Stormwater Management Report and Servicing Brief

Site Plan Control Design
85 Gemini Way, Ottawa, ON

Prepared for:

Centurion Appelt (1 Centrepoint) LP
#218, 3477 Lakeshore Road,
Kelowna, BC

Attention: Joshua Saltzman

LRL File No.: 230088

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1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Appelt Properties to complete a Stormwater Management Analysis and Servicing Brief for the construction of a 6-storey residential building with 2 levels of underground garage parking. The site is located at 85 Gemini Way, Ottawa, Ontario.

The subject property consists of one (1) lot with an existing parking lot. The site location is legally described as Part of Lots 35, Concession 2 and Registered Plan 4M-623 in the City of Ottawa and is zoned MC F(2.0) H(34) (Mixed-Use Center Zone).

Figure 1: Aerial View of Proposed Development

The subject property measures approximately **39 m** in frontage along **Baseline Road** and approximately **49 m** along **Gemini Way**. Based on locations of the existing property line, the total site area is approximately **0.323 ha**.

The proposed development will be constructed in a single phase, which includes the demolition of the existing asphalt parking lot and the construction of the 6-storey residential building. Refer to ***Site Plan*** included in ***Appendix F*** for more details.

This report has been prepared in consideration of the terms and conditions noted above and with the civil drawings prepared for the new development. Should there be any changes in the design features, which may relate to the stormwater and servicing considerations, LRL Associates Ltd. should be advised to review the report recommendations.

2 Existing Site and Drainage Description

The subject site measures **0.323 *ha*** and currently consists of a parking lot with associated asphalt parking. There is one existing entrance to the site via Gemini Way. The highest point on the site is located at the northwest and southeast edges, with an elevation of **86.63 m**. The lowest point is located in the middle of the south part of the site, with an elevation of **86.06 m**. The site generally slopes towards this low point, where an existing catch basin is located. Overall, the site is relatively flat, as it is predominantly occupied by an outdoor asphalt parking lot fronting Gemini Way.

Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent right-of-way:

Gemini Way:

- **525 mmØ** CONC storm sewer
- **300 mmØ** PVC sanitary sewer
- **203 mmØ** DI watermain

3 Scope of Work

As per applicable guidelines, the scope of work includes the following:

Stormwater management

- Calculate the allowable stormwater release rate.
- Calculate the anticipated post-development stormwater release rates.
- Demonstrate how the target quantity control objectives will be achieved.
- Demonstrate how the target quality control objectives will be achieved.

Water services

- Calculate the expected water supply demand at average and peak conditions.
- Calculate the required fire flow as per the Fire Underwriters Survey (FUS) method.
- Confirm the adequacy of water supply and pressure during peak flow and fire flow condition.
- Describe the proposed water distribution network and connection to the existing system.

Sanitary services

- Describe the existing sanitary sewers available to receive wastewater from the proposed building.
- Calculate peak flow rates from the development.
- Describe the proposed sanitary sewer system.
- Review impact of increased sanitary flow on downstream sanitary sewer.

4 REGULATORY APPROVALS

An MECP Environmental Compliance Approval is not expected to be required for installation of the proposed storm and sanitary sewers within the site. A Permit to Take Water is not anticipated to be required for pumping requirements for sewer installation. The Rideau Valley Conservation Authority (RVCA) will need to be consulted to obtain municipal approval for site development. No other approval requirements from other regulatory agencies are anticipated.

5 WATER SUPPLY AND FIRE PROTECTION

5.1 Existing Water Supply Services and Fire Hydrant Coverage

The subject property lies within the City of Ottawa 2W water distribution network pressure zone. It is situated in proximity to an existing 203 mm dia. watermain along Gemini Way. Additionally, there are at least two (2) existing fire hydrants located nearby. Refer to ***Appendix B*** for the location of fire hydrants.

5.2 Water Supply Servicing Design

According to the City of Ottawa Water Distribution Guidelines (Technical Bulletin ISDTB-2014-02), since the subject site is anticipated to house more than 50 residential units, it is required to be serviced by two water service laterals, separated by an isolation valve, for redundancy and to avoid creation of a vulnerable service area. Additionally, considering the presence of automatic sprinkler system inside the building and a recommended size to service the sprinkler system, the subject property is proposed to be serviced via two (2) 150 mm diameter service laterals connected to the existing 203mm DI watermain within Gemini Way. Refer to *Site Servicing Plan* C.401 in ***Appendix E*** for servicing layout and connection points.

We have analyzed the water demand requirements for the proposed 6-storey residential building. The residential water demands, and anticipated population were determined using Appendix 4-A, Table 4.1 and Table 4.2 from the *City of Ottawa Water Distribution Design Guidelines* and Table 3-3 from the *MOE Design Guidelines for Drinking Water Systems*.

Through reviewing the architectural floor plans of the proposed building, it was determined that the building will have a total combined above ground floor space of **11,079.6 m^2** and **161** residential units.

The water supply requirements for the residential units and commercial space in the proposed development have been calculated using the following formulas:

$$Q = (q \times P \times M), \text{ for the residential and}$$
$$Q = (q \times A \times M), \text{ for the commercial space.}$$

Where:

q = average water consumption (L/capita/day) or (L/ha/day)
P = design population (capita)
M = Peak factor
A = area (ha)

Residential Demands

The proposed building will include **53** studio units, **75** one-bedroom units and **33** two-bedroom units. Based on the City of Ottawa Design guidelines for population projection, this translates to approximately **248.5** residents. *Table 1* below summarizes the proposed residential population count as interpreted using Table 4-1 from the *City of Ottawa Water Distribution Design Guideline.*

Table 1: Development Residential Population Estimate

Proposed Unit Type	Persons Per Unit	Number of Units	Total Population
Studio	1.4	53	74.2
1 Bedroom	1.4	75	105.0
2 Bedroom	2.1	33	69.3
	Total	**161**	**248.5**

With reference to *Table 4.1 of the City of Ottawa Water Distribution Design Guidelines*, an average water consumption rate of 280 L/c/d was used. With reference to Table 3-3 of the MOE *Design Guidelines for Drinking Water Systems* a Maximum Daily Demand Factor and Maximum Hour Demand Factor were calculated to be approximately 3.90 and 5.83, respectively. The anticipated residential demands are calculated as follows:

- Average daily domestic water demand is **0.81 L/s**,
- Maximum daily demand is **3.14 L/s**, and
- Maximum hourly demand is **4.70 L/s**.

Refer to ***Appendix B*** for water demand calculations.

The City of Ottawa was contacted to obtain boundary conditions associated with the previously determined estimated water demand, as indicated in the boundary condition request (correspondence included in ***Appendix B)***. The previously anticipated residential demands were calculated as follows:

- Average daily domestic water demand is **0.76 L/s**,
- Maximum daily demand is **3.04 L/s**, and
- Maximum hourly demand is **4.54 L/s**.

The following hydraulic grade line (HGL) boundary conditions were obtained from the City:

- Minimum HGL = **126.0m**
- Maximum HGL = **132.2m**
- Maximum available Fire flow at 20 psi = **218 L/s**

As indicated in Table 2 below, the residual pressure at the proposed connection meets the required pressure range stated in the City of Ottawa Design Guidelines – Water Distribution (Section 4.2.2). Since the last revision, the average daily domestic water demand has increased by 6.6%, and the maximum hourly demand has increased by 3.5% compared to the previously determined values. As the increase in water demand is minimal compared to the previously submitted values used for boundary condition requests, a new request was not deemed necessary. Refer to ***Appendix B*** for Boundary Conditions.

Table 2: Summary of Boundary Conditions

Design Parameters	**Boundary Conditions @ Gemini way**	
	(m H_2O)	***KPa (psi)**
Minimum HGL	126.0	395.21 (57.32)
Maximum HGL	132.2	456.01 (66.14)
Maximum Available Fire Flow (218 L/s)	99.76	137.90 (20.00)

**Based on a ground elevation of approximately 85.7 m*

The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02* by using the following parameters provided by the Architect:

- Type of construction – Wood Frame
- Occupancy type – Limited Combustible
- Sprinkler Protection –Fully Automatic Sprinkler System

The estimated fire flow demand was estimated to be **13,000 L/min (216.7 L/s- Building A)**, see ***Appendix B*** for details. The required fire flow does not exceed the available fire flow at 20 psi (218 L/s) as per the boundary conditions.

There are six (6) existing fire hydrants in proximity to the proposed buildings that are available to provide the required fire flow demands of 13,000 L/min. Refer to ***Appendix B*** for fire hydrant locations. Table 3 below summarizes the aggregate fire flow of the contributing hydrants in proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 3: Fire Protection Summary Table

	Max. Fire Flow Demand (L/min)	**Fire Hydrants(s) within 75m**	**Fire Hydrant(s) within 150m**	**Fire Hydrant(s) within 305m**	**Available Combined Fire Flow (L/min)**
Contemplated Development	13,000	3	1	2	(3 x 5678) + (1 x 3785) + (2 x 2839) = 26,497

The total available fire flow from contributing hydrants is equal to **26,497 L/min** which is sufficient to provide adequate fire flow for the proposed development. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

6 SANITARY SERVICE

6.1 Existing Sanitary Sewer Services

There is an existing 300 mm diameter PVC sanitary sewer located within Gemini Way. The proposed development is anticipated to connect to this existing sewer.

6.2 Sanitary Sewer Servicing Design

The proposed development will be serviced via a 250 mm dia. sanitary service connected to the existing 300mm PVC sanitary sewer located within Gemini Way. Refer to LRL drawing C.401, included in **Appendix E,** for the proposed sanitary servicing.

The parameters used to calculate the anticipated residential sanitary flows are an average population count of 1.4 person per single unit, 2.1 persons per two-bedroom unit, a residential daily demand of **280 L/p/day**, a residential peaking factor of 4.0 and a total infiltration rate of 0.33 L/s/ha. Based on these parameters and a total site area of 0.323 ha, the total anticipated wet wastewater flow was estimated to be **3.33 L/s**. Refer to ***Appendix C*** for the site sanitary sewer design sheet.

As requested in the pre-consultation with City staff, the previously calculated sanitary demand of 3.09 L/s for the proposed development were coordinated with the City of Ottawa to confirm there is sufficient capacity in the downstream municipal sewers. As per correspondence attached, see ***Appendix C***, the downstream municipal sewers can sufficiently accommodate the increase in sanitary flows from the proposed development. Since the last revision, the total sanitary demand has increased by 7%. As this increase in demand is minimal, a new confirmation request was not deemed necessary.

7 STORMWATER MANAGEMENT

7.1 Existing Stormwater Infrastructure

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system. As such, approvals for the proposed development within this area are under the approval authority of the City of Ottawa.

An existing 525 mm diameter concrete storm sewer is located within Gemini Way. Under pre-development conditions, the site is divided into four drainage catchments:

- **ECA-01 (0.203 ha):** drains southwest toward Gemini Way
- **ECA-02 (0.046 ha):** drains east toward the adjacent property boundary
- **ECA-03 (0.470 ha):** drains south to Gemini Way

- **ECA-04 (0.027 ha):** drains north toward Baseline Road

Pre-development drainage patterns are illustrated on Plan C701 in ***Appendix E***. Additional details on pre-development and post-development watershed areas are provided in ***Appendix D***.

7.2 Design Criteria

The stormwater management criteria for this development are based on the pre-consultation with City of Ottawa officials, the City of Ottawa Sewer Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Management Planning and Design Manual, 2003 (SWMPD Manual).

7.2.1 Water Quality

The subject property is located within the Ottawa River West sub-watershed and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). It was determined that a total suspended solids (TSS) removal efficiency of minimum 80% is required for this site. To meet this requirement, an oil/grit separator (EFO4 or approved equivalent) is proposed for quality control.

7.2.2 Water Quantity

Based on pre-consultation with the city and as per Pinecrest Creek/Westboro Stormwater management guidelines, correspondence included in ***Appendix A***, the following stormwater management requirements were identified for the subject site:

- The 100-year post-development discharge from the site shall not exceed 33.5 L/s/ha. Excess flows for all storm events up to and including 100-year event will be detained on-site.

Refer to ***Appendix D*** for calculations.

7.3 Method of Analysis

The Modified Rational Method has been used to calculate the runoff rate from the site to quantify the detention storage required for quantity control of the development. Refer to ***Appendix D*** for storage calculations.

7.4 Proposed Stormwater Quantity Controls

The proposed stormwater management quantity control for this development will be accomplished using an underground cistern. The proposed cistern will be pumped, and a proposed 250 mm PVC diameter storm sewer pipe will outlet stormwater flows from the site to the existing 525mm diameter CONC storm sewer located within Gemini Way. The proposed servicing layout and connection points are shown on drawing C.401 in ***Appendix E,*** and detailed calculations can be found in ***Appendix D***.

The site has been analyzed, and total eleven (11) post-development watersheds have been allocated.

- CA-01, CA-02 and CA-03 (0.185ha) are controlled areas which consist of the roof envelope. There will be roof storage and control. Flows from the roof will be directed to the outlet pipe.
- CA-04 (0.035ha) is a controlled area which consists of pavers and is located east of the building. This area is directed to an area drain which carries flows to the underground cistern.
- CA-05 and CA-06 (0.037ha) consist of ramp access. Flows from this area will be captured via a trench drain and directed to the underground cistern.
- CA-07 (0.021ha) is a controlled area which consists of pavers and grass and is located on the west side of the building. This area is directed to area drains which will convey flows to the underground cistern.
- CA-08, CA-09 and CA-10 (0.034ha) are controlled drainage areas located north of the building, fronting Baseline Road. These areas consist of a mix of grassed surfaces, concrete, and pavers. Runoff from these areas is collected via an area drain, trench drain, and catch basin, and then conveyed to the underground cistern.
- CA-11 (0.001ha) consists of areas south of the building that will flow uncontrolled towards the Gemini Right of Way.

Refer to C601, Stormwater Management Plan and C702, Post-Development Watershed Plan C702 in ***Appendix E*** for reference.

Table 4 below summarizes post-development drainage areas. Calculations can be found in ***Appendix D.***

Table 4: Post-Development Catchment Areas & Runoff Coefficients

Catchments	Total Area (ha)	Weighted Runoff Coefficient (C)
CA-01A (roof controlled)	0.034	0.90
CA-01B (roof controlled)	0.027	0.90
CA-01C (roof controlled)	0.018	0.90
CA-01D (roof controlled)	0.024	0.90
CA-02A (roof controlled)	0.019	0.90
CA-02B (roof controlled)	0.022	0.90
CA-02C (roof controlled)	0.025	0.90
CA-03A (roof controlled)	0.009	0.90
CA-03B (roof controlled)	0.007	0.90
CA-04 (cistern controlled)	0.035	0.90
CA-05 (cistern controlled)	0.022	0.90
CA-06 (cistern controlled)	0.015	0.85
CA-07 (cistern controlled)	0.021	0.86
CA-08 (cistern controlled)	0.013	0.38

CA-09 (cistern controlled)	0.008	0.77
CA-10 (cistern controlled)	0.013	0.58
CA-11 (uncontrolled)	0.001	0.53
Total	**0.314**	**0.85**

For release rate and storage calculations, refer to ***Appendix D***. For additional information on cistern location, refer to drawing C.601 in ***Appendix E.*** Table 5 below summarizes the release rates and storage volumes required to meet the allowable release rate of **10.53 L/s** during 100-year storm.

Table 5: Stormwater Release Rate & Storage Volume Summary (100 Year)

Catchment Areas	Drainage Areas (ha)	Release Rate (L/s)	Required Storage (m^3)	Total Available Storage (m^3)
CA-04 to CA-10 (Cistern Controlled)	0.127	3.75	57.32	60.00
CA-01 to CA-03 (Roof Controlled)	0.185	6.31	82.66	84.13
CA-11 (Uncontrolled)	0.001	0.46	N/A	N/A
Total	**0.314**	**10.53**	**139.99**	**144.13**

To attenuate flows to the allowable release rate of **10.53 L/s**, it is calculated that a total of **139.99 m^3** of storage will be required. The required storage is proposed to be met through roof top storage and underground storage in a cistern as summarized below.

- A storage volume of **57.32 m^3** is required within the underground cistern to accommodate stormwater quantity control corresponding to a maximum restricted release rate of **3.75L/s**.
- The cistern will provide a minimum storage capacity of **60.00 m^3**. The exact cistern size and location will be confirmed during the detailed design stage. The cistern will be equipped with an emergency backup power and pump system designed by mechanical engineer.
- A roof storage volume of **82.66 m^3** is required to meet stormwater quantity control objectives, based on maximum restricted total release rate of **6.31L/s** via controlled roof drains.

8 Erosion and Sediment Control

During construction, erosion and sediment controls will be provided primarily via a sediment control fence to be erected along the perimeter of the site where runoff has the potential of leaving the site. Inlet sediment control devices are also to be provided in any catch basin and/or manholes in and around the site that may be impacted by the site construction. Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario

Provincial Standard Specification OPSS 577. For more details refer to drawing C101 Erosion and Sediment Control Plan in ***Appendix E.***

9 CONCLUSION

This Stormwater Management and Servicing Report for the development proposed at 85 Gemini Way presents the rationale and details for the servicing requirements for the subject property.

In accordance with the report objectives, the servicing requirements for the development are summarized below:

Water Service

- The maximum required fire flow was calculated to be **13,000 L/min** using the FUS method.
- There are at least two (6) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **26,497 L/min** to the site.
- The new development will be serviced via two (2) 150 mm diameter service laterals separated by an isolation valve, that will be connected to the existing 203 mm DI watermain within Gemini Way.
- Boundary conditions received from the City of Ottawa indicate that sufficient pressure is available to service the proposed site.

Sanitary Service

- The total calculated wet wastewater flow from the proposed development is **3.33 L/s.**
- The proposed development will discharge **3.33 L/s** to the existing 300 mm dia. PVC sanitary sewer within Gemini Way via a proposed 250 mm dia. PVC sanitary service lateral.

Stormwater Management

- The stormwater release rates from the proposed development will meet the calculated allowable release rate of **10.53 L/s.**
- The stormwater quantity control objectives will be met through a combination of storage in an underground cistern **(60 m^3)** and rooftop storage (**84.13m^3**).
- For quality control, an oil/grit separator (EFO4 or approved equivalent) is proposed, providing enhanced protection with a minimum of **80% TSS removal**.

10 REPORT CONDITIONS AND LIMITATIONS

The report conclusions are applicable only to this specific project described in the preceding pages. Any changes, modifications or additions will require a subsequent review by LRL Associates Ltd. to ensure compatibility with the recommendations contained in this document.

If you have any questions or comments, please contact the undersigned.

Prepared by:
LRL Associates Ltd.

Sarthak Vora
Civil E.I.T

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Civil Engineer

APPENDIX A

Pre-consultation / Correspondance

File No.: PC2024-0398

October 25, 2024

Tyler Yakichuk
Fotenn Planning and Design
Via email: yakichuk@fotenn.com

Subject: **Pre-Consultation: Meeting Feedback**
Proposed Site Plan Control Application – 1 Centrepointe Drive

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on October 17, 2024.

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.

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken.

2. In your subsequent submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

3. Please note, if your development proposal changes significantly in scope, design, or density before the next submission, you may be requested to repeat the pre-consultation process before filing an Official application.

Supporting Information and Material Requirements

1. 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.

    a. 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.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Policies

The following policies apply to the site:

a. The site is designated Hub and Mainstreet Corridor and within an Evolving Neighbourhood overlay shown on Schedule B3 – Outer Urban Transect.

b. Per Schedule C1 – the site is within a Protected Major Transit Station Area (PMTSA).

c. Per Schedule C3 – Active Transportation Network – the site is within 250m of an existing Major Pathway.

d. Per Schedule C4 – Urban Road Network, Baseline Road is classified as an Arterial – Existing Road. Centrepointe Drive is classified as a Major Collector – Existing Road. Gemini Way and Constellation Drive is classified as Collector – Existing Road.

e. Per Schedule C7-A, the subject site is within a Design Priority Area – Urban.

Zoning

1. General Zoning Performance Requirements

    a. A minor zoning by-law amendment application or committee of adjustment application will be required to permit the proposed FSI of 3.3, which exceeds the maximum permitted FSI of 2.0, based on the zoning of the subject site: Mixed-Use Centre Zone, Floor Space Index 2.0, Height 34 metres (MC F(2.0) H(34)).

    b. Provide additional dimensions on plans to confirm zoning compliance and/or identify any performance standards requiring relief.

2. Site Design and Configurations

    a. Staff are appreciative of the desire to redevelop this vacant, underutilized site.

b. Please confirm the distance between the existing medical building and development proposal.

c. Explore opportunities to include active commercial services on ground floor to support cultural development in order to maintain, extend, or create a continuous stretch of active frontages along a Mainstreet Corridor. Refer to section 6.2.2., subsection 1 of the Official Plan.

d. Please explore alternative iterations of site configurations, building shape and building height for the subject site.

    i. There are opportunities to increase the building height (an additional two-three storeys) on the subject property, while reducing the floor area to permit additional landscaping and larger amenity area.

e. Consider providing a secondary pedestrian access to Baseline Road to provide direct access to the major public and active transportation routes.

3. Landscaping

    a. Consider opportunities for additional trees and landscaping throughout the subject site.

        i. For example, a larger setback along Gemini Way could provide opportunities to preserve the existing landscape buffer and provide additional tree plantings.

4. Amenity Area

    a. Reconsider the location of the outdoor amenity area along Gemini Way, and away from access to the underground parking garage. Refer to Section 4.6.1., policy 5c) of the Official Plan that speaks to mitigating micro-climate impacts in public and private amenity spaces.

5. Parking Requirements

    a. Please provide parking calculations as part of the next submission. Refer to Section 101 and 102 of the Zoning By-law for applicable parking rates.

        i. Note: The property is situated within Area A on Schedule 361, being the Centrepointe Community. There are special parking provisions for this area, see text below Table 101B, ‘Additional Zoning Provisions’ (c).

    b. Please provide parking measurements as part of the next submission.

c. Please show the extent of the underground parking garage on the site and landscape plans. This will inform the landscaping opportunities on site.

d. Given the site's context within a Protected Major Transit Station area and proximity to an Major active transportation pathway staff are supportive for a reduction of parking spaces, and increase in bicycle parking spaces. Consider providing 1 bicycle parking space per unit.

6. Bicycle Parking Requirements

a. Provide additional information on proposed bicycle parking in the next submission. Provide bicycle parking calculation in the next submission. Refer to Section 111 in the Zoning By-law for minimum bicycle parking rates and bicycle parking provisions.

b. Ensure bicycle parking is provided in accordance with the direction in Policy 9 of Section 4.1.2 in the Official Plan:

1. Long-term bicycle parking facilities shall be secure, sheltered and usable by all types of cyclists. Where located inside buildings, long-term bicycle parking facilities shall provide safe, accessible, direct and convenient access to the exterior; and

2. Short-term bicycle parking facilities shall be highly visible, well-lit, near building entrances and where appropriate, sheltered.

c. Provide design details of the proposed bicycle parking in the next submission.

7. Waste Management Requirements

a. Provide further information on how waste management will be handled on site. Staff have concerns with the current location of the temporary waste loading area as it may temporarily block off accessway to the singular entranceway to the underground parking garage.

b. Show the locations of any outdoor waste storage areas on the plan. Please note that all outdoor refuse collection and refuse loading areas contained within or accessed via a parking lot must comply with the provisions in Section 110(3) of the Zoning By-law.

c. If any, identify location(s) of any indoor garbage rooms. Waste Collection Services staff will review and confirm whether the development is eligible for City pick-up.

Required Applications

8. The following development applications are required to permit the proposed development:

    a. Minor Zoning By-law Amendment (Development Application) or Minor Variance (Committee of Adjustment Application).

    b. Site Plan Control (Complex)

Feel free to contact Nishant Dave (nishant.dave@ottawa.ca), Planner I, for follow-up questions.

Urban Design

Comments:

1. Staff require an Urban Design Brief, architectural plans (Site Plan, Building Elevations, etc.), and a Landscape Plan. Please refer to the attached Urban Design Brief Terms of Reference.

2. Design Priority Area – a visit to the UDRP may be required. Staff to confirm once more detailed drawings are produced. If a visit to the UDRP is required, a UDRP Report will also be required.

3. Please improve the western most setback to a minimum of 5.5 metres as there will be several units with principal windows facing out towards the side yard.

4. Consider an I-shaped building instead of a U-shaped building to improve separation to adjacent sites and to ensure that there is adequate light access to units.

5. Staff have no concerns with the 6-storey height proposed. Mid-rise up to 9 storeys is appropriate for the size of the site. Additional stepbacks beyond the 6th level may be needed if a taller building is explored.

6. Public realm on Baseline Road and Gemini Way needs to be enhanced. The public realm should include a sidewalk with a 2-metre accessible clearway and the potential for several medium to large street trees.

7. Staff require more details on the temporary waste loading area – will the bins be rolled out to the curb from a waste room on the side of the building? How long will access to the below-grade garage be impacted?

8. Please explore the potential for non-residential uses at-grade or ground floor amenity that engages with the street. Where ground floor units are proposed, explore the potential for active entrances, particularly along Gemini Way.

9. Staff look forward to reviewing building elevations and landscape plans in the future.

Feel free to contact Nader Kadri (nader.kadri@ottawa.ca), Senior Urban Designer, for follow-up questions.

Engineering

Comments:

10. The Stormwater Management Criteria, for the subject site, is to be based on the requirements of the Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area, JFSA, dated May 2019.

    a. **Water Quantity Control:** 1:100 year discharge from site not to exceed 33.5 L/s/ha. Flows in excess of this target rate will be detained on site for up to the 100-year storm event.

    b. **Water Quality Control:** On-site removal of 80% of TSS. Some of which would be accomplished by on-site retention of first 10mm of rainfaill and detention of the 25mm design storms (25mm 4-hour Chicago design storm).

    c. **Runoff Volume Reduction:** A minimum on-site retention of the 10mm design storm. Refer to LID References(1) for guidance on prudent approach to planning infitlration-based LID best management practrises. Assumptions re: non-viability of infiltration masures must be substantiated. A green roof, rain harvestig measures and/or a combinaion of detention/retention(II) measures could be implemented to provide furtehr runoff volume reduction.

    (i) Re: Infiltration measures: Beyond the targets specified in this table, the planning, design and use of these systems shall be in accordance with the guidance in the Stormwater Management Planning and Design Manual (MOE, 2003); the Low Impact Development Stormwater Management Planning and Design Guide (CVC and TRCA, 2010); the Low Impact Development Stormwater Management Planning and Design Wiki at: wiki.sustainabletechnologies.ca; and Draft No.2 Low Impact Development (LID) Stormwater Management Guidance Manual (MOECC, November 2017) or the final version of this Manual, when available. As noted in the MOECC LID SWM Guidance Manual, a prudent approach to planning infiltration-based LID best management practices on any site involves delineating catchment areas that contain high risk site activities and isolating them by applying non-infiltration-based practices to these areas.

    (ii) Retention is to hold or retain stormwater on a more permanent basis such as for infiltration to the surrounding soils. Detention is the temporary

storage or detaining of stormwater for eventual release to the downstream system.

d. **Erosion Control:** Control (detain) the runoff from the 25mm design storm (25mm 4-hour Chicago Design Storm) such that the peak outflow from the site does not exceed 5.8 L/s/ha.

11. An MECP Environmental Compliance Approval is not required for the proposed development assuming the subject site is to remain as one parcel.

12. Water

a. Water service connections are to be connected to 203mm dia. watermain on Gemini Way. Connections to Baseline Road will not be permitted.

b. Water Supply Redundancy: Residential buildings with a basic day demand greater than 50m3/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration. The basic day demand for this site not expected to exceed 50m3/day.

c. Please review Technical Bulletin ISTB-2018-02, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A hydrant coverage figure shall be provided and demonstrate there is adequate fire protection for the proposal. Two or more public hydrants are anticipated to be required to handle fire flow.

d. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

i. Location of service

ii. Type of development

iii. The amount of fire flow required (per OBC or FUS).

iv. Average daily demand: ___ l/s.

v. Maximum daily demand: ___l/s.

vi. Maximum hourly daily demand: ___ l/s.

13. Sewer (sanitary and storm)

a. Sewer service connetions shall be to Gemini Way and not Baseline Road.

b. A storm sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

c. Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

d. Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.

e. Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.

f. Please provide a Pre-Development Drainage Area Plan to define the pre-development drainage areas/patterns. Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.

g. Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.

h. There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.

i. **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e., parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

j. When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of

zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**

k. If there is a disagreement from the designer regarding the required storage, the City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.

l. Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 2- and 100-year event storage requirements.

m. In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.

n. Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

o. If rooftop control and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a Roof Drain Plan as part of the submission.

p. Street catch basins are not to be located at any proposed entrances.

q. 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.

v. No submerged outlet connections.

14. Grading

Post-development site grading shall match existing property line grades to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.

15. Geotechnical (including, where applicable, detailed sensitive marine clay investigation)

Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications. Please note that the Geotechnical Report must speak to possible impacts and mitigation measures with respect to the protection of the backbone watermain on Baseline Road. Possible impacts could be as a result from excavation, shoring, etc. A Vibration and Settlement Monitoring Program may be required depending on the results of the investigation of the Geotechnical Report.

16. Snow Storage

Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

17. Road Reinstatement

Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By- Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

18. Gas Pressure Regulating Station

A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site

Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.

19. Phase One Environmental Site Assessment

a. A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.

b. The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.

c. Official Plan Section 10.1.6

d. Record of Site Condition (RSC) will be required.

20. General

a. It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.

b. Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided, and all easements shall be shown on the engineering plans.

c. **Construction approach** – Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead on this request.

21. Background Studies and/or Subwatershed Studies

a. Please refer to the Stormwater Management Guidelines for the Pincrest Creek/Westboro Area Final Report prepared by JFSA, dated Mat 2019.

Feel free to contact Mohammed Fawzi, Senior Project Manager, for follow-up questions.

Noise

Comments:

22. A noise study will be required due to the site's proximity to Baseline Rd.

Feel free to contact Reed Adams (reed.adams@ottawa.ca), Transportation Project Manager, for follow-up questions.

Transportation

23. TIA:

    a. A full Transportation Impact Assessment is required. Please submit the Scoping/Forecasting report to reed.adams@ottawa.ca at your earliest convenience. The applicant is responsible to submit the Scoping Report prior to application and must allow for a 14 day circulation period.

    b. The Strategy Report must be submitted with the formal submission to deem complete. The applicant is strongly encouraged to submit the Strategy Report to the TPM prior to formal submission and allow for a 14 day circulation period.

    c. Complete and submit the Transportation Demand Management Measures Checklist and the Transportation Demand Management Supportive Development Design and Infrastructure Checklist in support of the application.

    d. If an RMA is required to support the proposed development, the functional plan and/or RMA plans must be submitted with the formal submission to deem complete. Request base mapping asap if RMA is required, contact Engineering Services

    e. The "Urban" area designation is based upon the Transportation Master Plan 'Inner Urban' area (i.e. 400m Radius for study area).

24. ROW Protection:

    a. Ensure that the development proposal complies with the Right-of-Way protection requirements of the Official Plan's Schedule C16.

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

25. Site plan:

    a. Ensure site access meets the City's Private Approach Bylaw.

b. Show all details of the roads abutting the site; include such items as pavement markings, accesses and/or sidewalks.

c. Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.

d. Turning movement diagrams required for internal movements (loading areas, garbage).

e. 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).

f. Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)

g. Sidewalk is to be continuous across access as per City Specification 7.1.

h. Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers. When the underground parking ramp's break over slope exceeds 8%, a vertical-curve transition or a transition slope of half the ramp slope should be used. Without this transition, bottoming out of vehicles may occur.

Feel free to contact Reed Adams (reed.adams@ottawa.ca), Transportation Project Manager, for follow-up questions.

Environment

Comments:

26. Urban Heat Island - Please add features that reduce the urban heat island effect (see OP 10.3.3) produced by the parking lot and a building footprint. For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or constructing the parking lot or building with low heat absorbing materials.

27. Bird-safe Development - Please review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf

Feel free to contact Matthew Hayley (matthew.hayley@ottawa.ca), Environmental Planner, for follow-up questions.

Forestry

Comments:

28. In keeping with the Official Plan (see 4.8.2), please maintain an adequate setback between Gemini Way & Baseline Rd, to permit retention of existing trees and new plantings to improve the site following construction.

    a. Priority should be given to the protection and retention of existing, healthy trees, such as the oak trees bordering Gemini Way.

    b. High-quality soil volumes of adequate depth & size should be provided or reinstated after construction, to permit tree plantings.

29. Existing trees are being maintained along the eastern edge of the site, through construction of the adjacent development. Appropriate tree protection measures will need to be taken to prevent unnecessary impacts.

30. The following Tree Conservation Report (TCR) guidelines have been adapted from the Schedule E of the Tree Protection By-law – for more information on these requirements please contact julian.alvarez-barkham@ottawa.ca

    a. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City

        i. An approved TCR is a requirement of Site Plan approval.

    b. Any removal of privately-owned trees 10cm or larger in diameter within the urban area, or 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.

    c. The TCR must contain 2 separate plans:

        i. Plan/Map 1 - show existing conditions with tree cover information.

        ii. Plan/Map 2 - show proposed development with tree cover information.

    d. 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.

        i. For ease of review, the Planning Forester suggests that all trees be numbered and referenced in an inventory table.

e. Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)

f. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained.

    i. Compensation may be required for the removal of city owned trees.

g. The removal of trees on a property line will require the permission of both property owners.

h. 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 on the Tree Protection Specification or by searching Ottawa.ca.

    i. The location of tree protection fencing must be shown on the plan.

    ii. Show the critical root zone of the retained trees.

i. 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.

31. The following Landscape Plan (LP) guidelines have been adapted from Schedule E of the Tree Protection By-law – for more information on these requirements please contact julian.alvarez-barkham@ottawa.ca

    a. Please ensure any retained trees are shown on the LP.

    b. Minimum Setbacks

        i. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.

        ii. Maintain 2.5m from curb.

        iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.

        iv. 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.

        v. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

    b. Tree specifications

i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.

c. 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.

d. No root barriers, dead-man anchor systems, or planters are permitted.

e. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

f. Hard surface planting

i. If there are hard surface plantings, a planting detail must be provided.

ii. Curb style planter design is highly recommended.

iii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

c. Trees are to be planted at grade.

d. 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 following:

Tree Type/Size	Single Tree Soil Volume (m^3)	Multiple Tree Soil Volume (m^3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

i. It is strongly suggested that the proposed species list include a column listing the available soil volume.

e. Sensitive Marine Clay - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines.

f. The City requests that consideration be given to planting native species wherever there is a high probability of survival to maturity.

g. 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.**

Feel free to contact Julian Alvarez-Barkham (julian.alvarez-barkham@ottawa.ca), Planning Forester, for follow-up questions.

Parkland

Comments:

32. The proposed development will require parkland dedication as per the Parkland Dedication By-law No.2022-280 (or as amended). For the next submission, please provide the following information for staff to confirm the *form* of parkland dedication required (land or cash-in-lieu of parkland).

    i. Evidence to substantiate that the consent (severance) and lot line adjustment applications are proceeding to registration. Please advise once the legal plans are deposited.

    ii. Lot area of the development, in square meters

    iii. Number of residential units proposed.

Feel free to contact Louise Cerveny (louise.cerveny@ottawa.ca), Parks Planner, for follow-up questions.

Other

33. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

    a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.

    b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

34. Under the Affordable Housing Community Improvement Plan, a Tax Increment Equivalent Grant (TIEG) program was created to incentivize the development of affordable rental units. It provides a yearly fixed grant for 20 years. The grant helps offset the revenue loss housing providers experience when incorporating affordable units in their developments.

    a. To be eligible for the TIEG program you must meet the following criteria:

        i. the greater of five units OR 15 per cent of the total number of units within the development must be made affordable

        ii. provide a minimum of 15 per cent of each unit type in the development as affordable

        iii. enter into an agreement with the city to ensure the units maintain affordable for a minimum period of 20 years at or below the city-wide average market rent for the entire housing stock based on building form and unit type, as defined by the Canada Mortgage and Housing Corporation

        iv. must apply after a formal Site Plan Control submission, or Building Permit submission for projects not requiring Site Plan Control, and prior to Occupancy Permit issuance

    b. Please refer to the TIEG information *at Affordable housing community improvement plan / Plan d'améliorations communautaires pour le logement abordable for more details or contact the TIEG coordinator via email at affordablehousingcip@ottawa.ca.*

Submission Requirements and Fees

1. Outlines the application type/subtype required and the associated fees
    a. Additional information regarding fees related to planning applications can be found here.
2. 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.
    a. 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.
3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

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

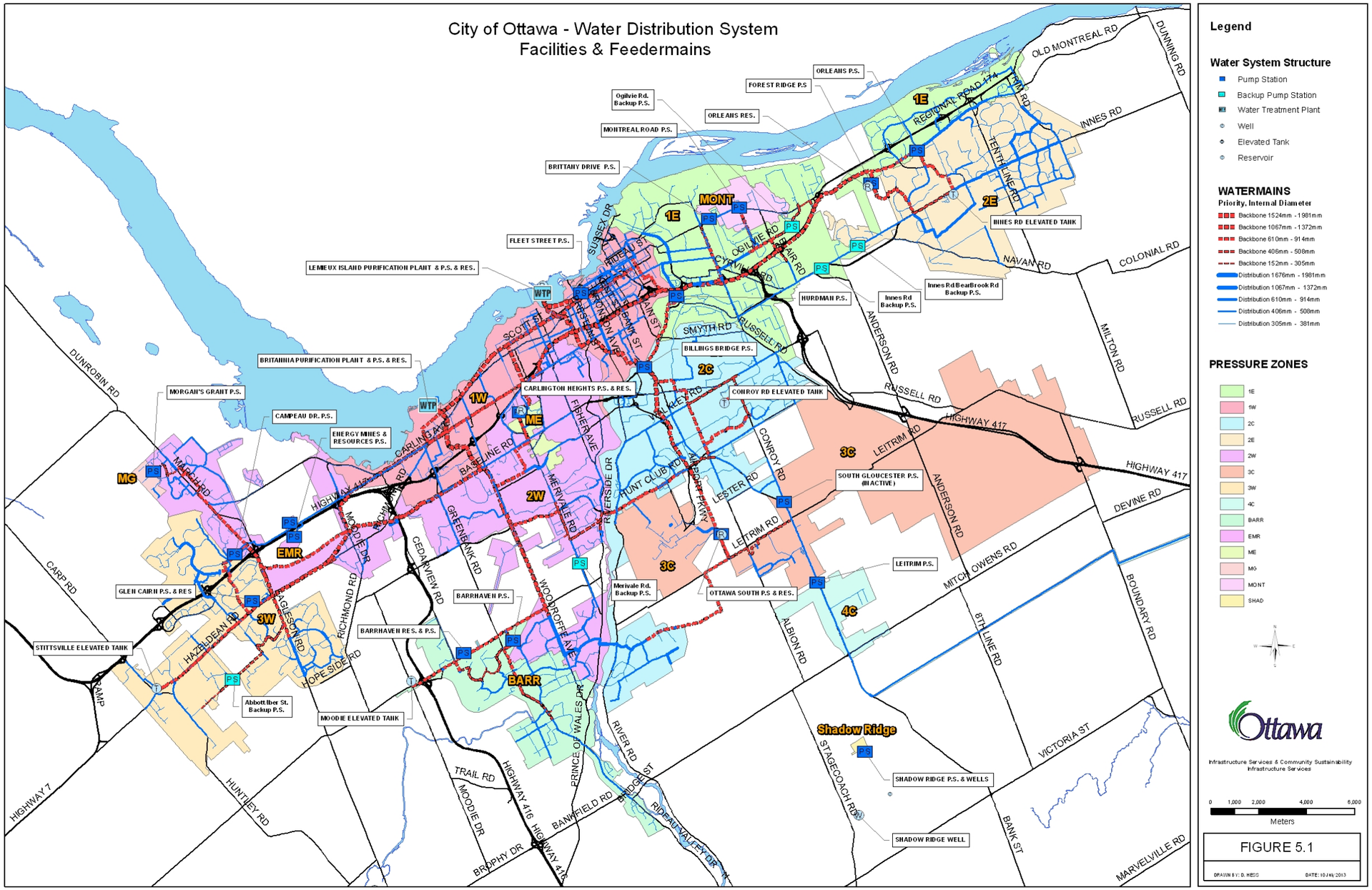
Yours Truly,
Nishant Dave

Encl. SPIL, ADS Site Plan, HPDS Overview, HPDS Example, Urban Design Brief

c.c. Kimberley Baldwin, Planner III
Maise Liu, Planning Student
Nader Kadri, Senior Urban Designer
Mohammed Fawzi, Senior Project Manager
Reed Adams, Transportation Project Manager
Julian Alvarez-Barkham, Planning Forester
Louise Cerveny, Parks Planner
Matthew Hayley, Environment Planner

APPENDIX B

Water Supply Calculations & Fire Hydrant Coverage



Source: City of Ottawa GIS infrastructure database

Figure 5.1: City of Ottawa Water Distribution System, Facilities and Feedermains

FIRE HYDRANT LOCATIONS FIGURE

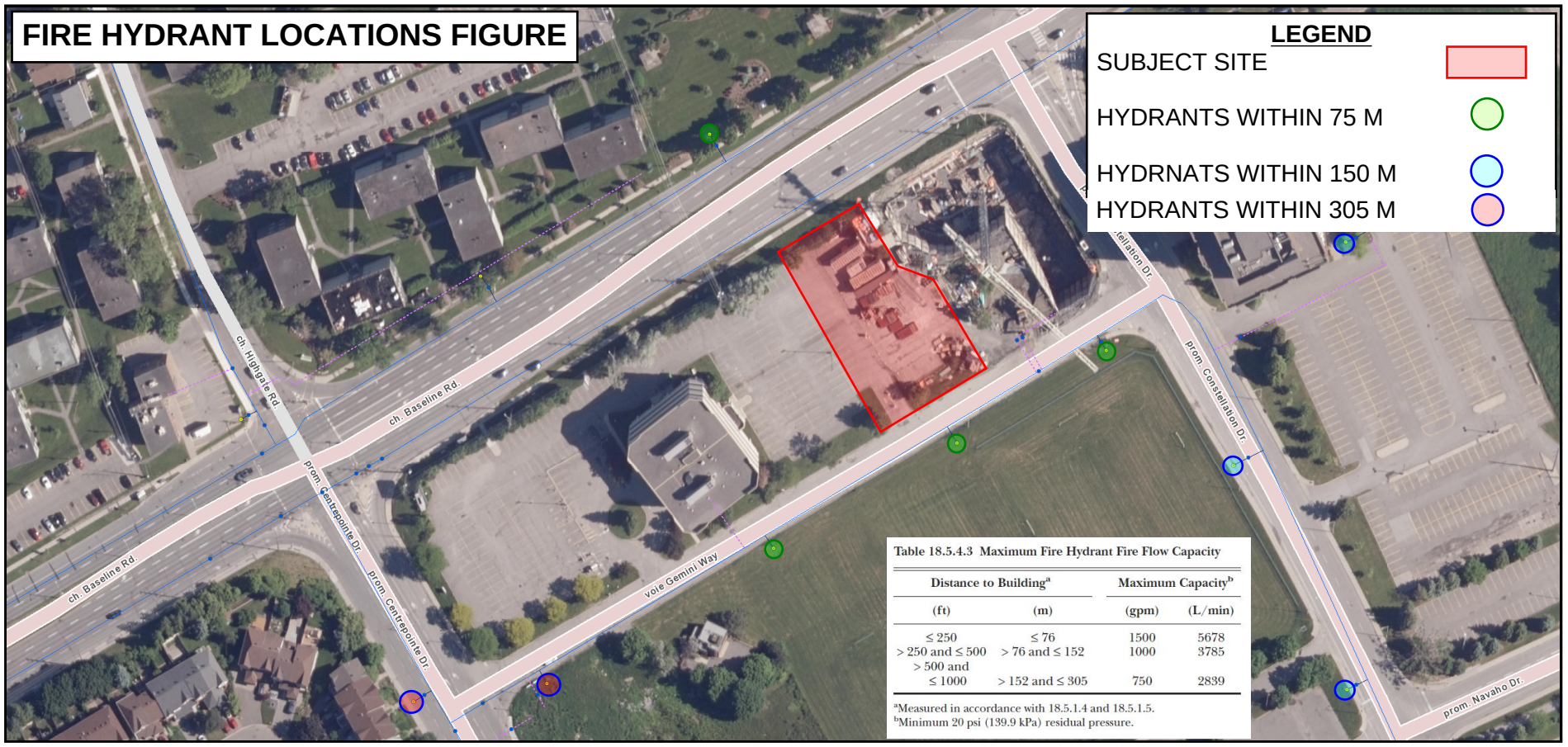


Table 18.5.4.3 Maximum Fire Hydrant Fire Flow Capacity

Distance to Building[a]		Maximum Capacity[b]	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

[a]Measured in accordance with 18.5.1.4 and 18.5.1.5.
[b]Minimum 20 psi (139.9 kPa) residual pressure.

Momen Siam

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: May 22, 2025 5:38 PM
To: Momen Siam
Cc: Virginia Johnson
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request
Attachments: 85 Gemini Way May 2025.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Momen,

Please note a requested fire flow of 267 L/s was not met.

The following are boundary conditions, HGL, for hydraulic analysis at 85 Gemini Way (zone 2W2C) assumed to be connected via a dual connection to the 203 mm watermain on Gemini Way (see attached PDF for location).

Minimum HGL: 126.0 m
Maximum HGL: 132.2 m
Maximum available Fire flow at 20 (psi): 218 L/s , assumed ground surface elevation is 85.7 m.

These are for current conditions and are based on computer model simulation.
Disclaimer:
The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.
"The IWSD has recently updated their water modelling software. Any significant difference between previously received BC results and newly received BC results could be attributed to this update."

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Fawzi, Mohammed
Sent: May 22, 2025 1:21 PM
To: Momen Siam <msiam@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

Thanks for following up. I'm following up on my end as well and should have something for you soon hopefully.

Thanks Momen.

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

From: Momen Siam <msiam@lrl.ca>
Sent: May 22, 2025 11:23 AM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Good Morning Mohammad,

I wanted to follow up on this request. Has the Water Dept provided the boundary conditions along Gemini?

Thank you,

Momen Siam, P.Eng

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: May 5, 2025 10:53 AM
To: Momen Siam <msiam@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

Thank you for your email. This to confirm your request has been received, and results will be forwarded as soon as they are available. Please also note that during the Site Plan Control review, a stamped letter from the architect will be required to confirm that the parameters that are used in the FUS calculations are being incorporated in the building design.

Thanks Momen.

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
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Ottawa, ON K1P 1J1
613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

From: Momen Siam <msiam@lrl.ca>
Sent: April 30, 2025 1:46 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>

Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Mohammed,

We have revised the site plan and a 2.0 hour rating firewall has been proposed to separate the building. The northern portion of the building has the higher fire flow demand. Please see attached calculation along with a site plan.

Please provide boundary conditions at connection points 1 & 2, shown below in the green circles.

The following table shows the expected water and fire demands.

	Demand (L/s)
Avg. Daily	0.74

Max Day + FUS	3.00 + 267
Peak Hour	4.48

Momen Siam, P.Eng

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: January 29, 2025 8:10 AM
To: Momen Siam <msiam@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

Unfortunately, you will need to look for ways at reducing the required fire flow as Infrastructure Planning does not approve required fire flows exceeding 18,000 L/min.

Let me know if you wish to discuss further.

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

From: Momen Siam <msiam@lrl.ca>
Sent: January 28, 2025 12:07 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Hi Mohammed,

As requested, please see attached calculations along with figure with connection points.

Thank you,

Momen Siam, P.Eng

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: January 23, 2025 1:39 PM
To: Momen Siam <msiam@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

Thank you for sending your request. Can you please include calculations for the expected water demands as well as the FUS fire flow calculations? Furthermore, the figure attached in your email should show the proposed connection point(s) to the watermain.

Thanks Momen.

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
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110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

From: Momen Siam <msiam@lrl.ca>
Sent: Wednesday, January 22, 2025 5:20 PM

To: Schaeffer, Gabrielle <gabrielle.schaeffer@Ottawa.ca>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Good Afternoon Gabrielle and Mohammad,

I'd like to request boundary conditions for the site located at 85 Gemini way, at the SW corner of Constellation Drive and Baseline Road. Please provide boundary conditions at connection points 1 & 2, shown below in the green circles.

The following table shows the expected water and fire demands.

	Demand (L/s)
Avg. Daily	0.75

Max Day + FUS	3.01 + 350
Peak Hour	4.50

Thank you,

Momen Siam, P.Eng

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'

Water Supply Calculations

LRL File No. : 230088
Project: 85 Gemini Way
Location: Ottawa, ON.
Date: 10/22/2025
Designed: SV
Checked: VJ
Dwg Reference: C401

Water Demand based on the City of Ottawa Design Guidelines-Water Distribution, 2010

Domestic Demand

Unit Type	Persons Per Unit	Number of Units	Population
Bachelor	1.4	53	74.2
1 Bedroom	1.4	75	105.0
2 Bedroom	2.1	33	69.3
	Total	**161**	**248.5**

Average Water Consumption Rate =	280	L/c/d		
Average Day Demand =	**69,580**	**L/d**	**0.81**	**L/s**
Maximum Day Factor =	3.90		(Table 3-3 MOE Peaking Factors)	
Maximum Daily Demand =	**271,496**	**L/d**	**3.14**	**L/s**
Peak Hour Factor =	5.83		(Table 3-3 MOE Peaking Factors)	
Maximum Hour Demand =	**405,895**	**L/d**	**4.70**	**L/s**

Water Service Pipe Sizing

Q = VA

Where: V = velocity (m/s)
A = area of pipe (m^2)
Q = flow rate (L/s)

Assuming a maximum velocity of 1.8m/s, the diameter of pipe is calculated as:

Minimum pipe diameter (d) =	$(4Q/\pi V)^{1/2}$		
=	0.058	m	
=	58	mm	
Proposed pipe diameter (d) =	**150**	mm	(to be confirmed with hydraulic pressure analysis)
=	**6**	Inches	

Fire Flow Calculations

LRL File No. 230088
Project: 85 Gemini Way
Location: Ottawa, ON.
Date: March 31, 2025
Method: Fire Underwriter's Survey (FUS)
Prepared by: M.Siam

BUILDING A

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Structural Framing Material								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Wood Frame	**1.5**		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
Floor Space Area (A)								
2	Total area					**6,082**	m^2	
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1000)	Fire Flow = 220 x C x $A^{0.5}$				L/min	**26,000**
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	**-15%**	L/min	**22,100**
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	**-30%**	L/min	**11,050**
			Water supply is standard for both the system and fire department hose lines	-10%	True	**-10%**		
			Fully supervised system	-10%	True	**-10%**		
6	Choose separation	Exposure distance between units	North side	Firewall	10%		L/min	**13,260**
			East side	30.1 to 45m	0%			
			South side	30.1 to 45m	0%			
			West side	30.1 to 45m	0%	**10%**		
Net required fire flow								
7	Obtain fire flow, duration, and volume	Minimum required fire flow rate (rounded to nearest 1000)					L/min	**13,000**
		Minimum required fire flow rate					L/s	**216.7**
		Required duration of fire flow					hr	**2.75**

Fire Flow Calculations

LRL File No. 230088
Project: 85 Gemini Way
Location: Ottawa, ON.
Date: March 31, 2025
Method: Fire Underwriter's Survey (FUS)
Prepared by: M.Siam

BUILDING B

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
			Structural Framing Material					
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Wood Frame	**1.5**		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
			Floor Space Area (A)					
2			Total area			**4,028**	m^2	
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1000)	Fire Flow = 220 x C x $A^{0.5}$				L/min	**21,000**
			Reductions or surcharge due to factors affecting burning					
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	**-15%**	L/min	**17,850**
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	**-30%**	L/min	**8,925**
			Water supply is standard for both the system and fire department hose lines	-10%	True	**-10%**		
			Fully supervised system	-10%	True	**-10%**		
6	Choose separation	Exposure distance between units	North side	30.1 to 45m	0%		L/min	**12,495**
			East side	Firewall	10%			
			South side	Firewall	10%			
			West side	30.1 to 45m	0%	**20%**		
			Net required fire flow					
7	Obtain fire flow, duration, and volume		Minimum required fire flow rate (rounded to nearest 1000)				L/min	**12,000**
			Minimum required fire flow rate				L/s	**200.0**
			Required duration of fire flow				hr	**2.5**

Fire Flow Calculations
LRL File No.
Project: **BUILIDNG C**
Location:
Date:
Method: Fire Underwriter's Survey (FUS)
Prepared by:

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Construction Coefficient (C)								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame Construction (Type V)	1.5	Wood Frame Construction (Type V)	**1.5**		
			Mass Timber Construction (Type IV-A)	0.8				
			Mass Timber Construction (Type IV-B)	0.9				
			Mass Timber Construction (Type IV-C)	1.0				
			Mass Timber Construction (Type IV-D)	1.5				
			Ordinary Construction (Type III)	1.0				
			Noncombustible Construction (Type II)	0.8				
			Fire Resistive Construction (Type I)	0.6				
Floor Area (A)								
2	Total Effective Floor Area					**970**	m^2	
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1000)	Fire Flow = 220 x C x $A^{0.5}$				L/min	**11,000**
Occupancy and Contents Adjustment								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Noncombustible	-25%	Limited combustible	**-15%**	L/min	**9,350**
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
Sprinkler Protection								
5	Choose reduction for sprinklers	Sprinkler reduction	Automatic sprinkler protection designed & installed in accordance with NFPA 13	-30%	True	**-30%**	L/min	**4,675**
			Water supply is standard for both the system and fire department hose lines	-10%	True	**-10%**		
			Fully supervised system	-10%	True	**-10%**		
Exposure Adjustment								
6	Choose separation	Exposure distance	North side	>30m	0%	**40%**	L/min	**8,415**
			East side	3.1 to 10m	20%			
			South side	20.1 to 30m	10%			
			West side	Firewall	10%			
Net Required Fire Flow								
7	Obtain fire flow and duration				Minimum required fire flow (rounded to nearest 1000)		L/min	**8,000**
					Minimum required fire flow		L/s	**133.3**
					Required duration of fire flow		hr	**2**

APPENDIX C

Wastewater Collection Calculations

LRL Associates Ltd.
Sanitary Sewer Design Sheet

LRL File No.: 230088
Project: 85 Gemini
Location: Ottawa, ON.
Designed: SV
Checked: VJ
Date: January 20, 2026
DWG. Reference: C401

Sanitary Design Parameters

Commercial & Institutional Flow = 28000 L/ha/day
Light Industrial Flow = 35000 L/ha/day
Heavy Industrial Flow = 55000 L/ha/day
Maximum Residential Peak Factor = 4.0
Commercial & Institutional Peak Factor = 1.5
Average Daily Flow = 280 L/p/day
Industrial Peak Factor = as per Appendix 4-B
Extraneous Flow = 0.33 L/s/ha

Pipe Design Parameters

Maximum Velocity = 3.00 m/s
Minimum Velocity = 0.60 m/s
Manning's n = 0.013

LOCATION			RESIDENTIAL						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW, Q	PIPE						
STREET	FROM	TO	AREA	POP.	ACCU. AREA	ACCU. POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FACT.	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW		LENGTH	DIA.	SLOPE	MATERIAL	CAP. Q(FULL)	VEL. V(FULL)	RATIO Q /QFULL
			(Ha)		(Ha)			(L/s)	(Ha)	(Ha)		(Ha)		(Ha)	(Ha)	(L/s)	(Ha)	(Ha)	(L/s)	(L/s)	(m)	(mm)	(%)		(L/s)	(m/s)	
85 Gemini Way	BLDG	Ex. SAN	0.323	248.5	0.323	248.5	4.0	3.22									0.323	0.323	0.11	3.33	9.3	250	5.00%	PVC	132.97	2.71	0.03

Notes: Existing inverts and slopes are estimated. They are to be confirmed on-site.

Momen Siam

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: February 4, 2025 11:01 AM
To: Momen Siam
Cc: Virginia Johnson; Dieme, Abi
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

This is to confirm that there are no capacity concerns with a proposed sanitary peak flow if 3.09 l/s. However, please note that any future phases or developments surrounding the subject site will need to be evaluated for capacity. Capacity is only reserved on a first come first serve basis and when a Site Plan Control application is submitted.

Thanks Momen.

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
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Ottawa, ON K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

From: Momen Siam <msiam@lrl.ca>
Sent: January 31, 2025 2:44 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Mohammed,

See attached PDF for Sanitary demands.

Thank you,

Momen Siam, P.Eng

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: January 30, 2025 2:33 PM
To: Momen Siam <msiam@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

Could you please provide me the anticipated sanitary demands? I'd like to verify for capacity.

Thank you.

Best Regards,

Mohammed Fawzi, P.Eng.
Senior Project Manager (A), Infrastructure Approvals
Development Review – West Branch
Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

From: Fawzi, Mohammed
Sent: January 29, 2025 8:10 AM
To: Momen Siam <msiam@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: LRL 230088 - 85 Gemini Way Boundary Conditions Request

Hi Momen,

Unfortunately, you will need to look for ways at reducing the required fire flow as Infrastructure Planning does not approve required fire flows exceeding 18,000 L/min.

Let me know if you wish to discuss further.

Best Regards,

APPENDIX D

Stormwater Management Calculations

LRL Associates Ltd.

Storm Watershed Summary

LRL
ENGINEERING | INGÉNIERIE

LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Dwg Reference: C701, C702

Pre-Development Catchments

Watershed	C = 0.20	C = 0.80	C = 0.90	Total Area (ha)	Combined C
ECA-01(controlled)	0.000	0.000	0.203	0.203	0.90
ECA-02(uncontrolled)	0.037	0.000	0.000	0.037	0.20
ECA-03(uncontrolled)	0.042	0.000	0.004	0.046	0.26
ECA-04(uncontrolled)	0.027	0.000	0.000	0.027	0.20
Total	**0.107**	**0.000**	**0.207**	**0.314**	**0.66**

Post-Development Catchments

Watershed	C = 0.20	C = 0.8	C = 0.90	Total Area (ha)	Combined C
CA-01A (roof controlled)	0.000	0.000	0.034	0.034	0.90
CA-01B (roof controlled)	0.000	0.000	0.027	0.027	0.90
CA-01C (roof controlled)	0.000	0.000	0.018	0.018	0.90
CA-01D (roof controlled)	0.000	0.000	0.024	0.024	0.90
CA-02A (roof controlled)	0.000	0.000	0.019	0.019	0.90
CA-02B (roof controlled)	0.000	0.000	0.022	0.022	0.90
CA-02C (roof controlled)	0.000	0.000	0.025	0.025	0.90
CA-03A (roof controlled)	0.000	0.000	0.009	0.009	0.90
CA-03B (roof controlled)	0.000	0.000	0.007	0.007	0.90
CA-04 (cistern controlled)	0.000	0.000	0.035	0.035	0.90
CA-05 (cistern controlled)	0.000	0.000	0.022	0.022	0.90
CA-06 (cistern controlled)	0.001	0.000	0.014	0.015	0.85
CA-07 (cistern controlled)	0.001	0.000	0.020	0.021	0.86
CA-08 (cistern controlled)	0.010	0.000	0.003	0.013	0.38
CA-09 (cistern controlled)	0.001	0.000	0.006	0.008	0.77
CA-10 (cistern controlled)	0.006	0.000	0.007	0.013	0.58
CA-11 (uncontrolled)	0.001	0.000	0.001	0.001	0.53
Total	**0.021**	**0.000**	**0.293**	**0.314**	**0.85**

LRL
ENGINEERING | INGÉNIERIE

LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

Stormwater Management Design Sheet

STORM - 100 YEAR

Runoff Equation

Q = 2.78CIA (L/s)

C = Runoff coefficient

I = Rainfall intensity (mm/hr) = $A / (T_d + C)^B$

A = Area (ha)

T_d = Time of duration (min)

Pre-Development Release Rate

IDF Curve Equations

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ A = 1735.688 B = 0.820 C = 6.014

C =	0.50	(max of 0.5 as per City Guidelines)	
I_{100} =	178.6	mm/hr	
T_d =	10	min	
A =	0.314	ha	
100 Year Release Rate =	77.98	L/s	
2 Year Release Rate =	33.54	L/s	(2-year pre-development release rate)
Allowable Release Rate =	**10.53**	L/s	(33.5 L/s/ha as per pre-consultation notes)

Post-development Stormwater Management

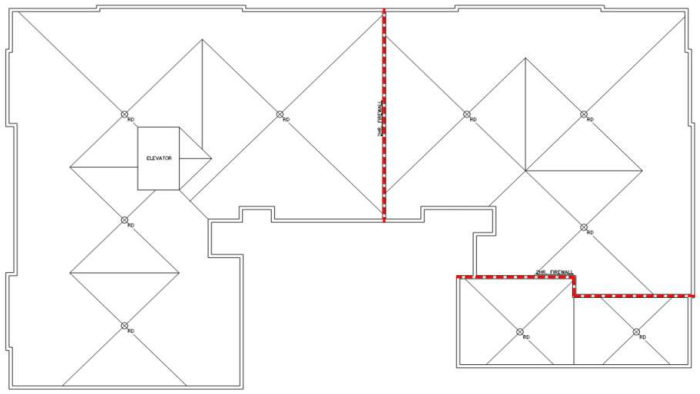
				2y	100y
Total Site Area =	**0.314**	**ha**	**∑R =**	**0.85**	**1.00**
CA-04 (cistern controlled)	0.035	ha	R =	0.90	1.00
CA-05 (cistern controlled)	0.022	ha	R =	0.90	1.00
CA-06 (cistern controlled)	0.015	ha	R =	0.85	1.00
CA-07 (cistern controlled)	0.021	ha	R =	0.86	1.00
CA-08 (cistern controlled)	0.013	ha	R =	0.38	0.47
CA-09 (cistern controlled)	0.008	ha	R =	0.77	0.96
CA-10 (cistern controlled)	0.013	ha	R =	0.58	0.72
Total (cistern controlled)	**0.127**	**ha**	**R =**	**0.79**	**0.99**
CA-01A (roof controlled)	0.034	ha	R =	0.90	1.00
CA-01B (roof controlled)	0.027	ha	R =	0.90	1.00
CA-01C (roof controlled)	0.018	ha	R =	0.90	1.00
CA-01D (roof controlled)	0.024	ha	R =	0.90	1.00
CA-02A (roof controlled)	0.019	ha	R =	0.90	1.00
CA-02B (roof controlled)	0.022	ha	R =	0.90	1.00
CA-02C (roof controlled)	0.025	ha	R =	0.90	1.00
CA-03A (roof controlled)	0.009	ha	R =	0.90	1.00
CA-03B (roof controlled)	0.007	ha	R =	0.90	1.00
Total (roof controlled)	**0.185**	**ha**	**R =**	**0.90**	**1.00**
CA-11 (uncontrolled)	0.001	ha	R =	0.53	0.66
Total (uncontrolled)	**0.001**	**ha**	**R =**	**0.53**	**0.66**
Total (controlled+uncontrolled)	**0.314**	**ha**	**R =**	**0.85**	**1.00**

100 Year Post-development Stormwater Management (CA-01 Roof-Controlled)

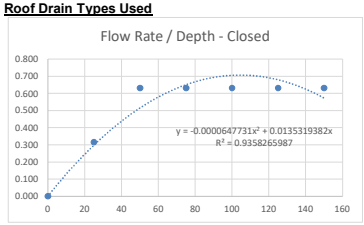
Rooftop Subcatchment Area CA-01A

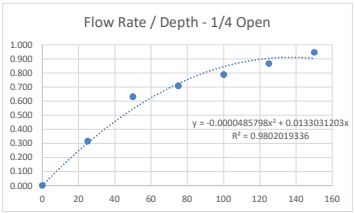
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	16.79	9.51	0.95	0.00	0.95
15	142.89	13.44	11.24	0.95	0.00	0.95
20	119.95	11.28	12.40	0.95	0.00	0.95
25	103.85	9.77	13.23	0.95	0.00	0.95
30	91.87	8.64	13.85	0.95	0.00	0.95
35	82.58	7.77	14.32	0.95	0.00	0.95
40	75.15	7.07	14.69	0.95	0.00	0.95
45	69.05	6.49	14.98	0.95	0.00	0.95
50	63.95	6.01	15.20	0.95	0.00	0.95
55	59.62	5.61	15.38	0.95	0.00	0.95
60	55.89	5.26	15.52	0.95	0.00	0.95
70	49.79	4.68	15.69	0.95	0.00	0.95
80	44.99	4.23	15.77	0.95	0.00	0.95
90	41.11	3.87	15.77	0.95	0.00	0.95
100	37.90	3.56	15.71	0.95	0.00	0.95
110	35.20	3.31	15.60	0.95	0.00	0.95
120	32.89	3.09	15.46	0.95	0.00	0.95

Roof Drain Layout

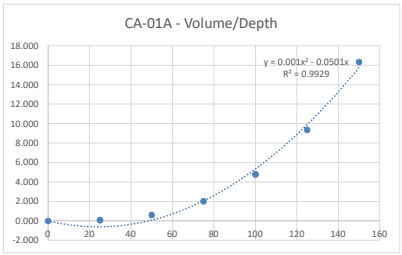


Roof Drain Types Used





Weir Opening	Head of Water (mm)						
	0	25	50	75	100	125	150
	Flow Rate (L/s)						
1/4 open	0.000	0.315	0.631	0.710	0.789	0.867	0.946
Closed	0.000	0.315	0.631	0.631	0.631	0.631	0.631



CA-01A Weir Opening	Head of Water (mm)						
	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
1/4 Open	0.000	0.080	0.600	2.020	4.780	9.350	16.330

LRL ENGINEERING | INGÉNIERIE

LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

Stormwater Management Design Sheet

Summary of Rooftop Subcatchment Area CA-01A

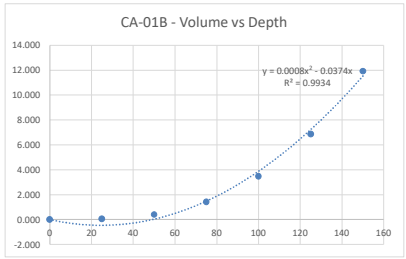
Minimum Required Roof Storage (100 Year) =	15.77	m^3	
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.95	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.95	L/s	
Available Roof Storage =	**16.33**	m^3	
Roof Drain Model =	*WATTS Roof Drain- 1/4 exposed Weir Opening*		

100 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01B

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	13.51	7.54	0.95	0.00	0.95
15	142.89	10.81	8.88	0.95	0.00	0.95
20	119.95	9.08	9.76	0.95	0.00	0.95
25	103.85	7.86	10.37	0.95	0.00	0.95
30	91.87	6.95	10.81	0.95	0.00	0.95
35	82.58	6.25	11.13	0.95	0.00	0.95
40	75.15	5.69	11.37	0.95	0.00	0.95
45	69.05	5.22	11.55	0.95	0.00	0.95
50	63.95	4.84	11.68	0.95	0.00	0.95
55	59.62	4.51	11.76	0.95	0.00	0.95
60	55.89	4.23	11.82	0.95	0.00	0.95
70	49.79	3.77	11.85	0.95	0.00	0.95
80	44.99	3.40	11.80	0.95	0.00	0.95
90	41.11	3.11	11.69	0.95	0.00	0.95
100	37.90	2.87	11.53	0.95	0.00	0.95
110	35.20	2.66	11.33	0.95	0.00	0.95
120	32.89	2.49	11.11	0.95	0.00	0.95

Summary of Rooftop Subcatchment Area CA-01B

Minimum Required Roof Storage (100 Year) =	11.85	m^3	
Proposed Head =	147	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.95	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.95	L/s	
Available Roof Storage =	**11.85**	m^3	
Roof Drain Model =	*WATTS Roof Drain- 1/4 exposed Weir Opening*		



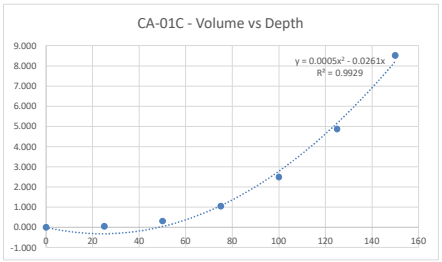
CA-01B	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
1/4 Open	0.000	0.060	0.400	1.420	3.480	6.870	11.920

100 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01C

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	8.84	4.93	0.63	0.00	0.63
15	142.89	7.08	5.80	0.63	0.00	0.63
20	119.95	5.94	6.37	0.63	0.00	0.63
25	103.85	5.14	6.77	0.63	0.00	0.63
30	91.87	4.55	7.05	0.63	0.00	0.63
35	82.58	4.09	7.26	0.63	0.00	0.63
40	75.15	3.72	7.42	0.63	0.00	0.63
45	69.05	3.42	7.53	0.63	0.00	0.63
50	63.95	3.17	7.61	0.63	0.00	0.63
55	59.62	2.95	7.66	0.63	0.00	0.63
60	55.89	2.77	7.69	0.63	0.00	0.63
70	49.79	2.47	7.71	0.63	0.00	0.63
80	44.99	2.23	7.67	0.63	0.00	0.63
90	41.11	2.04	7.59	0.63	0.00	0.63
100	37.90	1.88	7.48	0.63	0.00	0.63
110	35.20	1.74	7.34	0.63	0.00	0.63
120	32.89	1.63	7.19	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-01C

Minimum Required Roof Storage (100 Year) =	7.71	m^3	
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**8.51**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



CA-01C	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.042	0.313	1.053	2.491	4.873	8.510

LRL
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LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

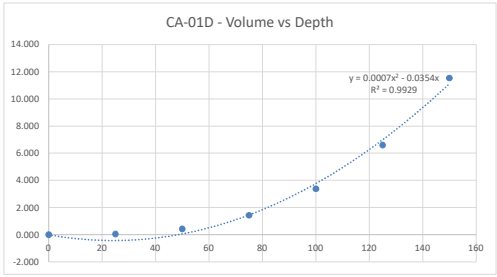
Stormwater Management Design Sheet

100 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01D

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	11.94	6.78	0.63	0.00	0.63
15	142.89	9.55	8.03	0.63	0.00	0.63
20	119.95	8.02	8.87	0.63	0.00	0.63
25	103.85	6.94	9.47	0.63	0.00	0.63
30	91.87	6.14	9.92	0.63	0.00	0.63
35	82.58	5.52	10.27	0.63	0.00	0.63
40	75.15	5.02	10.54	0.63	0.00	0.63
45	69.05	4.62	10.76	0.63	0.00	0.63
50	63.95	4.28	10.93	0.63	0.00	0.63
55	59.62	3.99	11.07	0.63	0.00	0.63
60	55.89	3.74	11.18	0.63	0.00	0.63
70	49.79	3.33	11.33	0.63	0.00	0.63
80	44.99	3.01	11.41	0.63	0.00	0.63
90	41.11	2.75	11.43	0.63	0.00	0.63
100	37.90	2.53	11.42	0.63	0.00	0.63
110	35.20	2.35	11.37	0.63	0.00	0.63
120	32.89	2.20	11.29	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-01D

Minimum Required Roof Storage (100 Year) =	11.43	m^3	
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**11.53**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



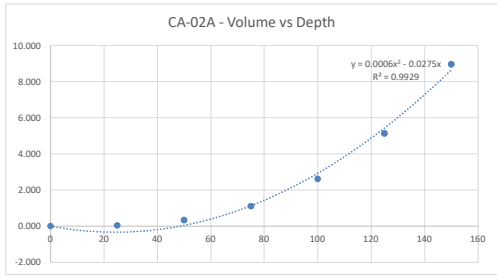
CA-01D	Head of Water (mm)						
Weir Opening	**0**	**25**	**50**	**75**	**100**	**125**	**150**
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.056	0.424	1.426	3.375	6.602	11.530

100 Year Post-development Stormwater Management (CA-02 Roof-Controlled)
Rooftop Subcatchment Area CA-02A

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	9.52	5.33	0.63	0.00	0.63
15	142.89	7.62	6.29	0.63	0.00	0.63
20	119.95	6.40	6.92	0.63	0.00	0.63
25	103.85	5.54	7.36	0.63	0.00	0.63
30	91.87	4.90	7.68	0.63	0.00	0.63
35	82.58	4.40	7.92	0.63	0.00	0.63
40	75.15	4.01	8.10	0.63	0.00	0.63
45	69.05	3.68	8.24	0.63	0.00	0.63
50	63.95	3.41	8.34	0.63	0.00	0.63
55	59.62	3.18	8.41	0.63	0.00	0.63
60	55.89	2.98	8.46	0.63	0.00	0.63
70	49.79	2.65	8.50	0.63	0.00	0.63
80	44.99	2.40	8.48	0.63	0.00	0.63
90	41.11	2.19	8.43	0.63	0.00	0.63
100	37.90	2.02	8.34	0.63	0.00	0.63
110	35.20	1.88	8.22	0.63	0.00	0.63
120	32.89	1.75	8.08	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-02A

Minimum Required Roof Storage (100 Year) =	8.50	m^3	
Proposed Head =	144	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**8.50**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



CA-02A	Head of Water (mm)						
Weir Opening	**0**	**25**	**50**	**75**	**100**	**125**	**150**
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.044	0.329	1.108	2.623	5.130	8.960

LRL
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LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

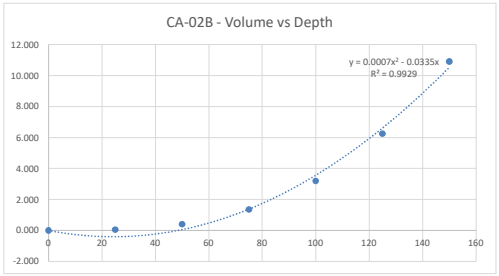
Stormwater Management Design Sheet

100 Year Post-development Stormwater Management (CA-02 Roof-Controlled)
Rooftop Subcatchment Area CA-02B

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	11.14	6.30	0.63	0.00	0.63
15	142.89	8.91	7.45	0.63	0.00	0.63
20	119.95	7.48	8.22	0.63	0.00	0.63
25	103.85	6.48	8.77	0.63	0.00	0.63
30	91.87	5.73	9.18	0.63	0.00	0.63
35	82.58	5.15	9.49	0.63	0.00	0.63
40	75.15	4.69	9.73	0.63	0.00	0.63
45	69.05	4.31	9.92	0.63	0.00	0.63
50	63.95	3.99	10.07	0.63	0.00	0.63
55	59.62	3.72	10.19	0.63	0.00	0.63
60	55.89	3.49	10.28	0.63	0.00	0.63
70	49.79	3.11	10.39	0.63	0.00	0.63
80	44.99	2.81	10.44	0.63	0.00	0.63
90	41.11	2.56	10.44	0.63	0.00	0.63
100	37.90	2.36	10.40	0.63	0.00	0.63
110	35.20	2.20	10.32	0.63	0.00	0.63
120	32.89	2.05	10.23	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-02B

Minimum Required Roof Storage (100 Year) =	10.44	m^3	
Proposed Head =	148	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	**1**		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**10.44**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



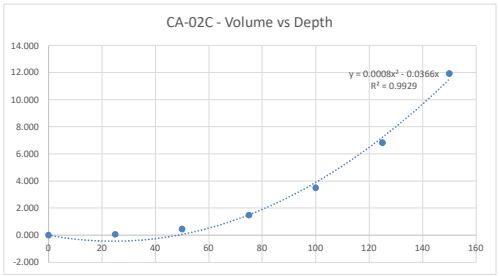
CA-02B	Head of Water (mm)						
Weir Opening	**0**	**25**	**50**	**75**	**100**	**125**	**150**
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.053	0.401	1.350	3.193	6.247	10.910

100 Year Post-development Stormwater Management (CA-02 Roof-Controlled)
Rooftop Subcatchment Area CA-02C

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	12.33	7.02	0.63	0.00	0.63
15	142.89	9.87	8.31	0.63	0.00	0.63
20	119.95	8.28	9.18	0.63	0.00	0.63
25	103.85	7.17	9.81	0.63	0.00	0.63
30	91.87	6.34	10.28	0.63	0.00	0.63
35	82.58	5.70	10.65	0.63	0.00	0.63
40	75.15	5.19	10.94	0.63	0.00	0.63
45	69.05	4.77	11.17	0.63	0.00	0.63
50	63.95	4.42	11.36	0.63	0.00	0.63
55	59.62	4.12	11.51	0.63	0.00	0.63
60	55.89	3.86	11.62	0.63	0.00	0.63
70	49.79	3.44	11.79	0.63	0.00	0.63
80	44.99	3.11	11.89	0.63	0.00	0.63
90	41.11	2.84	11.92	0.63	0.00	0.63
100	37.90	2.62	11.92	0.63	0.00	0.63
110	35.20	2.43	11.88	0.63	0.00	0.63
120	32.89	2.27	11.81	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-02C

Minimum Required Roof Storage (100 Year) =	11.92	m^3	
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	**1**		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**11.92**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



CA-02C	Head of Water (mm)						
Weir Opening	**0**	**25**	**50**	**75**	**100**	**125**	**150**
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.058	0.438	1.474	3.489	6.825	11.920

LRL
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LRL File No. 230088
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Checked: M.Basnet
Drawing Ref.: C601

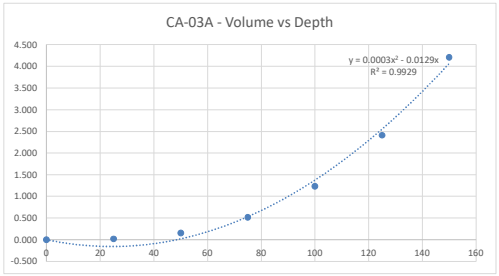
Stormwater Management Design Sheet

100 Year Post-development Stormwater Management (CA-03 Roof-Controlled)
Rooftop Subcatchment Area CA-03A

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	4.48	2.31	0.63	0.00	0.63
15	142.89	3.59	2.66	0.63	0.00	0.63
20	119.95	3.01	2.86	0.63	0.00	0.63
25	103.85	2.61	2.96	0.63	0.00	0.63
30	91.87	2.31	3.02	0.63	0.00	0.63
35	82.58	2.07	3.03	0.63	0.00	0.63
40	75.15	1.89	3.01	0.63	0.00	0.63
45	69.05	1.73	2.98	0.63	0.00	0.63
50	63.95	1.61	2.92	0.63	0.00	0.63
55	59.62	1.50	2.86	0.63	0.00	0.63
60	55.89	1.40	2.78	0.63	0.00	0.63
70	49.79	1.25	2.60	0.63	0.00	0.63
80	44.99	1.13	2.39	0.63	0.00	0.63
90	41.11	1.03	2.17	0.63	0.00	0.63
100	37.90	0.95	1.92	0.63	0.00	0.63
110	35.20	0.88	1.67	0.63	0.00	0.63
120	32.89	0.83	1.40	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-03A

Minimum Required Roof Storage (100 Year) =	3.03	m^3	
Proposed Head =	124	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**3.03**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



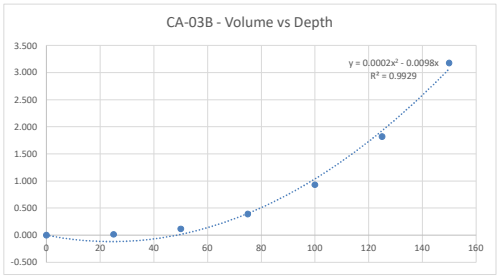
CA-03A	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.021	0.155	0.521	1.232	2.411	4.210

100 Year Post-development Stormwater Management (CA-03 Roof-Controlled)
Rooftop Subcatchment Area CA-03B

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	3.40	1.66	0.63	0.00	0.63
15	142.89	2.72	1.88	0.63	0.00	0.63
20	119.95	2.28	1.98	0.63	0.00	0.63
25	103.85	1.98	2.02	0.63	0.00	0.63
30	91.87	1.75	2.01	0.63	0.00	0.63
35	82.58	1.57	1.98	0.63	0.00	0.63
40	75.15	1.43	1.92	0.63	0.00	0.63
45	69.05	1.31	1.85	0.63	0.00	0.63
50	63.95	1.22	1.76	0.63	0.00	0.63
55	59.62	1.13	1.66	0.63	0.00	0.63
60	55.89	1.06	1.56	0.63	0.00	0.63
70	49.79	0.95	1.33	0.63	0.00	0.63
80	44.99	0.86	1.08	0.63	0.00	0.63
90	41.11	0.78	0.82	0.63	0.00	0.63
100	37.90	0.72	0.55	0.63	0.00	0.63
110	35.20	0.67	0.26	0.63	0.00	0.63
120	32.89	0.63	0.00	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-03B

Minimum Required Roof Storage (100 Year) =	2.02	m^3	
Proposed Head =	128	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	1		
Total Flow from Roof Drain =	0.63	L/s	
Available Roof Storage =	**2.02**	m^3	
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*		



CA-03B	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.016	0.117	0.393	0.931	1.821	3.180

LRL
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LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

Stormwater Management Design Sheet

Summary of Roof Storage and Release Rates (100 Year)

Catchment	Roof Catchment Area (m2)	Depth (mm)	# Roof Drains	Weir Opening Exposure	Required Volume (m3)	Effective Available Volume* (m3)	Total Flow (L/s)
CA-01A	338	150	1	1/4 exposed	15.77	16.33	0.95
CA-01B	272	147	1	1/4 exposed	11.85	11.85	0.95
CA-01C	178	150	1	closed	7.71	8.51	0.63
CA-01D	240	150	1	closed	11.43	11.53	0.63
CA-02A	192	144	1	closed	8.50	8.50	0.63
CA-02B	224	148	1	closed	10.44	10.44	0.63
CA-02C	248	150	1	closed	11.92	11.92	0.63
CA-03A	90	124	1	closed	3.03	3.03	0.63
CA-03B	68	128	1	closed	2.02	2.02	0.63
Total	**1852**		**9**		**82.7**	**84.13**	**6.31**

*Effective available volume as per Civil3D ponding volume modelling

100 Year Post-development Stormwater Management (CA-04 to CA-10 Cistern Controlled)

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	62.30	35.13	3.75	0.46	4.22
15	142.89	49.85	41.49	3.75	0.37	4.12
20	119.95	41.85	45.71	3.75	0.31	4.07
25	103.85	36.23	48.71	3.75	0.27	4.02
30	91.87	32.05	50.94	3.75	0.24	3.99
35	82.58	28.81	52.62	3.75	0.21	3.97
40	75.15	26.22	53.91	3.75	0.19	3.95
45	69.05	24.09	54.91	3.75	0.18	3.93
50	63.95	22.31	55.68	3.75	0.17	3.92
55	59.62	20.80	56.26	3.75	0.15	3.91
60	55.89	19.50	56.69	3.75	0.14	3.90
70	49.79	17.37	57.19	3.75	0.13	3.88
80	44.99	15.70	57.32	3.75	0.12	3.87
90	41.11	14.34	57.18	3.75	0.11	3.86
100	37.90	13.22	56.82	3.75	0.10	3.85
110	35.20	12.28	56.28	3.75	0.09	3.85
120	32.89	11.48	55.60	3.75	0.09	3.84

On-site Stormwater Detention

Total Storage Required = **57.32** m^3
Proposed Cistern Storage= 60.00 m^3

Summary of Release Rates and Storage Volumes

Catchment	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m3)	Total Available Storage (m3)
CA-04 to CA-10 (Cistern Controlled)	0.127	3.75	57.32	60.00
CA-01 to CA-03 (Roof Controlled)	0.185	6.31	82.66	84.13
Uncontrolled	0.001	0.46	N/A	N/A
Total	**0.314**	**10.53**	**139.99**	**144.13**

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Stormwater Management Design Sheet

STORM - 2 YEAR

Runoff Equation

Q = 2.78CIA (L/s)

C = Runoff coefficient

I = Rainfall intensity (mm/hr) = $A / (T_d + C)^B$

A = Area (ha)

T_d = Time of duration (min)

Pre-Development Release Rate (2 YEAR)

IDF Curve Equations

$I_2 = 732.951 / (Td + 6.199)^{0.810}$ A = 732.951 B = 0.810 C = 6.199

C =	0.50	(max of 0.5 as per City Guidelines)	
I_{100} =	76.8	mm/hr	
T_d =	10	min	
A =	0.314	ha	
2 Year Release Rate =	33.54	L/s	(2-year pre-development release rate)
Allowable Release Rate =	**10.53**	L/s	(33.5 L/s/h as per pre-consultation notes)

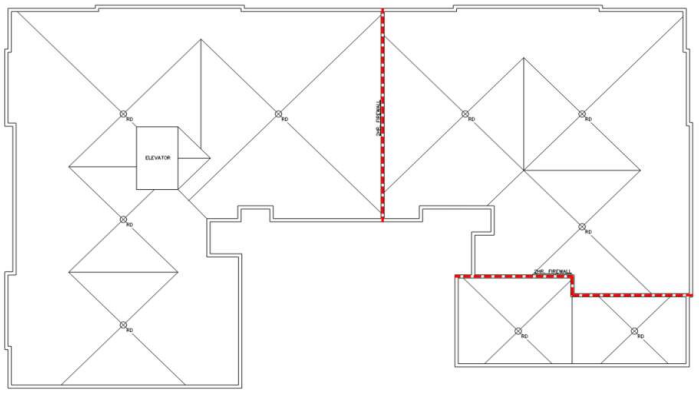
Post-development Stormwater Management

				2yr	100yr
Total Site Area =	**0.314**	**ha**	**∑R =**	**0.85**	**1.00**
CA-04 (cistern controlled)	0.035	ha	R =	0.90	1.00
CA-05 (cistern controlled)	0.022	ha	R =	0.90	1.00
CA-06 (cistern controlled)	0.015	ha	R =	0.85	1.00
CA-07 (cistern controlled)	0.021	ha	R =	0.86	1.00
CA-08 (cistern controlled)	0.013	ha	R =	0.38	0.47
CA-09 (cistern controlled)	0.008	ha	R =	0.77	0.96
CA-10 (cistern controlled)	0.013	ha	R =	0.58	0.72
Total (cistern controlled)	**0.127**	**ha**	**R =**	**0.79**	**0.99**
CA-01A (roof controlled)	0.034	ha	R =	0.90	1.00
CA-01B (roof controlled)	0.027	ha	R =	0.90	1.00
CA-01C (roof controlled)	0.018	ha	R =	0.90	1.00
CA-01D (roof controlled)	0.024	ha	R =	0.90	1.00
CA-02A (roof controlled)	0.019	ha	R =	0.90	1.00
CA-02B (roof controlled)	0.022	ha	R =	0.90	1.00
CA-02C (roof controlled)	0.025	ha	R =	0.90	1.00
CA-03A (roof controlled)	0.009	ha	R =	0.90	1.00
CA-03B (roof controlled)	0.007	ha	R =	0.90	1.00
Total (roof controlled)	**0.185**	**ha**	**R =**	**0.90**	**1.00**
CA-11 (uncontrolled)	0.001	ha	R =	0.53	0.66
Total (uncontrolled)	**0.001**	**ha**	**R =**	**0.53**	**0.66**
Total (controlled+uncontrolled)	**0.314**	**ha**	**R =**	**0.85**	**1.00**

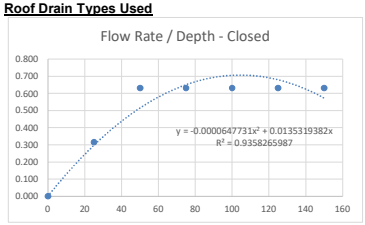
2 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01A

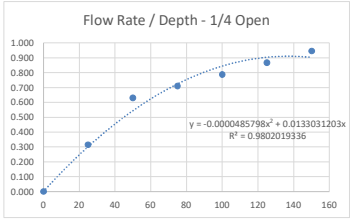
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	7.22	3.82	0.85	0.00	0.85
15	61.77	5.81	4.46	0.85	0.00	0.85
20	52.03	4.89	4.85	0.85	0.00	0.85
25	45.17	4.25	5.09	0.85	0.00	0.85
30	40.04	3.77	5.24	0.85	0.00	0.85
35	36.06	3.39	5.33	0.85	0.00	0.85
40	32.86	3.09	5.37	0.85	0.00	0.85
45	30.24	2.84	5.37	0.85	0.00	0.85
50	28.04	2.64	5.35	0.85	0.00	0.85
55	26.17	2.46	5.31	0.85	0.00	0.85
60	24.56	2.31	5.24	0.85	0.00	0.85
70	21.91	2.06	5.07	0.85	0.00	0.85
80	19.83	1.86	4.86	0.85	0.00	0.85
90	18.14	1.71	4.61	0.85	0.00	0.85
100	16.75	1.57	4.33	0.85	0.00	0.85
110	15.57	1.46	4.03	0.85	0.00	0.85
120	14.56	1.37	3.72	0.85	0.00	0.85

Roof Drain Layout

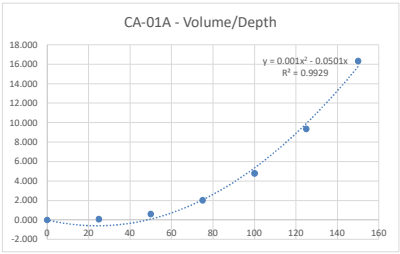


Roof Drain Types Used





Weir Opening	Head of Water (mm)						
	0	25	50	75	100	125	150
	Flow Rate (L/s)						
1/4 open	0.000	0.315	0.631	0.710	0.789	0.867	0.946
Closed	0.000	0.315	0.631	0.631	0.631	0.631	0.631



CA-01A Weir Opening	Head of Water (mm)						
	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
1/4 Open	0.000	0.080	0.600	2.020	4.780	9.350	16.330

LRL
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LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

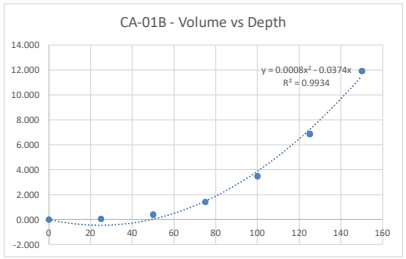
Stormwater Management Design Sheet

Summary of Rooftop Subcatchment Area CA-01A

Minimum Required Roof Storage (2 Year) =	5.37	m^3
Proposed Head =	103	mm
Control Flow/Drain =	0.85	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.85	L/s
Available Roof Storage =	**5.37**	m^3
Roof Drain Model =	*WATTS Roof Drain- 1/4 exposed Weir Opening*	

2 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01B

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	5.81	2.99	0.84	0.00	0.84
15	61.77	4.67	3.45	0.84	0.00	0.84
20	52.03	3.94	3.72	0.84	0.00	0.84
25	45.17	3.42	3.87	0.84	0.00	0.84
30	40.04	3.03	3.95	0.84	0.00	0.84
35	36.06	2.73	3.97	0.84	0.00	0.84
40	32.86	2.49	3.96	0.84	0.00	0.84
45	30.24	2.29	3.92	0.84	0.00	0.84
50	28.04	2.12	3.86	0.84	0.00	0.84
55	26.17	1.98	3.78	0.84	0.00	0.84
60	24.56	1.86	3.68	0.84	0.00	0.84
70	21.91	1.66	3.45	0.84	0.00	0.84
80	19.83	1.50	3.19	0.84	0.00	0.84
90	18.14	1.37	2.90	0.84	0.00	0.84
100	16.75	1.27	2.59	0.84	0.00	0.84
110	15.57	1.18	2.26	0.84	0.00	0.84
120	14.56	1.10	1.92	0.84	0.00	0.84



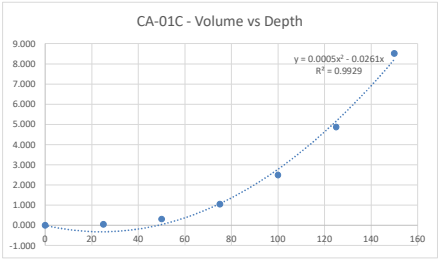
CA-01B	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
1/4 Open	0.000	0.060	0.400	1.420	3.480	6.870	11.920

Summary of Rooftop Subcatchment Area CA-01B

Minimum Required Roof Storage (2 Year) =	3.97	m^3
Proposed Head =	98	mm
Control Flow/Drain =	0.84	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.84	L/s
Available Roof Storage =	**3.97**	m^3
Roof Drain Model =	*WATTS Roof Drain- 1/4 exposed Weir Opening*	

2 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01C

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	3.80	1.90	0.63	0.00	0.63
15	61.77	3.06	2.19	0.63	0.00	0.63
20	52.03	2.58	2.33	0.63	0.00	0.63
25	45.17	2.24	2.41	0.63	0.00	0.63
30	40.04	1.98	2.43	0.63	0.00	0.63
35	36.06	1.79	2.42	0.63	0.00	0.63
40	32.86	1.63	2.39	0.63	0.00	0.63
45	30.24	1.50	2.34	0.63	0.00	0.63
50	28.04	1.39	2.27	0.63	0.00	0.63
55	26.17	1.30	2.19	0.63	0.00	0.63
60	24.56	1.22	2.11	0.63	0.00	0.63
70	21.91	1.09	1.91	0.63	0.00	0.63
80	19.83	0.98	1.68	0.63	0.00	0.63
90	18.14	0.90	1.44	0.63	0.00	0.63
100	16.75	0.83	1.19	0.63	0.00	0.63
110	15.57	0.77	0.92	0.63	0.00	0.63
120	14.56	0.72	0.65	0.63	0.00	0.63



CA-01C	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.04	0.31	1.05	2.49	4.87	8.51

Summary of Rooftop Subcatchment Area CA-01C

Minimum Required Roof Storage (2 Year) =	2.43	m^3
Proposed Head =	101	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**2.43**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	

LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
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Checked: M.Basnet
Drawing Ref.: C601

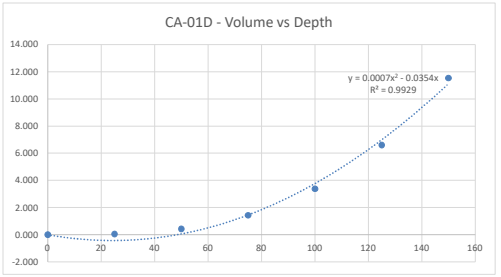
Stormwater Management Design Sheet

2 Year Post-development Stormwater Management (CA-01 Roof-Controlled)
Rooftop Subcatchment Area CA-01D

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	5.13	2.70	0.63	0.00	0.63
15	61.77	4.13	3.15	0.63	0.00	0.63
20	52.03	3.48	3.42	0.63	0.00	0.63
25	45.17	3.02	3.58	0.63	0.00	0.63
30	40.04	2.68	3.68	0.63	0.00	0.63
35	36.06	2.41	3.74	0.63	0.00	0.63
40	32.86	2.20	3.76	0.63	0.00	0.63
45	30.24	2.02	3.75	0.63	0.00	0.63
50	28.04	1.87	3.73	0.63	0.00	0.63
55	26.17	1.75	3.69	0.63	0.00	0.63
60	24.56	1.64	3.64	0.63	0.00	0.63
70	21.91	1.46	3.50	0.63	0.00	0.63
80	19.83	1.33	3.33	0.63	0.00	0.63
90	18.14	1.21	3.14	0.63	0.00	0.63
100	16.75	1.12	2.93	0.63	0.00	0.63
110	15.57	1.04	2.71	0.63	0.00	0.63
120	14.56	0.97	2.47	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-01D

Minimum Required Roof Storage (2 Year) =	3.76	m^3
Proposed Head =	103	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**3.76**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	



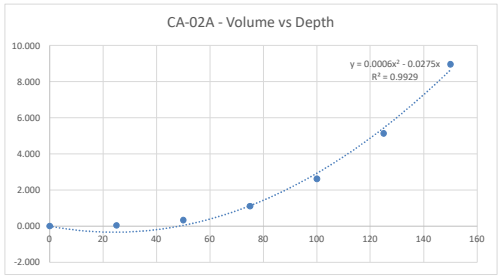
CA-01D	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.06	0.42	1.43	3.37	6.60	11.530

2 Year Post-development Stormwater Management (CA-02 Roof-Controlled)
Rooftop Subcatchment Area CA-02A

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	4.09	2.08	0.63	0.00	0.63
15	61.77	3.29	2.40	0.63	0.00	0.63
20	52.03	2.77	2.57	0.63	0.00	0.63
25	45.17	2.41	2.67	0.63	0.00	0.63
30	40.04	2.13	2.71	0.63	0.00	0.63
35	36.06	1.92	2.71	0.63	0.00	0.63
40	32.86	1.75	2.69	0.63	0.00	0.63
45	30.24	1.61	2.65	0.63	0.00	0.63
50	28.04	1.49	2.59	0.63	0.00	0.63
55	26.17	1.40	2.52	0.63	0.00	0.63
60	24.56	1.31	2.44	0.63	0.00	0.63
70	21.91	1.17	2.26	0.63	0.00	0.63
80	19.83	1.06	2.05	0.63	0.00	0.63
90	18.14	0.97	1.82	0.63	0.00	0.63
100	16.75	0.89	1.57	0.63	0.00	0.63
110	15.57	0.83	1.31	0.63	0.00	0.63
120	14.56	0.78	1.05	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-02A

Minimum Required Roof Storage (2 Year) =	2.71	m^3
Proposed Head =	94	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**2.71**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	



CA-02A	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.04	0.33	1.11	2.62	5.13	8.960

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Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

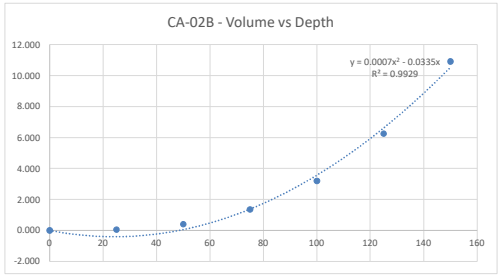
Stormwater Management Design Sheet

2 Year Post-development Stormwater Management (CA-02 Roof-Controlled)
Rooftop Subcatchment Area CA-02B

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	4.79	2.50	0.63	0.00	0.63
15	61.77	3.85	2.90	0.63	0.00	0.63
20	52.03	3.24	3.14	0.63	0.00	0.63
25	45.17	2.82	3.28	0.63	0.00	0.63
30	40.04	2.50	3.36	0.63	0.00	0.63
35	36.06	2.25	3.40	0.63	0.00	0.63
40	32.86	2.05	3.40	0.63	0.00	0.63
45	30.24	1.89	3.39	0.63	0.00	0.63
50	28.04	1.75	3.35	0.63	0.00	0.63
55	26.17	1.63	3.30	0.63	0.00	0.63
60	24.56	1.53	3.24	0.63	0.00	0.63
70	21.91	1.37	3.09	0.63	0.00	0.63
80	19.83	1.24	2.91	0.63	0.00	0.63
90	18.14	1.13	2.70	0.63	0.00	0.63
100	16.75	1.04	2.48	0.63	0.00	0.63
110	15.57	0.97	2.24	0.63	0.00	0.63
120	14.56	0.91	2.00	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-02B

Minimum Required Roof Storage (2 Year) =	3.40	m^3
Proposed Head =	98	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**3.40**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	



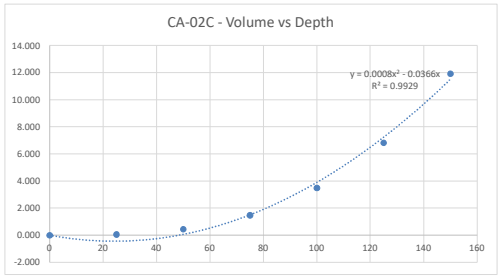
CA-02B	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.05	0.40	1.35	3.19	6.25	10.910

2 Year Post-development Stormwater Management (CA-02 Roof-Controlled)
Rooftop Subcatchment Area CA-02C

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	5.30	2.80	0.63	0.00	0.63
15	61.77	4.27	3.27	0.63	0.00	0.63
20	52.03	3.59	3.55	0.63	0.00	0.63
25	45.17	3.12	3.73	0.63	0.00	0.63
30	40.04	2.77	3.84	0.63	0.00	0.63
35	36.06	2.49	3.90	0.63	0.00	0.63
40	32.86	2.27	3.93	0.63	0.00	0.63
45	30.24	2.09	3.93	0.63	0.00	0.63
50	28.04	1.94	3.92	0.63	0.00	0.63
55	26.17	1.81	3.88	0.63	0.00	0.63
60	24.56	1.70	3.83	0.63	0.00	0.63
70	21.91	1.51	3.71	0.63	0.00	0.63
80	19.83	1.37	3.54	0.63	0.00	0.63
90	18.14	1.25	3.36	0.63	0.00	0.63
100	16.75	1.16	3.15	0.63	0.00	0.63
110	15.57	1.08	2.93	0.63	0.00	0.63
120	14.56	1.01	2.70	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-02C

Minimum Required Roof Storage (2 Year) =	3.93	m^3
Proposed Head =	97	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**3.93**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	



CA-02C	Head of Water (mm)						
Weir Opening	0	25	50	75	100	125	150
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.06	0.44	1.47	3.49	6.82	11.920

LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

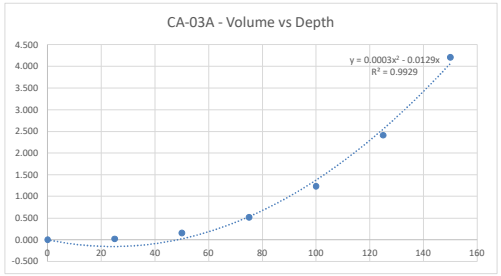
Stormwater Management Design Sheet

2 Year Post-development Stormwater Management (CA-03 Roof-Controlled)
Rooftop Subcatchment Area CA-03A

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	1.93	0.78	0.63	0.00	0.63
15	61.77	1.55	0.83	0.63	0.00	0.63
20	52.03	1.31	0.81	0.63	0.00	0.63
25	45.17	1.13	0.75	0.63	0.00	0.63
30	40.04	1.01	0.67	0.63	0.00	0.63
35	36.06	0.91	0.58	0.63	0.00	0.63
40	32.86	0.83	0.47	0.63	0.00	0.63
45	30.24	0.76	0.35	0.63	0.00	0.63
50	28.04	0.70	0.22	0.63	0.00	0.63
55	26.17	0.66	0.09	0.63	0.00	0.63
60	24.56	0.62	0.00	0.63	0.00	0.63
70	21.91	0.55	0.00	0.63	0.00	0.63
80	19.83	0.50	0.00	0.63	0.00	0.63
90	18.14	0.46	0.00	0.63	0.00	0.63
100	16.75	0.42	0.00	0.63	0.00	0.63
110	15.57	0.39	0.00	0.63	0.00	0.63
120	14.56	0.37	0.00	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-03A

Minimum Required Roof Storage (2 Year) =	0.83	m^3
Proposed Head =	78	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**0.83**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	



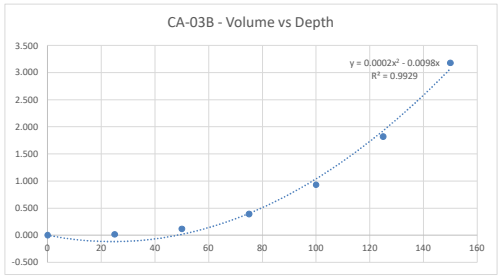
CA-03A	Head of Water (mm)						
Weir Opening	**0**	**25**	**50**	**75**	**100**	**125**	**150**
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.02	0.15	0.52	1.23	2.41	4.210

2 Year Post-development Stormwater Management (CA-03 Roof-Controlled)
Rooftop Subcatchment Area CA-03B

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	1.46	0.50	0.63	0.00	0.63
15	61.77	1.17	0.49	0.63	0.00	0.63
20	52.03	0.99	0.43	0.63	0.00	0.63
25	45.17	0.86	0.34	0.63	0.00	0.63
30	40.04	0.76	0.24	0.63	0.00	0.63
35	36.06	0.69	0.12	0.63	0.00	0.63
40	32.86	0.63	0.00	0.63	0.00	0.63
45	30.24	0.58	0.00	0.63	0.00	0.63
50	28.04	0.53	0.00	0.63	0.00	0.63
55	26.17	0.50	0.00	0.63	0.00	0.63
60	24.56	0.47	0.00	0.63	0.00	0.63
70	21.91	0.42	0.00	0.63	0.00	0.63
80	19.83	0.38	0.00	0.63	0.00	0.63
90	18.14	0.35	0.00	0.63	0.00	0.63
100	16.75	0.32	0.00	0.63	0.00	0.63
110	15.57	0.30	0.00	0.63	0.00	0.63
120	14.56	0.28	0.00	0.63	0.00	0.63

Summary of Rooftop Subcatchment Area CA-03B

Minimum Required Roof Storage (2 Year) =	0.50	m^3
Proposed Head =	80	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**1**	
Total Flow from Roof Drain =	0.63	L/s
Available Roof Storage =	**0.50**	m^3
Roof Drain Model =	*WATTS Roof Drain- Closed Weir Opening*	



CA-03B	Head of Water (mm)						
Weir Opening	**0**	**25**	**50**	**75**	**100**	**125**	**150**
	Available Storage (m^3) Calculated using Civil 3D						
Closed	0.000	0.02	0.12	0.39	0.93	1.82	3.180

LRL
ENGINEERING | INGENIERIE

LRL File No. 230088
Project: Proposed 6 Storey Residential Apartment Building
Location: 85 Gemini Way, Ottawa, ON
Date: July 11, 2025
Designed: M.Siam
Checked: M.Basnet
Drawing Ref.: C601

Stormwater Management Design Sheet

Summary of Roof Storage and Release Rates (2 Year)

Catchment	Roof Catchment Area (m2)	Depth (mm)	# Roof Drains	Weir Opening Exposure	Required Volume (m3)	Effective Available Volume* (m3)	Total Flow (L/s)
CA-01A	338	103	1	1/4 exposed	5.37	5.37	0.85
CA-01B	272	98	1	1/4 exposed	3.97	3.97	0.84
CA-01C	178	101	1	closed	2.43	2.43	0.63
CA-01D	240	103	1	closed	3.76	3.76	0.63
CA-02A	192	94	1	closed	2.71	2.71	0.63
CA-02B	224	98	1	closed	3.40	3.40	0.63
CA-02C	248	97	1	closed	3.93	3.93	0.63
CA-03A	90	78	1	closed	0.83	0.83	0.63
CA-03B	68	80	1	closed	0.50	0.50	0.63
Total	**1852**		**9**		**26.92**	**26.89**	**6.10**

*Effective available volume as per Civil3D ponding volume modelling

2 Year Post-development Stormwater Management (CA-04 to CA-10 Cistern Controlled)

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	26.80	13.54	4.22	0.20	4.42
15	61.77	21.55	15.60	4.22	0.16	4.38
20	52.03	18.15	16.72	4.22	0.13	4.36
25	45.17	15.76	17.31	4.22	0.12	4.34
30	40.04	13.97	17.55	4.22	0.10	4.33
35	36.06	12.58	17.55	4.22	0.09	4.31
40	32.86	11.47	17.39	4.22	0.09	4.31
45	30.24	10.55	17.09	4.22	0.08	4.30
50	28.04	9.78	16.69	4.22	0.07	4.29
55	26.17	9.13	16.20	4.22	0.07	4.29
60	24.56	8.57	15.65	4.22	0.06	4.29
70	21.91	7.65	14.38	4.22	0.06	4.28
80	19.83	6.92	12.95	4.22	0.05	4.27
90	18.14	6.33	11.39	4.22	0.05	4.27
100	16.75	5.84	9.73	4.22	0.04	4.26
110	15.57	5.43	7.99	4.22	0.04	4.26
120	14.56	5.08	6.19	4.22	0.04	4.26

On-site Stormwater Detention

Total Storage Required = 17.55 m^3

Summary of Release Rates and Storage Volumes

Catchment	Drainage Area (ha)	2-year Release Rate (L/s)	2-Year Required Storage (m3)
CA-04 to CA-10 (Cistern Controlled)	0.127	4.22	17.55
CA-01 to CA-03 (Roof Controlled)	0.185	6.10	26.92
Uncontrolled	0.001	0.20	N/A
Total	**0.314**	**10.53**	**44.47**

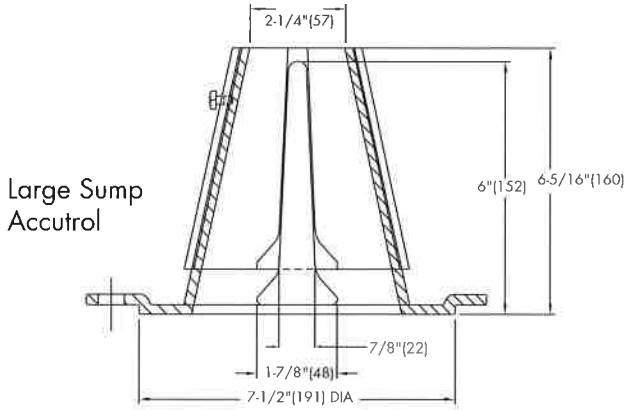
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

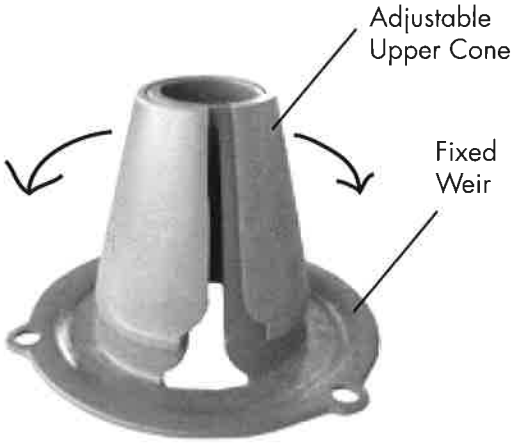
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2" of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3" of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm(per inch of head) x 2 inches of head] + 2-1/2 gpm(for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	Head of Water					
	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	10	10	10	10	10

Job Name _____ **Model No.** _____

Job Location _____ Contractor _____

Engineer _____ Representative _____

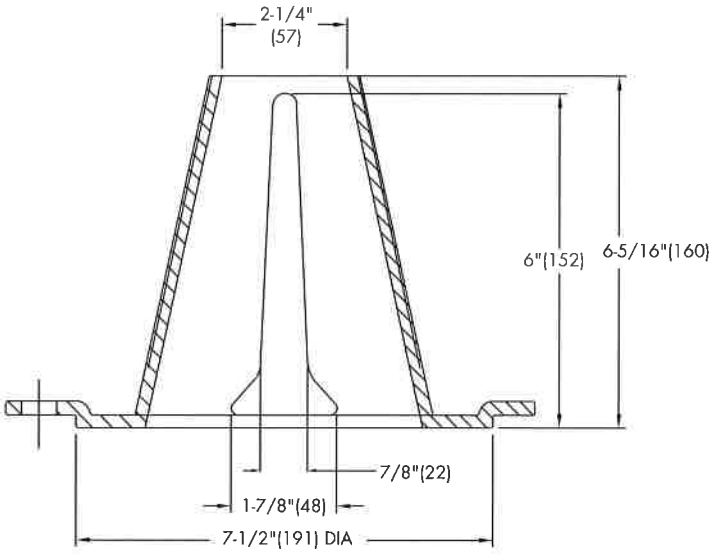
Specification Drainage Products

CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: www.wattscanada.ca

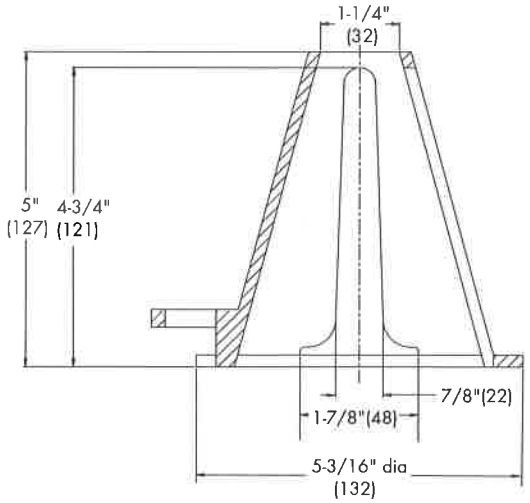
ACCUTROL WEIR FLOW CONTROL

SPECIFICATION: Watts Drainage Products epoxy coated cast iron Accutrol Weir is designed with parabolic openings which limit the flow of rain water off a roof. Each weir slot controls flow to 5 gpm per inch of head to a maximum of 30 gpm at 6" head(for large sump), 25 gpm at 5" head(for small sump) . The Accutrol Weir is secured to the flashing clamp of the roof drain. The Accutrol Weir is available with 1 to 4 slots for the large sump drain and up to 3 slots for the small sump drain.

For Large Sump Roof Drains Specify the "-A" option and number of slots required. (ie. "RD-100-A2" for two slot weir)
For Small Sump Roof Drains Specify the "-A" option and number of slots required. (ie. "RD-200-A1" for one slot weir)



LARGE SUMP ACCUTROL WEIR



SMALL SUMP ACCUTROL WEIR

Job Name _____ **Model No.** _____

Job Location _____ Contractor _____

Engineer _____ Representative _____

Stormceptor®

Rinker MATERIALS® A QUIKRETE® COMPANY

Stormceptor® EF Sizing Report

Imbrium® Systems
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

06/27/2025

Province:	Ontario
City:	Ottawa
Nearest Rainfall Station:	OTTAWA CDA RCS
Climate Station Id:	6105978
Years of Rainfall Data:	20

Site Name:	85 Gemini Way

Drainage Area (ha):	0.127
Runoff Coefficient 'c':	0.68

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0
Required Water Quality Runoff Volume Capture (%):	90.0
Estimated Water Quality Flow Rate (L/s):	2.85
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	

Project Name:	85 Gemini Way
Project Number:	230088
Designer Name:	Brandon O'Leary
Designer Company:	Rinker Pipe
Designer Email:	brandon.oleary@RinkerPipe.com
Designer Phone:	905-630-0359
EOR Name:	Momen Siam
EOR Company:	LRL Associates Ltd.
EOR Email:	msiam@lrl.ca
EOR Phone:	613-203-0746

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	98
EFO5	99
EFO6	100
EFO8	100
EFO10	100
EFO12	100

Recommended Stormceptor EFO Model: EFO4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 98

Water Quality Runoff Volume Capture (%): > 90

imbrium®

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

PARTICLE SIZE DISTRIBUTION (PSD)

►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

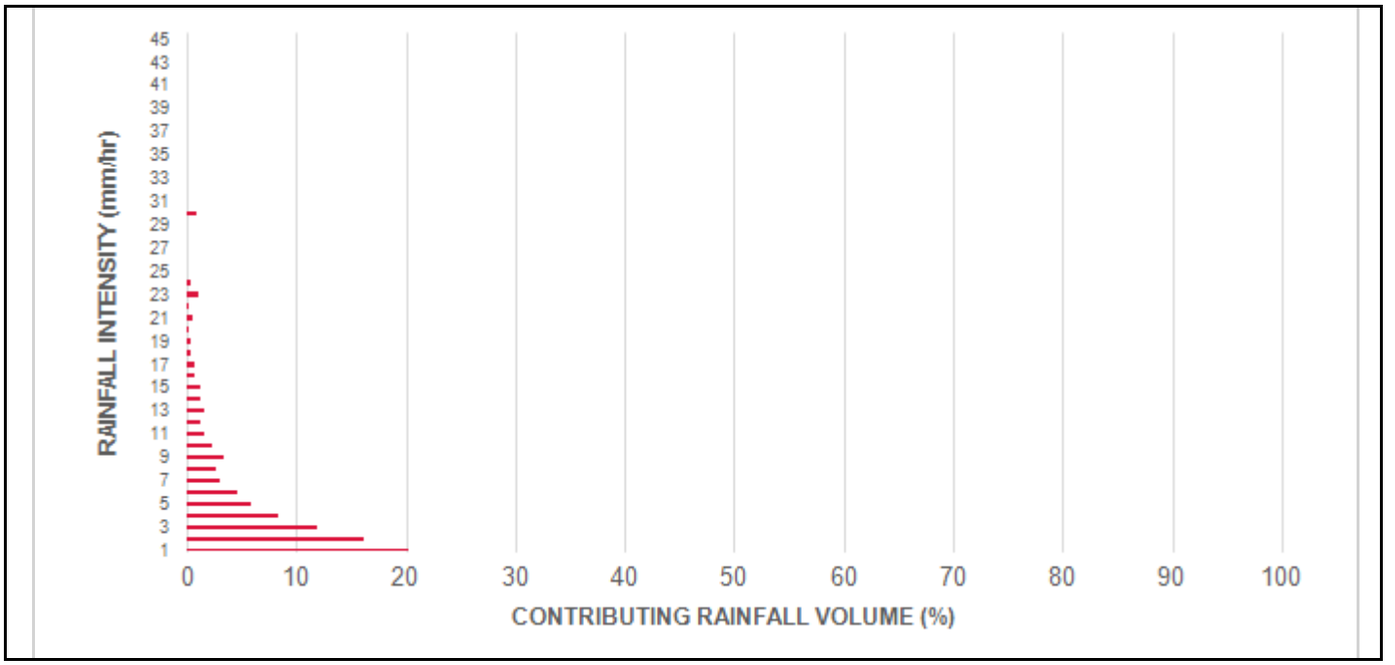
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Stormceptor® EF Sizing Report

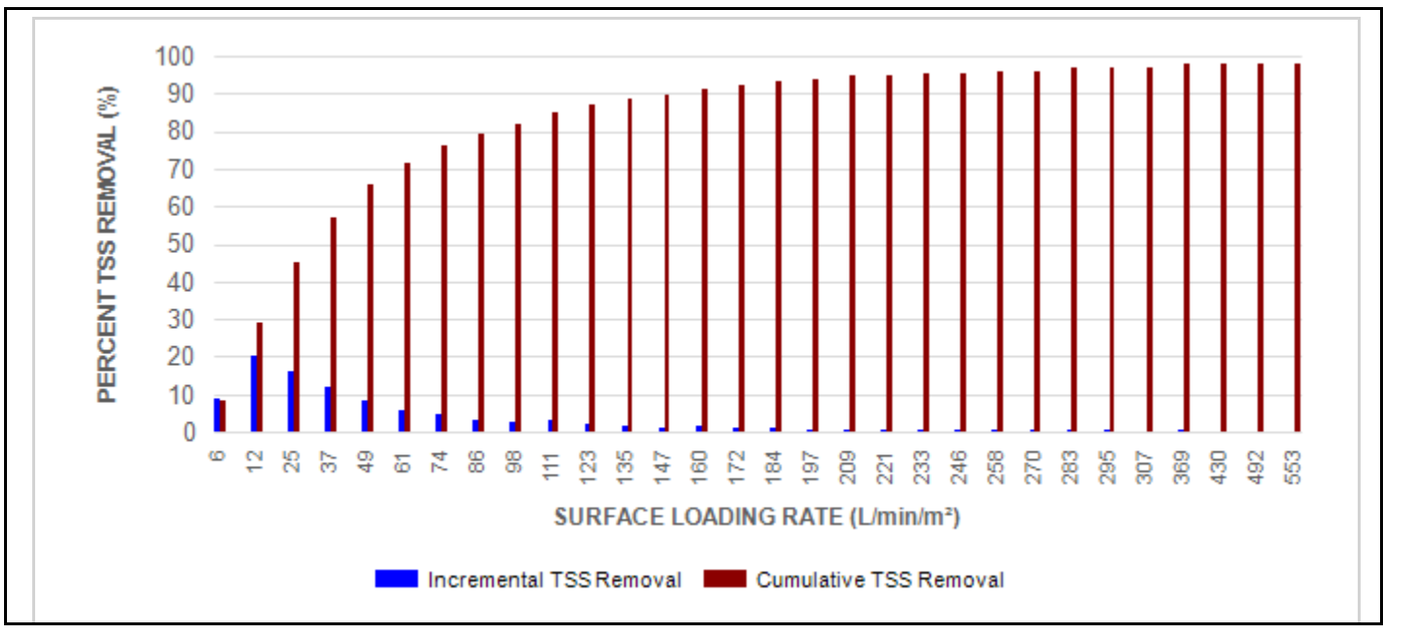
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.6	8.6	0.12	7.0	6.0	100	8.6	8.6
1.00	20.3	29.0	0.25	15.0	12.0	100	20.3	29.0
2.00	16.2	45.2	0.49	29.0	25.0	100	16.2	45.2
3.00	12.0	57.2	0.74	44.0	37.0	100	12.0	57.2
4.00	8.4	65.6	0.98	59.0	49.0	100	8.4	65.6
5.00	5.9	71.6	1.23	74.0	61.0	100	5.9	71.6
6.00	4.6	76.2	1.47	88.0	74.0	100	4.6	76.2
7.00	3.1	79.3	1.72	103.0	86.0	98	3.0	79.2
8.00	2.7	82.0	1.97	118.0	98.0	97	2.7	81.9
9.00	3.3	85.3	2.21	133.0	111.0	95	3.2	85.0
10.00	2.3	87.6	2.46	147.0	123.0	93	2.1	87.2
11.00	1.6	89.2	2.70	162.0	135.0	92	1.4	88.6
12.00	1.3	90.5	2.95	177.0	147.0	91	1.2	89.8
13.00	1.7	92.2	3.19	192.0	160.0	88	1.5	91.3
14.00	1.2	93.5	3.44	206.0	172.0	87	1.1	92.4
15.00	1.2	94.6	3.69	221.0	184.0	86	1.0	93.4
16.00	0.7	95.3	3.93	236.0	197.0	84	0.6	94.0
17.00	0.7	96.1	4.18	251.0	209.0	83	0.6	94.6
18.00	0.4	96.5	4.42	265.0	221.0	82	0.3	94.9
19.00	0.4	96.9	4.67	280.0	233.0	82	0.3	95.3
20.00	0.2	97.1	4.92	295.0	246.0	81	0.2	95.4
21.00	0.5	97.5	5.16	310.0	258.0	81	0.4	95.8
22.00	0.2	97.8	5.41	324.0	270.0	80	0.2	96.0
23.00	1.0	98.8	5.65	339.0	283.0	79	0.8	96.8
24.00	0.3	99.1	5.90	354.0	295.0	79	0.2	97.0
25.00	0.0	99.1	6.14	369.0	307.0	78	0.0	97.0
30.00	0.9	100.0	7.37	442.0	369.0	76	0.7	97.7
35.00	0.0	100.0	8.60	516.0	430.0	72	0.0	97.7
40.00	0.0	100.0	9.83	590.0	492.0	70	0.0	97.7
45.00	0.0	100.0	11.06	664.0	553.0	67	0.0	97.7
Estimated Net Annual Sediment (TSS) Load Reduction =								**98 %**

Climate Station ID: 6105978 *Years of Rainfall Data*: 20

RAINFALL DATA FROM OTTAWA CDA RCS RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL
FOR THE RECOMMENDED STORMCEPTOR® MODEL



imbrium

Stormceptor® EF Sizing Report

Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

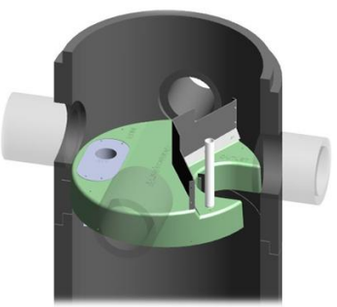
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

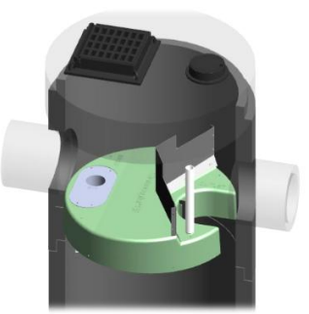
DESIGN FLEXIBILITY

►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.





INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

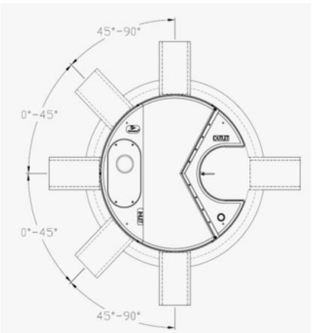
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1.

Stormceptor® EF Sizing Report



Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREAMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m^3 sediment / 420 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil

12 ft (3657 mm) Diameter OGS Units: 31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

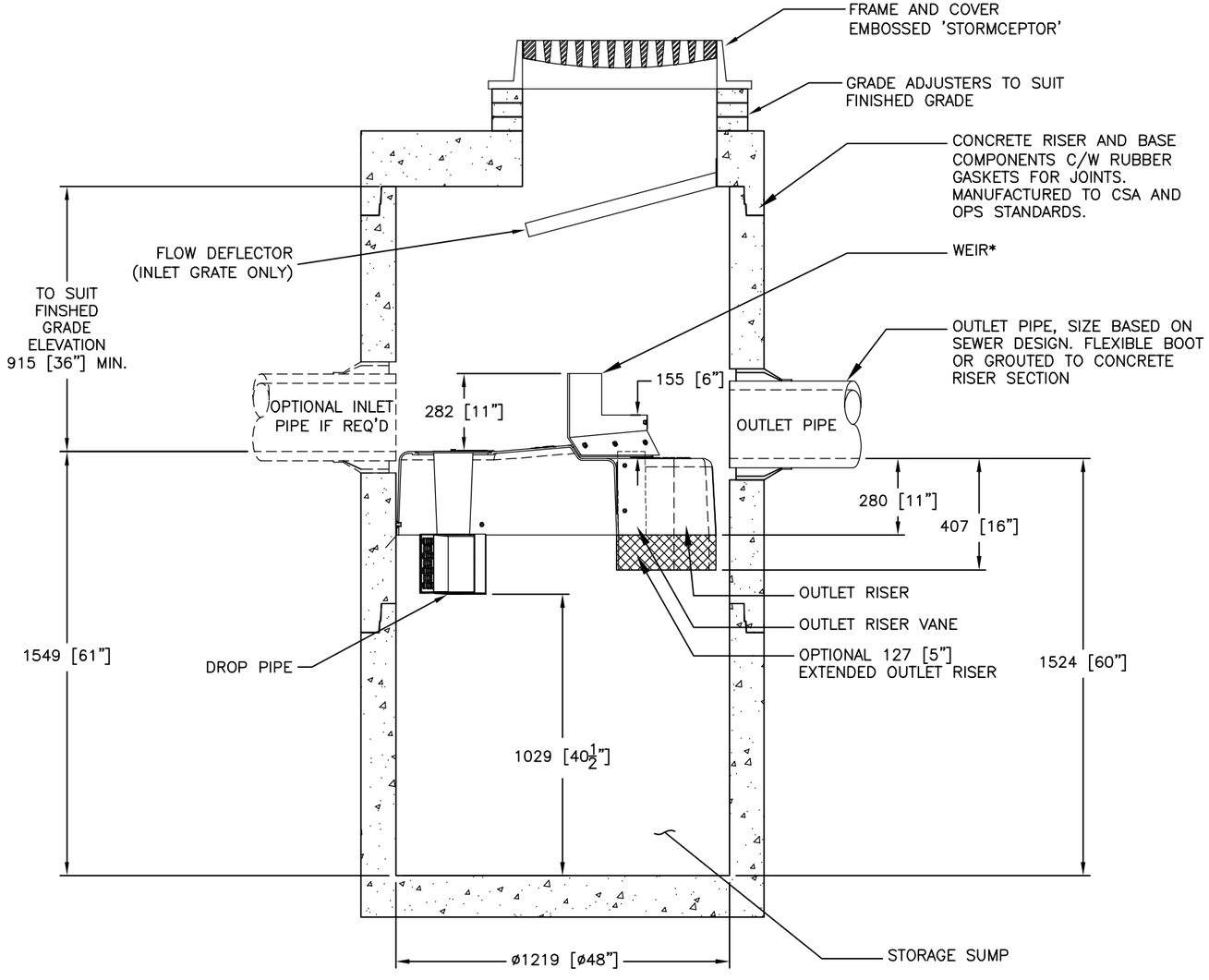
The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

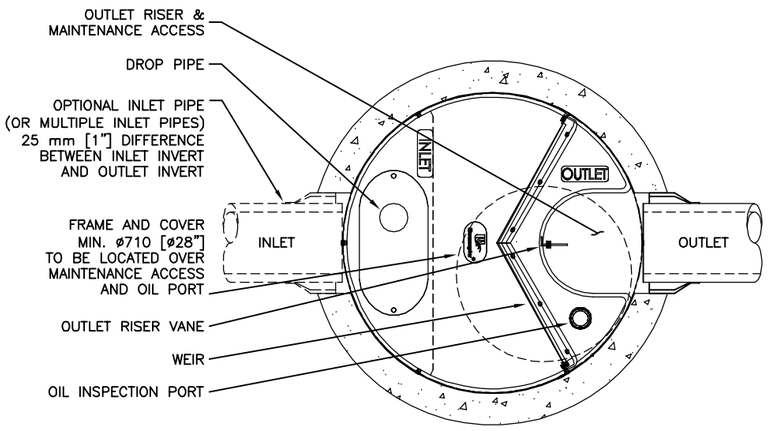
3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

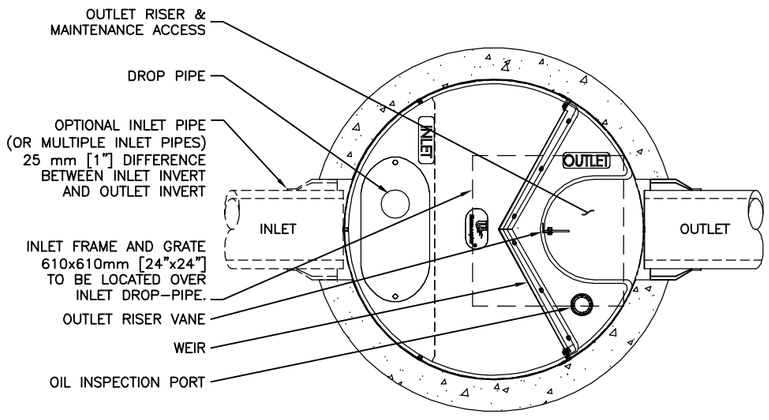
3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m^2 to 2600 L/min/m^2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.** However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF4 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO4 (OIL CAPTURE CONFIGURATION). WEIR HEIGHT IS 150 mm (6 INCH) FOR EF04.

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EFO4
STRUCTURE ID	*
HYDROCARBON STORAGE REQ'D (L)	*
WATER QUALITY FLOW RATE (L/s)	*
PEAK FLOW RATE (L/s)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
DRAINAGE AREA (HA)	*
DRAINAGE AREA IMPERVIOUSNESS (%)	*

PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

MARK	DATE	REVISION DESCRIPTION	BY
1	6/8/18	UPDATES	JSK
0	5/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®
7007 RIDGE ROAD, SUITE 550, HANOVER, MD 21076
USA: 888-279-9828 CA: 800-388-4601 INTL: +1-416-960-9900

DATE: 10/13/2017

DESIGNED:	DRAWN:
JSK	JSK
CHECKED:	APPROVED:
BSF	SP
PROJECT No.:	SEQUENCE No.:
EFO4	*

SHEET: 1 OF 1

STANDARD SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREAMENT DEVICE WITH THIRD-PARTY VERIFIED LIGHT LIQUID RE-ENTRAINMENT SIMULATION PERFORMANCE TESTING RESULTS

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, designing, maintaining, and constructing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, **specifically an OGS device that has been third-party tested for oil and fuel retention capability using a protocol for light liquid re-entrainment simulation testing, with testing results and a Statement of Verification in accordance with all the provisions of ISO 14034 Environmental Management – Environmental Technology Verification (ETV)**. Work includes supply and installation of concrete bases, precast sections, and the appropriate precast section with OGS internal components correctly installed within the system, watertight sealed to the precast concrete prior to arrival to the project site.

1.2 REFERENCE STANDARDS

1.2.1 For Canadian projects only, the following reference standards apply:

CAN/CSA-A257.4-14: Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections, and Fittings Using Rubber Gaskets
CAN/CSA-A257.4-14: Precast Reinforced Circular Concrete Manhole Sections, Catch Basins, and Fittings
CAN/CSA-S6-00: Canadian Highway Bridge Design Code

1.2.2 For ALL projects, the following reference standards apply:

ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks
ASTM C 478: Specification for Precast Reinforced Concrete Manhole Sections
ASTM C 443: Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM C 891: Standard Practice for Installation of Underground Precast Concrete Utility Structures
ASTM D2563: Standard Practice for Classification of Visual Defects in Reinforced Plastics

1.3 SHOP DRAWINGS

1.3.1 Shop drawings shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail the precast concrete components and OGS internal components prior to shipment, including the sequence for installation.

1.3.2 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record. Any and all changes to project cost estimates, bonding amounts, plan check fees for revision of approved documents, or design impacts due to regulatory requirements as a result of a product substitution shall be coordinated by the Contractor with the Engineer of Record.

1.4 HANDLING AND STORAGE

Prevent damage to materials during storage and handling.

1.4.1 OGS internal components supplied by the Manufacturer for attachment to the precast concrete vessel shall be pre-fabricated, bolted to the precast and watertight sealed to the precast vessel surface prior to site delivery to ensure Manufacturer's internal assembly process and quality control processes are fully adhered to, and to prevent materials damage on site.

1.4.2 Follow all instructions including the sequence for installation in the shop drawings during installation.

PART 2 – PRODUCTS

2.1 GENERAL

2.1.1 The OGS vessel shall be cylindrical and constructed from precast concrete riser and slab components.

2.1.2 The precast concrete OGS internal components shall include a fiberglass insert bolted and watertight sealed inside the precast concrete vessel, prior to site delivery. Primary internal components that are to be anchored and watertight sealed to the precast concrete vessel shall be done so only by the Manufacturer prior to arrival at the job site to ensure product quality.

2.1.3 The OGS shall be allowed to be specified and have the ability to function as a 240-degree bend structure in the stormwater drainage system, or as a junction structure.

2.1.4 The OGS to be specified shall have the capability to accept influent flow from an inlet grate and an inlet pipe.

2.2 PRECAST CONCRETE SECTIONS

All precast concrete components shall be designed and manufactured to meet highway loading conditions per State/Provincial or local requirements.

2.3 GASKETS

Only profile neoprene or nitrile rubber gaskets that are oil resistant shall be accepted. For Canadian projects only, gaskets shall be in accordance to CSA A257.4-14. Mastic sealants, butyl tape/rope or Conseal CS-101 alone are not acceptable gasket materials.

2.4 JOINTS

The concrete joints shall be watertight and meet the design criteria according to ASTM C-990. For projects where joints require gaskets, the concrete joints shall be watertight and oil resistant and meet the design criteria according to ASTM C-443. Mastic sealants or butyl tape/rope alone are not an acceptable alternative.

2.5 FRAMES AND COVERS

Frames and covers shall be manufactured in accordance with State/Provincial or local requirements for inspection and maintenance access purposes. A minimum of one cover, at least 22-inch (560 mm) in diameter, shall be clearly embossed with the OGS manufacturer's product name to properly identify this asset's purpose is for stormwater quality treatment.

2.6 PRECAST CONCRETE

All precast concrete components shall conform to the appropriate CSA or ASTM specifications.

2.7 FIBERGLASS

The fiberglass portion of the OGS device shall be constructed in accordance with ASTM D2563, and in accordance with the PS15-69 manufacturing standard, and shall only be installed, bolted and watertight sealed to the precast concrete by the Manufacturer prior to arrival at the project site to ensure product quality.

2.8 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a fiberglass insert for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The total sediment storage capacity shall be a minimum 40 ft^3 (1.1 m^3). The total petroleum hydrocarbon storage capacity shall be a minimum 50 gallons (189 liters). The access opening to the sump of the OGS device for periodic inspection and maintenance purposes shall be a minimum 16 inches (406 mm) in diameter.

2.9 LADDERS

Ladder rungs shall be provided upon request or to comply with State/Provincial or local requirements.

2.10 INSPECTION

All precast concrete sections shall be level and inspected to ensure dimensions, appearance, integrity of internal components, and quality of the product meets State/Provincial or local specifications and associated standards.

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 HYDROLOGY AND RUNOFF VOLUME

The OGS device shall be engineered, designed and sized to treat a minimum of 90 percent of the average annual runoff volume, unless otherwise stated by the Engineer of Record, using historical rainfall data. Rainfall data sets should be comprised of a minimum 15-years of rainfall data or a longer continuous period if available for a given location, but in all cases a minimum 5-year period of rainfall data.

3.3 ANNUAL (TSS) SEDIMIMENT LOAD AND STORAGE CAPACITY

The OGS device shall be capable of removing and have sufficient storage capacity for the calculated annual total suspended solids (TSS) mass load and volume without scouring previously captured pollutants prior to maintenance being required. The annual (TSS) sediment load and volume transported from the drainage area should be calculated and compared to the OGS device's available storage capacity by the specifying Engineer to ensure adequate capacity between maintenance cycles. Sediment loadings shall be determined by land use and defined as a minimum of 450 kg (992 lb) of sediment (TSS) per impervious hectare of drainage area per year, or greater based on land use, as noted in Table 1 below.

Annual sediment volume calculations shall be performed using the projected average annual treated runoff volume, a typical sediment bulk density of 1602 kg/m^3 (100 lbs/ft^3) and an assumed Event Mean Concentration (EMC) of 125 mg/L TSS in the runoff, or as otherwise determined by the Engineer of Record.

Example calculation for a 1.3-hectares parking lot site:

- 1.28 meters of rainfall depth, per year
- 1.3 hectares of 100% impervious drainage area
- EMC of 125 mg/L TSS in runoff
- Treatment of 90% of the average annual runoff volume
- Target average annual TSS removal rate of 60% by OGS

Annual Runoff Volume:

- 1.28 m rain depth x 1.3 ha x 10,000 m^2/ha= 16,640 m^3 of runoff volume
- 16,640 m^3 x 1000 L/m^3 = 16,640,000 L of runoff volume
- 16,640,000 L x 0.90 = 14,976,000 L to be treated by OGS unit

Annual Sediment Mass and Sediment Volume Load Calculation:

- 14,976,000 L x 125 mg/L x kg/1,000,000 mg = 1,872 kg annual sediment mass
- 1,872 kg x m^3/1602 kg = 1.17 m^3 annual sediment volume
- 1.17 m^3 x 60% TSS removal rate by OGS = 0.70 m^3 minimum expected annual storage requirement in OGS

As a guideline, the U.S. EPA has determined typical annual sediment loads per drainage area for various sites by land use (see Table 1). Certain States, Provinces and local jurisdictions have also established such guidelines.

Table 1 – Annual Mass Sediment Loading by Land Use

	Commercial	Parking Lot	Residential			Highways	Industrial	Shopping Center
			High	Med.	Low			
(lbs/acre/yr)	1,000	400	420	250	10	880	500	440
(kg/hectare/yr)	1,124	450	472	281	11	989	562	494

Source: U.S. EPA Stormwater Best Management Practice Design Guide Volume 1, Appendix D, Table D-1, Burton and Pitt 2002

3.4 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in Table 2, Section 3.5, and based on third-party performance testing conducted in accordance with the Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol *Procedure for Laboratory Testing of Oil-Grit Separators*, as follows:

3.4.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.4.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.4.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.4.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 3.3.

3.4.5 The Peclet Number is not an approved method or model for calculating TSS removal, sizing, or scaling OGS devices.

3.4.6 If an alternate OGS device is proposed, supporting documentation shall be submitted that demonstrates:

- Canadian ETV or ISO 14034 ETV Verification Statement which verifies third-party performance testing conducted in accordance with the **Procedure for Laboratory Testing of Oil-Grit Separators,** including the Light Liquid Re-entrainment Simulation Testing.
- Equal or better sediment (TSS) removal of the PSD specified in Table 2 at equivalent surface loading rates, as compared to the OGS device specified herein.
- Equal or better Light Liquid Re-entrainment Simulation Test results (using low-density polyethylene beads as a surrogate for light liquids such as oil and fuel) at equivalent surface loading rates, as compared to the OGS device specified herein. However, an alternative OGS device shall not be allowed as a substitute if the Light Liquid Re-entrainment Simulation Test was performed with screening components within the OGS device that are effective at retaining the low-density polyethylene beads, but would not be expected to retain light liquids such as oil and fuel.
- Equal or greater sediment storage capacity, as compared to the OGS device specified herein.
- Supporting documentation shall be signed and sealed by a local registered Professional Engineer. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.

3.5 PARTICLE SIZE DISTRIBUTION (PSD) FOR SIZING

The OGS device shall be sized to achieve the Engineer-specified average annual percent sediment (TSS) removal based solely on the test sediment used in the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.** This test sediment is comprised of inorganic ground silica with a specific gravity of 2.65, uniformly mixed, and containing a broad range of particle sizes as specified in Table 2. No alternative PSDs or deviations from Table 2 shall be accepted.

Table 2
Canadian ETV Program Procedure for Laboratory Testing of Oil-Grit Separators
Particle Size Distribution (PSD) of Test Sediment

Particle Diameter (Microns)	% by Mass of All Particles	Specific Gravity
1000	5%	2.65
500	5%	2.65
250	15%	2.65
150	15%	2.65
100	10%	2.65
75	5%	2.65
50	10%	2.65
20	15%	2.65
8	10%	2.65
5	5%	2.65
2	5%	2.65

3.6 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party scour testing conducted and have in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. This scour testing is conducted with the device pre-loaded with test sediment comprised of the particle size distribution (PSD) illustrated in Table 2.

3.6.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

Data generated from laboratory scour testing performed with an OGS device pre-loaded with a coarser PSD than in Table 2 (i.e. the coarser PSD has no particles in the 1-micron to 50-micron size range, or the D_{50} of the test sediment exceeds 75 microns) shall not be acceptable for the determination of the device's suitability for on-line installation.

3.7 DESIGN ACCOUNTING FOR BYPASS

3.7.1 The OGS device shall be specified to achieve the TSS removal performance and water quality objectives without washout of previously captured pollutants. The OGS device shall also have sufficient hydraulic conveyance capacity to convey the peak storm event, in accordance with hydraulic conditions per the Engineer of Record. To ensure this is achieved, there are two design options with associated requirements:

3.7.1.1 The OGS device shall be placed **off-line** with an upstream diversion structure (typically in an upstream manhole) that only allows the water quality volume to be diverted to the OGS device, and excessive flows diverted downstream around the OGS device to prevent high flow washout of pollutants previously captured. This design typically incorporates a triangular layout including an upstream bypass manhole with an appropriately engineered weir wall, the OGS device, and a downstream junction manhole, which is connected to both the OGS device and bypass structure. In this case with an external bypass required, the OGS device manufacturer must provide calculations and designs for all structures, piping and any other required material applicable to the proper functioning of the system, stamped by a Professional Engineer.

3.7.1.2 Alternatively, OGS devices in compliance with Section 3.6 shall be acceptable for an **on-line** design configuration, thereby eliminating the requirement for an upstream bypass manhole and downstream junction manhole.

3.7.2 The OGS device shall also have sufficient hydraulic conveyance capacity to convey the peak storm event, in accordance with hydraulic conditions per the Engineer of Record. If an alternate OGS device is proposed, supporting documentation shall be submitted that demonstrates equal or better hydraulic conveyance capacity as compared to the OGS device specified herein. This documentation shall be signed and sealed by a local registered Professional Engineer. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.

3.8 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.8.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m^2 to 2600 L/min/m^2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

3.9 PETROLEUM HYDROCARBONS AND FLOATABLES STORAGE CAPACITY

Petroleum hydrocarbons and floatables storage capacity in the OGS device shall be a minimum 50 gallons (189 Liters), or more as specified.

3.9.1 The OGS device shall have gasketed precast concrete joints that are watertight, and oil resistant and meet the design criteria according to ASTM C-443 to provide safe oil and other hydrocarbon materials storage and ground water protection. Mastic sealants or butyl tape/rope alone are not an acceptable alternative.

3.10 SURFACE LOADING RATE SCALING OF DIFFERENT MODEL SIZES

The reference device for scaling shall be an OGS device that has been third-party tested in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. Other model sizes of the tested device shall only be scaled such that the claimed TSS removal efficiency of the scaled device shall be no greater than the TSS removal efficiency of the tested device at identical **surface loading rates** (flow rate divided by settling surface area). The depth of other model sizes of the tested device shall be scaled in accordance with the depth scaling provisions within Section 6.0 of the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.10.1 The Peclet Number and volumetric scaling are not approved methods for scaling OGS devices.

PART 4 – INSPECTION & MAINTENANCE

The OGS manufacturer shall provide an Owner's Manual upon request.
Maintenance shall be performed by a professional service provider who has experience in cleaning OGS devices and has been trained and certified in applicable health and safety practices, including confined space entry procedures.

4.1 A Quality Assurance Plan that provides inspection for a minimum of 5 years shall be included with the OGS stormwater quality device, and written into the Environmental Compliance Approval (ECA) or the appropriate State/Provincial or local approval document.

4.2 OGS device inspection shall include determination of sediment depth and presence of petroleum hydrocarbons below the insert. Inspection shall be easily conducted from finished grade through a frame and cover of at least 22 inch (560 mm) in diameter.

4.3 Inspection and pollutant removal shall be conducted periodically. For routine maintenance cleaning activities, pollutant removal shall typically utilize a truck equipped with vacuum apparatus, and shall be easily conducted from finished grade through a frame and cover of at least 22-inches (560 mm) in diameter.

4.4 Diameter of the maintenance access opening to the lower chamber and sump shall be scaled consistently across all model sizes, and shall be 1/3 the inside diameter of the OGS structure, or larger.

4.5 No confined space entry shall be required for routine inspection and maintenance cleaning activities.

4.6 For OGS model sizes of diameter 72 inches (1828 mm) and greater, the access opening to the OGS device's lower chamber and sump shall be large enough to allow a maintenance worker to enter the lower chamber to facilitate non-routine maintenance cleaning activities and repairs, as needed.

4.7 The orifice-containing component (i.e. drop pipe, duct, chute, etc.) of the OGS device used to control flow rate into the lower chamber shall be removable from the insert to facilitate cleaning, repair, or replacement of the orifice-containing component, as needed.

PART 5 – EXECUTION

5.1 PRECAST CONCRETE INSTALLATION

The installation of the precast concrete OGS stormwater quality treatment device shall conform to ASTM C 891, ASTM C 478, ASTM C 443, CAN/CSA-A257.4-14, CAN/CSA-A257.4-14, CAN/CSA-S6-00 and all highway, State/Provincial, or local specifications for the construction of manholes. Selected sections of a general specification that are applicable are summarized below. The Contractor shall furnish all labor, equipment and materials necessary to offload, assemble as needed the OGS internal components as specified in the Shop Drawings.

5.2 EXCAVATION

5.2.1 Excavation for the installation of the OGS stormwater quality treatment device shall conform to highway, State/Provincial or local specifications. Topsoil that is removed during the excavation for the OGS stormwater quality treatment device shall be stockpiled in designated areas and not be mixed with subsoil or other materials. Topsoil stockpiles and the general site preparation for the installation of the OGS stormwater quality device shall conform to highway, State/Provincial or local specifications.

5.2.2 The OGS device shall not be installed on frozen ground. Excavation shall extend a minimum of 12 inch (300 mm) from the precast concrete surfaces plus an allowance for shoring and bracing where required. If the bottom of the excavation provides an unsuitable foundation additional excavation may be required.

5.2.3 In areas with a high water table, continuous dewatering shall be provided to ensure that the excavation is stable and free of water.

5.3 BACKFILLING

Backfill material shall conform to highway, State/Provincial or local specifications. Backfill material shall be placed in uniform layers not exceeding 12 inches (300 mm) in depth and compacted to highway, State/Provincial or local specifications.

5.4 OGS WATER QUALITY DEVICE CONSTRUCTION SEQUENCE

5.4.1 The precast concrete OGS stormwater quality treatment device is installed and leveled in sections in the following sequence:

- aggregate base
- base slab, or base
- riser section(s) (if required)
- riser section w/ pre-installed fiberglass insert
- upper riser section(s)
- internal OGS device components
- connect inlet and outlet pipes
- riser section, top slab and/or transition (if required)
- frame and access cover

5.4.2 The precast concrete base shall be placed level at the specified grade. The entire base shall be in contact with the underlying compacted granular material. Subsequent sections, complete with oil resistant, watertight joint seals, shall be installed in accordance with the precast concrete manufacturer's recommendations.

5.4.3 Adjustment of the OGS stormwater quality treatment device can be performed by lifting the upper sections free of the excavated area, re-leveling the base, and re-installing the sections. Damaged sections and gaskets shall be repaired or replaced as necessary. Once the OGS stormwater quality treatment device has been constructed, any lift holes must be plugged with mortar.

5.5 DROP PIPE AND OIL INSPECTION PIPE

Once the upper precast concrete riser has been attached to the lower precast concrete riser section, the OGS device Drop Pipe and Oil Inspection Pipe must be attached, and watertight sealed to the fiberglass insert using Sikaflex 1a. Installation instructions and required materials shall be provided by the OGS manufacturer.

5.6 INLET AND OUTLET PIPES

Inlet and outlet pipes shall be securely set using grout or approved pipe seals (flexible boot connections, where applicable) so that the structure is watertight. Non-secure inlets and outlets will result in improper performance.

5.7 FRAME AND COVER OR FRAME AND GRATE INSTALLATION

Precast concrete adjustment units shall be installed to set the frame and cover/grate at the required elevation. The adjustment units shall be laid in a full bed of mortar with successive units being joined using sealant recommended by the manufacturer. Frames for the cover/grate should be set in a full bed of mortar at the elevation specified.

5.7.1 A minimum of one cover, at least 22-inch (560 mm) in diameter, shall be clearly embossed with the OGS device brand or product name to properly identify this asset's purpose is for stormwater quality treatment.

APPENDIX E

Civil Engineering Drawings

PROPOSED 6 STOREY RESIDENTIAL BUILDING
85 GEMINI WAY, OTTAWA, ON.

REVISION 03

KEY PLAN (N.T.S.)

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DEMOLITION PLAN	C102
GRADING AND DRAINAGE PLAN	C301
SERVICING PLAN	C401
STORMWATER MANAGEMENT PLAN	C601
PRE-DEVELOPMENT WATERSHED PLAN	C701
POST-DEVELOPMENT WATERSHED PLAN	C702
CONSTRUCTION DETAIL PLAN	C901

LRL
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PROPOSED 6-STOREY RESIDENTIAL BUILDING
85 GEMINI WAY, OTTAWA, ON.
REV.03 : RE-ISSUED FOR APPROVAL - JANUARY 2026
LRL PROJECT NO: 230088

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2026/1/30
PROVINCE OF ONTARIO
NOT AUTHENTIC UNLESS SIGNED AND DATED

D07-12-25-0106

PLAN #19405

GENERAL NOTES

1. ALL WORKS MATERIALS SHALL CONFIRM TO THE LAST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTORS SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTORS SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION , TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS 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. LOST TIME DUE TO FAILURE OF THE CONTRACTORS TO CONFIRM UTILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT CONTRACTORS EXPENSE.
4. ANY AREA 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. RELOCATING OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DETECTED BY THE ENGINEER AT THE EXPENSE OF DEVELOPERS.
5. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS'. THE GENERAL CONTRACTORS SHALL BE DEEMED TO BE THE 'CONTRACTOR' AS DEFINED IN THE ACT.
6. ALL THE CONSTRUCTION SIGNAGE MUST CONFIRM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT.
7. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THE CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS.
8. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE.
9. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER.
10. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
11. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.
12. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
13. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED.
15. ALL PIPE/CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS.
16. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.
17. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND THE CITY OF OTTAWA PRIOR TO ANY TREE CUTTING/REMOVAL.
18. DRAWINGS SHALL BE READ ON CONJUNCTION WITH ARCHITECTURAL SITE PLAN.
19. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER ON SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS.
20. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL

THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE 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.

THE CONTRACTOR ACKNOWLEDGES THAT SURFACE EROSION AND SEDIMENT RUNOFF RESULTING FROM THEIR CONSTRUCTION OPERATIONS HAS POTENTIAL TO CAUSE A DETRIMENTAL IMPACT TO ANY DOWNSTREAM WATERCOURSE OR SEWER, AND THAT ALL CONSTRUCTION OPERATIONS THAT MAY IMPACT UPON WATER QUALITY SHALL BE CARRIED OUT IN MANNER THAT STRICTLY MEETS THE REQUIREMENT OF ALL APPLICABLE LEGISLATION AND REGULATIONS.

AS SUCH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THEIR OPERATIONS, AND SUPPLYING AND INSTALLING ANY APPROPRIATE CONTROL MEASURES, SO AS TO PREVENT SEDIMENT LADEN RUNOFF ENTERING ANY SEWER OR WATERCOURSE WITHIN OR DOWNSTREAM OF THE WORKING AREA.

THE CONTRACTOR ACKNOWLEDGES THAT NO ONE MEASURE IS LIKELY TO BE 100% EFFECTIVELY FOR EROSION PROTECTION AND CONTROLLING SEDIMENT RUNOFF AND DISCHARGES FROM THE SITE. THEREFORE, WHERE NECESSARY THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES ARRANGED IN SUCH MANNER AS TO MITIGATE SEDIMENT RELEASE FROM THE CONSTRUCTION OPERATIONS AND ACHIEVE SPECIFIC MAXIMUM PERMITTED CRITERIA WHERE APPLICABLE. SUGGESTED ON-SITE MEASURES MAY INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING METHODS: SEDIMENT PONDS, FILTER BAGS, PUMP FILTERS, SETTLING TANKS, SILT FENCE, STRAW BALES, FILTER CLOTHS, CATCH BASIN FILTERS, CHECK DAMS AND/OR OTHER RECOGNIZED TECHNOLOGIES AND METHOD AVAILABLE AT THE TIME OF CONSTRUCTION. SPECIFIC MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF OPSS 577 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

WHERE, IN THE OPINION OF THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY, THE INSTALLED CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE MEASURES AS DIRECTED BY THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY, AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIME WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED BY HIM AT THE MOMENT'S NOTICE.

PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR SIX COPIES OF A DETAILED EROSION AND SEDIMENT CONTROL PLAN (ESCP). THE ESCP WILL CONSIST OF WRITTEN DESCRIPTION AND DETAILED DRAWINGS INDICATING THE ON-SITE ACTIVITIES AND MEASURES TO BE USED TO CONTROL EROSION AND SEDIMENT MOVEMENT FOR EACH STEP OF THE WORK.

CONTRACTOR'S RESPONSIBILITIES

THE CONTRACTOR SHALL ENSURE THAT ALL WORKERS, INCLUDING SUB-CONTRACTOR, IN THE WORKING ARE ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES.

THE CONTRACTOR SHALL PERIODICALLY, AND WHEN REQUESTED BY THE CONTRACT ADMINISTRATOR, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES, INCLUDING THOSE DEPOSITS THAT MAY ORIGINATE FROM OUTSIDE THE CONSTRUCTION AREA. ACCUMULATED SEDIMENT SHALL BE REMOVED IN SUCH A MANNER THAT PREVENTS THE DEPOSITION OF THIS MATERIAL INTO THE SEWER WATERCOURSE AND AVOIDS DAMAGE TO CONTROL MEASURES. THE SEDIMENT SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH REQUIREMENTS FRO EXCESS EARTH MATERIAL, AS SPECIFIED ELSEWHERE IN THE CONTRACT.

THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE CONTRACT ADMINISTRATOR ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO EITHER THE WATERCOURSE OR THE STORM SEWER SYSTEM. FAILURE TO REPORT WILL BE CONSTITUTE A BRACH OF THIS SPECIFICATION AND THE CONTRACTOR MAY ALSO BE SUBJECT TO THE PENALTIES IMPOSED BY THE APPLICABLE REGULATORY AGENCY. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.

THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE CONTRACT ADMINISTRATOR, THE MEASURE OR MEASURES, IS NO LONGER REQUIRED. NO CONTROL MEASURE MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE CONTRACT ADMINISTRATOR. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED IN A MANNER THAT AVOIDS THE ENTRY OF ANY EQUIPMENT, OTHER THAN HAND-HELD EQUIPMENT, INTO ANY WATERCOURSE, AND PREVENTS THE RELEASE OF ANY SEDIMENT OR DEBRIS INTO ANY SEWER OR WATERCOURSE WITHIN OR DOWNSTREAM OF THE WORKING AREA. ALL ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE WORKING AREA AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH THE REQUIREMENTS FOR EXCESS EARTH MATERIAL

WHERE, IN THE OPINION OF EITHER THE CONTRACT ADMINISTRATOR OR A REGULATORY AGENCY, ANY OF THE TERMS SPECIFIED HEREIN HAVE NOT BEEN COMPLIED WITH OR PERFORMED IN A SUITABLE MANNER, OR TAT ALL, THE CONTRACTOR ADMINISTRATOR OR A REGULATORY AGENCY HAS THE RIGHT TO IMMEDIATELY WITHDRAW ITS PERMISSION TO CONTINUE THE WORK BUT MAY RENEW ITS PERMISSION UPON BEING SATISFIED THAT THE DEFAULTS OR DEFICIENCIES IN THE PERFORMANCE OF THIS SPECIFICATION BY THE CONTRACTOR HAVE BEEN REMEDIED.

SPILL CONTROL NOTES

1. ALL CONSTRUCTION EQUIPMENT SHALL BE RE-FUELED, MAINTAINED, AND STORED NO LESS THAN 30 METRES FROM WATERCOURSE, STEAMS, CREEKS, WOODLOTS, AND ANY ENVIRONMENTALLY SENSITIVE AREAS, OR AS OTHERWISE SPECIFIED.
2. THE CONTRACTOR MUST IMPLEMENT ALL NECESSARY MEASURES IN ORDER TO PREVENT LEAKS, DISCHARGES OR SPILLS OF POLLUTANTS, DELETERIOUS MATERIALS, OR OTHER SUCH MATERIALS OR SUBSTANCES WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT.
3. IN THE EVENT OF A LEAK, DISCHARGE OR SPILL OF POLLUTANT, DELETERIOUS MATERIAL OR OTHER SUCH MATERIAL OR SUBSTANCE WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT, THE CONTRACTOR SHALL:
   - 3.1. IMMEDIATELY NOTIFY APPROPRIATE FEDERAL, PROVINCIAL, AND LOCAL GOVERNMENT MINISTRIES, DEPARTMENTS, AGENCIES, AND AUTHORITIES OF THE INCIDENT IN ACCORDANCE WITH ALL CURRENT LAWS, LEGISLATION, ACTS, BY-LAWS, PERMITS, APPROVALS, ETC.
   - 3.2. TAKE IMMEDIATE MEASURES TO CONTAIN THE MATERIAL OR SUBSTANCE, AND TO TAKE SUCH MEASURES TO MITIGATE AGAINST ADVERSE IMPACTS TO THE NATURAL ENVIRONMENT.
   - 3.3. RESTORE THE AFFECTED AREA TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

MUD MAT NOTES

1. THE GRANULAR MATERIAL WILL REQUIRE PERIODIC REPLACEMENT AS IT BECOMES CONTAMINATED BY VEHICLE TRAFFIC.
2. SEDIMENT SHALL BE CLEANED FROM PUBLIC ROADS AT THE END OF EACH DAY.
3. SEDIMENT SHALL BE REMOVED FROM PUBLIC ROADS BY SHOVELING OR SWEEPING AND DISPOSED OR PROPERLY IN A CONTROLLED SEDIMENT DISPOSAL AREA.

SITE GRADING NOTES

1. PRIOR TO THE COMMENCEMENT OF THE SITE GRADING WORKS, ALL SILTATION CONTROL DEVICES SHALL BE INSTALLED AND OPERATIONAL PER EROSION CONTROL PLAN.
2. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
3. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. CONCRETE CURB SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. SC1.1 PROVISION SHALL BE MADE OR CURB DEPRESSIONS AS INDICATED ON ARCHITECTURAL SITE PLAN. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD SC1.4. ALL CURBS, CONCRETE ISLANDS, AND SIDEWALKS SHOWN O THIS DRAWING ARE TO BR PRICED IN SITE WORKS PORTION OF THE CONTRACT.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. R10 AND OPSD 509.010 AND OPSS 310.
6. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 30MM AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
7. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 30MM LIFTS.
8. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR BACKFILLING.
9. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
10. ALL PAVEMENT MARKING FEATURES AND SITE SIGNAGE SHALL BE PLACED PER ARCHITECTURAL SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT PAINT.
11. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
12. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
13. SIDEWALKS TO BE 13MM & BEVELED AT 2:1 OR 6MM WITH NO BEVEL REQUIRED BELOW THE FINISHED FLOOR SLAB ELEVATION AT ENTRANCES REQUIRED TO BE BARRIER-FREE, UNLESS OTHERWISE NOTED. ALL IN ACCORDANCE WITH OBC 3.8.1.3 & OTTAWA ACCESSIBILITY DESIGN STANDARDS.
14. WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.

ROADWORK SPECIFICATIONS

15. ROADWORK TO BE COMPLETED IN ACCORDANCE WITH GEOTECHNICAL REPORT, PREPARED BY EXP SERVICES INC. DATED MARCH 03, 2025.
16. AL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND STOCK PILLED ON SITE AS DIRECTED BY NATIONAL MUNICIPALITY.
17. THE SUBGRADE SHALL BE CROWNED AND SLOPED AT LEAST 2% AND PROOF ROLLED WITH HEAVY ROLLERS.
18. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'A', TYPE II COMPACTED IN MAXIMUM 300MM LIFTS.
19. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO MINIMUM OF 100% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
20. CONCRETE RAMP C/W TACTILE WALKING SURFACE INDICATORS COMPONENT AS PER OPSD 310.039. TACTILE WALKING SURFACE INDICATORS TO BE INSTALLED AT ALL RAMPS. MATERIAL TO BE POLYMER COMPOSITE, COLOR GREY.

SANITARY, FOUNDATION DRAIN, STORM SEWER AND WATERMAIN NOTES

GENERAL

1. LASER ALIGNMENT CONTROL TO BE UTILIZED ON ALL SEWER INSTALLATIONS.
2. CLAY SEALS TO BE INSTALLED AS PER CITY STANDARD DRAWING S8. THE SEALS SHOULD BE AT LEAST 1.5M LONG (IN THE TRENCH DIRECTION) AND SHOULD EXTEND FROM TRENCH WALL TO TRENCH WALL. THE SEALS SHOULD EXTEND FROM THE FROST LINE AND FULLY PENETRATE THE BEDDING, SUB-BEDDING, AND COVER MATERIAL. THE BARRIERS SHOULD CONSIST OF RELATIVELY DRY AND COMPATIBLE BROWN SILTY CLAY PLACED IN MAXIMUM 225MM LIFTS AND COMPACTED TO A MINIMUM OF 95% SPMDD. THE CLAY SEALS SHOULD BE PLACED AT THE SITE BOUNDARIES AND AT 60M INTERVALS IN THE SERVICE TRENCHES.
3. SERVICES TO BUILDING TO BE TERMINATED 1.0M FROM THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
4. ALL MAINTENANCE STRUCTURE AND CATCH BASIN EXCAVATIONS TO BE BACKFILLED WITH GRANULAR MATERIAL COMPACTED TO 98% STANDARD PROCTOR DENSITY. A MINIMUM OF 300MM AROUND STRUCTURES.
5. "MODULOC" OR APPROVED PRE-CAST MAINTENANCE STRUCTURE AND CATCH BASIN ADJUSTERS TO BE USED IN LIEU OF BRICKING. PARGE ADJUSTING UNITS ON THE OUTSIDE ONLY.
6. SAFETY PLATFORMS SHALL BE PER OPSD 404.02.
7. DROP STRUCTURES SHALL BE IN ACCORDANCE WITH OPSD 1003.01, IF APPLICABLE.
8. THE CONTRACTOR IS TO PROVIDE CCTV CAMERA INSPECTIONS OF ALL SEWERS, INCLUDING PICTORIAL REPORT, ONE (1) CD COPY AND TWO (2) VIDEO RECORDING IN A FORMAT ACCEPTABLE TO ENGINEER. ALL SEWER ARE TO BE FLUSHED PRIOR TO CAMERA INSPECTION. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS AND NECESSARY REPAIRS HAVE BEEN COMPLETED TO THE SATISFACTION OF THE ENGINEER.
9. CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPSS 407. CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF ALL SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF WEAR COURSE ASPHALT.

SANITARY

10. ALL SANITARY SEWER INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD). AND SPECIFICATIONS (OPSS).
11. ALL SANITARY GRAVITY SEWER SHALL BE PVC SDR 35, IPEX 'RING-TITE' (OR APPROVED EQUIVALENT) PER CSA STANDARD B182.2 OR LATEST AMENDMENT, UNLESS SPECIFIED OTHERWISE.
12. EXISTING MAINTENANCE STRUCTURES TO BE RE-BENCHED WHERE A NEW CONNECTION IS MADE.
13. SANITARY GRAVITY SEWER TRENCH AND BEDDING SHALL BE PER CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' BEDDING, UNLESS SPECIFIED OTHERWISE.
14. SANITARY MAINTENANCE STRUCTURE FRAME AND COVERS SHALL BE PER CITY OF OTTAWA STD. S24 AND S25.
15. SANITARY MAINTENANCE STRUCTURES SHALL BE BENCHED PER OPSD 701.021.
16. 100MM THICK HIGH-DENSITY GRADE 'A' POLYSTYRENE INSULATION TO BE INSTALLED IN ACCORDANCE WITH CITY STD W22 WHERE INDICATED ON DRAWING SSP-1.

STORM

17. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.2, OR LATEST AMENDMENT. ALL NON-REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.1, OR LATEST AMENDMENT. PIPE SHALL BE JOINED WITH STD. RUBBER GASKETS AS PER CSA A257.3, OR LATEST AMENDMENT.
18. ALL STORM SEWER TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
19. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
20. CATCH BASIN SHALL BE IN ACCORDANCE WITH OPSD 705.010.
21. CATCH BASIN LEADS SHALL BE IN 200MM DIA. AT 1% SLOPE (MIN) UNLESS SPECIFIED OTHERWISE.
22. ALL CATCH BASINS SHALL HAVE 600MM SUMPS, UNLESS SPECIFIED OTHERWISE.
23. ALL CATCH BASIN LEAD INVERTS TO BE 1.5M BELOW FINISHED GRADE UNLESS SPECIFIED OTHERWISE.
24. THE STORM SEWER CLASSES HAVE BEEN DESIGNED BASED ON BEDDING CONDITIONS SPECIFIED ABOVE. WHERE THE SPECIFIED TRENCH WIDTH IS EXCEEDED , THE CONTRACTOR IS REQUIRED TO PROVIDE AND SHALL BE RESPONSIBLE FOR EXTRA TEMPORARY AND/OR PERMANENT REPAIRS MADE NECESSARY BY THE WIDENED TRENCH.
25. ALL ROAD AND PARKING LOT CATCH BASINS TO BE INSTALLED WITH ORTHOGONALLY PLACED SUBDRAINS IN ACCORDANCE WITH DETAIL. PERFORATED SUBDRAIN FOR ROAD AND PARKING LOT CATCH BASIN SHALL BE INSTALLED PER CITY STD R1 UNLESS OTHERWISE NOTED.
26. PERFORATED SUBDRAIN FOR REAR YARD AND LANDSCAPING APPLICATIONS SHALL BE INSTALLED PER CITY STD S29, S30 AND S31, WHERE APPLICABLE.
27. RIP-RAP TREATMENT SEWER AND CULVERT OUTLETS PER OPSD 810.010.
28. ALL STORM SEWER/ CULVERTS TO BE INSTALLED WITH FROST TREATMENT PER OPSD 803.031 WHERE APPLICABLE.
29. ALL STORM MANHOLES WITH PIPE LESS THAN 900MM IN DIAMETER SHALL BE CONSTRUCTED WITH A 300MM SUMP AS PER SDG, CLAUSE 6.2.6.

WATERMAIN

30. ALL WATERMAIN INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS).
31. ALL PVC WATERMAINS SHALL BE AWWA C-900 CLASS 150, SDR 18 OR APPROVED EQUIVALENT.
32. ALL WATER SERVICES LESS THAN OR EQUAL TO 50MM IN DIAMETER TO BE TYPE 'K' COPPER.
33. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17. UNLESS SPECIFIED OTHERWISE. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY THE PROJECT GEOTECHNICAL ENGINEER.
34. ALL PVC WATERMAINS, SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W.36.
35. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS PER CITY OF OTTAWA STD.25.5 AND W25.6.
36. VALVE BOXES SHALL BE INSTALLED PER CITY OF OTTAWA STD W24.
37. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS PER CITY OF OTTAWA STD.25.5 AND W25.6.
38. THRUST BLOCKING OF WATERMAINS TO BE INSTALLED PER CITY OF OTTAWA STD. W25.3 AND W25.4.
39. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS, BLOW-OFFS, AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
40. WATERMAIN CROSSING OVER AND BELOW SEWERS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. W25,2 AND W25, RESPECTIVELY.
41. WATER SERVICES ARE TO BE INSULATED PER CITY STD. W23 WHERE SEPARATION BETWEEN SERVICES AND MAINTENANCE HOLES ARE LESS THAN 2.4M.
42. THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER/UTILITY IS 0.5M PER MOE GUIDELINES. FOR CROSSING UNDER SEWERS, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING TO ENSURE THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.
43. ALL WATERMAINS SHALL HAVE A MINIMUM COVER OF 2.4M, OTHERWISE THERMAL INSULATION IS REQUIRED AS PER STD DWG W22.
44. GENERAL WATER PLANT TO UTILITY CLEARANCE AS PER STD DWG R20.
45. BUILDING SERVICE TO BE CAPPED 1.0M OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED AND MUST BE RESTRAINED A MINIMUM OF 12M BACK FROM STUB.
46. ALL WATERMAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES UNLESS OTHERWISE DIRECTED. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED.
47. ALL WATERMAINS SHALL BE BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES. ALL CHLORINATED WATER TO BE DISCHARGED AND PRETREATED TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE. ALL DISCHARGED WATER MUST BE CONTROLLED AND TREATED SO AS NOT TO ADVERSELY EFFECT ENVIRONMENT. IT IS RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MUNICIPAL AND/OR PROVINCIAL REQUIREMENTS ARE FOLLOWED.
48. ALL WATERMAIN STUBS SHALL BE TERMINATED WITH A PLUG AND 50MM BLOW OFF UNLESS OTHERWISE NOTED.

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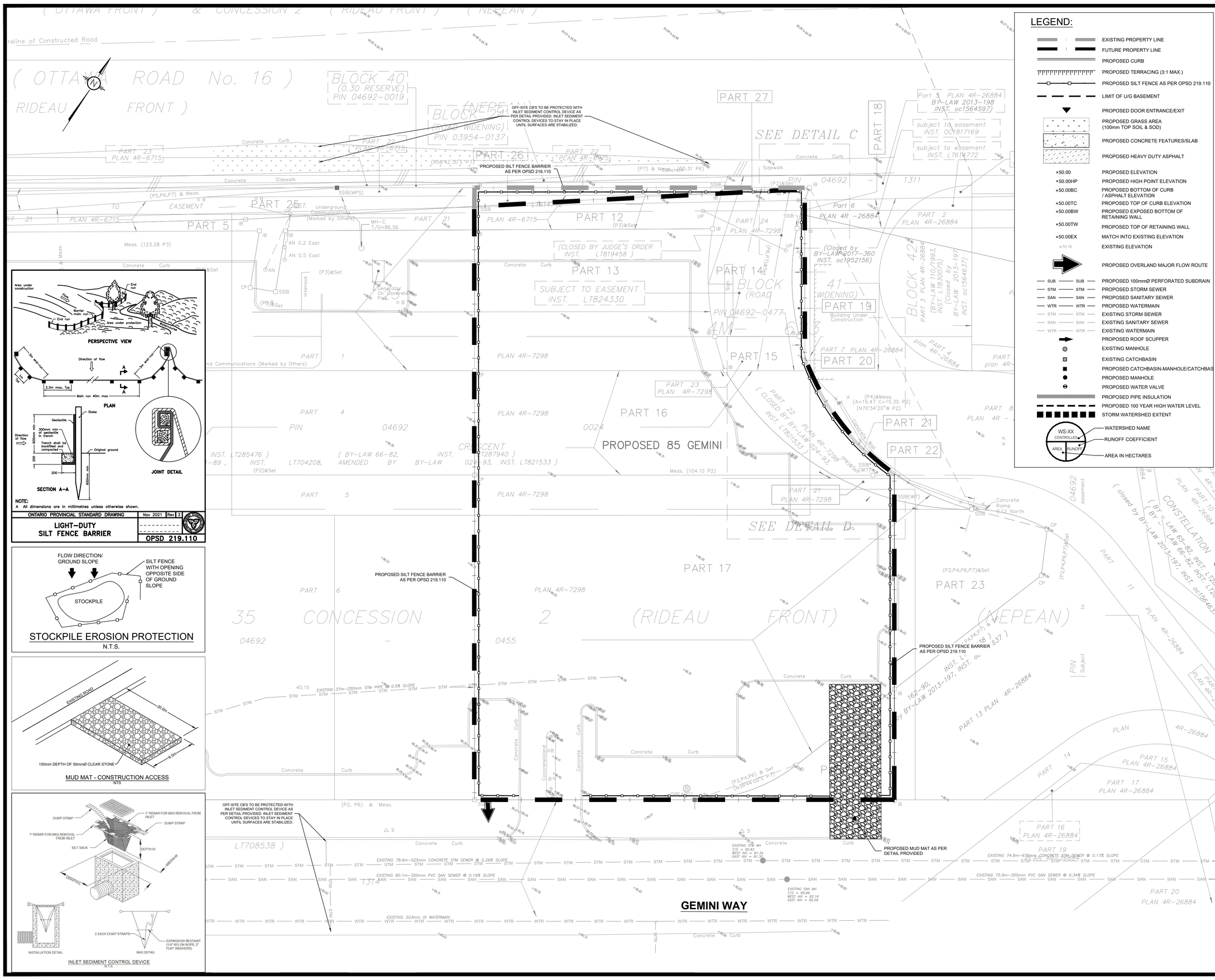
NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov. 2021	Rev. 3
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110

STOCKPILE EROSION PROTECTION
N.T.S.

MUD MAT - CONSTRUCTION ACCESS
NTS

INLET SEDIMENT CONTROL DEVICE
N.T.S.



LEGEND:

- EXISTING PROPERTY LINE
- FUTURE PROPERTY LINE
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- PROPOSED TERRACING (3:1 MAX.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
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- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
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- PROPOSED ROOF SCUPPER
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED WATER VALVE
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED / RUNOFF / AREA — WATERSHED NAME, RUNOFF COEFFICIENT, AREA IN HECTARES

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IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 2 0 5m
SCALE: 1:200

No.	REVISIONS	BY	DATE
03	RE- ISSUED FOR APPROVAL	S.V.	JAN 30 2026
02	RE-ISSUED FOR APPROVAL	S.V.	NOV 04 2025
01	ISSUED FOR APPROVAL	M.S.	JUL 17 2025

LICENSED PROFESSIONAL ENGINEER M. BASNET 100501996 2026/1/30 PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
CENTURION APPELT (1 CENTREPOINT) LP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
M.S.	M.S.	M.B.

PROJECT
PROPOSED 6-STOREY RESIDENTIAL BUILDING

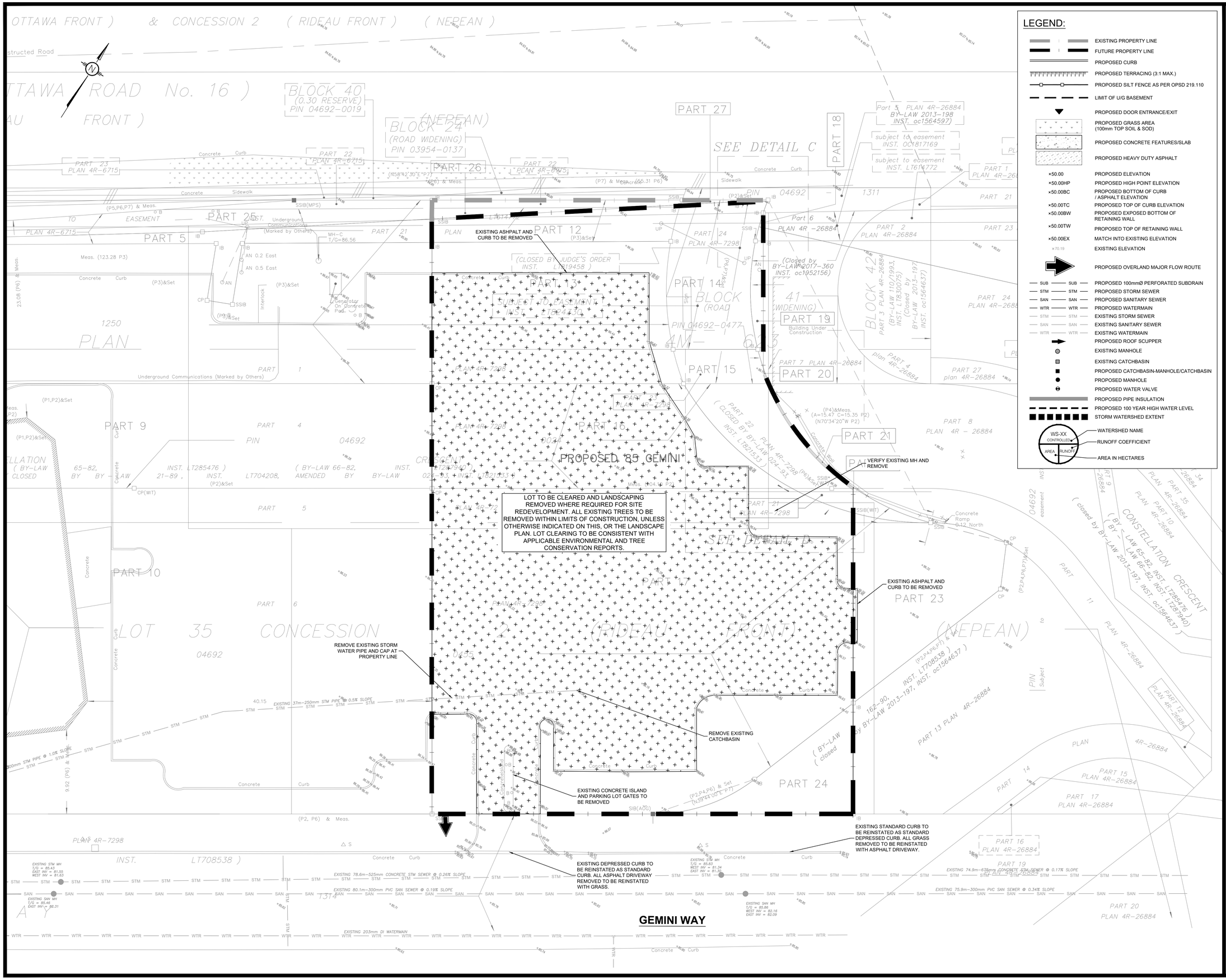
DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.
230088

C101

D07-12-25-0106

PLAN #19405



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- EXISTING CATCHBASIN
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- PROPOSED MANHOLE
- PROPOSED WATER VALVE
- PROPOSED PIPE INSULATION
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- STORM WATERSHED EXTENT
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5m 2 0 5m

SCALE: 1:200

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHANGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, (INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

No.	REVISIONS	BY	DATE
03	RE- ISSUED FOR APPROVAL	S.V.	JAN 30 2026
02	RE-ISSUED FOR APPROVAL	S.V.	NOV 04 2025
01	ISSUED FOR APPROVAL	M.S.	JUL 17 2025

LICENSED PROFESSIONAL ENGINEER — M. BASNET 100501996 — 2026/1/30 — PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT

CENTURION APPELT (1 CENTREPOINT) LP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
M.S.	M.S.	M.B.

PROJECT

PROPOSED 6-STOREY RESIDENTIAL BUILDING

DRAWING TITLE

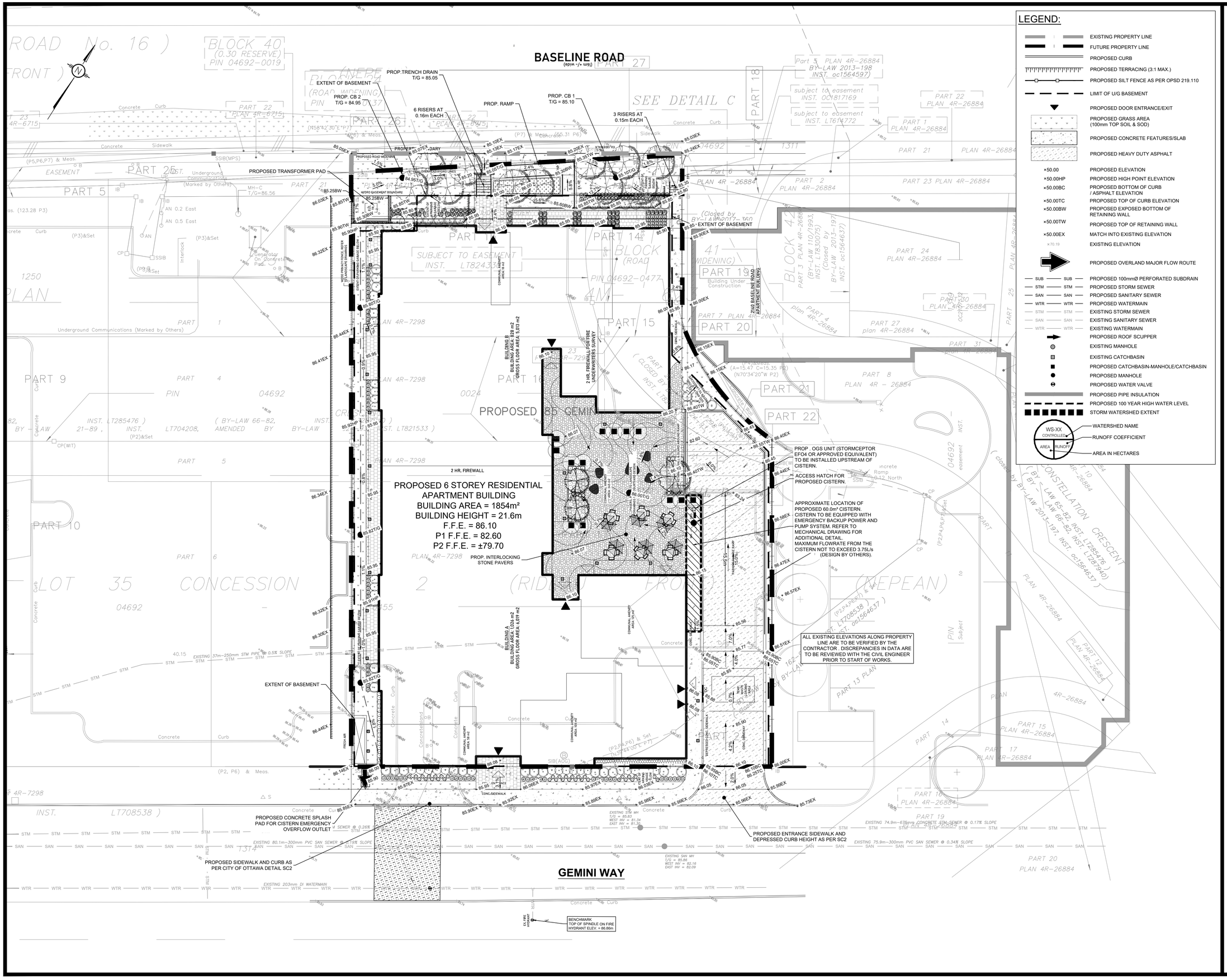
DEMOLITION PLAN

PROJECT NO.

230088 C102

D07-12-25-0106

PLAN #19405


BASELINE ROAD
(16m +/- wide)
PROP.TRENCH DRAIN
T/G = 85.05
EXTENT OF BASEMENT
PROP. CB 2
T/G = 84.95
6 RISERS AT
0.16m EACH
PROP. RAMP
PROP. CB 1
T/G = 85.10
3 RISERS AT
0.15m EACH
SEE DETAIL C
PROPER
PROPOSED TRANSFORMER PAD
PROPOSED ROAD WIDENING
OVERHEAD HYDRO LINES
HYDRO EASEMENT BOUNDARY
PROPOSED 85 GEMINI
2 HR. FIREWALL
PROPOSED 6 STOREY RESIDENTIAL
APARTMENT BUILDING
BUILDING AREA = 1854m²
BUILDING HEIGHT = 21.6m
F.F.E. = 86.10
P1 F.F.E. = 82.60
P2 F.F.E. = ±79.70
PROP. INTERLOCKING
STONE PAVERS
BUILDING B
BUILDING AREA: 828 m2
GROSS FLOOR AREA: 3,703 m2
BUILDING A
BUILDING AREA: 1024 m2
GROSS FLOOR AREA: 6,819 m2
2 HR. FIREWALL (OBC/FIRE UNDERWRITERS SURVEY)
COMMUNAL LAUNDRY AREA: 9.8 m2
COMMUNAL LAUNDRY AREA: 10 m2
COMMUNAL AMENITY AREA: 55 m2
COMMUNAL AMENITY AREA: 105 m2
PROP . OGS UNIT (STORMCEPTOR EFO4 OR APPROVED EQUIVALENT) TO BE INSTALLED UPSTREAM OF CISTERN.
ACCESS HATCH FOR PROPOSED CISTERN.
APPROXIMATE LOCATION OF PROPOSED 60.0m³ CISTERN. CISTERN TO BE EQUIPPED WITH EMERGENCY BACKUP POWER AND PUMP SYSTEM. REFER TO MECHANICAL DRAWING FOR ADDITIONAL DETAIL.
MAXIMUM FLOWRATE FROM THE CISTERN NOT TO EXCEED 3.75L/s (DESIGN BY OTHERS).
ALL EXISTING ELEVATIONS ALONG PROPERTY LINE ARE TO BE VERIFIED BY THE CONTRACTOR. DISCREPANCIES IN DATA ARE TO BE REVIEWED WITH THE CIVIL ENGINEER PRIOR TO START OF WORKS.
EXTENT OF BASEMENT
PROPOSED CONCRETE SPLASH PAD FOR CISTERN EMERGENCY OVERFLOW OUTLET
PROPOSED SIDEWALK AND CURB AS PER CITY OF OTTAWA DETAIL SC2
PROPOSED ENTRANCE SIDEWALK AND DEPRESSED CURB HEIGHT AS PER SC2
GEMINI WAY
BENCHMARK
TOP OF SPINDLE ON FIRE HYDRANT ELEV. = 86.86m
PART 1 PLAN 4R-26884
PART 2 PLAN 4R-26884
PART 5 PLAN 4R-26884
PART 6 PLAN 4R-26884
PART 7 PLAN 4R-26884
PART 8 PLAN 4R- 26884
PART 10 PLAN 4R-26884
PART 12 PLAN 4R-26884
PART 13 PLAN 4R-26884
PART 14 PLAN 4R-26884
PART 15 PLAN 4R-26884
PART 16 PLAN 4R-26884
PART 17 PLAN 4R-26884
PART 18 PLAN 4R-26884
PART 19 PLAN 4R-26884
PART 20 PLAN 4R-26884
PART 21 PLAN 4R-26884
PART 22 PLAN 4R-26884
PART 23 PLAN 4R-26884
PART 24 PLAN 4R-26884
PART 25 PLAN 4R-26884
PART 27 plan 4R-26884
PART 31 PLAN 4R-26884
BLOCK 40 (0.30 RESERVE) PIN 04692-0019
BLOCK 41 (ROAD WIDENING) PIN 04692-0477
BLOCK 42 (ROAD WIDENING) PIN 04692-0024
CONSTELLATION CRESCENT
LOT 35 CONCESSION 2 (RIDEAU FRONTAGE)
(REPEAN)
EXISTING 37m–250mm STM PIPE @ 0.5% SLOPE
EXISTING 80.1m–300mm PVC SAN SEWER @ 0.19% SLOPE
EXISTING 203mm DI WATERMAIN
EXISTING 74.9m–675mm CONCRETE STM SEWER @ 0.17% SLOPE
EXISTING 75.9m–300mm PVC SAN SEWER @ 0.34% SLOPE
EXISTING STM MH T/G = 85.83 WEST INV = 81.34 EAST INV = 81.34
EXISTING SAN MH T/G = 85.86 WEST INV = 82.16 EAST INV = 82.09
Underground Communications (Marked by Others)
Concrete
Curb
Sidewalk
Interlock
Limit of Concrete Pad
CP
SSIB
AN 0.2 East
AN 0.5 East
MH–C T/G=86.56
WOOD PRIVACY FENCE, REFER TO LANDSCAPE DRAWING
EXTENT OF BASEMENT BELOW
CONC. SIDEWALK
DEPRESSED CONC. SIDEWALK
CONC. CURB RAMP
TACTILE WALKING SURFACE INDICATORS
2.4%
4.0%
7.0%
4.2%
2.0%
0.7%
1.5%
5.0%
3.0%
1.8%
5.6%
0.5%
0.8%
1.0%
1.6%
1.7%
1.9%
2.1%
2.2%
2.3%
2.5%
2.6%
2.7%
2.8%
2.9%
3.1%
3.2%
3.3%
3.4%
3.5%
3.6%
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9.8%
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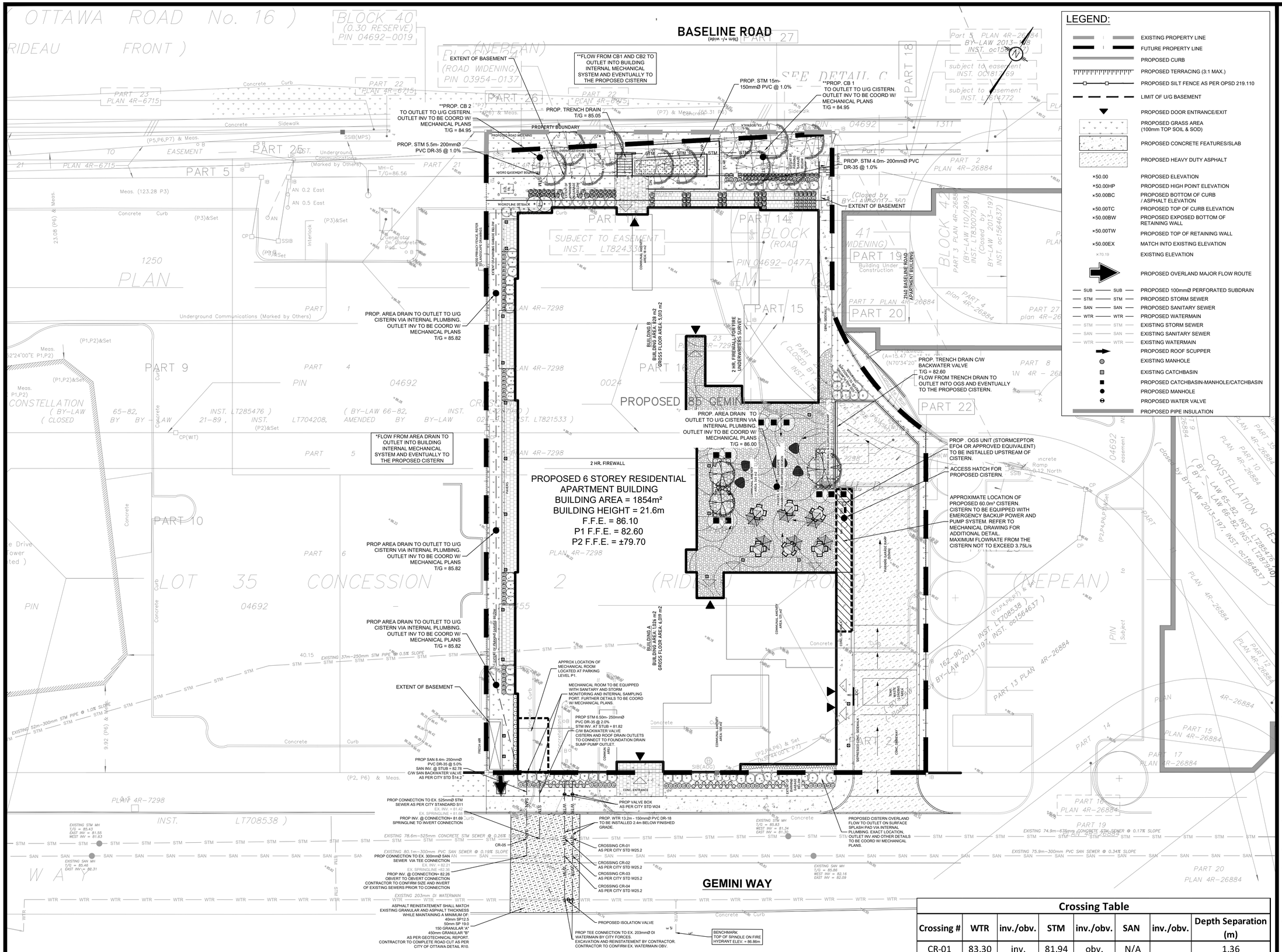
10.0%
10.1%
10.2%
10.3%
10.4%
10.5%
10.6%
10.7%
10.8%
10.9%
11.0%


BASELINE ROAD
(18m +/- wide)
EXTENT OF BASEMENT
**FLOW FROM CB1 AND CB2 TO OUTLET INTO BUILDING INTERNAL MECHANICAL SYSTEM AND EVENTUALLY TO THE PROPOSED CISTERN
**PROP. CB 2 TO OUTLET TO U/G CISTERN. OUTLET INV/ TO BE COORD W/ MECHANICAL PLANS T/G = 84.95
PROP. TRENCH DRAIN T/G = 85.05
PROP. STM 15m-150mmØ PVC @ 1.0%
**PROP. CB 1 TO OUTLET TO U/G CISTERN. OUTLET INV/ TO BE COORD W/ MECHANICAL PLANS T/G = 84.95
PROP. STM 5.5m- 200mmØ PVC DR-35 @ 1.0%
PROP. STM 4.0m- 200mmØ PVC DR-35 @ 1.0%
EXTENT OF BASEMENT
PROP. AREA DRAIN TO OUTLET TO U/G CISTERN VIA INTERNAL PLUMBING. OUTLET INV/ TO BE COORD W/ MECHANICAL PLANS T/G = 85.82
PROP. AREA DRAIN TO OUTLET TO U/G CISTERN VIA INTERNAL PLUMBING OUTLET INV/ TO BE COORD W/ MECHANICAL PLANS T/G = 86.00
PROP. TRENCH DRAIN C/W BACKWATER VALVE T/G = 82.60 FLOW FROM TRENCH DRAIN TO OUTLET INTO OGS AND EVENTUALLY TO THE PROPOSED CISTERN.
*FLOW FROM AREA DRAIN TO OUTLET INTO BUILDING INTERNAL MECHANICAL SYSTEM AND EVENTUALLY TO THE PROPOSED CISTERN
PROPOSED 6 STOREY RESIDENTIAL APARTMENT BUILDING
BUILDING AREA = 1854m²
BUILDING HEIGHT = 21.6m
F.F.E. = 86.10
P1 F.F.E. = 82.60
P2 F.F.E. = ±79.70
2 HR. FIREWALL
PROPOSED 85 GEMINI
PROP , OGS UNIT (STORMCEPTOR EFO4 OR APPROVED EQUIVALENT) TO BE INSTALLED UPSTREAM OF CISTERN.
ACCESS HATCH FOR PROPOSED CISTERN.
APPROXIMATE LOCATION OF PROPOSED 60.0m³ CISTERN. CISTERN TO BE EQUIPPED WITH EMERGENCY BACKUP POWER AND PUMP SYSTEM. REFER TO MECHANICAL DRAWING FOR ADDITIONAL DETAIL. MAXIMUM FLOWRATE FROM THE CISTERN NOT TO EXCEED 3.75L/s
PROP AREA DRAIN TO OUTLET TO U/G CISTERN VIA INTERNAL PLUMBING. OUTLET INV/ TO BE COORD W/ MECHANICAL PLANS T/G = 85.82
PROP AREA DRAIN TO OUTLET TO U/G CISTERN VIA INTERNAL PLUMBING. OUTLET INV/ TO BE COORD W/ MECHANICAL PLANS T/G = 85.82
EXTENT OF BASEMENT
APPROX LOCATION OF MECHANICAL ROOM LOCATED AT PARKING LEVEL P1.
MECHANICAL ROOM TO BE EQUIPPED WITH SANITARY AND STORM MONITORING AND INTERNAL SAMPLING PORT. FURTHER DETAILS TO BE COORD W/ MECHANICAL PLANS.
PROP STM 6.50m- 250mmØ PVC DR-35 @ 2.0% STM INV. AT STUB = 81.82 C/W BACKWATER VALVE CISTERN AND ROOF DRAIN OUTLETS TO CONNECT TO FOUNDATION DRAIN SUMP PUMP OUTLET.
PROP SAN 8.4m- 250mmØ PVC DR-35 @ 5.0% SAN INV. @ STUB = 82.78 C/W SAN BACKWATER VALVE AS PER CITY STD S14.2
PROP CONNECTION TO EX. 525mmØ STM SEWER AS PER CITY STANDARD S11
PROP INV. @ CONNECTION= 81.69 SPRINGLINE TO INVERT CONNECTION
PROP. WTR 13.2m - 150mmØ PVC DR-18 TO BE INSTALLED 2.4m BELOW FINISHED GRADE.
CR-05
PROP CONNECTION TO EX. 300mmØ SAN SEWER VIA TEE CONNECTION
PROP INV. @ CONNECTION= 82.26 OBVERT TO OBVERT CONNECTION CONTRACTOR TO CONFIRM SIZE AND INVERT OF EXISTING SEWERS PRIOR TO CONNECTION
ASPHALT REINSTATEMENT SHALL MATCH EXISTING GRANULAR AND ASPHALT THICKNESS WHILE MAINTAINING A MINIMUM OF: 40mm SP12.5 50mm SP 19.0 150 GRANULAR "A" 450mm GRANULAR "B" AS PER GEOTECHNICAL REPORT. CONTRACTOR TO COMPLETE ROAD CUT AS PER CITY OF OTTAWA DETAIL R10.
CROSSING CR-01 AS PER CITY STD W25.2
CROSSING CR-02 AS PER CITY STD W25.2
CROSSING CR-03 AS PER CITY STD W25.2
CROSSING CR-04 AS PER CITY STD W25.2
PROPOSED ISOLATION VALVE
PROP TEE CONNECTION TO EX. 203mmØ DI WATERMAIN BY CITY FORCES. EXCAVATION AND REINSTATEMENT BY CONTRACTOR. CONTRACTOR TO CONFIRM EX. WATERMAIN OBV.
BENCHMARK TOP OF SPINDLE ON FIRE HYDRANT ELEV. = 86.86m
PROPOSED CISTERN OVERLAND FLOW TO OUTLET ON SURFACE SPLASH PAD VIA INTERNAL PLUMBING. EXACT LOCATION, OUTLET INV AND OTHER DETAILS TO BE COORD W/ MECHANICAL PLANS.
GEMINI WAY
BASELINE ROAD APARTMENT BUILDING
OTTAWA ROAD No. 16
BLOCK 40 (0.30 RESERVE) PIN 04692-0019
RIDEAU FRONT
CONSTELLATION
LOT 35 CONCESSION 2 (RIDEAU FRONT) (NEPEAN)
PART 1 PLAN 4R-7298
PART 2 PLAN 4R-26884
PART 3 PLAN 4R-26884
PART 4 PLAN 4R-26884
PART 5 PLAN 4R-26884
PART 6 PLAN 4R-26884
PART 7 PLAN 4R-26884
PART 8 PLAN 4R-26884
PART 9 PLAN 4R-26884
PART 10 PLAN 4R-26884
PART 11 PLAN 4R-26884
PART 12 PLAN 4R-26884
PART 13 PLAN 4R-26884
PART 14 PLAN 4R-26884
PART 15 PLAN 4R-26884
PART 16 PLAN 4R-26884
PART 17 PLAN 4R-26884
PART 18 PLAN 4R-26884
PART 19 PLAN 4R-26884
PART 20 PLAN 4R-26884
PART 21 PLAN 4R-6715
PART 22 PLAN 4R-6715
PART 23 PLAN 4R-6715
PART 25 PLAN 4R-6715
PART 26 PLAN 4R-6715
PART 27 PLAN 4R-6715
Part 5 PLAN 4R-26884 BY-LAW 2013-197 INST. oc1564637
Part 6 PLAN 4R-26884
Part 7 PLAN 4R-26884
Part 8 PLAN 4R-26884
Part 9 PLAN 4R-26884
Part 10 PLAN 4R-26884
Part 11 PLAN 4R-26884
Part 12 PLAN 4R-26884
Part 13 PLAN 4R-26884
Part 14 PLAN 4R-26884
Part 15 PLAN 4R-26884
Part 16 PLAN 4R-26884
Part 17 PLAN 4R-26884
Part 18 PLAN 4R-26884
Part 19 PLAN 4R-26884
Part 20 PLAN 4R-26884
Part 21 PLAN 4R-6715
Part 22 PLAN 4R-6715
Part 23 PLAN 4R-6715
Part 25 PLAN 4R-6715
Part 26 PLAN 4R-6715
Part 27 PLAN 4R-6715
PIN 04692-0477
PIN 04692-0478
PIN 04692-0479
PIN 04692-0480
PIN 04692-0481
PIN 04692-0482
PIN 04692-0483
PIN 04692-0484
PIN 04692-0485
PIN 04692-0486
PIN 04692-0487
PIN 04692-0488
PIN 04692-0489
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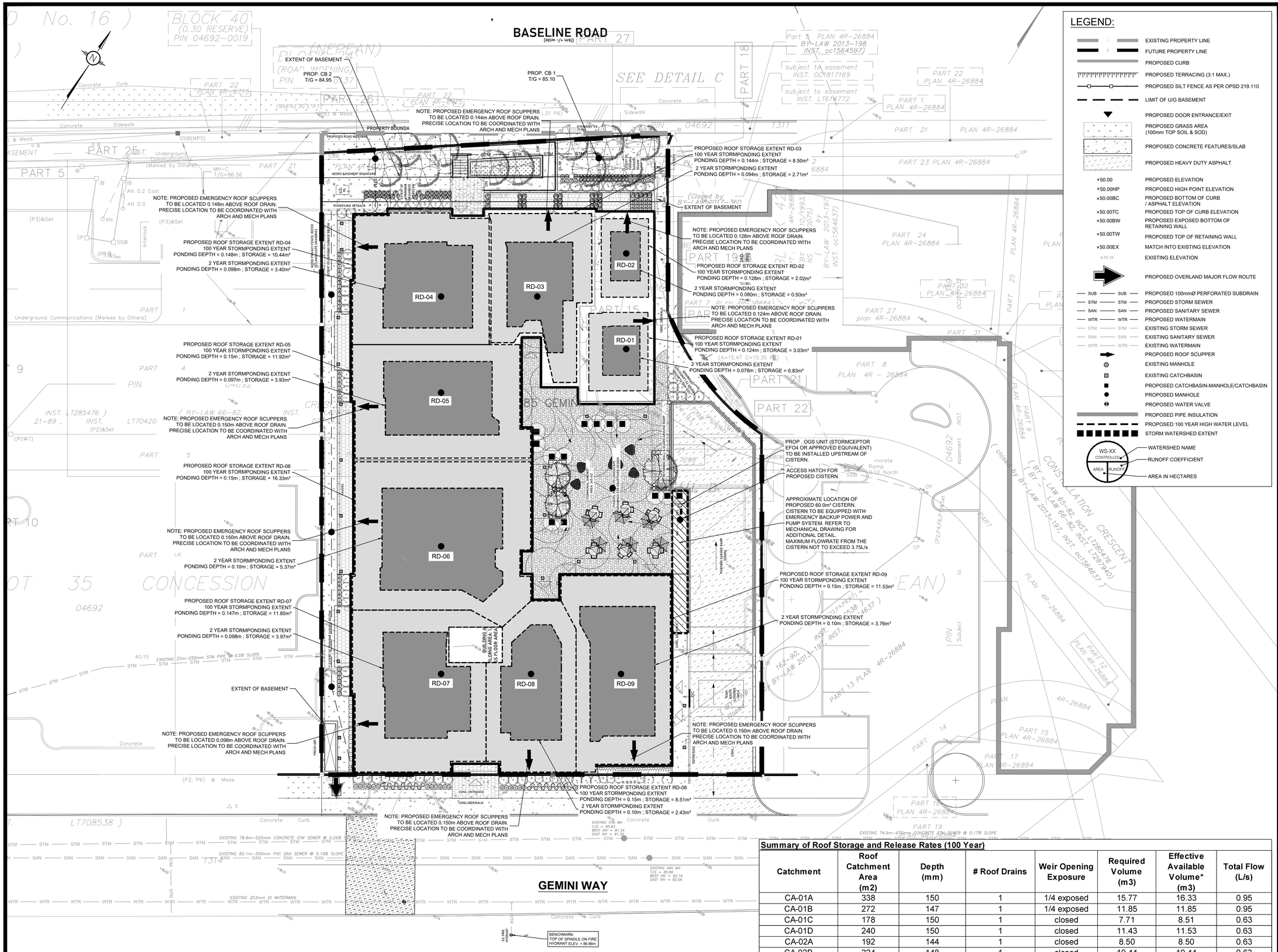
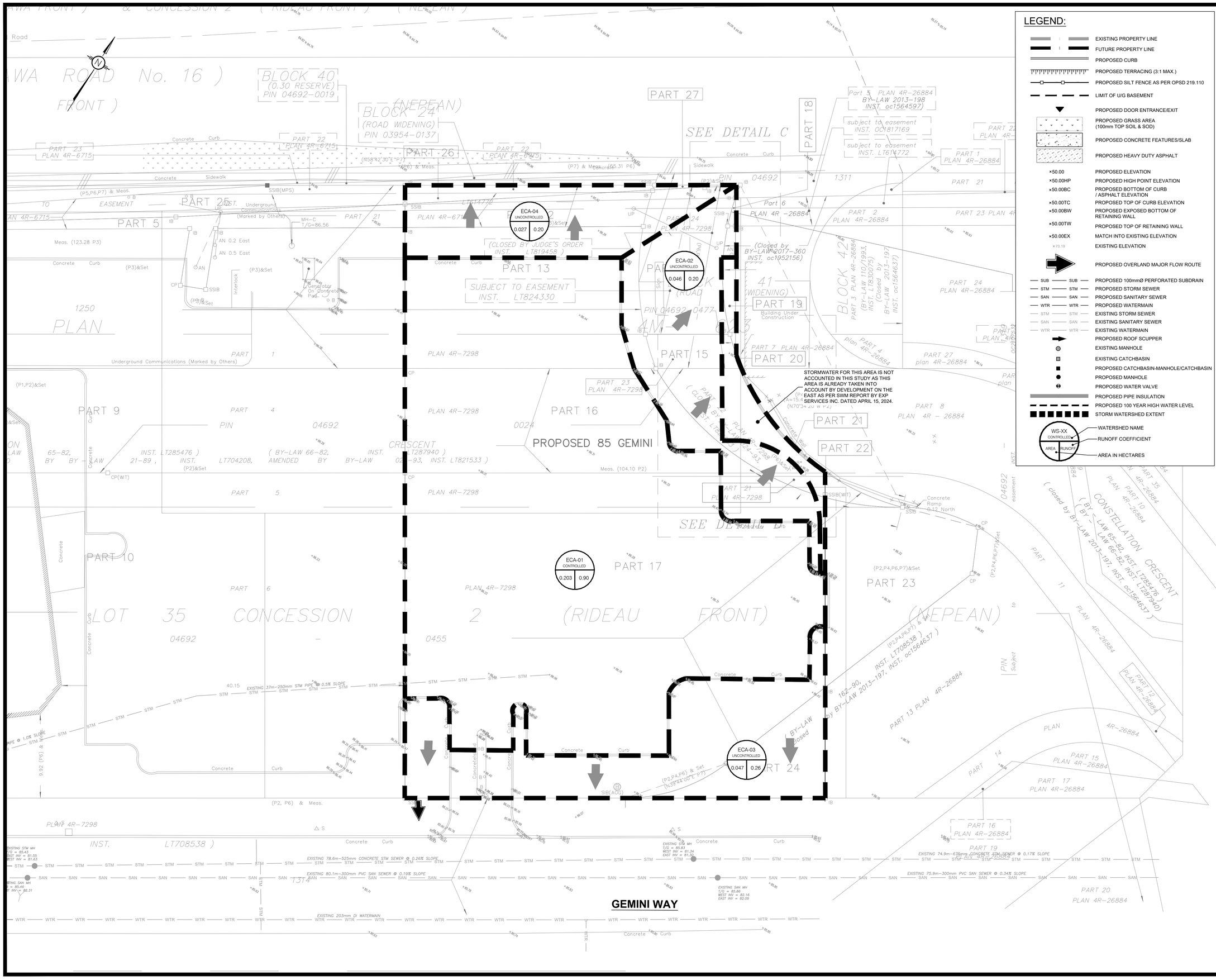
PIN 04692-0495
PIN 04692-0496
PIN


BASELINE ROAD
GEMINI WAY
EXTENT OF BASEMENT
PROP. CB 2
T/G = 84.95
PROP. CB 1
T/G = 85.10
PROPERTY BOUNDARY
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.144m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-03
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.144m ; STORAGE = 8.50m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.094m ; STORAGE = 2.71m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.148m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-04
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.148m ; STORAGE = 10.44m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.098m ; STORAGE = 3.40m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.128m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-02
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.128m ; STORAGE = 2.02m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.080m ; STORAGE = 0.50m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.124m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-01
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.124m ; STORAGE = 3.03m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.078m ; STORAGE = 0.83m³
PROPOSED ROOF STORAGE EXTENT RD-05
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.15m ; STORAGE = 11.92m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.097m ; STORAGE = 3.93m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.150m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-06
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.15m ; STORAGE = 16.33m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.150m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.10m ; STORAGE = 5.37m³
PROPOSED ROOF STORAGE EXTENT RD-07
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.147m ; STORAGE = 11.85m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.098m ; STORAGE = 3.97m³
EXTENT OF BASEMENT
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.098m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-09
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.15m ; STORAGE = 11.53m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.10m ; STORAGE = 3.76m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.150m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROPOSED ROOF STORAGE EXTENT RD-08
100 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.15m ; STORAGE = 8.51m³
2 YEAR STORMPONDING EXTENT
PONDING DEPTH = 0.10m ; STORAGE = 2.43m³
NOTE: PROPOSED EMERGENCY ROOF SCUPPERS TO BE LOCATED 0.150m ABOVE ROOF DRAIN. PRECISE LOCATION TO BE COORDINATED WITH ARCH AND MECH PLANS
PROP . OGS UNIT (STORMCEPTOR EF04 OR APPROVED EQUIVALENT) TO BE INSTALLED UPSTREAM OF CISTERN.
ACCESS HATCH FOR PROPOSED CISTERN.
APPROXIMATE LOCATION OF PROPOSED 60.0m³ CISTERN. CISTERN TO BE EQUIPPED WITH EMERGENCY BACKUP POWER AND PUMP SYSTEM. REFER TO MECHANICAL DRAWING FOR ADDITIONAL DETAIL. MAXIMUM FLOWRATE FROM THE CISTERN NOT TO EXCEED 3.75L/s
RD-01
RD-02
RD-03
RD-04
RD-05
RD-06
RD-07
RD-08
RD-09
BUILDING AREA (LOWEST FLOOR AREA)
SEE DETAIL C
PART 25 PLAN 4R-26884
PART 1 PLAN 4R-26884
PART 21 PLAN 4R-26884
PART 22 PLAN 4R-26884
PART 23 PLAN 4R-26884
PART 24 PLAN 4R-26884
PART 27 plan 4R-26884
PART 8 PLAN 4R - 26884
PART 13 PLAN 4R-26884
PART 14 PLAN 4R-26884
PART 15 PLAN 4R-26884
PART 17 PLAN 4R-26884
PART 19 PLAN 4R-26884
PART 31 PLAN 4R-26884
PART 12 PLAN 4R-26884
PART 9 PLAN 4R-26884
Part 5 PLAN 4R-26884 BY-LAW 2013-198 INST. oc1564597)
subject to easement INST. OC1817169
subject to easement INST. LT617772
BENCHMARK TOP OF SPINDLE ON FIRE HYDRANT ELEV. = 86.86m
EXISTING 78.6m–525mm CONCRETE STM SEWER @ 0.26%
EXISTING 80.1m–300mm PVC SAN SEWER @ 0.19% SLOPE
EXISTING 203mm DI WATERMAIN
EXISTING 37m–250mm STM PIPE @ 0.5% SLOPE
EXISTING 74.9m–675mm CONCRETE STM SEWER @ 0.17% SLOPE
EXISTING STM MH T/G = 85.83 WEST INV = 81.34 EAST INV = 81.39
EXISTING SAN MH T/G = 85.86 WEST INV = 82.16 EAST INV = 82.09
EXISTING STM MH T/G = 85.84 WEST INV = 81.39 EAST INV = 81.44
EXISTING STM MH T/G = 85.83 WEST INV = 81.44 EAST INV = 81.49
EXISTING STM MH T/G = 85.83 WEST INV = 81.49 EAST INV = 81.54
EXISTING STM MH T/G = 85.83 WEST INV =



STORMWATER FOR THIS AREA IS NOT ACCOUNTED IN THIS STUDY AS THIS AREA IS ALREADY TAKEN INTO ACCOUNT BY DEVELOPMENT ON THE EAST AS PER SWM REPORT BY EXP SERVICES INC. DATED APRIL 15, 2024.

LEGEND:

▬ ▬	EXISTING PROPERTY LINE
▬ ▬	FUTURE PROPERTY LINE
═	PROPOSED CURB
┬┬┬┬	PROPOSED TERRACING (3:1 MAX.)
—□—□—	PROPOSED SILT FENCE AS PER OPSD 219.110
— — —	LIMIT OF U/G BASEMENT
▼	PROPOSED DOOR ENTRANCE/EXIT
▨	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
▨	PROPOSED CONCRETE FEATURES/SLAB
▨	PROPOSED HEAVY DUTY ASPHALT
×50.00	PROPOSED ELEVATION
×50.00HP	PROPOSED HIGH POINT ELEVATION
×50.00BC	PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
×50.00TC	PROPOSED TOP OF CURB ELEVATION
×50.00BW	PROPOSED EXPOSED BOTTOM OF RETAINING WALL
×50.00TW	PROPOSED TOP OF RETAINING WALL
×50.00EX	MATCH INTO EXISTING ELEVATION
×70.19	EXISTING ELEVATION
➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
— SUB — SUB —	PROPOSED 100mmØ PERFORATED SUBDRAIN
— STM — STM —	PROPOSED STORM SEWER
— SAN — SAN —	PROPOSED SANITARY SEWER
— WTR — WTR —	PROPOSED WATERMAIN
— STM — STM —	EXISTING STORM SEWER
— SAN — SAN —	EXISTING SANITARY SEWER
— WTR — WTR —	EXISTING WATERMAIN
➡	PROPOSED ROOF SCUPPER
●	EXISTING MANHOLE
■	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
●	PROPOSED MANHOLE
⊗	PROPOSED WATER VALVE
▬	PROPOSED PIPE INSULATION
— — —	PROPOSED 100 YEAR HIGH WATER LEVEL
■ ■ ■	STORM WATERSHED EXTENT

WS-XX CONTROLLED / AREA / RUNOFF

WATERSHED NAME
RUNOFF COEFFICIENT
AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 2 0 5m

SCALE: 1:200

No.	REVISIONS	BY	DATE
03	RE- ISSUED FOR APPROVAL	S.V.	JAN 30 2026
02	RE-ISSUED FOR APPROVAL	S.V.	NOV 04 2025
01	ISSUED FOR APPROVAL	M.S.	JUL 17 2025

M. BASNET
100501996
2026/1/30

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
CENTURION APPELT (1 CENTREPOINT) LP

DESIGNED BY: M.S.
DRAWN BY: M.S.
APPROVED BY: M.B.

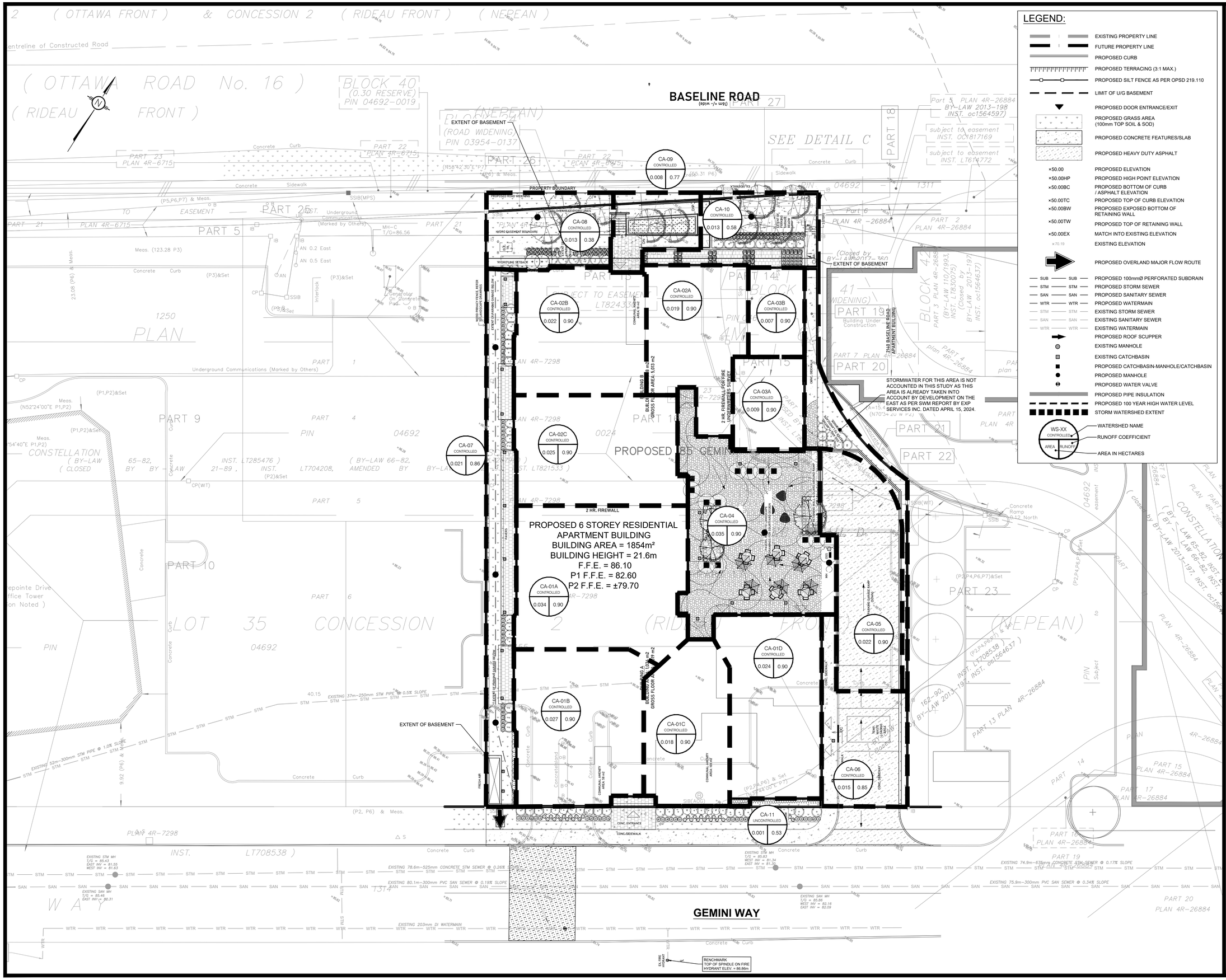
PROJECT
PROPOSED 6-STOREY
RESIDENTIAL BUILDING

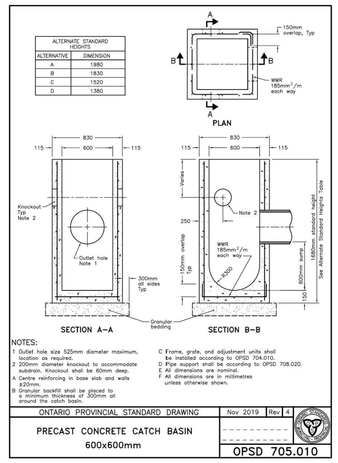
DRAWING TITLE
PRE-DEVELOPMENT
WATERSHED PLAN

PROJECT NO.
230088
C701

D07-12-25-0106

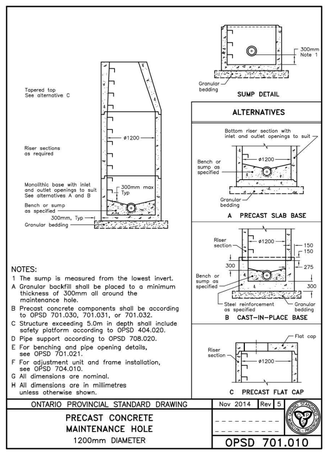
PLAN #19405


BASELINE ROAD
(16m +/- width)
EXTENT OF BASEMENT
PROPERTY BOUNDARY
PROPOSED 6 STOREY RESIDENTIAL APARTMENT BUILDING
BUILDING AREA = 1854m²
BUILDING HEIGHT = 21.6m
F.F.E. = 86.10
P1 F.F.E. = 82.60
P2 F.F.E. = ±79.70
2 HR. FIREWALL
BUILDING A GROSS FLOOR AREA: 1,509 m2
BUILDING B GROSS FLOOR AREA: 5,013 m2
CA-01A CONTROLLED 0.034 0.90
CA-01B CONTROLLED 0.027 0.90
CA-01C CONTROLLED 0.018 0.90
CA-01D CONTROLLED 0.024 0.90
CA-02A CONTROLLED 0.019 0.90
CA-02B CONTROLLED 0.022 0.90
CA-02C CONTROLLED 0.025 0.90
CA-03A CONTROLLED 0.009 0.90
CA-03B CONTROLLED 0.007 0.90
CA-04 CONTROLLED 0.035 0.90
CA-05 CONTROLLED 0.022 0.90
CA-06 CONTROLLED 0.015 0.85
CA-07 CONTROLLED 0.021 0.86
CA-08 CONTROLLED 0.013 0.38
CA-09 CONTROLLED 0.008 0.77
CA-10 CONTROLLED 0.013 0.58
CA-11 UNCONTROLLED 0.001 0.53
STORMWATER FOR THIS AREA IS NOT ACCOUNTED IN THIS STUDY AS THIS AREA IS ALREADY TAKEN INTO ACCOUNT BY DEVELOPMENT ON THE EAST AS PER SWM REPORT BY EXP SERVICES INC. DATED APRIL 15, 2024.
GEMINI WAY
BENCHMARK
TOP OF SPINDLE ON FIRE HYDRANT ELEV. = 86.86m
SEE DETAIL C
PART 1 PLAN 4R-7298
PART 2 PLAN 4R-26884
PART 3 PLAN 4R-26884
PART 4 PLAN 4R-26884
PART 5 PLAN 4R-26884
PART 6 PLAN 4R-26884
PART 7 PLAN 4R-26884
PART 8 PLAN 4R-26884
PART 9 PLAN 4R-26884
PART 10 PLAN 4R-26884
PART 11 PLAN 4R-26884
PART 12 PLAN 4R-26884
PART 13 PLAN 4R-26884
PART 14 PLAN 4R-26884
PART 15 PLAN 4R-26884
PART 16 PLAN 4R-26884
PART 17 PLAN 4R-26884
PART 18 PLAN 4R-26884
PART 19 PLAN 4R-26884
PART 20 PLAN 4R-26884
PART 21 PLAN 4R-26884
PART 22 PLAN 4R-26884
PART 23 PLAN 4R-26884
PART 25 PLAN 4R-6715
PART 26 PLAN 4R-6715
PART 27 PLAN 4R-6715
BLOCK 40 (0.30 RESERVE) PIN 04692-0019
(OTTAWA ROAD No. 16)
(RIDEAU FRONT)
(NEPEAN)
CONSTELLATION (BY-LAW 65-82, BY-LAW 66-82, BY-LAW 21-89, BY-LAW 2013-197)
LOT 35 CONCESSION 2 (RIDEAU FRONT) (NEPEAN)
1250 PLAN
Centreline of Constructed Road
Underground Communications (Marked by Others)
EXISTING 37m-250mm STM PIPE @ 0.5% SLOPE
EXISTING 52m-300mm STM PIPE @ 1.0% SLOPE
EXISTING 78.6m-525mm CONCRETE STM SEWER @ 0.26% SLOPE
EXISTING 80.1m-300mm PVC SAN SEWER @ 0.19% SLOPE
EXISTING 74.9m-675mm CONCRETE STM SEWER @ 0.17% SLOPE
EXISTING 75.9m-300mm PVC SAN SEWER @ 0.34% SLOPE
EXISTING 203mm DI WATERMAIN
EXISTING STM MH T/G = 85.43 EAST INV = 81.55 WEST INV = 81.63
EXISTING STM MH T/G = 85.46 EAST INV = 80.31
EXISTING STM MH T/G = 85.83 WEST INV = 81.34 EAST INV = 81.30
EXISTING STM MH T/G = 85.86 WEST INV = 82.16 EAST INV = 82.09
EXISTING SAN MH T/G = 85.46 WEST INV = 82.19 EAST INV = 82.09
Part 5 PLAN 4R-26884 BY-LAW 2013-198 INST. oc1564597
subject to easement INST. OC1817169
subject to easement INST. LT617772
(Closed by BY-LAW2017-160 INST. oc1564637)
7140 BASELINE ROAD APARTMENT BUILDING
Building Under Construction
Concrete Ramp 0.12 North
Concrete Curb
Sidewalk
Interlock
Meas. (123.28 P3)
(P1,P2)&Set
(P3)&Set
(P5,P6,P7) & Meas.
(P2, P6) & Meas.
(P2,P4,P6,P7)&Set
(N58°42'30"E P7)
(65.31 P6)
(N52°24'00"E P1,P2)
(N54°40'E P1,P2)
(N70°34'40"W P4)
(N70°34'40"E P7)
162.90 (P2,P4,P6,P7) & Set
9.92 (P6) & Meas.
23.08 (P6) & Meas.
40.15
SSIB(MPS)
SSIB(WIT)
SSIB(AGO)
CP(WIT)
MH-C T/G=86.56
Generator On Concrete Pad
OVERHEAD HYDRO LINES
HYDRO EASEMENT BOUNDARY
HYDRO LINE SETBACK
PROPOSED ROAD WIDENING
EXTENT OF DEPARMING (LAND) BELOW
WOOD PRIVACY FENCE, REFER TO LANDSCAPE DRAWINGS
CONCRETE SIDEWALK
CONCRETE CURB
PAVERS
CONCRETE PLANTER
CONCRETE STEPS
CONCRETE RAMP
PARKING GARAGE RAMP (DOWN)
PARKING GARAGE RAMP (UP)
CONCRETE LANDING
CONCRETE PLANTER AREA: 9.3 m2
CONCRETE PLANTER AREA: 4.3 m2
CONCRETE PLANTER AREA: 3.4 m2
CONCRETE PLANTER AREA: 3.5 m2
CONCRETE PLANTER AREA: 3.6 m2
CONCRETE PLANTER AREA: 3.7 m2
CONCRETE PLANTER AREA: 3.8 m2
CONCRETE PLANTER AREA: 3.9 m2
CONCRETE PLANTER AREA: 4.0 m2
CONCRETE PLANTER AREA: 4.1 m2
CONCRETE PLANTER AREA:



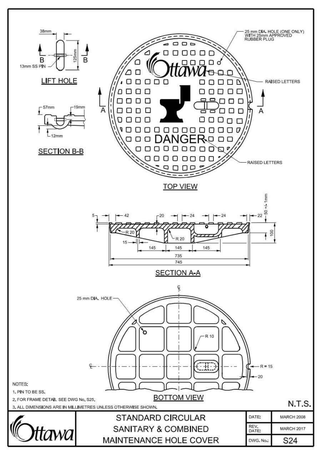
NOTES:
1. Outlet hole size 525mm diameter maximum, location as required.
2. 200mm diameter knockout to accommodate subdrain. Knockout shall be 60mm deep.
A Centre reinforcing in base slab and walls ±20mm.
B Granular backfill shall be placed to a minimum thickness of 300mm at around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.
D Pipe support shall be according to OPSD 708.020.
E All dimensions are in nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 4
PRECAST CONCRETE CATCH BASIN 600x600mm		
		OPSD 705.010



NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For barrel and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

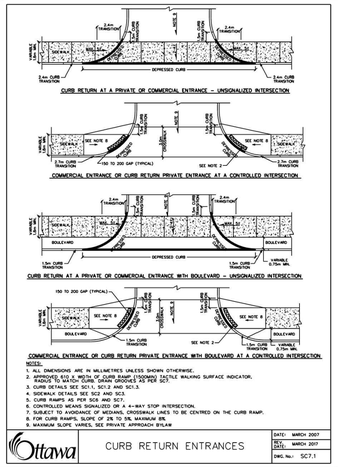
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		
		OPSD 701.010



NOTES:
1. PIN TO BE SS.
2. FOR FRAME DETAIL, SEE DWG No. S25.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

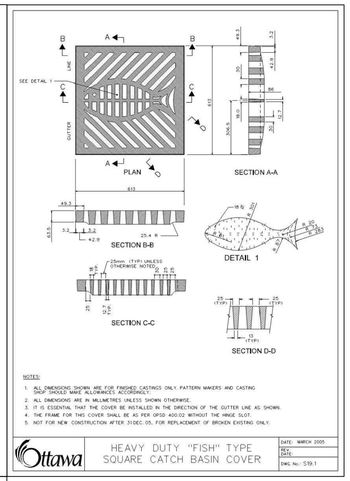
N.T.S.

STANDARD CIRCULAR SANITARY & COMBINED MAINTENANCE HOLE COVER	DATE:	MARCH 2008
	REV. DATE:	MARCH 2017
	DWG No.:	S24



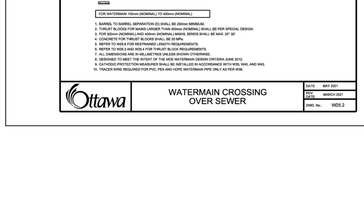
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. RADIUS TO BACK OF CURB. GRADE CHANGE ACROSS SECTION.
3. CURB DETAILS SEE SC1.1, SC1.2 AND SC1.3.
4. SIDEWALK DETAILS SEE SC2 AND SC3.
5. CURB RAMPS AS PER SC6 AND SC7.
6. CONTROLLED MEANS SIGNALIZED OR A 4-WAY STOP INTERSECTION.
7. SUBJECT TO AVOIDANCE OF MEDIANS, CROSSWALK LINES TO BE CENTRED ON THE CURB RAMP.
8. FOR CURB RAMPS, SLOPE OF 2% TO 5% MAXIMUM 8%.
9. MAXIMUM SLOPE VARIES, SEE PRIVATE APPROACH BYLAW

CURB RETURN ENTRANCES	DATE:	MARCH 2007
	REV. DATE:	MARCH 2017
	DWG. No.:	SC7.1



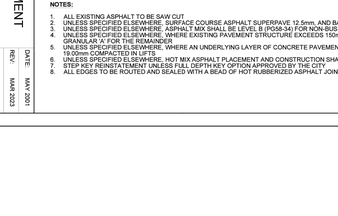
NOTES:
1. ALL DIMENSIONS SHOWN ARE FOR FINISHED CASTINGS ONLY. PATTERN MAKERS AND CASTING SHOP SHOULD MAKE ALLOWANCES ACCORDINGLY.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
3. IT IS ESSENTIAL THAT THE COVER BE INSTALLED IN THE DIRECTION OF THE GUTTER LINE AS SHOWN.
4. THE FRAME FOR THIS COVER SHALL BE AS PER OPSD 400.02 WITHOUT THE HINGE SLOT.
5. NOT FOR NEW CONSTRUCTION AFTER 31 DEC 05, FOR REPLACEMENT OF BROKEN EXISTING ONLY.

HEAVY DUTY "FISH" TYPE SQUARE CATCH BASIN COVER	DATE:	MARCH 2005
	REV. DATE:	
	DWG. No.:	S19.1



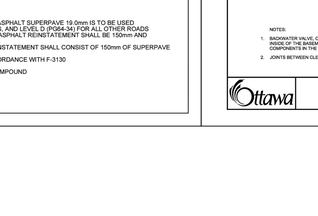
NOTES:
1. CONCRETE AND GRANULAR "A" IS TO BE INCREASED TO 150mm AT THE ENTRANCE AND 150x150mm WWS 1 x WWS 1 REINFORCING MESH IS TO BE PLACED MID DEPTH WITHIN DRIVEWAY ACCESS.
2. TRANSVERSE EXPANSION JOINTS ARE REQUIRED AT THE ENDS, THE MIDPOINT, AT INTERVALS OF 4m MAXIMUM, AND ALSO TO ISOLATE OBSTRUCTIONS FROM SIDEWALK, HYDRANTS, POLES, BUILDINGS, ETC.
3. WHERE THE OVERALL SIDEWALK WIDTH EXCEEDS 2.5m, A LONGITUDINAL CONSTRUCTION JOINT SHALL BE CREATED AT ITS MIDPOINT.
4. EDGES AND JOINTS ARE TO BE FINISHED WITH A 75mm EDGING TOOL.
5. ALL CONCRETE SIDEWALKS ARE TO HAVE A BROOM FINISH UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
7. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
8. INSTALL DUMMY TRANSVERSE JOINTS AS REQUIRED SO THERE IS A MAXIMUM SPACING OF 2m BETWEEN ALL JOINTS.
9. SIDEWALK NOT TO BE DEPRESSED ACROSS DRIVEWAY ACCESSES.
10. EXPANSION AND DUMMY JOINTS AS PER SC5

TYPICAL CONCRETE SIDEWALK IN BOULEVARD	DATE:	MAY 2001
	REV. DATE:	MARCH 2021
	DWG. No.:	SC4



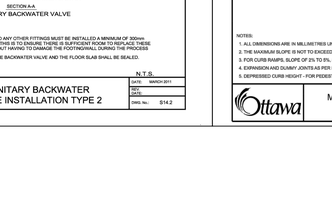
NOTES:
1 When sidewalk is continuously adjacent, the dropped curb at entrances shall be reduced to 75mm.
2 For slipforming procedure a 0% batter is acceptable.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

CONCRETE BARRIER CURB	Nov 2012	Rev 2
		OPSD 600.110



NOTES:
1. THE INSULATION MATERIAL SHALL BE EXTRUDED POLYSTYRENE ACCORDING TO MMI-15.15 WITH:
A MINIMUM COMPRESSIVE STRENGTH OF 275 KPa.
2. MINIMUM INSULATION THICKNESS SHALL BE 50MM.
3. JOINTS SHALL BE STAGGERED FOR MULTIPLE INSULATION SHEETS.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

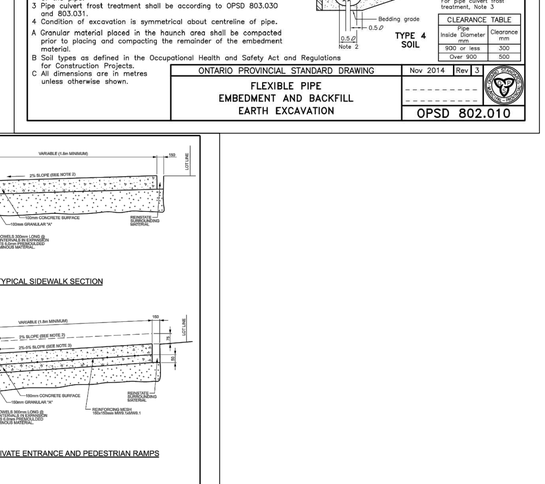
INSULATION FOR SHALLOW SEWERS	DATE:	MARCH 2003
	REV. DATE:	
	DWG No.:	S35



NOTES:
1. ALL DIAMETERS OF SERVICE CONNECTIONS THAT HAVE NOMINAL DIAMETERS NO GREATER THAN 50% OF THE NOMINAL DIAMETER OF THE MAIN SEWER REQUIRE NEITHER SADDLE NOR SOCKET CLEAN-OUT WHEN USING A WELL END INSERT AS PER ST1.07 OR AN APPROVED RUBBER GASKETED INSERT, INSTALLED ABOVE THE SPRING LINE.
2. SANITARY SERVICES TO BE 150mm AND STORM SERVICES TO BE 100mm FOR NEW RESIDENCES UNLESS SPECIFIED OTHERWISE. SERVICE PIPE AND FAUCES BEFORE TO BE APPROVED FOR 4" SEWER PRODUCTS UNLESS SPECIFIED OTHERWISE.
3. APPROVED CONTROLLED SETTLEMENT JOINTS OPTIONAL FOR SERVICE CONNECTIONS TO MAIN SEWERS UP TO 6m DEEP. WHERE APPROVED, SADDLE SHALL BE REMOVED AND CUT REQUIRE APPROVED CONTROLLED SETTLEMENT JOINTS.
4. VERTICAL RISER SHALL BE SAME AS SERVICE PIPE UNLESS OTHERWISE SPECIFIED.
5. CAP OR PLUG AT THE PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURE.
6. FOR NEW CONSTRUCTION, INSERTS MUST BE INSTALLED ON THE MAIN PIPE BEFORE THAT PIPE IS LAID. FOR REPLACEMENT OF BROKEN PIPE, INSERTS MAY BE INSTALLED AFTER THE PIPE MAY BE LAID.
7. APPROVED CUT-IN TOOL MUST BE USED FOR FIELD MADE CONNECTIONS.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

N.T.S.

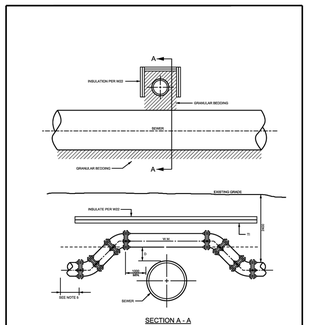
SEWER SERVICE CONNECTIONS FOR RIGID MAIN SEWER PIPE (MODIFIED OPSD-1006.010)	DATE:	MARCH 2008
	REV. DATE:	MARCH 2014
	DWG. No.:	S11



LEGEND:
∅ – Inside diameter

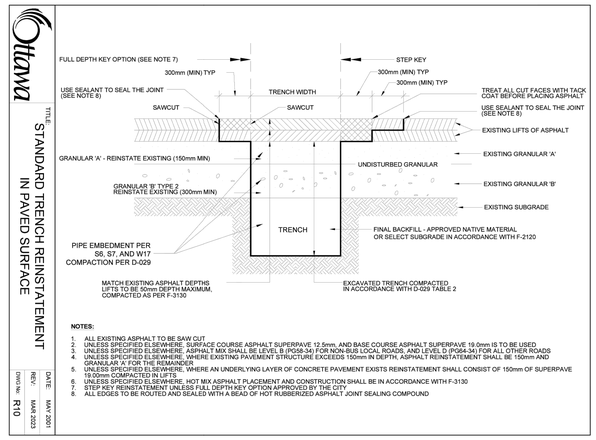
NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C All dimensions are in metres unless otherwise shown.

FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION	Nov 2014	Rev 3
		OPSD 802.010

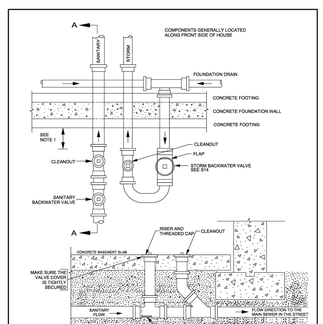


NOTES:
FOR WATERMAIN 150mm (NOMINAL) TO 406mm (NOMINAL)
1. BARREL TO BARREL SEPARATION (S) SHALL BE 200mm MINIMUM.
2. THRUST BLOCKS FOR MAINS LARGER THAN 406mm (NOMINAL) SHALL BE PER SPECIAL DESIGN.
3. MAINS SHALL BE LAID WITH A MINIMUM COVER OF 2.4m. UNDER ROADS SHALL BE MIN. 3.0m OF SC.
4. CONCRETE FOR THRUST BLOCKS SHALL BE 20 MPa.
5. REFER TO M33.4 FOR RESTRAINED LENGTH REQUIREMENTS.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS KNOWN OTHERWISE.
8. DESIGNED TO MEET THE INTENT OF THE MOE WATERMAIN DESIGN CRITERIA JUNE 2010.
9. CATHODIC PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH M16, M40 AND M42.
10. TRACER WIRE REQUIRED FOR PVC, PEA AND HDPE WATERMAIN PIPE ONLY AS PER M38.

WATERMAIN CROSSING OVER SEWER	DATE:	MAY 2001
	REV. DATE:	MARCH 2021
	DWG No.:	W25.2



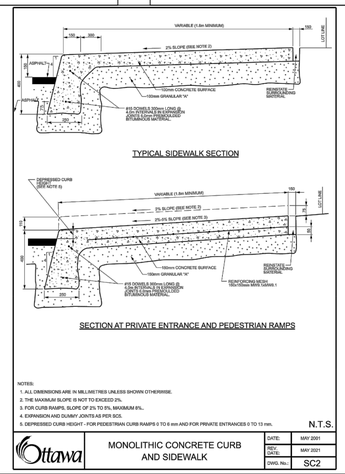
NOTES:
1. ALL EXISTING ASPHALT TO BE SAW CUT
2. UNLESS SPECIFIED ELSEWHERE, SURFACE COURSE ASPHALT SUPERPAVE 12.5mm, AND BASE COURSE ASPHALT SUPERPAVE 19.0mm IS TO BE USED.
3. UNLESS SPECIFIED ELSEWHERE, ASPHALT MIX SHALL BE LEVEL B (PG58-34) FOR NON-BUS LOCAL ROADS, AND LEVEL D PG64-34) FOR ALL OTHER ROADS
4. UNLESS SPECIFIED ELSEWHERE, WHERE EXISTING PAVEMENT STRUCTURE EXCEEDS 150mm IN DEPTH, ASPHALT REINSTATEMENT SHALL BE 150mm AND GRANULAR 'A' FOR THE REMAINDER
5. UNLESS SPECIFIED ELSEWHERE, WHERE AN UNDERLYING LAYER OF CONCRETE PAVEMENT EXISTS REINSTATEMENT SHALL CONSIST OF 150mm OF SUPERPAVE 19.0mm COMPACTED IN LIFTS
6. UNLESS SPECIFIED ELSEWHERE, HOT MIX ASPHALT PLACEMENT AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH F-3130
7. STEP KEY REINSTATEMENT UNLESS FULL DEPTH KEY OPTION APPROVED BY THE CITY
8. ALL EDGES TO BE ROUTED AND SEALED WITH A BEAD OF HOT RUBBERIZED ASPHALT JOINT SEALING COMPOUND



NOTES:
1. BACKWATER VALVE, CLEANOUTS AND ANY OTHER FITTINGS MUST BE INSTALLED A MINIMUM OF 300mm INSIDE OF THE BASEMENT FOOTING. THIS IS TO ENSURE THERE IS SUFFICIENT ROOM TO REPLACE THESE COMPONENTS IN THE FUTURE WITHOUT HAVING TO DAMAGE THE FOOTING/WALL DURING THE PROCESS
2. JOINTS BETWEEN CLEANOUT AND THE BACKWATER VALVE AND THE FLOOR SLAB SHALL BE SEALED.

N.T.S.

SANITARY BACKWATER VALVE INSTALLATION TYPE 2	DATE:	MARCH 2011
	REV. DATE:	
	DWG. No.:	S14.2



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
3. FOR CURB RAMPS, SLOPE OF 2% TO 5% MAXIMUM 8%.
4. EXPANSION AND DUMMY JOINTS AS PER SC5.
5. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13 mm.

N.T.S.

MONOLITHIC CONCRETE CURB AND SIDEWALK	DATE:	MAY 2001
	REV. DATE:	MAY 2021
	DWG. No.:	SC2

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHANGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, (INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

No.	REVISIONS	BY	DATE
03	RE- ISSUED FOR APPROVAL	S.V.	JAN 30 2026
02	RE-ISSUED FOR APPROVAL	S.V.	NOV 04 2025
01	ISSUED FOR APPROVAL	M.S.	JUL 17 2025

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2026/1/30
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT
CENTURION APPELT (1 CENTREPOINT) LP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
M.S.	M.S.	M.B.

PROJECT
PROPOSED 6-STOREY RESIDENTIAL BUILDING

DRAWING TITLE
CONSTRUCTION DETAIL PLAN

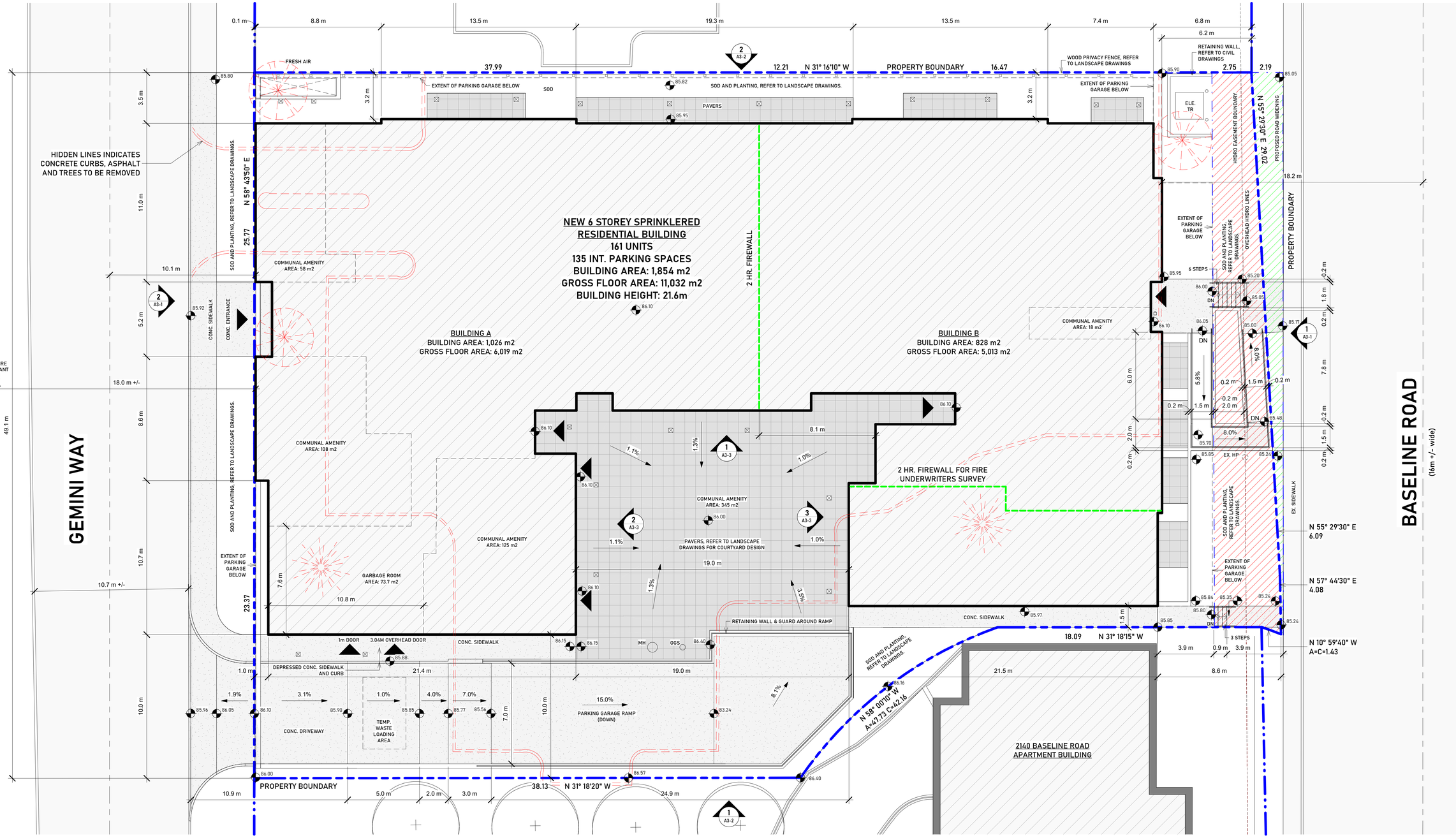
PROJECT NO.
230088 C901

D07-12-25-0106

PLAN #19405

APPENDIX F

Proposed Site Plan
Legal Survey
As-builts



1 Site Plan
1 : 125

Ref 1 A101 — ELEVATION
XX — SPOT ELEVATION
XX — SLOPE
ENTRANCE OR EXIT
1 View Name — View Scale

Beyond
Centerline
Demolished
Hidden Lines
Hidden
Lines
Overhead
Path of Travel
Thin
Medium
Wide
Furniture

PLAN 6R-36669

PLAN OF SURVEY OF
BLOCK 39
PART OF BLOCKS 22 AND 23
AND
PART OF BLOCK 41
(CLOSED BY JUDGE'S ORDER LT819458) &
(CLOSED BY BY-LAW 2017-360, INST OC1952156)
REGISTERED PLAN 4M-623
AND
PART OF LOT 35
CONCESSION 2 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
CITY OF OTTAWA
SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

PROJECT TEAM

Owner
Appelt Properties
3477 Lakeshore Rd #218
Kelowna, BC V1W 0A7
T: 250-300-1866

Surveyor
Annis, O'Sullivan, Vollebekk Ltd.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
T: 613-727-0850

Civil
LRL Engineering
5430 Canotek Road
Ottawa, Ont. K1J 9G2
T: 613-842-3434

Landscape
Adesso Design Inc.
69 John Street South, Suite 250
Hamilton, Ont. L8N 2B9
T: 905-526-8876

Planning
Fotenn
420 O'Connor Street
Ottawa, Ont. K2P 1W4
T: 613-730-5709

ZONING STATS

REGULATION	REQUIRED	PROVIDED
LOT AREA	N/A.	3179.1 m2
LOT WIDTH	N/A.	49.1m
FRONT YARD SETBACK	N/A.	0.100m
INT. SIDE YARD SETBACK	N/A.	1.5 m
REAR YARD SETBACK	2.0	6.2 m
MAX. FLOOR SPACE HEIGHT	2.0	3.3 m
MAX. BUILDING HEIGHT	34.0	21.6 m
LANDSCAPE AREA	N/A.	1018 m2
REQUIRED PARKING	0.1/UNIT VISITOR	16
BICYCLE PARKING	0.5/UNIT	98
COMMUNAL AMENITY AREA	435m2	654 m2
MINIMUM PARKING REQUIREMENT ZONE: AREA Z		
MINIMUM VISITOR PARKING: 0.1 PER UNIT		

CITY OF OTTAWA
FILE NUMBER D07-12-25-0106
PLAN NUMBER #19405

True North / Const. North

Stamp:

Logo: brouwer architecture

No.	Issuance	Date
3	Issued for SPA Comments	01-30-26

Project
Gemini Residential Development
85 Gemini Way, Ottawa, Ontario

Project No.
2433

Sheet Name
Site Plan

Scale: As indicated
Drawn By: JV Checked By: JB
Date 2026-01-21 4:29:35 PM

Sheet No.
A1-1

Revision No. 3

TOPOGRAPHICAL PLAN OF SURVEY

BLOCK 39 (0.30 RESERVE) And
PART OF BLOCKS 22, 23 And
PART OF BLOCK 41 (ROAD WIDENING)
(As Closed by Judge's Order Inst. LT819458)
REGISTERED PLAN 4M-623
And
PART OF LOT 35
CONCESSION 2 (RIDEAU FRONT)
Geographic Township of Nepean
CITY OF OTTAWA
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

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

Bearings are astronomic, derived from the southerly limit of Plan 4R-7298, shown to be N 58°43'50" E thereon.

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act, the Land Titles Act and the regulations made under them.
2. The survey was completed on the 21st day of June, 2023.

__________ Date

____________________ E.H. Herweyer, O.L.S.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
XXXXX
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

Notes & Legend

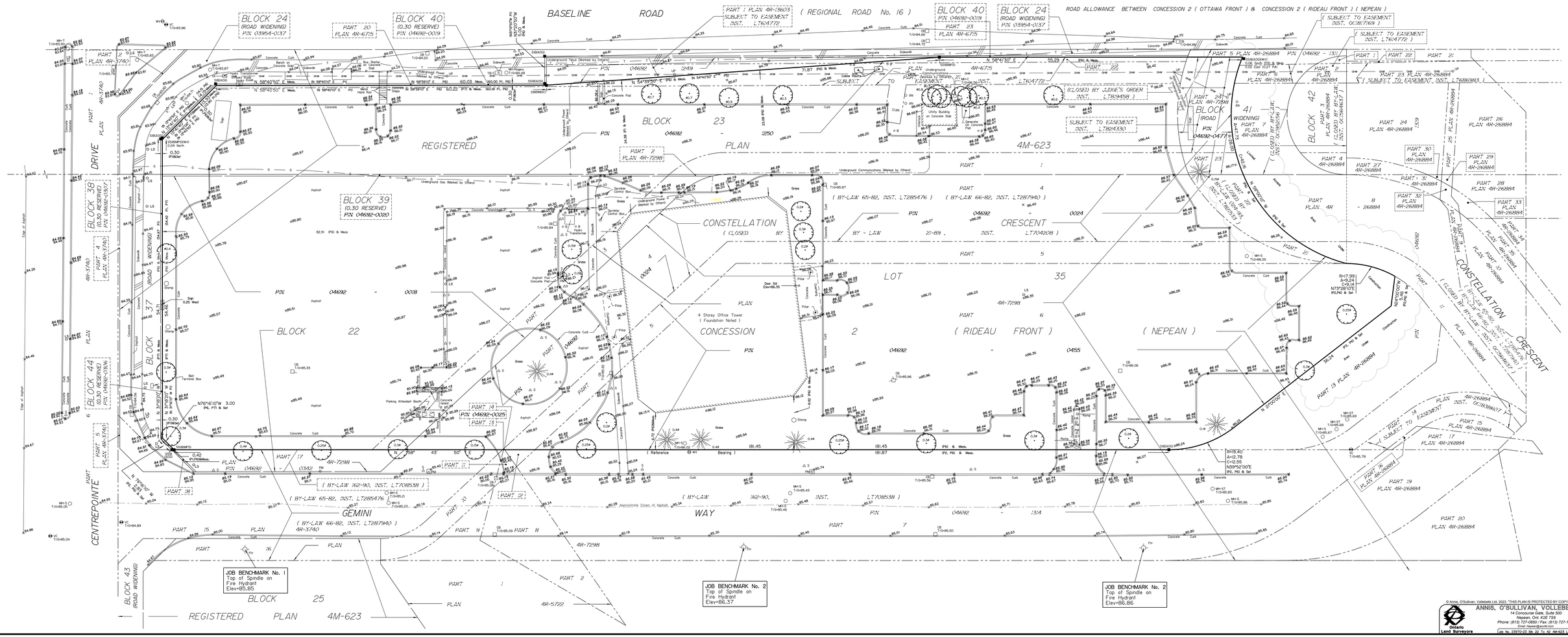
	Denotes	
─□─	"	Survey Monument Planted
─■─	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CC	"	Cut Cross
(WIT)	"	Witness
Meas.	"	Measured
Calc'd	"	Calculated
(P1)	"	Registered Plan 4M-623
(P2)	"	Plan 4R-7298
(P3)	"	Plan 4R-23887
(P4)	"	Plan 4R-26884
(P5)	"	Plan 4R-13603
(P6)	"	Plan by (AOG) dated December 10, 2009
(P7)	"	Plan by (AOG) dated March 19, 2018
·	"	Deciduous Tree
✳	"	Coniferous Tree
FH	"	Fire Hydrant
WV	"	Water Valve
○ MH–S	"	Maintenance Hole (Sanitary)
—— OHW ——	"	Overhead Wires
—— P ——	"	Underground Power
—— G ——	"	Underground Gas
—— T ——	"	Underground Telus
—— • ——	"	Underground Telus
□ CB	"	Catch Basin
○ B	"	Bollard
○ MH-T	"	Maintenance Hole (Traffic)
○ MH-H	"	Maintenance Hole (Hydro)
□ TB-C	"	Cable Terminal Box
◎ PM	"	Parking Meter
○ UM	"	Utility Marker
○ UP	"	Utility Pole
○ AN	"	Anchor
○ LS	"	Light Standard
Ø	"	Diameter
+ 65.00	"	Location of Elevations
+ 65.00	"	Top of Concrete Curb Elevation
T/G	"	Top of Grate
C/L	"	Centreline
△ S	"	Sign

ELEVATION NOTES

1. Elevations shown are referred to geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

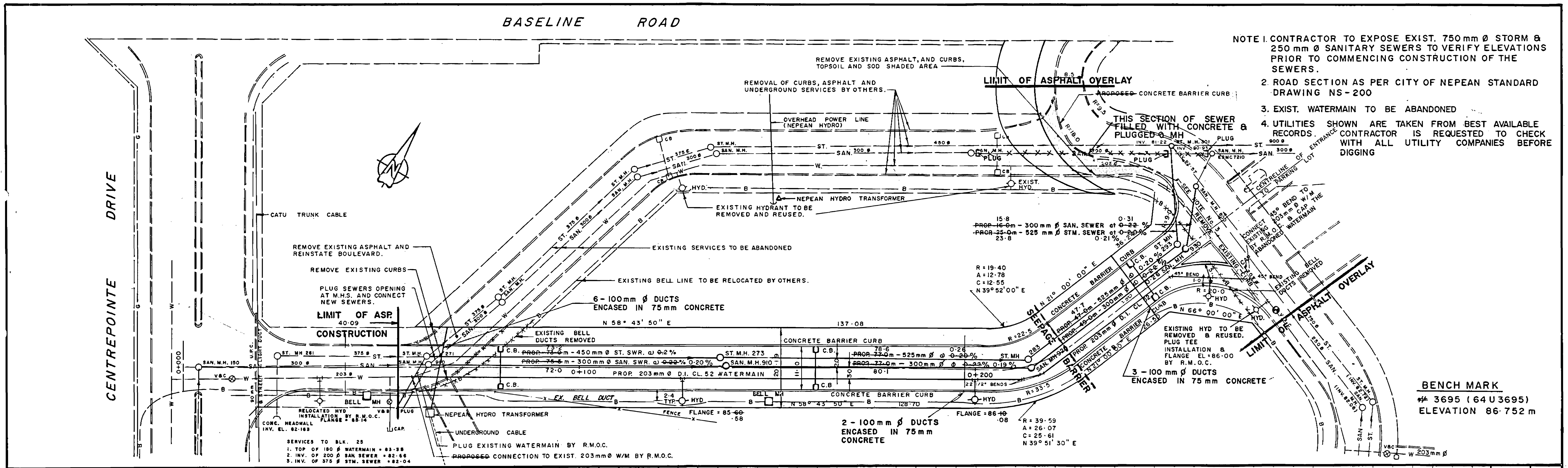
UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.



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. 23970-23 Blk 22 To 42 4M-623 Lt 35 C2_T_D2



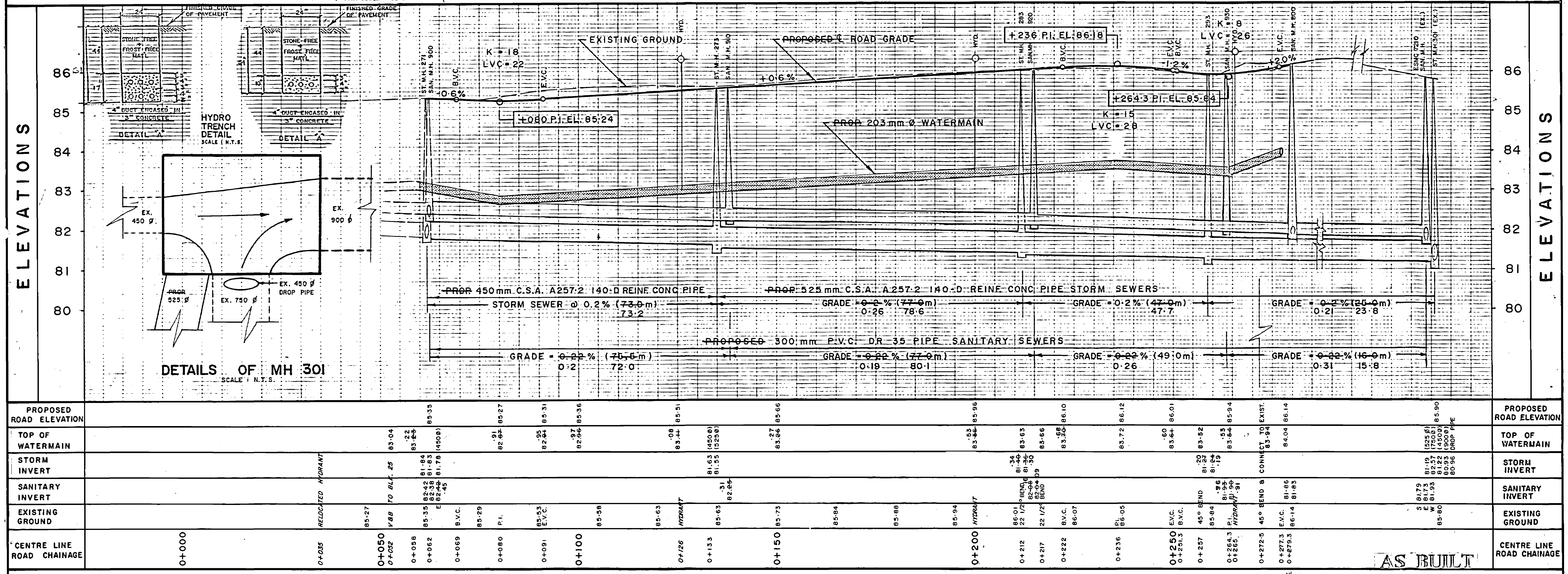
NOTE 1. CONTRACTOR TO EXPOSE EXIST. 750mm Ø STORM & 250mm Ø SANITARY SEWERS TO VERIFY ELEVATIONS PRIOR TO COMMENCING CONSTRUCTION OF THE SEWERS.

2. ROAD SECTION AS PER CITY OF NEPEAN STANDARD DRAWING NS-200

3. EXIST. WATERMAIN TO BE ABANDONED

4. UTILITIES SHOWN ARE TAKEN FROM BEST AVAILABLE RECORDS. CONTRACTOR IS REQUESTED TO CHECK WITH ALL UTILITY COMPANIES BEFORE DIGGING

BENCH MARK
3695 (64U3695)
ELEVATION 86·752 m



AS BUILT

NO.	DATE	REVISIONS	BY	NO.	DATE	REVISIONS	BY	NO.	DATE	REVISIONS	BY	NO.	DATE	REVISIONS	BY
1	9·9·88	GENERAL	D·N·	6	27·11·89	REVISED ROAD REALIGNMENT	D.N.	11	13·8·90	ISSUED FOR TENDER	D. N.				
2	27·9·88	AS PER R.M.O.C.	D·N·	7	29·11·89	DETAILS OF M.H. 301 ADDED	D.N.	12	14·8·90	HYDRO DUCTS ADDED	D. N.				
3	29·9·88	AS PER UTILITIES	D.N.	8	11·12·89	AS PER R.M.O.C.	D.N.	13	24·9·90	AS PER R.M.O.C. — HYD.	D. N.				
4	27·10·88	AS PER R.M.O.C. DWG NO. N-306-3	D.N.	9	15·3·90	AS PER C.M.H.C.	D.N.	14	21·11·90	" AS BUILT "	D. N.				
5	10·11·89	ROAD REALIGNMENT	D. N.	10	25·7·90	"AS BUILT" — BELL	D.N.								

SEPT. 12/88
D. NARAINE

Cecil D. Naraine Associates Limited
CONSULTING ENGINEERS MUNICIPAL - CIVIL

CANADA MORTGAGE AND HOUSING CORPORATION

RE ALIGNMENT OF CONSTELLATION CRESCENT

SCALE: HORIZ. 1:500 VERT. 1:50
DESIGNED: C.D.N.
DRAWN: C.D.W.
CHECKED: C.D.N.
DATE: SEPT. 1988
DRWG. NO. 3042-101

D07-12-60129

D07-12-60129

LEGEND

85.7 Ext'g grade

85.7 Prop'd. grade

TP 2 / 85.7 / 82.3 Test pit, ext'g grade, bottom of ext'g fill

Wm Water Meter location

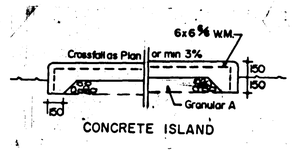
RM Remote meter location

STORM WATER RETENTION.

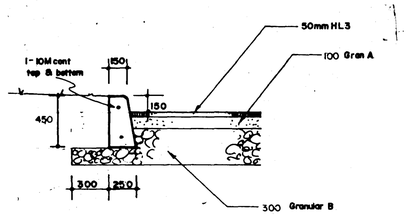
TWL Top water level of ponding.

Limit of catchment area

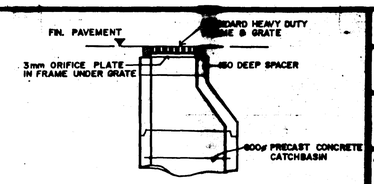
" " ponding



CONCRETE ISLAND

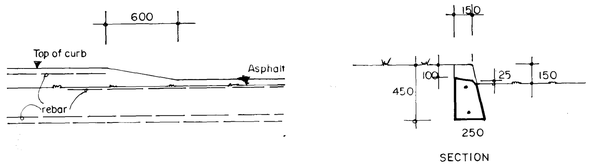


ROAD DETAIL



CATCHBASIN ORIFICE PLATE

ORIFICE PLATE SCHEDULE	
c b mark	dia of orifice mm
1 & 2	125
3	165
4	90



SECTION

DEPRESSED CURB FOR WHEELCHAIRS.

GRADING APPROVED Nov 30/92 DEPARTMENT OF PLANNING

BASELINE LINE RD.

CENTREPOINTE DR.

CONSTELLATION

Municipal Boundary CITY OF OTTAWA / CITY OF NEPEAN

sidewalk
Bus shelter
Boundary of property
approx top of slope ext'g
Slope down evenly to ext'g top of slope
conc curb
Conc Parking Control Island - Typical - top at 85.5
poured conc island
TWL 86.15
cb cover 86.0 outlet inv 84.6
depressed curb
FIN. F. L. 86.85
Rainwater flow from roof restricted to 10.0 litres per sec
TWL 85.6
TWL 86.3
3 cb cover 85.4 outlet inv 84.4
300ø - 1.0% - 68m
2 cb cover 86.1 outlet inv 84.85
250ø - 0.5% - 37m
1 cb cover 86.1 outlet inv 851
inv 84.9
Deepen footing at this corner
inv 84.6
MH inv 83.6
200ø
inv 84.3
50ø copper water service - 2.4m cover
Storm 300ø - 8m
San 150ø
300ø - 1.0% - 52m
inv 83.1
inv 81.68
inv 81.83
450ø Ext'g Storm Sewer
mh inv 81.63
inv 82.56
inv 82.36
Ext'g San Sewer 300ø
mh inv 8231
Ext'g Watermain 300ø
Ext'g abandoned UG services
Watermain
mh
HP
TP 1 85.0 83.7
TP 2 85.7 85.55
TP 3 85.8 84.8
TP 4 85.7 82.1
TP 5 85.7 85.0
top at 86.05
top of island at 86.4
depressed curb
Depressed curb
Ext'g curbs
Duct bank - 6 x 100ø
Duct bank - 2 x 100ø
FH TBM TOP OF SPINDLE 85.91
FH

client.	Aseford and Martin Ltd.
project.	OFFICE BUILDING
	CENTREPOINTE AT CONSTELLATION NEPEAN
dwg description.	Grading Paving and Underground Servicing Plan

SPENCER & ASSOCIATES CONSULTING ENGINEERS LTD.
3852 RICHMOND ROAD, OTTAWA. 828-5547.

drn by	S.S.	scales	1 300
chkd by		date	JULY 92
trcd by			
project no.	429		
dwg no.	23.	rev.	C

No	REVISIONS	Date
A	PARKING LAYOUT CHANGED	SEPT 92
B	Stormwater retention shown	Oct 92
C	Changes to parking lot	Nov. 92