Stormwater Management and Servicing Report

Proposed Multi-Unit Commercial Development
5254 Bank Street
Ottawa, Ontario

Prepared for:

Unpoised Architecture Inc.
5-16 Sweetland Avenue
Ottawa, ON. K1N 7T6

Attention: Sam Cox

LRL File No.: 220536-01

December 15, 2022

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TABLE OF CONTENTS

APPENDICES

Appendix A	**Pre-consultation / Correspondence**
Appendix B	**Water Supply Calculations**
Appendix C	**Wastewater Collection Calculations**
Appendix D	**Stormwater Management Calculations**
Appendix E	**Civil Engineering Drawings**
Drawings/Figures	**Proposed Site Plan**
	Legal Survey
	Huron & Wellington Road As-builts

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Unpoised Architecture Inc. to complete a Stormwater Management Analysis and Servicing Brief for a proposed multi-unit commercial building development located at 5254 Bank Street in Ottawa, Ontario. The legal description of the property is Part of Lot 28, Concession 4 (Rideau Front), PIN 04327-0082**,** City of Ottawa.

Figure 1: Aerial View of Proposed Development

The site at 5254 Bank Street has approximately 23 metres of frontage along Bank Street and a depth of approximately 76 metres. The overall lot area is approximately **0.172 ha.**

Currently there is a 1-storey residential building and garage located at the front (East) of the property, and two barns located at the rear (West) of the property. An asphalt driveway, tied to from Bank Street, provides access to the residential dwelling and garage, which is continued by a gravel driveway providing access to the rear yard barns. The balance of the site is grassed area.

The development proposed consists of a multi-unit commercial development, consisting of multiple bays equipped with overhead doors for vehicular access. A driveway, branching off Bank Street, will provide vehicular access to all the bay doors. A parking lot will be proposed directly North of the driveway. The balance of the site will be grassed area and landscaping elements. Due to the steep slope down on site from East to West, the West portion of the site will be built up with retaining wall.

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 considerations, LRL Associates Ltd. Should be advised to review the report recommendations.

2 Existing Site and Drainage Description

The subject site measures 0.172ha and consists of a 1-storey residential building and garage located at the front (East) of the property, and two barns located at the rear (West) of the property. An asphalt driveway, providing entrance from Bank Street, provides access to the site.

The residential unit was serviced by municipal water. As no sanitary sewer is present along Bank Street adjacent to the property, the dwelling relied on a septic system for sanitary requirements.

As per the topographical survey provided by Farley, Smith and Denis Surveying LTD (dated April 24th, 2019), the site slopes down considerable from East to West, with a minor slope down from North to South. Elevations of the existing site range from 115.29m in the northeast corner and 113.64m at the southeast corner, down to 110.55m in the northwest corner and 109.81m at the southwest corner of the site.

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:

Bank Street

- 406 mm diameter PVC 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 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.
- Describe the proposed water distribution network and connection to the existing system.

Sanitary services

- Calculate peak flow rates from the development.
- Describe the proposed sanitary sewer system.

4 REGULATORY APPROVALS

The South Nation Conservation Authority will need to be consulted in order to obtain municipal approval for site development. No other approval requirements from other regulatory agencies beyond the City of Ottawa 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 4C water distribution network pressure zone. Refer to ***Appendix B*** for the water network pressure zone map.

The subject property is located within proximity of an existing 406 mm dia. PVC watermain within Bank Street.

There are currently six (6) existing fire hydrants within close proximity to the property:

1) West side of Bank Street, approximately 6m North of North P/L
2) West side of Bank Street, approximately 93m North of North P/L
3) West side of Bank Street, approximately 215m North of North P/L
4) West side of Bank Street, approximately 87m South of South P/L
5) West side of Bank Street, approximately 202m South of South P/L
6) West side of Bank Street, approximately 303m South of South P/L

Refer to ***Appendix B*** for the location of fire hydrants.

5.2 Water Supply Servicing Design

The subject property is proposed to be serviced via 19mm diameter Type K copper service lateral connected to the 406mm diameter PVC watermain located within Bank Street.
Refer to Site Servicing Plan C401 in ***Appendix E*** for servicing layout.
Table 1 summarizes the City of Ottawa Design Guidelines design parameters utilized in the preparation of the water demand estimate.

Table 1: ***City of Ottawa Design Guidelines Design Parameters***

Design Parameter	Value
Industrial – Light Demand	35,000 L/(gross ha)/d
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
Desired operating pressure range during normal operating conditions	345 kPa (50 psi) and 552 kPa (80 psi)
During maximum hourly demand conditions pressure must not drop below	276 kPa (40 psi)

During normal operating conditions pressure shall not exceed	552 kPa (80 psi)
During maximum day and fire flow operating conditions pressure must not drop below	140 kPa (20 psi)
**Table updated to reflect technical Bulletin ISDTB-2018-02*	

The interior layout and architectural floor plans have been reviewed, and it was determined that the building will include:

- 5 commercial / industrial units (auto service, auto body shop)

The required water supply requirements for the industrial units in proposed building have been calculated using the following formula:

Where: $Q = (q \times A \times M)$
q = average water consumption (L/grossha/day)
A = gross area (ha)
M = Peak factor

For industrial water demands, the following factors were used in calculations as per Table 4.2 in the Ottawa Design Guidelines – Water Distribution:

- Maximum Daily Demand Commercial Factor = **1.5**
- Peak Hour Demand Commercial Factor = **1.8**

For a site with an approximate area of **0.172** ha, the industrial anticipated demands were calculated as follows:

- Average daily domestic water demand is **0.069** L/s,
- Maximum daily demand is **0.103** L/s, and
- Maximum hourly is **0.186** L/s.

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

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix B***. Table 3 below summarizes boundary conditions for the proposed development.

Table 2: ***Summary of Anticipated Demands and Boundary Conditions***

Design Parameter	Anticipated Demand (L/s)	Boundary Conditions @ Bank Street Head (m) / Pressure (psi)
Average Daily Demand	0.069	165.2 / 74.3
Max Day + Fire Flow (per FUS)	0.103 + 100.0	155.2 / 60.1
Peak Hour	0.186	159.9 / 66.8
** Assumed Ground elevation at connection point = 112.93 m.*		
Water demand calculation per City of Ottawa Water Design guidelines. See Appendix B for details.		

As shown above, pressures from boundary conditions exceed the minimum required threshold in all scenarios.

The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02*. The following parameters were provided by the Architect, see ***Appendix A*** for collaborating correspondence:

- Type of construction – Ordinary Construction
- Occupancy type –Combustible
- Sprinkler Protection – No sprinkler system

The estimated fire flow demand was estimated to be **6,000 L/min**, see ***Appendix B*** for details.

There are six (6) existing fire hydrants in close proximity to the proposed buildings that are available to provide the required fire flow demands of 6,000 L/min. Refer to ***Appendix B*** for fire hydrant locations. Table 4 below summarizes the aggregate fire flow of the contributing hydrants in close proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 3: ***Fire Protection Summary Table***

Building	Fire Flow Demand (L/min)	Fire Hydrants(s) within 76m	Fire Hydrant(s) within 152m	Fire Hydrant(s) within 305m	Available Combined Fire Flow* (L/min)
Proposed Commercial Building	6000	1	2	3	(1 x 5678) + (2 x 3785) + (3 x 2839) = 21,765

*Assuming all fire hydrants are class AA

The total available fire flow from contributing hydrants is equal to 21,765 L/min which is sufficient to provide adequate fire flow for the proposed development.

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

6 SANITARY SERVICE

6.1 Existing Sanitary Sewer Services

There is no sanitary sewer located within Bank Street. The sanitary outflows produced by the current site are treated by a septic system, and release via leaching bed.

6.2 Sanitary Sewer Servicing Design

The proposed development will be serviced via a septic holding tank, to be buried at the rear (East) of the property.

The parameters to be used to calculate the anticipated sanitary flows are:

- A commercial/industrial* lot space / gross area of 0.172ha
- A light industrial flow of 35,000 L/ha/day
- An industrial peaking factor of 7.0
- a total infiltration rate of 0.33 L/s/ha

*assumed light industrial to be conservative in flow calculations

Based on these parameters the total anticipated wet sanitary flow was estimated to be **0.54 L/s**. Refer to LRL drawing C401 in ***Appendix E*** for the proposed sanitary servicing.

Refer to ***Appendix C*** for the site sanitary sewer design sheet.

The septic holding tank design is to be performed by an accredited septic designer. A pumping contract / schedule will need to be established in order to ensure the holding tank will never exceed allowable sewage accumulation.

7 STORMWATER MANAGEMENT

7.1 Existing Stormwater Infrastructure

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

In pre-development conditions, stormwater from a small portion of the front (East) of the property will flow uncontrolled overland to the Bank Street roadside ditch. The balance of the site's stormwater flows uncontrolled overland to the West & South property lines.

Refer to ***Appendix E*** for pre-development watershed information.

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 including City of Ottawa Stormwater Management Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Planning and Design Manual, 2003 (SWMPD Manual).

7.2.1 Water Quality

The proposed development lot is subject to review by the South Nation Conservation Authority (SNCA). It was determined that site stormwater management quality criteria for the site will follow the SNCA's requirements; 80% TSS removal (based on MOE fine PSD).

Stormwater quality requirements have been met by incorporating a treatment unit within the stormwater network, the ADS FD-4HC stormwater treatment unit (or approved equivalent),

Correspondence (pre-application consultation meeting minutes) with SNCA input is included in ***Appendix A***.

Quality treatment unit details have been included within **Appendix D.**

7.2.2 Water Quantity

Based on pre-consultation discussions with the City of Ottawa and South Nation Conservation Authority, correspondence included in ***Appendix A***, the following stormwater management requirements were identified for the subject site:

- Meet an allowable release rate based on the existing Rational Method Coefficient of no more than 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a calculated time of concentration equal to or greater than 10 minutes.

- Attenuate all storms up to and including the City of Ottawa 100-year storm event on site.

The allowable release rate for the subject site was calculated to be **18.36 L/s**.

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 extent of the stormwater management quantity control calculations will focus on the proposed development and the proposed changes to the site. The proposed changes to the site are as follows;

- 5 unit building development
- Paved driveway, sidewalk/curbs and parking lot
- Grassed area and planters
- Retaining wall bordering South, West and North property lines

The balance of the site unaffected by these works will remain as they were in existing condition.

The existing site is delineated by catchment EWS-01 (0.172 ha), consisting of buildings, both asphalt and gravel paving, and grassed area (total runoff coefficient of 0.67).
Refer to ***Appendix E*** Civil Plan C701 for greater detail.

The proposed stormwater management quantity control for this development will be accomplished by restricting flow leaving site via a flow control at the outlet of the stormwater management network; a Hydrovex VHV-100 Flow Control Device (or approved equivalent). Storage required as a result of quantity control measures will be accomplished minor surface ponding, but mostly via underground storage chambers. Stormwater will be captured by one of the proposed catchbasins within the driveway, controlled/stored, conveyed to the treatment unit and ultimately pumped up to the Bank Street roadside ditch.

The proposed site storm sewer and stormwater management system are shown on drawing C401 and detailed calculations, including the design sheet, can be found in ***Appendix D***.

The proposed site development has been analyzed and post development watersheds have been allocated.

- Watershed WS-01 (0.022 ha), consisting of mostly the asphalt driveway roundabout, will be captured by catch basin CB01.
- Watershed WS-02 (0.090 ha), consisting of the West and central portions of the driveway and parking lot, as well as rooftops for Bays 2 to 5, will be captured by CBMH03 and the Nyloplast FD-4HC
- Watershed WS-03 (0.028 ha), consisting of the East portion of the driveway and parking lot, as well as the rooftop for Bay 1, will be captured by catch basin CB02.
- Watershed WS-04 (0.032 ha), consisting of the West grassed portion of the site, will flow overland off site uncontrolled, as it did in pre-development conditions

Table 4 below summarizes post-development drainage areas. Detailed calculations can be seen in ***Appendix D.***

Table 4: Post Development *Drainage Areas*

Drainage Area Name	Area (ha)	Weighted Runoff Coefficient (C)	100 Year Weighted Runoff Coefficient (25% increase)
WS-01 (controlled)	0.022	0.87	1.00
WS-02 (controlled)	0.090	0.90	1.00
WS-03 (controlled)	0.028	0.83	1.00
WS-04 (uncontrolled)	0.032	0.20	0.25

Table 5 below summarizes the release rates and storage volumes required to meet the allowable release rate of 18.36 L/s for 100-year flow.

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

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m^3)	Total Available Storage (m^3)
WS-01, WS-02, WS-03 (controlled via ICD)	0.140	14.00	53.67*	57.95
WS-02 (uncontrolled)	0.032	3.97	0.00	0.00
TOTAL	**0.172**	**17.97**	**53.67**	**57.95**

*as stormwater storage is occurring underground, the controlled release rate was halved to 7.0 L/s for storage volume calculations

The 100-year maximum ponding depths can be found on drawing "C601 – Stormwater Management Plan" of ***Appendix E***.

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.

Refer to drawing C101 in ***Appendix E*** for erosion and sediment control details.

9 CONCLUSION

This Stormwater Management and Servicing Report for the development proposed at 5254 Bank Street 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 at **6,000 L/min** using the FUS method.
- There are six (6) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **21,765 L/min** to the site.
- The new proposed addition to the existing multi-use building will be serviced by one (1) new connection: a new 19 mm diameter water service to be connected to the existing 406 mm diameter watermain within Bank Street.
- Boundary conditions received from the City of Ottawa indicate that sufficient pressure is available to service the proposed site.

Sanitary Service

- The anticipated sanitary flow from the proposed development is **0.54 L/s.**
- The proposed development will be serviced by a septic holding tank.

Stormwater Management

- Stormwater quality controls require a minimum 80% TSS removal, which will be achieved by the proposed stormwater treatment unit.
- The storm water release rates from the proposed development will meet calculated allowable release rate of **18.36 L/s.**

- Stormwater quantity control objectives will be met through overland ponding and underground storage structures, and control will be provided via the flow control unit proposed.

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 the compatibility with the recommendations contained in this document. If you have any questions or comments, please contact the undersigned.

Prepared by:
LRL Associates Ltd.

Mohan Basnet, P. Eng.
Civil Engineer

Kyle Herold
Civil Designer

APPENDIX A

Pre-consultation / Correspondance

Pre-Application Consultation Meeting Notes

Property Address: 5254 Bank Street, Ottawa, ON
Pre-Application Consultation File Number PC 2022 0103
Date: May 17, 2022 Room: Virtual

Attendees: Sam Cox (Agent), Cheryl McWilliams, Damien Whittaker, Jasdeep Brar

Regrets: Mike Giampa

Subject: 5254 Bank Street

Meeting notes:

Opening & attendee introduction

- Introduction of meeting attendees
- Overview of proposal:
  - Applicant is proposing to remove the holding provision along with a zoning by-law amendment to build a new 619m structure for light industrial and personal services use.
  - The current zone is RG3 [900R]-h Rural General Industrial.
  - The applicant is seeking minor variances for parking provisions, the front yard setback, and the southern interior side yard setback.
  - Two of the smaller bays are proposed for personal service use, two medium sized bays are proposed for "automobile repair" and the larger bay reserved for the owner for "automobile repair" use.
- Projected timing including construction – not specified

Preliminary comments and questions from staff and agencies, including follow-up actions:

- Planning
  - Proposed Minor Variances may not be eligible as the zoning amendment by-law 2021-286 was passed last year, ***will follow up to determine applicability***
  - Committee of Adjustment / variances required
  - The property neighbours lands designated as sand and gravel resources and is in close proximity to a licensed quarry across Bank Street. As per Section 3.7.4 of the City of Ottawa Official Plan, sensitive land uses will not be approved within 300 metres of a Sand and Gravel Resource Area and 500 metres of a bedrock resource area, unless it can be demonstrated that such development will not conflict with future mineral aggregate extraction. Personal service businesses are considered a sensitive land use with respect to pits and quarries.

- Urban Design
  - As per Schedule C13 of the City of Ottawa Official plan, Bank Street is a Scenic Entry Route Policy 4.6.4 of the new City of Ottawa Official Plan aims to ensure that development abutting Scenic Routes contributes to conserving or creating a desirable context by means such as

b. Preserving and restoring landscaping, including but not limited to distinctive trees and vegetation along the right of way,

c. Orienting buildings towards the Scenic Route and providing direct pedestrian access, where appropriate; and

d. Providing screening by way of opaque fencing or landscape buffers to hide surface parking lots or outside storage; and

e. Managing the intensity and spill-over of lighting on adjacent parcels.

As such, tree buffering of parking areas is needed. Consider increasing the number of windows (double of what is proposed) to enhance the front façade and to add more windows or protected openings on the south façade facing or in proximity to Bank street.

- Engineering
  - Development density;
    - As stated for the re-zoning of the property it will be a challenge to develop the property and staff opposed the application; developing with a very high lot coverage makes a challenging site much, much harder
  - Surveying;
    - Civil engineering plans shall have a note that references the horizontal and vertical datums that were used, and tied into, to complete the project.
    - The drawing should also make reference (on the face of the plan) to a site benchmark that can be used by anyone with a level to carry out checks on the particular project..
  - Water pipes:
    - There is a municipal water pipe near the application, though there may not be fire-fighting provision at the address. Please have the civil consultant provide a Water Boundary Conditions request (please note that fixture counts should not be used) for further site applications at this stage." The fire demand shall be calculated by the FUS methodology (2020) and if a construction coefficient less than 1 is proposed that a waiver will be required and the necessary componentry/design shall be demonstrated and a commence work notice shall not be provided until satisfactory assurance is given to an engineering member of the Rural Development Review unit.
  - Sanitary Sewers:
    - There are no municipal sanitary sewers adjacent to the property
  - Terrain Analysis:
    - As there are no municipal sanitary sewers adjacent the property a septic system will be needed. A terrain analysis will be needed to design the septic system and the approval from the OSSO will be needed before site plan approval is given. Please also note that thin soils may exist in the area and increased (non-standard) septic treatment is anticipated.
  - Geotechnical
    - Please note that sensitive marine clays are anticipated in the area of the proposal and, if so, enhanced geotechnical investigation and analysis will be necessary. Investigation of clays should be undertaken with vane

shear, Atterberg limits, shrinkage, size, grade raise restriction, consolidation, sensitivity, and liquefaction analysis- amongst others. Further, to maintain the desired result of the trees in clay soils policy all of the conditions of the policy need to be met.
    - Please note that the 2.1 m of cover in the vicinity of the footings is sometimes a challenge as is the necessary comprehensive linkages between geotechnical, grading, parks, utilities, and trees. Thin soils exist in the area and enhanced geotechnical investigation and analysis will be necessary.
- Hydrogeological
    - A hydrogeological report may be required if a SWM pond, or similar stormwater management infrastructure, is proposed
- Storm Sewers:
    - No storm sewers exist in the area and instead there are ditches. The consultant will need to show and/or provide continuation of ditch flows.
- Groundwater:
    - Groundwater is anticipated to be high and the level is to be derived from long-term analysis (12 months, or more) or spring freshet conditions ((unfrozen ground and significant rainfall). With the high groundwater anticipated, the City advises against basements for the development.
- Noise and vibration:
    - A noise report will be required for the traffic from Bank Street, recorded on Official Plan Schedule G as an existing arterial.
- Mineral Resource Impact Assessment
    - Due to the personal service options being included a Mineral Resource Impact Assessment (MRIA) will be required- please note that removing the personal service option may not negate the need.
- Storm Water Management:
    - Stormwater management quality criteria shall follow the SNRCA's requirements- anticipated to be for 80% TSS removal. The quantity criteria for the development is that 100-year post-development shall match 2-year pre-development. LID is required as per the memo from the former MOECC (now MECP). Any existing stormwater runoff from adjacent site(s) that crosses the property must be accommodated by the proposed stormwater management design. All stormwater management determinations shall have supporting rationale. The stormwater management report shall itemize concurrence with the content

of the updated (2004) Shields Creek Subwatershed Study, as shown by Annex 2B;
    - a. Thermally controlled low flow in summer, to a maximum of 23 degrees Celsius is required for an anticipated coldwater habitat (p. 6-13, sheet 114) (p. 4-53, sheet 73). It is not sufficient to merely have a bottom draw outlet.
    - b. 150 mm/yr infiltration (table 5.5.1, p.5-5, sheet 84) (figure 4.3.4, sheet 201) A pollution prevention/spill control report is required as per section 6.3.4.8 of the SCSWS.
- Roads:
    - The required ROW at the location, according to Annex 1 of the Official Plan is 40 m.
- Site lighting:
    - Lighting must be designed only using fixtures that meet the criteria for Full Cut-off classification, as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and it must result in minimal light spillage onto adjacent properties; 0.5 foot-candles is the maximum allowable spillage.
- Phase 2 ESA:
    - A Phase 2 ESA is required following the previously completed Phase 1 ESA.
- Energy Conservation:
    - Energy conservation is required to be demonstrated throughout design as per section 4.9 of the Official Plan.

Questions regarding the above requirements can be directed to Senior Engineer Infrastructure Applications, damien.whittaker@ottawa.ca

- Transportation
    - Parking requirements
        - To determine the number of required parking spaces, further clarification is required regarding the proposed “light industrial use” and whether it classifies as “Automobile Service Station” or as a “Service and Repair Shop” in Section 54 of Zoning By-law 2008-25
        - If the use classifies as “Automobile Service Station”, further clarification required on the number of service bays to determine parking requirements
    - TIA submission / Road modification agreement requirements
        - A Transportation Impact Assessment is not required and therefore that condition of the lifting of the holding provision can be waived based on the current concept site plan and uses.

- Cycling and pedestrian
- Required ROW width
    - Bank Street has a protected right of way of 40 m, or 20 m form the centreline, That will need to be demonstrated on the survey

- Noise report
    - A noise report may be required for the traffic from Bank Street, recorded on Official Plan Schedule G as an existing arterial. This may be waived if no sensitive land uses are proposed.

- Environmental
    - Tree preservation / distinctive trees – Tree Conservation Report required as part of Landscape plan

- Parks
    - Cash-in-lieu of parkland per the Parkland Dedication By-law (2% of the value of the land prior to site plan approval)

- Survey
    - The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
    - Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

  Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

- Conservation Authority - South Nations Conservation Authority
    - The site falls within the Shield Creek Sub watershed Study and SNC would request the 80% TSS removal for runoff quality treatment.
    - SNC recommends that the OSSO review design flows, contact areas and setbacks for a septic system to ensure that a OBC Part 8 permit can be issued down the road.
    - It is unclear whether the roadside ditch would constitute a watercourse or how the stormwater design may function. Any interference with a watercourse may require a permit under O. Reg. 170/06 and restrictions may apply. It is unlikely for this property and South Nation Conservation will confirm at the detail design stage.

- Permits and Approvals
    - Please contact the South Naiton Conservation Authority (SNRCA), amongst other federal and provincial departments/agencies, to identify all the necessary permits and approvals required to facilitate the development: responsibility rests

with the developer and their consultant for determining which approvals are needed and for obtaining all external agency approvals. The address shall be in good standing with all approval agencies, for example MVCA, prior to approval. Copies of confirmation of correspondence will be required by the City of Ottawa from all approval agencies that a form of assent is given. No construction shall commence until after a commence work notification is given by and engineering member of the Rural Development Review unit. An MECP ECA may be required for the application; please also note that by the time the ECA is applied for, with this application, that a different type of process may be underway.

Ministry of the Environment, Conservation and Parks	South Nation River Conservation Authority
Contact Information: Jena Leavoy Senior Environmental Officer 613-521-3450 ext. 236 Jena.Leavoy@ontario.ca	Contact Information: James Holland jholland@nation.on.ca

Submission requirements and fees

- Outline the submission requirements and fees.
  - Submission requirements for planning
    - Landscape plan including Tree Conservation Report (boundary trees and any on-site trees need to be considered)
    - Site Plan (including zoning chart)
    - a planning rationale – at minimum as a cover letter
    - Phase 1 and 2 ESA
    - Building Elevations.
  - Submission requirements for engineering
    - Site Servicing Plan*
    - Grading and Drainage Area Plan*
    - Erosion and Sediment Control Plan*
    - Site Servicing Report to be prepared as per requirements.
    - Storm Water Management Report
    - Noise Report
    - Erosion and Sediment Control Measures
    - Mineral Resource Impact Assessment
    - Geotechnical Investigation Study
      - The geotechnical consultant will need to provide full copies of any published and peer reviewed papers relied on to determine results and conclusions
      - Earthquake analysis is now required to be provided in the report.
    - Phase 2 Environmental Site Assessment (ESA)
      - The Phase 2 Environmental Site Assessment (ESA) shall be as per O.Reg. 153/04. Phase 1 ESA documents performed to CSA standards

are not acceptable. Documents older than 18 months from the time of draft approval will not be accepted

- Guide to preparing City of Ottawa Studies and Plans: http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

  To request City of Ottawa plan(s) or report information please contact the ISD Information Centre:
  Information Centre
  (613) 580-2424 ext. 44455

- Additional information regarding fees related to planning applications can be found here.
- *Plans are to be standard A1 size (594 mm x 841 mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500) as per City of Ottawa Servicing and Grading Plan Requirements and shall note the survey monument used to establish datum on the plans with sufficient information to enable a layperson to locate the monument.
- All PDF submitted documents are to be unlocked and flattened.

Next steps

- Encourage applicant to discuss the proposal with Councillor, community groups and neighbours
- Any questions on the notes or submission requirements let us know.

CLM/JB

APPENDIX B

Water Supply Calculations

LRL File No. 220536-01
Project: Commercial Development
Location: 5254 Bank Street, Ottawa
Date: December 15, 2022
Designed: K.H.

Water Demand
(Based on City of Ottawa Design Guidelines - Water Distribution, 2010)

Commercial / Industrial Demand

Unit Type	Unit Rate		Area (ft^2)	Area (ha)	Demand (L/d)
Service/Repair Shop (Industrial-Light)	35000	L/(grossha)/d	18331.0	0.17	5960.3
				0.17	**5960.3**

Commercial / Industrial Consumption Rates

Unit Type	Value	Units	Value	Units
Average Daily Demand	**5,960**	**L/d**	**0.069**	**L/s**
Maximum Daily Factor	1.5	*(Design guidelines - water distribution Table 4.2)*		
Maximum Daily Demand	**8,940**	**L/d**	**0.103**	**L/s**
Peak Hour Factor	1.8	*(Design guidelines - water distribution Table 4.2)*		
Maximum Hour Demand	**16,093**	**L/d**	**0.186**	**L/s**

Total Demand

Demand	Value	Units	Value	Units
Average Daily Demand	**5,960**	**L/d**	**0.069**	**L/s**
Maximum Daily Demand	**8,940**	**L/d**	**0.103**	**L/s**
Maximum Hourly Demand	**16,093**	**L/d**	**0.186**	**L/s**

Water Service Pipe Sizing

Q = VA	Q = Flow Rate	V = Velocity	A = Area of pipe
Assumed maximum velocity =	*1.8*	*m/s*	

$Q =$ 0.19 L/s
$Q =$ 0.00019 m^3/s

Minimum pipe diameter (d) = $(4Q/\pi V)^{1/2}$
= 0.011 m
= 11 mm

Proposed pipe diameter (d) = **19 mm**
3/4 in

Fire Flow Calculations

LRL File No. 220536-01
Date December 15, 2022
Method Fire Underwriters Survey (FUS)
Prepared by K.H.

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	Ordinary Construction	1		
			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					619	m^2	
3	Obtain fire flow before reductions	Required fire flow *(rounded to nearest 1,000 L/min)*	Fire Flow = 220 x C x $A^{0.5}$				L/min	6,000
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Combustible	0%	L/min	6,000
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	False	0%	L/min	6,000
			Water supply is standard for both the system and fire department hose lines	-10%	False	0%		
			Fully supervised system	-10%	False	0%		
6	Choose separation	Exposure distance between units	North side	>30m	0%		L/min	6,000
			East side	>30m	0%			
			South side	>30m	0%			
			West side	>30m	0%	0%		
Net required fire flow								
7	Obtain fire flow, duration, and volume	Minimum required fire flow rate (rounded to nearest 1000)					L/min	6,000
		Minimum required fire flow rate					L/s	100.0
		Required duration of fire flow					hr	2

Pipe Pressure Losses Calculations

LRL File No. 220536-01
Project Commercial Development
Location: 5254 Bank Street, Ottawa
Date 2022-12-15
Designed: K.H.

Piezometric Head Equation (Derived from Bernoulli's Equation)

$$h = \frac{p}{\gamma} + z$$

Where:

h = HGL (m)
p = Pressure (Pa)
γ = Specific weight (N/m3) = 9810
z = Ground Elevation (m) = 112.93

Water Pressure on Huron Street			
HGL (m)		Pressure	
		kPa	psi
Minimum =	159.9	460.78	66.83
Maximum =	165.2	512.77	74.37
Max. Day + Fire =	155.2	414.67	60.14

Hazen Williams Equation

$$h_f = \frac{10.67 \times Q^{1.85} \times L}{C^{1.85} \times d^{4.87}}$$

Where:

h_f = Head loss over the length of pipe (m)
Q = Volumetric flow rate (m^3/s)
L = Length of pipe (m)
C = Pipe roughness coefficient
d = Pipe diameter (m)

Scenario 1: maximum daily demand

Q (L/s)	0.103
C	150

L (m.)	39.5	
I.D. (mm)	19	
V (m/s)	0.36	
h_f (m)	0.41	
Head Loss (psi)	0.58	
Min. Pressure (psi)	66.25	
Max. Pressure (psi)	73.79	
Service Obv. @ Street Connection (m)	110.53	
Service Obv. @ Building Connection (m)	111.60	
Pressure Adjustment (psi)	-1.52	(due to service elev. Diff. from street to building)
Adjusted Min. Pressure (psi)	64.73	(must not be less than 50psi)
Adjusted Max. Pressure (psi)	72.27	(must not be more than 80psi)

Scenario 2: maximum hourly demand

Q (L/s)	0.186	
C	150	
L (m.)	39.5	
I.D. (mm)	19	
V (m/s)	0.66	
h_f (m)	1.21	
Head Loss (psi)	1.71	
Min. Pressure (psi)	65.12	
Max. Pressure (psi)	72.66	
Service Obv. @ Street Connection (m)	110.53	
Service Obv. @ Building Connection (m)	111.60	
Pressure Adjustment (psi)	-1.52	(due to service elev. Diff. from street to building)
Adjusted Min. Pressure (psi)	63.59	(must not be less than 40psi)
Adjusted Max. Pressure (psi)	71.14	(must not be more than 80psi)

City of Ottawa Boundary Conditions (Multi Hydrant Analysis)

	Quantity	Max Capacity (L/min)*	Available Fire Flow** (L/min)
Fire Hydrant(s) Within 76m	1	5678	5678
Fire Hydrant(s) Within 76m to 152m	2	3785	7570
Fire Hydrant(s) Within 152m to 305m	3	2839	8517
Available Combined Fire Flow (L/min)			21765
Max Day + Fire Flow Demand (L/min)			6006

*as per Table 18.5.4.3. of ISTB-2018-02

**assumed class AA hydrants

The aggregate flow from the six fire hydrants is 21,765 L/min (362.8 L/s), which exceeds the required fire flow of 6006 L/min (100.1 L/s)

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
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PROJECT

PROPOSED MULTI-UNIT
COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

DRAWING TITLE

EXISTING FIRE HYDRANTS
(GEOOTTAWA)

CLIENT	DATE	PROJECT	
UNPOISED ARCHITECTURE INC.	DEC152022	220536-01	C000

Boundary Conditions
5254 Bank Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	4.14	0.069
Maximum Daily Demand	6.18	0.103
Peak Hour	11.16	0.186
Fire Flow Demand # 1	6000	100.0

Location

Results

Connection 1 – Bank Street

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	165.2	74.3
Peak Hour	159.9	66.8
Max Day plus Fire #1	155.2	60.1

[1] Ground Elevation = 112.93 m

Notes

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.

APPENDIX C

Wastewater Collection Calculations

LRL File No. 220536
Project: Commercial Development
Location: 5254 Bank Street
Date: December 15, 2022
Designed: K. Herold
Drawing Ref.: C401

Sanitary Pipe Sizing

DESIGN GUIDELINES

Sanitary Design Parameters		
Avg. Daily Flow	280	L/p/day
Commercial & Industrial Flow	28000	L/ha/day
Light Industrial Flow	35000	L/ha/day
Heavy Industrial Flow	55000	L/ha/day
Maximum Residential Peak Factor	4	
Industrial Peak Factor (as per Appendix 4-B)	7	
Commercial & Industrial Peak Factor	1.5	
Extraneous Flow	0.33	L/s/gross ha

Pipe Design Parameters	
Minimum velocity	Manning's "n"
0.60 m/s	0.013

Domestic Demand			
Unit Type	Persons/Unit	No.of Units	Pop.
1 bedroom apartment	1.4	0	0.0
2 bedroom apartment	2.1	0	0.0
3 bedroom apartment	3.1	0	0.0
Single family dwelling	3.4	0	0.0
		0	**0.0**

LOCATION			RESIDENTIAL						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL			INFILTRATION			TOTAL	PIPE					
STREET	From	To	AREA	POP.	CUMMULATIVE AREA	CUMMULATIVE POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FACT.	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	TOTAL FLOW	LENGTH	DIA.	SLOPE	MAT.	CAP. (FULL)	VEL. (FULL)
			(ha)		(ha)			(L/s)	(ha)	(ha)	(ha)	(ha)		(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(m)	(mm)	(%)		(L/s)	(m/s)
Bank Street	Prop. Bldg	Septic Tank	0.000	0.0	0.000	0.0	4.0	0.00	0.000	0.000	0.172	0.172	7.0	0.000	0.000	0.49	0.172	0.172	0.06	0.54	5.0	150	2.00%	PVC	21.54	1.22
					0.000	0.0				0.000		0.172			0.000			0.172								

APPENDIX D

Stormwater Management Calculations

LRL Associates Ltd.

Storm Watershed Summary

LRL File No.	220536
Project:	Commercial Dev
Location:	5254 Bank Street
Date:	December 15, 2022
Designed:	K. Herold
Checked:	M. Basnet
Drawing Reference:	C.702, C.702

Pre-Development Catchments

WATERSHED	C = 0.20	C = 0.8	C = 0.90	Total Area (ha)	Combined C
EWS-01	0.052	0.031	0.089	0.172	0.67
TOTAL	**0.052**	**0.031**	**0.089**	**0.172**	**0.67**

Post-Development Catchments

WATERSHED	C = 0.20	C = 0.8	C = 0.90	Total Area (ha)	Combined C
WS-01	0.001	0.000	0.021	0.022	0.87
WS-02	0.000	0.000	0.090	0.090	0.90
WS-03	0.003	0.000	0.025	0.028	0.83
TOTAL CONTROLLED	**0.004**	**0.000**	**0.136**	**0.140**	**0.88**
WS-04	0.032	0.000	0.000	0.032	0.20
TOTAL UNCONTROLLED	**0.032**	**0.000**	**0.000**	**0.032**	**0.20**
TOTAL	**0.036**	**0.000**	**0.136**	**0.172**	**0.75**

LRL File No. 220536
Project: Commercial Dev
Location: 5254 Bank Street
Date: December 15, 2022
Designed: K. Herold
Checked: M. Basnet
Drawing Ref.: C.401

Stormwater Management Design Sheet

STORM - 100 YEAR

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) = $A / (Td + C)^B$
A = Area (ha)
T_c = Time of concentration (min)

Pre-Development Catchments within Development Area

	Total Area =	**0.172**	ha	**∑R=**	**0.67**
Un-Controlled	EWS-01	0.172	ha	R=	0.67
	Total Uncontrolled =	**0.172**	**ha**	**∑R=**	**0.67**

Allowable Release Rate (Max C=0.5, 2-year Pre-Dev FR)

2 Year Pre-Development Flow Rate

I2 = 732.951 / (Td + 6.199)$^{0.81}$ **a = 732.951** **b = 0.81** **C = 6.199**

C =	0.50	the smaller of 0.5 or the actual existing as per the City of Ottawa
I =	76.8	mm/hr
Tc =	10	min
Total =	0.172	ha
Allowable Release Rate=	**18.36**	L/s

Post-development Stormwater Management

					$\sum R_5$	$\sum R_{100}$
	Total Site Area =	**0.172**	ha	**∑R=**	**0.75**	**0.94**
Controlled	**Total Controlled =**	**0.140**	**ha**	**∑R=**	**0.88**	**1.00**
Un-controlled	**Total Un-Controlled =**	**0.032**	**ha**	**∑R=**	**0.20**	**0.25**

Post-development Stormwater Management

I_{100} = 1735.688 / (Td + 6.014)$^{0.820}$ **a = 1735.688** **b = 0.82** **C = 6.014**

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	178.6	69.50	33.30	14.00	3.97	17.97
15	142.9	55.61	37.45	14.00	3.18	17.18
20	120.0	46.68	39.22	14.00	2.67	16.67
25	103.8	40.42	39.63	14.00	2.31	16.31
30	91.9	35.76	39.16	14.00	2.04	16.04
35	82.6	32.14	38.09	14.00	1.84	15.84
40	75.1	29.25	36.59	14.00	1.67	15.67
45	69.1	26.87	34.76	14.00	1.54	15.54
50	64.0	24.89	32.67	14.00	1.42	15.42
55	59.6	23.21	30.38	14.00	1.33	15.33
60	55.9	21.75	27.92	14.00	1.24	15.24
65	52.6	20.49	25.31	14.00	1.17	15.17
70	49.8	19.38	22.59	14.00	1.11	15.11
75	47.3	18.39	19.76	14.00	1.05	15.05
80	45.0	17.51	16.85	14.00	1.00	15.00

Post-development Stormwater Management

I_{100} = 1735.688 / (Td + 6.014)$^{0.820}$ **a = 1735.688** **b = 0.82** **C = 6.014**

*** for volume calculation, controlled release rate taken as half of the discharge rate**

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	178.6	69.50	37.50	7.00	3.97	10.97
15	142.9	55.61	43.75	7.00	3.18	10.18
20	120.0	46.68	47.62	7.00	2.67	9.67
25	103.8	40.42	50.13	7.00	2.31	9.31
30	91.9	35.76	51.76	7.00	2.04	9.04
35	82.6	32.14	52.79	7.00	1.84	8.84
40	75.1	29.25	53.39	7.00	1.67	8.67
45	69.1	26.87	53.66	7.00	1.54	8.54
50	64.0	24.89	53.67	7.00	1.42	8.42
55	59.6	23.21	53.48	7.00	1.33	8.33
60	55.9	21.75	53.12	7.00	1.24	8.24
65	52.6	20.49	52.61	7.00	1.17	8.17
70	49.8	19.38	51.99	7.00	1.11	8.11
75	47.3	18.39	51.26	7.00	1.05	8.05
80	45.0	17.51	50.45	7.00	1.00	8.00

Onsite Stormwater Retention

Total Storage Required =	**53.67**	**m^3**	
Underground Storage =	54.60	m^3	refer to LRL Plan C401, C601
Surface Storage =	3.35	m^3	refer to LRL Plan C401, C601
Total Available Storage =	**57.95**	**m^3**	

LRL Associates Ltd.

Storm Design Sheet

LRL File No.	220536
Project:	Commercial Dev
Location:	5254 Bank Street
Date:	December 15, 2022
Designed:	K. Herold
Checked:	M. Basnet
Drawing Reference:	C.401

Storm Design Parameters

Rational Method Q = 2.78CIA

Q = Peak flow in litres per second (L/s)
A = Drainage area in hectares (ha)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)

Runoff Coefficient (C)

Grass	0.20
Gravel	0.80
Asphalt / rooftop	0.90

Ottawa Macdonald-Cartier International Airport IDF curve equation (2 year event, intensity in mm/hr)
$I = 732.951 / (T_c + 6.199)^{0.81}$
Min. velocity = 0.80 m/s
Manning's "n" = 0.013

LOCATION			AREA (ha)			FLOW					STORM SEWER								MANHOLE						
WATERSHED / STREET	From MH	To MH	C = 0.20	C = 0.80	C = 0.90	Indiv. 2.78AC	Accum. 2.78AC	Time of Conc. (min.)	Rainfall Intensity (mm/hr)	Peak Flow Q (l/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})	Up Invert (m)	Down Invert (m)	T/G Up Stream (m)	T/G Down Stream	Up Depth obv (m)	Down Depth obv (m)	Up Depth inv (m)
WS-01	CB01	CBMH03	0.001	0.000	0.021	0.05	0.05	10.00	76.81	4.08	250	PVC	0.50%	27.8	42.05	0.86	0.54	**0.10**							
WS-03	CB02	CBMH03	0.003	0.000	**0.040**	0.10	0.10	10.00	76.81	7.81	250	PVC	0.50%	37.1	42.05	0.86	0.72	**0.19**							
*ADDED 150M2 TO C = 0.90 TO ACCOUNT FOR ENTRANCE/DRIVEWAY RUNOFF																									
WS-01,02,03	CBMH03	NYLOPLAST	0.004	0.000	**0.151**	0.38	0.38	10.84	73.72	28.02	250	PVC	0.50%	2.0	42.05	0.86	0.04	**0.67**							
*ADDED 150M2 TO C = 0.90 TO ACCOUNT FOR ENTRANCE/DRIVEWAY RUNOFF																									
WS-01,02,03	ICD	PUMP	0.004	0.000	**0.151**	0.38	0.38	10.84	73.72	14.00	250	PVC	0.50%	11.0	42.05	0.86	0.21	**0.33**							
*ADDED 150M2 TO C = 0.90 TO ACCOUNT FOR ENTRANCE/DRIVEWAY RUNOFF, PEAK FLOW = CONTROLLED RELEASE RATE 14.00 L/s																									

ADS OGS Sizing Summary

Project Name:	5254 Bank Street
Consulting Engineer:	LRJ Engineering
Location:	Ottawa, Ontario
Sizing Completed By:	Haider Nasrullah

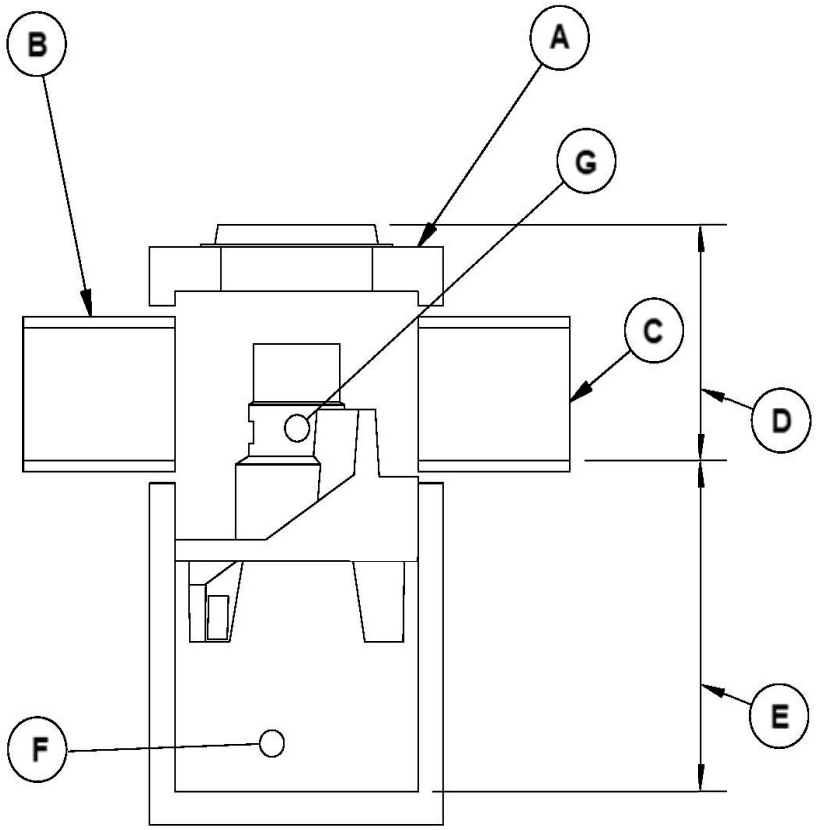
Email: haider.nasrullah@adspipe.com

Treatment Requirements		
Treatment Goal:	Enhanced (MOE)	
Selected Parameters:	80% TSS	90% Volume
Selected Unit:	**FD-4HC**	

Site Details	
Site Area:	0.14 ha
% Impervious:	95%
Rational C:	0.88
Rainfall Station:	Ottawa, ONT
Particle Size Distribution:	Fine
Peak Flowrate:	510 L/s

Summary of Results		
Model	**TSS Removal**	**Volume Treated**
FD-4HC	97.0%	99.9%
FD-5HC	98.0%	99.9%
FD-6HC	99.0%	99.9%
FD-8HC	100.0%	99.9%

FD-4HC Specification	
Unit Diameter (A):	1,200 mm
Inlet Pipe Diameter (B):	200, 200 mm
Outlet Pipe Diameter (C):	300 mm
Height, T/G to Outlet Invert (D):	2440 mm
Height, Outlet Invert to Sump (E):	1515 mm
Sediment Storage Capacity (F):	0.78 m³
Oil Storage Capacity (G):	723 L
Recommended Sediment Depth for Maintenance:	440 mm
Max. Pipe Diameter:	600 mm
Peak Flow Capacity:	510 L/s



Site Elevations:	
Rim Elevation:	114.15
Inlet Pipe Elevation:	111.76, 111.81
Outlet Pipe Elevation:	111.71

Notes:

Removal efficiencies are based on NJDEP Test Protocols and independently verified.

All units supplied by ADS have numerous local, provincial, and international certifications (copies of which can be provided upon request). The design engineer is responsible for ensuring compliance with applicable regulations.

Project Name:	5254 Bank Street
Consulting Engineer:	LRJ Engineering
Location:	Ottawa, Ontario

Net Annual Removal Efficiency Summary: FD-4HC

Rainfall Intensity[1]	Fraction of Rainfall[1]	FD-4HC Removal Efficiency[2]	Weighted Net-Annual Removal Efficiency
mm/hr	%	%	%
0.50	0.1%	100.0%	0.1%
1.00	14.1%	100.0%	14.1%
1.50	14.2%	100.0%	14.2%
2.00	14.1%	100.0%	14.1%
2.50	4.2%	100.0%	4.2%
3.00	1.5%	100.0%	1.5%
3.50	8.5%	100.0%	8.5%
4.00	5.4%	100.0%	5.4%
4.50	1.2%	99.9%	1.2%
5.00	5.5%	98.9%	5.5%
6.00	4.3%	97.3%	4.2%
7.00	4.5%	95.9%	4.3%
8.00	3.1%	94.7%	2.9%
9.00	2.3%	93.7%	2.2%
10.00	2.6%	92.7%	2.4%
20.00	9.2%	87.0%	8.0%
30.00	2.6%	83.7%	2.2%
40.00	1.2%	81.5%	0.9%
50.00	0.5%	79.9%	0.4%
100.00	0.7%	74.9%	0.5%
150.00	0.1%	72.1%	0.1%
200.00	0.0%	70.2%	0.0%
		Total Net Annual Removal Efficiency:	97.0%
		Total Runoff Volume Treated:	99.9%

Notes:

(1) Rainfall Data: 1960:2007, HLY03, Ottawa, ONT, 6105976 & 6105978.

(2) Based on third party verified data and appoximating the removal of a PSD similar to the STC Fine distribution

(3) Rainfall adjusted to 5 min peak intensity based on hourly average.

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

5254 BANK STREET
OTTAWA, CANADA

SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL BE CERTIFIED TO CSA B184, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES", AND MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 150 mm (6") SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 20-50 mm (3/4-2").
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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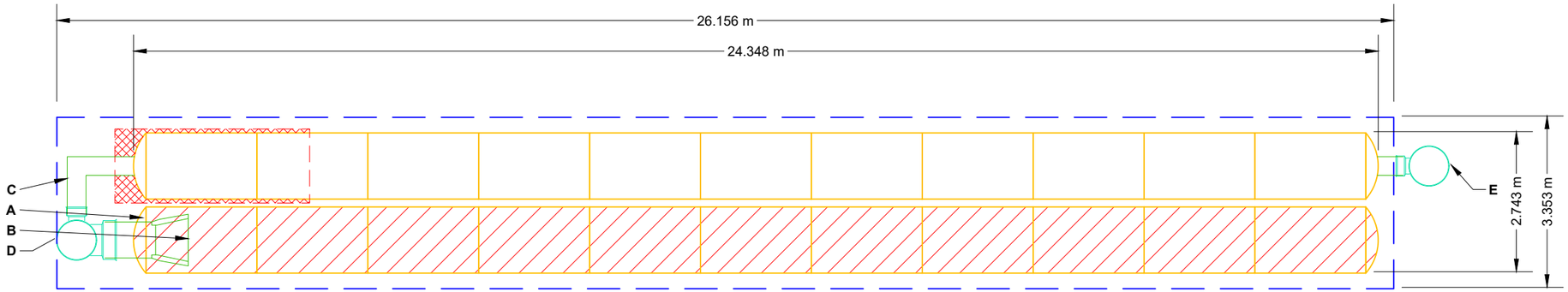
PROPOSED LAYOUT		PROPOSED ELEVATIONS	
22	STORMTECH SC-740 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	114.898
4	STORMTECH SC-740 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	113.069
152	STONE ABOVE (mm)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	112.917
152	STONE BELOW (mm)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	112.917
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	112.917
54.6	INSTALLED SYSTEM VOLUME (m^3) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	112.612
		TOP OF SC-740 CHAMBER:	112.459
		300 mm x 300 mm TOP MANIFOLD INVERT:	112.015
		300 mm BOTTOM CONNECTION INVERT:	111.728
87.7	SYSTEM AREA (m^2)	600 mm ISOLATOR ROW PLUS INVERT:	111.700
59.0	SYSTEM PERIMETER (m)	BOTTOM OF SC-740 CHAMBER:	111.697
		BOTTOM OF STONE:	111.545

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED EZ END CAP	A	600 mm BOTTOM PREFABRICATED EZ END CAP, PART#: SC740ECEZ / TYP OF ALL 600 mm BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	3 mm	
FLAMP	B	INSTALL FLAMP ON 600 mm ACCESS PIPE / PART#: SC74024RAMP		
MANIFOLD	C	300 mm x 300 mm TOP MANIFOLD, ADS N-12	318 mm	
NYLOPLAST (INLET W/ ISO PLUS ROW)	D	750 mm DIAMETER (610 mm SUMP MIN)		65 L/s IN
NYLOPLAST (OUTLET)	E	750 mm DIAMETER (DESIGN BY ENGINEER)		57 L/s OUT



ISOLATOR ROW PLUS
(SEE DETAIL)

PLACE MINIMUM 3.810 m OF ADSPLUS125 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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OTTAWA, CANADA

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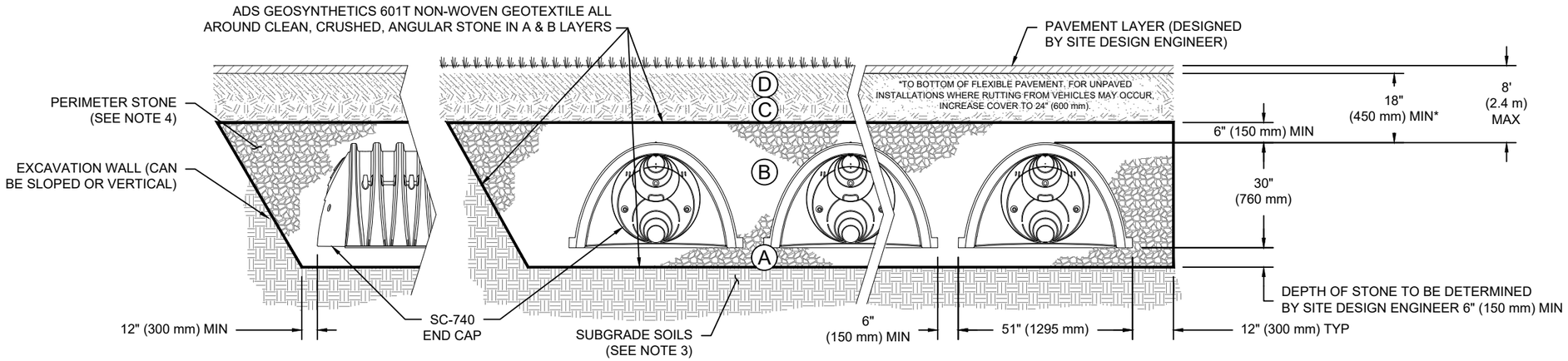
SCALE = 1 : 100

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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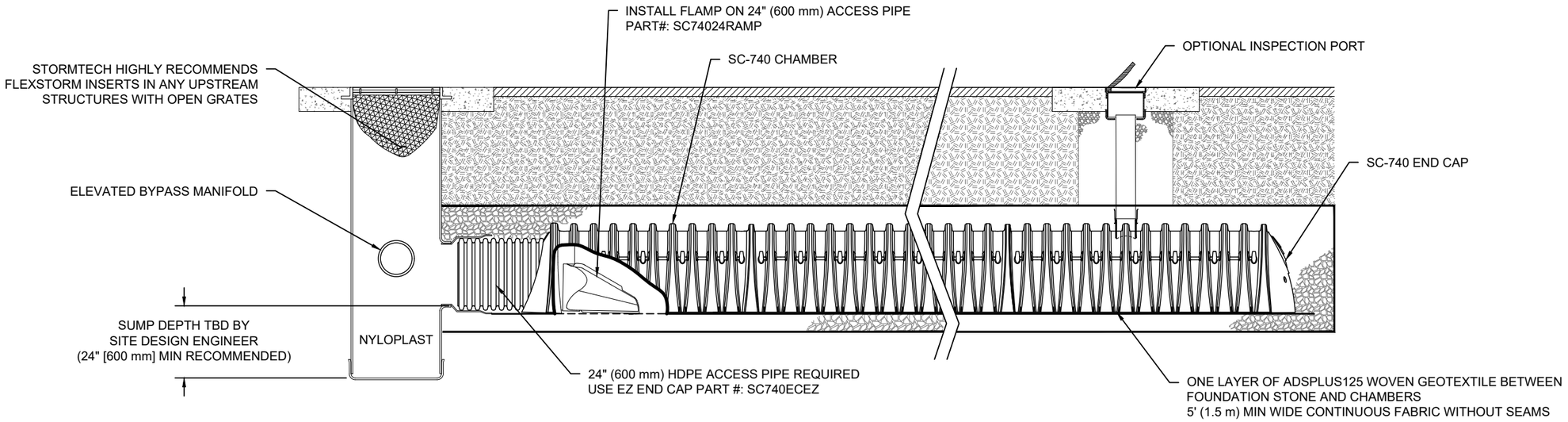

SC-740 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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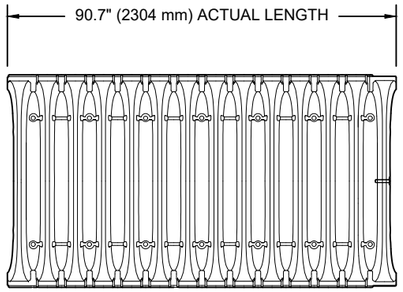
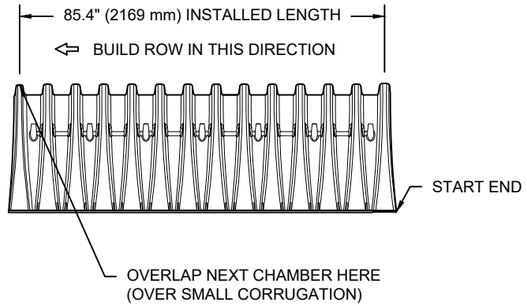
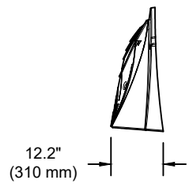
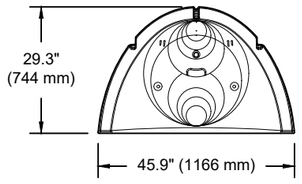
SC-740 TECHNICAL SPECIFICATION

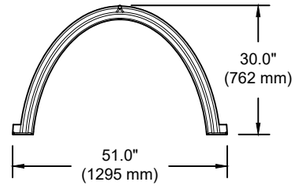
NTS







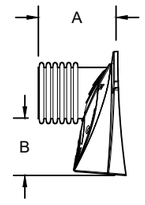


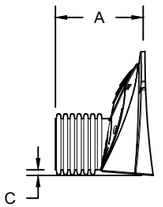


NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS





PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

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HILLIARD, OH 43026
1-800-733-7473

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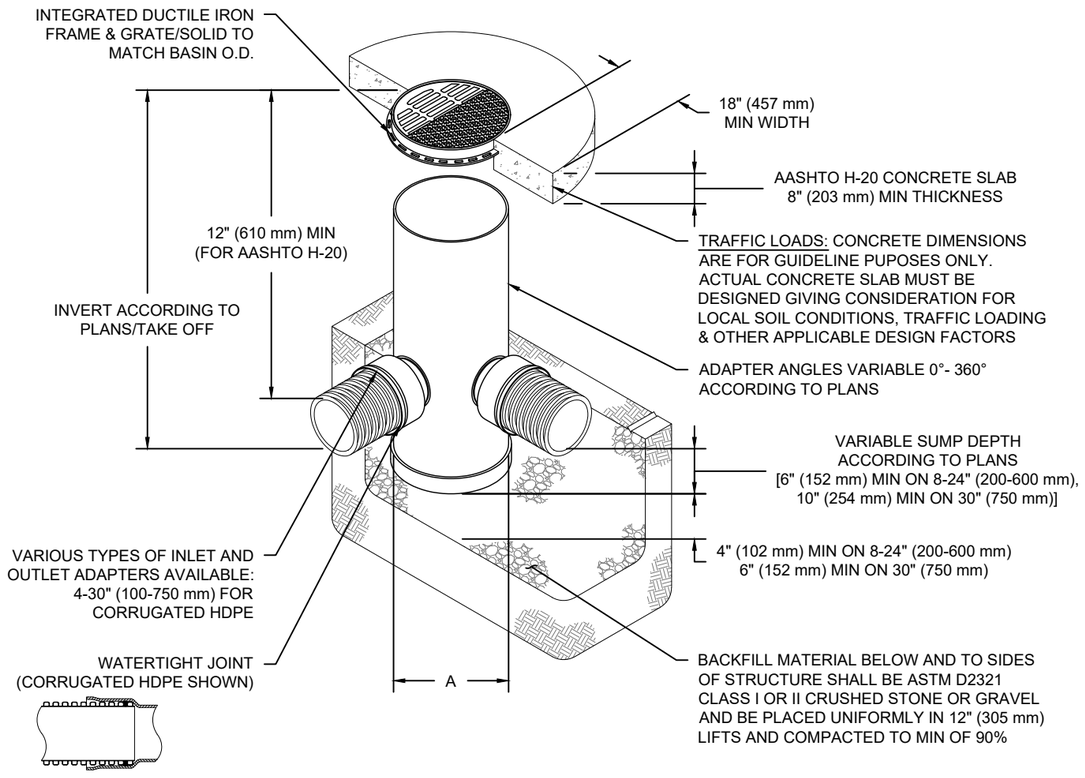
NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

5254 BANK STREET
OTTAWA, CANADA

DATE:
DRAWN: HN
PROJECT #:
CHECKED: N/A

DATE	DRW	CHK	DESCRIPTION

Nyloplast®
770-932-2443 | WWW.NYLOPLAST-US.COM
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

APPROVED EQUIVALENT
T/G = 114.25
SE INV = 111.70

FLOW = 14.00 L/s
HEAD = 2.50m

27.8m - 200mmØ PVC
STM @ 0.5% SLOPE

PROP 2.0m - 300mmØ PVC
DR-35 STM @ 0.5% SLOPE

PROP CBMH03
T/G = 114.15
NE INV = 111.81
SW INV = 111.76
NW INV = 111.71

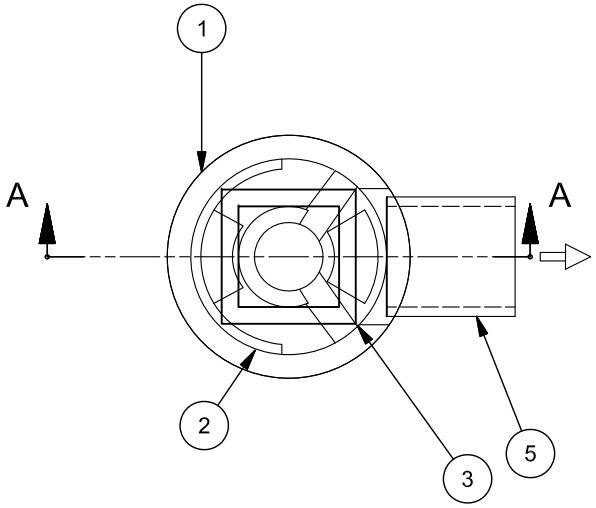
PROP 37.1m - 200mmØ PVC
DR-35 STM @ 0.5% SLOPE

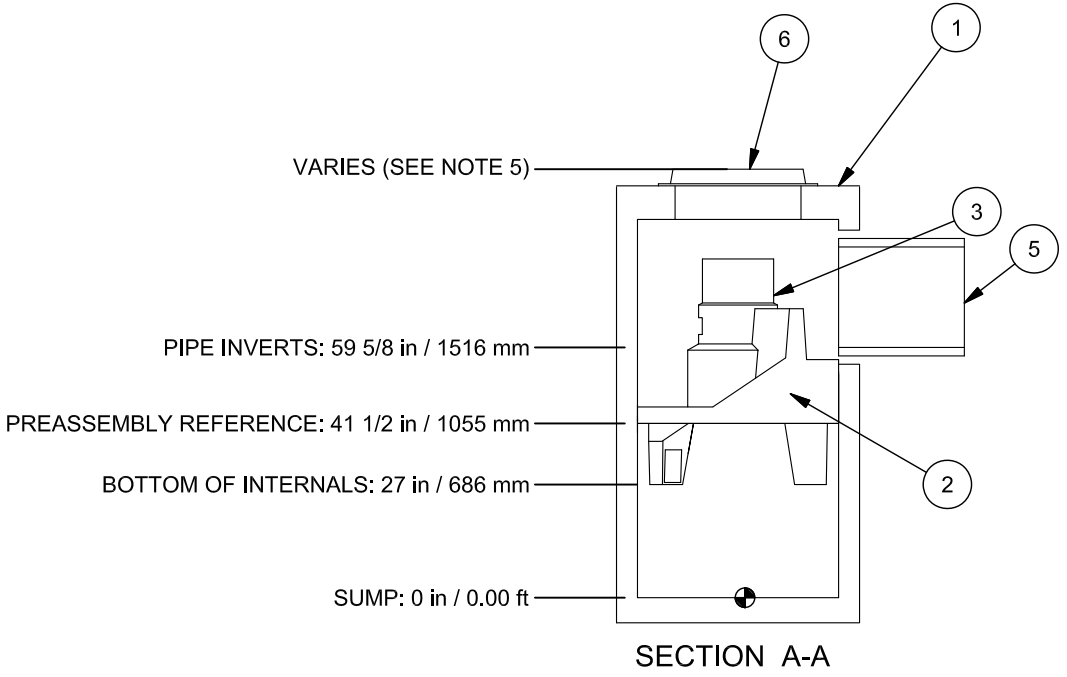
PROPOSED BAY 4
G.F.A. = +83m²

PROPOSED BAY 3
G.F.A. = +91m²

PROPOSED BAY 2
G.F.A. = +91m²

PROPOSED BAY 1
G.F.A. = +93m²





SECTION A-A

Notes

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

REV	BY	DATE	DESCRIPTION
A	JL	11/5/15	SUMP DEPTH

REVISION HISTORY

Date	Scale
11/25/14	1/4" = 1'0"

Drawn	Checked	Approved
RC		

Title

4-FT DIAMETER
FIRST DEFENSE® HC

GRATED TOP INLET ONLY

HIGH CAPACITY
GENERAL ARRANGEMENT

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific fabrication drawings.
2. The diameter of the inlet & outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plans).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plans).
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PRODUCT SPECIFICATIONS:
A. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
B. The treatment system shall fit within the limits of excavation (area and depth) as shown in the project plans and will not exceed the dimensions for the design flow rates specified herein.
C. The treatment system shall convey the Peak On-line Flow Rates of up to 18 cfs without causing upstream surcharge conditions. Full-scale independent laboratory scour testing shall demonstrate effluent control of less than or equal to 5 mg/L for all flows up to 200% of MTFR-106.
D. The treatment system shall be capable of capturing and retaining fine silt and sand size particles. Analysis of captured sediment from full-scale field installations shall demonstrate particle sizes predominately in the 20-micron range

Parts List		
ITEM	SIZE (in)	DESCRIPTION
1	48	I.D. PRECAST MANHOLE
2		LEDGER SUPPORT
3		SEPARATION MODULE
4	24	INLET PIPE (BY OTHERS)
5	24	OUTLET PIPE (BY OTHERS)
6	24	FRAME AND GRATE (SQUARE)

Hydro International

Stormwater Solutions
94 Hutchins Drive
Portland, Maine 04102
Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

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Hydro International

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CAD Ref:	F4HC-MAXNJscale
Project No.	xx-xxxx
Drawing No.	F4HCS1 Rev. A

APPENDIX E

Civil Engineering Drawings

EROSION AND SEDIMENT CONTROL MEASURES:

** CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES **

1. PRIOR TO START OF CONSTRUCTION:

- PRIOR TO THE REMOVAL OF ANY VEGETATIVE COVER, MOVING OF SOIL AND CONSTRUCTION:
- INSTALL SILT FENCE IMMEDIATELY DOWNSTREAM FROM AREAS TO BE DISTURBED (SEE PLAN FOR LOCATION).
- INSTALL GEOSOCK INSERTS WITH AN OVERFLOW IN ALL THE DOWNSTREAM CATCHBASINS AND MANHOLES
- INSTALL SILTSACK FILTERS IN ALL CONCRETE CATCH BASINS STRUCTURES
- INSPECT MEASURES IMMEDIATELY AFTER INSTALLATION.

2. DURING CONSTRUCTION:

- WORK TO BE DONE IN THE VICINITY OF MAJOR WATERWAYS TO BE CARRIED OUT FROM JULY TO SEPTEMBER ONLY.
- MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE.
- PROTECT DISTURBED AREAS FROM RUNOFF.
- PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREA WILL NOT BE REHABILITATED WITHIN 30 DAYS.
- INSPECT SILT FENCES, FILTER CLOTHS AND CATCH BASIN SUMPS WEEKLY AND AFTER EVERY MAJOR STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY.
- CONSTRUCT SWALES AS PER DETAIL.
- PLAN TO BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION
- EROSION CONTROL FENCING TO BE ALSO INSTALLED AROUND THE BASE OF ALL STOCKPILES.
- DO NOT LOCATE TOPSOIL PILES AND EXCAVATION MATERIAL CLOSER THAN 2.5m FROM ANY PAVED SURFACE, OR ONE WHICH IS TO BE PAVED BEFORE THE PILE IS REMOVED. ALL TOPSOIL PILES ARE TO BE SEEDED IF THEY ARE TO REMAIN ON SITE LONG ENOUGH FOR SEEDS TO GROW (LONGER THAN 30 DAYS).
- CONTROL WIND-BLOWN DUST OFF SITE TO ACCEPTABLE LEVELS BY SEEDING TOPSOIL PILES AND OTHER AREAS TEMPORARILY (PROVIDE WATERING AS REQUIRED).
- ALL EROSION CONTROL STRUCTURE TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN STABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
- NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THIS CONSULTING ENGINEER AND THE CITY DEPARTMENT OF PUBLIC WORKS.
- CONTRACTOR RESPONSIBLE FOR CITY ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING ETC. AT THE END OF EACH WORK DAY.
- PROVIDE GRAVEL ENTRANCE WHEREVER EQUIPMENT LEAVES THE SITE TO PREVENT MUD TRACKING ONTO PAVED SURFACES. GRAVEL BED SHALL BE A MINIMUM OF 15m LONG, 4M WIDE AND 0.3m DEEP AND SHALL CONSIST OF COARSE (50mm CRUSHERT-RUN LIMESTONE) MATERIAL. MAINTAIN GRAVEL ENTRANCE IN CLEAN CONDITION.
- DURING WET CONDITIONS, TIRES OF ALL VEHICLES/EQUIPMENT LEAVING THE SITE ARE TO BE SCRAPED.
- ANY MUD/MATERIAL TRACKED ONTO THE ROAD SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE LOADER.
- TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIAL, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS SO AFFECTED.

3. AFTER CONSTRUCTION:

- PROVIDE PERMANENT COVER CONSISTING OF TOPSOIL AND SEED TO DISTURBED AREAS.
- REMOVE STRAW BALE FLOW CHECK DAMS, SILT FENCES AND FILTER CLOTHS ON CATCH BASINS AND MANHOLE COVERS AFTER DISTURBED AREAS HAVE BEEN REHABILITATED AND STABILIZED.
- INSPECT AND CLEAN CATCH BASIN SUMPS AND STORM SEWERS.

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.

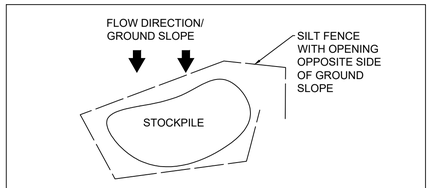
SPILL CONTROL NOTES

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.

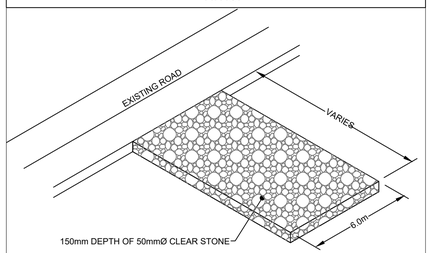
MUD MAT NOTES

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.

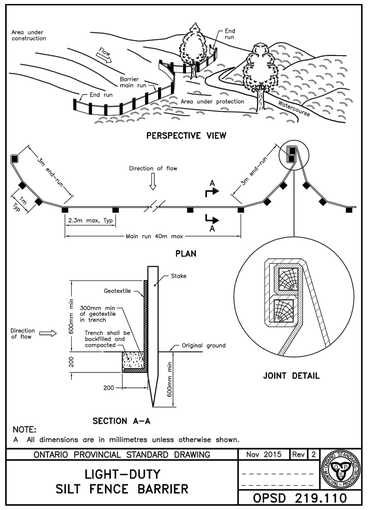
1.



STOCKPILE EROSION PROTECTION
N.T.S.

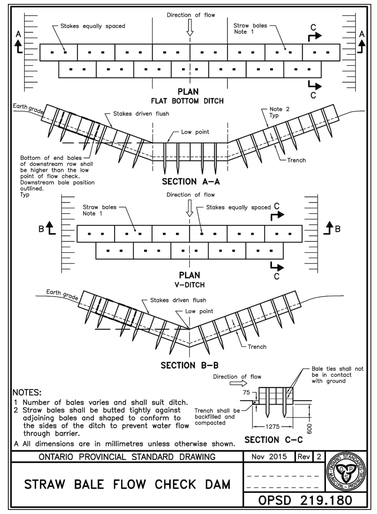


MUD MAT - CONSTRUCTION ACCESS
NTS



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

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	2
LIGHT-DUTY SILT FENCE BARRIER		OPSD 219.110	

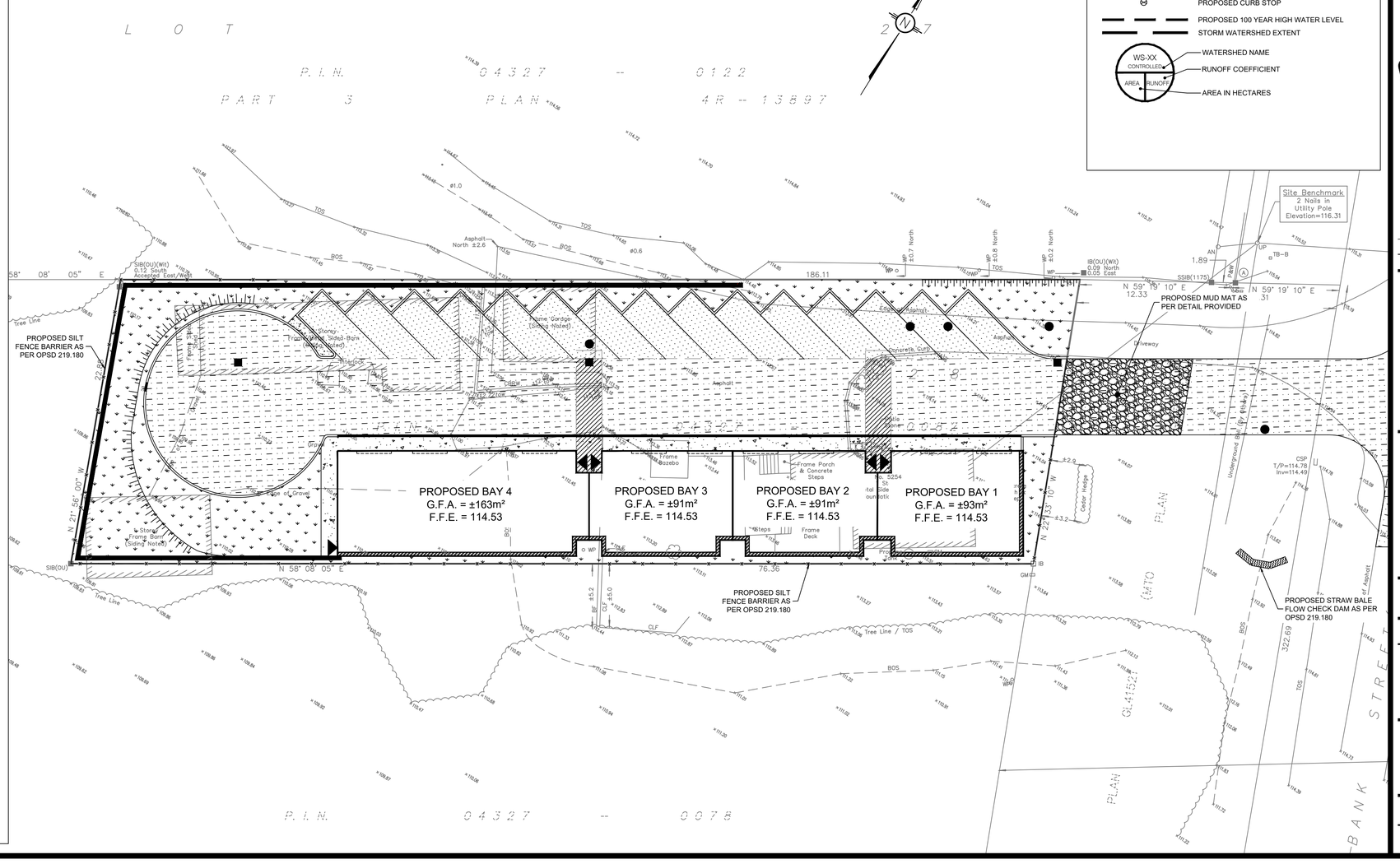


NOTES:
1 Number of bales varies and shall suit ditch.
2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	2
STRAW BALE FLOW CHECK DAM		OPSD 219.180	

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×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
- STM / SAN / WTR — PROPOSED STORM SEWER / PROPOSED SANITARY SEWER / PROPOSED WATERMAIN
- STM / SAN / WTR — EXISTING STORM SEWER / EXISTING SANITARY SEWER / EXISTING WATERMAIN
- EXISTING CATCHBASIN-MANHOLE/MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED CURB STOP
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX (CONTROLLER) / AREA / RUNOFF — WATERSHED NAME / RUNOFF COEFFICIENT / AREA IN HECTARES



No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

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 DETAILS 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.

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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

NOT FOR CONSTRUCTION TENDER OR PERMIT

LICENSED PROFESSIONAL ENGINEER M. BASNET 100501996 2022/12/15 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
UNPOISED ARCHITECTURE INC

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT
PROPOSED MULTI-UNIT COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO. 220536
DATE JUNE2022

C101

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 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.

SITE GRADING NOTES

1. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS (AS APPLICABLE).
2. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. 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.
4. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 300MM AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
5. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300MM LIFTS.
6. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR BACKFILLING.
7. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
8. 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.
9. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
10. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
11. 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 ENGINEER.

ROADWORK SPECIFICATIONS

12. ROADWORK TO BE COMPLETED IN ACCORDANCE WITH GEOTECHNICAL REPORT.
13. ALL 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 THE MUNICIPAL AUHTORITY.
14. THE SUBGRADE SHALL BE CROWNED AND SLOPED AT LEAST 2% AND PROOF ROLLED WITH HEAVY ROLLERS.
15. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'A', TYPE II COMPACTED IN MAXIMUM 300MM LIFTS.

ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO MINIMUM OF 100% STANDARD PROCTOR DENSITY MAXIMUM DRY DENSITY (SPMDD).

PAVEMENT STRUCTURE

COURSE	MATERIAL	THICKNESS (mm) AUTOMOBILE PARKING	THICKNESS (mm) TRUCK ROUTE (HEAVY TRAFFIC)
SURFACE	HL.3 A/C (PG 58-28)	50	40
BINDER	HL.8 A/C (PG 58-28)	--	50
BASECOURSE	OPSS GRANULAR "A"	150	150
SUBBASE	OPSS GRANULAR "B" TYPE II	350	450

NOTE:
IN PREPARATION FOR PAVEMENT CONSTRUCTION AT THIS SITE, ANY SURFICIAL OR NEAR SURFACE/SUBGRADE LEVEL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIALS SHOULD BE REMOVED FROM THE PROPOSED PAVED AREAS. THE EXPOSED SUBGRADE SHOULD BE INSPECTED AND APPROVED BY GEOTECHNICAL PERSONNEL AND ANY SOFT AREAS EVIDENT SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE EARTH BORROW APPROVED BY THE GEOTECHNICAL ENGINEER. THE SUBGRADE SHOULD BE SHAPED AND CROWNED TO PROMOTE DRAINAGE OF THE SITE DRAINAGE STRUCTURES. FOLLOWING APPROVAL OF THE PREPARATION OF THE SUBGRADE, THE PAVEMENT GRANULARS MAY BE PLACED.

REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY LRL ASSOCIATES DATED JULY 2021.

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
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- PROPOSED SILT FENCE AS PER OPSD 219.110
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- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
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- WS-XX — WATERSHED NAME
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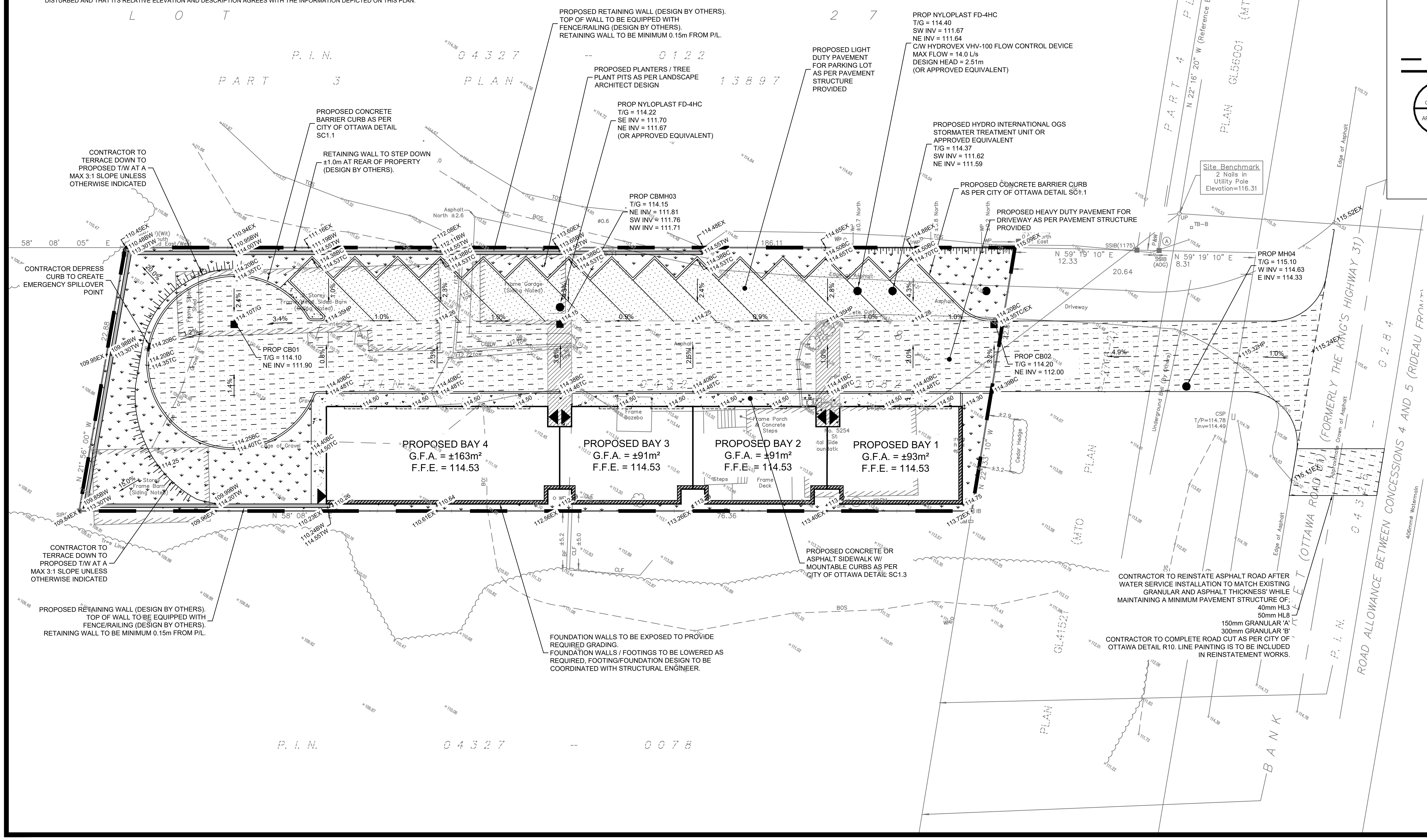

Topographical Information

Topographic information provided by Farley, Smith and Denis Surveying Ltd.
File No: 67-19
Dated: April 24th, 2019

Metric Note

Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

Distance Note

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99995.

Bearing Note

Bearings are MTM grid, derived from the Can-Net Real Time Network.
GPS observations on reference points A and B, shown hereon, having a bearing of
N 22° 16' 20" W and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) Nad-83 (Original).

For bearing comparisons, a rotation of 6°16'20" counter-clockwise was applied to bearings on P1.

For bearing comparisons, a rotation of 0°39'20" counter-clockwise was applied to bearings on P2, P3, P4 & P5.

Elevation Notes

1. Elevations shown are geodetic and are referred to Geodetic Datum CGVD-1928 :1978.
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. Underground utility data derived from City of Ottawa utility sheet reference: 7123 (sheet 6).
4. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

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5m 2 0 5m
SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

LICENSED PROFESSIONAL ENGINEER M. BASNET 100501996 2022/12/15 PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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CLIENT
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DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT
PROPOSED MULTI-UNIT COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

DRAWING TITLE
GRADING AND DRAINAGE PLAN

PROJECT NO.
220536

DATE
JUNE2022

C301

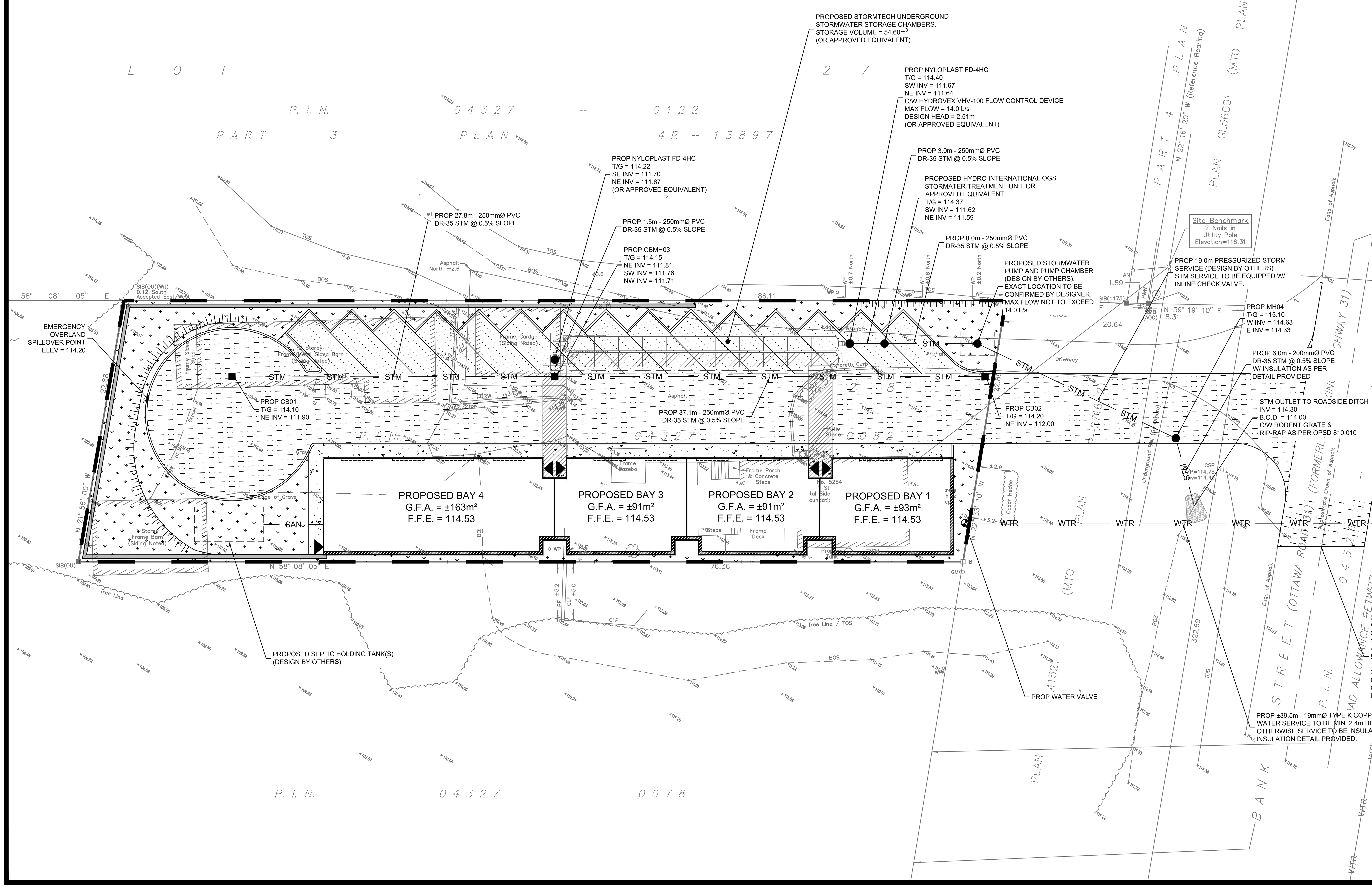
SANITARY, FOUNDATION DRAIN, STORM SEWER AND WATERMAIN NOTES

GENERAL

1. LASER ALIGNMENT CONTROL TO BE UTILIZED ON ALL SEWER INSTALLATIONS.
2. 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.

STORM

3. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
4. CATCH BASIN SHALL BE IN ACCORDANCE WITH OPSD 705.010.
5. CATCH BASIN LEADS SHALL BE IN 200MM DIA. AT 1% SLOPE (MIN) UNLESS SPECIFIED OTHERWISE.
6. ALL CATCH BASINS SHALL HAVE 600MM SUMPS, UNLESS SPECIFIED OTHERWISE.
7. ALL CATCH BASIN LEAD INVERTS TO BE 1.5M BELOW FINISHED GRADE UNLESS SPECIFIED OTHERWISE.
8. 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.
9. ALL STORM MANHOLES WITH PIPE LESS THAN 900MM IN DIAMETER SHALL BE CONSTRUCTED WITH A 300MM SUMP AS PER SDG, CLAUSE 6.2.6.



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5m 2 0 5m

SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

LICENSED PROFESSIONAL ENGINEER M. BASNET 100501996 2022/12/15 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: UNPOISED ARCHITECTURE INC

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

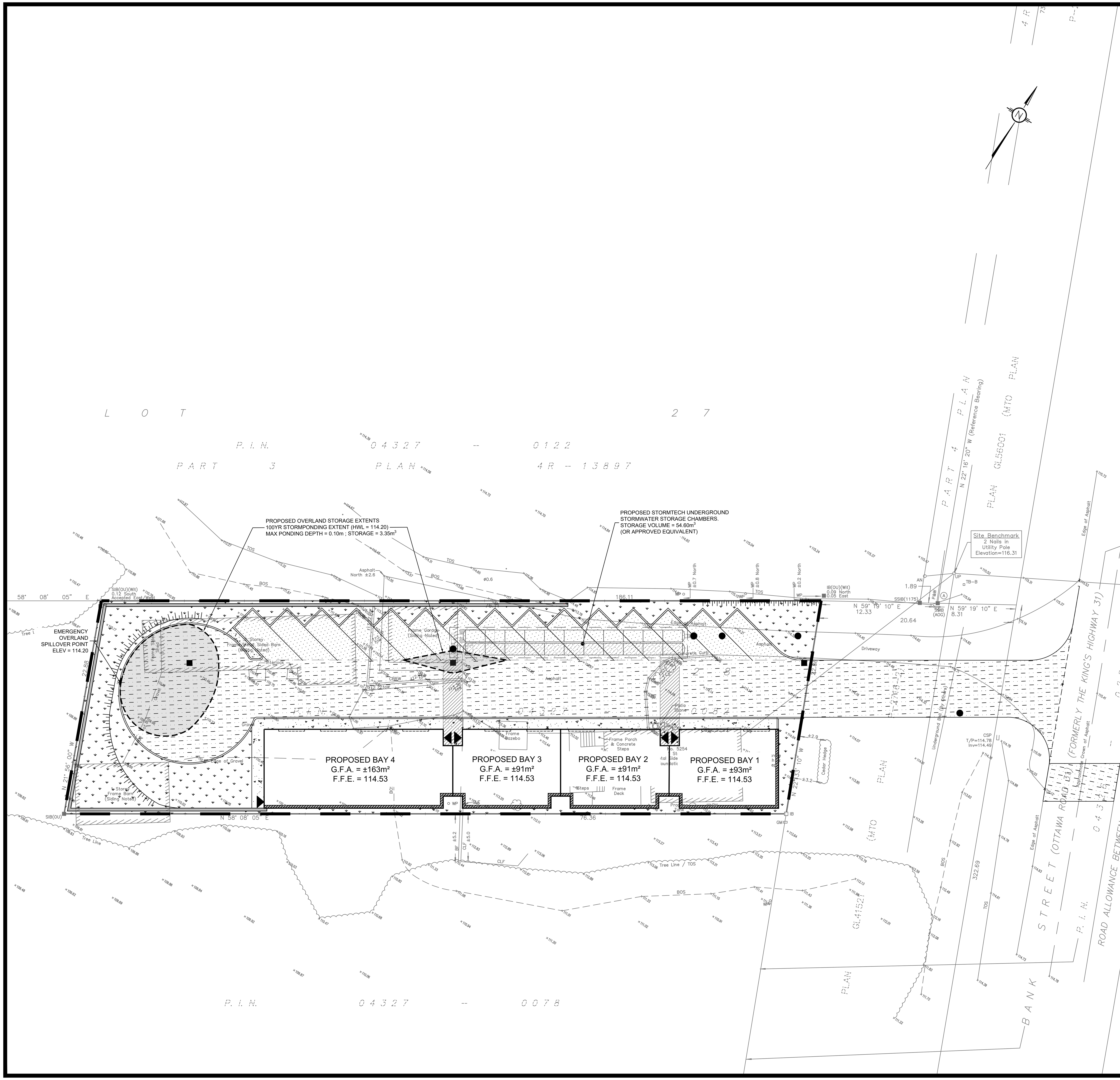
PROJECT: PROPOSED MULTI-UNIT COMMERCIAL DEVELOPMENT 5254 BANK STREET, OTTAWA

DRAWING TITLE: SERVICING PLAN

PROJECT NO. 220536

DATE JUNE2022

C401



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
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- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
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- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
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- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
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- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- 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
- EXISTING CATCHBASIN-MANHOLE/MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED CURB STOP
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX / CONTROLLED — WATERSHED NAME
- RUNOFF — RUNOFF COEFFICIENT
- AREA — AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

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5m 2 0 5m

SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2022/12/15
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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CLIENT
UNPOISED ARCHITECTURE INC

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

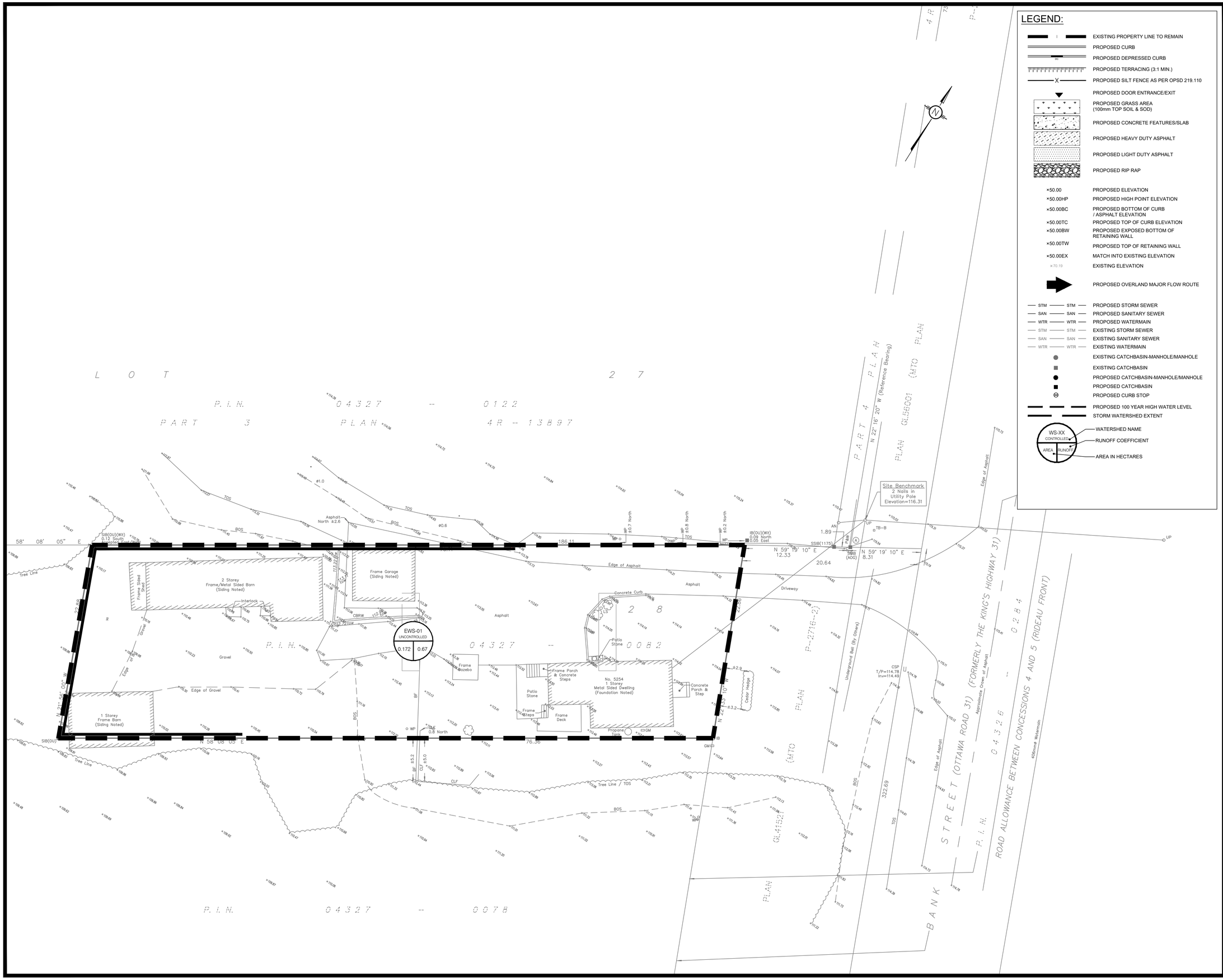
PROJECT
PROPOSED MULTI-UNIT COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

DRAWING TITLE
STORMWATER MANAGEMENT PLAN

PROJECT NO.
220536

DATE
JUNE2022

C601



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5m 2 0 5m

SCALE: 1:200

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No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501986
2022/12/15
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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

CLIENT

UNPOISED ARCHITECTURE INC

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT

PROPOSED MULTI-UNIT
COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

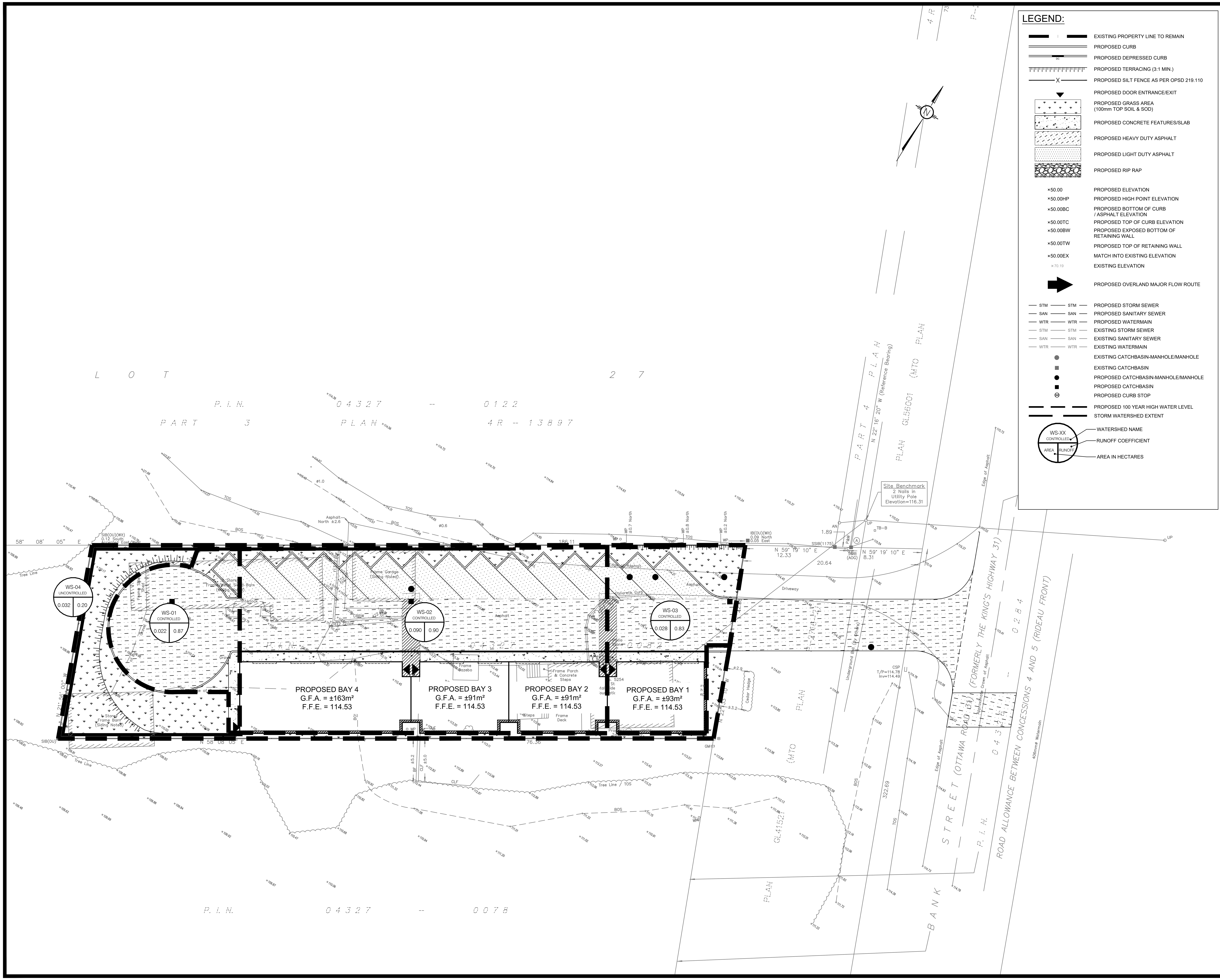
DRAWING TITLE

PRE-DEVELOPMENT
WATERSHED PLAN

PROJECT NO.
220536

DATE
JUNE2022

C701



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5m 2 0 5m

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01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

LICENSED PROFESSIONAL ENGINEER
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CLIENT
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DESIGNED BY:	DRAWN BY:	APPROVED BY:
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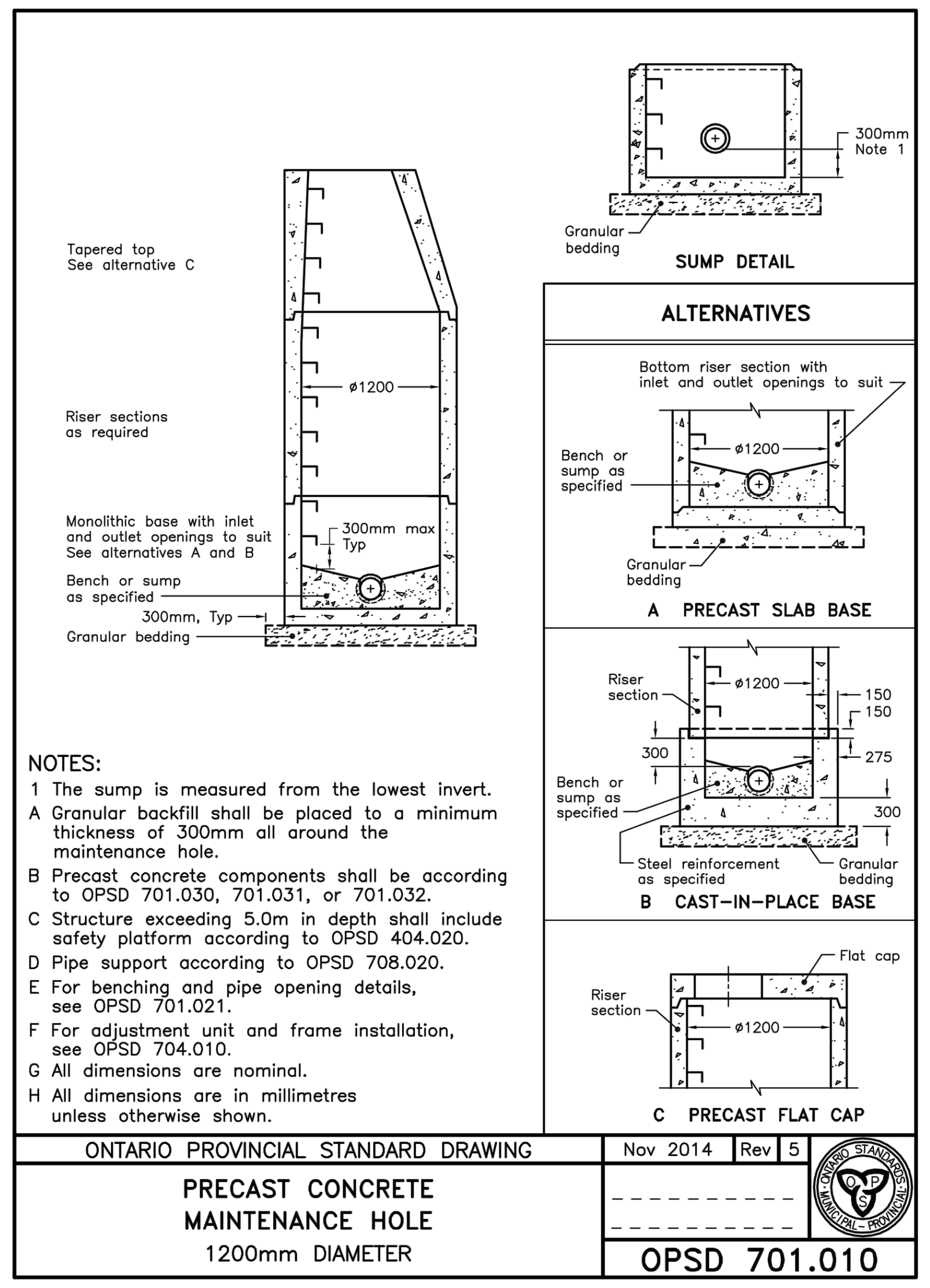
PROJECT
PROPOSED MULTI-UNIT COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

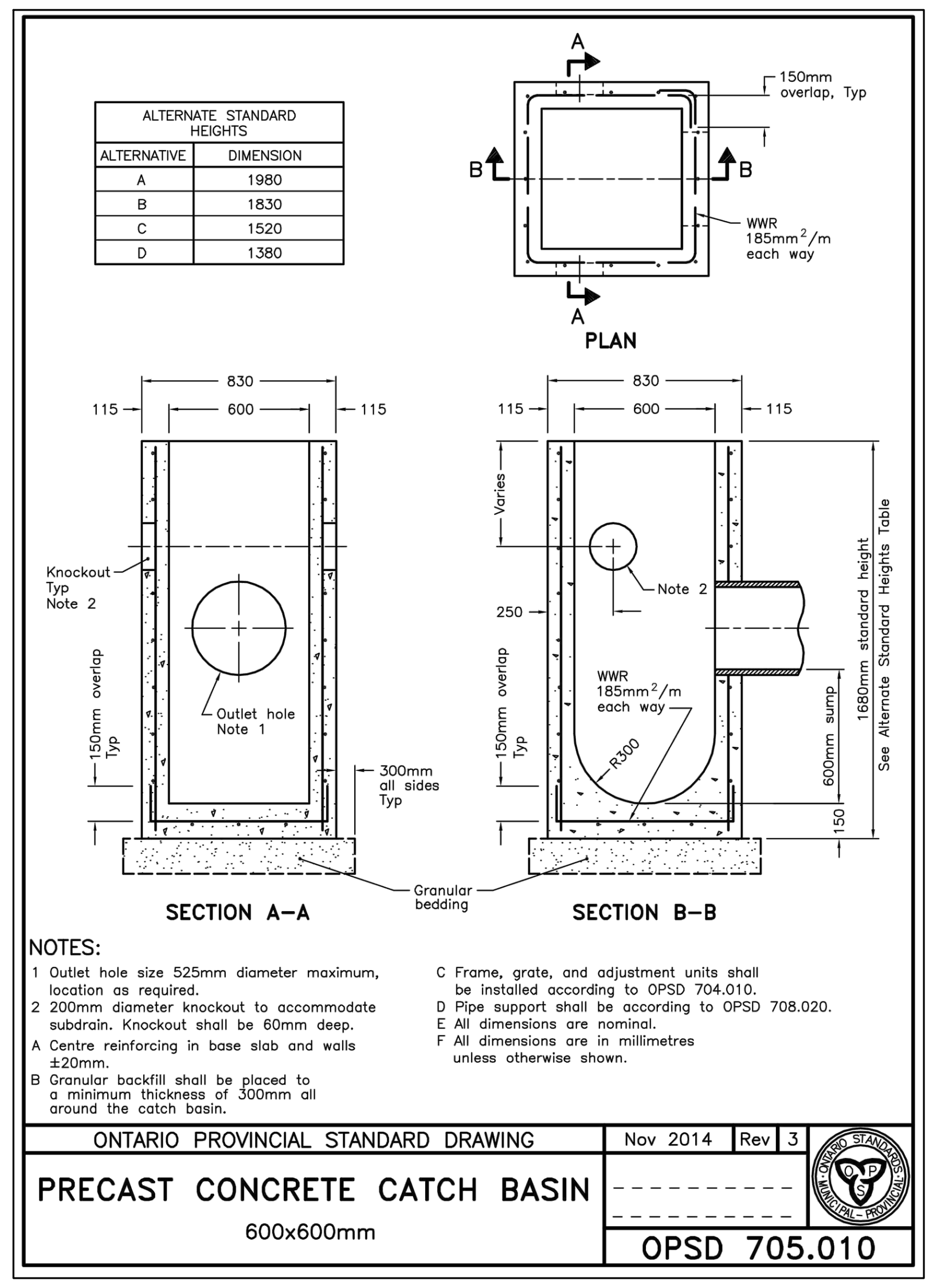
DRAWING TITLE
POST-DEVELOPMENT WATERSHED PLAN

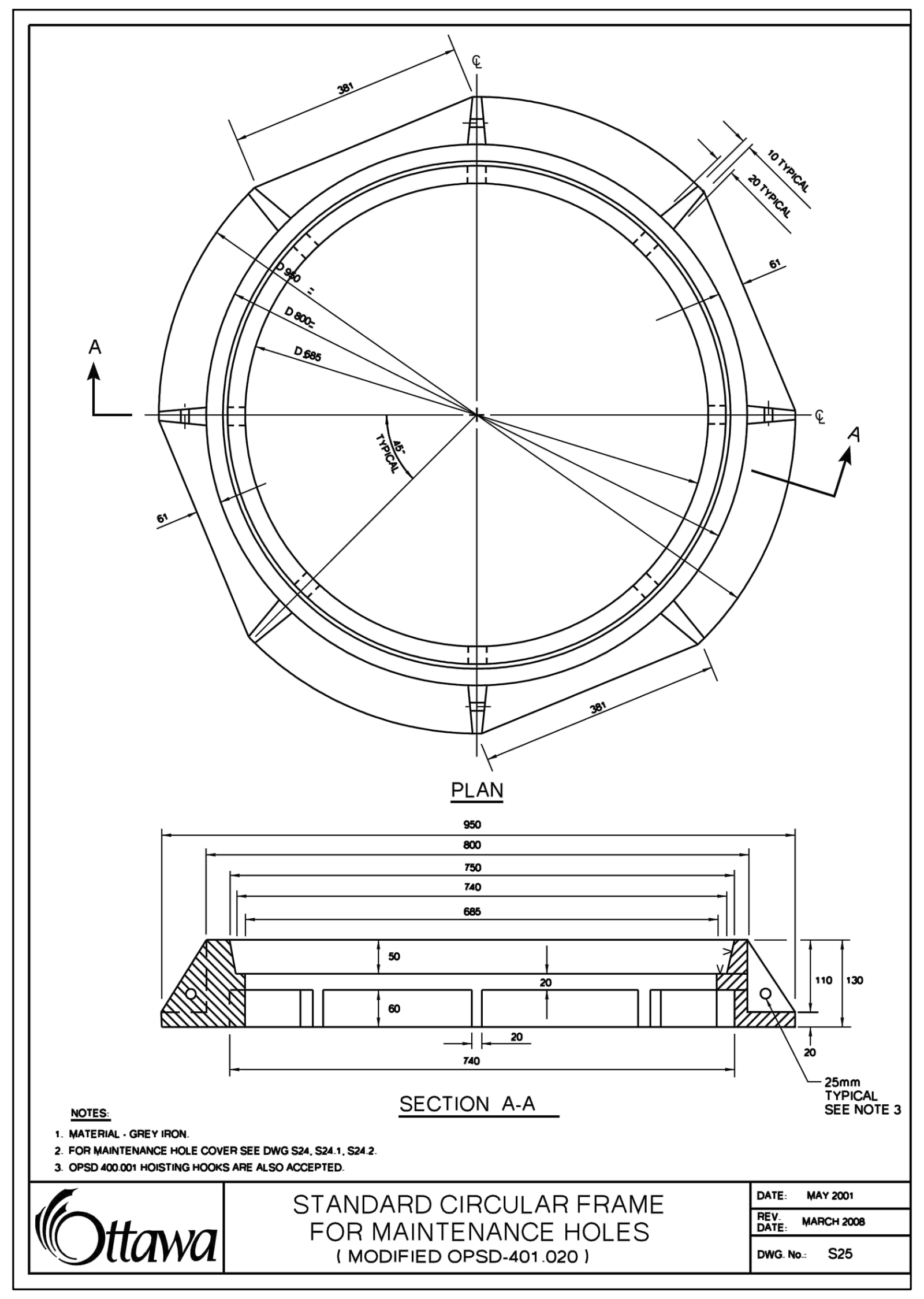
PROJECT NO.
220536

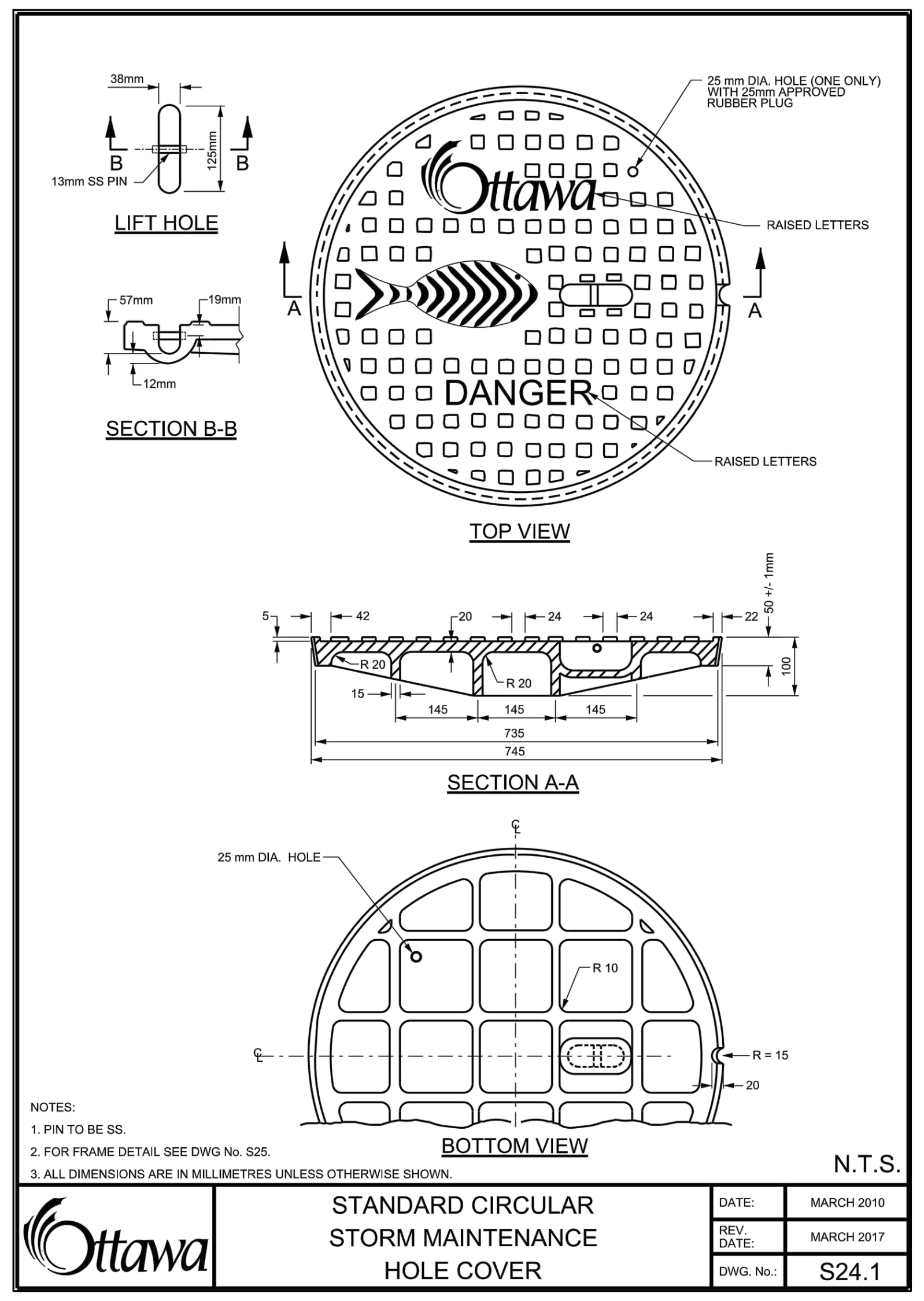
DATE
JUNE2022

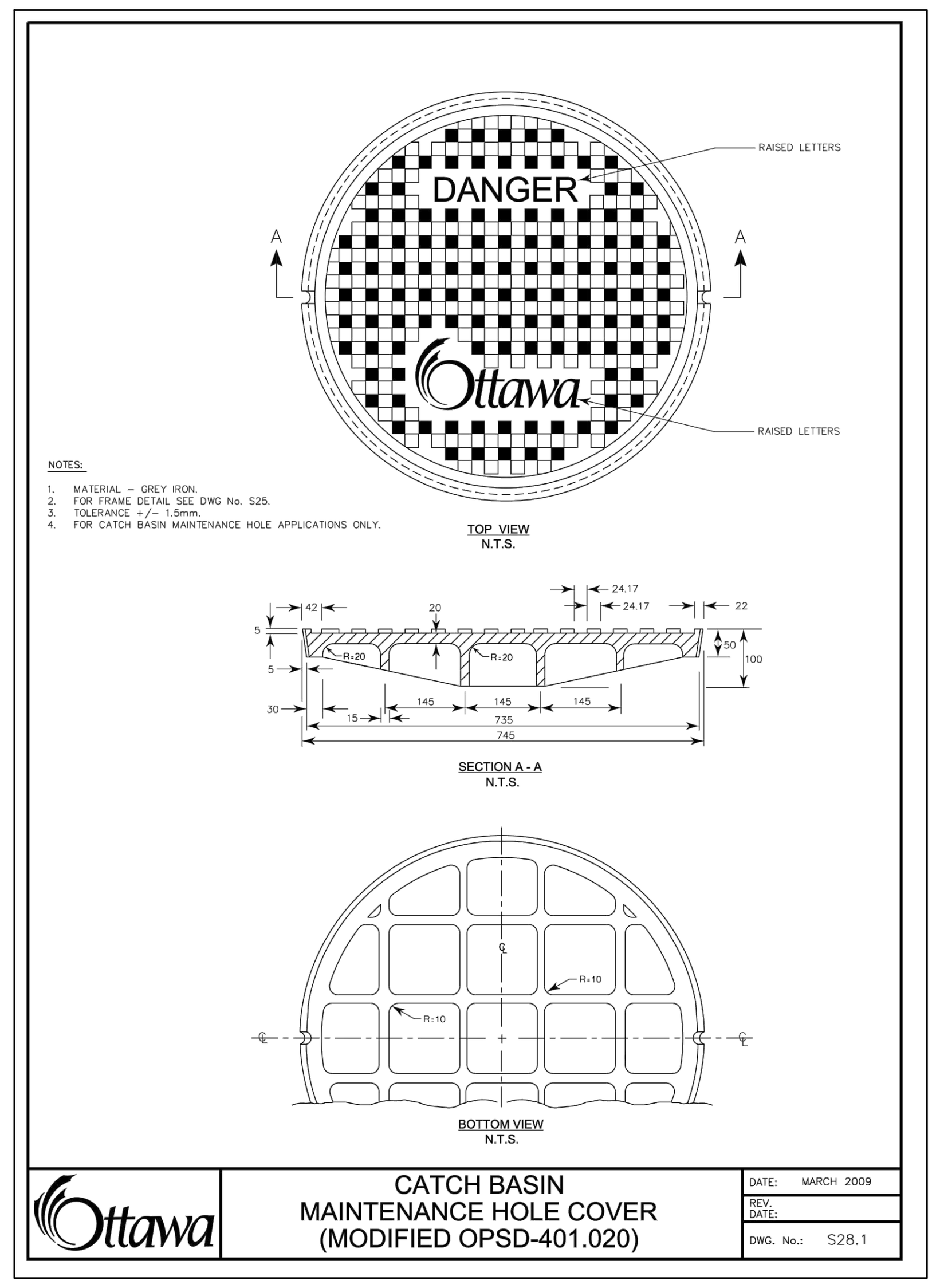
C702

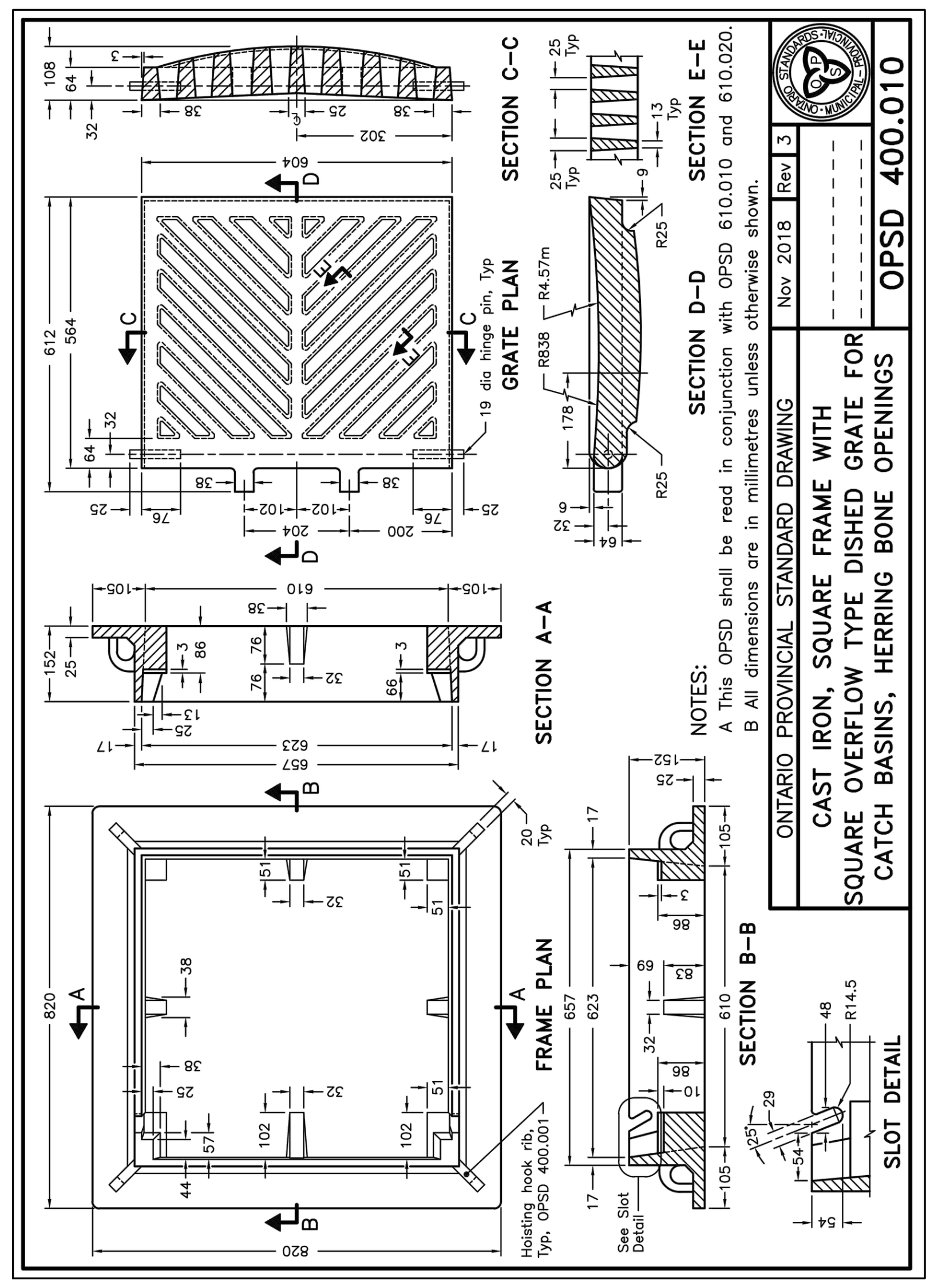


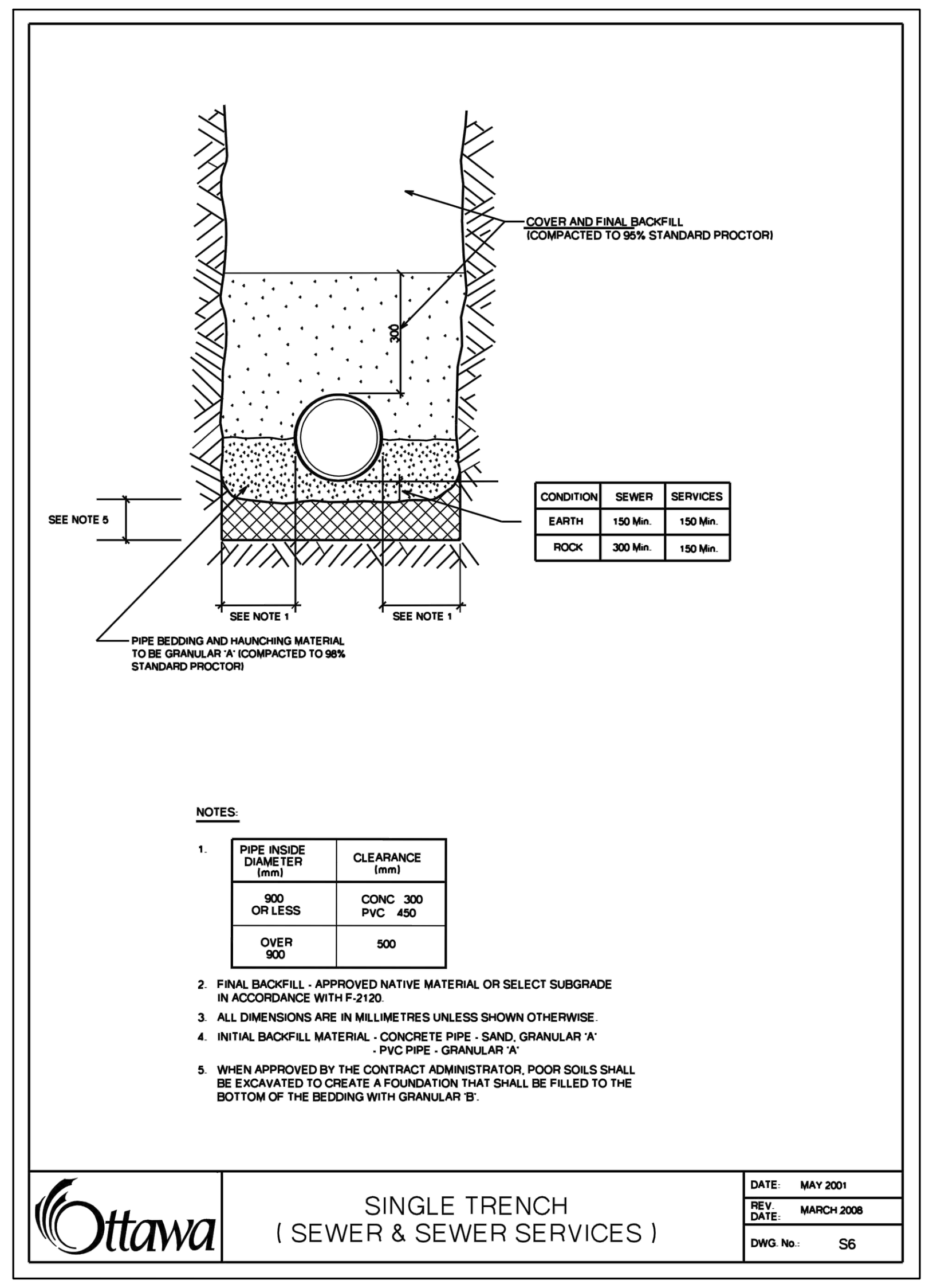


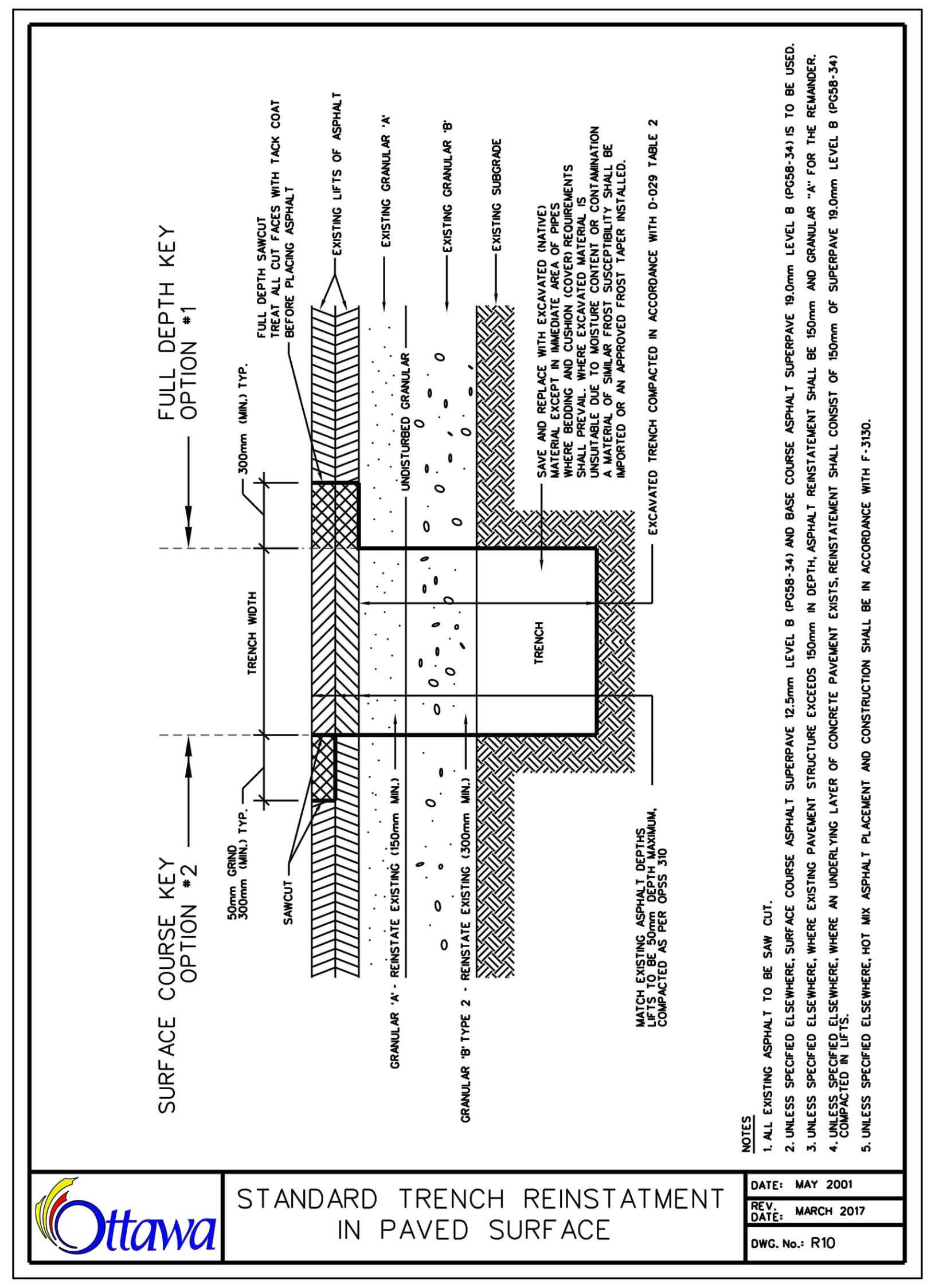


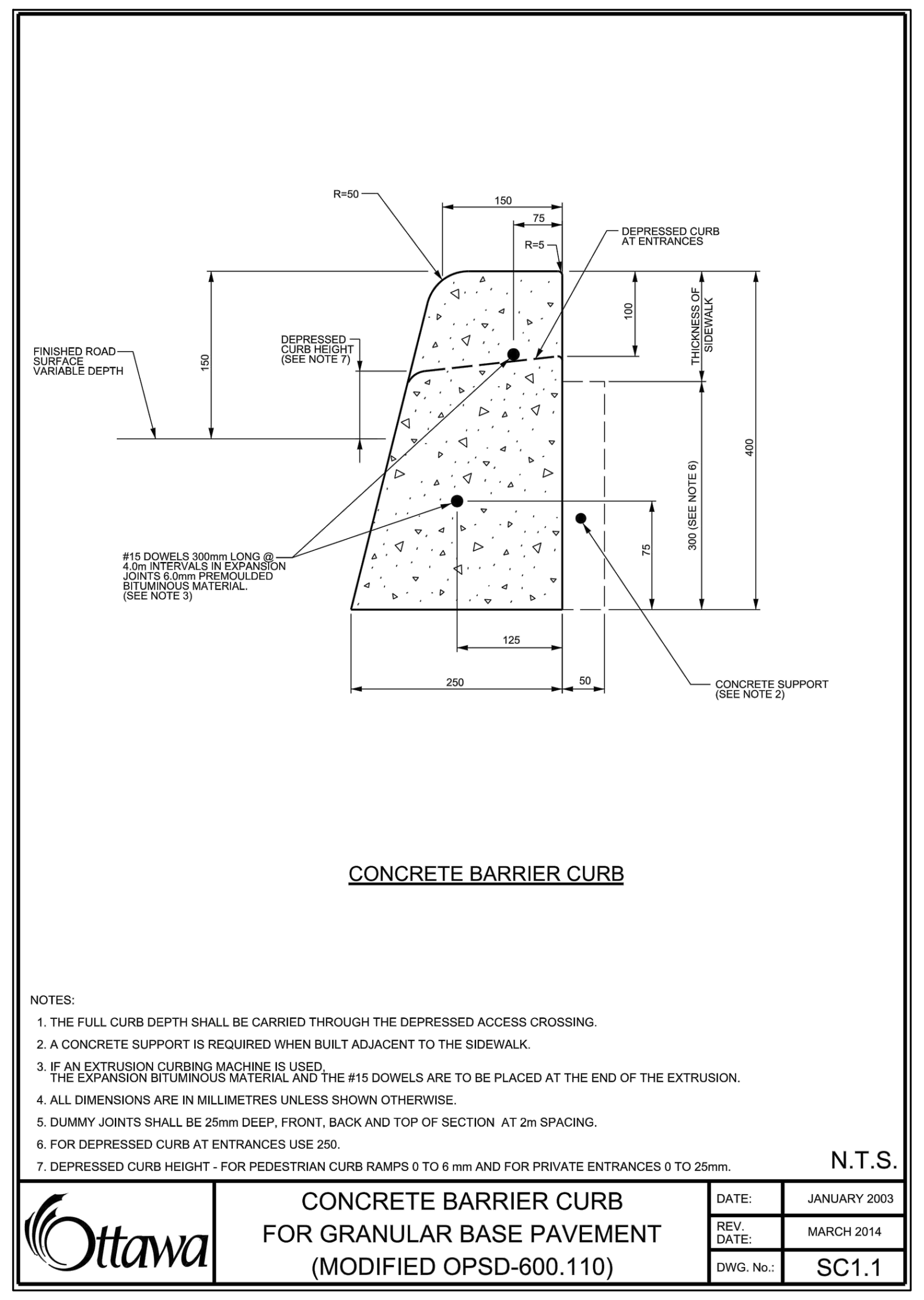


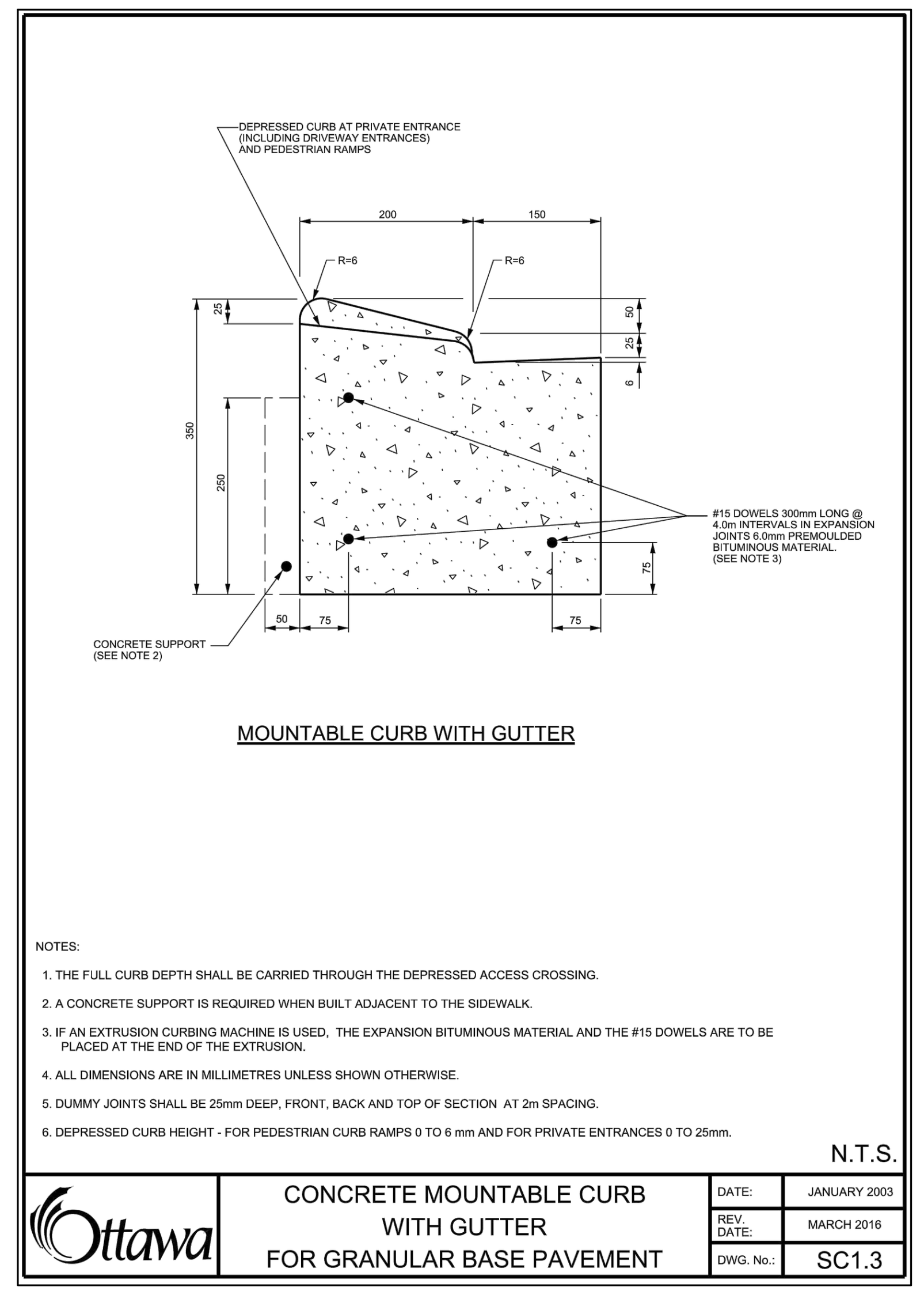


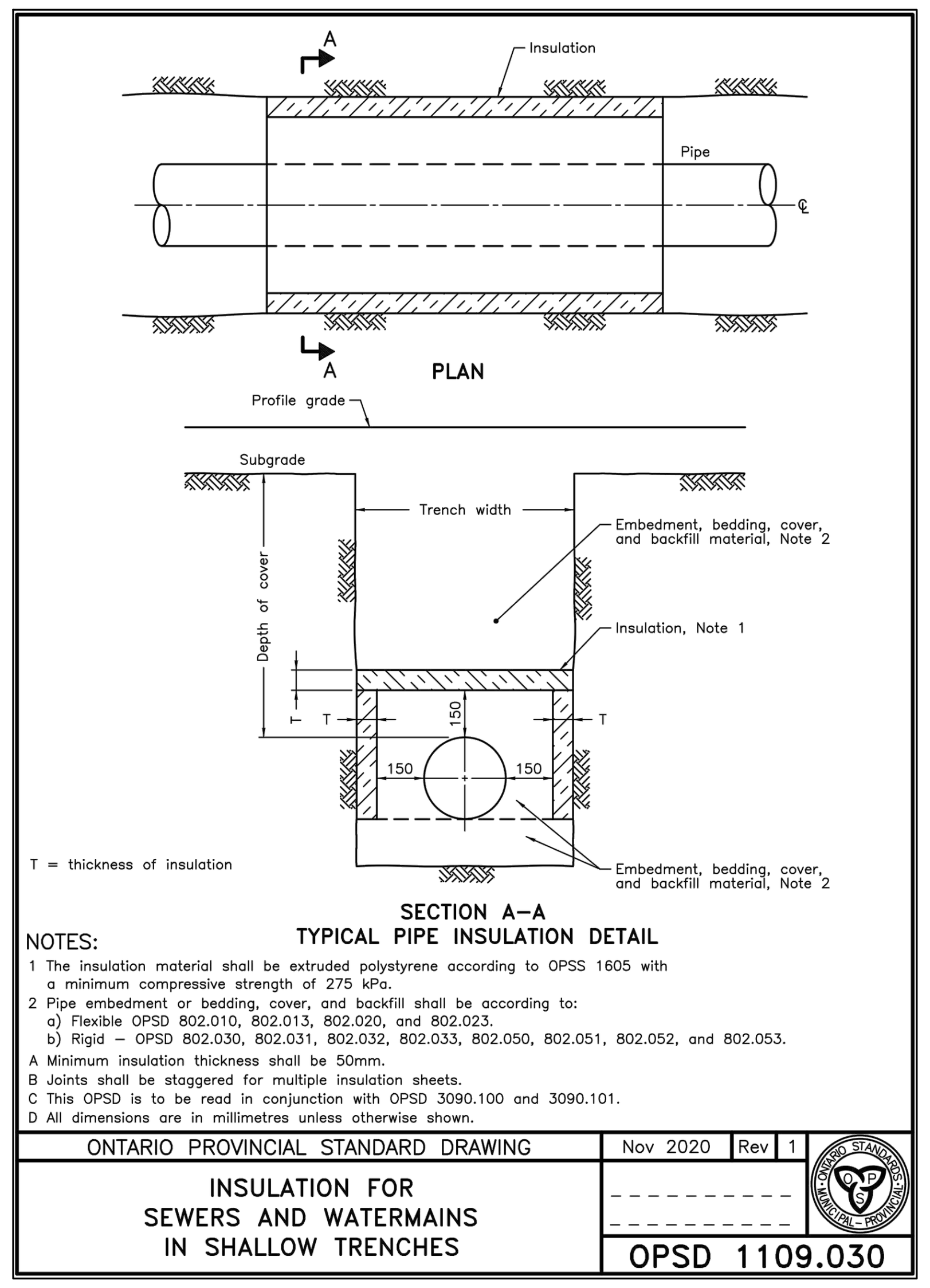


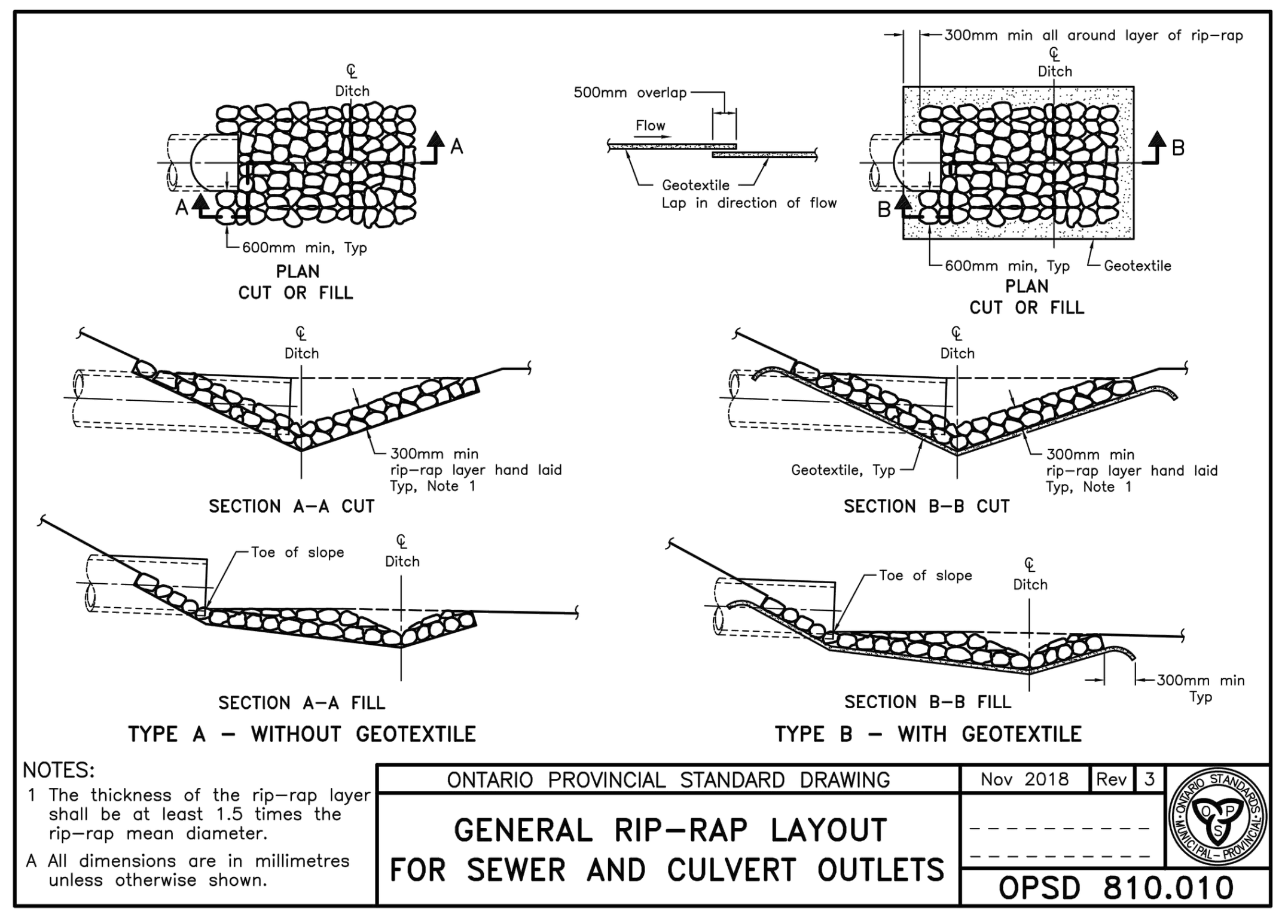












USE AND INTERPRETATION OF DRAWINGS

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.

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	15 DEC 2022

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2022/12/15
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
UNPOISED ARCHITECTURE INC

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT
PROPOSED MULTI-UNIT COMMERCIAL DEVELOPMENT
5254 BANK STREET, OTTAWA

DRAWING TITLE
CONSTRUCTION DETAIL PLAN

PROJECT NO.
220536

DATE
JUNE2022

C901

DRAWINGS/FIGURES

Proposed Site Plan
Legal Survey

377249, 5017062

TOPOGRAPHIC DATA WAS COLLECTED UNDER WINTER CONDITIONS. SNOW COVER AND ICE PRECLUDE DETERMINING LOCATION AND ELEVATION OF SOME TOPOGRAPHICAL DATA THAT IS OTHERWISE VISIBLE.

WARNING NO PERSON MAY COPY, REPRODUCE, DISTRIBUTE OR ALTER THIS PLAN IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF FARLEY, SMITH & DENIS SURVEYING LTD. © FARLEY, SMITH & DENIS SURVEYING LTD., 2019.

TOPOGRAPHIC PLAN OF SURVEY OF

PART OF LOT 28
CONCESSION 4 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

FARLEY, SMITH & DENIS SURVEYING LTD. 2019

Scale 1: 200

0 2.5 5 10 15 20 metres

Metric Note
Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

Distance Note
Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99995.

Bearing Note
Bearings are MTM grid, derived from the Can-Net Real Time Network.
GPS observations on reference points A and B, shown hereon, having a bearing of N 22° 16' 20" W and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) Nad-83 (Original).

For bearing comparisons, a rotation of 6°16'20" counter-clockwise was applied to bearings on P1.

For bearing comparisons, a rotation of 0°39'20" counter-clockwise was applied to bearings on P2, P3, P4 & P5.

Elevation Notes
1. Elevations shown are geodetic and are referred to Geodetic Datum CGVD-1928 :1978.
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. *Underground utility data derived from City of Ottawa utility sheet reference:* 7123 (sheet 6).
4. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

Notes & Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
(Wit)	"	Witness
Meas	"	Measured
(OU)	"	Origin Unknown
(P1)	"	Plan GL41521
(P2)	"	Plan GL56001
(P3)	"	Plan 5R-8330
(P4)	"	Plan 4R-13897
(P5)	"	Plan 4R-19602
(D1)	"	Inst GL76777
—— W ——	"	Underground Water
—— B ——	"	Underground Bell
—— OHW ——	"	Overhead Wires
O UP	"	Utility Pole
O AN	"	Anchor
O LS	"	Light Standard
CSP	"	Corrugated Steel Pipe
□ TB-B	"	Bell Terminal Box
▭ GM	"	Gas Meter
AC	"	Air Conditioner
Ø	"	Diameter
O WP	"	Wooden Post
CLF	"	Chain Link Fence
BF	"	Board Fence
P&W	"	Post and Wire
CBRW	"	Concrete Block
TOS	"	Top of Slope
BOS	"	Bottom of Slope
Inv.	"	Invert
T/P	"	Top of Pipe
U/Eave	"	Underside of Eave
TpFdn	"	Top of Foundation
C/L	"	Centreline
tow	"	Top of Wall
+65.00	"	Location of Elevations
+65.00	"	Top of Concrete Curb Elevation
———	"	Property Line
	"	Deciduous Tree
	"	Coniferous Tree
	"	Shrub

Surveyor's Certificate
I certify that :
1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Regulations made under them.
2. The survey was completed on the 15th day of April, 2019.

April 24/19
Date

Jamie Leslie
Ontario Land Surveyor

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2088411

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

FARLEY, SMITH & DENIS SURVEYING LTD.

ONTARIO LAND SURVEYORS
CANADA LAND SURVEYORS

190 COLONNADE ROAD, OTTAWA, ONTARIO K2E 7J5
TEL. (613) 727-8226 FAX. (613) 727-1826

FILE No.: 67-19

J:\2019\67-19_5254 Bank St_Topo\Final\67-19_5254 Bank St_Ptl28 Con 4 (RF) Glo_T_F.dwg

ZONING REQUIREMENTS: **RG3 [900r]-h - Rural Commercial Industrial (schedule 219 and 220) + BUILDING INFORMATION**

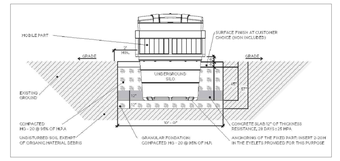
PARKING PROVISIONS (AREA D) Required: 19 552 sq.m service and repair shop = 19 spaces (3.4 spaces / 100 sq.m)	**Provided 15 (exterior) + 10 (inside bays)**
BICYCLE PARKING PROVISIONS Required: 1 / 1500 sq.m @ 552 sq.m = 0	**Provided** **0**
VEHICLE LOADING SPACE PROVISIONS Required: 1 for 350 to 999 sq.m @ 552 sq.m = 0	**Provided** **0**
MINIMUM FRONT YARD SETBACK Required: 15m (49'-3")	**Provided** **1.02 m (3'-4")**
MINIMUM NORTH NTERIOR SIDE YARD SETBACK Required: 3m (9'-11") from RG ZONE	**Provided** **12.78 m (41'-11")**
MINIMUM SOUTH INTERIOR SIDE YARD SETBACK Required: 8m (26'-3") from ME2 ZONE	**Provided** **1.24 m (4'-1")**
REAR YARD SETBACK Required: 15m (49'-3")	**Provided** **19.48 m (63'-11")**
MAXIMUM BUILDING HEIGHT Required: 15m (49'-3")	**Provided** **6.7 m (22'-0")**
MAXIMUM LOT COVERAGE Required: 50%	**Provided** **26%**

LOT AREA	**18,342 sq.ft (1,704 sq.m)**
GROSS AREA zoning definition	**5,945 sq.ft (552 sq.m)**
BUILDING AREA	**4,717 sq.ft (438.2 sq.m)**
GROSS AREA building code definition	**6,281 sq.ft (584 sq.m)**
BUILDING HEIGHT	**1 storey (mezzanine not included as storey)**
FACING STREET	**1**
OCCUPANCY TYPE	**F2 - medium hazard industrial**
BUILDING FIRE SAFETY	**Part 3 - 3.2.2.71**
PERMITTED CONSTRUCTION	**Combustible or Non - Combustible**

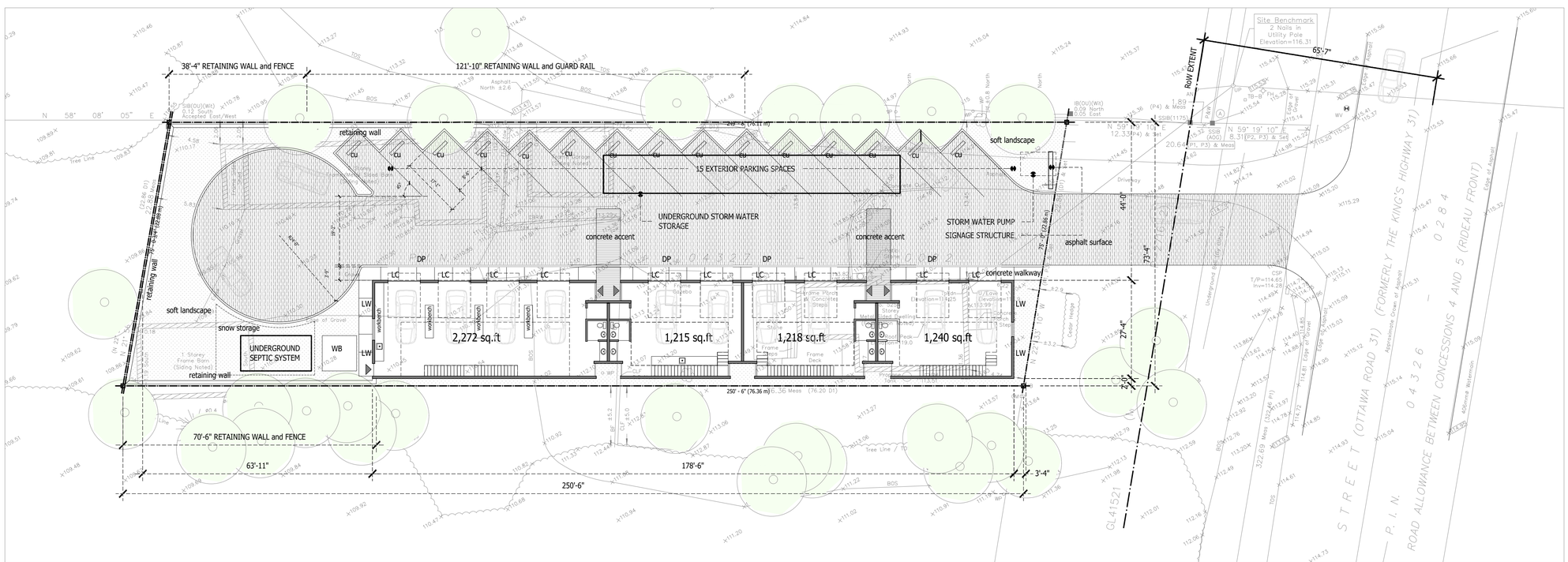
LEGEND

LS - LIGHT STANDARD
LB - LIGHT BOLLARD
LC - LIGHT UNDER CANOPY
LW - LIGHT WALL MOUNT

DP - DEPRESSED CURB
WB - IN-GROUND WASTE BIN
CU - PRECAST CONCRETE CURB STOP



DETAIL FOR IN-GROUND WASTE BIN



owner
Rayan Zaher
364 Wisteria Crescent
Ottawa ON

architect
unPoised Architecture INC
5-16 Sweetland Avenue
Ottawa ON

unPoised Architecture INC

true north

project north

revisions	date
XXXXX XXXXX	XXXXX
XXXXX XXXXX	XXXXX
XXXXX XXXXX	XXXXX
XXXXX XXXXX	XXXXX
PROGRESS REVIEW	2022-12-15

project title

SERVICE REPAIR FACILITY

5254 Bank Street, Ottawa ON

drawing title

SITE PLAN and ZONING

sheet number

A01