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Stormwater Management Report and Servicing Brief

Site Re-Development MacEwen Albion
5546 Albion Rd S
Gloucester, Ontario

Prepared for:

Grant Castle Corp.
18 Adelaide Street, P.O. Box 100
Maxville, Ontario K0B IT0

Attention: Mr. Roch Lortie, Construction and Real Estate Development Manager

LRL File No.: 01348

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1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Grant Castle Corp. to complete a Stormwater Management Analysis and Servicing Brief for a Site Re-development at 5446 Albion Rd, Gloucester, Ontario. The property is legally described as Part of Lot 30, Concession 3 (Rideau Front), Geographic Township of Gloucester, City of Ottawa with Zoning - Rural Commercial 2 (RC2). The location of the proposed development can be viewed in Figure 1.

Figure 1: Aerial View of Proposed Development

The portion of the property to be re-developed has trapezoidal shape, having a frontage of approximately 94 m along Mitch Owens Rd and 106 m along Albion Rd S and total surface area 1.08 ha. The existing property is currently used as a gas station with a convenience store and consists of grassed and asphalt areas. The proposed new development will feature a convenience store (400 sqm), complete with new u/g tanks, canopy and pump area to be located southerly of the proposed convenience store building. The site will be accessible from two (2) 12 m wide entrances located off Mitch Owens Rd and Albion Rd S. For additional details of the proposed development, refer to Site Plan C201 included in Appendix D.

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

2 EXISTING SITE AND DRAINAGE DESCRIPTION

The subject site measures approximately 1.084 ha and consisting of grassed area and asphalt area. Elevations of existing site range between 103.8 near the northeast corner to 101.7 at the southwest corner of the site.

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 rate.
- Demonstrate how the target quantity control objectives will be achieved.
- Demonstrate how the target quality control objectives will be achieved.

Water services

- Calculate the expected water supply demand at average and peak conditions.
- Describe the proposed water distribution network.

Sanitary services

- Describe the proposed sanitary sewer system.

4 REGULATORY APPROVALS

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

5 WATER SUPPLY AND FIRE PROTECTION

5.1 Existing Water Supply Services

A supply well is available within the site, refer to Servicing Plan C401(Appendix D) for its location.

5.2 Water Supply Servicing Design

The subject property is proposed to be serviced via a 50 mm dia. water servicing to be connected to the existing supply well. For servicing layout, refer to Site Servicing Plan C401 (Appendix D). Table 1 summarizes the City of Ottawa Design Guidelines design parameters employed in the preparation of the water demand estimate.

Table 1: City of Ottawa Water Servicing Design Parameters

Design Parameters	Value
Average Day Demand - Commercial	28,000 L/gross ha/day
Average Day Demand - Light Industrial	35,000 L/gross ha/day
Maximum Day Demand-Commercial/Industrial	1.5 × Average Day Demand
Maximum Hour Demand-Commercial/Industrial	1.8 × Maximum Day Demand
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
Desired operating pressure during Maximum Day Flow	345 kPa (50 psi) to 552 kPa (80 psi)
Minimum allowable pressure during Peak Hour Flow	275 kPa (40 psi)
Minimum allowable pressure during Fire Flow Conditions	140 kPa (20 psi)

Below is a summary of anticipated water demands calculated by using the parameters mentioned in Table 1.

- Average Day Demand = 0.35 L/s
- Maximum Day Demand = 0.53 L/s
- Peak Hour Demand = 0.95 L/s

6 SANITARY SERVICE

Currently, there are no municipal services available in this area. A proposed septic system will service the proposed development. Refer to Servicing Plan C401(Appendix D) for its location.

7 STORMWATER MANAGEMENT

7.1 Existing Stormwater Infrastructure

There is an existing roadside ditch along Mitch Owens Rd. at the south extent of the site. In pre-development conditions, the stormwater runoff would flow uncontrolled overland and via existing storm sewers to the existing ditch along Mitch Owens Rd. Refer to Appendix D (Dwg. C701) for the pre-development watershed information.

7.2 Design Criteria

The stormwater management criteria for this development are based on pre-consultation meeting with the City of Ottawa officials, Shields Creek Subwatershed Study (SCSWS, 2004), the City of Ottawa Sewer Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Management, Planning and Design Manual, 2003.

7.2.1 Water Quality

Based on site plan pre-consultation meeting note (Appendix A), the appropriate stormwater quality control target for this site is an Enhanced Level of Protection (80% TSS removal).

To address water quality objective, an oil/grit separator (OGS) is proposed downstream of CBMH06 which will provide > 80% TSS removal prior to discharging stormwater to the existing roadside ditch. Refer to Appendix D for the proposed OGS, Stormceptor Model EFO4 (or approved equivalent), and Servicing Plan C401 (Appendix D) for its location.

7.2.2 Water Quantity

Based on SCSWS (2004), the post-development allowable release rate for the subject site is determined as follows:

- Control the 2-yr post-development flow to 50% of pre-development peak flow
- Control the 5- and 100-yr post-development flows to match pre-development conditions

Table 2 summarizes calculated peak release rates for 2-, 5- and 100-yr storm events in pre-development conditions calculated using City of Ottawa IDF curves. For additional details, refer to STM design calculation sheets in Appendix C.

Table 2**: Pre-development Release Rates.**

Return Periods	*Rainfall Intensity (mm/hr)	**Runoff Coefficient (C)	Total Area (ha)	Peak Release Rates (L/s)
2-yr	76.81	0.5	1.084	115.77
5-yr	104.19	0.5	1.084	157.05
100-yr	178.56	0.5	1.084	269.14

**Time of concentration = 10 min*
***Maximum C value of 0.5 per SDG 2012*

Based on the design criteria mentioned above, the 2-yr allowable post-development release rate for this site is **57.88 L/s**. The 5- and 100-yr post-development release rates should not exceed 157.05 L/s and 269.14 L/s for 5- and 100-yr storm, respectively.

7.3 Method of Analysis

The Rational method has been used to calculate the peak flow rate from the proposed site.

$$Q = 2.78CIA$$

where,

Q = Peak Flow (L/s)

C = Runoff Coefficient

I = Rainfall Intensity (mm/hr), determined from the City of Ottawa IDF curves

A = Area (ha)

The modified Rational method is used to quantify storage volume required for quantity control for the proposed development. Refer to Appendix C for runoff and storage calculations.

7.4 Proposed Stormwater Quantity Controls

The proposed stormwater management quantity control for this development will be accomplished using an Inlet Control Device (ICD). Storage required as a result of quantity control measures will be accommodated as a surface storage in the parking lot and underground storage in oversized pipes and CBMH structures. A network of storm sewers is proposed to service the site which will outlet to the existing ditch along Mitch Owens Rd. For the layout of proposed storm sewers and ICD, refer to Site Servicing Plan C401 (Appendix D).

The existing site is delineated by catchments ECA-01 which currently drains uncontrolled and eventually outlet to the existing ditch along Mitch Owens Rd. Refer to Pre-development Watershed Plan C701 (Appendix D). The site has been analyzed, and post-development catchments have been allocated (Table 3), additional details can be found in Appendix C.

Table 3: Drainage Areas and Runoff Coefficients

Catchments	Area (ha)	Weighted Runoff Coefficient (C)
CA-01 (controlled)	0.113	0.90
CA-02 (controlled)	0.085	0.85
CA-03 (controlled)	0.225	0.41
CA-04 (controlled)	0.108	0.67
CA-05 (controlled)	0.065	0.90
CA-06 (controlled)	0.097	0.90
CA-10 (controlled)	0.076	0.20
CA-07 (uncontrolled)	0.015	0.90
CA-08 (uncontrolled)	0.075	0.20
CA-09 (uncontrolled)	0.225	0.20
Total	**1.084**	**0.53**

Overland flow from catchments CA-01, CA-02, CA-03, CA-04, CA-05, CA-06 and CA-10 will be captured by a several CBMHs. An ICD, Hydrovex Vortex Flow Regulator 200VHV-2 (or approved equivalent), is proposed at CBMH06 to restrict peak flow and control release rate at 42.40 L/s (H=1.90 m). For additional details on select ICD, refer to Appendix C.

A few catchments consisting of asphalt area (CA-07) and grass area (CA-08 and CA-09) will flow uncontrolled off the site. For additional details, refer to Post-development Watershed Plan C702 (Appendix D).

Table 4 summarizes post-development release rates, required storage and available storage within the site.

Table 4: Summary of Post-development Release Rates and Storage Volumes

Watersheds	Area (ha)	Release Rate (L/s)		Storage Required (m^3)		*Total Storage Provided (m^3)
		100-yr	2-yr	100-yr	2-yr	
Controlled (CA-01 to CA-06 & CA-10)	0.763	42.40	42.40	212.67	62.50	279.94
Uncontrolled (CA-07 to CA-09)	0.321	44.99	15.48	N/A	N/A	N/A
Total	**1.084**	**87.39**	**57.88**	**212.67**	**62.50**	**279.94**
**Total available storage including surface storage (216.86 m^3) and underground storage (63.08 m^3)*						

From Table 4, it is evident that the post-development release rates are less than the allowable release rates determined in Section 7.2.2 above. The runoff exceeding the allowable release rate will be stored on-site via surficial ponding and underground storage in oversized pipe and CBMHs. For a 100-yr storm event, it is calculated that a total of 212.67 m^3 of storage will be required to attenuate flows to the allowable release rate of 42.40 L/s (controlled release). The total surface storage provided is 216.86 m^3, thus exceeds the required storage. The required storage for a 2-yr storm (62.50 m^3) will be accommodated underground in oversized pipe and CBMH structures which will provide a total available storage of 63.08 m^3. Refer to Appendix C for runoff and storage calculation details. The maximum ponding elevation and depths can be found on Stormwater Management Plan C601 (Appendix D).

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.MUNI.805. Refer to Erosion and Sediment Control Plan C101 (Appendix D) for additional details.

9 CONCLUSION

This Stormwater Management and Servicing Report for the proposed development at 5546 Albion Rd S 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 existing supply well is anticipated to adequately service the proposed development.

Sanitary Service

- The proposed development will be serviced with a septic system including a leaching bed.

Stormwater Management

- Stormwater quality control requirements will be met using an oil/grit separator, Stormceptor EFO4 (or approved equivalent), which will provide >80% TSS removal.
- The stormwater release rates from the proposed development will meet contemplated allowable release rate of 57.88 L/s (42.40 L/s controlled and 15.48 L/s uncontrolled) for 2-yr storm.
- The 2-, 5- and 100-yr post-development release rates do not exceed the respective pre-development release rates.

- Stormwater quantity control objectives will be met using an Inlet Control Device (ICD) to control flow leaving the site and stormwater surface storage in the parking lot and underground storage in oversized pipes.

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.

Maxime Longtin
Civil Engineering Technologist

Mohan Basnet, P.Eng.
Civil Engineer

APPENDIX A

Pre-consultation / Correspondance

File No.: PC2023-0249

Maxime Longtin
LRL Engineering Ltd.
Via email: mlongtin@lrt.ca

Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control Application – 5546 Albion Road

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on September 29, 2023.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☒

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

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. Please proceed to complete a Phase 3 Pre-consultation Application Form and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca.

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

3. Please note, if your development proposal changes significantly in scope, design, or density before the Phase 3 pre-consultation, you may be required to complete or repeat the Phase 2 pre-consultation process.

Supporting Information and Material Requirements

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

   a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline

the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

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

Planning

Comments:

1. The subject site is designated Rural Countryside by Schedule B9 of the Official Plan. The intent of this designation is to accommodate a variety of land uses that are appropriate for a rural location, limiting the amount of residential development, and support industries that serve local residents and the travelling public.

2. The property is zoned RC2 – Rural Commercial Zone, Subzone 2. A gas bar is currently a permitted use.

3. Section 37 requirements / Community Benefits Charge

    a. The former Section 37 regime has been replaced with a "Community Benefits Charge", By-law No. 2022-307, of 4% of the land value. This charge will be required for ALL buildings that are 5 or more storeys and 10 or more units and will be required at the time of building permit unless the development is subject to an existing registered Section 37 agreement. Questions regarding this change can be directed to Ranbir.Singh@ottawa.ca.

4. A **Site Plan** is required and must adhere to the terms of reference. Please ensure everything included in the terms of reference is included on the Site Plan. The terms of reference have been updated since the previous pre-application consultation meeting: Site Plan (ottawa.ca)

5. A **Landscape Plan** is required and the terms of reference have been updated: Landscape Plan Terms of Reference (ottawa.ca).

6. Please consider additional tree plantings along the rear lot line abutting the residential properties for additional screening and along parking areas to reduce the urban heat island effect.

Urban Design

Comments:

7. This proposal does not run along or does not meet the threshold in one of the City's Design Priority Areas and need not attend the City's UDRP. Staff will be responsible for evaluating the Urban Design Brief and providing design direction.

8. Design guidelines for Gas Stations (please respond to each with indication in the design or a rationale for why they cannot be achieved).

    a. **Guideline 2:** Locate building toward the street. Provide a rationale for why not.

    b. **Guideline 3:** Design all sides of buildings and pump islands with a consistent architectural style to enhance the streetscape.

    c. **Guideline 5:** Ample landscaping. Further screening to the residential rear yards with new trees and taller shrubs.

    d. **Guideline 6:** Provide transparent windows and doors for retail buildings to ensure visibility between the store, the pump islands and surrounding streets.

    e. **Guideline 7:** Provide an unobstructed 2.0 metre wide pedestrian walkway between the public sidewalk (and/or parking areas) and building entrances. Support the pedestrian environment.

    f. **Guideline 8:** Distinguish walkways from driving surfaces by using varied paving treatments and by raising walkways to curb level, or painted demarcation.

    g. **Guideline 10:** Locate required bicycle parking close to the building entrance in a manner that does not impede pedestrian movement.

    h. **Guideline 21:** Provide only the minimum number of required parking spaces required by the Zoning By-law. Provide a rationale for the 3x increase in parking.

    i. We recommend providing a fence adjacent to residential rear yards to screen and protect the sensitive lands to the north.

    j. If the lands to the west can redevelop into a residential neighbourhood, how will the future lot(s) be protected from the commercial/industrial use?

9. An Urban Design Brief is a required submittal. The Urban Design Brief should be structured by generally following the headings highlighted under Section 3 – Contents of these Terms of Reference. Please see the Urban Design Brief Terms of Reference provided and consult the City's website for details regarding the UDRP schedule (if applicable).

    a. Note. The Urban Design Brief submittal should have a section which addresses these pre-consultation comments.

Feel free to contact Christopher Moise, Planner II, Urban Design, for follow-up questions.

Engineering

Comments:

10. Phase One Environmental Site Assessment (Phase 1 & 2 ESA)

    a. A Phase One and Phase 2 ESA are required for the SPC/rezoning of the site.

    b. Environmental Site Assessments (ESA's) are required to ensure that development only takes place on sites where the environmental conditions are suitable for the proposed use in accordance with provincial legislation and regulations.

    c. While a Phase 2 report has already been submitted, the Phase 2 report looks at what was analyzed on site. A Phase One report provides the history, local review, and site inspection information.

11. Geotechnical Study

    a. A Geotechnical report is required to support the design and construction of this project.

    b. The Geotechnical report should provide sufficient soils and engineering information to confirm that the site(s) are suitable or can be made suitable for development. The geotechnical report shall adequately discuss the fill requirements, grade raise restrictions, and other limitations and earthworks required for development within a floodplain or adjacent to a watercourse, and wetland.

    c. The report should clearly state whether sensitive marine clays or organic soils are present on this site, or not. The report might include: Atterberg limits, consolidation testing, shear strength testing, grade raise restrictions, or a sieve analysis as required.

    d. The report should clearly state whether soil liquefaction is a risk on this site, or not.

    e. Please indicate the seasonal high groundwater level for this site.

    f. Feel free to contact Brian Morgan, Project Manager, for follow-up questions.

12. Grading and Drainage Plan

    a. A Grading Plan is required to support the design and construction of this project.

    b. Grading Plans provided to the City of Ottawa should include:

        i. All elevations must be referenced to a geodetic reference point.

        ii. Please indicate the Site Benchmark and the external reference that provides the horizontal and vertical datum of the reference used to set this benchmark.

        iii. Provide top of curb (TC) and bottom of curb (BC) elevations.

        iv. Please maintain a minimum 150 mm difference between the proposed finished floor elevation and the finished grade at the structure. Maintain positive surface drainage away from the foundation wall.

        v. A 0.3m freeboard should be provided between the 100-year water elevation and the finished floor elevation.

    c. Please include the Pavement Design provided in the Geotechnical Report. Typically, this should include a low-density and a heavy-duty pavement design.

13. Site Servicing Study

    a. A Site Servicing Study will be required to support the design and construction of this project.

    b. Applications for new development are required to demonstrate, to the City's satisfaction, that adequate services are available and can be allocated to support the proposal.

    c. Stormwater Management Report

        i. A Stormwater Management report is required in support of the design and construction of this project.

        ii. Stormwater design must adhere to the City's 'Ottawa Design Guidelines - Sewer', Second Edition, document no. SDG002, October 2012, City of Ottawa, including technical bulletins: ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04, ISTB-2019-02.

iii. The quantity criteria for the development are that the 100-yr post development peak flow rate must match the 2-year pre-development peak flow rate.

iv. The stormwater management quality criteria for this site are 80% TSS removal.

v. A calculated time of concentration (Cannot be less than 10 minutes) is required.

vi. Runoff volumes must be calculated using the 'C' values found in Ottawa Design Guidelines (Sewer), Section 5.4.5.2.1 page 5.26. There are no standard or maximum 'C' values in the Rural area.

vii. Stormwater must outlet to a legal and sufficient outlet.

viii. A 0.3m freeboard should be provided between the 100-year high-water elevation and the finished floor elevation.

ix. Stormwater or Drainage plans must include the ponding depth, volume, and ponding extent for 2-year and 100-year storm events on the grading plans.

x. Please provide pre- & post- development drainage plans clearly identifying the sub-drainage zones, their areas, and 'C' values.

xi. If considering a stormwater management pond, please be aware of the potential issues with airport safety design.

xii. The stormwater on this site should be controlled as per the Shields Creek Subwatershed Study.

d. Feel free to contact Brian Morgan, Project Manager, for follow-up questions.

e. Fire Protection: As per City of Ottawa Technical Bulletin ISTB-2021-03, the requirement for the level of fire protection on private property in rural areas is based on the Fire Underwriters Survey (FUS) method. Please contact Allan Evans for more information. allan.evans@ottawa.ca .

14. Ministry of the Environment, Conservation and Parks Review (ECA Approval)

a. An MECP Environmental Compliance Approval [Industrial Sewage Works or Municipal/Private Sewage Works] may be required for the proposed development. Please contact the Ministry of the Environment, Conservation and Parks, Ottawa District Office to arrange a pre-submission consultation.

b. It is the applicant's responsibility to determine which of the several types of ECA approvals may be required for this application. If a Direct Submission is by the nature of the application required by the MECP, the applicant can request a Transfer of Review in its place by contacting Charles Warnock, Charles.warnock@ottawa.ca .

c. Industrial sites will likely require additional ECA approval from the MECP.

d. Service stations typically require additional ECA approval from the MECP.

e. For any water taking of volumes greater than 50,000 L/day, either an Environmental Activity and Sector Registration (EASR) or a Permit To Take Water (PTTW) is required from the MECP, dependent on dewatering requirements.

f. MECP/ECA Contact info:

- Charlie Primeau at (613) 521-3450, ext. 251 or Charlie.Primeau@ontario.ca .
- Emily Diamond at (613) 521-3450, ext. 238 or Emily.Diamond@ontario.ca .
- Charles Warnock at 613-580-2424 x27809 or Charles.warnock@ottawa.ca.

15. Site Plan Approval

a. The following items will be required at the Site Plan Approval stage:

i. Site Lighting Certificate.

ii. Septic Permit Approval.

iii. Spill Contingency and Pollution Prevention Plan.

iv. Letter of Continued Use from the Technical Standards and Safety Authority be provided.

16. Site Lighting Certificate

a. The City will require an Exterior Lighting Certificate certified by a qualified engineer before issuing Site Plan Approval.

b. Any exterior lighting proposed for the site is required by the City of Ottawa to be certified by a qualified engineer conforming the design complies with the following criteria:

i. It must be designed using only fixtures that meet the criteria for Full-Cut-Off (Sharp cut-off) Classification, as recognized by the illuminating Engineering Society of North America (IESNA or IES).

ii. It must result in minimal light spillage onto adjacent properties. As a guide, 0.5 foot-candle is normally the maximum allowable spillage.

iii. The location of the fixtures, fixture types (make, model, and part number) and the mounting heights must be provided.

17. Septic Permit Approval

a. If the sewage design flow is less than 10,000 L/day, the septic permit from the Ottawa Septic System Office (OSSO) must be issued prior to future Site Plan Approval being granted.

b. If the sanitary daily design flow is greater than 10,000 L/day, the septic system(s) is regulated by the Ministry of the Environment, Conservation and Parks (MECP) and requires a direct submission Environmental Compliance Approval (ECA) application.

c. Please ensure that the OSSO office is aware if an oil/grit separator is contributing to the flows to the septic system.

d. Be advised that a Groundwater Impact Assessment will be required if the site-wide daily design flow is greater than 10,000 L/day.

e. As per the OSSO office, the septic tank must be at least 3.0 metres from the property lines.

Feel free to contact Brian Morgan, Infrastructure Project Manager, for follow-up questions.

Hydrogeology

Comments:

18. The following HGTA report was submitted and a cursory review was completed:

Hydrogeological Assessment & Terrain Analysis – Proposed Fuel Dispensing Facility Re-development, 5546 Albion Road South, Ottawa (Gloucester), Ontario. Dated March 17, 2023, prepared by LRL Associates. (herein referred to as the March 2023 Report)

19. A hydrogeological and terrain analysis report is required and must meet the requirements and standards outlined in the City's Hydrogeological and Terrain Analysis Guidelines (March 2021).

20. Site characterization. The March 2023 Report requires better characterization of the site, specifically the distribution and thickness of clay across the site. This information is required to support the protection of the communal well, as outlined in the Wellhead Protection Plan Report (Jacques Whitford, 2004). Note that the distribution of clays across the site may be referenced to amend the location of certain activities in the site plan to better protect the supply aquifer (i.e. protect the sand and gravel unit which recharges the supply aquifer).

    a. Also note that the proposed activities (including construction) should not puncture the low conductivity layer, for example new USTs are installed. Do not want to create potential transport pathways for contaminants through the low conductivity layer.

21. The water quantity assessment presented in the March 2023 Report looks generally acceptable (i.e. sufficient quantity was confirmed, and the pump rate was justified). However, the pump test information was not provided with the report, this must be included for reference.

22. The existing well integrity must be investigated. The original pre-consultation included a recommendation for downhole camera investigation (to confirm the integrity of the well casing) and a well sounding (to confirm the integrity of the grouting around the casing) and to bring the well up to code if required. This should be completed prior to site plan approval. Also note that the grading plan must show that the final grades around the well must meet the requirements of O.Reg. 903. IF there is an issue with the well integrity (existing casing or grouting), then the well should be brought up to code or decommissioned an a new well installed under the supervision of a professional geoscientist, as per the Wellhead Protection Plan Report. (Note that improper well construction would be a potential transport pathway for contamination into the supply aquifer)

23. Water quality assessment outline in the March 2023 Report sampling did not include the minimum parameters outlined in the previous pre-consultation, nor that outlined in the Wellhead Protection Plan Report. For example, the sampling did not include BTEX or PH; and should also include PAH (based on the Phase 2 ESA). New well sampling is required.

24. The March 2023 Report is missing all field sampling results (i.e. the turbidity issue is discussed in the report, due to elevated turbidity in the lab sample, however no field sample results are included for reference)

25. A predictive septic impact assessment is missing from the report and must be included. The report identifies that the septic impact assessment was based on lot size considerations, but lot size consideration is only applicable for residential

developments (i.e. one residential septic system). The hydrogeological and terrain analysis report must include a predictive nitrate impact assessment based on the commercial-industrial developments (See MECP Guideline D-5-4 Section 5.6.3).

26. Septic permit must be included with the site plan application. Support is also required that the existing septic system was decommissioned as per the OBC.

27. Risk Management Measures are required since in the site lies within the Wellhead Protection Area for Albion Sun Vista communal wells.

    a. Some risk management measures are recommended in the report, but it is unclear how they will be implemented. The report should outline who is responsible and when/how they will be implemented.
    b. The proposed development must adhere to the Wellhead Protection Area Plan recommendations listed in the final report, this includes (briefly):
        i. Protection measures for development within the sand and gravel unit that acts as the recharge area for the contact aquifer: such as best management practices, spills prevention plan, spills response plan, staff training, etc.
        ii. All underground storage tanks must be equipped with interstitial monitoring systems and the tanks and associated piping should have leak detection systems in place.
        iii. A monitoring program must be established to provide ongoing water quality information, the program should include monitoring on an annual basis for general water quality parameters and metals plus petroleum hydrocarbons, volatile organic compounds (VOCs) and BTEX. (not just monitoring at the supply well
        iv. Construction management plan is recommended to show how the aquifer will be protected during construction (i.e. the USTs are being replaced, they are typically 14ft below grade; should not create a transport pathway through the protective (tighter sediment) layer). Also show how fluids will be managed onsite during construction (i.e. no vehicle maintenance onsite), and there should be a spills response plan in the construction management plan.
        v. The site also needs a spills prevention plan, spills management plan, recommended staff training, etc. as mitigative measures.

28. The Hydrogeological report should include an assessment of impact to support how the well/aquifer will be protected from contamination and damage in the long term; the Phase 2 ESA should be referenced to confirm any existing contamination, mitigation and potential risk to the supply well and aquifer. The report can also reference if/how the activity is regulated through TSSA.

29. It was confirmed that a stormwater ECA will be required for the site. The City would like to be invited to any discussions with the MECP related to any ECA onsite, due to the site being within the wellhead protection area for a communal well. The City would also like to discuss the potential of including mitigation measures and the monitoring requirement as part of the ECA.

Feel free to contact Tessa Di Iorio, Hydrogeologist and Risk Management Official, for follow-up questions.

Transportation

Comments:

30. Please ensure the following are provided on the **Site Plan**:

    a. All details of the road abutting the site up to and including the opposite curb; include items such as pavement markings, accesses, and/or sidewalks.

    b. Recommend delineating the access with curb returns.

    c. All curb radii measurements; ensure that all curb radii are reduced as much as possible.

    d. Consider narrowing the access width where feasible. 9m width is preferred.

    e. Show lane/aisle widths.

    f. Right-of-way protection -Provide and show on site plan per Schedule C16 of the Official Plan.

    g. Ensure that at least the minimum bicycle parking is provided.

31. As the proposed site is general public use, AODA legislation applies. Accessible parking, access aisle and the curb ramp should follow City's Accessibility design standards.

32. Noise Study is not required.

Feel free to contact Neeti Paudel, Transportation Project Manager, for follow-up questions.

Planning Forestry

Comments:

33. The Landscape Plan Terms of Reference are now in effect. Please ensure the plan adheres to them: Landscape Plan Terms of Reference

34. This property is located within the rural area of the City. There are no City trees impacted by the proposal. A tree removal permit is therefore not required. If a jointly owned tree needs to be removed, it is advised you speak with the co-owner beforehand to avoid any civil disputes.

35. There are no geotechnical restrictions identified and there is space to support large canopy trees on the property. It is recommended that the planting list is amended to replace small canopy trees with larger canopy species. The LP terms of reference also notes native species are preferred.

36. Oak, Hickory and Walnut would benefit from the space available on this site.

Feel free to contact Hayley Murray, Planning Forester, for follow-up questions.

Environment

Comments:

37. Significant environmental features

    a. There are unevaluated wetlands to the west of the site that could have an impact given the 30m setback to surface water features. However, the previously-completed EIS included a wetland boundary survey indicating that the true extent of the wetlands is farther west than shown on the current GeoOttawa mapping. As a result, the only watercourse or surface water feature setbacks affecting this site are from the lone watercourse to the west. This setback is respected and there are no further concerns with regard to water features.

38. Species at risk

    a. The EIS indicated that there is the possibility of protected Butternut trees on or adjacent to the site. However, the EIS did not include any additional information about whether or not Butternuts exist in the area. The field visit summary discussed what tree species were noted, but did not provide any conclusive evidence that Butternuts were or were not observed. This is not sufficient. The presence of Butternut trees must be discussed specifically and with reference to a butternut survey completed by a qualified professional.

    b. A revised EIS must be submitted that details the presence or absence of Butternuts on or adjacent to the property.

    c. The EIS contains the sentence “More detailed description of the forest located on the western extent of the Site is described in Section 5.1.” There is no section 5.1 in the provided EIS. While this may be a typo, given the insufficient data on Butternuts, it’s possible some information was accidentally excluded from the report.

39. Environmental impact statements

    a. See above.

40. Bird-Safe Design Guidelines

a. The bird safe design guidelines do not apply. However, the site is located in the Airport Bird Hazard Zone, which influences the type of trees to be planted. A list of plants and trees to avoid will be provided.

Feel free to contact Mark Elliott, Environmental Planner, for follow-up questions.

Parkland

Comments:

41. Parkland Dedication:

a. The amount of parkland dedication required is to be calculated as per the City of Ottawa Parkland Dedication By-law No. 2022-280.

b. The proposal presented at the pre-consultation meeting included an increase in gross floor area of a non-residential use. Therefore, the parkland requirement is calculated as 2% of the gross land area of the site being developed/redeveloped, including roads, parking lot and other associated land.

c. Please provide the City with a surveyor's area certificate/memo which specifies the exact gross land area of the site being developed/redeveloped. For industrial or commercial redevelopment, this includes the portion of the property that is impacted by the proposed redevelopment, but not including any hazard lands or natural heritage features identified in the official plan, an approved Secondary Plan, or through an environmental impact study accepted by the City.

d. Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application and any requested supporting documentation. Additionally, if the proposed land use changes, then the parkland dedication requirement will be re-evaluated accordingly.

42. Form of Parkland Dedication:

a. PFP will be requesting **cash-in-lieu of conveyance of parkland** for parkland dedication in accordance with the Parkland Dedication By-law.

43. Reference Documents:

a. Please review the following City of Ottawa reference documents which outline the requirements for parkland conveyance and/or cash-in-lieu of parkland.

- Official Plan (2021)
- Parks and Recreation Facilities Master Plan (2021)
- Park Development Manual, 2nd edition

- Parkland Dedication By-Law (2022-280) and Planning Act amendments
- City of Ottawa Standard Parks Conditions

Feel free to contact Warren Bedford, Parks Planner, for follow-up questions.

Other

44. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design. The HPDS was passed by Council on April 13, 2022.

    a. At this time, the HPDS is not in effect and Council has referred the 2023 HPDS Update Report back to staff with direction to bring forward an updated report to Committee with recommendations for revised phasing timelines, resource requirements and associated amendments to the Site Plan Control By-law by no later than Q1 2024.

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

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

Yours Truly,

Sean Harrigan

cc.
Brian Morgan
Kevin Hall
Jeffrey Ostafichuk
Tessa Di Iorio
Mark Elliot
Neeti Paudel
Warren Bedford

APPENDIX B

Water Supply Calculations

Water Service Calculations

LRL File No. : 01348
Project : MacEwen Petroleum Inc.
Location : 5546 Albion Rd S, Gloucester, ON
Date : December 12, 2022
Designed by : M. Basnet

Water Demand

Site area = 1.084 ha

Average day demand =	*28000*	*L / ha·day*	(based on City of Ottawa guidelines)
=	30363	L / day	
=	**0.35**	**L / s**	
Maximum daily peak factor =	1.5		
Maximum daily demand =	**0.53**	**L / s**	
Maximum hour peak factor =	1.8		
Maximum hour demand =	**0.95**	**L / s**	

Water Service Pipe Sizing

$Q = VA$

Where,

V = velocity
A = area of watermain pipe
Q = water supply flow rate

By deriving the above formula with an assumed maximum V=1.5 m/s

Minimum pipe diameter:

$d = (4Q/\pi V)^{1/2}$

$d =$ 0.028 m

$d =$ 28 mm (minimum required size)

Proposed pipe diameter: 50 mm

APPENDIX C

Stormwater Management Calculations

LRL Associates Ltd.

Storm Watershed Summary

LRL File No.	01348
Project:	MacEwen Petroleum Inc.
Location:	5546 Albion Rd S, Gloucester, ON
Date:	2025-01-22
Designed:	M. Longtin
Checked:	M. Basnet
Drawing Reference:	C701, C702

Pre-Development Catchments (Uncontrolled)

CATCHMENT	C = 0.20	C = 0.80	C = 0.90	Total Area (ha)	Combined C
ECA-01	0.608	0.000	0.477	1.084	0.51
TOTAL	**0.608**	**0.000**	**0.477**	**1.084**	**0.51**

Post-Development Catchments (Controlled)

CATCHMENT	C = 0.20	C = 0.80	C = 0.90	Total Area (ha)	Combined C
CA-01	0.000	0.000	0.114	0.114	0.90
CA-02	0.010	0.000	0.090	0.099	0.83
CA-03	0.158	0.000	0.056	0.214	0.38
CA-04	0.035	0.000	0.099	0.134	0.72
CA-05	0.000	0.000	0.065	0.065	0.90
CA-06	0.000	0.000	0.071	0.071	0.90
CA-10	0.076	0.000	0.000	0.076	0.20
TOTAL	**0.279**	**0.000**	**0.494**	**0.773**	**0.65**

Post-Development Catchments (Uncontrolled)

CATCHMENT	C = 0.20	C = 0.80	C = 0.90	Total Area (ha)	Combined C
CA-07	0.000	0.000	0.015	0.015	0.90
CA-08	0.071	0.000	0.000	0.071	0.20
CA-09	0.226	0.000	0.000	0.226	0.20
TOTAL	**0.296**	**0.000**	**0.015**	**0.311**	**0.23**

LRL File No. 01348
Project: MacEwen Petroleum Inc.
Location: 5546 Albion Rd S, Gloucester, ON
Date: January 24, 2025
Designed: M. Longtin
Checked: M. Basnet
Drawing Ref.: C701, C702

Stormwater Management Design Sheet

STORM - 2 YEAR

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)
A = Area (ha)
T_d = Time of duration (min)

Pre-Devlopment Catchments within Development Area

	Total Area =	**1.084**	ha	**∑R=**	**0.51**
Uncontrolled	ECA-01	1.084	ha	R=	0.51
	Total Uncontrolled =	**1.084**	**ha**	**∑R=**	**0.51**

Pre-Development Release Rate

IDF Curve Equations (based on City of Ottawa IDF Curve)

$$I = A / (T_d+C)^B$$

Return Period	Constants		
	A	B	C
2-yr	732.951	0.810	6.199
5-yr	998.071	0.814	6.053
100-yr	1735.688	0.820	6.014

C =	0.50	(maximum 0.5 per City guidelines)
T_d =	10.00	min
I_2 =	76.81	mm/hr
I_5 =	104.19	mm/hr
I_{100} =	178.56	mm/hr
2-yr Release Rate =	115.77	L/s
5-yr Release Rate =	157.05	L/s
100-yr Release Rate =	269.14	L/s

Allowable Post-development Release Rates = ***57.88*** L/s (50% of 2-yr Pre-development Flow per SCSS Report, 2004)

Post-development Stormwater Management

					$\sum R_{2\&5}$	$\sum R_{100}$
	Total Site Area =	**1.084**	ha	**∑R=**	**0.53**	**0.66**
Controlled	CA-01	0.114	ha	R=	0.90	1.00
	CA-02	0.099	ha	R=	0.83	1.00
	CA-03	0.214	ha	R=	0.38	0.48
	CA-04	0.134	ha	R=	0.72	0.89
	CA-05	0.065	ha	R=	0.90	1.00
	CA-06	0.071	ha	R=	0.90	1.00
	CA-10	0.076	ha	R=	0.20	0.25
	Total Controlled =	**0.773**	**ha**	**∑R=**	**0.65**	**0.81**
Uncontrolled	CA-07	0.015	ha	R=	0.90	1.00
	CA-08	0.071	ha	R=	0.20	0.25
	CA-09	0.226	ha	R=	0.20	0.25
	Total Uncontrolled =	**0.311**	**ha**	**∑R=**	**0.23**	**0.29**

Post-development Stormwater Management

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	106.90	38.70	42.40	15.48	57.88
15	61.77	85.97	39.21	42.40	12.45	54.85
20	52.03	72.42	36.02	42.40	10.49	52.89
25	45.17	62.87	30.70	42.40	9.10	51.51
30	40.04	55.73	24.00	42.40	8.07	50.47
35	36.06	50.19	16.35	42.40	7.27	49.67
40	32.86	45.74	8.02	42.40	6.62	49.03
45	30.24	42.09	0.00	42.40	6.10	48.50
50	28.04	39.03	0.00	42.40	5.65	48.05
60	24.56	34.18	0.00	42.40	4.95	47.35
70	21.91	30.50	0.00	42.40	4.42	46.82
80	19.83	27.60	0.00	42.40	4.00	46.40
90	18.14	25.25	0.00	42.40	3.66	46.06
100	16.75	23.31	0.00	42.40	3.38	45.78
110	15.57	21.67	0.00	42.40	3.14	45.54
120	14.56	20.27	0.00	42.40	2.94	45.34

Storage Required = **39.21** **m^3**

LRL File No. 01348
Project: MacEwen Petroleum Inc.
Location: 5546 Albion Rd S, Gloucester, ON
Date: January 24, 2025
Designed: M. Longtin
Checked: M. Basnet
Drawing Ref.: C701, C702

Stormwater Management Design Sheet

STORM - 2 YEAR

Post-development Stormwater Management (*with a controlled release rate reduced to 50% for underground storage calculation)

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	*Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.81	106.90	51.42	21.20	15.48	36.68
15	61.77	85.97	58.29	21.20	12.45	33.65
20	52.03	72.42	61.46	21.20	10.49	31.69
25	45.17	62.87	62.50	21.20	9.10	30.31
30	40.04	55.73	62.16	21.20	8.07	29.27
35	36.06	50.19	60.88	21.20	7.27	28.47
40	32.86	45.74	58.90	21.20	6.62	27.83
45	30.24	42.09	56.40	21.20	6.10	27.30
50	28.04	39.03	53.48	21.20	5.65	26.85
60	24.56	34.18	46.73	21.20	4.95	26.15
70	21.91	30.50	39.05	21.20	4.42	25.62
80	19.83	27.60	30.72	21.20	4.00	25.20
90	18.14	25.25	21.88	21.20	3.66	24.86
100	16.75	23.31	12.64	21.20	3.38	24.58
110	15.57	21.67	3.09	21.20	3.14	24.34
120	14.56	20.27	0.00	21.20	2.94	24.14

Storage Required = **62.50** m^3
Underground Storage Provided = **63.08** m^3

Underground Storage

Oversized Pipe	dia (m)	A(m^2)	L(m)	V(m^3)
STM Sewer	0.600	0.283	124.50	35.20
STM Sewer	0.525	0.216	46.80	10.13
			Total	**45.33**
CBMH	**dia (m)**	**A(m^2)**	**H(m)**	**V(m^3)**
CBMH01	1.5	1.767	1.30	2.30
CBMH02	1.5	1.767	1.41	2.49
CBMH03	1.2	1.131	1.48	1.67
CBMH04	1.8	2.545	1.55	3.94
CBMH05	1.2	1.131	1.56	1.76
CBMH06	1.8	2.545	1.65	4.20
CBMH07	1.2	1.131	1.22	1.38
			Total	**17.75**

LRL File No. 01348
Project: MacEwen Petroleum Inc.
Location: 5546 Albion Rd S, Gloucester, ON
Date: January 24, 2025
Designed: M. Longtin
Checked: M. Basnet
Drawing Ref.: C701, C702

Stormwater Management Design Sheet

STORM - 100 YEAR

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)
A = Area (ha)
T_d = Time of duration (min)

Pre-Devlopment Catchments within Development Area

	Total Area =	**1.084**	ha	**∑R=**	**0.51**
Uncontrolled	ECA-01	1.084	ha	R=	0.51
	Total Uncontrolled =	**1.084**	**ha**	**∑R=**	**0.51**

Pre-Development Release Rate

IDF Curve Equations (based on City of Ottawa IDF Curve)

$$I = A / (T_d+C)^B$$

Return Period	Constants		
	A	B	C
2-yr	732.951	0.810	6.199
5-yr	998.071	0.814	6.053
100-yr	1735.688	0.820	6.014

C =	0.50	(maximum 0.5 per City guidelines)
T_d =	10.00	min
I_2 =	76.81	mm/hr
I_5 =	104.19	mm/hr
I_{100} =	178.56	mm/hr
2-yr Release Rate =	115.77	L/s
5-yr Release Rate =	157.05	L/s
100-yr Release Rate =	269.14	L/s

Allowable Post-development Release Rates = ***269.14*** L/s
Actual Post-development Release Rates = ***87.39*** L/s

Post-development Stormwater Management

					$\sum R_{2\&5}$	$\sum R_{100}$
	Total Site Area =	**1.084**	ha	**∑R=**	**0.53**	**0.66**
Controlled	CA-01	0.114	ha	R=	0.90	1.00
	CA-02	0.099	ha	R=	0.83	1.00
	CA-03	0.214	ha	R=	0.38	0.48
	CA-04	0.134	ha	R=	0.72	0.89
	CA-05	0.065	ha	R=	0.90	1.00
	CA-06	0.071	ha	R=	0.90	1.00
	CA-10	0.076	ha	R=	0.20	0.25
	Total Controlled =	**0.773**	**ha**	**∑R=**	**0.65**	**0.81**
Uncontrolled	CA-07	0.015	ha	R=	0.90	1.00
	CA-08	0.071	ha	R=	0.20	0.25
	CA-09	0.226	ha	R=	0.20	0.25
	Total Uncontrolled =	**0.311**	**ha**	**∑R=**	**0.23**	**0.29**

Post-development Stormwater Management

Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.56	310.66	160.96	42.40	44.99	87.39
15	142.89	248.61	185.59	42.40	36.01	78.41
20	119.95	208.69	199.55	42.40	30.22	72.63
25	103.85	180.68	207.41	42.40	26.17	68.57
30	91.87	159.83	211.38	42.40	23.15	65.55
35	82.58	143.67	212.67	42.40	20.81	63.21
40	75.15	130.74	212.01	42.40	18.93	61.34
45	69.05	120.14	209.88	42.40	17.40	59.80
50	63.95	111.27	206.60	42.40	16.11	58.52
60	55.89	97.25	197.44	42.40	14.08	56.49
70	49.79	86.63	185.74	42.40	12.55	54.95
80	44.99	78.28	172.20	42.40	11.34	53.74
90	41.11	71.53	157.27	42.40	10.36	52.76
100	37.90	65.94	141.25	42.40	9.55	51.95
110	35.20	61.25	124.37	42.40	8.87	51.27
120	32.89	57.23	106.77	42.40	8.29	50.69

Storage Required = **212.67** m^3
Surface Storage Provided = **216.86** m^3 (Refer to Dwg. C601)

LRL File No. 01348
Project: MacEwen Petroleum Inc.
Location: 5546 Albion Rd S, Gloucester, ON
Date: January 24, 2025
Designed: M. Longtin
Checked: M. Basnet
Drawing Ref.: C701, C702

Stormwater Management Design Sheet

STORM - 5 YEAR

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)
A = Area (ha)
T_d = Time of duration (min)

Pre-Devlopment Catchments within Development Area

	Total Area =	**1.084**	ha	**∑R=**	**0.51**
Uncontrolled	ECA-01	1.084	ha	R=	0.51
	Total Uncontrolled =	**1.084**	**ha**	**∑R=**	**0.51**

Pre-Development Release Rate

IDF Curve Equations (based on City of Ottawa IDF Curve)

$$I = A / (T_d+C)^B$$

Return Period	Constants		
	A	B	C
2-yr	732.951	0.810	6.199
5-yr	998.071	0.814	6.053
100-yr	1735.688	0.820	6.014

C =	0.50	(maximum 0.5 per City guidelines)
T_d =	10.00	min
I_2 =	76.81	mm/hr
I_5 =	104.19	mm/hr
I_{100} =	178.56	mm/hr
2-yr Release Rate =	115.77	L/s
5-yr Release Rate =	157.05	L/s
100-yr Release Rate =	269.14	L/s

Allowable Post-development Release Rates = ***157.05*** L/s
Actual Post-development Release Rates = ***63.41*** L/s

Post-development Stormwater Management

					$\sum R_{2&5}$	$\sum R_{100}$
	Total Site Area =	**1.084**	ha	**∑R=**	**0.53**	**0.66**
Controlled	CA-01	0.114	ha	R=	0.90	1.00
	CA-02	0.099	ha	R=	0.83	1.00
	CA-03	0.214	ha	R=	0.38	0.48
	CA-04	0.134	ha	R=	0.72	0.89
	CA-05	0.065	ha	R=	0.90	1.00
	CA-06	0.071	ha	R=	0.90	1.00
	CA-10	0.076	ha	R=	0.20	0.25
	Total Controlled =	**0.773**	**ha**	**∑R=**	**0.65**	**0.81**
Uncontrolled	CA-07	0.015	ha	R=	0.90	1.00
	CA-08	0.071	ha	R=	0.20	0.25
	CA-09	0.226	ha	R=	0.20	0.25
	Total Uncontrolled =	**0.311**	**ha**	**∑R=**	**0.23**	**0.29**

Post-development Stormwater Management

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	104.19	145.02	61.57	42.40	21.00	63.41
15	83.56	116.30	66.51	42.40	16.84	59.25
20	70.25	97.78	66.45	42.40	14.16	56.56
25	60.90	84.76	63.53	42.40	12.28	54.68
30	53.93	75.06	58.78	42.40	10.87	53.27
35	48.52	67.53	52.77	42.40	9.78	52.18
40	44.18	61.50	45.83	42.40	8.91	51.31
45	40.63	56.55	38.20	42.40	8.19	50.59
50	37.65	52.41	30.02	42.40	7.59	49.99
60	32.94	45.85	12.42	42.40	6.64	49.04
70	29.37	40.88	0.00	42.40	5.92	48.32
80	26.56	36.97	0.00	42.40	5.35	47.76
90	24.29	33.81	0.00	42.40	4.90	47.30
100	22.41	31.19	0.00	42.40	4.52	46.92
110	20.82	28.98	0.00	42.40	4.20	46.60
120	19.47	27.10	0.00	42.40	3.92	46.33

Storage Required = **66.51** **m^3**

LRL Associates Ltd.

Storm Design Sheet

LRL File No.	01348
Project:	MacEwen Petroleum Inc.
Location:	5546 Albion Rd S, Gloucester, ON
Date:	January 24, 2025
Designed:	M. Longtin
Checked:	M. Basnet
Drawing Reference:	C.401

Storm Design Parameters

Rational Method:
Q = 2.78CIA
where,
Q = Peak flow (L/s)
A = Drainage area (ha)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)

Runoff Coefficient (C)

Grass	0.2
Gravel	0.80
Asphalt / rooftop	0.90

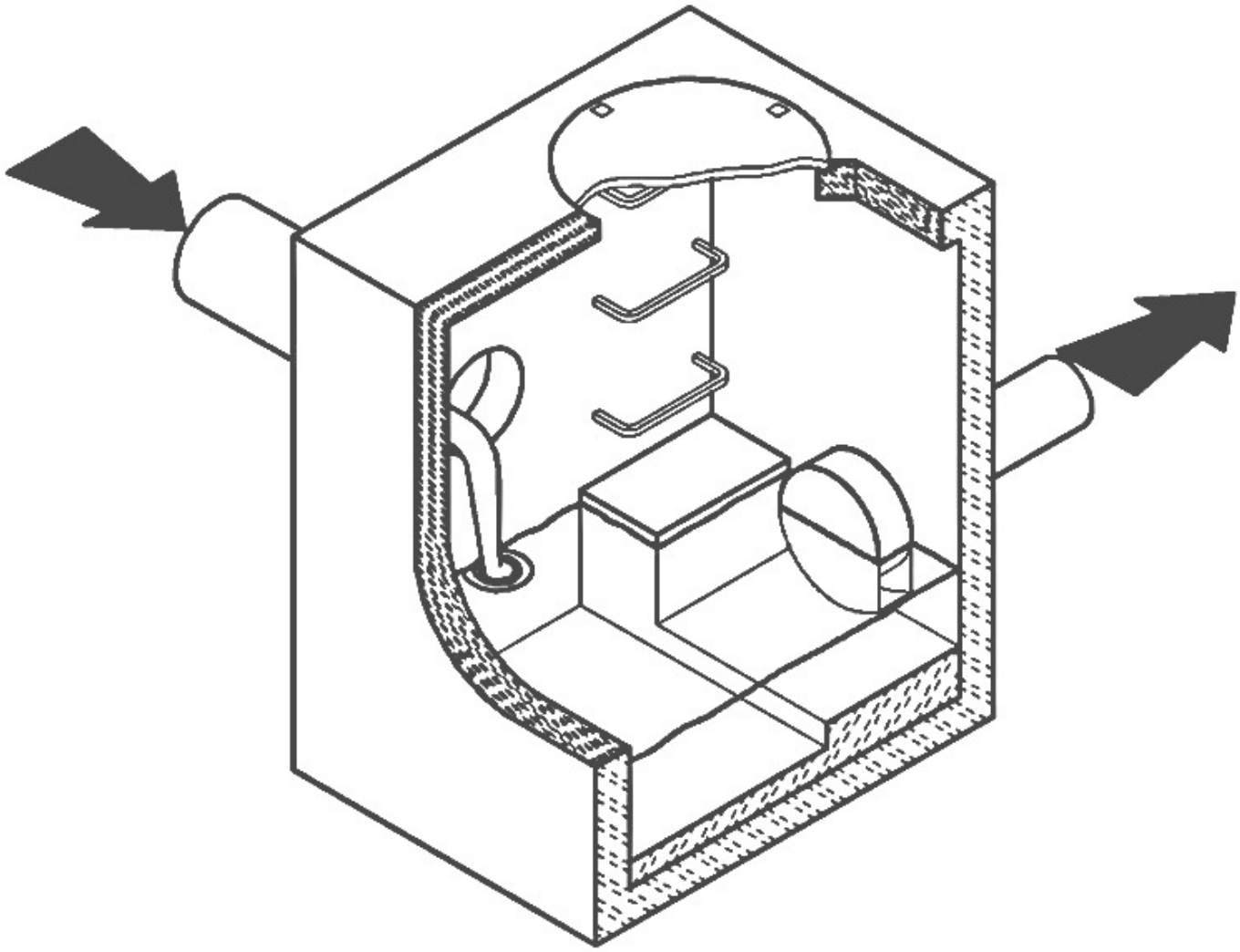
IDF curve
Ottawa Macdonald-Cartier International Airport
Storm event: 5 Years
Intensity equation:
$I_5 = 998.071 / (Td + 6.053)^{0.814}$ (mm/hr)
Min. velocity = 0.80 m/s
Manning's "n" = 0.013

LOCATION			AREA (ha)			FLOW						STORM SEWER							
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)	Controlled Flow Q (L/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full Q_{FULL} (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})
CA-10	CBMH07	CBMH01	0.076	0.000	0.000	0.042	0.042	10.00	104.19	4.41		525	PVC	0.20%	23.6	192.3	0.89	0.44	0.02
CA-01	CBMH01	CBMH02	0.000	0.000	0.114	0.285	0.327	10.44	101.91	33.33		525	PVC	0.20%	23.2	192.3	0.89	0.44	0.17
CA-02	CBMH02	CBMH04	0.010	0.000	0.090	0.230	0.557	10.88	99.77	55.54		600	PVC	0.20%	40.1	274.6	0.97	0.69	0.20
CA-03	CBMH03	CBMH04	0.158	0.000	0.056	0.228	0.228	10.00	104.19	23.73		600	PVC	0.20%	21.1	274.6	0.97	0.36	0.09
CA-04	CBMH04	CBMH06	0.035	0.000	0.099	0.266	1.051	11.57	96.59	101.50		600	PVC	0.20%	32.9	274.6	0.97	0.56	0.37
CA-05	CBMH05	CBMH06	0.000	0.000	0.065	0.163	0.163	10.00	104.19	17.00		600	PVC	0.20%	30.4	274.6	0.97	0.52	0.06
CA-06	CBMH06	OGS	0.000	0.000	0.071	0.178	1.392	12.13	94.14	131.03	42.40	300	PVC	0.35%	14.3	57.2	0.81	0.29	0.74
	OGS	Ex. Ditch					1.392	12.43	92.92	129.33	42.40	300	PVC	0.35%	5.90	57.2	0.81	0.12	0.74

CSO/STORMWATER MANAGEMENT

HYDROVEX® VHV / SVHV

Vertical Vortex Flow Regulator



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APPLICATIONS

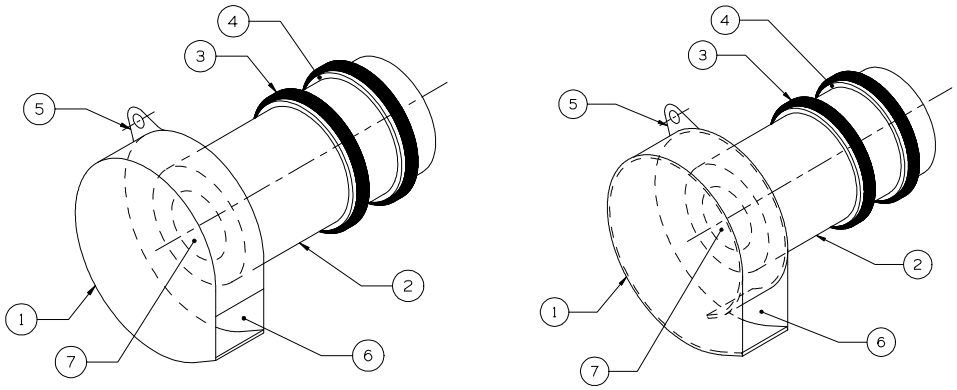
One of the major problems of urban wet weather flow management is the runoff generated after a heavy rainfall. During a storm, uncontrolled flows may overload the drainage system and cause flooding. Due to increased velocities, sewer pipe wear is increased dramatically and results in network deterioration. In a combined sewer system, the wastewater treatment plant may also experience significant increases in flows during storms, thereby losing its treatment efficiency.

A simple means of controlling excessive water runoff is by controlling excessive flows at their origin (manholes). **John Meunier Inc.** manufactures the **HYDROVEX® VHV / SVHV** line of vortex flow regulators to control stormwater flows in sewer networks, as well as manholes.

The vortex flow regulator design is based on the fluid mechanics principle of the forced vortex. This grants flow regulation without any moving parts, thus reducing maintenance. The operation of the regulator, depending on the upstream head and discharge, switches between orifice flow (gravity flow) and vortex flow. Although the concept is quite simple, over 12 years of research have been carried out in order to get a high performance.

The **HYDROVEX® VHV / SVHV** Vertical Vortex Flow Regulators **(refer to Figure 1)** are manufactured entirely of stainless steel, and consist of a hollow body (**1**) (in which flow control takes place) and an outlet orifice (**7**). Two rubber "O" rings (**3**) seal and retain the unit inside the outlet pipe. Two stainless steel retaining rings (**4**) are welded on the outlet sleeve to ensure that there is no shifting of the "O" rings during installation and use.

1. **BODY**
2. **SLEEVE**
3. **O-RING**
4. **RETAINING RINGS (SQUARE BAR)**
5. **ANCHOR PLATE**
6. **INLET**
7. **OUTLET ORIFICE**



VHV ***SVHV***

FIGURE 1: HYDROVEX® VHV-SVHV VERTICAL VORTREX FLOW REGULATORS

ADVANTAGES

- The **HYDROVEX® VHV / SVHV** line of flow regulators are manufactured entirely of stainless steel, making them durable and corrosion resistant.
- Having no moving parts, they require minimal maintenance.
- The geometry of the **HYDROVEX® VHV / SVHV** flow regulators allows a control equal to an orifice plate, having a cross section area 4 to 6 times smaller. This decreases the chance of blockage of the regulator, due to sediments and debris found in stormwater flows. **Figure 2** illustrates the comparison between a regulator model 100 SVHV-2 and an equivalent orifice plate. One can see that for the same height of water, the regulator controls a flow approximately four times smaller than an equivalent orifice plate.
- Installation of the **HYDROVEX® VHV / SVHV** flow regulators is quick and straightforward and is performed after all civil works are completed.
- Installation requires no special tools or equipment and may be carried out by any contractor.
- Installation may be carried out in existing structures.

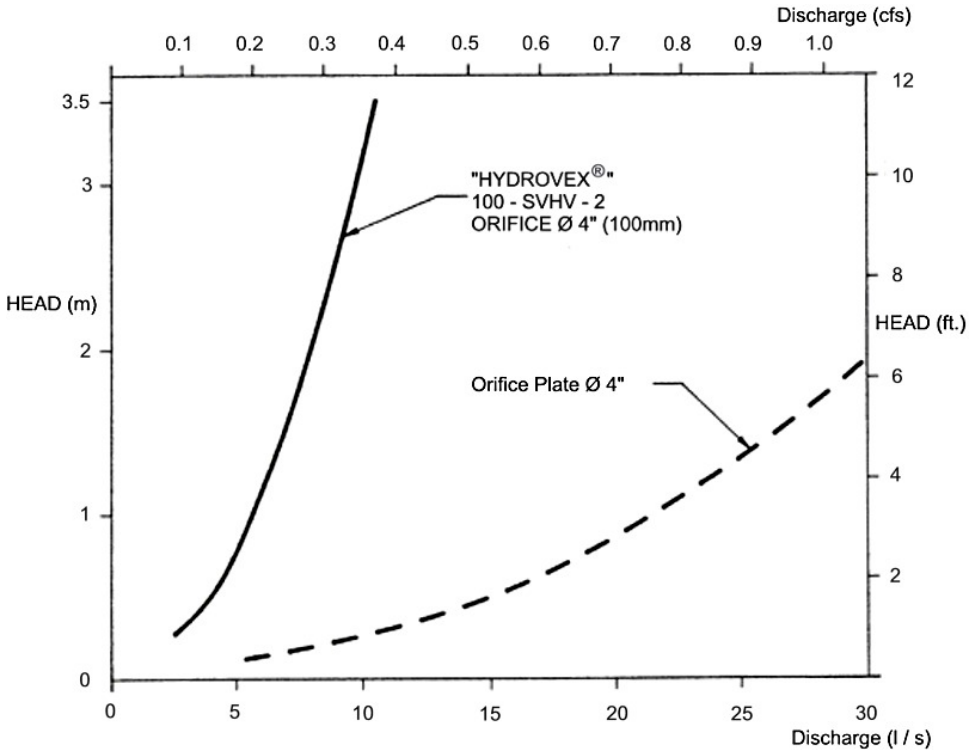


FIGURE 2: DISCHARGE CURVE SHOWING A HYDROVEX® FLOW REGULATOR VS AN ORIFICE PLATE

SELECTION

Selection of a **VHV or SVHV** regulator can be easily made using the selection charts found at the back of this brochure (see **Figure 3**). These charts are a graphical representation of the maximum upstream water pressure (head) and the maximum discharge at the manhole outlet. The maximum design head is the difference between the maximum upstream water level and the invert of the outlet pipe. All selections should be verified by John Meunier Inc. personnel prior to fabrication.

Example:

✓ Maximum design head	2m (6.56 ft.)
✓ Maximum discharge	6 L/s (0.2 cfs)
✓ Using **Figure 3** - VHV	model required is a **75 VHV-1**

INSTALLATION REQUIREMENTS

All **HYDROVEX® VHV / SVHV** flow regulators can be installed in circular or square manholes. **Figure 4** gives the various minimum dimensions required for a given regulator. ***It is imperative to respect the minimum clearances shown to ensure easy installation and proper functioning of the regulator.***

SPECIFICATIONS

In order to specify a **HYDROVEX®** regulator, the following parameters must be defined:

- The model number (ex: 75-VHV-1)
- The diameter and type of outlet pipe (ex: 6" diam. SDR 35)
- The desired discharge (ex: 6 l/s or 0.21 CFS)
- The upstream head (ex: 2 m or 6.56 ft.) *
- The manhole diameter (ex: 36" diam.)
- The minimum clearance "H" (ex: 10 inches)
- The material type (ex: 304 s/s, 11 Ga. standard)

* ***Upstream head is defined as the difference in elevation between the maximum upstream water level and the invert of the outlet pipe where the HYDROVEX® flow regulator is to be installed.***

PLEASE NOTE THAT WHEN REQUESTING A PROPOSAL, WE SIMPLY REQUIRE THAT YOU PROVIDE US WITH THE FOLLOWING:

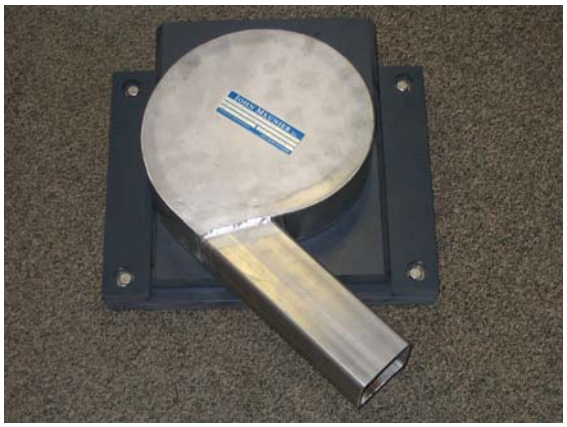
- ***project design flow rate***
- ***pressure head***
- ***chamber's outlet pipe diameter and type***

Typical VHV model in factory

OPTIONS

FV – SVHV (mounted on sliding plate)

VHV-1-O (standard model with odour control inlet)



FV – VHV-O (mounted on sliding plate with odour control inlet)

VHV with Gooseneck assembly in existing chamber without minimum release at the bottom

VHV with air vent for minimal slopes

HYDROVEX®

VHV Vertical Vortex Flow Regulator

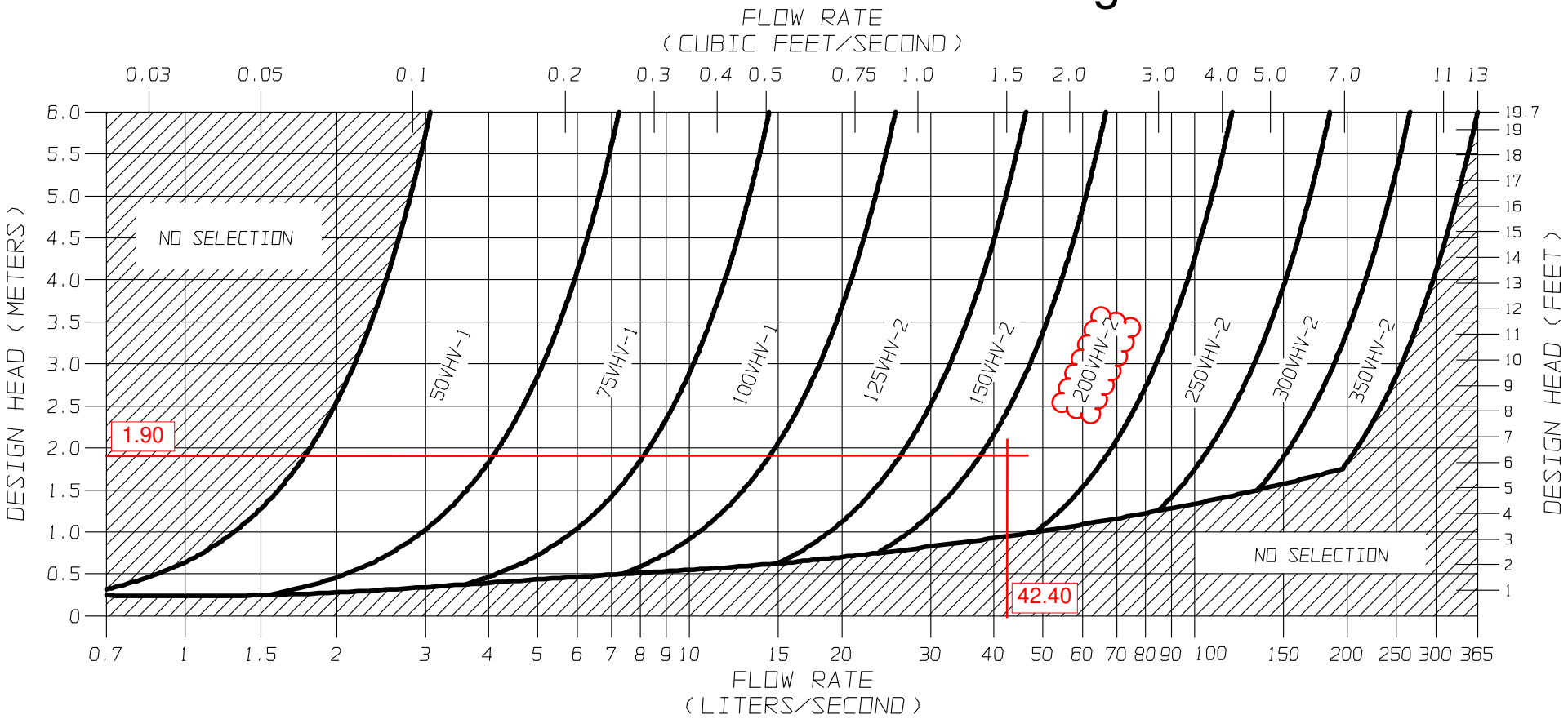


FIGURE 3 - VHV

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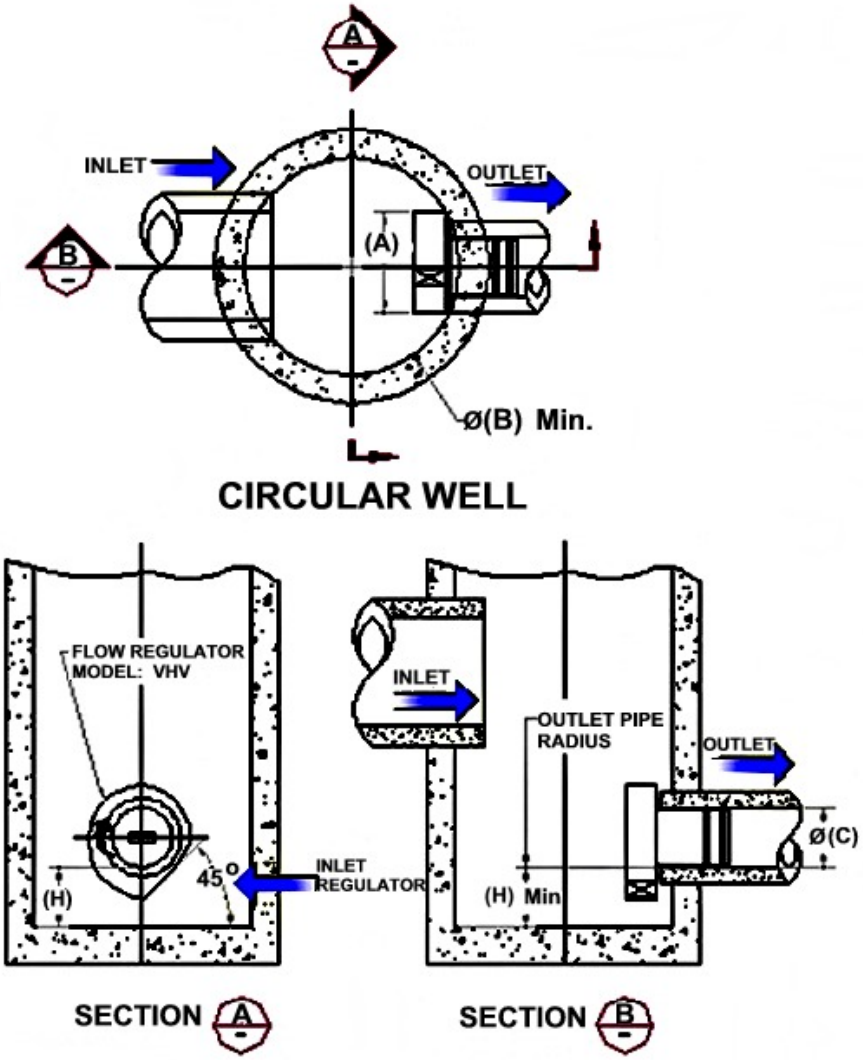
FLOW REGULATOR TYPICAL INSTALLATION IN CIRCULAR MANHOLE
FIGURE 4 (MODEL VHV)

Model Number	Regulator Diameter		Minimum Manhole Diameter		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	**A** (in.)	**B** (mm)	**B** (in.)	**C** (mm)	**C** (in.)	**H** (mm)	**H** (in.)
50VHV-1	150	6	600	24	150	6	150	6
75VHV-1	250	10	600	24	150	6	150	6
100VHV-1	325	13	900	36	150	6	200	8
125VHV-2	275	11	900	36	150	6	200	8
150VHV-2	350	14	900	36	150	6	225	9
200VHV-2	450	18	1200	48	200	8	300	12
250VHV-2	575	23	1200	48	250	10	350	14
300VHV-2	675	27	1600	64	250	10	400	16
350VHV-2	800	32	1800	72	300	12	500	20



INSTALLATION

The installation of a **HYDROVEX®** regulator may be undertaken once the manhole and piping is in place. Installation consists of simply fitting the regulator into the outlet pipe of the manhole. **John Meunier Inc.** recommends the use of a lubricant on the outlet pipe, in order to facilitate the insertion and orientation of the flow controller.

MAINTENANCE

HYDROVEX® regulators are manufactured in such a way as to be maintenance free; however, a periodic inspection (every 3-6 months) is suggested in order to ensure that neither the inlet nor the outlet has become blocked with debris. The manhole should undergo periodically, particularly after major storms, inspection and cleaning as established by the municipality

GUARANTY

The **HYDROVEX®** line of **VHV / SVHV** regulators are guaranteed against both design and manufacturing defects for a period of 5 years. Should a unit be defective, **John Meunier Inc.** is solely responsible for either modification or replacement of the unit.

John Meunier Inc.
ISO 9001 : 2008

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Revised: 2011-05-03

Stormceptor®

FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

12/20/2022

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

Site Name:	5546 Albion Rd. S

Drainage Area (ha):	0.770
Runoff Coefficient 'c':	0.65

Particle Size Distribution:	Fine

Target TSS Removal (%):	80.0
Required Water Quality Runoff Volume Capture (%):	90.0

Oil / Fuel Spill Risk Site?	Yes

Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	43.28

Peak Conveyance (maximum) Flow Rate (L/s):	43.28

Project Name:	5546 Albion Rd. S
Project Number:	01348
Designer Name:	Brandon O'Leary
Designer Company:	Forterra
Designer Email:	brandon.oleary@forterrabp.com
Designer Phone:	905-630-0359
EOR Name:	Mohan Basnet
EOR Company:	LRL Associates Ltd.
EOR Email:	mbasnet@lrl.ca
EOR Phone:	613-229-6819

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	83
EFO6	92
EFO8	96
EFO10	98
EFO12	99

Recommended Stormceptor EFO Model: EFO4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 83

Water Quality Runoff Volume Capture (%): > 90

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THIRD-PARTY TESTING AND VERIFICATION

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

PERFORMANCE

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

PARTICLE SIZE DISTRIBUTION (PSD)

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

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

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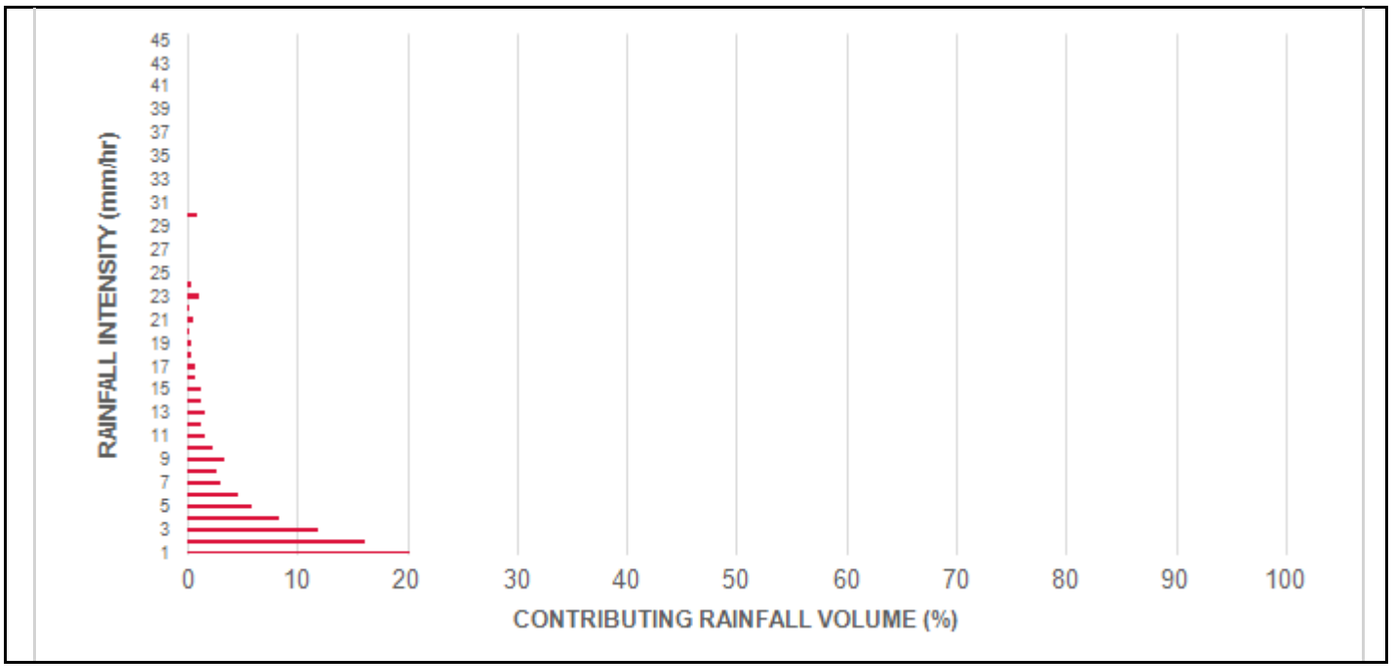
Upstream Flow Controlled Results

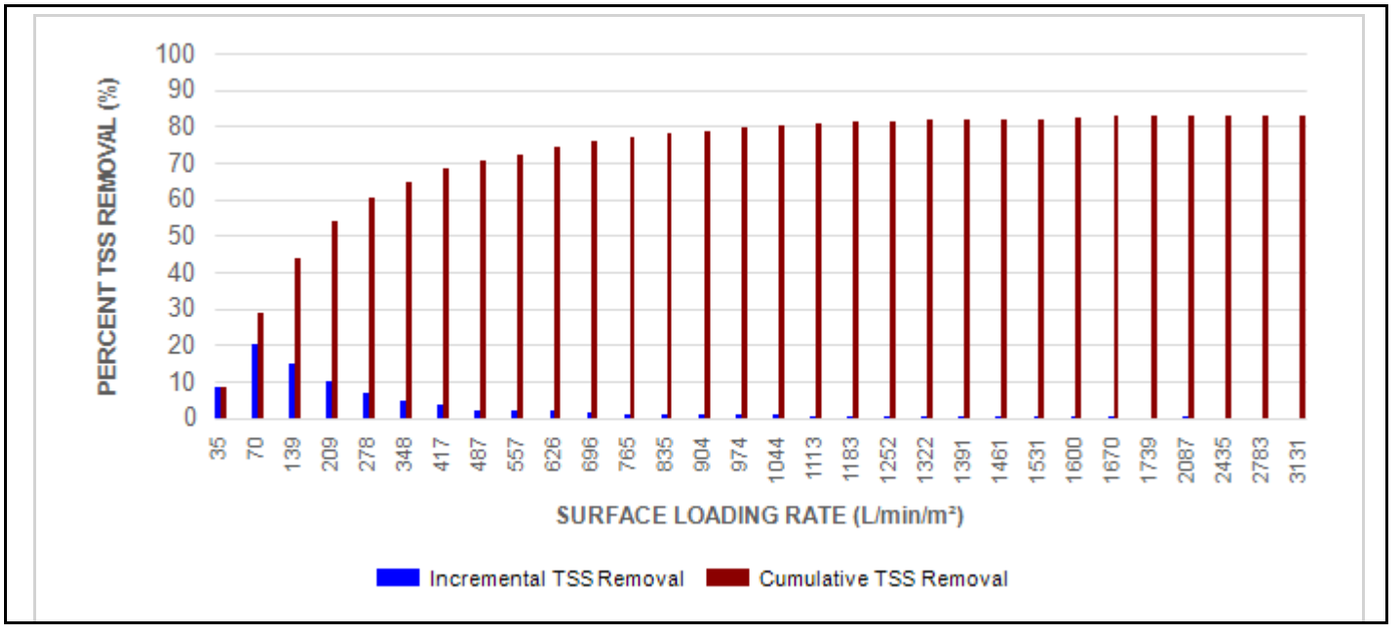
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	8.6	8.6	0.70	42.0	35.0	100	8.6	8.6
1	20.3	29.0	1.39	83.0	70.0	100	20.3	29.0
2	16.2	45.2	2.78	167.0	139.0	91	14.7	43.7
3	12.0	57.2	4.17	250.0	209.0	83	10.0	53.7
4	8.4	65.6	5.57	334.0	278.0	80	6.7	60.4
5	5.9	71.6	6.96	417.0	348.0	77	4.6	64.9
6	4.6	76.2	8.35	501.0	417.0	73	3.4	68.3
7	3.1	79.3	9.74	584.0	487.0	70	2.1	70.5
8	2.7	82.0	11.13	668.0	557.0	67	1.8	72.3
9	3.3	85.3	12.52	751.0	626.0	64	2.1	74.5
10	2.3	87.6	13.91	835.0	696.0	64	1.5	75.9
11	1.6	89.2	15.31	918.0	765.0	63	1.0	76.9
12	1.3	90.5	16.70	1002.0	835.0	63	0.8	77.8
13	1.7	92.2	18.09	1085.0	904.0	62	1.1	78.8
14	1.2	93.5	19.48	1169.0	974.0	62	0.8	79.6
15	1.2	94.6	20.87	1252.0	1044.0	61	0.7	80.3
16	0.7	95.3	22.26	1336.0	1113.0	59	0.4	80.7
17	0.7	96.1	23.65	1419.0	1183.0	57	0.4	81.1
18	0.4	96.5	25.05	1503.0	1252.0	56	0.2	81.4
19	0.4	96.9	26.44	1586.0	1322.0	54	0.2	81.6
20	0.2	97.1	27.83	1670.0	1391.0	53	0.1	81.7
21	0.5	97.5	29.22	1753.0	1461.0	50	0.2	81.9
22	0.2	97.8	30.61	1837.0	1531.0	48	0.1	82.0
23	1.0	98.8	32.00	1920.0	1600.0	46	0.5	82.5
24	0.3	99.1	33.39	2004.0	1670.0	44	0.1	82.6
25	0.0	99.1	34.78	2087.0	1739.0	42	0.0	82.6
30	0.9	100.0	41.74	2505.0	2087.0	35	0.3	82.9
35	0.0	100.0	43.00	2580.0	2150.0	34	0.0	82.9
40	0.0	100.0	43.00	2580.0	2150.0	34	0.0	82.9
45	0.0	100.0	43.00	2580.0	2150.0	34	0.0	82.9
Estimated Net Annual Sediment (TSS) Load Reduction =								**83 %**

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

RAINFALL DATA FROM OTTAWA CDA RCS RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL
FOR THE RECOMMENDED STORMCEPTOR® MODEL



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Maximum Pipe Diameter / Peak Conveyance

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

SCOUR PREVENTION AND ONLINE CONFIGURATION

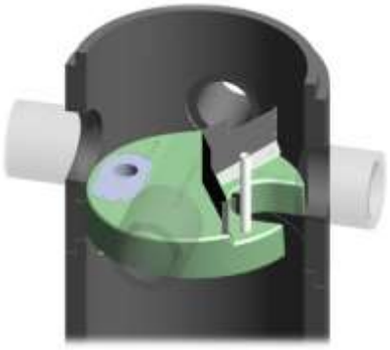
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

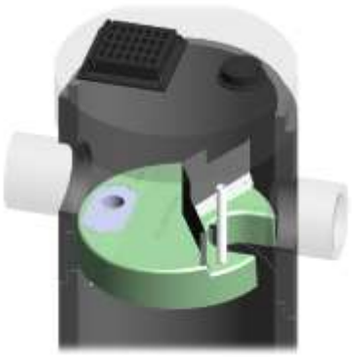
DESIGN FLEXIBILITY

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

OIL CAPTURE AND RETENTION

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





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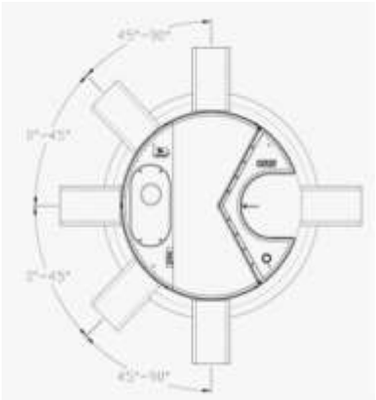

INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

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

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

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

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

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

3.2 SIZING METHODOLOGY

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

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

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

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

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

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

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in

accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

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

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

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

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

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

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

2.1.1

4ft (1219mm) Diameter OGS Units:	1.19m^3 sediment / 265L oil
6ft (1829mm) Diameter OGS Units:	3.48m^3 sediment / 609Ll oil
8ft (2438mm) Diameter OGS Units:	8.78m^3 sediment / 1,071L oil
10ft (3048mm) Diameter OGS Units:	17.78m^3 sediment / 1,673L oil
12ft (3657mm) Diameter OGS Units:	31.23m^3 sediment / 2,476L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality

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

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

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

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

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

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

APPENDIX D

Civil Engineering Drawings

SITE RE-DEVELOPMENT
MACEWEN PETROLEUM INC
5546 ALBION RD S, OTTAWA

KEY PLAN (N.T.S.)

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CONSTRUCTION DETAIL PLAN	C901
CONSTRUCTION DETAIL PLAN	C902

LRL
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www.lrl.ca | (613) 842-3434

SITE RE-DEVELOPMENT
5546 ALBION RD, OTTAWA
REV.06 - RE-ISSUED FOR APPROVAL - JANUARY 24th 2025
LRL PROJECT no: 01348

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/29
PROVINCE OF ONTARIO
NOT AUTHENTIC UNLESS SIGNED AND DATED

D07-12-24-0157

#19199

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

EROSION AND SEDIMENT CONTROL NOTES

GENERAL

THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

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

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

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

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

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

CONTRACTOR'S RESPONSIBILITIES

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

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

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

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

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

SPILL CONTROL NOTES

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

MUD MAT NOTES

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

SITE GRADING NOTES

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

ROADWORK SPECIFICATIONS

15. ROADWORK TO BE COMPLETED IN ACCORDANCE WITH GEOTECHNICAL REPORT, PREPARED BY LRL ASSOCIATES. DATED NOVEMBER 2020.
16. AL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND STOCK PILLED ON SITE AS DIRECTED BY NATIONAL MUNICIPALITY.
17. THE SUBGRADE SHALL BE CROWNED AND SLOPED AT LEAST 2% AND PROOF ROLLED WITH HEAVY ROLLERS.
18. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'A', TYPE II COMPACTED IN MAXIMUM 300MM LIFTS.
19. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO MINIMUM OF 100% STANDARD PROCTOR DENSITY MAXIMUM DRY DENSITY (SPMDD).

SANITARY, FOUNDATION DRAIN, STORM SEWER AND WATERMAIN NOTES

GENERAL

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

SANITARY

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

STORM

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

WATERMAIN

30. ALL WATERMAIN INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS).
31. ALL PVC WATERMAINS SHALL BE AWWA C-900 CLASS 150, SDR 18 OR APPROVED EQUIVALENT.
32. ALL WATER SERVICES LESS THAN OR EQUAL TO 50MM IN DIAMETER TO BE TYPE 'K' COPPER.
33. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17. UNLESS SPECIFIED OTHERWISE. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY THE PROJECT GEOTECHNICAL ENGINEER.
34. ALL PVC WATERMAINS, SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W.36.
35. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS PER CITY OF OTTAWA STD.25.5 AND W25.6.
36. VALVE BOXES SHALL BE INSTALLED PER CITY OF OTTAWA STD W24.
37. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS PER CITY OF OTTAWA STD.25.5 AND W25.6.
38. THRUST BLOCKING OF WATERMAINS TO BE INSTALLED PER CITY OF OTTAWA STD. W25.3 AND W25.4.
39. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS, BLOW-OFFS, AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
40. WATERMAIN CROSSING OVER AND BELOW SEWERS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. W25,2 AND W25, RESPECTIVELY.
41. WATER SERVICES ARE TO BE INSULATED PER CITY STD. W23 WHERE SEPARATION BETWEEN SERVICES AND MAINTENANCE HOLES ARE LESS THAN 2.4M.
42. THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER/UTILITY IS 0.5M PER MOE GUIDELINES. FOR CROSSING UNDER SEWERS, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING TO ENSURE THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.
43. ALL WATERMAINS SHALL HAVE A MINIMUM COVER OR 2.4M, OTHERWISE THERMAL INSULATION IS REQUIRED AS PER STD DWG W22.
44. GENERAL WATER PLANT TO UTILITY CLEARANCE AS PER STD DWG R20.
45. FIRE HYDRANT INSTALLATION AS PER STD DWG W19, ALL BOTTOM OF HYDRANT FLANGE ELEVATIONS TO BE INSTALLED 0.10M ABOVE PROPOSED FINISHED GRADE AT HYDRANT; FIRE HYDRANT LOCATION AS PER STD DWG W18.
46. BUILDING SERVICE TO BE CAPPED 1.0M OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED AND MUST BE RESTRAINED A MINIMUM OF 12M BACK FROM STUB.
47. ALL WATERMAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES UNLESS OTHERWISE DIRECTED. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED.
48. ALL WATERMAINS SHALL BE BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES. ALL CHLORINATED WATER TO BE DISCHARGED AND PRETREATED TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE. ALL DISCHARGED WATER MUST BE CONTROLLED AND TREATED SO AS NOT TO ADVERSELY EFFECT ENVIRONMENT. IT IS RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MUNICIPAL AND/OR PROVINCIAL REQUIREMENTS ARE FOLLOWED.
49. ALL WATERMAIN STUBS SHALL BE TERMINATED WITH A PLUG AND 50MM BLOW OFF UNLESS OTHERWISE NOTED.

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UNAUTHORIZED CHANGES:

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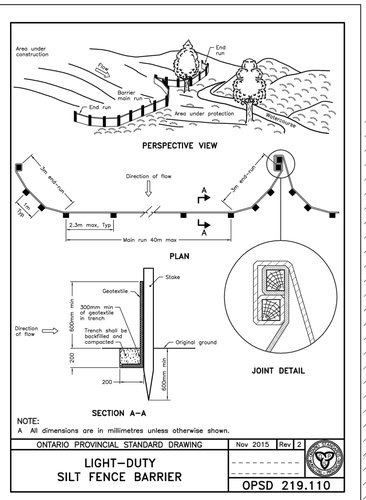
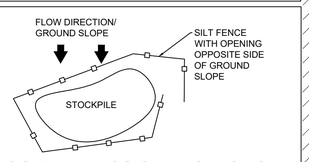
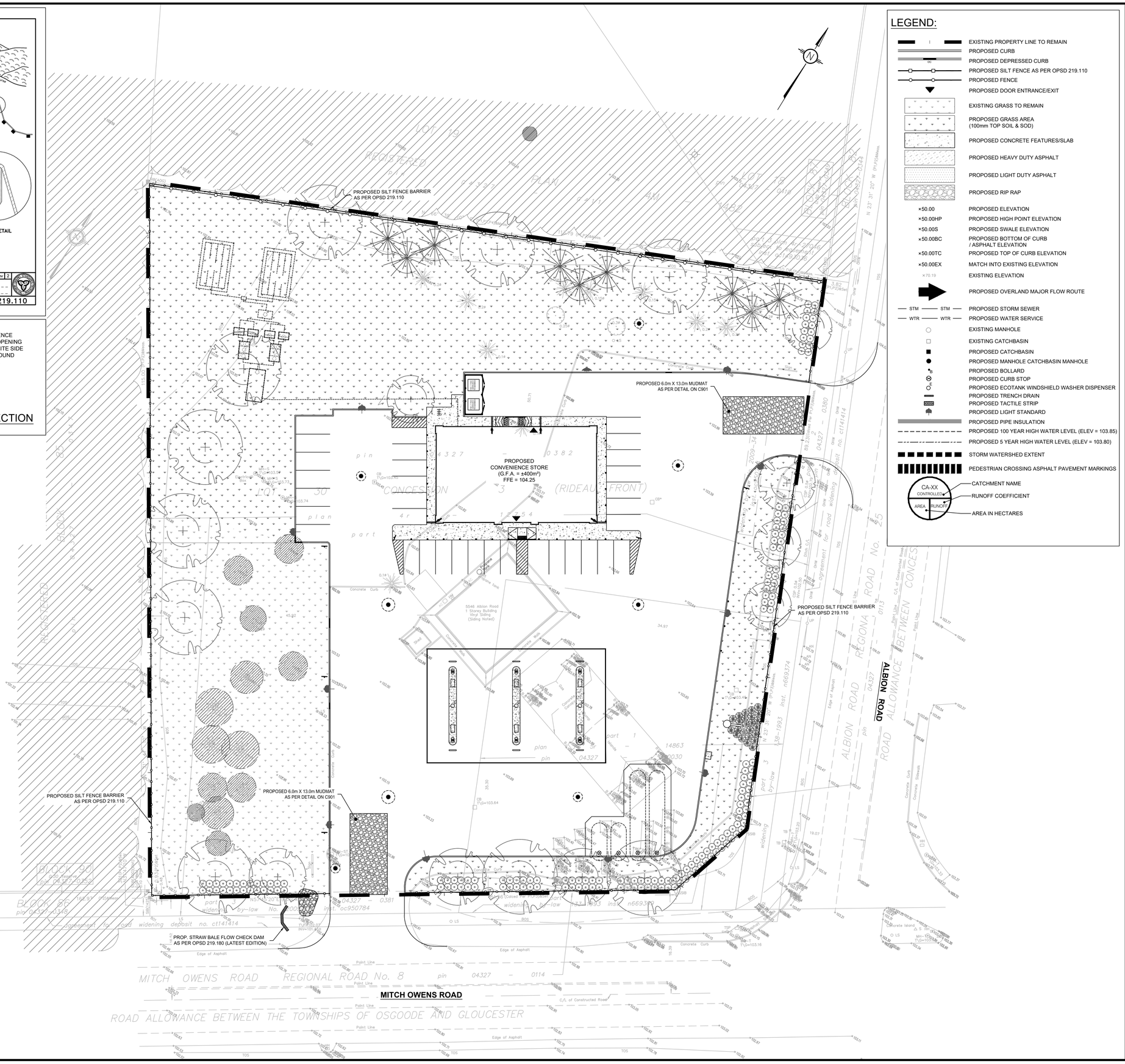


NOTE:
A All dimensions are in millimetres unless otherwise shown.

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



STOCKPILE EROSION PROTECTION
N.T.S.



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- EXISTING GRASS TO REMAIN
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
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IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

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

GENERAL NOTES:

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

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

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

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

TOPOGRAPHICAL SURVEY FOR THIS PROPERTY WAS PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD., IN APRIL 2022.

5m 2 0 5 10m
SCALE: 1:300

SUBJECT TO APPROVAL

No.	REVISIONS	BY	DATE
06	ISSUED FOR APPROVAL	M.L.	24 JAN 2025
05	ISSUED FOR APPROVAL	M.L.	15 NOV 2024
04	ISSUED FOR APPROVAL	M.L.	09 AUG 2024
03	ISSUED FOR APPROVAL	M.L.	10 APR 2024
02	ISSUED FOR APPROVAL	M.L.	13 DEC 2023
01	ISSUED FOR APPROVAL	M.L.	07 SEP 2023

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/24
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
MACEWEN PETROLEUM INC.
18 ADELAIDE STREET, MAXVILLE, ON

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

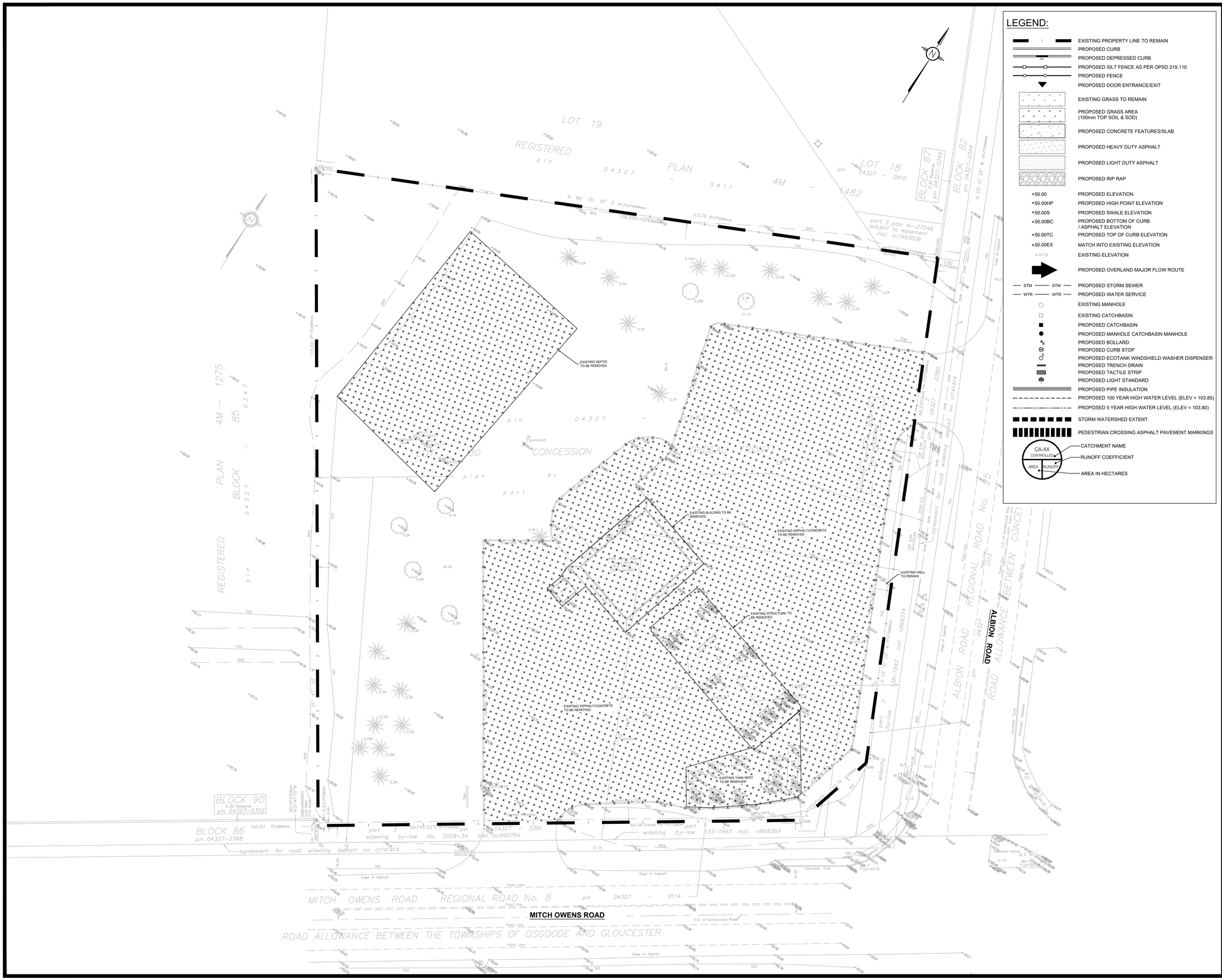
PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.
01348

DATE
APRIL 2022

C101



LEGEND:

▬ ▬	EXISTING PROPERTY LINE TO REMAIN
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═ DC	PROPOSED DEPRESSED CURB
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➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
— STM — STM —	PROPOSED STORM SEWER
— WTR — WTR —	PROPOSED WATER SERVICE
○	EXISTING MANHOLE
□	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN
●	PROPOSED MANHOLE CATCHBASIN MANHOLE
•B	PROPOSED BOLLARD
⊗	PROPOSED CURB STOP
○E	PROPOSED ECOTANK WINDSHIELD WASHER DISPENSER
▬	PROPOSED TRENCH DRAIN
▨	PROPOSED TACTILE STRIP
●	PROPOSED LIGHT STANDARD
▬	PROPOSED PIPE INSULATION
- - - -	PROPOSED 100 YEAR HIGH WATER LEVEL (ELEV = 103.85)
-·-·-	PROPOSED 5 YEAR HIGH WATER LEVEL (ELEV = 103.80)
■ ■ ■ ■	STORM WATERSHED EXTENT
▮▮▮▮▮	PEDESTRIAN CROSSING ASPHALT PAVEMENT MARKINGS

CA-XX CONTROLLED — CATCHMENT NAME
RUNOFF — RUNOFF COEFFICIENT
AREA — AREA IN HECTARES

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TOPOGRAPHICAL SURVEY FOR THIS PROPERTY WAS PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD., IN APRIL 2022.

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SCALE: 1:300

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LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/24
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
MACEWEN PETROLEUM INC.
18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
DEMOLITION PLAN

PROJECT NO.
01348

DATE
APRIL 2022

C102

D07-12-24-0157

#19199

KEY PLAN
N.T.S.

CONSULTANTS

PLANNER

Jonah Bonn
First Bay Properties Inc.
311 Richmond Road, Suite 301, Ottawa

SITE ENGINEERING

Maxime Longtin
LRL Engineering Ltd.
5430 Canotek Rd, Ottawa

ARCHITECT

Ian Wilson
McRobie Architects - Interior Designers
Suite 100, 66 Queen Street, Ottawa

SURVEYOR

Ed Herweyer
Annis O'Sullivan Vollebekk Ltd.
14 Concourse Gate, Suite 500, Nepean

The property information was derived from the topographical survey prepared by Annis, O'Sullivan, Vollebekk LTD. prepared in April 2022.

PART OF LOT 30, CONCESSION 3 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- EXISTING GRASS TO REMAIN
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
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- PROPOSED 5 YEAR HIGH WATER LEVEL (ELEV = 103.80)
- STORM WATERSHED EXTENT
- PEDESTRIAN CROSSING ASPHALT PAVEMENT MARKINGS

CA-XX (CONTROLLED) / AREA, RUNOFF
- CATCHMENT NAME
- RUNOFF COEFFICIENT
- AREA IN HECTARES

DETAILS OF DEVELOPMENT

DATA		REQUIRED	PROVIDED
ZONING		RC2	
SETBACKS	FY	10.0m	21.2m
	RY	10.0m	28.7m
	INT.SY	4.5m	44.6m
	EXT.SY	7.5m	24.6m
NET LOT AREA (sqm)		2,000 sqm	10,844 sqm
BUILDING COVERAGE		30 % (MAX)	3.7 %
BUILDING HEIGHT		11.0 m (MAX)	7.2 m
GROSS FLOOR AREA		400 sqm	
No. of UNITS (COMMERCIAL)		1	
LOADING SPACES		0	1
PARKING:		13 + 1 HC	32 + 1 HC
LANDSCAPE BUFFER		15% MIN.	42% MIN.
LANDSCAPE COVERAGE		52.5%	
No. OF STOREYS		1	
OTHER:			

SITE PLAN NOTES:

1. PROPOSED CONVENIENCE STORE
2. PROPOSED GARBAGE ENCLOSURE
3. PROPOSED NO PARKING AREA FOR GARBAGE & LOADING AREA (WITH NO PARKING SIGNS/PAVEMENT MARKINGS)
4. PROPOSED PAVEMENT MARKINGS
5. PROPOSED ACCESSIBLE RAMP 1:12
6. PROPOSED CONCRETE BARRIER CURB AS PER OPSD 600.110
7. PROPOSED ACCESSIBLE PARKING C/W PAINTED BLUE BACKGROUND
8. PROPOSED PARKING
9. FIRE ROUTE
10. PROPOSED ROOF DRAINAGE DOWNSPOUT LOCATION
11. PROPOSED 100mm TOP SOIL & SOD. (CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE NECESSARY TURF MAINTENANCE TO OPTIMIZE GROWTH OF THE SEED OR SOD FOR THE FIRST 30 DAYS, OR UNTIL THE FIRST CUT.)
12. PRE-SLOPED POLYPROPYLENE TRENCH DRAIN SYSTEMS WITH DUCTILE IRON FRAMES AT DOWNSPOUT LOCATIONS AROUND PROPOSED BUILDING (SEE DETAIL ON C901)
13. 30 x 45 cm "ACCESSIBLE PARKING PERMIT" SIGN (Rb-93) AS PER MTO BOOK 5 AND AS PER SECTION 11 OF THE ONTARIO REGULATION 581/90. SIGN TO BE MOUNTED ON BUILDING WALL
14. PROPOSED CONCRETE FEATURES / SIDEWALK / PUMP ISLAND
15. PROPOSED CAR FILL-UP STATION
16. 18.3m X 28.7m CANOPY OVER CONCRETE APRON
17. PROPOSED UNDERGROUND TANK LOCATION
18. PROPOSED TACTILE ATTENTION INDICATOR. DEPTH SHALL BE NOT LESS THAN 300mm AND NOT MORE THAN 610mm. SHALL CONFORM TO CLAUSES 4.1.1. AND 4.1.2. OF ISO 23599, "ASSISTIVE PRODUCTS FOR BLIND AND VISION-IMPAIRED PERSONS - TACTILE WALKING SURFACE INDICATORS"
19. EXISTING WELL TO REMAIN
20. SNOW STORAGE AREA
21. PROPOSED BOLLARD
22. PROPOSED BIKE RACK PER DETAIL ON C902
23. PROPOSED 1.5m WOODED PRIVACY FENCE
24. EXISTING POLE WITH BUS STOP SIGNAGE TO REMAIN
25. PROPOSED ACCESSIBLE PARKING SPACES

USE AND INTERPRETATION OF DRAWINGS

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5m 2 0 5 10m
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LICENSED PROFESSIONAL ENGINEER
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100501996
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18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
SITE DEVELOPMENT PLAN

PROJECT NO.
01348

DATE
APRIL 2022

C201

#19199

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).
For bearing comparisons, a rotation of 1°04'10" counter-clockwise was applied to bearings on P1, P2, P3 & P4.

TOPOGRAPHICAL PLAN OF SURVEY
PART OF LOT 30
CONCESSION 3 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 250
10 7.5 5.0 2.5 0 5 10 Metres

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

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 Land Titles Act and the regulations made under them.
2. The survey was completed on the 7th day of April, 2022.

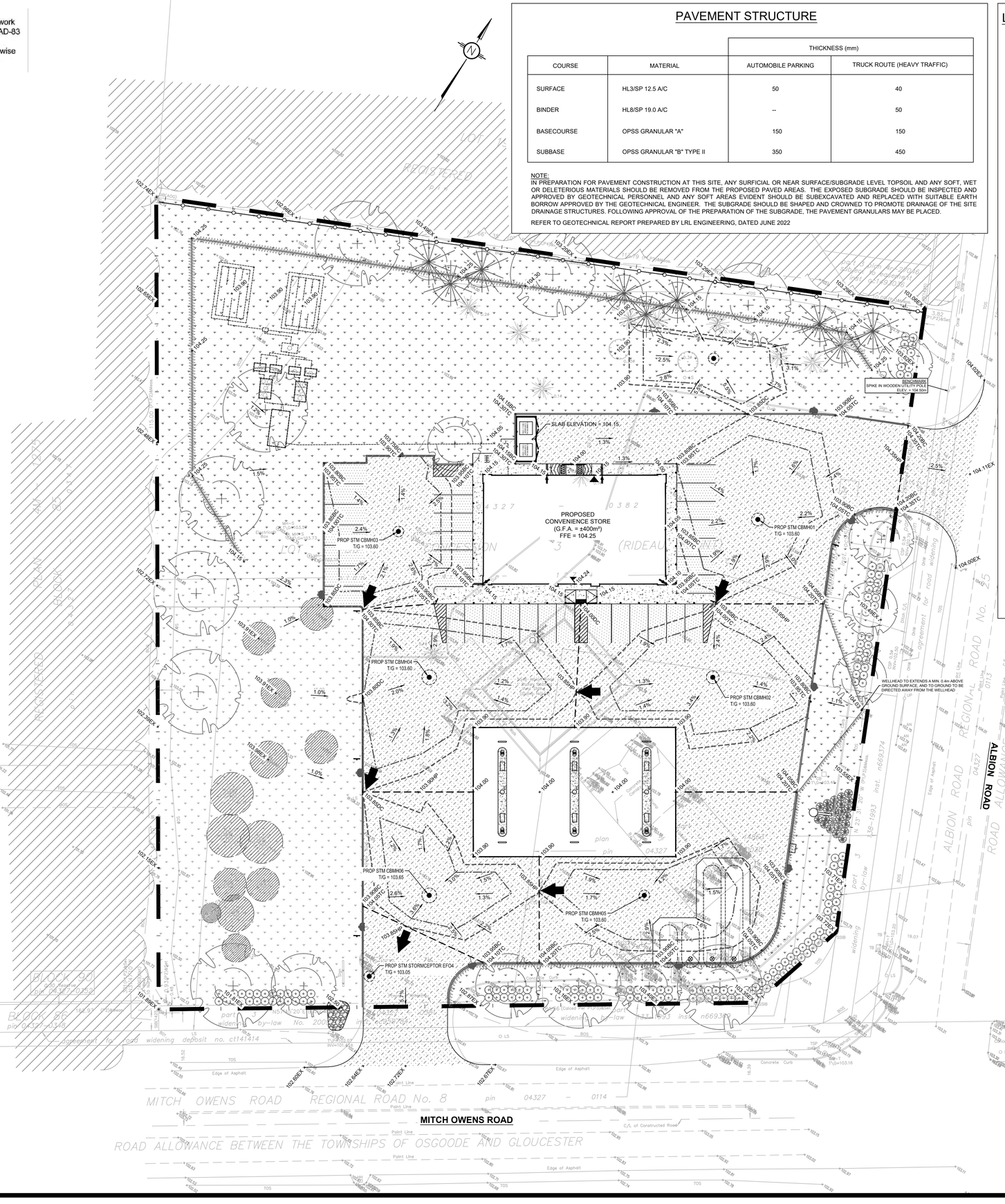
April 18, 2022 — Date
E.H. Herweyer — Ontario Land Surveyor

PAVEMENT STRUCTURE

COURSE	MATERIAL	THICKNESS (mm) AUTOMOBILE PARKING	THICKNESS (mm) TRUCK ROUTE (HEAVY TRAFFIC)
SURFACE	HL3/SP 12.5 A/C	50	40
BINDER	HL8/SP 19.0 A/C	--	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 REPORT PREPARED BY LRL ENGINEERING, DATED JUNE 2022



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LICENSED PROFESSIONAL ENGINEER — M. BASNET 100501996 — 2025/01/24 — PROVINCE OF ONTARIO
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DESIGNED BY:	DRAWN BY:	APPROVED BY:
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PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

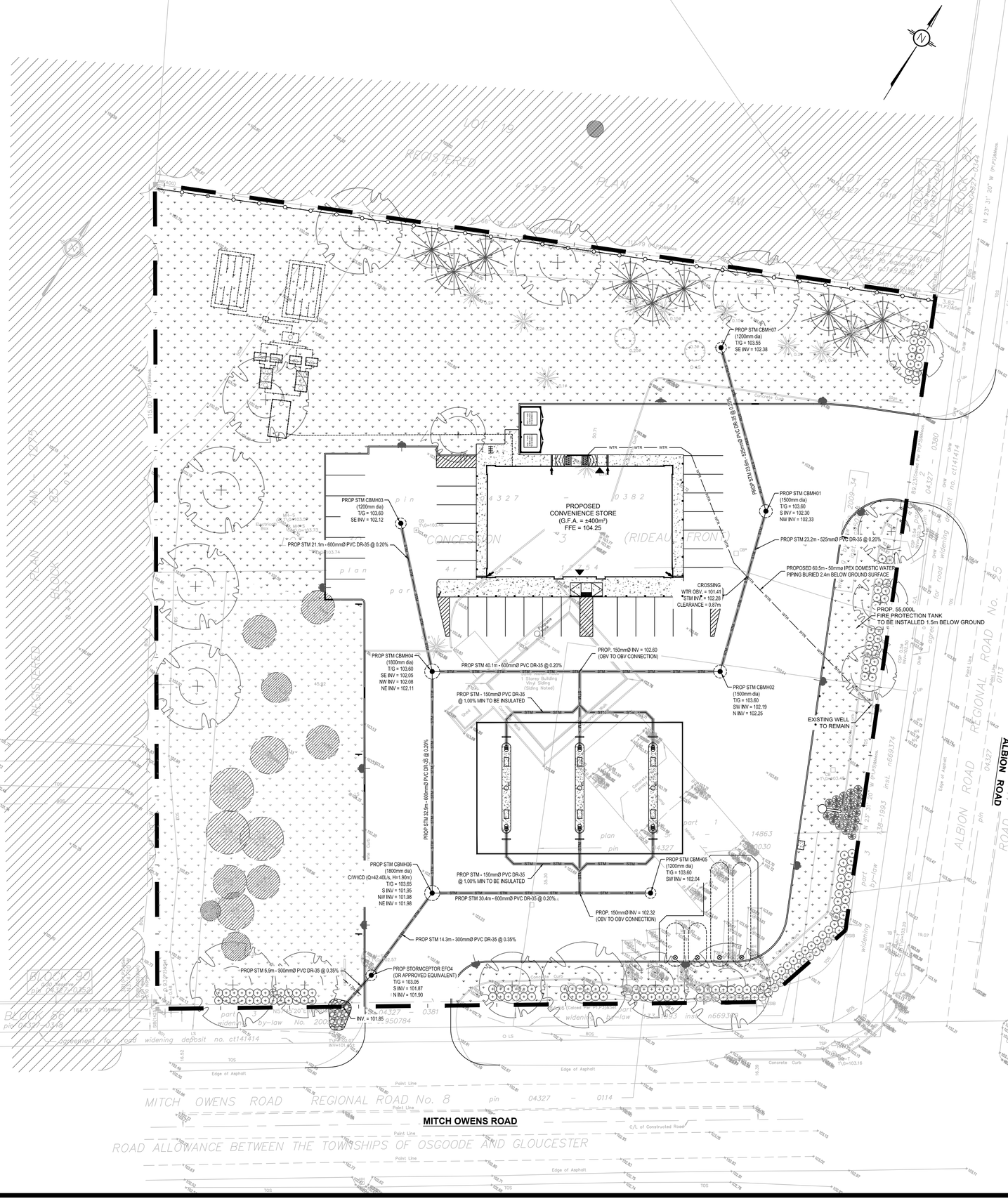
DRAWING TITLE
GRADING AND DRAINAGE PLAN

PROJECT NO. 01348
DATE APRIL 2022

C301

D07-12-24-0157

#19199



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- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 — PROPOSED ELEVATION
- ×50.00HP — PROPOSED HIGH POINT ELEVATION
- ×50.00S — PROPOSED SWALE ELEVATION
- ×50.00BC — PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC — PROPOSED TOP OF CURB ELEVATION
- ×50.00EX — MATCH INTO EXISTING ELEVATION
- ×70.19 — EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- STM STM — PROPOSED STORM SEWER
- WTR WTR — PROPOSED WATER SERVICE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN
- PROPOSED MANHOLE CATCHBASIN MANHOLE
- PROPOSED BOLLARD
- PROPOSED CURB STOP
- PROPOSED ECOTANK WINDSHIELD WASHER DISPENSER
- PROPOSED TRENCH DRAIN
- PROPOSED TACTILE STRIP
- PROPOSED LIGHT STANDARD
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL (ELEV = 103.85)
- PROPOSED 5 YEAR HIGH WATER LEVEL (ELEV = 103.80)
- STORM WATERSHED EXTENT
- PEDESTRIAN CROSSING ASPHALT PAVEMENT MARKINGS

CA-XX (CONTROLLED) AREA | RUNOFF
- CATCHMENT NAME
- RUNOFF COEFFICIENT
- AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

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

TOPOGRAPHICAL SURVEY FOR THIS PROPERTY WAS PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD., IN APRIL 2022.

5m 2 0 5 10m

SCALE: 1:300

SUBJECT TO APPROVAL

No.	REVISIONS	BY	DATE
06	ISSUED FOR APPROVAL	M.L.	24 JAN 2025
05	ISSUED FOR APPROVAL	M.L.	15 NOV 2024
04	ISSUED FOR APPROVAL	M.L.	09 AUG 2024
03	ISSUED FOR APPROVAL	M.L.	10 APR 2024
02	ISSUED FOR APPROVAL	M.L.	13 DEC 2023
01	ISSUED FOR APPROVAL	M.L.	07 SEP 2023

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/24
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
MACEWEN PETROLEUM INC.
18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
SERVICING PLAN

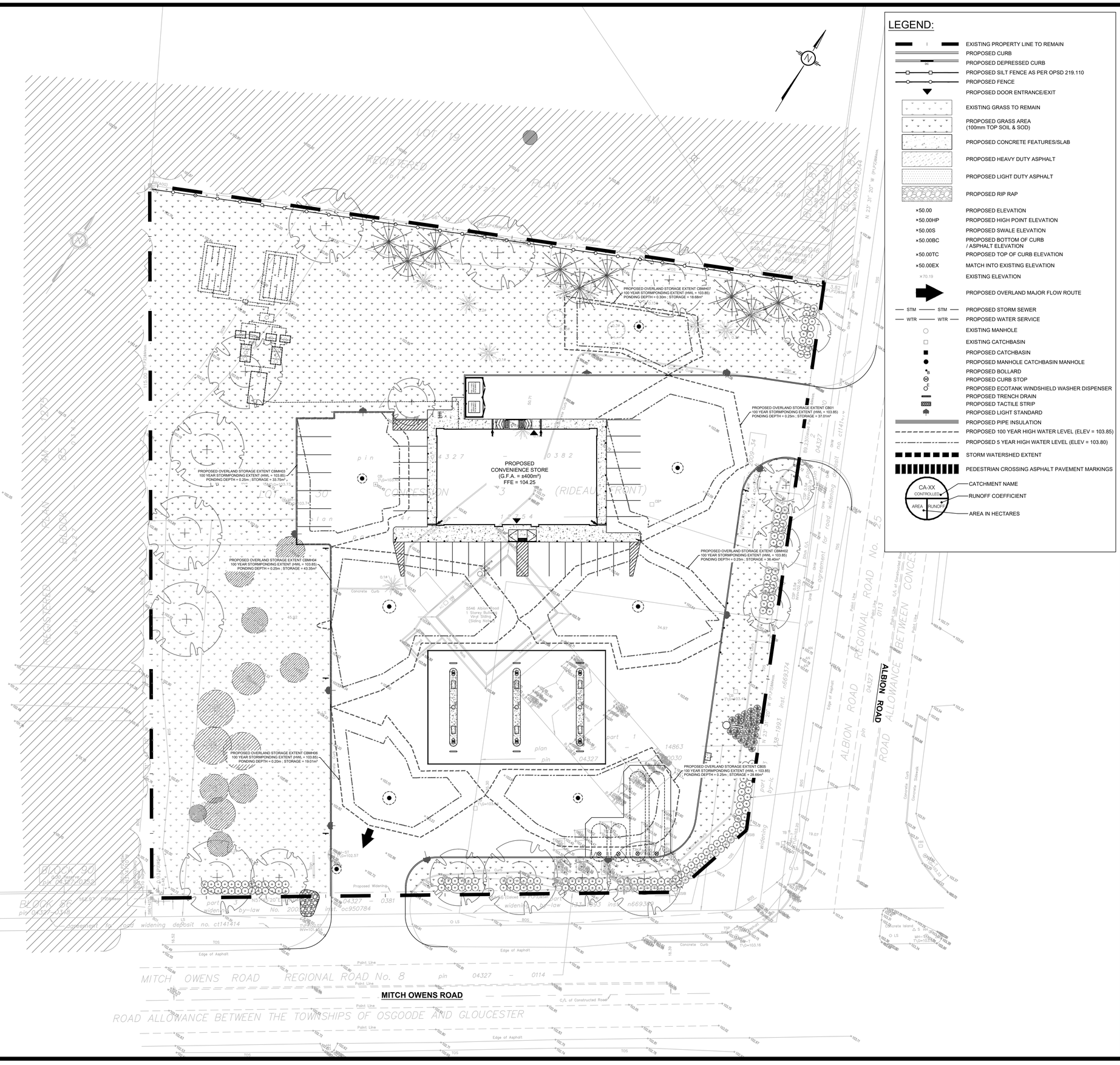
PROJECT NO.
01348

DATE
APRIL 2022

C401

D07-12-24-0157

#19199



LEGEND:

▬ ▬	EXISTING PROPERTY LINE TO REMAIN
═	PROPOSED CURB
DC	PROPOSED DEPRESSED CURB
—□—□—	PROPOSED SILT FENCE AS PER OPSD 219.110
—○—○—	PROPOSED FENCE
▼	PROPOSED DOOR ENTRANCE/EXIT
▨	EXISTING GRASS TO REMAIN
▨	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
▨	PROPOSED CONCRETE FEATURES/SLAB
▨	PROPOSED HEAVY DUTY ASPHALT
▨	PROPOSED LIGHT DUTY ASPHALT
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×50.00EX	MATCH INTO EXISTING ELEVATION
×70.19	EXISTING ELEVATION
➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
— STM — STM —	PROPOSED STORM SEWER
— WTR — WTR —	PROPOSED WATER SERVICE
○	EXISTING MANHOLE
□	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN
●	PROPOSED MANHOLE CATCHBASIN MANHOLE
•B	PROPOSED BOLLARD
⊗	PROPOSED CURB STOP
○E	PROPOSED ECOTANK WINDSHIELD WASHER DISPENSER
▬	PROPOSED TRENCH DRAIN
▨	PROPOSED TACTILE STRIP
●	PROPOSED LIGHT STANDARD
▬	PROPOSED PIPE INSULATION
– – – –	PROPOSED 100 YEAR HIGH WATER LEVEL (ELEV = 103.85)
–·–·–	PROPOSED 5 YEAR HIGH WATER LEVEL (ELEV = 103.80)
■ ■ ■ ■	STORM WATERSHED EXTENT
▮▮▮▮▮	PEDESTRIAN CROSSING ASPHALT PAVEMENT MARKINGS

CA-XX — CATCHMENT NAME
CONTROLLED — RUNOFF COEFFICIENT
AREA | RUNOFF — AREA IN HECTARES

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TOPOGRAPHICAL SURVEY FOR THIS PROPERTY WAS PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD., IN APRIL 2022.

5m 2 0 5 10m
SCALE: 1:300

SUBJECT TO APPROVAL

No.	REVISIONS	BY	DATE
06	ISSUED FOR APPROVAL	M.L.	24 JAN 2025
05	ISSUED FOR APPROVAL	M.L.	15 NOV 2024
04	ISSUED FOR APPROVAL	M.L.	09 AUG 2024
03	ISSUED FOR APPROVAL	M.L.	10 APR 2024
02	ISSUED FOR APPROVAL	M.L.	13 DEC 2023
01	ISSUED FOR APPROVAL	M.L.	07 SEP 2023

M. BASNET
100501996
2025/01/24

NOT AUTHENTIC UNLESS SIGNED AND DATED

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

CLIENT
MACEWEN PETROLEUM INC.
18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
STORMWATER MANAGEMENT PLAN

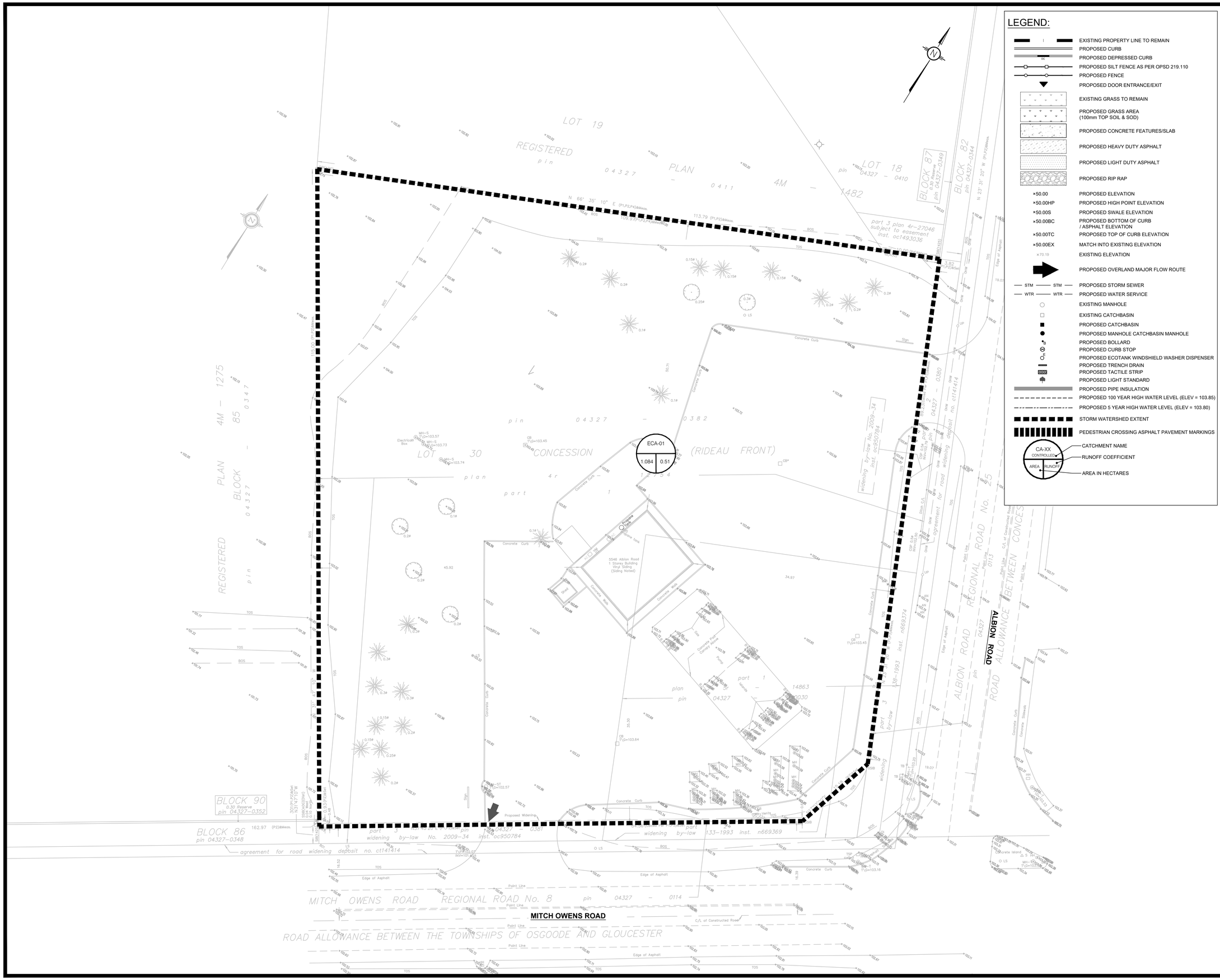
PROJECT NO.
01348

DATE
APRIL 2022

C601

D07-12-24-0157

#19199



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- EXISTING GRASS TO REMAIN
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- STORM WATERSHED EXTENT
- PEDESTRIAN CROSSING ASPHALT PAVEMENT MARKINGS

CA-XX
CONTROLLED / UNCONTROLLED
AREA / RUNOFF

- CATCHMENT NAME
- RUNOFF COEFFICIENT
- AREA IN HECTARES

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5m 2 0 5 10m
SCALE: 1:300

SUBJECT TO APPROVAL

No.	REVISIONS	BY	DATE
06	ISSUED FOR APPROVAL	M.L.	24 JAN 2025
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LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/24
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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www.lrl.ca | (613) 842-3434

CLIENT
MACEWEN PETROLEUM INC.
18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
PRE-DEVELOPMENT
WATERSHED PLAN

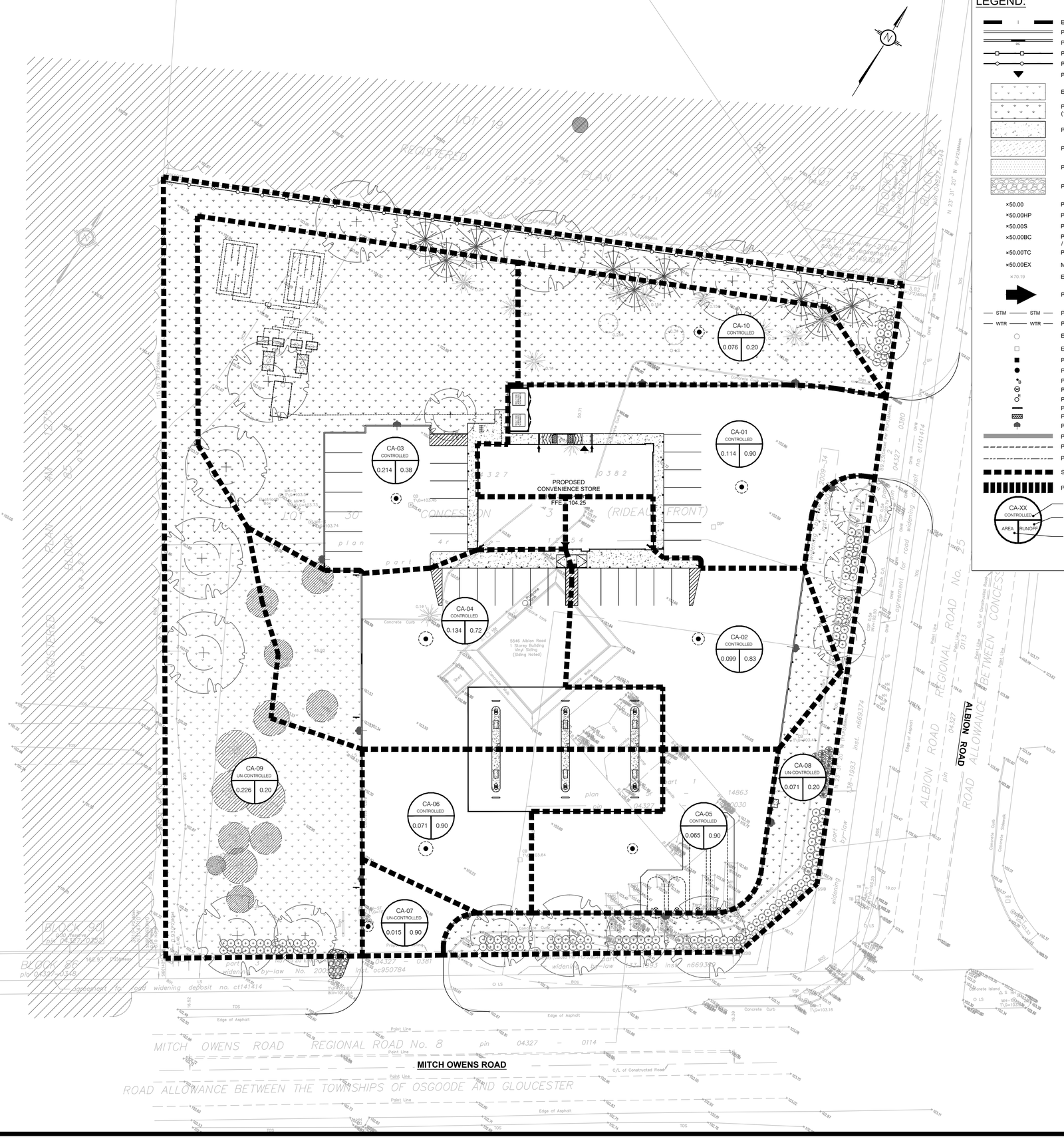
PROJECT NO.
01348

DATE
APRIL 2022

C701

D07-12-24-0157

#19199


CA-10
CONTROLLED
0.076
0.20
CA-01
CONTROLLED
0.114
0.90
CA-03
CONTROLLED
0.214
0.38
PROPOSED
CONVENIENCE STORE
FFE = 104.25
CA-04
CONTROLLED
0.134
0.72
CA-02
CONTROLLED
0.099
0.83
CA-09
UN-CONTROLLED
0.226
0.20
CA-06
CONTROLLED
0.071
0.90
CA-05
CONTROLLED
0.065
0.90
CA-08
UN-CONTROLLED
0.071
0.20
CA-07
UN-CONTROLLED
0.015
0.90
5546 Albion Road
1 Storey Building
Vinyl Siding
(Siding Noted)
MITCH OWENS ROAD
REGISTERED PLAN 4M-1327
ALBION ROAD
ROAD ALLOWANCE BETWEEN THE TOWNSHIPS OF OSGOODE AND GLOUCESTER
REGIONAL ROAD No. 8
pin 04327 – 0114
pin 04327 – 0382
pin 04327 – 0380
pin 04327 – 0383
pin 04327 – 0384
pin 04327 – 0385
pin 04327 – 0386
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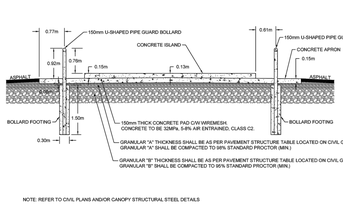
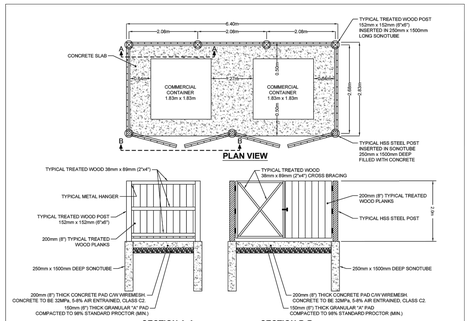
pin 04327 –



NOTE: REFER TO CIVIL PLANS AND/OR CANOPY STRUCTURAL STEEL DETAILS

CANOPY APRON & ISLANDS CROSS-SECTION DETAIL

N.T.S.

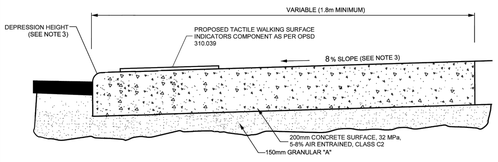


GARBAGE ENCLOSURE DETAIL

N.T.S.

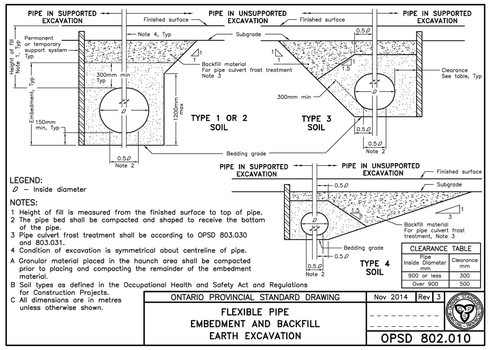
TANK NEST CONCRETE SLAB DETAIL

N.T.S.



SIDEWALK SECTION AT PRIVATE ENTRANCE AND PEDESTRIAN RAMPS

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%..
3. DEPRESSION HEIGHT 0 TO 6 mm



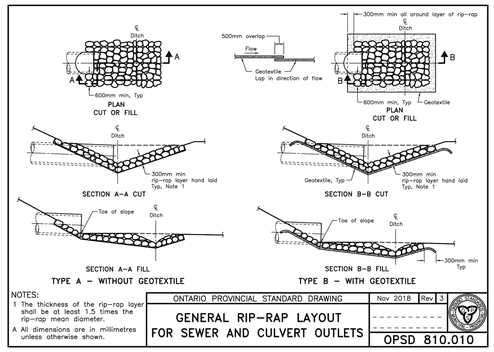
LEGEND:
D = Inside diameter

NOTES:
1. Height of fill is measured from the finished surface to top of pipe.
2. The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3. Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4. Condition of excavation is symmetrical about centreline of pipe.

A. Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B. Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C. All dimensions are in metres unless otherwise shown.

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

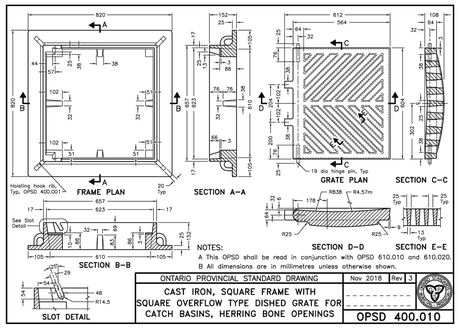
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION		
OPSD 802.010		



NOTES:
1. The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.

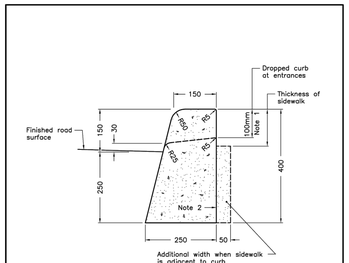
A. All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
GENERAL RIP-RAP LAYOUT FOR SEWER AND CULVERT OUTLETS		
OPSD 810.010		



NOTES:
A. This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.
B. All dimensions are in millimetres unless otherwise shown.

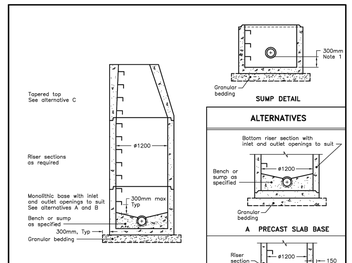
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CAST IRON, SQUARE FRAME WITH SQUARE OVERFLOW TYPE DISHED GRATE FOR CATCH BASINS, HERRING BONE OPENINGS		
OPSD 400.010		



NOTES:
1. Sidewalk thickness at residential driveways and adjacent to curb shall be 150mm. At commercial and industrial driveways, the thickness shall be 200mm.
2. Sidewalk width shall be wider when specified.
3. This OPSD shall be read in conjunction with OPSD 310.030, 310.031, 310.032, 310.033 and 310.039.

A. All dimensions are in millimetres unless otherwise shown.

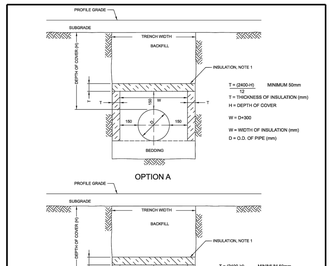
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
CONCRETE SIDEWALK		
OPSD 310.010		



NOTES:
1. The sump is measured from the lowest invert.

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

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



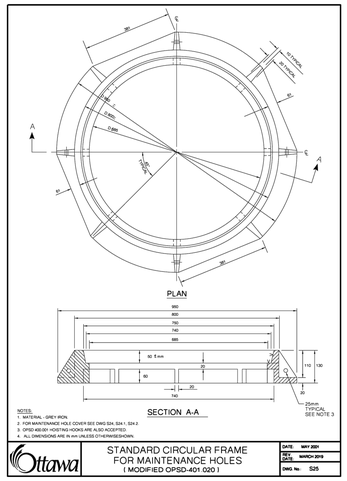
NOTES:
1. THE INSULATION MATERIAL SHALL BE EXTRUDED POLYSTYRENE ACCORDING TO MNI-18.15 WITH A MINIMUM COMPRESSIVE STRENGTH OF 275 KPA.
2. MINIMUM INSULATION THICKNESS SHALL BE 50MM.
3. JOINTS SHALL BE STAGGERED FOR MULTIPLE INSULATION SHEETS.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

Ottawa	INSULATION FOR SHALLOW SEWERS	DATE: MARCH 2020 REV.: – DWG No.: S36

NOTES:
1. When sidewalk is continuously adjacent, the dropped curb at entrances shall be reduced to 75mm.
2. For slipforming procedure a 5% batter is acceptable.

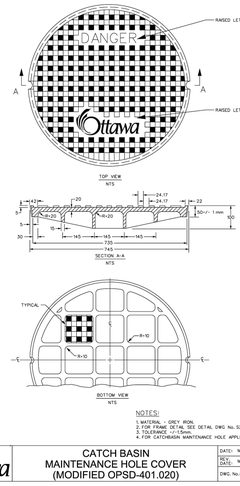
A. Treatment at entrances shall be according to OPSD 351.010.
B. Outlet treatment shall be according to the OPSD 610 Series.
C. The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D. All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2012	Rev 2
CONCRETE BARRIER CURB		
OPSD 600.110		



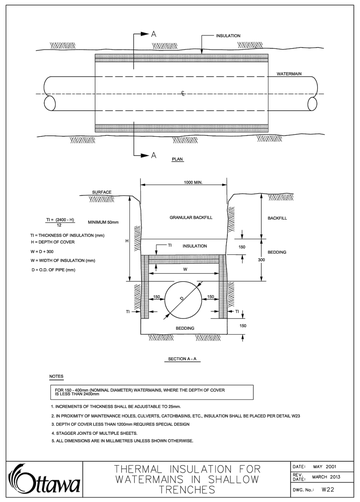
NOTES:
1. MATERIAL - GREY IRON.
2. FOR MAINTENANCE HOLE COVER SEE OMG S24, S24.1, S24.2.
3. OPSD 400.001 HOISTING HOOKS ARE ALSO ACCEPTED.
4. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SHOWN.

Ottawa	STANDARD CIRCULAR FRAME FOR MAINTENANCE HOLES (MODIFIED OPSD-401.020)	DATE: MAY 2004 REV. DATE: MARCH 2015 DWG No.: S25



NOTES:
1. MATERIAL - GREY IRON.
2. FOR MAINTENANCE HOLE COVER SEE DETAIL DWG No. S25.
3. TOLERANCE +/- 1.0mm.
4. FOR CATCHBASIN MAINTENANCE HOLE APPLICATIONS ONLY.

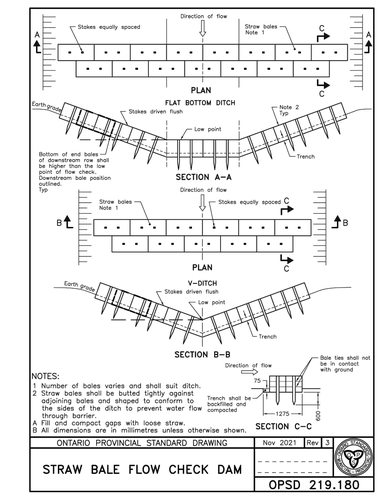
Ottawa	CATCH BASIN MAINTENANCE HOLE COVER (MODIFIED OPSD-401.020)	DATE: MARCH 2009 REV.: DATE: MARCH 2017 DWG No.: S28.1



NOTES
FOR 150 - 450mm (NOMINAL DIAMETER) WATERMAINS, WHERE THE DEPTH OF COVER IS LESS THAN 2400mm

1. INCREMENTS OF THICKNESS SHALL BE ADJUSTABLE TO 25mm.
2. IN PROXIMITY OF MAINTENANCE HOLES, CULVERTS, CATCHBASINS, ETC., INSULATION SHALL BE PLACED PER DETAIL W23
3. DEPTH OF COVER LESS THAN 1200mm REQUIRES SPECIAL DESIGN.
4. STAGGER JOINTS OF MULTIPLE SHEETS.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

Ottawa	THERMAL INSULATION FOR WATERMAINS IN SHALLOW TRENCHES	DATE: MAY 2001 REV.: DATE: MARCH 2013 DWG No.: W22



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. Fill and compact gaps with loose straw.
B. All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
STRAW BALE FLOW CHECK DAM		
OPSD 219.180		

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.

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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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TOPOGRAPHICAL SURVEY FOR THIS PROPERTY WAS PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD., IN APRIL 2022.

SUBJECT TO APPROVAL

No.	REVISIONS	BY	DATE
06	ISSUED FOR APPROVAL	M.L.	24 JAN 2025
05	ISSUED FOR APPROVAL	M.L.	15 NOV 2024
04	ISSUED FOR APPROVAL	M.L.	09 AUG 2024
03	ISSUED FOR APPROVAL	M.L.	10 APR 2024
02	ISSUED FOR APPROVAL	M.L.	13 DEC 2023
01	ISSUED FOR APPROVAL	M.L.	07 SEP 2023

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/24
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
MACEWEN PETROLEUM INC.
18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
CONSTRUCTION DETAIL PLAN

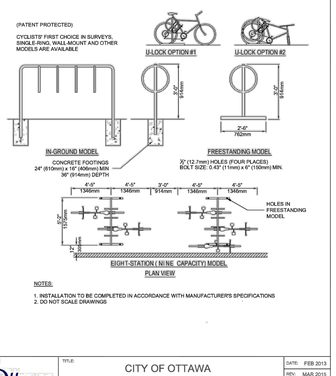
PROJECT NO.
01348

DATE
APRIL 2022

C901

D07-12-24-0157

#19199



NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS
2. DO NOT SCALE DRAWINGS

TITLE: CITY OF OTTAWA STANDARD BIKE RACK	DATE:	FEB 2013
	REV:	MAR 2015
	DWG No:	SF06

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TOPOGRAPHICAL SURVEY FOR THIS PROPERTY WAS PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD., IN APRIL 2022.

SUBJECT TO APPROVAL

No.	REVISIONS	BY	DATE
06	ISSUED FOR APPROVAL	M.L.	24 JAN 2025
05	ISSUED FOR APPROVAL	M.L.	15 NOV 2024
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LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2025/01/29
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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

CLIENT
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18 ADELAIDE STREET, MAXVILLE, ON

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

PROJECT
SITE RE-DEVELOPMENT
MACEWEN ALBION
5546 ALBION RD S, GLOUCESTER, ON

DRAWING TITLE
CONSTRUCTION DETAIL PLAN

PROJECT NO.
01348

DATE
APRIL 2022

C902

D07-12-24-0157

#19199

APPENDIX E
Survey

TOPOGRAPHICAL PLAN OF SURVEY

PART OF LOT 30
CONCESSION 3 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Revised to show catch basin invert elevation
August 8, 2022

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

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

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 Land Titles Act and the regulations made under them.
2. The survey was completed on the 7th day of April, 2022.

April 18 2022 — E. H. Herweyer
Date — E. H. Herweyer, Ontario Land Surveyor

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
(AOG)	-	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	-	Plan 4R-12754
(P2)	-	Registered Plan 4M-1275
(P3)	-	Plan 5R-14863
(P4)	-	Plan 4M-1482
	-	Deciduous Tree
	-	Coniferous Tree
MH-ST	-	Maintenance Hole (Storm Sewer)
MH-S	-	Maintenance Hole (Sanitary)
MH-T	-	Maintenance Hole (Traffic)
MH	-	Maintenance Hole
OHW	-	Overhead Wires
CB	-	Catch Basin
CB*	-	Catch Basin (Not Verified)
DI	-	Ditch Inlet
CSP	-	Corrugated Steel Pipe
TB	-	Unidentified Terminal Box
TSP	-	Traffic Signal Post
B	-	Bollard
S	-	Sign
HH	-	Handhole
UP	-	Utility Pole
AN	-	Anchor
LS	-	Light Standard
TOS	-	Top of Slope
BOS	-	Bottom of Slope
AC	-	Air Conditioner
Ø	-	Diameter
x 65.00	-	Location of Elevations
+ 65.00	-	Top of Concrete Curb Elevation
C/L	-	Centreline

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).
For bearing comparisons, a rotation of 1°04'10" counter-clockwise was applied to bearings on P1, P2, P3 & P4.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from control monument No. 019680377 having an elevation of 113.994 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

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

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-25414

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