McINTOSH PERRY

STORMWATER MANAGEMENT & SERVICING REPORT
122 REIS ROAD, CARP, ON

City File No.: D07-12-07-0217

Project No.: CCO-23-3606

Prepared for:

Grace Monuments Inc.
106 Reis Road
Carp, Ontario, K0A 1L0

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
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Submitted: October 13, 2023

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by Grace Monuments Inc. (the Client) to prepare a Stormwater Management and Servicing Report in support of the Site Plan Control amendment for the proposed property modification of 122 Reis Road, located in Carp (Ottawa). The main purpose of this report is to present the servicing and stormwater management justification for the proposed property adjustment in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), the Ministry of the Environment Conservation and Parks (MECP), and the Reis Industrial Park Site Plan Agreement and Engineering Report.

This report should be read in conjunction with the following drawings:

- CCO-23-3606, C100 – Site Plan (***Appendix D***)
- CCO-23-3606, C101 – Site Grading Plan (***Appendix D***)
- CCO-23-3606, SWM1 – Pre-Adjustment (Existing) Drainage Area Plan (***Appendix C***)
- CCO-23-3606, SWM2 – Post-Adjustment (Proposed) Drainage Area Plan (***Appendix C***)

1.2 Site Description

The property is located at 122 Reis Road and is described as Part of Block 1, Registered Plan 4m-745, City of Ottawa, and is part of the Reis Road Industrial Park. The existing site covers approximately 0.85ha and is bound by developed light industrial properties to the southwest and northeast, Reis Road to the southeast, and undeveloped agricultural lands to the northwest. Additionally, there is an existing drainage easement located along the northwest and northeast property limits for an existing drainage course. See Site Location Plan in ***Appendix A*** for more details.

Figure 1: Site Location

1.3 Proposed Development and Statistics

The property owner of 106 Reis Road has proposed to acquire approximately 30.5m by the full depth of the subject property which has a total area of approximately 0.28ha. The property adjustment would reduce the existing parcel from 0.85ha to 0.57ha. The buyer is not proposing any building additions, or other site modifications at this time other than the property adjustment. The existing property has one two (2) storey commercial building with an area of gravel parking, compacted gravel outdoor storage areas, and other areas mixed with maintained and unmaintained vegetation which are to remain. Refer to the Site Plan included in ***Appendix D*** for more details.

1.4 Existing Conditions and Infrastructure

The existing property has one two (2) storey building which is serviced via a drilled well and septic system. Stormwater for the site and the rest of the subdivision is managed via overland sheet flow to adjacent open drainage ditching within the right of way (ROW). Stormwater is ultimately conveyed to the Carp River via various ditching and creeks.

Topography of the existing property is relatively low sloping and generally drains towards either the roadside ditches on Reis Road, or directly to the adjacent ditch to the side and rear of the property within the drainage easement.

The property to be sold is generally comprised of compacted gravel and vegetation that is currently undeveloped with no buildings or structures.

1.5 Approvals

The proposed development is subject to the City of Ottawa's site plan control process. Site plan control requires the City to review, provide concurrence and approve the engineering design package. Permits to construct can be requested once the County has issued a site plan agreement.

An Environmental Compliance Approval (ECA) through the Ministry of Environment, Conservation and Parks (MECP) is anticipated to be required since the since the site is designated as industrial use, but may need to be reassessed based on the final stormwater management requirements presented in this report.

2.0 BACKROUND STUDIES, STANDARDS, AND REFRENCES

2.1 Background Reports / Reference Information

Background studies that have been reviewed for the proposed site include the Reis Road Industrial Park Subdivision Agreement and Engineering Report, a Hydrogeological Investigation completed by Gemtec Consulting Engineers and Geoscientists, and a topographic plan of survey. The topography was used to review the existing conditions of the property and determine the current drainage patterns and prepare servicing and stormwater management schemes for the site based on the current available information.

The following reports and documents were reviewed and are available under separate cover:

- Hydrogeological Investigation & Terrain Analysis, Proposed Lot Line Adjustment, 106 & 122 Reis Road, completed by Gemtec Consulting Engineers, dated September 22, 2023.
- Environmental Impact Statement, Proposed Lot Line Adjustment, 106 & 122 Reis Road, completed by Gemtec Consulting Engineers, dated October 5, 2023.
- Topographic Plan of Survey completed by Annis, O'Sullivan, Vollebekk Ltd., dated May 30, 2023
- Reis Industrial Park Site Plan Agreement and Engineering Report, dated December 5, 1989
- Reis Business Park Stormwater Management Memorandum, Ref: Reis Road, Tansley Road & Maple Creek Court (D07-17-4M75), prepared by the City of Ottawa, edited September 6, 2016

2.2 Applicable Guidelines and Standards

City of Ottawa:

- Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (Ottawa Sewer Guidelines)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (ISTB-2014-01)
  - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (PIEDTB-2016-01)
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (ISTB-2018-01)
  - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. (ISTB-2018-03)
  - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. (ISTB-2019-01)
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (ISTB-2019-02)
- Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (Ottawa Water Guidelines)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (ISD-2010-2)
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (ISDTB-2014-02)
  - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (ISTB-2018-02)

Ministry of Environment, Conservation and Parks (MECP):

- Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (MECP Stormwater Design Manual)
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (MECP Sewer Design Guidelines)

3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on February 22, 2023, regarding the proposed site. Meeting notes are included in ***Appendix B***.

Based on the understanding of the stormwater management requirements at the time of the pre-consultation, specific requirements to be incorporated within this submission should include the following:

- The pre-development condition should reflect the site as it existed prior to the current Site Plan Agreement (i.e. undeveloped).
- The post-development conditions should reflect the existing conditions of the site, or proposed conditions if modifications from the existing are required.
- The controlled surface runoff flow from the site is to be restricted to the levels defined in the current Site Plan Agreement.

4.0 WATER SERVICING

4.1 Existing Water Services

Currently the site is serviced via a drilled well for domestic drinking water as there are no municipal water services available within the ROW on Reis Road. As noted in the Hydrogeological Investigation completed by Gemtec, groundwater is supplied by an aquifer that can be characterized as limestone bedrock. Three on site wells were reported to be completed in limestone on the corresponding water well records.

4.2 Water Quantity

For the purposes of this report, the anticipated water demands have been assumed to be directly related to twice the anticipated sewage flow demands for the development. Based on Appendix 4-A (Daily Sewage Flow for Various Establishments) of the City of Ottawa's Sewer Design Guidelines and Table 8.2.1.3.B of the Ontario Building Code (OBC), the anticipated average sewage flow for various buildings and places of employment with office workers is 75 L/person/day. It is understood that 9 employees are expected to use the facility on any given day, and so, the resulting average daily water volume demand was calculated to be 1,350 L for the facility.

Based on the water quantity results presented in the Gemtec Hydrogeology Investigation report, the existing well on site is capable of providing sufficient water quantity for typical commercial developments in the area. The water demand results are summarized in ***Table 1***, below.

Table 1: Water Supply Design Criteria

Parameter	Total
Facility Population (No. of Employees per Day)	9 persons
Anticipated Demand Rate (Per App. 4-A and Table 8.2.1.3.B)	(X2) 75 L/person/day
Total Daily Volume Demand	**1,350 L per day**

4.3 Water Quality

Based on the water quality results presented in the Gemtec report, the results of the physical, chemical, and bacteriological groundwater analyses indicate that the water quality in the supply aquifer meets the ODWQS MAC and MCCRT and is considered to be safe for consumption. It was noted that the groundwater may need to be treated for numerous aesthetic and operational guideline exceedances if desired by the Owner. Please refer to the final Hydrogeology Investigation report prepared by Gemtec for the full details on water quality.

5.0 SANITARY SERVICING

5.1 Existing Sanitary Servicing

Currently the site is serviced via a conventional septic system located to the southeast of the existing building, as there are no municipal sanitary services available within the ROW on Reis Road.

5.2 Proposed Sanitary Servicing

For the purposes of this report, the anticipated sewage demands have been calculated based on Appendix 4-A (Daily Sewage Flow for Various Establishments) of the City of Ottawa's Sewer Design Guidelines and Table 8.2.1.3.B of the Ontario Building Code (OBC). The anticipated average sewage flow for various buildings and places of employment with office workers is 75 L/person/day. It is understood that 9 employees are expected to use the facility on any given day, and so, the resulting average daily sewage volume demand was calculated to be 675 L for the facility.

Based on the septic system analysis presented in the Gemtec Hydrogeology Investigation report, the proposed parcel (after property adjustment) can support up to 363 L/day and 5 employees using a conventional septic, which is not sufficient to support the current property demands of 675 L/day and 9 employees. The sewage demand results are summarized in ***Table 1***, below. Please refer to the final Hydrogeology Investigation report prepared by Gemtec for the full details on septic system analysis and recommendations.

Table 2: Sewage Flow Design Criteria

Parameter	Total
Facility Population (No. of Employees per Day)	9 persons
Anticipated Demand Rate (Per App. 4-A and Table 8.2.1.3.B)	75 L/person/day
Total Daily Volume Demand	**675 L per day**

6.0 STORM SERVICING DESIGN

6.1 Existing Storm Servicing

Stormwater for the site is currently managed by overland sheet flow across the site. There are no existing storm sewers in the Reis Road ROW, however, both sides of the road have drainage ditching which flows from west to east beyond the site, and discharges to the drainage ditch which crosses Reis Road to the east and ultimately discharges to the Carp River.

6.2 Proposed Storm System

The proposed stormwater modifications for this project are limited to regrading the area along the new property boundary between the subject property and 106 Reis Road, to ensure that neither property negatively impacts the other with surface runoff. The regrading work will include a shallow swale with a low slope to encourage natural filtration and infiltration of stormwater runoff, and will be directed to the drainage ditch to the north and south of the properties.

7.0 PROPOSED STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

It is acknowledged that the original site plan for 122 Reis Road did not include a stormwater management design or report. Based on further background research, the stormwater management design for this site will adhere to the original drainage design included in the Site Plan Agreement completed for the overall subdivision in 1989. As recently as 2016, the City has issued a memo of their interpretation of the original drainage design which explains the stormwater management design requirements for each site within the subdivision. A summary of these requirements is provided below:

> The allowable runoff rate from sites within the Reis Industrial Park is governed by the design assumptions used in the approved Engineering Report contained in Schedule "H" of the subdivision agreement. If the resulting runoff from the proposed site will be less than the allowable rate, no on-site SWM will be required. The design parameters used in the subdivision Engineering Report are as follows:
>
> - The design of the internal drainage for the subdivision was based on site developments that would be: 50% building area (C=1.0), 25% parking/drive aisles (C=0.9), and 25% undeveloped/pervious area (C=0.2);
> - By the interpretation of design assumptions in the subdivision Engineering Report, sites in this subdivision can be developed without a requirement for on-site SWM as long as the combined C-value does not exceed 0.775; and

- It is important to note that the original subdivision design used constant C-values, while the newer City of Ottawa Sewer Design Guidelines (see section 5.4.5.2.1 and Table 5.7) now stipulate that C-values be increased by 25% during the 100-year event (to a maximum of C=1.0). Accordingly, the City's increased 100-year runoff coefficient is to be used when determining the post-development combined C-value for the site. If the post-development C-value is below 0.775, no on-site SWM will be required. If SWM is required, the allowable release will be based on the 5-year flow, with a C-value of 0.775.

The City's interpretation memo has been included in ***Appendix B*** for reference. Please refer to the drainage area plans and calculations included in ***Appendix C*** of this report for more details on the proposed site drainage areas. The Stormwater Management design for the subject property will be outlined in ***Section 7.5*** of this report.

7.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA$$

Where: Q = Flow (L/sec)
C = Runoff coefficient
I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)
A = Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended. The following coefficients were used to develop an average C for each area:

	2/5-Year C-Value	100-Year C-Value
Roofs	1.00	1.00
Concrete/Asphalt	0.90	1.00
Gravel	0.70	0.88
Landscaped and Grass	0.20	0.25

As per the City of Ottawa's Sewer Design Guidelines, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

7.3 Allowable Release Rate

Since there was no stormwater management design originally completed for the subject property, the current design will be based on the City's interpretation of the original drainage design as described in the Site Plan Agreement. The estimated allowable release rates are based on a maximum runoff coefficient (C-value) of 0.775 for the site both before and after the property adjustment, and are summarized in ***Table 3*** below.

Table 3: Approved Runoff Release Rate

Condition	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
Before Property Adjustment (Existing)	0.8520	**0.775**	**0.775**	10	104.2	178.6	**191.26**	**327.77**
After Property Adjustment	0.5654	**0.775**	**0.775**	10	104.2	178.6	**126.92**	**217.51**

7.4 Existing Drainage Conditions (Before Property Adjustment)

The existing runoff coefficients and peak flow rates were calculated based on the current site conditions and its existing topography. The site is divided into six drainage areas which all sheet drain either towards the rear drainage ditch, or the municipal roadside ditching in the ROW on Reis Road. The calculated existing runoff coefficients and resulting peak flows for the 5- and 100-year events for the site are summarized below in ***Tables 4*** and ***5***, respectively. It should be noted that the gravel areas shown below were increased slightly to remain conservative and account for any mixed areas of gravel and vegetation that may not have been illustrated in the survey. Please refer to the detailed calculations and drainage plan CCO-23-3606 – *SWM1* provided in ***Appendix C*** for more information.

Table 4: Existing Runoff Coefficient Summary

Area ID	Area (ha)	Impervious Area (m^2)	C	Asp. / Con. Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	Result	
										C_{AVG} 5-Yr	C_{AVG} 100-Yr
A1	0.2429	0.00	1.00	0.00	0.90	1,471.00	0.70	958.00	0.20	**0.503**	**0.628**
A2	0.3096	300.00	1.00	0.00	0.90	2,340.00	0.70	232.00	0.20	**0.641**	**0.777**
A3	0.0671	0.00	1.00	0.00	0.90	247.00	0.70	424.00	0.20	**0.384**	**0.480**
A4	0.1536	300.00	1.00	0.00	0.90	1,035.00	0.70	501.00	0.20	**0.732**	**0.866**
A5	0.0508	0.00	1.00	0.00	0.90	432.00	0.70	76.00	0.20	**0.625**	**0.781**
A6	0.0280	0.00	1.00	0.00	0.90	216.00	0.70	64.00	0.20	**0.586**	**0.732**
Total	**0.8520**									**0.595**	**0.726**

Table 5: Existing Uncontrolled Peak Flow Summary

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A1	0.2429	0.50	0.63	10	104.2	178.6	**35.38**	**75.78**
A2	0.3096	0.64	0.78	10	104.2	178.6	**57.48**	**119.41**
A3	0.0671	0.38	0.48	10	104.2	178.6	**7.46**	**15.99**
A4	0.1536	0.73	0.87	10	104.2	178.6	**32.58**	**66.06**
A5	0.0508	0.63	0.78	10	104.2	178.6	**9.20**	**19.71**
A6	0.0280	0.59	0.73	10	104.2	178.6	**4.75**	**10.18**
Total	**0.8520**						**146.85**	**307.13**

Based on the current drainage characteristics of the site, the overall combined runoff coefficient (C-value) was calculated to be less than the required 0.775 for the 5-year event, as well as during the 100-year event including the 25% increase to the coefficients. Therefore, the current site as it exists does not warrant the implementation of any Stormwater Management measures based on the interpretation of the original drainage design requirements of the Site Plan Agreement.

7.5 Proposed Drainage Conditions (After Property Adjustment)

The proposed drainage characteristics of the site are based on the site conditions after the property adjustment. The existing drainage of the property to remain is split near the center of the site, and generally slopes away from the building in all directions, draining towards either the rear drainage ditch or the roadside ditch along Reis Road.

Overall, the general topography of both sites is planned to be maintained with the exception of some minor regrading works proposed along the new adjusted lot line which will separate 106 and 122 Reis Road. The proposed regrading works will consist of constructing a new shallow wide-bottom swale which provides a high point near the middle of the lot line to split the stormwater drainage towards either the rear drainage ditch or the roadside ditch on Reis Road, similarly to existing conditions. It is proposed to maintain the existing ground covers on site and to only regrade and reshape vegetated or landscaped areas, without the addition of any impervious or semi-impervious areas. This work along the lot line will ensure that stormwater runoff from either site does not negatively impact the other. In addition to the regrading works, a new security fence is proposed to be installed along the lot line for both security and privacy. Please refer to the Site Grading Plan provided in ***Appendix D***.

The resulting runoff coefficients and peak flow rates for the 5- and 100-year events for the site were calculated and are summarized below in ***Tables 5*** and ***6***. It should be noted that the gravel areas shown below were increased slightly to remain conservative and account for any mixed areas of gravel and vegetation that may not have been illustrated in the survey. Please refer to the detailed calculations and drainage plan CCO-23-3606 – *SWM2* provided in ***Appendix C*** for more information.

Table 6: Post-Adjustment Runoff Coefficient Summary

Area ID	Area (ha)	Impervious Area (m^2)	C	Asp. / Con. Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	Result	
										C_{AVG} 5-Yr	C_{AVG} 100-Yr
B1	0.2313	122.00	1.00	0.00	0.90	1,540.00	0.70	773.00	0.20	**0.586**	**0.719**
B2	0.1143	177.00	1.00	0.00	0.90	867.00	0.70	232.00	0.20	**0.726**	**0.869**
B3	0.0671	0.00	1.00	0.00	0.90	247.00	0.70	424.00	0.20	**0.384**	**0.480**
B4	0.1527	299.00	1.00	0.00	0.90	1,031.00	0.70	496.00	0.20	**0.733**	**0.868**
Total	**0.5654**									**0.630**	**0.761**

Table 7: Post-Adjustment Uncontrolled Peak Flow Summary

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.2313	0.59	0.72	10	104.2	178.6	**39.24**	**82.54**
B2	0.1143	0.73	0.87	10	104.2	178.6	**24.05**	**49.32**
B3	0.0671	0.38	0.48	10	104.2	178.6	**7.46**	**15.99**
B4	0.1527	0.73	0.87	10	104.2	178.6	**32.44**	**65.78**
Total	**0.5654**						**103.19**	**213.63**

Based on the proposed drainage characteristics of the site under post-adjustment conditions, the overall combined runoff coefficient (C-value) was calculated to be less than the required 0.775 for the 5-year event, as well as during the 100-year event including the 25% increase to the coefficients. Therefore, the site conditions after the proposed property adjustment will not warrant the implementation of any Stormwater Management measures.

7.6 Quantity Control

As noted previously, both the pre- and post-adjustment conditions of the site have combined runoff coefficients of less than 0.775 as required by the interpretation of the original drainage design in the Site Plan Agreement. As a result, neither the existing site, nor the proposed site after property adjustment will require the implementation of any SWM quantity controls or other measures.

Table 8: Runoff Summary

Condition	Area (ha)	Calculated				Allowable			Satisfies Constraint (Yes/No)
		C-Value 5-Year	C-Value 100-Yr	Q (L/s) 5-Yr	Q (L/s) 100-Yr	C-Value 5/100-Yr	Q (L/s) 5-Yr	Q (L/s) 100-Yr	
Before Property Adjustment (Existing)	0.8520	0.595	0.726	146.9	307.1	0.775	191.26	327.77	Yes
After Property Adjustment	0.5654	0.630	0.761	103.19	213.63	0.775	126.92	217.51	Yes

The peak flow rates summarized above show that both the current site, and the site after property adjustment are below the allotted flow rate based on their respective combined runoff coefficients and therefore flow control measures or other stormwater management features will not be required for this site.

7.7 Best Management Practices

The proposed work will utilize Best Management Practices (BMP) wherever possible. BMP’s will be implemented at the lot and conveyance levels.

Lot level BMP’s include the directing of runoff onto grassed areas and minimizing ground slopes. Runoff from roofs will flow to grassed areas wherever possible, which will provide an opportunity for initial filtration and collection of any sediment runoff and provide an opportunity for absorption and groundwater recharge.

The conveyance system to be used in the proposed development will be overland sheet flow. The proposed drainage swale has been designed at minimal gradient where possible, thus promoting absorption and infiltration, as well as providing opportunity for particulate and sediment filtration. Rip-rap will be placed at erosion-prone areas and all disturbed areas are to be re-vegetated as soon as possible.

8.0 EROSION AND SEDIMENT CONTROL

8.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all-natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and the inspection of sediment and erosion controls are to be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. The measures for the existing/proposed structures are to be removed only after all areas have been paved or landscaped. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the Township and/or County to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant.

8.2 Permanent Measures

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the property owner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

9.0 SUMMARY

- 122 Reis Road property is proposing sell a portion of its parcel of land to the southwest of approximately 0.28ha.
- Based on the water quantity results presented in the Gemtec report, the existing well on site is capable of providing sufficient water quantity for typical commercial developments in the area.
- Based on the water quality results presented in the Gemtec report, the results of the physical, chemical, and bacteriological groundwater analyses indicate that the water quality in the supply aquifer meets the ODWQS MAC and MCCRT and is considered to be safe for consumption.
- Based on the septic system analysis presented in the Gemtec Hydrogeology Investigation report, the proposed parcel (after property adjustment) can support up to 363 L/day and 5 employees using a conventional septic, which is not sufficient to support the current property demands of 675 L/day and 9 employees.
- The requirements for Stormwater Management have been based on the original drainage design found in the Engineering Report of the Site Plan Agreement. The City has interpreted the requirements and have stated that all sites within the subdivision must ensure the combined runoff coefficient of the site does not exceed 0.775, or SWM measures will have to be implemented.
- Based on the current and future drainage characteristics of the site, the combined runoff coefficients were calculated to be less than 0.775 for both the 5- and 100-year storm events, which also accounts for a 25% increase under the 100-year event. Therefore, the site is not required to implement any Stormwater Management.
- The proposed work will utilize Best Management Practices (BMP) wherever possible. BMP's will be implemented at the lot and conveyance levels.

10.0 RECOMMENDATION

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management report in support of the Site Plan Amendment at 122 Reis Road.

Sincerely,

McIntosh Perry Consulting Engineers Ltd.

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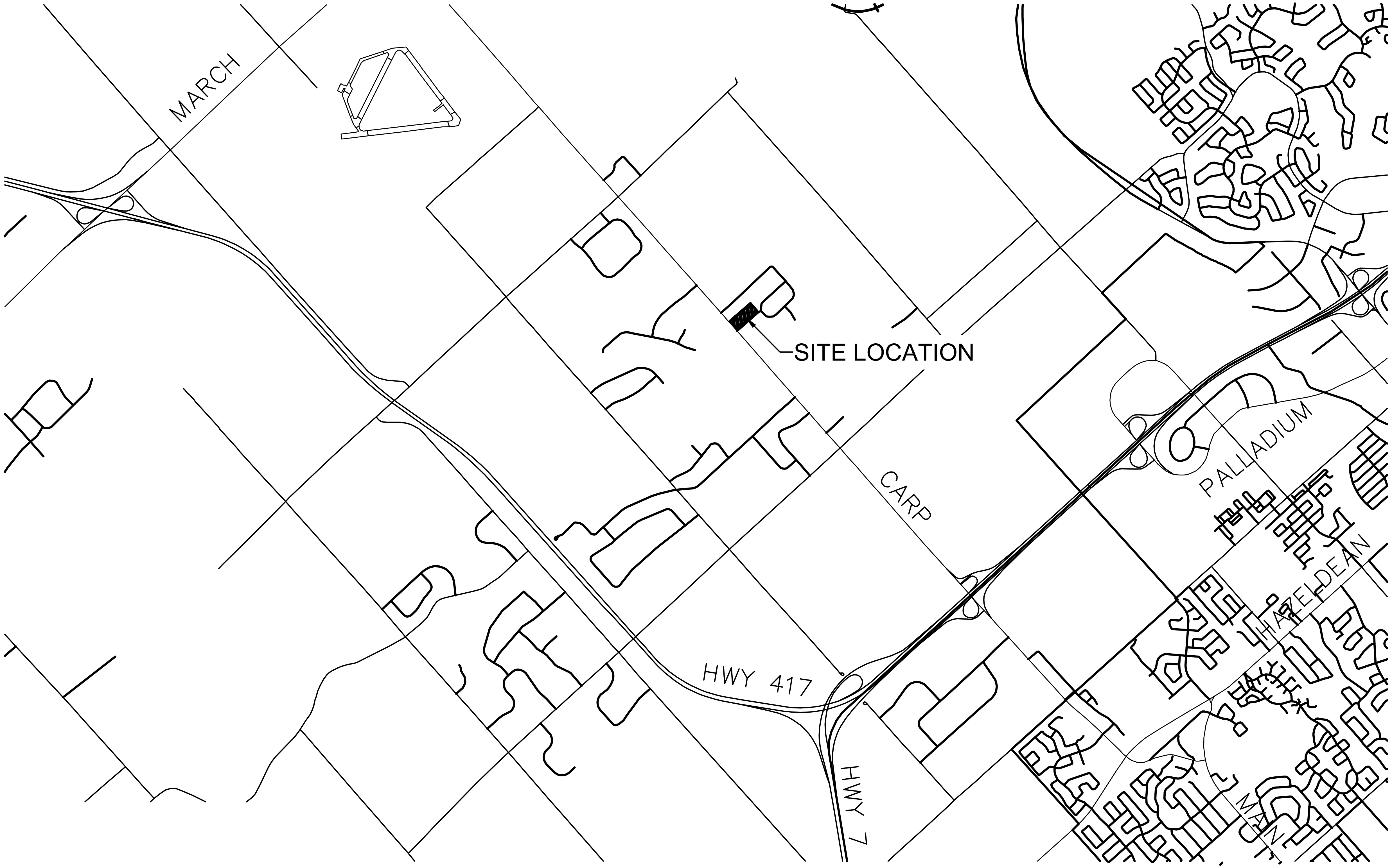
11.0 STATEMENT OF LIMITATIONS

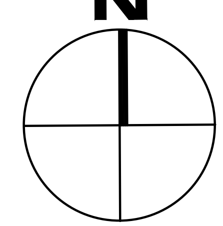
This report was produced for the exclusive use of **122 Reis Road**. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Parks and Climate Change, County of Renfrew and local approval agencies. McIntosh Perry reviewed the site information and background documents listed herein. While the previous data was reviewed by McIntosh Perry, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
SITE LOCATION PLAN





McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
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Client:	GRACE MONUMENTS 106 REIS ROAD, CARP, ON K0A 1L0
Project:	106 & 122 REIS ROAD - SITE PLAN AMENDMENT
Drawing Title:	SITE LOCATION PLAN
Drawn by:	J.H.
Checked By:	B.C.
Scale:	N.T.S.
Project Number:	CCO-23-3606
Drawing Number:	A1

No.	Revisions	Date
1	SITE PLAN AMENDMENT	OCT, 2023

FILENAME: U:\Ottawa\01 Project - Proposals\2023 Jobs\CCO\CCO-23-3606 Grace Monuments, SPC, 106 & 122 Reis Road\12 - Drawings\CCO-23-3606-FIG.dwg
LAST SAVED: Friday, October 13, 2023 LAST SAVED BY: j.hewson
LAST PLOTTED: Friday, October 13, 2023 CTB FILE USED: ----

APPENDIX B
BACKGROUND DOCUMENTS

James Hewson

From:	Bridgette Alchawa
Sent:	June 22, 2023 10:09 AM
To:	James Hewson
Subject:	FW: 106 Reis Road & 122 Reis Road - Applications for Site Plan Control Amendments, City File Nos. D07-12-22-0118 & D07-12-22-0119

Bridgette Alchawa
Planner
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b.alchawa@mcintoshperry.com | www.mcintoshperry.com

Turning Possibilities Into Reality

From: Teeft, Luke <Luke.Teeft@ottawa.ca>
Sent: March 21, 2023 9:39 AM
To: Bridgette Alchawa <b.alchawa@mcintoshperry.com>
Cc: Kulyk, Derek <derek.kulyk@ottawa.ca>; Rehman, Sami <Sami.Rehman@ottawa.ca>; Di Iorio, Tessa <tessa.diiorio@ottawa.ca>; Andrius Paznekas <andrius.paznekas@gemtec.ca>; Brent Cuming <b.cuming@mcintoshperry.com>; Brittany Moy <BMoy@mvc.on.ca>
Subject: RE: 106 Reis Road & 122 Reis Road - Applications for Site Plan Control Amendments, City File Nos. D07-12-22-0118 & D07-12-22-0119

Good morning Bridgette,

Thank you for your continued patience with these files. I have compiled the full comments prepared by our engineer, hydrogeologist and environmental planner for your review. I have confirmed with the beforementioned individuals and senior staff that the following studies and information will be required in support of your applications. Please see the following details for clarification of what we are requesting:

106 Reis Road (D07-12-22-0118)

Required Reports:

1) Hydrogeological and Terrain Analysis (HGTA) Study and Report – is required (signed and sealed by a qualified professional) to confirm suitable well water quantity, water quality and investigate potential impacts from the septic systems; one report can be submitted for both properties. The HGTA report requirements are provided below:

- Existing Well: If the building will remain connected to the existing well and water use will remain the same (i.e. water use not increase), then the report should identify that the water use will remain the same and clarify if the well has produced sufficient water for the existing use to date.

- The report should also include a description of the well and confirmation that the well meets current regulations (physical well condition, required stickup, grading around the well, etc.).

- Existing Well #2 (formerly connected to the building at 122 Reis): It is understood that the well that previously serviced 122 Reis is located in the land that well be transferred to 106 Reis and is no longer connected to 122 Reis. The Wells Regulation (O.Reg. 903) under the *Ontario Water Resources Act* specifies that a well which is not being used or maintained for future use must be decommissioned, see O.Reg. 903 - Section 21(3). As such, the HGTA report must either include a statement and a description of the future well use and confirmation that it will be maintained in the future OR provide the well decommissioning record to support that the well has been decommissioned as per the regulations.

- Septic System: At the Feb 22, 2023 consultation meeting, it was identified that 106 Reis Road was not developed as originally intended based on the original Site Plan; the site includes more impermeable surface. As such, as part of the current site plan control application, the City requests an updated septic impact assessment as per Ottawa's Hydrogeological and Terrain Analysis Guidelines (please use the assessment methodology intended for industrial/commercial developments in Procedure D-5-4). The purpose of the assessment is to ensure there is sufficient septic dilution such that the groundwater in the receiving aquifer is not being contaminated. Please note that there are special considerations for developments within the Carp Road Corridor, as noted in the City memo entitled: *Carp Road Corridor – Nitrate Impact Assessment Recommendations*, dated September 2016. Note that compact gravel will be considered impermeable unless supported with field data related to infiltration capacity.

- An analysis of the existing septic system condition should be provided with the report; the system should be in good working condition and meet current building code regulations.

- The properties are located within the area identified as high recharge in the Carp Road Corridor Community Design Plan, as such there is a requirement to maintain recharge onsite. It is expected pre to post recharge be maintained, as compared to the original site plan design. A water budget analysis can be submitted to support that recharge will be maintained, information in the water budget should be harmonized with that in the stormwater management report.

2) Stormwater Management (SWM) Report - will be required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario) to ensure proper site drainage and SWM control, as per previously defined criteria of the Industrial Subdivision and the Site plan Agreement. Since it is an industrial subdivision site, ECA will be required for SWM modifications.

   It was noted that, as per the City approved Site plan, the entire north and southeast portion of the property was intended to be left as an open grassed surface (also indicated by run-off coefficients of C=25 & C=29, in the report) and the Quantity/Quality control swale with an orifice plate was to be constructed at the east limit of the property.

   While examining the aerial database, it was noted that the existing site condition does not match the approved site plan. The areas that were intended to be covered with grass appear to be all compacted granular parking lot surfaces and the swale no longer appears to exist.

   The report needs to consider the pre-development condition, as it existed prior to the current Site Plan Agreement (i.e. undeveloped) and the post-development condition should reflect the existing condition of the site or the proposed condition, if modifications from the existing condition are required or proposed. The controlled surface run-off flow from the site needs to be restricted to the levels defined in the current Site Plan agreement (100-year post-development flow to the 5-year pre-development flow).

The report needs to provide clear recommendations to ensure run-off drainage control on the entire site.

3) Servicing Brief - is required (sealed and signed by a Professional Engineer licensed in the province of Ontario) and it needs to address the available water quality and quantity. It should identify the required water demand on site and the expected well capacity (sustainably to be in excess of demand). It should also address the site sanitary servicing needs.

Site Plan Comments:

1) The submitted Site plan needs to be sealed and signed by a Professional Engineer, to endorse the latest changes and adjustments to the Site plan (currently an old Site plan from the year 2006 was submitted with modifications drawn over the old plan). It is understood that the Engineer that originally sealed the drawing has not endorsed the modified Site Plan.

2) The fence at the east property limit should be shown as existing and its removal indicated on the plans.

I) Pre-construction and post-construction drainage plans are required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario). They need to identify the SWM control features, tributary areas, run-off coefficients and the 100-year storm overland drainage patterns to ensure that surface run-off is not crossing property lines.

The swale directing water to the SWM pond needs to be proposed within the property (106 Reis Rd), not at the property line.

II) A Site Servicing plan is required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario). Rather than showing the proposed site features, it must show features as they currently exist on the property (i.e.: buildings, wells, septic beds, vegetation, etc.). It should provide a note that references the horizontal and vertical datums with the local benchmarks. Underground water and sanitary pipe networks need to be shown, to ensure that none cross the property lines (122 Reis Rd Site Plan shows underground water pipes crossing the proposed property line).

III) A Topographic Plan of Survey needs to be submitted with the application, sealed and signed by an Ontario Land Surveyor (OLS).

IV) A Grading Plan is required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario) – it needs to show accurate topographic information (existing and proposed grades and features). The grading plan should also show the property address and to provide a note that references the horizontal and vertical datums with the local benchmarks (needs to provide direct reference to an official topographic survey endorsed by an OLS).

It is understood that the site re-grading is not proposed for the entire extended area allocated from 122 Reis Rd., however, it was noted that some re-grading will be required. Please indicate clearly existing and proposed grades with a limit of grading identified with solid lines.

Water well set-backs and drainage around the water well need to comply with section 5.2.2 of the City's Hydrogeological and Terrain Analysis Guidelines (March 2021) – grading and storm water flow direction needs to be shown to ensure storm water is directed away from the well, as per City guidelines. The existing well appears to be less than 3.0 m from the property line. Please provide the set-back dimension on the plan. Confirmation from a qualified well driller will be required to confirm if the current set-back from the property line is adequate to service the well in the future without impact to the adjacent property.

V) An Erosion and Sedimentation control plan is required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario). Please be mindful of the fact that there is a watercourse at the north-east corner of the property.

VI) It is understood that no development of any kind is proposed at this point in time, and the grading extent is as it is identified in the comments above, otherwise additional comments and report requirements will likely be required.

122 Reis Road (D07-12-07-0217)

Required Reports:

1) Hydrogeological and Terrain Analysis (HGTA) Study and Report - is required (signed and sealed by a qualified professional) to confirm suitable well water quantity, water quality and investigate potential impacts from the septic systems; one report can be submitted for both properties. The HGTA report requirements are provided below:

- New Well: It is understood that a new well was installed to service the existing building. Since the well has not previously been tested as part of a previous Site Plan Control application, the well should be tested to confirm quantity and quality as part of the current application. Water quantity test should be based on a 6-hour pump test at the maximum day rate. Well testing requirements are outlined in Section 5 of the City's Hydrogeological and Terrain Analysis Guidelines, water quality testing should include the subdivision suite of parameters, trace metals, VOCs and other parameters that may be a concern based on current or past land uses.

- If raw (untreated) groundwater quality exceeds aesthetic MCCRTs, please contact the City hydrogeologist to discuss potential options for non-residential developments.

- The report should include a description of the well and confirmation that the well meets current regulations (physical well condition, required stickup, grading around the well, etc.).

- Septic System: Since the size of the lot will decrease with the lot line adjustment, a septic impact assessment should be completed to ensure that the new lot size/configuration can accommodate the impacts from the existing septic on the property.

- The septic impact assessment should be prepared based on the Ottawa's Hydrogeological and Terrain Analysis Guidelines (use the assessment for industrial/commercial developments), and note the special considerations the City memo entitled: *Carp Road Corridor – Nitrate Impact Assessment Recommendations*, dated September 2016.

    - As discussed at the meeting, the design flows of the existing septic systems may exceed those permitted by the OSSO in the Sept 2016 memo; thus the septic impact assessment may apply the flow requirements outlined in the Sept 2016 memo (based on employment) for the purposes of the calculation.

- An analysis of the existing septic system condition should be provided with the report; the system should be in good working condition and meet current building code regulations.

- The properties are located within the area identified as high recharge in the Carp Road Corridor Community Design Plan, as such there is a requirement to maintain recharge onsite. It is expected pre to post recharge be maintained, as compared to the original site plan design. A water budget analysis can be submitted to support that recharge will be maintained, information in the water budget should be harmonized with that in the stormwater management report.

2) Stormwater Management (SWM) Report - will be required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario) to ensure proper site drainage and SWM control, as per previously defined criteria of the Industrial Subdivision and the Site plan Agreement.
Since it is an industrial subdivision site, ECA will be required for SWM modifications.

   It was noted that originally no SWM report was prepared for this property. It was also noted that, as per the City approved Site plan, the entire north and the west portion of the property was supposed to be left as an open grassed space. While examining the aerial database, it was observed that the existing site condition does not match the approved site plan. The areas that were intended to be covered with grass, appear to be partially compacted granular parking lot surfaces, with all the above-mentioned areas void of any vegetation.

   The report needs to consider the pre-development condition, as it existed prior to the current Site Plan Agreement (i.e. undeveloped) and the post-development condition should reflect the existing condition of the site. Considering that, at the time of the existing site plan approval, no SWM report was provided to the City and the site directly adjacent to the proposal, within the same subdivision, was designed with 100-year post-development run-off flow from the site restricted to the 5-year pre-development flow, and no changes, other than the property line adjustment, are proposed now, the same requirement will be accepted.
   However, if a new site plan application is filed in the future with a proposed site modification, the 100-year post development flow will need to be restricted to the 2-year pre-development flow.

   The report needs to provide clear recommendations to ensure run-off drainage control on the entire site.

3) Servicing Brief - is required (sealed and signed by a Professional Engineer licensed in the province of Ontario) and it needs to address the available water quality and quantity. It should identify the required water demand on site and the expected well capacity (sustainably to be in excess of the demand) and analyze the impacts of a well loss from the site (well is proposed to be moved to 106 Reis Rd). It should also address the site sanitary servicing needs and any impacts related to the surface area reduction, which will likely affect potential future sanitary system maintenance or expansion.

Site Plan Comments:

1) The submitted Site plan needs to be sealed and signed by a Professional Engineer, to endorse the latest changes and adjustments to the Site plan (currently an old Site plan drawing from the year 2007 was submitted with modifications drawn over the old drawing).

2) The water well setback needs to show actual (not superimposed) dimensions on the site plan to both adjacent property lines.

3) Please verify the parking lot set-backs to ensure compliance with the City Standards.

I) Pre-construction and post-construction drainage plans are required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario). They need to identify the SWM control features, tributary areas, run-off coefficients and the 100-year storm overland drainage patterns to ensure that surface run-off is not crossing property lines. Potential swale(s) directing water to the SWM control feature need(s) to be proposed within the property (122 Reis Rd), not at the property line. If a swale is proposed at the property line (between 106 Reis Rd & 122 Reis Rd), it needs to be shown and an Easement needs to be registered, allowing unobstructed access to it by both property owners.

It also appears that, with the property shift, the parking lot might be draining directly to the adjacent property, and this will need to be corrected.

II) A Site Servicing plan is required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario). Rather than showing the proposed site features, it must show features as they currently exist on the property (i.e.: buildings, wells, septic beds, vegetation, etc.). It should provide a note that references the horizontal and vertical datums with the local benchmarks. Underground water and sanitary pipe networks need to be shown, to ensure that none cross the property lines (122 Reis Rd Site Plan shows underground water pipes crossing the proposed property line).

With the property line shift, the lot driveway entrance at 122 Reis Rd appears to violate the private approach by-law (Private Approach (By-law No. 2003-447) | City of Ottawa). The driveway setback needs to be a minimum of 3.0 m from the property line and it should be measured, along the edge of the pavement, from the point where the property line extension intercepts the edge of pavement, to the tangent end point of the driveway corner radius at the edge of pavement. To determine the property line edge of pavement intercept point, the property line needs to be extended along its natural angle to the conclusion at the edge of the pavement.

III) A Topographic Plan of Survey needs to be submitted with the application, sealed and signed by an Ontario Land Surveyor (OLS).

IV) A Grading Plan is required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario) – it needs to show accurate topographic information (existing and proposed grades and features). The grading plan should also show the property address and to provide a note that references the horizontal and vertical datums with the local benchmarks (needs to provide direct reference to an official topographic survey endorsed by an OLS).

It is understood that the site re-grading is not proposed for the entire area, however, it was noted that some re-grading might be required, specifically at the interface of both properties. Also, parking lot set-back adjustments and consequently re-grading might be required. Please provide changes specific to the 122 Reis Rd. property, clearly indicating existing and proposed grades with a limit of grading clearly shown with solid lines.

V) An Erosion and Sedimentation control plan is required (sealed, dated, and signed by a Professional Engineer licensed in the province of Ontario). Please be mindful of the fact that there is a watercourse at the north side of the property.

VI) It is understood that no development of any kind is proposed at this point in time, and the grading extent is as identified in the comments above, otherwise additional comments and report requirements will likely be required.

Both Properties:

Given the presence of a watercourse on and adjacent to the two properties, an Environmental Impact Statement (EIS) will be required. The EIS should look at the following:

1) The appropriate surface water feature setbacks, as per OP policies in section 4.9.3.

2) Recommendations to curb any further encroachment into the setbacks.

3) As a consideration for not requiring the existing development to retract to the appropriate watercourse setbacks (i.e. pulling the development back to comply with setback requirements), recommendations to ecologically enhance and restore surface water features.

4) Recommendations to contribute to City's tree canopy, using locally appropriate native species of trees, shrubs and plants.

5) Addressing any potential impacts from stormwater on the surface water features and recommendations to mitigate those impacts.

I hope the above details provide some clarity on the additional information that is being requested to support the application. Although no new development is being proposed, there are significant changes to the topography of these properties that needs to be accounted for. These items are being requested as a part of the site plan process and as a result of the information that was provided with the applications.

Kind regards,

Lucas Teeft (he/him)
Planner I | Urbaniste I
Development Review | Examen des projets d'aménagement
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
City of Ottawa | Ville d'Ottawa
☎ 613.580.2424 ext./poste 21886
ottawa.ca/planning / ottawa.ca/urbanisme

*****During this period of uncertainty due to COVID-19, City staff are following best practices to minimize exposure and risk. I am currently working from home and will respond to any emails as soon as I am able.***

TOPOGRAPHIC PLAN OF SURVEY OF

PART OF BLOCK 1
REGISTERED PLAN 4M-745
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 300

12 9 6 3 0 6 12 Metres

Metric

DISTANCES AND COORDINATES 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 regulations made under them.
2. The survey was completed on the 29th day of May, 2023.

May 30, 2023
Date

T. Hartwick
Ontario Land Surveyor

Notes & Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CP	"	Concrete Pin
(WIT)	"	Witness
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Plan 4R-34826
(P2)	"	Registered Plan 4M-745
(P3)	"	Plan 4R-16781
	"	Deciduous Tree
	"	Coniferous Tree
CSP	"	Corrugated Steel Pipe
WV	"	Water Valve
GM	"	Gas Meter
S	"	Sign
UP	"	Utility Pole
AC	"	Air Conditioner
LS	"	Light Standard
TB-B	"	Bell Terminal Box
TB	"	Unidentified Terminal Box
B	"	Bollard
+65.00	"	Location of Elevations
+65.00	"	Top of Concrete Curb Elevation
PO-W	"	Wood Pole
HT	"	Hydro Transformer
EOA	"	Edge of Asphalt
EOG	"	Edge of Gravel
T/G	"	Top of Grate
Inv	"	Invert
CLF	"	Chain Link Fence
BF	"	Board Fence
MF	"	Metal Fence
	"	Gate
Ø	"	Diameter
C/L	"	Centreline
	"	Property Line
OHW	"	Overhead Wires
TOS	"	Top of Slope
BOS	"	Bottom of Slope

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-53747
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations and are referenced to Specified Control Points 01919680037 and 01919791051, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

For bearing comparisons, a rotation of 0°19'10" counter-clockwise was applied to bearings on plan P2.

ELEVATION NOTES

1. Elevations shown are geodetic, derived from a Spike in Utility Pole having a published elevation of 144.28m (AOG Ref. 17008-16) and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

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

Ontario Land Surveyors
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Email: Nepean@aovltd.com

Job No. 23843-23 Grace Mon PtBlk1 4M-745 0 F | DG

<u>Reis Business Park</u>
<u>Stormwater Management</u>

Ref Info: Reis Road, Tansley Road, & Maple Creek Court
15-86-3062 (Phase 1)
D07-17-4M745

Stormwater Management – The allowable runoff rate from sites within the Reis Industrial Park is governed by the design assumptions used in the approved Engineering Report contained in Schedule “H” of the subdivision agreement. If the resulting runoff from the proposed site will be less than the allowable rate, no on-site SWM will be required. The design parameters used in the approved subdivision Engineering Report are as follows:

- The design of the internal drainage for the subdivision was based on site developments that would be: 50% building (C=1.0), 25% parking (C=0.9) and 25% undeveloped (C=0.2). By my interpretation of design assumptions in the subdivision Engineering Report, sites in this subdivision can be developed without a requirement for on-site SWM as long as the combined C-value does not exceed 0.775.

It is important to note that the original subdivision design used constant C-values, while the newer City of Ottawa Sewer Design Guidelines (see Section 5.4.5.2.1 and Table 5.7) now stipulate that C-values be increased by 25% during the 100-year event (to a maximum of C=1.0). Accordingly, I would ask that you use the City’s increased 100-year runoff coefficients when determining the post-development combined C-value for the site. If the post-development C-value is below 0.775, no on-site SWM will be required. If SWM is required, the allowable release will be based on the 5-year flow, with a C-value of 0.775.

As per Tim Newton, Project Manager, City of Ottawa
Edits supplied by Damien Whittaker and Brian Morgan. 06-Sep-2016

APPENDIX C
DRAINAGE AREA PLANS AND
STORMWATER MANAGEMENT CALCULATIONS

SCALE 1 : 750

0 25 50 75 Metres

LEGEND

DRAINAGE AREA ID

AREA I.D

A1

X.XXXX ha

X.XX

X.XX

AREA SIZE (HECTARES)

5-YEAR

100-YEAR

RUNOFF COEFFICIENT

OVERLAND FLOW DIRECTION

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Client: GRACE MONUMENTS
106 REIS ROAD, CARP, ON K0A 1L0

Project: 122 REIS ROAD - SITE PLAN AMENDMENT
CITY FILE NO.: D07-12-07-0217

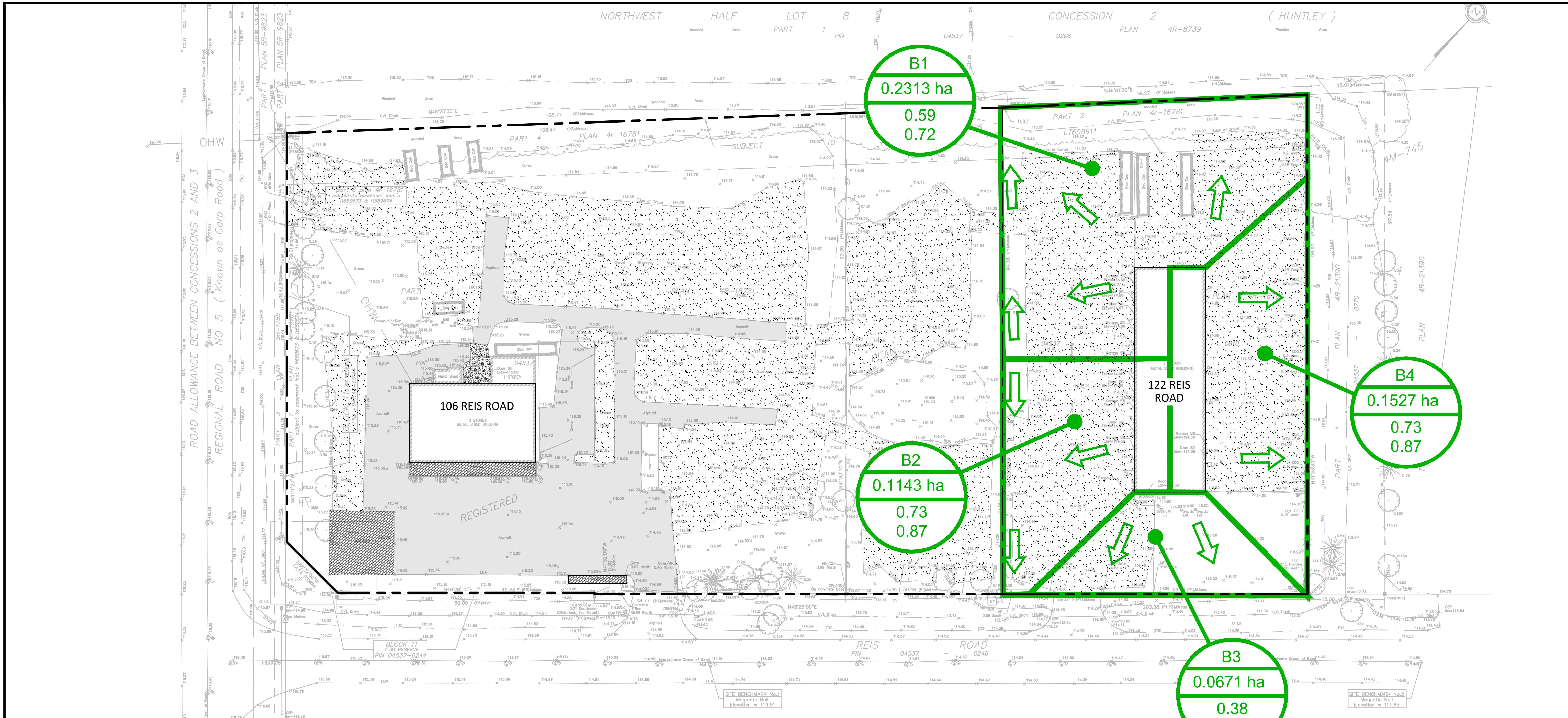
Drawing Title: PRE-ADJUSTMENT (EXISTING) STORMWATER DRAINAGE AREA PLAN

Drawn by:	Checked By:
J.H.	B.C.
Scale: 1:750	Project Number: CCO-23-3606

No.	Revisions	Date
1	SITE PLAN AMENDMENT	OCT, 2023

Drawing Number: SWM1

FILENAME: U:\Ottawa\01 Project - Proposals\2023 Jobs\CCO\CCO-23-3606 Grace Monuments, SPC, 106 & 122 Reis Road\12 - Drawings\CCO-23-3606-SWM.dwg
LAST SAVED: Friday, October 13, 2023 LAST SAVED BY: j.hewson
LAST PLOTTED: Friday, October 13, 2023 CTB FILE USED: ---



SCALE 1 : 750

0 25 50 75 Metres

LEGEND

DRAINAGE AREA ID

AREA I.D — B1

AREA SIZE (HECTARES) — X.XXXX ha

5-YEAR — X.XX

100-YEAR — X.XX

RUNOFF COEFFICIENT

OVERLAND FLOW DIRECTION

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Client: GRACE MONUMENTS
106 REIS ROAD, CARP, ON K0A 1L0

Project: 122 REIS ROAD - SITE PLAN AMENDMENT
CITY FILE NO.: D07-12-07-0217

Drawing Title: POST-ADJUSTMENT (PROPOSED) STORMWATER DRAINAGE AREA PLAN

Drawn by:	Checked By:	No.	Revisions	Date	Drawing Number:
J.H.	B.C.	1	SITE PLAN AMENDMENT	OCT, 2023	SWM2
Scale: 1:750	Project Number: CCO-23-3606				

FILENAME: U:\Ottawa\01 Project - Proposals\2023 Jobs\CCO\CCO-23-3606 Grace Monuments, SPC, 106 & 122 Reis Road\12 - Drawings\CCO-23-3606-SWM.dwg
LAST SAVED: Friday, October 13, 2023 LAST SAVED BY: j.hewson
LAST PLOTTED: Friday, October 13, 2023 CTB FILE USED: ---

McINTOSH PERRY

CCO-23-3606 - 122 Reis Road - D07-12-07-0217 - Stormwater Management Calculations

Table E1 Approved Runoff Release Rate Calculations

Condition	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
PRE	0.8520	**0.775**	**0.775**	10	76.8	104.2	178.6	**140.99**	**191.26**	**327.77**
POST	0.5654	**0.775**	**0.775**	10	76.8	104.2	178.6	**93.56**	**126.92**	**217.51**

Table E2 Existing Runoff Coefficient Calculations

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Asp. / Con. Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	Result C_{AVG} 2/5-Year	Result C_{AVG} 100-Year
A1	0.2429	0.00	1.00	0.00	0.90	1,471.00	0.70	958.00	0.20	**0.503**	**0.628**
A2	0.3096	300.00	1.00	0.00	0.90	2,340.00	0.70	232.00	0.20	**0.641**	**0.777**
A3	0.0671	0.00	1.00	0.00	0.90	247.00	0.70	424.00	0.20	**0.384**	**0.480**
A4	0.1536	300.00	1.00	0.00	0.90	1,035.00	0.70	501.00	0.20	**0.732**	**0.866**
A5	0.0508	0.00	1.00	0.00	0.90	432.00	0.70	76.00	0.20	**0.625**	**0.781**
A6	0.0280	0.00	1.00	0.00	0.90	216.00	0.70	64.00	0.20	**0.586**	**0.732**
Total	**0.8520**									**0.595**	**0.726**

Table E3 Post-Adjustment Runoff Coefficient Calculations

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Asp. / Con. Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	Result C_{AVG} 2/5-Year	Result C_{AVG} 100-Year
B1	0.2313	122.00	1.00	0.00	0.90	1,540.00	0.70	773.00	0.20	**0.586**	**0.719**
B2	0.1143	177.00	1.00	0.00	0.90	867.00	0.70	232.00	0.20	**0.726**	**0.869**
B3	0.0671	0.00	1.00	0.00	0.90	247.00	0.70	424.00	0.20	**0.384**	**0.480**
B4	0.1527	299.00	1.00	0.00	0.90	1,031.00	0.70	496.00	0.20	**0.733**	**0.868**
Total	**0.5654**									**0.630**	**0.761**

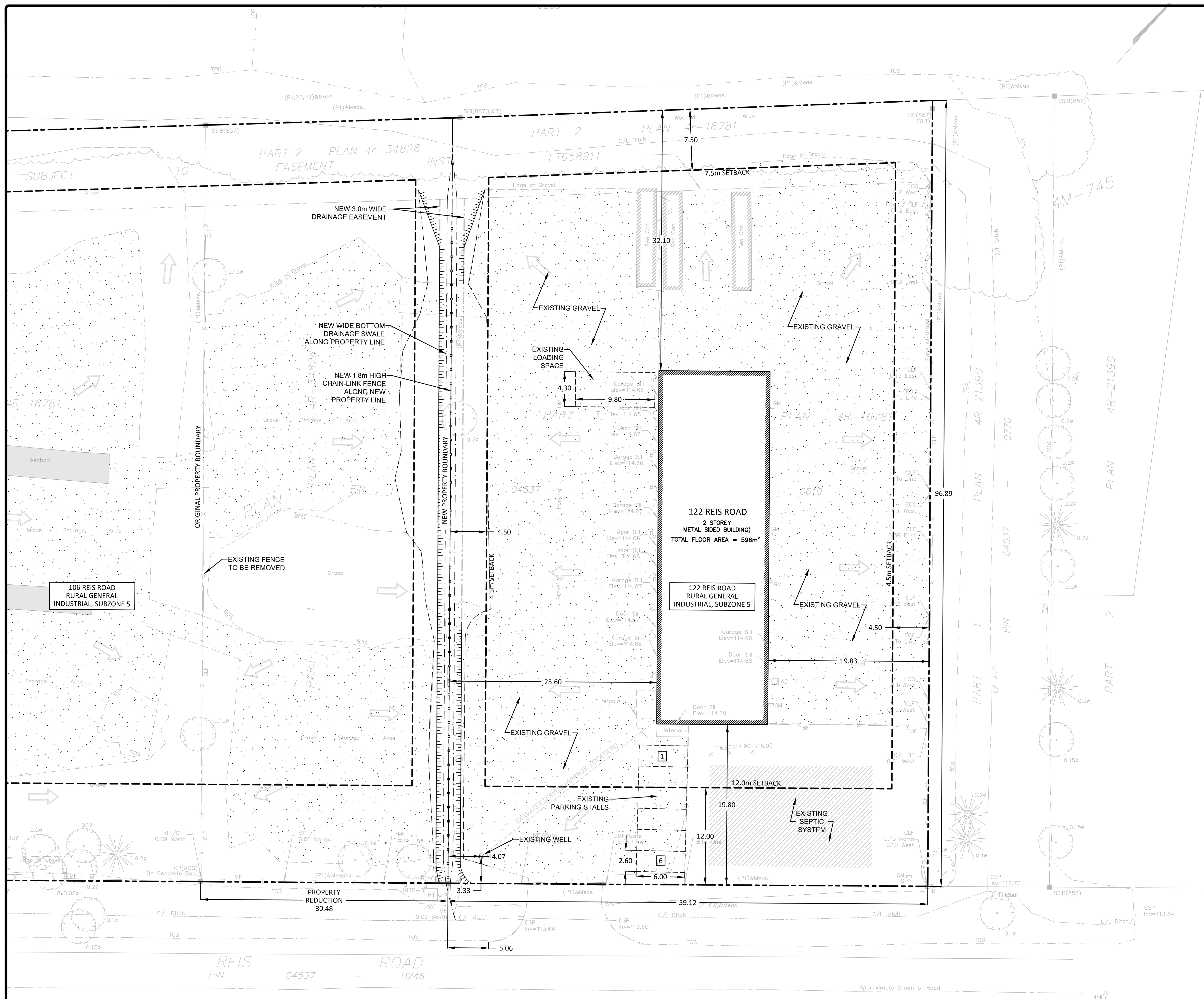
Table E4 Existing Uncontrolled Peak Flow Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A1	0.2429	0.50	0.63	10	104.2	178.6	**35.38**	**75.78**
A2	0.3096	0.64	0.78	10	104.2	178.6	**57.48**	**119.41**
A3	0.0671	0.38	0.48	10	104.2	178.6	**7.46**	**15.99**
A4	0.1536	0.73	0.87	10	104.2	178.6	**32.58**	**66.06**
A5	0.0508	0.63	0.78	10	104.2	178.6	**9.20**	**19.71**
A6	0.0280	0.59	0.73	10	104.2	178.6	**4.75**	**10.18**
Total	**0.8520**						**146.85**	**307.13**

Table E5 Post-Adjustment Uncontrolled Peak Flow Calculations

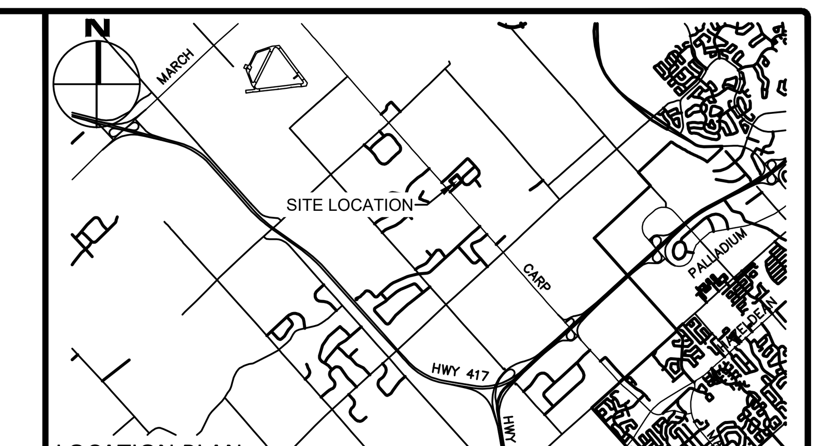
Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.2313	0.59	0.72	10	104.2	178.6	**39.24**	**82.54**
B2	0.1143	0.73	0.87	10	104.2	178.6	**24.05**	**49.32**
B3	0.0671	0.38	0.48	10	104.2	178.6	**7.46**	**15.99**
B4	0.1527	0.73	0.87	10	104.2	178.6	**32.44**	**65.78**
Total	**0.5654**						**103.19**	**213.63**

APPENDIX D
DESIGN DRAWINGS



RG5 ZONE PROVISIONS

Provision	Required	Provided
Minimum Lot Width	30m	59.1m
Minimum Lot Area	4,000m2	5,654m2
Minimum Front Yard Setback	12m	19.8m
Minimum Rear Yard Setback	7.5m	32.1m
Minimum Interior Side Yard Setback	4.5m	19.8m
Maximum Principal Buidling Height	15m	<15m
Maximum Lot Coverage	50%	11%
Location of Outdoor Storage	Permitted in Rear Yard & Interior Side Yards	Rear Yard and Side Yard
Outdoor Storage Screening	Screened from Public Street by Opaque Screen with Minimum Height of 1.8m	None per Approved Site Plan
Minimum Required Parking (Light Industrial Use)	0.8 Spaces per 100 m2 GFA (first 5000 m2 ofGFA)	6
Required Parking Space Size	2.6m x 5.2m	2.6m x 6.0m
Minimum Width of Driveway Providing Access to Parking	3.0m (Single lane), 6.0m (Double Lane)	9.0m
Minimum Required Loading Space Rate (350-999m2 GFA)	1	1



LOCATION PLAN

LEGEND

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
1	ISSUED FOR SITE PLAN CONTROL AMENDMENT	OCT. 13, 2023

Check and verify all dimensions before proceeding with the work — Do not scale drawings

SCALE 1 : 300 (0 5 10 15 20 25 30 Metres)

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
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Stamp:

Client:
GRACE MONUMENTS INC.
106 REID ROAD
CARP, ON K0A 1L0

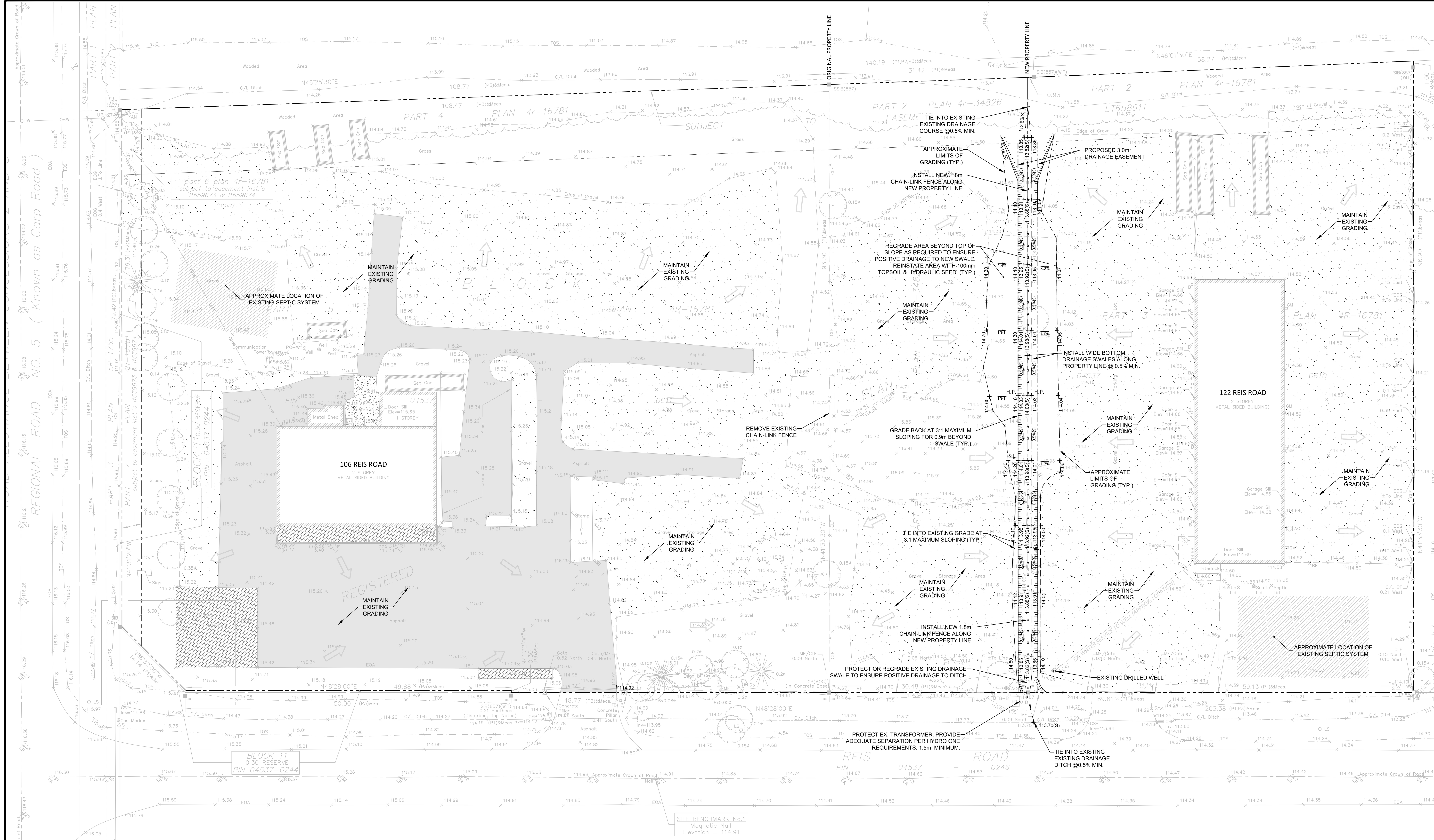
Project:
SITE PLAN CONTROL AMENDMENT
122 REIS ROAD, CARP, ON K0A 1L0

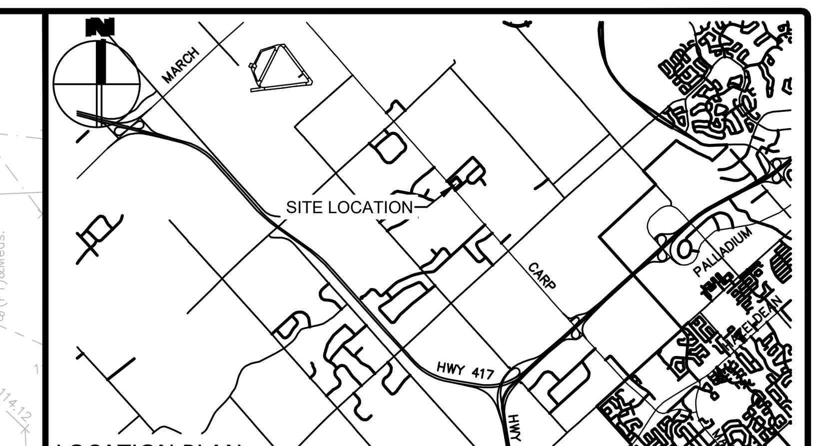
Drawing Title:
SITE PLAN

Scale: 1:500	Project Number: CCO-23-3606
Drawn By: J.H.	
Checked By: B.S.C.	Drawing Number: C100
Designed By:	

D07-12-07-0217

#XXXXX





LOCATION PLAN

LEGEND

— — —	PROPERTY LINE
+114.05	PROPOSED FINISHED GRADE
+113.98(S)	PROPOSED SWALE CENTERLINE GRADE
1.0%	PROPOSED SLOPE
0.5%(S)	PROPOSED SWALE SLOPE
	PROPOSED TERRACING (MAX 3:1)
	PROPOSED SWALE BREAKLINE
	PROPOSED FENCLINE
	EXISTING DRAINAGE DIRECTION

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

GENERAL NOTES

1. THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY, AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
2. THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY (OR SHOWN ON) ANNIS, O'SULLIVAN, VOLLEBEKK LTD. JOB NO. 23843-23 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
3. THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
5. THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES AND SERVICES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
6. RESTORE ALL EXCAVATIONS AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
7. EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
8. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
10. DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
11. ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
12. ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION, IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
13. ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
    - 13.1. ELECTRICAL SERVICE - HYDRO ONE
    - 13.2. GAS SERVICE - ENBRIDGE,
    - 13.3. TELEPHONE SERVICE - BELL CANADA,
    - 13.4. TELEVISION SERVICE - ROGERS.
14. CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL EXCAVATION WORK AROUND EXISTING UTILITIES AND SHALL PROTECT AND SUPPORT ANY UTILITY AND/OR SERVICE PER THE REQUIREMENTS OF THE GOVERNING AUTHORITIES. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO, BELL, ENBRIDGE, ROGERS AND THE CITY.
15. CONTRACTOR TO ENSURE ALL APPLICABLE OPS AND CITY OF OTTAWA SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION

SITE GRADING NOTES

16. MATCH EXISTING GRADES UNLESS SHOWN OTHERWISE.
17. PROPERTY LINE SHALL BE MARKED (OR STAKED-OUT) BY AN ONTARIO LAND SURVEYOR AT ALL LOCATIONS WHERE NEW PLANT IS WITHIN 0.50m FROM THE PROPERTY LINE.
18. CONTRACTOR SHALL ENSURE BARRIER FREE ACCESSIBILITY PEDESTRIAN SURFACE INCLUDING PEDESTRIAN ACCESS TO ALL BUILDINGS AND STREET CROSSINGS MUST BE PROVIDED AND MAINTAINED IN A GOOD STATE OF REPAIR TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR THROUGH OR BY THE CONSTRUCTION SITE AT ALL TIMES.
19. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT GRADING AROUND HYDRANTS, TRANSFORMERS, AND UTILITY PEDESTALS, ETC., MEET CURRENT CITY OF OTTAWA, HYDRO AND UTILITY COMPANY REQUIREMENTS.
20. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR CATCH BASIN OUTLETS ARE PROVIDED.
21. CONTRACTOR TO ADJUST EXISTING SEWER, WATER AND UTILITY STRUCTURES WHERE DISTURBED TO FINAL GRADE WHERE REQUIRED.
22. GRADING IN GRASSED AREAS WILL BE AS PER CITY OF OTTAWA STANDARDS.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION, BACKFILL AND REINSTATEMENT OF ALL AREAS DISTURBED DURING CONSTRUCTION AND ALL ASSOCIATED WORKS TO THE SATISFACTION OF THE ENGINEER, THE CITY OF OTTAWA AND THE OWNERS.

REINSTATEMENT NOTES

24. CONTRACTOR IS TO MINIMIZE DISTURBANCE TO ADJACENT GROUNDS AND IS TO REDUCE THE ACTUAL LIMITS OF REMOVALS AND REINSTATEMENT WHEREVER POSSIBLE, AND SHALL MAKE THEIR OWN JUDGMENT AND ACCOUNT FOR ALL MATERIAL AND LABOUR REQUIRED FOR ADEQUATELY REINSTATING THE AREAS TO PRE-CONSTRUCTION CONDITIONS OR BETTER, AND BEAR THE COST OF THE SAME. NO ADDITIONAL PAYMENT WILL BE MADE FOR REINSTATEMENT WORK NOT SHOWN ON THE CONTRACT DRAWING AS A DIRECT RESULT FROM CONSTRUCTION OR OTHER CONSTRUCTION RELATED ACTIVITIES.
25. CONTRACTOR TO REINSTATE DISTURBED AREAS TO PRE-CONSTRUCTION CONDITION OR BETTER MATCHING EXISTING GROUND COVERS INCLUDING, BUT NOT LIMITED TO, GRASS, GRAVEL, MULCH, GARDEN BEDS, RIVER STONE, ETC. REINSTATEMENT IN EXISTING GRASSED AREAS TO INCLUDE MINIMUM 150mm IMPORTED TOPSOIL AND HYDRAULIC SEED. ALL WORK TO INCLUDE A ONE-YEAR WARRANTY FROM DATE OF FINAL ACCEPTANCE. PROVIDE WATERING OF ALL GRASS AREAS AS REQUIRED FOR PROPER ESTABLISHMENT, AND REGULAR MOWING UNTIL FINAL ACCEPTANCE - MINIMUM TWO CUTS.
26. ALL SITE APPURTENANCES INCLUDING, BUT NOT LIMITED TO, SIGNAGE, BOLLARDS, FENCING, GATES & CONTROLS, SHRUBBERY/TREES/PLANTS, LIGHT POLES, OTHER EQUIPMENT, ETC. ARE TO BE PROTECTED UNLESS OTHERWISE NOTED.

No.	Revisions	Date
3	ISSUED FOR SITE PLAN CONTROL AMENDMENT	OCT. 13, 2023
2	ISSUED FOR CLIENT REIVIEW	OCT. 05, 2023
1	ISSUED FOR CLIENT REVIEW	JUL. 14, 2023

Check and verify all dimensions before proceeding with the work

Do not scale drawings

SCALE 1 : 500

0 10 20 30 40 50 Metres

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J. D. J. HEWSON
100506243
10/13/2023
PROVINCE OF ONTARIO

Client:
GRACE MONUMENTS INC.
106 REIS ROAD
CARP, ON K0A 1L0

Project:
SITE PLAN CONTROL AMENDMENT
122 REIS ROAD, CARP, ON K0A 1L0

Drawing Title:
SITE GRADING PLAN

Scale: 1:300	Project Number: CCO-23-3606
Drawn By: J.H.	
Checked By: B.C.	Drawing Number: C101
Designed By: J.H.	

D07-12-07-0217

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LAST SAVED: Friday, October 13, 2023 LAST SAVED BY: J.Hewson
LAST PLOTTED: Friday, October 13, 2023 CTB FILE USED: ---