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Residential Development 1040 Somerset Street West Stormwater Management Report



Prepared for: Claridge Homes

**RESIDENTIAL DEVELOPMENT
1040 SOMERSET STREET WEST
OTTAWA, ONTARIO**

STORMWATER MANAGEMENT REPORT

Prepared by:

**NOVATECH ENGINEERING CONSULTANTS LTD.
240 Michael Cowpland Dr. - Suite 200
Ottawa, Ontario
K2M 1P6**

**File No.: 112191
Report Reference No.: R-2013-004
Prepared: April 02, 2013
Revised: April 14, 2022**

April 14, 2022

City of Ottawa
Development Review Central
Planning, Infrastructure and Economic Development
110 Laurier Avenue West
Ottawa, ON
K1P1J1

Attention: Mr. Jean-Charles Renaud

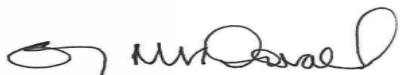
**Reference: Residential Development
1040 Somerset Street West
Stormwater Management Report
Our File No.: 112191**

Enclosed herein is the Stormwater Management Report for the proposed Residential development at 1040 Somerset Street West, located in the southeast quadrant of the Breezehill Avenue North / Somerset Street West intersection. This report is submitted in support of the site plan application for the site and presents a stormwater management plan for the re-development of the site.

Trusting this report is adequate for your purposes. Should you have any questions, or require additional information, please contact us.

Yours truly,

NOVATECH ENGINEERING CONSULTANTS LTD.



Greg MacDonald, P.Eng
Director, Land Development and Public Sector Infrastructure

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
2.0 CRITERIA.....	2
3.0 EXISTING CONDITIONS	2
3.1 THE SITE.....	2
3.2 ALLOWABLE RELEASE RATE.....	2
4.0 PROPOSED DEVELOPMENT STORMWATER MANAGEMENT DESIGN	3
4.1 STORMWATER MANAGEMENT MODELING.....	3
4.2 DRAINAGE AREAS	3
4.3 UNCONTROLLED DEVELOPMENT FLOWS	4
4.4 CONTROLLED DEVELOPMENT FLOWS.....	4
4.5 MAJOR OVERLAND DRAINAGE.....	5
5.0 EROSION AND SEDIMENT CONTROL MEASURES	5
6.0 CONCLUSIONS AND RECOMMENDATIONS	5
7.0 CLOSURE.....	6

List of Figures

Figure 1: Aerial Photo of Subject Site
 Figure 1b: Key Plan
 Figure 2: Site Plan
 Figure 3: Existing Conditions

List of Appendices

Appendix A: IDF Curves, Rational Method, Release Rate
 Appendix B: SWM Calculations
 Appendix C: Correspondence

List of Attached Drawings

112191-GP General Plan of Services
 112191-GR Grading and Erosion Control Plan
 112191-ESC Erosion and Sediment Control Plan
 112191-SWM Stormwater Management Plan

1.0 INTRODUCTION

Novatech has been retained to prepare a Stormwater management Report for the proposed residential development located at 1040 Somerset Street West within the City of Ottawa. The purpose of this report is to support the site plan application for the subject development. The property is located in the southeast quadrant of the Breezehill Avenue North / Somerset Street West intersection in the City of Ottawa, as shown in **Figure 1a – Aerial Photo** and **Figure 1b – Key Plan**.

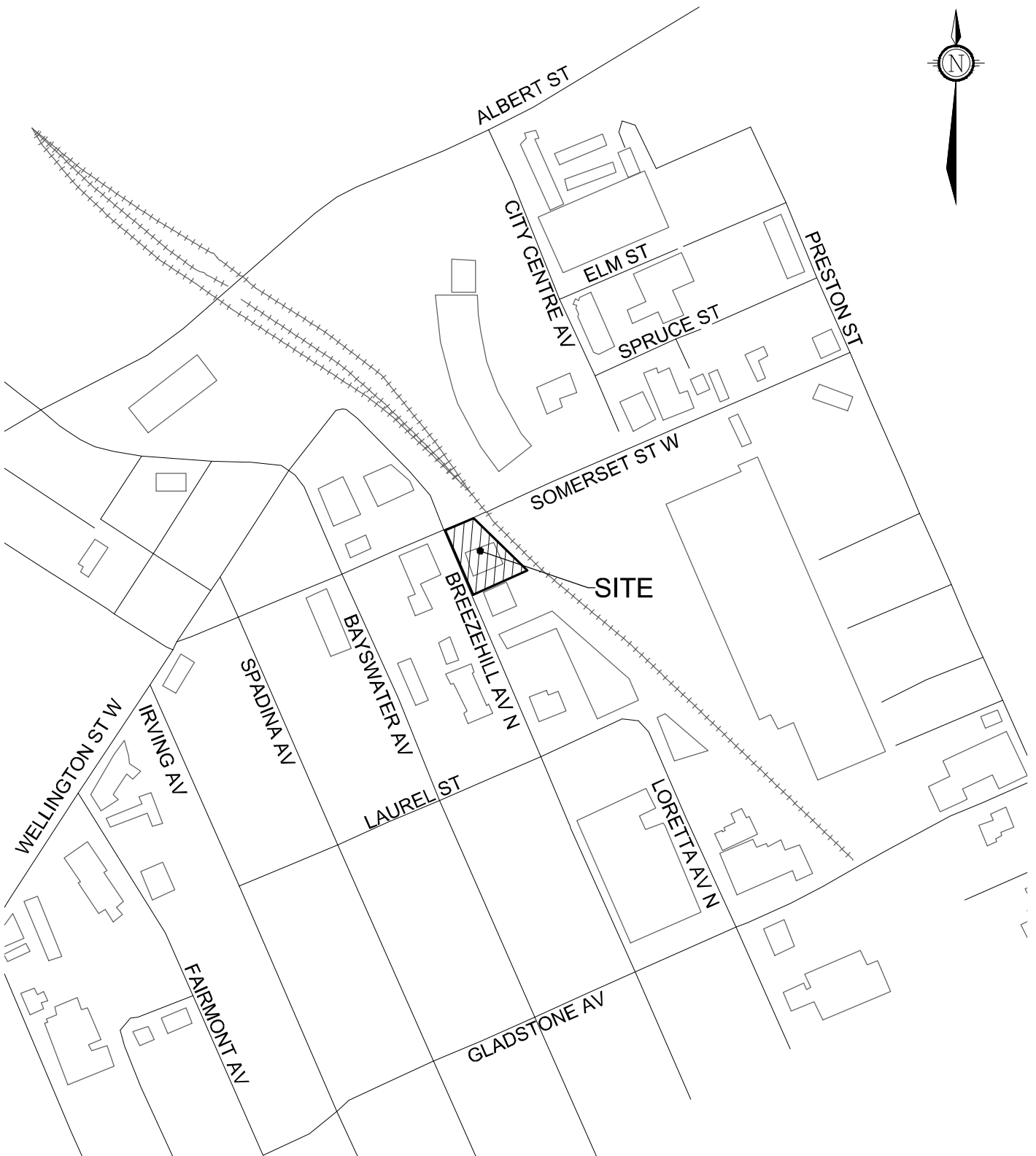
Figure 1a: Aerial Photo of Subject Site



Photo courtesy of www.bing.com/maps

The subject site is approximately 0.135 ha in area and is bound by Somerset Street West to the north, the O-Train transit corridor to the east; a meditation center and an auto repair shop (53 Breezehill Avenue North) to the south; and Breezehill Avenue N. to the west. The existing property is currently occupied by a one storey building with commercial uses.

The proposed re-development will consist of a 30-storey tower with 262 condominium units to be constructed in one phase. The building will include 105m² of commercial floor space, located on the ground floor, and a total of 145 underground parking spaces will be provided on 7 levels of underground parking. **Refer to Figure 2 – Site Plan for details.** Access to the proposed site will be a single two-way vehicular ramp access to the underground parking garage which will connect to Breezehill Avenue N. A copy of the topographical survey which shows the property outline is included in the back of this report. **Refer to Figure 3 – Existing Conditions.**



M:\2012\112191\CAD\Design\Figures\Design Brief\KEYPLAN.dwg, KEY PLAN, Feb 17, 2022 - 12:58pm, amestwarp



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Suite 200, 240 Michael Cowpland Drive
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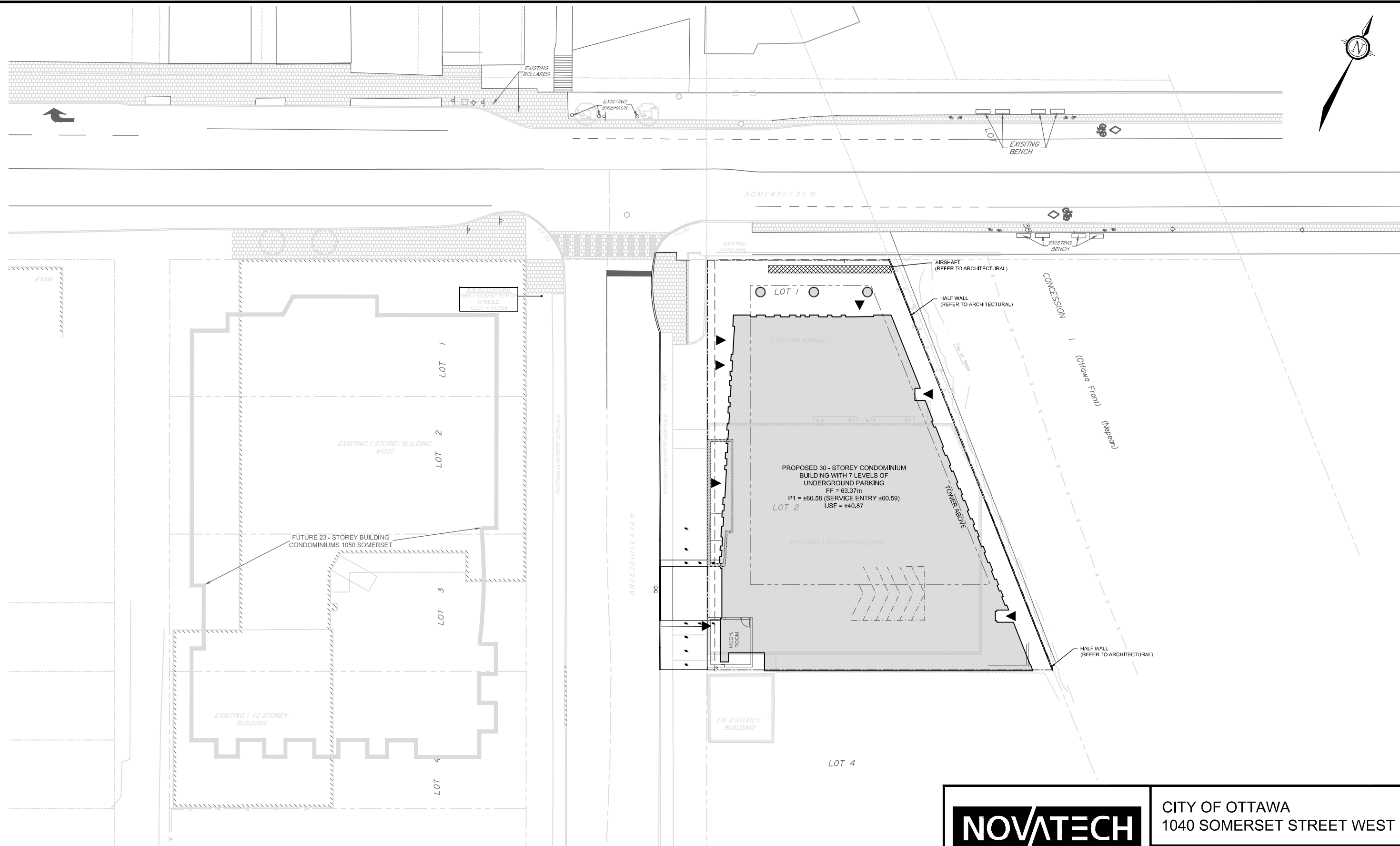
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
1040 SOMERSET STREET WEST

KEY PLAN

SCALE		N.T.S	
DATE	MAR 2022	JOB	112191
FIGURE	FIGURE 1b		

M:\2012\112191\CAD\Design\Figures\Design Brief\112191-SITE PLAN.dwg, FIGURE 2, Mar 23, 2022 - 2:26pm, cferguson



LEGEND

- SITE PLAN AREA
- LIMIT OF UNDERGROUND PARKING
- LIMIT OF BUILDING OVERHANG

NOVATECH

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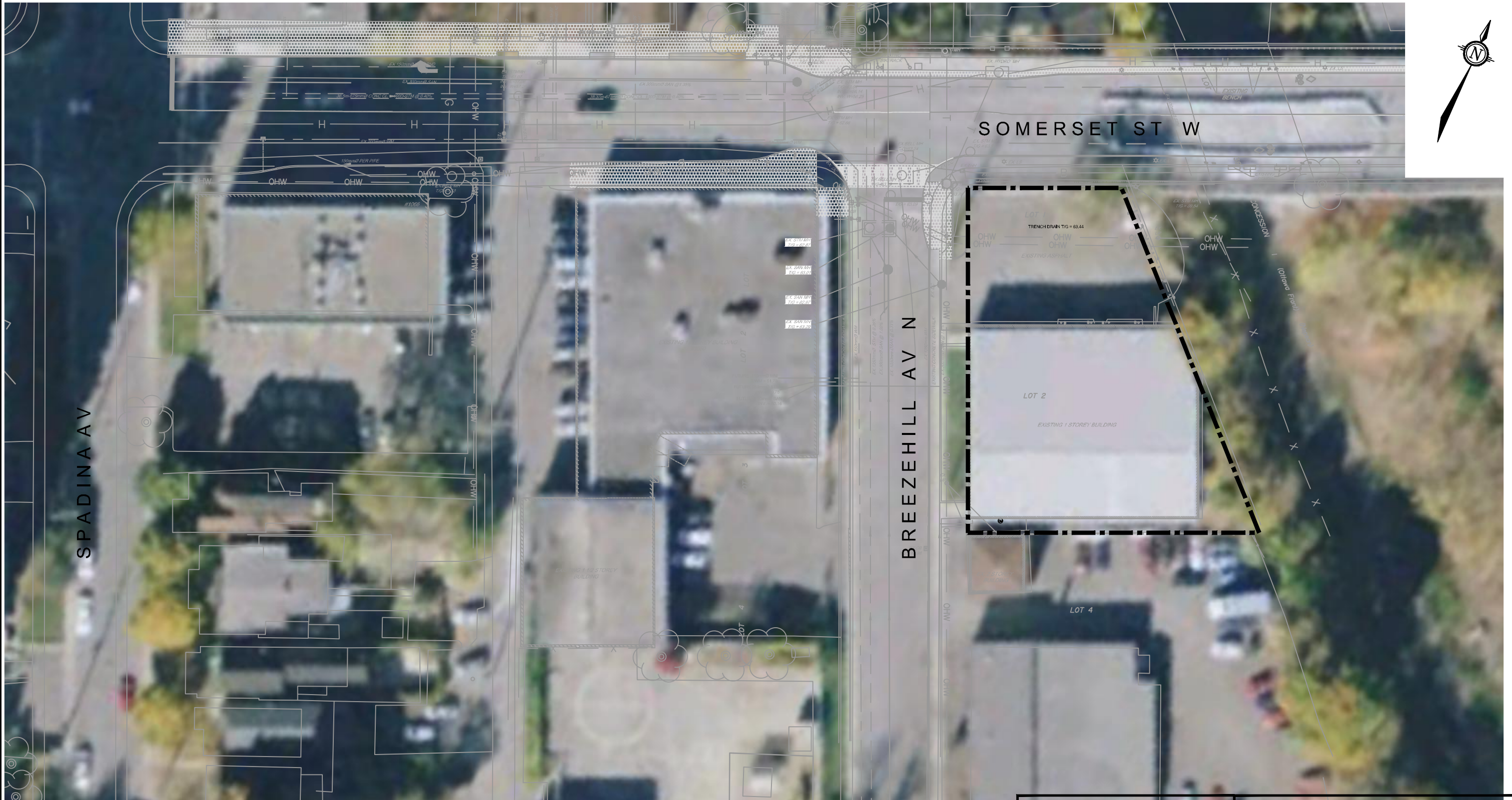
CITY OF OTTAWA
 1040 SOMERSET STREET WEST

SITE PLAN

SCALE 1 : 400

DATE	JOB	FIGURE
MAR 2022	112191	FIGURE 2

M:\2012\112191\CAD\Design\Figures\Design Brief\112191-EXISTING CONDITIONS.dwg, FIGURE 3, Feb 17, 2022 - 1:00pm, amestwarp



LEGEND
 - - - - - SITE PLAN AREA

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CITY OF OTTAWA
 1040 SOMERSET STREET WEST

EXISTING CONDITIONS PLAN

SCALE 1 : 500

DATE	JOB	FIGURE
MAR 2022	112191	FIGURE 3

2.0 CRITERIA

Through correspondence with the City of Ottawa, the following criteria have been adopted to control post-development stormwater discharge from the site:

- Control proposed development flows, up to and including the 100-year storm event, to a 5-year allowable release rate calculated using a runoff coefficient (C) of 0.50 and a time of concentration (T_c) of 20 minutes;
- Determine size and location of proposed drainage system components and identify any modifications required to existing infrastructure to meet SWM targets;
- Provide source controls which are in conformity with the City of Ottawa requirements, where possible;
- Limit ponding to 0.15 m for all rooftop storage areas and 0.30 m for all parking storage areas; and;
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

The approach to the stormwater management design is to determine the allowable release rate for the site, calculate the uncontrolled flow, and ensure that the remaining flow, in combination with the uncontrolled flow, does not exceed the allowable release rate. All proposed development runoff in excess of the allowable release rate, will be attenuated on-site prior to being released into the storm sewer on Somerset Street West and Breezehill Avenue North.

3.0 EXISTING CONDITIONS

3.1 The Site

Under existing conditions, the site in question is currently occupied by a one storey building with commercial uses, including an auto care shop, a charity organization and an art studio, as illustrated in **Figure 3**. Stormwater flows from the site are currently conveyed to the existing storm sewer system within Breezehill Avenue North via overland flows, as well as the abutting Ottawa O-Train land.

As part of this development, all stormwater will be controlled on site and discharged via a 250 mm dia. storm service from the proposed condominium development that will connect to the existing 1350 mm dia. storm sewer on Breezehill Avenue North. The proposed storm service connection to the building will be equipped with a backwater valve.

3.2 Allowable Release Rate

The city requires that on-site stormwater management be implemented to control post-development stormwater discharge for the 100-year storm event to the 5-year storm, a time of concentration (T_c) of 20 minutes and a runoff coefficient (C) of 0.50. The allowable release rate for the proposed 0.135 ha development was calculated using the Rational Method to be 13.2 L/s. Calculations are included within **Appendix A**, for reference.

4.0 PROPOSED DEVELOPMENT STORMWATER MANAGEMENT DESIGN

Stormwater runoff flow from the site will be a combination of uncontrolled direct runoff and controlled flow. Stormwater management will be achieved with an internal cistern within the P1 mezzanine parking level. The site will be graded such that flows exceeding the 100-year storm event will be conveyed overland to Breezehill Avenue North, and the neighboring railway property as per existing conditions.

4.1 Stormwater Management Modeling

The performance of the proposed stormwater management system was evaluated using a dual-drainage model created in PCSWMM. The PCSWMM model simulates the storage and routing of flows through the proposed storm drainage network. The results of the analysis were used to:

- Calculate the storm sewer hydraulic grade line and ponding elevations for the 5-year, and 100-year storm events.
- Determine the allowable release rates from each drainage area and size the required inlet control devices (ICD's).
- Calculate the modelled runoff from the controlled portions and uncontrolled portions of the site under post-development conditions.

The design storms used in the hydrologic analysis model include the 6-hour and 4-hour Chicago distributions and the 12-hour and 24-hour SCS Type II distribution for the 2-year, 5-year and 100-years storm events. IDF data was taken from the *City of Ottawa Sewer Design Guidelines (OSDG)* (October 2012). The 6-hour Chicago storm distribution was found to generate the highest peak flows and the model results from this distribution are documented in the following tables. The model schematic, system parameters and output files are provided in **Appendix B**.

4.2 Drainage Areas

The development will consist of multiple drainage areas that are highlighted on the Stormwater Management Plan (112191-SWM) enclosed in the back of this report. The following is a detailed description of how the flows from each area will be managed.

Table 4.1 Drainage Area Descriptions

Drainage Area No.	Total area (ha)	Runoff Coefficient - C	Description
D-01	0.006	0.90	Uncontrolled
D-02	0.002	0.90	Uncontrolled
R-01	0.126	0.90	Controlled – Cistern
R-02	0.001	0.90	Controlled – Cistern
Total =	0.135		

Drainage Areas D-01, and D-02 are the surficial uncontrolled runoff at the ground elevation that will flow overland towards Breezehill Avenue North, and the transit corridor, respectively. Drainage Areas R-01, and R-02 are rooftop areas which will drain into the cistern within the P1 mezzanine parking level and will ultimately discharge to the existing storm system within the Breezehill Avenue North right-of-way.

4.3 Uncontrolled Development Flows

The uncontrolled development flows from Areas D-01, and D-02 were calculated using PCSWM and results are summarized in Table 4.2. The model schematics and results are contained in **Appendix B**.

Table 4.2 Proposed Development Uncontrolled Flows Summary

Area ID	5-Year Flows (L/s)	100-Year Flows (L/s)	100-Year +20% Flows (L/s)
D-01	1.73	2.98	3.57
D-02	0.58	0.99	1.19
Total	2.31	3.97	4.76

4.4 Controlled Development Flows

The roof area will outlet to the 1350mm diameter storm sewer system in Breezehill Avenue N. The post-development flow from this sub-catchment area will be attenuated using an inlet control device (ICD) installed within the proposed building cistern within the P1 parking level.

Table 4.4 summarizes the post-development design flow from this sub-catchment area as well as the ICD specifications, the anticipated ponding elevations, storage volumes required and storage volume provided for the 2-year, 5-year and the 100-year design events.

Table 4.4: Area R-01 & R-02 Design Flow and ICD Table

Design Event	Sub-Catchment Area R-01 & R-02				
	ICD Type	Design Flow (L/s)	Ponding Elevation (m)	Storage Vol. Required (m ³)	Max Storage Provided (m ³)
2-Year	LMF 85	5.30 L/s	61.30 m	21.0 m ³	60.27 m ³
5-Year		6.34 L/s	61.59 m	29.0 m ³	
100-Year		8.74 L/s	62.43 m	53.0 m ³	

Table 4.5 below compares the post-development design flows for the 5-year and 100-year design events to the target allowable release rates.

Table 4.5 Stormwater Management Post-Development Flow Summary

Drainage Area ID	Drainage Area (ha)	Runoff Coefficient "C"	5-Year Flows (L/s)	100-Year Flows (L/s)
D-01	0.006	0.90	1.73	2.98
D-02	0.002	0.90	0.58	0.99
Direct Runoff Sub Total			2.31	3.97
R-01	0.126	0.90	6.34	8.74
R-02	0.001	0.90		
Controlled Flows Sub Total			6.34	8.74
Total Post Development Release Rate			8.65	12.71
Total Allowable Release Rate			13.2	13.2

As indicated in the **Table 4.5** above, the 5-year and 100-year post-development flows will be less than the target allowable release rate for the site. Refer to **Appendix B** for PCSSWMM model schematics and results, and Figures. Refer to the Grading Plan (112191-GR) and the Stormwater Management Plan for more details.

4.5 Major Overland Drainage

A major overland flow route will be provided for storms greater than the 100-year storm event. Stormwater will be directed to the Breezehill Avenue N. and the neighboring railway block as per the existing conditions. The major overland system is shown on the Grading Plan (drawing 112191-GR).

5.0 EROSION AND SEDIMENT CONTROL MEASURES

Temporary erosion and sediment control measures will be implemented on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter socks (catchbasin inserts) will be placed in existing and proposed catchbasins and catchbasin manholes, and will remain in place until vegetation has been established and construction is completed;
- Silt fencing will be placed along the surrounding construction limits;
- Mud mats will be installed at the site entrances;
- Strawbale or rock check dams will be installed in swales and ditches;
- The contractor will be required to perform regular street sweeping and cleaning as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site;

Erosion and sediment control measures should be inspected daily and after every rain event to determine maintenance, repair or replacement requirements. Sediments or granulars that enter site sewers shall be removed immediately by the contractor. These measures will be implemented prior to the commencement of construction and maintained in good order until vegetation has been established. Refer to the Erosion and Sediment Control Plan (drawing 112191-ESC) for additional information.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this report, a stormwater management scheme has been identified that will achieve the allowable release rate required by the City. Therefore, the following conclusions are made:

- Stormwater discharge from the site will be controlled to the allowable 5-year pre-development storm event rate of 13.2 L/s by an ICD and storage within the proposed cistern within the P1 parking level for both the 5-year and 100-year post-development storm events;
- The site will be graded such that flows in excess of the 100-year storm event will be conveyed overland to Breezehill Avenue North, and the existing rail corridor.
- Sediment and erosion control measures will be implemented during construction.

7.0 CLOSURE

This report has been prepared in accordance with the requirements for site plan submission and is hereby submitted for approval.

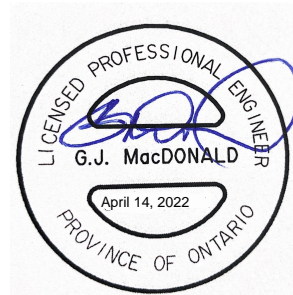
NOVATECH ENGINEERING CONSULTANTS LTD.

Prepared by:



Anthony Mestwarp, P.Eng.
Project Engineer

Reviewed by:



Greg MacDonald, P.Eng.
Director, Land Development
and Public Sector Infrastructure

Stormwater Design Prepared by:



Vahid Mehdipour, M.Sc.
Water Resources

APPENDIX A
IDF CURVES, RATIONAL METHOD, RUNOFF

RATIONAL METHOD

The Rational Method was used to determine both the allowable runoff as well as the proposed development runoff for the site. The equation is as follows:

$$Q=2.78 \text{ CIA}$$

Where:

Q is the runoff in L/s

C is the weighted runoff coefficient*

I is the rainfall intensity in mm/hr**

A is the area in hectares

*The weighted runoff coefficient is determined for each of the catchment areas as follows:

$$C = \frac{(A_{perv} \times C_{perv}) + (A_{imp} \times C_{imp})}{A_{tot}}$$

Where:

A_{perv} is the pervious area in hectares

C_{perv} is the pervious area runoff coefficient ($C_{perv}=0.20$)

A_{imp} is the impervious area in hectares

C_{imp} is the impervious area runoff coefficient ($C_{imp}=0.90$)

A_{tot} is the catchment area ($A_{perv} + A_{imp}$) in hectares

** The rainfall intensity is taken from the City of Ottawa IDF Curves with a time of concentration of 20 min (refer to attached IDF Curves) as specified by the City of Ottawa.

ALLOWABLE RELEASE RATE AS SPECIFIED BY THE CITY

The allowable release rate was calculated for the proposed 0.1345 ha re-developed site, using a runoff coefficient (C) of 0.50 and a time of concentration (T_c) of 20 minutes, as specified by the City of Ottawa.

Drainage Area (A) = 0.1345 ha

Runoff Coefficient (C) = 0.50

Intensity (I5) = 70.25 mm/hr

$$Q5= 2.78 \text{ CIA}$$

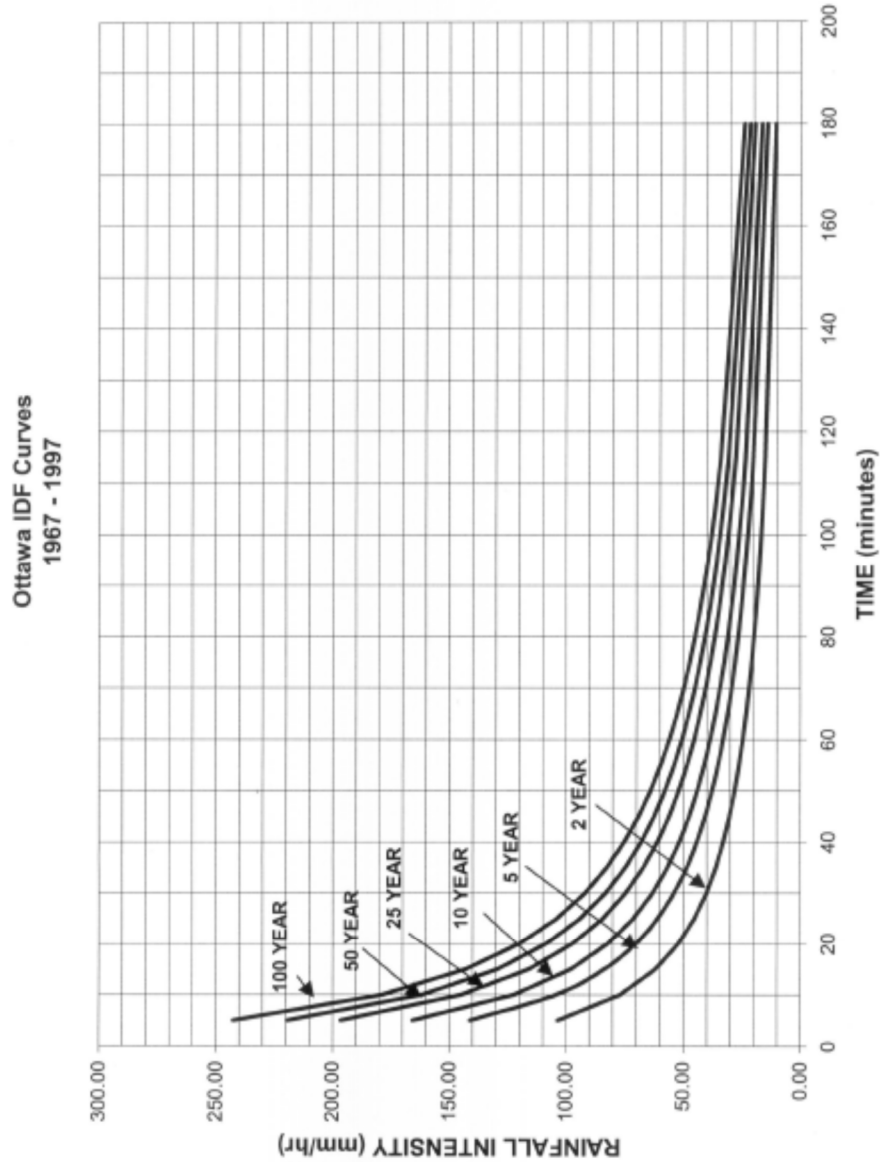
$$Q5= 2.78 \times 0.50 \times 70.25 \text{ mm/hr} \times 0.1345 \text{ ha}$$

$$Q5= 13.13 \text{ L/s}$$

Ottawa Sewer Design Guidelines

APPENDIX 5-A

OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE



City of Ottawa

Appendix 5-A.1

November 2004

* IDF CURVE FROM OTTAWA SEWER DESIGN GUIDELINES – NOV 2004

TABLE 1A: Allowable Runoff Coefficient "C"

Area	"C"
Total	0.50
0.135	

TABLE 1B: Allowable Flows

Outlet Options	Area (ha)	"C"	Tc (min)	Q _{5 Year} (L/s)	Q _{ALLOW} (L/s)
Cambridge Street N	0.135	0.50	20	13.2	13.2

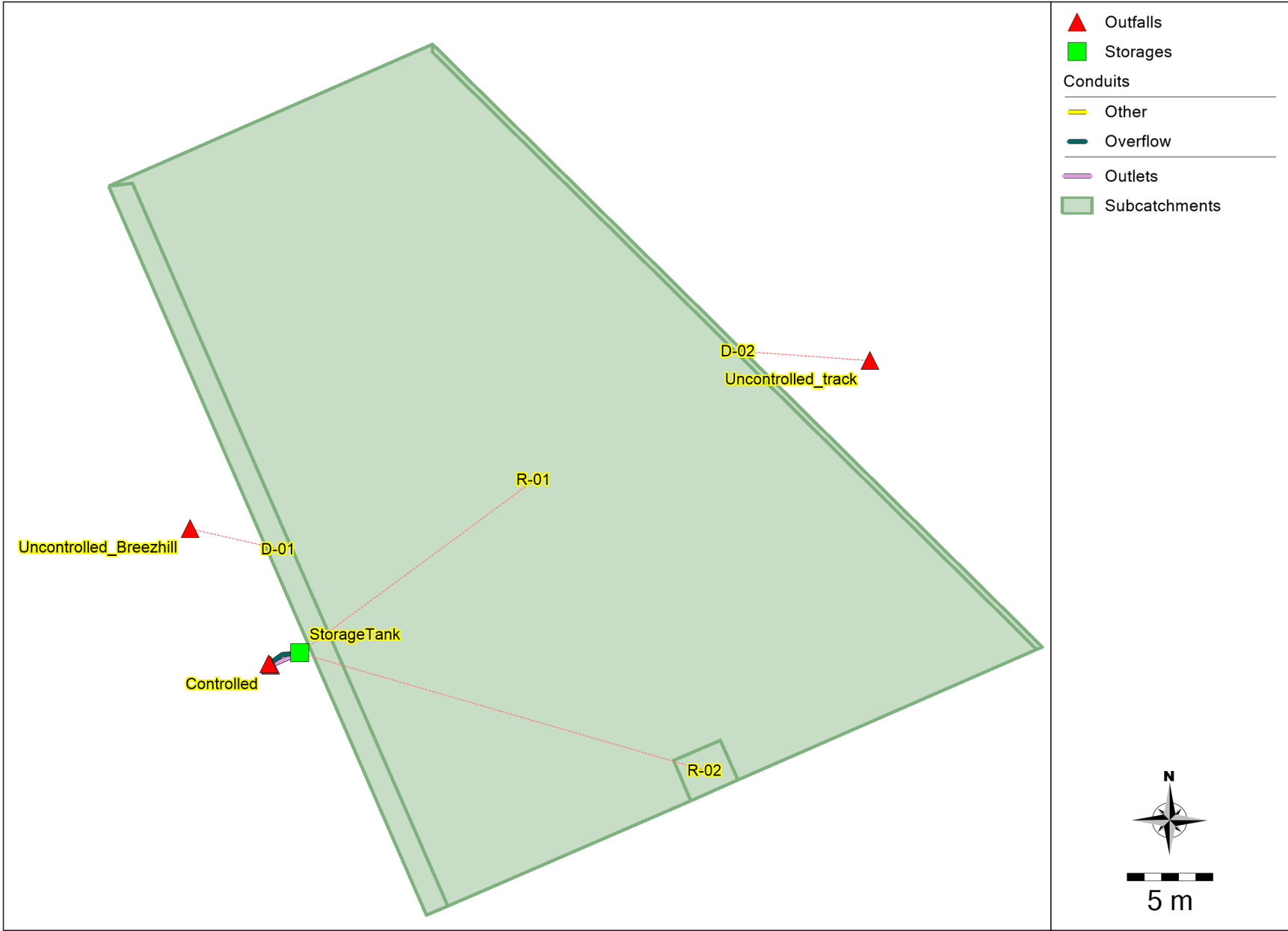
Time of Concentration T_c= 20 min
 Intensity (2 Year Event) I₂= 52.03 mm/hr
 Intensity (5 Year Event) I₅= 70.25 mm/hr
 Intensity (100 Year Event) I₁₀₀= 119.95 mm/hr

Equations:
 Flow Equation
 $Q = 2.78 \times C \times I \times A$

Where:
 C is the runoff coefficient
 I is the rainfall intensity, City of Ottawa IDF
 A is the total drainage area

100 year Intensity = $1735.688 / (\text{Time in min} + 6.014)^{0.820}$
 5 year Intensity = $998.071 / (\text{Time in min} + 6.053)^{0.814}$

**APPENDIX B
SWM CALCULATIONS**



Refer to the attached PCSWMM output file
(112191_20220414.pcz) For model details.

**APPENDIX C
CORRESPONDENCE**

From: Wu, John <John.Wu@ottawa.ca>
Sent: Wednesday, March 9, 2022 8:12 AM
To: Anthony Mestwarp <a.mestwarp@novatech-eng.com>
Subject: RE: 112191 - Storm Boundary Conditions Request - 1040 Somerset Street

The 100 year HGL as per our flood risk model is 58.02 m. The 5 year is within the pipe at 56.31.

John

From: Anthony Mestwarp <a.mestwarp@novatech-eng.com>
Sent: March 3, 2022 10:12 AM
To: Wu, John <John.Wu@ottawa.ca>
Cc: Vahid Mehdipour <v.mehdipour@novatech-eng.com>
Subject: RE: 112191 - Storm Boundary Conditions Request - 1040 Somerset Street

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

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

Can you please let me know the approximate timing to provide the Hydraulic Grade line elevations within the existing stm sewer for the 100-yr, and 5-yr storm events.

Thanks,

Anthony Mestwarp, P.Eng., Project Engineer | Land Development Engineering

NOVATECH Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext. 216 | Fax: 613.254.5867

The information contained in this email message is confidential and is for exclusive use of the addressee.

From: Wu, John <John.Wu@ottawa.ca>
Sent: Monday, February 28, 2022 12:03 PM
To: Anthony Mestwarp <a.mestwarp@novatech-eng.com>
Subject: RE: 112191 - Storm Boundary Conditions Request - 1040 Somerset Street

Yes, I can confirm that.

From: Anthony Mestwarp <a.mestwarp@novatech-eng.com>
Sent: February 28, 2022 11:57 AM
To: Wu, John <John.Wu@ottawa.ca>
Cc: Vahid Mehdipour <v.mehdipour@novatech-eng.com>; Curtis Ferguson <c.ferguson@novatech-eng.com>
Subject: 112191 - Storm Boundary Conditions Request - 1040 Somerset Street

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

Can you please confirm the HGL within the 1350mm storm within the Breezehill Avenue N. right of way fronting the 1040 Somerset Street W. site.

Based on the SWM site criteria:

- Coefficient of 0.50
- Time of concentration of 20 min
- 5-year stm

The maximum run-off from the site will be restricted to 13.2L/s.

The approximate storm service connection location is noted on the attached image for reference.

Please let me know if you require any further information.

Thanks,

Anthony Mestwarp, P.Eng., Project Engineer | Land Development Engineering

NOVATECH Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext. 216 | Fax: 613.254.5867

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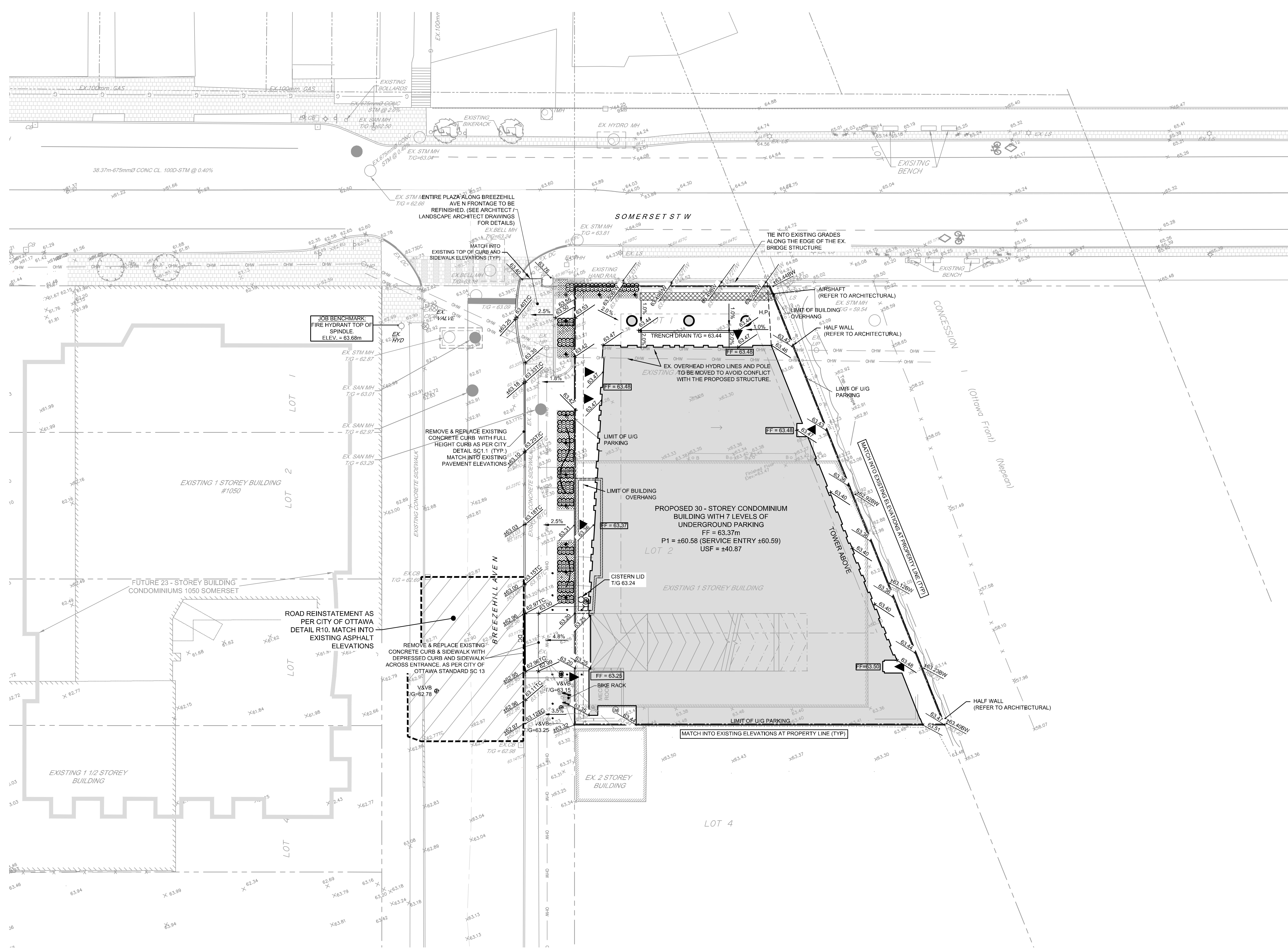
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ATTACHED DRAWINGS

112191-GP GENERAL PLAN OF SERVICES
112191-GR GRADING PLAN
112191-ESC Erosion and Sediment Control Plan
112191-SWM Stormwater Management Plan



- ### GENERAL NOTES:
- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
 - DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
 - OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
 - BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
 - RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
 - REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
 - ALL ELEVATIONS ARE GEODETIC. THE SITE BENCHMARK IS AT THE TOP OF THE SPINDLE FIRE HYDRANT LOCATED IN THE SOUTH WEST CORNER OF THE BREEZEHILL AVE. N AND SUMMERSET ST W INTERSECTION (ELEV=63.68). REFER TO ANNIS, O'SULLIVAN VOLLEBECK LTD. TOPOGRAPHIC PLAN OF PART OF LOTS 1, 2 AND 3 EAST SIDE BREEZEHILL AVE NORTH PART OF BLOCK 3, REGISTERED PLAN 73, CITY OF OTTAWA.
 - REFER TO ARCHITECTS AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
 - REFER TO STORMWATER MANAGEMENT REPORT (R-2013-004, DATED APRIL 14, 2022) AND SERVING DESIGN BRIEF (R-2013-003, DATED APRIL 14, 2022) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
 - SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
 - PROVIDE LINE/PARKING PAINTING.
 - CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING THE AS-BUILT ELEVATION OF EVERY DESIGN GRADE ON THIS PLAN.
 - REFER TO GEOTECHNICAL REPORT (NO. PG 2674-2 REVISION 4, DATED OCTOBER 4, 2021) PREPARED BY PATTERSON GROUP FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
 - ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS. ONTARIO PROVINCIAL STANDARDS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.
 - ALL PRIVATE APPROACHES MUST BE CONSTRUCTED AS PER CITY SPECIFICATION SC13.

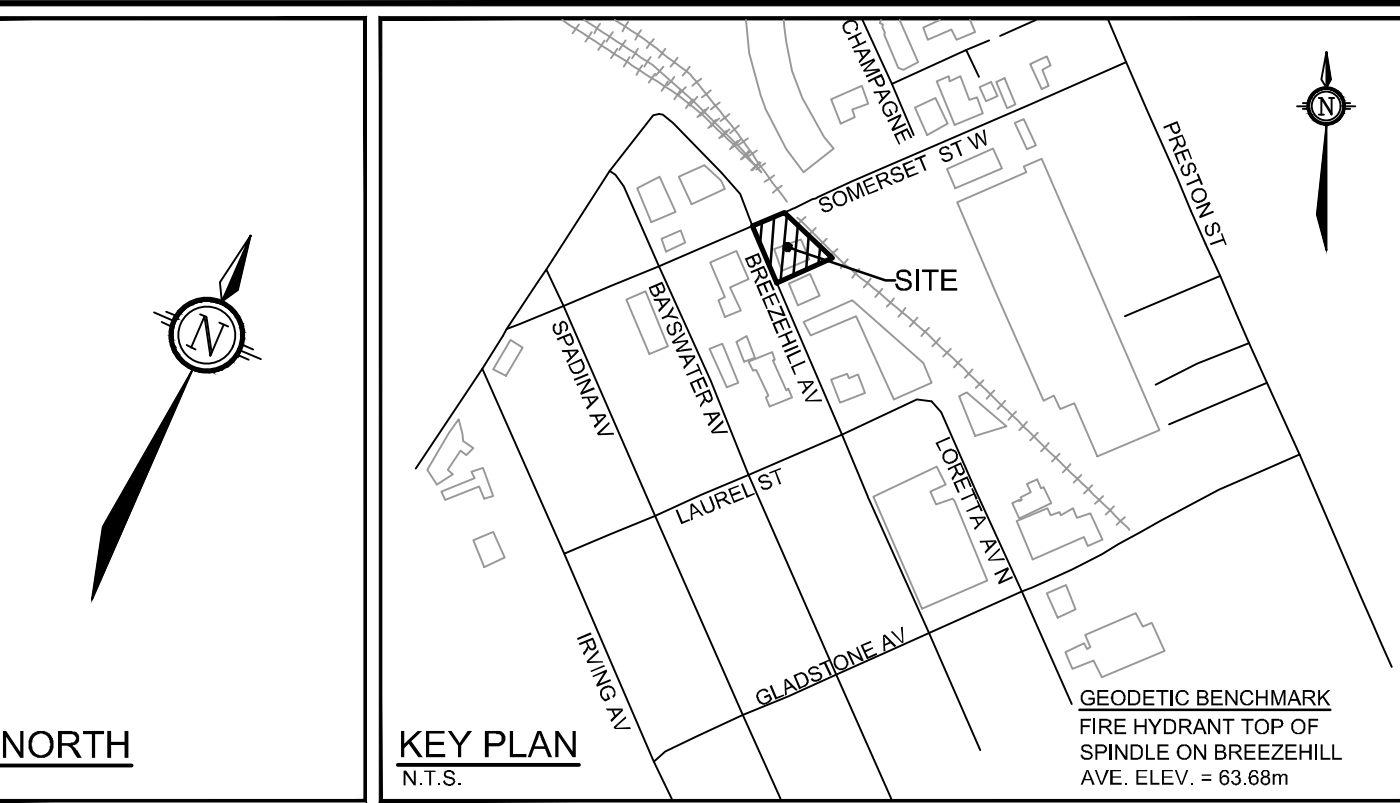
LEGEND

---	PROPERTY LINE
---	PROPOSED CURB
---	PROPOSED DEPRESSED CURB
---	PROPOSED LIMIT OF UNDERGROUND PARKING
---	PROPOSED LIMIT OF BUILDING OVERHANG
---	PROPOSED ELEVATION
---	EXISTING ELEVATION
---	EXISTING TOP OF CURB ELEVATION
---	PROPOSED TOP OF CURB ELEVATION
---	PROPOSED HIGH POINT
---	PROPOSED SLOPE
V&VB	PROPOSED WATER VALVE LOCATION
•••	PROPOSED BOLLARDS
⊗	PROPOSED GAS METER
⊗	PROPOSED REMOTE WATER METER
⊗	PROPOSED SIAMESE CONNECTION
DC	EXISTING DEPRESSED CURB
DC	EXISTING HYDRO TRANSFORMER
Be	EXISTING BOLLARD
SP	EXISTING WATER STANDPIPE
EX LS	EXISTING LAMP STANDARD
EX UP	EXISTING UTILITY POLE
T/V	EXISTING TOP OF VALVE
T/G	EXISTING TOP OF GRADE
□	EXISTING CATCH BASIN
⊗	EXISTING FIRE HYDRANT
SANMH	EXISTING SANITARY MANHOLE
STMH	EXISTING STORM MANHOLE
EX V&VB	EXISTING VALVE & VALVE BOX
OHW	EXISTING OVERHEAD WIRES
⊗	EXISTING TREES / VEGETATION
---	EXISTING CURB
---	EXISTING UTILITY POLE OR GUY WIRES
---	EXISTING FENCE

- ### GRADING NOTES:
- ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS.
 - EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL CONSULTANT.
 - ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS.
 - THE PAVEMENT GRANULAR BASE AND SUBBASE SHOULD BE PLACED IN MAXIMUM 300 mm THICK LIFTS AND COMPACTED TO A MINIMUM OF 98% OF THE MATERIAL'S SPMD USING SUITABLE VIBRATORY EQUIPMENT. IF SOFT SPOTS DEVELOP IN THE SUBGRADE DURING COMPACTION OR DUE TO CONSTRUCTION TRAFFIC, THE AFFECTED AREAS SHOULD BE EXCAVATED AND REPLACED WITH OPS GRANULAR B TYPE II MATERIAL.
 - GRADE AND/OR FILL BEHIND PROPOSED CURB AND BETWEEN BUILDINGS AND CURBS, WHERE REQUIRED TO PROVIDE POSITIVE DRAINAGE.
 - MINIMUM OF 2% GRADE FOR ALL GRASSED AREAS UNLESS OTHERWISE NOTED.
 - ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
 - ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).
 - REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.

PAVEMENT STRUCTURE:

PARKING AREAS:	125mm CONCRETE SLAB
(RIGID PAVEMENT)	300mm TO 500mm OPS GRANULAR A
	SUBGRADE, BEDROCK
ACCESS LANES:	40mm HL3 - SUPERPAVE 12.5
	50mm HL3 - SUPERPAVE 19.0
	150mm GRANULAR A
	400mm GRANULAR B TYPE II
	MINIMUM PERFORMANCE GRADE PG 58-34 ASPHALTIC CEMENT



**NOT FOR
CONSTRUCTION**

NOTE:
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CLARIDGE HOMES
CLARIDGE HOMES SUITE 2001,
210 GLADSTONE AVENUE,
OTTAWA, ONTARIO
K2P 0Y6.

NOTE:
CONTRACTOR TO CONFIRM ELEVATIONS OF INFRASTRUCTURE IN THE STREET PRIOR TO EXTENDING SERVICES INTO THE SITE AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES IMMEDIATELY.

No.	REVISION	DATE	BY
08.	ISSUED FOR CITY APPROVAL	APR 14/22	GJM
07.	ISSUED FOR COORDINATION	MAY 04/21	JAG
06.	ISSUED FOR COORDINATION	APR 29/21	JAG
05.	REVISED PER CITY COMMENTS	FEB 18/21	JAG
04.	ISSUED FOR COORDINATION	DEC 01/20	JAG
03.	REVISED PER CITY COMMENTS	AUG 24/15	JAG
02.	REVISED PER CITY COMMENTS	OCT 31/13	JAG
01.	ISSUED WITH SITE PLAN APPLICATION	JAN 31/13	GJM

SCALE
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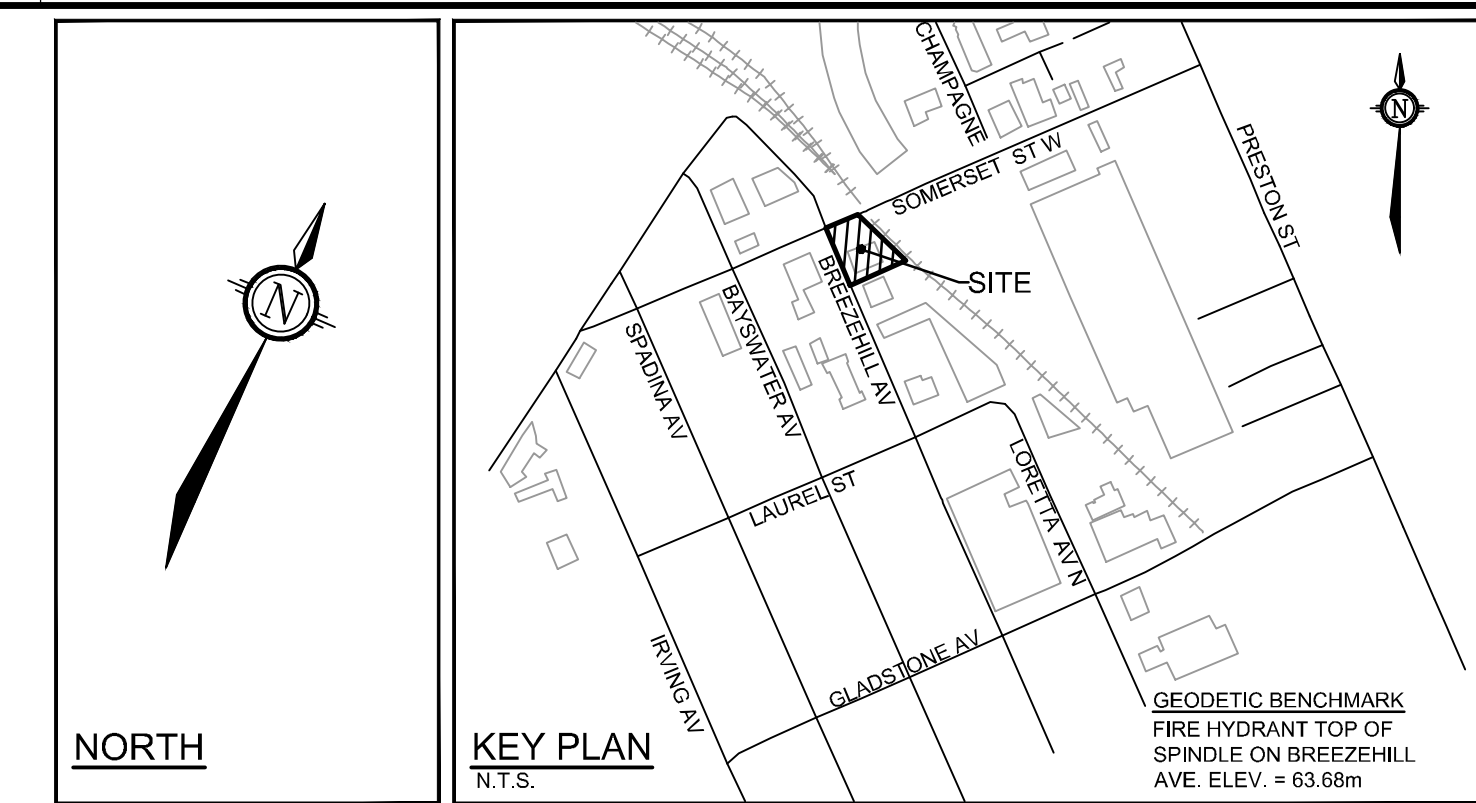
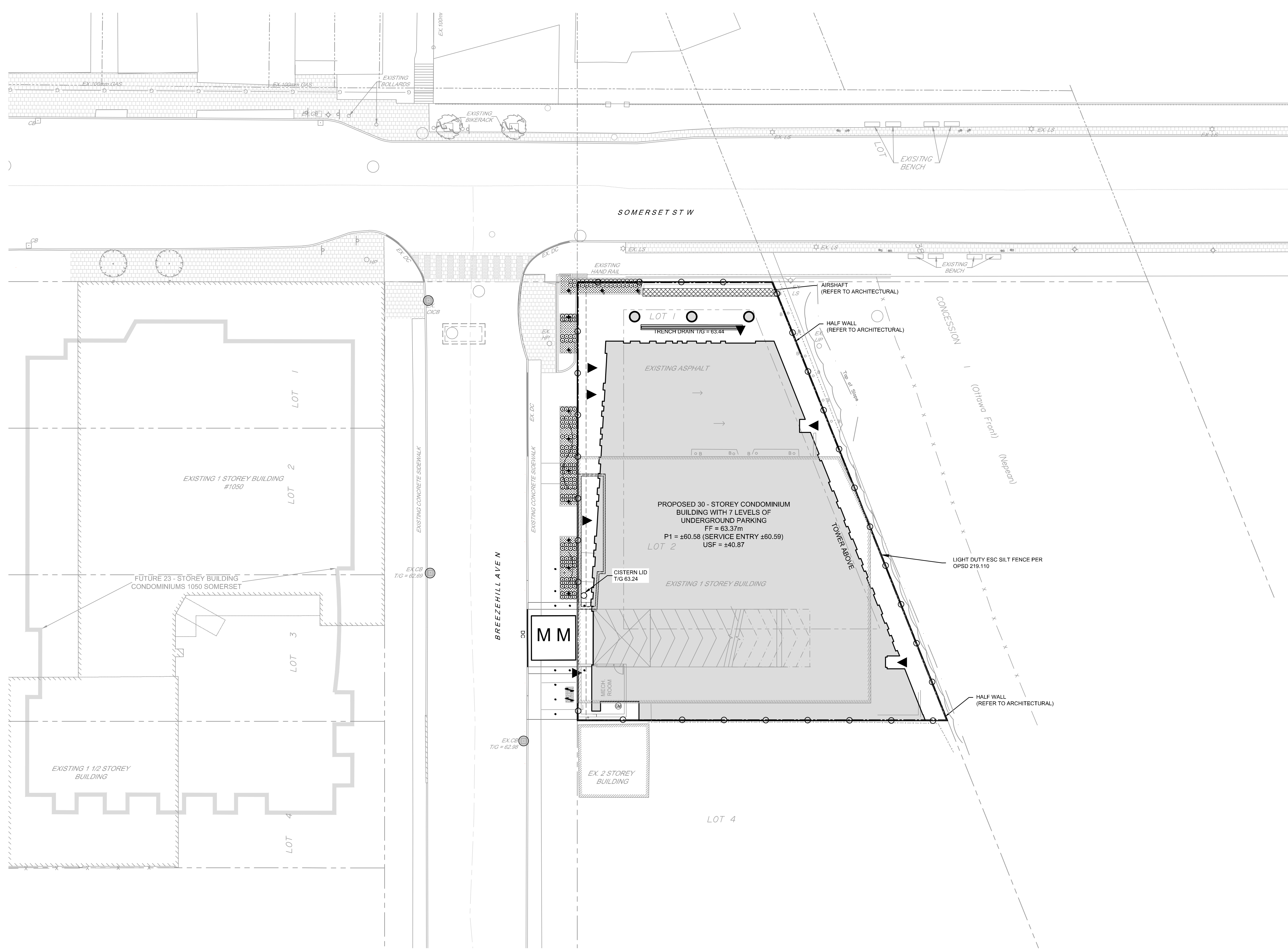
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DESIGN	JAG/ARM
CHECKED	GJM
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CHECKED	ARM
APPROVED	GJM

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION CITY OF OTTAWA 1040 SOMERSET STREET WEST	PROJECT No. 112191
DRAWING NAME GRADING PLAN	REV REV # 08
DRAWING No. 112191-GR	

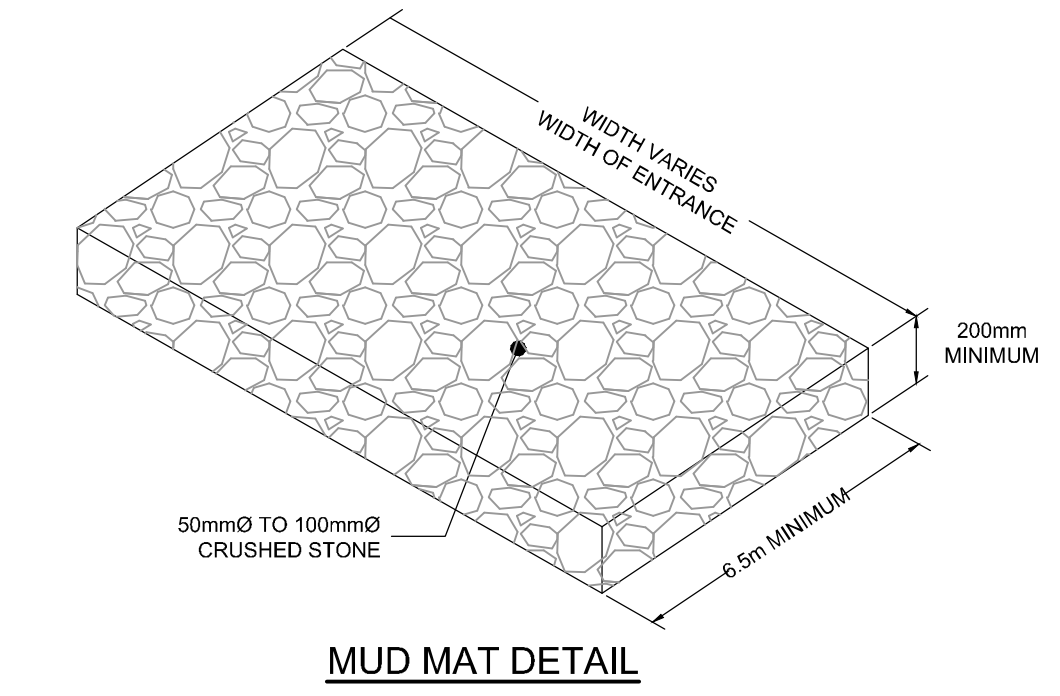
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LEGEND

---	PROPERTY LINE
- - - -	PROPOSED LIMIT OF UNDERGROUND PARKING
- - - -	PROPOSED LIMIT OF BUILDING OVERHANG
---	PROPOSED CURB
DC	PROPOSED DEPRESSED CURB
---	PROPOSED BOLLARDS
---	PROPOSED TRENCH DRAIN
---	PROPOSED BUILDING ENTRANCE
---	PROPOSED FILTER BAGS AT CATCHBASINS AND CATCHBASIN MANHOLES
MM	PROPOSED MUD MAT
---	LIGHT DUTY SILT FENCE (OPSD 219.110)
DC	EXISTING DEPRESSED CURB
HT	EXISTING HYDRO TRANSFORMER
BL	EXISTING BOLLARD
EX LS	EXISTING LAMP POST
EX CB	EXISTING CATCH BASIN
STMMH	EXISTING STORM MANHOLE
---	EXISTING TREES / VEGETATION
---	EXISTING CURB
EX UP	EXISTING UTILITY POLE C/W GUY WIRES
---	EXISTING FENCE

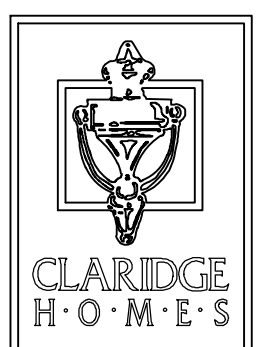
- EROSION AND SEDIMENT CONTROL NOTES:**
- 1) ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF OTTAWA. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
 - 2) TO PREVENT SURFACE EROSION FROM ENTERING THE DITCH OR STORM SYSTEM DURING CONSTRUCTION, FILTER CLOTH WILL BE PLACED UNDER GRATES OF CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED ALONG THE PROPERTY LINES. THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION IS COMPLETE.
 - 3) THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
 - 4) THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. 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.
 - 5) THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
 - 6) ROADWAYS ARE TO BE SWEEP AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR MUNICIPALITY.
 - 7) THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.



NOT FOR CONSTRUCTION

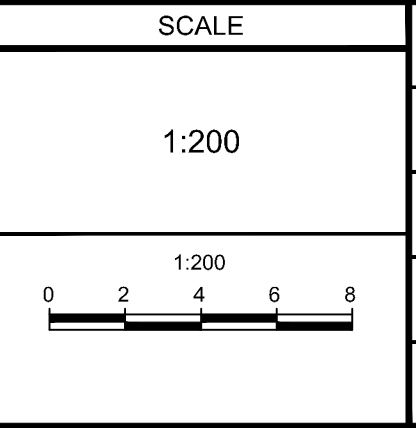
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K2P 0Y6.



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No.	REVISION	DATE	BY
1.	REISSUED FOR CITY APPROVAL	APR 14/22	GJM



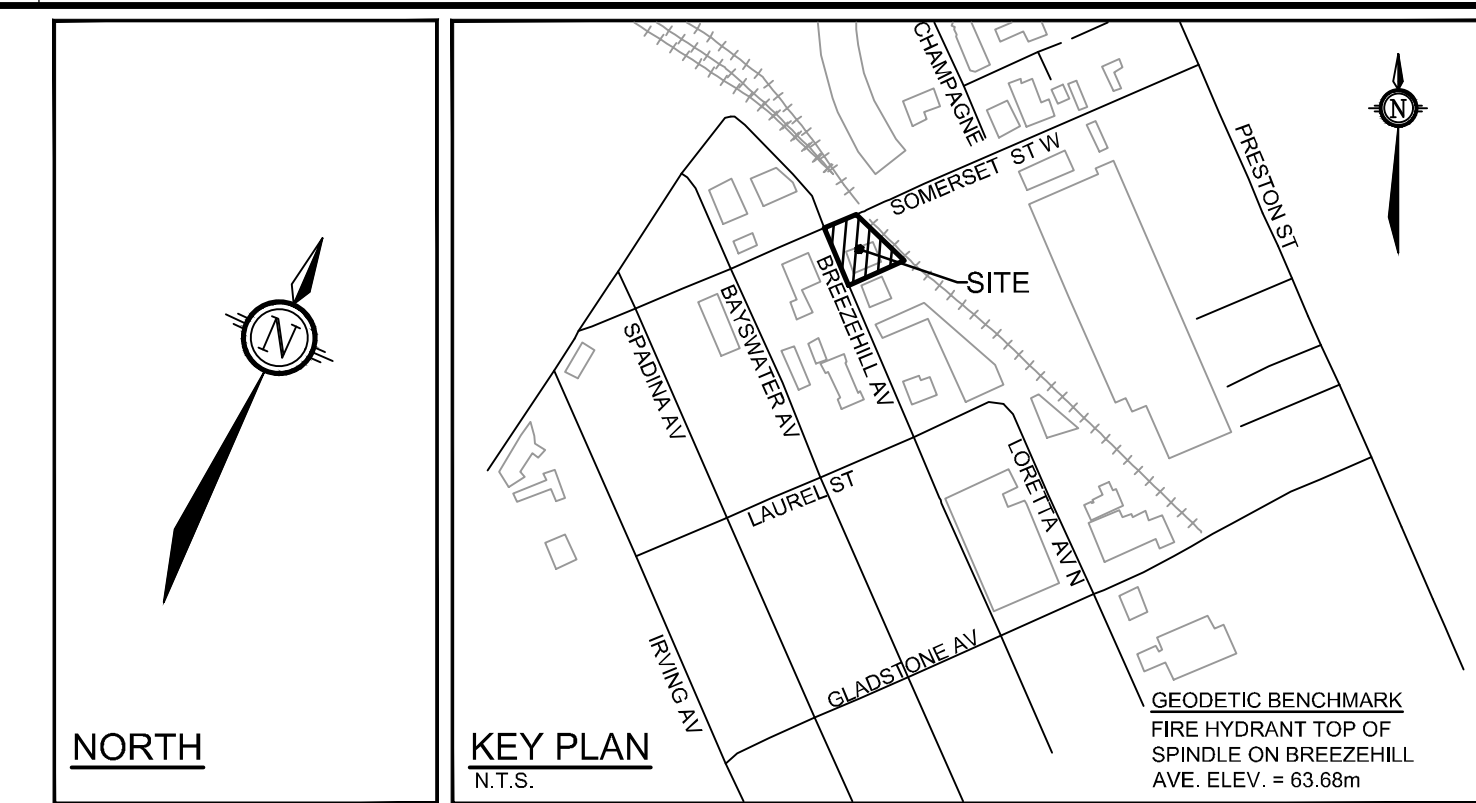
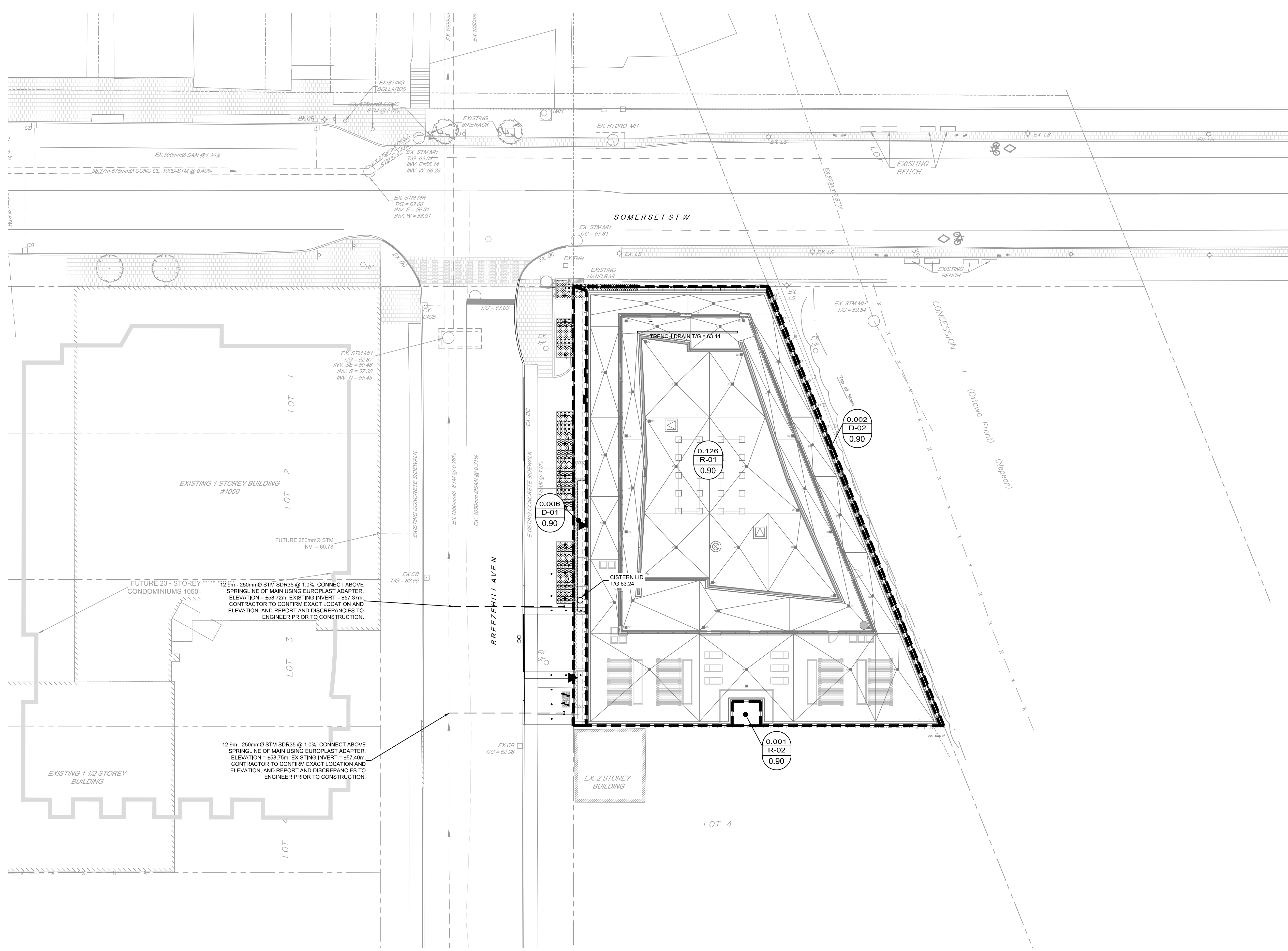
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DESIGN: C/JF
CHECKED: ARM
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APPROVED: GJM

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LOCATION CITY OF OTTAWA 1040 SOMERSET STREET WEST	PROJECT No. 112191
DRAWING NAME EROSION AND SEDIMENT CONTROL PLAN	REV # 1
DRAWING No. 112191-ESC	

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PLANNED 2017 03/03/2017 10:29am

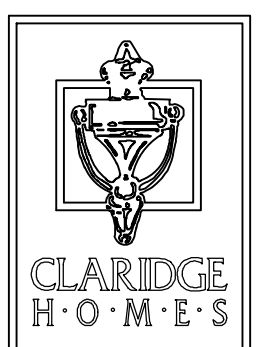


LEGEND

	PROPERTY LINE		STORM DRAINAGE AREA
	PROPOSED DEPRESSED CURB		0.0059 DRAINAGE AREA (HECTARES)
	PROPOSED LIMIT OF UNDERGROUND PARKING		A-1 DRAINAGE AREA I.D.
	PROPOSED LIMIT OF BUILDING OVERHANG		0.90 RUN-OFF COEFFICIENT
	PROPOSED BUILDING ENTRANCE		
	PROPOSED STORM SEWER		
	EXISTING DEPRESSED CURB		
	EXISTING HYDRO TRANSFORMER		
	EXISTING BOLLARD		
	EXISTING LAMP STANDARD		
	EXISTING UTILITY POLE		
	EXISTING TOP OF VALVE		
	EXISTING TOP OF GRATE		
	EXISTING CATCH BASIN		
	EXISTING FIRE HYDRANT		
	EXISTING STORM MANHOLE		
	EXISTING OVERHEAD WIRES		
	EXISTING TREES / VEGETATION		
	EXISTING CURB		
	EXISTING UTILITY POLE C/W GUY WIRES		
	EXISTING FENCE		

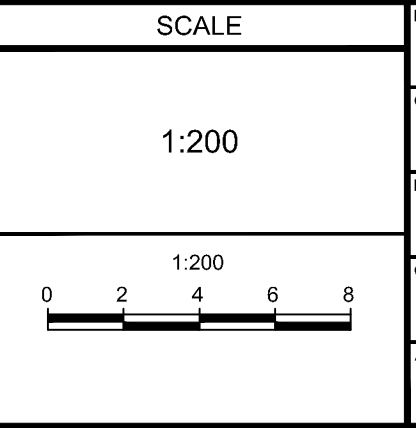
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 K2P 0Y6.



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No.	REVISION	DATE	BY
02.	ISSUED FOR CITY APPROVAL	APR 14/22	GJM
01.	ISSUED WITH SITE PLAN APPLICATION	JAN 31/13	GJM



DESIGN	JAG
CHECKED	GJM
DRAWN	MTM
CHECKED	JAG
APPROVED	GJM

FOR REVIEW ONLY



LOCATION
 CITY OF OTTAWA
 1040 SOMERSET STREET WEST

DRAWING NAME
STORMWATER MANAGEMENT PLAN

PROJECT No.	112191
REV	REV # 02
DRAWING No.	112191-SWM

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