

Site Servicing & Storm Water Management Report

**Three-Storey Residential Building
352 Somerset Street
Ottawa, ON**

Ainley Group
Project No. 21038-1

Prepared for:
TKS Holdings Inc.

March 29, 2023



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1.0 INTRODUCTION

The Ainley Group has been retained by TKS Holdings Inc. to prepare a Site Servicing & Stormwater Management report addressing the Site Plan Approval process requirements of the City of Ottawa.

The subject site is located at 352 Somerset Street West, at the south / east corner of Somerset Street West and Bank Street, (See Key Map in Appendix A).

The subject site has an area of 0.058 ha (i.e. 6,278.26 sq.ft). We note that a section of the existing building has already been demolished / removed while the other half still exists. The demolished portion will be replaced with a new building addition with a similar footprint. The existing building portion and the proposed new building addition will occupy the whole site. The proposed development will be a 3 storey (14.9 m to Top of roof) building. The building includes a basement and ground floor for commercial use, and 2nd and 3rd floors for residential use. The total combined floor area is approx. 1,980 sq.m. There are a total of 14 residential units divided into bachelor, one-bedroom and two-bedroom types (i.e. 1 unit, 8 units, and 5 units respectively). The area of the commercial space on the ground floor is 435 sq.m and the area of the commercial space in the basement level is 453 sq.m.

This report will address the sanitary, storm, and water servicing requirements for the proposed 3 storey apartment building as well as the stormwater management requirements.

2.0 MUNICIPAL DRINKING & FIRE PROTECTION WATER SERVICES

Using the City of Ottawa guidelines, the anticipated average daily demand for the 3-storey apartment building has been calculated at **0.13 L/s** as follows:

- 1 unit (bachelor) X 1.4 persons per unit X 350 L/person/day = 490 L/day = 0.006 L/s
- 8 units (1 bedroom) X 1.4 persons per unit X 350 L/person/day = 3,920 L/day = 0.05 L/s
- 5 units (2 bedrooms) X 2.1 persons per unit X 350 L/person/day = 3,675 L/day = 0.04 L/s
- 0.0888ha (435 sq.m + 453 sq.m) X 28,000 L/gross ha/d = 2,486 L/day = 0.03 L/s

Only one 150mm diameter water service is required to service the 3-storey apartment building since the average daily demand is less than 50cu.m/day (0.57 L/s). Therefore, the intent is to reuse the existing 150mm diameter building water service connecting to the existing 406mm diameter watermain along Somerset Street West. However, the contractor is required to confirm the pipe size and condition of the existing water service and be reviewed by the engineer for adequacy prior to construction. The existing water service location can be seen on drawing 21038–EX1 & REM1 in Appendix D.

The anticipated maximum daily demand and maximum hourly daily demand (peak hour) based on peaking factors from MOE Table 3.3 – Peaking Factors for Drinking-Water Systems Serving Fewer than 500 People for residential use and City of Ottawa guidelines for commercial use will be **0.88 L/s** and **1.30 L/s** respectively. The peaking factors for the 14 residential units are estimated by applying a power trendline fitting curve to the data presented in MOE Table 3.3 (Appendix B).

- Average Daily Demand: 0.10 L/s (residential) + 0.03 L/s (commercial) = 0.13 L/s
- Max. Daily Demand: 0.10 L/s X 8.3 (peaking factor for 14 units serviced) + 0.03 L/s X 1.5 (commercial) = 0.88 L/s
- Max. Hourly Daily Demand (Peak Hour): 0.10 L/s X 12.5 (peaking factor for 14 units serviced) + 0.03 L/s X 1.8 (commercial) = 1.30 L/s

The anticipated fire flow (based on the Fire Underwriters Survey – Water Supply for Public Fire Protection 2020) was calculated to be **6,000 L/min** or **100 L/s**. A detailed calculation can be seen in Appendix B.

There are three (3) fire hydrants located in close proximity to the development. Fire hydrant distance to the nearest face of the proposed building is summarized below. The location of the Fire Hydrants and the Exposure Distances can be seen in Appendix B.

Fire Hydrant ID	Distance to Building (m)
366030H350	28.0
366030H189	32.8
366030H188	18.0

The aggregate fire flow capacity of all contributing hydrants noted above (3 x 5678 = **17,034 L/min**) is **greater** than the required fire flow (**6,000 L/min**) for the proposed building. The hydrant capacity is assessed based on Table 18.5.4.3 – Maximum Fire Flow Hydrant Capacity found in the City of Ottawa Technical Bulletin ISTB-2018-02 Revisions to Ottawa Design Guidelines – Water Distribution and summarized below.

Distance to Building (m)	Maximum Fire Flow Hydrant Capacity (L/min)
< 76	5678
> 76 and < 152	3785
> 152 and < 305	2839

A boundary condition analysis has been provided by the City of Ottawa. The results are as follows and can be seen in Appendix B. It should be noted that these values reflect the previous building condition (i.e. when the design was for a 9-storey building), however, they are deemed applicable to the current condition (i.e. 3-storey building).

Minimum HGL = 106.7 m

Maximum HGL = 115.4 m

Max Day + Fire Flow = 109.4 m

Based on a ground elevation of 72.5 m and using the hydrostatic pressure equation $P = \rho gh$, where P = water pressure, ρ = water density ($\sim 1,000 \text{ kg/m}^3$), g = gravitational acceleration (9.81 m/s^2), and h = water depth. $1 \text{ psi} \approx 6.9 \text{ kPa}$.

Minimum HGL = $1,000 \text{ kg/m}^3 \times 9.81 \text{ m/s}^2 \times (106.7 - 72.5) \text{ m} = 335 \text{ kPa} = 49 \text{ psi}$

Maximum HGL = $1,000 \text{ kg/m}^3 \times 9.81 \text{ m/s}^2 \times (115.4 - 72.5) \text{ m} = 420 \text{ kPa} = 61 \text{ psi}$

Max Day + Fire Flow = $1,000 \text{ kg/m}^3 \times 9.81 \text{ m/s}^2 \times (109.4 - 72.5) \text{ m} = 362 \text{ kPa} = 53 \text{ psi}$

Ainley has reviewed the results of the City of Ottawa hydraulic analysis and find that they meet the requirements set out by the ODG for water distribution, as seen below:

- Normal operating pressure ranges between 50 psi and 80 psi under a condition of maximum daily flow.
- Under maximum hourly demand conditions, the pressures are not less than 40 psi.
- During periods of maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 20 psi.
- The maximum pressure at any point in the distribution system in occupied areas outside of the public right-of-way shall not exceed 80 psi.
- The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 100 psi.

3.0 SANITARY SEWER SERVICES

Based on the average daily demand of 0.13 L/s calculated above in section 2.0 (i.e. 0.10 L/s - residential and 0.03 L/s - commercial), the anticipated peak sanitary flow has been calculated at **0.50 L/s**.

- 0.10 L/s X 4.4 (peaking factor for domestic flow using Harmon Formula) + 0.03 L/s X 1.5 (peaking factor for commercial flow) = 0.49 L/s
- 0.49 L/s + (0.058 ha X 0.28 L/s/gross ha) = 0.50 L/s

A standard 0.28 L/s/gross ha was used for infiltration allowance.

The intent is to reuse the existing 150mm diameter building sanitary service connecting to the existing 450mm diameter sanitary sewer along Somerset Street West. However, the contractor is required to complete CCTV inspection and report on the existing sanitary service pipe and be reviewed by the engineer for adequacy prior to site plan approval. The existing sanitary service location can be seen on drawing 21038–EX1 & REM1 in Appendix D.

4.0 DRAINAGE & STORM SEWER SYSTEM

With regards to stormwater management, we note that only the new building addition (i.e. based on the email received March 10, 2023 from the City of Ottawa - please see attached correspondence / email in Appendix C) was to be controlled up to and including the 100 year storm event to a 2 year pre-development level.

Rational Method

$$Q = R \times A \times I \times N$$

Building Addition Area	A =	0.028 hectares
Runoff Coefficient	R =	0.90 (actual)
	R =	0.50 (used)
Time of Concentration	T _c =	10 min
2-year Rainfall Intensity	I =	76.81 mm/hr

$$\begin{aligned} \text{2-year Pre-Development Flow:} \quad Q &= 0.50 \times 0.028 \times 76.81 \times 2.78 \\ Q &= 3.0 \text{ L/s} \end{aligned}$$

Although the building is taking up all of the site (i.e. the existing building plus the new building addition), we note, based on correspondence with the City, that the stormwater control will only be required on the new building addition (i.e. the existing building will remain uncontrolled). Therefore, the new building addition will be controlled to the aforementioned 2-year pre-development level.

Thus, the total 100 year Post-Development release rate for the building addition shall be less or equal to **3.0 L/s**.

This shall be achieved by providing a storm water tank (i.e. cistern) inside the building.
(Refer to the Storm Water Management Plan Dwg. 21038 – SWM1” in Appendix ‘D’)

Storm water tank storage requirements including maximum release rate has been determined for the building and shall be implemented by the Mechanical Engineer as follows:

Storm Water Tank 100-year Storage volume requirements = **7.6 cu.m**
Storm Water Tank Controlled Release Rate = **3.0 L/s**

A submersible pump with a constant release rate (no greater than 3.0 L/s) is anticipated. Also, the storm water tank shall have an emergency spill outlet towards the Right of Way should the cistern or outlet fail. Foundation and/or under slab drains are to be connected downstream of any cistern controls.

Storage volume requirements were determined by applying the 5-year and 100-year rainfall intensity values at 10-minute intervals until a peak storage volume was attained, (Refer to Storage Table 2 in Appendix ‘C’).

The intent is to reuse the existing 150mm diameter building storm service connecting to the existing 525mm diameter storm sewer along Somerset Street West. However, the contractor is required to complete CCTV inspection and report on the existing storm service pipe and be reviewed by the engineer for adequacy prior to site plan approval. The existing storm service location can be seen on drawing 21038–EX1 & REM1 in Appendix D.

Based on the proposed site plan, and further to our discussion / correspondence with the RVCA, it was confirmed that no on-site stormwater quality requirements will be required for this site (please see attached correspondence / email in Appendix C).

Also, based on our review, it's our understanding that the exemptions set out under Ontario Regulations 525/98 - Approval Exemptions are satisfied and that this project will not be subject to an Environmental Compliance Approval (ECA). Since the City of Ottawa participates in the ToR program, it's the Ministry's expectation that the ECA requirement determination would be completed by the City's review engineer/project manager. In situations where the review engineer/project manager is unsure of the requirements, it is expected that the City would contact MECP Ottawa District Office for clarification.

5.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures shall be implemented during construction to minimize the migration of sediments from the proposed construction. To accomplish this task, items such as silt fences and geo-textile membranes shall be installed to capture sediment before it leaves the construction area. Since the building footprint is basically the entire site, and that the existing building and proposed building has a basement, we expect this to be one large excavation. During construction, all erosion control features shall be maintained and repaired as necessary and adjacent roadways kept free of debris and sediment as required. A mud mat may be required on construction entrances to the site, depending on frequency of heavy vehicle travel and condition of the site.

(Refer to the Grading and Sediment Erosion Control Plan "Dwg. 21038 – GR1" in Appendix 'D').

6.0 CONCLUSION

1. The max daily and fire flow water demands for the site were calculated to be 0.88 L/s and 100 L/s respectively. A building fire sprinkler system is anticipated in this development.
2. The peak wastewater flow for the site was calculated to be 0.50 L/s including the infiltration allowance.
3. The stormwater management measures proposed will result in a 100-year post-development release rate of 3.0 L/s, which is less/equal to the allowable release rate of 3.0 L/s. A storm water tank (i.e. cistern) will be constructed in the building to achieve the 100 year stormwater storage requirement of 7.6 cu.m.

We trust that this Site Servicing & Stormwater Management report meets all of your requirements. Should you have any questions or require further clarification, please do not hesitate to contact our office.

Sincerely,

Prepared by:



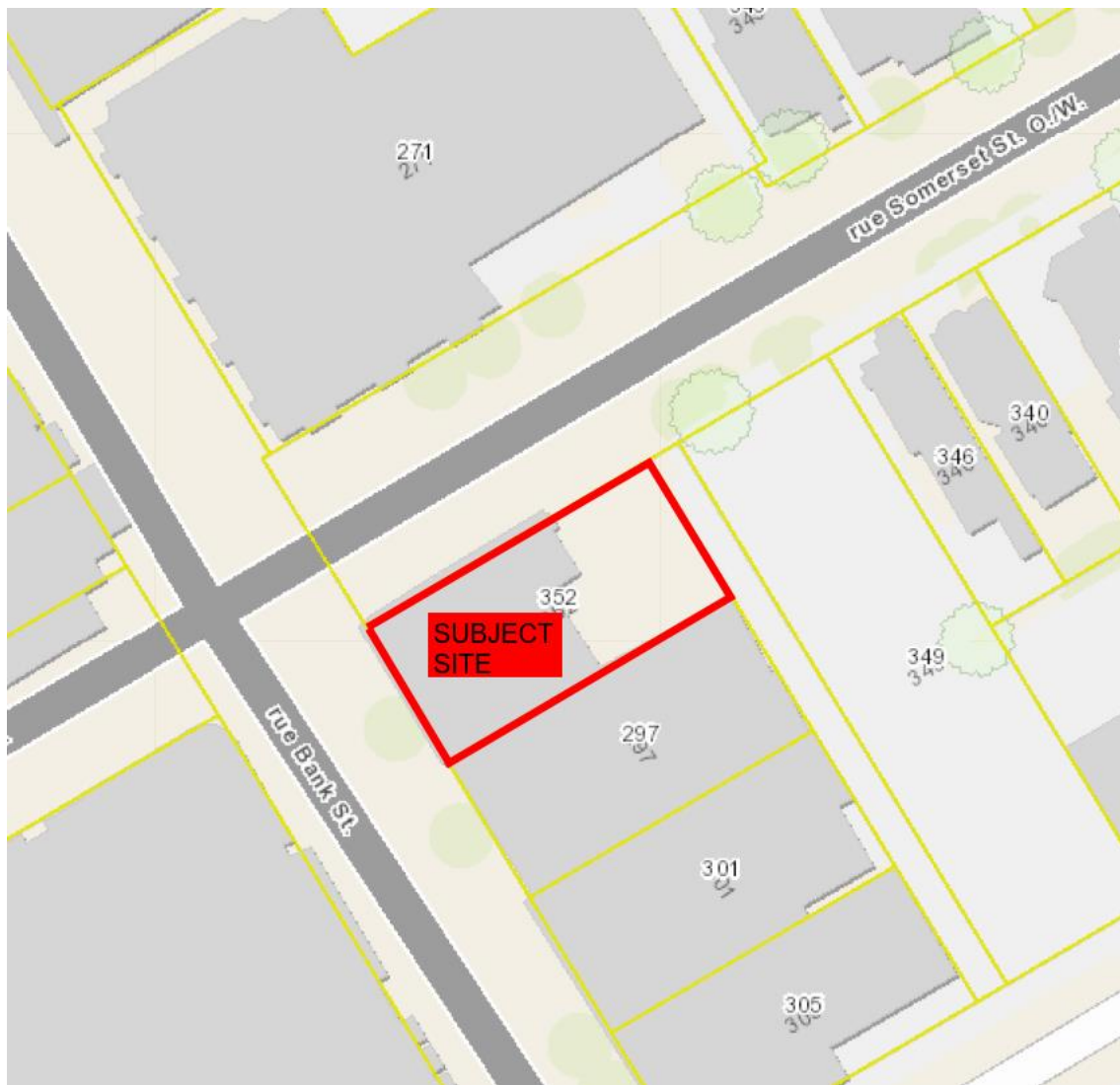
Jiawu Xu, LEL, C.E.T.
Project Manager

Reviewed by:



Guy Ste-Croix, LEL, C.E.T., PMP
Vice President & Branch Manager

APPENDIX A



APPENDIX B

FUS Calculations

352 Somerset Street

$$F = 220 \times C \times \sqrt{A}$$

Where $C = 0.6$ for fire-resistive construction (fully protected frame, floors, roof)

For fire-resistive building (Type I Construction), consider the two largest adjoining floors plus 50 percent of all floors immediately above them up to a maximum of eight, when the vertical openings are inadequately protected. If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider only the area of the largest floor plus 25 percent of each of the two immediately adjoining floors.

We note the following statements would apply for this project / building:

- The north and west exterior walls would not have a fire rating. The south exterior wall would be 1 or 2 hours as would be the east exterior wall.

Therefore, it's our interpretation that the underlined requirement noted above shall apply for this project / building.

Floor area (1st or ground floor) = 435m²

Floor area (2th floor) = 500 m²

Floor area (3th floor + Mezzanine) = 480 + 115 = 595 m²

$A = (435 + 500) + (0.5 \times 595)$

$A = 1,235 \text{ m}^2$

$$F = 220 \times 0.6 \times \sqrt{1,235}$$

$$F = 4,639 \text{ L/min}$$

$F \sim 5,000 \text{ L/min}$, rounded to the nearest 1,000 L/min

FUS Reductions / Increases:

Occupancy and Contents Adjustment Factor

It is noted that 'Apartments' are examples of Low Hazard Occupancies.

Therefore, a "limited combustibility" reduction of 15% (750 L/min) will be applied.

$$F = 4,250 \text{ L/min}$$

Modifier for Sprinkler System

A conservative modifier of 25% will be applied under the assumption that the sprinkler system will conform to the current standards required by the NFPA. It is possible to increase this credit by either providing a standard water supply for both the system and fire department hose lines, and/or providing a fully supervised system.

$$M_1 = 1,250 \text{ L/min}$$

Modifier for Exposure

The proposed building will have the following approximate clearances to existing structures:

East: bet'w 20.1 and 30m *10% increase*
West: bet'w 10.1 and 20m *15% increase*
North: bet'w 20.01 and 30m *10% increase*
South: bet'w 0 and 3m *25% increase*
Total Increase: *60%*

$$M_2 = 3,000 \text{ L/min}$$

The final fire flow, according to the FUS, will be the fire flow as a result of the Occupancy reduction (4,250 L/s), minus the value M_1 , and plus the value M_2 .

$$F = 4,250 \text{ L/min} - 1,250 \text{ L/min} + 3,000 \text{ L/min}$$

$$F = 6,000 \text{ L/min}$$

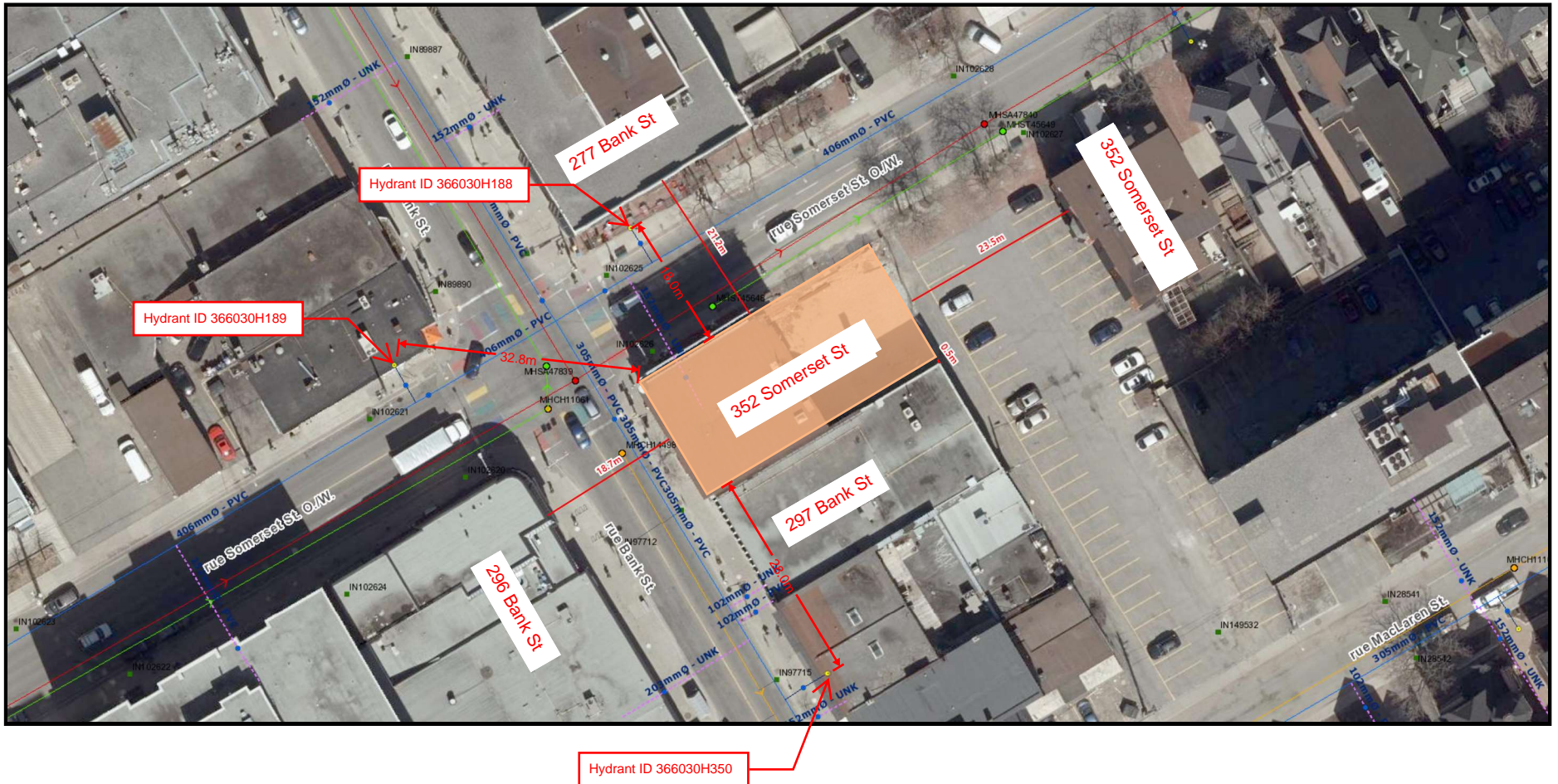
$$F \sim 6,000 \text{ L/min, rounded to the nearest 1,000 L/min}$$

$$F \sim 100.0 \text{ L/s}$$

Conclusion:

The conservative FUS fire flow requirement for this building (based on our assumptions noted above) is **100.0 L/s**.

FUS EXPOSURE DISTANCE AND FIRE HYDRANT COVERAGE PLAN 352 Somerset St



MOE - Design Guideline for Drinking Water Systems

Table 3-3 Peaking Factors for Drinking Water Systems Serving Fewer than 500 People

Dwelling Units Served	Maximum Day Factor	Peak Hour Factor
10	9.5	14.3
50	4.9	7.4
100	3.6	5.4
150	3.0	4.5
167	2.9	4.3

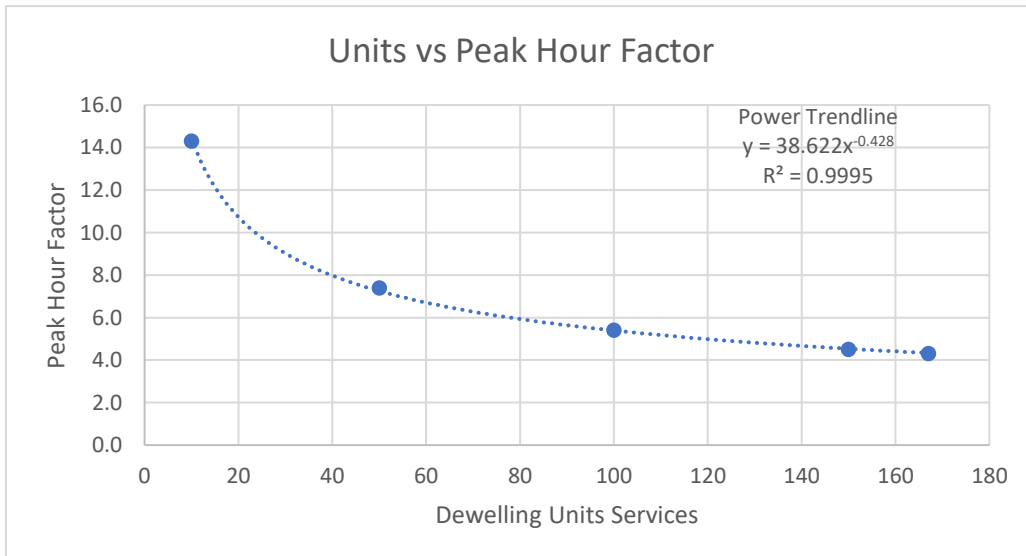
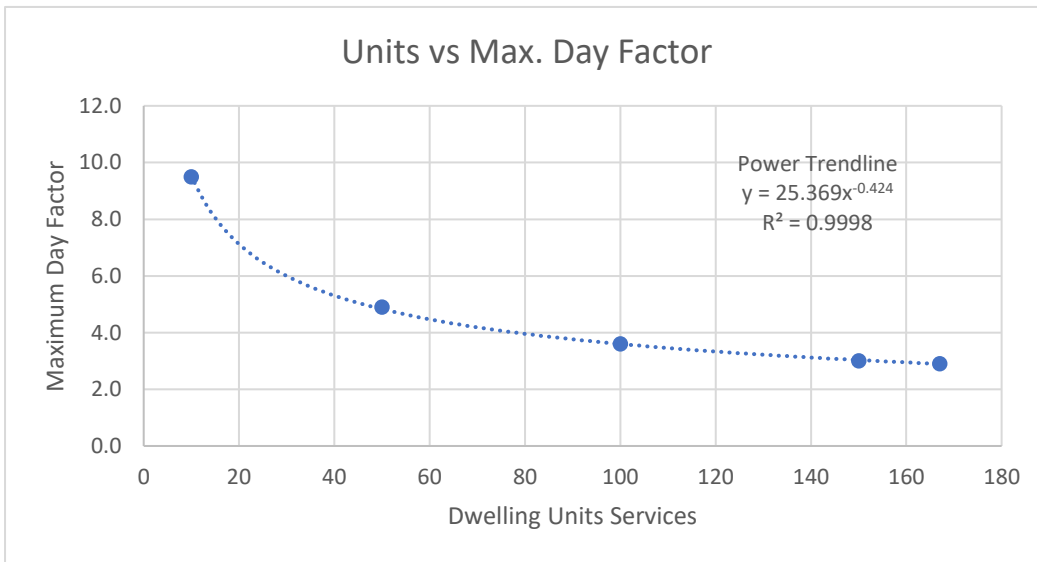
Thus for,

14

8.3

12.5

$y = 25.369x^{-0.424}$ $y = 38.622x^{-0.428}$



APPENDIX C

AINLEY Project: 21038-Somerset House
Location: 352 Somerset Street
Client: Chmielarchitects

Table 1. Stormwater Management Summary Sheet

Sub Area I.D.	Sub Area (ha)	C = 0.25	C = 0.6	C = 0.9	Composite 'C'	Outlet Location	5 year Controlled Release (L/s)	100 year Controlled Release (L/s)
A1	0.0281	0.0000	0.0000	0.0281	0.90	Cistern	3.0	3.0
Overall site	0.0281	0.0000	0.0000	0.0281	0.90		3.0	3.0
	2 year allowable release rate							
	2.78*0.0281*0.5*76.81=		3.0					

AINLEY Project: 21038-Somerset House						
Location: 352 Somerset Street						
Client: Chmielarchitects						
Table 2. Storage Requirements for AREA A1						
Area		0.03	hectares			
5 year Runoff Coefficient =		0.90	post developme	100 year Runoff Coefficient =	1.00	
Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m3
	10	104.19	7.33	3.0	4.3	2.6
5 Year	20	70.25	4.94	3.0	1.9	2.3
	30	53.93	3.79	3.0	0.8	1.4
	40	44.18	3.11	3.0	0.1	0.3
	50	37.65	2.65	3.0	-0.4	-1.1
	10	178.56	13.95	3.0	10.9	6.6
100 Year	20	119.95	9.37	3.0	6.4	7.6
	30	91.87	7.18	3.0	4.2	7.5
	40	75.15	5.87	3.0	2.9	6.9
	50	63.95	5.00	3.0	2.0	6.0

Guy Ste-Croix

From: Guy Ste-Croix
Sent: December 15, 2021 1:12 PM
To: Guy Ste-Croix
Subject: FW: 21-1959 352 Somerset Street (Somerset House)
Attachments: 352 Somerset Street December 2021.pdf

From: Wu, John <John.Wu@ottawa.ca>
Sent: December 15, 2021 11:20 AM
To: Guy Ste-Croix <stecroix@ainleygroup.com>
Subject: RE: 21-1959 352 Somerset Street (Somerset House)

Here is the result:

The following are boundary conditions, HGL, for hydraulic analysis 352 Somerset Street (zone 1W) assumed to be connected to the 406 mm watermain on Somerset Street (see attached PDF for location).

Minimum HGL: 106.7 m

Maximum HGL: 115.4 m

Max Day + FF (133.3 L/s): 109.4 m

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

John

From: Guy Ste-Croix <stecroix@ainleygroup.com>
Sent: December 8, 2021 9:00 AM
To: Wu, John <John.Wu@ottawa.ca>; Hamlin, Allison <Allison.Hamlin@ottawa.ca>
Cc: 'Richard A Chmiel' <RichardC@chmielarchitects.com>; Jamil Afana <jamila@chmielarchitects.com>
Subject: RE: 21-1959 352 Somerset Street (Somerset House)

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.

At this time, we ask that the City provide boundary conditions for the 352 Somerset Street project. We note that the proposed development will be a 9 storey apartment building with 48 residential units and 3 commercial retail units. The 48 residential units will be divided into 40 one-bedroom and 8 two-bedroom apartments.

We provide the following information:

- Average Daily Demand = 0.32 L/s
- Max. Daily Demand = 1.50 L/s
- Peak Hour Demand = 2.26 L/s
- Fire Flow req'm = 133.3 L/s (see attached)
- Ex. fire hydrant location / ID (see attached)

We note that the peaking factors used to calculate the anticipated residential maximum daily demand and maximum hourly daily demand (peak hour) is based on MOE Table 3.3 – Peaking Factors for Drinking-Water Systems Serving Fewer than 500 People.

Should you have any questions, please don't hesitate to call.

Regards,

Guy Ste-Croix, LEL, C.E.T., PMP
Vice President & Branch Manager



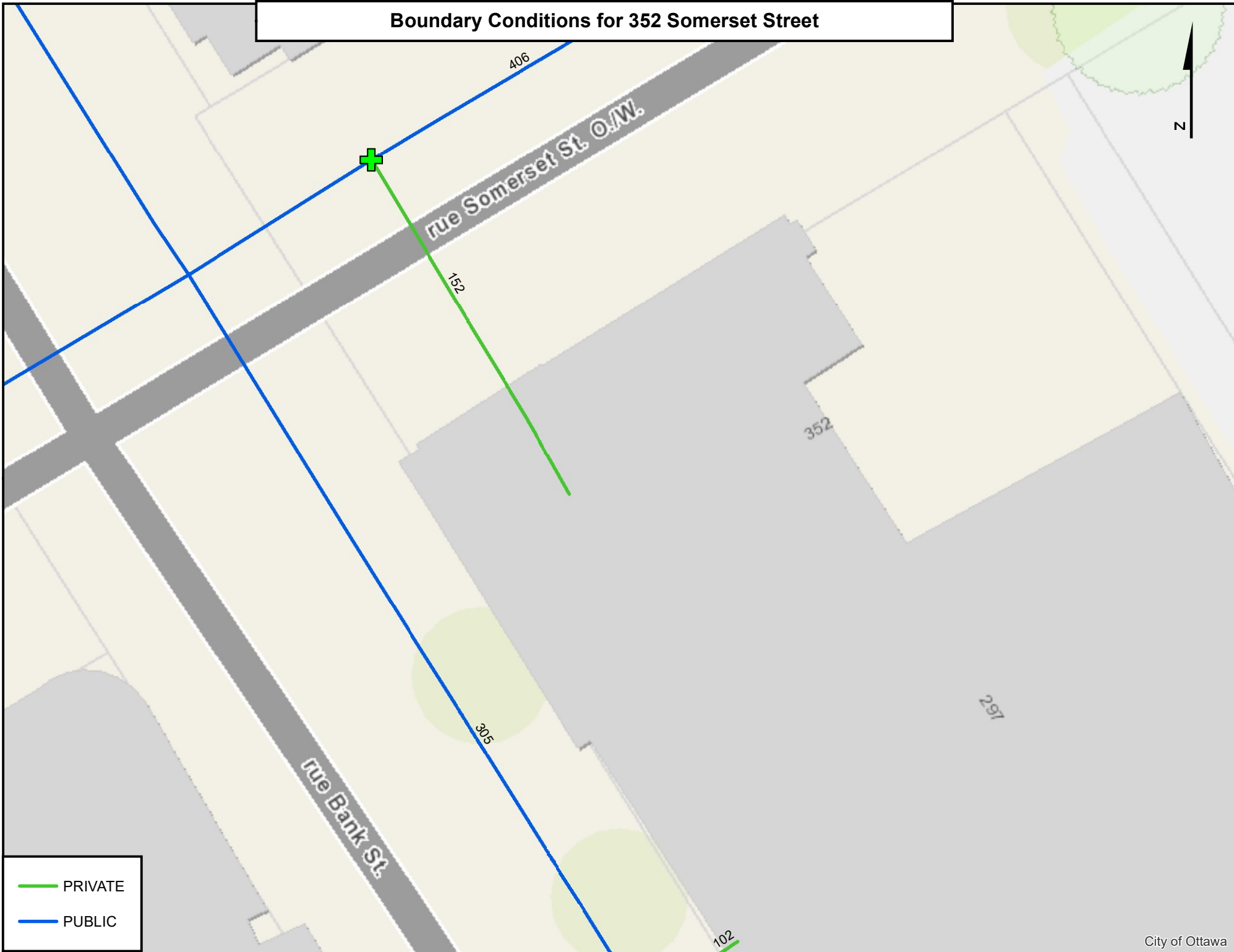
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Boundary Conditions for 352 Somerset Street



- PRIVATE
- PUBLIC

Anmar Al-Faraj

To: Bakhit, Reza; Guy Ste-Croix
Cc: Jiawu Xu; van Wyk, Adrian; Fitzpatrick, Anne
Subject: RE: 21-1952-352 Somerset Street W Pre-con

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: March 10, 2023 10:38 AM
To: van Wyk, Adrian <adrian.vanwyk@ottawa.ca>
Cc: Fitzpatrick, Anne <Anne.Fitzpatrick@ottawa.ca>
Subject: 352 Somerset Street W Pre-con

Hi Adrian,

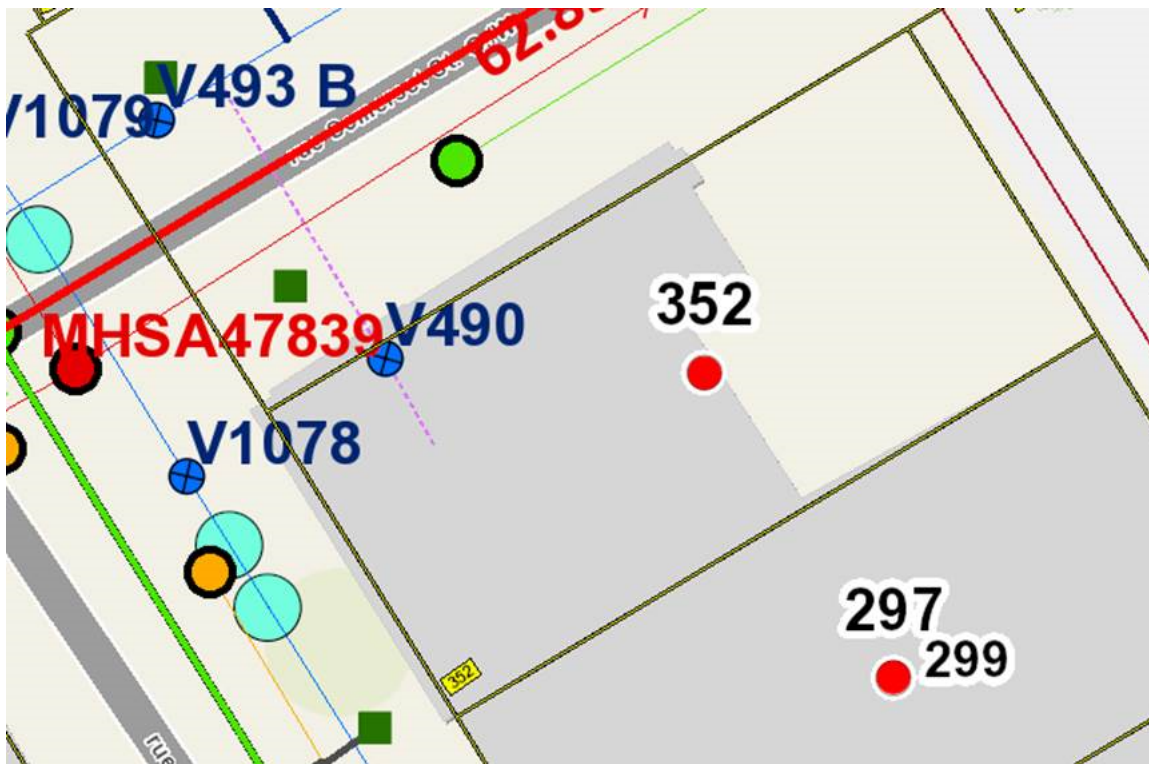
Please forward the below information to the applicant regarding a development proposal at **352 Somerset Street W**. Note that the information is considered **preliminary**, and the assigned Development Review Project Manager may modify and/or add additional requirements and conditions upon review of an application if deemed necessary.

General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided and all easements shall be shown on the engineering plans.
- .Please note that the subject site is located within a combined sewershed (If the connecting to Bank Sewer). Therefore, the approval exemption set out in Section 3 of O.Reg. 525/98 under the OWRA would not apply and an Environmental Compliance Approval (ECA) application under direct submission will be required
- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities (excavation, dewatering, vibrations associated with construction, etc.) will not have an impact on any adjacent buildings and infrastructure.
- **Reference documents for information purposes :**
 - Ottawa Sewer Design Guidelines (October 2012)
 - Technical Bulletin PIEDTB-2016-01
 - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.
 - Ottawa Design Guidelines - Water Distribution (2010)
 - Technical Bulletin ISTB-2021-03
 - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
 - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
 - City of Ottawa Environmental Noise Control Guidelines (January 2016)
 - City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
 - Ottawa Standard Tender Documents (latest version)
 - Ontario Provincial Standards for Roads & Public Works (2013)

- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455).

Please note that this is the applicant responsibility to refer to the latest applicable guidelines while preparing reports and studies.



Disclaimer:

The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

Stormwater Management Criteria and Information:

- Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the **100-year storm event**, to a **2-year pre-development level**. The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. **[If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5].** The time of concentration (T_c) used to determine the pre-development condition should be calculated. ***T_c should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations.***
- Any storm events greater than the established **2-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.

- Please note that foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**
- **Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 2-year storm rainfall event.**
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

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

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

Please provide information on UG storage pipe. Provide required cover over pipe and details, chart of storage values, capacity etc. How will this pipe be cleaned of sediment and debris?

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

Provide a cross section of underground chamber system showing invert and obvert/top, major and minor HWLs, top of ground, system volume provided during major and minor events. UG storage to provide actual 2- and 100-year event storage requirements.

In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective. Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

- Please note that the minimum orifice dia. for a plug style ICD is **83mm and the minimum flow rate from a vortex ICD is 6 L/s** in order to reduce the likelihood of plugging.
- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.**
- **If rooftop control** and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- Considering the size of the site, it would be acceptable to control the roof portion of the addition only and leave the remainder of the site uncontrol as long as the uncontrolled portion is directed towards the right of way. This approach should be discussed in the SWM report. Also, the grading plan should

clearly demonstrate that the runoff from the uncontrolled portion of the site will be directed towards the ROW

- If **Window wells** are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.
- There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.

Storm Sewer:

- A 525mm dia. CONC storm sewer (2006) is available within Somerset Street. (**Connection to the Somerset is preferred**)
- A 900mm dia. CONC Combined sewer (2009) is available within Bank Street.

Sanitary Sewer Maclaren St:

- A 450 mm dia. PVC Sanitary sewer (2006) is available within Somerset Street. (**Connection to the Somerset is preferred**)
- Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01*.
- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.

Water :

- A 406 mm dia. PVC watermain (2006) is available within Somerset Street.
- A 305 mm dia. PVC watermain (2009) is available within Bank Street
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m³/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration*.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
 - Type of Development and Units
 - Site Address
 - A plan showing the proposed water service connection location.
 - **Average Daily Demand** (L/s)
 - **Maximum Daily Demand** (L/s)

- **Peak Hour Demand (L/s)**
- **Fire Flow (L/min)**

*[Fire flow demand requirements shall be based on **Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999]***

*[Fire flow demand requirements shall be based on **ISTB-2021-03]***

Note: The OBC method can be used if the fire demand for the private property is less than 9,000 L/min. If the OBC fire demand reaches 9000 L/min, then the FUS method is to be used.

Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

- **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved.**
Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.
- Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patterns or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

Gas pressure regulating station

A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.

Regarding Quantity Estimates:

Please note that external Garbage and/or bicycle storage structures are to be added to QE under Landscaping as it is subject to securities. In addition, sump pumps for Sanitary and Storm laterals and/or cisterns are to be added to QE under Hard items as it is subject to securities, even though it is internal and is spoken to under SWM and Site Servicing Report and Plan.

Road Reinstatement

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

Permits and Approvals:

- Please note that this project may be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. (Any connection to a combined Sewer system required the Ministry (MECP) approval)

Required Engineering Plans and Studies for both ZBLA and SPC applications:

PLANS:

- Existing Conditions and Removals Plan

- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Roof Drainage Plan
- Topographical survey

REPORTS:

- Site Servicing and Stormwater Management Report
- Geotechnical Study/Investigation
- Noise Control Study
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- ECA (If connecting to the Combined sewer on Bank)
- Site lighting certificate

Please refer to the [City of Ottawa Guide to Preparing Studies and Plans \[Engineering\]](#):

Specific information has been incorporated into both the [Guide to Preparing Studies and Plans](#) for a site plan. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.

Added to the general information for servicing and grading plans is a note that an **O.L.S.** should be engaged when reporting on or relating information to property boundaries or existing conditions. The importance of engaging an **O.L.S.** for development projects is emphasized.

Phase One Environmental Site Assessment:

- A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.
- The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.
- Official Plan Section 4.8.4:

<https://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan/volume-1-official-plan/section-4-review-development-applications#4-8-protection-health-and-safety>

RSC (Record of the site Conditions)

- A RSC is required when changing the land use (zoning) of a property to a more sensitive land use.

[Submitting a record of site condition | Ontario.ca](#)

Geotechnical Investigation:

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.
- Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long term damages associated with lowering the groundwater in this area.
- Geotechnical Study shall be consistent with the **Geotechnical Investigation and Reporting Guidelines for Development Applications**.

https://documents.ottawa.ca/sites/documents/files/geotech_report_en.pdf

Noise Study:

- A **Transportation Noise Assessment** is required as the subject development is located within 100m proximity of an Arterial or Collector Road.
- A **Stationary Noise Assessment** is required in order to assess the noise impact of the proposed sources of stationary noise (mechanical HVAC system/equipment) of the development onto the surrounding residential area to ensure the noise levels do not exceed allowable limits specified in the City Environmental Noise Control Guidelines.

https://documents.ottawa.ca/sites/default/files/documents/enviro_noise_guide_en.pdf

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Fourth (4th) Review Charge:

Please be advised that additional charges for each review, after the 3rd review, will be applicable to each file. There will be no exceptions.

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

Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.

If you have any questions or require any clarification, please let me know.

Regards,

Reza Bakhit, P.Eng, C.E.T

Project Manager

Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2424 ext./poste 19346, reza.bakhit@ottawa.ca

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

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<adrian.vanwyk@ottawa.ca>; Fitzpatrick, Anne <Anne.Fitzpatrick@ottawa.ca>

Subject: RE: 21-1952-352 Somerset Street W Pre-con

Hi Guy,

Please see my response incorporated into your email.

Regards,

Reza Bakhit, P.Eng, C.E.T

Project Manager

Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique

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Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Guy Ste-Croix <guy.ste-croix@ainleygroup.com>

Sent: Wednesday, March 15, 2023 9:20 AM

To: Bakhit, Reza <reza.bakhit@ottawa.ca>

Cc: Anmar Al-Faraj <anmar.al-faraj@ainleygroup.com>; Jiawu Xu <jiawu.xu@ainleygroup.com>

Subject: FW: 21-1952-352 Somerset Street W Pre-con

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.

Hi Reza,

We had previously received some feedback from John Wu / City of Ottawa re. the SWM requirements for this site as follows:

Guy Ste-Croix

From: Wu, John <John.Wu@ottawa.ca>
Sent: December 8, 2021 8:33 AM
To: Hamlin, Allison; Guy Ste-Croix; DR Central / EPA Centre
Cc: Deiacco, Simon; 'Richard A Chmiel'; Jamil Afana
Subject: RE: 21-1959 352 Somerset Street (Somerset House)

Hi, All:

Please be aware that this site better connect to Somerset Street Storm sewer, the Storm water Management requirement will be C 0.5 , 5 year's to control up to 100 year's storm on site, but if it connected to Bank Street Combined Sewer, it will be C 0.4 , 5 year's storm to control up to 100 year's storm on site , and will require MOE approval, direct submission.

For boundary conditions, please send me all details about the water daily consumption rate ,max day , and max hour rate, and required fire flow by using FUS method.
I will send to Asset Management group for the result after I got the information from the consultant, when I get the result from Asset Management Group, I will email back to the consultant.

Thanks.

John

Our current design has the pre-development flow calculated using $C=0.5$, 5yr intensity and a T_c of 20 minutes. Is this acceptable or do we need to revise our design per the green highlighted requirement noted below?

- Please update the design per the green highlighted notes, as this is the latest requirements. As you see in my notes, you need to control the addition part of the site only.

On another note, since the project is relatively small and that the building takes up the entire property, the following Civil drawings were anticipated:

- Existing Conditions and Removals Plan.
- Grading and Sediment Erosion Control Plan.
- Stormwater Management Plan.

We note that a Site Servicing Plan is not required since no new services are proposed. The existing water, sanitary and storm services are all shown (and noted as to remain) on the Existing Conditions and Removals Plan. We do however discuss the servicing issues / requirements in the Site Servicing and Stormwater Management report.

- Considering the age of the existing building ,and the proposed additional unites . I am not sure if the existing services can accommodate the additional flow , are in good working condition, and meet the standards . A CCTV inspection and report (Supported by a memo from a P.Eng) required to ensure existing services can be re-used confirming they are in good working order and meet **the current** minimum size and material requirements.

We thank you for your assistance in advance, we await your feedback.

Regards,

Guy Ste-Croix

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: November 16, 2021 9:45 AM
To: Guy Ste-Croix
Subject: RE: 352 Somerset Street

Hi Guy,

Based on the site plan provided, the RVCA has no requirements for water quality protection. Rooftop and amenity areas are considered clean for the purposes of stormwater management. Best management practices are encouraged to be implemented where possible.

Thanks,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Guy Ste-Croix <stecroix@ainleygroup.com>
Sent: Tuesday, November 16, 2021 9:38 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Richard A Chmiel <RichardC@chmielarchitects.com>; Jamil Afana <jamila@chmielarchitects.com>
Subject: 352 Somerset Street

Hi Eric,

We are currently working on a proposed development (i.e. 9 storey building) at 352 Somerset Street West in Ottawa. The building will take up the entire site (i.e. 583 sq.m), we've attached the Architect's plan for your reference. The City of Ottawa of late has been asking us to contact the RVCA and include correspondence in our site servicing and stormwater management report re. storm water quality requirements. It's our understanding that the RVCA will not require on-site water quality protection based on the proposed site plan. We await your conformation.

Regards,

Guy Ste-Croix, LEL, C.E.T., PMP
Vice President & Branch Manager



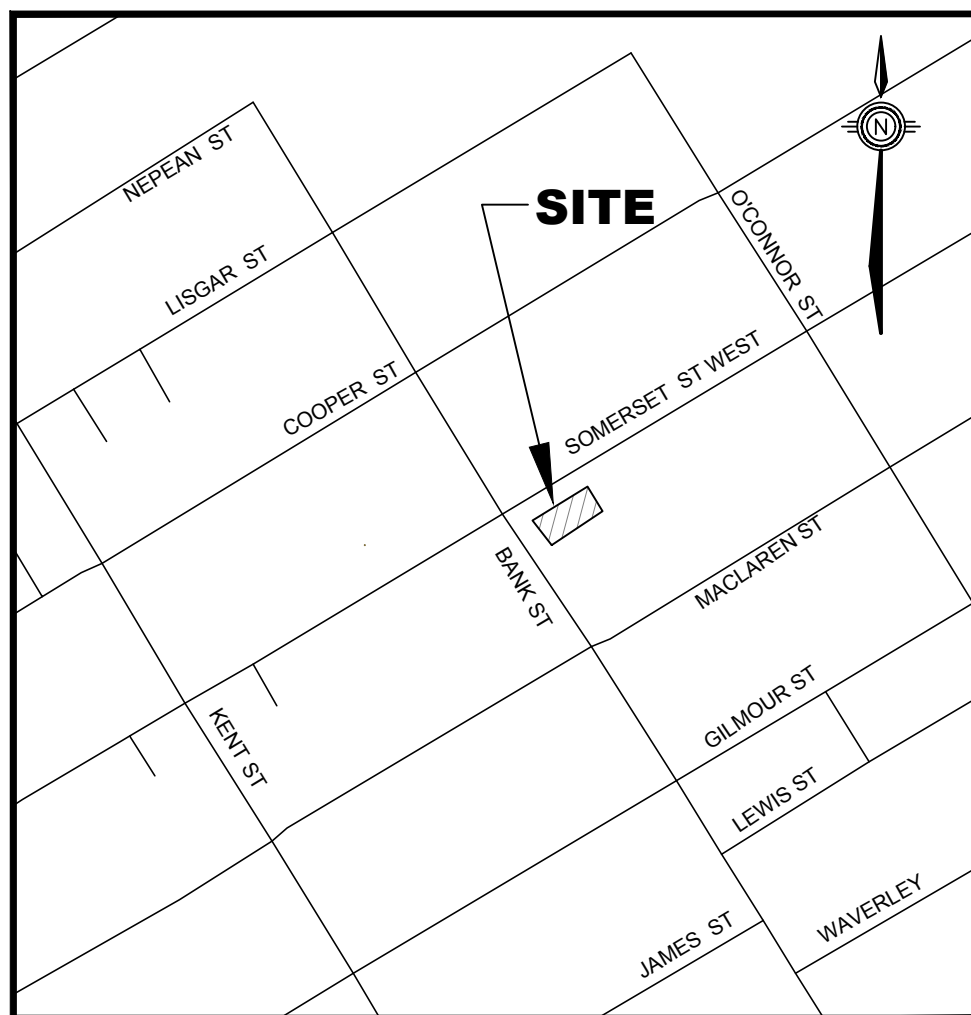
Tel: (613) 822-1052 Ext. 225
Cell: (613) 858-8943

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APPENDIX D



KEY MAP
SCALE: N.T.S.

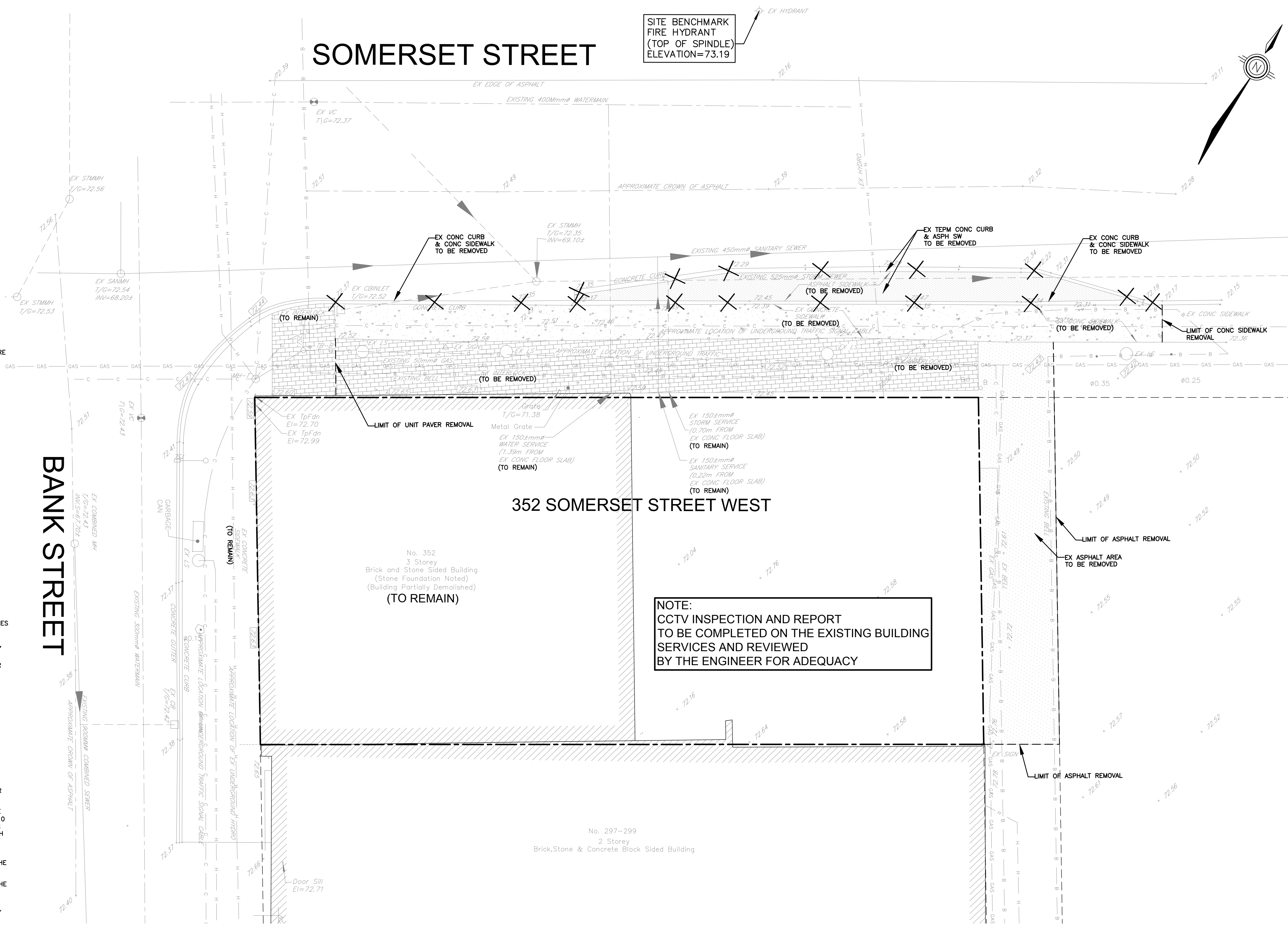
NOTES: GENERAL

- CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION
- ALL ELEVATIONS / DIMENSIONS ARE IN METRIC UNITS.
- JOB BENCH MARK - CONFIRM WITH LEGAL SURVEYOR PRIOR TO UTILIZATION.
- ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR CATCHBASIN OUTLETS ARE PROVIDED.
- ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER AND/OR CITY OF OTTAWA.
- ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT.
- CURBS TO BE AS PER CITY OF OTTAWA STANDARD SC1.1.
- CONTRACTOR IS TO COMPLY WITH THE CITY OF OTTAWA REQUIREMENTS FOR TRAFFIC CONTROL WHEN WORKING ON PUBLIC ROAD.
- RESTORE PAVEMENT STRUCTURE AND SURFACES ON PUBLIC ROAD TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE CITY OF OTTAWA.
- ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. (CONSTRUCTION OPSS 206, 310 & 314 MATERIALS OPSS 1001, 1003 & 1010).
- REFER TO ARCHITECT'S SITE PLAN FOR BUILDING DIMENSIONS AND SITE LAYOUT. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS.
- REFER TO LANDSCAPE ARCHITECT'S PLAN FOR SIDEWALK, PATHWAYS, CONCRETE MEDIAN, WALLS, FENCES, GATES, PLANTING AND OTHER LANDSCAPE FEATURE MATERIALS AND LOCATIONS.
- ALL CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
- DESIGN ELEVATIONS AS GIVEN ON THIS PLAN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER.
- U/G CONTRACTOR TO CONFIRM LOCATION(S) AND ELEVATION(S) OF EXISTING SERVICES AND STRUCTURES TO BE CONNECTED TO AND EXISTING SERVICES THAT MAY CAUSE CONFLICTS PRIOR TO CONSTRUCTION OF ANY NEW SEWER, WATER AND/OR STORM WATER WORKS. THE ENGINEER SHALL BE INFORMED IMMEDIATELY OF ANY ERRORS, DISCREPANCIES, CONFLICTS, OMISSIONS etc THAT ARE FOUND.
- THE CONTRACTOR SHALL VERIFY ALL SURFACE AND SUBSURFACE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION BY REVIEWING THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP, DATED MARCH 9, 2020.
- THE CONTRACTOR SHALL APPRAISE HIS/HER SELF OF ALL SURFACE AND SUBSURFACE CONDITIONS TO BE ENCOUNTERED AND SHALL CARRY OUT THEIR OWN TEST PITS AS REQUIRED TO MAKE THEIR OWN INDEPENDENT ASSESSMENT OF GROUND CONDITIONS. THE CONTRACTOR SHALL NOT MAKE ANY CLAIM FOR ANY EXTRA COST DUE TO ANY SUCH GROUND CONDITIONS VARYING FROM THOSE ANTICIPATED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL CONSTRUCTION RELATED PERMITS, FEES, INSPECTIONS AND APPROVALS REQUIRED BY THE CITY OF OTTAWA.
- IN PREPARATION FOR THE CONSTRUCTION OF THE NEW ASPHALTIC CONCRETE SURFACED ROADWAYS AND PARKING AREAS, ALL TOPSOIL, ORGANIC MATERIAL AND ANY LOOSE/SOFT OR WET SOIL SHOULD BE REMOVED FROM THE PROPOSED SUBGRADE SURFACE AND REPLACED WITH SUITABLE COMPACTED EARTH BORROW OR GRANULAR FILL.
- PRIOR TO PLACING GRANULAR FILL FOR THE ROADWAYS AND PARKING AREAS, THE EXPOSED SUBGRADE SHOULD BE HEAVILY PROOF ROLLED WITH A WITH A LARGE (10 TONNE) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE, COMPACTED EARTH BORROW.
- THE CONTRACTOR IS TO PROVIDE 'AS-CONSTRUCTED' INFORMATION (i.e. ASPHALT GRADES, TOP OF CURB GRADES, WATERMAIN OBVERTS, SEWER INVERTS, ETC.) TO THE ENGINEER AND/OR CLIENT.
- ASPHALTIC CONCRETE SHALL NOT BE PLACED UNTIL FINAL CCTV INSPECTION OF THE SEWERS IN ACCORDANCE WITH OPSS 409 HAVE BEEN COMPLETED AND TO THE ENGINEER AND/OR CLIENT.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL RE-CCTV RESULTING FROM DEFICIENCY REPAIRS AS DEEMED NECESSARY BY THE ENGINEER. CCTV INSPECTIONS WILL BE CONDUCTED UNTIL SUCH TIME AS THE RESULTS HAVE BEEN APPROVED BY THE ENGINEER AND/OR CITY OF OTTAWA AT NO ADDITIONAL COST TO THE CLIENT.

CONTRACT DRAWINGS:
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Anley Graham & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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SOMERSET STREET



LEGEND

---	PROPERTY LINE
—○—	EXISTING SANITARY SEWER
—●—	EXISTING WATERMAIN
—○—	EXISTING STORM SEWER
—○—	EXISTING UTILITY POLE
□	EXISTING CATCHBASIN
H	EXISTING HYDRO WIRE
C	EXISTING CABLE
GAS	EXISTING GAS
B	EXISTING BELL
[Pattern]	EX ASPHALT REMOVAL
[Pattern]	EX CONCRETE SIDEWALK REMOVAL
[Pattern]	EXISTING UNIT PAVER REMOVAL
X	EXISTING CURB REMOVAL

352 SOMERSET STREET WEST

No. 352
3 Storey
Brick and Stone Sided Building
(Stone Foundation Noted)
(Building Partially Demolished)
(TO REMAIN)

NOTE:
CCTV INSPECTION AND REPORT
TO BE COMPLETED ON THE EXISTING BUILDING
SERVICES AND REVIEWED
BY THE ENGINEER FOR ADEQUACY

No. 297-299
2 Storey
Brick, Stone & Concrete Block Sided Building

NO.	REVISIONS	DATE	INITIAL
1	ISSUED FOR SITE PLAN APPROVAL	MAR 29/23	JX

Not Valid Unless Signed And Dated

Professional Engineers
Ontario
MARCH 29, 2023
Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL-see limitation
Limitations:
This license is subject to the limitations as detailed on the certificate.
Association of Professional Engineers of Ontario

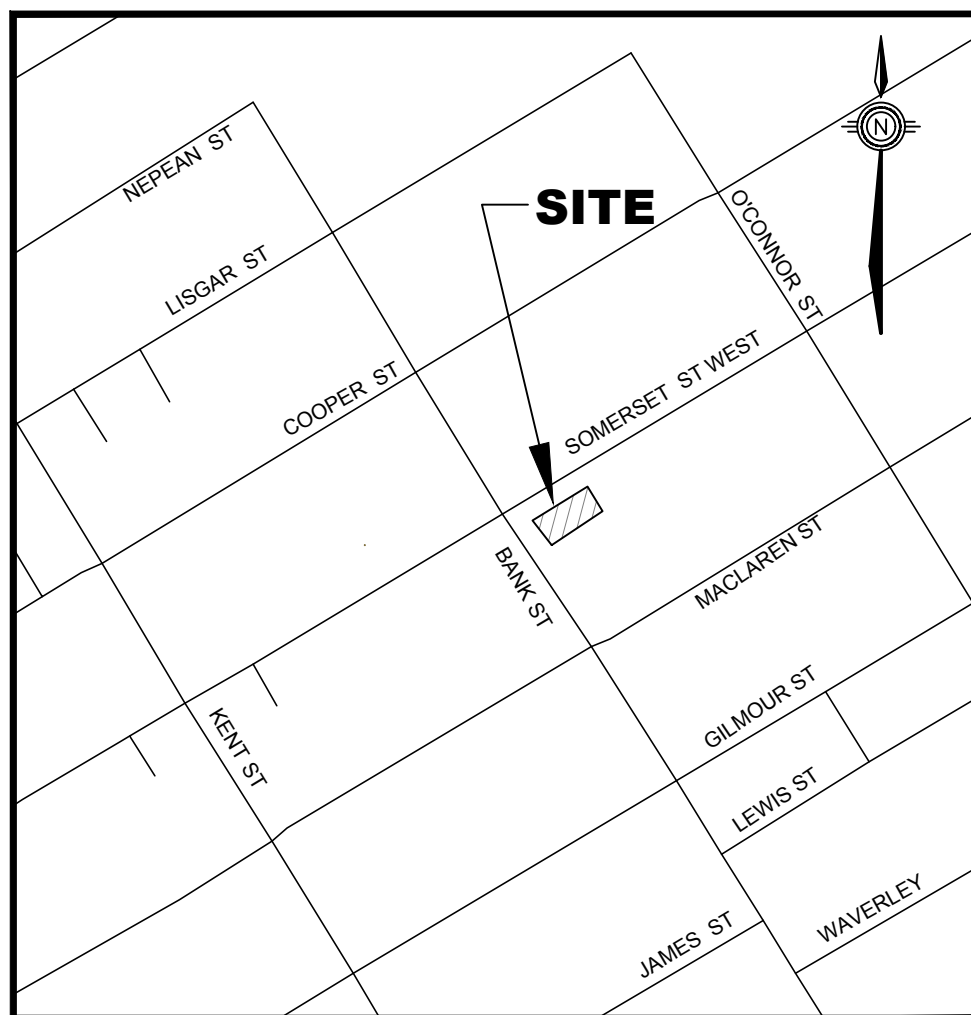
SCALE: 1 : 100
DESIGN: JX
DRAWN: JX
CHECKED: GSC/JX
DATE: AUG 2022

SOMERSET HOUSE
352 SOMERSET STREET WEST
CITY OF OTTAWA

EX CONDITIONS AND REMOVALS PLAN

Anley GROUP CONSULTING ENGINEERS PLANNERS

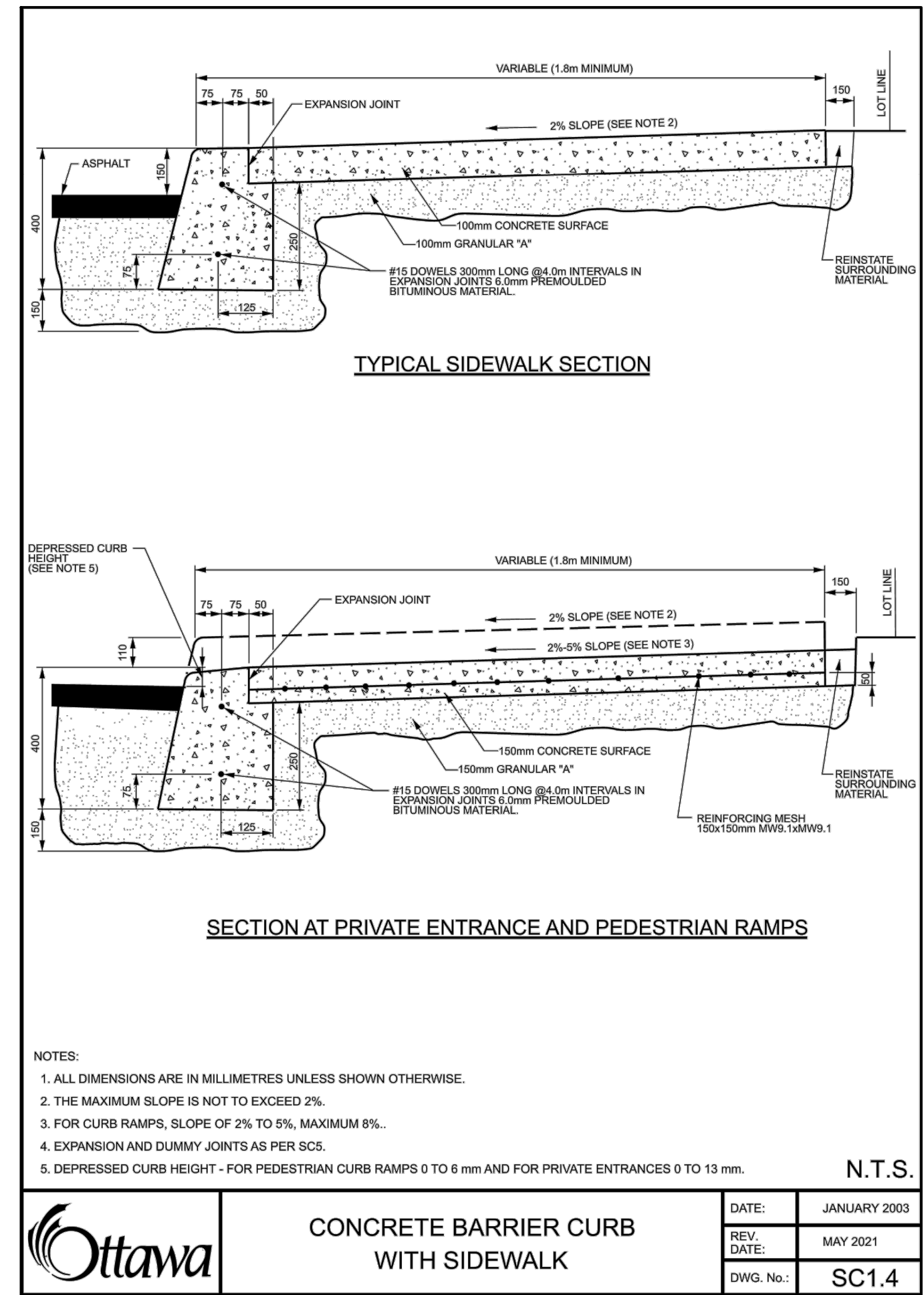
CONTRACT No. 21038 001-21038-EX1&REM1



LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING UTILITY POLE
- EXISTING CATCHBASIN
- EXISTING HYDRO WIRE
- EXISTING CABLE
- EXISTING GAS
- EXISTING BELL
- EXISTING ELEVATION
- PROPOSED GRADE
- DIRECTION AND SLOPE
- PROPOSED ASPHALT AREA
- PROPOSED CONCRETE SIDEWALK

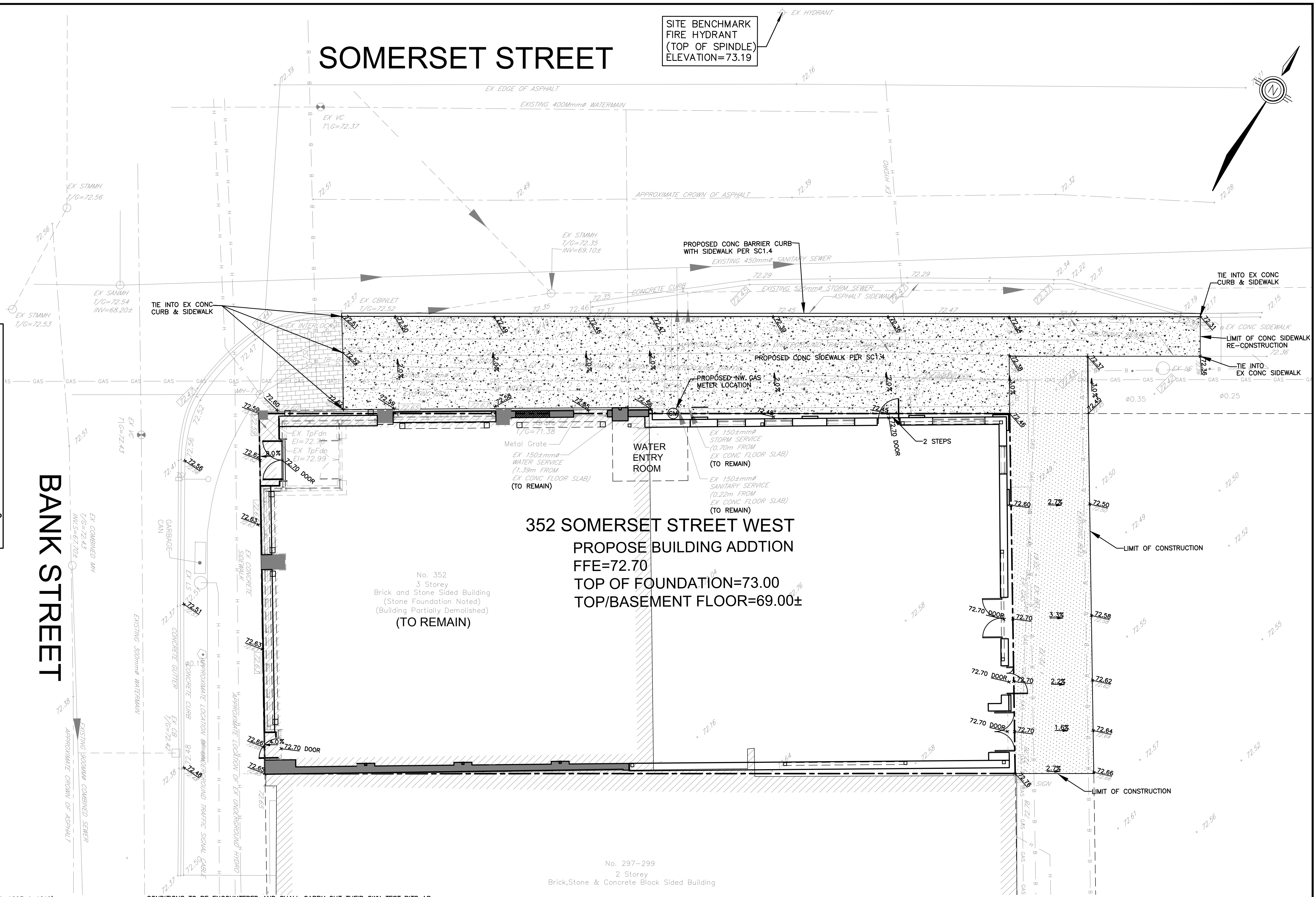
KEY MAP
SCALE: N.T.S.



PAVEMENT STRUCTURE

- 40mm HL-3 OR SUPERPAVE 12.5
- 50mm HL-8 OR SUPERPAVE 19
- 150mm OPSS GRANULAR "A"
- 450mm OPSS GRANULAR "B" TYPE II

ACCESS LANES (HEAVY DUTY)
N.T.S.
(REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP DATED MARCH 9, 2020)



- NOTES: GENERAL**
- CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION
 - ALL ELEVATIONS / DIMENSIONS ARE IN METRIC UNITS.
 - JOB BENCH MARK - CONFIRM WITH LEGAL SURVEYOR PRIOR TO UTILIZATION.
 - ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR CATCHBASIN OUTLETS ARE PROVIDED.
 - ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER AND/OR CITY OF OTTAWA.
 - ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT.
 - CURBS TO BE AS PER CITY OF OTTAWA STANDARD SC1.1.
 - CONTRACTOR IS TO COMPLY WITH THE CITY OF OTTAWA REQUIREMENTS FOR TRAFFIC CONTROL WHEN WORKING ON PUBLIC ROAD.
 - RESTORE PAVEMENT STRUCTURE AND SURFACES ON PUBLIC ROAD TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE CITY OF OTTAWA.
 - ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.

- (CONSTRUCTION OPSS 206, 310 & 314 MATERIALS OPSS 1001, 1003 & 1010).
- REFER TO ARCHITECT'S SITE PLAN FOR BUILDING DIMENSIONS AND SITE LAYOUT. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
 - CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS.
 - REFER TO LANDSCAPE ARCHITECT'S PLAN FOR SIDEWALK, PATHWAYS, CONCRETE MEDIAN, WALLS, FENCES, GATES, PLANTING AND OTHER LANDSCAPE FEATURE MATERIALS AND LOCATIONS.
 - ALL CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
 - DESIGN ELEVATIONS AS GIVEN ON THIS PLAN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER.
 - U/G CONTRACTOR TO CONFIRM LOCATION(S) AND ELEVATION(S) OF EXISTING SERVICES AND STRUCTURES TO BE CONNECTED TO AND EXISTING SERVICES THAT MAY CAUSE CONFLICTS PRIOR TO CONSTRUCTION OF ANY NEW SEWER, WATER AND/OR STORM WATER WORKS. THE ENGINEER SHALL BE INFORMED IMMEDIATELY OF ANY ERRORS, DISCREPANCIES, CONFLICTS, OMISSIONS etc THAT ARE FOUND.
 - THE CONTRACTOR SHALL VERIFY ALL SURFACE AND SUBSURFACE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION BY REVIEWING THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP, DATED MARCH 9, 2020.
 - THE CONTRACTOR SHALL APPRAISE HIS/HER SELF OF ALL SURFACE AND SUBSURFACE

- CONDITIONS TO BE ENCOUNTERED AND SHALL CARRY OUT THEIR OWN TEST PITS AS REQUIRED TO MAKE THEIR OWN INDEPENDENT ASSESSMENT OF GROUND CONDITIONS. THE CONTRACTOR SHALL NOT MAKE ANY CLAIM FOR ANY EXTRA COST DUE TO ANY SUCH GROUND CONDITIONS VARYING FROM THOSE ANTICIPATED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL CONSTRUCTION RELATED PERMITS, FEES, INSPECTIONS AND APPROVALS REQUIRED BY THE CITY OF OTTAWA.
 - IN PREPARATION FOR THE CONSTRUCTION OF THE NEW ASPHALTIC CONCRETE SURFACED ROADWAYS AND PARKING AREAS, ALL TOPSOIL, ORGANIC MATERIAL AND ANY LOOSE/ SOFT OR WET SOIL SHOULD BE REMOVED FROM THE PROPOSED SUBGRADE SURFACE AND REPLACED WITH SUITABLE COMPACTED EARTH BORROW OR GRANULAR FILL.
 - PRIOR TO PLACING GRANULAR FILL FOR THE ROADWAYS AND PARKING AREAS, THE EXPOSED SUBGRADE SHOULD BE HEAVILY PROOF ROLLED WITH A WITH A LARGE (10 TONNE) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE, COMPACTED EARTH BORROW.
 - THE CONTRACTOR IS TO PROVIDE 'AS-CONSTRUCTED' INFORMATION (i.e. ASPHALT GRADES, TOP OF CURB GRADES, WATERMAIN OBVERTS, SEWER INVERTS, ETC.) TO THE ENGINEER AND/OR CLIENT.
 - ASPHALTIC CONCRETE SHALL NOT BE PLACED UNTIL FINAL CCTV INSPECTION OF THE SEWERS IN ACCORDANCE WITH OPSS 409 HAVE BEEN COMPLETED AND TO THE ENGINEER AND/OR CLIENT.
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL RE-CCTV RESULTING FROM DEFICIENCY REPAIRS AS DEEMED NECESSARY BY THE ENGINEER. CCTV INSPECTIONS WILL BE CONDUCTED UNTIL SUCH TIME AS THE RESULTS HAVE BEEN APPROVED BY THE ENGINEER AND/OR CITY OF OTTAWA AT NO ADDITIONAL COST TO THE CLIENT.

- NOTES: EROSION AND SEDIMENT CONTROL**
- THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND CONSTRUCTION OF ALL SEDIMENT AND EROSION CONTROL MEASURES TO ENSURE THAT SEDIMENT DOES NOT MIGRATE FROM THE CONSTRUCTION SITE. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING FILTER CLOTH UNDER THE GRATES OF CATCHBASINS AND MANHOLES (SEE NOTE 2) AND INSTALLING SILT FENCES (PER OPSS 219.110) AND OTHER EFFECTIVE SEDIMENT TRAPS.
 - THE CONTRACTOR IS TO SUPPLY, INSTALL AND MAINTAIN FILTER CLOTH BETWEEN THE FRAME AND COVER ON ALL AFFECTED CATCH BASINS AND MANHOLES FOR THE DURATION OF CONSTRUCTION.
 - A MUD MAT IS TO BE INSTALLED AT EACH CONSTRUCTION ENTRANCE AND SHALL BE MAINTAINED UNTIL THE PLACEMENT OF THE GRANULAR SUB-BASE. MUD MAT SHALL BE CONSTRUCTED OF 100mm# CLEAR STONE, 400mm THICK. MUD MAT SHALL BE OF SUFFICIENT LENGTH TO ENSURE THAT A MINIMUM AMOUNT OF MATERIALS IS TRUCKED OFF SITE ON ADJACENT ROADS.
 - IN ORDER TO AVOID POLLUTANTS FROM BEING DISCHARGED, THE CONTRACTOR MUST MINIMIZE THE GENERATION OF DUST THROUGH APPROPRIATE APPLICATION OF WATER OR OTHER DUST SUPPRESSION TECHNIQUES.
 - THE CONTRACTOR IS PROHIBITED FROM DISCHARGING GROUND WATER OR ACCUMULATED STORMWATER THAT IS REMOVED FROM EXCAVATIONS, TRENCHES, FOUNDATIONS, ETC. UNLESS SUCH WATERS ARE FIRST EFFECTIVELY TREATED BY APPROPRIATE CONTROLS AS SEDIMENT SOCKS, DEWATERING TANKS, ETC.
 - THE CONTRACTOR MUST INITIATE SOIL STABILIZATION MEASURES IMMEDIATELY WHENEVER EARTH-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE.

CONTRACT DRAWINGS:
Contractor must verify all dimensions and be responsible for some. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Anley Graham & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL
1	ISSUED FOR SITE PLAN APPROVAL	MAR 29/23	JX

Not Valid Unless Signed And Dated

Professional Engineers
Ontario
MARCH 29, 2023

Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL - see limitation
Limitations:
This licence is subject to the limitations as detailed on the certificate.
Association of Professional Engineers of Ontario

SCALE: 1 : 100
DESIGN: JX
DRAWN: JX
CHECKED: GSC/JX
DATE: AUG 2022

SOMERSET HOUSE
352 SOMERSET STREET WEST
CITY OF OTTAWA

GRADING AND SEDIMENT EROSION CONTROL PLAN

Anley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 21038 002-21038-GR1

Mar 28, 2023 1: DRAWINGS\21038-1 352 Somerset\Design\002-21038-GR1.dwg

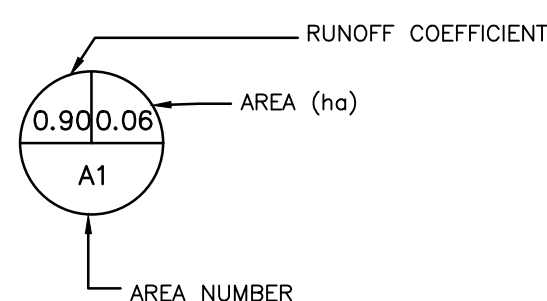


KEY MAP
SCALE: N.T.S.

LEGEND



STORM DRAINAGE AREA



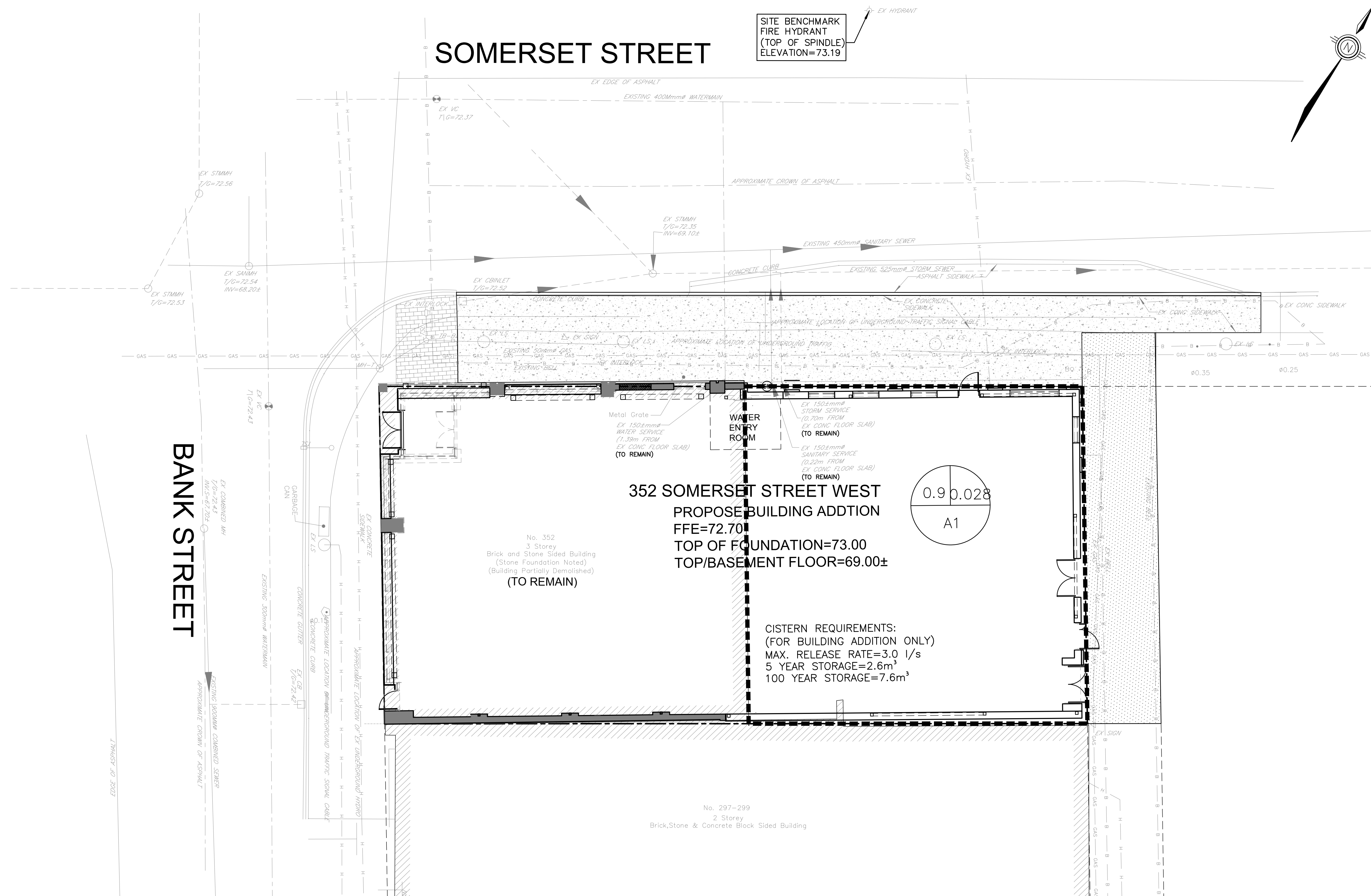
RUNOFF COEFFICIENT

AREA (ha)

AREA NUMBER

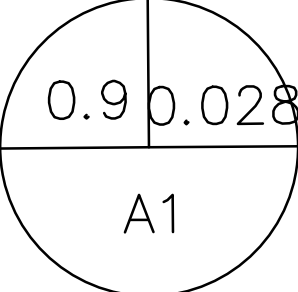
SOMERSET STREET

SITE BENCHMARK
FIRE HYDRANT
(TOP OF SPINDLE)
ELEVATION=73.19



BANK STREET

352 SOMERSET STREET WEST
PROPOSE BUILDING ADDTION
FFE=72.70
TOP OF FOUNDATION=73.00
TOP/BASEMENT FLOOR=69.00±



CISTERN REQUIREMENTS:
 (FOR BUILDING ADDITION ONLY)
 MAX. RELEASE RATE=3.0 l/s
 5 YEAR STORAGE=2.6m³
 100 YEAR STORAGE=7.6m³

CONTRACT DRAWINGS:
 Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be copied, distributed or used by others without the express written consent of Ainley Graham & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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Limited Licensee
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SCALE: 1 : 100
 DESIGN: JX
 DRAWN: JX
 CHECKED: GSC/JX
 DATE: AUG 2022

SOMERSET HOUSE
352 SOMERSET STREET WEST
CITY OF OTTAWA

STORMWATER MANAGEMENT PLAN

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 21038 003-21038-SWM1