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SITE SERVICING REPORT
BARRHAVEN ISLAMIC CENTER
3971 GREENBANK ROAD
OTTAWA, ONTARIO

Prepared For:
Barrhaven Islamic Center
Muslim Association of Canada
3971 Greenbank Road
Ottawa, Ontario
K2C 3H2

PROJECT #: 241068

DISTRIBUTION
1 pdf – City of Ottawa
1 pdf – Barrhaven Islamic Center

Rev 0 – Issued for City of Ottawa Review — May 29, 2026

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241068 – SER – Site Servicing Plan

1 INTRODUCTION

Kollaard Associates was retained by the Barrhaven Islamic Center to complete a Site Servicing Report in support of connecting to municipal water and sanitary services on Greenbank Road.

The servicing report is part of the studies required under a Rural Small Site Plan Control Application to the City of Ottawa.

This report will address the serviceability of the proposed site, specifically relating to the adequacy of the sanitary sewer and watermain to hydraulically convey the proposed sanitary sewage and water demands that will be placed on the system.

The proposed development is located at 3971 Greenbank Road. The drawings associated with this report orientate Greenbank Road in the north – south direction. The property is located to the northeast of the intersection of Greenbank Road and Barnsdale Road. The site contains two entrances on Greenbank Road.

The site has a total area of 1.2 hectares. There are two existing buildings on the property. Building#1 is a 1-storey brick and metal sided building (closest building to Greenbank Road). Building#2 is a 1-storey steel pre-fabricated structure (Quonset hut). It is understood that the existing buildings will remain, with an addition proposed to building#2. The addition will contain a new washroom facility with a 56m^2 footprint. The two existing buildings are used as places of worship and assembly.

2 BACKGROUND

According to GeoOttawa historic aerial photographs, building#1 was constructed prior to 1976 and building#2 was constructed between 2014-2015. Building#1 is serviced by an existing well and septic system on the property. Building#2 is not connected to the septic system. The site was retrofitted for a place of worship and assembly in late 2023. Prior to this it is understood that the site way primarily used for office space and equipment storage.

In December 2024, a pre-consultation was completed with the City of Ottawa for a proposed Temporary Zoning by-law Amendment for the uses on the property and to connect to municipal water and sanitary services. It was noted that the sanitary and water pipes on Greenbank Road are of significant depth from the surface. Specific connection details for the sanitary pipe were provided.

In 2025, the Barrhaven Islamic Center had submitted a servicing plan (completed by Kollaard Associates) to the Planning, Development & Building Services Department, proposing to decommission the existing well and septic system and connection to the sanitary sewer and watermain on Greenbank Road. A private fire hydrant was proposed on the property to provide water for fire protection, with the closest City hydrant located on Cappamore Drive,

approximately 240m away from the site. The City of Ottawa file number for this application is CON-2025-012222. Several iterations of review comments have been completed.

A request for boundary conditions was completed in 2025 to determine the water pressure in the main on Greenbank in order to facilitate the sizing of the proposed site service. A Water Data Card for water meter sizing in building#1 was completed in April 2026 as part of a response City review comments package. An updated servicing plan that illustrated the proposed washroom addition to building #2 was included in the April 2026 submission. The submission documents under application number CON-2025-012222 are still being reviewed by City Officials.

3 BUILDING OCCUPANCY

The site consists of the following buildings:

Building#1: 1 storey brick and metal sided building – with Kitchen Facilities
(Community Centre and Place of Worship)

Buildng#2: Steel prefabricated structure (Quonset Hut) – without Kitchen Facilities
(Community Centre and Place of Worship)

Documentation from the City of Ottawa recently outlined the occupancy limits of each building. These are the maximum occupancy limits issued by the City of Ottawa building inspector, until a building permit and occupancy permit has been issued. The occupancy limits at this time are as follows:

Building#1: 60 persons in the men's prayer room, 45 persons in the women's prayer room (105 people total).

Building #2: 300 persons

Prior to the occupancy limits being set by the Building Inspector, the previous servicing calculations were based on the approximate prayer space per person within the pre-determined space. This was shown in a change of use letter for building#1 by Morrison Hershfield, dated June 4th, 2024.

The occupancy for building#1 shown in the letter was 133 occupants.

Building #2, occupancy was not included in the letter by Morrison Hershfield. The occupancy in building #2 was calculated using similar methods as building #1:

Place of worship = $470.5m^2/1.05$ = 448 occupants

- $1.05m^2$/person is based on the space required for each person's prayer space. (700mm x 1500mm) – information provided by the Client to Morrison Hershfield.

To be conservative with the pipe sizing, the occupancy determined based on the prayer space will be used for further calculations, as it generated a higher population than the current occupancy limits set by the building inspector.

4 SANITARY SEWER DESIGN

The sanitary discharge from the site is currently conveyed to an on-site septic system. The septic system will be decommissioned. A private 150mm diameter sanitary sewer is proposed on the site. Sanitary laterals of 125mm diameter from building#1, and the washroom addition on building#2 will be connected to the 150mm diameter private sanitary sewer. The private sanitary sewer on the site will outlet to the existing sanitary maintenance hole on Greenbank Road. The maintenance hole on Greenbank Road is connected to the existing 600mm sanitary sewer in the street.

Sewage discharges will be institutional in type. The anticipated peak sanitary flow will be 0.66 L/s.

The sanitary sewage flow for the building was calculated based on the City of Ottawa Sewer Design Guidelines (Technical Bulletin ISTB-2018-01 and Appendix 4A.) and the Ontario Building Code.

A pre-consultation was completed with the City in 2024. It was noted that the sanitary pipe on Greenbank Road is of significant depth. A connection to the municipal sanitary system is permitted only at maintenance hole locations. It must be a sewer connection to one of the existing sanitary maintenance holes on Greenbank Road (not a service-lateral connection). It was also noted that a monitoring maintenance hole is required, placed on private property, as close to the property line as possible (not in a parking area).

4.1 Design Flows

The average daily demand from the existing institutional buildings and proposed washroom facility was calculated with the use of City of Ottawa Appendix 4A as follows:

<u>Building#1:</u>
Estimated operational hours = 20hrs/day
Ottawa Sewer Design Guidelines – Appendix 4-A
Churches

- *With kitchen facilities: per sanctuary seat = 30 L/day*
- *Kitchen wastes – normal service: per meal = 15 L/day*

Average daily demand = (30 L/day + 15 L/day) x 133 people
= 5985 L/day ÷ (20hrs/day x 60min/hr x 60sec/min)
= 0.083 L/s

- Average daily demand (ADD) 0.083 L/s
- Institutional Peak (x 1.5) is 0.083 L/s x 1.5 = 0.124 L/s
- Infiltration = 0.33 L/ha/sec x 0.6ha (total site area divided by two) = 0.198 L/s
- Building#1 Total Peak Sanitary Flow = 0.322 L/s

Building #2:
Estimated operational hours = 20hrs/day
Ottawa Sewer Design Guidelines – Appendix 4-A
Churches

- *No kitchen facilities: per sanctuary seat = 15 L/day*

Average daily demand = 15 L/day x 448 people
= 6720 L/day ÷(20hrs/day x 60min/hr x 60sec/min)
= 0.093 L/s

- Average daily demand (ADD) 0.093 L/s
- Institutional Peak (x 1.5) is 0.093 L/s x 1.5 = 0.140 L/s
- Infiltration = 0.33 L/ha/sec x 0.6ha (total site area divided by two) = 0.198 L/s
- Building#2 Total Peak Sanitary Flow = 0.338 L/s

Combined Buildings

- Average daily demand (ADD) 0.176 L/s
- Commercial Peak (x 1.5) is 0.176 L/s x 1.5 = 0.264 L/s
- Infiltration = 0.33 L/ha/sec x 1.2 ha = 0.396 L/s
- Total Peak Sanitary Flow = 0.66 L/s

4.2 Sanitary Sewer

4.2.1 Proposed Private Sanitary Sewer

The proposed 150mm PVC private sanitary sewer commences between building#1 and building#2. The private sewer will convey the sewage north to a proposed sanitary maintenance hole SAN-MH2. From SAN-MH2 the pipe will convey the sewage to the west, and outlet to the existing sanitary maintenance hole (EX. SAN-MH) on Greenbank Road. EX. SAN-MH has a depth from the top of grate to the outlet invert of 7.21m. Since the structure is deep, an external drop structure is required. Further details for the drop structure are provided in the servicing plan 241068-SER.

A sampling chamber is proposed near the property line 16m east of EX. SAN-MH. The sampling chamber follows City of Ottawa detail S18.1. The sampling chamber located outside of the parking area.

SAN-MH2 is located within the site parking area. SAN-MH2 was required to facilitate the change in direction of the pipe to line up with the EX. SAN-MH in the right of way. To add another maintenance hole at the property line between SAN-MH2 and the EX.SAN-MH for the observation/samplin use was not proposed, considering the two other maintenance holes could be utilized for larger access space. If a larger structure is required for observation purposes or sampling, SAN-MH2 or the EX. SAN-MH can be used. Both maintenance holes are 1200mm diameter concrete structures. Further servicing details are provided on the servicing plan 241068– SER.

The maximum peak sanitary flow for the both building#1 and building#2 is 0.66 L/sec. The capacity of the proposed 150 mm diameter PVC sanitary sewer lateral at a 1.6% slope is 19.26 L/sec. Since 0.65 x 19.26 =12.52 L/s is much greater than 0.66L/sec, the private sanitary sewer of 150 mm diameter at 1.6% slope will be sufficient according to O.B.C 7.4.10.8 (2).

4.2.2 Proposed Service Laterals

The maximum peak sanitary flow for building#1 is 0.32 L/s. The maximum peak sanitary flow for building#2 is 0.34 L/s. It is proposed that the service laterals coming from each building be 125mm in diameter. The service laterals will connect to the 150mm diameter main on the site. The service lateral from building#1 will connect to the private main via the proposed maintenance hole SAN-MH1. The service lateral from building#2 will connect to the private main via a tee connection to the main.

The Ontario Building Code specifies minimum pipe size and maximum hydraulic loading for sanitary sewer pipe. OBC 7.4.10.8 (2) states "Horizontal sanitary drainage pipe shall be designed to carry no more than 65% of its full capacity." The capacity of the proposed 125 mm diameter PVC sanitary sewer lateral at a 2.0% slope is 13.24 L/sec. Since 0.65 x 13.24 =8.6 L/s is much greater than 0.34L/sec, the sanitary laterals of 125 mm diameter at least 2% slope will be sufficient according to O.B.C 7.4.10.8 (2).

4.2.3 Fixture Units

Kollaard Associates has obtained the number of fixtures from the following floor plans:

- Building#1: Get Permit (Revision 0, Dated May 23, 2024)
- Building #2: Get Permit (Revision 0, Dated May 25, 2025).

From the Ontario Building Code (O.B.C) table 7.4.9.3, the number of fixture units in building#1 was 30.5, and the number of fixture units in building#2 was 28. The total number of sanitary fixture units for the site is 58.5.

From OBC Table 7.4.10.8, the allowable number of fixture units for a 5" drain size (125mm diameter) sanitary service pipe at 1% is 390 fixtures. For a 6" drain size (150mm diameter) sanitary pipe at 1% is 700 fixtures.

Since the proposed number of fixture units is less than the maximum allowable for each pipe size at 1% slope, the proposed service laterals and private main will have adequate capacity.

5 WATERMAIN DESIGN

Existing building#1 is currently serviced by a drilled well on-site. The existing drilled well is to be decommissioned and a proposed connection to the 406mm diameter PVC watermain City watermain is proposed.

A 150mm water pipe is proposed from the connection on Greenbank Road to a proposed private hydrant on the property. From the hydrant lead, a 50mm diameter service lateral is proposed from the hydrant lead to building#1. Building#1 will contain a water meter in the mechanical room. A separate 38mm diameter water pipe will be installed from building#1 to the washroom facilities in building#2. Further details on the proposed watermain connection, hydrant location and service lateral are provided on the Site Servicing plan 241068 – SER.

5.1 Water Demand

The water demand for the proposed development was calculated based on section 4.1 above. The average daily demand is as follows:

Building #1:

- Average daily demand (ADD) 0.083 L/s

Building #2:

- Average daily demand (ADD) 0.093 L/s

Combined Buildings:

- Average daily demand 0.176 L/s
- Maximum daily demand (factor of 1.5) is 0.176 L/s x 1.5 = 0.264 L/s
- Peak hourly demand (factor of 1.8) = 0.264 L/s x 1.8 = 0.476 L/s

5.2 Water Required for Fire Protection

The fire flow protection requirements are calculated as per the Fire Underwriters Survey (FUS).

All the buildings on site are one storey buildings. The highest fire flow requirement would be from the building with the largest footprint and the smallest separation distances. The buildings on site have the following footprints:

- Building#1 (Existing): 299.6m^2
- Building#2 (Existing): 470.5m^2
- Building#2 Existing with Proposed Washroom Facility Addition: 526.6m^2

Detailed calculations were completed according to the FUS methods for building#2 with the proposed washroom facility addition.

The coefficient for the type of construction used in the calculations was selected to be 1.5 (structure essentially combustible). It is understood that the coefficient related to the type of construction may be less, however this value was chosen to be conservative.

Calculations can be found in the appendix. Note that the separation distances are approximate.

The minimum fire flow requirement for FUS is 8,500 L/min or 141.7 L/s.

5.3 Fire Hydrants

The fire hydrants within the vicinity of the site are shown in the Table 5.1 below:

Hydrant	Class	Location	Distance to North Door Building#1 (m)	Expected Contribution (L/s)
#1 (proposed on site)	AA	Proposed hydrant at driveway of site.	50m	95
#2	AA	Cappamore Drive, 35m west of the intersection with Greenbank	240m	47
			Total	142

Notes:
Hydrant testing would have to be completed to confirm hydrant class for hydrant #1. Boundary conditions received suggest that there is adequate pressure to facilitate the flow for a class AA hydrant.

City of Ottawa Technical Bulletin ISTB-2018-02 Appendix I Table 1 provides guidance with respect to the maximum flow to be considered from a given hydrant. From this table, a Class AA hydrant can contribute a maximum flow of 5,700 L/min when located less than 75 metres from the building and 3,800 L/min when located between 75 and 150 metres from the building.

Hydrant 1 is 50m to the northern entrance of building#2. Hydrant 2 is 240m to the northern entrance of building#2. Since Hydrant 1 is less than 75 metres from the northern entrance of building#2 the expected contribution is 5,700 L/min or 95 L/s. Since Hydrant 2 is greater than 150 metres away from the northern entrance of building#2, the expected contribution is 2820 L/min or 47 L/s. These hydrants are expected to provide a total combined contribution of 8520 L/min. As previously indicated, the required fire flow is 141.7 L/sec x 60 sec/min = 8502 L/min. The existing hydrant and proposed on-site hydrant are considered to be sufficient to meet the required fire flow without needing an additional hydrant at the site.

5.4 Boundary Conditions

The following calculated water demands were submitted to the City for the request for Boundary Conditions:

Table 5.2: Original Demand Presented in the Request for Boundary Conditions

Scenario	Demand (L/s)
Average Daily Demand	0.15
Maximum Daily Demand	0.23
Peak Hour	0.41
Fire Flow	133.3

After boundary conditions were received, the washroom facility had been added to building#2. Therefore the building area has increased for the Fire Flow calculations.

For the original boundary condition submission operation hours were assumed to be 24hrs a day. Operations have been adjusted to a 20hr operating day. The following are the adjusted demands:

Table 5.3: Update Water Demand Summary

Scenario	Demand (L/s)
Average Daily Demand	0.18
Maximum Daily Demand	0.27
Peak Hour	0.48
Fire Flow	141.7

With the changes in demand it is not expected that the boundary conditions would change significantly.

The following are the boundary conditions, HGL, for hydraulic analysis that were provided in February 2025 for the above indicated peak hourly demand and fire flow demand.

Minimum HGL = 142.6
Maximum HGL = 156.5
MaxDay + FireFlow = 142.6

In accordance with MOE Design Guidelines for Drinking Water Systems, the distribution system shall be sized so that under maximum hourly demand conditions the pressures are not less than 276 kPa (40 psi.)

The pressure loss to the floor level of the proposed building was calculated using Bernoulli's Equation in Combination with the Darcy – Weisbach Equation and the Colebrook Equation. The equations are shown below.

$$H_P + Z_1 - Z_2 + \frac{P_1 - P_2}{S} + \frac{V_1^2 - V_2^2}{2g} = h_f + h_m \quad \text{where:}$$

$$h_m = K_m \frac{V^2}{2g} \qquad \mathrm{Re} = \frac{VD}{\nu} \qquad Q = VA \qquad A = \frac{\pi}{4} D^2$$

$$\text{Darcy – Weisbach Equation: } h_f = f \frac{L}{D} \frac{V^2}{2g} \quad \text{where:}$$

$$\text{If laminar flow } \left(\mathrm{Re} < 4000 \text{ and any } \frac{e}{D}\right), \quad f = \frac{64}{\mathrm{Re}}$$

$$\text{If turbulent flow } \left(4000 \le \mathrm{Re} \le 10^8 \text{ and } 0 \le \frac{e}{D} < 0.05\right), \text{ then}$$

$$\text{Colebrook Equation: } \frac{1}{\sqrt{f}} = -2.0 \log\left(\frac{e/D}{3.7} + \frac{2.51}{\mathrm{Re}\sqrt{f}}\right)$$

In general conformance with the MOE Guidelines, and City of Ottawa Technical Bulletin ISD-2010-2, the desired range in pressure should be approximately 350KPa (50psi) to 480KPa (70psi) during normal operating conditions. As per the Ontario Building Code, the residual pressure should not exceed 552KPa (80psi). The system should be designed to maintain a minimum pressure of 140kPa (20 psi) at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

Table 5.4 Water Flow Analysis

Pipe Sections			Grade Elevation		Hydraulic Grade line							
Average Dailly Demand												
Start	Along	End	Start	End	Start	End	Ps	Pe	Q	V	D	A
			m	m	m	m	kPa	kPa	m^3/sec	m/sec	m	m^2
1st Floor - Existing												
Greenbank Rd (Peak Hourly)	Driveway	Service Tee	97.3	97.3	140.25	140.25	421	421	0.000476	0.0269	0.15	0.017671
Service tee	Service	1 storey place of worship	97.3	101.64	140.25	140.16	421	378	0.000476	0.2424	0.05	0.001963
1st Floor - Existing												
Greenbank Rd (max HGL)	Driveway	Service Tee	97.3	97.3	154.12	154.12	557	557	0.000180	0.0102	0.15	0.017671
Service tee	Service	1 storey place of worship	97.3	101.64	154.12	154.10	557	514	0.000180	0.0917	0.05	0.001963

For calculation purposes the hydraulic grade line and pressure information originally provided and the updated demand information was used for the pressure analysis of the hydrant pipe and the lateral from the hydrant to building#1, as shown in table 5.4 above. With an average daily flow of 0.18 L/s, and a pressure at the main of 80.8 psi (557Kpa), given losses in the private main at the hydrant, and in the bends and valves of the service, the pressure at the building was calculated to be 514 Kpa. As per the Ontario Building Code, the residual pressure should not exceed 552Kpa under normal operating conditions.

Since the resultant pressure at the building will be below 552 Kpa, a pressure reducing valve would not be required.

However, given that this is computer modelled data provided by the City, it is possible that the main may have a residual pressure higher than 557 Kpa. When the laterals are installed, the pressure at the building should be tested to determine if the pressure is above 552Kpa. A note has been included on the drawing to indicate that a pressure reducing valve will be required if the pressure exceeds 552Kpa at the building.

5.5 Water Service Requirements

For the proposed development, a 50mm water lateral is proposed from the 150mm diameter hydrant lead to building#1.

From the architectural drawings indicated in section 4.2.3, the number of water fixture units were obtained from both buildings.

From the Ontario Building Code (O.B.C) table 7.6.3.2 A, the total number of water fixture units for the site is 51.8.

From OBC Table 7.6.3.1, the number of fixture units indicated for a 2” (50mm diameter water service), with a total length from the connection at the main to building#1 of 45m, is 151 fixtures.

Since the proposed number of fixture units is less than 151, the proposed service lateral size of 50mm in diameter from the hydrant lead to building#1 is adequate.

A proposed 38mm water pipe is shown from building#1 to building#2. The service size has to be confirmed with the Mechanical Engineer.

6 CONCLUSIONS

This report addresses the adequacy of the existing municipal sanitary sewer system and watermain to service the proposed demands of the institutional site on Greenbank Road. Based on the analysis provided in this report, the conclusions are as follows:

The peak sewage flow rate from the site including the proposed washroom facility addition will be 0.66 L/sec. A connection to the City's sanitary sewer at the existing maintenance hole on Greenbank EX. SAN-MH is proposed, with a 150mm diameter private sanitary sewer on the site, and 125mm diameter service laterals connected to the private sewer from each building.

The existing watermain on Greenbank Road will have adequate capacity to service the site for both domestic and fire protection. A 150mm diameter watermain will be proposed from the tee connection at the existing watermain on Greenbank Road to the proposed hydrant lead on-site. A 50mm water service pipe will be proposed from the hydrant lead to building#1. A pressure reducing valve may be required, to keep the residual pressure below 552 Kpa. Testing should be completed after installation to verify the pressure information, and confirm if a pressure reducing valve is necessary.

We trust that this report provides sufficient information for your present purposes. If you have any questions concerning this report or if we can be of any further assistance to you on this project, please do not hesitate to contact our office.

Sincerely,
Kollaard Associates, Inc.



Amanda Van Bruggen, P.Eng.

Appendix A: Servicing Design Information

- Fireflow Calculation – FUS
- Boundary Conditions Received

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APPENDIX C: CALCULATION OF FIRE FLOW REQURIEMENTS - 3971 Greenbank Road

Calculation Based on Fire Underwriters Survey, 1999

1) An estimate of the Fire Flow required for a given fire area may be estimated by:

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

where F = required fire flow in litres per minute
A = Consider area of largest floor (2nd) plus 100% of 1st floor

C = coefficient related to the type of construction:

1.5	for wood construction (structure essentially combustible)
1.0	for ordinary construction (brick or other masonry walls, combustible floor and interior)
0.8	for noncombustible construction (unprotected metal structural components, masonary or metal walls)
0.6	for fire-resistive construction (fully protected frame, floors, roof)

100% of floor 2 = 0.0 m^2 100% of 1st Floor = 526.6 m^2

A = 526.6 m^2 (Combustible Construction)
C = 1.5
F = 7,573 L/min ----------> Rounded to nearest 1000 = **8,000** L/min

2) The value obtained in 1. may be reduced by as much as 25% for occupancies having a low

Non-combustible =	-25%
Limited Combustible =	-15%
Combustible =	0%
Free Burning =	15%
Rapid Burning =	25%

Reduction due to low occupancy hazard = -15% x 8,000 = **= 6,800** L/min

3) The value above my be reduced by up to 50% for automatic sprinlker system

Reduction due to automatic sprinker system = 0% x 8,000 = **0**

4) The value obtained in 2. may be increased for structures exposed within 45 metres by the fire

Separation (metres)	Condtion	Charge
0m to 3.0m	1	25%
3.1m to 10.0m	2	20%
10.1m to 20.0m	3	15%
20.1m to 30.0m	4	10%
30.1m to	5	0%

Exposures	Distance(m)	Condtion		Charge
Side 1	3.0	1	-------->	25%
Side 2	101.7	5	-------->	0%
Side 3	241.0	5	-------->	0%
Side 4	168.2	5	-------->	0%
				25%

Increase due to separation = 25% x 6,800 = **1,700** L/min

The fire flow requirement is = **6,800**

Reduction due to Sprinkler = **0**
Increase due to Separation = 1,700

The Total fire flow requirement is = 8,500

or **141.7** **L/sec**

Subject: RE: 3971 Greenbank Road
From: "Cassidy, Tyler" <tyler.cassidy@ottawa.ca>
Date: 2025-02-20, 9:12 a.m.
To: "amanda@kollaard.ca" <amanda@kollaard.ca>

Hi Amanda,

Please find attached the boundary conditions for 3971 Greenbank Road.

Thank you,

Tyler Cassidy, P.Eng
Infrastructure Project Manager,
Planning, Development and Building Services department (PDBS)/ Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB) - South 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 12977, Tyler.Cassidy@ottawa.ca

From: Amanda VanBruggen <amanda@kollaard.ca>
Sent: February 19, 2025 3:13 PM
To: Cassidy, Tyler <tyler.cassidy@ottawa.ca>
Subject: Re: 3971 Greenbank Road

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.

Thank you Tyler,

Just though I would check in, in case they got back to you sooner.

Many Thanks,

Amanda Van Bruggen

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On 2025-02-19 3:11 p.m., Cassidy, Tyler wrote:

> Hi Amanda,
>
> I haven't heard anything back from our water services department yet. I am aware they're quite busy at the moment. I'll let you know if they are able to provide the results before the standard 10 business day timeframe.
>
> Thank you,
>
> **Tyler Cassidy, P.Eng**
> Infrastructure Project Manager,
> Planning, Development and Building Services department (PDBS)/ Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB) - South Branch
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>
> ---
>
> **From:** Amanda VanBruggen <amanda@kollaard.ca>
> **Sent:** February 19, 2025 9:21 AM

Boundary Conditions
3971 Greenbank

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	9	0.15
Maximum Daily Demand	14	0.23
Peak Hour	25	0.41
Fire Flow #1	8,000	133.33

Location



Results

Existing Condition

Connection 1 –Greenbank

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	156.5	80.8
Peak Hour	142.6	61.0
Fire Flow #1	142.6	61.0

[1] Ground Elevation = 99.7 m

Future SUC

Connection 1 –Greenbank

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	146.8	66.9
Peak Hour	142.8	61.2
Fire Flow #1	141.9	60.1

[1] Ground Elevation = 99.7 m

Notes

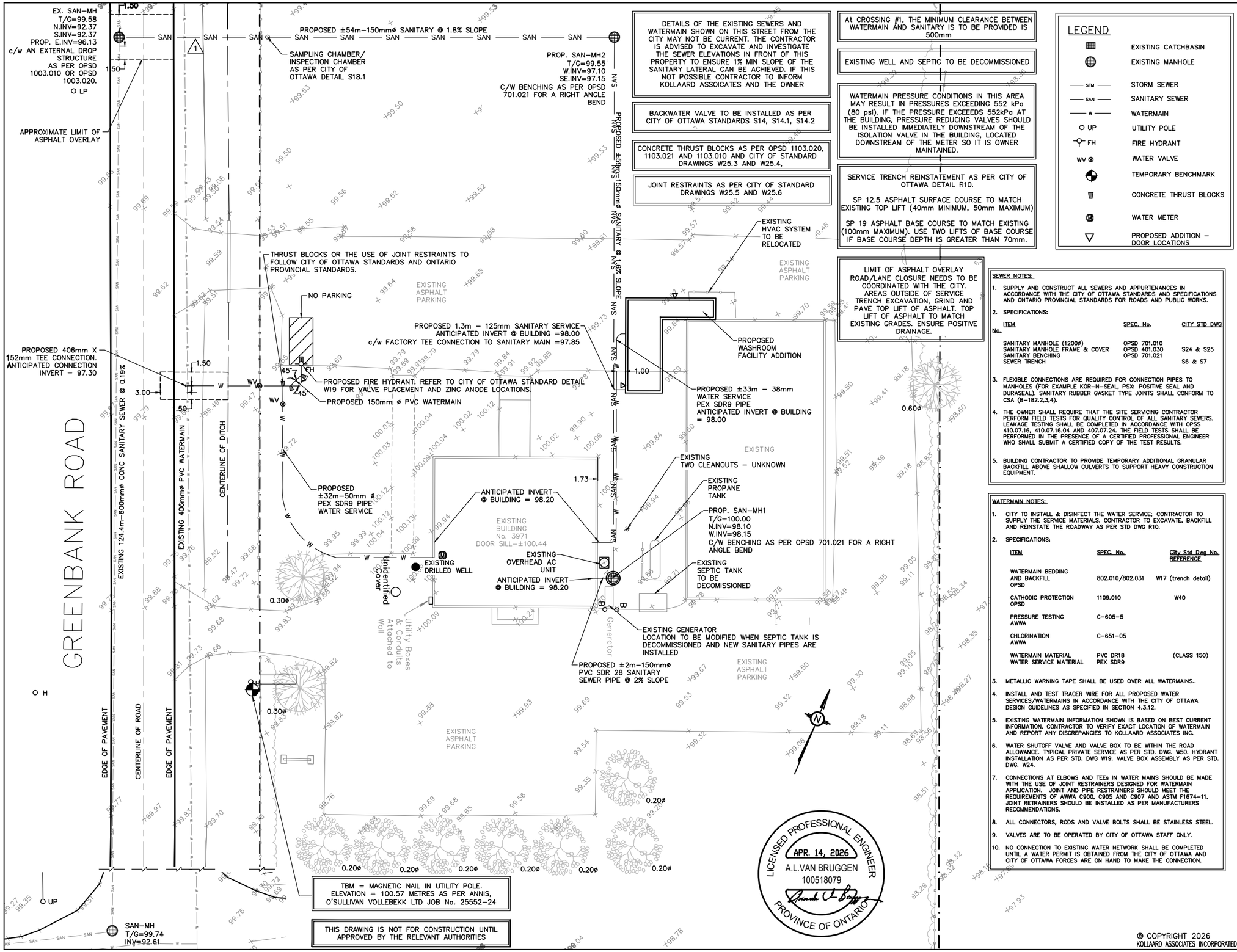
1. *As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:*
    a. *If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.*
    b. *Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.*
2. *Any connection to a watermain 400 mm or larger should be approved by DWS as per the Water Design Guidelines Section 2.4 Review by Drinking Water Services.*

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

Appendix B: Drawings

- 241068 – SER – Site Servicing Plan



DETAILS OF THE EXISTING SEWERS AND WATERMAIN SHOWN ON THIS STREET FROM THE CITY MAY NOT BE CURRENT. THE CONTRACTOR IS ADVISED TO EXCAVATE AND INVESTIGATE THE SEWER ELEVATIONS IN FRONT OF THIS PROPERTY TO ENSURE 1% MIN SLOPE OF THE SANITARY LATERAL CAN BE ACHIEVED. IF THIS NOT POSSIBLE CONTRACTOR TO INFORM KOLLAARD ASSOICATES AND THE OWNER

BACKWATER VALVE TO BE INSTALLED AS PER CITY OF OTTAWA STANDARDS S14, S14.1, S14.2

CONCRETE THRUST BLOCKS AS PER OPSD 1103.020, 1103.021 AND 1103.010 AND CITY OF STANDARD DRAWINGS W25.3 AND W25.4,

JOINT RESTRAINTS AS PER CITY OF STANDARD DRAWINGS W25.5 AND W25.6

At CROSSING #1, THE MINIMUM CLEARANCE BETWEEN WATERMAIN AND SANITARY IS TO BE PROVIDED IS 500mm

EXISTING WELL AND SEPTIC TO BE DECOMMISSIONED

WATERMAIN PRESSURE CONDITIONS IN THIS AREA MAY RESULT IN PRESSURES EXCEEDING 552 kPa (80 psi). IF THE PRESSURE EXCEEDS 552kPa AT THE BUILDING, PRESSURE REDUCING VALVES SHOULD BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE ISOLATION VALVE IN THE BUILDING, LOCATED DOWNSTREAM OF THE METER SO IT IS OWNER MAINTAINED.

SERVICE TRENCH REINSTATEMENT AS PER CITY OF OTTAWA DETAIL R10.

SP 12.5 ASPHALT SURFACE COURSE TO MATCH EXISTING TOP LIFT (40mm MINIMUM, 50mm MAXIMUM)

SP 19 ASPHALT BASE COURSE TO MATCH EXISTING (100mm MAXIMUM). USE TWO LIFTS OF BASE COURSE IF BASE COURSE DEPTH IS GREATER THAN 70mm.

LIMIT OF ASPHALT OVERLAY
ROAD/LANE CLOSURE NEEDS TO BE COORDINATED WITH THE CITY. AREAS OUTSIDE OF SERVICE TRENCH EXCAVATION, GRIND AND PAVE TOP LIFT OF ASPHALT. TOP LIFT OF ASPHALT TO MATCH EXISTING GRADES. ENSURE POSITIVE DRAINAGE.

LEGEND

- EXISTING CATCHBASIN
- EXISTING MANHOLE
- STM — STORM SEWER
- SAN — SANITARY SEWER
- W — WATERMAIN
- UP — UTILITY POLE
- FH — FIRE HYDRANT
- WV — WATER VALVE
- TEMPORARY BENCHMARK
- CONCRETE THRUST BLOCKS
- M — WATER METER
- PROPOSED ADDITION — DOOR LOCATIONS

SEWER NOTES:

1. SUPPLY AND CONSTRUCT ALL SEWERS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS AND ONTARIO PROVINCIAL STANDARDS FOR ROADS AND PUBLIC WORKS.
2. SPECIFICATIONS:

ITEM No.	SPEC. No.	CITY STD DWG.
SANITARY MANHOLE (1200ø)	OPSD 701.010	
SANITARY MANHOLE FRAME & COVER	OPSD 401.030	S24 & S25
SANITARY BENCHING	OPSD 701.021	
SEWER TRENCH		S6 & S7

3. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTION PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). SANITARY RUBBER GASKET TYPE JOINTS SHALL CONFORM TO CSA (B-182.2,3,4).
4. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
5. BUILDING CONTRACTOR TO PROVIDE TEMPORARY ADDITIONAL GRANULAR BACKFILL ABOVE SHALLOW CULVERTS TO SUPPORT HEAVY CONSTRUCTION EQUIPMENT.

WATERMAIN NOTES:

1. CITY TO INSTALL & DISINFECT THE WATER SERVICE; CONTRACTOR TO SUPPLY THE SERVICE MATERIALS. CONTRACTOR TO EXCAVATE, BACKFILL AND REINSTATE THE ROADWAY AS PER STD DWG R10.
2. SPECIFICATIONS:

ITEM	SPEC. No.	City Std Dwg No. REFERENCE
WATERMAIN BEDDING AND BACKFILL OPSD	802.010/802.031	W17 (trench detail)
CATHODIC PROTECTION OPSD	1109.010	W40
PRESSURE TESTING AWWA	C-605-5	
CHLORINATION AWWA	C-651-05	
WATERMAIN MATERIAL WATER SERVICE MATERIAL	PVC DR18 PEX SDR9	(CLASS 150)

3. METALLIC WARNING TAPE SHALL BE USED OVER ALL WATERMAINS..
4. INSTALL AND TEST TRACER WIRE FOR ALL PROPOSED WATER SERVICES/WATERMAINS IN ACCORDANCE WITH THE CITY OF OTTAWA DESIGN GUIDELINES AS SPECIFIED IN SECTION 4.3.12.
5. EXISTING WATERMAIN INFORMATION SHOWN IS BASED ON BEST CURRENT INFORMATION. CONTRACTOR TO VERIFY EXACT LOCATION OF WATERMAIN AND REPORT ANY DISCREPANCIES TO KOLLAARD ASSOCIATES INC.
6. WATER SHUTOFF VALVE AND VALVE BOX TO BE WITHIN THE ROAD ALLOWANCE. TYPICAL PRIVATE SERVICE AS PER STD. DWG. W50. HYDRANT INSTALLATION AS PER STD. DWG W19. VALVE BOX ASSEMBLY AS PER STD. DWG. W24.
7. CONNECTIONS AT ELBOWS AND TEEs IN WATER MAINS SHOULD BE MADE WITH THE USE OF JOINT RESTRAINERS DESIGNED FOR WATERMAIN APPLICATION. JOINT AND PIPE RESTRAINERS SHOULD MEET THE REQUIREMENTS OF AWWA C900, C905 AND C907 AND ASTM F1674-11. JOINT RETRAINERS SHOULD BE INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS.
8. ALL CONNECTORS, RODS AND VALVE BOLTS SHALL BE STAINLESS STEEL.
9. VALVES ARE TO BE OPERATED BY CITY OF OTTAWA STAFF ONLY.
10. NO CONNECTION TO EXISTING WATER NETWORK SHALL BE COMPLETED UNTIL A WATER PERMIT IS OBTAINED FROM THE CITY OF OTTAWA AND CITY OF OTTAWA FORCES ARE ON HAND TO MAKE THE CONNECTION.

LICENSED PROFESSIONAL ENGINEER
APR. 14, 2026
A.L.VAN BRUGGEN
100518079
PROVINCE OF ONTARIO

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KOLLAARD ASSOCIATES INCORPORATED

DRAWING NUMBER: 241068-SER

CONSTRUCTION NOTES:

1. All dimensions and elevations are in metres. Do not scale drawing.
2. This drawing is not a legal survey, a utility plan or a site plan and is for sanitary, storm and water servicing only.
3. TBM = Magnetic nail in utility pole. Elevation = 100.57 metres as per Annis, O'Sullivan Vollebekk Ltd Job No. 25552-24.
4. This drawing cannot be accepted as acknowledging all of the utilities, and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
5. This drawing is not for construction until approved by the relevant authorities.
6. Underside of Footing (USF) elevations are assumed on drawing.
7. Existing location of watermain and sanitary sewer as shown on this plan are approximate. Contractor to verify in the field to confirm exact location prior to construction.
8. Service laterals to be insulated where soil is cover is less than 2.4 metres for water services and 2 metres sanitary and storm services as per City of Ottawa Standard Drawing W22.
9. If water service is less than 2.4 metres from sewer manhole or catchbasin, contractor shall insulate between them with s/m rigid insulation as per City of Ottawa Standard Drawing W23.
10. Bedding for sewers and watermain installation shall be granular type 'A" compacted to 95% dry proctor density.
11. All dimensions to be verified on site by contractor prior to construction.
12. Client is responsible for acquiring all necessary permits.
13. Elevations of existing storm and sanitary services were provided by the Information Centre at the City of Ottawa.
14. Any changes made to this plan must be verified and approved by Kollaard Associates Inc.
15. Kollaard Associates accepts not responsibility if the servicing plan is used for the purposes other than lot servicing. Dimensions are included on the servicing plan as a courtesy and are not to be used for layout
16. This servicing plan is not a site plan. Proposed building addition as per site plan provided by client/designer. Client is responsible to ensure building location meets municipal zoning by-laws.

CROSSING TABLE	
1	W/M INV = 96.91
	SAN OBV = 96.40

REV.	NAME	DATE	DESCRIPTION
2	AVB	14/04/2026	RESPONSE TO 2nd SET OF CITY COMMENTS
1	AVB	09/25/2025	RESPONSE TO CITY REVIEW COMMENTS
0	AVB	09/25/2025	FOR CITY OF OTTAWA REVIEW

Kollaard Associates Engineers
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PO BOX 189
KEMPTVILLE ONTARIO
K0G 1J0
www.kollaard.ca
info@kollaard.ca

CLIENT: BARRHAVEN ISLAMIC CENTRE

PROJECT: EXISTING ISLAMIC CENTRE

DRAWING: PROPOSED LOT SERVICING PLAN

LOCATION: 3971 GREENBANK ROAD
R.PLAN 4R-19715, PART 2
LOT 6, CONC. 2,
NEPEAN,
CITY OF OTTAWA, ONTARIO

DESIGNED BY: NR/AVB	*DATE:* MAR 7, 2025
DRAWN BY: NR/AVB	*SCALE:* 1:400

KOLLAARD FILE NUMBER: 241068