

**PROPOSED
TWO STOREY COMMERCIAL WAREHOUSE AND OFFICE
BUILDING SITE
PART OF LOT 18
CONCESSION 1 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
96 BILL LEATHEM DRIVE
CITY OF OTTAWA**

**SERVICEABILITY REPORT
REPORT R-822-125A (REV. 1)
MARCH 2024**

T.L. MAK ENGINEERING CONSULTANTS LTD.

SEPTEMBER 2023

REFERENCE FILE NUMBER 822-125

Introduction

The commercial land under consideration [Zone (IL9)] is proposed for a two-storey warehouse/office building development site. The municipal address of the property is 96 Bill Leathem Drive. It is situated on the south side of Bill Leathem Drive, west of Leikin Drive and east of Longfields Drive. It is located in the City Ward (Ward 24 – Barrhaven East). See site plan and legal survey plan in Appendix “A” for details.

The total gross floor area of warehouse/office building is approximately 1,644.40 m² (±17,700 ft²) in size.

The size of the site development property under consideration is ±0.4047 ha. In addition to the two-storey warehouse/office building, the other development features will comprise of one vehicle entrance asphalt access road, parking areas, concrete walkways, landscape area, etc. to meet City of Ottawa site plan requirements.

A site geotechnical investigation report was prepared for the owner’s soils engineers by Paterson Group entitled “Geotechnical Investigation – Proposed Warehouse Building” (Report No. PG6668-1) dated June 1, 2023.

This Serviceability Report will serve provide the City of Ottawa with our serviceability brief to address the proposed servicing scheme for this site.

Existing Site Conditions and Servicing

Presently, the said commercial property is vacant with gravel material stockpiled along the east portion of the site. The Land is currently found to be gently sloping and drains predominantly from a north to south (front to rear) direction across the lot. The existing ground surface of the lot across from the site is partially gravel covered with some vegetation cover at the west side of the property. The existing gradient of the land is sloping at an approximate gradient of 0.33%. For additional details of the site’s pre-development conditions, refer to the coloured Google Images (2019) and aerial photography from (GeoOttawa 2022) in Appendix “B”.

As for the availability of underground services, there are existing municipal services along Bill Leathem Drive consisting of the following main sizes: a 750 mm dia. and 1200 mm dia. storm sewer, a 250 mm dia. sanitary sewer and a 300 mm dia. watermain. Refer to the City of Ottawa Bill Leathem UCC and “As-built” plan and profile drawings included in Appendix “C” for details.

Because the site will be connecting and outletting into the separated storm sewer system along Bill Leathem Drive in the City of Ottawa, therefore, the approval exemption under Ontario Regulations 525/98 would apply since storm water discharges from this site will outlet flow into a downstream storm sewer. Thus, an Environmental Compliance Approval (ECA) application will not be required to be submitted to the Ministry.

Proposed Warehouse/Office Building Site

A vehicle entrance located at the northwest corner of the lot is proposed to provide vehicular access to this property along with an access roadway from this entranceway to direct vehicular traffic in and out of the site. Vehicular parking will be available at the rear of the site, south of the proposed building as well as along the front (northside) of the building.

A. Water Supply

The proposed commercial building located within the Pressure Zone 2W2C at 96 Bill Leathem Drive is a 2-storey commercial building with no basement. The building has a footprint of 1,326 m² and contains 2-stories of office space with a total gross floor area of 752 m². The building also has a warehouse with a total gross floor area 892 m². The building is to be serviced by the 305 mm diameter watermain along Bill Leathem Drive.

The ground elevation on the property is approximately 89.7 m, as obtained from GeoOttawa elevation contours (**Figure 1** in Appendix “D”), and the Site Survey Plan also (see attached **Site Survey Plan** in Appendix “D”).

Demand Projections

The demands were calculated using the City of Ottawa’s Water Design Guidelines, where the consumption rate of 28,000 L/gross ha/da was used to estimate average day demands (AVDY). Maximum day (MXDY) demands were calculated by multiplying AVDY demands by a factor of 1.5. Peak hour (PKHR) demands were calculated by multiplying MXDY by a factor of 1.8. The consumption unit per gross hectare per day for the commercial use of the building was estimated based on the City of Ottawa’s Water Design Guidelines. **Table 1** shows the estimated domestic demands of the proposed building.

Table 1: Estimated Domestic Demand

Unit Type	Unit Count	Consumption (L/gross ha/d)	AVDY		MXDY		PKHR	
			L/d	L/s	L/d	L/s	L/d	L/s
Commercial	0.164	28,000	4,604	0.05	6,906	0.08	12,432	0.14
Total	0.164		4,604	0.05	6,906	0.08	12,432	0.14

The fire flow required was determined following the Fire Underwriter Survey (FUS) method and is provided in the attached worksheet in Appendix “D”. For this analysis, the building was classified as a non-combustible construction (assuming that all structural elements such as walls, floors and roof are constructed with a minimum 1-hour fire resistance rating and non-combustible material). Furthermore, the building contents were assumed as rapid burning, as a conservative approach depending on the intended use of the warehouse. Lastly, it is understood that the building will have a sprinkler system.

The resulting total required fire flow is 6,000 L/min (100 L/s) for a duration of 2 hours. Details are provided in the attached **FUS Fire Flow Calculations** in Appendix “D”. The proposed **Site**

Plan in Appendix “D” attached was used to determine distances from the proposed building to the property lines. **Figure 2** in Appendix “D” provides separation distances from adjacent buildings.

In summary, the estimated water demands for the proposed building are as follows:

- AVDY = 4,604 L/d (0.05 L/s);
- MXDY = 6,906 L/d (0.08 L/s);
- PKHR = 12,432 L/d (0.14 L/s); and,
- Fire Flow (FUS) = 6,000 L/min (100 L/s).

Boundary Conditions

The Based on the City’s **Water Boundary Conditions**, the proposed building falls in the pressure zone 2W2C under existing condition but will eventually be within the future zone SUC following a pressure zone reconfiguration. As such, two conditions (i.e., Existing and Future Condition) were analyzed. The HGL boundary conditions for 96 Bill Leathem Drive under existing and future conditions, as presented in **Table 2**, were provided by the City on July 20th, 2023 (see attached **Water Boundary Conditions Email** in Appendix “D”)

Table 2: Boundary Conditions

Demand Scenario	Head (m) Existing Condition	Head (m) Future Condition
Minimum HGL (Peak Hour)	125.0	144.1
Maximum HGL (Average Day)	132.8	146.9
Maximum Day + Fire Flow (FUS – 6,000 L/min)	126.5	142.8

Hydraulic Analysis

Peak Hour & Average Day

During average day demands, the resulting maximum hydraulic gradeline of 132.8 m corresponds to a maximum pressure of 423 kPa (61 psi) under the existing condition. However, after the pressure zone reconfiguration, the maximum hydraulic gradeline would increase to 146.9 m, which corresponds to 561 kPa (81 psi). This value is slightly above the maximum pressure objective of 552 kPa (80 psi). Thus, as per the City guidelines, pressures exceeding 552 kPa (80 psi) will require reduction mitigation methods, which in turn could be achieved by adding a pressure reducing valve along the service line to the proposed building.

During peak hour demands, the resulting minimum hydraulic gradeline of 125.0 m corresponds to a peak hour pressure of 346 kPa (50 psi) under the existing condition. Subsequent to the pressure zone reconfiguration, the peak hour hydraulic gradeline would increase to 144.1 m corresponding to a minimum pressure of 533 kPa (77 psi). Peak hour pressure (both under the

existing condition and future condition) is above the minimum pressure objective of 276 kPa (40 psi) and is therefore considered acceptable.

Supporting Hydraulic Calculations are attached in Appendix D.

Maximum Day + Fire Flow

A maximum day plus fire flow hydraulic gradeline of 126.5 m corresponds to a residual pressure of 361 kPa (52 psi) at this location. Similarly, after pressure zone reconfiguration, the hydraulic gradeline of 142.8 m corresponds to a residual pressure of 521 kPa (76 psi) at this location. As such, both existing and future conditions are well above the minimum residual pressure requirements of 140 kPa (20 psi).

Based on Table 1 of Appendix I of the City of Ottawa Technical Bulletin ISTB-2018-02 and a desktop review (i.e., Google Street View) to confirm hydrant class, four (4) hydrants with known hydrant classes are located in the vicinity of the proposed building. Two (2) Class AA hydrants are within 75 m, both with a capacity contribution of up to 5,700 L/min. Two (2) others Class AA hydrants are within 150 m from the site, both with a capacity contribution of up to 3,800 L/min. The combined hydrant flow coverage for 96 Bill Leathem Drive is therefore 19,000 L/min, which is above the required fire flow (RFF) obtained from the FUS (6,000 L/min).

The hydrant coverage is illustrated in **Figure 3** attached in Appendix “D”. A breakdown of the hydrant coverage is summarized in **Table 3**.

Table 3: Minimum Fire Hydrant Coverage

Building	Calculated Fire Flow Demand (L/min)	Fire Hydrants					Minimum Combined Hydrant Flow Coverage (L/min)
		Hydrant Class	Within 75 m		Between 75 m and 150 m		
			Quantity	Contrib. to RFF	Quantity	Contrib. to RFF	
96 Bill Leathem	6,000 (FUS)	AA	2	5,700	2	3,800	19,000
		A					
		B					
		C					

In conclusion, based on the boundary condition provided, the 305 mm dia. watermain on Bill Leathem Drive provides sufficient flow to meet the Fire Underwriter Survey (FUS) required fire flow.

Resulting pressures during anticipated demand flows meet the pressure objectives during peak demand conditions, as per the City of Ottawa’s Drinking Water Design Guidelines. However, during average day demand conditions, the expected maximum pressure is slightly above the

maximum pressure objective of 552 kPa (80 psi). Thus, an individual pressure reducing valve is required along the service line to the proposed building.

B. Sanitary Flow

The peak sanitary flow for this site is estimated at $Q = 0.49$ L/s with an infiltration rate of 0.14 L/s. Refer to Appendix "E" Sheet 1 of 1 regarding sanitary flow calculations. This flow will enter the existing 250 mm dia. sanitary sewer on Bill Leathem Drive via the proposed 150 mm dia. PVC sanitary service lateral from the two-storey warehouse/office building.

Waste water from the Bill Leathem Drive 250 mm dia. sanitary sewer then in turn outlets east into the existing downstream 750 mm dia. concrete sanitary collector sewer located at Leikin Drive where the waste water further outlets east and north to the existing 1650 mm dia. Merivale Road sanitary trunk sewer.

C. Storm Flow

Stormwater outlet for this proposed property will be the existing 750 mm dia. and 1200 mm dia. storm sewer located on Bill Leathem Drive. The proposed warehouse/office building rooftop is flat and will be able to provide on-site stormwater management (SWM) storage. Roof water from the building will be drained and controlled by four (4) roof drains each with a maximum release rate of 0.95 L/s (15.0 US gal/min.) which then outlets directly into the existing Bill Leathem Drive 1200 mm dia. storm sewer via the proposed 150 mm dia. PVC storm pipe.

On-site drainage shall be graded and drained into (4) catch basin manholes where they are interconnected by oversized underground storm sewer ranging in size from 900 mm dia. to 1500 mm dia. and designed for SWM attenuation purposes.

The building foundation weeping-tile drainage system shall have its own separate pipe for gravity flow where weeping-tile water is outletted via a 150mm diameter storm pipe to the existing Bill Leathem Drive storm sewer. The stormwater outlet for the rooftop water from roof drains will be a separately designated proposed 150mm diameter PVC pipe that will also be outletted directly into the existing Bill Leathem Drive storm sewer.

Four (4) roof drains are proposed for this warehouse/office building to restrict flow at a rate of 0.95 L/s each or 4×0.95 L/s = 3.80 L/s into the existing municipal storm sewer. The calculated net allowable controlled release rate from this site is estimated at 18.42 L/s where 4.13 L/s is release off-site from uncontrolled drainage areas and the total allowable off-site flow is estimated at 22.55 L/s.

Based on the residential site plan from the owner's architect, the average post-development runoff coefficient is estimated at $C = 0.85$ and $A = 0.4047$ hectares.

An estimation of the pre-development flow condition was carried out using the criteria accepted by the City of Ottawa. If post-development C value exceeds the lesser of the $C_{pre} = 0.24$ then SWM is required. Because $C_{post} = 0.85$ for this site exceeds $C_{pre} = 0.24$ then SWM measures are required.

Therefore, based on our calculation, on-site retention is required for this proposed commercial development site, because the site post-development C value of 0.85 is greater than the $C_{pre} = 0.24$.

The storage volume for the five (5)-Year and up to the 100-Year storm event attenuation will be stored by means of flat rooftop of the proposed commercial building and by the oversized underground storm drainage pipe and structures on-site. Refer also to the site storm drainage report (Report No. R-822-125) for further details.

ECA Exemption

The Ministry of the Environment, Conservation and Parks (MECP) was contacted by the City of Ottawa staff on March 27, 2023 regarding status for exemption from an Industrial Sewer Works ECA and MECP confirmed on March 31, 2023 that based on proposed use (mixed office, warehousing, etc.) where tenants are not yet determined, the MECP agrees that this project is not defined as Industrial use. Therefore, presently, this project would meet the exemption criteria of O.Reg. 525/98 as the stormwater management works are designed for and located on a single parcel of land and is outletting to an existing storm sewer on Bill Leathem Drive (750mm dia. Conc. Storm Sewer on Bill Leathem Drive). Refer to Appendix "F" for details of correspondences between MECP and City of Ottawa relating to the ECA exemption status.

Conclusion

To develop this commercial site (± 0.4047 ha. in size) and in controlling the 5-Year stormwater release rate off-site to an allowable rate of 22.55 L/s, a calculated site storage volume of approximately 70.10 m^3 (min.) is required during the 5-Year event, See Table No. 1 to 7 inclusive. We estimate that the required storage volume is 22.97 m^3 (min.) from rooftop storage and 47.13 m^3 (min.) from the site underground drainage system are necessary to attenuate the 5-Year storm event. Refer to the Storm Sewer Design Sheet (Sheet No. 1 of 1) in Appendix "D" of the Storm Drainage Report (Report No. R-822-125) for details of proposed storm sewer system for this site.

During the 5-Year storm event for the flat rooftop storage, the ponding depth on this rooftop is estimated at 120 mm at Drain No. 1, 2, 3, 4, 5 and 6 and 0 mm at the roof perimeter assuming a 1.3% (min.) roof pitch to the drains. The rooftop storage available at Roof Area No. 1 is 4.41 m^3 , Roof Area No. 2 is 4.39 m^3 , Roof Area No. 3 is 4.32 m^3 , Roof Area No. 4 is 6.76 m^3 , Roof Area No. 5 is 6.58 m^3 , and Roof Area No. 6 is 6.77 for a total of 33.23 m^3 which is greater than the required volume of 22.97 m^3 .

As for the remaining storage volume of 47.13 m^3 (min.) required from the site development area for the 5-Year storm event, the estimated H.W.L. of 88.22 m will provide a total available underground storage volume of 48.53 m^3 consisting of the proposed underground storm piping and drainage structures. In total, the 5-Year available site storage volume is approximately 81.76 m^3 which is greater than the required site storage volume of 70.10 m^3 .

In order to control the 100-Year stormwater release rate off-site to an allowable rate of 22.55 L/s, a calculated site storage volume of approximately 108.89 m^3 (min.) is required during the 100-Year event. We estimate that the required storage volume of 53.99 m^3 (min.) of rooftop storage and 108.89 m^3 (min.) from the site underground drainage system are necessary to attenuate the 100-Year storm event. See Table No. 8 to 14 inclusive.

During the 100-year storm event for the flat rooftop storage, the ponding depth on this rooftop is estimated at 150 mm at Drain No. 1, 2, 3, 4, 5 and 6 and 0 mm at the roof perimeter assuming a 1.3% (min.) roof pitch to the drains. The rooftop storage available at Roof Area No. 1 is 8.87 m^3 , Roof Area No. 2 is 8.53 m^3 , Roof Area No. 3 is 8.63 m^3 , Roof Area No. 4 is 13.11 m^3 , Roof Area No. 5 is 12.90 m^3 , and Roof Area No. 6 is 13.12 and for a total of 65.16 m^3 which is greater than the required volume of 53.99 m^3 .

As for the remaining storage volume of 108.89 m^3 (min.) required from the site development area for the 100-Year storm event, the estimated H.W.L. of 90.05 m will provide a total available storage volume of 109.40 m^3 consisting of the proposed oversized underground storm piping and drainage structures. In total, the 100-Year available site storage volume is 174.56 m^3 which is greater than the required site storage volume of 162.88 m^3 .

Therefore, by means of flat building rooftop storage, grading the site to the proposed grades and constructing the proposed underground storm piping and drainage system as shown on the Proposed Site Grading and Servicing Plan (Dwg. No. 822-125, G-1), the desirable 5-Year and 100-Year storm event attenuation volume of 81.76 m^3 and 174.56 m^3 respectively will be available on-site.

In order to control the release flow rate off-site from the controlled drainage area of the lot, an inlet control device (ICD) will be installed at the outlet of CB/MH#1 in the 375mm diameter storm pipe (outlet pipe) with $Q = 12.85 \text{ L/s}$ under a head of 2.54 m. A rooftop drain with a release rate of 0.95 L/s will be installed at Roof Drain #1, #2, #3, #4, #5 and #6 of the proposed warehouse/office building flat rooftop as depicted on (Dwg. No. 822-125, G-1). The 5-Year and 100-Year flow off-site is restricted to 22.55 L/s.

An inlet control device (ICD) will be installed at the outlet of CB/MH#1 in the 375 mm diameter storm pipe (outlet pipe) with $Q = 12.85 \text{ L/s}$ under a head of 2.54 m. The ICD type recommended is a Hydrovex Regulator (100-VHV-1) or equivalent.

The building weeping tile drainage will outlet via its separate 150mm diameter PVC storm lateral. The roof drains will be outletted also via a separate 150mm diameter PVC storm lateral from the office building which "wye" into the proposed 150mm dia. weeping tile storm lateral, where upon both laterals are outletting to the existing Bill Leathem Drive 750mm diameter storm sewer with only one (1) connection. The City of Ottawa recommends that pressurized drain pipe material be used in the building for the roof drain leader pipe in the event of surcharging in the City storm sewer system. Refer to the proposed site grading and servicing plan Dwg. No. 822-125-G-1 for details.

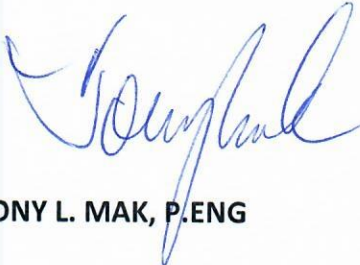
To achieve a minimum of 80 percent TSS removal, a Stormceptor structure (Model EFO-4) is proposed to be installed for the site development of this property. This Stormceptor structure shall be located downstream of the proposed CB/MH#1, which houses the site's inlet control device (ICD). Based on the Stormceptor system that is proposed for this site, size of the lot, and impervious ratio, a greater than 80 percent TSS removal is estimated for all rainfall events including large storms.

Erosion and Sediment Control

The contractor shall implement Best Management Practices to provide for protection of the receiving storm sewer during construction activities. These practices are required to ensure no sediment and/or associated pollutants are released to the receiving watercourse. These practices include installation of a "silt sack" catch basin sediment control device or equal in catch basins as recommended by manufacturer on-site and off-site within the Bill Leathem Drive road right of way adjacent to this property. Siltsack shall be inspected every 2 to 3 weeks and after major storm. The deposits will be disposed of as per the requirements of the contract. Additionally, silt sacs shall be placed on all storm sewer maintenance hole openings during construction. A mud mat is proposed to be installed at the construction site access in order to protect the public road right of way from potential construction traffic damages. See Dwg. #822-125 ESC-1 for details.

Refer to Appendix G for the summary of the Development Servicing Study Checklist that is applicable to this development.

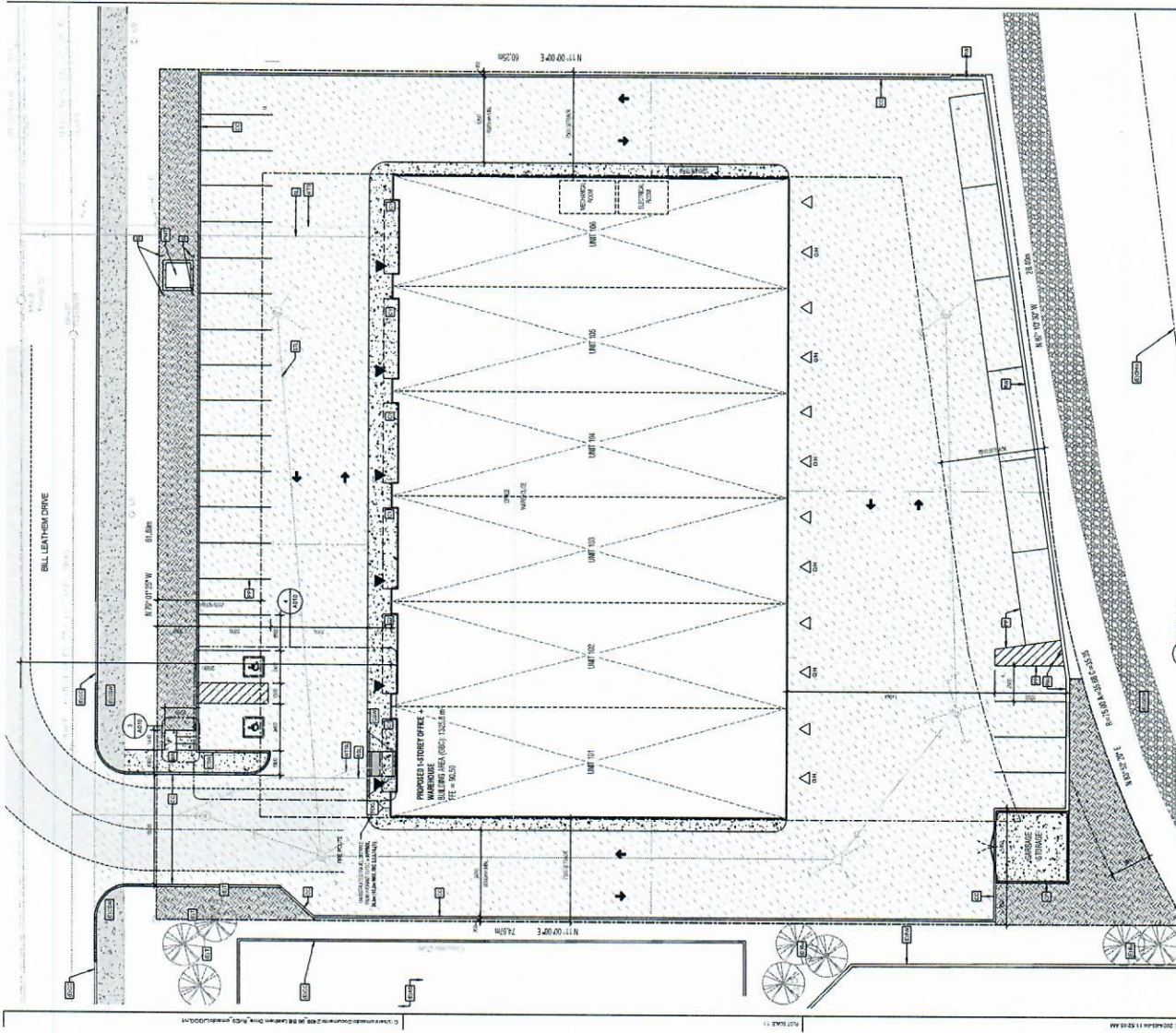
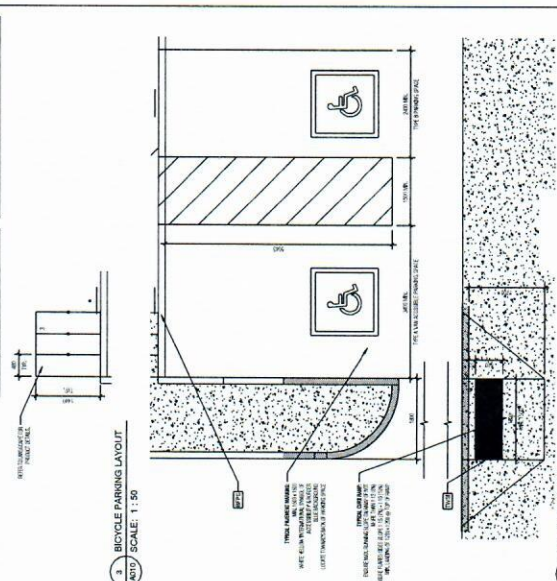
PREPARED BY T.L. MAK ENGINEERING CONSULTANTS LTD.


TONY L. MAK, P.ENG



**PROPOSED
TWO STOREY COMMERCIAL WAREHOUSE AND OFFICE
BUILDING SITE
PART OF LOT 18
CONCESSION 1 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
96 BILL LEATHEM DRIVE
CITY OF OTTAWA**

**APPENDIX A
SITE PLAN AND LEGAL SURVEY PLAN**

[illegible]

TOPOGRAPHIC PLAN OF SURVEY OF
PART OF LOT 18
CONCESSION 1
(RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF
NEPEAN
CITY OF OTTAWA
Surveyed by Annis, O'Sullivan, Vollebek Ltd.

Scale 1: 250



Metric

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

Surveyor's Certificate

CERTIFY THAT: This plan was prepared and in accordance with the Survey Act and the Survey Regulations and the Survey Act and the Survey Regulations.

The survey was completed on the 3rd day of May, 2023.

Annis, O'Sullivan, Vollebek Ltd.

Notes & Legend

Survey Monument Planted	Survey Monument Found	Standard Iron Bar	Short Standard Iron Bar	Iron Bar	Witness	Measured	Arctic, O'Sullivan, Vollebek Ltd.	Accepted	Plan 41-28255	Plan 41-33861	Plan 41-11133	Maintenance Hole (Storm Sewer)	Maintenance Hole (Sanitary)	Maintenance Hole (Watermain)	Utility Pole	Overhead Wires	Light Standard	Inlet Catch Basin	Fire Hydrant	Water Valve	Top of Gate	Not Tangential	Location of Elevation	Top of Concrete Curb Elevation	Property Line
Denotes																									

Bearings are given, derived from CanMet 2016 Real Time Network GPS observations and are referenced to Specified Control Points 01919701338 and 01919871046, MTN Zone 8 (78°37' West Longitude) NAD-83 (original).

ELEVATION NOTES

1. Elevations shown are geoid and are referred to the CGVD23 geoid datum and derived from City of Ottawa control monument 019800090 having a published elevation of 88.831 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that its relative elevation and description agree with the information shown on this drawing.

UTILITY NOTES

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

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ANNIS, O'SULLIVAN, VOLLEBEK LTD.

14 Concession Gate, Suite 500

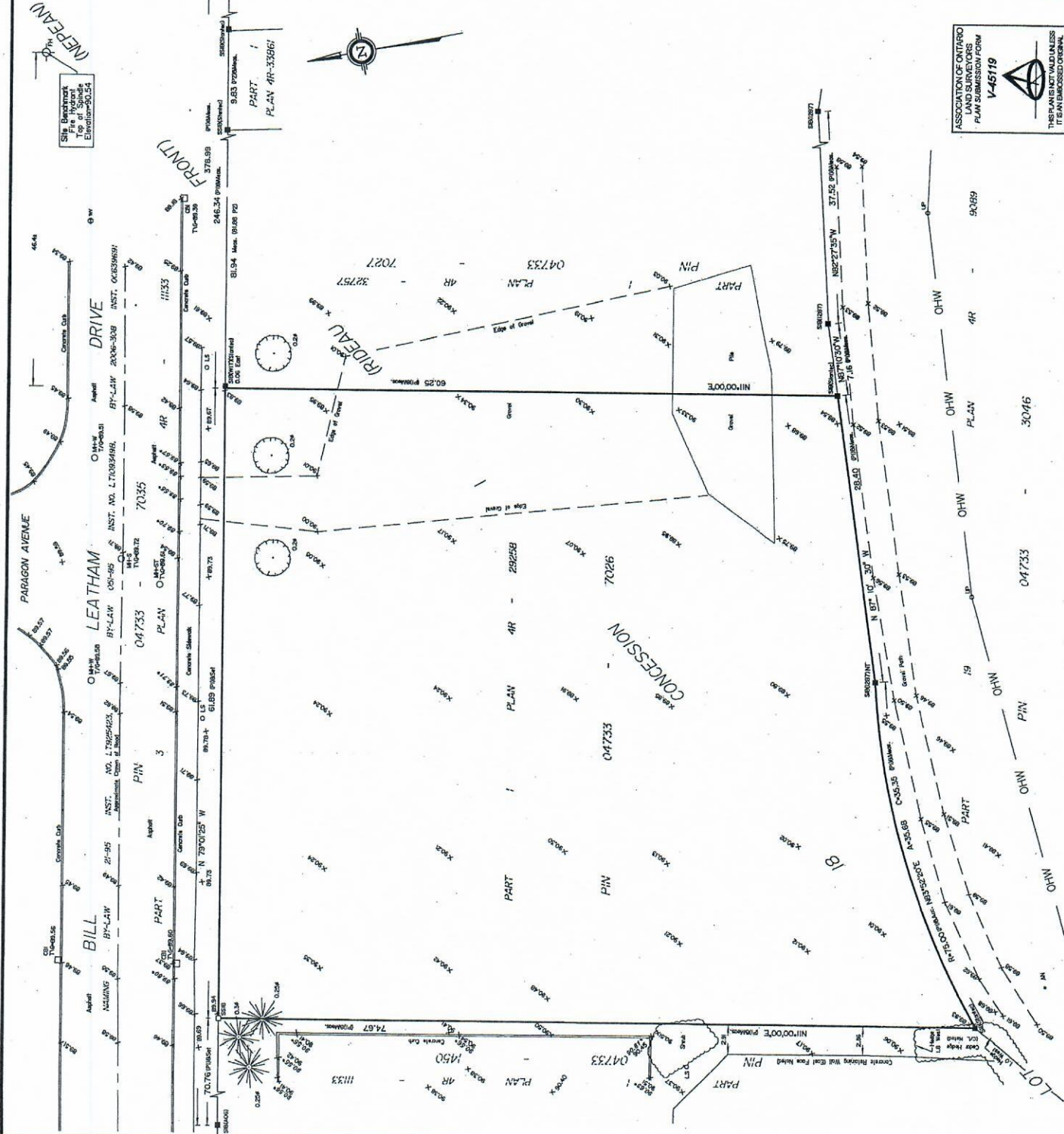
Nepean, Ont. K2E 7S5

Phone: (613) 737-7277 Fax: (613) 737-0779

Land Surveyors (Lic. No. 23887-23) Phillip Design Print Ltd. (Lic. No. 1 987 0 02) 10

ASSOCIATION OF ONTARIO
LAND SURVEYORS
PLAN SUBMISSION FORM
V-45119

THIS PLAN IS NOT VALID UNLESS
IT IS APPROVED BY THE SURVEYOR
IN ACCORDANCE WITH THE SURVEY
REGULATION 1924, REGULATION 28 (3)



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CITY OF OTTAWA**

**APPENDIX B
SITE PRE-DEVELOPMENT CONDITION
GOOGLE IMAGE (2019)
AND
AERIAL PHOTOGRAPHY 2022 (GEOOTTAWA)**

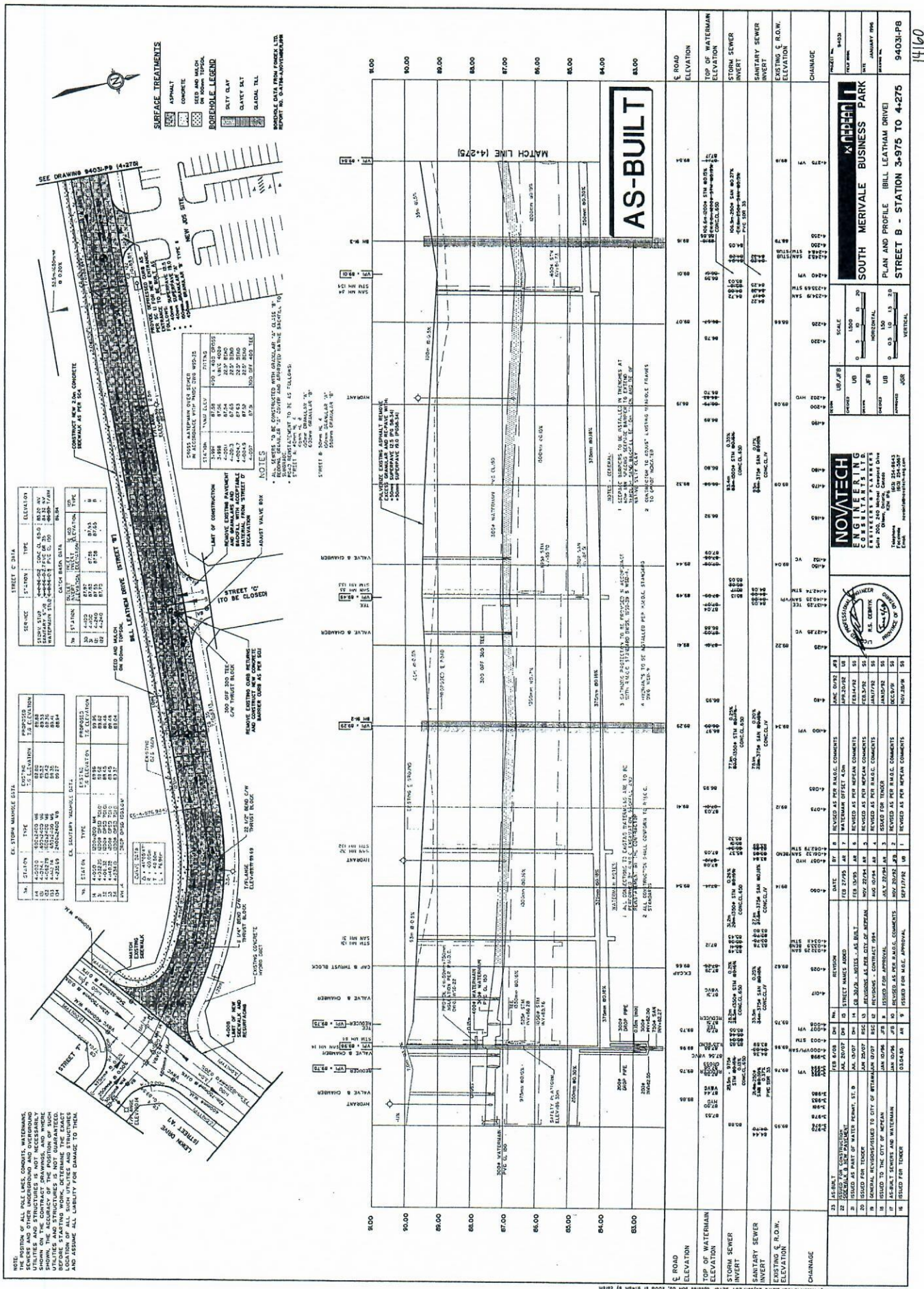


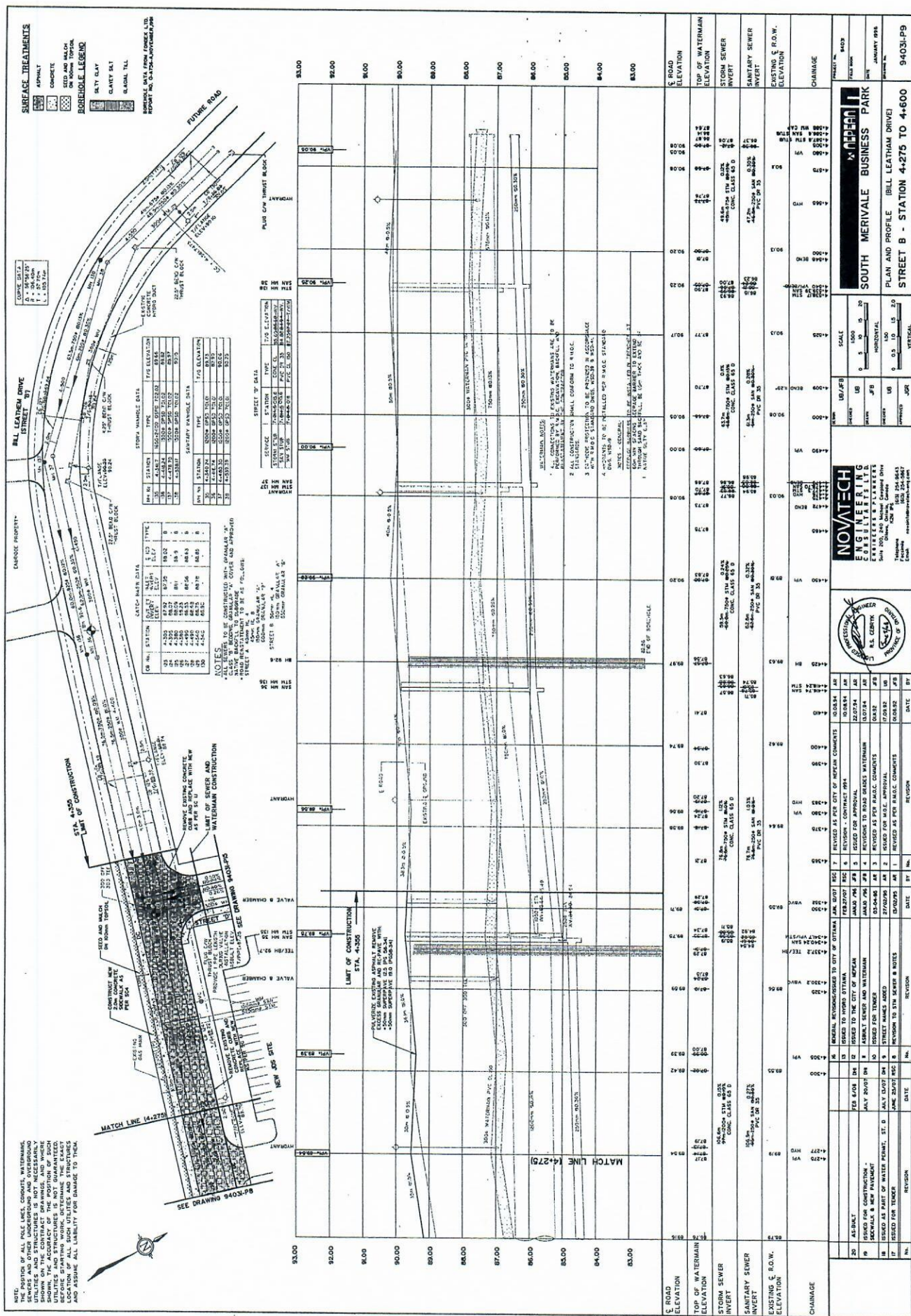


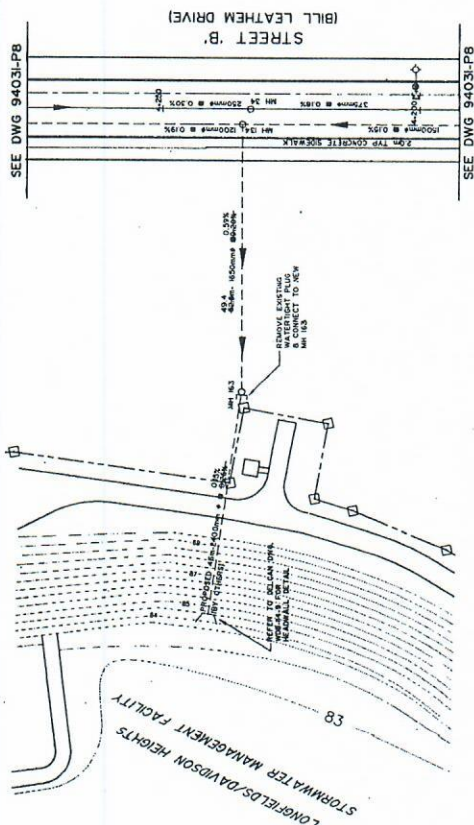


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**APPENDIX C
BILL LEATHEM DRIVE
CITY OF OTTAWA
PLAN AND PROFILE
AND
UCC DRAWINGS**



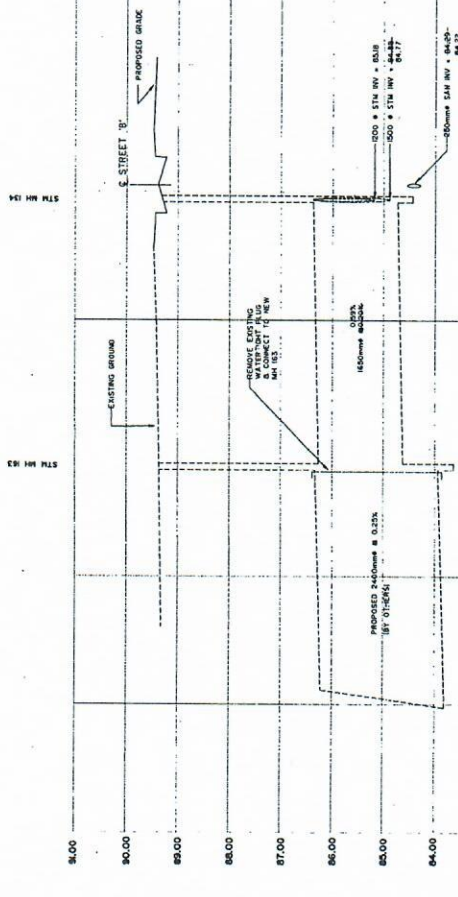




STORM MANHOLE DATA			
NO.	STATION	TYPE	TS ELEVATION
14	0+00.00	2400x2400 MM	89.25
15	0+048.75	2400x2400 MM	89.25

SANITARY MANHOLE DATA			
NO.	STATION	TYPE	TS ELEVATION
34	0+063.5	1200x 950x 750 MM	89.50

SEE DWG 9403-P8



ELEVATION		90.47	89.50	89.22	89.16	89.22	89.30	89.25	89.20
TOP OF WATERMAIN ELEVATION									
STORM SEWER INVERT				64.72	64.72	64.72	64.72	64.72	64.72
SANITARY SEWER INVERT									
EXISTING E.R.O.W. ELEVATION									
CHANNAGE									
NOTE: THE POSITION OF ALL HOLES, COUNTS, WATERMANS, UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE UTILITIES AND STRUCTURES ARE NOT SHOWN, THE EXACT LOCATION OF ANY UTILITIES OR STRUCTURES IS NOT GUARANTEED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING THE EXACT LOCATION OF ANY UTILITIES OR STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.									
REVISION		DATE	BY	DATE	BY	DATE	BY	DATE	BY
1		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
2		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
3		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
4		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
5		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
6		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
7		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
8		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
9		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
10		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
11		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
12		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
13		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
14		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
15		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
16		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
17		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
18		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
19		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
20		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
21		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
22		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
23		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
24		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
25		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
26		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
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63		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
64		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
65		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
66		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
67		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
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82		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
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84		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
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100		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
101		01-00	01-00	01-00	01-00	01-00	01-00	01-00	01-00
102		0							

**PROPOSED
TWO STOREY COMMERCIAL WAREHOUSE AND OFFICE
BUILDING SITE
PART OF LOT 18
CONCESSION 1 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
96 BILL LEATHEM DRIVE
CITY OF OTTAWA**

**APPENDIX D
CITY OF OTTAWA**

- **ELEVATION CONTOURS (FIGURE 1)**
- **SITE SURVEY PLAN**
- **SITE PLAN**
- **FUS FIRE FLOW CALCULATION**
- **FUS EXPOSURE DISTANCES (FIGURE 2)**
- **WATER BOUNDARY CONDITIONS**
- **SUPPORTING HYDRAULIC CALCULATIONS**
- **HYDRANT SPACING (FIGURE 3)**

ATTACHMENT 1: FIGURE 1 – ELEVATION CONTOURS

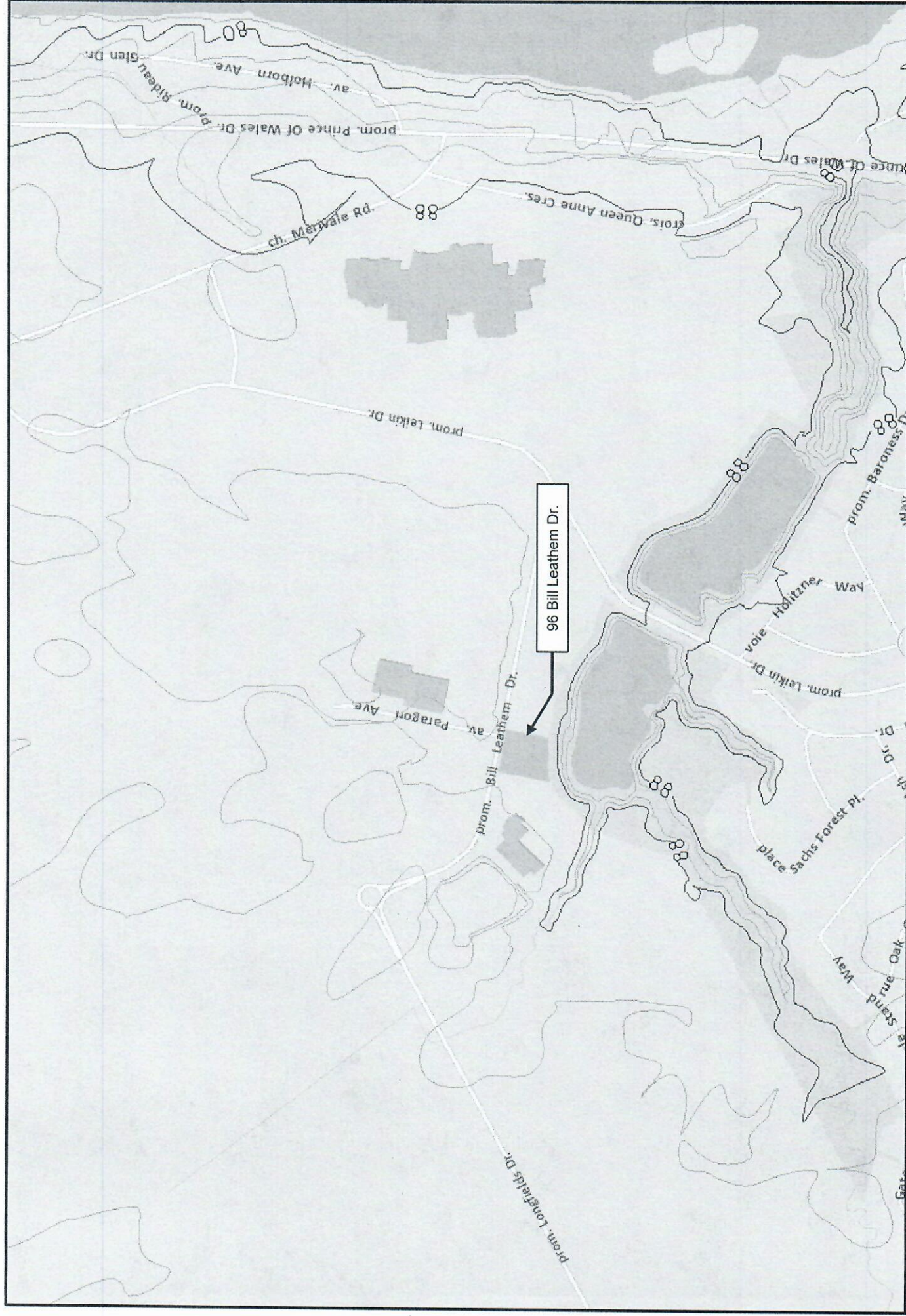


Figure 1: Elevation Contours

Source: geoOttawa 2023; Contains information licensed under the Open Government Licence – City of Ottawa.

ATTACHMENT 2: SITE SURVEY PLAN

TOPOGRAPHIC PLAN OF SURVEY OF

PART OF LOT 18 CONCESSION 1 (RIDEAU FRONT) GEOGRAPHIC TOWNSHIP OF NEPEAN CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebek Ltd.
Annis, O'Sullivan, Vollebek Ltd.

Scale 1:250
0 5 10 Metres

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

Surveyor's Certificate

CERTIFY THAT:
1. This plan was prepared and is in accordance with the Survey Act and the Survey Regulations.
2. The survey was completed on the 1st day of May, 2020.

[Signature]
V. Koppa Shab
Ontario Licensed Surveyor

Notes & Legend

Survey Monument Planted	Denotes
Survey Monument Found	
Standard Iron Bar	
Short Standard Iron Bar	
Iron Bar	
Witness	
Measured	
Annis, O'Sullivan, Vollebek Ltd.	
Acc.	
Plan 48-22258	
Plan 48-33861	
Plan 48-11133	
Maintenance Hole (Storm Sewer)	
Maintenance Hole (Sanitary)	
Maintenance Hole (Watermain)	
Utility Pole	
Overhead Wires	
Light Standard	
Inlet Catch Basin	
Fire Hydrant	
Water Valve	
Top of Grate	
Top of Culvert	
Location of Elevations	
Top of Concrete Curb Elevation	
Property Line	

Bearings are given, derived from Can-Nat 2015 Real Time Network GPS observations and are referenced to Specified Control Points 019 079 1338 and 019 087 046, MTM Zone 8 (78°30' West Longitude) NAD-83 (Original).

ELEVATION NOTES

1. Elevations shown are geoid and are referred to the CGVD28 geoid datum and derived from City of Ottawa control monument 019600000 having a published elevation of 88.831 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that its relative elevation and description agree with the information shown on this drawing.

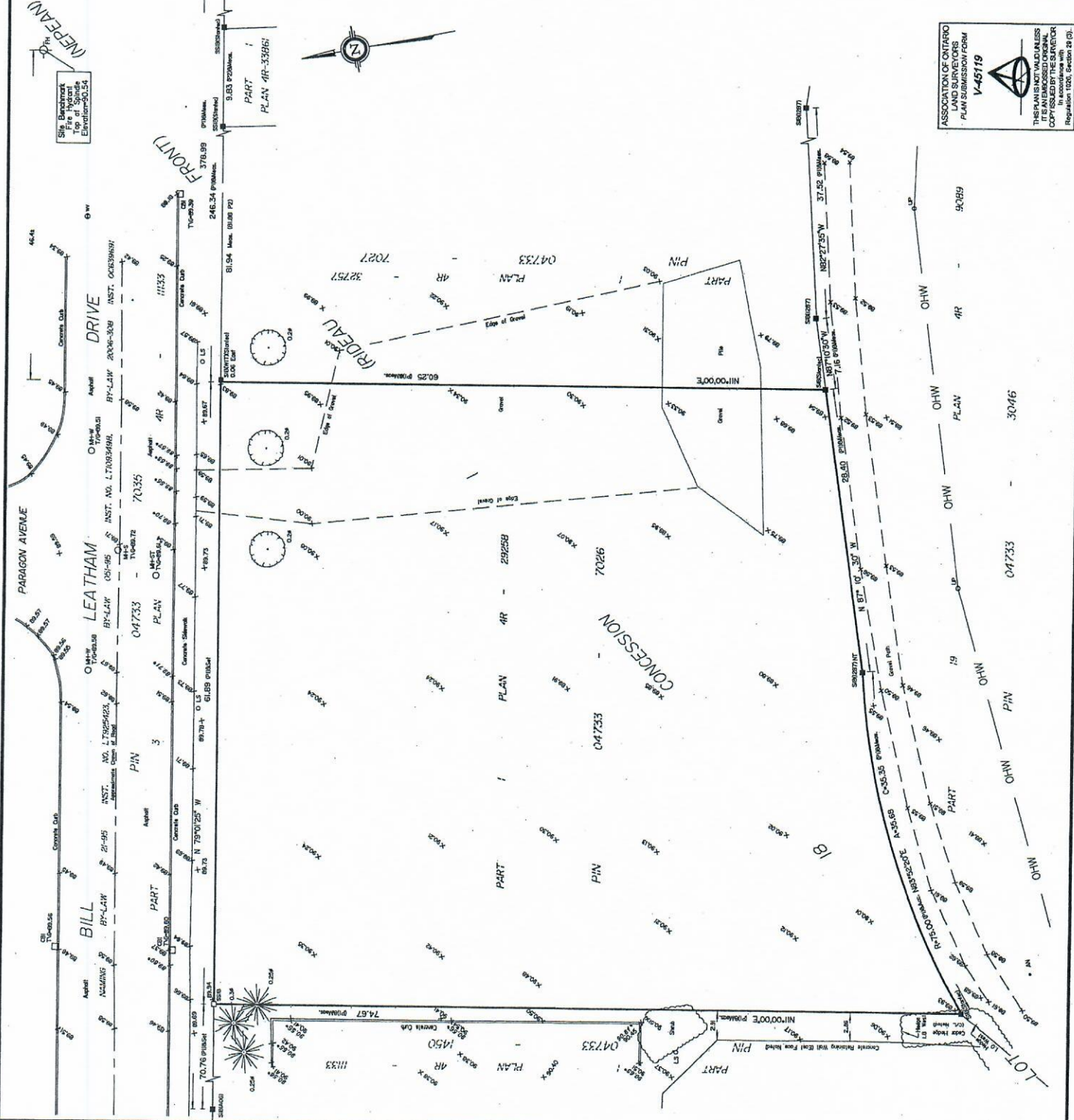
UTILITY NOTES

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

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ANNIS, O'SULLIVAN, VOLLEBEK LTD.
14 Concession Gate, Suite 500
Nepean, ON, K2E 7S5
Phone: (613) 727-1079
Fax: (613) 727-1079

ASSOCIATION OF ONTARIO
LAND SURVEYORS
PLAN SUBMISSION FORM
V-45119

THIS PLAN AND NOTES
ARE THE PROPERTY OF THE
CITY OF OTTAWA
REGULATION 100, CHAPTER 28 (3)

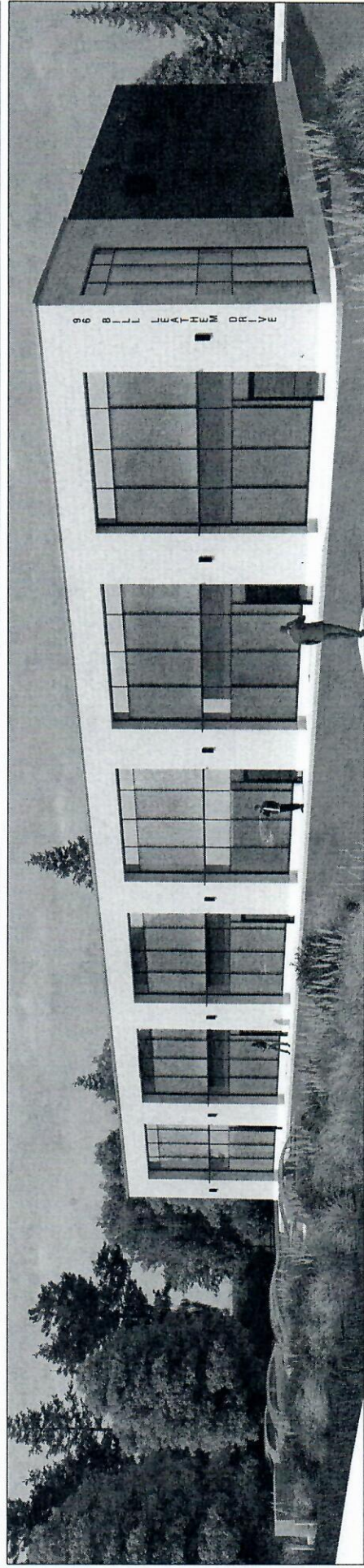


ATTACHMENT 3: SITE PLAN

1-STOREY OFFICE + WAREHOUSE

96 BILL LEATHAM DRIVE
OTTAWA ONTARIO

363 Portland Avenue, Suite 201, Ottawa, ON, K1Y 4R4
Tel: 613-238-2117 www.kwarcmb.ca



<p>ARCHITECT: Chubb Building Corp Consultants CME ENGINEERS & DESIGN KWC Architects Inc. 3801 Parkside Avenue, Suite 200 Toronto, Ontario M3J 1K1 Tel.: 416 593-1171 Fax: 416 593-1117 Cell: 416 895-0218 E-mail: info@kwc.ca</p>	<p>ARCHITECTURAL CONTRACT DOCUMENTS 1000 ARCHITECTURAL 1000 ARCHITECTURAL</p>	<p>STRUCTURAL CONTRACT DOCUMENTS 1000 STRUCTURAL 1000 STRUCTURAL</p>	<p>MECHANICAL CONTRACT DOCUMENTS 1000 MECHANICAL 1000 MECHANICAL</p>	<p>ELECTRICAL CONTRACT DOCUMENTS 1000 ELECTRICAL 1000 ELECTRICAL</p>	<p>CIVIL CONTRACT DOCUMENTS 1000 CIVIL 1000 CIVIL</p>	<p>LANDSCAPE CONTRACT DOCUMENTS 1000 LANDSCAPE 1000 LANDSCAPE</p>	<p>SURVEYOR CONTRACT DOCUMENTS 1000 SURVEYOR 1000 SURVEYOR</p>
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ATTACHMENT 4: FUS FIRE FLOW CALCULATION



FUS Fire Flow Calculation - Long Method

Calculations based on: "Water Supply for Public Fire Protection" by Fire Underwriters' Survey, 2020

Stantec Project #: 163401084

Project Name: Potable Water Hydraulic Analysis- 96 Bill Leatham Dr

Date: July 11, 2023

Data inputted by: Hamidreza Mohabbat, M.Sc

Data reviewed by: Alexandre Mineault-Guitard P.Eng

Fire Flow Calculation #: 1

Building Type/Description/Name: Commercial

Notes: Non-combustible construction (concrete + steel frame); 2 storeys more than 50% above grade. Building Footprint of 1326 m². Sprinklered Building.
Building setbacks per site plan (dated 2023/05).

Fire Underwriters Survey Determination of Required Fire Flow - Long Method								
Step	Task	Term	Options	Multiplier Associated with Option	Choose:	Value Used	Unit	Total Fire Flow (L/min)
1	Choose Frame Used for Construction of Unit	Coefficient related to type of construction (C)	Framing Material					
			Type V - Wood Frame	1.5	Type II - Non-combustible construction	0.8	m	
			Type IV-A - Mass Timber	0.8				
			Type IV-B - Mass Timber	0.9				
			Type IV-C - Mass Timber	1				
			Type IV-D - Mass Timber	1.5				
			Type III - Ordinary construction	1				
			Type II - Non-combustible construction	0.8				
Type I - Fire resistive construction	0.6							
2	Choose Type of Housing (if TH, Enter Number of Units Per TH Block)	Type of Housing	Floor Space Area					
			Single Family	0	Other (Comm, Ind, Apt etc.)	1	Units	
			Townhouse - indicate # of units	0				
			Other (Comm, Ind, Apt etc.)	1				
2.2	# of Storeys	Number of Floors/Storeys in the Unit (do not include basement if 50% below grade):			2	2	Storeys	
3	Enter Ground Floor Area of One Unit	Average Floor Area (A) based on total floor area of all floors for one unit (non-fire resistive construction):			663	663	Area in Square Metres (m ²)	
		Square Metres (m ²)						
3.1	Obtain Total Effective Building Area	Total Effective Building Area (# of Storeys x # of Units (if single family or townhouse) x Average Floor Area):			1,326	1326		
4	Obtain Required Fire Flow without Reductions	Required Fire Flow (without reductions or increases per FUS) (F = 220 * C * √A) Round to nearest 1,000 L/min						6,000
5	Apply Factors Affecting Burning	Reductions/Increases Due to Factors Affecting Burning						
5.1	Choose Combustibility of Building Contents	Occupancy Content Hazard Reduction or Surcharge	Non-combustible	-0.25	Rapid burning	0.25	N/A	7,500
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Choose Reduction Due to Presence of Sprinklers	Sprinkler Reduction	Adequate Sprinkler conforms to NFPA13	-0.3	Adequate Sprinkler conforms to NFPA13	-0.3	N/A	-2,250
			None	0				
		Water Supply Credit	Water supply is standard for sprinkler and fire dept. hose line	-0.1	Water supply is standard for sprinkler and fire dept. hose line	-0.1	N/A	-750
			Water supply is not standard or N/A	0				
			Sprinkler Supervision Credit	Sprinkler system is fully supervised				
Sprinkler not fully supervised or N/A	0							
5.3	Choose Presence of Sprinklers for Exposures within 30m	Sprinkler Conforms to NFPA13	Adequate sprinkler for exposures conforms to NFPA13		None for exposures		N/A	
			None for exposures					
		Water Supply	Water supply is standard for sprinkler and fire dept. hose line of exposures		Water supply is not standard or N/A for exposures	0	N/A	0
			Water supply is not standard or N/A for exposures					
		Sprinkler Supervision	Sprinkler system of exposures is fully supervised		Sprinkler not fully supervised or N/A for exposures		N/A	
Sprinkler not fully supervised or N/A for exposures								
5.4	Choose Separation Distance Between Units	Exposure Distance Between Units	North Side	30.1m or greater	0	0.2	m	1,500
			East Side	30.1m or greater	0			
			West Side	3.1 to 10.0m	0.2			
			South Side	30.1m or greater	0			
6	Obtain Required Fire Flow, Duration & Volume	Total Required Fire Flow, rounded to nearest 1,000 L/min, with max/min limits applied:						6,000
		Total Required Fire Flow (above) in L/s:						100
		Required Duration of Fire Flow (hrs)						2.00
		Required Volume of Fire Flow (m ³)						720

ATTACHMENT 5: FIGURE 2 – FUS EXPOSURE DISTANCES



Figure 2: FUS Exposure Distances (Property Line to Adjacent Buildings)

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ATTACHMENT 6: WATER BOUNDARY CONDITIONS

Mohabbat, Hamidreza

From: TL MaK <tlmakecl@bellnet.ca>
Sent: Thursday, July 20, 2023 5:02 PM
To: Mineault-Guitard, Alexandre
Cc: Mohabbat, Hamidreza; Alemany, Kevin
Subject: FW: 96 Bill Leathem Drive - Water Boudary Conditions Request
Attachments: 96 Bill Leathem_Boundary Condition(20July2023).docx

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Alex,

Attached please find the City's water boundary conditions for your calculations that we received on July 20, 2023.

Please provide your calculation and letter report to us at your earliest convenience.

Thank You,

Tony Mak

T.L. Mak Engineering Consultants Ltd.
1455 Youville Drive, Suite 218
Ottawa, ON. K1C 6Z7
Tel. 613-837-5516 | Fax: 613-837-5277
E-mail: tlmakecl@bellnet.ca

From: Cassidy, Tyler [<mailto:tyler.cassidy@ottawa.ca>]
Sent: July 20, 2023 1:56 PM
To: TL MaK
Subject: RE: 96 Bill Leathem Drive - Water Boudary Conditions Request

Hi Tony,

Please find attached your request for boundary conditions for 96 Bill Leathem Drive.

Note that there is a planned pressure zone reconfiguration for this area. Please ensure your Site Servicing Report includes the hydraulic results for each pressure zone configuration. Feel free to reach out if you have any questions

Thank you,

Tyler Cassidy, P.Eng
Infrastructure Project Manager,
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique - 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: TL MaK <tlmakecl@bellnet.ca>
Sent: July 11, 2023 2:57 PM
To: Cassidy, Tyler <tyler.cassidy@ottawa.ca>
Subject: 96 Bill Leatham Drive - Water Boundary Conditions Request

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 Tyler,

Regarding this site, we are requesting for water boundary conditions from the City of Ottawa to be provided for our hydraulic analysis. The particulars are as follows:

The proposed commercial building located within the Pressure Zone 2W at 96 Bill Leatham Drive is a 2-storey commercial building with no basement. The building has a footprint of 1,325.8 m² and contains 2 stories of office space with a total gross floor area of 752 m². The building also has a warehouse with a total gross floor area 892 m². The building is to be serviced by the 305 mm diameter watermain along Bill Leatham Dr.

The demands were calculated using the City of Ottawa's Water Design Guidelines, where the consumption rate of 28,000 L/gross ha/d was used to estimate average day demands (AVDY). Maximum day (MXDY) demands were calculated by multiplying AVDY demands by a factor of 1.5. Peak hour (PKHR) demands were calculated by multiplying MXDY by a factor of 1.8.

Table 1: Estimated Domestic Demand

Unit Type	Area (ha)	Consumption (L/gross ha/d)	AVDY		MXDY		PKHR	
			L/d	L/s	L/d	L/s	L/d	L/s
Commercial	0.164	28,000	4,604	0.05	6,906	0.08	12,432	0.14
Total	0.164		4,604	0.05	6,906	0.08	12,432	0.14

The fire flow required was determined following the Fire Underwriter Survey (FUS) method and is provided in the attached worksheet. For this analysis, the building was classified as a non-combustible construction (assuming that all structural elements such as walls, floors and roof are constructed with a minimum 1-hour fire-resistance rating and non-combustible material). Furthermore, the building content was assumed as rapid burning, as a conservative approach depending on the intended use of the warehouse. Lastly, it is understood that the building will have a sprinkler system. The resulting total required fire flow is 6,000 L/min (100 L/s) for a duration of 2 hours.

In summary:

- AVDY = 4,604 L/d (0.05 L/s);
- MXDY = 6,906 L/d (0.08 L/s);
- PKHR = 12,432 L/d (0.14 L/s); and,
- Fire Flow = 6,000 L/min (100 L/s).

The City is requested to provide boundary conditions for the Average Day, Maximum Day, Peak Hour and Fire Flow conditions indicated above.

Thank you for your prompt attention to this matter. Please forward the boundary conditions as soon as possible.

Have a good day.

Regards,

Tony Mak

T.L. Mak Engineering Consultants Ltd.
1455 Youville Drive, Suite 218
Ottawa, ON. K1C 6Z7
Tel. 613-837-5516 | Fax: 613-837-5277
E-mail: tlmakecl@bellnet.ca

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

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Attention: Ce courriel provient de l'extérieur de Stantec. Veuillez prendre des précautions supplémentaires.

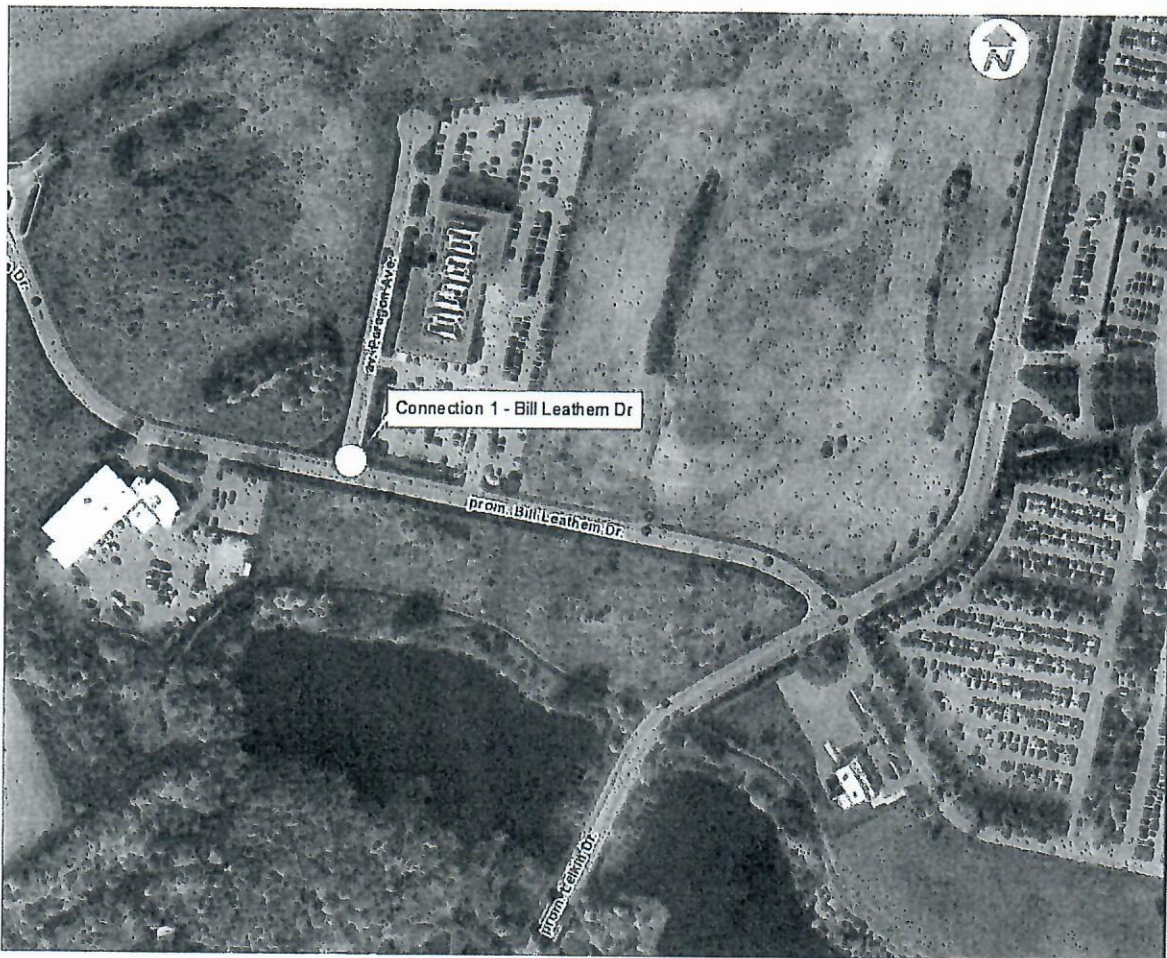
Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

Boundary Conditions 96 Bill Leathem

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	3.0	0.05
Maximum Daily Demand	4.8	0.08
Peak Hour	8.4	0.14
Fire Flow Demand #1	6,000	100.0

Location



Results

Connection 1 - 96 Bill Leathem (Existing Conditions – Pressure Zone 2W2C)

Demand Scenario	Head (m)	Pressure (psi)
Maximum HGL	132.8	61.3
Peak Hour	125.0	50.3
Max Day plus Fire Flow	126.5	52.3

¹ Ground Elevation = 89.7 m

Connection 1 - 96 Bill Leathem (Future Conditions – Pressure Zone SUC)

Demand Scenario	Head (m)	Pressure (psi)
Maximum HGL	146.9	81.4
Peak Hour	144.1	77.4
Max Day plus Fire Flow	142.8	75.5

¹ Ground Elevation = 89.7 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.

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 watermain 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.

ATTACHMENT 7: SUPPORTING HYDRAULIC CALCULATIONS



Supporting Hydraulic Calculations

Stantec Project #: 163401084

Project Name: 96 Bill Leatham Dr.

Date: July 27, 2023

Data inputted by: Hamidreza Mohabbat MASc.

Data reviewed by: Alexandre Mineault-Guitard, P.Eng.

Boundary Conditions provided by the City (Pressure Zone 2W2C):

Scenario 1: Peak Hour (Min HGL): 125.0 m;

Scenario 2: Average Day (Max HGL): 132.8 m; and

Scenario 3: Maximum Day plus Fire Flow: 126.5 m.

Sample Calculations

$$HGL(m) = hp + hz \quad (1)$$

where: hp = Pressure Head (m); and hz = Elevation Head (m), estimated from topography.

For Scenario 1, we have:

$$HGL(m) = 125 \text{ and } hz(m) = 89.7.$$

Rearranging Equation 1, we can calculate the Pressure Head (hp) as follow:

$$hp(m) = HGL - hz$$

$$\therefore hp = 125.0 - 89.7 \text{ m} = 35.3 \text{ m}.$$

To convert from Pressure Head (m) to a pressure value (kPa), the following equation can be used:

$$P(kPa) = (\rho * g * hp) / 1000 \quad (2)$$

where: ρ = density of water = 1000 kg/m^3 ; and g = gravitational acceleration = 9.81 m/s^2 .

Using Equation 2, we can calculate the Pressure Head (hp) as follow:

$$P(kPa) = (1000 * 9.81 * 35.3) / 1000$$

$$\therefore P = 346 \text{ kPa}.$$

Considering that $1 \text{ kPa} = 0.145 \text{ psi}$, the pressure under Scenario 1 is equal to:

$$P = 50 \text{ psi}.$$

Applying the same procedures, the pressures under Scenario 2 and Scenario 3 are calculated as follows:

Scenario 2: $P = 61 \text{ psi}$; and Scenario 3: $P = 52 \text{ psi}$.

To summarize:

Scenario 1: Minimum Pressure under Peak Hour Demand: 346 kPa (50 psi)
Scenario 2: Maximum Pressure under Average Day Demand: 423 kPa (61 psi)
Scenario 3: Minimum Pressure under Maximum Day + Fire Flow Demand: 361 kPa (52 psi)



Supporting Hydraulic Calculations

Stantec Project #: 163401084

Project Name: 96 Bill Leatham Dr.

Date: July 27, 2023

Data inputted by: Hamidreza Mohabbat MASc.

Data reviewed by: Alexandre Mineault-Guitard, P.Eng.

Boundary Conditions provided by the City (Pressure Zone SUC):

Scenario 1: Peak Hour (Min HGL): 144.1 m;

Scenario 2: Average Day (Max HGL): 146.9 m; and

Scenario 3: Maximum Day plus Fire Flow: 142.8 m.

Sample Calculations

$$HGL(m) = hp + hz \quad (1)$$

where: hp = Pressure Head (m); and hz = Elevation Head (m), estimated from topography.

For Scenario 1, we have:

$$HGL(m) = 144.1 \text{ and } hz(m) = 89.7.$$

Rearranging Equation 1, we can calculate the Pressure Head (hp) as follow:

$$hp(m) = HGL - hz$$

$$\therefore hp = 144.1 - 89.7 \text{ m} = 54.4 \text{ m}.$$

To convert from Pressure Head (m) to a pressure value (kPa), the following equation can be used:

$$P(kPa) = (\rho * g * hp) / 1000 \quad (2)$$

where: ρ = density of water = 1000 kg/m^3 ; and g = gravitational acceleration = 9.81 m/s^2 .

Using Equation 2, we can calculate the Pressure Head (hp) as follow:

$$P(kPa) = (1000 * 9.81 * 54.4) / 1000$$

$$\therefore P = 533 \text{ kPa}.$$

Considering that $1 \text{ kPa} = 0.145 \text{ psi}$, the pressure under Scenario 1 is equal to:

$$P = 77 \text{ psi}.$$

Applying the same procedures, the pressures under Scenario 2 and Scenario 3 are calculated as follows:

Scenario 2: $P = 81 \text{ psi}$; and Scenario 3: $P = 76 \text{ psi}$.

To summarize:

Scenario 1: Minimum Pressure under Peak Hour Demand: 533 kPa (77 psi)
Scenario 2: Maximum Pressure under Average Day Demand: 561 kPa (81 psi)
Scenario 3: Minimum Pressure under Maximum Day + Fire Flow Demand: 521 kPa (76 psi)

ATTACHMENT 8: FIGURE 3 – HYDRANT SPACING

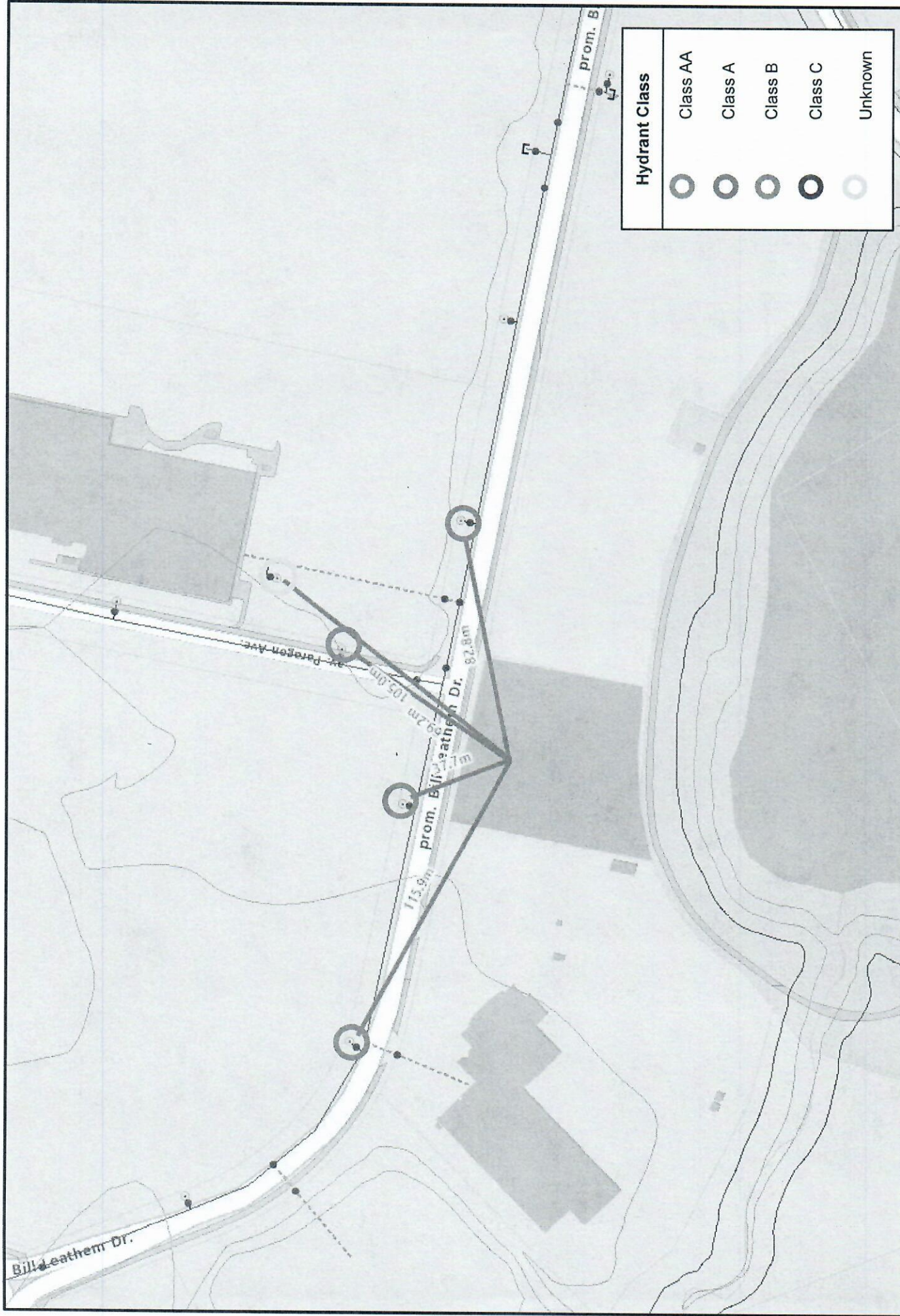


Figure 3: Hydrant Spacing

Source: geoOttawa 2023; Contains information licensed under the Open Government Licence – City of Ottawa.

**PROPOSED
TWO STOREY COMMERCIAL WAREHOUSE AND OFFICE
BUILDING SITE
PART OF LOT 18
CONCESSION 1 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
96 BILL LEATHEM DRIVE
CITY OF OTTAWA**

**APPENDIX E
CITY OF OTTAWA
SANITARY SEWER DESIGN SHEET
SHEET No. 1 OF 1**

**PROPOSED
TWO STOREY COMMERCIAL WAREHOUSE AND OFFICE
BUILDING SITE
PART OF LOT 18
CONCESSION 1 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
96 BILL LEATHEN DRIVE
CITY OF OTTAWA**

**APPENDIX F
CITY OF OTTAWA AND MECP
CORRESPONDENCES REGARDING
ECA EXEMPTION**

From: Cassidy, Tyler [tyler.cassidy@ottawa.ca]
Sent: March 31, 2023 3:16 PM
To: 'John Mazzarello'; tlmacecl@bellnet.ca
Subject: FW: Industrial Sewage Works ECA Exemption Request - 96 Bill Leatham Drive

Hi John & Tony,

Please find correspondence with the MECP below regarding the industrial sewage works ECA exemption request for 96 Bill Leatham. Based on the information provided to the MECP, they are in concurrence that this application does not meet the definition of industrial works and can be exempt from an ECA application based on O.Reg. 525/98 criteria.

Note that if the use changes to something that would trigger the need for an industrial sewage works ECA, The Owner is responsible to ensure all provincial approvals and permits are up to date.

Please include this email correspondence with your Site Servicing Report appendices when you come in with a formal submission package for this application.

Thank you,

Tyler Cassidy, P.Eng

Infrastructure Project Manager,
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique - 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: Ahmed, Aziz (MECP) <Aziz.Ahmed@ontario.ca>
Sent: March 31, 2023 7:20 AM
To: Warnock, Charles <Charles.Warnock@ottawa.ca>
Cc: Primeau, Charlie <Charlie.Primeau@ontario.ca>
Subject: RE: Industrial Sewage Works ECA Exemption Request - 96 Bill Leatham Drive

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.

Hello Charles,

Happy Friday. We agree that the proposed use as dental/physio mixed office etc. is not industrial, and you may proceed accordingly.

Best,

Aziz

Aziz S. Ahmed, P.Eng. | Manager

Municipal Water and Wastewater Permissions Section, Environmental Permissions Branch | Environmental Assessment and Permissions Division
Ministry of the Environment, Conservation and Parks | 40 St. Clair Ave. West, 2nd Floor, Toronto, ON M4V 1M2

If you have any accommodation needs or require communication supports or alternate formats, please let me know.

Si vous avez des besoins en matière d'adaptation, ou si vous nécessitez des aides à la communication ou des médias substituts, veuillez me le faire savoir.

From: Warnock, Charles <Charles.Warnock@ottawa.ca>

Sent: March-27-23 11:50 AM

To: Ahmed, Aziz (MECP) <Aziz.Ahmed@ontario.ca>

Subject: Industrial Sewage Works ECA Exemption Request - 96 Bill Leathem Drive

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Aziz,

We have a request for an exemption from an Industrial Sewage Works ECA. The proposed use meets the definition of Industrial as defined in O.Reg. 525/98. If the application is not exempt, we would like to apply through the City of Ottawa Transfer of Review Program.

The consultant states the following:

"We believe our development at 96 Bill Leathem should be processed under the transfer of review program as the effluent generated by our site would not be classified as industrial. This site will operate as a light industrial/mixed use development utilized for the storage and transfer of non hazardous goods. The effluent will not contain any harsh chemicals or toxins that are attributed to heavy industrial processing facilities. Therefore this development should not be categorized as an industrial use and should be reviewed under schedule A, Article 4 of the City's Transfer of Review Program."

The site is located at 96 Bill Leathem Drive, Ottawa. The zoning is Light Industrial [IL9] and the Company is Chello Building Corp.

The proposed site use is for warehousing, office, mixed-use space (like dental/physio, health & fitness, etc. – tenants are not yet determined).

The exterior of the site will be used for staff/client parking. There will be no outdoor storage of goods/materials, no storage tanks, and no refueling occurring on site.

If the MECP agrees that this project is not defined as Industrial use, then this project would meet the exemption criteria of O.Reg. 525/98 as the stormwater management works are for a designed for and located on a single parcel of land and is out letting to an existing storm sewer on Bill Leathem Drive (750 mm dia. Conc. Storm sewer on Bill Leathem Drive).

Please let me know if an Industrial ECA is required. If an Industrial ECA is required can the City proceed under the ToR.

Thank you,
Charles Warnock

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

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,

**PROPOSED
TWO STOREY COMMERCIAL WAREHOUSE AND OFFICE
BUILDING SITE
PART OF LOT 18
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GEOGRAPHIC TOWNSHIP OF NEPEAN
96 BILL LEATHEM DRIVE
CITY OF OTTAWA**

**APPENDIX G
DEVELOPMENT SERVICING STUDY CHECKLIST SUMMARY**

Servicing study guidelines for development applications

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

- ☐ Executive Summary (for larger reports only).
- ☒ Date and revision number of the report.
- ☒ Location map and plan showing municipal address, boundary, and layout of proposed development.
- ☒ Plan showing the site and location of all existing services.
- ☐ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.
- ☐ Summary of Pre-consultation Meetings with City and other approval agencies.
- ☐ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.
- ☒ Statement of objectives and servicing criteria.
- ☒ Identification of existing and proposed infrastructure available in the immediate area.
- ☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).
- ☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.
- ☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.
- ☐ Proposed phasing of the development, if applicable.

- ☒ Reference to geotechnical studies and recommendations concerning servicing.
- ☒ All preliminary and formal site plan submissions should have the following information:
 - Metric scale
 - North arrow (including construction North)
 - Key plan
 - Name and contact information of applicant and property owner
 - Property limits including bearings and dimensions
 - Existing and proposed structures and parking areas
 - Easements, road widening and rights-of-way
 - Adjacent street names

4.2 Development Servicing Report: Water

- ☐ Confirm consistency with Master Servicing Study, if available
- ☒ Availability of public infrastructure to service proposed development
- ☒ Identification of system constraints
- ☒ Identify boundary conditions
- ☒ Confirmation of adequate domestic supply and pressure
- ☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.
- ☒ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.
- ☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design
- ☐ Address reliability requirements such as appropriate location of shut-off valves
- ☒ Check on the necessity of a pressure zone boundary modification.
- ☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

- ☒ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.
- ☐ Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
- ☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- ☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

4.3 Development Servicing Report: Wastewater

- ☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).
- ☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.
- ☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.
- ☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- ☐ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)
- ☒ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.
- ☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.
- ☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).
- ☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
- ☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
- ☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
- ☐ Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

- ☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)
- ☐ Analysis of available capacity in existing public infrastructure.
- ☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
- ☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.
- ☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- ☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- ☐ Set-back from private sewage disposal systems.
- ☐ Watercourse and hazard lands setbacks.
- ☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- ☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
- ☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- ☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- ☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
- ☐ Any proposed diversion of drainage catchment areas from one outlet to another.
- ☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- ☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.
- ☐ Identification of potential impacts to receiving watercourses
- ☐ Identification of municipal drains and related approval requirements.
- ☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.
- ☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

- ☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.
- ☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- ☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
- ☐ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

- ☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.
- ☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
- ☐ Changes to Municipal Drains.
- ☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

- ☒ Clearly stated conclusions and recommendations
- ☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.
- ☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario