

**PROPOSED
SIX (6) STOREY APARTMENT BUILDING SITE
LOT 1
R-PLAN 268160
917 MERIVALE ROAD
CITY OF OTTAWA**

**SERVICEABILITY REPORT
REPORT No. R-823-102A**

**T.L. MAK ENGINEERING CONSULTANTS LTD.
AUGUST 2024
REFERENCE FILE NUMBER 823-102**

Introduction

The developer of this property is proposing to redevelop the existing residential lot described as Lot 1 Registered Plan 268160 City of Ottawa by constructing a six (6) storey residential apartment building plus a basement consisting of twenty (20)-units, including ten (1)-bedroom units and ten (10) bachelor units.

The municipal address of this property is referenced as 917 Merivale Road and it is located in the City Ward (16 - River). The site is situated on the east side of Merivale Road, south of Crerar Avenue and north of Anna Avenue, see site plan and legal survey plan in Appendix A for details.

The area of this property is ± 0.0482 hectares. In addition to the six (6) storey residential building, the other development features will comprise of an interlock paver access to the front entrance plus a concrete sidewalk access along the south side yard to the waste storage and one vehicular entrance asphalt access road, parking areas and an amenity area is also located in the rear yard including landscaped areas along the north side of the site, etc., to meet the City of Ottawa's site plan requirements.

A site geotechnical report was prepared by the owner's soils engineer Yuri Mendez Engineering entitled "Subsurface Investigation Report" 917 Merivale Road (Report No. 63-SPD-R0) dated September 27, 2023 for this proposed development property.

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

Existing Site Conditions and Servicing

This property is presently occupied by one and one half (1 ½) storey wooden sided residential building. The existing house is located near the front centre on this property with existing gazebo structures located at the rear yard, asphalt surface along the south side yard and gravel plus interlock walkway located along the north side of the property limit which currently provides pedestrian access to the gazebos. For additional details of the site's pre-development conditions, refer to the coloured Google Image (2023) and aerial photography from (GeoOttawa 2022) in Appendix B.

Approximately one half of this site is currently permeable surface covered and consisting of grass/landscaped areas with the remaining areas being roof area, concrete steps, gravel and asphalt surfaces. Presently, most of the landscape areas are concentrated at the rear of lot and at the front yard.

The topography of the land is found to be graded primarily to drain from rear to the front of the lot (east to west). The existing gradient of the property is sloping approximately 1.9% from back to front.

Water and sanitary service lateral currently servicing the existing dwelling on 917 Merivale Road will be removed. The existing water services shall be blanked at the main and the existing house laterals shall be capped at the front property line for re-development of this lot.

As for the availability of underground municipal services, there are existing municipal services along Merivale Road in front of this property consisting of a 450mm diameter storm sewer, a 375mm diameter sanitary sewer, and a 300mm diameter watermain for development of this property. Refer to the City of Ottawa Merivale Road UCC drawing and As-Built plan and profile drawing included in Appendix C for details.

Because the site will be connecting to and outletting into the separated Merivale Road storm sewer located within the Merivale Road road right of way 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 Residential Apartment 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, east of the proposed building.

A. Water Supply

The proposed building located within Pressure Zone 2W at 917 Merivale Road is a 6-storey residential multiunit building with a basement. The building contains twenty (20) total units, ten (10) 1-bedroom, and ten (10) bachelor units. Each floor covers an average area of around 218 m², for a gross floor area of 1,310 m² (excluding the basement).

The building is to be serviced by the 300 mm diameter watermain along Merivale Road. The ground elevation along Merivale Road is approximately 77.9 m.

Demand Projections

The domestic demands were calculated using the City of Ottawa's Water Design Guidelines, where the residential consumption rate of 280 L/cap/d was used to estimate average day

demands (AVDY). Persons per unit (PPU) for each unit were estimated based on the City of Ottawa's Water Design Guidelines.

Following discussions with the City, peaking factors are to be estimated from Table 3-3 of the MECP Design Guidelines for Drinking-Water Systems, given that the proposed development population is less than 500 people. Maximum day (MXDY) demands were calculated by multiplying AVDY demands by a factor of 9.5. Peak hour (PKHR) demands were calculated by multiplying AVDY by a factor of 14.3. **Table 1** shows the estimated domestic demands of the proposed building.

Table 1: Estimated Domestic Demand

Unit Type	Unit Count	PPU	Consumption	AVDY		MXDY		PKHR	
				L/d	L/s	L/d	L/s	L/d	L/s
Apartment, 1-Bedroom	10	1.4	280	3,920	0.05	37,240	0.43	56,056	0.65
Apartment, Bachelor	10	1.4		3,920	0.05	37,240	0.43	56,056	0.65
Total	20			7,840	0.09	74,480	0.86	112,112	1.30

The fire flow required was determined following the Fire Underwriter Survey (FUS) method and is provided in the attached worksheet. The proposed building will be of wood frame construction. It is understood that the building will be equipped with sprinklers, and that the basement is more than 50% below ground level. The resulting required fire flow is 11,000 L/min (183 L/s) for a duration of 2.25 hours.

Details are provided in the attached **Fire Flow Calculations** (See Appendix D). Furthermore, **Figure 1** found in Appendix D provides separation distances for the FUS calculations. The proposed **Site Plan** attached in Appendix D was used to determine distances from the proposed building to the property lines.

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

- AVDY = 7,840 L/d (0.09 L/s)
- MXDY = 74,480 L/d (0.86 L/s);
- PKHR = 112,112 L/d (1.30 L/s); and,
- Fire Flow (FUS) = 11,000 L/min (183 L/s).

Boundary Conditions

The hydraulic gradeline (HGL) boundary conditions for 917 Merivale Road, as presented in **Table 2**, were provided by the City on May 2, 2024 (see attached **Water Boundary Conditions Email** in Appendix D). Note that slight architectural changes to the buildings were made

following the reception of the boundary conditions, resulting in slightly less water demands. As such, the received boundary conditions are considered conservative and applicable).

Table 2: Boundary Conditions

Demand Scenario	Head (m)
Minimum HGL (Peak Hour)	124.4
Maximum HGL (Average Day)	132.8
Available Fire Flow @ Residual 20 psi	118.0

Hydraulic Analysis

Peak Hour & Average Day

During peak hour demands, the resulting minimum hydraulic gradeline of 124.4 m corresponds to a peak hour pressure of 456 kPa (66 psi). This value is above the minimum pressure objective of 276 kPa (40 psi) for residential buildings up to two storeys. Adding 5 psi per floor above two stories, to account for headloss due to elevation and pipe losses, a minimum pressure of 413 kPa (60 psi) would be required for the sixth floor. The peak hour pressure at ground level is above this objective and therefore considered acceptable.

During average day demands, the resulting maximum hydraulic gradeline of 132.8 m corresponds to a maximum pressure of 538 kPa (78 psi). This value is less than the maximum pressure objective of 552 kPa (80 psi) and therefore considered acceptable.

Supporting hydraulic calculations are attached in Appendix D.

Maximum Day + Fire Flow

A maximum day plus fire flow (11,000 L/min) hydraulic gradeline of 118.0 m corresponds to a residual pressure of 393 kPa (57 psi) at this location, which is above the minimal residual pressure requirement 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 are located in the vicinity of the proposed building. One (1) Class AA hydrants is within 75 m, both with a capacity contribution of up to 5,700 L/min. Three (3) other 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 917 Merivale Road is therefore 17,100 L/min, which is above the RFF obtained from the FUS (11,000 L/min) method.

The hydrant coverage is illustrated in **Figure 2** attached in Appendix D. A breakdown of the hydrant coverage is summarized in **Table 3** below.

Table 3: Fire Hydrant Coverage

Building	Fire Flow Demand (L/min)	Fire Hydrants					Combined Hydrant Flow Coverage (L/min)
		Hydrant Class	Within 75 m		Between 76 m and 150 m		
			Quantity	Contribution to RFF	Quantity	Contribution to RFF	
917 Merivale Road	11,000	AA	1	5,700	3	3,800	17,100
		A					
		B					
		C					

Conclusion

In conclusion, based on the boundary condition provided, 300 mm diameter watermain along Merivale Road provides adequate fire flow capacity, as per the Fire Underwriters Survey (FUS) method, to the proposed development 917 Merivale Road. Resulting pressures during anticipated demand flows meet the pressure objectives during average and peak demand conditions, as per the City of Ottawa's Drinking Water Design Guidelines.

B. Sanitary Flow

The peak sanitary flow for the 20 units, which comprise of ten (1)-bedroom and ten (10) bachelor apartment units, is estimated at $Q = 0.34$ L/s with an infiltration rate of 0.02 L/s. Refer to Appendix E sheet 1 of 1 regarding sanitary flow calculations. This flow will enter the existing 375 mm diameter sanitary sewer on Merivale Road via the proposed 150 mm diameter PVC sanitary service lateral from the six (6)-storey residential apartment building.

The existing peak sanitary flow of the site for single detached dwelling unit is $Q = 0.06$ L/s with an infiltration rate of 0.02 L/s. The net increase in flow from this proposed development is 0.28 L/s which is not expected to negatively impact the existing 375 mm dia. sanitary sewer.

Waste water from this site outlets into the Merivale Road 375 mm dia. sanitary sewer then continues to outlet north along Merivale Road into the existing downstream 1050 mm dia. concrete sanitary collector sewer located north of Carling Avenue which further direct sewage flow northward crossing Island Park Drive into the Geneva Street 1050 mm dia. sanitary collector sewer.

C. Storm Flow

Stormwater outlet for this proposed development property will be the existing 450 mm dia. storm sewer located on Merivale Road. The proposed residential apartment building has a rooftop that is partially flat and will be able to provide on-site stormwater management (SWM)

storage. Roof water from the building will be drained and controlled by two (2) roof drains which then outlets directly into the existing Merivale Road 450 mm dia. storm sewer via the proposed 300 mm dia. PVC storm sewer from the site.

On-site drainage shall be graded and drained into (2) catch basin manholes where they are interconnected by oversized underground 600 mm dia. storm sewer stormwater flow here will be controlled by the specified ICD located in CB/MH#1 to a rate of 6.0 L/s (min.) permitted by the City.

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

Two (2) roof drains are proposed for this residential building to restrict flow to a rate of 2.84 L/s (1.26 L/s + 1.58 L/s) into the existing municipal storm sewer.

Based on the residential site plan from the owner's architect, the average post-development runoff coefficient is estimated at $C = 0.82$ and $A = 0.0482$ 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 $C_{pre} = 0.59$ then SWM is required. Because $C_{post} = 0.82$ for this site exceeds $C_{pre} = 0.59$ then SWM measures are required.

Therefore, based on our calculation, on-site retention is required for this proposed residential development site, because the site post-development C value of 0.82 is greater than the $C_{pre} = 0.59$.

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 residential building and by the oversized underground storm drainage pipe and structures on-site. Also refer to the site storm drainage report (Report No. R-823-102) for further details.

Conclusion

To develop this proposed residential site (± 0.0482 ha. in size) and in controlling the 5-Year stormwater release rate off-site to an allowable rate of 5.17 L/s, a calculated site storage volume of approximately 5.26 m^3 (min.) is required during the 5-Year event. We estimate that the required storage volume is 1.69 m^3 (min.) from rooftop storage and 3.57 m^3 (min.) from the

site underground drainage system are necessary to attenuate the 5-Year storm event. Refer to the Storm Drainage Report (Report No. R-823-102) for details.

During the 5-Year storm event for the flat rooftop storage, the ponding depth of rooftop is estimated at 120 mm at Roof Drain No. 1 and Roof Drain No. 2 and 0 mm at the roof perimeter, assuming a 2.0% (min.) roof pitch to the roof drains. The rooftop storage available at Roof Area No. 1 is 1.17 m^3 and Roof Area No. 2 is 1.38 m^3 , for a total of 2.55 m^3 , which is greater than the required volume of 1.69 m^3 .

As for the remaining storage volume of 3.57 m^3 (min.) required from the site development area for the 5-Year storm event, the estimated H.W.L. of 76.48 m will provide a total available underground storage volume of 4.0 m^3 consisting of the proposed underground storm piping and drainage structures. In total, the 5-Year available site storage volume is approximately 4.0 m^3 which is greater than the required site storage volume of 3.57 m^3 . See Appendix E for details.

In order to control the 100-Year stormwater release rate off-site to an allowable rate of 5.17 L/s, a calculated site storage volume of approximately 13.37 m^3 (min.) is required during the 100-Year event. We estimate that the required storage volume of 4.65 m^3 (min.) of rooftop storage and 8.72 m^3 (min.) from the site underground drainage system are necessary to attenuate the 5-Year storm event. See Table 4 to 6 inclusive

During the 100-year storm event for the flat rooftop storage, the ponding depth on this rooftop is estimated at 150 mm at Roof Drain No. 1 and Roof Drain No. 2 and 0 mm at the roof perimeter assuming a 2.0% (min.) roof pitch to the drains. The rooftop storage available at Roof Area No. 1 is 2.35 m^3 and Roof Area No. 2 is 2.69 m^3 for a total of 5.04 m^3 which is greater than the required volume of 4.65 m^3 .

As for the remaining storage volume of 8.72 m^3 (min.) required from the site development area for the 100-Year storm event, the estimated H.W.L. of 77.18 m will provide a total available underground storage volume of 8.90 m^3 consisting of the proposed underground storm piping and drainage structures. In total, the 100-Year available site storage volume is approximately 8.90 m^3 which is greater than the required site storage volume of 8.72 m^3 . See Appendix E for details.

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. 823-102, G-1) the desirable 5-Year and 100-Year storm event attenuation volume of 4.0 m^3 and 8.90 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 300 mm diameter storm pipe (outlet pipe) with $Q = 6.0$ L/s under a head of 1.0 m. A rooftop drain with a maximum release rate of 1.26 L/s will be installed at Roof Drain No. 1 and a maximum release rate of 1.58 L/s will be installed at Roof Drain No. 2 under a head of 150 mm at the proposed apartment building flat rooftop as depicted on (Dwg. No. 823-102, G-1).

A specified inlet control device (ICD) will be installed at the outlet of CB/MH#1 in the 300 mm diameter storm pipe (outlet pipe) with $Q = 6.0$ L/s under a head of 1.0 m. The ICD type recommended is a Hydrovex Regulator (75-VHV-1) or equivalent. The specified ICD at 6.0 L/s is the lowest flow ICD permitted by the City of Ottawa for maintenance purposes.

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 PVC storm lateral from the apartment building whereupon both laterals "wye" into the proposed 300 mm dia. storm pipe due to one (1) connection to the existing Merivale Road storm sewer is permitted. Therefore, both storm laterals and the site storm sewer all outlets to the existing Merivale Road 450 mm diameter storm sewer with only one (1) storm pipe 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 on the City storm sewer system. Refer to the proposed site grading and servicing plan Dwg. 823-102 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. (See Appendix D of the Storm Drainage Report {Report No. R-823-102} for details).

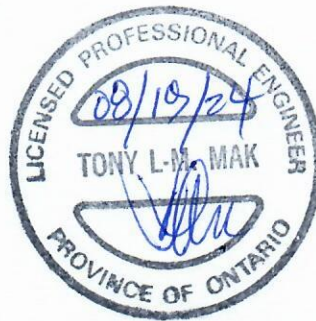
Erosion and Sediment Control

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 Merivale Road road right of way adjacent to this property. Silt sack 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. See Dwg. #823-102 ESC-1 for details.

Refer to Appendix F 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
SIX (6) STOREY APARTMENT BUILDING SITE
LOT 1
R-PLAN 268160
917 MERIVALE ROAD
CITY OF OTTAWA**

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

ZONING REQUIREMENTS - TM (2196)

EXISTING ZONING: TM(2196) Traditional Main Street Zone
PROPOSED ZONING: TM(2196) Traditional Main Street Zone

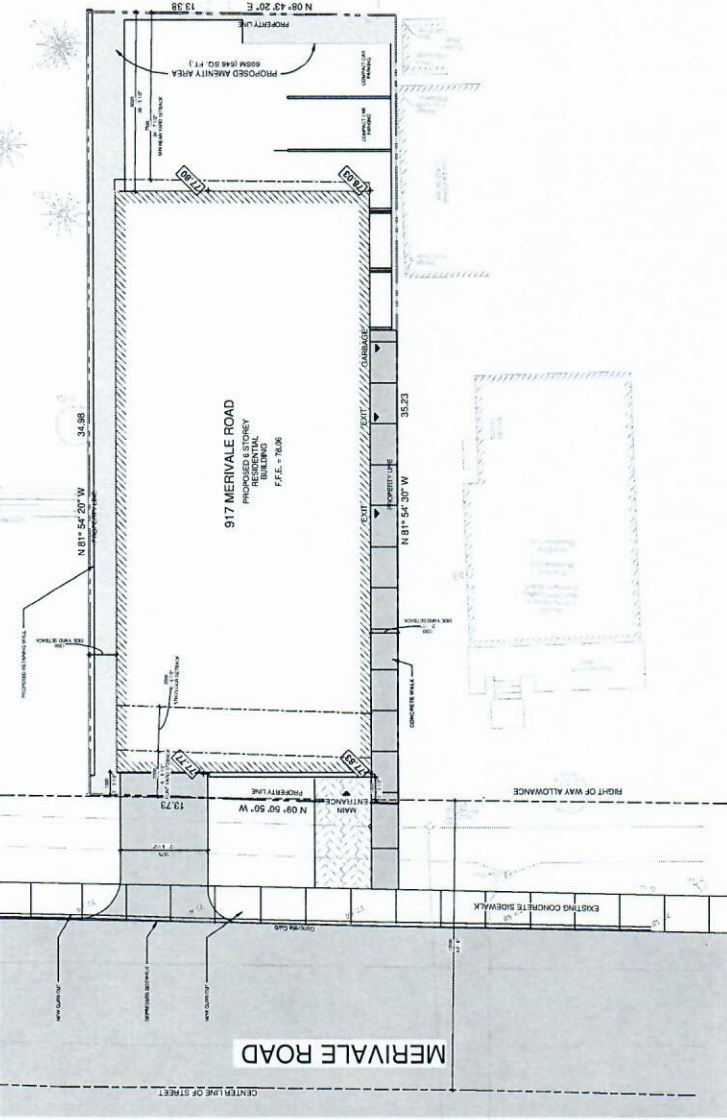
PARKING	REQUIRED	PROVIDED	COMPLIES Y/N
OFF-STREET PARKING	4	4	Y
VEHICLE PARKING	1	1	Y
BARBER / RETAIL PARKING	5	5	Y
BICYCLE PARKING	15	22 (STANDARD)	Y
SETBACKS			
FRONT YARD	MIN 2M	2M	Y
FRONT YARD SIDEWALK	MIN 2M	2M	Y
REAR YARD	7.5M	7.5M	Y
REAR YARD FENCE	1.5M	1.5M	Y
REAR YARD SCREENING	1.5M	1.5M	Y
REAR YARD FENCE	2M	2M	Y
REAR YARD FENCE	13.2M	13.2M	Y
REAR YARD FENCE	NA	35.5M	Y
TOTAL AREA	NA	1,341 SM	Y
ADJACENT SPACE AREA	2.5M (MIN) 10M (MAX)	10M (MAX)	Y
TOTAL NUMBER OF UNITS	NA	25	Y
MIN. LANDSCAPE BUFFER	0 - NOT APPLICABLE	NA	Y

ITEM	AREA	% TOTAL
LOT AREA	441.5 SM (5,163 SFT)	100%
BUILDING AREA	243 SM (2,822 SFT)	55.1%
GROSS FLOOR AREA	1,341 SM (15,434 SFT)	30%
ASPHALT/CONC. AREA	163.5 SM (1,813 SFT)	14.5%
LANDSCAPED AREA	163.5 SM (1,813 SFT)	14.5%

UNIT DATA	STUDIO	1 BED	2 BED	TOTAL	FLOOR AREA
BASEMENT	0	0	0	0	119 SM (1,300 SFT)
MAIN FLOOR	0	0	0	0	103 SM (1,116 SFT)
2ND FLOOR	2	2	0	4	243 SM (2,822 SFT)
3RD FLOOR	2	2	0	4	243 SM (2,822 SFT)
4TH FLOOR	2	2	0	4	243 SM (2,822 SFT)
5TH FLOOR	2	2	0	4	243 SM (2,822 SFT)
TOTAL	10	10	0	20	1,341 SM (15,434 SFT)

PARKING COUNT	USAGE	COUNT	PARKING RATIO	PARKING REQUIRED (1/10)	COMPLIES
STUDIOS	10	10	0	0	Y
1 BED	10	10	0	0	Y
2 BED	0	0	0	0	Y
BF SPOTS	0	0	0	0	Y
VISITOR	0	0	0	0	Y
TOTAL	20	20	0	0	Y

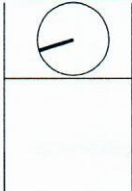
ESTABLISHED GRADE ELEVATION DATA			
BUILDING CORNER	ELEVATION	CALCULATION	
NORTH WEST CORNER	77.77	$77.77 + 77.80 + 78.03 + 77.83$	
NORTH EAST CORNER	77.80	$= 311.43$	
SOUTH EAST CORNER	78.03	$311.43 / 4$	
SOUTH WEST CORNER	77.83	$= 77.8575$	
AVERAGE GRADE ELEVATION		AVG ELEV. 77.86	



1 PROPOSED SITE PLAN



NO.	DATE	BY	DESCRIPTION
1	2024.08.01	SH	ISSUED FOR PERMIT
2	2024.08.01	SH	ISSUED FOR PERMIT
3	2024.08.01	SH	ISSUED FOR PERMIT
4	2024.08.01	SH	ISSUED FOR PERMIT
5	2024.08.01	SH	ISSUED FOR PERMIT
6	2024.08.01	SH	ISSUED FOR PERMIT
7	2024.08.01	SH	ISSUED FOR PERMIT
8	2024.08.01	SH	ISSUED FOR PERMIT
9	2024.08.01	SH	ISSUED FOR PERMIT
10	2024.08.01	SH	ISSUED FOR PERMIT



Biosis Designs
E: info@biosisdesigns.com
W: 613-255-9642

MERVALE APARTMENT
917 MERVALE RD
OTTAWA ON
MARC AMYOT

As indicated
2301
DS SH
SH
REVIEWED

PROPOSED SITE PLAN

A101

PERMIT NOTE
THIS DOCUMENT IS THE PROPERTY OF BIOSIS DESIGNS INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. WITHOUT THE WRITTEN PERMISSION OF BIOSIS DESIGNS INC. THIS DOCUMENT IS TO BE DESTROYED.

**PROPOSED
SIX (6) STOREY APARTMENT BUILDING SITE
LOT 1
R-PLAN 268160
917 MERIVALE ROAD
CITY OF OTTAWA**

**APPENDIX B
SITE PRE-DEVELOPMENT CONDITION
GOOGLE IMAGE (2023)
AND
AERIAL PHOTOGRAPHY 2022 (GEOOTTAWA)**



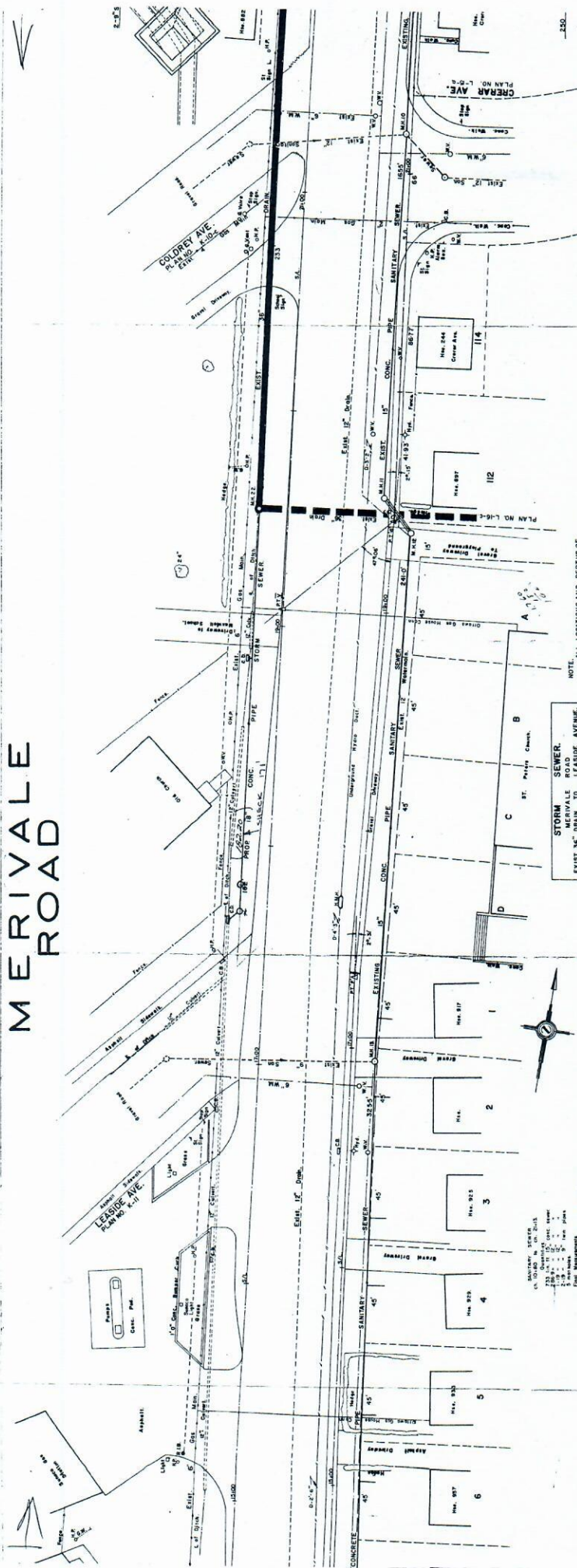




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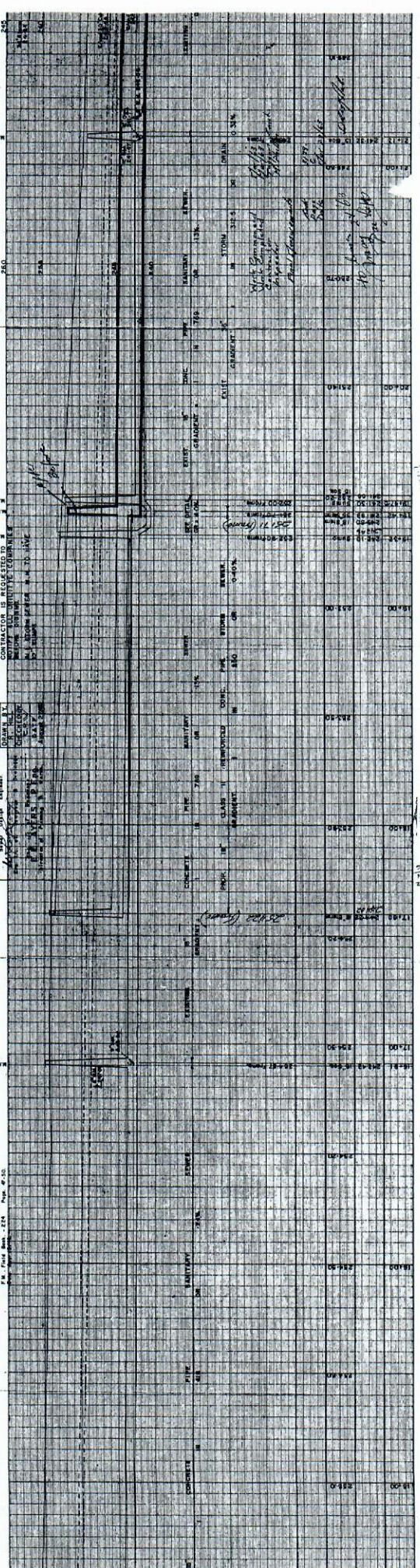
**APPENDIX C
MERIVALE ROAD
CITY OF OTTAWA
PLAN AND PROFILE
AND
UCC DRAWINGS**

MERIVALE ROAD



STORM SEWER
MERIVALE ROAD
EXIST. 12" DIA. TO LESLIE AVE.
EXIST. 12" DIA. TO LESLIE AVE.

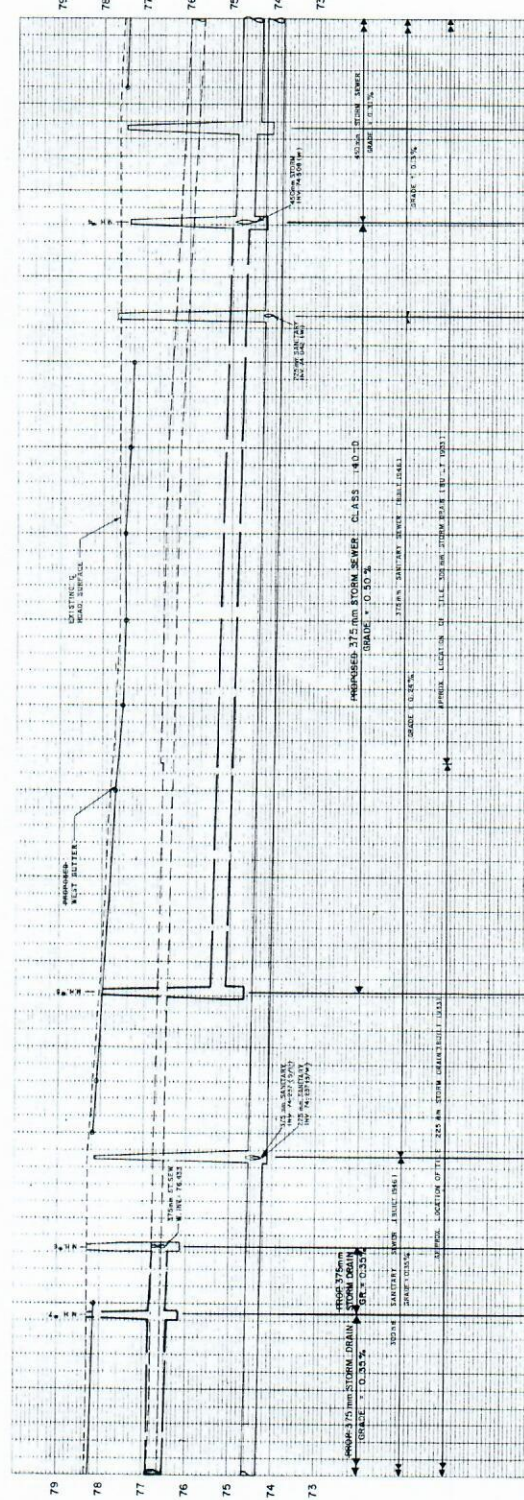
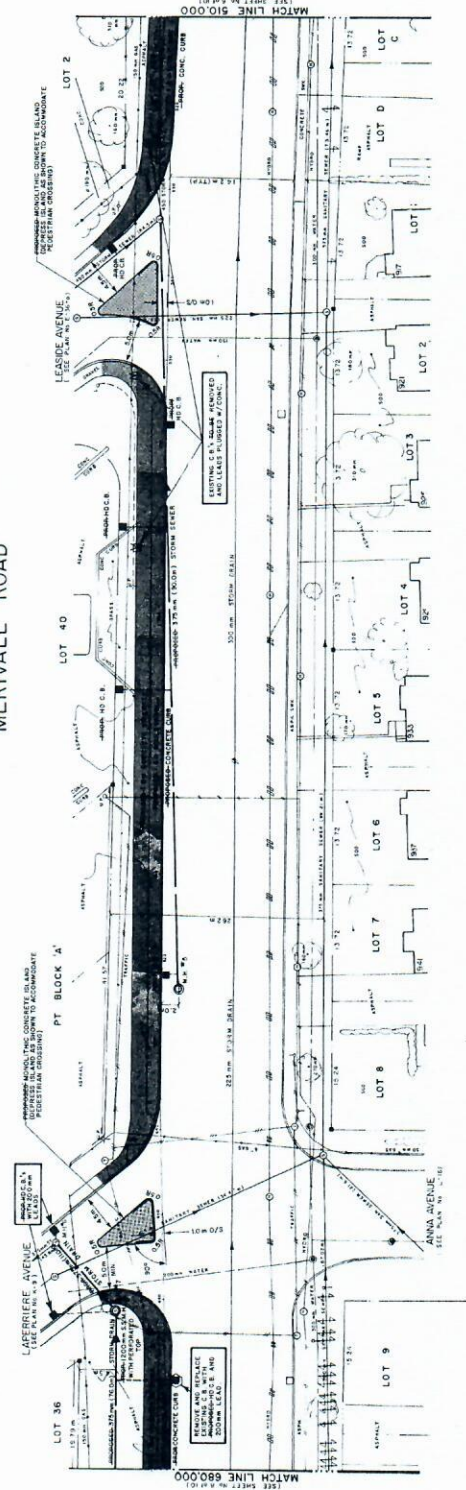
NOTE: ALL LOCATIONS AND DEPTHS OF UNDERGROUND UTILITIES ARE SHOWN AS APPROXIMATE. CONTRACTOR IS REQUESTED TO VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION.



2268 MERIVALE ROAD (7 of 10)

2700 SERV.
* ALSO SEE 2268

MERIVALE ROAD



Station	Elevation	Notes
0+00	78.00	Start of Road
0+10	78.00	Start of Road
0+20	78.00	Start of Road
0+30	78.00	Start of Road
0+40	78.00	Start of Road
0+50	78.00	Start of Road
0+60	78.00	Start of Road
0+70	78.00	Start of Road
0+80	78.00	Start of Road
0+90	78.00	Start of Road
1+00	78.00	End of Road

NO. 1011
Description
Drawn By
App'd By

REVISIONS

DATE

DESCRIPTION

DRAWN BY

APP'D BY

NOTES

1. All work shown is to be done in accordance with the specifications of the City of Ottawa.

2. The contractor is to be responsible for obtaining all necessary permits and licenses.

3. The contractor is to be responsible for the safety of the work area.

4. The contractor is to be responsible for the quality of the work.

5. The contractor is to be responsible for the completion of the work.

City of Ottawa
Villages of Ottawa
Department of Engineering and Works
Design and Construction Division
100 Scott Street, Ottawa, Ontario K1P 1H7
D. G. Curry, P. Eng.
W. R. Cole, P. Eng.

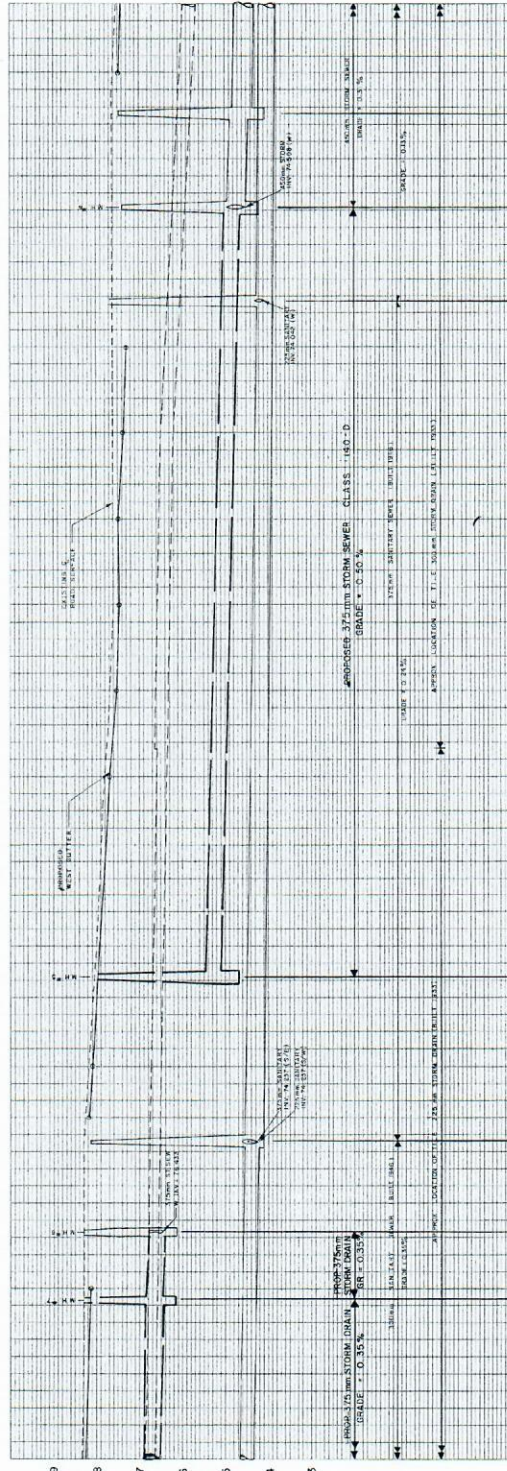
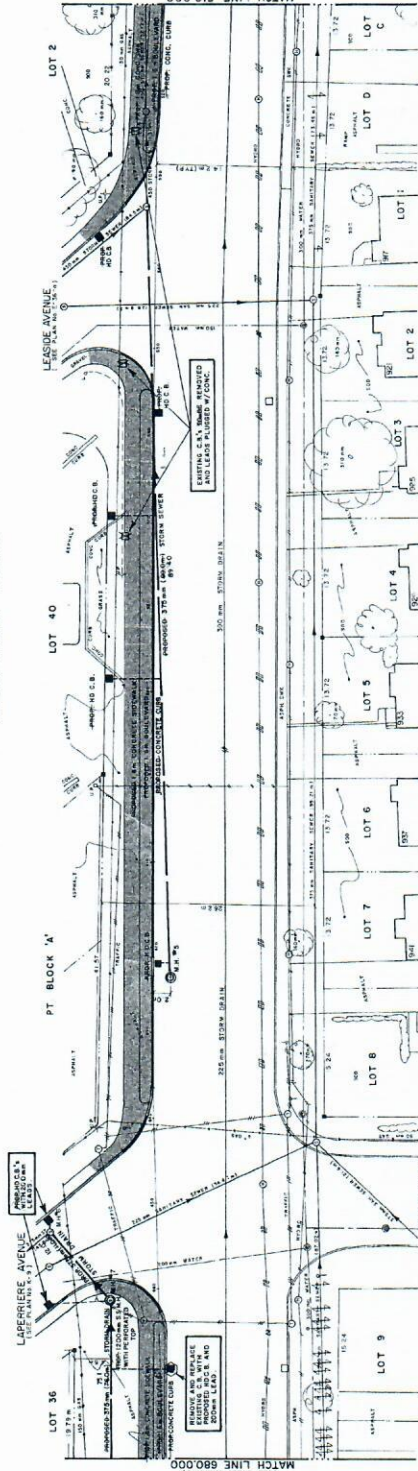
Project Name
Project No.
Contract No.
Sheet No.
Total Sheets

2268 MERIVALE ROAD

12700 SER

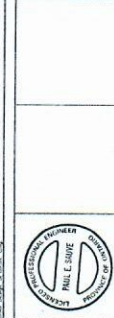
NOTE:
ALSO SEE PLAN # 2700

MERIVALE ROAD



Revisions:	No.	Date	Description	Drawn By	App'd By
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				

Final Measurements:
 500' MARK 155'40"
 100' MARK 155'40"
 200' MARK 155'40"
 300' MARK 155'40"
 400' MARK 155'40"
 500' MARK 155'40"
 600' MARK 155'40"
 700' MARK 155'40"
 800' MARK 155'40"
 900' MARK 155'40"
 1000' MARK 155'40"



Notes:
 1. All work shall be done in accordance with the Ontario Building Code and the Ontario Fire Code.
 2. The plan is based on the latest available aerial photography and field measurements.
 3. The profile is based on the latest available spot heights and field measurements.
 4. The storm sewer system is designed to handle a peak flow of 1.0 cfs.
 5. The storm sewer system is designed to maintain a minimum velocity of 2.0 ft/s.
 6. The storm sewer system is designed to maintain a minimum depth of 4.0 ft.
 7. The storm sewer system is designed to maintain a minimum cover of 4.0 ft.
 8. The storm sewer system is designed to maintain a minimum clearance of 4.0 ft.
 9. The storm sewer system is designed to maintain a minimum clearance of 4.0 ft.
 10. The storm sewer system is designed to maintain a minimum clearance of 4.0 ft.

City of Ottawa
 Ville d'Ottawa

Department of Engineering And Works
 Engineering Branch
 Design And Construction Division

D. G. Curry P. Eng. W. R. Cole P. Eng.

MERIVALE ROAD

Contract No. 92P2268
 Project No. 2268
 Sheet No. 7 of 10

PROPOSED
SIX (6) STOREY APARTMENT BUILDING SITE
LOT 1
R-PLAN 268160
917 MERIVALE ROAD
CITY OF OTTAWA

APPENDIX D
CITY OF OTTAWA

- **SITE PLAN AND ARCHITECTURAL DRAWINGS**
- **WATER BOUNDARY CONDITIONS E-MAIL**
- **FUS FIRE FLOW CALCULATION**
- **FUS EXPOSURE DISTANCES – FIGURE 1**
- **SUPPORTING HYDRAULIC CALCULATIONS**
- **HYDRANT SPACING – FIGURE 2**

ATTACHMENT 1 : SITE PLAN AND ARCHITECTURAL DRAWINGS

MARC AMYOT | 917 MERIVALE ROAD, OTTAWA, ON

Project No. 2301
Date Issued For 24.05.17
Internal Review

PROJECT DESCRIPTION:

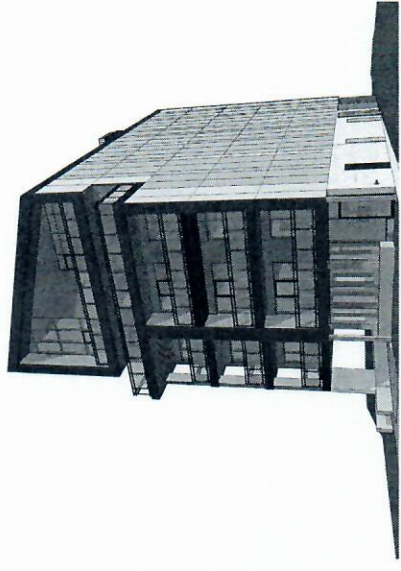
6 storey apartment building with basement storage

INDEX OF ARCHITECTURAL DRAWINGS

- INDICATES REVISIONS OR AMENDMENTS TO THE DRAWING
- INDICATES REVISIONS OR AMENDMENTS TO THE DRAWING
- INDICATES REVISIONS OR AMENDMENTS TO THE DRAWING
- INDICATES REVISIONS OR AMENDMENTS TO THE DRAWING

ISSUE RECORD

NO.	DATE	BY	DESCRIPTION
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- 1. ARCHITECT
Marc Amyot Inc.
1117 St. Patrick St.
Ottawa, ON K1N 6K1
www.marcamyot.com
- 2. STRUCTURAL ENGINEER
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- 6. OWNER
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- 7. PROJECT MANAGER
Marc Amyot Inc.
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Ottawa, ON K1N 6K1
www.marcamyot.com

Biosis Designs
E: info@biosisdesigns.com
P: 613-320-6642

MERIVALE APARTMENT
917 MERIVALE RD
OTTAWA ON
MARC AMYOT

2301 1:1
PROJECT SCALE
DS, SH
DATE
SH
REVISED

COVER PAGE
A001

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8917 MERIVALE RD
OTTAWA ON

2301 PROJECT SCALE As indicated

LIFE & SAFETY PLAN

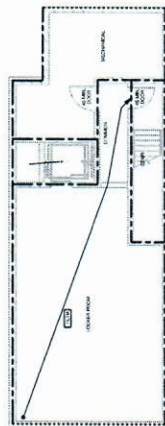
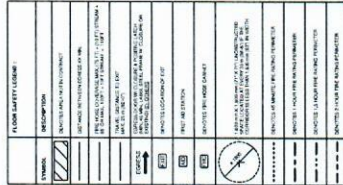
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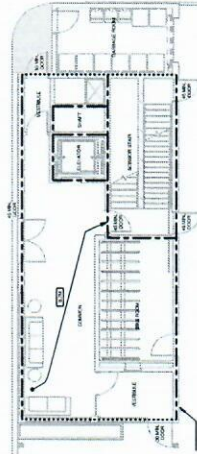
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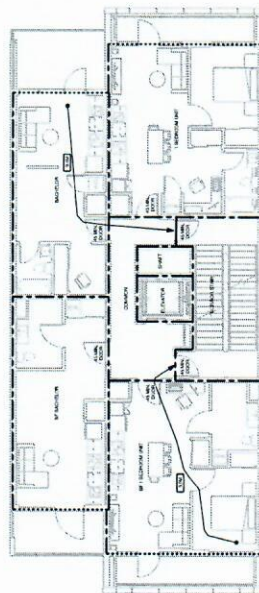
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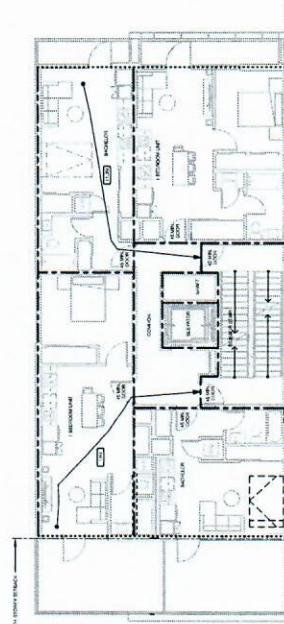
1 BASEMENT LEVEL FLS PLAN
A006 1' = 0'



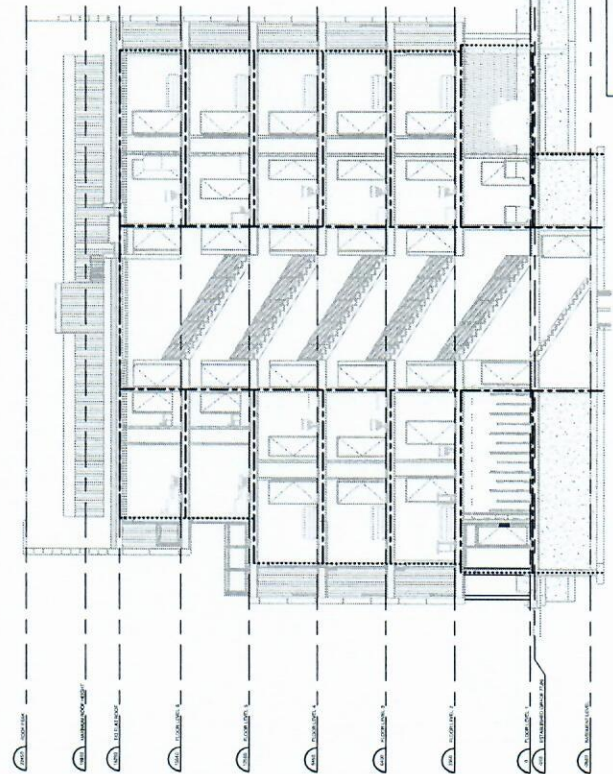
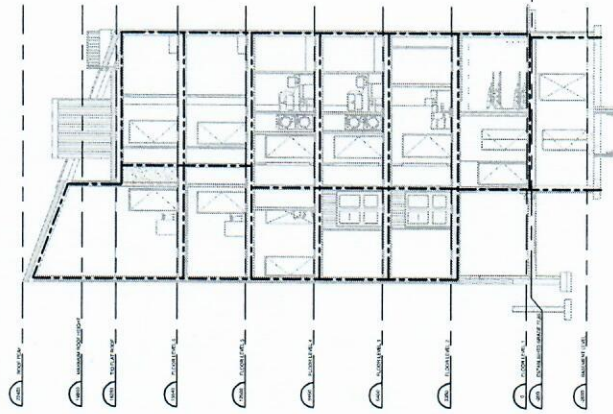
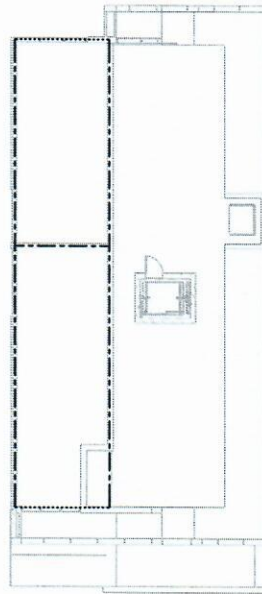
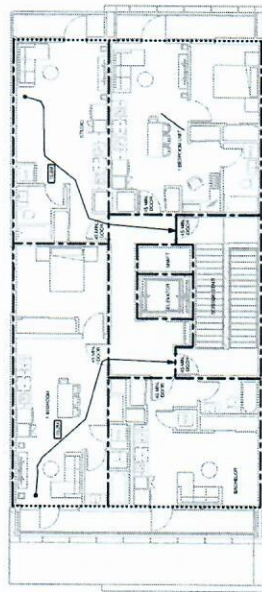
2 FIRST LEVEL FLS PLAN
ADDS 1, 100



3 FLS PLAN - LEVELS 2-4
A006 1 EIG



4 FIFTH LEVEL FLS PLAN
A206 1 100

[illegible]

PAUSE - MAILING LIST
ALL PAUSE MAILING LIST REQUESTS MUST BE RECEIVED BY 12:00 PM, 12/1/97.
1. LISTENERS: 1. 100,000+ 2. 100,000-150,000 3. 150,000-200,000 4. 200,000-250,000 5. 250,000-300,000 6. 300,000-350,000 7. 350,000-400,000 8. 400,000-450,000 9. 450,000-500,000 10. 500,000-550,000 11. 550,000-600,000 12. 600,000-650,000 13. 650,000-700,000 14. 700,000-750,000 15. 750,000-800,000 16. 800,000-850,000 17. 850,000-900,000 18. 900,000-950,000 19. 950,000-1,000,000 20. 1,000,000-1,050,000 21. 1,050,000-1,100,000 22. 1,100,000-1,150,000 23. 1,150,000-1,200,000 24. 1,200,000-1,250,000 25. 1,250,000-1,300,000 26. 1,300,000-1,350,000 27. 1,350,000-1,400,000 28. 1,400,000-1,450,000 29. 1,450,000-1,500,000 30. 1,500,000-1,550,000 31. 1,550,000-1,600,000 32. 1,600,000-1,650,000 33. 1,650,000-1,700,000 34. 1,700,000-1,750,000 35. 1,750,000-1,800,000 36. 1,800,000-1,850,000 37. 1,850,000-1,900,000 38. 1,900,000-1,950,000 39. 1,950,000-2,000,000 40. 2,000,000-2,050,000 41. 2,050,000-2,100,000 42. 2,100,000-2,150,000 43. 2,150,000-2,200,000 44. 2,200,000-2,250,000 45. 2,250,000-2,300,000 46. 2,300,000-2,350,000 47. 2,350,000-2,400,000 48. 2,400,000-2,450,000 49. 2,450,000-2,500,000 50. 2,500,000-2,550,000 51. 2,550,000-2,600,000 52. 2,600,000-2,650,000 53. 2,650,000-2,700,000 54. 2,700,000-2,750,000 55. 2,750,000-2,800,000 56. 2,800,000-2,850,000 57. 2,850,000-2,900,000 58. 2,900,000-2,950,000 59. 2,950,000-3,000,000 60. 3,000,000-3,050,000 61. 3,050,000-3,100,000 62. 3,100,000-3,150,000 63. 3,150,000-3,200,000 64. 3,200,000-3,250,000 65. 3,250,000-3,300,000 66. 3,300,000-3,350,000 67. 3,350,000-3,400,000 68. 3,400,000-3,450,000 69. 3,450,000-3,500,000 70. 3,500,000-3,550,000 71. 3,550,000-3,600,000 72. 3,600,000-3,650,000 73. 3,650,000-3,700,000 74. 3,700,000-3,750,000 75. 3,750,000-3,800,000 76. 3,800,000-3,850,000 77. 3,850,000-3,900,000 78. 3,900,000-3,950,000 79. 3,950,000-4,000,000 80. 4,000,000-4,050,000 81. 4,050,000-4,100,000 82. 4,100,000-4,150,000 83. 4,150,000-4,200,000 84. 4,200,000-4,250,000 85. 4,250,000-4,300,000 86. 4,300,000-4,350,000 87. 4,350,000-4,400,000 88. 4,400,000-4,450,000 89. 4,450,000-4,500,000 90. 4,500,000-4,550,000 91. 4,550,000-4,600,000 92. 4,600,000-4,650,000 93. 4,650,000-4,700,000 94. 4,700,000-4,750,000 95. 4,750,000-4,800,000 96. 4,800,000-4,850,000 97. 4,850,000-4,900,000 98. 4,900,000-4,950,000 99. 4,950,000-5,000,000 100. 5,000,000-5,050,000 101. 5,050,000-5,100,000 102. 5,100,000-5,150,000 103. 5,150,000-5,200,000 104. 5,200,000-5,250,000 105. 5,250,000-5,300,000 106. 5,300,000-5,350,000 107. 5,350,000-5,400,000 108. 5,400,000-5,450,000 109. 5,450,000-5,500,000 110. 5,500,000-5,550,000 111. 5,550,000-5,600,000 112. 5,600,000-5,650,000 113. 5,650,000-5,700,000 114. 5,700,000-5,750,000 115. 5,750,000-5,800,000 116. 5,800,000-5,850,000 117. 5,850,000-5,900,000 118. 5,900,000-5,950,000 119. 5,950,000-6,000,000 120. 6,000,000-6,050,000 121. 6,050,000-6,100,000 122. 6,100,000-6,150,000 123. 6,150,000-6,200,000 124. 6,200,000-6,250,000 125. 6,250,000-6,300,000 126. 6,300,000-6,350,000 127. 6,350,000-6,400,000 128. 6,400,000-6,450,000 129. 6,450,000-6,500,000 130. 6,500,000-6,550,000 131. 6,550,000-6,600,000 132. 6,600,000-6,650,000 133. 6,650,000-6,700,000 134. 6,700,000-6,750,000 135. 6,750,000-6,800,000 136. 6,800,000-6,850,000 137. 6,850,000-6,900,000 138. 6,900,000-6,950,000 139. 6,950,000-7,000,000 140. 7,000,000-7,050,000 141. 7,050,000-7,100,000 142. 7,100,000-7,150,000 143. 7,150,000-7,200,000 144. 7,200,000-7,250,000 145. 7,250,000-7,300,000 146. 7,300,000-7,350,000 147. 7,350,000-7,400,000 148. 7,400,000-7,450,000 149. 7,450,000-7,500,000 150. 7,500,000-7,550,000 151. 7,550,000-7,600,000 152. 7,600,000-7,650,000 153. 7,650,000-7,700,000 154. 7,700,000-7,750,000 155. 7,750,000-7,800,000 156. 7,800,000-7,850,000 157. 7,850,000-7,900,000 158. 7,900,000-7,950,000 159. 7,950,000-8,000,000 160. 8,000,000-8,050,000 161. 8,050,000-8,100,000 162. 8,100,000-8,150,000 163. 8,150,000-8,200,000 164. 8,200,000-8,250,000 165. 8,250,000-8,300,000 166. 8,300,000-8,350,000 167. 8,350,000-8,400,000 168. 8,400,000-8,450,000 169. 8,450,000-8,500,000 170. 8

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BIOSIS DESIGNS

E info@biosiddesigns.com
P 613-292-9642

917 MERIVALE RD
OTTAWA ON

2301 PROJECT 1:100 SCALE

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LIFE & SAFETY

LIFE & SAFETY

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A100

EXISTING SITE PLAN

2301 1:100
PROJECT SCALE

DS
SH

MERIVALE APARTMENT
917 MERIVALE RD
OTTAWA ON
BY
MARC AMYOT

E: info@biosisdesigns.com
P: 613-252-9642

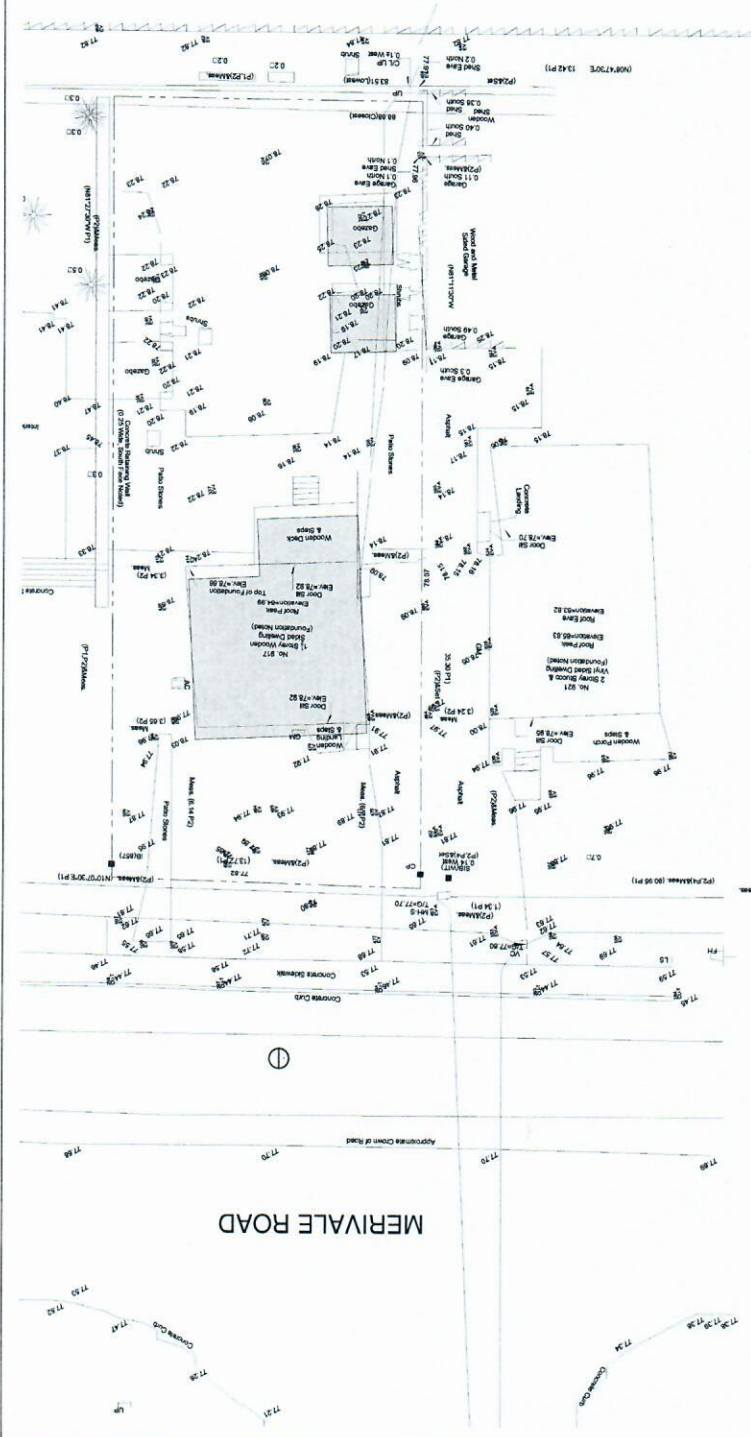
BIOSIS DESIGNS



ISSUE RECORD	
NO.	DATE
1	20.01.2010

REVISION RECORD	
NO.	DATE
1	20.01.2010

REVISION RECORD	
NO.	DATE
1	20.01.2010



MERIVALE ROAD



EXISTING SITE PLAN
1:100

ZONING REQUIREMENTS - TM [2196]

EXISTING ZONING: TM/21961 Traditional Main Street Zone

EXISTING ZONING:	TM(2196)	Traditional Main Street Zone
PROPOSED ZONING:	TM(2196)	Traditional Main Street Zone

	COMPLIES Y/N	PROVIDED	REQUIRED	PARKING	
ON-STREET / PUBLIC	Y		4		
NEIGHBORHOOD	Y	1	1		
STREET / SIDE PARKING	Y	5	5		
WORKING PARKING	Y	22	10		
UTILITIES					
FRONT YARD	Y		MAX 2M		
FRONT YARD ABOVE 1M	Y	2M	480 2M		
REAR YARD	Y	1.5M	7.5M		
SIDE / SIDE PORCH	Y	1.5M	1.5M		
SEMI-ENCLOSURE	Y	1.2M	1.2M		
SEMI-ENCLOSURE	Y	2M	2M		
MAX HEIGHT TO ROOF	Y				
MINIMUM OF WIDTH	Y	0	13.25M		
NEIGHBORHOOD / AREA	Y	N/A			
TOTAL	Y	51.5M			
OVERALL SPACE AREA	Y	1.5M 2M			
NO. OF PARKING SPACES	Y	30			
NO. OF PARKING SPACES	Y	30			
TOTAL NUMBER OF SPACES	Y	30			
NO. OF PARKING SPACES	Y	N/A			
NO. OF PARKING SPACES	Y	N/A			

SITE DATA		
ITEM	AREA	% TOTAL
LOT AREA	44.15 (M (5,185 SFT))	100%
BUILDING AREA	243.5M (2,622 SFT)	53.2%
GROSS FLOOR AREA	1,341.5M (14,434 SFT)	
ASPHALT/PAVING AREA	184.5 (M (1,913 SFT))	20%
UNDEVELOPED AREA	REAR LOT AREA: 70.5M (750 SFT)	14.5%

UNIT DATA

LEVEL	STUDIO	1 BED	2 BED	TOTAL	FLOOR AREA
ASSESSMENT	0	0	0	0	119 SM (1260 SFT)
1ST FLOOR	0	0	0	0	103 SM (1116 SFT)
2ND FLOOR	2	2	0	4	243 SM (2622 SFT)
3RD FLOOR	2	2	0	4	243 SM (2622 SFT)
4TH FLOOR	2	2	0	4	243 SM (2622 SFT)
5TH FLOOR	2	2	0	4	238 SM (2570 SFT)
6TH FLOOR	2	2	0	4	238 SM (2570 SFT)
TOTAL	141	10	0	20	1341 SM (14,434 SFT)

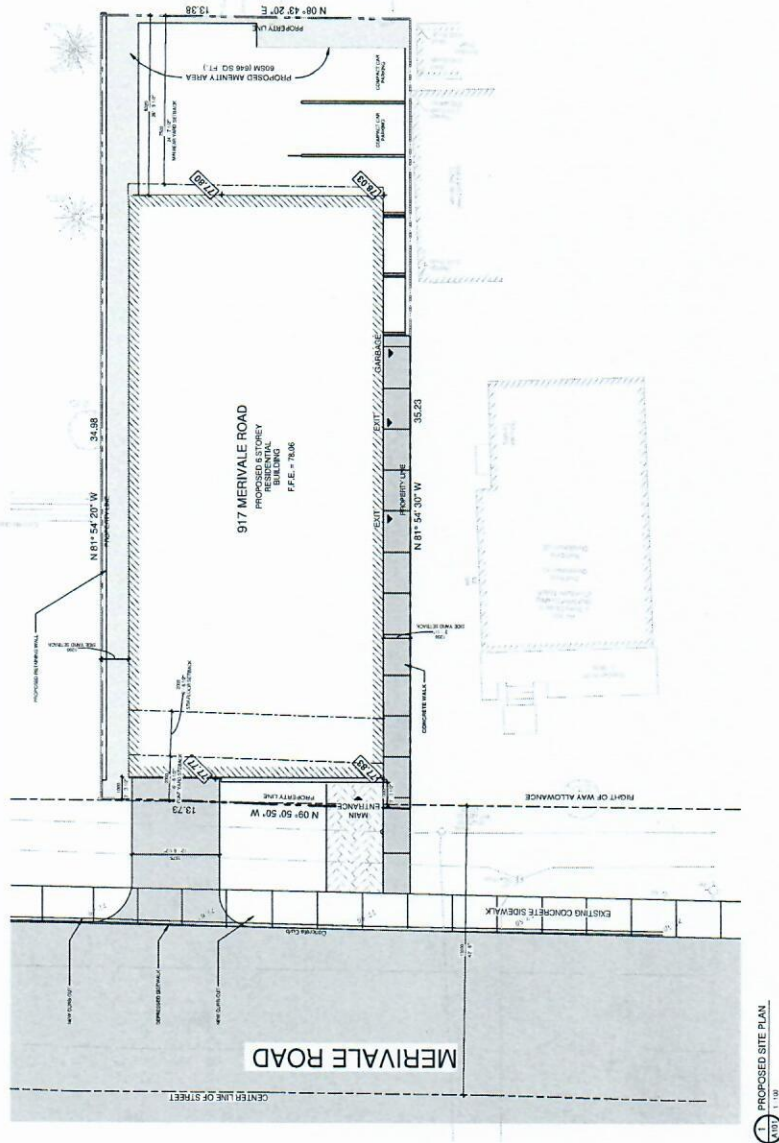
PARKING COUNT

	COUNT	PARKING RATING	PARKING REQUIRED	COMPLETES PROVIDED	COMPLETES (Y/N)
STUDIOS*	20	3-4 UNITS = 0	0	0	Y
BED*	15	10-15 UNITS = 4	4	4	Y
BED	15	10-15 UNITS = 4.5			Y
5 SPOTS					Y
INSISTOR		15 UNITS = 0	1	1	Y
TOTAL	20	3-4 UNITS = 1.1	5	5	Y

ESTABLISHED GRADE ELEVATION DATA

BUILDING CORNER	ELEVATION	CALCULATION
NORTH WEST CORNER	77.77	$77.77 + 77.80 + 78.03$
NORTH EAST CORNER	77.80	$+ 77.83$
SOUTH EAST CORNER	78.03	$= 311.43$
SOUTH WEST CORNER	77.83	$311.43 / 4$
AVERAGE GRADE ELEVATION		$= 77.8575$
		AVG ELEV. = 77.86

WASTE MANAGEMENT DATA				
USAGE	WASTE TYPE	REQ. CY	BINS PROVIDED	COMPLIES (Y/N)
GARBAGE	LOOSE	0.11 CY/UNIT ± 3	4 x 360L	Y
RECYCLING	LOOSE	0.06 CY/UNIT ± 1	4 x 360L	Y
ORGANIC	LOOSE	0.125 CY/UNIT ± 1	3 x 240L	Y



1 PROPOSED SITE PLAN
A101 1' 00"

[illegible]

ISSUE RECORD			
NO.	DATE	BY	DESCRIPTION
1	22 JUL 2024	DS	WANTED FOR SPA



BIOSIS DESIGNS

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117 MERIVALE RD
OTTAWA ON

MARC AMYOT

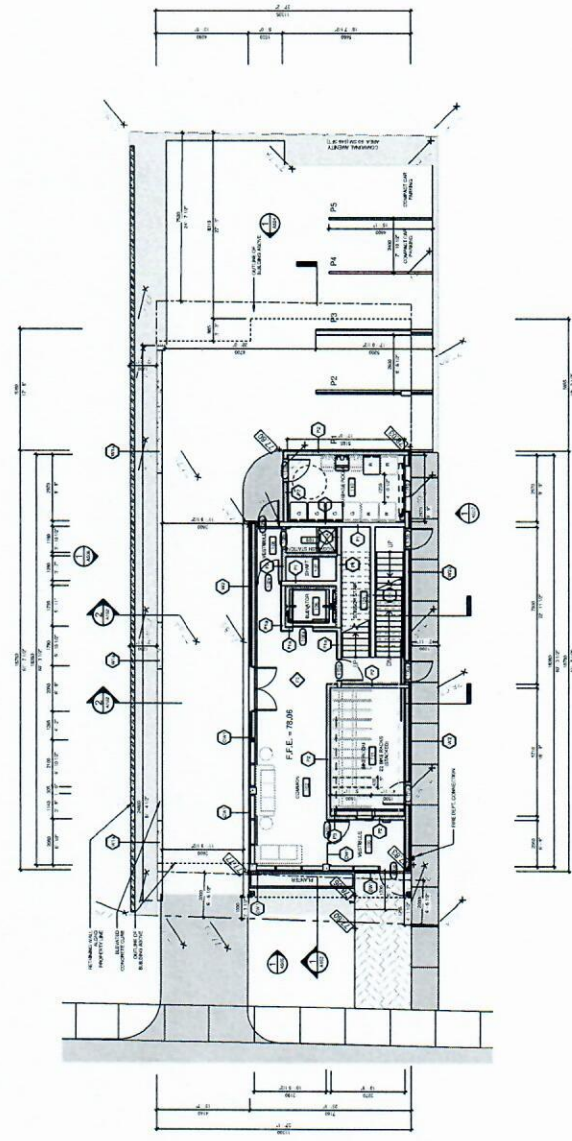
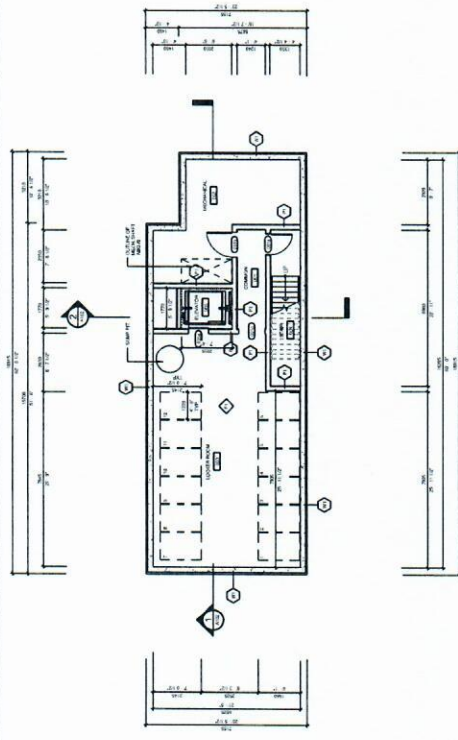
2301	As indicated
PROJECT	SCALE

25.

PROPOSED SITE PLAN

A101

BASE NOTE:
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PROPERTY OF BOBBI DESIGNING INC OR CREDIT WITH THAT THE
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DISCREPANCIES TO BOBBI DESIGNING INC. AND 08/18/18

[illegible]

ISSUE RECORD			
NO.	DATE	BY	DESCRIPTION
1	22 JUL 2024	DS	REMOVED FOR IPA



 BIOSIS DESIGNS
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P: 613-292-9142

MERIVALE APARTMENT
917 MERIVALE RD
OTTAWA ON
for
MARC AMYOT

2301 PROJECT
1:100 SCALE
DS, SH
DRAWN
SH
REVISED

FLOOR PLANS

A102

PLEASE NOTE:

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REVISION RECORD	
NO.	DESCRIPTION
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BIOSIS DESIGNS

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P: 416-291-8642
W: www.biosisdesigns.com

MERVILLE APARTMENT
917 MERVILLE RD
OTTAWA ON

Prepared by:
MARC AMYOT

2301
1:100

DATE
2014

BY
SH

BY
SH

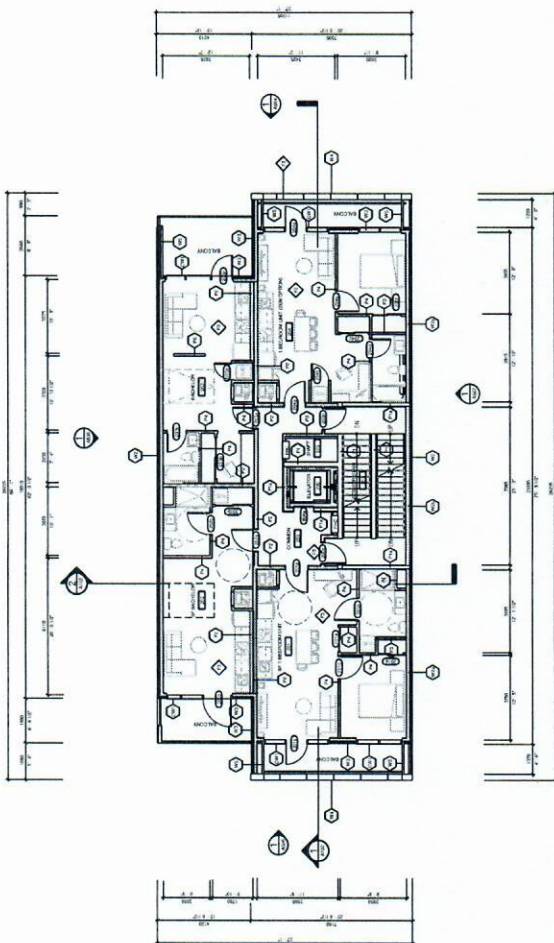
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BY

FLOOR PLANS

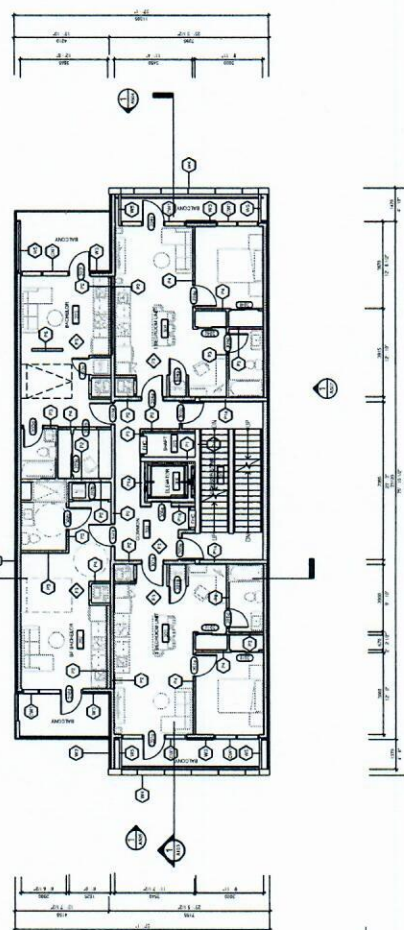
A103

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2 SECOND LEVEL FLOOR PLAN
1:100



3 THIRD LEVEL FLOOR PLAN
1:100



REVISION RECORD		
NO.	DATE	BY
1	20.12.2018	DS
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BIOSIS DESIGNS

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W: 613-231-8642

MERVILLE APARTMENT
917 MERVILLE RD
OTTAWA ON

MARC AMYOT

2201

1:100

DS SH

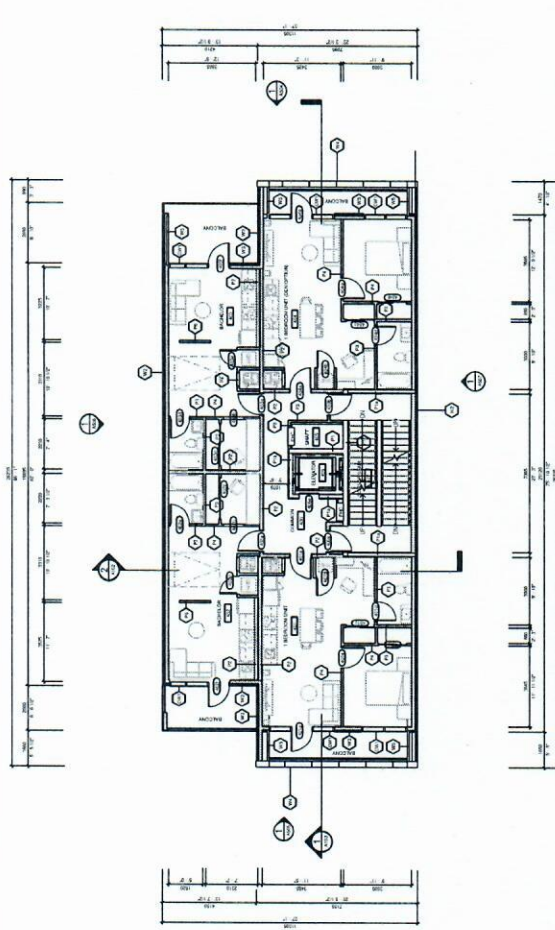
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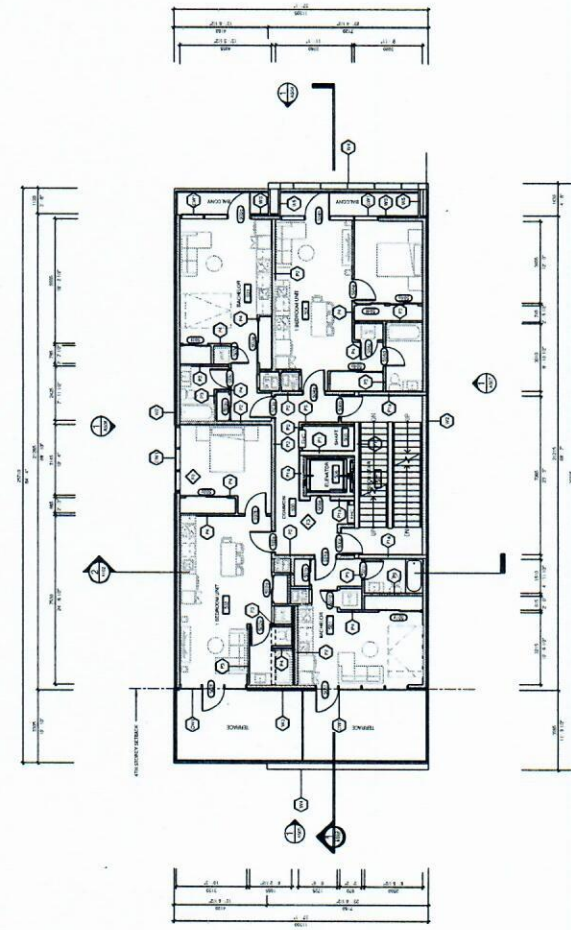
FLOOR PLANS

A104

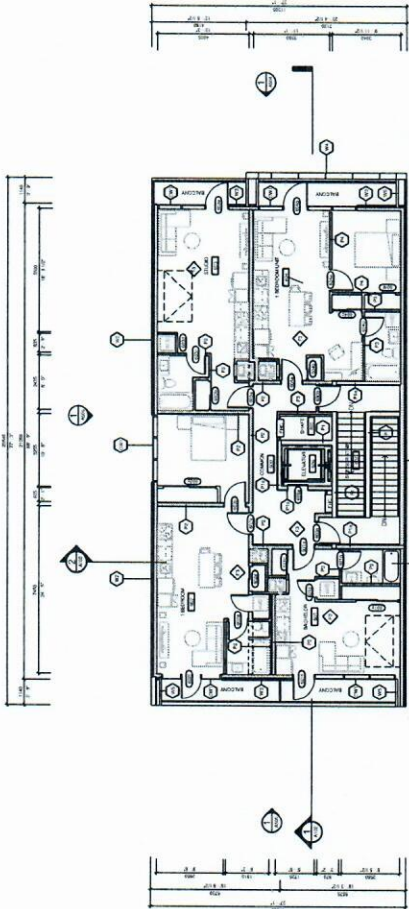
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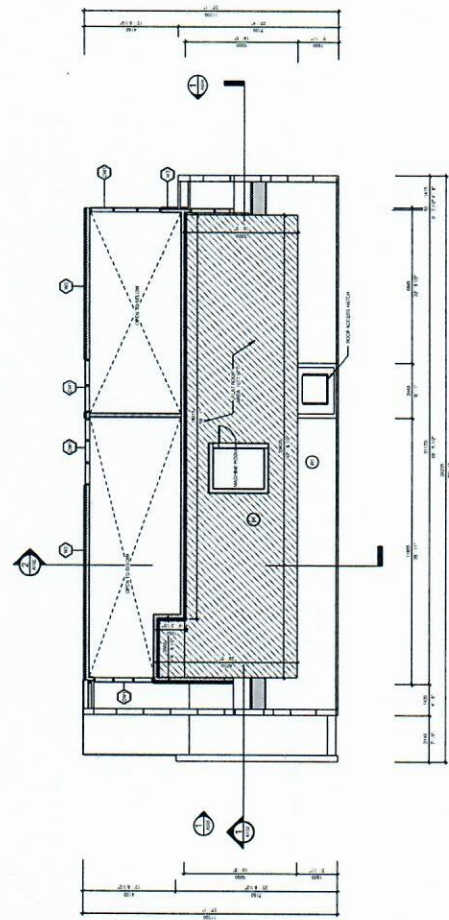
1 FOURTH LEVEL FLOOR PLAN
1:100



2 FIFTH LEVEL FLOOR PLAN
1:100



1 SIXTH LEVEL FLOOR PLAN
1:100



2 FLAT ROOF PLAN
1:100



REVISION RECORD	
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MERVALE APARTMENT
917 MERVALE RD
OTTAWA ON
MARC AMYOT

2301
PROJECT
DS, SH
SH
SH
REVISED

1:100
SCALE

FLOOR PLANS
A105

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HW 10/10/18 01-00-0001



REVISION RECORD	
NO.	DESCRIPTION
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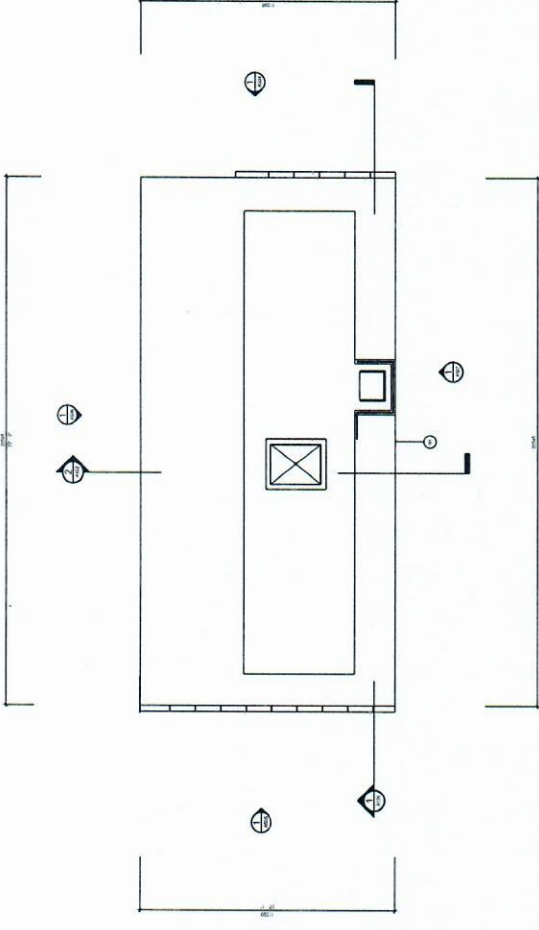
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P: 613-583-8642
W: www.biosisdesigns.com

MERVILLE APARTMENT
917 MERVILLE RD
OTTAWA ON
For: **MARC AMYOT**

2301 1:100
PROJECT SCALE
Author: [Signature]
Checked: [Signature]
Reviewed: [Signature]

FLOOR PLANS
A106

PROJ. NO. 2301
DATE: 2018-05-10
BY: [Signature]
CHECKED: [Signature]
REVIEWED: [Signature]
SCALE: 1:100
SHEET: 1 OF 1
DRAWING: FLOOR PLANS
PROJECT: MERVILLE APARTMENT
CLIENT: MERVILLE APARTMENTS
LOCATION: 917 MERVILLE RD, OTTAWA, ON
DRAWN BY: [Signature]
CHECKED BY: [Signature]
REVIEWED BY: [Signature]



ROOF PLAN
1:100



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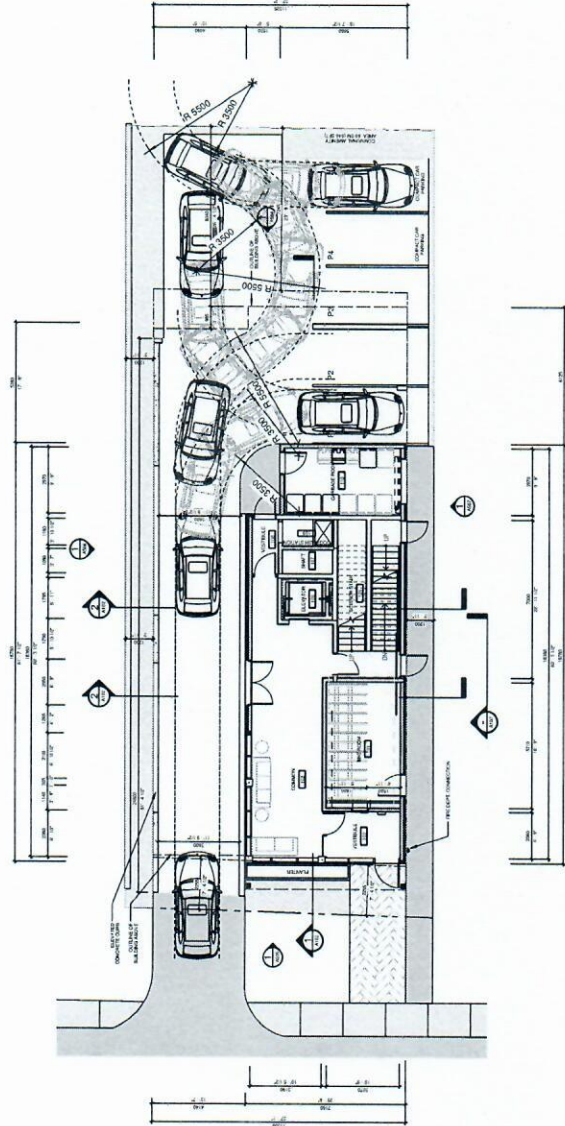
MERVALE APARTMENT
917 MERVALE RD
OTTAWA ON
M4C 1A7
MARC AMYOT

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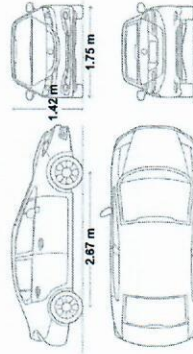
VEHICLE TURNING PLAN

A107

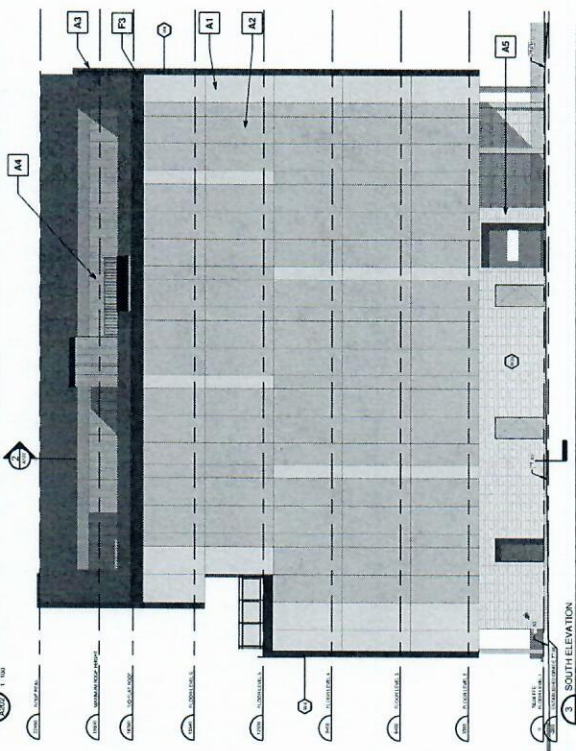
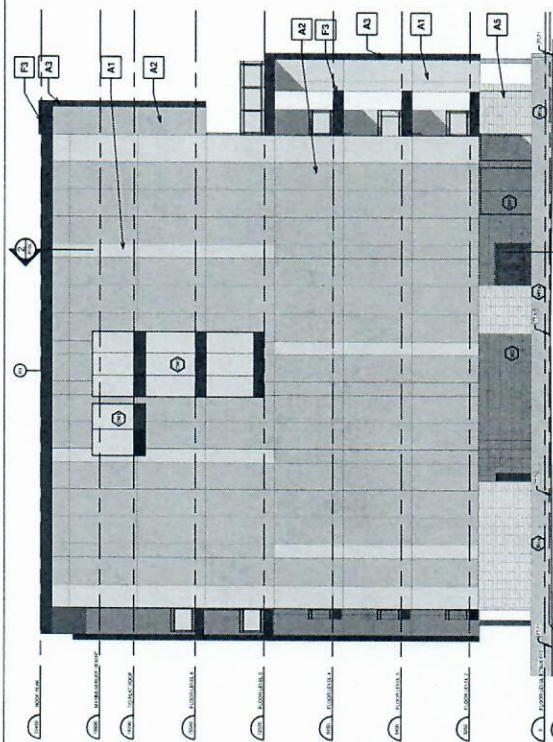
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1 FIRST LEVEL VEHICLE TURNING - MID SIZED SEDAN
1:100



2 TYP. VEHICLE DIMENSIONS
1:20



EXTERIOR FINISH LEGEND

A1 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 	A2 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 	A3 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 	A4 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 	A5 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 	A6 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 	A7 - VERTICAL HARBOR PANEL COLOR: POLAR WHITE FINISH: SMOOTH PATTERN: STACKED 
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5 MATERIAL LEGEND

2002 | 50

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MERIVALE APARTMENT
917 MERIVALE RD
OTTAWA ON
for
MARC AMYOT

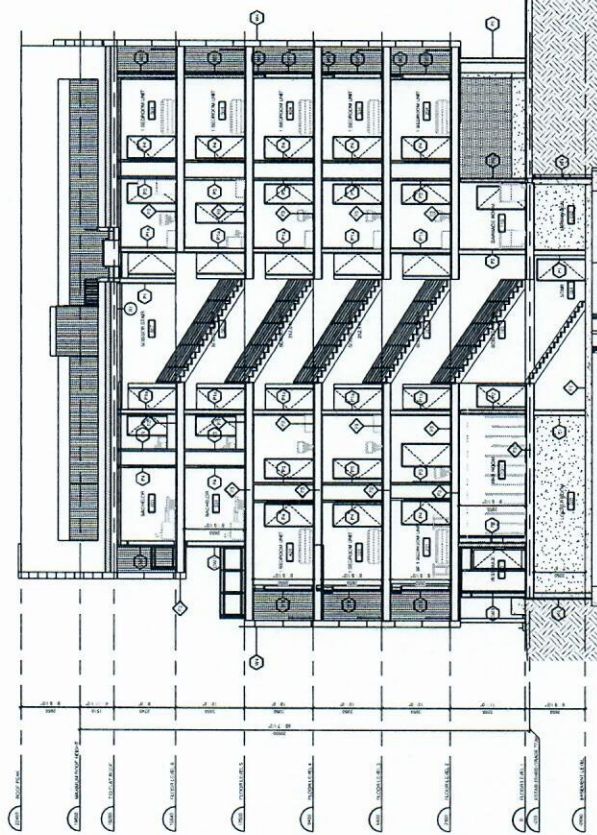
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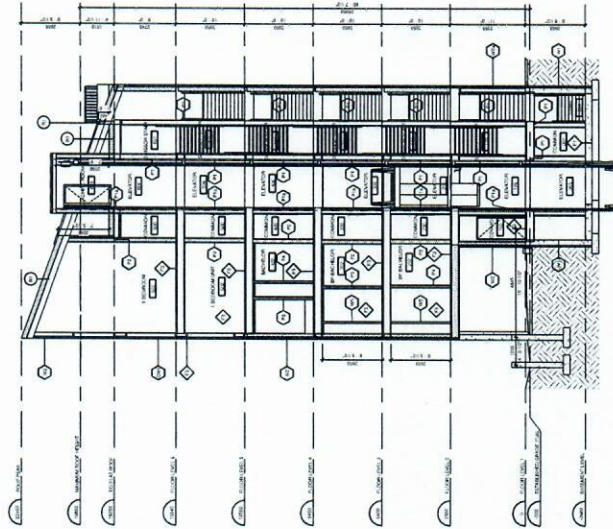
A202

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1 EAST-WEST SECTION THRU STAIRS
1:100



2 NORTH-SOUTH SECTION THRU STAIRS
1:100



REVISION RECORD	
NO.	DESCRIPTION
1	ISSUED FOR PERMIT
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ISSUE RECORD			
NO.	DATE	BY	DESCRIPTION
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8	2014.04.04	DS	ISSUED FOR PERMIT
9	2014.04.04	DS	ISSUED FOR PERMIT
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P: 613-282-1842

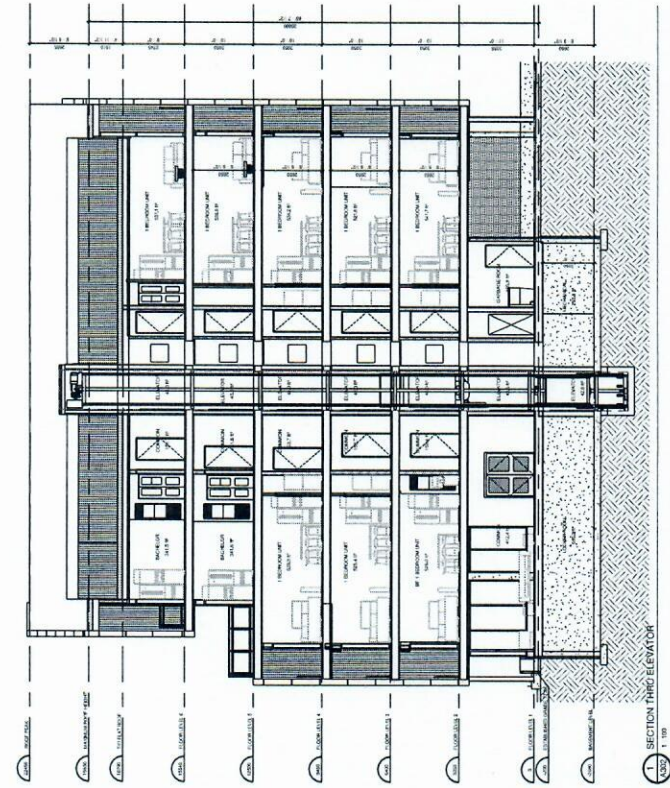
MERIVALE APARTMENT
917 MERIVALE RD
OTTAWA ON
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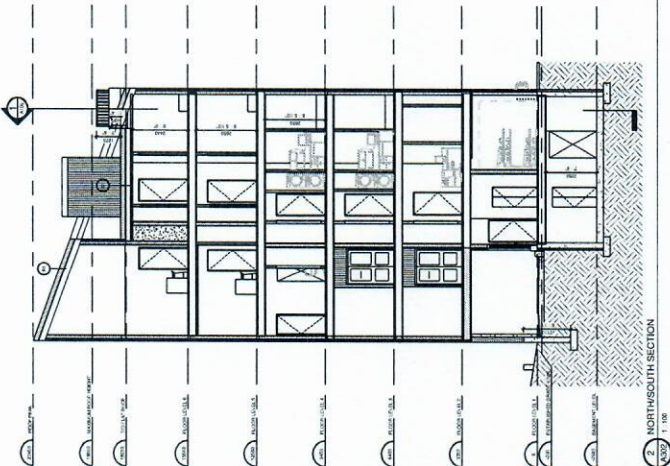
BUILDING SECTIONS

A301

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1 SECTION THRU ELEVATOR
2000 1/16"



2 NORTHSOUTH SECTION
2000 1/16"



REVISION RECORD	
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MERVILLE APARTMENT
917 MERVILLE RD
OTTAWA ON
M5C 1A5
MARC AMYOT

2301 1:100
PROJECT
DS, SH
DATE
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REVISED

BUILDING SECTIONS

A302

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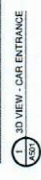
MERIVALE APARTMENT
917 MERIVALE RD
OTTAWA ON
for
MARC AMYOT

2301 PROJECT SCALE
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REVIEWED

3D VIEWS

A501

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ATTACHMENT 2 : WATER BOUNDARY CONDITIONS E-MAIL

Mineault-Guitard, Alexandre

From: TL MaK <tlmakecl@bellnet.ca>
Sent: Friday, May 3, 2024 11:01 AM
To: Mineault-Guitard, Alexandre
Cc: Alemany, Kevin
Subject: RE: 917 Merivale Road - Water Boundary Conditions Request
Attachments: 917 Merivale Road April 2024.pdf

Hi Alex,

Attached please find the Water Boundary Conditions received from the City on May 2, 2024 for your calculation use.

Have a good weekend.

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: Adams, Reed [<mailto:reed.adams@ottawa.ca>]
Sent: May 2, 2024 2:50 PM
To: TL MaK
Subject: RE: 917 Merivale Road - Water Boundary Conditions Request

Hi Tony,

Here are the boundary conditions for 917 Merivale:

The following are boundary conditions, HGL, for hydraulic analysis at 917 Merivale Road (zone 2W2C) assumed to be connected to the 305 mm watermain on Merivale Road (see attached PDF for location).

Min HGL: 124.4 m
Max HGL: 132.8 m
Max Day + Fire Flow (183 L/s): 118.0 m

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

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of 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.

Thanks,

Reed

From: Adams, Reed
Sent: April 18, 2024 1:59 PM
To: TL MaK <tlmakecl@bellnet.ca>
Subject: RE: 917 Merivale Road - Water Boundary Conditions Request

Hi Tony,

I've sent the request to our water resources group and should get a response back in two weeks max.

Thanks,

Reed

From: TL MaK <tlmakecl@bellnet.ca>
Sent: April 18, 2024 1:41 PM
To: Adams, Reed <reed.adams@ottawa.ca>
Subject: 917 Merivale Road - Water Boundary Conditions Request

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Hi Reed,

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 building located within Pressure Zone 2W at 917 Merivale Road is a 6-storey residential multi-unit building with a basement. The building contains twenty (20) total units, one (1) 2-bedroom, nine (9) 1-bedroom, and ten (10) bachelor units. Each floor covers an area of around 224 m², for a gross floor area of 1,341 m². The building is to be serviced by the 300 mm diameter watermain along Merivale Road.

The domestic demands were calculated using the City of Ottawa's Water Design Guidelines, where the residential consumption rate of 280 L/cap/d was used to estimate average day demands (AVDY). Persons per unit (PPU) for each unit were estimated based on the City of Ottawa's Water Design Guidelines. Following discussions with the City, peaking factors are to be estimated from Table 3-3 of the MECP Design Guidelines for Drinking-Water Systems, given that the proposed development population is less than 500 people. Maximum day (MXDY) demands were calculated by multiplying AVDY demands by a factor of 9.5. Peak hour (PKHR) demands were calculated by multiplying AVDY by a factor of 14.3. Table 1 shows the estimated domestic demands of the existing building.

Table 1: Estimated Domestic Demand

Unit Type	Unit Count	PPU	Consumption	AVDY		MXDY		PKHR	
				L/d	L/s	L/d	L/s	L/d	L/s

Apartment, 2-Bedroom	1	2.1	280	588	0.01	5,586	0.06	8,408	0.10
Apartment, 1-Bedroom	9	1.4		3,528	0.04	33,516	0.39	50,450	0.58
Apartment, Bachelor	10	1.4		3,920	0.05	37,240	0.43	56,056	0.65
Total	20			8,036	0.09	76,342	0.88	114,915	1.33

The fire flow required was determined following the Fire Underwriter Survey (FUS) method and is provided in the attached worksheet. The proposed building will be of wood frame construction. It is understood that the building will be equipped with sprinklers, and that the basement is more than 50% below ground level. The resulting required fire flow is 11,000 L/min (183 L/s) for a duration of 2.25 hours.

In summary:

- AVDY = 8,036 L/d (0.09 L/s);
- MXDY = 76,342 L/d (0.88 L/s);
- PKHR = 114,915 L/d (1.33 L/s); and,
- Fire Flow = 11,000 L/min (183 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

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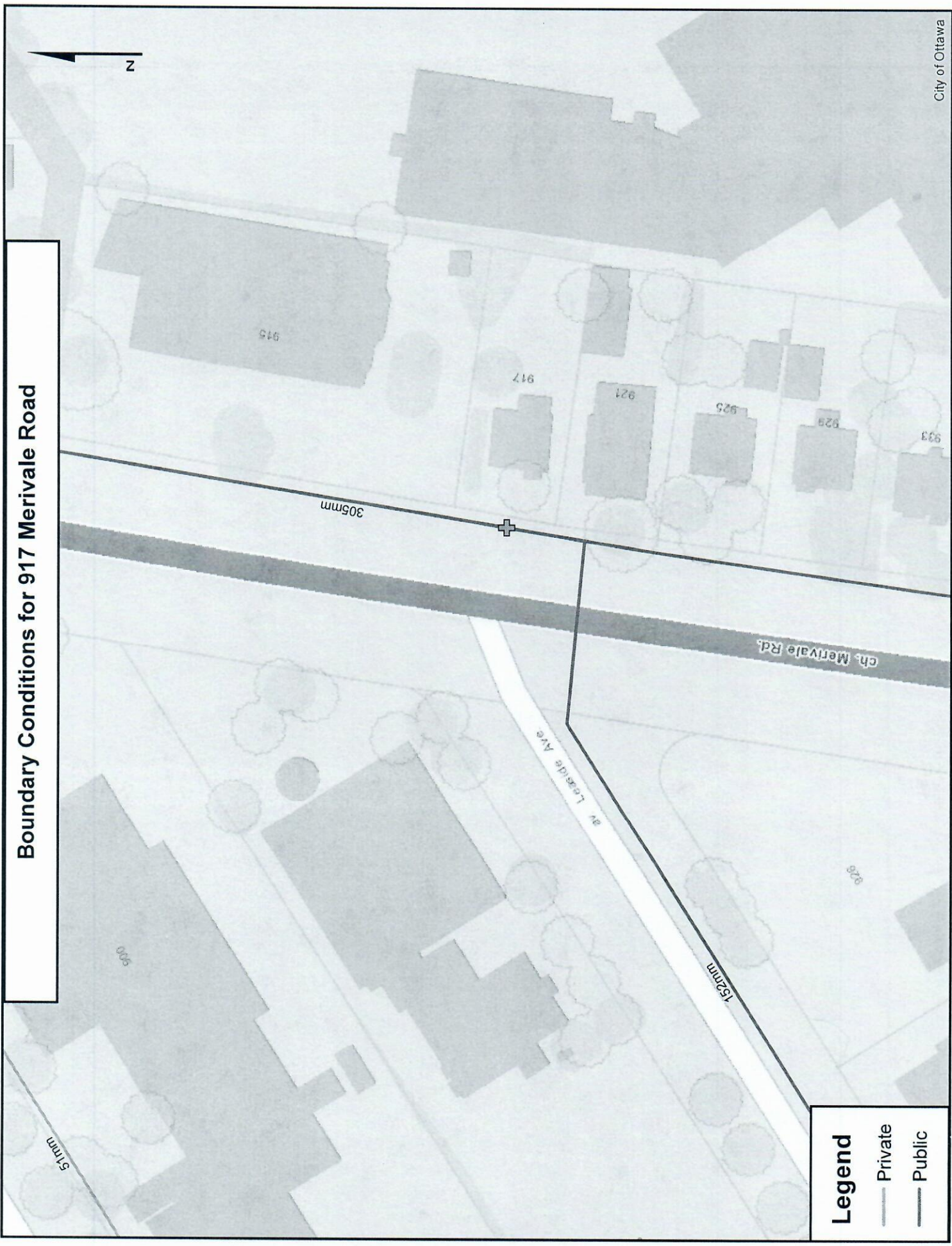
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Boundary Conditions for 917 Merivale Road



Legend

- Private
- Public

ATTACHMENT 3 : 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: 917 Merivale Road
 Date: August 14, 2024
 Data inputted by: Melissa Nelson, EIT
 Data reviewed by: Alexandre Mineault-Guitard, P.Eng

Fire Flow Calculation #: 1
 Building Type/Description/Name: Residential

Notes: Multi-unit building
 Wood frame, with sprinklers. 6-storey residential multi-unit building with a basement that is more than 50% below grade. The building contains twenty (20) total units, ten (10) 1-bedroom, and ten (10) bachelor units.
 The average floor area is 218 sq. meters, for a gross floor area of 1,310 sq. meters.

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 V - Wood Frame	1.5	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	1	Other (Comm, Ind, Apt etc.)	20	Units	
			Townhouse - indicate # of units	0				
2.2	# of Storeys	Number of Floors/Storeys in the Unit (do not include basement if 50% below grade):			6	6	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):			218	218	Area in Square Metres (m ²)	
					Square Metres (m2)			
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):			1,310	1310		
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						12,000
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	Limited combustible	-0.15	N/A	10,200
			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	-3,060
			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	-1,020
			Water supply is not standard or N/A	0				
		Sprinkler Supervision Credit	Sprinkler system is fully supervised	-0.1	Sprinkler system is fully supervised	-0.1	N/A	-1,020
	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	0
			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	
			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	Front Yard	30.1m or greater	0	0.6	m	6,120
			Right Side	3.1 to 10.0m	0.2			
			Rear Yard	10.1 to 20.0m	0.15			
			Left Side	0 to 3.0m	0.25			
6	Obtain Required Fire Flow, Duration & Volume	Total Required Fire Flow, rounded to nearest 1,000 L/min, with max/min limits applied:						11,000
		Total Required Fire Flow (above) in L/s:						183
		Required Duration of Fire Flow (hrs)						2.25
		Required Volume of Fire Flow (m ³)						1,485

ATTACHMENT 4 : FIGURE 1 – FUS EXPOSURE DISTANCES



Figure 1: FUS Exposure Distances (Property Line to Adjacent Buildings)

Source: geoOttawa 2024; Contains information licensed under the Open Government License – City of Ottawa.

ATTACHMENT 5 : SUPPORTING HYDRAULIC CALCULATIONS



Supporting Hydraulic Calculations

Stantec Project #: 163401084

Project Name: 917 Merivale Road

Date: May 9, 2024

Data inputted by: Alexandre Mineault-G, P.Eng.

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

Boundary Conditions provided by the City:

Scenario 1: Peak Hour (Min HGL): 124.4 m;

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

Scenario 3: Maximum Day plus Fire Flow: 118.0 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:

$$HGL(m) = 124.4 \text{ and } hz (m) = 77.9.$$

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

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

$$\therefore hp = 124.4 - 77.9 \text{ m} = 46.5 \text{ m}.$$

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:

$$P (kPa) = (1000 * 9.81 * 46.5) / 1000$$

$$\therefore P = 456 \text{ kPa}.$$

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

$$P = 66 \text{ psi}.$$

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

Scenario 2: $P = 78 \text{ psi}$; and Scenario 3: $P = 57 \text{ psi}$.

To summarize:

Scenario 1: Minimum Pressure under Peak Hour Demand: 456 kPa (66 psi)
Scenario 2: Maximum Pressure under Average Day Demand: 538 kPa (78 psi)
Scenario 3: Minimum Pressure under Maximum Day + Fire Flow Demand: 393 kPa (57 psi)

ATTACHMENT 6 : FIGURE 2 – HYDRANT SPACING

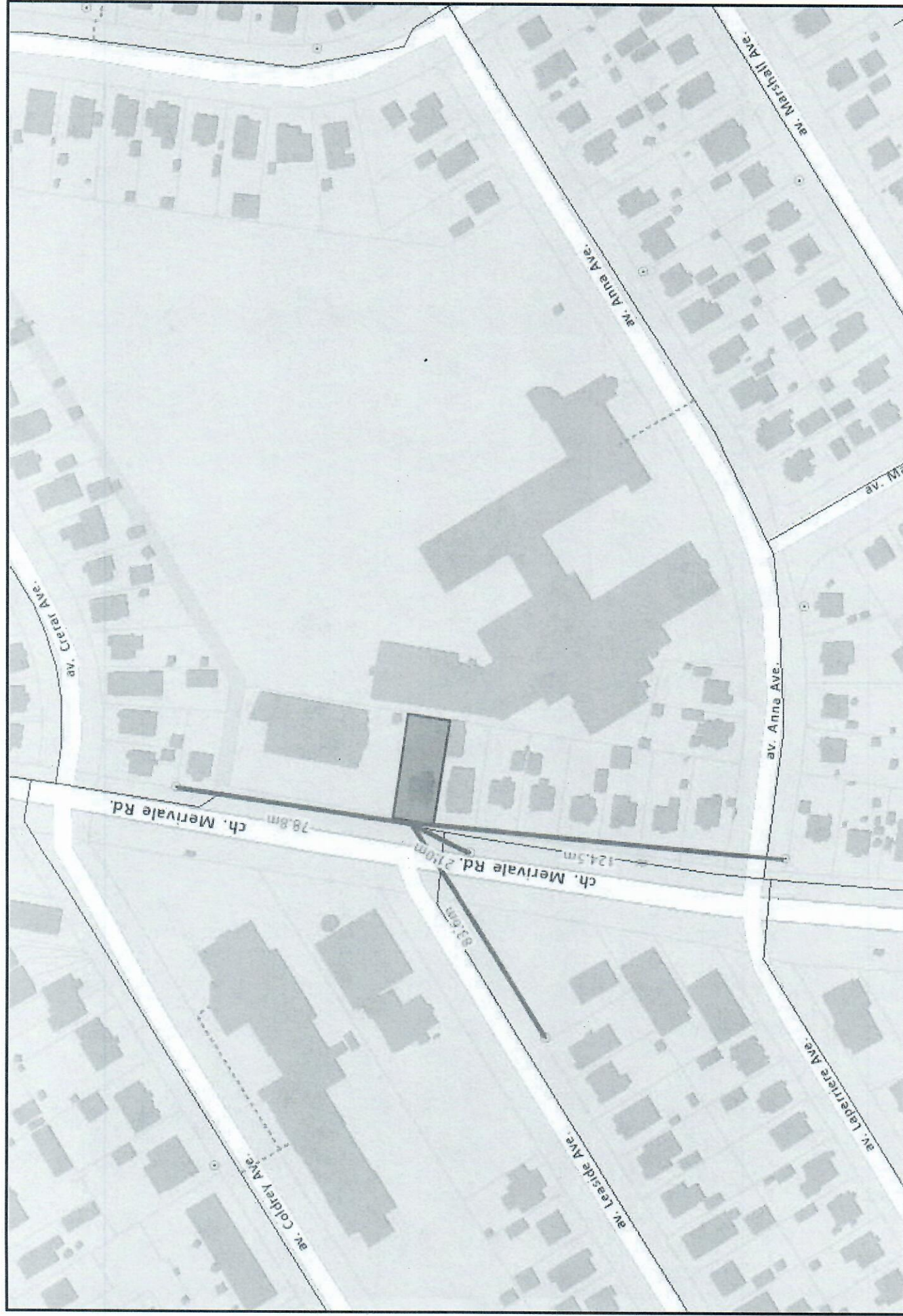


Figure 2: Hydrant Spacing

Source: geoOttawa 2024; Contains information licensed under the Open Government License – City of Ottawa.

**PROPOSED
SIX (6) STOREY APARTMENT BUILDING SITE
LOT 1
R-PLAN 268160
917 MERIVALE ROAD
CITY OF OTTAWA**

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

$$M = 1 + \frac{14}{4} \times \frac{K}{\sqrt{p}} \quad \text{where } p = \text{population in } 1000's$$

$$K = 0.8$$

$$Q(p) = \frac{PqM}{86.4} \quad (L/s)$$

$$Q(l) = IA \quad (L/s) \quad \text{where } A = \text{area in hectares}$$

$$Q(d) = Q(p) + Q(l) \quad (L/s)$$

- q = average daily per capita flow (200 l/cap. d)
- U = unit of peak extraneous flow (2.5 l/he. s)
- M = peaking factor 4 (MAX)
- Q (p) = peak population flow (l/s)
- Q (l) = peak extraneous flow (l/s)
- Q (d) = peak design flow

LOCATION			INDIVIDUAL		CUMULATIVE		PROPOSED SEWER										
STREET	FROM	TO	Pop.	Area A hectares	Pop.	Area A (hectares)	Peaking factor M	Pop. flow Q(p) (L/s)	Peak extraneous flow Q(i) (L/s)	Peak design flow Q(d) (L/s)	Length (m)	Pipe size (mm)	Type of pipe	Grade %	Capacity (L/s) n = 0.013	Full flow velocity (m/s)	Actual velocity at Q(d)
917 MERIVALE ROAD	SITE	EX-3750 SAN. SEWER	28	0.048	28	0.048	3.49	0.32	0.02	0.34	3.5	150	PVC	1.0	19.8	1.12	

A circular professional engineer stamp. The outer ring contains the text 'PROFESSIONAL ENGINEER' at the top and 'PROVINCE OF ONTARIO' at the bottom. Inside the ring, the name 'TONY L.M. MAK' is printed. A handwritten license number '38710/24' is written across the center, and a signature is written over it.

DESIGN	TLM	PROJECT	917 MERIVALE ROAD	SHEET NO. 1 of 1
CHECKED	TLM	PROPOSED	SIX (6) STOREY APARTMENT	
DATE	AUGUST, 2024	BUILDING SITE	- CITY OF OTTAWA	

(File # 923-102)

**PROPOSED
THREE (3) STOREY APARTMENT BUILDING SITE
LOT 75
R-PLAN 263
370 ATHLONE AVENUE
CITY OF OTTAWA**

**APPENDIX F
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