REPORT

SITE SERVICING REPORT & EROSION & CONTROL PLAN
78-90 BEECHWOOD/69-93 BARRETTE

Project: 125192-7.03.04

Prepared for Minto Communities Inc.
by IBI Group
December 18, 2020

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1 INTRODUCTION

1.1 Scope

The purpose of this report is to outline the required municipal services, including water supply, stormwater management and wastewater disposal, needed to support the redevelopment of the subject property. The property is approximately 0.42 hectares in area and is located at the following current municipal addresses, 78-90 Beechwood Avenue and 69-93 Barrette Street. The site is bound by Beechwood Avenue to the north Barrette Street to the south. Please refer to **Figure 1 – Location** plan for more details.

This Site Servicing Study, which also includes the Stormwater Management Plan, Watermain Analysis and Erosion and Sedimentation Control Plans, is being completed in support of the current Re-zoning Application and the future Site Plan Application.

1.2 Subject Site

Minto Communities proposes to construct a mixed use building with 229 residential units along with 6,000 square feet (564 square metres) of ground floor retail space fronting along Beechwood Avenue. The proposed development also includes 2 levels of underground parking. Vehicular access to the site will be from both Beechwood Avenue and Barrette Street. Please refer to **Figure 2 – Site Plan** for more information.

The site currently consists of vacant lots along with some existing low rise residential and commercial structures. All existing structures within the subject property will be demolished to facilitate the proposed development.

1.3 Pre-consultation

It should be noted that a pre-consultation with the Ministry of the Environment is not required since this site is serviced by existing separated municipal sanitary and storm sewers and is a single owner residential site, thus an ECA is not required.

2 WATER DISTRIBUTION

2.1 Existing Conditions

As previously noted, the site is located south of Beechwood Ave, and north of Barrette Street. An existing 200 mm diameter watermain is located within the Beechwood Ave right of way and an existing 300 mm watermain is located within the Barrette Street right of way. The watermains fall within the City of Ottawa's pressure zone 1E which will provide the water supply to the site.

2.2 Design Criteria

2.2.1 Water Demands

The population for apartment buildings is assumed at 1.8 persons per unit as found in Table 4.1 of the Design Guidelines. A watermain demand calculation sheet is included in **Appendix A** and the total water demands are summarized as follows:

	Subject Site
Average Day	1.36 l/s
Maximum Day	3.38 l/s
Peak Hour	7.42 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rates

A calculation using the Fire Underwriting Survey (FUS) method was conducted to determine the fire flow requirement for the site. The building is considered non-combustible construction. Results of the analysis provides a maximum fire flow rate of 8,000 l/min or 133 l/s is required which is used in the hydraulic analysis. A copy of the FUS calculation is included in **Appendix A**.

2.2.4 Boundary Conditions

A boundary condition was provided by the City of Ottawa for the 305 mm diameter watermain on Barrette Street adjacent to the development. A copy of the boundary conditions is included in **Appendix A** and summarized as follows:

BOUNDARY CONDITIONS	
SCENARIO	HGL (m) Barrette (proposed connection)
Maximum HGL	118.3m
Minimum HGL (Peak Hour)	107.0m
Max Day + Fire Flow	89.0m

2.3 Proposed Water Plan

The minimum water pressure inside the building at the connection is determined by the difference between the water entry elevation of 55.95m and the minimum HGL condition, resulting in a pressure 500.8 kPa which exceeds the minimum requirement of 276 kPa per the guidelines. Because the pressure at the 9th floor under minimum HGL conditions is less than the minimum requirement of 276 kPa, a domestic water pump will be necessary for this building.

Maximum water pressure is determined by the difference between the water entry elevation of 55.95m and the maximum HGL condition resulting in a pressure of 66.6 kPa, which is greater than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is required for this building.

The boundary condition for Maximum Day and Fire Flow results in a pressure of 324.2 kPa at the ground floor level. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 324.21 kPa is achieved, the fire flow requirement is exceeded.

To service the property twin 200mm dia water services off Barrette are proposed, see site servicing plan 125192-C-001 in **Appendix D.** The proposed 200mm dia service will provide adequate supply to the building to meet demands while twining the service will provide service redundancy for this building.

3 WASTEWATER

3.1 Existing Conditions

The site is bound by 300mm concrete sanitary sewers located in both the Beechwood and Barrette ROWs. Given the proximity and elevation of the existing sewers, the sewer within the Barrette ROW has been chosen as the outlet for the subject development.

3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

- Commercial/Institutional flow — 28,000 l/ha/d
- Residential flow — 280 l/c/d
- Peaking factor — 1.5 if ICI in contributing area >20%
1.0 if ICI in contributing area <20%
- Infiltration allowance — 0.33 l/s/ha
- Velocities — 0.60 m/s min. to 3.0 m/s max.
-

Given the above criteria, total wastewater flow from the proposed development will 4.72 l/s, the detailed sanitary sewer calculations are included in **Appendix B**.

3.3 Recommended Wastewater Plan

A 200mm dia sanitary service lateral is proposed to connect to the existing sanitary sewer in Barrette to service this site. Please refer to the site servicing plan 125192-C-001 in **Appendix D** for connection location details.

4 STORMWATER SYSTEM

4.1 Existing Conditions

Currently adjacent to the site is a 375mm dia storm sewer draining westward within the Barrette ROW and a 450mm dia storm sewer draining westward in the Beechwood ROW. The proposed storm sewer connection will be in keeping with the other services and connect to the Barrette Street sewer.

4.2 Design Criteria

Criteria for the stormwater management of existing infill sites discharging to separated sewers within the City of Ottawa are as follows;

- Existing adjacent storm sewers were designed to a 2 year level of service
- Site to be designed to limit the 100 year post development flow to a maximum of the 2 year pre development flow
- Pre development flow to use a maximum C of 0.5 and a minimum TC of 10 min.

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

- Design Storm — 1:2 year return (Ottawa)
- Rational Method Sewer Sizing
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients
  - Landscaped Areas — C = 0.30
  - Asphalt/Concrete — C = 0.90
  - Roof — C = 0.90
- Pipe Velocities — 0.80 m/s to 6.0 m/s
- Minimum Pipe Size — 250 mm diameter (200 mm CB Leads)

4.3 Proposed Minor System

The detailed design for this site shows a storm sewer connection along with some uncontrolled surface drainage entering into the 375mm sewer within Barrette Street Road ROW. A limited amount of uncontrolled surface flow will also enter the 450mm storm sewer within the Beechwood Avenue ROW.

Using the above-noted criteria, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated storm sewer drainage area plan are included in **Appendix C**. The current servicing drawing shows 5 surface catchbasin locations. As these are located above the underground parking structure all flows will be routed inside the building via the mechanical plumbing systems and directed to the building cistern.

4.4 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through an inlet control device (ICD) at the outlet of the cistern.

Flows generated that are in excess of the site`s allowable release rate will be stored within the cistern located at the buildings SW corner. The cistern has been sized at 130 cubic metres.

At certain locations within the site, the opportunity to store runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties, and it is not always feasible to capture or store stormwater runoff. These “uncontrolled” areas, 0.05 hectares in total, have a weighted average C value of 0.9. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 22.3 l/s runoff (refer to Section 4.5 for calculation). The cistern has been sized to control water generated during the 1:100-year event, with no overflow leaving the site. Please refer to the SWM calculations in **Appendix C**.

4.5 Inlet Controls

The allowable release rate for the 0.42 Ha site can be calculated as follows:

$\mathbf{Q_{allowable}}$ = **2.78** x **C** x $\mathbf{i_{2yr}}$ x **A** where:

C = 0.5 (pre-development C*)

$\mathbf{I_{2yr}}$ = Intensity of 2-year storm event (mm/hr)

= $732.951 \times (T_c + 6.199)^{0.81}$ = 76.81 mm/hr; where T_c = 10 minutes*

A = Area = 0.42 Ha

= **44.84 L/s**

*based on pre development calculations, see Appendix C

As noted in Section 4.4, a portion of the site will be left to discharge to the surrounding boulevards and roadways at an uncontrolled rate.

Based on a 1:100 year event, the flow from the 0.05 Ha uncontrolled area can be determined as:

$\mathbf{Q_{uncontrolled}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A** where:

C = Average runoff coefficient of uncontrolled area = 0.9

$\mathbf{i_{100yr}}$ = Intensity of 100-year storm event (mm/hr)

= $1735.688 \times (T_c + 6.014)^{0.820}$ = 178.56 mm/hr; where T_c = 10 minutes

A = Uncontrolled Area = 0.05 Ha

Therefore, the uncontrolled release rate can be determined as:

$\mathbf{Q_{uncontrolled}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A**

= 2.78 x 0.9 x 178.56 x 0.05

= **22.34L/s**

The maximum allowable release rate from the remainder of the site can then be determined as:

$Q_{max\ allowable} = Q_{restricted} - Q_{uncontrolled}$

$= 44.84\ L/s - 22.34\ L/s$

$= \mathbf{22.50\ L/s}$

4.6 On-Site Detention

As noted in section 4.4 any excess storm water up to the 100-year event is to be stored on-site within the building cistern in order to not surcharge the downstream municipal storm sewer system. As the cistern is located inside the building, coordination with the architect, structural and mechanical engineers will be needed to design the structure and associated inlet control device.

4.6.1 Site Inlet Control

The following Table summarizes the on-site storage requirements during both the 1:5-year and 1:100-year events.

ICD AREA	TRIBUTARY AREA	AVAILABLE STORAGE (M^3)	100-YEAR STORM		5-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
Cistern	0.37	130.00	22.50	129.67	22.50	51.13
Unrestricted	0.05					
TOTAL	**0.42**	**130.00**	**22.50**	**129.67**	**22.50**	**51.13**

In all instances the required storage is met with the building cistern.

4.6.2 Overall Release Rate

As demonstrated above, the site uses an inlet control device to restrict the 100 year storm event to the criteria approved by the City of Ottawa. Restricted stormwater will be contained onsite by the building cistern. In the 100 year event, there will be no overflow off-site from restricted areas.

The sum of restrictions on the site is 22.50 l/s, which is equal to the allowable release of 22.50 l/s noted in section 4.5.

5 SEDIMENT AND EROSION CONTROL PLAN

During construction, existing stream and storm water conveyance systems can be exposed to significant sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings may be used such as;

- Filter socks will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use;
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.

During construction of the services, any trench dewatering using pumps will be fitted with a “filter sock.” Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed these structures will be protected with a sediment capture filter sock to prevent sediment from entering the minor storm sewer system. These will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

The Sediment and Erosion Control Plan 125192-C-010 is included in **Appendix D**.

6 CONCLUSIONS

Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

This report has demonstrated sanitary and storm flows from and water supply to the subject site can be accommodated by the existing infrastructure. Also, the proposed servicing has been designed in accordance with MECP and City of Ottawa current level of service requirements.

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on surface water.

Based on the information provided herein, the development can be serviced to meet City of Ottawa requirements.

Report prepared by:

Demetrius Yannoulopoulos, P. Eng.
Director, Ottawa Office Lead

James Battison C.E.T

"J:\125192_78Beechwood\7.0_Production\7.03_Design\04_Civil_Report\2nd Submission\CTR-site-srvcng-erosion-2020-12-18.docx"

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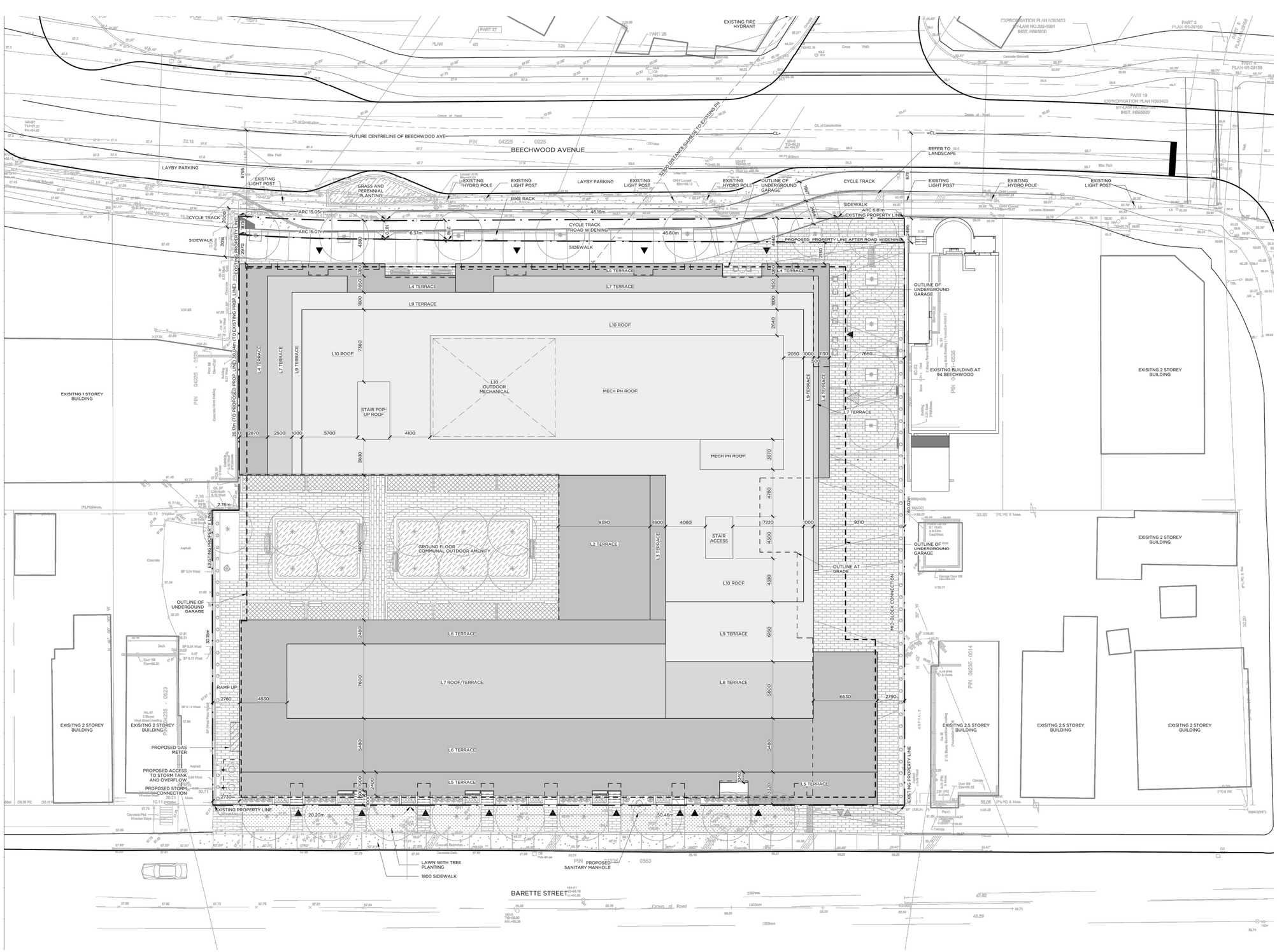
Project Title	Drawing Title	Sheet No.
78-90 BEECHWOOD AVENUE 69-93 BARRETTE STREET	KEY PLAN	FIGURE 1



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Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	78-90 BEECHWOOD AVENUE 69-93 BARRETTE STREET	SITE PLAN	FIGURE 2

APPENDIX A

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : 78 Beechwood Ave.
LOCATION : City of Ottawa
DEVELOPER : Minto Communities - Canada

FILE: 125192-6.4.4
DATE PRINTED: 2020-12-18
DESIGN: 2020-05-13
PAGE : 1 OF 1

NODE	RESIDENTIAL				NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND
	Single	Town	Apt	POP'N	INDTRL (ha.)	COMM. (ha.)	RETAIL (m^2)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	(l/min)
BUILDING			229	412			564	1.34	0.02	**1.36**	3.34	0.04	**3.38**	7.35	0.07	**7.42**	**8,000**

ASSUMPTIONS

RESIDENTIAL DENSITIES

Apartment (ave) 1.8 p / p / u

** Residential Daily Demand reduced to coincide with current waste water guidelines

AVG. DAILY DEMAND

Residential:**	280	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:	2,500	l / 1000m^2 / day

MAX. DAILY DEMAND

Residential:	700	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:	6,250	l / 1000m^2 / day

MAX. HOURLY DEMAND

Residential:	1,540	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:	11,250	l / 1000m^2 / day

FIRE FLOW

From FUS Calculation 28,000 l / min

Fire Flow Requirement from Fire Underwriters Survey - 78 Beechwood Avenue

78 Beechwood

Floor Area (3 & 4)	5,013	m^2
50% Floor Area (5 to 10)	4,480	
Total Floor Area	9,493	m^2

F = 220C√A

C	0.6	C =	1.5	wood frame
A	9,493 m^2		1.0	ordinary
			0.8	non-combustible
F	12,861 l/min		0.6	fire-resistive
use	13,000 l/min			

Floor	Area (m^2)	Two Largerst Floor	Floors Above at 50%
1	2218		
2	2447		
3	2519	2519	
4	2494	2494	
5	2494		1247
6	2214		1107
7	1428		714
8	1171		585.5
9	1271		635.5
10	382		191
Total	18638		**9493**

(**Note**: For fire-resistive buildings, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

Occupancy Adjustment

		-25%	non-combustible
		-15%	limited combustible
Use	-15%	0%	combustible
		+15%	free burning
Adjustment	-1950 l/min	+25%	rapid burning
Fire flow	11,050 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-3315 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge *
north	21.0	32.3	2	65	8%
east	3.1	46.6	2	93	19%
south	20.8	24.9	2	50	7%
west	7.9	28.8	2	58	16%

Total 0%

(**Note**: According to Page G-104 in **Tech bulletin ISTB-2018-02** Revisions to Ottawa Design Guidelines - Water Distribution, "If the exposing wall of the building being considered is taller than the exposed wall of the adjacent structure, no exposure charge applies".)

Adjustment	-	l/min
Total adjustments	(3,315)	l/min
Fire flow	7,735	l/min
Use	**8,000**	**l/min**
	133	**l/s**

Water Boundary Condition Request - 78 Beechwood Ave.

Wessel, Shawn <shawn.wessel@ottawa.ca>

Tue 5/19/2020 9:45 AM

To: Amy Zhuang <Amy.Zhuang@ibigroup.com>
Cc: O'Connor, Ann <Ann.O'Connor@ottawa.ca>; James Battison <James.Battison@ibigroup.com>; Demetrius Yannoulopoulos <dyannoulopoulos@IBIGroup.com>

1 attachments (80 KB)

78 Beechwood May 2020.pdf;

Good morning everyone.

Please find requested conditions.

Please refer to Guidelines and Technical bulletin ISDTB-2014-02 concerning basic day demands greater than 0.5 L/s.

The following are boundary conditions, HGL, for hydraulic analysis at 78 Beechwood (zone 1E) assumed to be connected to the 305mm on Barrette (see attached PDF for location).

Minimum HGL = 107.0m

Maximum HGL = 118.3m. The maximum pressure is estimated to be more than 80 psi. A pressure check at completion of construction is recommended to determine if pressure control is required.

MaxDay + FireFlow (467 L/s) = 89.0m

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

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

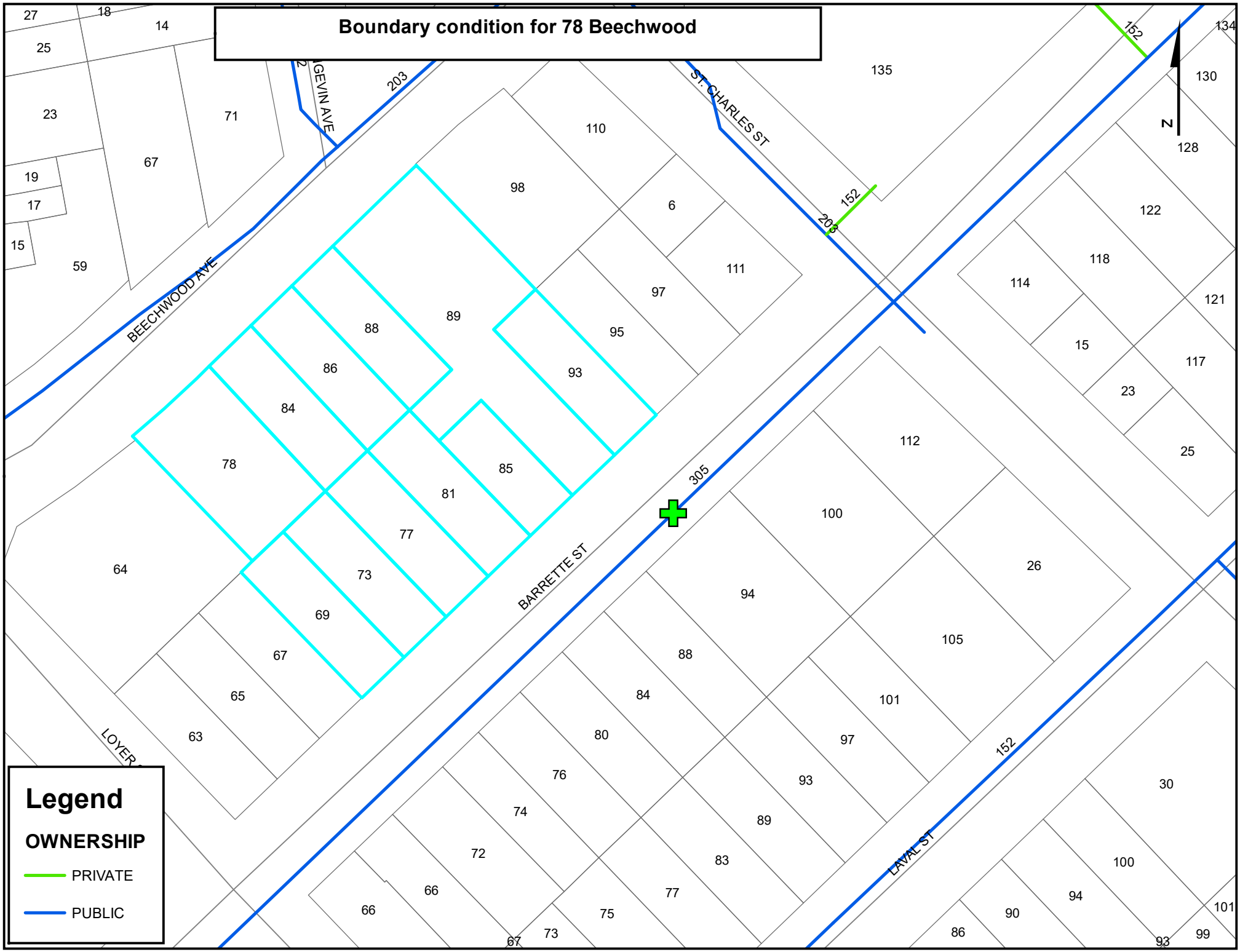
If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Project Manager - Infrastructure Approvals
Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale


Boundary condition for 78 Beechwood
BEECHWOOD AVE
BARRETTE ST
ST-CHARLES ST
LAVAL ST
LOYER
GEVIN AVE
203
305
152
N
Legend
OWNERSHIP
PRIVATE
PUBLIC

APPENDIX B

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

SANITARY SEWER DESIGN SHEET

78 Beechwood Ave
CITY OF OTTAWA
Minto Communities Inc.

LOCATION				RESIDENTIAL									ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH		SF	SD	TH	APT		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL				IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
														IND	CUM	IND	CUM	IND	CUM														
78 Beechwood Ave.		Building	MH1A	0.42				229		412.2	412.2	3.41	4.56			0.06	0.06					0.48	0.48	0.16			4.72	48.39	1.07	200	2.00	1.492	43.67	90.25%
78 Beechwood Ave.		MH1A	Main							0.0	412.2	3.41	4.56			0.00	0.06					0.00	0.48	0.16			4.72	48.39	10.59	200	2.00	1.492	43.67	90.25%

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	
APT	1.8	p/p/u	COM	28,000	L/Ha/day	
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart
				17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,
   1.5 if greater than 20%, otherwise 1.0

Designed: JEB
Checked: DY
Dwg. Reference: 125192-C-001

No.	Revision	Date
1.	Issued for Re-Zoning Application	2020-07-31
2.	2nd City Submission	2020-12-18

File Reference: 125192.7.03
Date: 2020-07-31
Sheet No: 1 of 1

APPENDIX C

DEPRESSED SIDEWALK TRANSITION AS PER NOTE 8 IN CITY STD SC7.1 (TYPICAL)

DEPRESSED CURB AND SIDEWALK AS PER CITY STD SC7.1

CURB RETURN AS PER CITY STD SC7.1

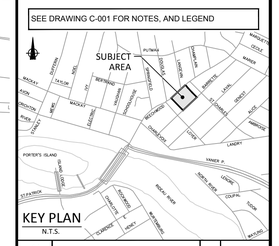
PRELIMINARY
FOR INFORMATION ONLY

LEGEND :

WH
1.01 | 0.0

- AREA NUMBER
- RUNOFF COEFFICIENT
- AREA IN HECTARES
- DRAINAGE AREA LIMITS

SEE DRAWING C-001 FOR NOTES, AND LEGEND



KEY PLAN
N.T.S.

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3			
2	2ND SUBMISSION	D.G.Y.	2020:12:18
1	ISSUED FOR SPA	D.G.Y.	2020:07:31

minto Communities

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tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title
78-90 BEECHWOOD/
69-93 BARRETTE

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2020/12/18
PROVINCE OF ONTARIO

Drawing Title
SITE DRAINAGE
AREA PLAN

Scale
2.5 0 2.5 5
1:200

Design	Date
J.B.	AUG. 2020
Drawn: J.B./D.P.S.	Checked: D.G.Y.
Project No. 125192	Drawing No. C-500

CITY FILE No. D07-02-20-0056 CITY PLAN No. XXXXX

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STORM SEWER DESIGN SHEET

78 Beechwood Ave
City of Ottawa
Minto Communitis Inc.

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.30	C= 0.50	C= 0.57	C= 0.65	C= 0.69	C= 0.70	C= 0.76	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
78 Beechwood		Cistern	Main										0.37	0.93	0.93	10.00	0.09	10.09	76.81	104.19	122.14	178.56	71.10	96.46	113.07	165.30		71.10	142.67	10.75	300			2.00	1.955	71.57	50.16%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed: JEB

Checked: DY

Dwg. Reference: 125192-500

No.	Revision	Date
1.	Issued for Re-Zoning Application	2020-07-31

File Reference: 125192.7.03
Date: 2020-07-31
Sheet No: 1 of 1

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: 78 Beechwood Ave.
DATE: 2020-07-31
FILE: 125192.7.03
REV #: 1
DESIGNED BY: JB
CHECKED BY: DY

STORMWATER MANAGEMENT

Formulas and Descriptions

i_{2yr} = 1:2 year Intensity = 732.951 / $(T_c+6.199)^{0.810}$
i_{5yr} = 1:5 year Intensity = 998.071 / $(T_c+6.053)^{0.814}$
i_{100yr} = 1:100 year Intensity = 1735.688 / $(T_c+6.014)^{0.820}$
T_c = Time of Concentration (min)
C = Average Runoff Coefficient
A = Area (Ha)
Q = Flow = 2.78CiA (L/s)

Maximum Allowable Release Rate

Flow Allocation

C	=	0.5	(Pre-Development)
T_c	=	10	min
i_{2yr}	=	76.81	mm/hr
A_{TOTAL}	=	0.42	Ha
Q_{TOTAL}	=	44.84	L/s

Uncontrolled Release ($Q_{uncontrolled} = 2.78*C*i_{100yr}*A_{uncontrolled}$)

C	=	0.9	
T_c	=	10	min
i_{100yr}	=	178.56	mm/hr
$A_{uncontrolled}$	=	0.050	Ha
$Q_{uncontrolled}$	=	22.34	L/s

Maximum Allowable Release Rate ($Q_{max\ allowable} = Q_{restricted} - Q_{uncontrolled}$)

$Q_{max\ allowable}$	=	22.50 L/s

MODIFIED RATIONAL METHOD (100-Year & 5-YearPonding)

Drainage Area	Cistern		
Area (Ha)	0.370		
C =	0.99	Restricted Flow Q_r (L/s)=	22.50

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
36	80.96	82.45	22.50	59.95	129.48
38	77.93	79.36	22.50	56.86	129.64
39	76.51	77.91	22.50	55.41	**129.67**
40	75.15	76.52	22.50	54.02	129.65
42	72.57	73.90	22.50	51.40	129.52

Storage (m^3)

Overflow	Required	Surface	Cistern	Balance
0.00	129.67	0.00	130.00	0.00

Drainage Area	Cistern		
Area (Ha)	0.370		
C =	0.90	Restricted Flow Q_r (L/s)=	22.50

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
19	72.53	67.14	22.50	44.64	50.89
21	68.13	63.07	22.50	40.57	51.12
22	66.15	61.23	22.50	38.73	**51.13**
23	64.29	59.51	22.50	37.01	51.08
25	60.90	56.37	22.50	33.87	50.81

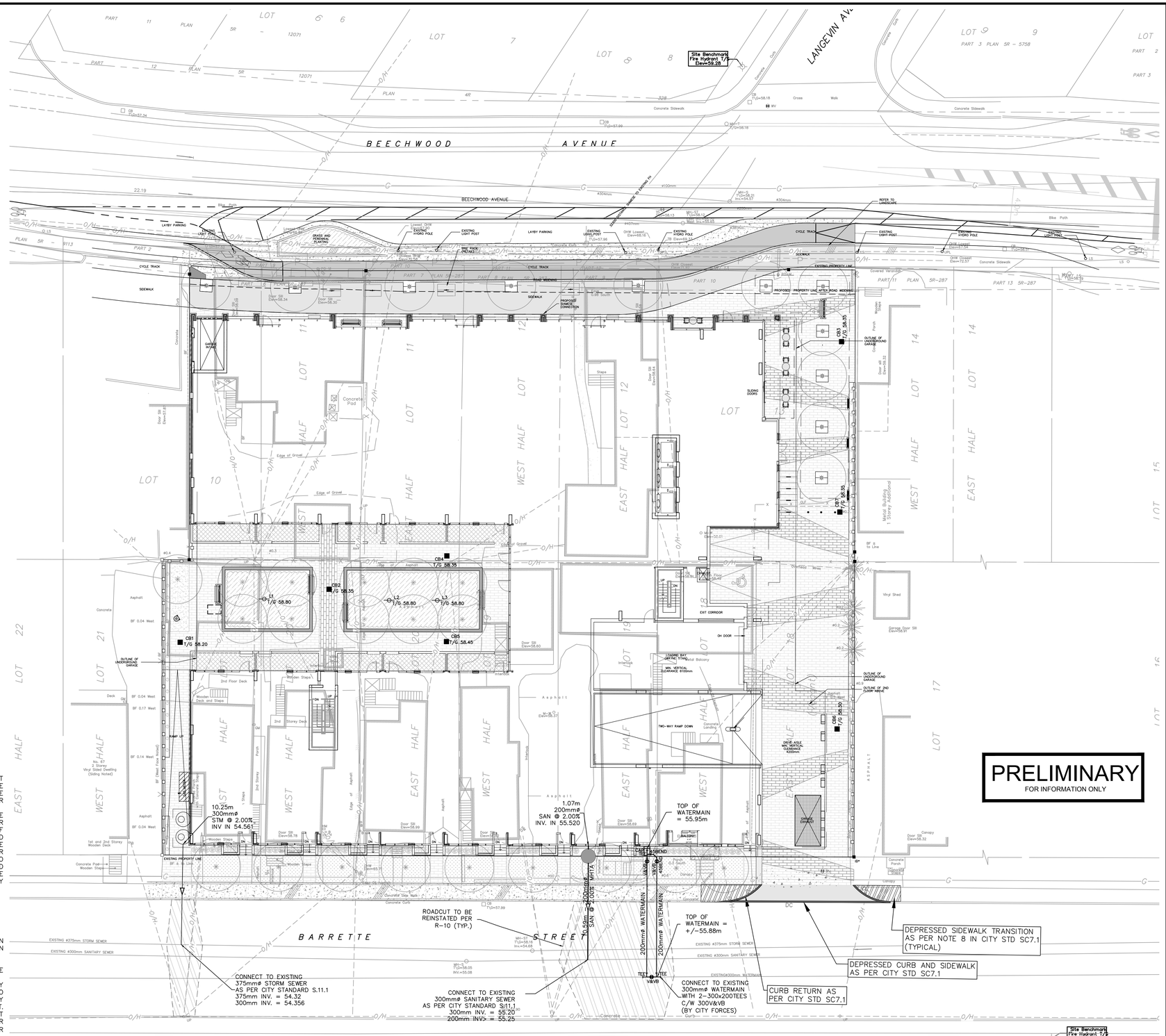
Storage (m^3)

Overflow	Required	Surface	Cistern	Balance
0.00	51.13	0.00	130.00	0.00

APPENDIX D

LEGEND

PROPERTY LINE	
F.F.= 80.50	FINISHED FLOOR ELEVATION
DC	PROPOSED DEPRESSED CURB
(M)	WATER METER (SEE MECH. DRWG. FOR EXACT LOCATION)
(RM)	REMOTE WATER METER (SEE MECH. DRWG. FOR EXACT LOCATION)
	SIAMESE CONNECTIONS (SEE MECH. DRWG. FOR EXACT LOCATION)
~G~G~	PROPOSED GAS SERVICE
—H—	EXISTING UNDERGROUND HYDRO
— O/H —	EXISTING OVERHEAD HYDRO
HMH	EXISTING HYDRO MANHOLE
H/SL	EXISTING HYDRO AND LIGHT POLE
— G —	EXISTING GAS MAIN
— B —	EXISTING BELL
BMH	EXISTING BELL MANHOLE
TMH	EXISTING TRAFFIC MANHOLE
TL	EXISTING TRAFFIC LIGHT
	PROPOSED RETAINING WALL
	EXISTING TRAFFIC SIGN
CB	EXISTING CATCH BASIN
AD1	PROPOSED AREA DRAIN
MH	EXISTING COMBINED MANHOLE
300ø COMBINED	EXISTING COMBINED SEWER
200ø STORM	PROPOSED STORM SEWER
400ø WATERMAIN	EXISTING WATERMAIN
200ø SANITARY	PROPOSED SANITARY SEWER
150ø WATERMAIN	PROPOSED WATERMAIN
150V&VB	PROPOSED VALVE AND VALVE BOX
400V&VC	PROPOSED VALVE AND VALVE CHAMBER
FH	EXISTING FIRE HYDRANT
SN	EXISTING SIGN
	EXISTING WATER VALVE
SP	EXISTING WATER SERVICE STANDPOST
VB	EXISTING VALVE BOX



NOTES:

1. ALL WORKS TO BE COMPLETED AS PER CURRENT CITY OF OTTAWA STANDARDS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.

2. SEWER LATERALS TO BE PVC DR 35.

3. WATER SERVICES TO BE PVC. DR 18 CL150. MINIMUM COVER OF 2.4m FOR WATER SERVICE IS REQUIRED, USE THERMAL INSULATION AS PER CITY STANDARDS WHEN COVER IS LESS THAN 2.4m.

4. ALL SERVICE LATERAL AND SURFACE RESTORATION WORK IN ACCORDANCE WITH CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

5. FULL PORT BACKWATER VALVE IS REQUIRED ON BOTH THE SANITARY AND STORM SERVICE CONNECTIONS.

6. WATER SERVICE CHLORINATION AND TESTING TO BE COMPLETED BY CITY FORCES.

7. PROPOSED BUILDING INFORMATION TAKEN FROM RAW ARCHITECTS DRAWINGS.

8. AN EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED ON THIS SITE. AS A MINIMUM THAT PLAN WILL INCLUDE A LIGHT DUTY SILT FENCE BARRIER TO OPSD STANDARD 219.110 SURROUNDING THE SITE WHERE PRACTICAL AND SILT SACKS FITTED UNDER EXISTING STREET CATCH BASINS.

9. ALL SHOWN UTILITIES ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY CONTRACTOR, ANY DISCREPANCIES ARE TO BE REPORTED TO IBI GROUP PRIOR TO CONTRACTOR MOBILIZING TO SITE.

10. CONTRACTOR RESPONSIBLE TO SUPPORT EXISTING UTILITIES THAT MAY BE AFFECTED DURING CONSTRUCTION

11. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATER COURSE, DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING FILTER CLOTH UNDER THE GRATES OF CATCHBASINS AND MANHOLES AND INSTALLING SILT FENCES AND EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCIES.

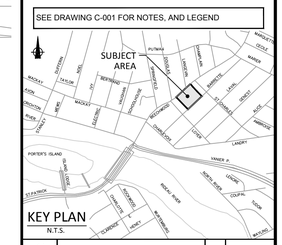
12. BEARINGS SHOWN HEREON AND ELEVATIONS ARE INDICATED ON THE LOT SURVEY BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. DATED JULY 20, 2020.

13. CLAY SEAL TO BE INSTALLED IN SERVICE TRENCHES BETWEEN CONNECTION POINT AND CAP.

14. THE EXISTING BUILDING SERVICES ARE TO BE FIELD LOCATED AND DECOMMISSIONED AS PER CURRENT CITY STANDARDS. THE WATER SERVICES ARE TO BE BLANKED AT THE WATERMAIN BY CITY FORCES AS PART OF THE WATER PERMIT. EXISTING SEWERS ARE TO BE CAPPED AT THE PROPERTY LINE BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY'S SEWER OPERATIONS STAFF.

PRELIMINARY
FOR INFORMATION ONLY

SEE DRAWING C-001 FOR NOTES, AND LEGEND



KEY PLAN
N.T.S.

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3			
2	2ND SUBMISSION	D.G.Y.	2020:12:18
1	ISSUED FOR SPA	D.G.Y.	2020:07:31

minto Communities

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title
78-90 BEECHWOOD/
69-93 BARRETTE

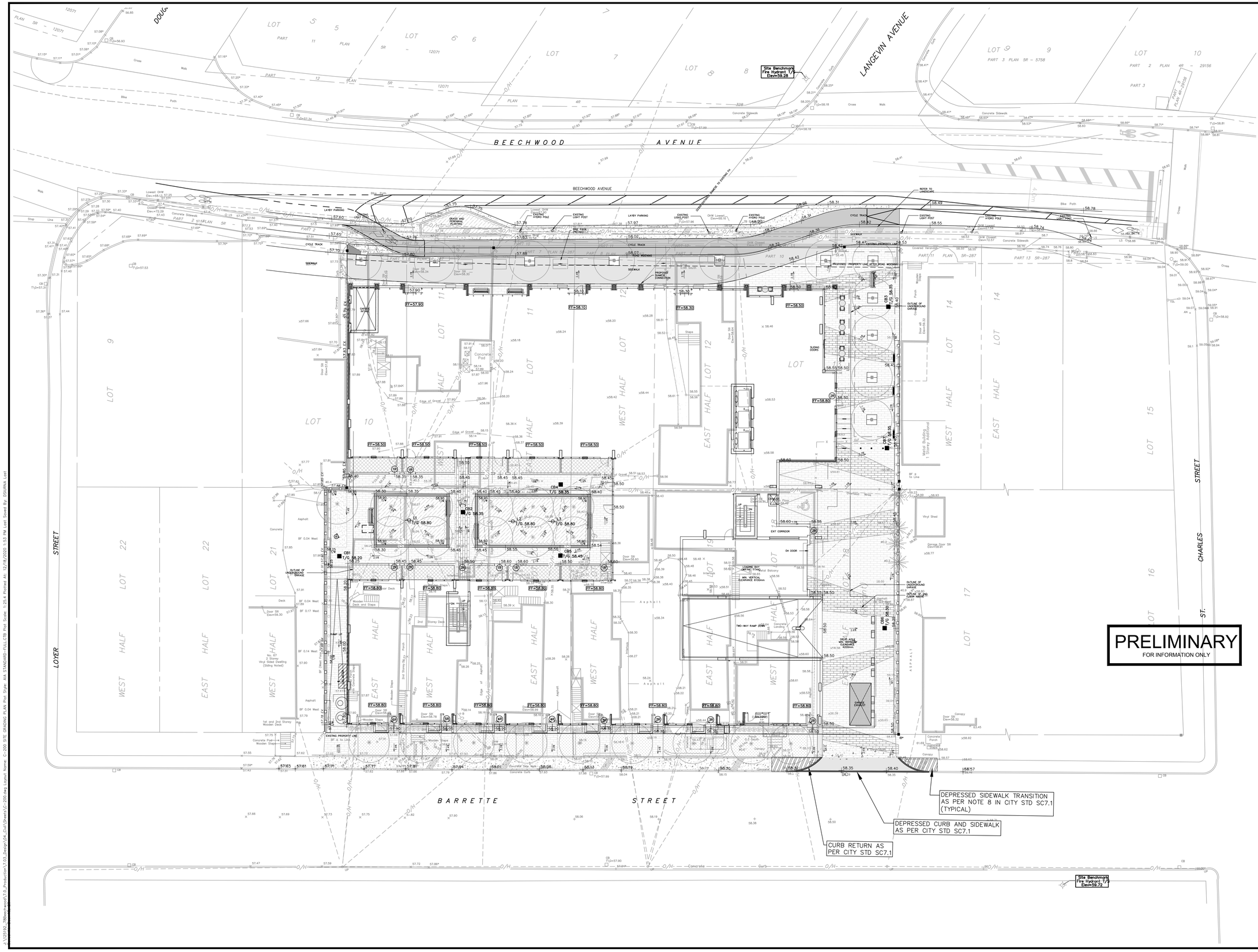
LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2020/12/18
PROVINCE OF ONTARIO

Drawing Title
SITE SERVICING PLAN

Scale
2.5 0 2.5 5
1:200

Design	Date
J.B.	AUG. 2020
Drawn	Checked
J.B./D.P.S.	D.G.Y.
Project No.	Drawing No.
125192	C-001

CITY FILE No. D07-02-20-0056
CITY PLAN No. XXXXX


BEECHWOOD AVENUE
LANGEVIN AVENUE
LOYER STREET
CHARLES ST. STREET
BARRETTE STREET
Site Benchmark
Fire Hydrant T/F
Elev=59.28
Site Benchmark
Fire Hydrant T/F
Elev=59.72
EXISTING PROPERTY LINE
PROPOSED PROPERTY LINE AFTER ROAD WIDENING
OUTLINE OF UNDERGROUND GARAGE
OUTLINE OF UNDERGROUND GARAGE ABOVE
DEPRESSED SIDEWALK TRANSITION AS PER NOTE 8 IN CITY STD SC7.1 (TYPICAL)
DEPRESSED CURB AND SIDEWALK AS PER CITY STD SC7.1
CURB RETURN AS PER CITY STD SC7.1
CYCLE TRACK
SIDEWALK
LAYBY PARKING
EXISTING LIGHT POST
EXISTING HYDRO POLE
GRASS AND PERENNIAL PLANTING
REFER TO LANDSCAPE
EXISTING TREE TO BE REMOVED
PROPOSED SIDEWALK CONNECTION
Concrete Pad
Wooden Steps
Asphalt
Concrete
Deck
Wooden Deck and Steps
Concrete Porch
Concrete Steps
Concrete Curb
Concrete Slab Path
Metal Balcony
Vinyl Shed
Garage Door Sill Elev=58.91
Door Sill Elev=58.30
Door Sill Elev=58.60
Door Sill Elev=58.78
Door Sill Elev=58.99
Door Sill Elev=58.32
Door Sill Elev=58.34
Door Sill Elev=58.50
Door Sill Elev=58.55
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Door Sill Elev=58.74
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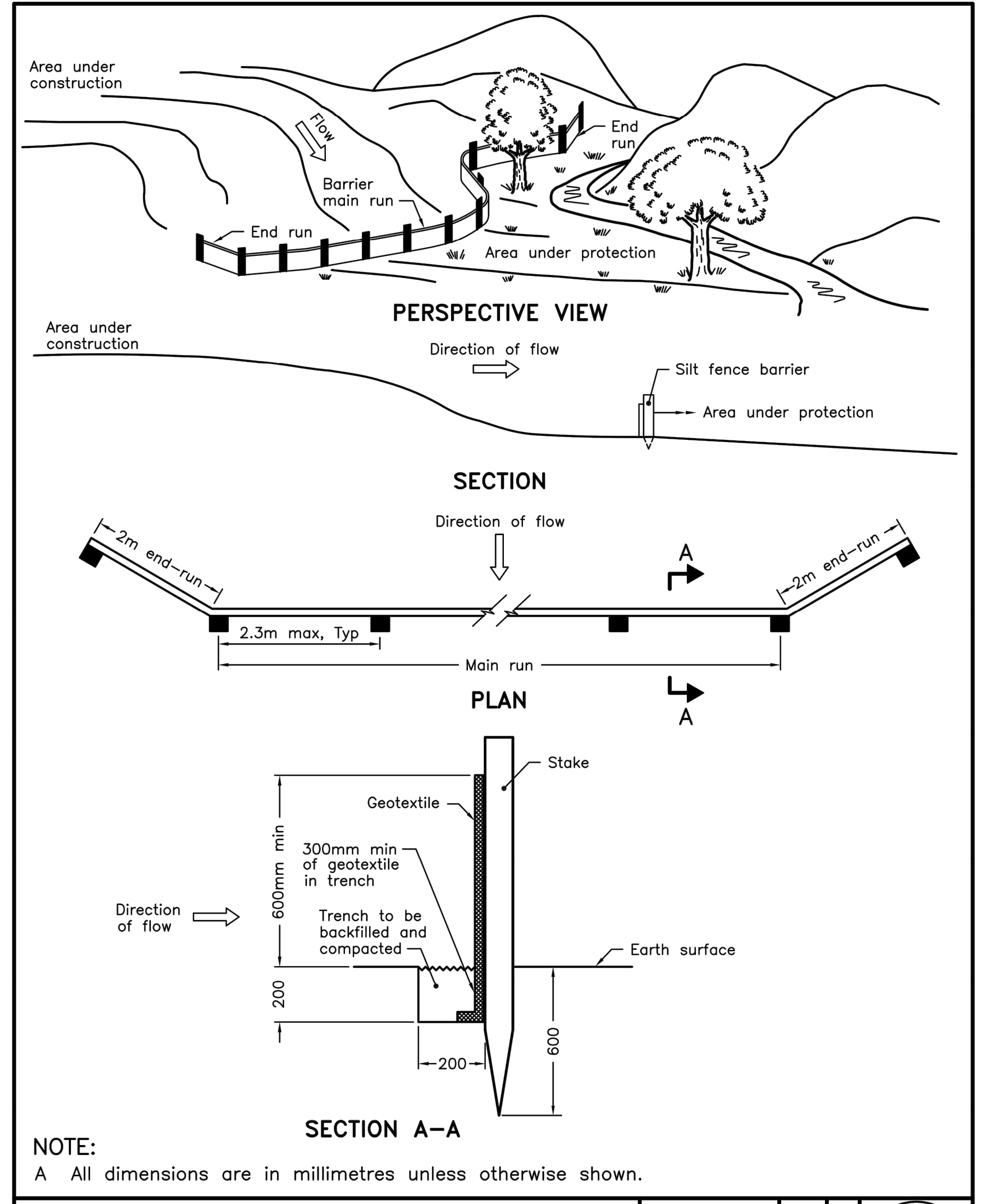
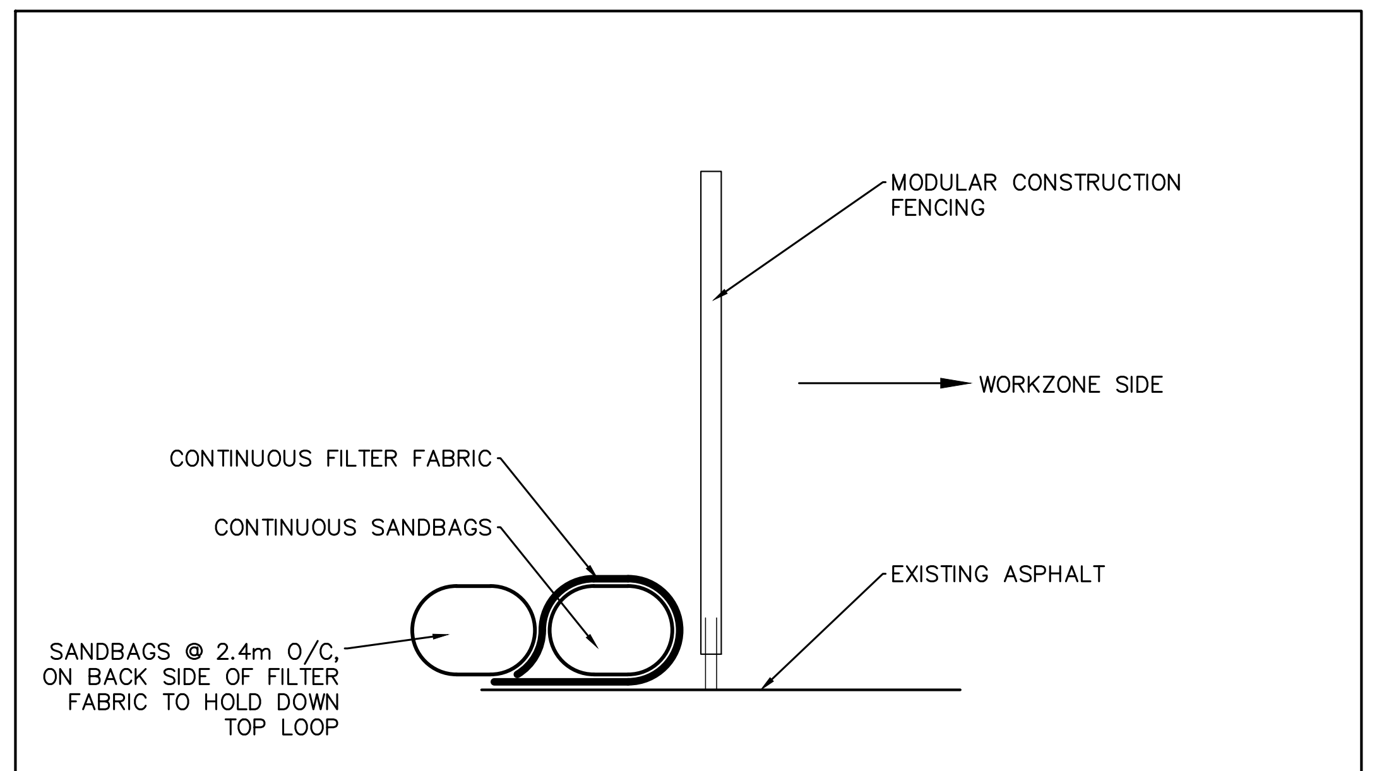
Door Sill



NOTE:
A All dimensions are in millimetres unless otherwise shown.

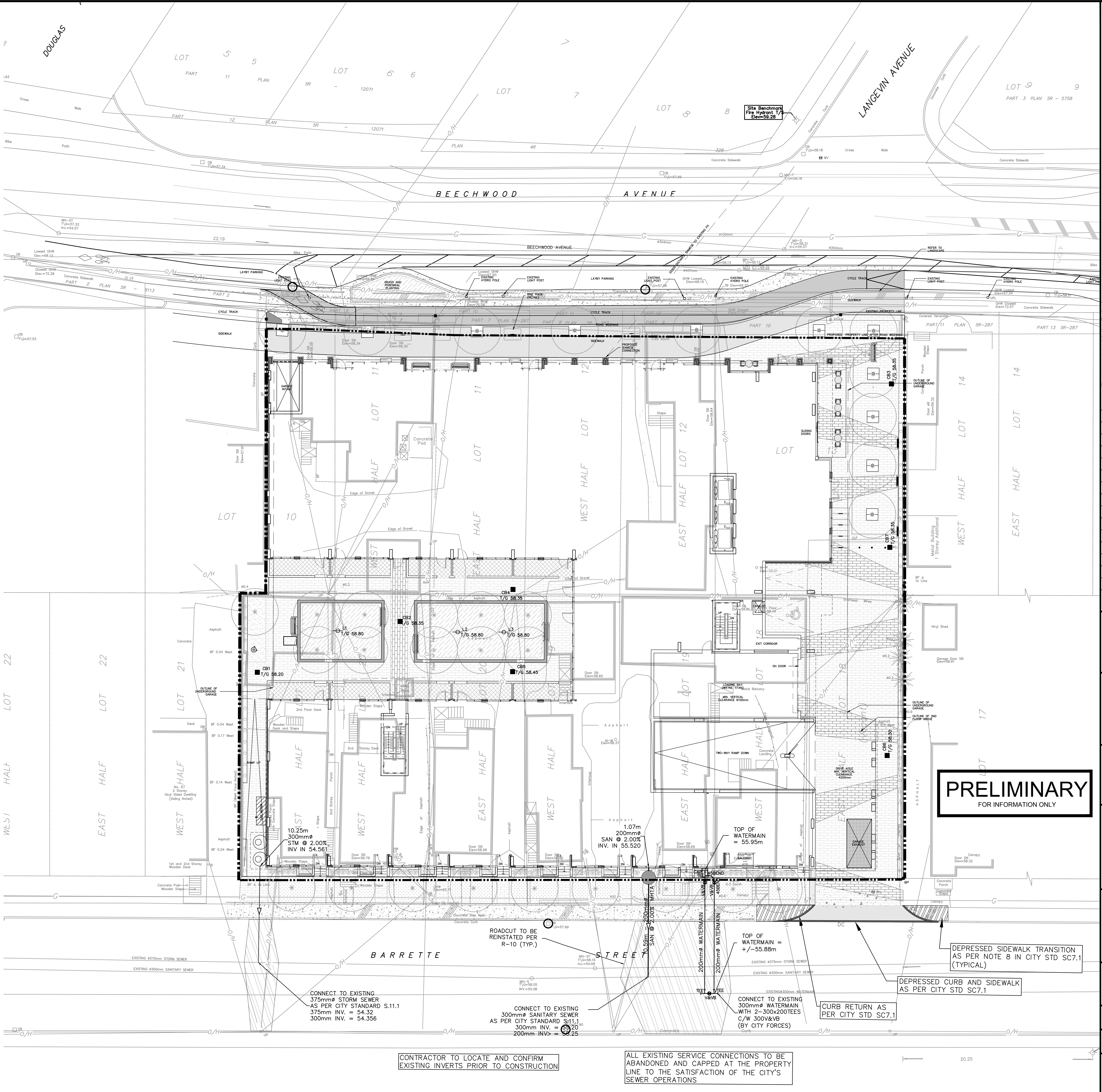
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
LIGHT–DUTY SILT FENCE BARRIER	OPSD 219.110	



CUSTOM SILT FENCE DETAIL
FOR SITE PERIMETER
LOCATION AS REQUIRED

NOTES:

1. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
2. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
3. SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
4. CONTRACTOR TO PROVIDE DETAILS ON LOCATION(S) AND DESIGN OF DEWATERING TRAP(S) PRIOR TO COMMENCING WORK. CONTRACTOR ALSO RESPONSIBLE FOR MAINTAINING TRAP(S) AND ADJUSTING SIZE(S) IF DEEMED REQUIRED BY THE ENGINEER DURING CONSTRUCTION.
5. CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.



PRELIMINARY
FOR INFORMATION ONLY

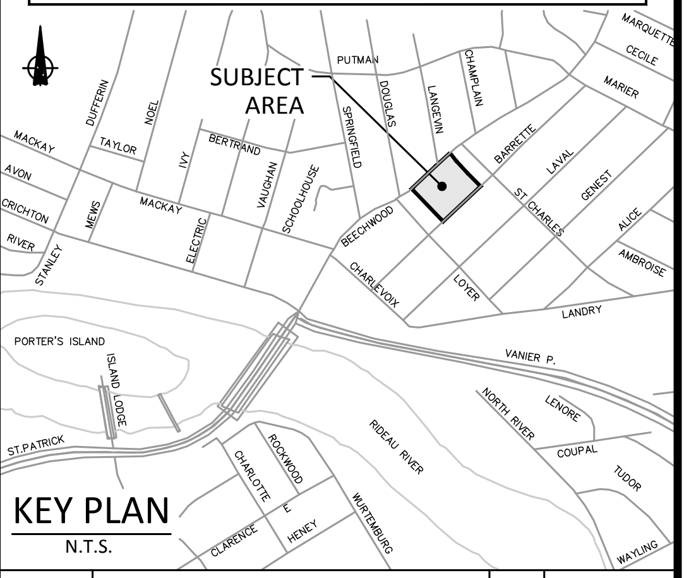
CONTRACTOR TO LOCATE AND CONFIRM EXISTING INVERTS PRIOR TO CONSTRUCTION

ALL EXISTING SERVICE CONNECTIONS TO BE ABANDONED AND CAPPED AT THE PROPERTY LINE TO THE SATISFACTION OF THE CITY'S SEWER OPERATIONS

LEGEND :

▬ ▪ ▪ ▬	LIGHT DUTY SILT FENCE AS PER OPSD-219.110
▬ ▪ ▪ ▬ ▪ ▪ ▬	CUSTOM SILT FENCE (SEE DETAIL)
▤	STRAW BALE CHECK DAM AS PER OPSD-219.180
◈	ROCK CHECK DAM AS PER OPSD-219.210
◎ CB	SILT SACK PLACED UNDER EXISTING CB COVER
▨ 15.0 × 7.0	TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

SEE DRAWING C-001 FOR NOTES, AND LEGEND



KEY PLAN
N.T.S.

No.	REVISIONS	By	Date
14			
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3			
2	2ND SUBMISSION	D.G.Y.	2020:12:18
1	ISSUED FOR SPA	D.G.Y.	2020:07:31

minto Communities

IBI GROUP
400 – 333 Preston Street
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tel 613 225 1311 fax 613 225 9868
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Project Title
78-90 BEECHWOOD/
69-93 BARRETTE

D. G. Yannoulopoulos
2020/12/18

Drawing Title
EROSION AND
SEDIMENTATION
CONTROL PLAN

Scale
2.5 0 2.5 5
1:200

Design	Date
J.B.	AUG. 2020
Drawn	**Checked**
J.B./D.P.S.	D.G.Y.
Project No.	**Drawing No.**
125192	C-900

CITY PLAN No. XXXXX

CITY FILE No. D07-02-20-0056