



REPORT

SITE SERVICING REPORT

Herongate HG-5

2851 Baycrest Drive

Project: 135142-6.03.04



Prepared for Hazelview Investments
by IBI Group
December 23, 2021

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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 1.19 hectares in area and is currently identified as 2851 Baycrest Drive.

The site is bound by future Herongate Developments phases to the west and south (previously existing residential developments have recently been demolished), Heron Road to the north, and Sandalwood Drive to the east.

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 Site Plan Application.

1.2 Subject Site

Hazelview Investments proposes to construct 3 residential towers, two at 7 stories and one at 6 stories with a total of 305 dwelling units. The proposed development also includes a common underground parking structure linking the three tower and spanning the full extent of the site limits. Vehicular access to the site will be from a new private drive linking Baycrest and Sandalwood Drives along the south limit of the site.

The site currently consists of vacant land. All existing structures within the subject property have been previously demolished to facilitate the proposed development.

1.3 Previous Studies

In May 2021 Hazelview Investments completed a Functional Servicing and Stormwater Management Report (FSR) for their Herongate Community. The subject lands of this report are identified as building 2 on the FSR. It should be noted that the lands subject of this report represents 50% of the total area of the Building 2 area of the FSR. Notes from the FSR will be included in each of the following water, sanitary and storm servicing sections within this report. In general, the recommendations contained within this report follow the recommendations of the approved FSR.

2 WATER DISTRIBUTION

2.1 Existing Conditions

Adjacent to the site there is an existing 305 mm diameter cast iron watermain, located within the Heron Road right of way and a 203 mm diameter cast iron watermain in the Sandalwood Drive right of way. These watermains fall within the City of Ottawa's pressure zone 2W2C 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:

	<u>Subject Site</u>
Average Day	1.78 l/s
Maximum Day	4.45 l/s
Peak Hour	9.79 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 on the largest building (Building A) 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 9,000 l/min or 150 l/s is required which less than the 12,000 l/min estimated in the FSR confirming the systems capability. A copy of the FUS calculation is included in **Appendix A**.

2.3 Proposed Water Plan

To service the property twin 152mm dia water services are proposed, both connections are proposed to the 203 mm watermain located within the Sandalwood Drive ROW. A new valve box separating the twin services is also proposed, see site servicing plan 135143-C-001 in **Appendix D**. The proposed 152mm dia services will provide adequate supply to the building to meet demands while twining the service will provide service redundancy for this building.

With 2 AA hydrants within 75m of the building the minimum number of hydrants needed to deliver the required fire flow to the structure is being provided in accordance with Technical Bulletin ISTB-2018-02 dated March 21, 2018. Furthermore, the fire dept. connection is located within 45m of a hydrant which is located on Heron Road at the north property line, as such a new hydrant is not needed.

BUILDING ID	FIRE FLOW DEMAND (L/MIN)	FIRE HYDRANT(S) WITHIN 75M (5,700 L/MIN)	FIRE HYDRANT(S) WITHIN 150M (3,800 L/MIN)	COMBINED FIRE FLOW (L/MIN)
HG-5	9,000	1	1	9,500

3 WASTEWATER

3.1 Existing Conditions

Adjacent to the site is a 300mm concrete sanitary sewer located in the Heron Road ROW draining eastward. Additionally, there is a 250mm concrete sanitary sewer located in the Sandalwood Drive ROW draining southward. In keeping with the FSR all sanitary flows from the subject site will be directed to the Heron Road sanitary sewer.

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 6.37 l/s, the detailed sanitary sewer calculations are included in **Appendix B**. The detailed design peak flow noted above is less than the peak flow identified in the FSR and is therefore in keeping with the approved report.

3.3 Recommended Wastewater Plan

A 200mm dia sanitary service lateral is proposed to connect to the existing sanitary sewer in Heron Road to service this site. Please refer to the site servicing plan 135142-C-001 in **Appendix D** for connection location details.

4 STORMWATER SYSTEM

4.1 Existing Conditions

Currently adjacent to the site is are two 750mm concrete storm sewers located in the Heron Road ROW and a 300mm concrete storm sewer located in the Sandalwood Drive ROW.

Further to the east within the Baycrest Drive ROW is a 450mm concrete storm sewer, the FSR has identified this sewer as the outlet for the subject lands.

4.2 Design Criteria

The approved FSR has established target release rates for the subject blocks of development. As noted above, the current application represents 50% of the FSR Block 2 lands, as such the release rate for Block 2 will be taken at 50% for the subject application.

FSR Block 2 100 Year Release Rate = 223.54 l/sec

Taken at 50% for subject application - 100 year release rate = 111.77 l/sec

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)
 - 1:100 year return (External Areas)
- 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 through the proposed/future private road to the storm sewer at Baycrest Drive as noted in section 4.1

Using the above-noted criteria, the proposed storm sewer connection was sized accordingly.

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 roof flow control devices and an inlet control device (ICD) at the outlet of the cistern and ICDs at the road catchbasins.

Flows generated that are in excess of the site's allowable release rate will be stored both on road sags outside of the building garage footprint or within the building via rooftop storage and cistern located at the parking garage structure for flows from on top of the building/garage areas.

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.

In this case, a portion of the building frontage at the Heron Road and Sandalwood Drive intersection will discharge uncontrolled to the street CBs. This uncontrolled area, 0.009 hectares in total, have a C value of 0.45. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 2.01 l/s runoff (refer to Section 4.5 for calculation). The cistern (and rooftops) have 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 1.19 Ha site as established in section 4.2 is

$$Q_{\text{allowable}} = 111.77 \text{ L/sec}$$

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

Based on a 1:100 year event, the flow from the 0.009 Ha uncontrolled areas can be determined as:

$$Q_{\text{uncontrolled}} = 2.78 \times C \times i_{100\text{yr}} \times A \quad \text{where:}$$

$$C = \text{Average runoff coefficient of uncontrolled area} = 0.45$$

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

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

$$A = \text{Uncontrolled Area} = 0.009 \text{ Ha}$$

Therefore, the uncontrolled release rate can be determined as:

$$Q_{\text{uncontrolled}} = 2.78 \times C \times i_{100\text{yr}} \times A$$

$$= 2.78 \times 0.45 \times 178.56 \times 0.009$$

$$= 2.01 \text{ L/s}$$

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

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

$$= 111.77 \text{ L/s} - 2.01 \text{ L/s}$$

$$= \mathbf{109.76 \text{ L/s}}$$

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 via roof top storage and 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/Roof	0.90	341	45	340.45	45	132.35
Private Drive	0.463	110	64	107.15	64	34.12
TOTAL	1.363	451	109	447.6	109	166.47

In all instances the required storage is met (with some rooftop storage needed). The cistern will be fitted with a mechanical constant flow pump set at 45 litres/second.

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 surface ponding in the private drive and rooftop storage and 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 109 l/s, which is less than the allowable release of 109.76 l/s noted in section 4.5.

5 SEDIMENT AND EROSION CONTROL PLAN

During construction, existing 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 135142-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:

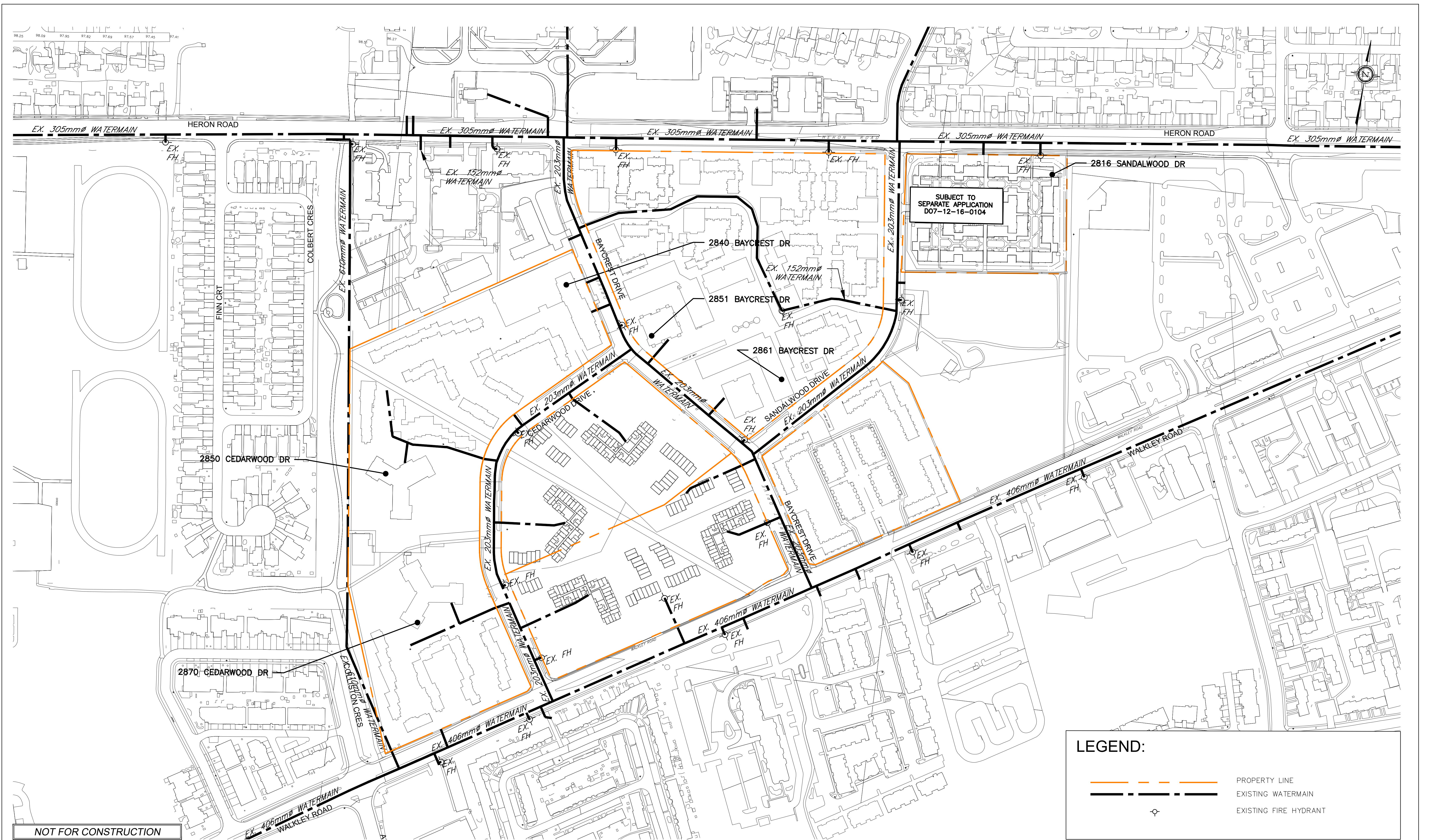


Jim Moffatt P. Eng.
Associate

A handwritten signature in cursive script that reads "Battison".

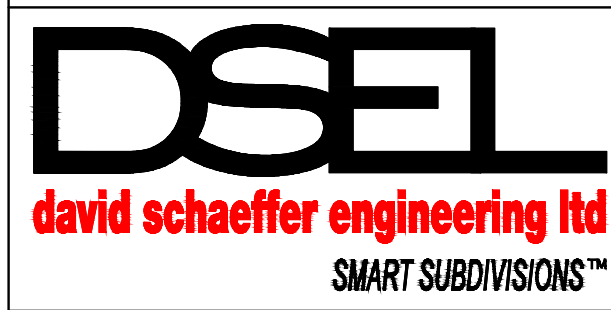
James Battison C.E.T

APPENDIX A



LEGEND:

	PROPERTY LINE
	EXISTING WATERMAIN
	EXISTING FIRE HYDRANT



120 Iber Road Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

HERON GATE COMMUNITY EXISTING WATER SERVICING

PROJ NO.:	18-1080
DRAWN BY:	AWT
DATE:	2021-05-07
SCALE:	1:1500
FIGURE NO.:	EX-WTR



IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : 2851 Baycrest Drive - HG-5
LOCATION : City of Ottawa

FILE: 135142-6.4.4
DATE PRINTED: 2021-12-23
DESIGN: 2021-12-23
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 (l/min)
	Single	Town	Apt	POP'N	INDTRL (ha.)	COMM. (ha.)	RETAIL (m ²)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	
Site			305	549				1.78	0.00	1.78	4.45	0.00	4.45	9.79	0.00	9.79	9,000

ASSUMPTIONS

<u>RESIDENTIAL DENSITIES</u>			<u>AVG. DAILY DEMAND</u>			<u>MAX. HOURLY DEMAND</u>		
Apartment (ave)	1.8	p / p / u	Residential:**	280	l / cap / day	Residential:	1,540	l / cap / day
			Industrial:		l / ha / day	Industrial:		l / ha / day
			Commercial:		l / ha / day	Commercial:		l / ha / day
			Retail:	2,500	l / 1000m ² / day	Retail:	11,250	l / 1000m ² / day
** Residential Daily Demand reduced to coincide with current waste water guidelines			<u>MAX. DAILY DEMAND</u>			<u>FIRE FLOW</u>		
			Residential:	700	l / cap / day	From FUS Calculation	9,000	l / min
			Industrial:		l / ha / day			
			Commercial:		l / ha / day			
			Retail:	6,250	l / 1000m ² / day			

Fire Flow Requirement from Fire Underwriters Survey

2851 Baycrest Drive - Building A

Total Floor Area 7,187 m²

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

C 0.8 C = 1.5 wood frame
A 7,187 m² 1.0 ordinary
0.8 non-combustible
F 14,921 l/min 0.6 fire-resistive
use 15,000 l/min

Occupancy Adjustment

Use -15% -25% non-combustible
-15% limited combustible
0% combustible
Adjustment -2250 l/min +15% free burning
Fire flow 12,750 l/min +25% rapid burning

Sprinkler Adjustment

Use -30% -30% system conforming to NFPA 13
-50% complete automatic system
Adjustment -3825 l/min

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall			Exposure Charge *
		Length	Stories	L*H Factor	

north
east
south
west

Total

Adjustment - l/min

Total adjustments (3,825) l/min

Fire flow 8,925 l/min

Use 9,000 l/min

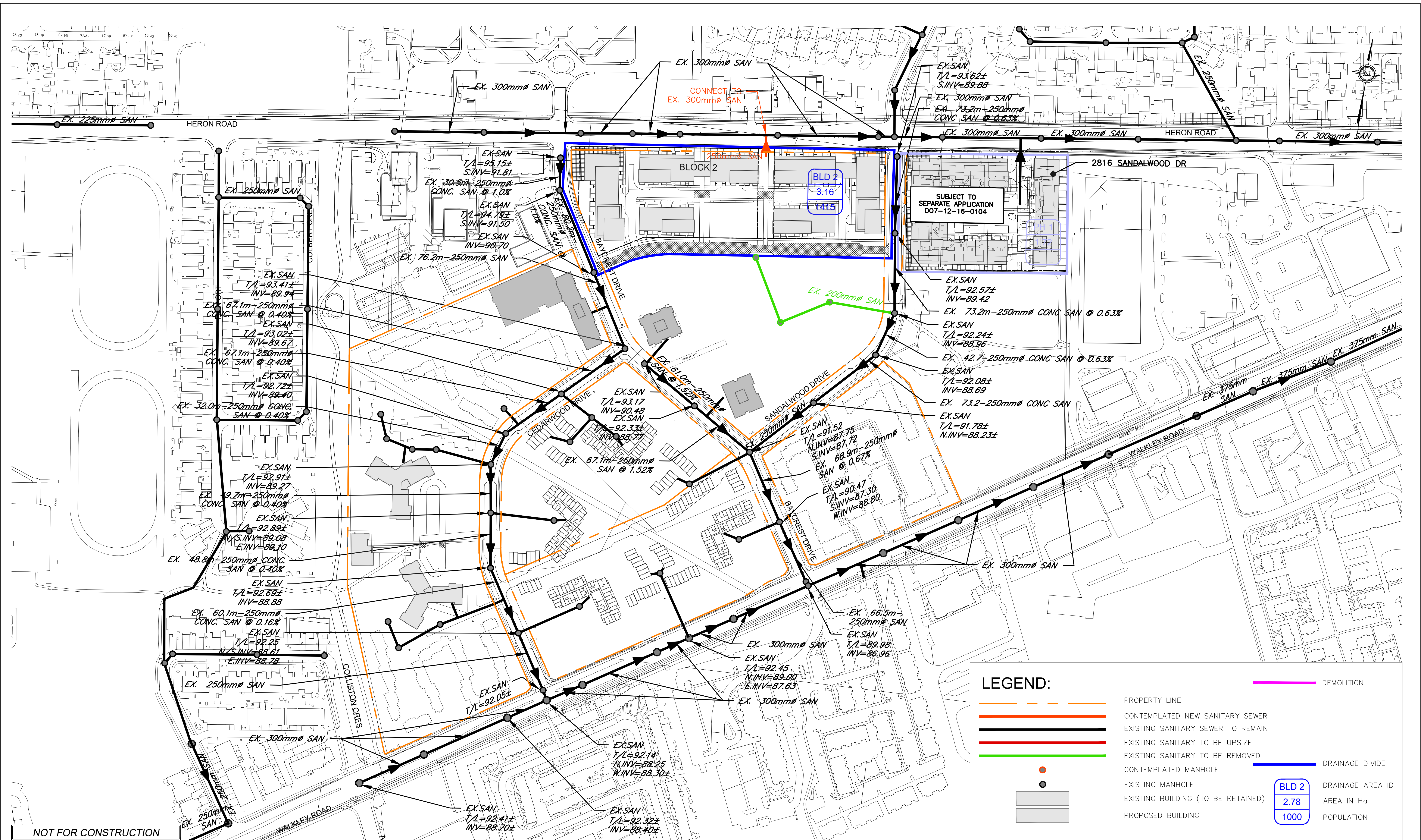
150 l/s

Floor	Area (m ²)	Two Largest Floor	Floors Above at 50%
1	1813	1813	
2	1813	1813	
3	1513		757
4	1513		757
5	1513		757
6	1513		757
7	1070		535
Total	10748		7187

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

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".)

APPENDIX B





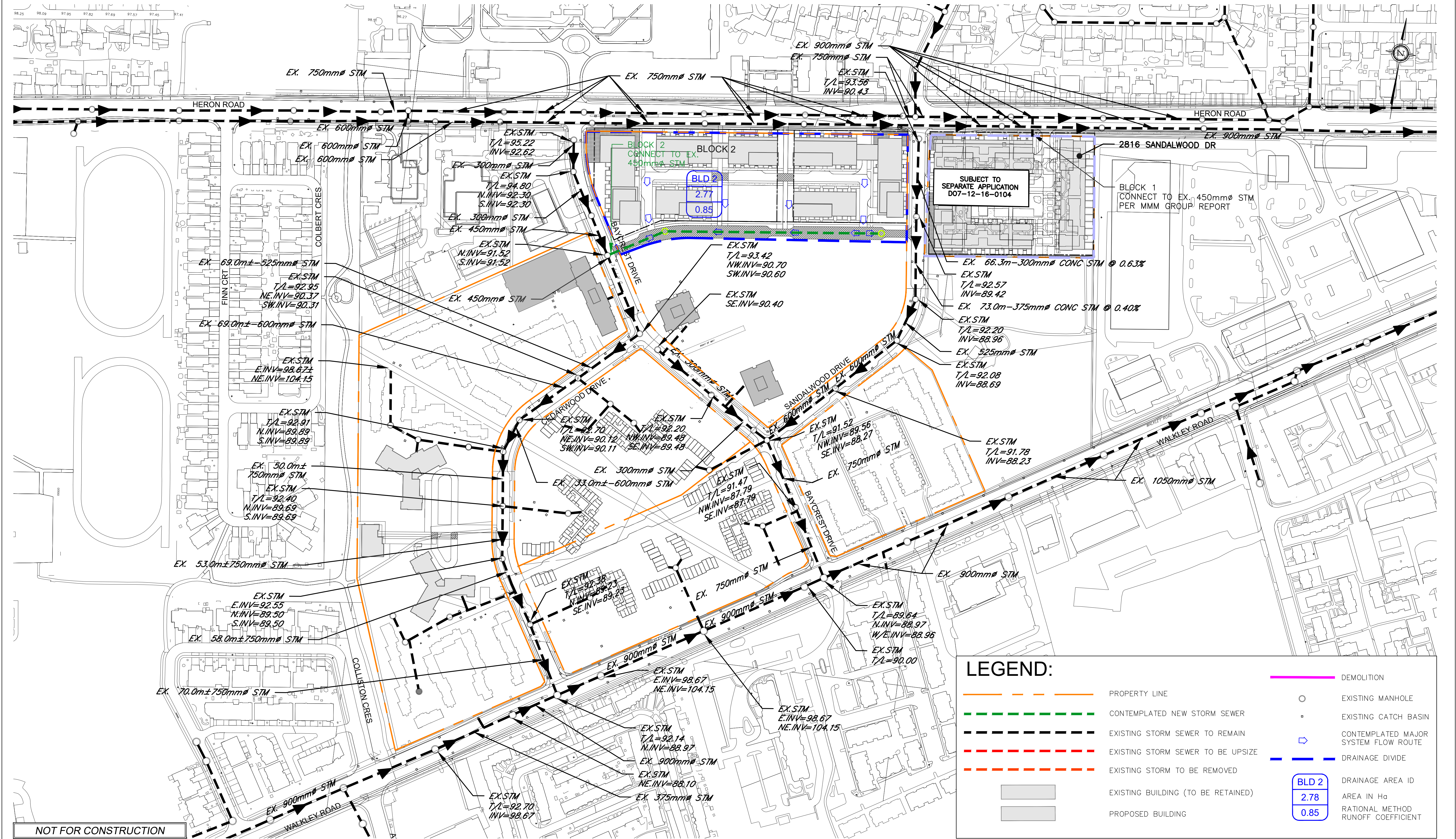
IBI GROUP
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SANITARY SEWER DESIGN SHEET

2851 Baycrest Drive - HG 5
CITY OF OTTAWA
Hazardview Investments

LOCATION				RESIDENTIAL										ICI AREAS										INFILTRATION ALLOWANCE				FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
STREET	AREA ID	FROM MH	TO MH	AREA w/ Units (Ha)	SF	SD	TH	APT	AREA w/o Units (Ha)	IND	CUM	RES PEAK FACTOR	PEAK FLOW (L/s)	INSTITUTIONAL IND	CUM	AREA (Ha) COMMERCIAL	INDUSTRIAL IND	CUM	ICI PEAK FACTOR	PEAK FLOW (L/s)	IND	CUM	FLOW (L/s)	IND	CUM	IND	CUM	FLOW (L/s)	IND	CUM	DIAM (mm)	SLOPE (%)	VELOCITY (m/s)	AVAILABLE CAPACITY L/s	CAPACITY (%)		
2851 Baycrest Drive		BLDG	MH1A	1.19				305		549.0	549.0	3.36	5.98			0.00	0.00							1.19	1.19	0.39			6.37	48.39	4.35	200	2.00	1.492	42.01	96.83%	
2851 Baycrest Drive		MH1A	Main							0.0	549.0	3.36	5.98			0.00	0.00								1.19	1.19	0.39			6.37	34.22	16.20	200	1.00	1.055	27.84	81.37%
Design Parameters:				Notes: 1. Mannings coefficient (n) = 0.013 2. Demand (per capita): 280 L/day 3. Infiltration allowance: 0.33 L/s/Ha 4. Residential Peaking Factor: Harmon Formula = $1+(14/(P^{0.5}/1000))$ 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		No. 1		Revision Issued for Site Plan Application										Date 2021-12-23									
Residential				ICI Areas										Checked: JM																							
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																																
				17000 L/Ha/day																																	
														Dwg. Reference: 135142-C-001				File Reference: 135142-6.04										Date: 2021-12-23									
																												Sheet No: 1 of 1									

APPENDIX C



HERON GATE COMMUNITY STORM SERVICING - PHASE 2



IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: 2851 Baycrest Drive
DATE: 2021-12-23
FILE: 135142.6.04
REV #: 1
DESIGNED BY: JB
CHECKED BY: JM

STORMWATER MANAGEMENT

Formulas and Descriptions

$i_{2y} = 1:2 \text{ year Intensity} = 732.951 / (T_c + 6.199)^{0.810}$
 $i_{5y} = 1:5 \text{ year Intensity} = 998.071 / (T_c + 6.053)^{0.814}$
 $i_{100y} = 1:100 \text{ year Intensity} = 1735.688 / (T_c + 6.014)^{0.820}$
 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 Taken from Functional Servicing and Stormwater Report Table 16

100 Year Flow Block 2 223.54 L/sec
Area of subject application 50% of FSR block 2

$Q_{TOTAL} = 111.77 \text{ L/s}$

Uncontrolled Release ($Q_{uncontrolled} = 2.78 \cdot C \cdot i_{100y} \cdot A_{uncontrolled}$)

$C = 0.45$
 $T_c = 10 \text{ min}$
 $i_{100y} = 178.56 \text{ mm/hr}$
 $A_{uncontrolled} = 0.009 \text{ Ha}$

$Q_{uncontrolled} = 2.01 \text{ L/s}$

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

$Q_{max \text{ allowable}} = 109.76 \text{ L/s}$

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

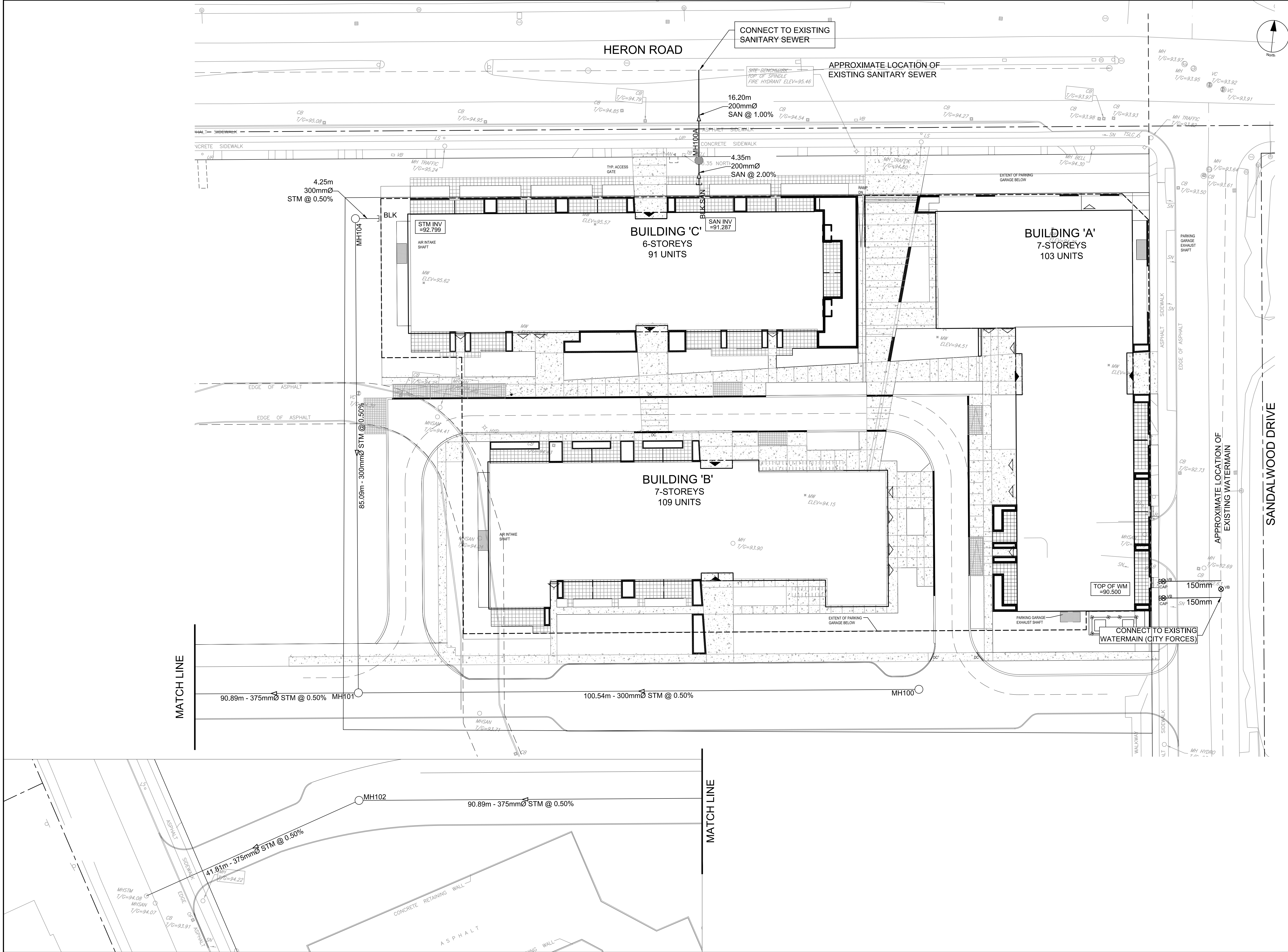
Drainage Area		Cistern			
Area (Ha)	0.900				
C =	0.99	Restricted Flow Q_r (L/s)= 45.00			
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78 \times C i_{100yr} A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
44	70.18	173.84	45.00	128.84	340.13
46	67.96	168.34	45.00	123.34	340.41
47	66.91	165.73	45.00	120.73	340.45
48	65.89	163.21	45.00	118.21	340.44
50	63.95	158.41	45.00	113.41	340.24
Storage (m^3)					
Overflow	Required	Roof	Cistern	Balance	
0.00	340.45	155.00	186.00	0.00	

Drainage Area		Private Road			
Area (Ha)	0.463				
C =	0.99	Restricted Flow Q_r (L/s)= 64.00			
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78 C i_{100yr} A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
15	142.89	182.09	64.00	118.09	106.28
17	132.63	169.00	64.00	105.00	107.10
18	128.08	163.21	64.00	99.21	107.15
19	123.87	157.84	64.00	93.84	106.98
21	116.30	148.19	64.00	84.19	106.08
Storage (m^3)					
Overflow	0.00	Required	Surface	Cistern	Balance
		107.15	110.00	0.00	0.00

Drainage Area		Cistern			
Area (Ha)	0.900				
C =	0.90	Restricted Flow Q_r (L/s)= 45.00			
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78 C i_{5yr} A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
14	86.93	195.76	45.00	150.76	126.64
16	80.46	181.18	45.00	136.18	130.73
17	77.61	174.76	45.00	129.76	132.35
18	74.97	168.82	45.00	123.82	133.72
20	70.25	158.19	45.00	113.19	135.83

Storage (m ³)					
	Overflow	Required	Roof	Cistern	Balance
	0.00	132.35	155.00	186.00	0.00
Drainage Area		Private Road			
Area (Ha)		0.483			
C =	0.90	Restricted Flow Q _r (L/s)=			64.00
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)
6	131.57	152.41	64.00	88.41	31.83
8	116.11	134.51	64.00	70.51	33.84
9	109.79	127.19	64.00	63.19	34.12
10	104.19	120.70	64.00	56.70	34.02
12	94.70	109.70	64.00	45.70	32.90

APPENDIX D



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HAZELVIEW INVESTMENTS

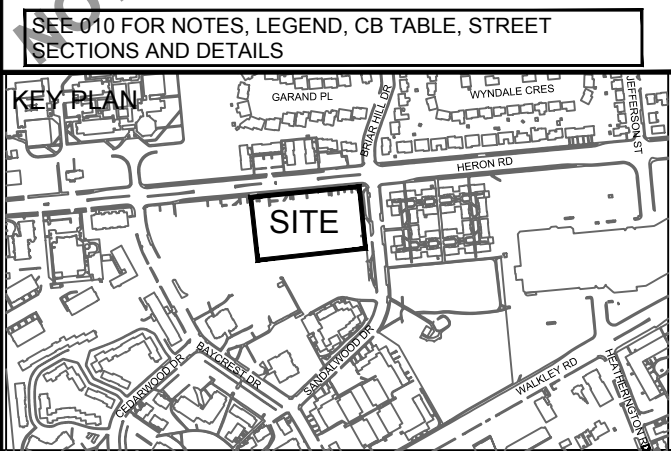
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M4T 1W1

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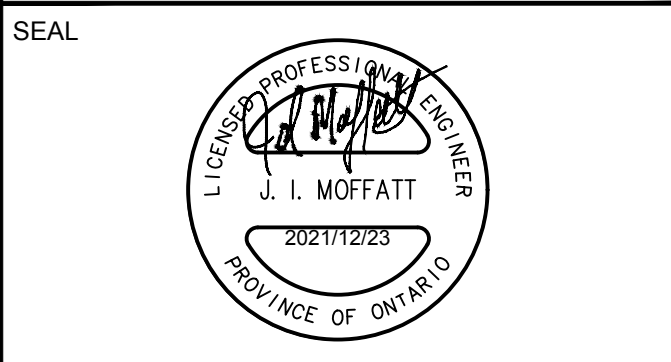
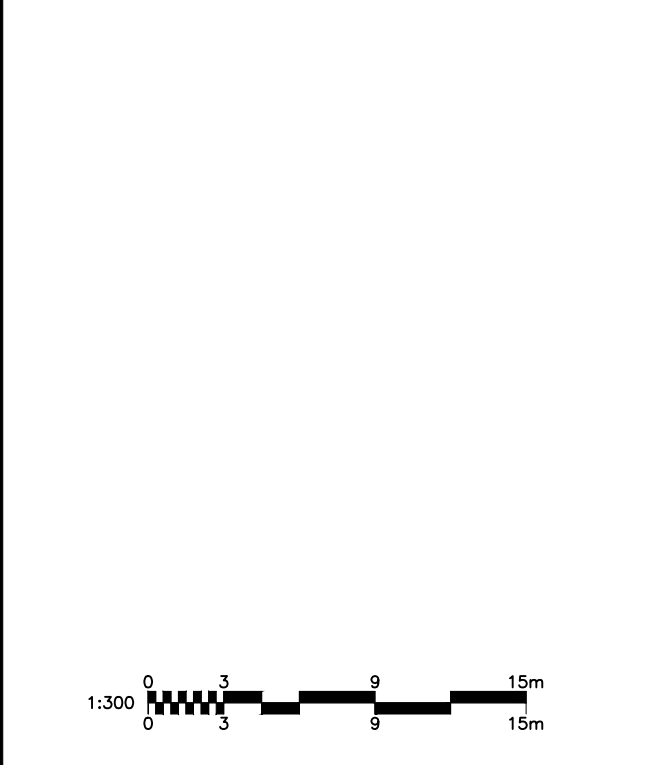
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ISSUES		
No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2021-12-15
2	RE-ISSUED FOR COORDINATION	2021-12-23
3	ISSUED FOR SPA	2021-12-23



CONSULTANTS



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PROJECT		Heron Gate 5
PROJECT NO:		135142
DRAWN BY:	CHECKED BY:	----
PROJECT MGR:	APPROVED BY:	----
SHEET TITLE		GENERAL PLAN OF SERVICES
SHEET NUMBER	ISSUE	
C-001		

CITY PLAN No. xxxxx

City File No. D07-xx-xx-xxxx
Scale Check
File Location: \\1135142_Heron_Gate5_CityPlan04_CivilSheet001_GENERAL PLAN OF SERVICES.dwg Last Saved: December 23, 2021 by James Ballison Plotted: Thursday, December 30, 2021 9:46:32 AM by James Ballison

UTILITY LEGEND

	TRANSFORMER
	TRANSFORMER C/W CONCRETE WINGS
	HYDRO SWITCHGEAR
	HYDRO MANHOLE
	BELL PEDESTAL
	BELL GRADE LEVEL BOX (l=600mm, w=1200mm, d=750mm) C/W 1.5 x 3.0m easement
	BELL FIBER CABINET (l=1200mm, w=750mm, d=500mm)
	BELL CENTRAL SPLITTING POINTS (l=1175mm, w=1200mm, d=500mm)
	ROGERS PEDESTAL
	ROGERS VAULT (l=1000mm, w=1000mm, d=1200mm) C/W 1m x 2m easement
	STREET LIGHT
	STREET LIGHT DISCONNECT
	STREET LIGHT GROUNDING
	JOINT UTILITY TRENCH
	HYDRO CABLE AND DUCTS
	BELL CABLE
	BELL DUCTS
	ROGERS CABLE
	ROGERS DUCTS
	GAS
	STREET LIGHT CABLE
	UTILITY DROP LOCATIONS
	CONCRETE ENCASED DUCT BANK C/W NUMBER OF DUCTS
	COMMUNITY MAILBOX
	PROPOSED TREE LOCATION
	ROOT MANAGEMENT BARRIER

SEDIMENT EROSION LEGEND

	HEAVY DUTY SILT FENCE
	SNOW FENCE
	STRAW BALE CHECK DAM
	STRAW BALE CHECK DAM WITH FILTER CLOTH
	ROCK CHECK DAM
	SEDIMENT SACK PLACED UNDER EXISTING CB COVER
	TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR
	STONE ON NON WOVEN FILTER CLOTH

GENERAL LEGEND

	LIMIT OF CONSTRUCTION
	PHASING LINE
	BARRIER CURB
	MOUNTABLE CURB
	DEPRESSED BARRIER CURB
	CONCRETE SIDEWALK
	TACTILE WALKING SURFACE INDICATOR
	ASPHALT SIDEWALK / PATHWAY
	BUS STOP CONCRETE / ASPHALT

SERVICING LEGEND

	MH118A	SANITARY MANHOLE
	200mmØ SAN	SANITARY SEWER
	MH109	STORM MANHOLE
	825mmØ STM	STORM SEWER - LESS THAN 900Ø
	900mmØ STM	STORM SEWER - 900Ø AND GREATER
	200Ø WATERMAIN	WATERMAIN
	CB100	STREET CATCHBASIN C/W TOP OF GRATE
	CICB101	CURB INLET CATCHBASIN C/W GUTTER GRADE
	DCB100	DOUBLE CATCHBASIN C/W TOP OF GRATE
	DCICB101	DITCH INLET CATCHBASIN C/W GUTTER GRADE
	CBMH100	CATCHBASIN MANHOLE C/W TOP OF GRATE
	CBMH101	DITCH INLET MANHOLE C/W TOP OF GRATE
	ICD100	ICD LOCATION
	RYCB	REAR YARD CATCHBASIN IN ROAD CONNECTING STRUCTURE C/W SOLID GRATE
	TIG 104.35	REAR YARD "TEE" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT
	TIG 104.50	REAR YARD "TEE" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT
	TIG 104.35	REAR YARD "CUSTOM ANGLED" CATCHBASIN (450Ø) C/W TOP OF GRATE AND INVERT OUT
	TIG 104.35	REAR YARD "THREE WAY" CATCHBASIN (450Ø) C/W TOP OF GRATE AND INVERT OUT
	300mmØ CSP	PERFORATED REAR YARD SUBDRAIN
	V&VB	CSP CULVERT C/W DIAMETER
	V&VC	VALVE AND VALVE BOX
	HYD 104.35	VALVE AND VALVE CHAMBER
	RED	FIRE HYDRANT C/W BOTTOM OF FLANGE ELEVATION
	200Ø WM	WATERMAIN REDUCER
	V BENDS	VERTICAL BEND LOCATION
	BH 12	SINGLE SERVICE LOCATION
	HGL	DOUBLE SERVICE LOCATION
	101.79	INFERRED BEDROCK (SEE GEOTECHNICAL REPORT)
	ST	100 YEAR STORM HYDRAULIC GRADE LINE AT MANHOLE
	101.75	STRESS TEST STORM HYDRAULIC GRADE LINE AT MANHOLE
	108	UNDERSIDE OF FOOTING ELEVATION (WITH LOT #)
	102.40	CLAY SEAL IN SEWER / WATERMAIN TRENCH

GRADING LEGEND

	PROPOSED SWALE C/W FLOW DIRECTION
	PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
	SLOPE C/W FLOW DIRECTION
	MAJOR OVERLAND FLOW ROUTE
	PROPOSED SPOT GRADE
	PROPOSED SWALE GRADE
	PROPOSED SWALE HIGH POINT GRADE
	LOT CORNER GRADE C/W EXISTING GRADE
	TIE INTO EXISTING GRADE
	FULL STATIC PONDING GRADE
	RETAINING WALL C/W TOP OF WALL AND GRASS GRADE
	TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
	PRESSURE REDUCING VALVE
	FINISHED FLOOR ELEVATION
	TOP OF FOUNDATION ELEVATION
	UNDERSIDE OF FOOTING ELEVATION
	NUMBER OF ADDITIONAL RISERS
	MINIMUM UNDERSIDE OF FOOTING (Based on the higher of the sewer obverts, or hydraulic grade line)
	MINIMUM GARAGE GRADE
	MINIMUM GRASS GRADE
	WALKUP UNIT
	WALKOUT UNIT
	NON-STANDARD FOUNDATION (Frost cover not provided for standard unit)
	BACKSPLIT UNIT (1.5m frost cover on footings)
	NOISE FENCE LOCATION
	NOISE FENCE GATE

NOTES :

- ALL MATERIALS AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF OTTAWA STANDARD DRAWINGS & SPECIFICATIONS OR OPSP/OPSS IF CITY DRAWINGS AND SPECIFICATIONS DO NOT APPLY.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION AND SHALL PROTECT AND ASSUME RESPONSIBILITY FOR ALL UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS.
- FOR GEOTECHNICAL INFORMATION REFER TO GEOTECHNICAL REPORT
- FOR GEODETIC BENCHMARK AND GEOMETRIC LAYOUT OF STREET AND LOTS, REFER TO TOPOGRAPHICAL SURVEY AND PLAN OF SUBDIVISION PREPARED BY LEGAL SURVEYOR BENCHMARK BASED ON CAN-NET VIRTUAL REFERENCE SYSTEM NETWORK.
- ROADWAY SECTIONS REQUIRING GRADE RAISE TO PROPOSED SUB GRADE LEVEL TO BE FILLED WITH ACCEPTABLE NATIVE EARTH BORROW OR IMPORTED OPSS SELECTED SUBGRADE MATERIAL IF NATIVE MATERIAL IS DEFICIENT AS PER RECOMMENDATION OF GEOTECHNICAL ENGINEER.
- IN AREAS WHERE EXISTING GROUND IS BELOW THE PROPOSED ELEVATION OF SEWER AND WATERMAINS, GRADE RAISING AND FILLING IS TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. AS PER CITY GUIDELINES ALL WATERMAINS IN FILL AREAS ARE TO BE TIED WITH RESTRAINING JOINTS AND THRUST BLOCKS.
- CONTRACTORS SHALL BE RESPONSIBLE FOR KEEPING CLEAN ALL ROADS WHICH BECOME COVERED IN DUST, DEBRIS AND/OR MUD AS A RESULT OF ITS CONSTRUCTION OPERATIONS.
- 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.
- STRAW BALE SEDIMENT TRAPS TO BE PLACED AND MAINTAINED IN EXISTING AND CONSTRUCTED ROADSIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED (IF APPLICABLE).
- 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.
- ALL CONNECTIONS TO EXISTING WATERMAINS ARE TO BE COMPLETED BY CITY FORCES. CONTRACTOR IS TO EXCAVATE, BACKFILL, COMPACT AND REINSTATE.
- ANY WATERMAIN WITH LESS THAN 2.4M DEPTH OF COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.
- ALL LEADS FOR STREET CBs TO AND CICBs CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 2% SLOPE UNLESS NOTED OTHERWISE. ALL LEADS FOR RYCBs CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 1% SLOPE UNLESS NOTED OTHERWISE.
- EACH BUILDING SHALL BE EQUIPPED WITH A SANITARY AND STORM SEWER BACKWATER VALVE AND CLEAN-OUT ON ITS PRIMARY SERVICE, AS PER ONTARIO BUILDING CODE REQUIREMENTS (BY OTHERS).
- THESE DRAWINGS ARE NOT TO BE SCALED OR USED FOR LAYOUT PURPOSES.
- THE COMPOSITE UTILITY PLAN HAS BEEN REVIEWED BY IBI GROUP FOR CONFORMITY TO THE DESIGN CONCEPT FOR THE DEVELOPMENT AND FOR GENERAL ARRANGEMENT ONLY AND AS SUCH SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN EITHER LAYOUT OR WORKMANSHIP.
- ALL UTILITY BOXES (I.E. PEDESTALS, TRANSFORMERS, ETS) ARE TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF OTTAWA'S "GUIDELINES FOR UTILITY PEDESTALS WITHIN THE ROAD RIGHT OF WAY"
- THIS DRAWING IS A COMPILATION OF OTHER UTILITY DESIGNS AND DOES NOT INDICATE IN ANY WAY THAT THE PARTY SIGNING THIS DRAWING HAS DESIGNED OR APPROVED THE RESPECTIVE UTILITY PLANTS INDICATED ON THIS DRAWING. THE DRAWING WAS PREPARED TO BE USED AS REFERENCE ONLY AS PER REQUIREMENTS OF THE CITY OF OTTAWA. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE IT HAS REVIEWED THE CURRENT AND EXISTING DESIGNS BY HYDRO, STREET LIGHTING, BELL, CANADA POST, O.C. TRANSP. CABLE TV AND ANY OTHER PARTIES INCLUDED BUT NOT MENTIONED AND COMPLETE THE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF THE STAKEHOLDER UTILITY DESIGNS.

CLIENT

HAZELVIEW INVESTMENTS

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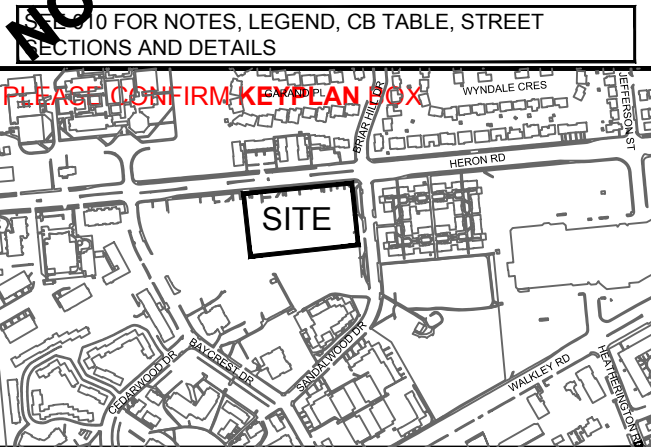
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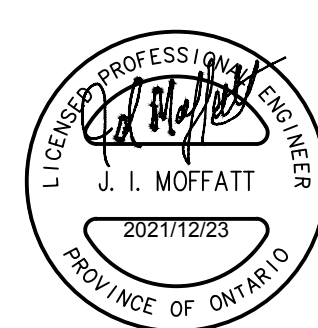
ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2021-12-16
2	RE-ISSUED FOR COORDINATION	2021-12-16
3	ISSUED FOR SPA	2021-12-23



CONSULTANTS

SEAL



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Ottawa ON K1S 5N4 Canada
tel 613 225-1311 fax 613 225-9888
ibigroup.com

PROJECT
Heron Gate 5

PROJECT NO:
135142

DRAWN BY:
####

CHECKED BY:
####

PROJECT MGR:
####

APPROVED BY:
####

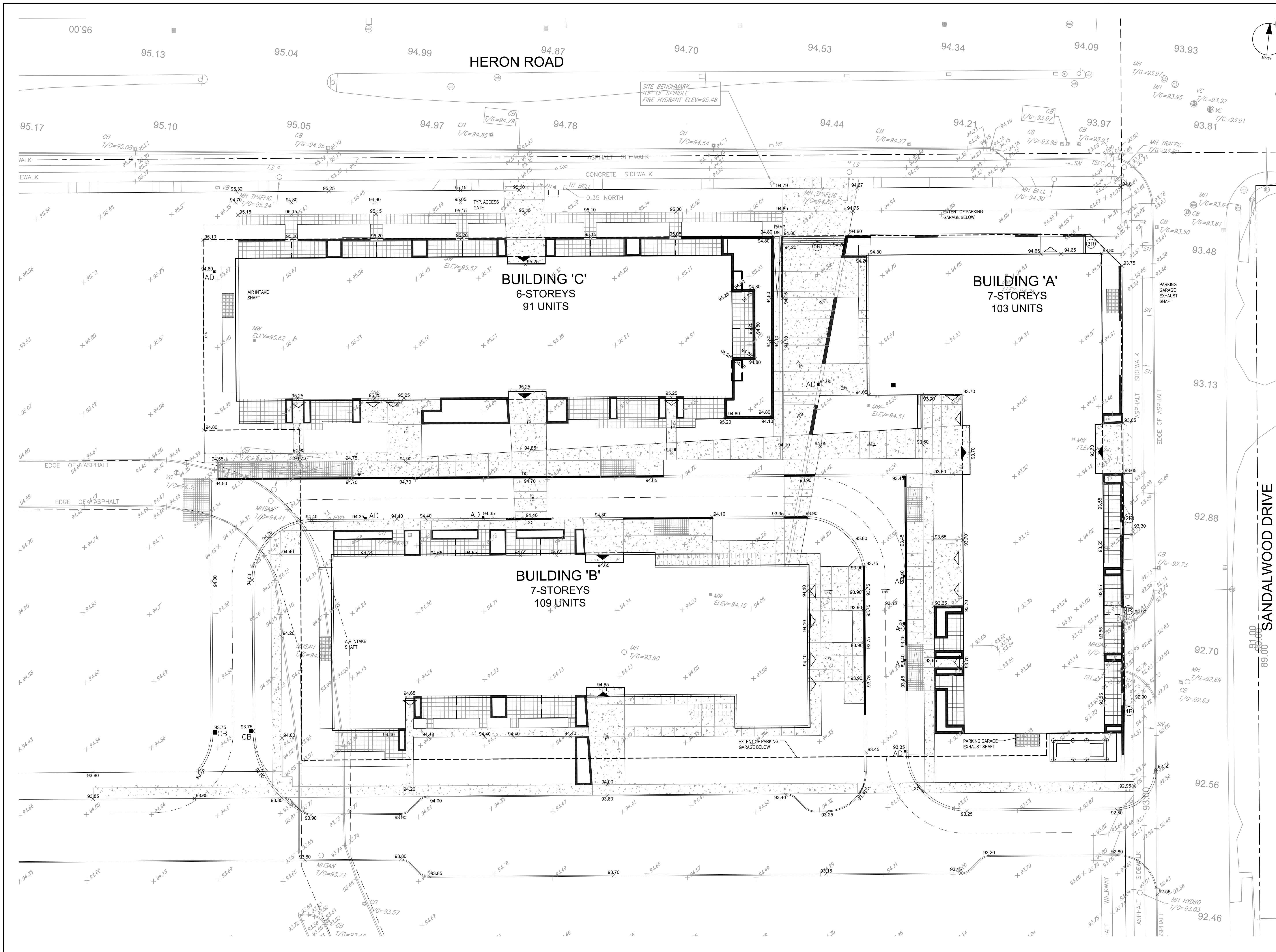
SHEET TITLE
**GENERAL NOTES,
LEGEND AND
CB DATA TABLE**

SHEET NUMBER

C-010

ISSUE

####



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ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2021-12-15
2	RE-ISSUED FOR COORDINATION	2021-12-23
3	ISSUED FOR SPA	2021-12-23

NOT FOR CONSTRUCTION

SECTION 010 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

CONSULTANTS

SEAL

hazerview INVESTMENTS

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Tel 613 225 1311 / 613 241 3300 Fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO:
135142

DRAWN BY:

PROJECT MGR:

CHECKED BY:

APPROVED BY:

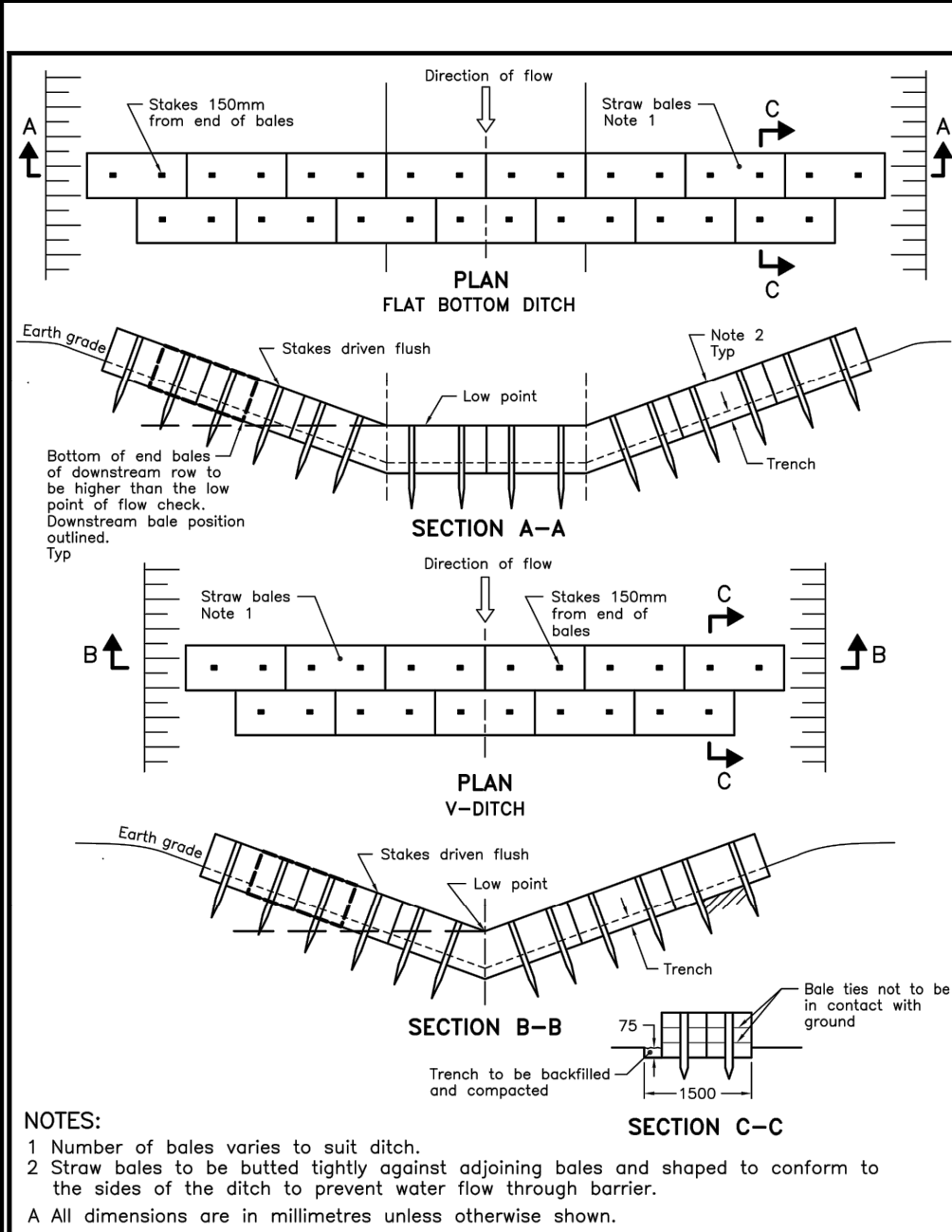
SHEET TITLE

GRADING PLAN

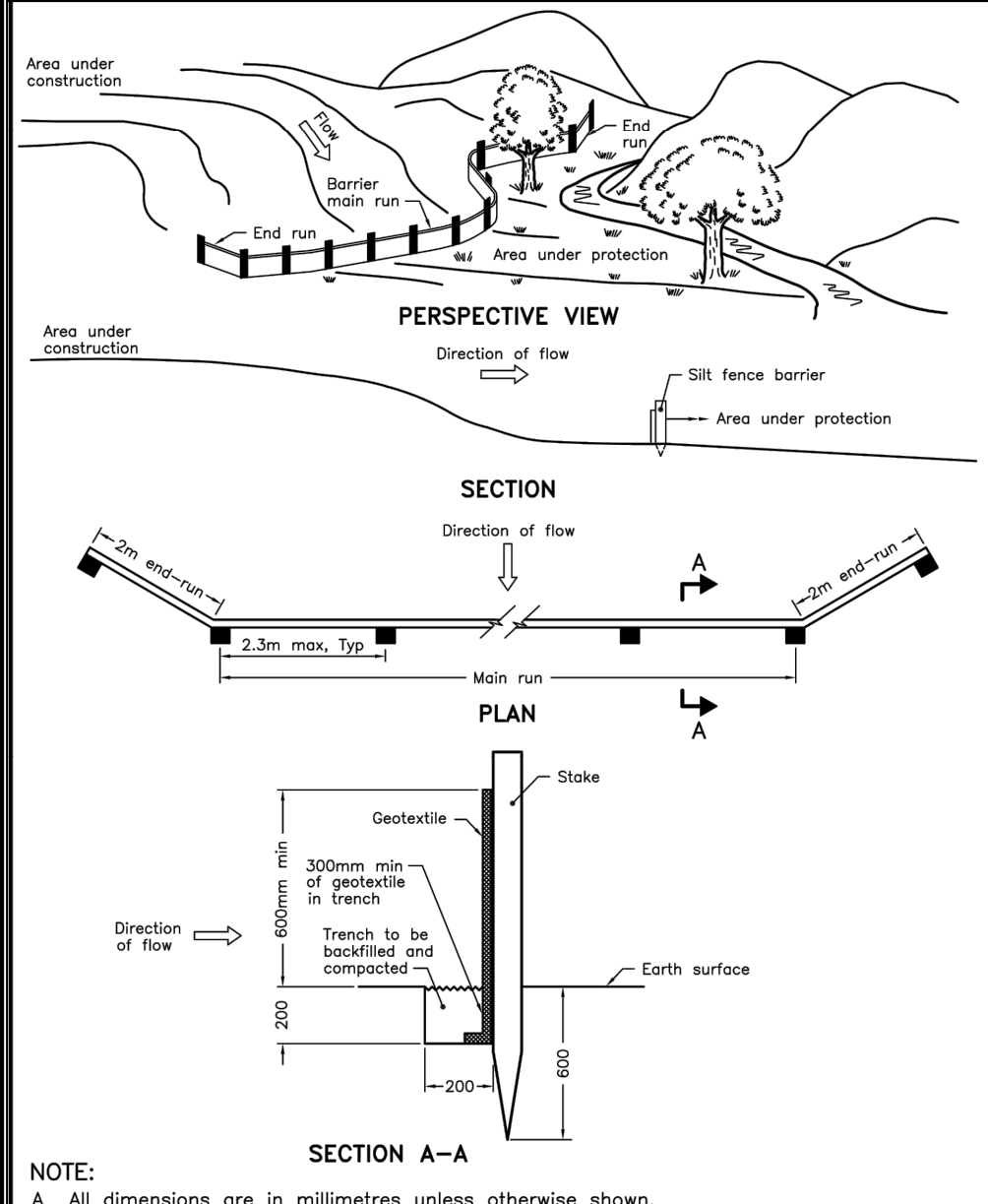
SHEET NUMBER

C-200

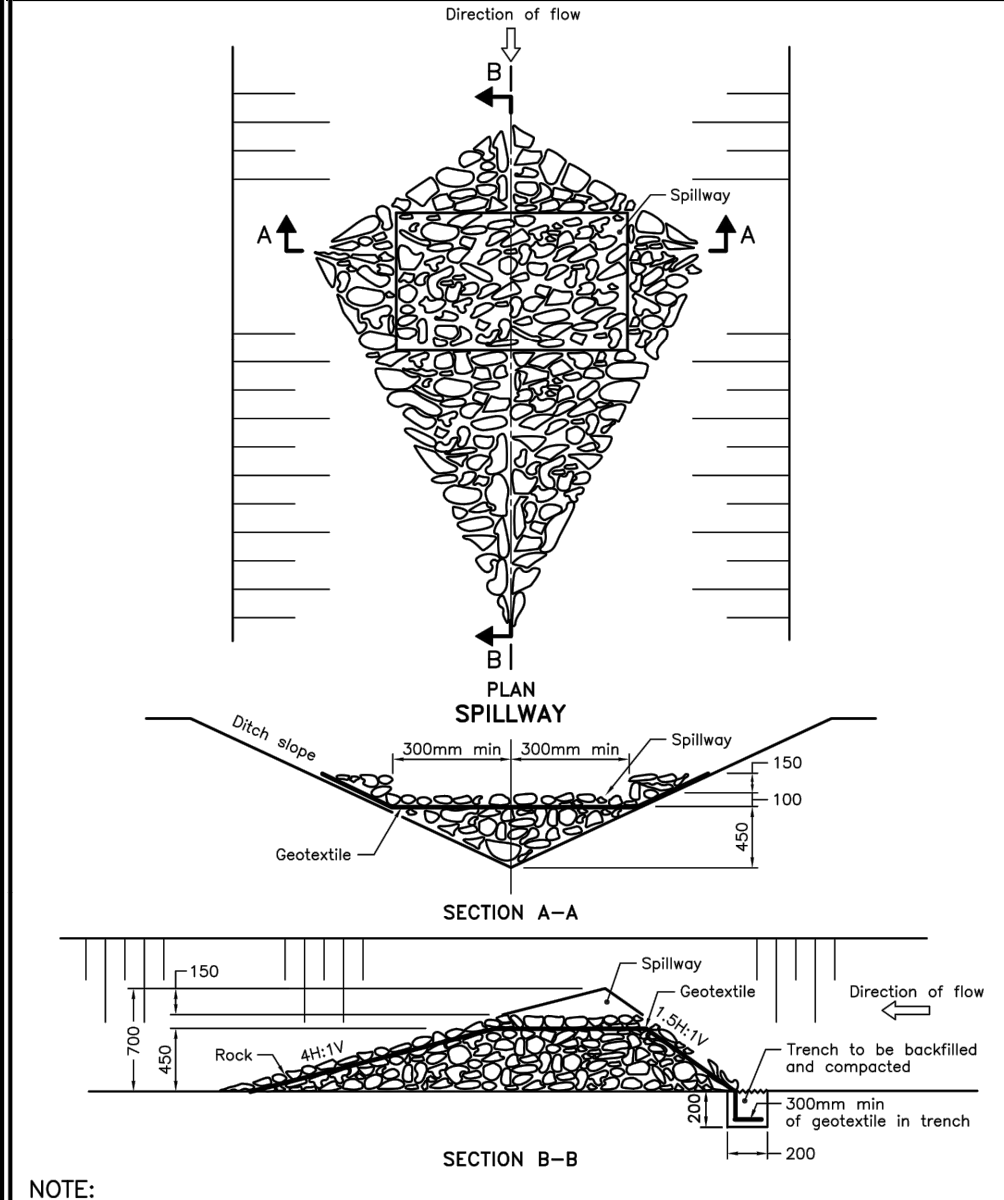
ISSUE



ONTARIO PROVINCIAL STANDARD DRAWING
STRAW BALE FLOW CHECK DAM
OPSD 219.180



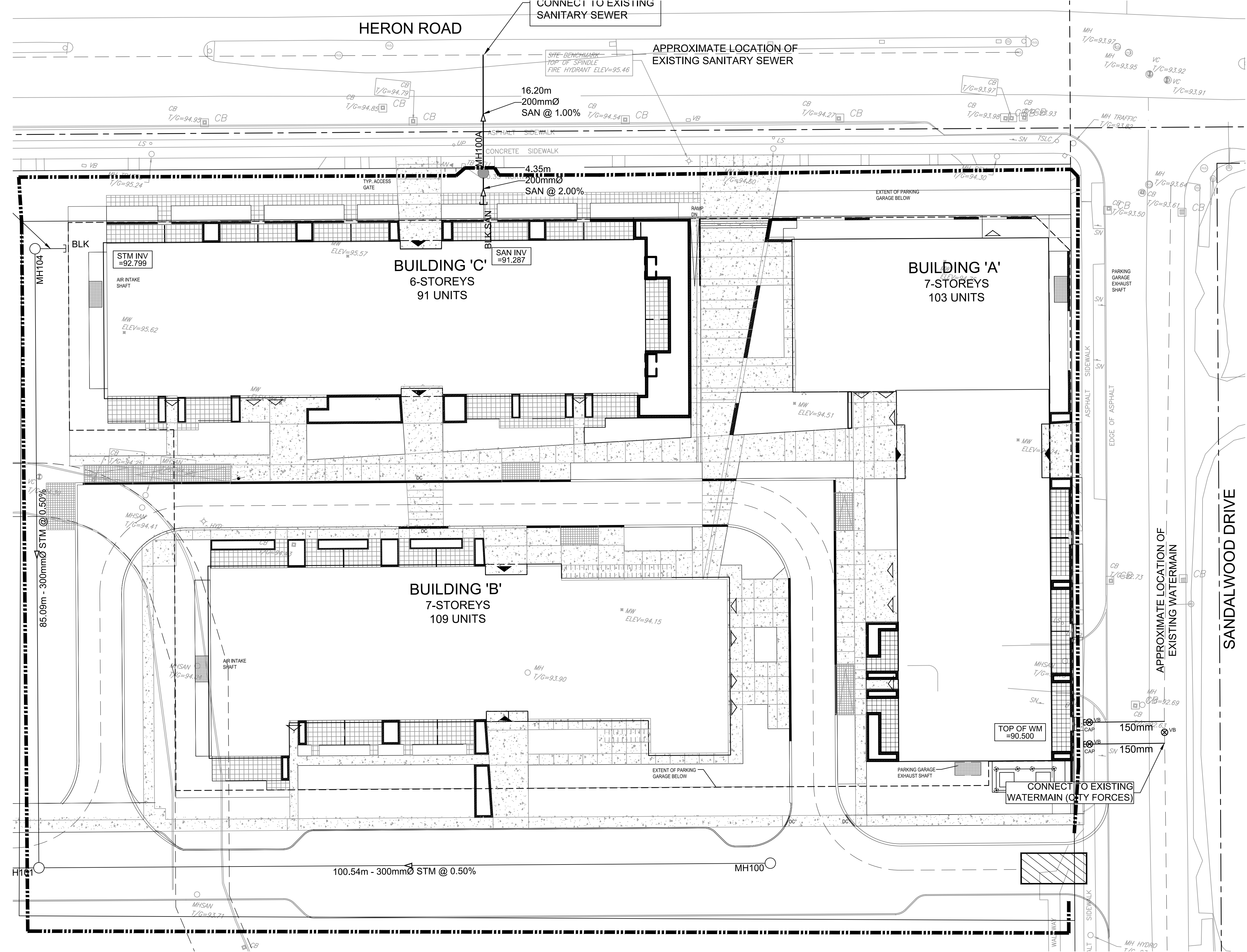
ONTARIO PROVINCIAL STANDARD DRAWING
LIGHT-DUTY SILT FENCE BARRIER
OPSD 219.110



ONTARIO PROVINCIAL STANDARD DRAWING
ROCK FLOW CHECK DAM
OPSD 219.210

- NOTES:
- THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
 - 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.
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 - 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.
 - CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
 - WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
 - THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT

- LEGEND :
- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
 - SNOW FENCE
 - STRAW BALE CHECK DAM AS PER OPSD-219.180
 - ROCK CHECK DAM AS PER OPSD-219.210
 - SILT SACK PLACED UNDER EXISTING CB COVER
 - TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

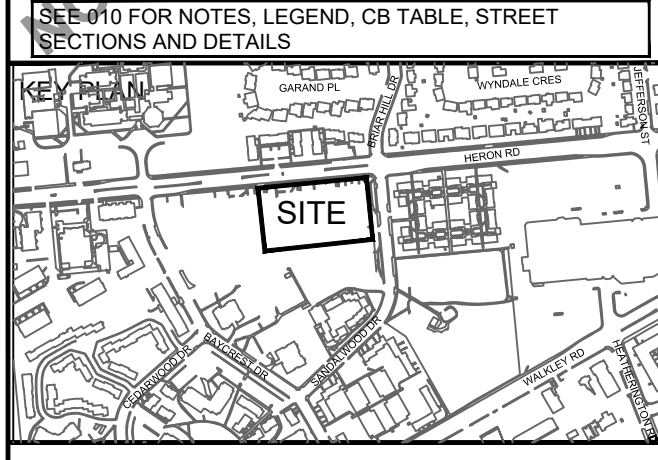


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2	RE-ISSUED FOR COORDINATION	2021-12-23
3	ISSUED FOR SPA	2021-12-23



CONSULTANTS

1:300 0 3 6 9 12 15m



PROJECT
Heron Gate 5

PROJECT NO:
135142

DRAWN BY:

PROJECT MGR:

CHECKED BY:

APPROVED BY:

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER
C-900

ISSUE