REPORT

SITE SERVICING REPORT
Herongate HG-5
2851 Baycrest Drive

Project: 135142-6.03.04

Prepared for Hazelview Investments
by IBI Group
February 3, 2023

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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 towner 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. The boundary conditions received from the City are included in **Appendix A**.

2.2 Design Criteria

2.2.1 Water Demands

The proposed development plan includes 305 residential units. The population for apartment buildings is assumed at 1.8 persons per unit as found in Table 4.1 of the Design Guidelines. Per unit population density and consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Residential Average Day Demand 280 l/cap/day
- Residential Peak Daily Demand 700 l/cap/day
- Residential Peak Hour Demand 1540 l/cap/day

A watermain demand calculation sheet is included in **Appendix A** and the total water demands are summarized as follows:

	Subject Site
Average Day	1.78 l/s
Maximum Day	4.45 l/s
Peak Hour	9.79 l/s

The watermain demand calculation was forwarded to the city to determine the boundary conditions at the site, copy of the boundary conditions is included in **Appendix A** and summarized below.

	Sandalwood Connection
Minimum HGL	123.9
Maximum HGL	130.9
Max Day + FireFlow (233.3 L/s)	111.2
Max Day + FireFlow (216.7 L/s)	113.2

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 14,000 l/min or 233.3 l/s. A copy of the FUS calculation is included in **Appendix A**.

2.3 Proposed Water Plan

To service the property twin 200mm 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 135142-C-001 in **Appendix D.** The proposed 200mm 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, and another within 150m, the capacity 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	14,000	2	1	15,200

In order to be within range of the Siamese connection for Building B, a hydrant is proposed off of Sandalwood Drive. Despite the long lead, using the provided boundary conditions, there is enough pressure in the system to support this hydrant.

For the purposes of this report, assuming a minimal loss within the service connection the pressures within the site can be estimated as follows:

Minimum Pressure (Peak Hour) – The minimum peak hour pressure on the site can be estimated as HGL 123.9.7m – meter elevation of 90.5m = 33.4m or 327.7 kPa which exceeds the minimum requirement of 276 kPa. The pressure on the top floor can be estimated as 123.9m – 109.72m = 14.18m or 139.1 KPa which is below the minimum of 276 kPa and will require a water pump.

Fire Flow – The max day plus fire flow can be estimated as HGL 111.2 – ground floor elevation plus 0.4m 94.1 = 17.1m or 167.8 KPa which exceeds the minimum of 140kPa.

Max HGL (High Pressure Check) – The high-pressure check can be estimated as HGL 130.9 – (lowest level) 89.3 = 41.6m or 408.1 KPa which is below the maximum of 552 kPa, therefore a pressure reducing valve is not required.

The above results indicate the municipal infrastructure can support the proposed development.

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 prepared by DSEL all sanitary flows from the subject site will be directed to the Heron Road sanitary sewer. The boundary conditions set out by the FSR prepared by DSEL are included in **Appendix B**.

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 be 6.48 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. The sanitary sewer design sheet can also be found in **Appendix B**.

A second sanitary service lateral will be needed for the next phase as it is not possible to drain future buildings by gravity to Heron Road through proposed sanitary service (refer to Mechanical engineer's comments in **Appendix E**).

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 a fraction of the FSR Block 2 lands, as such the release rate for Block 2 will be taken at a pro-rated amount for the subject application.

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

Heron Gate 5 Phase Limits include 1.51 ha out of Block 2's 2.67 ha = 56.6%

Taken at 56.6% for subject application - 100 year release rate = 126.42 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 = 0.20
  - 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

Using the above-noted criteria, the proposed storm service lateral was sized accordingly. A conceptual storm sewer design sheet is included in **Appendix C**, while the associated conceptual storm sewer drainage area plan is included in **Appendix D**. Runoff coefficients for each storm drainage area were calculated individually by surface area and calculations can be found in **Appendix C**. The detailed design for this site shows a storm sewer connection through the proposed private road to the storm sewer at Baycrest Drive as noted in section 4.1.

A cistern, situated in the parking garage, has been sized to support stormwater retention. The cistern will be equipped with duplex storm pumps to control the flow rate of the storm water runoff

from the site directed to the municipal storm sewer system. The pumps will discharge to a storm sewer lateral which will also service as an outlet for the building foundation drain.

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 rooftop flow control devices, an inlet control device (ICD) at the outlet of the cistern, underground sewers, and an ICD at the outlet of MH102.

Flows generated that are in excess of the site's allowable release rate will be stored on road sags outside of the building garage footprint, within underground pipe storage, and within the building via rooftop storage and a 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, 0.23 hectares in total, have a C value of 0.66. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 75.35 l/s runoff (refer to Section 4.5 for calculation). The cistern/rooftops and underground pipe storage 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 1.51 Ha site as established in section 4.2 is

$\mathbf{Q_{allowable}}$ = **126.42 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 0.23 Ha uncontrolled areas 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 = 0.66

$\mathbf{i_{100yr}}$ = 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 = 0.23 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 0.66 x 178.56 x 0.23

= **75.35 L/s**

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

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

= 126.42 L/s – 75.35 L/s

= **51.07 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 on rooftops and within the building cistern in order to not surcharge the downstream municipal storm sewer system. As the roofs and cistern are located inside the building, coordination with the architect, structural and mechanical engineers will be needed to design the structure and associated pump release rate.

The architect and mechanical engineer have provided the usable rooftop storage area as well as a release rate of 20GPM per each roof (see correspondence in **Appendix E**). Water that has accumulated on the rooftops will be released into the cistern. A structural engineer has not yet been retained, but it is anticipated that the ultimate structural design will accommodate this level of retention. A cross-section of the cistern has been provided by the mechanical engineer and can be found in **Appendix E**.

The roof of Building A will have 11,026 sqft (0.1024 Ha) of usable area to collect and hold water, as well as four drains that restrict flow to 5 GPM each for a total release rate to the cistern of 20 GPM (1.26 L/s). Based on the 100-yr event, the peak volume for Rooftop A was determined as 60m^3 (refer to calculations in **Appendix D**). The same exercise was repeated for Rooftops B and C and their peak 100-yr storm event volumes were determined as 90m^3 and 94m^3, respectively.

The peak flow for the remainder of the cistern catchment (ie the rainfall that would not fall on the capturable area of the rooftops and outside the building envelope) was calculated separately. A series of area drains will capture runoff before it leaves the catchment area. The release rate from the rooftops (1.26 L/s x 3) was added to the peak flow to determine the maximum volume that would be required to contain a 100-yr storm event at a release rate of 15 L/s. This volume was determined to be 298.2m^3. Currently, the cistern has been sized to retain 318m^3 (see correspondence in **Appendix E**), therefore, it can be accommodated if the future structural design requires a higher release rate from the rooftops to the cistern.

In addition, further storage is required downstream in the private road area. There is 77.61m^3 of surface ponding available as well as an oversized underground sewer system that has been sized to store a further 32.63 m^3 during a storm event. The underground storage will have an ICD to limit the release rate to 36 L/s. Calculations for the underground storage can be found in **Appendix C**, while location and sizing can be found on the servicing plan in **Appendix D**.

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	0.98	562.00	15	541.29	15	210.00
Private Drive	0.30	110.24	36	92.39	36	29.18
TOTAL	**1.28**	**672.24**	**51**	**633.68**	**51**	**239.18**

In all instances the required storage is met. The cistern will be fitted with a mechanical constant flow pump set to release at 15 litres/second regardless of the elevation of the cistern. Detailed stormwater management calculations are included in **Appendix C**. ICD orifice calculation can also be found in **Appendix C**. Rooftop drain specification sheet can be found in **Appendix E**.

4.6.2 Overall Release Rate

As demonstrated above, the site uses an inlet control device and a flowrate-limited pump 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, underground storage, 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 51.0 l/s, which is less than the allowable release of 51.07 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

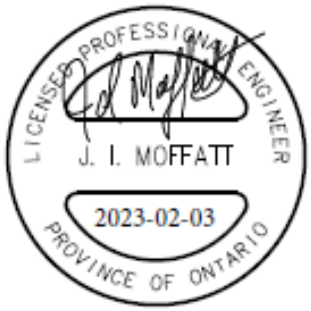
Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

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

Sam Labadie P.Eng.
Civil Engineer

Appendix A

Doug Cave

From: Sevigny, John <John.Sevigny@ottawa.ca>
Sent: Friday, April 8, 2022 10:47 AM
To: Doug Cave
Cc: Jim Moffatt; Lance Erion
Subject: RE: Heron Gate 5 - Request for Watermain Boundary Conditions
Attachments: Heron Gate 5 April 2022.pdf

Hi Doug,

Please find attached and below the requested boundary conditions.

******The following information may be passed on to the consultant, but do NOT forward this e-mail directly.******

The following are boundary conditions, HGL, for hydraulic analysis at Heron Gate 5 (zone 2W2C) assumed to be a dual connection to the 203 mm on Sandalwood Drive (see attached PDF for location).

Minimum HGL: 123.9 m

Maximum HGL: 130.9 m

Max Day + Fire Flow (233.3 L/s): 111.2 m

Max Day + Fire Flow (216.7 L/s): 113.2 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 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.

Regards

John Sevigny, C.E.T.
Senior Project Manager
Development Review, Suburban Services | *Examen des projets d'aménagement, Services suburbains*
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West. Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste **14388**, fax/téléc:613-580-2576, john.sevigny@ottawa.ca

---

From: Doug Cave <doug.cave@ibigroup.com>
Sent: April 04, 2022 8:56 AM
To: Sevigny, John <John.Sevigny@ottawa.ca>; Lance Erion <lerion@ibigroup.com>
Cc: Jim Moffatt <jmoffatt@ibigroup.com>
Subject: RE: Heron Gate 5 - Request for Watermain Boundary Conditions

Hi John,

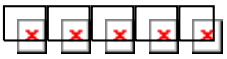
Here are the location plan and servicing plan.

Doug

Douglas Cave, C.E.T.
(he/him/his)

Senior Project Manager

IBI GROUP
Suite 400, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64062 fax +1 613 241 1130
mobile 613 402 9677



From: Sevigny, John <John.Sevigny@ottawa.ca>
Sent: Monday, April 4, 2022 8:49 AM
To: Lance Erion <lerion@ibigroup.com>
Cc: Jim Moffatt <jmoffatt@ibigroup.com>; Doug Cave <doug.cave@ibigroup.com>
Subject: RE: Heron Gate 5 - Request for Watermain Boundary Conditions

Hi Lance,
I think you forgot to attached the general plan of services with the connection location. Can you please send it to me?
Thanks.

John Sevigny, C.E.T.
Senior Project Manager
Development Review, Suburban Services | *Examen des projets d'aménagement, Services suburbains*
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West. Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste **14388**, fax/téléc:613-580-2576, john.sevigny@ottawa.ca

---

From: Lance Erion <lerion@IBIGroup.com>
Sent: April 01, 2022 3:46 PM
To: Sevigny, John <John.Sevigny@ottawa.ca>
Cc: Jim Moffatt <jmoffatt@ibigroup.com>; Doug Cave <doug.cave@ibigroup.com>
Subject: Heron Gate 5 - Request for Watermain Boundary Conditions

Good afternoon, we are requesting watermain hydraulic boundary conditions for the proposed residential development located at the southeast corner of Heron Road and Sandalwood Drive. As shown on the attached general plan of services a water connection to the complex of three buildings is proposed off of the Sandalwood Drive main. Water demands for the 303 unit development is as follows

Basic Day	1.77 l/s
Max Day	4.42
Peak Hour	9.72 l/s

Fire flow requirements have been calculated using the FUS method with Building A and B having a 14,000 l/min requirement and Building C with 13,000 l/min.

Copies of the water demand and FUS calculations are attached. Please let us know if you have any questions or require further information.

Thank you

Lance Erion P.ENG

Associate

IBI GROUP
400-333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64047 fax +1 613 225 9868

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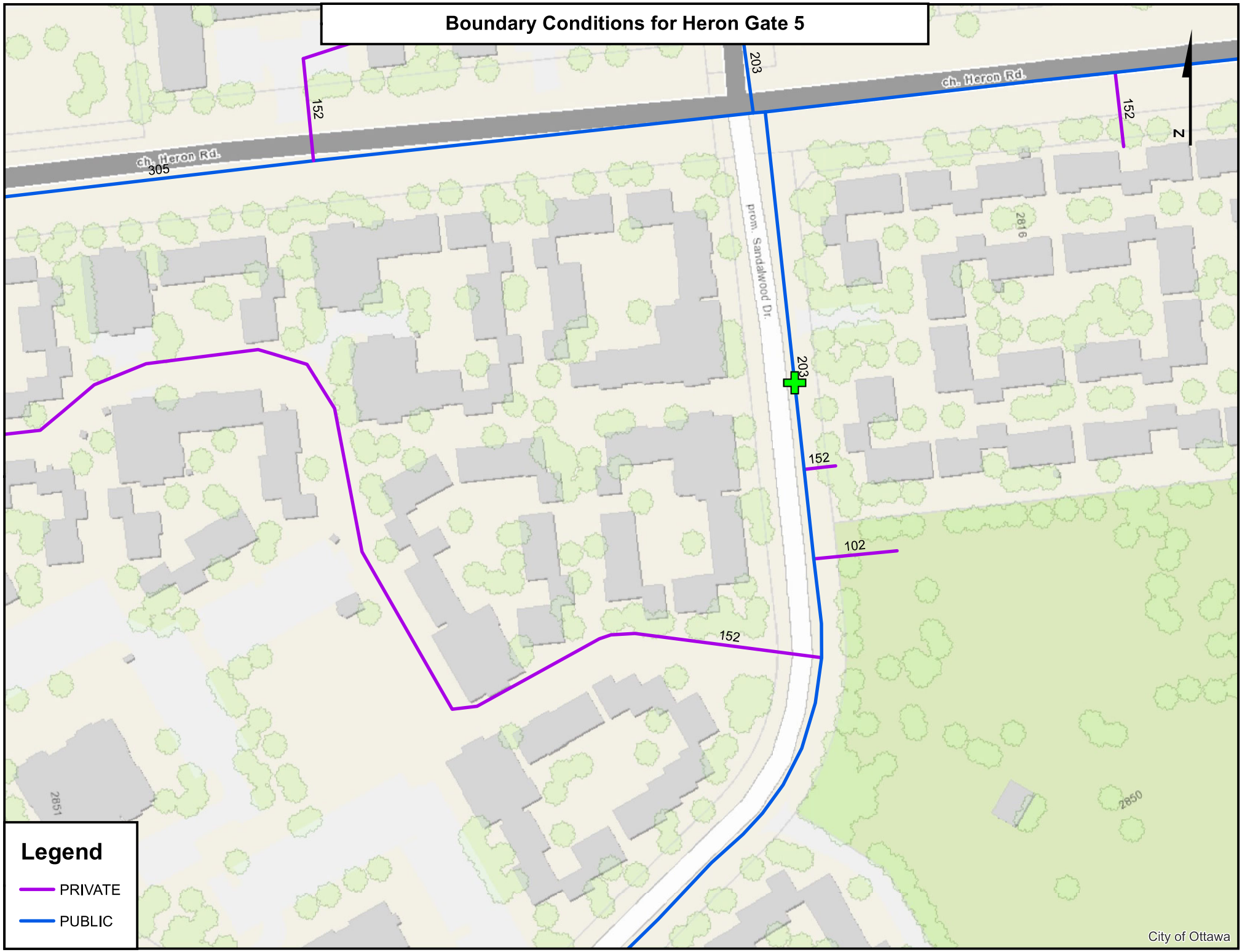
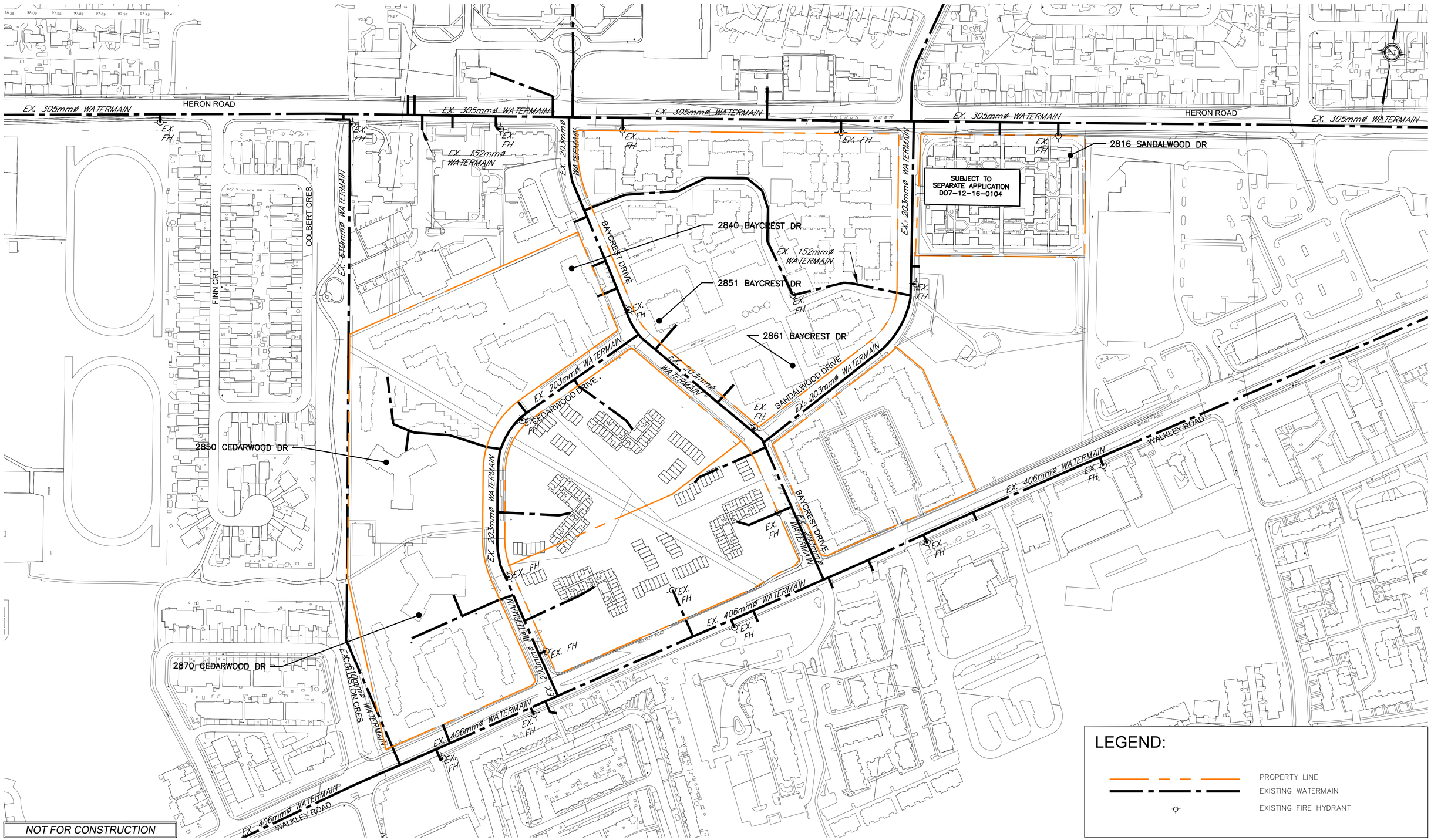
Boundary Conditions for Heron Gate 5





david schaeffer engineering ltd
SMART SUBDIVISIONS™
120 Iber Road Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
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HERON GATE COMMUNITY
EXISTING WATER SERVICING

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

z:\projects\18-1080_timbercreek_heron-gate\b_design\b2_drawings\b2-2_main (dsel)\spa_sub1\cad\2021-05-06_1080_ggg.dwg

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : HERON GATE 5
LOCATION : 2851 BAYCREST DRIVE. OTTAWA
DEVELOPER : HAZELVIEW INVESTMENTS

FILE: 135142-6.04.04
DATE PRINTED: 12-Aug-22
DESIGN: LE
PAGE : 1 OF 1

NODE	RESIDENTIAL UNITS SF	SD & TH	APT	POP'N	NON-RESIDENTIAL INDTRL (ha.)	COMM. (ha.)	INST. (ha.)	AVERAGE DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM HOURLY DEMAND (l/s) Res.	Non-res.	Total	FIRE DEMAND (l/min)
BLDG A			105	189				0.61	0.00	0.61	1.53	0.00	1.53	3.37	0.00	3.37	14,000
BLDG B			109	196				0.64	0.00	0.64	1.59	0.00	1.59	3.50	0.00	3.50	14,000
BLDG C			91	164				0.53	0.00	0.53	1.33	0.00	1.33	2.92	0.00	2.92	13,000
TOTALS			305	549						1.78			4.45			9.79	

ASSUMPTIONS

RESIDENTIAL DENSITIES
- Single Family (SF) 3.4 p / p / u
- Semi Detached (SD) & Townhouse (TH) 2.7 p / p / u
- Apartment (APT) 1.8 p / p / u

AVG. DAILY DEMAND
- Residential 280 l / cap / day
- ICI 50,000 l / ha / day

MAX. DAILY DEMAND
- Residential 700 l / cap / day
- 75,000 l / ha / day

MAX. HOURLY DEMAND
- Residential 1,540 l / cap / day
- ICI 135,000 l / ha / day

FIRE FLOW
- Refer to FUS Calculations

Fire Flow Requirement from Fire Underwriters Survey

2851 Baycrest Drive - Building A

Floor	Area (m^2)
1	1743
2	1718
3	1440
4	1440
5	1431
6	1431
7	1065
Total	10268

	Total Floor Area	10,268	m^2

$F = 220C\sqrt{A}$

C	0.8		C =	1.5 wood frame
A	10,268	m^2		1.0 ordinary
				0.8 non-combustible
F	17,834	l/min		0.6 fire-resistive
use	18,000	l/min		

Occupancy Adjustment

		-25%	non-combustible
		-15%	limited combustible
Use	-15%	0%	combustible
		+15%	free burning
Adjustment	-2700 l/min	+25%	rapid burning
Fire flow	15,300 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-4590 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall			Exposure Charge *
		Length	Stories	L*H Factor	
north	> 45				0%
east	25	22	5	110	9%
south	>45				0%
west	23	25	7	175	10%
Total					19%

Adjustment	2,907	l/min
Total adjustments	(1,683)	l/min
Fire flow	13,617	l/min
Use	**14,000**	**l/min**
	233	**l/s**

Fire Flow Requirement from Fire Underwriters Survey

2851 Baycrest Drive - Building B

Floor	Area (m^2)
1	1498
2	1587
3	1602
4	1602
5	1481
6	1481
7	1481
Total	10732

Total Floor Area 10,732 m^2

F = 220C√A

C	0.8		C =	1.5 wood frame
A	10,732	m^2		1.0 ordinary
				0.8 non-combustible
F	18,233	l/min		0.6 fire-resistive
use	18,000	l/min		

Occupancy Adjustment

		-25%	non-combustible
		-15%	limited combustible
Use	-15%	0%	combustible
		+15%	free burning
Adjustment	-2700 l/min	+25%	rapid burning
Fire flow	15,300 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-4590 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge *
north	23	75	6	450	10%
east	23	50	7	350	10%
south	> 45				0%
west	> 45				0%
Total					20%

Adjustment	3,060	l/min
Total adjustments	(1,530)	l/min
Fire flow	13,770	l/min
Use	**14,000**	**l/min**
	233	**l/s**

Fire Flow Requirement from Fire Underwriters Survey

2851 Baycrest Drive - Building C

Floor	Area (m^2)
1	1503
2	1511
3	1563
4	1563
5	1546
6	1546
Total	9232

Total Floor Area 9,232 m^2

$F = 220C\sqrt{A}$

C	0.8	C =	1.5	wood frame
A	9,232 m^2		1.0	ordinary
			0.8	non-combustible
F	16,911 l/min		0.6	fire-resistive
use	17,000 l/min			

Occupancy Adjustment

		-25%	non-combustible
		-15%	limited combustible
Use	-15%	0%	combustible
		+15%	free burning
Adjustment	-2550 l/min	+25%	rapid burning
Fire flow	14,450 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-4335 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge *
north	> 45				0%
east	21	21	7	147	10%
south	23	71	7	497	10%
west	> 45				0%
Total					20%

Adjustment	2,890	l/min
Total adjustments	(1,445)	l/min
Fire flow	13,005	l/min
Use	**13,000**	**l/min**
	217	**l/s**

Appendix B

4.2.1 Wastewater Design – Phase I

The proposed Phase I development includes the construction of Block 1. As indicated by the Site Servicing Report (***Block 1 Servicing Report***), prepared by MMM Group and dated March 2017, the Block 1 development is proposed to be serviced via the existing 300 mm diameter sanitary sewer within the Heron Road right-of-way. The peak wet weather flow rate for the Block 1 development was estimated to be ***10.75 L/s***. Refer to ***Drawings/Figures*** for drawing ***SAN-1*** for the Phase I sanitary servicing layout.

Phase 1 also included the removal of the existing townhomes contained within the existing Block 2 and Block 3 area. It is anticipated that these blocks are currently served by the existing sanitary sewers within Cedarwood and Baycrest avenue, ultimately tributary to Walkley road. Based on the removal it is estimated that Phase I will increase to the available capacity within Walkley Road by ***2.58 L/s*** increasing the available capacity to ***22.58 L/s.***

4.2.2 Wastewater Design – Phase II

The contemplated Phase II development includes the construction of Block 2. It is contemplated that Block 2 will be serviced via the existing 300 mm diameter sanitary sewer within the Heron Road right-of-way. As indicated by ***Table 10,*** below, the estimated peak wet weather flow rate for Block 2 is ***12.65 L/s***. Refer to ***Appendix C*** for detailed calculations and ***Drawings/Figures*** for drawing ***SAN-2*** for the Phase II sanitary servicing layout.

It is anticipated that no modifications to the existing sanitary sewers within Baycrest Drive, Cedarwood Drive, Sandalwood Drive, Heron Road, and Walkley Road will be required to support the Phase II development. The apartment buildings to be retained will continue to be serviced via the sanitary sewers within Baycrest Drive and Cedarwood Drive, which are ultimately tributary to the Walkley Road sanitary sewer. The estimated available capacity in Heron road is ***13.34 L/***s once Phase II is completed.

Table 10, below, demonstrates the anticipated peak flow from the Phase II development. See ***Appendix C*** for associated calculations.

Table 10
Summary of Estimated Peak Wastewater Flow – Phase II

Development Block	Outlet	Design Parameter		
		Estimated Average Dry Weather Flow (L/s)	Estimated Peak Dry Weather Flow (L/s)	Estimated Peak Wet Weather Flow (L/s)
Block 1*	Heron Road	-	-	10.75
Block 2	Heron Road	4.74	11.76	12.65
Total Remaining Capacity	Heron Road	-	-	**13.34**
Total Existing Site Flow	Walkley Road			39.51
Total Remaining Capacity	Walkley Road	-	-	**22.21**

As indicated by the **Block 1 Servicing Report prepared by MMM Group Limited*

As summarized by ***Table 10,*** above, the total estimated sanitary flow, based on the Concept Plan provided in ***Drawings/Figures,*** anticipates a peak wet weather flow of ***23.4 L/s*** to the Heron Road sanitary sewer. Based on consultation with City staff, the available capacity within the Heron Road sanitary sewer is ***35 L/s***; the residual capacity after the Phase II development is estimated to be ***13.34 L/s***.

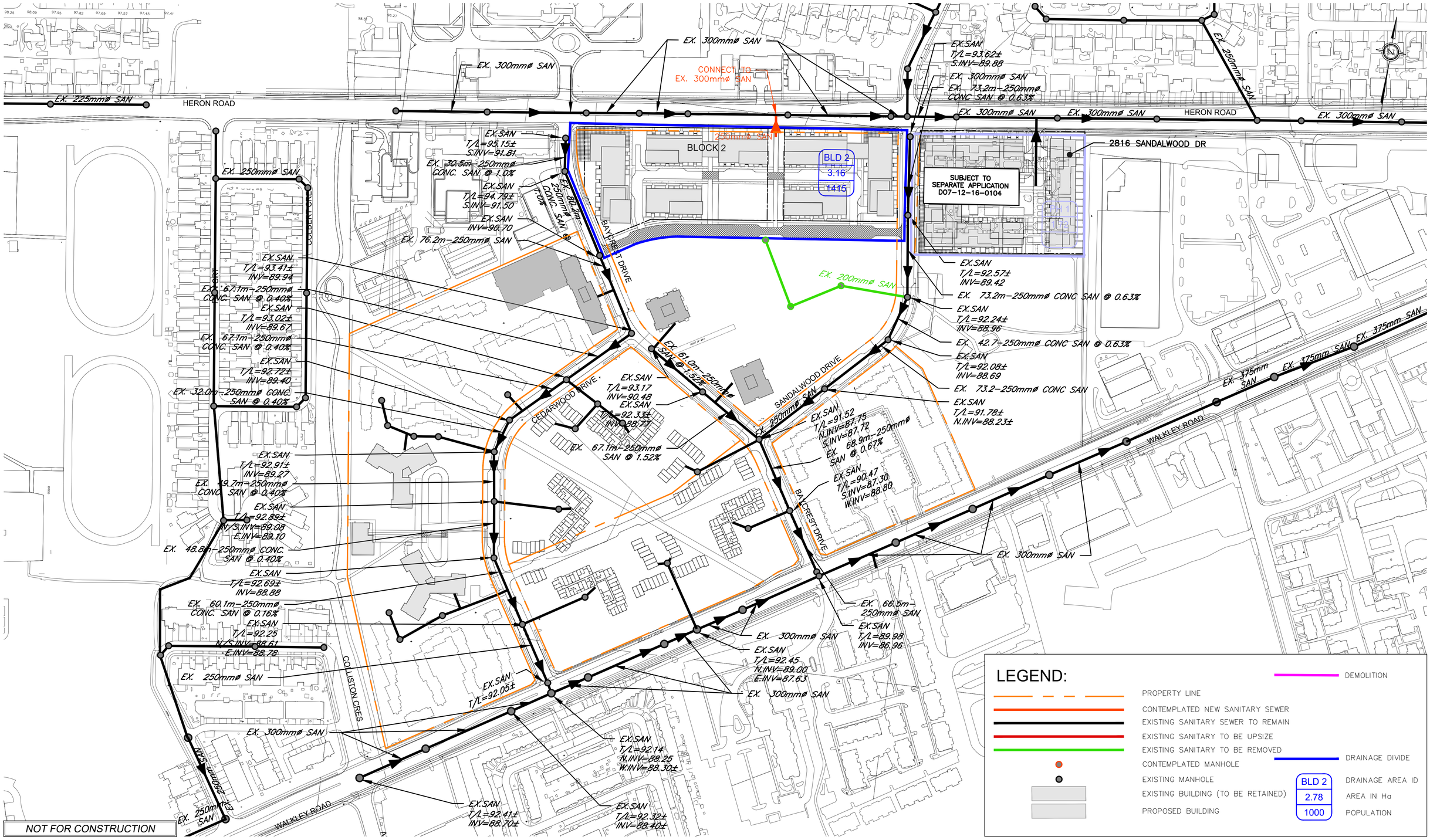
As summarized by ***Table 10,*** above, the total estimated peak wet weather sanitary flow tributary to the existing sanitary sewer within Walkley Road is ***39.51 L/s***. Based on consultation with City staff, the available capacity within the Walkley Road is ***62.09 L/s***; the residual capacity after the Phase II development is estimated to be ***22.21 L/s***.

4.2.3 Wastewater Design – Phase III

The contemplated Phase III development includes the construction of Block 3. It is contemplated that Block 3 will be serviced via the existing 250 mm diameter sanitary sewer within the Sandalwood Drive right-of-way. As indicated by ***Table 11,*** below, the estimated peak wet weather flow rate for Block 3 is ***15.26 L/s***. Refer to ***Appendix C*** for detailed calculations and ***Drawings/Figures*** for drawing ***SAN-3*** for the Phase III sanitary servicing layout.

The contemplated Phase III development includes the construction of Block 5 Townhomes. It is contemplated that Block 5 townhomes will be serviced via the existing 250 mm diameter sanitary sewer within the Cedarwood Drive right-of-way. As indicated by ***Table 11,*** below, the estimated peak dry weather flow rate for Block 5 Townhomes is ***0.98 L/s***.

The contemplated Phase III development includes the removal of the Block 9 Townhomes. It is contemplated that Block 9 is serviced via the existing 250 mm diameter sanitary sewer within the Baycrest Drive right-of-way. As indicated by ***Table 11,*** below, the estimated peak domestic flow rate for existing Block 9 is ***1.50 L/s***.



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

HERON GATE COMMUNITY
SANITARY SERVICING - PHASE 2

PROJ NO.:	18-1080
DRAWN BY:	AWT
DATE:	2021-05-07
SCALE:	1:1500
FIGURE NO.:	SAN-2

z: \projects\18-1080_timbercreek_heron-gate\b_design\b2_drawings\b2-2_main (dsel)\spa_sub1\cad\2021-05-06_1080_ggg.dwg

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

Herongate Phase 5
CITY OF OTTAWA
Hazelview Investments

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA	UNIT TYPES				AREA	POPULATION		RES	PEAK	AREA (Ha)						ICI	PEAK	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH	w/ Units (Ha)	SF	SD	TH	APT	w/o Units (Ha)	IND	CUM	PEAK FACTOR	FLOW (L/s)	INSTITUTIONAL IND	INSTITUTIONAL CUM	COMMERCIAL IND	COMMERCIAL CUM	INDUSTRIAL IND	INDUSTRIAL CUM	PEAK FACTOR	FLOW (L/s)	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)	L/s	(%)
2851 Baycrest Drive		BLDG	MH1A	1.51				305		549.0	549.0	3.36	5.98			0.00	0.00					1.51	1.51	0.50			6.48	66.53	4.35	250	1.15	1.313	60.05	90.26%
2851 Baycrest Drive		MH1A	MH99A							0.0	549.0	3.36	5.98			0.00	0.00					0.00	1.51	0.50			6.48	62.04	16.20	250	1.00	1.224	55.56	89.55%

Design Parameters:

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

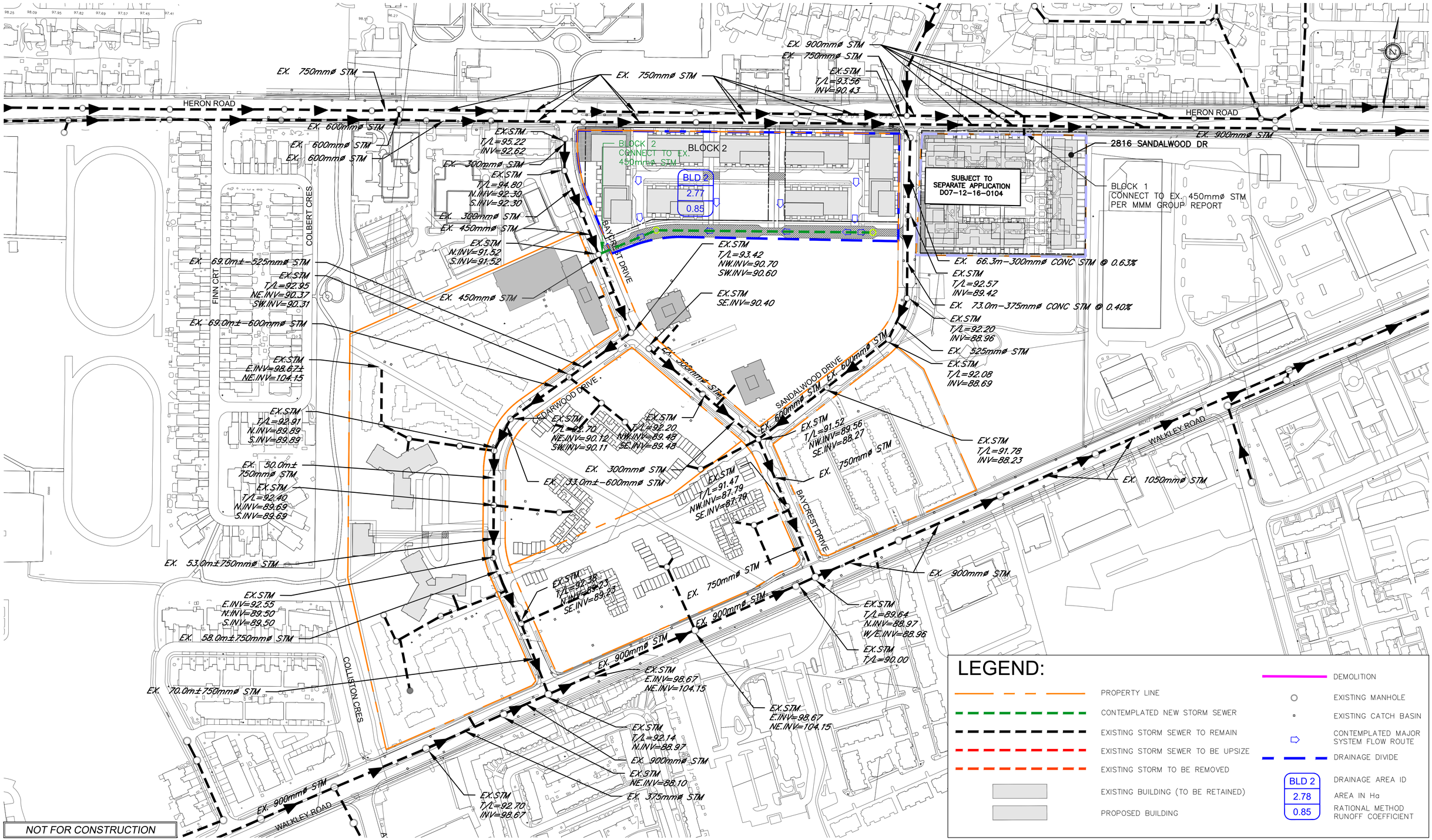
Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,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

Designed: SEL
Checked: JIM
Dwg. Reference: 135142-C-001

No.	Revision	Date
1.	Issued for Site Plan Application	2021-12-23
2.	Revised per Client Comments	2022-08-12
3.	Revised per City Comments	2022-09-28
4.	Revised to add MH99A	2023-01-19

File Reference: 135142.6.04
Date: 2023-01-19
Sheet No: 1 of 1

Appendix C



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david schaeffer engineering ltd
SMART SUBDIVISIONS™
120 Iber Road Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

HERON GATE COMMUNITY
STORM SERVICING - PHASE 2

PROJ NO.:	18-1080
DRAWN BY:	AWT
DATE:	2021-05-07
SCALE:	1:1500
FIGURE NO.:	STM-2

z:\projects\18-1080_timbercreek_heron-gate\b_design\b2_drawings\b2-2_main (dsel)\spa_sub1\cad\2021-05-06_1080_ggg.dwg

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: 2851 Baycrest Drive
DATE: 2023-01-19
FILE: 135142.8.04
REV #: 5
DESIGNED BY: SEL
CHECKED BY: JIM

STORMWATER MANAGEMENT

Formulas and Descriptions

i_{5yr} = 1:2 year Intensity = 732.951 / ([T+6.199)$^{0.810}$
i_{5yr} = 1:5 year Intensity = 998.071 / ([T+6.053)$^{0.814}$
i_{100yr} = 1:100 year Intensity = 1735.688 / ([T+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 1***

100 Year Flow Block 2	223.54 L/sec
Area of subject application	56.554% of FSR block 2 (1.51 ha out of 2.67 ha)
Q_{TOTAL} =	126.42 L/s

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

C =	0.66
T_c =	10 min
i_{100yr} =	178.56 mm/hr
$A_{uncontrolled}$ =	0.23 Ha
$Q_{uncontrolled}$ =	75.35 L/s

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

$Q_{max\ allowable}$ =	51.07 L/s

MODIFIED RATIONAL METHOD (100-Year & 5-YearPonding

Drainage Area *Roof of Building A*

Area (Ha) 0.1024 — 11026 sqft
C = 1.00 — Restricted Flow Q_r (L/s)= 1.260 — 20 GPM

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xC_{100yr}xA (L/s)		Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
197	22.25	6.33		1.26	5.07	59.97
199	22.07	6.28		1.26	5.02	59.97
200	21.98	6.26		1.26	5.00	**59.97**
201	21.90	6.23		1.26	4.97	59.97
203	21.72	6.18		1.26	4.92	59.97

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
7.51	6.25	**74.99**

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance	100+20 Overflow	100+20 Required	100+20 Balance
0.00	59.97	60.00	318.00	0.00	0.00	74.99	0.00

Depth on Roof (m) 0.059

Drainage Area *Roof of Building A*

Area (Ha) 0.1024
C = 0.90 — Restricted Flow Q_r (L/s)= 1.260

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xC_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
105	21.58	5.53	1.26	4.27	26.90
107	21.27	5.45	1.26	4.19	26.90
108	21.12	5.41	1.26	4.15	**26.90**
109	20.97	5.37	1.26	4.11	26.90
111	20.68	5.30	1.26	4.04	26.89

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance
0.00	26.90	60.00	318.00	0.00

Drainage Area *Roof of Building B*

Area (Ha) 0.1410 — 15177 sqft
C = 1.00 — Restricted Flow Q_r (L/s)= 1.260 — 20 GPM

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xC_{100yr}xA (L/s)		Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
285	16.56	6.49		1.26	5.23	89.45
287	16.47	6.45		1.26	5.19	89.46
288	16.42	6.44		1.26	5.18	**89.46**
289	16.38	6.42		1.26	5.16	89.46
291	16.29	6.38		1.26	5.12	89.46

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
7.72	6.46	**111.70**

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance	100+20 Overflow	100+20 Required	100+20 Balance
0.00	89.46	90.00	318.00	0.00	0.00	111.70	0.00

Depth on Roof (m) 0.064

Drainage Area *Roof of Building B*

Area (Ha) 0.1410
C = 0.90 — Restricted Flow Q_r (L/s)= 1.260

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xC_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
150	16.36	5.77	1.26	4.51	40.61
152	16.19	5.71	1.26	4.45	40.61
153	16.11	5.68	1.26	4.42	**40.61**
154	16.03	5.65	1.26	4.39	40.61
156	15.87	5.60	1.26	4.34	40.60

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance
0.00	40.61	90.00	318.00	0.00

Drainage Area *Roof of Building C*

Area (Ha) 0.1463 — 15750 sqft
C = 1.00 — Restricted Flow Q_r (L/s)= 1.260 — 20 GPM

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xC_{100yr}xA (L/s)		Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
300	15.89	6.46		1.26	5.20	93.66
302	15.81	6.43		1.26	5.17	93.66
303	15.76	6.41		1.26	5.15	**93.66**
304	15.72	6.39		1.26	5.13	93.66
306	15.64	6.36		1.26	5.10	93.66

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
7.69	6.43	**116.97**

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance	100+20 Overflow	100+20 Required	100+20 Balance
0.00	93.66	94.00	318.00	0.00	0.00	116.97	0.00

Depth on Roof (m) 0.064

Drainage Area *Roof of Building C*

Area (Ha) 0.1463
C = 0.90 — Restricted Flow Q_r (L/s)= 1.260

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xC_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
155	15.95	5.84	1.26	4.58	42.57
157	15.79	5.78	1.26	4.52	42.57
158	15.71	5.75	1.26	4.49	**42.57**
159	15.63	5.72	1.26	4.46	42.57
161	15.48	5.67	1.26	4.41	42.56

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance
0.00	42.57	94.00	318.00	0.00

Drainage Area *Remainder of Cistern Catchment*

Area (Ha) 0.5903 — 0.98 Ha less Roof Storage Area
C = 0.98 — Restricted Flow Q_r (L/s)= 15.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xC_{100yr}xA (L/s)	Peak Flow + Roof Flows Q_{prof} (L/s)	Q_r (L/s)	Q_{prof}-Q_r (L/s)	Volume 100yr (m^3)
121	32.68	52.29	56.07	15.00	41.07	298.18
123	32.27	51.63	55.41	15.00	40.41	298.20
124	32.06	51.30	55.08	15.00	40.08	**298.20**
125	31.86	50.98	54.76	15.00	39.76	298.19
127	31.47	50.35	54.13	15.00	39.13	298.17

100Yr +20%

100YRQp 20% + Q_{rf} (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
65.34	50.34	**374.53**

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance	100+20 Overflow	100+20 Required	100+20 Balance
0.00	298.20	0.00	318.00	0.00	0.00	374.53	56.53

overflows tPRIV ROAD

Drainage Area *Remainder of Cistern Catchment*

Area (Ha) 0.5903
C = 0.78 — Restricted Flow Q_r (L/s)= 15.000

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xC_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
41	43.42	55.58	15.00	40.58	99.82
43	41.97	53.72	15.00	38.72	99.91
44	41.29	52.85	15.00	37.85	**99.92**
45	40.63	52.00	15.00	37.00	99.91
47	39.38	50.40	15.00	35.40	99.84

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance
0.00	99.92	0.00	318.00	0.00

Drainage Area *Private Road*

Area (Ha) 0.30 — ICD Restricted Flow Q_r (L/s)= 36.00
C = 0.90 — Effective Restricted Flow Q_r (L/s)= 18.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xC_{100yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
33	86.03	64.58	18.00	46.58	92.22
35	82.58	61.98	18.00	43.98	92.37
36	80.96	60.77	18.00	42.77	**92.39**
37	79.42	59.61	18.00	41.61	92.37
39	76.51	57.43	18.00	39.43	92.27

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
72.93	54.93	**118.64**

Storage (m^3)

Overflow	Required	Surface	Underground	Balance	100+20 Overflow	100+20 Required	100+20 Balance
0.00	92.39	77.61	32.63	0.00	56.53	175.17	64.93

overflows tOUT

Elevation of Ponded Water	Storage Volume from CAD
94.11	25.98
94.12	31.22
94.13	37.11
94.14	43.70
94.15	51.02
94.16	59.10
94.17	67.95
94.18	77.61

Volume for 100yr	92.39	Volume for 100+20	175.17
Underground	32.63	Underground	32.63
Remaining volume	59.76	Remaining volume	142.54
Elevation for 100yr	94.16	Elevation for 100+20	MAX (94.18)

Drainage Area *Private Road*

Area (Ha) 0.30 — ICD Restricted Flow Q_r (L/s)= 36.00
C = 0.72 — Effective Restricted Flow Q_r (L/s)= 18.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xC_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
15	83.56	50.17	18.00	32.17	28.96
17	77.61	46.60	18.00	28.60	29.17
18	74.97	45.02	18.00	27.02	**29.18**
19	72.53	43.55	18.00	25.55	29.13
21	68.13	40.91	18.00	22.91	28.87

Storage (m^3)

Overflow	Required	Surface	ndergroun	Balance
0.00	29.18	77.61	32.63	0.00

Volume for 5yr	29.18		
Underground	32.63		
Remaining volume	-3.45		
Elevation for 5yr	(NO PONDING)		

RUNOFF COEFFICIENT CALCULATION SHEET

RESTRICTED

A2	Area (m^2)	C
Softscape	629	0.20
Hardscape	1191	0.90
Total	1820	**0.66**

A3	Area (m^2)	C
Softscape	40	0.20
Hardscape	398	0.90
Total	438	**0.84**

A4	Area (m^2)	C
Softscape	92	0.20
Hardscape	668	0.90
Total	760	**0.82**

UNCONTROLLED

B1	Area (m^2)	C
Softscape	129	0.20
Hardscape	214	0.90
Total	343	**0.64**

B2	Area (m^2)	C
Softscape	25	0.20
Hardscape	85	0.90
Total	110	**0.74**

B3	Area (m^2)	C
Softscape	590	0.20
Hardscape	1066	0.90
Total	1656	**0.65**

B4	Area (m^2)	C
Softscape	46	0.20
Hardscape	184	0.90
Total	230	**0.76**

CISTERN

C1	Area (m^2)	C
Softscape	1710	0.20
Hardscape	8042	0.90
Total	9752	**0.78**

Total Restricted	Area (m^2)	C
A2	1820	0.66
A3	438	0.84
A4	760	0.82
Total	3018	**0.72**

Total Unrestricted	Area (m^2)	C
B1	343	0.64
B2	110	0.74
B3	1656	0.65
B4	230	0.76
Total	2339	**0.66**

Total Cistern	Area (m^2)	C
C1	9752	0.78
Total	9752	**0.78**

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

STORM SEWER DESIGN SHEET

Herongate Phase 5
CITY OF OTTAWA
Hazelview Investments

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.30	C= 0.61	C= 0.64	C= 0.67	C= 0.69	C= 0.82	C= 0.84	C= 0.85	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 IND	FIXED FLOW CUM	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) (%)
	C1	Bldg	MH104	CISTERN - RESTRICTED FLOW (PUMP)												10.00	0.11	10.11									15.00	15.00	15.00	100.88	9.50	300			1.00	1.383	85.88	85.13%
		MH104	MH103											0.00	0.00	10.11	1.85	11.96	76.37	103.59	121.43	177.52	0.00	0.00	0.00	0.00	0.00	15.00	15.00	59.83	90.87	300			0.35	0.820	44.83	74.93%
	A2	MH100	MH101					0.18						0.34	0.34	10.00	1.13	11.13	76.81	104.19	122.14	178.56	25.75	34.93	40.95	59.87	0.00	0.00	25.75	100.32	59.84	375			0.30	0.880	74.57	74.33%
	A3, A4	MH101	MH102							0.08	0.04			0.28	0.61	11.13	2.12	13.26	72.71	98.56	115.51	168.82	44.43	60.23	70.58	103.16	0.00	0.00	44.43	251.90	109.93	600			0.15	0.863	207.47	82.36%
		MH102	MH103											0.00	0.61	13.26	0.08	13.34	66.21	89.65	105.02	153.41	40.46	54.78	64.17	93.74	0.00	0.00	40.46	100.57	4.30	375			0.30	0.882	60.11	59.77%
	Future EXT-Ph 2	MH103	Ex MH											0.00	0.61	13.34	0.63	13.97	65.99	89.34	104.66	152.89	40.32	54.59	63.95	93.42	97.12	112.12	152.44	245.74	41.81	525			0.30	1.100	93.30	37.97%

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: SEL

Checked: JIM

Dwg. Reference: 135142-500

No.	Revision	Date
1.	Issued for Site Plan Application	2021-11-24
2.	Revised per City Comments	2022-05-27
3.	Revised per Client Comments	2022-08-10
4.	Revised per City Comments	2022-10-14
5.	Revised per City Comments	2023-01-19

File Reference: 135142.6.04
Date: 2023-01-19
Sheet No: 1 of 1

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
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PROJECT:	Heron Gate 5
DATE:	2023-01-19
FILE:	135142.6.04
REV #:	2
DESIGNED BY:	SEL

UNDERGROUND STORAGE CALCULATIONS - HERONGATE 5

Pipe Storage ***Private Road***

From	To	Length	Diameter	X-sec Area	Volume
CB6	MAIN	2.00	200	0.031	0.06
CB7	MAIN	2.80	200	0.031	0.09
MH101	MH102	109.93	525	0.216	23.80
CB3	MAIN	2.00	200	0.031	0.06
CB4	MAIN	2.80	200	0.031	0.09
CB1	MAIN	2.00	200	0.031	0.06
CB2	MAIN	2.80	200	0.031	0.09
				Total	24.25

Structure Storage ***Private Road***

	Base	Top	Height	diameter	X-sec Area	Volume
CB6	92.550	93.95	1.40	600	0.360	0.50
CB7	92.550	93.95	1.40	600	0.360	0.50
MH101	91.930	94.06	2.13	1200	1.131	2.41
CB5	92.600	94.00	1.40	600	0.360	0.50
CB4	92.600	94.00	1.40	600	0.360	0.50
CB1	92.700	94.10	1.40	600	0.360	0.50
CB2	92.700	94.10	1.40	600	0.360	0.50
MH102	91.675	94.28	2.61	1200	1.131	2.95
					Total	8.38

TOTAL PRIVATE ROAD	**32.63**

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400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
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PROJECT:	HERONGATE
DATE:	2023-02-01
FILE:	135142.6.04
REV #:	3
DESIGNED BY:	SEL
CHECKED BY:	JIM

ORIFICE SIZING

Orifice coefficients	
Cv =	0.60

							Theoretical		Recommended	
	Invert	Diameter	Centre ICD	Max. Pond Elevation	Hydraulic Slope	Target Flow	Orifice	Actual Flow	Orifice	Actual Flow
	(m)	(mm)	(m)	(m)	(m)	(l/s)	(m)	(l/s)	(m)	(l/s)
Area 1	91.858	375	92.046	94.18	2.135	36.00	0.0963	36.00	0.0963	36.00
						36.00				**36.00**

rational method coefficients will need to be reviewed at the design stage for each development block to confirm.

A runoff coefficient of 0.85 has been assumed for the Block 2, 3, 4, 5, 6, 7, 8, and 9 stormwater calculations to provide a conservative storage volume estimate. Actual runoff coefficients to be reviewed during detailed design for each individual block. A runoff coefficient of 0.40 has been applied to Block 10 for the community park.

5.3.1 Proposed Stormwater Management System – Phase I

The Phase I development includes the construction of Block 1. As indicated by the Site Servicing Report (***Block 1 SWM Report***), prepared by MMM Group and dated March 2017, the Block 1 development is proposed to be serviced via the existing 900 mm diameter storm sewer within the Heron Road right-of-way. Refer to the ***Block 1 SWM Report*** for further details. As noted by ***Table 15***, above, the allowable release rate from the Block 1 development is ***158.8 L/s***.

5.3.2 Proposed Stormwater Management System – Phase II

To meet the stormwater objectives the contemplated development may contain a combination of roof top flow attenuation along with surface and subsurface storage.

The contemplated Phase II development includes the construction of Block 2. It is contemplated that Block 2 will be serviced via the existing 450 mm diameter storm sewer within the Baycrest Drive right-of-way. Refer to ***Drawings/Figures*** for both the detailed calculations and drawing ***STM-2*** for a conceptual Phase II servicing layout.

Table 16, summarizes post-development flow rates. The following storage requirement estimate assumes that approximately 10% of the development area will be directed to the outlet without flow attenuation. These areas will be compensated for in areas with flow attenuation controls.

Table 16
Stormwater Flow Rate Summary – Phase II

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m^3)	(L/s)	(m^3)
Block 2	111.5	484.53	223.54	968.2

As summarized by ***Table 16,*** above, approximately ***968.2 m^3*** of storage will be required for Block 2 in order to meet the target release rate established in *Section 5.2.* Actual storage volumes will need to be confirmed at the detailed design stage based on a number of factors including grading constraints.

Appendix D

HERON GATE 5

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

KEYPLAN
N.T.S.

Sheet List Table	
Sheet Number	Sheet Title
--	Cover
C-REM	REMOVALS
C-001	GENERAL PLAN OF SERVICES
C-010	NOTES-LEGEND-CB DATA
C-200	GRADING PLAN
C-201	GRADING PLAN
C-400	SANITARY DRAINAGE AREA
C-500	STORM DRAINAGE AREA
C-600	PONDING PLAN
C-900	EROSION AND SEDIMENT CONTROL PLAN

HAZELVIEW INVESTMENTS

hazelview
INVESTMENTS

CONTRACT NO. 135142

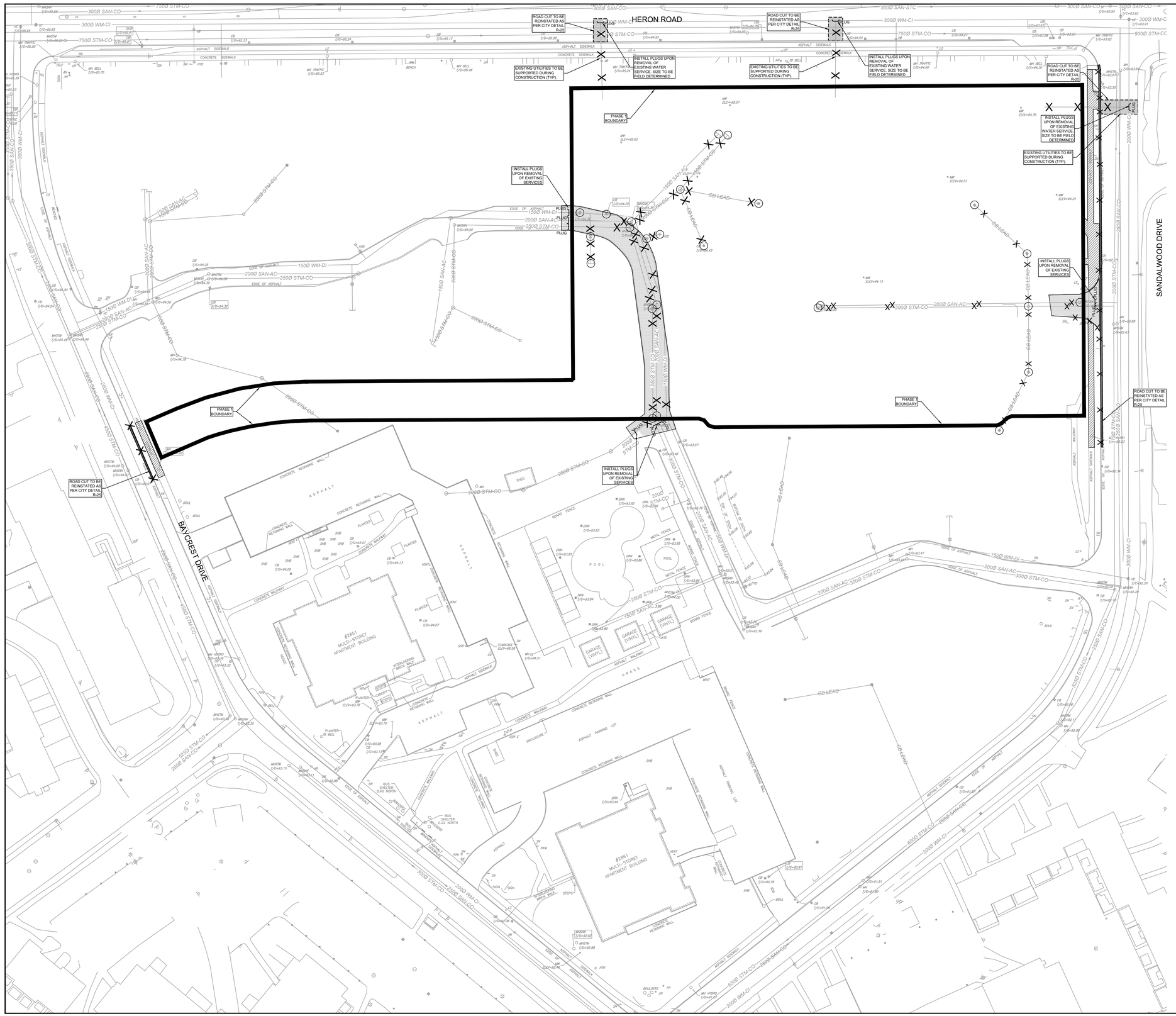
REVISED PER NEW SITE PLAN   2023-02-03

SCALE CHECK 1 in 10mm

File Location: J:\135142_Heron_Gat\7.0_Production\7.03_Design\04_Civil\Sheets\COVER.dwg   Last Saved: February 2, 2023, by ddore   Plotted: Friday, February 3, 2023 10:15:37 AM by Denis Dore

CITY FILE No. D07-12-21-0238

CITY PLAN No.18650



LEGEND (IF APPLICABLE)

AN	ANCHOR
BENCH	BENCH
BOUL	BOULDER
CB	CATCH BASIN
DCB	DOUBLE CB
CBMH	CB MANHOLE
DCBMH	DOUBLE CB MANHOLE
SICB	SIDE INLET CB
DRN	DRAIN
FP	FLAG POLE
GP	POLE GUYWIRE
GSR	GAS SERVICE REGULATOR
GV	GAS VALVE
HLS	HYDRO LIGHT STANDARD
HM	HYDRO METER
HTN	HYDRO TRANSFORMER
HW	HAND WELL
HYD	FIRE HYDRANT
JBX	JUNCTION BOX
LS	LIGHT STANDARD
MH	MAINTENANCE HOLE UNIDENTIFIED
MHB	MAINTENANCE HOLE BELL
MHF	MAINTENANCE HOLE FIBRE OPTIC
MHH	MAINTENANCE HOLE HYDRO
MHSA	MAINTENANCE HOLE SANITARY
MHST	MAINTENANCE HOLE STORM
MW	MONITORING WELL
PKM	PARKING METER
SIA	SIAMESE CONNECTION
SN	SIGN
TB BELL	TERMINAL BOX - BELL
TB CATV	TERMINAL BOX - CABLE
TCB	TRAFFIC CONTROL BOX
TPIT	TEST PIT
TSL	TRAFFIC SIGNAL LIGHT
UP	UTILITY POLE
VB	VALVE BOX
VC	VALVE CHAMBER
WV	WATER VALVE
	TREE STUMP
	TREE CONIFEROUS
	TREE DECIDUOUS

300Ø WM-CI ——— 150Ø WM-DI
WATERMAIN (CI Cast Iron - DI Duct Tile Iron)

150Ø STM-CO
STORM SEWER (CO Concrete)

300Ø SAN-STC
SANITARY SEWER (STC - AC Asbestos Concrete)

P P P P
UNDERGROUND HYDRO

T T T T
UNDERGROUND TELEPHONE

G G G G
GASMAIN

North

1:500 0 5 15 25m

CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

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
4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-31
6	REVISED PER CLIENT COMMENTS	2022-08-12
7	REVISED PER CITY COMMENTS	2022-10-26
8	REVISED PER NEW SITE PLAN	2023-02-03

SEE #10 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN

CONSULTANTS

SEAL

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT
Heron Gate 5

PROJECT NO: 135142

DRAWN BY:	CHECKED BY:
D.D./S.L.	D.C.
PROJECT MGR:	APPROVED BY:
J.I.M.	J.I.M.

SHEET TITLE
REMOVALS

SHEET NUMBER C-REM

ISSUE 8

SCALE CHECK: 10mm

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

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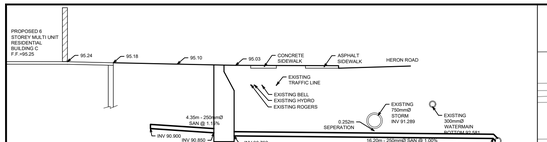


SECTION A-A
HERON ROAD SERVICE

ROAD CUT TO BE REINSTATED AS PER CITY DETAIL R-25

APPROXIMATE LOCATION OF EXISTING SANITARY SEWER

CONNECT TO EXISTING SANITARY SEWER

MH99A (1200Ø)
T/G 92.17
INV IN:90.412W
INV IN:90.600S
INV OUT:90.412E

EXISTING UTILITIES TO BE SUPPORTED DURING CONSTRUCTION (TYP).

SITE BENCHMARK
TOP OF SPINDLE
FIRE HYDRANT ELEV=95.46

16.23m
250mmØ
SAN @ 1.00%

MH100A (1200Ø)
T/G 97.11
INV IN:90.850S
INV OUT:90.762N

4.35m
250mmØ
SAN @ 1.15%

HERON ROAD

LIMIT OF CONSTRUCTION

SAN INV =90.900

BLK SAN

PROPOSED 6 STOREY MULTI UNIT RESIDENTIAL BUILDING C
F.F.=95.25
U.S.F.=89.73

PROPOSED 7 STOREY MULTI UNIT RESIDENTIAL BUILDING A
F.F.=93.80
U.S.F.=88.18

PROPOSED 7 STOREY MULTI UNIT RESIDENTIAL BUILDING B
F.F.=94.70
U.S.F.=89.13

OUTLINE OF BUILDING CISTERN
INTERNAL PLUMBING TO OUTLET AT STM SERVICE RELEASE RATE 15 L/S
100-YR UTILIZED STORAGE 299m³
AVAILABLE STORAGE 318m3

Concrete Steps

Intake

Exhaust

Loading

AD1 T/G 93.45
AD2 T/G 93.74
AD3 T/G 93.45
AD4 T/G 94.43
AD5 T/G 94.44
AD6 T/G 93.45
AD7 T/G 94.23

EDGE OF ASPHALT

LIMIT OF UNDERGROUND PARKING GARAGE

STM INV =92.500

9.50m
300mmØ
STM @ 1.00%

MH104 (1200Ø)
T/G 93.99
INV IN:92.400N
INV OUT:92.100W

MH101 (1200Ø)
T/G 94.06
INV IN:92.462E
INV IN:92.454NE
INV OUT:92.050W

MH103 (1200Ø)
T/G 93.58
INV IN:91.845E
INV IN:91.780E
INV OUT:91.675SW

T/G 94.10
CB1
T/G 94.10
(ICD = 36L/S)
CB2
T/G 94.10

90.87m - 300mmØ STM @ 0.35%
109.93m - 525mmØ ST

4.30m
375mmØ
STM @ 0.30%

MH102 (1200Ø)
T/G 94.28
INV IN:91.880E
INV OUT:91.858W

41.81m - 525mmØ STM @ 0.30%

CB5 T/G 94.00
CB4 T/G 94.
CB7 T/G 93.95
CB6 T/G 93.95

MATCH LINE

PRIVATE ACCESS ROAD

CONCRETE RETAINING WALL

ASPHALT

LIMT OF CONSTRUCTION

DEPRESED CURB AND SIDEWALK SITE ENTRANCE AS PER SC.7.1

WATERMAIN TO CROSS OVER PROPOSED 375Ø STM. C/W VERTICAL BENDS AND INSULATION PER CITY STD W22 AND W25.2

ROAD CUT TO BE REINSTATED AS PER CITY DETAIL

EXISTING UTILITIES TO BE SUPPORTED DURING CONSTRUCTION (TYP).

BAYCREST DRIVE

250Ø SAN-CO
200Ø WM-CI
450Ø STM-CO
300Ø WM-CI

CONNECT TO EXISTING WATERMAIN (CITY FORCES)

WATERMAIN TO CROSS OVER PROPOSED 375Ø STM. C/W VERTICAL BENDS AND INSULATION PER CITY STD W22 AND W25.2

TOP OF WM =90.500

200Ømm

200Ømm WATERMAIN

150Ømm RED

HYD-1 T/G 93.78

ROAD CUT TO BE REINSTATED AS PER CITY DETAIL R-25

CONNECT TO EXISTING WATERMAIN (CITY FORCES)

DEPRESED CURB AND SIDEWALK SITE ENTRANCE AS PER SC.7.1

ROAD CUT TO BE REINSTATED AS PER CITY DETAIL R-25

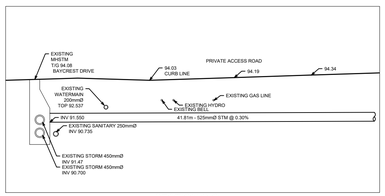
WATERMAIN TO CROSS OVER PROPOSED 375Ø STM. C/W VERTICAL BENDS AND INSULATION PER CITY STD W22 AND W25.2

LIMT OF CONSTRUCTION

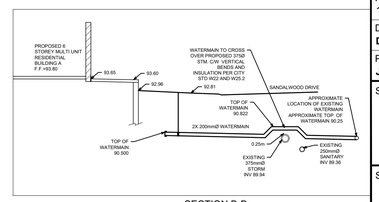
APPROXIMATE LOCATION OF EXISTING 200Ø WATERMAIN

SANDALWOOD DRIVE

300Ø STM-CO
2500 SAN-CO
2000 WM-CI



SECTION C-C
SANDALWOOD DRIVE SERVICE



SECTION B-B
SANDALWOOD DRIVE SERVICE

CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

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
4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-31
6	REVISED PER CLIENT COMMENTS	2022-08-12
7	REVISED PER CITY COMMENTS	2022-10-26
8	REVISED PER NEW SITE PLAN	2023-02-03

NOT FOR CONSTRUCTION

SEE C-010 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN

CONSULTANTS

1:300 0 3 9 15m

SEAL

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142	
DRAWN BY: D.D./S.L.	CHECKED BY: D.C.
PROJECT MGR: J.I.M.	APPROVED BY: J.I.M.

SHEET TITLE

GENERAL PLAN OF SERVICES

SHEET NUMBER	ISSUE
C-001	8

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

SCALE CHECK

File Location: J:\135142_Heron_Gat7 0_Production\7 03_Design\04_Civil\Sheets\C-001 GENERAL PLAN OF SERVICES.dwg Last Saved February 2, 2023, by ddore Plotted: Friday, February 3, 2023 10:16:28 AM by Denis Dore

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 (P30)
- STREET LIGHT DISCONNECT
- STREET LIGHT GROUNDING
- JOINT UTILITY TRENCH (H/B/T/G/S)
- HYDRO CABLE AND DUCTS (H)
- BELL CABLE (B)
- BELL DUCTS (BB)
- ROGERS CABLE (T)
- ROGERS DUCTS (TT)
- GAS (G)
- STREET LIGHT CABLE (S)
- UTILITY DROP LOCATIONS
- CONCRETE ENCASED DUCT BANK C/W NUMBER OF DUCTS (10-DUCTS, 6-H, 4-T)
- COMMUNITY MAILBOX (CMB)
- 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 (BUS)

SERVICING LEGEND

- MH118A — SANITARY MANHOLE
- 200mmØ SAN — SANITARY SEWER
- MH109 / MH118 — STORM MANHOLE
- 825mmØ STM — STORM SEWER - LESS THAN 900Ø
- 900mmØ STM — STORM SEWER - 900Ø AND GREATER
- 200Ø WATERMAIN — WATERMAIN
- CB100, T/G 104.10 — STREET CATCHBASIN C/W TOP OF GRADE
- CICB101, G/G 104.25 — CURB INLET CATCHBASIN C/W GUTTER GRADE
- DCB100, T/G 104.10 — DOUBLE CATCHBASIN C/W TOP OF GRADE
- DCICB101, G/G 104.25 — DITCH INLET CATCHBASIN C/W GUTTER GRADE
- CBMH100, T/G 103.59 — CATCHBASIN MANHOLE C/W TOP OF GRADE
- CBMH101, T/G 103.59 — DITCH INLET MANHOLE C/W TOP OF GRADE
- CB100, T/G 104.10 — ICD LOCATION
- RYCB, T/G 104.35 — REAR YARD CATCHBASIN IN ROAD CONNECTING STRUCTURE C/W SOLID GRATE
- AD4, T/G 94.43 — AREA DRAIN OVER UNDERGROUND PARKING LEVEL
- T/G 104.35, INV 103.35 — REAR YARD "TEE" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT
- T/G 104.50, INV 103.50 — REAR YARD "END" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT
- T/G 104.35, INV 103.35 — REAR YARD "CUSTOM ANGLED " CATCHBASIN (450Ø) C/W TOP OF GRATE AND INVERT OUT
- T/G 104.35, INV 103.35 — REAR YARD "THREE WAY" CATCHBASIN (450Ø) C/W TOP OF GRATE AND INVERT OUT
- 300mmØ CSP — PERFORATED REAR YARD SUBDRAIN
- CSP CULVERT C/W DIAMETER
- V&VB — VALVE AND VALVE BOX
- V&VC — VALVE AND VALVE CHAMBER
- HYD, 104.35 — FIRE HYDRANT C/W BOTTOM OF FLANGE ELEVATION
- 200Ø WM — RED — 150Ø WM — WATERMAIN REDUCER
- 2 VBENDS — VERTICAL BEND LOCATION
- SINGLE SERVICE LOCATION
- DOUBLE SERVICE LOCATION
- BH 12, 102.00 — INFERRED BEDROCK (SEE GEOTECHNICAL REPORT)
- HGL, 101.79 — 100 YEAR STORM HYDRAULIC GRADE LINE AT MANHOLE
- S/T HGL, 101.79 — STRESS TEST STORM HYDRAULIC GRADE LINE AT MANHOLE
- 106, 102.40 — UNDERSIDE OF FOOTING ELEVATION (WITH LOT #)
- CLAY SEAL IN SEWER / WATERMAIN TRENCH

GRADING LEGEND

- PROPOSED SWALE C/W FLOW DIRECTION
- 0.5% — PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
- 1.0% — SLOPE C/W FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE
- 104.62 — PROPOSED SPOT GRADE
- x104.40 (SI) — PROPOSED SWALE GRADE
- x104.50 (SWP) — PROPOSED SWALE HIGH POINT GRADE
- 104.60 / 103.59 — LOT CORNER GRADE C/W EXISTING GRADE
- 86.45 EX — TIE INTO EXISTING GRADE
- 96.79 — FULL STATIC PONDING GRADE
- 103.50 — RETAINING WALL C/W TOP OF WALL AND GRASS GRADE
- TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
- PRESSURE REDUCING VALVE
- F.F.E. — FINISHED FLOOR ELEVATION
- 2R — NUMBER OF ADDITIONAL RISERS
- F — F — NOISE FENCE LOCATION
- F — F — NOISE FENCE GATE

NOTES :

1. ALL MATERIALS AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF OTTAWA STANDARD DRAWINGS & SPECIFICATIONS OR OPSD/OPSS IF CITY DRAWINGS AND SPECIFICATIONS DO NOT APPLY.
2. 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 SHOW ON THESE DRAWINGS.
3. FOR GEOTECHNICAL INFORMATION REFER TO GEOTECHNICAL REPORT
4. 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. SITE BENCHMARK ELEVATION 95.46m ON TOP OF HYDRANT SPINDLE ON SOUTH SIDE OF HERON ROAD APPROXIMAETLY 65m WEST OF THE C/L OF SANDLEWOOD DRIVE.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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).
10. 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.
11. ALL CONNECTIONS TO EXISTING WATERMAINS ARE TO BE COMPLETED BY CITY FORCES. CONTRACTOR IS TO EXCAVATE, BACKFILL, COMPACT AND REINSTATE.
13. 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.
14. ALL LEADS FOR STREET CB's TO AND CICB's CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 2% SLOPE UNLESS NOTED OTHERWISE. ALL LEADS FOR RYCB's CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 1% SLOPE UNLESS NOTED OTHERWISE.
15. 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).
16. THESE DRAWINGS ARE NOT TO BE SCALED OR USED FOR LAYOUT PURPOSES.
17. 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.
18. 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"
19. 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. TRANSPO, 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

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

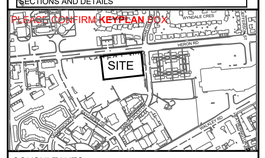
IBI Group Professional Services (Canada) Inc.
is a member of the IBI Group of companies

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2021-12-15
2	RE-ISSUED FOR COORDINATION	2021-12-22
3	ISSUED FOR SPA	2022-12-23
4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-31
6	REVISED PER CLIENT COMMENTS	2022-08-12
7	REVISED PER CITY COMMENTS	2022-10-26
8	REVISED PER NEW SITE PLAN	2023-02-03

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

PLEASE CONFIRM KEYPLAN BOX



CONSULTANTS

SEAL

hazelview INVESTMENTS

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

PROJECT

Heron Gate 5

PROJECT NO: 135142

DRAWN BY:	CHECKED BY:
D.D./S.L.	**D.C.**
PROJECT MGR: **J.I.M.**	APPROVED BY: **J.I.M.**

SHEET TITLE

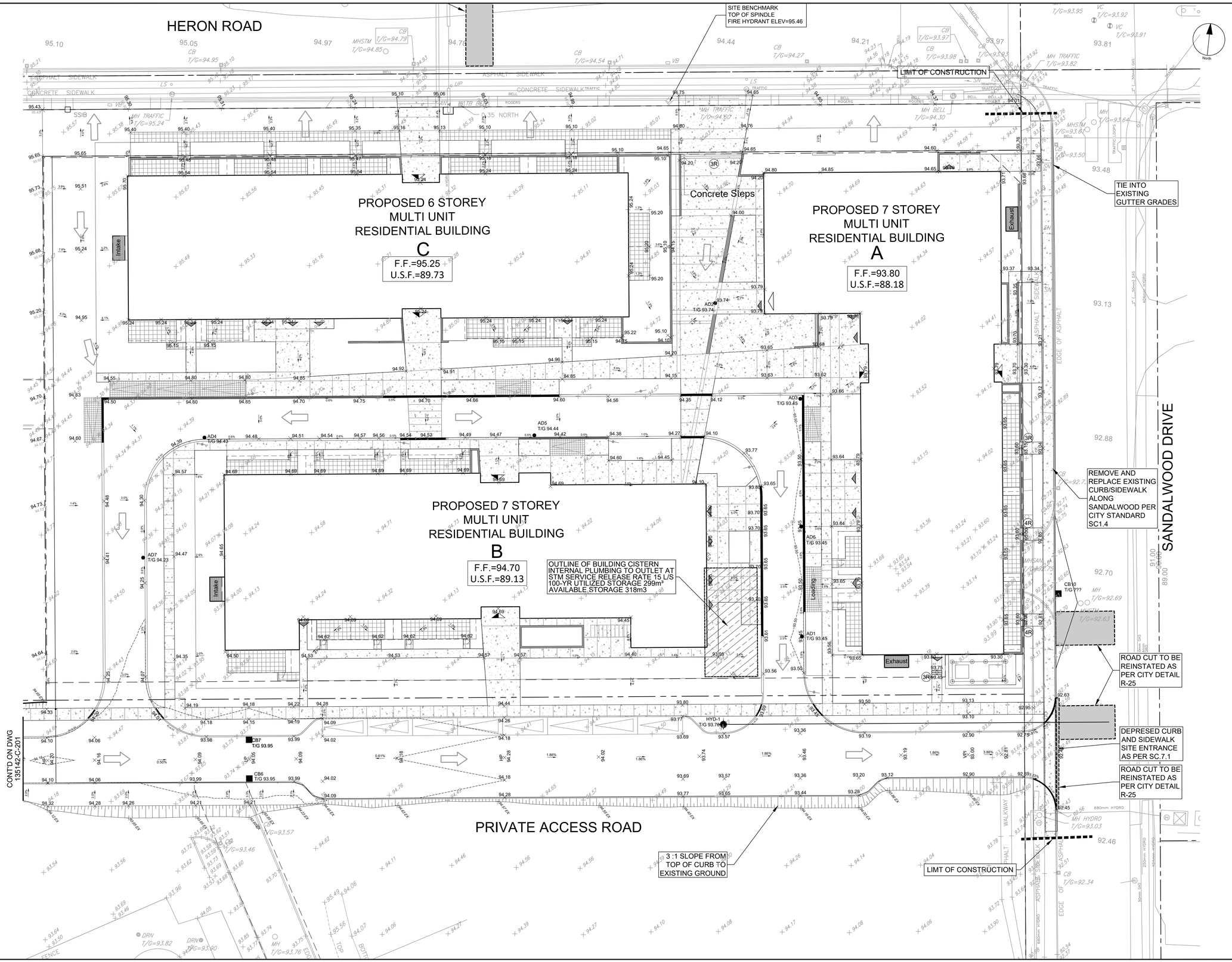
GENERAL NOTES, LEGEND AND CB DATA TABLE

SHEET NUMBER	ISSUE
C-010	8

SCALE CHECK

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650



CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

ISSUES

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8	REVISED PER NEW SITE PLAN	2023-02-03

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

KEY PLAN

CONSULTANTS

1:250 0 2.5 7.5 12.5m

SEAL

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142	
DRAWN BY: D.D./S.L.	CHECKED BY: D.C.
PROJECT MGR: J.I.M.	APPROVED BY: J.I.M.

SHEET TITLE

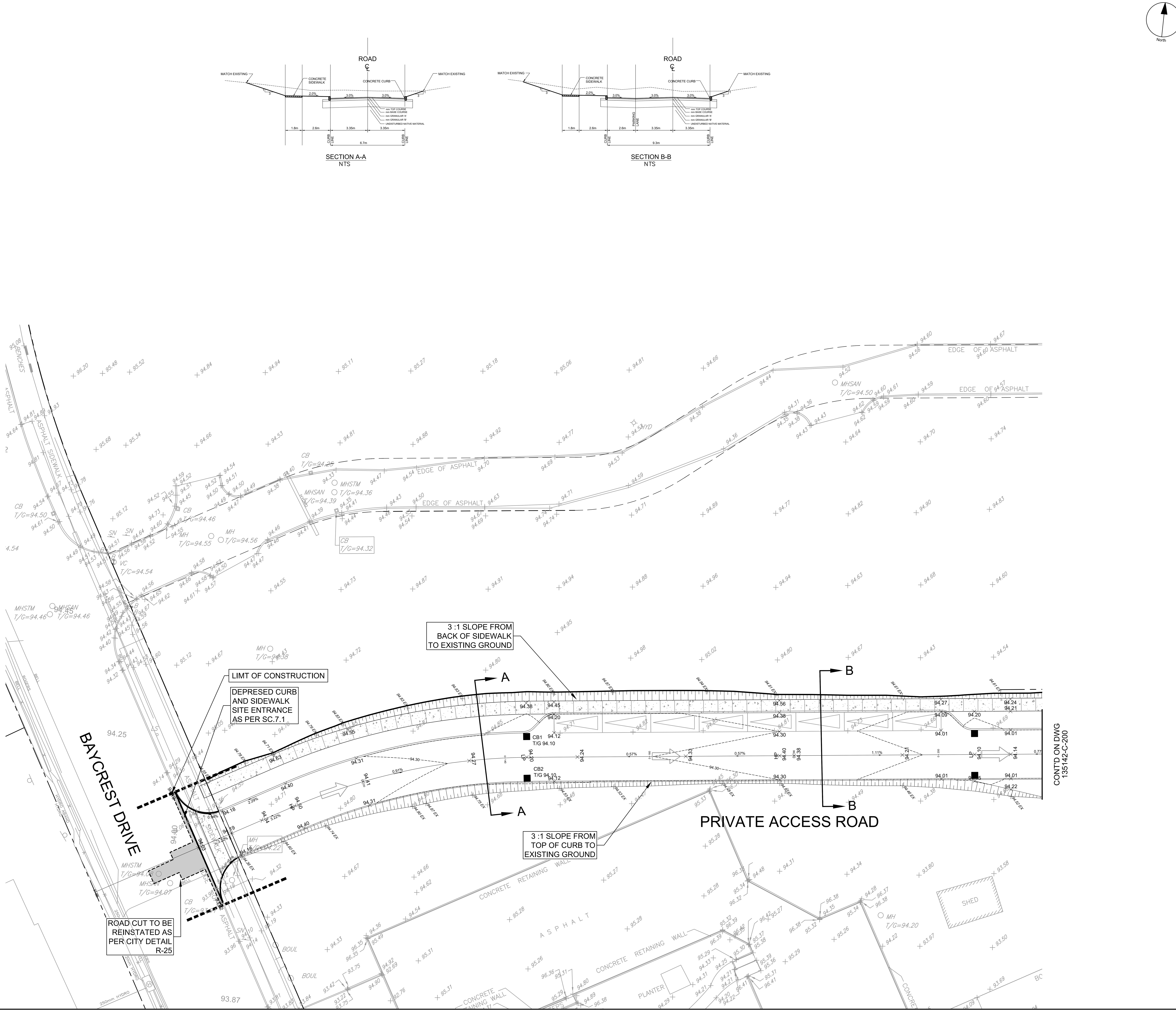
GRADING PLAN

SHEET NUMBER	ISSUE
C-200	8

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

File Location: J:\135142_Heron_Gat\7.0_Production\7.03_Design\04_Civil\Sheets\C-200 GRADING PLAN.dwg Last Saved: February 2, 2023, by ddore Plotted: Friday, February 3, 2023 10:17:16 AM by Denis Dore



CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

ISSUES

No.	DESCRIPTION	DATE
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NOT FOR CONSTRUCTION

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

KEY PLAN

SITE

CONSULTANTS

1:250 0 2.5 7.5 12.5m

SEAL

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2023/02/03
PROVINCE OF ONTARIO

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142	
DRAWN BY: D.D./S.L.	CHECKED BY: D.C.
PROJECT MGR: J.I.M.	APPROVED BY: J.I.M.

SHEET TITLE

GRADING PLAN

SHEET NUMBER	ISSUE
C-201	8

File Location: J:\135142_Heron_Gat\7.0_Production\7.03_Design\04_Civil\Sheets\C-201 GRADING PLAN.dwg Last Saved: August 12, 2022, by Eherrie Plotted: Friday, February 3, 2023 10:17:52 AM by Denis Dore

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

HERON ROAD

PER CITY DETAIL R-25

SITE BENCHMARK
TOP OF SPINDLE
FIRE HYDRANT ELEV=95.46

LIMIT OF CONSTRUCTION

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
C
F.F.=95.25
U.S.F.=89.73

PROPOSED 7 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
A
F.F.=93.80
U.S.F.=88.18

PROPOSED 7 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
B
F.F.=94.70
U.S.F.=89.13

SAN-1
1.51 549.0

Concrete Steps

SANDALWOOD DRIVE

ROAD CUT TO BE REINSTATED AS PER CITY DETAIL R-25

DEPRESED CURB AND SIDEWALK SITE ENTRANCE AS PER SC.7.1

LIMIT OF CONSTRUCTION

BAYCREST DRIVE

PRIVATE ACCESS ROAD

PRIVATE ACCESS ROAD

#2851
MULTI-STOREY
APARTMENT BUILDING

POOL

SHED

GARAGE (VINYL)

ASPHALT SIDEWALK

GRASS

CONCRETE RETAINING WALL

BOARD FENCE

METAL FENCE

EDGE OF ASPHALT

CONCRETE SIDEWALK

CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

ISSUES

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8	REVISED PER NEW SITE PLAN	2023-02-03

SEE C-010 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN

CONSULTANTS

1:400 0 4 12 20m

SEAL

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142

DRAWN BY:	CHECKED BY:
D.D./S.L.	D.C.
PROJECT MGR:	APPROVED BY:
J.I.M.	J.I.M.

SHEET TITLE

SANITARY DRAINAGE AREA

SHEET NUMBER	ISSUE
C-400	8

SCALE CHECK

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

File Location: J:\135142_Heron_Gate\7.0_Production\7.03_Design\04_Civil\Sheets\C-400 SANITARY DRAINAGE AREA.dwg Last Saved: August 12, 2022, by Etienne Plotted: Friday, February 3, 2023 10:18:13 AM by Denis Dore

North

HERON ROAD

SITE BENCHMARK
TOP OF SPINDLE
FIRE HYDRANT ELEV=95.46

LIMIT OF CONSTRUCTION

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
C
F.F.=95.25
U.S.F.=89.73

C1
0.98|0.77

PROPOSED 7 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
A
F.F.=93.80
U.S.F.=88.18

R1
0.03|0.64

Concrete Steps

PROPOSED 7 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
B
F.F.=94.70
U.S.F.=89.13

OUTLINE OF BUILDING CISTERN
INTERNAL PLUMBING TO OUTLET AT
STM SERVICE RELEASE RATE 15 L/S
100-YR UTILIZED STORAGE 299m³
AVAILABLE STORAGE 318m3

SANDALWOOD DRIVE

ROAD CUT TO BE
REINSTATED AS
PER CITY DETAIL
R-25

DEPRESED CURB
AND SIDEWALK
SITE ENTRANCE
AS PER SC.7.1

EXT-Ph2
1.16|0.85

A4
0.08|0.82

A3
0.04|0.84

A2
0.18|0.67

B3
0.17|0.65

B2
0.01|0.74

PRIVATE ACCESS ROAD

PRIVATE ACCESS ROAD

#2851
MULTI-STOREY
APARTMENT BUILDING

POOL

GARAGE (VINYL)

ASPHALT WALKWAY

GRASS

BOARD FENCE

METAL FENCE

CONCRETE RETAINING WALL

CONCRETE WALKWAY

PLANTER

SHED

STAIRCASE ELEV=96.58

EDGE OF ASPHALT

DITCH

BOTTOM OF WATER

INTERLOCKING BRICK WALKWAY

CLIENT

HAZELVIEW
INVESTMENTS

1133 Younge St. 4th Floor, Toronto On,
M4T 1W1

ISSUES

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8	REVISED PER NEW SITE PLAN	2023-02-03

SEE C-010 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN

CONSULTANTS

1:400 0 4 8 12 20m

SEAL

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142

DRAWN BY:	CHECKED BY:
D.D./S.L.	D.C.
PROJECT MGR:	APPROVED BY:
J.I.M.	J.I.M.

SHEET TITLE

STORM DRAINAGE AREA

SHEET NUMBER C-500

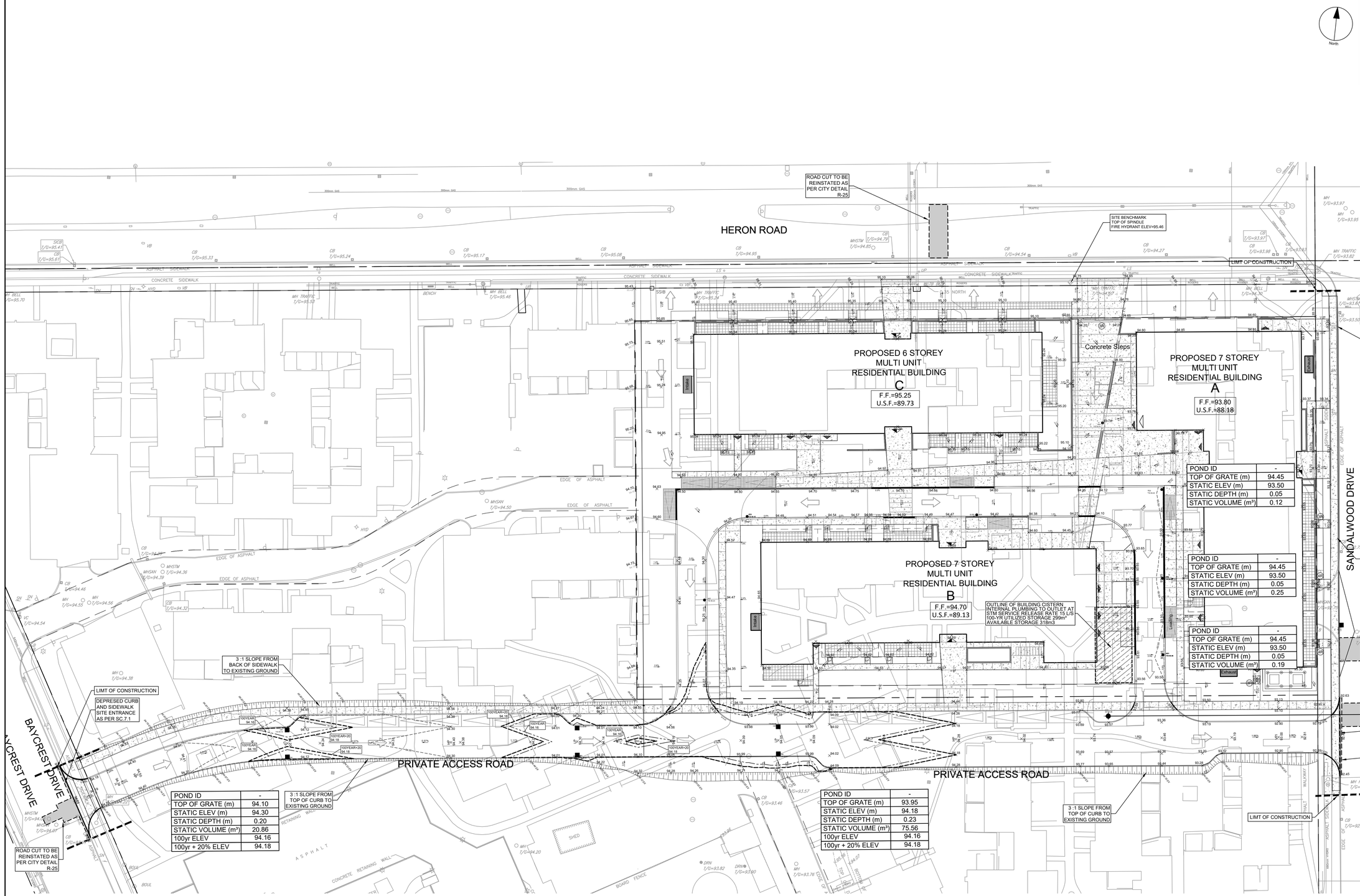
ISSUE 8

SCALE CHECK

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

File Location: J:\135142_Heron_Gat\7.0_Production\7.03_Design\04_Civil\Sheets\C-500 STORM DRAINAGE AREA.dwg Last Saved: February 3, 2023 by ddore Plotted: Friday, February 3, 2023 10:18:34 AM by Denis Dore



POND ID	-
TOP OF GRATE (m)	94.45
STATIC ELEV (m)	93.50
STATIC DEPTH (m)	0.05
STATIC VOLUME (m³)	0.12

POND ID	-
TOP OF GRATE (m)	94.45
STATIC ELEV (m)	93.50
STATIC DEPTH (m)	0.05
STATIC VOLUME (m³)	0.25

POND ID	-
TOP OF GRATE (m)	94.45
STATIC ELEV (m)	93.50
STATIC DEPTH (m)	0.05
STATIC VOLUME (m³)	0.19

POND ID	-
TOP OF GRATE (m)	94.10
STATIC ELEV (m)	94.30
STATIC DEPTH (m)	0.20
STATIC VOLUME (m³)	20.86
100yr ELEV	94.16
100yr + 20% ELEV	94.18

POND ID	-
TOP OF GRATE (m)	93.95
STATIC ELEV (m)	94.18
STATIC DEPTH (m)	0.23
STATIC VOLUME (m³)	75.56
100yr ELEV	94.16
100yr + 20% ELEV	94.18

CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2021-12-15
2	RE-ISSUED FOR COORDINATION	2021-12-23
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7	REVISED PER CITY COMMENTS	2022-10-26
8	REVISED PER NEW SITE PLAN	2023-02-03

CONSULTANTS

SEAL

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2023/02/03
PROVINCE OF ONTARIO

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142

DRAWN BY:	CHECKED BY:
D.D./S.L.	D.C.
PROJECT MGR:	APPROVED BY:
J.I.M.	J.I.M.

SHEET TITLE

PONDING PLAN

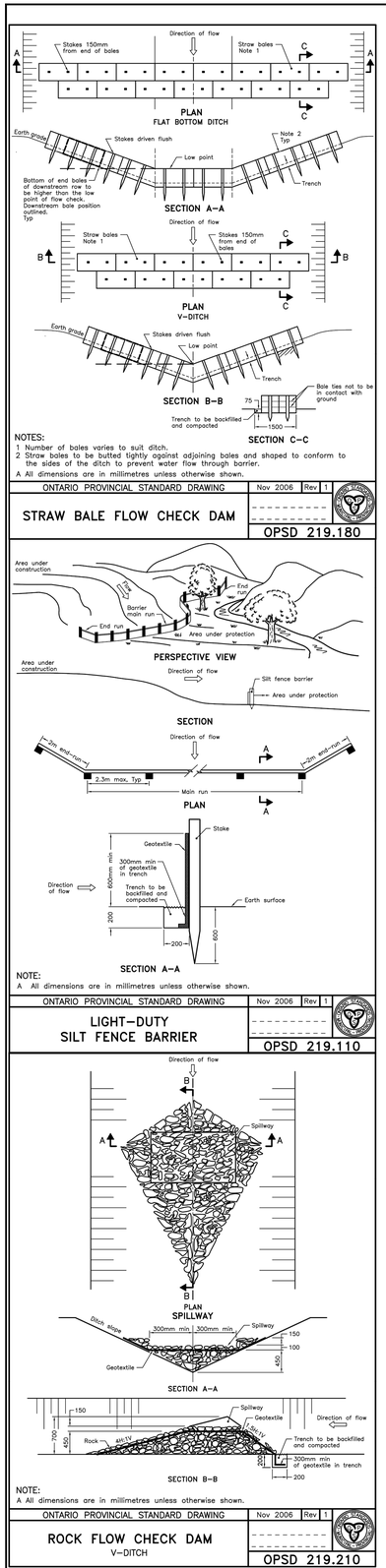
SHEET NUMBER	ISSUE
C-600	8

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

SCALE CHECK

File Location: J:\135142_Heron_Gat7.0_Production\7.03_Design\04_Civil\Sheets\C-600 PONDING PLAN.dwg Last Saved: January 23, 2023 by stefan.geisser Plotted: Friday, February 3, 2023 10:19:00 AM by Denis Done



NOTES:
1 Number of bales varies to suit ditch.
2 Straw bales to be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev	1
STRAW BALE FLOW CHECK DAM			
OPSD 219.180			

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			

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

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev	1
ROCK FLOW CHECK DAM V–DITCH			
OPSD 219.210			

NOTES:

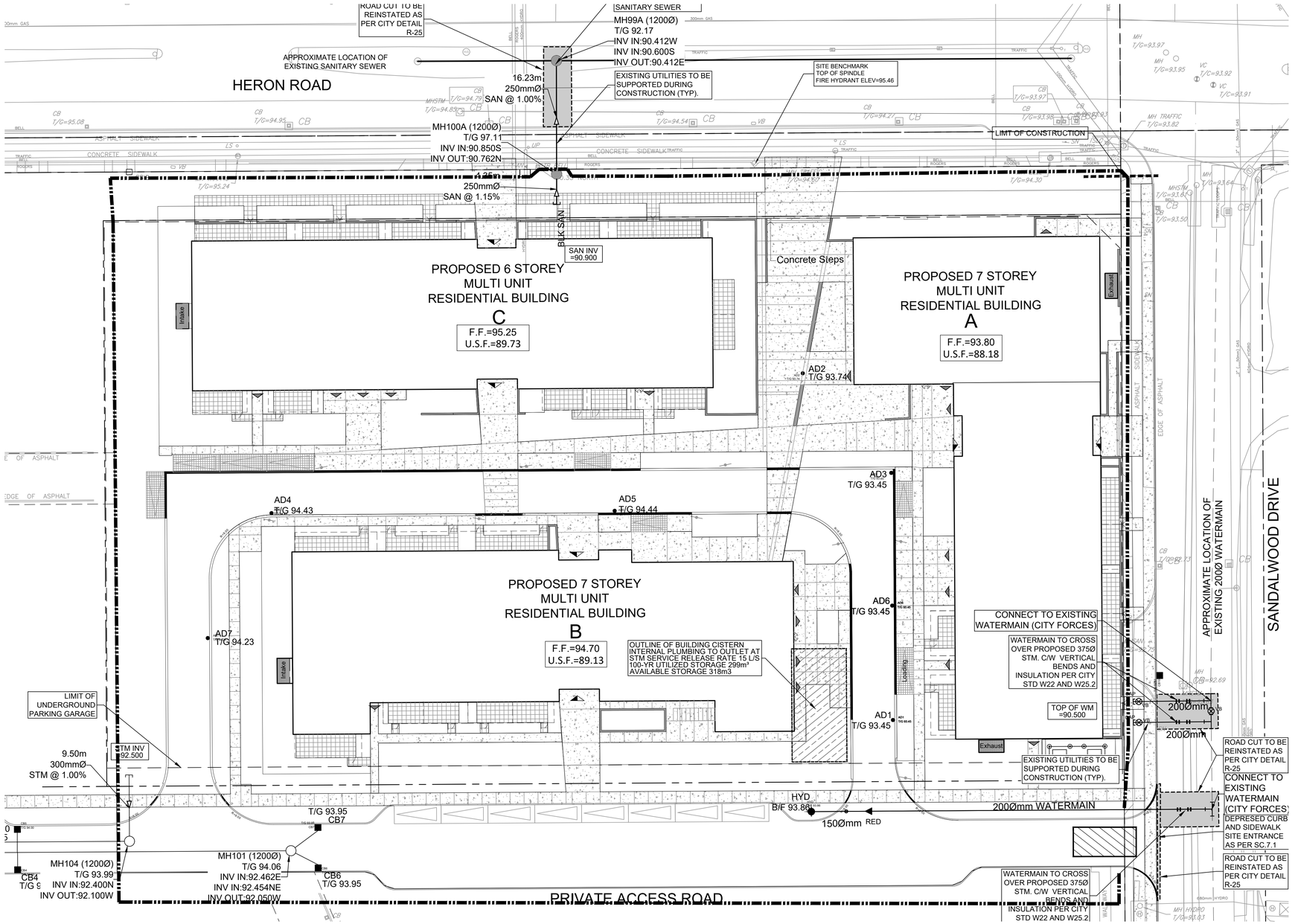
THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY,

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.
6. WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
7. 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
- CB — SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH (7.5 × 15.0)

North



1:300 (0, 3, 9, 15m)

CLIENT

HAZELVIEW INVESTMENTS

1133 Younge St. 4th Floor, Toronto On, M4T 1W1

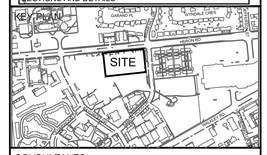
IBI Group Professional Services (Canada) Inc.
is a member of the IBI Group of companies

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
4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-31
6	REVISED PER CLIENT COMMENTS	2022-08-12
7	REVISED PER CITY COMMENTS	2022-10-26
8	REVISED PER NEW SITE PLAN	2023-02-03

SEE 910 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN



CONSULTANTS

SEAL

hazelview INVESTMENTS

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

PROJECT NO: 135142	
DRAWN BY: D.D./S.L.	CHECKED BY: D.C.
PROJECT MGR: J.I.M.	APPROVED BY: J.I.M.

SHEET TITLE

EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER	ISSUE
C-900	8

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

Appendix E

THE MITCHELL PARTNERSHIP INC.
CONSULTING ENGINEERS

285 YORKLAND BOULEVARD
TORONTO, ON CANADA M2J 1S5
E tmp@tmptoronto.com
P 416-499-8000

tmptoronto.com

October 9, 2022

IBI GROUP
Suite 400, 333 Preston Street
Ottawa ON K1S 5N4

ATTN: DOUG CAVE

RE: HERON GATE – FUTURE SANITARY DRAINAGE

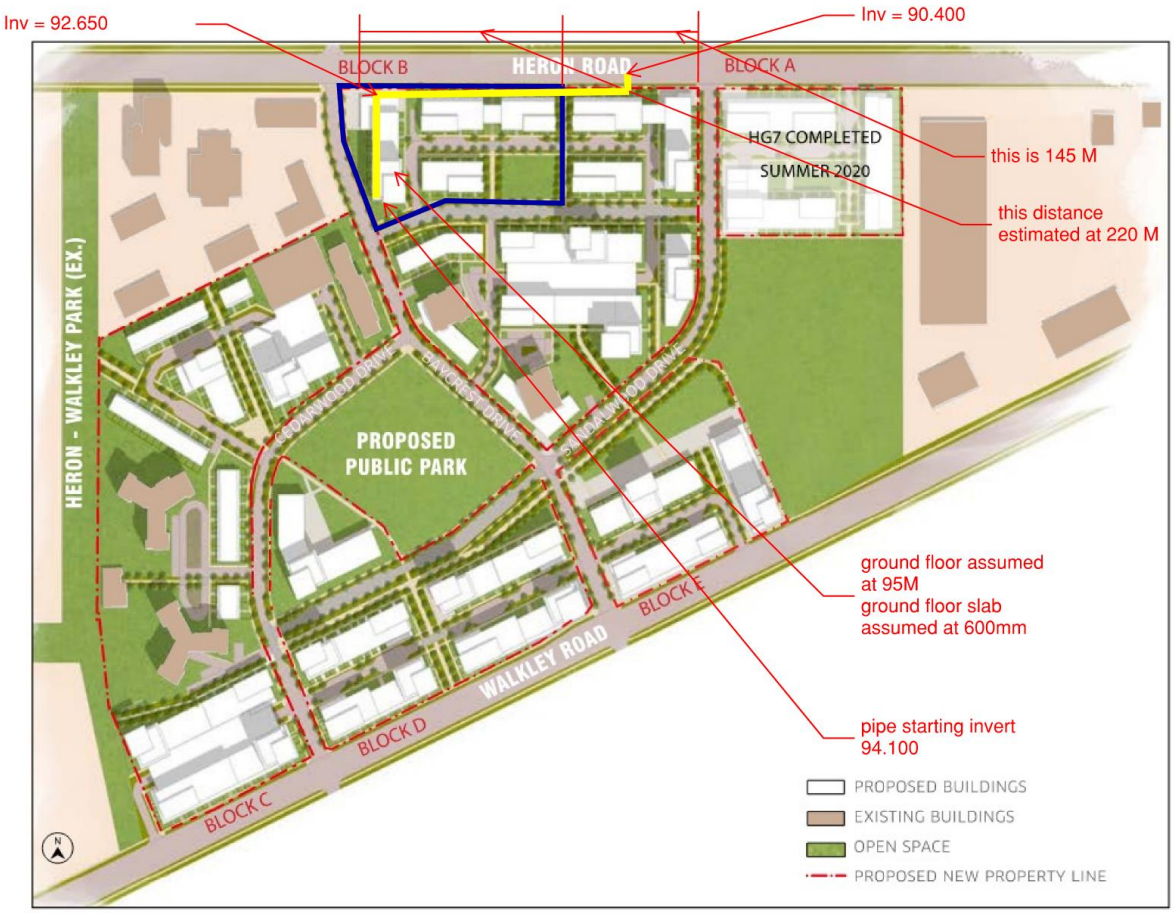
TMP FILE NO. 21-1060-000

Dear Doug,

As requested we are pleased to provide an opinion on the viability of connecting future sanitary drainage to the proposed connection for this phase of construction. Note that we are not involved with the design of this future construction and there is no structural engineer engaged so we have made some assumptions.

The sketch below has a proposed sanitary drain location shown in yellow. The sketch shows what we anticipate to be the longest sanitary pipe run going north to the future foundation wall and east to the sanitary drain connection being provided for the current project.

IBI has given a ground floor elevation for the future building of 95 Meters. We made an assumption that the ground floor slab will be 300 mm thick. Based on that we estimate that the best possible case scenario has a sanitary pipe elevation of 90.4 by the time it gets to the outgoing sanitary location. That is half of a meter lower than the capped pipe you provided. We also have not accounted for any deep beams anywhere along the internal pipe run. We would expect that there will be structural interferences along that route. There will be internal roads and significant structure will be required to support them. We would expect a realistic pipe elevation in the range of 89.5 Meters at the end of the yellow run shown below.



In our opinion when the next phase of construction is designed a second sanitary connection to the main in Heron Road will be required. There is no chance whatsoever that future buildings can connect to the sanitary drain being installed under this project.

Yours very truly,

THE MITCHELL PARTNERSHIP INC.

Reg Callaghan, P.Eng.
Partner

Samantha Labadie

From: Reg Callaghan <rcallaghan@tmptoronto.com>
Sent: Friday, October 14, 2022 11:55 AM
To: Samantha Labadie; Doug Cave; 'Melissa Du Plessis'
Cc: Damien Boylan; Harseerat Khaira
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Thank you Samantha. We can specify a drain that restricts to 5 GPM. The caution I would put out there is that the structural design has not started. As mechanical engineers we don't specify the number of drains. The structural design dictates roof low points. That in turn dictates the number of drains. It's a bit more complicated than that in that there are rules we need to ensure are followed but in its most basic form that's how it works. If weeks from now when the roof structure and slope is designed there are more drains then we will have more flow.

I say we keep the footprint and size of the cistern as is. We don't lower the floor. Based on that the cistern volume you rely on is this and just say the roof stores the difference

Cistern

The cistern volume is 448,000 litres (refer to our attached drawing M2-101). The usable volume though is less than that. Water can only be stored up to the level of the lowest pipe entering the cistern. The elevation of that pipe is 2.5 meters above the floor and thus the usable volume is 318,000 litres. The cistern is pumped out at a rate of 45 l/s.

Our calculation of the total number of drains we see on the preliminary plans was this: (again may end up being more in the end)

Roof Drains

The smallest output control flow roof drain produces 5 gallons per minute. We will specify that drain (weir cut sheet attached). There are a total of 23 roof drains in the current design therefore the maximum rooftop outflow is x 115 GPM (8.7 l/s). That water all is directed to the cistern. No roof retention water goes directly to storm.

From: Samantha Labadie <samantha.labadie@ibigroup.com>
Sent: Friday, October 14, 2022 11:29 AM
To: Reg Callaghan <rcallaghan@tmptoronto.com>; Doug Cave <doug.cave@ibigroup.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Hi Reg,

I've recalculated with your roof size and flow rate and determined the maximum volume each roof would need to store to retain a 100yr storm. Can you confirm the following:

- Roof A can hold 60m3 (5.9cm or 2.32” avg depth)
- Roof B can hold 90m3 (6.4cm or 2.52” avg depth)
- Roof C can hold 94m3 (6.4cm or 2.52” avg depth)

If each roof can store the above volumes, then the restricted flowrate of 20GPM per roof works and the cistern would only need to hold 260m3.

If a roof cannot hold that volume, we can increase the GPM to reduce it.

Thanks,

Sam

From: Reg Callaghan <rcallaghan@tmptoronto.com>
Sent: Thursday, October 13, 2022 1:25 PM
To: Doug Cave <doug.cave@ibigroup.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

The thing is, we don’t know how to calculate storage. I can say this. The drains can back up water to as much as 5” from the low points. That roughly equates to an average of 2.5” across the roof. They will only do that in heavy rain. In light rain they really don’t hold anything back.

Total roof area = 42,000 SF.
2.5” = .2 Ft.
therefore volume stored is 8,390 cubic feet = 52,300 Imp Gal = 692 Cubic Meters.

That happens only on the heaviest possible storm. It exists instantaneously and as soon as rain slows we store less.

I have no idea idea what all of this means and how it does or doesn’t affect the cistern. We do not calculate storage of anything and I can’t give you a number.

If control flow helps you we can do it. If not we can go with conventional drains (meaning zero rooftop storage) and drop the bottom of the tank below the floor. You tell me what you want.

From: Doug Cave <doug.cave@ibigroup.com>
Sent: Thursday, October 13, 2022 1:01 PM
To: Reg Callaghan <rcallaghan@tmptoronto.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Thank you Reg,

How much storage will there be on the roofs? As per your email on October 10th the cistern can accommodate 318 cu.m. of storage therefore the roofs will need to accommodate at least 134 cu.m. to get to the total of 452 cu.m. required.

Doug Cave C.E.T.
(he/him/his)

Sr. Project Manager
mob 613 402 9677

Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64062

From: Reg Callaghan <rcallaghan@tmptoronto.com>
Sent: Thursday, October 13, 2022 12:41 PM
To: Doug Cave <doug.cave@ibigroup.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

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Here is what we got on the roof issue

Building A:
Roof Area: 11,026sq.ft.
Rainfall Ottawa: 384GPM
Roof Drains: 4 @ 5GPM each = 20GPM
Drain Down Time: 19.25hours.

Building B:
Roof Area: 15,177sq.ft.
Rainfall Ottawa: 528GPM
Roof Drains: 4 @ 5GPM each = 20GPM
Drain Down Time: 26.4hours

Building C:
Roof Area: 15,750sq.ft.
Rainfall Ottawa: 548GPM
Roof Drains: 4 @ 5GPM each = 20GPM
Drain Down Time: 27.4hours

From: Doug Cave <doug.cave@ibigroup.com>
Sent: Thursday, October 13, 2022 11:43 AM
To: Reg Callaghan <rcallaghan@tmptoronto.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Just to confirm the total storage that is required from the cistern/roof is 452 cu.m.

Doug Cave C.E.T.
(he/him/his)

Sr. Project Manager
mob 613 402 9677
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64062

From: Reg Callaghan <rcallaghan@tmptoronto.com>
Sent: Wednesday, October 12, 2022 8:18 PM
To: Doug Cave <doug.cave@ibigroup.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: Re: Heron Gate 5-1 - Coordination Meeting

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Sorry, the relief we will detail as well

Reg Callaghan P Eng
Partner
The Mitchell Partnership
416 578 0449

From: Reg Callaghan <rcallaghan@tmptoronto.com>
Sent: Wednesday, October 12, 2022 8:11:11 PM
To: Doug Cave <doug.cave@ibigroup.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: Re: Heron Gate 5-1 - Coordination Meeting

Typically Melissa is showing where pipes are. I think we keep doing that and she updates her plan. We submit no drawings as part of this.

We reverse engineered a control flow system to send the lowest flow possible to the cistern in an attempt to make it as small as possible so that we can hopefully not have to excavate. Normally all drains into a cistern are free flow.

What we can do is say what the drain down time will be with those drains at the flow I already stated. That's all.

I have no idea what that means for your overall storage calculations or how much roof storage credit there might be. If it doesn't help downsize the cistern then we will revert back to the normal free flow design.

Reg Callaghan P Eng
Partner
The Mitchell Partnership
416 578 0449

From: Doug Cave <doug.cave@ibigroup.com>
Sent: Wednesday, October 12, 2022 4:18 PM
To: Reg Callaghan <rcallaghan@tmptoronto.com>; 'Melissa Du Plessis' <mduplessis@figurr.ca>

Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Hi Reg,

Can you please tweak the letter you wrote with the mark-ups I provided and re-send.

The still require the following items:

- The location and details for the emergency overflow for the cistern.
- The details and storage calculations for the roof top storage.

Thank you

Doug

Doug Cave C.E.T.
(he/him/his)

Sr. Project Manager
mob 613 402 9677
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64062

From: Reg Callaghan <rcallaghan@tmptoronto.com>
Sent: Tuesday, October 11, 2022 5:27 PM
To: 'Melissa Du Plessis' <mduplessis@figurr.ca>; Doug Cave <doug.cave@ibigroup.com>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

*** Exercise caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***
Please find attached the final letter. I kept the same date for consistency.

Can you please forward the SWM report? I can't find a copy although I'm sure I have seen it.

From: Reg Callaghan
Sent: Monday, October 10, 2022 8:14 AM
To: Melissa Du Plessis <mduplessis@figurr.ca>; Doug Cave <doug.cave@ibigroup.com>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Please find attached three letters. One was issued in response to City comments a while ago but it has some pertinent information so I'm resending it. The second deals with rooftop control flow drains and the cistern. The third is the letter on the impossibility of connecting future build sanitary drainage to our current outgoing sanitary.

From: Melissa Du Plessis <mduplessis@figurr.ca>
Sent: Friday, October 7, 2022 7:47 PM
To: Doug Cave <doug.cave@ibigroup.com>; Reg Callaghan <rcallaghan@tmptoronto.com>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: Re: Heron Gate 5-1 - Coordination Meeting

Doug,

See attached for the floor plans with the rooftop areas noted.
I will be sending an updated site plan with the inverts shown as well.

Thanks,

Melissa Du Plessis OAA M.Arch B.A.S. ORSA CPHD

Architect | Associate

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FIG. 1

190 Somerset St W #206

Ottawa ON K2P 0J4

T 613 695–6122 x 135

M 613 618-3290

FIG. 2

3550, Saint-Antoine O.

Montréal QC H4C 1A9

T 514 861–5122

From: Doug Cave <doug.cave@ibigroup.com>
Sent: October 6, 2022 8:19 AM
To: Melissa Du Plessis <mduplessis@figurr.ca>; rcallaghan@tmptoronto.com <rcallaghan@tmptoronto.com>
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: RE: Heron Gate 5-1 - Coordination Meeting

Good morning Melissa,

Thank you for the drawing. Can you please show on the attached plan the storm pipe leaving the building similar to how the sanitary pipe leaving the building is shown.

Thank you

Doug

Doug Cave C.E.T.
(he/him/his)

Sr. Project Manager
mob 613 402 9677
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64062

From: Melissa Du Plessis <mduplessis@figurr.ca>
Sent: Thursday, October 6, 2022 8:13 AM
To: Doug Cave <doug.cave@ibigroup.com>; rcallaghan@tmptoronto.com
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Damien Boylan <dboylan@tmptoronto.com>; Harseerat Khaira <hkhaira@tmptoronto.com>
Subject: Re: Heron Gate 5-1 - Coordination Meeting

Doug,

To get the cistern to work we have relocated it to the center of the building on the south. Attached is a sketch from Reg for the piping runs.
Our team is updating the parking layout and I should be able to send this to you shortly.

As we discussed, the 451.72 m3 represents the entire stormwater retention we need to maintain for the project (cistern + rooftop) and I think we can now confirm that we do meet this requirement.

Other than the P1 layout, let me know if there is anything else you need.

Thanks,

Melissa Du Plessis OAA M.Arch B.A.S. ORSA CPHD

Architect | Associate

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FIG. 1

190 Somerset St W #206

Ottawa ON K2P 0J4

T 613 695–6122 x 135

M 613 618-3290

FIG. 2

3550, Saint-Antoine O.

Montréal QC H4C 1A9

T 514 861–5122

From: Doug Cave <doug.cave@ibigroup.com>
Sent: September 12, 2022 10:15 AM
To: Reg Callaghan <rcallaghan@tmptoronto.com>
Cc: Melissa Du Plessis <mduplessis@figurr.ca>; Samantha Labadie <samantha.labadie@ibigroup.com>
Subject: Heron Gate 5-1 - Coordination Meeting

Reg,

Further to the coordination meeting that we had last weekend here is the list of information we are looking for:

1. The City have requested that we provide the following Cistern details on our site servicing plan:
    a. Location.
    b. Inverts.
    c. Dimensions.
    d. Emergency overflow.

2. The City have asked us to prove that we cannot us the sanitary connection to Heron Road shown on the Master Servicing Report. We need to know what the sanitary service invert would be is you have to bring it to the northwest corner of the parking garage.
3. For inclusion in our servicing report we require the following details:

a. Calculations for the capacity of the cistern.
b. We need the spec sheets for the roof drains and inlet controls.
c. We need the spec sheet for the constant flow pump.

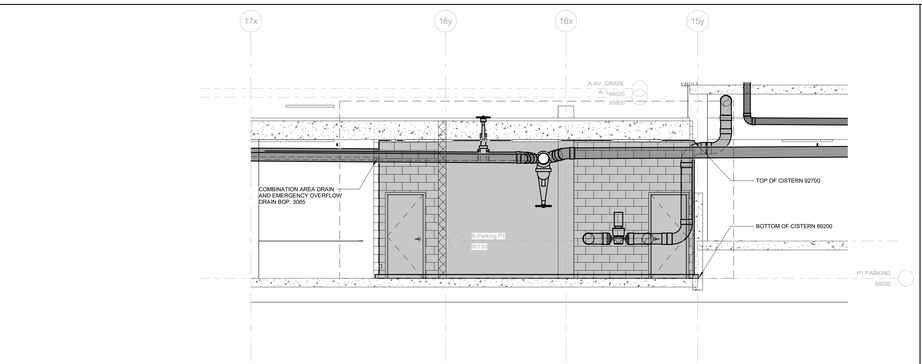
Thank you

Doug

Doug Cave C.E.T.
(he/him/his)

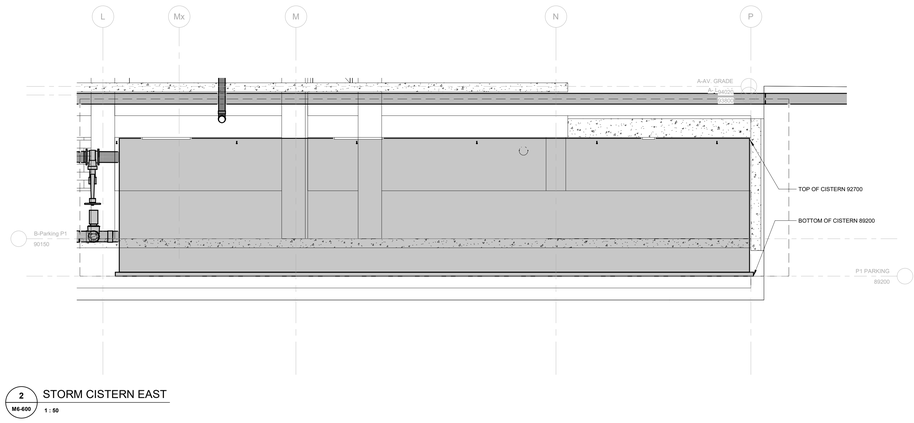
Sr. Project Manager
mob 613 402 9677

IBI GROUP
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64062



1 M6-600 STORM CISTERN SOUTH

1 : 50



2 M6-600 STORM CISTERN EAST

1 : 50

ISSUES/REVISIONS		
ISSUE	TITLE	DATE

Urbaniste / Urban Planner

FOTENN PLANNING+DESIGN

Architecte / Architect
(Paysagiste Landscape)

Gino J. Aiello **landscape architect** www.GJALA.com
GINO@GJALA.com (613) 852 1343
110 Dicksbury Road Unit #9 | Ottawa Ontario | K2T0C2

Ingénieur / Engineer
(Civil / Civil)

IBI

Ingénieur / Engineer
(Mécanique & Electricité / Mechanical & Electrics)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

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Architecte / Architect
Collectif d'architectes

fig. 1
5500, Saint-Antoine O.
Montréal QC H4C 1A9
T. 514 861-5122

fig. 2
180 Somerset St W #206
Ottawa ON K2P 0J4
T. 613 856-5122

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Note:

L'entrepreneur doit vérifier toutes les données et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

Titre / Title

SECTIONS

Dessiné par / Drawn by	No. projet / Project number	
-		
Vérifié par / Verified by	No. dessin / Drawing number	Révision / Revision
-		△
Échelle / Scale		
1 : 50		
Date de création du dessin / Drawing creation date		
01/29/23	M6-600	