REPORT

SITE SERVICING REPORT
Herongate HG-5
2851 Baycrest Drive

Project: 135142-6.03.04

Prepared for Hazelview Investments
by IBI Group
May 27, 2022

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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 303 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	1.77 l/s
Maximum Day	4.42 l/s
Peak Hour	9.72 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

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

3.3 Recommended Wastewater Plan

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

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 1.50 ha out of Block 2's 2.67 ha = 56%

Taken at 56% for subject application - 100 year release rate = 125.58 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, situ[illegible]rage near MH104, has been sized to support stormwater retention. The[illegible]d with duplex storm pumps to control the flow rate of the storm water r[illegible]ted to the municipal storm sew[illegible]will discharge to a[illegible]ich will also service as an outle[illegible]ion drain.

IBI: Rood drains now included in Appendix X.

IBI: Noted, configuration revised in current submission

Roof top flow controls are not proposed in any plan or in the appendix. Please clarify.

Revise to CBMH 106

If the proposed underground storage media is designed to be an infiltration gallery, please ensure it meets the LID guidelines or revise to underground storage.

IBI: Noted, infiltration gallery (originally designed to provide additional storage) has been removed in current design

[illegible]rate established using the criteria described in section [illegible]ow control devices, an inlet control device (ICD) at the outlet of the cistern, an underground infiltration gallery, and an ICD at the outlet of CBMH105.

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 storage, and within the building via rooftop storage and cistern located at the parking garage structure for flows from on top of the building/garage areas.

At certain locations within the site, the opportunity to store runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties, and it is not always feasible to capture or store stormwater runoff.

In this case, a portion of the building frontage at the Heron Road and Sandalwood Drive intersection will discharge uncontrolled to the street CBs. This uncontrolled area, 0.132 hectares in total, have a C value of 0.63. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 41.28 l/s runoff (refer to Section 4.5 for calculation). The cistern/rooftops and underground infiltration gallery 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 1.5 Ha site as established in section 4.2 is

$\mathbf{Q_{allowable}}$ = **125.58 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 0.132 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 = 0.63

$\mathbf{i_{100yr}}$ = 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 = 0.132 Ha

Therefore, the uncontrolled release rate can be determined as:

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

= 2.78 x 0.63 x 178.56 x 0.132

= **41.28 L/s**

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

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

= 125.58 L/s – 41.28 L/s

= **84.30 L/s**

4.6 On-Site Detention

As noted in section 4.4 any excess storm water up to the 100-year event is to be stored on-site via roof top storage and within the building cistern in order to not surcharge the downstream municipal storm sewer system. As the cistern is located inside the building, coordination with the architect, structural and mechanical engineers will be needed to design the structure and associated inlet control device. In order to accommodate the required retention volume, the rooftop and the cistern combined will need to provide a storage volume of 367 m3 and release at a rate of 45 L/s.

In addition, further storage is required downstream in the private road area. An underground storage system has been sized to store a further 95m3 during a storm event. Specifications for the underground storage can be found in **Appendix C**, while location and sizing can be found on the servicing plan in **Appendix D**.

Please provide the storage calculations for the cistern and underground storage systems

Please provide the ICD orifice calculations

IBI: Orifice calculation is included in Appendix C

IBI: Detailed Stormwater Management Calculations are included in Appendix C

4.6.1 Site Inlet Control

The following Table summarizes the on-site sto g both 1:100-year events.

ICD AREA	TRIBUTARY AREA	AVAILABLE STORAGE (M^3)	100-YEAR STORM		5-YE	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
Cistern/Roof	0.94	367	45	366.4	45	123.47
Private Drive	0.55	146.9	39	144.74	39	43.16
TOTAL	**1.49**	**513.7**	**84**	**511.14**	**84**	**166.63**

In all instances the required storage is met. The cistern will be fitted with a mechanical constant flow pump set to release at 45 litres/second regardless of the elevation of the cistern.

Please provide a constant flow pump manufacturers specification sheet.

IBI: Now included in Appendix X.

4.6.2 Overall Release Rate

As demonstrated above, the site uses an inlet contr to the criteria approved by the City of Ottawa. Restr 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 84 l/s, which is less than the allowable release of 84.3 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

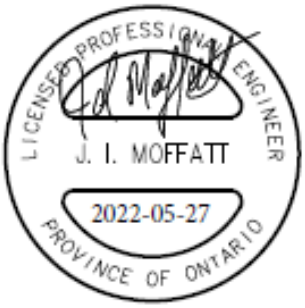
Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

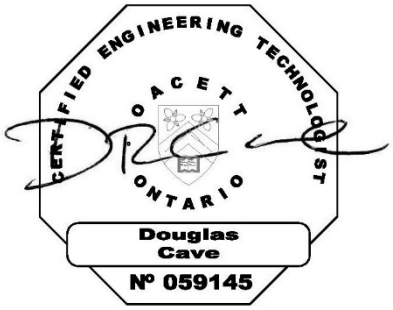
This report has demonstrated sanitary and storm flows from and water supply to the subject site can be accommodated by the existing infrastructure. Also, the proposed servicing has been designed in accordance with MECP and City of Ottawa current level of service requirements.

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

Doug Cave, C.E.T.

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
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613.580.2424 ext./poste **14388**, fax/téléc:613-580-2576, john.sevigny@ottawa.ca

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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

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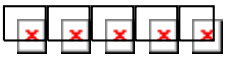

From: Sevigny, John <John.Sevigny@ottawa.ca>
Sent: Monday, April 4, 2022 8:49 AM
To: Lance Erion <lerion@ibigroup.com>
Cc: Jim Moffatt <jmoffatt@ibigroup.com>; Doug Cave <doug.cave@ibigroup.com>
Subject: RE: Heron Gate 5 - Request for Watermain Boundary Conditions

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
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613.580.2424 ext./poste **14388**, fax/téléc:613-580-2576, john.sevigny@ottawa.ca

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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

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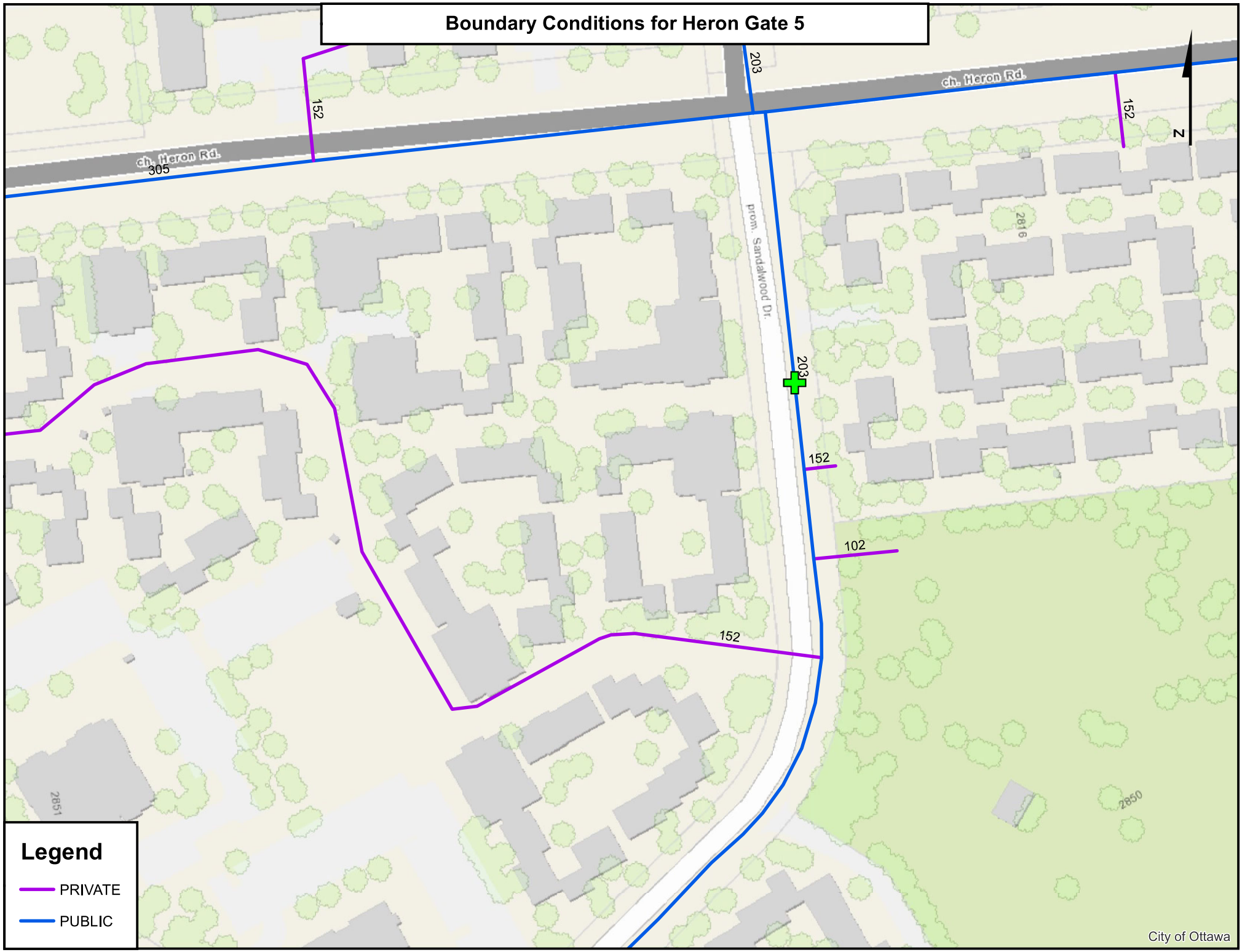
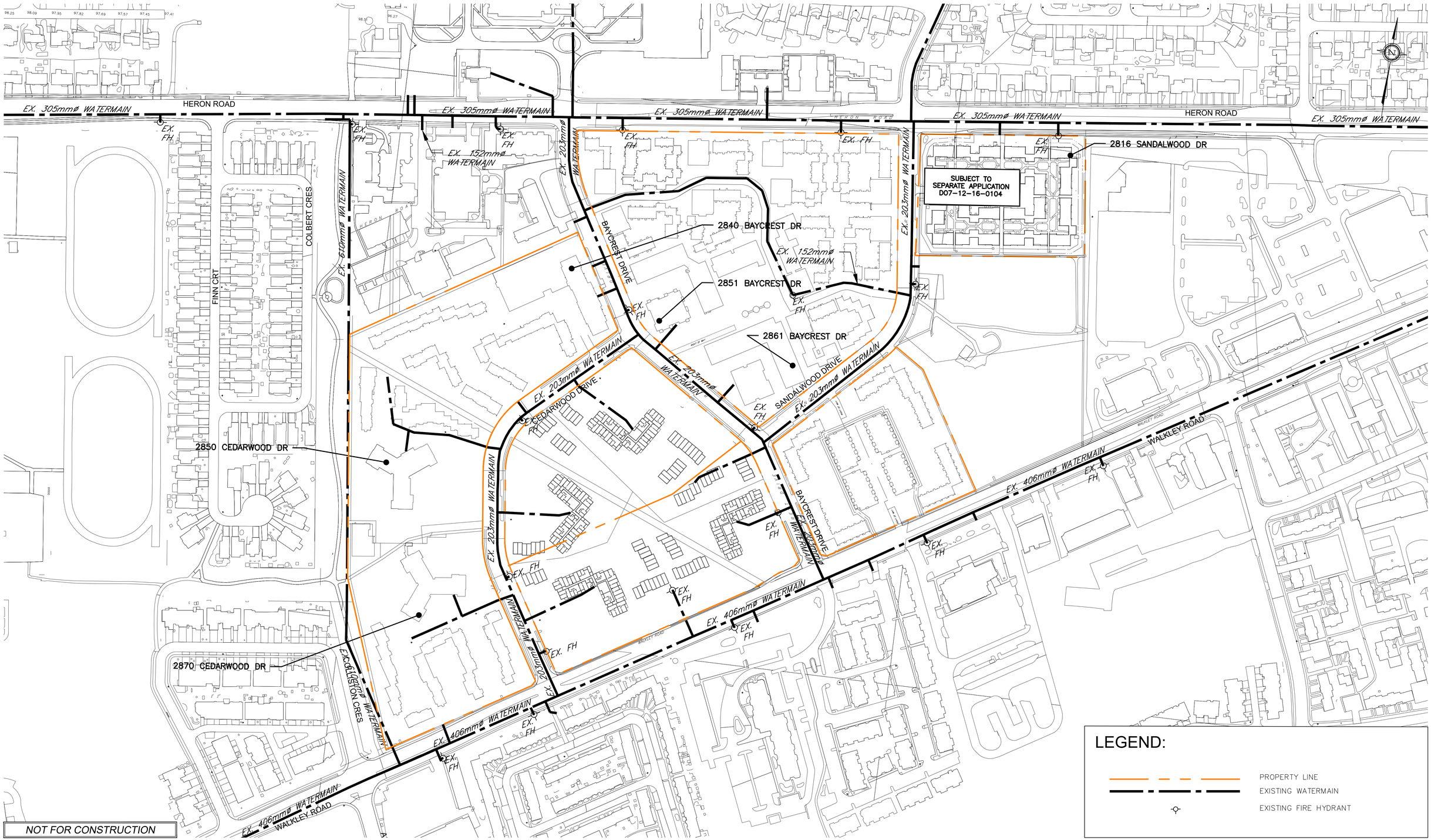
Boundary Conditions for Heron Gate 5





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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: 01-Apr-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			103	185				0.60	0.00	0.60	1.50	0.00	1.50	3.30	0.00	3.30	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			303	545						1.77			4.42			9.72	

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

Please provide fire flow calculations for all buildings and provide provide a plan view of all separation distances. Please note the 2020 FUS guidelines may be used.

Fire Flow Requirement from Fire Underwriters Survey

IBI: Building A is the worst-case of the three buildings, however additional buildings now included to demonstrate

2851 Baycrest Drive - Building A

Floor	Area (m^2)
1	1813
2	1813
3	1513
4	1513
5	1513
6	1513
7	1070
Total	10748

Total Floor Area 10,748 m^2

$F = 220C\sqrt{A}$

C	0.8		C =	1.5 wood frame
A	10,748	m^2		1.0 ordinary
				0.8 non-combustible
F	18,246	l/min		0.6 fire-resistive
use	18,000	l/min		

Occupancy Adjustment

-25% non-combustible
-15% limited combustible
0% combustible
+15% free burning
+25% rapid burning

Use	-15%	
Adjustment	-2700	l/min
Fire flow	15,300	l/min

Sprinkler Adjustment

-30% system conforming to NFPA 13
-50% complete automatic system

Use	-30%	
Adjustment	-4590	l/min

Repeated Comment:

Please look into the standard water supply reduction factor for sprinklers.

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%

IBI: Current adjustment is conservative. Additional reduction may be possible but would require more stringent verification

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**

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***.

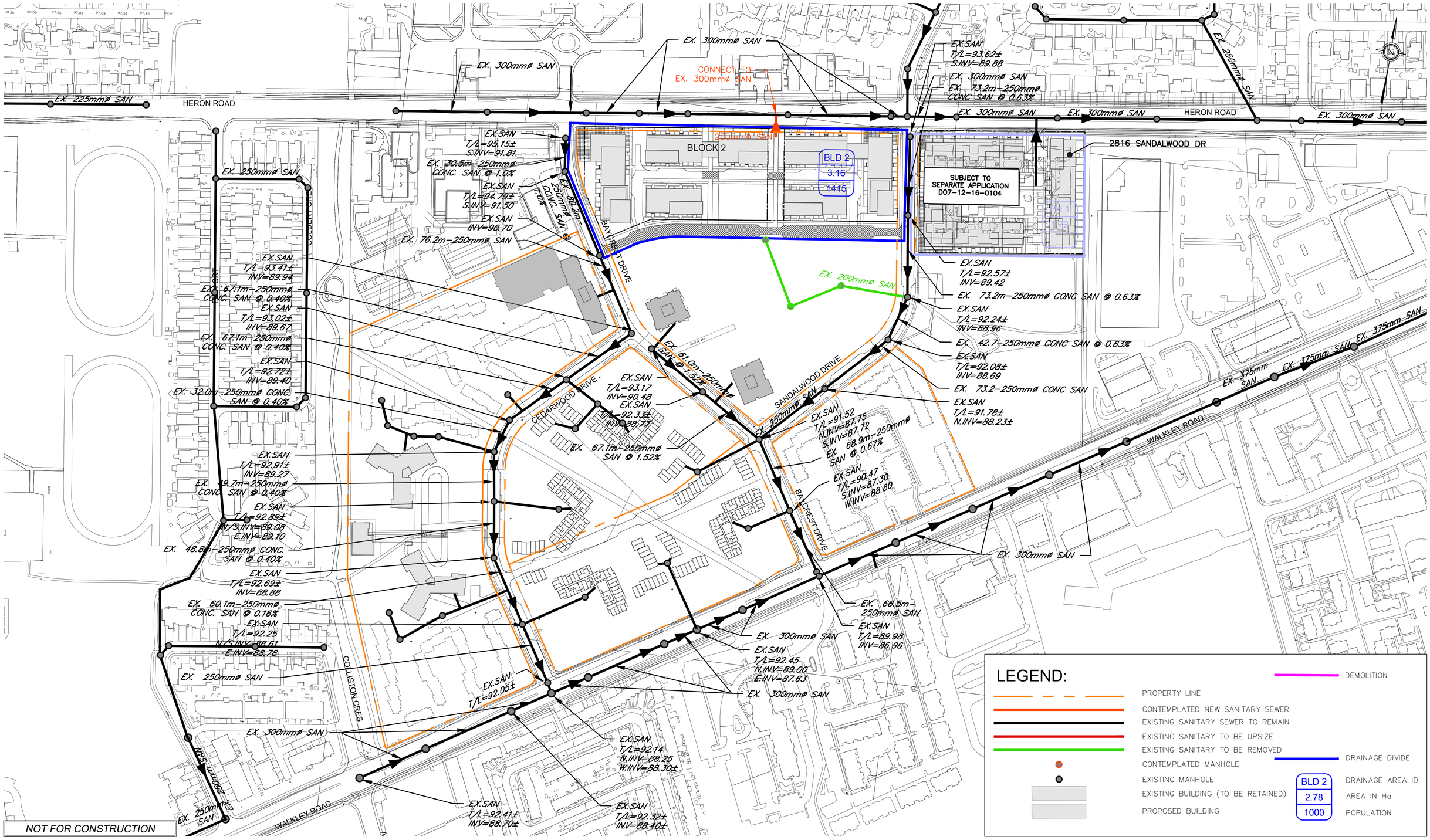
As summarized by ***Table 10,*** above, the total estimated peak wet weather sanitary flow tributary to the existing sanitary sewer within Walkley Road is ***39.51 L/s***. Based on consultation with City staff, the available capacity within the Walkley Road is ***62.09 L/s***; the residual capacity after 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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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
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Ottawa, Ontario K1S 5N4 Canada
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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		COMMERCIAL		INDUSTRIAL		PEAK FACTOR	FLOW (L/s)	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)	L/s	(%)
														IND	CUM	IND	CUM	IND	CUM															
2851 Baycrest Drive		BLDG	MH1A	1.50				303		545.4	545.4	3.36	5.95			0.00	0.00					1.50	1.50	0.50			6.44	48.39	4.35	200	2.00	1.492	41.95	86.69%
2851 Baycrest Drive		MH1A	Main							0.0	545.4	3.36	5.95			0.00	0.00					0.00	1.50	0.50			6.44	34.22	16.20	200	1.00	1.055	27.78	81.18%

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	

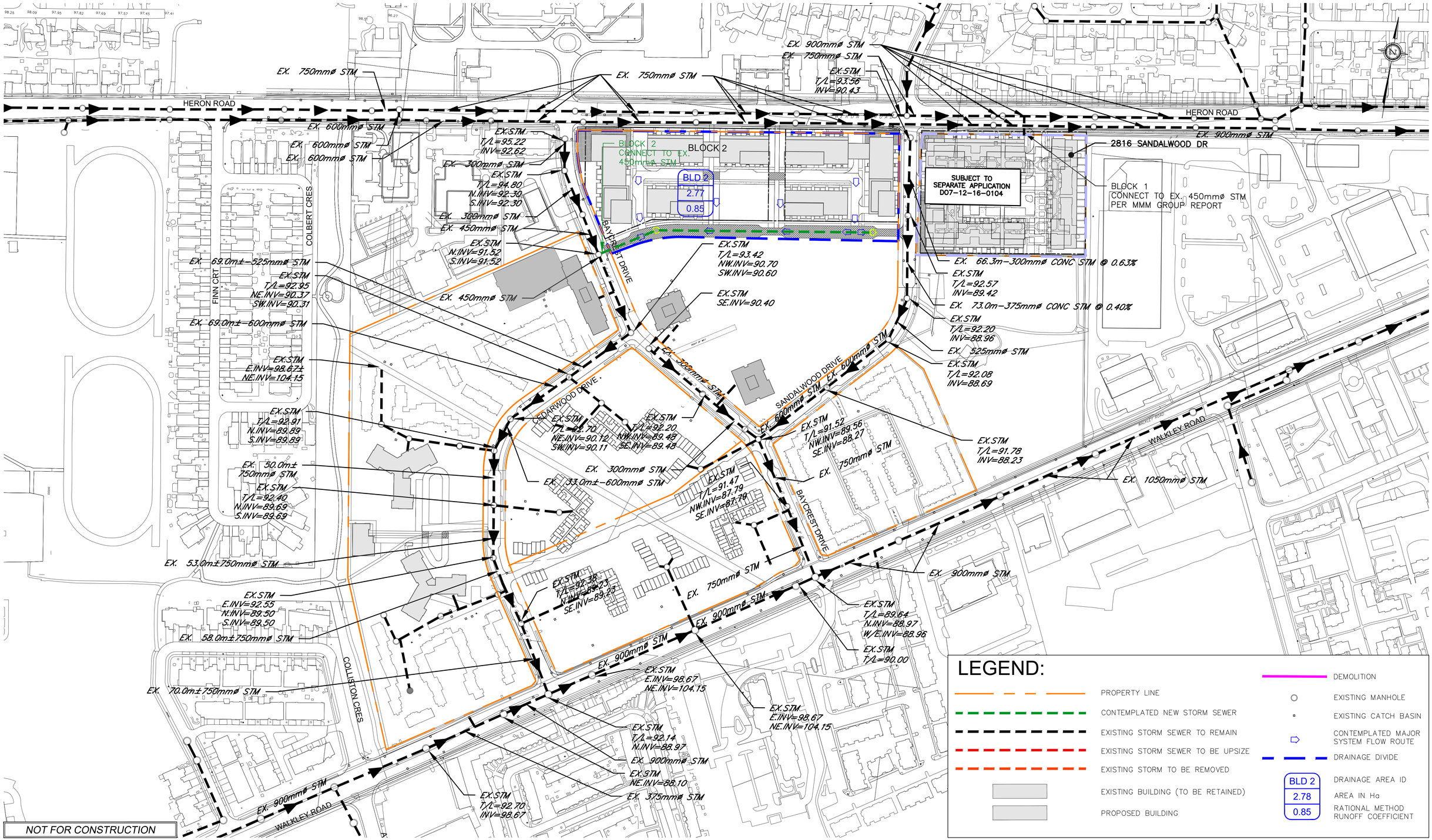
Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,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

Designed: JEB
Checked: JM
Dwg. Reference: 135142-C-001

No.	Revision	Date
1.	Issued for Site Plan Application	2021-12-23
2.		

File Reference: 135142.6.04
Date: 2021-12-23
Sheet No: 1 of 1

Appendix C



NOT FOR CONSTRUCTION

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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: 2022-05-25
FILE: 135142.6.04
REV #: 1
DESIGNED BY: SEL
CHECKED BY: JIM

STORMWATER MANAGEMENT

Formulas and Descriptions

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

Maximum Allowable Release Rate

Flow Allocation ***Taken from Functional Servicing and Stormwater Report Table 16***

100 Year Flow Block 2	223.54 L/sec
Area of subject application	56% of FSR block 2 (1.50 ha out of 2.67 ha)
Q_{TOTAL} =	125.58 L/s

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

C =	0.63
T_c =	10 min
i_{100yr} =	178.56 mm/hr
$A_{uncontrolled}$ =	0.132 Ha
$Q_{uncontrolled}$ =	41.28 L/s

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

$Q_{max\ allowable}$ =	84.30 L/s

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

IBI: There are effectively three drainage areas and calculations for each are provided here

Private Road (A1, A2, A3, A4) which is controlled with an ICD at the outlet MH. These operate as one and cannot be separated using the rational method since there is one common flow restriction for the set.

Uncontrolled (B1, B2, B3)

and Cistern (C1) which is controlled at a fixed rate via pumps

Please provide drainage area calculations for each drainage area.

Drainage Area	*Cistern*
Area (Ha)	0.940
C =	1.00
Restricted Flow Q_r (L/s)=	45.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
47	66.91	174.84	45.00	129.84	366.15
49	64.91	169.61	45.00	124.61	366.36
50	63.95	167.12	45.00	122.12	**366.37**
51	63.03	164.72	45.00	119.72	366.34
53	61.28	160.13	45.00	115.13	366.10

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance
0.00	366.37	0.00	367.00	0.00

Drainage Area	*Cistern*
Area (Ha)	0.940
C =	0.80
Restricted Flow Q_r (L/s)=	45.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
21	68.13	142.43	45.00	97.43	122.76
23	64.29	134.40	45.00	89.40	123.37
24	62.54	130.74	45.00	85.74	**123.47**
25	60.90	127.31	45.00	82.31	123.46
27	57.88	121.00	45.00	76.00	123.12

Storage (m^3)

Overflow	Required	Roof	Cistern	Balance
0.00	123.47	0.00	367.00	0.00

Drainage Area	*Private Road*
Area (Ha)	0.550
C =	0.85
Restricted Flow Q_r (L/s)=	39.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
26	101.18	131.50	39.00	92.50	144.30
28	96.27	125.12	39.00	86.12	144.69
29	94.01	122.19	39.00	83.19	**144.74**
30	91.87	119.40	39.00	80.40	144.71
32	87.89	114.22	39.00	75.22	144.42

Storage (m^3)

Overflow	Required	Surface	Stormtech	Balance
0.00	144.74	51.90	95.00	0.00

Drainage Area	*Private Road*
Area (Ha)	0.550
C =	0.68
Restricted Flow Q_r (L/s)=	39.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}xA (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
11	99.19	103.13	39.00	64.13	42.33
13	90.63	94.23	39.00	55.23	43.08
14	86.93	90.39	39.00	51.39	**43.16**
15	83.56	86.88	39.00	47.88	43.09
17	77.61	80.69	39.00	41.69	42.52

Storage (m^3)

Overflow	Required	Surface	Stormtech	Balance
0.00	43.16	51.90	95.00	0.00

Please include the ponding depths and max ponding elevation for each drainage area.

IBI: Now shown on drawings

RUNOFF COEFFICIENT CALCULATION SHEET

RESTRICTED

A1	Area (m^2)	C
Softscape	235	0.20
Hardscape	557	0.90
Total	792	**0.69**

A2	Area (m^2)	C
Softscape	1125	0.20
Hardscape	1965	0.90
Total	3090	**0.65**

A3	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	355	0.20
Hardscape	509	0.90
Total	864	**0.61**

CISTERN

C1	Area (m^2)	C
Softscape	1340	0.20
Hardscape	8060	0.90
Total	9400	**0.80**

Total Restricted	Area (m^2)	C
A1	792	0.69
A2	3090	0.65
A3	760	0.82
Total	4642	**0.68**

Total Unrestricted	Area (m^2)	C
B1	343	0.64
B2	110	0.74
B3	864	0.61
Total	1317	**0.63**

Total Cistern	Area (m^2)	C
C1	9400	0.80
Total	9400	**0.80**

Please review spreadsheet calculations

Ex. 2.78AC = 0.59, I(2) = 76.81mm/hr
Q = 0.59 x 76.81 = 45.32 L/s

Please review all design flow calculations to ensure the correct design flow based on the associated drainage areas.

Ex. MH101 to CBMH105 shall be the sum of the upstream sewers (MH100 to MH101 and MH104 to MH101).

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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												20.00	0.05	20.05									45.00	45.00	45.00	100.88	4.05	300			1.00	1.383	55.88	55.39%
		MH104	MH101											0.00	0.00	20.05	1.48	21.53	51.95	70.14	82.08	119.77	0.00	0.00	0.00	0.00	0.00	45.00	45.00	59.94	72.77	300			0.35	0.821	14.94	24.92%
	A1, A2	MH100	MH101			0.26			0.08					0.59	0.59	10.00	1.91	11.91	76.81	104.19	122.14	178.56	45.65	61.93	72.60	106.13	0.00	0.00	45.65	99.85	100.54	375			0.30	0.876	54.20	54.28%
	A3, A4	MH101	CBMH105							0.08	0.04			0.28	0.87	21.53	0.30	21.83	49.70	67.07	78.48	114.47	43.25	58.36	68.28	99.61	0.00	45.00	88.25	101.84	16.17	375			0.31	0.893	13.59	13.35%
		CBMH105	CBMH106											0.00	0.87	21.83	1.18	23.01	49.27	66.48	77.78	113.46	42.87	57.85	67.68	98.72	0.00	45.00	87.87	99.85	62.01	375			0.30	0.876	11.98	12.00%
		CBMH106	MH102											0.00	0.87	23.01	0.24	23.25	47.65	64.27	75.19	109.66	41.46	55.93	65.43	95.42	0.00	45.00	86.46	101.02	12.95	375			0.31	0.886	14.56	14.41%
	Future EXT-Ph 2	MH102	Ex MH											0.00	0.87	23.25	0.63	23.88	47.33	63.84	74.68	108.91	41.18	55.55	64.98	94.77	97.96	142.96	184.14	245.74	41.81	525			0.30	1.100	61.60	25.07%

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

File Reference: 135142.6.04
Date: 2022-05-27
Sheet No: 1 of 1

The sewers upstream and downstream of the underground storage tank are not provided. Please revise.

IBI: Configuration has been revised

IBI: Numbers are not rounded in this sheet:

AC = 0.61*0.26+0.08*0.69 = 0.2138
2.78AC = 0.2138*2.78 = 0.594364

i(2) = 732.951/(10.00+6.199)^0.81 = 76.8050

Q = 0.594364*76.8050 = 45.6501

Please note this configuration has been revised.

Please clarify why a fixed flow of 45 L/s is present here.

IBI: This is the rate released by the cistern via pumping, which represents a "fixed flow". The 45L/s enters MH101-CBMH5 from MH104-MH101.

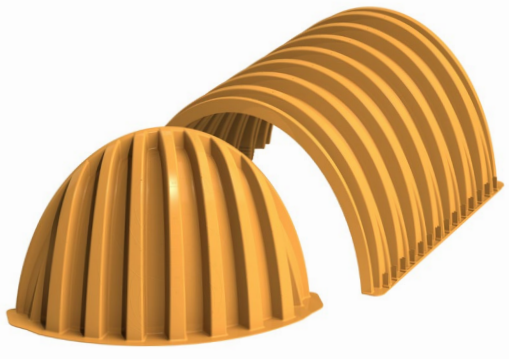
Please note that the configuration has been revised.

IBI: 88.25 is the correct design flow for this run. It is composed of the 2-year peak flow for this run (which included the 2.78AC of all upstream drainage areas) and the fixed flow from the cistern of 45 L/s.

Please note that the configuration has been revised.

StormTech® MC-3500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



Nominal Chamber Specifications
(not to scale)

Size (L x W x H)
90” x 77” x 45”
2286 mm x 1956 mm x 1143 mm

Chamber Storage
109.9 ft³ (3.11 m³)

Min. Installed Storage*
175.0 ft³ (4.96 m³)

Weight
134 lbs (60.8 kg)

Shipping
15 chambers/pallet
7 end caps/pallet
7 pallets/truck

*Assumes a minimum of 12” (300 mm) of stone above, 9” (230 mm) of stone below chambers, 6” (150 mm) of stone between chambers/ end caps and 40% stone porosity.

Nominal End Cap Specifications
(not to scale)

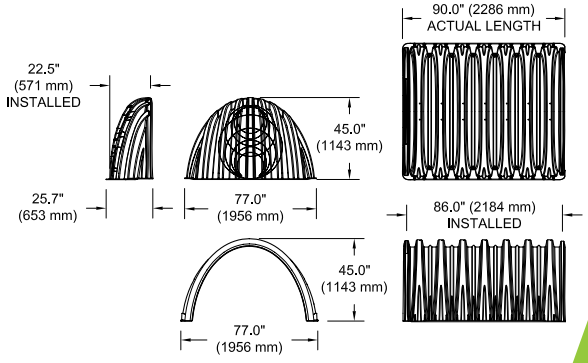
Size (L x W x H)
26.5” x 71” x 45.1”
673 mm x 1803 mm x 1145 mm

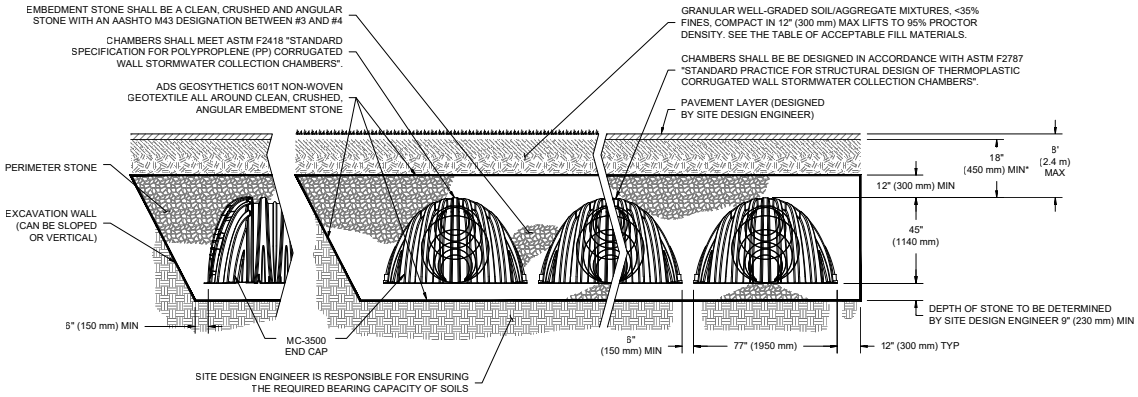
End Cap Storage
14.9 ft³ (0.42 m³)

Min. Installed Storage*
45.1 ft³ (1.28 m³)

Weight
49 lbs (22.2 kg)

*Assumes a minimum of 12” (300 mm) of stone above, 9” (230 mm) of stone below, 6” (150 mm) of stone perimeter, 6” (150 mm) of stone between chambers/ end caps and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

ADS StormTech™

StormTech MC-3500 Specifications

Storage Volume Per Chamber

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)			
		9 in (230 mm)	12 in (300 mm)	15 in (375 mm)	18 in (450 mm)
Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
End Cap	14.9 (0.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

Note: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth			
	9 in	12 in	15 in	18 in
Chamber	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
Metric Kilograms (m³)	**230 mm**	**300 mm**	**375 mm**	**450 mm**
Chamber	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

Note: Assumes 12" (300 mm) of stone above and 6" (150 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth			
	9 in (230 mm)	12 in (300 mm)	15 in (375mm)	18 in (450 mm)
Chamber	11.9 (9.1)	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)
End Cap	4.0 (3.1)	4.1 (3.3)	4.3 (3.3)	4.4 (3.4)

Note: Assumes 6" (150 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.

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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
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Ottawa ON K1S 5N4 Canada
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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-900	EROSION AND SEDIMENT CONTROL PLAN

HAZELVIEW INVESTMENTS

hazelview
INVESTMENTS

CONTRACT NO. 135142

REVISED PER CLIENT COMMENTS 2022-05-17

File Location: J:\135142_Heron_Gat\7.0_Production\7.03_Design\04_Civil\Sheets\COVER.dwg Last Saved: May 17, 2022, by ddore Plotted: Friday, May 27, 2022 10:11:21 AM by Eric Henne

CITY FILE No. D07-12-21-0238

CITY PLAN No.18650

REMOVAL

- REMOVAL
- ADJUST MANHOLE, VALVES
- ADJUST CATCH BASIN
- ADJUSTMENT BY BELL OR HYDRO APPROVED CONTRACTOR
- X REMOVE OR ABANDON SEWER, WATERMAIN, UTILITY, CURB RETURNS
- PLUG
- DRY GRIND EXISTING ASPHALT. AVERAGE DEPTH 50mm.
- FULL DEPTH ASPHALT REMOVAL
- AREA TO BE CLEARED AND GRUBBED
- REMOVAL OF BUILDINGS, FOUNDATIONS, SEPTIC SYSTEM AND WELL
- REMOVALS OF CONCRETE/ ASPHALT SIDEWALK

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)

750Ø STM-CO
STORM SEWER (CO Concrete)

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

UNDERGROUND HYDRO

UNDERGROUND TELEPHONE

GASMAIN

1:750 0 7.5 22.5 37.5m

CLIENT

HAZELVIEW INVESTMENTS

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

ISSUES

No.	DESCRIPTION	DATE

NOT FOR CONSTRUCTION

KEY PLAN

CONSULTANTS

SEAL

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tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

Heron Gate 5

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

SHEET TITLE

REMOVALS

SHEET NUMBER

C-REM

ISSUE

File Location: J:\135142_Heron_Gat\7.0_Production\7.03_Design\04_Civil\Sheets\C-REM REMOVALS.dwg Last Saved: May 17, 2022, by ddore Plotted: Friday, May 27, 2022 10:11:36 AM by Eric Henrie

SCALE CHECK 1 in 10mm

CONNECT TO EXISTING SANITARY SEWER

APPROXIMATE LOCATION OF EXISTING SANITARY SEWER

HERON ROAD

16.20m
200mmØ
SAN @ 1.00%

MH100A (1200Ø)
T/G 97.11
INV IN:91.200S
INV OUT:90.862N

4.35m
200mmØ
SAN @ 2.00%

BLK SAN

SAN INV =91.287

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
C

F.F.=95.25

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING

F.F.=93.80

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
B

F.F.=94.70

LIMIT OF CONSTRUCTION

TIE INTO EXISTING GUTTER GRADES

4.05m
300mmØ
STM @ 0.99%

MH104 (1200Ø)
T/G 95.08
INV IN:92.710E
INV OUT:92.370S

BLK

STM INV =92.750

73.50m - 300mmØ STM @ 0.35%

2500 SAN-CO

2000 WM-CI

3000 STM-CO

APPROXIMATE LOCATION OF EXISTING WATERMAIN

SANDALWOOD DRIVE

TOP OF WM =90.500

200mm

200mm

DEPRESED CURB AND SIDEWALK SITE ENTRANCE AS PER SC.7.1

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

CONNECT TO EXISTING WATERMAIN (CITY FORCES)

MATCH LINE

MH101 (1200Ø)
T/G 94.15
INV IN:92.000E
INV IN:92.115N
INV OUT:91.980W

9.71m
375mmØ
STM @ 0.16%

CBMH105 (1200Ø)
T/G 93.96
INV IN:91.930E
INV OUT:92.610W
INV OUT:91.930W

CB4
T/G 93.95

16.17m - 375mmØ
STM @ 0.31%

T/G 93.95
CB7

100.54m - 375mmØ STM @ 0.30%

CB6
T/G 93.95

T/G 93.62
CB9

CB8
T/G 93.62

MH100 (1200Ø)
T/G 93.60
INV OUT:92.300W

1 ROW OF 42m STORMTECH MC-3500 WITH FOUNDATION STONE DEPTH OF 0.23m INSTALLED PER MANUFACTURER SPECIFICATIONS

8.92m
375mmØ
STM @ 0.21%

12.95m
375mmØ
STM @ 0.31%

43.7m x 2.6m MC-3500 UNDERGROUND STORAGE

62.01m - 375mmØ STM @ 0.30%

OVERFLOW PIPE

ICD = 39L/S

CB2
T/G 94.10

MH102 (1200Ø)
T/G 94.25
INV IN:91.855E
INV OUT:91.675SW

CBMH106 (1200Ø)
T/G 97.16
INV IN:92.425E
INV IN:91.895E
INV OUT:91.895W

MATCH LINE

LIMT OF CONSTRUCTION

DEPRESED CURB AND SIDEWALK SITE ENTRANCE AS PER SC.7.1

2500 SAN-CO

2000 WM-CI

4800 STM-CO

41.81m - 525mmØ STM @ 0.30%

INV =91.550

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 R-25

CONCRETE RETAINING WALL

ASPHALT

CLIENT

HAZELVIEW INVESTMENTS

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

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4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-17

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

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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

GENERAL PLAN OF SERVICES

SHEET NUMBER C-001

ISSUE 5

SCALE CHECK

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

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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

- SANITARY MANHOLE (MH118A)
- SANITARY SEWER (200mmØ SAN)
- STORM MANHOLE (MH109, MH118)
- STORM SEWER - LESS THAN 900Ø (825mmØ STM)
- STORM SEWER - 900Ø AND GREATER (900mmØ STM)
- WATERMAIN (200Ø WATERMAIN)
- STREET CATCHBASIN C/W TOP OF GRADE (CB100, T/G 104.10)
- CURB INLET CATCHBASIN C/W GUTTER GRADE (CICB101, G/G 104.25)
- DOUBLE CATCHBASIN C/W TOP OF GRADE (DCB100, T/G 104.10)
- DITCH INLET CATCHBASIN C/W GUTTER GRADE (DCICB101, G/G 104.25)
- CATCHBASIN MANHOLE C/W TOP OF GRADE (CBMH100, T/G 103.59)
- DITCH INLET MANHOLE C/W TOP OF GRADE (CBMH101, T/G 103.59)
- ICD LOCATION (CB100, T/G 104.10)
- REAR YARD CATCHBASIN IN ROAD CONNECTING STRUCTURE C/W SOLID GRATE (RYCB, T/G 104.35)
- REAR YARD "TEE" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT (T/G 104.35, INV 103.35)
- REAR YARD "END" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT (T/G 104.50, INV 103.50)
- 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 (T/G 104.35, INV 103.35)
- PERFORATED REAR YARD SUBDRAIN
- CSP CULVERT C/W DIAMETER (300mmØ CSP)
- VALVE AND VALVE BOX (V&VB)
- VALVE AND VALVE CHAMBER (V&VC)
- FIRE HYDRANT C/W BOTTOM OF FLANGE ELEVATION (HYD 104.35)
- WATERMAIN REDUCER (200Ø WM, RED, 150Ø WM)
- VERTICAL BEND LOCATION (2 VBENDS)
- SINGLE SERVICE LOCATION
- DOUBLE SERVICE LOCATION
- INFERRED BEDROCK (SEE GEOTECHNICAL REPORT) (BH 12, 102.00)
- 100 YEAR STORM HYDRAULIC GRADE LINE AT MANHOLE (HGL 101.79)
- STRESS TEST STORM HYDRAULIC GRADE LINE AT MANHOLE (S/T HGL 101.79)
- UNDERSIDE OF FOOTING ELEVATION (WITH LOT #) (108, 102.40)
- CLAY SEAL IN SEWER / WATERMAIN TRENCH

GRADING LEGEND

- PROPOSED SWALE C/W FLOW DIRECTION
- PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE (1.0%)
- SLOPE C/W FLOW DIRECTION (1.0%)
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED SPOT GRADE (104.62)
- PROPOSED SWALE GRADE (104.40 IE)
- PROPOSED SWALE HIGH POINT GRADE (104.50 I/part)
- LOT CORNER GRADE C/W EXISTING GRADE (104.60, 103.55)
- TIE INTO EXISTING GRADE (86.45 EX)
- FULL STATIC PONDING GRADE (96.75)
- RETAINING WALL C/W TOP OF WALL AND GRASS GRADE (103.50)
- TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
- PRESSURE REDUCING VALVE
- FINISHED FLOOR ELEVATION (F.F.=)
- NUMBER OF ADDITIONAL RISERS (2R)
- NOISE FENCE LOCATION (F)
- NOISE FENCE GATE (F)

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.

   FOR GEOTECHNICAL INFORMATION REFER TO GEOTECHNICAL REPORT
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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).
9. 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.
10. 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

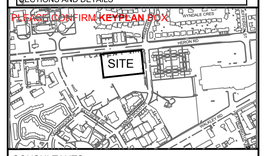
1133 Younge St. 4th Floor, Toronto On, M4T 1W1

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	2022-05-17

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

PLEASE CONFIRM KEYPLAN BOX



CONSULTANTS

SEAL

hazelview INVESTMENTS

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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 NOTES, LEGEND AND CB DATA TABLE

SHEET NUMBER	ISSUE
C-010	5

SCALE/CHECK

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

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

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING

F.F.=93.80

PROPOSED 6 STOREY
MULTI UNIT
RESIDENTIAL BUILDING
B

F.F.=94.70

TIE INTO
EXISTING
GUTTER GRADES

DEPRESED CURB
AND SIDEWALK
SITE ENTRANCE
AS PER SC.7.1

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

3 :1 SLOPE FROM
TOP OF CURB TO
EXISTING GROUND

LIMT OF CONSTRUCTION

CONTD ON DWG
135142-C-201

SANDALWOOD DRIVE

EDGE OF ASPHALT

ASPHALT SIDEWALK

WALKWAY

CONCRETE SIDEWALK

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

KEY PLAN

SITE

North

1:250 0 2.5 7.5 12.5m

CLIENT

HAZELVIEW
INVESTMENTS

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

ISSUES

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5	REVISED PER CLIENT COMMENTS	2022-05-17

NOT FOR CONSTRUCTION

CONSULTANTS

SEAL

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2022/05/17
PROVINCE OF ONTARIO

hazelview INVESTMENTS

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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.

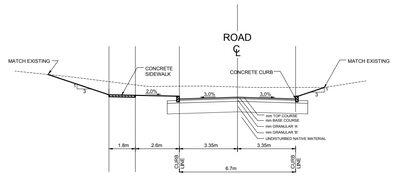
SHEET TITLE
GRADING PLAN

SHEET NUMBER C-200 | ISSUE 5

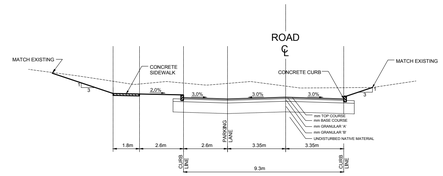
CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

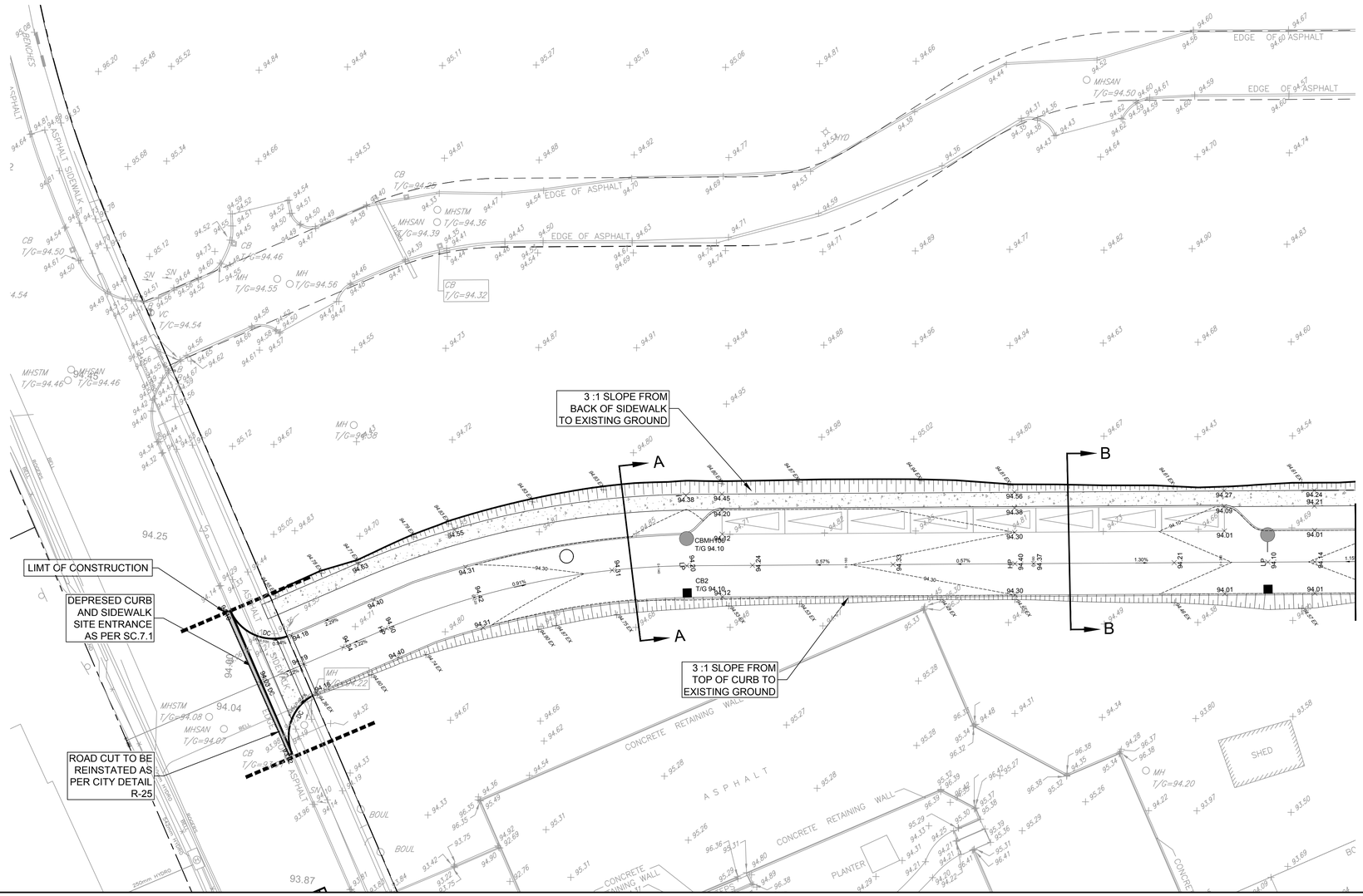
File Location: J:\135142_Heron_Gate\7.0_Production\7.03_Design\04_Civil\Sheets\C-200 GRADING PLAN.dwg Last Saved: May 17, 2022, by ddore Plotted: Friday, May 27, 2022 10:12:24 AM by Eric Hennie



SECTION A-A
NTS



SECTION B-B
NTS



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	2021-12-22
3	ISSUED FOR SPA	2021-12-23
4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-17

SEE D10 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-201	5

File Location: J:\135142_Heron_Gate\7.0_Production\7.03_Design\04_Civil\Sheets\C-201 GRADING PLAN.dwg Last Saved: May 17, 2022. by ddore Plotted: Friday, May 27, 2022 10:13:00 AM by Eric Henrie

SCALE CHECK 1:250

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

HERON ROAD

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

PROPOSED 6 STOREY MULTI UNIT RESIDENTIAL BUILDING
F.F.=93.80

PROPOSED 6 STOREY MULTI UNIT RESIDENTIAL BUILDING B
F.F.=94.70

SAN-1
1.50 549.0

#2551 MULTI-STOREY APARTMENT BUILDING

BAYCREST DRIVE

SANDALWOOD DRIVE

LIMT OF CONSTRUCTION

DEPRESED CURB AND SIDEWALK SITE ENTRANCE AS PER SC.7.1

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

TIE INTO EXISTING GUTTER GRADES

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

KEY PLAN

SITE

CONSULTANTS

1:400 0 4 12 20m

NOT FOR CONSTRUCTION

CLIENT

HAZELVIEW INVESTMENTS

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

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5	REVISED PER CLIENT COMMENTS	2022-05-17

SEAL

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2022/05/17
PROVINCE OF ONTARIO

hazelview INVESTMENTS

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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 C-400

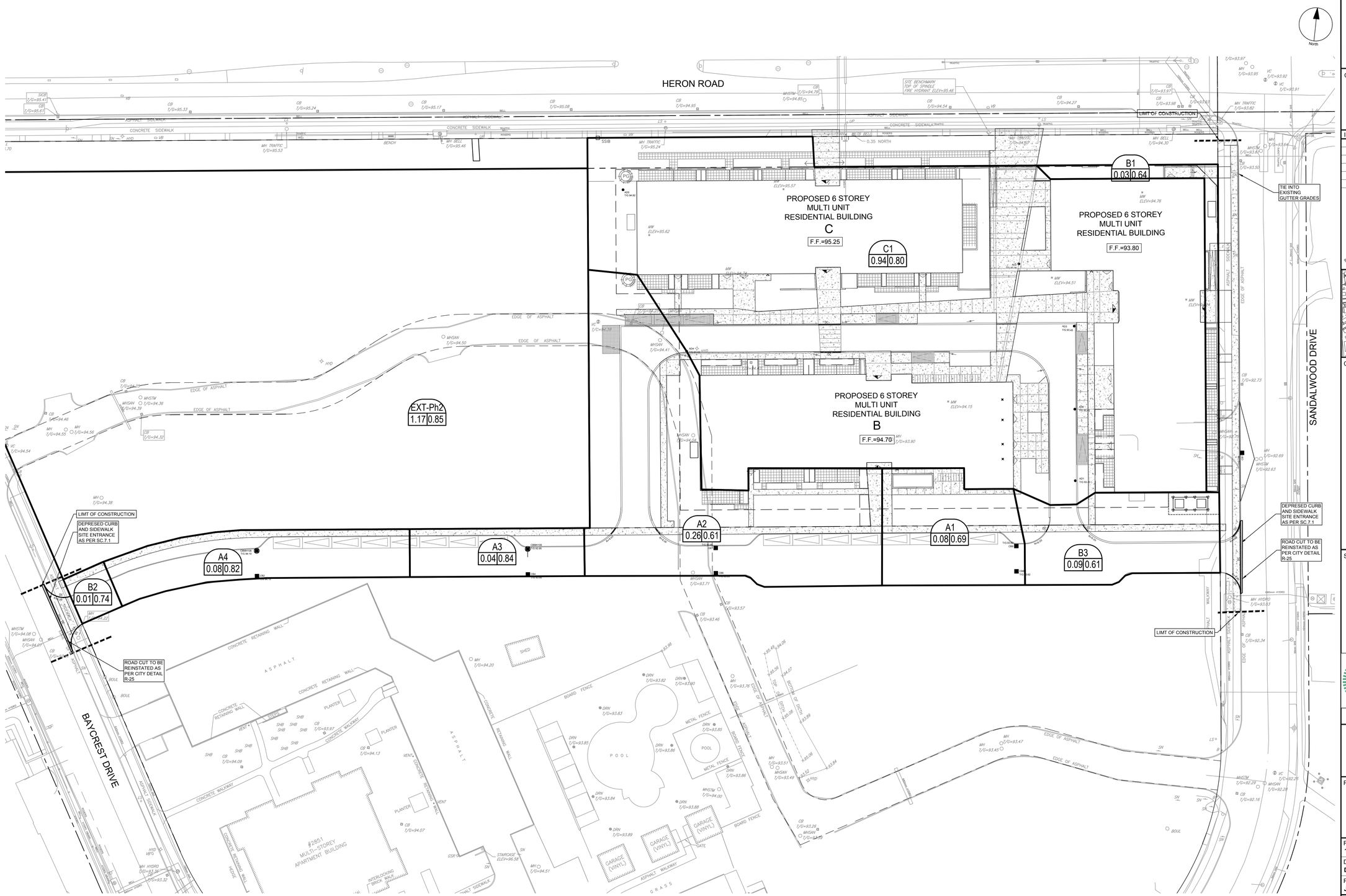
ISSUE 5

SCALE CHECK

CITY FILE No. D07-12-21-0238

CITY PLAN No. 18650

File Location: J:\135142_Heron_Gat7 0_Production\7 03_Design\04_Civil\Sheets\C-400 SANITARY DRAINAGE AREA.dwg Last Saved: May 17, 2022, by Ehenrie Plotted: Friday, May 27, 2022 11:22:48 AM by Eric Henrie



CLIENT

HAZELVIEW INVESTMENTS

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

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No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2021-12-15
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4	REVISED PER CLIENT COMMENTS	2022-04-27
5	REVISED PER CLIENT COMMENTS	2022-05-17

CONSULTANTS

SEAL

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2022/05/17
PROVINCE OF ONTARIO

hazelview INVESTMENTS

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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

STORM DRAINAGE AREA

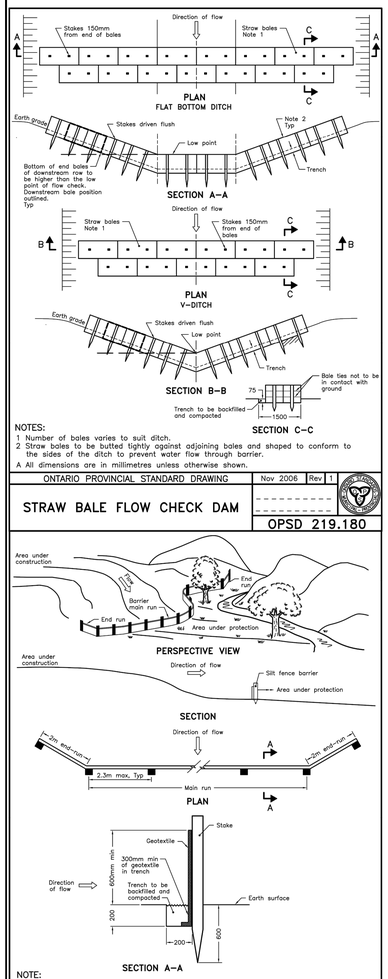
SHEET NUMBER	ISSUE
C-500	5

CITY PLAN No. 18650

CITY FILE No. D07-12-21-0238

File Location: J:\135142_Heron_Gate\7.0_Production\7.03_Design\04_Civil\Sheets\C-500 STORM DRAINAGE AREA.dwg Last Saved: May 27, 2022, by Ehonnie Plotted: Friday, May 27, 2022 11:24:18 AM by Eric Hennie

SCALE CHECK

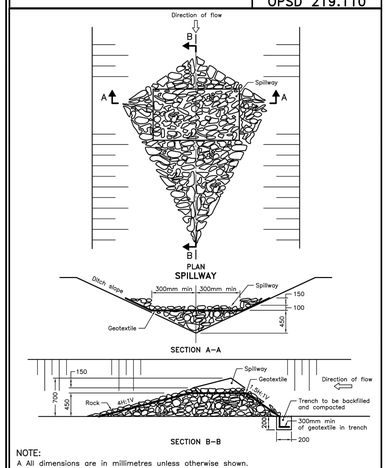


NOTES:
1 Number of bales varies to suit ditch.
2 Straw bales to be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

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:

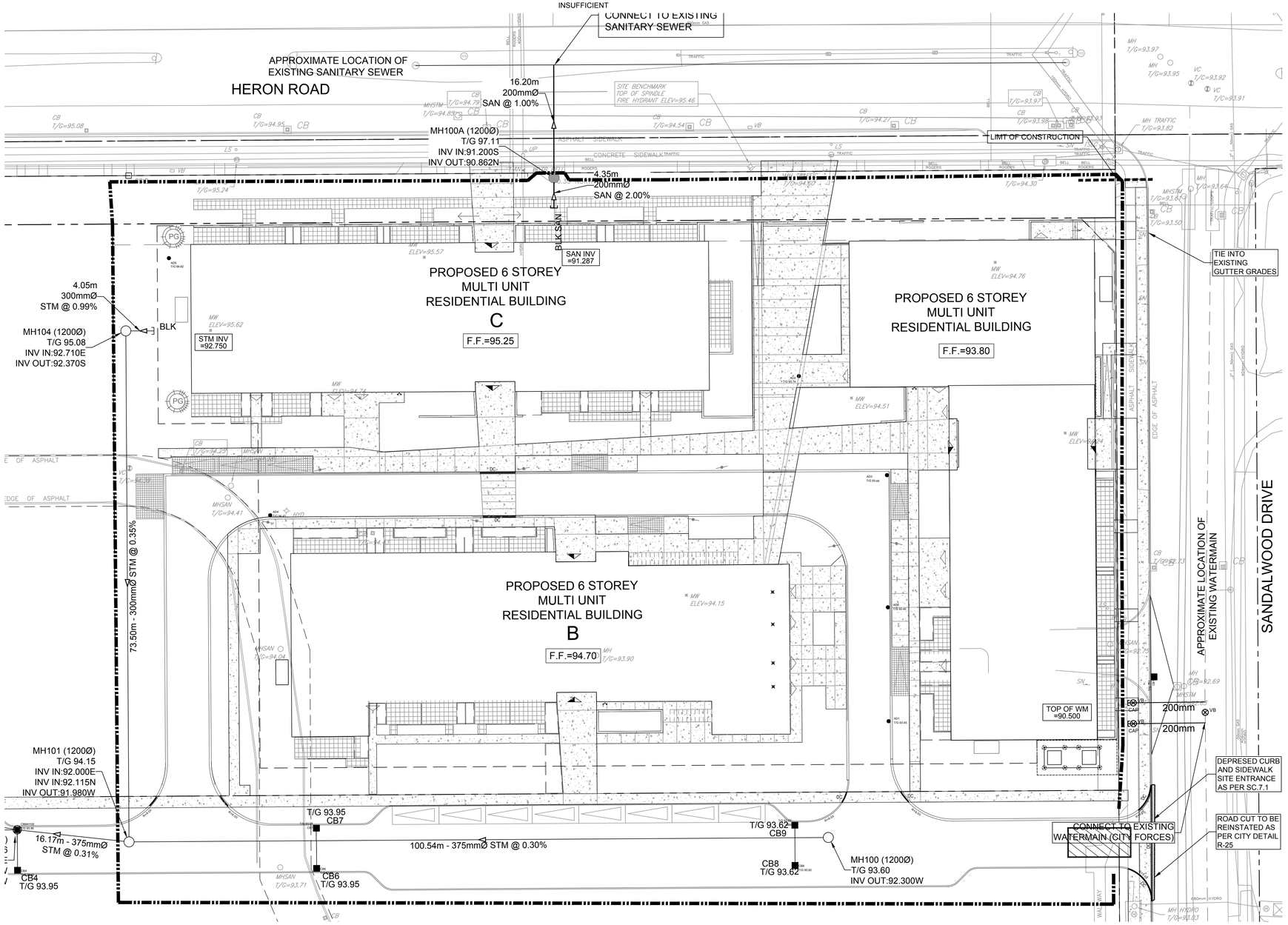
THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES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



CLIENT

HAZELVIEW INVESTMENTS

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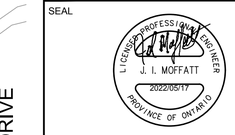
SEE C-010 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

CONSULTANTS

1:300 0 3 9 15m

SEAL



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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	5

SCALE CHECK 1:xxx

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-900 SEDIMENTATION PLAN.dwg Last Saved: May 17, 2022, by ddore Plotted: Friday, May 27, 2022 10:16:16 AM by Eric Hennie