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Functional Servicing Report

2983, 3053 and 3079 Navan Road & 2690 Pagé Road, Ottawa, Ontario

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

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1.0 Introduction

1.1 Background

In 2021, J.L. Richards & Associates Limited (JLR) was retained by 12714001 Canada Inc. (the Owner) to prepare a Functional Servicing Report in support of a Draft Plan of Subdivision Application for their subject properties sited at 2983, 3053 and 3079 Navan Road and 2690 Pagé Road. Once the draft plan of subdivision is approved, the owner intends to subdivide the properties into five (5) separate parcels with their own developmental application. The developmental breakdown is as follows:

- One (1) Plan of Subdivision;
- One (1) Residential Site Plan;
- Two (2) Mixed Use - Residential and Commercial Site Plans; and
- One (1) Commercial Site Plan.

This Functional Servicing Report has been prepared to outline the design objectives and criteria, servicing constraints and high-level strategies for developing the subject lands with water, wastewater, storm, and stormwater management services in accordance with the following:

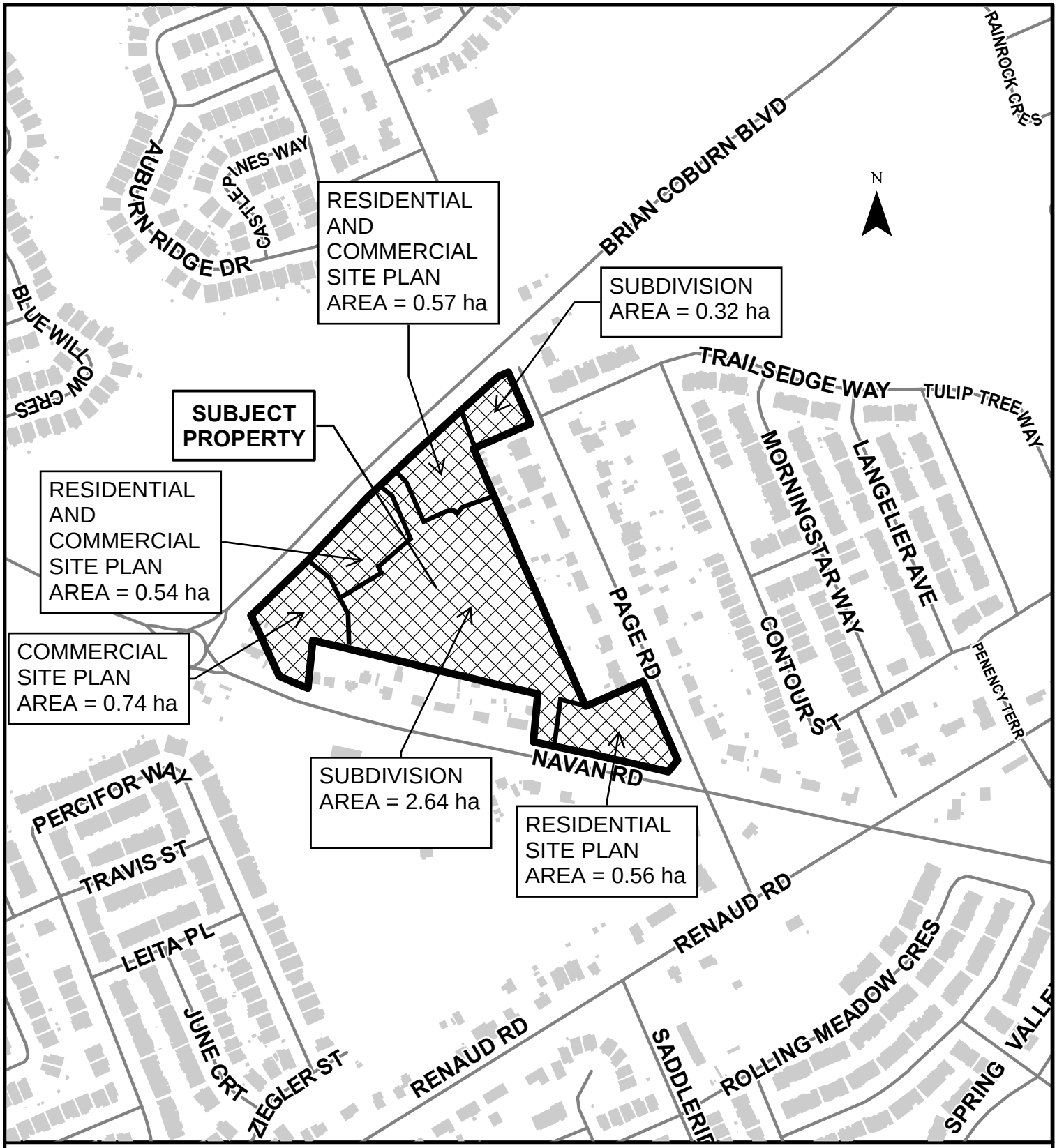
- the November 2009 Servicing Study Guidelines for Development Applications in the City of Ottawa (City);
- the Ottawa Sewer Design Guidelines (2012) and associated Technical Bulletins;
- the 2005 Gloucester East Urban Community (EUC) Infrastructure Servicing Study Update (ISSU) prepared by Stantec Consulting Ltd.; and
- Response E-Mail (dated January 18, 2021) on servicing requirements.

A copy of the pre-consultation meeting notes is included in Appendix A.

1.2 Site Description and Proposed Development

The municipal addresses for this development are 2983, 3053, and 3079 Navan Road & 2690 Page Road. The properties are located within the urban limits of the City of Ottawa. The total developmental area is ±5.36 ha and is bounded by Pagé Road, Brian Coburn Boulevard and Navan Road (refer to Figure 1 for the Location Plan). A review of Google Maps and GeoOttawa indicate that the existing area is entirely vegetated.

The Owner intends to subdivide the site into five (5) separate parcels each with their own developmental application. Table 1-1 provides the developmental breakdown and area for the five (5) subject parcels. A schematic of this breakdown can be found in Figure 2.



PROJECT:

12714001 CANADA INC.
2983, 3053, 3079 NAVAN ROAD
OTTAWA, ONTARIO

DRAWING:

LOCATION PLAN

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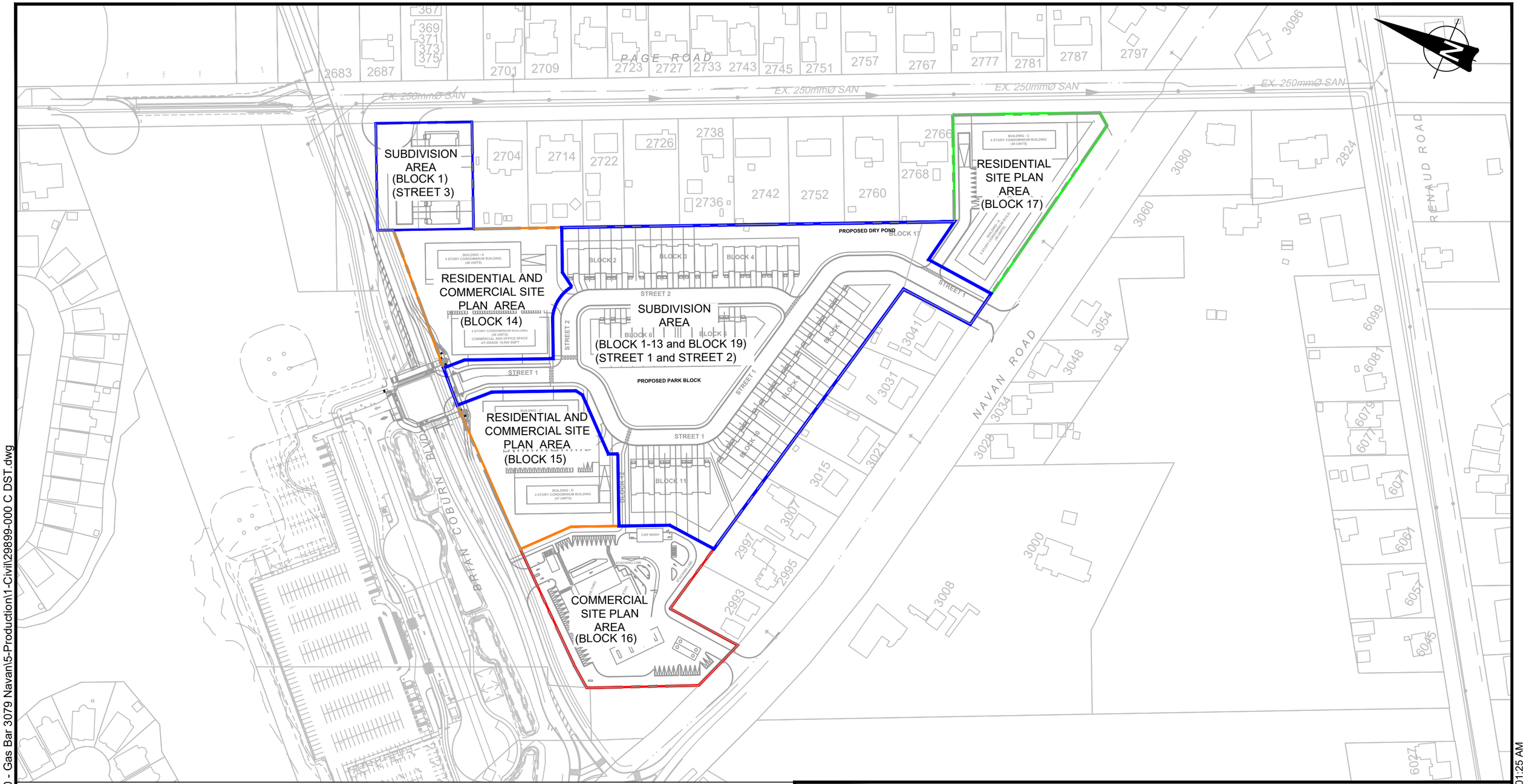
DESIGN:	TB
DRAWN:	TB
CHECKED:	LJ
JLR #:	29899

DRAWING #:

FIGURE 1

File Location: P:\29000\29899-000 - Gas Bar 3079 Navan\5-Production\1-Civil\FIGURE\29899-LocationPlan.mxd

Plot Date: Tuesday, July 6, 2021 1:28:10 PM



LEGEND:

- SUBDIVISION AREA (Total 2.95 ha)
- COMMERCIAL SITE PLAN AREA (Total 0.74 ha)
- RESIDENTIAL SITE PLAN AREA (Total 0.56 ha)
- RESIDENTIAL AND COMMERCIAL SITE PLAN AREA (Total 1.11 ha)

PROJECT:

2983, 3053 AND 3079 NAVAN RD & 2690 PAGE RD

DRAWING:

DEVELOPMENTAL BREAKDOWN OF SUBJECT PROPERTIES

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DESIGN:	MM
DRAWN:	KT
CHECKED:	MM
JLR #:	29899-000

SCALE: 1:2000

DRAWING #: FIGURE 2

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Table 1-1: Developmental Breakdown of the Subject Properties

Property	Area (ha)
One (1) Plan of Subdivision (Blocks 1 to 13 and Block 19)	2.95
One (1) Residential Site Plan (Block 17)	0.56
Two (2) Mixed Use - Residential and Commercial Site Plans (Block 14 and 15)	1.11
One (1) Commercial Site Plan (Block 16)	0.74
Total Area of the Five (5) Subject Parcels	**5.36**

A summary of the proposed developmental parcels is provided below:

- The subdivision covers ±2.95 ha and contains 67 townhouse units, one (1) public park, and one (1) dry pond. The subdivision is located within Blocks 1 to 13 and Block 19.

- The one (1) residential site plan is located on Block 17 (±0.56 ha) and contains two (2) mid-rise residential condos.

- The two (2) mixed use - residential and commercial site plans are located on Blocks 14 and 15 with a total area of ±1.11 ha. Each site plan features two (2) mid-rise residential condos with underground parking and one (1) storey of commercial space.

- The commercial site plan on Block 16 features a gas bar and McDonalds on a ±0.74 ha parcel of land.

At this time no phasing is proposed. It is anticipated that the approvals for the subdivision will proceed first, and once the approval of the site plans is obtained; they will be developed accordingly.

The Draft Plan of Subdivision and the proposed Concept Plan for the proposed development (prepared by PMA Architects) is included in Appendix B. The topographical survey for the properties prepared by Stantec Geomatics Ltd. is also included in Appendix B.

1.3 Existing Infrastructure and Future Navan Road Widening

A review of existing services was carried out along the frontages of the subject properties to identify existing sewers and watermains. Based on the review of the Drawings for Pagé Road, Navan Road and Brian Coburn Boulevard obtained from the City of Ottawa (Appendix C), the following infrastructure has been identified to exist within municipal right-of-way (R.O.W.):

Watermains:

- 305 mm diameter Ductile Iron watermain along Navan Road (circ. 1976)
- 305 mm diameter Ductile Iron watermain along Pagé Road (circ. 1974)

Sanitary Sewers:

- 250 mm diameter PVC sanitary sewer along Pagé Road (circ. 2005)

- 300 mm diameter PVC sanitary forcemain along Pagé Road (circ. 2005)
- 400 mm diameter PVC sanitary forcemain along Pagé Road (circ. 2007)

Storm Sewers:

- Short section of 750 mm diameter PVC storm sewer along Navan Road (circ. 2016)
- Short section of 525 mm diameter PVC storm sewer along Brian Cobourn Boulevard (circ. 2016)

Future Navan Road Widening

The City's Transportation Master Plan (2013) anticipates a future road widening of Navan Road, from Brian Coburn Boulevard to Mer Bleue Road, to four (4) lanes, therefore increasing the Right-of-Way to 37.5 meters. At the direction of the City, the servicing design and drawings have been revised to reflect this ultimate condition.

1.4 Existing Topography and Functional Grading Plan

Based on the topography of the subject properties (refer to Appendix B), there is a southeasterly slope from Brian Coburn Boulevard to the intersection of Navan Road and Pagé Road. The site topography indicates a 4 to 5 meter elevation drop from the center of the development to the entrance on Navan Road.

A Functional Grading Plan (refer to Drawing FG) has been developed for the proposed site. Centre line of road grades from the local streets were functionally designed to tie into existing roads from the adjacent streets (Navan Road and Pagé Road). The conceptual road grades were developed to convey and safely evacuate the minor system’s runoff excess to strategic low points and the 1:100-year runoff is to be contained on-site.

1.5 Pre-Consultation, Permits and Approvals

The pre-consultation meeting that was held on January 18, 2021 (Appendix A) summarizes the planning process and design criteria and servicing constraints. From a storm perspective, the storm discharge criteria and allowable peak flow used for the preparation of this Report is presented in Section 4.1 (below).

Once the Functional Servicing Report is approved, the development of the above-referenced properties will first be subject to a Draft Plan of Subdivision. Once rezoning is approved, the subdivision will proceed into detailed design where servicing constraints would be developed for the private properties (site plans) on Blocks 14, 15, 16 and 17. Following the approval of the Subdivision, the private properties (site plans) could proceed under Site Plan control.

In terms of the Ministry of the Environment, Conservation and Parks (MECP) requirements, an Application for an Environmental Compliance Approval (ECA) is expected to be required for the sanitary, storm and SWM works for the subdivision including works along Navan Road. However, an Application for an ECA is not anticipated for the individual site plans blocks.

2.0 Water Servicing

2.1 Water Supply Design Criteria

Any additions to the City of Ottawa water distribution system must be designed in accordance with the Ottawa Design Guidelines for Water Distribution (July 2010) and Technical Bulletins ISDTB-2014-02, ISTB-2018-02 and ISTB-2021-03. The Design Guidelines require that the proposed water distribution system will satisfy the pressure constraints for the peak hour demand, maximum day demand plus fire flow, and maximum pressure in the system.

Section 4.2.2 of the Design Guidelines require that all new development additions to the public water distribution system be designed such that the minimum and maximum water pressure, as well as the fire flow rates, conform to the following:

- Under maximum hourly demand conditions (peak hour), the pressures shall not be less than 276 kPa;
- During periods of maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 140 kPa (20 psi);
- In accordance with the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi);
- The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 689 kPa (100 psi); and

Feedermains, which have been provided primarily for the purpose of redundancy, shall meet, at a minimum, the basic day plus fire flow demand.

Table 2-1 summarizes the design criteria for water distribution systems, which will serve as the basis for the detailed design of the proposed watermains for the site.

Table 2-2: Water Design Criteria

Design Criteria	Design Value
Average demand	280 L/cap/day
Maximum demand	2.5 x Avg
Peak hour	2.2 x Max Day
Density Townhouse	2.7 ppu
Density Average Apt (used for Condo Units)	1.8 ppu
Commercial	
Average demand	28,000 L/gross ha/day
Fire Flow Requirements	
Municipal ROW / Private Site with Hydrants	FUS
Service Lateral Only	OBC & NFPA 13
Pressure/Flow	
Peak hour	>276 kPa (40 psi)
Maximum day plus fire flow	>140 kPa (20 psi)
Minimum hour (maximum HGL)	<552 kPa (80 psi)

2.2 Domestic Water Demands

The estimated domestic water demands presented in this section are based on the site layout and unit count proposed in the Concept Plan (Appendix D1). The proposed development consists of 67 row townhouse units, six (6) condominium buildings, and 0.93 hectares of commercial space. Refer to Appendix D1 for the detailed water demands calculation sheet.

The residential consumption rate for average day demand was set in accordance with the City's Technical Bulletin ISTB-2021-03. Since receiving the boundary conditions from the City (see Appendix D3), a portion of the residential units in the condominium buildings have been converted into retail space. Additionally, the number of row townhouse units within the proposed development has reduced. As a result of these changes, the boundary conditions provided by the City are expected to remain applicable. The water demand calculations for the latest site layout and unit count can be found in Appendix D1. Table 2-2 summarizes the theoretical water demand results based on the proposed site details and the Design Guidelines.

Table 2-3: Theoretical Water Demands

Demand Scenario	Residential Water Demand (L/s)	Commercial Water Demand (L/s)	Total Water Demand (L/s)
Average Day	2.12	0.30	2.43
Maximum Day	5.30	0.45	5.75
Peak Hour	11.66	0.81	12.47

2.3 Proposed Watermain Sizing and Roughness

The overall watermain layout for 2983, 3053, and 3079 Navan Road and 2690 Pagé Road is shown in Drawing FWM (Functional Watermain Servicing). Table 2-3 summarizes the watermain roughness coefficients that were determined using friction factors presented in Section 4.2.12 of the Design Guidelines. The internal pipe diameters were modelled based on Section 4.3.5 of the Design Guidelines and are summarized in Table 2-4.

Table 2-4: Watermain Roughness Coefficients

Watermain Diameter	C-Factor
150 mm	100
200 to 250 mm	110
300 to 600 mm	120

Table 2-5: Watermain Internal Diameters

Nominal Diameter	Inside Diameter
150 mm	155 mm
200 mm	204 mm
300 mm	297 mm

2.4 Fire Flow Requirements

2.4.1 General

In terms of required fire flow (RFF), the Fire Underwriters Survey (FUS) method shall be used for any public or private site where watermains and fire hydrants are being designed. Hence, the required fire flow (RFF) for the site was calculated using the FUS method. Specifically, the protocol for the application of the FUS method as outlined in Appendix H: Protocol to Clarify the Application of the Fire Flow Calculation Method Published by Fire Underwriters Survey (FUS) of TB-2018-02 was used.

2.4.2 Required Fire Flow

The required fire flow (RFF) per the FUS was calculated based on the building size, building properties, exposure to adjacent units and TB-2018-02 which includes the City Technical Bulletin ISDTB-2014-02.

Based on the proposed layout for the development, the critical RFF was calculated at six (6) locations as presented in Appendix D1:

- Critical Fire Area 1: One (1) proposed block of seven (7) townhouse units located in the centre of the development.
- Critical Fire Area 2: One (1) proposed block of four (4) townhouse units adjacent to the backs of the existing properties on Pagé Road.
- Critical Fire Area 3: The gas retail and drive-thru located east of the Navan Road and Brian Coburn Intersection.
- Critical Fire Area 4: A four (4) storey condominium building (Building A) located southwest of the Pagé Road cul-de-sac.
- Critical Fire Area 5: A four (4) storey condominium building (Building C) located west of the Navan Road and Pagé Road intersection.
- Critical Fire Area 6: One (1) proposed block of four (4) townhouse units located in the centre of the development east of the proposed gas station.

The RFF for each critical fire area was calculated in accordance with the Design Guidelines, and associated Technical Bulletins. According to ISDTB-2014-02, the required fire flows (based on FUS calculations) for the townhouse units can be capped at 10,000 L/min (167 L/s) since they satisfy the following two (2) conditions:

1. Firewalls are constructed to separate a town or row house block into fire areas of no more than the lesser of 7 dwellings, or 600 m^2 in building footprint; and

2. There is a minimum separation of 10 m between the backs of adjacent units.

Table 2-5 summarizes the calculated RFFs for the six (6) critical fire areas and the detailed RFF calculations are presented in Appendix D1.

Table 2-6: Fire Flow Requirements for Critical Fire Areas

Location	Block Number	Calculated RFF in L/min (L/s)
Critical Fire Area 1	Block 6	10,000 (167)
Critical Fire Area 2	Block 3	10,000 (167)
Critical Fire Area 3	Block 16	6,000 (100)
Critical Fire Area 4	Block 14	14,000 (233)
Critical Fire Area 5	Block 17	15,000 (250)
Critical Fire Area 6	Block 11	10,000 (167)

2.5 Water Servicing and Boundary Conditions

2.5.1 Water Servicing

The proposed water service for the Navan Road development will consist of a local 203 mm diameter watermain loop within the subdivision and a 203 mm water service for the gas station within Block 16 as illustrated in Drawing FWM (Functional Watermain Servicing). The 203 mm diameter loop for the subdivision will connect to the existing 305 mm diameter watermains at the two (2) proposed connection locations:

- the existing Pagé Road 305 mm diameter watermain, located at the intersection between Pagé Road and Brian Coburn Boulevard; and
- the existing Navan Road 305 mm diameter watermain, located west of the intersection between Navan Road and Pagé Road.

The 200 mm diameter water service for the gas station within Block 16 will have its own connection to the existing 305 mm diameter watermain on Navan Road, located adjacent to the intersection of Navan Road and Brian Colburn Boulevard. The water service to the gas station will not connect internally to the residential watermain loop.

The 200 mm diameter water service for the townhouses in Block 1 will connect to the existing 305 mm diameter watermain on Pagé Road and extend along Street 3.

During the detailed design phase, upsizing of the watermain from a 203 mm diameter system to a 305 mm diameter system within the municipal right of way will be investigated. The use of larger sized mains will be considered as required to ensure there are sufficient flows within the system for fire protection.

2.5.2 Fire Protection

Fire protection to the site is anticipated to be achieved by five (5) on-site hydrants and the existing hydrants on Pagé Road and Navan Road. As shown in Drawing FWM, the on-site hydrants will be located along the 203 mm diameter watermain loop. It should be noted that these hydrant locations are preliminary and will be refined during the detailed design phase.

Hydrant spacing is in accordance with ISTB-2018-02, which states that the aggregated fire flow capacity of all fire hydrants within 150 m of a building shall not be less than the required fire flow of the building. Furthermore, ISTB-2018-02 highlights that the maximum capacity of fire flow for a hydrant is 95 L/s if the hydrant is within 75 m of a building. For hydrants located between 75 to 150 m from a structure, the hydrant flow capacity shall be taken as 63 L/s.

Fire protection for the private site plans (Blocks 14, 15, 16 and 17) will be detailed as part of their respective Site Plan Applications. For the purposes of this report, it will be demonstrated that the proposed watermains are anticipated to have sufficient flow for fire protection of the four (4) blocks.

2.5.3 Boundary Conditions

The performance of the proposed water distribution system at 2983, 3053 and 3079 Navan Road and 2690 Pagé Road was evaluated under various domestic demands and fire flow conditions using the hydraulic boundary conditions provided by the City (refer to Appendix D3 for a copy of the City correspondence). The boundary conditions provided by the City were located down the street from the proposed connections to the site (refer to Appendix D1 for the proposed connection locations). In order to model the proposed connection on Pagé Road, Connection-1 from the City's boundary condition was used. Similarly, in order to model both proposed connections on Navan Road, Connection-3 from the City's boundary condition was used. The existing watermains on Navan Road and Pagé Road were modelled as required. Tables 2-6 and 2-7 summarize the hydraulic boundary conditions received from the City that were used in the HNA.

Table 2-7: Hydraulic Boundary Conditions at Connection-1 on Pagé Road

Demand Scenarios	Head (m)
Peak Hour	126.6
Maximum Day + Fire Flow 1 10,000 L/min (167 L/s)	126.2
Maximum Day + Fire Flow 2 15,000 L/min (250 L/s)	123.0
Maximum Pressure Check	130.7

Table 2-8: Hydraulic Boundary Conditions at Connection-3 on Navan Road

Demand Scenarios	Head (m)
Peak Hour	126.6
Maximum Day + Fire Flow 1 10,000 L/min (167 L/s)	125.8
Maximum Day + Fire Flow 2 15,000 L/min (250 L/s)	122.3
Maximum Pressure Check	130.7

2.6 Simulation Results

A Hydraulic Network Analysis (HNA) was carried out to assess preliminary water servicing. Boundary conditions were provided by the City (Appendix D3) and used in this HNA. Simulations were carried out under peak hour demand, maximum day demand plus fire flow, and maximum pressure conditions.

2.6.1 Peak Hour

The peak hour demand shown in Table 2-2 was distributed throughout the nodes within the site. Using the boundary conditions shown in Table 2-6 and Table 2-7, the simulation results found the minimum pressure on site to be 397 kPa (57.6 psi) as shown in Appendix D4. Based on the simulation results, the minimum pressure criterion of 276 kPa (40 psi) is anticipated to be met everywhere on this site.

2.6.2 Maximum Day Plus Fire Flow

To ensure adequate fire protection, the maximum day demand shown in Table 2-2 was analyzed simultaneously with the fire flow. The simulation was conducted using the boundary conditions presented in Table 2-6 and Table 2-7. As described in Section 2.2, the Concept Plan has been revised since receiving boundary conditions from the City. However, considering that the most critical required fire flow (RFF) of 250 L/s has not changed, the boundary conditions are expected to remain applicable for the purposes of reviewing the functional serviceability of this site.

The fire flow simulation was carried out by allowing WaterCAD® to calculate the maximum fire flow that can be drawn from each node without allowing any part of the system to experience pressures less than 140 kPa (20 psi). Using the 15,000 L/min (250 L/s) boundary condition provided by the City (refer to Table 2-6 and 2-7), the system is expected to deliver a minimum of 10,000 L/min (167 L/s) within the site. This demonstrates that the fire flow requirement of 10,000 L/min (167 L/s) for the townhouse units within the subdivision can be met. It is noted that the boundary conditions used in this scenario are conservative for most of the site, including for all of the townhouse units.

The critical RFF for the residential site plans on Blocks 14 and 15 is 14,000 L/min (233 L/s) as described in Section 2.4.2. Using the 15,000 L/min (250 L/s) boundary condition provided by the City (refer to Table 2-6 and 2-7), it is anticipated that a minimum flow of 14,280 L/min (238 L/s) is available within the mains fronting these two blocks as shown in Appendix D5.

For the other residential site plan on Block 17, the RFF was calculated as 15,000 L/min (250 L/s). The simulation results (Appendix D5) found that the hydraulic capacity in this area is capable of supplying 15,000 L/min (250 L/s). Thus, it is expected that fire protection will be met for all three (3) residential site plans.

The simulation results (Appendix D5) show that the industrial site plan (Block 16) will deliver fire flows in excess of 169 L/s, which is above the calculated RFF in Section 2.4.2. Hence, the RFF can be fulfilled everywhere within the site. As noted in Section 2.5.2, the RFF will be provided by a combination of fire hydrants that each have a maximum flow capacity of 95 L/s (as per ISTB-2018-02).

2.6.3 Maximum HGL

The Design Guidelines require that a high-pressure check (maximum hydraulic grade elevation) be performed on the proposed system to ensure that the maximum pressure constraint of 552 kPa (80 psi) is not exceeded. Based on a zero (0 L/s) demand condition and corresponding boundary conditions (refer to Table 2-5 and Table 2-6), a maximum pressure of 479 kPa (69.5 psi) is expected (refer to Appendix D6 model output results). These values are below the maximum pressure constraint of 552 kPa (80 psi), therefore pressure reducing valves (PRVs) are not anticipated to be required.

2.7 Water Servicing Conclusions

Based on the water simulation results, the proposed subdivision can be serviced by the 203 mm diameter watermains illustrated in Drawing FWM. Simulation results under peak hour demand and maximum hydraulic grade line (HGL) show that the pressure requirements listed in the Design Guidelines were achieved. Furthermore, fire flow requirements can be met for the site, noting that fire protection for the Site Plans (Blocks 14, 15, 16 and 17) will be detailed as part of their respective Site Plan Applications.

3.0 Wastewater Servicing

3.1 Background

East Urban Community Infrastructure Servicing Study Update (EUC ISSU, Stantec 2005)

The subject properties are tributary to a proposed sanitary sewer that will be part of the Navan Road right-of-way (ROW). The proposed system is intended to flow in a southeasterly direction, bypassing Pagé Road, and ultimately discharging into the existing Renaud Road 600 mm diameter trunk sanitary sewer. From that point, wastewater flows will be conveyed in a

southwesterly direction by the Renaud Road 600 mm diameter trunk sanitary sewer until discharging to the Forrest Valley Pump Station and pumped to the Forest Valley Trunk sewer.

The subject properties are part of two tributary areas denoted in the EUC ISSU as Area 13A and 13B. Appendix E1 contains a copy of the overall sanitary drainage plan from the EUC ISSU highlighting Area 13A and 13B.

Area 13A:
Based on the design sheet included in the EUC ISSU (Appendix E1), the subject properties are part of the 6.60 ha that forms Area 13A and tributary to the sewer reach identified as MH13A to MH13, spanning from Pagé Road to Renaud Road as per the EUC ISSU Design Sheet. A copy of this design sheet is attached to Appendix E1.

Area 13B:
Based on the design sheet included in the EUC ISSU (Appendix E1), the subject properties are also part of the 10.50 ha that forms Area 13B and tributary to the sewer reach identified as MH13B to MH13A, spanning from the subject properties' entrance to Pagé Road.

From a review of the planned sanitary servicing on Navan Road as well as the background documents presented in Appendix C, the following were key highlights:

- The existing Renaud Road trunk sanitary sewer at Navan Road has an invert of 77.17 m and obvert of 77.77 m.

- There are two (2) existing forcemains along Pagé Road (±157.6 m) with top of casing elevations of ±76.69 m that would need to be crossed to extend sanitary servicing along Navan Road.

- There is an existing 250 mm diameter sanitary sewer along Pagé Road that flows in a southerly direction from Navan Road to Renaud Road which was not part of the EUC ISSU Design. From the background documents provided the existing sanitary sewer has a south invert of 78.02 at existing MH 10 at the Pagé and Navan Road intersection as shown in Drawing FSAN (Functional Sanitary Servicing).

- The recommended strategy of a sanitary sewer connection to the Renaud Road trunk sanitary sewer at Navan Road along Navan Road (at a minimum 0.35% slope) from the Pagé Road intersection (i.e., ±158.0 m distance) cannot be proposed due to pipe conflicts. The pipe locations and existing inverts would not allow for flows to be conveyed in a southeasterly direction as intended in the EUC ISSU Design but rather flows would flow south via the 250mm sanitary sewer along Pagé Road. An alternative sanitary servicing solution is provided in Section 3.2.

3.2 Revised Sanitary Servicing

Given the linear infrastructure constraints at the Pagé Road intersection, an alternate sanitary servicing solution was reviewed to replace the recommended strategy developed as part of the EUC ISSU. The original strategy was to construct a 200 mm diameter sanitary sewer along Navan Road, that would extend from the site entrance to Pagé Road, and then to the sanitary sewer at the intersection of Renaud Road and Navan Road, for an overall length of ±300 m.

As shown in the Functional Sanitary Servicing (Drawing FSAN), the Renaud Road 600 mm diameter trunk sewer runs southwesterly from Navan Road towards Pagé Road. Hence, there is an opportunity to connect the proposed Navan Road 200 mm diameter sanitary sewer, from the site entrance to the existing MH 10 at the intersection of Pagé Road and Navan Road (refer to Drawing FSAN). Wastewater would then flow in a southeasterly direction along Pagé Road and discharge into the Renaud Road 600 mm diameter trunk sanitary sewer. Given that this revised sanitary sewer routing along Pagé Road is further downstream than the original servicing solution found in the EUC ISSU, there would not be any capacity issues and this strategy would limit the works crossing the existing forcemains on Pagé Road.

Refer to Drawing FSAN for the revised functional sanitary servicing which involves the above stated connection to existing MH 10 at the intersection of Pagé Road and Navan Road. In addition, the 2690 Pagé Road parcel is to be serviced via the existing 250 mm diameter sanitary sewer on Pagé Road in accordance with the EUC ISSU tributary to Area 13A.

3.3 Proposed Sanitary Sewer System

The proposed sanitary sewers within the subject properties and along Navan Road were conceptually sized in accordance with the Ottawa Sewer Design Guidelines ((OSDG) - (October 2012)) and associated Technical Bulletins. As described in Section 3.2, the sanitary servicing has slightly been modified from what was shown in the EUC ISSU to prevent a sub-standard connection.

The proposed sanitary sewers have also been designed to accommodate any catchment areas identified within the EUC ISSU Report (Stantec, 2005) as well as the future Navan Road widening. Refer to Drawing FDSAN for the Functional Sanitary Drainage Plan and Drawing FSAN for the Functional Sanitary Servicing.

Key design parameters reflecting the revised sanitary parameters have been summarized in Table 3-1 below.

Table 3-1: Wastewater Servicing Design Criteria

Design Criteria	Design Value	Reference
Residential average flow	280 L per capita/day	ISTB-2018-01
Residential peaking factor	Harmon Formula x 0.8	City Section 4.4.1
Commercial average flow	28,000 L/gross ha/day	ISTB-2018-01
ICI peaking factor (1)	1.0/1.5	ISTB-2018-01
Infiltration Allowance 0.05 L/s/ha (dry I/I) 0.28 L/s/ha (wet I/I)	0.33 L/s/ha	ISTB-2018-01
Minimum velocity	0.6 m/s	OSDG Section 6.1.2.2
Maximum velocity	3.0 m/s	OSDG Section 6.1.2.2
Manning Roughness Coefficient	0.013	OSDG Section 6.1.8.2
Minimum allowable slopes	Varies	OSDG Table 6.2, Section 6.1.2.2

3.4 Theoretical Sanitary Peak Flow

Wastewater flows from the subject properties were estimated based on the population associated with the Concept Plan, Draft Plan of Subdivision, the theoretical unit flow of 280 L/capita/day and the adjusted Harmon peaking factor. Based on this design criteria, a total combined peak wastewater flow of 8.95 L/s (Navan) + 0.37 L/s (Pagé) = 9.31 L/s was estimated. This peak wastewater flow represents part of the overall flows allocated for Areas 13B and 13A, which are shown as 10.50 ha and 6.60 ha in the EUC ISSU sanitary design sheet (Appendix E1). When the other areas of Area 13B is considered, the peak flow at Pagé Road was estimated at 12.65 L/s.

As presented in Section 3.2, it is proposed to connect the Navan Road 200 mm diameter sanitary sewer, from the site entrance to Pagé Road, and connect to the existing MH 10 at the intersection of Pagé and Navan Road.

Therefore, when the areas included in Area 13A (6.60 ha) as shown in the EUC ISSU, are combined with the flows from Area 13B (12.65 L/s) wastewater flows of 15.71 L/s were estimated to discharge southeasterly from existing MH 10 towards the Renaud Road 600 mm diameter trunk sanitary sewer. Although, the calculated peak flow of 15.71 L/s is above the allocated peak flow of 11.33 L/s as shown in the EUC ISSU design sheet (refer to Appendix E1 for the ISSU design sheet and Appendix E2 for the JLR Design Sheet). The design from the EUC ISSU was based on the previous OSDG of 350 L/p/day. Given the updated design parameters of 280 L/p/day prescribed in ISTB 2018-03 from the previous 350 L/cap/day, and the existing 250 mm sanitary sewer system on Pagé Road currently has a free-flowing capacity of 29.0 L/s (250mm diameter sewer with an As-Constructed slope of 0.74%), it is expected that this sewer will have adequate capacity to accommodate the flows generated from the subject site. The total amalgamated flows stated above of 15.71 L/s will only account for 55% of the existing sanitary pipe capacity (from Navan to Renaud) or flow 55% full.

3.5 Proposed Sanitary Sewer Sizing

The wastewater analysis described in Section 3.2 shows that the proposed sanitary sewers must be sized to accommodate: i) the peak wastewater flow in the subdivision of 8.95 L/s (for Navan Road connection) and 0.37 L/s (for Pagé road connection), ii) the peak flow of 12.65 L/s at Pagé Road, and iii) the design flow of 15.71 L/s at Renaud Road. To accommodate these design flow targets, proposed 200 mm diameter sanitary sewers are proposed. Refer to Appendix E2 for the Design Sheets for the subject properties and Drawing FSAN for the functional sanitary servicing plan.

3.6 Wastewater Servicing Conclusions

The subject properties will be serviced by a local sanitary system consisting of 200 mm diameter sewers discharging to two locations i) Navan Road and ii) Pagé Road (refer to Drawing FSAN).

The Navan Road system will discharge into an off-site 200 mm diameter sewer that will be tributary to the existing 250 mm diameter sanitary sewer located along Pagé Road east of Navan Road. The Pagé Road system will be discharged into an existing 250 mm diameter sanitary sewer located along Pagé Road. Both systems merging at the Pagé and Navan intersection and ultimately tributary to the Renaud Road trunk sewer. The theoretical peak wastewater flows of 9.01 L/s and 0.37 L/s were calculated based on the design criteria described in the Ottawa Sewer

Design Guidelines and associated Technical Bulletins as shown in the Design Sheet included in Appendix E.

4.0 Storm Servicing and Stormwater Management

4.1 Existing Conditions and Background

The subject properties are bounded on three (3) frontages; Navan Road, Pagé Road and Brian Coburn Boulevard. As noted in Section 1.3, short sections of storm sewers are existing on Navan Road and Brian Coburn Boulevard. These storm sewers have limited capacities and were not sized for the subject properties.

There are no existing storm sewers that have capacity for the subject properties. However, storm servicing and stormwater management for the subject properties have been reviewed as part of the East Urban Community Infrastructure Servicing Study Update (EUC ISSU, Stantec 2005). A summary of the EUC ISSU that pertains with the properties follows:

East Urban Community Infrastructure Servicing Study Update (Stantec, 2005)

The subject properties are tributary to a proposed storm sewer system that will be part of the Navan Road right-of-way (ROW). The proposed storm sewer system is intended to flow in a southeasterly direction, past the Pagé Road intersection, and to ultimately connect to the existing Renaud Road 1350 mm diameter trunk storm sewer. From that point, the captured storm sewer flows will be conveyed in a southwesterly direction by the Renaud Road 1350 mm diameter trunk storm sewer, pass the Pagé Road intersection until discharging to an existing end-of-pipe facility referred to as Pond #3, which in turn outlets to Mud Creek. This facility was designed to provide an enhanced protection level (80% total suspended solids removal), erosion control as well as providing quantity storage for its serviced area.

The minor system flow allowance for the subject properties should be set based on the design criteria developed as part of the EUC ISSU. The subject properties are within the drainage area for Pond 3 which requires control in the minor system to 85 L/s/ha and to the 1:10 year event on arterial roads, including Navan Road.

Mud Creek Cumulative Impact Study (Stantec, May 2020)

Pond #3 in the East Urban Community discharges into Mud Creek and therefore the development is contributes flows to Mud Creek. Historical land use alterations and land development within the Mud Creek watershed has led to erosion of stream bed and bank materials as evidenced by stream bank instabilities. The Mud Creek Cumulative Impact Study completed a cumulative impacts assessment for upper Mud Creek whereby the potential impacts of foreseeable public and private developments were considered. The study recommended the implementation of a series of restoration measures in four locations and Pond #3 is upstream of two of these locations, Sites #12 and #13, which are approximately 475 m in length.

The implementation plan for the restoration includes establishing an approach to funding/cost sharing for the natural inventories, design, construction and post-construction monitoring activities. The major funding partners will include the City, land developers and the National

Capital Commission. As urbanization of lands tributary to some of the erosion works occur, the Draft Condition that will be formulated by the City should reference the mechanism that they have, or will, established to cost share the length of erosion works that the subject site will contribute while accounting the site's imperviousness.

4.2 Storm Criteria

4.2.1 Design Criteria

This Functional Servicing Report and associated high-level drawings have been prepared based on the discussions held during the pre-consultation meeting (Appendix A) and subsequent E-Mail correspondences. The storm design criteria used in this high-level functional level servicing is based on the items described in As shown in Figure 3, the total drainage area of the development consists of the following:

1) The internal tributary drainage area is ±5.295 ha. Which is the total site area of ±5.36 ha with a small area of ±0.069 ha removed that will sheet flows uncontrolled to Navan Road. The internal tributary drainage area is ±5.295 ha

2) In addition to the internal drainage area, the area from existing abutting properties on Navan Road (0.7ha) and Pagé Road (1.14ha) which currently drain towards the proposed development and will be captured via the proposed stormwater system within this new development. This external tributary drainage area is therefore an additional area of ±1.84 ha.

By considering the catchment areas noted above, the total drainage area for the site storm servicing is ±7.13 ha. Multiplying this area by the controlled release rate of 85 L/s/ha (as directed by the EUC ISSU), the allowable release rate calculated for the development is ±606 L/s.

Table 4-1.

4.2.2 Boundary Condition

The boundary condition of the storm sewer on Navan Road is set as the 1:100 year HGL specified for the Trunk Storm Sewer on Renaud Road in the EUC ISSU. The elevation specified at MH603 is estimated from the report at 77.5 m. It should be noted that this elevation is below the outlet from the subject parcels and therefore does not have significant impact on the site servicing.

4.2.3 Allowable Release Rate

The method to determine the allowable peak flow is based on multiplying the total drainage area tributary to the proposed development by the controlled release rate of 85 L/s/ha (as directed by the EUC ISSU). As shown in Figure 3, the total drainage area of the development consists of the following:

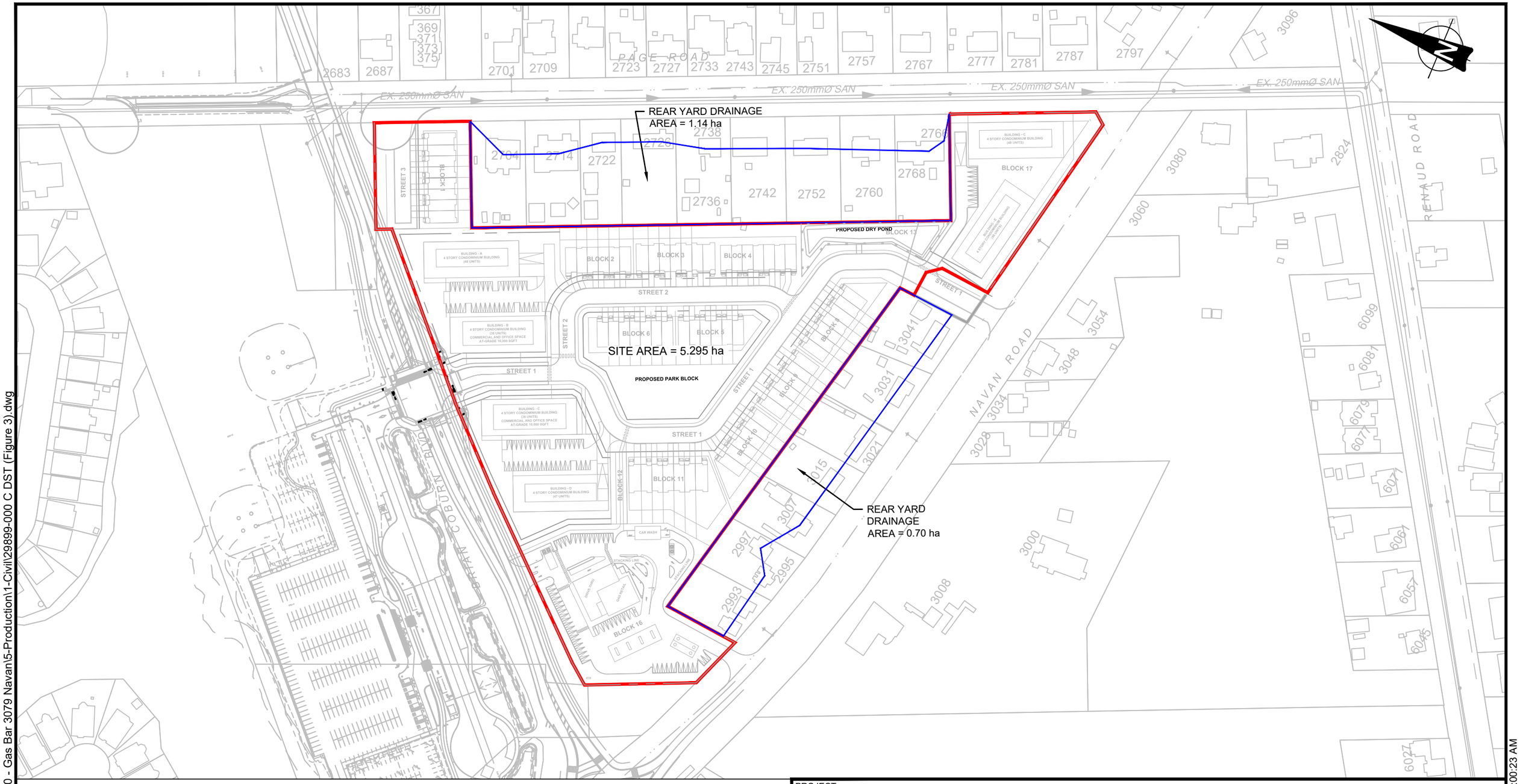
3) The internal tributary drainage area is ±5.295 ha. Which is the total site area of ±5.36 ha with a small area of ±0.069 ha removed that will sheet flows uncontrolled to Navan Road. The internal tributary drainage area is ±5.295 ha

4) In addition to the internal drainage area, the area from existing abutting properties on Navan Road (0.7ha) and Pagé Road (1.14ha) which currently drain towards the proposed development and will be captured via the proposed stormwater system within this new development. This external tributary drainage area is therefore an additional area of ±1.84 ha.

By considering the catchment areas noted above, the total drainage area for the site storm servicing is ±7.13 ha. Multiplying this area by the controlled release rate of 85 L/s/ha (as directed by the EUC ISSU), the allowable release rate calculated for the development is ±606 L/s.

Table 4-1: Storm Servicing Design Criteria

General Design Criteria
Proposed storm sewers to be sized to capture the 1:2-year peak flows, and the 1:10 year peak flows on Navan Road, to be estimated with the Rational Method based on the City of Ottawa Intensity-Duration-Frequency (IDF) curves.
Peak flows estimated based on an inlet time of ten (10) minutes, as per the Technical Bulletin ISDTB-2012-4.
Calculated peak flows to be estimated based on calculated Runoff-Coefficients. The weighted C-Factors have been calculated based on 0.90 for all hard surfaces and 0.60 for all landscaped areas.
Peak flow rate from the site to be controlled to 85 L/s/ha.
Proposed storm sewer systems on each of the individual Site Plans are to capture the 1:2-year design flow and have no surface ponding.
The stormwater management system on each of the individual Site Plans is to detain the 1:100-year flows while releasing at a peak flow rate equivalent to 85 L/s/ha therefore underground or rooftop storage will be required within the site plan parcels.
The 1:100-year peak flows to be detained by means of on-site retention measures including street sag storage and a dry pond facility.
Quality control will be accommodated by Pond #3 to meet an MECP Enhanced Level of Protection (80% TSS removal).
Inlet control devices (ICDs) will be sized at detailed design to capture a peak flow rate of 85 L/s/ha and ensure a freeboard in the sewer network to the underside of footing (USF) of 300 mm during the 1:100-year storm
Comparisons of the ICD captured flow rates to the rational method flow rates will be provided at detailed design.
Maximum street ponding depth of 350 mm (static and dynamic) as per the Design Guidelines and maximum depth of rear yard flow to be 300 mm. During the Climate Change event, the street ponding is not to reach the lowest building opening while the storm HGL must remain at or below the USF. The product of the velocity and depth of major system flows on streets during the 1:100-year design storm event is not to exceed 0.60 m²/s.
• Minimum roadway profile grades at 0.5%. • Roadway cross-fall of 3% was used for all streets. • Minimum roadway slope of 0.1% from crest-to-crest for overland flow route. • Minimum vertical clearance of 0.15 m between the spill elevation on the street and the finished grade (garage elevation). • Minimum vertical clearance of 0.30 m between the rear yard spill elevation and the ground elevation at the building in the rear yards.
Provide measures to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.



LEGEND:

SITE AREA (Total 5.295 ha)

REAR YARD DRAINAGE AREA (Total 1.84 ha)

TOTAL DRAINAGE AREA = 7.13 ha

PROJECT:

2983, 3053 AND 3079 NAVAN RD & 2690 PAGE RD

DRAWING:

TOTAL DRAINAGE AREA BREAKDOWN

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DESIGN:	MM
DRAWN:	GH
CHECKED:	MM
JLR #:	29899-000

SCALE: 1:2000

DRAWING #: FIGURE 3

File Location: P:\29000\29899-000 - Gas Bar 3079 Navan\5-Production\1-Civil\29899-000 C DST (Figure 3).dwg

PLOT DATE: December 1, 2022 11:00:23 AM

4.2.4 Runoff Coefficients (C-Factors)

Functional runoff coefficients (C-Factors) were calculated based on the weighted product between the percentage of the pervious area and the percentage of the impervious area. At the direction of the City, sample runoff coefficient were calculated based on zoning setbacks and maximum driveway widths. To better reflect the differences in impervious surfaces within the subdivision, the overall C-Factor was broken down by assigning a higher C-Factor to the front areas that includes the roadways and driveways and a lesser C-Factor to the rear yard areas. On this basis, functional C-Factors used in the Rational Method calculations have been summarized in **Error! Not a valid bookmark self-reference.** below (refer to Appendix F2 for the Functional Runoff Coefficient calculations). Runoff coefficients for the remaining drainage areas were obtained from the EUC ISSU (Stantec, 2005). Refer to Appendix F1 for the EUC ISSU Storm Drainage Area Plan and Design Sheet.

Table 4-2: Functional Design Runoff Coefficients

Scenario	Functional Runoff Coefficient
Rear Yards – Townhouse Units Only	0.61
Front Yards and ROW	0.66
Residential and Commercial Site Plans (Blocks 14, 15 and 17)	0.77
Commercial Site Plan (Block 16)	0.90
Park Block (Block 7)	0.40
Dry Pond Block (Block 13)	0.83
Abutting Properties on Navan Road and Pagé Road	0.30

4.3 Storm Servicing Strategy

The proposed storm servicing strategy within the subject properties consists of a conventional storm sewer system on the municipal right-of-way (ROW). The storm sewers will be designed with capacity for the 1:2 year event with capture of a peak flow rate of 85 L/s/ha. The proposed sewers have been designed to accommodate any catchment areas identified within the EUC ISSU Report (Stantec, 2005) as well as the future Navan Road widening. Refer to Drawing FDST for the Functional Storm Drainage Plan and Appendix F3 for the Functional Storm Design Sheets.

The storm sewer system will connect to new public sewers on Navan Road (refer to Drawing FSTM for Functional Stormwater Servicing), which are to be designed to convey the 1:10 year event from Navan Road as well as the 1:2 year event from the remainder of the catchment area.

Major overland flow on the ROW within the subject properties, in excess of the 85 L/s/ha minor system capture, will be directed via a series of sags to a dry pond facility. The dry pond facility will detain runoff from up to the 1:100 year event. The dry pond will have a controlled release into the downstream storm sewer system.

Blocks 14, 15 and 17, and the gas station block (Block 16) will detain on site the 1:100 year event and will discharge at a flow rate equivalent to 85 L/s/ha into the storm sewers in the ROW upstream of the control structure.

The 2690 Pagé Road parcel, which is directly on Pagé Road, will discharge into the site's conventional storm sewer network with capture at 85 L/s/ha. Major overland flow will be detained in the street sag in up to the 1:100 year event.

4.4 Assessment of Storm Servicing Strategy

Note that when assessing reported results and areas there may be minor differences in results presented due to:

- Rounding in GIS areas – if ten catchments are rounded up by 0.001 or up to 0.004, this can have a difference across the ten catchments of between 0.01 and 0.04 ha.

- Reporting timestep verses calculation time step – the SWMM engine provides graphing of the results using the reporting timestep set by the modeler, which is different from the simulation calculation timestep. Results in the report below are extracted from PCSWMM in a way that extracts the result from the calculation timestep and may differ from results graphed in PCSWMM.

4.4.1 On-Site Storage Volume Requirements

Storage volume requirements were evaluated using the PCSWMM software platform (Refer to Appendix F5 for PCSWMM Schematic). A functional level dual drainage model was developed; the minor system spanned from the upstream end of the system within the future Site Plans, through the municipal right-of-way (ROW) included Draft Plan of Subdivision, along Navan Road until the connection point with the Renaud Road 1350 mm diameter trunk storm sewer.

The model includes street sags with preliminary grading with control release into the minor system at 85 L/s/ha, underground storage (represented with storage nodes) on the future Site Plans, and a dry pond near the entrance of the site. The release rate of the dry pond has been set at the equivalent of 85 L/s/ha from the upslope lands draining via overland flow to the dry pond. Storage requirements for the site were identified as shown in Table 4-3.

Table 4-3: Main Site Storage Volume Requirements and Release Rates (Navan Road)

Block	Area (ha)	Release Rate	Storage Required (m^3)	Storage Required (m^3/ha)
Block 14	0.57	49 L/s (85 L/s/ha)	194	338
Block 15	0.54	46 L/s (85 L/s/ha)	184	341
Block 16	0.74	63 L/s (85 L/s/ha)	244	330
Block 17	0.56	48 L/s (86 L/s/ha)	190	339
TOTAL SITE	7.13	607 L/s (85 L/s/ha)	309	43

On site plan blocks, storage will be provided in the future with the opportunity to utilise underground storage as well as parking lot sag storage, roof top storage, and/or a combination of these. The design storage requirements and configuration will be optimized at the detailed design stage of each of he respective sites.

4.4.2 Dry Pond Operation

The dry pond will receive major overland flow on site and detain it to release it at a controlled rate to the minor system storage. Pond side slopes will be 3:1 and have been simulated using a stage-storage curve developed from the proposed grading surface. The pond has been preliminarily sized to meet the OSDG requirements.

A geotechnical report entitled "Geotechnical Investigation of the Proposed Residential Development 2983, 3053, and 3079 Navan Road Ottawa, Ontario" was prepared by EXP. The borehole data provided in this report specifies that the groundwater table at the proposed dry pond block (Block 13) is at an elevation of 80.46 meters. As shown in Figure 4, the bottom of the pond is 1.00 metres above the groundwater table at an elevation of 81.46 metres.

The operation of the dry pond in the modelling simulation is provided in Table 4-4 for the 3-hour Chicago storm distribution and Table 4-5 for the 12-hour SCS storm distribution.

Table 4-4: Dry Pond Operation (3-hour Chicago Storm)

Event	Max HGL (m)	Max Depth (m)	Total Inflow (L/s)	Peak Release Rate (L/s)	Max Storage Volume (m³)
1:2 year	81.57	0.11	16	14	3
1:5 year	81.68	0.22	67	41	25
1:10 year	81.76	0.29	126	62	54
1:25 year	81.88	0.42	206	83	123
1:50 year	81.98	0.52	309	96	192
1:100 year	82.14	0.67	425	113	309

Table 4-5: Dry Pond Operation (12-hour SCS Storm)

Event	Max HGL (m)	Max Depth (m)	Total Inflow (L/s)	Peak Release Rate (L/s)	Max Storage Volume (m³)
1:2 year	81.59	0.12	21	18	5
1:5 year	81.70	0.23	82	46	30
1:10 year	81.78	0.31	142	65	63
1:25 year	81.89	0.42	214	83	125
1:50 year	81.97	0.51	299	94	182
1:100 year	82.05	0.59	382	104	243

The modelling results show that the pond contains flow in the 1:2 year event. The frequent event flows are from the immediate catchment runoff, rear yard swale and overflow from the street. The maximum water level in the pond is 82.14 m, which provides 470 mm freeboard to the surrounding area. Maximum pond depth is 670 mm which is less than 1.5m.

PROPOSED DRY POND

3:1 MAX SIDE SLOPES

POND BOTTOM = 81.46
GROUNDWATER TABLE = 80.46

MAXIMUM (100yr) WATER LEVEL: 82.14m

VOLUME AT MAXIMUM (100yr) WATER LEVEL: 309m^3

BLOCK 4

BLOCK 13

BLOCK 8

STREET 1

3041

505 504 503 522 510 509 508 507

525mmØ ST 750mmØ ST 825mmØ ST 375mmØ ST

0+200 0+220 0+236 0+280 0+290 0+300 0+310 0+320 0+340 0+360 0+380 0+400 0+420 0+440 0+460

3+050 3+060 3+080 3+100

82.96 82.65 82.65 82.62 83.05 82.51 82.70 82.53 82.38 82.92 83.60 83.33 82.75 82.56 82.68 83.76 83.70 83.82 83.79 83.70

T/G 81.46

0.8%

PLOT DATE: December 1, 2022 9:06:33 AM
CITY FILE NO. D07-12-21-0081

PROJECT:
2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:
BLOCK 13 FUNCTIONAL DRY POND SKETCH

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DESIGN:	SP
DRAWN:	SP
CHECKED:	KF
JLR #:	29899-000

SCALE: 1:400

DRAWING #:
FIGURE 4

4.4.3 Major System Ponding

Due to the capture rate of 85 L/s/ha being less than the 1:2 year rainfall event, there is ponding in the street sags in the 1:2 year event of up to 90 mm depth. The street ponding lasts for 19 minutes at the deepest location in the 1:2 year event and for 1.12 hours in the 1:100 year event. Table 4-7 shows the street ponding depths and capture rates compared to the 1:2 year rational flow as well as the 85 L/s/ha rate. Each low point has ICDs that combined capture a flow rate greater than the 85 L/s/ha flow rate to the low point.

Error! Reference source not found. shows the ponding depth values for the 3-hour Chicago storm, which is the critical storm event for the major system flows.

Table 4-6: Major System Ponding Analysis

Low Point	1:2 year Max Ponding Depth (mm)	1:100 year Max Ponding Depth (mm)	1:2 year Rational Method Flow (L/s)	85 L/s/ha Rate Flow (L/s)	Combined Low Point ICD Capture Rate (L/s)
LP1	20	130	32	19	20
LP2	60	300	39	24	28
LP3	70	310	39	23	28
LP4	90	240	44	27	28
LP5	50	200	17	10	12
LP6	80	350	38	23	28
LP7	70	300	32	20	20

4.4.4 Minor System Freeboard

As discussed in Section 1.4, a Functional Grading Plan (Drawing FG) has been developed with high-level centreline grades and USF for townhouse units. Table 4-7 below shows the HGLs of the minor system for both the 3-hour Chicago and 12-hour SCS 1:100 year storm events compared to the road centreline elevations. Basement underside of footings are typically 1.8 metres below the road centreline.

Table 4-7: Maximum HGLs

Manhole	Road Centreline (m)	3-hour Chicago 1:100 year Max HGL (m)	Freeboard (m)	12-hour SCS 1:100 year Max HGL (m)	Freeboard (m)
500_(P-Stm)	83.13	77.51	5.62	77.52	5.61
501_(P-Stm)	81.82	78.00	3.82	78.00	3.82
502_(P-Stm)	81.58	78.42	3.16	78.41	3.17
503_(P-Stm)	81.88	78.57	3.31	78.56	3.32
504_(P-Stm)	82.67	78.82	3.85	78.81	3.86
505_(P-Stm)	82.73	78.90	3.83	78.90	3.83
506_(P-Stm)	82.87	79.02	3.85	79.02	3.85
507_(P-Stm)	82.54	79.38	3.16	79.38	3.16
508_(P-Stm)	82.56	79.52	3.04	79.52	3.04
509_(P-Stm)	83.15	80.06	3.09	80.06	3.09

Manhole	Road Centreline (m)	3-hour Chicago 1:100 year Max HGL (m)	Freeboard (m)	12-hour SCS 1:100 year Max HGL (m)	Freeboard (m)
510_(P-Stm)	83.88	80.62	3.26	80.62	3.26
511_(P-Stm)	84.70	81.37	3.33	81.37	3.33
512_(P-Stm)	84.69	81.46	3.23	81.46	3.23
513_(P-Stm)	84.58	82.25	2.33	82.25	2.33
514_(P-Stm)	84.64	82.27	2.37	82.27	2.37
515_(P-Stm)	84.90	82.39	2.51	82.39	2.51
516_(P-Stm)	85.10	82.49	2.61	82.49	2.61
517_(P-Stm)	85.28	82.55	2.73	82.55	2.73
518_(P-Stm)	85.36	82.44	2.92	82.44	2.92
519_(P-Stm)	85.48	82.53	2.95	82.53	2.95
520_(P-Stm)	85.29	82.70	2.59	82.70	2.59
521_(P-Stm)	85.10	83.49	1.61	83.49	1.61
522_(P-Stm)	83.70	81.40	2.30	81.40	2.30
523_(P-Stm)	84.34	81.61	2.73	81.61	2.73
524_(P-Stm)	84.43	81.65	2.78	81.65	2.78
525_(P-Stm)	84.95	81.71	3.24	81.71	3.24
526_(P-Stm)	85.78	82.06	3.72	82.06	3.72
527_(P-Stm)	85.67	82.55	3.12	82.55	3.12

The results show that in the majority of manholes the available freeboard to the road centreline is greater than 2.2 metres. There is one location where the freeboard is less than 2.1 metres (assuming a 1.8 metre depth to the USF and 300 mm freeboard), which is in the Gas Bar site (Block 16) with no basement and therefore sufficient freeboard is provided to the surface.

4.5 Water Quality Assessment

The subject properties are within the catchment of Pond #3 in the East Urban Community, which provides water quality control for the receiving runoff. As outlined in the EUC Stormwater Management Facility #3 Design Brief Update (Stantec 2005), the Pond was sized to provide 70% TSS removal water quality treatment for 180.66 ha of land at a weighted percentage imperviousness of 45.3%.

The level of imperviousness of the proposed development increases the weighted percentage of imperviousness of the overall catchment to the pond from 45.3% to 47.0%. The sizing implications of such a change are compared in Table 4-8 below.

Table 4-8: Water Quality Volumes Comparison

Parameter	Value from 2005 Design Brief	Value incorporating new developments
Total Contributing Area (ha)	180.66 ha	180.66 ha
Imperviousness of Contributing Area (%)	45.3%	47.0%
Unit Area Storage Volume Requirements as per SWMPD	100.3 m³/ha	102.0 m³/ha
Required Total Water Quality Volume	18,113 m³	18,440 m³

Parameter	Value from 2005 Design Brief	Value incorporating new developments
Required Permanent Pool Volume	10,887 m³	11,210 m³
Permanent Pool Volume Provided (Total above sediment)	18,986 m³	18,986 m³
Required Extended Detention Volume (40m³/ha)	7,226 m³	7,226 m³
Extended Detention Volume Provided	22,873 m³	22,873 m³

From the analysis in Table 4-8, the pond facility still has sufficient permanent pool volume capacity to provide water quality treatment for the level of development proposed. The increase in volume required, 1,323 m³, is 4% of the residual capacity of the pond. Therefore water quality control is provided.

4.6 Storm and Stormwater Management Conclusions

The release rate from the site is set by the East Urban Community Infrastructure Servicing Study Update (EUC ISSU, Stantec 2005). The site contributes to the Navan Road storm system, which, under the 2005 EUC ISSU, has quality control provided by a downstream stormwater management pond, Pond #3. The 2005 EUC ISSU sized the downstream pond and storm sewer system to accept a flow of 85 L/s/ha from the site, which has been provided for through ICDs and a dry pond on site to capture the major system flows.

5.0 Erosion and Sediment Control

Erosion and sediment control measures, as outlined in the Ontario Ministry of Natural Resources (MNR) Guidelines on Erosion and Sediment Control for Urban Construction Sites, will be implemented to trap sediment on site. The following erosion and sediment control measures could be implemented during construction:

- Supply and installation of a silt fence barrier, as per OPSD 219.110.
- Supply and installation of siltsack or sentinel CB inserts between the frame and cover of catch basins and maintenance holes adjacent to the project area during construction, to prevent sediment from entering the sewer system.
- Stockpiling of material during construction is to be located along flat areas away from drainage paths. For material placed on sloped areas, stockpiles are to be enclosed with a silt fence to protect watercourses.
- All catch basins are to be equipped with sumps, inspected frequently, and cleaned as required.
- Temporary ICDs are to be placed blocking part of the sewer pipe in the connecting storm maintenance holes to eliminate construction debris from entering the existing storm sewer system. The ICDs are to be removed after the proposed storm sewers have been fully cleaned.
- A mud mat is to be built at each of the site entranceways to prevent the transport of sediment onto paved surfaces. The mud mat shall be:
  - Minimum of 20 m in length for the full width of the entrance way (10 m wide minimum).
  - Minimum of 400 mm thick underlain with a geotextile (or graded aggregate filter); and

- Constructed with 50 mm diameter clear stone for the first 10 m (extending from the paved street) and the remainder of the length with 150 mm diameter clear stone.

The proposed removal and reinstatement measures as well as the erosion control measures shall conform to the following documents:

- "Guidelines on Erosion and Sediment Control for Urban Construction Sites" published by Ontario Ministries of Natural Resources, Environment, Municipal Affairs, and Transportation & Communication, Association of Construction Authorities of Ontario and Urban Development Institute, Ontario, May 1987.

3. "MTO Drainage Manual", Chapter F: "Erosion of Materials and Sediment Control", Ministry of Transportation & Communications, 1985.

- "Erosion and Sediment Control" Training Manual by Ministry of Environment, Spring 1998.

4. Applicable Regulations and Guidelines of the Ministry of Natural Resources.

This report has been prepared by J.L. Richards & Associates Limited for 12714001 CANADA INC.'s exclusive use. Its discussions and conclusions are summary in nature and cannot properly be used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report is based on information, drawings, data, or reports provided by the named client, its agents, and certain other suppliers or third parties, as applicable, and relies upon the accuracy and completeness of such information. Any inaccuracy or omissions in information provided, or changes to applications, designs, or materials may have a significant impact on the accuracy, reliability, findings, or conclusions of this report.

This report was prepared for the sole benefit and use of the named client and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited, and anyone intending to rely upon this report is advised to contact J.L. Richards & Associates Limited in order to obtain permission and to ensure that the report is suitable for their purpose.

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Karla Ferrey, P. Eng.
Manager, Planning & Development

Reviewed by:

December 1, 2022

Bobby Pettigrew, P. Eng.
Senior Water Resource Engineer

Appendix A

Pre-consultation meeting notes
and Servicing Study Checklist

Guy Forget

From: Curry, William <William.Curry@ottawa.ca>
Sent: Monday, January 18, 2021 10:53 AM
To: Gabrielle Snow
Cc: Belan, Steve; Tim F. Chadder; Baird, Natasha; Lucie Dalrymple; Guy Forget
Subject: Re: Navan Road - Second Pre-Application

Gabrielle,

1. Site Plans for this file are to be a C of .5. Subdivision is to be calculated as per the SDG. Your permitted with a 5-year pipe design and store up to the 100-year for both subdivision and Site Plan.
2. If you discharge to a pipe that discharges to a City SWM facility, then no additional quality controls are required. However, you are required to confirm with the Conservation Authority.
3. No, but the City does confirm it is the responsibility of the proponent to demonstrate the site is serviceable for water, storm and sanitary and that the receiving sewers have capacity. The Functional Servicing Report provides the ultimate servicing solution for watermain storm and sanitary.
4. Unknown currently. Who owns 2973...apparently the City. Depends if they sell it or what? More ideal if it was within a City Block or City ROW but not an easement.
5. No. No occupancy unless it is serviced properly.
6. You may discharge to the **ditch and not the 750mm Ø storm** along Navan Road if that is to be your determined outlet. Quality Controls are provided by the Conservation Authority. 5-year Pre to post with a tc of 20 minutes Pre and a tc of 10 minutes with a 0.5 C, store up to the 100-year.
7. You are permitted to use infiltration designs anywhere within the city but they must demonstrate functionality and have supporting documentation.
8. You must demonstrate, not assume the 750 mm Ø storm pipe was designed to include your entire site. The road-side ditch primarily runs towards Page Road. This will require further investigation. The City will not support any municipal owned infrastructure within the proposed Gas Station parcel. 2973 is City Owned.

Any info you may require is available from the Info Centre "ISD Information Centre / Centre Information" informationcentre@ottawa.ca

The City reserves the right to change any decisions provided herein should new information warrant it.

thanks

Will Curry, C.E.T.

Planning, Infrastructure and Economic Development /
Planification, d'infrastructure et de développement économique
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste16214

110 Laurier Ave., 4th Fl East;
Ottawa ON K1P 1J1

William.Curry@Ottawa.ca

From: Gabrielle Snow <gsnow@jlrichards.ca>
Sent: Friday, January 15, 2021 3:51 PM
To: Belan, Steve <Steve.Belan@ottawa.ca>; Curry, William <William.Curry@ottawa.ca>
Cc: Tim F. Chadder <tchadder@jlrichards.ca>; Lucie Dalrymple <ldalrymple@jlrichards.ca>; Guy Forget <gforget@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Hi Steve and Will,

Leading up to the second pre-application meeting for 2983, 3053 and 3079 Navan Road, I wanted to forward you some questions regarding servicing:

Question 1: The City to confirm that the quantity control criterion from the EUC ISU prevails; The 1:100 year post-development peak flows for the overall subdivision be limited to the 1:5 year peak flows calculated based on a C-Factor of 0.60.
Question 2: The City to confirm that the quality control criterion from the EUC ISU prevails; Given that 2983 Navan Road is tributary to Pond #3 which was sized to meet the enhanced protection level, there is no be any additional water quality control requirements for the subdivision.
Question 3: The City to confirm that the ultimate servicing solution for storm & sanitary hinges on proposed storm and sanitary sewers along Navan Road, from 3053 Navan Road to Renaud Road.

Question 4: Given that water servicing to support the subdivision requires looping, can an easement be granted within 2973 Navan Road to facilitate water servicing as this future watermain connection would be the supply for both the subdivision and future gas station? The second watermain connection would be within 3053 Navan Road.
Question 5: To support the gas station under interim condition, would the City entertain that wastewater flows be captured by a holding tank assuming that the car wash would not be commissioned.
Question 6: Given that the lands for the future gas station currently sheet flows to the open ditch system & CB/DICB and 750 mm diameter storm sewer along Navan Road, its is assumed that storm servicing for the gas station can be developed to maintain the same drainage pattern. As such, the City to confirm the quantity control criterion for the gas station. The 1:100 year post-development peak flows from the gas station be limited to pre-development levels (C-Factor of 0.20). Prior to outlet into the 750 mm diameter storm sewer, a proposed OGS would be sized to achieve the enhanced protection level (TSS 80%).
Question 7: To minimize runoff volume discharged to the 750 mm diameter storm sewer, rooftop flows from the building and car wash could be captured and infiltrated. Although infiltration for this type of usage is generally not recommended, the City to confirm whether infiltration of the rooftop flows would be permitted.
Question 8: In support of servicing for the overall subdivision and gas station, would the City be favorable of an easement within the 2973 Navan Road to facilitate water and storm servicing (connection to the existing 750 mm diameter storm sewer)? As alternate, would the City entertain selling the eastern part of 2973 Navan Road?

Also, would it be possible to get information on the following for Brian Coburn Blvd:

- Built infrastructure for lanes (i.e. turning lanes, bike lanes etc.);
- Traffic signals;

- Infrastructure underground.

Thanks in advance and have a great weekend,

Gabrielle Snow
Intern Planner

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-803-3913

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From: Gabrielle Snow
Sent: Friday, January 15, 2021 10:53 AM
To: 'Belan, Steve' <Steve.Belan@ottawa.ca>
Cc: 'Sauve, Diane' <Diane.Sauve@ottawa.ca>; Tim F. Chadder (tchadder@jlrichards.ca) <tchadder@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Hi Steve,

Please find the revised concept plan attached. Note that the only changes made were removing a row of townhouses and replacing them with another 3-storey condo building along the southeast corner.

Can you please confirm that the meeting on the 18th is still on? If it is, can Raad and Carmine be sent invites? Their emails are:
rakrawi@groupeheafey.com
carmine@zayoungroup.com

Should you have any questions, please feel free to reach out.

Thanks again,

From: Belan, Steve <Steve.Belan@ottawa.ca>
Sent: Thursday, January 14, 2021 4:38 PM
To: Gabrielle Snow <gsnow@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Thank you

From: Gabrielle Snow <gsnow@jlrichards.ca>
Sent: January 14, 2021 4:02 PM
To: Belan, Steve <Steve.Belan@ottawa.ca>

Cc: Tim F. Chadder <tchadder@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Hi Steve,

Quick update, the client might provide us with an updated concept plan tomorrow that would include minor changes only however there is a chance that the concept plan I provided earlier will be the final draft to be discussed at the pre-consult meeting. If we receive an updated concept plan from them, I will be sure to promptly send it your way.

Thanks,

Gabrielle

Gabrielle Snow
Intern Planner

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700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
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From: Gabrielle Snow
Sent: Thursday, January 14, 2021 3:30 PM
To: Belan, Steve <Steve.Belan@ottawa.ca>
Cc: Tim F. Chadder (tchadder@jlrichards.ca) <tchadder@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Hi Steve,

My apologies for the wait on receiving the concept plan—we only just received it from the client. Please find the concept plan attached to this email.

Should you have any questions, please feel free to reach out.

Additionally, would it be possible to get Raad and Carmine added to the zoom meeting? They have not received invites. Their emails are:
rakrawi@groupeheafey.com
carmine@zayoungroup.com

Thanks,

From: Belan, Steve <Steve.Belan@ottawa.ca>
Sent: Thursday, January 7, 2021 12:49 PM
To: Gabrielle Snow <gsnow@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Gabrielle,

I have asked the Admin Assistant to set up a Zoom Call for the 18th some time between 11 and 3. You should receive an email some time. If you haven't by Monday, remind me again please.

Steve

From: Gabrielle Snow <gsnow@jlrichards.ca>
Sent: January 07, 2021 11:46 AM
To: Belan, Steve <Steve.Belan@ottawa.ca>
Cc: Tim F. Chadder <tchadder@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Hi Steve,

I have gotten word from our client that we should be getting the concept plan by next Friday, Jan 15th. Once we receive it, I will share it with you.

Would it be possible to set up a meeting for the week of Jan 18th? Tim and I have the most availability on the 19th and 20th.

Thanks in advance,

Gabrielle

Gabrielle Snow
Intern Planner

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Direct: 343-803-3913

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From: Belan, Steve <Steve.Belan@ottawa.ca>
Sent: Monday, December 14, 2020 2:39 PM

To: Gabrielle Snow <gsnow@jlrichards.ca>
Subject: RE: Navan Road - Second Pre-Application

Gabrielle,

I am reluctant to set up a meeting until I know that your group has prepared some kind of concept plan. This will is my last week before the Christmas Holidays and therefore very busy. If you have some material to share I will make a meeting for Thursday afternoon.

Regarding the parkland dedication, There is no plan for a park in the secondary plan. However, it will be up to the parks planner to make this call. I would imagine it will also depend on the number of units that you are proposing. I have spoken with them any they have indicated that they will get back to me.

Steve Belan

From: Gabrielle Snow <gsnow@jlrichards.ca>
Sent: December 07, 2020 3:30 PM
To: Belan, Steve <Steve.Belan@ottawa.ca>
Cc: Tim F. Chadder <tchadder@jlrichards.ca>; Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: Navan Road - Second Pre-Application

Hi Steve,

I hope this email finds you well.

I am reaching out to request a second pre-application meeting as it relates to the proposed Navan Road development. As mentioned during the last meeting, the client was able to acquire abutting properties (2983 Navan Road, 3053 Navan Road) in addition to 3079 Navan road. Since a number of additional development plans and considerations have changed as a result, we are looking to have a second meeting.

We are aiming to get you the site plan, pre-application meeting form and additional materials by early next week. With this in mind, do you think it would be possible to schedule the pre-application meeting end of week next week or sometime early the week after?

Also, would you be able to confirm that cash in lieu of parkland would be accepted for this development?

Thanks in advance,

Gabrielle

Gabrielle Snow
Intern Planner

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-803-3913

J.L. Richards
& Associates Limited
ENGINEERS · ARCHITECTS · PLANNERS

CANADA'S BEST MANAGED COMPANIES

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From:	Curry, William
To:	Gabrielle Snow
Cc:	Belan, Steve; Tim F. Chadder; Lucie Dalrymple; Guy Forget
Subject:	Navan Road Site
Date:	Tuesday, January 19, 2021 11:10:35 AM

Gabrielle,

I have already provided my Submission list to Steve for distribution.

I can offer these other items at this time.

I reviewed the report prepared by IBI and they followed the parameters of the Stantec EUC to demonstrate the site was serviceable for zoning purposes only. Historically I can tell you IBI tends to take their own liberties in what they deem we the City should accept.

There were several documents submitted for zoning and I don't know if Taggart is making those available to the applicant.

I will require a FSR for this file for Draft Plan of Subdivision, regardless of what was submitted.

Info only
I looked at the existing topographical plan of survey and it will require more existing elevations to be considered acceptable.
The Storm and Sanitary **pipe(s)** Outlets are as per the EUC and are to be on Navan Road and connected to Renaud Road. Design to City Standards may be another issue if you read IBI's report.
This site is lower than all the surrounding roads. Preloading would be ideal for this site. Note that the attempts to sometimes retain trees and preload areas is a conflict and some trees can't be saved.

The watermain option out to Page; you should consider or attempt to go through the City owned parcel between the proposed Townhouses and Brian Coburn. Also the easement location within that private parcel is critical as we accept nothing else within the easement other than asphalt and curbs. Maybe it is best to go in a straight line and loose some trees.
It is hard to believe you need a Dry Pond for this site with all the green spaces. I know this is just concept currently. Private Bio-swales could be considered

elsewhere...etc. Water table here is a concern.

Let me know if I can assist further.

Thanks

Will Curry, C.E.T.

Planning, Infrastructure and Economic Development /
Planification, d'infrastructure et de développement économique
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 16214
110 Laurier Ave., 4th Fl East;
Ottawa ON K1P 1J1

William.Curry@Ottawa.ca

From: Belan, Steve <Steve.Belan@ottawa.ca>
Sent: Friday, April 23, 2021 2:15 PM
To: Tim F. Chadder <tchadder@jlrichards.ca>; Gabrielle Snow <gsnow@jlrichards.ca>
Cc: Curry, William <William.Curry@ottawa.ca>; Young, Mark <Mark.Young@ottawa.ca>; Castro, Phil <phil.castro@ottawa.ca>; Giampa, Mike <Mike.Giampa@ottawa.ca>
Subject: Pre-con Follow-up - 3079 Navan Road

CC: Will Curry, Mark Young, Phil Castro, Mike Giampa

Hello Gabrielle,

I apologize for the delay on getting these out. Please refer to the below and/or attached notes, regarding the Pre-Application Consultation (pre-con) Meeting held on January 18, and March 25, for the property at 3079 Navan Road for ZBLA and subdivision in order to allow the development of in fill subdivision with low-rise apartments, town house unit and a commercial block at the corner of Brian Coburn and Navan. I have also attached the required Plans & Study List for application submission. During the Covid-19 pandemic the City will not be requiring any paper copies as listed in the attached list.

Below or attached, are staff's preliminary comments based on the information available at the time of pre-con meeting:

Planning

- A severance application may be required depending on how the owner wishes to proceed with the creating the commercial block at the intersection
- We need to discuss the order of applications. There are pros and cons to moving forward with a severance of the commercial blocks to address ownership issues.
- We support the move to low-rise buildings along Brain Coburn Blvd.
- Lynda Mongeon would be able to facilitate the transfer of surplus City lands as needed
- Contributions to the Mud Creek restoration will need to be determine.
- The Applicant must now provide a proposed strategy for public consultation as directed by Bill 73

Urban Design

1. PRUD appreciates and supports the desire to retain trees on-site. The arrangement and viability of this should be reviewed in depth by our Planning Forester.
2. The size and locations of the commercial block is supported. It would be worth exploring the possibility of obtaining additional city lands at the intersection of Brian Coburn and Navan Road to complete the block and allow for possible built form at this gateway location.

3. The current drive through configuration/location adjacent to this community entrance is a significant concern. Please re-consider the layout of the commercial site.
4. Please review the proposal in conjunction with the EUC Phase 1 CDP.
5. PRUD would support the inclusion of a park block to serve the new residents. Consider a location that allows for tree retention, and connectivity to the community to the east.
6. Access to Page Road should be discouraged. If this is planned to become a cul-de sac at Navan Road this should also be considered.
7. 18.0 m public r.o.w as proposed is supported.
8. Please ensure that rear yards with a minimum depth of 7.5 m for townhomes are provided abutting existing residential uses.
9. The 3 townhomes on Page Road should be re-considered. This typology is not common on Page Road.
10. A design brief will be required in support of your applications. Please see attached terms of reference.

Engineering

The attached “Pre-application consultation servicing memo” summarizes engineering design considerations as per our discussion. [Ensure the memo addresses all relevant engineering issues.]

Required for both Site Plan and Subdivision:

Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:

Location of service connections (MAP)

Type of development and the amount of fire flow required (as per FUS).

Average daily demand: ___ l/s.

Maximum daily demand: ___l/s.

Maximum hourly daily demand: ___ l/s.

Subdivision Draft Plan requirements

Functional Servicing Report

4 M plan

4 R Plan

Detailed Subdivision Design

Cover Page

Road Cross Sections

Site Plan

Topographical Plan of Survey Plan with a published Bench Mark

Grading & Drainage Plan

General Plan of Services

Plan and profile Plans

CUP

SWM Plan

Erosion & Sediment Control Plan

Landscape Plans and TCR

Design Brief and Stormwater Management Report

Geotechnical Report

Transportation Noise Study

TIA

Site Plan Requirements

Site Plan

Topographical Plan of Survey Plan with a published Bench Mark

Grading & Drainage Plan

General Plan of Services

Erosion & Sediment Control Plan

Design Brief and Stormwater Management Report

Geotechnical Report

Lighting Plan and or and Memo

Stationary Noise Study

TIA

Design Criteria

Storm Pre to post, C of .5, Pre tc 20; post tc 10

5-year pipe minimum and store up to 100-year on site. No 2-year ponding on site.

Permissible ponding of 350mm for 100-year

At 100-year ponding elevation you must spill to City ROW

100-year Spill elevation must be 300mm lower than any building opening

Minimum Drawing and File Requirements- All Plans

Plans are to be submitted on standard **A1 size** (594mm x 841mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400, or 1:500).

With all submitted hard copies provide individual PDF of the DWGs and for reports please provide one PDF file of the reports. **All PDF documents are to be unlocked and flattened.**

1. Site Plans for this file are to be a C of .5. Subdivision is to be calculated as per the SDG. Your permitted with a 5-year pipe design and store up to the 100-year for both subdivision and Site Plan.
2. If you discharge to a pipe that discharges to a City SWM facility, then no additional quality controls are required. However, you are required to confirm with the Conservation Authority.
3. No, but the City does confirm it is the responsibility of the proponent to demonstrate the site is serviceable for water, storm and sanitary and that the receiving sewers have capacity. The Functional Servicing Report provides the ultimate servicing solution for watermain storm and sanitary.
4. Unknown currently. Who owns 2973...apparently the City. Depends if they sell it or what? More ideal if it was within a City Block or City ROW but not an easement.
5. No. No occupancy unless it is serviced properly.
6. You may discharge to the **ditch and not the 750mm Ø storm** along Navan Road if that is to be your determined outlet. Quality Controls are provided by the Conservation Authority. 5-year Pre to post with a tc of 20 minutes Pre and a tc of 10 minutes with a 0.5 C, store up to the 100-year.
7. You are permitted to use infiltration designs anywhere within the city but they must demonstrate functionality and have supporting documentation.
8. You must demonstrate, not assume the 750 mm Ø storm pipe was designed to include your entire site. The road-side ditch primarily runs towards Page Road. This will require further investigation. The City will not support any municipal owned infrastructure within the proposed Gas Station parcel. 2973 is City Owned.

Any info you may require is available from the Info Centre "ISD Information Centre / Centre Information" informationcentre@ottawa.ca

The City reserves the right to change any decisions provided herein should new information warrant it.

Feel free to contact the Infrastructure Project Manager, Will Curry, at Will.Curry@ottawa.ca for follow-up questions.

Transportation

A TIA is warranted, please proceed to scoping.

The application will not be deemed complete until the submission of the draft step 2-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).

Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended.

Synchro files are required at Step 4.

ROW protection on Navan is 44.5m.

Corner sight triangle: 5m x 5m

A stationary Noise Impact Study is required if there is noise sensitive use within 100m.

Clear throat requirements on Navan as per TAC guidelines

On site plan:

Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.

Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).

Show all curb radii measurements; ensure that all curb radii are reduced as much as possible

Show lane/aisle widths.

As built plans for Brian Coburn should be available through our Drawing Center; the applicant should contact: ISD Information Centre / Centre Information informationcentre@ottawa.ca.

There may be a fee.

A Noise Study will be required for traffic noise impacts and any newly created stationary noise sources.

Feel free to contact the Transportation Project Manager, Mike Giampa, at Mike.Giampa@ottawa.ca, for follow-up questions.

Environmental

- Environmental impact statements shall be submitted to identify any Species at risk
- A TCR will be required for these applications.
- A permit is required prior to any tree removal on site which can be made available at site plan approval. Please contact the planner associated with the file or Mark Richardson (mark.richardson@ottawa.ca) when the permit is required or for additional information.
- There may be adjacent or co-owned trees on or near the property line. Please ensure that all trees with a Critical Root Zone extending from adjoining sites onto the development site are addressed in the TCR.
- Please identify any City-owned trees – Forestry Services will need to provide permission for their removal.
- Please be aware of the City's Bird-Safe Design Guidelines

Parkland

- These lands have not been consider for any previous Parkland dedication /Cash-in-lieu of parkland
- Parkland requirements would be based on proposed unit counts.
- It would be preferred that the park is located in the interior of the site. However, we will consider a location with frontage on Brian Coburn and Page next to, but not including the pedestrian/service access to Page Road.

Conservation Authority

- The Conservation Authority will make comments concerning:
  - Stormwater runoff quality criteria
  - Area specific stormwater runoff criteria

Other

- [Insert other concerns or notes]
- You are encouraged to contact the Ward Councillor, Councillor Dudas, at Laura.Dudas@ottawa.ca about the proposal.

Please refer to the links to Guide to preparing studies and plans and fees for further information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,
Steve Belan

Steve Belan, MCIP, RPP
Planner Planning Services, Development Review Services
Planning, Infrastructure and Economic Development
City of Ottawa / Ville d'Ottawa
110 Laurier Avenue West, 4th Floor / 110, avenue Laurier Ouest, 4e étage
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Telephone / tél.: 613-580-2424 ext./poste 27591
E-mail / courriel: Steve.Belan@ottawa.ca

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12714001 Canada Inc – 2983, 3053 and 3079 Navan Road & 2690 Pagé Road

DEVELOPMENT SERVICING STUDY CHECKLIST

REFERENCED STUDIES AND REPORTS	REFERENCE
Functional Servicing Report for 12714001 Canada Inc, 2983, 3053 and 3079 Navan Road & 2690 Pagé Road (J.L. Richards & Associates Limited, April 12, 2022)	FSR

4.1	GENERAL CONTENT	REFERENCE
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	FSR (Title Page)
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	FSR (Figure 1 & 2) All Drawings
☒	Plan showing the site and location of all existing services.	Functional Overall Servicing (FOS)
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	FSR (Section 1)
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	FSR (Appendix 'A')
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Reference made to Stantec 2005 EUC ISSU
☒	Statement of objectives and servicing criteria.	FSR (Section 1.0, 2.0, 3.0, 4.0, 5.0)
☒	Identification of existing and proposed infrastructure available in the immediate area.	FSR (Section 1.0, 2.0, 3.0, 4.0) Functional Overall Servicing (FOS)
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☒	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Functional Grading Plan (FG)

☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☐	Reference to geotechnical studies and recommendations concerning servicing.	To be confirmed
☒	All preliminary and formal site plan submissions should have the following information: ▪ Metric scale ▪ North arrow (including construction North) ▪ Key plan ▪ Name and contact information of applicant and property owner ▪ Property limits, including bearings and dimensions ▪ Existing and proposed structures and parking areas ▪ Easements, road widening and rights-of-way ▪ Adjacent street names	All Drawings

4.2	DEVELOPMENT SERVICING REPORT: WATER	REFERENCE
☐	Confirm consistency with Master Servicing Study, if available.	N/A
☒	Availability of public infrastructure to service proposed development.	SSR (Section 1.0, 2.0) Functional Overall Servicing (FOG)
☒	Identification of system constraints.	FSR (Section 2.0)
☒	Identify boundary conditions.	FSR (Section 2.0, Appendix 'D3')
☒	Confirmation of adequate domestic supply and pressure.	FSR (Section 2.0)
☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	FSR (Section 2.0, Appendix 'D1' & 'D5')
☒	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	FSR (Section 2.0)
☐	Definition of phasing constraints. Hydraulic modelling is required to confirm servicing for all defined phases of the project, including the ultimate design.	N/A
☒	Address reliability requirements, such as appropriate location of shutoff valves.	FSR (Section 2.0)
☐	Check on the necessity of a pressure zone boundary modification.	N/A

☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	FSR (Section 2.0, Appendix D1 to D6)
☒	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants), including special metering provisions.	FSR (Section 2.0) Functional Watermain Servicing (FWM)
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	FSR (Section 2.0)
☒	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	FSR (Appendix 'D2')

4.3	DEVELOPMENT SERVICING REPORT: WASTEWATER	REFERENCE
☒	Summary of proposed design criteria (Note: Wet weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	FSR (Section 3.0, Appendix 'E1' & 'E2')
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Stantec 2005 EUC ISSU
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the Guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	FSR (Section 1.0, 3.0) Functional Sanitary Servicing (FSAN)
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable.)	FSR (Section 3.0, Appendix 'E1' & 'E2')
☒	Calculations related to dry weather and wet weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	FSR (Appendix 'E1', 'E2')
☒	Description of proposed sewer network, including sewers, pumping stations and forcemains.	FSR (Section 3.0) Functional Sanitary Servicing (FSAN)

☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A
☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations, such as contamination, corrosive environment, etc.	N/A

4.4	DEVELOPMENT SERVICING REPORT: STORMWATER	REFERENCE
☒	Description of drainage outlets and downstream constraints, including legality of outlets (i.e., municipal drain, right-of-way, watercourse, or private property).	FSR (Section 1.0, 4.0)
☒	Analysis of available capacity in existing public infrastructure.	FSR (Section 4.0)
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings FSTM, FDST, FSMW
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	FSR (Section 4.0)
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	FSR (Section 4.0)
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	FSR (Section 4.0) Drawings FDST, FSMW
☐	Setback from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	FSR (Appendix 'A')

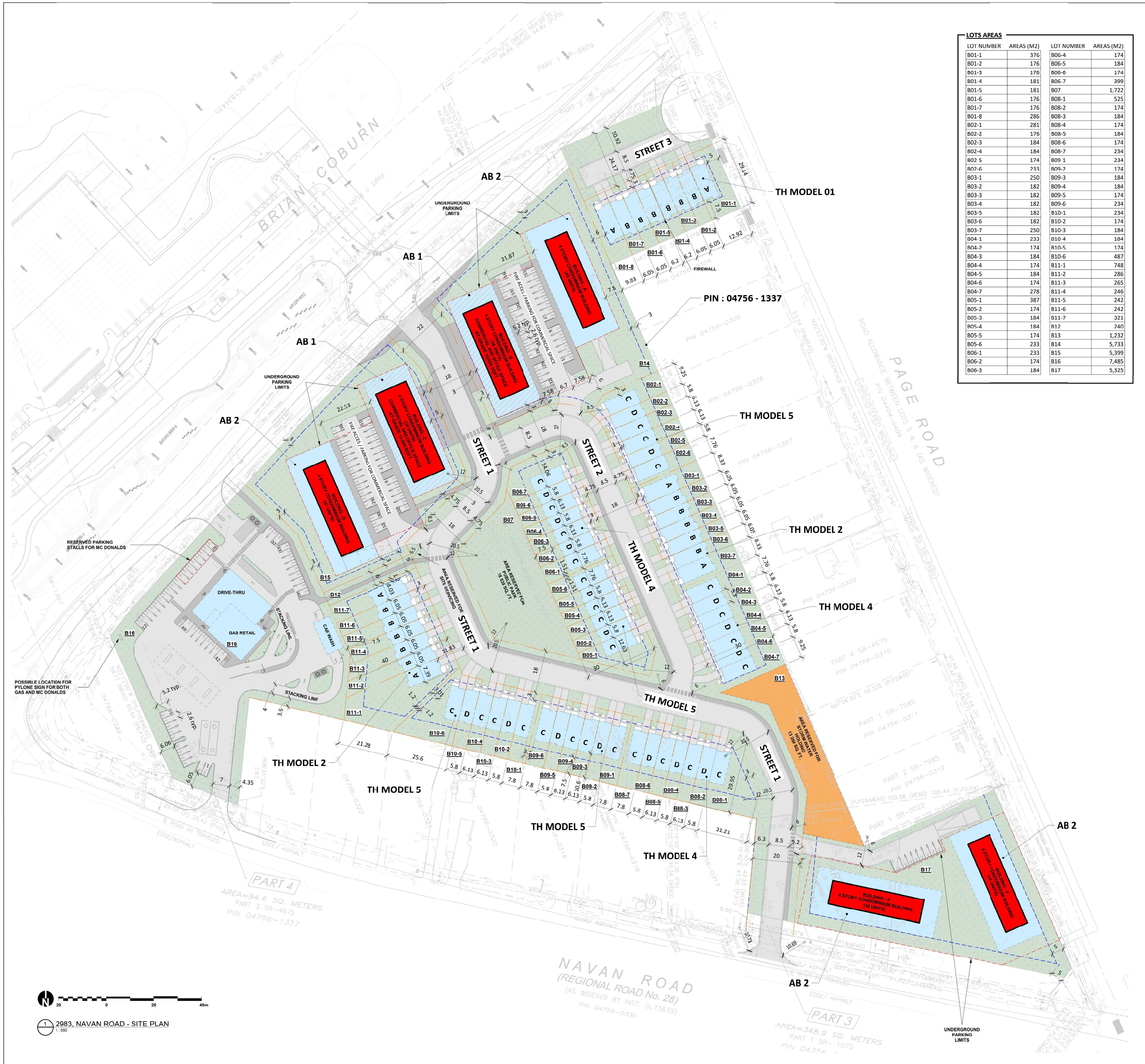
☐	Confirm consistency with subwatershed and Master Servicing Study, if applicable study exists.	Stantec 2005 EUC ISSU
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:2 year return period) and major events (1:100 year return period).	FSR (Section 4.0)
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre- and post-development peak flow rates, including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	FSR (Section 4.0)
☒	Any proposed diversion of drainage catchment areas from one outlet to another.	FSR (Section 4.0)
☒	Proposed minor and major systems, including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Drawings FOS, FSTM, FDST, FSMW
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	Quantity control proposed per FSR (Section 4.0)
☐	Identification of potential impacts to receiving watercourses.	N/A
☐	Identification of municipal drains and related approval requirements.	N/A
☒	Description of how the conveyance and storage capacity will be achieved for the development.	FSR (Section 4.0)
☒	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	SSR (Section 4.0) Drawings FOS, FSTM, FDST, FSMW
☒	Inclusion of hydraulic analysis, including hydraulic grade line elevations.	FSR (Section 4.0)
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	SSR (Section 5.0)
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5	APPROVAL AND PERMIT REQUIREMENTS	REFERENCE
The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development, as well as the relevant issues affecting such approval. The approval and permitting shall include but not be limited to the following:		
☒	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams, as defined in the Act.	N/A
☐	Application for Environmental Compliance Approval (ECA) under the Ontario Water Resources Act.	As part of future submission
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation, etc.).	N/A

4.6	CONCLUSION CHECKLIST	REFERENCE
☒	Clearly stated conclusions and recommendations.	FSR (Section 2.7, 3.6, 4.7)
☒	Comments received from review agencies, including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	Comment Response Letter to City of Ottawa
☒	All draft and final reports shall be signed and stamped by a Professional Engineer registered in Ontario.	FSR All Drawings

Appendix B

Concept Plan, Draft Plan of Subdivision and Topographical Survey



1 2983, NAVAN ROAD - SITE PLAN
1 : 550

LOTS AREAS

LOT NUMBER	AREAS (M2)	LOT NUMBER	AREAS (M2)
B01-1	376	B06-4	174
B01-2	176	B06-5	184
B01-3	176	B06-6	174
B01-4	181	B06-7	399
B01-5	181	B07	1,722
B01-6	176	B08-1	525
B01-7	176	B08-2	174
B01-8	286	B08-3	184
B02-1	281	B08-4	174
B02-2	176	B08-5	184
B02-3	184	B08-6	174
B02-4	184	B08-7	234
B02-5	174	B09-1	234
B02-6	233	B09-2	174
B03-1	250	B09-3	184
B03-2	182	B09-4	184
B03-3	182	B09-5	174
B03-4	182	B09-6	234
B03-5	182	B10-1	234
B03-6	182	B10-2	174
B03-7	250	B10-3	184
B04-1	233	B10-4	184
B04-2	174	B10-5	174
B04-3	184	B10-6	487
B04-4	174	B11-1	748
B04-5	184	B11-2	286
B04-6	174	B11-3	265
B04-7	278	B11-4	246
B05-1	387	B11-5	242
B05-2	174	B11-6	242
B05-3	184	B11-7	321
B05-4	184	B12	240
B05-5	174	B13	1,232
B05-6	233	B14	5,733
B06-1	233	B15	5,399
B06-2	174	B16	7,485
B06-3	184	B17	5,325

SITE PLAN LEGEND

	EXISTING BUILDING		LOT LINE
	NEW BUILDING		SETBACKS
	NEW BUILDING WITH COMMERCIAL SPACE AT-GRADE		NEW TREE
	GRASS		FIREWALL
	ASPHALT		SIDEWALK

SITE INFORMATION & DEVELOPMENT STATISTICS

LOTS		PIN
		04756 - 0303
		04756 - 0315
		04756 - 0316
		04756 - 1337
ZONING		GM[2546] H(14.5)
SITE AREA		
TOTAL SITE AREA:		~53,441.14 m² (5.34ha)
TOTAL DEVELOPABLE AREA:		~45,956.28 m² (4.59ha)
NET SITE AREA:		~38,956.28 m² (3.89ha)
UNITS		
TOWNHOUSES:		67 UNITS
BLOCK 01:		
1 X RESIDENTIAL APARTMENT BUILDING		48 UNITS
1 X MIXED USE BUILDING		
RESIDENTIAL:		36 UNITS
COMMERCIAL SPACES:		~929 m²
BLOCK 02:		
1 X RESIDENTIAL APARTMENT BUILDING		47 UNITS
1 X MIXED USE BUILDING		
RESIDENTIAL:		36 UNITS
COMMERCIAL SPACES:		~929 m²
BLOCK 03:		
2 X RESIDENTIAL APARTMENT BUILDING		96 UNITS
TOTAL NUMBER OF UNITS:		330 UNITS
TOTAL COMMERCIAL SPACES:		~1,858 m²
	REQUIRED	PROVIDED
MAXIMUM DENSITY	NO MAX.	84.8 units/net ha
MINIMUM LOT WIDTH	NO MIN.	5.8 m
MINIMUM LOT AREA	NO MIN.	174 m²
MAXIMUM BUILDING HEIGHT	14.5 m	14.5 m
SETBACKS		
MINIMUM FRONT YARD:	3 m	3 m
MINIMUM CORNER SIDE YARD:	3 m	3 m
MINIMUM INTERIOR SIDE YARD:		
NON-RESIDENTIAL OR MIXED-USE:	5 m	5 m
LOW-RISE RESIDENTIAL :	1.2 m	1.2 m
MID-RISE RESIDENTIAL :	3 m	3 m
MINIMIM REAR YARD:		
ABUTTING A STREET:	3 m	3 m
FROM A RESIDENTIAL ZONE:	7.5 m	7.5 m
FOR A RESIDENTIAL BUILDING:	7.5 m	7.5 m
PARKING RATES		
R9 - TOWNHOUSES:	1 p/unit = 67	67 (GARAGES)
VISITOR:	0	67 DRIVE AISLES
BLOCK 14:		
R12 - APARTEMENTS	1.2 p/unit = 101	101 (UNDERGROUND)
VISITOR:	0.2 p/unit = 17	17 (UNDERGROUND)
N79 - RETAIL STORE:	3.4 p/100 m² GFA = 32	32 (EXTERIOR)
		TOTAL: 150
BLOCK 15:		
R12 - APARTEMENTS	1.2 p/unit = 100	100 (UNDERGROUND)
VISITOR:	0.2 p/unit = 17	17 (UNDERGROUND)
N79 - RETAIL STORE:	3.4 p/100 m² GFA = 32	32 (EXTERIOR)
		TOTAL: 150
BLOCK 18:		
R12 - APARTEMENTS	1.2 p/unit = 116	145 (UNDERGROUND)
VISITOR:	0.2 p/unit = 17	17 (8 EXT. + 12 UND.)
		TOTAL: 162
GROSS FLOOR AREA		
TOWNHOUSE A:		267 m²
TOWNHOUSE B:		239 m²
TOWNHOUSE C:		232 m²
TOWNHOUSE C (CORNER UNIT):		236 m²
TOWNHOUSE D:		225 m²
TOTAL MODEL 01 (ABBBBBBA)		1,968 m²
TOTAL MODEL 02 (ABBBBBA)		1,729 m²
TOTAL MODEL 03 (ABBBBA)		1,490 m²
TOTAL MODEL 04 (CDCDCDC)		1,611 m²
TOTAL MODEL 05 (CDCCDC)		1,386 m²
MIXED USE BUILDING (TOTAL OF 2 BUILDINGS):		TOTAL: 4,130 m²
RESIDENTIAL:		3,201 m²
COMMERCIAL:		929 m²
RESIDENTIAL APARTMENT BUILDING (TOTAL OF 4 BUILDINGS) :		TOTAL: 4,130 m²
RESIDENTIAL:		4,130 m²

NOTE

1. ASSUMES TYPICAL RESIDENTIAL FLOOR HEIGHT OF 3m.
2. THE BASE PLAN (LOT LINES, EXISTING ROADS AND SURROUNDING AREAS) IS BASED ON THE TOPOGRAPHICAL PLAN OF SURVEY, SURVEYED STANTEC GEOMATICS LTD.
3. DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0,3048.

PROJECT

NAVAN ROAD DEVELOPMENT

2983, Navan Road, Orleans, ON K1C 7G4

OWNER

GROUPE Heafey GROUP

768, BOUL. SAINT-JOSEPH, SUITE 100
GATINEAU, QC J8Y 4B8

ARCHITECTURAL

PMA ARCHITECTES

(418) 651-8954
INFO@PMAARCHITECTES.COM
3070, CHEMIN DES QUATRE-BOURGEOIS
QUÉBEC (QC) G1W 2K4
PMAARCHITECTES.COM

LAPALME RHEAULT ARCHITECTES | +ASSOCIÉS

53, BOUL. SAINT-RAYMOND,
GATINEAU, QC J8Y 1R8

ENGINEERS / PLANNER

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

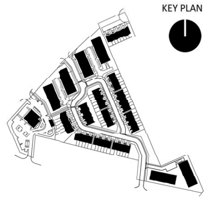
1565 CARLING AVENUE, SUITE 700,
OTTAWA, ON K1Z 8R1

SURVEYOR

Stantec

1331 CLYDE AVENUE, SUITE 400,
OTTAWA, ON K2C 3G4

KEY PLAN



ARCHITECT SEAL

REVISIONS

NO	DESCRIPTION	DATE
8	FOR CITY REVIEW	2022-11-28
7	FOR COORDINATION	2022-11-08
6	FOR COORDINATION	2022-11-01
5	FOR COORDINATION	2022-04-14
4	FOR COORDINATION	2021-11-03
3	FOR COORDINATION	2021-08-30
2	FOR COORDINATION	2021-08-26
1	FOR COORDINATION	2021-08-18

NOTE

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON THE SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT. ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS. DO NOT SCALE DRAWINGS.

FOR CITY REVIEW DO NOT USE FOR CONSTRUCTION
2022-11-28

DATE	DESIGNED
2022-11-28	PP
	DRAWN: PP
PROJECT No: 20054	CHECKED: PM

SHEET TITLE: SITE PLAN

SHEET No: A100

C:\Users\ppomerleau\Documents\20054_DEV-NAVAN_CENTRAL_R21_ppomerleauUW453.rvt

29 November 2022 4:23 PM

APPROVED UNDER SECTION 51 OF THE PLANNING ACT BY THE CITY OF OTTAWA.

THIS _____ DAY OF _____ 2022.

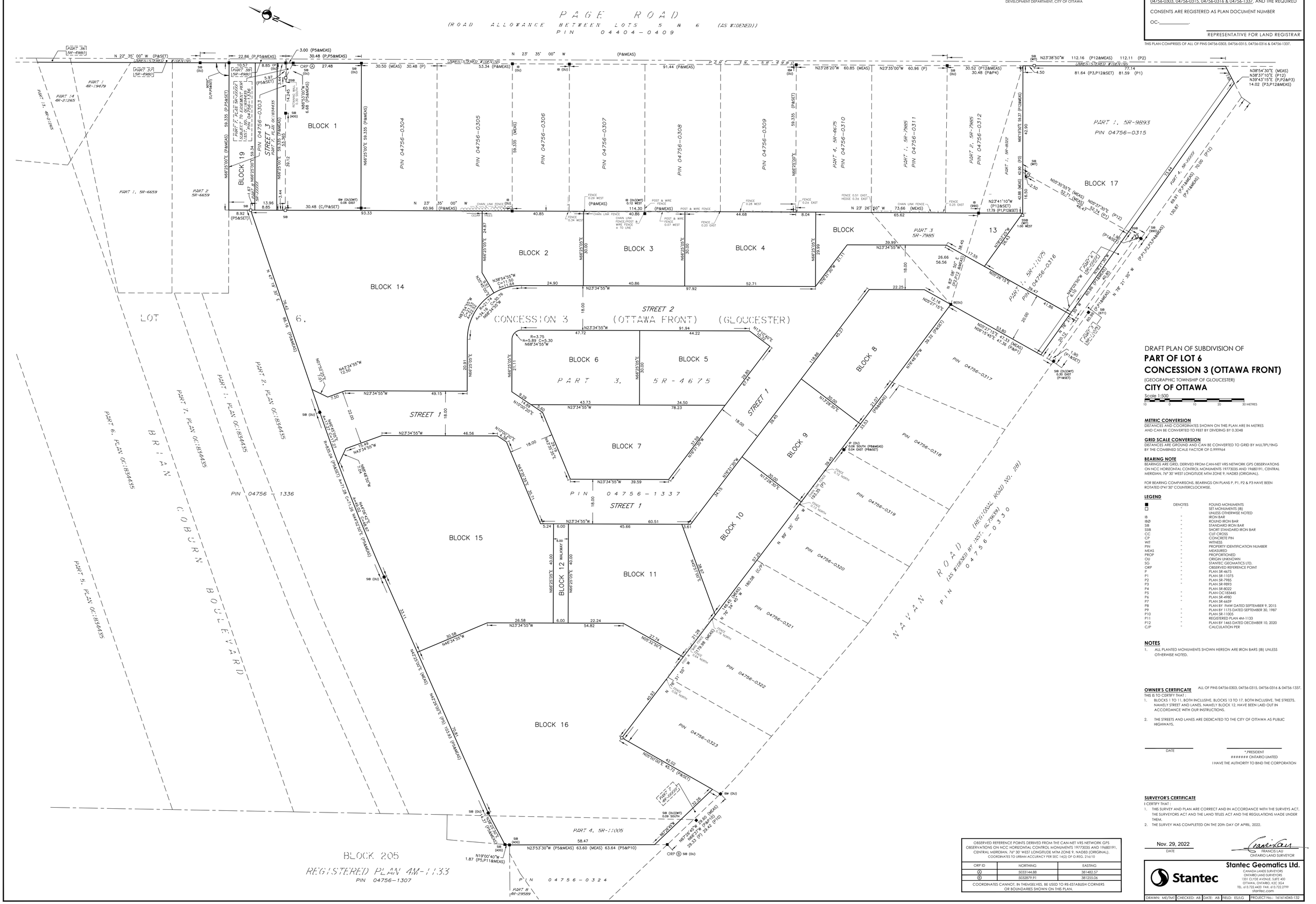
STEPHEN WILLIS, MCIP, RPP, GENERAL MANAGER
PLANNING, INFRASTRUCTURE AND ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

PLAN 4M-

I HEREBY CERTIFY THAT THIS PLAN 4M-_____ IS REGISTERED IN THE LAND REGISTRY OFFICE FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON (No.4) AT_____ O'CLOCK ON THE_____ DAY OF _____, 2022 AND ENTERED IN THE REGISTER FOR P.I.N.'s 04756-0303, 04756-0315, 04756-0316 & 04756-1337, AND THE REQUIRED CONSENTS ARE REGISTERED AS PLAN DOCUMENT NUMBER OC-_____.

REPRESENTATIVE FOR LAND REGISTRAR

THIS PLAN COMPRISES OF ALL OF PINS 04756-0303, 04756-0315, 04756-0316 & 04756-1337.



DRAFT PLAN OF SUBDIVISION OF
PART OF LOT 6
CONCESSION 3 (OTTAWA FRONT)
(GEOGRAPHIC TOWNSHIP OF GLOUCESTER)
CITY OF OTTAWA

Scale 1:500

10 0 10 20 30 METRES

METRIC CONVERSION
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

GRID SCALE CONVERSION
DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999964

BEARING NOTE
BEARINGS ARE GRID, DERIVED FROM CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).

FOR BEARING COMPARISONS, BEARINGS ON PLANS P, P1, P2 & P3 HAVE BEEN ROTATED 0°41'30" COUNTERCLOCKWISE.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS (IB)
	"	UNLESS OTHERWISE NOTED
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
ORP	"	OBSERVED REFERENCE POINT
P	"	PLAN SR-4675
P1	"	PLAN SR-11075
P2	"	PLAN SR-7985
P3	"	PLAN SR-9893
P4	"	PLAN SR-8022
P5	"	PLAN OC1834445
P6	"	PLAN SR-4980
P7	"	PLAN SR-6659
P8	"	PLAN BY PMW DATED SEPTEMBER 9, 2015
P9	"	PLAN BY 1175 DATED SEPTEMBER 30, 1987
P10	"	PLAN SR-11005
P11	"	REGISTERED PLAN 4M-1133
P12	"	PLAN BY 1465 DATED DECEMBER 10, 2020
C/P	"	CALCULATION PER

NOTES
1. ALL PLANTED MONUMENTS SHOWN HEREON ARE IRON BARS (IB) UNLESS OTHERWISE NOTED.

OWNER'S CERTIFICATE ALL OF PINS 04756-0303, 04756-0315, 04756-0316 & 04756-1337.

THIS IS TO CERTIFY THAT:
1. BLOCKS 1 TO 11, BOTH INCLUSIVE, BLOCKS 13 TO 17, BOTH INCLUSIVE, THE STREETS, NAMELY STREET AND LANES, NAMELY BLOCK 12, HAVE BEEN LAID OUT IN ACCORDANCE WITH OUR INSTRUCTIONS.
2. THE STREETS AND LANES ARE DEDICATED TO THE CITY OF OTTAWA AS PUBLIC HIGHWAYS.

DATE

*PRESIDENT
####### ONTARIO LIMITED
I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE
I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 20th DAY OF APRIL, 2022.

Nov. 29, 2022
DATE

FRANCIS LAU
ONTARIO LAND SURVEYOR

OBSERVED REFERENCE POINTS DERIVED FROM THE CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL). COORDINATES TO URBAN ACCURACY PER SEC 14(2) OF O.REG. 216/10

ORP ID	NORTHING	EASTING
(A)	5033144.88	381482.57
(B)	5032879.91	381255.06

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: ME/TM1 | CHECKED: AB | DATE: AB | FIELD: ES/LG | PROJECT No.: 161614345-132

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SCHEDULE			
PART	LOT	CONCESSION	PIN
1	PART OF 6	3 (OTTAWA FRONT) (GLOUCESTER)	PART OF 04756 - 1337
2			PART OF 04756 - 0315
3			
4			PART OF 04756 - 0316
5			
6			PART OF 04756 - 1337
7			PART OF 04756 - 1336
8			ALL OF 04756 - 0303

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE: ____________________

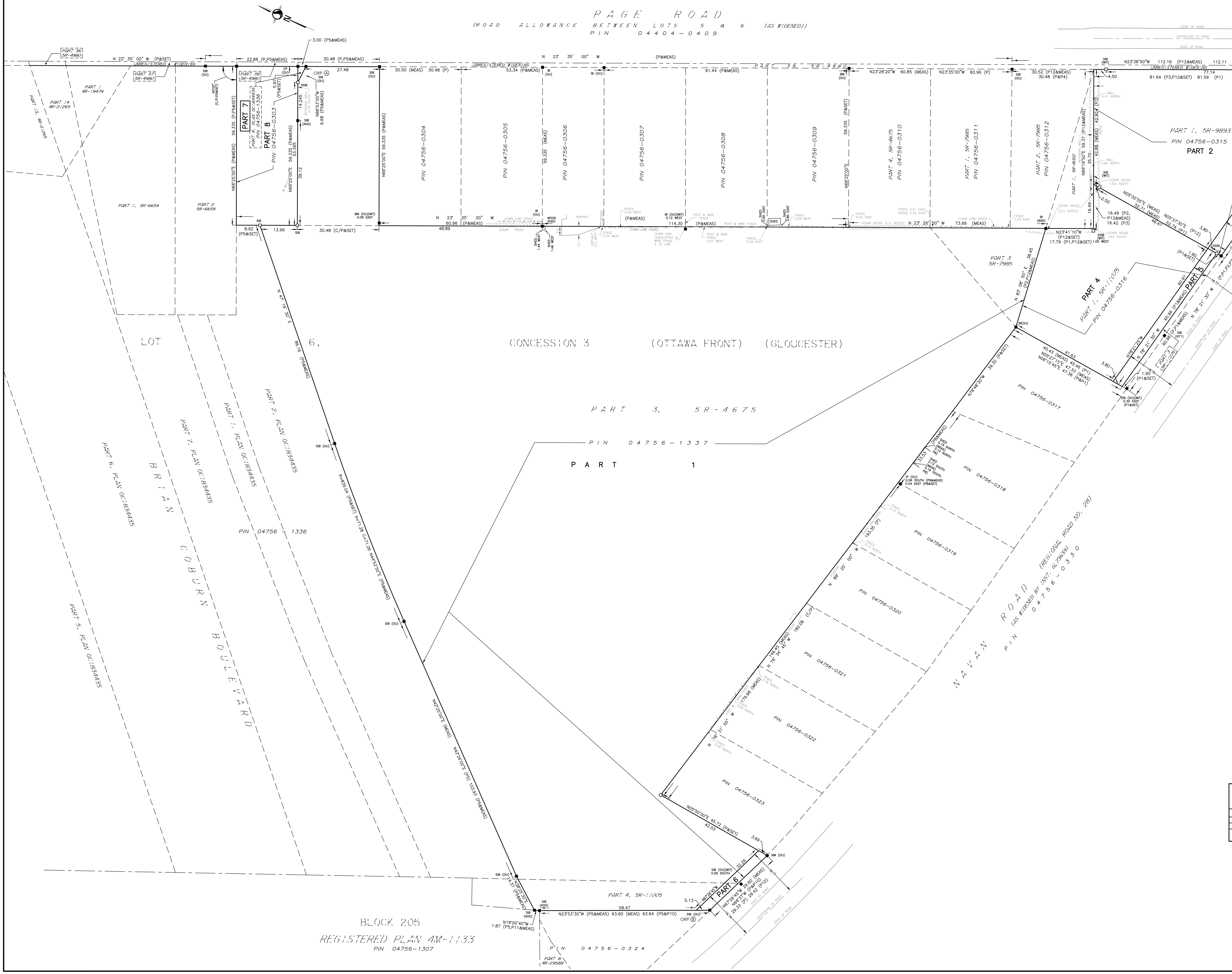
AMANDA BULUA
ONTARIO LAND SURVEYOR

PLAN 4R-________

RECEIVED AND DEPOSITED

DATE: ____________________

REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON No. 4



DRAFT PLAN OF SURVEY OF

PART OF LOT 6
CONCESSION 3 (OTTAWA FRONT)

(GEOGRAPHIC TOWNSHIP OF GLOUCESTER)

CITY OF OTTAWA

Scale 1:500

10 0 10 20 30 METRES

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

GRID SCALE CONVERSION

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999964

BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).

FOR BEARING COMPARISONS, BEARINGS ON PLANS P, P1, P2 & P3 HAVE BEEN ROTATED 0°41'30" COUNTERCLOCKWISE.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS (IB) UNLESS OTHERWISE NOTED
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
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ORP	"	OBSERVED REFERENCE POINT
P	"	PLAN 5R-4675
P1	"	PLAN 5R-11075
P2	"	PLAN 5R-7985
P3	"	PLAN 5R-9893
P4		PLAN 5R-8022
P5	"	PLAN OC183445
P6	"	PLAN 5R-4980
P7	"	PLAN 5R-6659
P8		PLAN BY FMW DATED SEPTEMBER 9, 2015
P9	"	PLAN BY 1175 DATED SEPTEMBER 30, 1987
P10	"	PLAN 5R-11005
P11	"	REGISTERED PLAN 4M-1133
P12	"	PLAN BY 1465 DATED DECEMBER 10, 2020
C/P	"	CALCULATION PER

OBSERVED REFERENCE POINTS DERIVED FROM THE CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).
COORDINATES TO URBAN ACCURACY PER SEC 14(2) OF O.REG. 216/10

ORP ID	NORTHING	EASTING
Ⓐ	5033144.88	381482.57
Ⓑ	5032879.91	381255.06

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

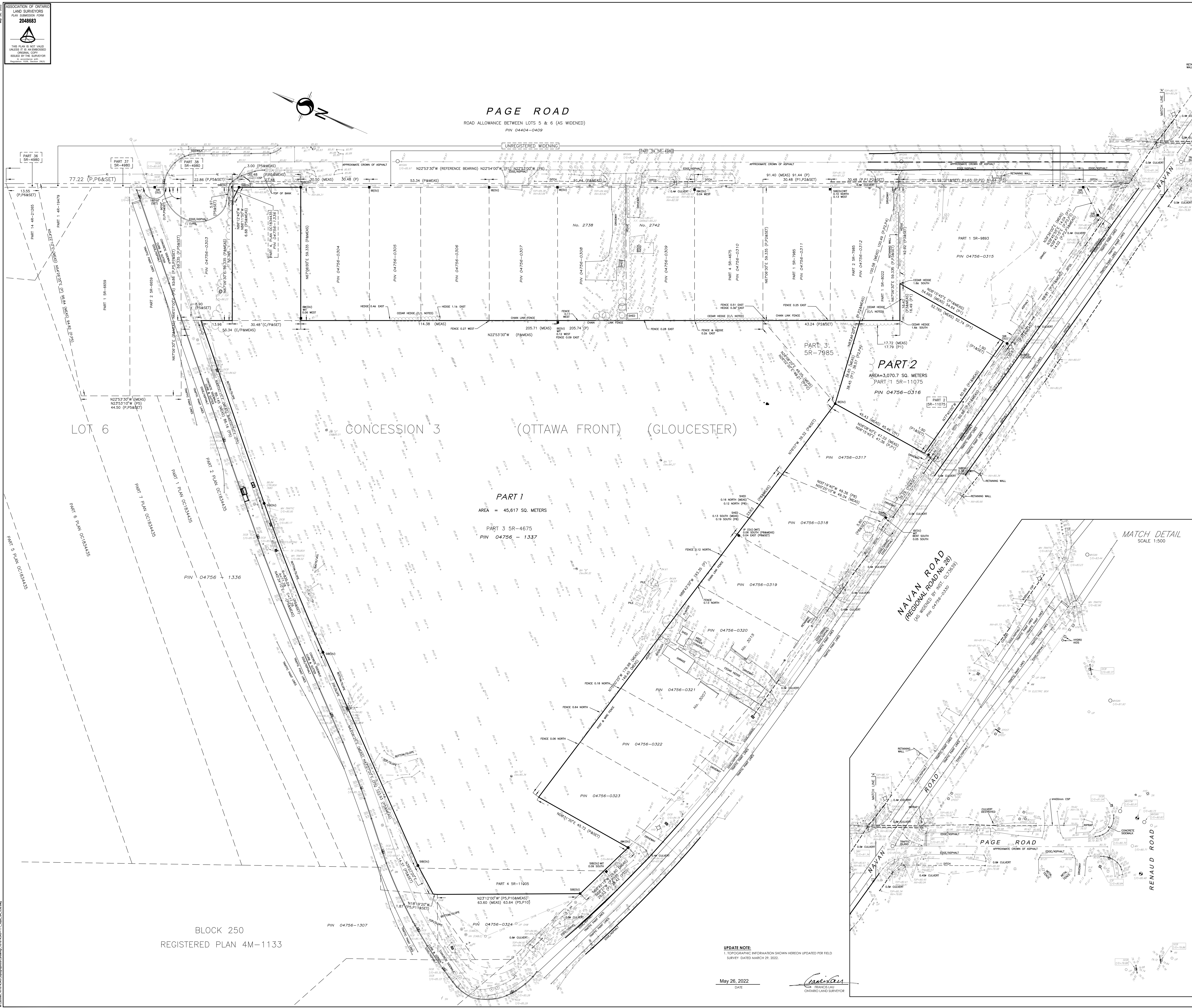
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 16th DAY OF MARCH, 2022.

May 2, 2022
DATE

Amanda Bulua
AMANDA BULUA
ONTARIO LAND SURVEYOR

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: NJ/TMT	CHECKED: AB	DATE: MAR. 18, 2022	FIELD: ES/LG	PROJECT No.: 161614345-114



TOPOGRAPHIC SKETCH OF

PART OF LOT 6
CONCESSION 3 (OTTAWA FRONT)

(GEOGRAPHIC TOWNSHIP OF GLOUCESTER)

CITY OF OTTAWA

Scale 1:500

10 0 10 20 30 METRES

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

GRID SCALE CONVERSION

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999964

BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE WESTERLY LIMIT OF PAGE ROAD, AS SHOWN ON PLAN 5R-4980, HAVING A BEARING OF N22°53'30"W.

A BEARING ROTATION CLOCKWISE OF 0°41'20" HAVE BEEN APPLIED TO BEARINGS SHOWN ON P5, P6, AND P7.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK.

LEGEND (IF APPLICABLE)

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
ORP	"	OBSERVED REFERENCE POINT
P	"	PLAN 5R-4675
P1	"	PLAN 5R-11075
P2	"	PLAN 5R-7985
P3	"	PLAN 5R-9893
P4		PLAN 5R-8022
P5	"	PLAN OC183445
P6	"	PLAN 5R-4980
P7	"	PLAN 5R-6659
P8		PLAN BY FMW DATED SEPTEMBER 9, 2015
P9	"	PLAN BY 1175 DATED SEPTEMBER 30, 1987
P10	"	PLAN 5R-11005
P11	"	REGISTERED PLAN 4M-1133
C/P	"	CALCULATION PER
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
AP	"	AIR PUMP
ANT	"	ANTENNA
BH	"	BOREHOLE
BIB	"	HOSE BIB
BKR	"	BIKE RACK
BENCH	"	BENCH
BOL	"	BOLLARD
BOUL	"	BOULDER
CB	"	CATCH BASIN
DCB	"	DOUBLE CB
DICB	"	DITCH CB
CBMH	"	CB MANHOLE
DCBMH	"	DOUBLE CB MANHOLE
CBSI	"	SIDE INLET CB
CHM	"	CHIMNEY
CSV	"	VALVE CURB STOP
DRN	"	DRAIN
EPOST	"	ELECTRICAL OUTLET
FP	"	FLAG POLE
FL	"	FLOOD LIGHT
FTF	"	FUEL TANK FILLER CAP
GC	"	GARBAGE CAN
GFL	"	PIPE FLANGE (GAS)
GFP	"	GAS FUEL PUMP
GP	"	POLE GUYWIRE
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
HIC	"	HICKENBOTTOM
HDS	"	HEADSTONE
HLS	"	LIGHT STANDARD HYDRO
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
MB	"	MAILBOX
MP	"	MONITORING PIN
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHBELL	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHI	"	MAINTENANCE HOLE INVERT
MHSAN	"	MAINTENANCE HOLE SANITARY
MHSTM	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
NPB	"	NEWS PAPER BOX
OLP	"	LIGHT STANDARD ORNAMENTAL
OW	"	OBSERVATION WELL
PKM	"	PARKING METER
PLBX	"	PULL BOX
PLQ	"	PLAQUE
PLR	"	PILLAR
PZ	"	PIEZIOMETER
RLC	"	RED LIGHT CAMERA
RWSL	"	RAILWAY SIGNAL LIGHT
RWSS	"	RAILWAY SWITCH STAND
SAT	"	SATELLITE DISH
SCLP	"	SCULPTURE
SCP	"	SUMP/CATCH PIT
SCV	"	SPRINKLER CONTROL VALVE
SH	"	SPRINKLER HEAD
SIA	"	SIAMESE CONNECTION
SN	"	SIGN
SPAN	"	SOLAR PANEL
SPT	"	SEPTIC TANK LID
TBL	"	TABLE
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
TPIT	"	TEST PIT
TSL	"	TRAFFIC SIGNAL LIGHT
UMB	"	MARKER BELL UNDERGROUND
UMC	"	MARKER CABLE UNDERGROUND
—— G ——	"	NATURAL GAS LOCATE
UMO	"	MARKER OIL UNDERGROUND
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
_cm	"	TREE CONIFEROUS Ø _centimetres
_cm	"	TREE DECIDUOUS Ø _centimetres

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 14th DAY OF DECEMBER, 2020.

May 26, 2022
DATE

FRANCIS LAU
ONTARIO LAND SURVEYOR

SRO COORDS: X= 381388 Y= 5032979

Stantec

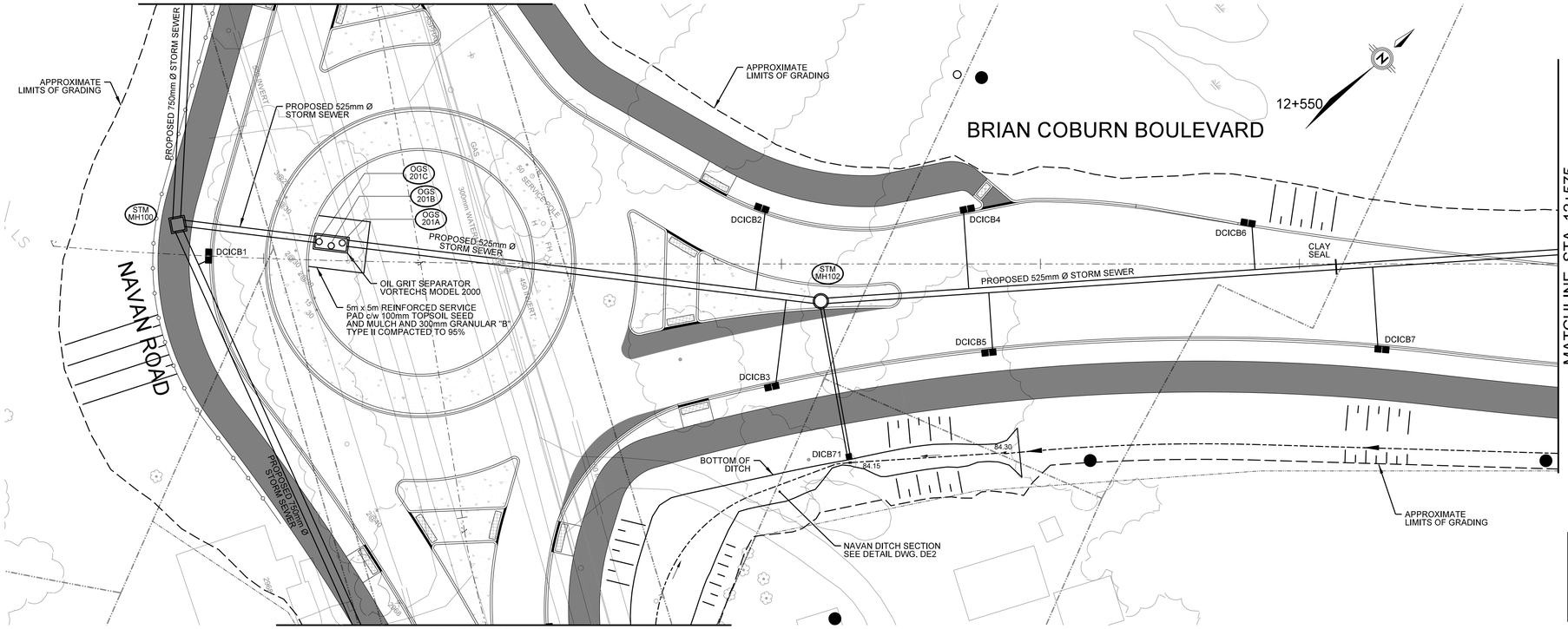
Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: ME	CHECKED: KJ	PM: AB	FIELD: CA\SJ	PROJECT No.: 161614345-111

Appendix C

Background Drawings –
Existing Infrastructure

FOR CONTINUATION SEE DWG. P18



FOR CONTINUATION SEE DWG. P19

MATCHLINE STA. 12+575
FOR CONTINUATION SEE DWG. P2

BRIAN COBURN BOULEVARD
NEW ROAD CONSTRUCTION

GRADING & DRAINAGE
STA. 12+425 TO STA. 12+575

W. R. Newell, P.Eng.
General Manager
Infrastructure Services Department

J. Mojsej, P.Eng.
Project Manager
Design & Construction - Municipal East

Robinson Consultants

AS-BUILT

RECORD INFORMATION PROVIDED BY CITY OF OTTAWA

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Ottawa

Contract No.	Dwg. No.
ISD14-5104	P1

Sheet _ of _

Asset No. _____

Asset Group ___

Des.	Chk'd.
C.T.	R.C.
Dwn.	Chk'd.
C.T.	D.R.
Utility Circ. No. _____	Index No. ____
Const. Inspector _____	

Scale: HORIZONTAL 0m 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR PRELIMINARY DESIGN CIRCULATION	R.C.	31,10,14
2	ISSUED FOR TENDER	R.C.	05,06,15
3	ISSUED FOR CONSTRUCTION	R.C.	01,03,16
4	REVISED OGS INVERTS AS PER SCM 12	R.C.	28,03,16
5	ISSUED FOR SCM No. 67	R.C.	03,05,17
6	*AS BUILT*	*R.C.*	*30.03.18*

STORM MANHOLE DATA

No.	Station	Offset (m)	Type		Elevations		Grate to Invert
			Structure	Cover	Grate	Low Inv.	
STM MH100	12+441.55	2.89 L	M4	S24.1 / S25	85.46	83.27	2.19
STM MH102	12+503.80	3.60 R	701.010	S24.1 / S25	85.40	83.60	1.80
OGS 201A	12+457.55	1.72 L	OGS	OGS	85.74	N/A	N/A
OGS 201B	12+456.49	1.42 L	OGS	OGS	85.72	N/A	N/A
OGS 201C	12+455.31	1.79 L	OGS	OGS	85.70	N/A	N/A

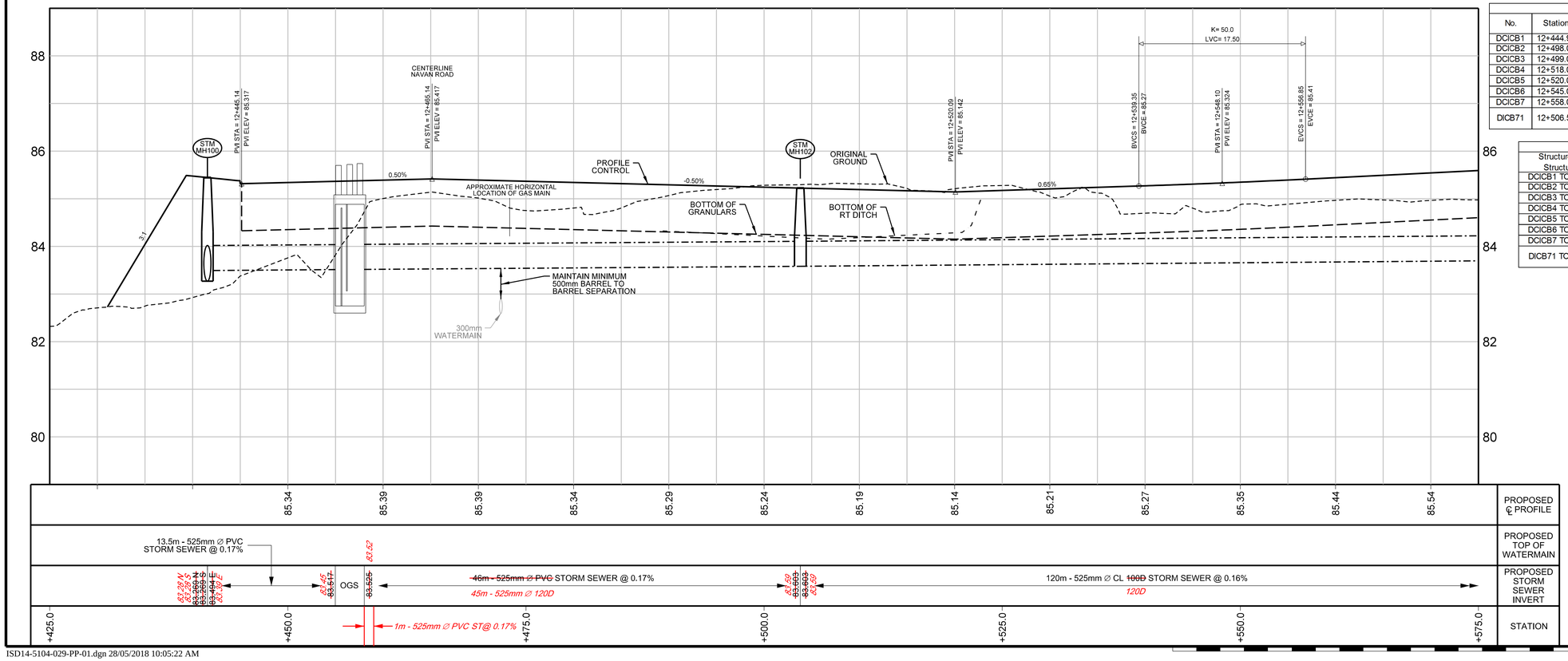
OGS - OIL GRIT SEPERATOR UNIT

CATCH BASIN DATA

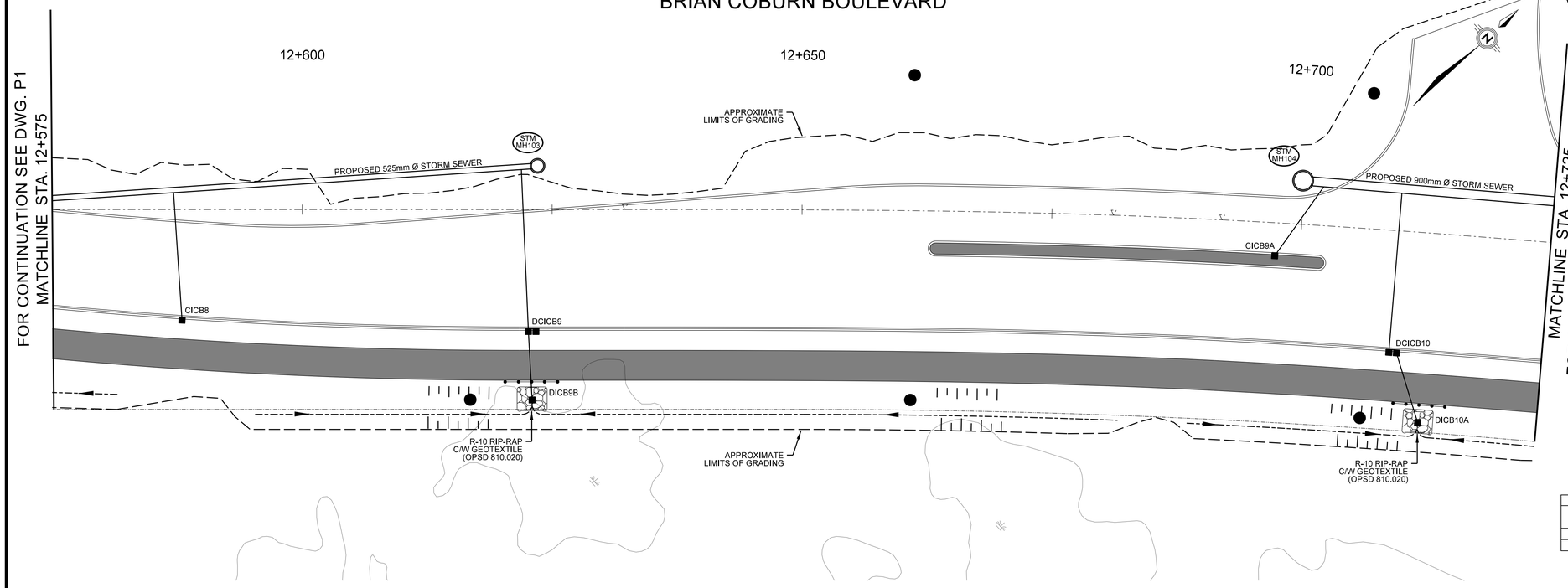
No.	Station	Offset (m)	Type		Elevations		Grate to Invert	ICD (L/s)
			Structure	Grate	Grate	Low Inv.		
DCICB1	12+444.99	0.00 L	705.020	S22 / S23 (2)	85.38	83.67	1.71	25
DCICB2	12+498.00	5.10 L	705.020	S22 / S23 (2)	85.33	83.90	1.43	20
DCICB3	12+499.00	11.56 R	705.020	S22 / S23 (2)	85.32	83.91	1.41	20
DCICB4	12+518.00	5.00 L	705.020	S22 / S23 (2)	85.18	83.97	1.21	20
DCICB5	12+520.00	8.25 R	705.020	S22 / S23 (2)	85.17	83.95	1.22	30
DCICB6	12+545.00	3.65 L	705.020	S22 / S23 (2)	85.43	83.98	1.45	15
DCICB7	12+558.00	7.94 R	705.020	S22 / S23 (2)	85.50	84.03	1.47	20
DICB71	12+506.51	18.60 R	705.030 (2:1)	403.010 (A)	84.15	83.70	0.45	

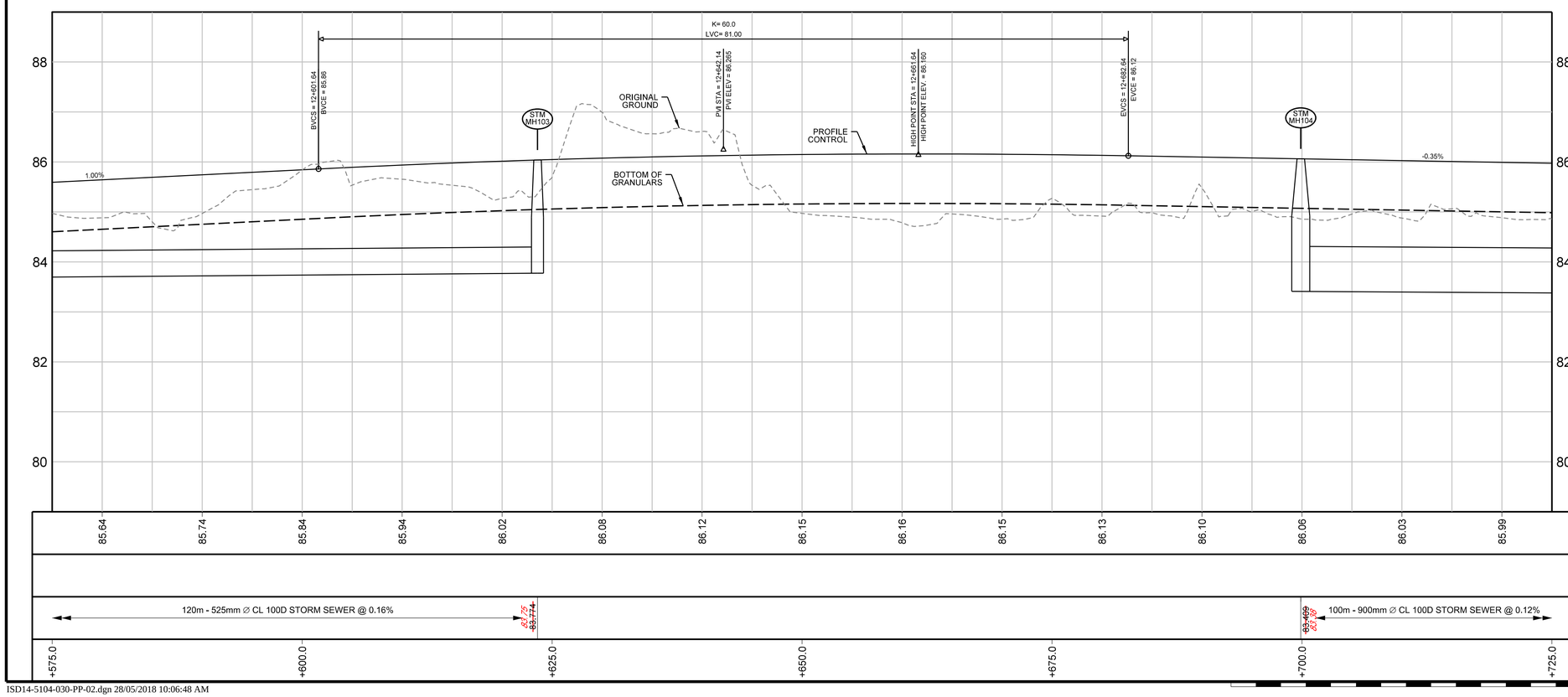
CATCH BASIN LEAD DATA

Structure to Structure	Dia.	Type	Length	Invert Elevations	
				Upstream	Downstream
DCICB1 TO MAIN	250mm	PVC	1.5	83.67	83.86
DCICB2 TO MAIN	250mm	PVC	8.1	83.90	83.82
DCICB3 TO MAIN	250mm	PVC	8.6	83.91	83.82
DCICB4 TO MAIN	250mm	PVC	7.9	83.97	83.89
DCICB5 TO MAIN	250mm	PVC	6.0	83.95	83.89
DCICB6 TO MAIN	250mm	PVC	4.7	83.98	83.93
DCICB7 TO MAIN	250mm	PVC	8.2	84.03	83.95
DICB71 TO MAIN	300mm	PVC	15.2	83.70	83.60



BRIAN COBURN BOULEVARD





BRIAN COBURN BOULEVARD
NEW ROAD CONSTRUCTION

GRADING & DRAINAGE
STA. 12+575 TO STA. 12+725

W. R. Newell, P.Eng.	J. Mojsej, P.Eng.
General Manager	Project Manager
Infrastructure Services Department	Design & Construction - Municipal East

Robinson Consultants

AS-BUILT

RECORD INFORMATION PROVIDED BY CITY OF OTTAWA

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Ottawa

Contract No.	Dwg. No.
ISD14-5104	P2

Sheet _ of _

Asset No. _____

Asset Group ___

Des.	Chk'd.
C.T.	R.C.
Dwn.	Chk'd.
C.T.	D.R.
Utility Circ. No.	Index No.
_____	___

Const. Inspector _____

Scale: HORIZONTAL
0m 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
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2	ISSUED FOR TENDER	R.C.	05,06,15
3	ISSUED FOR CONSTRUCTION	R.C.	01,03,16
4	ISSUED FOR SCM NO. 62	R.C.	29,03,17
5	ISSUED FOR SCM No. 67	R.C.	03,05,17
4	*AS BUILT*	*R.C.*	*30.03.18*

STORM MANHOLE DATA

No.	Station	Offset (m)	Type		Elevations		Grate to Invert
			Structure	Cover	Grate	Low Inv.	
STM MH103	12+623.54	4.38 L	701.010	S24.1 / S25	86.00	83.77	2.23
STM MH104	12+699.88	4.37 L	701.012	S24.1 / S25	86.03	83.41	2.62

CATCH BASIN DATA

No.	Station	Offset (m)	Type		Elevations		Grate to Invert	ICD (L/s)
			Structure	Grate	Grate	Low Inv.		
CICB8	12+588.00	10.76 R	705.010	S22 / S23	85.73	84.13	1.60	25
DCICB9	12+623.00	11.90 R	705.020	S22 / S23 (2)	86.00	84.22	1.78	30
DCICB10	12+709.99	11.90 R	705.020	S22 / S23 (2)	85.99	84.09	1.90	30
CICB9A	12+697.5	3.00 R	705.010	S22 / S23	86.21	84.31	1.90	10
DICB9B	12+623	19.05 R	705.030 2:1	403.010 (A)	85.00	84.30	0.70	N/A
DICB10A	12+713	19.00 R	705.030 2:1	403.010 (A)	85.00	84.18	0.82	N/A

CATCH BASIN LEAD DATA

Structure to Structure	Dia.	Type	Length	Invert Elevations	
				Upstream	Downstream
CICB8 TO MAIN	200mm	PVC	13.0	84.13	84.00
DCICB9 TO MAIN	250mm	PVC	16.5	84.22	84.06
DCICB10 TO MAIN	250mm	PVC	16.2	84.09	83.93
CICB9A TO MAIN	200mm	PVC	8.2	84.31	84.23
DICB9B TO DCICB9	200mm	PVC	6.6	84.30	84.22
DICB10A TO DCICB10	200mm	PVC	7.0	84.18	84.09

BRIAN COBURN BOULEVARD NEW ROAD CONSTRUCTION

GRADING & DRAINAGE STA. 12+725 TO STA. 12+875

W. R. Newell, P.Eng. *General Manager Infrastructure Services Department*	J. Mojsej, P.Eng. *Project Manager Design & Construction - Municipal East*

Robinson Consultants

AS-BUILT

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Ottawa

Contract No.	Dwg. No.
ISD14-5104	P3

Sheet _ of _

Asset No. _____

Asset Group ___

Des.	Chk'd.
C.T.	R.C.
Dwn.	Chk'd.
C.T.	D.R.
Utility Circ. No. ____	Index No. ___
Const. Inspector _____	

Scale: HORIZONTAL 0m 5 10

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REVISIONS

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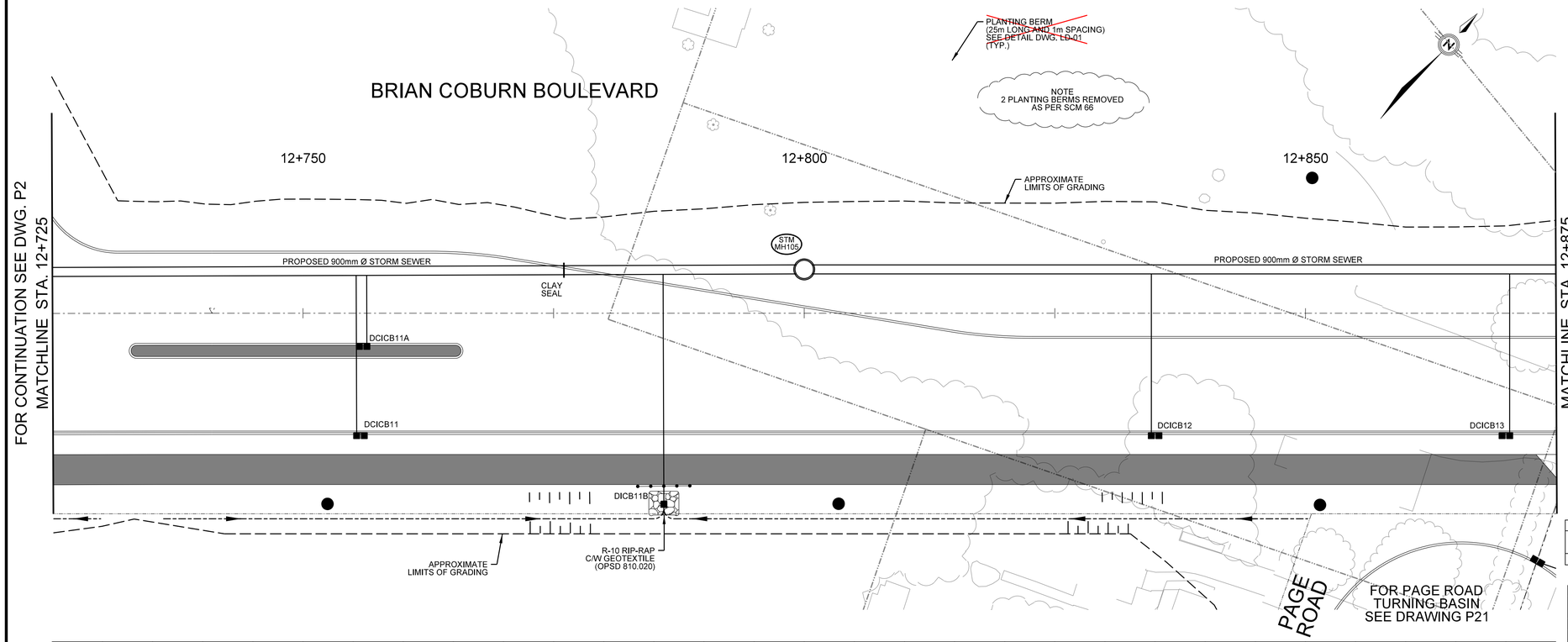
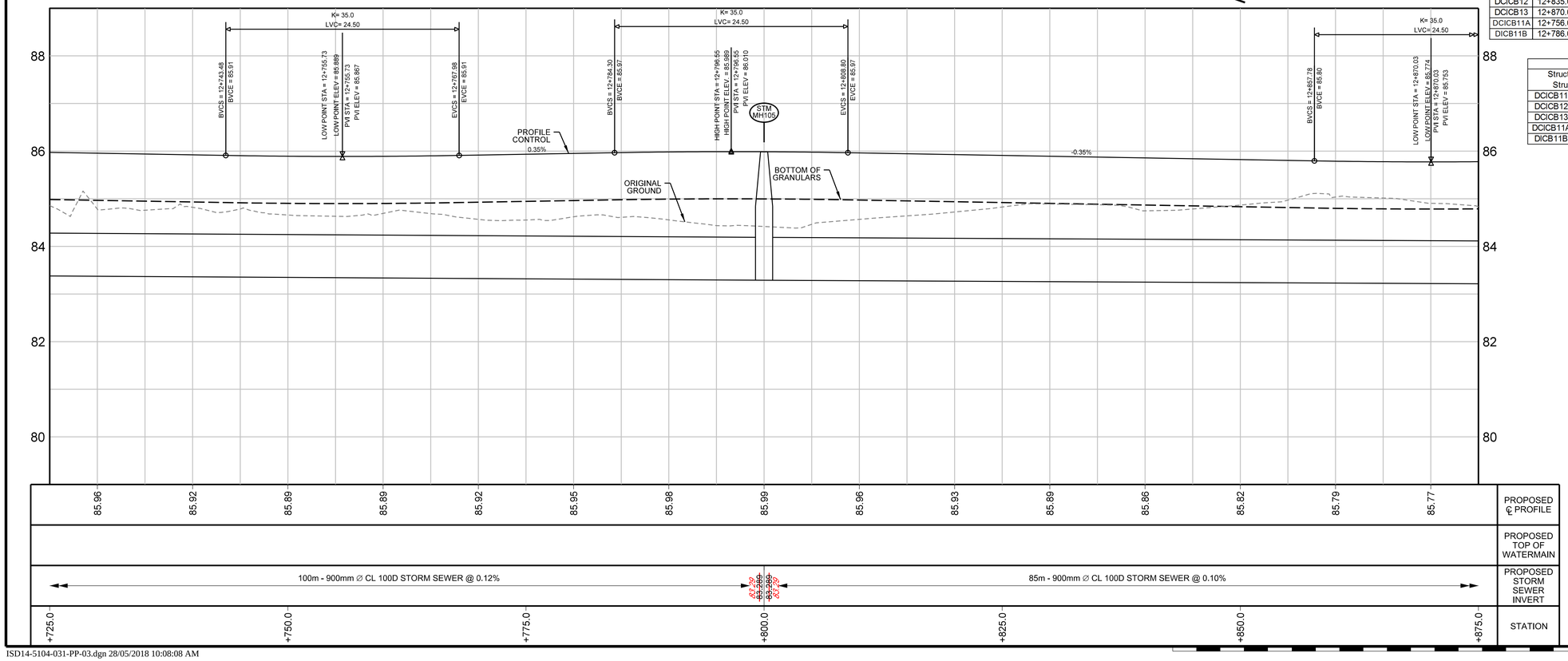
2	ISSUED FOR TENDER	R.C.	05.06.15
3	ISSUED FOR SCM NO. 62	R.C.	29.03.17
4	ISSUED FOR SCM NO. 67	R.C.	03.05.17
5	*AS BUILT*	*R.C.*	*30.03.18*



STORM MANHOLE DATA							
No.	Station	Offset (m)	Type		Elevations		Grate to Invert
			Structure	Cover	Grate	Low Inv.	
STM MH105	12+800.00	4.38 L	701.012	S24.1 / S25	85.95	83.29	2.66

CATCH BASIN DATA								
No.	Station	Offset (m)	Type		Elevations		Grate to Invert	ICD (L/s)
			Structure	Grate	Grate	Low Inv.		
DCICB11	12+755.73	11.90 R	705.020	S22 / S23 (2)	85.83	83.93	1.90	40
DCICB12	12+835.00	11.90 R	705.020	S22 / S23 (2)	85.84	83.94	1.90	25
DCICB13	12+870.03	11.90 R	705.020	S22 / S23 (2)	85.72	83.82	1.90	35
DCICB11A	12+756.00	3.00 R	705.020	S22 / S23 (2)	86.03	84.13	1.90	15
DICB11B	12+786.00	19.05 R	705.030 2:1	403.010 (A)	84.70	84.01	0.69	10

CATCH BASIN LEAD DATA					
Structure to Structure	Dia.	Type	Length	Invert Elevations	
				Upstream	Downstream
DCICB11 TO MAIN	250mm	PVC	16.2	83.93	83.77
DCICB12 TO MAIN	250mm	PVC	16.4	83.94	83.78
DCICB13 TO MAIN	250mm	PVC	16.4	83.82	83.65
DCICB11A TO MAIN	250mm	PVC	7.7	84.13	84.05
DICB11B TO MAIN	200mm	PVC	22.9	84.01	83.76



BRIAN COBURN BOULEVARD NEW ROAD CONSTRUCTION

GRADING & DRAINAGE PAGE ROAD - SOUTH TURNING BASIN

W. R. Newell, P.Eng. — General Manager, Infrastructure Services Department

J. Mojsej, P.Eng. — Project Manager, Design & Construction - Municipal East

Robinson Consultants

AS-BUILT

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Ottawa

Contract No.	Dwg. No.
ISD14-5104	P21

Sheet _ of _

Asset No. _____

Asset Group ___

Des.	Chk'd.
C.T.	R.C.
Dwn.	Chk'd.
C.T.	D.R.
Utility Circ. No. ____	Index No. ____

Const. Inspector _____

Scale: HORIZONTAL 0m 5 10

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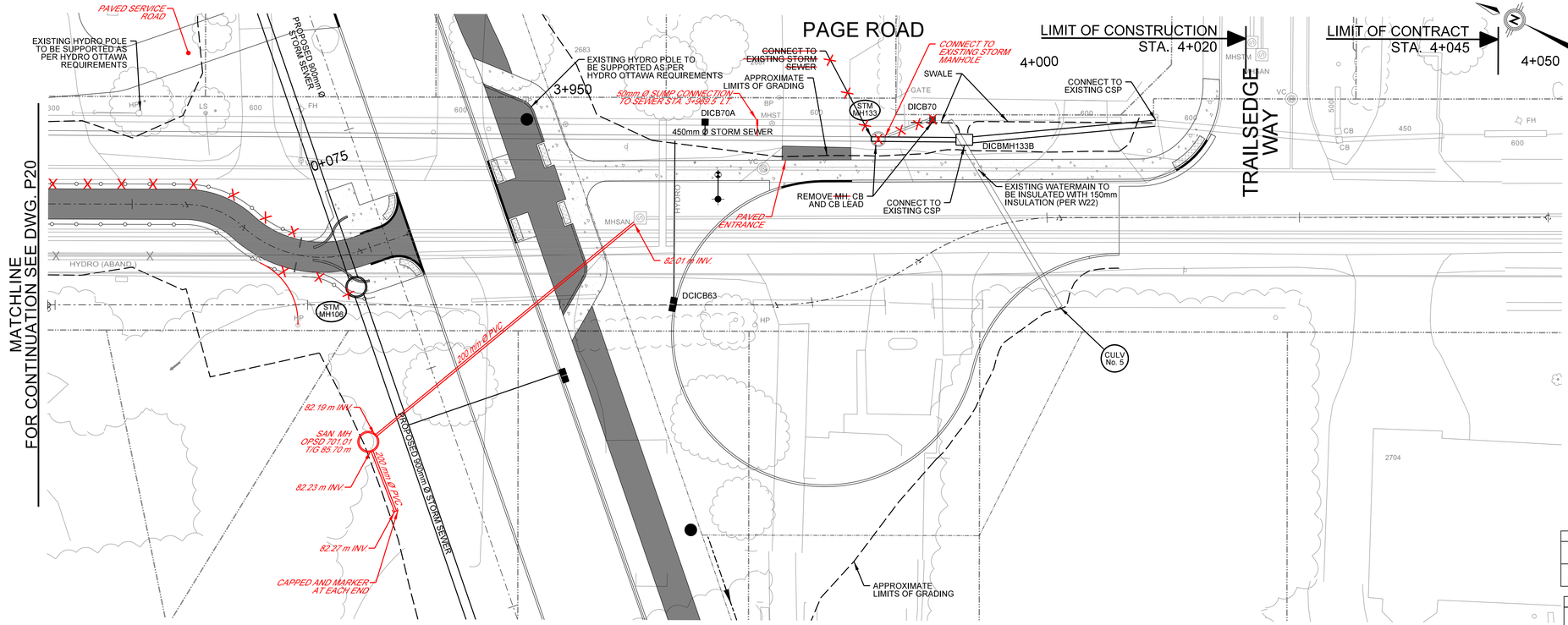
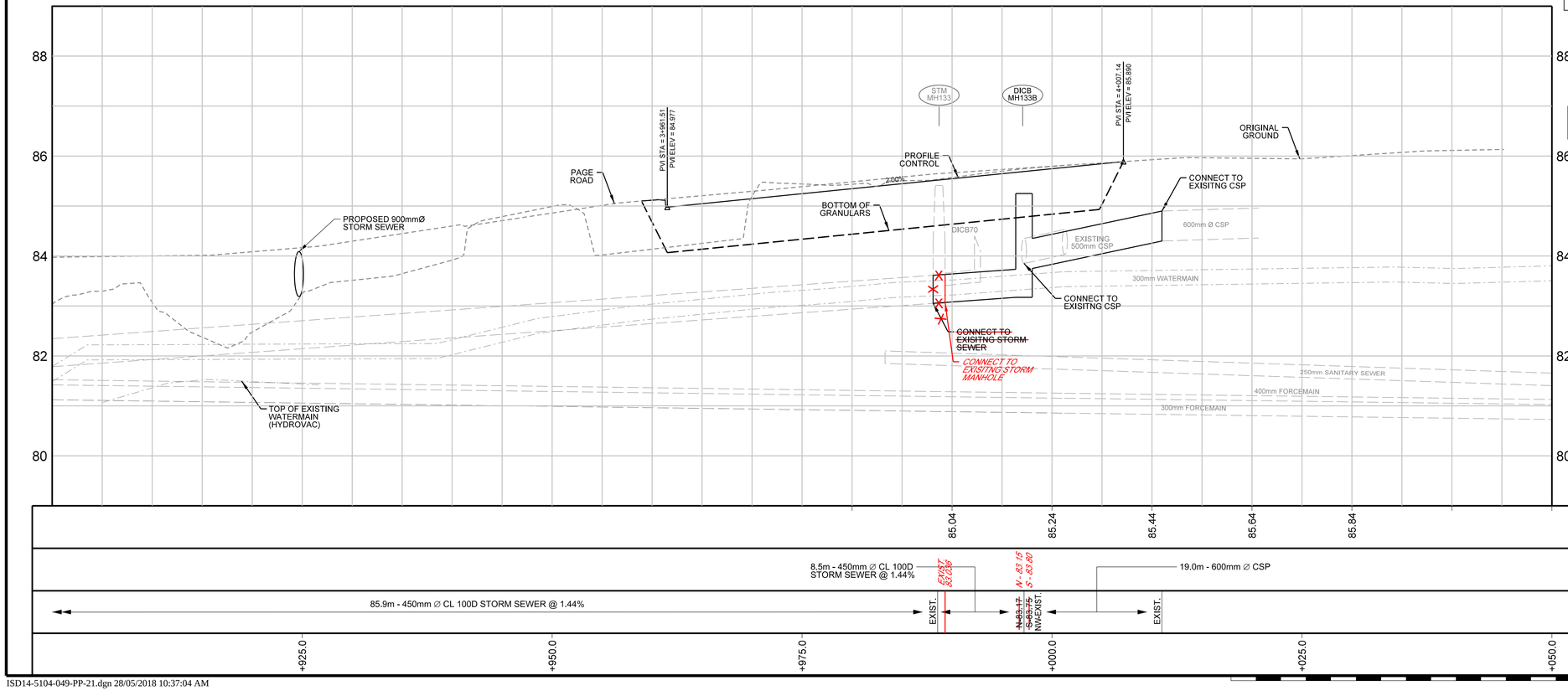
1	ISSUED FOR PRELIMINARY DESIGN CIRCULATION	R.C.	31.10.14
2	ISSUED FOR TENDER	R.C.	05.06.15
3	ISSUED FOR CONSTRUCTION	R.C.	01.03.16
4	REVISED STORM SEWER, PROFILE & CULVERT STATIONS SCM NO. 33	R.C.	14.07.16
5	REVISED STORM SEWER CONFIGURATION SCM NO. 49	R.C.	13.10.16
6	AS BUILT	R.C.	30.03.18





STORM MANHOLE DATA

No.	Station	Offset (m)	Type		Elevations		Grate to Invert
			Structure	Cover	Grate	Low Inv.	
DICBMH133B	3+994.3	9.56 L	702.040	403.010 (B-4:1)	~~85.25~~ 85.23	~~83.17~~ 83.15	2.08

CATCH BASIN DATA

No.	Station	Offset (m)	Type		Elevations		Grate to Invert	ICD (L/s)
			Structure	Grate	Grate	Low Inv.		
DCICB63	3+961.51	0	705.020	S22 / S23 (2)	85.12	83.58	1.54	N/A
DICB70A	3+964.00	18.50 L	705.030	403.010 (A-HOR)	85.25	83.55	1.70	N/A

CATCH BASIN LEAD DATA

Structure to Structure	Dia.	Type	Length	Invert Elevations	
				Upstream	Downstream
DCICB63 TO MAIN	250mm	PVC	17.7	83.58	83.42
DICB70A TO MAIN	200mm	PVC	1.5	83.55	82.90
DICBMH 133B TO STMH 133				83.15	83.036

Culvert	Size (mm)	Length (m)	Downstream			Upstream		
			Station	Offset (m)	Invert	Station	Offset (m)	Invert
5	500	21.5	3+993.62	11.29 L	~~84.08~~ 83.85	4+0001.28	8.90 R	~~84.09~~ 84.03

AS-BUILT DRAWING
THIS DRAWING HAS BEEN REVISED TO INCORPORATE CHANGES INDICATED ON THE CONTRACTOR'S MARKED UP DRAWINGS. CONTRACTOR'S DRAWINGS WERE NOT VERIFIED ON SITE BY THE ENGINEER. THE ENGINEER DOES NOT TAKE RESPONSIBILITY FOR INFORMATION ON THIS DRAWING THAT IS IN CONFLICT WITH EXISTING CONDITION DUE TO INACCURATE OR MISSING INFORMATION ON THE MARKED UP DRAWINGS PROVIDED.

Vinley CONSULTING ENGINEERS PLANNERS

NO.	REVISIONS	BY	DATE
6	AS – CONSTRUCTED	GTP	FEB/2007
5	REVISED WATERMAIN	GTP	DEC 7/05
4	ISSUED FOR TENDER	GTP	JUN 9/05

NOTE:
The location of the utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned.
The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage

FOREST VALLEY SANITARY SERVICING

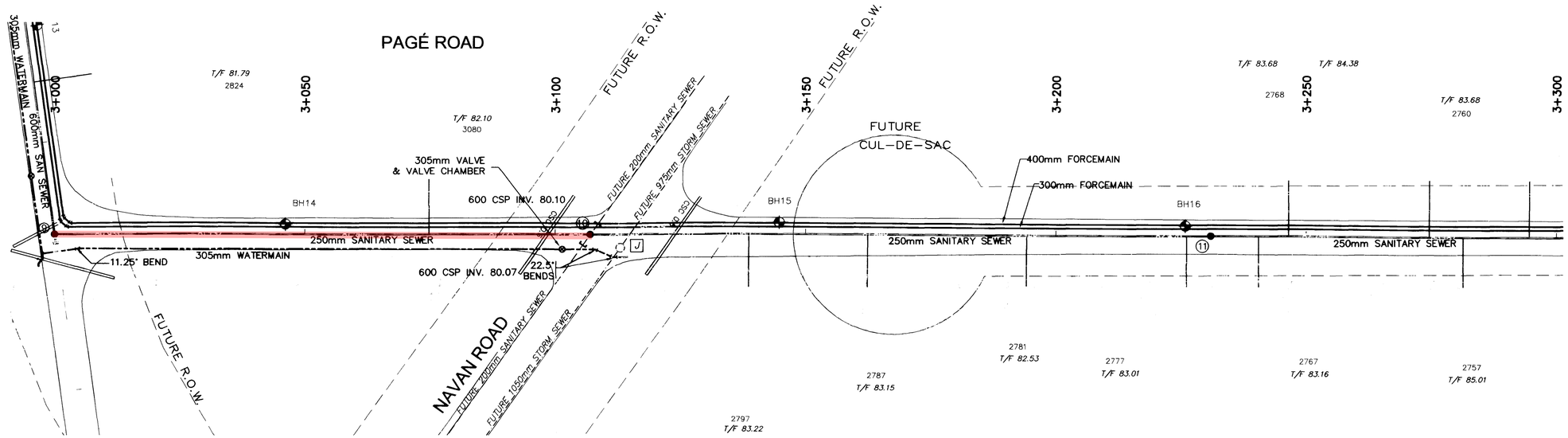
DUAL FORCEMAIN & SANITARY SEWER STA 3+000 – STA 3+300 PAGÉ ROAD

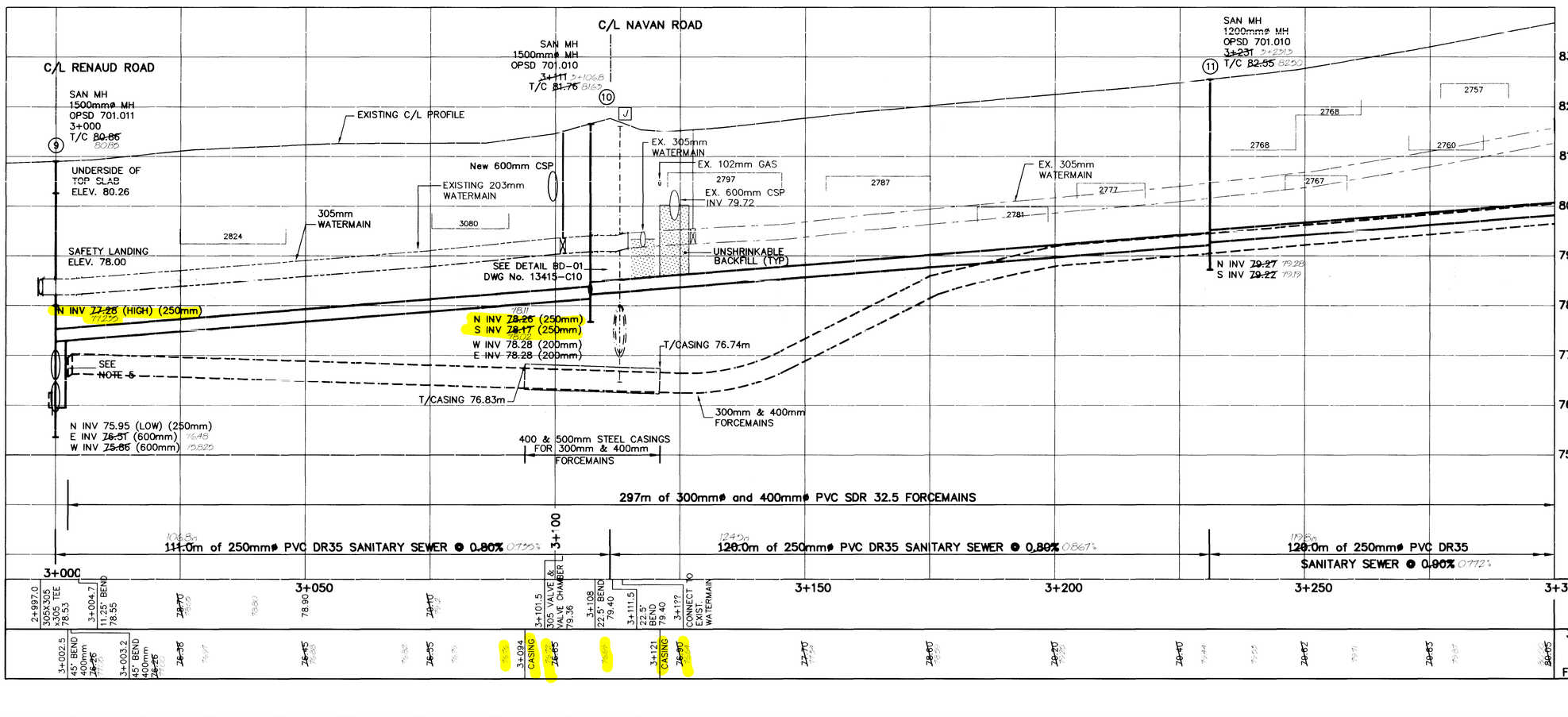
W. NEWELL, P.ENG.	W. CLOUTHIER, P.ENG.
Director Infrastructure Services	Manager Construction Services-Development

Dwn: AVH | Chkd: GTP | Des: GTP | Chkd: JM

Ottawa

CONTRACT NO. ISB05-2011
DWG. NO. 13415-C6
SHEET 8 OF –
DATE MARCH 2005
SCALE Hor 0m 5 10m, Vert 0m 1m





NOTES:

1. *T/F 85.79* – TOP OF FOUNDATION ELEVATION
2. ALL SANITARY SERVICE LATERALS SHALL CROSS BELOW THE EXISTING WATERMAIN, EXISTING STORM SEWER PIPE AND EXISTING DITCH ELEVATION.
3. ALL SANITARY SERVICE LATERAL INVERTS SHALL BE A 3.0m MINIMUM BELOW THE TOP OF FOUNDATION ELEVATION AT THE PROPERTY LINE.
4. ALL SANITARY SERVICE LATERALS SHALL BE INSTALLED AS PER OPSD 1006.020.
5. 250mm DROP STRUCTURE AS PER OPSD 1003.020
6. FUTURE STORM MANHOLE:
   J STA 3+112.9
   W INV 77.05 (975mm)
   E INV 76.97 (1050mm)
7. CONTRACTOR TO CONFIRM ELEVATION AND LOCATION OF EXISTING 305mm WATERMAIN PRIOR TO CROSSING NAVAN ROAD.
8. RECONNECT WATER SERVICES TO NEW 305mm WATERMAIN

AS-BUILT DRAWING
THIS DRAWING HAS BEEN REVISED TO INCORPORATE CHANGES INDICATED ON THE CONTRACTOR'S MARKED UP DRAWINGS. CONTRACTOR'S DRAWINGS WERE NOT VERIFIED ON SITE BY THE ENGINEER. THE ENGINEER DOES NOT TAKE RESPONSIBILITY FOR INFORMATION ON THIS DRAWING THAT IS IN CONFLICT WITH EXISTING CONDITION DUE TO INACCURATE OR MISSING INFORMATION ON THE MARKED UP DRAWINGS PROVIDED.

Vinley CONSULTING ENGINEERS PLANNERS

NO.	REVISIONS	BY	DATE
5	AS – CONSTRUCTED	GTP	FEB/2007
4	ISSUED FOR TENDER	GTP	JUN 9/05
3	ISSUED TO CITY FOR REVIEW	GTP	05/03/23
2	ISSUED TO CITY FOR REVIEW	GTP	05/03/18
1	ISSUED FOR UTILITY CIRCULATION	GTP	05/03/15

NOTE:
The location of the utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned.
The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage

FOREST VALLEY SANITARY SERVICING

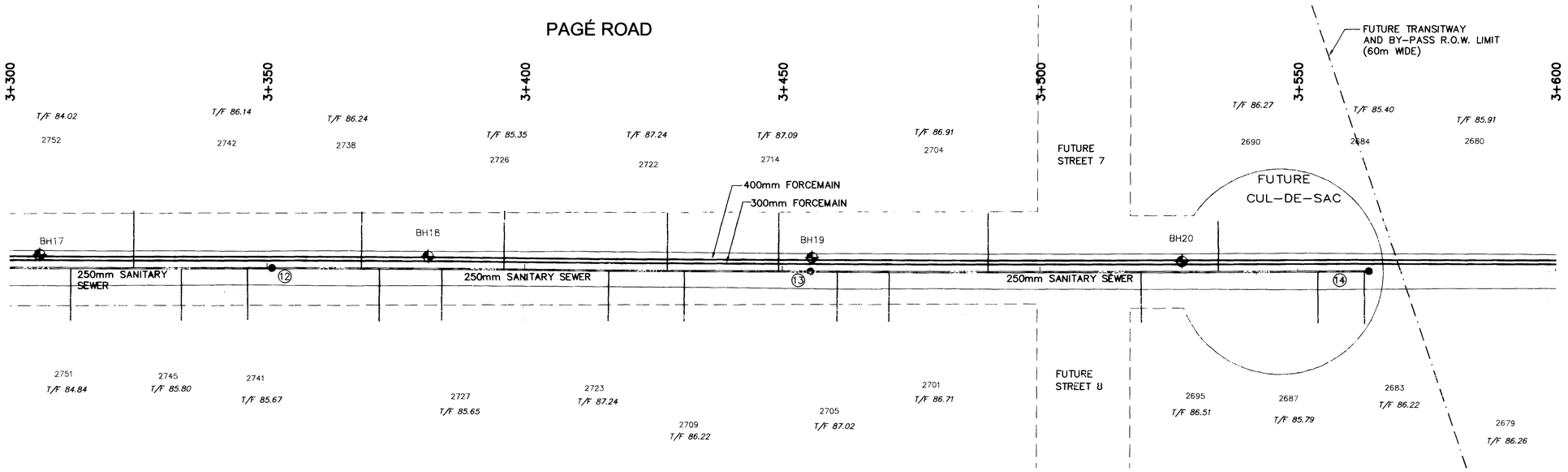
DUAL FORCEMAIN & SANITARY SEWER STA 3+300 – STA 3+600 PAGÉ ROAD

W. NEWELL, P.ENG.	W. CLOUTHIER, P.ENG.
Director Infrastructure Services	Manager Construction Services–Development

Dwn: AVH | Chkd: GTP | Des: GTP | Chkd: JM

Ottawa
CONTRACT NO. ISB05-2011
DWG. NO. 13415-C7
SHEET 9 OF –
DATE MARCH 2005
SCALE Hor 0m 5 10m; Vert 0m 1m

PAGÉ ROAD



NOTES:

1. *T/F 85.79* – TOP OF FOUNDATION ELEVATION
2. ALL SANITARY SERVICE LATERALS SHALL CROSS BELOW THE EXISTING WATERMAIN, EXISTING STORM SEWER PIPE AND EXISTING DITCH ELEVATION.
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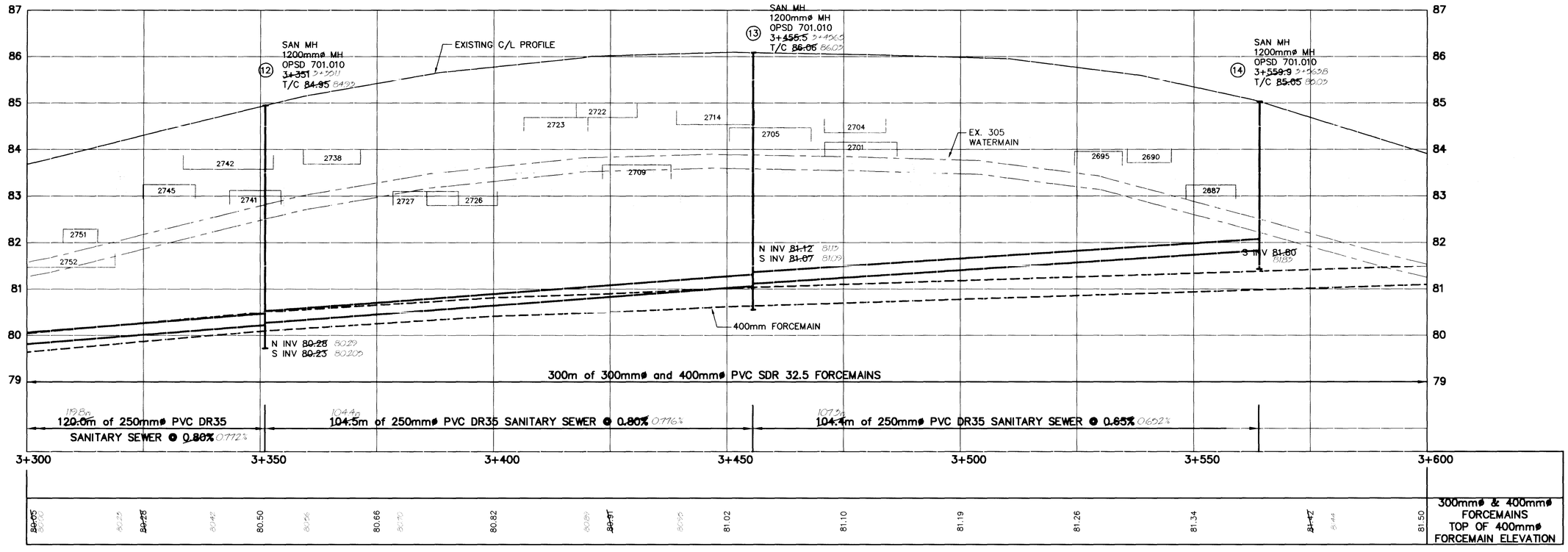
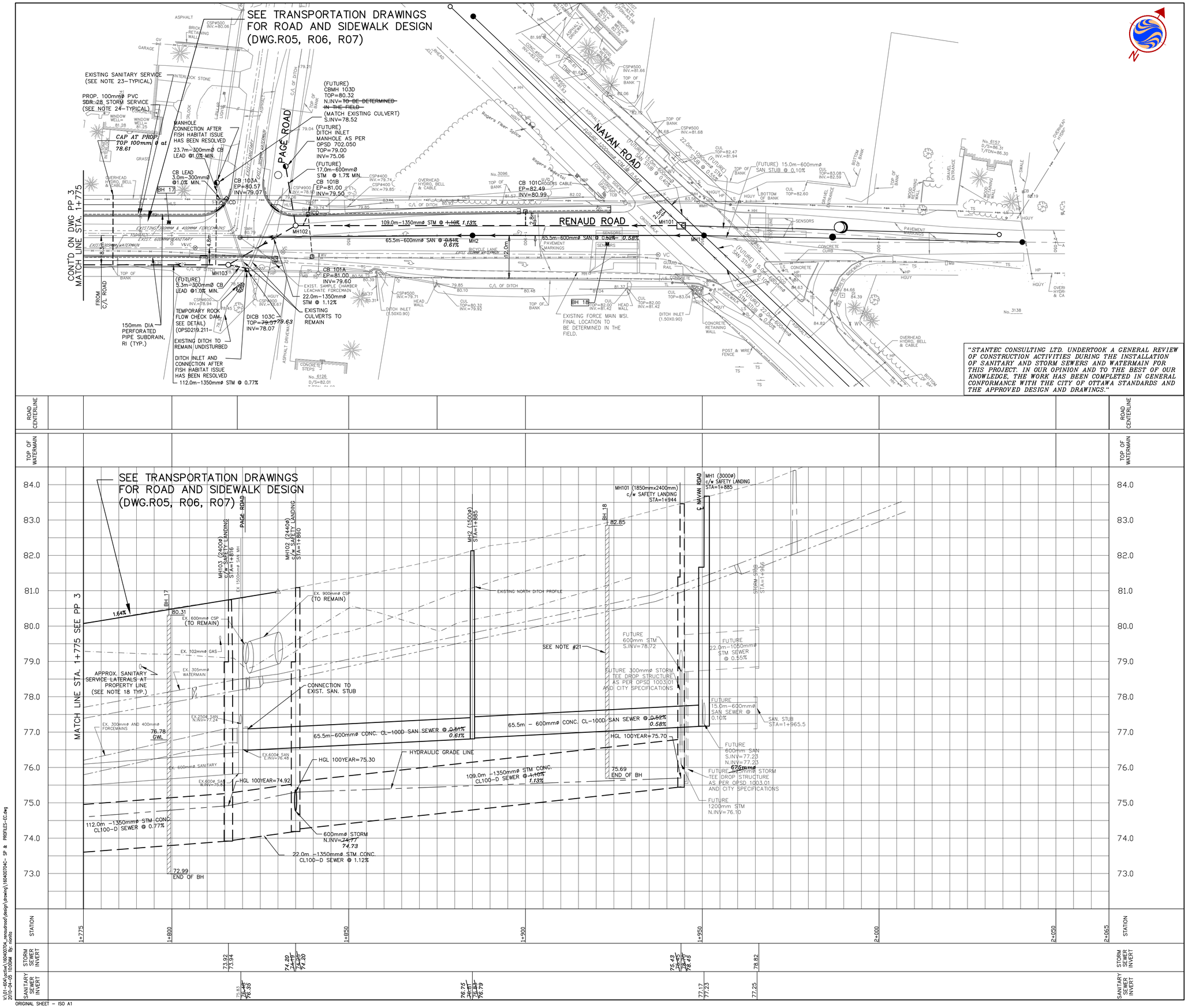
4. ALL SANITARY SERVICE LATERALS SHALL BE INSTALLED AS PER OPSD 1006.020.





ROAD CENTERLINE | TOP OF WATERMAIN | STATION | STORM SEWER INVERT | SANITARY SEWER INVERT

V:\01-60A\active\160400704_renaudroad\design\drawing\160400704C- SP & PROFILES-EC.dwg
2010-04-05 10:00AM by: nicolla

ORIGINAL SHEET - ISO A1

Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada
K1Z 7T1
Tel. 613.722.4420
Fax. 613.722.2799
www.stantec.com

Stantec

Notes

1. ALL MATERIALS AND CONSTRUCTION METHODS TO BE IN ACCORDANCE WITH OPS AND CITY OF OTTAWA STANDARD SPECIFICATIONS AND DRAWINGS AND OPSD SUPPLEMENT, ONTARIO PROVINCIAL STANDARDS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND BEAR COST OF SAME INCLUDING WATER PERMIT AND ASSOCIATED COSTS.
3. SERVICE AND UTILITY LOCATIONS ARE APPROXIMATE, CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING SERVICES AND UTILITIES PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATES FROM ALL UTILITY COMPANIES TO LOCATE EXISTING UTILITIES PRIOR TO EXCAVATION. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION AND REINSTATEMENT.
4. ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER & THE CITY. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH OPSD 509.010 AND OPSS 310.
5. STORM SEWERS 375mm DIA. OR SMALLER SHALL BE PVC SDR 35. STORM SEWERS LARGER THAN 375mm DIA. SHALL BE CONCRETE CSA A 257 CLASS 100 D.
6. STORM MANHOLES SIZE SHALL BE AS INDICATED ON THE PROFILES IN ACCORDANCE WITH OPSD c/w FRAME AND COVER AS PER CITY OF OTTAWA S24.1 AND S25.
7. STREET CBs SHALL BE CURB INLET TYPE AS PER CITY STANDARD S3. FRAME AND COVER AS PER CITY STANDARD S22 AND S23, AND PROVIDED WITH 150mmø SPACERS. ALL CBs SHALL HAVE 600mmø SUMPS. CB LEADS SHALL BE 200mmø (MIN.) PVC SDR35 AT 1.0% MIN. ALL STREET CBs WILL BE INTERCONNECTED WITH ICDs. SEE SCHEDULE ON DWG. OSD-1.
8. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE PROTECTION FOR RECEIVING STORM SEWERS OR DRAINAGE DURING CONSTRUCTION ACTIVITIES. (ie: FILTER CLOTH ON CATCH BASINS, STRAW BALE CHECK DAMS AND SEDIMENT CONTROLS AROUND ALL DISTURBED AREAS). DEWATERING SHALL BE PUMPED INTO SEDIMENT TRAPS. (SEE EROSION CONTROL PLAN).
9. GRANULAR "A" SHALL BE PLACED TO A MINIMUM THICKNESS OF 300 mm AROUND ALL STRUCTURES WITHIN PAVEMENT AREA
10. SEWER TRENCH SHALL CONSIST OF A CLASS "B" BEDDING AS PER CITY OF OTTAWA STANDARDS S6 AND S7. COMPACTION SHALL BE A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
11. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
12. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEWED BY THE CITY OF OTTAWA PRIOR TO TREE CUTTING.
13. CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF ALL STORM SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW.
14. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS & NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE CONSULTANT.
15. SUB-EXCAVATE SOFT AREAS & FILL WITH GRANULAR 'B' COMPACTED IN 0.15m LAYERS.
16. CONCRETE CURBS SHALL BE CONSTRUCTED AS PER CITY STANDARD SC1.1
17. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
18. RECONNECT EXISTING SANITARY SERVICE LATERALS FROM EXISTING RESIDENTAL UNITS AS REQUIRED AS PER CITY STANDARD S11.
19. STORM SERVICE LATERALS TO BE INSTALL FOR THE EXISTING RESIDENTS ALONG RENAUD ROAD TO PROPERTY LINE AS REQUIRED AS PER CITY STANDARD S11. CONNECTION LOCATION AND INV. TO BE DETERMINED IN FIELD. (INVERT AT PROPERTY LINE SHALL BE A MINIMUM OF 3.0m BELOW TOP OF FOUNDATION WALL.)
20. 150mmø SUBDRAIN TO BE INSTALLED 300mm BELOW SUBGRADE LEVEL CONTINUOUS ALONG BOTH SIDES OF PAVEMENT, CONNECTED TO CATCHBASINS.
21. REFER TO GEOTECHNICAL REPORT BY PATERSONGROUP DATED NOVEMBER 17, 2008 FOR TEST PIT INFORMATION AND GEOTECHNICAL RECOMMENDATIONS.

7	*AS RECORDED*	*GBU*	*GT*	*11.12.12*
6	*AS RECORDED*	*CTL*	*PM*	*11.03.25*
5	ISSUED FOR CONSTRUCTION	NI	TJW	10.04.01
4	ISSUED FOR TENDER	NI	TJW	09.04.17
3	ADD FRONT YARD GRADING	NI	TJW	09.02.25
2	REVISED AS PER CITY COMMENTS/ ADD BOREHOLES INFORMATION	NI	TJW	08.12.01
1	REVISED STORM SEWER ALIGNMENT AS PER CITY COMMENTS	NI	TJW	08.10.17
0	1ST SUBMISSION	NI	TJW	08.08.12
Revision		By	Appd.	YY.MM.DD
File Name: 160400704C-SP&PP		NI	PM	TJW	08.07.10
		Dwn.	Chkd.	Dsgn.	YY.MM.DD

Seal

RECORD DRAWING
DATE DEC. 12/11

Client/Project

CLARIDGE HOMES (CARSON) INC.

RENAUD ROAD IMPROVEMENTS

Ottawa ON Canada

Title

RENAUD ROAD
STA. 1+775 TO STA. 1+966

Project No. 160400704

Scale 1:500H 0 5 15 25m
1:50V 0 0.5 1.5 2.5m

Drawing No. PP-4

Sheet 6 of 12

Revision 7

Appendix D1

Water Demands and FUS Calculations

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : NAVAN ROAD DEVELOPMENT PROJECT
LOCATION : CITY OF OTTAWA
DEVELOPER : 12714001 Canada Inc.

NODE	RESIDENTIAL UNITS Townhouses (TH)	RESIDENTIAL UNITS Condo Units (CU)	RESIDENTIAL POP'N	NON-RESIDENTIAL COMM (ha.)	AVERAGE DAILY DEMAND (l/s) Res.	AVERAGE DAILY DEMAND (l/s) Non-res.	AVERAGE DAILY DEMAND (l/s) Total	MAXIMUM DAILY DEMAND (l/s) Res.	MAXIMUM DAILY DEMAND (l/s) Non-res.	MAXIMUM DAILY DEMAND (l/s) Total	PEAK HOUR DEMAND (l/s) Res.	PEAK HOUR DEMAND (l/s) Non-res.	PEAK HOUR DEMAND (l/s) Total
J-1	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-2	8	0	22	0.00	0.07	0.00	0.07	0.18	0.00	0.18	0.39	0.00	0.39
J-4	0	84	151	0.09	0.49	0.03	0.52	1.23	0.05	1.27	2.70	0.08	2.78
J-5	0	36	65	0.09	0.21	0.03	0.24	0.53	0.05	0.57	1.16	0.08	1.24
J-6	0	47	85	0.00	0.27	0.00	0.27	0.69	0.00	0.69	1.51	0.00	1.51
J-7	13	0	35	0.00	0.11	0.00	0.11	0.28	0.00	0.28	0.63	0.00	0.63
J-8	26	0	70	0.00	0.23	0.00	0.23	0.57	0.00	0.57	1.25	0.00	1.25
J-9	20	0	54	0.00	0.18	0.00	0.18	0.44	0.00	0.44	0.96	0.00	0.96
J-10	0	96	173	0.00	0.56	0.00	0.56	1.40	0.00	1.40	3.08	0.00	3.08
J-11	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-12	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-13	0	0	0	0.37	0.00	0.12	0.12	0.00	0.18	0.18	0.00	0.32	0.32
J-14	0	0	0	0.37	0.00	0.12	0.12	0.00	0.18	0.18	0.00	0.32	0.32
J-15	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	67	263	654	0.93	**2.12**	**0.30**	**2.43**	**5.30**	**0.45**	**5.75**	**11.66**	**0.81**	**12.47**

ASSUMPTIONS

RESIDENTIAL DENSITIES

- Townhouse (TH) 2.7 p / p / u
- Condo Units (CU) 1.8 p / p / u

p / p / u

p / p / u

AVG. DAILY DEMAND

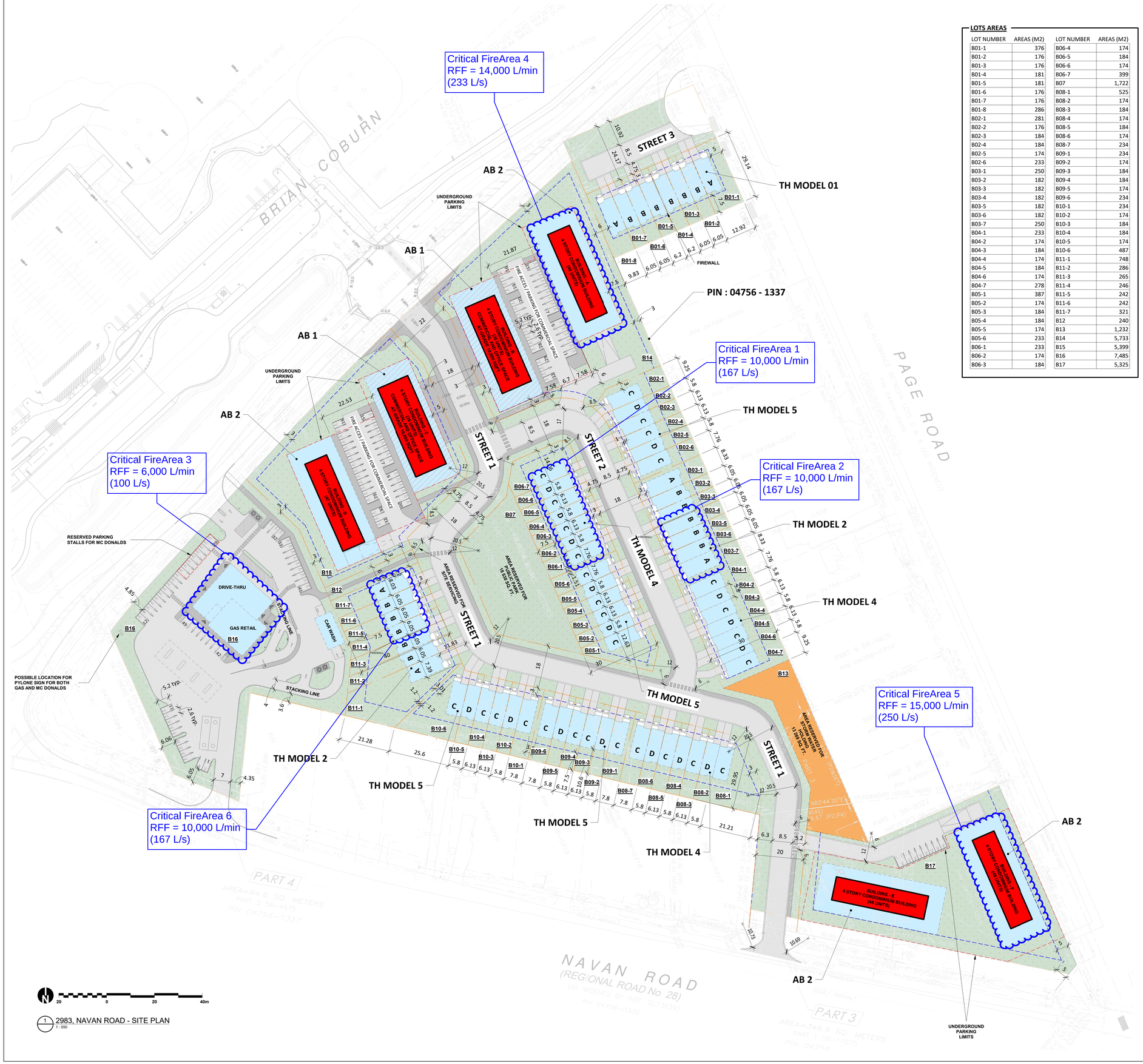
- Residential 280 l / cap / day
- Institutional 28,000 l / ha / day
- Commercial 28,000 l / ha / day

MAX. DAILY DEMAND

- Residential 700 l / cap / day
- Institutional 42,000 l / ha / day
- Commercial 42,000 l / ha / day

MAX. HOURLY DEMAND

- Residential 1,540 l / cap / day
- Institutional 75,600 l / ha / day
- Commercial 75,600 l / ha / day



LOTS AREAS

LOT NUMBER	AREAS (M2)	LOT NUMBER	AREAS (M2)
B01-1	376	B06-4	174
B01-2	176	B06-5	184
B01-3	176	B06-6	174
B01-4	181	B06-7	399
B01-5	181	B07	1,722
B01-6	176	B08-1	525
B01-7	176	B08-2	174
B01-8	286	B08-3	184
B02-1	281	B08-4	174
B02-2	176	B08-5	184
B02-3	184	B08-6	174
B02-4	184	B08-7	234
B02-5	174	B09-1	234
B02-6	233	B09-2	174
B03-1	250	B09-3	184
B03-2	182	B09-4	184
B03-3	182	B09-5	174
B03-4	182	B09-6	234
B03-5	182	B10-1	234
B03-6	182	B10-2	174
B03-7	250	B10-3	184
B04-1	233	B10-4	184
B04-2	174	B10-5	174
B04-3	184	B10-6	487
B04-4	174	B11-1	748
B04-5	184	B11-2	286
B04-6	174	B11-3	265
B04-7	278	B11-4	246
B05-1	387	B11-5	242
B05-2	174	B11-6	242
B05-3	184	B11-7	321
B05-4	184	B12	240
B05-5	174	B13	1,232
B05-6	233	B14	5,733
B06-1	233	B15	5,399
B06-2	174	B16	7,485
B06-3	184	B17	5,325

SITE PLAN LEGEND

- EXISTING BUILDING
- NEW BUILDING
- NEW BUILDING WITH COMMERCIAL SPACE AT-GRADE
- GRASS
- ASPHALT
- LOT LINE
- SETBACKS
- NEW TREE
- FIREWALL
- SIDEWALK

SITE INFORMATION & DEVELOPMENT STATISTICS

LOTS		PIN
		04756 - 0303
		04756 - 0315
		04756 - 0316
		04756 - 1337
ZONING		GM[2546] H(14.5)
SITE AREA		
TOTAL SITE AREA:		~53,441.14 m² (5.34ha)
TOTAL DEVELOPABLE AREA:		~45,956.28 m² (4.59ha)
NET SITE AREA:		~38,956.28 m² (3.89ha)
UNITS		
TOWNHOUSES:		67 UNITS
BLOCK 01:		
1 X RESIDENTIAL APARTMENT BUILDING		48 UNITS
1 X MIXED USE BUILDING		
RESIDENTIAL:		36 UNITS
COMMERCIAL SPACES:		~929 m²
BLOCK 02:		
1 X RESIDENTIAL APARTMENT BUILDING		47 UNITS
1 X MIXED USE BUILDING		
RESIDENTIAL:		36 UNITS
COMMERCIAL SPACES:		~929 m²
BLOCK 03:		
2 X RESIDENTIAL APARTMENT BUILDING		96 UNITS
TOTAL NUMBER OF UNITS:		330 UNITS
TOTAL COMMERCIAL SPACES:		~1,858 m²
	REQUIRED	PROVIDED
MAXIMUM DENSITY	NO MAX.	84.8 units/net ha
MINIMUM LOT WIDTH	NO MIN.	5.8 m
MINIMUM LOT AREA	NO MIN.	174 m²
MAXIMUM BUILDING HEIGHT	14.5 m	14.5 m
SETBACKS		
MINIMUM FRONT YARD:	3 m	3 m
MINIMUM CORNER SIDE YARD:	3 m	3 m
MINIMUM INTERIOR SIDE YARD:		
NON-RESIDENTIAL OR MIXED-USE:	5 m	5 m
LOW-RISE RESIDENTIAL :	1.2 m	1.2 m
MID-RISE RESIDENTIAL :	3 m	3 m
MINIMIM REAR YARD:		
ABUTTING A STREET:	3 m	3 m
FROM A RESIDENTIAL ZONE:	7.5 m	7.5 m
FOR A RESIDENTIAL BUILDING:	7.5 m	7.5 m
PARKING RATES		
R9 - TOWNHOUSES:	1 p/unit = 67	67 (GARAGES)
VISITOR:	0	67 DRIVE AISLES
BLOCK 14:		
R12 - APARTEMENTS	1.2 p/unit = 101	101 (UNDERGROUND)
VISITOR:	0.2 p/unit = 17	17 (UNDERGROUND)
N79 - RETAIL STORE:	3.4 p/100 m² GFA = 32	32 (EXTERIOR)
		TOTAL: 150
BLOCK 15:		
R12 - APARTEMENTS	1.2 p/unit = 100	100 (UNDERGROUND)
VISITOR:	0.2 p/unit = 17	17 (UNDERGROUND)
N79 - RETAIL STORE:	3.4 p/100 m² GFA = 32	32 (EXTERIOR)
		TOTAL: 150
BLOCK 18:		
R12 - APARTEMENTS	1.2 p/unit = 116	145 (UNDERGROUND)
VISITOR:	0.2 p/unit = 17	17 (8 EXT. + 12 UND.)
		TOTAL: 162
GROSS FLOOR AREA		
TOWNHOUSE A:		267 m²
TOWNHOUSE B:		239 m²
TOWNHOUSE C:		232 m²
TOWNHOUSE C (CORNER UNIT):		236 m²
TOWNHOUSE D:		225 m²
TOTAL MODEL 01 (ABBBBBBA)		1,968 m²
TOTAL MODEL 02 (ABBBBBA)		1,729 m²
TOTAL MODEL 03 (ABBBBA)		1,490 m²
TOTAL MODEL 04 (CDCDCDC)		1,611 m²
TOTAL MODEL 05 (CDCCDC)		1,386 m²
MIXED USE BUILDING (TOTAL OF 2 BUILDINGS):		TOTAL: 4,130 m²
RESIDENTIAL:		3,201 m²
COMMERCIAL:		929 m²
RESIDENTIAL APARTMENT BUILDING (TOTAL OF 4 BUILDINGS) :		TOTAL: 4,130 m²
RESIDENTIAL:		4,130 m²

NOTE

1. ASSUMES TYPICAL RESIDENTIAL FLOOR HEIGHT OF 3m.
2. THE BASE PLAN (LOT LINES, EXISTING ROADS AND SURROUNDING AREAS) IS BASED ON THE TOPOGRAPHICAL PLAN OF SURVEY, SURVEYED STANTEC GEOMATICS LTD.
3. DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0,3048.

PROJECT

NAVAN ROAD DEVELOPMENT

2983, Navan Road, Orleans, ON K1C 7G4

OWNER

GROUPE Heafey GROUP
768, BOUL. SAINT-JOSEPH, SUITE 100
GATINEAU, QC J8Y 4B8

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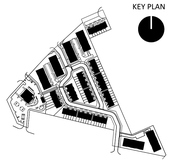
ENGINEERS / PLANNER

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS
1565 CARLING AVENUE, SUITE 700, OTTAWA, ON K1Z 8R1

SURVEYOR

Stantec
1331 CLYDE AVENUE, SUITE 400, OTTAWA, ON K2C 3G4

KEY PLAN



ARCHITECT SEAL

REVISIONS

NO	DESCRIPTION	DATE
7	FOR COORDINATION	2022-11-08
6	FOR COORDINATION	2022-11-01
5	FOR COORDINATION	2022-04-14
4	FOR COORDINATION	2021-11-01
3	FOR COORDINATION	2021-08-30
2	FOR COORDINATION	2021-08-26
1	FOR COORDINATION	2021-08-18

NOTE

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON THE SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT. ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS. DO NOT SCALE DRAWINGS.

FOR COORDINATION
DO NOT USE FOR CONSTRUCTION
2022-11-08

DATE	DESIGNED
2022-11-08	PP
	DRAWN
	PP
PROJECT No	CHECKED
20054	PM

SHEET TITLE

SITE PLAN

SHEET No

A100

C:\Users\ppomerleau\Documents\20054_DEV-NAVAN_CENTRAL_R21_ppomerleauUW453.rvt

FUS Fire Flow Calculations

NAVAN ROAD DEVELOPMENT PROJECT - Row Townhouse

(JLR 29899-000)

FireArea 1

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	589.75	m^2	Includes 7 units of Row TH
C	Height in storeys	2	storeys	Basements are excluded.
	Total Floor Area	1179.5	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	11333	L/min	
	Rounded Fire Flow	11000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1650		
	Fire Flow	9350	L/min	No rounding applied.
F	Sprinkler Protection	None		
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		7 Unit Row TH
	Exposed Wall:	Wood Frame		7 Unit Row TH and 6 Unit Row TH separated by 3.01 m
	Length of Exposed Wall:	42.2	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	84.3	m-storeys	
	Separation Distance	27.14	m	
	North Side Exposure Charge	9%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		7 Unit Row TH
	Exposed Wall:	Wood Frame		6 Unit Row TH
	Length of Exposed Wall:	14.2	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	28.3	m-storeys	
	Separation Distance	3.02	m	
	East Side Exposure Charge	22%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		7 Unit Row TH
	Exposed Wall:	Wood Frame		7 Unit Row TH
	Length of Exposed Wall:	26.2	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	52.4	m-storeys	
	Separation Distance	65.71	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		7 Unit Row TH
	Exposed Wall:	Wood Frame		Building B (4 Storey Condo Unit)
	Length of Exposed Wall:	14.2	m	
	Height of Exposed Wall:	4	storeys	
	Length-Height Factor	56.8	m-storeys	
	Separation Distance	28.81	m	
	West Side Exposure Charge	8%		
	Total Exposure Charge	39%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	3647	L/min	
H	Fire Flow	12997	L/min	
	Rounded Fire Flow	13000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**10000**	**L/min**	The City of Ottawa's cap does apply since north and south separations are greater than 10 m AND total exposing area is less than 600 sq-m
		167	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

NAVAN ROAD DEVELOPMENT PROJECT - Row Townhouse

(JLR 29899-000)

FireArea 2

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	372.47	m^2	Fire area is 4 units of Row TH (7 units seperated by firewall)
C	Height in storeys	2	storeys	Basements are excluded.
	Total Floor Area	744.94	m^2	
D	Fire Flow Formula	F=220C√A		
	Fire Flow	9007	L/min	
	Rounded Fire Flow	9000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1350		
	Fire Flow	7650	L/min	No rounding applied.
F	Sprinkler Protection	None		
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		Shed/Garage on existing property fronting Page Rd.
	Length of Exposed Wall:	4.0	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	4.0	m-storeys	
	Separation Distance	12.34	m	
	North Side Exposure Charge	12%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		7 Unit Row TH
	Length of Exposed Wall:	14.2	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	28.3	m-storeys	
	Separation Distance	3.01	m	
	East Side Exposure Charge	22%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		7 Unit Row TH and 6 Unit Row TH separated by 3.01 m
	Length of Exposed Wall:	24.9	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	49.8	m-storeys	
	Separation Distance	27.17	m	
	South Side Exposure Charge	8%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		6 Unit Row TH
	Length of Exposed Wall:	14.2	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	28.5	m-storeys	
	Separation Distance	3.01	m	
	West Side Exposure Charge	22%		
	Total Exposure Charge	64%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	4896	L/min	
H	Fire Flow	12546	L/min	
	Rounded Fire Flow	13000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**10000**	**L/min**	The City of Ottawa's cap does apply since north and south separations are greater than 10 m AND total exposing area is less than 600 sq-m
		167	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

NAVAN ROAD DEVELOPMENT PROJECT - Commercial Building

(JLR 29899-000)

FireArea 3

Step	Parameter	Value		Note
A	Type of Construction	Non-combustible		
	Coefficient (C)	0.8		
B	Ground Floor Area	686.22	m^2	Commercial area consisting of a Gas Retail and Drive Thru
C	Height in storeys	1	storeys	Basements are excluded.
	Total Floor Area	686.22	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	4610	L/min	
	Rounded Fire Flow	5000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Combustible		
	Occupancy Charge	0%		
	Occupancy Increase or Decrease	0		
	Fire Flow	5000	L/min	No rounding applied.
F	Sprinkler Protection	None		
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Non-combustible		Gas Retail/Drive Thru
	Exposed Wall:	Wood Frame		4 Storey Condo Unit
	Length of Exposed Wall:	29.6	m	
	Height of Exposed Wall:	4	storeys	
	Length-Height Factor	118.4	m-storeys	
	Separation Distance	29.64	m	
	North Side Exposure Charge	10%		
	East Side Exposure			
	Exposing Wall:	Non-combustible		Gas Retail/Drive Thru
	Exposed Wall:	Non-combustible		Car Wash (East and South Face of Car Wash)
	Length of Exposed Wall:	21.8	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	21.8	m-storeys	
	Separation Distance	18.81	m	
	East Side Exposure Charge	12%		
	South Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	7.5	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	15.1	m-storeys	
	Separation Distance	46	m	Over 45 m to next structure
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Non-combustible		Gas Retail/Drive Thru
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:		m	
	Height of Exposed Wall:		storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance		m	Over 200 m to next structure
	West Side Exposure Charge	0%		
	Total Exposure Charge	22%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	1100	L/min	
H	Fire Flow	6100	L/min	
	Rounded Fire Flow	6000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**6000**	**L/min**	
		100	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

NAVAN ROAD DEVELOPMENT PROJECT - Commercial Building

(JLR 29899-000)

FireArea 4

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		Building A
	Coefficient (C)	1.5		
B	Ground Floor Area	1033	m^2	4 Story Condominium Building
C	Height in storeys	4	storeys	Basements are excluded.
	Total Floor Area	4132	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	21213	L/min	
	Rounded Fire Flow	21000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-3150		
	Fire Flow	17850	L/min	No rounding applied.
F	Sprinkler Protection	Automatic Fully Supervised		
	Sprinkler Credit	-50%		
	Decrease for Sprinkler	-8925	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		Building A (4 Story Condo Unit)
	Exposed Wall:	Wood Frame		Proposed 8 Unit ROW townhouse & existing single house
	Length of Exposed Wall:	35.0	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	35.0	m-storeys	
	Separation Distance	10.4	m	
	North Side Exposure Charge	13%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		Building A (4 Story Condo Unit)
	Exposed Wall:	Wood Frame		Proposed 6 Unit ROW townhouse
	Length of Exposed Wall:	14.2	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	28.4	m-storeys	
	Separation Distance	25.88	m	
	East Side Exposure Charge	8%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		Building A (4 Story Condo Unit)
	Exposed Wall:	Wood Frame		Building B (4 Story Condo Unit)
	Length of Exposed Wall:	39.0	m	
	Height of Exposed Wall:	4	storeys	
	Length-Height Factor	156.0	m-storeys	
	Separation Distance	21.91	m	
	South Side Exposure Charge	10%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		Building A (4 Story Condo Unit)
	Exposed Wall:	Wood Frame		No structure within 50 m
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	Over 50m away from any structure
	West Side Exposure Charge	0%		
	Total Exposure Charge	31%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	5534	L/min	
H	Fire Flow	14459	L/min	
	Rounded Fire Flow	14000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**14000**	**L/min**	
		233	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

NAVAN ROAD DEVELOPMENT PROJECT - Commercial Building

(JLR 29899-000)

FireArea 5

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		Building F (4 Story Condominium Building)
	Coefficient (C)	1.5		
B	Ground Floor Area	1033	m^2	
C	Height in storeys	4	storeys	Basements are excluded.
	Total Floor Area	4132	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	21213	L/min	
	Rounded Fire Flow	21000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-3150		
	Fire Flow	17850	L/min	No rounding applied.
F	Sprinkler Protection	Automatic Fully Supervised		
	Sprinkler Credit	-50%		
	Decrease for Sprinkler	-8925	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		Building F (4 Story Condominium Building)
	Exposed Wall:	Wood Frame		Existing 1 story house
	Length of Exposed Wall:	42.0	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	42.0	m-storeys	
	Separation Distance	27.67	m	
	North Side Exposure Charge	8%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		Building F (4 Story Condominium Building)
	Exposed Wall:	Wood Frame		No structure within 50 meters
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	East Side Exposure Charge	0%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		Building F (4 Story Condominium Building)
	Exposed Wall:	Wood Frame		Building E (4 Story Condominium Building)
	Length of Exposed Wall:	36.0	m	
	Height of Exposed Wall:	4	storeys	
	Length-Height Factor	144.0	m-storeys	
	Separation Distance	14.6	m	
	South Side Exposure Charge	15%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		Building F (4 Story Condominium Building)
	Exposed Wall:	Wood Frame		Existing 1 story house
	Length of Exposed Wall:	11.1	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	11.1	m-storeys	
	Separation Distance	13.6	m	
	West Side Exposure Charge	12%		
	Total Exposure Charge	35%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	6248	L/min	
H	Fire Flow	15173	L/min	
	Rounded Fire Flow	15000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**15000**	**L/min**	
		250	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

NAVAN ROAD DEVELOPMENT PROJECT - Row Townhouse

(JLR 29899-000)

FireArea 6

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	370.97	m^2	Fire area is 4 units of Row TH (7 units seperated by firewall)
C	Height in storeys	2	storeys	Basements are excluded.
	Total Floor Area	741.94	m^2	
D	Fire Flow Formula	F=220C√A		
	Fire Flow	8989	L/min	
	Rounded Fire Flow	9000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1350		
	Fire Flow	7650	L/min	No rounding applied.
F	Sprinkler Protection	None		
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		7 Unit Row TH
	Length of Exposed Wall:	25.1	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	50.2	m-storeys	
	Separation Distance	65.71	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		Firewall
	Length of Exposed Wall:	14.8	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	29.5	m-storeys	
	Separation Distance	None	m	
	East Side Exposure Charge	0%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		Fire area of 4 unit Row TH
	Exposed Wall:	Wood Frame		Portion of wall of Gas Retail and Car Wash
	Length of Exposed Wall:	17.2	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	17.2	m-storeys	
	Separation Distance	19	m	19 meter between Car Wash and TH
	South Side Exposure Charge	12%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		Fire area of 3 unit Row TH
	Exposed Wall:	Wood Frame		Building D (4 Story Condominium Building)
	Length of Exposed Wall:	10.6	m	
	Height of Exposed Wall:	4	storeys	
	Length-Height Factor	42.4	m-storeys	
	Separation Distance	11.5	m	
	West Side Exposure Charge	13%		
	Total Exposure Charge	25%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	1913	L/min	
H	Fire Flow	9563	L/min	
	Rounded Fire Flow	10000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**10000**	**L/min**	The City of Ottawa's cap does apply since north and south separations are greater than 10 m AND total exposing area is less than 600 sq-m
		167	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

Mahad Musse

From: Pascal Pomerleau <PPomerleau@pmaarchitectes.com>
Sent: June 11, 2021 8:55 AM
To: Annie Williams
Cc: Karla Ferrey; Mahad Musse; Raad Akrawi; azayoun@groupeheafey.com
Subject: RE: Navan Road Project - Building Aspects

Hi Annie,

No, they are not. I was reading your last e-mail and I think I have mis explained myself. The 4-story building will be built of **COMBUSTIBLE** construction. Same as the towns. Regular wood construction.

Thanks,

PMA ARCHITECTES

PASCAL POMERLEAU
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QUÉBEC (QC) G1W 2K4

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De : Annie Williams <awilliams@jlrichards.ca>
Envoyé : 11 juin 2021 08:44
À : Pascal Pomerleau <PPomerleau@pmaarchitectes.com>
Cc : Karla Ferrey <kferrey@jlrichards.ca>; Mahad Musse <mmusse@jlrichards.ca>; Raad Akrawi <rakrawi@groupeheafey.com>; azayoun@groupeheafey.com
Objet : RE: Navan Road Project - Building Aspects

Hi Pascal,

Are the 4-storey condominium buildings considered to be fire-resistive construction? If so, will the vertical openings be protected or unprotected?

Thank you,
Annie

Annie Williams, P.Eng.
Civil Engineer

J.L. Richards & Associates Limited
700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1
Direct: 343-803-4523

J.L. Richards & Associates Limited is proactively doing our part to protect the wellbeing of our staff and communities while improving our communication technology. ***We are pleased to announce that we have implemented direct phone lines for all of our staff, allowing you to connect with us regardless of whether we are working remotely or in the office.*** *We are dedicated to delivering quality services to you through value and commitment, as always. Please reach out to us if you have any questions about your project.*

From: Annie Williams
Sent: Thursday, June 10, 2021 2:50 PM
To: PPomerleau@pmaarchitectes.com
Cc: Karla Ferrey <kferrey@jlrichards.ca>; Mahad Musse <mmusse@jlrichards.ca>; Raad Akrawri <rakrawi@groupeheafey.com>; azayoun@groupeheafey.com
Subject: RE: Navan Road Project - Building Aspects

Hi Pascal,

Thank you very much for the call today. I made the following notes from our discussion, please notify me of any errors.

- 48-unit 4-storey condominium buildings – Can we assume these to be similar to apartment units? Will the buildings be of non-combustible construction with windows on all 4 sides? Will they include a sprinkler system and if so, will it be automatic fully supervised?
  Similar to apartment units, non-combustible windows all 4 sides, yes sprinkler system (can assume automatic fully supervised – 'best case'). Noted that mech. engineer will have to submit a certified letter to City stating that sprinkler system is automatic fully supervised.

- Row Townhouses – Will any of the blocks have a 2-hr firewall (per OBC Div. B 3.1.10)? If so, where are they located? We note there are 9 units in the middle which are separated by less than 3m so there is likely a firewall required here. We are assuming wood frame construction for the row townhouses.
  OBC does not require any firewalls, gypsum composition wall. Considering making 3m separation between the 2 blocks. 7 units should be ok without firewall. 8 units would need firewall. 7 units together footprint is <600 m2 (it is 554 m2). Wood frame construction. Firewalls can be added as needed to meet fire flow requirements.

- Commercial Portion – Will the drive-thru/gas retail and car wash be of wood frame construction? Any fire protection?
  Steel construction (non-combustible), no sprinkler unless required.

As we discussed, you are shifting the center townhouses to provide a 3m separation between the 7-unit block and the 6-unit block and you will send us the updated Site Plan once ready. I will send email confirmation once we have determined whether a firewall is required within the 6-unit block backing towards Page Road.

Also just copying the note from Karla below about the updated grading relationships in case this item is still outstanding.

Thank you,
Annie

From: Karla Ferrey <kferrey@jlrichards.ca>
Sent: Thursday, June 10, 2021 1:11 PM
To: PPomerleau@pmaarchitectes.com
Cc: Mahad Musse <mmusse@jlrichards.ca>; Annie Williams <awilliams@jlrichards.ca>; Raad Akrawri <rakrawi@groupeheafey.com>; azayoun@groupeheafey.com
Subject: RE: Navan Road Project - Building Aspects

Pascal,

Any chance you can coordinate with Annie right away to get the information she needs so that we can submit the Watermain Boundary Condition request to the City. The City usually takes a couple weeks to respond and this will delay the water modelling if we can't get this information into the City in a timely manner.

Also, could you give us an update on when we can expect the updated grading relationships discussed at our meeting earlier this week.

Thanks

Karla

From: Annie Williams <awilliams@jlrichards.ca>
Sent: Wednesday, June 9, 2021 11:59 AM
To: PPomerleau@pmaarchitectes.com
Cc: Mahad Musse <mmusse@jlrichards.ca>; Karla Ferrey <kferrey@jlrichards.ca>
Subject: RE: Navan Road Project - Building Aspects

Hi Pascal,

Following my voicemail, I've attached the updated site plan. Please let me know your answers to the questions below as we require this information to submit our request for boundary coniditions to the City, which we need for our design.

Feel free to give me a call to discuss.

Thank you,
Annie

From: Annie Williams
Sent: Thursday, June 3, 2021 9:25 AM
To: PPomerleau@pmaarchitectes.com
Cc: Mahad Musse <mmusse@jlrichards.ca>; Karla Ferrey <kferrey@jlrichards.ca>
Subject: Navan Road Project - Building Aspects

Good morning Pascal,

We are working on the Navan Road Development Project and wanted to clarify a few items about the buildings in support of our hydraulic water analysis:

- 48-unit 4-storey condominium buildings – Can we assume these to be similar to apartment units? Will the buildings be of non-combustible construction with windows on all 4 sides? Will they include a sprinkler system and if so, will it be automatic fully supervised?

- Row Townhouses – Will any of the blocks have a 2-hr firewall (per OBC Div. B 3.1.10)? If so, where are they located? We note there are 9 units in the middle which are separated by less than 3m so there is likely a firewall required here. We are assuming wood frame construction for the row townhouses.

- Commercial Portion – Will the drive-thru/gas retail and car wash be of wood frame construction? Any fire protection?

Thank you,
Annie

Mathieu Lacelle

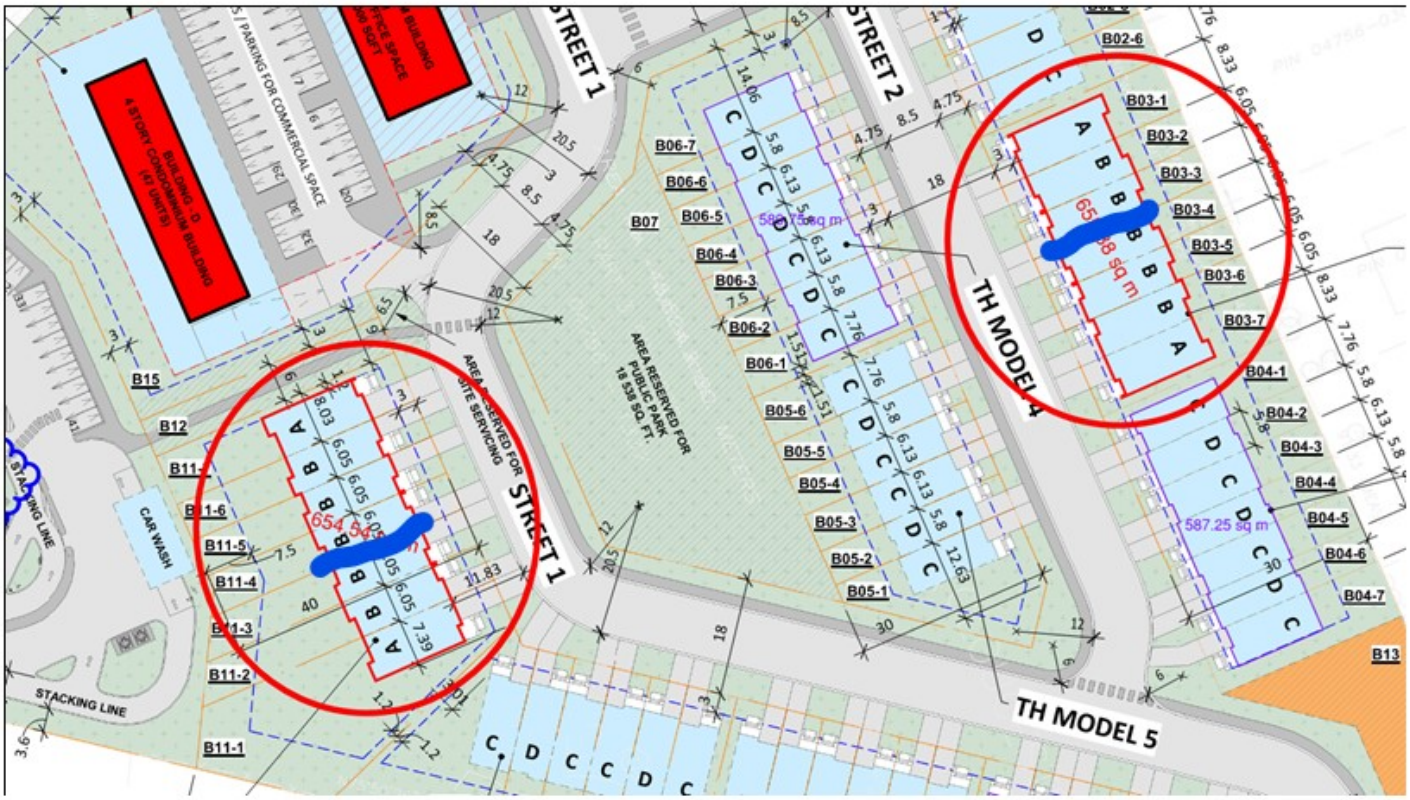
From: Mahad Musse
Sent: Wednesday, November 23, 2022 8:31 AM
To: Mathieu Lacelle; Annie Williams
Subject: FW: 3079 Navan Road - Firewall Requirement for Townhouse Blocks

For Navan Water

From: Pascal Pomerleau <PPomerleau@pmaarchitectes.com>
Sent: November 22, 2022 4:05 PM
To: Mahad Musse <mmusse@jlrichards.ca>; Raad Akrawi <rakrawi@groupeheafey.com>
Cc: Karla Ferrey <kferrey@jlrichards.ca>
Subject: RE: 3079 Navan Road - Firewall Requirement for Townhouse Blocks

Hi Mahad,

Yes! They are required. See the image below for the two locations.



Let me know if you need more information.

Thanks,

PMA ARCHITECTES

PASCAL POMERLEAU
ARCHITECTE | CHARGÉ DE PROJETS
OAQ

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C. (819) 593-1035
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3070, CHEMIN DES QUATRE-BOURGEOIS
QUÉBEC (QC) G1W 2K4

PMAARCHITECTES.COM

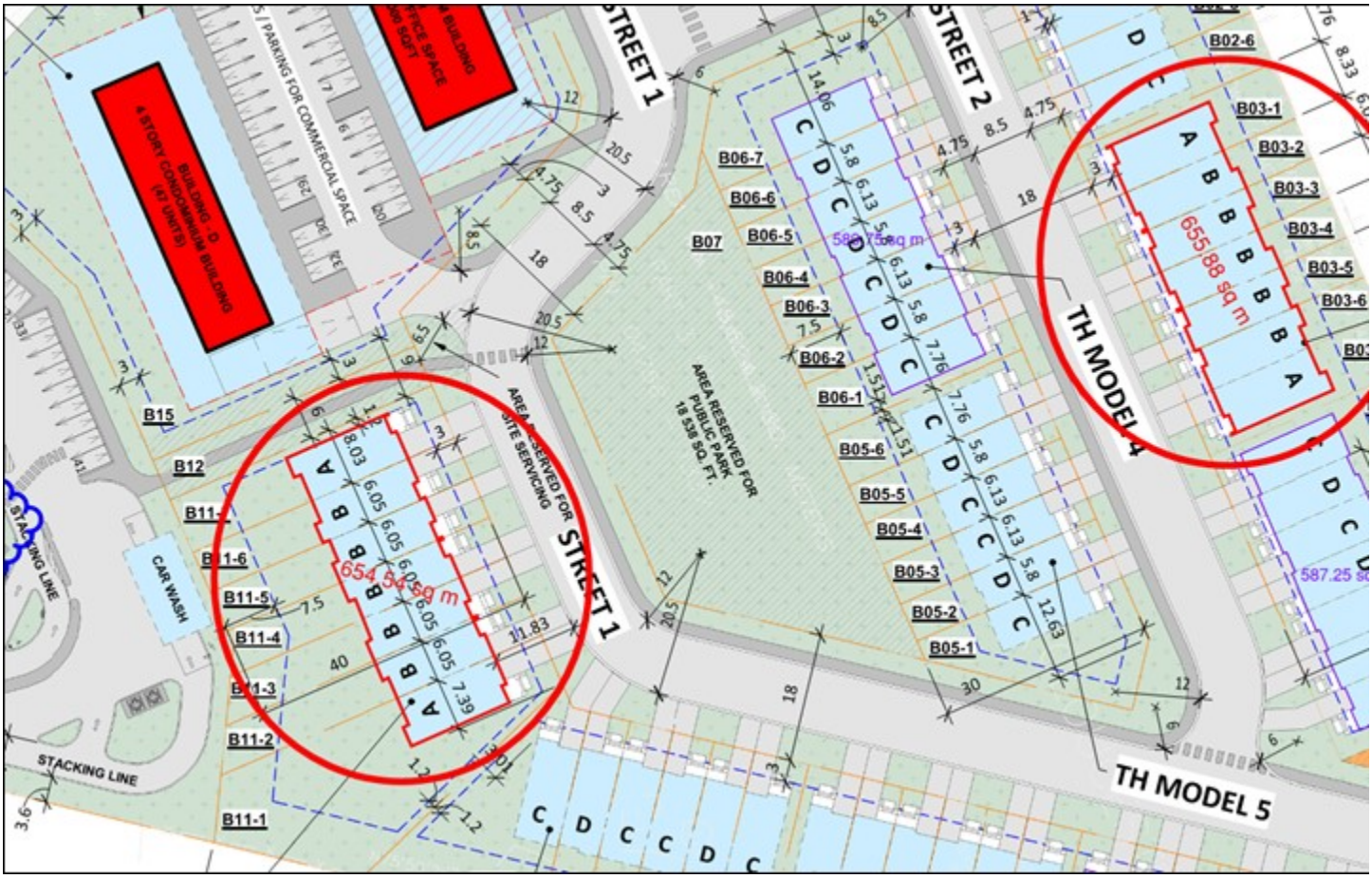
De : Mahad Musse <mmusse@jlrichards.ca>
Envoyé : 22 novembre 2022 16:02
À : Raad Akrawi <rakrawi@groupeheafey.com>; Pascal Pomerleau <PPomerleau@pmaarchitectes.com>
Cc : Karla Ferrey <kferrey@jlrichards.ca>
Objet : 3079 Navan Road - Firewall Requirement for Townhouse Blocks

Hi Raad, Pascal,

It is our understanding of the Ontario Building Code that townhouse blocks may require a 2hr firewall if the total footprint exceeds either 7 units or 600 sq-m. There appears to be two blocks which exceed this limit (see below).

As we are finalizing our water servicing, we will need to understand if firewalls are required (as per OBC) and if so, where they will be placed.

Thanks
Mahad



Mahad Musse, EIT
Civil Engineering Intern

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1000-343 Preston Street, Ottawa, ON K1S 1N4
Direct: 343-633-1501

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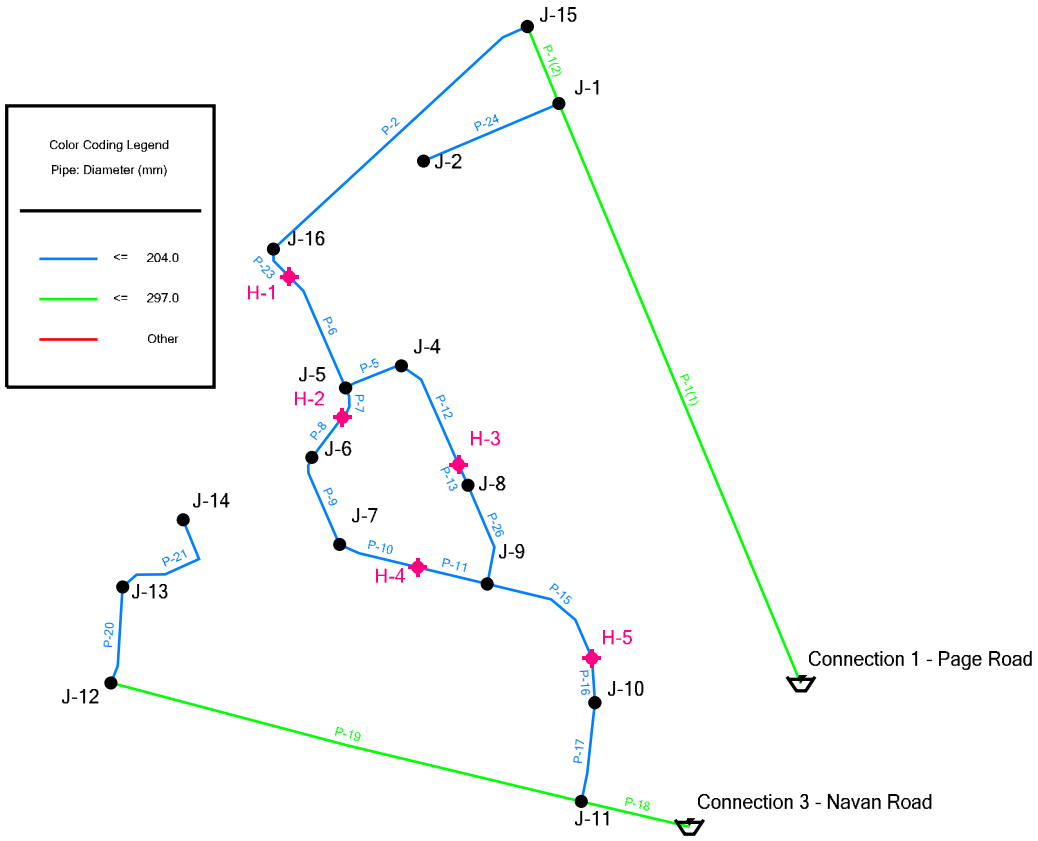
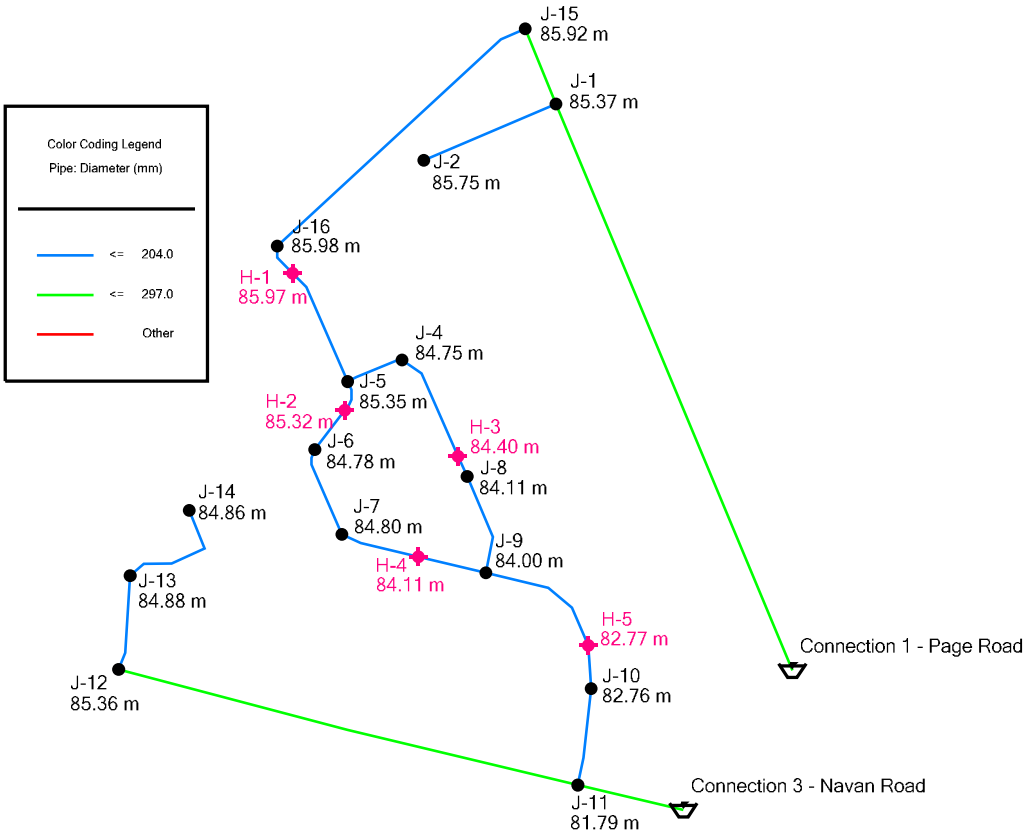
Appendix D2

WaterCAD Schematics

2983, 3053, and 3079 Navan Road and 2690 Page Road
Model Schematic



2983, 3053, and 3079 Navan Road and 2690 Page Road
Model Schematic
Elevation Model



Appendix D3

City Correspondence –
Boundary Conditions

Boundary Conditions
3079 Navan Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	137	2.28
Maximum Daily Demand	340	5.66
Peak Hour	746	12.44
Fire Flow Demand #1	10,020	167.00
Fire Flow Demand #2	15,000	250.00

Location

Results

Connection 1 – Page Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.7	68.2
Peak Hour	126.6	62.4
Max Day plus Fire 1	126.2	61.7
Max Day plus Fire 2	123.0	57.3

Ground Elevation = 82.8 m

Connection 2 – Navan Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.7	69.7
Peak Hour	126.6	63.9
Max Day plus Fire 1	126.2	63.3
Max Day plus Fire 2	123.2	59.0

Ground Elevation = 81.7 m

Connection 3 – Navan Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.7	69.4
Peak Hour	126.6	63.5
Max Day plus Fire 1	125.8	62.4
Max Day plus Fire 2	122.3	57.4

Ground Elevation = 81.9 m

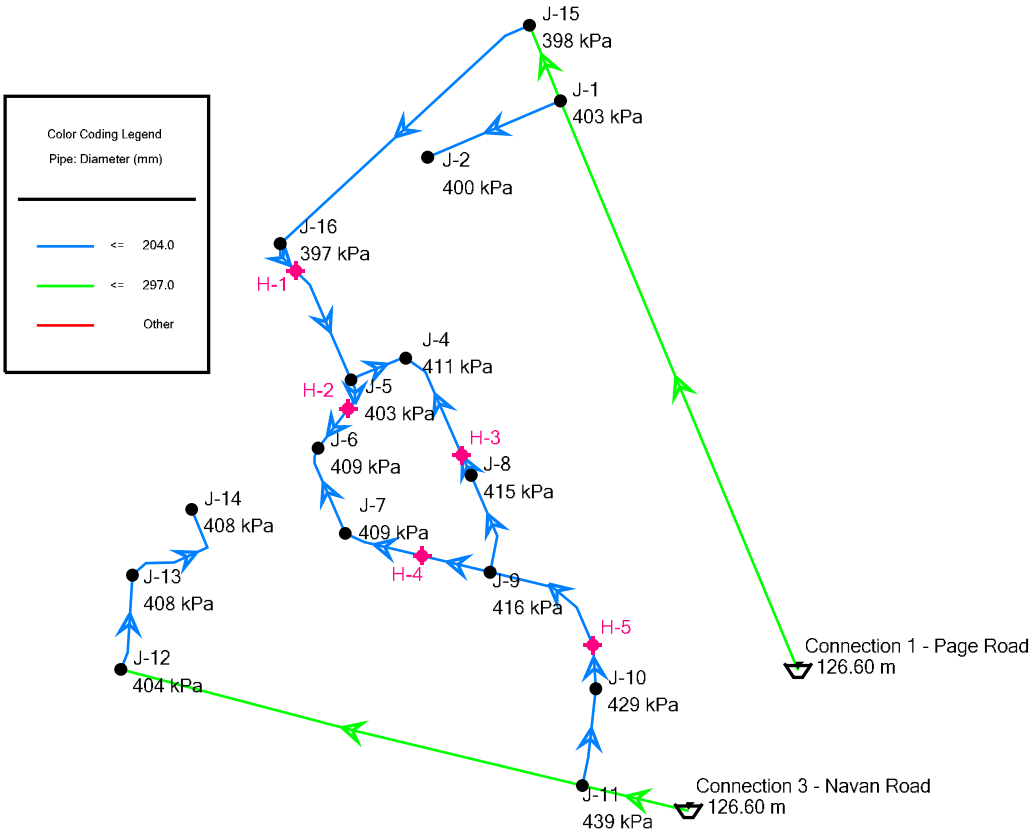
Disclaimer

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

Appendix D4

Simulation Results – Peak Hour

2983, 3053, and 3079 Navan Road and 2690 Page Road
Peak Hour Demand



2983, 3053, and 3079 Navan Road and 2690 Page Road
Peak Hour Demand
Junction Table

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
J-16	85.98	0.00	126.57	397
J-15	85.92	0.00	126.59	398
J-2	85.75	0.39	126.59	400
J-5	85.35	1.24	126.55	403
J-1	85.37	0.00	126.59	403
J-12	85.36	0.00	126.60	404
J-13	84.88	0.32	126.60	408
J-14	84.86	0.32	126.60	408
J-7	84.80	0.63	126.55	409
J-6	84.78	1.51	126.55	409
J-4	84.57	2.78	126.55	411
J-8	84.11	1.25	126.55	415
J-9	84.00	0.96	126.56	416
J-10	82.76	3.08	126.57	429
J-11	81.79	0.00	126.60	439

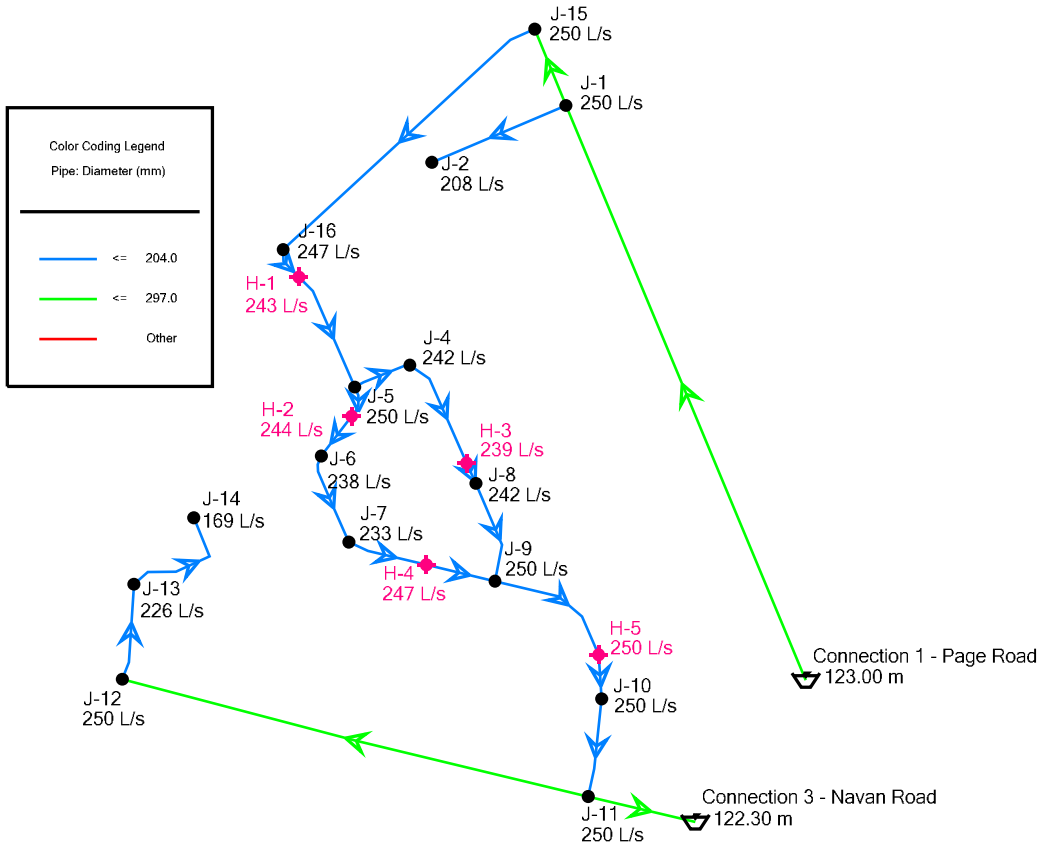
2983, 3053, and 3079 Navan Road and 2690 Page Road
Peak Hour Demand
Pipe Table

ID	Label	Length (Scaled) (m)	Diameter (mm)	Material	Hazen-Williams C	Hydraulic Grade (Start) (m)	Hydraulic Grade (Stop) (m)	Flow (L/s)	Velocity (m/s)
49	P-2	172	204.0	PVC	110.0	126.59	126.57	3.99	0.12
52	P-5	31	204.0	PVC	110.0	126.55	126.55	-1.98	0.06
54	P-9	48	204.0	PVC	110.0	126.55	126.55	-0.73	0.02
60	P-18	56	297.0	PVC	120.0	126.60	126.60	-8.10	0.12
61	P-20	49	204.0	PVC	110.0	126.60	126.60	0.64	0.02
62	P-21	64	204.0	PVC	110.0	126.60	126.60	0.32	0.01
65	P-19	245	297.0	PVC	120.0	126.60	126.60	0.64	0.01
82	P-6	64	204.0	PVC	110.0	126.55	126.56	-3.99	0.12
85	P-7	16	204.0	PVC	110.0	126.55	126.55	0.78	0.02
86	P-8	26	204.0	PVC	110.0	126.55	126.55	0.78	0.02
91	P-10	41	204.0	PVC	110.0	126.55	126.56	-1.36	0.04
92	P-11	36	204.0	PVC	110.0	126.56	126.56	-1.36	0.04
97	P-17	50	204.0	PVC	110.0	126.57	126.60	-7.46	0.23
104	P-12	59	204.0	PVC	110.0	126.55	126.55	-0.80	0.02
105	P-13	11	204.0	PVC	110.0	126.55	126.55	-0.80	0.02
108	P-15	70	204.0	PVC	110.0	126.56	126.57	-4.38	0.13
109	P-16	23	204.0	PVC	110.0	126.57	126.57	-4.38	0.13
110	P-23	17	204.0	PVC	110.0	126.57	126.56	3.99	0.12
113	P-1(1)	318	297.0	PVC	120.0	126.60	126.59	4.38	0.06
114	P-1(2)	42	297.0	PVC	120.0	126.59	126.59	3.99	0.06
116	P-24	74	204.0	PVC	110.0	126.59	126.59	0.39	0.01
123	P-26	53	204.0	PVC	110.0	126.55	126.56	-2.05	0.06

Appendix D5

Simulation Results – Maximum Day + Fire Flow

2983, 3053, and 3079 Navan Road and 2690 Page Road
Max Day + Fire Flow Requirement



2983, 3053, and 3079 Navan Road and 2690 Page Road

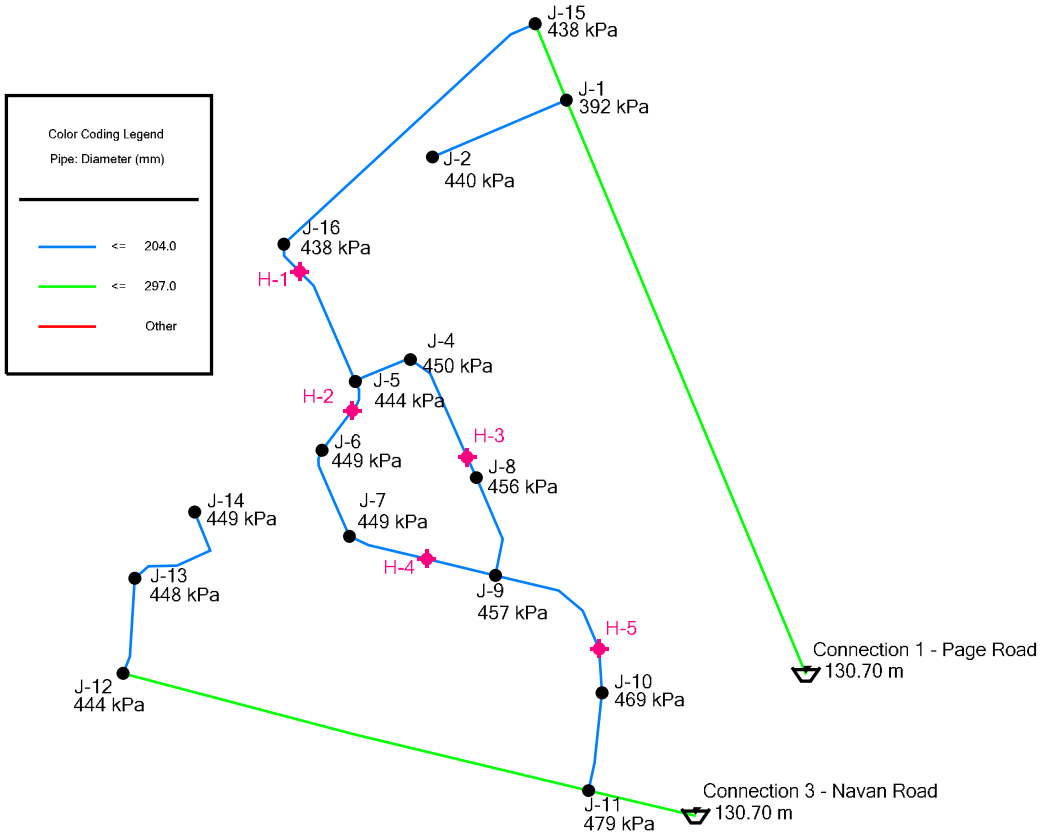
Max Day + Fire Flow Requirement

Label	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Flow (Total Available) (L/s)	Pressure (Residual Lower Limit) (kPa)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated System Lower Limit) (kPa)	Junction w/ Minimum Pressure (System)
J-14	True	169	169	140	140	234	J-13
J-2	True	208	208	140	140	262	J-1
J-13	True	226	226	140	140	140	J-14
J-7	True	233	234	140	140	172	J-6
J-6	True	238	238	140	140	162	H-2
H-3	True	239	239	140	140	153	J-8
J-4	True	242	243	140	140	171	J-5
J-8	True	242	243	140	140	144	H-3
H-1	True	243	243	140	140	183	J-16
H-2	True	244	244	140	140	155	J-6
J-16	True	247	247	140	140	175	H-1
H-4	True	247	247	140	140	150	J-7
J-15	True	250	250	140	266	240	J-1
J-5	True	250	251	140	145	150	H-2
J-9	True	250	250	140	179	182	J-7
J-10	True	250	251	140	279	284	H-2
J-12	True	250	250	140	239	244	J-13
J-11	True	250	250	140	377	323	J-1
H-5	True	250	250	140	251	258	J-7
J-1	True	250	250	140	237	276	J-15

Appendix D6

Simulation Results – Maximum HGL

2983, 3053, and 3079 Navan Road and 2690 Page Road
Maximum Pressure Analysis



2983, 3053, and 3079 Navan Road and 2690 Page Road
Maximum Pressure Analysis
Junction Table

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
J-1	90.66	0	130.70	392
J-16	85.98	0	130.70	438
J-15	85.92	0	130.70	438
J-2	85.75	0	130.70	440
J-12	85.36	0	130.70	444
J-5	85.35	0	130.70	444
J-13	84.88	0	130.70	448
J-14	84.86	0	130.70	449
J-7	84.80	0	130.70	449
J-6	84.78	0	130.70	449
J-4	84.75	0	130.70	450
J-8	84.11	0	130.70	456
J-9	84.00	0	130.70	457
J-10	82.76	0	130.70	469
J-11	81.79	0	130.70	479

2983, 3053, and 3079 Navan Road and 2690 Page Road
Maximum Pressure Analysis
Pipe Table

ID	Label	Length (Scaled) (m)	Diameter (mm)	Material	Hazen-Williams C	Hydraulic Grade (Start) (m)	Hydraulic Grade (Stop) (m)	Flow (L/s)	Velocity (m/s)
49	P-2	172	204.0	PVC	110.0	130.70	130.70	0	0.00
52	P-5	31	204.0	PVC	110.0	130.70	130.70	0	0.00
54	P-9	48	204.0	PVC	110.0	130.70	130.70	0	0.00
60	P-18	56	297.0	PVC	120.0	130.70	130.70	0	0.00
61	P-20	49	204.0	PVC	110.0	130.70	130.70	0	0.00
62	P-21	64	204.0	PVC	110.0	130.70	130.70	0	0.00
65	P-19	245	297.0	PVC	120.0	130.70	130.70	0	0.00
82	P-6	64	204.0	PVC	110.0	130.70	130.70	0	0.00
85	P-7	16	204.0	PVC	110.0	130.70	130.70	0	0.00
86	P-8	26	204.0	PVC	110.0	130.70	130.70	0	0.00
91	P-10	41	204.0	PVC	110.0	130.70	130.70	0	0.00
92	P-11	36	204.0	PVC	110.0	130.70	130.70	0	0.00
97	P-17	50	204.0	PVC	110.0	130.70	130.70	0	0.00
104	P-12	59	204.0	PVC	110.0	130.70	130.70	0	0.00
105	P-13	11	204.0	PVC	110.0	130.70	130.70	0	0.00
108	P-15	70	204.0	PVC	110.0	130.70	130.70	0	0.00
109	P-16	23	204.0	PVC	110.0	130.70	130.70	0	0.00
110	P-23	17	204.0	PVC	110.0	130.70	130.70	0	0.00
113	P-1(1)	318	297.0	PVC	120.0	130.70	130.70	0	0.00
114	P-1(2)	42	297.0	PVC	120.0	130.70	130.70	0	0.00
116	P-24	74	204.0	PVC	110.0	130.70	130.70	0	0.00
123	P-26	53	204.0	PVC	110.0	130.70	130.70	0	0.00

Appendix E1

Wasterwater – EUC ISSU
Design Excerpts

SANITARY SEWER CALCULATION SHEET

LOCATION		RESIDENTIAL AREA AND POPULATION						COMM		INDUST			INST		C+I+I	PEAK FLOW				PIPE														
FROM M.H.	TO M.H.	AREA (ha)	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (L/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR (per MOE)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (L/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (L/s)	TOTAL FLOW (L/s)	LENGTH (m)	DIAMETER NOM (mm)	DIAMETER ACT (mm)	SLOPE (%)	CAP. (FULL) (L/s)	Q/Qcap (%)	VEL. (FULL) (m/s)	Upstream OG (m)	Downstream OG (m)	Upstream Invert (m)	Upstream Obvert (m)	Downstream Invert (m)	Downstream Obvert (m)	Drop Structure (m)	US Frost Depth (m)	DS Frost Depth (m)
1	2	3.25	66	3.25	66	4.00	0.91		0.00		0.00			0.00	0.00	3.25	3.25	0.91	1.81	250	200	203.2	0.32	19.35	9.4%	0.60	88.25	88.00	84.83	85.03	84.03	84.23			3.22	3.77
2	3	5.20	181	8.45	247	4.00	3.84		0.00		0.00			0.00	0.00	5.20	8.45	2.37	6.21	320	200	203.2	0.32	19.35	32.1%	0.60	88.00	87.80	84.03	84.23	83.00	83.21			3.77	4.39
3	4	19.75	995	28.20	1232	3.74	18.66		0.00		0.00			0.00	0.00	19.75	28.20	7.90	26.56	320	250	254.0	0.24	30.39	87.4%	0.60	87.60	87.50	82.95	83.21	82.18	82.44			4.39	5.06
4A	4	19.80	979	19.80	979	3.81	15.10		0.00		0.00			0.00	0.00	19.80	19.80	5.54	20.64	365	250	254.0	0.24	30.39	67.9%	0.60	88.00	87.50	83.83	84.08	82.95	83.20			3.92	4.30
4	5	7.10	185	55.10	2396	3.62	34.19		0.00		0.00		3.10	3.10	2.69	10.20	58.20	16.30	53.18	310	375	381.0	0.14	58.43	77.7%	0.60	87.50	87.80	82.06	82.44	81.62	82.00			5.06	5.60
5A	5	7.90	362	7.90	362	4.00	5.87		0.00		0.00			0.00	0.00	7.90	7.90	2.21	8.08	320	200	203.2	0.65	27.56	29.3%	0.85	87.40	87.80	84.05	84.25	81.97	82.17			3.15	5.43
5	6	2.40	170	65.40	2928	3.45	40.94		0.00		0.00			0.00	0.00	2.40	68.50	19.18	62.81	295	375	381.0	0.14	58.43	91.8%	0.60	87.50	87.50	81.62	82.00	81.21	81.59			5.80	5.91
6	7	15.90	787	81.30	3715	3.36	50.60		0.00		0.00			3.10	2.69	15.90	84.40	23.63	76.92	115	450	457.2	0.11	98.64	78.0%	0.60	87.50	87.50	81.13	81.59	81.01	81.46			5.91	6.04
7	8	6.80	353	88.10	4068	3.33	54.83		0.00		0.00			3.10	2.69	6.80	91.20	25.54	83.09	235	450	457.2	0.11	98.64	84.2%	0.60	87.50	86.90	81.01	81.46	80.75	81.21			6.04	5.69
8A	8	11.85	826	11.85	826	3.85	12.89		0.00		0.00			0.00	0.00	11.85	11.85	3.32	18.21	150	200	203.2	0.50	24.19	67.0%	0.75	86.50	86.90	81.45	81.85	80.70	80.90			4.85	6.00
8	9	2.60	128	102.55	5022	3.24	65.98		0.00		0.00		2.20	5.30	4.60	4.80	107.85	30.20	100.78	170	525	533.4	0.10	141.87	71.0%	0.63	86.90	87.00	80.37	80.90	80.20	80.73			6.00	6.27
9A	9	6.45	300	6.45	300	4.00	6.86		0.00		0.00			0.00	0.00	6.45	6.45	1.53	8.38	65	200	203.2	0.32	19.35	33.0%	0.60	87.00	87.00	81.42	81.62	81.14	81.35			5.38	5.65
9	10	2.70	0	110.70	5322	3.22	69.42		0.00		0.00			5.30	4.60	2.70	116.00	32.48	104.59	275	525	533.4	0.10	141.87	73.1%	0.63	87.00	87.00	80.20	80.73	79.92	80.46			6.27	6.56
10A	10	14.80	731	14.80	731	3.68	11.50		0.00		0.00		0.60	0.60	0.52	15.40	15.40	4.31	16.34	270	200	203.2	0.32	19.35	84.4%	0.60	87.50	87.00	83.56	83.76	82.69	82.90			3.74	4.10
10	11	4.30	117	129.80	6170	3.16	78.96		0.00		0.00		2.40	8.30	7.20	6.70	138.10	38.67	124.84	405	525	533.4	0.10	141.87	88.0%	0.63	87.00	85.50	79.92	80.46	79.52	80.05			6.55	6.45
11A	11	8.00	393	8.00	393	4.00	8.36		0.00		0.00			0.00	0.00	8.00	8.00	2.24	8.69	95	200	203.2	0.32	19.35	44.4%	0.60	86.00	85.50	80.42	80.62	80.11	80.32			5.38	5.18
11B	11	5.90	352	5.90	352	4.00	6.70		0.00		0.00			0.00	0.00	5.90	5.90	1.65	7.36	90	200	203.2	0.32	19.35	38.0%	0.60	86.00	85.50	81.69	81.89	81.40	81.60			4.11	3.90
11	12	1.90	18	145.60	6931	3.11	87.34		0.00		0.00			8.30	7.20	1.90	153.90	43.09	137.83	230	600	609.6	0.100	202.65	68.0%	0.69	85.50	83.90	79.44	80.05	79.21	79.82			6.45	4.08
25D	25C	7.40	48	7.40	48	4.00	0.78		0.00		0.00			0.00	0.00	7.40	7.40	2.07	2.85	420	200	203.2	0.32	19.35	14.7%	0.60	86.30	86.00	83.02	83.22	81.67	81.88			3.08	4.12
LOCAL PS 2	25C	4.55	22	4.55	22	4.00	0.36		0.00		0.00			0.00	0.00	4.55	4.55	1.27	1.64	300		0.0		0.00	#DIV/0!	#DIV/0!	82.00	86.00		79.50		83.30			2.80	2.70
25G	25E	7.40	496	7.40	496	3.98	7.99		0.00		0.00			0.00	0.00	7.40	7.40	2.07	10.06	230	200	203.2	0.32	19.35	52.0%	0.60	81.50	81.00	78.80	79.00	78.06	78.26			2.90	2.74
25F	25E	4.60	272	4.60	272	4.00	4.41		0.00		0.00			0.00	0.00	4.60	4.60	1.29	5.70	120	200	203.2	2.50	54.10	10.5%	1.67	84.00	81.00	81.30	81.50	78.30	78.50			2.50	2.50
25E	LOCAL PS 1	0.00	0	12.00	768	3.87	12.04		0.00		0.00			0.00	0.00	0.00	12.00	3.36	15.40	70	200	203.2	0.32	19.35	79.6%	0.60	81.00	81.00	78.06	78.26	77.84	78.04			2.74	2.96
LOCAL PS 1	25C	0.00	0	12.00	768	3.87	12.04		0.00		0.00			0.00	0.00	0.00	12.00	3.36	15.40	340		0.0		0.00	#DIV/0!	#DIV/0!	81.00	86.00		78.50		83.50			2.50	2.50
25C	25B	7.00	51	30.95	890	3.83	13.81		0.00		0.00			0.00	0.00	7.00	30.95	8.67	22.48	460	300	304.8	0.19	43.97	51.1%	0.60	86.00	86.50	81.57	81.88	80.70	81.00			4.12	5.60
25B	25A	11.80	337	42.75	1226	3.74	18.59		0.00		0.00			0.00	0.00	11.80	42.75	11.97	30.56	295	375	381.0	0.14	58.43	44.7%	0.60	86.50	86.50	80.62	81.00	80.21	80.59			5.60	5.91
25A	25	17.00	845	59.75	2071	3.57	29.99		0.00		0.00			0.00	0.00	17.00	59.75	16.73	46.72	405	375	381.0	0.14	58.43	68.3%	0.60	86.50	86.50	80.21	80.59	79.84	80.02			5.91	6.48
20	21	8.75	505	8.75	505	3.97	8.13		0.00		0.00			0.00	0.00																			
21	22	7.00	160	15.75	665	3.91	10.53		0.00	1.00	1.00	6.50	2.55	2.55	2.21	11.30	11.30	3.16	13.51	320	200	203.2	0.32	19.35	69.8%	0.60	87.00	86.80	83.91	84.11	82.88	83.09			2.89	3.71
22	23	7.30	440	23.05	1106	3.77	16.69		0.00		1.00	6.50	8.30	10.85	12.05	18.30	27.60	7.73	30.31	335	300	304.8	0.19	43.97	68.9%	0.60	86.80	87.00	82.78	83.09	82.14	82.45			3.71	4.55
23B	23A	15.70	565	15.70	565	3.95	9.03		0.00		0.00			10.85	12.05	7.30	34.90	9.77	36.71	275	300	304.8	0.19	43.97	88.0%	0.60	87.00	86.50	82.14	82.45	81.62	81.93			4.55	4.57
23A	23	9.40	584	25.10	1149	3.76	17.50		0.00		0.00			0.00	0.00	15.70	15.70	4.40	13.43	325	250	254.0	0.45	41.38	32.4%	0.82	86.80	86.00	82.52	82.77	81.07	81.32			4.03	4.68
23	24	2.60	120	50.75	2374	3.53	33.92		0.00		1.00	6.50	3.30	14.15	14.92	5.90	65.90	18.45	67.29	315	375	381.0	0.22	65.79	78.4%	0.75	86.50	86.50	80.35	80.73	79.66	80.04			4.66	5.77
24A	24	25.10	544	25.10	544	3.96	8.72		0.00		0.00			0.00	0.00	25.10	25.10	7.03	18.74	235	200	203.2	0.32	19.35	81.3%	0.60	86.00	86.50	83.00	83.20	82.24	82.45			2.80	4.05
24	25	0.80	0	76.65	2918	3.45	40.82		0.00		1.00	6.50		14.15	14.92	0.80	91.80	25.70	81.44	235	450	457.2	0.11	98.64	82.6%	0.60	86.50	86.50	79.58	80.04	79.33	79.78			6.46	6.72
LANDFILL PS	25	0.00	0	0.00	0	4.00	0.00		0.00	10.40	10.40	4.20		0.00	17.69	10.40	10.40	2.91		120		0.0		0.00	#VALUE!	#DIV/0!	80.00	86.50	77.50	77.80		84.00			2.50	2.50
25	26	8.30	99	144.70	5089	3.24	66.75		0.00		11.40	4.15		14.15	31.45	8.30	170.25	47.87	148.87	380	600	609.6	0.10	202.55	72.0%	0.89	86.50	86.50	79.17	79.78	78.79	79.40			6.72	7.10
26A	26	6.90	360	6.90	360	4.00	5.83		0.00		0.00		1.30	1.30	1.13	8.20	8.20	2.30	9.26	175	200	203.2	0.32	19.35	47.6%	0.60	86.00	86.50	81.00	81.20	80.44	80.64			4.80	5.86
26	12	2.80	6	154.40	5455	3.21	70.93		0.00		11.40	4.15		15.45	32.58	2.80	181.25	50.75	154.26	720	600	609.6	0.10	202.55	76.2%	0.89	86.50	83.90	78.79	79.40	78.07	78.68			7.10	5.22
12	13	0.60	32	300.60	12418	2.86	143.91	0.90	0.90		11.40	4.15		23.75	40.58	1.50	336.85	94.26	276.74	60	600	609.6	0.30	350.83	78.5%	1.20	83.90	82.50	78.07	78.68	77.89	78.50			5.22	4.00
13C	13	5.60	353	5.60	353	4.00	5.71		0.00		0.00			0.00	0.00	5.60	5.90	1.57	7.28	150	200	203.2	0.66	27.79	26.2%	0.86	83.50	82.50	80.80	81.00	79.81	80.01			2.50	2.49
13B	13A	10.50	314	10.50	314	4.00	5.09		0.00		0.00			0.00	0.00	10.50	10.50	2.94	8.03	160	200	203.2	0.32	19.35	41.5%	0.60	81.50	81.50	78.80	79.00	78.28	78.49			2.50	3.01
13A	13	6.60	90	17.10	404	4.00	6.54		0.00		0.00			0.00	0.00	6.60	17.10	4.79	11.33	100	200	203.2	0.32	19.35	58.6%	0.60	81.50	82.50	78.28	78.49	77.96	78.17			3.01	4.33
13	14	0.26	0	323.56	13175	2.83	151.30	0.54	1.44		11.40	4.15		23.75	41.03	0.60	360.15	100.84	293.17	100	600	609.6	0.40	405.10	72.4%	1.39	82.50	80.80	78.91	77.52	76.51	77.12	0.65	4.99	3.68
14	15	1.40	18	324.96	13191	2.83	151.46		1.44		11.40	4.15		23.75	41.03	1.40	361.55	101.23	293.72	150	600	609.6	0.40	405.10	72.5%	1.39	80.80	79.40	78.88	76.47	75.26	76.07	0.65	4.33	2.53
15	16	1.70	53	326.66	13244	2.83	151.97		1.44		11.40	4.15		23.75	41.03	1.70	363.25	101.71	294.71	150	600	609.6	0.60	496.14	59.4%	1.70	79.40	77.00	74.78	75.37	73.86	74.47	0.50	3.03	2.53
16	17	2.30	32	328.96	13276	2.83	152.28		1.44		11.40	4.15		23.75	41.03	2.30	365.55	102.35	295.67	250	600	609.6	0.60	496.14	59.6%	1.70	77.00	76.00	73.86	74.47	72.96	73.57			2.53	3.03
17	18	0.30	0	329.26	13276	2.83	152.28		1.44		11.40	4.15		23.75	41.03	0.30	365.85	102.44	295.75	100	600	609.6	0.80	572.90	51.6%	1.96	76.00	73.00	70.66	71.27	69.86	70.47	1.70	4.73	2.53
30	31	4.80	252	4.80	252	4.00	4.08		0.00		0.00			0.00	0.00	4.80	4.80	1.34	8.43	150	200	203.2	2.50	54.10	10.0%	1.67	83.50	79.00	80.26	80.46	78.51	78.71			3.04	2.29
31	32	1.40	34	6.20	286	4.00	4.83	1.30	1.30		0.00			0.00	1.13	2.70	7.50	2.10	7.86	205	200	203.2	3.90	67.57	11.6%	2.08	79.00	71.00	76.30	76.50	69.30	69.51	0.21	2.50	2.50
32A	32	5.50	336	5.50	336	4.00	5.44		0.00		0.00			0.00	0.00	5.50	5.50	1.54	6.88	80	300	304.8	0.19	43.97	15.6%	0.60	70.50	71.00	66.24	66.54	66.08	66.39			3.96	4.61
32	33	4.05	38	15.75	659	3.91	10.44		1.30		0.00			0.00	1.13	4.05	17.05	4.77	16.35	160	300	304.8	0.19	43.97	37.2%	0.60	71.00	70.80	66.08	66.39	65.78	66.08			4.81	4.72
33A	33	4.00	252	4.00	252	4.00	4.06		0.00		0.00			0.00	0.00	4.00	4.00	1.12	5.20	85	200	203.2	0.32	19.35	26.9%	0.60	70.50	70.60	66.07	66.27	65.79	66.00			4.23	4.80
33	34	0.90	42	20.65	953	3.81	14.73		1.30		0.00		2.80	2.80	3.56	3.70	24.75	6.93	25.22	185	300	304.8	0.19	43.97	57.3%	0.60	70.60	70.50	65.69	66.00	65.34	65.65			4.80	4.85
34A	34	3.70	176	3.70	176	4.00	2.86		0.00		0.00			0.00	0.00	3.70	3.70	1.04	3.89	80	200	203.2	2.00	48.38	8.0%	1.49	71.50	70.50	66.80	69.00	67.20	67.40			2.50	3.10
34	35	3.80	227	28.15	1357	3.71	20.39		1.30		0.00			2.80	3.56	3.80	32.25	9.03	32.98	160	300	304.8	0.19	43.97	75.0%	0.60	70.50	71.00	65.34	65.65	65.04	65.34			4.85	5.66
35C	35B	7.30	445	7.30	445	4.00	7.21		0.00		0.00			0.00	0.00	7.30	7.30	2.04	9.29	160	200	203.2	1.90	47.16	19.6%	1.45	75.00	72.00	72.30	72.50	69.26	69.46			2.50	2.54
35B	35A	0.96	50	8.26	495	3.98	7.98		0.00		0.00			0.00	0.00	0.96	8.26	2.31	10.30	65	200	203.2	0.32	19.35	53.2%	0.60	72.00	72.00	69.26	69.46	68.98	69.19			2.54	2.81
35A	35	2.70	134	10.96	630	3.92	10.01		0.00		0.00			0.00	0.00	2.70	10.96	3.07	13.07	70	200	203.2	2.50	54.10	24.2%	1.67	72.00	71.00	67.99	68.20	66.24	66.45	0.99	3.80	4.55
35	36	0.73	42	39.84	2029	3.58	29.43		1.30		0.00			2.80	3.56	0.73	43.94	12.30	45.29	110	375	381.0	0.14	58.43	68.2%	0.60	71.00	72.00	64.96	65.34	64.81	65.19			5.66	6.81
36	37	9.80	538	49.64	2568	3.50	36.38		1.30		0.00			2.80	3.56	9.80	53.74	15.05	54.98	165	375	381.0	0.14	58.43	80.3%	0.60	72.00	78.00	64.81	65.19	64.58	64.96			6.81	11.04
37	38	3.40	193	53.04	2759	3.47	38.82		1.30		0.00			2.80	3.56	3.40	57.14	16.00	58.38	95	375	381.0	0.14	58.43	85.3%	0.60	76.00	78.00	64.58	64.96	64.44	64.82			11.04	11.18

LOCATION		RESIDENTIAL AREA AND POPULATION						COMM		INDUST			INST		C+I+I	PEAK FLOW				PIPE														
FROM M.H.	TO M.H.	AREA (ha)	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (L/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR (per MOE)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (L/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (L/s)	TOTAL FLOW (L/s)	LENGTH (m)	DIAMETER NOM (mm)	DIAMETER ACT (mm)	SLOPE (%)	CAP. (FULL) (L/s)	Q/Qcap (%)	VEL. (FULL) (m/s)	Upstream OG (m)	Downstream OG (m)	Upstream Invert (m)	Upstream Obvert (m)	Downstream Invert (m)	Downstream Obvert (m)	Drop Structure (m)	US Frost Depth (m)	DS Frost Depth (m)
38A	38	3.00	174	3.00	174	4.00	2.92		0.00		0.00			0.00	0.00	3.00	3.00	0.84	3.86	160	200	203.2	0.32	19.35	19.9%	0.60	72.00	76.00	68.60	68.79	67.99	68.19		3.30	7.61
38	39	3.40	182	59.44	3116	3.43	43.27		1.30		0.00			2.80	3.56	3.40	63.54	17.79	64.92	170	375	381.0	0.22	85.79	75.3%	0.75	76.00	72.00	64.44	64.82	64.07	64.45		11.16	7.55
39	18	6.20	341	65.64	3457	3.39	47.46		1.30		0.00			2.80	3.56	6.20	69.74	19.53	70.55	105	375	381.0	0.22	85.79	82.2%	0.75	72.00	73.00	64.07	64.45	63.84	64.22		7.56	8.78
50	51	8.20	555	8.20	555	3.95	8.88		0.00		0.00			0.00	0.00	8.20	8.20	2.30	11.17	60	200	203.2	0.50	24.19	46.2%	0.76	74.00	74.00	69.00	69.29	68.70	68.90		4.80	5.10
51	52	4.10	235	12.30	790	3.86	12.36		0.00		0.00			0.00	0.00	4.10	12.30	3.44	15.81	140	200	203.2	0.67	28.00	56.4%	0.86	74.00	72.80	68.65	68.75	67.81	67.81	0.15	5.25	4.99
52	18	4.70	174	17.00	964	3.81	14.68		0.00		0.00			0.00	0.00	4.70	17.00	4.78	19.64	70	250	254.0	0.32	35.09	56.0%	0.69	72.80	73.00	67.56	67.81	67.33	67.59		4.99	5.41
18	19	0.00	0	411.90	17696	2.71	193.96		2.74		11.40			26.55	25.43	0.00	432.69	126.73	346.13	110	600	609.6	0.50	452.92	76.4%	1.55	73.00	71.50	63.61	64.22	63.06	63.67		8.78	7.83
19	19A	0.00	0	411.90	17696	2.71	193.96		2.74		11.40	4.15		26.55	44.59	0.00	432.69	126.73	368.30	25	600	609.6	0.50	452.92	80.7%	1.55	71.50	71.00	63.06	63.67	62.93	63.54		7.83	7.46
19A	19B	0.40	0	412.30	17696	2.71	193.96		2.74		11.40	4.15		26.55	44.59	0.40	432.09	126.84	368.41	51	600	609.6	0.50	452.92	80.7%	1.55	71.00	71.00	62.87	63.48	62.62	63.23	0.06	7.62	7.77
50	19B	5.90	326	5.90	326	4.00	5.26		0.00		0.00			0.00	0.00	5.90	5.90	1.65	8.83	120	200	203.2	0.32	19.35	35.8%	0.60	71.00	71.00	68.30	68.50	67.91	68.12		2.50	2.88
19B	FVPS	0.00	0	418.20	18022	2.70	196.97		2.74		11.40	4.15		26.55	44.59	0.00	438.89	128.49	370.65	24	600	609.6	0.50	452.92	81.7%	1.55	71.00	71.50	62.66	63.17	62.44	63.05	0.06	7.83	8.45

DESIGN PARAMETERS

Residential Flow =	350 Lpcd	Industrial Peak Factor =	as per MOE Graph	Low Density (LD)/Existing =	3.2 ppu
Commerical/Institutional Flow =	50000 L/ha/d	Extraneous Flow =	0.28 L/s/ha	Low/Medium Density (LMD) =	3.2 ppu
Industrial Flow =	35000 L/ha/d	Minimum Velocity =	0.76 m/s	Medium Density (MD) =	2.4 ppu
Maximum Residential Peak Factor =	4.00	Mannings n =	0.013	High Density (HD) =	1.9 ppu
Minimum Residential Peak Factor =	2.00	Harmon Peak Factor =	1+14/(4+(P/1000)^1/2)*K, where K= 1	MUC =	1.9 ppu
Commerical/Institutional Peak Factor =	1.50			GUA =	3.1 ppu

(Telephone Conversation with Selma Hassan Sept. 10/2004 - Based on development applications - 361 Singles @ 3.2pers/unit and 184 Singles @ 3 pers/unit)

Designed: B.D	PROJECT:	Gloucester EUC Infrastructure Servicing Study Update	
Checked: F.W	LOCATION:	City of Ottawa	
Dwg. Reference: SAN	File Ref.: 1634-00493	Date: Mar-05	Sheet No.

N

12a — SANITARY SEWER AND MANHOLE

12 — SANITARY TRUNK SEWER AND MANHOLE

SANITARY FORCEMAIN

SANITARY CATCHMENT AREA

71.50 / 67.33 — ORIGINAL GROUND / OBVERT

3.25 / 56 / 2 — AREA (ha) / POPULATION / MANHOLE No.

3.25 / 56 / 2 / 3.2 INST — AREA (ha) / POPULATION / MANHOLE No. / INST (INSTUTIONAL) ha / IND (INDUSTRIAL) ha / COM (COMMERCIAL) ha

* EQUIVALENT AREA (17.7 l/s ALLOWABLE PEAK FLOW UNDER C of O SEWER USE AGREEMENT)

PROPOSED SITE,
2983-3053-3079 Navan Road and
2690 Pagé Road

HYDRO CORRIDOR
PROPOSED TRANSITWAY
PROPOSED BLACKBURN BY-PASS EXTENSION

MER BLEUE ROAD
FOURTH LINE ROAD
PAGE ROAD
NAVAN ROAD
WALL ROAD
SAPHIR AVE.
GRAND PRE
ABANDONED C.P.R. RIGHT OF WAY

SANITARY TRUNK No.1
SANITARY TRUNK No.2
SANITARY TRUNK No.3
SANITARY TRUNK No.4

WSI LANDFILL

FOREST VALLEY PUMPING STATION

LOCAL PUMP STA. No.1

LOCAL PUMP STA. No.2

SCHOOL
PARK
INSTIT.
COMMERCIAL
INSTITUTIONAL
ESCARPMENT
FIRE HALL

REVISION No.2 MARCH, 2005

CITY OF OTTAWA
GLOUCESTER EUC INFRASTRUCTURE SERVICING STUDY UPDATE

SANITARY SEWER SYSTEM

Scale 0 40 120 200m

Dwg. No. SAN

Dwn By E.C. Date 04.10.29 Revision 2

Appendix E2

JLR Functional Sanitary Design Sheet

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

2983, 3053 and 3079 Navan Road and 2690 Page Road
SANITARY SEWER DESIGN SHEET
JLR NO. 29899

DESIGNED BY: CJM
CHECKED BY: KF
Date: August 2021

Street Name	MH No.		Residential							Commercial/Institutional				Infiltration			Peak Design Flow L/s	Pipe Data									Upstream Geometry				Downstream Geometry				
	From	To	Multiples	Apartments	Area (ha)	Pop.	Cum. Pop.	Cum. Area (ha)	Peaking Factor	Residential Flow (L/s)	Area (ha)	Cum. Area (ha)	Peaking Factor	Inst. Flow (L/s)	Area (ha)	Cum. Area (ha)	Peak Extr. Flow L/s		Dia	Type	Actual Diameter	Slope	Q Full (L/s)	V Full	Length	Residual Capacity	% Full	TG From	Obvert	Invert	Cover	TG TO	Drop	Obvert	Invert	Cover
OUTLET TO PAGE (CUL-DU-SAC @ Brian Coburn)																																		
STREET 3	24	23	8		0.32	22	22	0.32	3.70	0.26		0.00	1.50	0.00	0.32	0.32	0.11	**0.37**	200	Circular	203.20	1.00%	34.22	1.06	66.13	33.85	1%	85.722	82.532	82.329	3.190	85.376		81.870	81.667	3.505
Page Road (2690 to Navan Road)	23	10			5.87	80	102	6.19	3.59	1.19		0.00	1.50	0.00	5.87	6.19	2.04	3.23																	
OUTLET TO PAGE @ NAVAN																																		
STREET 1	15	14			0.21	0	0	0.21	3.80	0.00		0.00	1.50	0.00	0.21	0.21	0.07	0.07	200	Circular	203.20	1.00%	34.22	1.06	11.81	34.15	0%	85.350	82.485	82.282	2.865	85.185		82.367	82.164	2.818
Site Plan - BLOCK 15 / STREET 1	14	13		83	0.45	149	149	0.66	3.55	1.72	0.093	0.09	1.50	0.05	0.54	0.75	0.25	2.01	200	Circular	203.20	0.35%	20.24	0.62	32.42	18.23	10%	85.185	82.367	82.164	2.818	84.725		82.254	82.051	2.471
STREET 1	13	12				0	149	0.66	3.55	1.72		0.09	1.50	0.05	0.00	0.75	0.25	2.01	200	Circular	203.20	0.35%	20.24	0.62	7.12	18.23	10%	84.725	82.254	82.051	2.471	84.627	0.600	82.229	82.026	2.398
Site Plan - BLOCK 16	22	21				0	0	0.00	3.80	0.00	0.740	0.74	1.50	0.36	0.74	0.74	0.24	0.60	200	Circular	203.20	1.00%	34.22	1.06	45.36	33.61	2%	85.292	82.729	82.526	2.563	85.421	0.600	82.276	82.072	3.145
Site Plan - BLOCK 16	21	12			0.02	0	0	0.02	3.80	0.00		0.74	1.50	0.36	0.02	0.76	0.25	0.61	200	Circular	203.20	0.35%	20.24	0.62	13.32	19.63	3%	85.421	81.676	81.472	3.745	84.627		81.629	81.426	2.998
STREET 1	12	11	6		0.23	16	165	0.91	3.54	1.89		0.83	1.50	0.40	0.23	1.74	0.57	2.87	200	Circular	203.20	0.35%	20.24	0.62	35.50	17.37	14%	84.627	81.629	81.426	2.998	84.723		81.505	81.301	3.218
STREET 1	11	10	3		0.16	8	173	1.07	3.54	1.98		0.83	1.50	0.40	0.16	1.90	0.63	3.01	200	Circular	203.20	0.35%	20.24	0.62	10.51	17.23	15%	84.723	81.505	81.301	3.218	84.737	0.300	81.468	81.265	3.269
STREET 1	10	09	12		0.56	32	205	1.63	3.52	2.34		0.83	1.50	0.40	0.56	2.46	0.81	3.55	200	Circular	203.20	0.35%	20.24	0.62	81.88	16.69	18%	84.737	81.168	80.965	3.569	83.999	0.450	80.881	80.678	3.118
Site Plan - BLOCK 14	20	19		84	0.48	151	151	0.48	3.55	1.74	0.093	0.09	1.50	0.05	0.57	0.57	0.19	1.97	200	Circular	203.20	1.00%	34.22	1.06	28.06	32.25	6%	85.634	82.717	82.513	2.918	84.935		82.436	82.233	2.498
Site Plan - BLOCK 14	19	18				0	151	0.48	3.55	1.74		0.09	1.50	0.05	0.00	0.57	0.19	1.97	200	Circular	203.20	0.35%	20.24	0.62	13.22	18.27	10%	84.935	82.436	82.233	2.498	84.514	0.300	82.390	82.187	2.124
STREET 2	18	17	1		0.10	3	154	0.58	3.55	1.77		0.09	1.50	0.05	0.10	0.67	0.22	2.04	200	Circular	203.20	0.35%	20.24	0.62	10.21	18.20	10%	84.514	82.090	81.887	2.424	84.373		82.054	81.851	2.319
STREET 2	17	16	30		0.81	81	235	1.39	3.50	2.66		0.09	1.50	0.05	0.81	1.48	0.49	3.20	200	Circular	203.20	0.35%	20.24	0.62	104.33	17.05	16%	84.373	82.054	81.851	2.319	83.759	0.600	81.689	81.486	2.070
STREET 2	16	09	2		0.07	5	240	1.46	3.49	2.72		0.09	1.50	0.05	0.07	1.55	0.51	3.27	200	Circular	203.20	0.35%	20.24	0.62	16.45	16.97	16%	83.759	81.089	80.886	2.670	83.999	0.600	81.031	80.828	2.968
STREET 1	09	08	5		0.15	14	459	3.23	3.39	5.05		0.93	1.50	0.45	0.15	4.16	1.37	6.87	200	Circular	203.20	0.35%	20.24	0.62	25.46	13.37	34%	83.999	80.431	80.228	3.568	83.138		80.342	80.139	2.796
STREET 1	08	07			0.25	0	459	3.48	3.39	5.05		0.93	1.50	0.45	0.25	4.41	1.46	6.95	200	Circular	203.20	0.35%	20.24	0.62	14.49	13.29	34%	83.138	80.342	80.139	2.796	82.629	0.400	80.291	80.088	2.338
STREET 1	07	06				0	459	3.48	3.39	5.05		0.93	1.50	0.45	0.00	4.41	1.46	6.95	200	Circular	203.20	0.35%	20.24	0.62	19.95	13.29	34%	82.629	79.891	79.688	2.738	81.959		79.822	79.618	2.137
STREET 1	06	03				0	459	3.48	3.39	5.05		0.93	1.50	0.45	0.00	4.41	1.46	6.95	200	Circular	203.20	0.35%	20.24	0.62	24.08	13.29	34%	81.959	79.822	79.618	2.137	82.723		79.737	79.534	2.986
Site Plan - BLOCK 18	05	04		96	0.56	173	173	0.56	3.54	1.98		0.00	1.50	0.00	0.56	0.56	0.18	2.17	250	Circular	254.00	1.00%	62.04	1.22	28.28	59.87	3%	82.870	80.152	79.898	2.718	82.599		79.869	79.615	2.730
Site Plan - BLOCK 18	04	03				0	173	0.56	3.54	1.98		0.00	1.50	0.00	0.00	0.56	0.18	2.17	250	Circular	254.00	0.35%	36.70	0.72	37.60	34.54	6%	82.599	79.869	79.615	2.730	82.723		79.737	79.483	2.986
STREET 1	03	02			0.07	0	632	4.11	3.34	6.83		0.93	1.50	0.45	0.07	5.04	1.66	**8.95**	200	Circular	203.20	0.35%	20.24	0.62	55.32	11.30	44%	82.723	79.737	79.534	2.986	81.809		79.544	79.341	2.265
NAVAN	02	01				0	632	4.11	3.34	6.83		0.93	1.50	0.45	0.00	5.04	1.66	8.95	200	Circular	203.20	0.35%	20.24	0.62	118.54	11.30	44%	81.809	79.544	79.341	2.265	81.544	0.500	79.129	78.926	2.415
NAVAN	01	EX10			5.87	176	808	9.98	3.29	8.60		0.93	1.50	0.45	5.87	10.91	3.60	12.65	200	Circular	203.20	0.35%	20.24	0.62	41.62	7.59	62%	81.544	78.629	78.426	2.915	81.586		78.483	78.280	3.103
																10.91																			
Page Road (Navan to Renaud)	EX10	Renaud					910	16.17	3.26	9.61		0.93	1.50	0.45	0.00	17.10	5.64	15.71	250	Circular	254.00	0.74%	53.19	1.05	106.80	37.48	30%									
																17.10																			
			67	263	4.43	654					0.93																									
Subject Properties Drainage Area:					5.36																													

Design Parameters		
Single Family Population	3.4	Cap/Unit
Semi-Detached/Townhouse Population	2.7	Cap/Unit
Apartments Population	1.8	Cap/Unit
Residential Flows	280	L/Cap/Day
Infiltration Flows	0.33	L/s/ha
Manning Coefficient	0.013	

PER EUC Area 13A: 6.6
Area 13B: 10.5
Total: 17.1

Sanitary Inv Ex MH 13 Page Rd	81.13
Sanitary Inv Ex MH 14 Page Rd	81.83
Sanitary Inv at Ex MH 10 Page @ Navan	78.280

Appendix F1

Storm – EUC ISSU Design Excerpts

STORM SEWER CALCULATION SHEET (RATIONAL METHOD) - POND 3

Manning's 0.013 **Return Frequency** = 5 years

		AREA (Ha)							FLOW					SEWER DATA																	
From Node	To Node	R= 0.3	R= 0.5	R= 0.55	R= 0.6	R= 0.75	R= 0.79	R= 0.82	Indiv. 2.78 AC	Accum. 2.78 AC	Time of Conc.	Rainfall Intensity	Peak Flow Q (l/s)	DIA. (m) (actual)	DIA. (mm) (nominal)	TYPE	SLOPE (m/m)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME OF FLOW (min.)	RATIO Q/Q full	Upstream OG	Downstream OG	Upstream Invert	Upstream Obvert	Downstream Invert	Downstream Obvert	Drop Structure	US Frost Depth	DS Frost Depth
601A	601	0.00	4.45	0.00	0.00	0.00	1.50	0.00	9.48	9.48	21.00	68.13	645.86	0.76	750	CONC	0.0035	90	687.1	1.5	1.00	0.94	86.00	85.50	81.27	82.03	80.95	81.71		3.97	3.79
601	602	0.00	4.91	0.00	0.00	0.00	1.80	0.00	10.78	20.26	22.00	66.15	1340.16	0.91	900	CONC	0.0055	220	1400.6	2.1	1.72	0.96	85.50	83.90	80.80	81.71	79.59	80.50		3.79	3.40
602	603	0.00	0.66	3.50	0.00	0.97	1.43	1.75	15.42	35.68	23.71	63.03	2248.78	0.99	975	CONC	0.01	70	2338.0	3.0	0.38	0.96	83.90	82.50	79.51	80.50	78.81	79.80	2.26	3.40	2.70
603B	603A	0.00	4.42	3.47	0.00	0.00	1.24	1.80	18.28	18.28	22.00	66.15	1208.89	0.99	975	CONC	0.003	150	1280.5	1.7	1.50	0.94	81.50	81.50	77.50	78.49	77.05	78.04		3.01	3.46
603A	603	0.00	5.58	0.00	0.00	0.00	1.08	0.38	10.99	29.27	23.50	63.39	1855.51	1.07	1050	CONC	0.0045	110	1911.0	2.1	0.86	0.97	81.50	82.50	76.97	78.04	76.48	77.54		3.46	4.96
603	604	0.00	0.66	0.00	0.00	0.00	0.28	0.00	1.53	66.48	25.96	59.41	3949.46	1.37	1350	CONC	0.006	100	4313.1	2.9	0.57	0.92	82.50	80.80	76.17	77.54	75.57	76.94	0.52	4.96	3.86
604	605	0.00	1.03	0.00	0.00	0.00	0.52	0.00	2.57	69.06	26.53	58.56	4043.75	1.37	1350	CONC	0.006	150	4313.1	2.9	0.86	0.94	80.80	78.40	75.05	76.42	74.15	75.52	0.40	4.38	2.88
605	606	0.00	0.89	0.41	0.00	0.00	0.39	0.00	2.72	71.78	27.39	57.33	4115.22	1.37	1350	CONC	0.006	150	4313.1	2.9	0.86	0.95	78.40	77.00	73.75	75.12	72.85	74.22	0.40	3.28	2.78
606	607	0.00	1.66	0.00	0.00	0.00	0.74	0.00	3.93	75.71	28.24	56.17	4252.25	1.37	1350	CONC	0.006	250	4313.1	2.9	1.43	0.99	77.00	76.00	72.45	73.82	70.95	72.32	1.60	3.18	3.68
607	608	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.55	76.26	29.67	54.33	4143.26	1.37	1350	CONC	0.006	90	4313.1	2.9	0.51	0.96	76.00	73.00	69.35	70.72	68.81	70.18	1.10	5.28	2.82
608E	608D	0.41	3.79	0.00	0.00	0.00	1.58	0.00	9.08	9.08	20.00	70.25	637.88	0.91	900	CONC	0.0013	170	680.9	1.0	2.73	0.94	71.00	71.00	68.59	69.50	68.36	69.28		1.50	1.72
608D	608	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.86	9.94	22.73	64.77	643.62	0.91	900	CONC	0.0013	150	680.9	1.0	2.41	0.95	71.00	73.00	68.36	69.28	68.17	69.08		1.72	3.92
608C	608B	0.00	2.57	3.82	0.00	0.00	1.80	0.00	13.37	13.37	19.00	72.53	969.39	0.84	825	CONC	0.005	60	1058.9	1.9	0.52	0.92	74.00	74.00	69.50	70.33	69.20	70.03		3.67	3.97
608B	608A	0.00	3.12	0.00	0.00	0.00	0.96	0.00	6.45	19.81	19.52	71.32	1412.95	0.99	975	CONC	0.005	120	1653.2	2.1	0.93	0.85	74.00	72.80	69.04	70.03	68.44	69.43		3.97	3.37
608A	608	1.26	2.29	0.00	0.00	0.00	1.25	0.00	6.98	26.79	20.45	69.27	1855.82	1.07	1050	CONC	0.005	70	2014.4	2.3	0.52	0.92	72.80	73.00	68.37	69.43	68.02	69.08		3.37	3.92
608	609	0.00	2.60	0.00	0.00	0.00	1.11	0.00	6.05	119.04	30.18	53.70	6392.78	1.98	1950	CONC	0.002	290	6638.9	2.2	2.24	0.96	73.00	76.00	67.10	69.08	66.52	68.50	0.46	3.92	7.50
700	701	16.26	2.78	0.00	0.00	1.39	4.09	0.00	29.31	29.31	25.00	60.90	1784.60	0.91	900	CONC	0.0095	170	1840.8	2.8	1.01	0.97	86.00	86.50	81.53	82.45	79.92	80.83	1.33	3.56	5.67
701A	701	0.00	6.89	0.00	0.00	0.00	0.00	1.29	12.52	12.52	15.00	83.56	1045.95	0.84	825	CONC	0.005	330	1058.9	1.9	2.87	0.99	86.50	86.50	82.96	83.80	81.31	82.15	2.65	2.70	4.35
701	702	0.00	1.56	0.00	0.00	0.00	0.46	1.30	6.14	47.97	26.01	59.33	2845.74	0.99	975	CONC	0.023	210	3545.7	4.6	0.76	0.80	86.50	79.00	78.51	79.50	73.68	74.67		7.00	4.33
702A	702	0.00	0.00	0.00	0.00	3.11	1.67	0.00	10.15	10.15	20.00	70.25	713.19	0.61	600	CONC	0.02	150	905.9	3.1	0.81	0.79	83.50	79.00	78.89	79.50	75.89	76.50	1.83	4.00	2.50
702	703	0.00	0.00	0.36	0.00	0.00	0.54	0.00	1.74	59.85	26.77	58.21	3483.92	1.07	1050	CONC	0.024	210	4413.3	4.9	0.71	0.79	79.00	71.00	73.60	74.67	68.56	69.63		4.33	1.37
703	704	5.02	0.00	0.41	0.00	0.00	0.41	0.00	5.71	65.57	27.48	57.20	3750.72	1.83	1800	CONC	0.0012	160	4154.1	1.6	1.69	0.90	71.00	70.80	67.80	69.63	67.61	69.44		1.37	1.36
704	705	0.99	0.00	0.55	0.00	3.19	0.45	0.00	9.31	74.87	29.17	54.96	4115.38	1.83	1800	CONC	0.0013	180	4323.7	1.6	1.82	0.95	70.80	70.50	67.61	69.44	67.38	69.20		1.36	1.30
705A	705	0.00	0.00	2.06	0.00	0.00	1.74	0.00	6.97	6.97	23.00	64.29	448.15	0.69	675	CONC	0.003	80	480.3	1.3	1.03	0.93	71.50	70.50	68.76	69.44	68.52	69.20		2.06	1.30
705	706	0.00	0.00	0.92	0.00	0.00	0.44	0.00	2.37	84.22	30.99	52.75	4442.71	1.98	1950	CONC	0.001	160	4694.4	1.5	1.75	0.95	70.50	71.00	67.22	69.20	67.06	69.04		1.30	1.96
706C	706B	0.00	0.00	5.20	0.00	0.00	2.00	0.00	12.34	12.34	21.00	68.13	840.94	0.69	675	CONC	0.012	155	960.6	2.6	0.99	0.88	75.00	72.00	71.13	71.81	69.27	69.95		3.19	2.05
706B	706A	0.00	0.00	0.64	0.00	0.00	0.22	0.00	1.46	13.80	21.99	66.16	913.32	0.76	750	CONC	0.007	80	971.7	2.1	0.63	0.94	72.00	72.00	69.19	69.95	68.63	69.39		2.05	2.61
706A	706	0.00	0.00	1.74	0.00	0.00	1.16	0.00	5.21	19.01	22.62	64.98	1235.49	0.91	900	CONC	0.005	70	1335.4	2.0	0.57	0.93	72.00	71.00	68.48	69.39	68.13	69.04		2.61	1.96
706	707	0.00	0.00	0.50	0.00	0.00	0.21	0.00	1.23	104.46	32.74	50.81	5307.00	1.98	1950	CONC	0.0015	100	5749.5	1.9	0.89	0.92	71.00	72.00	67.06	69.04	66.91	68.89		1.96	3.11
707	708	0.00	0.00	2.66	0.00	0.00	1.20	0.00	6.70	111.16	33.63	49.87	5543.80	1.98	1950	CONC	0.0015	175	5749.5	1.9	1.56	0.96	72.00	76.00	66.91	68.89	66.65	68.63		3.11	7.37
708	609	0.00	0.00	1.38	0.00	0.00	0.67	0.00	3.58	114.74	35.20	48.33	5545.19	1.98	1950	CONC	0.0015	85	5749.5	1.9	0.76	0.96	76.00	76.00	66.65	68.63	66.52	68.50	0.46	7.37	7.50
609	610	0.00	3.00	0.00	0.00	0.00	1.21	0.00	6.83	240.60	35.96	47.62	11456.50	1.52	1500 x 4200	CONC	0.002	160	14595.0	2.3	1.15	0.78	76.00	72.00	66.52	68.04	66.20	67.72		7.96	4.28
610	Outlet	0.00	3.98	0.00	0.00	0.00	0.96	0.00	7.64	248.25	37.11	46.58	11563.06	1.52	1500 x 4200	CONC	0.002	100	14595.0	2.3	0.72	0.79	72.00	70.00	66.20	67.72	66.00	67.52		4.28	2.48
800	801	0.00	0.00	2.51	0.00	0.00	0.73	0.00	5.44	5.44	18.00	74.97	407.91	0.84	825	CONC	0.001	140	473.6	0.9	2.72	0.86	70.00	70.00	67.60	68.44	67.46	68.30		1.56	1.70
801	802	0.00	0.00	1.02	0.00	0.00	0.34	0.00	2.31	7.75	20.72	68.71	532.33	0.91	900	CONC	0.001	80	597.2	0.9	1.47	0.89	70.00	70.00	67.38	68.30	67.30	68.22		1.70	1.78
802	803	0.00	0.00	2.06	0.00	0.00	0.77	0.00	4.84	12.59	22.19	65.79	828.22	1.07	1050	CONC	0.001	195	900.9	1.0	3.22	0.92	70.00	70.00	67.15	68.22	66.96	68.02		1.78	1.98
803	804	0.00	0.00	1.60	0.00	0.00	0.75	0.00	4.09	16.68	25.41	60.25	1005.07	1.07	1050	CONC	0.0013	80	1027.1	1.1	1.16	0.98	70.00	70.00	66.96	68.02	66.85	67.92		1.98	2.08
804	805	0.00	0.00	2.76	0.00	0.00	0.83	0.00	6.04	22.72	26.57	58.50	1329.38	1.22	1200	CONC	0.0012	285	1409.0	1.2	3.94	0.94	70.00	70.00	66.70	67.92	66.36	67.58		2.08	2.42
805	806	0.00	0.00	1.51	0.00	0.00	0.70	0.00	3.85	26.57	30.51	53.32	1416.74	1.22	1200	CONC	0.0013	80	1466.5	1.3	1.06	0.97	70.00	70.00	66.36	67.58	66.26	67.47		2.42	2.53
806	807	0.86	0.00	1.24	0.00	0.00	0.41	0.00	3.51	30.08	31.57	52.09	1567.14	1.22	1200	CONC	0.0017	70	1677.0	1.4	0.81	0.93	70.00	70.00	66.26	67.47	66.14	67.36		2.53	2.64
807	Outlet	0.00	0.00	0.86	0.00	0.00	0.34	0.00	2.06	32.15	32.38	51.19	1645.68	1.22	1200	CONC	0.0017	80	1677.0	1.4	0.93	0.98	70.00	70.00	66.14	67.36	66.00	67.22		2.64	2.78

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa IDF Curve
2) Min Velocity = 0.80 m/sec

Designed: B.D

Checked: F.W

Dwg. : STM / STM P1

PROJECT: Gloucester EUC Infrastructure Servicing Study Update

LOCATION: Stormwater Management Pond 3

File Ref. 1634-00493

Date: March-05

Sheet No. 1 of 1

N

- STORM SEWER AND MANHOLE
- STORM TRUNK SEWER AND MANHOLE
- STORM CATCHMENT AREA (POND #1)
- STORM CATCHMENT AREA (POND #2)
- STORM CATCHMENT AREA (POND #3)
- 30m CREEK BUFFER
- ORIGINAL GROUND / OBVERT
- AREA (ha) / RUNOFF COEFFICIENT / MANHOLE No.
- AREAS OF INSUFFICIENT COVER (LESS THAN 2.0m)

1. "PONDS 1 AND 3 EAST URBAN COMMUNITY DESIGN BRIEF" (STANTEC CONSULTING, APRIL 2001)
2. "CITY OF GLOUCESTER EAST URBAN COMMUNITY MASTER DRAINAGE PLAN" (GORE & STORRIE, 1992)
3. WATER LEVEL TO BE CONFIRMED AS PART OF THE REDESIGN OF POND 3.

PROPOSED SITE,
2983-3053-3079 Navan Road and
2690 Pagé Road

HYDRO CORRIDOR
PROPOSED TRANSITWAY
PROPOSED BLACKBURN BY-PASS EXTENSION
MER BLEUE ROAD
FOURTH LINE ROAD
PAGE ROAD
NAVAN ROAD
WALL ROAD
SAPHIR AVE.
GRAND PRE
ABANDONED C.P.R. RIGHT OF WAY
STORM TRUNK SEWER No.1
STORM TRUNK SEWER No.2
STORM TRUNK SEWER No.3
STORM TRUNK SEWER No.4
STORM TRUNK SEWER No.5
STORM TRUNK SEWER No.6

POND 1
100 YR. WL=87.00m
NWL=80.10m

POND 2
100 YR. WL=80.00m
(2)

POND 3
100 YR. WL=68.50m
NWL=67.00m
(3)

WSI LANDFILL

SCHOOL
PARK
INSTIT.
INSTITUTIONAL
COMMERCIAL
ESCARPMENT
FIRE HALL

REVISION No.2 MARCH, 2005

CITY OF OTTAWA
GLOUCESTER EUC INFRASTRUCTURE
SERVICING STUDY UPDATE

STORM SEWER SYSTEM

Scale: 0 40 120 200m
Dwg. No.: STM
Own By: E.C.
Date: 04.10.29
Revision: 2

Appendix F2

Sample Functional Runoff Coefficients

2022-12-01
Our File: 29899-000

Runoff Coefficient
2983, 3053, and 3079 Navan Road & 2690 Page Road

The proposed development is comprised of four (4) subject properties under (1) Draft Plan of Subdivision and four (4) Site Plan Applications. In total there are 67 row townhouse units, six (6) condominium units and a gas station and retail establishment.

1. ROW TOWNHOUSE BLOCK:

An average run-off coefficient was calculated for front yard and rear yard of the smallest block (Block 4) which contains five (5) townhouse units. The runoff coefficients are based on zoning setbacks and a maximum driveway width of 50% of the area of the front yard as stated in Section 107 (2) in the City of Ottawa Zoning By-Laws. Since this scenario has the highest ratio of house area to greenspace, the resulting run-off coefficient would be the highest of any scenario for a townhouse block.

Unit Information

Unit Width	5.80	m
Block Depth	29.9	m
Unit Area	97	m^2
Total Number of Units	5	units
Number of Interior Units	4	units
Number of End Units	1	units
Corner Unit Width	6.25	m
Min. Corner Yard Setback	3	m
Min. Rear Yard Setback	7.5	m
Min. Front Yard Setback	3	m

Block Area

Total Block Area = (5.80 x 4 + 9.25 x 1) x 29.9 = 970.26 m^2 **(A_T)**
Zoning Footprint (Internal Unit) = (29.9 - 7.5 – 3) m x 5.80m = 112.52 m^2 **(B_T)**
Zoning Footprint (End Unit) = (29.9 - 7.5 - 3) x 6.25 = 121.25 m^2 **(C_T)**
Unit Driveway Area (50% of Front Yard Area) = 8.7 m^2 **(D_T)**

Assuming each lot has a highpoint at the centre, the unit and lot areas could be divided equally between the front and rear yards.

Rear Area:

Block Rear Area = $\frac{AT}{2} = \frac{970.26}{2}$ = 485.13 m^2 **(E_T)**

By: MM

Number of Internal Units: 4
Number of End Units: 1
Rear Impervious (House) Footprint: $\frac{4(BT)+1(CT)}{2} = \frac{4(112.52)+1(121.25)}{2}$ = 285.67 m^2 **(F_T)**

Front Area:
Block Front Area = Block Rear Area = 485.13 m^2 **(G_T)**
Number of Internal Units: 4
Number of End Units: 1
Front Impervious (House/Driveway) Footprint: $F_T + 6D_T = 285.67 + 5(8.7)$ = 329.17 m^2 **(I_T)**

Using a run-off coefficient of 0.2 for grassed areas and 0.9 for impervious areas (houses and driveways) the following weighted averages are calculated:

Run-off Coefficient:
Rear Coefficient = $\frac{0.2(E_T-F_T)+0.9F_T}{E_T} = \frac{0.2(485.13-285.67)+0.9(285.67)}{485.13}$ = **0.61** **(C_{RT})**
Front Coefficient = $\frac{0.2(G_T-I_T)+0.9(I_T)}{G_T} = \frac{0.2(485.13-329.17)+0.9(329.17)}{485.13}$ = **0.67** **(C_{FT})**

Summary: The rear yard runoff coefficient used for design is **0.61**

2. 18m ROW Road

A similar approach was used for the ROWs, a weighted average was calculated using the total 18m ROW Road.

Asphalt Road and Sidewalk (C=0.9)
There is approximately 585 m of 8.5 m asphalt road and 630 m of 1.8 m sidewalk. These lengths were measured directly from the Concept Plan in Appendix B1 of the Functional Servicing Report.
The total area of asphalt road is 585 x 8.5 = 4972.50 m^2 **(J_T)**
The total area of sidewalk is 630 x 1.8 = 1134.00 m^2 **(K_T)**

Driveways (C=0.9)
Within the boulevard there are 27 units which have driveways that do not overlap with sidewalks. For these cases the driveways have a width of 4.75 m within the boulevard span a distance of 2.9 m (50% of unit width).

The total area of driveways not fronting sidewalks can be taken as 27 x 4.75 x 2.9 = 371.93 m^2 **(L_T)**

By: MM

Within the boulevard there are 42 units which have driveways that do overlap sidewalks. For these cases the sidewalk width must be subtracted from the driveway boulevard width since it was already considered in **(K_T).** Hence, these driveways span 4.75m - 1.8m = 2.95m within the boulevard and span a distance of 2.9m (50% of unit width).

The total area of driveways fronting sidewalks can be taken as 42 x 2.95 x 2.9 = 359.31 m^2 **(M_T)**

Grassed Area (C=0.2)

The total area of grass is equal to the total ROW Area subtracted by area of asphalt road, sidewalks, and driveways. I.e., Grassed Area = (18 x 585m – (4972.50 + 1134.00 + 371.93 + 359.31 = 3692.26 m^2 **(N_T)**

Table 1 summarizes the total areas within the 18m ROW and their respective c-factors.

Table 1: ROW C-factor breakdown

Description	**Area (m^2)**	**C-Factor**
Asphalt Road	4972.50	0.9
Sidewalk	1134.00	0.9
Driveways not fronting sidewalk (26 units)	371.93	0.9
Driveways fronting sidewalk (41 units)	359.31	0.9
Grass boulevard not fronting sidewalk	3692.26	0.2

3. FRONT YARD AND ROW C-FACTOR

The front yard and ROWs of the subdivision were grouped into one weighted front yard runoff coefficient. The weighted average is derived from the results front yard co-efficient calculated for the ROW townhouse block and from the results in Table 1 for the 18 m ROW.

$$= \frac{(J_T\ x\ 0.9)+(K_T\ x\ 0.9)+(L_T\ x\ 0.9)+(M_T\ x\ 0.9)+(N_T\ x\ 0.2)+\ (69\ x\ 97)\ x\ C_{FT}\ )}{(J_T)+(K_T)+(L_T)+(M_T)+(N_T)+(69\ x(97))}$$

$$= \frac{(4972.50\ x\ 0.9)+(1134x0.9)+(371.93x0.9)+(359.31x0.9)+(3692.26x0.2)+((67\ x(97)\ x\ \mathbf{0.67})}{(\ 4972.50)+(1134)+(371.93)+(359.3)+(3692.26)+(67\ x(97)\ )}$$

= 0.66

By: MM

4. Residential and Commercial Site Plans (Block 14, 15 and 17)

A runoff coefficient was calculated for the residential site plans on Blocks 14, 15 and 17. Block 14 was used for the sample calculations since this block generates the highest ratio of impervious surfaces to grass.

A minimum zoned amenity space of 10% was assumed for the residential site plans. This is more conservative than the City of Ottawa By-Law requirement of 6m^2 per dwelling unit for low-rise apartment dwellings.

Block 14 Information

Total Block Area	0.575	ha
Zoning Limit Area	0.494	ha
Zoning Amenity Area (10% Zoning Limit Area)	0.049	ha **(O_T)**
Zoning Impervious Area (90% Zoning Limit Area)	0.445	ha **(P_T)**

The remaining area of the site plan (outside of the zoning area) is 0.069 ha of grass **(Q_T)** and 0.012 ha of impervious surfaces **(R_T)**.

Given that these are private site plans, a run-off coefficient of 0.25 was used for grassed areas and 0.9 for impervious areas. The following weighted averages are calculated:

$$= \frac{(\mathbf{0.25}\ (O_T+Q_T))+\mathbf{0.9}(P_T+R_T)}{(O_T+Q_T)+(P_T+R_T\ )}$$

$$= \frac{(\mathbf{0.25}\ (0.049+0.0688))+\mathbf{0.9}(0.445+0.0123)}{(0.049+0.0688\ )+(0.455+0.012\ )}$$

$$= \mathbf{0.77}$$

5. Commercial Site Plan (Gas Bar on Block 16)

Since there is minimal grass and amenity space within the industrial site plan a C-factor of **0.9** was assumed for all of Block 16.

6. Dry Pond (Block 13)

A C-factor of 0.83 was assumed for the Dry Pond because the water surface from large storm events would be considered 90% impermeable.

7. Park (Block 7)

A C-factor of 0.40 was assumed for the park given that this area is mainly grassed with minimal infrastructure.

8. **Abutting Existing Units on Navan and Page that drain into 3079 Navan Road**

The C-factor breakdowns based on actual impervious cover within the existing catchment areas are summarized in Table 2 and Table 3. A weighted average was calculated for impervious (C=0.9) and grassed (C=0.2).

Table 2: Existing Units on Navan Road C-factor breakdown

Description	**Area (m^2)**	**C-Factor**
Impervious	0.169	0.9
Grassed	0.971	0.2
Total	1.14	0.3

Table 3: Existing Units on Page Road C-factor breakdown

Description	**Area (m^2)**	**C-Factor**
Impervious	0.096	0.9
Grassed	0.598	0.2
Total	0.694	0.3

Table 4 below presents a summary of run-off coefficients to be used for functional design.

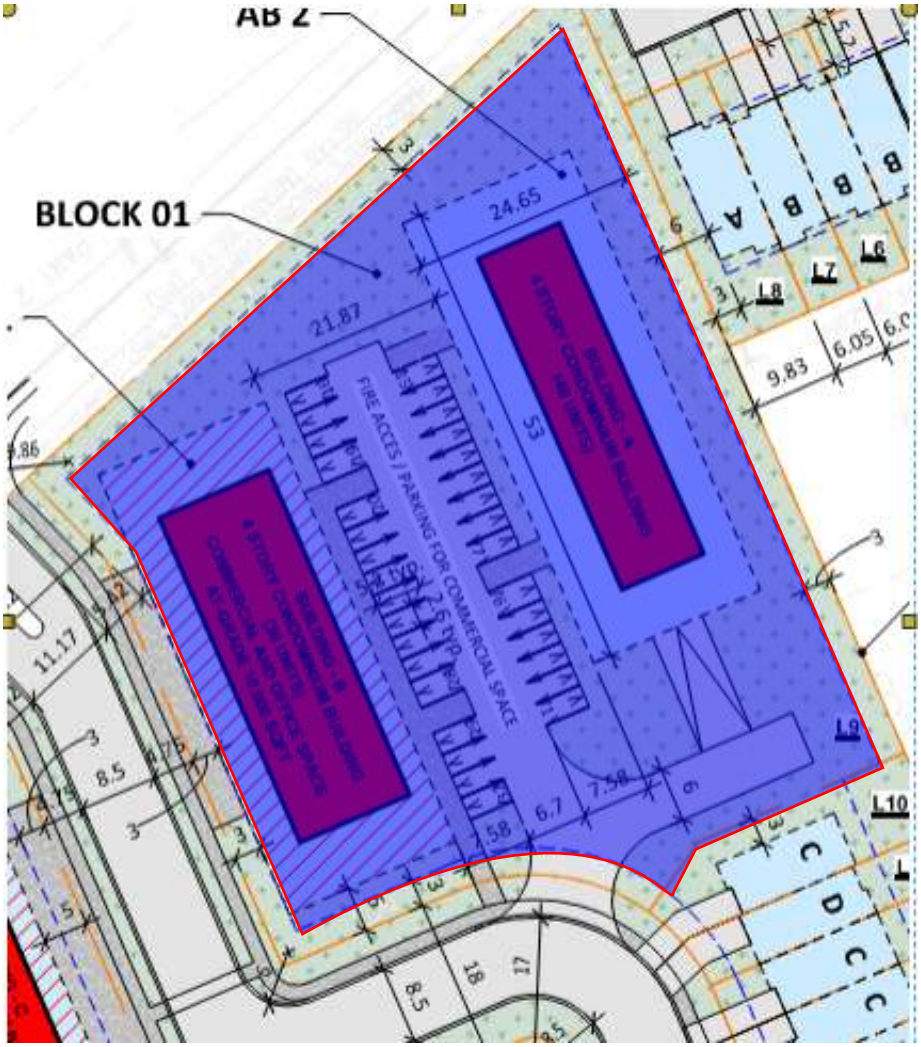
Table 4: Functional Design Run-off Coefficients

Scenario	**Runoff Coefficient (C)**
Rear Yards – Townhouse Units Only	**0.61**
Front Yards and ROW	**0.66**
Residential Site Plan	**0.77**
Industrial Site Plan (Gas Bar)	**0.90**
Abutting Properties on Navan and Page	**0.30**
Park	**0.40**
Dry Pond	**0.83**

SAMPLE C-FACTOR CALCULATION FIGURES

BLOCK 4

BLOCK 14



C-FACTOR CALCULATED BASED ON ZONING SET BACKS AND MAXIMUM DRIVEWAY WIDTH OF 50% AREA OF FRONT YARD

ALL AREAS MEASURED DIRECTLY FROM CONCEPT PLAN IN APPENDIX B1 OF THE FUNCTIONAL SERVICING REPORT

LEGEND

ZONING AREA FOR INTERIOR RESIDENTIAL UNIT

ZONING AREA FOR CORNER RESIDENTIAL UNIT

ZONING AREA FOR SITE PLAN (10% AREA FOR AMENITY SPACE ASSUMED)

PROPERTY LINE (ORANGE LINE IN CONCEPT PLAN)

Appendix F3

JLR Functional Storm Design Sheet

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

2983, 3053 and 3079 Navan Road and 2690 Page Road
STORM SEWER DESIGN SHEET
JLR NO. 29899

DESIGNED BY: CJ/KS
CHECKED BY: KF
2022-12-01

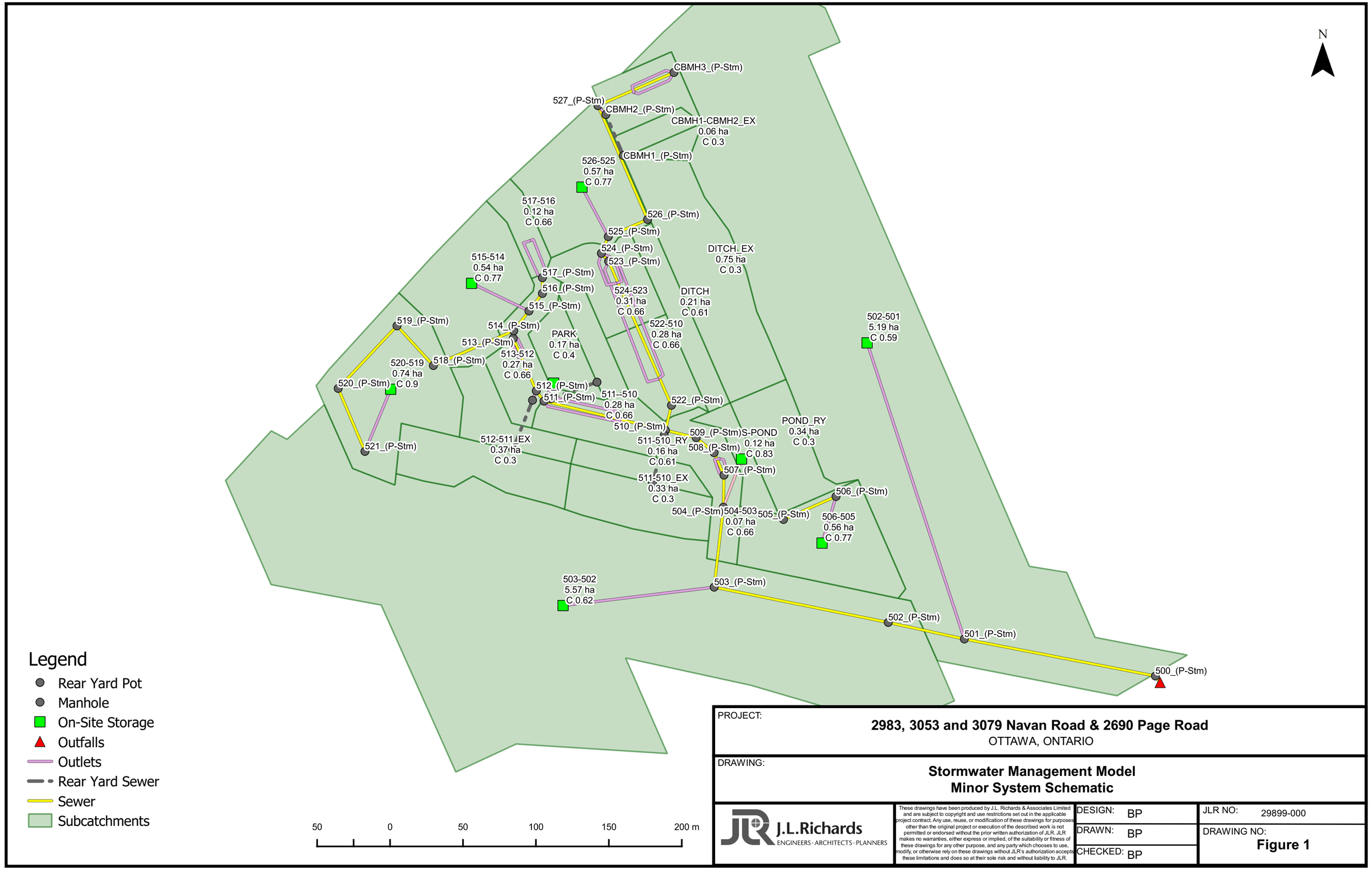
Street Name	Maintenace Hole No.		1:2 Year Storm										1:10 Year Storm	Total Areas		Total Area (ha)	Cum. Total Area (ha)	Inlet Time (min.)	In Pipe Flow Time (min)	Total Time	1:2 Year Peak Flow					Controlled Flow (85 L/s/ha)	1:10 Year Peak Flow					Total Peak Flow	Pipe Data									Upstream Geometry					Downstream Geometry					
	From	To	0.30	0.40	0.50	0.55	0.61	0.66	0.77	0.79	0.83	0.90	0.82	1:2 Yr	1:10 Yr						2.78AR	Additional 2.78AR	Cum. 2.78AR	1:2 Yr Intensity	Peak Flow		2.78AR	Additional 2.78AR	Cum. 2.78AR	1:10 Yr Intensity	Peak Flow		REQ'D DIA.	Type	Actual Diameter	Slope	Q Full (L/s)	V Full	Length	Residual Capacity	% Full	TG From	Obvert	Invert	Springline Elev	Cover	TG To	Drop	Obvert	Invert	Springline Elev	Cover
OUTLET TO NAVAN @ RENAUD																																																
STREET 1	517	516						0.122						0.12	0.00	0.12	0.12	10.00	0.20	10.20	0.22		0.22	76.81	17.19	10.37	0.00		0.00	122.14	0.00	10.37	250	Circular	254.00	0.55%	46.01	0.91	10.8	28.82	23%	85.278	82.710	82.456	82.583	2.568	85.099		82.650	82.396	82.523	2.449
STREET 1	516	515												0.00	0.00	0.00	0.12	10.20	0.28	10.48	0.00		0.22	76.05	17.02	10.37	0.00		0.00	120.92	0.00	10.37	250	Circular	254.00	0.55%	46.01	0.91	15.2	28.99	23%	85.099	82.650	82.396	82.523	2.449	84.898		82.567	82.313	82.440	2.331
STREET 1 - Block 15	515	514							0.540					0.54	0.00	0.54	0.66	10.48	0.30	10.78	1.16		1.38	75.02	103.51	56.27	0.00		0.00	119.25	0.00	56.27	375	Circular	381.00	0.35%	108.21	0.95	17.1	4.70	52%	84.898	82.567	82.186	82.376	2.331	84.642		82.507	82.126	82.316	2.135
Site Plan - Block 16	521	520												0.00	0.00	0.00	0.00	10.00	0.86	10.86	0.00		0.00	76.81	0.00	0.00	0.00		0.00	122.14	0.00	0.00	250	Circular	254.00	0.55%	46.01	0.91	46.9	46.01	0%	85.096	83.202	82.948	83.075	1.893	85.292		82.944	82.690	82.817	2.347
Site Plan - Block 16	520	519										0.740		0.74	0.00	0.74	0.74	10.86	0.99	11.85	1.85		1.85	73.65	136.36	62.90	0.00		0.00	117.03	0.00	62.90	450	Circular	457.20	0.30%	162.91	0.99	58.9	26.55	39%	85.292	82.944	82.487	82.716	2.347	85.484		82.768	82.311	82.539	2.716
Site Plan - Block 16	519	518												0.00	0.00	0.00	0.74	11.85	0.62	12.47	0.00		1.85	70.36	130.28	62.90	0.00		0.00	111.72	0.00	62.90	450	Circular	457.20	0.30%	162.91	0.99	36.9	32.63	39%	85.484	82.768	82.311	82.539	2.716	85.358		82.657	82.200	82.428	2.701
Site Plan - Block 16	518	514					0.037							0.04	0.00	0.04	0.78	12.47	1.10	13.57	0.06		1.91	68.47	131.06	66.05	0.00		0.00	108.65	0.00	66.05	450	Circular	457.20	0.25%	148.72	0.91	60.1	17.66	44%	85.358	82.657	82.200	82.428	2.701	84.642		82.507	82.050	82.278	2.135
STREET 1	514	513												0.00	0.00	0.00	1.44	13.57	0.07	13.65	0.00		3.29	65.35	215.26	122.32	0.00		0.00	103.62	0.00	122.32	525	Circular	533.40	0.35%	265.43	1.19	5.1	50.17	46%	84.642	82.507	81.973	82.240	2.135	84.581		82.489	81.955	82.222	2.093
STREET 1	513	512						0.267						0.27	0.00	0.27	1.71	13.65	0.55	14.20	0.49		3.78	65.16	246.55	145.01	0.00		0.00	103.31	0.00	145.01	525	Circular	533.40	0.35%	265.43	1.19	39.3	18.88	55%	84.581	82.489	81.955	82.222	2.093	84.686	0.600	82.351	81.818	82.085	2.334
STREET 1	512	511	0.367				0.235							0.60	0.00	0.60	2.31	14.20	0.11	14.31	0.70		4.49	63.73	286.03	196.18	0.00		0.00	101.01	0.00	196.18	600	Circular	609.60	0.35%	376.96	1.30	8.8	92.93	52%	84.686	81.751	81.142	81.446	2.934	84.698		81.720	81.111	81.416	2.977
STREET 1	511	510	0.326	0.173			0.300	0.275						1.07	0.00	1.07	3.38	14.31	1.02	15.33	1.48		5.97	63.44	378.50	287.47	0.00		0.00	100.55	0.00	287.47	675	Circular	685.80	0.35%	518.80	1.40	85.7	140.30	55%	84.698	81.720	81.035	81.378	2.977	83.884	0.500	81.421	80.735	81.078	2.463
Block 1	528	527												0.00	0.00	0.00	0.00	10.00	1.04	11.04	0.00		0.00	76.81	0.00	0.00	0.00		0.00	122.14	0.00	0.00	250	Circular	254.00	0.55%	46.01	0.91	56.9	46.01	0%	85.368	82.982	82.728	82.855	2.386	85.670		82.669	82.415	82.542	3.001
Block 1	527	526	0.058				0.087	0.230						0.38	0.00	0.38	0.38	11.04	1.73	12.78	0.62		0.62	73.01	45.12	31.88	0.00		0.00	116.00	0.00	31.88	300	Circular	304.80	0.35%	59.68	0.82	85.1	14.57	53%	85.670	82.669	82.365	82.517	3.001	85.775		82.371	82.067	82.219	3.403
Site Plan - Block 14	526	525							0.574					0.57	0.00	0.57	0.95	12.78	0.49	13.27	1.23		1.85	67.56	124.76	80.67	0.00		0.00	107.19	0.00	80.67	450	Circular	457.20	0.30%	162.91	0.99	29.4	38.15	50%	85.775	82.371	81.914	82.143	3.403	84.954	0.400	82.283	81.826	82.055	2.671
Site Plan - Block 14	525	524												0.00	0.00	0.00	0.95	13.27	0.23	13.50	0.00		1.85	66.17	122.19	80.67	0.00		0.00	104.95	0.00	80.67	450	Circular	457.20	0.25%	148.72	0.91	12.4	26.53	54%	84.954	81.883	81.420	81.655	3.071	84.431		81.852	81.395	81.624	2.579
STREET 2	524	523												0.00	0.00	0.00	0.95	13.50	0.13	13.64	0.00		1.85	65.55	121.04	80.67	0.00		0.00	103.94	0.00	80.67	450	Circular	457.20	0.25%	148.72	0.91	7.3	27.67	54%	84.431	81.852	81.395	81.624	2.579	84.337		81.834	81.377	81.605	2.503
STREET 2	523	522						0.593						0.59	0.00	0.59	1.54	13.64	1.79	15.42	1.09		2.93	65.19	191.30	131.07	0.00		0.00	103.36	0.00	131.07	525	Circular	533.40	0.25%	224.33	1.00	107.7	33.03	58%	84.337	81.834	81.301	81.567	2.503	83.703		81.565	81.031	81.298	2.138
STREET 2	522	510												0.00	0.00	0.00	1.54	15.42	0.29	15.72	0.00		2.93	60.78	178.38	131.07	0.00		0.00	96.27	0.00	131.07	525	Circular	533.40	0.25%	224.33	1.00	17.6	45.95	58%	83.703	81.565	81.031	81.298	2.138	83.884	0.600	81.521	80.987	81.254	2.363
STREET 1	510	509												0.00	0.00	0.00	4.92	15.72	0.28	16.00	0.00		8.90	60.13	535.17	418.54	0.00		0.00	95.21	0.00	418.54	750	Circular	762.00	0.25%	580.71	1.27	21.7	45.54	72%	83.884	80.921	80.159	80.540	2.963	83.148	0.500	80.866	80.104	80.485	2.281
STREET 1	509	508												0.00	0.00	0.00	4.92	16.00	0.21	16.21	0.00		8.90	59.50	529.62	418.54	0.00		0.00	94.21	0.00	418.54	750	Circular	762.00	0.25%	580.71	1.27	16.0	51.09	72%	83.148	80.366	79.604	79.985	2.781	82.556	0.500	80.326	79.564	79.945	2.230
STREET 1	508	507												0.00	0.00	0.00	4.92	16.21	0.22	16.43	0.00		8.90	59.05	525.60	418.54	0.00		0.00	93.48	0.00	418.54	750	Circular	762.00	0.25%	580.71	1.27	16.8	55.11	72%	82.556	79.826	79.064	79.445	2.730	82.543		79.784	79.022	79.403	2.759
STREET 1	507	504	1.084				0.215	0.224			0.122			1.65	0.00	1.65	6.57	16.43	0.27	16.70	1.96		10.86	58.59	636.35	558.37	0.00		0.00	92.73	0.00	558.37	825	Circular	838.20	0.25%	748.75	1.36	22.0	112.40	75%	82.543	79.784	78.946	79.365	2.759	82.672	0.800	79.729	78.891	79.310	2.943
Site Plan - Block 18	506	505							0.561					0.56	0.00	0.56	0.56	10.00	0.69	10.69	1.20		1.20	76.81	92.23	47.69	0.00		0.00	122.14	0.00	47.69	375	Circular	381.00	0.35%	108.21	0.95	39.3	15.98	44%	82.874	79.214	78.833	79.024	3.660	82.725		79.077	78.696	78.886	3.649
Site Plan - Block 18	505	504												0.00	0.00	0.00	0.56	10.69	0.74	11.43	0.00		1.20	74.25	89.17	47.69	0.00		0.00	118.01	0.00	47.69	375	Circular	381.00	0.35%	108.21	0.95	42.1	19.04	44%	82.725	79.077	78.696	78.886	3.649	82.672		78.929	78.548	78.739	3.743
STREET 1	504	503												0.00	0.00	0.00	7.13	16.70	0.68	17.38	0.00		12.06	58.03	699.94	606.05	0.00		0.00	91.83	0.00	606.05	825	Circular	838.20	0.25%	748.75	1.36	55.1	48.81	81%	82.672	78.929	78.091	78.510	3.743	81.884		78.791	77.953	78.372	3.092
NAVAN	503	502			0.36	3.47		0.069					1.74	3.90	1.74	5.64	12.77	17.38	1.16	18.54	5.93		18.00	56.67	1019.82	937.47	3.97		3.97	89.66	355.62	1293.09	1050	Circular	1066.80	0.30%	1560.35	1.75	121.8	267.26	83%	81.884	78.791	77.725	78.258	3.092	81.582		78.426	77.359	77.893	3.155
NAVAN	502	501			3.61					1.01			0.58	4.62	0.58	5.20	17.97	18.54	0.47	19.01	7.24		25.23	54.50	1375.22	1330.17	1.32		5.29	86.18	455.76	1785.93	600	Circular	1219.20	0.30%	2227.75	1.91	53.4	441.82	80%	81.582	77.969	77.359	77.664	3.613	81.823		77.809	77.199	77.504	4.015
NAVAN	501	500												0.00	0.00	0.00	17.97	19.01	1.17	20.17	0.00		25.23	53.69	1354.58	1330.17	0.00		5.29	84.86	448.82	1778.98	1200	Circular	1219.20	0.30%	2227.75	1.91	133.4	448.77	80%	81.823	78.418	77.199	77.809	3.405	83.132	0.600	78.018	76.799	77.408	5.114
NAVAN	500	EXMH101												0.00	0.00	0.00	17.97	20.17	0.05	20.22	0.00		25.23	51.76	1305.89	1330.17	0.00		5.29	81.77	432.45	1762.62	1200	Circular	1219.20	0.30%	2227.75	1.91	5.5	465.13	79%	83.132	77.418	76.199	76.808	5.714	83.500	0.600	77.402	76.182	76.792	6.098
																							15.65	2.32	17.97																								

Site Area (Subdivision + Site Plans)	5.36	
Navan ROW		2.32
Abutting Property Drainage Area	1.84	

At Ex MH 101 - Renaud @ Navan - (1350mm dia outlet)	83.500		76.802	75.430	76.116	6.698
At Sani Crossing - Page @ Navan - (min INV +/- 77.11, max OBV +/- 77.97)	81.785		77.770	77.161	77.847	4.015

Appendix F4

PCSWMM Schematic



Legend

- Rear Yard Pot
- Manhole
- On-Site Storage
- Outfalls
- Outlets
- Rear Yard Sewer
- Sewer
- Subcatchments

PROJECT:

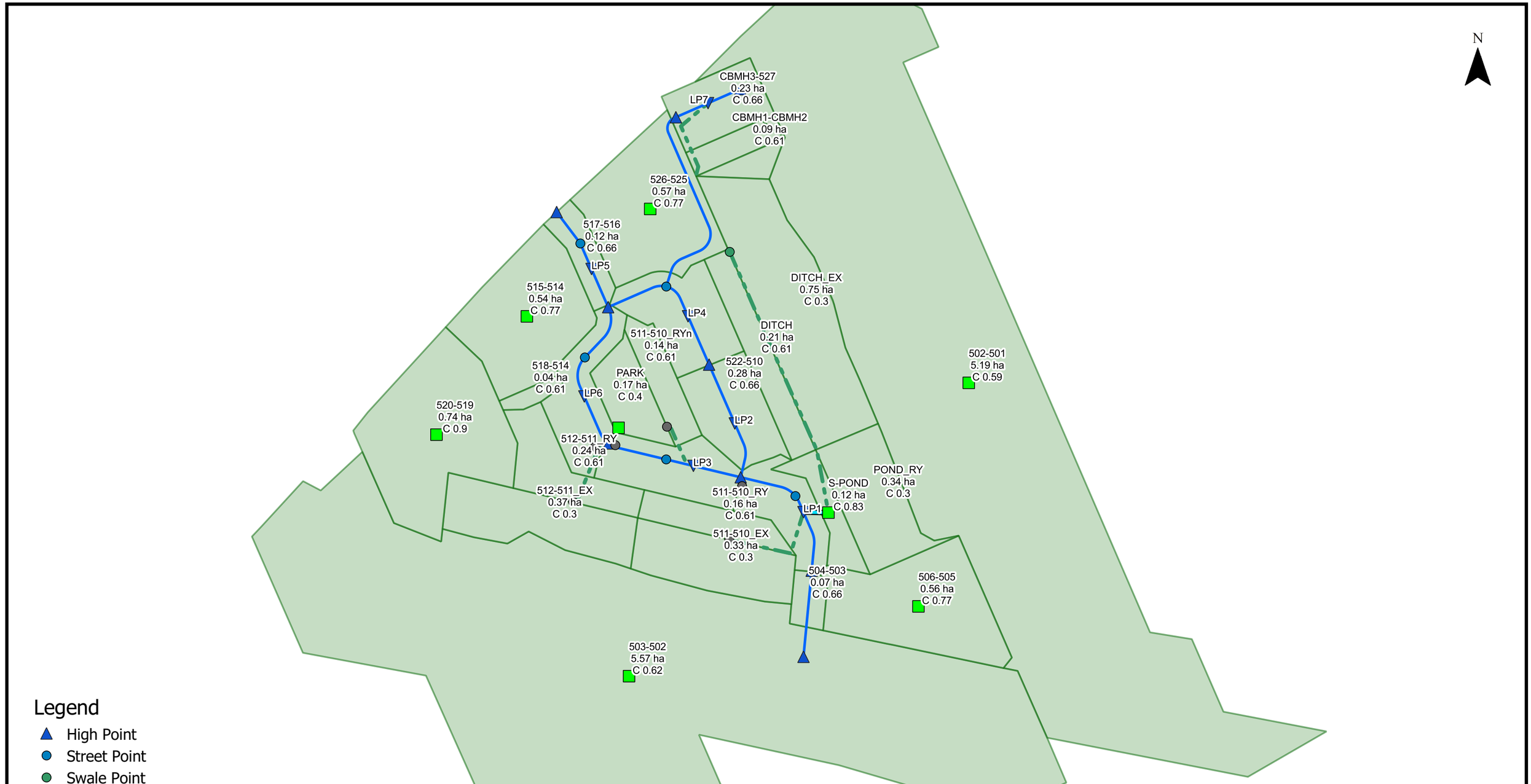
2983, 3053 and 3079 Navan Road & 2690 Page Road
OTTAWA, ONTARIO

DRAWING:

Stormwater Management Model
Minor System Schematic

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

DESIGN: BP	JLR NO: 29899-000
DRAWN: BP	DRAWING NO: **Figure 1**
CHECKED: BP	



PROJECT:

2983, 3053 and 3079 Navan Road & 2690 Page Road

OTTAWA, ONTARIO

DRAWING:

Stormwater Management Model
Major System Schematic

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	BP	JLR NO:	29899-000
DRAWN:	BP	DRAWING NO:	**Figure 2**
CHECKED:	BP		

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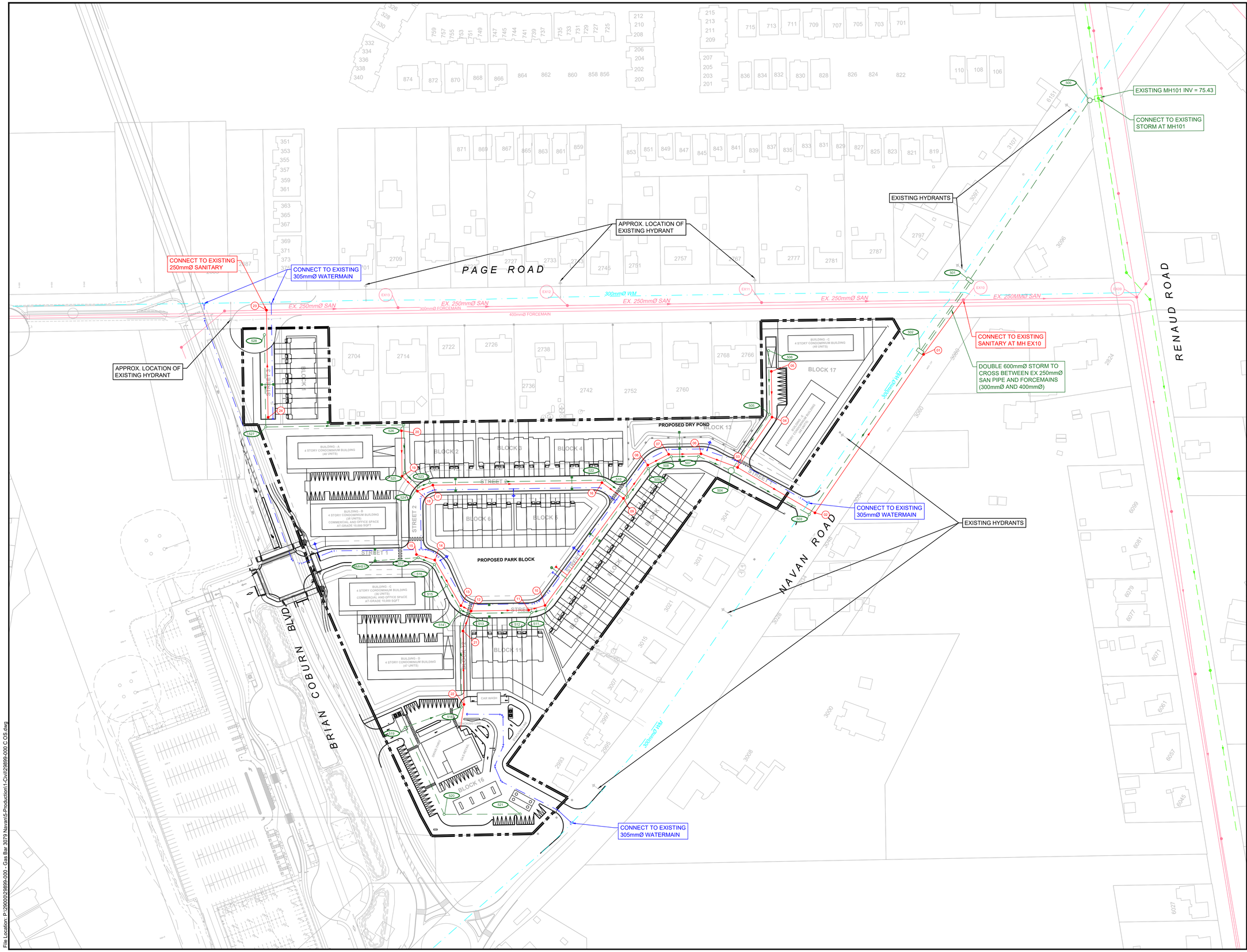
guelph@jlrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS



LEGEND:

- PROPOSED 200mmØ WATERMAIN
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- PROPOSED 200mm SANITARY SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- EXISTING HYDRANT, VALVE & VB
- PROPOSED HYDRANT, VALVE & VB

PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:1000

0 10 20 40 60 80m

CLIENT: Groupe Heafey Group

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS • ARCHITECTS • PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

FUNCTIONAL OVERALL SERVICING

DESIGN: MM	DRAWING #: FOS
DRAWN: KT	
CHECKED: KF	
JLR #: 29899-000	

File Location: P:\29000\29899-000 - Gas Bar 3079 Navan\5-Production\1-Civil\29899-000 C OS.dwg

PLOT DATE: December 1, 2022 11:34:39 AM CITY FILE NO. D07-12-21-0081

PAGE ROAD

NAVAN ROAD

BRIAN COBURN BLVD

potential retaining wall
(height and limits to be confirmed at detailed design)

PROPOSED DRY POND

PROPOSED PARK BLOCK

potential retaining wall
(height and limits to be confirmed at detailed design

3.3 m
0.3 m
1.5 m

BUILDING - A
4 STORY CONDOMINIUM BUILDING
(48 UNITS)

BUILDING - B
4 STORY CONDOMINIUM BUILDING
(36 UNITS)
COMMERCIAL AND OFFICE SPACE
AT-GRADE 10,000 SQFT

BUILDING - C
5 STORY CONDOMINIUM BUILDING
(36 UNITS)
COMMERCIAL AND OFFICE SPACE
AT-GRADE 10,000 SQFT

BUILDING - D
4 STORY CONDOMINIUM BUILDING
(47 UNITS)

BUILDING - C
5 STORY CONDOMINIUM BUILDING
(48 UNITS)

BUILDING - E
4 STORY CONDOMINIUM BUILDING
(48 UNITS)

BLOCK 12
BLOCK 13
BLOCK 16
BLOCK 17

CAR WASH
DRIVE-THRU
GAS BAR
STACKING LINE

STREET 1
STREET 2
STREET 3
STREET 4

FF 86.05
USF 83.25

FF 86.05
USF 83.25

FF 84.95
USF 81.95

FF 84.80
USF 81.80

FF 84.80
USF 81.80

FF 84.90
USF 81.90

FF 84.70
USF 81.70

FF 84.55
USF 81.75

FF 84.50
USF 81.70

FF 85.30
USF 82.30

FF 85.60
USF 82.60

LEGEND

81.12 ORIGINAL SURVEY

×81.55 PROPOSED ELEVATION

PRELIMINARY DESIGN

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No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:750
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CLIENT:
Groupe Heafey

CONSULTANT: www.jlrichards.ca
J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:
2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:
FUNCTIONAL GRADING PLAN

DESIGN:	KF
DRAWN:	KT
CHECKED:	MM
JLR #:	29899-000

DRAWING #: FG

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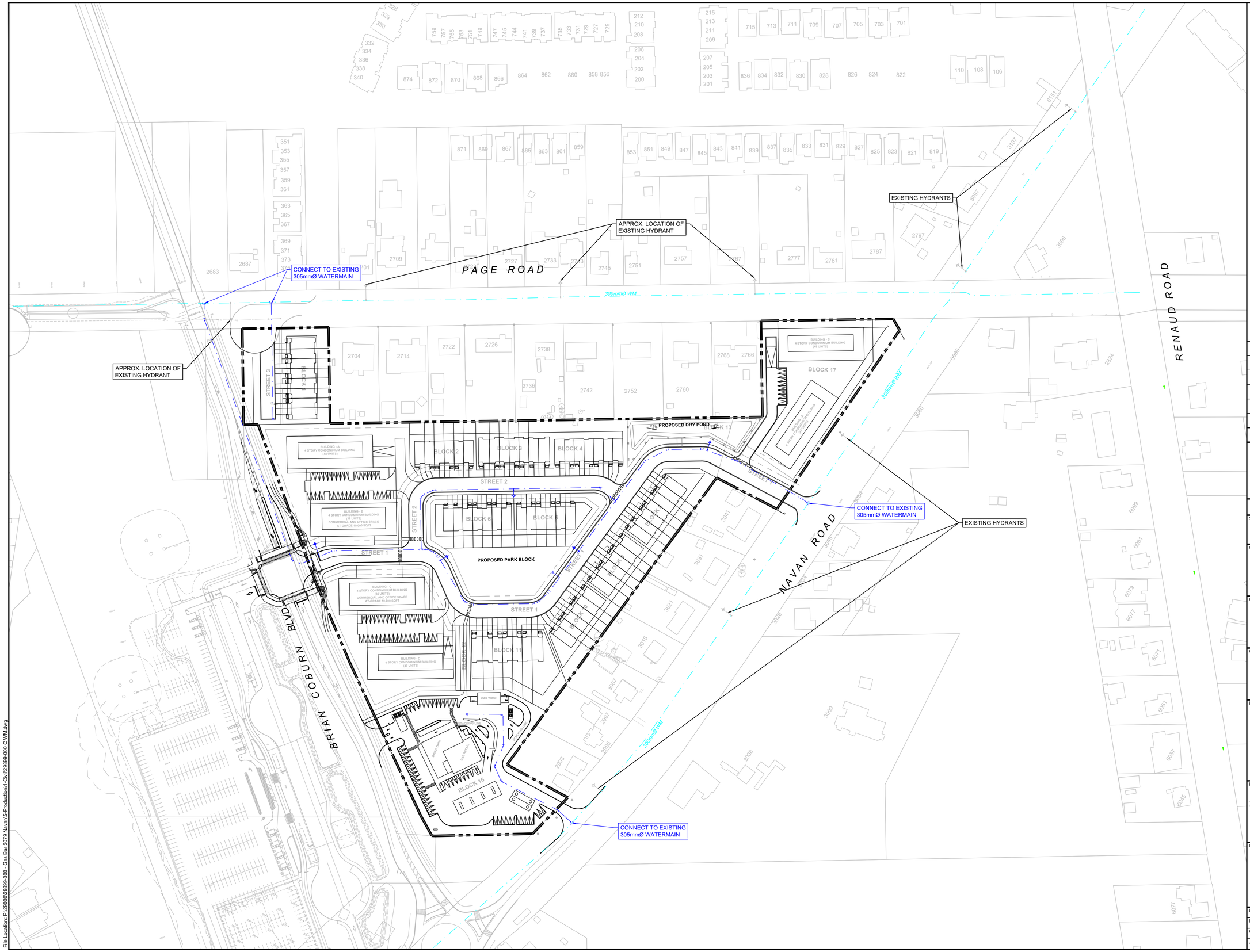
PLOT DATE: December 1, 2022 11:34:46 AM CDT - FILE NO: D07-12-21-0081



PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:1000

0 10 20 40 60 80m

CLIENT: Groupe Heafey

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

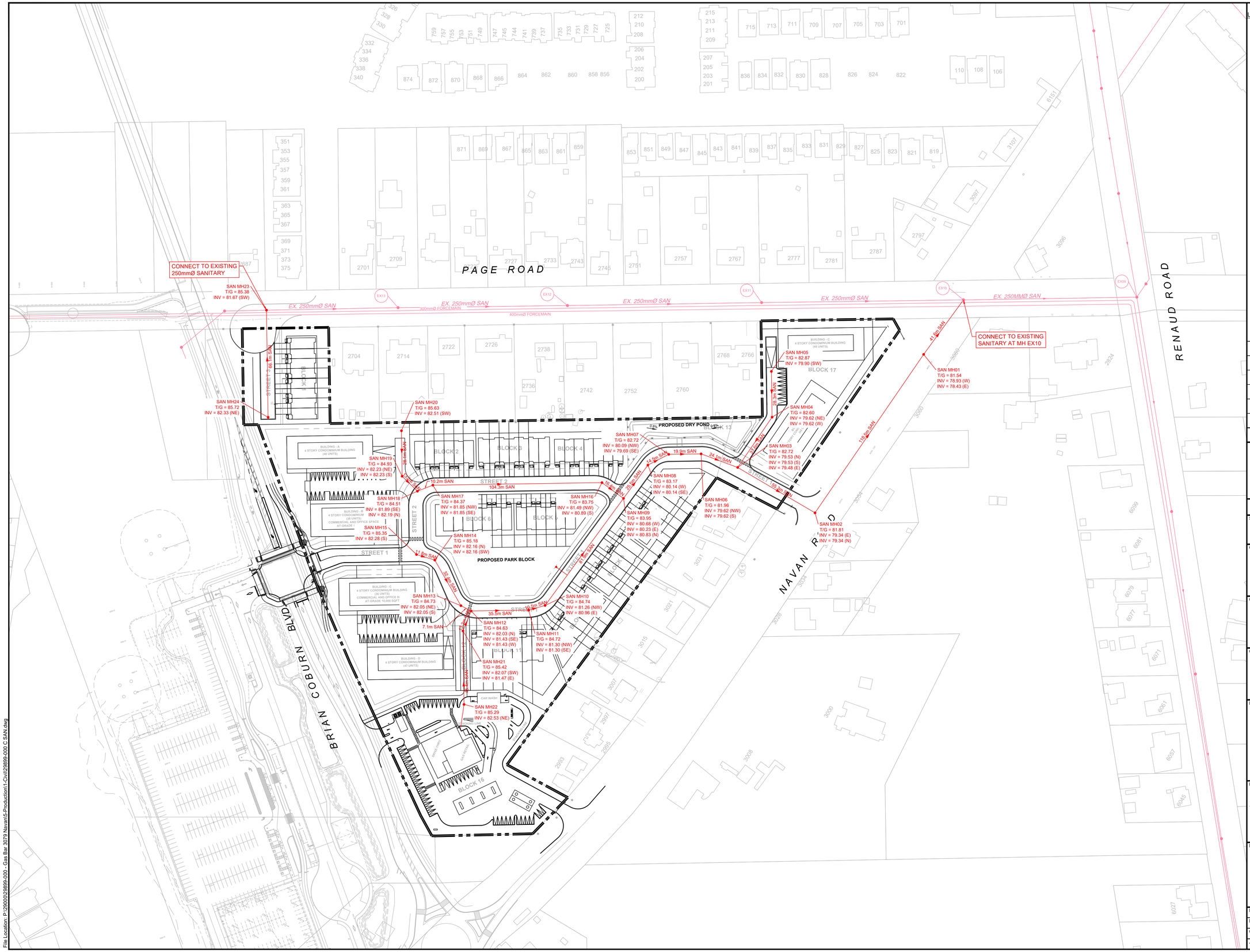
FUNCTIONAL WATERMAIN SERVICING

DESIGN:	MM
DRAWN:	KT
CHECKED:	KF
JLR #:	29899-000

DRAWING #: FWM

File Location: P:\29000\29899-000 - Gas Bar 3079 Navan\5-Production\1-Civil\29899-000 C WM.dwg

PLOT DATE: December 1, 2022 11:34:56 AM CITY FILE NO. D07-12-21-0081



LEGEND:

- EXISTING SANITARY SEWER & MANHOLE
- PROPOSED 200mm SANITARY SEWER & MANHOLE

PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:1000

0 10 20 40 60 80m

CLIENT:

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CONSULTANT:

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PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

FUNCTIONAL SANITARY SERVICING

DESIGN:	MM
DRAWN:	KT
CHECKED:	KF
JLR #:	29899-000

DRAWING #: FSAN

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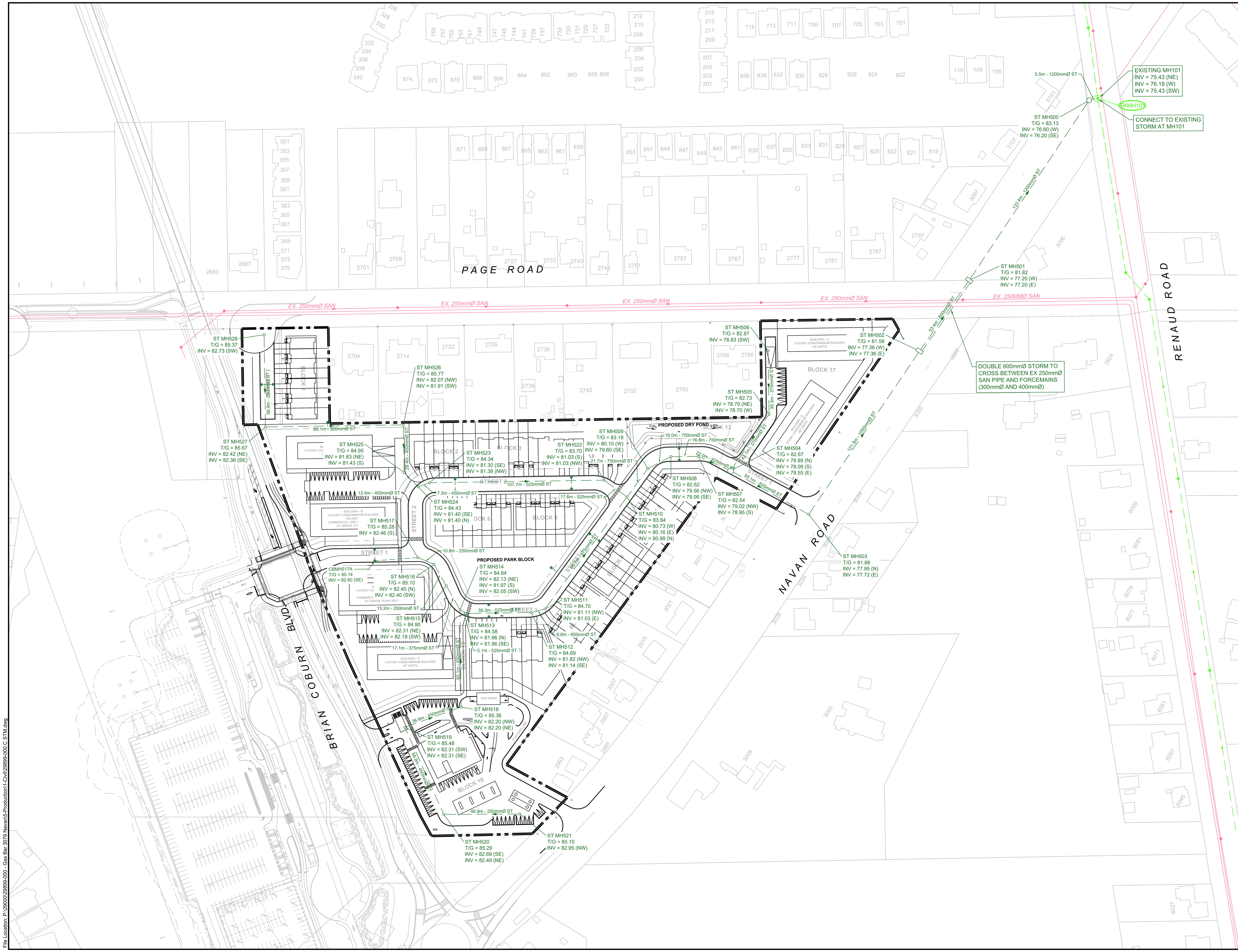
PLOT DATE: December 1, 2022 11:35:06 AM CITY FILE NO. D07-12-21-0081



LEGEND:

- EXISTING STORM SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE

PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:1000

0 10 20 40 60 80m

CLIENT: Groupe Heafey Group

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PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

FUNCTIONAL STORMWATER SERVICING

DESIGN: MM
DRAWN: KT
CHECKED: KF
JLR #: 29899-000

DRAWING #: FSTM

PLOT DATE: December 1, 2022 11:35:16 AM CITY FILE NO. D07-12-21-0081

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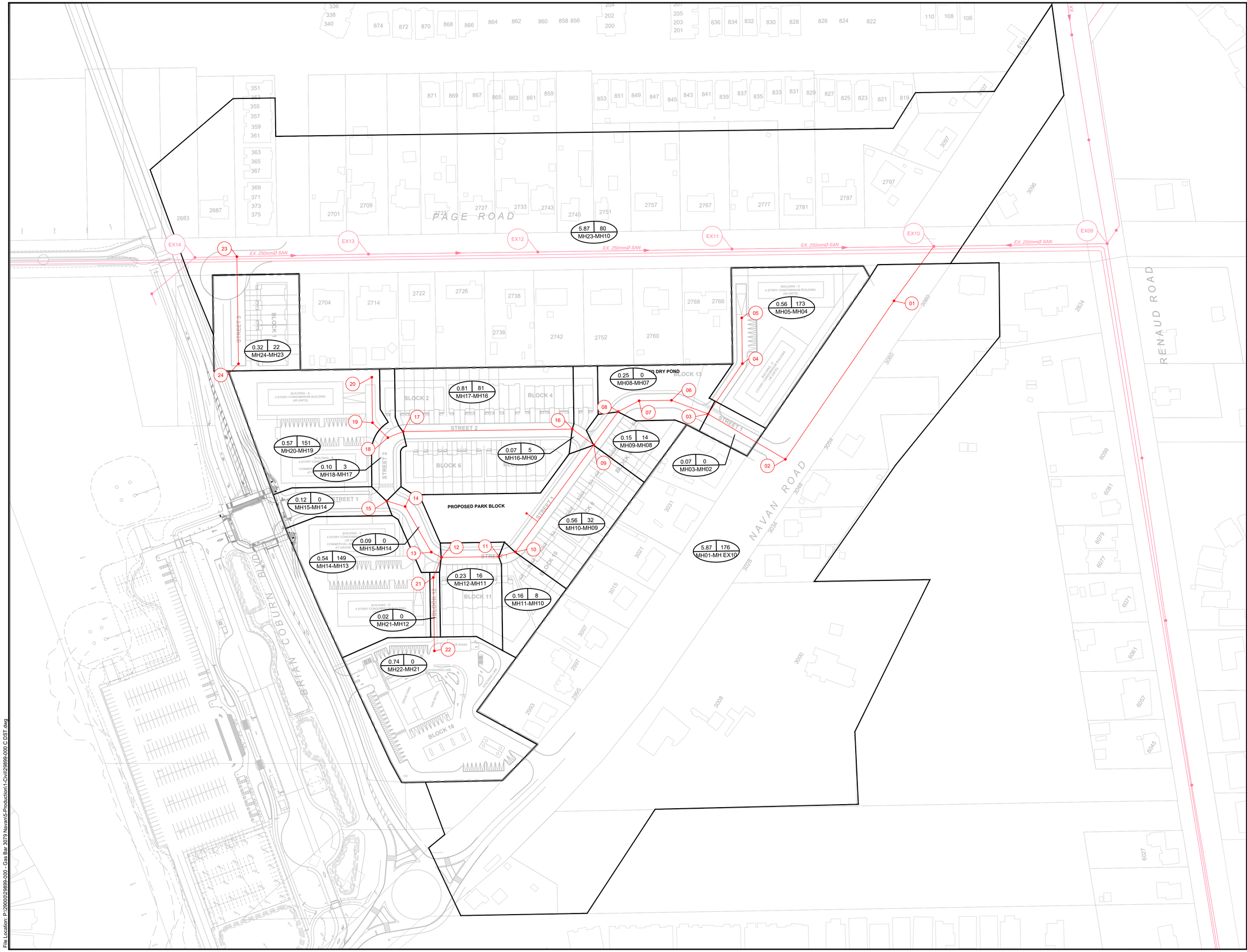

LEGEND:

- EXISTING SANITARY SEWER & MANHOLE
- PROPOSED 200mm SANITARY SEWER & MANHOLE
- AREA IN HECTARES
- AREA POPULATION
- PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE

PRELIMINARY DESIGN

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No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:1000

0 15 30 45 60m

CLIENT: Groupe Heafey

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PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

FUNCTIONAL SANITARY DRAINAGE PLAN

DESIGN: MM	
DRAWN: KT	DRAWING #:
CHECKED: KF	FDSAN
JLR #: 29899-000	

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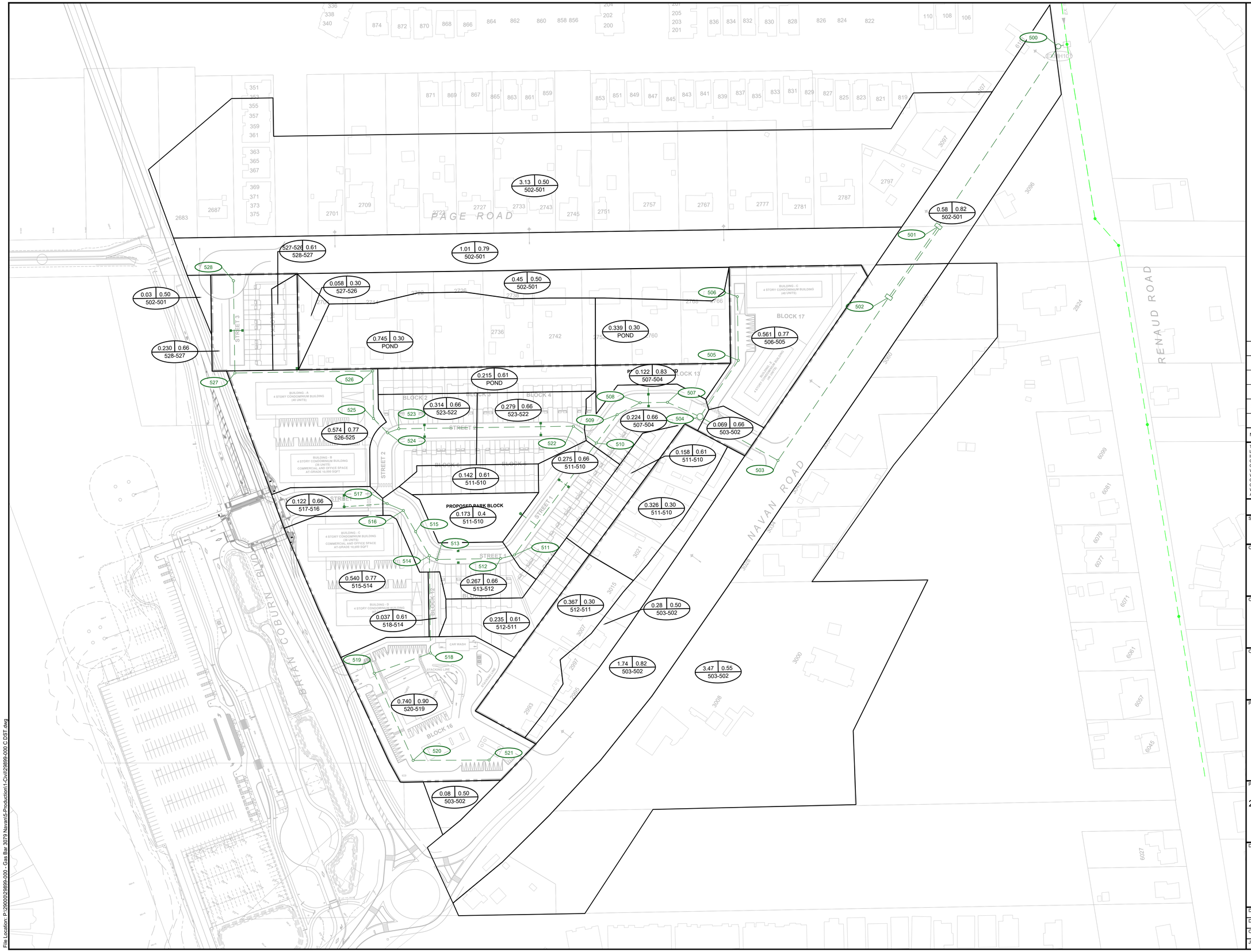

LEGEND:

- EXISTING STORM SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- AREA IN HECTARES
- RUNOFF COEFFICIENT
- PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE

PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:1000

0 15 30 45 60m

CLIENT: Groupe Heafey Group

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PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

FUNCTIONAL STORM DRAINAGE PLAN

DESIGN: MM	
DRAWN: KT	DRAWING #:
CHECKED: KF	FDST
JLR #: 29899-000	

File Location: P:\29000\29899-000 - Gas Bar 3079 Navan\5-Production\1-Civil\29899-000 C DST .dwg

PLOT DATE: December 1, 2022 11:35:31 AM CITY FILE NO. D07-12-21-0081

PAGE ROAD

BRIAN COBURN BLVD

NAVAN ROAD

PROPOSED DRY POND

PROPOSED PARK BLOCK

BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 7
BLOCK 8
BLOCK 9
BLOCK 10
BLOCK 11
BLOCK 12
BLOCK 13
BLOCK 16
BLOCK 17

STREET 1
STREET 2
STREET 3

EX. 250mmØ SAN

EX10
EX11
EX12
EX13
EX14

LEGEND

x81.12 ORIGINAL SURVEY

×81.55 PROPOSED ELEVATION

PONDING EXTENT

PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: 1:750

0 15 30 45 60m

CLIENT: Groupe Heafey Group

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS-ARCHITECTS-PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

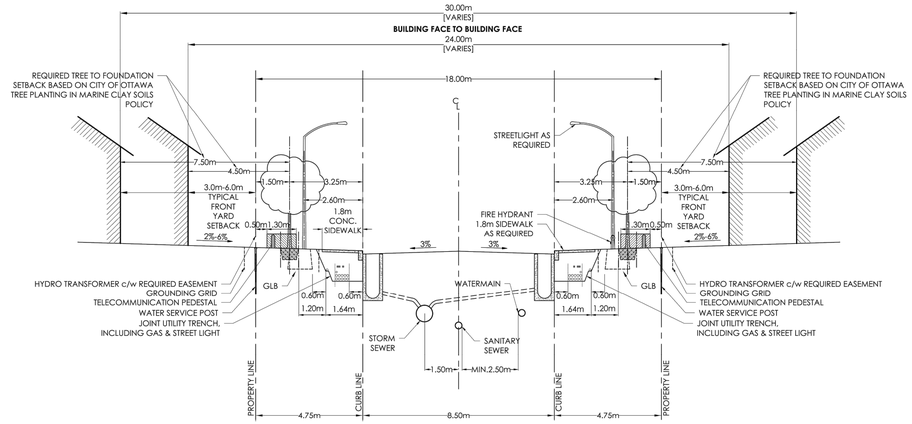
FUNCTIONAL PONDING PLAN

DESIGN: KF	
DRAWN: KT	DRAWING #: FSWM
CHECKED: MM	
JLR #: 29899-000	

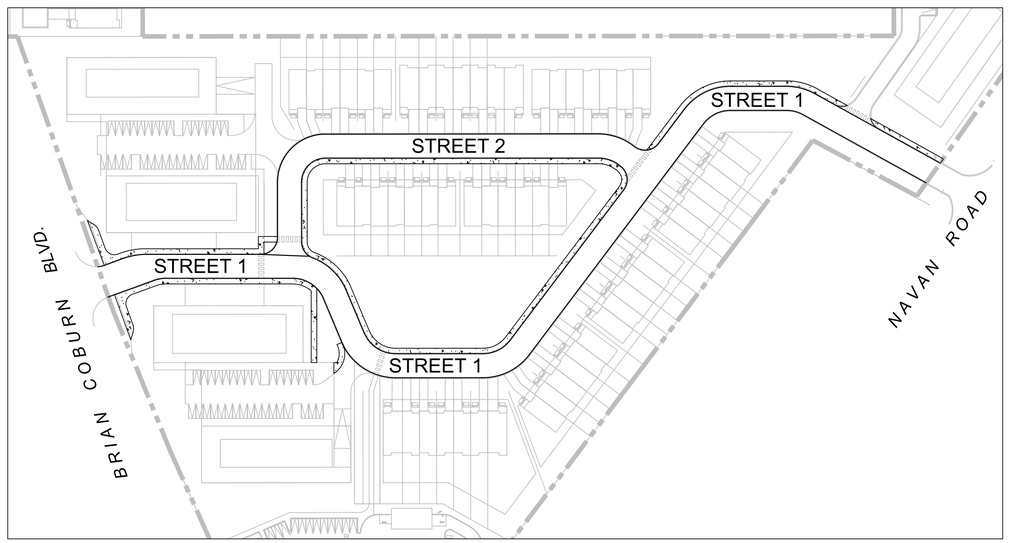
PLOT DATE: December 1, 2022 11:35:41 AM CITY FILE NO. D07-12-21-0081

File Location: P:\29800\29899-000 - Gas Bar 3079 Navan\5-Production\4-Civil\29899-000 C Ponding.dwg

1. STANDARD CROSS-SECTIONS TO BE READ IN CONJUNCTION WITH THE GENERAL STANDARD CROSS-SECTION NOTES AND OTHER APPLICABLE CITY AND UTILITY PLANS AND DETAILS.
2. 18M RIGHT-OF-WAY NOT TO BE USED ON STREETS WITH BUS SERVICE.
3. CONCRETE CURBS TO BE CONSTRUCTED AS PER CITY OF OTTAWA STANDARD DETAILS.
4. TYPICAL FRONT YARD SETBACK IS TO BE CLEAR AND UNENCUMBERED OF ANY SUBSURFACE BUILDING ENCROACHMENTS.
5. FIRE HYDRANTS TO BE LOCATED ON THE WATERMAIN SIDE OF THE STREET.
6. CATCH BASINS TO BE PER CITY OF OTTAWA DETAIL S2.
7. GAS MAIN SHALL HAVE A MINIMUM OF 0.6M CLEARANCE FROM STRUCTURES E.G. CATCH BASINS AND HYDRANTS) AND 1.2 M FROM TREE ROOT BALL.
8. STREETLIGHTS CAN BE LOCATED ON EITHER SIDE OF THE RIGHT-OF-WAY.
9. JOINT-USE UTILITY TRENCH (JUT) UNDER SIDEWALK AS PER DETAIL UDS0049. HELD BY HYDRO OTTAWA.
10. GRADE LEVEL BOX (GLB) AS DRAWN SHOWS GLB3660. EXACT LOCATION TO BE CONFIRMED.
11. THIS CROSS-SECTION CANNOT BE USED WHERE A CONCRETE ENCASED HYDROELECTRIC DUCT OR ANOTHER SEPARATE UTILITY DUCT IS REQUIRED.
12. TREE CLEARANCES TO HYDRO OTTAWA PLANT SHALL FOLLOW GCS0038.
13. CLEARANCES SHOWN ARE MINIMUMS.



Ottawa	18.0m ROW CROSS SECTION	REV.DATE: AUG. 2022 DWG. No. ROW-18.0



LEGEND

SIDEWALK

PRELIMINARY DESIGN

THESE DOCUMENTS ARE NOT COMPLETE IN ALL DETAILS AND MAY BE SUBJECT TO CHANGE AS DESIGN DEVELOPMENT AND CODE REVIEW IS ADVANCED.

No.	ISSUE / REVISION	DD/MM/YY
2	FUNCTIONAL SERVICING REPORT RESUBMISSION	14/04/22
1	ADEQUACY OF PUBLIC SERVICES REPORT	07/09/21

SCALE: NTS

CLIENT: Groupe Heafey Group

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

2983, 3053 and 3079 NAVAN ROAD & 2690 PAGE ROAD

DRAWING:

FUNCTIONAL CROSS SECTIONS

DESIGN: TB	
DRAWN: TB/KT	DRAWING #: FXS
CHECKED: SP	
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