

BAYVIEW HOSPITALITY GROUP

# 6301 CAMPEAU DRIVE, RESIDENTIAL DEVELOPMENT, OTTAWA, ON SERVICING REPORT

DECEMBER 4, 2020  
1<sup>ST</sup> SUBMISSION







**6301 CAMPEAU DRIVE,  
RESIDENTIAL DEVELOPMENT,  
OTTAWA, ON  
SERVICING REPORT**

**BAYVIEW HOSPITALITY GROUP**

SITE PLAN APPLICATION  
1ST SUBMISSION

PROJECT NO.: 201-03048-00  
DATE: DECEMBER 2020

WSP  
2611 QUEESVIEW DRIVE, SUITE 300  
OTTAWA, ON, CANADA, K2B 8K2

TEL.: +1 613-829-2800

WSP.COM



2611 Queensview Drive, Suite 300  
Ottawa, ON, Canada K2B 8K2

Tel.: +1 613-829-2800

[wsp.com](http://wsp.com)

December 4, 2020

Sameer Gulamani  
Managing Director, General Counsel  
Bayview Hospitality Group

Via:

Momentum – Planning & Communications  
1165 Greenlawn Crescent  
Ottawa, ON, K2C 1Z4

**Attention: Dennis Jacobs, Principal Planner, MCIP, RPP,**

Dear Sir:

**Subject:** 6301 Campeau Drive – Residential Development – Servicing Report

Please find attached our revised servicing report, including civil engineering design drawings, prepared for your review prior to resubmission.

Yours sincerely,



Ding Bang (Winston) Yang, P.Eng.  
Project Engineer

WSP ref.: 201-03048-00



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# QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Issued for Site Plan Application			
Date	December 4, 2020			
Prepared by	Ding Bang (Winston) Yang			
Signature				
Checked by	Ishaque Jafferjee			
Signature				
Project number	201-03048-00			



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# SIGNATURES

PREPARED BY



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Ding Bang (Winston) Yang, P.Eng  
Project Engineer

REVIEWED BY



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Ishaque Jafferjee, P.Eng.  
Senior Project Manager

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# TABLE OF CONTENTS

<b>1</b>	<b>GENERAL.....</b>	<b>1</b>
1.1	Executive summary.....	1
1.2	Date and Revision Number .....	2
1.3	Location Map and Plan .....	2
1.4	Adherence to zoning and related requirements .....	2
1.5	Pre-Consultation meetings.....	3
1.6	Higher level studies .....	3
1.7	Statement of objectives and servicing criteria.....	3
1.8	Available existing and proposed infrastructure .....	3
1.9	Environmentally significant areas, watercourses and municipal drains .....	3
1.10	Concept level master grading plan .....	4
1.11	Impacts on private services .....	4
1.12	Development phasing .....	4
1.13	Geotechnical study .....	4
1.14	Drawing requirement.....	5
<b>2</b>	<b>WATER DISTRIBUTION .....</b>	<b>6</b>
2.1	Consistency with master servicing study and availability of public infrastructure.....	6
2.2	System constraints and boundary conditions.....	6
2.3	Confirmation of adequate domestic supply and pressure	7
2.4	Confirmation of adequate fire flow protection.....	8
2.5	Check of high pressure.....	9
2.6	Phasing constraints.....	9
2.7	Reliability requirements .....	9
2.8	Need for pressure zone boundary modification.....	9



<b>2.9</b>	<b>Capability of major infrastructure to supply sufficient water .....</b>	<b>9</b>
<b>2.10</b>	<b>Description of proposed water distribution network....</b>	<b>10</b>
<b>2.11</b>	<b>Off-site requirements .....</b>	<b>10</b>
<b>2.12</b>	<b>Calculation of water demands .....</b>	<b>10</b>
<b>2.13</b>	<b>Model Schematic .....</b>	<b>10</b>
<b>3</b>	<b>WASTEWATER DISPOSAL.....</b>	<b>11</b>
<b>3.1</b>	<b>Design Criteria.....</b>	<b>11</b>
<b>3.2</b>	<b>Consistency with master servicing study .....</b>	<b>11</b>
<b>3.3</b>	<b>Review of Soil conditions.....</b>	<b>11</b>
<b>3.4</b>	<b>Description of existing sanitary sewer .....</b>	<b>11</b>
<b>3.5</b>	<b>Verification of available capacity in downstream sewer</b>	<b>11</b>
<b>3.6</b>	<b>Calculations for New sanitary sewer.....</b>	<b>12</b>
<b>3.7</b>	<b>Description of proposed sewer network.....</b>	<b>12</b>
<b>3.8</b>	<b>Environmental constraints .....</b>	<b>12</b>
<b>3.9</b>	<b>Pumping requirements .....</b>	<b>12</b>
<b>3.10</b>	<b>Force-mains.....</b>	<b>12</b>
<b>3.11</b>	<b>Emergency overflows from sanitary pumping stations.</b>	<b>12</b>
<b>3.12</b>	<b>Special considerations.....</b>	<b>12</b>
<b>4</b>	<b>SITE STORM SERVICING .....</b>	<b>13</b>
<b>4.1</b>	<b>Existing condition .....</b>	<b>13</b>
<b>4.2</b>	<b>Analysis of available capacity in public infrastructure .</b>	<b>13</b>
<b>4.3</b>	<b>Drainage drawing .....</b>	<b>13</b>
<b>4.4</b>	<b>Water quantity control objective.....</b>	<b>13</b>
<b>4.5</b>	<b>Water quality control objective .....</b>	<b>14</b>
<b>4.6</b>	<b>Design criteria .....</b>	<b>14</b>

<b>4.7</b>	<b>Proposed minor system.....</b>	<b>14</b>
<b>4.8</b>	<b>Stormwater management .....</b>	<b>15</b>
<b>4.9</b>	<b>Inlet Controls .....</b>	<b>15</b>
<b>4.10</b>	<b>On-site detention .....</b>	<b>15</b>
<b>4.11</b>	<b>Watercourses .....</b>	<b>15</b>
<b>4.12</b>	<b>Pre and Post development peak flow rates .....</b>	<b>15</b>
<b>4.13</b>	<b>Diversion of drainage catchment areas .....</b>	<b>15</b>
<b>4.14</b>	<b>Downstream capacity where quanTity control is not proposed.....</b>	<b>15</b>
<b>4.15</b>	<b>Impacts to receiving watercourses.....</b>	<b>15</b>
<b>4.16</b>	<b>Municipal drains and related approvals .....</b>	<b>15</b>
<b>4.17</b>	<b>Means of conveyance and storage capacity .....</b>	<b>16</b>
<b>4.18</b>	<b>Hydraulic analysis .....</b>	<b>16</b>
<b>4.19</b>	<b>Identification of floodplains.....</b>	<b>16</b>
<b>4.20</b>	<b>Fill constraints .....</b>	<b>16</b>
<b>5</b>	<b>SEDIMENT AND EROSION CONTROL .....</b>	<b>17</b>
<b>5.1</b>	<b>General .....</b>	<b>17</b>
<b>6</b>	<b>APPROVAL AND PERMIT REQUIREMENTS .....</b>	<b>18</b>
<b>6.1</b>	<b>General .....</b>	<b>18</b>
<b>7</b>	<b>CONCLUSION CHECKLIST .....</b>	<b>19</b>
<b>7.1</b>	<b>Conclusions and recommendations.....</b>	<b>19</b>
<b>7.2</b>	<b>Comments received from review agencies.....</b>	<b>19</b>

---

## **TABLES**

TABLE 2-1:	BOUNDARY CONDITIONS FOR PARCEL 1.....	6
TABLE 2-2:	BOUNDARY CONDITIONS FOR PARCEL 2.....	6
TABLE 2-3:	SUMMARY OF THE MINIMUM WATER PRESSURE FOR PARCEL 1 UNDER PEAK HOUR SCENARIO.....	7
TABLE 2-4:	SUMMARY OF THE MINIMUM WATER PRESSURE FOR PARCEL 2 UNDER PEAK HOUR SCENARIO.....	8
TABLE 2-5:	SUMMARY OF THE RESIDUAL PRESSURE FOR PARCEL 1 UNDER MAX DAY + FIRE SCENARIO.....	8
TABLE 2-6:	SUMMARY OF THE RESIDUAL PRESSURE FOR PARCEL 2 UNDER MAX DAY + FIRE SCENARIO.....	9

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## **FIGURES**

FIGURE 1-1 SITE LOCATION.....	2
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## **APPENDICES**

### **A**

- PRE-CONSULTATION MEETING NOTES
- TOPOGRAPHIC SURVEY PLAN
- GEOTECHNICAL REVIEW LETTER

### **B**

- WATERMAIN BOUNDARY CONDITIONS FROM CITY OF OTTAWA
- EMAILS FROM CITY OF OTTAWA
- FIRE UNDERWRITERS SURVEY - FIRE FLOW CALCULATION
- WATER DEMAND CALCULATION
- WATER MODEL OUTPUT - INFOWATER





C

- FIGURE 4 - OVERALL SANITARY DRAINAGE PLAN
- SANITARY SEWER DESIGN SHEET

D

- STORM SEWER DESIGN SHEET
- POST-DEVELOPMENT STORM DRAINAGE AREA PLAN C06 AND C07
- GRADING PLAN C02 AND C03
- SERVICING PLAN C04 AND C05

E

- EROSION AND SEDIMENTATION CONTROL PLAN C07 AND C08

F

- SUBMISSION CHECK LIST

# 1 GENERAL

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## 1.1 EXECUTIVE SUMMARY

WSP was retained by Bayview Hospitality Group to provide servicing and grading design services for the proposed new residential development, including apartments and townhouses, located at 6301 Campeau Drive, north of existing Kanata Centre Park, south of Campeau Drive, west of Cordillera Street and east of existing OMNI health care. This report outlines findings and calculations pertaining to the servicing of the proposed development for Parcel 1 and 2 with a gross lot area of 19,644m<sup>2</sup> and 17,410.8m<sup>2</sup> respectively.

Currently the land proposed for the residential development is natural landscaping area with mainly covered by grass and trees, and it is part of the Kanata Town Centre development lands. The total study area for both parcels were considered to be 1.964 and 1.741 ha respectively in size. The site is bounded by residential development to the north, and commercial development to the east, west and south. It is part of lot 3 concession 2 and 3, and part of road allowance between concession 2 and 3, Geographic Township of March, now City of Ottawa (refer to Appendix A for the Topographical Survey Plan by Annis, O'Sullivan, Vollebakk Ltd, February 2020). Based on the topographic survey, the ground, predominantly Canadian Shield granite, rises from a low elevation of 101.10 m in the southeast corner of parcel 2 north of Canadian Shield Ave to a high elevation of 111.73 m in the middle of parcel 1 and 2, falling again to a low elevation of 102.98 in the northwest corner south of Campeau Drive of parcel 1. Significant infrastructure has been previously installed around the perimeter of the Kanata Town Centre development lands as part of the development of the adjacent lands. Most of this infrastructure has been designed with some capacity to accommodate the future development of the subject site.

The City of Ottawa required that the design of a drainage and stormwater management system in this development must be prepared in accordance with the following documents:

- Sewer Design Guidelines, City of Ottawa, October 2012;
- Stormwater Management Planning and Design Manual, Ministry of the Environment, March 2003; and
- Stormwater Management Facility Design Guidelines, City of Ottawa, April 2012

This report was prepared utilizing servicing design criteria obtained from available sources, and outlines the design for water, sanitary wastewater, and stormwater facilities.

The format of this report matches that of the servicing study checklist found in Section 4 of the City of Ottawa's Servicing Study Guidelines for Development Applications, November 2009.

The following municipal services are available within Campeau Drive and Cordillera Street to the development as recorded from as-built drawings from City of Ottawa:

Campeau Drive:

- 750 mm storm sewer, 250mm sanitary sewer and 305mm watermain.

Cordillera Street:

- 300mm storm sewer, 200mm sanitary and 203mm watermain.

It is proposed that:

- On-site stormwater management systems, employing surface storage and the underground storm chambers will be provided to attenuate flow rates leaving the new parking lot and new building roof. Existing drainage patterns, previously established controlled flow rates and storm sewers will be maintained. Refer to the stormwater management report for details.

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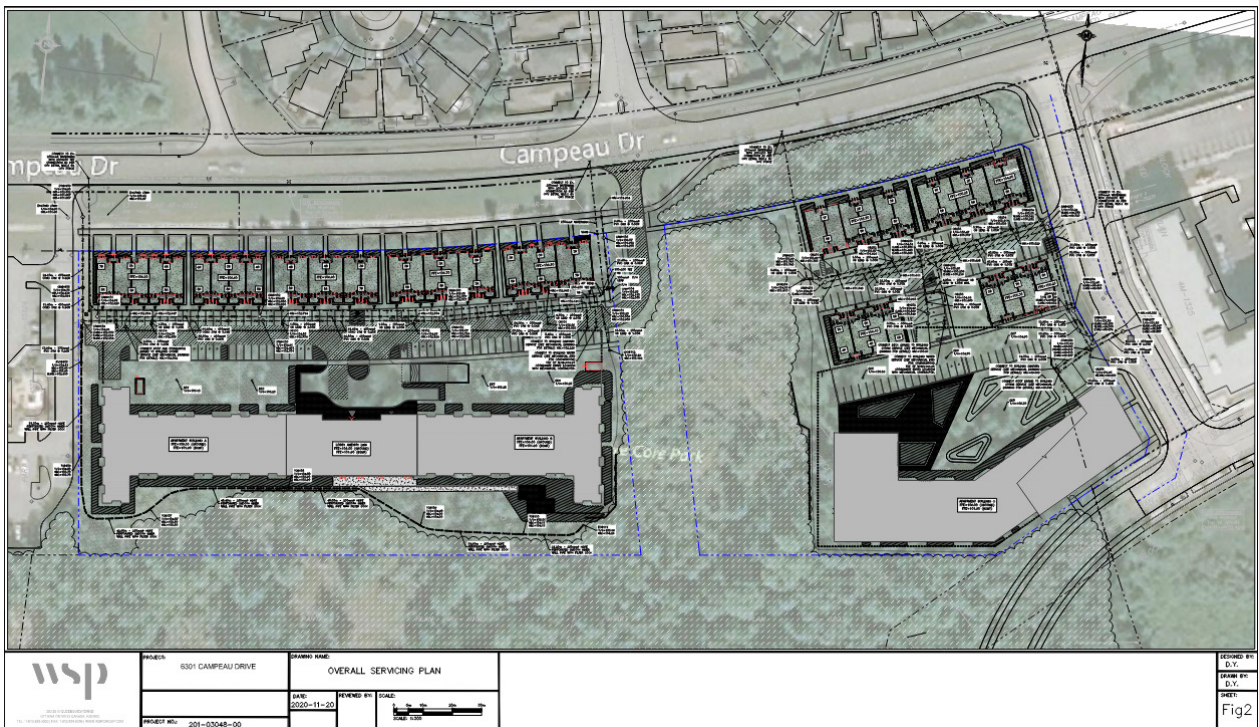
## 1.2 DATE AND REVISION NUMBER

This version of the report is the third revision, dated November 25, 2020.

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## 1.3 LOCATION MAP AND PLAN

The proposed residential development for Parcel 1 and 2 are located at 6301 Campeau Drive, in the City of Ottawa at the location shown in Figure 1-1 below.



**Figure 1-1 Site Location**

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## 1.4 ADHERENCE TO ZONING AND RELATED REQUIREMENTS

The proposed property use will be in conformance with zoning and related requirements prior to approval and construction, and is understood to be in conformance with current zoning.

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## 1.5 PRE-CONSULTATION MEETINGS

A pre-consultation meeting was held with the City of Ottawa on November 8, 2019. Notes from this meeting are provided in Appendix A.

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## 1.6 HIGHER LEVEL STUDIES

The review for servicing has been undertaken in conformance with, and utilizing information from, the following documents:

- Ottawa Sewer Design Guidelines, Second Edition, Document SDG002, October 2012, City of Ottawa including:
  - Technical Bulletin ISDTB-2012-4 (20 June 2012)
  - Technical Bulletin ISDTB-2014-01 (05 February 2014)
  - Technical Bulletin PIEDTB-2016-01 (September 6, 2018)
  - Technical Bulletin ISDTB-2018-01 (21 March 2018)
  - Technical Bulletin ISDTB-2018-04 (27 June 2018)
- Ottawa Design Guidelines – Water Distribution, July 2010 (WDG001), including:
  - Technical Bulletin ISDTB-2014-02 (May 27, 2014)
  - Technical Bulletin ISTB-2018-02 (21 March 2018)
- Stormwater Management Planning and Design Manual, Ontario Ministry of the Environment and Climate Change, March 2003 (SMPDM).
- Design Guidelines for Drinking-Water Systems, Ontario Ministry of the Environment and Climate Change, 2008 (GDWS).
- Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS), 1999.

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## 1.7 STATEMENT OF OBJECTIVES AND SERVICING CRITERIA

The objective of the site servicing is to meet the requirements for the proposed modification of the site while adhering to the stipulations of the applicable higher-level studies and City of Ottawa servicing design guidelines.

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## 1.8 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

A municipal sanitary sewer, a municipal storm sewer and a watermain are located within both Campeau Drive and Cordillera Street right of way. A new sanitary sewer, a new storm sewer and a new water service will be connected to the existing sewers along Campeau Drive from the proposed development of Parcel 1. A new sanitary sewer, a new storm sewer and a new water service will be connected to the existing sewers along Cordillera Street from the proposed development of Parcel 2. Quantity control is required to restrict the discharge leaving both the development areas, as noted in the Stormwater Management Report. The existing boundary roads at the site will remain open.

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## 1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

The proposed development site is bordered by residential land uses to the north and west, commercial areas to the east and existing park land to the south. The subjected site is divided into Parcel 1 and 2. Parcel 1 is within the 7000 Campeau Drive watershed. Runoff from Parcel 1 is directed to a 1200mm storm culvert across Campeau Drive which runs south to north to Kanata Lakes Gold Club and ultimately outlets to the existing Beaver Pond.

Parcel 2 is within the Kanata Town Centre watershed. Partial runoff along Cordillera Street from Parcel 2 is initially directed to a 300mm storm sewer along Cordillera Street and ultimately outlets to the existing storm pond in Urbandale's Corporation Central Business District. The rest of the runoff from Parcel 2 will be running off the existing grass areas to the south uncontrolled to a 1650mm trunk storm sewer along Maritime Way and ultimately outlets to the existing storm pond.

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## 1.10 CONCEPT LEVEL MASTER GRADING PLAN

A detailed grading plan for both Parcel 1 and 2 have been developed, matching the existing overland flow pattern of directing overflow drainage to Campeau Drive to the northwest corner of Parcel 1 and to Cordillera Street to the east of Parcel 2. The site topographic survey, included in Appendix A, provides evidence of direction of overland flow of the site both Parcels.

Along the disturbed rock areas, the geotechnical engineer has confirmed that no retaining wall will be required even there is a elevation difference ranging from 0.50m to 4.00m. The rock face can be vertical after blasting or hole raming. The confirmation letter from the geotechnical engineer has been attached to Appendix A for reference.

Grading will employ smooth transitions from the new work areas to existing grades with less than 4.0% slope. No changes will be made to grades at the development perimeter.

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## 1.11 IMPACTS ON PRIVATE SERVICES

There are no existing domestic private services (septic system and well) located on the site. There are no neighbouring properties using private services.

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## 1.12 DEVELOPMENT PHASING

Development phasing is expected for the current proposal. There are two parcels proposed. But there is no further direction for which parcel will be constructed first at this moment.

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## 1.13 GEOTECHNICAL SUTDY

A geotechnical investigation report has been prepared by Yuri Mendez Engineering (Report 44-BHH-R0, November 23, 2019), and its recommendations has been taken into account in developing the engineering specifications. Yuri Mendez Engineering has also prepared a follow up commentary based on a geotechnical review of the proposed grading plan to access the rock wall condition. Based on the confirmation letter that the rock cut along the perimeter of the site required for grading can be vertical. Rock faces and slope are expected to be stable where they meet the proposed grades. The letter can be found in Appendix A.

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## 1.14 DRAWING REQUIREMENT

The engineering plans submitted for site plan approval are in compliance with City requirements.

## 2 WATER DISTRIBUTION

### 2.1 CONSISTENCY WITH MASTER SERVICING STUDY AND AVAILABILITY OF PUBLIC INFRASTRUCTURE

There are an existing 305mm diameter public watermain along Campeau Drive and 203mm diameter municipal watermain along Cordillera Street providing water to Parcel 1 and Parcel 2. For Parcel 1, a 203mm diameter private watermain looping extended from the existing 305mm municipal watermain along Campeau Drive will provide redundancy for the Parcel 1 development. Two water services connections will be extended to the Apartment Building A and B mechanical room.

For Parcel 2, a 203mm diameter private watermain looping extended from the existing 305mm municipal watermain along Campeau Drive and 203mm municipal watermain along Cordillera Street will provide redundancy for the Parcel 2 development. One water service connection will be extended to the Apartment Building C mechanical room.

The new apartment buildings will be protected with a supervised automatic fire protection sprinkler system and will require a 203mm diameter water service. Three new private fire hydrants will be required for Parcel 1 to service and provide adequate coverage to the proposed townhouses and apartment building A and B. A new private fire hydrant will be required for Parcel 2. No changes are required to the existing City water distribution system to allow servicing for this property.

### 2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

Boundary conditions have been provided by the City of Ottawa at the 305mm diameter watermain on Campeau Drive for the Parcel 1 development and at the 305mm diameter watermain on Campeau Drive and 203mm diameter watermain on Cordillera Street for the Parcel 2 development, and are included in Appendix B. A maximum fire flow of 266.67 l/s (16,000 l/min) was used for both Parcel 1 and 2 development which was calculated in Section 2.4. The boundary conditions were supplied by the City of Ottawa, based on fire flows and domestic demands estimated by WSP for the proposed residential development.

**Table 2-1: Boundary Conditions for Parcel 1**

BOUNDARY CONDITIONS		
SCENARIO	Head (m) @ Connection 1	Head (m) @ Connection 2
Maximum HGL	161.4	161.4
Minimum HGL (Peak Hour)	156.2	156.2
Max Day + Fire Flow	146.5	147.0

**Table 2-2: Boundary Conditions for Parcel 2**

BOUNDARY CONDITIONS		
SCENARIO	Head (m) @ Connection 1	Head (m) @ Connection 2
Maximum HGL	161.4	161.4
Minimum HGL (Peak Hour)	155.7	155.7
Max Day + Fire Flow	147.6	140.0



## 2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Water demands are based on Table 4.2 of the Ottawa Design Guidelines – Water Distribution. As previously noted, the development is considered as institutional development, consisting of an Athletics and Recreation Centre providing food service, gymnasium and leisure facilities. A water demand calculation sheet is included in Appendix B, and the total water demands are summarized as follows:

	Parcel 1	Parcel 2
Average Day	2.13 l/s	1.95 l/s
Maximum Day	5.33 l/s	4.85 l/s
Peak Hour	11.73 l/s	10.66 l/s

The 2010 City of Ottawa Water Distribution Guidelines stated that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	Maximum pressure at any point the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

A water model software, InfoWater was used to perform the water distribution analyze for the proposed development including Parcel 1 and 2. The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 499.38 kPa for Building B, 502.00 kPa for Building A and 500.13 kPa for Building C which exceeds the minimum requirement of 276 kPa per the guidelines. Refer to Appendix B for detail water distribution analyze output.

**Table 2-3: Summary of the minimum water pressure for Parcel 1 under peak hour scenario**

Parcel 1 – Peak Hour @ 156.2m	
ID	Pressure (kPa)
J16	501.65
J18	500.40
J20	495.27
J22 (Building B)	499.38
J24 (Building A)	502.99



**Table 2-4: Summary of the minimum water pressure for Parcel 2 under peak hour scenario**

Parcel 2 – Peak Hour @ 155.7m	
ID	Pressure (kPa)
J26	503.84
J28	505.33
J30 (Building C)	500.13

## 2.4 CONFIRMATION OF ADEQUATE FIRE FLOW PROTECTION

The fire flow rate has been calculated using the Fire Underwriters Survey (FUS) method. The method takes into account the type of building construction, the building occupancy, the use of sprinklers and the exposures to adjacent structures. Assuming fire resistive construction and a fully supervised sprinkler system, a fire flow demand of 267 l/s for Building A, 250 l/s for Building B and 267 l/s for the wood frame townhouses in Parcel 1 have been calculated. For Parcel 2, a fire flow demand of 217 l/s for Building C and 267 l/s for the wood frame townhouses have been calculated under the same constraints. A copy of the calculation is included in Appendix B.

For Parcel 1, the townhouses and the apartment building A and B can be serviced through the combination of existing and proposed hydrants. There is one existing fire hydrant north of the site on Campeau Drive and three new private hydrants across the site from east to west. The middle private hydrant is within 45 m of the building fire department connection for both Building A and B. All of the proposed and existing hydrants are rated at 5700 l/min.

The proposed building A and B on site will be serviced by a single 203 mm service off the 203 mm private watermain. The service will run into the water entry room. The proposed building will be fully sprinklered and fire protection will be provided with the fire department Siamese connection within 45 m of the new private fire hydrant at the entrance from the private access road. The Siamese connection is located on the north side of the building.

The boundary condition for Maximum Day and Fire Flow results in a pressure of 226.37 kPa and 205.30 kPa at the ground floor level for Building B and A respectively. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 226.37 kPa and 205.30 are achieved, the fire flow requirement is exceeded.

**Table 2-5: Summary of the Residual Pressure for Parcel 1 under Max Day + Fire scenario**

Parcel 1 – Max Day + Fire @ 267 l/s	
ID	Residual Pressure (kPa)
J16	345.12
J18	329.07
J20	340.21
J22 (Building B)	226.37
J24 (Building A)	205.30

For Parcel 2, the townhouses and the apartment building C can be serviced through the combination of existing and proposed hydrants. There is one existing fire hydrant north of the site on Campeau Drive, two existing fire hydrants east of the site on Cordillera Street, one existing fire hydrant south of the site on Canadian Shield Ave and one new private hydrant in the middle of Parcel 2. The existing hydrant on Canadian Shield Ave is within 45 m of the building fire department connection. All the proposed and existing hydrants are rated at 5700 l/min.

The proposed building C on site will be serviced by a single 203 mm service off the 203 mm private watermain. The service will run into the water entry room. The proposed building will be fully sprinklered and fire protection will be provided with

the fire department Siamese connection within 45 m of the existing private fire hydrant at the entrance from the Canadian Shield Ave. The Siamese connection is located on the south side of the building.

The boundary condition for Maximum Day and Fire Flow results in a pressure of 253.32 kPa at the ground floor level for Building C. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 253.32 kPa is achieved, the fire flow requirement is exceeded.

**Table 2-6: Summary of the Residual Pressure for Parcel 2 under Max Day + Fire scenario**

Parcel 2 – Max Day + Fire @ 267 l/s	
ID	Residual Pressure (kPa)
J26	298.33
J28	285.02
J30	253.32

---

## 2.5 CHECK OF HIGH PRESSURE

High pressure is not a concern for Parcel 1. The maximum water pressure inside the building at the connection is determined with the maximum HGL condition, resulting in the range of 550.58 to 554.19 kPa which is slightly less than the 552 kPa threshold in the guideline in which pressure control is not required. Based on this result, pressure controls are not required for Parcel 1 development. But for Parcel 2, the maximum water pressure inside the building at the connection is determined with the maximum HGL condition, resulting in the range of 556.31 to 561.39 kPa which is slightly higher than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure controls are required for Parcel 2 development.

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## 2.6 PHASING CONSTRAINTS

The development consists Parcel 1 and 2.

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## 2.7 RELIABILITY REQUIREMENTS

DMA chamber as per city of Ottawa standard W3 and shot off valve will be provided at the study boundary for both Parcel 1 and 2 from Campeau Drive and Cordillera Street. Water can be supplied to the private watermain from both the Campeau Drive from the east and west and can be isolated for Parcel 1. For Parcel 2, water can be supplied to the private watermain from both the Campeau Drive and Cordillera Street.

---

## 2.8 NEED FOR PRESSURE ZONE BOUNDARY MODIFICATION

There is no need for a pressure zone boundary modification.

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## 2.9 CAPABILITY OF MAJOR INFRASTRUCTURE TO SUPPLY SUFFICIENT WATER

The current infrastructure is capable of meeting the domestic demand based on City requirements and fire demand as determined by FUS requirements for the proposed townhouses and apartment buildings.

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## 2.10 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK

For Parcel 1, a 203mm water looping is proposed to be provided into the proposed development. Three private hydrants are required, one of them is located within 45 metres of the fire department connection on the north side of the building as per OBC requirements.

For Parcel 2, a 203mm water looping is proposed to be provided into the proposed development. One private hydrant is required. The fire department connection on the east side of apartment building C is 45 meters away from the existing municipal hydrant along Cordillera Street.

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## 2.11 OFF-SITE REQUIREMENTS

No off-site improvements to watermains, feeder mains, pumping stations, or other water infrastructure are required to maintain existing conditions and service the adjacent buildings, other than the connection of the new private watermain to the City watermain in the south frontage of the site.

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## 2.12 CALCULATION OF WATER DEMANDS

Water demands were calculated by as described in Sections 2.3 and 2.4 above.

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## 2.13 MODEL SCHEMATIC

For Parcel 1, the water works consist a 203mm water looping, three proposed private fire hydrants, two water services for apartment buildings A and B, and individual water service for the townhouses units.

For Parcel 2, the water works consist a 203mm water looping, one proposed private fire hydrant, one water services for apartment building C, and individual water service for the townhouses units. A model schematic is provided with InfoWater for this development.

## 3 WASTEWATER DISPOSAL

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### 3.1 DESIGN CRITERIA

In accordance with the City of Ottawa's Sewer Design Guidelines, the following design criteria have been utilized in order to predict wastewater flows generated by the subject site and complete the sewer design;

• Minimum Velocity	0.6 m/s
• Maximum Velocity	3.0 m/s
• Manning Roughness Coefficient	0.013
• Average sanitary flow for residential use	280 L/cap/day
• Average sanitary flow for commercial use	28,000 L/Ha/day
• Commercial/Institutional Peaking Factor	1.5
• Infiltration Allowance (Total)	0.33 L/s/Ha
• Minimum Sewer Slopes – 200 mm diameter	0.32%

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### 3.2 CONSISTENCY WITH MASTER SERVICING STUDY

For Parcel 1, the outlet for the private sanitary sewer network is the 250 mm diameter municipal sewer on Campeau Drive. For Parcel 2, the outlet for the private sanitary sewer network is the 200 mm diameter municipal sewer on Cordillera Street. The Ottawa Sewer Design Guidelines provide estimates of sewage flows based on residential development. A sanitary drainage area plan and the sanitary design sheet have been attached to Appendix C for reference.

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### 3.3 REVIEW OF SOIL CONDITIONS

There are no specific local subsurface conditions that suggest the need for a higher extraneous flow allowance.

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### 3.4 DESCRIPTION OF EXISTING SANITARY SEWER

The outlet sanitary sewer for Parcel 1 is the existing 250 mm diameter sewer on Campeau Drive. This local sewer will outlet to a sanitary trunk sewer along the Kanata Lakes Golf Club corridor, then discharge to municipal wastewater treatment facility.

The outlet sanitary sewer for Parcel 2 is the existing 200 mm diameter sewer on Cordillera Street. This local sewer will outlet to sanitary trunk sewer along the Urbandale's Corporate Business Centre District, then discharge to municipal wastewater treatment facility.

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### 3.5 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

For Parcel 1, the capacity of the downstream 250 mm diameter sewer on Campeau Drive at 0.37% slope is 36.17 L/s, which is adequate for the flow assumptions from the proposed Parcel 1. This existing sewer also services approximately 1.3 ha of the OMNI Health Care on the west side of Parcel 1. Assuming this existing area generates a proportional flow of 1.06 L/s, then the combined existing and anticipated flow estimate is 9.91 L/s.

For Parcel 2, the capacity of the downstream 200 mm diameter sewer on Cordillera Street at 0.33% slope is 18.70 L/s, which is adequate for the flow assumptions from the proposed Parcel 2. This existing sewer also services approximately 1.72 ha of

the Residential Building on the east side of Cordillera Street. This existing area generates a proportional flow of 2.93 L/s, then the combined existing and anticipated flow estimate is 9.67 L/s.

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### **3.6 CALCULATIONS FOR NEW SANITARY SEWER**

A sanitary sewer design sheet is provided for both Parcel 1 and 2. See Appendix C for details.

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### **3.7 DESCRIPTION OF PROPOSED SEWER NETWORK**

The proposed sanitary sewer network on site for both Parcel 1 and 2 will consist of 200 mm diameter private sanitary sewers with 200 mm diameter building services and typical sanitary services for townhouses.

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### **3.8 ENVIRONMENTAL CONSTRAINTS**

There are no previously identified environmental constraints that impact the sanitary servicing design in order to preserve the physical condition of watercourses, vegetation, or soil cover, or to manage water quantity or quality.

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### **3.9 PUMPING REQUIREMENTS**

The proposed development will have no impact on existing pumping stations and will not require new pumping facilities.

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### **3.10 FORCE-MAINS**

No force-mains are required specifically for this development.

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### **3.11 EMERGENCY OVERFLOWS FROM SANITARY PUMPING STATIONS**

No pumping stations are required for this site, except as required internally for the plumbing design to service the lower area of the building.

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### **3.12 SPECIAL CONSIDERATIONS**

There is no known need for special considerations for sanitary sewer design related to existing site conditions.

## 4 SITE STORM SERVICING

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### 4.1 EXISTING CONDITION

The subjected property is located within the Kanata Town Centre Development Area west of Cordillera Street and south of Campeau Drive. For Parcel 1, the runoff is ultimately directed to a 1200 mm diameter culvert which runs south to north across Campeau Drive. The 1200 mm diameter culvert ultimately outlets to the stormwater management facility pond in Kanata Lakes Golf Club area. Drainage in excess of the minor system capacity currently flows overland to the Campeau Drive. For Parcel 2, the runoff is ultimately directed to the stormwater management facility pond in Urbandale's Corporate Business Centre District area via a series of sewers east of Parcel 2 along Canadian Shield Ave and Maritime Way. Drainage in excess of the minor system capacity currently flows overland to the Cordillera Street, Canadian Shield Ave and Maritime Way.

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### 4.2 ANALYSIS OF AVAILABLE CAPACITY IN PUBLIC INFRASTRUCTURE

For Parcel 1, the DSEL and J.F.Sabourin and Associates' SWM Pond Sizing for the Proposed Redevelopment of Kanata Golf And Country Club indicates that the present contributing area to the 750mm diameter storm sewer on the Campeau Drive is 3.22 ha, comprised of entirely impervious area. Using the Rational Method, with coefficient of 0.25 for pervious areas and 0.9 for impervious areas, and a 10 minute time of concentration, results in an estimated 2 year flow of 190.68 L/s from this area. Using utility records from the City, the slope of the existing storm sewer 750 mm diameter running east to west on Campeau Drive is 0.12%, which equates to a capacity in excess of 190.68 L/s. As the proposed stormwater management works for the Parcel 1 will reduced the runoff rate, capacity in the minor system is not a concern.

For Parcel 2, the J.L. Richards & Associates' SWN Report for the Central Business District indicates that the present contributing area to the 300mm diameter storm sewer on the Cordillera Street is 0.3 ha, comprised of entirely impervious area. The rest of the runoff from this site will go to the 1650mm diameter trunk sewer on Maritime Way. Using the Rational Method, with coefficient of 0.25 for pervious areas and 0.9 for impervious areas, and a 10 minute time of concentration, results in an estimated 2 year flow of 103.26 L/s from this area. Using utility records from the City, the slope of the existing storm sewer 300 mm diameter running east to west on Campeau Drive is 1.60%, which equates to a capacity in excess of 122.44 L/s. As the proposed stormwater management works for the Parcel 2 will reduced the runoff rate, capacity in the minor system is not a concern.

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### 4.3 DRAINAGE DRAWING

Drawing C04 and C05 shows the receiving storm sewer and site storm sewer network for Parcel 1 and 2. Drawing C03 and C02 provides proposed grading and drainage, and includes existing grading information. Drawing C06 and C07 provide a post-construction drainage sub-area plan. Site sub-area information is also provided on the storm sewer design sheet attached in Appendix D.

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### 4.4 WATER QUANTITY CONTROL OBJECTIVE

Refer to the Stormwater Management Report for the water quantity objective for the site.

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## 4.5 WATER QUALITY CONTROL OBJECTIVE

The site is not required to achieve water quality objectives. Water quality objectives are achieved through downstream works as noted in the upper level study.

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## 4.6 DESIGN CRITERIA

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

Some of the key criteria include the following:

- Design Storm (minor system) 1:2 year return (Ottawa)
  - Rational Method Sewer Sizing
  - Initial Time of Concentration 10 minutes
  - Runoff Coefficients
    - Landscaped Areas C = 0.25
    - Asphalt/Concrete C = 0.90
    - Traditional Roof C = 0.90
  - Pipe Velocities 0.80 m/s to 6.0 m/s
  - Minimum Pipe Size 250 mm diameter  
(200 mm CB Leads and service pipes)
- 

## 4.7 PROPOSED MINOR SYSTEM

The detailed design for this site will maintain the existing storm sewer network to Campeau Drive north of the development site and Cordillera Street east of the development site.

For Parcel 1, The drainage system consists of a series of manholes, catchbasins and storm sewers leading to the outlet manhole STMH106 at the northwest corner of the site. All drainage areas on the site are collected in the site piped drainage system, with the exception of a narrow strip of land along the north boundary, with a total area of 0.036 ha. The grades at the property line in these areas are too low to allow for outlet to the site storm sewer system, and the use of retaining walls in the vicinity of the site boundaries has been prohibited. Minor flows from these areas are therefore running off to the right of way of Campeau Drive. Major flows are allowed to be released to the right of way. This area will remain primarily as pervious surfaces and will generate minimal flows. Grading of these areas will be consistent with existing conditions, and will not generate additional flows to these off-site areas.

For Parcel 2, The drainage system consists of a series of manholes, catchbasins and storm sewers leading to the outlet manhole STMH207 at the east of the site. All drainage areas on the site are collected in the site piped drainage system, with the exception of a narrow strip of land along the south and east boundary, with a total area of 0.171 ha. Minor flows from these areas are therefore running off to the right of way of Cordillera Street and Canadian Shield Ave. This area will remain primarily as pervious surfaces and will generate minimal flows. Grading of these areas will be consistent with existing conditions, and will not generate additional flows to these off-site areas.

It is also customary for larger buildings to be provided with piped storm services for roof drainage. There are no downspouts proposed. Separate outlet pipes are provided for foundation drains and roof drains, and therefore roof drainage will not negatively impact the foundation. The storm services are connected to the storm sewer downstream of the controlled flow point, ensuring an unobstructed flow for these areas.

Using the above noted criteria, the existing on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated post development storm sewer drainage area plan are included in Appendix D.

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#### **4.8 STORMWATER MANAGEMENT**

Refer to Stormwater Management report for details.

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#### **4.9 INLET CONTROLS**

Refer to Stormwater Management report for details.

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#### **4.10 ON-SITE DETENTION**

Refer to Stormwater Management report for details.

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#### **4.11 WATERCOURSES**

For Parcel 1, The minor flow will be ultimately directed to the SWM pond in Kanata Lakes Golf Club, north of Campeau Drive. For Parcel 2, the minor flow will be ultimately directed to the SWM pond in the Central Business District east of Maritime Way.

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#### **4.12 PRE AND POST DEVELOPMENT PEAK FLOW RATES**

Pre and post development peak flow rates for the impacted areas of the site have been noted in storm sewer design sheet.

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#### **4.13 DIVERSION OF DRAINAGE CATCHMENT AREAS**

There will be no diversion of existing drainage catchment areas arising from the proposed work described in this report.

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#### **4.14 DOWNSTREAM CAPACITY WHERE QUANTITY CONTROL IS NOT PROPOSED**

This checklist item is not applicable to this development as quantity control is provided.

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#### **4.15 IMPACTS TO RECEIVING WATERCOURSES**

No significant negative impact is anticipated to downstream receiving watercourses due to proposed quantity and quality control measures, the separation of the site from the eventual receiving watercourse as a result of discharge through City owned sewers, and the planned stormwater management ponds on Kanata Lakes Golf Club and Central Business District.

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#### **4.16 MUNICIPAL DRAINS AND RELATED APPROVALS**

There are no municipal drains on the site or associated with the drainage from the site.



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#### **4.17 MEANS OF CONVEYANCE AND STORAGE CAPACITY**

The means of flow conveyance and storage capacity are described in the Stormwater Management Report.

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#### **4.18 HYDRAULIC ANALYSIS**

Hydraulic calculations for the site storm sewers are provided in the storm sewer design sheet and the Stormwater Management Report.

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#### **4.19 IDENTIFICATION OF FLOODPLAINS**

There are no designated floodplains on the site of this development.

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#### **4.20 FILL CONSTRAINTS**

There are no known fill constraints applicable to this site related to any floodplain. The site is generally being raised higher relative to existing conditions. No fill constraints related to soil conditions are anticipated, as confirmed in the geotechnical report.

## 5 SEDIMENT AND EROSION CONTROL

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### 5.1 GENERAL

During construction, existing storm sewer system can be exposed to sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings will be used including;

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

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

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

During construction of any development both imported and native soils are placed in stockpiles. Mitigative measures and proper management to prevent these materials entering the sewer system are needed.

During construction of the deeper water mains and sewers, imported granular bedding materials are temporarily stockpiled on site. These materials are however quickly used up and generally placed before any catchbasins are installed.

Refer to the Erosion and Sedimentation Control Plan C08 and C09 provided in Appendix E.

## 6 APPROVAL AND PERMIT REQUIREMENTS

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### 6.1 GENERAL

The proposed development is subject to site plan approval and building permit approval.

No approvals related to municipal drains are required.

No permits or approvals are anticipated to be required from the Ontario Ministry of Transportation, National Capital Commission, Parks Canada, Public Works and Government Services Canada, or any other provincial or federal regulatory agency.

## **7 CONCLUSION CHECKLIST**

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### **7.1 CONCLUSIONS AND RECOMMENDATIONS**

It is concluded that the proposed development can meet all provided servicing constraints and associated requirements. It is recommended that this report be submitted to the City of Ottawa in support of the application for site plan approval.

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### **7.2 COMMENTS RECEIVED FROM REVIEW AGENCIES**

This is the first submission, there is no comment at this point.



# APPENDIX

## A

- PRE-CONSULTATION MEETING NOTES
- TOPOGRAPHIC SURVEY PLAN
- GEOTECHNICAL REVIEW LETTER

**Part of 6301 Campeau Drive**  
**Pre-Consultation Meeting Minutes**

Location: Room 4102E, City Hall  
Date: November 8, 2:00pm to 3:00pm

<b>Attendee</b>	<b>Role</b>	<b>Organization</b>
Mark Young	Planner	City of Ottawa
Justin Armstrong	Project Manager (Infrastructure)	
Neeti Paudel	Project Manager (Transportation)	
Matthew Hayley	Planner (Environment)	
Justyna Garbos	Planner (Parks)	
Matthew Ippersiel	Planner (Urban Design)	
Lauren Reeves	Owner	OCLDC
Sameer Gulamani	Applicant	Bayview Hospitality
Alnoor Gulamani	Applicant	Bayview Hospitality

**Comments from Applicant**

1. The applicant is proposing a phased development of purpose-built 6-storey multi-residential apartment buildings at the south side of the site and 3-storey townhouses on the north side of the site along Campeau Drive. The buildings would have shared covered podium parking in the middle of the site which will have amenity space on top. Access is provided through Cordillera street and through a laneway shared with the adjacent private retirement home (which may not be feasible).
2. A central access point or alternative access point for the western development block would be preferable.
3. Zoning By-law relief will be requested for the requirement for 50% at grade commercial development.

**Planning Comments**

1. The proposal will require a major Zoning By-law Amendment Application and a New complex site plan approval application.
2. Please ensure that all zoning requirements and provisions are indicated on the provided plans.
3. Commercial uses should be maintained as a permitted use at grade, but a stringent requirement for 50% should be revisited. Commercial viability at grade on Cordillera Street and Maritime Way.

4. A joint access for both parcels on Campeau Drive aligned with Stonecroft Terrace may be a viable option. This would also need to include accessible pedestrian access to the Town Centre Park.
5. Consideration for the opportunity for flexible units that could accommodate small businesses on Campeau Drive needs to be considered as part of the design and zoning.
6. The maximum permitted height is 3 storeys – therefore the basement level as proposed must be more than 50% below grade. We would recommend front to back ground floor suites, with accessible access to allow for home based business opportunities.
7. Zoning By-law amendment application will need to address portions of the site currently zoned Development Reserve (DR), proposed performance standards and the addition of townhouse as a permitted use.

### Urban Design Comments

1. Generally supportive of the proposed scale of the buildings and the urban treatment of Campeau.
2. The apartment building in the south-east corner of the site should be an L-shaped building, wrapping the corner of the site with a frontage on Cordillera Street. This may also be an appropriate location for ground floor retail.
3. The greening of the rooftops of the parking decks as amenity space is supported. The internal courtyard spaces would likely be even stronger places if they were entirely at grade level.
4. Consider the relationship that will be created between the townhomes and the parking garage, what the pedestrian experience will be in that space, and how the raised amenity space will be accessed from the north. Alternatively, connecting the raised parking structure directly to the buildings, as suggested, may be worth exploring as an option.
5. As the plan progresses, consider what the interface between the development and the park to the south will be. Try to establish a clear delineation between public and private space and ensure there are pedestrian connections through the site.
6. Consider relocating the east-west drive aisle to the south of the property, between the development and the park. This would improve the relationship with the park, clarify the distinction of public and private space, and may help connect the apartment buildings to the amenity space (as they would be shifted north).
7. The proposal will be subject to a formal review with the Urban Design Review Panel. An informal pre-consultation meeting with the panel is also recommended at an early stage in the development review process. The next meetings are scheduled for:
  - December 6<sup>th</sup> (Nov 22<sup>nd</sup> submission deadline)
  - January 10<sup>th</sup> (Dec 27<sup>th</sup> submission deadline)



- More details available on the UDRP [webpage](#). For questions, email UDRP coordinator David Maloney: [David.Maloney@ottawa.ca](mailto:David.Maloney@ottawa.ca)

### Parks Planning:

1. Parks will take cash-in-lieu of parkland at an amount equivalent to 10% of the value of the land area of the site being developed. The exact amount will be identified as a condition of site plan approval. In addition, the applicant will be charged a land appraisal fee of \$565 (HST included).
2. Bill Teron Park is planned to be expanded in the future. Please see the attached plan for illustration of the expansion. The applicant should be mindful of their development's transition to/connection into the future parkland south of it.
3. If a combined vehicular/pedestrian site access is considered on the intervening city parkland access block, Parks planning will play an active role in the detailed design of this access to ensure that pedestrian access to Bill Teron Park is prioritized, designed in accordance with the Parks Development Manual, and meets accessibility requirements. The construction of said vehicular and pedestrian access shall be solely at the cost of the developer, and shall not be credited toward cash-in-lieu of parkland requirements. Parks Planning is willing and wanting to work with the developer to help find solutions that benefit both parties.
4. All efforts shall be utilized to protect and retain city owned trees on the abutting city park land. The required TCR shall identify how these trees are being protected. The report shall also address any mitigation measures required for tree retention if blasting and associated grading is required adjacent to the park property line.
5. Efforts shall be undertaken to ensure that the grade differential between the park block and the development sites is minimized to the greatest extent possible.

### Engineering Comments

The following are engineering comments related to the recent pre-consultation meeting for the development of 6301 Campeau Drive that was held on Friday November 8<sup>th</sup>, 2019. It is recommended that the developer retain a local engineering firm familiar with the City of Ottawa's procedures and requirements in order to navigate the comments made below and provide recommendations pertaining to the potential engineering design for the proposed site.

#### 1. WATER

- Water is available along Campeau and along Cordillera/Canadian Shield.
- Watermain looping will be required for the proposed development.

- As per The City of Ottawa's Water Distribution Guidelines Technical Bulletin ISDTB-2014-02, individual residential facilities with a basic day demand greater than 50m<sup>3</sup>/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid the creation of a vulnerable service area.
- A watermain boundary condition request should be made for each proposed connection to the City watermain. As part of the request, anticipated domestic demands and FUS fireflow requirements should be provided along with a screenshot of the proposed connection locations. The request can be sent to [justin.armstrong@ottawa.ca](mailto:justin.armstrong@ottawa.ca).

## 2. SANITARY

- Sanitary is available along Campeau and along Cordillera/Canadian Shield. For discharge to either location, it should be demonstrated that capacity exists within the receiving sewers. The Servicing Brief (Revised) Kanata Town Centre Central Business District Subdivision Memo prepared by J.L.Richards for Urbandale Corporation, dated June 13, 2012 (attached), and the sanitary sewer design sheet prepared by J.L.Richards for Urbandale dated October 12, 2016 (attached) are related to the design of the sanitary sewers along Cordillera/Canadian shield. These documents should be consulted when demonstrating capacity exists for sewage discharging to this location.

## 6. STORM

- The report titled *Kanata Town Centre Phasing and Servicing Overview*, prepared by IBI Group, dated September 23, 2013 (attached) states that *"a 1200 mm diameter culvert under Campeau Drive at the Omnicare site and the storm sewer outlet for Omnicare were designed to outlet a portion of the Kanata Town Centre lands adjacent to Campeau Drive. This storm outlet is directly available to Block A to D inclusive. On-site attenuation to predevelopment flow should be considered a requirement for the purposes of advancing use of the storm outlet."* The referenced 1200 mm diameter culvert outlets under Campeau Drive to the existing Kanata Lakes Golf Course. This statement is consistent with the proposed Storm Servicing and Drainage Plan submitted by DSEL as part of the proposed Kanata Lakes Golf Course development application (D07-16-19-0026), in which a 3.32 ha drainage area (runoff coefficient = 0.2) located south of Campeau Drive has been proposed for allocation to drain to the golf course lands. The proposed Kanata Lakes Golf Course development application files can be obtained from the following link:  
<https://app01.ottawa.ca/postingplans/appDetails.jsf?lang=en&appId= BONQQQ>

Please keep in mind that providing onsite attenuation to restrict the storm release rate to predevelopment flows will require significant onsite storage (given that the site is currently grassed/landscaped).

- IBI's report, noted above, also states that *"A local storm sewer varying in size from 525mm diameter to 1650 mm diameter exists in Kanata Main Street and Canadian Shield Avenue across the full frontage of the Kanata Town Centre site. This storm sewer has limited capacity available for direct connection from the Town Centre development, with the understanding that onsite attenuation will be required to match the sewer design capacity as specified in MOE Certificate of Approval Number 3-1378-98-006."* The above-mentioned sewers ultimately outlet to Urbandale's stormwater management pond located at the south-east corner of the Town Centre lands. The SWM pond was designed in accordance with the report titled *Stormwater Management Report, Kanata Town Centre, Central Business District*, prepared by J.L. Richards, dated January 1999 (attached). JLR's report is consistent with IBI's report in which Blocks E, G, H, I and J have been allocated to the existing storm sewers within Kanata Main Street and Canadian Shield Avenue with an outlet to Urbandale's pond. The allocated release rate for each parcel of land will be restricted to the sewer design capacity of the storm sewers as well as the stormwater allocations set with JLR's report.

If servicing allows it, there may be an opportunity to re-direct storm flows from Block A through D to outlet to Canadian Shield Avenue and ultimately Urbandale's pond if it can be demonstrated that the storm sewers and stormwater management pond have capacity to accept the additional flows.

#### Transportation Planning:

1. Follow Traffic Impact Assessment Guidelines
  - Scoping form should be submitted– triggers trip generation. Meets the triggers for full Traffic Impact Assessment.
  - Applicant advised that their application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
  - Request base mapping asap if RMA is required. Contact Engineering Services (<https://ottawa.ca/en/city-hall/planning-and-development/engineering-services>)
  - All requested access locations including the access between the two parcels on Campeau Drive (if proposed) will be reviewed at the TIA strategy (analysis) stage.
2. ROW protection on Campeau Drive between Didsbury and Teron is 40m even. Ensure that this is protected. Campeau Drive at this section is identified to be widened in the 2031 network concept of the TMP (Terry Fox to March) and no parking is currently proposed on Campeau. An eyebrow Street within the right of way is not supported as a temporary measure. Please note that if and when the EA for the widening of Campeau Drive is updated on-street parking may be considered.

3. Site triangles at the following locations on the final plan will be required:
  - Arterial Road to Local Road: 5 metre x 5 metres
4. Noise Impact Studies required:
  - Road
5. 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.
  - Sidewalk is to be continuous across access as per City Specification 7.1.

Planning Forester:

1. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City;
2. Tree removal
  - a. any removal of privately-owned trees 10cm or larger in diameter requires a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR
  - b. any removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR
3. The TCR must list all trees on site by species, diameter and health condition – separate stands of trees may be combined using averages
4. The TCR must clearly show where tree removal will occur.
5. Tree permits for geotechnical work are possible, but tree removal must be limited to areas required for machinery access and drilling; please provide a plan supported by the TCR showing travel routes and landings
6. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines listed on Ottawa.ca
7. For more information on the process or help with tree retention options, contact Mark Richardson [mark.richardson@ottawa.ca](mailto:mark.richardson@ottawa.ca)

Environment:

1. An EIS/TCR is required to address species at risk.
2. They will also need to address the Protocol for Wildlife protection during Construction which is available at [www.ottawa.ca](http://www.ottawa.ca)

### Requested Plans and Studies

1. A list of required plans and studies required for a complete Site Plan Control application have been attached.

### Process

1. This is a pre-consultation for a Zoning By-law Amendment and Site Plan Control application at 6301 Campeau Drive to the requirements for a complete application.
2. This proposal will trigger a Major Zoning By-law Amendment Application and a New Site Plan Control application, Manager Approval, subject to Public Consultation. The proposal would fall under the 'complex' category as per the [Site Plan Control Subtype Thresholds](#). The application form, timeline and fees can be found [here](#).

Please refer to the links to "[Guide to preparing studies and plans](#)" and [fees](#) for general 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](mailto: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 contact me at [Mark.Young@ottawa.ca](mailto:Mark.Young@ottawa.ca) or at 613-580-2424 extension 41396 if you have any questions.

Sincerely,



Mark Young MCIP RPP  
Planner III  
Development Review - West



DATA COLLECTION SKETCH OF

PART OF LOT 3 CONCESSION 2  
PART OF LOT 3 CONCESSION 3  
AND PART OF ROAD ALLOWANCE  
BETWEEN CONCESSION 2 AND 3  
(CLOSED BY INST. LT278660)  
GEOGRAPHIC TOWNSHIP OF MARCH  
CITY OF OTTAWA

Prepared by Amis, O'Sullivan, Vollebakk Ltd.  
Field Work Completed February 10, 2020.



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

- Notes & Legend
- MH-S Maintenance Hole (Sanitary)
  - MH-W Maintenance Hole (Bell Telephone)
  - MH-U Maintenance Hole (Unidentified)
  - VC Valve Chamber (Watermain)
  - FH Fire Hydrant
  - LS Light Standard
  - WV Water Valve
  - PWF Port & Wire Fence
  - LE Location of Elevations
  - CCB Top of Concrete Curb Elevation

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999911.

SITE AREA = 37064.5 m<sup>2</sup>

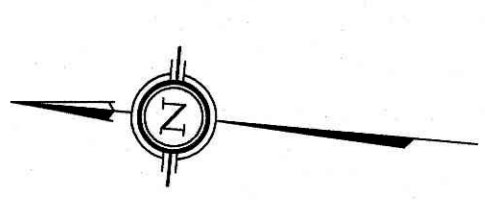
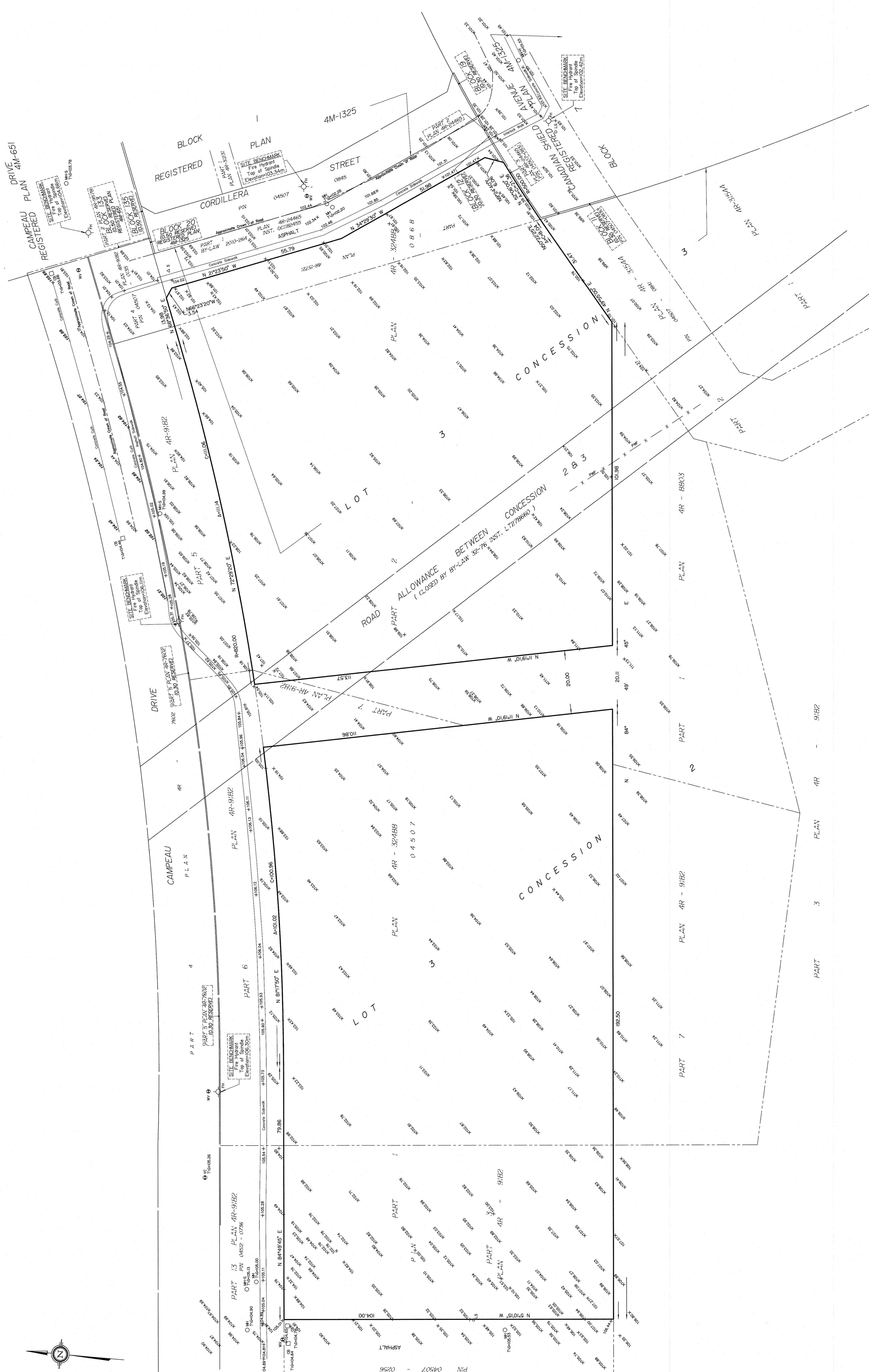
BOUNDARY INFORMATION COMPILED FROM PLAN 4R-32488.

ELEVATION NOTES

1. Elevations shown are geospatial and are referred to the CGVD2011 geoid datum.
2. Elevations shown are ground elevations and not reduced elevations. The benchmark has not been altered or disturbed and that its relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only the location of underground utility was located.
3. Only the location of underground utility was located by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.





Ottawa, November 25, 2020  
No.: 6301-Campeau-YME-L2

Sameer Gulamani  
Bayview Hospitality Holdings Ltd.

**Reference:** Proposed development at 6301 Campeau Drive: “Overall Grading Plan by WSP Group for their project numbered 201-03048-00 dated November 20, 2020 ”.

**Subject:** Review from the geotechnical stand point based on the findings reported in Subsurface Investigation Report 46-BHH-R1.

YME has no objections to the referenced grading plan from the geotechnical stand point.

Rock cuts along the perimeter of the buildings shown in the referenced plan or required for grading can be vertical.

Rock faces and slopes are expected to be stable where they meet the proposed grades.

Do not hesitate to contact us if you have any questions.



Yuri Mendez, M. Eng, P. Eng

# APPENDIX



# APPENDIX

## B

- WATERMAIN BOUNDARY CONDITIONS FROM CITY OF OTTAWA
- EMAILS FROM CITY OF OTTAWA
- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION
- WATER DEMAND CALCULATION
- WATER MODEL OUTPUT - INFOWATER

## Boundary Conditions 6301 Campeau Drive - Parcel 1

### Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	165	2.75
Maximum Daily Demand	412	6.87
Peak Hour	907	15.11
Fire Flow Demand #1	15,000	250.00
Fire Flow Demand #2	16,000	266.67

### Location



### Results

#### Connection 1 – Campeau Dr.

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	161.4	80.1
Peak Hour	156.2	72.7
Max Day plus Fire 1	147.6	60.5
Max Day plus Fire 2	146.5	58.9

<sup>1</sup> Ground Elevation = 105.0 m

## Connection 2 – Campeau Dr.

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	161.4	79.7
Peak Hour	156.2	72.3
Max Day plus Fire 1	148.1	60.8
Max Day plus Fire 2	147.0	59.3

<sup>1</sup> Ground Elevation = 105.3 m

### **Notes**

1. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
  - a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
  - b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

### **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.*

## Boundary Conditions 6301 Campeau Drive - Parcel 2

### Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	128	2.14
Maximum Daily Demand	321	5.35
Peak Hour	705	11.75
Fire Flow Demand #1	13,000	216.67
Fire Flow Demand #2	16,000	266.67

### Location



### Results

#### Connection 1 – Campeau Dr.

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	161.4	80.4
Peak Hour	155.7	72.3
Max Day plus Fire 1	150.5	64.9
Max Day plus Fire 2	147.6	60.8

<sup>1</sup> Ground Elevation = 104.8 m

## Connection 2 – Cordillera St.

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	161.4	82.8
Peak Hour	155.7	74.6
Max Day plus Fire 1	145.3	59.9
Max Day plus Fire 2	140.0	52.4

<sup>1</sup> Ground Elevation = 103.2 m

### **Notes**

1. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
  - a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
  - b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

### **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.*

## Yang, Winston

---

**From:** Rasool, Rubina <Rubina.Rasool@ottawa.ca>  
**Sent:** Monday, November 23, 2020 5:51 PM  
**To:** Yang, Winston  
**Subject:** RE: Boundary Condition for 6301 Campeau Drive  
**Attachments:** 6301 Campeau Drive - Parcel 1\_23Nov2020.docx; 6301 Campeau Drive - Parcel 2\_23Nov2020.docx

Winston,

Please find attached the water boundary conditions. We apologize for the delay due to staff shortages in Asset Management.

Thank you,

### Rubina

---

#### Rubina Rasool, E.I.T.

Project Manager

Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique

Development Review - West Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue Laurier Ouest. Ottawa (Ontario) K1P 1J1 [rubina.rasool@ottawa.ca](mailto:rubina.rasool@ottawa.ca)

---

**From:** Yang, Winston <[Winston.Yang@wsp.com](mailto:Winston.Yang@wsp.com)>  
**Sent:** October 15, 2020 5:28 PM  
**To:** Armstrong, Justin <[justin.armstrong@ottawa.ca](mailto:justin.armstrong@ottawa.ca)>  
**Cc:** Jafferjee, Ishaque <[ishaque.jafferjee@wsp.com](mailto:ishaque.jafferjee@wsp.com)>; Fernando Fabiani <[ffabiani@apiconsultants.net](mailto:ffabiani@apiconsultants.net)>; Shen, Stream <[Stream.Shen@ottawa.ca](mailto:Stream.Shen@ottawa.ca)>  
**Subject:** RE: Boundary Condition for 6301 Campeau Drive

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Hi Justin,

Just try to reconnect with you regarding the Boundary condition for 6301 Campeau Drive.

Our client is looking to split up the development into two parcels, 1 and 2.

The water looping for redundancy for both parcels are proposed.

For Parcel 1, the proposed watermain will go through parcel 1 and connect to the existing 305mm dia. watermain along Campeau Drive at both end of the site, please see attached preliminary servicing plan for details.

The domestic water demands were calculated using the City of Ottawa's Water Design Guidelines and fire demands were calculated using FUS 1999.

The results are summarized as follow:

Proposed Buildings	Average Daily Demand (l/s)	Maximum Daily Demand (l/s)	Maximum Hourly Demand (l/s)	Fire Demand (l/s)
<b>Parcel 1</b>				
Building A	0.92	2.30	5.05	267
Building B	0.92	2.30	5.05	250
Townhouses	0.91	2.28	5.01	267
<b>Total</b>	<b>2.75</b>	<b>6.88</b>	<b>15.11</b>	

For Parcel 2, the proposed watermain will go through parcel 2 and connect to the existing 305mm dia. watermain along Campeau Drive to the north and the existing 203mm dia. watermain along Cordillera Street to the east, please refer to attached preliminary servicing plan for details.

The domestic water demands were calculated using the City of Ottawa’s Water Design Guidelines and fire demands were calculated using FUS 1999.

The results are summarized as follow:

Proposed Buildings	Average Daily Demand (l/s)	Maximum Daily Demand (l/s)	Maximum Hourly Demand (l/s)	Fire Demand (l/s)
<b>Parcel 2</b>				
Building C	1.43	3.57	7.86	217
Building C – Commercial	0.02	0.02	0.04	
Townhouses	0.70	1.75	3.85	267
<b>Total</b>	<b>2.14</b>	<b>5.35</b>	<b>11.75</b>	

Please see attached pdfs for the detail calculation for FUS and water demands for your reference and see below in red for the responses.

The Architect has also confirmed that the type of construction for Apartments is non-combustible and combustible wood frame for townhouses. And apartments will be reequipped with Automatic Fire Protection.

Please provide boundary condition at the connection points of Campeau Drive and Cordillera in the vicinity of the property.

Should you have any questions please do not hesitate to contact me.

Thank you,

**Ding Bang (Winston) Yang, P.Eng.**

Project Engineer

Infrastructure



T+ 1 613-690-0538



2611 Queensview Drive, Suite 300  
Ottawa, Ontario,  
K2B 8K2, Canada

[www.wsp.com](http://www.wsp.com)

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**From:** Armstrong, Justin [<mailto:justin.armstrong@ottawa.ca>]

**Sent:** Tuesday, June 30, 2020 4:29 PM

**To:** Yang, Winston <[Winston.Yang@wsp.com](mailto:Winston.Yang@wsp.com)>

**Cc:** Jafferjee, Ishaque <[Ishaque.Jafferjee@wsp.com](mailto:Ishaque.Jafferjee@wsp.com)>

**Subject:** RE: Boundary Condition for 6301 Campeau Drive

Hi Winston,

Just had a chance to look over the demands provided with the boundary condition request and I have the following comments:

- Buildings A, B, & C have all been accounted for in the same FUS calculation sheet since they all have the same fire area, however, building A seems like it should be subject to different exposure charges than B and C. Building A is fronted to the north by a townhouse block, to the east by building B, and potentially to the west by the existing development. The townhouse block and building B both seem as though they could be within 10 metres of building A. Building D's offsets also seem a little high. Please verify that offset distances used to calculate the exposure charges are accurate. Also ensure that the length-height factor of adjacent buildings is accounted for when determining the exposure charge. The City of Ottawa Water Distribution Guideline Technical Bulletin ISTB-2018-02 should be used for the FUS calculations as it goes into great detail with respect to each step of FUS calculations. **The fire flow is interpolated by the updated FUS under the Appendix H in the City of Ottawa Water Distribution Guideline Technical Bulletin ISTB-2018-02.**
- For step 1 of each FUS calculation the required fire flow is rounded down, however, ISTB-2018-02 indicates that the required fire flow should be rounded to the nearest thousand at this step. This means that for buildings A, B, C and townhomes (6 in a row) the required fire flow was rounded incorrectly at step 1. **The rounding has been revised to the nearest 1000.**
- Why is occupancy type different between apartments and townhomes in step 2? Are they not all residential occupancies? Is this typical? **This is typical for apartments and townhomes.**

Please address the above and I will subsequently send off the demands and request the boundary conditions.

Kind Regards,

During this period of uncertainty surrounding COVID-19, we are following best practices recommended to minimize the risk of exposure, while ensuring that service to our clients remains as uninterrupted as possible. For the most part I am working from home and will respond to emails at my earliest opportunity. Should there be delays due to internet connectivity, I thank your understanding and patience.

**Justin Armstrong, E.I.T.**

Engineering Intern

Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique

Development Review - West Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2400 ext./poste 21746, [justin.armstrong@ottawa.ca](mailto:justin.armstrong@ottawa.ca)



---

**From:** Yang, Winston <[Winston.Yang@wsp.com](mailto:Winston.Yang@wsp.com)>  
**Sent:** June 24, 2020 5:48 PM  
**To:** Armstrong, Justin <[justin.armstrong@ottawa.ca](mailto:justin.armstrong@ottawa.ca)>  
**Cc:** Jafferjee, Ishaque <[ishaque.jafferjee@wsp.com](mailto:ishaque.jafferjee@wsp.com)>  
**Subject:** Boundary Condition for 6301 Campeau Drive

Hi Cody,

We are working on the SPA for the 6301 Campeau Drive. The proposed development consists of townhouses along the frontage of Campeau Drive and four 6-storey apartment buildings to the south .

The proposed development is proposed to be serviced from the 305 mm diameter watermain along Campeau Drive and 203 mm diameter watermain along Cordillera. Street Please see attached Site Location for detail.

The domestic water demands were calculated using the City of Ottawa's Water Design Guidelines and fire demands were calculated using FUS 1999.

The results are summarized as follow

Proposed Buildings	Average Daily Demand (l/s)	Maximum Daily Demand (l/s)	Maximum Hourly Demand (l/s)	Fire Demand (l/s)
<b>Parcel 1</b>				
Building A	0.62	1.53	3.37	183
Building B	0.61	1.51	3.33	183
Townhouses	1.05	2.63	5.78	267
<b>Parcel 2</b>				
Building C	0.61	1.52	3.34	183
Building D	0.62	1.53	3.37	233
Townhouses	0.63	1.58	3.47	267
<b>Total</b>	<b>4.12</b>	<b>10.30</b>	<b>22.65</b>	

Please see attached pdfs for the detail calculation for FUS and water demands for your reference.

Please provide boundary condition at the connection points of Campeau Drive and Cordillera in the vicinity of the property.

Should you have any questions please do not hesitate to contact me.

Thank you,

**Ding Bang (Winston) Yang, P.Eng.**  
Project Engineer  
Infrastructure



T+ 1 613-690-0538

2611 Queensview Drive, Suite 300  
Ottawa, Ontario,  
K2B 8K2, Canada

[www.wsp.com](http://www.wsp.com)

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**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for wood construction (structure essentially combustible)
  - 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
  - 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
  - 0.6 for fire-resistive construction (fully protected frame, floors, roof)
- A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 14312 m<sup>2</sup>  
 C = 0.8  
 F = 21055.4 L/min

rounded off to 21,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 21,000 = 17,850 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -50% x 17,850 = 8,925 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	30	10% north side
Side 2	0	25% east side
Side 3	100	0% south side
Side 4	45	5% west side

40% (Total shall not exceed 75%)

Increase due to separation 40% x 17,850 = 7,140 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 16,000 L/min (Rounded to nearest 1000 L/min)  
 or 267 L/sec  
 or 4,227 gpm (us)  
 or 3,520 gpm (uk)



**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for wood construction (structure essentially combustible)
  - 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
  - 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
  - 0.6 for fire-resistive construction (fully protected frame, floors, roof)
- A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 14312 m<sup>2</sup>  
 C = 0.8  
 F = 21055.4 L/min

rounded off to 21,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 21,000 = 17,850 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -50% x 17,850 = -8,925 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	30	10% north side
Side 2	78	0% east side
Side 3	100	0% south side
Side 4	0	25% west side
	35%	(Total shall not exceed 75%)

Increase due to separation 35% x 17,850 = 6,248 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

- The fire flow requirement is 15,000 L/min (Rounded to nearest 1000 L/min)
- or 250 L/sec
- or 3,963 gpm (us)
- or 3,300 gpm (uk)



**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for wood construction (structure essentially combustible)
  - 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
  - 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
  - 0.6 for fire-resistive construction (fully protected frame, floors, roof)
- A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 22600 m<sup>2</sup>  
 C = 0.8  
 F = 26458.6 L/min

rounded off to 26,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 26,000 = 22,100 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -50% x 22,100 = -11,050 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	25	10% north side
Side 2	60	0% east side
Side 3	100	0% south side
Side 4	78	0% west side

10% (Total shall not exceed 75%)

Increase due to separation 10% x 22,100 = 2,210 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 13,000 L/min (Rounded to nearest 1000 L/min)  
 or **217 L/sec**  
 or 3,434 gpm (us)  
 or 2,860 gpm (uk)



**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for wood construction (structure essentially combustible)
  - 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
  - 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
  - 0.6 for fire-resistive construction (fully protected frame, floors, roof)
- A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 969 m<sup>2</sup>  
 C = 1.5  
 F = 10272.5 L/min

rounded off to 10,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard 0% x 10,000 = 10,000 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System 0% x 10,000 = 0 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	48	0% north side
Side 2	3.5	18% east side
Side 3	52	0% south side
Side 4	3.5	18% west side

36% (Total shall not exceed 75%)

Increase due to separation 36% x 10,000 = 3,600 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 14,000 L/min (Rounded to nearest 1000 L/min)  
 or **233 L/sec**  
 or 3,698 gpm (us)  
 or 3,080 gpm (uk)



**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for wood construction (structure essentially combustible)
  - 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
  - 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
  - 0.6 for fire-resistive construction (fully protected frame, floors, roof)
- A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 1470 m<sup>2</sup>  
 C = 1.5  
 F = 12652.4 L/min

rounded off to 12,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard 0% x 12,000 = 12,000 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler conforms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System 0% x 12,000 = 0 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	48	0% north side
Side 2	3.5	18% east side
Side 3	52	0% south side
Side 4	3.5	18% west side
	36%	(Total shall not exceed 75%)

Increase due to separation 36% x 12,000 = 4,320 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

- The fire flow requirement is 16,000 L/min (Rounded to nearest 1000 L/min)
- or 267 L/sec
- or 4,227 gpm (us)
- or 3,520 gpm (uk)

**Water Demand Calculation Sheet**

**Project:** 6301 Campeau Drive  
**Location:** City of Ottawa  
**WSP Project No.** 201-03048-00

**Date:** 11/25/2020  
**Design:** WY  
**Page:** 1 of 1



Proposed Buildings	Residential					Non-Residential			Average Daily			Maximum Daily			Maximum Hourly			Fire Demand (l/s)
	Units			Beds	Pop.	Industrial (ha)	Institutional (ha)	Commercial (ha)	Demand (l/s)			Demand (l/s)			Demand (l/s)			
	SF	APT	UT						Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total	
<b>Parcel 1</b>																		
Building A - 1 bed		104			146				0.47		0.47	1.18		1.18	2.60		2.60	267
Building A - 2 bed		70			147				0.48		0.48	1.19		1.19	2.62		2.62	
Building B - 1 bed		104			146				0.47		0.47	1.18		1.18	2.60		2.60	250
Building B - 2 bed		70			147				0.48		0.48	1.19		1.19	2.62		2.62	
Townhouses		52			73				0.24		0.24	0.59		0.59	1.30		1.30	267
Townhouses		52			109				0.35		0.35	0.88		0.88	1.95		1.95	267
<b>Total</b>					658						2.13			5.33			11.73	
<b>Parcel 2</b>																		
Building C - 1 bed		148			207				0.67		0.67	1.68		1.68	3.69		3.69	217
Building C - 2 bed		118			248				0.80		0.80	2.01		2.01	4.42		4.42	
Building C - Commercial								0.06		0.02	0.02		0.03	0.03		0.05	0.05	
Townhouses		40			56				0.18		0.18	0.45		0.45	1.00		1.00	267
Townhouses		40			84				0.27		0.27	0.68		0.68	1.50		1.50	267
<b>Total</b>					595					0.02	1.95		0.03	4.85		0.05	10.66	

**Population Densities**

Single Family	3.4 person/unit
Semi-Detached	2.7 person/unit
Duplex	2.3 person/unit
Townhome (Row)	2.7 person/unit
Bachelor Apartment	1.4 person/unit
1 Bedroom Apartment	1.4 person/unit
2 Bedroom Apartment	2.1 person/unit
3 Bedroom Apartment	3.1 person/unit
4 Bedroom Apartment	4.1 person/unit
Avg. Apartment	1.8 person/unit

**Average Daily Demand**

Residential	280 l/cap/day
Industrial	35000 l/ha/day
Institutional	28000 l/ha/day
Commercial	28000 l/ha/day

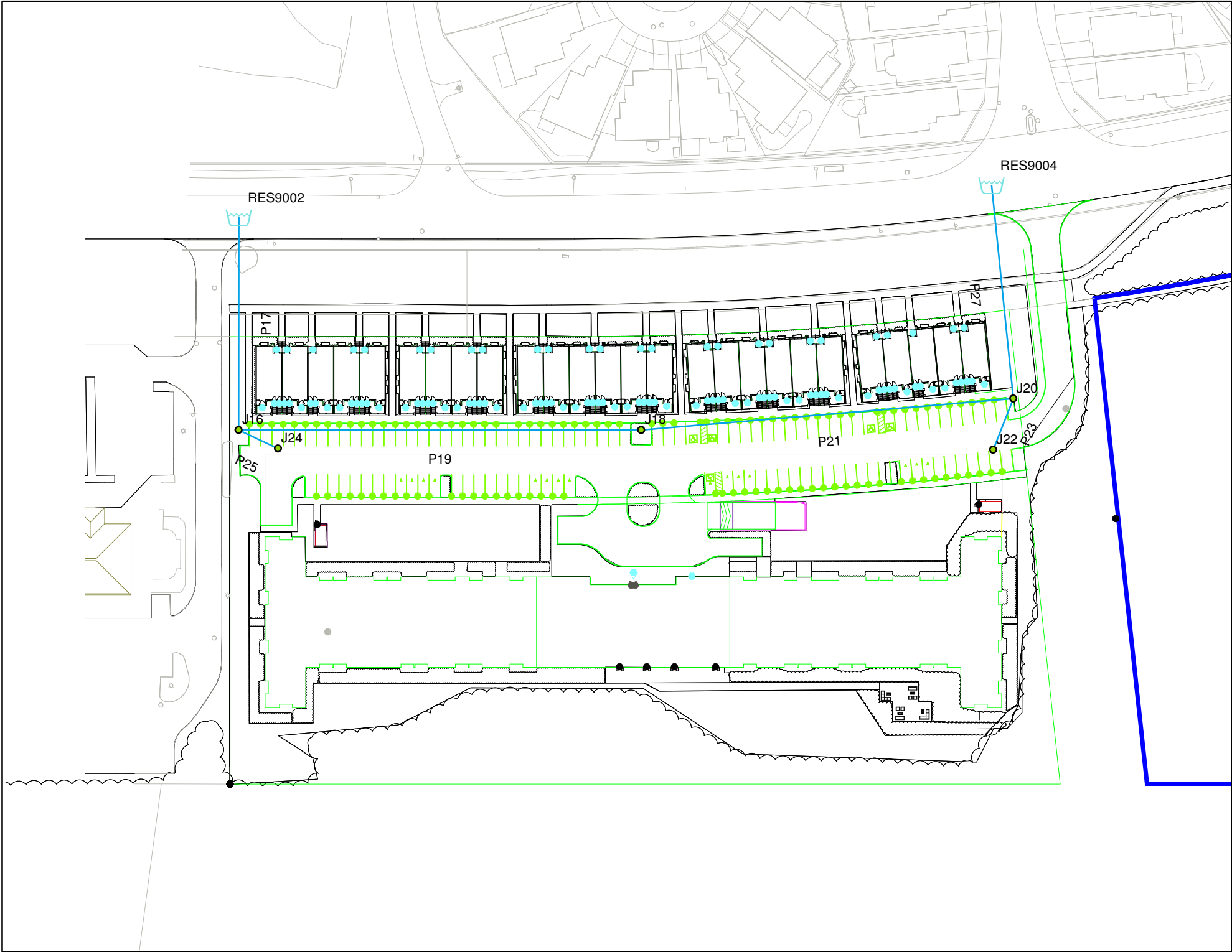
**Maximum Daily Demand**

Residential	2.5 x avg. day
Industrial	1.5 x avg. day
Institutional	1.5 x avg. day
Commercial	1.5 x avg. day

**Maximum Hourly Demand**

Residential	2.2 x max. day
Industrial	1.8 x max. day
Institutional	1.8 x max. day
Commercial	1.8 x max. day





6301 Campeau Drive - Parcel 1

	ID	Total Demand (L/s)	Available Flow at Hydrant (L/s)	Critical Node ID	Critical Node Pressure (kPa)	Critical Node Head (m)	Design Flow (L/s)	Design Pressure (kPa)	Design Fire Node Pressure (kPa)
1	<input type="checkbox"/> J16	267.51	590.37	J16	137.86	119.06	590.38	137.86	137.86
2	<input type="checkbox"/> J18	267.68	523.02	J18	137.86	119.19	523.02	137.86	137.87
3	<input type="checkbox"/> J20	267.28	584.37	J20	137.86	119.71	584.37	137.86	137.87
4	<input type="checkbox"/> J22	252.37	312.93	J22	137.86	119.28	312.93	137.86	138.17
5	<input type="checkbox"/> J24	269.37	314.26	J24	137.86	118.91	314.26	137.86	137.75

6301 Campeau Drive - Parcel 1

		ID	Static Demand (L/s)	Static Pressure (kPa)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (kPa)	Available Flow at Hydrant (L/s)	Available Flow Pressure (kPa)
1	<input type="checkbox"/>	J16	0.51	407.63	146.59	267.00	345.12	590.37	137.86
2	<input type="checkbox"/>	J18	0.68	407.56	146.71	267.00	329.07	523.02	137.86
3	<input type="checkbox"/>	J20	0.28	403.68	146.84	267.00	340.21	584.37	137.86
4	<input type="checkbox"/>	J22	2.37	407.87	146.84	250.00	226.37	312.93	137.86
5	<input type="checkbox"/>	J24	2.37	409.05	146.59	267.00	205.30	314.26	137.86

6301 Campeau Drive - Parcel 1

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J16	0.20	104.99	161.40	552.76
2	<input type="checkbox"/>	J18	0.27	105.12	161.40	551.51
3	<input type="checkbox"/>	J20	0.12	105.64	161.40	546.37
4	<input type="checkbox"/>	J22	0.95	105.21	161.40	550.58
5	<input type="checkbox"/>	J24	0.95	104.85	161.40	554.19

Junction Report - Average Day @ 161.4m

6301 Campeau Drive - Parcel 1

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J16	1.12	104.99	156.18	501.65
2	<input type="checkbox"/>	J18	1.50	105.12	156.18	500.40
3	<input type="checkbox"/>	J20	0.62	105.64	156.18	495.27
4	<input type="checkbox"/>	J22	5.22	105.21	156.18	499.38
5	<input type="checkbox"/>	J24	5.22	104.85	156.18	502.99

6301 Campeau Drive - Parcel 1

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	<input type="checkbox"/>	P17	RES9002	J16	30.48	199.90	100.00	1.25	0.04	0.00	0.02	Open	0
2	<input type="checkbox"/>	P19	J16	J18	30.48	199.90	100.00	0.10	0.00	0.00	0.00	Open	0
3	<input type="checkbox"/>	P21	J18	J20	30.48	199.90	100.00	-0.17	0.01	0.00	0.00	Open	0
4	<input type="checkbox"/>	P23	J20	J22	30.48	199.90	100.00	0.95	0.03	0.00	0.01	Open	0
5	<input type="checkbox"/>	P25	J16	J24	30.48	199.90	100.00	0.95	0.03	0.00	0.01	Open	0
6	<input type="checkbox"/>	P27	J20	RES9004	30.48	199.90	100.00	-1.24	0.04	0.00	0.02	Open	0

6301 Campeau Drive - Parcel 1

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	<input type="checkbox"/>	P17	RES9002	J16	30.48	199.90	100.00	6.87	0.22	0.02	0.53	Open	0
2	<input type="checkbox"/>	P19	J16	J18	30.48	199.90	100.00	0.53	0.02	0.00	0.00	Open	0
3	<input type="checkbox"/>	P21	J18	J20	30.48	199.90	100.00	-0.97	0.03	0.00	0.01	Open	0
4	<input type="checkbox"/>	P23	J20	J22	30.48	199.90	100.00	5.22	0.17	0.01	0.32	Open	0
5	<input type="checkbox"/>	P25	J16	J24	30.48	199.90	100.00	5.22	0.17	0.01	0.32	Open	0
6	<input type="checkbox"/>	P27	J20	RES9004	30.48	199.90	100.00	-6.81	0.22	0.02	0.52	Open	0





6301 Campeau Drive - Parcel 2

		ID	Total Demand (L/s)	Available Flow at Hydrant (L/s)	Critical Node ID	Critical Node Pressure (kPa)	Critical Node Head (m)	Design Flow (L/s)	Design Pressure (kPa)	Design Fire Node Pressure (kPa)
1	<input type="checkbox"/>	J26	267.27	465.45	J26	137.86	118.34	465.45	137.86	137.71
2	<input type="checkbox"/>	J28	267.27	446.22	J30	132.76	118.18	441.10	137.86	143.08
3	<input type="checkbox"/>	J30	220.42	318.17	J30	137.86	118.70	318.17	137.86	137.85

6301 Campeau Drive - Parcel 2

		ID	Static Demand (L/s)	Static Pressure (kPa)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (kPa)	Available Flow at Hydrant (L/s)	Available Flow Pressure (kPa)
1	<input type="checkbox"/>	J26	0.57	397.79	144.86	266.70	298.33	465.45	137.86
2	<input type="checkbox"/>	J28	0.57	377.99	142.68	266.70	285.02	446.22	137.86
3	<input type="checkbox"/>	J30	3.72	372.89	142.68	216.70	253.32	318.17	137.86

6301 Campeau Drive - Parcel 2

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J26	0.23	104.27	161.40	559.84
2	<input type="checkbox"/>	J28	0.23	104.11	161.40	561.39
3	<input type="checkbox"/>	J30	1.49	104.63	161.40	556.31

Junction Report - Average Day @ 161.4m

6301 Campeau Drive - Parcel 2

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J26	1.25	104.27	155.69	503.84
2	<input type="checkbox"/>	J28	1.25	104.11	155.68	505.33
3	<input type="checkbox"/>	J30	8.16	104.63	155.67	500.13

Peak Hour - Junction Report @ 155.7m

6301 Campeau Drive - Parcel 2

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	<input type="checkbox"/>	P29	RES9006	J26	53.14	199.90	100.00	0.89	0.03	0.00	0.01	Open	0
2	<input type="checkbox"/>	P31	J26	J28	42.87	199.90	100.00	0.67	0.02	0.00	0.01	Open	0
3	<input type="checkbox"/>	P33	J28	RES9008	58.42	199.90	100.00	-1.05	0.03	0.00	0.02	Open	0
4	<input type="checkbox"/>	P35	J28	J30	17.33	199.90	100.00	1.49	0.05	0.00	0.03	Open	0

6301 Campeau Drive - Parcel 2

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	<input type="checkbox"/>	P29	RES9006	J26	53.14	199.90	100.00	4.91	0.16	0.02	0.28	Open	0
2	<input type="checkbox"/>	P31	J26	J28	42.87	199.90	100.00	3.66	0.12	0.01	0.17	Open	0
3	<input type="checkbox"/>	P33	J28	RES9008	58.42	199.90	100.00	-5.75	0.18	0.02	0.38	Open	0
4	<input type="checkbox"/>	P35	J28	J30	17.33	199.90	100.00	8.16	0.26	0.01	0.73	Open	0

# APPENDIX



# APPENDIX

## C

- FIGURE 4 – OVERALL SANITARY DRAINAGE PLAN
- SANITARY SEWER DESIGN SHEET





 <p>300-2611 QUEENVIEW DRIVE OTTAWA ONTARIO CANADA K2B 9K2 TEL: 1-613-829-2880   FAX: 1-613-829-8299   WWW.WSPGROUP.COM</p>	PROJECT: <b>6301 CAMPEAU DRIVE</b>	DRAWING NAME: <b>OVERALL SANITARY DRAINAGE PLAN</b>		DESIGNED BY: D.Y.
	PROJECT NO.: 201-03048-00	DATE: 2020-12-04	REVIEWED BY:	SCALE:
				SHEET: <b>Fig4</b>



**SANITARY SEWER DESIGN SHEET**



**6301 Campeau Drive  
Residential Development  
Project: 201-03048-00  
Date: December, 2020**

LOCATION				RESIDENTIAL AREA AND POPULATION										INDUSTRIAL				COMMERCIAL		INSTITUTIONAL		I+C+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE									
LOCATION	FROM M.H.	TO M.H.	SANITARY DRAINAGE AREA ID	INDV AREA (ha)	ACCU AREA (ha)	NUMBER OF UNITS						POPULATION		PEAK FACT.	PEAK FLOW (l/s)	GROSS AREA (ha)	DEVEL. AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR	INDV AREA (ha)	ACCU. AREA (ha)	INDV AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	INDV AREA (ha)		ACCU. AREA (ha)	INFILT. FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	AVAIL. CAP. (%)		
<b>TO CAMPEAU DRIVE</b>																																				
Parcel 1	SAMH101	SAMH102	SA101	0.174	0.174					18.00	18.00		63	63	3.63	0.74											0.174	0.17	0.06	0.80	55.50	200	0.65	26.44	0.84	96.98%
Parcel 1	SAMH102	SAMH103	SA102	0.168	0.342					18.00	18.00		63	126	3.57	1.46											0.168	0.34	0.11	1.57	62.80	200	0.36	19.68	0.63	92.02%
Parcel 1	BLDG	SAMH103-SAMH104	SA104	1.446	1.446					208.00	140.00		585	585	3.35	6.35											1.446	1.45	0.48	6.83	8.45	200	1.00	32.80	1.04	79.17%
Parcel 1	SAMH103	SAMH104	SA103	0.166	1.954					16.00	16.00		56	767	3.30	8.20											0.166	1.95	0.64	8.84	57.55	200	0.36	19.68	0.63	55.07%
Parcel 1	SAMH104	SAMH105	SA105	0.012	1.966								767		3.30	8.20											0.012	1.97	0.65	8.85	21.65	200	0.36	19.68	0.63	55.05%
Parcel 1	SAMH105	EXISTING			1.966								767		3.30	8.20											0.000	1.97	0.65	8.85	9.90	200	0.36	19.68	0.63	55.05%
OMNI Health Care	EXISTING	EXISTING			0.000										3.80	0.00					1.30	1.30			0.63	1.300	1.30	0.43	1.06	251.00	250	0.37	36.17	0.74	97.07%	
Campeau Drive	EXISTING	EXISTING			1.966								767		3.30	8.20					1.30				0.63	0.000	3.27	1.08	9.91	11.87	250	0.37	36.17	0.74	72.61%	
<b>TO CORDILLERA STREET</b>																																				
Parcel 2	SAMH201	SAMH202	SB201	0.752	0.752					20.00	20.00		70	70	3.63	0.82											0.752	0.75	0.25	1.07	35.30	200	1.00	32.80	1.04	96.74%
Parcel 2	SAMH202	SAMH203	SB202	0.241	0.993					20.00	20.00		70	140	3.56	1.62											0.241	0.99	0.33	1.94	43.60	200	1.00	32.80	1.04	94.08%
Parcel 2	SAMH203	SAMH204	SB203	0.013	1.006								0	140	3.56	1.62											0.013	1.01	0.33	1.95	31.05	200	1.00	32.80	1.04	94.06%
Parcel 2	BLDG	SAMH205	SB205	0.676	0.676					148.00	118.00		455	455	3.40	5.01											0.676	0.68	0.22	5.23	14.75	200	2.50	51.86	1.65	89.91%
Parcel 2	SAMH204	SAMH205	SB204	0.040	1.722								0	595	3.35	6.45											0.040	1.68	0.56	7.01	12.95	200	1.47	39.77	1.27	82.37%
Parcel 2	SAMH205	EXISTING			1.722								0	595	3.35	6.45											0.000	1.68	0.56	7.01	12.75	200	2.50	51.86	1.65	86.48%
Residential Building	EXISTING	EXISTING		1.725	1.725								207	207	3.51	2.36											1.725	1.73	0.57	2.93	69.60	200	1.20	35.93	1.14	91.85%
Cordillera Street	EXISTING	EXISTING			3.447								802		3.29	8.55											0.000	3.41	1.12	9.67	11.87	200	0.33	18.70	0.60	48.29%

DESIGN PARAMETERS													
RESIDENTIAL AVG. DAILY FLOW =	280	l/cap/day	COMMERCIAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	PEAK POPULATION FLOW, (l/s) =	$P \cdot q \cdot M / 86400$	UNIT TYPE	PERSONS/UNIT	DESIGNED:	NO.	REVISION	DATE
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	PEAK EXTRANEIOUS FLOW, (l/s) =	$I \cdot Ac$	SINGLES	3.4	Ding Bang Yang, P.Eng.	1.	City Submission No.1	12/4/2020
INSTITUTIONAL AVG. DAILY FLOW =	0.324	l/ha/s	INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	RESIDENTIAL PEAKING FACTOR, M =	$1 + (14 / (4 + P^{0.5})) \cdot K$	SEMI-DETACHED	2.7	CHECKED:			
LIGHT INDUSTRIAL FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	Ac = CUMULATIVE AREA (ha)		TOWNHOMES	2.7	Ishaque Jefferjee, P.Eng.			
HEAVY INDUSTRIAL FLOW =	0.324	l/ha/s	RESIDENTIAL CORRECTION FACTOR, K =	0.80		P = POPULATION (THOUSANDS)		SINGLE APT. UNIT	1.4	PROJECT:			
	35,000	l/ha/day	MANNING N =	0.013		SEWER CAPACITY, Qcap (l/s) =	$1/N \cdot S^{1/2} \cdot R^{2/3} \cdot Ac$	2-BED APT. UNIT	2.1	6310 Campeau Drive			
	0.405	l/ha/s	PEAK EXTRANEIOUS FLOW, I (l/s/ha) =	0.33		(MANNING'S EQUATION)		3-BED APT. UNIT	3.1	Residential Development			
	55,000	l/ha/day								LOCATION:			
	0.637	l/ha/s								Ottawa, Ontario			
										PAGE NO:		FILE & DWG. REFERENCE:	
										1 of 1		Figure 4	

# APPENDIX

# APPENDIX

## D

- STORM SEWER DESIGN SHEET
- POST-DEVELOPMENT STORM DRAINAGE AREA PLAN C06 AND C07
- GRADING PLAN C02 AND C03
- SERVICING PLAN C04 AND C05

**STORM SEWER DESIGN SHEET**



6301 Campeau Drive  
Residential Development  
Project: 201-03048-00  
Date: December, 2020

LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW											PROPOSED SEWER DATA																
STREET	AREA ID	FROM	TO	C= 0.25	C= 0.35	C= 0.50	C= 0.60	C= 0.75	C= 0.90	IND 2.78AC	CUM 2.78 AC	INLET (min)	TOTAL (min)	I (2) (mm/hr)	I (5) (mm/hr)	I (100) (mm/hr)	BLDG FLOW (L/s)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	ICD FIXED FLOW (L/s)	DESIGN FLOW (L/s)	MODIFIED DESIGN FLOW (L/s)	MATERIAL PIPE	SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME IN PIPE	AVAIL CAP (L/s)	(2yr) (%)					
<b>POST-DEVELOPMENT</b>																																					
<b>To Campeau Drive</b>																																					
Parcel 1	A-105, A-EXT1	RYCB103	STMH110	1.372					0.280	1.654	1.654	30.00	30.27	40.04	53.93	91.87		66.24																			
Parcel 1	A-112, A-EXT2	DICB112	STMH101	0.174						0.121	0.121	20.00	20.25	52.03	70.25	119.95		6.29																			
Parcel 1		STMH101	STMH102							0.000	0.121	20.25	21.37	51.64	69.72	119.03		6.24																			
Parcel 1		STMH102	STMH103							0.000	0.121	21.37	22.65	49.92	67.38	115.00		6.04																			
Parcel 1		STMH103	STMH104							0.000	0.121	22.65	23.74	48.12	64.92	110.78		5.82																			
Parcel 1	A-BLDG	BUILDING ROOF	STMH104						0.387	0.968	0.968	10.00	10.03	76.81	104.19	178.56		74.37																			
Parcel 1		STMH104	STMH109-CBMH110							0.000	1.089	23.74	23.93	46.70	62.98	107.43		50.86																			
Parcel 1	A-101, A-EXT3	CB101	CBMH105	0.095					0.205	0.579	0.579	10.00	10.96	76.81	104.19	178.56		44.47																			
Parcel 1	A-102	CBMH105	CBMH106	0.014					0.197	0.503	1.082	10.96	11.89	73.32	99.40	170.27		79.30																			
Parcel 1	A-103	CBMH106	CBMH107	0.018					0.188	0.483	1.564	11.89	12.81	70.23	95.16	162.94		109.88																			
Parcel 1	A106-A110	BUILDING DECK	CBMH107-STMH108	0.178					0.015	0.161	0.161	10.00	10.02	76.81	104.19	178.56		12.38																			
Parcel 1	A-104	CBMH107	STMH108	0.009					0.157	0.399	2.125	12.81	13.19	67.46	91.35	156.36		143.33																			
Parcel 1		CBMH108	CISTERN							0.000	2.125	13.19	13.24	66.40	89.90	153.84		141.07																			
Parcel 1		CISTERN	CBMH109 (ICD)							0.000	2.125	13.24	13.30	66.25	89.70	153.50		140.77																			
Parcel 1		STMH109 (ICD)	STMH110							0.000	2.125	13.30	13.34	66.11	89.50	153.16		140.46				52.00	140.46	52.00													
Parcel 1		STMH110	CBMH111							0.000	3.779	30.27	30.52	39.81	53.61	91.31		150.42				52.00	150.42	117.84													
Parcel 1	A-111	CBMH111	STMH112	0.011					0.003	0.015	3.794	30.52	31.01	39.58	53.30	90.79		150.18				52.00	150.18	118.07													
Campeau Drive		STMH112	EXISTING								3.794	31.01	31.11	39.16	52.72	89.80		148.56				52.00	148.56	117.36													

**Definition:**  
Q=2.78CiA, where:  
Q = Peak Flow in Litres per Second (L/s)  
A = Area in Hectares (Ha)  
i = Rainfall Intensity in millimeters per hour (mm/hr)  
i = 732.951/(TC+6.199)^0.810  
i = 1174.184/(TC+6.014)^0.816  
i = 1735.688/(TC+6.014)^0.820

2 Year  
5 Year  
100 Year

**Notes:**  
1. Mannings coefficient (n) = 0.013

Time-of-Concentration in the Swale  
FAA Equation:  $t (min) = 3.258 [(1.1 - C) L^{0.5} / S^{0.33}]$   
Where: Longest Watercourse Length, L (m). S (%)  
Runoff Coef. C = 0.25 Impervious

No.	L (m)	S %	Tc (min)
1	225	2.00	30.00
2	48	2.00	20.00

**Designed:** D.B.Y.  
**Checked:** D.B.Y./I.J.  
**Dwg. Reference:** C06

No.	Revision	Date
1.	City Submission No. 1	12/4/2020

<b>File Reference:</b> 201-03048-00	<b>Date:</b> 12/4/2020	<b>Sheet No:</b> 1 of 2
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STORM SEWER DESIGN SHEET

6301 Campeau Drive  
Residential Development  
Project: 201-03048-00  
Date: December, 2020

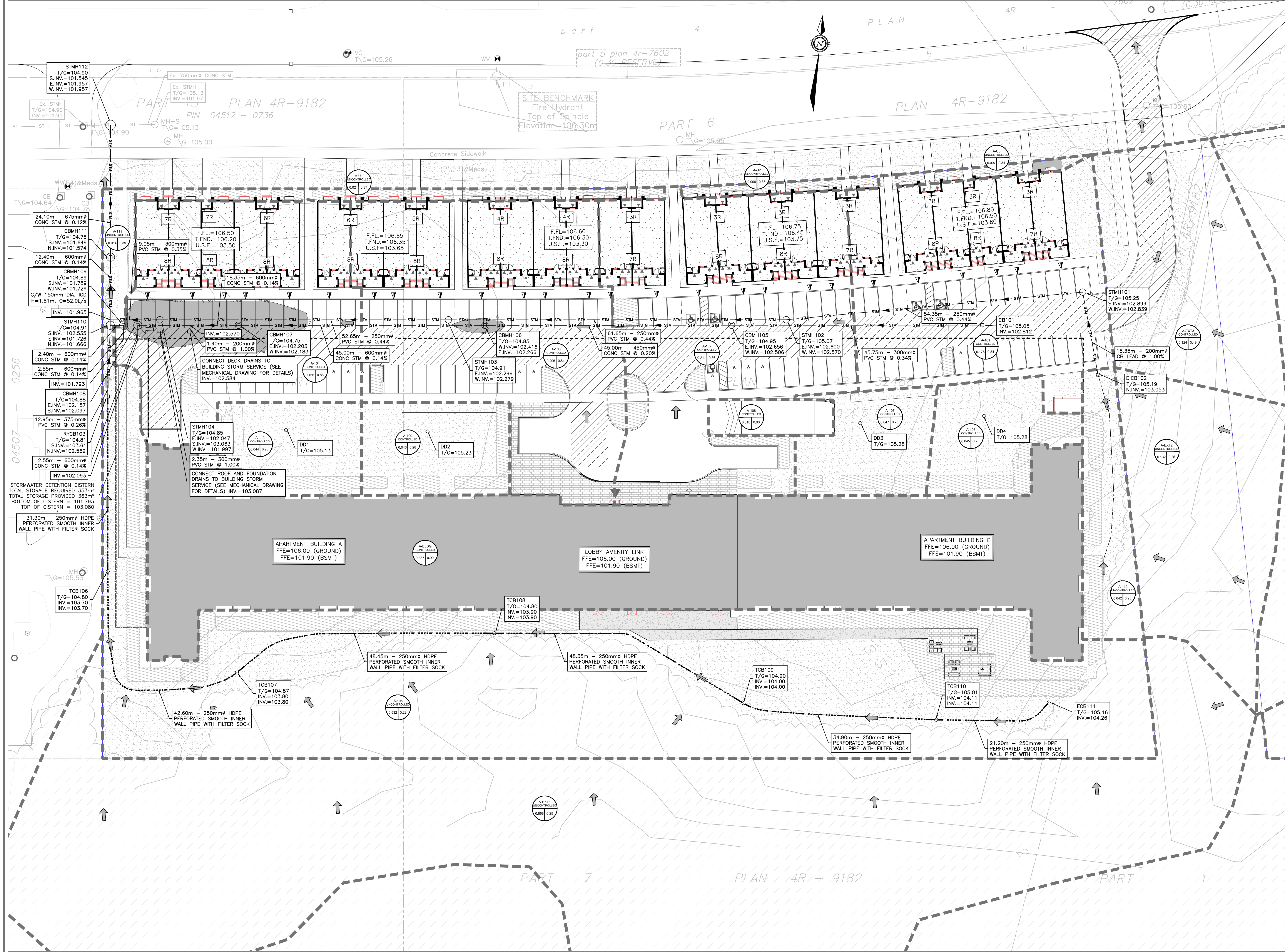


LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW											PROPOSED SEWER DATA												
STREET	AREA ID	FROM	TO	C= 0.25	C= 0.35	C= 0.50	C= 0.60	C= 0.75	C= 0.90	IND 2.78AC	CUM 2.78 AC	INLET (min)	TOTAL (min)	I (2) (mm/hr)	I (5) (mm/hr)	I (100) (mm/hr)	BLDG FLOW (L/s)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	ICD FIXED FLOW (L/s)	DESIGN FLOW (L/s)	MODIFIED DESIGN FLOW (L/s)	MATERIAL PIPE	SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME IN PIPE (L/s)	AVAIL CAP (2yr) (%)		
<b>To Cordillera Street</b>																																	
Parcel 2	B-EXT1	DICB204	STMH201	0.421					0.003	0.300	0.300	20.00	20.10	52.03	70.25	119.95		15.61					15.61		PVC DR-35	200.0	1.00	6.35	32.83	1.04	0.10	17.22	52.44%
Parcel 2			STMH201							0.000	0.300	20.10	21.73	51.87	70.03	119.57		15.57					15.57		PVC DR-35	250.0	0.44	78.40	39.49	0.80	1.63	23.92	60.58%
Parcel 2			STMH202							0.000	0.300	21.73	22.11	49.41	66.67	113.79		14.83				14.83		PVC DR-35	250.0	3.02	48.95	103.45	2.11	0.39	88.62	85.67%	
Parcel 2	B201	CB201	CBMH203	0.001					0.096	0.241	0.241	10.00	10.26	76.81	104.19	178.56		18.50				18.50		PVC DR-35	250.0	1.00	19.20	59.53	1.21	0.26	41.03	68.92%	
Parcel 2	B202	CBMH203	STMH205						0.082	0.205	0.446	10.26	10.40	75.81	102.82	176.18		33.81				33.81		PVC DR-35	250.0	1.00	9.80	59.53	1.21	0.13	25.71	43.20%	
Parcel 2	B207-B210	BUILDING DECK	STMH204	0.154					0.154	0.492	0.492	10.00	10.05	76.81	104.19	178.56		37.81				37.81		PVC DR-35	300.0	1.00	3.75	96.80	1.37	0.05	58.98	60.94%	
Parcel 2	B205	CB202	STMH204-STMH205	0.023					0.028	0.086	0.086	10.00	10.08	76.81	104.19	178.56		6.61				6.61		PVC DR-35	200.0	1.00	4.90	32.83	1.04	0.08	26.22	79.87%	
Parcel 2			STMH204						0.000	0.578	10.08	10.44	10.44	76.51	103.78	177.85		44.25				44.25		PVC DR-35	300.0	0.50	21.05	68.45	0.97	0.36	24.20	35.35%	
Parcel 2			STMH205						0.000	1.024	10.44	10.59	10.59	75.15	101.92	174.63		76.99				76.99		PVC DR-35	300.0	0.80	11.25	86.58	1.22	0.15	9.59	11.08%	
Parcel 2	B203	CBMH206	CBMH207	0.005					0.088	0.224	1.248	10.59	10.88	74.60	101.16	173.30		93.10				93.10		PVC DR-35	300.0	0.80	21.10	86.58	1.22	0.29	-6.52	-7.53%	
Parcel 2	B204	CBMH207	STMH208	0.003					0.106	0.267	1.515	10.88	11.01	73.58	99.76	170.88		111.50				111.50		PVC DR-35	300.0	1.00	10.40	96.80	1.37	0.13	-14.70	-15.19%	
Parcel 2			STMH208						0.000	1.515	11.01	11.40	11.40	73.14	99.15	169.84		110.83				110.83		PVC DR-35	300.0	1.00	32.05	96.80	1.37	0.39	-14.03	-14.50%	
Parcel 2			STMH209						0.000	1.515	11.40	11.44	11.44	71.82	97.34	166.71		108.84				108.84		PVC DR-35	300.0	0.80	2.80	86.58	1.22	0.04	-22.26	-25.71%	
Parcel 2			CISTERN						0.000	1.515	11.44	11.48	11.48	71.70	97.17	166.41		108.65				108.65		PVC DR-35	300.0	0.80	2.90	86.58	1.22	0.04	-22.07	-25.49%	
Parcel 2			CBMH210 (ICD)						0.000	1.515	11.48	11.52	11.52	71.57	96.99	166.10		108.45			28.60	108.45	28.60	PVC DR-35	300.0	0.80	3.00	86.58	1.22	0.04	57.98	66.97%	
Parcel 2	B211	CB203	STMH211						0.036	0.090	0.090	10.00	10.06	76.81	104.19	178.56		6.92				6.92		PVC DR-35	200.0	1.00	3.60	32.83	1.04	0.06	25.91	78.93%	
Parcel 2	B-BLDG	BUILDING ROOF	STMH211						0.276	0.691	0.691	10.00	10.13	76.81	104.19	178.56		53.04				53.04		PVC DR-35	250.0	1.40	11.50	70.43	1.43	0.13	17.40	24.70%	
Parcel 2			STMH211						0.000	2.296	22.11	22.21	22.21	48.86	65.93	112.50		112.18			28.60	112.18	66.74	PVC DR-35	300.0	2.50	12.50	153.05	2.16	0.10	86.31	56.39%	
Cordillera Street			STMH212							2.296	22.21	22.70	22.70	48.73	65.74	112.19		111.87			28.60	111.87	66.64	CONC	300.0	1.60	50.53	122.44	1.73	0.49	55.80	45.57%	

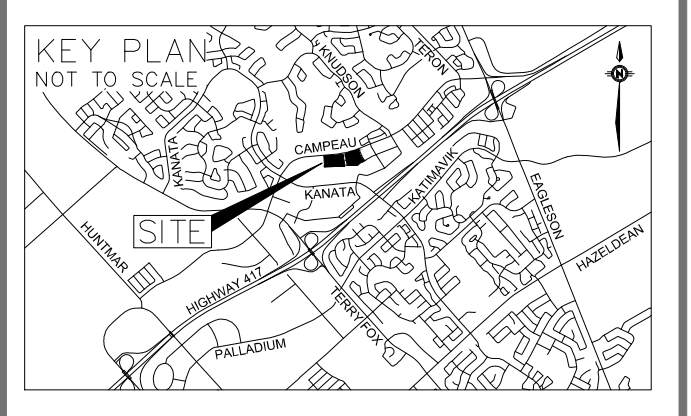
  

<b>Definition:</b> Q=2.78CiA, where: Q = Peak Flow in Litres per Second (L/s) A = Area in Hectares (Ha) i = Rainfall Intensity in millimeters per hour (mm/hr) i = 732.951/(TC+6.199)^0.810 i = 1174.184/(TC+6.014)^0.816 i = 1735.688/(TC+6.014)^0.820  2 Year 5 Year 100 Year	<b>Notes:</b> 1. Mannings coefficient (n) = 0.013  Time-of-Concentration in the Swale FAA Equation: $t (min) = 3.258 [(1.1 - C) L^{0.5} / S^{0.33}]$ Where: Longest Watercourse Length, L (m). S (%) Runoff Coef. C = 0.25 Impervious	<table border="1"> <thead> <tr> <th>No.</th> <th>L (m)</th> <th>S %</th> <th>Tc (min)</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>68</td> <td>1.50</td> <td>20.00</td> </tr> </tbody> </table>	No.	L (m)	S %	Tc (min)	3	68	1.50	20.00	<b>Designed:</b> D.B.Y.	<table border="1"> <thead> <tr> <th>No.</th> <th>Revision</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>City Submission No. 1</td> <td>12/4/2020</td> </tr> </tbody> </table>	No.	Revision	Date	1.	City Submission No. 1	12/4/2020
			No.	L (m)	S %	Tc (min)												
			3	68	1.50	20.00												
			No.	Revision	Date													
1.	City Submission No. 1	12/4/2020																
<b>Checked:</b> D.B.Y./J.J.																		
<b>Dwg. Reference:</b> C07	<b>File Reference:</b> 201-03048-00	<b>Date:</b> 12/4/2020																
		<b>Sheet No:</b> 2 of 2																





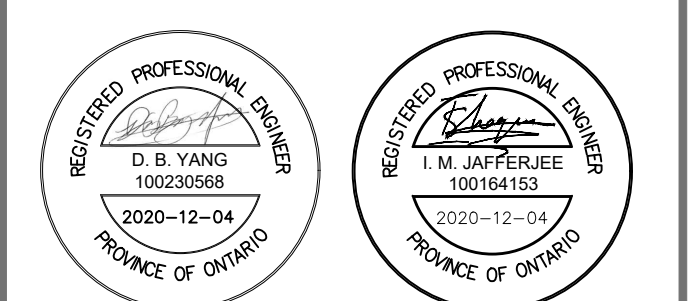
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 CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.



No.	REVISIONS	BY	DATE
01	ISSUED FOR SPA		D.Y. 2020-12-04

HORIZONTAL SCALE:  
 SCALE: 1:300

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



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**wsp**

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ANNIS, O'SULLIVAN, VOLLEBEKK  
 Ontario Land Surveyors  
 14 CONROUSE GATE, SUITE 500, WILLOWDALE, ONTARIO, M2E 7S6  
 TEL: (416) 727-0850 FAX: (416) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./J.J.

**6301 CAMPEAU DRIVE  
 RESIDENTIAL DEVELOPMENT**

DRAWING TITLE  
**STORM DRAINAGE AREA PLAN  
 PARCEL 1**

PROJECT NO.  
 201-03048-00

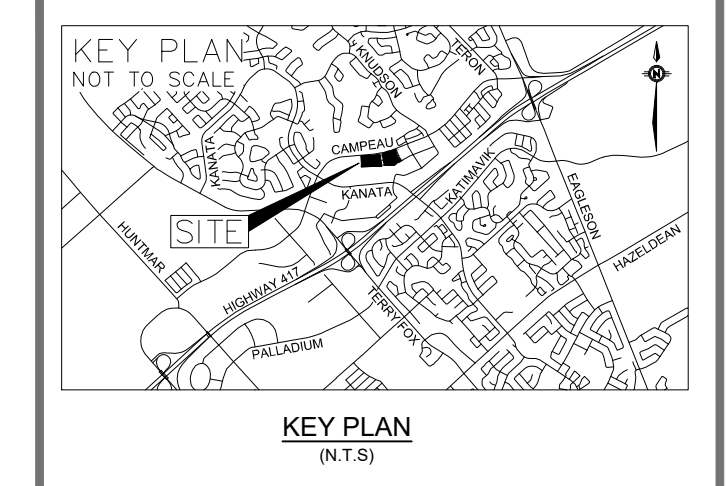
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 TEL: (416) 727-0850 FAX: (416) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./I.J.

6301 CAMPEAU DRIVE  
 RESIDENTIAL DEVELOPMENT

DRAWING TITLE  
**STORM DRAINAGE AREA PLAN  
 PARCEL 2**

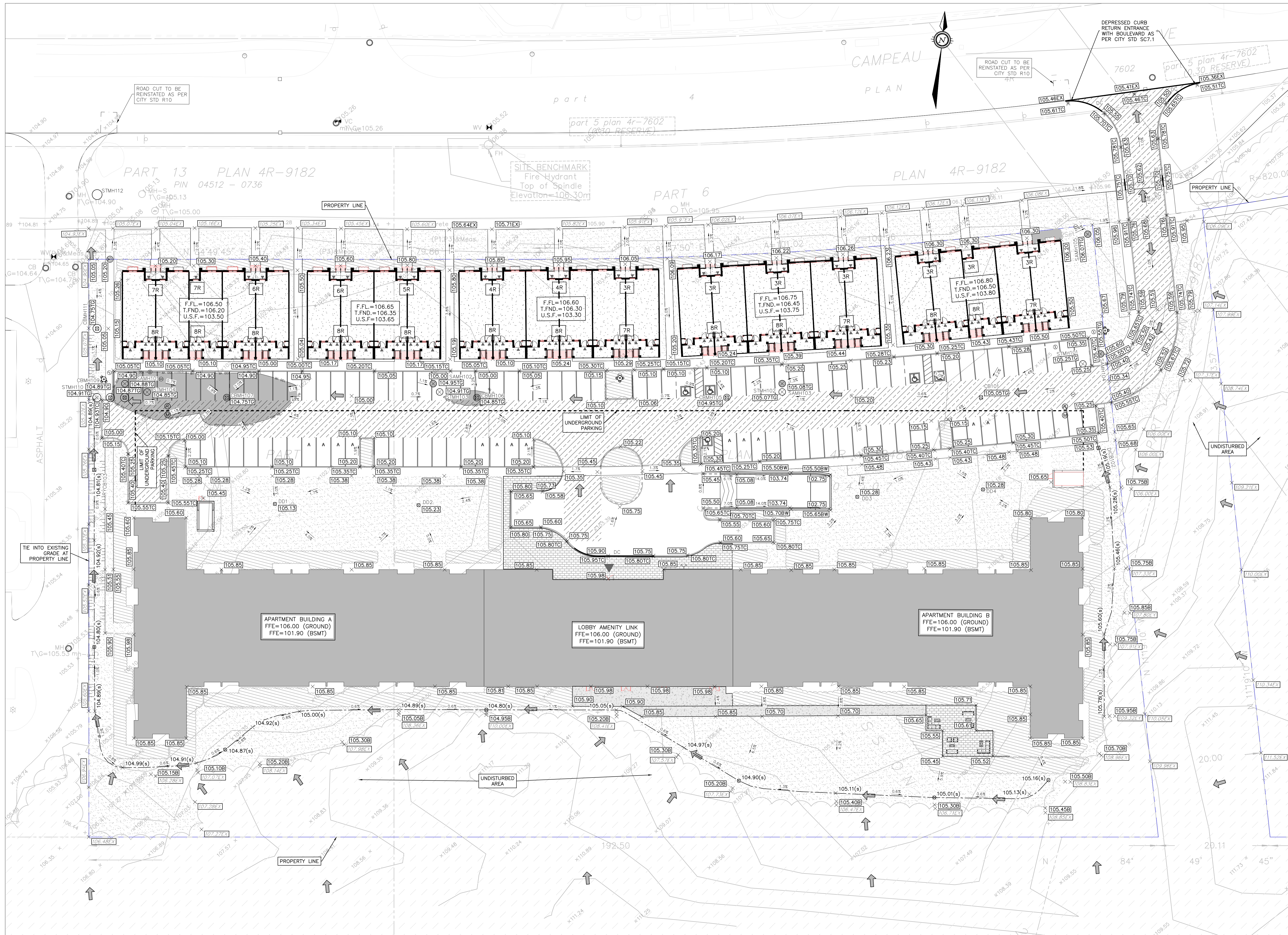
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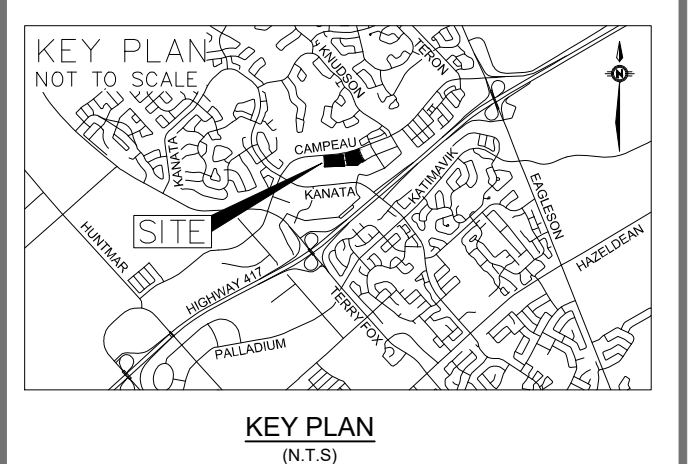
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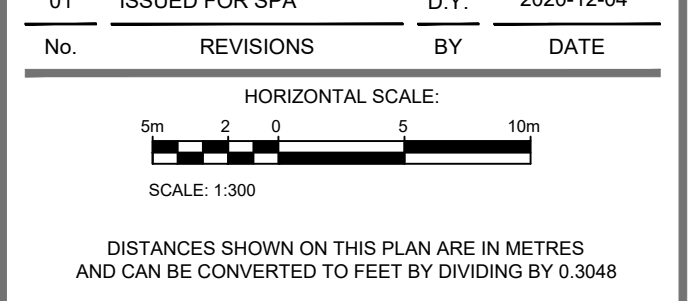




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 14 CONGRESS GATE, SUITE 500, WILLOWDALE, ONTARIO, M2E 7S6  
 TEL: (416) 727-0850 FAX: (416) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./J.J.  
**6301 CAMPEAU DRIVE RESIDENTIAL DEVELOPMENT**  
**GRADING PLAN PARCEL 1**

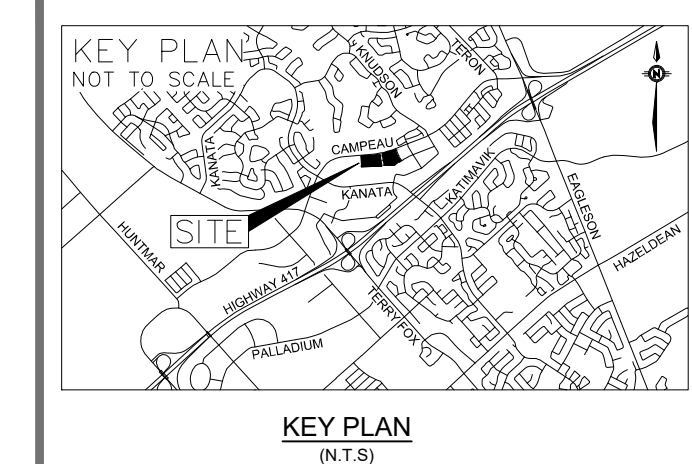
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No.	REVISIONS	BY	DATE
01	ISSUED FOR SPA	D.Y.	2020-12-04

HORIZONTAL SCALE:  
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 SCALE: 1:300

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 Ontario Land Surveyors  
 114 CONCORDS GATE, SUITE 500, WILLOWDALE, ONTARIO, M2E 7S6  
 TEL: (416) 727-0850 FAX: (416) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./J.J.

**6301 CAMPEAU DRIVE**  
 RESIDENTIAL DEVELOPMENT

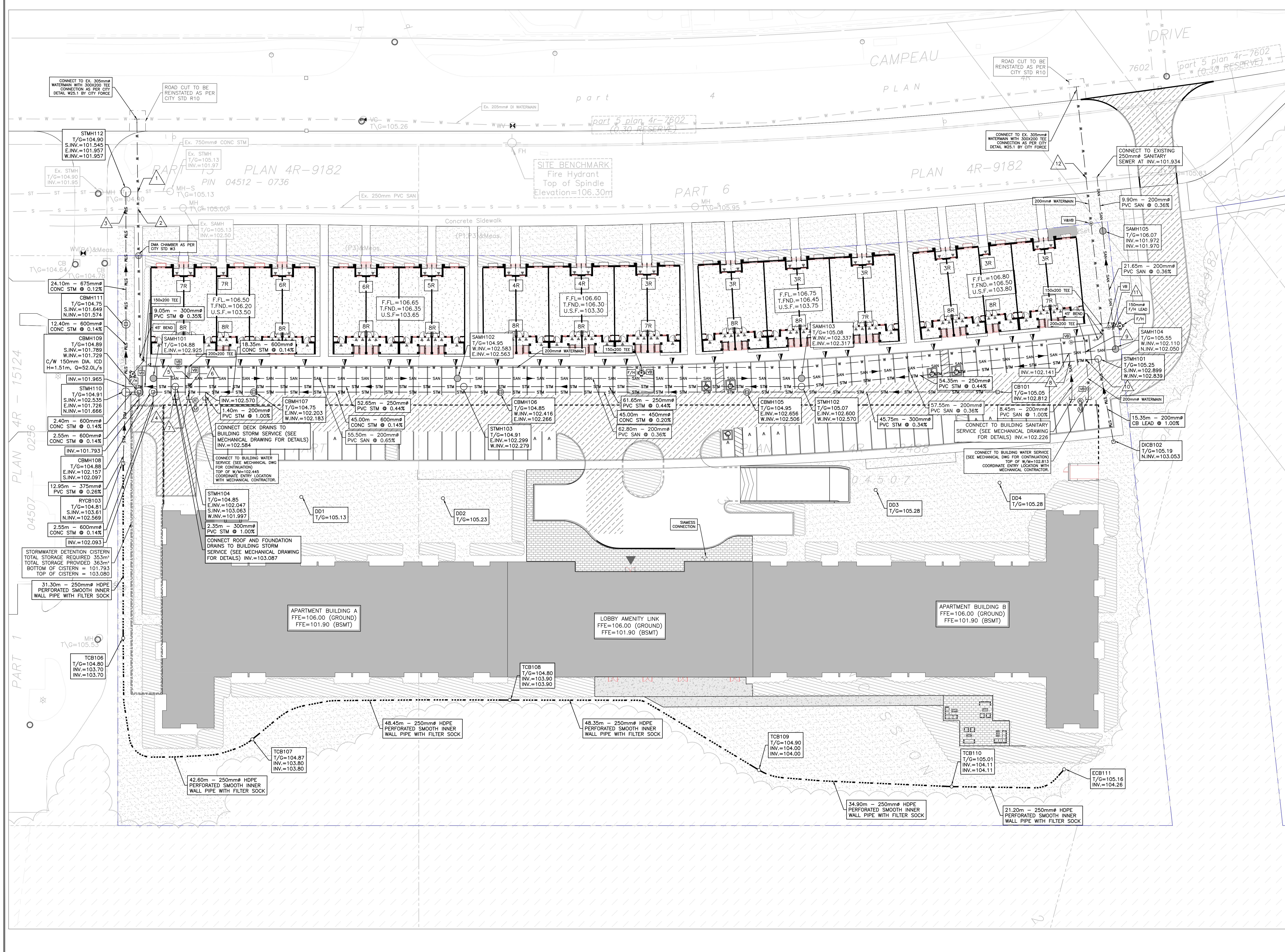
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**GRADING PLAN**  
**PARCEL 2**

PROJECT NO. 201-03048-00 DRAWING NO. C03

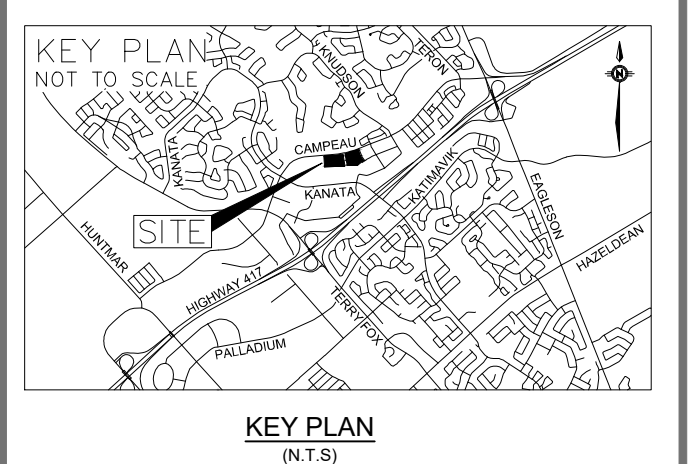
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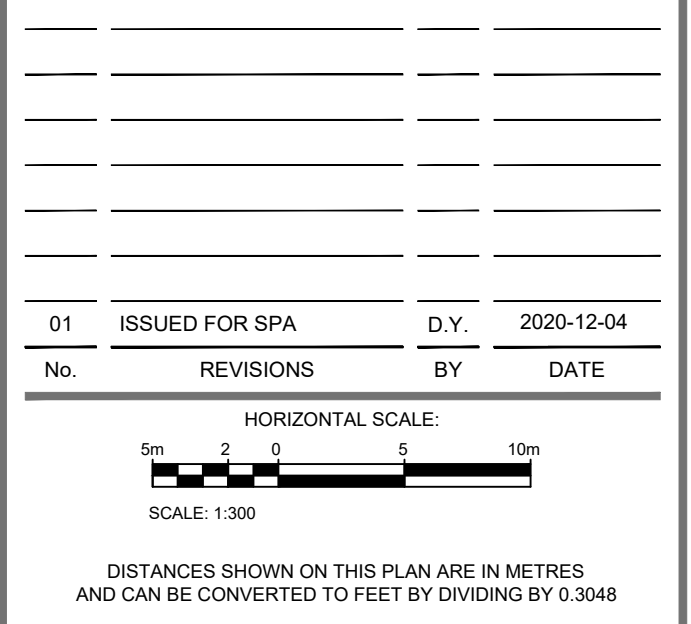




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 Ontario Land Surveyors  
 114 CONGRESS GATE, SUITE 500, NEPEAN, ONTARIO, K2E 7S6  
 TEL: (613) 727-0850 FAX: (613) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./J.J.

PROJECT: 6301 CAMPEAU DRIVE RESIDENTIAL DEVELOPMENT

DRAWING TITLE: SERVICING PLAN PARCEL 1

PROJECT NO.: 201-03048-00 DRAWING NO.: C04

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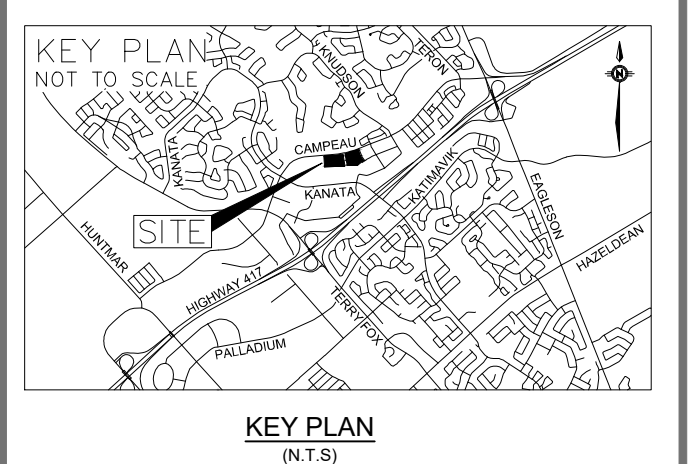
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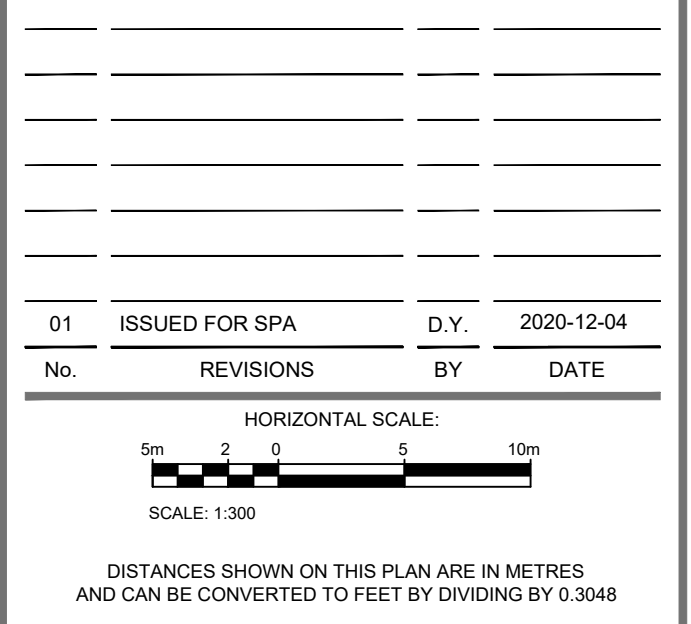




**GENERAL NOTES:**  
 THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEERS GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES, AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.  
 CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.



No.	REVISIONS	BY	DATE
01	ISSUED FOR SPA	D.Y.	2020-12-04



**wsp**  
 2611 Queensview Dr. Ottawa, ON Canada K2B 8K2  
 t: 613.829.2800 f: 613.829.8299 www.wspgroup.com



ANNIS, O'SULLIVAN, VOLLEBECK  
 Ontario Land Surveyors  
 114 CONCORDE GATE, SUITE 500, NEPEAN, ONTARIO, K2E 7S6  
 TEL: (613) 727-0850 FAX: (613) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./J.J.  
 PROJECT: 6301 CAMPEAU DRIVE RESIDENTIAL DEVELOPMENT  
 DRAWING TITLE: SERVICING PLAN PARCEL 2

PROJECT NO. 201-03048-00 DRAWING NO. C05

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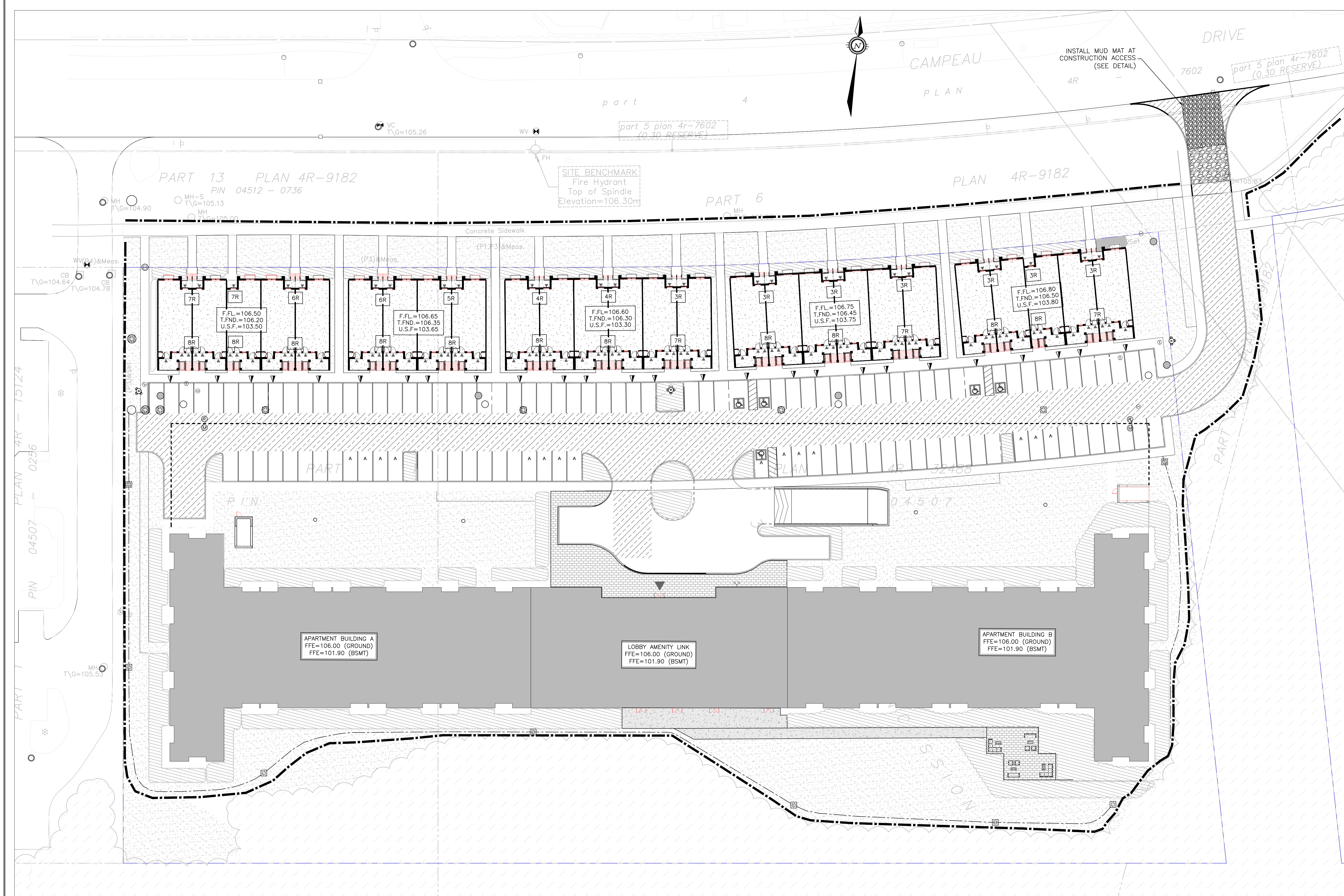
# APPENDIX

# APPENDIX

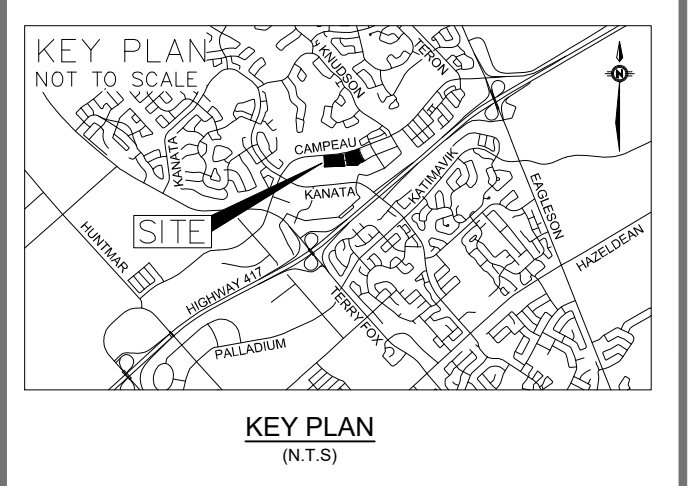
## E

- EROSION AND SEDIMENTATION CONTROL PLAN C07 AND C08





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No.	REVISIONS	BY	DATE
01	ISSUED FOR SPA	D.Y.	2020-12-04

HORIZONTAL SCALE:  
 0 2 4 6 8 10m  
 SCALE: 1:300

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



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 2611 Queensview Dr. Ottawa, ON Canada K2B 8K2  
 t: 613.829.2800 f: 613.829.8299 www.wspgroup.com



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 Ontario Land Surveyors  
 14 CONROUSE GATE, SUITE 500, WILLOWDALE, ONTARIO, M2E 7S6  
 TEL: (416) 727-0850 FAX: (416) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./I.J.

**6301 CAMPEAU DRIVE**  
**RESIDENTIAL DEVELOPMENT**

DRAWING TITLE  
**EROSION AND SEDIMENTATION CONTROL PLAN**  
**PARCEL 1**

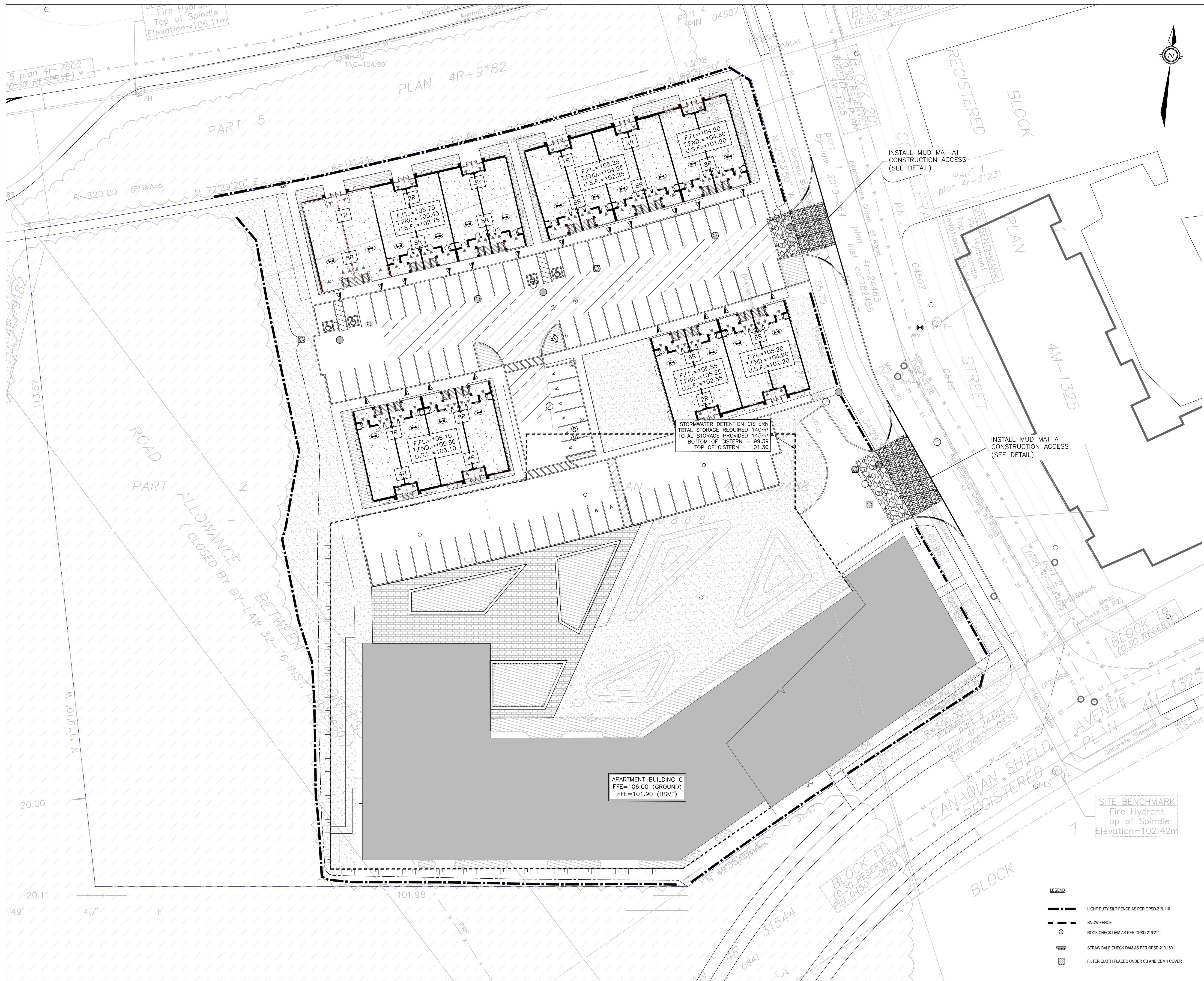
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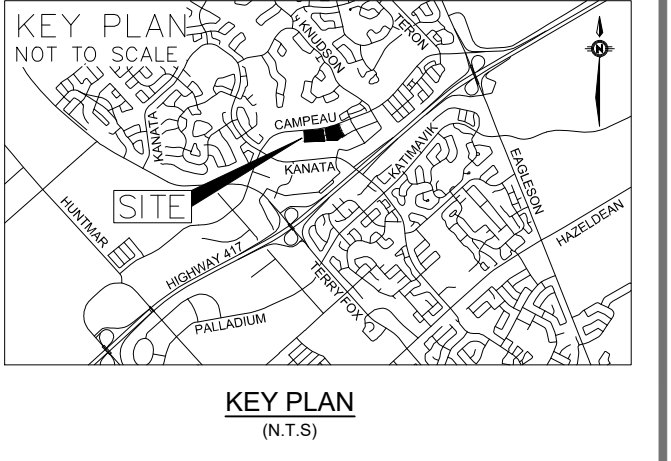
- LEGEND**
- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
  - - - SNOW FENCE
  - ROCK CHECK DAM AS PER OPSD-219.211
  - ▭ STRAW BALE CHECK DAM AS PER OPSD-219.180
  - ▭ FILTER CLOTH PLACED UNDER CB AND CBMH COVER

D07-XX-XX-XXXX  
 #XXXX

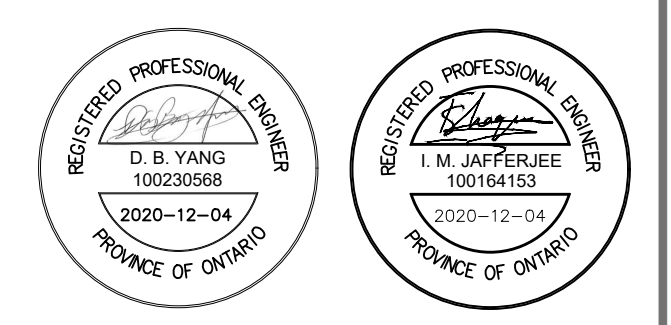
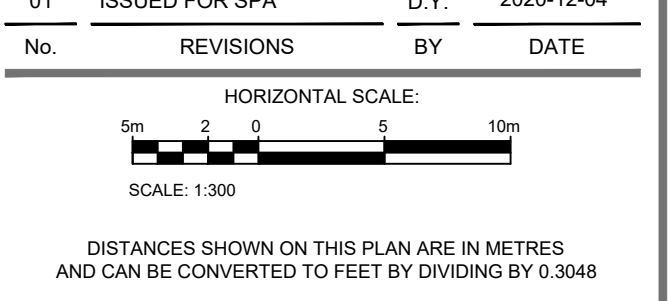




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01	ISSUED FOR SPA	D.Y.	2020-12-04



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 TEL: (416) 727-0850 FAX: (416) 727-1079

DESIGNED BY: D.Y. DRAWN BY: D.Y. APPROVED BY: D.Y./I.J.

**6301 CAMPEAU DRIVE RESIDENTIAL DEVELOPMENT**

DRAWING TITLE:  
**EROSION AND SEDIMENTATION CONTROL PLAN PARCEL 2**

PROJECT NO. 201-03048-00 DRAWING NO. C07

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 D07-XX-XX-XXXX



# APPENDIX

# APPENDIX

## F

- SUBMISSION CHECK LIST

## 4.1 General Content

- Executive Summary (for larger reports only).

*Comments:*

- Date and revision number of the report.

*Comments:*

- Location map and plan showing municipal address, boundary, and layout of proposed development.

*Comments:*

- Plan showing the site and location of all existing services.

*Comments:*

- 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.

*Comments:*

- Summary of Pre-consultation Meetings with City and other approval agencies.

*Comments:*

- 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 defensible design criteria.

*Comments:*

- Statement of objectives and servicing criteria.

*Comments:*

- Identification of existing and proposed infrastructure available in the immediate area.

*Comments:*

- 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).

*Comments:*

- 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.

*Comments:*

- 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.

*Comments:*

- Proposed phasing of the development, if applicable.

*Comments:*

- Reference to geotechnical studies and recommendations concerning servicing.

*Comments:*

- 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

*Comments:*

## 4.2 Development Servicing Report: Water

- Confirm consistency with Master Servicing Study, if available  
*Comments:*
- Availability of public infrastructure to service proposed development  
*Comments:*
- Identification of system constraints  
*Comments:*
- Identify boundary conditions  
*Comments:*
- Confirmation of adequate domestic supply and pressure  
*Comments:*
- 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.  
*Comments:*
- 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.  
*Comments:*
- Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design  
*Comments:*
- Address reliability requirements such as appropriate location of shut-off valves  
*Comments:*
- Check on the necessity of a pressure zone boundary modification.  
*Comments:*

- 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

*Comments:*

- 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.

*Comments:*

- Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

*Comments:*

- Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

*Comments:*

- Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

*Comments:*

### 4.3 Development Servicing Report: Wastewater

- 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).

*Comments:*

- Confirm consistency with Master Servicing Study and/or justifications for deviations.

*Comments:*

- 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.

*Comments:*

- Description of existing sanitary sewer available for discharge of wastewater from proposed development.

*Comments:*

- 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)

*Comments:*

- Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

*Comments:*

- Special considerations such as contamination, corrosive environment etc.

*Comments:*

## 4.4 Development Servicing Report: Stormwater

- Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

*Comments:*

- Analysis of available capacity in existing public infrastructure.

*Comments:*

- A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

*Comments:*

- 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.

*Comments:*

- Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

*Comments:*

- Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

*Comments:*

- Set-back from private sewage disposal systems.

*Comments:*

- Watercourse and hazard lands setbacks.

*Comments:*

- Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

*Comments:*



- Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

*Comments:*

- Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).

*Comments:*

- Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.

*Comments:*

- 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.

*Comments:*

- Any proposed diversion of drainage catchment areas from one outlet to another.

*Comments:*

- Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.

*Comments:*

- 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.

*Comments:*

- Identification of potential impacts to receiving watercourses

*Comments:*

- Identification of municipal drains and related approval requirements.

*Comments:*

- Descriptions of how the conveyance and storage capacity will be achieved for the development.

*Comments:*

- 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

*Comments:*

- Inclusion of hydraulic analysis including hydraulic grade line elevations.

*Comments:*

- Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.

*Comments:*

- 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.

*Comments:*

- Identification of fill constraints related to floodplain and geotechnical investigation.

*Comments:*

## 4.5 Approval and Permit Requirements: Checklist

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 each 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.

*Comments:*

- Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

*Comments:*

- Changes to Municipal Drains.

*Comments:*

- Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

*Comments:*

## 4.6 Conclusion Checklist

- Clearly stated conclusions and recommendations

*Comments:*

- 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.

*Comments:*

- All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

*Comments:*