

Report  
Project: 135883-6.04.01

# DESIGN BRIEF

## 255 RICHMOND ROAD

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Prepared for Y Street Capital C/O Vince Colizza Architects  
by IBI Group  
April 3, 2023

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<b>Appendix C:</b>	Sanitary Sewer Design Sheets C-400 Sanitary Drainage Area Plan
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# 1 INTRODUCTION

## 1.1 Scope

The purpose of this report is to outline the required municipal services, including water supply, stormwater management and wastewater disposal, needed to support the redevelopment of the subject property. The property is approximately 0.21 hectares in area and is an assembly of parcels of land comprised of 249-255 Richmond Road and 372 Tweedsmuir Ave.

The subject site is bounded by Tweedsmuir Ave to the east, and Richmond Road to the south, as well as existing commercial lands to the west and residential lands to the north. Refer to Figure 1 in **Appendix A** for site location.

This Site Servicing Study, which also includes the Stormwater Management Plan, Watermain Analysis and Erosion and Sedimentation Control Plans, is being completed in support of the Site Plan Application.

## 1.2 Subject Site

The proposed development consists of one mixed use multi-storey building consisting of 104 residential units, retail on the first floor fronting Richmond Road, and underground parking to support the proposed building. A copy of the proposed Site Plan, prepared by Vince Colizza Architects is included in **Appendix A**. The plan illustrates the building occupying most of the parcel and vehicular access to the site is provided from Tweedsmuir Ave.

The site currently consists of several commercial buildings (Ottawa Medispa, Capital Printers, Rikochet Resale, and Whispers Pub) and a residential building. All existing structures within the subject property will be demolished to facilitate the proposed development.

## 1.3 Pre-consultation

A pre-consultation meeting with the City of Ottawa was held regarding the proposed development. Notes from this meeting may be found in **Appendix A**. No significant constraints relating to the site servicing or stormwater management for the subject lands were identified during the consultation.

## 2 WATER DISTRIBUTION

### 2.1 Existing Conditions

The proposed development is located within the City of Ottawa pressure zone 1W. There is a 300 mm diameter watermain along Richmond Road and a 150mm diameter watermain along Tweedsmuir Ave, both mains service the existing buildings within the subject parcel. Existing services within the project site will be disconnected and abandoned per City of Ottawa Standards. A survey of the subject parcel was completed by Farley, Smith, Denis Surveying Ltd. and is included in **Appendix B** the survey illustrates the location of the existing water plant adjacent to the site.

### 2.2 Design Criteria

#### 2.2.1 Water Demands

The proposed development plan includes 104 residential units, as well as some commercial space on the first floor. Water demands have been calculated for the full development. Per unit population density and consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- ICI Average Day Demand                      2500 l/m<sup>2</sup>/day
- ICI Peak Daily Demand                        3750 l/m<sup>2</sup>/day
- ICI Peak Hour Demand                        6750 l/m<sup>2</sup>/day
- Residential Average Day Demand        280 l/cap/day
- Residential Peak Daily Demand         700 l/cap/day
- Residential Peak Hour Demand         1540 l/cap/day

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

- Average Day                      0.59 l/s
- Maximum Day                    1.46 l/s
- Peak Hour                        3.20 l/s

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

	Richmond Connection	Tweedsmuir Connection
Minimum HGL	108.7	108.7
Maximum HGL	114.9	114.9
Max Day + FireFlow (133.3 L/s)	110.0	104.4

## 2.2.2 System Pressures

The 2010 City of Ottawa Water Distribution Guidelines states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 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 in the distribution system in unoccupied areas 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) in occupied areas. Pressure reduction controls may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

## 2.2.3 Fire Flow Rate

A calculation using the Fire Underwriting Survey (FUS) method was conducted to determine the fire flow requirement for the site. The building is considered non-combustible construction and is fully sprinklered. Results of the analysis provides a maximum fire flow rate of 8,000 l/min or 133.3 l/s is required which is used in the hydraulic analysis. A copy of the FUS calculation is included in **Appendix B**.

## 2.3 Proposed Water Plan

Two proposed 150mm diameter water services will connect the building to the municipal system. It is proposed to provide a connection to both Tweedsmuir and Richmond mains for redundancy purposes, see site servicing plan 135883-C-001 in **Appendix E**. An existing valve chamber separates the two connections. Two existing fire hydrants are expected to provide fire flow coverage for the site, as can be seen in **Figure 2.2** in **Appendix B**. For the purposes of this report, assuming a minimal loss within the service connection the pressures within the site can be estimated as follows:

Minimum Pressure (Peak Hour) – The minimum peak hour pressure on the site can be estimated as HGL 108.7m – meter elevation (assumed to be 1m above level P1) 63.06m = 45.64m or 447.46 kPa which exceeds the minimum requirement of 276 kPa. The pressure on the top floor can be estimated as 108.7m – 92.58m = 16.12m or 158.1 KPa which is below the minimum of 276 kPa and will require a water pump.

Fire Flow – On Richmond Rd, the max day plus fire flow can be estimated as HGL 110.0 – ground floor 67.47 = 42.53m or 417.2 KPa which exceeds the minimum of 140kPa. On Tweedsmuir Ave, the max day plus fire flow can be estimated as HGL 104.4 – 67.47 = 36.93m or 362.3 KPa which also exceeds the minimum of 140kPa.

Max HGL (High Pressure Check) – The high-pressure check can be estimated as HGL 114.9 – lowest level) 55.66 = 59.24m or 580.8 KPa which exceeds the maximum of 552 kPa, therefore a pressure reducing valve is required.

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

All existing water services will be located and abandoned per City of Ottawa specifications.

Two hydrants are available to service the subject property as seen in **Figure 2**. Both hydrants are within 75m of the building's Siamese connection. With 2 AA hydrants within 75m of the building the minimum number of hydrants needed to deliver the required fire flow to the structure is being provided in accordance with Technical Bulletin ISTB-2018-02 dated March 21, 2018.

BUILDING ID	FIRE FLOW DEMAND (L/MIN)	FIRE HYDRANT(S) WITHIN 75M (5,700 L/MIN)	FIRE HYDRANT(S) WITHIN 150M (3,800 L/MIN)	COMBINED FIRE FLOW (L/MIN)
255 Richmond	8,000	2	0	11,400

## 3 WASTEWATER SYSTEM

### 3.1 Existing Conditions

Municipal sanitary sewers abut the property along both Richmond Road and Tweedsmuir Ave, which provide servicing to the existing properties. A survey of the subject parcel was completed by Farley, Smith, Denis Surveying Ltd. and is included in **Appendix B** the survey illustrates the location of the existing sanitary sewers adjacent to the site.

### 3.2 Design Criteria

The sanitary flows for the development are based on the City of Ottawa design criteria which includes, but it not limited to the following criteria:

- Average Residential Flow 280 l/p/d
- Average Population density 1.8 PPU for apartments
- Residential Peaking Factor Harmon Formula [max = 4.0, min. = 2.0]
- Retail Flow 5 l/m<sup>2</sup>/d
- Restaurant Flow 125 l/seat/d
- ICI Peaking factor 1.5 if ICI in contributing area >20%  
1.0 if ICI in contributing area <20%
- Infiltration allowance 0.33 l/s/ha
- Velocities 0.60 m/s min. to 3.0 m/s max.

### 3.3 Recommended Wastewater Plan

It is proposed to abandon the existing services for 372 Tweedsmuir and 249-255 Richmond, in accordance with City of Ottawa specifications. The sanitary sewer design sheet in **Appendix C** confirms the proposed service lateral to service the proposed building has sufficient capacity to accommodate the development.

The proposed development is a mixed-use development designed to provide a higher density meet this City objective of more intensification to maximize use of existing infrastructure. The following reviews the impact of increased density on the volume of wastewater to be generated from the proposed development. The existing municipal sanitary sewer system that services these parcels would have been designed based on commercial sewage loading of 50,000 l/Ha/d and infiltration allowance of 0.28 l/s/Ha, for the 0.21 Ha site would result in an average flow of 0.187 l/s.

Avg commercial flow: 50,000 l/Ha/d X 0.218 Ha=10,900 l/d = 0.126 l/s

Infiltration allowance: 0.218 Ha X 0.28 l/s/Ha = 0.061 l/s,

Original avg. design flow, 0.126 + 0.061 = 0.187 l/s

The proposed mixed-use development includes residential and commercial uses. Based on the previously noted flow rates of 280 l/p/d for residential, 5 l/m<sup>2</sup>/d for retail, and 125 l/seat/d for the



restaurant portion, including an ICI peaking factor of 1.5, the average wastewater flow plus infiltration allowance calculates to 0.81 l/s, as noted below:

Avg pop flow:  $177 (61 \text{ units @ } 1.4\text{ppu}, 42 \text{ units @ } 2.1\text{ppu} \& 1 \text{ unit @ } 3.1\text{ppu}) \times 280 \text{ l/p/d} = 49,560 \text{ l/d} = 0.57 \text{ l/s}$

Plus retail flow of  $5 \text{ l/m}^2/\text{d} \times 391\text{m}^2 \times 1.5 = 1,955 \text{ l/d} = 0.034 \text{ l/s}$ ,

and restaurant flow of  $125 \text{ l/seat/d} \times 60 \text{ seats} \times 1.5 = 7500 \text{ l/d} = 0.130 \text{ l/s}$

avg flow =  $0.57+0.034+0.130 = 0.734 \text{ l/s}$

Infiltration allowance:  $0.218\text{Ha} \times 0.33\text{l/s/Ha} = 0.072 \text{ l/s}$ ,

Rezoned avg flow,  $0.734 + 0.072 = 0.806 \text{ l/s}$

The proposed redevelopment results in a theoretical increase in average flow to the downstream system of  $0.806-0.187= 0.619 \text{ l/s}$ . The sanitary service connection is to an existing 375mm dia sanitary sewer which discharges into the 1500 mm dia West Nepean Collector at the end of Tweedsmuir Ave, given the size of these sewers and that City Staff have not advised of any downstream issues, that there is ample available capacity to accommodate the proposed redevelopment. The proposed design meets City of Ottawa and MOE requirements. Existing services within the project site will be disconnected and abandoned per City of Ottawa Standards.

## 4 STORMWATER MANAGEMENT

### 4.1 Existing Conditions

During the Pre-consult with the City no infrastructure concerns were noted, and follow-up memo was provided by the City along with the preconsult meeting notes, the stormwater infrastructure comments are summarized below:

*Available Infrastructure:*

*Tweedsmuir Avenue, Storm: 1200mm Conc (Install 2002)*

*Richmond Road, Storm: 375mm PVC (Install 2004)*

*Stormwater Management:*

*Coefficient (C) of runoff determined as per existing conditions but in no case more than 0.5*

*TC = To be calculated, minimum 10 minutes*

*Any storm events greater than 2 year, up to 100 year, and including 100-year storm event must be detained on site.*

*Foundation drains are to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.*

*Roof drains are to be connected downstream of any incorporated ICD within the SWM system.*

*Stormwater management criteria (Quality Control):*

*Include a section in the SWM report concerning quality control requirements. It is the consultant's responsibility to check with the relevant Conservation Authority for quality control issues and include this information in the SWM report.*

As noted above there is a 1200 mm diameter storm sewer along Tweedsmuir Ave and a 375mm diameter storm sewer along Richmond Road, both sewers service the existing buildings within the subject parcel. Existing services within the project site will be disconnected and abandoned per City of Ottawa Standards. A survey of the subject parcel was completed by Farley, Smith, Denis Surveying Ltd. and is included in **Appendix B** the survey illustrates the location of the existing storm sewers adjacent to the site.

## 4.2 Design Criteria

As noted in the preconsult memo the City of Ottawa requires the site to follow the following design criteria;

- Storm sewers designed to a 2 year level of service
- Site to be designed to limit the 100 year post development flow to a maximum of the 2 year rate with C=0.5.

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

Some of the key criteria include the following:

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

## 4.3 Proposed Minor System

Using the above-noted criteria, the proposed storm service lateral was sized accordingly. The storm sewer design sheet and the associated storm sewer drainage area plan are included in **Appendix D**. The site servicing drawing in **Appendix E** illustrates the proposed building above grade outline, and where the underground structure extends beyond the above grade building. All decks and roof drains will be routed inside the building via the mechanical plumbing systems and directed to the building cistern located adjacent to the northeast corner of the building. Two landscaped areas will be serviced by rear yard catchbasins, these catchbasins will discharge into the building plumbing system and will be directed to the building cistern. The cistern will be equipped with duplex storm pumps to control the flow rate of the storm water runoff from the site

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

## 4.4 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through a duplex storm pump system set to discharge at the identified release rate. When rainfall events generate flows that are more than the site's allowable release rate excess volume will be stored within the cistern.

At certain locations within the site, the opportunity to capture runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties, and it is not always feasible to capture stormwater runoff. These "uncontrolled" areas total 0.016 hectares. The runoff from the remaining site will be collected and discharged into the cistern, sized to accommodate inflow during the 1:100-year event with no overflow leaving the site.

The restricted release rate for the 0.218 Ha site as noted previously is limited to the 2yr flow with  $C=0.5$

$$Q_{\text{restricted}} = 2.78 \times C \times i_{2\text{yr}} \times A \text{ where:}$$

$$C = 0.5$$

$$i_{2\text{yr}} = \text{Intensity of 2-year storm event (mm/hr)}$$

$$= 732.951 \times (T_c + 6.119)^{0.810} = 78.61 \text{ mm/hr; where } T_c = 10 \text{ minutes}$$

$$Q_{\text{restricted}} = 23.28 \text{ l/s}$$

As noted above, a portion of the site will be left to discharge to the surrounding boulevards and roadways uncontrolled.

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

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

$$C_{100} = \text{Average runoff coefficient of uncontrolled area} = 1.00$$

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

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

$$A_{1+2+3} = \text{Uncontrolled Area} = 0.010 \text{ Ha} + 0.001 \text{ Ha} + 0.005 \text{ Ha} = 0.016 \text{ Ha}$$

Therefore, the uncontrolled release rate can be determined as:

$$Q_{\text{uncontrolled}} = 7.94 \text{ L/s}$$

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

$$\begin{aligned} Q_{\text{max allowable}} &= Q_{\text{restricted}} - Q_{\text{uncontrolled}} \\ &= 23.28 \text{ L/s} - 7.94 \text{ L/s} = 15.34 \text{ L/s} \end{aligned}$$

As noted in the preconsult notes, any excess storm water runoff up to the 100-year event is to be stored on-site, in order to not surcharge the downstream municipal storm sewer system. For this site a building cistern will be used, no roof top or surface storage will be employed. A duplex storm pump will be designed to limit discharge from the tank to 15.00 L/s to meet the maximum allowable release rate to the storm sewer system. The Modified Rational Method was used to identify the required storage, the MRM spreadsheet in **Appendix D** identifies the required storage to accommodate the 1:100yr and 1:2yr events. The following table summarizes the on-site storage requirements during both the events.

AREA	TRIBUTARY AREA	AVAILABLE STORAGE (M <sup>3</sup> )	100-YEAR STORM		2-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M <sup>3</sup> )	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M <sup>3</sup> )
Roof & Deck	0.202	70	15.00	65.96	15.00	14.68
Unrestricted	0.016		7.94		3.07	
<b>TOTAL</b>	<b>0.218</b>	<b>70</b>	<b>22.94</b>	<b>65.96</b>	<b>18.07</b>	<b>14.68</b>

In all instances the required storage is met with the building cistern.

As demonstrated above, the proposed site controls will restrict the 100-year storm event runoff from the site into the existing storm sewer system to 23.28 l/s. Restricted stormwater will be contained onsite by the building cistern. Should a more extreme event occur, or should a roof inlet become blocked, scuppers will provide for overflow to the street. In the unlikely event the duplex pump system fails, or the storm service lateral is blocked, an emergency overflow from the building cistern to the street is provided.

## 5 SOURCE CONTROLS

### 5.1 General

The existing municipal storm sewer system collects and conveys storm runoff to the Ottawa river without any end of pipe quality treatment for captured stormwater. On site level or source control management of runoff will be provided. The proposed building configuration consists of a podium covering most of the site and no onsite surface parking or exposed drive lanes are proposed. Surface runoff will be collected and controlled by a cistern and duplex pump system. It is proposed to include a sump within the cistern. The sump will trap pollutants such as sand, grit and debris which can be mechanically removed prior to being flushed into the minor pipe system. The underground garage extends beyond the above grade building at the cistern location allowing for a maintenance hole exterior to the building to facilitate the use of a vacuum truck to clean out any debris/sediment from the tank as needed.

## 6 SEDIMENT AND EROSION CONTROL PLAN

### 6.1 General

During construction, existing conveyance systems can be exposed to significant sediment loadings. Although construction is only a temporary situation, it is proposed to introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These include:

- Installation of filter cloths on open surface structures such as maintenance holes and catchbasins during building construction.
- Installation of silt fence on the site perimeter, where practical.

The Erosion and Sedimentation Control measures are detailed in drawing 135883-C-900 in **Appendix E**.

### 6.2 Trench Dewatering

Although little groundwater is expected during construction of municipal services, any trench dewatering using pumps will be discharged into a filter trap made up of geotextile filters and straw bales similar in design to the OPSD 219.240 Dewatering Trap. These will be constructed in a bowl shape with the fabric forming the bottom and the straw bales forming the sides. Any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filters as needed including sediment removal and disposal and material replacement as needed.

### 6.3 Surface Structure Filters

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. However, until the surrounding surface has been completed these structures should be covered in some fashion to prevent sediment from entering the minor storm sewer system. Until landscaped areas are sodded or until drive isles and parking lots are asphalted and curbed, catchbasins and manholes will be constructed with geotextile filter bags or a geotextile filter fabric located between the structure frame and cover respectively. These will stay in place and be maintained during construction and build until it is appropriate to remove.

## 7 SOILS and GRADING

Paterson Group was retained to prepare a geotechnical investigation for the proposed development. The objectives of the investigation were to prepare a report to:

- Determine the subsoil and groundwater conditions at the site by means of test holes.
- To provide geotechnical recommendations pertaining to design of the proposed development including construction considerations.

The geotechnical report PG5946-1 rev 2, “Geotechnical Investigation 249, 255 Richmond Road and 372 Tweedsmuir Ave.” dated September 24, 2021. A copy of the report has been included with the SPA application. The report contains recommendations for building construction and site services, which include but are not limited to the following for site servicing:

- At least 300 mm of OPSS Granular A should be used for pipe bedding for sewer and water pipes. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to at least 300 mm above the obvert of the pipe, should consist of OPSS Granular A or Granular B Type II with a maximum size of 25 mm. The bedding and cover materials should be placed in maximum 225 mm thick lifts compacted to 99% of the material’s standard Proctor maximum dry density.
- The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 99% of the material’s SPMDD
- Long term groundwater level is expected to range between 5 to 7m below grade
- No Grade raise restrictions were noted.

MATERIAL	Layer Thickness
• <b>Access Lanes</b>	
• Asphalt Wearing Course (Superpave 12.5)	• 40 mm
• Asphalt Binder Course (Superpave 19.0)	• 50 mm
• Well Graded Granular Base Course (Granular ‘A’)	• 150 mm
• Well Graded Granular Sub-Base Course (Granular ‘B’ Type II)	• 300 mm

A topographic survey of the subject parcel was completed by Farley, Smith, Denis Surveying Ltd. and is included in **Appendix B** the survey illustrates spot elevations within and along the perimeter of the site. The topo survey reveals the high point on the site is where the property lines along Richmond Road and Tweedsmuir Ave. intersect. Along the Richmond Road frontage, the elevation drops 0.28m across the 61m frontage for an average slope of 0.46%, along Tweedsmuir Ave frontage, the elevation drops 2.05m across 57m frontage for an average slope of 3.6%. To take advantage of the drop in elevation along Tweedsmuir the ramp to the underground parking was located along that frontage. To deal with the elevation drop across Tweedsmuir Ave. and provide barrier free access at the various entrances the ground floor Finished Floor elevation drops from 67.47 for the retail entrances along Richmond Road, to 66.47 for the tower lobby, and 66.73 with steps for the north entrance. Detailed grading plan 135883-C-200 is provided in **Appendix E**.

## 8 Conclusions

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

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

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on surface water.

Based on the information provided herein, the development can be serviced to meet City of Ottawa requirements.

Report prepared by:



Demetrius Yannouloupoulos, P.Eng.  
Director



S.E. Labadie, P.Eng.  
Project Engineer

# **APPENDIX A**



J:\135863\_255\_Richmond\7.0\_Production\7.03\_Design\04\_Civil\Sheets\FIGURES\FIGURE-1-SITELLOCATION.dwg Layout Name: Layout1

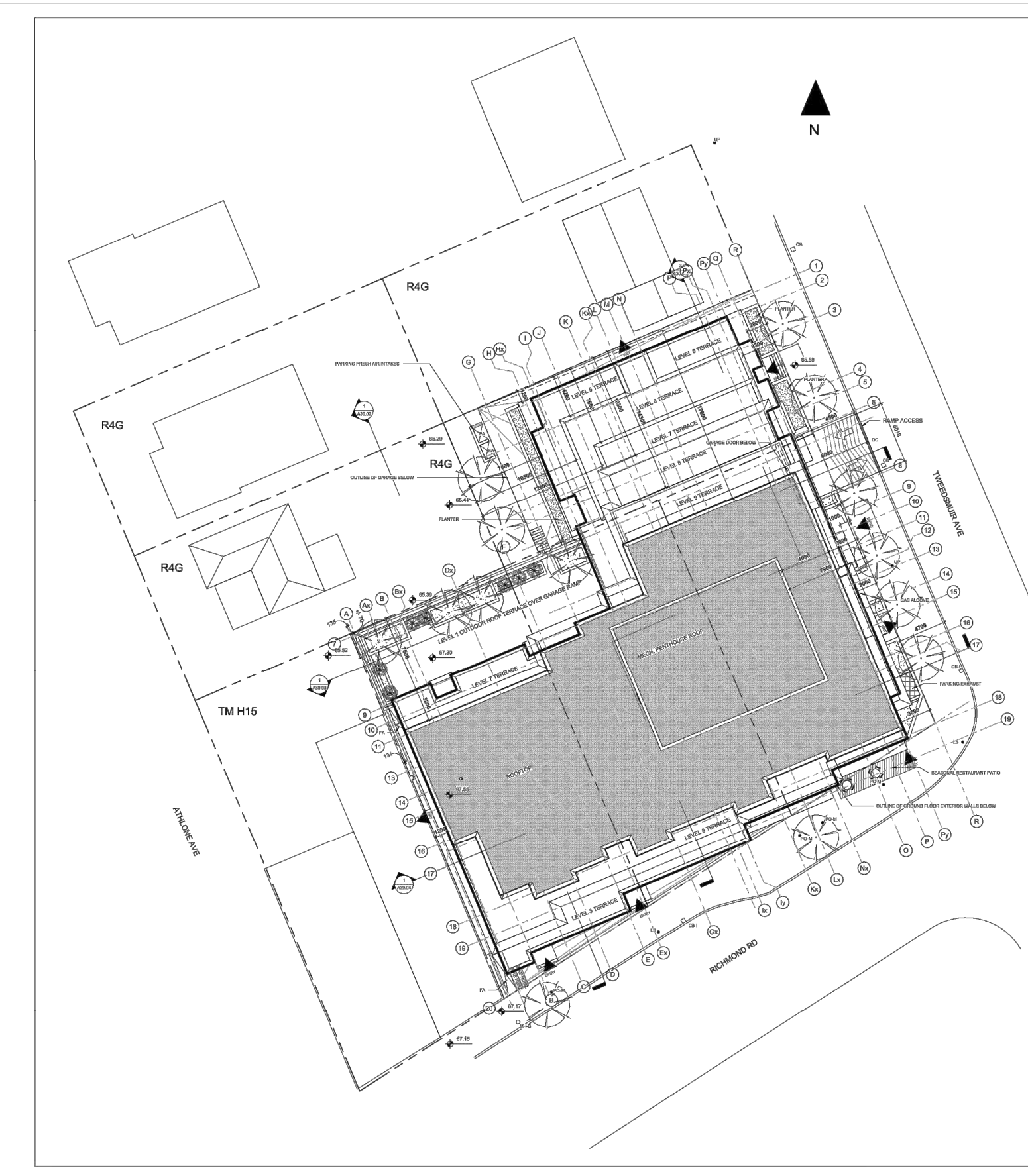


Project Title  
255 RICHMOND ROAD

Drawing Title  
SITE LOCATION

Sheet No.  
FIGURE 1

J:\35883\_255\_Richmond\7.0\_Production\7.03\_Design\04\_Civil\Sheets\FIGURES\FIGURE-2-SITE PLAN.dwg Layout Name: Layout1 Plot Scale: 1:5.13 Plotted At: 4/3/2023 Last Saved By: dsurna Last Saved At:



**ZONING INFORMATION**

**ZONE DESIGNATION**

TM H15

**ZONING REQUIREMENTS**

NOTE:

MIN. LOT WIDTH REQUIRED:	NO MINIMUM
LOT WIDTH PROVIDED (NORTH PROPERTY LINE):	48.8M
LOT WIDTH PROVIDED (SOUTH PROPERTY LINE):	48.8M
MIN. LOT AREA REQUIRED (NET):	NO MINIMUM
LOT AREA PROVIDED:	319.12MP
MIN. BUILDING HEIGHT:	15.0M
BUILDING HEIGHT FROM AVG GRADE:	31.0M
MAX FRONT YARD SETBACK:	2M
FRONT YARD SETBACK (RETAIL) (VARIES AT GRADE):	0M
FRONT YARD SETBACK (RESIDENTIAL):	2M
MIN. REAR YARD SETBACK:	7.5M
REAR YARD SETBACK (CORNER RA ZONE):	1.2M
REAR YARD SETBACK (CORNER T1 ZONE):	0.7M
REAR YARD SETBACK BUILDING ABOVE GRADE:	7.5M
MAX INTERIOR SIDE YARD SETBACK:	2M
INTERIOR SIDE YARD SETBACK (CORNER RA ZONE):	7.5M
INTERIOR SIDE YARD SETBACK (T1 ZONE):	0.138M
INTERIOR SIDE YARD SETBACK (NET):	1.2M
MIN. CORNER YARD SETBACK (WEST):	3M
MIN. CORNER YARD SETBACK (EAST):	2M
CORNER YARD SETBACK (ABOVE 15M):	2M
CORNER YARD SETBACK (ABOVE 15M) PROVIDED:	2.5M
MIN. DRIVEWAY AVAIL. WIDTH:	6.2M
DRIVEWAY AVAIL. WIDTH:	6M

**DEVELOPMENT INFORMATION**

**PROPOSED:**

GROUND FLOOR GFA (UNITS ONLY):	214.89MP
SECOND FLOOR GFA:	894.55MP
THIRD FLOOR GFA:	1195.23MP
FOURTH FLOOR GFA:	1195.23MP
FIFTH FLOOR GFA:	1071.04MP
SIXTH FLOOR GFA:	1071.04MP
SEVENTH FLOOR GFA:	892.25MP
EIGHTH FLOOR GFA:	892.25MP
NINTH FLOOR GFA:	892.25MP
TOTAL GFA (RETAIL/COMMERCIAL):	1000.89MP
TOTAL GFA (RESIDENTIAL):	8146.78MP
TOTAL BUILDING GFA:	9153.28MP
PROPOSED # UNIT (RETAIL):	3 UNITS
PROPOSED # UNIT (RESIDENTIAL):	104 UNITS

**PARKING REQUIREMENTS**

NOTE:

MIN. RESIDENT PARKING STALLS REQUIRED (GFA/RESIDING UNIT):	0.5
MIN. VISITOR PARKING STALLS REQUIRED (GFA/RESIDING UNIT):	0.1
MIN. REQUIRED PARKING STALLS @ 103 UNITS:	85

**PROPOSED PARKING**

DRIVE AVAIL. WIDTH (RETAIL AND VISITOR PARKING SHARED):	6.0M
PUNCH POINT IN GARAGE:	6.2M
PROPOSED RETAIL PARKING:	8
PROPOSED RESIDENTIAL PARKING:	84
PROPOSED VISITOR PARKING:	10
SUB-TOTAL OF PROPOSED PARKING:	95

**PROPOSED BICYCLE PARKING**

REQUIRED RETAIL BICYCLE PARKING:	8
REQUIRED RESIDENTIAL BICYCLE PARKING (8 UNITS):	100
SUB-TOTAL OF REQUIRED BICYCLE PARKING:	107
PROVIDED RESIDENTIAL BICYCLE PARKING:	104
BICYCLE PARKING PROVIDED (OVERGROUND):	2
BICYCLE PARKING PROVIDED (BEHIND):	2
BICYCLE PARKING PROVIDED (TOTAL):	106

**AMENITY AREA CALCULATIONS - PROPOSED**

NOTE: CALCULATIONS DONE IN ACCORDANCE WITH CITY OF OTTAWA BY-LAW 2008-205, SECTION 137 - AMENITY AREA

RESIDENTIAL TOTAL REQUIRED AMENITY AREA (MIN.) (103 UNITS @ 8.16MP/UNIT):	841.23MP
COMBINATIONAL AREA (MIN.) (50% OF TOTAL REQUIRED AMENITY AREA):	420.61MP
TOTAL RESIDENTIAL AMENITY AREA REQUIRED:	841.23MP
TOTAL AMENITY AREA PROVIDED:	1,143.89MP
BALCONY AREA (103 UNITS):	763.09MP
INDOOR AMENITY AREA (COMMUNAL):	187.22MP
OUTDOOR AMENITY AREA (COMMUNAL):	253.58MP
TOTAL AMENITY AREA PROVIDED:	1,143.89MP
LANDSCAPED AREA REQUIRED:	NON MINIMUM
LANDSCAPED AREA PROVIDED:	400.00MP
MINIMUM WIDTH OF LANDSCAPE AREA ABUTTING A RESIDENTIAL ZONE:	1.0M WITH FENCE
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (FORMER RA REAR YARD):	1.2M WITH FENCE
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (FORMER RA SIDE YARD):	7.5M
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (T1 ZONE REAR YARD):	0.070M
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (T1 ZONE ABOVE GARAGE RAMP):	7.5M

NO.	DESCRIPTION	DATE	CHKD
1			
REVISIONS			
CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY OMISSIONS OR DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.			
DO NOT SCALE THE DRAWINGS			
THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED BY THE ARCHITECT.			
DATE:	04/03/2023		
DRAWN BY:	SH		
DATE:	04/03/2023		
CHECKED:	VPC		
DATE PRINTED:	2023-04-02 11:50:43 AM		



255 Richmond Road	
Ottawa, ON	
Site Plan	
SCALE	DWG. NO.
As Indicated	A01.00
PROJ. NO.	
2219	



Scale  
N.T.S.

Project Title  
255 RICHMOND ROAD

Drawing Title  
SITE PLAN

Sheet No.  
FIGURE 2

## 255 Richmond Road – Infrastructure Notes

### Available Infrastructure:

Tweedsmuir Avenue:

Sanitary: 375mm PVC (Install 2002)

Storm: 1200mm Conc (Install 2002)

Water: 150mm PVC (Install 2001)

Richmond Road

Storm: 375mm PVC (Install 2004)

Water: 300mm PVC (Install 2004)

### Water Boundary Conditions:

Will be provided at request of consultant. Requests must include the location of the service and the expected loads required by the proposed development. Please provide the following and submit Fire Flow Calculation Sheet per FUS method with the request:

- Location of service
- Type of development and amount of required fire flow (per FUS method – include FUS calculation sheet with request)
- Average Daily Demand (l/s)
- Maximum Hourly Demand (l/s)
- Maximum Daily Demand (l/s)
- Water Supply Redundancy – Fire Flow:  
Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m<sup>3</sup> / day (0.5787 l/s per day)

Water services larger than 19 mm require a Water Data Card. Please complete card and submit.

### Stormwater Management:

- Coefficient (C) of runoff determined **as per existing conditions** but in no case more than 0.5
- TC = To be calculated, minimum 10 minutes
- Any storm events greater than 2 year, up to 100 year, and including 100-year storm event must be detained on site.
- Foundation drains are to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
- Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

### Stormwater management criteria (Quality Control)

Include a section in the SWM report concerning quality control requirements. It is the consultant's responsibility to check with the relevant Conservation Authority for quality control issues and include this information in the SWM report.

### Noise Study:

- Noise study required – property fronts an Arterial Road (Richmond Road).

### Phase I and Phase II ESA:

- Phase I ESA is required; Phase II ESA may be required depending on the results of the Phase I ESA. Phase I ESA must include an EcoLog ERIS Report.
- Phase I ESA and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

### Required Studies

- Servicing and Stormwater Management Report
- Geotechnical Study
- Phase I ESA
- Phase II ESA (depends on outcome of Phase I)
- Noise Study

### Required Plans

- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan (Can be combined with grading plan)

### Relevant information

1. The Servicing Study Guidelines for Development Applications are available at the following address: <https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications>
2. Servicing and site works shall be in accordance with the following documents:
  - ⇒ Ottawa Sewer Design Guidelines (October 2012)
  - ⇒ Ottawa Design Guidelines – Water Distribution (2010)
  - ⇒ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
  - ⇒ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
  - ⇒ City of Ottawa Environmental Noise Control Guidelines (January, 2016)
  - ⇒ City of Ottawa Park and Pathway Development Manual (2012)
  - ⇒ City of Ottawa Accessibility Design Standards (2012)
  - ⇒ Ottawa Standard Tender Documents (latest version)
  - ⇒ Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at [InformationCentre@ottawa.ca](mailto:InformationCentre@ottawa.ca) or by phone at (613) 580-2424 x.44455).
4. Any proposed work in utility easements requires written consent of easement owner.

# **APPENDIX B**





**IBI GROUP**  
**333 PRESTON STREET**  
**OTTAWA, ON**  
**K1S 5N4**

**WATERMAIN DEMAND CALCULATION SHEET**

**PROJECT :** 255 Richmond Road  
**LOCATION :** 255 Richmond Road  
**DEVELOPER :**

FILE: 135883.6.04  
 DATE PRINTED: 03-Apr-23  
 DESIGN: SEL  
 PAGE: 1 OF 1

NODE	RESIDENTIAL				NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND			FIRE DEMAND (l/s)
	UNITS			POP'N	INDTRL (ha.)	INST. (ha.)	COMM. (m <sup>2</sup> )	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	
	1BD	2BD	3BD														
Site	61	42	1	177			582	0.57	0.02	0.59	1.43	0.03	1.46	3.15	0.05	3.20	133.3

ASSUMPTIONS					
RESIDENTIAL DENSITIES		AVG. DAILY DEMAND		MAX. HOURLY DEMAND	
1 Bedroom Apartment	1.4 persons/unit	Residential	280 l / cap / day	Residential	1,540 l / cap / day
2 Bedroom Apartment	2.1 persons/unit	Commercial	28,000 l / ha / day	Commercial	75,600 l / ha / day
3 Bedroom Apartment	3.1 persons/unit				
		MAX. DAILY DEMAND		FIRE FLOW	
		Residential	700 l / cap / day	Site	8,000 l / min
		Commercial	42,000 l / ha / day		



## Samantha Labadie

---

**From:** Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>  
**Sent:** Thursday, October 7, 2021 1:41 PM  
**To:** Samantha Labadie  
**Subject:** RE: 255 Richmond - Boundary Conditions Request  
**Attachments:** 255 Richmond Road October 2021.pdf

Hi Samantha,

The following are boundary conditions, HGL, for hydraulic analysis at 255 Richmond Road (zone 1W) assumed to be connected to the 305 mm watermain on Richmond Road and the 152 mm on Tweedsmuir Street (see attached PDF for location).

### Both Connections

Minimum HGL: 108.7 m

Maximum HGL: 114.9 m

Max Day + FF (133.3 L/s): 110.0 m (Richmond) 104.4 m (Tweedsmuir)

These are for current conditions and are based on computer model simulation.

*Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.*

Best Regards,

### **Mohammed Fawzi, E.I.T.**

Project Manager

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

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

613.580.2424 ext./poste 20120, [Mohammed.Fawzi@ottawa.ca](mailto:Mohammed.Fawzi@ottawa.ca)

**\*\*Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me\*\***

---

**From:** Fawzi, Mohammed

**Sent:** October 04, 2021 11:25 AM

**To:** Samantha Labadie <samantha.labadie@ibigroup.com>

**Subject:** RE: 255 Richmond - Boundary Conditions Request

Hi Samantha,

This is to confirm your request has been received. I will get back to you as early as possible.

Thank you.

Best Regards,

**Mohammed Fawzi, E.I.T.**

Project Manager

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

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

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

613.580.2424 ext./poste 20120, [Mohammed.Fawzi@ottawa.ca](mailto:Mohammed.Fawzi@ottawa.ca)

**\*\*Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me\*\***

---

**From:** Samantha Labadie <[samantha.labadie@ibigroup.com](mailto:samantha.labadie@ibigroup.com)>

**Sent:** October 04, 2021 11:12 AM

**To:** Fawzi, Mohammed <[mohammed.fawzi@ottawa.ca](mailto:mohammed.fawzi@ottawa.ca)>

**Subject:** 255 Richmond - Boundary Conditions Request

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**ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.**

Hi Mohammed,

We are requesting for boundary conditions for the above noted site. It is a 9-Storey Residential building with some commercial space. The proposed building will have two connections, one on Tweedsmuir Ave and one on Richmond Road, as shown in the attached site plan. Demand and fire flows can be found on the attached and are summarized below,

Fire Flow per FUS = 8000 L/min

Average Daily Demand = 0.74 L/s

Maximum Daily Demands = 1.64 L/s

Maximum Hourly Demand = 3.48 L/s

Thank you,

Sam Labadie P.ENG

Civil Engineer

**IBI GROUP**

Suite 400, 333 Preston Street

Ottawa ON K1S 5N4 Canada

tel +1 613 225 1311 ext 64059 cell +1 613 899 5717



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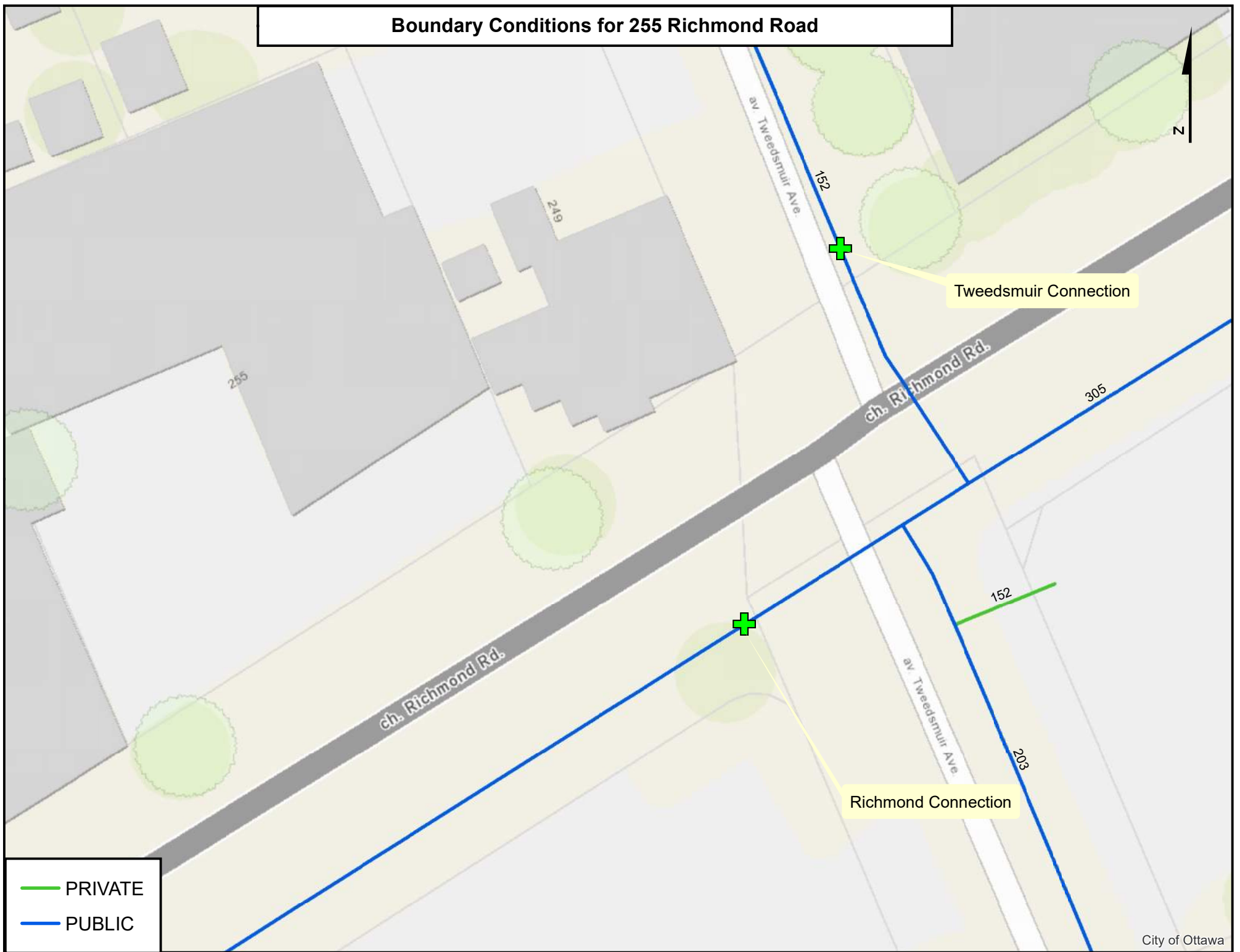
,

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,

# Boundary Conditions for 255 Richmond Road



- PRIVATE
- PUBLIC

**Fire Flow Requirement from Fire Underwriters Survey**

**Building - 9 Storey Residential**

Building Floor Area (for Type II Noncombustible Construction)  
(2 largest adjoining floors plus 50% of floors above up to eight)

Floors 1-2	3,223 m <sup>2</sup>
50% Floors 3-8	<u>4,030</u>
Total	7,253 m <sup>2</sup>

Fire Flow

$F = 220C\sqrt{A}$

C	0.8	C =	1.5 wood frame
A	7,253 m <sup>2</sup>		1.0 ordinary
			0.8 non-combustile
F	14,988 l/min		0.6 fire-resistive
Use	15,000 l/min		

Occupancy Adjustment

		-25% non-combustile
		-15% limited combustile
Use	0%	0% combustile
		+15% free burning
Adjustment	0 l/min	+25% rapid burning
Fire flow	15,000 l/min	

Sprinkler Adjustment

		-30% system conforming to NFPA 13
		-50% complete automatic system
Use	-50%	
Adjustment	-7500 l/min	

Exposure Adjustment

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

north	2.1	Lower elevation	0%
east	19	Lower elevation	0%
south	31	Lower elevation	0%
west	1.3	Lower elevation	0%

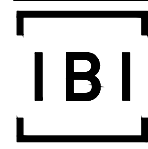
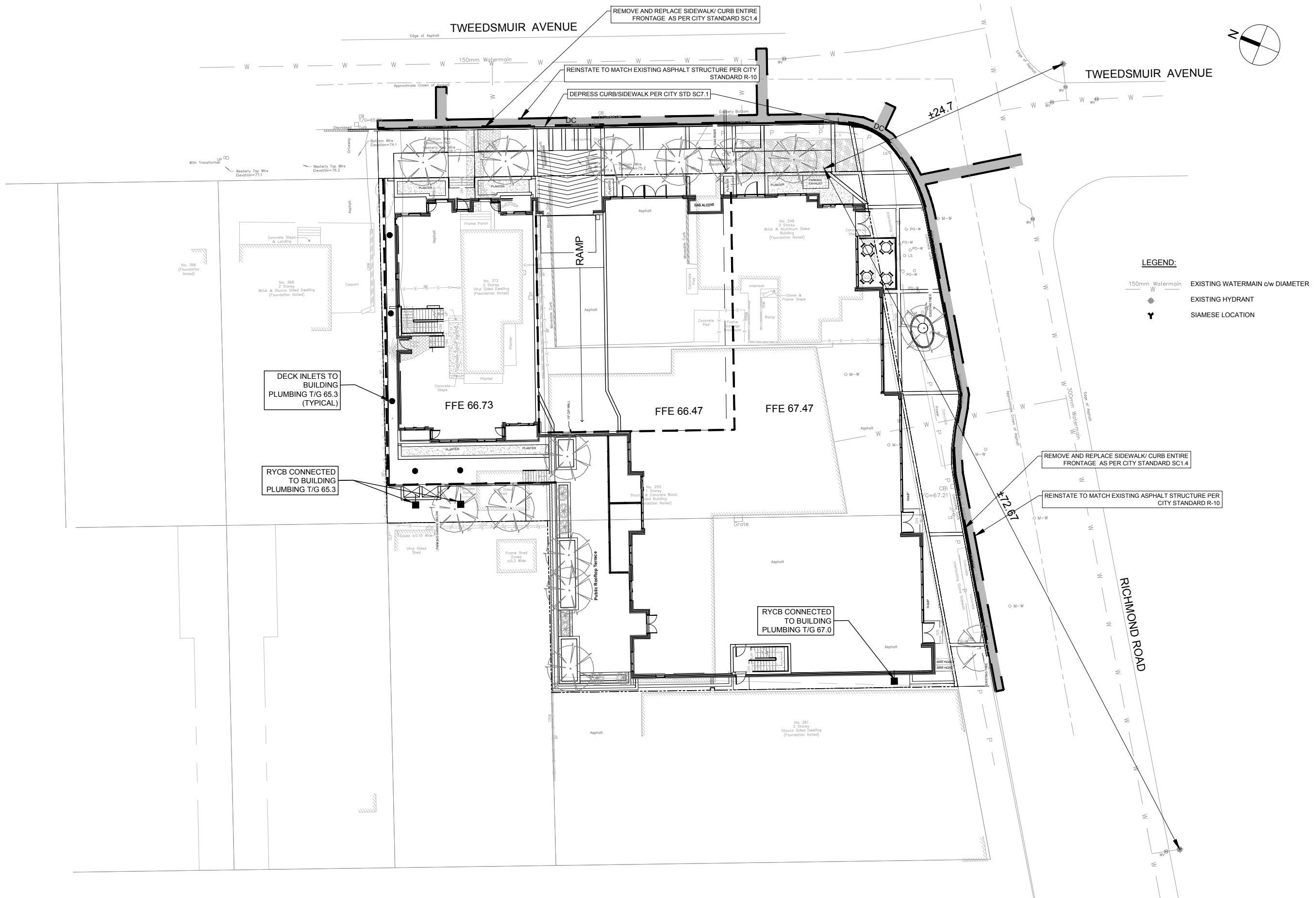
Total 0%

Adjustment - l/min

Required Fire Flow

Total adjustments	<u>(7,500) l/min</u>
Fire flow	7,500 l/min
<b>Use</b>	<b>8,000 l/min</b>
	<b>133.3 l/s</b>

J:\15888\_L255\_Richmond\172\_Production\172\_Production\172\_Design\172\_Design\172\_001\172\_001.dwg (Sheet Set) Figure 2.2 HYDRANT COVERAGE  
 Plot Date: 4/27/2023 10:49 AM Last Saved By: sullivan Last Saved At: Mon, 4/27/23



Scale  
N.T.S.

Project Title  
255 RICHMOND ROAD

Drawing Title  
HYDRANT COVERAGE

Sheet No.  
Figure 2.2

## Samantha Labadie

---

**From:** Mark Sarasin <marks@gwal.com>  
**Sent:** Friday, March 31, 2023 11:57 AM  
**To:** Samantha Labadie  
**Cc:** Victor Menasce; Matthew Maxsom; Lisa Dalla Rosa; Vincent P. Colizza; Demetrius Yannoulopoulos  
**Subject:** RE: 255 Richmond (YStreet) - Update to Plans/Studies

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Yes it is, to NFPA 13 and fully supervised

Mark Sarasin P.Eng | Senior Associate, Mechanical Engineer  
GOODKEY, WEEDMARK & ASSOCIATES LTD.

Email: [marks@gwal.com](mailto:marks@gwal.com)

Office: (613) 727-5111 ext. 308 Mobile: (613) 816-0844

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---

**From:** Samantha Labadie <samantha.labadie@ibigroup.com>  
**Sent:** Friday, March 31, 2023 11:53 AM  
**To:** Mark Sarasin <marks@gwal.com>  
**Cc:** Victor Menasce <victorm@ystreetcapital.com>; Matthew Maxsom <mattm@ystreetcapital.com>; Lisa Dalla Rosa <dallarosa@fotenn.com>; Vincent P. Colizza <vcolizza@colizzaarchitects.com>; Demetrius Yannoulopoulos <dyannoulopoulos@IBIGroup.com>  
**Subject:** RE: 255 Richmond (YStreet) - Update to Plans/Studies

Thanks Mark, and can you indicate on page 4? Is the water supply standard for both system and fire dept hose lines, and is it a fully supervised system?

Sam

---

**From:** Mark Sarasin <[marks@gwal.com](mailto:marks@gwal.com)>  
**Sent:** Friday, March 31, 2023 11:48 AM  
**To:** Samantha Labadie <[samantha.labadie@ibigroup.com](mailto:samantha.labadie@ibigroup.com)>  
**Cc:** Victor Menasce <[victorm@ystreetcapital.com](mailto:victorm@ystreetcapital.com)>; Matthew Maxsom <[mattm@ystreetcapital.com](mailto:mattm@ystreetcapital.com)>; Lisa Dalla Rosa <[dallarosa@fotenn.com](mailto:dallarosa@fotenn.com)>; Vincent P. Colizza <[vcolizza@colizzaarchitects.com](mailto:vcolizza@colizzaarchitects.com)>; Demetrius Yannoulopoulos

<[dyannouloupoulos@IBIGroup.com](mailto:dyannouloupoulos@IBIGroup.com)>

**Subject:** RE: 255 Richmond (YStreet) - Update to Plans/Studies

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All systems will be protected

<p>C = 0.8    <input type="checkbox"/></p>	<p><b>Type II Noncombustible Construction</b></p> <p>A building is considered to be of Noncombustible construction (Type II) when all structural elements, walls, arches, floors, and roofs are constructed with a minimum 1-hour fire resistance rating and are constructed with noncombustible materials.</p> <p>Total Effective Area (A) =</p> <ul style="list-style-type: none"><li><input type="checkbox"/> if any vertical openings in the building (ex. interconnected floor spaces, atria, elevators, escalators, etc.) are unprotected**, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight; or</li><li><input type="checkbox"/> if all vertical openings and exterior vertical communications are properly protected* in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.</li></ul>
--	--

Mark Sarasin P.Eng | **Senior Associate, Mechanical Engineer**

GOODKEY, WEEDMARK & ASSOCIATES LTD.

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---

**From:** Samantha Labadie <[samantha.labadie@ibigroup.com](mailto:samantha.labadie@ibigroup.com)>

**Sent:** Friday, March 31, 2023 11:27 AM

**To:** Mark Sarasin <[marks@gwal.com](mailto:marks@gwal.com)>

**Cc:** Victor Menasce <[victorm@ystreetcapital.com](mailto:victorm@ystreetcapital.com)>; Matthew Maxsom <[mattm@ystreetcapital.com](mailto:mattm@ystreetcapital.com)>; Lisa Dalla Rosa <[dallarosa@fotenn.com](mailto:dallarosa@fotenn.com)>; Vincent P. Colizza <[vcolizza@colizzaarchitects.com](mailto:vcolizza@colizzaarchitects.com)>; Demetrius Yannouloupoulos <[dyannouloupoulos@IBIGroup.com](mailto:dyannouloupoulos@IBIGroup.com)>

**Subject:** RE: 255 Richmond (YStreet) - Update to Plans/Studies

Hi Mark,

Are you able to mark which checkboxes the sprinkler system fulfills on the attached?



# **APPENDIX C**

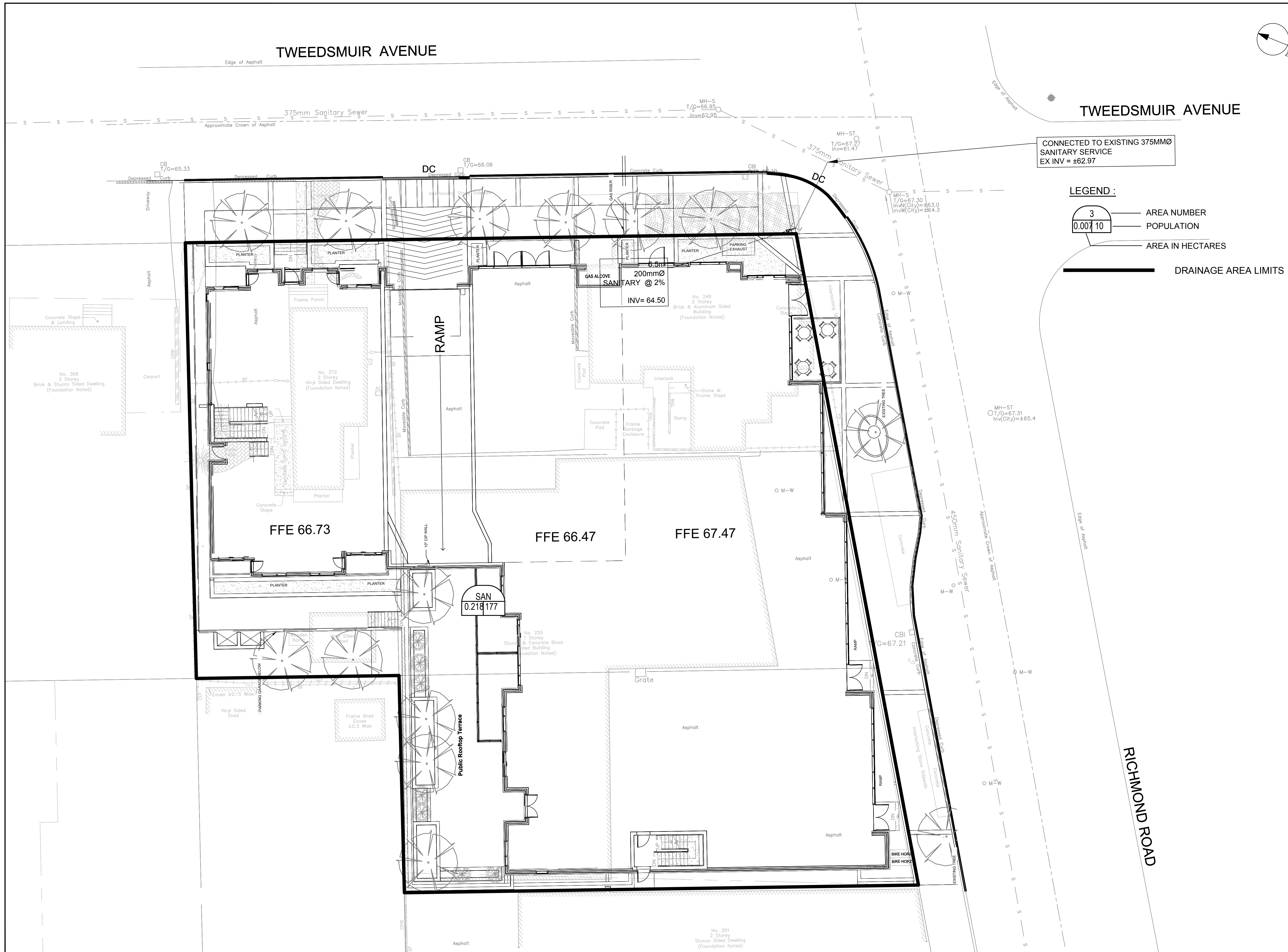


**IBI GROUP**  
 400-333 Preston Street  
 Ottawa, Ontario K1S 5N4 Canada  
 tel 613 225 1311 fax 613 225 9868  
 ibigroup.com

**SANITARY SEWER DESIGN SHEET**

255 Richmond  
 CITY OF OTTAWA  
 Y Street Capital

LOCATION				RESIDENTIAL								ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN							
STREET	AREA ID	FROM MH	TO MH	AREA w/ Units (Ha)	UNIT TYPES			AREA w/o Units (Ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA				ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW (L/s)	IND	CUM	TOTAL FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY			
					1BD	2BD	3BD		IND	CUM			IND	CUM	IND	CUM			IND	CUM										L/s	(%)		
	Proposed Sanitary			0.218	61	42	1		177	177	4.00	2.29	0.00	0.00	391	391	60	60	1.50	0.16	0.218	0.218	0.07	0.00	0.00	2.53	87.74	5.50	250	2.00	1.731	85.21	97.12%
<b>Design Parameters:</b>				<b>Notes:</b>								<b>Designed:</b>				<b>No.</b>				<b>Revision</b>				<b>Date</b>									
Residential				ICI Areas								S.E.L.				1. Adequacy of Public Services Report				2021-10-21													
1BD 1.4 p/p/u				1. Mannings coefficient (n) = 0.013								Checked: D.G.Y.				2. Adequacy of Public Services Report - Submission 2				2022-04-06													
2BD 2.1 p/p/u				2. Demand (per capita): 280 L/day								Dwg. Reference:				3. Design Brief				2023-03-27													
3BD 3.1 p/p/u				3. Infiltration allowance: 0.33 L/s/Ha								File Reference:																					
Other 60 p/p/Ha				4. Residential Peaking Factor: Harmon Formula = $1 + (14 / (4 + (P/1000)^{0.5}))^{0.8}$ where K = 0.8 Correction Factor								Date:																					
				5. Commercial and Institutional Peak Factors based on total area, 1.5 if greater than 20%, otherwise 1.0								135883.6.04.04				2023-03-27				Sheet No: 1 of 1													



CONNECTED TO EXISTING 375MMØ  
SANITARY SERVICE  
EX INV = ±62.97

**LEGEND :**

3 — AREA NUMBER  
0.007 10 — POPULATION  
— AREA IN HECTARES

————— DRAINAGE AREA LIMITS

CLIENT

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IBI Group Professional Services (Canada) Inc.  
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ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2023-10-04
2	REVISED AS PER CITY COMMENTS	2023-10-04
3		
4		
5		
6		
7		
8		

NOT FOR CONSTRUCTION

KEY PLAN

CONSULTANTS

SCALE

IBI GROUP  
Suite 500 - 333 Preston Street  
Ottawa ON K1S 5N4 Canada  
Tel: 613 225 1311 / 613 241 3300 Fax: 613 225 9868  
ibigroup.com

PROJECT

255 RICHMOND

PROJECT NO:  
135883

DRAWN BY:  
SPG

CHECKED BY:  
S.E.L.

PROJECT MGR:  
D.G.Y.

APPROVED BY:  
D.G.Y.

SHEET TITLE

SANITARY DRAINAGE AREA PLAN

SHEET NUMBER

C-400

ISSUE

2

CITY PLAN No. xxxxx

CITY FILE No. D07-XX-XX-XXXX

# **APPENDIX D**





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

**PROJECT:** 255 Richmond  
**DATE:** 2023-03-27  
**FILE:** 135883 6.04.04  
**REV #:** 2  
**DESIGNED BY:** SEL  
**CHECKED BY:** D.Y.

**STORMWATER MANAGEMENT**

**Formulas and Descriptions**

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

**Maximum Allowable Release Rate**

**Restricted Flowrate (based on C=0.50 Tc=10min)**

$C = 0.5$   
 $T_c = 10 \text{ min}$   
 $i_{2yr} = 76.81 \text{ mm/hr}$   
 $A_{site} = 0.218 \text{ Ha}$

$Q_{restricted} = 23.28 \text{ L/s}$

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

$C = 1.00$   
 $T_c = 10 \text{ min}$   
 $i_{100yr} = 178.56 \text{ mm/hr}$   
 $A_{uncontrolled} = 0.016 \text{ Ha}$

$Q_{uncon} = 7.94 \text{ L/s}$

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

$Q_{max\ allowable} = 15.34 \text{ L/s}$

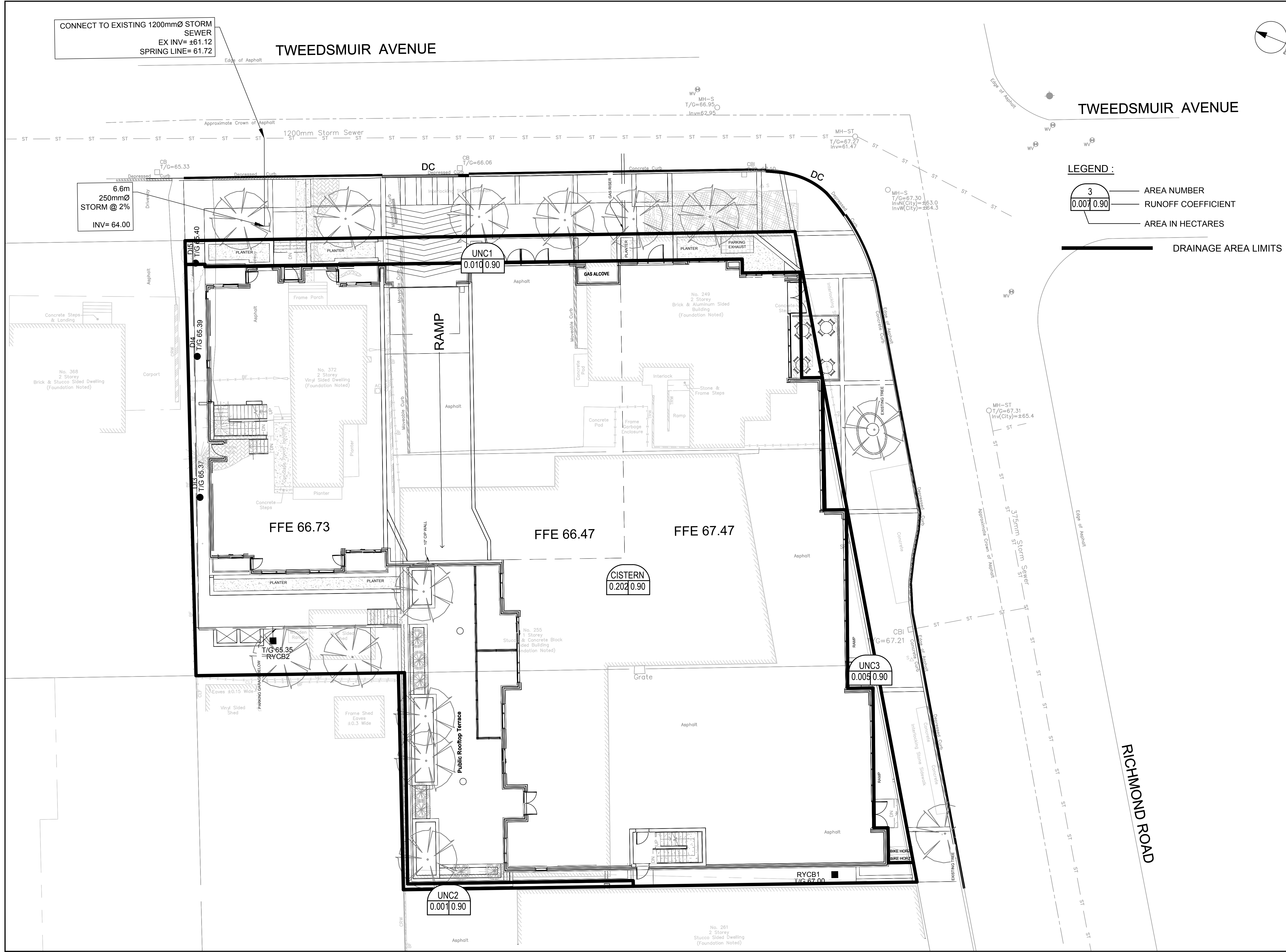
**MODIFIED RATIONAL METHOD (100-Year, & 2-Year Ponding)**

Drainage Area		Roof & Decks	
Area (Ha)	0.202		
C =	1.00	Restricted Flow $Q_r$ (L/s)=	15.00
100-Year Ponding			
$T_c$ Variable (min)	$i_{100yr}$ (mm/hour)	Peak Flow $Q_p = 2.78 \cdot C \cdot i_{100yr} \cdot A$ (L/s)	Volume 100yr ( $m^3$ )
30	91.87	51.59	65.861
32	87.89	49.35	65.958
33	86.03	48.31	<b>65.960</b>
34	84.27	47.32	65.935
36	80.96	45.47	65.806

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	65.96		70.00	0.00

Drainage Area		Roof & Decks	
Area (Ha)	0.202		
C =	0.90	Restricted Flow $Q_r$ (L/s)=	15.00
2-Year Ponding			
$T_c$ Variable (min)	$i_{2yr}$ (mm/hour)	Peak Flow $Q_p = 2.78 \cdot C \cdot i_{2yr} \cdot A$ (L/s)	Volume 2yr ( $m^3$ )
10	76.81	38.82	14.29
12	69.89	35.32	14.63
13	66.93	33.83	<b>14.68</b>
14	64.23	32.46	14.67
16	59.50	30.07	14.47

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	14.68		70.00	0.00



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LEGEND :

- 3 — AREA NUMBER
- 0.007 0.90 — RUNOFF COEFFICIENT
- AREA IN HECTARES
- DRAINAGE AREA LIMITS

KEY PLAN

CONSULTANTS

SCALE

1:250

0 2.5 5 7.5 12.5m

SEAL

LICENCED PROFESSIONAL ENGINEER  
S. E. LABADIE  
100214983  
2023/04/03  
PROVINCE OF ONTARIO

IBI GROUP  
Suite 500 - 333 Preston Street  
Ottawa ON K1S 5N4 Canada  
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PROJECT

255 RICHMOND

PROJECT NO:  
135883

DRAWN BY:  
SPG

CHECKED BY:  
S.E.L.

PROJECT MGR:  
D.G.Y.

APPROVED BY:  
D.G.Y.

SHEET TITLE

STORM DRAINAGE AREA PLAN

SHEET NUMBER

C-500

ISSUE

2

CITY PLAN No. xxxxx

NOT FOR CONSTRUCTION

CITY FILE No. D07-XX-XX-XXXX

SCALE CHECK

File Location: J:\135883\_255\_Richmond\7.0\_Production\7.03\_Design\7.03\_Design\7.03\_Storm Drainage Area Plan.dwg Last Saved: March 27, 2023, by dslama Printed: Monday, April 3, 2023 11:09:14 AM by Don Stuma

# **APPENDIX E**



**LEGEND**

---	PROPERTY LINE
F.F. = 80.50	FINISHED FLOOR ELEVATION
---	DEPRESSED CURB
⊙	WATER METER (SEE MECH. DRWG. FOR EXACT LOCATION)
⊙	REMOTE WATER METER (SEE MECH. DRWG. FOR EXACT LOCATION)
⊙	SIAMSE CONNECTIONS (SEE MECH. DRWG. FOR EXACT LOCATION)
---	GAS SERVICE
---	RETAINING WALL C/W TOP OF WALL AND GRASS GRADE
⊙	VALVE AND VALVE BOX
⊙	VALVE AND VALVE CHAMBER
---	WATER SERVICE
---	SANITARY SEWER SERVICE
---	STORM SEWER SERVICE
---	EXISTING CURB
---	EXISTING CATCHBASIN
---	EXISTING WATER VALVE
---	EXISTING LAMP STANDARD
---	EXISTING UTILITY POLE
---	EXISTING FIRE HYDRANT
---	EXISTING MANHOLE
---	EXISTING SIGN
---	EXISTING BOLLARDS
---	EXISTING DECIDUOUS TREE
---	EXISTING SANITARY SEWER
---	EXISTING STORM SEWER
---	EXISTING WATERMAIN
---	EXISTING GAS LINE
---	EXISTING HYDRO EXISTING
---	EXISTING OVERHEAD UTILITY WIRES
---	EXISTING COMBINED SEWER
---	EXISTING STREET LIGHTING

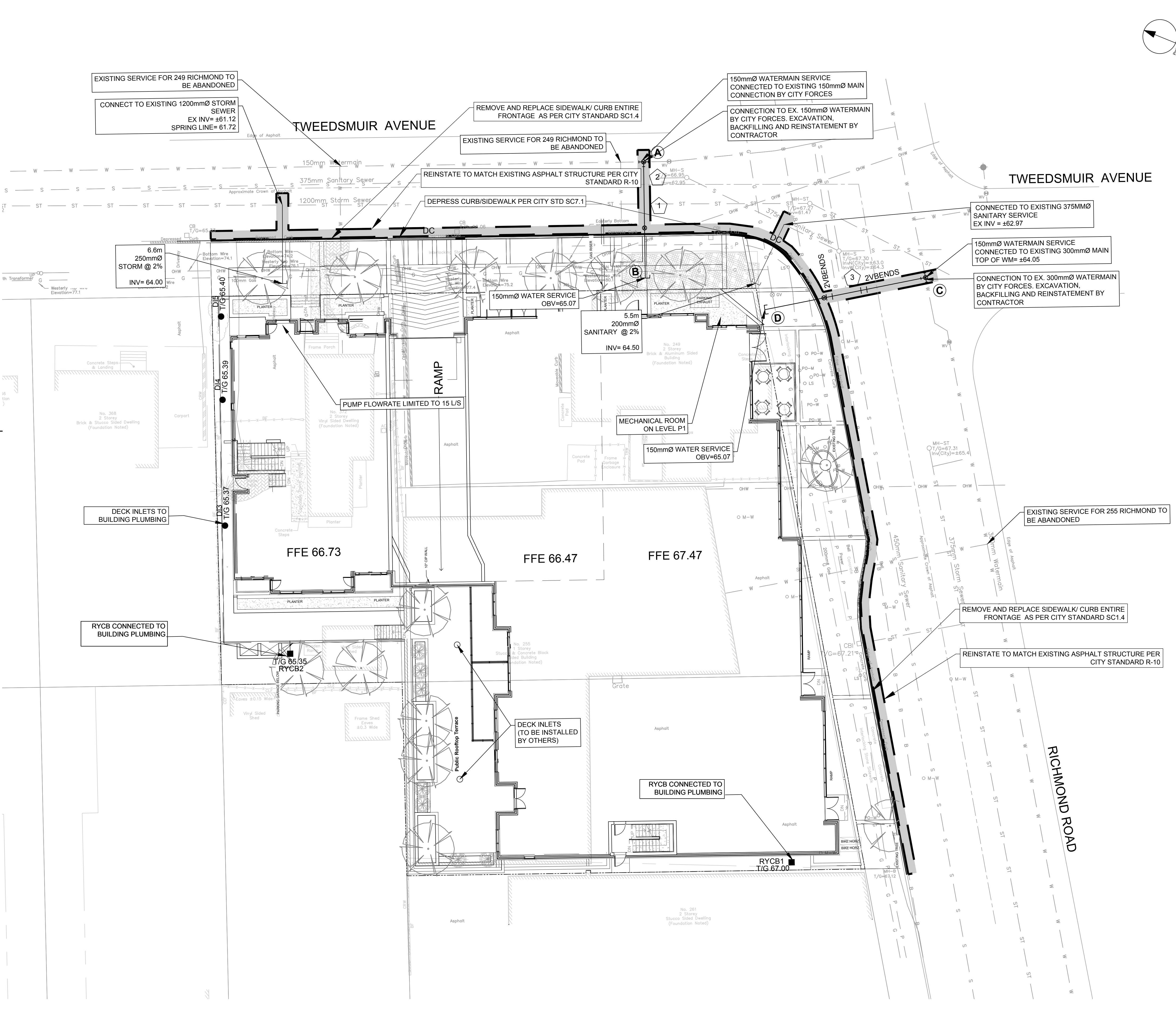
- NOTES**
- ALL WORKS TO BE COMPLETED AS PER CURRENT CITY OF OTTAWA STANDARDS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
  - SEWER LATERALS TO BE PVC DR 35.
  - WATER MAIN AND SERVICES TO BE PVC DR 18 CL150. MINIMUM COVER OF 2.4m FOR WATER SERVICE IS REQUIRED. USE THERMAL INSULATION AS PER CITY STANDARDS WHEN COVER IS LESS THAN 2.4m. WATER MAIN AND SERVICES TO HAVE RESTRAINTS AND THRUST BLOCKS AS PER CITY STD W23, W25.5 AND W25.6. NEW WATER MAIN TO HAVE TRACING WIRE PER STD W36.
  - ALL SERVICE LATERAL AND SURFACE RESTORATION WORK IN ACCORDANCE WITH CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.
  - FULL PORT BACKWATER VALVE IS REQUIRED ON BOTH THE SANITARY AND STORM SERVICE CONNECTIONS.
  - WATER SERVICE CHLORINATION AND TESTING TO BE COMPLETED BY CITY FORCES.
  - BUILDING INFORMATION TAKEN FROM VINCE P. COLIZZA ARCHITECTS DRAWINGS.
  - AN EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED ON THIS SITE. AS A MINIMUM THAT PLAN WILL INCLUDE A LIGHT DUTY SILT FENCE BARRIER TO OPSD STANDARD 219.110 SURROUNDING THE SITE WHERE PRACTICAL AND SILT SACKS FITTED UNDER EXISTING STREET CATCH BASINS.
  - ALL SHOWN UTILITIES ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY CONTRACTOR. ANY DISCREPANCIES ARE TO BE REPORTED TO IBI GROUP PRIOR TO CONTRACTOR MOBILIZING TO SITE.
  - CONTRACTOR RESPONSIBLE TO SUPPORT EXISTING UTILITIES THAT MAY BE AFFECTED DURING CONSTRUCTION.
  - EXISTING CURBS AND SIDEWALKS ARE TO BE REMOVED AND REPLACED AS NOTED ON THE DRAWINGS.
  - THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATER COURSE, DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING FILTER CLOTH UNDER THE GRATES OF CATCHBASINS AND MANHOLES AND INSTALLING SILT FENCES AND EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCIES.
  - FOR GEOTECHNICAL INFORMATION SEE PATERSON REPORT PG5948-1 DATED SEPTEMBER 24, 2021.
  - MONITORING PORTS ARE TO BE INSTALLED ON THE SANITARY AND STORM SEWERS INSIDE THE PROPERTY LINE.

**Pipe Interference Table**

Crossing No.	PIPE 1	PIPE 2	Clearance
1	MM Bottom 64.190	EX STM Top 62.707	1.483
2	MM Bottom 64.223	EX SAN Top 63.295	0.929
3	MM Bottom 65.000	EX SAN Top 64.742	0.258

**WATERMAIN SCHEDULE**

Station	Description	Finished Grade	Top of Watermain	As Built Watermain
A	0+000.00	TVS	66.786	±65.07
	0+001.47	SAN CROSSING	66.793	±64.393
	0+003.43	SAN CROSSING	66.762	±64.362
	0+005.55	VB	66.714	±64.314
B	0+009.75	CAP	66.937	64.579
C	0+000.00	TVS	67.433	±65.05
	0+005.02	V BEND	67.360	±64.96
	0+005.53	V BEND	67.349	±65.17
	0+001.88	V BEND	67.297	±65.17
	0+008.47	V BEND	67.286	±64.886
	0+008.70	VB	67.281	±64.881
D	0+013.76	CAP	67.456	65.010



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**KEY PLAN**

**CONSULTANTS**

**SCALE**

1:250

**SEAL**

**IBI GROUP**  
S. E. LABADIE  
100214983  
2023/04/03  
PROVINCE OF ONTARIO

**PROJECT**

**255 RICHMOND**

**PROJECT NO:** 135883

**DRAWN BY:** SPG

**CHECKED BY:** S.E.L.

**PROJECT MGR:** D.G.Y.

**APPROVED BY:** D.G.Y.

**SHEET TITLE**

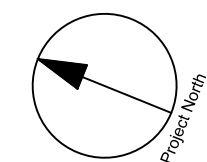
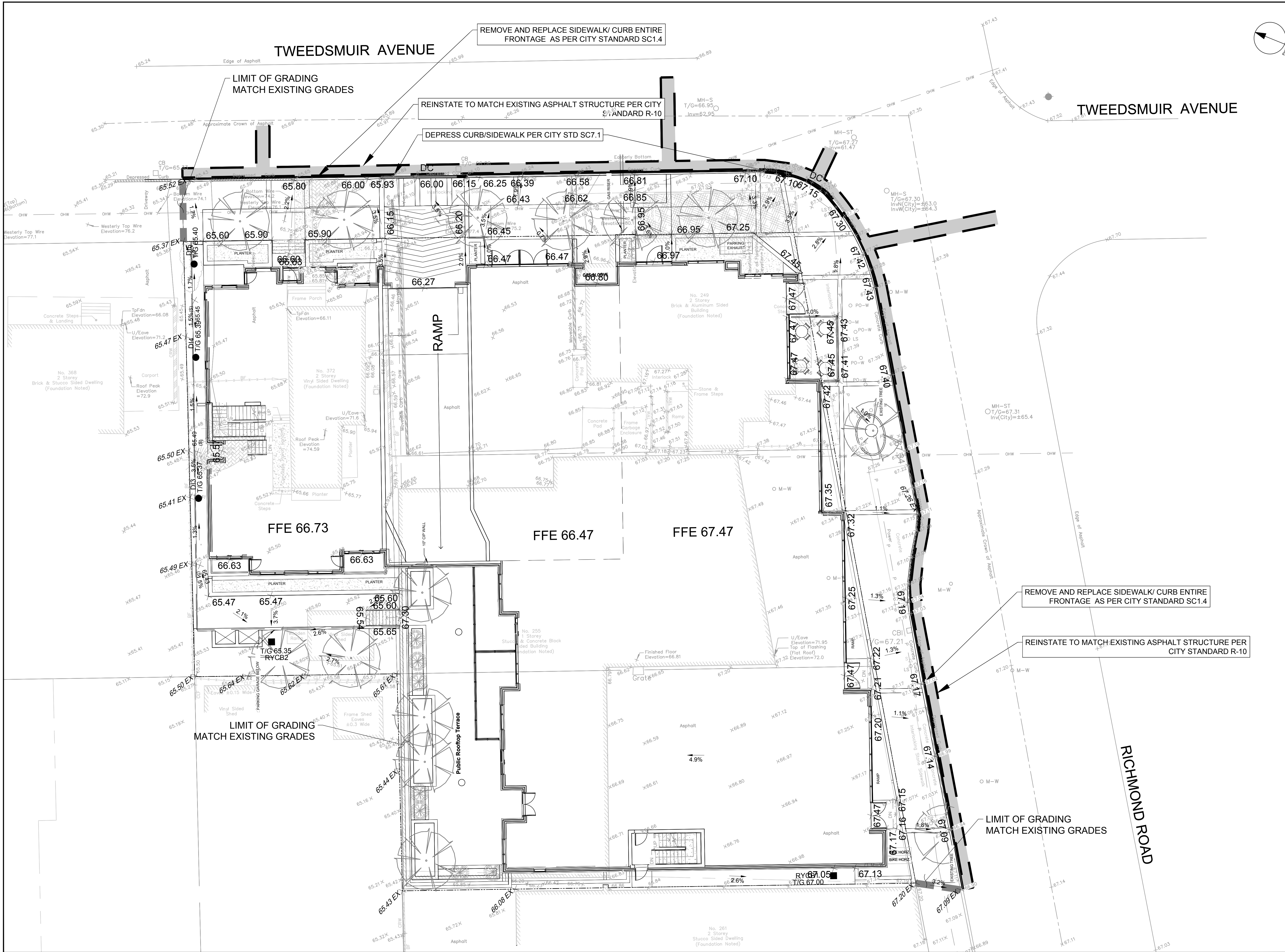
**GENERAL PLAN OF SERVICES**

**SHEET NUMBER** C-001

**ISSUE** 2

**CITY PLAN No. xxxxx**

**CITY FILE No. D07-xx-xx-xxxx**



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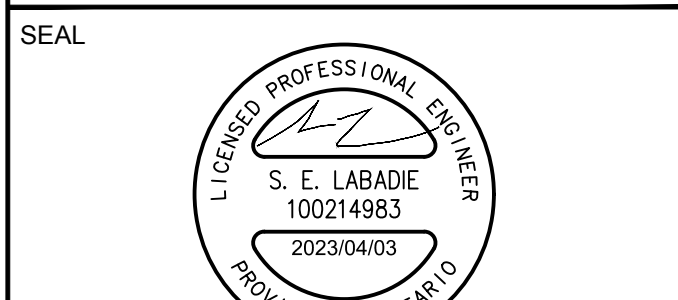
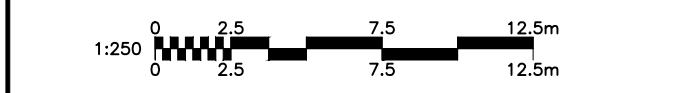
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CONSULTANTS



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**PROJECT**  
 255 RICHMOND

**PROJECT NO:**  
 135883

**DRAWN BY:** SPG

**PROJECT MGR:** D.G.Y

**CHECKED BY:** S.E.L

**APPROVED BY:** D.G.Y

**SHEET TITLE**  
 GRADING PLAN

**SHEET NUMBER**  
 C-200

**ISSUE**  
 2

CITY FILE No. D07-XX-XX-XXXX

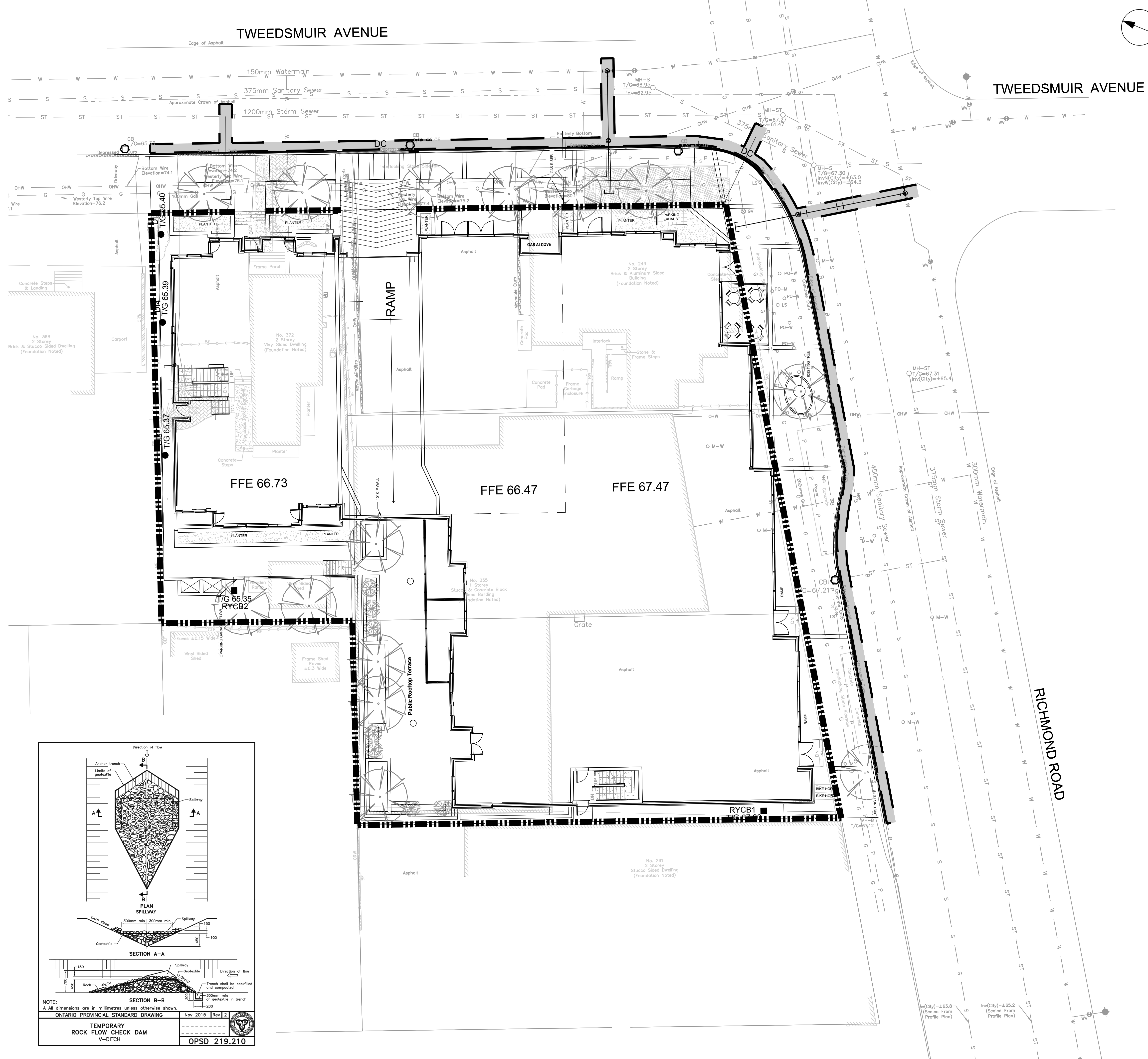
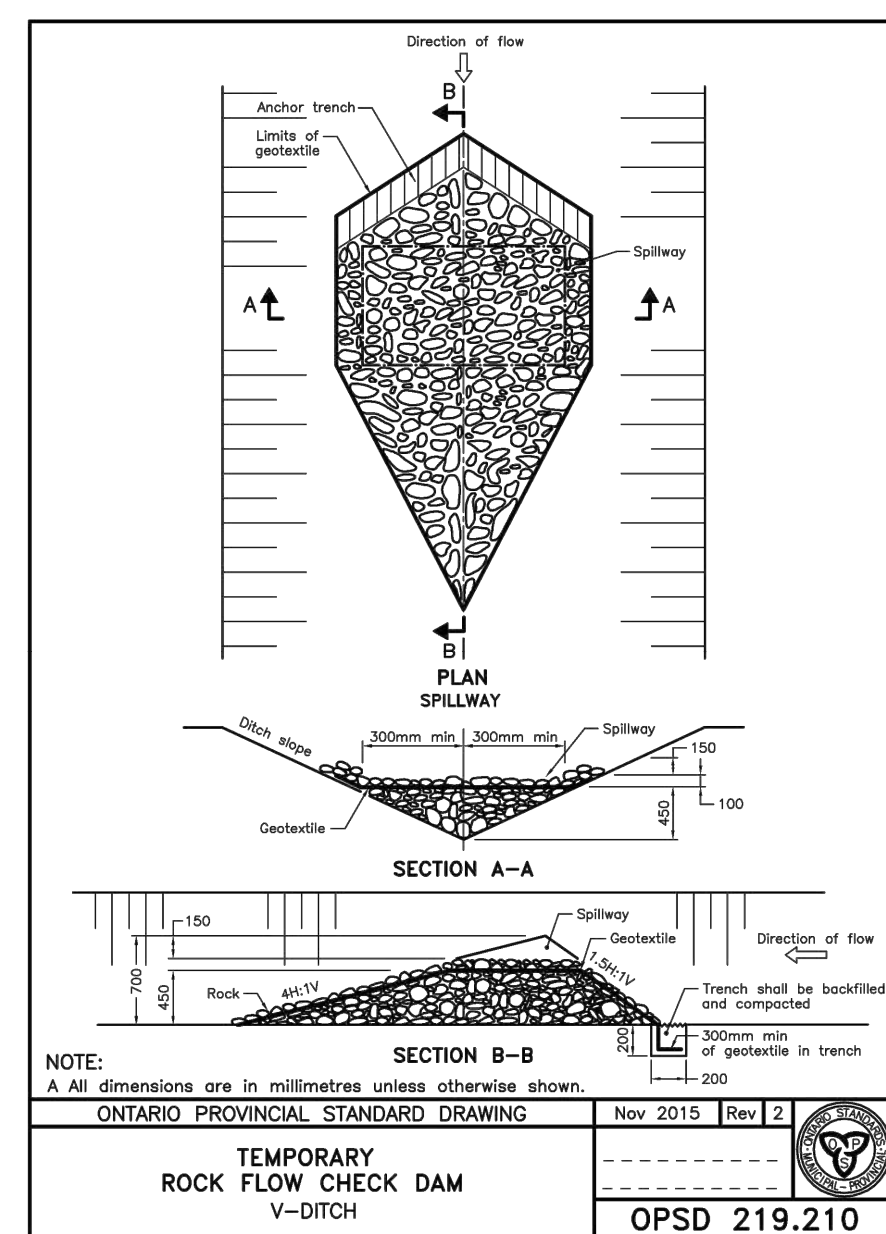
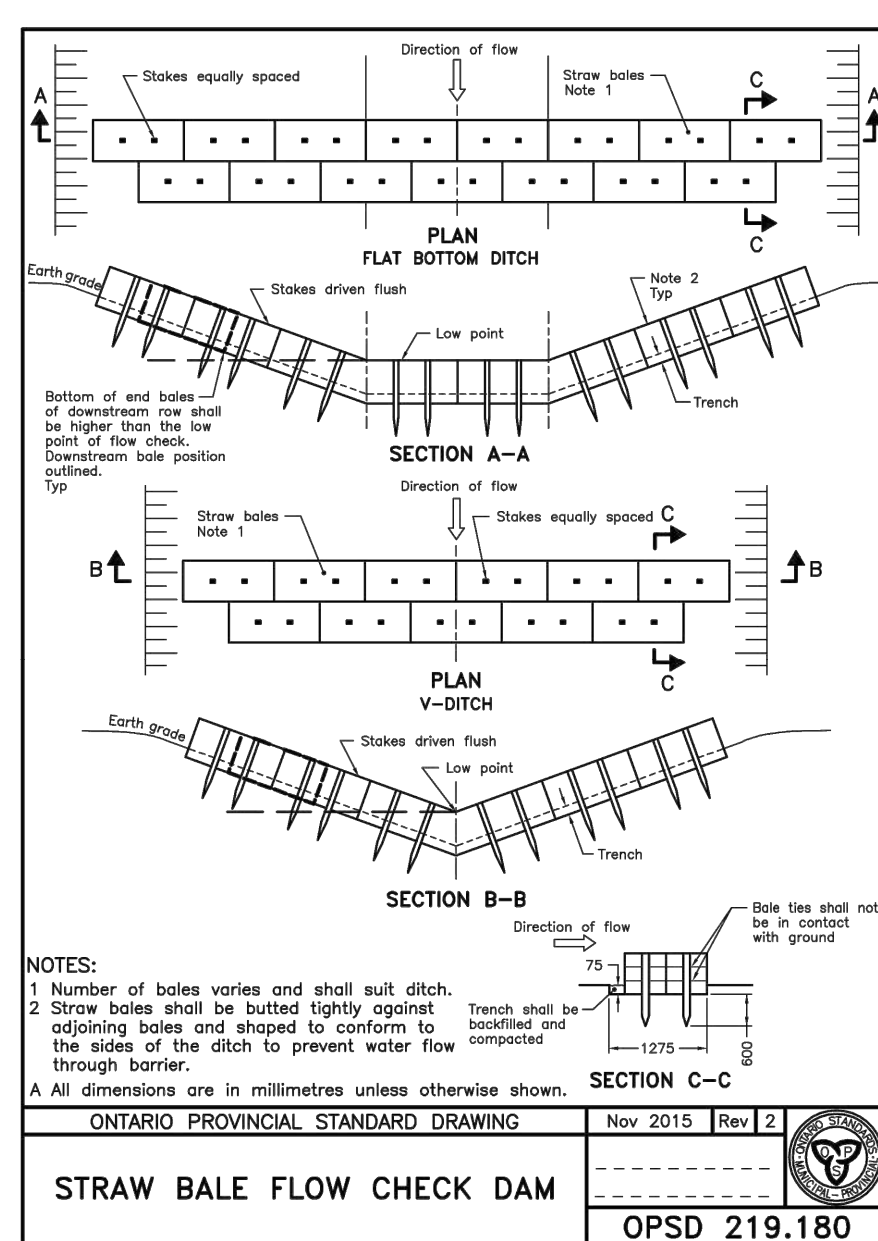
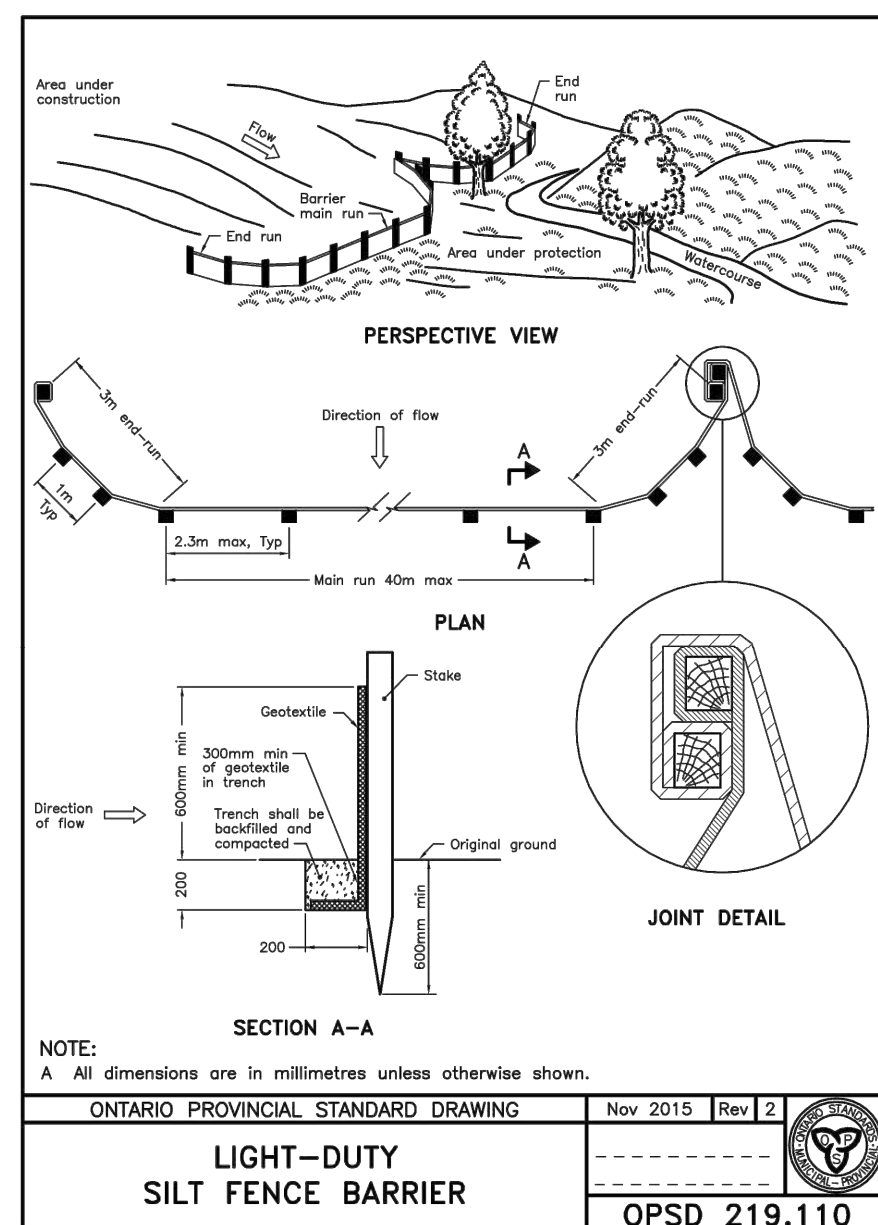
**NOTES:**

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

1. SILT FENCE TO BE ERRECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
2. SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
3. WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
4. THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT.
5. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND NOTES.

**LEGEND :**

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



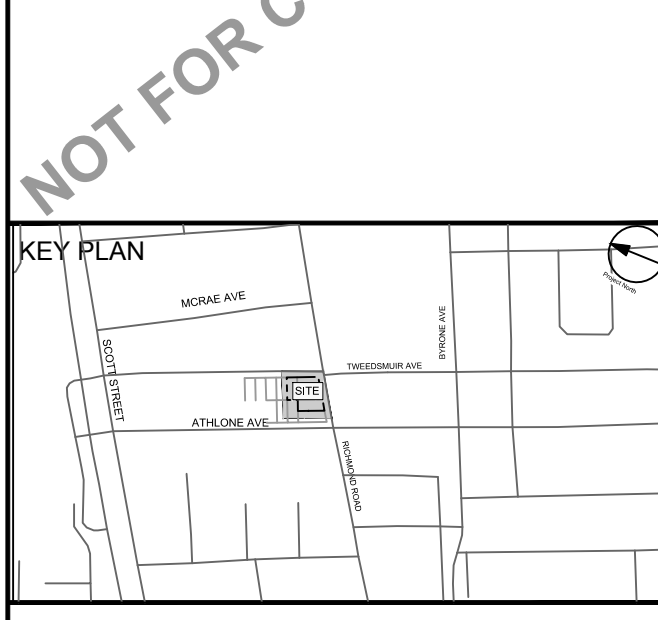
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CONSULTANTS

1:250  
0 2.5 5 7.5 12.5m

SEAL

IBI GROUP  
Suite 500 - 333 Preston Street  
Ottawa ON K1S 5N4 Canada  
Tel: 613 225 1311 / 613 241 3300 Fax: 613 225 9868  
ibigroup.com

**PROJECT**  
255 RICHMOND

PROJECT NO: 135883  
DRAWN BY: SPG  
PROJECT MGR: D.G.Y

CHECKED BY: S.E.L.  
APPROVED BY: D.G.Y

**SHEET TITLE**  
SEDIMENT AND EROSION PLAN

SHEET NUMBER: C-900  
ISSUE: 2

CITY FILE No. D07-xx-xx-xxxx  
SCALE CHECK  
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