JLR No.: 29056-001 December 1, 2025

Revision: 01

Assessment of Adequacy of Public Services 267 O'Connor Street, Ottawa ON



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1.0 INTRODUCTION

1.1 Background

In 2019, J.L. Richards & Associates Limited (JLR) was retained by Taggart Realty Management (TRM) to prepare an Assessment of Adequacy of Public Services (AAPS) and detailed design of municipal infrastructure in support of twin Mixed-Use Residential Towers sited at 267 O'Connor Street, in the City of Ottawa. This AAPS had been prepared as supporting documentation to a joint Official Plan Amendment, Zoning By-Law Amendment (OPA/ZBLA) and Site Plan Control Application (SPCA) which subsequently was submitted for only the OPA/ZBLA and reviewed under the Urban Design review Panel (UDRP) process. This Revised Report has been revised to capture the requirements of an Assessment of Adequacy of Public Services (AAPS) and has also been prepared to outline the design objectives and criteria, servicing constraints and strategies for developing the subject lands with water, wastewater, storm and stormwater management services in accordance with:

- i. the Site Servicing Study Terms of Reference current as of this writing for Development Applications in the City of Ottawa (City);
- ii. the Ottawa Sewer Design Guidelines (2012) and associated Technical Bulletins;
- iii. the discussions held during a pre-consultation meeting with City staff, and
- iv. subsequent Email correspondences with the City.
- v. Consolidation of Official Plan and Zoning Amendment Comments 267 O'Connor Street

A copy of the Site Plan and Legal Plan is included in Appendix A while a copy of the preconsultation meeting and follow-up Email correspondence has been included in Appendix B.

1.2 Site Description and Background

The subject property is located within the urban limits of the City of Ottawa, specifically in the southeastern quadrant of the O'Connor Street and MacLaren Street intersection. As illustrated on Figure 1 (below), the subject site currently consists of an existing building and adjacent parking sited onto six (6) parcels. The site currently consists of a combination of asphalt and building which makes the subject property fully impervious.



Figure 1: Site Plan Location

The six (6) subject parcels when combined account for ±3,574 m2. Under the Zoning By-Law (ZBL), the subject properties are zoned R4UD[479].

TRM proposes to develop Twin residential Towers as follows:

- The Phase 2 Tower (southern) consists of a 25-storey building (240 units) fronting on Gilmour Street, and
- The Phase 1 Tower (northern) would consist of a 27-storey building (273 units) fronting onto MacLaren Street.

The Site Plan (Appendix A) provides a breakdown of the type of units for both towers.

1.3 Existing Infrastructure and Servicing

A review of existing services was carried out in the vicinity of the above-noted subject site to investigate the servicing requirements for the Mixed-Use Residential Towers. The following Drawings and Legal Plan were reviewed for the purpose of identifying the infrastructure bounding the subject property (refer to Appendix C for copy of Drawings):

- City of Ottawa Drawing 5026-3: Gilmour Street, revision No. 8 (01/14/2004); and
- City of Ottawa Drawing 2908, Sheet 4: MacLaren Street (June 1998).
- Other Drawings in the vicinity of the Site.

Based on this review, the following infrastructure has been identified to exist within the Gilmour Street, MacLaren Street and O'Connor Street Right-Of-Way (R.O.W.):

Watermains:

- 305mm diameter ductile iron watermain (circa 1976) located within Gilmour Street
- 406mm diameter unlined cast iron watermain (circa 1912) located within O'Connor Street
- 305mm diameter PVC watermain (circa 1997) located within MacLaren Street

As part of the water distribution system, five (5) hydrants are in close proximity of the subject site and located: i) east of the existing building along O'Connor, ii) southeast quadrant of the O'Connor and Gilmour Street intersection, and iii) southwest quadrant of the O'Connor Street and MacLaren Street intersection.

Combined Sewers:

- 450 mm diameter concrete combined sewer (circa 1997) located within MacLaren Street (flowing west). This sewer connects to the 500 mm diameter concrete combined sewer (circa 1980) on O'Connor Street which flows northerly;
- 300 mm diameter PVC combined sewer (2004) located within Gilmour Street which connects to the O'Connor Street 300 mm diameter combined sewer which then flows in a southerly direction; and
- 375 mm diameter PVC combined sewer (circa 2004) located within Gilmour Street flowing in an easterly direction.

Figure 2 below shows the existing infrastructure bounding the subject property.



Figure 2: Existing Infrastructure

Based on existing grading and servicing (refer to topographical survey in Appendix A), the following is noted:

- Runoff from the parking area, east of the existing building, currently sheet flows to MacLaren Street where it is intercepted by the MacLaren Street 450 mm diameter combined sewer via roadway catch basins along this ROW.
- Rooftop flows and wastewater flows from the existing building converge in the building's basement into a single combined sewer lateral (350 mm diameter), which connects to the MacLaren Street 450 mm diameter combined sewer.
- Runoff from most of the parking area south of the existing building is captured by on-site
 catch basins that conveys the captured flows southerly via on-site storm sewers to the
 300 mm diameter storm lead which connects to a manhole located at the southern
 property limit adjacent to the Gilmour Street ROW. From that manhole, the captured
 flows are then conveyed westerly via the 300 mm diameter combined sewer along the
 Gilmour Street ROW where it eventually connects to the O'Connor Street 300 mm
 diameter combined sewer.

Based on existing servicing, the northern half of the property (±40%) is serviced by the 450 mm diameter combined sewer on MacLaren Street while the southern half of the property (±60%) is serviced off the 300 mm diameter combined sewer located on Gilmour Street that outlets to the O'Connor Street 300 mm diameter combined sewer. The pre-development drainage for the subject property is shown in the upper left corner of Drawing DST.

1.4 Municipal Design Guidelines

This Site Servicing Report and associated engineering drawings were prepared in accordance with the following:

- Ottawa Sewer Design Guidelines (October 2012) and associated Technical Bulletins as of this writing.
- City of Ottawa Water Distribution Guidelines complete and associated Technical Bulletins as of this writing.
- Detail Drawings as well as Sewer Material Specifications including:
 - I. Sewer Connection (2003-513) and Sewer Use (2003-514) By-Laws
 - II. Watermains/Services Material Specifications as well as Water and Road Standard Detail Drawings
- III. Water By-Law (2018-167)

1.5 Pre-Consultation, Permits and Approvals

A pre-consultation meeting was held between TRM, its Consultant Team, and the City of Ottawa via a Teams Meeting on June 30, 2020 (refer to Appendix B for a copy of the pre-consultation meeting notes). Subsequently, follow up Emails (Appendix B) with the reviewer of the City of Ottawa were issued to establish the criteria of discharge to the receiving combined sewers. The storm discharge criteria used for the preparation of this AAPS report is presented in Section 4.2 (below). Refer to Appendix B for the City Comments Letter with complete responses.

Once the AAPS is approved under the joint OPA/ZBLA, the redevelopment of the above-referenced property will be subject to the municipal Site Plan control approval process with the City of Ottawa.

2.0 WATER SERVICING

2.1 Design Criteria

Headloss calculations were carried out for the proposed residential Towers sited at 267 O'Connor Street to confirm that the existing supply from the municipal system bounding the site and proposed water service laterals can provide adequate supply while complying with both the Ottawa Design Guidelines (ODG) for Water Distribution (July 2010), and Technical Bulletins ISDTB-2014-02, ISTB-2018-02, ISTB-2021-03 and IWSTB-2024-05. The above-noted documents have been referred to in this Report as the ODG.

The ODG requires that a water supply system be designed to satisfy the following demand criteria:

- · maximum day demand plus fire flow; and
- maximum hourly demand (peak hour demand).

Fire flow requirements within this private property must comply with Technical Bulletin IWSTB-2024-05, the Ontario Building Code (OBC) and NFPA 13.4

Section 2.4 (below) provides additional details with respect to fire flow requirements.

2.2 System Pressures

Section 4.2.2 of the ODG requires that new development additions to the public water distribution system be designed such that the minimum and maximum water pressures, as well as flow rates, conform to the following:

- i. Under maximum hourly demand conditions (peak hour), the pressures shall not fall below 276 kPa (40 psi).
- ii. During periods of simultaneous maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 140 kPa (20 psi).
- iii. In accordance with the Ontario Code & Guide for Plumbing, the static pressure at any fixture shall not exceed 552 kPa (80 psi) in areas that may be occupied.
- iv. The maximum pressure at any point in the distribution system shall not exceed 689 kPa (100 psi) in unoccupied areas.
- v. Feedermains, which have been provided primarily for the purpose of redundancy, shall meet, at a minimum, the basic day plus fire flow demand. This criterion is not applicable to this analysis as there are only watermain laterals proposed as part of this project.

The headloss calculations shown below were completed to demonstrate compliance to the above watermain pressure under the various demand conditions.

2.3 Water Demands

To assess the headloss along the proposed water service laterals (Drawing C001 at the back of the Report), the above-noted water demand scenarios were evaluated against the pressure criteria listed in Section 2.2 using the well-known Hazen-Williams equation.

The theoretical domestic demands for 267 O'Connor Street were calculated based on the information provided by TRM and shown on the Site Plan (Appendix A). For the Southern Tower (Phase 2), a total of 240 units is proposed consisting of a mix of studios and 1- and 2-bedrooms. For the Northern Tower (Phase 1), a total of 273 units is proposed also consisting of a mix of studios and 1- and 2-bedrooms.

Based on densities of 1.4 (studios and 1-bedroom) and 2.1 (2-bedroom) persons per unit (Table 4.1 of the ODG – Water Distribution), a total population of 827 people was calculated (refer to Appendix D1 for detailed calculations). Given that the overall population for the site is above 500, the peaking factors used for 267 O'Connor Street were extracted from Table 4.2 of the ODG.

Table 1 summarizes the overall water demands for 267 O'Connor, which were calculated based on an average day consumption rate of 280 L/cap/day and the above-noted population of 827 using the recommended peaking factors of the ODG (Table 4.2) since the overall population is greater than 500. These demands were then used to assess headloss under various demand scenarios along the proposed water servicing.

The average day demands exceed the 50 m³/day (0.578 L/s) threshold. Therefore, for redundancy, the water servicing consists of two (2) 200 mm diameter water laterals, one for each Tower (Drawing C001) with a shut-off valve located on each of the proposed watermain service laterals. The headloss calculations were conducted assuming that total theoretical demand was solely drawn from one of the two (2) 200 mm diameter watermain service laterals. Appendix D1 includes the detailed domestic demand calculations for the Southern (Phase 2) and Northern (Phase 1) Towers.

Water Demand (L/s) Demand Scenario Southern Tower **Northern Tower** Combined (Phases 1 &2) (Phase 2) (Phase 1) 1.24 1.44 2.68 Average Day Maximum Day 3.10 3.60 6.70 Peak Hour 6.83 7.91 14.74 Minimum Hour 0.50 0.58 1.07

Table 1: Theoretical Water Demands

2.4 Fire Flow Requirements

The City has specified that the OBC method shall be used to calculate the required fire flow (RFF), which in turn, is based on NFPA 13 when the building is to be equipped by a fire suppression system and that there are no on-site hydrants proposed (supply via watermain service laterals).

Based on NFPA's Table 11.2.2.1 (Water Supply Requirements for Pipe Schedule Sprinkler Systems) and Table 11.2.3.1.2 (Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems), the RFF within the property for ordinary hazard shall be 4,150 L/min (69.2 L/s), which is to be made up of i) 3,200 L/min (53.3 L/s) for the fire suppression system, and ii) 950 L/min (15.8 L/s) for the total combined hose allowance (refer to Appendix D3).

2.5 Watermain Sizing and Roughness Coefficients

The existing and proposed watermain layout for 267 O'Connor is shown on the Site Servicing Plan (Drawing C001) at the back of the Report. The proposed water servicing for 267 O'Connor consists of the following:

Southern Tower (Phase 2)

- Water supply to the Southern Tower (Phase 2) will be provided via a 200 mm diameter water service lateral that will connect to the Gilmour Street 305 mm diameter watermain.
- This service lateral will provide both domestic and supply to the internal fire suppression system within the Southern Tower (Phase 2). The mechanical engineer will be responsible to size and design a pump to supply domestic demands as well as a fire pump to provide adequate supply to the sprinkler system. As per the OBC, these systems will be designed in accordance with NFPA 13 where a total demand of 69.2 L/s (4,150 L/min) needs to be accounted; 53.3 L/s (3,200 L/min) for the fire suppression system and 15.8 L/s (950 L/min) for the hose allowance. Assuming a sprinkler flow allowance of 69.2 L/s is conservative for this type of product based on similar projects. It will be confirmed as part detailed design once a mechanical engineer has been retained by TRM.
- The fire department connection (FDC) will be located near the southwest corner of the Southern Tower, off Gilmour Street in proximity of the mechanical room within the prescribed distance to an existing fire hydrant on Gilmour Street.

Northern Tower (Phase 1)

• Water supply to the Northern Tower (Phase 1) will be provided by a 200 mm diameter water service lateral that will connect to the MacLaren Street 305 mm diameter watermain. This service lateral will provide both domestic and supply to the internal fire suppression system within the Northern Tower (Phase 1). The mechanical engineer will be responsible to size and design a pump to supply domestic demands as well as a fire pump to provide adequate supply to the fire suppression system. As per the OBC, these systems will be designed in accordance with NFPA 13 where a total demand of 69.2 L/s

(4,150 L/min) needs to be accounted; 53.3 L/s (3,200 L/min) for the fire suppression system and 15.8 L/s (950 L/min) for the hose allowance.

 The fire department connection will be located at the north face of the Northern Tower, off MacLaren Street in proximity of the mechanical room within the prescribed distance to an existing fire hydrant on MacLaren Street.

2.6 Hydraulic Boundary Conditions

The headloss calculations were carried out under various water demand scenarios described in Sections 2.3 and 2.4. Boundary conditions were requested for each of the Towers sited at 267 O'Connor. Boundary conditions received from the City dated August 7, 2025 (Appendix D2) have been summarized (below) in Table 2.

Water Demand Scenario	HGL at MacLaren (m)	HGL at Gilmour (m)
Minimum HGL	106.8	106.8
Maximum HGL	115.0	115.0
MDD + FF - Southern – Phase 2 (117 L/s)	N/A	108.1
MDD + FF - Northern – Phase 1 (133 L/s)	108.0	N/A

Table 2: Hydraulic Boundary Conditions

The most recent Boundary Conditions (August 7, 2025) shown above were used for the following design as the updated demands and fire flows are lower than those used by the City of Ottawa to generate the Boundary Conditions shown in Table 2. The demands are lower given the reduction of both unit counts and the RFF which was to be based on the OBC method for sprinklered buildings (NPFA 13). Therefore, the updated headloss analysis described in the following section is conservative.

2.7 Headloss Calculations

The proposed servicing as presented on Drawing C001 was evaluated under domestic (minimum and maximum HGL) as well as during a maximum day combined to a fire flow demand condition. Due to the demand at each of the Towers, the proposed servicing at each of the Towers consists of a 200 mm diameter watermain service lateral that will converge into the mechanical room, upstream of the water meter. The length of the service lateral is ± 8.10 m for the Phase 2 Tower (Southern) and ± 6.90 m for the Phase 1 Tower (Northern) (Drawing C001). These lengths have been used to evaluate headloss along both service laterals. Sections 2.7.1 to 2.7.3 summarize the headloss calculations and associated findings.

It is noted that the headloss calculations were developed based on the peaking factors per the ODG for a combined population greater than 500. If the population and demands of each tower were to be reviewed individually, the population would be less than 500 people, which results in

higher peaking factors and higher demands for each tower. As the design is governed by the maximum day plus fire flow scenario, the boundary conditions developed based on the FUS method (2020), which results in a higher fire flow requirement than the OBC method for sprinklered buildings. Therefore, the pressure requirements would still be achieved if each tower were to be reviewed individually as the boundary conditions are conservative for the target OBC fire flow.

2.7.1 Peak Hour Demand

Northern Tower (Phase 1)

The simulation results found the pressure at the Northern Tower (Phase 1) during the peak hour condition to be 345 kPa (50.0 psi) (refer to Appendix D4), which exceeds the minimum pressure criterion of 276 kPa (40 psi) per Design Guidelines.

Southern Tower (Phase 2)

The simulation results found the pressure at the Southern Tower (Phase 2) during the peak hour condition to be 347 kPa (50.3 psi) (refer to Appendix D4), which exceeds the minimum pressure criterion of 276 kPa (40 psi) per Design Guidelines.

2.7.2 Maximum Day plus Fire Flow

Northern Tower (Phase 1)

The simulation results found the pressure at the Northern Tower (Phase 1) during the maximum day plus sprinkler demand to be 355 kPa (51.5 psi) (refer to Appendix D4), which exceeds the minimum pressure criterion of 140 kPa (20 psi) per Design Guidelines.

Southern Tower (Phase 2)

The simulation results found the pressure at the Southern Tower (Phase 2) during the maximum day plus sprinkler demand condition to be 358 kPa (50.9 psi) (refer to Appendix D4), which exceeds the minimum pressure criterion of 140 kPa (20 psi) per Design Guidelines.

2.7.3 Maximum HGL

Northern Tower (Phase 1)

Based on a minimum hour demand of 0.58 L/s, the simulation results found the pressure at the Northern Tower (Phase 1) is 426 kPa (61.8 psi) (refer to Appendix D4), which is below the maximum pressure criterion of 552 kPa (80 psi) per the Ontario Building Code.

Southern Tower (Phase 2)

Based on a minimum hour demand of 0.50 L/s, the simulation results found the pressure at the Southern Tower (Phase 2) is 428 kPa (62.1 psi) (refer to Appendix D4), which is below the maximum pressure criterion of 552 kPa (80 psi) per the Ontario Building Code.

2.8 Summary and Conclusions

Based on the above watermain servicing details, it is recommended that proposed 200 mm diameter watermain, as shown on the Site Servicing (Drawing C001), be constructed to provide water servicing for the Southern Tower (connection to Gilmour Street) and Northern Tower (connection to MacLaren Street) recognizing that domestic and fire pumps will be sized by the Owner's mechanical engineer.

3.0 WASTEWATER SERVICING

3.1 Background

Currently, wastewater flows from a Building fronting on MacLaren Street is collected by an internal piping system which merges in the basement with the storm piping (rooftop flows). This single 200 mm diameter sewer outlets to the MacLaren Street 450 mm diameter combined sewer. Given that the property does not include any building fronting on Gilmour Street, there are no wastewater flows currently being discharged into the existing 300 mm diameter combined sewer on Gilmour Street.

It is proposed that wastewater flows generated by 267 O'Connor be collected by an internal piping system in each Tower that will convey the wastewater flows for the Phase 2 Tower and Phase 1 Tower to the Gilmour Street and MacLaren Street combined sewers, respectively (refer to Drawing C001 - Site Servicing).

3.2 Design Criteria

The proposed sanitary services for 267 O'Connor Street twin towers were designed based on the City of Ottawa Sewer Design Guidelines ((OSDG) - (October 2012)) and associated Technical Bulletins. Key design parameters have been summarized in Table 3.

Table 3: Wastewater Servicing Design Criteria

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

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Design Criteria	Design Value	Reference
Manning Roughness Coefficient (for smooth wall pipes)	0.013	OSDG Section 6.1.8.2
Minimum allowable slopes	Varies	OSDG Table 6.2, Section 6.1.2.2

3.3 Theoretical Sanitary Peak Flow and Proposed Sanitary Servicing

Wastewater flows from the Southern and Northern Towers will discharge into the municipal systems via individual sanitary service laterals. Wastewater flows from the Southern Tower will discharge into the Gilmour Street 300 mm diameter combined sewer while flows from the Northern Tower will discharge to the MacLaren Street 450 mm diameter combined sewer.

Based on the proposed densities for apartment buildings (as recommended by the OSDG), the peak wastewater flows were calculated based on the design value of 280 L per capita per day (per Table 3) and populations of 383 (Southern Tower) and 444 (Northern Tower).

Peak wastewater flows of 4.29 L/s and 4.93 L/s were calculated for the Southern (Phase 2) and Northern (Phase 1) Towers, respectively based on the following parameters (refer to Appendix F for Detailed Wastewater Flow Calculations):

- i. Residential average unit flow rate of 280 L/capita/day;
- ii. Theoretical population of 383 (Southern) and 444 (Northern);
- iii. Peaking factors of 3.425 and 3.400, calculated in accordance with the Harmon formula for the Southern and Northern Towers, respectively;
- iv. Total infiltration allowance calculated based on 0.05 L/s/ha (dry I/I), and (0.28 L/s/ha (wet I/I), in accordance with the OSDG and ISTB-2018-01. Based on the phasing limit of each phase, a combined I/I allowance of 0.06 L/s was estimated for the Southern and Northern Tower (refer to Appendix E).

In addition to the above-noted contributions including I/I (dry and wet), the groundwater flow allowance of 0.17 L/s estimated by Paterson, was proportionally added to the above-noted peak wastewater flows. Once added, total peak wastewater flows of 4.38 L/s and 5.02 L/s were calculated for the Southern Tower (Phase 2) and Northern Tower (Phase 1), respectively.

3.3.1 Proposed Sanitary Service Lateral Sizing

To accommodate the above design flow targets of 4.38 L/s and 5.02 L/s, the following is proposed:

• For the Phase 2 Tower, it is proposed to convey wastewater flows to the existing Gilmour Street 300 mm diameter combined sewer as depicted on Drawing C001. The existing catchbasin lead outlets to an existing catchbasin maintenance hole on Gilmour Street. The re-use of this existing 300 mm diameter catchbasin lead will minimize disturbance along Gilmour Street, provided that its structural condition is proven to be satisfactory. Should this sewer require to be replaced, it is proposed that a 300 mm diameter sanitary

sewer be used so that the connection works at the existing manhole within the ROW be kept to a minimum.

 An existing 200 mm diameter sanitary service lateral at 1.0% slope will be reused to convey the wastewater flows from the Phase 1 Tower to MacLaren Street as shown on Drawing C001.

The above-noted 200 mm diameter and 300 mm diameter sanitary sewers can accommodate peak design flows up to 34.2 L/s (200 mm diameter sewer) under free-flowing condition, which exceeds the requirements for both Towers.

3.4 Summary and Conclusions

Based on the above wastewater servicing details, it is recommended that the wastewater servicing shown on the Site Servicing (Drawing C001) be implemented to provide wastewater servicing for the Southern and Northern Towers.

4.0 STORM SERVICING AND STORMWATER MANAGEMENT

4.1 Background

Runoff generated by the proposed Towers at 267 O'Connor will be collected by a series of internal drains and sewers that will outlet to two (2) separate combined sewer outlets. Runoff from the Southern Tower (Phase 2) will discharge to the Gilmour Street 300 mm diameter combined sewer while runoff from the Northern Tower (Phase 1) will outlet to the MacLaren Street 450 mm diameter combined sewer. Runoff collected from most of the Privately Owned Public Space (POPS) will discharge into the Gilmour Street combined sewer, which matches the current drainage divide within the property (Section 4.3).

4.2 Storm Criteria

This AAPS and associated drawings have been prepared based on the discussions held at the pre-consultation meeting and subsequent Email correspondences. The storm design criteria used in this design is based on the following:

- The allowable peak flow shall be estimated based on a 1:5-year intensity which is to be calculated based on a Runoff Coefficient (C-Factor) of 0.40 given that the site is currently fully impervious (C-Factor=0.9).
- The allowable peak flow is to be calculated using the IDF statistics (per the Ottawa Sewer Design Guidelines (OSDG)) based on the calculated time of concentration (Tc) reflecting existing condition. The calculated Tc shall not be less than a Tc of 10 mins.
- The allowable peak flow will reflect the current drainage divide between MacLaren Street and Gilmour Street.

- The outlets for the Mixed-Use Residential Towers should reflect the existing condition. The outlet for the Phase 2 tower (wastewater & storm) will be the existing 300 mm diameter combined sewer on Gilmour Street, while the outlet for the Phase 1 tower (wastewater & storm) will be 450 mm diameter combined sewer on MacLaren Street.
- The post development flows will be limited to the allowable peak flow for both outlets and will be set once the wastewater peak flow and groundwater flow contributions are subtracted from the 1:5-year calculated peak flows.
- The post-development peak flows shall be controlled up to the 1:100-year storm to the
 allowable peak flow by means of on-site storage. On-site measures would consist of
 rooftop storage, at grade ponding, underground cistern or a combination of these
 measures which will be confirmed at detailed design
- All storm contributions conveyed to the MacLaren Street and Gilmour Street combined sewers, will be controlled by means of inlet control devices (ICD) and/or rooftop drains equipped with flow control devices.
- The subject property is tributary to combined sewers and consists of rooftops and POPS. As a result, there is no water quality control requirements given the proposed surfaces.

4.3 Allowable Release Rate

Storm servicing and stormwater management for the subject property is to be developed to limit the 1:100-year post-development flow from the subject property to the prescribed allowable peak flows of both outlets. As per the storm criteria described in Section 4.2, the allowable peak flow is to be estimated based on the 1:5-year design storm which shall be estimated based on a maximum C-Factor of 0.40. Further, the wastewater peak flows and groundwater peak flow should be subtracted from the 1:5-year peak flow.

To evaluate the allowable peak flows, the various areas were delineated based on their type and outlet locations and were assigned a C-Factor as shown on a Drainage Area Plan (refer to Drawing DST – Pre-Development Drainage Plan). These areas for both outlet locations have been summarized in Table 4 (below).

Table 4: Pre-Development (Existing) Condition Surfaces

Overall Parcel (per Topographic Survey)					
Surface Details Area (m²) C-Factor					
Area tributary to Gilmour Street					
Parking area	2,205.77	0.90			
TOTAL:	2,205.77	0.90			
Surface Details	Area (m²)	C-Factor			
Area tributary to MacLaren Street					
Parking	559.74	0.90			

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Building	767.45	0.90
TOTAL:	1,327.19	0.90

Based on the above surface breakdown, ±2206 m² is tributary to Gilmour Street while ±1,327 m² to MacLaren Street. Pre-development (existing) peak flows were estimated under both the 1:5 year and 1:100 year and presented below for information purposes.

Based on the review of the current site condition (existing condition survey) and length of the various flow paths, the Time of Concentration (Tc) was estimated for both outlets (refer to Appendix F1 for details). The Tc calculations were carried out based on the Uplands Method and have shown that the Tc for both outlets was well below 10 minutes given the short and efficient flow paths (i.e., asphalt parking sloping and short sections of sewers). Consequently, a Tc of 10 minutes has been used for both outlets to calculate the pre-development peak flows (refer to Appendix F1 for the Uplands Chart for the flow paths and corresponding velocities). Table 5 below shows the 1:5-year and 1:100-year peak flows under existing conditions based on a C-Factor of 0.90.

1:5-year Outlet Area 1:100-year Location Type Area (m²) C-Factor Qp (L/s) Qp (L/s) Parking 2205.77 0.90 57.5 98.5 Gilmour Parking MacLaren 559.74 Building MacLaren 767.45 0.90 Total 1327.19 MacLaren 0.90 35.6 61.1

Table 5: Existing Peak Flows

Based on existing development conditions, peak flows of 57.5 L/s and 98.5 L/s are conveyed to Gilmour Street under the 1:5-year and 1:100-year, respectively. Similarly, peak flows of 35.6 L/s and 61.1 L/s are conveyed to MacLaren Street under the 1:5-year and 1:100-year, respectively. These flows are reflective of the current hard surfaces (refer to Appendix F1 for detailed calculations for existing condition peak flow assessment).

Given the storm discharge criteria noted by the City, the allowable peak flow at both outlets was then estimated based on a C-Factor of 0.40 while subtracting the contributing sanitary peak flows and groundwater contributions to the combined sewer systems, related to post-development condition. Refer to above Section 3.3 for sanitary flows, and a groundwater estimate of 15,000 L/day (0.17 L/s) was identified for the entire site in report, Geotechnical Investigation prepared by Paterson, dated September 28, 2020, latest revision January 2025. Appendix F1 includes the allowable peak flow calculation under post-development for both outlets, which have been summarized below in Table 6.

Table 6: Allowable Peak Flows

Outlet Location	Area (m²)	C- Factor	1:5-year Qp (L/s)	Sanitary (L/s)	Groundwater (L/s)	Allowable Qp (L/s)
Gilmour	2,205.77	0.40	25.6	4.38	0.085	21.09
Total MacLaren	1,327.19	0.40	15.4	5.02	0.085	10.74

The storm and stormwater management servicing described in the section below was developed to meet the allowable peak flows noted above for both outlets.

4.4 Storm Servicing

The general storm and stormwater servicing constraints used to develop the detailed design for 267 O'Connor are listed in Table 7 below.

Table 7: Storm Servicing Design Criteria

General Design Criteria

Storm drains are to be designed by the mechanical engineer to convey the calculated flows presented herein in accordance with the Ontario Building Code. The calculated peak flows were estimated with the Rational Method and the City of Ottawa Intensity-Duration-Frequency (IDF) curves.

Peak flows estimated based on an inlet time of ten (10) minutes, as per the Technical Bulletin ISDTB-2012-4.

Calculated peak flows to be estimated based on weighted average C-Factors. The weighted C-Factors have been calculated based on 0.90 for all hard surfaces and 0.60 for all landscaped areas where applicable.

The sum of all storm flows to be controlled to the allowable peak flow noted in Table 6

The 1:100-year peak flows to be detained by means of on-site retention measures; i) at grade surface ponding, ii) rooftop storage, or iii) stormwater cistern.

Provide measures to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

4.5 Proposed Stormwater Management Solution and Calculations

4.5.1 Water Quantity Requirements

Storm servicing and stormwater management for 267 O'Connor was developed to limit the 1:100-year post-development flows below the allowable peak flows of 21.09 L/s and 10.74 L/s for the Gilmour and MacLaren outlets, respectively. As part of the grading exercise, a number of low points (3) were introduced in the site's grading for areas surrounding the Towers; these low points have labelled as LP1 to LP3 on Drawing C003.

Given that these low points and area drains are part of the POPS' structure, their design will be completed by the mechanical engineer, including sizing of the internal piping that will be part of the underground garage.

The stormwater management strategy also includes rooftop storage and restrictions. Rooftop storage along with underground storage via a cistern for the Gilmour outlet, were adapted to the allowable release rate, site constraints, and proposed grading. It should be noted that this report was prepared to demonstrate that the storm and stormwater management servicing could meet the allowable release rate at both outlets. Once the joint OPA/ZBLA is approved, the stormwater management strategy will be coordinated with TRM's mechanical engineer and could potentially be revised upon comments from the City. At that time, stormwater management cistern for the MacLaren outlet may be incorporated into the design to improve the level of service along the hard scaped surfaces.

Based on the grading and the types of proposed surfaces (roof, hard scaped and landscaped), the various surfaces along with the calculated C-Factors have been delineated on Drawing C003 (Post-Development Drainage Plan). Buildings and hard scaped areas were assigned a C-Factor of 0.90 while soft scaped areas (landscaped and planters) will be set to a conservative C-Factor of 0.60 when a landscape plan is available at the SPCA stage of the project. All areas depicted on Drawing C003 are controlled by means of restrictors except for two (2) small areas; Areas 8 and 9, which are at-grade surfaces and abutting the roadways. Given that Areas 8 and 9 do not include restrictors, they have been accounted as uncontrolled flow and used in the assessment of the stormwater management strategy.

A summary of the various areas depicted on Drawing C003 follows:

Area 8: Small strip of land (86.57m²) that is proposed to sheet flow uncontrolled towards Gilmour Street. This flow was accounted as uncontrolled flow in the stormwater management assessment.

Area 9: Small strip of land (56.32 m²) that is proposed to sheet flow uncontrolled towards Gilmour Street. This flow was accounted as uncontrolled flow in the stormwater management assessment.

Area 2: It consists of the Phase 1 Tower, with a footprint of 971.22 m². Additional details regarding storage volume and release rate are shown below.

Areas 4,1 and 3: At grade Low Point Areas denoted as A4-LP1 (512.82m²), A1-LP2 (159.44), A3-LP3 (334.35m²) on the Ponding Area Table, having the static ponding characteristics shown on Drawing C003. This area consists of hard-scaped and landscaped areas, with a runoff coefficient of 0.90 and 0.87 respectively and is directed to the underground cistern tributary to the Gilmour combined sewer.

Area 6: It consists of a combination of hard-scaped and landscaped areas, with a weighted runoff coefficient of 0.87 and is directed to the underground cistern tributary to the MacLaren Street sewer.

Area 7: It consists of only hard-scaped surfaces with a runoff coefficient of 0.9 and is directed to the underground cistern tributary to the Gilmour Street combined sewer.

Area 5: It consists of the Phase 2 Tower, with a footprint of 917.52 m². Additional details regarding storage volume and release rate are shown below.

Rooftop Servicing (Areas 2 and 5):

Regarding rooftop storage and restrictions, the following assumptions were made based on experience with other mixed-use residential tower projects:

- Rooftop storage could easily be introduced up to 60% of the Tower footprint with a maximum ponding depth of 0.15 m, which is within the snow load design requirement. Based on the footprint of both towers, the storage volume estimated is 87.41 m³ and 82.58 m³ and for the and Phase 1 Tower (Area 2) and Phase 2 Tower (Area 5), respectively.
- It was assumed that the rooftop weirs could consist of a Watts Adjustable Accutrol Weir which under 150 mm ponding depth, would release a maximum of 0.315 L/s (5 gpm) when fully closed (refer to Appendix F2 for copy of the Manufacturer's detail sheet for Watts weir).
- Based on the footprint of both towers, it was assumed that 12 of the Watts weirs could provide the necessary rooftop coverage. Based on this configuration, storm flows from both Towers would be limited to 3.78 L/s (12 weirs) up to the 1:100-year storm. The mechanical engineer could opt in the use of other type of restrictors. However, to maintain the integrity of the proposed stormwater management strategy each roof shall be restricted to a maximum of 3.78 L/s while providing the minimum rooftop storage noted above.

To assess storage volume requirements for both rooftops and cistern detention areas, the Modified Rational Method (MRM) was used. Given that the proposed stormwater management strategy includes an internal cistern, the MRM calculation was carried out assuming the half the design flow (50%) for areas tributary to the cistern.

4.5.2 Stormwater Management Assessment

An evaluation of the stormwater management system design was carried out under the 1:100-year storm which has been documented in Appendix F2. To limit peak flows from the at-grade detention areas, restrictors are proposed (to be designed by the mechanical engineer) as noted in the Ponding Area Table (Drawing C003).

Ponding volumes provided by grading (Drawing C002) have been included in the Ponding Area Volume Table on Drawing C003.

Other details for each area have been summarized in the Ponding Area Table (Drawing C003), including the proposed ICD capture rates, maximum static ponding depth and elevation and the maximum static volume. These will be reviewed and coordinated with TRM's mechanical engineer during detailed design.

Assessment of Adequacy of Public Services 267 O'Connor Street, Ottawa ON

The stormwater management assessment carried out and presented in Appendix F2 has been summarized in the tables on Drawing C003.

As shown on the table for the Gilmour Street outlet (Drawing C003), the sum of all 1:100-year flows (ICD, cistern plus uncontrolled) are estimated at 21.09 L/s, which matches the allowable peak flow of 21.09 L/s. Hence, the storm discharge criterion is met. The above ponding elevations under the 1:100-year show that the Phase 2 building will be protected during this event. Hence, the Phase 2 Tower is protected during the 1:100 year.

Per the table for the MacLaren Street outlet (Drawing C0003), the sum of all 1:100-year flows (ICD plus uncontrolled) are estimated at 10.74 L/s, which is equal to the allowable peak flow of 10.74 L/s. Hence, the storm discharge criterion is met. The above ponding elevations under the 1:100-year shows that the Phase 1 building will also be protected during those extreme events. Hence, the Phase 1 Tower is protected during the 1:100 year.

4.5.3 Water Quality

Storm runoff generated by the twin towers sited at 267 O'Connor is conveyed to the Gilmour Street and MacLaren Street combined sewer systems. The proposed development will consist of twin high-rise Mixed-Use Residential Towers and POPS. As a result of the outlets and types of surfaces, no water quality control measures are proposed.

4.6 Summary and Conclusions

The storm and stormwater management solutions presented in this Report were found to fulfill the water quantity and quality criteria presented in Section 4.2. The assumptions made for the rooftop of both Towers and the cistern tributary to Gilmour Street (i.e., storage and capacity) will require to be reviewed by TRM's mechanical engineer. Similarly, the internal piping will require to be designed by the mechanical engineer. As noted above, once rezoning has been approved and the stormwater management servicing reviewed by the mechanical engineer, cistern(s) requirements in the design to improve the level of service along the hard scaped surfaces would be further reviewed.

Desktop calculations (Appendix F2) were carried out to assess the effectiveness of the proposed grading, servicing and stormwater management design under the 1:100-year storm. This assessment has demonstrated that the rooftop controls along with the cistern storage and controls could accommodate the 1:100-year storm while protecting the Phase 1 and Phase 2 towers. In light of the above, it is recommended that the storm and stormwater management solution shown on Site Servicing (Drawing C001), Grading (Drawing C002) and Post-Development Drainage (Drawing C003) be implemented to provide storm servicing for the proposed development.

5.0 EROSION AND SEDIMENTATION CONTROL

At the on-set of the construction of the Mixed-Use Residential Towers, substantial excavation will be completed for the underground garage for both Towers. As a result, runoff from the site will mostly be contained in the excavation area. As such, appropriate erosion and sedimentation control measures, as outlined in the Ontario Ministry of Natural Resources (MNR) Guidelines on Erosion and Sediment Control for Urban Construction Sites, will be implemented to trap sediment on site. The following erosion and sedimentation control measures could be implemented during construction (refer to Drawing C004):

- Supply and installation of a silt fence barrier, as per OPSD 219.110, if required;
- Supply and installation of filter fabric between the frame and cover of catch basins and maintenance holes adjacent to the project area during construction, to prevent sediment from entering the sewer system. The filter fabric is to be inspected regularly and corrected as required;
- Stockpiling of material during construction is to be located offsite;
- Sandbags are to be placed blocking part of the sewer pipe in the connecting storm
 maintenance holes to eliminate construction debris from entering the existing storm
 sewer system. The sandbags are to be removed after the proposed storm sewers have
 been fully cleaned.

Assessment of Adequacy of Public Services 267 O'Connor Street, Ottawa ON

The proposed erosion control measures (refer to Drawing C004) shall conform to the following documents:

- "Guidelines on Erosion and Sediment Control for Urban Construction Sites" published by Ontario Ministries of Natural Resources, Environment, Municipal Affairs, and Transportation & Communication, Association of Construction Authorities of Ontario and Urban Development Institute, Ontario, May 1987.
- "MTO Drainage Manual", Chapter F: "Erosion of Materials and Sediment Control", Ministry of Transportation & Communications, 1985.
- "Erosion and Sediment Control" Training Manual by Ministry of Environment, Spring 1998
- Applicable Regulations and Guidelines of the Ministry of Natural Resources.

Assessment of Adequacy of Public Services 267 O'Connor Street, Ottawa ON

J.L. RICHARDS & ASSOCIATES LIMITED

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

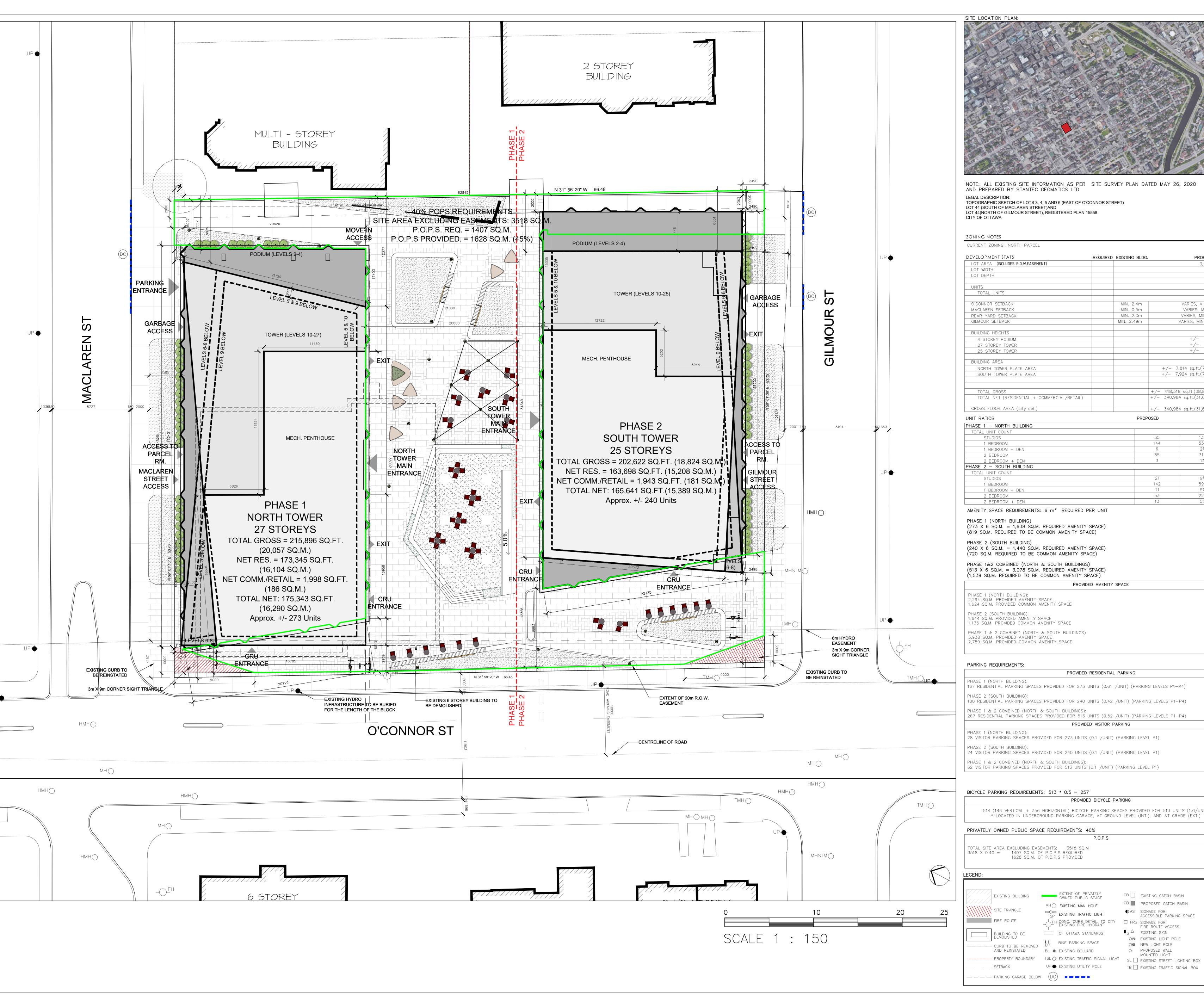
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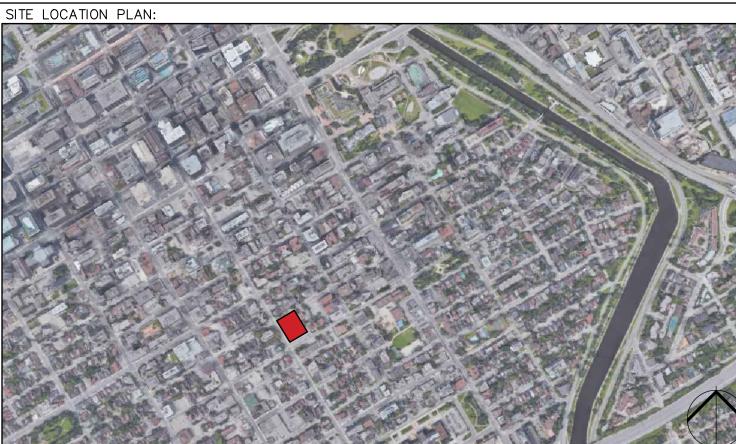
Prepared by:	Reviewed by:
Evan Way, P.Eng. Civil Engineer	Steve Picken, C.Tech. Civil Technician

Site	Servicing	Report	
267	O'Connor,	Ottawa,	Ontario

Appendix A

Site Plan and Legal Plans





NOTE: ALL EXISTING SITE INFORMATION AS PER SITE SURVEY PLAN DATED MAY 26, 2020 AND PREPARED BY STANTEC GEOMATICS LTD TOPOGRAPHIC SKETCH OF LOTS 3, 4, 5 AND 6 (EAST OF O'CONNOR STREET) LOT 44 (SOUTH OF MACLAREN STREET)AND LOT 44(NORTH OF GILMOUR STREET), REGISTERED PLAN 15558

CURRENT ZONING: NORTH PARCEL

DEVELOPMENT STATS	REQUIRED	EXISTING BLDG	. PROPOSED
LOT AREA (INCLUDES R.O.W.EASEMENT)			3,573 m²
LOT WIDTH			66.4m
LOT DEPTH			53.7m
UNITS			
TOTAL UNITS			513
O'CONNOR SETBACK		MIN. 2.4m	VARIES, MIN. 1.5m
MACLAREN SETBACK		MIN. 0.5m	VARIES, MIN 1.0m
REAR YARD SETBACK		MIN. 2.0m	VARIES, MIN. 2.0m
GILMOUR SETBACK		MIN. 2.49m	VARIES, MIN. 2.49m
BUILDING HEIGHTS			
4 STOREY PODIUM			+/- 20 m
27 STOREY TOWER			+/- 96 m
25 STOREY TOWER			+/- 90 m
BUILDING AREA			
NORTH TOWER PLATE AREA			+/- 7,814 sq.ft.(726 sq.n
SOUTH TOWER PLATE AREA			+/- 7,924 sq.ft.(736 sq.n
TOTAL GROSS			+/- 418,518 sq.ft.(38,882 sq.m
TOTAL NET (RESIDENTIAL + COMMERCIAL/RETAIL)			+/- 340,984 sq.ft.(31,678 sq.m
GROSS FLOOR AREA (city def.)			+/- 340,984 sq.ft.(31,678 sq.m

UNIT RATIOS	PROPOSED	PROPOSED		
PHASE 1 - NORTH BUILDING				
TOTAL UNIT COUNT		273		
STUDIOS	35	13%		
1 BEDROOM	144	53%		
1 BEDROOM + DEN	6	2%		
2 BEDROOM	85	31%		
2 BEDROOM + DEN	3	1%		
PHASE 2 - SOUTH BUILDING				
TOTAL UNIT COUNT		240		
STUDIOS	21	9%		
1 BEDROOM	142	59%		
1 BEDROOM + DEN	11	5%		
2 BEDROOM	53	22%		
2 BEDROOM + DEN	13	5%		

PROVIDED AMENITY SPACE

AMENITY SPACE REQUIREMENTS: 6 m2 REQUIRED PER UNIT

PHASE 1 (NORTH BUILDING) (273 X 6 SQ.M. = 1,638 SQ.M. REQUIRED AMENITY SPACE) (819 SQ.M. REQUIRED TO BE COMMON AMENITY SPACE) PHASE 2 (SOUTH BUILDING) (240 X 6 SQ.M. = 1,440 SQ.M. REQUIRED AMENITY SPACE) (720 SQ.M. REQUIRED TO BE COMMON AMENITY SPACE)

PHASE 1&2 COMBINED (NORTH & SOUTH BUILDINGS) (513 X 6 SQ.M. = 3,078 SQ.M. REQUIRED AMENITY SPACE) (1,539 SQ.M. REQUIRED TO BE COMMON AMENITY SPACE)

PHASE 1 (NORTH BUILDING): 2,294 SQ.M. PROVIDED AMENITY SPACE 1,624 SQ.M. PROVIDED COMMON AMENITY SPACE PHASE 2 (SOUTH BUILDING)
1,644 SQ.M. PROVIDED AMENITY SPACE
1,135 SQ.M. PROVIDED COMMON AMENITY SPACE PHASE 1 & 2 COMBINED (NORTH & SOUTH BUILDINGS)

PROVIDED RESIDENTIAL PARKING

167 RESIDENTIAL PARKING SPACES PROVIDED FOR 273 UNITS (0.61 /UNIT) (PARKING LEVELS P1-P4) PHASE 2 (SOUTH BUILDING): 100 RESIDENTIAL PARKING SPACES PROVIDED FOR 240 UNITS (0.42 /UNIT) (PARKING LEVELS P1-P4)

267 RESIDENTIAL PARKING SPACES PROVIDED FOR 513 UNITS (0.52 /UNIT) (PARKING LEVELS P1-P4) PROVIDED VISITOR PARKING

PHASE 1 (NORTH BUILDING): 28 VISITOR PARKING SPACES PROVIDED FOR 273 UNITS (0.1 /UNIT) (PARKING LEVEL P1) 24 VISITOR PARKING SPACES PROVIDED FOR 240 UNITS (0.1 /UNIT) (PARKING LEVEL P1)

BICYCLE PARKING REQUIREMENTS: 513 * 0.5 = 257

PROVIDED BICYCLE PARKING 514 (146 VERTICAL + 356 HORIZONTAL) BICYCLE PARKING SPACES PROVIDED FOR 513 UNITS (1.0/UNIT)

PRIVATELY OWNED PUBLIC SPACE REQUIREMENTS: 40%

TOTAL SITE AREA EXCLUDING EASEMENTS: 3518 SQ.M 3518 X 0.40 = 1407 SQ.M. OF P.O.P.S REQUIRED 1628 SQ.M. OF P.O.P.S PROVIDED



EXTENT OF PRIVATELY OWNED PUBLIC SPACE

MH C EXISTING MAN HOLE TSP EXISTING TRAFFIC LIGHT FH CONC. CURB DETAIL. TO CITY FRS SIGNAGE FOR EXISTING FIRE HYDRANT

O⊠ EXISTING LIGHT POLE O- NEW LIGHT POLE O- PROPOSED WALL BL @ EXISTING BOLLARD PROPERTY BOUNDARY TSL EXISTING TRAFFIC SIGNAL LIGHT SL EXISTING STREET LIGHTING BOX UP

EXISTING UTILITY POLE TB ___ EXISTING TRAFFIC SIGNAL BOX

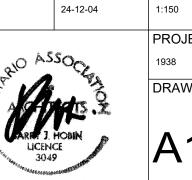
CB ___ EXISTING CATCH BASIN CB PROPOSED CATCH BASIN ① AS SIGNAGE FOR ACCESSIBLE PARKING SPACE

lacksquare existing sign

FIRE ROUTE ACCESS

MOUNTED LIGHT

DRAWN BY: DATE:



25-01-31 ISSUED FOR REZONING

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/ or omissions to the architect. All contractors must comply with all

TEAGGART REALTY MANAGEMENT

pertinent codes and by-laws. Do not scale drawings.

25-12-01 REISSUED FOR REZONING

25-08-01 ISSUED FOR SUDRP

o.| date | revision

This drawing may not be used for construction until signed. Copyright reserved.

UNSTUDIO

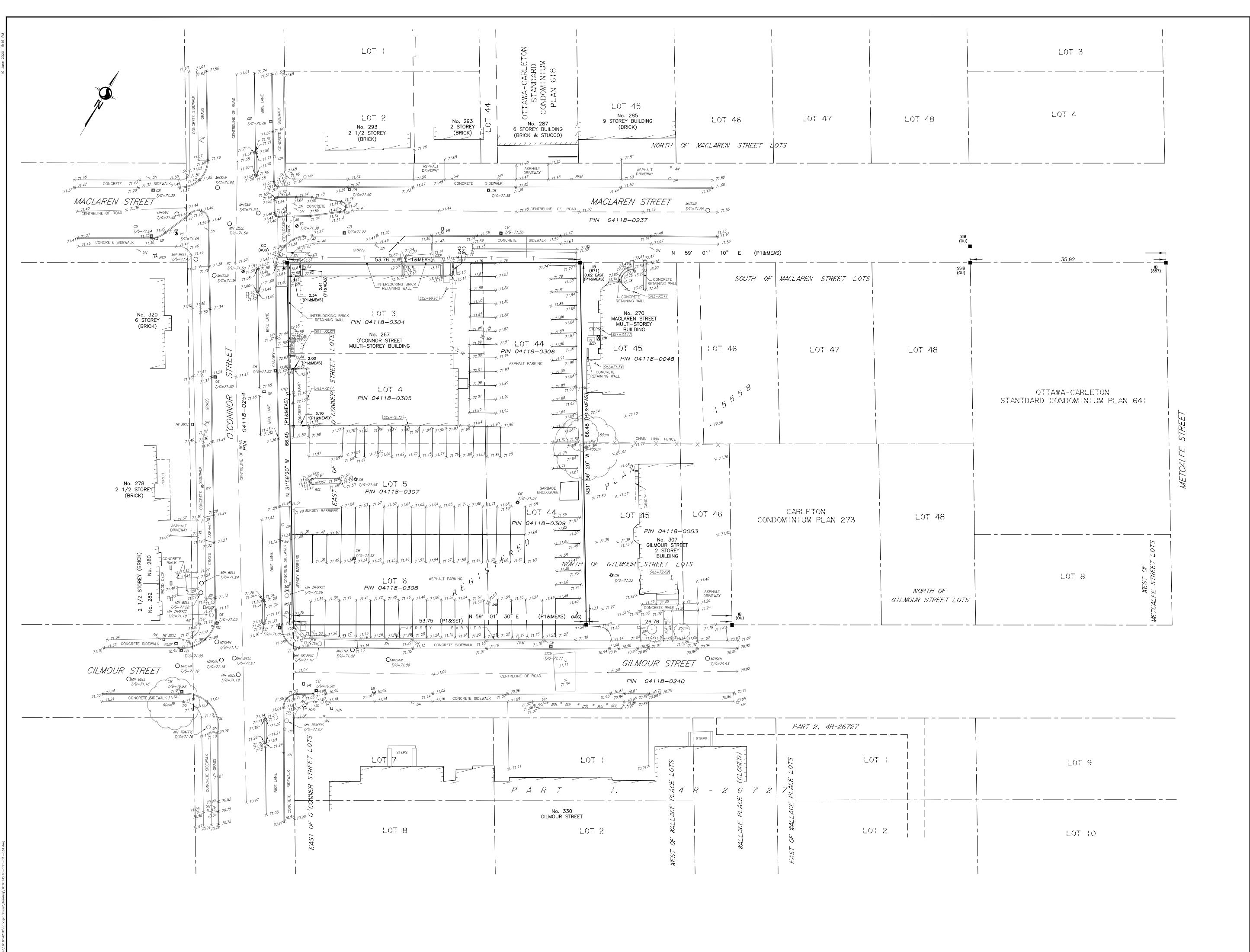
63 Pamilla Stree Ottawa, Ontario Canada K1S3K7 T: 613-238-7200 F: 613-235-2005

PROJECT/LOCATION: 267 O'CONNOR OTTAWA, ON.

DRAWING TITLE: SITE PLAN

> PROJECT DRAWING NO.:

> > REVISION NO.:





Stantec Geomatics Ltd. 400-1331 Clyde Avenue Ottawa ON Tel. 613.722.4420 www.stantec.com

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TOPOGRAPHIC SKETCH OF LOTS 3, 4, 5 AND 6 (EAST OF O'CONNOR STREET) LOT 44

(SOUTH OF MACLAREN STREET)

LOT 44

(NORTH OF GILMOUR STREET)

REGISTERED PLAN 15558

CITY OF OTTAWA

5 0 5 10 15 20 METRES

METRIC CONVERSION

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

BEARING NOTE

BEARINGS HEREON ARE GRID BEARINGS DERIVED FROM THE CAN-NET VRS NETWORK AND ARE REFERRED TO THE CENTRAL MERIDIAN 76°30' WEST LONGITUDE OF THE 3° MTM ONTARION COORDINATE SYSTEM, NAD83 (ORIGINAL) ZONE 9.

BEARINGS ARE REFERRED TO THE NORTHERLY LIMIT OF GILMOUR STREET AS SHOWN P1, HAVING A BEARING OF N59°01'30"E, A COUNTER-CLOCKWISE ROTATION OF 1°37" WAS APPLIED TO THE BEARING ON P1.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: OTTAWA ELEVATION=95.230.

UTILITY NOTE

LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE AND MUST BE VERIFIED PRIOR TO CONSTRUCTION.

<u>LEGEND</u>

		DENOTES	FOUND MONUMENTS
		"	SET MONUMENTS
IB		· ·	IRON BAR
IBØ		"	ROUND IRON BAR
SIB			STANDARD IRON BAR
-		"	
SSIB			SHORT STANDARD IRON BAR
RB			ROCK BAR
CC			CUT CROSS
CP		"	CONCRETE PIN
WIT			WITNESS
PIN		"	PROPERTY IDENTIFICATION NUMBER
MEA	NS	"	MEASURED
PRO	P	"	PROPORTIONED
OU		"	ORIGIN UNKNOWN
SG		"	STANTEC GEOMATICS LTD.
Р		"	REGISTERED PLAN 15558
P1		"	PLAN BY FSM DATED SEPTEMBER 19, 20
	ACU	"	AIR CONDITIONING UNIT
- ■	AN	n .	ANCHOR
	BOL		BOLLARD
	CB	II.	CATCH BASIN
		"	
	SICB	"	SIDE INLET CB
	GSR		GAS SERVICE REGULATOR
	НМ		HYDRO METER
닛	HTN	"	hydro transformer
4	HYD	"	FIRE HYDRANT
	JBX	"	JUNCTION BOX
0	LS	"	LIGHT STANDARD
	MB	"	MAILBOX
\bigcirc	MH	II .	MAINTENANCE HOLE UNIDENTIFIED
\bigcirc	MHB	"	MAINTENANCE HOLE BELL
Q	MHSAN	"	MAINTENANCE HOLE SANITARY
	MHSTM	II .	MAINTENANCE HOLE STORM
	MHT	II .	MAINTENANCE HOLE TRAFFIC
□	MW	"	MONITORING WELL
Ġ	PKM	II .	PARKING METER
	PLBX	п	PULL BOX
	SN	"	SIGN
	TB BELL	"	TERMINAL BOX - BELL
		"	
0	TCB TCI	"	TRAFFIC CONTROL BOX
0	TSL 115	"	TRAFFIC SIGNAL LIGHT
	UP		UTILITY POLE
€	VB		VALVE BOX
	VC	"	VALVE CHAMBER

WATER VALVE TREE DECIDUOUS

SURVEYOR'S CERTIFICATE

1. THE SURVEY WAS COMPLETED ON THE 26th DAY OF MAY, 2020.

DATE BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

RAWN: NJ CHECKED: BW PM: BW FIELD: AW,AS,CK PROJECT No.: 161614210-111

Appendix B

Pre-consultation notes and Email Correspondences

Pre-Application Consultation Meeting Notes

Property Address: 267 O'Connor Street PC2020-0131 TEAMS Meeting, Tuesday June 30, 2020

Attendees:

Simon Deiaco, City of Ottawa Planning (SD)
Christopher Moise, City of Ottawa, Architecture and Urban Design (CM)
MacKenzie Kimm, City of Ottawa, Heritage (MK)
Mark Fraser, City of Ottawa, Engineering (MF)
Miguel Tremblay, Fotenn (MT)
Paul Black, Fotenn (PBk)
Emily McGirr, Tagart (EM)
Lucie Dalrymple, JL Richards (LD)
Guy Forget, JL Richards (GF)
Derek Howe, Taggart (DH)
Jeff Parkes, Taggart (JP)
Patrick Bisson, Hobin Architecture (PB)
Barry Hobin, Hobin Architecture (BH)
Mark Baker, Parsons (MB)
Jack Hanna, Centretown Citizens Community Association (JH)

Regrets:

Subject: 267 O'Connor Street

Meeting notes:

Opening & attendee introduction

- Introduction of meeting attendees
- Overview of proposal: JP summary of past meeting and concept. Previous design was in the early stages of taking control of the property. Looked at a possible phased approach, however the team is now considering a more holistic approach to the site.
- Site has three frontages (O'Connor Street, MacLaren Street and Gilmour Street) the site is just under an acre in area.
- There is some history of the site as a result of the OMB decision and implementing Secondary Plan policies (JP/PBk). Now looking at a concept that is more in line with Landmark Policy Direction. Applications for Official Plan and Zoning Amendments and Site Plan Control would be submitted.
- Two amendment to the OP are being requested. The project proposes a privately owned, publicly assessible space (POPS) versus a publicly owned space. The project is also proposing towers up to 30 storeys in height whereas 27 storeys is the maximum permitted under the Landmark policies. The team would prepare the appropriate studies to support this requested amendment. The existing office building on the site is not a heritage asset; however, the team recognizes the heritage assets in the area that must be considered.

- PB Overview of the design package. Early design concepts shown, no architectural detail to date. Previous massing studies presented that looked at one tower, now at a holistic approach to the site. Two tall towers (30-storeys). North tower, 263 units, south tower 284 units.
- Looking at a range of unit sizes and commercial space at grade. Approximately 4 levels
 of below grade parking with 152 stalls in tower 1 (south) and 148 stalls in tower 2 (north).
 Project development would be phased.
- 5 key drivers and design narratives for the project.
 - Public Realm
 - Street Animation
 - Pedestrian Experience
 - Urban Fabric
 - Built Form
- Pubic realm is approximately 47% of the subject site which includes a portion that is located under a cantilever of the south tower. Looking to establish a design competition for the public space component of the project.

Preliminary comments and questions from staff and agencies, including follow-up actions:

- o Planning (SD)
 - Property is zoned R4T[479] and subject to the Heritage Overlay and Mature Neighbourhoods Overlay by-law provisions. The rationale should include the draft performance standards for the property. An apartment building high-rise is not permitted with the current zoning.
 - Subject site is designated as Mixed-Use Area, Residential on Schedule H1 of the Centretown Secondary Plan.
 - Subject site is designated as Mid-Rise (9 storey) on Schedule H2 of the Centretown Secondary Plan.
 - O'Connor Street is a priority streetscape as per Schedule H3 of the Centretown Secondary Plan. Appropriate street tree planting should be included on the landscape plan.
 - Policy 3.9.5.3A of the Secondary Plan speaks specifically to this property and landmark provisions. Policy 3.9.5.5 is applicable with respect to the Landmark Buildings and outlines specific criteria. Of note, the policy sets out clear direction about the quality of this space and what is to be created.

"Landmark Buildings" are those that make both significant and exceptional contributions to the public realm and overall identity of Centretown. They combine iconic architecture, extraordinary site design and a unique civic or national function to create a distinctive place that invites visitors to experience its qualities. Both the building and its landscape should be appreciated as much for their beauty as for their utility. While Landmark Buildings must respect the form and character of their surroundings, they may depart from the built form parameters established for Centretown, but in this regard they will not set precedents for other development, and to be different they must be special."

- A Section 37 agreement will be required as per the Secondary Plan Landmark provisions.
- Design guidelines for high-rise building will need to be considered (i.e. tower separation).

- Further discussions will be required with respect to a POPS versus a publicly owned space approach as required by the Secondary Plan.
- Applications for Official Plan and Zoning Amendments and Site Plan Control would be required. Submission lists to be provided. Rationale will need to be provided for the proposed increase in height. A full review and response to the applicable Landmark Provisions of the Secondary Plan will also need to form part of the planning rationale.

Urban Design (CM)

- o Topics:
 - POPS vs. Park (to allow for ownership and parking below). The parameters and expectations for this space should be agreed to before it goes out to a design competition;
 - Staff are developing POPs guidelines and this would appear to be a unique arrangement that may not fit into our definition of a POPS;
 - Design competition vs. Special Design Review Panel for Tall Buildings.
 Hitting 30 storeys may trigger some special considerations;
 - Two towers vs. One land mark building opens a broader discussion about how high-rise buildings relate to each other and whether one should be subservient to the other;
 - Not sure the Parliamentary view planes has any bearing on the potential height for this site;
- This proposal runs along one of the City's Design Priority Areas and must attend the City's UDRP panel as per the Secondary Plan policies in lieu of a design competition. We recommend the proposal attend an informal visit (prior to a full submission and is not a public meeting), with the City's UDRP to further discuss and evaluate various scenarios of development for the whole site;
- Please see the Design Brief Terms of Reference provided and consult the City's website for details regarding the UDRP schedule (if applicable).

Engineering (MF)

- Storm water quantity control and criteria, control to a two-year
- Geotech will assess ground water flow as well (see attached e-mail)
- Follow-up questions to be answered regarding servicing options
- Site is located within a combined sewer shed. Needs an ECA direct submission.
- Project will require an RSC.
- Follow-up questions from LD regarding servicing criteria and options in the area.
- GF and LD to follow up with staff on servicing options.
- See additional notes and submission requirements in the follow up email.

Transportation (WD)

Previous comments from earlier consultations have been provided.

 The previous comments submitted for the Forecasting Report are to be addressed, and the TIA Step 3 – Analysis Report is to be submitted for circulation and review.

<u>General</u>

- O'Connor Street is designated as an Arterial road within the City's Official Plan with a ROW protection of 20.0 metres. The ROW limits are to be shown on all the drawings and the offset distance (10.0 metres) to be dimensioned from the existing centerline of pavement.
- Land for a road widening will be taken equally from both sides of a road, measured from the centreline in existence at the time of the widening if required by the City. The centreline is a line running down the middle of a road surface, equidistant from both edges of the pavement. In determining the centreline, paved shoulders, bus lay-bys, auxiliary lanes, turning lanes and other special circumstances are not included in the road surface.
- A 5.0 metres x 5.0 metres sight triangle will be required at the intersection of Gilmour Street and O'Connor Street and is to be shown on all drawings. The traffic signals would need to be relocated into the sight triangle when O'Connor Street is widened.
- All underground and above ground building footprints need to be shown on the plan to confirm the structure does not extend into existing property lines, sight triangles and/or future road widening requirements.
- Existing pavement marking and signing plan is required (prior to start of construction) adjacent to the site to ensure signing and curb side control is reinstated following construction.
- Site planning and streetscape will need to address pedestrian environment to ensure a 2.0 m wide clear ped zone and a street tree canopy to contribute to the quality of the ped environment and mitigate microclimate conditions.
- Parking garage access/egress needs to have the proper transitions and sight lines at the sidewalk approach.
- The concrete sidewalks should be 2.0 metres in width and be continuous and depressed through the proposed access (please refer to the City's sidewalk and curb standard drawing SC7.1).
- The TIA report is to address the parking situation for the existing building during the Phase I construction period, and for both the commercial & residential component.
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- For the precast concrete pavers on City's road right-of-way, the developer shall sign a "Maintenance and Liability Agreement" with the City to cover any claims.
- For any planter boxes/trees on the City's road right-of-way, an Encroachment Agreement along with a Maintenance Agreement will be required.
- Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.
- A construction Traffic Management Plan is to be provided for approval by the Senior Engineer, Traffic Management, Transportation Services Dept.

- Parks (SD)
 - Cash-in-lieu of parkland payment will be required.
 - A follow up meeting with staff will be required to discuss the requested amendment to provide a POPS rather than publicly owned space. SD to organise. This is a fundamental issue that needs resolution.
- Heritage (MK)
 - Previous comments from heritage staff still apply.
 - Application for new construction would be required for new construction under the Ontario Heritage Act.
 - There is an ongoing update to the Centretown HCD.
 - A CHIS is required and should be completed as soon as possible in the process to inform the design.
 - Q has a heritage consultant been engaged?
 - Transition will be a component to consider in the design along with materiality.
- Questions and comments from the Community Association representative (JH)
 - Comment, looking for clarification on the comment that the CDP is amenable to 30 storeys. SD – There is specific policy direction for the site at 267 O'Connor in the Centretown Secondary Plan that allows for an increase in height along with the landmark building provisions (if satisfied). The application will have to justify the additional height requested and all other policy amendments.
 - Comment Public spaces, thinks it is a good idea for a design competition.
 Would like residents to be involved in the process.
 - Tall trees shown on the slides, would like to see this achieved.
 - Question articulation at the base and top of the building, can the architect expand on this?
 - BH Would not be opposed to have the public participate in the design competition, has been successful in other projects. Regarding articulation, the project needs to show an appropriate scale at the public realm (similar to the project at Laurier and Friel, see below). Regarding the top, the team is looking at an approach to hide the mechanical penthouse in an attractive manner. Noted an example at the Lansdowne site.



BH - Agrees that the street trees are important to the site and will be a design challenge. There have been lessons learned from other projects on how to best create a proper growing medium. Q - Affordable housing piece? DH – Engaged with the ward office regarding the topic of affordability. Any sense on the proportion? DH, working with the CMHC on applying for a housing program they offer.

Submission requirements and fees

Next steps

- Encourage applicant to discuss the proposal with Councillor, community groups and neighbours
- o SD to set up follow up meeting regarding the public space discussion.
- o Jack Hanna, willing to organize a follow up meeting with the Community Association.
- o SD to discuss with UDRP staff on setting up a review team for the project.

Guy Forget

From: Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>

Sent: Tuesday, August 25, 2020 4:07 PM

To: Guy Forget **Cc:** Mottalib, Abdul

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

Okay thanks.

Please share with me when you will have better understanding with the servicing for this site. As usual every tower will have two service laterals, one for storm service and the other one for sanitary service lateral.

Please note we will also be looking for the foundation drainage and weeping tile connection to the city system.

--

Thanks,

Abdul

Mohammad Abdul Mottalib, P. Eng.

Extension: 27798

From: Guy Forget <gforget@jlrichards.ca>

Sent: August 25, 2020 3:44 PM

To: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

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Hi.

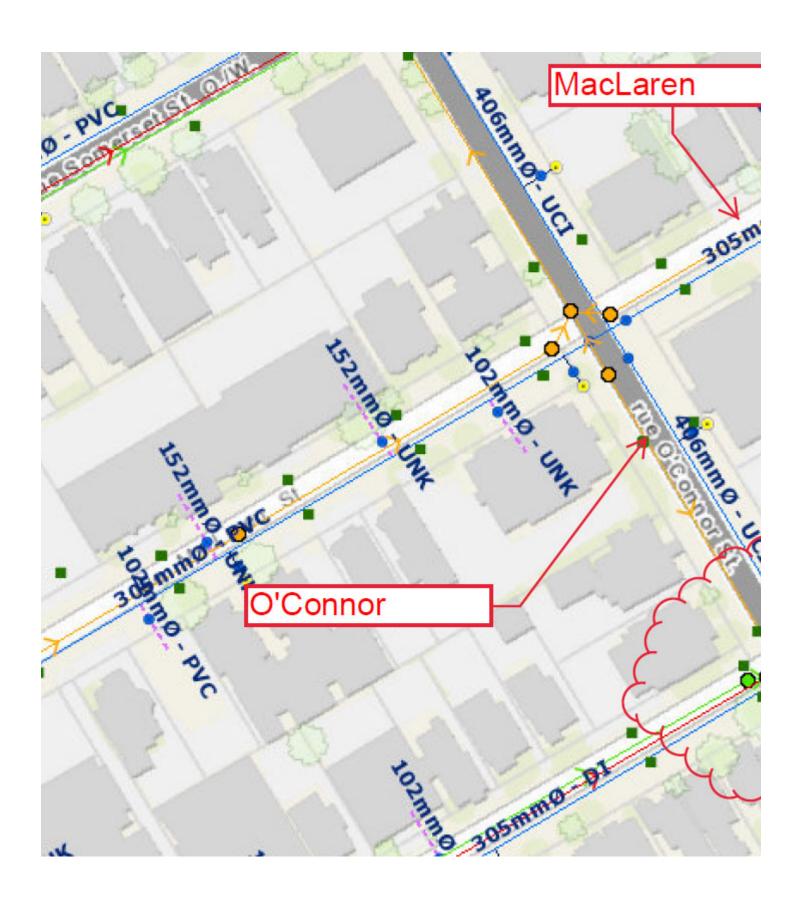
Thanks for the clarifications, the allowable peak flow will be net of the wastewater flows.

In terms of that on-site CB, we have yet move to detailed servicing. However, as per the CB lead connected to O'Connor Street (see the lateral in the cloud below), we intend to keep this service provided that it is good condition.

At this time, we have yet figured out the design for the subject site, however, if this existing sewer lateral is maintained, we intend to only discharge flows to this lateral once it has been controlled by means of ICDs.

Once we have a better understanding of our servicing, we will share it with you to get your opinion.

Guy



J.L. Richards & Associates Limited

700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1

Direct: 343-804-5363





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From: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca >

Sent: Tuesday, August 25, 2020 3:24 PM **To:** Guy Forget <<u>gforget@jlrichards.ca</u>>

Cc: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca >

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

Hi Guy,

For a site that will be connecting into a combine sewer system, C value is always 0.4. Sometimes we change the storm event from 2 year to 5 year depend on the site and its location. In this case, the c value will be 0.4 and the allowable release rate will be 5-year storm event for this site. You must control any storm event above 5 year and up to 100 year including 100year.

Yes, you need to subtract wastewater flow from the allow able release rate to find the net allowable release rate for storm event as the allowable release rate is for the whole site.

In you email you mentioned, one onsite existing CB will be connected on O'Connor combined sewer. Will there be a ICD at the outlet of the onsite CB to restrict the flow?

Could you please provide me a plan so that I can do a quick review of the plan?

Thanks,

Abdul

Mohammad Abdul Mottalib, P. Eng.

Extension: 27798

From: Guy Forget <gforget@jlrichards.ca>

Sent: August 25, 2020 2:03 PM

To: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

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Hi Abdul,

Thank you and the water resources team to have provided guidance with respect to the design criteria for 267 O'Connor.

Can you provide further clarifications as follows:

- Is the 1:5 year allowable peak flow based on the existing condition (i.e., C = 0.9)?
- Is the 1:5 year allowable flow based on the current Tc which is 10 minutes?
- Can we assume that the peak wastewater flows and groundwater flows do not have to be subtracted from the 1:5 year peak flow?

Thanks again.

Guy

Guy Forget, P.Eng., LEED AP Senior Water Resources Engineer

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From: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Sent: Tuesday, August 25, 2020 1:14 PM **To:** Guy Forget <gforget@jlrichards.ca>

Cc: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

In this case, they are asking for a 5 year release rate and we can allow it because the general area does in fact have a 5 year level of service according to the O'Connor SWM model

__

Thanks,

Abdul

Mohammad Abdul Mottalib, P. Eng.

Extension: 27798

From: Guy Forget <gforget@jlrichards.ca>

Sent: August 20, 2020 6:55 PM

To: Mottalib, Abdul < Abdul.Mottalib@ottawa.ca>

Subject: Re: 267 O'Connor Street - Design Parameters Inquiry

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If you can follow up early next week, that would be great

Thanks

Guy,

I Just got confirmation from the water resources unit that we are okay for you to use a 5-year release rate for this site. Please note this approval is site specific and should not be referenced for other cases.

Guy Forget, P.Eng., LEED®AP
Senior Water Resources Engineer
J.L. Richards & Associates Limited
2013 Winner of Canada's Best Managed Companies program

864 Lady Ellen Place, Ottawa, ON K1Z 5M2 Tel: 613-728-3571 (ext. 1279) - Fax: 613-728-6012 www.ilrichards.ca

Guy Forget, P.Eng., LEED AP Senior Water Resources Engineer

J.L. Richards & Associates Limited 700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1 Direct: 343-804-5363



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



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From: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Sent: August 20, 2020 5:27 PM

To: Guy Forget <gforget@jlrichards.ca>

Cc: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

Everyone is crazy busy now. Even though I will give them a call after 2/3 days.

--Thanks.

Abdul

Mohammad Abdul Mottalib, P. Eng.

Extension: 27798

From: Guy Forget <gforget@jlrichards.ca>

Sent: August 20, 2020 4:59 PM

To: Mottalib, Abdul < Abdul.Mottalib@ottawa.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

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Hi Abdul,

Thanks for coordinating, if this could be made a priority, we would appreciate it.

Just noticed that I forgot to revise one number in the text below the bullets, so here is the new version of the text, with the mark-up in red. Sorry, for the inconvenience:

This message is to request the City's consideration and confirmation of the design parameters for 267 O'Connor Street. Please find attached our spreadsheet calculations for the expected stormwater runoff as well as projected sanitary peak flows for the site. These calculations are summarized below:

Phase 1:

- Estimated Sanitary Peak flow (including infiltration from groundwater): 4.8 L/s;
- 2Yr. Release Rate (assuming C = 0.4): 15.3 L/s
- 5Yr. Release Rate (assuming C = 0.4): 30.5 L/s 20.7 L/s

Phase 1 & 2

- Estimated Sanitary Peak flow (including infiltration from groundwater): 9.4 L/s;
- 2Yr. Release Rate (assuming C = 0.4): 20.7 L/s 30.5 L/s
- 5Yr. Release Rate (assuming C = 0.4): 41.4 L/s

Once the sanitary flow is deducted from the above 2 year peak flow calculations, the allowable release rate would be excessively low. Using the 2 year release rate as the design criteria with a C of 0.4 would lead to a stormwater release rates as low as 10.5 L/s for Phase 1 and 11.3 L/s 21.1 L/s for the ultimate development. Once uncontrolled flows would be further subtracted from these values (as there are always some remaining strips of land along the property lines which are left uncontrolled), the allowable release rates would be closer to zero.

Under the Existing conditions, peak flows generated by the Site is approximately 68.7 L/s, under a 1:2 year storm with the current imperviousness being at a C=0.9 and Tc = 10 mins (calculated). Based on water consumption usage provided by Taggart, the existing sanitary flows are negligible as they are approximately 0.03 l/s based on an 8 hr working day.

Given the above, we ask that the City consider allowing the ultimate development to proceed based on an allowable release rate of no less than the equivalent of a 5 year storm, which would equal 41.40 L/s as a total combined release rate (meaning 32.0 L/s for the storm and 9.4 L/s for the wastewater). This would still allow an improvement to the City's existing combined system, while allowing for a more achievable design. The allowable release rate would be distributed to the current two (2) connections; one existing connection (on-site CB) is to the O'Connor combined system while the second connection is to MacLaren (sanitary/storm flows from the existing building).

We are happy to discuss and develop a solution together with the City.

Best Regards,

Guy

Guy Forget, P.Eng., LEED AP Senior Water Resources Engineer

J.L. Richards & Associates Limited 700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1 Direct: 343-804-5363





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From: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca >

Sent: Thursday, August 20, 2020 4:29 PM **To:** Guy Forget <gforget@jlrichards.ca>

Cc: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca >

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

Hi Guy,

FYI, I just forwarded boundary condition request to the water resources unit.

Thanks, Abdul

Mohammad Abdul Mottalib, P. Eng.

Extension: 27798

From: Guy Forget <gforget@jlrichards.ca>

Sent: August 20, 2020 7:16 AM

To: Mottalib, Abdul < Abdul. Mottalib@ottawa.ca>

Cc: Alexandre Tourigny <a tourigny@jlrichards.ca>; Fraser, Mark <<u>Mark.Fraser@ottawa.ca</u>>; Emily McGirr emily.mcgirr@taggart.ca>; Lucie Dalrymple ldalrymple@jlrichards.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

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Hope you are doing well.

If you can submit this email and attachments to the Water Resources Group as two of the peak flows previously shown were inadvertently reversed. I have made the corrections below in RED.

Abdul, would it be possible that this request be a priority to the Water Resources Group, as Taggart's sub-consultant Team are using as a submission target the first week of September, therefore our target would be <u>September 4, 2020</u>. Hence, it is critical for the Team to get a response back from the Water Resources Group as soon as possible. Here is our request with the numbers corrected.

This message is to request the City's consideration and confirmation of the design parameters for 267 O'Connor Street. Please find attached our spreadsheet calculations for the expected stormwater runoff as well as projected sanitary peak flows for the site. These calculations are summarized below:

Phase 1:

- Estimated Sanitary Peak flow (including infiltration from groundwater): 4.8 L/s;
- 2Yr. Release Rate (assuming C = 0.4): 15.3 L/s
- 5Yr. Release Rate (assuming C = 0.4): 30.5 L/s 20.7 L/s

Phase 1 & 2

- Estimated Sanitary Peak flow (including infiltration from groundwater): 9.4 L/s;
- 2Yr. Release Rate (assuming C = 0.4): 20.7 L/s 30.5 L/s
- 5Yr. Release Rate (assuming C = 0.4): 41.4 L/s

Once the sanitary flow is deducted from the above 2 year peak flow calculations, the allowable release rate would be excessively low. Using the 2 year release rate as the design criteria with a C of 0.4 would lead to a stormwater release rates as low as 10.5 L/s for Phase 1 and 11.3 L/s for the ultimate development. Once uncontrolled flows would be further subtracted from these values (as there are always some remaining strips of land along the property lines which are left uncontrolled), the allowable release rates would be closer to zero.

Under the Existing conditions, peak flows generated by the Site is approximately 68.7 L/s, under a 1:2 year storm with the current imperviousness being at a C=0.9 and Tc = 10 mins (calculated). Based on water consumption usage provided by Taggart, the existing sanitary flows are negligible as they are approximately 0.03 l/s based on an 8 hr working day.

Given the above, we ask that the City consider allowing the ultimate development to proceed based on an allowable release rate of no less than the equivalent of a 5 year storm, which would equal 41.40 L/s as a total combined release rate (meaning 32.0 L/s for the storm and 9.4 L/s for the wastewater). This would still allow an improvement to the City's existing combined system, while allowing for a more achievable design. The allowable release rate would be distributed to the current two (2) connections; one existing connection (on-site CB) is to the O'Connor combined system while the second connection is to McLaren (sanitary/storm flows from the existing building).

We are happy to discuss and develop a solution together with the City.

Best Regards,

Guy Forget, P.Eng., LEED AP Senior Water Resources Engineer

J.L. Richards & Associates Limited 700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1

Direct: 343-804-5363





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From: Fraser, Mark < Mark.Fraser@ottawa.ca > Sent: Wednesday, August 19, 2020 6:02 PM
To: Alexandre Tourigny <atourigny@jlrichards.ca >

Cc: Guy Forget <gforget@jlrichards.ca>; Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

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Hi Alex,

Sorry, I did not received the below email due to my email address being incorrect.

I have accept another position within the City thus I'm unable to assist in responding to the below email at this time. I will forward the below email on for somebody in DR to be able to assist and provide direction on this pre-consultation file moving forward.

Regards,

Mark Fraser, P.Eng.

Engineer, Infrastructure Projects (T)

Rail Construction Program | Programme de construction du train léger Transportation Services Department | Direction générale des transports City of Ottawa | Ville d'Ottawa 141 Laurier Avenue W. Suite 300 | 141 avenue Laurier O., bureau 300

Ottawa, ON K2P 2P7

Email: Mark.Fraser@ottawa.ca

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^{*}Please consider your environmental responsibility before printing this e-mail

From: Alexandre Tourigny <atourigny@jlrichards.ca>

Sent: August 19, 2020 3:21 PM

To: Fraser, Mark < <u>Mark.Fraser@ottawa.ca</u>>
Cc: Guy Forget < gforget@jlrichards.ca>

Subject: RE: 267 O'Connor Street - Design Parameters Inquiry

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Hi Mark,

Just looking for a status update on when we can expect the following criteria?

Thanks, Alex

Alexandre Tourigny

Civil Engineering Designer

J.L. Richards & Associates Limited 700 - 1565 Carling Avenue, Ottawa, ON K1Z 8R1 Direct: 343-803-4522





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From: Alexandre Tourigny

Sent: Tuesday, August 4, 2020 5:08 PM

To: Marc.fraser@ottawa.ca

Cc: Guy Forget <gforget@jlrichards.ca>

Subject: 267 O'Connor Street - Design Parameters Inquiry

Hi Mark,

This message is to request the City's consideration and confirmation of the design parameters for 267 O'Connor Street. Please find attached our spreadsheet calculations for the expected stormwater runoff as well as projected sanitary peak flows for the site. These calculations are summarized below:

Phase 1:

- Estimated Sanitary Peak flow (including infiltration from groundwater): 4.8 L/s;
- 2Yr. Release Rate (assuming C = 0.4): 15.3 L/s
- 5Yr. Release Rate (assuming C = 0.4): 30.5 L/s

Phase 1 & 2

- Estimated Sanitary Peak flow (including infiltration from groundwater): 9.4 L/s;
- 2Yr. Release Rate (assuming C = 0.4): 20.7 L/s
- 5Yr. Release Rate (assuming C = 0.4): 41.4 L/s

Once the sanitary flow is deducted from the above 2 year peak flow calculations, the allowable release rate would be excessively low. Using the 2 year release rate as the design criteria with a C of 0.4 would lead to a stormwater release rates as low as 10.5 L/s for Phase 1 and 11.3 L/s for the ultimate development. Once uncontrolled flows would be further subtracted from these values (as there are always some remaining strips of land along the property lines which are left uncontrolled), the allowable release rates would be closer to zero.

Existing conditions for the site likely generate peak flows of approximately 68.7 l/s, under a 2 year storm with on a C=0.9 and tc = 10 mins. Based on water consumption usage provided by Taggart, the existing sanitary flows are negligible as they are approximately 0.03 l/s based on an 8 hr working day.

Given the above, we ask that the City consider allowing the ultimate development to proceed based on an allowable release rate of no less than the equivalent of a 5 year storm, which would equal 41.40 L/s as a total combined release rate (meaning 32.0 L/s for the storm and 9.4 L/s for the wastewater). This would still allow an improvement to the City's existing combined system, while allowing for a more achievable design.

We are happy to discuss and develop a solution together with the City.

Best Regards,

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11

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Date of Issue: December 1st, 2025 File: D01-01-20-0019 & D02-02-20-0101

SUBMISSION NO. 4 TRANSMITTAL LETTER

OFFICIAL PLAN AMENDMENT AND ZONING BY-LAW AMENDMENT APPLICATION

ATTENTION: Ann O'Connor

Planner III

Development Review Central

City of Ottawa

Via: e-mail to Ann.OConnor@ottawa.ca

RE: Submission No. 4 Transmittal Letter – OPA and ZBLA Application for 267 O'Connor Street

Dear Ms. Ann O'Connor,

We are pleased to present the following responses and supporting studies to formal review comments on the second technical circulation, received April 1st, 2025, and Special Design Review Panel recommendations from the September 2nd, 2025 meeting.

42. Geotechnical Investigation Report speaks to underfloor drainage system for GW control. Civil Consultant to ensure this is added to SWM design. See anticipated long-term GW flow rate in this Report.

Response: The geotechnical report identifies a groundwater flow of 0.17 L/s that was incorporated into the stormwater management design (0.085 L/s for Gilmour and 0.085 L/s for MacLaren). The calculated allowable storm flows were updated on page 14 to account for groundwater.

43. Regarding Servicing and SWM:

Please be advised that Water ISTB Tech Bulletins have been updated with 2024-05, which requires using OBC for Fire Flow demands. Please ensure all current and relevant Guidelines and Tech Bulletins are listed and it is suggested to state "as amended".

Response: Water Section revised and reference added in for City Tech Bulletin 2024-05.

For 2024-05 - The requirements for levels of fire protection on private property in urban areas are covered in Section A-3.2.5.7 of the OBC. If this approach yields a fire flow of 9,000 L/min then the FUS method, as amended, and NFPA 1142 may be used to determine these requirements instead. **Response:** OBC method was used to determine the fire protection flow given the building will be a sprinklered system. City Technical Bulletin 2024-05 (Page 3) makes direct reference to NFPA 13 for fire flow calculation related to a sprinklered system.

A FH analysis may be requested through IPM, to ensure fire flows from nearby FHs are used for fire suppression accurately. As the boundary conditions are approximately 5 years old, i would suggest a new boundary request to ensure that you are using current data. Please send request to IPM. **Response:** Boundary conditions were received in 2025 and pressure loss calculations have been updated accordingly.

Only one water service per property parcel, including a dual service, is permitted. Will property be severed? If so an ECA for multiple property would be required as would Part Lot Control. A single service off Maclaren and another off O'Connor or Gilmour is permitted.

Response: Servicing Plan has been updated to reflect the permissible water servicing approach, with single services now proposed off of Maclaren and Gilmour.



Please see Geotech Investigation Report regarding anticipated long term GW flows and underslab drains, which will need to be incorporated into SWM design, along with sanitary, discharging into the combined sewer system. Please speak to footing drains and underslab drains in this Report.

Response: The long-term groundwater flow of 15,000 L/day (0.17 L/s) were incorporated into the SWM design along with the proposed sanitary flows.

Note: We have consulted with our Water Resources Department and have no capacity concerns regarding proposed Sanitary and Storm flows.

Response: Noted.

Regarding drainage and grading – Please provide proposed grades, particularly around private approaches (garage and site entries) and building entrances and any lower openings that need to be protected. Please identify any sag points in roadways that may affect surface water and entry into building.

Response: Proposed grades for private approaches have been provided. Lower openings are not anticipated at this stage of design but if proposed, protection will be considered during site plan application.

Feel free to contact Mike Russett, Parks Planner, for follow-up questions.



We trust that this addresses all submission requirements and the development application can move forward toward approval. Please feel free to contact Kyle Kazda with any additional comments or questions at kyle.kazda@taggart.ca.

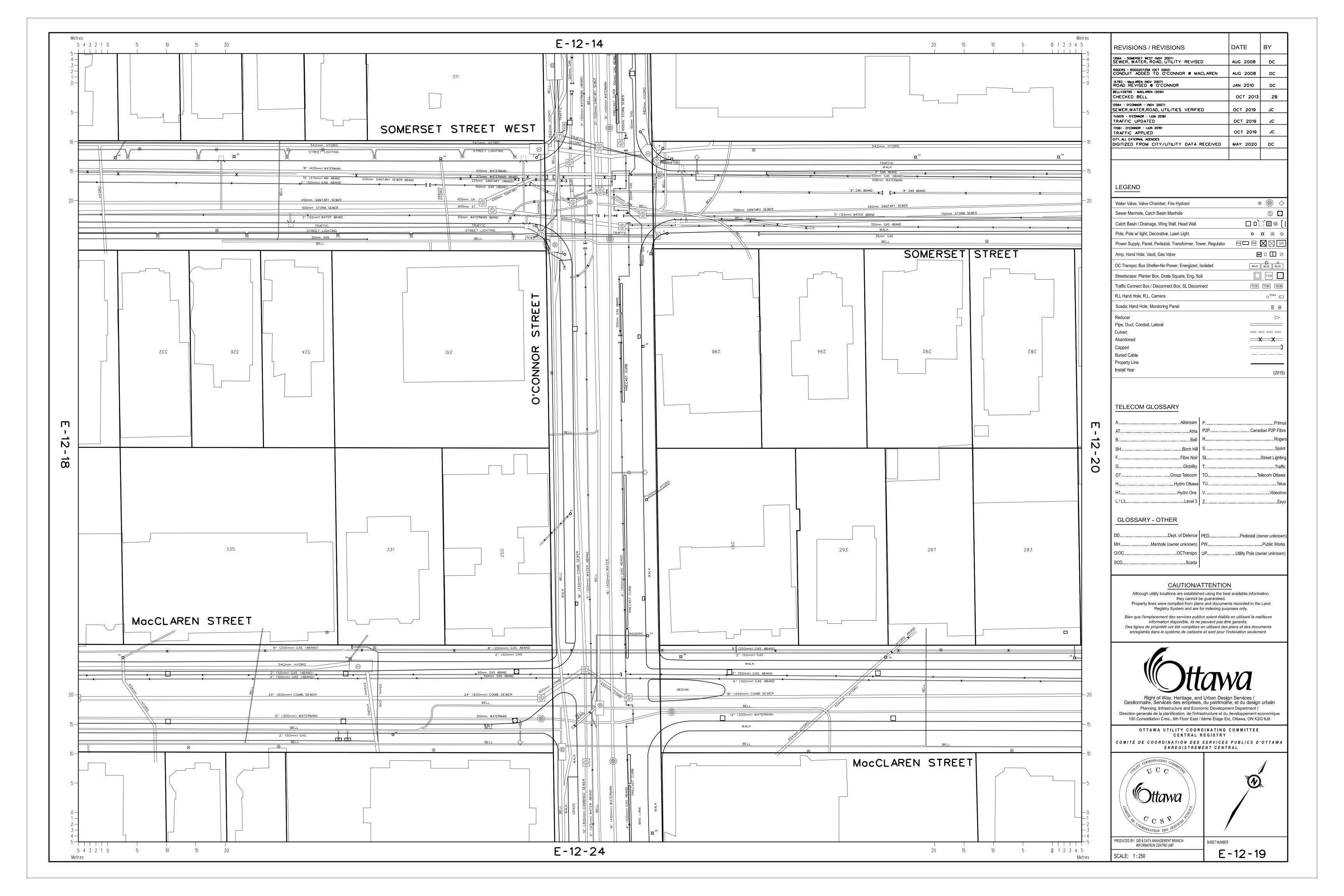
Thank you,

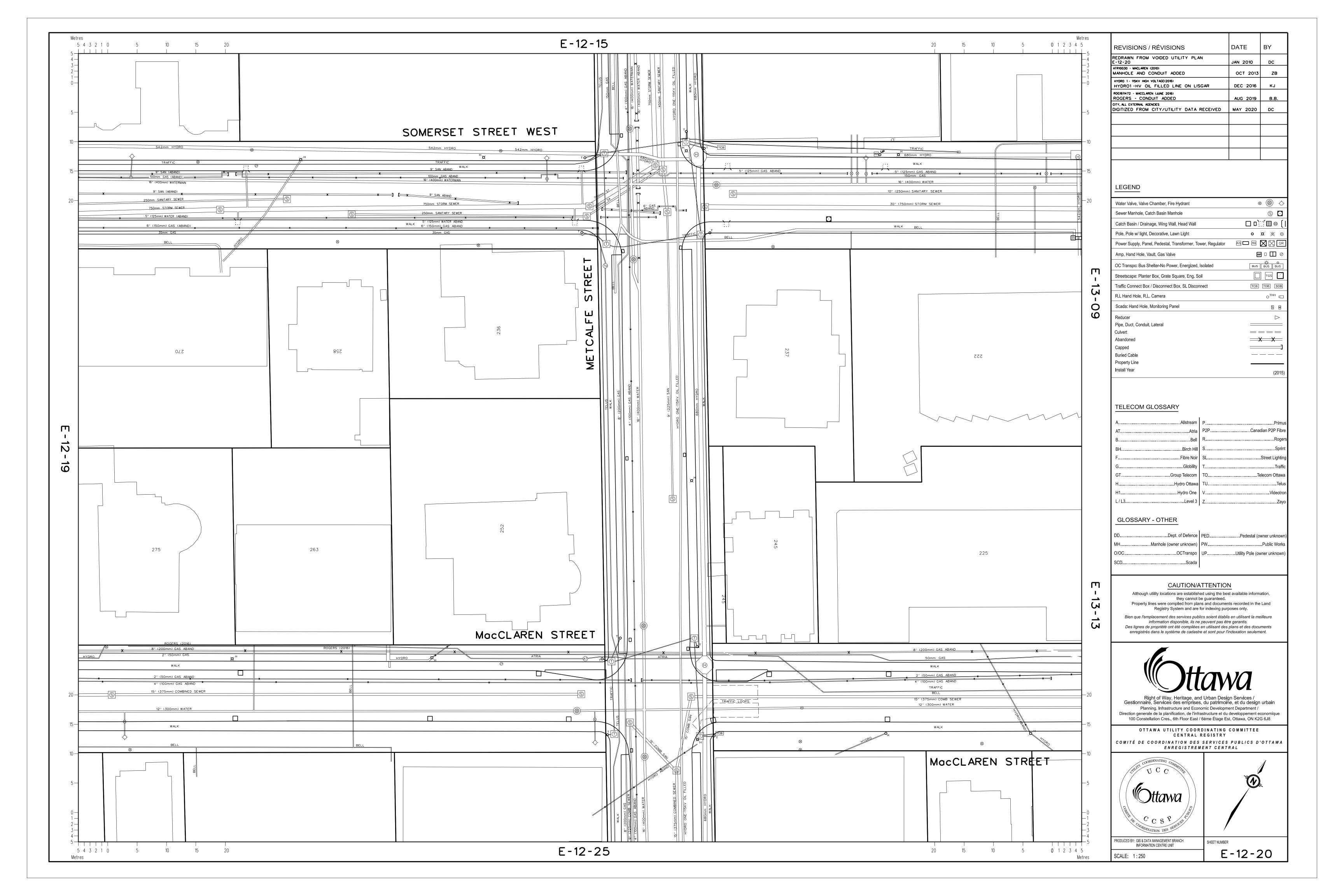
Kyle Kazda, Development Manager Taggart Realty Management 225 Metcalfe Street, Suite 708, Ottawa, Ontario K2P 1P9

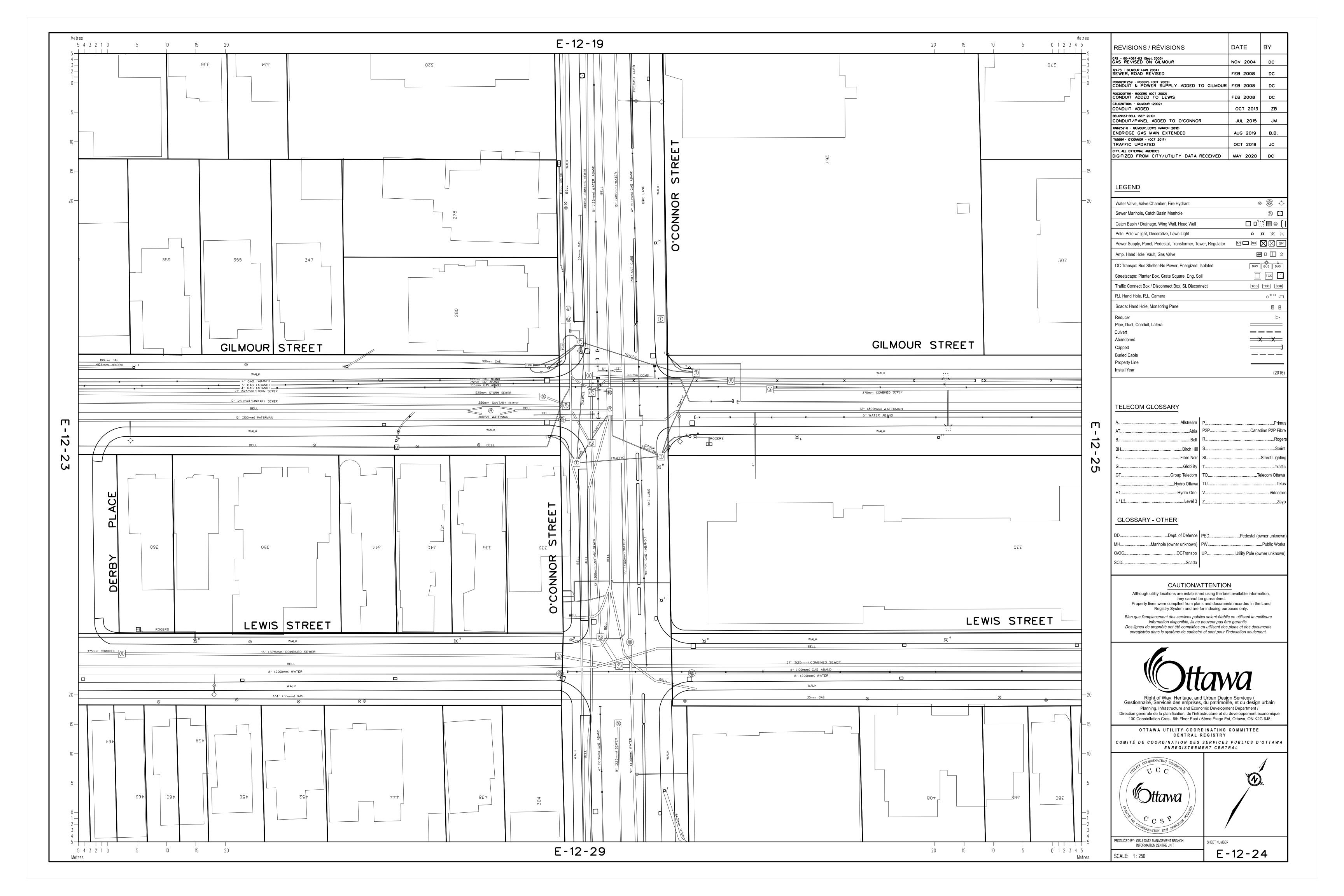


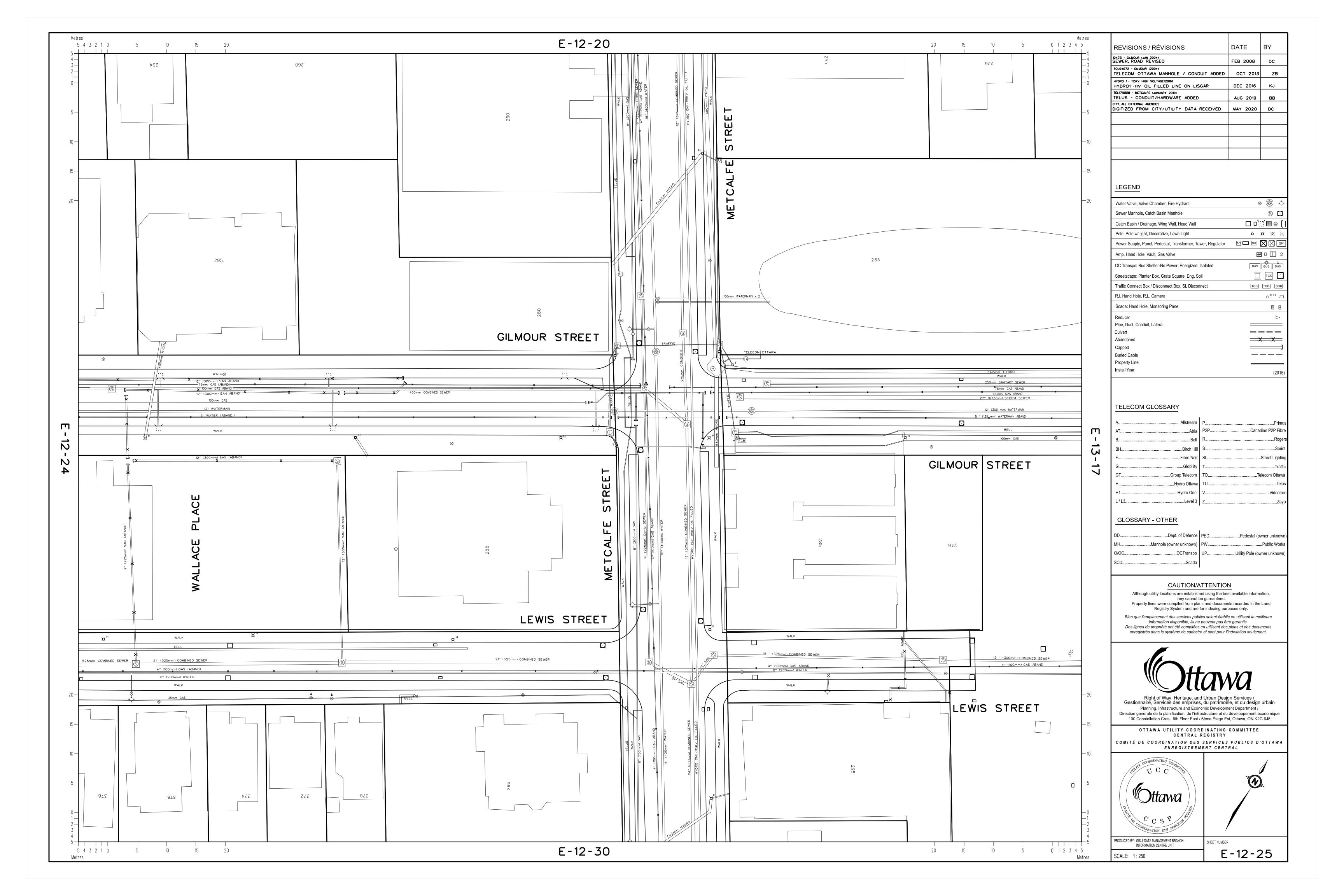
Appendix C

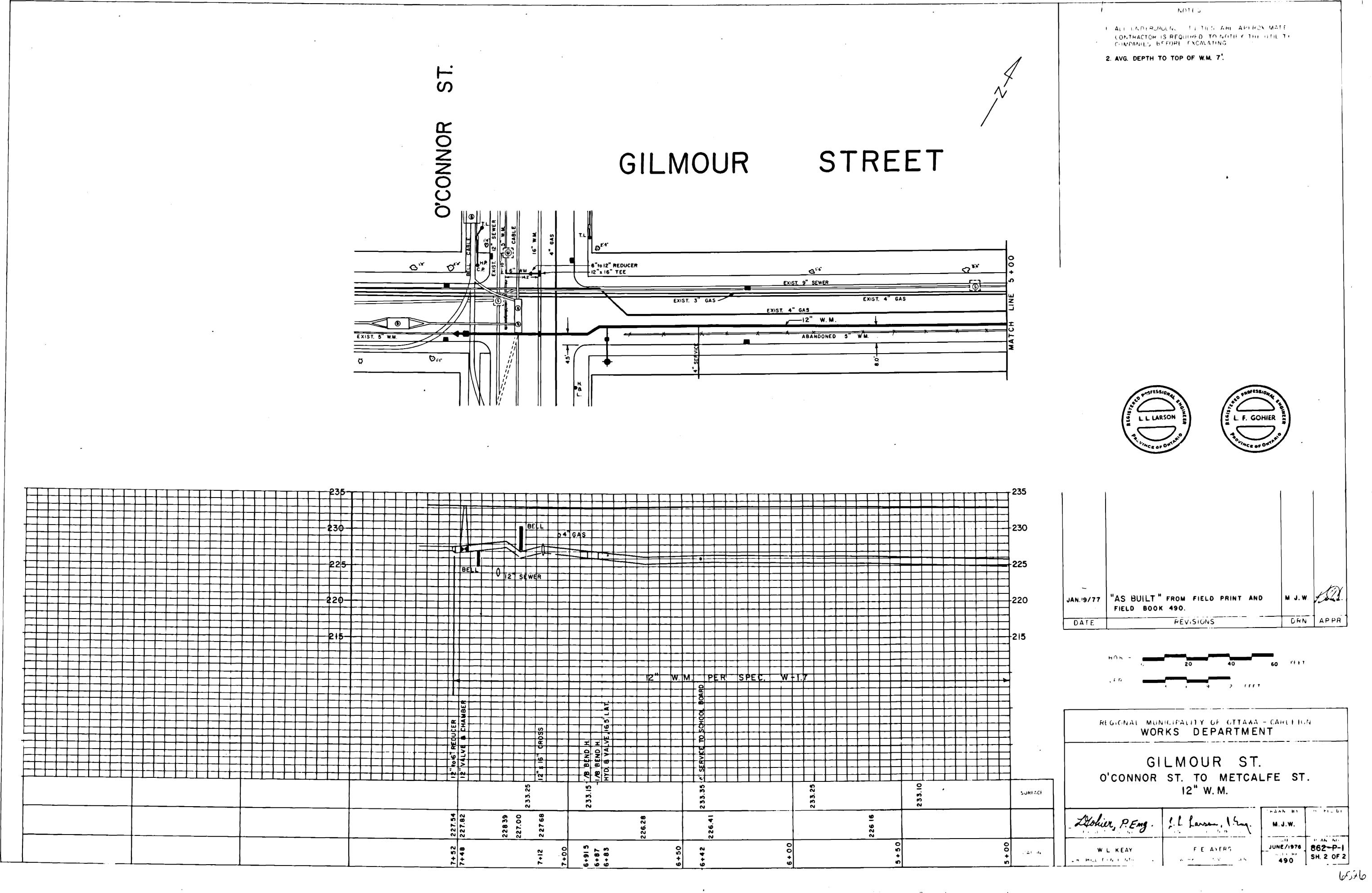
Background Drawings

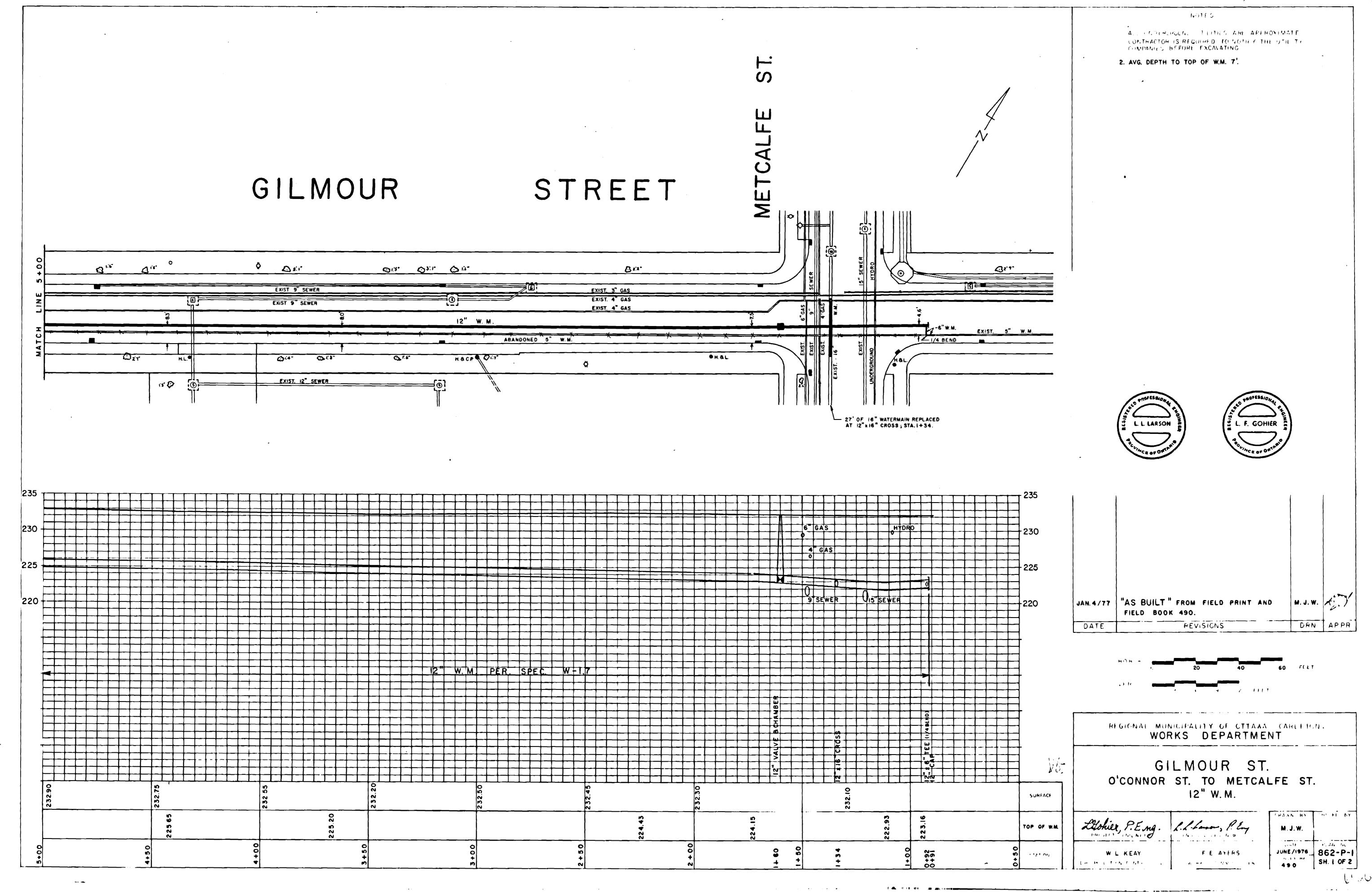


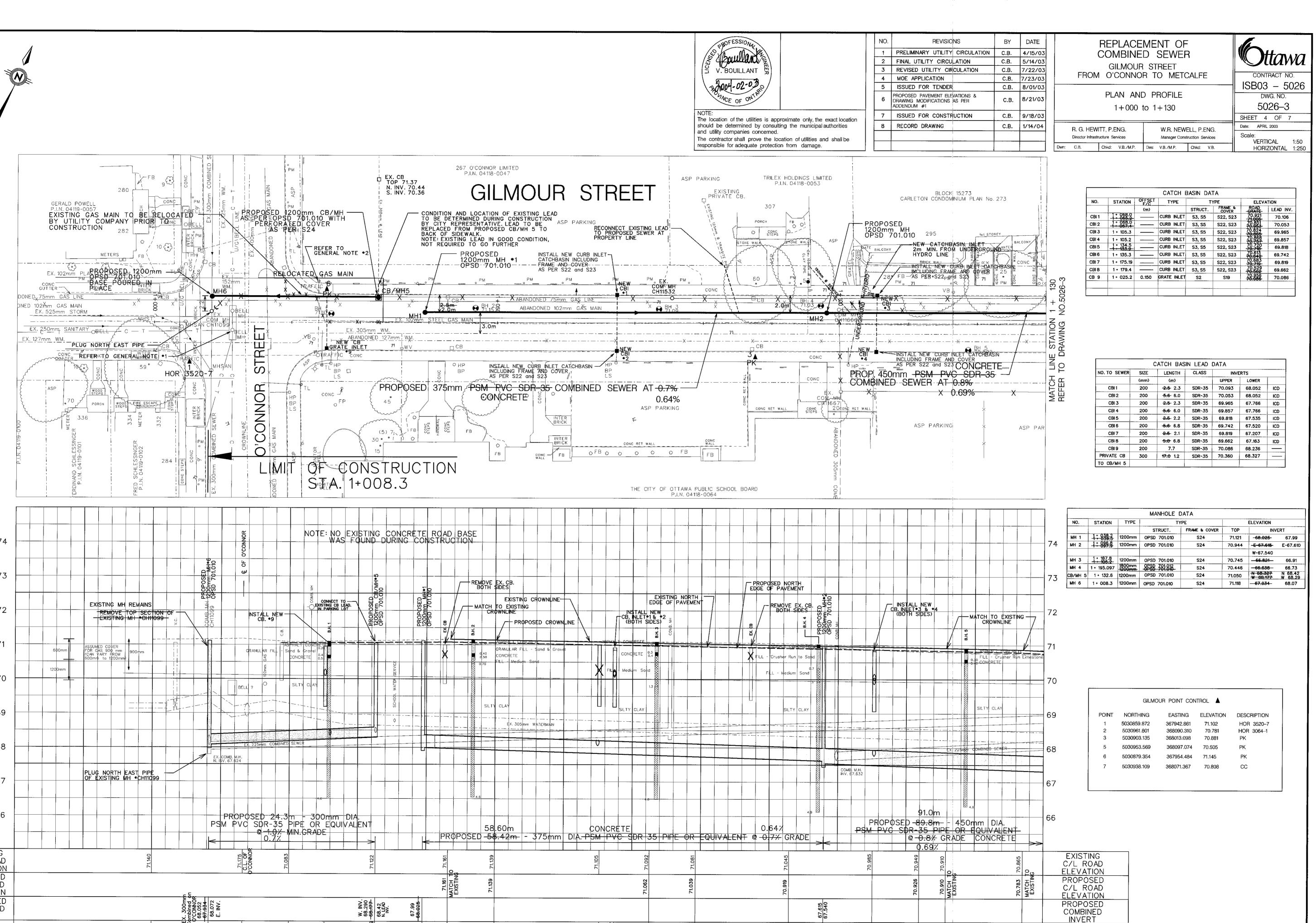




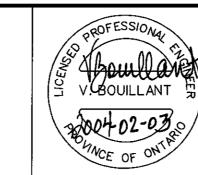








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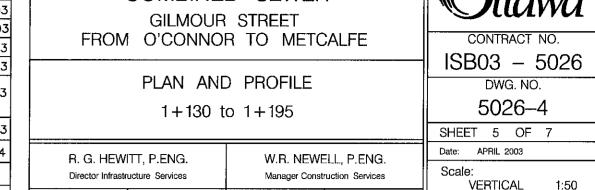


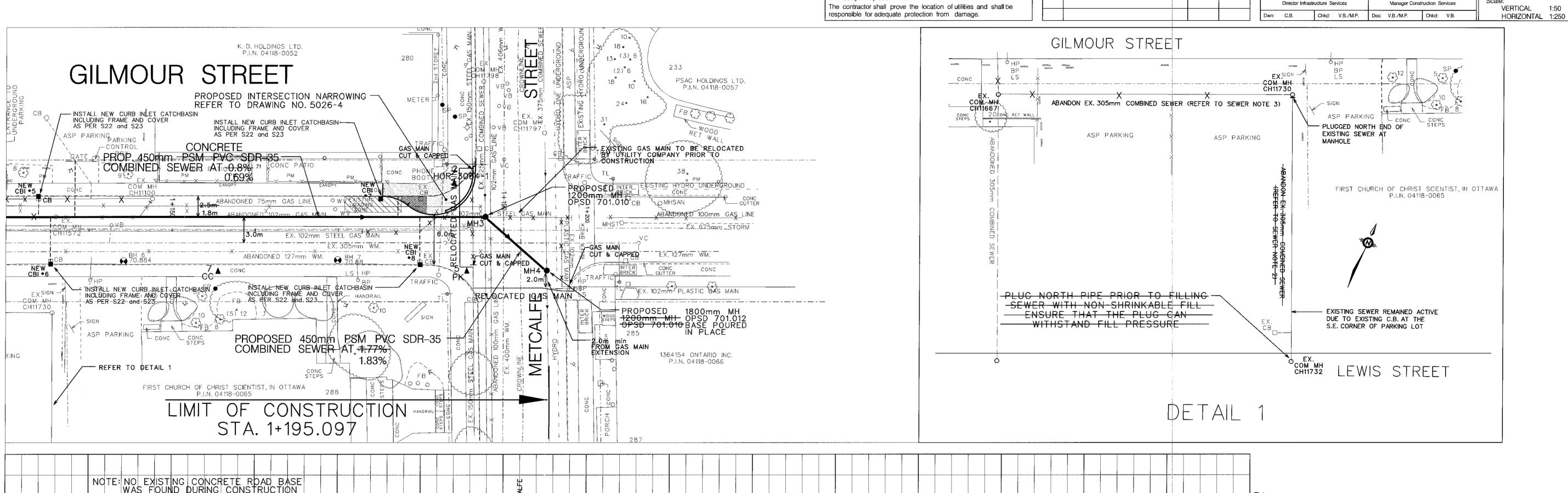
The location of the utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be

	NO.	REVISIONS	·	BY	DATE
	1	PRELIMINARY UTILITY CIRCULATION	ON	C.B.	4/15/03
	2	FINAL UTILITY CIRCULATION		C.B.	5/14/03
	3	REVISED UTILITY CIRCULATION		C.B.	7/22/03
	4	MOE APPLICATION		C.B.	7/23/03
	5	ISSUED FOR TENDER		C.B.	8/01/03
	6	PROPOSED PAVEMENT ELEVATIONS & DRAWING MODIFICATIONS AS PER ADDENDUM #1		C.B.	8/21/03
	7	ISSUED FOR CONSTRUCTION		C.B.	9/18/03
	8	RECORD DRAWING		C.B.	1/14/04

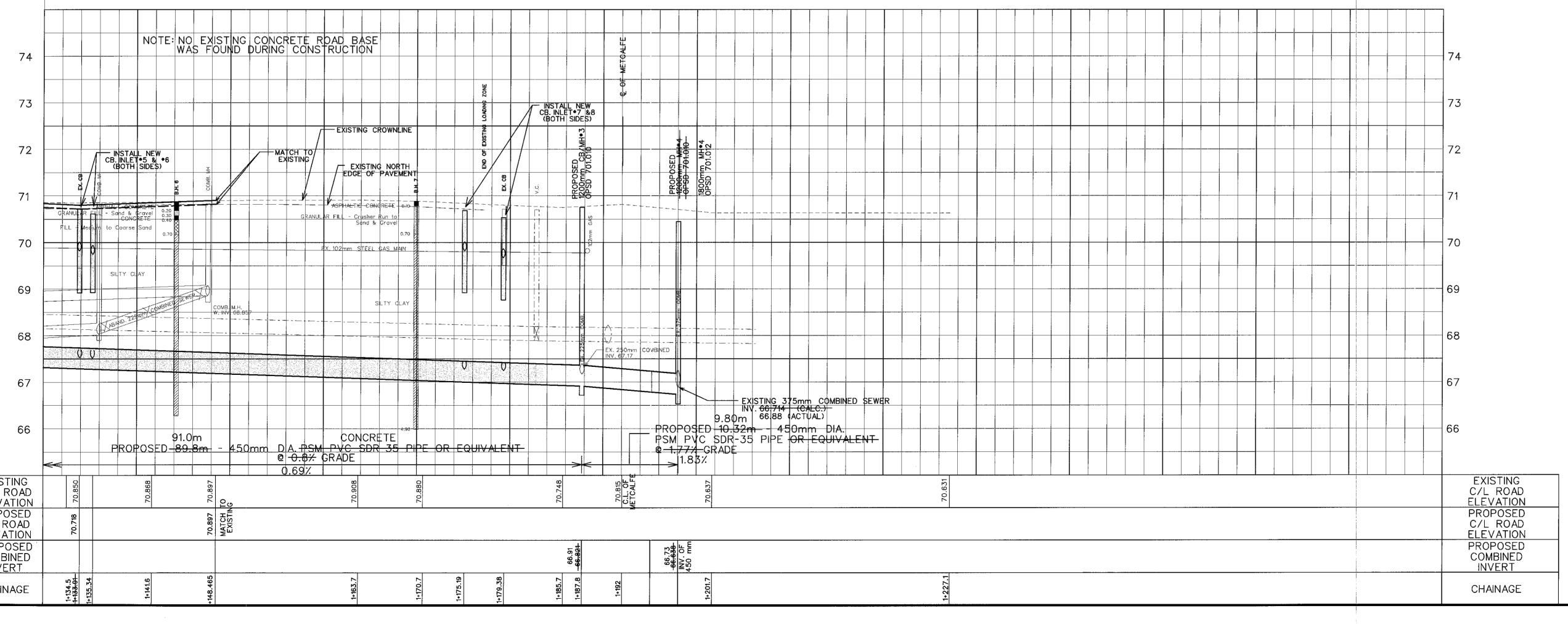
REPLACEMENT OF COMBINED SEWER GILMOUR STREET FROM O'CONNOR TO METCALFE

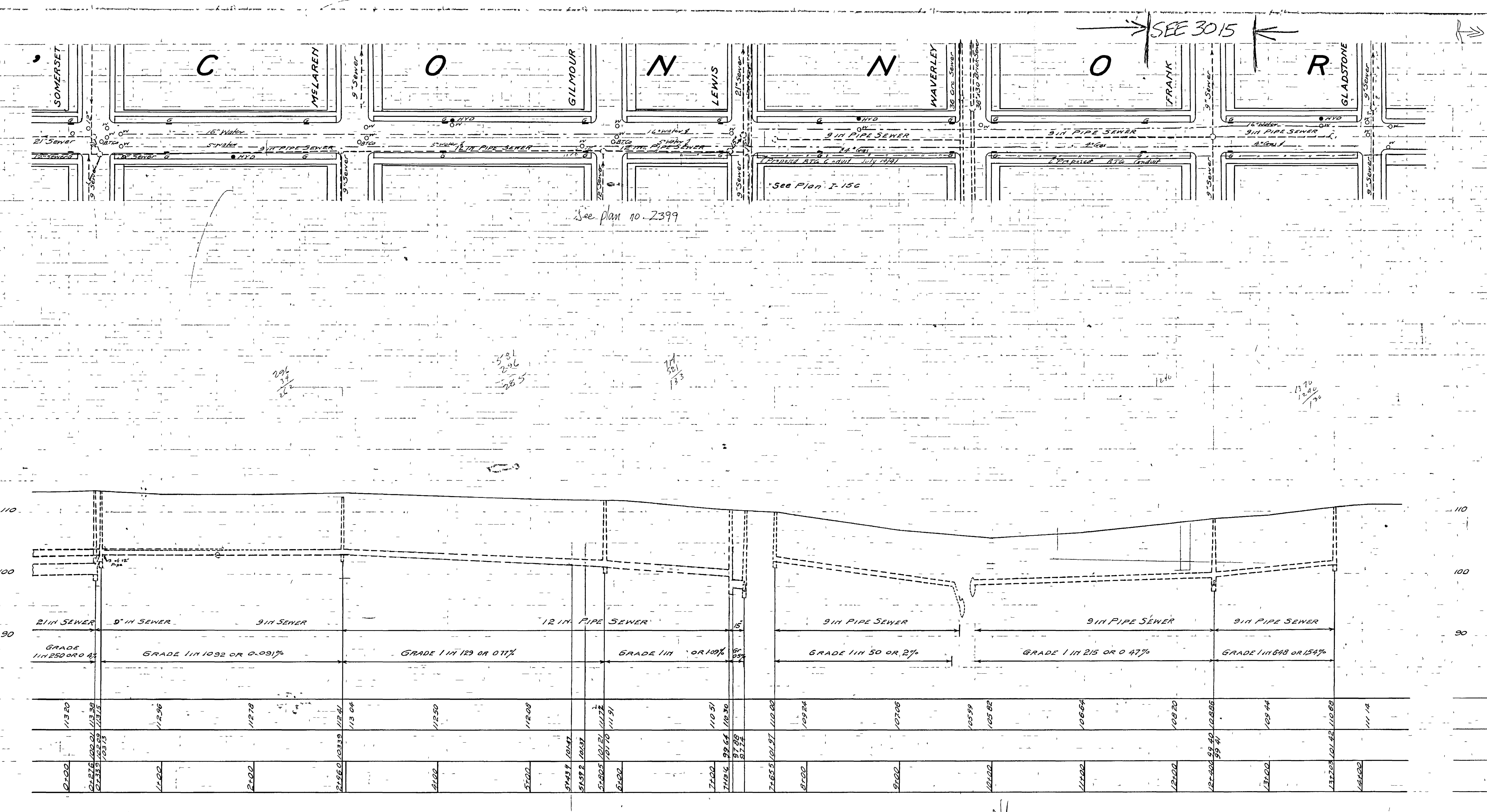
R. G. HEWITT, P.ENG. W.R. NEWELL, P.ENG. Manager Construction Services Director Infrastructure Services Chkd: V.B./M.P. Des: V.B./M.P. Chkd: V.B.





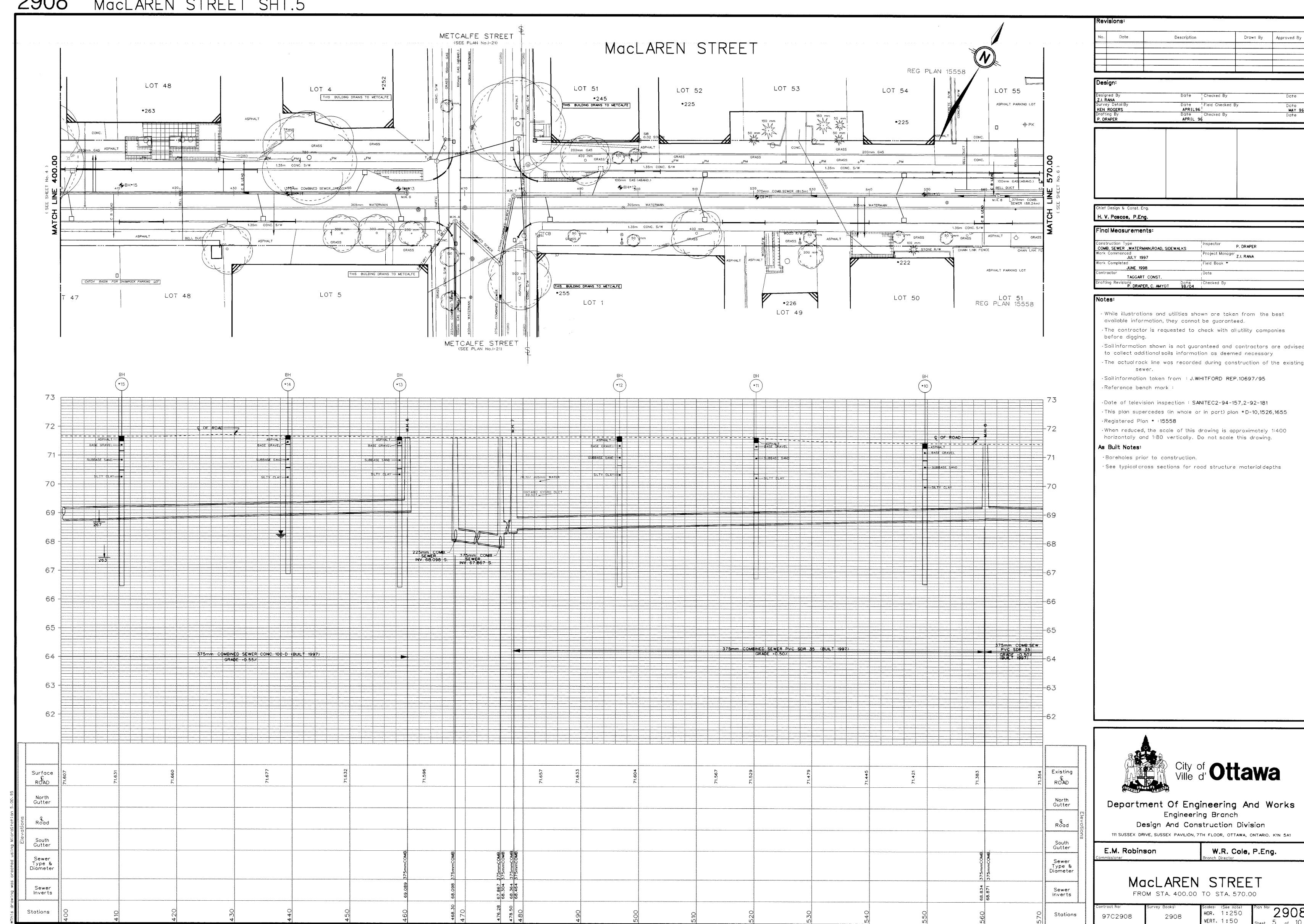
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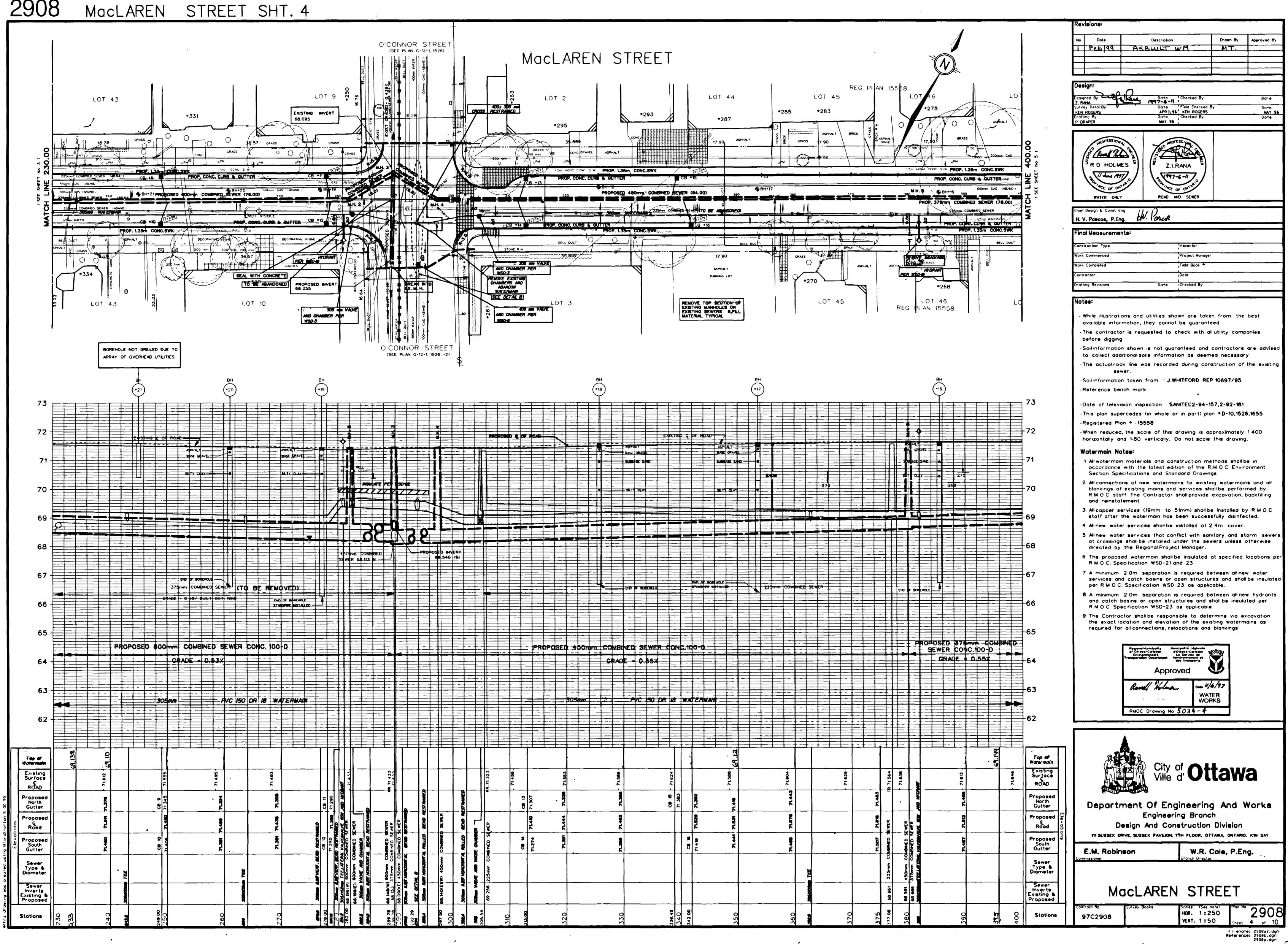


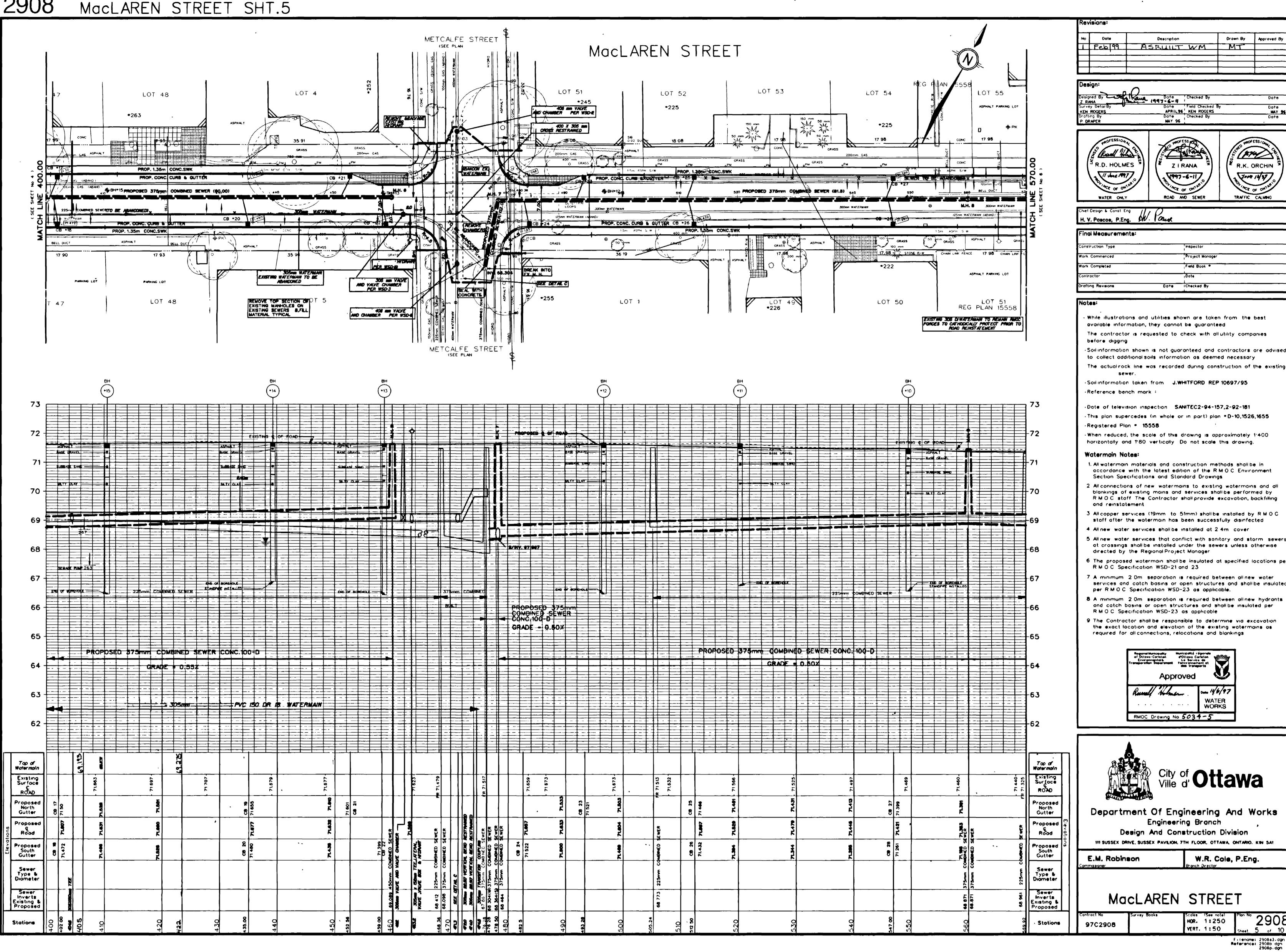


MacLAREN STREET SHT. 4 O'CONNOR STREET (SEE PLAN G-12-1, 1526) Description Drawn By Approved B MacLAREN STREET LOT 4 LOT 45 LOT 43 LOT 44 LOT 2 *283 *285 •293 •287 GRASS 450mm COMB.SEWER (84.0m) H. V. Pascoe, P.Eng. 1.35m CONC. S/W DECORATIVE STONE BELL DUCT Final Measurements: DECORATIVE STONE Construction Type

COMB. SEWER ,WATERMAIN,ROAD, SIDEWALKS Project Manager Z.I. RANA P. DRAPER, C. AMYOT LOT 10 LOT 3 LOT 44 LOT 45 LOT 46 REG PLAN 15558 HSE.*334,336 ON SAME SANITARY SERVICE · While illustrations and utilities shown are taken from the best available information, they cannot be guaranteed. ·The contractor is requested to check with all utility companies before digging. -Soil information shown is not guaranteed and contractors are advised to collect additional soils information as deemed necessary -The actualrock line was recorded during construction of the existing ·Soil information taken from : J.WHITFORD REP.10697/95 -Reference bench mark : -Date of television inspection: SANITEC2-94-157,2-92-181 -This plan supercedes (in whole or in part) plan #D-10,1526,1655 ·Registered Plan * :15558 -When reduced, the scale of this drawing is approximately 1:400 horizontally and 1:80 vertically. Do not scale this drawing. As Built Notes: ·Boreholes prior to construction. · See typical cross sections for road structure material depths Existing Ç ROAD Ç ROAD North Gutter North Gutter Department Of Engineering And Works Engineering Branch Q Road С Road Design And Construction Division 111 SUSSEX DRIVE, SUSSEX PAVILION, 7TH FLOOR, OTTAWA, ONTARIO. KIN 5A1 South Gutt**e**r South Gutter E.M. Robinson W.R. Cole, P.Eng. Sewer Type & Diameter Sewer Type & Diameter MacLAREN STREET Sewer Inverts Sewer inverts FROM STA.230.00 TO STA.400.00 10: 2908 11 10 Scales: (See note)
HOR. 1:250
VERT. 1:50 Stations Stations 2908 97C2908







9095 **

1 Bhatia. Road Grade Designed By Survey Detail By J. FRANCE

Existing Surface

Proposed Surface

Type & Diameter (sewer)

Inverts Exist. & Prop. (sewer)

Stations

Design And Construction Division
Engineering And Surveys Branch D.K. Donaldson P.Egg. EXISTING COMBINED SEWER O'CONNOR STREET FROM GILMOUR STREET TO STA. 170.00

Scales: HOR, 1:200 VERT, 1:50

Existing Surface **Q**

Proposed Surface

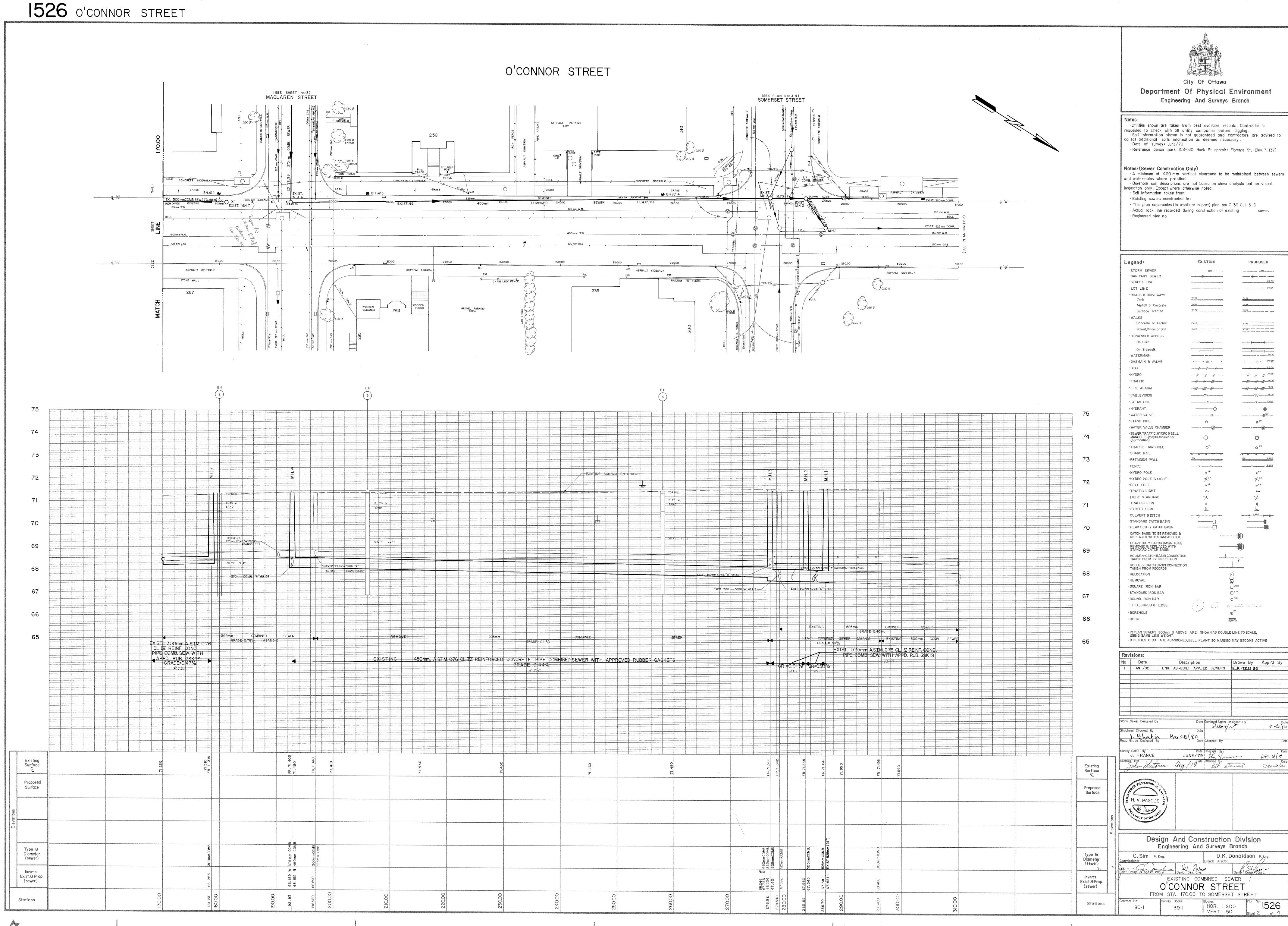
Type & Diameter (sewer)

inverts

Exist. & Prop.

(sewer)

Stations



Appendix D1

Water Demand Calculations

J.L. RICHARDS & ASSOCIATES LIMITED 2025-11-21

Water Demand Calculations 267 O'Connor (JLR 29056-000)

Unit Breakdown	No.	Person Per Unit (Table 4.1)	
North Tower (Phase 1)			
Studio	35	1.4	
1 Bed	144	1.4	
1 bed + den	6	1.4	
2 bed	85	2.1	
2 bed + den	3	2.1	
Unit Count =	273		
South Tower (Phase 2)			
Studio	21	1.4	
1 Bed	142	1.4	
1 bed + den	11	1.4	
2 bed	53	2.1	
2 bed + den	13	2.1	
Unit Count =	240		
Total Unit Count=	513		
No. of Studios & 1-bedroom	359	units	
Density	1.4	p/p/u	
No. Ppl	503	ppl	
No. of 2-bedroom	154	units	
Density	2.1	p/p/u	
No. Ppl	324	ppl	
Total Population	827	ppl	
Average Day Consumption Rate	280	L/c/d	
Average Day Demand	2.68	L/s	
Maximum Day Peaking Factor	2.50	x Avg Day (Table 4.2 ODG)	
Maximum Day Demand	6.70	L/s	
Peak Hour Peaking Factor	2.20	x Max Day (Table 4.2 ODG)	
Peak Hour Demand	14.74	L/s	
Minimum Hour Peaking Factor	0.40	x Avg Day (MECP Table 3-1)	
Minimum Hour Demand	1.07	L/s	

Appendix D2

Hydraulic Boundary Condition E-Mail

From: Wessel, Shawn <shawn.wessel@ottawa.ca>

Sent: August 6, 2025 8:36 AM

To: Kendra Tyhurst

Cc: kyle.kazda@taggart.ca; Steve Picken; Annie Williams

Subject: RE: 267 O'Connor Street- Request for Hydraulic Boundary Conditions

Attachments: 267 O'Connor Street May 2025.pdf

Follow Up Flag: Follow up Flag Status: Flagged

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Hello Kendra and good morning.

Please find your requested information, below:

We do not apply FIRE during peak hours. Therefore, the Min HGL from peak hrs can be lower than the HGL during Maxday + Fire.

The following are boundary conditions, HGL, for hydraulic analysis at 267 O'Connor Street (zone 1W) assumed to be connected via (Scenario 1) a dual connection to the 305mm watermain on Maclaren Street OR (Scenario 2) a dual connection to the 305mm watermain on Gilmour Street OR (Scenario 3) two connections to the 305mm watermain on Maclaren Street and the 305mm watermain on Gilmour Street. (see attached PDF for location).

Scenario 1: Connection 1 Only (Maclaren Street)

Minimum HGL: 106.8 m Maximum HGL: 115.0 m

Max Day + Fire Flow (133 L/s): 108.0 m Max Day + Fire Flow (117 L/s): 108.2 m

Scenario 2: Connection 2 Only (Gilmour Street)

Minimum HGL: 106.8 m Maximum HGL: 115.0 m

Max Day + Fire Flow (133 L/s): 108.0 m Max Day + Fire Flow (117 L/s): 108.1 m

Scenario 3: Connection 1 and Connection 2 (Maclaren Street and Gilmour Street)

Both connections:

Minimum HGL: 106.8 m Maximum HGL: 115.0 m

Max Day + Fire Flow (133 L/s): 108.0 m Max Day + Fire Flow (117 L/s): 108.1 m

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

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji

Pronouns: he/him | Pronom: il

Project Manager - Infrastructure Approvals

Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale Planning, Development & Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bàtiment (DGSPAB) City of Ottawa | Ville d'Ottawa

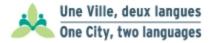
110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1 (613) 580 2424 Ext. | Poste 33017 Int. Mail Code | Code de Courrier Interne 01-14

shawn.wessel@ottawa.ca



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Vacation Alert: August 1 - August 5 (inclusive)



Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Kendra Tyhurst ktyhurst@jlrichards.ca

Sent: Friday, August 1, 2025 11:37 AM

To: Wessel, Shawn < shawn.wessel@ottawa.ca>

Cc: kyle.kazda@taggart.ca; Steve Picken <spicken@jlrichards.ca>; Annie Williams

<awilliams@jlrichards.ca>

Subject: RE: 267 O'Connor Street- Request for Hydraulic Boundary Conditions

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Hi Shawn,

Just following up on our request below.

Could we get confirmation that that the minimum HGL condition is lower than the max day + fire flow condition for this site? We understand the City's peak hour demand may be greater than our fire flow which could explain this condition.

Also, could we get the max day + fire flow boundary condition, using the 7000L/min (117L/s) fire flow.

Thank you, Kendra













Kendra Tyhurst, C.Tech. (she/her)

Civil Technician

1000-343 Preston Street Ottawa ON K1S 1N4 Work: 343-809-6424 ktyhurst@jlrichards.ca

Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Wessel, Shawn <shawn.wessel@ottawa.ca>

Sent: June 11, 2025 2:58 PM

To: Kendra Tyhurst < ktyhurst@jlrichards.ca>

Cc: kyle.kazda@taggart.ca; Steve Picken <spicken@jlrichards.ca>; Annie Williams

<awilliams@ilrichards.ca>

Subject: RE: 267 O'Connor Street- Request for Hydraulic Boundary Conditions

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Thanks Kendra

Your comments/inquiry have been sent to the Water Dept. for response.

Regards,

Shawn Wessel, A.Sc.T.,rcji

Pronouns: he/him | Pronom: il

Project Manager - Infrastructure Approvals

Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale Planning, Development & Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bàtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1

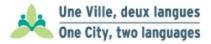
(613) 580 2424 Ext. | Poste 33017

Int. Mail Code | Code de Courrier Interne 01-14

shawn.wessel@ottawa.ca



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Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Kendra Tyhurst < ktyhurst@jlrichards.ca> Sent: Wednesday, June 11, 2025 2:50 PM To: Wessel, Shawn <shawn.wessel@ottawa.ca>

Cc: kyle.kazda@taggart.ca; Steve Picken <spicken@jlrichards.ca>; Annie Williams

<awilliams@jlrichards.ca>

Subject: RE: 267 O'Connor Street- Request for Hydraulic Boundary Conditions

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Hi Shawn,

Thank you for providing the boundary conditions, just a couple of follow up questions.

We noticed that the minimum HGL condition is lower than the max day + fire flow condition, we just want to confirm that is the case for this site. We understand the City's peak hour demand may be greater than our fire flow which could explain this condition.

Additionally, could we get the other fire flow, 7000 L/min (117 L/s), listed in the boundary request?

Thank you, Kendra













Kendra Tyhurst, C.Tech. (she/her) Civil Technician

1000-343 Preston Street Ottawa ON K1S 1N4 Work: 343-809-6424 ktyhurst@jlrichards.ca

Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Wessel, Shawn <<u>shawn.wessel@ottawa.ca</u>>

Sent: June 4, 2025 3:57 PM

To: Kendra Tyhurst < ktyhurst@jlrichards.ca>

Cc: kyle.kazda@taggart.ca; Steve Picken <spicken@jlrichards.ca>; Annie Williams

<awilliams@ilrichards.ca>

Subject: RE: 267 O'Connor Street- Request for Hydraulic Boundary Conditions

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Hello Kendra

Please find BC as requested, below and attached.

The following are boundary conditions, HGL, for hydraulic analysis at 267 O'Connor Street (zone 1W) assumed to be connected via (*Scenario 1*) a dual connection to the 305mm watermain on Maclaren Street **OR** (*Scenario 2*) a dual connection to the 305mm watermain on Gilmour Street **OR** (*Scenario 3*) two connections to the 305mm watermain on Maclaren Street and the 305mm watermain on Gilmour Street. (see attached PDF for location).

Scenario 1: Connection 1 Only (Maclaren Street)

Minimum HGL: 106.8 m Maximum HGL: 115.0 m

Max Day + Fire Flow (133 L/s): 108.0 m

Scenario 2: Connection 2 Only (Gilmour Street)

Minimum HGL: 106.8 m Maximum HGL: 115.0 m

Max Day + Fire Flow (133 L/s): 108.0 m

Scenario 3: Connection 1 and Connection 2 (Maclaren Street and Gilmour Street)

Both connections: Minimum HGL: 106.8 m Maximum HGL: 115.0 m

Max Day + Fire Flow (133 L/s): 108.0 m

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

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

"The IWSD has recently updated their water modelling software. Any significant difference between previously received BC results and newly received BC results could be attributed to this update."

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji

Pronouns: he/him | Pronom: il

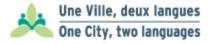
Project Manager - Infrastructure Approvals

Gestionnaire de projet – Approbation des demandes d'infrastructures

Development Review Central Branch | Direction de l'examen des projets d'aménagement, Centrale Planning, Development & Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bàtiment (DGSPAB) City of Ottawa | Ville d'Ottawa 110 Laurier Ave. W. | 110, avenue Laurier Ouest, Ottawa ON K1P 1J1 (613) 580 2424 Ext. | Poste 33017 Int. Mail Code | Code de Courrier Interne 01-14 shawn.wessel@ottawa.ca



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Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Kendra Tyhurst ktyhurst@jlrichards.ca>

Sent: Thursday, May 8, 2025 3:59 PM

To: Wessel, Shawn <shawn.wessel@ottawa.ca>

Cc: kyle.kazda@taggart.ca; Steve Picken <spicken@ilrichards.ca>; Annie Williams

<awilliams@jlrichards.ca>

Subject: 267 O'Connor Street- Request for Hydraulic Boundary Conditions

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Hi Shawn,

We are preparing the detailed design for the site servicing of Taggart's 267 O'Connor Street development located in the downtown area of the City of Ottawa. We request hydraulic water boundary conditions to complete the hydraulic network analysis. The required development details are as follows:

- 1. Two phases (Phase 1 and 2) of high-density residential development- apartment buildings, connected underground by a parking garage:
- 2. Location of development: 267 O'Connor Street- between Gilmour Street and MacLaren Street (refer to attached figure):
- 3. Location of Requested Boundary Conditions: 2 water service connection locations: MacLaren and Gilmour Street, as shown in the attached figure. We would like to request three (3) servicing scenarios:
 - a. Service off MacLaren Street, entire demand off MacLaren Street (connection #1 only)
 - b. Service off Gilmour Street, entire demand off Gilmour Street (connection #2 only)
 - c. 200mm dia. watermain loop connected to MacLaren Street and Gilmour Street (both connections #1 and #2)

Estimated water demands:

Average Day Demand: 2.73 L/s Max Day Demand: 6.81 L/s Peak Hour Demand: 14.99 L/s

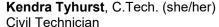
Per Technical Bulletin IWSTB-2024-05 the fire flow requirement was calculated based on the OBC method and was found to be above 9000 L/min; therefore FUS (2020) was followed. The estimated Fire Flows of 8000 L/min (133L/s) (North Tower) and 7000 L/min (117 L/s) (South Tower) were calculated in accordance with FUS (2020) and Technical Bulletin IWSTB 2024-05, see attached Concept Plan and FUS Fire Flow Calculations.

Please provide boundary conditions at the locations specified in Item No. 3 for Peak hour, Maximum Day plus Fire Flow (2 values), and Maximum HGL scenarios.

Should you have any questions or require anything further, please do not hesitate to call.

Thank you, Kendra





1000-343 Preston Street Ottawa ON K1S 1N4 Work: <u>343-809-6424</u> ktyhurst@jlrichards.ca



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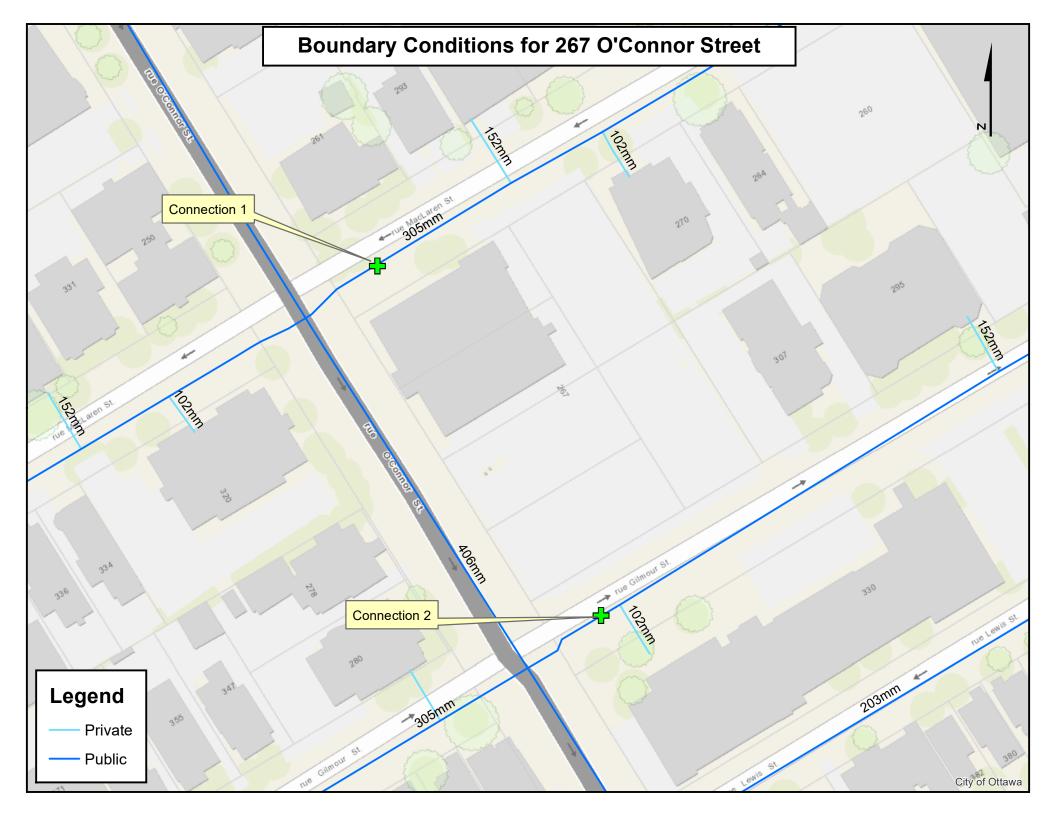
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Appendix D3

Fire Flow Requirements

11.2.2 Water Demand Requirements - Pipe Schedule Method.

11.2.2.1 Table 11.2.2.1 shall be used in determining the minimum water supply requirements for light and ordinary hazard occupancies protected by systems with pipe sized according to the pipe schedules of Section 23.7.

Table 11.2.2.1 Water Supply Requirements for Pipe Schedule Sprinkler Systems

Occupancy Classification –	Minimum Residual Pressure Required		Acceptable Base o (Includit Stream A	Duration	
Classification	psi	bar	gpm	L/min	(minutes)
Light hazard	15	1	500-750	1900-2850	30-60
Ordinary hazard	20	1.4	850–1500 <mark></mark>	<mark>3200-</mark> 5700	60–90

11.2.2.2 Pressure and flow requirements for extra hazard occupancies shall be based on the hydraulic calculation methods of 11.2.3.

11.2.2.3 The pipe schedule method shall be permitted as follows:

- (1) Additions or modifications to existing pipe schedule systems sized according to the pipe schedules of Section 23.7
- (2) Additions or modifications to existing extra hazard pipe schedule systems
- (3) New systems of 5000 ft² (465 m²) or less
- (4) New systems exceeding 5000 ft² (465 m²) where the flows required in Table 11.2.2.1 are available at a minimum residual pressure of 50 psi (3.4 bar) at the highest elevation of sprinkler
- 11.2.2.4 Table 11.2.2.1 shall be used in determining the minimum water supply requirements.
- 11.2.2.5 The lower duration value of Table 11.2.2.1 shall be acceptable only where the sprinkler system waterflow alarm device(s) and supervisory device(s) are electrically supervised and such supervision is monitored at an approved, constantly attended location.

11.2.2.6* Residual Pressure.

11.2.2.6.1 The residual pressure requirement of Table 11.2.2.1 shall be met at the elevation of the highest sprinkler.

11.2.2.6.2 Friction Loss Due to Backflow Prevention Valves.

- 11.2.2.6.2.1 When backflow prevention valves are installed on pipe schedule systems, the friction losses of the device shall be accounted for when determining acceptable residual pressure at the top level of sprinklers.
- 11.2.2.6.2.2 The friction loss of this device [in psi (bar)] shall be added to the elevation loss and the residual pressure at the top row of sprinklers to determine the total pressure needed at the water supply.
- 11.2.2.7 The lower flow figure of Table 11.2.2.1 shall be permitted only where the building is of noncombustible construction or the potential areas of fire are limited by building size or compartmentation such that no open areas exceed 3000 ft 2 (280 m 2) for light hazard or 4000 ft 2 (370 m 2) for ordinary hazard.

${\bf 11.2.3\ \ Water\ Demand\ Requirements -- \ Hydraulic\ Calculation\ \ Methods.}$

11.2.3.1 General.

11.2.3.1.1 The water demand for sprinklers shall be determined only from one of the following, at the discretion of the designer:

- (1) Density/area curves of Figure 11.2.3.1.1 in accordance with the density/area method of 11.2.3.2
- (2) The room that creates the greatest demand in accordance with the room design method of 11.2.3.3
- (3) Special design areas in accordance with 11.2.3.4

11.2.3.1.2 The minimum water supply shall be available for the minimum duration specified in Table 11.2.3.1.2.

11.2.3.1.3 The lower duration values in Table 11.2.3.1.2 shall be permitted where the sprinkler system waterflow alarm device(s) and supervisory device(s) are electrically supervised and such supervision is monitored at an approved, constantly attended location.

11.2.3.1.4 Restrictions. When either the density/area method or room design method is used, the following shall apply:

- (1)*For areas of sprinkler operation less than 1500 ft² (139 m²) used for light and ordinary hazard occupancies, the density for 1500 ft² (139 m²) shall be used.
- (2) For areas of sprinkler operation less than 2500 ft² (232 m²) for extra hazard occupancies, the density for 2500 ft² (232 m²) shall be used.

11.2.3.1.5 Unsprinklered Combustible Concealed Spaces.

- 11.2.3.1.5.1* When using the density/area or room design method, unless the requirements of 11.2.3.1.5.2 are met for buildings having unsprinklered combustible concealed spaces, as described in 8.15.1.2 and 8.15.6, the minimum area of sprinkler operation for that portion of the building shall be $3000 \, \text{ft}^2$ ($280 \, \text{m}^2$).
- (A) The design area of $3000 \text{ ft}^2 (280 \text{ m}^2)$ shall be applied only to the sprinkler system or portions of the sprinkler system that are adjacent to the qualifying combustible concealed space.
- **(B)** The term *adjacent* shall apply to any sprinkler system protecting a space above, below, or next to the qualifying concealed space except where a barrier with a fire resistance rating at least equivalent to the water supply duration completely separates the concealed space from the sprinklered area.

11.2.3.1.5.2 The following unsprinklered concealed spaces shall not require a minimum area of sprinkler operation of $3000 \text{ ft}^2 (280 \text{ m}^2)$:

- (1) Noncombustible and limited-combustible concealed spaces with minimal combustible loading having no access. The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.
- (2) Noncombustible and limited-combustible concealed spaces with limited access and not permitting occupancy or storage of combustibles. The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.
- (3) Combustible concealed spaces filled entirely with noncombustible insulation.
- (4)*Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are directly attached

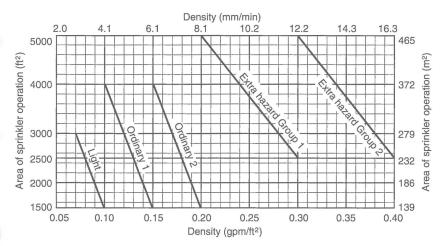


FIGURE 11.2.3.1.1 Density/Area Curves.

Table 11.2.3.1.2 Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems

	Inside	e Hose	Total Co Inside and Ho	Duration	
Occupancy	gpm	L/min	gpm	L/min	(minutes)
Light hazard	0, 50, or 100	0, 190, or 380	100	380	30
Ordinary hazard	0, 50, or 100	0, 190, or 380	250	950	60–90
Extra hazard	0, 50, or 100	0, 190, or 380	500	1900	90–120

to the bottom of solid wood joists or solid limited-combustible construction or noncombustible construction so as to create enclosed joist spaces $160~{\rm ft}^3~(4.5~{\rm m}^3)$ or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered concealed space.

- (5) Concealed spaces where rigid materials are used and the exposed surfaces have a flame spread index of 25 or less and the materials have been demonstrated to not propagate fire more than 10.5 ft (3.2 m) when tested in accordance with ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Standard for Test for Surface Burning Characteristics of Building Materials, extended for an additional 20 minutes in the form in which they are installed in the space.
- (6) Concealed spaces in which the exposed materials are constructed entirely of fire-retardant-treated wood as defined by NFPA 703.
- (7) Concealed spaces over isolated small rooms not exceeding 55 ft² (5.1 m²) in area.
- (8) Vertical pipe chases under 10 ft² (0.9 m²), provided that in multifloor buildings the chases are firestopped at each floor using materials equivalent to the floor construction, and where such pipe chases contain no sources of ignition, piping shall be noncombustible, and pipe penetrations at each floor shall be properly sealed.

- (9) Exterior columns under 10 ft² (0.9 m²) in area formed by studs or wood joists, supporting exterior canopies that are fully protected with a sprinkler system.
- (10)*Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are attached to the bottom of composite wood joists either directly or on to metal channels not exceeding 1 in. (25 mm) in depth, provided the adjacent joist channels are firestopped into volumes not exceeding 160 ft³ (4.5 m³) using materials equivalent to ½ in. (13 mm) gypsum board, and at least 3½ in. (90 mm) of batt insulation is installed at the bottom of the joist channels when the ceiling is attached utilizing metal channels.

11.2.3.2 Density/Area Method.

11.2.3.2.1 Water Supply.

11.2.3.2.1.1 The water supply requirement for sprinklers only shall be calculated from the density/area curves of Figure 11.2.3.1.1 or from Chapter 22 where density/area criteria are specified for special occupancy hazards.

11.2.3.2.1.2 When using Figure 11.2.3.1.1, the calculations shall satisfy any single point on the appropriate density/area

11.2.3.2.1.3 When using Figure 11.2.3.1.1, it shall not be necessary to meet all points on the selected curves.

11.2.3.2.2 Sprinklers.

11.2.3.2.2.1 The densities and areas provided in Figure 11.2.3.1.1 shall be for use only with spray sprinklers.

11.2.3.2.2.2 Quick-response sprinklers shall not be permitted for use in extra hazard occupancies or other occupancies where there are substantial amounts of flammable liquids or combustible dusts.

11.2.3.2.2.3 For extended coverage sprinklers, the minimum design area shall be that corresponding to the hazard in Figure 11.2.3.1.1 or the area protected by five sprinklers, whichever is greater.

11.2.3.2.2.4 Extended coverage sprinklers shall be listed with and designed for the minimum flow corresponding to the density for the hazard as specified in Figure 11.2.3.1.1.

Appendix D4

Headloss Calculations

267 O'Connor Street Condominium Towers Taggart Realty Management 29056-000

Boundary Conditions (August 6, 2025 Email from the City):

Water Demand Scenario	MacLaren (m)	Gilmour (m)
Minimum HGL	106.8	106.8
Maximum HGL	115.0	115.0
MDD + FF - Southern - Phase 2 (117 L/s)	N/A	108.1
MDD + FF - Northern - Phase 1 (133 L/s)	108.0	N/A

Note: The supply elevations under the maximum day demand plus fire flow estimated by the City based on RFF of 133 L/s (Phase 1) and 117 L/s (Phase 2), which is conservative given the Fire Flow Target is based on OBC for sprinklered buildings (69.2 L/s)

Headloss Calculations (Hazen Williams Equation)

Calculate headloss in a given pipe length based on flows and C value

HL = 10.675 * L * Q^1.852 / (C^1.856 * D ^4.8704)

Where

HL = Headloss (m)

L - Length (m)

Q - Flow (m³/s)

C - Hazen Williams "C"

D - Main Diameter (m)

Water Demand	Flow - Q	Flow - Q	Length	С	D	HeadLoss	HGL (m)	HGL @ Tower	Tower Elevation	Pressure	@ Tower	Requirement	Criteria
Condition	(L/s)	(m ³ /s)	(m)		(m)	(m)	@ BC	(m)	(m)	(m)	(kPa)		Acheived?
Southern Tower (Phase 2)													
Average Day	1.24	0.00124	7.95	110	0.204								
Maximum Day	3.10	0.00310	7.95	110	0.204								
Peak Hour	6.83	0.00683	7.95	110	0.204	0.0031	106.8	106.797	71.4	35.397	347	276	Yes
Maximum HGL	0.50	0.00050	7.95	110	0.204	0.000025	115.0	115.000	71.4	43.600	428	552	Yes
Maximum Day Plus Fire (Q = 3.10 L/s + 69.2 L/s)	72.30	0.07230	7.95	110	0.204	0.2463	108.1	107.854	71.4	36.454	358	140	Yes
Northern Tower (Phase 1)													
Average Day	1.44	0.00144	7.2	110	0.204				1				
Maximum Day	3.60	0.00360	7.2	110	0.204								
Peak Hour	7.91	0.00791	7.2	110	0.204	0.0037	106.8	106.796	71.6	35.196	345	276	Yes
Maximum HGL	0.58	0.00058	7.2	110	0.204	0.000029	115.0	115.000	71.6	43.400	426	552	Yes
Maximum Day Plus Fire (Q = 3.60 L/s + 69.2 L/s)	72.80	0.07280	7.2	110	0.204	0.2259	108.0	107.774	71.6	36.174	355	140	Yes

Domestic Booster Pump & Fire Pump to be designed by the Owner's Mechanical Engineer

Appendix E

Wastewater Calculations

J.L. RICHARDS & ASSOCIATES LIMITED

Wastewater Calculations 267 O'Connor (JLR 29056-001)

PHASE 1 - Tower Unit Breakdown 0.0971 Person Per Unit (Table 4.1) Studio 35 Studio
1 Bed
1 bed + den
2 bed
2 bed + den
Total Unit Count =
No. of Studios & 1-bedroom 1.4 144 1.4 2.1 2.1 85 273 185 1.4 259 Density No. Ppl No. of 2-bedroom 88 2.1 units Density
No. Ppl
Total Population p/p/u 185 444 280 **1.44** Theoretical Wastewater Flow Average Wastewater Flow Harmon Peaking Factor
Peak Wastewater Flow
Commercial/Office Area (ha) 3.400 **4.89** 0.02 Commercial PF = 1 0.006 Peak Flow (Comm) =

Dry & Wet I/I (0.33 L/s/ha)	0.03	L/S	
Peak WW Flow (L/s)	4.93	L/s	
Paterson GW Allowance	0.17	L/s	
GW Allowance (50%) =	0.09	L/s	
Total Peak WW Flow (L/s)	5.02	L/s	

PHASE 2 - Tower	0.0918	
Unit Breakdown	No.	Person Per Unit (Table 4.1
Studio	21	1.4
1 Bed	142	1.4
1 bed + den	11	1.4
2 bed	53	2.1
2 bed + den	13	2.1
Totla Unit Count =	240	
No. of Studios & 1-bedroom	174	units
Density	1.4	p/p/u
No. Ppl	244	ppl
No. of 2-bedroom	66	units
Density	2.1	p/p/u
No. Ppl	139	ppl
Total Population	383	ppl
Theoretical Wastewater Flow	280	L/c/d
Average Wastewater Flow	1.24	L/s
Harmon Peaking Factor	3.425	
Peak Wastewater Flow	4.25	L/s
Commercial/Office Area (ha)	0.02	
Commercial PF =	1	
Peak Flow (Comm) =	0.006	L/s
Dry & Wet I/I (0.33 L/s/ha)	0.03	L/s
Peak WW Flow (L/s)	4.29	L/s
Paterson GW Allowance	0.17	L/s
GW Allowance (50%) =	0.09	L/s

4.38 L/s

Total Peak WW Flow (L/s)

PHASES 1 & 2	0.1889	На.
Unit Breakdown	No.	Person Per Unit (Table 4.1)
Studio	56	1.4
1 Bed	286	1.4
1 bed + den	17	1.4
2 bed	138	2.1
2 bed + den	16	2.1
Totla Unit Count =	513	
No. of Studios & 1-bedroom	359	units
Density	1.4	p/p/u
No. Ppl	503	ppl
No. of 2-bedroom	154	units
Density	2.1	p/p/u
No. Ppl	324	ppl
Total Population	827	ppl
Theoretical Wastewater Flow	280	L/c/d
Average Wastewater Flow	2.68	L/s
Harmon Peaking Factor	3.281	
Peak Wastewater Flow	8.79	L/s
Commercial/Office Area (ha)	0.04	
Commercial PF =	1	
Peak Flow (Comm) =	0.013	L/s
Dry & Wet I/I (0.33 L/s/ha)	0.06	L/s
Peak WW Flow (L/s)	8.87	L/s
Paterson GW Allowance	0.17	L/s
GW Allowance =	0.17	L/s

9.04 L/s

Total Peak WW Flow (L/s)

	Number of Units						
	Studio	1-Bed	Bed+Den	2-Bed	Bed+Den	Total	
Phase 1:	35	144	6	85	3	273	
Phase 2:	21	142	11	53	13	240	
Phases 1 &2	56	286	17	138	16	513	

Appendix F1

Pre-Development Peak Flow Calculations



267 O'Connor Exisitng Peak Flow Calculations

Guidance on Approach to Estimate Allowable Peak Flow and SWM Calculations:

- 1 Allowable peak flow shall be estimated based on a 1:5 year intensity and based on a 'C' = 0.4.
- 2 Allowable peak flow estimated using the IDF statistics (per the OSDG) and calculated Tc no less than 10 mins
- 3 The allowable peak flow will reflect the current drainage divide between MacLaren Street and Gilmour Street.
- 4a Outlet for the Phase 1 tower (wastewater & storm) will be the existing 300 mm diameter combined sewer on Gilmour Street
- 4b Outlet for the Phase 2 tower (wastewater & storm) will be 450 mm diameter combined sewer on MacLaren Street.
- 5a Post development flows to be limited to the allowable peak flow for both outlets
- 5b Post development flows to be set once the wastewater peak flow and groundwater flow contributions are subtracted.
- 6 Post-development peak flows shall be controlled the allowable peak flow by means of on-site storage up to the 1:100 year storm.
- 7 SWM calculations to be complted using the Modified Rational Method (MRM) for rooftop and at grade storage within the POPS.
- 8 MRM calculations to estimate cistern storage, if required, to be estimated based on 50% of the peak flow rate per City requirement
 9 All storm contributions to combined sewers (MacLaren and Gilmour) to be controlled by means of an inlet control device (ICD) or accounted as uncontrolled.
- 10 The subject property is within a combined area and consists of rooftop and POPS. As such, there is no water quality control requirement

Pre-Development Area Breakdown:

To Gilmour Street combined sewer (Phase 2):

Type of Area	Area (m²)	C-Factor	C-Factor (Eff)
Parking	2205.77	0.9	0.4
	2205.77	0.9	0.4

Time of Concentration (existing) to Gilmour:

Flow path on asphalt from high point to U/S CB = ± 25 m on 2.4% slope Length of Sewers from U/S CB to O'Connor = ± 76 m

Sewer slope = ±1%: V= ±0.95 m/s

Tc (exist) = (25 m / 0.90 m/s) + (76 m / 0.95 m/s)

Tc (exist) = 108 secs or 1.8 mins, use Tc = 10 min

Intensity_(Syr) = 104.19 mm/hr based on a Tc = 10 min

Gilmour: Existing Peak Flow Calculations (5 Yr & 100 yr - C-Factor = 0.90)

Q_{5vr} = 2.78CIA

Q_{5vr} = 2.78 x 0.40 x 104.193 mm/hr x 0.22057 ha

_	-7	
Ī	Q _{5yr} =	57.5 L/s

Q_{100yr} = 2.78 x 0.90 x 178.559 mm/hr x 0.13272 ha

Q_{100yr} = 98.5 L/s

Gilmour: Pre-development peak flows (1:5 yr and 1:100 yr):

Peak Flow (1:5 yr - C-Factor = 0.9)	57.5 L/s
Peak Flow (1:100 yr - C-Factor = 0.9)	98.5 L/s

Allowable Peak Flow (5 Yr) Calculations (C-Factor = 0.40)

Q_{5yr} = 2.78CIA

 $Q_{Syr} = 2.78 \times 0.40 \times 104.193 \text{ mm/hr} \times 0.22057 \text{ ha}$

Q _{5yr} =	25.6 L/s

Gilmour: 1:5 year allowable peak flow (C-Factor of 0.40) is:

To Gilmour: 25.6 L/s

Pre-Development Area Breakdown:

To MacLaren Street combined sewer (Phase 1):

Type of Area	Area (m ²)	C-Factor	C-Factor (Eff)
Parking	599.74	0.9	0.4
Building	767.45	0.9	0.4
	1367.19	0.9	0.4

Time of Concentration (exist) to MacLaren:

Flow path on asphalt from high point to MacLaren ROW = ±34 m

Slope = ±0.9%; V= ±0.60 m/s (Uplands Method)

Tc (exist) = (34 m / 0.60 m/s)

Tc (exist) = ± 57 secs, or 0.94 mins, use Tc = 10 min

Intensity_(5yr) = 104.19 mm/hr based on a Tc = 10 min

MacLaren: Existing Peak Flow Calculations (5 Yr & 100 yr - C-Factor = 0.90)

Q_{5vr} = 2.78CIA

 $Q_{5yr} = 2.78 \times 0.90 \times 104.193 \text{ mm/hr} \times 0.13272 \text{ ha}$

$Q_{5yr} =$	35.6 L/s

Q_{100yr} = 2.78 x 0.90 x 178.559 mm/hr x 0.13272 ha

Q_{100yr} = 61.1 L/s

MacLaren: Pre-development peak flows (1:5 yr and 1:100 yr) are:

Peak Flow (1:5 yr - C-Factor = 0.9)	35.6 L/s
Peak Flow (1:100 yr - C-Factor = 0.9)	61.1 L/s

Allowable Peak Flow (5 Yr) Calculations (C-Factor = 0.40)

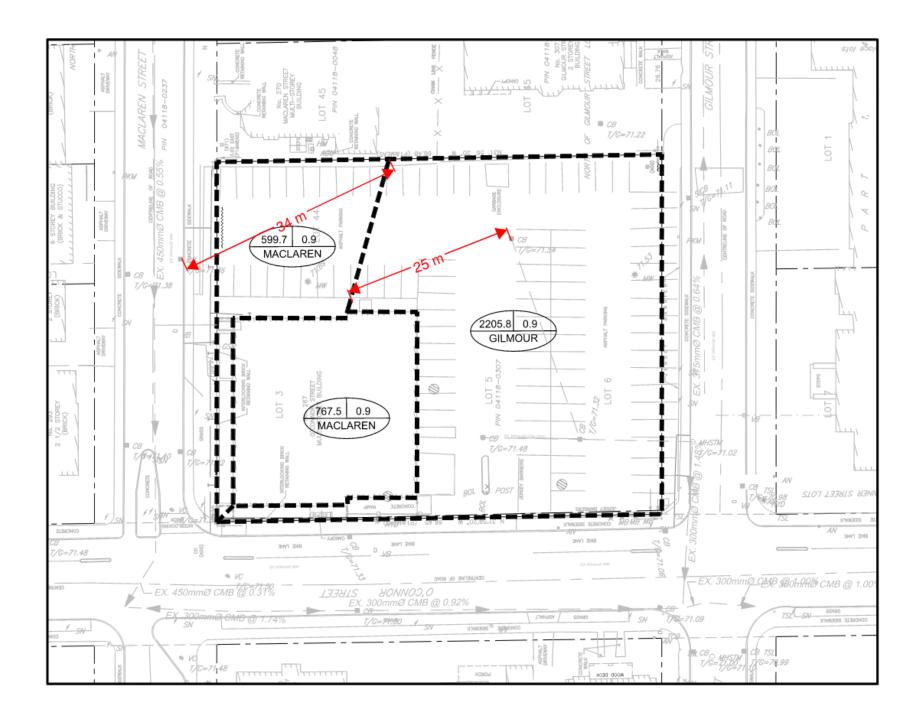
Q_{5yr} = 2.78CIA

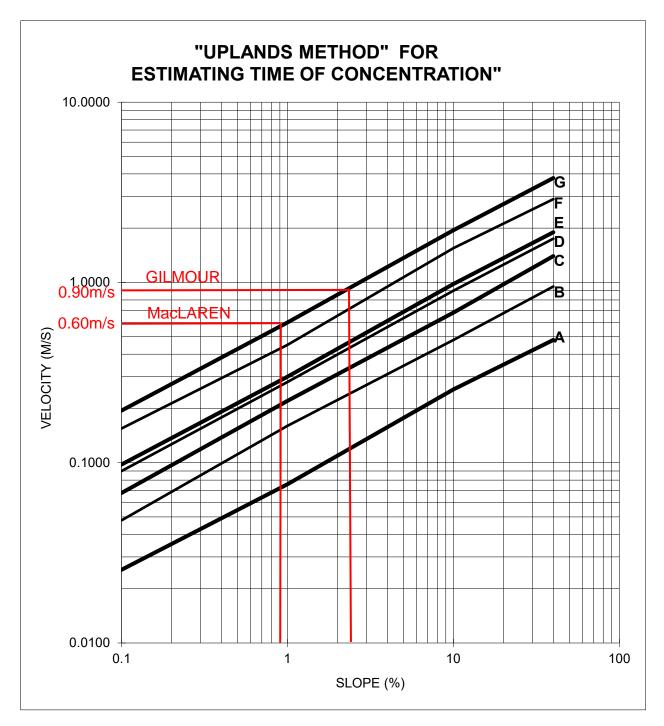
 $Q_{5yr} = 2.78 \times 0.40 \times 104.193 \text{ mm/hr} \times 0.13272 \text{ ha}$

Q _{5yr} =	15.8 L/s

MacLaren: 1:5 year allowable peak flow (C-Factor of 0.40) is:

To MacLaren: 15.8 L/s





A = Overland Flow: Forest (heavy litter) & hay meadow B = Overland Flow: Woodland, fallow, controur or strip crop

C = Overland Flow: Pasture

D = Overland Flow: Cultivated straight row E = Overland Flow: Nearly bare soil, untilled

F = Grassed waterway

G = Small upland gullies & paved areas (sheet flow)

Appendix F2

Stormwater Management Calculations & Watts Roof Drain



Adjustable Accutrol Weir

Adjustable Flow Control for Roof Drains

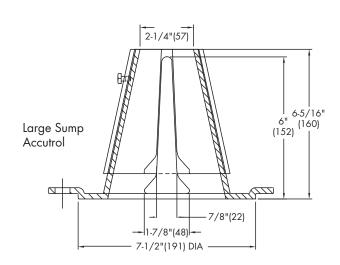
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

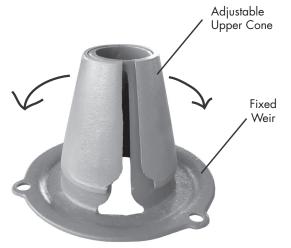
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below. Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3" of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be: [5 gpm (per inch of head) \times 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Wain On anima	1"	1" 2" 3" 4" 5" 6"				
Weir Opening Exposed	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Q = 0.315 L/s/drain Weir fully closed at 6" depth

Job Name	Contractor
Job Location	Contractor's P.O. No.
Engineer	Representative

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

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267 O'Connor Allowable Peak Flow & SWM Calculations

Allowable Peak Flow Calculation:

Phase 2 (Gilmour Street):

Q_{5yr} = 25.6 L/s

Wastewater Contribution (Phase 2 Tower):

Qp 4.38 L/s

Groundwater Contribution:

Qp 0.085 L/s

Allowable Peak Flow - Phase 2 @ Gilmour:

 $Q_{pAllow} = Q_{p5yr} - Q_{pw/w} - Q_{pgw}$

 $Q_{pAllow} = 25.6 \text{ L/s} - 4.38 \text{ L/s} - 0.09 \text{ L/s}$

D_{pAllow} = 21.09 L/s Allowable

Allowable Peak Flow Calculation:

Phase 1 (MacLaren Street):

_{5yr} = 15.8 L/s

Wastewater Contribution (Phase 1 Tower):

Qp 5
Groundwater Contribution:

Qp 0.085 L/s

Allowable Peak Flow - Phase 1 @ MacLaren:

 $Q_{pAllow} = Q_{p5yr} - Q_{pw/w} - Q_{pgw}$

Q_{pAllow} = 15.4 L/s - 5.02 L/s - 0.09 L/s

Q_{pAllow} = 10.74 L/s Allowable

Phase 2 - South Tower - Allocation of Flows

	Area (m ²)	C-Factor
Phase 2 Tower	917.52	0.9

Assuming Watts Ajustable Accutrol Weir (weir fully closed at 6" depth) 12 weirs x 0.315 L/s/weir = 3.78 L/s

Tower (12) Qp = 3.78 L/s POPS Qp = 17.31 L/s Phase 1 - North Tower - Allocation of Flows

	Area (m²)	C-Factor
Phase 1 Tower	971.22	0.9

Assuming Watts Ajustable Accutrol Weir (weir 3/4 closed at 6" depth) 12 weirs x 0.315 L/s/weir = 3.78 L/s

Tower(12)Qp =	3.78 L/s
POPS Qp =	6.96 L/s
Total Flow =	10.74 L/s

Storage Volume Requirement Calculations:

Based on the above allowable release rates, SWM servicing must be developed to:

- i) Limit rooftop flows for Phase 2 Tower (Gilmour) to 3.78 L/s
- ii) Limit rooftop flows for Phase 1 Tower (MacLaren) to 3.78 L/s
- iii) Limit flows from the POPS and Uncontrolled to MacLaren at 6.93 L/s
- iv) Limit flows from the POPS and Uncontrolled to Gilmour at 17.48 L/s

Based on the above capacities, it is proposed that the following areas drain:

Phase 2 - South Tower (Gilmour Street)

Area No.	Area (m2)	C-Factor	ICD
Areas 3 and 7 (Cistern) Area 5 (Rooftop) Area 8 (Uncontrolled)	399.02 917.52 86.57	0.88 0.90 0.90	13.44 3.78 N/A
SUM of Roof ICDs (Phase 2) = Cistern Release Rate		3.78 L/s 13.44 L/s	
SUM Uncontrolled (area 8) =	3.87 L/s		
Total Flow (Phase 2) =		21.09 L/s	3
. ,			
Allowable Peak Flow (Phase 2) =		21.09 L/s	3

Phase 1 - North Tower (MacLaren Street):

Thuse 1 - North Tower (inc			
Area No.	Area (m2)	C-Factor	ICD
Areas 1, 4 and 6 (Cistern) Area 2 (Rooftop) Area 9 (Uncontrolled)	1217.13 971.22 56.32	0.89 0.90 0.90	4.44 3.78 N/A
SUM of Roof ICDs (Phase 1 Cistern Release Rate) =	3.78 4.44	L/s L/s
SUM Uncontrolled (area 9) =		2.52	L/s
Total Flow (Phase 1) =		10.74	L/s
Allowable Book Flow (Phase	2) =	10.74	1 /6

SWM Calcs (South Tower - Phase 2 Areas) to Gilr	mour:
Area 5	

Aleas	
Roof (m2)	917.52
C =	0.90
ICD =	3.78
Storage Volume (m3)	82.58

Time	Intensity	Qp	Qp	Qp	Max Volume
(min)	1:100 Yr	1:100 Yr	Rooftop ICD	stored	Requirement
	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
30	91.87	21.09	3.78	17.31	31.16
35	82.58	18.96	3.78	15.18	31.87
40	75.15	17.25	3.78	13.47	32.33
45	69.05	15.85	3.78	12.07	32.59
50	63.95	14.68	3.78	10.90	32.70
55	59.62	13.69	3.78	9.91	32.69
60	55.89	12.83	3.78	9.05	32.58
65	52.65	12.09	3.78	8.31	32.39
70	49.79	11.43	3.78	7.65	32.13
75	47.26	10.85	3.78	7.07	31.81
80	44.99	10.33	3.78	6.55	31.43
85	42.95	9.86	3.78	6.08	31.01
90	41 11	9 44	3.78	5.66	30.55

The following assumptions were made in regard to rooftop storage:

Phase 2 Tower	
Rooftop flow =	3.78 L/s
Roof	917.52 m2
60% storage =	550.51 m2
Vol. @ 6" ponding =	82.58 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 32.70 m3 under the 1:100 year event.

Based on the above assumption (60% of rooftop used as storage), sufficient rooftop storage will be provided to detain the 1:100 yr on the rooftop Hence, the SWM target will, therefore, be met. There will not be any overtopping during the 1:100 year event



267 O'Connor Allowable Peak Flow & SWM Calculations

South Tower - Phase 2 - Underground Cistern - Storage Calculation - Gilmour	
Areas 3 and 7	399
C =	0.88
Cistern ICD (50% of 13.44 L/s)	6.72
Storage Volume (m3)	6.50

Time	Intensity	Qp	Qp	Qp	Max Volume
(min)	1:100 Yr	1:100 Yr	ICD	stored	Requirement
	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
10	178.56	17.43	6.72	10.71	6.42
15	142.89	13.95	6.72	7.23	6.50
20	119.95	11.71	6.72	4.99	5.98
25	103.85	10.14	6.72	3.42	5.12
30	91.87	8.97	6.72	2.25	4.04
35	82.58	8.06	6.72	1.34	2.81
40	75.15	7.34	6.72	0.61	1.47

The SWM Calculations (above) shows Cistern storage volume requirements of 6.50 m3 under the 1:100 year The cistern to be equipped with an overflow pipe by the mechanical engineer to convey the events over the 1:100-year peak flow

South Tower - Phase 2 - Uncontrolled - Gilmour	i
Pops (m2)	86.570
C =	0.90
ICD =	N/A
No Storage Volume - Uncontrolled	

Time	Intensity	Qp	Qp	Qp	Max Volume
(min)	1:100 Yr	1:100 Yr	ICD	stored	Requirement
	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
10	178.56	3.87	N/A	N/A	N/A
15	142.89	3.10	N/A	N/A	N/A
20	119.95	2.60	N/A	N/A	N/A
25	103.85	2.25	N/A	N/A	N/A
30	91.87	1.99	N/A	N/A	N/A
35	82.58	1.79	N/A	N/A	N/A
40	75.15	1.63	N/A	N/A	N/A
45	69.05	1.50	N/A	N/A	N/A
50	63.95	1.39	N/A	N/A	N/A
55	59.62	1.29	N/A	N/A	N/A
60	55.89	1.21	N/A	N/A	N/A
65	52.65	1.14	N/A	N/A	N/A

Based on the above SWM calculations, flows of 3.87 L/s will sheet flow uncontrolled to Gilmour Street

Summary of Areas to Gilmour Street (Phase 2):

Area No.	Area (m2)	C-Factor	ICD Flow 100 yr	Uncontrolled 100 yr Flow
Areas 3 and 7 (Cistern)	399.02	0.88		
Area 5 (Rooftop)	917.52	0.90	3.78	
Area 8 (Uncontrolled)	86.57	0.90	N/A	3.87
		Sum 1	:100 year Flows :	21.09

Conclusion:
The sum of all 100 year flows (ICD and uncontrolled) is 21.09 L/s, which matches the allowable peak flow of 21.09 L/s. The SWM criterion on Gilmour Street is met.



267 O'Connor Allowable Peak Flow & SWM Calculations

Phase 1 - North Tower - Areas To MacLaren (SWM Calculations):

Area 2	
Roof (m2)	971.22
C =	0.90
ICD =	3.78
Storage Volume (m3)	87.41

Time	Intensity	Qp	Qp	Qp	Max Volume
(min)	1:100 Yr	1:100 Yr	Rooftop ICD	stored	Requirement
	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
20	119.95	29.15	3.78	25.37	30.44
25	103.85	25.23	3.78	21.45	32.18
30	91.87	22.32	3.78	18.54	33.38
35	82.58	20.07	3.78	16.29	34.20
40	75.15	18.26	3.78	14.48	34.75
45	69.05	16.78	3.78	13.00	35.10
50	63.95	15.54	3.78	11.76	35.28
55	59.62	14.49	3.78	10.71	35.34
60	55.89	13.58	3.78	9.80	35.29
65	52.65	12.79	3.78	9.01	35.15
70	49.79	12.10	3.78	8.32	34.94
75	47.26	11.48	3.78	7.70	34.66
80	44 99	10.93	3.78	7 15	34.33

The following assumptions were made in regard to rooftop storage:

Phase 1 - North Tower - MacLaren

Rooftop flow = Roof 3.78 L/s 971.220 m2 582.732 m2 60% storage = Vol. @ 6" ponding = 87.41 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 35.34 m3 under the 1:100 year event.

Based on the above assumption (60% of rooftop used as storage), sufficient rooftop storage (87.4 m3) will be provided to detain the 1:100 yr on the rooftop Hence, the SWM target will, therefore, be met for Area 2. There will not be any overtopping during the 1:100 yearevent

Area 9 - Uncontrolled - MacLaren
Pops (m2)
C =
ICD =
No Storage Volume 56.320 0.90 N/A

Time	Intensity	Qp	Qp	Qp	Max Volume
(min)	1:100 Yr	1:100 Yr	ICD	stored	Requirement
	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
10	178.56	2.52	N/A	0.00	0.00
15	142.89	2.01	N/A	0.00	0.00
20	119.95	1.69	N/A	0.00	0.00
25	103.85	1.46	N/A	0.00	0.00
30	91.87	1.29	N/A	0.00	0.00
35	82.58	1.16	N/A	0.00	0.00
40	75.15	1.06	N/A	0.00	0.00
45	69.05	0.97	N/A	0.00	0.00
50	63.95	0.90	N/A	0.00	0.00
55	59.62	0.84	N/A	0.00	0.00
60	55.89	0.79	N/A	0.00	0.00
65	52.65	0.74	N/A	0.00	0.00

Based on the above SWM calculations, flows of 2.52 L/s will sheet flow uncontrolled to MacLaren Street

North Tower - Phase 1 - Underground Cistern - Storage Calculation - MacLaren	
Areas 1, 4, and 6	1217
C =	0.89
Cistern ICD (50% of 4.44 L/s)	2.22
Storage Volume (m3)	55.07

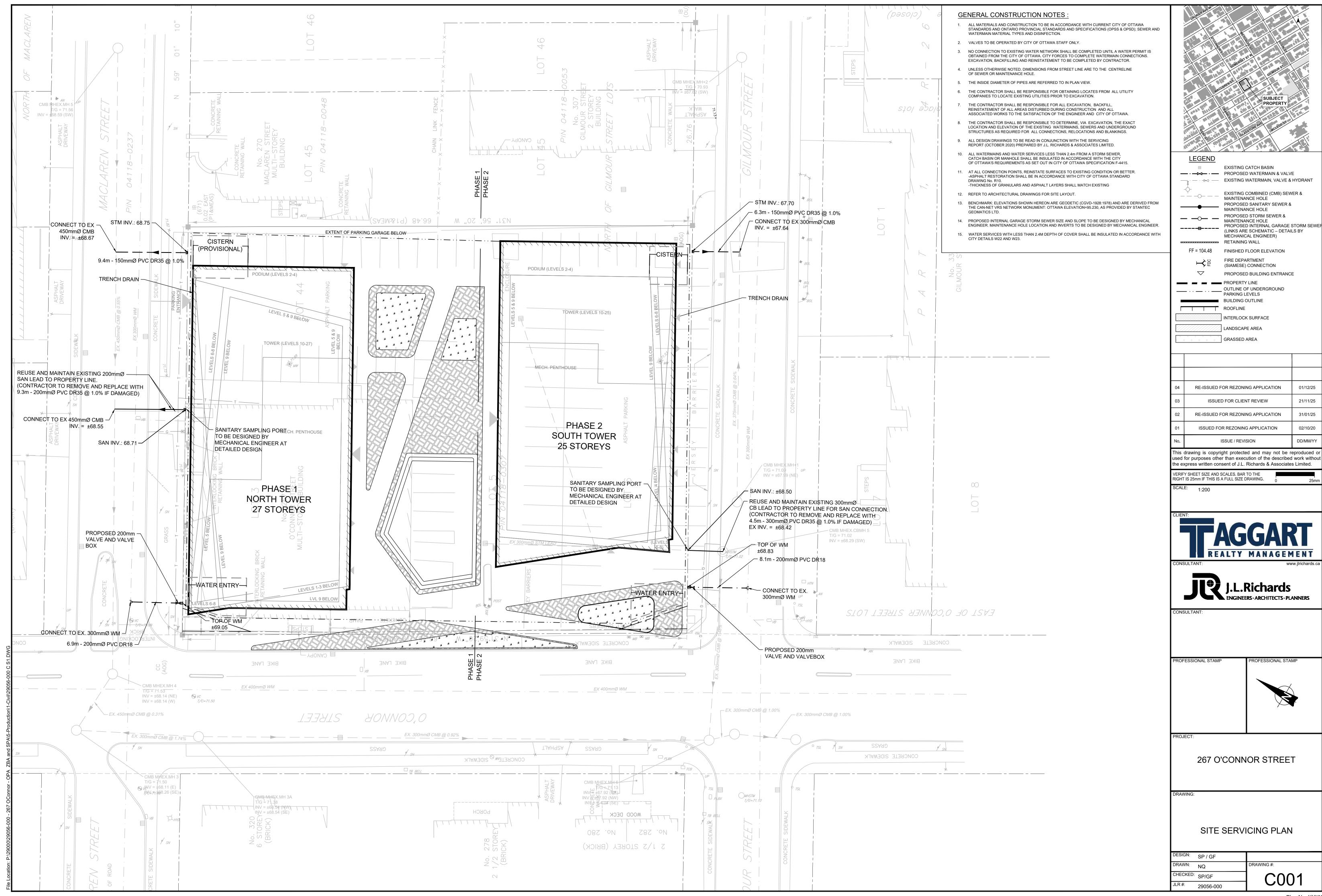
Time	Intensity	Qp	Qp	Qp	Max Volume
(min)	1:100 Yr	1:100 Yr	ICD	stored	Requirement
	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
100	37.90	11.37	2.22	9.15	54.90
105	36.50	10.95	2.22	8.73	54.99
110	35.20	10.56	2.22	8.34	55.05
115	34.01	10.20	2.22	7.98	55.07
120	32.89	9.87	2.22	7.65	55.07
125	31.86	9.56	2.22	7.34	55.04
130	30.90	9.27	2.22	7.05	54.98

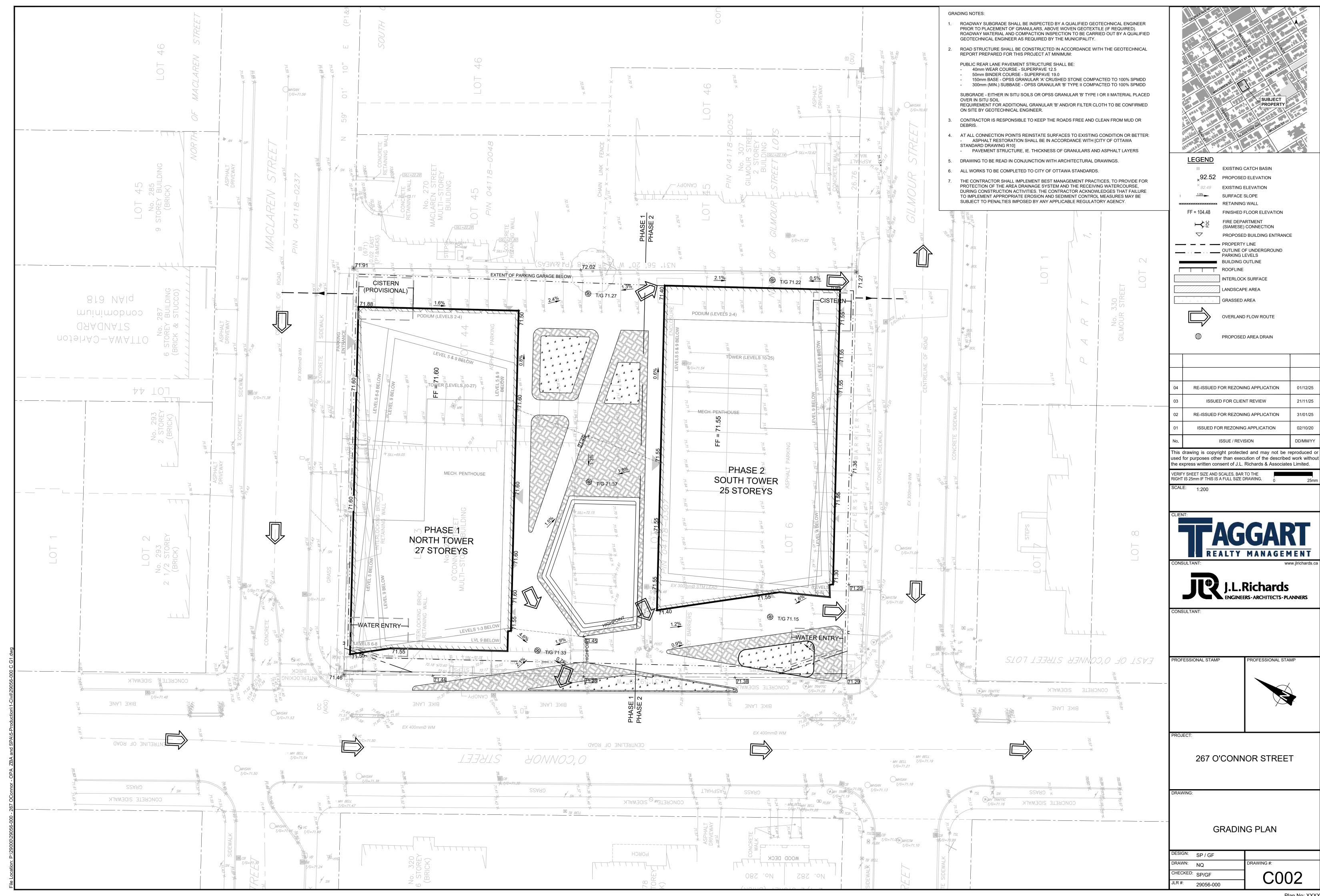
The SWM Calculations (above) shows Cistern storage volume requirements of 55.07 m3 under the 1:100 year. The cistern to be equipped with an overflow pipe by the mechanical engineer to convey the events over the 1:100-year peak flow.

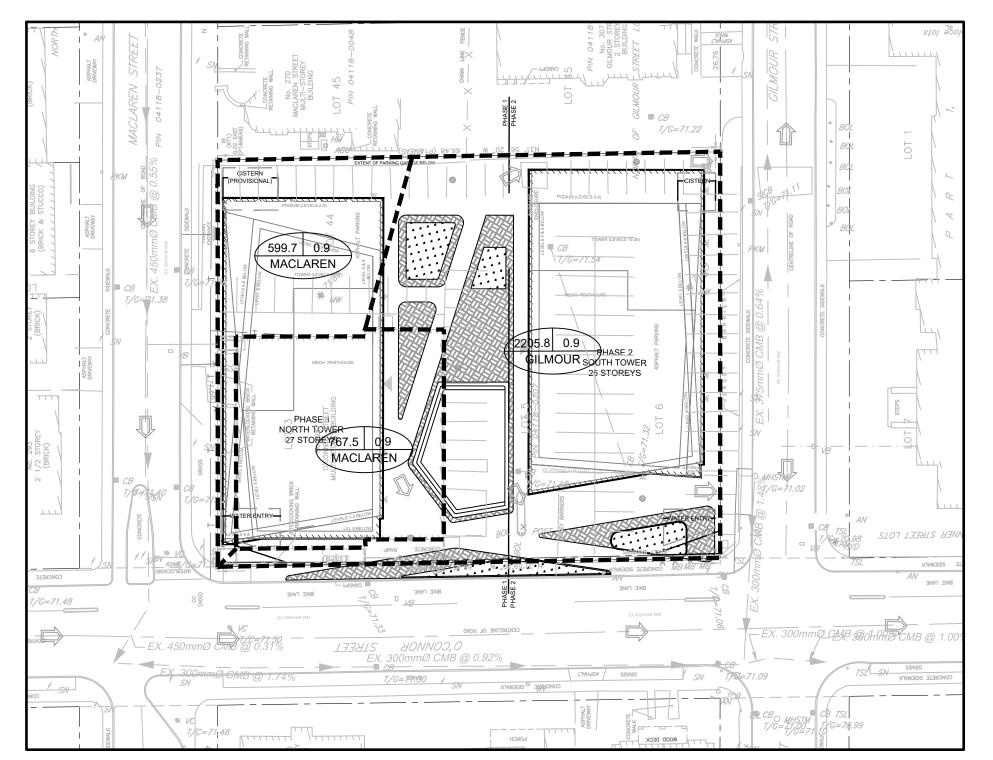
Summary of Areas to MacLaren Street (Phase 1):

Area	Area	C-Factor	ICD Flow	Uncontrolled
No.	(m2)		100 yr	100 yr Flow
Areas 1, 4 and 6 (Cistern)	1217.13	0.89	4.44	
Area 2 (Rooftop)	971.22	0.90	3.78	
Area 9 (Uncontrolled)	56.32	0.90	N/A	2.52
		Sum 1	:100 year Flows :	10.74

Conclusion:
The sum of all 100 year flows (ICD and uncontrolled) is 10.74 L/s which matches the allowable peak flow of 10.74 L/s. The SWM criterion on MacLaren Street is met.







STORMWATER MANAGEMENT REQUIREMENTS:

PRE-DEVELOPMENT PEAK FLOWS (ALLOWABLE PEAK FLOWS) TO BE SET BASED ON RUN-OFF COEFFICIENT OF C=0.40, 1:5 YEAR INTENSITY. WASTEWATER AND GROUNDWATER CONTRIBUTIONS SUBTRACTED FROM ALLOWABLE

TO LIMIT POST-DEVELOPMENT FLOWS TO THE ALLOWABLE RELEASE RATE, THE MECHANICAL ENGINEER SHOULD IMPLEMENT THE FOLLOWING:

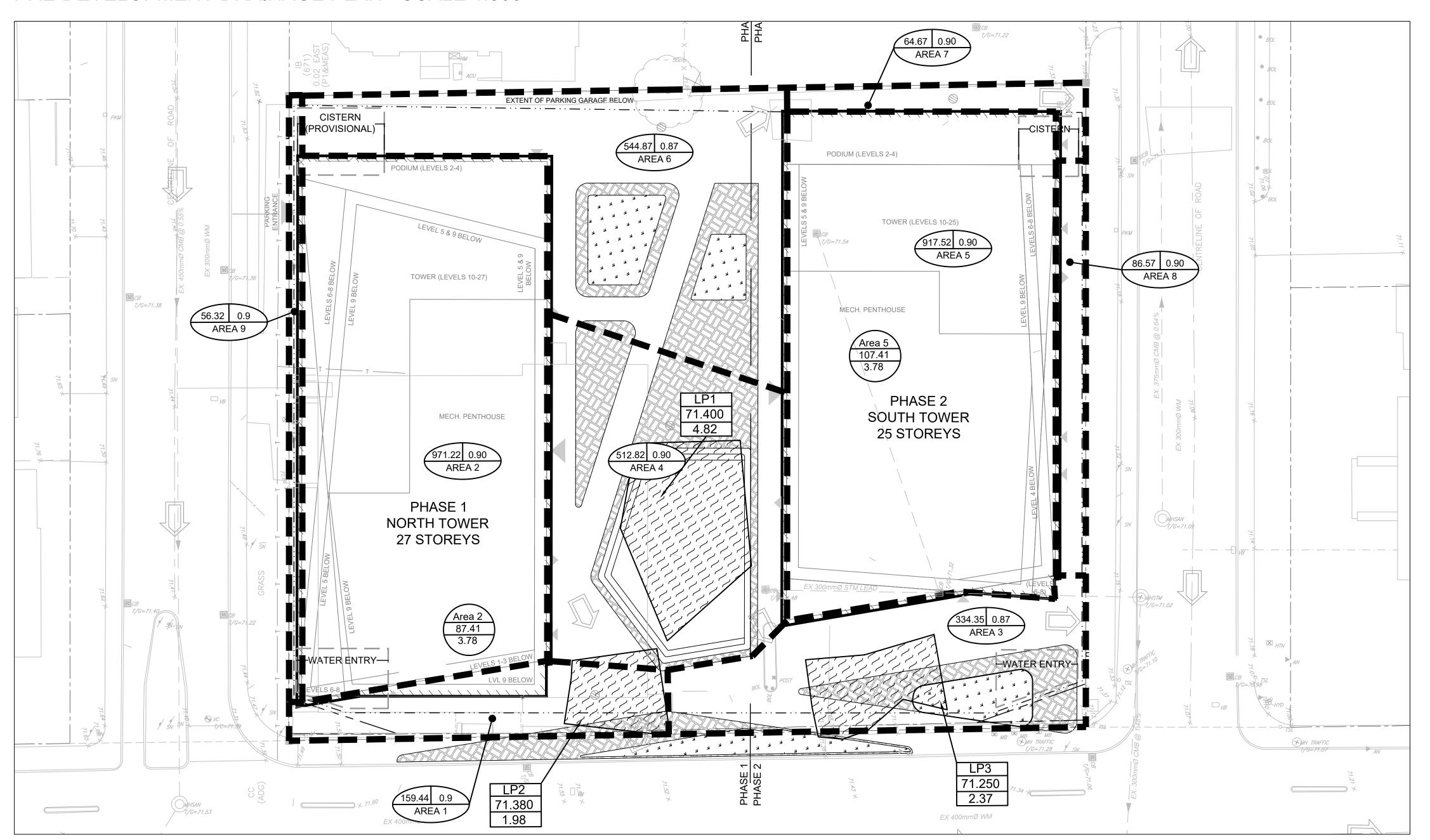
- AT-GRADE CATCH BASINS (4) SHOULD BE DESIGNED TO CONVEY FLOWS TO THE INTERNAL CISTERN FRONTING GILMOUR STREET. CISTERN TO BE SIZED TO STORE 42.57 m³ AND RESTRICTOR TO BE SIZED TO
- ROOFTOP STORAGE IDENTIFIED IN THE PONDING AREA TABLE SHOULD BE INCORPORATED INTO THE ROOFTOP DESIGNS FOR PHASE 1 (87.41 m³) AND PHASE 2 (107.41 m³) TOWERS.
- ROOFTOP FLOWS SHOULD BE LIMITED TO 3.78 L/S FOR EACH TOWER AS IDENTIFIED IN THE PONDING AREA
 TABLE. ROOFTOP FLOWS MUST BE CONVEYED TO A SURFACE EQUIPPED BY A ROOFTOP RESTRICTOR.
 THERE SHALL NOT BE ANY OVERTOPPING OF SCUPPERS UNTIL STORAGE IDENTIFIED IN THE PONDING AREA
 TABLE IS REACHED.

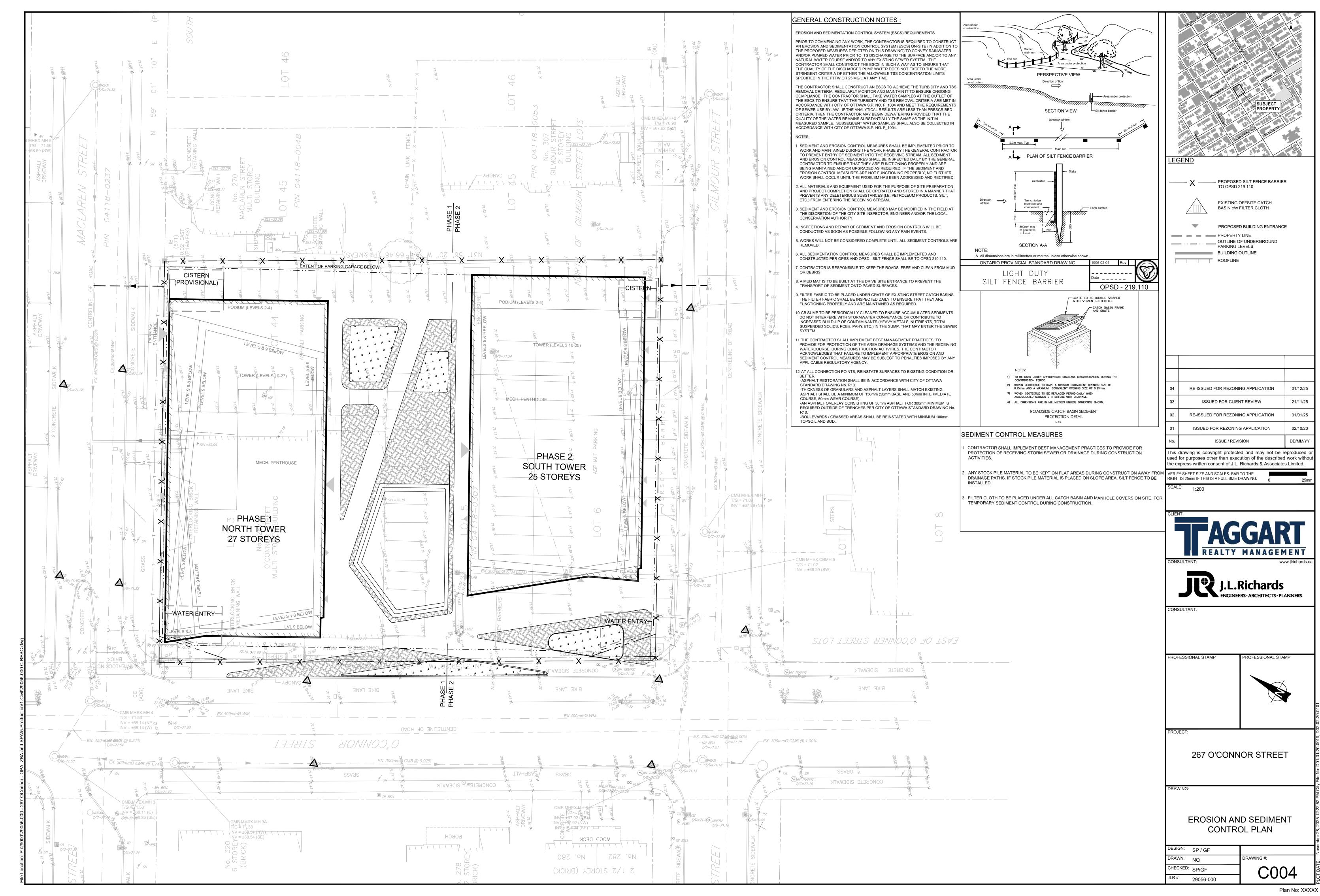
			Max Static	ICD Flow	Unc	Volum
Area	Area	Static	Surface Volume	Flow (L/s)	Flow (L/s)	(m3)
No.	(m2)	Depth	(m3)	100 yr	100 yr	Used
Gilmour Street outlet						
Area 5 (Rooftop)	917.52	0.15	82.58	3.78		32
Areas 3 and 7 (Cistern)	399.02			13.44		6
Area 8 (Uncontrolled)	86.57				3.87	
			1:100 year Flows	(ICD+Unc):	21.09	
			Criteria:		21.09	

			Max Static	ICD Flow	Unc	Volume
Area	Area	Static	Volume	Flow (L/s)	Flow (L/s)	(m3)
No.	(m2)	Depth	(m3)	100 yr	100 yr	Used
MacLarenStreet outlet						
Area 2 (Rooftop)	971.22	0.15	87.41	3.78		35.3
Areas 1, 4 and 6 (Cistern)	1217.13			4.44		55.0
Area 9 (Uncontrolled)	56.32				2.52	
1:100 year Flows (ICD+Unc): 10.74						
			Criteria:		10.74	

PRE-DEVELOPMENT DRAINAGE PLAN - SCALE 1:500

POST-DEVELOPMENT DRAINAGE PLAN - SCALE 1:200





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