JLR No.: 31261-000.1
Revision: 0

August 31, 2021

Prepared for:

1081 CARLING AVENUE 2019 CO-TENANCY
c/o Taggart Realty Management
225 Metcalfe Street, Suite 708
Ottawa, ON
K2P 1P9

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED
1565 Carling Avenue
Ottawa, ON
K1Z 8R1

Assessment of Adequacy of Public Services

1081 Carling Avenue, Ottawa ON

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

Table of Contents

List of Tables

List of Appendices

List of Figures

List of Drawings (back of report)

1.0 INTRODUCTION

1.1 Background

In 2021, J.L. Richards & Associates Limited (JLR) was retained by 1081 Carling Avenue 2019 Co-tenancy, care of Taggart Realty Management (TRM), to prepare an Assessment of Adequacy of Public Services (AAPS) Report and functional-level drawings of municipal infrastructure in support of two high-rise residential towers of both 22-storeys and 28-storeys sited at 1081 Carling Avenue in the City of Ottawa. This AAPS Report been prepared as supporting documentation to a Zoning By-Law Amendment (ZBLA) which will be reviewed by Urban Design review Panel (UDRP). This Report 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 November 2009 Servicing Study Guidelines for Development Applications in the City of Ottawa (City);
ii) the Ottawa Sewer Design Guidelines (2012) and associated Technical Bulletins (Section 1.4);
iii) the discussions held during a pre-consultation meeting with City staff, and
iv) subsequent Email correspondences with the City.

A copy of the Site Plan, Legal Plan and Topographical Survey is included in Appendix A while a copy of the pre-consultation meeting and follow-up Email correspondences 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 Ottawa Civic Hospital neighborhood, an area bounded by the Bronson Avenue to the east, by Highway 417 to the north, and by the Central Experimental Farm to the south.

As illustrated on Figure 1 (below), the subject site currently consists of an existing commercial building and by adjacent surrounding parking within the 1081 Carling Avenue parcel. The site currently consists of a combination of asphalt and building which makes the subject site fully impervious.

Figure 1: Site Plan Location

The subject parcels amount to ±4293 m^2. Under the Zoning By-Law (ZBL), the subject properties are zoned AM2 H(11) and AM10[2196]. The façade of the existing building is fronting on Carling Avenue and access to a parking area off Hamilton Avenue and to another existing parking annex on Parkdale Avenue.

TRM proposes to redevelop the subject property with two high-rise residential condominium towers as follows:

- Step 1: The existing building would be demolished.
- Step 2: Construct the both mid-rise 22-storey and 28-storey residential condominiums building (204 and 258 units respectively).

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

1.3 Existing Infrastructure

A review of existing civil drawings was carried out in the vicinity of the site. Available information has been included in Appendix C. Based on the review of the available information, the following infrastructure has been identified to exist within the Hamilton Avenue south, Parkdale Avenue and Carling Avenue Right-Of-Way (R.O.W.):

Watermains:

- 152 mm diameter unlined cast iron watermain located within Hamilton Avenue ROW;
- 305 mm diameter PVC located within Parkdale Avenue ROW
- 406 mm diameter unlined cast iron watermain located withing Carling Avenue ROW

Based on the review of “geoOttawa”, the following four (4) hydrants are located within the prescribed distances of ISTB-2018-02, in close proximity of the subject property:

- One (1) hydrant is located on the southwest corner of the property at the intersection of Hamilton Avenue south and Carling Avenue intersection;
- One (1) hydrant is located within 3 m of the northwest corner of the property along Hamilton Avenue;
- One (1) hydrant is located within 37 m from the southwest corner of the property along Carling Avenue; and
- One (1) hydrant is located within 18 m form the northeast corner of the property, in front of civic address 751 Parkdale Avenue;

Sanitary Sewers:

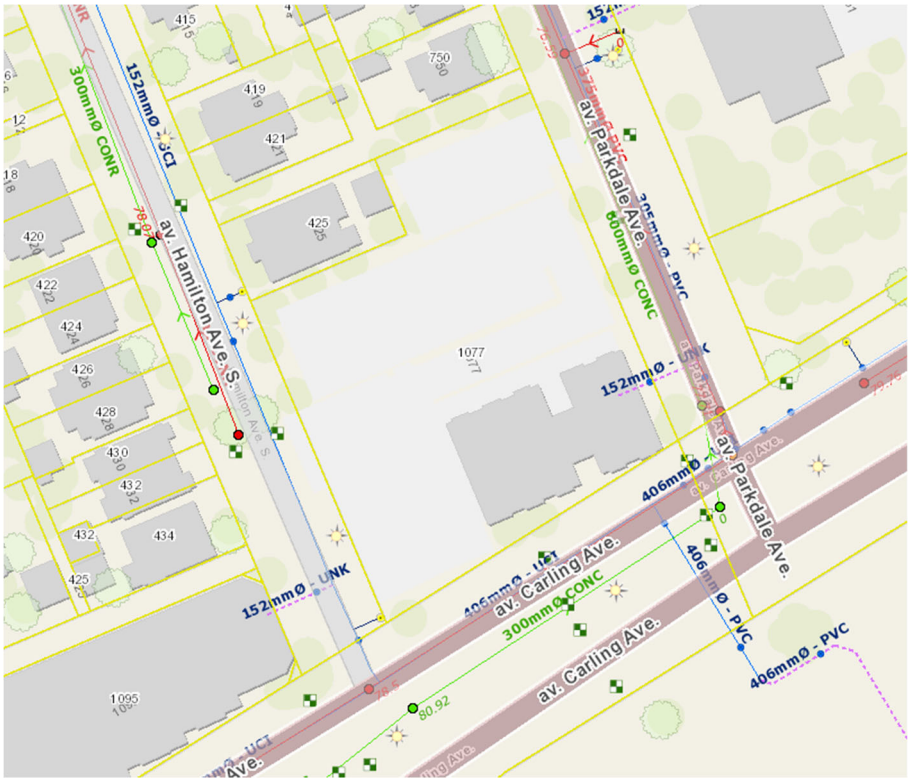
- 225 mm diameter sanitary sewer located within Carling Avenue ROW (flowing east). This sanitary sewer eventually discharges into to the 375 mm diameter Parkdale Avenue’s sanitary sewer, which in turn outlets into the Robert O. Pickard Environmental Centre (ROPEC) via a series of trunk sanitary sewers;
- 300 mm diameter sanitary sewer located within the Hamilton Avenue south ROW. This sanitary sewer also outlets to ROPEC via a series of trunk sanitary sewers.

Storm Sewers:

- There is an on-site catch basin (CB) in the parking area at the end of the parking ramp connected to the 300 mm diameter concrete storm sewer with Hamilton Avenue south ROW.
- 300 mm diameter concrete storm sewer located within Carling Avenue ROW. This sewer outlets to the 600 mm concrete storm sewer located within the Parkdale Avenue ROW.

Figure 2 below shows the existing infrastructure near the property parcel.

Figure 2: Existing Infrastructure



1.4 Functional Servicing

The existing servicing and connections to off-site linear infrastructure is summarized in Section 1.3 and 1.4. Based on the above-noted connections with existing infrastructure, the following proposed servicing is envisioned:

Water Servicing: Proposed water service lateral for the East Tower to connect to the existing Parkdale Avenue 305 mm diameter watermain. Given the population and associated demands, a dual water service lateral is proposed with an isolation valve to provide a redundant supply to the East Tower. This connection is consistent with the existing condition. Existing water service lateral to be re-used, if the condition is acceptable and sufficient in size to meet the pressure constraints. Proposed water service lateral for the West Tower to connect to the existing 152 mm diameter Hamilton Avenue. Given the population and associated demands, a dual water service lateral is proposed with an isolation valve to provide a redundant supply to the West Tower. The service laterals for the East and West Towers will be sized to provide domestic and sprinkler system supply.

Wastewater: Proposed sanitary lateral for the east tower to connect to the existing Parkdale Avenue 375 mm diameter sanitary sewer. Proposed sanitary

lateral for the west tower to connect to the existing Hamilton Ave 300 mm diameter sanitary sewer.

Storm: Runoff generated from site to be directed towards the existing 600 mm diameter sewer on Parkdale Ave and existing 300 mm diameter sewer on Hamilton Ave. On-site storage and controls to be implemented to respect the storm discharge design criteria.

1.5 Municipal Design Guidelines

This AAPS and functional-level drawings were prepared in support of the ZBLA in accordance with the following:

Ottawa Sewer Design Guidelines (October 2012) complete with the following Technical Bulletins;

- ISTB-2012-01;
- ISTDB-2014-01;
- ISTDB-2016-01;
- ISTDB-2018-01;
- ISTDB-2019-01; and
- ISTDB-2019-02;

City of Ottawa Water Distribution Guidelines complete with the following Technical Bulletins:

- ISTDB-2010-02;
- ISTDB-2014-02; and
- ISTDB-2018-02.

Detail Drawings as well as well as Sewer Material Specifications including:

- Sewer Connection (2003-513) and Sewer Use (2003-514) By-Laws
- Watermains/Services Material Specifications as well as Water and Road Standard Detail Drawings
- Water By-Law (2018-167)

1.6 Pre-Consultation, Permits and Approvals

A pre-consultation meeting was held between Taggart and the City of Ottawa via a Teams Meeting on June 30, 2021 (refer to Appendix B for a copy of the pre-consultation meeting notes).

Once the AAPS Report is approved under the joint ZBLA, the redevelopment of the above-referenced property will be subject to the municipal Site Plan control approval process with the City of Ottawa. At such time, the City of Ottawa Development Servicing Study Checklist and an Application will be completed.

2.0 WATER SERVICING

2.1 Water Supply and Design Criteria

A Hydraulic Network Analysis (HNA) was carried out for the proposed site to confirm that the existing watermain and water service can provide adequate supply while complying with both the Ottawa Design Guidelines for Water Distribution (July 2010) and Technical Bulletins ISDTB-2014-02 and ISTB-2018-02.

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

- Under maximum hourly demand conditions (peak hour), the pressures shall not be less than 276 kPa;
- During periods of maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 140 kPa (20 psi);
- In accordance with the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi);
- The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 689 kPa (100 psi); and
- Feedermains, which have been provided primarily for the purpose of redundancy, shall meet, at a minimum, the basic day plus fire flow demand.

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

Table 2-1: Water Design Criteria

Design Criteria	Design Value
Population > 500	
Residential average demand	280 L/cap/day
Residential maximum demand	2.5 x Avg
Residential peak hour	2.2 x Max Day
Fire Flow Requirements	
Municipal ROW	F.U.S.
Within Private Property	OBC
Pressure/Flow	
Peak hour	>275 kPa (40 psi)
Maximum day plus fire flow	>140 kPa (20 psi)
Minimum hour (maximum HGL)	<552 kPa (80 psi)

2.2 Domestic Water Demands

The water demands presented in this section reflect the unit count proposed on the Site Plan. Domestic water demands were calculated for two high-rise residential towers (22-storeys and 28-storeys), with a total unit count of 462. The calculations presented are based on 258-unit and 204-unit for the Eastern (Parkdale) and Western (Hamilton) Towers, respectively.

The residential consumption rate for average day demand was set to 280 L/c/d as instructed by the City based on Technical Bulletin ISTB-2018-01. Since receiving the boundary conditions from the City (see Appendix D), the site plan has changed slightly to reduce the number of units in both proposed high-rise residential towers. As a result, the boundary conditions provided by the City are expected to remain applicable. Table 2-2 summarizes the water demands based on the proposed site details and the design criteria from Table 2-1 reflecting the unit count of both Towers (refer to Appendix D for detailed calculations).

Table 2-2: Water Consumption Rates

Demand Scenario	Water Demand Eastern Tower (L/s)	Water Demand Western Tower (L/s)
Average Day	1.51	1.19
Maximum Day	3.77	2.98
Peak Hour	8.29	6.56

2.3 Proposed Water Servicing

It is proposed that water supply be provided by extending the existing 150 mm water service connection from the 305 mm diameter watermain on Parkdale Avenue to the Eastern Tower. Similarly, supply to the Western Tower will be provided by a proposed 150 mm diameter water service lateral which will be connected to the existing Hamilton Avenue 150 mm diameter watermain. Given that the demand of both Towers exceeds 50 m^3, dual water service laterals equipped with an isolation valve is proposed for the Eastern and Western Towers as per Section 4.3.1. of the Design Guidelines.

The watermain roughness coefficient for the 150 mm diameter water services was set to 100 in accordance with Section 4.2.12. of the Design Guidelines. Furthermore, the internal pipe diameter for the 150 mm water services was analyzed as 155 mm based on Section 4.3.5. of the Design Guidelines.

2.4 Required Fire Flow

In terms of the required fire flow (RFF) within the City of Ottawa, water supply within the municipal right-of-way (ROW) must be estimated per the guidance of the Fire Underwriters Survey (FUS) for the type of development being proposed. The required fire flow (RFF) was calculated for the 22-storey west tower and the 28-storey east tower while considering material, height of structure, exposure, etc. in accordance with ISDTB-2018-02 (refer to Appendix D for detailed calculations). However, NFPA 24 is the standard for the Installation of Private Fire Service Watermains and their Appurtenances. The sizing of private service fire mains for fire protection is detailed in

Chapter 13 of NFPA 13. The design should consider the type of construction for the given occupancy type, fire and pressure and the adequacy of the water supply.

Boundary conditions (BC) were requested from the City along the existing watermain on both Parkdale Avenue and Hamilton Avenue. Given that both Towers will be equipped with a sprinkler system, the BC was generated from the RFF based on the OBC (NFPA 13) for the building type and occupancy. The boundary conditions received from the City are summarized in Table 2-3 and a copy of the email correspondence can be found in Appendix D.

Table 2-3: Hydraulic Boundary Conditions

Water Demand Scenario	Head on Parkdale Avenue (m)	Head on Hamilton Avenue (m)
Peak Hour	123.3	123.3
Maximum HGL	132.3	132.2
Max. Day + Fire Flow per OBC (69.2 *L/s)*	125.2	117.6

2.5 Headloss Calculations

The proposed functional servicing as presented on the Functional Servicing, Grading, and Erosion and Sediment Control Plan (Drawing F-SGE) was evaluated under the demand scenarios listed in Section 2.2. Supply to both Towers would be achieved via a 150 mm diameter water service lateral; the existing 150 mm diameter service would be extended to the Eastern Tower while the proposed 150 mm diameter water service lateral would be constructed off the existing Hamilton Avenue 150 mm diameter watermain. The length of this service lateral to the mechanical room was estimated to ±14 m and ±7.0 m for the Eastern and Western Towers, respectively. These lengths have been used to evaluate the expected headloss along both water laterals.

Headlosses were calculated along both 150 mm diameter service laterals using the Hazen-Williams headloss equation. The operating pressures at the Eastern and Western Towers (finished floor elevations) were calculated using the water demand scenarios listed in Table 2-2. The Headloss Calculation Spreadsheet (Appendix D4) summarizes the operating pressures estimated at both Towers (mechanical room) under peak hour, maximum pressure, and maximum day plus fire flow scenarios. Detailed calculations for each water demand scenario are shown in Appendix D.

2.5.1 Peak Hour

The peak hour demand shown in Table 2-2 for the Eastern and Western Towers was applied along both 150 mm diameter service laterals. Using the boundary conditions shown in Table 2-3, the anticipated pressure at the building was found to be 402 kPa (58.4 psi) and 402 kPa (58.2 psi) for the Eastern and Western Towers, respectively. Based on the calculated results, the minimum pressure criterion of 276 kPa (40 psi) is exceeded for both Towers.

2.5.2 Maximum Day Plus Fire Flow

Given the site's usage as a private high-rise residential development and the fact that the buildings will incorporate a fire pump and sprinkler system (designed to meet the Ontario Building Code (OBC)), fire flow protection within this private property must comply with Section 3.2.5.7 of the OBC which states that NFPA 13 should be used to determine both sprinkler and hose stream demands.

The headloss calculation was, therefore, carried out for the RFF using NFPA 13 which is based on the hose stream allowance (per Table 11.2.3.1.2 of NFPA) & sprinkler system allowance (per Table 11.2.2.1 of NFPA). Based on the building's classification, both components total 4,150 L/min (69.2 L/s).

By applying the boundary conditions shown in Table 2-3, the pressure at the building is estimated to be 400 kPa (58.0 psi) and 336 kPa (48.7 psi) for the Eastern and Western Towers, respectively. These pressures exceed the Design Guidelines' requirement of 140 kPa (20 psi).

2.5.3 Maximum HGL

The Water Design Guidelines require that a high-pressure check (maximum hydraulic grade elevation) be performed to ensure that the maximum pressure constraint of 552 kPa (80 psi) is not exceeded. Based on a zero (0 L/s) demand and the maximum HGL boundary condition at each of the buildings (refer to Table 2-3), a maximum pressure of 490 kPa (71.1 psi) is expected at each of the Towers. This pressure is below the maximum pressure constraint of 552 kPa (80 psi) and pressure reducing valves (PRV) is not required on either of the Towers.

Domestic and fire pumps as well as the sprinkler system will be designed at the detailed design stage by the Owner's mechanical engineer.

2.6 Summary and Conclusions

Based on the HNA presented above, it is expected that both 150 mm diameter water service laterals along with the reductant 150 mm diameter water service (with an isolation valve) can provide adequate domestic supply to each of the Towers. Furthermore, fire protection as per the OBC can be met recognizing that domestic and fire pumps will be sized at detailed design by the Owner's mechanical engineer.

3.0 WASTEWATER SERVICING

3.1 Existing Conditions

The existing building is currently being serviced by a 150 mm diameter sanitary lateral connected to the existing 375 mm diameter sanitary sewer on Parkdale Ave.

3.2 Design Criteria

The sanitary service for the proposed towers will be 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 3-4.

Table 3-4: 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
Infiltration Allowance 0.05 L/s/ha (dry I/I) 0.28 L/s/ha (wet I/I)	0.33 L/s/ha	ISTB-2018-01
Minimum velocity	0.6 m/s	OSDG Section 6.1.2.2
Maximum velocity	3.0 m/s	OSDG Section 6.1.2.2
Manning Roughness Coefficient (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 two high-rise buildings will be accommodated by its own sanitary lateral. The 22-storey west tower will be serviced via a sanitary connection to the existing 300 mm diameter sewer on Hamilton Ave and the 28-storey east tower will be serviced via a sanitary connection to the existing 375 mm diameter sanitary sewer on Parkdale Ave.

Based on the proposed densities for apartment buildings (as recommended by the OSDG), the peak wastewater flow was calculated based on the design value of 280 L per capita per day and an overall population of 367 for the west tower and 464 for the east tower as summarized in the above table. For the west tower, a peak wastewater flow of 4.12 L/s was calculated (refer to Appendix E for Detailed Wastewater Flow Calculations) based on a Harmon peaking factor, and a total infiltration allowance of 0.03 L/s 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. For the east tower, a peak wastewater flow of 5.14 L/s was calculated. The City of Ottawa has confirmed that both the Parkdale Ave and Hamilton Ave existing sanitary sewers have sufficient residual capacity to accommodate the wastewater flows for this redevelopment. The City of Ottawa correspondence confirming the sanitary capacity is presented in Appendix E.

3.4 Summary and Conclusions

Section 3.0 and the calculations presented in Appendix E demonstrate that the site can be serviced using the existing infrastructure within vicinity of the site.

4.0 STORM SERVICING AND STORMWATER MANAGEMENT

4.1 Existing Conditions

The following stormwater infrastructure is located adjacent to the site:

- 300mm diameter storm sewer on Hamilton Avenue South
- 600m diameter storm sewer on Parkdale Avenue
- 300mm diameter storm sewer on Carling Avenue

The existing building, multi-storey parking, parking lot to the north of the existing building and a frontage on Parkdale Ave are all tributary to the Parkdale Avenue Storm Sewer. A portion of frontage of Carling Ave on the property parcel is tributary to the 300mm diameter sewer on Carling. The remainder of the site consisting of an at-grade parking lot is tributary to the 300mm Ave. sewer on Hamilton Ave. Existing condition drainage areas are provided in Appendix F.

4.2 Storm Criteria

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

- The allowable peak flow shall be estimated based on a 1:2-year intensity which is to be calculated based on a Runoff Coefficient (C-Factor) of the lesser of the existing conditions and shall not exceed 0.50.

- The allowable peak flow is to be calculated using the 1:2-year 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 15 mins.

- 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 to consist of rooftop storage, at grade ponding, underground cistern or a combination of these measures.

- The subject property is tributary to existing storm sewers and consists of rooftops and at grade amenity areas. The Rideau Valley Conservation Authority (RVCA) has confirmed that no additional water quality protections are required for this site. Best management practices will be implemented. Correspondence is presented in Appendix B.

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 aggregate sum of the allowable peak flows set by the storm criteria.

To evaluate the allowable peak flows, the various areas were delineated based on their type and outlet locations. Pre-development drainage areas, and peak flow calculations are presented in Appendix F and summarized in the table below.

Table 4-5: Allowable Stormwater Release Rates

Storm Sewer Outlet	Area (m2)	Allowable Release Rate (L/s)
300mm dia. Hamilton Sewer	1448	12.15
600mm dia. Parkdale Sewer	2588	21.8
375mm dia. Carling Sewer	16	0.14

4.4 Storm Servicing Strategy

On site storage requirements were calculated based on the Modified Rational Method (MRM). In order to limit the post development peak flows to those presented in Table 4-5, flow restrictors will be implemented with on-site storage solutions. The final storage solution and servicing layout will be determined at detailed design; however, storage calculations for functional design were undertaken and are provided in Appendix F. A summary of the results is presented in the table below.

Table 4-6: Post Development Release Rates & Storage

Outlet	Post Development Tributary area (m2)	Allowable Release Rate (L/s)	Required Storage (m3)	Storage Provided (m3)
300mm dia. Hamilton Sewer	765	12.15	17.16	61.20
600mm dia. Parkdale Sewer	3287	21.80	104.47	152.19

The results summarized in Table 4-6 are supported by calculations presented in Appendix F. These calculations demonstrate that adequate storage can be provided to respect the stormwater management criteria described in Section 4.2.

It is proposed to utilize rooftop storage where feasible and supplement any further storage requirements with an on-site cistern to be located within the underground parking lot. The

analysis presented above is meant to confirm that the site can be serviced and that the stormwater criteria can be met; however, they should not be interpreted as detailed design calculations. Surface ponding, detailed calculations for the proposed cistern and ponding volumes for the rooftop will be provided during detailed design once the site plan is finalized and more information is available.

4.5 Summary and Conclusions

The storm and stormwater management solutions presented in this AAPS Report were found to fulfill the water quantity and quality criteria presented in Section 4.2. The parameters adopted for the rooftop storage calculations (i.e., storage and capacity) will need to be reviewed by the Owner's mechanical engineer as the towers are designed. Similarly, the collection system and storage tank will be coordinated with the Owners mechanical engineer as the client moves forward with detailed design.

Desktop calculations (Appendix F) were carried out to assess the effectiveness of the proposed grading, servicing and stormwater management design under both the 1:100-year and CCE storms. This assessment has demonstrated that the rooftop controls along with a cistern could accommodate the 1:100-year and CCE storms while protecting the towers.

5.0 EROSION AND SEDIMENTATION CONTROL

At the onset of construction of the Condominium 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 FSGE):

- 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.

The proposed removal and reinstatement measure as well as the erosion control measures (refer to Drawing FSGE) 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.

This report has been prepared for the exclusive use of Taggart Realty Management (TRM) for the stated purpose, for the named facility. Its discussions and conclusions are summary in nature and cannot be properly 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 was prepared for the sole benefit and use of TRM and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Alexandre Tourigny, P.Eng.
Civil Engineer

Reviewed:

Guy Forget, P.Eng.
Senior Water Resources Engineer

PROJECT NORTH

- Proposed storm sewer
- Proposed sanitary sewer
- Proposed watermain

LIMIT OF UNDERGROUND PARKING (APPROX.)

Ex.150mm St CB lead

Ex.150mm St CB lead

Ex.150mm St CB lead

ST

SAN

WM

WM

WM

Ex.150mm SAN

Ex.150mm St

Ex.150mm WM

FF = 82.35

FF = 82.50

CARLING AVENUE

PARKDALE AVENUE

No.	ISSUE / REVISION	DD/MM/YY
2.	ISSUED TO CITY FOR REVIEW	26/08/21
1.	ISSUED FOR CLIENT REVIEW	5/08/21

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:200

0 1 2 5 10 15m

CLIENT:

TAGGART

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

1081 CARLING

DRAWING:

FUNCTIONAL SERVICING, GRADING and EROSION AND SEDIMENT CONTROL PLAN

DESIGN:	AT
DRAWN:	AT
CHECKED:	LD
JLR #:	31261-000

DRAWING #: F-SGE

File Location: P:\31000\31261-000 - 1081 Carling - ZBLA - Civil and Traffic\5Production\1-Civil\31261-000 C 01.dwg

PLOT DATE: Tuesday, August 3, 2021 1:26:01 PM

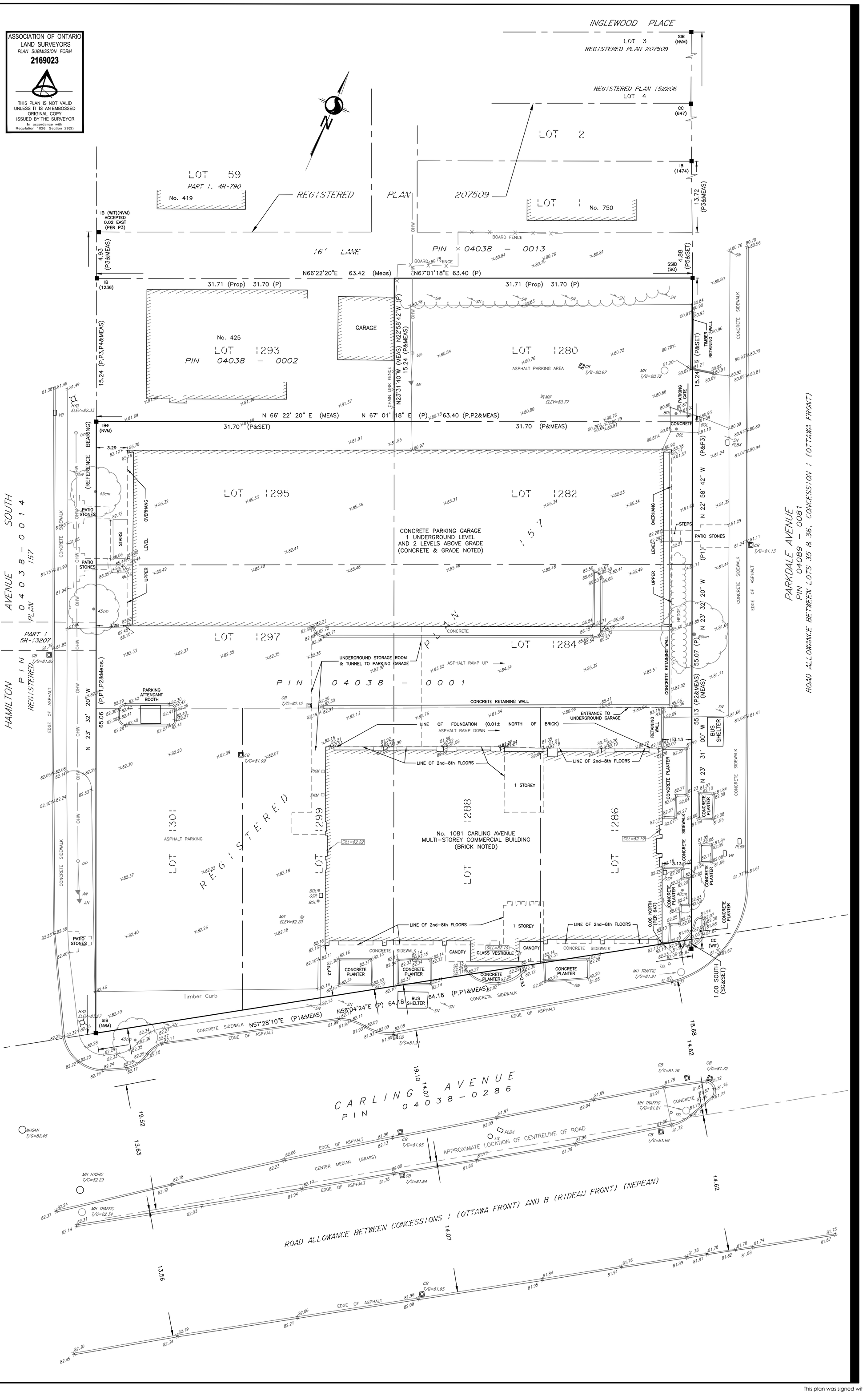
Appendix A

Site Plan and Legal Plans

11 June 2021 11:44 AM

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2169023

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)



Stantec

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

TOPOGRAPHIC PLAN OF
LOTS 1280, 1282,1284, 1286. 1295 1297 1299 AND 1301 REGISTERED PLAN 157 CITY OF OTTAWA

Scale 1:200

5 0 5 10 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 SHOWN HEREON ARE ASTRONOMIC AND ARE DERIVED FROM THE EASTERLY LIMIT OF HAMILTON AVENUE SOUTH SHOWN AS N23°32'20"W ON PLAN D-50, BA1486.

ELEVATION NOTE
ELEVATIONS SHOWN HEREON ARE GEODETIC VERTICAL DATUM (CGVD-1928:1978) AND ARE DERIVED FROM CAN NET NETWORK MONUMENT: OTTAWA ELEVATION 95.230..

LEGEND (IF APPLICABLE)

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
647	"	H.R. FARLEY, O.L.S.
1236	"	P.A. RIDDELL, O.L.S.
1474	"	M.E. RENAUD, O.L.S.
P	"	REGISTERED PLAN 157
P1	"	PLAN D-50, BA1486
P2	"	PLAN BY 647 DATED FEBRUARY 19, 1973
P3	"	PLAN BY 1474 DATED FEBRUARY 22, 2001
P4	"	PLAN BY 1236 DATED SEPT. 4, 1973
P5	"	REGISTERED PLAN 207509
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
AP	"	AIR PUMP
ANT	"	ANTENNA
BH	"	BOREHOLE
BIB	"	HOSE BIB
BKR	"	BIKE RACK
BENCH	"	BENCH
BOL	"	BOLLARD
BOUL	"	BOULDER
CB	"	CATCH BASIN
DCB	"	DOUBLE CB
CBMH	"	CB MANHOLE
DCBMH	"	DOUBLE CB MANHOLE
SICB	"	SIDE INLET CB
CHM	"	CHIMNEY
CO	"	CLEAN OUT
CSV	"	CURB STOP VALVE
DRN	"	DRAIN
EPOST	"	ELECTRICAL OUTLET
FP	"	FLAG POLE
FL	"	FLOOD LIGHT
FTF	"	FUEL TANK FILLER CAP
GC	"	GARBAGE CAN
GFL	"	PIPE FLANGE (GAS)
GFP	"	GAS FUEL PUMP
GP	"	POLE GUYWIRE
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
HIC	"	HICKENBOTTOM
HDS	"	HEADSTONE
HLS	"	HYDRO LIGHT STANDARD
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
LS	"	LIGHT STANDARD
MB	"	MAILBOX
MP	"	MONITORING PIN
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHB	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHSA	"	MAINTENANCE HOLE SANITARY
MHST	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
NPB	"	NEWS PAPER BOX
OLS	"	LIGHT STANDARD ORNAMENTAL
OW	"	OBSERVATION WELL
PKM	"	PARKING METER
PLBX	"	PULL BOX
PLQ	"	PLAQUE
PLR	"	PILLAR
RWSS	"	RAILWAY SWITCH STAND
SAT	"	SATELLITE DISH
SCLP	"	SCULPTURE
SCP	"	SUMP/CATCH PIT
SCV	"	SPRINKLER CONTROL VALVE
SH	"	SPRINKLER HEAD
SIA	"	SIAMESE CONNECTION
SN	"	SIGN
SPAN	"	SOLAR PANEL
SPT	"	SEPTIC TANK LID
TBL	"	TABLE
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
TPIT	"	TEST PIT
TSL	"	TRAFFIC SIGNAL LIGHT
UMB	"	MARKER BELL UNDERGROUND
UMC	"	MARKER CABLE UNDERGROUND
UMG	"	MARKER GAS UNDERGROUND
UMO	"	MARKER OIL UNDERGROUND
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
	"	TREE STUMP
	"	TREE CONIFEROUS
	"	TREE DECIDUOUS
OHW	OHW	OHW

OVERHEAD WIRE

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THE SURVEY WAS COMPLETED ON THE 1st DAY OF JUNE, 2021.

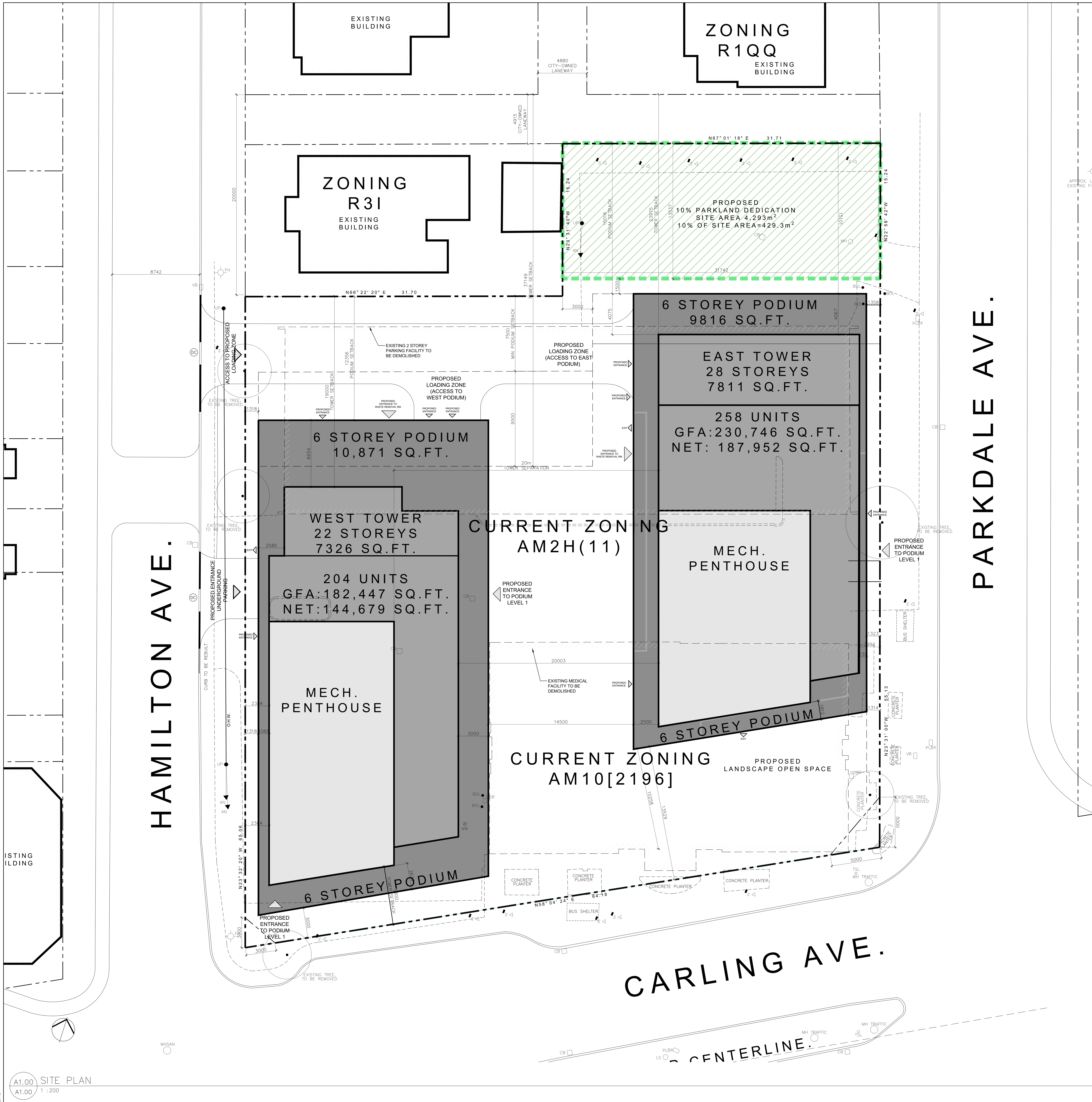
DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

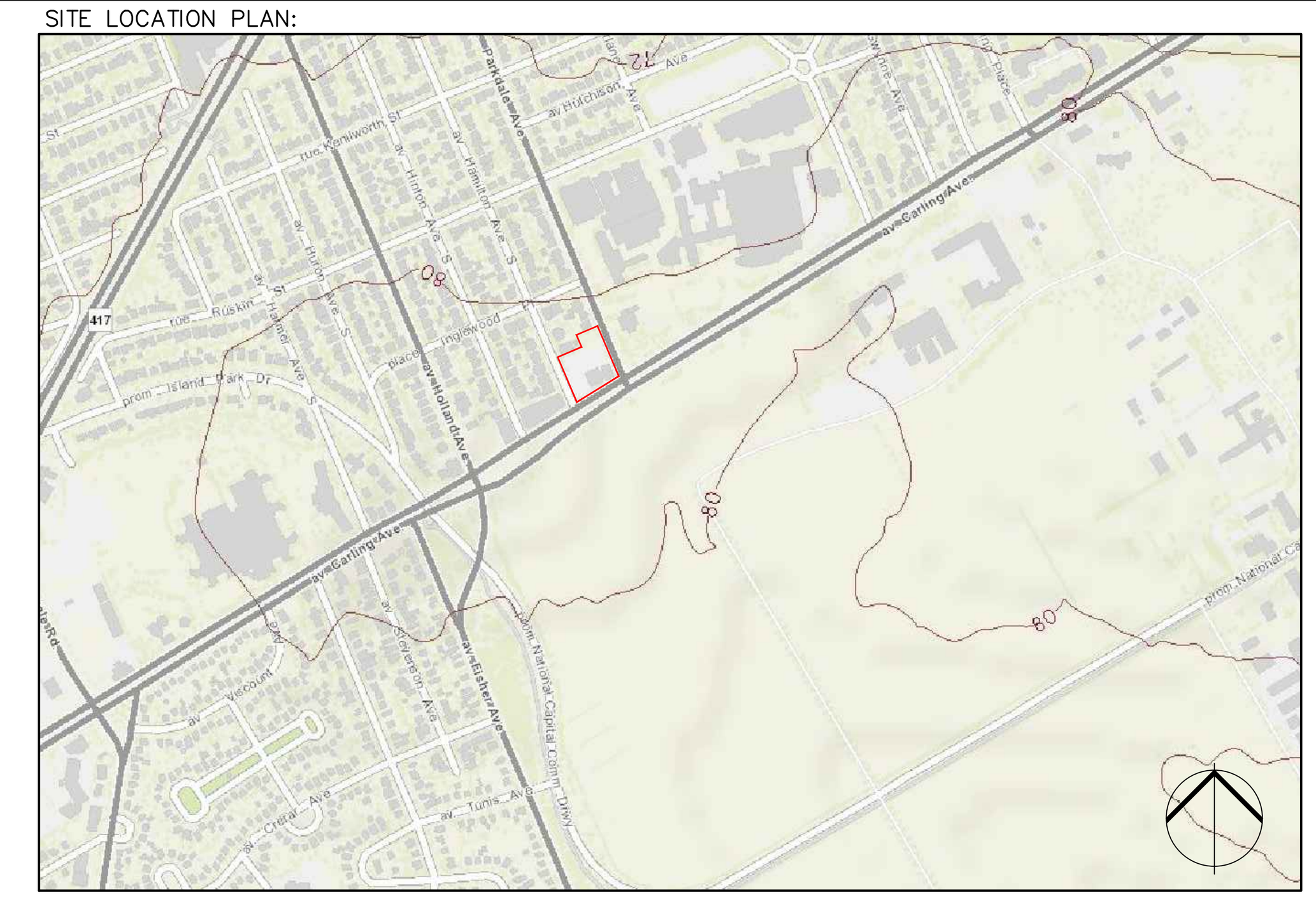
DRAWN: NJ CHECKED: BW PM: BW FIELD: AW/NB PROJECT No.: 161614366-111

This plan was signed with a scanned signature as a result of the Emergency Order related to the COVID-19 pandemic.

W:\active\161614366\topographical\drawing\161614366-111-03-c3d.dwg



SITE LOCATION PLAN:



ZONING NOTES:

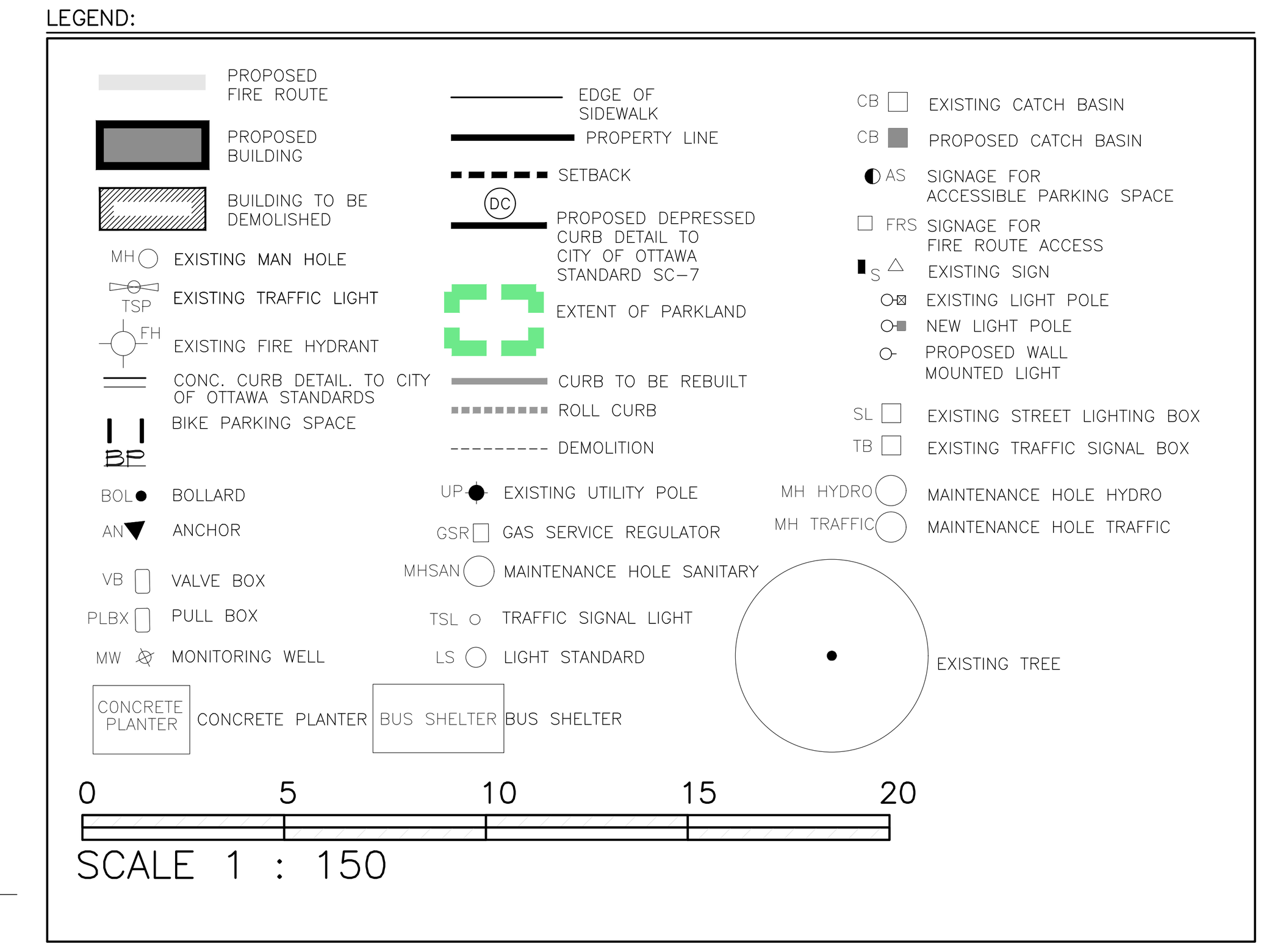
CURRENT ZONING: NORTH PARCEL **AM 2 H(11)**, SOUTH PARCEL **AM10[2196]**

LOT AREA : 4,293 m^2

DEVELOPMENT STATS PHASE 1

		REQUIRED	PROPOSED
LOT WIDTH			63.44m
LOT DEPTH			70.3m IRREGULAR
UNITS			
EAST TOWER UNITS			258
WEST TOWER UNITS			204
TOTAL UNITS			462
FRONT YARD SETBACK	CARLING AVENUE	3 m	5M
REAR YARD SETBACK		7.5 m	VARIES – 7.5 MIN.
CORNER SIDE YARD SETBACK	PARKDALE AVE.		1.25 m
CORNER SIDE YARD SETBACK	HAMILTON AVE.		1.25 m
MAXIMUM HEIGHT		30 m	
EAST TOWER			89 m
WEST TOWER			70 m
NUMBER OF STOREYS			
EAST TOWER			28 STOREYS
WEST TOWER			22 STOREYS
BUILDING AREA			
EAST TOWER			+/–21,437 m^2
WEST TOWER			+/–16,949 m^2

LEGEND:



SCALE 1 : 150

TAGGART REALTY MANAGEMENT

PROJECT TEAM

ARCHITECT
HOBIN ARCHITECTURE
PATRICK BISSON
T 613-238-7200

PLANING
FOTENN CONSULTANTS INC.
STEPHANIE MORRIS
T 613-730-5709

CIVIL
J.L. RICHARDS
LUCIE DALRYMPLE
T 613-913-4368

LANDSCAPE ARCHITECT
LEVSTEK LANDSCAPE ARCHITECTS LTD.
RUDY LEVSTEK
T 613-826-0518

TRANSPORTATION
PARSONS
MARK BAKER
T 613-222.-8234

ENVIRONMENTAL
GRADIENT WIND ENGINEERING
JOSHUA FOSTER
T 613-836-0634

SURVEYOR
STANTEC
BRIAN WEBSTER
T 613-229-7644

DRAFT

no.	date	revision
1	21-06-08	CITY OF OTTAWA PRECONSULTATION

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 pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
TAGGART REALTY
1081 CARLING AVE.
OTTAWA ON.

DRAWING TITLE:
SITE PLAN

DRAWN BY:	DATE:	SCALE:
PB	21-04-12	1:100

PROJECT: 2110

DRAWING NO.: A1.00

REVISION NO.:

Appendix B

Pre-Consultation Notes and
Email Correspondences

Pre-Application Consultation Meeting Notes

Property Address: 1081 Carling Avenue
File No: PC2021-0219
Date: Wednesday, June 30, 2021
Via Microsoft Teams

Attendees:

City of Ottawa

- Kimberley Baldwin, File Lead
- Holly Newitt, Student Planner
- Christopher Moise, Urban Design
- Nishant Jhamb, Engineering
- Wally Dubyk, Transportation
- Mark Richardson, Forestry
- Mike Russett, Parks

Applicant Team

- Paul Black, Fotenn
- Tamara Nahal, Fotenn
- Braden Walker, Taggart
- Derek Howe, Taggart
- Julie Taggart, Taggart
- Jeff Parkes, Taggart
- Kyle Kazda, Taggart
- Patrick Bisson, Hobin Architecture
- Mark Baker, Parsons
- Matt Mantle, Parsons
- Lucie Darlymple, JL Richards
- Alexandre Tourigny, JL Richards
- Guy Forget, JL Richards

Subject: 1081 Carling Avenue

Opening & attendee introduction

- Introduction of meeting attendees

Overview of proposal

Site context

- Bounded by three streets, Carling Avenue, Parkdale and Hamilton. Low-rise residential neighbourhood abutting the north property lines.
- Immediately east is an existing apartment building and the civic hospital
- Existing on site is an office building with surface and built parking
- Currently a split zoning designation across the site (AM10 [2196]– along Carling Avenue and AM2 H(11) – back portion of site)

- Close to proposed O-train station at Parkdale and Carling

Proposal
- Proposed two high rise buildings – 22 storeys (west tower) and 28 storeys (east tower). Each tower proposes includes a 6-storey podium.
- City road widening along Carling is planned but would like to discuss reducing this corridor
- Size of the site would trigger parkland dedication
- Transition has been explored through the High-rise Building Design Guidelines
- The east building was shifted away from Carling Avenue to provide an open landscaped area at the corner of Carling and Parkdale
- Two proposed access points for underground parking - one off of Parkdale and one off of Hamilton but layout is not confirmed

Preliminary comments and questions from staff and agencies:

<u>Planning (Kimberley Baldwin)</u>

- Designated Arterial Mainstreet in the Official Plan. Policies found in 3.6.3 of Plan
    - Policy 12 in 3.6.3 - High-rise buildings may only be permitted subject to a zoning amendment and where the building is located at a specific node (as described in the OP) and *where the development provides a community amenity and adequate transition is provided to adjacent low-rise.* The site is located at a node (adjacent to a Major Urban Facility). See below for further direction on how planning and urban design staff will evaluate this policy.
- Transition
    - The proposal will need to demonstrate adequate transition is provided to adjacent low-rise residential (see also Urban Design guidance below)
    - Adequate transition to rise from the maximum permitted height of adjacent residential – adjacent R3 zone permits a maximum height of 11 metres.
    - Additional visual analysis is required to assess what may be considered adequate transition to the sensitive low-rise neighbourhood to the north – see policies in Section 4.11, particularly policies 12 and 13, of the OP for further direction.
        - Eg. adequate transition accomplished through incremental changes in building height (angular planes) and building setbacks and stepbacks.
- High-rise buildings
    - See Policies for High-Rise Buildings in Policies 14-18 in Section 4.11 of the OP
        - Proposal to demonstrate how the base of the high-rise building respects the scale of adjacent residential and will relate positively to the proposed park (ie. limit shadowing, animating park)
        - Direction on tower separation and floor plates
    - Urban Design Guidelines for High-Rise Buildings
        - 23 metre separation between towers
        - 20 metre tower setback from abutting low-rise residential property lines (proposed east tower currently shown approximately 10 metres from adjacent residential property, proposed west tower 17 metres from adjacent residential property.)

    - Zoning performance standards (eg. setbacks) in the AM zone contemplates buildings up to 9 storeys in height. A high-rise building in this context will require a closer examination to determine appropriate setbacks for a high rise-built form (10+ storeys).
- Amenity Areas
    - A Shadow Analysis is required to evaluate the potential impacts of the development on the adjacent low-rise residential properties and the proposed park to the north.
        - Avoid shadow patterns on adjacent public and private spaces. (Policy 14 a) of 4.11)
        - Siting and design of buildings shall minimize undesirable impacts on the existing private amenity spaces of adjacent residential units (Policy 19 of 4.11)
- Public Art - Explore opportunities to provide public art on site. (Policy 21 of Section 4.11)

<u>Urban Design (Christopher Moise)</u>

- This proposal runs along one of the City's Design Priority Areas and must attend the City's UDRP for a formal visit once a full submission is made. However, we recommend the proposal attend an Informal visit (prior to a full submission and which is not a public meeting), with the City's UDRP to further discuss and evaluate various scenarios of development for the whole site;
- We have the following comments/questions relating to the proposed design:
    - In other locations where increased density are contemplated along Carling and where an established and sensitive residential community is adjacent we pay special attention to the potential impacts of height and how transition is being considered in addition to how the tall building guidelines are addressed;
    - **Transition**: Separation is one tool (minimum 20m which is not achieved for the west tower) but we also would like to see additional analysis using a 45 degree angular plane measured from the northern lot lines drawn from the allowable height of that zone;
    - **Tower separation**: Minimum 23m (not achieved);
    - **Floor plate maximums**: 750m2
    - **Podium scale**: The podium should investigate a transition of scale toward the north through stepping the massing;
    - We recommend that alternative massing be investigated and illustrated in the design brief to show some analysis of different approaches to the site. As there are already deficiencies in various high-rise guidelines we are not currently convinced that this site is large enough to accommodate two high-rise towers;
- A scoped Design Brief is a required submittal for all Site Plan/Re-zoning applications and can be combined with the Planning Rationale. Please see the Design Brief Terms of Reference provided and consult the City's website for details regarding the UDRP schedule.
- This is an exciting project in an area full of potential. We look forward to helping you achieve its goals with the highest level of design resolution. We are happy to assist and answer any questions regarding the above. Good luck.

<u>Parks Planning (Mike Russett)</u>

- 10% development area dedication requirement.
- If Section 37 is applicable, please direct to park design/construction.
- note potential for OBC Limiting Distance Agreement, and Limiting Distance Compensation Agreement requirements

Forestry (Mark Richardson)

Tree Conservation Report requirements:

- A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    - An approved TCR is a requirement of Site Plan approval.
- As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
- The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
    - If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
    - Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
- The TCR must list all trees on site by species, diameter and health condition
- Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
- The TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
- If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
- All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    - the location of tree protection fencing must be shown on a plan
    - show the critical root zone of the retained trees
    - if excavation will occur within the critical root zone, please show the limits of excavation
- The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
- For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

LP tree planting requirements:

- For additional information on the following please contact tracy.smith@Ottawa.ca
- Minimum Setbacks
    - Maintain 1.5m from sidewalk or MUP/cycle track.
    - Maintain 2.5m from curb
    - Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
    - Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
    - Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.
- Tree specifications
    - Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
    - Maximize the use of large deciduous species wherever possible to maximize future canopy coverage

    - Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
    - Plant native trees whenever possible
    - No root barriers, dead-man anchor systems, or planters are permitted.
    - No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)
- Hard surface planting
    - Curb style planter is highly recommended
    - No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
    - Trees are to be planted at grade
- Soil Volume
    - Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

- Sensitive Marine Clay
    - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

Engineering

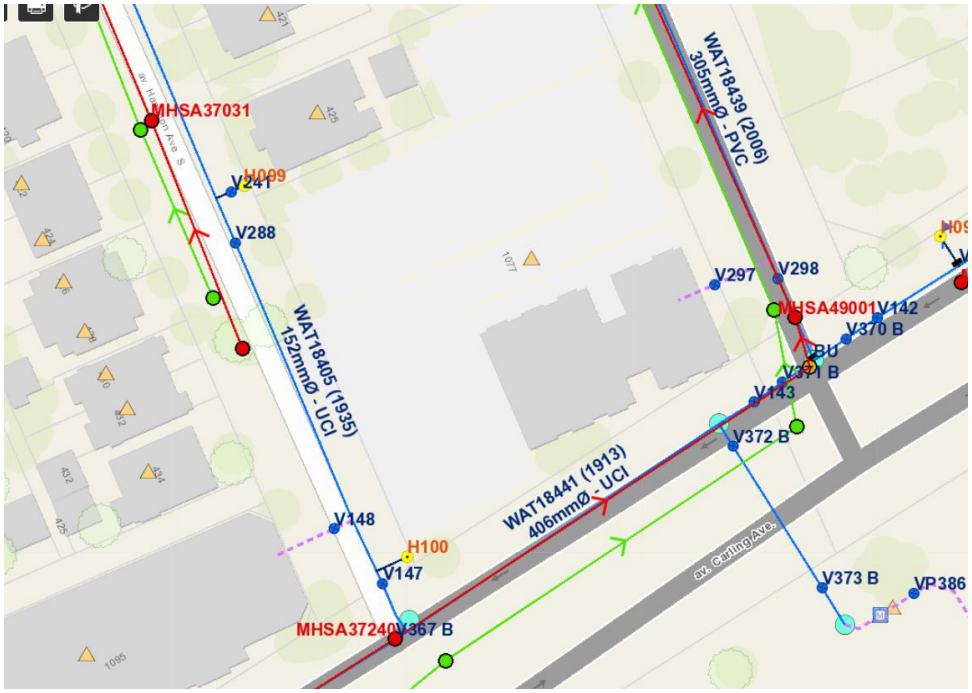
Important notes

- Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.
- Please control post-development runoff from the subject site, up to and including the **100-year storm event**, to **a 2-year pre-development level.** The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5.
- Please provide the new and existing Sanitary sewer discharge and we will confirm if sanitary sewer main has the capacity.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m^3/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration.*
- Road Resurfacing and new transit construction is planned on Carling Ave. this season, please note that once the road is resurfaced, a road cut permit will not be issued on Carling Ave for three years. https://ottawa.ca/en/living-ottawa/laws-licences-and-permits/laws/law-z/road-activity-law-no-2003-445#road-activity-law-no-2003-445
  Please let me know if more information is required on the proposed construction work on Carling Ave.

General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided and all easements shall be shown on the engineering plans.
- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities (excavation, dewatering, vibrations associated with construction, etc.) will not have an impact on any adjacent buildings and infrastructure.
- A **Record of Site Condition (RSC) in accordance with O.Reg.** 153/04 will be required to be filed and acknowledged by the Ministry prior to issuance of a building permit due to a change to a more sensitive property use.
- A CCTV inspection and report is required to ensure existing services to be re-used are in good working order and meet current minimum size requirements. Located services to be placed on site servicing plans.
- All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does not extend either above or below into the existing property lines and sight triangles.
- Reference documents for information purposes:
    - Ottawa Sewer Design Guidelines (October 2012)
    - Technical Bulletin PIEDTB-2016-01
    - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.
    - Ottawa Design Guidelines - Water Distribution (2010)
    - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
    - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
    - City of Ottawa Environmental Noise Control Guidelines (January 2016)
    - City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
    - Ottawa Standard Tender Documents (latest version)
    - Ontario Provincial Standards for Roads & Public Works (2013)
    - Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455).
- Please note that this is the applicant responsibility to refer to the latest applicable guidelines while preparing reports and studies.

Disclaimer:
The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.



Stormwater Management Criteria and Information:

- **Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the **100-year storm event**, to **a 2-year pre-development level.** The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. [**If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5**]. The time of concentration (T_c) used to determine the pre-development condition should be calculated. *Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*].
- Any storm events greater than the established **2-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**

- **Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 5-year storm rainfall event**.
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.
    - When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**
    - In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.
    - Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 2- and 100-year event storage requirements.
    - In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.
    - Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.
- Please note that the minimum orifice dia. for a plug style **ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s** in order to reduce the likelihood of plugging.
- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution**.
- **If rooftop control** and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- If **Window wells** are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.

- There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.
- Rear yard on grade parking to be permeable pavement. Refer to City Standard Detail Drawings SC26 (maintenance/temp parking areas), SC27 or permeable asphalt materials. No gravel or stone dust parking areas permitted.
- Street catch basins are not to be located at any proposed entrances.

Storm Sewer:

- STM (2005) 600mm CONC on Parkdale, STM 300mm Conc on Carling and STM 300mm(1980) CONR on Hamilton is available
- A storm sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

Sanitary Sewer

- SAN (2005) 375mm PVC on Parkdale
- SAN 225mm (1936) Conc on Carling
- SAN 300mm (1980) CONR on Hamilton
- Please provide the new Sanitary sewer discharge and we will confirm if sanitary sewer main has the capacity.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01.*
- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.
- Include correspondence from the Architect within the Appendix of the report confirming the number of residential units per building **and a unit type breakdown for each of the buildings** to support the calculated building populations.

Water:

- A WTR(2006) 305mm PVC on Parkdale
- WTR 406mm (1913) UCI on Carling
- WTR 152mm (1935) UCI on Hamilton
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m^3/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration.*
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following

information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.

- Type of Development and Units
- Site Address
- A plan showing the proposed water service connection location.
- Average Daily Demand (L/s)
- Maximum Daily Demand (L/s)
- Peak Hour Demand (L/s)
- Fire Flow (L/min)
  - [*Fire flow demand requirements shall be based on* ***Fire Underwriters Survey (FUS)*** *Water Supply for Public Fire Protection 1999*]
  - *Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).*
- **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved**. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

Other Construction projects:

New Transit	On Carling Ave. from Bayswater Ave to Sir John A Macdolnald Pky	Start in 2021
Road Resurfacing	On Carling Ave. from Bayswater Ave to Marivale Road	Start in 2021

Snow Storage:

- Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

Trees:

- Please note that a new Tree By-law is now in effect.

Sensitive marine clay:

- If Sensitive marine clay soils are present in this area that are susceptible to soil shrinkage that can lead to foundation and building damages. All six (6) conditions listed in the Tree Planting in Sensitive Marine Clay Soils-2017 Guidelines are required to be satisfied. Note that if the plasticity index of the soil is determined to be less than 40% a minimum separation between a street tree and the proposed building foundations of 4.5m will need to be achieved. A memorandum addressing the Tree in Clay Soil Guidelines prepared by a geotechnical engineer is required to be provided to the City.https://ottawa.ca/en/city-hall/planning-and-development/community-plans-and-design-guidelines/design-and-planning/completed-guidelines/tree-planting-sensitive-marine-clay-soils-2017-guidelines

Severance:

- If severance is planned, this needs to be addressed in servicing to satisfy severance requirements. Where a large parcel with multiple buildings is planned, City will require an ultimate servicing plan so as to appropriately understand how severance requirements are being met.

Gas pressure regulating station

- A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.

Regarding Quantity Estimates:

- Please note that external Garbage and/or bicycle storage structures are to be added to QE under Landscaping as it is subject to securities. In addition, sump pumps for Sanitary and Storm laterals and/or cisterns are to be added to QE under Hard items as it is subject to securities, even though it is internal and is spoken to under SWM and Site Servicing Report and Plan.

Source Protection Policy Screening (SPPS):

- The address lies within the Mississippi-Rideau Source Protection Region and is subject to the policies of the Mississippi-Rideau Source Protection Plan.
- The area is not located within a Surface Water Intake Protection Zone (IPZ) where significant threat policies apply.
- The area is not located within a Wellhead Protection Area (WHPA).
- The area is not located within a Significant Groundwater Recharge Area (SGRA).
- The area is not located within a Highly Vulnerable Aquifer (HVA).
- In terms of the development application, please note that the address is not located in an area where activities could be considered a significant threat to drinking water sources and there are no legally binding source protection policies.

CCTV sewer inspection

- CCTV sewer inspection required for pre and post construction conditions to ensure no damage to City Assets surrounding site.

Pre-Construction Survey

- Pre-Construction (Piling/Hoe Ramming or close proximity to City Assets) and/or Pre-Blasting (if applicable) Survey required for any buildings/dwellings in proximity of 75m of site and circulation of notice of vibration/noise to residents within 150 m of site. Conditions for Pre-Construction/ Pre-Blast Survey & Use of Explosives will be applied to agreements. Refer to City's Standard S.P. No. F-1201 entitled Use of Explosives, as amended.

Road Reinstatement

- Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By-Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

Required Engineering Plans and Studies:

- **Plans:**
  - Existing Conditions and Removals Plan
  - Site Servicing Plan
  - Grade Control and Drainage Plan
  - Erosion and Sediment Control Plan
  - Roof Drainage Plan
  - Foundation Drainage System Detail (if applicable)
  - Topographical survey
- **Reports:**
  - Site Servicing and Stormwater Management Report
  - Geotechnical Study/Investigation
  - Noise Control Study
  - Phase I ESA
  - Phase II ESA (Depending on recommendations of Phase I ESA)
  - RSC (Record of the site Conditions)
  - Site lighting certificate
  - Wind analysis
- Please refer to the **City of Ottawa Guide to Preparing Studies and Plans [Engineering]:**
- Specific information has been incorporated into both the Guide to Preparing Studies and Plans for a site plan. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.
- Added to the general information for servicing and grading plans is a note that an O.L.S. should be engaged when reporting on or relating information to property boundaries or existing conditions. The importance of engaging an O.L.S. for development projects is emphasized.

Phase One Environmental Site Assessment:

- A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.
- The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.
- Official Plan Section 4.8.4: https://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan/volume-1-official-plan/section-4-review-development-applications#4-8-protection-health-and-safety

RSC (Record of the site Conditions)

- A RSC is required when changing the land use (zoning) of a property to a more sensitive land use and **a memorandum prepared by an environmental consultant confirming that no potential contaminating activities have taken place within the RSC area since the filling of the RSC.** Submitting a record of site condition | Ontario.ca

Geotechnical Investigation:

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.
- Rreducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long-term damages associated with lowering the groundwater in this area.

- Geotechnical Study shall be consistent with the **Geotechnical Investigation and Reporting Guidelines for Development Applications**. https://documents.ottawa.ca/sites/default/files/documents/cap137602.pdf

Noise Study:

- A **Transportation Noise Assessment** is required as the subject development is located within 100m proximity of Carling Ave
- A **Stationary Noise Assessment** is required in order to assess the noise impact of the proposed sources of stationary noise (mechanical HVAC system/equipment) of the development onto the surrounding residential area to ensure the noise levels do not exceed allowable limits specified in the City Environmental Noise Control Guidelines.

Wind analysis:

- When greater than 9 storey in height Wind Study for all buildings/dwellings.
- A wind analysis must be prepared, signed and stamped by an engineer who specializes in pedestrian level wind evaluation. Where a wind analysis is prepared by a company which do not have extensive experience in pedestrian level wind evaluation, an independent peer review may be required at the expense of the proponent.
- Terms of Reference: Wind Analysis (ottawa.ca)

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Fourth (4th) Review Charge:

- Please be advised that additional charges for each review, after the 3rd review, will be applicable to each file. There will be no exceptions.

Construction approach:

- Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead on this request.

Transportation (Wally Dubyk)

- Carling Avenue is targeted for resurfacing starting this season.
- The Screening Form has indicated that the TIA Triggers have been met. Please proceed with the TIA Step 2 – Forecasting Report.
- Update to the TIA Guideline Forecasting Report
  - We would like to inform all consultants making TIA Forecasting Report submissions to the City of Ottawa as part of a development application, that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual (see attached).
  - The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021. The document will be available

in French and English on the TRANS website http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation.
    - The new manual has simplified the conversion from vehicle trips to person trips and then trips by modal share. The City has also developed a spreadsheet that will apply the factors of location and building type to quickly provide the existing trip numbers by mode share.
- Carling Avenue is designated as an Arterial road within the City's Official Plan with a ROW protection limit of 44.5 metres. The ROW protection limit and the offset distance (22.25 metres) are to be dimensioned from the existing centerline of pavement and shown on the drawings. The Certified Ontario Land Surveyor is to confirm the ROW protected limits and any portion that may fall within the private property to be conveyed to the City.
- ROW interpretation – 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.
- Parkdale Avenue is classified as an Arterial road. There are no additional protected ROW limits identified in the OP.
- A 5.0 metres x 5.0 metres sight triangle would be required at the intersection of Carling Avenue and Parkdale Avenue. The sight triangle area is to be conveyed to the City and is to be shown on all drawings. The sight triangle dimensions are to be measured from the ROW protected limits.
- A 5.0 metres x 5.0 metres sight triangle would be required at the intersection of Parkdale Avenue and Hamilton Avenue. The sight triangle area is to be conveyed to the City and is to be shown on all drawings. The sight triangle dimensions are to be measured from the ROW protected limits.
- The proponent shall comply with the Private Approach By-Law 2003-447
- No private approach shall be constructed within 0.3 metres of any adjacent property measured at the highway line, and at the curb line or roadway edge.
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- Ensure that the driveway grade does not exceed 2% within the private property for a distance of 9.0 metres from the ROW limit; see Section 25 (u) of the Private Approach By-Law #2003-447. Any grade exceeding 6% will require a subsurface melting device. For private property, the mechanism to vary the slope is a minor variance. The consultant would need to provide technical rationale.
- All underground and above ground building footprints and permanent walls need to be shown on the plan to confirm that any permanent structure does not extend either above or below into the existing property lines, sight triangles and/or future road widening protection limits.
- The Owner shall be required to enter into maintenance and liability agreement for all pavers, plant and landscaping material placed in the City right-of-way and the Owner shall assume all maintenance and replacement responsibilities in perpetuity.
- 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.

City Surveyor

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Next steps

- We encourage the applicant to discuss the proposal with the local Councillor and the community association
- City staff to send follow-up email confirming submission requirements

Alexandre Tourigny

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: Friday, July 30, 2021 10:49 AM
To: Alexandre Tourigny
Subject: RE: 1081 Carling Avenue Stormwater Quality

Hi Alexandre,

Based on the proposed site plan, the RVCA will not require any additional water quality protections. Best management practices are encouraged to be implemented where possible.

Thanks,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Emma Bennett <emma.bennett@rvca.ca>
Sent: Friday, July 30, 2021 9:55 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: FW: 1081 Carling Avenue Stormwater Quality

Hi Eric,

Here's an inquiry about stormwater quality.

Happy Friday!
Emma

From: LRC Info <info@lrconline.com>
Sent: Friday, July 30, 2021 9:03 AM
To: Emma Bennett <emma.bennett@rvca.ca>
Subject: FW: 1081 Carling Avenue Stormwater Quality

From: RVCA Info <info@rvca.ca>
Sent: Thursday, July 29, 2021 3:08 PM
To: LRC Info <info@lrconline.com>
Subject: Fw: 1081 Carling Avenue Stormwater Quality

From: Alexandre Tourigny <atourigny@jlrichards.ca>
Sent: July 29, 2021 2:13 PM

To: RVCA Info <info@rvca.ca>
Cc: Braden Walker <braden.walker@taggart.ca>; Derek Howe <derek.howe@taggart.ca>
Subject: 1081 Carling Avenue Stormwater Quality

Good afternoon,

J.L.Richards & Associates Ltd. has been retained by Ownership Group 1081 Carling Avenue Ltd. care of Taggart Realty Management (TRM) to prepare an Assessment of Adequacy of Public Services (AAPS) Report and functional-level drawings of municipal infrastructure in support of two high-rise residential towers of both 22-storeys and 28-storeys sited at 1081 Carling Avenue in the City of Ottawa. The subject site currently consists of an existing commercial building and by adjacent surrounding parking within the 1081 Carling Avenue parcel. The site currently consists of a combination of asphalt and building which makes the subject site fully impervious.

The preliminary site plan is attached for reference.

Based on the above description of the site and the accompanying site plan, and considering that we are replacing an asphalt parking area with a building rooftop and landscape features, we would like to confirm that the proposed project will not require any stormwater quality control measures.

Please let me know if you have any questions.

Thank you,
Alex

Alexandre Tourigny, P.Eng.
Civil Engineer

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

Appendix C

Background Drawings

HOLLAND AVE.

HINTON AVE.

HAMILTON AVE.

PARKDALE AVE.

CIVIC HOSPITAL EXIT

O.T.C. Bus Terminal

Mc Neil's Drugs

conc.

Civic tea room

Red Door Tavern

Shell Oil station

pumps

monument

hedge

EXISTING STREET LINE

PROP 12" STEEL MAIN

10" GAS

12" WATER

8" SEWER

6" WATER

6" GAS

12" SEWER

H.E. CABLE

wire fence

Asphalt walks

O.T.C. Tracks

NEW STREET LINE

poles & between tracks

NOTE:—
EXISTING FENCE TO BE REMOVED AND DISPOSED OF BY ROAD CONTRACTOR

NOTE:-
EXISTING O.T.C. TRACKS AND WIRING TO BE REMOVED BY OTHERS PRIOR TO COMMENCEMENT OF ROADWORK CONSTRUCTION.

- SCALES -
Hor. 1" rep. 40'
Vert. 1" rep. 20'

Sewer South Side

Sewer North Side

SEWER @ 0.80%

2650.03

2658.11

2659.87

3" SANITARY SEWER @ 0.50%

2662.22

8" SAN. SEWER @ 1.0%

2658.51

8" SAN SEWER @ 0.50%

2661.87

8" SAN. SEWER @ 0.54%

270

260

79+00 78+00 77+00 76+00 75+00 74+00 73+00 72+00 71+00 70+00 69+00 68+00 67+00

REGISTERED PROFESSIONAL ENGINEER — CIVIL — F. E. AYERS — PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER — CIVIL — L. W. L. PILLAR — PROVINCE OF ONTARIO

CITY OF OTTAWA
PLANNING AND WORKS DEPT.
DESIGN & SPECIAL PROJECTS BRANCH

CARLING AVENUE

GENERAL LAYOUT
RECONSTRUCTION & WIDENING
From BRONSON AVE. to KIRKWOOD AVE.
CONTRACT Nº 56-28

Engineer of Special Projects

Director of Planning & Works

Drawn By: G.R.W.
Checked by: J.H.L.
Date: March, 1956

DR-137-R

PLAN Nº R-1000-71
SHEET Nº 8 of 11

TSH engineers architects planners

NCE

AS BUILT
APRIL 11, 2008

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

NO.	REVISIONS	BY	DATE
1	ISSUED FOR TENDER	B.R.	07/05
2	ADDENDUM 2	B.R.	07/14/05
3	ISSUED FOR CONSTRUCTION	B.R.	08/15/05
4	AS BUILT	S.A.E.	05/11/08

PARKDALE AVENUE ROAD RECONSTRUCTION

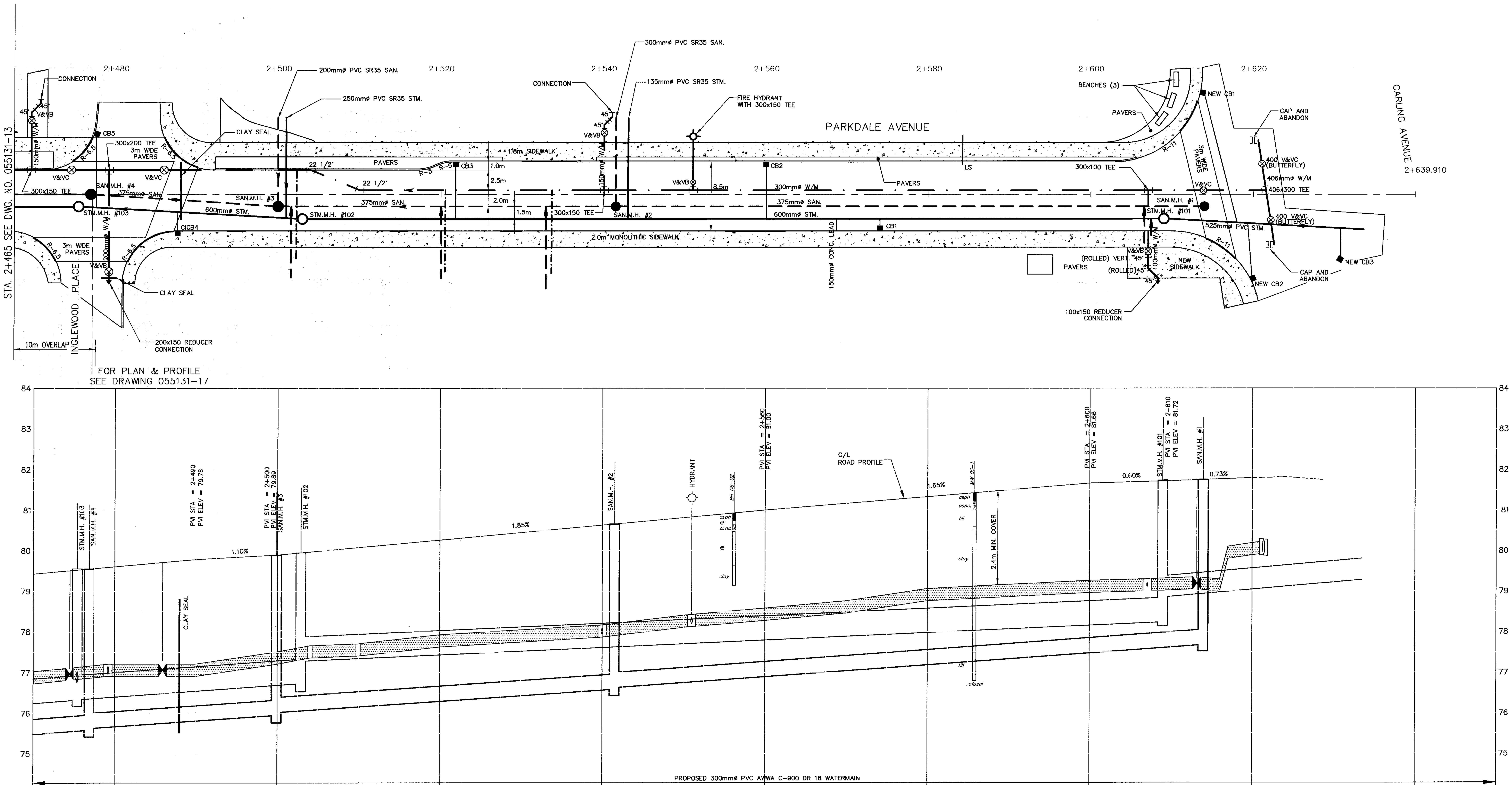
GRADING AND DRAINAGE STA. 2+470 TO 2+629

W. NEWELL, P. ENG. Director Infrastructure Services
B.M. MASON, P. ENG. Manager Construction Services

Dwn: L.H. | Chkd: C.T. | Des: L.H. | Chkd: C.T.

Ottawa

CONTRACT NO. ISB05-5131
DWG. NO. 055131-14
Date: JUNE 2005
Scale: HORIZONTAL 1:250 VERTICAL 1:50



PROPOSED C/L ROAD ELEVATION	79.43; 79.61; 79.78; 79.89; 80.08; 80.26; 80.45; 80.63; 80.82; 81.00; 81.16; 81.33; 81.49; 81.66; 81.72; 81.79
SANITARY SEWER INVERT	75.59, 75.63; 23.1m 375mmø PVC SDR 35 SANITARY SEWER @ 1.39%; N 75.95, S 76.02, E 76.00; 41.6m – 375mmø PVC SDR 35 SANITARY SEWER @ 1.37%; N 76.59, S 76.63, E 76.62; 72.5m – 375mmø PVC SDR 35 SANITARY SEWER @ 1.45%; 77.68, 78.15
STORM SEWER INVERT	N 76.33, S 76.34, W 76.77; 27.5m 600mmø CONCRETE CL 100D STORM SEWER @ 1.42%; 76.73, 77.28; TEE; TEE; 106.1m 600mmø CONCRETE CL 100D STORM SEWER @ 0.90%; 78.24, 78.85; 25.1m – 525mmø PVC 100D STORM SEWER @ 1.79%; 79.30, 79.28
PROPOSED TOP OF WATERMAIN	77.03; VALVE & CHAMBER; 300x200 TEE 77.22; VALVE & CHAMBER; 77.22; 77.51; 22 1/2° HOR BEND 77.66; 22 1/2° HOR BEND 77.71; 77.93; 78.05; 78.17 300x150; 78.41 400 x 150 V & VB HYD.; 78.58; 78.76; 79.06; 79.16; 79.26; 300x100 TEE 79.30; 79.35; VALVE & CHAMBER; 45° VERT. 79.29; 45° VERT. 80.10; 80.23; 300x400 TEE
CHAINAGE	2+474.5 VALVE CHAMBER; 2+479.2; 2+485.9 VALVE CHAMBER; 2+500; 2+504; 2+510; 2+520; 2+540; 2+551.0; 2+560; 2+580; 2+600; 2+607.1; 2+613.2 VALVE CHAMBER; 2+616; 2+617; 2+620; 2+621.4; 2+640

13758

GENERAL

1. FOR FURTHER INFORMATION REFER TO GEOTECHNICAL INFORMATION IN CARLING AVENUE WATERMAIN REHABILITATION REPORT FILE 06-1120-367 DATED MARCH 2007.
2. CONTRACTOR TO PROTECT, AND WHERE REQUIRED, SUPPORT EXISTING UTILITIES AND TRAFFIC PLANT FROM CONSTRUCTION ACTIVITIES. BEFORE EXCAVATING CALL FOR UNDERGROUND LOCATES.
3. REFER TO GL05 AND R-05 FOR REMOVALS AND REINSTATEMENT RELATED TO WATERMAIN CONSTRUCTION.

WATERMAIN NOTES

1. ALL WATERMAIN MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY STANDARD SPECIFICATIONS AND STANDARD DRAWINGS.
2. ALL CONNECTIONS OF NEW WATERMAIN TO EXISTING WATERMAIN AND VALVE INSTALLATIONS AND SERVICES SHALL BE PERFORMED BY CITY OF OTTAWA FORCES. THE CONTRACTOR SHALL PROVIDE EXCAVATION, BACKFILL AND REINSTATEMENT.
3. A MINIMUM OF 2m SEPARATION IS REQUIRED BETWEEN ALL NEW HYDRANTS AND CATCHBASINS OR OPEN STRUCTURES AND SHALL BE INSULATED PER CITY STANDARD DETAIL W23 AS APPLICABLE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE VIA EXCAVATION THE EXACT LOCATION AND ELEVATION OF THE EXISTING WATERMAINS AS REQUIRED FOR ALL CONNECTIONS, RELOCATIONS AND BLANKINGS.
6. HEAVY COMPACTION EQUIPMENT SOULD NOT BE USED UNTIL A MINIMUM OF 800mm OF COMPACTED BACKFILL IS PLACED OVER THE PIPE. DURING BACKFILLING OPERATION, CARE SHOULD BE TAKEN TO ENSURE THAT THE BACKFILLING PROCEEDS IN EQUAL STAGES SIMULTANEOUSLY ON BOTH SIDES OF THE PIPE.

PAVEMENT STRUCTURE

SURFACE COURSE - 40mm SUPERPAVE 12.5
BASE COURSE - 60mm SUPERPAVE 19.0
CUT REPAIR - 50mm SUPERPAVE 19.0
OPSS GRANULAR 'A' - 150mm
OPSS GRANULAR 'B' (TYPE II) - 600mm

1. FINAL ASPHALT SURFACE SHOULD MATCH REMAINING PAVEMENT STRUCTURE AND EXISTING CURB AND GUTTER ELEVATIONS.
2. CONSTRUCTION TRAFFIC IS TO BE CONTROLLED TO MINIMIZE DAMAGE AND PROTECT THE INTEGRITY OF THE SUBGRADE, BASE AND SUBBASE LAYERS DURING CONSTRUCTION.
3. ALL GRANULAR MATERIALS SHOULD BE COMPACTED TO AT LEAST 98% OF STANDARD PROCTOR MAXIMUM DRY DENSITY.

SIDEWALK

1. MONOLITHIC CURB AND CONCRETE SIDEWALK REINSTATEMENT AS PER CITY STANDARD SC2.
2. CONCRETE BARRIER CURB AS PER CITY STANDARD SC1.1.
3. SIDEWALKS TO BE REINSTATED TO REQUIREMENTS OF OPSS 311 AND 351, AND APPLICABLE CITY OF OTTAWA STANDARD.
4. SIDEWALKS SHOULD BE PLACED ON A MINIMUM OF 150mm COMPACTED GRANULAR BASE COMPACTED TO AT LEAST 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

UNDERGROUND UTILITIES

ALL UNDERGROUND LOCATES TO BE COMPLETED PRIOR TO EXCAVATION. HAND DIG ONLY WITHIN 1m OF BURIED PLANT.

HYDRO

1. PRIOR TO UNDERTAKING ANY WORK CONTACT ONTARIO ONE. CALL AT 1-800-400-2255 A MINIMUM OF 7 WORKING DAYS PRIOR TO THE PROPOSED DATE OF THE EXCAVATION. STEEL CURB AND SUPPORT PINS ARE NOT TO BE USED IN THE VICINITY OF HYDRO OTTAWA UNDERGROUND PLANT.
2. NO EXCAVATIONS WITHIN 5 FEET (1.5m) FROM BASE OF ALL POLES AND ANCHORS.
3. ALL WORKERS AND EQUIPMENT MUST REMAIN AT ALL TIMES AT LEAST 10 FEET (3.0m) FROM OVERHEAD PRIMARY HYDRO LINES.
4. CONTACT SCOTT EDEY AT (613)580-2424 EXT 23197 FOR POSSIBLE CONFLICTS WITH STREET LIGHTING SYSTEM A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION.

ENBRIDGE CONSUMERS GAS

1. GAS MAINS MUST BE FIELD LOCATED, BEFORE DIGGING, PLEASE CALL ONTARIO ONE CALL 48 HOURS IN ADVANCE AT 1-800-400-2255 FOR FREE GAS LOCATE SERVICE. A MINIMUM OF 0.6m HORIZONTAL AND 0.3m VERTICAL CLEARANCE MUST BE MAINTAINED. VERTICAL CLEARANCE MUST BE INCREASED TO 0.6m FOR MAINS NPS 16 OR LARGER. IF INFORMATION ON COVER OF EXISTING PLANT IS NOT AVAILABLE EXPOSURE BY HAND IS REQUIRED. A MINIMUM OF 0.15m OF SAND BACKFILL PADDING IS TO PLACED AROUND GAS MAINS AND SERVICES BEFORE BACKFILLING WITH UNSHRINKABLE FILL.

BELL CANADA

1. FOR ANY MODIFICATIONS TO MAINTENANCE HOLES / BELL STRUCTURE FACILITIES CONTACT COLIN LANDRIGAN AT (613)742-5766. A MINIMUM OF 48-HOURS IN ADVANCE OF THE REQUIRED WORKS.

MRC McCORMICK RANKIN CORPORATION

NO.	REVISIONS	BY	DATE
	PRE-TENDER SUBMISSION	M.J.R.	MAR. 26 /07
	ISSUED FOR TENDER	M.J.R.	APR. 5 /07
	ISSUED FOR CONSTRUCTION	M.J.R.	MAY 16 /07
	AS-BUILT	M.J.R.	SEPT 10 /07

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

CARLING AVENUE REHABILITATION

MERIVALE ROAD TO MELROSE AVENUE

KITCHISSIPPI AND RIVER WARDS

WATERMAIN
VALVE INSTALLATIONS

WAYNE NEWELL, P. ENG.		B. MASON, P. ENG.	
Director Infrastructure Services		A./Manager Construction Services West	
Dwn: MS	Chkd: MSB	Des: MSB	Chkd: MJR

AS-BUILT

These As-Built Drawings have been prepared based on inspections and observations undertaken by MRC staff during key stages of construction and on information submitted, in part, by others. While this information is believed to be reliable, MRC is not responsible for its accuracy, or for errors or omissions that may have been incorporated into this drawing as a result.

Ottawa

CONTRACT NO.
ISB07-5002

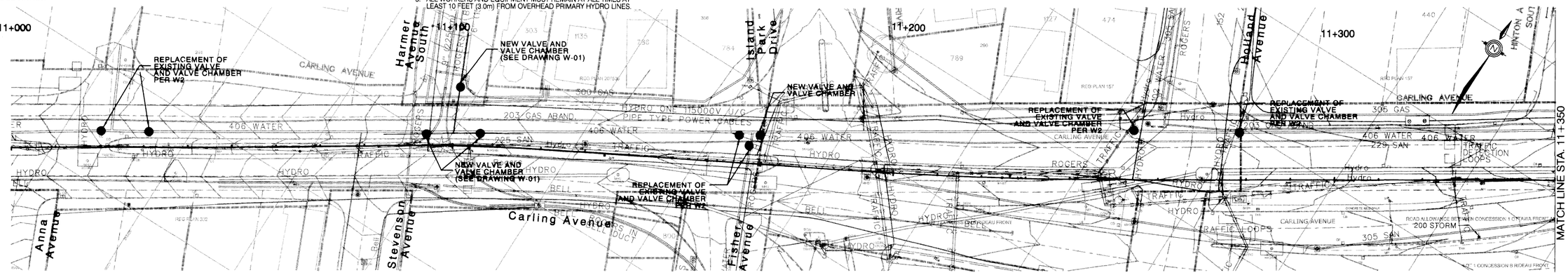
DWG. NO.
5002-012

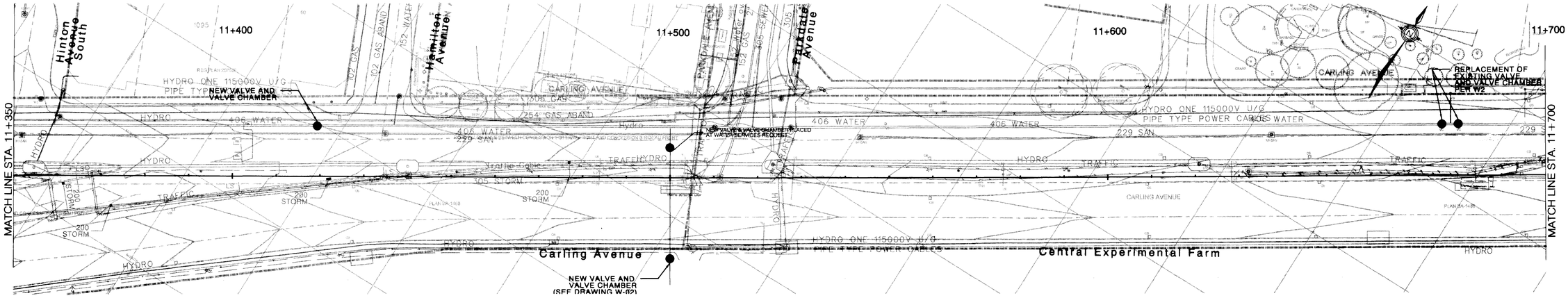
SHEET 12 OF 34

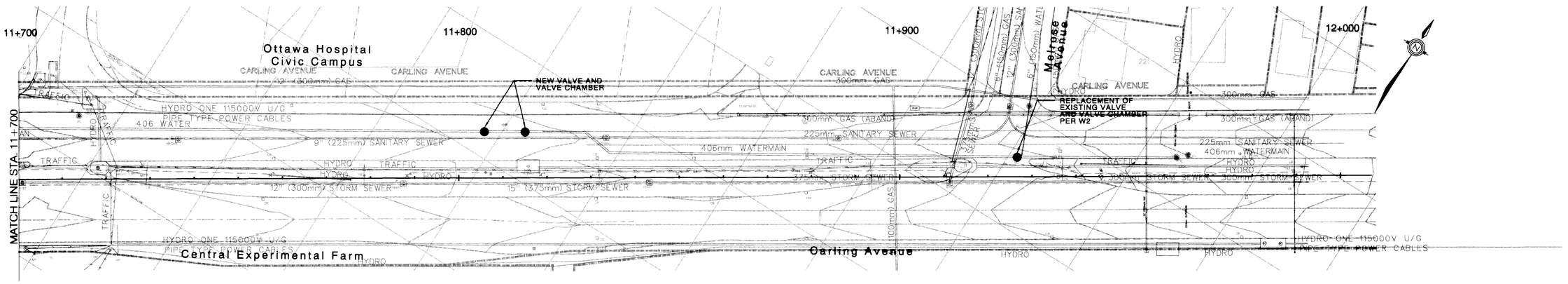
Date: FEBRUARY 13, 2007

Scale: HORIZ. 0m 5.0 / VERT. 0m 0.5

W-03







DATE: 10/9/2007
TIME: 8:16:23 AM
FILE: C:\PROJECTS\CONTRACT\SHEETS\06703_W03.dgn
DWG. FRAME: 790mm x 534mm RMQC-06/93-WG

14759

GENERAL

1. FOR FURTHER INFORMATION REFER TO GEOTECHNICAL INFORMATION IN CARLING AVENUE WATERMAIN REHABILITATION REPORT FILE 06-1120-367 DATED MARCH 2007.
2. CONTRACTOR TO PROTECT, AND WHERE REQUIRED, SUPPORT EXISTING UTILITIES AND TRAFFIC PLANT FROM CONSTRUCTION ACTIVITIES. BEFORE EXCAVATING CALL FOR UNDERGROUND LOCATES.
3. REFER TO GL06 AND R-06 FOR REMOVALS AND REINSTATEMENT RELATED TO WATERMAIN CONSTRUCTION.

WATERMAIN NOTES

1. ALL WATERMAIN MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY STANDARD SPECIFICATIONS AND STANDARD DRAWINGS.
2. ALL CONNECTIONS OF NEW WATERMAIN TO EXISTING WATERMAIN AND VALVE INSTALLATIONS AND SERVICES SHALL BE PERFORMED BY CITY OF OTTAWA FORCES. THE CONTRACTOR SHALL PROVIDE EXCAVATION, BACKFILL AND REINSTATEMENT.
3. A MINIMUM OF 2m SEPARATION IS REQUIRED BETWEEN ALL NEW HYDRANTS AND CATCHBASINS OR OPEN STRUCTURES AND SHALL BE INSULATED PER CITY STANDARD DETAIL W23 AS APPLICABLE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE VIA EXCAVATION THE EXACT LOCATION AND ELEVATION OF THE EXISTING WATERMAINS AS REQUIRED FOR ALL CONNECTIONS, RELOCATIONS AND BLANKINGS.
6. HEAVY COMPACTION EQUIPMENT SOULD NOT BE USED UNTIL A MINIMUM OF 800mm OF COMPACTED BACKFILL IS PLACED OVER THE PIPE. DURING BACKFILLING OPERATION, CARE SHOULD BE TAKEN TO ENSURE THAT THE BACKFILLING PROCEEDS IN EQUAL STAGES SIMULTANEOUSLY ON BOTH SIDES OF THE PIPE.

PAVEMENT STRUCTURE

SURFACE COURSE - 40mm SUPERPAVE 12.5
BASE COURSE - 60mm SUPERPAVE 19.0
CUT REPAIR - 50mm SUPERPAVE 19.0
OPSS GRANULAR 'A' - 150mm
OPSS GRANULAR 'B' (TYPE II) - 600mm

1. FINAL ASPHALT SURFACE SHOULD MATCH REMAINING PAVEMENT STRUCTURE AND EXISTING CURB AND GUTTER ELEVATIONS.
2. CONSTRUCTION TRAFFIC IS TO BE CONTROLLED TO MINIMIZE DAMAGE AND PROTECT THE INTEGRITY OF THE SUBGRADE, BASE AND SUBBASE LAYERS DURING CONSTRUCTION.
3. ALL GRANULAR MATERIALS SHOULD BE COMPACTED TO AT LEAST 98% OF STANDARD PROCTOR MAXIMUM DRY DENSITY.

SIDEWALK

1. MONOLITHIC CURB AND CONCRETE SIDEWALK REINSTATEMENT AS PER CITY STANDARD SC2.
2. CONCRETE BARRIER CURB AS PER CITY STANDARD SC1.1.
3. SIDEWALKS TO BE REINSTATED TO REQUIREMENTS OF OPSS 311 AND 351, AND APPLICABLE CITY OF OTTAWA STANDARD.
4. SIDEWALKS SHOULD BE PLACED ON A MINIMUM OF 150mm COMPACTED GRANULAR BASE COMPACTED TO AT LEAST 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

UNDERGROUND UTILITIES

ALL UNDERGROUND LOCATES TO BE COMPLETED PRIOR TO EXCAVATION. HAND DIG ONLY WITHIN 1m OF BURIED PLANT.

HYDRO

1. PRIOR TO UNDERTAKING ANY WORK CONTACT ONTARIO ONE. CALL AT 1-800-400-2255 A MINIMUM OF 7 WORKING DAYS PRIOR TO THE PROPOSED DATE OF THE EXCAVATION. STEEL CURB AND SUPPORT PINS ARE NOT TO BE USED IN THE VICINITY OF HYDRO OTTAWA UNDERGROUND PLANT.
2. NO EXCAVATIONS WITHIN 5 FEET (1.5m) FROM BASE OF ALL POLES AND ANCHORS.
3. ALL WORKERS AND EQUIPMENT MUST REMAIN AT ALL TIMES AT LEAST 10 FEET (3.0m) FROM OVERHEAD PRIMARY HYDRO LINES.
4. CONTACT SCOTT EDEY AT (613)580-2424 EXT.23197 FOR POSSIBLE CONFLICTS WITH STREET LIGHTING SYSTEM A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION.

ENBRIDGE CONSUMERS GAS

1. GAS MAINS MUST BE FIELD LOCATED. BEFORE DIGGING, PLEASE CALL ONTARIO ONE. CALL 48 HOURS IN ADVANCE AT 1-800-400-2255 FOR FREE GAS LOCATE SERVICE. A MINIMUM OF 0.6m HORIZONTAL AND 0.3m VERTICAL CLEARANCE MUST BE MAINTAINED. VERTICAL CLEARANCE MUST BE INCREASED TO 0.6m FOR MAINS NPS 16 OR LARGER. IF INFORMATION ON COVER OF EXISTING PLANT IS NOT AVAILABLE EXPOSURE BY HAND IS REQUIRED. A MIMIMUM OF 0.15m OF SAND BACKFILL PADDING IS TO PLACED AROUND GAS MAINS AND SERVICES BEFORE BACKFILLING WITH UNSHRINKABLE FILL.

BELL CANADA

1. FOR ANY MODIFICATIONS TO MAINTENANCE HOLES / BELL STRUCTURE FACILITIES CONTACT COLIN LANDRIGAN AT (613)742-5766. A MINIMUM OF 48-HOURS IN ADVANCE OF THE REQUIRED WORKS.

MRC McCORMICK RANKIN CORPORATION

NO.	REVISIONS	BY	DATE
	PRE-TENDER SUBMISSION	M.J.R.	MAR. 26 /07
	ISSUED FOR TENDER	M.J.R.	APR. 5 /07
	ISSUED FOR CONSTRUCTION	M.J.R.	MAY 16 /07
	AS-BUILT	M.J.R.	SEPT 10 /07

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

CARLING AVENUE REHABILITATION

MERIVALE ROAD TO MELROSE AVENUE

KITCHISSIPPI AND RIVER WARDS

WATERMAIN
EXPERIMENTAL FARM

WAYNE NEWELL, P. ENG.		B. MASON, P. ENG.	
Director Infrastructure Services		A./Manager Construction Services West	
Dwn: MS	Chkd: MSB	Des: MSB	Chkd: MJR

AS-BUILT

These As-Built Drawings have been prepared based on inspections and observations undertaken by MRC staff during key stages of construction and on information submitted, in part, by others. While this information is believed to be reliable, MRC is not responsible for its accuracy, or for errors or omissions that may have been incorporated into this drawing as a result.

Ottawa

CONTRACT NO.
ISB07-5002

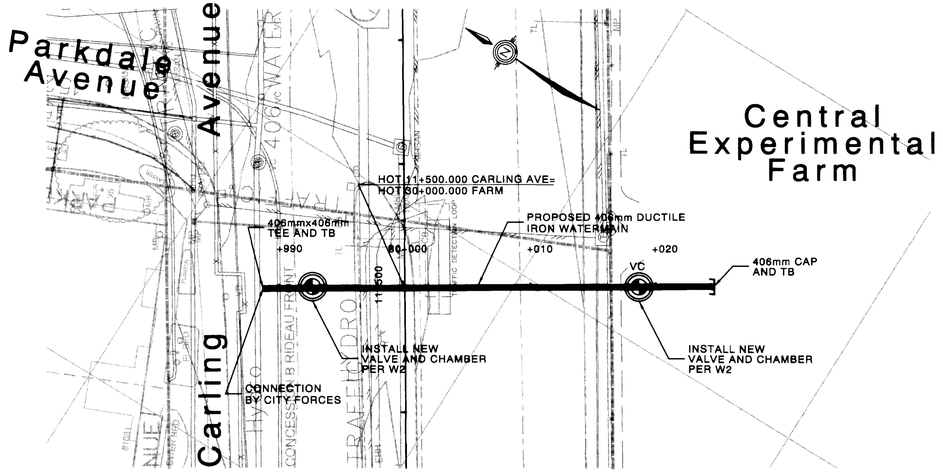
DWG. NO.
5002-011

SHEET 11 OF 34

Date: FEBRUARY 13, 2007

Scale: 0m HORIZ. 5.0 / 0m VERT. 0.5

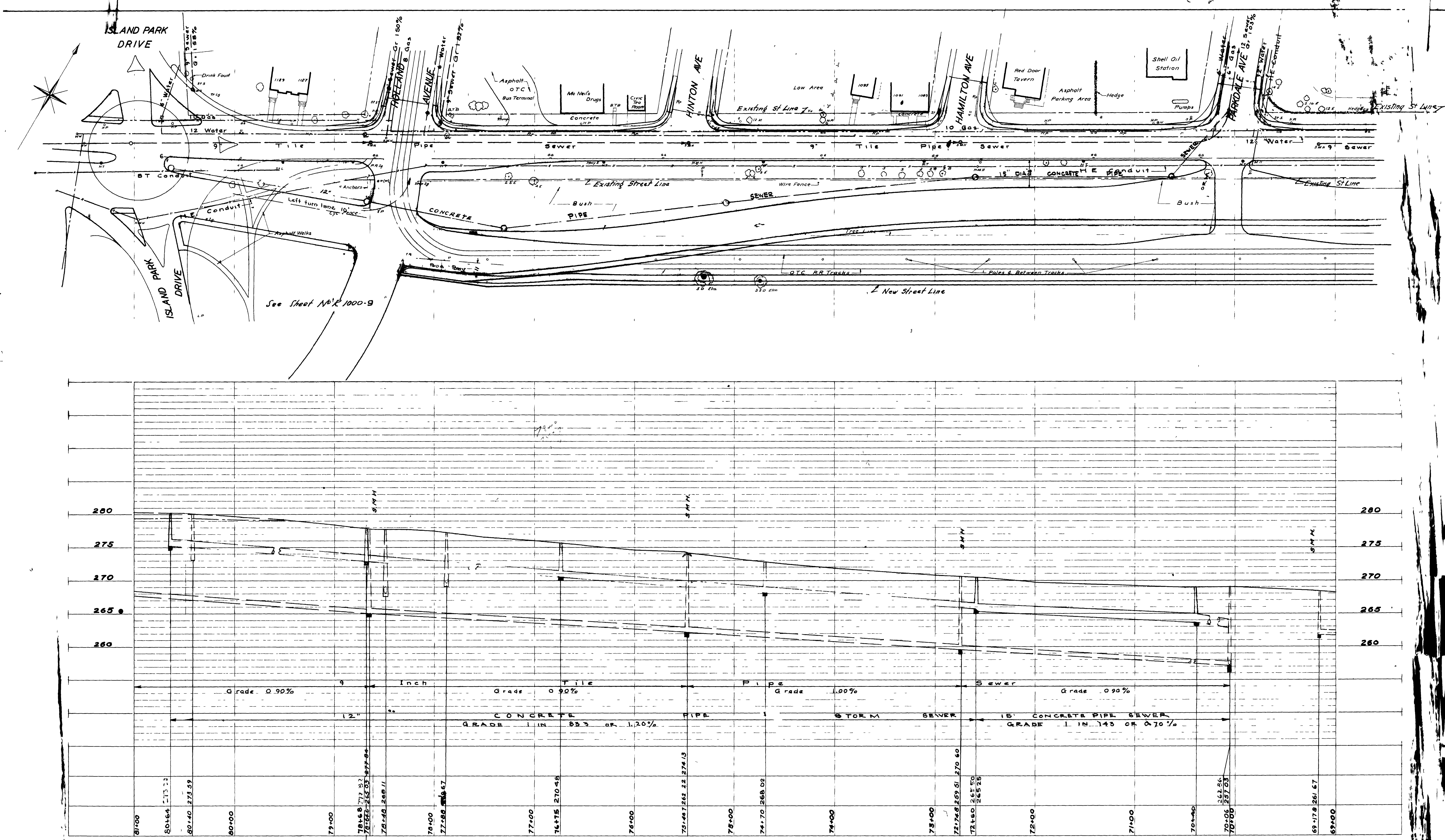
W-02



℄ PROFILE AND OFFSETS		82.16		82.14	82.20		82.28	
TOP OF WATERMAIN ELEVATION			79.51	79.33	79.33		79.33	79.3
℄ WATERMAIN STATION	30+987.75	30+990.75	30+993.57	30+000	30+010	30+020.36	30+020	30+024.75

DATE: 10/9/2007
TIME: 8:53:3 AM
FILE: Q:\6703\CONTRACT\SHEETS\06703_W02.dgn
DWG. FRAME 790mm x 534mm RMOC-06/93-WG

14759



SEWER & DRAINA

J-29
#8

CITY OF OTTAWA
DEPARTMENT OF PLANN
ROADWAYS BR

ENGINEER IN CHARGE OF DESIGN
ENGINEER IN CHARGE OF ROADWAYS
ENGINEER IN CHARGE OF SEWERS
DIRECTOR OF PLANNING & WORKS

J29

Appendix D

Water Servicing Calculations

Water Demand Calculations
1081 Carling Avenue (JLR 31261-001)

East Tower

Unit Breakdown	**No.**	**Person Per Unit (Table 4.1)**
Studio	N/A	1.4
1 Bed	N/A	1.4
1 Bed +	N/A	1.4
2 Bed	N/A	2.1
2 Bed+	N/A	2.1
3 Bed	N/A	3.1
Average	258	1.8
Total Unit Count =	258	
Total Population	465	ppl
Average Day Consumption Rate	280	L/c/d
Average Day Demand	**1.51**	**L/s**
Maximum Day Peaking Factor	2.50	City of Ottawa
Maximum Day Demand	**3.77**	**L/s**
Peak Hour Peaking Factor	2.20	City of Ottawa
Peak Hour Demand	**8.29**	**L/s**
Minimum Hour Peaking Factor	0.40	x Avg Day (Table 3-1 MOE)
Minimum Hour Demand	**0.60**	**L/s**

Water Demand Calculations
1081 Carling Avenue (JLR 31261-001)

West Tower

Unit Breakdown	**No.**	**Person Per Unit (Table 4.1)**
Studio	N/A	1.4
1 Bed	N/A	1.4
1 Bed +	N/A	1.4
2 Bed	N/A	2.1
2 Bed+	N/A	2.1
3 Bed	N/A	3.1
Average	204	1.8
Total Unit Count =	204	
Total Population	368	ppl
Average Day Consumption Rate	280	L/c/d
Average Day Demand	**1.19**	**L/s**
Maximum Day Peaking Factor	2.50	City of Ottawa
Maximum Day Demand	**2.98**	**L/s**
Peak Hour Peaking Factor	2.20	City of Ottawa
Peak Hour Demand	**6.56**	**L/s**
Minimum Hour Peaking Factor	0.40	x Avg Day (Table 3-1 MOE)
Minimum Hour Demand	**0.48**	**L/s**

Guy Forget

From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: Tuesday, August 24, 2021 4:43 PM
To: Alexandre Tourigny
Cc: Guy Forget; Braden Walker
Subject: RE: 1081 Carling Boundary Condition Request
Attachments: 1081 Carling Avenue August 2021 - revised.pdf

Hello Alexandre

The following are boundary conditions, HGL, for hydraulic analysis at 1081 Carling Avenue (zone 2W2C) with an assumed dual connection to both the 305 mm watermain on Parkdale Avenue and the 152 mm on Hamilton Avenue (see attached PDF for location).

Parkdale Connection

Minimum HGL: 123.4 m

Maximum HGL: 132.3 m

Max Day + FireFlow (283 L/s): 106.2 m

Max Day + Fireflow (69.2 L/s): 125.2 m

Hamilton Connection

Minimum HGL: 123.3 m

Maximum HGL: 132.2 m

Max Day + FireFlow (267 L/s): N/A

Max Day + FireFlow (69.2 L/s): 117.6 m

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

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

Regards

Nishant Jhamb, P.Eng
Project Manager |Gestionnaire de projet
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 23112, nishant.jhamb@ottawa.ca
Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Alexandre Tourigny <atourigny@jlrichards.ca>
Sent: August 17, 2021 8:09 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: Guy Forget <gforget@jlrichards.ca>; Braden Walker <braden.walker@taggart.ca>
Subject: 1081 Carling Boundary Condition Request

Hi, Nishant

Thanks for the quick meeting this afternoon to discuss the BC information recently provided to us and to go over fire protection in accordance to the Ontario Building Code (OBC).

The City provided to us boundary conditions on July 14, 2021 for this project. At the time, we had lumped the domestic demands of both building into one overall demand. We have revised the calculations so that the demand for each building is now separate as per the attached. As shown, we refer the Western Tower as the building adjacent to Hamilton and the Eastern Tower as the one adjacent to Parkdale.

As discussed, each building would be fed from a dual WM service lateral (with an isolation valve in between to provide redundancy). The Western Tower on Hamilton would be fed from the 152 mm diameter WM while the Eastern Tower from the Parkdale 305 mm diameter WM. Both of these mains are connected to the Carling Ave 406 mm diameter feedermain.

We understand that the City recommends the use of the FUS. However, within private property where a high-rise residential building equipped with a sprinkler system is proposed, the provincial regulation that applies is the Ontario Building Code. As such, there are hydrants located within the prescribed distance of 45 m (Hamilton & Parkdale) of the proposed Siamese.

Based on Section 6.2 of the attached OBC, sprinklered buildings need to be designed in accordance with NFPA 13. The required fire flow (RFF) based on NFPA 13 must account for: i) the sprinkler system allowance, and ii) a hose stream allowance.

I have attached excerpts extracted from NFPA 13; the chart associated with the sprinkler system allowance (Table 11.2.2.1) and also the chart for the hose stream allowance (Table 11.2.3.1.2). As per NFPA 13 and for the propose building classification, the RFF should consist of the following:

Sprinkler system flow = 3,200 L/min (Table 11.2.2.1) and a hose stream allowance 950 L/min (Table 11.2.3.1.2), which amounts to 4,150 L/min (69.2 L/s).

We, therefore, request hydraulic boundary conditions for the buildings at 1081 Carling Avenue along the Parkdale 305 mm diameter watermain as well as on the Hamilton 152 mm diameter.

Based on the City Design Guidelines, the following demands are anticipated:

Average Day = 1.51 L/s (Eastern Tower) and 1.19 Ls (Western Tower)
Maximum Day = 3.77 L/s (Eastern Tower) and 2.98 L/s (Western Tower)
Peak Hour = 8.29 L/s (Eastern Tower) and 6.58 L/s (Western Tower)

Required Fire Flow

Western Tower:

FUS = 17,000 L/min (283 L/s)

NFPA 13 = 69.2 L/s which is required by provincial legislation

Eastern Tower:

FUS = 16,000 L/min (267 L/s)

NFPA 13= 69.2 L/s which is required by provincial legislation

As discussed with you, we have coordinated the use of the OBC (NFPA 13) approach for the Brigil high-rise condominium tower at 99 Parkdale in 2020. I have attached an excerpt of the boundary condition from Shawn Wessel (page 72 of the Site Servicing Report). During the project, I had discussions with the Water Resources Group (Walid Khawan).

As discussed earlier, there are numerous high-rise condominium Towers in the downtown area that was approved using the OBC approach (NFPA 13), including:

151 Chapel Street (25 and 26 storey high rise Towers) – Trinity Development
505 Preston Street (45 storey high rise Tower) - Claridge Homes
201, 301 & 324 Lett Street (25 to 45 storey high rise Towers) Claridge (Lebreton Flats)
450 Lloyd Avenue (25 to 45 storey high-rise Towers) Claridge (Lebreton Flats)
133 Booth Street (25 to 45 storey high-rise Towers) Claridge (Lebreton Flats)
212 Slater (22 storey high-rise Tower) - 212 Slater
245 Rideau Street (19 storey high-rise Tower) - 245 Rideau
141 George Street, 325 Dalhousie and 110 York (15 storey, 22 storey 18 storey high rise Towers)
145 Loretta & 951 Gladstone (30, 35 and 40 high-rise towers) Trinity development

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

Regards,

Alexandre Tourigny, P.Eng.
Civil Engineer

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

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

'

'


Boundary Conditions for 1081 Carling Avenue
N
Parkdale Connection
Hamilton Connection
152
305
406
av. Hamilton Ave. S.
av. Carling Ave.
1077
419
421
425
424
426
428
430
432
414
Legend
PRIVATE
PUBLIC
City of Ottawa

FUS Fire Flow Calculations

1081 Carling - High Rise Residential Development

(JLR 31261-000)

West Tower (Hamilton)

Step	Parameter	Value		Note
A	Type of Construction	Non-combustible		
	Coefficient (C)	0.8		
B	Sum of All Floors	16949	m^2	Per Gross Area Stats for 22-storey Tower
C	Height in storeys	22	storeys	Basements are excluded.
	Total Floor Area	16949	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	22913	L/min	
	Rounded Fire Flow	23000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-3450		
	Fire Flow	19550	L/min	No rounding applied.
F	Sprinkler Protection	Automatic Fully Supervised		
	Sprinkler Credit	-50%		
	Decrease for Sprinkler	-9775	L/min	
G	*South Side Exposure*			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	45.0	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	45.0	m-storeys	
	Separation Distance	1000	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	50.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	100.0	m-storeys	
	Separation Distance	24.6	m	
	West Side Exposure Charge	10%		
	North Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	15.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	30.0	m-storeys	
	Separation Distance	12.7	m	
	North Side Exposure Charge	12%		
	East Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Non-combustible		
	Length of Exposed Wall:	46.0	m	
	Height of Exposed Wall:	28	storeys	
	Length-Height Factor	1288.0	m-storeys	
	Separation Distance	14.5	m	
	East Side Exposure Charge	15%		
	Total Exposure Charge	37%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	7234	L/min	
H	Fire Flow	17009	L/min	
	Rounded Fire Flow	17000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**17000**	**L/min**	The City of Ottawa's cap does not apply since the building is a high rise building.
		283	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

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

FUS Fire Flow Calculations

1081 Carling - High Rise Residential Development

(JLR 31261-000)

East Tower (Parkdale)

Step	Parameter	Value		Note
A	Type of Construction	Non-combustible		
	Coefficient (C)	0.8		
B	Sum of All Floors	21437	m^2	Per Gross Area Stats for 28-storey Tower
C	Height in storeys	28	storeys	Basements are excluded.
	Total Floor Area	21437	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	25769	L/min	
	Rounded Fire Flow	26000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-3900		
	Fire Flow	22100	L/min	No rounding applied.
F	Sprinkler Protection	Automatic Fully Supervised		
	Sprinkler Credit	-50%		
	Decrease for Sprinkler	-11050	L/min	
G	*South Side Exposure*			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	45.0	m	
	Height of Exposed Wall:	1	storeys	
	Length-Height Factor	45.0	m-storeys	
	Separation Distance	1000	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Non-combustible		
	Length of Exposed Wall:	46.0	m	
	Height of Exposed Wall:	22	storeys	
	Length-Height Factor	1012.0	m-storeys	
	Separation Distance	14.5	m	
	West Side Exposure Charge	15%		
	North Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	14.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	28.0	m-storeys	
	Separation Distance	20.8	m	
	North Side Exposure Charge	8%		
	East Side Exposure			
	Exposing Wall:	Non-combustible		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	11.0	m	
	Height of Exposed Wall:	16	storeys	
	Length-Height Factor	176.0	m-storeys	
	Separation Distance	35.0	m	
	East Side Exposure Charge	5%		
	Total Exposure Charge	28%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	6188	L/min	
H	Fire Flow	17238	L/min	
	Rounded Fire Flow	17000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**17000**	**L/min**	The City of Ottawa's cap does not apply since the building is a high rise building.
		283	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

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

Annie Williams

From: Alexandre Tourigny
Sent: Tuesday, July 6, 2021 12:48 PM
To: Annie Williams
Cc: Guy Forget; Lucie Dalrymple
Subject: FW: 2021-07-05 1081 Carling - Pre-Consult Summary - Civil Servicing Follow-up

Follow Up Flag: Follow up
Flag Status: Completed

Let me know if you need anything else for the boundary conditions.

Thanks,

From: Braden Walker <braden.walker@taggart.ca>
Sent: Tuesday, July 6, 2021 12:28 PM
To: Alexandre Tourigny <atourigny@jlrichards.ca>
Cc: Derek Howe <derek.howe@taggart.ca>; Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: RE: 2021-07-05 1081 Carling - Pre-Consult Summary - Civil Servicing Follow-up

Hello Alex,

Thank you for the questions. Our response is below.

Derek, would you be able to answer question #3 below?

Thank you,
Braden Walker | Development Manager
Taggart Realty Management
T | 613-234-7000 ext: 512 **D** | 613-604-0868 **M** | 613-223-1579
A | 225 Metcalfe Street, Suite 708, Ottawa, Ontario K2P 1P9
E | braden.walker@taggart.ca
W | https://www.taggart.ca/

From: Alexandre Tourigny <atourigny@jlrichards.ca>
Sent: July 6, 2021 10:41 AM
To: Braden Walker <braden.walker@taggart.ca>

Cc: Derek Howe <derek.howe@taggart.ca>; Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: 2021-07-05 1081 Carling - Pre-Consult Summary - Civil Servicing Follow-up

Hi Braden,

Following up on the pre-consult summary we received yesterday, we have the following questions:

1. We understand that the project will consist of twin towers; the western tower will be 22 storey while the eastern tower will be 28 storey. As part of our Servicing Brief, we will need to calculate the domestic demands as well as the required fire flow (RFF) in accordance with the Fire Underwriters Survey (FUS). Given that it takes 2 weeks to get the boundary condition back from the City, we would like to submit the information today. In order to carry out the RFF, we would like, when possible, that you clarify the following (we will make assumptions if item can not be answered):

- Given the height and usage, we assumed that a sprinkler system will be incorporated in both towers. Would the material consist of non-combustible or fire resistive? If fire-resistive, are the vertical openings 'properly protected' (one hour rating)? – The building will be non-combustible and sprinklered. Protected openings will only be required where limiting distance calls for it.
- Please confirm whether firewalls will be part of the building construction. – I don't believe firewalls are required in non-combustible construction.
- Pending on the connection requirements with the existing watermains, where would the mechanical room be located. – There will be a mechanical penthouse for HVAC and the majority of the mechanical equipment. We can bring services into the first floor of the underground parking garage also.
- Please confirm the unit statistics for both Towers (1-bedroom, 2-bedroom, etc.) Note that there is a discrepancy with the number of units on the Drawing (plan view vs table). Will there be commercial space in these buildings, if so, do you have an approximate area? – We will get Hobin to provide an updated unit mix list.

We would complete the RFF calculations based on the response, and would make assumptions for the information that cannot be confirmed.

2. As discussed last week, we strongly recommend having a CCTV inspection carried out for Parkdale, Hamilton and Carling Ave. This would allow us to determine where the existing service connections (Storm and Sanitary) are located. Given the timeline, this may not be feasible in time for the Servicing Brief submission. Are there any objections to JLR sending an inspector to confirm the size and directions of the storm laterals for the existing CBs? Are any permissions required? – I am not sure CCTV inspections are absolutely required for a rezoning. I think we keep things simple. We need to confirm the City infrastructure can support the development, that is all the City will want to know at this point. Exact connection designs are too detailed at this time. If the City asks for more I think we should push back – this is a rezoning, not site plan.

3. We suggest separate connections for sanitary and watermain for each building, on Hamilton and Parkdale Street respectively. Are there any objections to this approach? Are there any shared services between both buildings? – I would assume that it would be more cost effective to have shared water and sewer connections between the buildings. Unless we want the potential to sever these buildings in the future, I would think shared utilities would be more efficient (water, sewer, storm, gas, hydro).

Don't hesitate to give us a call if you would like to discuss any of the above.

Thanks,
Alex

Alexandre Tourigny, P.Eng.
Civil Engineer

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

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

CANADA BEST MANAGED COMPANIES Platinum member

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

J.L. Richards & Associates Limited

HEAD LOSS - HAZEN-WILLIAMS

1081 Carling - High Rise Residential Development
(JLR 31261-000)

Demand Scenario	East Tower	West Tower
Average Day	1.51	1.19
Maximum Day	3.77	2.98
Required Fire Flow (FUS)	267.00	283.00
Required Fire Flow (NFPA)	69.17	69.17
Peak Hour	8.29	6.58

Boundary Conditions (Email from City, Augsut 24, 2021):

Water Demand Scenario	Demand East Tower (L/s)	Demand West Tower (L/s)	Head (m) on Parkdale Ave. Connection	Head (m) on Hamilton Ave. Connection
Peak Hour	8.29	6.58	123.4	123.3
Maximum HGL	0.00	0.00	132.3	132.3
Max Day + Fire Flow (OBC)	72.94	72.15	125.2	117.6
Max Day + Fire Flow (FUS)	267.00	283.00	106.2	N/A

Headloss Calculations (Hazen Williams Equation)

Hazen Williams equation (Mays, 1999; Streeter et al., 1998; Viessman and Hammer, 1993)
where k=0.85 for meter and seconds units or 1.318 for feet and seconds units:

$$H = L\left[\frac{V}{kC}\left(\frac{4}{D}\right)^{0.63}\right]^{1/0.54} \qquad V = \frac{Q}{A} \qquad A = \frac{\pi}{4}D^2$$

Where,

HL = Headloss (m)

Q - Flow (m^3/s)
L - Length (m)
C - Hazen Williams "C"
D - Watermain Diameter (m)
V - Velocity (m/s)
A - Watermain Cross-Sectional Area (m^2)

1081 Carling Ave. Headloss Calculations

Water Demand Condition	Flow (Q) (L/s)	Flow (Q) (m^3/s)	Length (m)	C	D (m)	V (m/s)	A (m2)	Head Loss (m)	HGL (m)	Calculated HGL (m)	Elevation (m) of Tower	Pressure @ Node (m)	(kPa)	(psi)	ODG 4.2.2 Requirement	Criteria Acheived?
Peak Hour (East Tower)	8.29	0.008	14	100	0.155	0.439	0.019	0.037	123.400	123.363	82.35	41.013	402	58.4	276 kPa	Yes
Peak Hour (West Tower)	6.58	0.007	7	100	0.155	0.349	0.019	0.012	123.300	123.288	82.35	40.938	402	58.2	276 kPa	Yes
Maximum HGL (East Tower)	0.00	0.000	14	100	0.155	0.000	0.019	0.000	132.300	132.300	82.35	49.950	490	71.1	552 kPa	Yes
Maximum HGL (West Tower)	0.00	0.000	7	100	0.155	0.000	0.019	0.000	132.300	132.300	82.35	49.950	490	71.1	552 kPa	Yes
Max Day + Fire Flow (NFPA) - East Tower	72.94	0.073	14	100	0.155	3.865	0.019	2.052	125.200	123.148	82.35	40.798	400	58.0	140 kPa	Yes
Max Day + Fire low (NFPA) - West Tower	72.15	0.072	7	100	0.155	3.824	0.019	0.995	117.600	116.605	82.35	34.255	336	48.7	140 kPa	Yes

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 Flow at Base of Riser (Including Hose Stream Allowance)		Duration (minutes)
	psi	bar	gpm	L/min	
Light hazard	15	1	500–750	1900-2850	30–60
Ordinary hazard	20	1.4	850–1500	3200-5700	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 ft^2 (465 m^2) or less
(4) New systems exceeding 5000 ft^2 (465 m^2) 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.

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 ft^2 (139 m^2) used for light and ordinary hazard occupancies, the density for 1500 ft^2 (139 m^2) shall be used.
(2) For areas of sprinkler operation less than 2500 ft^2 (232 m^2) for extra hazard occupancies, the density for 2500 ft^2 (232 m^2) 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 ft^2 (280 m^2).

(A) The design area of 3000 ft^2 (280 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 ft^2 (280 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

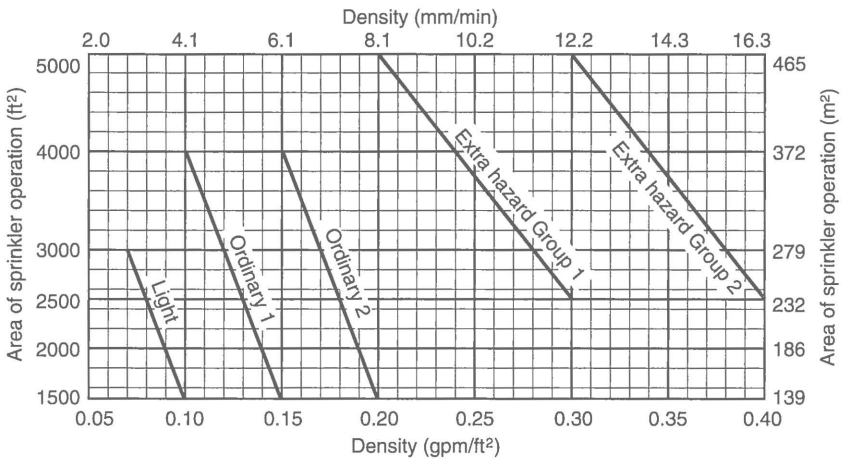


FIGURE 11.2.3.1.1 Density/Area Curves.

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

Occupancy	Inside Hose		Total Combined Inside and Outside Hose		Duration (minutes)
	gpm	L/min	gpm	L/min	
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 ft^3 (4.5 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 ft^2 (5.1 m^2) in area.

(8) Vertical pipe chases under 10 ft^2 (0.9 m^2), 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 ft^2 (0.9 m^2) 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 ft^3 (4.5 m^3) 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 curve.

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 E

Wastewater Peak Flow Calculations

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

1081 Carling Avenue
SANITARY SEWER DESIGN SHEET
TAGGARD REALTY MANAGEMENT
JLR NO. 31261-000

Single Family	3.4	pers/unit	q =	280	L/cap/day
Appartment Units	1.8	pers/unit	I =	0.330	L/s/ha
Manning's Coeff. N =	0.013		Inst. =	50000	L/ha/day

STREET	M.H. #		RESIDENTIAL NUMBER OF UNITS Apt.	RESIDENTIAL NUMBER OF UNITS AREA ha	RESIDENTIAL CUMULATIVE POPUL. peop.	RESIDENTIAL CUMULATIVE AREA ha	PEAKING FACTOR	POPUL. FLOW l/s	PEAK EXTR. FLOW l/s	PEAK DES. FLOW l/s
	FROM	TO								
West Tower	MH1	MH2	204	0.1054	367	0.11	3.43	4.08	0.03	4.12
East Tower	MH 3	MH4	258	0.12	464	0.12	3.39	5.10	0.04	5.14

Alexandre Tourigny

From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: Tuesday, July 13, 2021 3:34 PM
To: Alexandre Tourigny
Cc: Lucie Dalrymple; Braden Walker
Subject: RE: 1081 Carling Ave Existing Sanitary peak flow

Hello Alexandre,

Both Sanitary mains on Hamilton Ave and Parkdale Ave have the capacity to take required 10.55L/s discharge.

There is more capacity of Parkdale Ave so our first preference is to connect sanitary service to Parkdale Ave and recommends to use the existing service lateral (*as long as you can confirm that existing sanitary service lateral has the required capacity and is in good condition*).
Second preference is to divide the discharge between Parkdale Ave and Hamilton Ave.
Last preference is to connect sanitary service on Hamilton Ave only.

I will get back to you with Boundary conditions once I receive it.

Thanks
Nishant

From: Jhamb, Nishant
Sent: July 12, 2021 10:28 AM
To: Alexandre Tourigny <atourigny@jlrichards.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Braden Walker <braden.walker@taggart.ca>
Subject: RE: 1081 Carling Ave Existing Sanitary peak flow

Hello Alexandre,

Thank you. I will get back to you as soon as I hear from concerned department.

Regards
Nishant Jhamb, P.Eng
Project Manager |Gestionnaire de projet
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch

City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 23112, nishant.jhamb@ottawa.ca
Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Alexandre Tourigny <atourigny@jlrichards.ca>
Sent: July 12, 2021 10:21 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: Lucie Dalrymple <ldalrymple@jlrichards.ca>; Braden Walker <braden.walker@taggart.ca>
Subject: 1081 Carling Ave Existing Sanitary peak flow

Good morning Nishant,

The existing peak sanitary design flow for the existing building at 1081 Carling Avenue is estimated at 0.288 L/s. There is currently an 8 story commercial building on-site which we believe is beings serviced by the existing sanitary sewer on Parkdale Ave.

- Commercial average flow: 28,000 L/gross ha/d
- Building Area: 0.0682 ha
- Number of stories: 8
- Commercial peak factor: 1.5
- Infiltration Allowance: 0.33 L/s/ha

28,000 L/gross ha/d x (0.0682ha x 8) x 1.5 = 22,915.2 L/d (0.265L/s).

I/I: 0.33L/s/ha x 0.0682 ha = 0.023 L/s

Average Flow (L/ha/d)	Gross Area (ha) [building footprint x 8]	Peaking Factor	Ave. Commercial Flow (L/s)	Peak Extra flow (L/s)	Peak Design Flow (L
28000	0.546	1.5	0.265	0.023	**0.288**

Best Regards,

Alexandre Tourigny, P.Eng.
Civil Engineer

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

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

BEST MANAGED COMPANIES
Platinum member

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

'

'

Appendix F

Storm Servicing and
Stormwater Management
Calculations

11 June 2021 11:44 AM

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2169023

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)

TOTAL AREA OF SITE 4293 M2

TOTAL AREA OF ROAD WIDENING EASEMENT 241M2

Pre-Development Drainage Areas

P1
577 m2 Asphalt
to Parkdale Ave

P2
1060 m2 Asphalt
to Parkdale Ave

P3
676 m2 Roof
to Parkdale Ave

P4
127 m2 to
Parkdale Ave

P5
148 m2 to
Parkdale Ave

H1
1448 m2 Roof
to Hamilton Ave

C1
16 m2 to Carling
Ave

241 m2 Road
widening
easement to
Carling Ave

576.96 sq m
169.91 sq m
1,059.9 sq m
219.92 sq m
146.98 sq m
126.77 sq m
1,059.32 sq m
676.13 sq m
16.17 sq m
240.68 sq m

CONCRETE PARKING GARAGE
1 UNDERGROUND LEVEL
AND 2 LEVELS ABOVE GRADE
(CONCRETE & GRADE NOTED)

No. 1081 CARLING AVENUE
MULTI-STOREY COMMERCIAL BUILDING
(BRICK NOTED)

Stantec

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

TOPOGRAPHIC PLAN OF
LOTS 1280, 1282,1284, 1286. 1295 1297 1299 AND 1301 REGISTERED PLAN 157 CITY OF OTTAWA

Scale 1:200
5 0 5 10 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 SHOWN HEREON ARE ASTRONOMIC AND ARE DERIVED FROM THE EASTERLY LIMIT OF HAMILTON AVENUE SOUTH SHOWN AS N23°32'20"W ON PLAN D-50, BA1486.

ELEVATION NOTE
ELEVATIONS SHOWN HEREON ARE GEODETIC VERTICAL DATUM (CGVD-1928:1978) AND ARE DERIVED FROM CAN NET NETWORK MONUMENT: OTTAWA ELEVATION 95.230..

LEGEND (IF APPLICABLE)

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
647	"	H.R. FARLEY, O.L.S.
1236	"	P.A. RIDDELL, O.L.S.
1474	"	M.E. RENAUD, O.L.S.
P	"	REGISTERED PLAN 157
P1	"	PLAN D-50, BA1486
P2	"	PLAN BY 647 DATED FEBRUARY 19, 1973
P3	"	PLAN BY 1474 DATED FEBRUARY 22, 2001
P4	"	PLAN BY 1236 DATED SEPT. 4, 1973
P5	"	REGISTERED PLAN 207509
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
AP	"	AIR PUMP
ANT	"	ANTENNA
BH	"	BOREHOLE
BIB	"	HOSE BIB
BKR	"	BIKE RACK
BENCH	"	BENCH
BOL	"	BOLLARD
BOUL	"	BOULDER
CB	"	CATCH BASIN
DCB	"	DOUBLE CB
CBMH	"	CB MANHOLE
DCBMH	"	DOUBLE CB MANHOLE
SICB	"	SIDE INLET CB
CHM	"	CHIMNEY
CO	"	CLEAN OUT
CSV	"	CURB STOP VALVE
DRN	"	DRAIN
EPOST	"	ELECTRICAL OUTLET
FP	"	FLAG POLE
FL	"	FLOOD LIGHT
FTF	"	FUEL TANK FILLER CAP
GC	"	GARBAGE CAN
GFL	"	PIPE FLANGE (GAS)
GFP	"	GAS FUEL PUMP
GP	"	POLE GUYWIRE
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
HIC	"	HICKENBOTTOM
HDS	"	HEADSTONE
HLS	"	HYDRO LIGHT STANDARD
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
LS	"	LIGHT STANDARD
MB	"	MAILBOX
MP	"	MONITORING PIN
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHB	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHSA	"	MAINTENANCE HOLE SANITARY
MHST	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
NPB	"	NEWS PAPER BOX
OLS	"	LIGHT STANDARD ORNAMENTAL
OW	"	OBSERVATION WELL
PKM	"	PARKING METER
PLBX	"	PULL BOX
PLQ	"	PLAQUE
PLR	"	PILLAR
RWSS	"	RAILWAY SWITCH STAND
SAT	"	SATELLITE DISH
SCLP	"	SCULPTURE
SCP	"	SUMP/CATCH PIT
SCV	"	SPRINKLER CONTROL VALVE
SH	"	SPRINKLER HEAD
SIA	"	SIAMESE CONNECTION
SN	"	SIGN
SPAN	"	SOLAR PANEL
SPT	"	SEPTIC TANK LID
TBL	"	TABLE
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
TPIT	"	TEST PIT
TSL	"	TRAFFIC SIGNAL LIGHT
UMB	"	MARKER BELL UNDERGROUND
UMC	"	MARKER CABLE UNDERGROUND
UMG	"	MARKER GAS UNDERGROUND
UMO	"	MARKER OIL UNDERGROUND
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
	"	TREE STUMP
	"	TREE CONIFEROUS
	"	TREE DECIDUOUS
OHW	OHW	OHW

OVERHEAD WIRE

SURVEYOR'S CERTIFICATE
I CERTIFY THAT :
1. THE SURVEY WAS COMPLETED ON THE 1st DAY OF JUNE, 2021.

DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

DRAWN: NJ CHECKED: BW PM: BW FIELD: AW/NB PROJECT No.: 161614366-111

This plan was signed with a scanned signature as a result of the Emergency Order related to the COVID-19 pandemic.

W:\active\161614366\topographical\drawing\161614366-111-d3-c3d.dwg

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

1081 Carling

Allowable Peak Flow & SWM Calculations (Hamilton Ave Storm Sewer)

Allowable Peak Flow Calculation:

To Hamilton 300 mm diameter storm sewer:

$Q_{allowable}$ (1:2-year) =	12.15 L/s

Post-Development Drainage Areas

Controlled Flow To Hamilton Ave 300 mm diameter sewer:

Type of Area	Area (m^2)	C-Factor
West Tower Mech Penthouse	395	0.90
West Tower 22 Storey Roof	285	0.90
Total =	680	

Un-controlled Flow To Hamilton Ave 300 mm diameter sewer:

Type of Area	Area (m^2)	C-Factor
Hamilton Ave. Frontage	85	0.90

Total Area tributary ro Hamilton Ave. Storm Sewer 765 m^2

1:100 Year Peak Unctontrolled Flow to Hamilton:	
Tc	10 min.
Intensity $_{100yr}$	179 mm/hr.
Q=2.8CAI	3.80 L/s

Remaining Allowable Release Rate to Hamilton Ave. 300mm dia. Sewer:
12.15L/s - 3.80 L/s = 8.35 L/s

Summary of Flows	Release Rate
West Tower Mech Penthouse Roof Storage	3.15 L/s
West Tower 22 Story Roof Storage	3.15 L/s
Uncontrolled to Hamilton	3.80 L/s
Total Flow	**10.10 L/s**

Summary of Storage Requirements	
West Tower Mech Penthouse Roof Storage	10.67 m^3
West Tower 22 Story Roof Storage	6.48 m^3
Total	**17.16 m^3**

Summary of Storage Provided	
West Tower Mech Penthouse Roof Storage	35.55 m^3
West Tower 22 Story Roof Storage	25.65 m^3
Total	**61.20 m^3**

SWM Calcs for Areas Tributary to Hamilton 300mm diameter Sewer :

West Tower Mech Penthouse Roof Storage	
Area (m2)	395
C =	0.90
Sum of Roof Drains =	3.15
Storage Volume (m3)	10.67

Assuming Watts Ajustable Accutrol Weir (weir fully closed at 6" depth)	
No. of Drains	10
Flow/drain:	0.315 L/s

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)
10	178.56	17.65	3.15	14.50	8.70	22.06	18.91	11.35
15	142.89	14.12	3.15	10.97	9.87	17.65	14.50	13.05
20	119.95	11.85	3.15	8.70	10.45	14.82	11.67	14.00
25	103.85	10.26	3.15	7.11	10.67	12.83	9.68	14.52
30	91.87	9.08	3.15	5.93	10.67	11.35	8.20	14.76
35	82.58	8.16	3.15	5.01	10.52	10.20	7.05	14.81
40	75.15	7.43	3.15	4.28	10.26	9.28	6.13	14.72
45	69.05	6.82	3.15	3.67	9.92	8.53	5.38	14.53
50	63.95	6.32	3.15	3.17	9.51	7.90	4.75	14.25
55	59.62	5.89	3.15	2.74	9.05	7.37	4.22	13.91
60	55.89	5.52	3.15	2.37	8.55	6.91	3.76	13.52
65	52.65	5.20	3.15	2.05	8.01	6.50	3.35	13.08
70	49.79	4.92	3.15	1.77	7.44	6.15	3.00	12.60

The following assumptions were made in regard to rooftop configuration:

Rooftop flow (10 drains) =	3.15 L/s
Area of Roof	395 m2
60% of roof for storage =	237 m2
Vol. @ 6" ponding =	35.6 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 10.7 m3 and 14.8 m3 under the 1:100 year and climate change event (CCE)
Based on the above assumption (60% of rooftop used as storage), sufficient rooftop storage (36.5 m3) will be provided to detain the 1:100 yr and CCE on the rooftop

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

1081 Carling

Allowable Peak Flow & SWM Calculations (Hamilton Ave Storm Sewer)

West Tower 22 Storey Roof Storage	
Roof (m2)	285
C =	0.90
Sum of Roof Drains =	3.15
Storage Volume (m3)	6.48

Assuming Watts Ajustable Accutrol Weir (weir fully closed at 6" depth)	
No. of Drains	10
Flow/drain:	0.315 L/s

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)
10	178.56	12.73	3.15	9.58	5.75	15.92	12.77	7.66
15	142.89	10.19	3.15	7.04	6.34	12.74	9.59	8.63
20	119.95	8.55	3.15	5.40	6.48	10.69	7.54	9.05
25	103.85	7.41	3.15	4.26	6.38	9.26	6.11	9.16
30	91.87	6.55	3.15	3.40	6.12	8.19	5.04	9.07
35	82.58	5.89	3.15	2.74	5.75	7.36	4.21	8.84
40	75.15	5.36	3.15	2.21	5.30	6.70	3.55	8.52
45	69.05	4.92	3.15	1.77	4.79	6.15	3.00	8.11
50	63.95	4.56	3.15	1.41	4.23	5.70	2.55	7.65
55	59.62	4.25	3.15	1.10	3.64	5.31	2.16	7.14
60	55.89	3.99	3.15	0.84	3.01	4.98	1.83	6.60
65	52.65	3.75	3.15	0.60	2.36	4.69	1.54	6.02
70	49.79	3.55	3.15	0.40	1.68	4.44	1.29	5.41
75	47.26	3.37	3.15	0.22	0.99	4.21	1.06	4.78
80	44.99	3.21	3.15	0.06	0.28	4.01	0.86	4.13
85	42.95	3.06	3.15	N/A	N/A	3.83	0.68	3.46
90	41.11	2.93	3.15	N/A	N/A	3.66	0.51	2.78

The following assumptions were made in regard to rooftop configuration:

Rooftop flow (10 drains) =	3.15 L/s
Area of Roof	285 m2
60% of roof for storage =	171 m2
Vol. @ 6" ponding =	25.7 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 6.5 m3 and 9.3 m3 under the 1:100 year and climate change event (CCE)
Based on the above assumption (60% of rooftop used as storage), sufficient rooftop storage (26.1 m3) will be provided to detain the 1:100 yr and CCE on the rooftop

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

1081 Carling
Allowable Peak Ave. Flow & SWM Calculations (Parkdale Storm Sewer)

Allowable Peak Flow Calculation:

To Parkdale 600 mm diameter storm sewer:

$Q_{allowable}$ (1:2-year) =	21.80 L/s

Post-Development Drainage Areas

Controlled Flow To Parkdale Ave 600 mm diameter sewer:

Type of Area	Area (m^2)	C-Factor
East Tower Mech Penthouse	390	0.90
East Tower 28 Storey Roof	360	0.90
East Tower 6 Storey Podium	260	0.90
Frontage on Carling Ave. + West Tower 6 Storey Podium	1760	0.90
Park Dedication	429	0.30
Park Frontage	52	0.90
Total =	3251	

Un-controlled Flow To Parkdale Ave 600 mm diameter sewer:

Type of Area	Area (m^2)	C-Factor
Frontage on Parkale Ave	36	0.90

Total Area Tributary to Parkdale Ave. Storm Sewer: 3287 m^2

1:100 Year Peak Unctontrolled Flow to Parkdale:	
Tc	10 min.
Intensity $_{100yr}$	179 mm/hr.
Q=2.8CAI	1.61 L/s

1:5 Year Peak Flowrate from dedicated Parkland:	
Tc	10 min.
Intensity 5_{yr}	104 mm/hr.
Q=2.8CAI	3.73 L/s

Remaining Allowable Release Rate to Parkdale Ave 600mm diameter Sewer:
21.80 L/s - 1.61 L/s - 3.73 = 17.49 L/s

Summary of Flows	**Release Rate**
East Tower Mech Penthouse Roof Storage	3.15 L/s
East Tower 28 Story Roof Storage	3.15 L/s
Park Dedication	3.73 L/s
Cistern	5.89 L/s
Uncontrolled Peak Flow	1.61 L/s
Total	**17.53 L/s**

Summary of Storage Requirements	
East Tower Mech Penthouse Roof Storage	10.47 m^3
East Tower 28 Story Roof Storage	9.31 m^3
Park Dedication	0.96 m^3
Cistern	83.74 m^3
Total	**104.47 m^3**

Summary of Storage Provided	
East Tower Mech Penthouse Roof Storage	35.10 m^3
East Tower 28 Story Roof Storage	32.40 m^3
Park Dedication	0.96 m^3
Cistern	83.74 m^3
Total	**152.19 m^3**

SWM Calcs for Areas Tributary to Parkdale 600mm diameter Sewer :

East Tower Mech Penthouse Roof Storage	
Area (m2)	390
C =	0.90
Sum of Roof Drains =	3.15
Storage Volume (m3)	10.47

Assuming Watts Ajustable Accutrol Weir (weir fully closed at 6" depth)
No. of Drains 10
Flow/drain: 0.315 L/s

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)
10	178.56	17.42	3.15	14.27	8.56	21.78	18.63	11.18
15	142.89	13.94	3.15	10.79	9.71	17.43	14.28	12.85
20	119.95	11.70	3.15	8.55	10.27	14.63	11.48	13.78
25	103.85	10.13	3.15	6.98	10.47	12.67	9.52	14.27
30	91.87	8.96	3.15	5.81	10.47	11.21	8.06	14.50
35	82.58	8.06	3.15	4.91	10.31	10.07	6.92	14.54
40	75.15	7.33	3.15	4.18	10.04	9.17	6.02	14.44
45	69.05	6.74	3.15	3.59	9.69	8.42	5.27	14.24
50	63.95	6.24	3.15	3.09	9.27	7.80	4.65	13.95
55	59.62	5.82	3.15	2.67	8.80	7.27	4.12	13.60
60	55.89	5.45	3.15	2.30	8.29	6.82	3.67	13.20
65	52.65	5.14	3.15	1.99	7.75	6.42	3.27	12.76
70	49.79	4.86	3.15	1.71	7.18	6.07	2.92	12.28

The following assumptions were made in regard to rooftop configuration:

Rooftop flow (10 drains) =	3.15 L/s
Area of Roof	390 m2
60% of roof for storage =	234 m2
Vol. @ 6" ponding =	35.1 m3

The SWM Calculations (above) shows rooftop storage volume requirements of 10.5 m3 and 14.6 m3 under the 1:100 year and climate change event (CCE)
Based on the above assumption (60% of rooftop used as storage), sufficient rooftop storage (35.0 m3) will be provided to detain the 1:100 yr and CCE on the rooftop

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

1081 Carling

Allowable Peak Ave. Flow & SWM Calculations (Parkdale Storm Sewer)

East Tower 28 Storey Roof Storage	
Roof (m2)	360
C =	0.90
Sum of Roof Drains =	3.15
Storage Volume (m3)	9.31

Assuming Watts Ajustable Accutrol Weir (weir fully closed at 6" depth)
No. of Drains 10
Flow/drain: 0.315 L/s

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Rooftop ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)
10	178.56	16.08	3.15	12.93	7.76	20.10	16.95	10.17
15	142.89	12.87	3.15	9.72	8.75	16.09	12.94	11.64
20	119.95	10.80	3.15	7.65	9.19	13.51	10.36	12.43
25	103.85	9.35	3.15	6.20	9.31	11.69	8.54	12.81
30	91.87	8.27	3.15	5.12	9.22	10.34	7.19	12.95
35	82.58	7.44	3.15	4.29	9.00	9.30	6.15	12.91
40	75.15	6.77	3.15	3.62	8.68	8.46	5.31	12.75
45	69.05	6.22	3.15	3.07	8.29	7.77	4.62	12.49
50	63.95	5.76	3.15	2.61	7.83	7.20	4.05	12.15
55	59.62	5.37	3.15	2.22	7.33	6.71	3.56	11.76
60	55.89	5.03	3.15	1.88	6.78	6.29	3.14	11.32
65	52.65	4.74	3.15	1.59	6.21	5.93	2.78	10.83
70	49.79	4.48	3.15	1.33	5.61	5.61	2.46	10.31
75	47.26	4.26	3.15	1.11	4.98	5.32	2.17	9.77
80	44.99	4.05	3.15	0.90	4.33	5.07	1.92	9.19
85	42.95	3.87	3.15	0.72	3.67	4.84	1.69	8.60
90	41.11	3.70	3.15	0.55	2.99	4.63	1.48	7.98

The following assumptions were made in regard to rooftop configuration:

Rooftop flow (10 drains) =	3.15	L/s
Area of Roof	360	m2
60% of roof for storage =	216	m2
Vol. @ 6" ponding =	32.4	m3

The SWM Calculations (above) shows rooftop storage volume requirements of 9.3 m3 and 13.0 m3 under the 1:100 year and climate change event (CCE)
Based on the above assumption (60% of rooftop used as storage), sufficient rooftop storage (32.4 m3) will be provided to detain the 1:100 yr and CCE on the rooftop

Park Storage	
Park Dedication	429
C =	0.3
CB ICD	3.73
Storage Volume (m3)	0.96

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Park ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)
10	178.56	5.32	3.73	1.60	0.96	6.65	2.93	1.76
15	83.56	2.49	3.73	N/A	N/A	3.11	N/A	N/A
20	70.25	2.09	3.73	N/A	N/A	2.62	N/A	N/A

The SWM Calculations (above) shows Park storage volume requirements of 0.96 m3 and 1.76 m3 under the 1:100 year and climate change event (CCE)

Allowable Cistern Flowrate = 21.80 L/s - (2*3.15 L/s) - 3.73 L/s = 11.77 L/s
Cistern ICD for Calculations = 11.77/2 = 5.89 L/s

Cistern Storage	
Frontage on Park	52
Frontage on Carling	1760
6 Story Podium	260
C =	0.9
Cistern ICD (50% of 11.77 L/s)	5.89
Storage Volume (m3)	83.74

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp Cistern ICD (L/s)	Qp stored (L/s)	Max Volume Requirement (m^3)	Qp CCE (L/s)	Qp stored (L/s)	Volume CCE Requirement (m^3)
10	178.56	92.57	5.89	86.68	52.01	115.71	109.82	65.89
15	142.89	74.08	5.89	68.19	61.37	92.60	86.71	78.04
20	119.95	62.18	5.89	56.29	67.55	77.73	71.84	86.21
25	103.85	53.84	5.89	47.95	71.92	67.29	61.40	92.11
30	91.87	47.63	5.89	41.74	75.12	59.53	53.64	96.56
35	82.58	42.81	5.89	36.92	77.53	53.51	47.62	100.01
40	75.15	38.96	5.89	33.07	79.36	48.70	42.81	102.73
45	69.05	35.80	5.89	29.91	80.75	44.75	38.86	104.91
50	63.95	33.15	5.89	27.26	81.79	41.44	35.55	106.66
55	59.62	30.91	5.89	25.02	82.57	38.64	32.75	108.07
60	55.89	28.98	5.89	23.09	83.11	36.22	30.33	109.19
65	52.65	27.29	5.89	21.40	83.47	34.12	28.23	110.08
70	49.79	25.81	5.89	19.92	83.67	32.26	26.37	110.77
75	47.26	24.50	5.89	18.61	83.74	30.62	24.73	111.30
80	44.99	23.32	5.89	17.43	83.68	29.15	23.26	111.67
85	42.95	22.27	5.89	16.38	83.53	27.83	21.94	111.92
90	41.11	21.31	5.89	15.42	83.28	26.64	20.75	112.05
95	39.43	20.44	5.89	14.55	82.96	25.55	19.66	112.09
100	37.90	19.65	5.89	13.76	82.56	24.56	18.67	112.03

The SWM Calculations (above) shows Cistern storage volume requirements of 83.74 m3 and 112.09 m3 under the 1:100 year and climate change event (CCE)

J.L.Richards
ENGINEERS ARCHITECTS PLANNERS

1081 Carling

Pre-development (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 1:2 year IDF and based on a C-Factor = 0.5
2 Time of Concentration (Tc) to be calculated based on existing condition.
3 Rooftop flows and Amenity Area Flows to be controlled and conveyed to the Hamilton Avenue 300mm dia. Sewer and the 600m dia. Sewer on Parkdale Av
4 1:100 year post development flows to be limited to the allowable peak flow (1:2 year flow) by means of on-site retention measures
5 SWM calculations to be compiled using the Modified Rational Method (MRM) for rooftop and at grade storage
6 MRM calculations to estimate cistern storage, to be estimated based on 50% of the peak flow rate per City requiremer
7 All storm contributions to be be relased to storm sewers to be controlled by means of an inlet control device (ICD) or accounted as uncontrolle

Total Area of Site: 4293 m²
Total area of Road Widening Easement: 241 m2
Flow Allocation based on Total Site Area 4293m2 - Area of Road Widening Easement 241 m2 = 4052 m

Pre-Development Area Breakdown:

To Parkdale Avenue 600mm dia. Storm Sewer

Type of Area	Area (m²)	C-Factor	C-Factor (Eff)
Paring Lot (P1)	577	0.5	
Parking Garage (P2)	1093	0.5	
Roof (P3)	676	0.5	
Garage Ramp (P4)	127	0.5	
Boulevard (P5)	148	0.5	
Total =	2588	0.50	0.50

Time of Concentration (existing):

Flow Path P1
Travel time from parking lot to CB 15min
Travel time from CB to Sewer on Parkdale
Assume pipe velocity = 1.0m/s; travel Length 23m; Travel Length = 23m/1.0 m/s = 0.4min
Tc (exist) = 15 mins + 0.4 mins

Flow Path P2:
Travel Time from Parking lot to parking leader drain 15min
Travel Time from Leaderto Parkdale Sewer
Assume pipe velocity = 1.0m/s; travel Length 15m; Travel Length = 15m/1.0 m/s = 0.3min
Tc (exist) = 15 mins + 0.3 mins

Flow Path P3:
Travel time from Roof to roof drain 15min
Travel time from lead to Parkdale Sewer
Assume pipe velocity = 1.0m/s; travel Length 15m; Travel Length = 15m/1.0 m/s = 0.5min
Tc (exist) = 15 mins + 0.5 mins

Flow Path P4:
Travel Time from garage ramp to drain 15min
Travel time from drain to Parkdale Sewer
Assume pipe velocity = 1.0m/s; travel Length 23m; Travel Length = 23m/1.0 m/s = 0.4min
Tc (exist) = 15 mins + 0.4 mins

Flow Path P5:
Travel time from edge of building to CB 15min
Travel time from CB to Parkdale sewer
Assume pipe velocity = 1.0m/s; travel Length 3m; Travel Length = 3m/1.0 m/s = 0.05min
Tc (exist) = 15 mins + 0.05 mins

Tc = 15.50 mins
$Intensity_{(2yr)}$ = 60.61 mm/hr

Existing Peak Flow Calculations (1:2-year @ C-Factor = 0.50)

$Q2_{yr}$ = 2.78CAI
$Q2_{yr}$ = (2.78) x (0.50) x (0.2588 ha) x (60.61 mm/hr
$Q2_{yr}$ = 21.8 L/s

To Hamilton Avenue 300mm dia. Storm Sewer

Type of Area	Area (m²)	C-Factor	C-Factor (Eff)
Asphalt Parking Lot (H1)	1448	0.9	0.5
Total =	1448	0.90	0.50

Time of Concentration (existing):

Flow Path H1
Travel time from parking lot to CB 15min
Travel time from CB to Sewer on Parkdale
Assume pipe velocity = 1.0m/s; travel Length 33m; Travel Length = 33m/1.0 m/s = 0.55min
Tc (exist) = 15 mins + 0.6 mins

Tc = 15.60 mins
$Intensity_{(2yr)}$ = 60.39 mm/hr

Existing Peak Flow Calculations (1:2-year @ C-Factor = 0.50)

$Q2_{yr}$ = 2.78CAI
$Q2_{yr}$ = (2.78) x (0.50) x (0.1448 ha) x (60.39 mm/hr
$Q2_{yr}$ = 12.15 L/s

Summary Table	
Area being diverted to Parkdale 600mm dia. sewer:	2588 m²
Area being diverted to Hamilton 300mm dia. sewer:	1448 m²
Area being diverted to Carling 375mm dia. sewer (nic Road Widening Easement)	16 m²
Area of Road Widening Easement being diverted to Carling 375mm dia. storm sewer:	241 m²
Total Site Area	4293 m²

To Carling Avenue 375mm dia. Sewer

Type of Area	Area (m²)	C-Factor	C-Factor (Eff)
Asphalt/Interlock	16	0.9	0.9
Total =	16	0.90	0.50

Time of Concentration (existing):

Flow Path C1
Travel time from edge of building to CB 15 mins
Travel time from CB to Carling sewer 3m
Assume pipe velocity = 1.0m/s; travel Length 3m; Travel Length = 3m/1.0 m/s = 0.05min
Tc (exist) = 15 mins + 0.05 mins

Tc = 15.05 mins
$Intensity_{(2yr)}$ = 61.65 mm/hr

Existing Peak Flow Calculations (1:2-year @ C-Factor = 0.50)

$Q2_{yr}$ = 2.78CAI
$Q2_{yr}$ = (2.78) x (0.50) x (0.0016 ha) x (61.65 mm/hr)
$Q2_{yr}$ = 0.14 L/s

TOTAL AREA OF SITE 4293 M2

TOTAL AREA OF ROAD WIDENING EASEMENT 241M2

PROJECT NORTH

429 m2 Dedicated Parkland
Req'd storage: 1 m3
- Outlet to Parkdale

52 m2 Frontage on Park
(Stored in Cistern)

260 m2 East Tower 6 Storey Podium
(Stored in Cistern)

570 m2 Yard between Buildings
(Stored in Cistern)

360 m2 East Tower 28 Storey Roof

-Roof Storage req'd 9.3 m3
-Outlet to Parkdale

400 m2 West Tower 6 Storey Podium
(Stored in Cistern)

285 m2 West Tower 22 Storey Roof

- Roof storage req'd 6.5m3
- Outlet to Hamilton

390 m2 East Tower Mech Penthouse req'd storage:
-Roof Storage req'd 10.5m3
- Outlet to Parkdale

36 m2 Frontage on Parkdale Ave.

(Uncontrolled)

395 m2 West Tower Mech Penthouse

-Roof Storage req'd 10.7 m3
-Outlet to Hamilton

798.65 sq m

790 m2 Frontage on Carling Ave
(Stored in Cistern)

Cistern with required volume of 83.7 m3

Discharge to Parkdale

3.60 m

85 m2 Frontage on Hamilton Ave.

(Uncontrolled)

CARLING AVENUE

PARKDALE AVENUE

No.	ISSUE / REVISION	DD/MM/YY
1.	ISSUED FOR CLIENT REVIEW	5/08/21

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:200

0 1 2 5 10 15m

CLIENT:

TAGGART

CONSULTANT: www.jlrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

1081 CARLING

DRAWING:

POST DEVELOPMENT DRAINAGE PLAN & SWMM

DESIGN: AT	
DRAWN: AT	DRAWING #:
CHECKED: GF	F-DST
JLR #: 31261-000	

File Location: P:\31000\31261-000 - 1081 Carling - ZBLA - Civil and Traffic\5-Production\1-Civil\31261-000 C 01.dwg

PLOT DATE: Tuesday, August 3, 2021 1:28:41 PM

Assessment of Adequacy of Public Services
1081 Carling Avenue, Ottawa ON

www.jlrichards.ca

Ottawa

864 Lady Ellen Place
Ottawa ON Canada
K1Z 5M2
Tel: 613 728-3571

ottawa@jlrichards.ca

Kingston

203-863 Princess Street
Kingston ON Canada
K7L 5N4
Tel: 613 544-1424

kingston@jlrichards.ca

Sudbury

314 Countryside Drive
Sudbury ON Canada
P3E 6G2
Tel: 705 522-8174

sudbury@jlrichards.ca

Timmins

201-150 Algonquin Blvd. East
Timmins ON Canada
P4N 1A7
Tel: 705 360-1899
timmins@jlrichards.ca

North Bay

200-175 Progress Road
North Bay ON Canada
P1A 0B8
Tel: 705 495-7597

northbay@jlrichards.ca

Hawkesbury

326 Bertha Street
Hawkesbury ON Canada
K6A 2A8
Tel: 613 632-0287

hawkesbury@jlrichards.ca

Guelph

107-450 Speedvale Ave. West Guelph ON Canada
N1H 7Y6
Tel: 519 763-0713

guelph@jlrichards.ca