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39 Years

84 & 100 Gloucester Street

Servicing and

Stormwater Management Report

84 & 100 Gloucester Street

City of Ottawa

Servicing and Stormwater Management Report

Prepared for:

Claridge Homes Corporation

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

November 30, 2022
January 26, 2023
August 09, 2023
February 09, 2024

Novatech File: 122173
Ref: R-2022-197

City of Ottawa ZBLA: D02-02-23-0013
City of Ottawa SPC: D07-12-23-0021

NOVATECH
Engineers, Planners & Landscape Architects

February 09, 2024

City of Ottawa
Planning, Infrastructure and Economic Development Department
Planning and Infrastructure Approvals Branch
110 Laurier Avenue West, 4th Floor
Ottawa ON, K1P 1J1

Attention: **Jean-Charles Renaud, RPP, MCIP**

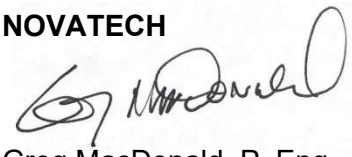
Reference: **84 & 100 Gloucester Street**
Servicing and Stormwater Management Report
Our File No.: 122173

Please find enclosed the 'Servicing and Stormwater Management Report' for the above-noted development located in the City of Ottawa. This report is being submitted for Site Plan Control for the proposed development.

Should you have any questions or require additional information, please contact the undersigned.

Yours truly,

NOVATECH



Greg MacDonald, P. Eng.
Director, Land Development and Public Sector Infrastructure

cc: Vincent Denomme, Claridge

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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1.0 INTRODUCTION

Novatech has been retained by Claridge Homes to prepare a Servicing and Stormwater Management Report for the proposed site plan located at 84 & 100 Gloucester Street. The subject site is located within the City of Ottawa between O'Connor Street and Metcalfe Street. This report is prepared in support of the site plan application for the subject development. **Figure 1- Key Plan** shows the site location. A copy of the legal plan is included in **Appendix E** for reference.

1.1 Existing Conditions

The subject site is approximately 0.18 hectares (ha.) in size and consists of two properties, 84 Gloucester Street and 100 Gloucester Street. Presently, 84 Gloucester Street contains an existing parking lot and 100 Gloucester Street contains a six (6) storey residential building with ground floor retail.

The site is bound by Gloucester Street to the north, an existing 28 storey building (70 Gloucester) to the east, and south-east, existing parking, and Imperial apartments (171 O'Conner St.), to the south, and a three (3) storey apartment building (110 Gloucester) to the west. The site primarily drains from the south to the north with a +/- 0.57m grade differential across the site. **Figure 2** shows the existing site conditions.

1.2 Proposed Development

The proposed site is denoted as lots 44, 45, and 46 (South Gloucester Street Lots) on Topographical Plan of Survey - Registered Plan 2996. The development will consist of a 27-storey tower with 315 residential units. A total of 95 underground parking spaces will be provided on 3 levels of underground parking, which will be accessed from the neighbouring underground parking structure of 70 Gloucester Street. **Figure 3** shows the concept plan for the proposed development.

Correspondence from the City pre-consultation meeting for the proposed development is also included in **Appendix A** for reference.

2.0 SITE CONSTRAINTS

A geotechnical investigation was completed for the subject development and a report was prepared entitled 'Geotechnical Investigation, Proposed Multi-Storey Building, 84 & 100 Gloucester Street, Ottawa, Ontario, prepared by Paterson Group July 26, 2023. The following is a summary of the findings of the report:

- Bedrock was encountered at approximate depths ranging from 4.2 to 8.1 m below the existing ground surface.
- Based on observations, the long-term groundwater table can be expected at approximate geodetic elevation 65 to 67 m. It should be noted that groundwater levels are subject to seasonal fluctuations. Therefore, the groundwater levels could vary at the time of construction.
- Due to the presence of silty clay deposits, a permissible grade raise restriction of 1m is recommended for grading of the subject site. If higher than permissible grade raises are required, preloading with or without a surcharge, lightweight fill, and/or other measures should be investigated to reduce the risk of unacceptable long-term post construction total and differential settlements
- The subsoil at this site is considered to be mainly a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects. The excavation side slopes above groundwater level extending to a maximum of 3m depth should be cut back at 1H:1V or flatter. Slopes in excess of 3m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.
- It is recommended that a trench box be used at all times to protect personnel working in trenches with steep or vertical sides.
- A temporary Ministry of Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required if more than 400,000 L/day of ground and/or surface water are to be pumped during the construction phase. At least 4 to 5 months should be allowed for completion of the application and issuance of the permit by the MECP.
- For typical ground or surface water volumes being pumped during the construction phase, typically between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16. If a project qualifies for a PTTW based upon anticipated conditions, an EASR will not be allowed as a temporary dewatering measure while awaiting the MECP review of the PTTW application.

3.0 WATER SERVICING

There are two existing watermains in the Gloucester Street Right of Way, fronting the proposed site. One 900mm Cast Iron backbone watermain, with a 740mm DR17 HDPE Liner, and a 300mm Cast Iron watermain.

3.1 Existing Backbone Watermain

The existing 900mm backbone watermain has been identified by the City of Ottawa's infrastructure management group as critical infrastructure. As a result, the City requires a Watermain Protection Plan, a Contingency Plan, and a Vibration Monitoring Plan to be prepared and submitted for review and approval.

The Watermain Protection Plan and the Contingency Plan are to be prepared by the Civil Construction Contractor based on their proposed construction plan and the details provided in the "*Protection, Support, and Monitoring of Existing Backbone Watermains*" which can be found in **Appendix B**. The Watermain Protection Plan, and the Watermain Contingency Plan, are to be submitted to the City's Development Review Board, Water Services Department, and the Asset Management Branch for approval.

As part of the site geotechnical investigation, Paterson Group has prepared a Vibration Monitoring Plan to ensure that excessive vibrations do not occur at the 900mm diameter Cast Iron Watermain in the Gloucester Street Right of Way. The following is a summary of the recommendations, please refer to the Geotechnical Investigation report dated July 26, 2023 for complete details.

- Vibration levels will be continuously monitored using 2 vibration monitors.
- Weekly reporting of findings will be provided to the owner and the City of Ottawa.
- In case of a vibration incident/exceedance occurs from construction activities, the Senior Project Management and any relevant personnel should be notified immediately.
- Processes and procedures should be in place prior to completing any vibrations to identify issues and react in a quick manner in the event of an exceedance.

3.2 Servicing Design

The proposed development will be serviced by two (2) 150mm diameter water services which will connect to the existing 300mm diameter cast iron watermain within Gloucester Street. The proposed building will be sprinklered and equipped with a Siamese connection located near the front entrance within 45m of a fire hydrant. Refer to the **General Plan of Services Drawing No. 122173-GP** for servicing details.

Water demands have been calculated using criteria from Section 4 of the City of Ottawa Water Distribution Guidelines, ISTB-2021-03, and the Ontario Building Code as follows:

- Average Domestic Flow = 280L/cap/day
- 1 Bedroom Apartment = 1.4 Persons/unit
- 2 Bedroom Apartment = 2.1 Persons/unit
- 2 Bedroom + Apartment = 3.1 Persons/unit
- Commercial Flow (Café) = 125L/seat/day
- Residential Peaking Factors
    - Maximum Day = 2.5 x Avg Day
    - Peak Hour = 2.2 x Max Day
- Commercial Peaking Factors
    - Maximum Day = 1.5
    - Peak Hour = 1.8

The required fire demand was calculated using the Fire Underwriters Survey (FUS) 2020 Guidelines. Through correspondence with the Architect, it is understood that the building is residential occupancy, non-combustible construction, and will be complete with a NFPA sprinkler system that is fully supervised. The proposed building floor area varies from 803m^2 to 1015m^2, with protected openings between floors. To be conservative the largest floor area was used for the FUS calculations.

A summary of the water demand, and fire flows, are provided in **Table 3.1**. Detailed water demand calculations, fire flow calculations, and supporting correspondence are provided in **Appendix B** for reference.

Table 3.1: Domestic and Fire Water Demand Summary

Population	Commercial Area (m^2)	Ave. Daily Demand (L/s)	Max. Daily Demand (L/s)	Peak Hour Demand (L/s)	Fire Flow (L/s)
517	144	1.73	4.27	9.36	133

The required Average Day Demand is greater than 50m^3 per day, as per City of Ottawa – Technical Bulletin ISTB-2021-03, the building will be serviced with two water services separated by an isolation valve for redundancy and to prevent the creation of a vulnerable service area.

The above water demand information has been submitted to the City for boundary conditions from the City's water model. Once received the boundary conditions will be used to confirm the performance of the proposed and existing watermain systems for three theoretical conditions:

1) High Pressure check under Average Day conditions
2) Peak Hour Demand
3) Maximum Day + Fire Flow Demand.

Refer to **Appendix B** for detailed water demand calculations.

4.0 SANITARY SERVICING

There is an existing, 300mm diameter, concrete sanitary sewer in the Gloucester Steet Right of Way fronting the proposed development.

It is proposed to service this site with a 200mm diameter sanitary service which will connect to the existing 300mm diameter sewer. As the service size is greater than 50% of the diameter of the existing 300mm sewer, a 1200mm diameter sanitary maintenance hole (SANMH 100) will be installed at the proposed connection. A monitoring port will be installed in the mechanical room, just inside the foundation wall for access and maintenance of the proposed service.

Sanitary flows for the proposed development were calculated using criteria from Section 4 of the City of Ottawa Sewer Design Guidelines and the Ontario Building Code as follows:

- Residential Average Flow = 280 L/capita/day
- Studio apartment = 1.4 Person/unit
- 1 Bed apartment = 1.4 Person/unit
- 2 Bed apartment = 2.1 Person/unit
- 2Bedroom + apartment = 3.1 Person/unit
- Commercial flow (Café) = 125 L/seat/day
- Residential Peaking Factor = Harmon Equation (max peaking factor = 4.0)
- Commercial Peaking Factor = 1.0
- Peak Extraneous Flows (Infiltration) = 0.33 L/s/ha

The peak sanitary flow including infiltration was calculated to be **5.76 L/s**. Through correspondence with the City of Ottawa Engineering Staff it is understood that the existing downstream infrastructure has capacity for the proposed development. Detailed sanitary flow calculations are provided in **Appendix C** for reference.

5.0 STORM SERVICING AND STORMWATER MANAGEMENT

There is an existing 900mm diameter, concrete storm sewer within the Gloucester Street right of way fronting the proposed development. It is proposed to service the site with one (1) 250mm storm service connection, which will connect to the existing 900mm diameter storm sewer. The proposed connection will convey both the controlled stormwater cistern flows and the uncontrolled foundation drain flows. These two services will be connected internally by the mechanical team.

Based on correspondence with the City of Ottawa it is understood that the existing storm sewer hydraulic grade line (HGL) is at an elevation of **69.03m** at the proposed connection location. As such it was ensured that all proposed building connections were above the existing HGL to mitigate any potential sewer back-ups during server storm events. Refer to the **General Plan of Services Drawing No.122173 - GP** for details, and **Appendix D** for detailed correspondence.

The design criteria used in sizing the storm sewers are summarized below in **Table 5.1.**

Table 5.1: Storm Sewer Design Parameters

Parameter	Design Criteria
Local Roads	2 Year Return Period
Storm Sewer Design	Rational Method
IDF Rainfall Data	Ottawa Sewer Design Guidelines
Initial Time of Concentration (Tc)	10 min
Minimum Velocity	0.8 m/s
Maximum Velocity	3.0 m/s
Minimum Diameter	250 mm

Refer to **Appendix D** for detailed storm drainage area plans and storm sewer design sheets.

5.1 Stormwater Management Design Criteria

Stormwater Management (SWM) design criteria for the proposed development were established through correspondence with the City of Ottawa and the City of Ottawa Sewer Design Guidelines (October 2012). The following criteria have been adopted to satisfy the requirement that on-site stormwater management be implemented to control post-development stormwater discharge:

- Control proposed development flows, up to and including the 100-year storm event to a 5-year allowable release rate calculated using a maximum runoff coefficient (C) of 0.50 and a time of concentration (T_c) of 10 minutes, as per City of Ottawa requirements;
- Provide source controls which are in conformity with the City of Ottawa requirements, where possible
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control

The approach to the stormwater management design is to determine the allowable release rate for the site, calculate the uncontrolled flow, and ensure that the remaining flow, in combination with the uncontrolled flow, does not exceed the allowable release rate. All proposed development runoff, in excess of the allowable release rate, will be attenuated on-site in a cistern located in the underground parking structure prior to being released into the storm sewers within Gloucester Street.

5.2 Existing Site Drainage

The site is currently occupied by an existing asphalt parking lot and a 6-storey concrete residential building. The predevelopment run-off coefficient based on these conditions is **0.9 (100% impervious)**, as shown on the Pre-Development Stormwater Management Plan Drawing **122173-SWM1**. The site drains from the southern limit of the property north, toward Gloucester Street, where it is captured by the existing city owned sewer infrastructure.

5.3 Quantity Control

The allowable release rate for the 0.18 ha site was calculated to be 26.5 L/s based on the SWM criteria provided by the City of Ottawa.

Total Drainage Area (A) = 0.183 ha
Runoff Coefficient (C_{Allow}) = 0.50
Intensity (I_{5Allow}) = 104.19mm/hr

Q_{Allow} = 2.78 CIA
Q_{Allow} = 2.78 x 0.50 x 104.19mm/hr x 0.183
Q_{Allow} = 26.50L/s

Design Storms

The design storms are based on City of Ottawa design storms. Design storms were used for the 5, 100, and 100+20%-year return periods.

Calculation Parameters

Post-development catchments were calculated based on the proposed site plan and grading as shown on **Drawing 122173-GR**, and reflected on **Drawing 122173-SWM2** within **Appendix D**. All the sub-catchments over proposed underground parking areas were assumed to be 100% impervious. The building roofs were assumed to have no depression storage.

The site has been divided into five (5) drainage areas for the post development condition. The drainage areas are as follows:

Area A-01 & A-02:

- Area A-01 consists of the front, side, and rear terraces surrounding the proposed building. Stormwater flows from the terraces will be captured by area drains and conveyed by the internal mechanical system to the proposed cistern.

Area R-01:

- Area R-01 consists of the two (2) podium roof tops and the tower roof top for the proposed building. Stormwater flows from the roofs will be captured by roof drains and conveyed by the internal mechanical system to the proposed cistern.

Area D-01 & D-02:

- The drainage along the north frontage of the property will flow uncontrolled to the Gloucester right-of-way, where it will be captured by the city owned storm system.

Flows from the cistern to the existing sewer in Gloucester Street will be controlled by a proposed pump which will discharge the flows to the proposed service. The flows from the proposed service will drain by gravity to the existing sewer system. The storm service will be equipped with a backflow prevention device to protect the building from any potential sewer back-ups. Storage will be provided for storms up to and including the 100-year event within the cistern. A 250mm internal overflow is provided 0.36mm below the top of tank, and a vented lid is proposed on the tank for maintenance access and emergencies which will convey flows directly to the Gloucester Street right-of-way.

Table **5.2 below** summarizes the flow, storage required, and storage provided for each of the site drainage areas.

Table 5.2 Stormwater Management Summary

Area ID	Area (ha)	1:5 Year Weighted Cw	Outlet Location	Control	**2 Year Storm Event**			**5 Year Storm Event**			**100 Year Storm Event**			
					Release (L/s)	Head (m)	Req'd Vol (cu.m)	Release (L/s)	Head (m)	Req'd Vol (cu.m)	Release (L/s)	Head (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)
D-01	0.0027	0.90	Gloucester Street	N/A	0.5	N/A	N/A	0.7	N/A	N/A	1.4	N/A	N/A	N/A
D-02	0.0009	0.90	Gloucester Street	N/A	0.2	N/A	N/A	0.2	N/A	N/A	0.5	N/A	N/A	N/A
A-01, R-01	0.183	0.90	Gloucester Street	PUMP	24.60	0.27	6.87	24.60	0.55	13.91	24.60	1.74	43.82	70.43
Total					**25.3**			**25.5**			**26.5**			
Allowable					**26.5**			**26.5**			**26.5**			

Refer to **Appendix D** for Rational and Modified Method calculations and **Drawing 122173-SWM** for post development drainage areas.

5.4 Major Overland Flow Route

A major overland flow route will be provided for storms greater than the 100-year storm event. Stormwater will be directed to the surrounding rights-of-way. The major overland system is shown on the **Grading Plan Drawing No. 122173-GR.**

6.0 EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures will be implemented on site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter socks (catchbasin inserts) will be placed in existing and proposed catchbasins and catchbasin manholes, and will remain in place until vegetation has been established and construction is completed;
- Silt fencing will be placed along the surrounding construction limits;
- Mud mats will be installed at the site entrances;
- The contractor will be required to perform regular street sweeping and cleaning as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site;

Erosion and sediment control measures should be inspected daily and after every rain event to determine maintenance, repair or replacement requirements. Sediments or granulars that enter site sewers shall be removed immediately by the contractor. These measures will be implemented prior to the commencement of construction and maintained in good order until vegetation has been established. Refer to the **Erosion Control Plan Drawing No. 122173-ESC** for details.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Watermain

The analysis of the existing and proposed watermain network confirms the following:

- The two (2) proposed 150mm dia. watermain services which connect to the existing 300mm watermain within Gloucester Street can service the proposed development.
- Boundary Conditions have been requested to confirm pressures in the existing watermain infrastructure to meet the required domestic and fire flow demands for the development.

Sanitary Servicing

The analysis of the existing and proposed sanitary system confirms the following:

- It is proposed to service the development with a proposed 200mm Sanitary service which will connect to existing sewers within the Gloucester Street right-of-way.
- The existing City infrastructure has capacity for the proposed development.

Stormwater Management

The following provides a summary of the storm sewer and stormwater management system:

- The proposed development will be provided with one (1) service which will connect to the existing 900mm storm sewer within the Gloucester right-of-way.
- The proposed service will convey the uncontrolled foundation drain, and the controlled stormwater cistern, flows. These two services will be connected internally to the building by the mechanical design.
- Stormwater quantity control is to be provided through the use of a cistern within the P1 parking level.
- As per existing conditions, a major overland flow route has been provided to the surrounding right-of-ways.

Erosion and Sediment control

- Erosion and sediment control measures (i.e. filter fabric, catchbasin inserts, silt fences, etc.) will be implemented prior to construction and are to remain in place until vegetation is established.

8.0 CLOSURE

This report is submitted in support of the site plan application and demonstrates adequate services for the development. Your review and approval of this report is requested.

NOVATECH

Prepared by:

Ryan Good, C.E.T.
Civil Engineering Technologist
Land Development Engineering

Reviewed by:

Greg MacDonald, P.Eng
Director, Land Development and Public Sector Infrastructure

Appendix A
Pre - Consultation Meeting Minutes

Pre-Application Consultation Meeting Notes

100 and 84 Gloucester Street, Ottawa
Meeting Date: Wednesday, April 20, 2022
PC2022-0084
MS Teams

Attendees:

City of Ottawa:
Jean-Charles Renaud, File Lead, Planner
Randolph Wang, Urban Designer
Wally Dubyk, Transportation
Reza Bakhit, Engineering
Parthvi Patel, Student

Applicant Team:
Vincent Denomme, Claridge Homes
Greg MacDonald
Nathan Godlovitch
Sayeh Jolan

Community Association:
Mary Huang

Subject: Development of 27-storey residential apartment building at 100 and 84 Gloucester Street

Proposal Details:

- An existing parking lot currently occupies 84 Gloucester Street, and a six-story office building occupies 100 Gloucester Street.
- Shared amenity space will include a ground-floor garden, swimming pool, and built complex.
- Approximately 321 units will be provided in total, with a mix of townhome, studio, one bedroom, two bedroom, and two+ bedroom units.

Technical Comments – City Staff

Planning Comments – Jean-Charles Renaud

- In the new Official Plan, there is a strong emphasis on the public realm and greenery. Ensure that appropriate soil volumes are provided for the trees.
- The Secondary Plan emphasizes the heritage nature of the area, review how the secondary plan asks you to interface with the heritage buildings.
- Address the different components of the secondary plan in submission documents, such as affordable housing.

- In the event that the ramp and garage door stay, their location close to the easement may create conflict due to people turning in the wrong way. Look into the landscape treatment in the front.
- I am not convinced to the appropriateness of the height of the podium as it seems quite tall.

Design Comments – Randolph Wang

1. A Design Brief is required. The Terms of Reference of the Design Brief is attached for convenience. Please note the requirements for both a wind study and a shadow study.
2. The site is within a Design Priority Area As such the design is subject to formal review by the City's Urban Design Review Panel. Please contact udrp@ottawa.ca for scheduling details and submission requirements.
3. With respect to the concept presented at the meeting, I appreciate the architect's efforts to break up the massing, and to create opportunities at grade for public realm. The design overall makes good sense given the complex situation.
    a. The floor plate and the location of the tower is generally in keeping with the directions of the applicable policies and guidelines. Further modifications to the floor plate are recommended to maintain a minimum 10m setback of the tower from all property lines.
    b. The cantilevered volume above the 6-storey podium on the west side should be removed. The overall massing composition should be of a 6-storey podium and a tower above it. A 9-storey podium is overwhelming for the narrow street.
    c. The angled setback of the ground floor is very interesting and useful for creating a more generous public realm within a very tight urban condition.
        ii. Urban design supports the option to remove the parking ramp if technically feasible so that a pedestrian "plaza" can be created and the main entrance of the building can be moved westwards to enliven the covered easement corridor.
            ii. Please study the relationship between the columns and wall to make sure the space between the wall and columns is sufficient and comfortable for pedestrians.
    d. Sufficient floor to ceiling height, at a minimum 4.5m should be provided for the covered easement corridor. Ideally, it should be 2-storeys.
    e. The two bedroom unit facing Gloucester is not most desirable. Considerations should be given to a different use at this location. If the two bedroom unit has to stay, considerations should be given to grade separation with the units being a few steps above the sidewalk.
    f. The architecture can benefit from some simplification with respect to color and material composition although the intent to breaking up the massing is appreciated. A careful study of the overall composition of the urban fabric consisting of buildings in the same street block will be useful to help understand how the design of this building can contribute.

Transportation Comments – Wally Dubyk

- Gloucester Street is classified as a Local road. There are no additional protected ROW limits identified in the OP.

- A Screening Form is to be submitted to determine if a transportation study is required. Consultants should fill in the form in Appendix 'B'. Click on the website: www.ottawa.ca/TIA
- 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.
- During the Analysis, ensure that both TDM checklists are filled out and appropriate measures are taken to achieve the target modal shares. In the future, please contact Tim Wei (tim.wei@ottawa.ca) to obtain a local snapshot of the Long-Range Transportation model to help inform background growth rates.

- Please keep in mind that on street parking is not a viable option for tenants. Ensure that potential tenants are aware that there is no provision for parking.

- Permanent structures such as curbing, stairs, retaining walls, and underground parking foundation also bicycle parking racks are not to extend into the City's right-of-way limits.
- The consultant should review the sight distance to the access and any obstructions that may hinder the view of the driver.
- The concrete sidewalks should be 2.0 metres in width and be continuous and depressed through the proposed accesses.
- Ensure that the pedestrian sidewalk has a clear and non-obstructive path of 2.0 metres width minimum and that the bicycle spaces do not interfere with the pedestrian crosswalk.
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- The Owner acknowledges and agrees that all private accesses to Roads shall comply with the City's Private Approach By-Law being By-Law No. 2003-447 as amended https://ottawa.ca/en/living-ottawa/laws-licences-and-permits/laws/law-z/private-approach-law-no-2003-447 or as approved through the Site Plan control process.
- 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.

- 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.
- Should the property Owner wish to use a portion of the City's road allowance for construction staging, prior to obtaining a building permit, the property Owner must obtain an approved Traffic Management Plan from the Manager, Traffic Management, Transportation Services Department. The city has the right for any reason to deny use of the Road Allowance and to amend the approved Traffic Management Plan as required.

Engineering Comments – Reza Bakhit

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.
- An application to consolidate the parcels (84 & 100 Gloucester Street) of land will be required otherwise the proposed stormwater works will be servicing more than one parcel of land and thus does not meet the exemption set out in O.Reg. 525/98. This would mean an **ECA would be required** regardless of who owns the parcels.

1. **Concern** about protection of the **736mm Backbone watermain** located within the ROW in Gloucester Street. Vibration and settlement monitoring plan will be required.

- 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.

1. 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)
   - Technical Bulletin ISTB-2021-03
   - 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 5-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 **5-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.
- Please note that 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 2-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.
  Please provide information on UG storage pipe. Provide required cover over pipe and details, chart of storage values, capacity etc. How will this pipe be cleaned of sediment and debris?
  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.

  Provide a cross section of underground chamber system showing invert and obvert/top, major and minor HWLs, top of ground, system volume provided during major and minor events. 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.

Storm Sewer:

- A 900mm dia. CONC storm sewer (1987) is available within Gloucester Street**.**

Sanitary Sewer Maclaren St:

- A 250 mm dia. PVC Sanitary sewer (1990) is available within Gloucester Street**.**
- Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- 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.

Water :

- A 736mm PE backbone watermain (1999) is located within Gloucester Street. (**No Connection is permitted, please see the additional notes below**)
- A 305 mm dia. DI watermain (1986) is available within Gloucester Street**.**
- 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.
    1. Type of Development and Units
    2. Site Address
    3. A plan showing the proposed water service connection location.
    4. **Average Daily Demand** (L/s)
    5. **Maximum Daily Demand** (L/s)
    6. **Peak Hour Demand** (L/s)
    7. **Fire Flow** (L/min)

[*Fire flow demand requirements shall be based on **Fire Underwriters Survey (FUS)** Water Supply for Public Fire Protection 1999*]
[Fire flow demand requirements shall be based on ISTB-2021-03]
Note: The OBC method can be used if the fire demand for the private property is less than 9,000 L/min. If the OBC fire demand reaches 9000 L/min, then the FUS method is to be used. Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

1. **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.

Backbone watermain Note

- A 736mm PE backbone watermain (1999) is located within Gloucester Street. Please note that to ensure the integrity of the nearby watermain the applicant may be required to develop a Vibration and Settlement Monitoring Program. A Vibration and settlement Monitoring Specialist Engineer shall undertake monitoring, develop a **vibration and settlement monitoring plan**, and **prepare a protection plan**, an **emergency response plan**, ensure conformance and shall issue certificates of conformance. The Vibration and settlement Monitoring Specialist Engineer shall be a licensed engineer in the Province of Ontario with a minimum of five years of experience in the field of Vibration and settlement monitoring. Vibration and settlement monitors are to be to be placed directly on the watermain. The maximum peak particle velocities are to be in accordance with Table 1 of the City of Ottawa Specification F-1201.

Snow Storage:

1. 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).

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.

Permits and Approvals:

- Please note that this project will be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. (Any connection to a combined Sewer system required the Ministry (MECP) approval)

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 (If rooftop utilized as a SWM component)
- Foundation Drainage System Detail (if applicable)
- Topographical survey

REPORTS:

- Site Servicing and Stormwater Management Report
- Geotechnical Study/Investigation
- Slope Stability Assessment Reports (if required, please see requirements below)
- Noise Control Study
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- RSC (Record of the site Conditions)
- ECA (If the SWM facility services two parcels)
- Site lighting certificate
- Wind analysis
- Shadow Study
- Vibration and settlement monitoring and protection plan for 736mm Backbone watermain

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

Geotechnical Investigation:

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.
- Reducing 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/documents/files/geotech_report_en.pdf

Slope Stability Assessment Reports

- A report addressing the stability of slopes, prepared by a qualified geotechnical engineer licensed in the Province of Ontario, should be provided wherever a site has slopes (existing or proposed) steeper than 5 horizontal to 1 vertical (i.e., 11 degree inclination from horizontal) and/or more than 2 metres in height.
- A report is also required for sites having retaining walls greater than 1 metre high, that addresses the global stability of the proposed retaining walls.
  https://documents.ottawa.ca/en/document/slope-stability-guidelines-development-applications

Noise Study:

- A **Transportation Noise Assessment** is required as the subject development is located within 100m proximity of an Arterial Road
- 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.

https://documents.ottawa.ca/sites/default/files/documents/enviro_noise_guide_en.pdf

Wind analysis:
When greater than 9 storey in height Wind Study for all buildings/dwellings.

1. 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)

Shadow Study
When greater than 9 storey in height, a Shadow Study required for all buildings/dwellings.

Exterior Site Lighting:

1. 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.

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.

Community Comments – Mary Huang

- Are there any family sized units, and what is your position on accessibility? Are you considering universal design? What is the nature of the rezoning that you are requesting?
    - *RE: Response from applicant team to community questions:* The unit mix is not finalized yet but I believe that we do have a small number of three-bedroom units. We are following OBC standards with 15% of units being accessible and adaptable. 15% of each unit type are build to OBC Standards.
- OBC standards are weak at 15%, with an aging population there is a need for more accommodation. Consider wider corridors and doorways as they would be difficult to change afterwards.
- Consider barrier free showers, potentially designate some floors for this. These may be useful for able-body people as well.
- I hope Claridge looks into the possibility of including some affordable units.
- The majority of new buildings only hold studio and two-bedroom units, family units are needed as there are very few currently existing.

Appendix B
Water Servicing

DRAWING LIST	
A-000	COVER SHEET
A-010	SITE PLAN
A-020	SHADOW ANALYSIS
A-021	EXISTING SHADOW ANALYSIS
A-030	MODEL VIEWS
A-031	MODEL VIEWS
A-032	MODEL VIEWS
A-090	UNDERGROUND FLOOR PLAN - P1
A-091	UNDERGROUND FLOOR PLAN – P2 & P3
A-100	GROUND FLOOR PLAN
A-101	FLOOR PLANS
A-102	FLOOR PLANS
A-102	FLOOR PLANS
A-200	SECTION CUTS
A-300	ELEVATIONS
A-301	ELEVATIONS

100 GLOUCESTER-CLARIDGE HOMES

100 Gloucester St, Ottawa K2P 0A4

PROJECT SUMMARY

PROJECT STATISTICS	
SITE AREA (m^2)	**1 832**
BUILDING HEIGHT (STOREYS)	**27**
UNIT SUMMARY	
TOWNHOME (A)	0
STUDIO (B)	24
1 BEDROOM (C)	193
2 BEDROOMS (D)	91
3 BEDROOMS (E)	7
TOTAL	**315**
PARKING SUMMARY	
RESIDENT CAR PARKING PROVIDED	**68**
VISITOR CAR PARKING PROVIDED	**30**
TOTAL CAR PARKING PROVIDED	**95**
BICYCLE STORAGE PROVIDED (INTERIOR)	**292**
BICYCLE STORAGE PROVIDED (EXTERIOR)	**23**
BICYCLE STORAGE PROVIDED (TOTAL)	**315**
TYPICAL FLOOR AREA (m2)	**1541,40**
BUILDING HEIGHT (m)	**27 storeys (84,85)**
BUILDING FOOPRINT (PROJECTION) (m^2)	1015,00
BUILDING FOOPRINT (GROUND FLOOR) (m2)	802,91
GROSS FLOOR AREA TOTAL (m2)	16566,75
GROSS AREA (residentiel, m2)	16422,75
GROSS LEASABLE AREA (commercial, m2)	144,00
SITE OCCUPANCY (%)	55%
DENSITY (FSI)	9,04
LANDSCAPE AREA (m2)	**985,09**
LANDSCAPE AREA (%)	54%
RESIDENTIAL UNITS	315
CARETAKER UNITS	**1**
COMMON AMENITIES (m2)	1040
PRIVATE AMENITIES (m2)	1494,25
VERIFICATION 3m2/unit	4,74
TOTAL AMENITIES (m2)	2534,25
VERIFICATION 6m2/unit	8,05

*Site area based on surveyor cad drawing

		AREA (m^2)		UNITS						AMENITIES (m^2)		
Floor	GFA	GLA (Residential)	GLA (Commercial)	Townhome	Studio	1BR	2BR	3BR	Total	Common	Balconies/ **private** terraces	Total
G	803	137,00	144	0	0	1	2	0	3	757	66,00	823
2	823	647,86	0	0	2	6	4	0	12	57	63,60	120,6
3	919	748,82	0	0	4	8	4	0	16	0	61,00	61
4	919	748,82	0	0	4	8	4	0	16	0	61,00	61
5	919	748,82	0	0	4	8	4	0	16	0	61,00	61
6	966	796,98	0	0	5	7	4	0	16	0	72,68	72,68
7	888	731,79	0	0	5	8	3	0	16	0	104,00	104
8	750	596,42	0	0	0	7	4	0	11	0	88,79	88,79
9	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
10	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
11	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
12	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
13	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
14	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
15	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
16	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
17	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
18	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
19	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
20	750	592,96	0	0	0	7	4	0	11	0	48,22	48,22
21	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
22	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
23	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
24	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
25	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
26	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
27	750	592,96	0	0	0	8	2	1	11	0	48,22	48,22
Roof / MPH	700	0,00		0	0	0	0	0	0	226	0,00	226
TOTAL	21938,2	16422,75	144	0	24	193	91	7	315	1040	1 494,25	2534,25

PARKING LEVELS

	AREA (m^2)	**PARKING**				**Bicycle Storage**			
Floor	BFA	Standard	Small	Accessible	TOTAL	Horizontral	Vertical	Exterior	TOTAL
G								23	23
P1	1541	24	3	2	29	64	20		84
P2	1541	31	2	0	33	61	43		104
P3	1541	31	2	0	33	61	43		104
TOTAL	**4623**	86	7	2	**95**	186	106	0	**315**

CLIENT:
CLARIDGE HOMES
210 Gladstone Avenue
OTTAWA, ONTARIO K2P 0Y6
T: (613) 233-6030 F: (613) 233-8290

ARCHITECTS:
EVOQ
1435, RUE SAINT-ALEXANDRE, BUREAU 1000
MONTRÉAL (QUÉBEC) H3A 2G4
T. 514-393-9490 F. 514-393-9498
info@evoqarchitecture.com

LANDSCAPE ARCHITECTS:

STRUCTURAL ENGINEERS:

CIVIL ENGINEERS:
NOVATECH ENGINEERING CONSULTANTS LTD.
ENGINEERS & PLANNERS
Suite 200, 240 Michael Cowpland Dr.
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Email novainfo@novatech-eng.com

URBAN DESIGN CONSULTANTS:

TOPOGRAPHICAL SURVEYOR:
Annis O'Sullivan, Vollebekk Ltd., Ontario Land Surveyors
14 Concouse Gate, Suite 500
Nepean, Ontario, K2E 7S6
Tel : (613) 727-0850
email : nepean@aovltd.com

KEY PLAN:

Nº:	DESCRIPTION:	BY	DATE
	ISSUED FOR SITE PLAN APPROVAL - REVISED		2023-06-21
	ISSUED FOR SITE PLAN APPROVAL - REVISED		2023-03-23
	ISSUED FOR SITE PLAN APPROVAL		2023-01-23

REVISION:

THE GENERAL CONTRACTOR :

1. SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS ON SITE TO ENSURE COMPLIANCE WITH THE DIMENSIONS GIVEN ON THE DRAWINGS.
2. SHALL BE RESPONSIBLE TO IMMEDIATELY SUBMIT A REPORT TO THE ARCHITECT OR ENGINEER OUTLINING ANY INACCURACIES.
3. SHALL NOT TAKE SCALED MEASUREMENTS OFF THE DRAWINGS.
4. ANY INDIVIDUAL OR FIRM THAT HAVE RECEIVED ELECTRONIC DOCUMENT SHALL USE THEM AT THEIR OWN RISK. ONLY ORIGINAL DRAWINGS, STAMPED BY THE ARCHITECT, MAY BE USED FOR CONSTRUCTION.

SEAL

PROJECT:
100 GLOUCESTER

DRAWING TITLE:
COVER SHEET

DESIGN:	NG	APPROVED:	XX
DRAWN:	MF	DATE:	2022-12-16
VERIFIED:	XX	SCALE:	
PROJECT Nº:	9531-22	DRAWING Nº:	A-1_000

NOVATECH
Engineers, Planners & Landscape Architects

100 GLOUCESTER ST
HYDRAULIC ANALYSIS

JOB NO. 122173
DATE PREPARED: JANUARY 26, 2023
DATE REVISED: JULY 19, 2023

Table 1
Water Demand

	Unit Type							Total Demand (L/s)		
Occuupancy	**Retail Area (m^2)**	**Studio**	**1 Bed Apartment**	**2 Bed Apartment**	**3 Bed Apartment**	**Total Units**	**Total Population**	**Avg Day**	**Max. Daily**	**Peak Hour**
100 Gloucester Street										
Residential		24	193	91	7	315	517	1.68	4.19	9.22
Commercial	144							0.05	0.08	0.14
Total		24	193	91	7			1.73	4.27	9.36

Design Parameters:

-Studio	1.4	persons/unit	**City of Ottawa Water Distribution Guidelines**
- 1 Bed Apartment	1.4	persons/unit	
- 2 Bed Apartment	2.1	persons/unit	
- 2 Bed + Apartment	3.1	persons/unit	
- Average Domestic Flow	280	L/c/day	
- Commercial Space (Café)	125	L/seat/day*	

(*assumed 1 seat/4m^2)

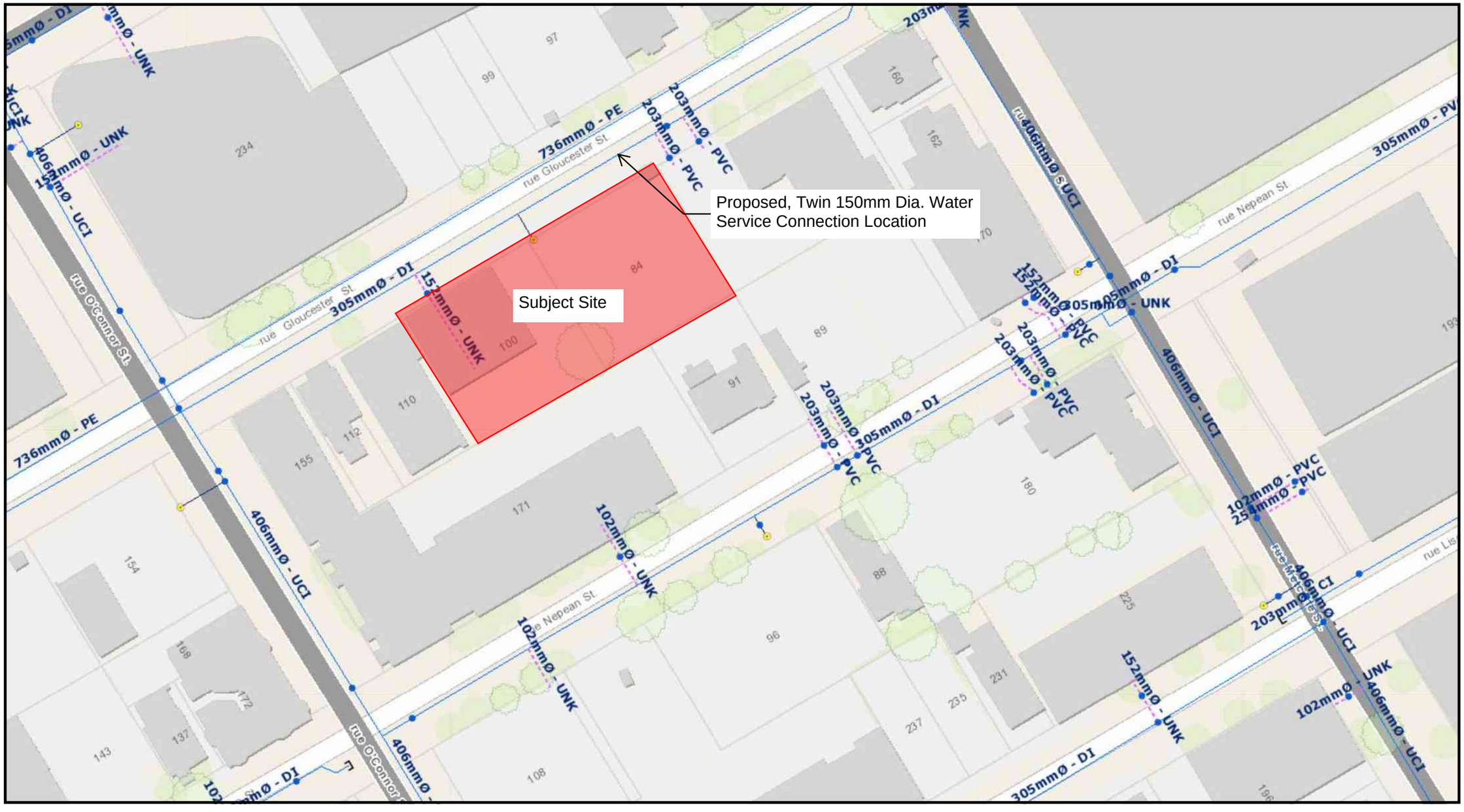
Residential Peaking Factors City of Ottawa Water Distrubution Guidelines:

Conditions	Peaking Factor		Units
Maximum Day	2.5	x avg day	L/c/day
Peak Hour	2.2	x max day	L/c/day

Commercial Peaking Factors City of Ottawa Water Distribution Guidelines

Conditions	Peaking Factor		Units
Maximum Day	1.5	x avg day	L/c/day
Peak Hour	1.8	x max day	L/c/day

100 Gloucester Street - Proposed Water Service Connection



FUS - Fire Flow Calculations

As per 2020 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 122173
Project Name: 100 Gloucester St.
Date: 19/07/2023
Input By: Ryan Good, C.E.T
Reviewed By: Anthony Mestwarp, P.Eng

Legend: Input by User; No Information or Input Required

Building Description: 27 Storey Building with 1 Storey Podium
Type II - Non-combustible construction

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame		1.5	0.8	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	Yes	0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	1015			
		Number of Floors/Storeys	27			
		Protected Openings (1 hr)	Yes			
		Area of structure considered (m^2)			**1,523**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,380**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	Yes	-10%	-10%	
				Cumulative Sub-Total	**-50%**	
		Area of Sprinklered Coverage (%)		80%		
				Cumulative Total	**-40%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**4,463**
		East Side	3.1 - 10 m		20%	
		South Side	10.1 - 20 m		15%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**75%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**8,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**133**
				or	USGPM	2,114

GLOUCESTER STREET

Approximate Crown of Road

Approximate Crown of Road

SPEED BUMP

15.12m

SITE BENCHMARK
FH TOP OF SPINDLE
ELEV = 71.83

110 GLOUCESTER
EXISTING 3 STORY APARTMENT
FFE=71.59

HIGHRISE PROFILE

27 STORY BUILDING
100 GLOUCESTER
FFE = 71.40

HIGHRISE PROFILE

27 STORY BUILDING
84 GLOUCESTER
FFE = 71.40

HIGHRISE PROFILE

70 GLOUCESTER
EXISTING 28 STORY BUILDING
FFE=71.56

EXISTING BALCONY

EXISTING GRATE

EXISTING RETAINING WALL

EXISTING GAS METER

EXISTING DOOR SILL ELEVATION=72.68

1.669

2.64m

UNDERGROUND PARKING LIMIT

EXISTING PARKING STALLS

EXISTING INGROUND POOL

9.42m

6.76m

Door Sill Elevation=71.70

EXISTING RETAINING WALL

EXISTING HAND RAIL

EXISTING RETAINING WALL

EXISTING RETAINING WALL

PROPERTY LINE

BUILDING ENTRANCE

2.64m OFFSET DIMENSION

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CITY OF OTTAWA
100 GLOUCESTER

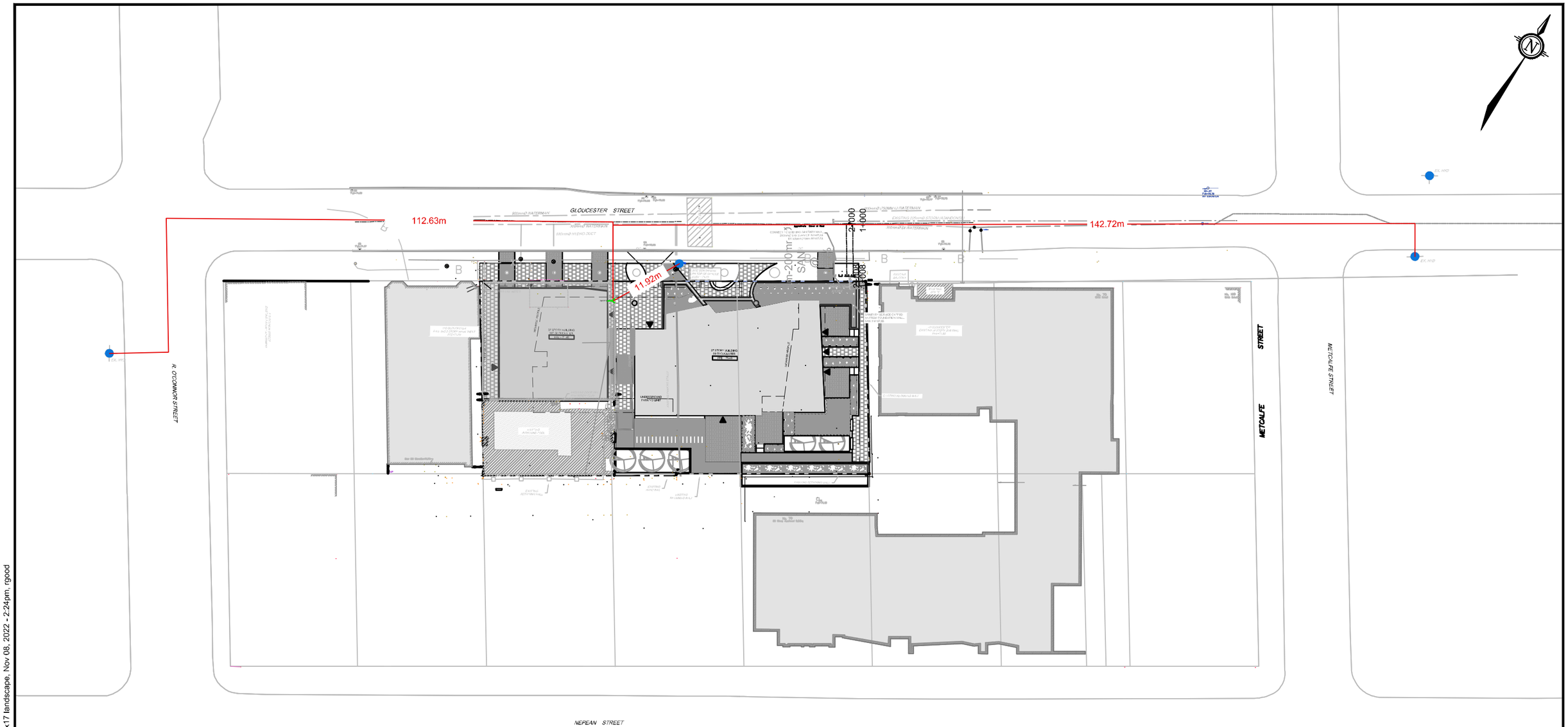
FUS SEPERATION

SCALE 1 : 250

DATE NOV 2022 | JOB 122173 | FIGURE SEP

SHT11X17.DWG - 279mmX432mm

M:\2022\122173\CAD\Civil\Figures\Hydraulic\122173-FUS Seperation.dwg, 11x17 landscape, Nov 07, 2022 - 3:28pm, rgood



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CITY OF OTTAWA
100 GLOUCESTER

COVERAGE PLAN

SCALE 1 : 600 (0, 6, 12, 18, 24)
DATE NOV 2022
JOB 122173
FIGURE HYD

SHT11X17.DWG - 279mmX432mm

M:\2022\122173\CAD\Civil\Figures\Hydraulic\122173-Hydrant Seperation.dwg, 11x17 landscape, Nov 08, 2022 - 2:24pm, rgood

From: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>
Sent: Thursday, October 12, 2023 4:31 PM
To: Ryan Good <r.good@novatech-eng.com>; Sayeh Jolan <sjolan@evoqarchitecture.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Ryan

Non-combustible concrete construction confirmed.

Regards,

Nathan

Nathan Godlovitch
OAQ

ARCHITECTE, ASSOCIÉ | ARCHITECT, ASSOCIATE

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MONTRÉAL QC H3A 2G4
T. 514 393-9490 / 477
C. 514 270-3071

ngodlovitch@evoqarchitecture.com

EVOQ ARCHITECTURE

From: Ryan Good <r.good@novatech-eng.com>
Sent: Thursday, October 12, 2023 4:22 PM
To: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>; Sayeh Jolan <sjolan@evoqarchitecture.com>
Cc: Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Nathan,

You previously sent the attached email noting the building is non combustible concrete construction. As such, the building coefficient would be 0.8 based on the FUS Manual. Can you please confirm this is still accurate?

As for the vertical openings, your below interpretation is correct. The vertical openings between floors would be considered Protected as long as they have 1 hour fire rating.

Thanks,

Ryan Good, C.E.T., Design Technologist | Land Development and Public Sector Infrastructure
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 284 | Cell: 343-364-2246

From: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>
Sent: Wednesday, October 11, 2023 5:20 PM
To: Ryan Good <r.good@novatech-eng.com>; Sayeh Jolan <sjolan@evoqarchitecture.com>
Cc: Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Ryan,

The walls facing the heritage building at 110 Gloucester will be built with a fire-resistance rating of 1 hr except at ground floor where the Hydro Vault will be a 3 hr wall and the commercial space 2 hours. This and all construction methods concerning the construction of these walls will conform to OBC 3.2.3.7

Regarding vertical opening protection, If my understanding of the document is correct, the building has a construction coefficient of 1.0 – its floors and structural members have a minimum 2 hr FRR and exterior walls (where less than 100% unprotected openings) are minimum 1 hr. In any event, protection of vertical openings as per OBC are applied throughout. Please confirm that this interpretation is correct.

Regards,

Nathan

Nathan Godlovitch
OAQ

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EVOQ ARCHITECTURE

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From: Ryan Good <r.good@novatech-eng.com>
Sent: Wednesday, October 11, 2023 9:41 AM
To: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>; Sayeh Jolan <sjolan@evoqarchitecture.com>
Cc: Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Sorry Nathan,

There was some wording error in my email. Can you please confirm the fire rating of the wall between the existing 110 Gloucester building and the new 100 Gloucester building?

Also, please see the clip below for protected vertical openings (full text on page 22 of the attached FUS 2020 document). It refers to the construction materials of components which separate floor levels (doors at stairways, elevators, etc.).

2) For a building classified with a Construction Coefficient below 1.0:
   a) if any vertical openings in the building (ex. interconnected floor spaces, atria, elevators, escalators, etc.) are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight; or
   b) if all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.

Protection requirements:

The protection requirements for vertical openings are only applicable in buildings with a Construction Coefficient below 1.0. The type of protection for vertical openings shall be based on the construction of the enclosure walls and the type of opening or other device used for the protection of openings in the enclosure. See also NBC Division B, Section 3.5. Vertical Transportation.

Protected openings:

i. Enclosures shall have walls of masonry or other limited or noncombustible construction with a fire resistance rating of not less than one hour.
ii. Openings including doors shall be provided with automatic closing devices
iii. Elevator doors shall be of metal or metal-covered construction, so arranged that the doors must normally be closed for operation of the elevator.

Unprotected openings:

i. Any opening through horizontal separations that are unprotected or otherwise have closures that do not meet the minimum requirements for protected openings, above.

Thanks,

Ryan Good, C.E.T., Design Technologist | Land Development and Public Sector Infrastructure
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From: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>
Sent: Wednesday, October 11, 2023 9:14 AM
To: Ryan Good <r.good@novatech-eng.com>; Sayeh Jolan <sjolan@evoqarchitecture.com>
Cc: Jhamb, Nishant <nishant.jhamb@ottawa.ca>; Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Ryan

The existing 100 Gloucester will be completely demolished, the 84-100 lots combined, and a single building erected. No firewall or protected openings required.

Regards,

Nathan Godlovitch
OAQ

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EVOQ ARCHITECTURE

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From: Ryan Good <r.good@novatech-eng.com>
Sent: Tuesday, October 10, 2023 5:57 PM
To: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>; Sayeh Jolan <sjolan@evoqarchitecture.com>
Cc: Jhamb, Nishant <nishant.jhamb@ottawa.ca>; Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Nathan and Sayeh,

Can you please confirm if there fire rating of the wall being utilized between the existing 100 Gloucester and the proposed 84 Gloucester buildings?

Also, can you please confirm all openings will be “Protected” as outlined in the attached FUS Manual?

Thanks,

Ryan Good, C.E.T., Design Technologist | Land Development and Public Sector Infrastructure
NOVATECH
Engineers, Planners & Landscape Architects

Ryan Good

From: Nathan Godlovitch ngodlovitch@evoqarchitecture.com
Sent: Thursday, June 15, 2023 9:51 AM
To: Ryan Good r.good@novatech-eng.com
Cc: Anthony Mestwarp a.mestwarp@novatech-eng.com; Greg MacDonald g.Macdonald@novatech-eng.com; Sayeh Jolan sjolan@evoqarchitecture.com
Subject: RE: Work Load

Hi Ryan

Occupancy is type C – residential.

There will be minor occupancies of type A2 (residential amenity spaces) and 140m2 of commercial space which will either be A2 (café), D or E, all of the 'limited' character wrt combustible content.

Building will be non-combustible concrete construction and be fully protected by sprinklers and alarm system.

Regards,

Nathan

Nathan Godlovitch
OAQ

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From: Ryan Good <r.good@novatech-eng.com>
Sent: Wednesday, June 14, 2023 12:08 PM
To: Nathan Godlovitch <ngodlovitch@evoqarchitecture.com>
Cc: Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: RE: Work Load

Hi Nathan,

We are looking to address city comments received (dated May 29, 2023) for 84 & 100 Gloucester. In one comment the city asks for written confirmation from EVOQ regarding the "Occupancy Type" as defined in the FUS Standards.

Can you please review the attached FUS Standards and confirm the applicable Occupancy Type (refer to pages 24, 25, and 26 of the attachment).

Thanks,

Ryan Good, C.E.T., CAD Technologist | Land Development and Public Sector Infrastructure
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 284 | Cell: 343-364-2246

84 & 100 GLOUCESTER STREET – PROTECTION, SUPPORT, AND MONITORING OF EXISTING BACKBONE WATERMAINS

Scope

The Contractor shall be responsible for the protection of an existing 900 mm diameter Cast Iron backbone watermain (complete with 740 mm diameter HDPE liner), located in the Gloucester Street right of way, for all construction activities associated with the 84 & 100 Gloucester Street Project, including; trenching for installation of the new storm and sanitary sewers, the local watermain, all service crossings, all catch basins and leads, roadway excavations, placement and compaction of roadway granular and all other works specified in the Contract.

This special provision defines the Contractor's responsibilities under the Contract to accurately locate, monitor vibration and movement, support and protect the existing backbone watermain. The watermain is to remain pressurized and operational during construction.

On Gloucester Street, as depicted on the Contract drawings, the stormwater servicing must cross above the existing backbone watermain. For all construction activities, the Contractor shall be responsible for providing temporary support systems during excavations, sewer/service installations, and backfilling, which shall prevent movement of the existing watermain during construction.

Watermain Location

The approximate location of the existing backbone watermain is indicated on the Contract Drawings. The depth of the watermain along Gloucester Street has been approximated based on review of as-built plans. The depth of cover is generally anticipated to be between 1.5m to 2m.

Prior to the start of construction, the Contractor shall retain the services of a subsurface utility contractor to establish the precise location of the 900 mm diameter watermain. Using hydro-excavation and field survey, the Contractor shall also at a minimum prove the location and depth of the 900 mm diameter watermain where the proposed local infrastructure crosses the large diameter watermain and any additional services shown on the Contractor's locates. The Contractor shall be responsible for obtaining all surface and subsurface locates related to the 900 mm diameter watermain at their own cost. No separate measurement for payment shall be made. The Contractor shall provide the field survey pickup results in digital format (AutoCAD or MicroStation) to the Contract Administrator and the City, five (5) days prior to the start of excavation on Gloucester Street.

84 & 100 GLOUCESTER STREET – PROTECTION, SUPPORT, AND MONITORING OF EXISTING BACKBONE WATERMAINS

The Contractor shall ensure their construction schedule accommodates these requirements.

Depending on the results of the hydro-excavation works, the Contractor may be requested to complete additional subsurface investigative works (hydro-excavation) on the backbone watermain as directed by the Contract Administrator or their designate. The Contractor would be compensated for this additional hydro-excavation works under the applicable “Test Pits” item.

Qualifications

Vibration Monitoring Specialist Engineer: The Contractor shall submit to the Contract Administrator the name and qualifications of the Vibration Monitoring Specialist Engineer, who shall be a professional engineer licensed in the Province of Ontario and who shall have a minimum of ten (10) years of experience in the field of vibration monitoring or alternatively demonstrated expertise by providing satisfactory services for work on a minimum of ten (10) projects of similar scope to this contract and who will be retained by the Contractor to develop a construction methodology plan, and supervise it’s implementation, that adheres to the acceptable vibration limits of the Vibration Monitoring Plan outlined by Paterson Group, in their Geotechnical Investigation Report dated July 26, 2023.

Submissions

Six (6) copies of all drawings or documents stipulated herein shall be submitted for review to the Contract Administrator at least two (2) weeks in advance of performing any excavating for the project, for review by the City of Ottawa’s Drink Water Services, Development Review Division, and the Asset Management Branch (AMB). All submissions shall bear the seal and signature of a Professional Engineer licensed in the Province of Ontario. The submissions shall include the following:

84 & 100 GLOUCESTER STREET – PROTECTION, SUPPORT, AND MONITORING OF EXISTING BACKBONE WATERMAINS

a) Construction Methodology at Existing Watermain

The Contractor's Design Engineer shall submit construction methods and protective measures proposed to protect the existing backbone watermain from damage from the Contractor's equipment and construction methods and operations during the construction of the specified works in the vicinity (within 3 m measured horizontally and vertically from the outside of the existing backbone watermain), including; heavy equipment access, sewer trench excavations, roadway excavation, subgrade preparation, granular placement, grading and compaction. The submission shall include proposed details at the backbone watermain location for protection against heavy equipment. The design shall ensure that no excess loads are transferred to any part of the existing backbone watermain during construction that may damage or displace the watermain.

b) Compaction Work Plan

Construction equipment, including heavy vibratory compaction equipment, shall be limited to locations where the equipment does not produce vibration levels at the watermain more than those specified in the Paterson Group Geotechnical Report dated July 26, 2023, as verified by the results from monitoring during construction. Compaction methods above the watermain shall prevent transfer of loads to the watermain. A compaction work plan, including details of the equipment to be used, shall be prepared and sealed by a Professional Engineer and submitted to the Contract Administrator. The compaction plan shall provide an estimate of the vibration levels that the selected equipment will produce. The Contractor shall only use light jumping jacks or plate tamper compaction equipment. Compaction shall not commence until the work plan has been reviewed and approved by the Contract Administrator and Geotechnical Engineer responsible for the Vibration Monitoring Plan.

c) Vibration Monitoring

Vibration Monitoring shall be completed in accordance with the Vibration Monitoring Plan provided by Paterson Group, in their Geotechnical Investigation Report dated July 26, 2023.

84 & 100 GLOUCESTER STREET – PROTECTION, SUPPORT, AND MONITORING OF EXISTING BACKBONE WATERMAINS

The contractor shall retain a Vibration Monitoring Specialist Engineer, who shall be a professional engineer licensed in the Province of Ontario and who shall have a minimum of ten (10) years of experience in the field of vibration monitoring or alternatively demonstrated expertise by providing satisfactory services for work on a minimum of ten (10) projects of similar scope to this contract. The engineer will recommend construction methods that maintain vibrations within acceptable limits and monitor construction procedures and vibration monitoring results.

Penalties for Damage to Existing Backbone Watermain

The Contractor acknowledges that in the event of any damage to the backbone watermain (physical damage, leaks, breakage) the Contract Administrator shall assess the Contractor a penalty of $50,000 for the first day or part thereof that the watermain damage occurs and a further penalty of $50,000 per day for each subsequent day or part thereof until the backbone watermain is repaired. The Contractor will also be responsible for the cost of the watermain repairs to be completed by the City, the cost of equipment and labour required to assist City forces, the cost of all traffic control operations and the cost for reinstatement of the damaged areas. The Contract Administrator shall deduct penalty amounts from the monies owing the Contractor.

Measurement for Payment

No measurement for payment will be made for the **"Protection and Monitoring of Existing Backbone Watermain During Construction"** item. Payment shall be as a lump sum, all inclusive, in accordance with the following payment schedule:

- 20% upon submission and acceptance of all specified submissions.
- 70% pro-rated over the duration of the construction in in Stage 1B.
- 10% upon completion of the vibration monitoring program, final reporting, and reinstatement at the vibration monitoring points to the satisfaction of the Contract Administrator.

Note that the monthly pro-rated payments will be withheld until all weekly Summary Reports have been provided up to the cut-off date for the progress payment.

84 & 100 GLOUCESTER STREET – PROTECTION, SUPPORT, AND MONITORING OF EXISTING BACKBONE WATERMAINS

Basis of Payment

Protection and Monitoring of Existing Backbone Watermain During Construction — ITEM
Temporary Support of Existing Backbone Watermain – ITEM

Payment at the contract price for the tender item **"Protection and Monitoring of Existing Watermain During Construction"** shall be full compensation for all labour, equipment and material necessary and incidental to do the work including the Vibration Monitoring (and excavating to expose the watermain for installation of vibration monitors), and Compaction Plan requirements.

There will be no separate payment for the submissions and reporting specified herein including but not limited to shop drawing submissions for detailed plans outlining construction measures required to ensure protection of the existing watermain during sewer, watermain, service, and roadway (including sidewalks and curbs) construction, compaction plan, and the vibration monitoring plan.

The Contractor shall not make any claims for additional payment for delays as a result of exceeding vibration limits.

The Contractor shall not make any claims for additional payment for having to adjust their construction operation or to make changes to equipment used onsite to adhere to the vibration limits in this specification or achieve the required compaction using alternative compaction techniques as may be dictated by the Contractor's compaction plan.

Appendix C
Sanitary Servicing

GLOUCESTER STREET

Approximate Crown of Road

SPEED BUMP

SITE BENCHMARK
FH TOP OF SPINDLE
ELEV = 71.83

EX SANMH 105

EX 250mmØ SAN @ 0.97%

EX 250mmØ SAN @ 0.64%

GAS LINE TO BE RELOCATED
TO AVOID CONFLICT WITH
SANMH 100

SANMH 100

EX 250mmØ SAN @ 0.64%

4.4m-200mmØ SAN @ 1.00%

EXISTING BALCONY

EXISTING GRATE

EXISTING GAS METER

ORNAMENTAL METAL GATE

110 GLOUCESTER
EXISTING 3 STORY APARTMENT
FFE=71.59

HIGHRISE PROFILE

27 STORY BUILDING
100 GLOUCESTER
FFE = 71.40

0.18
SAN-01
315 517

27 STORY BUILDING
84 GLOUCESTER
FFE = 71.40

70 GLOUCESTER
EXISTING 28 STORY BUILDING
FFE=71.58

SANITARY SERVICE CAPPED
1m FROM FOUNDATION WALL.
SAN INV=67.68

EXISTING DOOR SILL
ELEVATION=71.70

EXTERIOR BICYCLE PARKING

UNDERGROUND
PARKING LIMIT

EXISTING PARKING STALLS

EXISTING
INGROUND POOL

EXISTING RETAINING WALL

Door Sill Elevation=71.70

EXISTING
HAND RAIL

EXISTING
RETAINING WALL

EXISTING RETAINING WALL

EXTERIOR BICYCLE PARKING

LEGEND

- SANITARY DRAINAGE AREA
- 0.18 / SAN-01 / 324 / 537 — DRAINAGE AREA (ha)
  DRAINAGE AREA ID
  NO. UNITS / TOTAL POPULATION
- PROPOSED SANITARY MANHOLE AND SEWER
- EXISTING SANITARY MANHOLE AND SEWER
- BUILDING ENTRANCE

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Website www.novatech-eng.com

CITY OF OTTAWA
100 GLOUCESTER

SANITARY DRAINAGE AREA PLAN

SCALE 1 : 250 (0 2 4 6 8 10)

DATE JULY 2023 | JOB 122173 | FIGURE SAN

SHT11X17.DWG - 279mmX432mm

M:\2022\122173\CAD\Civil\Figures\Servicing\122173-SAN.dwg, 11x17 landscape, Jan 26, 2023 - 5:26pm, rgood

SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 122173
Project Name: 100 Gloucester Street
Date Prepared: 1/26/2023
Date Revised: **7/19/2023**
Input By: Ryan Good, C.E.T
Reviewed By: Anthony Mestwarp, P.Eng
Drawing Reference: 122173- SAN

Legend:
PROJECT SPECIFIC INFO
USER DESIGN INPUT
CUMULATIVE CELL
CALCULATED DESIGN CELL OUTPUT

LOCATION			DEMAND																DESIGN CAPACITY							
			RESIDENTIAL FLOW									COMMERCIAL FLOW						EXTRANEOUS FLOW			PROPOSED SEWER PIPE SIZING / DESIGN						
AREA	FROM MH	TO MH	Studio	1 Bed Apartment	2 Bed Apartment	3 Bed Apartment	POPULATION (in 1000's)	CUMULATIVE POPULATION (in 1000's)	PEAK FACTOR M	AVG POPULATION FLOW (L/s)	PEAKED DESIGN POP FLOW (L/s)	AREA (m^2)	CUMULATIVE AREA (m^2)	DESIGN COMMERICAL FLOW (L/s)	COMMERICAL PEAK FACTOR	PEAKED COMMERCIAL FLOW	Total Area (ha.)	Accum. Area (ha.)	DESIGN EXTRAN. FLOW (L/s)	TOTAL DESIGN FLOW (L/s)	PIPE LENGTH (m)	PIPE SIZE (mm) AND MATERIAL	PIPE ID ACTUAL (m)	ROUGH. (n)	DESIGN GRADE (%)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak Design / Qcap
SAN-01	BLDG	SANMH 100	24	193	91	7	0.517	0.517	3.37	1.67	5.65	144.000	144.000	0.05	1.00	0.05	0.18	0.18	0.06	5.76	4.4	200 PVC	0.203	0.013	1.00	34.2	1.06	16.8%

Design Parameters:

1. Residential Flows					
-Studio	1.4	Person/ Unit			**As per City of Ottawa Sewer Design Guidelines, 2012**
-1 Bed Apartment	1.4	Person/ Unit			
-2 Bed Apartment	2.1	Person/ Unit			
-3 Bed Apartment	3.1	Person/ Unit			
2. Commercial Flow					
-Commercial Area (Café)	125	L/seat/day			**As per City of Ottawa Sewer Design Guidelines, 2012**
3. Q Avg capita flow	**280**	L/capita/day			**As per City of Ottawa - Technical Bulletin ISTB-2018-01**
4. M = Harmon Formula (maximum of 4.0)					**As per Harmon Formula**
5. K =	**0.8**				
6. Commercial Peak Factor	**1.0**	<20%			**As per City of Ottawa - Technical Bulletin ISTB-2018-01**
	1.5	>20%			
7. Peak Extraneous Flow =	**0.33**	**L/sec/ha**			

(*assumed 1 seat/4m^2)

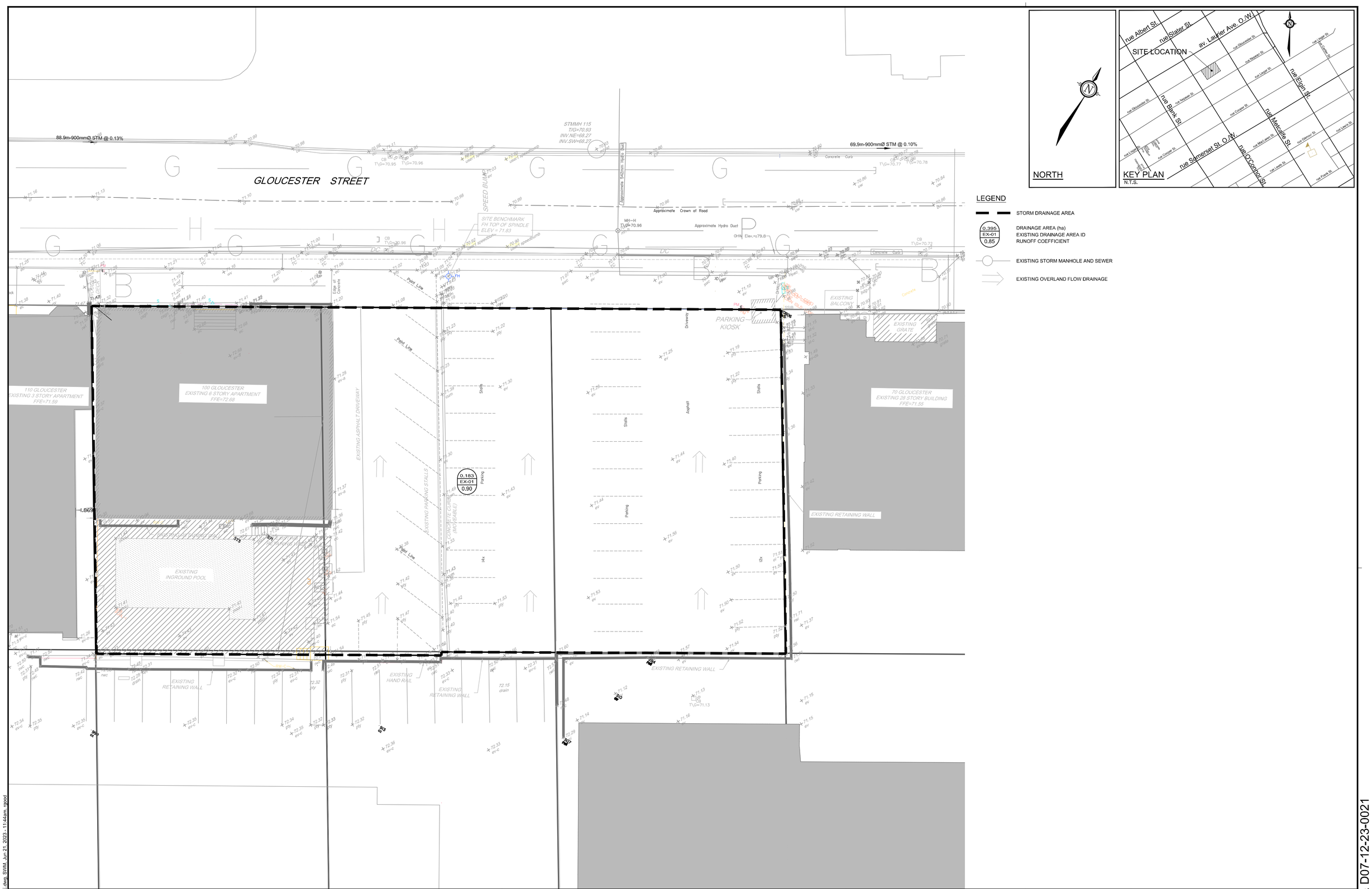
CAPACITY EQUATION

Q full= (1/n) A R^(2/3)S_o^(1/2)

Where : Q full = Capacity (L/s)

n = Manning coefficient of roughness (0.013)
A = Flow area (m^2)
R = Wetter perimenter (m)
So = Pipe Slope/gradient

Appendix D
Storm Servicing



NORTH

LEGEND

- STORM DRAINAGE AREA
- 0.395 / EX-01 / 0.85 — DRAINAGE AREA (ha), EXISTING DRAINAGE AREA ID, RUNOFF COEFFICIENT
- EXISTING STORM MANHOLE AND SEWER
- EXISTING OVERLAND FLOW DRAINAGE

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

CLARIDGE HOMES

CLARIDGE HOMES
SUITE 2001,
210 GLADSTONE AVENUE,
OTTAWA , ONTARIO
K2P 0Y6.

No.	REVISION	DATE	BY
1.			

SCALE: 1:150
1:150 (0 2 4 6)

DESIGN: RJG
CHECKED: GJM
DRAWN: RJG/MF
CHECKED: ARM
APPROVED: GJM

FOR REVIEW ONLY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
84 & 100 GLOUCESTER STREET

DRAWING NAME
PRE-DEVELOPMENT STORMWATER MANAGEMENT PLAN

PROJECT No. 122173-00
REV REV # 1
DRAWING No. 122173-SWM1

PLANNING - Revised

PLAN # 18944

D02-02-23-0013 & D07-12-23-0021

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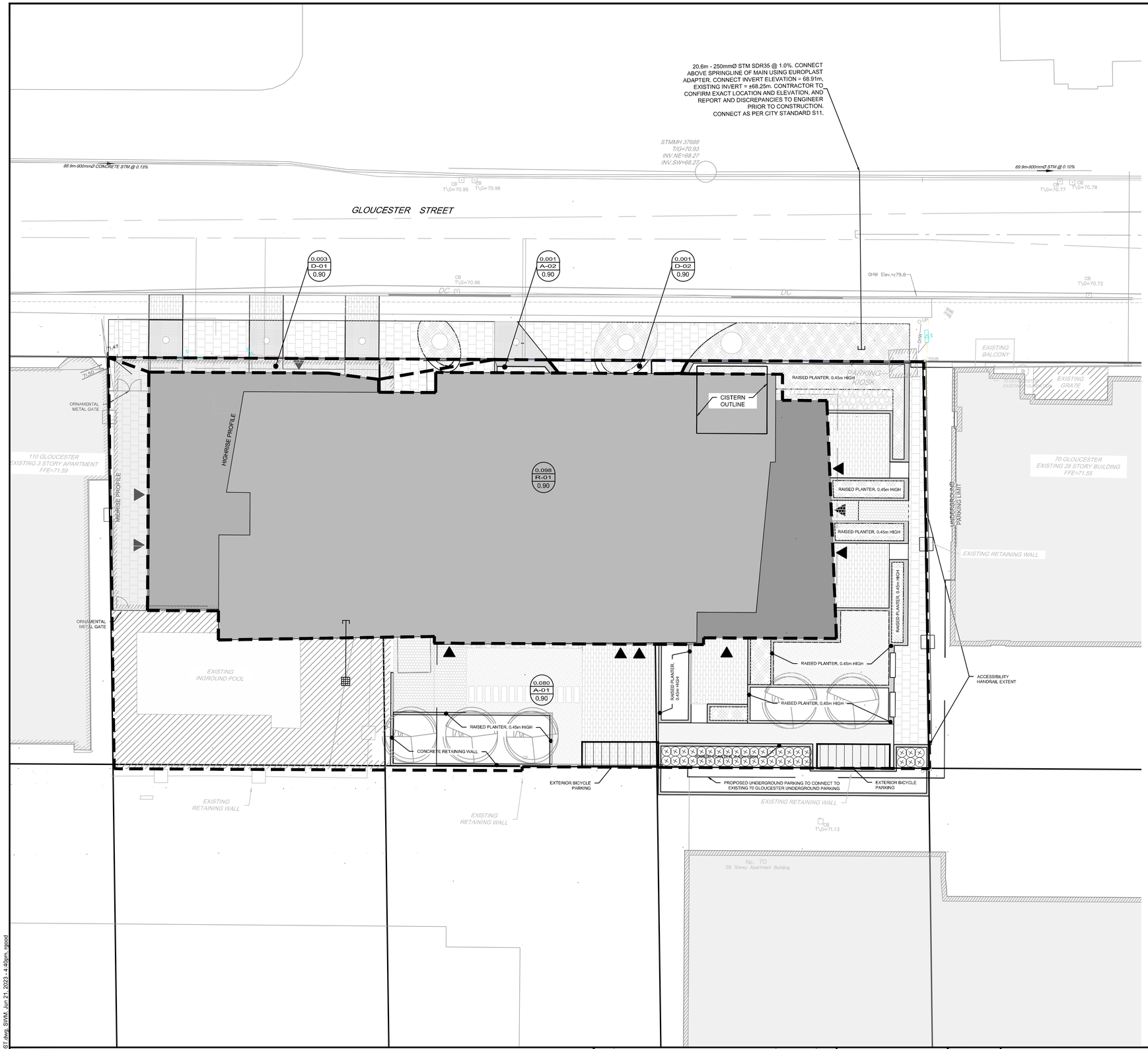

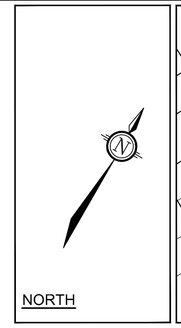

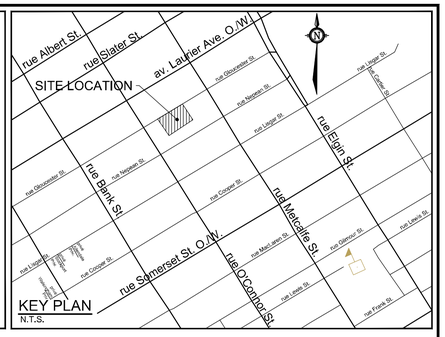

LEGEND

- STORM DRAINAGE AREA
- 0.395 / R-01 / 0.85 — DRAINAGE AREA (ha), DRAINAGE AREA ID, RUNOFF COEFFICIENT
- PROPOSED SANITARY MANHOLE AND SEWER
- EXISTING SANITARY MANHOLE AND SEWER
- BUILDING ENTRANCE

NOTE:
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CLARIDGE HOMES

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SUITE 2001,
210 GLADSTONE AVENUE,
OTTAWA , ONTARIO
K2P 0Y6.

No.	REVISION	DATE	BY
2.	REVISED PER CITY COMMENTS	FEB 07/24	GJM
1.	ISSUED FOR SITE PLAN CONTROL	JAN26/23	GJM

SCALE 1:150

1:150
0 2 4 6

DESIGN RJG
CHECKED GJM
DRAWN RJG/MF
CHECKED ARM
APPROVED GJM

FOR REVIEW ONLY

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Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
84 & 100 GLOUCESTER STREET

DRAWING NAME
STORMWATER MANAGEMENT PLAN

PROJECT No. 122173-00
REV REV # 2
DRAWING No. 122173-SWM2

D02-02-23-0013 & D07-12-23-0021

PLAN # 18944

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STORM SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 122173
Project Name: 100 Gloucester Street
Date Prepared: 11/11/2022
Date Revised:
Input By: Ryan Good
Reviewed By: Greg MacDonald
Drawing Reference: 122173-SWM

Legend:
- PROJECT SPECIFIC INFO
- USER DESIGN INPUT
- CUMILATIVE CELL
- CALCULATED DESIGN CELL OUTPUT
- USER AS-BUILT INPUT

LOCATION			DEMAND												CAPACITY							
			AREA							FLOW					PROPOSED SEWER PIPE SIZING / DESIGN							
From MH	To MH	Area ID	Hardscape	Landscaping	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr) 2yr	5yr	100yr	Peak Flow	TOTAL UNRESTRICTED PEAK FLOW (QDesign)	PIPE PROPERTIES LENGTH	SIZE / MATERIAL	ID ACTUAL	ROUGHNESS	DESIGN GRADE	CAPACITY	FULL FLOW VELOCITY	TIME OF FLOW	QPEAK DESIGN / QFULL
			0.90	0.20	(ha)				(min.)				(L/s)	(L/s)	(m)	(mm / type)	(m)		(%)	(L/s)	(m/s)	(min.)	(%)
BLDG	EX STM,	A-01,R-01	0.18	0.00	0.18	0.90	0.46	0.46	10.00	76.81			35.21	35.2	13.3	250 PVC	0.254	0.013	1.00	62.0	1.22	0.18	56.8%
					0.00		0.00	0.00	10.00				0.00										
					0.00		0.00	0.00	10.00				0.00										

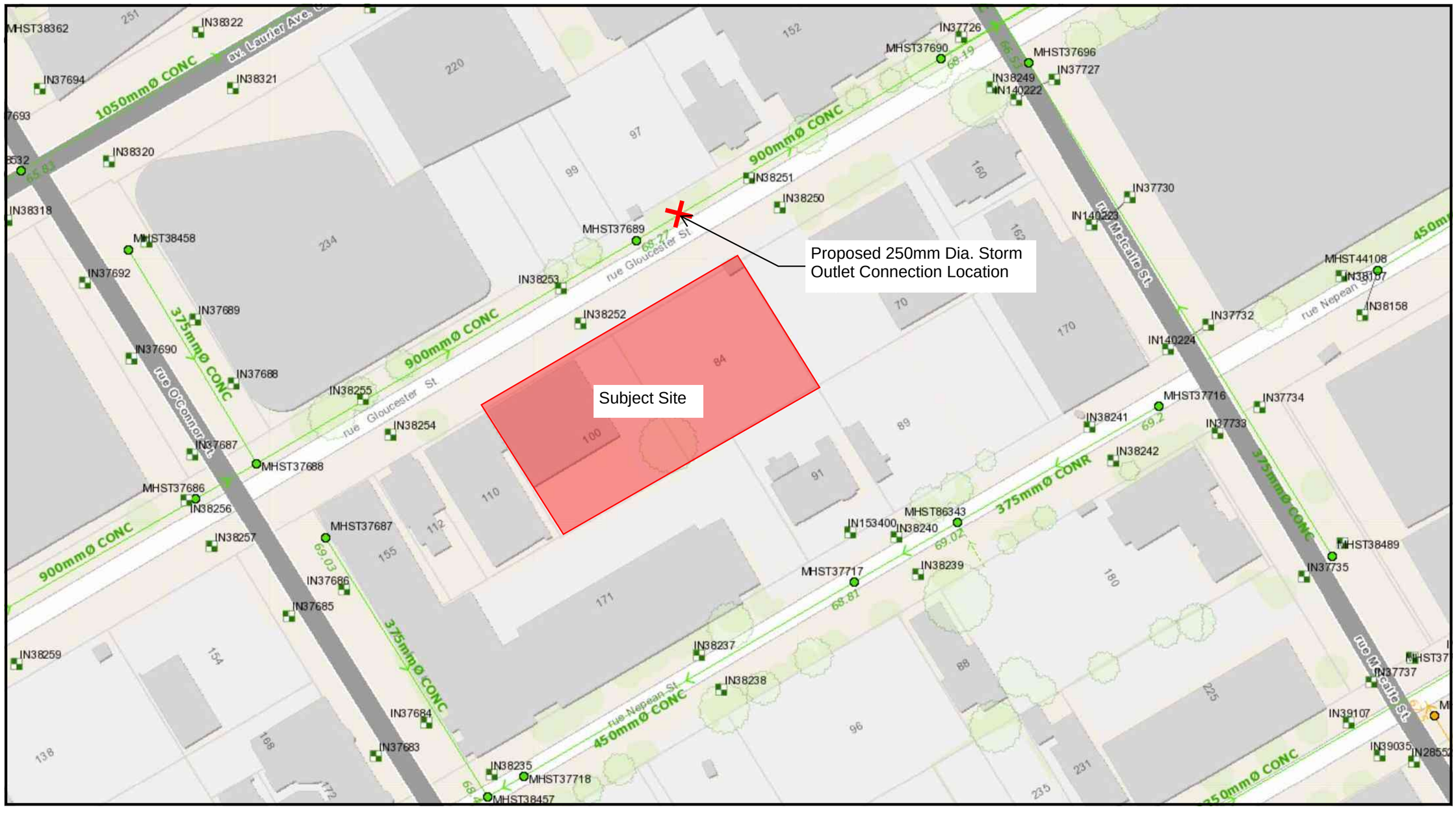
DEMAND EQUATION
Q = 2.78 AIR

Where : Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
R = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)
Rainfall Intensity (I) is based on City of Ottawa IDF data presented in the City of Ottawa Sewer Design Guidelines (Oct. 2012)

CAPACITY EQUATION
Q full= (1/n) A R^(2/3)So^(1/2)

Where : Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A = Flow area (m^2)
R = Wetter perimenter (m)
So = Pipe Slope/gradient

100 Gloucester Street - Proposed Storm Outlet Connection



Time to Peak Calculations - Existing Conditions

TABLE 1A: Time of Concentration (Uplands Overland Flow Method)

Area ID	Overland Flow						Channel Flow			Overall	
	Length (m)	Elevation U/S (m)	Elevation D/S (m)	Slope (%)	Velocity (Uplands (m/s)	Travel Time (min)	Length (m)	Velocity * (m/s)	Travel Time (min)	Time of Concentration (min)	Time to Peak (min)
PRE	31.12	71.52	71.16	1.2%	2.5	0.21	N/A	N/A	N/A	0.21	0.14

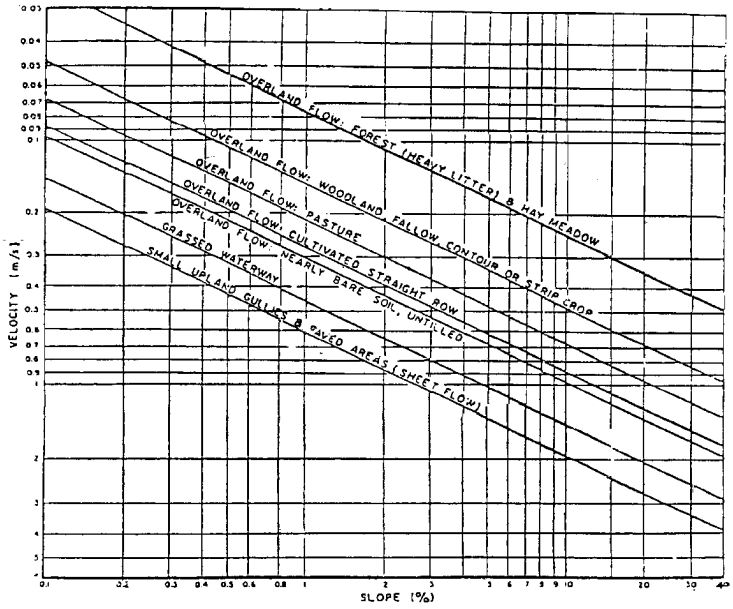


Figure A.5.2: Upland Method for Estimating Time of Concentration
(SCS National Engineering Handbook, 1971)

PROJECT #: 122173
PROJECT NAME: 100 Goucester Street
LOCATION: City of Ottawa

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: November, 2022

TABLE 2A: Pre-Development Runoff Coefficient "C" - PRE

Area	Surface	Ha	"C"	C_{avg}	$*C_{100}$
Total	Hard	0.183	0.90	0.90	1.00
0.183	Soft		0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

TABLE 2B: Pre-Development Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Gloucester Street	0.183	0.90	10	**35.2**	**47.7**	**90.8**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

TABLE 3A: Allowable Runoff Coefficient "C"

Area	"C"
Total	0.50
0.183	

TABLE 3B: Allowable Flows

Outlet Options	Area (ha)	"C"	Tc (min)	$Q_{5\ Year}$ (L/s)	Q_{ALLOW} (L/s)
Gloucester Street	0.183	0.50	10	**26.5**	**26.5**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

PROJECT #: 122173
PROJECT NAME: 100 Gloucester Street
LOCATION: City of Ottawa

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: March 10, 2023

TABLE 4A: Post-Development Runoff Coefficient "C" - D-01

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.003	0.90	0.90	1.00
0.003	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 2B: Post-Development D-01 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Gloucester Street	0.003	0.90	10	**0.5**	**0.7**	**1.4**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

TABLE 5A: Post-Development Runoff Coefficient "C" - D-02

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.001	0.90	0.90	1.00
0.001	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 2B: Post-Development D-02 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Gloucester Street	0.001	0.90	10	**0.2**	**0.2**	**0.5**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

PROJECT #: 122173
PROJECT NAME: 100 Gloucester Street
LOCATION: City of Ottawa

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: November, 2022

TABLE 12A: Post-Development Runoff Coefficient "C" - A-01,R-01

			5 Year Event		100 Year Event	
Area	0.4	Ha	"C"	C_{avg}	"C" + 25%	$*C_{avg}$
Total	Hard	0.086	0.90	0.90	1.00	1.00
0.183	Roof	0.097	0.90		1.00	
	Soft	0.000	0.20		0.25	

TABLE 12B: 2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-01,R-01

0.183 =Area (ha)
0.90 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
2 YEAR	-5	632.75	290.17	24.6	265.57	-79.67
	0	167.22	76.69	24.60	52.09	0.00
	5	103.57	**47.50**	**24.60**	**22.90**	**6.87**
	10	76.81	35.22	24.60	10.62	6.37
	15	61.77	28.33	24.60	3.73	3.35

TABLE 12C: 5 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-01,R-01

0.183 =Area (ha)
0.90 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
5 YEAR	0	230.48	105.70	24.60	81.10	0.00
	5	141.18	64.74	24.60	40.14	12.04
	10	**104.19**	**47.78**	**24.60**	**23.18**	**13.91**
	15	83.56	38.32	24.60	13.72	12.35
	20	70.25	32.22	24.60	7.62	9.14

TABLE 12D: 100 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-01,R-01

0.183 =Area (ha)
1.00 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR	10	178.56	90.98	24.60	66.38	39.83
	15	142.89	72.81	24.60	48.21	43.39
	20	**119.95**	**61.12**	**24.60**	**36.52**	**43.82**
	25	103.85	52.92	24.60	28.32	42.47
	30	91.87	46.81	24.60	22.21	39.98

TABLE 12E: 100+20 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-01,R-01

0.183 =Area (ha)
1.00 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR +20%	10	214.27	109.18	24.60	84.58	50.75
	15	171.47	87.37	24.60	62.77	56.50
	20	**143.94**	**73.34**	**24.60**	**48.74**	**58.49**
	25	124.62	63.50	24.60	38.90	58.35
	30	110.24	56.17	24.60	31.57	56.83

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Runoff Coefficient Equation
$C_s = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$
$C_{100} = (A_{hard} \times 1.0 + A_{soft} \times 0.25)/A_{Tot}$

TABLE 12F: Structure information - A-01,R-01

Structures	Size Dia.(mm)	Area (m^2)	T/G	Inv IN	Inv Overflow
STORAGE TANK	N/A	25.20	71.72	N/A	69.50

TABLE 12G: Storage Provided - A-01,R-01

Area A-01,R-01: Storage Table			
Elevation (m)	System Depth (m)	TANK Volume (m^3)	
67.760	0.00	0.00	
67.800	0.04	1.01	
67.900	0.14	3.53	
68.000	0.24	6.05	
68.100	0.34	8.57	
68.200	0.44	11.09	
68.300	0.54	13.61	
68.400	0.64	16.13	
68.500	0.74	18.65	
68.600	0.84	21.17	
68.700	0.94	23.69	
68.800	1.04	26.21	
68.900	1.14	28.73	
69.000	1.24	31.25	
69.100	1.34	33.77	
69.200	1.44	36.29	
69.300	1.54	38.81	
69.400	1.64	41.33	
69.500	1.74	43.85	
69.600	1.84	46.37	
69.700	1.94	48.89	
69.800	2.04	51.41	
69.900	2.14	53.93	
70.000	2.24	56.45	
70.100	2.34	58.97	
70.200	2.44	61.49	
70.300	2.54	64.01	
70.400	2.64	66.53	
70.500	2.74	69.05	**Top Of Tank**
70.600	2.84	69.16	
70.700	2.94	69.27	
70.800	3.04	69.39	
70.900	3.14	69.50	
71.000	3.24	69.61	
71.100	3.34	69.73	
71.200	3.44	69.84	
71.300	3.54	69.95	
71.400	3.64	70.07	
71.500	3.74	70.18	
71.600	3.84	70.29	
71.700	3.94	70.41	
71.720	3.96	70.43	**Top of Grate**

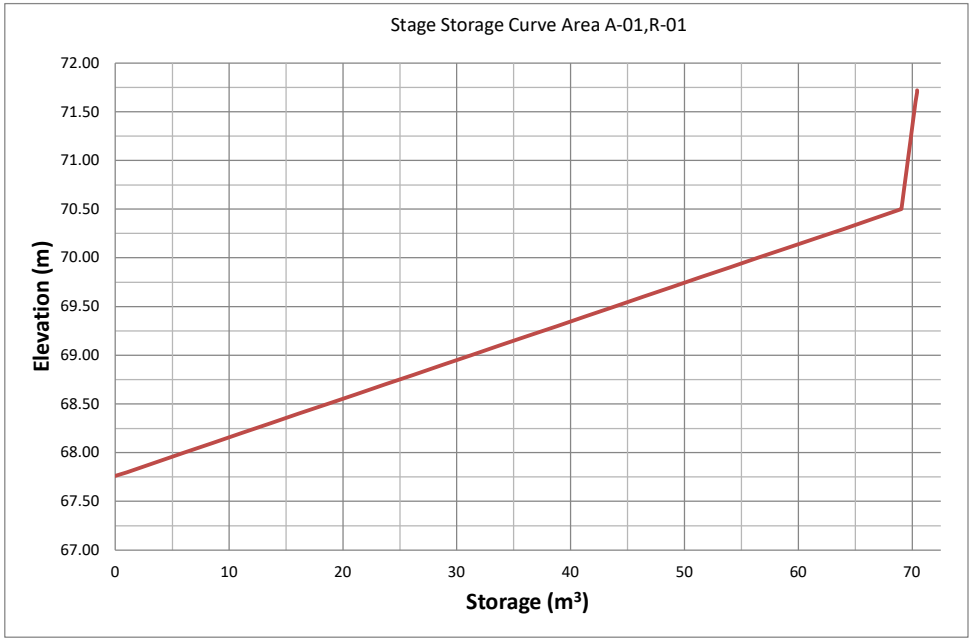


TABLE 5G: FLOW SUMMARY- STM TANK

Control Device
PUMP

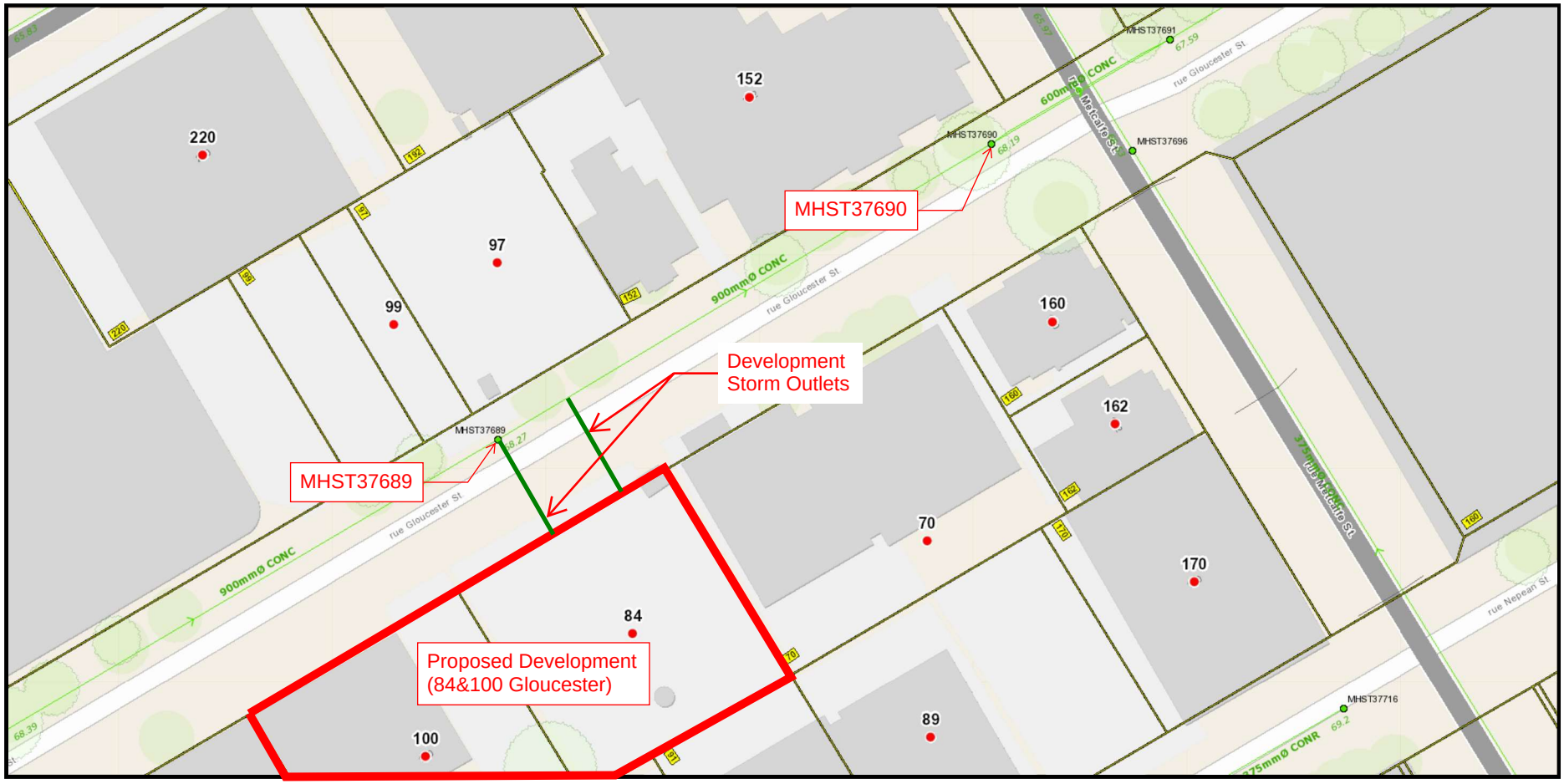
Design Event	Flow (L/S)	Head (m)	Elev (m)	Outlet dia. (mm)	Required Volume (m^3)
1:2 Year	24.60	0.27	68.03	250.00	6.87
1:5 Year	24.60	0.55	68.31	250.00	13.91
1:100 Year	24.60	1.74	69.50	250.00	43.82
1:100+20% Year	24.60	2.32	70.08	250.00	58.49

*NOTE: Design head taken from the permanent water elevation.

Table 7: Post-Development Stormwater Mangement Summary

Area ID	Area (ha)	1:5 Year Weighted Cw	Oulet Location	Control	2 Year Storm Event				5 Year Storm Event				100 Year Storm Event			
					Release (L/s)	Head (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)	Release (L/s)	Head (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)	Release (L/s)	Head	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)
D-01	0.0027	0.90	Gloucester Street	N/A	0.5	N/A	N/A	N/A	0.7	N/A	N/A	N/A	1.4	N/A	N/A	N/A
D-02	0.0009	0.90	Gloucester Street	N/A	0.2	N/A	N/A	N/A	0.2	N/A	N/A	N/A	0.5	N/A	N/A	N/A
A-01,R-01	0.183	0.90	Gloucester Street	PUMP	24.60	0.27	6.87	70.43	24.60	0.55	13.91	70.43	24.60	1.74	43.82	70.43
Total					**25.3**				**25.5**				**26.5**			
Allowable					**26.5**				**26.5**				**26.5**			

STORM HGL FIGURE

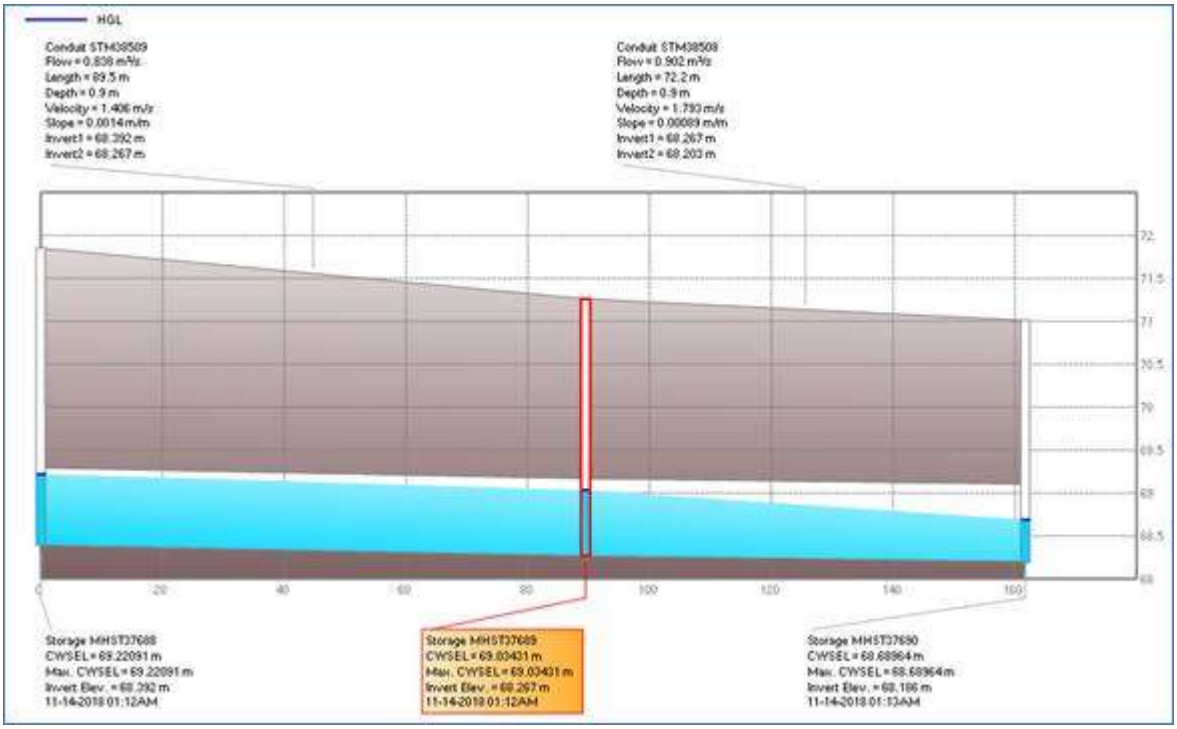


From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: Monday, July 24, 2023 12:34 PM
To: Ryan Good <r.good@novatech-eng.com>
Cc: Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>; Vincent Denomme <vincent.denomme@claridgehomes.com>
Subject: RE: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Ryan

No Concerns with Sanitary and Storm discharge rates. City system has the requested capacity.

Here is the existing 100 year profile along Gloucester between O'Connor and Metcalfe.



I will let you know when I receive the BC from Water Resource Group

Thanks

Nishant Jhamb, P.Eng
Project Manager |Gestionnaire de projet
Planning, Real Estate and Economic Development Department
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

From: Ryan Good <r.good@novatech-eng.com>
Sent: July 19, 2023 4:28 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Cc: Anthony Mestwarp <a.mestwarp@novatech-eng.com>; Greg MacDonald <g.Macdonald@novatech-eng.com>; Vincent Denomme <vincent.denomme@claridgehomes.com>
Subject: 84 & 100 Gloucester - Storm Sewer Capacity - (122173)

Hi Reza,

We are currently addressing City Comments (attached for reference, refer to section 4 for engineering comments) received to our submission 84 & 100 Gloucester Site Plan Application Submission.

As a result, can you please assist with the following?

1. Confirm if the 300mm diameter Concrete Sanitary Sewer in the Gloucester street ROW (attached figure "1-122173-SAN TRIBUTARY" shows connection location) has capacity for the proposed development's design flow of **5.76L/s.**
2. Confirm if the 900mm diameter Concrete Storm Sewer in the Gloucester Street ROW has capacity for the proposed development's design flow of **26.5L/s.**
3. Confirm the 100 year Storm HGL in the 900mm diameter – Concrete Storm Sewer in the Gloucester Street ROW so we can ensure there will not be any backflow issues with our proposed storm connections (attached markup "11-122173-HGL Figure" showing connection locations, between manholes MHST37689 and MHST37690).
4. Provide Boundary Conditions for the proposed development's water demand (details below, and associated files for request attached "Water – Boundary Conditions – Supporting Documents")
    a. The proposed development will have a total of 315 units (217 x 1 bed, 91 x 2-bed, and 7 x 3-bed units) and 144m^2 of commercial area (currently accounted for as a café).
    Total demands and fire flow are;
    Average Day Demand = **1.73L/s**
    Max Day Demand = **4.27L/s**
    Peak Hour Demand = **9.36L/s**
    Fire Flow (FUS 2020) = **150L/s**

If you have any questions or concerns please let me know.

Thanks,

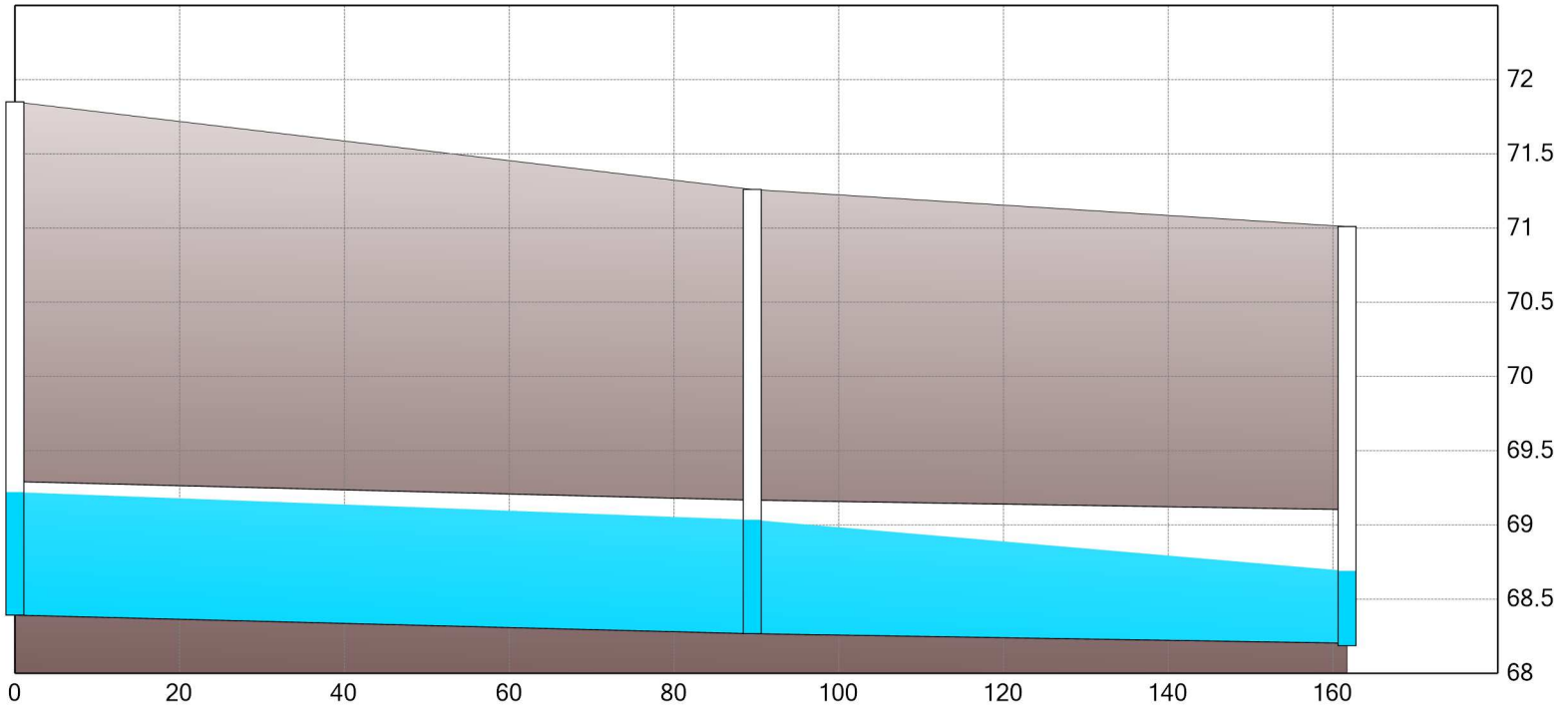
Ryan Good, C.E.T., CAD Technologist | Land Development and Public Sector Infrastructure
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 284 | Cell: 343-364-2246

HGL

Peak values

Conduit STM38509
Flow = 0.838 m³/s
Length = 89.5 m
Depth = 0.9 m
Velocity = 1.406 m/s
Slope = 0.0014 m/m
Invert1 = 68.392 m
Invert2 = 68.267 m

Conduit STM38508
Flow = 0.902 m³/s
Length = 72.2 m
Depth = 0.9 m
Velocity = 1.793 m/s
Slope = 0.00089 m/m
Invert1 = 68.267 m
Invert2 = 68.203 m



Storage MHST37688
CWSEL = 69.22091 m
Max. CWSEL = 69.22091 m
Invert Elev. = 68.392 m
11-14-2018 01:12AM

Storage MHST37689
CWSEL = 69.03431 m
Max. CWSEL = 69.03431 m
Invert Elev. = 68.267 m
11-14-2018 01:12AM

Storage MHST37690
CWSEL = 68.68964 m
Max. CWSEL = 68.68964 m
Invert Elev. = 68.186 m
11-14-2018 01:13AM

Appendix E
Legal Plan

Scale 1 : 150

6 4.5 3.0 1.5 0 3 6 Metres

Metric

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

Notes Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999943.

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations on reference points on the southerly limit of Gloucester Street having a bearing of N 59°06'00" E and are referenced to Specified Control Points 01919680005 and 01919680105, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

TOPOGRAPHICAL PLAN OF SURVEY OF

LOTS 44, 45 and 46
(South Gloucester Street Lots)
PART OF LOTS 44 and 45
(North Nepean Street Lots)
REGISTERED PLAN 2996
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.
AMENDED June 21, 2022 to show additional overhead wire and eave elevations.

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the regulations made under them.
2. The survey was completed on the 3rd day of December, 2021.

December 15, 2021
Date

V. Andrew Shelp
Ontario Land Surveyor

SITE AREA = 1842.5 m²

Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CC	"	Cut Cross
CP	"	Concrete Pin
(WIT)	"	Witness
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P)	"	Registered Plan 2996
(P1)	"	Plan 4R-1229
(P2)	"	(857) Plan dated Oct. 5, 1987
(P3)	"	(AOG) Plan dated Dec. 6, 1988
(P4)	"	(647) Plan dated July 4, 2018
(P5)	"	(AOG) Plan dated Sept. 12, 2017
(P6)	"	(AOG) Plan dated Aug. 6, 2020
(P7)	"	(647) Plan dated Mar. 26, 1963
(P8)	"	(647) Plan dated Aug. 19, 1964
(P9)	"	Plan 4R-31849
(D1)	"	Deed Inst. No. CR561159
(D2)	"	Deed Inst. No. CR488281
FH	"	Fire Hydrant
WV	"	Water Valve
MH-ST	"	Maintenance Hole (Storm Sewer)
MH-S	"	Maintenance Hole (Sanitary)
MH-B	"	Maintenance Hole (Bell Telephone)
MH-H	"	Maintenance Hole (Hydro)
— ST —	"	Underground Storm Sewer
— S —	"	Underground Sanitary Sewer
— W —	"	Underground Water
— P —	"	Underground Power
— G —	"	Underground Gas
———	"	Overhead Wires
CB	"	Catch Basin
GM	"	Gas Meter
HM	"	Hydro Meter
TB-B	"	Bell Terminal Box
B	"	Bollard
S	"	Sign
CLF	"	Chain Link Fence
BF	"	Board Fence
PO-M	"	Metal Pole
UP	"	Utility Pole
AN	"	Anchor
AC	"	Air Conditioner
Ø	"	Diameter
+ 65.00	"	Location of Elevations
+ 65.00	"	Top of Concrete Curb/ Retaining Wall Elevation
C/L	"	Centreline
———	"	Property Line
PM	"	Parking Meter
D	"	Drain
LF	"	Light Fixture
RW-C	"	Retaining Wall - Concrete
HTB	"	Hydro Transformer Bolt
T/G	"	Top of Grate
INV.	"	Invert

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-19574

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

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.
4. Invert data, and underground lines without surface hardware visible, were derived from City of Ottawa Engineering Sheets E-12-04 and E-12-05.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

Ontario Land Surveyors
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com

Job No. 22330-21 Claridge Lt44 PtLt45 Pl2996 T F2 | ns

Appendix F
Claridge Underground Parking Agreement

CLARIDGE HOMES

February 7, 2024

City of Ottawa
Building Department
110 Laurier Avenue West
Ottawa, ON K1P 1J1

RE: 100 Gloucester Proposed Underground Parking Structure extending into Neighboring Properties

To whom it may concern,

Please accept this letter as confirmation that Claridge Homes (70 Gloucester) Inc. owner of the property municipally known as 70 Gloucester & Claridge Homes (89 Nepean) Inc. owner of the property municipally known as 89 Nepean agree to the planned underground parking garage to be extended into 89 Nepean and 70 Gloucester, proposed by Claridge Homes (100 Gloucester) Inc. Site Plan Application known as file Number: D07-12-23-0021

CLARIDGE HOMES (70 GLOUCESTER) INC.

DocuSigned by:
Shawn Malhotra
B1FB4580AA3844F...

Shawn Malhotra
Chief Operating Officer

I have the authority to bind the corporation

CLARIDGE HOMES (89 NEPEAN) INC.

DocuSigned by:
Shawn Malhotra
B1FB4580AA3844F...

Shawn Malhotra
Chief Operating Officer

I have the authority to bind the corporation

CLARIDGE HOMES (100 GLOUCESTER) INC.

DocuSigned by:
Shawn Malhotra
B1FB4580AA3844F...

Shawn Malhotra
Chief Operating Officer

I have the authority to bind the corporation

Appendix G

City of Ottawa Development Servicing Study Checklist

NOVATECH
Engineers, Planners & Landscape Architects

Project Name: 100 Gloucester Street
Project Number: 122173
Date: June 2023

Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Executive Summary (for larger reports only).	NA		
Date and revision number of the report.	Y	COVER	SERVICING REPORT
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y	DWGS	ALL DESIGN DRAWINGS
Plan showing the site and location of all existing services.	Y	DWG	122173-GP
Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Y	1.0	SERVICING REPORT
Summary of Pre-consultation Meetings with City and other approval agencies.	Y	APP A	
Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Y	ALL SECTIONS	SERVICING REPORT
Statement of objectives and servicing criteria.	Y	3, 4, 5	SERVICING REPORT
Identification of existing and proposed infrastructure available in the immediate area.	Y	DWG	122173-GP
Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	NA		
Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Y	DWG	122173-GR

NOVATECH
Engineers, Planners & Landscape Architects

Project Name: 100 Gloucester Street
Project Number: 122173
Date: June 2023

Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	NA		
Proposed phasing of the development, if applicable.	NA		
Reference to geotechnical studies and recommendations concerning servicing.	Y	2.0	SERVICING REPORT
All preliminary and formal site plan submissions should have the following information:			
Metric scale	Y		ALL DRAWINGS
North arrow (Geodetic)	Y		ALL DRAWINGS
Key plan	Y		ALL DRAWINGS
Name and contact information of applicant and property owner	Y	1.0	DRAWINGS / SERVICING REPORT
Property limits including bearings and dimensions	Y		DRAWINGS / SERVICING REPORT
Existing and proposed structures and parking areas	Y		ALL DRAWINGS
Easements, road widening and rights-of-way	Y		ALL DRAWINGS
Adjacent street names	Y	1.0	ALL DRAWINGS (KEYPLAN) / SERVICING REPORT

NOVATECH
Engineers, Planners & Landscape Architects

Project Name: 100 Gloucester Street
Project Number: 122173
Date: June 2023

Development Servicing Study Checklist

4.2 Water	Addressed (Y/N/NA)	Section	Comments
Confirm consistency with Master Servicing Study, if available.	NA		
Availability of public infrastructure to service proposed development.	Y	DWG	122173-GP
Identification of system constraints.	NA		
Identify boundary conditions.	Y	3.0	SERVICING REPORT
Confirmation of adequate domestic supply and pressure.	Y	3.0	SERVICING REPORT
Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Y	3, APP B	SERVICING REPORT
Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Y	3, APP B	SERVICING REPORT
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	Y	NA	
Address reliability requirements such as appropriate location of shut-off valves.	Y	DWGS	122173-GP
Check on the necessity of a pressure zone boundary modification.	Y	3, APP B	SERVICING REPORT
Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Y	5.0	REPORT/APPENDIX D
Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Y	5.0	REPORT/GP
Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	Y	3.0	REPORT/APPENDIX B
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y	3, APP B	SERVICING REPORT
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Y	APP B	SERVICING REPORT

NOVATECH
Engineers, Planners & Landscape Architects

Project Name: 100 Gloucester Street
Project Number: 122173
Date: June 2023

Development Servicing Study Checklist

4.3 Wastewater	Addressed (Y/N/NA)	Section	Comments
Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Y	4.0	SERVICING REPORT
Confirm consistency with Master Servicing Study and/or justifications for deviations.	NA		
Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	Y	4.0, APP C	SERVICING REPORT
Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Y	4.0	SERVICING REPORT
Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)			
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	NA		
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y	4.0	SERVICING REPORT
Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	NA		
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	NA		
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	NA		
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	NA		
Special considerations such as contamination, corrosive environment etc.	NA		

NOVATECH
Engineers, Planners & Landscape Architects

Project Name: 100 Gloucester Street
Project Number: 122173
Date: June 2023

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y	5.0	122173-GP, SERVICING REPORT
Analysis of the available capacity in existing public infrastructure.			
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y	DWG'S	122173-GR, 122173-SWM
Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Y	5.1, APP D	SERVICING REPORT
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Y	5.1, APP D	SERVICING REPORT
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y	5.1, APP D	SERVICING REPORT
Set-back from private sewage disposal systems.	NA		
Watercourse and hazard lands setbacks.	NA		
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	NA		
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	NA		
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y	5.1, 5.3, APP D	SERVICING REPORT
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	NA		
Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Y	5.1, 5.3, APP D	APPENDIX D
Any proposed diversion of drainage catchment areas from one outlet to another.	NA		
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y	DWG	122173-GP

Development Servicing Study Checklist

If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	Y	APP D	SERVICING REPORT

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Identification of municipal drains and related approval requirements.	NA		
Description of how the conveyance and storage capacity will be achieved for the development.	Y	5.0, APP D	SERVICING REPORT
100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Y	APP D	SERVICING REPORT
Inclusion of hydraulic analysis including HGL elevations.	Y	APP D	SERVICING REPORT
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Y	DWG, 6.0	122173-GR, SERVICING REPORT
Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	NA		
Identification of fill constrains related to floodplain and geotechnical investigation.	Y	2.0	REPORT

NOVATECH
Engineers, Planners & Landscape Architects

Project Name: 100 Gloucester Street
Project Number: 122173
Date: June 2023

Development Servicing Study Checklist

4.5 Approval and Permit Requirements	Addressed (Y/N/NA)	Section	Comments
Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	NA		
Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	NA		
Changes to Municipal Drains.	NA		
Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	NA		

4.6 Conclusion	Addressed (Y/N/NA)	Section	Comments
Clearly stated conclusions and recommendations.	Y	7.0	SERVICING REPORT
Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	NA		
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario.	Y	ALL	ALL DWGS, REPORT