



Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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SITE SERVICING & STORMWATER MANAGEMENT REPORT

1058-1066 SILVER STREET
OTTAWA, ONTARIO

REPORT NO. 23056

AUGUST 12, 2024

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1.0 INTRODUCTION

This report has been prepared in support of the Site Plan Control application for the proposed 4-storey, 46-unit apartment building located at 1058-1066 Silver Street in Ottawa, Ontario. The properties are currently occupied by single family dwellings to be demolished. Refer to Pre-Application Consultation meeting notes in Appendix A.

This report forms part of the site servicing and stormwater management design for the proposed development. Also refer to drawings C-1 to C-7 prepared by D.B. Gray Engineering Inc.

2.0 WATER SERVICING

2.1 WATER SUPPLY FOR FIREFIGHTING

There is an existing municipal Class AA fire hydrant located at the intersection of Summerville Avenue and Silver Street. It is ± 40 m unobstructed distance to the far side of the Summerville Avenue façade of the proposed building, and ± 70 m unobstructed distance to the far side of the Silver Street façade of the proposed building, which is less than the maximum 90 m permitted by the Ontario Building Code; therefore, a private fire hydrant is not required.

In accordance with City of Ottawa Technical Bulletin ISTB-2021-03, when calculating the required fire flow where pipe sizing is not affected, the Ontario Building Code Method is to be used. Using the Ontario Building Code Method, the required fire flow was calculated to be 4,500 L/min (75 L/s). Refer to calculations in Appendix B.

The boundary conditions in the 150 mm Summerville Avenue municipal watermain provided by the City of Ottawa for the 75 L/s fire flow at the subject property indicate a hydraulic grade line (HGL) of 104.6 m. Refer to Appendix B. This HGL calculates to 206 kPa (30 psi). Since the pressure is above the Ontario Building Code's minimum required pressure of 140 kPa (20 psi), there is an adequate water supply for firefighting from the existing municipal water distribution system.

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02, the aggregate flow of all contributing fire hydrants within 150 m of the building shall not be less than the required fire flow. In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 Appendix I, Class AA fire hydrants within 75 m can contribute 5,700 L/min (95 L/s).

The existing municipal Class AA fire hydrant discussed above can contribute 5,700 L/min (95 L/s), which is greater than the required fire flow of 4,500 L/min (75 L/s).

2.2 DOMESTIC WATER SUPPLY

In accordance with

- i. the City of Ottawa Water Design Guidelines for the populations,
- ii. City of Ottawa Technical Bulletin ISTB-2021-03 for the consumption rate, and
- iii. the Ministry of the Environment Water Design Guidelines for the peaking factors, and

based on the 30 – 1 bedroom apartment units and 16 – 2 bedroom apartment units, the average daily demand was calculated to be 0.2 L/s, the maximum daily demand was calculated to be 1.9 L/s and the maximum hourly demand was calculated to be 2.9 L/s. Refer to calculations in Appendix B.

The boundary conditions in the 150 mm Summerville Avenue municipal watermain provided by the City of Ottawa at the subject property indicate a minimum HGL of 124.0 m and a maximum HGL of 132.8 m. Refer to Appendix B. Based on these boundary conditions, the pressure at the water meter is calculated to vary between 405 kPa (59 psi) and 491 kPa (71 psi). This is an acceptable range for the proposed development.

A 100 mm water service connecting to the existing 150 mm Summerville Avenue municipal watermain is proposed to service the development.

3.0 SANITARY SERVICING

In accordance with

- i. the City of Ottawa Sewer Design Guidelines for the populations,
- ii. City of Ottawa Technical Bulletin ISTB-2018-01 for the average daily flow, Harmon Formula correction factor and infiltration allowance, and
- iii. the Harmon Formula for the peaking factor, and

based on the 30 – 1 bedroom apartment units and 16 – 2 bedroom apartment units, the post-development sanitary flow rate was calculated to be 0.84 L/s. A 150 mm sanitary sewer service at 2% slope (21.54 L/s capacity) is proposed to service the development. At the design flow rate the sanitary sewer service will only be at 4% of its capacity. The proposed 150 mm sanitary sewer service will connect to the existing 225 mm Summerville Avenue municipal sanitary sewer, which at 2.91% slope has a capacity of 25.98 L/s. The pre-development sanitary flow rate was calculated to be 0.16 L/s. Refer to calculations in Appendix C. The 0.68 L/s post-development increase in flow is expected to have an acceptable impact on the surrounding municipal sanitary sewers.

4.0 STORMWATER MANAGEMENT

4.1 QUANTITY CONTROL

The stormwater quantity control criterion is to control the post-development peak flows with the use of flow control roof drains to the pre-development 2-year peak flow rate using the post-development roof area, a calculated pre-development runoff coefficient not more than 0.5 and a calculated pre-development time of concentration not less than 10 minutes. It was calculated that the pre-development conditions reflect a runoff coefficient of 0.52 during the 100-year event and 0.45 during the 2-year event. Using the Bransby Williams Formula, the pre-development time of concentration was calculated to be 3 minutes. Using the Rational Method with a time of concentration of 10 minutes, the pre-development flow rates were calculated to be 40.83 L/s during the 100-year event and 15.27 L/s during the 2-year event. Using the Rational Method with the post-development roof area of 882 sq.m, a time of concentration of 10 minutes and the calculated pre-development 2-year runoff coefficient of 0.45, the maximum allowable release rate was calculated to be 8.52 L/s. The Rational and Modified Rational Methods were used to calculate the post-development flow rates and corresponding storage volumes. Refer to calculations in Appendix D.

Drainage Area I (Uncontrolled Flow Off Site – 698 sq.m)

Other than roof storage, stormwater from the property will drain uncontrolled off site. The flow rates are calculated at a time of concentration of 10 minutes.

	100-Year Event	2-Year Event
Maximum Flow Rate	17.22 L/s	6.42 L/s

Drainage Area II (Roof – 882 sq.m)

The 5 roof drains are to be flow control type roof drains, which will restrict the flow of stormwater and cause it to pond on the roof. Roof drains are to be Watts RD-100 c/w a Watts Adjustable Accutrol Weir in the ¼ open position and release 0.95 L/s at 150 mm (15 USgpm at 6”). The opening at the top of the flow control weir is to be a minimum 50 mm in diameter. A minimum of 6 scuppers each a minimum 430 mm wide are to be installed 150 mm above the roof drains. Refer to architectural for exact locations and details. The roof is to be designed to carry the load of water having a 50 mm depth at the scuppers (i.e. 200 mm depth at the roof drains). Refer to structural.

	100-Year Event	2-Year Event
Maximum Release Rate	4.54 L/s	3.79 L/s
Maximum Depth at Roof Drains	139 mm	91 mm
Maximum Volume Stored	33.46 cu.m	9.27 cu.m

Summary

The maximum post-development release rate during the 100-year event for the entire property was calculated to be 21.76 L/s, which is 47% less than the pre-development flow rate during the 100-year event. The maximum post-development release rate during the 100-year event through the flow control roof drains was calculated to be 4.54 L/s, which is 47% less than the maximum allowable release rate. To achieve the maximum post-development release rate, a maximum storage volume of 33.46 cu.m is required and provided during the 100-year event. The maximum post-development release rate during the 2-year event for the entire property was calculated to be 10.21 L/s, which is 33% less than the pre-development flow rate during the 2-year event. The maximum post-development release rate during the 2-year event through the flow control roof drains was calculated to be 3.79 L/s, which is 56% less than the maximum allowable release rate. A maximum storage volume of 9.27 cu.m is required and provided during the 2-year event. The post-development reduction in flow is expected to have a positive impact on the 300 mm Summerville Avenue and 375 mm Silver Street municipal storm sewers.

4.2 QUALITY CONTROL

An Erosion & Sediment Control Plan has been developed to be implemented during construction. Refer to drawing C-3 and notes 2.1 to 2.5 on drawing C-5.

- i. Sediment capture filter sock inserts are to be installed in all existing catch-basins and catch-basin/manholes adjacent to and within the site.
- ii. A silt fence barrier is to be installed along the perimeter of the site.
- iii. Any material deposited on the public road is to be removed.

4.3 STORM SERVICING

The peak unrestricted roof and sunken terrace flow rate during the 2-year event was calculated to be 18.58 L/s. A 250 mm storm sewer service at 2% slope (84.10 L/s capacity) is proposed to service the building. At the peak unrestricted 2-year flow rate the storm sewer service would only be at 22% of its capacity. The peak restricted roof and sunken terrace flow rate during the 2-year event was calculated to be 5.42 L/s. At the peak restricted 2-year flow rate the storm sewer service will only be at 6% of its capacity. Refer to calculations in Appendix D. The proposed 250 mm storm sewer service will connect to the proposed private storm sewer system downstream of the inlet control device.

The peak unrestricted flow rate draining into the private storm sewer system during the 2-year event was calculated to be 33.89 L/s. A 250 mm storm sewer at 0.43% slope (39.00 L/s capacity) is proposed to connect to the existing 300 mm Summerville Avenue municipal storm sewer, which at 2.67% slope has a capacity of 158.01 L/s. At the peak unrestricted 2-year flow rate the proposed 250 mm storm sewer would be at 87% of its capacity. The peak restricted flow rate draining into the private storm sewer system during the 2-year event was calculated to be 10.32 L/s. At the peak restricted 2-year flow rate the proposed 250 mm storm sewer will only be at 26% of its capacity. Refer to calculations in Appendix D.

The rainwater leaders inside the building are to be constructed to withstand the pressure from a water column the height of the rainwater leader. Pressure tests are to be performed on the systems in accordance with the mechanical engineer's instructions.

The foundation drain will drain to a storm sump and be pumped to a storm drain. The point of connection to the storm drain is to be at high level in the basement. Refer to mechanical.

5.0 CONCLUSIONS

1. A private fire hydrant is not required.
2. There is an adequate water supply for firefighting from the existing municipal water distribution system.
3. There is an acceptable range of water pressures in the existing municipal water distribution system.
4. The post-development sanitary flow rate will be adequately handled by the proposed sanitary sewer service.
5. The post-development increase in sanitary flow is expected to have an acceptable impact on the existing municipal sanitary sewers.
6. The maximum post-development release rate during the 100-year event will be less than the pre-development flow rate during the 100-year event; and the maximum post-development release rate during the 2-year event will be less than the pre-development flow rate during the 2-year event.
7. The post-development reduction in stormwater flow is expected to have a positive impact on the existing municipal storm sewers.
8. An Erosion & Sediment Control Plan has been developed to be implemented during construction.
9. The peak unrestricted flow rates during the 2-year event will be adequately handled by the proposed storm sewer service and private storm sewer system.

10. The rainwater leaders inside the building are to be constructed to withstand the pressure from a water column the height of the rainwater leader. Pressure tests are to be performed on the systems in accordance with the mechanical engineer's instructions.

Prepared by D.B. Gray Engineering Inc.



APPENDIX A

PRE-APPLICATION CONSULTATION MEETING NOTES

Jordan Tannis
Via email: jt@concorde-properties.ca

**Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control, Complex Application
1058-1066 Silver Street and 1291-1305 Summerville Avenue**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on **October 10, 2023**.

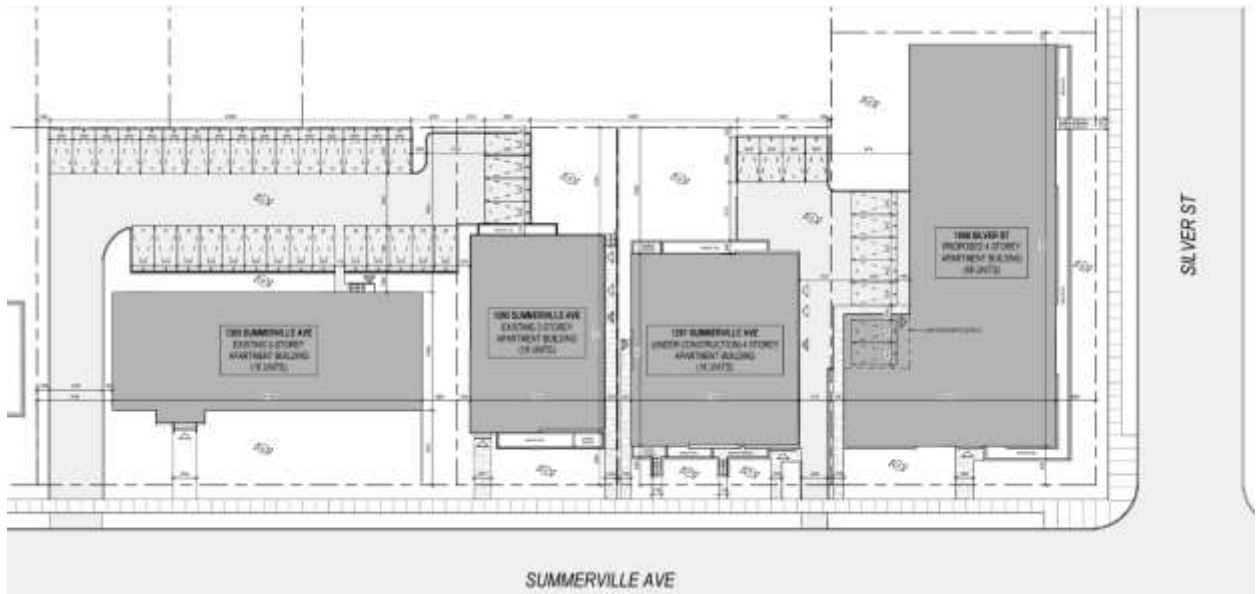
In Attendance:

Jordan Tannis, Applicant
Ryan Poulton, Novatech
Murray Chown, Novatech
Ryan Koolwine, Architect

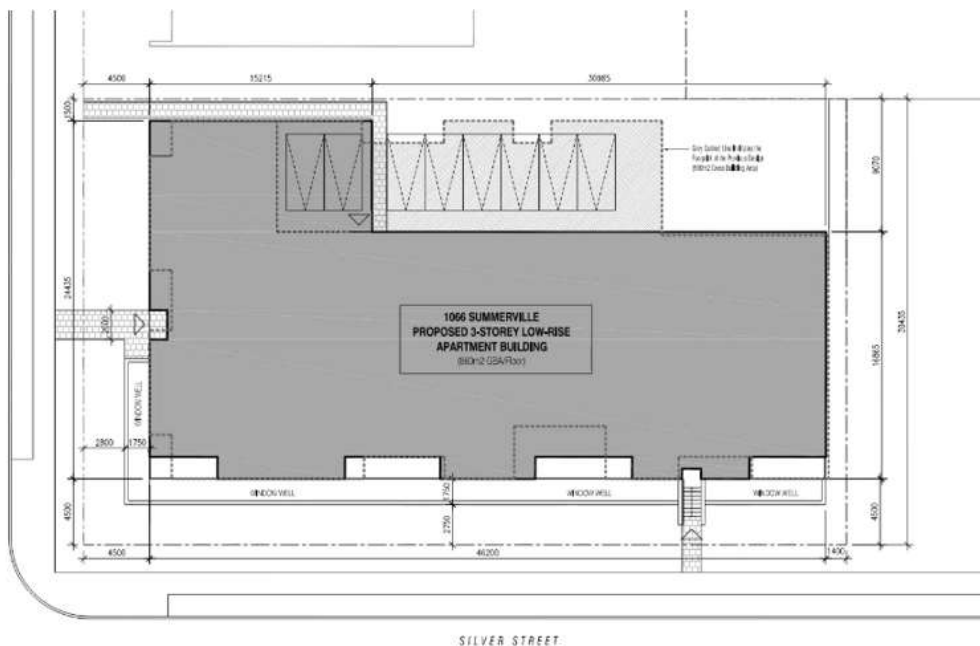
Josiane Gervais, City of Ottawa
Derek Unrau, City of Ottawa
Molly Smith, City of Ottawa
Mark Elliott, City of Ottawa
Sami Rehman, City of Ottawa
Bruce Bramah, City of Ottawa
Justin Griff, City of Ottawa
Tracey Scaramozzino, City of Ottawa

Proposal:

- Revised site plan control application is proposed to add 1291, 1295 and 1305 Summerville Ave to the active Site Plan Control Application for 1058, 1062 and 1066 Silver Street.
- There are currently 3, low-rise apartments, one per lot, at 1291, 1295 and 1305 Summerville Ave (1295 was just constructed).
- Proposal for new construction of a 46-unit, 4-storey, low-rise apartment building to be built over the 3 Silver Street parcels.
- A previous site plan for the 3 Silver Street parcels was approved for a low-rise apartment building with u/g parking, however the site plan agreement was never entered into by the former owner
- The 6 parcels of land (along Summerville and Silver) will merge on title and as such will become a PUD as per the Zoning By-Law Definition.



Current Proposal showing the PUD and associated surface parking



Difference between approved site plan and current (Oct 2023) proposal for the site along 1058, 1062, 1066 Silver (shown above incorrectly as 1066 Summerville) – above.



Pre-Consultation Preliminary Assessment

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input checked="" type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
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One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City’s key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. Please proceed to complete a Phase 3 Pre-consultation Application Form and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca.
2. In your subsequent pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.
3. Please note, if your development proposal changes significantly in scope, design, or density before the Phase 3 pre-consultation, you may be required to complete or repeat the Phase 2 pre-consultation process.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City’s Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning (Tracey Scaramozzino, Justin Grift):

Comments:

Policies and provisions, PPS, OP, CDP

1. Official Plan Designation: Neighbourhood in the Inner Urban Transect
 - a. Allows and supports a wide variety of housing types with a focus on missing-middle housing.
 - b. In appropriate locations, to support the production of missing middle housing, lower-density typologies may be prohibited..

Relief will be required for:

2. Variances required for lot area, as the Exception has a maximum area of 1,580 square metres
3. Areas where the private way width is less than 6 metre in width (Table 131 in ZBL)
4. Private way is required to be 1.2 metres from the buildings (see Table 131)
5. Landscape buffer between parking area and property line is 1.5 metres (Table 110)

Zoning By-Law

6. The three Silver Street parcels are zoned R4UC [2812], and the three Summerville Avenue parcels are zoned R4UC. PUDs are permitted in both zones.
7. Please ensure the R4UC provisions are reviewed and shown on site plan, consider Section 161(16)(b)(ii):
 - a. 25% of units need to be 2-bedroom units, please confirm for the next pre-consultation that the increase in units will respect the 2-bedroom provision.
4. Amenity area and landscape provisions
 - a. As per Section 137(6)(a &b), total amenity area for the PUD does not need to exceed 120sqm and may be located outside the rear yard, please refer to the layout of the communal area provisions for low-rise apartments (must be landscaped and at-grade, etc.)
 - i. May be good to cross-reference with landscape requirements in the R4UC zone (Section 161(15)).
5. Parking requirements

- a. Please review landscape provisions for parking lots and needing 15% landscaping in parking area (Section 110).
- b. As per Section 131, Table 131 (5) – parking may be located anywhere within the development.
- c. Vehicle parking spaces: in Area X for a PUD it is calculated as per dwelling type.
 - i. 96 units total, but with the first 12 for each dwelling not need to be accounted for (Section 101(3)(a)) = 48 total units
 - ii. Rate of 0.5 per units; $(48)(0.5) = 24$ spaces required

Visitor parking spaces

- iii. 96 units total, but first 12 on a lot not required (Section 102(3)) = 84 units
- iv. Rate of 0.1 per units; $(0.1)(84) = 8$ spaces required

TOTAL required: 32 spaces

- v. Refer to accessibility standards to determine how many Type A and B parking spaces are required and indicate on site plan:
documents.ottawa.ca/sites/documents/files/documents/accessibility_design_standards_en.pdf
- d. Bicycle parking spaces required at a rate of 0.5 per dwelling unit:
 - i. 48 bicycle parking spaces – please indicate these on site plan and their space dimensions
6. Please review PUD provisions in Section 131.
7. Section 37 requirements / Community Benefits Charge
 - a. This does not apply to the site, as the proposed building is less than 5-storeys in height.
8. A Zoning Confirmation Report will be required prior to deeming the application complete: [Zoning Confirmation Report \(ottawa.ca\)](http://Zoning Confirmation Report (ottawa.ca))

Urban Design (Molly Smith)

Comments:

9. A Design Brief is required, the term of reference is provided in the meeting minutes. Please note that there is a customized terms of reference with required items highlighted. The Design Brief is to follow the structure in Section 3 of the TOR- Contents.
10. Applicable Design Guidelines to be discussed in the Design Brief include the Design Guidelines for Low-Rise Infill Housing.
11. Please demonstrate in the Design Brief the elevation changes, particularly along the frontage of Silver Street.
12. There is concern that the parking stalls adjacent to 1066 Silver Seven would be shining lights into units, please utilize sketches, floorplans, elevations or diagrams to illustrate this is not the case. Mitigation measures to prevent headlights shining into units should be utilized such as through landscaping, if required.
13. Please provide an accessible entrance along Silver Street due to the grade changes and requirements in the Zoning By-law.
14. The site plan shows a sidewalk along Silver Street that is not currently present, who would be responsible for constructing this sidewalk?
15. Please maximize landscaping and tree planting. There are hydro wires along Silver Street but the amenity spaces in the rear of all building's present opportunity. Smaller trees along Silver Street would be acceptable.

Feel free to contact Molly Smith, Urban Design Planner, for follow-up questions at molly.smith@ottawa.ca.

Engineering (Derek Unrau):

Comments:

16. The Stormwater Management Criteria, for the subject site, is to be based on the following:
 - a. The 5-yr storm event using the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.
 - b. For separated sewer system built pre-1970 the design of the storm sewers are based on a 2 year storm.

- c. The pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).
- d. A calculated time of concentration (Cannot be less than 10 minutes).
- e. Flows to the storm sewer in excess of the 2-year storm release rate, up to and including the 100-year storm event, must be detained on site.
- f. For a combined sewer system the maximum C= 0.4 or the pre-development C value, whichever is less. In the absence of other information the allowable release rate shall be based on a 2 year storm event.
- g. **Please note that the storm system in this area is partially separated and prone to surcharge.** It can be assumed that the 100-year storm surcharges to street level. 30 cm of freeboard is required above the spill-point of the site and the top of the ramp for the parking garage entrance. Sump pump connection(s) are recommended rather than direct connection to the storm sewer, due to the surcharge risk. Floor drains in the parking garage must be connected to the sanitary sewer, in accordance with the City's Sewer Design Guideline.
- h. ***The increased sanitary load from the development should be analyzed as well as the capacity of the downstream receiver (750 mm dia. Conc. Sewer on Hollington Street).***



17. Deep Services (Storm, Sanitary & Water Supply)

- a. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.
- b. Connections to trunk sewers and easement sewers are typically not permitted.

- c. Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. Not in a parking area).
 - d. Review provision of a high-level sewer.
 - e. Sewer connections to be made above the springline of the sewermain as per:
 - i. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.
 - ii. Std Dwg S11 (For rigid main sewers) – lateral must be less than 50% the diameter of the sewermain,
 - iii. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less than 50% the diameter of the sewermain,
 - iv. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.
 - v. No submerged outlet connections.
18. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:
- a. Location of service
 - b. Type of development and the amount of fire flow required (as per FUS).
 - c. Average daily demand: ___ l/s.
 - d. Maximum daily demand: ___ l/s.
 - e. Maximum hourly daily demand: ___ l/s.
19. An MECP Environmental Compliance Approval may be required for the proposed development. Please contact the Ministry of the Environment, Conservation and Parks, Ottawa District Office to arrange a pre-submission consultation:
- a. Charlie Primeau at (613) 521-3450, ext. 251 or Charlie.Primeau@ontario.ca

20. Water

- a. Capacity, during the previous site plan application for Silver Street, a maximum capacity of 8,000l/m was determined, design conditions for the current application shall be made accordingly.

21. Sewer (sanitary and storm)

- a. Capacity, please provide peak sanitary flow on boundary condition request.
- b. The designer should be aware there may be limited capacity in the downstream sanitary sewer system. The sanitary demand needs to be coordinated with the City Planning Dept. to determine if the existing sanitary sewer system has sufficient capacity to support a rezoning. Provide sanitary demands to the City project manager for coordination.

22. Stormwater

- a. Quality Control, 80% TSS removal will be required. See SWM requirements above section 19.

Feel free to contact Derek Unrau, Infrastructure Project Manager, for follow-up questions at derek.unrau@ottawa.ca.

Noise (Josiane Gervais):

Comments:

23. Stationary Noise Study required if there will be any exposed mechanical equipment due to the proximity to neighboring noise sensitive land uses.

Feel free to contact Josiane Gervais, TPM, for follow-up questions.

Transportation (Josiane Gervais):

Comments:

24. A TIA is not required.
25. Ensure that the development proposal complies with the Right-of-Way protection requirements of the Official Plan's Schedule C16.
 - a. See [Schedule C16 of the Official Plan](#).
 - b. Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

26. Corner triangles as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required (measure on the property line/ROW protected line; no structure above or below this triangle): Local Road to Local Road: 3 m x 3 m
27. The TMP 2031 Affordable Network Concept identifies Merivale Road as a Transit Priority Corridor (Continuous Lanes).
28. As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, visitor parking, etc.).
29. Upgrade asphalt pathway to concrete sidewalk as per City Standard along Summerville Ave and construct new sidewalk along Silver Street frontage OR share communication with City regarding tree impacts and sidewalk requirements waived.
30. On site plan:
 - a. Ensure site access meets the City's Private Approach Bylaw.
 - b. Show all details of the roads abutting the site; include such items as pavement markings, accesses and/or sidewalks.
 - c. Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
 - d. Turning movement diagrams required for internal movements (loading areas, garbage).
 - e. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
 - f. Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)
 - g. Sidewalk is to be continuous across access as per City Specification 7.1.
 - h. Parking stalls at the end of dead-end parking aisles require adequate turning around space.

Feel free to contact Josiane Gervais, Transportation Project Manager, for follow-up questions at Josiane.gervais@ottawa.ca.

Planning Forestry (Hayley Murray)

Comments:

31. A Tree Conservation Report and Landscape Plan are required submission documents. The Landscape Plan Terms of Reference are now available and must be followed: [LP TOR](#)
32. There is quite a bit of canopy cover that will be lost across the property due to the development footprint. The landscape plan must demonstrate how trees will be incorporated on the landscape to compensate for this loss. The City has a goal of 40% canopy cover within the urban area (Section 4.8.2 of the OP). The design must balance space for trees with housing.
33. As stated in section 4.8.2 of the Official Plan
 - a. Retention solutions for trees in good health outside of the as of right building footprint must be detailed in the TCR;
 - b. Preserve and provide space for mature, healthy trees on private and public property, including the provision of adequate volumes of high-quality soil as recommended by a Landscape Architect.
34. Removal of a City tree will only be permitted when justified. Compensation would be required.
35. Boundary trees are to be protected. Removal of a boundary tree would require written permission from the adjacent landowner.
36. TCR requirements:
 - a. The TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition.
 - b. Please identify trees by ownership – private onsite, private on adjoining site, city owned, boundary (trees on a property line)
 - c. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
 - d. All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at [Tree Protection Specification](#) or by searching Ottawa.ca
 - e. The location of tree protection fencing must be shown on the plan
 - f. The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
 - g. For more information on the process or help with tree retention options, contact Hayley Murray hayley.murray@ottawa.ca or on [City of Ottawa](#)
37. LP tree planting requirements:

Minimum Setbacks

- a. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
- b. Maintain 2.5m from curb
- c. Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- d. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when **planting around overhead primary conductors**.

Tree specifications

- e. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- f. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- g. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- h. Plant native trees whenever possible
- i. No root barriers, dead-man anchor systems, or planters are permitted.
- j. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

- k. Curb style planter is highly recommended
- l. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- m. Trees are to be planted at grade

Soil Volume

- n. Please document on the LP that adequate soil volumes can be met:

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

** Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay **

- o. Please follow the City’s 2017 Tree Planting in Sensitive Marine Clay guidelines for trees in the Right of Way

Tree Canopy

- p. The landscape plan shall show how the proposed tree planting will replace and increase canopy cover on the site over time, to support the City’s 40% urban forest canopy cover target.
- q. At a site level, efforts shall be made to provide as much canopy cover as possible, through tree planting and tree retention, with an aim of 40% canopy cover at 40 years, as appropriate. Indicate on the plan the projected future canopy cover at 40 years for the site.

Feel free to contact Hayley Murray, Planning Forester, for follow-up questions at Hayley.murray@ottawa.ca.

Parkland (Burl Walker)

Comments:

- 38. Based on the information provided with the pre-consultation submission, the total site area is 5,342 m². The proposed apartment building will have 46 dwelling units and 3 existing dwelling units will be demolished. The proposed apartment building development will result in 43 net residential units.
- 39. Cash-in-lieu of parkland dedication was previously provided for the value of 76 m² of land prior to the registration of the site plan agreement for 1305 Summerville Avenue. The site plan agreement for 1291 Summerville Avenue will require the payment of cash-in-lieu of parkland dedication for 100 m² of land.
- 40. Cash-in-lieu of parkland dedication will be required as a condition of site plan approval. Below is a preliminary draft of the condition:

Prior to the issuance of a building permit, the Owner acknowledges and agrees to pay cash-in-lieu of conveyance of parkland at the rate set out in the Parkland Conveyance Requirement Table below. Pursuant to the City’s Parkland Dedication By-law, being By-law No. 2022-280, as amended, 40% of said funds collected shall be directed to City wide funds, and 60% shall be directed to Ward 16 funds. The Owner also acknowledges and agrees that the value of the land, determined as of the day before the day of building permit issuance, is to be determined by the City’s Corporate Real Estate Office. The Owner shall be responsible for any appraisal costs incurred by the City.

Cash-in-lieu of Parkland Conveyance Requirement Table

Development Type	Rate	Number of Net Residential Units	Conveyance Requirement
------------------	------	---------------------------------	------------------------

Proposed apartment building subject to current pre-consultation application (File No. PC2023-0253)	1 ha per 1,000 net residential units to a maximum of 10% of gross land area	43	430 m ²
CIL previously provided for apartment building at 1305 Summerville Avenue (File No. D07-12-19-0048)	1 ha per 500 dwelling units to a maximum of 10% of gross land area	18	-76 m ²
CIL to be provided for apartment building at 1291 Summerville Avenue (File No. D07-12-21-0126)	1 ha per 1,000 net residential units to a maximum of 10% of gross land area	10	-100 m ²
Total requirement:			254 m ²
Conveyance of Parkland:			
Cash-in-lieu of Conveyance of Parkland:			254 m ²

Feel free to contact Burl Walker, Parks Planner, for follow-up questions at burl.walker@ottawa.ca.

Other

41. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design. The HPDS was passed by Council on April 13, 2022.

- a. At this time, the HPDS is not in effect and Council has referred the 2023 HPDS Update Report back to staff with direction to bring forward an updated report to Committee with recommendations for revised phasing timelines, resource requirements and associated amendments to the Site Plan Control By-law by no later than Q1 2024.
- b. Please refer to the HPDS information attached and ottawa.ca/HPDS for more information.

Submission Requirements and Fees

1. The application subtype required is a Site Plan Revision Complex as there is an additional 14 units proposed. The fee for the Revision with Legal Fees total to \$ 39,687.73.
 - a. Additional information regarding fees related to planning applications can be found [here](#).
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

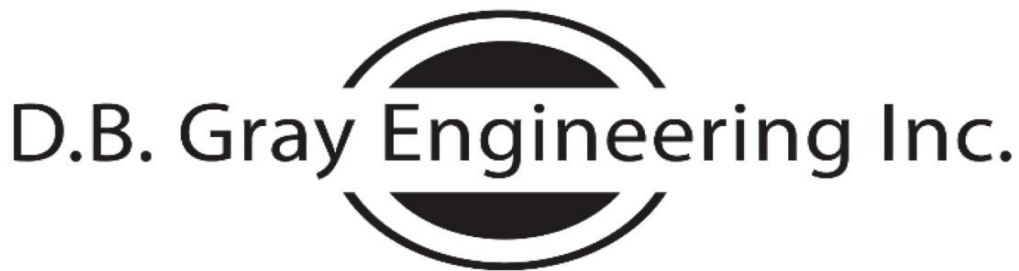
Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Sincerely,
Justin Grift

cc.
Tracey Scaramozzino
Derek Unrau
Molly Smith
Josiane Gervais
Haley Murray

APPENDIX B

WATER SERVICING



Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

February 6, 2024

1058-1066 Silver Street
NW Half of 4-Storey Apartment Building
Ottawa, Ontario

FIRE FLOW CALCULATIONS OBC Method

Q = Required water supply in litres
= KVS_{Total}

K = Water supply coefficient as per OBC A-3.2.5.7. Table 1
= 18 Group C Occupancy, Building is of combustible construction with fire separations and fire resistance ratings in accordance with Subsection 3.2.2.

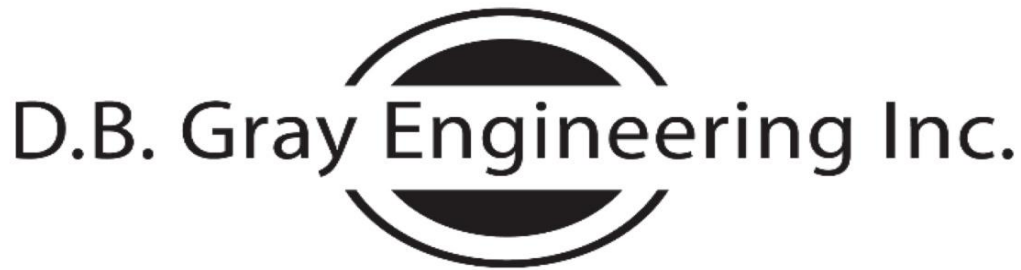
V = Building volume in cubic meters

	Floor Area (sq.m)	Height (m)	Volume (cu.m)
Level 03:	372	3.1	1,153
Level 02:	372	3	1,116
Level 01:	372	3	1,116
Level 00:	372	3	1,116
			4,501

S_{Total} = Total of spatial coefficients from exposure distances
= $1.0 + S_{Side 1} + S_{Side 2} + S_{Side 3} + S_{Side 4}$

	Spatial Coefficient	Exposure Distance (m)	
$S_{Side 1}$	0.5	1.4	(to NW property line)
$S_{Side 2}$	0.0	14	(NE to centerline of Silver Street)
$S_{Side 3}$	0.0		(SE to firewall)
$S_{Side 4}$	0.0	12	(SW to 1291 Summerville Avenue)
S_{Total}	1.5		

Q = 121,532 L
= 3,600 L/min as per OBC A-3.2.5.7. Table 2
= 60 L/s



Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

May 3, 2024

1058-1066 Silver Street
SE Half of 4-Storey Apartment Building
Ottawa, Ontario

FIRE FLOW CALCULATIONS OBC Method

Q = Required water supply in litres
= KVS_{Total}

K = Water supply coefficient as per OBC A-3.2.5.7. Table 1
= 18 Group C Occupancy, Building is of combustible construction with fire separations and fire resistance ratings in accordance with Subsection 3.2.2.

V = Building volume in cubic meters

	Floor Area (sq.m)	Height (m)	Volume (cu.m)
Level 03:	479	3.1	1,485
Level 02:	479	3	1,437
Level 01:	479	3	1,437
Level 00:	479	3	1,437
			5,796

S_{Total} = Total of spatial coefficients from exposure distances
= $1.0 + S_{Side 1} + S_{Side 2} + S_{Side 3} + S_{Side 4}$

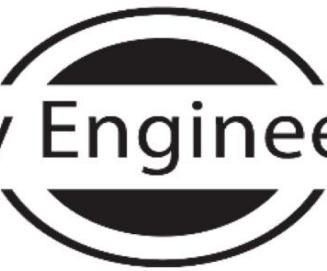
	Spatial Coefficient	Exposure Distance (m)	
S _{Side 1}	0.0		(NW to firewall)
S _{Side 2}	0.0	14	(NE to centerline of Silver Street)
S _{Side 3}	0.0	13	(SE to centerline of Summerville Avenue)
S _{Side 4}	0.5	5	(SW to 1291 Summerville Avenue)
S _{Total}	1.5		

$$\begin{aligned}
 Q &= 156,489 \text{ L} \\
 &= 4,500 \text{ L/min as per OBC A-3.2.5.7. Table 2} \\
 &= 75 \text{ L/s}
 \end{aligned}$$

75 L/s Fire Flow HGL: 104.6 m

Elevation at Fire Hydrant: 83.6 m

Static Pressure at Fire Hydrant: 21.0 m 206 kPa 30 psi



D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

May 3, 2024

1058-1066 Silver Street
4-Storey Apartment Building
Ottawa, Ontario

WATER DEMAND CALCULATIONS

	Number of Units	Persons per Unit	Population
1 Bedroom:	30	1.4	42
2 Bedroom:	16	2.1	33.6
3 Bedroom:	0	3.1	0
Average:	0	1.8	0
Total:	46		75.6

Average Daily Demand: 280 L/capita/day
14.7 L/min 0.2 L/s 3.9 USgpm

Maximum Daily Demand: 7.8 (Peaking factor for a population of 75.6 interpolated from MOE Design Guidelines for Drinking Water Systems Table 3-3)
114.0 L/min 1.9 L/s 30.1 USgpm

Maximum Hourly Demand: 11.7 (Peaking factor for a population of 75.6 interpolated from MOE Design Guidelines for Drinking Water Systems Table 3-3)
171.7 L/min 2.9 L/s 45.3 USgpm

Elevation of Water Meter: 82.67 m

Level 00 Floor Elevation: 81.77 m

Minimum HGL: 124.0 m

Static Pressure at Water Meter: 41.3 m 405 kPa 59 psi

Maximum HGL: 132.8 m

Static Pressure at Water Meter: 50.1 m 491 kPa 71 psi



Ryan Faith <r.faith@dbgrayengineering.com>

RE: Request for Boundary Conditions - 1058-1066 Silver Street

1 message

Bramah, Bruce <bruce.bramah@ottawa.ca>
To: Ryan Faith <r.faith@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>

Fri, May 3, 2024 at 7:55 AM

Good morning Ryan,

Please see the Boundary Conditions provided below:

The following are boundary conditions, HGL, for hydraulic analysis at 1058-1066 Silver Street (zone 2W2C) assumed to be connected to the 152 mm watermain on Summerville Avenue (see attached PDF for location).

-

Minimum HGL: 124.0 m

Maximum HGL: 132.8 m

Max Day + Fire Flow (75 L/s): 104.6

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

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

Please let me know if you have any questions.

Thanks,

--

Bruce Bramah, P.Eng

Project Manager

Planning, Development, and Building Services Department | Direction générale des services de la planification, de l'aménagement et du bâtiment

Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Bramah, Bruce
Sent: January 19, 2024 8:55 AM
To: Ryan Faith <r.faith@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>
Subject: FW: Request for Boundary Conditions - 1058-1066 Silver Street

Good morning Ryan,

Can you please provide a servicing plan or simple drawing showing the water service connection location on Summerville Ave.

Thanks,

--

Bruce Bramah, P.Eng

Project Manager

Planning, Real Estate and Economic Development Department

Development Review - South 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 29686, Bruce.Bramah@ottawa.ca

From: Unrau, Derek <derek.unrau@ottawa.ca>
Sent: January 18, 2024 4:11 PM
To: Bramah, Bruce <bruce.bramah@ottawa.ca>
Cc: Sevigny, John <John.Sevigny@ottawa.ca>
Subject: FW: Request for Boundary Conditions - 1058-1066 Silver Street

Hey,

Let me know if you want this redistributed within the South or keep it.

Regards,

Derek Unrau, C.E.T.

Project Manager

Planning, Real Estate and Economic Development Department

Development Review - East 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 27670, Derek.Unrau@ottawa.ca

From: Ryan Faith <r.faith@dbgrayengineering.com>
Sent: January 18, 2024 3:35 PM
To: Unrau, Derek <derek.unrau@ottawa.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>
Subject: Request for Boundary Conditions - 1058-1066 Silver Street

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

Hi Derek,

Please provide the boundary conditions for the 150 mm Summerville Avenue municipal watermain at 1066 Silver Street. We have calculated the following expected demands:

Fire flow demand: 75 L/s
Average daily demand: 0.2 L/s
Maximum daily demand: 1.9 L/s
Maximum hourly demand: 2.9 L/s

Fire flow + maximum daily demand: 76.9 L/s


Calculations are attached.

Thanks,

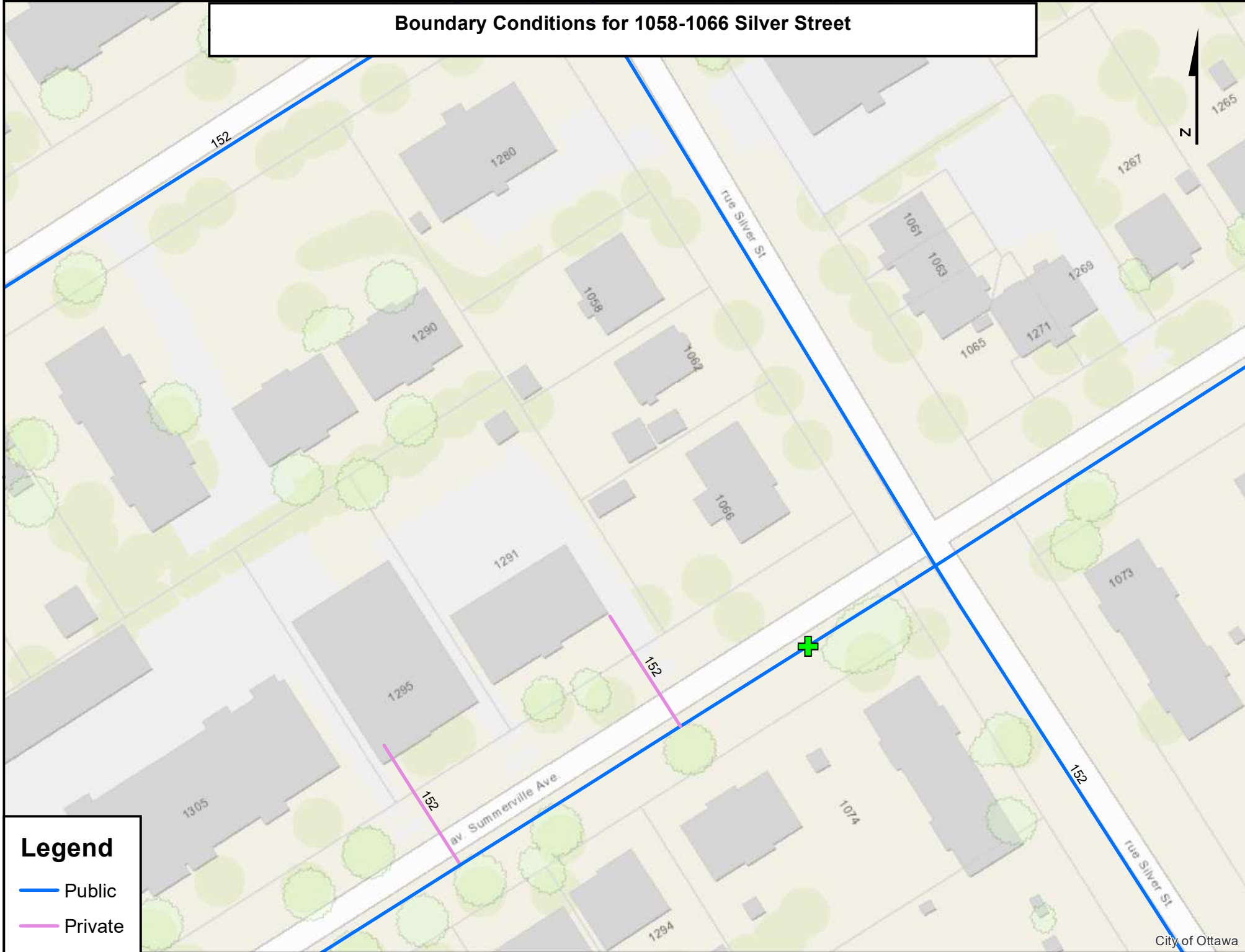
Ryan Faith
D.B. Gray Engineering Inc.
[700 Long Point Circle](#)
Ottawa, Ontario **K1T 4E9**
613-425-8044

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 **1058-1066 Silver Street January 2024.pdf**
506K

Boundary Conditions for 1058-1066 Silver Street



Legend

- Public
- Private

APPENDIX C

SANITARY SERVICING



SANITARY SEWER CALCULATIONS

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
 700 Long Point Circle Ottawa, Ontario K1T 4E9
 613-425-8044
 d.gray@dbgrayengineering.com

Project: 1058-1066 Silver Street
 4-Storey Apartment Building
 Ottawa, Ontario
 Date: February 6, 2024

Residential Average Daily Flow: 280 L/capita/day
 Commercial Average Daily Flow: 28,000 L/ha/day
 Institutional Average Daily Flow: 28,000 L/ha/day
 Light Industrial Average Daily Flow: 35,000 L/ha/day
 Heavy Industrial Average Daily Flow: 55,000 L/ha/day
 Infiltration Allowance: 0.33 L/s/ha

Residential Peaking Factor: Harmon Formula
 Harmon Formula Correction Factor: 0.8
 Commercial Peaking Factor: 1.5
 Institutional Peaking Factor: 1.5
 Industrial Peaking Factor: Ministry of the Environment
 Manning's Roughness Coefficient: 0.013

Location		Residential												Commercial				Infiltration			Q Total Flow Rate (L/s)	Sewer Data																
		Individual								Cumulative				Individual		Cumulative		Individual		Cumulative		Length (m)	Nominal Diameter (mm)	Actual Diameter (mm)	Slope (%)	Velocity (m/s)	Q _{Full} Capacity (L/s)	Q / Q _{Full}										
		Single Family	Semi Detached	Duplex	Apartment (1 Bed)	Apartment (2 Bed)	Apartment (3 Bed)	Apartment (Average)	Area (ha)	Population	Area (ha)	Population	Peaking Factor	Flow Rate (L/s)	Area (ha)	Area (ha)	Peaking Factor	Flow Rate (L/s)	Area (ha)	Area (ha)									Flow Rate (L/s)									
From	To	ppu = 3.4	ppu = 2.7	ppu = 2.3	ppu = 1.4	ppu = 2.1	ppu = 3.1	ppu = 1.8																														
1058 Silver	Existing 225 SAN	1							0.0465	3.4	0.0465	3.4	3.2	0.04					0.0465	0.0465	0.02	0.05																
1062 Silver	Existing 225 SAN	1							0.0465	3.4	0.0465	3.4	3.2	0.04					0.0465	0.0465	0.02	0.05																
1066 Silver	Existing 225 SAN	1							0.0650	3.4	0.0650	3.4	3.2	0.04					0.0650	0.0650	0.02	0.06																
Proposed Building	Existing 225 SAN				30	16			0.1580	75.6	0.1580	75.6	3.2	0.78					0.1580	0.1580	0.05	0.84	13.8	150	150	2	1.22	21.54	4%									
																						Existing 225 mm Summerville Avenue Municipal Sanitary Sewer:		150	150	2.91	1.47	25.98										

APPENDIX D

STORMWATER MANAGEMENT

1058-1066 Silver Street

Ottawa, Ontario

STORMWATER MANAGEMENT CALCULATIONS

Modified Rational Method

PRE-DEVELOPMENT CONDITIONS

100-YEAR EVENT

			C
Roof Area:	280	sq.m	1.00
Hard Area:	290	sq.m	1.00
Gravel Area:	0	sq.m	0.875
Soft Area:	1,010	sq.m	0.25
			<hr/>

Total Catchment Area:	1,580	sq.m	0.52
-----------------------	-------	------	------

Bransby Williams Formula

$$T_c = \frac{0.057 \cdot L}{S_w^{0.2} \cdot A^{0.1}} \text{ min}$$

Sheet Flow Distance (L):	60	m
Slope of Land (Sw):	5	%
Area (A):	0.1580	ha

Time of Concentration (Sheet Flow):	3	min
-------------------------------------	---	-----

Area (A):	1,580	sq.m
Time of Concentration:	10	min
Rainfall Intensity (i):	179	mm/hr
Runoff Coefficient (C):	0.52	

100-Year Pre-Development Flow Rate (2.78AiC):	40.83	L/s
---	-------	-----

2-YEAR EVENT

			C
Roof Area:	280	sq.m	0.90
Hard Area:	290	sq.m	0.90
Gravel Area:	0	sq.m	0.70
Soft Area:	<u>1,010</u>	<u>sq.m</u>	<u>0.20</u>
Total Catchment Area:	1,580	sq.m	0.45
Area (A):	1,580	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	77	mm/hr	
Runoff Coefficient (C):	0.45		
2-Year Pre-Development Flow Rate (2.78AiC):	15.27	L/s	

MAXIMUM ALLOWABLE RELEASE RATE

			C
Roof Area:	882	sq.m	0.90
Area (A):	882	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	77	mm/hr (2-Year Event)	
Runoff Coefficient (C):	0.45		
Maximum Allowable Release Rate (2.78AiC):	8.52	L/s	

100-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(100-YEAR EVENT)

			C
Roof Area:	0	sq.m	1.00
Hard Area:	230	sq.m	1.00
Gravel Area:	0	sq.m	0.875
Soft Area:	468	sq.m	0.25
<hr/>			
Total Catchment Area:	698	sq.m	0.50
Area (A):	698	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	179	mm/hr	
Runoff Coefficient (C):	0.50		
Flow Rate (2.78AiC):	17.22	L/s	

DRAINAGE AREA II (Roof)

(100-YEAR EVENT)

			C
Total Catchment Area:	882	sq.m	1.00
No. of Roof Drains:	5		
Wier Opening:	1/4		
Depth at Roof Drains:	139	mm	
Maximum Release Rate:	4.54	L/s	
		Pond Area:	721 sq.m
		Maximum Volume Stored:	33.46 cu.m
		Maximum Volume Required:	33.46 cu.m

DRAINAGE AREA II (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	43.78	4.54	39.24	23.55
15	143	35.04	4.54	30.50	27.45
20	120	29.41	4.54	24.87	29.85
25	104	25.46	4.54	20.92	31.39
30	92	22.53	4.54	17.99	32.38
35	83	20.25	4.54	15.71	32.99
40	75	18.43	4.54	13.89	33.33
45	69	16.93	4.54	12.39	33.46
50	64	15.68	4.54	11.14	33.43
55	60	14.62	4.54	10.08	33.27
60	56	13.71	4.54	9.17	33.00
65	53	12.91	4.54	8.37	32.64
70	50	12.21	4.54	7.67	32.21
75	47	11.59	4.54	7.05	31.71
80	45	11.03	4.54	6.49	31.16
85	43	10.53	4.54	5.99	30.56
90	41	10.08	4.54	5.54	29.92
95	39	9.67	4.54	5.13	29.24
100	38	9.29	4.54	4.75	28.53
105	36	8.95	4.54	4.41	27.78
110	35	8.63	4.54	4.09	27.01
115	34	8.34	4.54	3.80	26.21
120	33	8.07	4.54	3.53	25.39
125	32	7.81	4.54	3.27	24.55
130	31	7.58	4.54	3.04	23.69
135	30	7.36	4.54	2.82	22.81
140	29	7.15	4.54	2.61	21.91
145	28	6.95	4.54	2.41	21.00
150	28	6.77	4.54	2.23	20.08
180	24	5.86	4.54	1.32	14.27
210	21	5.18	4.54	0.65	8.13
240	19	4.66	4.54	0.12	1.74
270	17	4.24	4.24	0.00	0.00
300	16	3.90	3.90	0.00	0.00

2-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(2-YEAR EVENT)

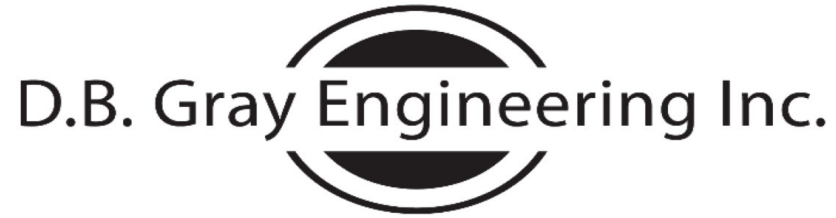
			C
Roof Area:	0	sq.m	0.90
Hard Area:	230	sq.m	0.90
Gravel Area:	0	sq.m	0.70
Soft Area:	<u>468</u>	<u>sq.m</u>	<u>0.20</u>
Total Catchment Area:	698	sq.m	0.43
Area (A):	698	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	77	mm/hr	
Runoff Coefficient (C):	0.43		
Flow Rate (2.78AiC):	6.42	L/s	

DRAINAGE AREA II (Roof)

(2-YEAR EVENT)

Total Catchment Area:	882	sq.m	C	0.90
No. of Roof Drains:	5			
Wier Opening:	1/4			
Depth at Roof Drains:	91	mm		
Maximum Release Rate:	3.79	L/s	Pond Area:	306 sq.m
			Maximum Volume Stored:	9.27 cu.m
			Maximum Volume Required:	9.27 cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	16.95	3.79	13.16	7.90
15	62	13.63	3.79	9.84	8.86
20	52	11.48	3.79	7.70	9.23
25	45	9.97	3.79	6.18	9.27
30	40	8.84	3.79	5.05	9.09
35	36	7.96	3.79	4.17	8.76
40	33	7.25	3.79	3.47	8.32
45	30	6.67	3.79	2.89	7.79
50	28	6.19	3.79	2.40	7.20
55	26	5.78	3.79	1.99	6.56
60	25	5.42	3.79	1.63	5.88
65	23	5.11	3.79	1.32	5.16
70	22	4.84	3.79	1.05	4.40
75	21	4.59	3.79	0.81	3.63
80	20	4.38	3.79	0.59	2.83
85	19	4.18	3.79	0.39	2.01
90	18	4.00	3.79	0.22	1.17
95	17	3.84	3.79	0.06	0.32
100	17	3.70	3.70	0.00	0.00
105	16	3.56	3.56	0.00	0.00
110	16	3.44	3.44	0.00	0.00
115	15	3.32	3.32	0.00	0.00
120	15	3.21	3.21	0.00	0.00



STORM SEWER CALCULATIONS

Rational Method

2-YEAR EVENT

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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Project: 1058-1066 Silver Street
4-Storey Apartment Building
Ottawa, Ontario

Date: February 6, 2024

Manning's Roughness Coefficient: 0.013

Location		Individual				Cumulative				Sewer Data								
		Roof C = 0.90 (ha)	Hard C = 0.90 (ha)	Gravel C = 0.70 (ha)	Soft C = 0.20 (ha)	2.78AC	2.78AC	Time (min)	Rainfall Intensity (mm/hr)	Q Flow Rate (L/s)	Length (m)	Nominal Diameter (mm)	Actual Diameter (mm)	Slope (%)	Velocity (m/s)	Q _{Full} Capacity (L/s)	Time (min)	Q / Q _{Full}
From	To																	
CB-1	CB/MH-2		0.0300		0.0210	0.0867	0.0867	10.00	77	6.66	11.9	250	250	0.43	0.79	39.00	0.25	17%
CB/MH-2	CB/MH-3					0.0000	0.0867	10.25	76	6.58	18	250	250	0.43	0.79	39.00	0.38	17%
Roof Drains	Existing 250 ST	0.0430				0.1076	0.1076	10.00	77	8.26								
							Flow through flow control roof drains:			2.53								
1291 Summerville	CB/MH-3					0.0000	0.1076	10.00	77	8.26	2.1	200	200	2	1.48	46.38	0.02	18%
							Flow through flow control roof drains:			2.53	2.1	200	200	2	1.48	46.38	0.02	5%
Roof Drains	250 ST	0.0882				0.2207	0.2207	10.00	77	16.95								
							Flow through flow control roof drains:			3.79								
Area Drains	250 ST		0.0085			0.0213	0.0213	10.00	77	1.63								
1066 Silver	CB/MH-3					0.0000	0.2419	10.00	77	18.58	3	250	250	2	1.71	84.10	0.03	22%
							Restricted upstream flow:			5.42	3	250	250	2	1.71	84.10	0.03	6%
CB/MH-3	MH-4		0.0075			0.0188	0.4550	10.63	74	33.89	15	250	250	0.43	0.79	39.00	0.31	87%
							Flow through inlet control device:			2.37	15	250	250	0.43	0.79	39.00	0.31	6%
							Restricted upstream flow:			10.32	15	250	250	0.43	0.79	39.00	0.31	26%
Existing 300 mm Summerville Avenue Municipal Storm Sewer:											300	300	2.67	2.24	158.01			