

SERVICING & STORMWATER MANAGEMENT REPORT

OCH GEYSER PLACE PHASE 2 – 3380 JOCKVALE ROAD



Project No.: CCO-25-1917

City File No.:

Prepared for:

LemayMichaud Architecture Design

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1.0 PROJECT DESCRIPTION

1.1 Purpose

Egis Canada (Egis) has been retained by LemayMichaud to prepare this Servicing and Stormwater Management Report in support of the site plan control application for the proposed development located at 3380 Jockvale Road within the City of Ottawa.

The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary, and storm sewer servicing for the development, ensuring that existing and proposed services will adequately service the development.

This report should be read in conjunction with the following drawings:

- CCO-25-1917, C101 – Lot Grading, Drainage, Erosion & Sediment Control Plan, and
- CCO-25-1917, C102 – Site Servicing Plan, and
- CCO-25-1917, PRE – Pre-Development Drainage Area Plan (Appendix 'E'), and
- CCO-25-1917, POST – Post-Development Drainage Area Plan (Appendix 'F').

1.2 Site Description



Figure 1: Site Map

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The proposed phased development is located at 3380 Jockvale Road within the Barrhaven West ward. The design of Phase 1 was previously completed by Sprouts Engineering Inc. As shown in Figure 1, the yellow outline represents the overall site, while the red outline represents Phase 2 of the development. The total land for Phases 1 and 2 covers approximately 0.85 ha, or 0.95 ha when including the 0.10 ha easement to the south of the property. The site is surrounded by Bending Way to the north, Jockvale Road to the east, Geyser Place to the south, and Branch Street to the west. The Phase 1 area covers approximately 0.36 ha, while the Phase 2 area will cover approximately 0.60 ha.

The property is described as Part of Lot 13, Concession 2(Rideau Front), geographic township of Nepean, City of Ottawa.

1.3 Proposed Development and Statistics

Phase 2 of the proposed development consists of two (2) new residential buildings; a 9-storey tower of 100 units, and a 3-storey townhouse complex of 18 units. Drive aisles will be extended throughout the site, and underground and surface parking will be provided with street access from Branch Street.

1.4 Existing Conditions and Infrastructure

Phase 1 of the proposed development has begun construction, while the area for Phase 2 remains a greenfield lot. Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s) (ROW):

- ❖ Bending Way
 - 200 mm diameter PVC sanitary sewer at a 0.65% slope, draining in a southwesterly direction
 - 300 mm diameter PVC watermain running northeast-southwest
 - 975 mm diameter concrete storm sewer at a 0.25% slope draining in a northeasterly direction
- ❖ Branch Street
 - 200 mm diameter PVC sanitary sewer at a 0.35% slope draining in a southerly direction
 - 200 mm diameter PVC watermain running north-south
 - 675 mm diameter concrete storm sewer at a 0.20% slope draining in a northerly direction
- ❖ Geyser Place
 - 1050 mm diameter Concrete Pressure Pipe sanitary at a 0.11% slope draining in a southwesterly direction
 - 300 mm diameter PVC storm sewer at a 0.80% slope draining in a south-westerly direction

The site is pre-serviced with a 200 mm diameter PVC sanitary service connection, 200 mm diameter PVC watermain stub, and 525 mm diameter concrete storm service connection at the southern corner of the site.

1.5 Approvals

The proposed development is subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provide concurrence and approve the engineering design package. Permits to construct can be requested once the City has issued a site plan agreement.

An Environmental Compliance Approval (ECA) through the Ministry of Environment, Conservation and Parks (MECP) is not anticipated to be required as the development does not outlet to a combined sewershed and does not propose industrial usage. An Environmental Activity Sector Registry (EASR) is not anticipated to be required as each phase will be independently serviced, however, an EASR may be required if runoff crossing the future severance line results in shared stormwater management. The requirement for an EASR will be confirmed prior to the severance of the Phase 1 lands from the Phase 2 lands.

2.0 BACKGROUND STUDIES, STANDARDS, AND REFERENCES

2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the City of Ottawa information centre, within the vicinity of the proposed site were reviewed to identify the infrastructure available to service the proposed development.

A topographic survey (25-3732) of the site was completed by Egis Surveying Inc. and dated November 14th, 2024.

The Site Plan was prepared by LemayMichaud and dated November 14th, 2025.

The following reports have previously been completed and are available under separate cover:

- Functional Servicing and Stormwater Management Report, completed by Sprouts Engineering, December 30, 2022
- Civil Servicing Constraints Memorandum, prepared by David Schaeffer Engineering Ltd, dated February 9, 2021
- Design Brief for Minto Communities – Canada and City of Ottawa – 3311 Greenbank Road, prepared by David Schaeffer Engineering Ltd, dated August 2018.
- Geotechnical Investigation – Proposed Residential Development – 3380 Jockvale Road, prepared by Paterson Group, dated March 5, 2025.

2.2 Applicable Guidelines and Standards

City of Ottawa:

- ♦ Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (*Ottawa Sewer Guidelines*)
 - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (*ISTB-2014-01*)

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- Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (*PIEDTB-2016-01*)
- Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (*ISTB-2018-01*)
- Technical Bulletin ISTB-2018-04 City of Ottawa, March 2018. (*ISTB-2018-04*)
- Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (*ISTB-2019-02*)
- Technical Bulletin IWTB-2024-04 City of Ottawa, September 2024. (*ISTB-2024-04*)
- ◆ Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (*Ottawa Water Guidelines*)
 - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (*ISD-2010-2*)
 - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (*ISDTB-2014-02*)
 - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (*ISTB-2018-02*)
 - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. (*ISTB-2021-03*)
 - Technical Bulletin IWTB-2024-05 City of Ottawa, November 2024. (*IWTB-2024-05*)

Ministry of Environment, Conservation and Parks:

- ◆ Design Guidelines for Drinking-Water Systems, Ministry of the Environment, 2008. (*MECP Water Design Guidelines*)
- ◆ Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (*MECP Stormwater Design Manual*)
- ◆ Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (*MECP Sewer Design Guidelines*)

Other:

- ◆ Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (*FUS Guidelines*)

3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on April 4th, 2024, regarding the proposed site. Specific design parameters to be incorporated within this design include the following:

- Minor system peak runoff to match the pre-development target release rate (90 L/s/ha) as defined in the 3380 Jockvale Road – Civil Servicing Constraints Memorandum prepared by David Schaeffer Engineering Ltd.
- Major system drainage to be directed towards the 600 mm major system culvert outlet towards the Jock River.
- Quality control to be provided by the existing Nepean South-Chapman Mills stormwater management pond.

The notes from the City of Ottawa can be found in *Appendix B*.

4.0 WATER SERVICING

4.1 Existing Watermain

The site is located within the 3SW pressure zone, as per the Water Distribution system mapping included in *Appendix C*. There are two (2) existing fire hydrants adjacent to the site – one on Branch Street and one on Bending Way. There is an existing 200 mm diameter PVC watermain within Branch Street available to service the proposed development. There is also an existing 200 mm diameter water service stub located within the property, connected to the 200 mm diameter PVC watermain within Branch Street.

4.2 Proposed Water Servicing

A dual 150 mm diameter water service connection is proposed to provide redundancy for the site. The first connection will be to the existing 200 mm diameter service stub located within the site, and the second connection will be to the 200 mm diameter watermain located within Branch Street. A valve is proposed on the 200 mm diameter watermain within Branch Street located between the two connections. One private hydrant is proposed and will be located within 45 m of the apartment building's fire department connection.

Table 1, below, summarizes the water supply design criteria for both buildings, obtained from the *Ottawa Design Guidelines – Water Distribution* and *MECP Water Design Guidelines* and used for the water analysis.

Table 1: Water Supply Design Criteria and Water Demands

Site Area	0.95 ha
Residential	280 L/person/day
Maximum Daily Peaking Factor	4.1 x avg day
Maximum Hour Peaking Factor	6.2 x avg day
Average Day Demand (L/s)	0.77
Maximum Daily Demand (L/s)	3.19
Peak Hourly Demand (L/s)	4.80
FUS Fire Flow Requirement (L/s)	100.0 (Tower)
OBC Fire Flow Requirement (L/s)	105.0 (Townhouses)
OBC Fire Flow Requirement (L/s)	150.0 (Tower)

The OBC and Fire Underwriters Survey 2020 (FUS) methods were used to estimate the required fire flow for both buildings. Fire flow requirements were calculated per City of Ottawa Technical Bulletins ISTB20-2021-03 and IWSTB-2024-05.

OBC (Townhouses):

- ❖ Type of construction – Combustible without fire resistance ratings.
- ❖ Occupancy Type: Group C
- ❖ Water Supply Coefficient (K): 23

OBC (Tower):

- ❖ Type of construction – Non-combustible with fire separations and fire resistance ratings provided in accordance with subsection 3.2.2.
- ❖ Occupancy Type: Group C
- ❖ Water Supply Coefficient (K): 10

FUS (Tower):

- ❖ Type of construction – Fire-Resistive
- ❖ Occupancy Type – Limited Combustible
- ❖ Sprinkler Protection – Standard Water Supply Sprinklered

The results of the FUS calculation yielded a required fire flow of *6,000 L/min* (100.0 L/s) for the apartment building. The results of the OBC calculation yielded a required fire flow of *9,000 L/min* (150.0 L/s) for the apartment building, and *6,300 L/min* (105.0 L/s) for the townhouse block. The detailed calculations for the FUS and OBC fire flow demands for both buildings can be found in *Appendix C*.

The City provided the estimated water pressures during average day scenario, peak hour scenario, and the max day plus fire flow scenario for the demands indicated by the correspondence in *Appendix C*. The resulting pressures for the future SUC pressure zone at Connection Points 1 and 2 are shown in Table 2 and Table 3, respectively. Please note that while the demands have increased slightly as a result of unit type changes, the change is minor and is not expected to impact the validity of the boundary condition results.

Table 2: Boundary Conditions Results at Connection Point 1 – Future SUC Zone

Scenario	Head (m)	Pressure (psi)*	Pressure (kPa)*
Maximum HGL	146.8	77.3	533
Peak Hour	142.3	70.8	488
Max Day + Fire Flow	138.0	64.6	445
<i>*Adjusted for an estimated watermain elevation of 92.5 m at the connection point.</i>			

Table 3: Boundary Conditions Results at Connection Point 2 – Future SUC Zone

Scenario	Head (m)	Pressure (psi)*	Pressure (kPa)*
Maximum HGL	146.8	77.7	536
Peak Hour	142.3	71.3	492
Max Day + Fire Flow (OBC)	136.4	62.8	433
<i>*Adjusted for an estimated watermain elevation of 92.2 m at the connection point.</i>			

The normal operating pressure range is anticipated to be 488 kPa to 536 kPa and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The proposed watermain will meet the minimum required 20 psi (140 kPa) from the *Ottawa Water Guidelines* at the ground level under maximum day demand and fire flow conditions.

To confirm the adequacy of fire flow to protect the proposed development, fire hydrants within 150 m of the proposed building were analyzed per City of Ottawa *ISTB 2018-02* Appendix I Table 1. Based on City guidelines (*ISTB-2018-02*), the existing and proposed hydrants can provide adequate fire protection to the proposed development. The results are summarized in Table 4, below.

Table 4: Fire Protection Confirmation

Building	Fire Flow Demand (L/min)	Fire Hydrant(s) within 75m (5,700 L/min)	Fire Hydrant(s) within 150m (3,800 L/min)	Combined Fire Flow (L/min)
3380 Jockvale Road	6,000 L/min – FUS 9,000 L/min – OBC	1 public 1 private (proposed)	1 public	15,200

5.0 SANITARY SERVICING

5.1 Existing Sanitary Sewers

There is an existing 200 mm diameter PVC sanitary sewer located within Branch Street available to service the development. Phase 1 of the development is serviced by a 200 mm diameter PVC sanitary sewer connected to the existing 200 mm sanitary sewer within Branch Street. There is also an existing 200 mm diameter PVC service stubbed within the Phase 2 limits, connected to the sanitary sewer within Branch Street.

5.2 Proposed Sanitary Servicing

It is proposed to service the Tower with a new 200 mm diameter gravity sanitary service, extended from the previously stubbed Phase 2 sanitary service. The sanitary network will extend along the front and rear of the townhouse block, as well as through the Phase 1 parking lot.

It is proposed to service the Townhouses with 135 mm diameter gravity sanitary services, which will convey flow to the stub at the southern corner of the property, and finally to the 200 mm diameter sewer within the Branch Street ROW.

Table 5 summarizes the wastewater design criteria identified by the *Ottawa Sewer Design Guidelines*.

Table 5: Sanitary Design Criteria

Design Parameter	Value
Site Area	0.60 ha
Residential	280 L/person/day
Residential Peaking Factor (Tower)	3.53
Residential Peaking Factor (Townhouses)	3.65
Institutional/Commercial Peaking Factor	1.0
Extraneous Flow Allowance (Dry)	0.05 L/s/ha
Extraneous Flow Allowance (Wet)	0.28 L/s/ha

Table 6 summarizes the estimated wastewater flow from the proposed development. Refer to *Appendix D* for detailed calculations.

Table 6: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/s) Tower	Total Flow (L/s) Townhouses
Total Estimated Average Dry Weather Flow	0.62	0.18
Total Estimated Peak Dry Weather Flow	2.16	0.61
Total Estimated Peak Wet Weather Flow	2.25	0.69

As noted above, the Tower is proposed to be serviced via a proposed 200 mm sanitary service connection. The service connection will discharge to a 200 mm diameter sanitary sewer and ultimately to the existing Phase 2 sanitary service stub. the Townhouses are to be serviced via 135 mm sanitary service connections. The service connections will also discharge to the 200 mm diameter sanitary sewer and ultimately to the existing Phase 2 sanitary service stub.

The full flowing capacity of the existing 200 mm diameter sanitary sewer at 0.36% slope on Branch Street is estimated to be 20.53 L/s. Based on the Riversbend Sanitary Drainage Area Plan prepared by David Schaeffer Engineering Ltd. (DSEL) and referenced in the Functional Servicing and Stormwater Management Report by Sprouts Engineering Inc., the existing flows within the sewer are estimated to be 8.68 L/s with an available capacity of 57.7%. With the addition of flows from Phase 2 of this development, the flow is expected to increase to 11.62 L/s and the available capacity will lower to 43.4%.

6.0 STORM SEWER SERVICING

6.1 Existing Storm Sewers

The property is generally sloped from north to south and from east to west. Stormwater runoff from the existing site currently flows overland towards the Branch Street ROW and south towards the Jock River. There is an existing 200-300 mm diameter storm sewer system within Phase 1 of the development, connected to the 675 mm diameter municipal storm sewer within Branch Street. There is an existing 525 mm diameter storm sewer stub located within Phase 2, also connected to the 675 mm diameter storm sewer within Branch Street.

6.2 Proposed Storm Servicing

Surface drainage within the development footprint will be collected by landscaping catch basins, catch basins, and catch basin maintenance holes. The Phase 2 Branch Street frontage and Jockvale Road frontage will be directed towards the ROW without restriction. The existing Jockvale Road ditch is proposed to be extended from the Bending Way culvert outlet to convey external drainage around the property limits.

Minor system flow will be directed towards the 675 mm diameter storm sewer within Branch Street, while major system flow will be conveyed towards the ROW or towards the Jock River.

See CCO-25-1917 - *POST* in *Appendix F* of this report for more details. The Stormwater Management design for the subject property will be outlined in Section 7.0.

7.0 PROPOSED STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage away from the proposed buildings and towards surface inlets. The storm system will capture and control rooftop runoff as well as surface runoff. Inlet control devices and surface storage will be used to restrict the minor system to the allowable capture rate. Spill points have been placed to ensure runoff exceeding the minor system capture rate is directed towards the ROW or towards the Jock River without restriction. The ditch along Jockvale Road has been extended to provide a suitable outlet for external drainage from the ROW currently being directed into the site. Foundation drainage for the Tower will be provided via sump pumps. Foundation drainage and subslab drainage for the Townhouse block will be provided via 150 mm diameter storm drains connected to the existing Phase 2 maintenance hole.

The quantitative and qualitative properties of the storm runoff for both the pre & post development flows are further detailed below. Stormwater Best Management Practices (SWM BMP's) will be implemented at the "Lot level", "Conveyance" and "End of Pipe" locations.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the City:

Quality Control

- Quality control will be provided by the Nepean South-Chapman Mills stormwater management pond.

Quantity Control

- Post development minor system (2-year) flow to the 675 mm diameter storm sewer within Branch Street shall be restricted to a maximum release rate of 90 L/s/ha, as per the Civil Servicing Constraints Memorandum prepared by DSEL.

7.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where:

C	=	Runoff coefficient
I	=	Rainfall intensity in mm/hr (City of Ottawa IDF curves)
A	=	Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the *City of Ottawa - Sewer Design Guidelines*, the 2/5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

7.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan included in *Appendix E*. It has been assumed that the Phase 2 development area contains no existing stormwater management controls for flow attenuation. A summary of Pre-Development runoff rates is shown in Table 7.

Table 7: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2-Year)	Runoff Coefficient (100-Year)	2-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)	Allowable Release Rate (90 L/s/ha)
A101	0.36	0.20	0.25	15.23	44.26	32.10
A201	0.60	0.20	0.25	25.54	34.65	53.83
Total	0.95			40.77	118.49	85.93

Area A1 consists of runoff within the Phase 1 limits, while Area A2 represents runoff within the Phase 2 limits. Existing runoff flows southwest towards the Branch Street ROW and towards the Jock River. For the purpose of determining pre-development flow rates, Phase 1 has been considered in a greenfield condition.

7.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan included in *Appendix F*. A summary of the Post-Development Runoff Calculations can be found below in Table 8.

Table 8: Post-Development Uncontrolled Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2/100-Year)	Tc (min)	2-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)
B101	0.15	0.67 / 0.76	10	21.65	56.69
B102	0.11	0.58 / 0.66	10	13.78	36.30
B103	0.09	0.62 / 0.70	10	11.84	31.08
B104	0.01	0.49 / 0.56	10	0.56	1.50
Total (Ph1)	0.36	-	-	47.83	125.47
B201	0.06	0.90 / 1.00	10	11.45	29.57
B202	0.03	0.90 / 1.00	10	5.71	14.75
B203	0.06	0.90 / 1.00	10	11.46	29.61
B204	0.03	0.90 / 1.00	10	6.26	16.17
B205	0.19	0.64 / 0.72	10	25.97	68.04
B206	0.02	0.90 / 1.00	10	4.24	10.94
B207	0.03	0.40 / 0.46	10	2.89	7.79
B208	0.17	0.34 / 0.41	10	12.42	34.34
Total (Ph2)	0.60	-	-	80.39	211.22
Total (Site)	0.95	-	-	128.22	336.68

See *Appendix G* for calculations.

Area *B101* represents controlled runoff within Phase 1 of the development. Runoff from Area *B101* is directed towards the parking lot and controlled by a 105 mm Tempest Low Flow inlet control device located at the outlet of Ex. CBMH4. Storage for the 2-year event is provided via underground storage. Additional surface storage is provided for larger events up to a spill elevation of 92.60m. Runoff exceeding the available underground and surface storage will spill to the Branch Street ROW at an elevation of 92.60 as per the Civil Servicing Constraints Memorandum prepared by DSEL. Area *B101* stormwater management has been previously approved as a redline to the Phase 1 Site Plan Control Application and is shown for information only.

Area *B102* represents Phase 1 drainage directed towards the Branch Street and Bending Way ROW. Area *B102* is captured by a swale and a series of landscaping catch basins and then restricted by a 105 mm Tempest Low Flow inlet control device located within the downstream catch basin. Storage is provided within the swale and within the underlying clear stone. Area *B102* stormwater management has been previously approved as a redline to the Phase 1 Site Plan Control Application and is shown for information only.

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Area B103 represents unrestricted Phase 1 drainage directed towards the Jockvale Road ROW. The existing ditch will be extended along Jockvale Road from the existing culvert outlet at Bending Way to accommodate runoff from this area as well as external drainage from the Jockvale Road ROW.

Area B104 represents unrestricted Phase 1 drainage directed towards the Branch Street ROW from the existing entrance.

Area B201 represents the roof of the townhouse building. Stormwater will be controlled on the flat roof of the townhouse building by 5 roof drains. Controlled roof flow will discharge to a proposed 200 mm diameter storm service.

Area B202 represents the lower roof area of the apartment building. Stormwater will be controlled on the lower roof area by 7 roof drains. Controlled roof flow will discharge to a proposed 250 mm diameter storm service.

Area B203 represents the main roof area of the apartment building. Stormwater will be controlled on the main roof area by 14 roof drains. Controlled roof flow will discharge to a proposed 250 mm diameter storm service.

Area B204 represents the penthouse roof area of the apartment building. Stormwater will be controlled on the penthouse roof area by 3 roof drains. Controlled roof flow will discharge to a proposed 250 mm diameter storm service.

Area B205 represents the courtyard and Phase 2 parking lot. Runoff within the parking lot and courtyard will be controlled by a circular 102 mm plate style orifice fastened to the outlet of CBMH8. Restriction of runoff will cause stormwater to back up towards LSCB10, where surface storage will be provided to restrict runoff to the allowable capture rate. Runoff exceeding the 100-year event will spill towards the major system outlet from LSCB17 at an elevation of 92.34 m.

Area B206 represents the underground parking garage ramp. It is anticipated that runoff from the ramp will be collected by a trench drain or catch basin specified by the mechanical engineer and pumped to the proposed 250 mm diameter storm service.

Area B207 represents unrestricted runoff from the townhouse block frontage. Stormwater runoff from this area will be directed towards the Branch Street ROW without restriction.

Area B208 represents unrestricted drainage from the tower side yard and rear yard. Stormwater runoff from area B208 will be directed towards the extended Jockvale Road ditch, bypassing the Branch Street minor system and draining directly to the major system outlet.

As previously noted, it is proposed to extend the existing ditch along Jockvale Road from the existing Bending Way culvert outlet. As part of the ditch design, a culvert crossing will be required for the proposed asphalt pedestrian connection extending from the Phase 2 building to the existing asphalt sidewalk located between Jockvale Road and Longfields Drive. Additionally, a 600mm culvert will be required within the pathway block located south of the site.

While City Standard SC30 identifies a minimum culvert size of 300 mm diameter for walkway culverts, the storm sewer design sheet has identified that a 300 mm diameter culvert will not have the capacity to convey post-development 100-year flows. As there is insufficient cover to increase the culvert size, it is instead proposed to provide a twin culvert design with two 300 mm diameter culverts within the Jockvale Road ditch section

A storm sewer design sheet was prepared to assess both the twin 300mm and 600mm culverts, accounting for runoff from 3380 Jockvale Road (drainage areas *B103* and *B208*) as well as external drainage from the Jockvale Road ROW (drainage area *EX-2*). External drainage areas are identified on the Post Development External Drainage Boundaries Plan prepared by DSEL, located within *Appendix G*. The storm sewer design sheet demonstrates that both culverts will have sufficient capacity to convey the 100-year design flow.

The capacity of the proposed ditch was also assessed within the rip-rap just upstream of the proposed 600 mm diameter culvert. The results indicate that the proposed ditch will have 12.7% and 24.7% of its capacity occupied during the 5- and 100-year events, respectively. Ditch calculations can be found within *Appendix G*.

Reducing site flows will be achieved using flow restrictions and will create the need for onsite storage. Runoff from Areas *B101* & *B102* will be restricted as per the previously approved redline changes to Phase 1. Runoff from areas *B201* – *B205* will be restricted by roof drains and inlet control devices, and storage will be provided within the courtyard and on the roof of the proposed building. See *Appendix G* for calculations.

Table 9: Post-Development Controlled Runoff Summary

Drainage Area	Area (ha)	2-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)	100-Year Storage Required (m ³)	100-Year Storage Available (m ³)
B101	0.15	10.63	12.26	42.5	43.6
B102	0.11	12.09	13.70	13.6	14.8
B103	0.09	11.84	31.08	-	-
B104	0.01	0.56	1.50	-	-
Total (Ph1)	0.36	35.12	58.54	56.02	58.32
B201	0.06	2.84	5.68	17.2	17.9
B202	0.03	2.65	5.30	5.7	5.9
B203	0.06	5.30	10.60	11.4	11.9
B204	0.03	1.70	3.22	9.2	9.2
B205	0.19	22.72	23.87	26.51	28.15
B206	0.02	4.24	10.94	-	-
B207	0.03	2.89	7.79	-	-
B208	0.17	12.42	34.34		
Total (Ph2)	0.60	54.76	101.74	69.93	73.12
Total (Site)	0.95	89.88	160.28	125.96	131.44

The total flow to the Branch Street minor system has been summarized in *Table 10*, below.

Table 10: Branch Street Minor System Capture Rate

Phase	Drainage Areas	Allowable Release Rate to Branch Street Minor System (L/s)	100-Year Release Rate to Branch Street Minor System (L/s)
1	B101, B102	32.10	25.96
2	B201-B206	53.83	59.61
Total		85.93	85.57

Please note that Phase 1 stormwater management has been previously approved under a separate submission and is shown for information only.

A storm sewer design sheet demonstrating the capacity of the existing and proposed private storm sewers can be found within *Appendix G*.

7.5 Quality Control

As noted within the Pre-Consultation notes as well as the Phase 1 Servicing Report completed by Sprouts Engineering, quality control of minor system runoff will be provided by the Nepean South-Chapman Mills stormwater management pond.

8.0 SUMMARY

- A new 9-storey apartment building and stacked townhouses are proposed at 3380 Jockvale Road.
- Water servicing will be provided by a dual 150 mm diameter connection to the municipal 200 mm diameter watermain within Branch Street.
- Fire protection will be provided by existing municipal hydrants and one proposed private hydrant.
- Sanitary servicing for the Phase 2 tower and townhouse block will be provided by a new 200 mm diameter sanitary sewer connection to the existing sanitary servicing stub.
- Runoff will be restricted to the minor system allowable capture rate of 90 L/s/ha. Runoff exceeding the minor system allowable capture rate and surface storage capacity will spill towards the adjacent ROW's or towards the Jock River.
- Quality control will be provided by the Nepean South-Chapman Mills stormwater management pond.

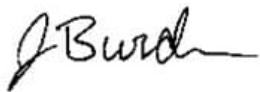
9.0 RECOMMENDATIONS

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed development at 3380 Jockvale Road.

This report is respectfully being submitted for approval.

Regards,

Egis Canada Ltd.



Jessica Burden, P.Eng.
Project Engineer, Land Development
E: Jessica.burden@egis-group.com



Francis Valenti, P.Eng.
Junior Project Engineer, Land Development
E: francis.valenti@egis-group.com

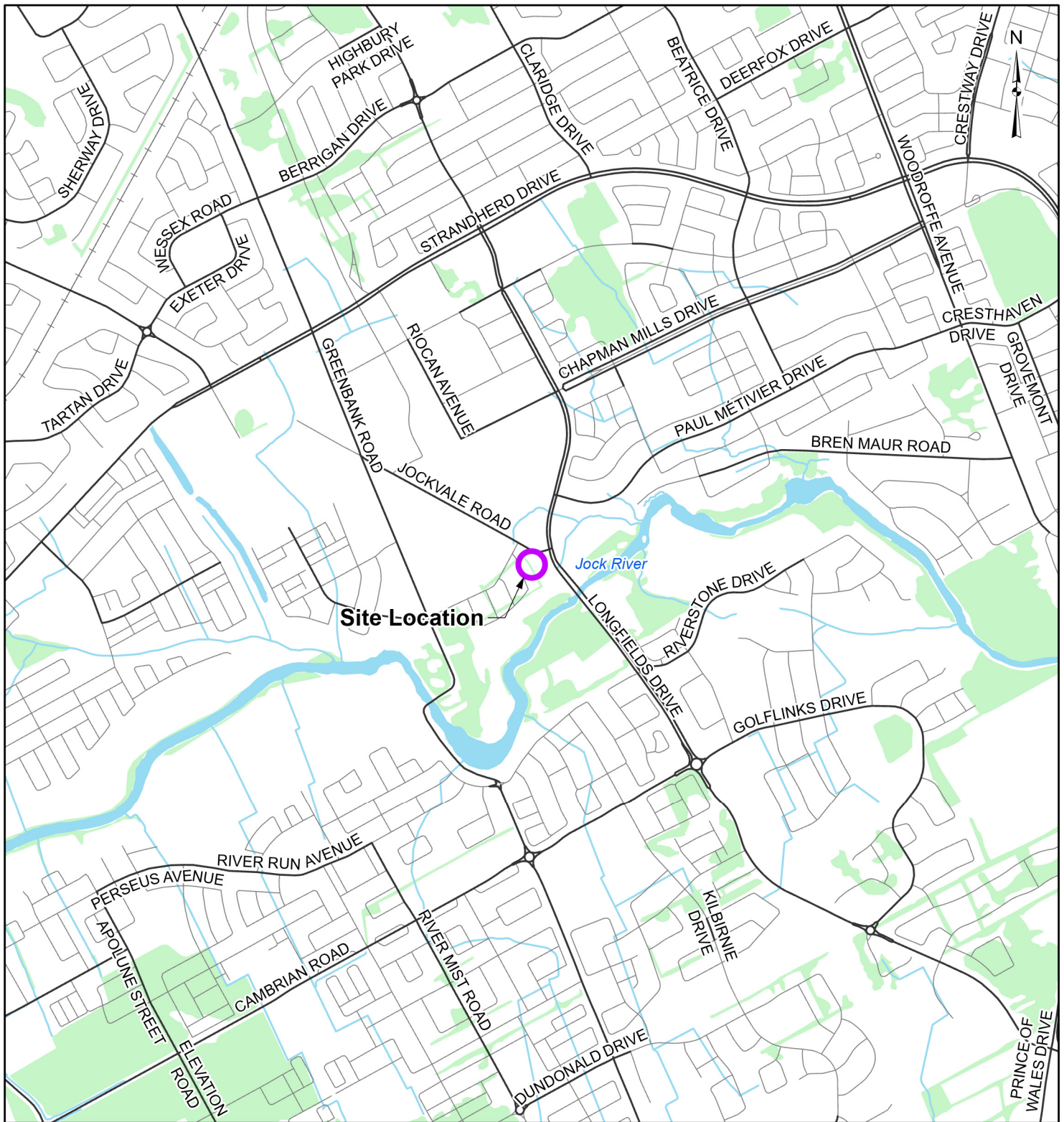
10.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of LemayMichaud. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. Egis Canada reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by Egis Canada and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. Egis Canada accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, Egis Canada should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A KEY PLAN

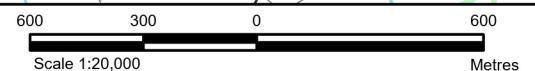


LEGEND

- Site Location
- Local Road
- Major Road
- Railroad
- ~ Watercourse
- Waterbody
- Wooded Area

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2025.



CLIENT:		LEMAYMICHAUD	
PROJECT:		3380 JOCKVALE ROAD	
TITLE:		SITE LOCATION	
 750 Palladium Dr, Suite 310, Kanata, ON K2V 1C7 Tel: 613-836-2184 Fax: 613-836-3742		PROJECT NO: CCO-25-1917	FIGURE:
		Date	Apr., 24, 2025
		GIS	AH
		Checked By	FV
		1	

APPENDIX B BACKGROUND DOCUMENTS

April 4, 2024

Tim Beed
Fotenn
Via email: beed@fotenn.com

**Subject: Pre-Consultation: Meeting Feedback
Proposed Zoning By-law Amendment & Site Plan Control Application
– 3380 Jockvale Road**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on March 27, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	2 ☐	3 ☒	4 ☒	5 ☐
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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 2 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

Comments:

1. Relevant Official Plan Policies

- a. 5.4 – Suburban Transect – generally characterized by Low- to Mid-density development. Multi-unit dwellings in Hubs and on Corridors
- b. 6.1 - Designated Hub – concentrate a diversity of functions, a higher density of development, a greater degree of mixed uses and a higher level of public transit connectivity. Shall be subject to motor vehicle parking regulations that support the Hub's prioritizing of transit, walking and cycling, including as appropriate reduction or elimination of on-site minimum parking requirements and maximum limits on parking supply
- c. 6.1.2 – PMTSAs - range of mid- and high-density housing types. Not less than 2 storeys with a minimum lot coverage of 70 per cent.
 - i. We have confirm with the City OP policy group that the 70% lot coverage requirement of the PMTSA does apply to this site.
 - ii. However, there's a City-initiated OPA (Omnibus 2) that will be going to PHC in the next few months that proposes to entirely delete the OP policy that requires a 70% lot coverage in PMTSAs.
 - iii. As long as the proposed ZBA goes to PHC after Omnibus 2 this shouldn't be an issue.
- d. 5.6.1.1 - Evolving Neighbourhood Overlay – achieve an urban built form over time
- e. Volume 2A - Barrhaven Downtown Secondary Plan
 - i. 3.4 – Neighbourhood - provide urban housing options, appropriate to the suburban planning area context, in proximity to amenities and transit. Residential uses encouraged to reflect the compact, dense,

urban nature of the planning area. Minimum residential density 50 units per net hectare.

- ii. 5.1 – Built form - have regard for Appendix 1 - Barrhaven Downtown Urban Design Guidelines and for other applicable design guidelines

2. Zoning by-law

- a. Subject site is currently zoned Residential Fourth Density Subzone Z Urban Excetion 2465 (R4Z[2465])
 - b. The Zone stacked townhouse development but a rezoning is also being sought to permit a mid-rise apartment use.
 - c. We would be looking at a Planned Unit Development consisting of one 3-storey stacked dwelling building and one 9-storey mid-rise apartment building, likely lending itself to R5 zoning:
 - i. If a R5 zone is sought please ensure your proposed Site Plan and requested Amendment addresses all required sections of the City's Zoning By-law including but not limited to Sections 111, 131, and 137.
3. Please refer to the City of Ottawa's Accessibility Design Standards ([Accessibility Design Standards \(ottawa.ca\)](https://ottawa.ca/accessibility-design-standards)) during the design of the proposed surface and underground parking lots
4. A Planning Rationale detailing all relevant Provincial and City Policies, the proposed development and proposed Zoning Amendment will be required to support the Zoning By-law Amendment Application. The City of Ottawa Terms of Reference for a Planning Rationale can be found at [Planning Rationale \(ottawa.ca\)](https://ottawa.ca/planning-rationale). Ensure this Rationale addresses the relationship of the proposed uses to the surrounding area and abutting land uses.
5. A Site Plan detailing all relevant Zoning provisions, requested amendments and proposal details will be required to support the Site Plan Amendment Application. The City of Ottawa Terms of Reference for a Site Plan can be found at [Site Plan \(ottawa.ca\)](https://ottawa.ca/site-plan). Please ensure your plan includes all the required components.
6. The Planning Department prioritizes development applications for affordable housing – the report is attached, which includes description of measures that the city uses to try and assist affordable housing projects.
7. Our current understanding of processing of applications is that any required zoning amendment has to be in place before we start a Phase 3 pre-application consultation for the site plan control application. If you find yourself in a position where we need to advance the Site Plan Control application concurrent to the zoning related to funding requirements or something similar, please advise and we can consider in the context of the prioritized land use.

Urban Design

Comments:

Please note that the comments provided are based on a high-level site plan and that additional comments may be provided as part of the Phase 2 meeting when more details are provided.

8. Urban Design Brief required – please see attached terms of reference.
9. The site is located within a Design Priority Area – a visit to the UDRP may be required following the review of the Phase 2 submission.
10. Please improve pedestrian connections between the Phase 1 and Phase 2 lands.
11. Please detail the sites relationship with the public realm – street trees should line all public streets. There may be an opportunity to landscape the triangular site within the City's right-of-way.
12. Please demonstrate that a 9-storey form is appropriate relative to the surrounding context.
13. Active uses will be required at-grade; please provide a ground floor plan for the proposed 9-storey building as part of your Phase 2 meeting with staff.
14. Please provide details for the outdoor amenity area and consider whether all or a portion of the space could be dedicated as POPS for the community to use.
15. Please provide parking details; surface parking is not supported.
16. Please provide architectural details as part of your Phase 2 meeting with staff.
17. Please provide sustainability details as part of your Phase 2 submission to staff.

Engineering

Comments:

18. The Stormwater Management Criteria, for the subject site, is to be based on the following:
 - a. **Water Quantity Control:** Minor system peak runoff to match the pre-development target release rate as defined in the 3380 Jockvale road (Riversbend) – Civil Servicing Constraints Memorandum prepared by David Shaeffer Engineering Ltd. The memorandum indicates a 90 L/s/ha target release rate. Given the existing Phase 1 development on site, the allowable release rate is therefore 41.4 L/s for Phase 2.

The major system shall be directed to the 600mm major system culvert outlet towards the Jock River.

- b. **Water Quality Control:** Runoff will meet the enhanced quality treatment objective as defined by the Ministry of Environment and Climate Change Stormwater Management Planning and Design Manual. As noted in the Nepean South Chapman Mills Stormwater Management Servicing Fourth Addendum prepared by IBI Group, quality control for the site will be achieved by the existing Nepean South-Chapman Mills stormwater management pond.
19. An MECP Environmental Compliance Approval may be required for the proposed development. If the services for block 2 will connect to the available infrastructure from Phase 1, this will trigger an ECA application due to stormwater management servicing multiple properties. Furthermore, the overland flow route from Phase 1 crosses onto to the Phase 2 property. If the overland flow from Phase 1 requires a dedicated drainage corridor through the Phase 2 property, this may trigger an ECA application. A Ministry contact has been provided below.
- a. Patrick Lalonde at (613) 521-3450 or Patrick.Lalonde@ontario.ca
 - b. Shannon Hamilton-Browne at (613) 521-3450 or Shannon.Hamilton-Browne@ontario.ca
20. 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.

21. Water

- a) Water Supply Redundancy: Residential buildings with a basic day demand greater than 50m³/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. The basic day demand for this site not expected to exceed 50m³/day.
- b) Please review Technical Bulletin ISTB-2018-02, 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.

- c) Existing service(s) to be blanked at the main.

22. Sewer

- a) A storm sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.
- b) 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.
- c) Please confirm if the existing stubs on the Phase 2 property have been decommissioned.
- d) Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.
- e) 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.
- f) 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.
- g) 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.
- h) 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.
- i) **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.

- j) 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.**
- k) If 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.
- l) Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 2- and 100-year event storage requirements.
- m) 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.
- n) 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.
- o) 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.
- p) Street catch basins are not to be located at any proposed entrances.
- q) 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.

23. Grading

Post-development site grading shall match existing property line grades 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.

24. Geotechnical (including, where applicable, detailed sensitive marine clay investigation)

- a) Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications.
<https://documents.ottawa.ca/sites/default/files/documents/cap137602.pdf>
- b) Two 406mm dia. backbone watermain are located within Jockvale Road. Please note that to ensure the integrity of the nearby backbone watermain the applicant may be required to develop a Vibration and Settlement Monitoring Program. Vibrations limits, impacts and mitigations measures to the backbone watermain should be discussed in the Geotechnical Report. Furthermore, a liability insurance policy with a minimum amount of 25,000,000 may be required to be in effect for the term of the construction work in close proximity to the backbone watermain. Both of these requirements would be conditioned through the Site Plan Control agreement.
- c) A 1050mm dia. Sanitary trunk sewer is located on Geyser Place. Similar to the backbone watermain, the Geotechnical Report must speak to Vibrations limits, impacts and mitigations measures to the trunk sewer. A Vibration and Settlement monitoring program may be required.

25. Snow Storage

Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patterns 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). Please also note that the snow storage area for Phase 1 will need to be relocated. Should it be relocated on the Phase 2 property, consent must be provided. This will also need to be indicated on the title of the property.

26. Road Reinstatement

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

27. 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.

28. Phase One Environmental Site Assessment

- a) 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.
- b) 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.
- c) Official Plan Section 10.1.6
- d) Record of Site Condition (RSC) will be required.

29. Background studies and/or Subwatershed Studies

- a) Functional Servicing Report for Minto Communities – Canada 3311 Greenbank Road, prepared by David Shaeffer Engineering Ltd., dated June 2017
- b) Functional Servicing and Stormwater Management Report – 3380 Jockvale Road, prepared by Sprouts Engineering Inc., dated December 30, 2022

30. General

- a) 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**.
- b) 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.
- c) All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does



not extend either above or below into the existing property lines and sight triangles.

- d) **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.

Feel free to contact Mohammed Fawzi, Project Manager, for follow-up questions.

Noise

Comments:

- 31. Noise Impact Study required to address roadway noise, as the site is within proximity to Jockvale and Longfields.
- 32. 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

Comments:

- 33. Correct Screening Form, the site is proposed to have 112 units, therefore the Trip Generation Trigger is not met. The site access is not within the area of influence of a traffic signal.
- 34. A TIA is not required.
- 35. ROW Protection:
 - a. Ensure that the development proposal complies with the Right-of-Way protection requirements of the Official Plan's Schedule C16. See [Schedule C16 of the Official Plan](#).
 - b. Review possibility of converging corner triangle at Jockvale/Bending Way. Corner triangle is to be measured on the property line, for an arterial to local intersection, a 9m x 3m triangle is required, with the longer portion located on the arterial road segment.
 - c. Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.
 - d. Where applicable, ROW and/or corner triangles must be unincumbered and conveyed at no cost to the City. Note that conveyance of the

ROW/corner triangle will be required prior to registration of the SP agreement. Additional information on the conveyance process can be provided upon request.

36. TMP identifies site is within 600m of St. Joseph/Greenbank Transit Station (2031 Network Concept)
37. Show all details of the roads abutting the site; include such items as pavement markings, accesses and/or sidewalks.
38. Turning movement diagrams required for internal movements (loading areas, garbage).
39. Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, curb radii, etc.)
40. Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers.

Feel free to contact Josiane Gervais, Transportation Project Manager, for follow-up questions.

Environment

Comments:

41. An Environmental Impact Statement is not required for this submission. There are no natural heritage system features, surface water features, or species-at-risk habitat present on or adjacent to the site that would trigger such an investigation.
42. This area is located in the Airport Bird Hazard Zone, which affect what types of trees can be planted. A list of trees to avoid planting will be provided.
43. The Bird Safe Design Guidelines apply to any building that is higher than four storeys. In particular note, the requirements of Guideline 2, which states that 90% of all glazing below 16m in height must be treated with some form of mitigation. The Bird Safe Design Guidelines can be [found at this link](#).
44. Additional tree plantings to help meet the city's forest canopy goals, as well as reducing the impacts of climate change and the urban heat island effect, are always welcomed and recommended. Please note that the city prefers that tree plantings be of native and non-invasive species.

Feel free to contact Mark Elliott, Environmental Planner, for follow-up questions.

Forestry

Comments:

45. Tree Conservation Report (TCR) requirements - The following Tree Conservation Report (TCR) requirements have been adapted from the Schedule E of the Urban Tree Protection Guidelines – for more information on these requirements please contact mark.richardson@ottawa.ca

- a. For the zoning application, a TCR is not required.
- b. For the site plan application, a Tree Conservation Report (TCR) will be required if there are trees that have a diameter of greater than 10cm.
 - TCR information can be included on the LP
- c. Any removal of privately-owned trees 10cm or larger in diameter, or city-owned trees of any diameter will require a tree permit
- d. The TCR must show the show proposed development with existing tree cover information.
- e. The TCR must document all trees by species, diameter and health condition
- f. Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
- g. If trees are to be removed, document the reason they cannot/should not be retained.

46. LP tree planting requirements - for more information on these requirements please contact mark.richardson@ottawa.ca

- a. Minimum Setbacks
 - i. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
 - ii. Maintain 2.5m from curb
 - iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.
- b. 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.
- c. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.
- d. Tree specifications
 - i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

- ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- e. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; if possible, include watering and warranty as described in the specification.
- f. No root barriers, dead-man anchor systems, or planters are permitted.
- g. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)
- h. Hard surface planting
 - i. If there are hard surface plantings, a planting detail must be provided
 - ii. Curb style planter is highly recommended
 - iii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
 - iv. Trees are to be planted at grade
- i. Soil Volume - Please demonstrate as per the **Landscape Plan Terms of Reference** that the available soil volumes for new plantings will meet or exceed the following:

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

- j. Sensitive Marine Clay - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines
- k. The City requests that consideration be given to planting native species where ever there is a high probability of survival to maturity.
- l. Efforts shall be made to provide as much future canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. Please provide a projection of the future canopy cover for the site to 40 years

Feel free to contact Mark Richardson, Forester, for follow-up questions.

Parkland

47. Parkland Dedication:

- a. The amount of parkland dedication that will be required at Site Plan Approval will be calculated as per the City of Ottawa Parkland Dedication [By-law No. 2022-280](#). Please note that parkland dedication is not required for a Zoning By-law Amendment.
- b. Section 11-(2)-e of the By-law indicates that no parkland dedication is required in the case of the development of:

*Residential purposes, or the residential portion of a mixed-use development, that are **erected and owned by non-profit housing**, provided that satisfactory evidence is provided to the Treasurer that the dwelling units and/or rooming units are intended for persons of low or modest incomes **and that the dwelling units and /or rooming units are being made available at values that are initially, and will continue to be, below current market levels in the City.***

- c. PFP requests that the applicant provides supporting documentation confirming that the development meets the requirements for the exemption of parkland dedication as specified in section 11-(2)-e of By-law 2022-280:
 - i. The development is erected and owned by non-profit housing.
 - ii. The dwelling units and /or rooming units are being made available at values that are initially, and will continue to be, below current market levels in the City.
 - iii. A listing of how many units will be made available 'at or above market rate' and how many will be 'below market rate'.
- d. Residential units being provided 'at' or 'above' market rate will be subject to parkland dedication calculated at 5% of the gross land area of the proportion of the site and/or building allocated to those units, as specified in section 6-(2) of the Parkland Dedication By-law.

48. Landowners' Agreement for Parks

- a. OP Section 11.6 (11):

Subject to Council approval of a Secondary Plan or Official Plan amendment, the City shall consider the use of private agreements

among landowners to cost share major infrastructure projects, associated studies and plans identified in secondary plans, comprehensive studies approved by Council and detailed in the agreement for a specified area. These agreements may include the provision of community facilities such as parkland, shared infrastructure, studies such as environmental assessments, restoration plans and restoration works. Such agreements are initiated by landowners within a defined area and provide for the fair sharing of costs among benefiting parties, to complement or replace the provisions of a Development Charges By-law. Where such agreements are in place, the City shall require evidence of payment pursuant to and as defined in the agreement as a condition of draft approval for plans of subdivision and plans of condominium, and as a condition of approval for Consent (to sever) applications and Site Plan Control, or as stated in the landowner agreement.

- b. Please be aware that there is a landowners agreement for park development within the Barrhaven Town Centre.
- c. At the time of Site Plan Approval, the Applicant will be required to provide evidence of payment and/or good standing, signed by the Trustee of the **Barrhaven Town Centre Landowners Group Park Construction Agreement**, pursuant to the terms and conditions of the agreement.

49. For Future Reference

- a. At the time of site plan development, PFP recommends decorative fencing (ex: wooden post-and-rail, or similar) along the southern boundary of the site to help delineate the public sidewalk (south) with the private lands; see blue-dashed line below:



Please note that the park comments are preliminary and will be finalized (and subject to change) as the application process proceeds. If the proposed development, residential product, or land use changes, then the parkland dedication requirement will be re-evaluated accordingly.



Feel free to contact Jeannette Krabicka, Parks Planner, for follow-up questions.

Other

50. 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.

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

Yours Truly,
Katie Turk, MCIP, RPP

Encl. Study and Plans Identification List
Urban Design Brief Terms of Reference
HPDS Overview for Applicants
HPDS Checklist
Airport Bird Hazard Plant Species

c.c. Erin O'Connell, Planner III
Mohammed Fawzi, PM
Anton Chettrar, PM
Marianne Abou Antoun,
Jeannette Krabicka, Parks Planner
Josiane Gervais, TPM
Mark Elliot, Environmental Planner
Mark Richardson, City Forester
Amy MacPherson

MEMORANDUM

February 9, 2021

Ottawa Community Housing Corporation
39 Auriga Drive
Ottawa, ON, K2E 7Y8

Attention: Robert Badger

Re: 3380 Jockvale Road (Riversbend) – Civil Servicing Constraints

The Ottawa Community Housing Corporation retained DSEL to prepare a brief summary of the availability of services associated with development of the approximately 0.85 ha property within the Riversbend subdivision that is bordered to the north by existing Jockvale Road, the southwest by future Branch Street and the southeast by future Geyser Place ('the site').

Refer to the following Riversbend subdivision drawings, attached for reference –

- Sheet No. 7 General Plan (servicing), revision 6 dated 19.01.28
- Sheets No. 19 & 20 (grading), revision 7 dated 19.02.17

The 0.85ha development was contemplated in the servicing studies prepared and submitted in support of the Minto – Riversbend subdivision application. The following studies were referenced in the preparation of this servicing brief:

- Design Brief for Minto Communities – Canada and City of Ottawa, 3311 Greenbank Road, DSEL, dated August 2018
- Detail Subdivision Stormwater Analysis, Riversbend (3311 Greenbank Road), Nepean South Chapman Mills, IBI Group, dated August 2018

Stormwater/Drainage

The site is serviced by an existing 525mm diameter storm sewer extended to the southern boundary of the site at control manhole 101 (invert approx. 89.64). The offsite municipal storm sewer system was designed to accommodate an allowable capture rate of 90L/s/ha from the site (76L/s for the 0.85ha area). Major system flow in excess of the allowable storm sewer capture rate is anticipated to be directed overland to the Geyser Place municipal road right-of-way and ultimately to the Jock River.

An onsite stormwater storage volume requirement of 30 m³ was estimated for the 0.85 ha site, based on a 2-year storm event, a runoff coefficient of 0.70, and assuming that roughly 10% of the site area will be released uncontrolled and need to be compensated for in areas with controls. Storm events greater than the 2-year event are permitted to flow overland to Geyser Place and ultimately the Jock River.

Wastewater

The site is currently serviced by an existing 200mm diameter sanitary sewer extended to the southern boundary of the subject site at control manhole 101A (invert approx. 88.43). The offsite municipal sanitary sewer system was designed to accommodate 80 residential units with a population of 168 people within the site. However, it is estimated that there is residual capacity within the offsite sanitary sewer system to allow for this design population density to more than double within the site.

Water

The site is currently serviced by an existing 200mm diameter watermain stub extended to the southern boundary of the subject site, near the future intersection of Branch Street and Geyser Place. The subject site is bordered by the following existing municipal watermains:

- 200mm diameter watermain within future Branch Street;
- 300mm diameter watermain within Bending Way; and
- Twin 406mm diameter watermains within Jockvale Road

City of Ottawa water design guidelines will require a second site service connection, with 'looped' internal site watermain, if the development plan for the site exceeds 50 residential units or 50 m³/day average daily water demand.

The August 2018 Servicing Brief assumed that a fire flow of 15,000 L/min would be required to protect the subject site. Water for fire protection was assumed to be provided to the site via hydrants along Branch Street and Bending Way. Should hydrants be required within the site, a second connection to the municipal watermain system will be required to ensure water pressure does not drop below 140kPa. Note that the City of Ottawa Water Supply design guidelines stipulate that water pressure within the distribution system must not fall below 140kPa during fire flow operation.

It was anticipated that the subject site would have a population of 135 people. The surrounding municipal watermain system is scheduled for a pressure zone conversion from the BARR zone to the 3C zone. During periods of normal operation, it is estimated that potable water is currently available to the site between 484 kPa and 640 kPa. Once the site is transitioned to the 3C PZ, water pressure is expected to be between 523 kPa and 543 kPa. Water pressure in the interim condition may necessitate pressure reducing valves within the residential units. The City of Ottawa Water Supply design guidelines indicate that the desired operation pressure during normal operations lies between 350kPa and 480kPa, and must not exceed 552kPa.

Other Utilities

Hydro, Bell, Rogers, Enbridge and others were made aware of the anticipated development of the subject site during design and construction of the first phase of the surrounding Riversbend subdivision. It will be necessary to coordinate directly with the utilities to coordinate specific infrastructure requirements to meet the demands of the proposed development plan.

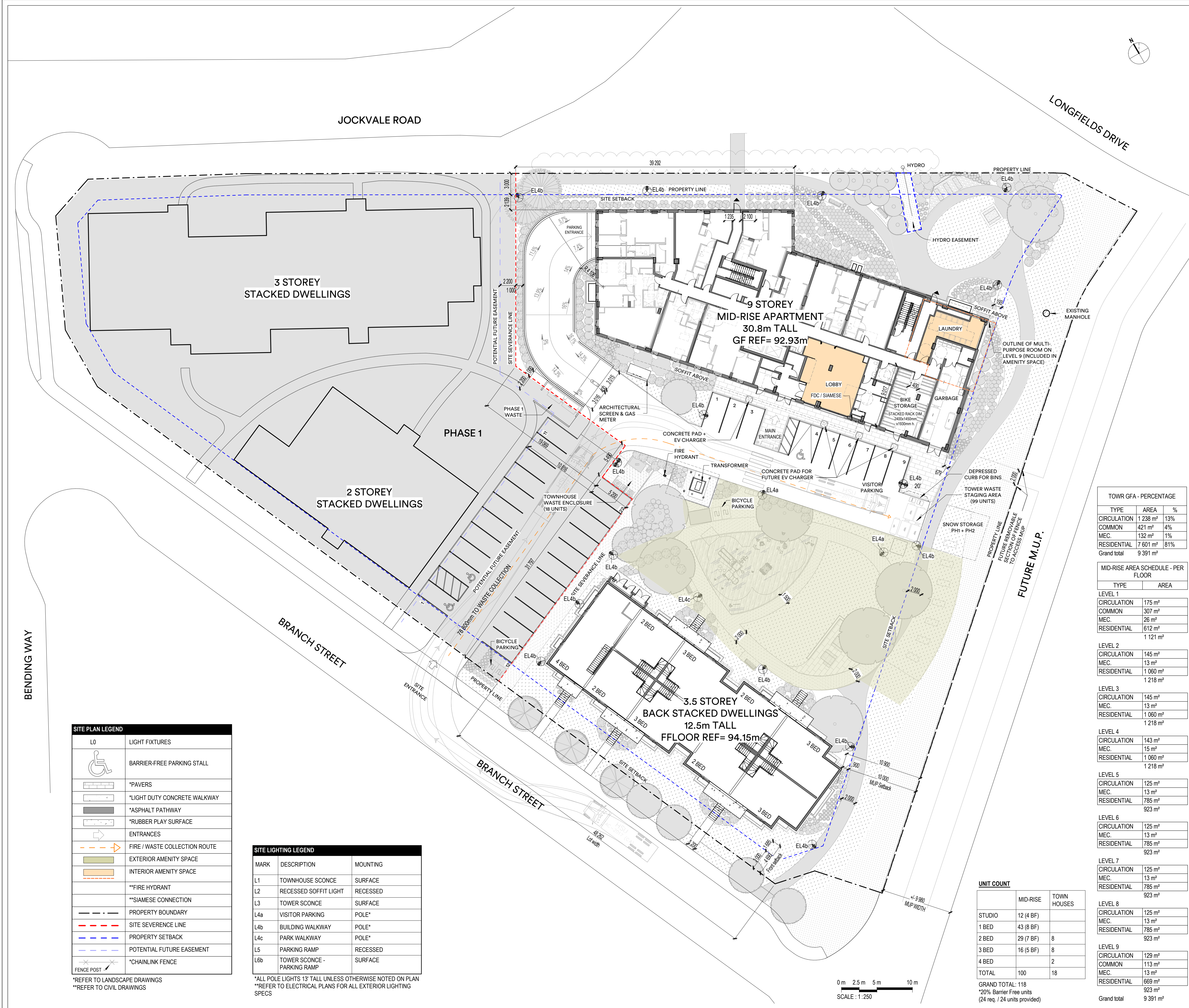


Matt Wingate, P.Eng.

DSEL

david schaeffer engineering ltd.

Z:\Projects\21-1230_OCH_Bending_Way\B_Design\B3_Reports\B3-2_Servicing (DSEL)\mem_2021-02-08_OCH_Riversbend_servicing-constraints.docx



SITE PLAN LEGEND	
L0	LIGHT FIXTURES
	BARRIER-FREE PARKING STALL
	*PAVERS
	*LIGHT DUTY CONCRETE WALKWAY
	*ASPHALT PATHWAY
	*RUBBER PLAY SURFACE
	ENTRANCES
	FIRE / WASTE COLLECTION ROUTE
	EXTERIOR AMENITY SPACE
	INTERIOR AMENITY SPACE
	**FIRE HYDRANT
	**SIAMESE CONNECTION
	PROPERTY BOUNDARY
	SITE SEVERANCE LINE
	PROPERTY SETBACK
	POTENTIAL FUTURE EASEMENT
	*CHAINLINK FENCE
	FENCE POST

*REFER TO LANDSCAPE DRAWINGS
**REFER TO CIVIL DRAWINGS

SITE LIGHTING LEGEND		
MARK	DESCRIPTION	MOUNTING
L1	TOWNHOUSE SCONCE	SURFACE
L2	RECESSED SOFFIT LIGHT	RECESSED
L3	TOWER SCONCE	SURFACE
L4a	VISITOR PARKING	POLE*
L4b	BUILDING WALKWAY	POLE*
L4c	PARK WALKWAY	POLE*
L5	PARKING RAMP	RECESSED
L6b	TOWER SCONCE - PARKING RAMP	SURFACE

*ALL POLE LIGHTS 13' TALL UNLESS OTHERWISE NOTED ON PLAN
**REFER TO ELECTRICAL PLANS FOR ALL EXTERIOR LIGHTING SPECS

UNIT COUNT		
	MID-RISE	TOWN HOUSES
STUDIO	12 (4 BF)	
1 BED	43 (8 BF)	
2 BED	29 (7 BF)	8
3 BED	16 (5 BF)	8
4 BED		2
TOTAL	100	18

GRAND TOTAL: 118
*20% Barrier Free units
(24 req. / 24 units provided)

TOWR GFA - PERCENTAGE		
TYPE	AREA	%
CIRCULATION	1 238 m ²	13%
COMMON	421 m ²	4%
MEC.	132 m ²	1%
RESIDENTIAL	7 601 m ²	81%
Grand total	9 391 m ²	

MID-RISE AREA SCHEDULE - PER FLOOR	
TYPE	AREA
LEVEL 1	
CIRCULATION	175 m ²
COMMON	307 m ²
MEC.	26 m ²
RESIDENTIAL	612 m ²
Grand total	1 121 m ²

LEVEL 2	
CIRCULATION	145 m ²
MEC.	13 m ²
RESIDENTIAL	1 060 m ²
Grand total	1 218 m ²

LEVEL 3	
CIRCULATION	145 m ²
MEC.	13 m ²
RESIDENTIAL	1 060 m ²
Grand total	1 218 m ²

LEVEL 4	
CIRCULATION	143 m ²
MEC.	15 m ²
RESIDENTIAL	1 060 m ²
Grand total	1 218 m ²

LEVEL 5	
CIRCULATION	125 m ²
MEC.	13 m ²
RESIDENTIAL	785 m ²
Grand total	923 m ²

LEVEL 6	
CIRCULATION	125 m ²
MEC.	13 m ²
RESIDENTIAL	785 m ²
Grand total	923 m ²

LEVEL 7	
CIRCULATION	125 m ²
MEC.	13 m ²
RESIDENTIAL	785 m ²
Grand total	923 m ²

LEVEL 8	
CIRCULATION	125 m ²
MEC.	13 m ²
RESIDENTIAL	785 m ²
Grand total	923 m ²

LEVEL 9	
CIRCULATION	129 m ²
COMMON	113 m ²
MEC.	13 m ²
RESIDENTIAL	669 m ²
Grand total	9 391 m ²

CONSTRUCTION NOTES

GENERAL NOTES - SITE PLAN

A. PROPERTY BOUNDARY INFORMATION DERIVED FROM SURVEY ... PREPARED BY CIVIL ENGINEER, EGIS.

B. SERVICES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY. REFER TO CIVIL ENGINEER'S DRAWINGS FOR ALL SERVICES, GRADING, TREE LOCATIONS, AND STORM WATER MANAGEMENT

C. REFER TO LANDSCAPE DRAWINGS FOR MORE INFORMATION REGARDING PEDESTRIAN PAVING, TREES, PLANTED AREAS, STREET FURNITURE, WASTE MANAGEMENT ENCLOSURE, AND EXTERIOR BICYCLE PARKING.

D. REFER TO ELEC. DRAWINGS FOR LIGHTING SPECIFICATIONS AND EV CHARGER SPECIFICATIONS.

E. MAINTANANCE STAFF WILL MOVE THE ROLLING BINS FROM THE STORAGE AREA TO THE STAGING AREA.

ZONING COMPLIANCE TABLE & PROJECT INFORMATION

PROJECT: OCH - GEYSER PLACE

ADDRESS: 525 BRANCH STREET

ZONING: R4Z(2465)

PROPERTY IDENTIFICATION NUMBER: PART OF LOT 13, CONCESSION 2 (RIDEAU FRONT) PLAN 4R-34672

PROPERTY USE

REQUIRED

PROVIDED

PLANNED UNIT DEVELOPMENT: STACKED DWELLING

STACKED DWELLING: MID-RISE APARTMENT

LOT WIDTH

18 m

48.165 m

LOT AREA

1,400 m²

5,967 m²

PROPERTY SETBACKS

FRONT YARD MIN.

3 m

3 m

FRONT YARD MAX.

5 m

6 m

INTERIOR SIDE YARD

3 m

3 m

REAR YARD

3 m

3 m

TOTAL % LANDSCAPED AREA (30%)

30%

43.8%

% OF LANDSCAPING IN PARKING LOT

15

41%

AMENITY AREA

ALL AMENITY SPACE PROVIDED IS COMMUNAL AND EXCEEDS 54 m²

6 m² / DWELLING

895 m² EXT.

193 m² INT.

708 m² TOTAL

1088 m² TOTAL

GFA / FLOOR

MID-RISE APARTMENT

LEVEL 1

1 121 m²

LEVEL 2-4

1218 m² x 3 = 3 654 m²

LEVEL 5-9

923 m² x 5 = 4 615 m²

9 391 m² TOTAL GFA

STACKED TOWNHOMES

LEVEL 1-3

594 m² x 3

1 782 m² TOTAL GFA

VEHICLE PARKING REQUIREMENTS

VISITOR

8 STANDARD

1 AODA TYPE A

0.2 x 117 UNITS = 23.9

9 TOTAL

RESIDENTIAL

1 AODA TYPE A

4 COMPACT CAR

16 STANDARD

0.5 x 117 UNITS = 59

21 TOTAL

TOTAL PARKING SPACES (INCL. BARRIER FREE)

83 GRAND TOTAL

30 GRAND TOTAL

BIKE PARKING REQUIREMENTS

RESIDENTIAL

0.5 / DWELING UNIT

56 INDOOR

8 EXTERIOR

0.5 x 118 UNITS = 59

64 TOTAL

WASTE COLLECTION

MID-RISE: 100 UNITS

GARBAGE

0.110 YARDS / UNIT = 11 YARDS

3 x 4 YARD BINS

RECYCLING - FIBER

0.038 YARDS / UNIT (INCL. GLASS) = 4 YARDS

1 x 4 YARD BIN

RECYCLING - GLASS

360 L / 50 UNITS

2 x 360L BINS

TOWNHOUSES: 18 UNITS

GARBAGE

0.231 YARDS / UNIT = 4 YARDS

1 x 4 YARD BIN

RECYCLING - FIBER

360 L CART / 6 UNITS = 2 - 360L BINS

2 x 360L BINS

RECYCLING - GLASS

360 L CART / 6 UNITS = 2 - 360L BINS

2 x 360L BINS

ORGANICS

240 L / 50 UNITS = 1 - 240L BIN

1 x 240L BINS

WASTE COLLECTION AREAS

MID-RISE APARTMENT

GARBAGE ROOM: 46 m²

WASTE COLLECTION AREA: 27.8 m²

TOWNHOMES

EXTERIOR ENCLOSED WASTE COLLECTION ONLY

WASTE ENCLOSURE: 19.7 m²

81, rue Metcalfe, bureau 310, Ottawa ON K1P 6K7

PROJECT: OCH - GEYSER PLACE
3380 Jockvale Road,
Ottawa, ON

CLIENT: OTTAWA COMMUNITY HOUSING
39 Auriga Drive
Ottawa, ON
K2E 7Y8

CONSULTANTS

STRUCTURAL: CUNLIFFE & ASSOCIATES
CIVIL: egis
MECHANICAL & ELECTRICAL: GWAL
LANDSCAPE: LASHLEY+ASSOCIATES
PASSIVE HOUSE / ENERGY MODELLING: ThorntonTomasetti
SECURITY: attain

NOTES

The contractor must verify all dimensions and communicate any discrepancies with the architect before carrying out the work.
This document remains the property of «LEMAYMICHAUD Architecture Design» and should be used only for the specific use which it is intended.

STAMP

ONTARIO ASSOCIATION OF ARCHITECTS
JUDITH PARKAS
LICENCE 9146

TEAM

DRAWN BY: SF
VERIFIED BY: AS
APPROVED BY: JF

PRINTS / REVISIONS

NO. DATE DESCRIPTION

A 2025-02-20 ISSUED FOR COORDINATION

B 2025-03-21 ISSUED FOR 50% DD COORDINATION

C 2025-05-01 ISSUED FOR SPCA REVIEW

D 2025-05-02 ISSUED FOR DD REPORT

E 2025-07-11 ISSUED FOR 65% REVIEW

F 2025-07-28 ISSUED FOR SPCA REVIEW R1

G 2025-09-03 ISSUED FOR 95% REVIEW

H 2025-12-12 ISSUE FOR SPCA REVIEW 2

KEY PLAN

DISCIPLINE

ARCHITECTURE

DRAWING

SITE PLAN

SCALE: 250

PROJECT

124724B

PAGE

A100

APPENDIX C WATERMAIN CALCULATIONS

CCO-25-1917 - 3380 Jockvale Road - Water Demands - Apartment Building

Project:	3380 Jockvale Road
Project No.:	CCO-25-0415
Designed By:	FV
Checked By:	JB
Date:	July 29, 2025
Site Area:	0.95 gross ha

Residential	NUMBER OF UNITS	UNIT RATE	
Studio Apartment	12 units	1.4	persons/unit
1 Bedroom Apartment	43 units	1.4	persons/unit
2 Bedroom Apartment	29 units	2.1	persons/unit
3 Bedroom Apartment	16 units	3.1	persons/unit

Total Population 188 persons

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m ² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	Residential	0.61 L/s
	Commercial/Industrial/Institutional	0.00 L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	4.6	x avg. day L/c/d
Industrial	1.5	x avg. day L/gross ha/d
Commercial	1.5	x avg. day L/gross ha/d
Institutional	1.5	x avg. day L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	2.78 L/s
	Commercial/Industrial/Institutional	0.00 L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	6.9	x avg. day L/c/d
Industrial	1.8	x max. day L/gross ha/d
Commercial	1.8	x max. day L/gross ha/d
Institutional	1.8	x max. day L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	4.20 L/s
	Commercial/Industrial/Institutional	0.00 L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.61	L/s
MAXIMUM DAILY DEMAND	2.78	L/s
MAXIMUM HOUR DEMAND	4.20	L/s

CCO-25-1917 - 3380 Jockvale Road - Water Demands - Stacked Townhomes

Project:	3380 Jockvale Road
Project No.:	CCO-25-0415
Designed By:	FV
Checked By:	JB
Date:	July 29, 2025
Site Area:	0.95 gross ha

Residential	NUMBER OF UNITS	UNIT RATE	
2-Bedroom	8 units	2.1	persons/unit
3-Bedroom	8 units	3.1	persons/unit
4-Bedroom	2 units	4.1	persons/unit (Rate Assumed)

Total Population 50 persons

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m ² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	Residential	0.16 L/s
	Commercial/Industrial/ Institutional	0.00 L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	8.8	x avg. day L/c/d
Industrial	1.5	x avg. day L/gross ha/d
Commercial	1.5	x avg. day L/gross ha/d
Institutional	1.5	x avg. day L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	1.43 L/s
	Commercial/Industrial/ Institutional	0.00 L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	13.3	x avg. day L/c/d
Industrial	1.8	x max. day L/gross ha/d
Commercial	1.8	x max. day L/gross ha/d
Institutional	1.8	x max. day L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	2.16 L/s
	Commercial/Industrial/ Institutional	0.00 L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.16	L/s
MAXIMUM DAILY DEMAND	1.43	L/s
MAXIMUM HOUR DEMAND	2.16	L/s

CCO-25-1917 - 3380 Jockvale Road - Water Demands - Total

Project:	3380 Jockvale Road
Project No.:	CCO-25-0415
Designed By:	FV
Checked By:	JB
Date:	July 29, 2025
Site Area:	0.95 gross ha

Residential	NUMBER OF UNITS	UNIT RATE	
Studio Apartment	12 units	1.4	persons/unit
1 Bedroom Apartment	43 units	1.4	persons/unit
2 Bedroom Apartment	37 units	2.1	persons/unit
3 Bedroom Apartment	24 units	3.1	persons/unit
4-Bedroom Stacked	2 units	4.1	persons/unit (Rate Assumed)

Total Population 238 persons

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m ² /d)
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	Residential	0.77 L/s
	Commercial/Industrial/Institutional	0.00 L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	4.1 x avg. day	L/c/d
Industrial	1.5 x avg. day	L/gross ha/d
Commercial	1.5 x avg. day	L/gross ha/d
Institutional	1.5 x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	3.19 L/s
	Commercial/Industrial/Institutional	0.00 L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	6.2 x avg. day	L/c/d
Industrial	1.8 x max. day	L/gross ha/d
Commercial	1.8 x max. day	L/gross ha/d
Institutional	1.8 x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	4.80 L/s
	Commercial/Industrial/Institutional	0.00 L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.77	L/s
MAXIMUM DAILY DEMAND	3.19	L/s
MAXIMUM HOUR DEMAND	4.80	L/s

CCO-25-1917 - 3380 Jockvale Road - OBC Fire Calculations - Apartment Building

Project:	3380 Jockvale Road
Project No.:	CCO-25-1917
Designed By:	FV
Checked By:	JB
Date:	July 29, 2025

Ontario 2006 Building Code Compendium (Div. B - Part 3)

Water Supply for Fire-Fighting - Apartment Building

Building is classified as Group : C - Residential (from table 3.2.2.55)
 Building is of noncombustible construction with fire separations and fire-resistance ratings provided in accordance with subsections 3.2.2., including loadbearing walls, columns and arches

From Div. B A-3.2.5.7. of the Ontario Building Code - 3. Building On-Site Water Supply:

$$(a) Q = K \times V \times Stot$$

where:

Q = minimum supply of water in litres

K = water supply coefficient from Table 1

V = total building volume in cubic metres

Stot = total of spatial coefficient values from the property line exposures on all sides as obtained from the formula:

$$Stot = 1.0 + [S_{side1} + S_{side2} + S_{side3} + \dots \text{etc.}]$$

K	10	(from Table 1 pg A-31)
V	36,165	(Total building volume in m ³ , provided by Architect.)
Stot	1.0	(From figure 1 pg A-32)
Q =	361,650.00 L	

			From Figure 1 (A-32)
Snorth	23	m	0.0
Seast	11	m	0.0
Ssouth	29	m	0.0
Swest	17	m	0.0

*approximate distances

From Table 2: Required Minimum Water Supply Flow Rate (L/s)

9,000 L/min
 2378 gpm
 150 L/s

if Q > 270,000 L

CCO-25-1917 - 3380 Jockvale Road - OBC Fire Calculations - Stacked Townhomes

Project:	3380 Jockvale Road
Project No.:	CCO-25-1917
Designed By:	FV
Checked By:	JB
Date:	July 29, 2025

Ontario 2006 Building Code Compendium (Div. B - Part 3)

Water Supply for Fire-Fighting - Townhouse Block

Building is classified as Group : C - Residential (from table 3.2.2.55)
 Building is of combustible construction. Floor assemblies are fire separations but with no fire-resistance ratings. Roof assemblies, mezzanies, loadbearing walls, columns and arches do not have a fire-resistance rating.

From Div. B A-3.2.5.7. of the Ontario Building Code - 3. Building On-Site Water Supply:

$$(a) Q = K \times V \times Stot$$

where:

Q = minimum supply of water in litres

K = water supply coefficient from Table 1

V = total building volume in cubic metres

Stot = total of spatial coefficient values from the property line exposures on all sides as obtained from the formula:

$$Stot = 1.0 + [S_{side1} + S_{side2} + S_{side3} + \dots \text{etc.}]$$

K	23	(from Table 1 pg A-31)
V	8,394	(Total building volume in m³.)
Stot	1.0	(From figure 1 pg A-32)
Q =	193,059.70 L	

From Table 2: Required Minimum Water Supply Flow Rate (L/s)

6,300 L/min if Q > 190,000 L and < 270,000 L
 1664 gpm

			From Figure 1 (A-32)
Snorth	34	m	0.0
Seast	11	m	0.0
Ssouth	15	m	0.0
Swest	22	m	0.0

*approximate distances

CCO-25-1917 - 3380 Jockvale Road - Fire Underwriters Survey - Apartment Building

Project: 3380 Jockvale Road
 Project No.: CCO-25-1917
 Designed By: FV
 Checked By: JB
 Date: July 29, 2025

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
 City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x vA Where: F = Required fire flow in liters per minute
 C = Coefficient related to the type of construction.
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Fire-Resistive Construction

C	0.6	A	9,675.0 m ²
Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)			6,013.0 m ² *Unprotected Vertical Openings

Calculated Fire Flow	10,235.7 L/min
	10,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:
 Limited Combustible -15%

Fire Flow	8,500.0 L/min
-----------	---------------

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Standard Water Supply Sprinklered -40%

Reduction	-3,400.0 L/min
-----------	----------------

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor		
Exposure 1	Over 30 m	Ordinary - Mass Timber (Unprotected)	N/A	1	N/A	0%	North
Exposure 2	Over 30 m	Ordinary - Mass Timber (Unprotected)	N/A	1	N/A	0%	East
Exposure 3	20.1 to 30	Fire Resistive - Non Combustible (Unprotected Openings)	25.4	2	50.8	1%	South
Exposure 4	10.1 to 20	Fire Resistive - Non Combustible (Unprotected Openings)	16.5	3	49.5	5%	West
						% Increase*	6%

Increase*	510.0 L/min
-----------	-------------

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	5,610.0 L/min
Fire Flow Required**	6,000.0 L/min

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

CCO-25-1917 - 3380 Jockvale Road - Boundary Condition Unit Conversion

Project: 3380 Jockvale Road
 Project No.: CCO-25-1917
 Designed By: FV
 Checked By: JB
 Date: July 29, 2025

Boundary Conditions Unit Conversion

Branch Street - Existing Conditions

Connection 1 (North)

Scenario	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa
Avg. DD	154.6	92.5	62.1	88.4	609.2
Fire Flow (150 L/s or 9,000 L/min)	142.1	92.5	49.6	70.6	486.6
Peak Hour	142.1	92.5	49.6	70.6	486.6

Connection 2 (South)

Scenario	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa
Avg. DD	154.6	92.2	62.4	88.8	612.1
Fire Flow (150 L/s or 9,000 L/min)	140.5	92.2	48.3	68.7	473.8
Peak Hour	142.1	92.2	49.9	71.0	489.5

Branch Street - Future SUC Zone

Connection 1 (North)

Scenario	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa
Avg. DD	146.8	92.5	54.3	77.3	532.7
Fire Flow (150 L/s or 9,000 L/min)	138.0	92.5	45.5	64.7	446.4
Peak Hour	142.3	92.5	49.8	70.9	488.5

Connection 2 (South)

Scenario	Height (m)	Elevation (m)	m H ₂ O	PSI	kPa
Avg. DD	146.8	92.2	54.6	77.7	535.6
Fire Flow (150 L/s or 9,000 L/min)	136.4	92.2	44.2	62.9	433.6
Peak Hour	142.3	92.2	50.1	71.3	491.5

VALENTI Francis

From: Chetrar, Anton <anton.chetrar@ottawa.ca>
Sent: April 15, 2025 7:07 AM
To: VALENTI Francis
Cc: BURDEN Jessica; Mottalib, Abdul; Abou Antoun, Marianne
Subject: RE: 3380 Jockvale Road - Boundary Condition Request
Attachments: 3380 Jockvale BC (09Apr2025).docx

!! Courriel externe - Merci d'être prudent avec les liens et les pièces jointes !! External email - Please be careful with links and attachments !!

Good morning Francis,

Please find attached Boundary Conditions for 3380 Jockvale.

Let me know if you have any questions.

Regards,

Anton Chetrar | P. Eng

Project Manager, Infrastructure - Gestionnaire de projet, Projets d'infrastructure

Development Review All Wards (DRAW) | Direction de l'examen des projets d'aménagement - Tous les quartiers (EPATQ)

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

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 avenue Laurier Ouest

Ottawa, ON K1P 1J1

Tel. | Tél. 613.580.2424 ext.60865

anton.chetrar@ottawa.ca

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

From: VALENTI Francis <Francis.VALENTI@egis-group.com>

Sent: April 07, 2025 4:11 PM

To: Chetrar, Anton <anton.chetrar@ottawa.ca>

Cc: BURDEN Jessica <Jessica.BURDEN@egis-group.com>

Subject: 3380 Jockvale Road - Boundary Condition Request

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

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.

Good afternoon,

We would like to request boundary conditions for the proposed development located at 3380 Jockvale Road. The proposed development consists of a 3-storey, 18-unit townhouse block and a 9-storey apartment building, complete with underground and surface parking, landscaping, and drive aisles with street access from Branch Street. The proposed connections (dual) will be to the existing 203 mm diameter PVC watermain located within Branch Street.

- The estimated fire flow for the townhouse block is 6,300 L/min based on the OBC method
- The estimated fire flow for the apartment building is 9,000 L/min based on the OBC method
- The estimated fire flow for the apartment building is 6,000 L/min based on the FUS method
- Average Daily Demand: 0.76 L/s
- Maximum Daily Demand: 3.18 L/s
- Maximum hourly daily demand: 4.79 L/s

Please find attached a map showing the proposed connection location and calculations prepared for the demands listed above.

Thank you,



Francis VALENTI
Engineering Intern | Environment and Energy
115 Walgreen Road
K0A 1L0 Ottawa | CA
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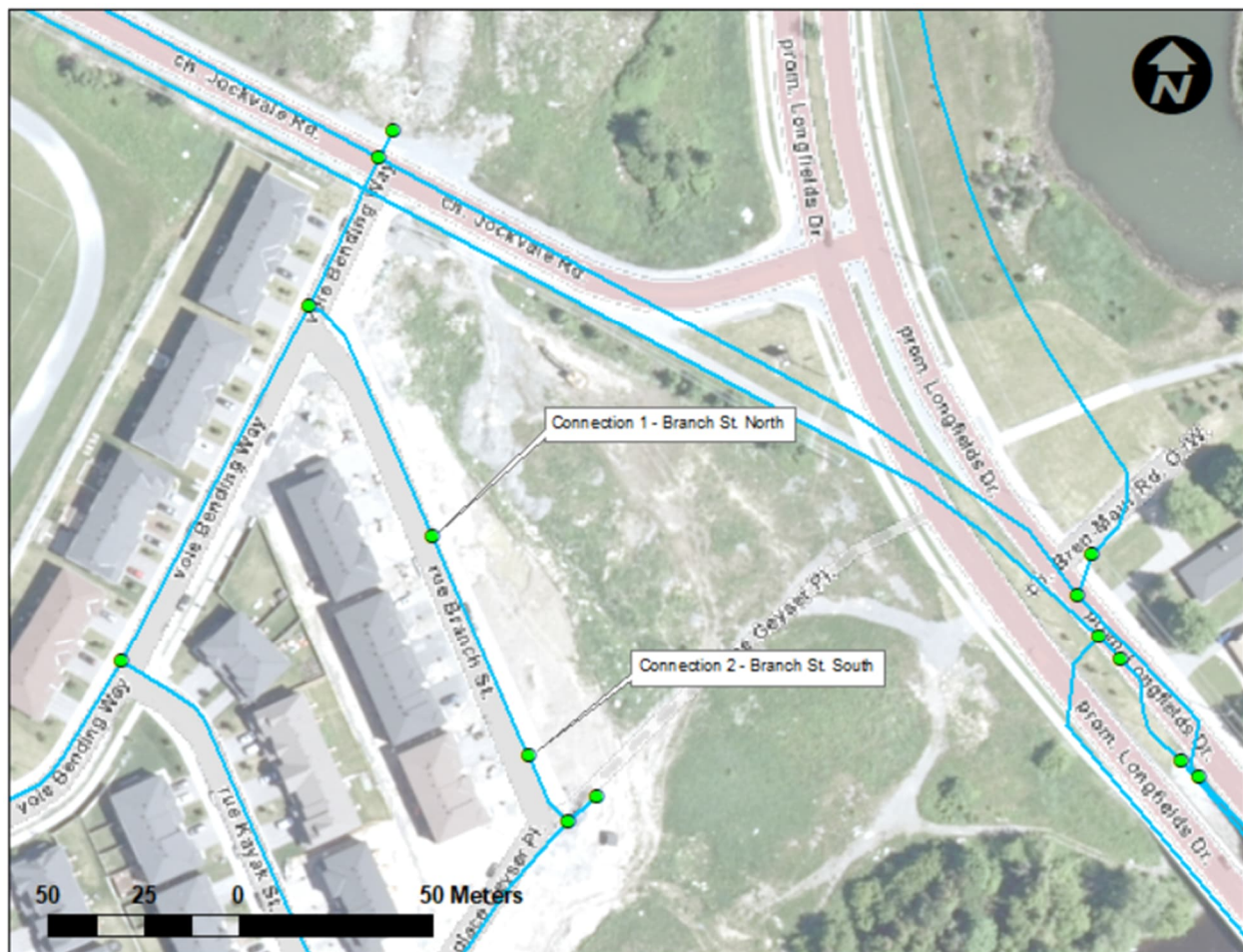
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Boundary Conditions 3380 Jockvale Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	46	0.76
Maximum Daily Demand	191	3.18
Peak Hour	287	4.79
Fire Flow #1	9,000	150.00

Location



Results

Existing Conditions

Connection 1 – Branch St. North

Demand Scenario	Head (m)	Pressure ¹ (psi)
Maximum HGL	154.6	88.3
Peak Hour	142.1	70.6
Max Day plus Fire Flow #1	142.1	70.6

¹ Ground Elevation = 92.5 m

Connection 2 – Branch St. South

Demand Scenario	Head (m)	Pressure ¹ (psi)
Maximum HGL	154.6	88.8
Peak Hour	142.1	71.0
Max Day plus Fire Flow #1	140.5	68.7

¹ Ground Elevation = 92.2 m

Future SUC

Connection 1 – Branch St. North

Demand Scenario	Head (m)	Pressure ¹ (psi)
Maximum HGL	146.8	77.3
Peak Hour	142.3	70.8
Max Day plus Fire Flow #1	138.0	64.6

¹ Ground Elevation = 92.5 m

Connection 2 – Branch St. South

Demand Scenario	Head (m)	Pressure ¹ (psi)
Maximum HGL	146.8	77.7
Peak Hour	142.3	71.3
Max Day plus Fire Flow #1	136.4	62.8

¹ Ground Elevation = 92.2 m

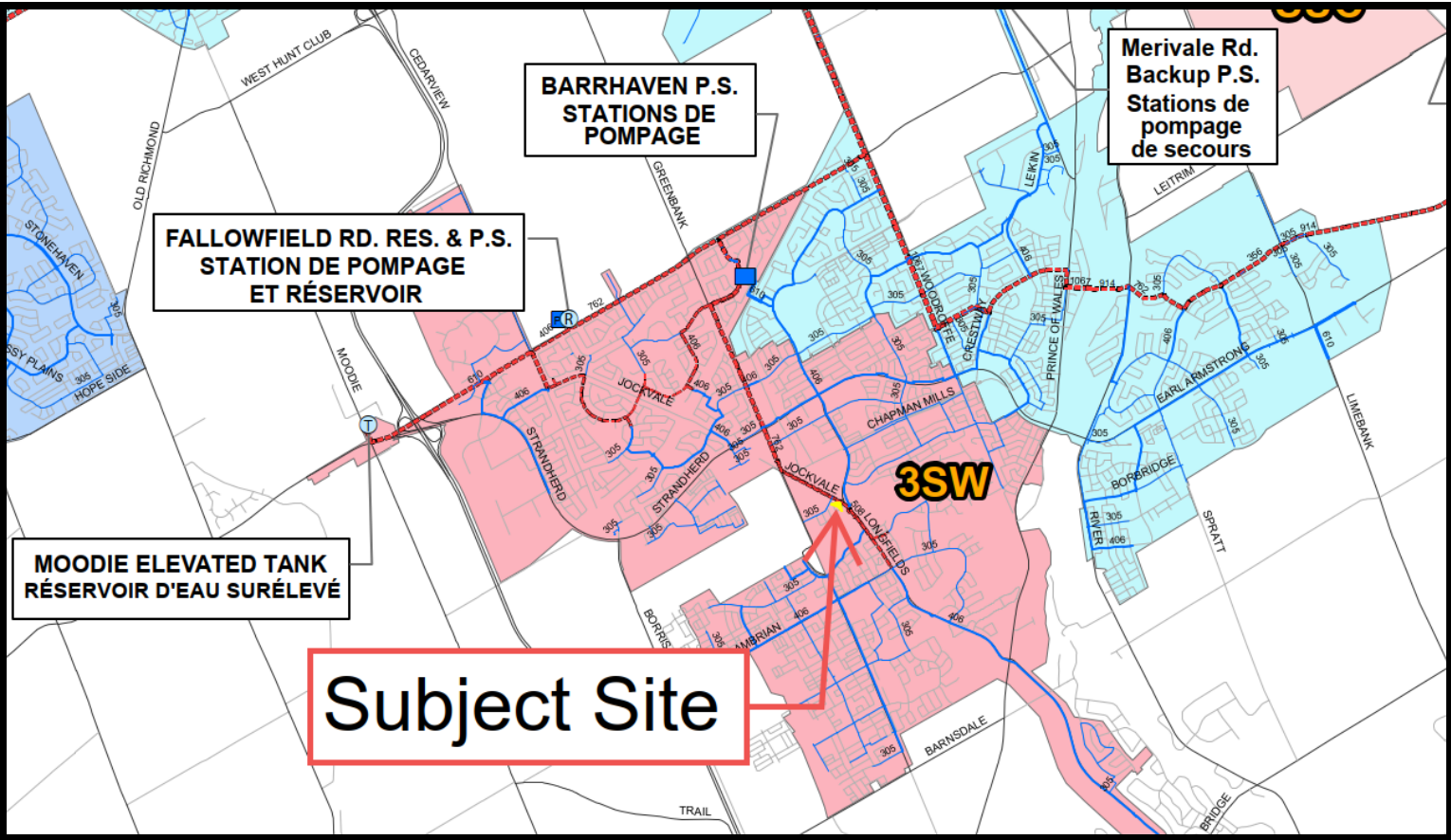
Notes

1. The Infrastructure and Waster Services Department (IWSD) has recently updated their water modelling software. Any perceived significant difference between previously received boundary condition (BC) results and newly received BC results can be attributed to this change.
2. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
 - a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
 - b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

3380 Jockvale Road
Pressure Zone Figure



APPENDIX D SANITARY CALCULATIONS

CCO-25-1917 - 3380 Jockvale Road - Sanitary Demands - Phase 2 Building

Project:	3380 Jockvale Road
Project No.:	CCO-25-1917
Designed By:	JB
Checked By:	FV
Date:	July 29, 2025

Site Area	0.30	Gross ha
Bachelor	12	1.40 Persons per unit
1 Bedroom	43	1.40 Persons per unit
2 Bedroom	29	2.10 Persons per unit
3 Bedroom	16	3.10 Persons per unit
4-Bedroom Stacked	0	4.10 Persons per unit

Total Population	188	Persons
------------------	-----	---------

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.0
Residential Peaking Factor	3.53 * Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$ where P = population in thousands, Harmon's Correction Factor = 1.0
Mannings coefficient (n)	0.013
Demand (per capita)	280 L/day
Dry weather groundwater infiltration	0.05 L/s/Ha
Infiltration allowance	0.33 L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.08
Total	0.10

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	188	0.61
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m ² /d)		0.00
Restaurant	125	L/(9.2m ² /d)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m ² /d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.61	L/s
PEAK RESIDENTIAL FLOW	2.15	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.62	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	2.16	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	2.25	L/s

CCO-25-1917 - 3380 Jockvale Road - Sanitary Demands - Phase 2 Stacked Townhomes

Project:	3380 Jockvale Road
Project No.:	CCO-25-1917
Designed By:	JB
Checked By:	FV
Date:	July 29, 2025
Site Area	0.30 Gross ha
Bachelor	0 1.40 Persons per unit
1 Bedroom	0 1.40 Persons per unit
2 Bedroom	8 2.10 Persons per unit
3 Bedroom	8 3.10 Persons per unit
4-Bedroom Stacked	2 4.10 Persons per unit
Total Population	50 Persons

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.0	
Residential Peaking Factor	3.65	* Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$ where P = population in thousands, Harmon's Correction Factor = 1.0
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Dry weather groundwater infiltration	0.05	L/s/Ha
Infiltration allowance	0.33	L/s/Ha

EXTRANEEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.08
Total	0.10

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	50	0.16
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m²/d)		0.00
Restaurant	125	L/(9.2m²/d)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m²/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.16	L/s
PEAK RESIDENTIAL FLOW	0.59	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.18	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.61	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.69	L/s

CCO-25-1917 - 3380 Jockvale Road - Sanitary Demands - Phase 1

Project:	3380 Jockvale Road
Project No.:	CCO-25-1917
Designed By:	JB
Checked By:	FV
Date:	July 29, 2025
Site Area	0.36 Gross ha
Bachelor	0 1.40 Persons per unit
1 Bedroom	0 1.40 Persons per unit
2 Bedroom	16 2.10 Persons per unit
3 Bedroom	16 3.10 Persons per unit
4-Bedroom Stacked	0 4.10 Persons per unit
Total Population	84 Persons

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.0	
Residential Peaking Factor	3.61	* Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$ where P = population in thousands, Harmon's Correction Factor = 1.0
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Dry weather groundwater infiltration	0.05	L/s/Ha
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.10
Total	0.12

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	84	0.27
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m²/d)		0.00
Restaurant	125	L/(9.2m²/d)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m²/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.27	L/s
PEAK RESIDENTIAL FLOW	0.98	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.29	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	1.00	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	1.10	L/s

SANITARY SEWER DESIGN SHEET

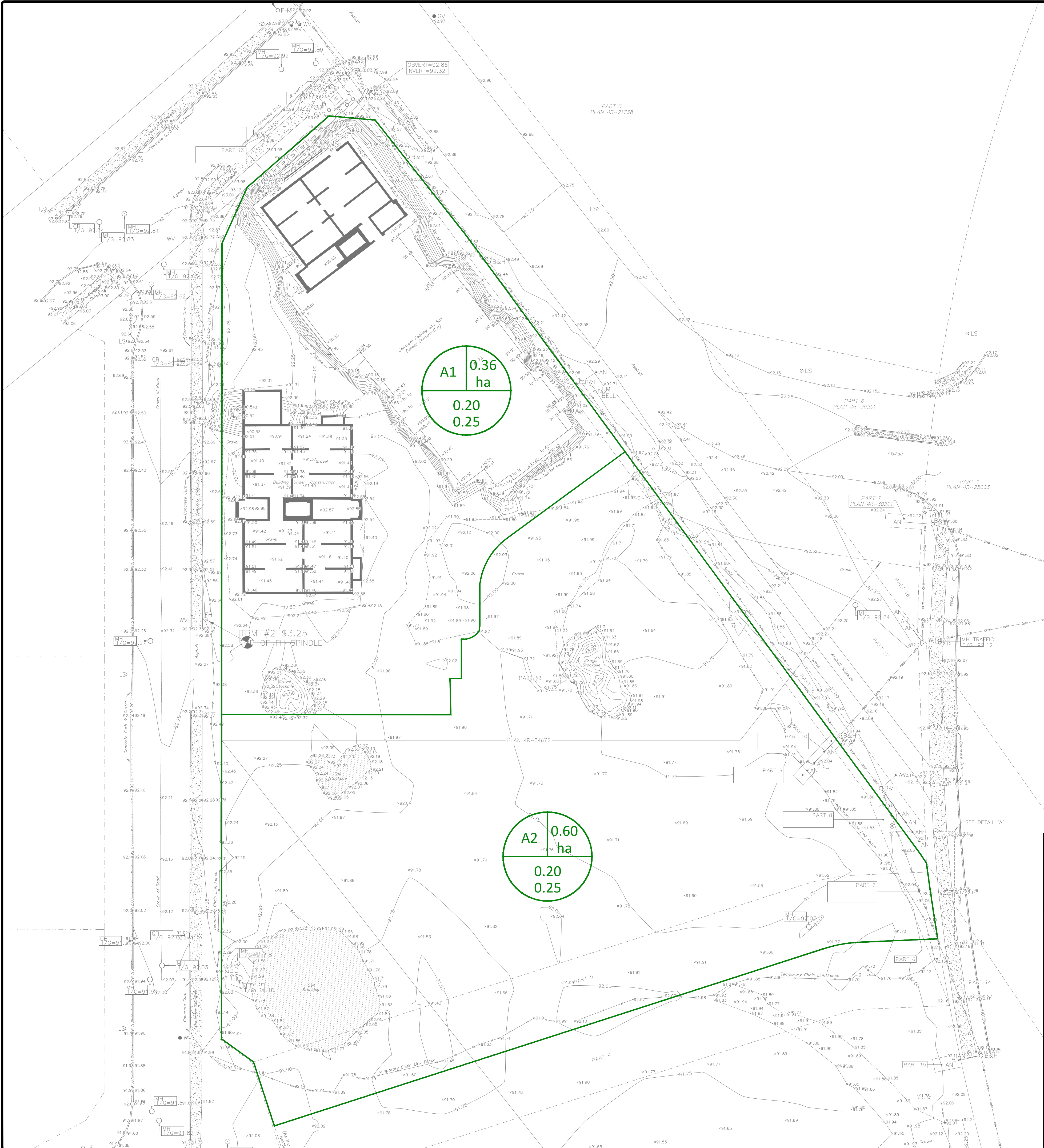
PROJECT: 3380 Jockvale Road
LOCATION: 3380 Jockvale Road
Client: Lemay Michaud



LOCATION				RESIDENTIAL										ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32						
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES					AREA (ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY							
				Studio	1-Bed	2-Bed	3-Bed	4-Bed Stacked		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			IND	CUM								L/s	(%)	(full) (m/s)	L/s	(%)			
Parking Lot	Phase 2 Bldg	BLDG	MH7A	12	43	29	16		0.30	188	188	3.53	2.14								0.30	0.30	0.10	2.24	48.39	28.45	200	2.00	1.492	46.15	95.37						
Branch Street	TH	MH8A	MH7A			4	4	2	0.30	29	29	3.69	0.35								0.30	0.30	0.10	0.45	34.22	42.40	200	1.00	1.055	33.77	98.70						
		MH7A	MH6A						0.00	0	217	3.51	2.46								0.00	0.60	0.20	2.66	34.22	21.59	200	1.00	1.055	31.56	92.23						
		MH6A	EX. MH5A			4	4		0.00	21	237	3.50	2.69								0.00	0.60	0.20	2.89	42.19	43.39	200	1.52	1.301	39.30	93.16						
	City Connection	EX. MH5A	EX. MH						0.00	0	237	3.50	2.69								0.00	0.60	0.20	2.89	27.59	11.46	200	0.65	0.851	24.70	89.54						
Design Parameters:				Notes:									Designed:				No.	Revision							Date												
Residential				1. Mannings coefficient (n) = 0.013									JB				1.	Issued for Site Plan Control							2025-04-21												
ICI Areas				2. Demand (per capita): 280 L/day													2.	Reissued for Site Plan Control							2025-07-29												
Peak Factor				3. Infiltration allowance: 0.33 L/s/Ha									Checked:				3.	Reissued for Site Plan Control							2025-11-28												
				4. Residential Peaking Factor:									FV				4.	Reissued for Site Plan Control							2026-04-01												
				Harmon Formula = 1+(14/(4+P^0.5)*1.0)																																	
				where P = population in thousands									Project No.:																								
													CO-25-1917																		Sheet No:						
																															1 of 1						

APPENDIX E PRE-DEVELOPMENT DRAINAGE PLAN

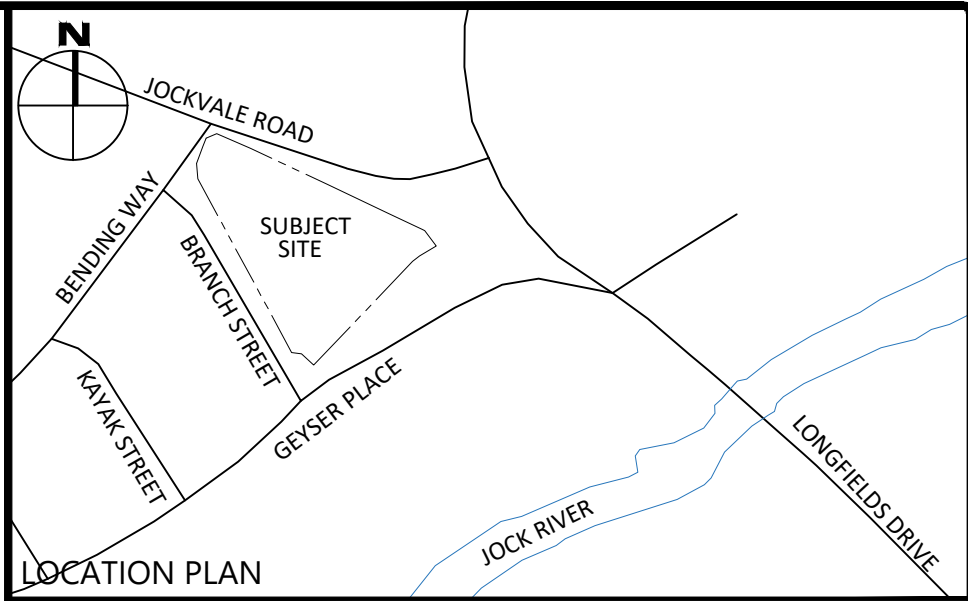
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User: LEMAY MICHAUD ARCHITECTURE DESIGN
Date: 2025-04-24 10:02:00
Plot Date: 2025-04-24 10:02:00
Plot User: LEMAY MICHAUD ARCHITECTURE DESIGN



GENERAL NOTES

1. THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY, AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
2. THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY OR SHOWN ON LEGISLATIVE DRAWING 25-3732 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
3. THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
5. THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
6. RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
7. EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
8. TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
9. CONTRACTOR TO MINIMIZE THE ACTUAL LIMITS OF REMOVALS AND REINSTATEMENT WHEREVER POSSIBLE, AND SHALL MAKE THEIR OWN JUDGEMENT AND ACCOUNT FOR ALL MATERIAL AND LABOUR REQUIRED FOR ADEQUATELY REINSTATING THE AREA TO PRE-CONSTRUCTION CONDITIONS OR BETTER, AND BEAR THE COST OF THE SAME. NO ADDITIONAL PAYMENT WILL BE MADE FOR REINSTATEMENT WORK NOT SHOWN ON THE CONTRACT DRAWING.
10. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
12. DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
13. ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
14. CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
15. ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
16. ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
 - ELECTRICAL SERVICE - HYDRO ONE,
 - GAS SERVICE - ENBRIDGE,
 - TELEPHONE SERVICE - BELL CANADA,
 - TELEVISION SERVICE - ROGERS.
17. INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
18. CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION.
19. ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

AS A DIRECT RESULT FROM CONSTRUCTION.



LEGEND

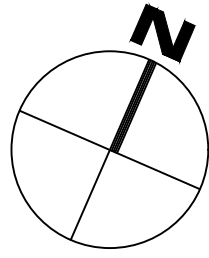
CONCRETE BARRIER CURB	LIMIT OF CONSTRUCTION
CONCRETE WALKWAY	DRAINAGE SWALE
PROPOSED ASPHALT	DRAINAGE DITCH
LANDSCAPING CATCHBASIN	SLOPING AT 3:1 UNLESS SPECIFIED
CATCHBASIN MANHOLE	SURFACE ELEVATION
CATCHBASIN	SWALE ELEVATION
SANITARY SEWER MANHOLE	TOP OF WALL ELEVATION
FIRE HYDRANT	OVERLAND FLOW ROUTE
WATER VALVE	SILT FENCE BARRIER
WATER METER	STRAW BALE CHECK DAM
REMOTE WATER METER	MUD MAT
RETAINING WALL	

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

1	ISSUED FOR SITE PLAN CONTROL	APR. 24, 2025
No.	Revisions	Date
Check and verify all dimensions before proceeding with the work		
Do not scale drawings		



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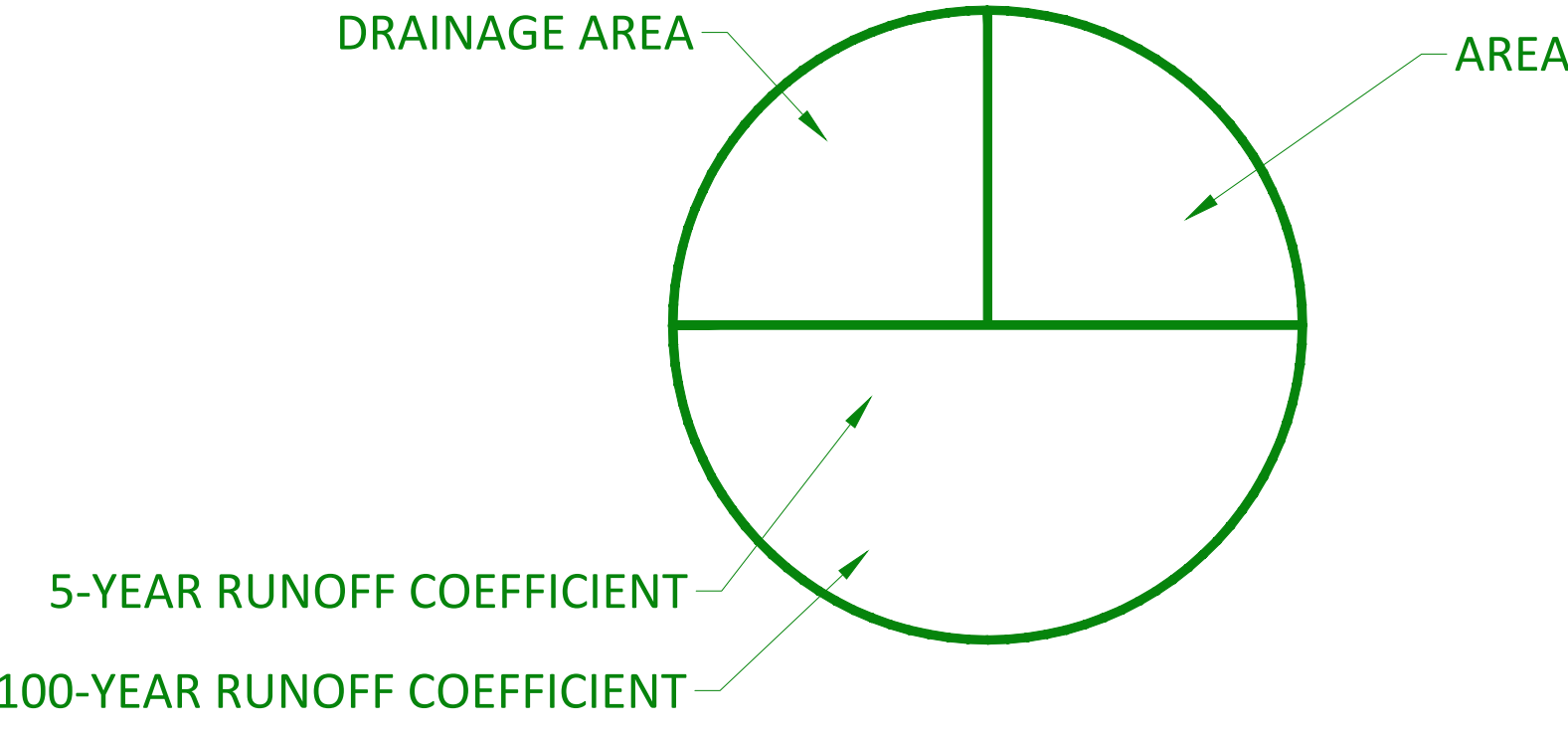
Client: **LEMAY MICHAUD ARCHITECTURE DESIGN**
81 METCALFE STREET
OTTAWA, ON K1P 6K7

Project: **RESIDENTIAL DEVELOPMENT**
3380 JOCKVALE ROAD

Drawing Title: **PRE-DEVELOPMENT DRAINAGE AREA PLAN**

Scale: 1:300	Project Number: CCO-25-1917
Drawn By: FV	Drawing Number: PRE
Checked By: JB	
Designed By: FV	

LEGEND:



D07-12-XX-XXX
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APPENDIX F POST-DEVELOPMENT DRAINAGE PLAN

APPENDIX G STORMWATER MANAGEMENT CALCULATIONS

Tc (min)	Intensity (mm/hr)		
	2-Year	5-Year	100-Year
20	52.0	70.3	120.0
10	76.8	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m ²)	Gravel (m ²)	Pervious Area (m ²)	Average C (2/5-Year)	Average C (100-Year)
A101	0	0	3,566	0.20	0.25
A201	0	0	5,981	0.20	0.25

Phase 1
Phase 2

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	5-Year	100-Year
A101	0.36	0.20	0.25	10	15.23	20.66	44.26
A201	0.60	0.20	0.25	10	25.54	34.65	74.23
Total	0.95				40.77	55.31	118.49

Phase 1
Phase 2

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m ²)	Gravel (m ²)	Pervious Area (m ²)	Average C (2-year)	Average C (100-year)
B101	1,019	0	483	0.67	0.76
B102	604	0	511	0.58	0.66
B103	536	0	360	0.62	0.70
B104	22	0	31	0.49	0.56
B201	596	0	0	0.90	1.00
B202	297	0	0	0.90	1.00
B203	596	0	0	0.90	1.00
B204	326	0	0	0.90	1.00
B205	1,195	0	705	0.64	0.72
B206	220	0	0	0.90	1.00
B207	96	0	244	0.40	0.46
B208	284	105	1,319	0.34	0.41

Ph1 - Parking Lot (Controlled)
Ph1 - Branch St Frontage (Controlled)
Ph1 - Unrestricted Jockvale
Ph1 - Unrestricted Entrance
Ph2 - Townhouse Roof
Ph2 - Bldg Roof
Ph2 - Bldg Roof
Ph2 - Bldg Roof
Ph2 - Parking Lot + Courtyard (Controlled)
Ph2 - Uncontrolled Ramp
Ph2 - Uncontrolled - Branch St
Ph2 - Uncontrolled - Ditch

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2-Year	C 100-Year	Tc (min)	Q (L/s)	
					2-Year	100-Year
B101	0.15	0.67	0.76	10	21.65	56.59
B102	0.11	0.58	0.66	10	13.78	36.30
B103	0.09	0.62	0.70	10	11.84	31.08
B104	0.01	0.49	0.56	10	0.56	1.50
B201	0.06	0.90	1.00	10	11.45	29.57
B202	0.03	0.90	1.00	10	5.71	14.75
B203	0.06	0.90	1.00	10	11.46	29.61
B204	0.03	0.90	1.00	10	6.26	16.17
B205	0.19	0.64	0.72	10	25.97	68.04
B206	0.02	0.90	1.00	10	4.24	10.94
B207	0.03	0.40	0.46	10	2.89	7.79
B208	0.17	0.34	0.41	10	12.42	34.34
Total	0.95				128.22	336.68

Ph1 - Parking Lot (Controlled)
Ph1 - Branch St Frontage (Controlled)
Ph1 - Unrestricted Jockvale
Ph1 - Unrestricted Entrance
Ph2 - Townhouse Roof
Ph2 - Bldg Roof
Ph2 - Bldg Roof
Ph2 - Bldg Roof
Ph2 - Parking Lot + Courtyard (Controlled)
Ph2 - Uncontrolled Ramp
Ph2 - Uncontrolled - Branch St
Ph2 - Uncontrolled - Ditch

Required Restricted Flow to Branch Street Minor System for Phase 1 and Phase 2

Drainage Area	Area (ha)	C 2-Year	Tc (min)	Q (L/s) Ex. 2-Year	Q (L/s/ha) Allowable	Q (L/s) Allowable
Phase 1	0.36	0.20	10	15.23	90	32.10
Phase 2	0.60	0.20	10	25.54	90	53.83
Total	0.95	0.20	10	40.77	90	85.93

Phase 1
Phase 2

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m ³)		Storage Provided (m ³)	
	2-Year	100-Year	2-Year	100-Year	2-Year	100-Year	2-Year	100-Year
B101	21.65	56.59	10.63	12.26	11.2	42.5	11.9	43.6
B102	13.78	36.30	12.09	13.70	1.0	13.6	14.8	14.8
B103	11.84	31.08	11.84	31.08	-	-	-	-
B104	0.56	1.50	0.56	1.50	-	-	-	-
Total (Ph1)	47.83	125.47	35.12	58.54	12.23	56.02	26.67	58.32
B201	11.45	29.57	2.84	5.68	5.90	17.16	6.70	17.87
B202	5.71	14.75	2.65	5.30	1.84	5.67	2.23	5.94
B203	11.46	29.61	5.30	10.60	3.70	11.41	4.47	11.93
B204	6.26	16.17	1.70	3.22	3.05	9.18	3.67	9.23
B205	25.97	68.04	22.72	23.87	1.95	26.51	2.42	28.15
B206	4.24	10.94	4.24	10.94	-	-	-	-
B207	2.89	7.79	2.89	7.79	-	-	-	-
B208	12.42	34.34	12.42	34.34	-	-	-	-
Total (Ph2)	80.39	211.22	54.76	101.74	16.42	69.93	19.49	73.12
Total (Site)	128.22	336.68	89.88	160.28	28.66	125.96	46.16	131.44

Post-Development Flow to Branch Street Minor System

Phase	Restricted Flow (L/s)	
	2-Year	100-Year
1	22.72	25.96
2	39.45	59.61
Total	62.17	85.57

CCO-25-1917 - 3380 Jockvale Road - Storage Requirement - B101

Storage Requirements for Area B101

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2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B101	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	21.65	5.32	16.34	9.80
20	52.0	14.67	5.32	9.35	11.22
30	40.0	11.29	5.32	5.97	10.75
40	32.9	9.26	5.32	3.95	9.48
50	28.0	7.90	5.32	2.59	7.77

Maximum Storage Required 2-year = 11 m³

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B101	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	56.60	6.13	50.47	30.28
20	120.0	38.03	6.13	31.90	38.28
30	91.9	29.13	6.13	23.00	41.39
40	75.1	23.80	6.13	17.67	42.41
50	64.0	20.28	6.13	14.15	42.46
60	55.9	17.72	6.13	11.59	41.71
70	49.8	15.78	6.13	9.65	40.54
80	45.0	14.26	6.13	8.13	39.03
90	41.1	13.03	6.13	6.90	37.24
100	37.9	12.01	6.13	5.88	35.29

Maximum Storage Required 100-year = 42 m³

2-Year Storm Event Storage Summary

Storage Available (m ³) = 11.9	*
Storage Required (m ³) = 11.2	

100-Year Storm Event Storage Summary

Storage Available (m ³) = 43.6	**
Storage Required (m ³) = 42.5	

*Available Storage consists of 10.00 m³ of Underground Storage and 1.91 m³ of storage within the structure. A 50% release rate has been applied to the ICD release rate of 10.63 L/s. There will be no surface ponding during the 2-year event

**Available storage consists of 10.00 m³ underground storage, 1.91 m³ of storage within the structure, and 31.65m³ of surface storage. A 50% release rate has been applied to the ICD release rate of 12.26 L/s.

Restriction provided by Tempest LMF105 ICD.

CCO-25-1917 - 3380 Jockvale Road - Storage Requirement - B102

Storage Requirements for Area B102

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2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B102	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	13.78	12.09	1.69	1.01
20	52.0	9.33	12.09	-2.76	-3.31
30	40.0	7.18	12.09	-4.91	-8.83
40	32.9	5.90	12.09	-6.20	-14.87
50	28.0	5.03	12.09	-7.06	-21.18

Maximum Storage Required 2-year = 1 m³

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B102	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	36.30	13.70	22.60	13.56
20	120.0	24.39	13.70	10.69	12.83
30	91.9	18.68	13.70	4.98	8.97
40	75.1	15.27	13.70	1.57	3.76
50	64.0	13.01	13.70	-0.69	-2.07

Maximum Storage Required 100-year = 14 m³

2-Year Storm Event Storage Summary

Storage Available (m ³) = 14.8	*
Storage Required (m ³) = 1.0	

100-Year Storm Event Storage Summary

Storage Available (m ³) = 14.8	*
Storage Required (m ³) = 13.6	

*Available Storage consists of 0.82m³ surface storage and 13.94 m³ of storage within the clear stone void space. Storage provided up to lowest spill point elevation (92.58). Restriction provided by Tempest LMF105 ICD

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B201

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2-Year Storm Event

Tc (min)	I (mm/hr)	B201 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	11.45	2.84	8.61	5.16
20	52.0	7.75	2.84	4.92	5.90
30	40.0	5.97	2.84	3.13	5.63
40	32.9	4.90	2.84	2.06	4.94
50	28.0	4.18	2.84	1.34	4.02
60	24.6	3.66	2.84	0.82	2.96
70	21.9	3.27	2.84	0.43	1.79
80	19.8	2.96	2.84	0.12	0.56

Maximum Storage Required 2-Year (m³) = 5.90

100-Year Storm Event

Tc (min)	I (mm/hr)	B201 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	29.57	5.68	23.89	14.33
20	120.0	19.86	5.68	14.18	17.02
30	91.9	15.21	5.68	9.53	17.16
40	75.1	12.44	5.68	6.77	16.24
50	64.0	10.59	5.68	4.91	14.74
60	55.9	9.26	5.68	3.58	12.88
70	49.8	8.24	5.68	2.57	10.78
80	45.0	7.45	5.68	1.77	8.51

Maximum Storage Required 100-Year (m³) = 17.16

Storage Parameters

Roof Area (m ²)	596
Usable Roof Area (%)	75%
Usable Roof Area (m ²)	446.75

2-Year Storage Summary

Storage Available (m ³)	6.70
2=Year Storage Required (m ³)	5.90
Ponding Depth (m)	0.045

100-Year Storage Summary

Storage Available (m ³)	17.87
100-Year Storage Required (m ³)	17.16
Ponding Depth (m)	0.090

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B201

Roof Drain Flow (B201)

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Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	5	
Roof Drain Position	Open	
	2-Year	100-Year
Rooftop Storage Available (m ³)	6.70	17.87
Rooftop Storage Required (m ³)	5.90	17.16
Storage Depth (m)	0.045	0.090
Flow (Per Roof Drain) (L/s)	0.57	1.14
Total Flow (L/s)	2.84	5.68

Flow Rate Vs. Build-Up (Individual Drain)	
Depth (mm)	Flow (L/s)
0	0.00
5	0.06
10	0.13
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69
60	0.76
65	0.82
70	0.88
75	0.95
80	1.01
85	1.07
90	1.14
95	1.20
100	1.26
105	1.32
110	1.39
115	1.45
120	1.51
125	1.58
130	1.64
135	1.70
140	1.77
145	1.83
150	1.89

		Roof Drain Flow		
		Individual Flow (l/s)	Storage Depth (mm)	Cumulative Flow (l/s)
2-Year		0.00	0	0.00
		0.06	5	0.32
		0.13	10	0.63
		0.19	15	0.95
		0.25	20	1.26
		0.32	25	1.58
		0.38	30	1.89
		0.44	35	2.21
		0.50	40	2.52
		0.57	45	2.84
		0.63	50	3.15
		0.69	55	3.47
		0.76	60	3.79
		0.82	65	4.10
		0.88	70	4.42
100-Year		0.95	75	4.73
		1.01	80	5.05
		1.07	85	5.36
		1.14	90	5.68
		1.20	95	5.99
		1.26	100	6.31
		1.32	105	6.62
		1.39	110	6.94
		1.45	115	7.26
		1.51	120	7.57
		1.58	125	7.89
		1.64	130	8.20
		1.70	135	8.52
		1.77	140	8.83
		1.83	145	9.15
	1.89	150	9.46	

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B202

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2-Year Storm Event

Tc (min)	I (mm/hr)	B202 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	5.71	2.65	3.06	1.84
20	52.0	3.87	2.65	1.22	1.46
30	40.0	2.98	2.65	0.33	0.59
40	32.9	2.44	2.65	-0.21	-0.50
50	28.0	2.08	2.65	-0.57	-1.70
60	24.6	1.83	2.65	-0.82	-2.97
70	21.9	1.63	2.65	-1.02	-4.29
80	19.8	1.47	2.65	-1.18	-5.64

Maximum Storage Required 2-Year (m³) = 1.84

100-Year Storm Event

Tc (min)	I (mm/hr)	B202 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	14.75	5.30	9.45	5.67
20	120.0	9.91	5.30	4.61	5.53
30	91.9	7.59	5.30	2.29	4.12
40	75.1	6.21	5.30	0.91	2.17
50	64.0	5.28	5.30	-0.02	-0.05
60	55.9	4.62	5.30	-0.68	-2.46
70	49.8	4.11	5.30	-1.19	-4.99
80	45.0	3.72	5.30	-1.58	-7.60

Maximum Storage Required 100-Year (m³) = 5.67

Storage Parameters

Roof Area (m ²)	297
Usable Roof Area (%)	75%
Usable Roof Area (m ²)	222.79

2-Year Storage Summary

Storage Available (m ³)	2.23
2-Year Storage Required (m ³)	1.84
Ponding Depth (m)	0.030

100-Year Storage Summary

Storage Available (m ³)	5.94
100-Year Storage Required (m ³)	5.67
Ponding Depth (m)	0.060

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B202

Roof Drain Flow (B202)

7 of 13

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	7	
Roof Drain Position	Open	
	2-Year	100-Year
Rooftop Storage Available (m ³)	2.23	5.94
Rooftop Storage Required (m ³)	1.84	5.67
Storage Depth (m)	0.030	0.060
Flow (Per Roof Drain) (L/s)	0.38	0.76
Total Flow (L/s)	2.65	5.30

Flow Rate Vs. Build-Up (Individual Drain)	
Depth (mm)	Flow (L/s)
0	0.00
5	0.06
10	0.13
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69
60	0.76
65	0.82
70	0.88
75	0.95
80	1.01
85	1.07
90	1.14
95	1.20
100	1.26
105	1.32
110	1.39
115	1.45
120	1.51
125	1.58
130	1.64
135	1.70
140	1.77
145	1.83
150	1.89

	Roof Drain Flow		
	Individual Flow (l/s)	Storage Depth (mm)	Cumulative Flow (l/s)
2-Year	0.00	0	0.00
	0.06	5	0.44
	0.13	10	0.88
	0.19	15	1.32
	0.25	20	1.77
	0.32	25	2.21
	0.38	30	2.65
	0.44	35	3.09
	0.50	40	3.53
	0.57	45	3.97
100-Year	0.63	50	4.42
	0.69	55	4.86
	0.76	60	5.30
	0.82	65	5.74
	0.88	70	6.18
	0.95	75	6.62
	1.01	80	7.07
	1.07	85	7.51
	1.14	90	7.95
	1.20	95	8.39
	1.26	100	8.83
	1.32	105	9.27
	1.39	110	9.72
	1.45	115	10.16
	1.51	120	10.60
	1.58	125	11.04
	1.64	130	11.48
	1.70	135	11.92
	1.77	140	12.37
	1.83	145	12.81
	1.89	150	13.25

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B203

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2-Year Storm Event

Tc (min)	I (mm/hr)	B203 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	11.46	5.30	6.16	3.70
20	52.0	7.77	5.30	2.47	2.96
30	40.0	5.98	5.30	0.68	1.22
40	32.9	4.90	5.30	-0.39	-0.95
50	28.0	4.18	5.30	-1.11	-3.34
60	24.6	3.67	5.30	-1.63	-5.88
70	21.9	3.27	5.30	-2.03	-8.52
80	19.8	2.96	5.30	-2.34	-11.23

Maximum Storage Required 2-Year (m³) = 3.70

100-Year Storm Event

Tc (min)	I (mm/hr)	B203 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	29.61	10.60	19.01	11.41
20	120.0	19.89	10.60	9.29	11.15
30	91.9	15.23	10.60	4.63	8.34
40	75.1	12.46	10.60	1.86	4.47
50	64.0	10.61	10.60	0.01	0.02
60	55.9	9.27	10.60	-1.33	-4.79
70	49.8	8.26	10.60	-2.34	-9.84
80	45.0	7.46	10.60	-3.14	-15.07

Maximum Storage Required 100-Year (m³) = 11.41

Storage Parameters

Roof Area (m ²)	596
Usable Roof Area (%)	75%
Usable Roof Area (m ²)	447.37

2-Year Storage Summary

Storage Available (m ³)	4.47
2-Year Storage Required (m ³)	3.70
Ponding Depth (m)	0.030

100-Year Storage Summary

Storage Available (m ³)	11.93
100-Year Storage Required (m ³)	11.41
Ponding Depth (m)	0.060

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B203

Roof Drain Flow (B203)

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Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	14	
Roof Drain Position	Open	
	2-Year	100-Year
Rooftop Storage Available (m ³)	4.47	11.93
Rooftop Storage Required (m ³)	3.70	11.41
Storage Depth (m)	0.030	0.060
Flow (Per Roof Drain) (L/s)	0.38	0.76
Total Flow (L/s)	5.30	10.60

Flow Rate Vs. Build-Up (Individual Drain)	
Depth (mm)	Flow (L/s)
0	0.00
5	0.06
10	0.13
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69
60	0.76
65	0.82
70	0.88
75	0.95
80	1.01
85	1.07
90	1.14
95	1.20
100	1.26
105	1.32
110	1.39
115	1.45
120	1.51
125	1.58
130	1.64
135	1.70
140	1.77
145	1.83
150	1.89

	Roof Drain Flow		
	Individual Flow (l/s)	Storage Depth (mm)	Cumulative Flow (l/s)
2-Year	0.00	0	0.00
	0.06	5	0.88
	0.13	10	1.77
	0.19	15	2.65
	0.25	20	3.53
	0.32	25	4.42
	0.38	30	5.30
	0.44	35	6.18
	0.50	40	7.07
	0.57	45	7.95
100-Year	0.63	50	8.83
	0.69	55	9.72
	0.76	60	10.60
	0.82	65	11.48
	0.88	70	12.37
	0.95	75	13.25
	1.01	80	14.13
	1.07	85	15.02
	1.14	90	15.90
	1.20	95	16.78
	1.26	100	17.67
	1.32	105	18.55
	1.39	110	19.43
	1.45	115	20.32
	1.51	120	21.20
	1.58	125	22.08
	1.64	130	22.96
	1.70	135	23.85
	1.77	140	24.73
	1.83	145	25.61
	1.89	150	26.50

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B204

10 of 13

2-Year Storm Event

Tc (min)	I (mm/hr)	B204 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	6.26	1.70	4.56	2.73
20	52.0	4.24	1.70	2.54	3.05
30	40.0	3.26	1.70	1.56	2.81
40	32.9	2.68	1.70	0.98	2.34
50	28.0	2.29	1.70	0.58	1.75
60	24.6	2.00	1.70	0.30	1.07
70	21.9	1.79	1.70	0.08	0.35
80	19.8	1.62	1.70	-0.09	-0.42

Maximum Storage Required 2-Year (m³) = 3.05

100-Year Storm Event

Tc (min)	I (mm/hr)	B204 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	16.17	3.22	12.95	7.77
20	120.0	10.86	3.22	7.65	9.18
30	91.9	8.32	3.22	5.10	9.18
40	75.1	6.81	3.22	3.59	8.61
50	64.0	5.79	3.22	2.57	7.72
60	55.9	5.06	3.22	1.84	6.64
70	49.8	4.51	3.22	1.29	5.43
80	45.0	4.07	3.22	0.86	4.11

Maximum Storage Required 100-Year (m³) = 9.18

Storage Parameters

Roof Area (m ²)	326
Usable Roof Area (%)	75%
Usable Roof Area (m ²)	244.34

2-Year Storage Summary

Storage Available (m ³)	3.67
2=Year Storage Required (m ³)	3.05
Ponding Depth (m)	0.045

100-Year Storage Summary

Storage Available (m ³)	9.23
100-Year Storage Required (m ³)	9.18
Ponding Depth (m)	0.085

CCO-25-1917 - 3380 Jockvale Road - Roof Storage - B204

Roof Drain Flow (B204)

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Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	3	
Roof Drain Position	Open	
	2-Year	100-Year
Rooftop Storage Available (m ³)	3.67	9.23
Rooftop Storage Required (m ³)	3.05	9.18
Storage Depth (m)	0.045	0.085
Flow (Per Roof Drain) (L/s)	0.57	1.07
Total Flow (L/s)	1.70	3.22

Flow Rate Vs. Build-Up (Individual Drain)	
Depth (mm)	Flow (L/s)
0	0.00
5	0.06
10	0.13
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69
60	0.76
65	0.82
70	0.88
75	0.95
80	1.01
85	1.07
90	1.14
95	1.20
100	1.26
105	1.32
110	1.39
115	1.45
120	1.51
125	1.58
130	1.64
135	1.70
140	1.77
145	1.83
150	1.89

	Roof Drain Flow		
	Individual Flow (l/s)	Storage Depth (mm)	Cumulative Flow (l/s)
2-Year	0.00	0	0.00
	0.06	5	0.19
	0.13	10	0.38
	0.19	15	0.57
	0.25	20	0.76
	0.32	25	0.95
	0.38	30	1.14
	0.44	35	1.32
	0.50	40	1.51
	0.57	45	1.70
	0.63	50	1.89
	0.69	55	2.08
	0.76	60	2.27
	0.82	65	2.46
	0.88	70	2.65
100-Year	0.95	75	2.84
	1.01	80	3.03
	1.07	85	3.22
	1.14	90	3.41
	1.20	95	3.60
	1.26	100	3.79
	1.32	105	3.97
	1.39	110	4.16
	1.45	115	4.35
	1.51	120	4.54
	1.58	125	4.73
	1.64	130	4.92
	1.70	135	5.11
	1.77	140	5.30
	1.83	145	5.49
	1.89	150	5.68

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

CCO-25-1917 - 3380 Jockvale Road - Storage Requirement - B205

Storage Requirements for Area B205

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2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B205	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	25.97	22.72	3.24	1.95
20	52.0	17.59	22.72	-5.13	-6.16
30	40.0	13.54	22.72	-9.18	-16.53
40	32.9	11.11	22.72	-11.61	-27.86
50	28.0	9.48	22.72	-13.24	-39.72

Maximum Storage Required 2-year = 1.9 m³

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B205	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	178.6	68.06	23.87	44.19	26.51
20	120.0	45.73	23.87	21.86	26.23
30	91.9	35.02	23.87	11.15	20.07
40	75.1	28.62	23.87	4.75	11.39
50	64.0	24.39	23.87	0.52	1.55
60	55.9	21.30	23.87	-2.57	-9.25
70	49.8	18.98	23.87	-4.89	-20.56
80	45.0	17.15	23.87	-6.72	-32.27
90	41.1	15.66	23.87	-8.21	-44.33
100	37.9	14.44	23.87	-9.43	-56.57

Maximum Storage Required 100-year = 27 m³

2-Year Storm Event Storage Summary

Storage Available (m³) = 2.4

Storage Required (m³) = 1.9

100-Year Storm Event Storage Summary

Storage Available (m³) = 28.2 *

Storage Required (m³) = 26.5

CCO-25-1917 - 3380 Jockvale Road - Orifice Sizing - B205

For Orifice Flow, C= 0.61
For Weir Flow, C= 1.84

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	Orifice 1	Orifice 2	Weir 1	Weir 2
invert elevation	91.12	X	X	X
center of crest elevation	91.17	X	X	X
orifice width / weir length	102 mm	X	X	X
weir height		X	X	X
orifice area (m ²)	0.008	X	x	X

Elevation Discharge Table - Storm Routing - Area B205

92	Orifice 1		Orifice 2		Weir 1		Weir 2		Total
	H [m]	Q [m ³ /s]	H [m]	Q [m ³ /s]	H [m]	Q [m ³ /s]	H [m]	Q [m ³ /s]	
92.00	0.83	0.0201	x	x	x	x	x	x	20.10
92.01	0.84	0.0202	x	x	x	x	x	x	20.22
92.02	0.85	0.0203	x	x	x	x	x	x	20.34
92.03	0.86	0.0205	x	x	x	x	x	x	20.46
92.04	0.87	0.0206	x	x	x	x	x	x	20.58
92.05	0.88	0.0207	x	x	x	x	x	x	20.70
92.06	0.89	0.0208	x	x	x	x	x	x	20.82
92.07	0.90	0.0209	x	x	x	x	x	x	20.93
92.08	0.91	0.0211	x	x	x	x	x	x	21.05
92.09	0.92	0.0212	x	x	x	x	x	x	21.17
92.10	0.93	0.0213	x	x	x	x	x	x	21.28
92.11	0.94	0.0214	x	x	x	x	x	x	21.39
92.12	0.95	0.0215	x	x	x	x	x	x	21.51
92.13	0.96	0.0216	x	x	x	x	x	x	21.62
92.14	0.97	0.0217	x	x	x	x	x	x	21.73
92.15	0.98	0.0218	x	x	x	x	x	x	21.85
92.16	0.99	0.0220	x	x	x	x	x	x	21.96
92.17	1.00	0.0221	x	x	x	x	x	x	22.07
92.18	1.01	0.0222	x	x	x	x	x	x	22.18
92.19	1.02	0.0223	x	x	x	x	x	x	22.29
92.20	1.03	0.0224	x	x	x	x	x	x	22.40
92.21	1.04	0.0225	x	x	x	x	x	x	22.50
92.22	1.05	0.0226	x	x	x	x	x	x	22.61
92.23	1.06	0.0227	x	x	x	x	x	x	22.72
92.24	1.07	0.0228	x	x	x	x	x	x	22.83
92.25	1.08	0.0229	x	x	x	x	x	x	22.93
92.26	1.09	0.0230	x	x	x	x	x	x	23.04
92.27	1.10	0.0231	x	x	x	x	x	x	23.15
92.28	1.11	0.0233	x	x	x	x	x	x	23.25
92.29	1.12	0.0234	x	x	x	x	x	x	23.36
92.30	1.13	0.0235	x	x	x	x	x	x	23.46
92.31	1.14	0.0236	x	x	x	x	x	x	23.56
92.32	1.15	0.0237	x	x	x	x	x	x	23.67
92.33	1.16	0.0238	x	x	x	x	x	x	23.77
92.34	1.17	0.0239	x	x	x	x	x	x	23.87
92.35	1.18	0.0240	x	x	x	x	x	x	23.97
92.36	1.19	0.0241	x	x	x	x	x	x	24.07
92.37	1.20	0.0242	x	x	x	x	x	x	24.18

2-Year

100-Year

- Notes:
1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
 2. Orifice Equation: $Q = cA(2gh)^{1/2}$
 3. Weir Equation: $Q = CLH^{3/2}$
 4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
 5. H for orifice equations is depth of water above the centroid of the orifice.
 6. H for weir equations is depth of water above the weir crest.

STORM SEWER DESIGN SHEET

PROJECT: CCO-25-1917
LOCATION: 3380 Jockvale Road
CLIENT: Lemay Michaud



LOCATION				CONTRIBUTING AREA (ha)				RATIONAL DESIGN FLOW										SEWER DATA									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Area	AREA ID	FROM MH	TO MH	C-VALUE	AREA	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)	
																					DIA	W	H			(L/s)	(%)
Phase 2 Courtyard	B205	LSCB10	CICB9	0.64	0.19	0.12	0.12	10.00	0.21	10.21	76.81	104.19		25.96	35.22		-	25.96	43.87	10.89	250			0.50	0.866	17.90	40.81%
		CICB9	CBMH8	-	-	-	0.12	10.21	0.24	10.45	76.01	103.10		25.69	34.85		-	25.69	62.04	17.32	250			1.00	1.224	36.34	58.58%
		CBMH8	MH12	-	-	-	0.12	10.45	0.16	10.61	75.14	101.90		25.40	34.45		22.72	25.40	94.90	18.37	250			2.34	1.873	69.50	73.24%
Phase 2 Apartment Building Totals	B202 (Roof)	BLDG	MH12	0.90	0.03	0.03	0.03	10.00	-	-	76.81	104.19		5.71	7.74		2.65	5.71	-	-	-			-	-	-	-
	B203 (Roof)	BLDG	MH12	0.90	0.06	0.05	0.05	10.00	-	-	76.81	104.19		11.45	15.54		5.30	11.45	-	-	-			-	-	-	-
	B204 (Roof)	BLDG	MH12	0.90	0.03	0.03	0.03	10.00	-	-	76.81	104.19		6.26	8.50		1.70	6.26	-	-	-			-	-	-	-
	B206 (Ramp)	BLDG	MH12	0.90	0.02	0.02	0.02	10.00	-	-	76.81	104.19		4.23	5.74		-	4.23	-	-	-			-	-	-	-
Ph2 Apt Bldg Service	B202-B206	BLDG	MH12	-	-		0.13	10.00	0.08	10.08	76.81	104.19		27.65	37.51		22.33	27.65	87.74	8.12	250			2.00	1.731	60.08	68.48%
		MH12	EX. MH3				0.25	10.61	0.25	10.86	74.54	101.08		52.04	70.56		45.05	52.04	100.88	20.95	300			1.00	1.383	48.84	48.42%
Phase 1 to Parking Lot	B101	EX. CBMH4	EX. MH3	0.67	0.15	0.10	0.10	10.00	0.08	10.08	76.81	104.19		21.76	29.52		10.63	21.76	48.39	7.15	200			2.00	1.492	26.63	55.04%
Parking lot to Outlet		EX. MH3	EX. MH2	-	-	-	0.35	10.86	0.21	11.08	73.65	99.85		72.28	97.99		55.68	72.28	100.88	17.75	300			1.00	1.383	28.61	28.36%
		EX. MH2	EX. 675mm STM				0.35	11.08	0.09	11.17	72.91	98.84		71.55	96.99		55.68	71.55	258.68	12.68	375			2.00	2.269	187.13	72.34%
Townhouse Block	B201	BLDG	EX. MH7	0.90	0.06	0.05	0.05	10.00	0.03	10.03	76.81	104.19		11.45	15.54		2.84	11.45	48.39	2.50	200			2.00	1.492	36.94	76.33%
		EX. MH7	EX. 675mm STM				0.05	10.03	0.20	10.23	76.70	104.05		11.44	15.52		2.84	11.44	200.65	10.97	525			0.20	0.898	189.21	94.30%
Definitions: Q = 2.78CiA, where: Q = Peak Flow in Litres per Second (L/s) A = Area in Hectares (ha) i = Rainfall intensity in millimeters per hour (mm/hr) [i = 998.071 / (TC+6.053)^0.814] 5 YEAR [i = 1174.184 / (TC+6.014)^0.816] 10 YEAR [i = 1735.688 / (TC+6.014)^0.820] 100 YEAR				Notes: 1. Mannings coefficient (n) = 0.013				Designed: FV						No.	Revision							Date					
														1.	Revision 1							2025.04.24					
														2.	Revision 2							2025.11.28					
								Checked: AG						3.	Revision 3							2026.03.11					
								Project No.: CCO-25-1917						Date: 2026.03.11							Sheet No: 1 of 1						

CCO-25-1917 - 3380 Jockvale Road - Ditch Calculations

Ditch Capacity Calculations

1 of 1

Runoff Calculations - Upstream of 600mm Culvert

Ditch	Tc (min)	I (mm/hr) (5- Year)	I (mm/hr) (100-Year)	Area Tributary To Ditch (ha)	Average C (5-Year)	Average C (100-Year)	Runoff (m³/s) (5-Year)	Runoff (m³/s) (100-Year)
U/S of Culvert	10	104.2	178.6	0.39	0.56	0.64	0.064	0.125

Manning's Equation For Channels:

$$Q = \frac{k}{n} A \frac{A^{2/3}}{P_w} S^{1/2}$$

Where

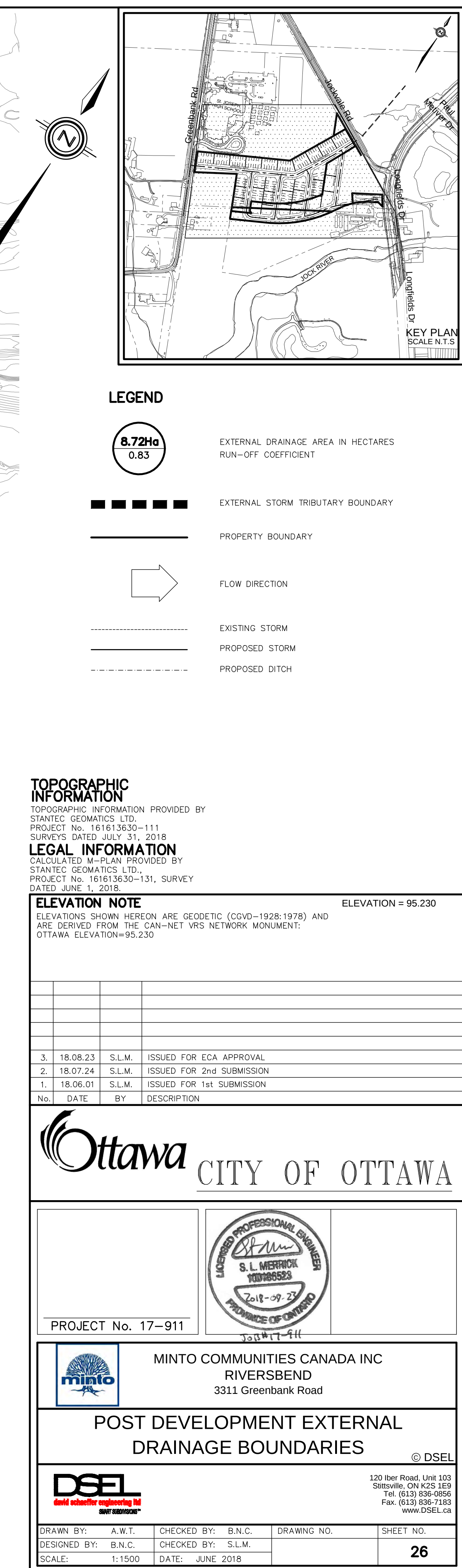
- Q= Volumetric Flow Rate [m³/s]
- k= Dimensionless Unit Conversion Factor [1 for Metric Units]
- n= Manning Roughness Coefficient (Rock channel, Jagged and irregular selected)
- A= Cross sectional Flow Area [m²]
- Pw= Wetted Perimeter [m]
- S= Stream Slope [dimensionless]

Capacity Calculations

Swale	Channel Material	Manning's n Value	Max Cross- Sectional Area (m²)	Max Wetted Perimeter (m)	Slope (m/m)	Maximum Capacity (m³/s)	Occupied Capacity (5-Year)	Occupied Capacity (100-Year)
U/S of Culvert	Rip-Rap	0.040	0.71	3.14	0.006	0.50	12.7%	24.7%

Velocity Calculations

Swale	Cross-Sectional Area at Flow Depth (m²)		Runoff (m³/s)		Flow Velocity (m/s)	
	(5-Year)	(100-Year)	(5-Year)	(100-Year)	(5-Year)	(100-Year)
U/S of Culvert	0.15	0.25	0.064	0.125	0.427	0.500





Adjustable Accutrol Weir

Tag: _____

Adjustable Flow Control for Roof Drains

ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

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

Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

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

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

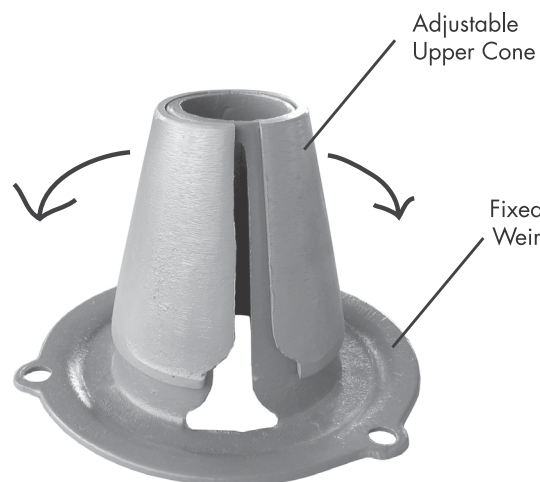
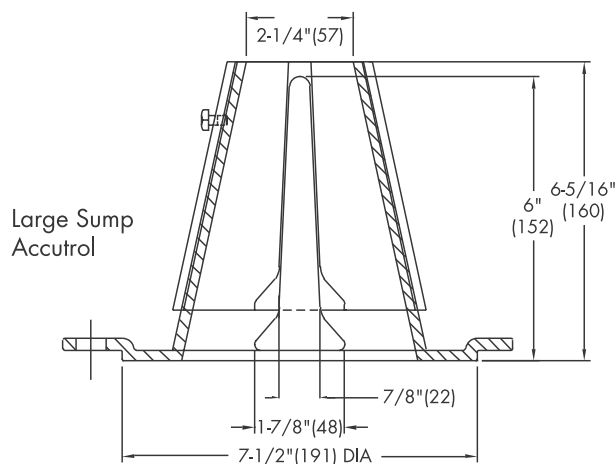


TABLE 1. Adjustable Accutrol Flow Rate Settings

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

Job Name _____

Contractor _____

Job Location _____

Contractor's P.O. No. _____

Engineer _____

Representative _____

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