PROPOSED FIVE-STOREY MIXED-USE BUILDING

DEVELOPMENT SITE

LOT 2

R-PLAN M-62

667 BANK STREET

CITY OF OTTAWA

SERVICEABILITY REPORT

REPORT R-816-41A (Rev. 1)

AUGUST 2016

T.L. MAK ENGINEERING CONSULTANTS LTD.

JULY 2016

REFERENCE FILE NUMBER 816-41

Introduction

The developer is proposing to re-develop the existing site described as Lot 2 Registered Plan M-62 by constructing a five(5)-storey mixed-use building on Bank Street. The ground floor of this building will be dedicated to commercial use consisting of three(3) retail units totalling approximately 2386.0ft^2. Floors 2, 3, 4, and 5 will be residential units consisting of 12 apartments and two bachelors totalling approximately 8865.0ft^2.

The municipal address of the property is referenced as 667 Bank Street. The site is located on the east side of Bank Street and situated at the southeast corner of Bank Street and Clemow Avenue.

The size of the development property under consideration is ±0.045 hectares. In addition to the five(5)-storey mixed-use building, the other development features will consist of underground parking with a positive slope laneway from the building garage door to the Clemow Avenue roadway, interlock pavers along the Bank Street portion of the site, landscape areas, etc., to meet the City of Ottawa's site-plan requirements.

This report will provide the City of Ottawa with our serviceability brief to address the proposed servicing scheme for this site.

Existing Site Conditions and Servicing

The said property is vacant and used as a vehicular parking lot. The site is a hard (impermeable) surface covered with gravel/rough asphalt. The terrain of the land slopes gently across the site from an easterly to westerly direction.

As for the availability of underground services, there are existing municipal services along Bank Street in front of this property consisting of the following main sizes: a 300mm diameter water-main and a 825mm x 1200mm combined sewer.

Also along Clemow Avenue, the existing municipal services available are a 200mm diameter water-main, and a 225mm diameter combined sewer.

Proposed Mixed-Use Building Site

One vehicle entrance located at the east limit of the said property is proposed to provide access to and exit from the one-level underground parking garage for this mixed-use building.

A. Water Supply

   From discussions with the Owner's Architects, the building will be installed with a sprinkler system. Consequently, the building is proposed to be serviced via a 150mm diameter water service and sized to minimize head losses to the building from the main.

   Based on the City of Ottawa's current boundary conditions provided from the email dated July 7, 2016, for hydraulic analysis at 667 Bank Street (refer to Appendix A) in which the five(5)-storey

building development is being serviced from an existing 200mm diameter water-main on Clemow Avenue, the calculated boundary conditions (HGL) are as follows:

- Minimum HGL=104.6m
- Maximum HGL=116.8m
- MaxDay (0.266L/s) + FireFlow (150L/s)=105.8m

The ground elevation along this street at the location of the connection is approximately 68.2m.

The City has indicated that for the requested Fire Underwriter Survey (FUS) fire flow of 150L/s (refer to Appendix B), the resulting hydraulic grade-line is 105.8m. This corresponds to a residual pressure of 437kPa (63psi) and is well above the minimum residual pressure requirement of 140kPa (20psi).

With respect to the peak hour flow conditions, the resulting boundary condition hydraulic grade-line of 104.6m corresponds to a peak hour pressure of 357kPa (52psi). With respect to the maximum pressure check, the resulting boundary condition hydraulic grade-line of 116.8m corresponds to a pressure of 476kPa (69psi). Therefore, the minimum and maximum pressures are anticipated to be within the desired normal operating range of 345kPa (50psi) to 552kPa (80psi) as per the City of Ottawa 2010 Water Distribution Design Guidelines.

The sprinkler system will have to be designed by the owner's mechanical engineers accordingly, based on available hydraulics and booster-pumped to meet the pressure requirements of the five(5)-storey building's water demands.

B. Sanitary Flow

Peak sanitary flow for this building consisting of three(3) retail units and 14 apartments is estimated at Q=0.15L/s with an infiltration rate of 0.01L/s. This flow will enter the existing 825mm x 1200mm diameter combined sewer on Bank Street via the proposed 150mm diameter PVC sanitary service lateral at 1% slope (minimum) from the five(5)-storey mixed-use building.

The existing site's peak sanitary flow for a 450.21m^2 commercial lot is Q=0.05L/s with an infiltration rate of 0.01L/s. The net increase in flow from this proposed development is 0.10L/s into the existing 825mm x 1200mm combined sewer.

To permit the installation of a monitoring manhole for this site on private property, the sanitary lateral (150mm diameter) is proposed to outlet to the existing 825mm x 1200mm combined sewer.

C. Storm Flow

The storm-water outlet for roof drains at this proposed building will be the existing 225mm diameter combined sewer located on Clemow Avenue. The storm water from the five(5) flat

rooftops at various levels of the building will be drained by five(5) proposed controlled roof drains specified at a flow rate of 0.63L/s per drain.

Based on the current site plan from the owner's architect, the average post-development runoff coefficient is estimated at C=0.87 and A=0.045ha.

An estimation of the pre-development flow condition was carried out using the criteria set out by the City of Ottawa.

The pre-development two(2)-year flow rate for this site is estimated to be approximately Q=3.86L/s using pre-development C=0.4 runoff value and t_c=10 minutes, which is used by the City of Ottawa for sewer design for this development area with combined sewers.

Based on the allowable two(2)-year flow of 3.86L/s from this site and the storm drainage system layout as shown on the Proposed Grading, Servicing, and Storm-water Management Plan (Dwg. 816-41 G-1), we estimated that the post-development 100-year flow is 5.35L/s, where 3.15L/s of controlled flow is from the building, and 2.2L/s is uncontrolled flow from the site.

To control the storm runoff release rate up to the 100-year event off site to an established allowable flow rate of 3.86L/s, it is proposed that each of the five(5) flat roof areas, a drain be installed and sized for a release rate of 0.63L/s. Therefore, the controlled release rate off site is 3.15L/s from the building's rooftops.

During the five(5)-year event, the required rooftop storage volume is 4.56m^3, and the available storage volume is 5.28m^3 at a ponding depth of 0.11m at Roof Drains 1 and 2. The ponding depth at Roof Drain 3 is 0.1m, and the ponding depth at Roof Drains 4 and 5 is 0.07m. At the perimeter of the five(5) roof areas, the ponding is 0mm.

During the 100-year event, the required rooftop storage volume is 11.99m^3, and the available storage volume is 16.65m^3 at a ponding depth of 0.15m at Roof Drains 1, 2, and 3. The ponding depth at Roof Drains 4 and 5 is 0.1m. At the perimeter of the five(5) roof areas, the ponding depth is 0mm.

Refer to the Proposed Servicing and Storm-water Management Plan Dwg. 816-41 G-1 for details.

For controlling the five(5)-year and up to the 100-year storm event, a controlled roof drain shall be installed at each of the designated flat rooftop areas having a release rate of 0.63L/s at the locations depicted (on Dwg. 816-41 G-1) that will provide a controlled flow rate of 3.15L/s off site. The 100-year flow from the uncontrolled drainage area is estimated at 2.2L/s. The 100-year flow into the 225mm diameter combined sewer on Clemow Avenue is estimated at 5.35L/s, which is approximately 1.49L/s greater than the established allowable flow rate of 3.86L/s for this development site.

The building weeping-tile drainage will be connected into the proposed 150mm diameter PVC storm lateral, which will outlet only the weeping-tile water from this building into the existing 825mm x 1200mm diameter combined sewer located on Bank Street, given the existing sewer depth available to drain the building weeping-tile water by gravity flow without pumping systems.

Erosion and Sediment Control

The contractor shall implement Best Management Practices to provide for protection of the receiving storm sewer during construction activities. These practices are required to ensure no sediment and/or associated pollutants are released to the receiving watercourse. These practices include installation of a silt fence barrier (as per OPSD 219.110 and associated specifications) along Bank Street and all other areas that sheet drain off site. Maintenance hole sediment barriers to be AMOCO 4555 non-woven geotextile or approved equivalent.

PREPARED BY T.L. MAK ENGINEERING CONSULTANTS LTD.

TONY L. MAK, P.ENG.

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CITY OF OTTAWA

APPENDIX A

CITY OF OTTAWA

WATER DATA BOUNDARY CONDITIONS

JULY 7, 2016

From: Buchanan, Richard
To: "tlmakecl@bellnet.ca";
Subject: FW: 667 Bank Street
Date: Thursday, July 07, 2016 1:02:56 PM
Attachments: 667 Bank June 2016.pdf

Tony

The following are boundary conditions, HGL, for hydraulic analysis at 667 Bank St (zone 1W) assumed to be connected to the 203mm on Clemow (see attached PDF for location).

Minimum HGL = 104.6m

Maximum HGL = 116.8m

MaxDay + FireFlow (150 L/s) = 105.8m

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

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

From: TL Mak [mailto:tlmakecl@bellnet.ca]
Sent: June 09, 2016 1:42 PM
To: Mottalib, Abdul
Subject: 667 Bank Street

Hi Abdul,

The following is the information provided regarding our request for a boundary condition for 667 Bank Street in the City of Ottawa.

A mixed use building at 667 Bank Street is proposed to be a 5-storey building. The ground floor will be dedicated to commercial use (2,386 sq ft) and floors 2, 3, 4, and 5 will be apartment units (8,865 sq ft). The building is to be connected to the 203mm diameter watermain along Clemow Avenue.

The daily demands were calculated using the City of Ottawa's Water Design Guidelines. The residential portion of the building contains 1-bedroom and 2-bedroom apartments with an average of 1.8 persons per unit (PPU) and a residential consumption rate of 350 L/cap/d. Additionally, a consumption rate of 28,000 L/ha/d will be used for the commercial portion of the building. Estimated water demands are shown in Tables 1 and 2.

Table 1: Estimated Residential Water Demand

Number of Units	PPU	Consumption	BSDY		MXDY		PKHR	
		L/cap/d	L/d	L/s	L/d	L/s	L/d	L/s
14	1.8	350	8,820	0.102	22,050	0.255	48,510	0.561

Table 2: Estimated Commercial Water Demand

Area	Consumption	BSDY		MXDY		PKHR	
sq.ft	L/ha/d	L/d	L/s	L/d	L/s	L/d	L/s
2,386	28,000	621	0.007	931	0.011	1,676	0.019

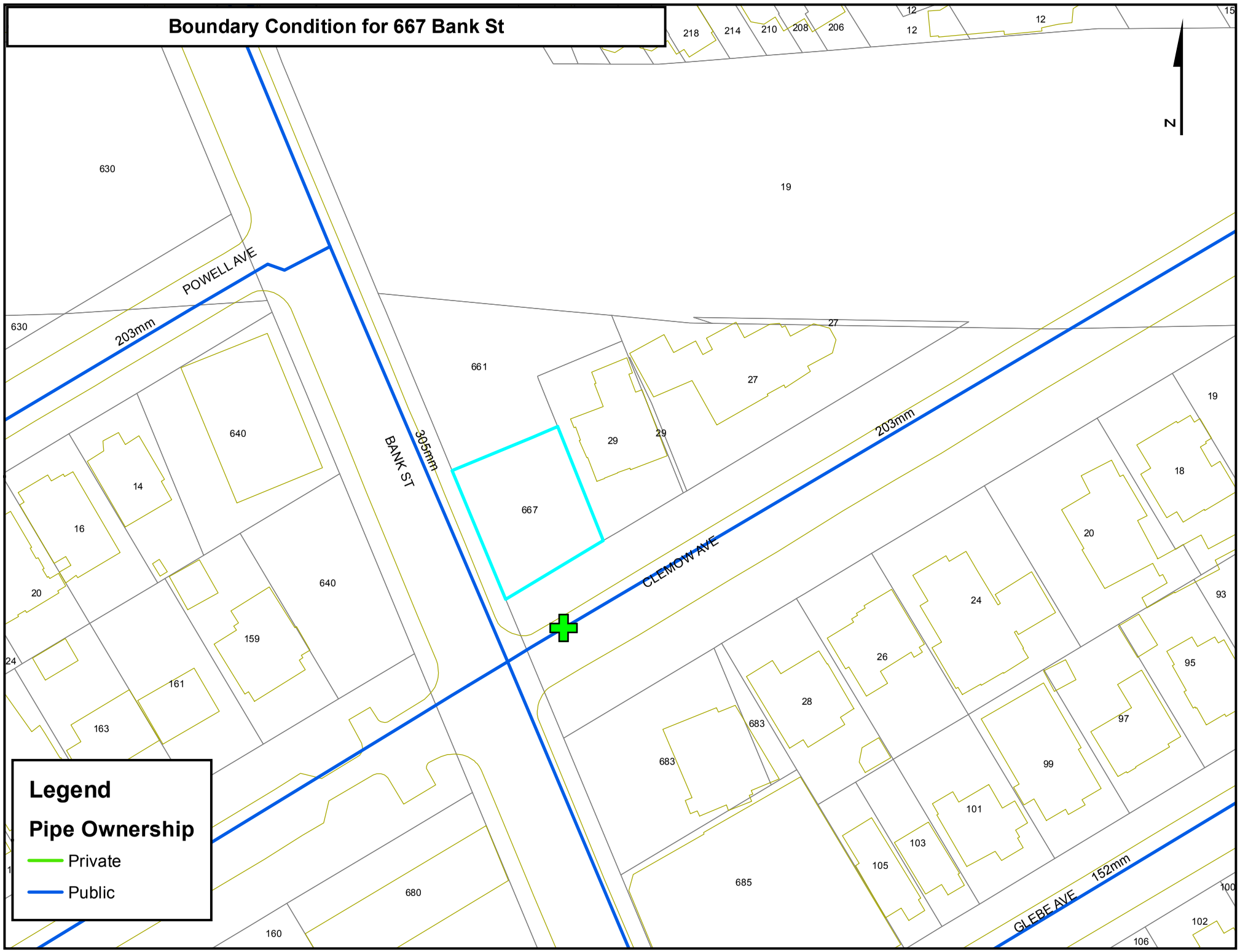
The fire flow required was determined following the Fire Underwriter Survey (FUS) method and is provided in the attached spreadsheet. This building is assumed to be wood frame construction with contents that are classified as limited combustibility. Additionally, the building will have a sprinkler system. The resulting total required fire flow is 9,000L/min (150L/s) for a duration of 2 hours.

In summary:
AVDY = 9,441 L/d (0.109 L/s)
MXDY = 22,981 L/d (0.266 L/s)
PKHR = 50,186 L/d (0.581 L/s)
Fire Flow = 9,000 L/min (150 L/s)

The City is requested to provide boundary conditions for the Average Day, Maximum Day, Peak Hour and Fire Flow conditions indicated above.

Thank you for your prompt attention to this matter. Please forward the boundary conditions as soon as possible.

Tony Mak
T.L. Mak Engineering Consultants Ltd.
1455 Youville Drive, Suite 218
Ottawa, ON K1C 6Z7
Tel: 613 837-5516 | Fax: 613 837-5277
E-mail: tlmakecl@bellnet.ca


Boundary Condition for 667 Bank St
N
POWELL AVE
203mm
BANK ST
305mm
CLEMOW AVE
203mm
GLEBE AVE
152mm
630
19
661
667
27
29
640
14
16
20
159
161
163
680
160
683
685
28
26
24
18
97
99
101
103
105
95
93
102
106
218
214
210
208
206
12
15
Legend
Pipe Ownership
Private
Public

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APPENDIX B

FUS FIRE FLOW CALCULATIONS

FUS Fire Flow Calculation

Calculations based on: "*Water Supply for Public Fire Protection* " by Fire Underwriters' Survey, 1999

Stantec Project #: 1634-01084
Project Name: 667 Bank Street
Date: June 2, 2016
Data input by: Valerie Hoang

Fire Flow Calculation #: 1
Building Type/Description/Name: Residential/Commercial

Notes: The total area of the building is 2386 sqft (commercial) plus 8865 sqft (residential). The ground floor area for one unit was estimated by dividing the total square footage by the number of total units where the commercial space on the first floor was assumed to be one unit.

Table A: Fire Underwriters Survey Determination of Required Fire Flow - Long Method

Step	Task	Term	Options	Multiplier Associated with Option	Choose:	Value Used	Unit	Total Fire Flow (L/min)
1	Choose Frame Used for Construction of Unit	**Framing Material**						
		Coefficient related to type of construction (C)	Wood Frame	1.5	Wood Frame	1.5	m	
			Ordinary construction	1				
			Non-combustible construction	0.8				
			Fire resistive construction (> 3 hrs)	0.6				
2	Choose Type of Housing (if TH, Enter Number of Units Per TH Block)	**Floor Space Area**						
		Type of Housing	Single Family	1	Other (Comm, Ind, Apt etc.)	15	Units	
			Townhouse - indicate # of units	6				
			Other (Comm, Ind, Apt etc.)	1				
2.2	# of Storeys	Number of Floors/Storeys in the Unit (do not include basement):			5	5	Storeys	
3	Enter Ground Floor Area of One Unit	Average Floor Area (A) based on fire resistive building design when vertical openings are inadequately protected:			750 Square Feet (ft2)	1,045	Area in Square Meters (m^2)	
4	Obtain Required Fire Flow without Reductions	Required Fire Flow (without reductions or increases per FUS) (F = 220 * C * √A) Round to nearest 1000L/min						11,000
5	Apply Factors Affecting Burning	**Reductions/Increases Due to Factors Affecting Burning**						
5.1	Choose Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15	N/A	9,350
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Choose Reduction Due to Presence of Sprinklers	Sprinkler reduction	Adequate Sprinkler conforms to NFPA13	-0.3	Adequate Sprinkler conforms to NFPA13	-0.3	N/A	-2,805
			None	0				
		Water Supply Credit	Water supply is standard for sprinkler and fire dept. hose line	-0.1	Water supply is standard for sprinkler and fire dept. hose line	-0.1	N/A	-935
			Water supply is not standard or N/A	0				
		Sprinkler Supervision Credit	Sprinkler system is fully supervised	-0.1	Sprinkler not fully supervised or N/A	0	N/A	0
			Sprinkler not fully supervised or N/A	0				
5.3	Choose Separation Distance Between Units	Exposure Distance Between Units	North Side	45.1m or greater	0	0.4	m	3,740
			East Side	3.1 to 10.0m	0.2			
			South Side	30.1 to 45.0m	0 05			
			West Side	10.1 to 20.0m	0.15			
6	Obtain Required Fire Flow, Duration & Volume	***Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:***						**9,000**
		Total Required Fire Flow (above) in L/s:						**150**
		Required Duration of Fire Flow (hrs)						**1.75**
		Required Volume of Fire Flow (m^3)						**945**

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APPENDIX C

DEVELOPMENT SERVICING STUDY CHECKLIST

SUMMARY

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

☐ Executive Summary (for larger reports only).

☒ Date and revision number of the report.

☒ Location map and plan showing municipal address, boundary, and layout of proposed development.

☒ Plan showing the site and location of all existing services.

☐ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.

☐ Summary of Pre-consultation Meetings with City and other approval agencies.

☐ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.

☒ Statement of objectives and servicing criteria.

☒ Identification of existing and proposed infrastructure available in the immediate area.

☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).

☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.

☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.

☐ Proposed phasing of the development, if applicable.

☒ Reference to geotechnical studies and recommendations concerning servicing.

☒ All preliminary and formal site plan submissions should have the following information:

- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

4.2 Development Servicing Report: Water

☐ Confirm consistency with Master Servicing Study, if available

☒ Availability of public infrastructure to service proposed development

☒ Identification of system constraints

☒ Identify boundary conditions

☒ Confirmation of adequate domestic supply and pressure

☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.

☒ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.

☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design

☐ Address reliability requirements such as appropriate location of shut-off valves

☒ Check on the necessity of a pressure zone boundary modification.

☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

☒ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.

☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

4.3 Development Servicing Report: Wastewater

☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).

☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.

☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.

☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.

☐ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)

☒ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.

☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.

☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).

☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.

☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.

☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

☐ Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

☐ Analysis of available capacity in existing public infrastructure.

☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.

☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

☐ Set-back from private sewage disposal systems.

☐ Watercourse and hazard lands setbacks.

☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

- [x] Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- [ ] Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- [x] Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
- [ ] Any proposed diversion of drainage catchment areas from one outlet to another.
- [x] Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- [ ] If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.
- [ ] Identification of potential impacts to receiving watercourses
- [ ] Identification of municipal drains and related approval requirements.
- [x] Descriptions of how the conveyance and storage capacity will be achieved for the development.
- [x] 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.
- [ ] Inclusion of hydraulic analysis including hydraulic grade line elevations.
- [x] Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- [ ] Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
- [ ] Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.

☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

☐ Changes to Municipal Drains.

☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

☒ Clearly stated conclusions and recommendations

☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.

☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario