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FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

SOUTHBOUND DEVELOPMENTS INC 890-900 BANK STREET

CITY OF OTTAWA

PROJECT NO.: 16-856

SEPTEMBER 2018 – REV 3

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT
FOR
890-900 BANK STREET

SOUTHBOUND DEVELOPMENTS INC

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FOR
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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare a Functional Servicing and Stormwater Management report in support of the Site Plan Application for 890-900 Bank Street, henceforth referred to as the subject property or site.

The subject property is located within the City of Ottawa urban boundary, in the Glebe-Dows Lake area within the Capital Ward. As illustrated in ***Figure 1***, the subject property is encompassed by Bank Street, Monk Street and Thornton Avenue. Comprised of 2 parcels, it measures approximately ***0.33 ha*** and is zoned Traditional Main Street (TM).

Figure 1: Site Location

The proposed development by Southbound Developments Inc. involves the construction of an 9-storey retirement residence/commercial building fronting onto Bank Street and Monk Street. The development would include approximately ***1529 m^2*** of ground level retail and underground parking, with access from Monk Street. The retirement residence component is comprised of approximately ***162 units***. The retirement residence and retail portions of the development will be severed into two different properties along a 3 dimensional property line with two different civic addresses. A copy of the site plan and site statistics are included in ***Drawings/Figures***.

The objective of this report is to provide sufficient detail with respect to the availability of existing site services to support the site plan application (SPA) for the proposed development.

1.1 Existing Conditions

The existing site contains a one-storey retail building, a one-storey auto service building and associated asphalt parking lot fronting onto Bank Street, along with a few vegetated areas.

Sewer and watermain mapping, along with as built drawings collected from the City of Ottawa, indicate that the following services exist across the property frontages within the adjacent municipal right-of-ways:

Bank Street

- 305 mm diameter PVC watermain;
- 300 mm diameter concrete combined sewer tributary to the Clegg Street Trunk Sewer.

Monk Street

- 225 mm diameter concrete combined sewer tributary to the Clegg Street Trunk Sewer;
- 152 mm diameter watermain.

1.2 Required Permits / Approvals

The proposed development is subject to the site plan control approval process. The City of Ottawa must approve the engineering design drawings and reports prior to the issuance of site plan control.

1.3 Pre-consultation

Pre-consultation correspondence, along with the servicing guidelines checklist, is located in ***Appendix A***.

DSEL met with City staff on April 5, 2016, additional pre-consultation took place over email. See ***Appendix A.***

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report:

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012.
  (City Standards)

  - **Technical Bulletin ISDTB-2014-01**
    City of Ottawa, February 5, 2014.
    (ITSB-2014-01)

  - **Technical Bulletin PIEDTB-2016-01**
    City of Ottawa, September 6, 2016.
    (PIEDTB-2016-01)

  - **Technical Bulletin ISTB-2018-01**
    City of Ottawa, March 21, 2018.
    (ISTB-2018-01)

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISD-2010-2*)

  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)

  - **Technical Bulletin ISDTB-2018-02**
    City of Ottawa, March 21, 2018.
    (ISDTB-2018-02)

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE* Design Guidelines*)

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010, Update.
  (OBC)

- **Water Supply for Public Fire Protection**
  Fire Underwriters Survey, 1999.
  (FUS)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone, as shown by the Pressure Zone map in ***Appendix B***. Based on as-built drawings and Water Distribution Maps from the City of Ottawa, a local 305 mm diameter watermain exists within the Bank Street right-of-way and a 152 mm diameter watermain exists within Monk Street.

3.2 Water Supply Servicing Design

The retail portion of the development is proposed to be serviced by one connection to the existing 305 mm watermain within Bank Street.

In order to meet City water supply objectives of basic day demands to be no greater than 50 m^3/d on a single feed, it is proposed that the building be serviced by both a single connection to the existing 152 mm watermain within Monk Street as well as a single connection to the existing 300 mm watermain within Bank Street and for the services to be connected and looped within the building.

Table 1, below, summarizes the ***Water Supply Guidelines*** employed in the preparation of the water demand estimate for the proposed development.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Boarding Room	1.0 P/unit
Boarding Room Average Daily Demand	200 L/bed/d
Auto washers in apartment buildings	1200 L/unit/d
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	3.6 x avg. day *
Residential Maximum Hourly	5.4 x avg. day *
Commercial Retail	2.5 $L/m^2/d$
Commercial Maximum Daily Demand	1.5 x avg. day
Commercial Maximum Hour Demand	1.8 x max. day
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350kPa and 480kPa
During normal operating conditions pressure must not drop below	275kPa
During normal operating conditions pressure must not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa

Daily average based on Appendix 4-A from **Water Supply Guidelines*
*** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.*
-Table updated to reflect ISD-2018-2

Tables 2 and ***3,*** both below, summarize the anticipated water supply demand and boundary conditions for the proposed development based on the ***Water Supply Guidelines***.

Table 2
Water Demand and Boundary Conditions
Proposed Conditions – Bank Street

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] Connection @ Bank (m H_2O / kPa)	
Average Daily Demand	2.7	46.4	455.2
Max Day	4.0	56,400 L/min @ 140 kPa	
Peak Hour	7.2	34.0	333.5

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions supplied by the City of Ottawa for the demands indicated in the correspondence; see ***Appendix B.***

Table 3
Water Demand and Boundary Conditions
Proposed Conditions – Monk Street

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] Connection @ Monk (m H_2O / kPa)	
Average Daily Demand	60.7	46.9	455.2
Max Day	138.3	5,280 L/min @ 140 kPa	
Peak Hour	224.6	34.5	338.4

3) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
4) Boundary conditions supplied by the City of Ottawa for the demands indicated in the correspondence; see ***Appendix B.***

The City provided both the anticipated minimum and maximum water pressures as indicated by the correspondence in ***Appendix B***. The minimum and maximum pressures fall within the required range identified in ***Table 1***.

Fire flow requirements are to be determined in accordance with Local Guidelines (***ISTB-2018-02***), City of Ottawa ***Water Supply Guidelines***, and the Ontario Building Code.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix B***.

Using the ***ISTB-2018-02***, an estimated fire flow has been established. Based on information received from ***Barry J. Hobin & Associates Architects Inc,*** the following assumptions were used in the calculations:

- Type of construction – Non-Combustible Construction;

- Occupancy type – Limited Combustible; and
- Sprinkler Protection – Supervised Sprinkler System.

The above assumptions result in an estimated fire flow of approximately ***14,000 L/min****;* see ***Appendix B*** for detailed FUS calculations. Approximately ***56,400 L/min*** flow is available within the Bank Street municipal system at minimum pressure, which is sufficient to service the proposed development.

3.3 Water Supply Conclusion

The retail and residential property are proposed to be serviced and metered individually from connections to Bank Street and Monk Street, respectively. The anticipated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions.

As demonstrated by ***Tables 2*** and ***3***, based on the City's model, the municipal system is capable of delivering water within the ***Water Supply Guidelines*** pressure range. Sufficient flow is available within Bank Street and Monk Street at minimum pressure within the municipal system to provide fire protection for the site.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject property is tributary to the Clegg Street Trunk sewer, as shown by the Trunk sewer map included in ***Appendix C***. The existing 300 mm diameter combined sewer within Bank Street directs flow to the 1050 mm diameter sanitary trunk sewer, as shown by the sewer map in ***Appendix C***.

The existing site consists of a 1 storey commercial and a 1 storey auto service building, both fronting Bank Street. ***Table 4,*** below, summarizes the estimated sanitary flow from the existing site.

Table 4
Existing Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.09
Estimated Peak Dry Weather Flow	0.14
Estimated Peak Wet Weather Flow	0.24

4.2 Wastewater Design

It is anticipated that the proposed development will connect to the 300 mm diameter combined sewer within the Bank Street right-of-way.

Table 5, below, summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 5
Wastewater Design Criteria

Design Parameter	Value
Boarding Room	1.0 P/unit
Boarding Room Average Daily Demand	200 L/bed/d
Auto washers in apartment buildings	1200 L/unit/d
Average Daily Demand - Residential	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. 3.8
Commercial Floor Space	5 L/m^2/d
Commercial Office Space	75 L/9.3m^2/d
Infiltration and Inflow Allowance	0.33L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012. *-Table updated to reflect ISD-2018-02*	

Table 6, below, demonstrates the anticipated peak flow from the proposed development. See ***Appendix C*** for associated calculations.

Table 6
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.70
Estimated Peak Dry Weather Flow	2.13
Estimated Peak Wet Weather Flow	2.23

The estimated sanitary flow, based on the concept plan provided in ***Drawings/Figures,*** anticipates a peak wet weather flow of ***2.23 L/s***.

The anticipated peak wastewater flow generated from the proposed development to the local Bank Street combined sewer and ultimately the Clegg Street Trunk sewer has been estimated to be ***2.23 L/s***; this results in a ***1.99 L/s*** increase from the existing conditions. Refer to ***Appendix C*** for associated calculations. The increase in wastewater discharge will be compensated by a reduction in stormwater flow, as per City of Ottawa criteria, detailed in ***Section 5.0 & Section 6.0***.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Clegg Street Trunk sewer; it is proposed to discharge wastewater to the existing 300 mm combined sewer within Bank Street.

The proposed development results in an estimated increase in wastewater flow contribution of ***1.99 L/s*** from the proposed development to the Bank Street sewer. This increase in wastewater discharge will be compensated by a reduction in stormwater flow, as per City of Ottawa Criteria.

The proposed wastewater design conforms to all relevant ***City Standards***.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa storm sewer system located within the Ottawa Central sub-watershed. As such, approvals for proposed developments within this area are under the approval authority of the City of Ottawa.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Ottawa River watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA).

DSEL has reviewed the available background material and has assumed that the existing development contained no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized in ***Table 7,*** below:

Table 7
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	53.7
5-year	72.9
100-year	156.1

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa, where the proposed development is required to:

- Total allowable combined flow (storm and sanitary) based on a Rational Method Coefficient of 0.40, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration not less than 10 minutes;
- Allowable stormwater release rate equal to allowable combined flow subtract proposed sanitary flow;
- Attenuate all storms up to and including the City of Ottawa 100-year design event;
- Quality controls are not anticipated to be required for the development since stormwater is tributary to a combined sewer.

Based on the above criteria, the allowable combined flow rate equals ***38.0 L/s*** and the allowable stormwater release rate is equal to ***35.9 L/s*** (38.0 – 2.13 = 35.9L/s).

5.3 Proposed Stormwater Management System

It is proposed that the stormwater from the development will be directed to the 300 mm diameter combined sewer within Bank Street.

To achieve the allowable post-development stormwater runoff release rate identified in ***Section 5.2*** above, the proposed development will employ flow attenuation using onsite storage through the use of an internal stormwater cistern. It is proposed that stormwater will discharge via the submersible pump, at the allowable release rate, to the existing 300 mm diameter combined sewer within Bank Street. Refer to ***Drawings/Figures*** for a cistern detail prepared be the mechanical engineer.

Table 8, below, summarizes post-development flow rates. Based on a geotechnical review of the existing groundwater conditions, maximum groundwater discharge to the local combined sewer is ***15,000 L/day***, as per the geotechnical memorandum included in ***Appendix A***. The groundwater release rate has been accounted for in the total release rate from site in ***Table 8***.

Table 8
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m^3)	(L/s)	(m^3)
Unattenuated Areas	9.4	0.0	20.1	0.0
Attenutated Areas	8.3	55.2	15.6	104.3
Groundwater Discharge*	0.17	0.0	0.17	0.0
Total	**17.9**	**55.2**	**35.9**	**104.3**

It is proposed that approximately ***104.3m^3*** of storage will be required on site to attenuate flow to the established release rate of ***35.9 L/s***; storage calculations are contained within ***Appendix D***.

5.4 Stormwater Servicing Conclusions

Post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm in accordance with ***City Standards***. The post-development allowable release rate was calculated as ***35.9 L/s*** based on consultation with the City of Ottawa; it is estimated that ***104.3m^3*** of on-site storage will be required to meet this release rate.

The proposed stormwater design conforms to all relevant ***City Standards*** and Policies.

6.0 COMBINED SEWER SYSTEM FLOW

Based on criteria outlined in ***Section 5.2***, the combined stormwater and sanitary flow is not to exceed ***38.0 L/s***.

Table 9, below, summarizes the pre-development and post-development flow rates to the combined sewershed.

Table 9
Summary of Release Rates to the Combined Sewer

Flow Type	5-Year		100-year	
	Pre-Development (L/s)	Post-Development (L/s)	Pre-Development (L/s)	Post-Development (L/s)
Sanitary*	0.14	2.13	0.14	2.13
Storm	72.9	17.9	156.1	35.9
Combined Flow	**73.0**	**20.0**	**156.2**	**38.0**
*Infiltration flows have been taken into account in stormwater calculations. Sanitary flow is equal to the peak dry weather flow.				

As shown by ***Table 9***, the post-development combined flow will equal the allowable release rate as required by the City of Ottawa and be significantly lower than the existing combined flow.

7.0 UTILITIES

Gas, Hydro services currently exist within the Bank Street, Monk Street and Thornton Avenue right-of-ways. Utility servicing will be coordinated with the individual utility companies prior to site development.

8.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catch basins will have SILTSACKs installed under the grate during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

- Limit extent of exposed soils at any given time;
- Re-vegetate exposed areas as soon as possible;
- Minimize the area to be cleared and grubbed;
- Protect exposed slopes with plastic or synthetic mulches;
- Install silt fence to prevent sediment from entering existing ditches;
- No refueling or cleaning of equipment near existing watercourses;
- Provide sediment traps and basins during dewatering;
- Install filter cloth between catch basins and frames;
- Plan construction at proper time to avoid flooding;Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers; and
- Clean and change filter cloth at catch basins.

9.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained to prepare a Functional Servicing and Stormwater Management report to support the proposed development of 890-900 Bank Street, in support of Southbound Development Inc.'s application for Site Plan Control (SPC). The preceding report outlines the following:

- Based on boundary conditions provided by the City, the existing municipal water infrastructure is capable of providing the proposed development with water within the City's required pressure range;
- The proposed development is anticipated to have a peak wet weather flow of ***2.23L/s***; the increase in wastewater discharge will be compensated by a reduction in stormwater flow;
- The proposed development will be required to attenuate post development flows to an equivalent release rate of ***35.9 L/s*** for all storms up to and including the 100-year storm event based on consultation with the City of Ottawa;
- It is proposed that stormwater objectives may be met through a combination of roof top and cistern storage, it is anticipated that ***104.3 m^3*** of onsite storage will be required to attenuate flow to the established release rate above;
- It is anticipated that stormwater quality controls are not required as flows are being discharged to a combined sewer;
- Combined stormwater runoff and sanitary discharge will not exceed the combined allowable release rate of ***38.0 L/s***.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Genavieve Melatti

Reviewed by,
David Schaeffer Engineering Ltd.

Per: Steven L. Merrick, P. Eng.

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

16-856 29/04/2016

4.1 General Content

☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	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.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	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).	N/A
☒	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.	N/A
☐	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.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☒	Reference to geotechnical studies and recommendations concerning servicing.	Section 1.4
☒	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	N/A

4.2 Development Servicing Report: Water

☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 1.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	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.	Section 3.2
☐	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.	N/A
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	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	Section 3.2, 3.3
☐	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.	N/A
☐	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.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

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).	Section 4.2
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐	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.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	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)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	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).	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

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)	Section 5.1
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
☒	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.	Section 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	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.	Section 5.1, 5.3
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	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.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
☐	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.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

☒	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 ct. 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.	Section 1.2
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 7.0
☐	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	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

Brandon Chow

From: Wu, John <John.Wu@ottawa.ca>
Sent: April-12-16 9:00 AM
To: bchow@dsel.ca
Subject: RE: 890-900 Bank Street - design criteria

Yes, I can confirm that is the requirement.

John

From: Brandon Chow [mailto:bchow@dsel.ca]
Sent: Monday, April 11, 2016 4:41 PM
To: Wu, John
Subject: 890-900 Bank Street - design criteria

Hi John,

Can you please confirm the design criteria for the 890-900 Bank Street site?

- Control storm to the 5-year event
- Runoff Coefficient = 0.4
- Calculated Tc

Will the allowable release rate for the site be calculated based on the existing sanitary flow + the storm runoff calculated based on the above criteria?
Is it required to have the proposed storm water flow and proposed sanitary flow equal to the allowable?

Thanks,

Brandon Chow
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532
fax: (613) 836-7183
email: bchow@DSEL.ca

patersongroup **memorandum**

consulting engineers

re:	**Geotechnical Response to City Comment** **Proposed Multi-Storey Building** **890-900 Bank Street - Ottawa**
to:	Southbound Developments (Ottawa) Inc. - **Mr. Steven Cohen** - scohen@successiondevelopment.com
date:	August 10, 2018
file:	PG4377-MEMO.01

As requested, Paterson Group (Paterson) prepared the following response to the geotechnical-related city comment dated August 3, 2018 regarding the aforementioned site development.

Engineering Comment 3

Comment: *The engineering report does not have an estimate of the ground water, which will be collected permanently during wet weather day, it needs to be updated. The servicing report should include the said groundwater and sanitary sewer peak in the storm water management discharging target. The servicing and storm water management report needs to be updated. This will be a direct submission for MOE approval, if it passed by me, it may be picked up by MOE. They have to fix it at that time.*

Response: As the lowest level building slab will be located several meters above the groundwater level, the most significant water infiltration for the perimeter foundation drainage system will be the surface infiltration volumes during storm events. For a typical storm event, the building's foundation drainage system is conservatively expected to drain a maximum of 15,000 L/day, which can be managed by a typical foundation drainage system.

Our report PG4377-1 has been updated (Revision 1 dated August 10, 2018) to include the above-noted information.

We trust that this information satisfies your requirements.

Best Regards,

Paterson Group Inc.

August 10, 2018

Scott S. Dennis, P.Eng.

David J. Gilbert, P.Eng.

Amr Salem

From: Amr Salem
Sent: September 5, 2018 11:50 AM
To: 'Kyle Witney'
Cc: James Arbuthnott
Subject: RE: 900 Bank - Topo.

Hello Kyle,

Unfortunately we're unable to adjust the grade at that area to avoid relocating your service.

Can you please provide an approximate cost estimate for the required relocation?

Thank you,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

From: Kyle Witney <Kyle.Witney@enbridge.com>
Sent: August 29, 2018 8:14 AM
To: Amr Salem <ASalem@dsel.ca>
Cc: James Arbuthnott <James.Arbuthnott@enbridge.com>
Subject: RE: 900 Bank - Topo.

Good morning Amr,

Unfortunately lowering the existing grade by approximately 0.29m does result in the need to relocate our gas main. We are currently installed at our minimum allowed depth and lowering the grade by any amount will result in relocation need.

I am not sure if you are able to relook at your plans to find a way to avoid cutting the grade. If you have any questions, please let me know.

Thanks!

Kyle Witney

Kyle Witney PMP

Advisor, Planning
Eastern Region

ENBRIDGE GAS DISTRIBUTION
TEL: 613-748-6770 | CELL: 343-998-1118
400 Coventry Road, Ottawa, Ontario K1K 2C7

enbridgegas.com
Integrity. Safety. Respect

From: Amr Salem [mailto:ASalem@dsel.ca]
Sent: Tuesday, August 28, 2018 2:22 PM
To: Kyle Witney
Cc: James Arbuthnott
Subject: [External] RE: 900 Bank - Topo.

Hello Kyle,

Point should not be an issue as the grade isn't really getting lowered there.
I believe the lowest grade is at Point **C**, where we're proposing to lower the grade by about ***0.29m.***

Please note that the surveyor was unable to identify the elevation of the Gas main at points B and C as the Bell ducts are not concrete encased, and the gas main is directly below them.

Would lowering the existing grade by approximately 0.29m result in the need of utility relocation?

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0626 ext. 512
email: asalem@DSEL.ca

From: Kyle Witney <Kyle.Witney@enbridge.com>
Sent: August 28, 2018 2:08 PM
To: Amr Salem <ASalem@dsel.ca>
Cc: James Arbuthnott <James.Arbuthnott@enbridge.com>
Subject: RE: 900 Bank - Topo.

Hi Amr,

I have reviewed your plans for lowering grades at 900 Bank St.

Can you confirm the difference in grade at point A from what the original grade was to what is now proposed? The email says the proposed grade will be 0.69m at point A. I see a little less on your PDF, does this mean you are adding grade?

For points B and C, I am not able to give you an answer based on the assumption that gas is 0.3m below bell. This will need to be confirmed so that I can let you know if the proposed cover would be sufficient. Is this something that you are able to confirm for me? Again, if you are planning on adding grade there shouldn't be a problem but if you are reducing grade we will need to know where our gas main sits.

Thanks!

Kyle

Kyle Witney PMP
Advisor, Planning
Eastern Region

ENBRIDGE GAS DISTRIBUTION
TEL: 613-748-6770 | CELL: 343-998-1118
400 Coventry Road, Ottawa, Ontario K1K 2C7

enbridgegas.com
Integrity. Safety. Respect.

From: James Arbuthnott
Sent: Tuesday, August 28, 2018 12:33 PM
To: Kyle Witney
Subject: FW: 900 Bank - Topo.

Hi Kyle,

Can you please review this. DESL is proposing grade changes and they're completed test holes. Come see me once you've had a chance to look.

James Arbuthnott, PMP
Sr Advisor, Planning
Eastern Region
—

ENBRIDGE GAS DISTRIBUTION
TEL: 613-748-6840
400 Coventry Rd, Ottawa, K1K 2C7

From: Amr Salem [mailto:ASalem@dsel.ca]
Sent: Tuesday, August 28, 2018 11:13 AM
To: James Arbuthnott
Subject: [External] FW: 900 Bank - Topo.

Hello James,

I recall we talked before about lowering some grades at 900 Bank Street. We surveyed the utilities and were able to get some numbers. Please see attached and below for more info.

Can you validate that the proposed cover would be sufficient?

Thanks,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0626 ext. 512
email: asalem@DSEL.ca

From: Amr Salem
Sent: August 28, 2018 10:05 AM
To: 'suzanne.renaud@enbridge.com' <suzanne.renaud@enbridge.com>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: FW: 900 Bank Topo.

Hello Suzanne,

Just following up on my e-mail.

As shown in the attached drawings, we were only able to identify the elevation of Gas at point **A** ; proposed cover is **0.69m**.

For Points **B and C**, cover provided for Bell is approximately 0.45m and 0.38m respectively. Assuming Gas is 0.3m below Bell, you will have a cover of **0.75m and 0.68m respectively**.

Can you confirm if that's sufficient?

Thank you,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0626 ext. 512
email: asalem@DSEL.ca

From: Amr Salem
Sent: August 27, 2018 10:18 AM
To: 'suzanne.renaud@enbridge.com' <suzanne.renaud@enbridge.com>; 'Jennifer.sellars@bell.ca' <Jennifer.sellars@bell.ca>
Subject: FW: 900 Bank Topo.

Hello,

Can you please confirm if the cover provided for your utilities is sufficient?

I have attached the elevations provided from the survey and a copy of our grading plan that shows the proposed grades.

We made the assumption that gas is 0.3m below Bell at points B and C.

Please let me know if you have any questions.

Thank you,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0626 ext. 512
email: asalem@DSEL.ca

From: Steve Merrick
Sent: August 27, 2018 9:44 AM
To: Amr Salem <ASalem@dsel.ca>
Subject: FW: 900 Bank Topo.

Can you send this to Bell and Enbridge for confirmation? We can assume that gas would be about 0.3m below the bell ducts, except on section A where the top of the gas was able to be identified.

They are anticipating moving Bell I expect they will have to relocate gas as well. Send the request to Suzanne at Enbridge, contact attached.

Steve Merrick, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 561
cell: (613) 222-7816
email: smerrick@DSEL.ca

From: Bill Welch [mailto:bwelch@tomlinsongroup.com]
Sent: Monday, August 27, 2018 8:31 AM
To: Steve Merrick <SMerrick@dsel.ca>; Darren Kettlewell <dkettlewell@successiondevelopment.com>; melaniel@hobinarc.com
Cc: Emilie Coyle <coyle@fotenn.com>; Steven Cohen <scohen@successiondevelopment.com>; Amr Salem <ASalem@dsel.ca>
Subject: RE: 900 Bank Topo.

Please find attached cross sections at the three test pit locations. Of note, the Bell ducts are not concrete encased, and the gas main is directly below them, so it wasn't possible to get an elevation on it.

Bill Welch
Operations Manager
Dufresne Piling Company (1967) Ltd
100 Citigate Drive
Ottawa, Ontario K2J 6K7

Office: (613) 696-0600
Cell: (613)227-5024
Fax: (613) 739-4012
E-Mail: billw@dufresnepiling.ca
or bwelch@tomlinsongroup.com

TOMLINSON tomlinsongroup.com
FOUNDED ON STRENGTH GUIDED BY VISION

From: Steve Merrick <SMerrick@dsel.ca>
Sent: Thursday, August 23, 2018 1:13 PM
To: Darren Kettlewell <dkettlewell@successiondevelopment.com>; melaniel@hobinarc.com; Bill Welch <bwelch@tomlinsongroup.com>
Cc: Emilie Coyle <coyle@fotenn.com>; Steven Cohen <scohen@successiondevelopment.com>; Amr Salem <ASalem@dsel.ca>
Subject: RE: 900 Bank Topo.

External Email. Be careful replying, opening links or attachments.

Hi Darren,

I'm having some trouble determining the top of bell and gas from the attached. Can we get a clean sketch showing the existing grade, top of bell and top of gas main at the 3 locations we flagged?

Thanks,

Steve Merrick, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 561
cell: (613) 222-7816
email: smerrick@DSEL.ca

From: Darren Kettlewell [mailto:dkettlewell@successiondevelopment.com]
Sent: Wednesday, August 22, 2018 12:57 PM
To: melaniel@hobinarc.com; Steve Merrick <SMerrick@dsel.ca>

Cc: Emilie Coyle <coyle@fotenn.com>; Steven Cohen <scohen@successiondevelopment.com>
Subject: Fwd: 900 Bank Topo.

Melanie, Emilie, and Steve Merrick

Here is the information gathered from the utility depths performed by Tomlinson Group on Monk Street.

Please add this information to our city comments reply.

Darren Kettlewell
Succession Development Corporation
Project Manager for Ottawa
Cell (613) 762-4699
Get Outlook for iOS

From: Bill Welch <bwelch@tomlinsongroup.com>
Sent: Wednesday, August 22, 2018 12:38:21 PM
To: Darren Kettlewell
Subject: 900 Bank Topo.

Darren,

Attached is the info gleaned from yesterday's work.

Bill Welch
Operations Manager
Dufresne Piling Company (1967) Ltd
100 Citigate Drive
Ottawa, Ontario K2J 6K7
Office: (613) 696-0600
Cell: (613)227-5024
Fax: (613) 739-4012
E-Mail: billw@dufresnepiling.ca
or bwelch@tomlinsongroup.com

APPENDIX B

Water Supply

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4	2	7
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	7	2.0	1.4	18.6	12.9	28.0	19.5

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5 $L/m^2/d$	908	2.27	1.6	3.4	2.4	6.1	4.3
Office	75 $L/9.3m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Restaurant*	125 L/seat/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand	2.3	1.6	3.4	2.4	6.1	4.3
		Total Demand	**4.2**	**2.9**	**22.0**	**15.3**	**34.2**	**23.7**

* Estimated number of seats at 1seat per $9.3m^2$

890-900 Bank Street
Proposed Site Conditions
Bank Street Connection - Residential

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Type of Housing	Per/Bed	Beds	Pop
Boarding*			

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.0	0.0	0.0	0.0	0.0	0.0

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5 $L/m^2/d$	1,529	3.82	2.7	5.7	4.0	10.3	7.2
Water Closets**	150 L/hr		0.00	0.0	0.0	0.0	0.0	0.0
Restaurant	125 L/seat/d		0.00	0.0	0.0	0.0	0.0	0.0
Laundry Facility	1,200 L/unit/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand	3.8	2.7	5.7	4.0	10.3	7.2
		Total Demand	**3.8**	**2.7**	**5.7**	**4.0**	**10.3**	**7.2**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines
** Water closets demand of 150 L/hour from Appendix 4-A of the Sewer design guidelines, assuming a 12 hour operation

890-900 Bank Street
Proposed Site Conditions
Monk Street Connection - Commercial

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Type of Housing	Per/Bed	Beds	Pop
Boarding*	1.0	162	162

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	162	32.4	22.5	116.6	81.0	175.0	121.5

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5 $L/m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Water Closets**	150 L/hr	19	34.20	23.8	51.3	35.6	92.3	64.1
Restaurant	125 L/seat/d	162	20.25	14.1	30.4	21.1	54.7	38.0
Laundry Facility	1,200 L/unit/d	4	0.52	0.4	0.8	0.5	1.4	1.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			55.0	38.2	82.4	57.3	148.4	103.1
Total Demand			**87.4**	**60.7**	**199.1**	**138.3**	**323.4**	**224.6**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines
** Water closets demand of 150 L/hour from Appendix 4-A of the Sewer design guidelines, assuming a 12 hour operation

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$$F = 220C\sqrt{A}$$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Non-Combustible Construction

C	0.8		*Type of Construction Coefficient per FUS Part II, Section 1*
A	8105.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	15844.9	L/min	
	16000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**13600.0**	**L/min**

3. Reduction for Sprinkler Protection

Sprinklered - Supervised	-50%	
Reduction	**-6800**	**L/min**

4. Increase for Separation Distance

	Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC	
N	Non-Combustible	10.1m-20m	106	0	0	12%	
S	Non-Combustible	0m-3m	133	0	0	22%	
E	Non-Combustible	20.1m-30m	44	3	132	10%	
W	Non-Combustible	20.1m-30m	20	0	0	8%	
		% Increase				**52%**	*value not to exceed 75%*

Increase	**7072.0**	**L/min**

Lw = Length of the Exposed Wall
Ha = number of storeys of the adjacent structure
LH = Length-height factor of exposed wall. Value rounded up.
EC = Exposure Charge

Total Fire Flow

Fire Flow	13872.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section*
	14000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by Barry J. Hobin & Associates Architects Inc.
-Calculations based on Fire Underwriters Survey - Part II

Brandon Chow

To: Steve Merrick
Subject: RE: 900 Bank - Fire Flow Estimation Parameters

From: Wendy Brawley [mailto:wbrawley@hobinarc.com]
Sent: April-11-16 4:46 PM
To: Steve Merrick <smerrick@dsel.ca>
Subject: 900 Bank - Fire Flow Estimation Parameters

Hi Steve: my comments are in red and have been edited to reflect the 900 Bank Street Project.

Sorry about my previous email; I obviously need to start reading the subject line more closely.

Hi Wendy,

Thanks for those plans in PDF and CAD, we hope you can advise on some architectural items that we will require in our fire flow calculations.

I have summarized the key information we will need below:

- Type of Construction (Fire-resistive, Non-combustible, ordinary, wood frame)
- Will the development employ fully supervised automatic sprinkler protection? Yes
- If sprinkler protected, where will the Siamese connection be located? The CACF room is located off of the Amica Lobby, so I believe this means that it would be coming from Monk St. We may need to review this in more detail depending upon the routing of your incoming water service.
- Occupancy Type (Non-combustible, limited combustible, combustible, free burning, rapid burning) Ground will be a combination of A and E occupancies, Second will be a combination of A and C Occupancies, Third Floor Assisted Living will be a B3 occupancy, Fourth Floor Memory Care will be a B3 occupancy and floors above the fourth floor are independent living or a C occupancy. All of these occupancies fall in line with the Low Hazard Occupancies indicated in your attachment.

I have attached an excerpt from the Fire Underwriter Survey which provides additional information on the definitions of "Type of Construction" and "Occupancy Type".

Thanks in advance,

Steve Merrick, EIT.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
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--

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63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7

t 613-238-7200 x119
f 613-235-2005
e wbrawley@hobinarc.com

hobinarc.com

Genavieve Melatti

From: Melaniel L. <melaniel@hobinarc.com>
Sent: Tuesday, September 4, 2018 10:00 AM
To: Genavieve Melatti
Subject: Re: 900 Bank - Update to FUS Calculations

Good morning Genavieve,

This is to confirm that 900 Bank Street is Construction Class 3 and will be sprinklered.

Cheers,
Melanie

On 9/4/2018 9:33 AM, Genavieve Melatti wrote:

Genavieve Melatti
Project Coordinator/ Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 569
email: gmelatti@DSEL.ca

From: Genavieve Melatti
Sent: Friday, August 31, 2018 9:57 AM
To: 'melaniel@hobinarc.com' <melaniel@hobinarc.com>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: 900 Bank - Update to FUS Calculations

Good morning Melanie,

Would you be able to update the ISO Class for the building so that we can revise our FUS calculation. We would need to confirm the sprinkler system for the building as well.

I have included the ISO guide in which sections 1, 2 and 3 on pages 3 to 10 provides definitions to clarify as well as the section from the City's technical bulletin. Note that ISO refers only to fire-resistive for fire ratings not less than 1-hour.

A. *Determine the type of construction.*

- Coefficient *C* in the FUS method is equivalent to coefficient *F* in the ISO method:

Correspondence between FUS and ISO construction coefficients

FUS type of construction	ISO class of construction	Coefficient *C*
Fire-resistive construction	Class 6 (fire resistive)	0.6
	Class 5 (modified fire resistive)	0.6
Non-combustible construction	Class 4 (masonry non-combustible)	0.8
	Class 3 (non-combustible)	0.8
Ordinary construction	Class 2 (joisted masonry)	1.0
Wood frame construction	Class 1 (frame)	1.5

However, the FUS definition of fire-resistive construction is more restrictive than those of ISO construction classes 5 and 6 (modified fire resistive and fire resistive). FUS requires structural members and floors in buildings of fire-resistive construction to have a fire-resistance rating of 3 hours or longer.

- With the exception of fire-resistive construction that is defined differently by FUS and ISO, practitioners can refer to the definitions of the ISO construction classes (and the supporting definitions of the types of materials and assemblies that make up the ISO construction classes) found in the current ISO guide [4] (see Annex i) to help select coefficient *C*.
- To identify the most appropriate type of construction for buildings of mixed construction, the rules included in the current ISO guide [4] can be followed (see Annex i). For a building to be assigned a given classification, the rules require ⅔ (67%) or more of the total wall area and ⅔ (67%) or more of the total floor and roof area of the building to be constructed according to the given construction class or a higher class.
- New residential developments (less than 4 storeys) are predominantly of wood frame construction ($C = 1.5$) or ordinary construction ($C = 1.0$) if exterior walls are of brick or masonry. Residential buildings with exterior walls of brick or masonry veneer and those with less than ⅔ (67%) of their exterior walls made of brick or masonry are considered wood frame construction ($C = 1.5$).

Please feel free to let me know if you have any questions.

Thank you,

Genavieve Melatti
Project Coordinator/ Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 569
email: gmelatti@DSEL.ca

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Melanie Lamontagne

Hobin Architecture Incorporated

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Canada K1S 3K7

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f 613-235-2005
e melaniel@hobinarc.com

hobinarc.com

Brandon Chow

From: Wu, John <John.Wu@ottawa.ca>
Sent: April-15-16 8:57 AM
To: bchow@dsel.ca
Subject: RE: 890-900 Bank St - Water Boundary Conditions
Attachments: 890-900 Bank April 2016.pdf

Here is the result:

The following are boundary conditions, HGL, for hydraulic analysis at 890-900 Bank St (zone 1W) assumed to be connected to the 305mm on Bank and 152mm on Monk (see attached PDF for location). Demands were assumed split evenly between both connection points.

Minimum HGL = 104.3m (same at both connections)

Maximum HGL = 116.7m (same at both connections)

Available flow (Monk St) = 88 L/s assuming a residual of 20 psi and a ground elevation of 69.8m

Available flow (Bank St) = 940 L/s assuming a residual of 20 psi and a ground elevation of 70.3m

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.

John

From: Brandon Chow [mailto:bchow@dsel.ca]
Sent: Monday, April 11, 2016 3:45 PM
To: Wu, John
Subject: 890-900 Bank St - Water Boundary Conditions

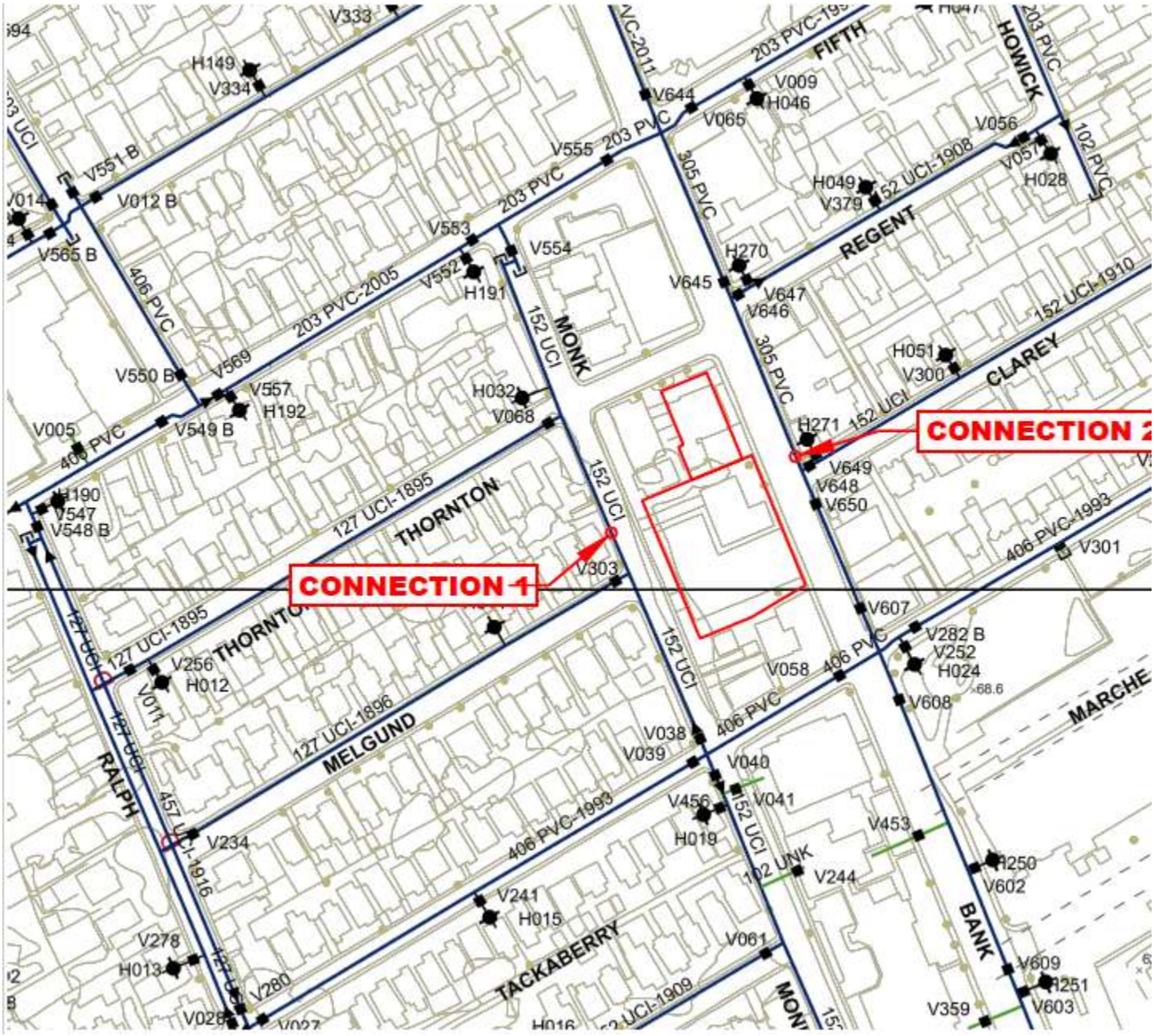
Hi John

We would like to request boundary conditions for the contemplated redevelopment at 890-900 Bank Street. The proposed development will consist of an 8 storey building which includes 1,607m² of retail area and 161 residential units. The proposed development will have an average daily demand greater then 50m^3/day and therefore 2 connections are required. It is proposed to provide a 150mm service connection to the existing 152mm watermain within Monk Street and 305mm water within Bank Street, see attached sketch.

We hope that you can provide the maximum flow from the existing connections points at a minimum pressure of 140 kPa (20 PSI) as we do not have sufficient building information to provide an estimate of fire flow based on the FUS at this time. Once information is available we will calculate fire flow as per the FUS and compare to the provided maximum flow rate.

The anticipated water demands are summarized below:

	L/min	L/s
Avg. Daily	82.7	1.38
Max Day	221.1	3.69
Peak Hour	348.1	5.80



Brandon Chow
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

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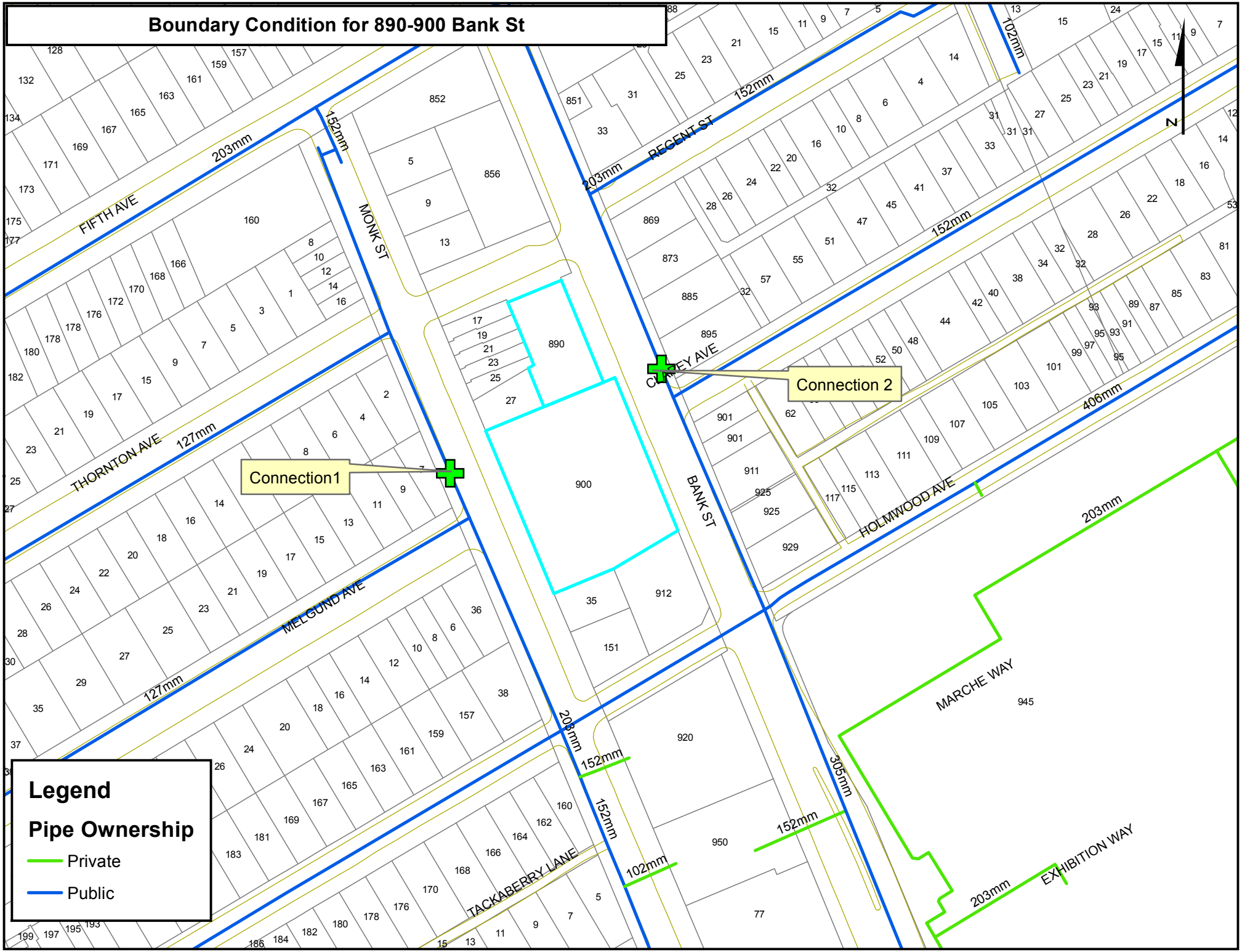
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532
fax: (613) 836-7183
email: bchow@DSEL.ca

Boundary Condition for 890-900 Bank St



FIFTH
HOWICK
RUPERT
REGENT
CLAREY
HOLMWOOD
PRINCE
MONK
THORNTON
MELGUND
RALPH
TACKABERRY
WOODLAWN
BANK
MARCHE
EXHIBITION
T D PLACE
203 PVC-1998
305 PVC-2011
152 PVC-1998
203 PVC-1991
203 PVC
102 PVC
152 UCI-1908
152 UCI-1910
152 UCI
305 PVC
203 PVC-2005
406 PVC
406 PVC-1993
127 UCI-1895
127 UCI-1896
127 UCI
152 UCI-1909
102 UNK
203 UCI
62.5
63.7
62.3
68.6
H221
V595
V062
V643
V011
V073
V058
H029
V333
V010
H047
H054
V594
H149
V334
V009
H046
V644
V065
V275
V555
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V551 B
V012 B
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V379
H052
V380
V014
H198
V564
V565 B
V553
V554
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H191
H270
V645
V647
V646
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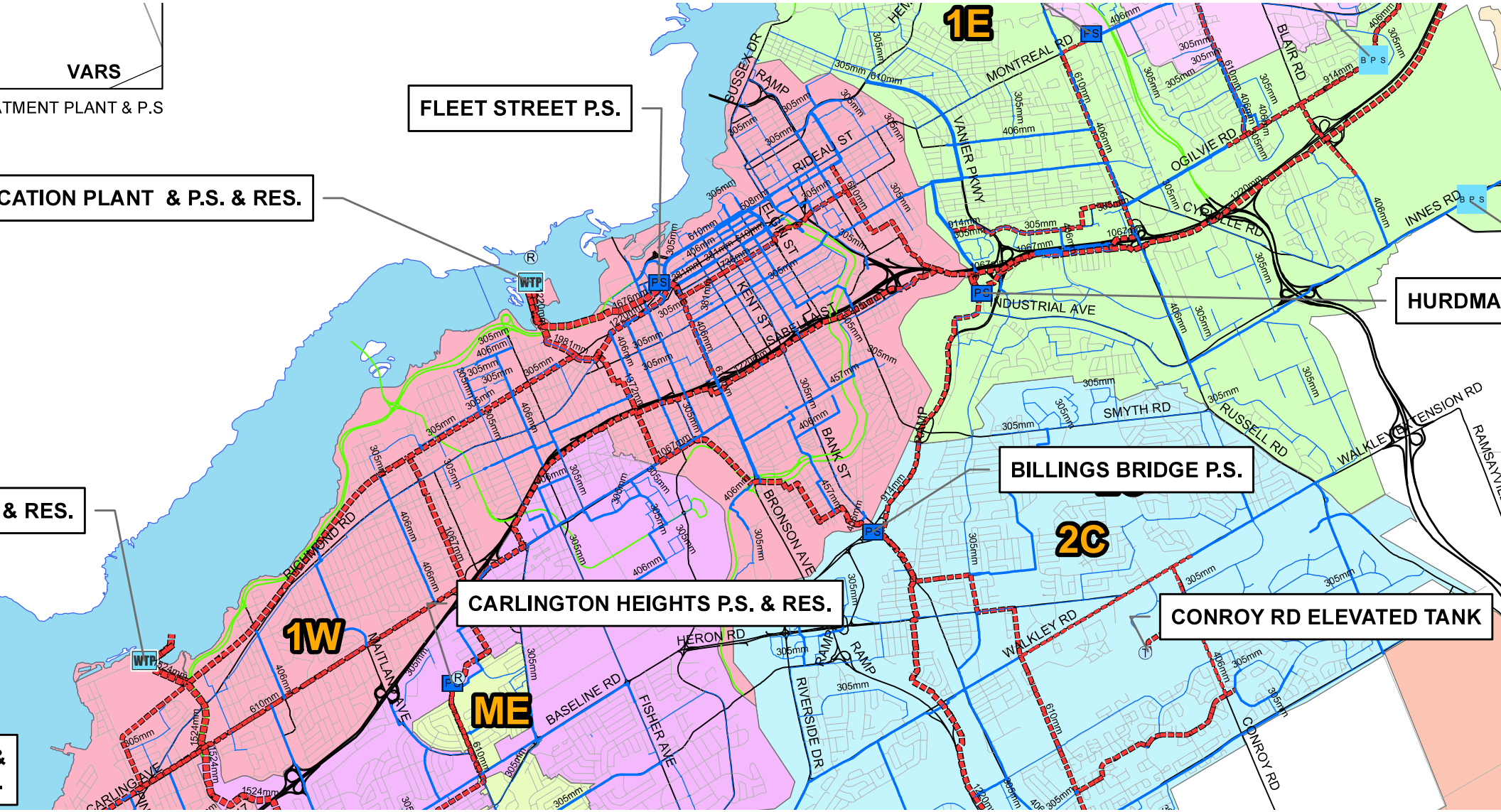
V077
V348
V349 B
V563
H051
V300
V550 B
V569
V557
H192
H032
V068
H271
V005
V549 B
H053
V296
V649
V648
V650
V546
H190
V547
V548 B
V301
V303
V607
H014
V282 B
V252
H024
V256
H012
V011
V608
V038
V039
V040
V041
V456
H019
V453
V234
H250
V602
V244
V241
H015
V278
H013
V061
H002
V328
V280
V028
V279
V027
V029
V609
H251
V603
V359
H016
V332


VARS
ATMENT PLANT & P.S
FLEET STREET P.S.
CATION PLANT & P.S. & RES.
& RES.
1E
1W
2C
ME
HURDMA
BILLINGS BRIDGE P.S.
CARLINGTON HEIGHTS P.S. & RES.
CONROY RD ELEVATED TANK
MONTREAL RD
BLAIR RD
OGILVIE RD
INNES RD
VANIER PKWY
RIDEAU ST
KENT ST
SABELLA ST
BANK ST
BRONSON AVE
INDUSTRIAL AVE
SMYTH RD
RUSSELL RD
WALKLEY RD
HERON RD
BASELINE RD
FISHER AVE
RIVERSIDE DR
CONROY RD
RICHMOND RD
MAITLAND AVE
CARLING AVE
RAMP
WTP
PS

APPENDIX C

Wastewater Collection

890-900 Bank Street
Existing Conditions

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area 0.327 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.11 L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop **0**

Average Domestic Flow **0.00 L/s**

Peaking Factor **3.8**

Peak Domestic Flow **0.00 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$	788	0.09
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Industrial - Light**	35,000	L/gross ha/d		0.00
Industrial - Heavy**	55,000	L/gross ha/d		0.00

Average I/C/I Flow **0.09**

Peak Institutional / Commercial Flow 0.14
Peak Industrial Flow** 0.00
Peak I/C/I Flow **0.14**

** assuming a 12 hour commercial operation*

*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.09 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.14 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.24 L/s**

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area 0.327 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.11 L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Boarding	1	162	162

Total Pop **162**

Average Domestic Flow **0.53 L/s**

Peaking Factor **3.54**

Peak Domestic Flow **1.86 L/s**

Institutional / Commercial / Industrial Contributions

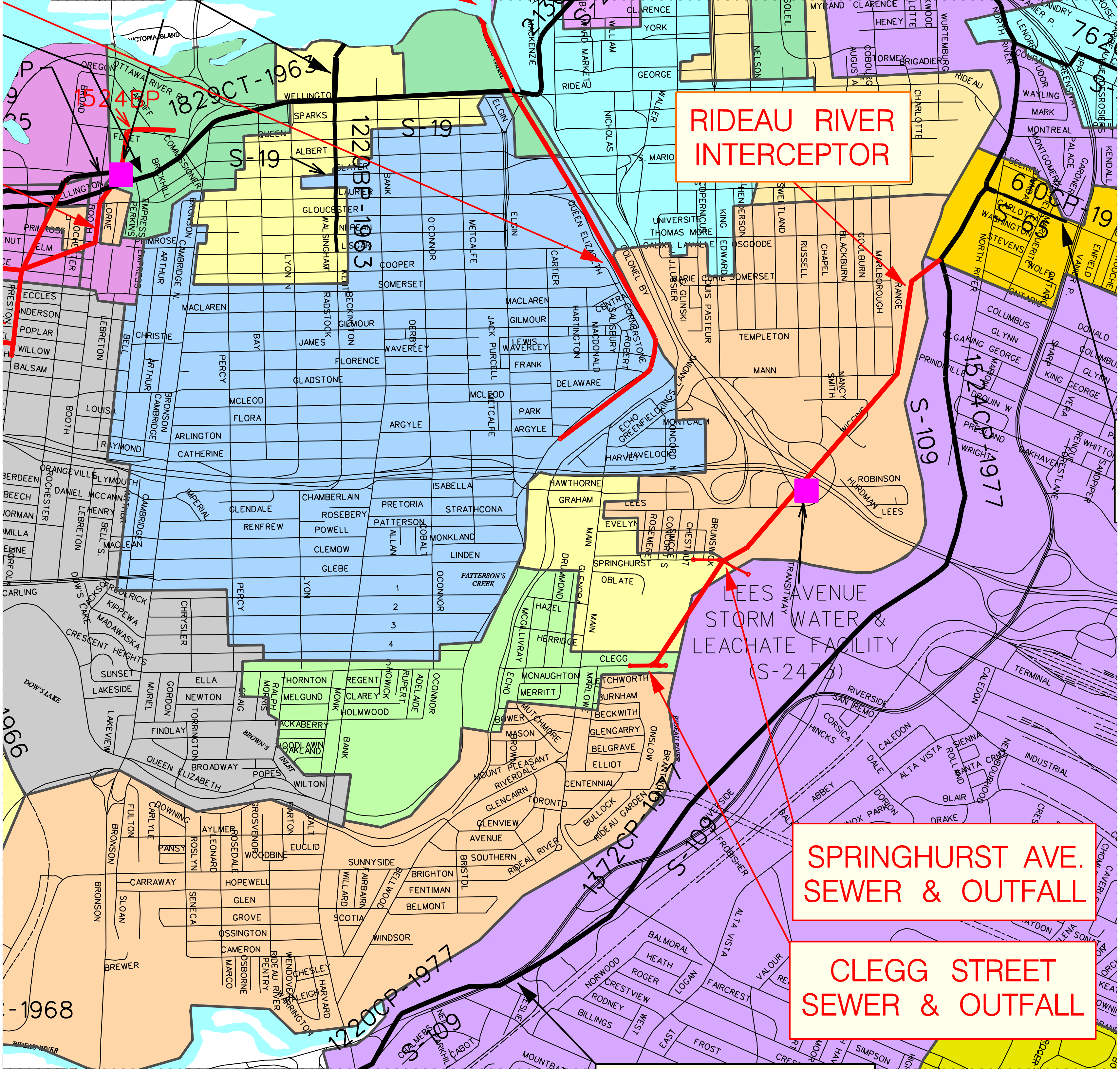
Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Dining room	125 L/seat/d		0.00
Commercial floor space*	2.5 L/m^2/d	1,529	0.09
Water Closets**	150 L/hr	19	0.03
Laundry Facility	1,200 L/unit/d	4	0.06

Average I/C/I Flow **0.18**

Peak Institutional / Commercial Flow 0.27
Peak I/C/I Flow **0.27**

Total Estimated Average Dry Weather Flow Rate	**0.70 L/s**
Total Estimated Peak Dry Weather Flow Rate	**2.13 L/s**
Total Estimated Peak Wet Weather Flow Rate	**2.23 L/s**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines
** Water closets demand of 150 L/hour from Appendix 4-A of the Sewer design guidelines, assuming a 12 hour operation


RIDEAU RIVER INTERCEPTOR
SPRINGHURST AVE. SEWER & OUTFALL
CLEGG STREET SEWER & OUTFALL
LEES AVENUE STORM WATER & LEACHATE FACILITY (S-2473)
1524CP-1977
1372CP-1977
1220CP-1977
1829CT-1963
122CBP-1963
1524BP
S-109
S-19

APPENDIX D

Stormwater Management

890-900 Bank Street
Existing Conditions

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

Existing Drainage Charateristics From Internal Site

Area	0.327	ha
C	0.77	Rational Method runoff coefficient
L	102	m
Up Elev	70.61	m
Dn Elev	69.3	m
Slope	1.3	%
Tc	10.00	min

1) Time of Concentration per Federal Aviation Administration

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	53.7	72.9	156.1	L/s

890-900 Bank Street
Existing Conditions

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Target Flow Rate

Area	0.327	ha
C	0.40	Rational Method runoff coefficient
t_c	10.0	min
	5-year	
i	104.2	mm/hr
Q	37.9	L/s
Ex. Sanitary Flow	0.14	L/s
Total Combined Allowable Release	**38.0**	**L/s**
Proposed Sanitary Flow	2.13	L/s
Total Allowable Stormwater Release	**35.9**	**L/s**

<---- 5-Year Release (37.9 L/s) + Ex. Sanitary Flow (0.14 L/s)
<---- Note that the proposed dry weather flow was used as infiltration will be accounted for through storm calculations
<---- Total Combined Release (38.0 L/s) - Proposed Sanitary Flow (2.13 L/s)

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.049 ha
C 0.66 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	9.4	9.4	0.0	0.0	178.6	20.1	20.1	0.0	0.0

Estimated Post Development Peak Flow from Attenuated Areas 0.332

Total Area 0.283 ha BLDG + A1
C 0.90 Rational Method runoff coefficient

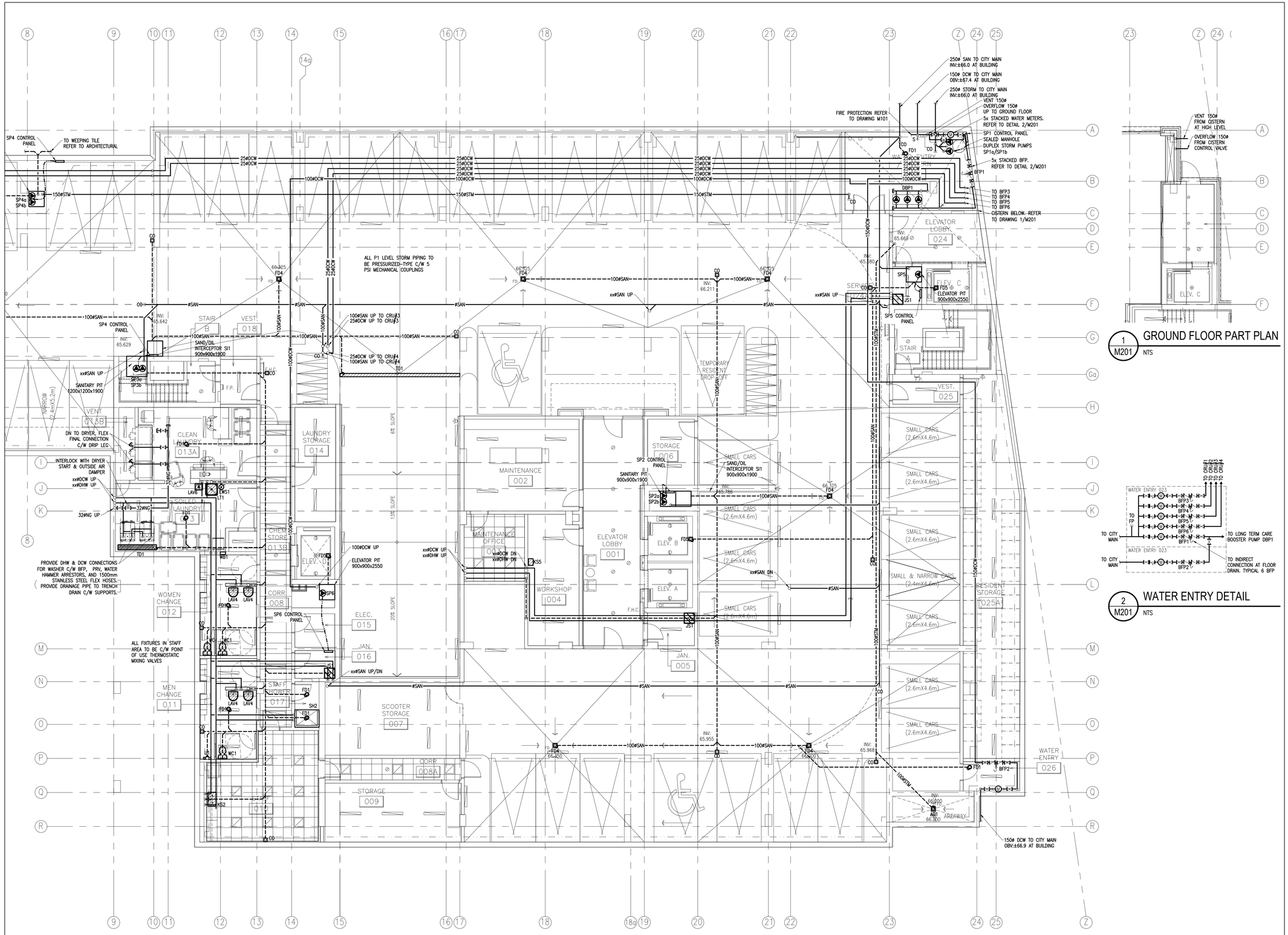
	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	73.7	8.2	65.5	39.3	178.6	140.4	15.6	124.7	74.8
15	83.6	59.1	8.2	50.9	45.8	142.9	112.3	15.6	96.7	87.0
20	70.3	49.7	8.2	41.5	49.7	120.0	94.3	15.6	78.6	94.4
25	60.9	43.1	8.3	34.8	52.2	103.8	81.6	15.6	66.0	99.0
30	53.9	38.2	8.3	29.9	53.8	91.9	72.2	15.6	56.6	101.8
35	48.5	34.3	8.3	26.1	54.7	82.6	64.9	15.6	49.3	103.5
40	44.2	31.3	8.3	23.0	55.2	75.1	59.1	15.6	43.4	104.2
45	40.6	28.7	8.3	20.5	55.2	69.1	54.3	15.6	38.6	104.3
50	37.7	26.6	8.3	18.3	55.0	64.0	50.3	15.6	34.6	103.9
55	35.1	24.8	8.3	16.6	54.6	59.6	46.9	15.6	31.2	103.0
60	32.9	23.3	8.3	15.0	54.0	55.9	43.9	15.6	28.3	101.9
65	31.0	22.0	8.3	13.7	53.3	52.6	41.4	15.6	25.7	100.4
70	29.4	20.8	8.3	12.5	52.4	49.8	39.1	15.6	23.5	98.7
75	27.9	19.7	8.3	11.4	51.4	47.3	37.1	15.6	21.5	96.8
80	26.6	18.8	8.3	10.5	50.3	45.0	35.4	15.6	19.7	94.7
85	25.4	17.9	8.3	9.6	49.1	43.0	33.8	15.6	18.1	92.4
90	24.3	17.2	8.3	8.9	47.9	41.1	32.3	15.6	16.7	90.0
95	23.3	16.5	8.3	8.2	46.5	39.4	31.0	15.6	15.4	87.5
100	22.4	15.9	8.3	7.5	45.2	37.9	29.8	15.6	14.1	84.9
105	21.6	15.3	8.3	6.9	43.7	36.5	28.7	15.6	13.0	82.2
110	20.8	14.7	8.3	6.4	42.3	35.2	27.7	15.6	12.0	79.4

5-year $Q_{attenuated}$ 8.33 L/s **100-year $Q_{attenuated}$ 15.65 L/s**
5-year Max. Storage Required 55.2 m^3 **100-year Max. Storage Required 104.3 m^3**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage Storage (m^3)	100-Year Release Rate Release Rate (L/s)	100-Year Storage Storage (m^3)
Unattenuated Areas	9.4	0.0	20.1	0.0
Attenutated Areas	8.3	55.2	15.6	104.3
Groundwater Discharge*	0.17	0.0	0.17	0.0
Total	**17.9**	**55.2**	**35.9**	**104.3**

* Groundwater Discharge release rate from Geotechnical Response to City Comments prepared by Paterson Group Report PG4377-1, August 10, 2018



1 M201 GROUND FLOOR PART PLAN
NTS

2 M201 WATER ENTRY DETAIL
NTS

AMICA
Mature Lifestyles
CANDEREL

Client

DATE	REVISION	REF
2018-08-16	ISSUED FOR BUILDING PERMIT	–
2018-06-07	ISSUED FOR CLIENT REVIEW	–
2018-04-06	ISSUED FOR CLIENT REVIEW	–

Goodkey Weedmark
Consulting Engineers

GOODKEY WEEDMARK & ASSOCIATES LIMITED
1688 Woodward Dr. 613 727-5111 Voice
Ottawa Ontario 613 727-5115 Fax
Canada K2C 3R8 www.gwal.com Web

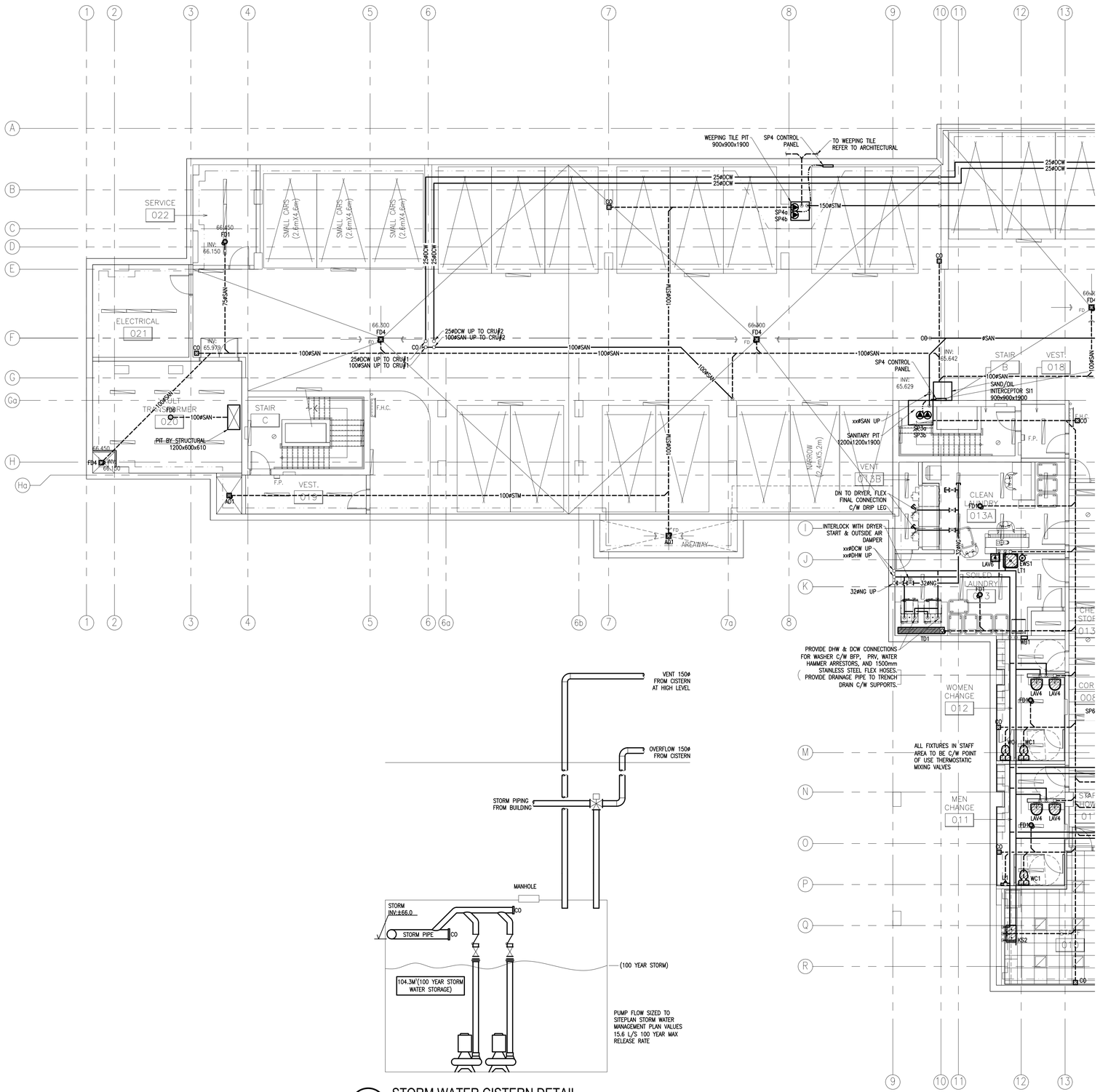
Project north
Nord du projet

Seal/Sceau
LICENSED PROFESSIONAL ENGINEER
F.W.A. BANN
90395575
PROVINCE OF ONTARIO

Project/Projet
890-900 BANK ST
REDEVELOPMENT

Drawing title/Titre du dessin
MECHANICAL
PLUMBING
PARKING LEVEL

Scale / Échelle	1:100	Project no./No. du projet	2017-377
Design by / Conçu par	M.ELGEZARY P.MCCLURE	Drawing/Dessin	M201
Drawn by / Dessiné par	B.BROWN		
Reviewed by / Examiné par	F.BANN		OF 74
Date / Date	AUGUST 2018	Revision no:	–
		Acad file/Fichier:	–



1 / M202 STORM WATER CISTERN DETAIL
NTS

CANDEREL

Client

2018-08-16	ISSUED FOR BUILDING PERMIT	–
2018-06-07	ISSUED FOR CLIENT REVIEW	–
2018-04-06	ISSUED FOR CLIENT REVIEW	–
DATE	REVISION	REF

Goodkey Weedmark
Consulting Engineers

GOODKEY WEEDMARK & ASSOCIATES LIMITED
1688 Woodward Dr. Ottawa Ontario Canada K2C 3R8
613 727-5111 Voice
613 727-5115 Fax
www.gwal.com Web

Project north / Nord du projet

Seal/Sceau

LICENSED PROFESSIONAL ENGINEER F.W.A. BANN 90395575 PROVINCE OF ONTARIO

Project/Projet

890-900 BANK ST REDEVELOPMENT

Drawing title/Titre du dessin

MECHANICAL PLUMBING PARKING LEVEL

Scale / Échelle	1:100	Project no./No. du projet	2017-377
Design by / Conçu par	M.ELGEZARY P.MCCLURE	Drawing/Dessin	M202
Drawn by / Dessiné par	B.BROWN		
Reviewed by / Examiné par	F.BANN		OF 74
Date / Date	AUGUST 2018	Revision no:	–
		Acad file/Fichier:	–

DRAWINGS / FIGURES

ZONING AMENDMENT FILE No.: D02-02-16-0053

SURVEY INFORMATION TAKEN FROM:

TOPOGRAPHICAL PLAN OF PART OF LOT 14 IN BLOCK 9 (NORTH OF HOLLYWOOD AVENUE) REGISTERED PLAN 146098 AND PART OF LOTS 9 AND 9 REGISTERED PLAN 47960

CITY OF OTTAWA
ANNIS, O'SULLIVAN VOLLEBEKK LTD.

SITE SUMMARY:

CIVIL ADDRESS :	850/900 BANK STREET, OTTAWA, ONTARIO
ZONING :	TRADITIONAL MAINSTREET WITH EXCEPTION 1395 AND HEIGHT SCHEDULE 949 [TM [1395] SH(49)]
SITE AREA :	9340m²
PROPOSED USE :	MIXED USE RETAIL AND RETIREMENT HOME / RESIDENTIAL CARE FACILITY 1 LEVEL UNDERGROUND PARKING GARAGE
BUILDING FOOTPRINT: (ABOVE GRADE)	5950m²

ZONING SUMMARY:

	REQUIRED	PROVIDED
MIN. LOT AREA:	NO MINIMUM	9340m²
MIN. LOT WIDTH:	NO MINIMUM	85.80m
BUILDING HEIGHT: 78.3m	99m MAX	

[PER SCHEDULE 949 TO ZONING BY-LAW NO 2008-250]

YARDS:

	REQUIRED	PROVIDED
YARD (BANK STREET)	115m C.L. OF ROAD	115 C.L. OF ROAD
YARD (MAIN STREET)	1.4m	1.49m
YARD (THORNTON AVENUE)	0m FOR FIRST 2 STOREYS	0m FOR FIRST 2 STOREYS
2 STOREYS		
CORNER SITE TRIANGLE	5m	5m
INTERIOR SIDE YARD (AT RESIDENTIAL)	7m	7m
INTERIOR SIDE YARD (NON RESIDENTIAL)	0m	0m

AMENITY

	REQUIRED	PROVIDED
RETIREMENT HOME (61 ROOMING UNITS)		
COMMUNAL AMENITY AREA	366m²	1521m²
BASED ON 10% OF GROSS FLOOR AREA OF ROOMING UNITS		
RESIDENTIAL CARE FACILITY (121 ROOMING UNITS)		
COMMUNAL AMENITY AREA	954m²	1585m²
BASED ON 10% OF GROSS FLOOR AREA OF ROOMING UNITS		
TOTAL AMOUNTS OF AMENITY AREA PROVIDED	660m²	3106m²

VEHICULAR PARKING:

	REQUIRED	PROVIDED
RETIREMENT HOME (61 ROOMING UNITS)	12	18
@1/5 PER DWELLING UNIT OR ROOMING UNIT		
NOTE: SEC. 101 (4)(b) WHERE A RESIDENTIAL USE IS LOCATED WITHIN A BUILDING OF FIVE OR MORE STOREYS, NO OFF-STREET MOTOR VEHICLE PARKING IS REQUIRED TO BE PROVIDED UNDER THIS SECTION FOR THE FIRST TWELVE RESIDENTIAL UNITS (61 ROOMING UNITS - 12 = 49 ROOMING UNITS)		
RESIDENTIAL CARE FACILITY (121 ROOMING UNITS)	15	21
@1/5 PER DWELLING UNIT OR ROOMING UNIT		
MEDICAL, HEALTH OR PERSONAL SERVICES (1,200m²) PLUS 1 PER 100m² OF GROSS FLOOR	2	
AREA USED FOR MEDICAL, HEALTH OR PERSONAL SERVICES INCLUDES ROOMS FOR PHYSICIAN OR WELLNESS, WELLNESS CHARTING, TREATMENT RM, SPA, MEDS		
RETAIL STORE	8	8
1/25 PER 100m² OF GROSS FLOOR AREA SEC. 101(4)(c) IN AREA Y RETAIL WITH A GFA OF 500m² OR LESS, NO OFF-STREET MOTOR VEHICLE PARKING REQUIRED		
ACCESSIBLE PARKING	1	2
VISITOR PARKING	0	0
REGULAR SIZED SPOTS REQUIRED SMALL SPOTS ACCESSIBLE SPOTS	36	34 (47%) 15 (39%) 2 (4%)

BICYCLE PARKING

	REQUIRED	PROVIDED
RETIREMENT HOME @1/25 X 61 UNITS)	15	17
RESIDENTIAL CARE (ZONING) (1/1500m²)	9	9
RETAIL	6	6
TOTAL BICYCLE PARKING	24	26

BUILDING SUMMARY:

	GROSS FLOOR AREA (ZONING BY-LAW)	UNIT COUNT
PARKING GARAGE P1	0m²	0
GROUND FLOOR TOTAL GFA, RETAIL GFA (1,150m²) RETIREMENT HOME GFA (78m²)	1,228m²	0
SECOND FLOOR (Independent Living)	677m²	14
THIRD FLOOR (Core)	1,080m²	31
FOURTH FLOOR (Core)	1,059m²	30
FIFTH FLOOR (Core)	701m²	20
SIXTH FLOOR (Core)	713m²	20
SEVENTH FLOOR (Independent Living)	503m²	13
EIGHTH FLOOR (Independent Living)	736m²	15
NINTH FLOOR (Independent Living)	719m²	13
TOTAL GFA RETAIL GFA: (1,150m² Independent Living Home GFA: 5,240m² Care GFA = 3,593m²	8,115m²	161

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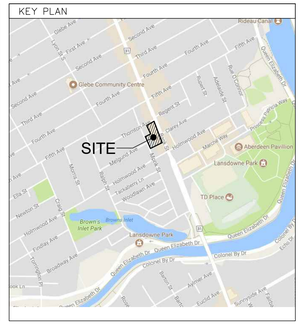
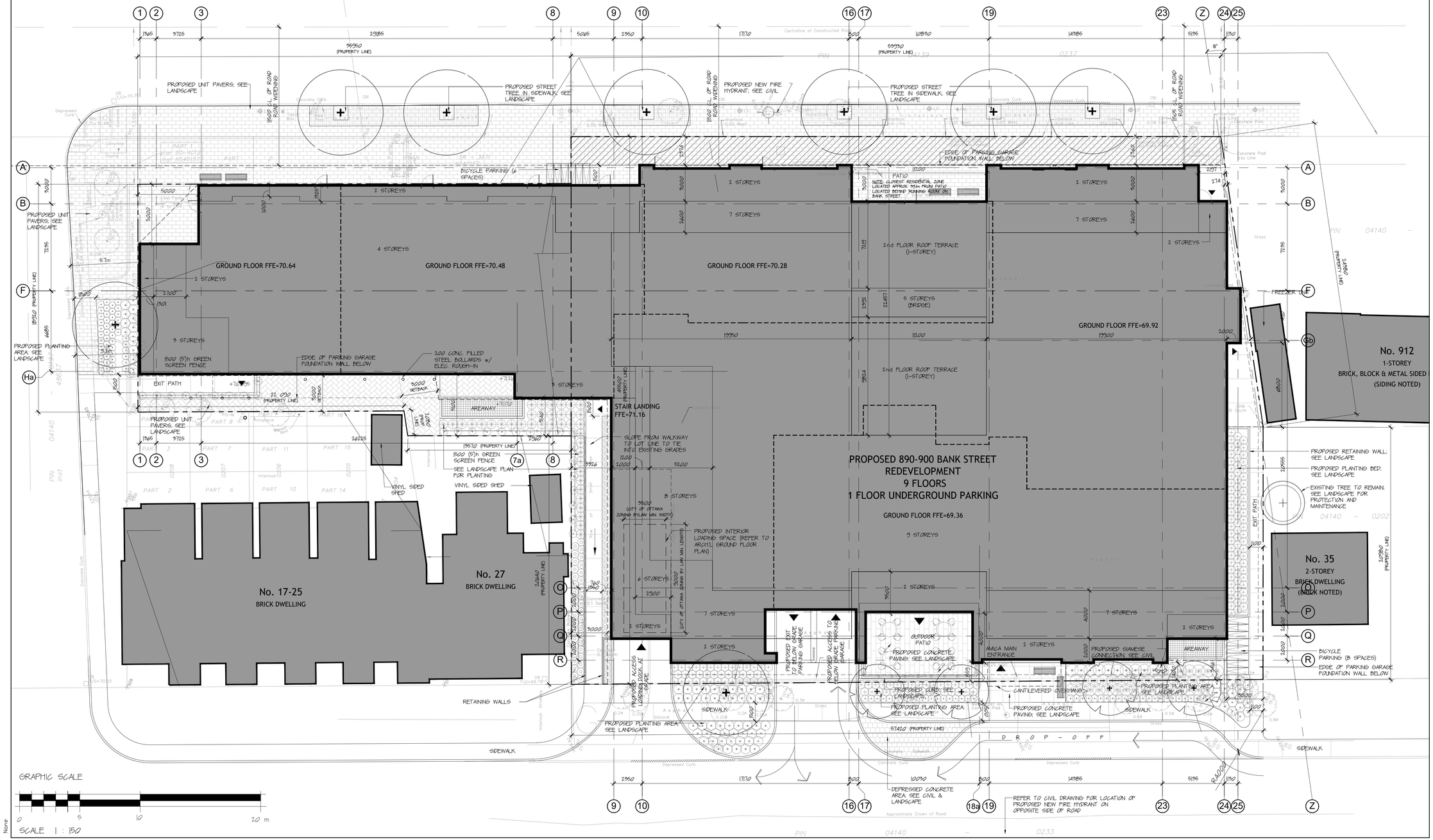
KEY PLAN





GRAPHIC SCALE
0 5 10 20 m
SCALE 1 : 150

None
None

SITE LEGEND

- INTERLOCK PATHWAY
- CONCRETE PAVING
- ROAD WIDENING
- DEPRESSED CONCRETE AREA
- ENTRANCE/EXIT
- FIRE HYDRANT
- TABLE w/ CHAIRS
- BENCH
- SHRUB, SEE LANDSCAPE
- TREES, SEE LANDSCAPE

NOTE: REFER TO LANDSCAPE PLAN FOR EXTERIOR FINISHES, PLANTING & SITE FURNITURE. REFER TO SITE SERVICING AND GRADING PLAN FOR RELEVANT INFO.

no.	date	revision
7	AUG. 16/18	ISSUED FOR BUILDING PERMIT
6	AUG. 8/18	ISSUED IN RESPONSE TO SECOND ROUND OF SITE PLAN COMMENTS
5	AUG. 2/18	ISSUED FOR TENDER PACKAGE 1
4	JUN. 20/18	ISSUED IN RESPONSE TO SITE PLAN COMMENTS
3	APR. 6/18	ISSUED FOR CLIENT REVIEW
2	JAN. 08/18	REVISED ISSUED FOR SITE PLAN CONTROL APPLICATION
1	AUG. 10/17	ISSUED FOR SITE PLAN CONTROL APPLICATION

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

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HOBIN ARCHITECTURE

PROJECT/LOCATION:
890-900 BANK STREET REDEVELOPMENT
890/900 Bank St., Ottawa ON

DRAWING TITLE:
SITE PLAN

DRAWN BY:	DATE:	SCALE:
ML	JUNE 2017	1:150

NORTH ARROW

PROJECT: 0015.24

DRAWING NO.: A1.01

REVISION NO.: