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SITE SERVICING STUDY AND STORMWATER MANAGEMENT REPORT

FOR

HUNTINGTON PROPERTIES
44 IBER ROAD

CITY OF OTTAWA

PROJECT NO.: 16-900

JULY 2017 – REV 2

SITE SERVICING STUDY AND STORMWATER MANAGEMENT REPORT
FOR
44 IBER ROAD

HUNTINGTON PROPERTIES

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FOR
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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by Huntington Properties to prepare a Functional Servicing and Stormwater Management report in support of their application for a Site Plan Control (SPC) at 44 Iber Road.

The subject property is located within the City of Ottawa urban boundary, in the Stittsville ward. As illustrated in ***Figure 1***, the subject property is located south east of the intersection of Iber Road and Hazeldean Road. Comprised of a single parcel, the subject property measures approximately ***1.35 ha*** and is zoned Light Industrial (IL).

Figure 1: Site Location

The proposed SPC would allow for the development of a 1-storey 1222 m^2 industrial building located behind the existing building with associated asphalt parking lots. No change in floor area is proposed to the existing building. A copy of the architectural Site plan is included in ***Drawings/Figures***.

The objective of this report is to provide sufficient detail to demonstrate that the proposed development is supported by existing municipal services.

1.1 Existing Conditions

The existing site includes an industrial building with asphalt parking lots and few vegetated areas. The elevations range between 104.3m and 104.9m with a grade change of approximate 0.6m from the Northeast to the Southwest corner of the property.

An existing 300mm diameter sanitary sewer tributary to the Stittsville Trunk Collector and a 300mm diameter watermain is available within Iber Road. The subject site currently directs stormwater runoff towards the existing stormwater storage area at the rear at of the property.

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.

As a result of the site's industrial zoning designation, OWRA s.53 approval is required from the Ministry of the Environment and Climate Change (MOECC). The MOECC has been contacted to the development to determine the approval requirements. Correspondence with the MOECC is included in ***Appendix A***.

1.3 Pre-consultation

Pre-consultation correspondence, along with the servicing guidelines checklist, is located in ***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)

- **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*)

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

- **Geotechnical Investigation, PG4089-1**
  Paterson Group, April 2017.
  (Geotechnical Report)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 3W pressure zone. A local 300 mm diameter watermain exists within the Iber Road right-of-way, as shown by the Pressure Zone map in ***Appendix B***.

3.2 Water Supply Servicing Design

It is proposed that the development will connect to the existing municipal infrastructure via a 150mm diameter water service. Servicing details for the proposed connection are shown by drawing ***SSP-1***.

Table 1 summarizes the ***Water Supply Guidelines*** employed in the preparation of the preliminary water demand estimate.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Light Industrial Daily Demand	35,000 L/gross ha/d
Industrial Maximum Daily Demand	1.5 x avg. day
Industrial Maximum Hour Demand	6.5 x avg. 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 MOECC Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.*
-Table updated to reflect ISD-2010-2

Table 2 summarizes 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

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] (m H_2O / kPa)
Average Daily Demand	7.5	58.2 / 570.9
Max Day + Fire Flow	11.3 + 7,000= 7,011.3	54.0 / 529.7
Peak Hour	48.8	52.8 / 518.0

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; assumed ground elevation 103m. See ***Appendix B.***

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

Using the ***FUS*** method a conservative estimation of fire flow had been established. The following parameters were established by correspondence with S.J. Lawrence Architect Inc:

- Type of construction – Non-combustible Construction
- Occupancy type –Non-combustible
- Sprinkler Protection – Non-Sprinkler System

The above assumptions result in an estimated fire flow of approximately ***7,000 L/min***, actual building materials selected will affect the estimated flow.

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***.

The City provided both the anticipated minimum and maximum water pressures, as well as the estimated water pressure during fire flow demand for the demands as indicated by the correspondence in ***Appendix B***. Initial boundary conditions obtained indicate residual pressures during average day demands exceed the required pressure range as specified in ***Table 1*** and the ***Water Supply Guidelines***.

3.2.1 EPANet Water Modelling

EPANet was utilized to determine pipe sizing and the availability of pressures throughout the system during average day demand, max day plus fire flow, and peak hour demands. The static model determines pressures based on the available head obtained from the boundary conditions provided by the City of Ottawa.

The model utilizes the Hazen-Williams equation to determine pressure drop, while the pipe properties, including friction factors, have been selected in accordance with Table 4.4 of the ***Water Supply Guidelines***. The model was prepared to assess the available pressure to the proposed building as well as the pressures the watermain provided the fire hydrant during fire flow conditions.

Table 3 summarizes the output reports and model schematics for each scenario.

Table 3
Model Simulation Output Summary

Location	Average Day (kPa)	Max Day + Fire Flow (kPa)	Peak Hour (kPa)
EX.BLDG	571.2†	530.0	518.3
FHYD	578.4†	164.8	525.4
PROP.BLDG	574.5†	160.9	521.5
N1	578.7†	165.1	525.7
† indicates pressures exceeded required pressure values as outlined in ***Table 1***			

The model indicates that pressures during average day exceed the requirements of the ***Water Supply Guidelines***; pressure reducing valves may be required.

3.3 Water Supply Conclusion

Anticipated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions.

Based on the EPANET model, pressures during average day exceed the requirements of the ***Water Supply Guidelines***. Based on the analysis, pressure reducing valves may be required.

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

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within the Stittsville Trunk catchment area, as shown by the City sewer mapping included in ***Appendix C***. An existing 300 mm diameter sanitary sewer within Iber Road is available to service the proposed development.

4.2 Wastewater Design

It is proposed that the development will connect to the existing SANMH within the subject site via a 250mm diameter sanitary sewer, as shown by ***SSP-1***.

Table 4 summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 4
Wastewater Design Criteria

Design Parameter	Value
Infiltration and Inflow Allowance	0.28L/s/ha
Industrial - Light	35,000 L/gross ha/d
Industrial Peaking Factor	7.0 per City of Ottawa Sewer Design Guidelines Appendix 4B
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250mm 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 5 demonstrates the anticipated peak flow from the proposed development. See ***Appendix C*** for associated calculations.

Table 5
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.13
Estimated Peak Dry Weather Flow	0.88
Estimated Peak Wet Weather Flow	1.25

The estimated sanitary flow based on the concept plan provide in ***Drawings/Figures*** anticipates a peak wet weather flow of ***1.25 L/s***.

A sanitary analysis was conducted for the local municipal sanitary sewers located across the frontage of the subject property in order to assess the available capacity. The catchment area serviced by the Iber Road sanitary sewer was identified and evaluated by reviewing existing development and zoning within the area. The analysis was conducted from the site to the upstream extents of the drainage area located near the intersection of Iber Road and Abbott Street, as shown by the sanitary drainage plan in ***Appendix C***.

City of Ottawa Sewer Design Guidelines (2004) Figure 4.3 'Peak Flow Design Parameters' were employed to generate a conservative estimate of the existing wastewater flow conditions within the sewer.

Based on the sanitary analysis, the controlling section of the local sewer system is located from the site to the intersection of Iber Road and Harry Douglas Drive (section 1-2) with an available residual capacity of ***15.1 L/s***; detailed calculations are included in ***Appendix C***.

The analysis above indicates that sufficient capacity is available in the local sewers to accommodate the proposed development.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Stittsville Trunk Collector sewer; based on the sanitary analysis sufficient capacity is available to accommodate the anticipated ***1.25 L/s*** peak wet weather flow from the proposed development.

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

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the rear subject property is currently directed to depressed storage area which attenuates flow before discharging to a swale located along the rear of the site. The swale is tributary to the Hazeldean Creek which outlets to the Carp River Municipal Drain approximately 1.9 km downstream.

Currently, runoff from the front portion of the site flows uncontrolled overland to the road side swale along Iber Road.

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 Mississippi Valley Conservation Authority (MVCA). Consultation with the MVCA is located in ***Appendix A***.

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:

- Meet an allowable release rate based on a Rational Method Coefficient of 0.70, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration for the front yard up to 20 metres from the Iber road right-of-way.
- Meet an allowable release rate based on a Rational Method Coefficient of 0.20, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration for the rear lot and discharge into the existing rear yard swale.
- Attenuate all storms up to and including the City of Ottawa 100-year design event are to be attenuated on site.
- Include quality controls to a normal level of treatment for the proposed development; correspondence with the MVCA is included in ***Appendix A***.

Table 6 summarizes the allowable release rates for the sit based on the information above.

Table 6
Allowable Release Rates

	5-Year Release Rate	100-Year Release Rate
	(L/s)	(L/s)
Front Yard	21.0	44.8
Rear Yard	44.6	95.1
Total	**65.6**	**139.9**

5.3 Proposed Stormwater Management System

Based on consultation with the City of Ottawa staff, runoff from the front yard up to 20 metres from the Iber Road right-of-way will outlet to the existing ditch along Iber Road and runoff from the rear yard will outlet to the existing rear yard swale.

A swale with a 150mm culvert with a 75mm ICD along the front yard is proposed to restrict runoff into the existing ditch along Iber Road. Details are included on the ***SSP-1***.

To compensate for the increase in impervious area, additional storage via the rear stormwater storage area is proposed. The stormwater storage area will contain a catchbasin with two ICDs, a 164mm ICD and a 210mm ICD, to attenuate the 5-year and 100-year flow before discharging to the existing rear yard ditch, respectively. Details are included on the ***SSP-1***.

Table 7 summarizes post-development flow rates for the front yard and rear yard.

Table 7
Stormwater Flow Rate Summary

	Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Required Storage	100-Year Available Storage
		(L/s)	(m^3)	(L/s)	(m^3)	(m^3)
Front Yard	Unattenuated Areas (U1)	17.9	0.0	38.4	0.0	0.0
	Attenuated Areas (A1)	5.7	18.0	7.7	47.0	13.7
Rear Yard	Unattenuated Areas (U2)	7.3	0.0	15.6	0.0	0.0
	Attenuated Areas (B1)	34.1	128.4	76.2	266.9	307.2
	Total	**65.0**	**146.4**	**137.9**	**313.9**	**320.9**

It was estimated that approximately ***47.0 m^3*** of storage will be required in the front yard and ***266.9 m^3*** will be required in the rear yard to attenuate flow to the established 5-year and 100-year release rates of ***65.6 L/s*** and ***139.9 L/s***, respectively; storage calculations are contained within ***Appendix D***.

5.4 Stormwater Quality Control

To reduce TSS, stormwater runoff from parking lots is proposed to be directed to landscaped areas and vegetated depressed storage areas before discharging to the existing rear yard and road side swales. Swales and landscape areas are an effective way to intercept and slow stormwater runoff allowing for infiltration uptake and sedimentation of stormwater before entering the storm system.

Stormwater from roof areas in front yard is considered to be clean as it will not interact with parking areas before discharging to the existing ditch along Iber Road.

5.5 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 of Ottawa ***City Standards***. The post-development allowable 5-year and 100-year release rates were calculated as ***65.6 L/s*** and ***139.9 L/s*** based on consultation with the City of Ottawa. It is estimated that approximately ***47.0 m^3*** of storage will be required in the front yard and ***266.9 m^3*** will be required in the rear yard to meet these release rates.

Based on consultation with the MVCA, quality controls are required to a normal level of treatment for the proposed development. In an effort to meet quality objectives, stormwater will be directed to landscaped areas and vegetated depressed storage areas.

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

6.0 UTILITIES

Gas, Hydro services currently exist within the Iber Road right-of-way. Utility servicing will be coordinated with the individual utility companies prior to site development.

7.0 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 or an approved equivalent filter fabric 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.
- Clean and change filter cloth at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained to prepare a Functional Servicing and Stormwater Management report in support of the application for a Site Plan Control (SPC) at 44 Iber Road. The preceding report outlines the following:

- Based on boundary conditions provided by the City, pressures during average day demands exceed the required pressure range as indicated by the ***Water Supply Guidelines***, it is therefore recommended that a pressure check be conducted at the completion of construction to determine if pressure controls are required;
- The FUS method for estimating fire flow indicated ***7,000 L/min*** is required for the proposed development,
- The development is anticipated to have a peak wet weather flow of ***1.25 L/s***; Based on the sanitary analysis conducted the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on consultation with the City of Ottawa staff, the proposed development will be required to attenuate post development flows to an equivalent 5-year release rate of ***65.6 L/s*** and an equivalent 5-year release rate of ***139.9 L/s*** for all storms up to and including the 100-year storm event;
- It is contemplated that stormwater objectives may be met through storm water retention via surface storage, it is anticipated that ***47.0 m^3*** of storage will be required in the front yard and ***266.9 m^3*** will be required in the rear yard to attenuate flow to the established release rates above;
- Based on consultation with the MVCA, quality controls are required to a normal level of treatment for the proposed development.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Alison J. Gosling, EIT

Prepared by,
David Schaeffer Engineering Ltd.

Per: Adam D. Fobert, P.Eng

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

16-900 03/05/2017

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.	GP-1
☐	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	SSP-1

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 3.1
☒	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.	Section 6.0
☐	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 8.0
☐	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

Alison Gosling

From: Matt Craig <MCraig@mvc.on.ca>
Sent: Tuesday, April 4, 2017 3:52 PM
To: Alison Gosling
Subject: RE: 44 Iber Road - MVCA

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Alison

The Fernbank CDP identifies the watercourse as Hazeldean Creek. MVCA recommends a normal level of water quality treatment be provided.

Regards

Matt Craig | Manager of Planning and Regulations | Mississippi Valley Conservation Authority
www.mvc.on.ca |t. 613 253 0006 ext. 226| f. 613 253 0122 |mcraig@mvc.on.ca

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From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Tuesday, April 4, 2017 2:41 PM
To: Matt Craig
Cc: Myra Van Die; Robert Freel
Subject: 44 Iber Road - MVCA

Good afternoon Matt,

We wanted to touch base with you regarding a development we are working on located at 44 Iber Road, Ottawa.

The stormwater collected from the site travels approximately 1.9 km to a direct outlet into the Carp River Municipal Drain.

The development proposes to construct an additional industrial building with associated aboveground parking. The development will maintain existing stormwater flow patterns.

Can you provide a comment regarding quality controls that maybe required for the site.

Please feel free to call if you have any questions or you would like to discuss.

Thanks in advance,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

Alison Gosling

From: Diamond, Emily (MOECC) <Emily.Diamond@ontario.ca>
Sent: Thursday, April 20, 2017 9:57 AM
To: Alison Gosling
Cc: Robert Freel
Subject: RE: 44 Iber Road - ECA Requirement

Follow Up Flag: Follow up
Flag Status: Completed

Hi Alison,

From the information provided, an Environmental Compliance Approval for stormwater management would be required for the proposed project due to the industrial zoning and proposed building use. The project would not meet the approval exemption set out under Ontario Regulation 525/98.

Regards,

Emily Diamond
Environmental Officer
Ministry of the Environment and Climate Change

Ottawa District Office
2430 Don Reid Drive
Ottawa, Ontario, K1H 1E1
Tel: 613-521-3450 ext 238
Fax: 613-521-5437
e-mail: emily.diamond@ontario.ca

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: April-04-17 2:43 PM
To: Diamond, Emily (MOECC)
Cc: Robert Freel
Subject: 44 Iber Road - ECA Requirement

Good afternoon Emily,

We just wanted to touch base with you regarding a proposed development we are working on located at 44 Iber Road.

Currently comprised a single parcel of land, the existing 1.4ha site currently consists an industrial building and is zoned Industrial Zone. The development proposes to construct an additional 1678 m² industrial building.

It appears that the existing stormwater management system currently directs flow towards the ditch along Iber Road and toward the existing stormwater pond located on-site. The stormwater management will attenuate to the release rate based on City of Ottawa requirements.

We understand that due to the site's industrial zoning designation, an MOE Environmental Compliance Approval is required under OWRA S.53. Can you confirm our assumptions above or advise with regards to ECA requirements for the proposed development.

Please feel free to contact us if you would like to discuss.

Thanks in advance,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

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

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

APPENDIX B

Water Supply

Huntington
44 Iber Road
Existing Site Conditions

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

	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 $L/m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Office	75 $L/9.3m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d	0.186	6.52	4.5	9.8	6.8	42.4	29.5
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			6.5	4.5	9.8	6.8	42.4	29.5
Total Demand			**6.5**	**4.5**	**9.8**	**6.8**	**42.4**	**29.5**

Huntington
44 Iber Road
Proposed Site Conditions

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

	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

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			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
Office	75 $L/9.3m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Ex. Industrial - Light	35,000 L/gross ha/d	0.186	6.52	4.5	9.8	6.8	42.4	29.5
Industrial - Light	35,000 L/gross ha/d	0.122	4.28	3.0	6.4	4.5	27.8	19.3
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			10.8	7.5	16.2	11.3	70.2	48.8
Total Demand			**10.8**	**7.5**	**16.2**	**11.3**	**70.2**	**48.8**

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	1,681.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	7216.0	L/min	
	7000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Non-Combustible	-25%	
Fire Flow	**5250.0**	**L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered	0%	
Reduction	**0**	**L/min**

4. Increase for Separation Distance

N	10.1m-20m	15%	
S	20.1m-30m	10%	
E	30.1m-45m	5%	
W	>45m	0%	
	% Increase	**30%**	*value not to exceed 75% per FUS Part II, Section 4*
	Increase	**1575.0**	**L/min**

Total Fire Flow

Fire Flow	6825.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section*
	7000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by S.J. Lawrence Architect Inc.
-Calculations based on Fire Underwriters Survey - Part II

44 Iber Road

Boundary Conditions Unit Conversion

Boundary Conditions Unit Conversion

	Height (m)	Elevation (m	m H_2O	PSI	kPa		L/s	L/min
Avg. DD	161.2	103	58.2	82.8	570.9	Fire Flow @ 140kPa	116.67	7000
Fire Flow	157.0	103	54.0	76.8	529.7			
Peak Hour	155.8	103	52.8	75.1	518.0			

Minor Loss Coefficients

Fitting	Loss Coefficient
Globe valve, fully open	10
Angle valve, fully open	5
Swing check valve, fully open	2.5
Gate valve, fully open	0.2
Short-radius elbow	0.9
Medium-radius elbow	0.8
Long-radius elbow	0.6
45 degree elbow	0.4
Closed return bend	2.2
Standard tee - flow through run	0.6
Standard tee - flow through branch	1.8
Square Entrance	0.5
Exit	1

*Minor loss coefficients based on EPANET 2 USERS MANUAL, dated September 2000

Pipe Diameter vs. "C" Factor

Pipe Diameter (m)	C-Factor
150	100
200 to 250	110
300 to 600	120
Over 600	130

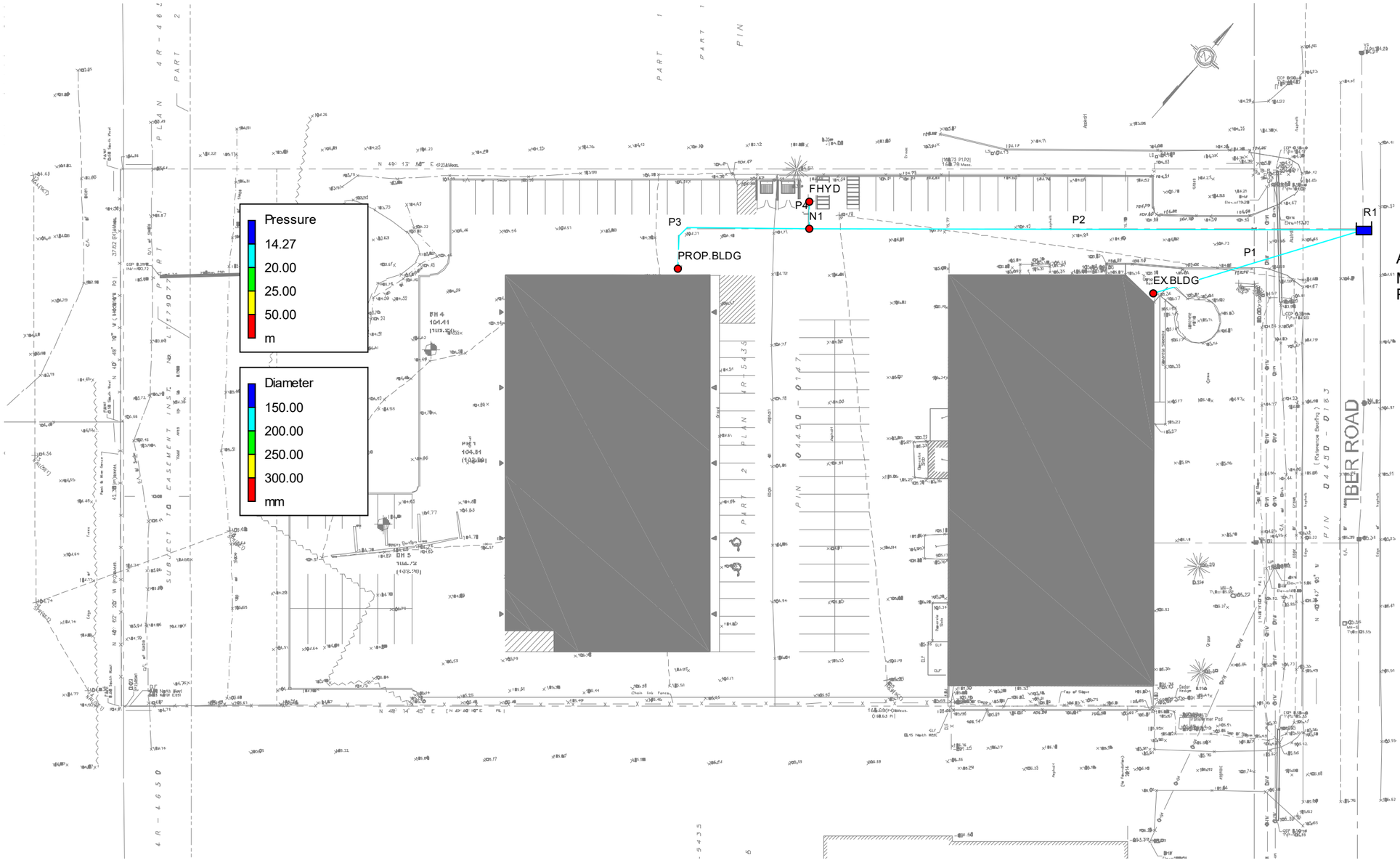
Node Pressures

Kpa	Pressure (kPa)	Pressure (m H20)
Max	552	56.3
Rec Max	480	49.0
Rec Min	350	35.7
Min	275	28.1

Location	Average Day (kPa)	Max Day + Fire Flow (kPa)	Peak Hour (kPa)
EX.BLDG	571.2	530.0	518.3
FHYD	578.4	164.8	525.4
PROP.BLDG	574.5	160.9	521.5
N1	578.7	165.1	525.7

44 IBER ROAD - AVERAGE DAY DEMAND

Day 1, 12:00 AM



AVERAGE DAY DEMAND = 161.2
MAX DAY + FIRE FLOW = 157.0
PEAK HOUR = 155.8

```
******************************************************************
*                          E P A N E T                           *
*                  Hydraulic and Water Quality                   *
*                  Analysis for Pipe Networks                    *
*                        Version 2.0                             *
******************************************************************

Input File: 2017-07-04_900.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P1	EX.BLDG	R1	30.7	150
P2	R1	N1	82.3	150
P3	PROP.BLDG	N1	55.6	150
P4	N1	FHYD	3.7	150

Node Results:

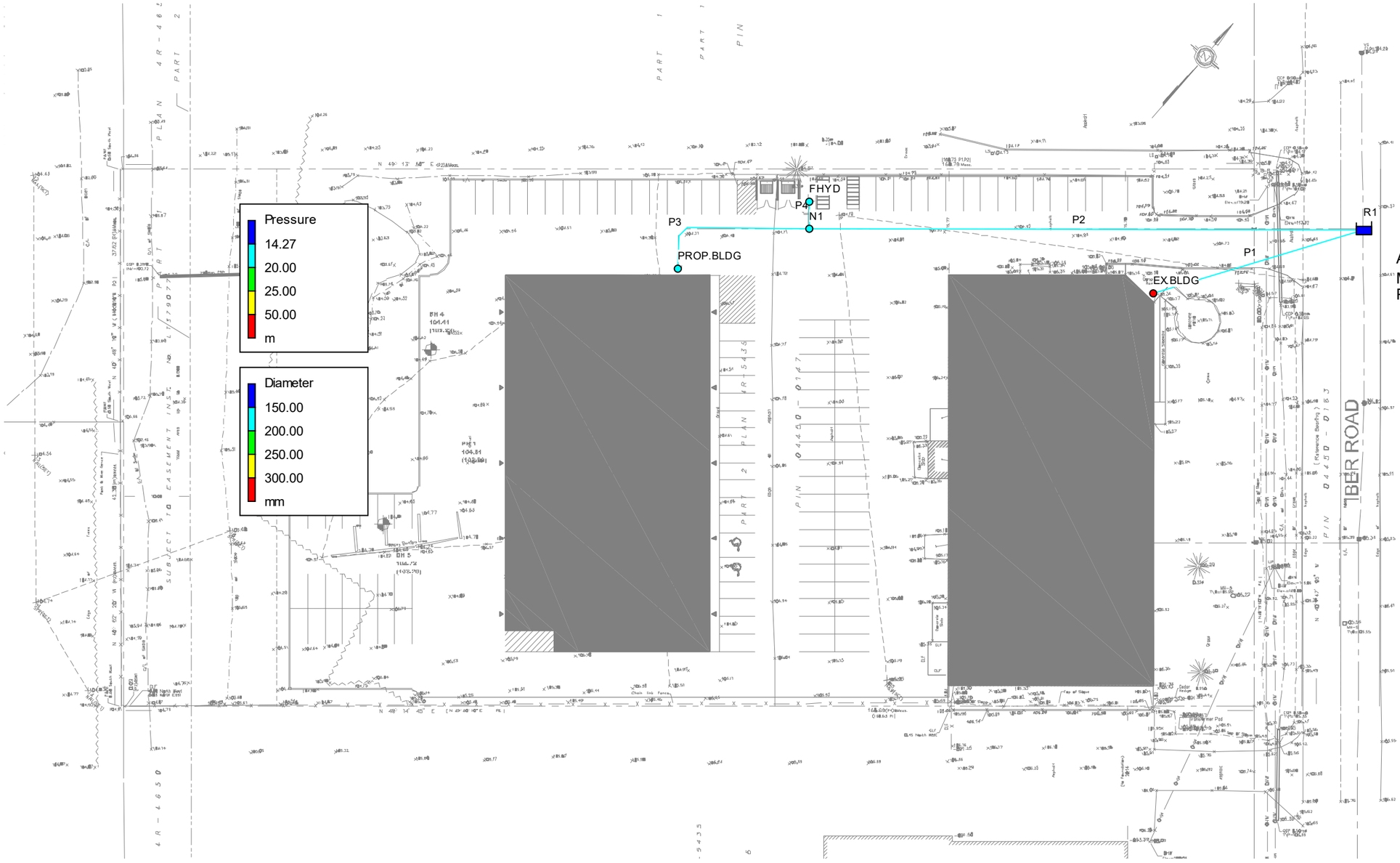
Node ID	Demand LPM	Head m	Pressure m	Quality	
PROP.BLDG	3.00	161.20	58.56	0.00	
N1	0.00	161.20	58.99	0.00	
EX.BLDG	4.50	161.20	58.23	0.00	
FHYD	0.00	161.20	58.96	0.00	
R1	-7.50	161.20	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPM	Velocity m/s	Unit Headloss m/km	Status
P1	-4.50	0.00	0.00	Open
P2	3.00	0.00	0.00	Open
P3	-3.00	0.00	0.00	Open
P4	0.00	0.00	0.00	Open

44 IBER ROAD - MAX DAY + FIRE FLOW DEMAND

Day 1, 12:00 AM



AVERAGE DAY DEMAND = 161.2
MAX DAY + FIRE FLOW = 157.0
PEAK HOUR = 155.8

```
******************************************************************
*                          E P A N E T                           *
*                  Hydraulic and Water Quality                   *
*                  Analysis for Pipe Networks                    *
*                        Version 2.0                             *
******************************************************************

Input File: 2017-07-04_900.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P1	EX.BLDG	R1	30.7	150
P2	R1	N1	82.3	150
P3	PROP.BLDG	N1	55.6	150
P4	N1	FHYD	3.7	150

Node Results:

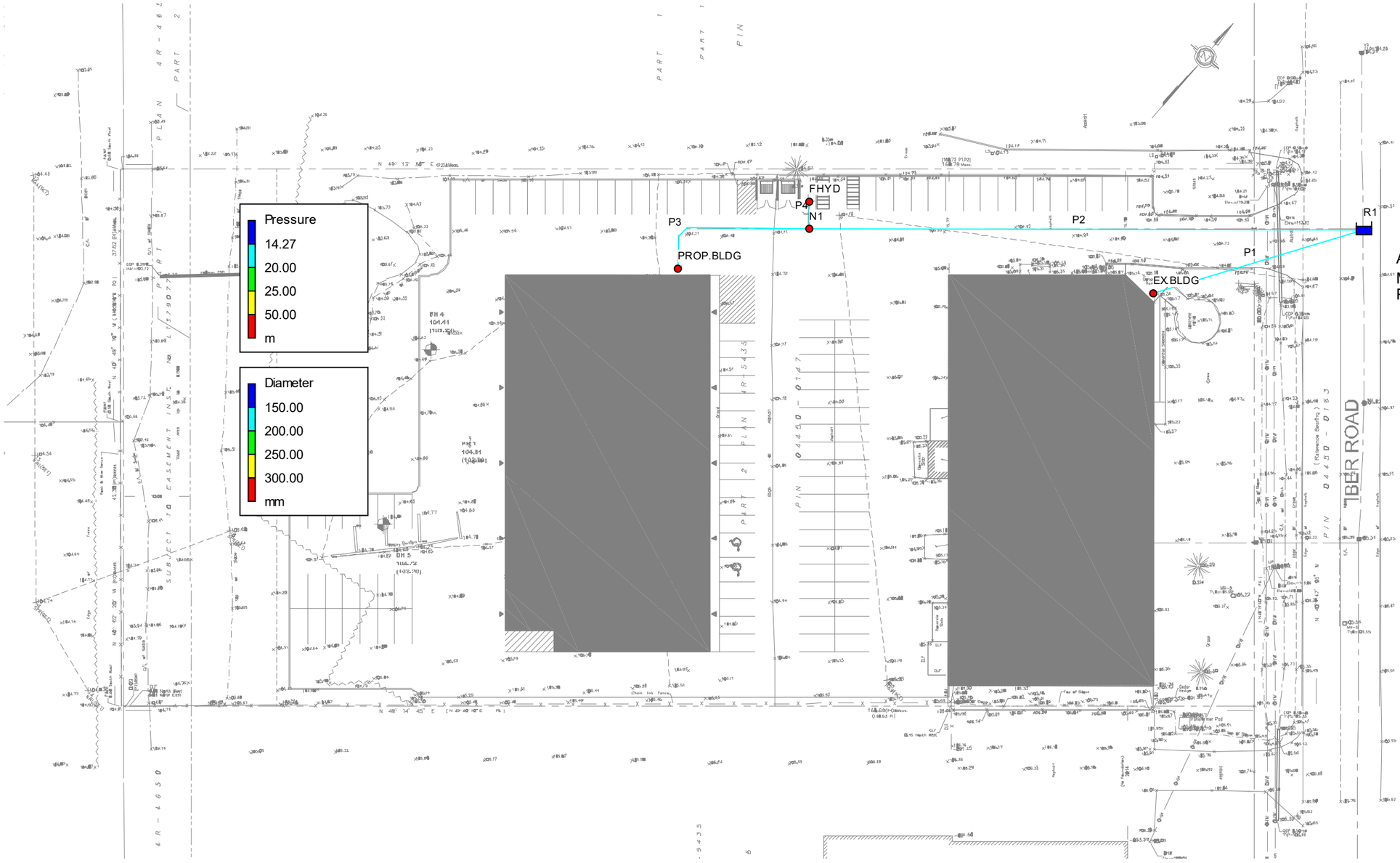
Node ID	Demand LPM	Head m	Pressure m	Quality	
PROP.BLDG	4.50	119.04	16.40	0.00	
N1	7000.00	119.04	16.83	0.00	
EX.BLDG	6.80	157.00	54.03	0.00	
FHYD	0.00	119.04	16.80	0.00	
R1	-7011.30	157.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPM	Velocity m/s	Unit Headloss m/km	Status
P1	-6.80	0.01	0.00	Open
P2	7004.50	6.61	461.22	Open
P3	-4.50	0.00	0.00	Open
P4	0.00	0.00	0.00	Open

44 IBER ROAD - PEAK HOUR DEMAND

Day 1, 12:00 AM



AVERAGE DAY DEMAND = 161.2
MAX DAY + FIRE FLOW = 157.0
PEAK HOUR = 155.8

```
******************************************************************
*                          E P A N E T                           *
*                  Hydraulic and Water Quality                   *
*                  Analysis for Pipe Networks                    *
*                        Version 2.0                             *
******************************************************************

Input File: 2017-07-04_900.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P1	EX.BLDG	R1	30.7	150
P2	R1	N1	82.3	150
P3	PROP.BLDG	N1	55.6	150
P4	N1	FHYD	3.7	150

Node Results:

Node ID	Demand LPM	Head m	Pressure m	Quality	
PROP.BLDG	19.30	155.80	53.16	0.00	
N1	0.00	155.80	53.59	0.00	
EX.BLDG	29.50	155.80	52.83	0.00	
FHYD	0.00	155.80	53.56	0.00	
R1	-48.80	155.80	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPM	Velocity m/s	Unit Headloss m/km	Status
P1	-29.50	0.03	0.02	Open
P2	19.30	0.02	0.01	Open
P3	-19.30	0.02	0.01	Open
P4	0.00	0.00	0.00	Open

44 Iber Road Boundary Conditions

Information Provided:
Date provided: April 2017

Scenario	Demand	
	L/min	L/s
Average Daily Demand	8.4	0.14
Maximum Daily Demand	13.2	0.22
Peak Hour	55.8	0.93
Fire Flow Demand	7000	116.67

Location:

Results:

Connection 1 - Iber Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.2	82.7
Peak Hour	155.8	75.0
Max Day plus Fire (7,000 l/min)	157.0	76.8

[1] Ground Elevation = 103 m

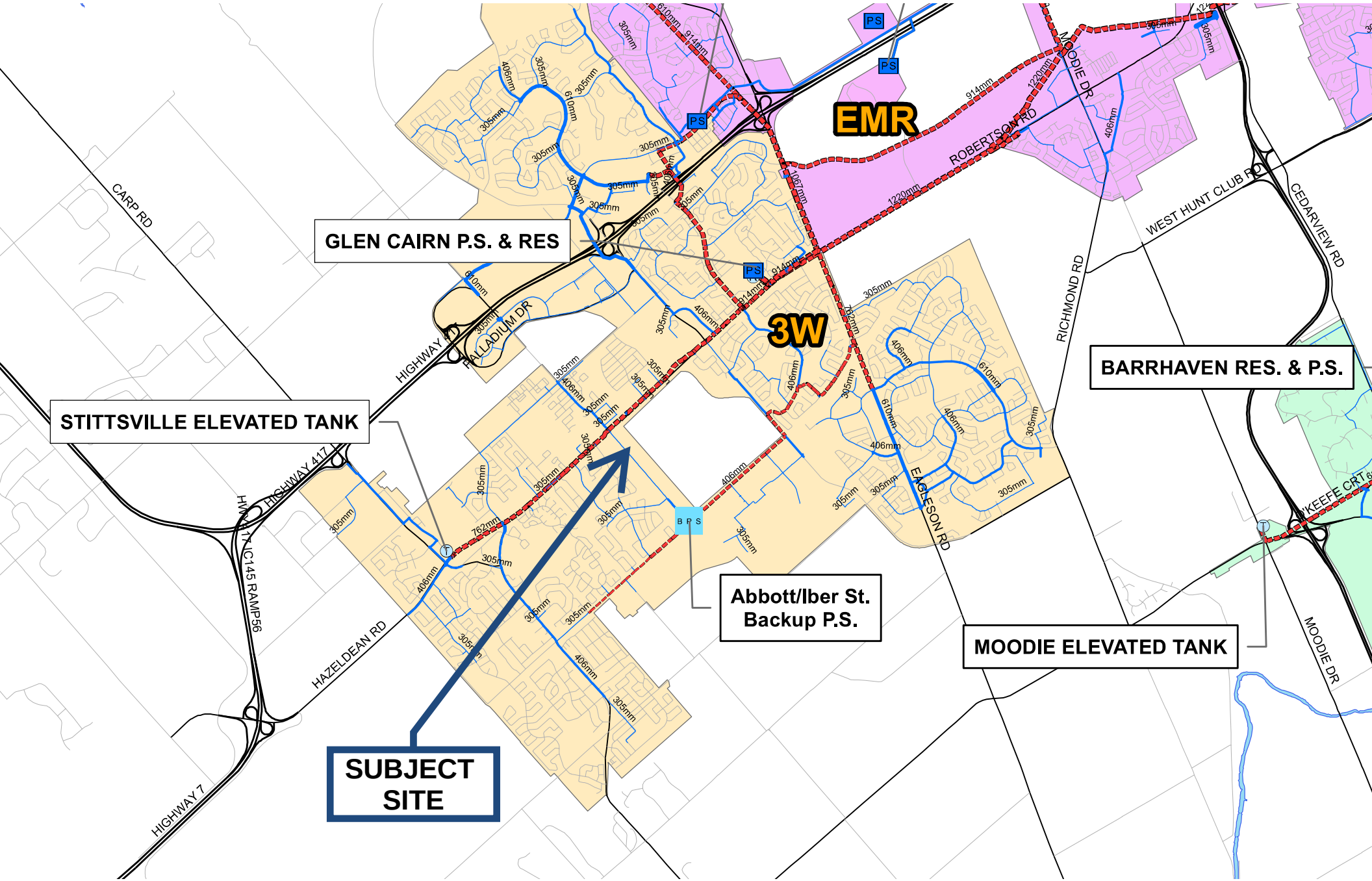
Notes:

1) As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
   a) If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
   b) Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

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

City of Ottawa - Water Distribution Systems



APPENDIX C

Wastewater Collection

Huntington
44 Iber Road
Proposed Site Conditions

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 1.351 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.38 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
Average	1.8		0

Total Pop **0**

Average Domestic Flow **0.00 L/s**

Peaking Factor **4.00**

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	$L/m^2/d$		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Ex. Industrial - Light**	35,000	L/gross ha/d	0.186	0.08
Industrial - Light**	35,000	L/gross ha/d	0.122	0.05
Industrial - Heavy**	55,000	L/gross ha/d		0.00

Average I/C/I Flow **0.13**

I/C/I Peaking Factor **7**

Peak Institutional / Commercial Flow 0.00
Peak Industrial Flow** 0.88
Peak I/C/I Flow **0.88**

** 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	**0.13 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.88 L/s**
Total Estimated Peak Wet Weather Flow Rate	**1.25 L/s**

SANITARY SEWER CALCULATION SHEET

CLIENT: **HUNTINGTON PROPERTIES**
LOCATION: **44 IBER ROAD**
FILE REF: **16-900**
DATE: **4-Jul-17**

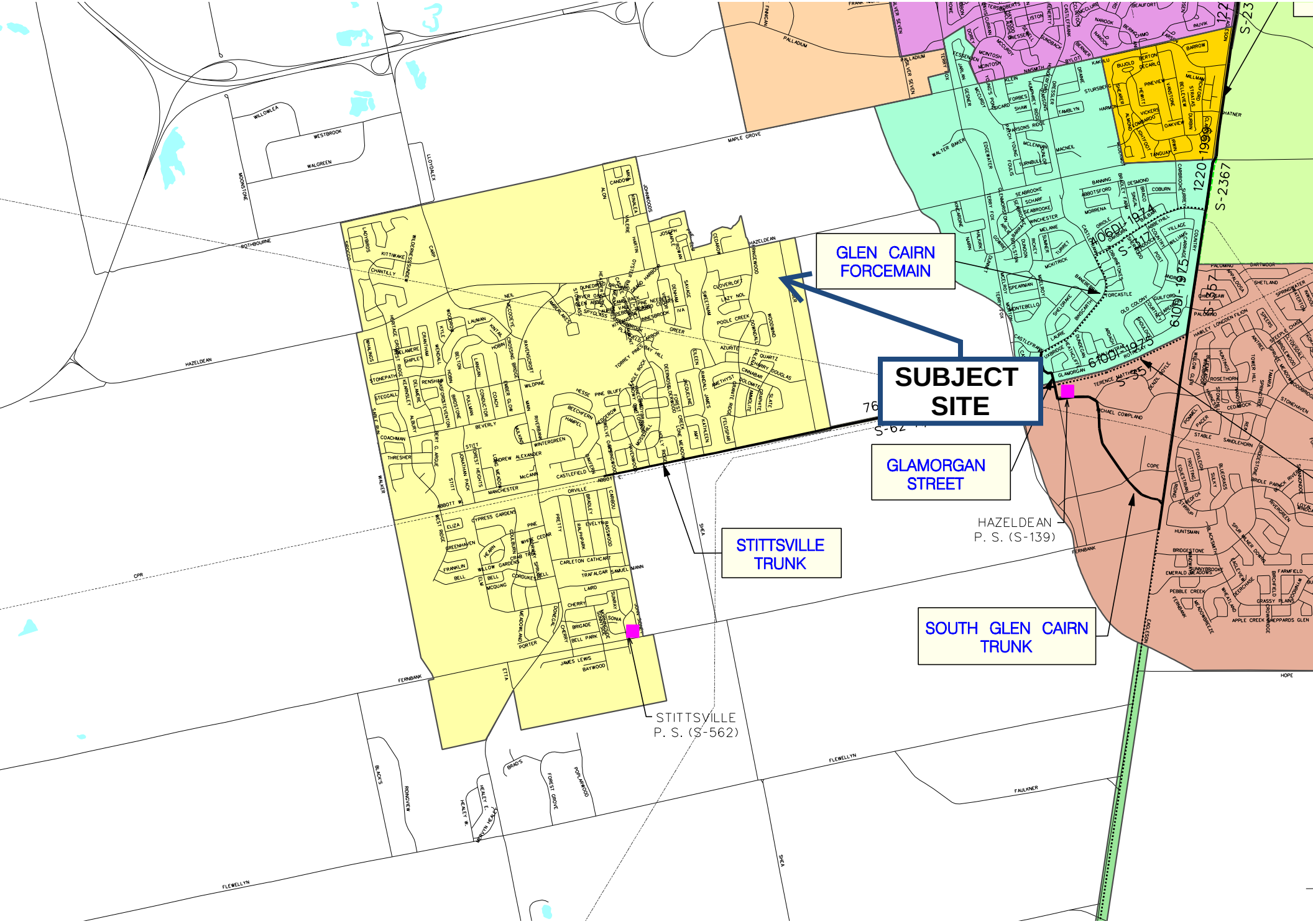
DESIGN PARAMETERS

Avg. Daily Flow Res.	350	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28	L/s/ha
Avg. Daily Flow Comn	50,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	50,000	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indus	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	

Location			Residential Area and Population									Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
				by type					Area	Pop.	Fact.			Area		Area		Area		Area	Area	Flow	Flow								
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
SITE	1	2	0.000					0.0	0.000	0.0	4.00	0.00		0.00		0.00	24.40	24.40	19.8	24.400	24.400	6.832	26.60	300	0.19		0.071	0.075	0.59	41.7	0.64
STITTSVILLE TRUNK	2	3	0.850	6				20.0	0.850	20.0	4.00	0.32		0.00		0.00	9.90	34.30	27.8	10.750	35.150	9.842	37.96	375	0.14		0.110	0.094	0.59	65.6	0.58


1
2
3
SITE
AREA A
24.4 ha
INDUSTRIAL
AREA B
9.9 ha
INDUSTRIAL
0.85 ha
RESIDENTIAL
9 SINGLE FAMILY
HOMES
STITTSVILLE
TRUNK
prom Sweetnam Dr
prom Harry Douglas Dr
ch Iber Rd
prom Fringewood Dr
cour Cloverdell Crt
cour Lazy Nor Crt
croiss Poole Creek Cres
croiss Woodwind Cres
voie Cinnabar Way
ch Graphite Rd
croiss Amethyst Cres
croiss Eileen Cres
prom Savage Dr
voie Denham Way
rue Victor St
500 m

TRUNK SANITARY SEWERS AND COLLECTION AREAS



APPENDIX D

Stormwater Management

44 Iber Road
Stormwater Summary

Front Yard

5-year		100-year	
Q	21.0 L/s	**Q**	44.8 L/s

Rear Yard

5-year		100-year	
Q	44.6 L/s	**Q**	95.1 L/s

Total

5-year		100-year	
Q	65.6 L/s	**Q**	139.9 L/s

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m^3)	100-Year Release Rate (L/s)	100-Year Required Storage (m^3)	100-Year Available Storage (m^3)
Front Yard	23.6	18.0	46.1	47.0	13.7
Rear Yard	41.4	128.4	91.8	266.9	307.2
Total	**65.0**	**146.4**	**137.9**	**313.9**	**320.9**

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

Existing Drainage Charateristics From Internal Site

Area	1.351	ha
C	0.56	Rational Method runoff coefficient
L	145.56	m
Up Elev	105.09	m
Dn Elev	103.64	m
Slope	1.0	%
Tc	21.3	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	50.0	67.4	115.1	mm/hr
Q	104.6	141.2	301.2	L/s

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

Target Flow Rate - Front Yard

Area	0.160	ha
C	0.70	Rational Method runoff coefficient
t_c	21.3	min

5-year			**100-year**		
i	67.4	mm/hr	**i**	115.1	mm/hr
Q	21.0	L/s	**Q**	44.8	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID **U1**
Total Area 0.084 ha
C 0.79 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)
11.6	96.6	17.9	17.9	0.0	0.0	165.5	38.4	38.4	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Area ID **A1**
Available Sub-surface Storage
Maintenance Structures

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage	**Ponding**	**h_o**	**delta d**	**V***	**V_{acc}****	**$Q_{release}$†**	**$V_{drawdown}$**
	(m)	**(m^2)**	**(m)**	**(m)**	**(m^3)**	**(m^3)**	**(L/s)**	**(hr)**
ICD INV	104.57	0	0.00			0.0	0.0	0.00
0.10 Ponding	104.67	86	0.10	0.10	3.1	3.1	3.8	0.23
0.20 Ponding	104.77	128	0.20	0.10	10.7	13.7	5.3	0.71
0.30 Ponding	104.87	153	0.30	0.10	14.0	27.8	6.5	1.18
0.40 Ponding	104.97	178	0.40	0.10	16.5	44.3	7.5	1.63
0.50 Ponding	105.07	211	0.50	0.10	19.4	63.7	8.4	2.09

* V=Incremental storage volume
** V_{acc}=Total surface and sub-surface
† $Q_{release}$ = Release rate calculated from orifice equation

Orifice Location **CSP** **Dia** 75
Total Area 0.189 ha
C 0.55 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	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	30.2	5.7	24.5	14.7	178.6	64.8	7.7	57.1	34.3
15	83.6	24.2	5.7	18.5	16.7	142.9	51.8	7.7	44.2	39.7
20	70.3	20.4	5.7	14.7	17.6	120.0	43.5	7.7	35.8	43.0
25	60.9	17.7	5.7	12.0	18.0	103.8	37.7	7.7	30.0	45.0
30	53.9	15.6	5.7	9.9	17.9	91.9	33.3	7.7	25.6	46.2
35	48.5	14.1	5.7	8.4	17.6	82.6	30.0	7.7	22.3	46.8
40	44.2	12.8	5.7	7.1	17.1	75.1	27.3	7.7	19.6	47.0
45	40.6	11.8	5.7	6.1	16.4	69.1	25.0	7.7	17.4	46.9
50	37.7	10.9	5.7	5.2	15.7	64.0	23.2	7.7	15.5	46.6
55	35.1	10.2	5.7	4.5	14.8	59.6	21.6	7.7	14.0	46.0
60	32.9	9.6	5.7	3.9	13.9	55.9	20.3	7.7	12.6	45.4
65	31.0	9.0	5.7	3.3	12.9	52.6	19.1	7.7	11.4	44.5
70	29.4	8.5	5.7	2.8	11.9	49.8	18.1	7.7	10.4	43.6
75	27.9	8.1	5.7	2.4	10.8	47.3	17.1	7.7	9.5	42.6
80	26.6	7.7	5.7	2.0	9.6	45.0	16.3	7.7	8.6	41.5
85	25.4	7.4	5.7	1.7	8.5	43.0	15.6	7.7	7.9	40.3
90	24.3	7.0	5.7	1.3	7.3	41.1	14.9	7.7	7.2	39.1
95	23.3	6.8	5.7	1.1	6.1	39.4	14.3	7.7	6.6	37.8
100	22.4	6.5	5.7	0.8	4.8	37.9	13.7	7.7	6.1	36.4
105	21.6	6.3	5.7	0.6	3.5	36.5	13.2	7.7	5.6	35.0
110	20.8	6.0	5.7	0.3	2.3	35.2	12.8	7.7	5.1	33.6

5-year $Q_{attenuated}$	**5.70 L/s**	**100-year $Q_{attenuated}$**	**7.67 L/s**
5-year Max. Storage Required	**18.0 m^3**	**100-year Max. Storage Required**	**47.0 m^3**
Est. 5-year Storage Elevation	**104.80 m**	**Est. 100-year Storage Elevation**	**104.98 m**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m^3)	100-Year Release Rate (L/s)	100-Year Required Storage (m^3)	100-Year Available Storage (m^3)
Unattenuated Areas	17.9	0.0	38.4	0.0	0.0
Attenutated Areas	5.7	18.0	7.7	47.0	13.7
Total	**23.6**	**18.0**	**46.1**	**47.0**	**13.7**

									Ditch Data												
Up	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**I**	**Q**	**depth**	**Side Slope**	**Bot. Width**	**Mannings**	**Slope**	**Length**	**A_{flow}**	**Wet. Per.**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
		(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(X:1)**	**(m)**	**n**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
		0.189	0.55	0.10	0.10	10.0	104.2	30.2	500	10	0.5	0.03	0.20	56.7	2.750	10.550	0.26	0.61	1,672.8	1.6	0.02
						11.6															

	Imp.	**Perv.**	**Total**
Area	0.095	0.094	0.189
C	0.9	0.2	0.55

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

Target Flow Rate - Rear Yard

Area 1.190 ha
C 0.20 Rational Method runoff coefficient
t_c 21.3 min

5-year			**100-year**	
i	67.4	mm/hr	**i**	115.1 mm/hr
Q	44.6	L/s	**Q**	95.1 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID **U2**
Total Area 0.126 ha
C 0.20 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	7.3	7.3	0.0	0.0	178.6	15.6	15.6	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Area ID **B1**
Available Sub-surface Storage
Maintenance Structures

Total Subsurface Storage (m^3)

Stage Attenuated Areas Storage Summary

		Surface Storage				Surface and Subsurface Storage				
	Stage (m)	Ponding (m^2)	h_5 (m)	h_{100} (m)	delta d (m)	V* (m^3)	V_{acc}** (m^3)	$Q_{5\text{-year}}$† (L/s)	$Q_{100\text{-year}}$† (L/s)	Q_{total}† (L/s)
5-year Orifice INV	103.70	0.4	0.00	0.00			0.0	0.0	0.0	0.0
5-year Orfice OBV	103.85	245.77	0.15	0.00	0.15	12.8	12.8	22.1	0.0	22.1
0.25m Ponding	103.95	655.28	0.25	0.00	0.10	43.4	56.2	28.5	0.0	28.5
0.35m Ponding	104.06	694.79	0.36	0.00	0.11	74.2	130.5	34.2	0.0	34.2
100-year Orifice INV	104.07	698.42	0.37	0.00	0.01	7.0	137.4	34.7	0.0	34.7
Top of Storage Area	104.30	778.32	0.60	0.23	0.23	169.7	307.2	44.2	44.9	89.1

* V=Incremental storage volume
** V_{acc}=Total surface and sub-surface
† $Q_{release}$ = Release rate calculated from orifice equation

Orifice Location **CSP(5-YR)** **Dia** 164 **CSP(100-YR)** **Dia** 210
INV 103.70 **INV** 104.07

Total Area 0.952 ha
C 0.74 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	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	203.7	34.1	169.6	101.8	178.6	436.3	76.2	360.1	216.1
15	83.6	163.3	34.1	129.3	116.3	142.9	349.2	76.2	273.0	245.7
20	70.3	137.3	34.1	103.2	123.9	120.0	293.1	76.2	216.9	260.3
25	60.9	119.0	34.1	85.0	127.4	103.8	253.8	76.2	177.6	266.3
30	53.9	105.4	34.1	71.3	128.4	91.9	224.5	76.2	148.3	266.9
35	48.5	94.8	34.1	60.8	127.6	82.6	201.8	76.2	125.6	263.7
40	44.2	86.4	34.1	52.3	125.5	75.1	183.6	76.2	107.4	257.8
45	40.6	79.4	34.1	45.3	122.4	69.1	168.7	76.2	92.5	249.8
50	37.7	73.6	34.1	39.5	118.6	64.0	156.3	76.2	80.1	240.2
55	35.1	68.7	34.1	34.6	114.1	59.6	145.7	76.2	69.5	229.3
60	32.9	64.4	34.1	30.3	109.1	55.9	136.6	76.2	60.4	217.4
65	31.0	60.7	34.1	26.6	103.7	52.6	128.6	76.2	52.4	204.5
70	29.4	57.4	34.1	23.3	98.0	49.8	121.7	76.2	45.5	191.0
75	27.9	54.5	34.1	20.4	91.9	47.3	115.5	76.2	39.3	176.7
80	26.6	51.9	34.1	17.8	85.6	45.0	109.9	76.2	33.7	161.9
85	25.4	49.6	34.1	15.5	79.1	43.0	105.0	76.2	28.8	146.7
90	24.3	47.5	34.1	13.4	72.3	41.1	100.5	76.2	24.3	131.0
95	23.3	45.6	34.1	11.5	65.4	39.4	96.4	76.2	20.2	114.9
100	22.4	43.8	34.1	9.7	58.3	37.9	92.6	76.2	16.4	98.5
105	21.6	42.2	34.1	8.1	51.0	36.5	89.2	76.2	13.0	81.8
110	20.8	40.7	34.1	6.6	43.7	35.2	86.0	76.2	9.8	64.8

5-year $Q_{attenuated}$	**34.09 L/s**	**100-year $Q_{attenuated}$**	**76.20 L/s**
5-year Max. Storage Required	**128.4 m^3**	**100-year Max. Storage Required**	**266.9 m^3**
Est. 5-year Storage Elevation	**104.06 m**	**Est. 100-year Storage Elevation**	**104.25 m**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m^3)	100-Year Release Rate (L/s)	100-Year Required Storage (m^3)	100-Year Available Storage (m^3)
Unattenutated Areas	7.3	0.0	15.6	0.0	0.0
Attenutated Areas	34.1	128.4	76.2	266.9	307.2
Total	**41.4**	**128.4**	**91.8**	**266.9**	**307.2**

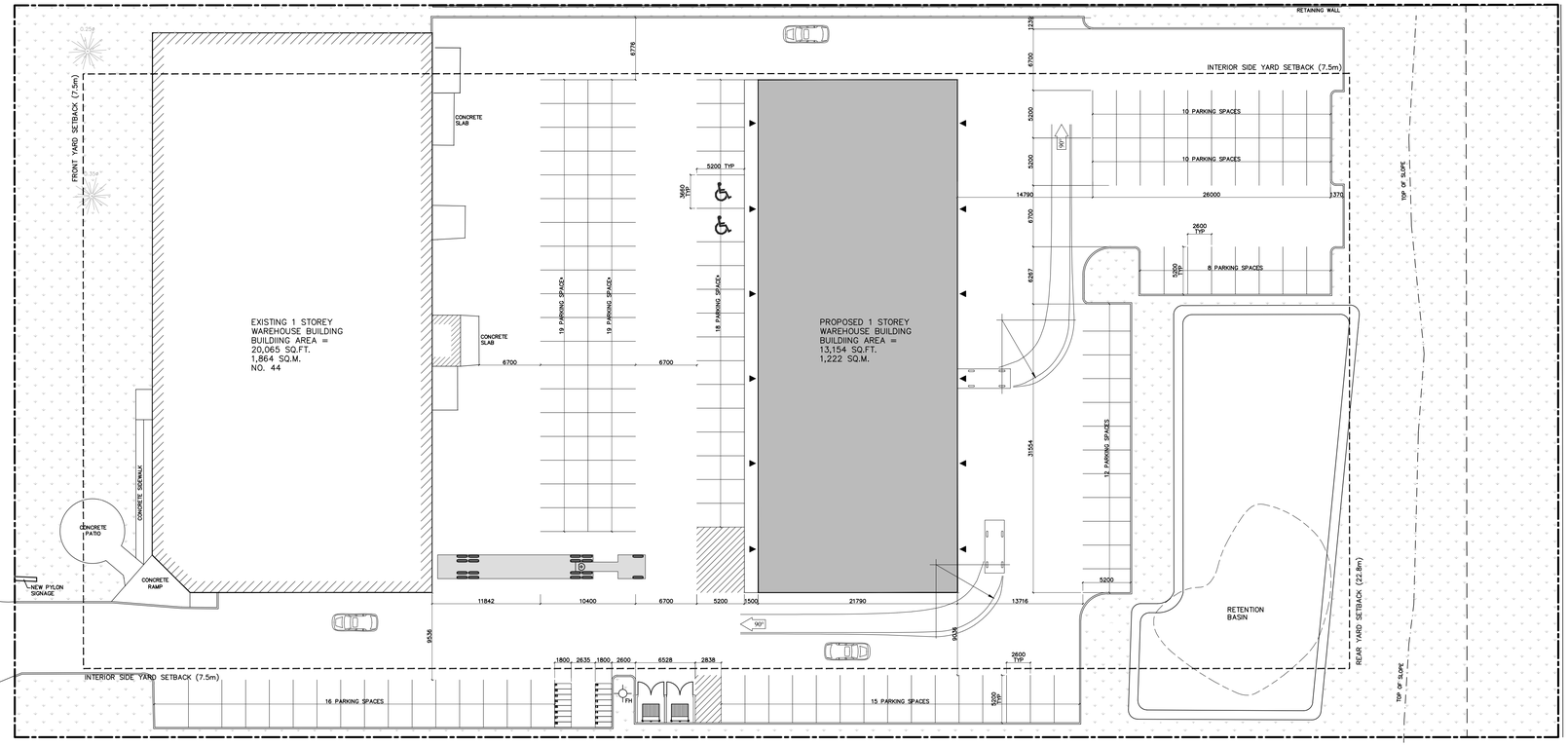
									Ditch Data												
Up	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**I**	**Q**	**depth**	**Side Slope**	**Bot. Width**	**Mannings**	**Slope**	**Length**	**A_{flow}**	**Wet. Per.**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
		(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(X:1)**	**(m)**	**n**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
		0.276	0.87	0.24	0.24	10.0	104.2	69.2	250	2	0.25	0.03	0.20	50.7	0.188	1.368	0.14	0.40	74.3	2.1	0.93
						12.1															

	Imp.	**Perv.**	**Total**
Area	0.263	0.013	0.276
C	0.9	0.2	0.87

DRAWINGS / FIGURES

PLAN OF SURVEY OF

PART OF BLOCK 1
REGISTERED PLAN 4M-454
CITY OF OTTAWA
PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
COMPLETED ON SEPTEMBER 21, 2016.



KEYPLAN

APPROVED ☐

THIS _____ DAY OF _____, 20__

DERRICK MOODIE, MANAGER
DEVELOPMENT REVIEW WEST
PLANNING, INFRASTRUCTURE AND ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

01 SITE PLAN
A100 SCALE: 1: 300

Item					OBC Reference		
1	Project Description: ☐ Change of Use		■ New ☐ Addition ☐ Alteration	☐ Part 11 11.1 to 11.4	■ Part 3 1.1.2. [A]	☐ Part 9 1.1.2. [A]&9.10.1.3.	
2	Major Occupancy (s) Primary: D Secondary: F2				3.1.2.1. (1)	9.10.2.	
3	Building Area (m²) Existing 0m² New 1,687m² Total 1,687m²				1.4.1.2. [A]	1.1.1.2. [A]	
4	Gross Area (m²) Existing 0m² New 1,687m² Total 1,687m²				1.4.1.2. [A]	1.1.1.2. [A]	
5	Number of Storeys Above Grade 1 Below Grade 0				1.4.1.2. [A] & 3.2.1.1.	1.1.1.2. [A] & 9.10.4.	
6	Height of Building (m) +/- 5.1m						
7	Number of Streets/ Fire Fighter Access 1				3.2.2.10. & 3.2.5.	9.10.20.	
8	Building Classification 3.2.2.53.				3.2.2.20. - .83	9.10.2.	
9	Sprinkler System Proposed ☐ Entire Building ☐ Selected Compartments ☐ Selected Floor Areas ☐ Basement ☐ in lieu of roof rating ■ Not Required				3.2.2.20. - .83 3.2.1.5. 3.2.2.17. INDEX	9.10.8.2. INDEX	
10	Standpipe Required			☐ Yes ■ No	3.2.9.	N/A	
11	Fire Alarm Required			☐ Yes ■ No	3.2.4.	9.10.18.	
12	Water Service/ Supply is adequate			■ Yes ☐ No	3.2.5.7.	N/A	
13	High Building			☐ Yes ■ No	3.2.6.	N/A	
14	Permitted Construction ■ Combustible ■ Non-Combustible Actual Construction ☐ Combustible ■ Non-Combustible				3.2.2.20. - .83	9.10.6.	
15	Mezzanine(s) Area (m²) N/A				3.2.1.1. (3)-(8)	9.10.4.1.	
16	Occupant load based on ☐ m²/person ■ Design of building Basement: Occupancy N/A Load N/A Persons 1st Floor: Occupancy Group "D" "F2" Load 90 Persons 2nd Floor: Occupancy N/A Load N/A Persons				3.1.17.1	9.9.1.3.	
17	Barrier-free Design ■ Yes ☐ No				3.8.	9.5.2.	
18	Hazardous Substances ☐ Yes ■ No				3.3.1.2. & 3.3.1.19	9.10.1.3. (4)	
19	Required Fire Resistance Rating (FRR)	Horizontal Assemblies FRR (Hours)		Listed Design No. or Description (SG-2)	3.2.2.20. .83 & 3.2.1.4.	9.10.8. 9.10.9.	
		Floors 0 Hour		Fire Separation			
		Roof 0 Hours					
		Mezzanine 0 Hours					
		FRR of Supporting Members		Listed Design No. or Description (SG-2)			
		Floors 0 Hour		Fire Separation			
		Roof 0 Hours					
		Mezzanine 0 Hours					
20	Spatial Separation				3.2.3.	9.10.14.	

Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max % of openings	FRR (Hours)	Listed Design or Description	Construction Comb.	Construction NonComb.	Cladding Comb.	Cladding NonComb.
North	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■
South	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■
East	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■
West	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■

CONSTRUCTION NOTES

1. PROVIDE SOILS REPORT TO INSPECTOR AT TIME OF INSPECTION STATED MIN. BEARING CAPACITY 75 KPA.
2. STRUCTURAL INFORMATION INCLUDED IN ASSEMBLY & CONSTRUCTION NOTES ARE SUPERSEDED BY STRUCTURAL NOTES. REFER TO STRUCTURAL NOTES, FOOTING SCHEDULES & DETAILS FOR CONCRETE WALL / FOOTING REINFORCING.
3. JOISTS TO BE DESIGNED BY SUPPLIER. JOIST SUPPLIER TO PROVIDE SHOP DRAWINGS INDICATING LAYOUT AND SPACING.
4. FILL BEAM POCKET CAVITIES AT TOP OF FOUNDATION WALL WITH NON-SHRINK GROUT.
5. REFER TO DRAWINGS FOR THICKNESS OF POURED CONCRETE FOUNDATION WALLS.
6. PROVIDE BRICK OR STONE TIES & WEEP VENT HOLES AS PER OBC 9.20.13.
7. PROVIDE FILTER CLOTH OVER WEEPING TILE.
8. PROVIDE CEMENT PARGING TO 8" BELOW GRADE ALL EXPOSED CONCRETE FOUNDATION WALLS.
9. PROVIDE TYPE S ROLL ROOFING ISOLATION MEMBRANE BETWEEN CONCRETE BELOW GRADE & WOOD FRAMING OR BATT INSULATION.
10. INTERIOR WOOD FRAMED WALLS USE 2"x4" @16" OC, UNLESS NOTED OTHERWISE.
11. EXTERIOR WOOD FRAMED WALLS USE 2"x6" @16" OC, UNLESS NOTED OTHERWISE.
12. TAPE & SEAL ALL JOINTS IN TYVEK AIR / MOISTURE BARRIER. PROVIDE AIR SEAL TO ALL OPENINGS IN ACCORDANCE WITH DETAILS 2/A203.
13. LAP & SEAL ALL JOINTS IN POLYETHYLENE VAPOUR BARRIER.
14. ALL GYPSUM BOARD WALLS & CEILINGS TO BE TAPED & SANDED FOR PAINT OR SPECIFIED INTERIOR FINISH. PRECEMEAL OF GYPSUM BOARD SHEETS IS NOT ACCEPTABLE.
15. PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS, WASHROOM, CEILINGS & WASHROOM WALLS. CEMENT BOARD TO BE USE ON ALL TUB DECKS & SHOWER ENCLOSURES.
16. PROVIDE 5/8" PLYWOOD UNDERLAY WITH 1/8" GAPS WHERE CERAMIC TILE IS TO BE INSTALLED AS PER OBC.
17. CERAMIC TILE ON ALL TUB AREAS WALLS TO UNDERSIDE OF BULKHEAD.
18. ALL TOILETS MUST HAVE A MAXIMUM 6 LITRES / FLUSH CAPACITY.
19. ALL BATHROOM / POWDER ROOM EXHAUST FANS MUST VENT TO EXTERIOR.
20. BACKING TO BE PROVIDED FOR ALL MILLWORK, WASHROOM ACCESSORIES, HAND RAILINGS, ETC. & TO BE COORDINATED ON SITE.
21. PROVIDE ALL CLOSETS WITH MIN. ONE (1) FULL WIDTH SHELF 12" DEEP & ONE (1) FULL WIDTH ROD.
22. ALL ATTIC ACCESS HATCHES MUST BE INSULATED.
23. DRYER VENT MUST EXHAUST TO EXTERIOR.
24. ALL INTERIOR GUARDRAILS MUST BE MIN. 42" HIGH.
25. ALL STAIR HANDRAILS MUST BE MINIMUM 3'-0" & MAXIMUM 3'-2" ABOVE THE STAIR.
26. ALL PENETRATIONS THROUGH FIRERATED WALLS, (CORRIDOR WALLS, ETC) MUST BE SEALED TIGHT WITH A COMBINATION OF JOINT COMPOUND AND FIRE CAULK, TO ENSURE A CONTINUOUS FIRE RATING.
27. THICKEN WALLS AS REQUIRED TO ACCOMMODATE ELECTRICAL PANELS & MECHANICAL ITEMS. CONTRACTOR TO CONFIRM CODE COMPLIANCE WITH ARCHITECT BEFORE SITE WORK BEGINS.
28. FOR ASSEMBLIES REQUIRING TO CONFORM TO A LISTED ULC/UL RATING, MATERIALS WITHIN THE ASSEMBLY SHALL BE EXACTLY AS PER THE TESTED ASSEMBLY. ALL MATERIAL SHALL BE LABELED WITH ULC/UL IDENTIFICATION.
29. ALL ELECTRICAL SWITCHES ARE TO BE LOCATED BETWEEN 4"-8" FROM THE ENTRANCE DOOR TO A ROOM. LOCATE STUDS TO ACCOMMODATE THE LOCATION OF SWITCHES SHOWN ON DRAWINGS AND SUIT THE APPROVED SUITE MOCK-UP.
30. PROVIDE SCUPPERS AT EDGES OF ROOF WHERE OVER FLOW CONTROL ROOF DRAINS ARE SPECIFIED. CONFIRM LOCATIONS WITH ARCHITECT.
31. ALL FIRE DAMPER INSTALLATION TO BE PER MANUFACTURER INSTRUCTIONS – HVAC CONTRACTOR TO COORDINATE ON SITE WITH DRYWALL/FRAMING CONTRACTOR TO ENSURE INSTALLATION INSTRUCTIONS ARE FOLLOWED EXACTLY.
32. ANY WASHROOM WALLS ADJACENT TO LIVING SPACES/PUBLIC AREAS ARE TO HAVE SOUND ATTENUATING BATT INSULATION –ULC APPROVED– IN THE STUD CAVITIES (TO FILL CAVITY).
33. ALL GYPSUM BOARD IS TO EXTEND TO FULL HEIGHT OF PARTITION U.N.O.

SHEET INDEX:

DRAWING SYMBOLS

REFERENCE BUBBLE: A / A100 — DRAWING NUMBER / SHEET NUMBER

INTERIOR ELEVATION BUBBLE: 2 / 1 / A101 / 3 — DRAWING NUMBER / SHEET NUMBER

ROOM LABEL: MECH. / 100 — ROOM NAME / ROOM NUMBER

DOOR LABEL: 116.1 — DOOR NUMBER

WINDOW LABEL: G2 — (B) =BASEMENT, (G) =GROUND FLOOR, (S) =SECOND FLOOR, # =WINDOW NUMBER

CONSTRUCTION ASSEMBLY LABEL: W2 — (W) = EXTERIOR WALL, (P) = INTERIOR WALL, (F) = ROOF, (R) = ROOF, # = ASSEMBLY NUMBER

CEILING ELEVATIONS: 114 — CEILING FINISH HEIGHT

GRID REFERENCE: 4 — GRID DESTINATION

ELEVATION HEIGHT: 174.25 — ELEVATION HEIGHT

LIST OF ABBREVIATIONS

ACT	ACOUSTIC CEILING TILE
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
BD	BOARD
BG	BUILDING GRADE
BLDG	BUILDING
CB	CATCH BASIN
CC	CENTRE TO CENTRE
CJ	CONTROL JOINT
CL	CENTRE LINE
CLG	CEILING
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CPT	CARPET
CR	CARD READER
CT	CERAMIC TILE
CW	CURTAIN WALL
DIM	DIMENSIONS
DO	HANDICAP DOOR OPERATOR
EL	ELEVATION
ELECT	ELECTRICAL
ELEC	ELEVATOR
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EP	ELECTRICAL PANEL
EQ	EQUAL
ES	EMERGENCY SCUPPER
EX	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FHC	FIRE HOSE CABINET
FIN	FINISH
FL	FLOOR
FRR	FIRE RESISTANCE RATED
GL	GLASS OR GLAZING
GB	GRAB BAR
GYP	GYPSUM WALLBOARD
HM	HOLLOW METAL
HWT	HOT WATER TANK
INT	INTERIOR
JT	JOINT
LTG	LIGHTING
MAX	MAXIMUM
MECH	MECHANICAL
MC	MEDICINE CABINET
MIN	MINIMUM
NBC	NATIONAL BUILDING CODE
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTRE
OH	OVERHEAD
PT	PAINT
PLAM	PLASTIC LAMINATE
PSF	PRESSED STEEL FRAME
PVC	POLY VINYL CHLORIDE
ROP	REFLECTIVE CEILING PLAN
RD	ROOF DRAIN
REINF	REINFORCED
REQD	REQUIRED
RWL	RAIN WATER LEADER
SH	SHOWER
SIM	SIMILAR
SS	STAINLESS STEEL
T/O	TOP OF
TYP	TYPICAL
U/S	UNDERSIDE
VCT	VINYL COMPOSITION TILE
VEST	VESTIBULE
WC	WATER CLOSET

ZONING

EXISTING ZONING		IL [1559] LIGHT INDUSTRIAL
	REQUIRED	PROPOSED
MIN. FRONT YARD SETBACK	7.5m	15.0m
MIN. REAR YARD SETBACK	7.5m	57.0m
MIN. INTERIOR YARD SETBACK	7.5m	8.2m
MAX. BUILDING HEIGHT	18.0m	±5.1m
MIN. LOT AREA	2,000m2	13,507m2
MAX LOT COVERAGE	65%	26%
MAX. FLOOR SPACE INDEX	2	2
MIN. WIDTH OF LANDSCAPE AREA		
ABUTTING A STREET	3m	15m
ALL OTHER CASES	NA	–
MIN. LOT WIDTH	NA	80m

LEGEND

A — EXTERIOR WALL MOUNTED LIGHT SCONCE
B — EXTERIOR SOFFIT LIGHT
C — EXTERIOR WALL MOUNTED LIGHT PACK
UNIT PAVER – TYPE 1 REFER TO LANDSCAPE PLAN

BUILDING AREA

	EXISTING	PROPOSED
BASEMENT	NA	NA
GROUND FLOOR	1,864m2	1,222m2
SECOND FLOOR	NA	NA

AUTOMOBILE PARKING SUMMARY

REQUIRED PARKING

OFFICE UNITS	2.4 PARKING SPACES PER 100m2 EXISTING = (1,864/100) x 2.4 = 44.7 (45) PROPOSED = (1,222/100) x 2.4 = 29.3 (29)		
TOTAL	= 74 REQUIRED PARKING SPACES		

PROVIDED PARKING

		UNDERGROUND	ABOVE GROUND
REGULAR SPACES	MIN. 2.6m x 5.2m	–	125
REDUCED SIZE SPACES	MIN. 2.4m x 4.6m	–	–
HANDICAP SPACES	MIN. 2.6m x 5.2m	–	2
TOTAL	= 127 PROVIDED PARKING SPACES		

BICYCLE PARKING SUMMARY

REQUIRED PARKING

OFFICE UNITS	1 SPACE PER 250m2 EXISTING = 1,864/250 = 7.4 (7) PROPOSED = 1,222/250 = 4.8 (5)		
TOTAL	= 12 REQUIRED BICYCLE SPACES		

PROVIDED PARKING

		UNDERGROUND	ABOVE GROUND
HORIZONTAL SPACES	MIN. 0.6m x 1.8m	–	16
VERTICAL SPACES	MIN. 0.5m x 1.5m	–	–
TOTAL	= 16		

OFFICE UNIT COUNT	EXISTING	PROPOSED
BASEMENT FLOOR	NA	NA
GROUND FLOOR	3 UNITS	6 UNITS
SECOND FLOOR	NA	NA
TOTAL 9 UNITS**		

Huntington PROPERTIES

NOTES:
1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.
2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST IN PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL BECOME PART OF THE CONTRACT DOCUMENTS AND SHALL BE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.
3) DO NOT SCALE DRAWINGS
4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY.
5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMMISSIONS PRIOR TO START OF WORK.

FIRE RESISTANCE RATING LEGEND:
45 MIN. - FIRE RESISTANCE RATING
1 HOUR - FIRE RESISTANCE RATING
2 HOUR - FIRE RESISTANCE RATING

No.	DATE:	REVISION:
01	2017-07-04	ISSUED FOR SITE PLAN CONTROL

SJL LAWRENCE ARCHITECT INCORPORATED
18 Deakin Street, Suite 205
Ottawa, ON K2E 8B7
T: (613) 739.7770
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sjl@sjlarchitect.com

DRAWN BY:	CHECKED BY:
B.L.	S.J.L.
DATE:	CHECKED BY:
2016-09-29	S.J.L.
SCALE:	REVISED:
AS NOTED	2017-07-04

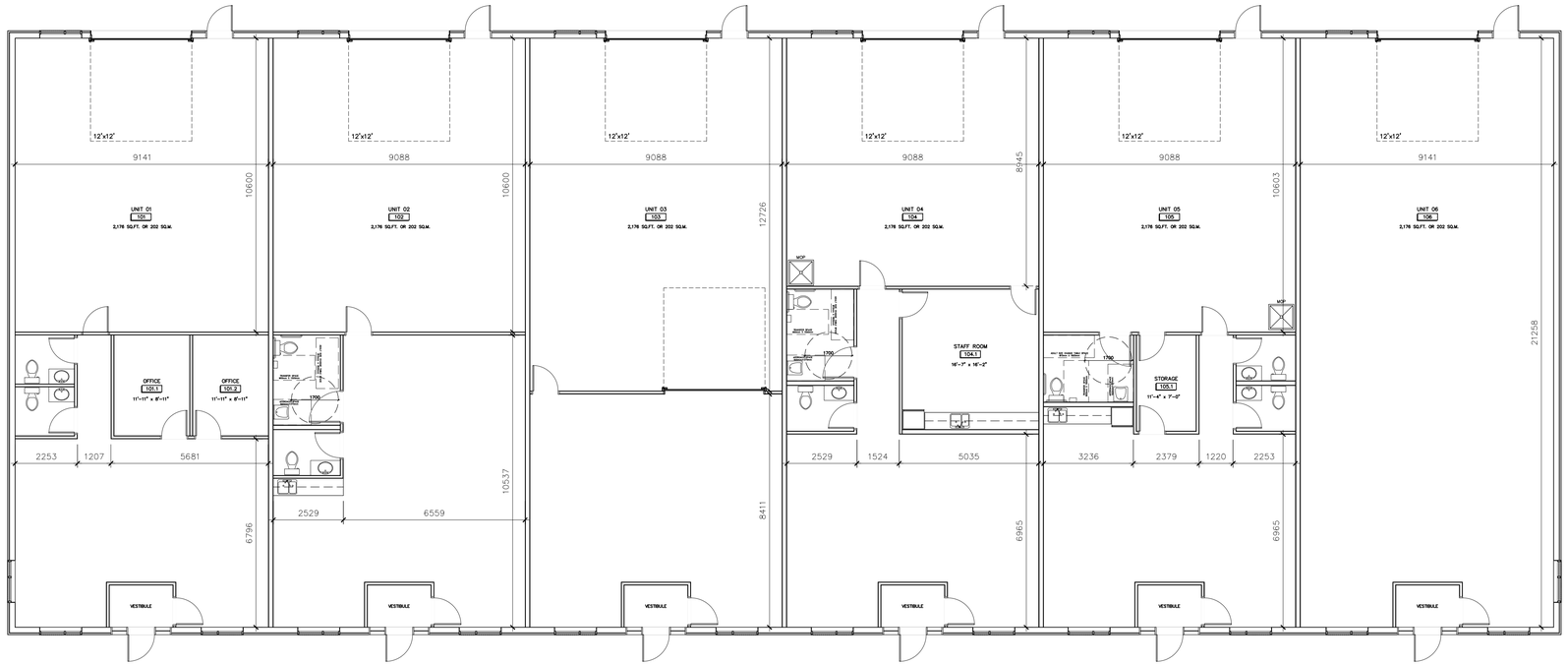
PROJECT:
IBER COMMERICAL COMPLEX
44 IBER ROAD, OTTAWA, ON.

JOB NUMBER: SL-1619-16

DRAWING TITLE:
SITE PLAN
(REFER TO CIVIL, LANDSCAPE, & M&E PLANS FOR FURTHER INFORMATION)

SHEET:
A100

APPLICATION NUMBER: XX - 000 - 00



01 GROUND FLOOR PLAN [OPTION 1]
A200 SCALE: 1:100

NOTES:

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FIRE RESISTANCE RATING LEGEND:

45 MIN. - FIRE RESISTANCE RATING

1 HOUR - FIRE RESISTANCE RATING

2 HOUR - FIRE RESISTANCE RATING

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01	2017-07-04	ISSUED FOR SITE PLAN CONTROL

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DRAWN BY:	DESIGNED BY:
B.L.	S.J.L.
DATE:	CHECKED BY:
2016-09-29	S.J.L.
SCALE:	PLOT DATE:
AS NOTED	2017-07-04

PROJECT:
IBER COMMERICAL COMPLEX
44 IBER ROAD, OTTAWA, ON.

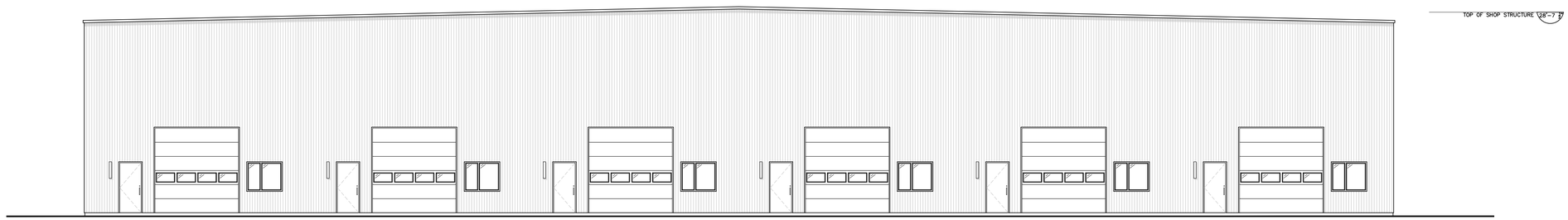
JOB NUMBER: SL - 609 - 16

DRAWING TITLE:
GROUND FLOOR PLAN

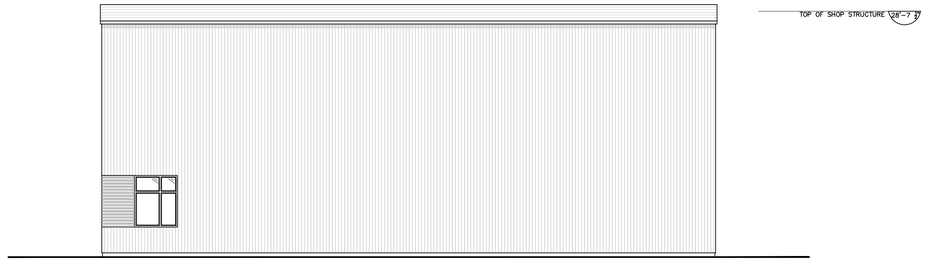
SHEET:
A200

APPLICATION NUMBER: XX - 000 - 00

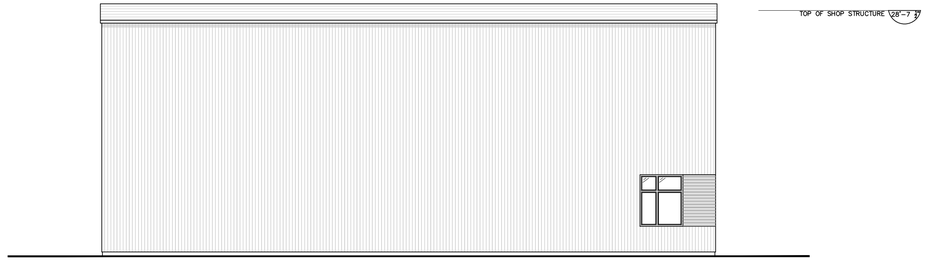
01 A400 FRONT [NORTH] ELEVATION
SCALE: 1:100



02 A400 REAR [SOUTH] ELEVATION
SCALE: 1:100



03 A400 SIDE [WEST] ELEVATION
SCALE: 1:100



04 A400 SIDE [EAST] ELEVATION
SCALE: 1:100

Huntington PROPERTIES

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FIRE RESISTANCE RATING LEGEND:

45 MIN. - FIRE RESISTANCE RATING

1 HOUR - FIRE RESISTANCE RATING

2 HOUR - FIRE RESISTANCE RATING

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01	2017-07-04	ISSUED FOR SITE PLAN CONTROL

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DRAWN BY: B.L.	DESIGNED BY: S.J.L.
DATE: 2016-08-29	CHECKED BY: S.J.L.
SCALE: AS NOTED	PLOT DATE: 2017-07-04

PROJECT:
IBER COMMERICAL COMPLEX
44 IBER ROAD,
OTTAWA, ON.

JOB NUMBER: SL - 828 - 16

DRAWING TITLE:
ELEVATIONS

SHEET:
A400

APPLICATION NUMBER: XX - 000 - 00