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SITE SERVICING AND STORMWATER MANAGEMENT

FOR

280 HERZBERG DEVELOPMENT CORP.
280 HERZBERG ROAD

CITY OF OTTAWA

PROJECT NO.: 17-905

APRIL 2018 – REV 3

SITE SERVICING AND STORMWATER MANAGEMENT
FOR
280 HERZBERG ROAD

280 HERZBERG DEVELOPMENT CORP.

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by 280 Herzberg Corp. to prepare a Site Servicing and Stormwater Management report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 280 Herzberg Road.

The subject property is located within the City of Ottawa urban boundary, in the Kanata North ward. As illustrated in ***Figure 1***, the subject property is located at the intersection of Terry Fox Drive and Herzberg Road. Comprised of two parcels of land the subject property measures approximately ***0.17 ha*** and is zoned Residential Fifth Density (R5C) and Business Park Industrial (IP6).

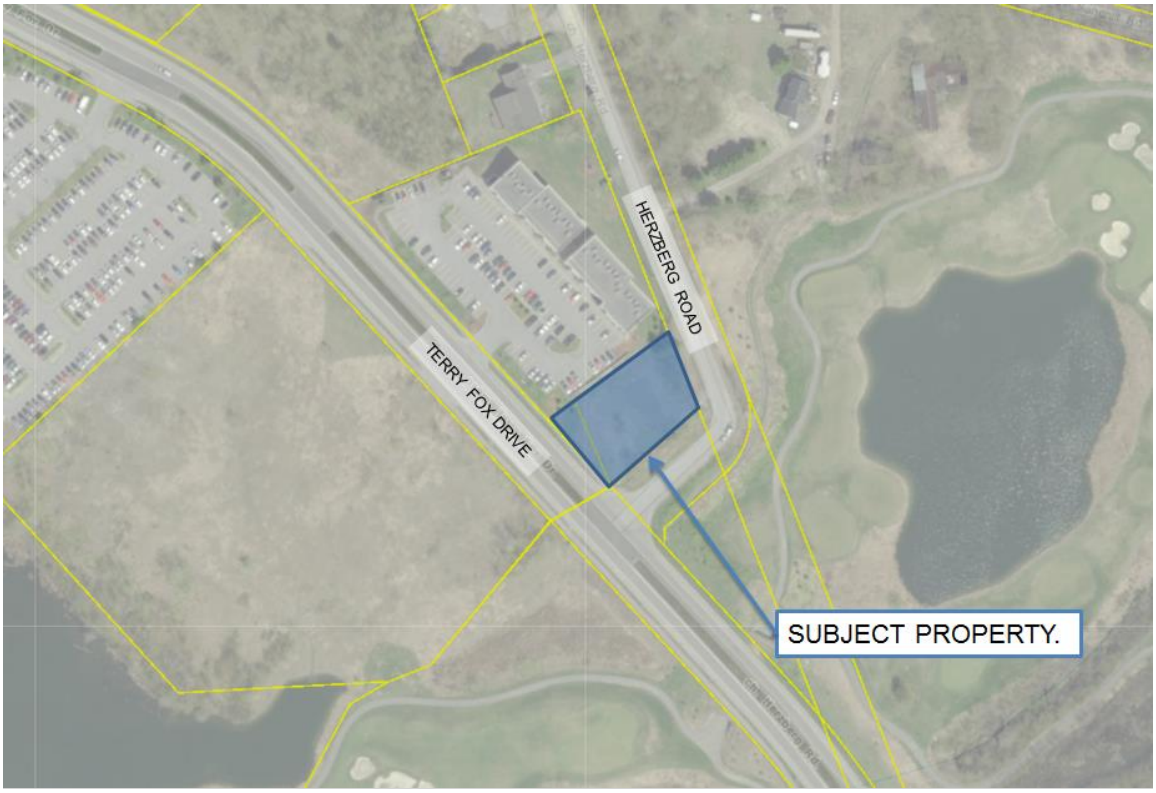

Figure 1: Site Location

The proposed ZBLA and SPC would allow for the development of a 4-storey residential building fronting onto Herzberg Road. The proposed development would include approximately 32 units and associated underground parking, with access from Herzberg Road. A copy of the proposed site plan prepared by Roderick Lahey Architects Inc is included in ***Drawings/Figures***.

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

1.1 Existing Conditions

The existing site is currently an undeveloped parcel. The elevations range between 77.48m and 78.54m with a grade change of approximately 1.06m from the Northeast to the Southwest corner of the property.

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

Terry Fox Drive

- 406 mm diameter PVC watermain
- 525 mm diameter CONC CL 100-D storm sewer tributary to Shirley's Bay
- 250 mm diameter PVC SDR-35 sanitary sewer tributary to the East March Trunk

Herzberg Road

- 450 mm diameter PVC SDR-35 storm sewer tributary to Shirley's Bay

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.

The proposed development is to be amalgamated and re-zoned as residential; as a result, the stormwater management system qualifies for an exemption under the OWRA. A 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.
  (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)

- **Stormwater Management Plan**, Kanata Research Park, City of Kanata
  Novatech Engineering Consultants Ltd.
  April, 2000 Update.
  (SWP)

- **Geotechnical Investigation**
  exp Services Inc., June 8, 2012
  (Geotechnical Report)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 2W pressure zone, as shown by the *Pressure Zone Map* included in ***Appendix B***. Based on the *Water Distribution* map located in ***Appendix B***, a local 406mm diameter PVC watermain exists within the Terry Fox Drive right-of-way.

3.2 Water Supply Servicing Design

It is proposed that the development be serviced by a connection to the existing 406mm diameter watermain within the Terry Fox Drive right-of-way via a 150mm diameter water service, as shown by drawing ***SSGP-1***.

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

Table 1
Water Supply Design Criteria

Design Parameter	Value
Average Residential Apartment	1.8 P/unit
1 Bedroom Residential Apartment	1.4 P/unit
2 Bedroom Residential Apartment	2.1 P/unit
Residential Average Daily Demand	350 L/d/P
Residential Maximum Daily Demand	4.9 x Average Daily *
Residential Maximum Hourly	7.4 x Average Daily *
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-2010-2*	

Table 2 summarizes the estimated water supply demand and boundary conditions for the proposed development based on the development statistics provided by Roderick Lahey Architects Inc. and 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	13.9	52.5	515.0
Max Day + Fire Flow	67.9 + 7,000 = 7,067.9	45.1	442.4
Peak Hour	102.5	46.5	456.2

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 78.7m. See ***Appendix B*** for detailed calculations.

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 has been established. The following parameters were coordinated with Roderick Lahey Architect Inc.:

- Type of construction – Ordinary Construction
- Occupancy type – Limited Combustibility
- Sprinkler Protection – Supervised Sprinkler System

The above parameters result in an estimated fire flow of approximately ***7,000 L/min***. A certified fire protection system specialist would need to be employed to design the building fire suppression system and confirm the actual fire flow demand.

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***. The minimum and maximum pressures fall within the required range identified in ***Table 1***. The available pressure for the fire flow demand exceeds the minimum pressure identified by the ***Water Supply Guidelines***.

3.3 Water Supply Conclusion

The anticipated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions. As demonstrated by ***Table 2***, based on the City's model, the municipal system is capable of delivering water within the required ***Water Supply Guidelines*** pressure range.

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 East March Trunk Collector sewer catchment area, as shown by the *Trunk Sanitary Sewers and Collection Areas* map included in ***Appendix C***. An existing 250 mm diameter PVC sanitary sewer within the Terry Fox Drive right-of-way is available to service the proposed development.

The subject property is a vacant lot and currently has no service connections to the local sanitary sewer infrastructure.

4.2 Wastewater Design

It is proposed that the development be serviced from the existing 250mm diameter sanitary sewer within the Terry Fox Drive right-of-way via a 200mm diameter sanitary service, as shown by drawing ***SSGP-1***.

Table 3 summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 3
Wastewater Design Criteria

Design Parameter	Value
Average Residential Apartment	1.8 P/unit
1 Bedroom Residential Apartment	1.4 P/unit
2 Bedroom Residential Apartment	2.1 P/unit
Average Daily Demand	350 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Infiltration and Inflow Allowance	0.28L/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 4 demonstrates the estimated peak flow from the proposed development based on the development statistics provided by Roderick Lahey Architect Inc. See ***Appendix C*** for associated calculations.

Table 4
Summary of Estimated Peak Wastewater Flow

Design Parameter	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.23
Estimated Peak Dry Weather Flow	0.92
Estimated Peak Wet Weather Flow	0.97

The sanitary flow based on the site plan located in ***Drawings/Figures*** estimates a peak wet weather flow of ***0.97 L/s***.

A sanitary analysis was conducted for the local municipal sanitary sewers as part of the Kanata Research Park design prepared by Novatech Engineering. The Sanitary Drainage Plan (93063-SAN) and associated Sanitary Sewer Design Sheet (revised February 7, 2001) is included in ***Appendix C***.

Based on the Sanitary Sewer Design Sheet prepared by Novatech Engineering, the controlling section of the local sewer system is located on Terry Fox Drive (MH213 to MH209) with an available residual capacity of ***8.66 L/s.***

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 East March Trunk Collector sewer. Based on the sanitary analysis of the Kanata Research Park prepared by Novatech Engineering, sufficient capacity is available to accommodate the estimated ***0.97 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 subject property is tributary to the City of Ottawa sewer system located within the Ottawa West sub-watershed. As such, approvals for proposed development 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 Shirley's Brook watershed, and is therefore subject to review by the Mississippi Valley Conservation Authority (MVCA).

Currently, runoff from the existing site flows towards the existing CSP north of the subject site and flows uncontrolled overland to the road side swale along Herzberg Road where it enters the municipal storm sewer system via the ditch inlet catchbasin located at the south east corner of the site.

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 0.45, employing the City of Ottawa IDF parameters for a 5-year storm with a time of concentration equal to 20 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site;
- Include quality controls to a normal level of treatment for the proposed development; correspondence with the MVCA is included in ***Appendix A***.

Based on the *Storm Drainage Plan* in the ***SWP***, the site is within a 1.25 ha section located on the edge of the Kanata Research Park. Currently this section directs stormwater towards the existing CSP north of the subject site and towards STM MH 226 via the existing road side swale, discharging to the Terry Fox Drive municipal infrastructure. Please refer to ***Appendix D*** for relevant excerpts of the ***SWP***.

Based on the above criteria, the allowable 5-year and 100-year release rates for the proposed development is ***14.9 L/s*** and ***31.8 L/s***, respectively.

5.3 Proposed Stormwater Management System

It is proposed that stormwater from the development be directed to one of two outlets. Rooftop flow will be directed to the existing 525 mm diameter storm sewer within the Terry Fox Drive right-of-way via a 250mm diameter storm lateral. Ground floor patios and

landscape areas will be directed overland to the existing road side swale and road catchbasin system, as shown by drawing ***SSGP-1***.

To meet the stormwater objectives, flow from rooftops will be attenuated before discharging to the private storm sewer system. The release rate and storage calculations for roof top attenuation were estimated based on Zurn Industries Ltd. design guidelines for Model Z-105-5 Control-Flo Single Notch drains. According to the Control-Flo Roof Drainage System Specification Drainage sheets notch ratings, each notch releases 5 G.P.M. per inch of head; relevant literature is provided in ***Appendix D***.

The building's roof uses the Zurn recommended number of notches for the area and produces a rating curve based on the above criteria; detailed calculations are included in ***Appendix D***. Other products may be specified provided that the restricted release rate and sufficient storage is provided to meet or exceed the values in ***Appendix D***.

Table 5 summarizes post-development flow rates.

Table 5
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage Required	100-Year Storage Available
	(L/s)	(m^3)	(L/s)	(m^3)	(m^3)
Unattenuated Areas (U1)	7.7	0.0	16.5	0.0	0.0
RAMP	1.3	0.0	2.6	0.0	0.0
Roof Top Attenuation (A1)	5.8	14.1	7.6	32.1	79.0
Total	**14.8**	**14.1**	**26.7**	**32.1**	**79.0**

It is anticipated that approximately ***32.1 m^3*** of storage will be required on site to attenuate flow to the established 5-year and 100-year release rates of ***14.9 L/s*** and ***31.8 L/s,*** respectively; detailed calculations are contained within ***Appendix D***.

5.4 Stormwater Quality Control

To reduce TSS, stormwater runoff from private patios is proposed to be directed to landscaped areas before discharging to the municipal storm sewers. Road side 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 sewer system.

Stormwater from roof areas is considered to be clean as it will not interact with parking areas before discharging to the municipal system.

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 Standards***. Based on consultation with the City of Ottawa and design of the Kanata Research Park, the post-development 5-year and 100-year allowable release rates were calculated as ***14.9 L/s*** and ***31.8 L/s***, respectively. It is estimated that ***32.1 m^3*** of storage will be required to meet this release rate.

Based on consultation with the MVCA, quality controls are required to a normal level of treatment for the proposed development.

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

6.0 UTILITIES

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

The proposed development will be coordinated and approved by the utility company having jurisdiction.

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 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 by 280 Herzberg Corp. to prepare a Site Servicing and Stormwater Management report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 280 Herzberg Road. 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 FUS method for estimating fire flow indicated ***7,000 L/min*** is required for the proposed development, boundary conditions indicate flow in excess of this is available;
- The proposed development is estimated to have a sanitary peak wet weather flow of ***0.97 L/s***; Based on the sanitary design prepared by Novatech Engineering as part of the Kanata Research Park, the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on consultation with the City of Ottawa, the proposed development will be required to attenuate post development flows to the equivalent 5-year and 100-year release rates of ***14.9 L/s*** and ***31.8 L/s*** for all storms up to and including the 100-year storm event;
- It is proposed that stormwater objectives may be met through roof top attenuation, ***32.1 m^3*** of onsite storage will be required to attenuate flow to the established release rate above;
- Based on consultation with the MVCA, quality controls are required to a normal level of treatment for the proposed development.

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Per: Robert D. Freel, P. Eng.

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2018-04-13 # 17-905

Per: Adam D. Fobert, P. Eng.

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

17-905 13/04/2018

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, EX-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, EX-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.	SSGP-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 2.1
☒	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	EX-1, SSGP-1, DS-1, SWM-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 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.2

*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, Appendix C
☒	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, 5.2, Appendix D
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	SWM-1
☒	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, 5.4
☒	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.	Section 5.2
☒	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 7.0
☐	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: Diamond, Emily (MOECC) <Emily.Diamond@ontario.ca>
Sent: Tuesday, March 28, 2017 5:24 PM
To: Alison Gosling
Subject: RE: 280 Herzberg Road - ECA Requirement

Hi Alison,

If the lots are to be amalgamated under 1 PIN number and zoning changed to residential, the site would meet the exemption set out under Ontario Regulation 525/98 Section 3.

Thank you,

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: January-19-17 11:22 AM
To: Diamond, Emily (MOECC)
Cc: Robert Freel
Subject: 280 Herzberg Road - ECA Requirement

Good morning Emily,

We just wanted to touch base with you regarding a proposed development we are working on located at 280 Herzberg Road located within the Kanata Research Park.

Currently comprised of two parcels the subject property measures approximately ***0.17 ha*** and is zoned Residential Fifth Density zone (R5C) and Business Park Industrial zone (IP6). Please note that the property will be amalgamated into one parcel of land and will be rezoned Residential.

The proposed development consists of a 4-story residential building and underground parking. The residential component is comprised of approximately 35 units.

It appears that the existing stormwater management system currently directs flow towards a the ditches along Herzberg Road and Terry Fox Drive towards municipal infrastructure. Proposed stormwater controls will use building control to attenuated the release rate to City of Ottawa requirements.

Our understanding is this project may require an Environmental Compliance Approval through the Ministry of the Environment and Climate Change due to the industrial zoning. The approval exemption set out in Ontario Regulation 525/98 as part of the Ontario Water Resources Act:

Subsection 53(1) and (3) of the Act do not apply to the use, operation, establishment, alteration, extension or replacement of or a change in a storm water management facility that,

- *(a) is designed to service one lot or parcel of land;*
- *(b) discharges into a storm sewer that is not a combined sewer;*
- *(c) does not service industrial land or a structure located on industrial land; and*

(d) is not located on industrial land.

As the subject site is to be amalgamated and rezoned prior to construction, it is assumed this falls within the exemption requirements for an Environmental Compliance Approval as per O.Reg 525/98, Section 3 (a) & Ontario Water Resources Act Section 53. 6 (c).

We hope you could support and provide a comment with regards to our assumption above that this property should be exempt from requiring an ECA. Please feel free to call to discuss this further.

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: Myra Van Die <MVandie@mvc.on.ca>
Sent: Friday, January 27, 2017 1:09 PM
To: Alison Gosling
Cc: Matt Craig
Subject: RE: 280 Herzberg - MVCA

Follow Up Flag: Follow up
Flag Status: Completed

Hi Alison,

Matt has forwarded your email to me, let me know if you have any questions.

MVCA recommends water quality treatment corresponding to a normal level of protection be provided within the Shirley's Brook watershed. If there is no downstream facility to provide treatment than our recommendation is that quality treatment be provided on-site. This should be confirmed with the City to ensure their requirements will be addressed.

Regards,

Myra Van Die, P.Eng. | Water Resources Engineer
Mississippi Valley Conservation Authority

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Thursday, January 19, 2017 11:49 AM
To: Matt Craig
Cc: Robert Freel; Craig Cunningham
Subject: 280 Herzberg - MVCA

Good morning Matt,

We wanted to touch base with you regarding a residential development we are working on located at 280 Herzberg Road, Ottawa.

The existing stormwater on site discharges to the ditches along Herzberg Road and Terry Fox Drive and is discharged into the municipal infrastructure. The stormwater collected is in the municipal sewer from the site travels approximately 1.5 km to a direct outlet into the Shirley's Brook.

The development proposes to construct a new residential building with associated underground parking.

Based on the *Stormwater Management Plan – Kanata Research Park*, prepared by Novatech Engineering, dated April 2000, a level 2 treatment is required prior to discharging into Shirley's Brook.

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

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

280 Herzberg Road Corp.
280 Herzberg 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	15	21
2 Bedroom	2.1	17	36
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	57	20.0	13.9	97.8	67.9	147.6	102.5

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
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		0.00	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	0.0	0.0	0.0	0.0	0.0	0.0
		Total Demand	**20.0**	**13.9**	**97.8**	**67.9**	**147.6**	**102.5**

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: Ordinary Construction

C	1		*Type of Construction Coefficient per FUS Part II, Section 1*
A	2918.2	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	11884.5	L/min	
	12000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%
Fire Flow	**10200.0 L/min**

3. Reduction for Sprinkler Protection

Sprinklered	-50%
Reduction	**-5100 L/min**

4. Increase for Separation Distance

N	20.1m-30m	10%
S	20.1m-30m	10%
E	>45m	0%
W	>45m	0%
	% Increase	**20%**

value not to exceed 75% per FUS Part II, Section 4

Increase	**2040.0 L/min**

Total Fire Flow

Fire Flow	7140.0	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 Roderick Lahey Architect Inc.
-Calculations based on Fire Underwriters Survey - Part II

Boundary Conditions Unit Conversion

Option 1 - Fire flow at 10,000 L/min

	Height (m)	Elevation (m	m H_2O	PSI	kPa		L/s	L/min
Avg. DD	131.2	78.7	52.5	74.7	515.0	Fire Flow @ 140kPa	166.67	10000
Fire Flow	123.8	78.7	45.1	64.2	442.4			
Peak Hour	125.2	78.7	46.5	66.2	456.2			

Option 2 - Fire flow at 17,000 L/min

	Height (m)	Elevation (m	m H_2O	PSI	kPa		L/s	L/min
Avg. DD	131.2	78.7	52.5	74.7	515.0	Fire Flow @ 140kPa	283.33	17000
Fire Flow	118.5	78.7	39.8	56.6	390.4			
Peak Hour	125.2	78.7	46.5	66.2	456.2			

Boundary Conditions for 280 Herzberg

Information Provided:
Date provided: Jan 2017

Scenario	Demand	
	L/min	L/s
Average Daily Demand	15.3	0.26
Maximum Daily Demand	75	1.25
Peak Hour	113.3	1.89
Fire Flow Demand (Tech Bulletin)	10000	167
Fire Flow Demand (High)	17000	283

Location:

Results:

Connection 1 - Terry Fox

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	131.2	74.7
Peak Hour	125.2	66.1
Max Day plus Fire (10,000 l/min)	123.8	64.1
Max Day plus Fire (17,000 L/min)	118.5	56.6

[1] Ground Elevation = 78.7m

Notes:

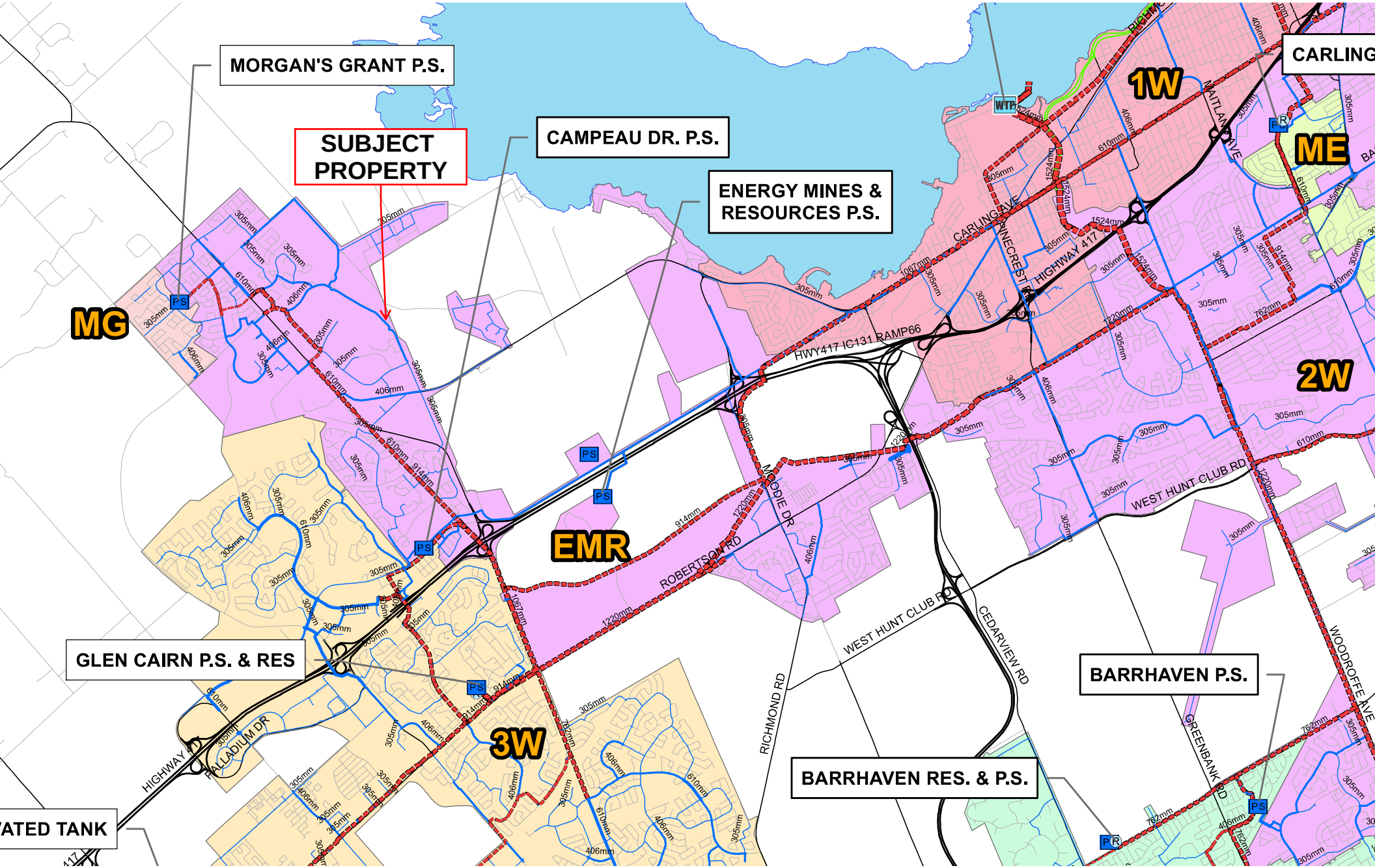
1) The boundary condition was provided off the 406 mm watermain on Terry Fox Drive. There is no watermain on Herzberg Road immediately east of Terry Fox Drive near the subject site.

2) The FUS method continues to be the required method of calculation in all cases. However, the following qualifications to the application of the FUS method are now in effect on an interim basis:
   a) For single detached dwellings, the fire flow requirement may be capped at 10,000 L/min, provided that there is a minimum separation of 10 meters between the backs of adjacent units.
   b) For traditional side-by-side town and row houses only, the fire flow requirement may be capped at 10,000 L/min provided that:
      a) firewalls with a minimum two hour fire-resistance rating that comply with OBC Div. B, Subsection 3.1.10, are constructed to separate a town or row house block into fire areas that comprise no more than the lesser of seven dwelling units, and 600 m2 of building area; and
      b) there is a minimum separation of 10 meters between the backs of adjacent units.
   c) For multi-unit residential buildings which do not fall into the categories described above, options such as sprinklering systems, or two hour firewalls that compartmentalize the structure into separate fire areas are to be considered and applied as needed to limit the sizing of crescent, dead-end, and other distribution mains to a nominal size of no more than 200 mm.

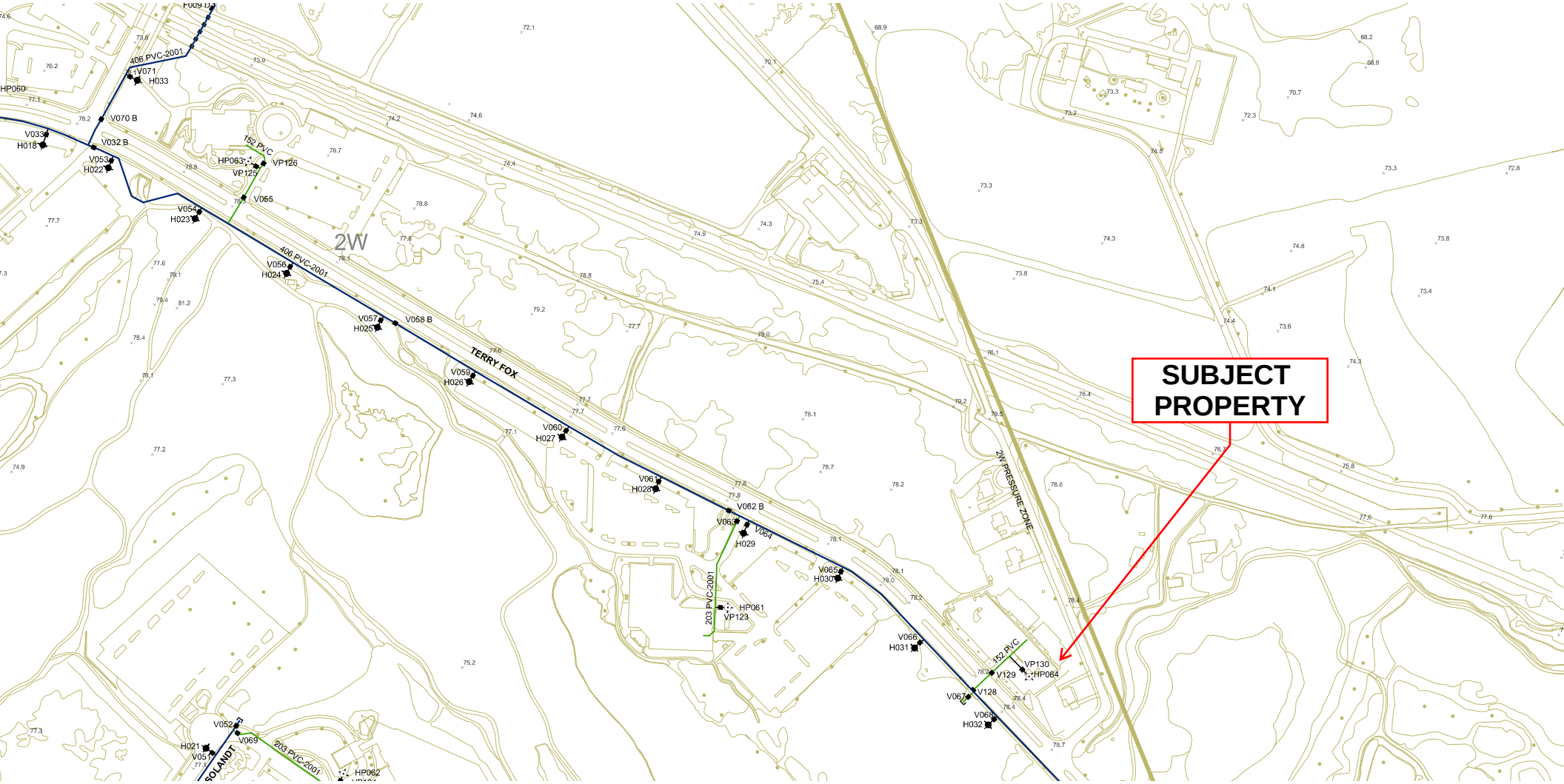
Disclaimer

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.

Pressure Zone Map



2016 Water Distribution System



APPENDIX C

Wastewater Collection

280 Herzberg Road Corp.
280 Herzberg Road
Proposed Site Conditions

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

Site Area	0.170	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.05**	**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	15	21
2 Bedroom	2.1	17	36
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**57**	
Average Domestic Flow	**0.23**	**L/s**
Peaking Factor	**4.00**	
Peak Domestic Flow	**0.92**	**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
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	**0.00**
Peak Institutional / Commercial Flow	0.00
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.00**

** 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	**0.23**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.92**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.97**	**L/s**

LEGEND

- 2.02 / 101–103 / 35 | 4 — AREA IN HECTARES; MANHOLE TO MANHOLE; PEAK FACTOR; FLOW (m3/ha/day)
- SANITARY DRAINAGE AREA BOUNDARY
- DIRECTION OF FLOW
- MH 101 — PROPOSED SANITARY SEWER AND MANHOLE

FOR CLARITY OF SERVICING ASBUILT INFORMATION PLEASE REFER TO THE PLAN AND PROFILE DRAWINGS.
NOTE: DRAINAGE SUPERCEDED BY ONGOING DESIGNS

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

KANATA RESEARCH PARK
Kanata Research Park Corporation
888 Legget Drive, Suite 304, Kanata, Ontario, Canada, K2K 2X3
(613)591-8994

AS-BUILT

No.	REVISION	DATE	BY
6	AS-BUILTS	APR 30/07	SAB
5	REVISED PER RMOC COMMENTS	AUG. 2000	RRS
4	ISSUED FOR MOEE	JULY 00	RRS
3	GENERAL REVISION	APR 13/00	RS
2	ISSUED FOR MOEE	FEB. 2000	LSM
1	ISSUED FOR COMMENTS	DEC. 1999	LSM

REGISTERED PROFESSIONAL ENGINEER — J.G. RIDDELL — PROVINCE OF ONTARIO

NOVATECH ENGINEERING CONSULTANTS LTD.
ENGINEERS & PLANNERS
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada
K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Email: novainfo@novatech-eng.com

DESIGN	RRS
CHECKED	UB
DRAWN	DU
CHECKED	RRS
APPROVED	UB

SCALE: 1:2000

CITY OF KANATA
KANATA RESEARCH PARK
SANITARY DRAINAGE PLAN

PROJECT No. 93063
SHEET 1 OF 2
DATE DECEMBER 1999
DRAWING No. 93063-SAN

11609 PLANBLDWG - 1000mmX707mm

SANITARY SEWER DESIGN SHEET

DESIGNED BY : LSM
REVISED BY: RRS
CHECKED BY : U.B.
CHECKED BY: J.R.

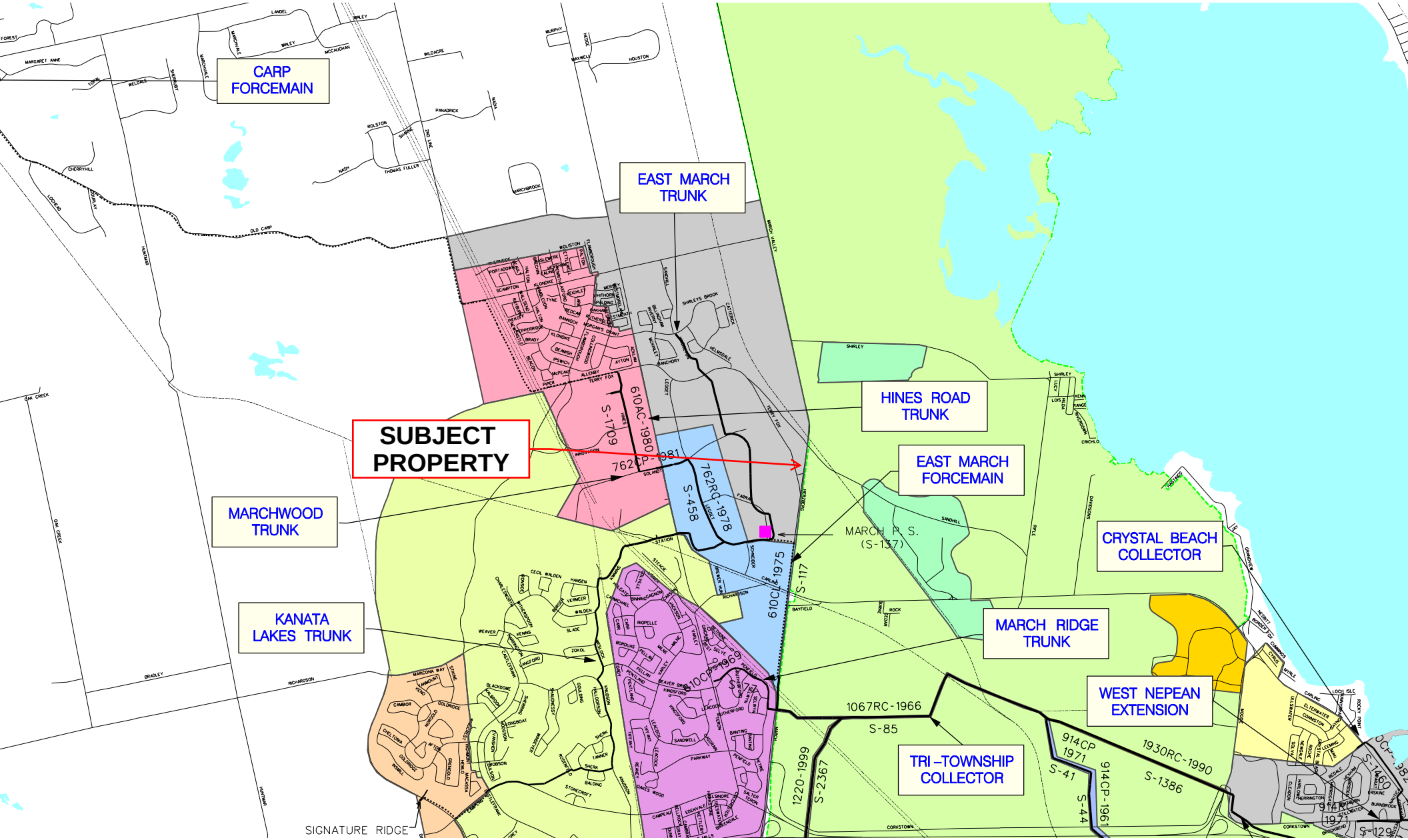
TERRY FOX EXTENSION
Kanata Research Park Corporation

DATE: April 27, 2000
REVISION: July 11, 2000.
REVISION: August 8, 2000.
REVISION: February 7,2001

LOCATION										PROPOSED SEWER					
STREET	FROM MH	TO MH	FLOW RATE (m3/ha/day)	INDIVIDUAL AREA (ha.)	CUMULATIVE AREA (ha.)	PEAK FACTOR M	PEAK FLOW Q (p) (L/s)	PEAK EXTRAN. FLOW Q(i) (L/s)	***PEAK DESIGN FLOW Q (d) (L/s)***	LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	**CAPACITY (L/s)**	FULL FLOW VELOCITY (m/s)
Terry Fox	219	217	35.0	4.490	4.490	4.3	7.73	1.26	***8.99***	105.2	250	PVC	0.28	**32.83**	0.65
Terry Fox	217	215	35.0	0.000	4.490	4.3	7.73	1.26	***8.99***	56.9	250	PVC	0.28	**32.83**	0.65
Terry Fox	215	213	35.0	3.990	8.480	4.3	14.60	2.37	***16.97***	104.7	250	PVC	0.28	**32.83**	0.65
Terry Fox	213	211	35.0	4.240	12.720	4.0	20.61	3.56	***24.17***	100.0	250	PVC	0.28	**32.83**	0.65
Terry Fox	211	209	35.0	0.000	12.720	4.0	20.61	3.56	***24.17***	60.0	250	PVC	0.28	**32.83**	0.65
Terry Fox	201	203	35.0	3.870	3.870	3.4	5.33	1.08	***6.41***	88.0	250	PVC	0.37	**37.74**	0.74
Terry Fox	203	205	35.0	0.000	3.870	3.4	5.33	1.08	***6.41***	100.0	250	PVC	0.38	**38.24**	0.75
Terry Fox	205	207	35.0	0.000	3.870	3.4	5.33	1.08	***6.41***	100.0	250	PVC	0.38	**38.24**	0.75
Terry Fox	207	209	35.0	2.160	6.030	3.4	8.31	1.69	***9.99***	100.0	250	PVC	0.44	**41.15**	0.81
Easement	209	225	35.0	0.000	18.750	3.1	23.55	5.25	***28.80***	95.0	375	PVC	0.45	**122.70**	1.08
Easement	225	227	35.0	0.000	18.750	3.1	23.55	5.25	***28.80***	71.2	375	PVC	0.45	**122.70**	1.08
Easement	227	229	35.0	0.000	18.750	3.1	23.55	5.25	***28.80***	93.9	375	PVC	0.45	**122.70**	1.08
Easement	229	229A	35.0	0.000	18.750	3.1	23.55	5.25	***28.80***	44.9	375	PVC	0.50	**129.34**	1.13
Easement	229A	Ex. SAN MH1	35.0	7.300	26.050	3.1	32.71	7.29	***40.01***	12.0	375	PVC	0.50	**129.34**	1.13
Terry Fox	231	232	35.0	4.860	4.860	4.8	9.45	1.36	***10.81***	73.5	250	PVC	0.30	**33.98**	0.67
Terry Fox	232	233	35.0	0.000	4.860	4.8	9.45	1.36	***10.81***	100.0	250	PVC	0.30	**33.98**	0.67
Terry Fox	233	Ex. SAN MH2	35.0	0.000	4.860	4.8	9.45	1.36	***10.81***	49.2	250	PVC	0.30	**33.98**	0.67

Notes:
1. Q(d) = Q(p) + Q(i) , where Q(d) = Design Flow (L/sec)
   Q(p) = Population Flow (L/sec)
   Q(i) = Extraneous Flow (L/sec)
2. Q(i) = 0.28 L/sec/ha
3. Light Industrial Flow = 35,000 L/ha/day (RMOC Standards)
4. Commercial Flow = 34,000 L/ha/day (C of K Standards)
5. Peak Factor - Refer to Appendix E, RMOC Design Guidelines (Light Industrial)
6. External Peak future Flow of 52L/s

TRUNK SANITARY SEWERS AND COLLECTION AREAS



APPENDIX D

Stormwater Management

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

Target Flow Rate

Area	0.170	ha
C	0.45	Rational Method runoff coefficient
t_c	20.0	min

5-year			**100-year**		
i	70.3	mm/hr	**i**	120.0	mm/hr
Q	14.9	L/s	**Q**	31.8	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID U1
Total Area 0.062 ha
C 0.63 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)
20.0	70.3	7.7	7.7	0.0	0.0	120.0	16.5	16.5	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)

Area ID RAMP
Total Area 0.008 ha
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)
20.0	70.3	1.3	1.3	0.0	0.0	120.0	2.6	2.6	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

Building ID A1
Roof Area 0.100 ha
Avail Storage Area 0.095
C 0.90 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*
t_c 10 min, tc at outlet without restriction

Estimated Number of Roof Drains
Building Length 23.9
Building Width 35.5
Number of Drains 5
m^2 / Drain 189.7 max 232.25m^2/notch as recommended by Zurn for Ottawa

Roof Top Rating Curve per Zurn Model Z-105-5						
d (m)	A (m^2)	V_{acc} (m^3)	V_{avail} (m^3)	Q_{notch} (L/s)	Q_{roof} (L/s)	$V_{drawdown}$ (hr)
0.000	0	0.0	0.0	0.00	0.00	0.00
0.025	59.3	0.5	0.5	0.38	1.90	0.07
0.050	237.1	3.5	4.0	0.77	3.85	0.32
0.075	533.4	9.4	13.3	1.14	5.70	0.78
0.100	948.3	18.3	31.6	1.52	7.60	1.45
0.125	948.3	23.7	55.3	1.90	9.50	2.14
0.150	948.3	23.7	79.0	2.28	11.40	2.72

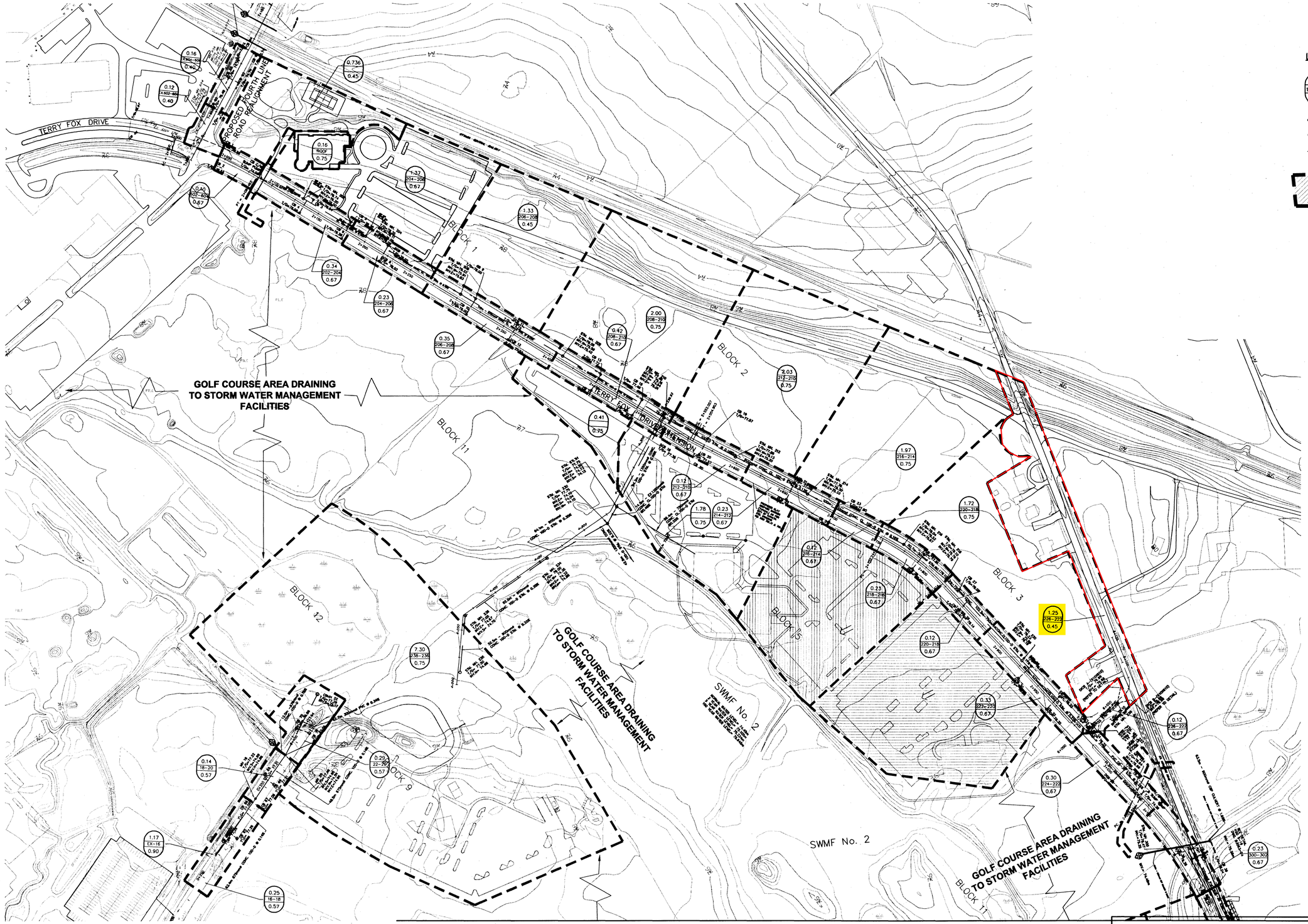
* Assumes one notch opening per drain, assumes maximum slope of 10cm

	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)
20	70.3	17.5	5.8	11.7	14.1	120.0	33.3	7.6	25.6	30.7
25	60.9	15.2	5.8	9.4	14.1	103.8	28.8	7.6	21.2	31.7
30	53.9	13.5	5.8	7.7	13.8	91.9	25.5	7.6	17.8	32.1
35	48.5	12.1	5.8	6.3	13.3	82.6	22.9	7.6	15.3	32.0
40	44.2	11.0	5.8	5.2	12.6	75.1	20.8	7.6	13.2	31.7
45	40.6	10.1	5.8	4.4	11.8	69.1	19.1	7.6	11.5	31.1
50	37.7	9.4	5.8	3.6	10.8	64.0	17.7	7.6	10.1	30.3
55	35.1	8.8	5.8	3.0	9.8	59.6	16.5	7.6	8.9	29.3
60	32.9	8.2	5.8	2.4	8.8	55.9	15.5	7.6	7.9	28.3
65	31.0	7.7	5.8	2.0	7.7	52.6	14.6	7.6	7.0	27.1
70	29.4	7.3	5.8	1.5	6.5	49.8	13.8	7.6	6.2	25.9
75	27.9	7.0	5.8	1.2	5.3	47.3	13.1	7.6	5.5	24.6
80	26.6	6.6	5.8	0.8	4.1	45.0	12.5	7.6	4.8	23.2
85	25.4	6.3	5.8	0.5	2.8	43.0	11.9	7.6	4.3	21.8
90	24.3	6.1	5.8	0.3	1.5	41.1	11.4	7.6	3.8	20.3
95	23.3	5.8	5.8	0.0	0.2	39.4	10.9	7.6	3.3	18.8
100	22.4	5.6	5.6	0.0	0.0	37.9	10.5	7.6	2.9	17.2
105	21.6	5.4	5.4	0.0	0.0	36.5	10.1	7.6	2.5	15.6
110	20.8	5.2	5.2	0.0	0.0	35.2	9.8	7.6	2.1	14.0
115	20.1	5.0	5.0	0.0	0.0	34.0	9.4	7.6	1.8	12.3
120	19.5	4.9	4.9	0.0	0.0	32.9	9.1	7.6	1.5	10.7

5-year Q_{roof}	**5.78 L/s**	**100-year Q_{roof}**	**7.64 L/s**
5-year Max. Storage Required	**14.1 m^3**	**100-year Max. Storage Required**	**32.1 m^3**
5-year Storage Depth	**0.076 m**	**100-year Storage Depth**	**0.101 m**
5-year Estimated Drawdown Time	**0.81 hr**	**00-year Estimated Drawdown Time**	**1.46 hr**

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)
U1	7.7	0.0	16.5	0.0	0.0
RAMP	1.3	0.0	2.6	0.0	0.0
A1	5.8	14.1	7.6	32.1	79.0
Total	**14.8**	**14.1**	**26.7**	**32.1**	**79.0**



REFER TO DRAWING 93063-STM1

FOR CLARITY OF SERVICING ASBUILT INFORMATION PLEASE REFER TO THE PLAN AND PROFILE DRAWINGS.
NOTE: DRAINAGE SUPERCEDED BY ONGOING DESIGNS

AS-BUILT

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

KANATA RESEARCH PARK
Kanata Research Park Corporation
666 Legget Drive, Suite 304, Kanata, Ontario, Canada, K2K 2W2
(613)592-8994

No.	REVISION	DATE	BY
9	AS-BUILTS	APR 30/07	SAB
8.	STORM AREA REVISION	MAR.02/01	AS
7	STORM AREA REVISION	FEB.8/01	AS
6	SEWER SIZE REDUCED	NOV 23/00	DHI
5	REVISED PER RMOC COMMENTS	AUG. 2000	RS
4	REVISED	JULY 2000	RS
3.	ISSUED FOR MOEE	APR 13/00	RS
2	ISSUED FOR MOEE	FEB. 2000	LSM
1	ISSUED FOR COMMENTS	DEC. 1999	LSM

REGISTERED PROFESSIONAL ENGINEER
J.G. RIDDELL
PROVINCE OF ONTARIO

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Ottawa, Ontario, Canada
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DESIGN	RRS
CHECKED	UB
DRAWN	DU
CHECKED	RRS
APPROVED	UB

SCALE: 1 : 1500

CITY OF KANATA
KANATA RESEARCH PARK
STORM DRAINAGE PLAN

PROJECT No. 93063
DATE DECEMBER 1999
DRAWING No. 93063-STM2

11609 PLANBLDWG - 1000mmX707mm

Drawing:M:\K R PV\93063\design\asbuilt\93063STM2.dwg Layout:STM2 Updated: APR 25, 2007 at 2:45pm by: sbutler

STORM SEWER DESIGN SHEET

DESIGNED BY : R.J.
CHECKED BY :
REVISED BY: DHI
CHECKED BY:
REVISED BY: AS

PROJECT: **TERRY FOX DRIVE EXTENSION**
DEVELOPER: **KANATA RESEARCH PARK CORP.**

DATE: February 15, 2000
Revision: November 23,2000
Revision: February 12,2001
Revision: March 9,2001

LOCATION			AREA (ha)								PROPOSED SEWER						
STREET	FROM M.H.	TO M.H.	R= 0.75	R = 0.67	R= 0.45	INDIV 2.78 AR	ACCUM 2.78 AR	TIME OF CONC (min)	RAINFALL INTENSITY (mm/hr)	**PEAK FLOW Q (l/s)**	TYPE OF PIPE	PIPE SIZE (mm)	GRADE %	LENGTH (m)	**CAPACITY (L/s)**	FULL FLOW VELOCITY	TIME OF FLOW (min)
Terry Fox Drive	202	204	0.160	1.370	0.000	2.89	2.89	20.00	70	**202.0**	CONC	600	0.15	100.0	**248.1**	0.85	1.96
	204	206	0.000	1.600	0.000	2.98	5.87	21.96	66	**387.1**	CONC	600	0.16	70.0	**256.2**	0.88	1.33
	206	208	0.000	0.351	1.330	2.32	8.18	23.29	64	**523.7**	CONC	675	0.22	110.0	**411.3**	1.11	1.65
	208	210	2.002	0.419		4.95	13.14	24.94	61	**801.4**	CONC	825	0.25	110.0	**748.8**	1.36	1.35
								26.29									
	226	222	0.000	0.121	1.252	1.79	1.79	10.00	104	**186.3**	CONC	450	0.20	38.0	**133.0**	0.81	0.78
								10.78									
EXISTING SEWER	224	222	0.000	0.300		0.56	0.56	10.00	104	**58.1**	PVC	375	0.25	65.0	**91.5**	0.80	1.35
								11.35									
	222	220	0.000	0.334		0.62	2.97	11.35	98	**291.3**	CONC	525	0.21	89.0	**205.6**	0.92	1.61
	220	218	1.720	0.117		3.80	6.78	12.96	91	**616.7**	CONC	750	0.17	102.2	**478.9**	1.05	1.62
	218	216	0.000	0.234		0.44	7.21	14.58	85	**613.1**	CONC	750	0.17	50.7	**478.9**	1.05	0.80
	216	214	1.970	0.117		4.33	11.54	15.39	82	**946.1**	CONC	900	0.17	100.0	**778.7**	1.19	1.41
	214	212	0.000	0.234		0.44	11.97	16.80	78	**933.9**	CONC	900	0.16	75.0	**755.4**	1.15	1.09
	212	210	2.031	0.117		4.45	16.43	17.88	75	**1232.0**	CONC	975	0.16	75.0	**935.2**	1.21	1.03
								18.91									
	210	STMSTLTH	0.410			0.85	30.42	26.29	59	**1794.7**	CONC	1350	0.45	94.3	**3735.2**	2.53	0.62
EXISTING SEWER	STMSTLTH	230	1.780			3.71	34.13	*26.91*	58	**1979.5**	C0NC	1350	0.45	14.5	**3735.2**	2.23	0.11
Nokia Site	238	236	7.298	0.000		15.22	15.22	10.00	104	**1582.5**	CONC	900	0.35	52.5	**1117.3**	1.70	0.51
	236	234	0.000	0.000		0.00	15.22	10.51	102	**1552.1**	CONC	900	0.35	92.0	**1117.3**	1.70	0.90
	234	230	0.000	0.000		0.00	15.22	11.42	97	**1476.0**	CONC	900	0.35	64.1	**1117.3**	1.70	0.63
								12.04									
	230	OUTLET	0.000	0.000		0.00	47.12	30.22	54	**2544.5**	CONC	1350	0.32	42.9	**3149.8**	2.13	0.34
								30.56									

Zurn Roof Drains

Control-Flo...Today's Successful Answer to More

THE ZURN "CONTROL-FLO CONCEPT"

Originally, Zurn introduced the scientifically-advanced "Control-Flo" drainage principle for dead-level roofs. Today, after thousands of successful applications in modern, large dead-level roof areas, Zurn engineers have adapted the comprehensive "Control-Flo" data to **sloped roof** areas.

WHAT IS "CONTROL-FLO"?

It is an advanced method of removing rain water off dead-level or sloped roofs. As contrasted with conventional drainage practices, which attempt to drain off storm water as quickly as it falls on the roof's surface, "Control-Flo" drains the roof at a controlled rate. Excess water accumulates on the roof under controlled conditions...then drains off at a lower rate after a storm abates.

CUTS DRAINAGE COSTS

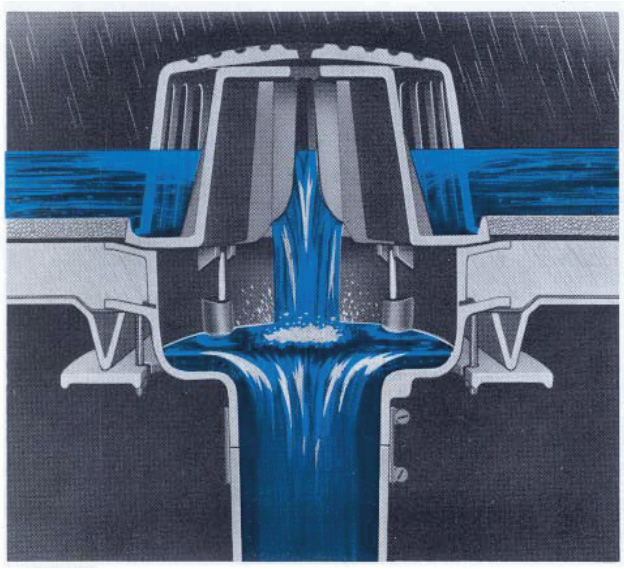
Fewer roof drains, smaller diameter piping, smaller sewer sizes, and lower installation costs are possible with a "Control-Flo" drainage system because roof areas are utilized as temporary storage reservoirs.

REDUCES PROBABILITY OF STORM DAMAGE

Lightens load on combination sewers by reducing rate of water drained from roof tops during severe storms thereby reducing probability of flooded sewers, and consequent backflow into basements and other low areas.

THANKS TO EXCLUSIVE ZURN "AQUA-WEIR" ACTION

Key to successful "Control-Flo" drainage is a unique scientifically-designed weir containing accurately calibrated notches with sides formed by parabolic curves which provide flow rates directly proportional to the head. Shape and size of notches are based on predetermined flow rates, and all factors involved in roof drainage to assure permanent regulation of drainage flow rates for specific geographic locations and rainfall intensities.

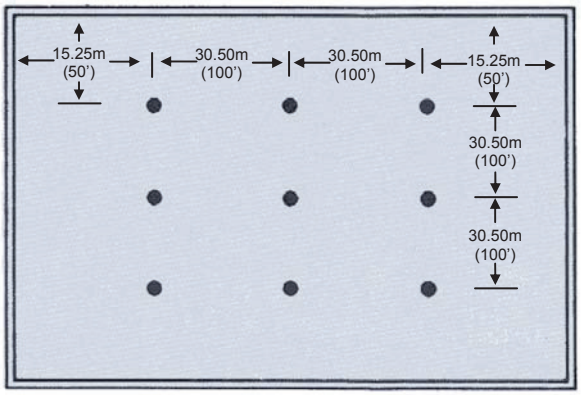


DEFINITION

DEAD LEVEL ROOFS

DIAGRAM "A"

A dead-level roof for purposes of applying the Zurn "Control-Flo" drainage principle is one which has been designed for zero slope across its entire surface. Measurements shown are for maximum distances.



(Plan View)

(Section View)

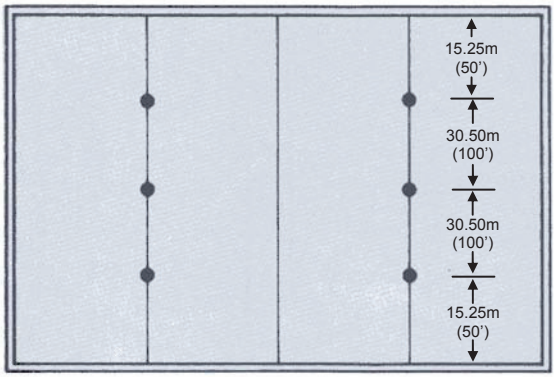
SLOPED ROOFS

DIAGRAM "B"

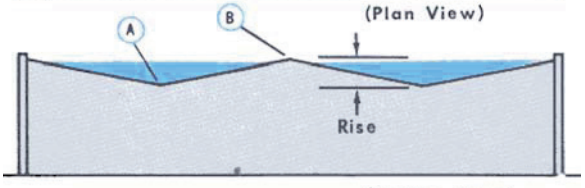
A sloped roof is one designed commonly with a shallow slope. The Zurn "Control-Flo" drainage system can be applied to any slope which results in a total rise up to 152mm (6").

The total rise of a roof as calculated for "Control-Flo" application is defined as the vertical increase in height in inches, from the low point or valley of a sloping roof (A) to the top of the sloping section (B). (Example: a roof that slopes 3mm (1/8") per foot having a 7.25m (24') span would have a rise of 7.25m x 3mm or 76mm (24' x 1/8" or 3")).

Measurements shown are for maximum distances.



(Plan View)

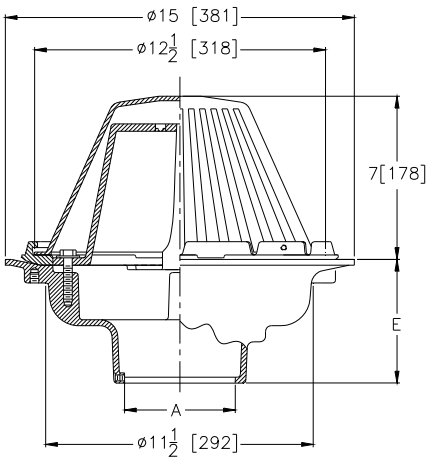


(Section View)

Dimensions and other measurements given in metric and imperial forms.

Economical Roof Drainage Installations

SPECIFICATION DATA



ENGINEERING SPECIFICATION: ZURN Z-105 "Control-Flo" roof drain for dead -level or sloped roof construction, Dura-Coated cast iron body. "Control-Flo" weir shall be linear functioning with integral membrane flashing clamp/ gravel guard and Poly-Dome. All data shall be verified proportional to flow rates.

ROOF DESIGN RECOMMENDATIONS

Basic roofing design should incorporate protection that will prevent roof overloading by installing adequate over-flow scuppers in parapet walls.

GENERAL INFORMATION

The “Control-Flo” roof drainage data is tabulated for four areas (232.25m^2 (2500 sq. ft.), 464.502m^2 (5000 sq. ft.), 696.75m^2 (7500 sq. ft.), 929m^2 (10,000 sq. ft.) notch areas ratings) for each locality. For each notch area rating the maximum discharge in L.P.M. (G.P.M.) - draindown in hours, and maximum water depth at the drain in inches for a dead level roof — 51mm (2 inch) rise — 102mm (4 inch) rise and 152mm (6 inch) rise—are tabulated. The rise is the total change in elevation from the valley to the peak. Values for areas, rise or combination thereof other than those listed, can be arrived at by extrapolation. All data listed is based on the fifty-year return frequency storm. In other words the maximum conditions as listed will occur on the average of once every fifty years.

NOTE: The tabulated “Control-Flo” data enables the individual engineer to select his own design limiting condition. The limiting condition can be draindown time, roof load factor, or maximum water depth at the drain. If draindown time is the limiting factor because of possible freezing conditions, it must be recognized that the maximum time listed will occur on the average of once every 50 years and would most likely be during a heavy summer thunder storm. Average winter draindown times would be much shorter in duration than those listed.

GENERAL RECOMMENDATIONS

On sloping roofs, we recommend a design depth referred to as an equivalent depth. An equivalent depth is the depth of water attained at the drains that results in the same roof stresses as those realized on a dead-level roof. In all cases this equivalent depth is almost equal to that attained by using the same notch area rating for the different rises to 152mm (6”). With the same depth of water at the drain the roof stresses will decrease with increasing total rise. Therefore, it would be possible to have a depth in excess of 152mm (6”) at the drain on a sloping roof without exceeding stresses normally encountered in a 152mm (6”) depth on a dead-level roof. However, it is recommended that scuppers be placed to limit the maximum water depth on any roof to 152mm (6”) to prevent the overflow of the weirs on the drains and consequent overloading of drain piping. In the few cases where the data shows a flow rate in excess of 136 L.P.M. (30 G.P.M.) if all drains and drain lines are sized according to recommendations, and the one storm in fifty years occurs, the only consequence will be a brief flow through the scuppers or over-flow drains.

NOTE: An equivalent depth is that depth of water attained at the drains at the lowest line or valley of the roof with all other conditions such as notch area and rainfall intensity being equal. For Toronto, Ontario a notch area rating of 464.50m^2 (5,000 sq. ft.) results in a 74mm (2.9 inch) depth on a dead level roof for a 50-year storm. For the same notch area and conditions, equivalent depths for a 51mm (2”), 102mm (4”) and 152mm (6”) rise respectively on a sloped roof would be 86mm (3.4”), 104mm (4.1”) and 124mm (4.9”). Roof stresses will be approximately equal in all cases.

Control-Flo Drain Selection Is Quick and Easy...

The exclusive Zurn “Selecta-Drain” Chart (pages 8—11) tabulates selection data for 34 localities in Canada. Proper use of this chart constitutes your best assurance of sure, safe, economical application of Zurn “Control-Flo” systems for your specific geographical area. If the “Selecta-Drain Chart does not cover your specific design criteria, contact Zurn Industries Limited, Mississauga, Ontario, for additional data for your locality. Listed below is additional information pertinent to proper engineering of the “Control-Flo” system.

ROOF USED AS TEMPORARY RETENTION

The key to economical “Control-Flo” is the utilization of large roof areas to temporarily store the maximum amount of water without overloading average roofs or creating excessive draindown time during periods of heavy rainfall. The data shown in the “Selecta-Drain” Chart enables the engineer to select notch area ratings from 232.25 m^2 (2,500 $ft.^2$) to 929m^2 (10,000 $ft.^2$) and to accurately predict all other design factors such as maximum roof load, L.P.M. (G.P.M.) discharge, draindown time and water depth at the drain. Obviously, as design factors permit the notch area rating to increase the resulting money saved in being able to use small leaders and drain lines will also increase.

ROOF LOADING AND RUN-OFF RATES

The four values listed in the “Selecta-Drain” Chart for notch area ratings for different localities will normally span the range of good design. If areas per notch below 232.25m^2 (2,500 $ft.^2$) are used considerable economy of the “Control-Flo” concept is being lost. The area per notch is limited to 929m^2 (10,000 $ft.^2$) to keep the draindown time within reasonable limits. Extensive studies show that stresses due to water load on a sloping roof for any fixed set of conditions are very nearly the same as those on a dead-level roof. A sloping roof tends to concentrate more water in the valleys and increase the water depth at this point. The greater depth around the drain leads to a faster run-off rate, particularly a faster early run -off rate. As a result, the total volume of water stored on the roof is less, and the total load on the sloping roof is less. By using the same area on the sloping roof as on the dead-level roof the increase in roof stresses due to increased water depth in the valleys is offset by the decrease in the total load due to less water stored. The net result of the maximum roof stress is approximately the same for any single span rise and fixed set of conditions. A fixed set of conditions, would be the same notch area, the same frequency store, and the same locality.

SPECIAL CONSIDERATIONS FOR STRUCTURAL SAFETY: Normal practice of roof design is based on 18kg (40 lbs.) per 929 cm^2 (sq ft.). (Subject to local codes and by-laws.) Thus it is extremely important that design is in accordance with normal load factors so deflection will be slight enough in any bay to prevent progressive deflection which could cause water depths to load the roof beyond its design limits.

ADDITIONAL NOTCH RATINGS

The ‘Selecta-Drain” Chart along with Tables I and II enables the engineer to select “Control-Flo” Drains and drain pipe sizes for most Canadian applications. These calculations are computed for a proportional flow weir that is sized to give a flow of 23 L.P.M. (5 G.P.M.) per inch of head. The 23 L.P.M. (5 G.P.M.) per inch of head notch opening is selected as the bases of design as it offers the most economical installation as applied to actual rainfall experienced in Canada.

Should you require design criteria for locations outside of Canada or for special project applications please contact Zurn Industries Limited, Mississauga, Ontario.

LEADER AND DRAIN PIPE SIZING

Since all data in the “Selecta-Drain” Chart is based on the 50-year-storm it is possible to exceed the water depth listed in these charts if a 100-year or 1000-year storm would occur. Therefore, for good design it is recommended that scuppers or other methods be used to limit water depth to the design depth and tables I and II be used to size the leaders and drain pipes. If the roof is capable of supporting more water than the design depth it is permissible to locate the scuppers or other overflow means at a height that will allow a greater water depth on the roof. However, in this case the leader and drain pipes should be sized to handle the higher flow rates possible based on a flow rate of 23 L.P.M. (5 G.P.M.) per inch of depth at the drain.

PROPER DRAIN LOCATION

The following good design practice is recommended for selecting the proper number of “Control-Flo” drains for a given area. **On dead-level roofs**, drains should be located no further than 15.25m (50 feet) from edge of roof and no further than 30.50m (100 feet) between drains. See diagram “A” page 2. **On sloping roofs**, drains should be located in the valleys at a distance no greater than 15.25m (50 feet) from each end of the valleys and no further than 30.50m (100 feet) between drains. See diagram “B” page 2. Compliance with these recommendations will assure good run off regardless of wind direction.

DRAWINGS / FIGURES

SITE PLAN

SCALE 1: 100

PROJECT INFORMATION

ZONING BY-LAW 2008-250 R5C [1866(H25) & IP8[1549]

SITE AREA	1,698.66 sq. m. 18,284 sq. ft.
GRADE (GEODETIC ELEVATION)	78.03 m.
BUILDING HEIGHT	25.0 m.
AMENITY AREA PER DWELLING UNIT	6.0 sq. m.
LANDSCAPE AREA	30%
FRONT YARD SETBACK	3.0 M
CORNER YARD SETBACK	3.0 M
REAR YARD SETBACK	3.0 M
INTERIOR SIDE YARD SETBACK (VARIES)	1.5, 2.5 & 6.0 M

PROJECT STATISTICS

AMENITY SPACE

PRIVATE BALCONY =	568,0 sq. m.	
COMMUNAL INTERIOR =	37.1 sq. m.	
COMMUNAL ROOF TOP PATIO =	73.0 sq. m.	
EXTERIOR AT GRADE =	0.0 sq. m.	
TOTAL =	677,1 sq. m.	

SITE COVERAGE

BUILDING FOOTPRINT =	54.4%	914,0 sq. m.
DRIVING SURFACE =	4.7%	80,1 sq. m.
LANDSCAPE AREA =	40.9%	686,6 sq. m.
TOTAL =	100.0%	1,680,7 sq. m.

GROSS BUILDING FLOOR AREA
(OTTAWA ZONING DEFINITION)

PARKING LEVEL - P1		1423 sq. m. 15,312 sq. ft.
GROUND FLOOR		605.73 sq. m. 6,520 sq. ft.
2nd - 4th FLOOR	3 x 780.4 sq. m. 3 x 8,400 sq. ft.	2,341.2 sq. m. 25,200 sq. ft.
TOTAL AREA ABOVE GRADE		2,946.9 sq. m. 31,720 sq. ft.

UNIT STATISTICS

1 BEDROOM UNIT	15
2 BEDROOM UNIT	17
TOTAL	32

CAR PARKING

REQUIRED		
RESIDENCE	- 1.0 PER UNIT (32 UNITS)	32
VISITOR	- 0.2 PER UNIT (32 UNITS)	6
TOTAL		38
PROVIDED		
RESIDENCE	- 1.05 PER UNIT (32 UNITS)	36
VISITOR	- 0.1 PER DWELLING UNIT	3
TOTAL		39

BICYCLE PARKING

REQUIRED	- 0.5 PER UNIT (32 UNITS)	16
PROVIDED		
INTERIOR		14
EXTERIOR		2

SITE PLAN SYMBOLS

- CONCRETE UNIT PAVERS SURFACE
- PROPOSED CONCRETE SURFACE
- EXISTING ASPHALT CITY SIDEWALK
- WASHED RIVER STONE SURFACE
- ASPHALT DRIVING SURFACE
- SOFT LANDSCAPING
- BIKE RACK
- TWO WAY VEHICLE CIRCULATION
- MAIN ENTRANCE
- UNIT BALCONY DOOR / FIRE EXIT
- PROPERTY LINE
- ZONING SETBACKS
- AIR INTAKE / EXHAUST WALL GRILL
- EXISTING TREE TO BE REMOVED

DRAWING NOTES

1. PROPERTY LINE
2. BUILDING SETBACKS
3. HARD SURFACE PAVING, SEE LANDSCAPE PLAN FOR PATTERN AND TYPE
4. DEPRESSED CURB TO CITY OF OTTAWA STANDARD DETAIL
5. HEATED ACCESS RAMP TO PARKING GARAGE WITH TRENCH DRAIN
6. VEHICLE LAY-BY WITH NEW CURB AND 1800mm WIDE CONCRETE SIDEWALK
7. SOFT LANDSCAPING, SEE LANDSCAPE PLAN
8. PRIVATE PATIOS OVER UNDERGROUND PARKING LEVEL WITH METAL FRAMED GLASS RAILINGS
9. HYDRO TRANSFORMER ON A CONCRETE PAD WIDTH CONCRETE FILLED BOLLARDS
10. GARBAGE / RECYCLING CONTAINER PICK-UP AREA
11. 0.6 M x 1.8 M BICYCLE PARKING SPACES
12. SIAMESE CONNECTION
13. AIR INTAKE / EXHAUST WALL GRILL
14. 1200mm WIDE CONCRETE PATH
15. EXISTING FIRE HYDRANT
16. OUTLINE OF PRIVATE TERRACE ABOVE
17. EXISTING TREE TO BE REMOVED
18. 1800mm HT. PRIVACY SCREEN
19. BUILDING CANOPY, ABOVE GROUND FLOOR
20. RELOCATE EXISTING UTILITY POLE AND GUIDE CABLES
21. PROPOSED LOCATION OF UNDERGROUND UTILITIES
22. GAS REGULATOR AND OR METERS
23. EXISTING PRECAST CONCRETE UNIT WALL
24. EXISTING ±1800mm HT. BOARD FENCE
25. EXISTING ASPHALT PARKING LOT
26. BLOCK 16 - 500mm RESERVE
27. EXISTING DRY STACKED FIELD STONE RETAINING WALL TO BE REMOVED
28. WASHED RIVER STONE SURFACE
29. REMOVE EXISTING ASPHALT SIDEWALK WITH STREET CURB
30. EXISTING STREET CURB TO BE REMOVED FOR LAY-BY
31. CONCRETE FOUNDATION / RETAINING WALL
32. BALCONY ABOVE , WASHED RIVER STONE BELOW
33. DRAINAGE SCUPPERS FOR GROUND FLOOR PATIO WITH RIVER STONE SPLASH PADS BELOW
34. CATCH BASIN
35. BALCONY COLUMN
36. 1800mm WIDE CONCRETE SIDEWALK TO CITY STANDARDS
37. EXISTING ASPHALT SITEWALK
38. NEW ALIGNMENT OF ASPHALT SIDEWALK
39. EXISTING STREET CURB AT INTERSECTION TO BE REMOVED AND RE-ALLIED WITH 6.0M RADIUS TO CITY STANDARDS
40. EXISTING CATCH BASIN TO BE ADJUSTED AS REQUIRED
41. 5.0 m x 5.0 m SIGHT TRIANGLE
42. ROOF TOP COMMUNAL PATIO WITH ENCLOSED ACCESS FROM 5th LEVEL

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (00) INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- (00) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 DETAIL NUMBER
- 00 TITLE / SCALE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

No.	DESCRIPTION	DATE
3	REVISED AS PER SPC & ZONING AMENDMENT COMMENTS	Apr. 6, 18
2	ISSUED FOR SPC & ZONING AMENDMENT APP.	Apr. 4, 17
1	ISSUED FOR DESIGN CONCEPT	Nov __ 16

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK J. LAHEY — LICENCE 4375 — SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:

280 Herzberg Development Corp.

PROJECT DEVELOPER
280 Herzberg Development Corp.
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Tel. 613-836-3070
Fax. 613-836-3065

LEGAL DESCRIPTION
SURVEYOR'S REAL PROPERTY REPORT
PART 1 Plan of
PART OF BLOCK 3
REGISTERED PLAN 4M-1096 and
PART OF LOT 7
CONCESSION 4
Geographic Township of March
CITY OF OTTAWA

SURVEYOR
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PROJECT TITLE:

280 HERZBERG

OTTAWA ONTARIO

SHEET TITLE:

SITE PLAN

DRAWN:	CHECKED:
RV	R.L.A.
SCALE: 1:100	SHEET No. SP-1
PROJECT No. 1610	

PAPER SIZE: ISO_B1_(707.00_x_1000.00_MM) | PLOT DATE: Friday, April 13, 2018 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb | F:\2016\1610 280 Herzberg Road\01_Design Development\1610 SP-1 Site Plan 2018 03 15.dwg

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.
4. Maintenance Holes marked by *, Underground services and Inverts are taken from City of Ottawa Engineering drawings C-K-28, D-K-04, PHASE V 93063-P8 and 93063-P12.

DETAIL SCALE 1:100

LOT 7
CONCESSION 4 (MARCH)
PIN 04517 - 0494
PART 1 PLAN 5R - 1121

BLOCK 16 (0.50 Reserve) PIN 04517 - 0871

HERZBERG ROAD PIN 04517 - 0882

BLOCK 3 PIN 04517 - 1995
PART 1 PLAN 4R - 28213

TERRY FOX DRIVE PIN 04517 - 0886

BLOCK 20 (0.30 Reserve) PIN 04517 - 0875

N23°41'00"W (N23°18'30"W) 35.99 (36.08 P4) (P1,P3&Meas)
Remains of PBWF
0.53 (P3&Set)
0.75 (P3&Set)
N47°40'20"E
0.45 (P1,P3&Set)
ASRW 1.0 South
ASRW 0.1 West
ASRW 0.4 West
0.31 (P3&Set)
N43°20'10"W 35.99 (P3&Meas)
S58°(657)(WIT)
Remains of PBWF 0.7 South
45.72 (P1,P3&Meas)

Bearings are grid, derived from the westerly limit of Herzberg Road shown to be N22°06'30"W on Registered Plan 4M-1096 and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

SITE AREA =1698.8 m²

SURVEYOR'S REAL PROPERTY REPORT

PART 1 Plan of
PART OF BLOCK 3
REGISTERED PLAN 4M-1096 and
PART OF LOT 7
CONCESSION 4
Geographic Township of March
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 200

8.0 6.0 4.0 2.0 0 4 8 Metres

Metric
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 9th day of February, 2017.

Feb 14/17
Date

A. Andrew Shelp
Ontario Land Surveyor

PART 2
THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED: FEBRUARY 14, 2017

ANNIS, O'SULLIVAN, VOLLEBEKK LTD. grants to 280 HERZBERG DEVELOPMENT CORP. ("The Client"), their solicitors, mortgagees, and other related parties, permission to use original, signed, sealed copies of the Surveyor's Real Property Report in transactions involving The Client.

Notes & Legend

	Denotes	
—□—	-	Survey Monument Planted
—■—	-	Survey Monument Found
SIB	-	Standard Iron Bar
SSIB	-	Short Standard Iron Bar
IB	-	Iron Bar
IBø	-	Round Iron Bar
CP	-	Concrete Pin
▪	-	Survey Monument 0.3 metres Long
(WIT)	-	Witness
Meas.	-	Measured
(AOG)	-	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	-	Registered Plan 4M-1096
(P2)	-	Ottawa-Carleton Standard Condominium Plan No. 793
(P3)	-	Plan 4R-28213
(P4)	-	Plan 5R-1121
○FH	-	Fire Hydrant
⊠ WV	-	Water Valve
○ VC	-	Valve Chamber (Watermain)
	-	Deciduous Tree
	-	Coniferous Tree
○ MH-S	-	Maintenance Hole (Sanitary)
○ MH-H	-	Maintenance Hole (Hydro)
□ CB	-	Catch Basin
□ CBI	-	Catch Basin Inlet
CSP	-	Corrugated Steel Pipe
T/P	-	Top of Pipe
T/G	-	Top of Grate
⊠ TB-B	-	Bell Terminal Box
⊠ TB-H	-	HydroTerminal Box
BF	-	Board Fence
P&WF	-	Post and Wire Fence
○ UP	-	Utility Pole
⊲ AN	-	Anchor
○ LS	-	Light Standard
MB	-	Mail Box
Ø	-	Diameter
× 65.50	-	Location of Elevations
+ 65.00	-	Top of Concrete Curb Elevation
× 65.55	-	Top of Wall Elevations
C/L	-	Centreline
———	-	Property Line
BRW	-	Brick Retaining Wall
ASRW	-	Armor Stone Retaining Wall
△ S	-	Sign
—— ST ——	-	Underground Storm Sewer
—— S ——	-	Underground Sanitary Sewer
—— W ——	-	Underground Water
—— P ——	-	Underground Power
—— P ——	-	Underground Power as marked on Ground by others
—— G ——	-	Underground Gas
—— B ——	-	Underground Bell
—— OHW ——	-	Overhead Wires
TOS	-	Top of Slope

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2000153
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

Topographic data was collected under Winter Conditions. Snow cover and ice preclude determining location and elevation of some topographical data that is otherwise visible.

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Ontario Land Surveyors

Job No. 19308-17 Herzberg Pl Lot 7 C4 MA T F | ig