FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT STUDY

FOR

RIOCAN MANAGEMENT INC
1021 ST. LAURENT BLVD

CITY OF OTTAWA

PROJECT NO.: 12-625

NOVEMBER 2012 – REV 1

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FOR
RIOCAN MANAGEMENT INC
1021 ST. LAURENT BLVD

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1.0 INTRODUCTION

RioCAN Management Inc has retained David Schaeffer Engineering Ltd. (DSEL) to prepare a Functional Servicing and Stormwater Management Study in support of their Site Plan Application for the proposed redevelopment at 1021 St. Laurent Blvd.

The subject property is located within City of Ottawa urban boundary. As illustrated in ***Figure 1***, the site is located southeast of the St. Laurent Boulevard / Donald Street intersection.

Figure 1: Site Location

The existing development at 1021 St. Laurent Blvd was constructed in two phases. Phase 1 (measuring approximately ***3.7ha***) is currently zoned for 'Arterial Mainstreet' development (AM) and phase 2, is zoned AM H(20). Phase 1 was constructed circa 1967, while phase 2 was developed in 2005. The site is currently developed as a shopping mall consisting of 19,555.33m^2 of total retail floor space.

RioCAN's proposed development involves the demolition of the existing retail units 1 and 3 through 7, while retaining retail 2 (existing food store) in Phase 1. There are no proposed works within existing Phase 2. The total post-development retail space will be 17,231.03m^2 in phase 1 and 7,676.69 m^2 in phase 2. The proposed site plan prepared by Leon Lubelski Architect has been included in ***Drawings / Figures***.

The objective of this report is to provide sufficient detail with respect to the availability of existing site services, in addition to the proposed servicing strategy, to support the application for site plan control.

1.1 Existing Conditions

Stantec Geomatics Ltd prepared a detailed topographical survey of the site. A reduction plot of the survey is included in ***Drawings / Figures***.

As described above, the existing site consists of a retail stores, with associated paved access roads, parking areas, and landscaping as illustrated on the '*Existing Conditions Plan'* included in ***Drawings / Figures***.

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 and building permits.

1.3 Summary of Pre-consultation

The client and consulting team met with City Staff on May 15, 2012. A record of meeting minutes is included in ***Appendix A***.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

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

- **Ottawa Sewer Design Guidelines,**
  City of Ottawa, November 2004.
  (City Standards)

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

- **Technical Bulletin ISD-2012-1**
  City of Ottawa, January 31, 2012.
  (ISD-2012-1)

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

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1E pressure zone. Potable water is available to the site via an existing 200mm diameter service connection to the 406mm St. Laurent Boulevard watermain. The existing site watermain servicing is illustrated on drawing ***EX-1*** included in ***Drawings/Figures***. Information shown on ***EX-1*** was derived from available as-built material.

3.2 Water Supply Servicing Design

It is proposed to retain as much of the existing water supply infrastructure as possible. The water service to the north (rear of the building) will be re-aligned to ensure adequate separation from the proposed building, proposed storm sewer, and existing hydro pole line. The existing water service makes a looped connection to the existing 406mm watermain on St.Laurent.

Table 1 summarizes the ***Water Supply Guidelines*** employed in the preparation of the water demand estimate. The water demand estimate includes both existing and proposed developments serviced by the 200mm dia water service.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Commercial Average Daily Demand (Retail)	2.5 L/m^2/d
Residential Maximum Daily Demand	1.5 x Average Daily
Residential Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
Desired pressure range during normal operating conditions (average day to maximum hour demand)	350kPa and 480kPa
Minimum pressure during normal operating conditions (average day to maximum hour demand)	275kPa
Minimum pressure during fire flow plus max day	140kPa
** Residential Max. Daily and Max. Hourly peaking factors as per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.*	

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] Location #1 (m H_2O)	Boundary Condition[2] Location #2 (m H_2O)
Average Daily Demand	43.3		
Max Day + Fire Flow	64.9 + 9,000= 9,064.9		
Peak Hour	116.8		
1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations. 2) Boundary conditions supplied by the City of Ottawa.			

Section 4.2.11 of the City Design guidelines for water distribution provides guidance for determining the method for estimating Fire Demand. As indicated, the requirements for levels of fire protection on private property are covered in the Ontario Building code. Section 7.2.11 of the OBC addresses the installation of water service pipes and fire service mains. Part 3 of the OBC outlines the requirement for Fire Protection, Occupant Safety, and Accessibility; and sub-section A-3.2.5.7 provides the provisions for fire fighting. Based on trained personnel responding to the emergency, and water supply being delivered through a municipal system, the required minimum provision for water supply shall not be less than 2,700L/min or greater than 9000L/min (OBC Section A.3.2.5.7, Table 2). Therefore, a conservative estimate for the required fire supply is assumed to be 9000L/min. A certified fire protection system specialist shall be employed to design the building fire suppression system(s) and confirm the actual fire flow demand.

The proposed watermain servicing design is illustrated on drawing ***SSP-1*** included in ***Drawings/Figures***.

3.3 Water Supply Conclusion

The anticipated water demands for the proposed development were submitted to the City of Ottawa for establishing boundary conditions. The results of their watermain model were not available at the time of publication.

However, the proposed development is anticipated to maintain the existing water demands per the current development. No water supply issues with the existing development have been brought forward to the design team.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The site is currently serviced via a 200mm diameter private sanitary sewer that outlets to the existing municipal 225mm diameter sewer on St. Laurent Blvd. The existing site sanitary servicing is illustrated on drawing ***EX-1*** included in ***Drawings/Figures***.

4.2 Wastewater Design

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

The anticipated the peak wet-weather wastewater flow generated from the proposed site development is ***5.36L/s***, including a 0.28L/s/ha allowance for extraneous flow. Refer to ***Appendix C*** for associated calculations.

The proposed site wastewater servicing design is illustrated on drawing ***SSP-1*** included in ***Drawings/Figures***.

Table 3
Wastewater Design Criteria

Design Parameter	Value
Commercial Floor Space	5 L/m^2/d
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
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, November 2004.

The proposed development will re-use the existing private 200mm diameter sanitary service; the carrying capacity of which is 23.2L/s.

4.3 Wastewater Servicing Conclusions

The proposed wastewater design conforms to all relevant City guidelines. The capacity of the existing private sanitary service is sufficient to convey wastewater from the proposed redevelopment to the existing municipal infrastructure on St. Laurent Blvd.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

The subject lands are located within the Green's Creek Subwatershed. The existing development contains no stormwater attenuation or treatment. The site is serviced by an existing 1900mm diameter storm sewer north of the development. This trunk sewer flows in an easterly direction and outlets approximately 1km into Cummings Creek. Flows directed into Cummings Creek are treated by an online facility, known as the 'CHMC Stormwater Management Pond.'

The on-site storm sewer infrastructure was installed below the existing 1900mm diameter storm sewer north of the development. An existing pump station was designed to lift stormwater into the existing sewer. It would appear that the existing pumping station is no longer in service as standing water was observed in the on-site storm sewers.

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the proposed development have been based on the review of available background material:

- Re-development sites tributary to separated sewers within the City of Ottawa are required to attenuate all storms up to and including a 100-year event.
- The specified release rate for the subject property is based on a 5-year City of Ottawa storm event with an equivalent Ration Method coefficient of 0.50 for a time of concentration of 20 minutes. Therefore, based on the Rational Method with the above parameters this site will be required to attenuate all storms up to and including a 100-year event to ***373.6L/s***. See ***Appendix D*** for detailed calculation.
- Quality controls are not required for the proposed re-development. Treatment takes place in downstream facility

5.3 Proposed Stormwater Management System

The proposed re-development will contain a combination of roof top flow attenuation, surface storage, and underground storage. See drawing ***SWM-1*** for inlet restriction details. Storm sewers have been designed to convey the 5-year event without inlet restrictions.

The underground storage component will take place within a combination of storm sewers, maintenance structures, and an underground storage system. The design drawings illustrate the area available for sub-surface storage as well as the minimum and maximum storage depths for the containment units. At this stage a specific manufacturer will not be selected, although it should be noted that several products exist to perform this function.

It was assumed that the existing building to be retained does not provide roof top attenuation of storm flow. The proposed building is anticipated to provide roof top attenuation in accordance with current practices. The release rate and storage calculations for roof top attenuation were estimated based Zurn Industries Ltd. design guidelines for Model Z-105-5 Control-Flo Single Notch drains. Other products may be specified provided that the restricted release rate and sufficient storage is provided to meet or exceed the values summarized in ***Appendix D***.

The Rational Method / Modified Rational Methods were employed to determine peak runoff rates and storage volumes for the un-attenuated and attenuated catchments. ***Table 4*** summarizes the release rate characteristics for each area. See ***Appendix D*** for detailed calculations.

Table 4
Summary of Proposed Release Rate and Storage Characteristics

Area ID	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m^3)	(L/s)	(m^3)
Un-attenuated	60.2	0.0	114.3	0.0
Attenuated	147.6	492.5	254.7	759.1
Total	**207.9**	**492.5**	**369.0**	**759.1**
Target	**373.6**		**373.6**	

A storm pumping station will be required to lift storm water to the outlet, since the proposed storm sewer infrastructure will outlet below the existing 1900mm dia trunk storm sewer north of the development. It is proposed to pump the storm water 0.30m above the outlet of the existing 1900mm dia storm sewer. Furthermore, it is proposed to install a new structure at this location and provide a gravity outlet for the development that would connect invert to invert. As illustrated on ***Drawing SSP-1***, the proposed lit station would be equipped with two outlets. The high level outlet for the pumped flows and a low level outlet to allow for gravity drainage in the event of pump failure. The low level gravity outlet would only be available once the head within the site is greater than the existing 1900mm dia storm sewer.

5.4 Stormwater Servicing Conclusions

The proposed stormwater design meets the target attenuation objectives.

6.0 UTILITIES

Hydro, telecommunications and gas servicing are currently extended into the site. The proposed site re-development will maintain these existing services to the fullest extent possible, and further extend servicing within the site in cooperation with the appropriate utility companies as required.

7.0 CONCLUSION AND RECOMMENDATIONS

DSEL was retained to prepare a Functional Servicing and Stormwater Management report in support of the RioCAN Management Inc application for site plan control for the proposed re-development of 1021 St. Laurent Blvd. The preceding report outlines the following conclusions:

- The proposed re-development will utilize the existing water service infrastructure to the extent possible;
- The proposed re-development will utilize the existing private sanitary sewer infrastructure. The existing infrastructure is sized sufficiently to convey flows from the proposed re-development;
- The proposed stormwater management system reduces the peak flow rates experienced in existing conditions, and achieve allowable release rate criteria in accordance with City of Ottawa guidelines. Quality controls are not required. The site will use flow restriction devices and a combination of rooftop retention, surface and sub-surface storage to retain stormwater on the site;

It is recommended that the site servicing design described with this functional servicing study be adopted and approved for site plan control in support of the proposed development.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Adam D. Fobert, P.Eng.

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

11-534 04/05/2012

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.	Drawings/Figures
☒	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 2.0
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.0, 4.0, 5.0
☐	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.	
☒	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

☐	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

City of Ottawa – Planning and Growth Management Comments Resulting from Pre-Application Consultation Meeting on May 15, 2012 (1:00pm) at 110 Laurier Avenue West

Site Address: 1021 St. Laurent Boulevard (City of Ottawa), Proposed Target/Metro Site

Attendees: Kersten Nitsche, Planner (kersten.nitsche@ottawa.ca), Phil Busby, Planner (philippe.busby@ottawa.ca), Randolph Wang, Urban Designer (randolph.wang@ottawa.ca), Jerico Gapas, Project Manager Infrastructure Approvals (jerico.gapas@ottawa.ca), Wally Dubyk, Transportation Engineer (wally.dubyk@ottawa.ca)

The following comments were formed based on the pre-application meeting that was held for the above noted site:

Planning Comments:

a. General

i. Ensure that the proposed development complies with all zoning, for example:
   - Minimum interior yard/rear yard abutting a residential zone – 7.5 m
   - Minimum width of landscaping abutting a residential zone – 3 m
   - Minimum width of landscaping for a parking lot with more than 100 spaces – 3 m

ii. Please show where garbage will be located and how it meets required screening provisions.

iii. Please clarify under what site plan the external garbage was approved that appears to be associated with Boston Pizza? Streetview (from Google which is a bit outdated by 2-3 years) shows that this is not maintained or properly screened, and this is visible from the street.

iv. All cart corrals must be shown to ensure that they work within the pedestrian network on the site.

v. The minimum parking rate is 3.4 spaces per 100 m² of gross leasable floor area. Please provide a breakdown of the uses on the site and the number of parking spaces on the site. Parking space rates can be found in Section 101, Area B.

b. CPTED

i. In addition to Randolph's comments, the fencing to the east of the Target and Metro store's should be carefully considered as the implementation of a solid wall fence that separates the stores from the abutting residential has the potential to create an unwanted gathering area for visitors.

c. Loading Area

i. The proposed location of the loading area for the store must be relocated to minimize pedestrian conflict and provide connectivity from the high-density residential neighbourhood.
ii. Please review Principle #3 and Policy 5 of Section 2.5.1, as well as Policy 2(e) of Section 4.11, all within the Official Plan. These principles and policies speak directly to an enhanced pedestrian environment, pedestrian connectivity, and locating loading areas appropriately within this context.
iii. As is currently proposed, the loading area does not meet the policies of the Official Plan.

d. Parking

i. Please remove parking spaces that are located in the Right-Of-Way along Donald Street and St. Laurent Boulevard and add landscaping.
ii. All parking spaces and aisles widths must meet the minimum size requirements as per Section 107 of the Zoning By-law.
ii. Include bicycle parking at a rate of 1 per 250 m^2 of Gross Floor Area. Bicycle parking provisions can be found in Section 111 of the Zoning By-law.
iii. Landscaping in parking lots must occupy a minimum of 15% of the area of any parking lot, whether a principal or accessory use, and must be provided as perimeter or interior landscaped area. Landscaping provisions for parking lots can be found in Section 110 of the Zoning By-law.

e. Pedestrian Connections

i. Locate a strong pedestrian connection from the adjacent residential area to the east away from the loading area.
ii. Locate a strong pedestrian connection from the north entrance to invite guests from surrounding commercial plaza and nearby residential areas.
iii. The parking lot must be revised to increase pedestrian connectivity and safety on the site.
iv. There must be a continuous pedestrian walkway that connects the sidewalk to the pedestrian network within the site.
v. As above, review the Principles and Policies within Section 2.5.1 and Section 4.11 of the OP, as well as the Arterial Mainstreet Design Guidelines.

f. Requirement for Site Plan Application

i. More information is required regarding the trees on the adjacent residential site. Tree protection will have to be installed for these trees.

ii. This would be a Site Plan Revision, Manager Approval, Public Consultation which determines your fees, processes, timelines etc.

iii. The site plan and landscape plan have to include lot fabric and information outside of their site so that we can adequately review connectivity to adjacent sites.

iv. A Phase I ESA is required. If the Phase I ESA states that a Phase II is required, then the Phase II must be submitted with the application to be considered as complete

<u>*Urban Design Comments*</u> *(Please refer to the City of Ottawa's Urban Design Guidelines for Development along Arterial Mainstreets, attached in the email)*

1. Building sitting and orientation
    a. Our policies and AM guidelines favour a configuration where building is fronting onto the street and parking is located behind and/or beside the buiding (AM guidelines 1, 4, 6, 13, and 17).
    b. However, given the circumstances, it is agreeable that the building could remain at the proposed location provided all other urban design considerations are not compromised.
    c. These urban design considerations include (but not limited to) improving the quality of the public realm through proper landscaping, and optimizing pedestrian connectivities as detailed below.
2. The perimeters of the site:
    a. Remove parking in the City's Right Of Ways.
    b. Landscape the area between the sidewalks and the property boundaries along both St. Laurent and Donald and provide continuous tree canopies. (AM guidelines 2, 3, 4, 20, 23, 30 and 42)
    c. Screen parking from public sidewalks by landscaping and property fencing.
    d. Landscape area at the back and provide for proper screening while at the same time following the CPTED principles (AM guideline 35).
3. Pedestrian connections within and through the site
    a. Provide walkways with a minimum width of 2m to link the main entrance of the retail stores and public sidewalks (AM guideline 20)
    b. Provide a walkway with a minimum width of 2m to link the main entrance of the retail stores and the municipal park, preferably along the southern edge of the proposed Target store (AM guideline 19).
    c. Locate the loading area away from the above-noted pedestrian walkway.
    d. Use continuous landscaping and tree canopies to reinforce these walkways (AM guideline 31).
4. Architectural expression as related to urban design
    a. Approach (AM guidelines 7)

   i. Ensure that the two-storey building will be read as a two story building, not a one-storey box.
   ii. Respect human scale by breaking up building mass, ensuring richness in architectural details, and using quality materials that are of a proper scale.
   iii. Use architectural vocabularies that are common to civic and urban commercial buildings (as opposed to industrial/ware house buildings) to ensure that the building will be compatible with the envisioned characteristics of the Arterial Mainstreet.

b. East elevation
   i. Implement CPTED principles and develop a design strategy (architecture and/or landscape) to ensure that the back of the building will not become the target of graffiti (AM guidelines 41).
   ii. Use EIFS panels of different shape, size, and color to provide finer architectural details.

c. West elevation
   i. Introduce elements such as a series of canopies to strengthen the visual separation between the first floor and second floor, enhance the horizontality, and to provide for weather protection for pedestrians.
   ii. Introduce architectural elements to enrich the expression of the top and/or roofline as experienced in a three-dimension world (not a two-dimension elevation drawing).
   iii. Enlarge the ground floor display windows, and potentially integrate the display windows with the spandrel windows of the second floor to establish a stronger contemporary commercial presence, which may help to enliven the Mainstreet.
   iv. Use glass panels with varied shape and size that are more common to civic and urban commercial buildings (as opposed to industrial/ware house buildings).
   v. Use window frames with varied shape and size that are more common to civic and urban commercial buildings (as opposed to industrial/ware house buildings).
   vi. Use EIFS panels of different shape, size, and color to provide finer architectural details that are more common to civic and urban commercial buildings (as opposed to industrial/ware house buildings).
   vii. Use a stone and employ a pavement pattern of the same that are more in keeping with the contemporary architecture design approach.

d. South elevation
   i. Relocate the loading docks.
   ii. Enlarge the clear glass window to the extent possible around the office.
   iii. Extend the display window area to enliven the space between the two shopping facilities.

iv. Use glass panels that are more common to civic and urban commercial buildings (as opposed to industrial/ware house buildings).
v. Use window frames that are more common to civic and urban commercial buildings (as opposed to industrial/ware house buildings).
vi. Use EIFS panels of different shape, size, and color to provide finer architectural details that are more common to civic and urban commercial buildings (as opposed to industrial/ware house buildings).

The image (email attachment) was provided by the project architect. I added some comments on the image to illustrate the verbal comments I provided above.

<u>Infrastructure:</u>

No servicing concerns at this time based on Conceptual Site Plan.

<u>Transportation:</u>

a. Trip Generation Data:
    i. Calculate trip generation data + non-modal to identify the increased traffic associated with the proposal. If trip generation data warrants the need for a Transportation Brief, please prepare one. If the data does not warrant a Transportation Brief, please provide a Transportation Letter at a minimum to identify the impact of the proposal from a transportation perspective.

APPENDIX B

Water Supply

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

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		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	$L/m^2/d$	24,915	62.29	43.3	93.4	64.9	168.2	116.8
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				62.3	43.3	93.4	64.9	168.2	116.8
Total Demand				**62.3**	**43.3**	**93.4**	**64.9**	**168.2**	**116.8**

APPENDIX C

Wastewater Collection

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

DSEL

Site Area 3.680 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **1.03 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	$L/m^2/d$	24,915	2.88
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Industrial - Light**	35,000	L/gross ha/d		0.00
Industrial - Heavy**	55,000	L/gross ha/d		0.00

Average I/C/I Flow **2.88**

Peak Institutional / Commercial Flow 4.33
Peak Industrial Flow** 0.00
Peak I/C/I Flow **4.33**

** 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	**2.88**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**4.33**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**5.36**	**L/s**

APPENDIX D

Stormwater Management

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2004

Target Flow Rate

Area	3.83	ha	includes external areas draining into site
C	0.50	Rational Method runoff coefficient	
t_c	20.0	min	
	5-year		
i	70.3	mm/hr	
Q	373.6	L/s	

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID	U1, U2, U3	
Total Area	0.34	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	60.2	60.2	0.0	0.0	120.0	114.3	114.3	0.0	0.0

Estimated Post Development Peak Flow from Attenuated Areas

Area ID	A1, EXT 1	
Total Area	1.75	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	70.3	307.7	33.0	274.7	329.7	120.0	583.8	61.6	522.2	626.6
25	60.9	266.7	33.0	233.7	350.6	103.8	505.4	61.6	443.8	665.7
30	53.9	236.2	33.0	203.2	365.8	91.9	447.1	61.6	385.5	693.9
35	48.5	212.5	33.0	179.5	377.0	82.6	401.9	61.6	340.3	714.7
40	44.2	193.5	33.0	160.5	385.3	75.1	365.7	61.6	304.1	729.9
45	40.6	178.0	33.0	145.0	391.4	69.1	336.0	61.6	274.5	741.1
50	37.7	164.9	33.0	131.9	395.8	64.0	311.2	61.6	249.7	749.0
55	35.1	153.8	33.0	120.9	398.8	59.6	290.2	61.6	228.6	754.4
60	32.9	144.3	33.0	111.3	400.7	55.9	272.0	61.6	210.5	757.6
65	31.0	136.0	33.0	103.0	401.7	52.6	256.2	61.6	194.6	759.1
70	29.4	128.6	33.0	95.7	401.8	49.8	242.3	61.6	180.7	759.1
75	27.9	122.2	33.0	89.2	401.3	47.3	230.0	61.6	168.4	757.9
80	26.6	116.3	33.0	83.4	400.1	45.0	219.0	61.6	157.4	755.5
85	25.4	111.1	33.0	78.1	398.5	43.0	209.0	61.6	147.5	752.1
90	24.3	106.4	33.0	73.4	396.4	41.1	200.1	61.6	138.5	747.9
95	23.3	102.1	33.0	69.1	393.8	39.4	191.9	61.6	130.4	743.0
100	22.4	98.1	33.0	65.2	391.0	37.9	184.5	61.6	122.9	737.4
105	21.6	94.5	33.0	61.5	387.8	36.5	177.6	61.6	116.1	731.1
110	20.8	91.2	33.0	58.2	384.3	35.2	171.3	61.6	109.8	724.4
115	20.1	88.1	33.0	55.1	380.5	34.0	165.5	61.6	103.9	717.1
120	19.5	85.3	33.0	52.3	376.5	32.9	160.1	61.6	98.5	709.4

5-year $Q_{attenuated}$	**32.98 L/s**		**100-year $Q_{attenuated}$**	**61.57 L/s**
5-year Max. Storage Required	**401.8 m^3**		**100-year Max. Storage Required**	**759.1 m^3**

Available Sub-surface Storage
Maintenance Structures

ID	103	104	105	106	CBMH10A
Structure dia, mm	1500	1800	1500	1500	1200
T/L	68.28	68.28	68.28	68.28	68.28
INV	66.23	66.35	66.65	66.84	67.52
storage depth	2.05	1.93	1.63	1.44	0.76
$V_{structure}$	3.6	4.9	2.9	2.5	0.9

Sewers

Storage Pipe Dia, mm	375	675	750	825
L, m	59.3	53.9	114.2	57
V_{sewer} **(m^3)**	6.5	19.3	50.5	30.5

Sub-surface storage system 540 m^3

Total Subsurface Storage **661.6** m^3

Total Available Storage

	Stage	A	h_o	delta d	V	V_{acc}	$Q_{release}$
	(m)	(m^2)	(m)	(m)	(m^3)	(m^3)	(L/s)
Orifice INV	66.23	-	0.00			0.0	0.0
Storage Pipe OBV	68.60	-	2.37	2.37	661.6	661.6	54.3
T/L	69.10	3	2.87	2.87		661.6	59.8
Surface Storage	69.20	546	2.97	0.10	19.6	681.2	60.8
Max Ponding	69.28	1,597	3.05	0.08	82.1	763.3	61.6

Inlet Control Devic 130 mm dia circular orifice

Area ID BLDG B
Roof Area 0.716 ha
Avail. Storage Area 0.5728 ha, assuming 50% of the roof area is available for storage
C 0.90 Rational Method runoff coefficient

Zurn Model Z-105-5 Control-Flo Single Notch Roof Drain
m^2 / Notch 232 as recommended by Zurn for Ottawa
Required Notches 32

Roof Top Rating Curve per Zurn Model Z-105-5				
d	Q_{notch}	Q_{roof}	V_{avail}	$V_{drawdown}$
(m)	(L/s)	(L/s)	(m^3)	(hr)
0.000	0.00	0.0	0.0	0
0.025	0.38	12.1	143.2	3.29
0.050	0.75	24.1	286.4	4.94
0.075	1.13	36.2	429.6	6.04
0.100	1.51	48.3	572.8	6.86

** flow per notch based on Zurn Control Flow Manual (23L/min per Inch of depth at the drain)*

	5-year					100-year				
t_c	i	Q_{actual}	$Q_{release}$	Q_{stored}	V_{stored}	i	Q_{actual}	$Q_{release}$	Q_{stored}	V_{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m^3)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m^3)
20	70.3	125.7	13.7	112.0	134.4	120.0	214.7	23.3	191.4	229.7
25	60.9	109.0	13.7	95.3	142.9	103.8	185.9	23.3	162.6	243.9
30	53.9	96.5	13.7	82.8	149.0	91.9	164.4	23.3	141.1	254.0
35	48.5	86.8	13.7	73.1	153.5	82.6	147.8	23.3	124.5	261.4
40	44.2	79.1	13.7	65.3	156.8	75.1	134.5	23.3	111.2	266.9
45	40.6	72.7	13.7	59.0	159.2	69.1	123.6	23.3	100.3	270.8
50	37.7	67.4	13.7	53.6	160.9	64.0	114.5	23.3	91.2	273.5
55	35.1	62.9	13.7	49.1	162.1	59.6	106.7	23.3	83.4	275.2
60	32.9	59.0	13.7	45.2	162.8	55.9	100.1	23.3	76.7	276.2
65	31.0	55.6	13.7	41.8	163.1	52.6	94.2	23.3	70.9	276.6
70	29.4	52.6	13.7	38.8	163.1	49.8	89.1	23.3	65.8	276.4
75	27.9	49.9	13.7	36.2	162.8	47.3	84.6	23.3	61.3	275.7
80	26.6	47.5	13.7	33.8	162.2	45.0	80.5	23.3	57.2	274.6
85	25.4	45.4	13.7	31.7	161.5	43.0	76.9	23.3	53.6	273.2
90	24.3	43.5	13.7	29.7	160.5	41.1	73.6	23.3	50.3	271.5
95	23.3	41.7	13.7	28.0	159.4	39.4	70.6	23.3	47.3	269.4
100	22.4	40.1	13.7	26.4	158.2	37.9	67.8	23.3	44.5	267.2
105	21.6	38.6	13.7	24.9	156.8	36.5	65.3	23.3	42.0	264.7
110	20.8	37.3	13.7	23.5	155.2	35.2	63.0	23.3	39.7	262.0
115	20.1	36.0	13.7	22.3	153.6	34.0	60.9	23.3	37.6	259.1
120	19.5	34.8	13.7	21.1	151.9	32.9	58.9	23.3	35.6	256.1

5-year Q_{roof}	**13.75**	**L/s**	**100-year Q_{roof}**	**23.32**	**L/s**
5-year Max. Storage Required	**163.1**	**m^3**	**100-year Max. Storage Required**	**276.6**	**m^3**
5-year Storage Depth	**0.028**	**m**	**100-year Storage Depth**	**0.048**	**m**
5-year Estimated Drawdown Time	**3.52**	**hr**	**00-year Estimated Drawdown Time**	**4.83**	**hr**

Area ID A2, BLDG A, EXT 2
Total Area 1.01 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	70.3	190.3	114.7	75.6	90.7	120.0	358.2	193.1	165.0	198.0
25	60.9	166.8	114.7	52.1	78.1	103.8	313.2	193.1	120.1	180.1
30	53.9	149.2	114.7	34.6	62.2	91.9	279.8	193.1	86.6	156.0
35	48.5	135.7	114.7	21.0	44.1	82.6	253.9	193.1	60.7	127.5
40	44.2	124.8	114.7	10.1	24.2	75.1	233.1	193.1	40.0	95.9
45	40.6	115.8	114.7	1.2	3.1	69.1	216.1	193.1	22.9	61.9
50	37.7	108.4	108.4	0.0	0.0	64.0	201.9	193.1	8.7	26.1
55	35.1	102.0	102.0	0.0	0.0	59.6	189.8	189.8	0.0	0.0
60	32.9	96.5	96.5	0.0	0.0	55.9	179.4	179.4	0.0	0.0
65	31.0	91.7	91.7	0.0	0.0	52.6	170.3	170.3	0.0	0.0
70	29.4	87.5	87.5	0.0	0.0	49.8	162.3	162.3	0.0	0.0
75	27.9	83.8	83.8	0.0	0.0	47.3	155.2	155.2	0.0	0.0
80	26.6	80.5	80.5	0.0	0.0	45.0	148.9	148.9	0.0	0.0
85	25.4	77.5	77.5	0.0	0.0	43.0	143.2	143.2	0.0	0.0
90	24.3	74.8	74.8	0.0	0.0	41.1	138.1	138.1	0.0	0.0
95	23.3	72.3	72.3	0.0	0.0	39.4	133.4	133.4	0.0	0.0
100	22.4	70.0	70.0	0.0	0.0	37.9	129.1	129.1	0.0	0.0
105	21.6	68.0	68.0	0.0	0.0	36.5	125.2	125.2	0.0	0.0
110	20.8	66.1	66.1	0.0	0.0	35.2	121.6	121.6	0.0	0.0
115	20.1	64.3	64.3	0.0	0.0	34.0	118.3	118.3	0.0	0.0
120	19.5	62.7	62.7	0.0	0.0	32.9	115.2	115.2	0.0	0.0

5-year $Q_{attenuated}$ 114.67 L/s **100-year $Q_{attenuated}$** 193.14 L/s
5-year Max. Storage Required 90.7 m^3 **100-year Max. Storage Required** 198.0 m^3

Available Sub-surface Storage
Maintenance Structures

ID	107	108
Structure dia, mm	1500	2400
T/L	68.36	68.2
INV	65.48	65.87
depth	2.88	2.33
$V_{structure}$	5.1	10.5

Sewers

Storage Pipe Dia, mm	600
L, m	119
V_{sewer} (m^3)	33.6

Sub-surface storage system 80 m^3

Total Subsurface Storage 129.3 m^3

Total Available Storage

	Stage (m)	A (m^2)	h_o (m)	delta d (m)	V (m^3)	V_{acc} (m^3)	$Q_{release}$ (L/s)
Orifice INV	65.55	-	0.00			0.0	0.0
Storage Pipe OBV	67.56	-	2.01	2.01	129.3	129.3	163.4
T/L	68.06	0	2.51	2.51		129.3	182.6
Surface Storage	68.21	182	2.66	0.15	9.5	138.8	188.0
Max Ponding	68.36	673	2.81	0.15	60.3	199.1	193.2

Inlet Control Devic 235 mm dia circular orifice

Summary of Release Rates and Storage Volumes

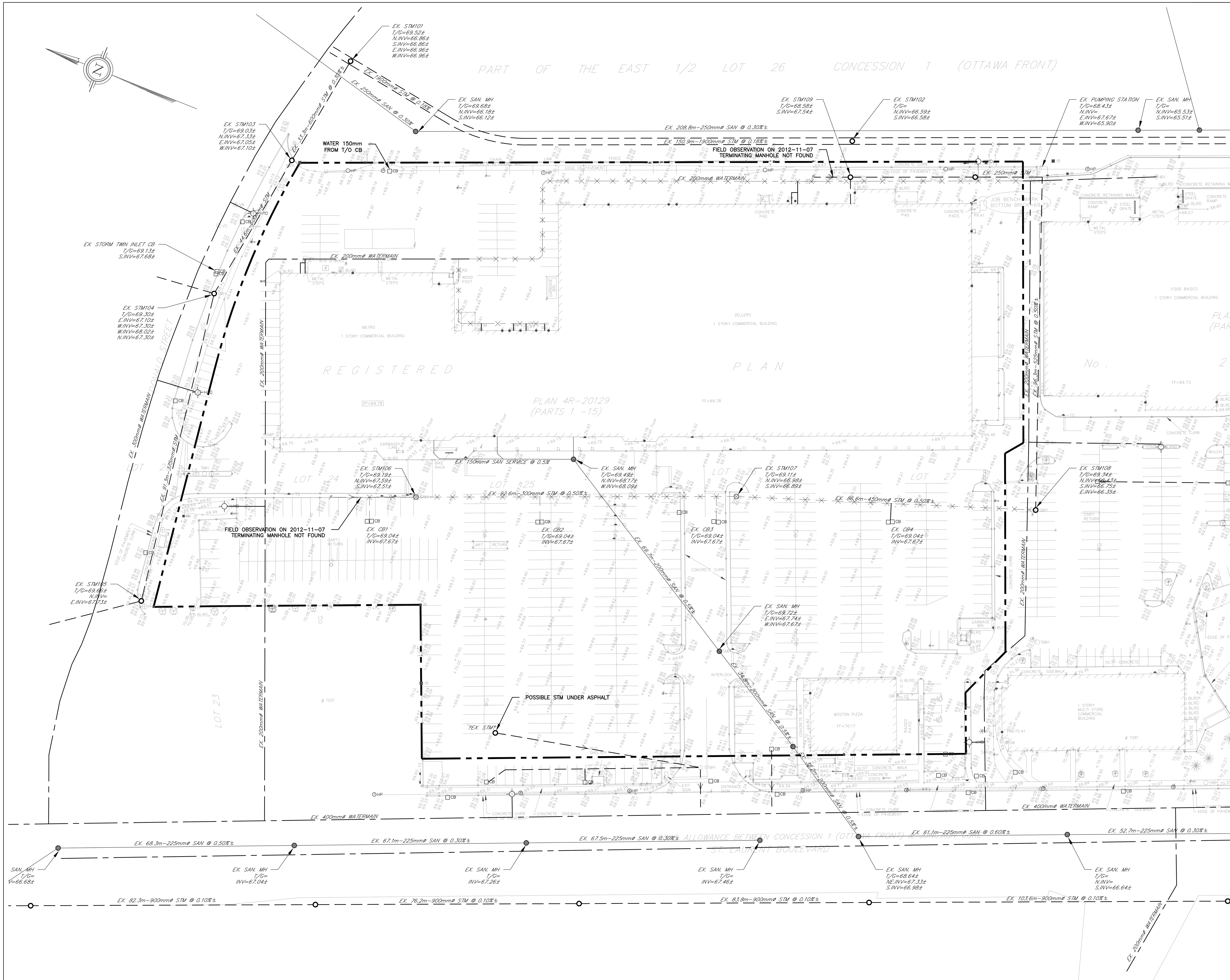
Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Unattenuated Areas	60.24	0.0	114.29	0.0
Attenutated Areas	147.65	492.5	254.71	759.1
Total	**207.9**	**492.51**	**368.99**	**759.1**

Target **373.6**

RioCAN Mangement Inc
1021 St. Laurent Blvd
Storm Sewer Calculation Sheet

									Sewer Data								
Up	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**I**	**Q**	**DIA**	**Slope**	**Length**	**$A_{hydraulic}$**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
		(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
STM106	STM105	0.735	0.90	0.66	0.66	10.0	104.2	191.5	675	0.20	53.9	0.358	0.169	1.05	375.9	0.9	0.51
						10.9											
CBMH10A	STM105	0.241	0.90	0.22	0.22	10.0	104.2	62.8	375	0.20	59.3	0.110	0.094	0.71	78.4	1.4	0.80
						11.4											
STM105	STM104	0.633	0.90	0.57	1.45	11.4	97.4	391.7	750	0.20	114.2	0.442	0.188	1.13	497.9	1.7	0.79
STM104	STM103			0.00	1.45	13.1	90.3	363.3	825	0.20	57.0	0.535	0.206	1.20	641.9	0.8	0.57
STM103	STM102	0.152	0.90	0.14	1.58	13.9	87.4	384.7	825	0.20	34.6	0.535	0.206	1.20	641.9	0.5	0.60
STM108	STM107	0.927	0.90	0.83	0.83	10.0	104.2	241.5	600	0.20	119.0	0.283	0.150	0.97	274.6	2.0	0.88
STM107	STM102	0.716	0.90	0.64	1.48	12.0	94.5	388.2	750	0.20	32.3	0.442	0.188	1.13	497.9	0.5	0.78
						12.5											

DRAWINGS / FIGURES



KEY PLAN

N.T.S.

LEGEND

PROPERTY LINE

GENERAL NOTES

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
4. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
5. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE DEVELOPER.
6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.' THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE 'CONSTRUCTOR' AS DEFINED IN THE ACT.
7. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT.
8. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS.
9. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE.
10. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER.
11. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
12. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.
13. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME.
15. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED.
16. ALL PIPE / CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS.
17. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.
18. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND THE CITY OF OTTAWA PRIOR TO ANY TREE CUTTING / REMOVAL.
19. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL SITE PLAN.
20. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER ONE SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS.
21. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN.

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC GEOMATICS LTD.
PROJ. NO. 161612703-111
DATED

SITE PLAN INFORMATION
SITE PLAN PROVIDED BY LEON LUBELSKI ARCHITECT
PROJ. NO.
DATED JULY 20, 2012

GEOTECHNICAL STUDY
GEOTECHNICAL RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

SITE SERVICING AND STORMWATER MANAGEMENT STUDY
SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

BENCH MARK
BOTTOM BRICK LOCATED AT SOUTH EAST CORNER OF EXISTING ZELLERS BUILDING
ELEV=69.79

1	B.N.C.	YY.MM.DD	ISSUED FOR MUNICIPAL REVIEW
No.	BY	YY.MM.DD	DESCRIPTION

PROJECT No. 12-625

EXISTING CONDITIONS PLAN
1021 ST. LAURENT

RIOCAN MANAGEMENT INC.
2300 Yonge Street, Suite 500, P.O.Box 2386
Toronto, Ontario M4P 1E4
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DRAWN BY:	B.N.C.	CHECKED BY:	S.J.P.	DRAWING NO.	SHEET NO.
DESIGNED BY:	A.D.F.	CHECKED BY:	S.J.P.	EX-1	1 of 4
SCALE:	1:500	DATE:	OCTOBER 2012		

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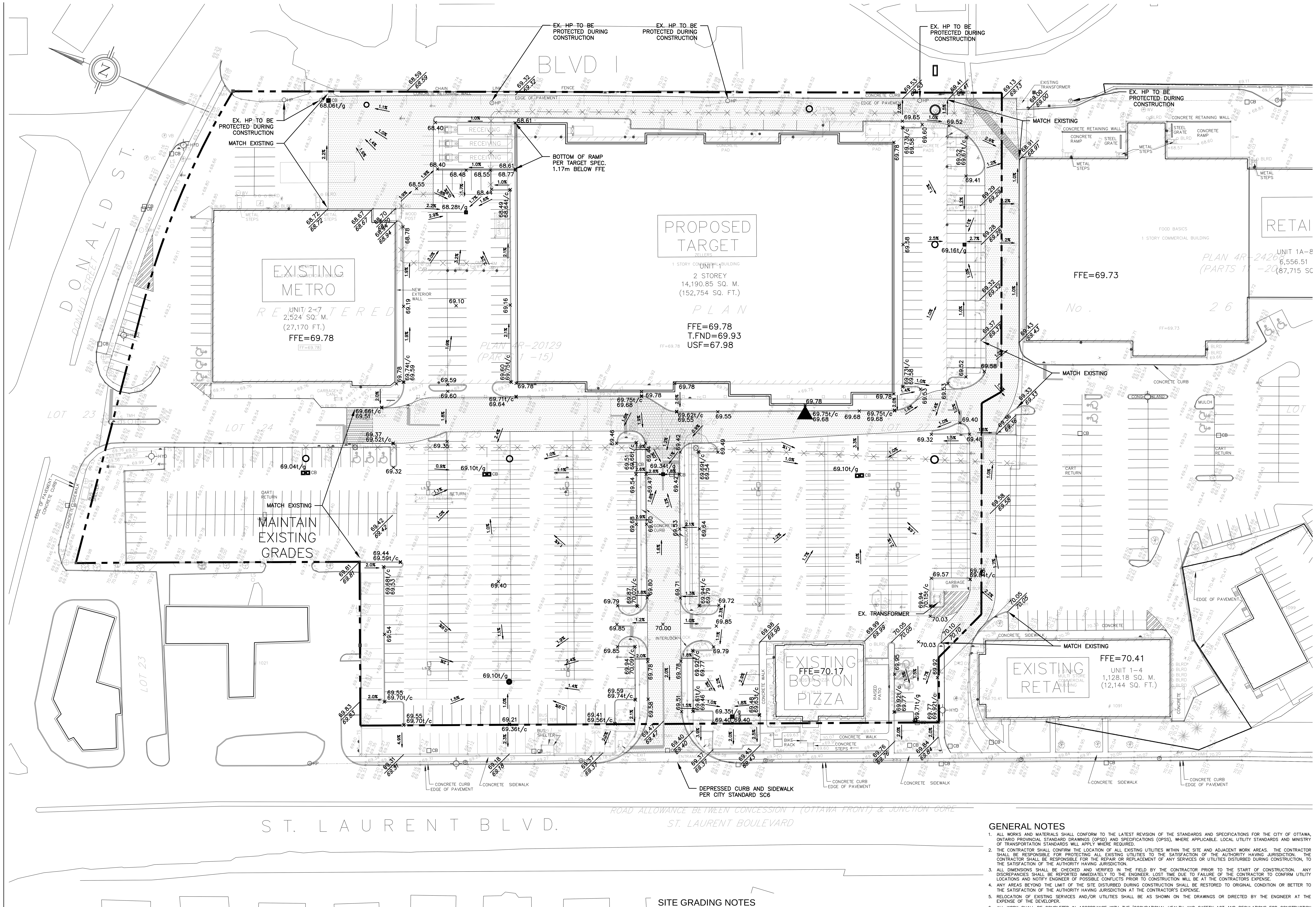

KEY PLAN

LEGEND

×100.00	PROPOSED SPOT ELEVATION
×100.00T/C	PROPOSED TOP OF CURB ELEVATION
×100.00B/W	PROPOSED BOTTOM OF WALL ELEVATION
×100.00T/W	PROPOSED TOP OF WALL ELEVATION
×100.00T/L	PROPOSED TOP OF LID ELEVATION
1.0%	PROPOSED GRADE AND DIRECTION
100.00 / 100.00	PROPOSED/EXISTING SPOT ELEVATION
	PROPOSED HEAVY DUTY ASPHALT
	PROPERTY LINE

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC GEOMATICS LTD.
PROJ. NO. 161612703-111
DATED

SITE PLAN INFORMATION
SITE PLAN PROVIDED BY LEON LUBELSKI ARCHITECT
PROJ. NO.
DATED JULY 20, 2012

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GEOTECHNICAL RECOMMENDATIONS PROVIDED BY
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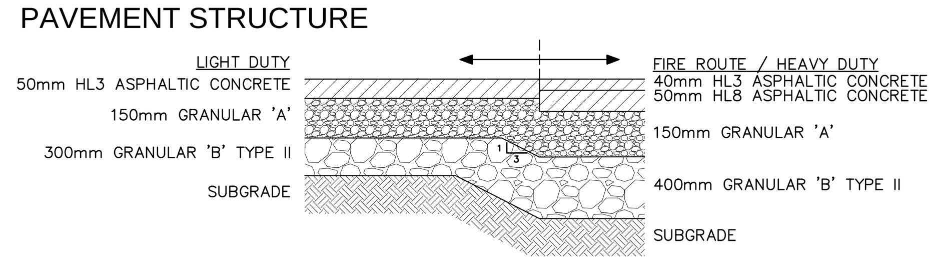
DATED

SITE SERVICING AND STORMWATER MANAGEMENT STUDY
SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

BENCH MARK
BOTTOM BRICK LOCATED AT SOUTH EAST CORNER OF EXISTING ZELLERS BUILDING
ELEV=69.79

No.	BY	YY.MM.DD	DESCRIPTION
1	B.N.C.	YY.MM.DD	ISSUED FOR MUNICIPAL REVIEW

PAVEMENT STRUCTURE



SITE GRADING NOTES

1. PRIOR TO THE COMMENCEMENT OF THE SITE GRADING WORKS, ALL SILTATION CONTROL DEVICES SHALL BE INSTALLED AND OPERATIONAL PER EROSION CONTROL PLAN.
2. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
3. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. CONCRETE CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.1. PROVISION SHALL BE MADE FOR CURB DEPRESSIONS AS INDICATED ON ARCHITECTURAL SITE PLAN. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD SC1.4. ALL CURBS, CONCRETE ISLANDS, AND SIDEWALKS SHOWN ON THIS DRAWING ARE TO BE PRICED IN THE SITEWORKS PORTION OF THE CONTRACT.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. R10 AND OPSD 509.010, AND OPSS 310.
6. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
7. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
8. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING.
9. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
10. ALL PAVEMENT MARKING FEATURES AND SITE SIGNAGE SHALL BE PLACED PER ARCHITECTURAL SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMOBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT PAINT.
11. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
12. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
13. SIDEWALKS TO BE 20mm BELOW THE FINISHED FLOOR SLAB ELEVATION AT ENTRANCES UNLESS OTHERWISE NOTED.
14. WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWS FOR RETAINING WALL (INCLUDE RAILINGS IF APPLICABLE) TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY STRUCTURAL AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTRED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.

GENERAL NOTES

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
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12. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.
13. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
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16. ALL PIPE / CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS.
17. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.
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PROJECT No. 12-625

GRADING PLAN
1021 ST. LAURENT

RIOCAN MANAGEMENT INC.
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DRAWN BY:	B.N.C.	CHECKED BY:	S.J.P.	DRAWING NO.	SHEET NO.
DESIGNED BY:	A.D.F.	CHECKED BY:	S.J.P.	GP-1	2 of 4
SCALE:	1:500	DATE:	OCTOBER 2012		

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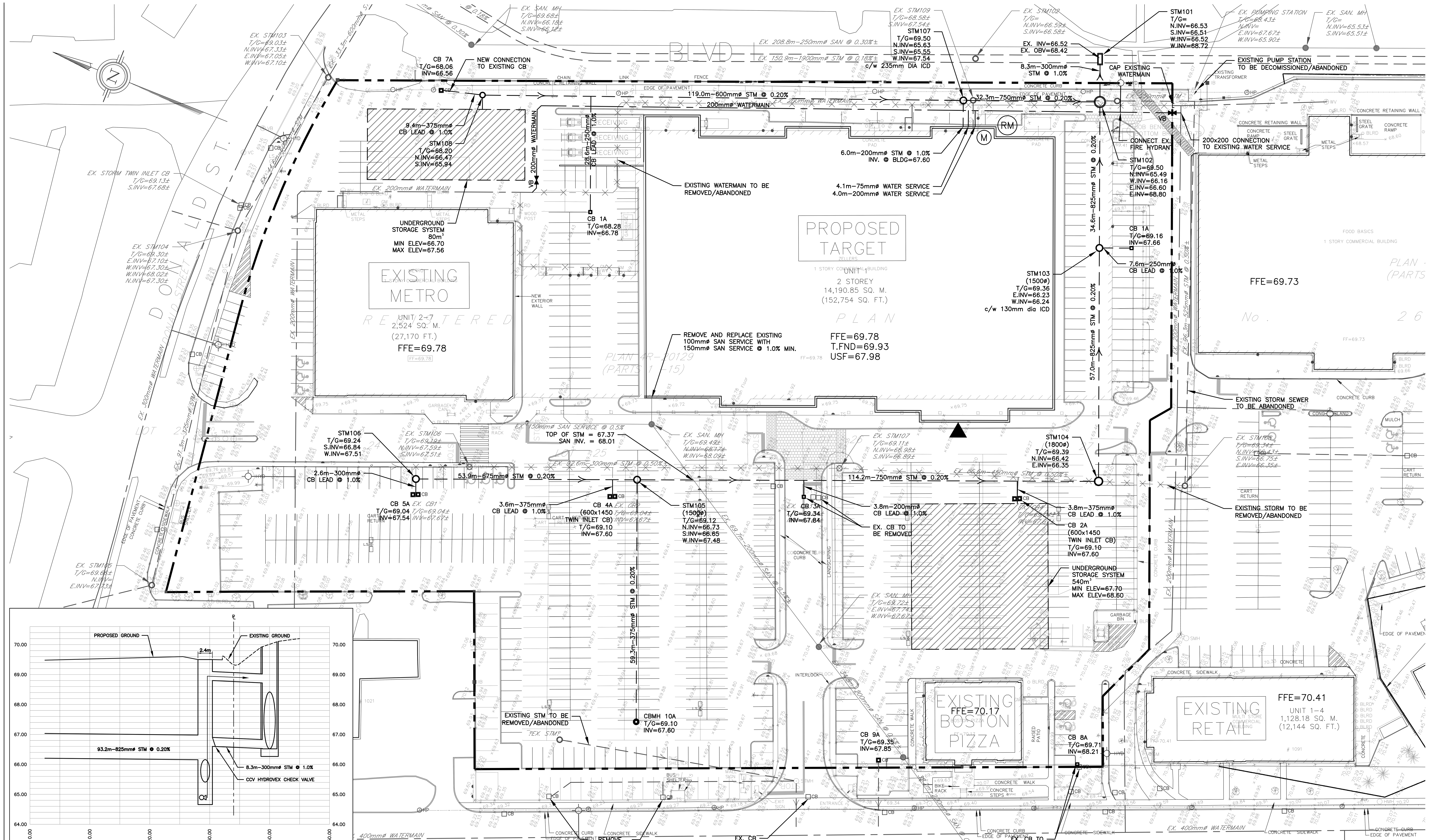

KEY PLAN

LEGEND

- PROPERTY LINE
- PROPOSED WATERMAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED VALVE BOX
- PROPOSED FIRE HYDRANT
- PROPOSED SIAMESE CONNECTION
- PROPOSED REMOTE WATER METER
- PROPOSED WATER METER

CONTRACTOR TO CONFIRM ELEVATIONS AND LOCATIONS OF EXISTING UNDERGROUND SERVICES AND UTILITIES WITHIN THURSTON DRIVE RIGHT OF WAY PRIOR TO INSTALLATION OF SITE SERVICING INFRASTRUCTURE.

THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT THE FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC GEOMATICS LTD.
PROJ. NO. 161612703–111
DATED

SITE PLAN INFORMATION

SITE PLAN PROVIDED BY LEON LUBELSKI ARCHITECT
PROJ. NO.
DATED JULY 20, 2012

GEOTECHNICAL STUDY

GEOTECHNICAL RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

SITE SERVICING AND STORMWATER MANAGEMENT STUDY

SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

BENCH MARK

BOTTOM BRICK LOCATED AT SOUTH EAST CORNER OF EXISTING ZELLERS BUILDING
ELEV=69.79

No.	BY	YY.MM.DD	DESCRIPTION
1	B.N.C.	YY.MM.DD	ISSUED FOR MUNICIPAL REVIEW

GENERAL NOTES

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
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11. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
12. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT PREPARED BY DSEL.
13. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME.
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SANITARY AND STORM SEWER NOTES

GENERAL

1. LASER ALIGNMENT CONTROL TO BE UTILIZED ON ALL SEWER INSTALLATIONS.
2. CLAY SEALS TO BE INSTALLED AS PER CITY STANDARD DRAWING S8. THE SEALS SHOULD BE AT LEAST 1.5m LONG (IN THE TRENCH DIRECTION) AND SHOULD EXTEND FROM TRENCH WALL TO TRENCH WALL. THE SEALS SHOULD EXTEND FROM THE FROST LINE AND FULLY PENETRATE THE BEDDING, SUB-BEDDING, AND COVER MATERIAL. THE BARRIERS SHOULD CONSIST OF RELATIVELY DRY AND COMPACTABLE BROWN SILTY CLAY PLACED IN MAXIMUM 225mm LIFTS AND COMPACTED TO A MINIMUM OF 95% SPMDD. THE CLAY SEALS SHOULD BE PLACED AT THE SITE BOUNDARIES AND AT 60m INTERVALS IN THE SERVICE TRENCHES.
3. SERVICES TO BUILDINGS TO BE TERMINATED 1.0m FROM THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
4. ALL MAINTENANCE STRUCTURE AND CATCH BASIN EXCAVATIONS TO BE BACKFILLED WITH GRANULAR MATERIAL COMPACTED TO 98% STANDARD PROCTOR DENSITY, A MINIMUM OF 300mm AROUND STRUCTURES.
5. "MODULOC" OR APPROVED PRE-CAST MAINTENANCE STRUCTURE AND CATCH BASIN ADJUSTERS TO BE USED IN LIEU OF BRICKING. PARGE ADJUSTING UNITS ON THE OUTSIDE ONLY.
6. SAFETY PLATFORMS SHALL BE PER OPSD 404.02.
7. DROP STRUCTURES SHALL BE IN ACCORDANCE WITH OPSD 1003.01 AND 1003.02, IF APPLICABLE.
8. THE CONTRACTOR IS TO PROVIDE CCTV CAMERA INSPECTIONS OF ALL SEWERS, INCLUDING PICTORIAL REPORT, ONE (1) CD COPY AND TWO (2) VIDEO RECORDINGS IN A FORMAT ACCEPTABLE TO THE ENGINEER. ALL SEWERS ARE TO BE FLUSHED PRIOR TO CAMERA INSPECTION. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS AND NECESSARY REPAIRS HAVE BEEN COMPLETED TO THE SATISFACTION OF THE ENGINEER.
9. CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPSS 410 AND OPSS 407. CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF ALL SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF WEAR COURSE ASPHALT.

SANITARY

10. ALL SANITARY SEWER INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS).
11. ALL SANITARY GRAVITY SEWER SHALL BE PVC SDR 35, IPEX 'RING-TITE' (OR APPROVED EQUIVALENT) PER CSA STANDARD B182.2 OR LATEST AMENDMENT, UNLESS SPECIFIED OTHERWISE.
12. EXISTING MAINTENANCE STRUCTURES TO BE RE-BECHNED WHERE A NEW CONNECTION IS MADE.
13. SANITARY GRAVITY SEWER TRENCH AND BEDDING SHALL BE PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING, UNLESS SPECIFIED OTHERWISE.
14. SANITARY MAINTENANCE STRUCTURE FRAME AND COVERS SHALL BE PER CITY OF OTTAWA STD. S24 AND S25.
15. SANITARY MAINTENANCE STRUCTURES SHALL BE BENCHED PER OPSD 701.021.

STORM

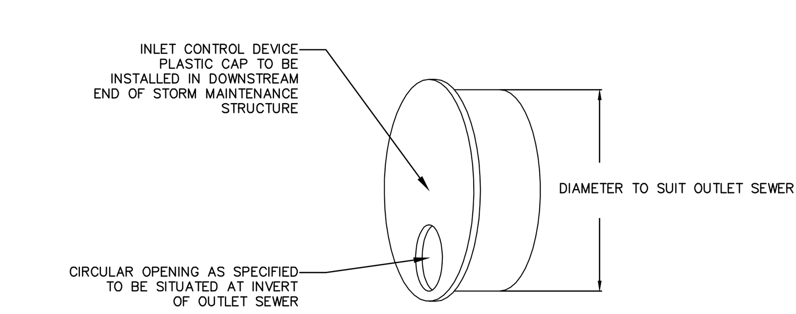
16. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.2, OR LATEST AMENDMENT. ALL NON-REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.1, OR LATEST AMENDMENT. PIPE SHALL BE JOINED WITH STD. RUBBER GASKETS AS PER CSA A257.3, OR LATEST AMENDMENT.
17. ALL STORM SEWER TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
18. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
19. CATCH BASINS SHALL BE IN ACCORDANCE WITH OPSD 705.010.
20. CATCH BASIN LEADS SHALL BE 200MM DIA. AT 1% SLOPE (MIN) UNLESS SPECIFIED OTHERWISE.
21. ALL CATCH BASINS SHALL HAVE 600MM SUMPS, UNLESS SPECIFIED OTHERWISE.
22. ALL CATCH BASIN LEAD INVERTS TO BE 1.5m BELOW FINISHED GRADE UNLESS SPECIFIED OTHERWISE.
23. THE STORM SEWER CLASSES HAVE BEEN DESIGNED BASED ON BEDDING CONDITIONS SPECIFIED ABOVE. WHERE THE SPECIFIED TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR IS REQUIRED TO PROVIDE AND SHALL BE BE RESPONSIBLE FOR EXTRA TEMPORARY AND/OR PERMANENT REPAIRS MADE NECESSARY BY THE WIDENED TRENCH.
24. PERFORATED SUBDRAIN FOR ROAD AND PARKING LOT CATCH BASIN SHALL BE INSTALLED PER CITY STD R1 UNLESS OTHERWISE NOTED.
25. PERFORATED SUBDRAIN FOR REAR YARD AND LANDSCAPING APPLICATIONS SHALL BE INSTALLED PER CITY STD S29, S30, AND S31, WHERE APPLICABLE.
26. RIP-RAP TREATMENT FOR SEWER AND CULVERT OUTLETS PER OPSD 810.010.
27. ALL STORM SEWERS / CULVERTS TO BE INSTALLED WITH FROST TREATMENT PER OPSD 803.031 WHERE APPLICABLE.

WATERMAIN NOTES

1. ALL WATERMAIN INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS).
2. ALL PVC WATERMAINS SHALL BE AWWA C-900 CLASS 150, SDR 18 OR APPROVED EQUIVALENT.
3. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17. UNLESS SPECIFIED OTHERWISE. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY THE PROJECT GEOTECHNICAL ENGINEER.
4. ALL PVC WATERMAINS SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W.36.
5. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS PER CITY OF OTTAWA STD. W40 AND W42.
6. VALVE BOXES SHALL BE INSTALLED PER CITY OF OTTAWA STD W24.
7. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS PER CITY OF OTTAWA STD.25.5 AND W25.6.
8. THRUST BLOCKING OF WATERMAINS TO BE INSTALLED PER CITY OF OTTAWA STD. W25,3 AND W25.4.
9. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS, BLOW-OFFS, AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
10. WATERMAIN CROSSING OVER AND BELOW SEWERS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W25.2 AND W25, RESPECTIVELY.
11. WATER SERVICES ARE TO BE INSULATED PER CITY STD. W23 WHERE SEPARATION BETWEEN SERVICES AND MAINTENANCE HOLES ARE LESS THAN 2.4m.
12. THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER / UTILITY IS 0.50m PER MOE GUIDELINES. FOR CROSSING UNDER SEWERS, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTRED AT THE POINT OF CROSSING TO ENSURE THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.
13. ALL WATERMAINS SHALL HAVE A MINIMUM COVER OR 2.4m, OTHERWISE THERMAL INSULATION IS REQUIRED AS PER STD DWG W22.
14. GENERAL WATER PLANT TO UTILITY CLEARANCE AS PER STD DWG R20
15. FIRE HYDRANT INSTALLATION AS PER STD DWG W19, ALL BOTTOM OF HYDRANT FLANGE ELEVATIONS TO BE INSTALLED 0.10m ABOVE PROPOSED FINISHED GRADE AT HYDRANT; FIRE HYDRANT LOCATION AS PER STD DWG W18.
16. BUILDING SERVICE TO BE CAPPED 1.0m OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED AND MUST BE RESTRAINED A MINIMUM OF 12m BACK FROM STUB.
17. ALL WATERMAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES UNLESS OTHERWISE DIRECTED. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED.
18. ALL WATERMAINS SHALL BE BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES. ALL CHLORINATED WATER TO BE DISCHARGED AND PRETREATED TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE. ALL DISCHARGED WATER MUST BE CONTROLLED AND TREATED SO AS NOT TO ADVERSELY EFFECT THE ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MUNICIPAL AND/OR PROVINCIAL REQUIREMENTS ARE FOLLOWED.
19. ALL WATERMAIN STUBS SHALL BE TERMINATED WITH A PLUG AND 50mm BLOW OFF UNLESS OTHERWISE NOTED.

INLET CONTROL DEVICE (ICD) DETAIL

PLASTIC "PLUG" STYLE



NOT TO SCALE

PROJECT No. 12-625

SITE SERVICING PLAN
1021 ST. LAURENT

RIOCAN MANAGEMENT INC.
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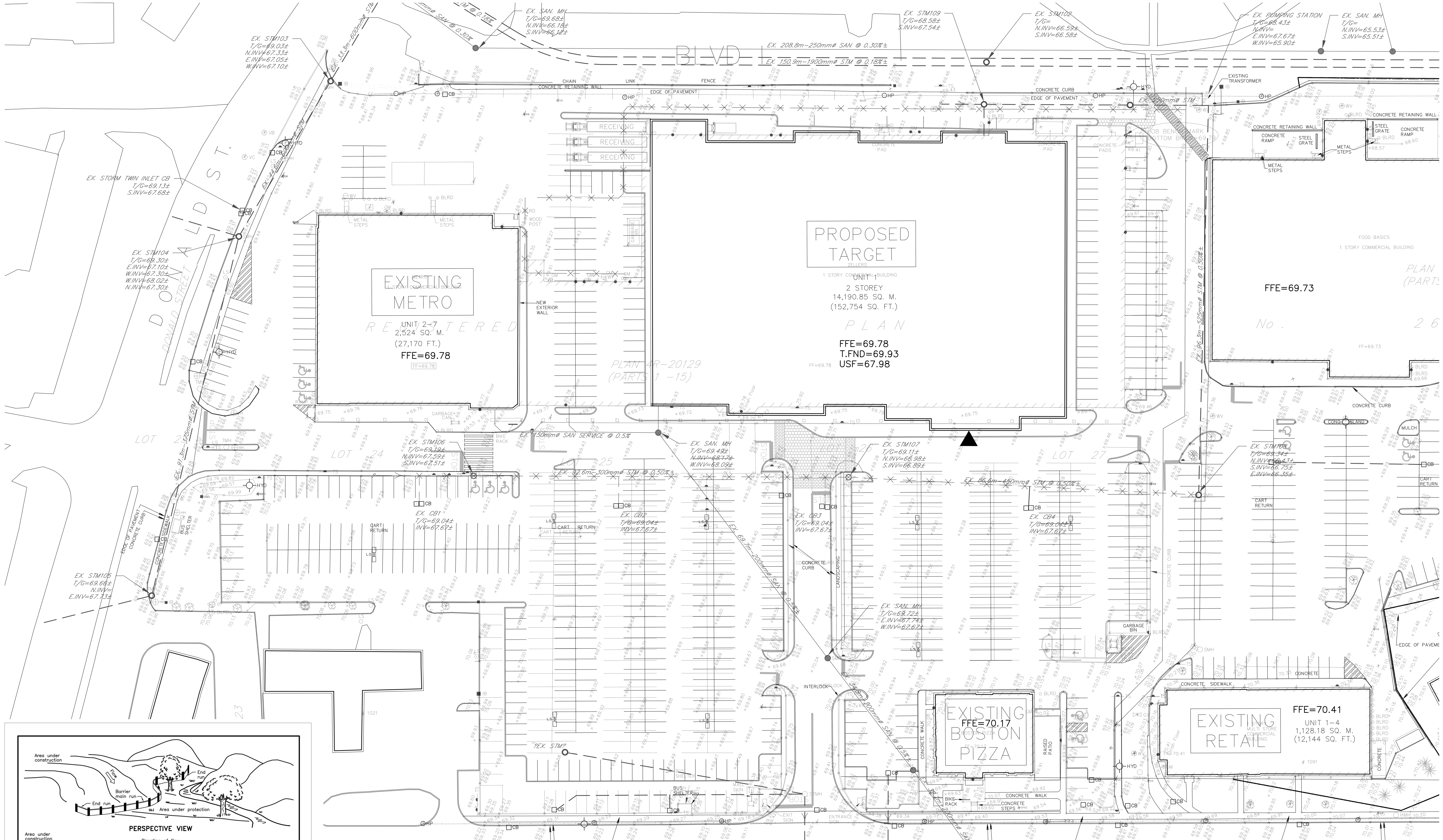
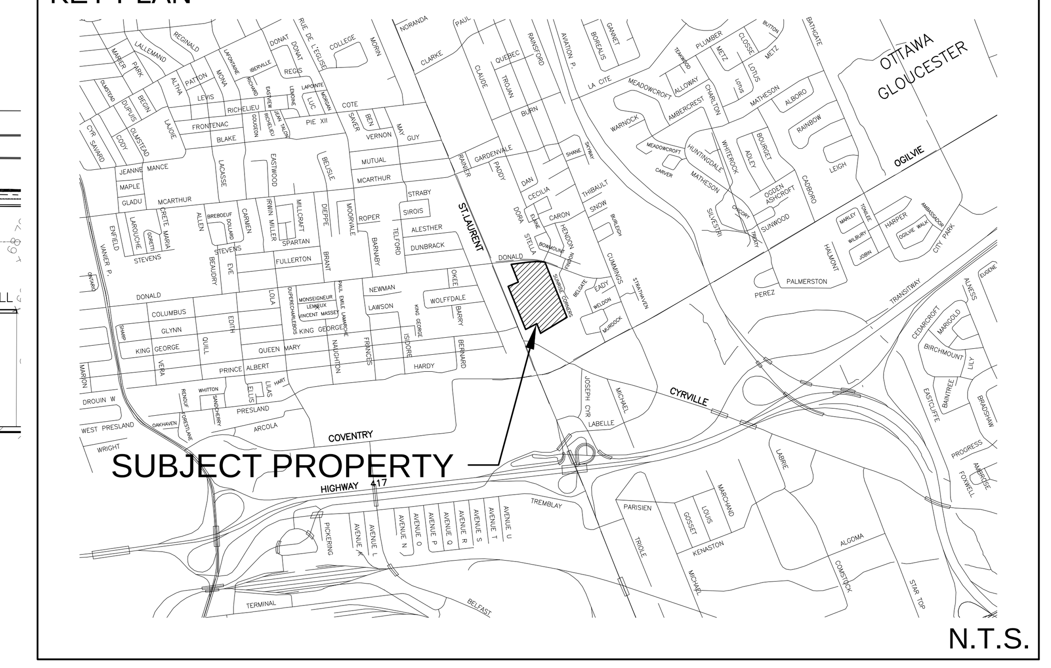
DESIGNED BY: A.D.F.	CHECKED BY: S.J.P.	SSP-1	3 of 4		
SCALE: 1:500	DATE: OCTOBER 2012				

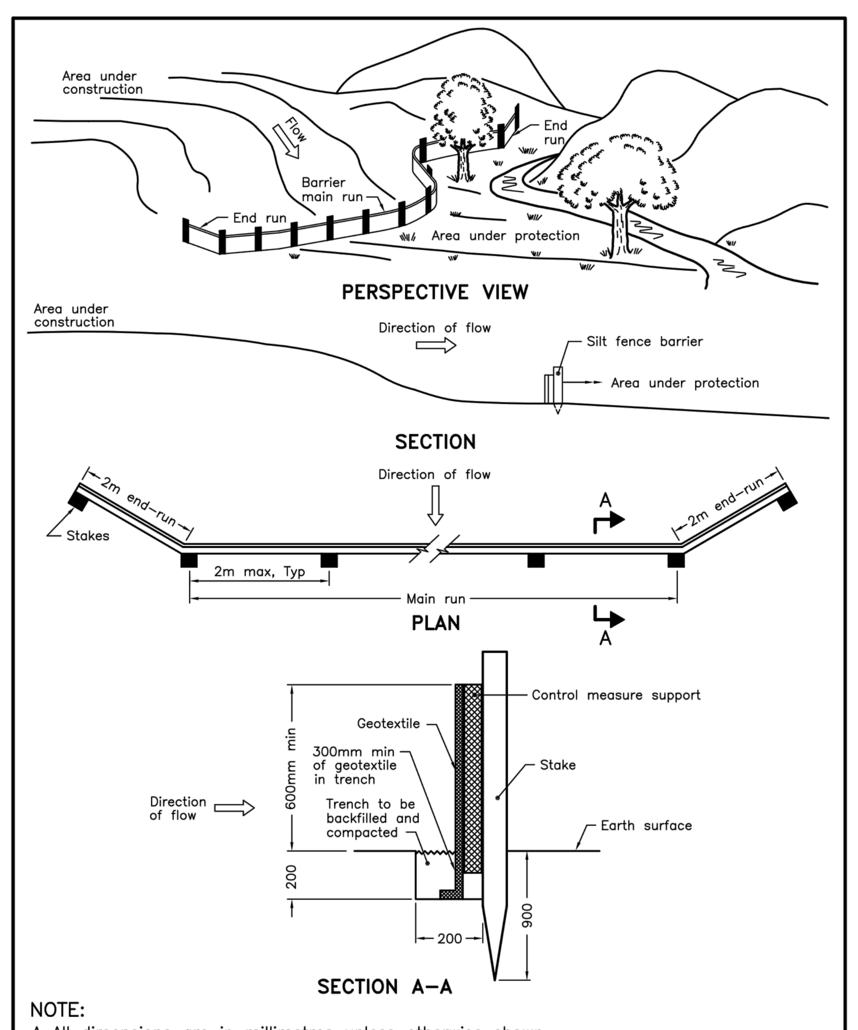


KEY PLAN



LEGEND

EROSION CONTROL FENCE PER OPSD 219.130



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
HEAVY-DUTY SILT FENCE BARRIER	OPSD 219.130	

EROSION AND SEDIMENT CONTROL NOTES

GENERAL

THE CONTRACTOR ACKNOWLEDGES THAT SURFACE EROSION AND SEDIMENT RUNOFF RESULTING FROM THEIR CONSTRUCTION OPERATIONS HAS POTENTIAL TO CAUSE A DETRIMENTAL IMPACT TO ANY DOWNSTREAM WATERCOURSE OR SEWER, AND THAT ALL CONSTRUCTION OPERATIONS THAT MAY IMPACT UPON WATER QUALITY SHALL BE CARRIED OUT IN A MANNER THAT STRICTLY MEETS THE REQUIREMENTS OF ALL APPLICABLE LEGISLATION AND REGULATIONS.

AS SUCH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THEIR OPERATIONS, AND SUPPLYING AND INSTALLING ANY APPROPRIATE CONTROL MEASURES, SO AS TO PREVENT SEDIMENT LADEN RUNOFF FROM ENTERING ANY SEWER OR WATERCOURSE WITHIN OR DOWNSTREAM OF THE WORKING AREA.

THE CONTRACTOR ACKNOWLEDGES THAT NO ONE MEASURE IS LIKELY TO BE 100% EFFECTIVE FOR EROSION PROTECTION AND CONTROLLING SEDIMENT RUNOFF AND DISCHARGES FROM THE SITE. THEREFORE, WHERE NECESSARY THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES ARRANGED IN SUCH A MANNER AS TO MITIGATE SEDIMENT RELEASE FROM THE CONSTRUCTION OPERATIONS AND ACHIEVE SPECIFIC MAXIMUM PERMITTED CRITERIA WHERE APPLICABLE. SUGGESTED ON-SITE MEASURES MAY INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING METHODS: SEDIMENT PONDS, FILTER BAGS, PUMP FILTERS, SETTLING TANKS, SILT FENCES, STRAW BALES, FILTER CLOTHS, CATCH BASIN FILTERS, CHECK DAMS AND/OR BERMS, OR OTHER RECOGNIZED TECHNOLOGIES AND METHODS AVAILABLE AT THE TIME OF CONSTRUCTION. SPECIFIC MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF OPSS 577 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

WHERE, IN THE OPINION OF THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY, THE INSTALLED CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE MEASURES AS DIRECTED BY THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY. AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIMES WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED BY HIM AT A MOMENT'S NOTICE.

PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR SIX COPIES OF A DETAILED EROSION AND SEDIMENT CONTROL PLAN (ESCP). THE ESCP WILL CONSIST OF A WRITTEN DESCRIPTION AND DETAILED DRAWINGS INDICATING THE ON-SITE ACTIVITIES AND MEASURES TO BE USED TO CONTROL EROSION AND SEDIMENT MOVEMENT FOR EACH STEP OF THE WORK.

CONTRACTOR'S RESPONSIBILITIES

THE CONTRACTOR SHALL ENSURE THAT ALL WORKERS, INCLUDING SUB-CONTRACTORS, IN THE WORKING AREA ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES.

THE CONTRACTOR SHALL PERIODICALLY, AND WHEN REQUESTED BY THE CONTRACT ADMINISTRATOR, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES, INCLUDING THOSE DEPOSITS THAT MAY ORIGINATE FROM OUTSIDE THE CONSTRUCTION AREA. ACCUMULATED SEDIMENT SHALL BE REMOVED IN SUCH A MANNER THAT PREVENTS THE DEPOSITION OF THIS MATERIAL INTO ANY SEWER OR WATERCOURSE AND AVOIDS DAMAGE TO THE CONTROL MEASURE. THE SEDIMENT SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH THE REQUIREMENTS FOR EXCESS EARTH MATERIAL, AS SPECIFIED ELSEWHERE IN THE CONTRACT.

THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE CONTRACT ADMINISTRATOR ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO EITHER THE WATERCOURSE OR THE STORM SEWER SYSTEM. FAILURE TO REPORT WILL BE CONSTITUTE A BREACH OF THIS SPECIFICATION AND THE CONTRACTOR MAY ALSO BE SUBJECT TO THE PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.

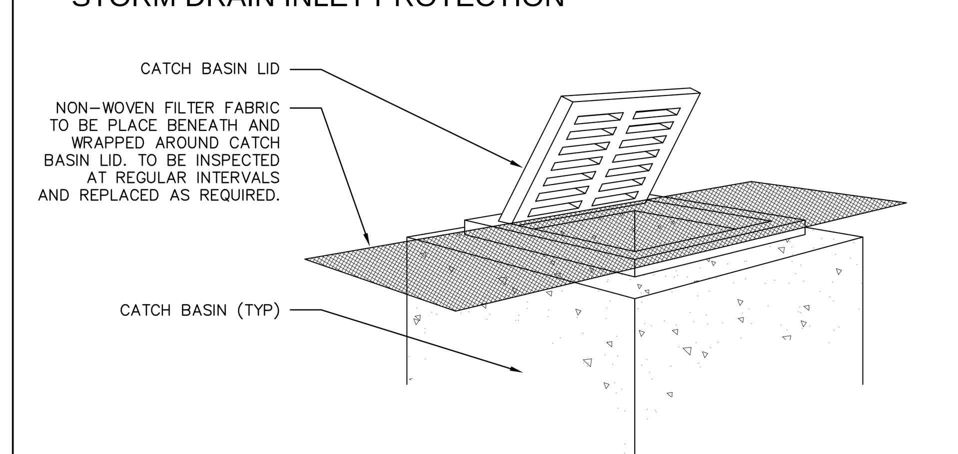
THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE CONTRACT ADMINISTRATOR, THE MEASURE OR MEASURES, IS NO LONGER REQUIRED. NO CONTROL MEASURE MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE CONTRACT ADMINISTRATOR. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED IN A MANNER THAT AVOIDS THE ENTRY OF ANY EQUIPMENT, OTHER THAN HAND-HELD EQUIPMENT, INTO ANY WATERCOURSE, AND PREVENTS THE RELEASE OF ANY SEDIMENT OR DEBRIS INTO ANY SEWER OR WATERCOURSE WITHIN OR DOWNSTREAM OF THE WORKING AREA. ALL ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE WORKING AREA AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH THE REQUIREMENTS FOR EXCESS EARTH MATERIAL.

WHERE, IN THE OPINION OF EITHER THE CONTRACT ADMINISTRATOR OR A REGULATORY AGENCY, ANY OF THE TERMS SPECIFIED HEREIN HAVE NOT BEEN COMPLIED WITH OR PERFORMED IN A SUITABLE MANNER, OR AT ALL, THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY HAS THE RIGHT TO IMMEDIATELY WITHDRAW ITS PERMISSION TO CONTINUE THE WORK BUT MAY RENEW ITS PERMISSION UPON BEING SATISFIED THAT THE DEFAULTS OR DEFICIENCIES IN THE PERFORMANCE OF THIS SPECIFICATION BY THE CONTRACTOR HAVE BEEN REMEDIED.

SPILL CONTROL NOTES

1. ALL CONSTRUCTION EQUIPMENT SHALL BE RE-FUELED, MAINTAINED, AND STORED NO LESS THAN 30 METRES FROM WATERCOURSES, STREAMS, CREEKS, WOODLOTS, AND ANY ENVIRONMENTALLY SENSITIVE AREAS, OR AS OTHERWISE SPECIFIED.
2. THE CONTRACTOR MUST IMPLEMENT ALL NECESSARY MEASURES IN ORDER TO PREVENT LEAKS, DISCHARGES OR SPILLS OF POLLUTANTS, DELETERIOUS MATERIALS, OR OTHER SUCH MATERIALS OR SUBSTANCES WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT.
3. IN THE EVENT OF A LEAK, DISCHARGE OR SPILL OF A POLLUTANT, DELETERIOUS MATERIAL OR OTHER SUCH MATERIAL OR SUBSTANCE WITH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT, THE CONTRACTOR SHALL:
   - 3.1. IMMEDIATELY NOTIFY THE APPROPRIATE FEDERAL, PROVINCIAL, AND LOCAL GOVERNMENT MINISTRIES, DEPARTMENTS, AGENCIES, AND AUTHORITIES OF THE INCIDENT IN ACCORDANCE WITH ALL CURRENT LAWS, LEGISLATION, ACTS, BY-LAWS, PERMITS, APPROVALS, ETC.
   - 3.2. TAKE IMMEDIATE MEASURES TO CONTAIN THE MATERIAL OR SUBSTANCE, AND TO TAKE SUCH MEASURES TO MITIGATE AGAINST ADVERSE IMPACTS TO THE NATURAL ENVIRONMENT.
   - 3.3. RESTORE THE AFFECTED AREA TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

STORM DRAIN INLET PROTECTION



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PROJ. NO. 161612703-111
DATED

SITE PLAN INFORMATION
SITE PLAN PROVIDED BY LEON LUBELSKI ARCHITECT
PROJ. NO.
DATED JULY 20, 2012

GEOTECHNICAL STUDY
GEOTECHNICAL RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

SITE SERVICING AND STORMWATER MANAGEMENT STUDY
SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

BENCH MARK
BOTTOM BRICK LOCATED AT SOUTH EAST CORNER OF EXISTING ZELLERS BUILDING
ELEV=69.79

No.	BY	YY.MM.DD	DESCRIPTION
1	B.N.C.	YY.MM.DD	ISSUED FOR MUNICIPAL REVIEW

PROJECT No. 12-625

EROSION CONTROL PLAN
1021 ST. LAURENT

RIOCAN MANAGEMENT INC.

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DESIGNED BY:	A.D.F.	CHECKED BY:	S.J.P.	EC-1	4 of 4
SCALE:	1:500	DATE:	OCTOBER 2012		

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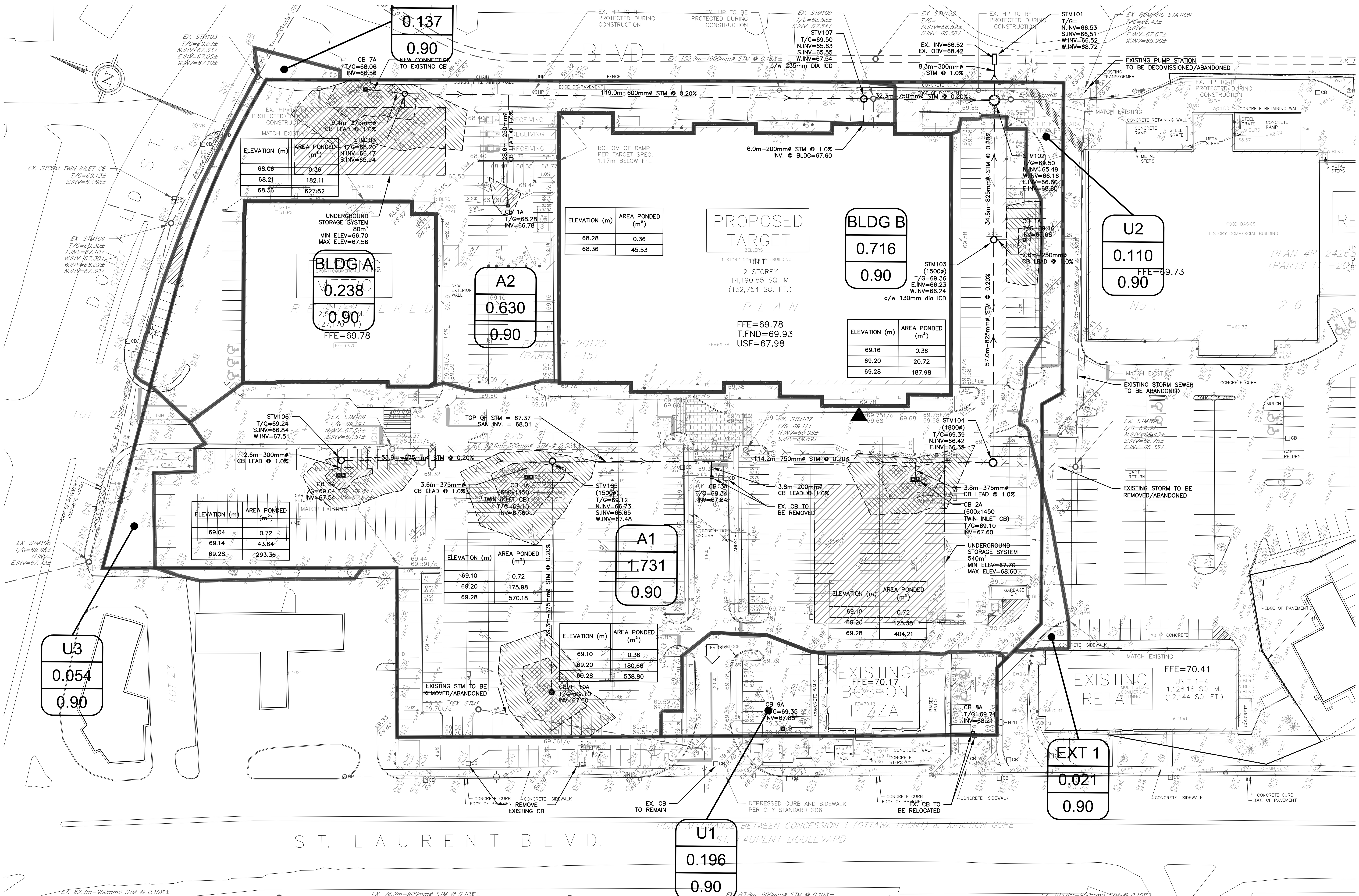

ELEVATION (m)	AREA PONDED (m³)
68.06	0.36
68.21	182.11
68.36	627.52

ELEVATION (m)	AREA PONDED (m³)
68.28	0.36
68.36	45.53

ELEVATION (m)	AREA PONDED (m³)
69.16	0.36
69.20	20.72
69.28	187.98

ELEVATION (m)	AREA PONDED (m³)
69.04	0.72
69.14	43.64
69.28	293.36

ELEVATION (m)	AREA PONDED (m³)
69.10	0.72
69.20	175.98
69.28	570.18

ELEVATION (m)	AREA PONDED (m³)
69.10	0.36
69.20	180.66
69.28	538.80

ELEVATION (m)	AREA PONDED (m³)
69.10	0.72
69.20	125.36
69.28	404.21

KEY PLAN

LEGEND

- PROPERTY LINE
- PROPOSED STORM SEWER
- DRAINAGE DIVIDE
- MAJOR SYSTEM FLOW ROUTE
- EX6 — DRAINAGE AREA ID
- 4.010 — AREA IN Ha
- 0.19 — RATIONAL METHOD RUNOFF COEFFICIENT

NOT FOR CONSTRUCTION

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SITE SERVICING AND STORMWATER MANAGEMENT STUDY
SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY
PROJ. NO.
DATED

BENCH MARK
LOCATED
ELEV=69.79

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PROJECT No. 12-625

STORMWATER MANAGEMENT PLAN
1021 ST. LAURENT

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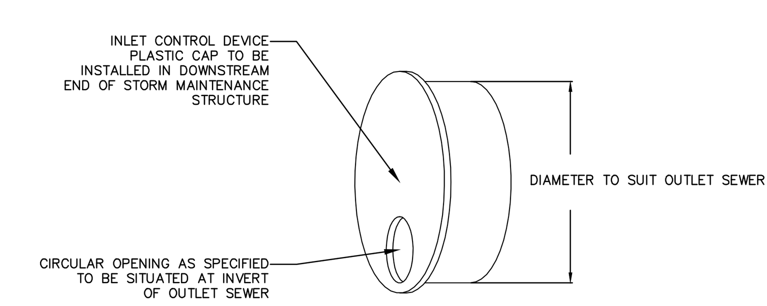
DESIGNED BY:	A.D.F.	CHECKED BY:	S.J.P.	SWM-1	1 of 1
SCALE:	1:500	DATE:	OCTOBER 2012		

INLET CONTROL DEVICE (ICD) DETAIL
PLASTIC "PLUG" STYLE



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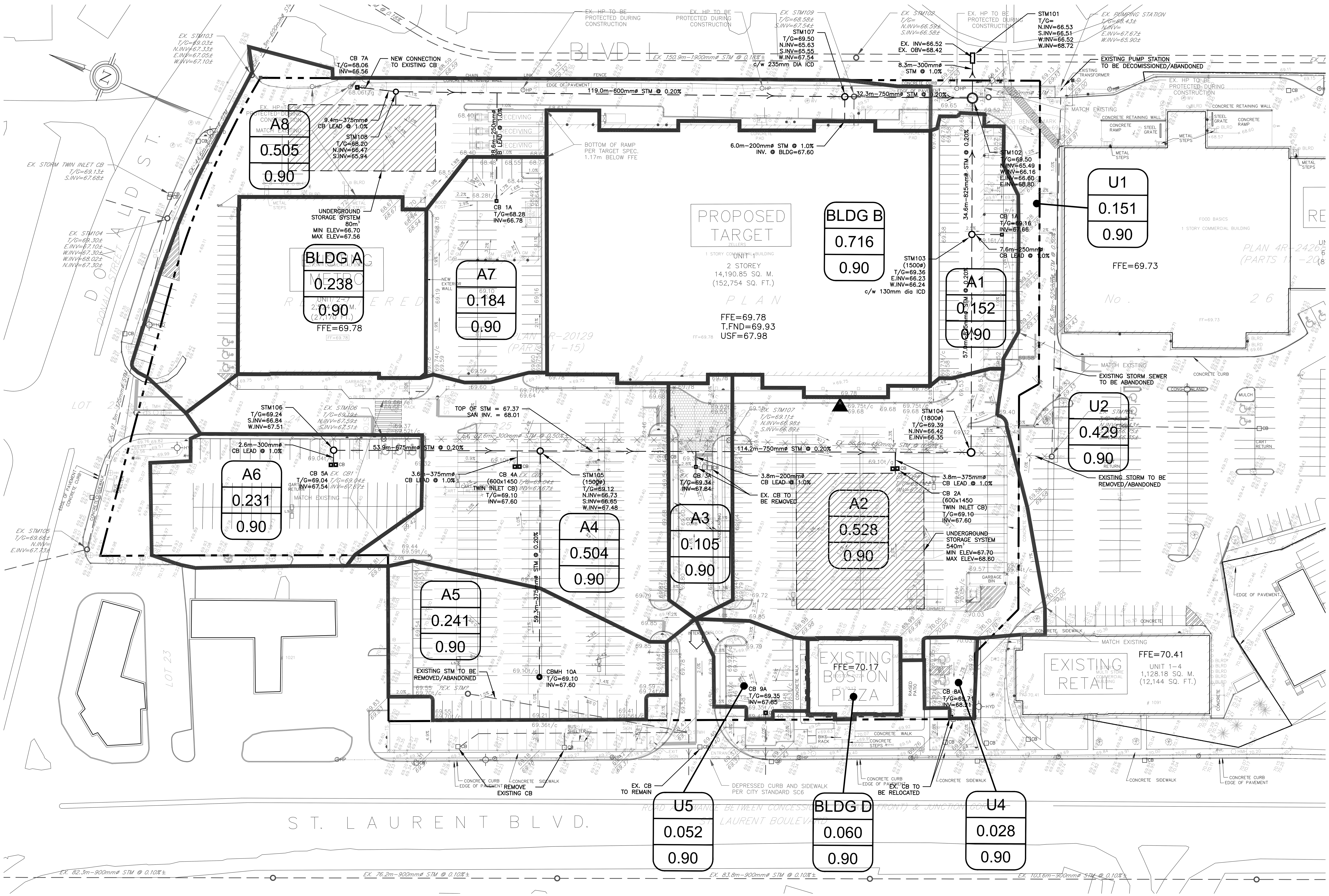

KEY PLAN

N.T.S.

LEGEND

	PROPERTY LINE
	PROPOSED STORM SEWER
	DRAINAGE DIVIDE
	MAJOR SYSTEM FLOW ROUTE
EX6	DRAINAGE AREA ID
4.010	AREA IN Ha
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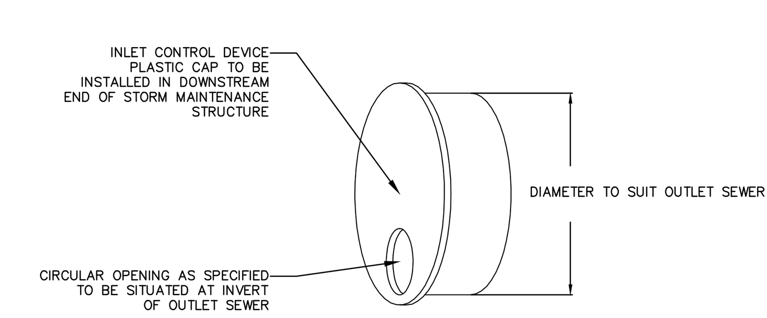

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STORMWATER MANAGEMENT PLAN
1021 ST. LAURENT

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