File: 33681 - 5.2.2

Design Brief
Kanata South Center
10 Cope Drive

Development Application File No. **D07-12-18-0074**

Prepared for Taggart Realty Management
by IBI Group
APRIL 2018
REVISED DECEMBER 2018

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1 INTRODUCTION

1.1 Scope

IBI Group has been retained by Taggart Realty Management to prepare the necessary engineering plans, specifications and documents to support the proposed Site Plan Application for the subject lands in accordance with the policies set out by the Planning and Development Branch of the City of Ottawa. This Brief will present a detailed servicing scheme to support development of the property, and will include sections on water supply, wastewater management, minor and major stormwater management along with erosion and sediment control.

1.2 Subject Site

The Kanata West Center is located at the southwest corner of the Eagleson Road and Cope Drive intersection. The proposed Kanata West Center development is approximately 2.1 hectares in size and is bounded by the unopened Akerson Road allowance to the south, Eagleson Road to the east, Cope Drive to the north and the existing First Air commercial office development to the west. Please refer to **Figure 1** for more information regarding the site location.

The Kanata West Center project will consist of the construction of 3 commercial building pads along with vehicular access routes, dedicated parking space and landscaping areas. A current concept of the envisioned development is shown on **Figure 2**.

1.3 Previous Studies

Design of this project has been undertaken in accordance with the following reports:

- SOHO West, Phases 1 and 2 – Stormwater Management Report prepared by Stantec, October 2007
- SOHO Development – Servicing Report prepared by Stantec, December 2006
- SOHO West-Phase 3-REV3 - Serviceability Report prepared by Stantec, September 2011
- Monahan Drain Model Update prepared by J.F.Sabourin and Associates Inc, September 2014
- Stormwater Management Report, SOFPAK Center, prepared by Oliver, Mangione, McCalla & Associates, June 3, 1999
- First Air Office Stormwater Management Report, prepared by Trow Associates Inc, May 2006

1.4 Pre-consultation

An engineering pre-consultation with the City was held in July 2016 regarding the proposed development. Notes from this meeting may be found in **Appendix E**.

A pre-consultation email exchange was conducted with the Ministry of the Environment, Conservation and Parks (MOECP) to discuss Environmental Compliance Approval (ECA) requirements for the site. The MOECP has stated that two ECA applications will be necessary for the subject site, one application for the on-site sewers and an additional application for the sewer replacement works required within the Cope Drive ROW. As it is the intention of the applicant to provide on-site stormwater quality control to 80% TSS removal (see Section 4.8 below) both ECA applications can be submitted through the Transfer of Review program.

2 WATER SUPPLY

2.1 Existing Conditions

As previously noted, the 2.1 hectare Kanata West Center site is located west of Eagleson Road and south of Cope Drive. The subject site is flanked on both the north and south sides by existing watermains. An existing 305mm diameter watermain is located within the Cope Drive right of way and an existing 406mm watermian is located within the unopened Akerson Road allowance. Both watermains fall within the City of Ottawa's pressure district **Zone 3W** which will provide the water supply to the site.

2.2 Design Criteria

2.2.1 Water Demands

Water demands have been calculated for the full development. Per unit population density and consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- ICI Average Day Demand 28,000 l/gross ha/day
- ICI Peak Daily Demand 42,000 l/gross ha/day
- ICI Peak Hour Demand 75,600 l/gross ha/day

A watermain demand calculation sheet is included in **Appendix A** and the total water demands are summarized as follows:

- Average Day 0.68 l/s
- Maximum Day 1.01 l/s
- Peak Hour 1.84 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rates

The Kanata West Center site plan contains 3 commercial building pads. Calculations using the Fire Underwriting Survey (FUS) method were conducted to determine the fire flow requirement for the site. Results of the analysis provides a maximum fire flow rate of 10.000 l/min or 166.7l/s is required which is used in the hydraulic analysis. A copy of the FUS calculations are included in **Appendix A**.

2.2.4 Boundary Conditions

The City of Ottawa has provided a hydraulic boundary condition at the intersection of Akerson Road and Cope Drive where the connection to the site will occur. A copy of the boundary conditions is included in **Appendix A** and summarized as follows:

Table 2. 1 Hydraulic Boundary Conditions at Riverside Park

	RIVERSIDE DRIVE.
Max HGL (Basic Day)	161.7 m
Min HGL (Peak Hour)	156.4 m
Max Day + Fire Flow (250 l/s Fire Flow)	152.7 m

2.2.5 Hydraulic Model

A computer model for the subject development has been developed using the H20 MAP Version 6.0 program produced by MWH Soft Inc. The model includes the existing watermain and boundary condition on Riverside Drive.

2.3 Proposed Water Plan

2.3.1 Modeling Results

The hydraulic model was run under basic day, maximum day with fire flows and under peak hour conditions. Water pipes are sized to provide sufficient pressure and to deliver the required fire flows. During the design stage all mains are tested at the minimum 150 mm diameter size, while the pressure criteria is met with the minimum sized mains the fire flow requirement is not achieved at all locations. The main sizes are increased in an iterative process until the fire flow results are sufficient.

Results of the hydraulic model are include in **Appendix A** and summarized as follows:

Scenario	
Basic Day (Max HGL) Pressure Range	672.7 to 629.1 kPa
Peak Hour (Min HGL) Pressure Range	575.2 to 577.1 kPa
Min Design Fire Flow @ 140 kPa and 183 L/s	509.5 L/s

A comparison of the results and design criteria is summarized as follows:

Maximum Pressure	All nodes have basic day pressures over 552 kPa, therefore pressure reducing control is required for this development. All pressures are less than the manimum pressure in unoccupied areas of 689 kPa
Minimum Pressure	All nodes are above the minimum pressure of 276 kPa
Fire Flow	The FUS fire demand of 183 l/s is met at all fire nodes.

2.3.2 Watermain Layout

In order to provide additional reliability to the system in case of a watermain break two connections to the City's watermain system are proposed. One proposed connection to the existing 305mm watermain within the Cope Drive right of way and the other proposed connection to the 406mm watermain within unopened Akerson Road allowance. All watermains on-site are 200mm diameter as required to meet the fire flow criteria.

2.4 Proposed Off-Site Works

To facilitate the proposed watermain connection to the watermain within the Cope Drive ROW the existing 305mm watermain and associated appearances within Cope Drive will need to be extended approximately 80m northwards within the ROW to the site limit. The extent of proposed watermain works within the Cope Drive ROW is shown on drawing 33681-C-100 which can be found in **Appendix G**. It is anticipated that municipal consent will be required in order for the proponent to proceed with these works.

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

The Kanata West Center is located within the South Glen Cairn sanitary trunk sewer tributary area which ultimately outlets to the Hazeldean Pumping Station. As part of the adjacent SOHO West Phase 3 & 4 serviceability analysis, completed in 2011, a review of the sanitary flows from the area was conducted. The proposed Kanata West Center lands were included in the analysis and it was demonstrated that these lands have been accommodated in the South Glen Cairn sanitary trunk sewer and Hazeldean Pumping Station flow estimates. A copy of excerpts from the report have been included in **Appendix B**.

3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

- Commercial/Institutional flow — 28,000 l/ha/d
- Peaking factor — 1.5 if ICI in contributing area >20%
1.0 if ICI in contributing area <20%
- Infiltration allowance — 0.33 l/s/ha
- Velocities — 0.60 m/s min. to 3.0 m/s max.

3.3 Recommended Wastewater Plan

The on-site sanitary system will consist of a network of 200mm PVC sewers installed at normal depth and slope and will provide a single service connection to each commercial building pad. The sewers have been designed using the criteria noted above in section 3.2 and outlet via a connection to the sanitary sewer within the Cope Drive right of way at the northwest corner of the subject site. A copy of the sanitary drainage area plan 33681-C-400 and the sanitary sewer design sheet can be found in **Appendix B.** Please refer to the site servicing plan 33681-C-001 for further details.

3.4 Proposed Off-Site Works

To provide adequate depth of cover, and facilitate crossing of the proposed storm sewer over the sanitary sewer into the site, it will be necessary to remove and replace 1 section of existing sanitary sewer within the Cope Drive ROW. The uppermost 250mm diameter sanitary sewer run will need to be reinstalled at a lowered depth, as shown on the profile drawing 33681-C-100, found in **Appendix G**. It is anticipated that municipal consent will be required in order for the proponent to proceed with these works.

4 SITE STORMWATER MANAGEMENT

4.1 Existing Conditions

The site was initially designed and included within the stormwater management strategy of the adjacent First Air development and the site currently drains overland to catchbasins located within the First Air parking lot.

It should be noted that the proposed development results in the small reduction of a single ponding area located in First Air's drainage area A5. The 2006 Trow engineering report for the First Air site, known as 20 Cope Drive, indicates that the affected area has 236 m^3 of storage available as designed but only requires 224.7 m^3 to satisfy the ponding requirement. The surplus storage of 11.3 m^3 is significantly less than the 3-4 m^3 of available ponding that will be reduced by the proposed development and thus the proposed development does not negatively affect the First Air's stromwater management strategy. Please find a figure in **Appendix C** which demonstrates the limited extent of the reduction in ponding area. Confirmation that the reduction is acceptable to the 20 Cope Drive site has been requested and will be proved to the City of Ottawa upon receipt.

The designated stormwater outlet for the site is a 525mm dia storm sewer draining westward within the Cope Drive ROW which discharges to the Monahan Drain Cell 1. A copy of the as-built drawings for this sewer, obtained from the City of Ottawa, can be found in **Appendix F**.

4.2 Design Criteria

In 2014 J.F. Sabourin & Associates were engaged by the City of Ottawa to conduct an analysis of the Monahan Drain Cell 1 and provide recommendations to upgrade the facility. As part of their report a figure was prepared that identified the tributary areas for the Monahan Drain Cell 1 and noted the release rates used in their model. The subject lands were included in the figure and identified as a portion of node CommSE. The JFSA figure notes that the stormwater flow allocation for the subject lands during the 100 year return event is 70 L/s/ha, which will be used for detailed design. A copy of JFSA's Figure 3 confirming the above can be found in **Appendix C.**

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

- Design Storm — 1:5 year return (Ottawa)
- Rational Method Sewer Sizing
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients
  - Landscaped Areas — C = 0.30
  - Asphalt/Concrete — C = 0.90
  - Roof — C = 0.90
- Pipe Velocities — 0.80 m/s to 6.0 m/s
- Minimum Pipe Size — 250 mm diameter (200 mm CB Leads)

4.3 Proposed Off-Site Works

Similarly to the sanitary sewer, it will be necessary to remove and replace 1 run of existing storm sewer within the Cope Drive ROW to provide adequate depth of cover at the upper reaches of the proposed on-site storm sewers. The existing 525 mm diameter storm sewer will need to be reinstalled with a larger diameter pipe at a lowered depth and shallower slope, as shown on the profile drawing 33681-C-100, found in **Appendix G**. It is anticipated that municipal consent will be required in order for the proponent to proceed with these works.

4.4 Proposed Minor System

Using the criteria identified in Section 4.2, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated storm sewer drainage area plan is included in **Appendix C**. The general plan of services, depicting all on-site storm sewers can be found in **Appendix G**.

It has been requested by the City of Ottawa that the site owner provide confirmation that the site owners will be responsible for regular maintenance of the on-site catch basins and inlet control devices (ICDs) at 10 Cope Drive. Maintenance includes but is not limited to the cost of regular cleaning the structures and ICDs as necessary. The site owner will also be responsible for replacement of damaged or missing catchbasin structures, grates or inlet control devices as needed. Confirmation from the owners will be forwarded directly to the City upon receipt.

4.5 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through a combination of inlet control devices (ICD's) at inlet locations and surface storage.

Flows generated that are in excess of the site`s allowable release rate will be stored on site in strategic surface storage areas or by the use of roof top storage and gradually released into the minor system so as not to exceed the site's allocation.

The maximum surface retention depth located within the developed areas will be limited to 300mm during a 1:100 year event with the exception of a proposed small dry pond to be located at the south-west corner of the property as show on the ponding and grading plans located in **Appendix G.**

Overland flow routes will be provided in the grading to permit emergency overland flow, in excess of the 100 year event, from the site.

At certain locations within the site, the opportunity to store runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties or in areas where ponding stormwater is undesirable. These "uncontrolled" areas – 0.07 hectares in total, have an average C value of 0.64. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 22.24 l/s runoff (refer to Section 4.5 for calculation).

The site grading and ponding has been designed to control water generated during the 1:100-year event, with no overflow leaving the site. Please refer to the SWM calculations in **Appendix C**.

4.6 Inlet Controls

The allowable release rate for the 2.1 Ha site can be calculated as follows:

$\mathbf{Q_{allowable}}$ = 70 L/s/Ha as per JFSA Monahan Drain Cell 1 report

Area = 2.10 Ha

= **147.00 L/s**

As noted in Section 4.4, a portion of the site will be left to discharge to the Eagleson Road boulevard at an uncontrolled rate in addition to the loading dock ramp which will drain via the buildings internal pluming into the storm sewer uncontrolled.

Based on a 1:100 year event, the flow from the 0.07 Ha uncontrolled area can be determined as:

$\mathbf{Q_{uncontrolled}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A** where:

C = Average runoff coefficient of uncontrolled area = 0.64

$\mathbf{i_{100yr}}$ = Intensity of 100-year storm event (mm/hr)

= $1735.688 \times (T_c + 6.014)^{0.820}$ = 178.56 mm/hr; where T_c = 10 minutes

A = Uncontrolled Area = 0.07 Ha

Therefore, the uncontrolled release rate can be determined as:

$\mathbf{Q_{uncontrolled}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A**

= 2.78 x 0.64 x 178.56 x 0.07

= **22.24 L/s**

The maximum allowable release rate from the remainder of the site can then be determined as:

$\mathbf{Q_{max\ allowable}}$ = $\mathbf{Q_{restricted} - Q_{uncontrolled}}$

= 147.00 L/s – 22.24 L/s

= **124.76 L/s**

Based on the flow allowance at the various inlet locations, a combination of various sizes of inlet control devices (ICDs) were chosen in the design. The design of the inlet control devices is unique to each drainage area and is determined based on a number of factors, including hydraulic head and allowable release rate. The inlet control devices were sized according to the manufacturer's design charts. The restrictions will cause the on-site catchbasins and manholes to surcharge, generating surface ponding in the parking and landscaped areas. Ponding locations and elevations are summarized on the Ponding Plan 33681-C-600, and included in **Appendix C**.

4.7 On-Site Detention

Any excess storm water up to the 100-year event is to be stored on-site in order to not surcharge the downstream municipal storm sewer system. Detention will be provided in parking and landscape areas and building rooftops, where feasible. As previously noted, the volume of storage is dependent on the characteristics of each individual drainage area and the ICD's were chosen accordingly. It should be noted that 0.30m of vertical separation has been provided from all maximum ponding elevations to lowest building openings.

4.7.1 Site Inlet Control

The following Table summarizes the on-site storage requirements during both the 1:5-year and 1:100-year events.

DRAINAGE AREA(s)	TRIBUTARY AREA	AVAILABLE STORAGE (M^3)	100-YEAR STORM		5-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
P11C	0.14	26.45	6	56.78	6	23.2
P11B	0.17	25.71	14	52.95	14	19.41
P11A/P12	0.29	60.23	13	115.75	13	47.04
P10E	0.07	11.61	6	21.39	6	7.77
P10D	0.13	15.25	6	51.35	6	20.79
P10C	0.17	35.75	6	73.65	6	30.75
P21	0.03	1.93	6	5.42	6	1.4
P20A	0.11	6.51	6	40.82	6	16.15
P10B	0.08	5.79	6	26.01	6	9.73
P10A	0.04	2.76	6	8.92	6	2.70
P3/L3	0.16	7.9	33	7.30	33	0.46
Unrestricted	0.07	0	22.24	0	22.24	0
TOTAL	**1.46**	**49.41**	**130.24**	**30.24**	**130.24**	**9.56**

In all instances the required storage is met with surface ponds which retain the stormwater and discharge at the restricted flow rate to the sewer system. Refer to the ponding plan in **Appendix C** for storage information.

4.7.2 Roof Inlet Controls

The proposed buildings will have roof inlet controls that help to control the amount of stormwater being released into the system. The restricted flow rate for the proposed building is shown below.

ICD AREA	TRIBUTARY AREA	100-YEAR STORM		5-YEAR STORM	
		RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
Block A	0.36	8.00	179.73	8.00	78.04
Block C	0.06	4.00	20.53	4.00	7.86
Block D	0.14	4.00	64.86	4.00	27.62
TOTAL	**0.56**	**16.00**	**265.12**	**16.00**	**113.52**

4.7.3 Overall Release Rate

As demonstrated above, the site uses new inlet control devices to restrict the 100 year storm event to the criteria approved by the City of Ottawa. Restricted stormwater will be contained onsite by utilizing surface ponding and rooftop storage. In the 100 year event, there will be no overflow off-site from restricted areas.

The sum of restrictions on the site, rooftops and uncontrolled flows is (108 l/s + 16.0 l/s + 22.24) 146.24 l/s, which is less than the allowable release of 147.00 l/s noted in section 4.5.

4.8 Quality Control

It is the intention of the applicant to provide quality control treatment for the storm water leaving the subject lands. The MOECP has identified 80% Total Suspended Solids (TSS) removed to be the level of service required to ensure the ECA application qualifies under the Transfer of Review program. To provide this level of quality control service an in-line oil grit separation structure is proposed. Please refer the sizing calculations for the structure, which confirms 80% TSS is provided, in **Appendix C**. The structure is proposed at location MH2, see plan 33681-C-001 for more details.

5 SEDIMENT AND EROSION CONTROL PLAN

5.1 General

During construction, existing stream and conveyance systems can be exposed to significant sediment loadings. Although construction is only a temporary situation, it is proposed to possibly introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These may include:

- Until the local storm sewer and storm pond are constructed, groundwater in trenches will be pumped into a filter mechanism prior to release to the environment. bulkhead barriers will be installed at the nearest downstream manhole in each sewer which connects to an existing downstream sewer;
- seepage barriers will be constructed in any temporary drainage ditches (where applicable);
- sediment capture filter socks will remain on open surface structures such as maintenance holes and catchbasins until these structures are commissioned and put into use; and
- silt fence on the site perimeter will be installed.

5.2 Trench Dewatering

Any trench dewatering using pumps will be discharged into a filter trap made up of geotextile filters and straw bales similar in design to the OPSD 219.240 Dewatering Trap. These will be constructed in a bowl shape with the fabric forming the bottom and the straw bales forming the sides. Any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filters as needed, including sediment removal and disposal and material replacement as needed. It should be noted that that the contractor will be responsible for the design and management of the trap(s).

5.3 Bulkhead Barriers

To further reduce downstream sediment loading, a ½ diameter bulkhead will be constructed over the lower half of the outletting sewer during construction. These bulkheads will trap any sediment laden flows, thus preventing any construction-related contamination into existing sewers. The bulkheads will be inspected and maintained including periodic sediment removal as needed.

5.4 Seepage Barriers

In order to further reduce sediment loading to the stormwater management facility, seepage barriers will be installed on any surface water courses at appropriate locations that may become evident during construction. These barriers will be Light Duty Straw Bale Barriers per OPSD 219.100 and Heavy Duty Silt Fence Barriers per OPSD 219.130; locations are shown on the Sediment and Erosion Control Plan included in **Appendix D**. They are typically made of layers of straw bales or geotextile fabric staked in place. All seepage barriers will be inspected and maintained as needed.

5.5 Surface Structure Filters

All catchbasins, and to a lesser degree, manholes, convey surface water to sewers. Until streets are asphalted and curbed, all catchbasins and manholes will be constructed with sediment capture inserts or equivalent located between the structure frame and cover. These will stay in place and be maintained during construction and build until it is appropriate to remove same.

6 CONCLUSION

This report has illustrated that the proposed Kanata West Center development can be serviced via existing municipal services. The water network will be extended to provide necessary service. All sanitary and storm sewer designs for this development will be completed in conformance with City of Ottawa standards while acknowledging downstream constraints. By limiting flow into the minor storm sewer system as per the applicable local stormwater management criteria and allowing for excess surface storage on-site, all stormwater management requirements will be met. Adherence to the Sediment and Erosion Control Plan during construction will minimize harmful impacts on surface water.

Based on the information provided within this report, the plans prepared for the subject development can be serviced to meet City of Ottawa requirements.

Terry Brule, P. Eng.
Associate

James Battison

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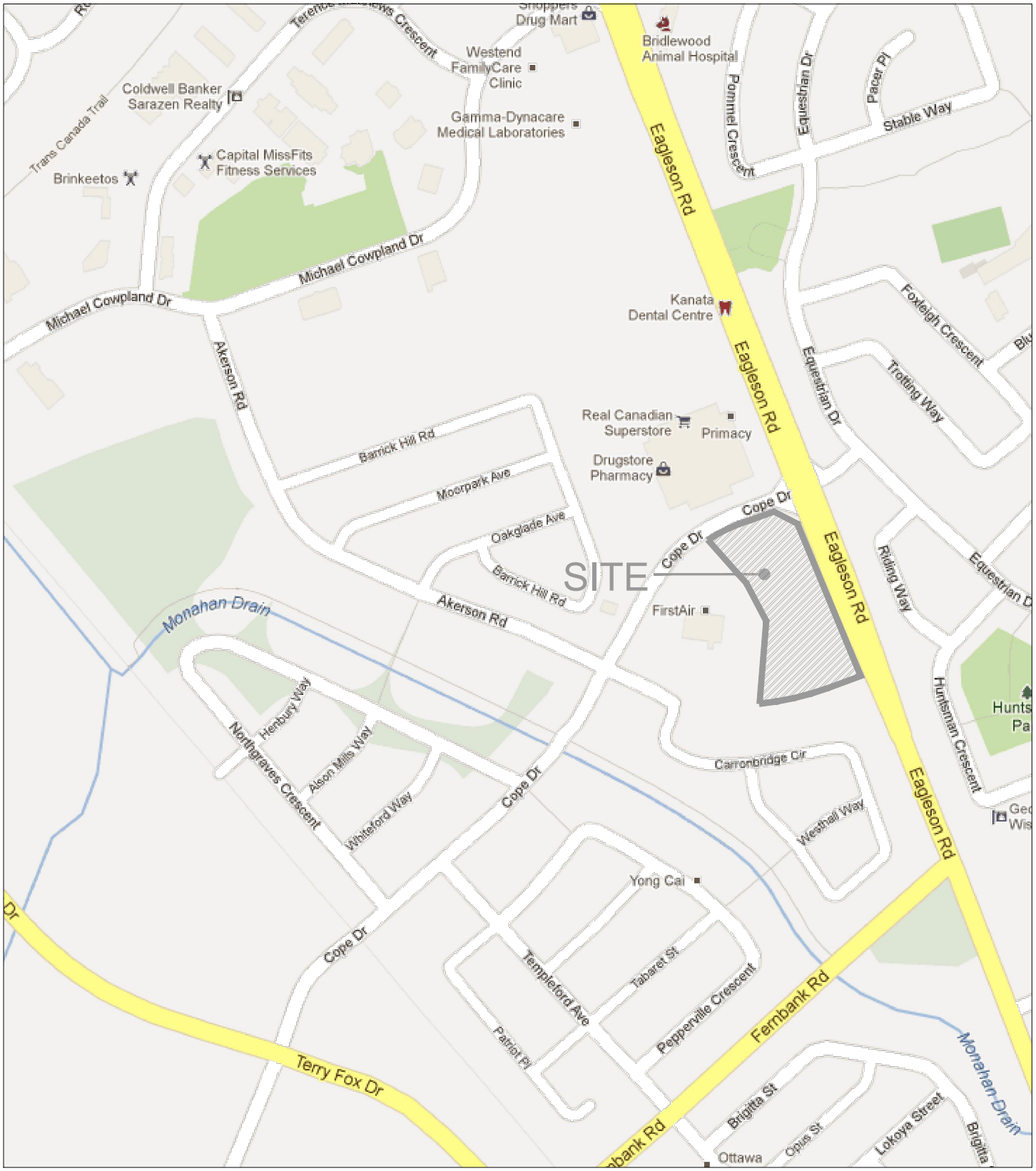

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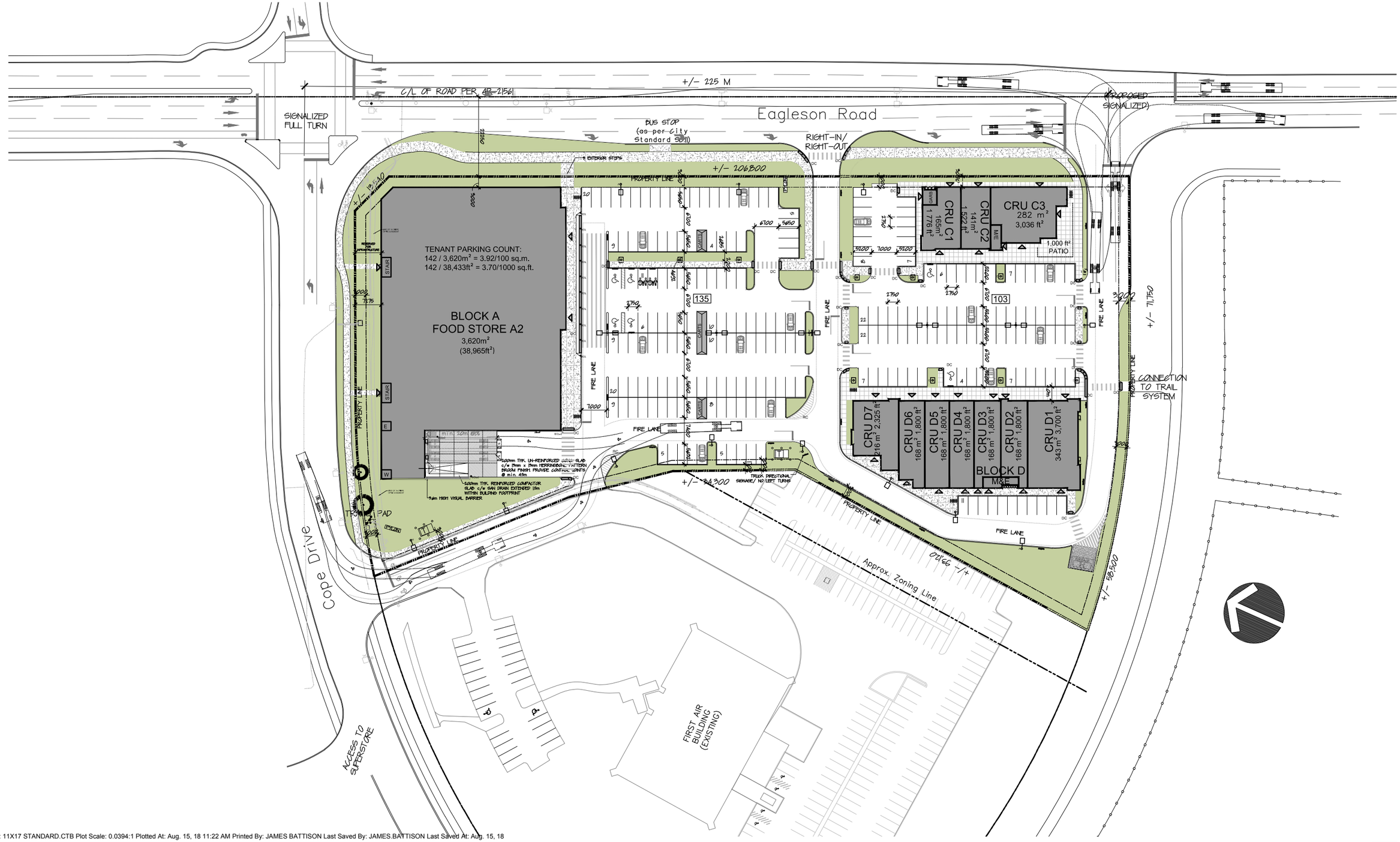
KANATA SOUTH CENTER
10 COPE DRIVE

LOCATION PLAN

FIGURE 1



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Project Title
KANATA SOUTH CENTER
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Drawing Title
SITE PLAN

Sheet No.
FIGURE 2

APPENDIX A

IBI GROUP

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

33681.5.7

PROJECT : **Kanata South Center**
LOCATION : **Taggart Realty Management**

DATE: 25-Apr-18
DESIGN: JEB

NODE	RESIDENTIAL UNITS SF	SD	TH	APT	GROSS RES. (Ha)	POP'N	NON-RESIDENTIAL COM (Ha)	IND (Ha)	INST (Ha)	AVERAGE DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM HOURLY DEMAND (l/s) Res.	Non-res.	Total
A							1.12			0.00	0.36	0.36	0.00	0.54	0.54	0.00	0.98	0.98
C							0.44			0.00	0.14	0.14	0.00	0.21	0.21	0.00	0.39	0.39
D							0.54			0.00	0.18	0.18	0.00	0.26	0.26	0.00	0.47	0.47
												0.68			1.01			1.84

ASSUMPTIONS

RESIDENTIAL DENSITIES

- Single Family (SF) 3.4 p/p/u
- Semi Detached (SD) 2.7 p/p/u
- Townhouse (TH) 2.7 p/p/u
- Apartment (APT) 1.8 p/p/u

AVERAGE DAILY DEMAND

- Residential 350 l/cap/day
- Commercia 28,000 l/ha/day
- Industrial 35,000 l/ha/day
- Institutional 28,000 l/student/d

MAXIMUM DAILY DEMAND

- Residential 875 l/cap/day
- Commercia 42,000 l/ha/day
- Industrial 52,500 l/ha/day
- Institutional 42,000 l/student/d

MAXIMUM HOURLY DEMAND

- Residential 1,925 l/cap/day
- Commercia 75,600 l/ha/day
- Industrial 94,500 l/ha/day
- Institutional 75,600 l/student/d

Fire Flow Requirement from Fire Underwriters Survey

Block A

Building Floor Area 4,000 m^2

Fire Flow

$F = 220C\sqrt{A}$

C	1.0	C =	1.5	wood frame
A	4,000 m^2		1.0	ordinary
			0.8	non-combustile
F	13,914 l/min		0.6	fire-resistive
use	14,000 l/min			

Occupancy Adjustment

		-25%	non-combustile
		-15%	limited combustile
Use	0%	0%	combustile
		+15%	free burning
Adjustment	0 l/min	+25%	rapid burning
Fire flow	14,000 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-4200 l/min		

Exposure Adjustment

Building Face	Separation		Charge
north	0	> 45	0%
east	0	> 45	0%
south	0	> 45	0%
west	0	> 45	0%
Total			0%

Separation	Charge
0 to 3m	+25%
3.1 to 10m	+20%
10.1 to 20m	+15%
20.1 to 30m	+10%
30.1 to 45m	+5%

Adjustment - l/min

Required Fire Flow

Total adjustments	(4,200)	l/min
Fire flow	9,800	l/min
Use	**10,000**	**l/min**
	166.7	**l/s**

Fire Flow Requirement from Fire Underwriters Survey

Block D
Building Floor Area 1,450 m^2

Fire Flow

$F = 220C\sqrt{A}$

C	1.0	C =	1.5 wood frame
A	1,450 m^2		1.0 ordinary
			0.8 non-combustile
F	8,377 l/min		0.6 fire-resistive
use	8,000 l/min		

Occupancy Adjustment

		-25% non-combustile
		-15% limited combustile
Use	0%	0% combustile
		+15% free burning
Adjustment	0 l/min	+25% rapid burning
Fire flow	8,000 l/min	

Sprinkler Adjustment

		-30% system conforming to NFPA 13
		-50% complete automatic system
Use	-30%	
Adjustment	-2400 l/min	

Exposure Adjustment

Building Face	Separation	Charge
north	> 45	0%
east	42	5%
south	> 45	0%
west	> 45	0%
Total		5%
Adjustment		400 l/min

Separation	Charge
0 to 3m	+25%
3.1 to 10m	+20%
10.1 to 20m	+15%
20.1 to 30m	+10%
30.1 to 45m	+5%

Required Fire Flow

Total adjustments	(2,000) l/min
Fire flow	6,000 l/min
Use	**6,000 l/min**
	100.0 l/s

James Battison

From: Whittaker, Damien <Damien.Whittaker@ottawa.ca>
Sent: Friday, March 15, 2013 8:10 AM
To: Stuart Hefler
Cc: Terry Brule
Subject: Soho Kanata South watermain boundary condition request (20 Cope Drive)

Stuart,

Boundary conditions are provided for the intersection of Akerson and Cope, for existing conditions:

- Max HGL = 161.7 m
- Peak Hour = 156.4 m
- Max Day + Fire = 152.7 m (with a fire demand of 250 l/s)

Maximum pressures will be over 80 psi and therefore private PRVs on service connections will be required.

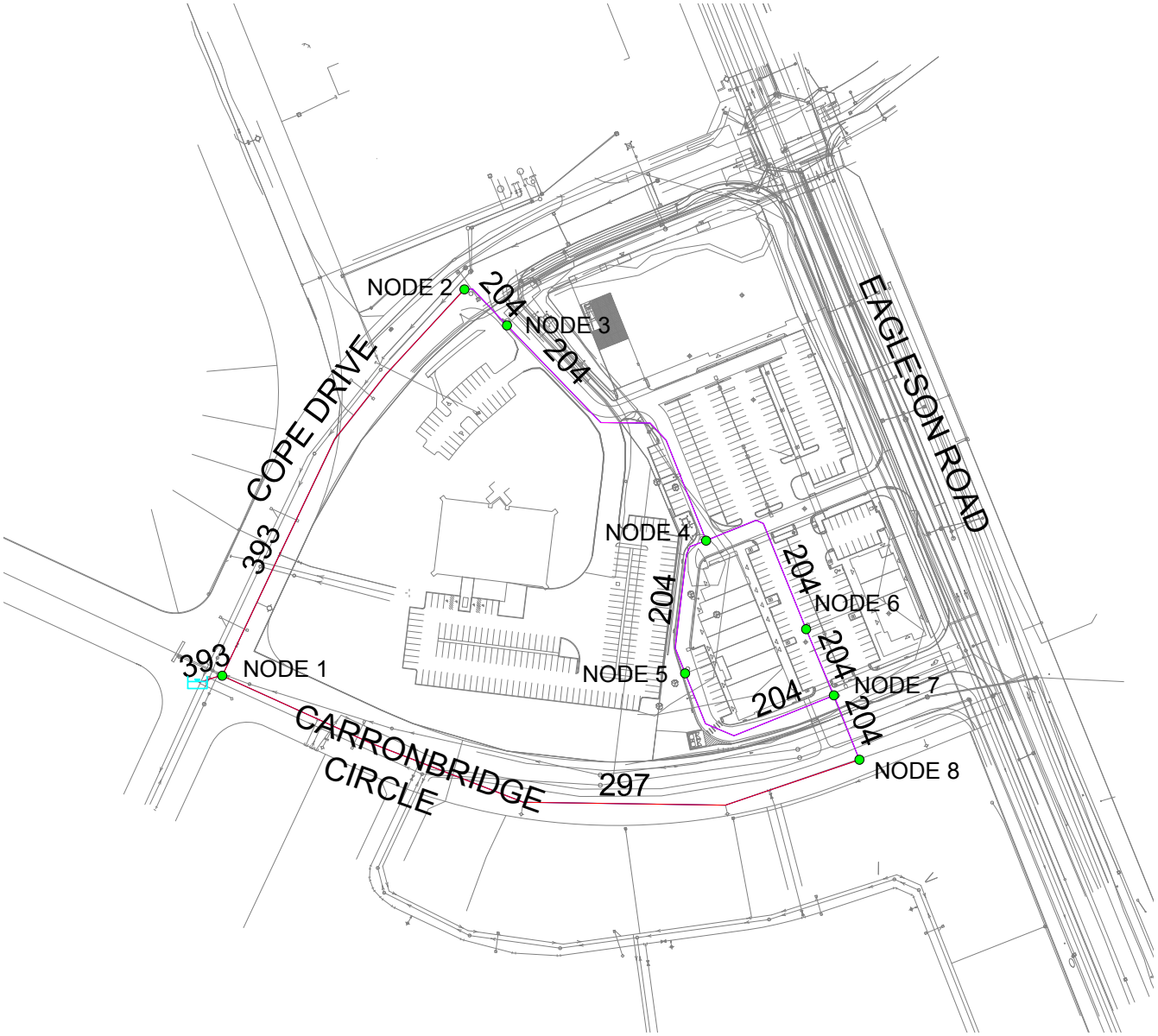
These are for current conditions and are based on computer model simulation.
Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water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

Please feel free to ask for clarification, or further information, on any of the comments above.

Regards,

Damien Whittaker, P.Eng ▪ **Project Manager** ▪ **Development Review, Suburban (West)**
City of Ottawa ▪ 110 Laurier Avenue West, Ottawa, Ontario K1P 1J1
☎ 613-580-2424 x16968 ▪ damien.whittaker@ottawa.ca ▪ 26-61

Pipe Sizes and Node IDs



Max HGL (Average Daily Demand)

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1		1	0.00	95.70	161.70	646.75
2		2	0.00	98.00	161.70	624.21
3		3	0.36	97.50	161.70	629.11
4		4	0.00	97.70	161.70	627.15
5		5	0.16	97.50	161.70	629.11
6		6	0.13	97.60	161.70	628.13
7		7	0.00	97.65	161.70	627.64
8		8	0.00	96.00	161.70	643.81

Peak Hour HGL (Maximum Hourly Demand) - Junction Report

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1		1	0.00	95.70	156.40	594.81
2		2	0.00	98.00	156.40	572.27
3		3	0.98	97.50	156.40	577.17
4		4	0.00	97.70	156.40	575.21
5		5	0.44	97.50	156.40	577.17
6		6	0.35	97.60	156.40	576.19
7		7	0.00	97.65	156.40	575.70
8		8	0.00	96.00	156.40	591.87

Peak Hour HGL (Maximum Hourly Demand) - Pipe Report

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/km)
1		11	1	2	189.52	393.00	120.00	1.09	0.01	0.0000	0.000
2		12	2	3	24.00	204.00	110.00	1.09	0.03	0.000	0.01
3		13	3	4	130.16	204.00	110.00	0.11	0.00	0.0000	0.000
4		14	4	5	60.60	204.00	110.00	0.16	0.00	0.0000	0.000
5		15	5	7	79.51	204.00	110.00	-0.28	0.01	0.0000	0.00
6		16	4	6	72.47	204.00	110.00	-0.05	0.00	0.00	0.00
7		17	6	7	29.58	204.00	110.00	-0.40	0.01	0.0000	0.00
8		19	7	8	28.48	204.00	110.00	-0.68	0.02	0.000	0.01
9		21	8	1	276.00	297.00	120.00	-0.68	0.01	0.000	0.000
10		23	10	1	10.35	393.00	120.00	1.77	0.01	0.0000	0.00

Max Day + Fire HGL (250 L/s)

		ID	Total Demand (L/s)	Critical Node 1 ID	Critical Node 1 Pressure (kPa)	Critical Node 1 Head (m)	Adjusted Fire-Flow (L/s)	Available Flow @Hydrant (L/s)	Critical Node 2 ID	Critical Node 2 Pressure (kPa)	Critcal Node 2 Head (m)	Adjusted Available Flow (L/s)	Design Flow (L/s)
1		2	250.00	2	518.92	150.95	1,366.93	1,366.90	2	139.98	112.28	1,366.93	1,366.93
2		3	250.54	3	484.75	146.97	724.36	724.36	3	139.97	111.78	724.36	724.36
3		4	250.00	4	432.03	141.79	509.48	509.48	4	139.96	111.98	509.48	509.48
4		5	250.24	5	396.52	137.96	434.49	434.49	5	139.96	111.78	434.49	434.49
5		6	250.19	6	418.13	140.27	475.63	475.63	6	139.96	111.88	475.63	475.63
6		7	250.00	7	449.01	143.47	558.17	558.17	7	139.97	111.93	558.17	558.17
7		8	250.00	7	482.88	145.28	719.55	683.76	8	139.97	110.28	683.76	683.76

APPENDIX B

Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON K1Z 7T1
Tel: (613) 722-4420 Fax: (613) 722-2799
stantec.com

Stantec

December 2, 2004
File: 604-00373

Preliminary Wastewater Collection System Calculations

Summary

Estimate of existing design peak flow rates from Business Park: 88.7L/s
Estimate of peak flow rates from proposed development: 76.9L/s

Since the proposed flow rates are lower than the previously designed peak flow rates the South Glen Cairn Collector and Hazeldean P.S. should be capable of receiving the proposed peak flows.

Calculations

Business Park

Total Site Area:	61.087ha
Existing Kanatek Site	4.83ha
Gross Area:	56.257ha

Peak Flow
Light Industrial Avg Flow: 35,000 L/gross ha/d *(Sewer Design Guidelines, 2004)*

$$56.257ha \times 35000L/ha/d = 1{,}968{,}995L/d = 22.79L/s$$

Peak Factor ≈ 3.2 *(MOE Tables, see attached)*

Peak Flow = $22.78L/s \times 3.2 = 72.93L/s$

Infiltration

0.28L/s/ha (*Sewer Design Guidelines, 2004)*

Total Infiltration $= 56.257ha \times 0.28L/s/ha = 15.75L/s$

Total Business Park Flow

72.93L/s + 15.75L/s = ***88.7L/s***

Proposed SOHO Concept Plan Flow

The mixed use concept plan is proposed the following composition (FoTenn Consultants):

391 Linked Singles	2.7p/unit	=	1056
507 Townhouses	2.7p/unit	=	1369
198 Stacked Townhouses	2.7p/unit	=	535
217 Low to Mid rise apartments	1.8p/unit	=	391
69 Chamber Units	2.7p/unit	=	187
Residential Population			**3538**

6.05ha Commercial
2.71ha Business Park

Peak Flow

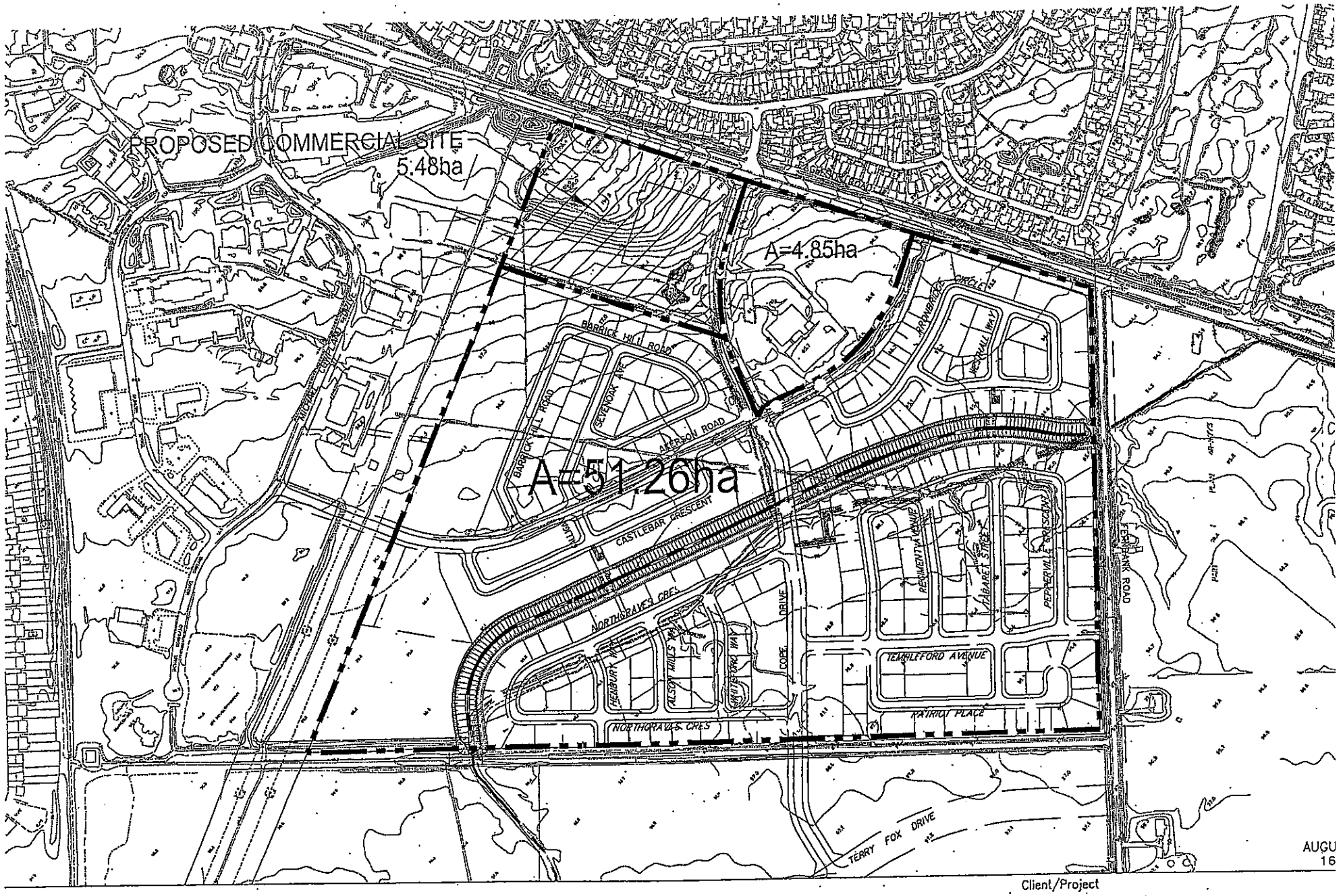
Residential:

$$3538p \times 350L/p/d = 1227800L/d \times \frac{1d}{(24)(3600)s} = 14.33L/s$$

Peak Factor

$$PF = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000} \right)^{1/2}} \right) = 1 + \left(\frac{14}{4 + \left(\frac{3538}{1000} \right)^{1/2}} \right) = 3.4$$

Peak Flow Residential $= 14.21L/s \times 3.4 = 48.7L/s$



Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada

Client/Project
KARAM / CAVANAGH
SOHO West Concept Plan

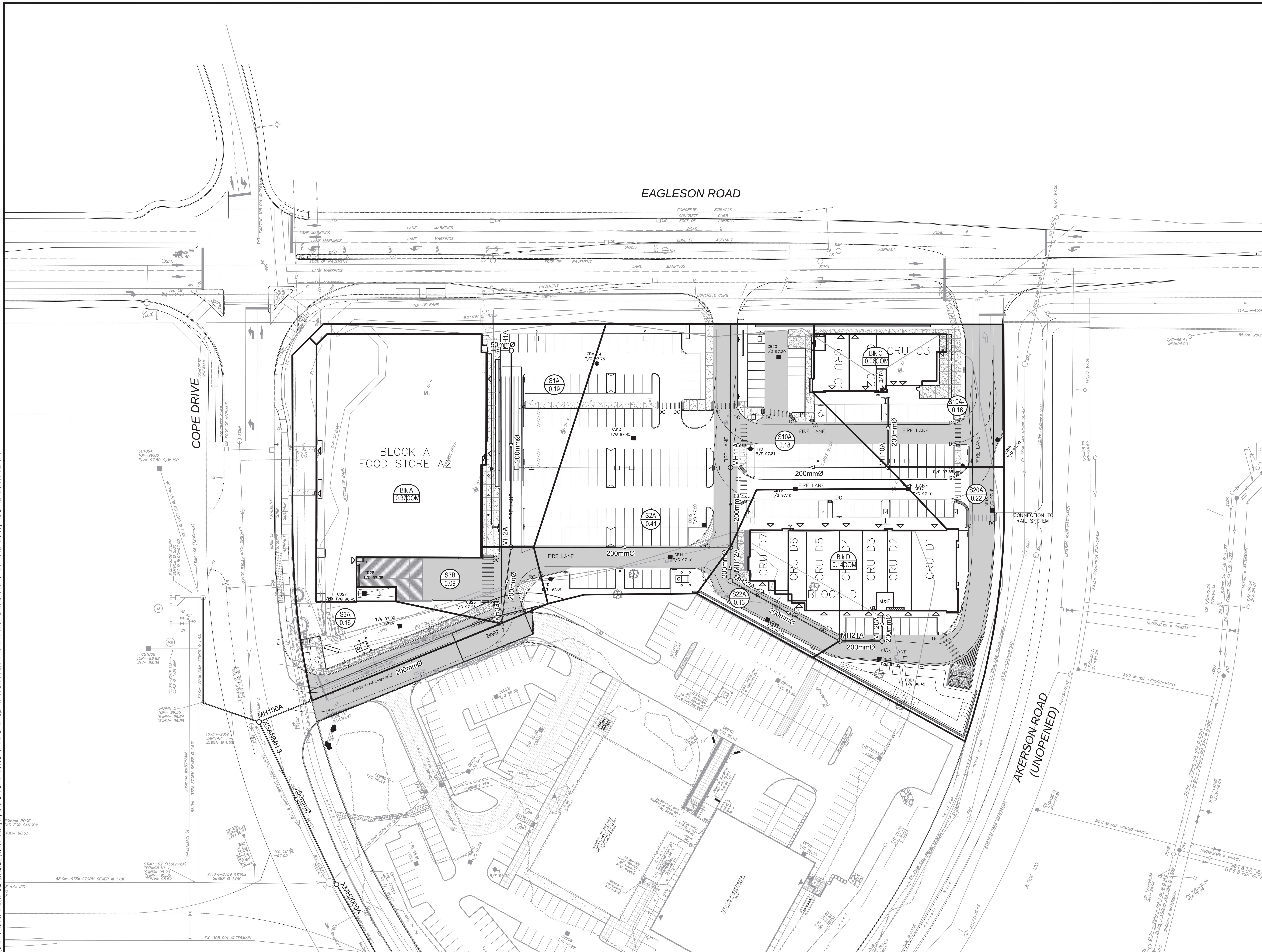
Figure No.

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________ 2018

Plan Number ______________________



LEGEND :

- Blk A / 0.37COM — AREA NUMBER; LAND USE; AREA IN HECTARES
- S3B / 0.09 (shaded) — AREA NUMBER; AREA IN HECTARES
- AREA BOUNDARY

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED BLOCK A FOOTPRINT	T.R.B	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B	2018:04:27

TAGGART REALTY MANAGEMENT

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title

KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

Drawing Title

SANITARY DRAINAGE AREA PLAN

Scale 1 : 500

Design	Date
J.E.B.	APR 2018
Drawn	Checked
D.D. / E.H.	T.R.B.
Project No.	Drawing No.
33681	C-400

CITY PLAN No. D07-12-18-0074

CITY FILE No. 17689

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

SANITARY SEWER DESIGN SHEET

Kanata South Center
CITY OF OTTAWA
Taggart Realty Management

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN							
				AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH		SF	SD	TH	APT		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL				IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
														IND	CUM	IND	CUM	IND	CUM															
	Blk C	51A	MH10A						0.06			3.80	0.00			0.06	0.06			1.50	0.03	0.06	0.06	0.02			0.05	34.22	23.66	200	1.00	1.055	34.17	99.86%
	S10A-1	MH10A	MH11A						0.16			3.80	0.00			0.16	0.22			1.50	0.11	0.16	0.22	0.07			0.18	19.66	47.91	200	0.33	0.606	19.48	99.09%
	S10A	MH11A	MH12A						0.18			3.80	0.00			0.18	0.40			1.50	0.19	0.18	0.40	0.13			0.33	19.66	24.27	200	0.33	0.606	19.33	98.34%
	Blk D	52A	MH20A						0.14			3.80	0.00			0.14	0.14			1.50	0.07	0.14	0.14	0.05			0.11	34.22	9.25	200	1.00	1.055	34.10	99.67%
	S20A	MH20A	MH21A						0.22			3.80	0.00			0.22	0.36			1.50	0.18	0.22	0.36	0.12			0.29	34.22	12.95	200	1.00	1.055	33.92	99.14%
	S22A	MH21A	MH22A						0.13			3.80	0.00			0.13	0.49			1.50	0.24	0.13	0.49	0.16			0.40	34.22	37.89	200	1.00	1.055	33.82	98.83%
		MH22A	MH12A									3.80	0.00			0.00	0.49			1.50	0.24	0.00	0.49	0.16			0.40	19.66	10.22	200	0.33	0.606	19.26	97.97%
	S2A	MH12A	MH2A						0.41			3.80	0.00			0.41	1.30			1.50	0.63	0.41	1.30	0.43			1.06	19.66	66.76	200	0.33	0.606	18.59	94.60%
	Blk A	50A	MH1A						0.37			3.80	0.00			0.37	0.37			1.50	0.18	0.37	0.37	0.12			0.30	15.89	6.05	150	1.00	0.871	15.59	98.10%
	S1A	MH1A	MH2A						0.19			3.80	0.00			0.19	0.56			1.50	0.27	0.19	0.56	0.18			0.46	48.39	59.78	200	2.00	1.492	47.93	99.06%
	S3B	MH2A	MH3A						0.09			3.80	0.00			0.09	1.95			1.50	0.95	0.09	1.95	0.64			1.59	19.66	23.49	200	0.33	0.606	18.06	91.90%
	S3A	MH3A	MH4A						0.16			3.80	0.00			0.16	2.11			1.50	1.03	0.16	2.11	0.70			1.72	19.66	62.26	200	0.33	0.606	17.93	91.24%
		MH4A	EXMH100A									3.80	0.00			0.00	2.11			1.50	1.03	0.00	2.11	0.70			1.72	19.66	17.30	200	0.33	0.606	17.93	91.24%
																											1.72	*33.98*	*54.71*	*250*	*0.30*	*0.671*	*32.26*	*94.93%*

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	1.5
APT	1.8	p/p/u	COM	28,000	L/Ha/day	1.5
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart
				17000	L/Ha/day	

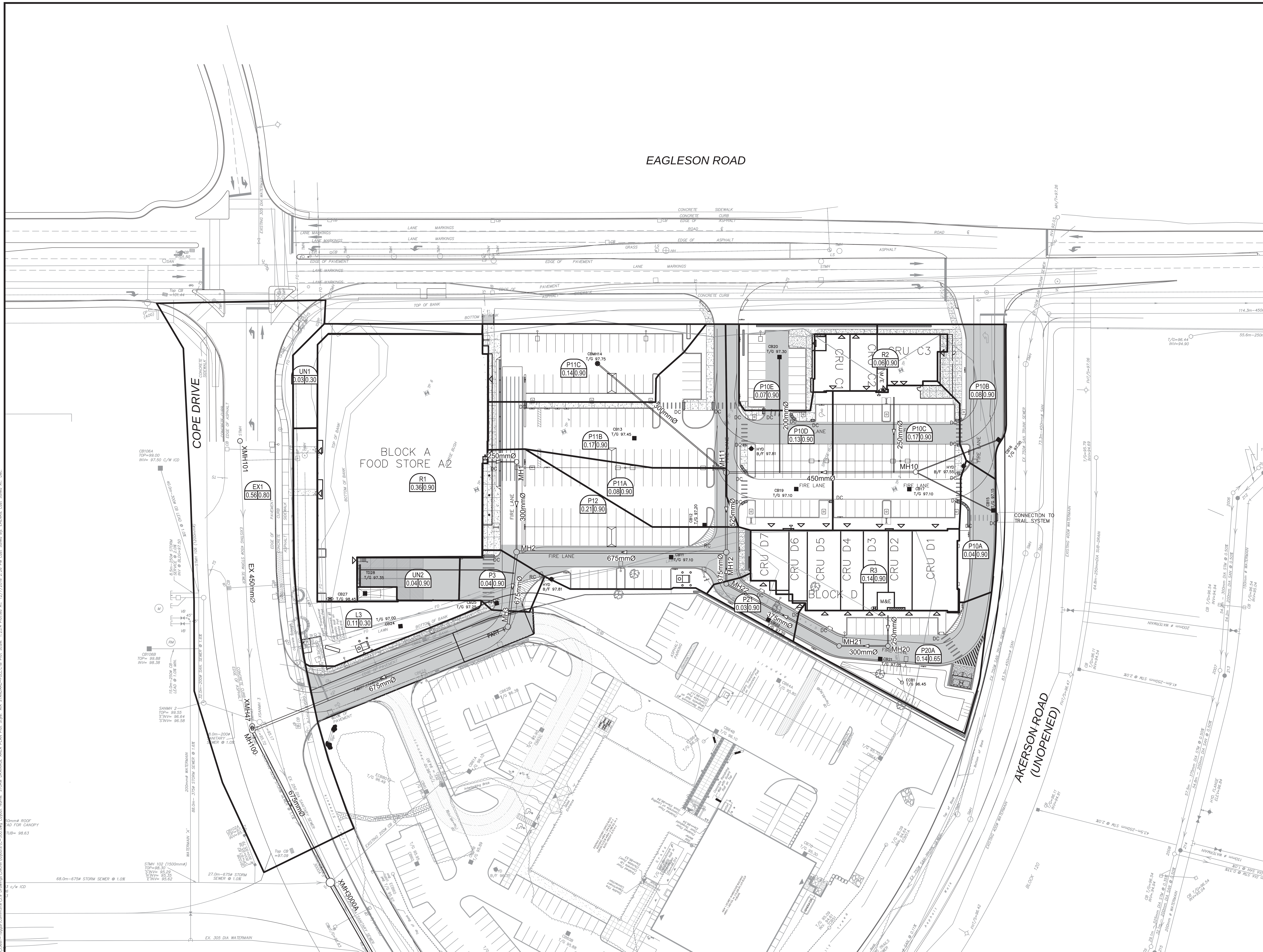
Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area, 1.5 if greater than 20%, otherwise 1.0

Designed: JEB
Checked: TRB
Dwg. Reference: 33681-600

No.	Revision	Date
1.	Submitted for Site Plan Application	2018-04-25
2	2nd City Submission	2018-08-15
3	3rd City Submission	2018-12-07

File Reference: 33681.5.7 **Date:** 2018-04-25 **Sheet No:** 1 of 1

APPENDIX C



REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ____________________

Date ____________________ 2018

Plan Number ____________________

LEGEND :

R1	AREA NUMBER
0.36	RUN OFF COEFFICIENT
0.90	AREA IN HECTARES
——	AREA BOUNDARY

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27

TAGGART
REALTY MANAGEMENT

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Project Title

KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

Drawing Title

STORM DRAINAGE
AREA PLAN

Scale 1 : 500

Design	Date
J.E.B.	APR 2018
Drawn	Checked
D.D. / E.H.	T.R.B.
Project No.	Drawing No.
33681	C-500

CITY PLAN No. D07-12-18-0074

CITY FILE No. 17689

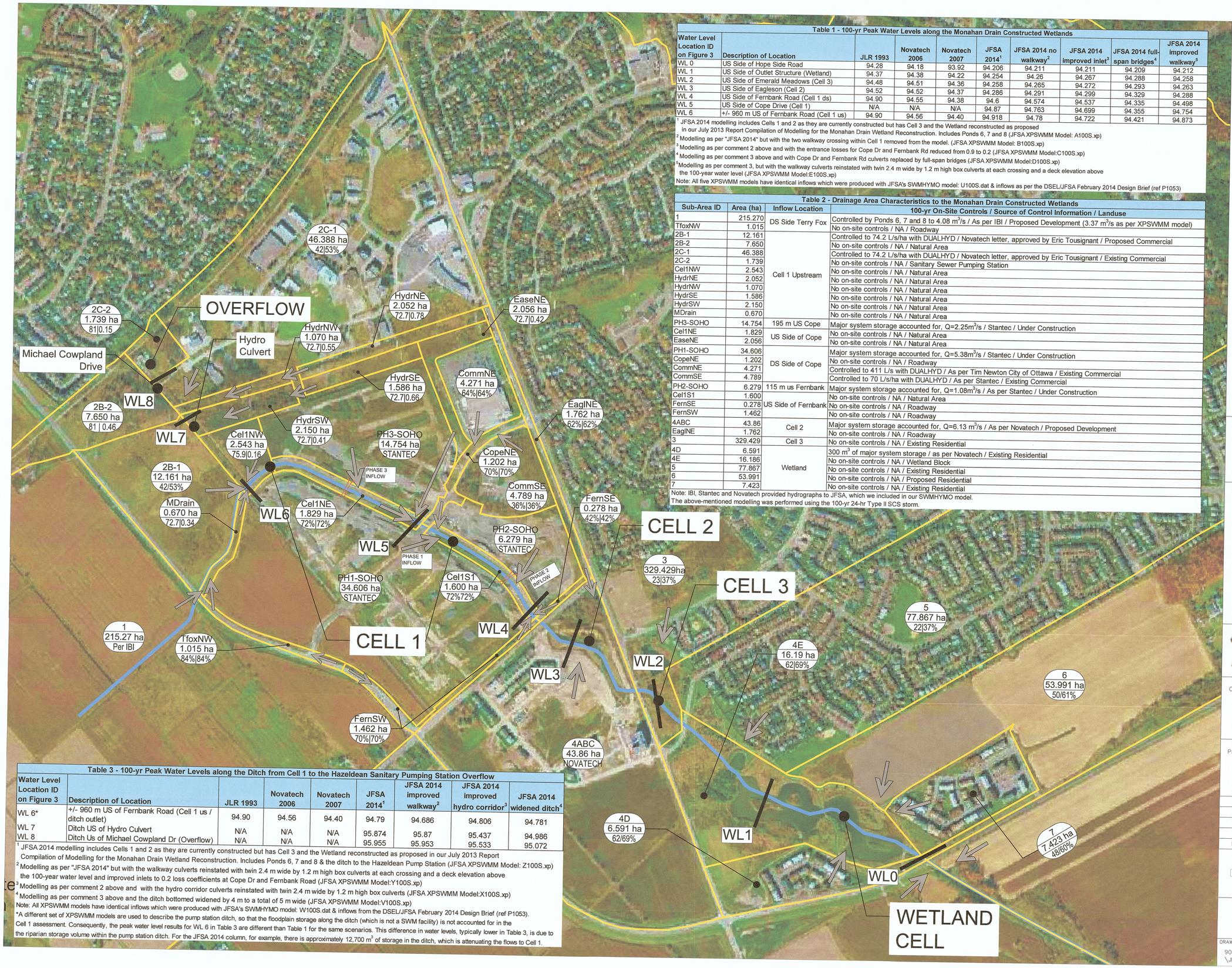


Table 1 - 100-yr Peak Water Levels along the Monahan Drain Constructed Wetlands

Water Level Location ID on Figure 3	Description of Location	JLR 1993	Novatech 2006	Novatech 2007	JFSA 2014[1]	JFSA 2014 no walkway[2]	JFSA 2014 improved inlet[3]	JFSA 2014 full-span bridges[4]	JFSA 2014 improved walkway[5]
WL 0	US Side of Hope Side Road	94.28	94.18	93.92	94.206	94.211	94.211	94.209	94.212
WL 1	US Side of Outlet Structure (Wetland)	94.37	94.38	94.22	94.254	94.26	94.267	94.288	94.258
WL 2	US Side of Emerald Meadows (Cell 3)	94.48	94.51	94.36	94.258	94.265	94.272	94.293	94.263
WL 3	US Side of Eagleson (Cell 2)	94.52	94.52	94.37	94.286	94.291	94.299	94.329	94.288
WL 4	US Side of Fernbank Road (Cell 1 ds)	94.90	94.55	94.38	94.6	94.574	94.537	94.335	94.498
WL 5	US Side of Cope Drive (Cell 1)	N/A	N/A	N/A	94.87	94.763	94.699	94.355	94.754
WL 6	+/- 960 m US of Fernbank Road (Cell 1 us)	94.90	94.56	94.40	94.918	94.78	94.722	94.421	94.873

[1] JFSA 2014 modelling includes Cells 1 and 2 as they are currently constructed but has Cell 3 and the Wetland reconstructed as proposed in our July 2013 Report Compilation of Modelling for the Monahan Drain Wetland Reconstruction. Includes Ponds 6, 7 and 8 (JFSA XPSWMM Model: A100S.xp)
[2] Modelling as per "JFSA 2014" but with the two walkway crossing within Cell 1 removed from the model. (JFSA XPSWMM Model: B100S.xp)
[3] Modelling as per comment 2 above and with the entrance losses for Cope Dr and Fernbank Rd reduced from 0.9 to 0.2 (JFSA XPSWMM Model:C100S.xp)
[4] Modelling as per comment 3 above and with Cope Dr and Fernbank Rd culverts replaced by full-span bridges (JFSA XPSWMM Model:D100S.xp)
[5] Modelling as per comment 3, but with the walkway culverts reinstated with twin 2.4 m wide by 1.2 m high box culverts at each crossing and a deck elevation above the 100-year water level (JFSA XPSWMM Model:E100S.xp)
Note: All five XPSWMM models have identical inflows which were produced with JFSA's SWMHYMO model: U100S.dat & inflows as per the DSEL/JFSA February 2014 Design Brief (ref P1053)

Table 2 - Drainage Area Characteristics to the Monahan Drain Constructed Wetlands

Sub-Area ID	Area (ha)	Inflow Location	100-yr On-Site Controls / Source of Control Information / Landuse
1	215.270	DS Side Terry Fox	Controlled by Ponds 6, 7 and 8 to 4.08 m^3/s / As per IBI / Proposed Development (3.37 m^3/s as per XPSWMM model)
TfoxNW	1.015		No on-site controls / NA / Roadway
2B-1	12.161	Cell 1 Upstream	Controlled to 74.2 L/s/ha with DUALHYD / Novatech letter, approved by Eric Tousignant / Proposed Commercial
2B-2	7.650		No on-site controls / NA / Natural Area
2C-1	46.388		Controlled to 74.2 L/s/ha with DUALHYD / Novatech letter, approved by Eric Tousignant / Existing Commercial
2C-2	1.739		No on-site controls / NA / Sanitary Sewer Pumping Station
Cel1NW	2.543		No on-site controls / NA / Natural Area
HydrNE	2.052		No on-site controls / NA / Natural Area
HydrNW	1.070		No on-site controls / NA / Natural Area
HydrSE	1.586		No on-site controls / NA / Natural Area
HydrSW	2.150		No on-site controls / NA / Natural Area
MDrain	0.670		No on-site controls / NA / Natural Area
PH3-SOHO	14.754	195 m US Cope	Major system storage accounted for, Q=2.25m^3/s / Stantec / Under Construction
Cel1NE	1.829	US Side of Cope	No on-site controls / NA / Natural Area
EaseNE	2.056		No on-site controls / NA / Natural Area
PH1-SOHO	34.606	DS Side of Cope	Major system storage accounted for, Q=5.38m^3/s / Stantec / Under Construction
CopeNE	1.202		No on-site controls / NA / Roadway
CommNE	4.271		Controlled to 411 L/s with DUALHYD / As per Tim Newton City of Ottawa / Existing Commercial
CommSE	4.789		Controlled to 70 L/s/ha with DUALHYD / As per Stantec / Existing Commercial
PH2-SOHO	6.279	115 m us Fernbank	Major system storage accounted for, Q=1.08m^3/s / As per Stantec / Under Construction
Cel1S1	1.600	US Side of Fernbank	No on-site controls / NA / Natural Area
FernSE	0.278		No on-site controls / NA / Roadway
FernSW	1.462		No on-site controls / NA / Roadway
4ABC	43.86	Cell 2	Major system storage accounted for, Q=6.13 m^3/s / As per Novatech / Proposed Development
EaglNE	1.762		No on-site controls / NA / Roadway
3	329.429	Cell 3	No on-site controls / NA / Existing Residential
4D	6.591	Wetland	300 m^3 of major system storage / as per Novatech / Existing Residential
4E	16.186		No on-site controls / NA / Wetland Block
5	77.867		No on-site controls / NA / Existing Residential
6	53.991		No on-site controls / NA / Proposed Residential
7	7.423		No on-site controls / NA / Existing Residential

Note: IBI, Stantec and Novatech provided hydrographs to JFSA, which we included in our SWMHYMO model.
The above-mentioned modelling was performed using the 100-yr 24-hr Type II SCS storm.

Table 3 - 100-yr Peak Water Levels along the Ditch from Cell 1 to the Hazeldean Sanitary Pumping Station Overflow

Water Level Location ID on Figure 3	Description of Location	JLR 1993	Novatech 2006	Novatech 2007	JFSA 2014[1]	JFSA 2014 improved walkway[2]	JFSA 2014 improved hydro corridor[3]	JFSA 2014 widened ditch[4]
WL 6*	+/- 960 m US of Fernbank Road (Cell 1 us / ditch outlet)	94.90	94.56	94.40	94.79	94.686	94.806	94.781
WL 7	Ditch US of Hydro Culvert	N/A	N/A	N/A	95.874	95.87	95.437	94.986
WL 8	Ditch Us of Michael Cowpland Dr (Overflow)	N/A	N/A	N/A	95.955	95.953	95.533	95.072

[1] JFSA 2014 modelling includes Cells 1 and 2 as they are currently constructed but has Cell 3 and the Wetland reconstructed as proposed in our July 2013 Report Compilation of Modelling for the Monahan Drain Wetland Reconstruction. Includes Ponds 6, 7 and 8 & the ditch to the Hazeldean Pump Station (JFSA XPSWMM Model: Z100S.xp)
[2] Modelling as per "JFSA 2014" but with the walkway culverts reinstated with twin 2.4 m wide by 1.2 m high box culverts at each crossing and a deck elevation above the 100-year water level and improved inlets to 0.2 loss coefficients at Cope Dr and Fernbank Road (JFSA XPSWMM Model:Y100S.xp)
[3] Modelling as per comment 2 above and with the hydro corridor culverts reinstated with twin 2.4 m wide by 1.2 m high box culverts (JFSA XPSWMM Model:X100S.xp)
[4] Modelling as per comment 3 above and the ditch bottomed widened by 4 m to a total of 5 m wide (JFSA XPSWMM Model:V100S.xp)
Note: All XPSWMM models have identical inflows which were produced with JFSA's SWMHYMO model: W100S.dat & inflows from the DSEL/JFSA February 2014 Design Brief (ref P1053).
*A different set of XPSWMM models are used to describe the pump station ditch, so that the floodplain storage along the ditch (which is not a SWM facility) is not accounted for in the Cell 1 assessment. Consequently, the peak water level results for WL 6 in Table 3 are different than Table 1 for the same scenarios. This difference in water levels, typically lower in Table 3, is due to the riparian storage volume within the pump station ditch. For the JFSA 2014 column, for example, there is approximately 12,700 m^3 of storage in the ditch, which is attenuating the flows to Cell 1.

LEGEND :

- SUBCATCHMENT BOUNDARY
- MONAHAN DRAIN
- DRAINAGE DIRECTION / INFLOW LOCATION TO XPSWMM
- 5 / 77.87 ha / 22/37% — SUB-CATCHMENT ID (STANDHYD) / SUB-CATCHMENT AREA (HA) / DIRECT / TOTAL IMPERVIOUSNESS (%)
- 13 / 121.65 ha / 75.7|1.3 — SUB-CATCHMENT ID (NASHYD) / SUB-CATCHMENT AREA (HA) / CURVE NUMBER | TIME TO PEAK (H)
- WL1 WATER LEVEL LOCATION refer to Table 1
- APPROXIMATE LOCATION of WALKWAYS

SCALE :

0 125 250 375 500 m

N

J.F. Sabourin & Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
OTTAWA (613) 836-3884
GATINEAU (819) 243-6858

CLIENT : Ottawa

PROJECT :

CELL 1 MODELLING
MONAHAN DRAIN CONSTRUCTED WETLANDS

CB	Sept/14	FINAL	3
CB	Feb/13	For Review / Comments	2
CB	Dec/13	For Discussion	1
CB	Sept/13	For Discussion	0
BY	DATE	DESCRIPTION	REV

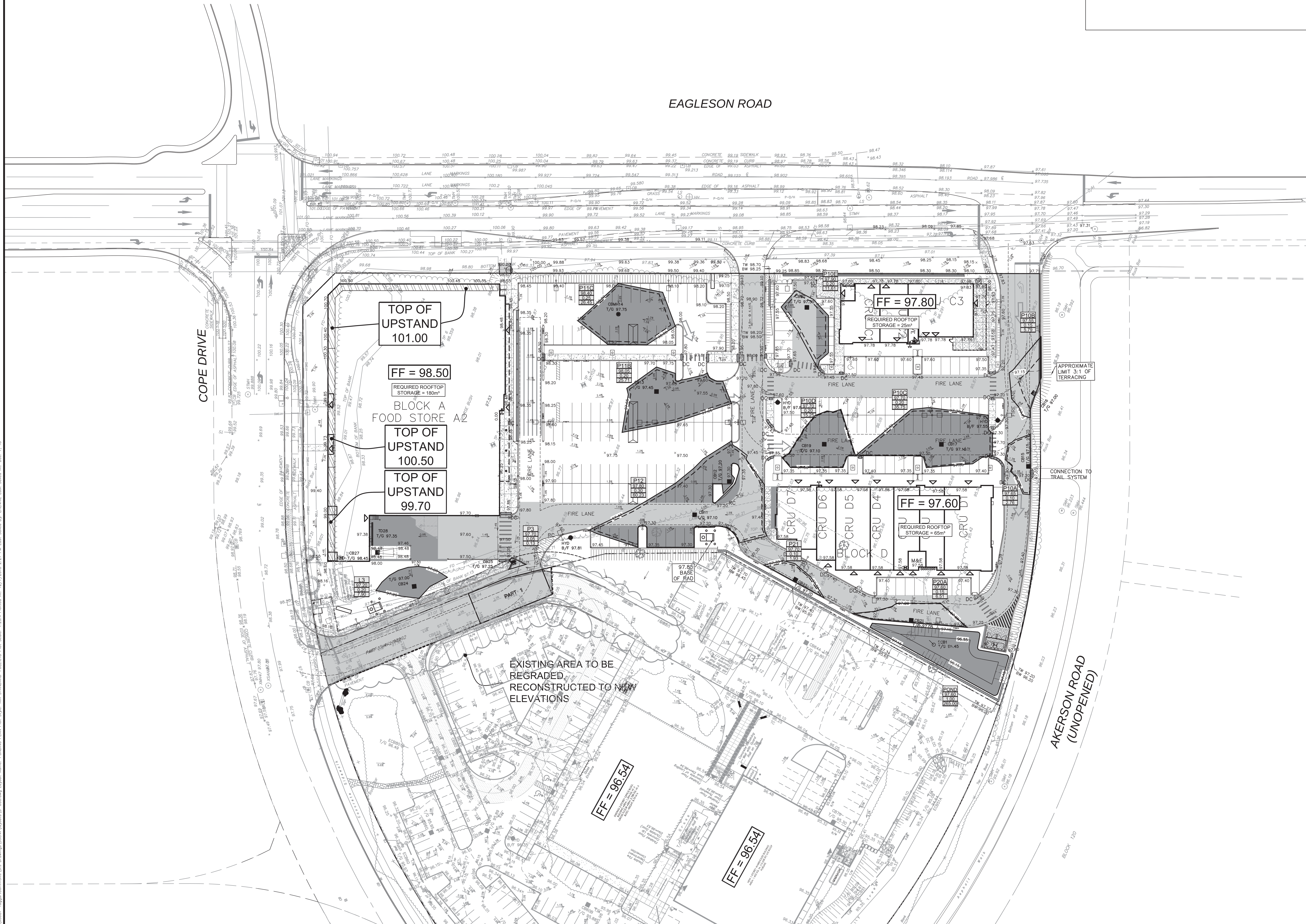
DETAILED DRAINAGE AREAS TO CELL 1 + WATER LEVELS ALONG the MDCW

FIGURE 3

DESIGNED:
DRAWN: CB
VERIFIED:
APPROVED:

DRAWING REF. 902(03)-13\Design\CAD\JFSA Figures 20140905.dwg

DATE: Sept/14
PROJECT No.: 902(03)-13



LEGEND :

- 100 YEAR PONDING LIMIT
- 5 YEAR PONDING LIMIT
- EMMERGENCY FLOW ROUTE FOR STORMWATER ABOVE THE 1:100 EVENT

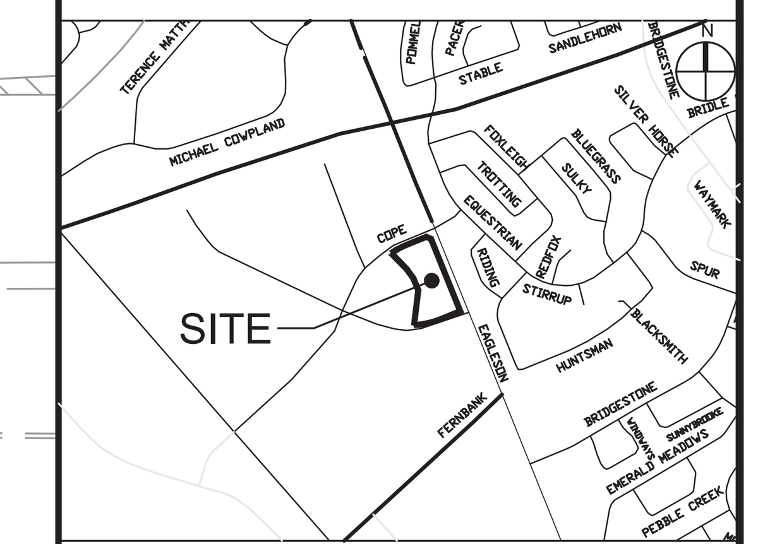
P11C	POND AREA #
98.40	POND ELEVATION (m)
0.25	POND DEPTH (m)
26.45	POND VOLUME (m^3)

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________ 2018

Plan Number ______________________



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27

TAGGART REALTY MANAGEMENT

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title
KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

N

Drawing Title
PONDING PLAN

Scale 1 : 500

Design	Date
J.E.B.	APR 2018
Drawn	**Checked**
D.D. / E.H.	T.R.B.
Project No.	**Drawing No.**
33681	C-600

CITY PLAN No. D07-12-18-0074

CITY FILE No. 17689

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

STORM SEWER DESIGN SHEET

10 Cope Drive
City of Ottawa
Taggart Realty Management

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA						
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.40	C= 0.50	C= 0.57	C= 0.65	C= 0.69	C= 0.70	C= 0.80	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE DIA (mm)	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
	P10A	CB15	CB10										0.04	0.10	0.10	10.00	0.51	10.51	76.81	104.19	122.14	178.56	7.69	10.43	12.22	17.87		7.69	27.59	25.82	200	0.65	0.851	19.90	72.14%
	P10B	CB16	MH10										0.08	0.20	0.20	10.00	0.53	10.53	76.81	104.19	122.14	178.56	15.37	20.86	24.45	35.74		15.37	27.59	27.04	200	0.65	0.851	12.21	44.27%
	R2	51	MH10-MH11										0.06	0.15	0.15	10.00	0.34	10.34	76.81	104.19	122.14	178.56	11.53	15.64	18.34	26.81		11.53	62.04	25.15	250	1.00	1.224	50.51	81.41%
	P10C, P10D, P10E	MH10	MH11										0.37	0.93	0.45	10.53	1.18	11.71	74.83	101.48	118.94	173.86	33.70	45.70	53.57	78.30		33.70	133.02	57.55	450	0.20	0.810	99.32	74.66%
	P11C, P11B	CBMH14	MH11										0.31	0.78	0.78	10.00	0.80	10.80	76.81	104.19	122.14	178.56	59.57	80.81	94.74	138.49		59.57	78.14	51.31	300	0.60	1.071	18.57	23.77%
	P11A	MH11	MH12										0.08	0.20	1.43	11.71	0.45	12.16	70.80	95.94	112.42	164.28	100.97	136.82	160.32	234.28		100.97	200.65	24.27	525	0.20	0.898	99.68	49.68%
	R3	52	MH20										0.14	0.35	0.35	10.00	0.15	10.15	76.81	104.19	122.14	178.56	26.90	36.50	42.78	62.55		26.90	62.04	10.75	250	1.00	1.224	35.14	56.63%
	P20A	MH20	MH21						0.14					0.25	0.60	10.15	0.28	10.43	76.25	103.43	121.24	177.23	46.00	62.39	73.14	106.92		46.00	63.80	14.83	300	0.40	0.874	17.81	27.91%
	P21	MH21	MH22										0.03	0.08	0.68	10.43	0.74	11.17	75.20	101.98	119.54	174.73	51.01	69.18	81.08	118.52		51.01	100.18	39.16	375	0.30	0.879	49.18	49.09%
		MH22	MH12											0.00	0.68	11.17	0.18	11.35	72.58	98.39	115.30	168.51	49.23	66.74	78.21	114.31		49.23	100.18	9.61	375	0.30	0.879	50.95	50.86%
	P12	MH12	MH2										0.21	0.53	2.63	12.16	1.24	13.41	69.39	94.00	110.14	160.93	182.48	247.21	289.65	423.23		182.48	316.18	63.77	675	0.13	0.856	133.70	42.29%
	R1	50	MH1										0.40	1.00	1.00	10.00	0.09	10.09	76.81	104.19	122.14	178.56	76.87	104.28	122.24	178.70		76.87	87.74	9.06	250	2.00	1.731	10.87	12.39%
		MH1	MH2											0.00	1.00	10.09	0.33	10.42	76.47	103.73	121.60	177.77	76.53	103.82	121.70	177.91		76.53	100.88	27.45	300	1.00	1.383	24.35	24.14%
		MH2	MH3											0.00	3.63	13.41	0.39	13.80	65.81	89.09	104.36	152.44	238.92	323.45	378.89	553.48		238.92	361.57	22.87	675	0.17	0.979	122.65	33.92%
	L3, P3	MH3	*EXMH100*			0.11							0.04	0.23	3.86	13.80	1.52	15.31	64.77	87.66	102.68	149.98	250.03	338.43	396.41	579.02		250.03	339.63	83.82	675	0.15	0.919	89.60	26.38%
	EX1	*EXMH100*	*EXMH3000A*									0.56		1.25	5.11	15.31	0.94	16.26	61.03	82.55	96.67	141.16	311.65	421.52	493.61	720.78		311.65	339.63	52.00	675	0.15	0.919	27.99	8.24%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed: JEB
Checked: TRM
Dwg. Reference: 33681-500

No.	Revision	
1.	1st City Submission	
2	2nd City Submission	2018-08-15
3	3rd City Submission	2018-12-07

File Reference: 33681.5.7.1
Date: 2018-08-15

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: Kanata South C
DATE: 4/26/2018
FILE: 33681.5.7
REV #:
DESIGNED BY: JEB
CHECKED BY: TB

STORMWATER MANAGEMENT

Formulas and Descriptions

i_{2yr} = 1:2 year Intensity = $732.951 / (T_c+6.199)^{0.810}$
i_{5yr} = 1:5 year Intensity = $998.071 / (T_c+6.053)^{0.814}$
i_{100yr} = 1:100 year Intensity = $1735.688 / (T_c+6.014)^{0.820}$
T_c = Time of Concentration (min)
C = Average Runoff Coefficient
A = Area (Ha)
Q = Flow = 2.78CiA (L/s)

Maximum Allowable Release Rate

Restricted Flowrate (based of JFSA)

RR	70.00	L/S/Ha
A_{TOTAL} =	2.10	Ha
Q_{TOTAL} =	147.00	L/s
Q_{TOTAL} =	147.00	L/s

Uncontrolled Release ($Q_{uncontrolled} = 2.78*C*i_{100yr}*A_{uncontrolled}$)

C =	0.64	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.07	Ha
$Q_{uncontrolled}$ =	22.24	L/s

Maximum Allowable Release Rate ($Q_{max\ allowable} = Q_{restricted} - Q_{uncontrolled}$)

$Q_{max\ allowable}$ =	124.76	L/s

MODIFIED RATIONAL METHOD (100-Year, 5-Year & 2-Year Ponding)

Drainage Area	***P11C***	(1 & 8 with weighted average C)	
Area (Ha)	0.140		
C =	1.00	Restricted Flow Q_r (L/s)=	6.00

100-Year Ponding

T_c Variable (min)	***i_{100yr} (mm/hour)***	***Peak Flow Q_p=2.78xCi_{100yr}A (L/s)***	***Q_r (L/s)***	***Q_p-Q_r (L/s)***	***Volume 100yr (m^3)***
52	62.14	24.19	6.00	18.19	56.74
54	60.44	23.52	6.00	17.52	56.77
55	59.62	23.21	6.00	17.21	**56.78**
56	58.83	22.90	6.00	16.90	56.78
58	57.32	22.31	6.00	16.31	56.76

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	56.78	26.45	0.00	30.33

overflows to: P11B

Drainage Area	***P11C***		
Area (Ha)	0.140		
C =	0.90	Restricted Flow Q_r (L/s)=	6.00

5-Year Ponding

T_c Variable (min)	***i_{5yr} (mm/hour)***	***Peak Flow Q_p=2.78xCi_{5yr}A (L/s)***	***Q_r (L/s)***	***Q_p-Q_r (L/s)***	***Volume 5yr (m^3)***
27	57.88	20.27	6.00	14.27	23.12
29	55.18	19.33	6.00	13.33	23.19
30	53.93	18.89	6.00	12.89	**23.20**
31	52.74	18.47	6.00	12.47	23.20
33	50.53	17.70	6.00	11.70	23.17

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	23.20	26.45	0.00	0.00

overflows to: P11B

Drainage Area	P11B				
Area (Ha)	0.170				
C =	1.00	Restricted Flow Q_r (L/s)=		14.00	
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
26	101.18	47.82	14.00	33.82	52.76
28	96.27	45.50	14.00	31.50	52.92
29	94.01	44.43	14.00	30.43	**52.95**
30	91.87	43.42	14.00	29.42	52.95
32	87.89	41.53	14.00	27.53	52.87

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
30.33	83.28	25.71	0.00	57.57

overflows to: P11A/P12

Drainage Area	P11B				
Area (Ha)	0.170				
C =	0.90	Restricted Flow Q_r (L/s)=		14.00	
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
13	90.63	38.55	14.00	24.55	19.15
15	83.56	35.54	14.00	21.54	19.39
16	80.46	34.22	14.00	20.22	**19.41**
17	77.61	33.01	14.00	19.01	19.39
19	72.53	30.85	14.00	16.85	19.21

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	19.41	25.71	0.00	0.00

overflows to: P11A/P12

Drainage Area	P11A/P12				
Area (Ha)	0.290				
C =	1.00	Restricted Flow Q_r (L/s)=		13.00	
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
50	63.95	51.56	13.00	38.56	115.68
52	62.14	50.10	13.00	37.10	115.74
53	61.28	49.40	13.00	36.40	**115.75**
54	60.44	48.72	13.00	35.72	115.75
56	58.83	47.43	13.00	34.43	115.69

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
57.57	173.32	60.23	0	113.09

overflows to: P21

Drainage Area	P11A/P12				
Area (Ha)	0.290				
C =	0.90	Restricted Flow Q_r (L/s)=		13.00	
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
26	59.35	43.06	13.00	30.06	46.89
28	56.49	40.99	13.00	27.99	47.02
29	55.18	40.04	13.00	27.04	**47.04**
30	53.93	39.13	13.00	26.13	47.03
32	51.61	37.45	13.00	24.45	46.94

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	47.04	60.23	0	0.00

overflows to: P21

Drainage Area	P10E				
Area (Ha)	0.070				
C =	1.00	Restricted Flow Q_r (L/s)=		6.00	
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
25	103.85	20.21	6.00	14.21	21.31
27	98.66	19.20	6.00	13.20	21.38
28	96.27	18.74	6.00	12.74	**21.39**
29	94.01	18.30	6.00	12.30	21.39
31	89.83	17.48	6.00	11.48	21.35

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	21.39	11.61	0	9.78

overflows to: P10D

Drainage Area	P10E				
Area (Ha)	0.070				
C =	0.90	Restricted Flow Q_r (L/s)=		6.00	
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
12	94.70	16.59	6.00	10.59	7.62
14	86.93	15.23	6.00	9.23	7.75
15	83.56	14.63	6.00	8.63	**7.77**
16	80.46	14.09	6.00	8.09	7.77
18	74.97	13.13	6.00	7.13	7.70

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	7.77	11.61	0	0.00

overflows to: P10D

Drainage Area	P10D				
Area (Ha)	0.130				
C =	1.00	Restricted Flow Q_r (L/s)=	6.00		
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
48	65.89	23.81	6.00	17.81	51.30
50	63.95	23.11	6.00	17.11	51.34
51	63.03	22.78	6.00	16.78	**51.35**
52	62.14	22.46	6.00	16.46	51.35
54	60.44	21.84	6.00	15.84	51.33

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
9.78	61.13	15.25	0	45.88

overflows to: P10C

Drainage Area	P10D				
Area (Ha)	0.130				
C =	0.90	Restricted Flow Q_r (L/s)=	6.00		
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
25	60.90	19.81	6.00	13.81	20.71
27	57.88	18.83	6.00	12.83	20.78
28	56.49	18.37	6.00	12.37	**20.79**
29	55.18	17.95	6.00	11.95	20.79
31	52.74	17.15	6.00	11.15	20.75

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	20.79	15.25	0	5.54

overflows to: P10C

Drainage Area	P10C				
Area (Ha)	0.170				
C =	1.00	Restricted Flow Q_r (L/s)=	6.00		
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
65	52.65	24.88	6.00	18.88	73.63
67	51.46	24.32	6.00	18.32	73.65
68	50.89	24.05	6.00	18.05	**73.65**
69	50.33	23.79	6.00	17.79	73.64
71	49.26	23.28	6.00	17.28	73.61

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
45.88	119.53	35.75	0	83.78

overflows to: P10A

Drainage Area	P10C				
Area (Ha)	0.170				
C =	0.90	Restricted Flow Q_r (L/s)=	6.00		
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
35	48.52	20.64	6.00	14.64	30.74
37	46.67	19.85	6.00	13.85	30.75
38	45.81	19.49	6.00	13.49	**30.75**
39	44.98	19.13	6.00	13.13	30.73
41	43.42	18.47	6.00	12.47	30.67

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
5.54	36.29	35.75	0	0.54

overflows to: P10A

Drainage Area	P21				
Area (Ha)	0.030				
C =	1.00	Restricted Flow Q_r (L/s)=	6.00		
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
10	178.56	14.89	6.00	8.89	5.34
11	169.91	14.17	6.00	8.17	5.39
12	162.13	13.52	6.00	7.52	**5.42**
13	155.11	12.94	6.00	6.94	5.41
15	142.89	11.92	6.00	5.92	5.33

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
113.09	118.51	1.93	0.00	116.58

overflows to: P20A

Drainage Area	P21				
Area (Ha)	0.030				
C =	0.90	Restricted Flow Q_r (L/s)=	6.00		
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
3	166.09	12.47	6.00	6.47	1.16
5	141.18	10.60	6.00	4.60	1.38
6	131.57	9.88	6.00	3.88	**1.40**
7	123.30	9.26	6.00	3.26	1.37
9	109.79	8.24	6.00	2.24	1.21

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	1.40	1.93	0	0.00

overflows to: P20A

Drainage Area	P20A				
Area (Ha)	0.110				
C =	1.00	Restricted Flow Q_r (L/s)=	6.00		
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
41	73.83	22.58	6.00	16.58	40.78
43	71.35	21.82	6.00	15.82	40.81
44	70.18	21.46	6.00	15.46	**40.82**
45	69.05	21.12	6.00	15.12	40.81
47	66.91	20.46	6.00	14.46	40.78

Storage (m^3)

Overflow	Required	Surface	Pond	Balance
226.74	267.55	6.51	265.00	0.00

overflows to: offsite

Drainage Area	P20A				
Area (Ha)	0.110				
C =	0.90	Restricted Flow Q_r (L/s)=	6.00		
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
21	68.13	18.75	6.00	12.75	16.07
23	64.29	17.69	6.00	11.69	16.14
24	62.54	17.21	6.00	11.21	**16.15**
25	60.90	16.76	6.00	10.76	16.14
27	57.88	15.93	6.00	9.93	16.09

Storage (m^3)

Overflow	Required	Surface	Pond	Balance
4.41	20.56	6.51	265	0.00

overflows to: offsite

Drainage Area	P10B
Area (Ha)	0.080
C =	1.00
Restricted Flow Q_r (L/s)=	6.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
30	91.87	20.43	6.00	14.43	25.98
32	87.89	19.55	6.00	13.55	26.01
33	86.03	19.13	6.00	13.13	**26.01**
34	84.27	18.74	6.00	12.74	25.99
36	80.96	18.01	6.00	12.01	25.93

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	26.01	5.79	0.00	20.22

Drainage Area	P10B
Area (Ha)	0.080
C =	0.90
Restricted Flow Q_r (L/s)=	6.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
15	83.56	16.72	6.00	10.72	9.65
17	77.61	15.53	6.00	9.53	9.72
18	74.97	15.01	6.00	9.01	**9.73**
19	72.53	14.52	6.00	8.52	9.71
21	68.13	13.64	6.00	7.64	9.62

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	9.73	5.79	0	3.94

Drainage Area	P10A
Area (Ha)	0.040
C =	1.00
Restricted Flow Q_r (L/s)=	6.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
13	155.11	17.25	6.00	11.25	8.77
15	142.89	15.89	6.00	9.89	8.90
16	137.55	15.30	6.00	9.30	**8.92**
17	132.63	14.75	6.00	8.75	8.92
19	123.87	13.77	6.00	7.77	8.86

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
103.99	112.92	2.76	0.00	110.16

overflows to: P20A

Drainage Area	P10A
Area (Ha)	0.040
C =	0.90
Restricted Flow Q_r (L/s)=	6.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
5	141.18	14.13	6.00	8.13	2.44
7	123.30	12.34	6.00	6.34	2.66
8	116.11	11.62	6.00	5.62	**2.70**
9	109.79	10.99	6.00	4.99	2.69
11	99.19	9.93	6.00	3.93	2.59

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
4.47	7.17	2.76	0	4.41

overflows to: P20A

Drainage Area	P3/L3
Area (Ha)	0.160
C =	0.53
Restricted Flow Q_r (L/s)=	33.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
3	286.05	67.43	33.00	34.43	6.20
5	242.70	57.22	33.00	24.22	7.26
6	226.01	53.28	33.00	20.28	**7.30**
7	211.67	49.90	33.00	16.90	7.10
9	188.25	44.38	33.00	11.38	6.15

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	7.30	7.90	0.00	0.00

overflows to: offsite

Drainage Area	P3/L3
Area (Ha)	0.160
C =	0.45
Restricted Flow Q_r (L/s)=	33.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
-2	319.47	63.95	33.00	30.95	-3.71
0	230.48	46.13	33.00	13.13	0.00
1	203.51	40.73	33.00	7.73	**0.46**
2	182.69	36.57	33.00	3.57	0.43
4	152.51	30.53	33.00	-2.47	-0.59

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	0.46	7.90	0	0.00

overflows to: offsite

Drainage Area	R1
Area (Ha)	0.360
C =	1.00
Restricted Flow Q_r (L/s)=	8.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
105	36.50	36.53	8.00	28.53	179.72
106	36.23	36.26	8.00	28.26	179.73
107	35.97	36.00	8.00	28.00	**179.73**
108	35.71	35.74	8.00	27.74	179.73
109	35.45	35.48	8.00	27.48	179.73

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	179.73	100.00	0.00	79.73

Drainage Area	R1
Area (Ha)	0.360
C =	0.90
Restricted Flow Q_r (L/s)=	8.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
56	34.66	31.22	8.00	23.22	78.02
57	34.21	30.82	8.00	22.82	78.03
58	33.78	30.42	8.00	22.42	**78.04**
59	33.36	30.04	8.00	22.04	78.03
60	32.94	29.67	8.00	21.67	78.02

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	78.04	100.00	0	0.00

Drainage Area	R2		
Area (Ha)	0.060		
C =	1.00	Restricted Flow Q_r (L/s)=	4.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
34	84.27	14.06	4.00	10.06	20.51
36	80.96	13.50	4.00	9.50	20.53
37	79.42	13.25	4.00	9.25	**20.53**
38	77.93	13.00	4.00	9.00	20.52
40	75.15	12.53	4.00	8.53	20.48

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	20.53	100.00	0.00	0.00

Drainage Area	R2		
Area (Ha)	0.060		
C =	0.90	Restricted Flow Q_r (L/s)=	4.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
17	77.61	11.65	4.00	7.65	7.80
19	72.53	10.89	4.00	6.89	7.85
20	70.25	10.55	4.00	6.55	**7.86**
21	68.13	10.23	4.00	6.23	7.85
23	64.29	9.65	4.00	5.65	7.80

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	7.86	100.00	0	0.00

Drainage Area	R3		
Area (Ha)	0.140		
C =	1.00	Restricted Flow Q_r (L/s)=	4.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
80	44.99	17.51	4.00	13.51	64.85
82	44.15	17.18	4.00	13.18	64.86
83	43.74	17.03	4.00	13.03	**64.86**
84	43.34	16.87	4.00	12.87	64.86
86	42.57	16.57	4.00	12.57	64.85

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	64.86	100.00	1.00	0.00

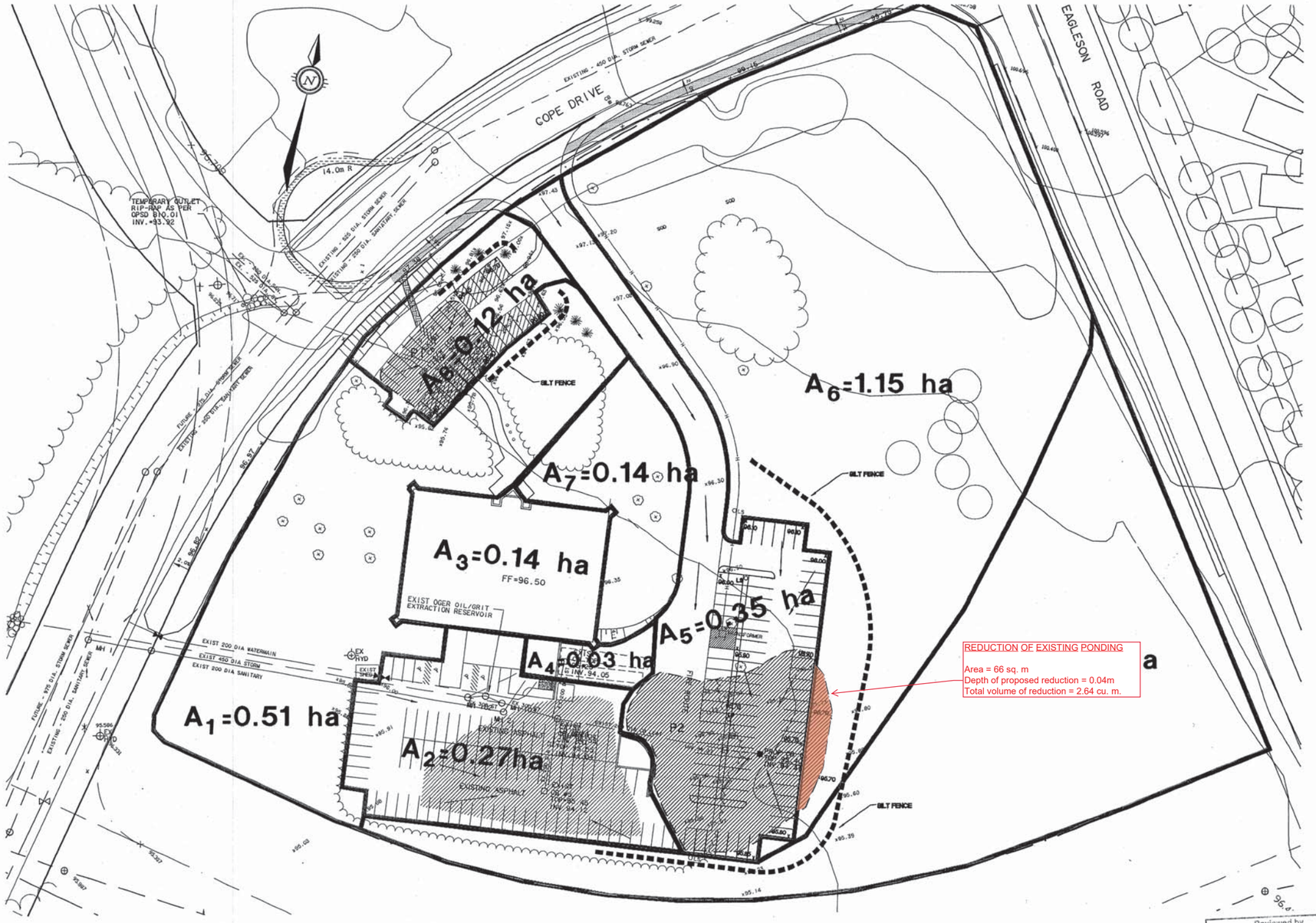
Drainage Area	R3		
Area (Ha)	0.140		
C =	0.90	Restricted Flow Q_r (L/s)=	4.00

5-Year Ponding

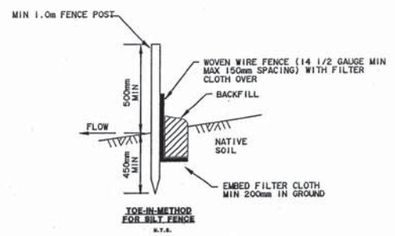
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
42	42.68	14.95	4.00	10.95	27.60
44	41.29	14.46	4.00	10.46	27.62
45	40.63	14.23	4.00	10.23	**27.62**
46	39.99	14.01	4.00	10.01	27.62
48	38.78	13.59	4.00	9.59	27.60

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	27.62	100.00	0	0.00

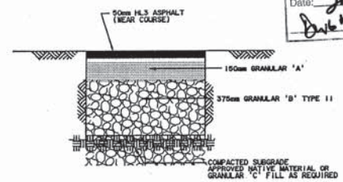


PONDS		
POND NUMBER	ELEVATION	VOLUME (cu.m.)
P1	96.35	40
P2	95.77	236



TOE-IN-METHOD FOR SILT FENCE
N.T.S.

APPROVED ☑ REFUSED ☐
Assistant Planner
print name J. Shepherd
DATE Jan 20, 2006



PARKING LOT

TYPICAL PAVEMENT STRUCTURES
N.T.S.

Reviewed by Infrastructure Approvals Division
Signed:
Date: Jan. 20, 2006
Drwg # 14050

KEY PLAN

LEGEND

- EXIST STORM MANHOLE
- EXIST SANITARY MANHOLE
- EXIST HYDRANT
- EXIST SWALE
- EXIST CATCH BASIN
- EXIST ELEVATION
- PROPOSED ELEVATION
- PROPOSED PARKING LOT EXPANSION
- PROPOSED CATCH BASIN
- PROPOSED CATCH BASIN LEAD
- EXISTING HYDRO TRENCH
- PROPOSED STORMWATER BOUNDARY
- A=0.78 ha PROPOSED AREA IN HECTARES
- PROPOSED SILT FENCE

BENCH MARK

BM 1 ELEV. = 000.00
DESCRIPTION HERE

	DESCRIPTION	DATE	BY	APP'D
3	REVISED AS PER CITY COMMENTS	26/05/06	MMR	SAD
2	GENERAL REVISIONS	10/05/06	MMR	SAD
1	REVISED PER PARKING EXPANSION	05/05/06	MMR	SAD

REVISIONS

LICENCED PROFESSIONAL ENGINEER M.A. ANSARI PROVINCE OF ONTARIO

CITY OF OTTAWA RECEIVED JUN 13 2006 DEVELOPMENT SERVICES

Trow Associates Inc.
154 Colonnade Road South, Ottawa, Ont. K2E 7J5
Tel:(613)225-9940 Fax:(613)225-7337

CLIENT
BARRY J HOBIN & ASSOCIATES ARCHITECTS INC

PROJECT
FIRST AIR OFFICE
20 COPE DRIVE

TITLE
STORMWATER MANAGEMENT

design by	S.A.D.	project no.	OTCD000182974
drawn by	M.M.R.	drawing no.	SWM 1
checked by	A.A.		
date	04/01/06		
scale	1:500		

14050

CDS Average Annual Efficiency For TSS Removal & Total Annual Volume Treated

Project:	**Kanata South Center-R1**			
Location:	**Ottawa, ON**			
Date:	**11/22/2018**			
By:	**PG**	**Upstream Storage:**	300	m3
PSD:	**FINE**	**Area:**	2.100	ha
CDS Model:	**PMSU30_20_6**	**C-Value**	0.85	
CDS Design Flow:	**57 l/s**	**IDF Data:**	Ottawa, ON	

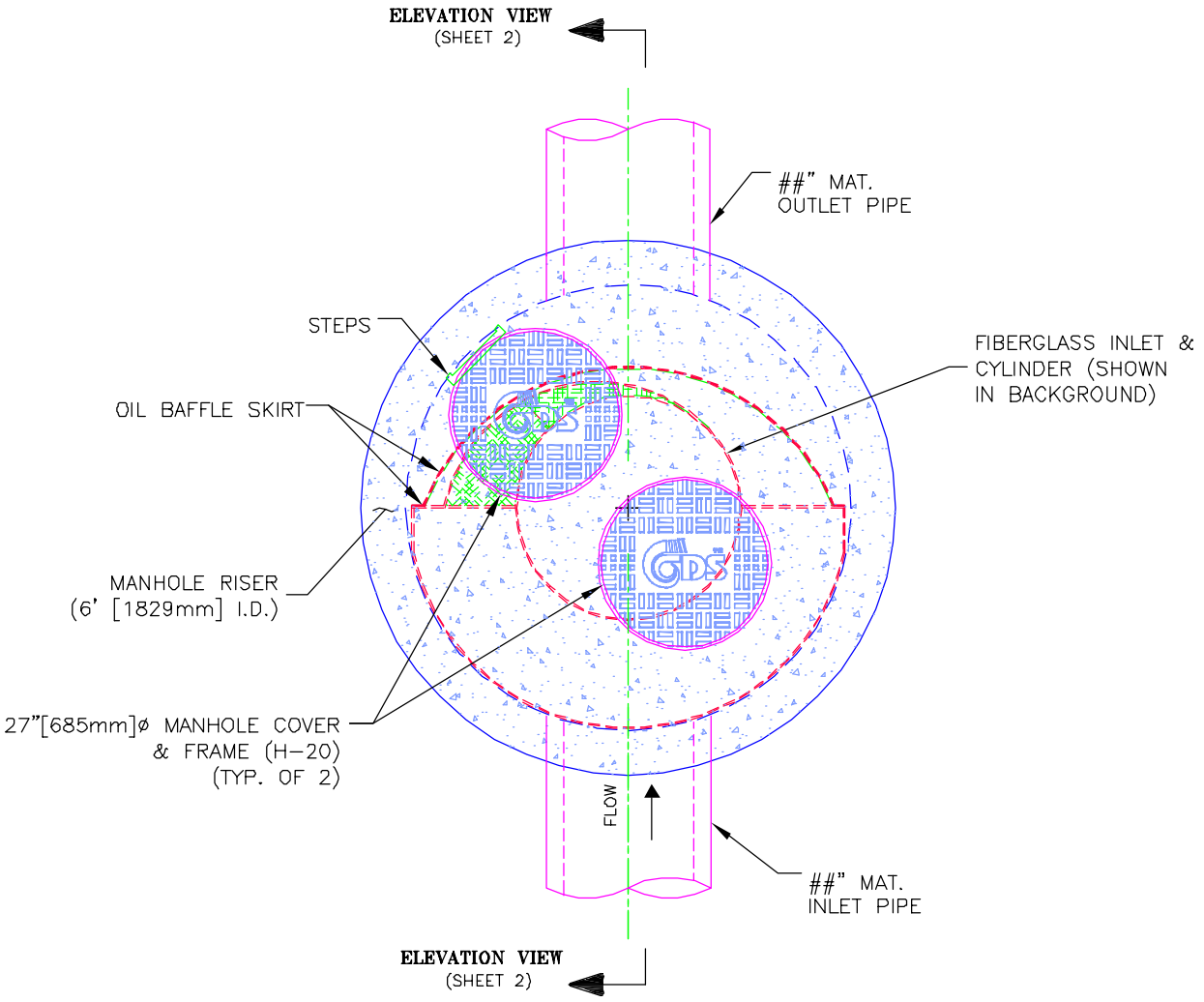
Return Period		Peak Flow	TSS Percentage Captured	Treated Flow Volume	Total Flow Volume	Annual Exceedance Probability	System Flow	CDS Flow	By-Pass Flow	Volume Percentage Treated
month / yr	Yr	l/s	%	litres	litres	%	l/s	l/s	l/s	%
1-M	0.08	16.89	93.09	26677	26677	**100.00**	16.89	16.89	0.00	100.00
2-M	0.17	26.94	89.59	43298	43298	**99.75**	26.94	26.94	0.00	100.00
3-M	0.25	29.57	88.67	47772	47772	**98.17**	29.57	29.57	0.00	100.00
4-M	0.33	39.86	85.02	65892	65892	**95.04**	39.86	39.86	0.00	100.00
5-M	0.42	43.73	83.63	73057	73057	**90.91**	43.73	43.73	0.00	100.00
6-M	0.50	47.60	82.24	80222	80222	**86.47**	47.60	47.60	0.00	100.00
7-M	0.58	50.44	81.20	85750	85750	**82.01**	50.44	50.44	0.00	100.00
8-M	0.67	53.28	80.17	91278	91278	**77.67**	53.28	53.28	0.00	100.00
9-M	0.75	56.12	79.13	96806	96806	**73.64**	56.12	56.12	0.00	100.00
10-M	0.83	61.43	76.21	104542	107934	**69.90**	61.43	56.63	4.79	97.39
11-M	0.92	66.73	73.29	112277	119063	**66.40**	66.73	56.63	10.10	94.79
1-Yr	1	72.04	70.37	120013	130191	**63.21**	72.04	56.63	15.40	92.18
2-Yr	2	92.07	59.84	142959	179665	**39.35**	92.07	56.63	35.44	79.57
5-Yr	5	143.23	42.02	211704	369891	**18.13**	143.23	56.63	86.59	57.23
10-Yr	10	144.30	41.79	212961	374011	**9.52**	144.30	56.63	87.67	56.94
25-Yr	25	145.58	41.52	214405	378824	**3.92**	145.58	56.63	88.94	56.60
50-Yr	50	146.13	41.41	215023	380889	**1.98**	146.13	56.63	89.50	56.45
100-Yr	100	147.92	41.06	216934	387376	**1.00**	147.92	56.63	91.28	56.00

Average Annual TSS Removal Efficiency [%]: **82.6** Ave. Ann. T. Volume [%]: **95%**

ECHELON ENVIRONMENTAL

CDS TECHNOLOGIES

PLAN VIEW

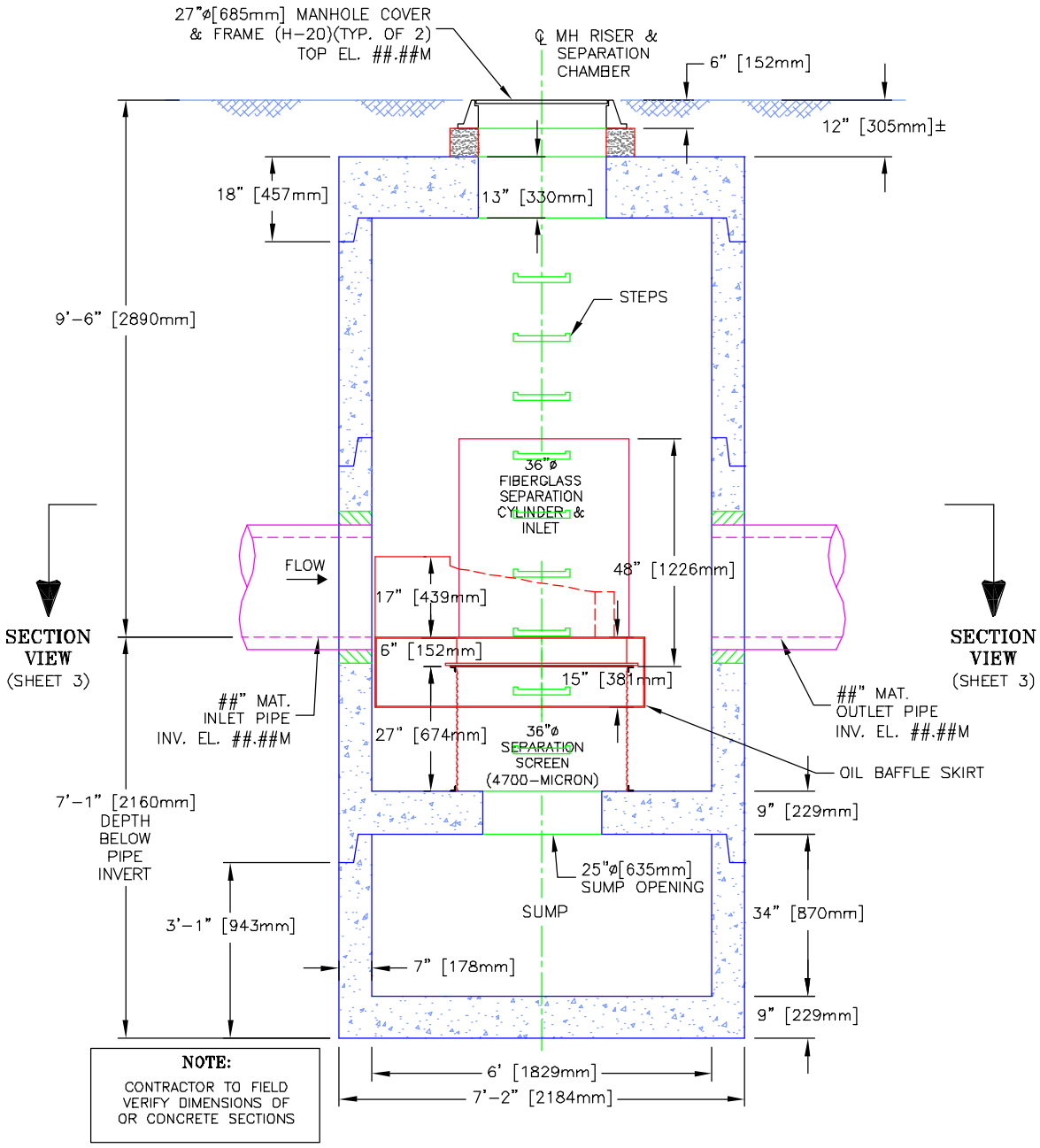


CDS MODEL PMSU30_20m, 2 CFS TREATMENT CAPACITY STORM WATER TREATMENT UNIT

CONTECH STORMWATER SOLUTIONS	PROJECT NAME CITY, STATE	JOB# CAN-##-###	SCALE 1" = 2.5'
		DATE ##/##/##	SHEET 1
		DRAWN INITIALS	
		APPROV.	

Echelon Environmental 505 Hood Road, Unit 26, Markham, Ontario L3R 5V6 Tel: (905) 948-0000 Fax: (905) 948-0577
CONTECH Stormwater Solutions Inc. 930 Woodcock Road, Suite 101, Orlando, Florida 32803 Tel: (800) 848-9955

ELEVATION VIEW



CDS MODEL PMSU30_20m, 2 CFS TREATMENT CAPACITY STORM WATER TREATMENT UNIT

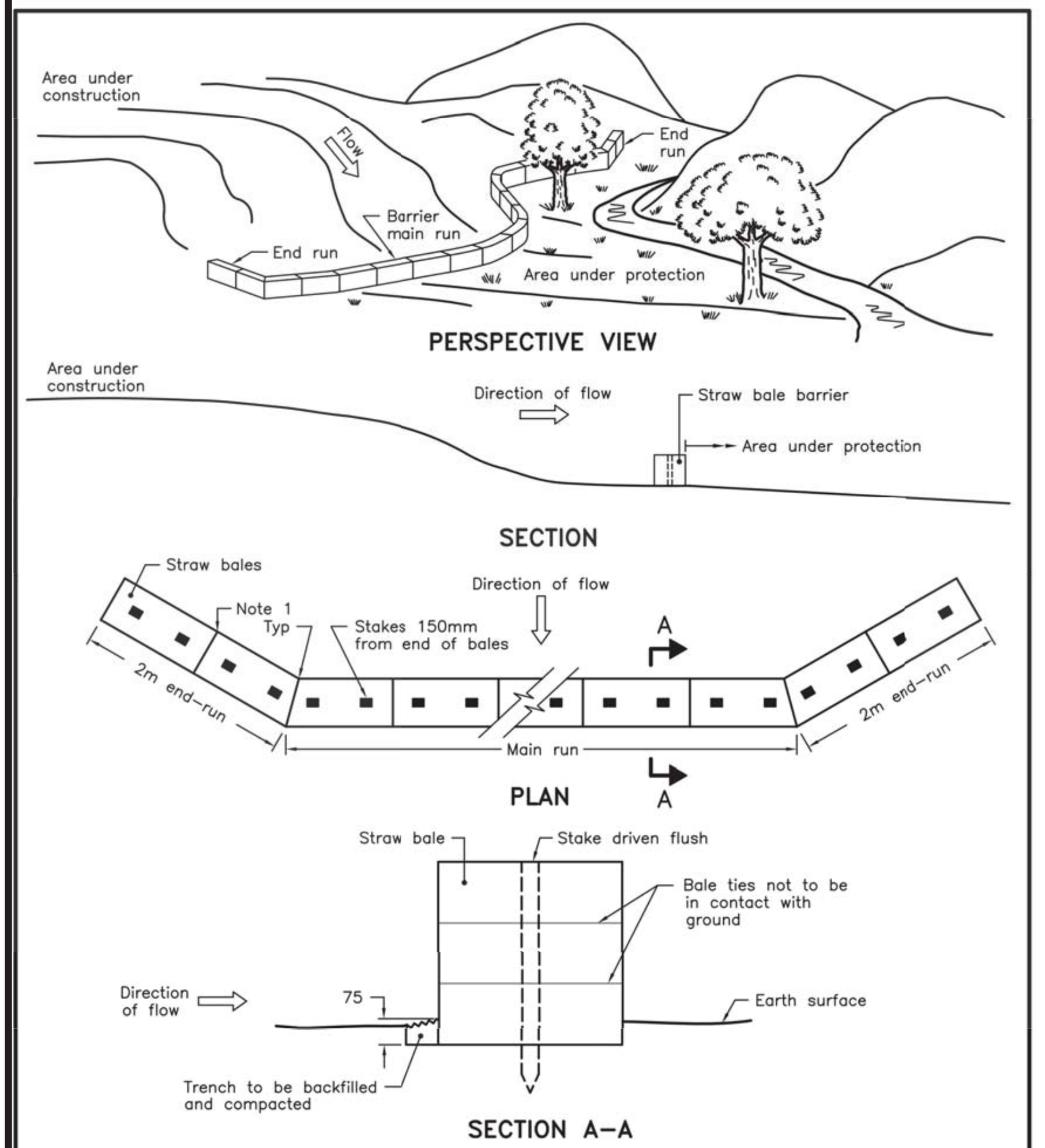
CONTECH STORMWATER SOLUTIONS	PROJECT NAME CITY, STATE	JOB# CAN-##-###	SCALE 1" = 3'
		DATE ##/##/##	SHEET 2
		DRAWN INITIALS	
		APPROV.	

Echelon Environmental 505 Hood Road, Unit 26, Markham, Ontario L3R 5V6 Tel: (905) 948-0000 Fax: (905) 948-0577
CONTECH Stormwater Solutions Inc. 930 Woodcock Road, Suite 101, Orlando, Florida 32803 Tel: (800) 848-9955

APPENDIX D

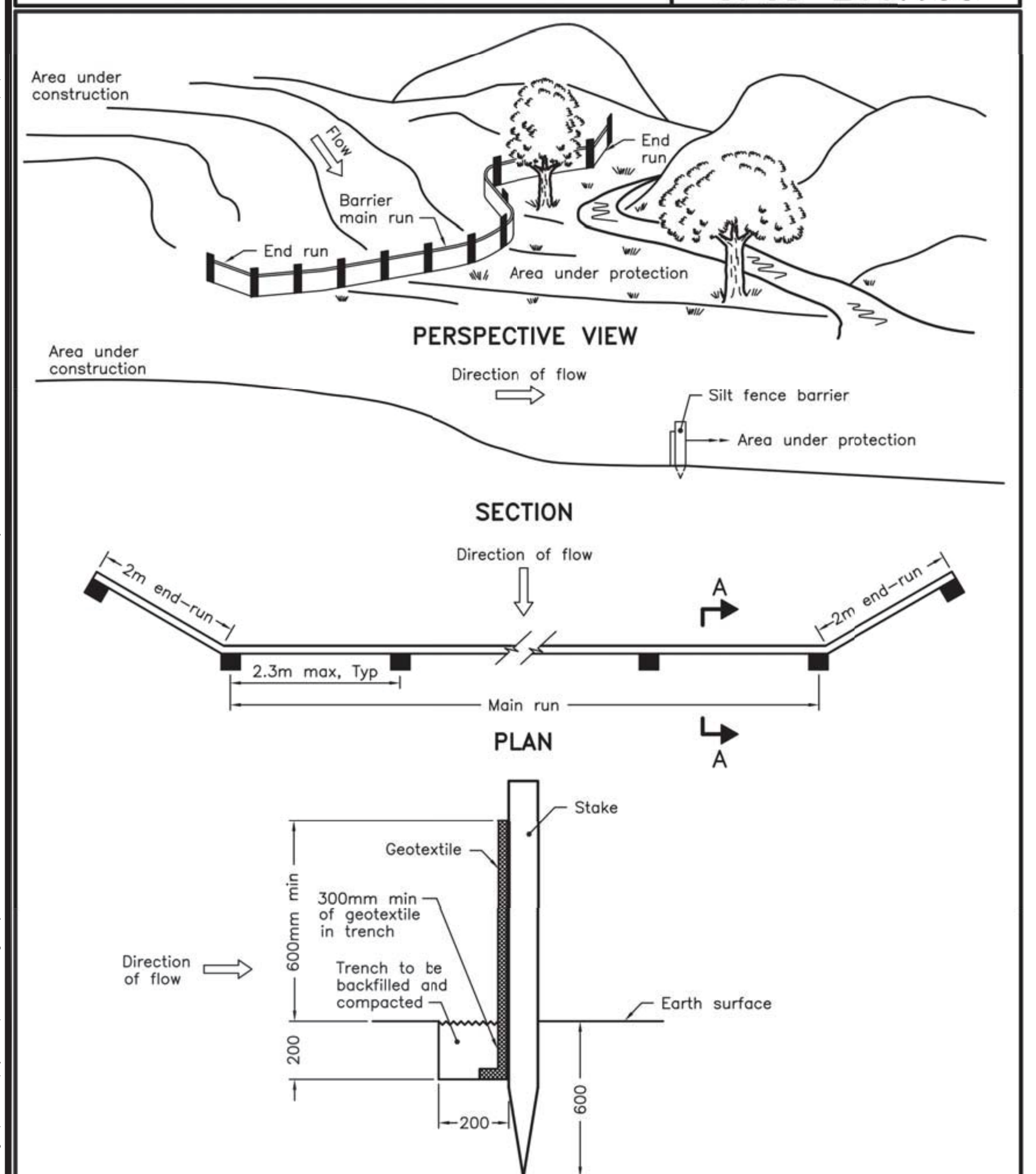
NOTES:

1. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
2. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
3. CONTRACTOR TO PROVIDE DETAILS ON LOCATION(S) AND DESIGN OF DEWATERING TRAP(S) PRIOR TO COMMENCING WORK. CONTRACTOR ALSO RESPONSIBLE FOR MAINTAINING TRAP(S) AND ADJUSTING SIZE(S) IF DEEMED REQUIRED BY THE ENGINEER DURING CONSTRUCTION.
4. 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 FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.



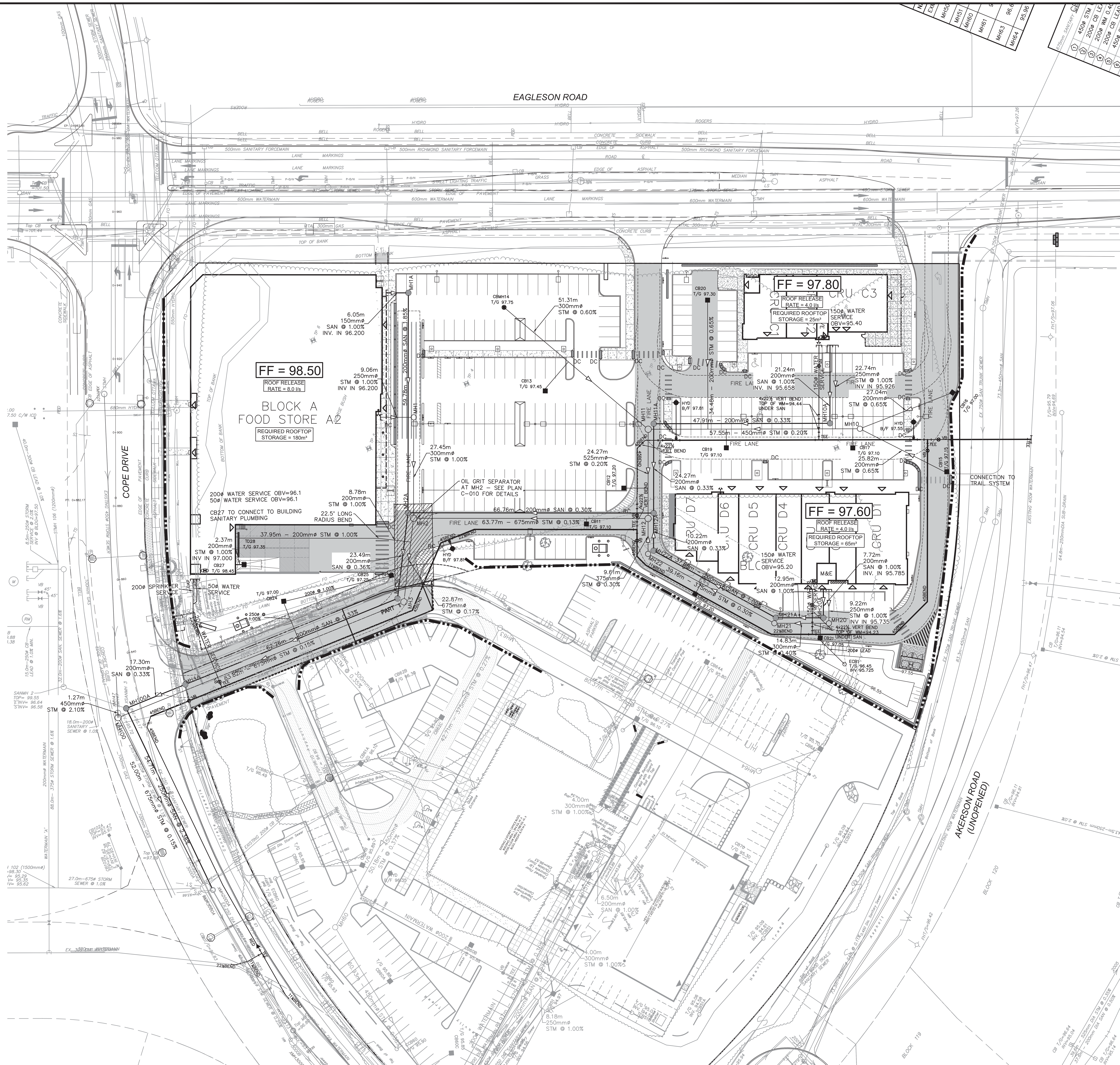
NOTES:
1 Straw bales to be butted tightly against adjoining bales to prevent sediment flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
LIGHT–DUTY STRAW BALE BARRIER		OPSD 219.100



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

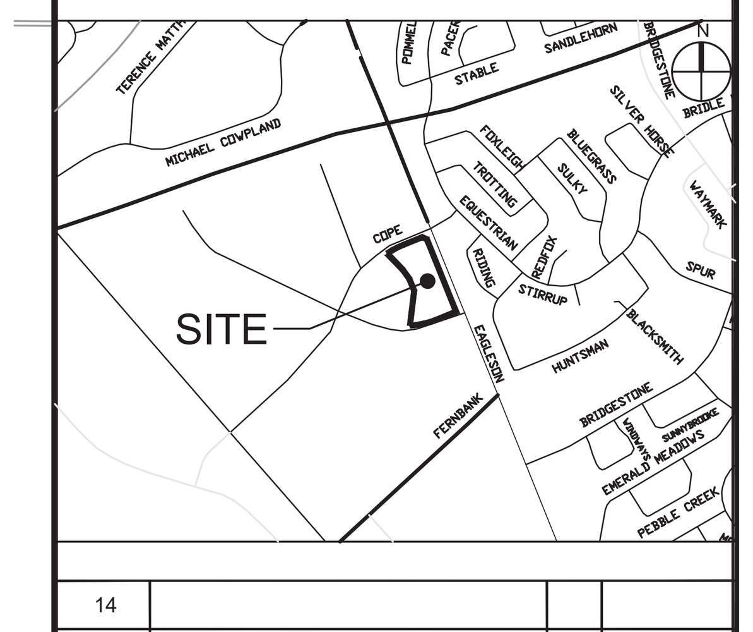
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110



REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH
Signed ____________
Date ____________ 2018
Plan Number ____________

NOTES:
1. SEE DETAIL DRAWING C–010 FOR ADDITIONAL DETAILS AND NOTES.

LEGEND :
- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SNOW FENCE
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27

TAGGART REALTY MANAGEMENT

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title
KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER T. R. BRULE 2018/12/07 PROVINCE OF ONTARIO

Drawing Title
EROSION SEDIMENT CONTROL PLAN

Scale 1 : 500

Design	Date
J.E.B.	APR 2018
Drawn	Checked
D.D. / E.H.	T.R.B.
Project No.	Drawing No.
33681	C-900

CITY PLAN No. D07-12-18-0074
CITY FILE No. 17689

APPENDIX E

James Battison

From: Paul Black <black@fotenn.com>
Sent: Thursday, July 14, 2016 2:25 PM
To: Jeff Parkes; Alex Turner; Terry Brule; James Battison; Leila Emmrys; wadavis@hobinarc.com; Mark.Baker@parsons.com; Chris Gordon
Cc: Matt McElligott
Subject: FW: 10 Cope Drive - pre-consult
Attachments: Applicant's Study and Plan Identification List.pdf; UDRP Final Recommendations_20 Cope Dr_Aug 1, 2013.pdf

All –
Please find attached the City's notes from the Pre-Application meeting for 20 Cope Drive last week.

Thanks,
Paul

PAUL BLACK, MCIP RPP
Planner
FOTENN
223 McLeod Street | Ottawa, ON | K2P 0Z8
T: 613.730.5709 ext.239 | M: 613.295.4395
fotenn.com

From: Gervais, Melanie [mailto:Melanie.Gervais@ottawa.ca]
Sent: July-08-16 10:55 AM
To: Paul Black
Subject: 10 Cope Drive - pre-consult

Hi Paul,

In response to the pre-consult meeting we had for 10 Cope Drive please find attached the list of required plans and studies.

Planning:

The property is zoned AM[1556] and is designated Enterprise Area and Arterial Mainstreet in the Official Plan.

Please ensure the zoning chart shows all the appropriate provisions of the AM zone, parking, landscaping... Please show the requirements in one column and what's proposed in another column.

Please correct the North arrow.

Please ensure that your garbage respects the applicable zoning provisions.

An appropriate connection to the Multi Use Pathway is required.

Please provide snow storage areas or add a note on the plan that snow will be removed from the site.

The Landscape Plan shall include appropriate measures to protect trees on the adjacent property. If there are any trees greater than 10cm DBH, they must be shown on the plan and if they need to be removed a permit will be required.

Design:

The Site Plan application triggers a review by the Urban Design Review Panel (UDRP). A UDRP submission package should be submitted with the Site Plan application to ensure it gets reviewed at the same time as the first Site Plan review.

Please find attached the comments from the pre-consult at the UDRP that was done back in 2013.

Although we are satisfied with the layout in terms of design, given the transportation issues we are open to site redesign. If the site is flipped to have the Metro at the corner please enhance the building to address both street frontages as much as possible. Similar to the Farm Boy in Orleans (corner of St. Joseph and Place D'Orleans).

The sign along Cope Drive should be ground oriented and incorporated into the landscaping.

Figure 20: The ground-mounted sign is incorporated into the landscaping at the entrance to the site.

Engineering:

Noise Study – a stationary noise study is needed for the grocery store and the proximity to the residential to the south.

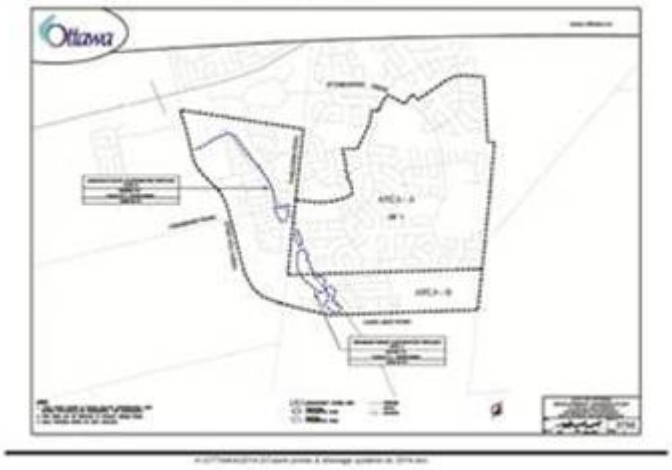
General:

- As per discussions with IBI Group the City will obtain the below requested documentation and any other relevant reports/studies in order to assist in the preparation of an engineering submission in support of a Site Plan Control development application. Please note that the below documentation has been requested from the Records Department and will be provided in a separate follow-up email.
  - *Stormwater Management Report, First Air Offices, prepared by Trow Associates Inc., Reference: MP18287A, dated May 10, 2006* and associated drawings.
  - Stormwater *Management Report, SOFPAK Center, City of Kanata, prepared by Oliver, Mangione, McCalla & Associates, Project No.: MP13095A, dated June 3, 1999* and associated drawings.

- *Cavanagh Construction – Soho West (Phase 1 and 2), Kanata South, City of Ottawa Stormwater Management Report, Stantec Consulting Ltd., October* 2007 and associated drawings **[R-1775]** and associated drawings.
- *Servicing Report, SOHO Development, prepared by Stantec Consulting Ltd., dated December 06, 2006* **[R-1832]** and associated drawings.
- *Cope Drive, Plan and Profile CH0+016.75 to CH0+300, City of Kanata, prepared by Oliver, Mangione, McCalla & Associates, Drawing No.: 84-4054-1, dated Jan 1990, Revision 4 dated 15/6/90.*
- A sample copy of a Municipal Approval circulation letter.

- The lands are subject to **Area-Specific Development Charges for Stormwater Management Facilities** as the lands are identified within Monahan Drain Area W-1B.
  http://ottawa.ca/en/area-specific-development-charges-stormwater-management-facilities
  http://ottawa.ca/en/monahan-drain

Schedule 1: Monahan Drain (Area W-1)



Monahan Drain

By-law 2014-235 effective June 12, 2014

Development charge rates effective August 1, 2015

	Area W-1			
	Single & Semi-Detached Units	Multiple Dwelling, Mobile Home & Row Dwelling	Apartment Dwelling	Non-Residential
Area A	$1,449	$1,596	$1,596	$2.50
Area B Wetlands and debt payments	$4,417 - $3,365	$2,799	$1,882	$2.50

The lands to which the By-law applies are as shown on the interactive map below and are as described in schedule A of the development charges By-law.

Schedule A
Monahan Drain (Area W-1)

Water:

- The Right-of-Way Approvals Infrastructure Services Department has advised that **No Water Frontage Charges** for Cope Drive or the unopened road allowance are applicable. Frontage charges are applicable for the 610mm dia. backbone watermain on Hazeldean Road, however a connection to the backbone watermain would not be permitted by the Water Distribution Unit, therefore fees would not be applicable.
- The site is located within the City of Ottawa 3W Pressure Zone.
- A looped private water service is recommended for the subject site.

- Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions. Please note that once this information has been provided to the City of Ottawa it takes approximately five (5) business days to receive boundary condition results for hydraulic analysis. It is suggested to request boundary conditions prior to submission of the Site Plan Control application.
    - Type of Development
    - Site Address
    - A plan clearly showing the proposed water service connection location
    - **Average Daily Demand** (L/s)
    - **Maximum Daily Demand** (L/s)
    - **Peak Hour Demand** (L/s)
    - **Fire Flow** (L/s)
        - Fire flow demand requirements shall be based on Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999 as per the *Ottawa Design Guidelines – Water Distribution*, First Edition, Document WDG001, July 2010, City of Ottawa Clause 4.2.11.
        - The full 50% reduction for sprinklering is only available for monitored systems.
        - Reductions, where applied to fire requirement demand calculation(s), need to be justified by the engineering consultant.
        - It is expected that no percentage increase or decrease for occupancy will be applied as the proposed buildings are commercial [1999 FUS, Page 22].

Sewers:

- As per discussions with IBI Group a separate meeting will be arranged to discuss the servicing and stormwater management approach subsequent to obtaining and reviewing of relevant reports/studies.
- The engineering consultant is required to provided analysis and demonstration that sufficient capacity in both the public wastewater and stormwater systems are available to accommodate proposed flows from the proposed development.
- Please note that the subject site is tributary to the Monahan Drain and is therefore subject to additional internal reviews.

Stormwater Management:

- Please note if underground stormwater storage is proposed, the engineering consultant is required to assume an average release rate equal to 50% of the determined peak allowable rate. Otherwise, disregard the underground storage as available storage or provide modeling to support the proposed design.
- The engineering consultant must ensure that the property being developed is higher than the spill elevation of the adjacent municipal right-of-way(s). This will ensure that during extreme events, the City major system will spill to the next downstream roadway segment and not back onto the property- this is especially important for this site where underground parking is being proposed on the site.
- Consultation with Conservation Authority is required to determine if any stormwater quality control is required for the site.
- Emergency overland flow route(s) are anticipated to be directed to Cope Drive.

Permits and Approvals:

- Please contact the Ministry of the Environment and Climate Change (MOECC) and the Conservation Authority to identify all the necessary permits and approvals required to facilitate the development. It is the developers and their consultants responsibility for obtaining all external agency approvals. Confirmation of correspondence will be required by the City of Ottawa prior to Site Plan Approval.
- The extension of any municipal sewers and/or watermains, within any City of Ottawa right-of-way will be subject to a Ministry of the Environment and Climate Change Environmental Compliance Approval (ECA) application Transfer of Review submission and City of Ottawa Municipal Approval circulation.

Exterior Site Lighting:

- Any exterior lighting proposed for the site is required by the City of Ottawa to be certified by a qualified engineer conforming the design complies with the following criteria:
- It must be designed using only fixtures that meet the criteria for Full-Cut-Off (Sharp cut-off) Classification, as recognized by the illuminating Engineering Society of North America (IESNA or IES).

- It must result in minimal light spillage onto adjacent properties. As a guide, 0.5 foot-candle is normally the maximum allowable spillage.
- The location of the fixtures, fixture types (make, model, and part number) and the mounting heights must be provided.

Transportation:

The 156m is substandard and we need more justification to present to our traffic signals group who are the ones that approve the traffic signal design. Moving the signal to the southern property line would be the preferred location.

One option that you should look at is the possibility of removing the signalized intersection and replacing it with a right-in, right-out, left-in only access, since the desire to head north from the site would likely be low and any traffic that did want to could do so via Cope Drive and the signalized intersection of Cope/Eagleson. (Jeff Parks indicated that he was going to review this option.)

Parsons/Taggart are going to review the signal location/need and will provide some additional data/rational. We will review this to come to an agreement prior to Site Plan submission.

Relevant City of Ottawa Links to Preparing Studies and Plans:

Guide to preparing City of Ottawa Studies and Plans:
http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

Servicing Study Guidelines for Development Applications:
http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications

Development Servicing Study Checklist:
http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/checklist_en.pdf

To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
InformationCentre@ottawa.ca
(613) 580-2424 ext. 44455

The fee for a New – Manager Approval with Public Consultation is $20,684.31 plus an Engineering Design Review Fee between $1000 and $10,000 plus a Conservation Authority fee of $935. You can find the application form at the following link:
http://ottawa.ca/en/development-application-review-process-0/site-plan-control

All identified required plans are to be submitted on standard A1 size sheets. Other sizes will not be reviewed. All required plans & reports are to be provided on a CD in *.pdf format (at application submission).

If you have any questions do not hesitate to contact me.

Regards,

***Mélanie Gervais** MCIP, RPP*
Planner / Urbaniste
Development Review /
Examen des demandes d'aménagement

PLANNING AND GROWTH MANAGEMENT
URBANISME ET GESTION DE LA CROISSANCE

City of / Ville d'Ottawa
110, avenue Laurier Avenue West / Ouest,
4th Floor / 4ième étage
Ottawa, ON K1P 1J1

Tel. : 613-580-2424 ext. 24025
Fax / Télécopieur : 613-580-2576
E-mail / Courriel : Melanie.Gervais@ottawa.ca
Mail Code: 01-14

James Battison

From: Diamond, Emily (MECP) <Emily.Diamond@ontario.ca>
Sent: Wednesday, October 24, 2018 12:03 PM
To: James Battison
Subject: RE: 33681 - Cope Drive

Hi James,

If 80% TSS removal is achieved, the application could then be submitted under the Transfer of Review Program. If 80% is not achieved, the application would be submitted as a direct submission. Either way, an ECA is still required.

Sorry about the confusion.

Thank you,

Emily Diamond
Environmental Officer
Ministry of the Environment, Conservation and Parks
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: Diamond, Emily (MECP)
Sent: October 22, 2018 1:55 PM
To: 'James Battison' <James.Battison@ibigroup.com>
Cc: Primeau, Charlie (MECP) <Charlie.Primeau@ontario.ca>
Subject: RE: 33681 - Cope Drive

Hi James,

This email is in follow up to our telephone conversation today regarding ECA requirements for the following:

1. An ECA is required for 10 Cope Drive as the stormwater management facility runs through the adjacent property at 20 Cope Drive. This application is to be submitted as a direct submission unless Enhanced Level Water quality control is provided (80% TSS removal).

2. An ECA is required for the relaying of storm sewer pipes on Cope Drive. This application can be submitted through the Transfer of Review program.

3. An ECA is required for 20 Cope Drive as the stormwater management facility will now be servicing industrial lands. This application is to be submitted as a direct submission.

You may use this email as a record of pre-submission consultation.

If you have any further questions, let me know.

Thank you,

Emily Diamond
Environmental Officer
Ministry of the Environment, Conservation and Parks
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: James Battison [mailto:James.Battison@ibigroup.com]
Sent: October 22, 2018 9:44 AM
To: Primeau, Charlie (MECP) <Charlie.Primeau@ontario.ca>
Subject: RE: 33681 - Cope Drive

Hi Charlie,

Are you able to review the request below?

Many thanks.

James Battison

IBI GROUP
Suite 400, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64039 fax +1 613 225 9868

-----Original Message-----
From: Primeau, Charlie (MECP) [mailto:Charlie.Primeau@ontario.ca]
Sent: Thursday, October 18, 2018 10:37 AM
To: James Battison
Subject: RE: 33681 - Cope Drive

Hi James,

I'm in training session today but back in office tomorrow. I also know that Emily has bee off sick most of this week.

I will look at your file tomorrow and get back to you

Sent with BlackBerry Work
(www.blackberry.com)

From: James Battison <James.Battison@ibigroup.com<mailto:James.Battison@ibigroup.com>>
Date: Thursday, Oct 18, 2018, 8:46 AM
To: Primeau, Charlie (MECP) <Charlie.Primeau@ontario.ca<mailto:Charlie.Primeau@ontario.ca>>
Subject: FW: 33681 - Cope Drive

Hi Charlie,

Hope all is well, I have a quick question.

I have not had much luck getting a response from Emily at your office per the email below.

She is often very helpful to work with and I understand she is very busy and often in the field; however, we are nearing City approval and need to discuss what steps will be needed regarding the MOECC approvals prior to commencing work.

Is there someone else we should be directing our inquiries too?

Many thanks.

James Battison
Please note that our phone extensions have been updated. New extensions effective June 20, 2018.

IBI Group
Suite 400, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64039 fax +1 613 225 9868

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From: James Battison
Sent: Monday, August 13, 2018 1:25 PM
To: 'Emily.Diamond@ontario.ca'
Cc: Terry Brule; Demetrius Yannoulopoulos
Subject: 33681 - Cope Drive

Hi Emily,

We have a couple sites that we are currently working through the City's Site Plan Application process. The site's, know municipally as 10 Cope Drive and 20 Cope Drive are directly adjacent to each other and vehicle access, and servicing somewhat work together. There are a few unique aspects to the proposed developments and servicing arrangements, as such we are hopeful to schedule a meeting for both sites to best utilize the resources and coordinate efforts on all parties behalf. A quick summary of the two sites follows;

10 Cope Drive

Proposed commercial retail site with 3 building pads, currently undeveloped land. This application has been submitted to the City of Ottawa and we have received our first round of comments. The current Site Servicing Plan for this site is attached.

20 Cope Drive

Proposed modification to existing site use (currently the First Air offices). Modifications include an expansion/addition of the current structure to include warehousing facilities along with a significant redesign of the parking and vehicle access areas. At this time the first City submission is anticipated this month.

Are you available to meet next week to review both files to better map out what if any MOECC ECA applications will be required upon completion of the City review process.

Thanks Emily.

James Battison
Please note that our phone extensions have been updated. New extensions effective June 20, 2018.

IBI Group
Suite 400, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64039 fax +1 613 225 9868

[LinkedIn]<https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.linkedin.com%2Fcompany%2Fibi-group_2&data=02%7C01%7CCharlie.Primeau%40ontario.ca%7Cdd359f2b23cc493b1b3808d634f77fdd%7Ccddc1229ac2a4b97b78a0e5cacb5865c%7C0%7C0%7C636754635593624405&sdata=O%2Fa23GNVmFWDbnoRgEQxw0JvC1pOe5HkAx%2BnHPDAU8E%3D&reserved=0>[Twitter]<https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Ftwitter.com%2Fibigroup&data=02%7C01%7CCharlie.Primeau%40ontario.ca%7Cdd359f2b23cc493b1b3808d634f77fdd%7Ccddc1229ac2a4b97b78a0e5cacb5865c%7C0%7C0%7C636754635593634406&sdata=fZFuhR3BzkIrq8beVkq3P83F0fDzMyyXKe8YPCak1kE%3D&reserved=0>[Instagram]<https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Finstagram.com%2Fibi_group%2F&data=02%7C01%7CCharlie.Primeau%40ontario.ca%7Cdd359f2b23cc493b1b3808d634f77fdd

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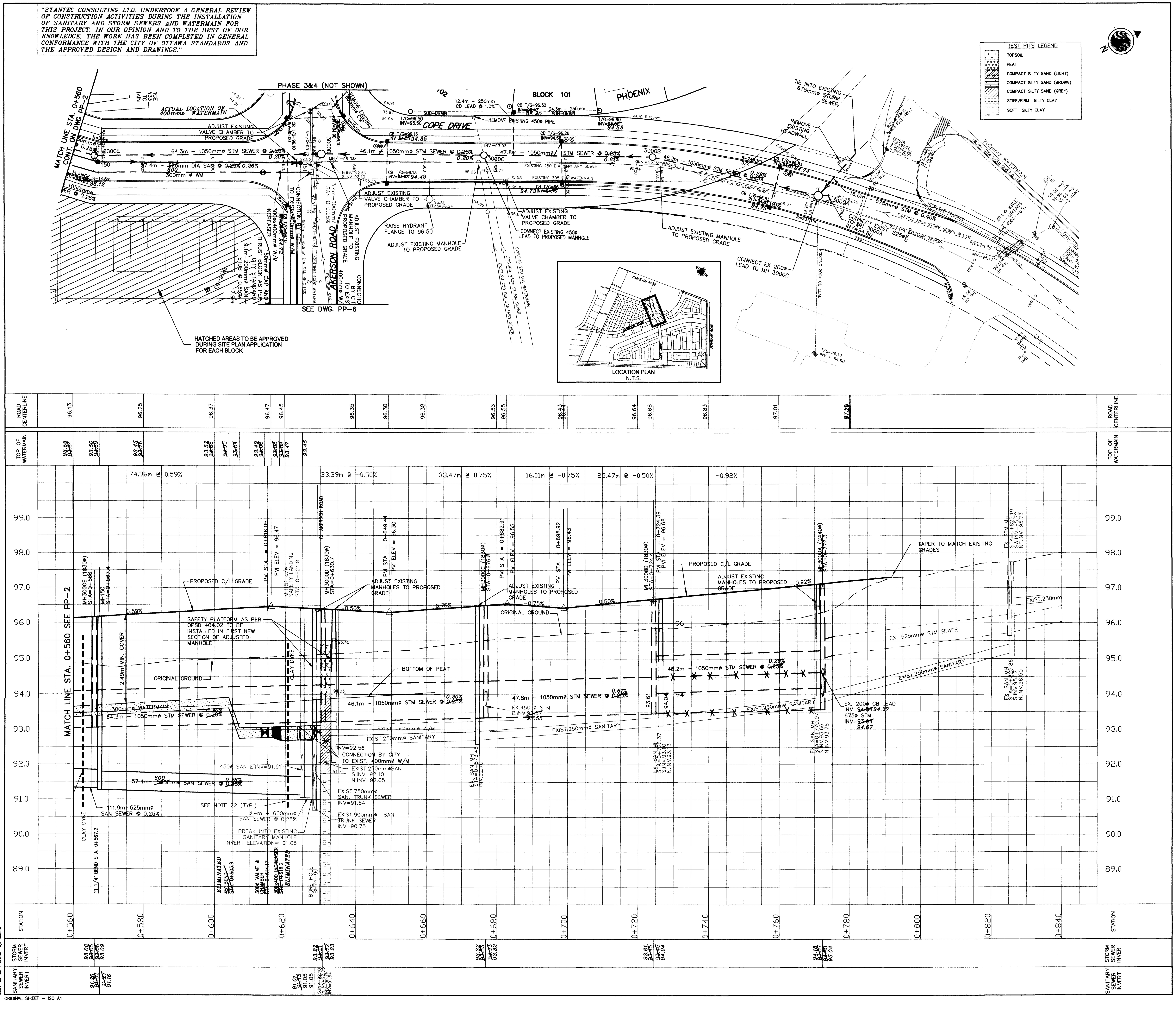
APPENDIX F



Stantec Consulting Ltd.
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Ottawa ON Canada
K1Z 7T1
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Fax. 613.722.2799
www.stantec.com

Notes

1. ALL MATERIALS AND CONSTRUCTION METHODS TO BE IN ACCORDANCE WITH OPS AND CITY OF OTTAWA STANDARD SPECIFICATIONS AND DRAWINGS AND OPSD SUPPLEMENT. ONTARIO PROVINCIAL STANDARDS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.
2. SERVICE AND UTILITY LOCATIONS ARE APPROXIMATE, CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING SERVICES AND UTILITIES PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATES FROM ALL UTILITY COMPANIES TO LOCATE EXISTING UTILITIES PRIOR TO EXCAVATION. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION AND REINSTATEMENT.
3. ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER & THE CITY. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH OPSD 509.010 AND OPSS 310.
4. STORM AND SANITARY SEWERS 375mm DIA. OR SMALLER SHALL BE PVC SDR 35. STORM AND SANITARY SEWERS LARGER THAN 375mm DIA. SHALL BE CONCRETE CSA A 257 CLASS 100 D. INSTALLED AS PER CITY OF OTTAWA S6 AND S7
5. THE CONTRACTOR SHALL CONSTRUCT WATERMAIN,WATER SERVICES,CONNECTIONS & APPURTENANCES AS PER CITY OF OTTAWA SPECIFICATIONS & SHALL CO-ORDINATE AND PAY ALL RELATED COSTS INCLUDING THE COST OF CONNECTION,INSPECTION & DISINFECTION BY CITY PERSONNEL.SERVICE CONNECTIONS SHALL BE INSTALLED A MINIMUM OF 2400mm FROM ANY CATCHBASIN, MANHOLE, OR OBJECT THAT MAY CONTRIBUTE TO FREEZING. THERMAL INSULATION SHALL BE INSTALLED ON ALL PROPOSED CB'S ON THE W/M STREET SIDE WHERE 2400mm SEPARATION CANNOT BE ACHIEVED.(AS PER CITY OF OTTAWA W22 & W23)(CATHODIC PROTECTION AS PER CITY OF OTTAWA W40 AND W42). WATERMAIN PIPE MATERIAL SHALL BE PVC CL.150 DR18. DEFLECTION OF WATERMAIN PIPE IS NOT TO EXCEED 1/2 OF THAT SPECIFIED BY THE MANUFACTURER.
6. STREET LIGHTING TO CITY OF OTTAWA STANDARDS.
7. STORM AND SANITARY MANHOLES SHALL BE 1200mm DIAMETER IN ACCORDANCE WITH OPSD-701.01 (UNLESS OTHERWISE NOTED) c/w FRAME AND COVER AS PER CITY OF OTTAWA S24 AND S25. ALL MANHOLE SIZES TO BE CONFIRMED BY SUPPLIER PRIOR TO INSTALLATION.
8. CATCH BASINS SHALL BE IN ACCORDANCE WITH CITY STANDARDS c/w FRAME AND GRATE AS PER S20 AND S21 FOR REAR YARDS AND S3 FOR STREET CB'S. PROVIDE 150mm ADJUSTED SPACERS. ALL CATCH BASINS SHALL HAVE SUMPS (600mm DEEP). CATCH BASIN LEADS SHALL BE 200mm DIA.(MIN) PVC SDR 35 AT 1.0% GR. STREET CB'S WILL BE INSTALLED WITH 'IPEX' INLET CONTROL DEVICE (ICD)
9. EXCESS EXCAVATED MATERIAL SHALL BE PLACED AT A LOCATION ON SITE AS DIRECTED BY THE OWNER.
10. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE PROTECTION FOR RECEIVING STORM SEWERS OR DRAINAGE DURING CONSTRUCTION ACTIVITIES. (ie: FILTER CLOTH ON CATCH BASINS, STRAW BALE CHECK DAMS AND SEDIMENT CONTROLS AROUND ALL DISTURBED AREAS). DEWATERING SHALL BE PUMPED INTO SEDIMENT TRAPS. (SEE EROSION CONTROL PLAN).
11. GRANULAR "A" SHALL BE PLACED TO A MINIMUM THICKNESS OF 300 mm AROUND ALL STRUCTURES WITHIN PAVEMENT AREA
12. SEWER TRENCH SHALL CONSIST OF A CLASS "B" BEDDING AS PER CITY OF OTTAWA STANDARDS S6 AND S7. COMPACTION SHALL BE A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
13. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
14. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH ARCHITECT AND THE CITY OF OTTAWA PRIOR TO TREE CUTTING.
15. 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 STORM AND SANITARY SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW.
16. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS & NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE CONSULTANT.
17. SUB-EXCAVATE SOFT AREAS & FILL WITH GRANULAR 'B' COMPACTED IN 0.15m LAYERS.
18. FOR ALL LANDSCAPING FEATURES (Ie. TREES, WALKWAYS, PARK DETAILS, NOISE BARRIERS, FENCES etc.) REFER TO LANDSCAPE ARCHITECT PLAN
19. CONCRETE CURBS SHALL BE CONSTRUCTED AS PER CITY STANDARD SC1.1 & SC1.3
20. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
21. PRESSURE REDUCING VALVES ARE REQUIRED ON ALL UNITS AS PER THE ONTARIO BUILDING CODE.
22. THE CLAY SEALS TO BE INSTALLED AS PER CITY STANDARD DRAWING NO. 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, SUBBEDDING AND COVER MATERIAL. THE BARRIERS SHOULD CONSIST OF RELATIVELY DRY AND COMPACTABLE BROWN SILTY CLAY PLACED IN MAXIMUM 225mm THICK LOOSE LAYERS COMPACTED TO A MINIMUM OF 95% OF THE MATERIAL'S SPMDD. THE CLAY SEALS SHOULD BE PLACED AT THE SITE BOUNDARIES AND AT STRATEGIC LOCATIONS AT NO MORE THAN 50m INTERVALS IN THE SERVICE TRENCHES.
23. REFER TO GEOTECHNICAL REPORT PREPARDED BY HOULE CHEVRIER ENGINEERING DATED SEPT 21, 2006 FOR ALL TEST PIT AND BORE HOLE INFORMATION.
24. GEOTECHNICAL ENGINEER TO CONFIRM AND DIRECT ON SITE PLACEMENT AND COMPACTION OF BLAST ROCK WITHIN THE R.O.W. AND THE UNDER SIDE OF FOUNDATIONS.

8	*AS RECORDED*	*DT*	*JJ*	*09.06.16*
7	REVISED DRIVEWAY & SIDEWALK LOCATIONS, ISSUED FOR FINAL APPROVAL	KJK	JBL	09.02.25
6	REVISED FINISHED ROAD GRADES ON COPE, TEMPLEFORD AND NORTHGRAVES (s)	KJK	JBL	08.11.12
5	REVISED LOT GRADING AND SERVICING	KJK	JBL	08.11.03
4a	REVISED ROAD PROFILE -COPE DRIVE	KJK	JBL	08.04.10
4	ISSUED FOR CONSTRUCTION	KJK	JBL	08.01.21
3	REVISED AS PER CITY COMMENTS AND FINAL APPROVAL	KJK	JBL	07.10.29
2	REVISED AS PER CITY COMMENTS	KJK	JBL	07.08.17
1.	ISSUED FOR CITY COMMENTS	KJK	JBL	07.07.12
Revision		By	Appd.	YY.MM.DD

File Name: 160400502C–Cope Drive	NI	JBL	KJK	07.03.26
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Seal

RECORD DRAWING
DATE *JUN.16/09*

Client/Project
CAVANAGH CONSTRUCTION LTD.

SOHO - KANATA SOUTH

Ottawa ON Canada

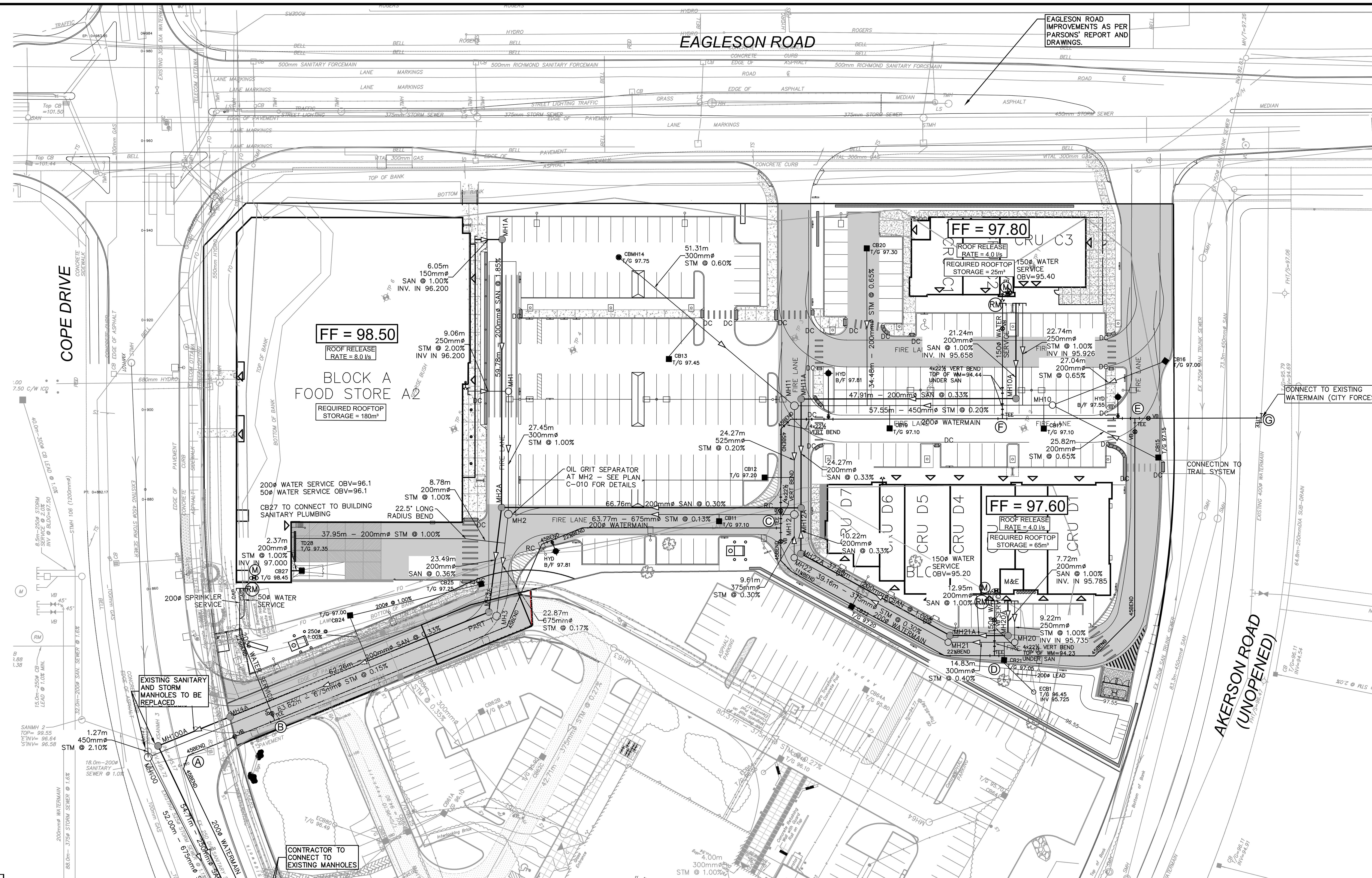
Title
COPE DRIVE
STA. 0+560 TO STA. 0+840

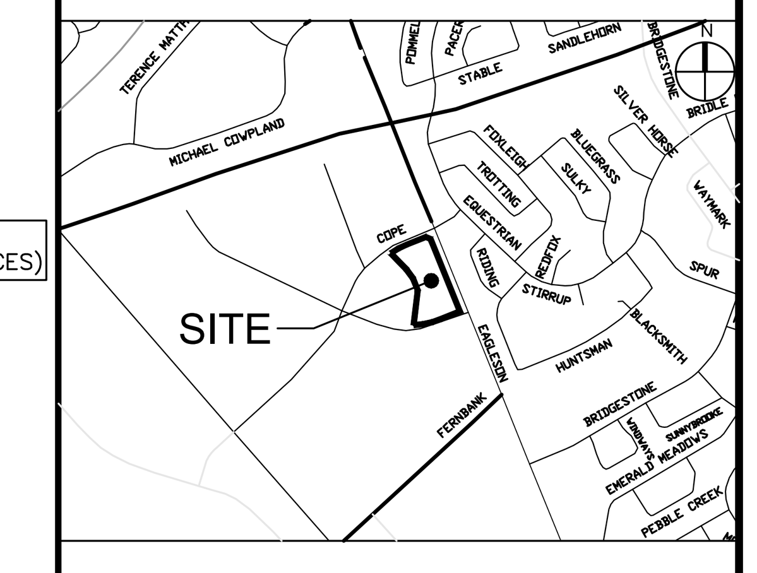
Project No. 160400502C
Scale 1:500H 1:50V

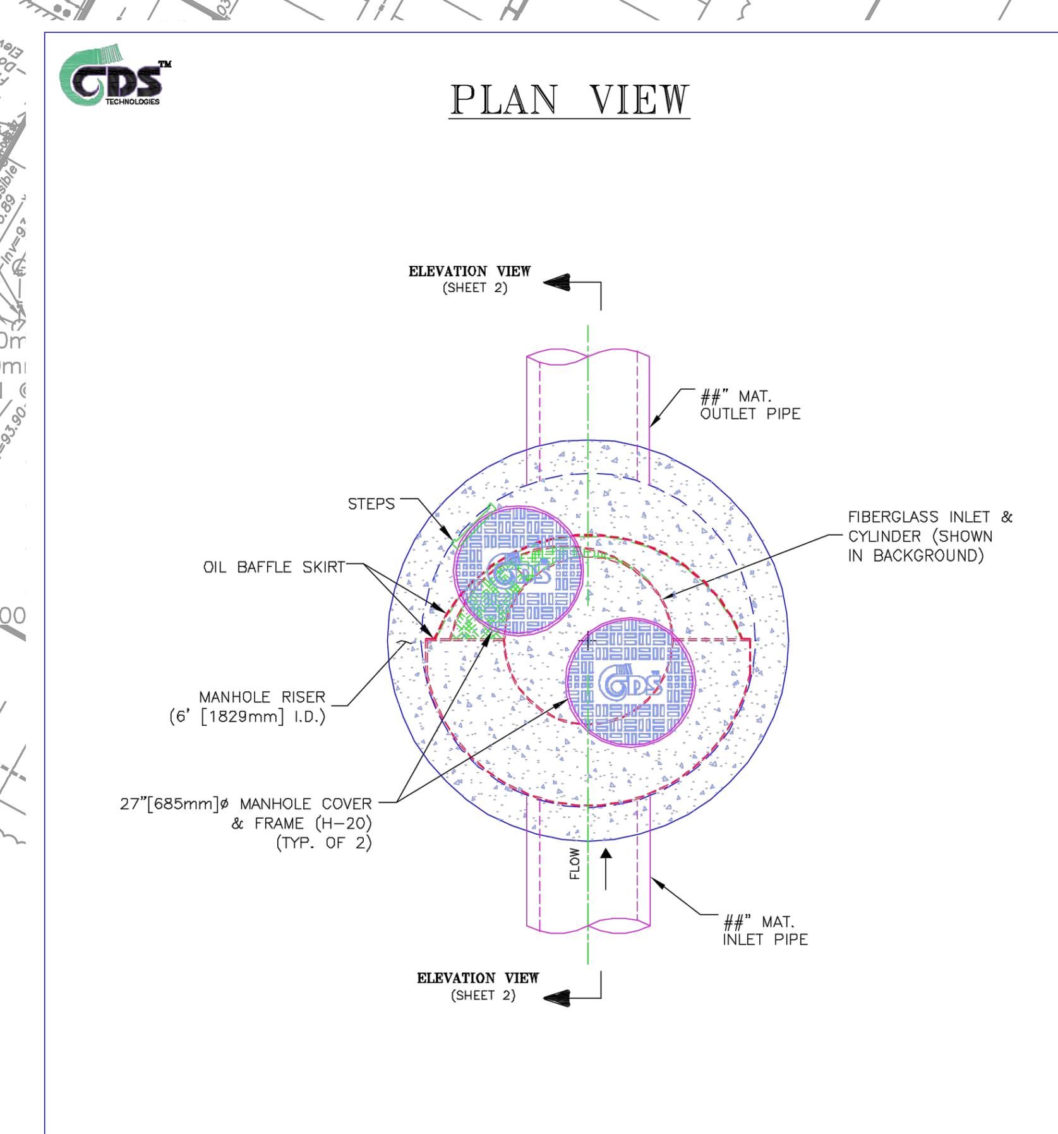
Drawing No. PP-3
Sheet 9 of 58
Revision 8

14791

APPENDIX G

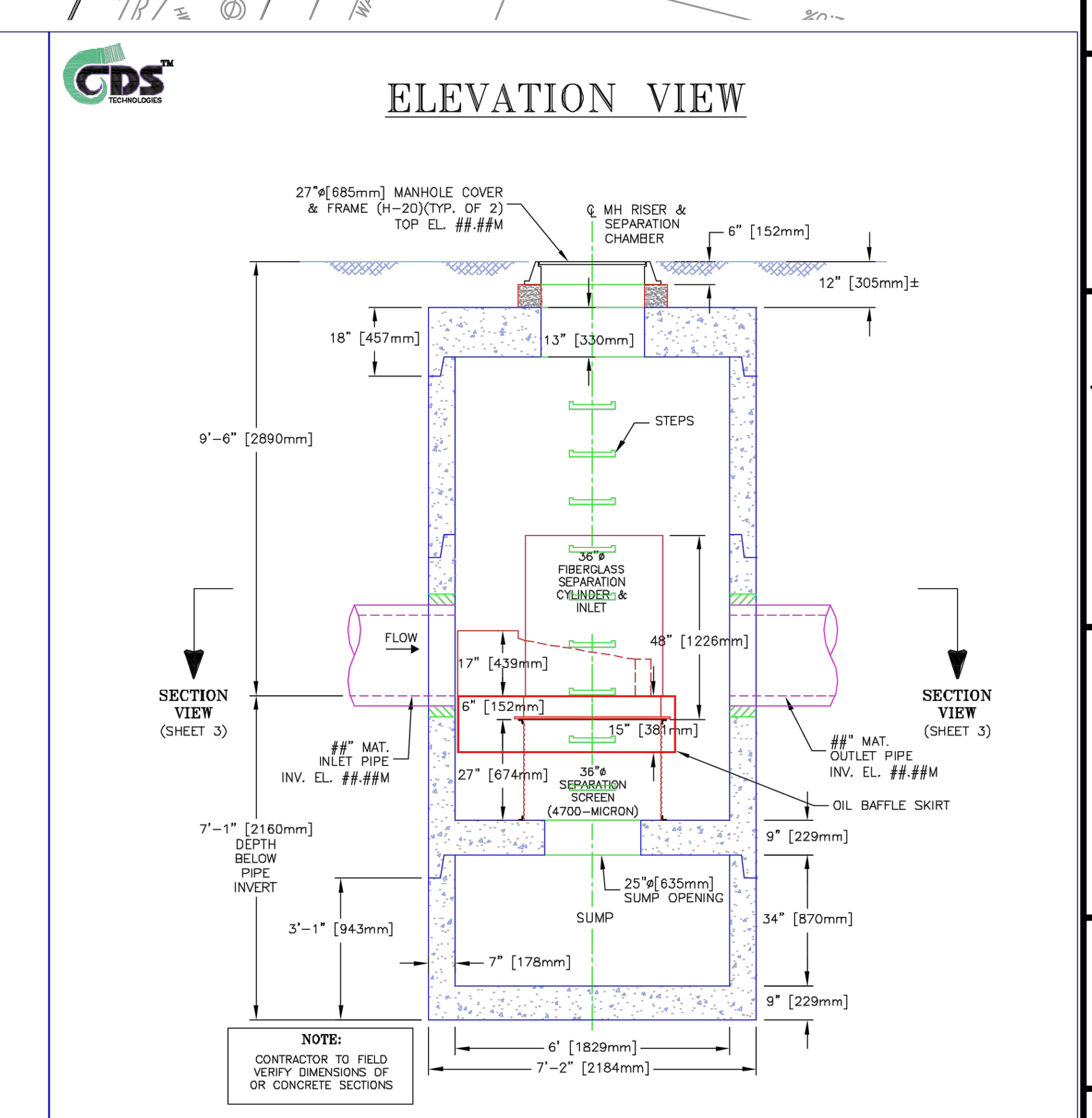






CDS MODEL PMSU30_20m, 2 CFS TREATMENT CAPACITY STORM WATER TREATMENT UNIT

PROJECT NAME
CITY, STATE



CDS MODEL PMSU30_20m, 2 CFS TREATMENT CAPACITY STORM WATER TREATMENT UNIT

PROJECT NAME
CITY, STATE

WATERMAIN SCHEDULE

STATION		DESCRIPTION	FINISHED GRADE	TOP OF WATERMAIN	AS-BUILT WATERMAIN
A	0+000.0	200ø 45°BEND	97.84	95.44	
	0+020.8	V&B	97.70	95.30	
B	0+020.8	200ø TEE CONNECT TO BUILDING	97.44	95.04	
	0+076.7	200ø 45°BEND	97.73	95.33	
	0+096.6	200ø 45°BEND	98.01	95.61	
	0+098.9	HYDRANT TEE	98.00	95.60	
	0+106.4	200ø 22½°BEND	97.93	95.53	
C	0+150.6	200ø x 200ø TEE	97.71	95.31	
C	0+000.0	200ø x 200ø TEE	97.71	95.31	
	0+003.0	V&B	97.77	95.37	
	0+007.3	200ø 45°BEND	97.79	95.39	
	0+010.7	200ø 11¼°BEND	97.76	95.36	
	0+049.7	200ø 22½°BEND	97.57	95.17	
D	0+060.8	200ø X 150ø TEE CONNECT TO BUILDING	97.50	95.10	
	0+083.1	200ø 45°BEND	97.67	95.27	
	0+095.7	200ø 45°BEND	97.73	95.33	
	0+137.0	V&B	97.64	95.24	
E	0+139.8	200ø x 200ø TEE	97.67	95.27	
C	0+000.0	200ø x 200ø TEE	97.71	95.31	
	0+002.0	200ø VERT 45°BEND	97.76	95.36	
	0+003.8	V&B	97.71	95.31	
	0+003.2	200ø VERT 45°BEND	97.71	94.08	
	0+006.6	200ø VERT 45°BEND	97.72	94.08	
	0+007.8	200ø VERT 45°BEND	97.73	95.33	
	0+022.1	200ø 45°BEND	97.83	95.43	
	0+023.1	200ø VERT 45°BEND	97.85	95.45	
	0+024.3	200ø VERT 45°BEND	97.84	94.23	
	0+025.2	200ø 45°BEND	97.84	95.44	
	0+028.7	200ø VERT 45°BEND	97.82	94.23	
	0+029.9	200ø VERT 45°BEND	97.80	95.40	
	0+033.6	HYDRANT TEE	97.79	95.39	
F	0+072.4	200ø X 150ø TEE CONNECT TO BUILDING	97.61	95.21	
	0+033.6	HYDRANT TEE	97.70	95.30	
E	0+101.9	200ø x 200ø TEE	97.67	95.27	
	0+105.0	V&B	97.65	95.25	
G	0+130.1	400ø x 200ø TEE	xxxx	xxxx	

SANITARY STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS BUILT	INVERT OUT	INVERT OUT AS BUILT	DESCRIPTION
MH1A	98.37	N96.139		W96.016		1200ø OPSD 701.010
MH2A	97.81	E94.910 S94.390		W94.360		1200ø OPSD 701.010
MH3A	97.31	E94.277		NW94.247		1200ø OPSD 701.010
MH4A	95.55	SE94.041		NW94.041		1200ø OPSD 701.010
MH10A	97.23	E95.446		N94.946		1200ø OPSD 701.010
MH11A	97.45	S94.787		W94.727		1200ø OPSD 701.010
MH12A	97.37	E94.647 W94.647		N94.587		1200ø OPSD 701.010
MH20A	97.21	E95.708		N95.250		1200ø OPSD 701.010
MH21A	97.27	S95.120		N95.090		1200ø OPSD 701.010
MH22A	97.40	S94.711		E94.681		1200ø OPSD 701.010
MH100A	97.81	SE93.984		SW93.924 SW95.170		1200ø OPSD 701.010

STORM STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS BUILT	INVERT OUT	INVERT OUT AS BUILT	DESCRIPTION
CBMH14	97.75			S95.703		OPSD 705.010
MH1	98.25	N96.019		W95.969		1200ø OPSD 701.010
MH2	97.71	E95.695 S94.887		W94.857		OGS
MH3	97.32	E94.819		NW94.819		1500ø OPSD 701.011
MH10	97.19	S95.610 SE95.610		N95.360		1200ø OPSD 701.010
MH11	97.45	S95.245 N95.395		W95.170		1500ø OPSD 701.011
MH12	97.36	E95.122 W95.272		N94.972		1500ø OPSD 701.011
MH20	97.17	E95.642		N95.582		1200ø OPSD 701.010
MH21	97.23	S95.523		N95.448		1200ø OPSD 701.010
MH22	97.39	S95.331		E95.301		1200ø OPSD 701.010
MH100	97.75	SE94.693		SW94.633		1500ø OPSD 701.011

J:\33681-TaggartCommSite\5.9 Drawings\59civil\layouts\C-001.dwg Layout Name: C-001 - GENERAL PLAN Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:25.4 Plotted At: 12/7/2018 3:37 PM Last Saved By: EHENRIE Last Saved At: Dec. 7,

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________ 2018

Plan Number ______________________

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27

TAGGART
REALTY MANAGEMENT

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title
KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

N

Drawing Title
GENERAL PLAN OF SERVICES

Scale
1 : 500

Design	Date
J.E.B.	APR 2018
Drawn	**Checked**
D.D. / E.H.	T.R.B.
Project No.	**Drawing No.**
33681	C-001

CITY PLAN No. D07-12-18-0074

CITY FILE No. 17689

UTILITY LEGEND

- TRANSFORMER
- TRANSFORMER C/W CONCRETE WINGS
- HYDRO SWITCHGEAR
- HYDRO MANHOLE
- BELL PEDESTAL
- BELL GRADE LEVEL BOX (l=600mm, w=1200mm, d=750mm) C/W 1.5 x 3.0m easement
- BELL FIBER CABINET (l=1200mm, w=750mm, d=500mm)
- BELL CENTRAL SPLITTING POINTS (l=1175mm, w=1200mm, d=500mm)
- ROGERS PEDESTAL
- ROGERS VAULT (l=1000mm, w=1000mm, d=1200mm) C/W 1m x 2m easement
- STREET LIGHT
- STREET LIGHT DISCONNECT
- STREET LIGHT GROUNDING
- H/B/T/G/S — JOINT UTILITY TRENCH
- H — HYDRO CABLE AND DUCTS
- B — BELL CABLE
- BB — BELL DUCTS
- T — ROGERS CABLE
- TT — ROGERS DUCTS
- G — GAS
- S — STREET LIGHT CABLE
- UTILITY DROP LOCATIONS
- 10–DUCTS 6–H 4–T — CONCRETE ENCASED DUCT BANK C/W NUMBER OF DUCTS
- CMB — COMMUNITY MAILBOX
- PROPOSED TREE LOCATION
- ROOT MANAGEMENT BARRIER

SEDIMENT EROSION LEGEND

- HEAVY DUTY SILT FENCE
- SNOW FENCE
- STRAW BALE CHECK DAM
- STRAW BALE CHECK DAM WITH FILTER CLOTH
- ROCK CHECK DAM
- SEDIMENT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

GENERAL LEGEND

- LIMIT OF CONSTRUCTION
- PHASING LINE
- BARRIER CURB
- MOUNTABLE CURB
- DEPRESSED BARRIER CURB
- CONCRETE SIDEWALK
- TACTILE WALKING SURFACE INDICATOR, DEPRESSED CURB
- ASPHALT SIDEWALK / PATHWAY
- BUS STOP CONCRETE / ASPHALT
- FIRE LANE — FIRE ROUTE
- HEAVY DUTY ASPHALT

STANTEC GEOMATICS LTD. SURVEY LEGEND

- TREELINE
- INV — INVERT
- BPED — BELL PEDESTAL
- TS — TRAFFIC SIGN
- BMH — BELL MANHOLE
- HMH — HYDRO MANHOLE
- TMH — TRAFFIC MANHOLE
- HYD — FIRE HYDRANT
- HGUY — HYDRO GUY WIRE
- HBP — HYDRO BELL POLE
- HP — HYDRO POLE
- LS — LIGHT STANDARD
- HLS — HYDRO LIGHT STANDARD
- HH — HAND HOLE
- SN — SIGN
- BP — BELL POLE
- TCB — TRAFFIC CONTROL BOX
- TL — TRAFFIC LIGHT
- CP — CABLE PEDESTAL
- HTRAN — HYDRO TRANSFORMER
- WV — WATER VALVE
- TP — TEST PIT
- GV — GAS VALVE
- BLRD — BOLLARD
- CB — CATCH BASIN
- VC — VALVE CHAMBER
- STMH — STORM MANHOLE
- FMH — FIBER OPTIC MANHOLE
- SMH — SANITARY MANHOLE
- DRN — DRAIN
- WELL — WATER WELL

SERVICING LEGEND

- MH118A — SANITARY MANHOLE
- MH119A — SANITARY MANHOLE C/W WATER TIGHT COVER
- 200mmø SAN — SANITARY SEWER
- MH109 / MH118 — STORM MANHOLE
- 825mmø STM — STORM SEWER - LESS THAN 900Ø
- 900mmø STM — STORM SEWER - 900Ø AND GREATER
- 200ø WATERMAIN — WATERMAIN
- CB100 T/G 104.10 — STREET CATCHBASIN C/W TOP OF GRATE
- CICB101 G/G 104.25 — CURB INLET CATCHBASIN C/W GUTTER GRADE
- DCB100 T/G 104.10 — DOUBLE CATCHBASIN C/W TOP OF GRATE
- DICB101 G/G 104.25 — DITCH INLET CATCHBASIN C/W GUTTER GRADE
- CBMH100 T/G 103.59 — CATCHBASIN MANHOLE C/W TOP OF GRATE
- CBMH101 T/G 103.59 — DITCH INLET MANHOLE C/W TOP OF GRATE
- CB100 T/G 104.10 — ICD LOCATION
- RYCB T/G 104.35 — REAR YARD CATCHBASIN IN ROAD CONNECTING STRUCTURE C/W SOLID GRATE
- TCB T/G 104.35 — REAR YARD "TEE" CATCHBASIN C/W TOP OF GRATE (300Ø)
- ECB T/G 104.50 — REAR YARD "END" CATCHBASIN C/W TOP OF GRATE (300Ø)
- LCCB T/G 104.35 — REAR YARD "CUSTOM ANGLED" CATCHBASIN C/W TOP OF GRATE (450Ø)
- RCB T/G 104.35 — REAR YARD "THREE WAY" CATCHBASIN C/W TOP OF GRATE (450Ø)
- PERFORATED REAR YARD SUBDRAIN
- 300mmø CSP — CSP CULVERT
- V&VB — VALVE AND VALVE BOX
- V&VC — VALVE AND VALVE CHAMBER
- HYD 104.35 — FIRE HYDRANT C/W BOTTOM OF FLANGE ELEVATION
- 200ø WM RED 150ø WM — WATERMAIN REDUCER
- 2 VBENDS — VERTICAL BEND LOCATION
- SINGLE SERVICE LOCATION
- DOUBLE SERVICE LOCATION
- BH 12 102.00 — INFERRED BEDROCK (SEE GEOTECHNICAL REPORT)
- HGL 101.79 — 100 YEAR STORM HYDRAULIC GRADE LINE AT MANHOLE
- S/T HGL 101.79 — STRESS TEST STORM HYDRAULIC GRADE LINE AT MANHOLE
- 108 102.40 — UNDERSIDE OF FOOTING ELEVATION (WITH LOT #)
- CLAY SEAL IN SEWER / WATERMAIN TRENCH

GRADING LEGEND

- PROPOSED SWALE C/W FLOW DIRECTION
- 1.2% — PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
- 1.5% — SLOPE C/W FLOW DIRECTION
- OVERLAND FLOW ROUTE
- 104.62 — PROPOSED SPOT GRADE
- 104.40 — PROPOSED SWALE GRADE
- 104.50 — PROPOSED SWALE HIGH POINT GRADE
- 104.60 103.59 — LOT CORNER GRADE C/W EXISTING GRADE
- 86.45 EX — TIE INTO EXISTING GRADE
- 96.79 — FULL STATIC PONDING GRADE
- RETAINING WALL
- 105.30 — TOP OF RETAINING WALL GRADE
- TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
- 103.50 — PROPOSED BOTTOM OF RETAINING WALL GRADE
- PRV — PRESSURE REDUCING VALVE
- F.FL. 96.32 / T.FND. 95.96 / U.S.F. 95.36 / RISERS 0 / M.U.S.F. — FINISHED FLOOR ELEVATION; TOP OF FOUNDATION ELEVATION; UNDERSIDE OF FOOTING ELEVATION; TOTAL NUMBER OF RISERS; MINIMUM UNDERSIDE OF FOOTING
- WU — WALKUP UNIT
- WO — WALKOUT UNIT
- NS — NON-STANDARD FOUNDATION (Frost cover not provided for standard unit)
- BS — BACKSPLIT UNIT (1.5m frost cover on footings)
- NOISE FENCE LOCATION
- NOISE FENCE GATE

ROADWAY STRUCTURE:

CAR PARKING AREA (500mm)

- 50mm - SUPERPAVE 12.5 ASPHALTIC CONCRETE
- 150mm - OPSS GRANULAR "A" CRUSHED STONE
- 300mm - OPSS GRANULAR "B" TYPE II

ACCESS LANES (690mm)

- 40mm - SUPERPAVE 12.5 ASPHALTIC CONCRETE
- 50mm - SUPERPAVE 19.0 ASPHALTIC CONCRETE
- 150mm - OPSS GRANULAR "A" CRUSHED STONE
- 450mm - OPSS GRANULAR "B" TYPE II

PER PATERSON REPORT #P6 2823-1

DRAWING NOTES

1.0 GENERAL

1.1 CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

1.2 DO NOT SCALE DRAWINGS.

1.3 CONTRACTOR TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE ARCHITECT OR DESIGN ENGINEER AS APPLICABLE.

1.4 USE ONLY THE LATEST REVISED DRAWINGS OR THOSE THAT ARE MARKED "ISSUED FOR CONSTRUCTION".

1.5 ALL CONSTRUCTION SHALL COMPLY WITH CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

1.6 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS.

1.7 FOR LEGAL SURVEY INFORMATION REFER TO REGISTERED PLAN.

1.8 REFER TO SITE PLAN (DRAWING NO A0.1) BY HOBIN ARCHITECTURE INC.

1.09 CONTRACTOR TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES AS IDENTIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.). DURING ALL PHASES OF THE SITE PREPARATION AND CONSTRUCTION THE MEASURES ARE TO BE MAINTAINED TO THE SATISFACTION OF THE ENGINEER AND CITY OF OTTAWA IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL. SHOULD ANY ADDITIONAL MEASURES BE REQUIRED TO ADDRESS FIELD CONDITIONS THEY SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR THE CITY OF OTTAWA. SUCH ADDITIONAL MEASURES MAY INCLUDE BUT NOT BE LIMITED TO INSTALLATION OF FILTER CLOTHS ACROSS MANHOLE AND CATCHBASIN LIDS TO PREVENT SEDIMENT FROM ENTERING THE STRUCTURE AND INSTALLATION AND MAINTENANCE OF A LIGHT DUTY SILT FENCE BARRIER AS REQUIRED.

1.10 ALL IRON WORK ELEVATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR ADJUSTMENTS AS DETERMINED BY THE ENGINEER.

1.11 ALL CONCRETE CURBS AND SIDEWALKS TO CONFORM TO O.P.S. AND CONSTRUCTED TO CITY STANDARDS. ALL ONSITE CURBS TO BE BARRIER TYPE, WITH DEPRESSIONS AS NOTED.

1.12 ALL CONCRETE SHALL BE "NORMAL PORTLAND CEMENT" IN ACCORDANCE WITH O.P.S.S. 1350 AND SHALL ACHIEVE A MINIMUM STRENGTH OF 30MPa AT 28 DAYS.

1.13 ALL CONSTRUCTION TRAFFIC TO ACCESS SITE FROM COPE DRIVE.

1.14 FOR GEOTECHNICAL REPORT REFER TO PATERSON GROUP REPORT PG 2823-1.

1.15 CONTRACTOR TO PROTECT EXISTING INFRASTRUCTURE AND PROPERTY SUCH AS TREES, PARKING METERS, SIDEWALKS, CURBS, ASPHALT, AND STREET SIGNS FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR TO PAY THE COST TO REINSTATE OR REPLACE ANY DAMAGED INFRASTRUCTURE OR PROPERTY TO THE SATISFACTION OF THE CITY.

1.16 THE POSITION OF POLE LINES, CONDUITS, WATERMAIN, SEWERS, AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE 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 THE CONTRACTOR SHALL INFORM ITSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, SHALL PROTECT ALL UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

1.17 CONTRACTOR TO SUPPLY SUITABLE FILL MATERIAL WHERE REQUIRED TO ROUGH GRADE THE SITE. ALL IMPORTED FILL MATERIAL TO BE CERTIFIED AS ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.

1.18 CONTRACTOR TO HAUL EXCESS MATERIAL OFFSITE AS NECESSARY TO GRADE SITE TO MEET THE PROPOSED GRADES. ALL EXCESS MATERIAL TO BE HAULED OFFSITE AND DISPOSED OF AT AN APPROVED DUMP SITE. SHOULD THE CONTRACTOR DISCOVER ANY HAZARDOUS MATERIAL, CONTRACTOR IS TO NOTIFY ENGINEER. ENGINEER TO DETERMINE APPROPRIATE DISPOSAL METHOD/LOCATION.

1.19 FILL MATERIAL WITHIN THE PARKING LOT AND BUILDING PAD AREAS, AND SUPPORTING BUILDING FOUNDATIONS SHALL BE COMPACTED TO 98% STANDARD MODIFIED PROCTOR DENSITY AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

1.20 ALL COMPACTION METHODS TO BE PERFORMED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER TO INCLUDE BUT NOT BE LIMITED TO THE THICKNESS OF LIFTS, AND COMPACTION EQUIPMENT USED.

1.21 ALL DISTURBED BOULEVARDS TO BE REINSTATED WITH SOD ON 100mm TOPSOIL.

1.22 UTILITY DUCTS TO BE INSTALLED PRIOR TO ROAD BASE CONSTRUCTION.

1.23 CLAY DIKES TO BE INSTALLED WHERE INDICATED ON THE DRAWINGS OR AS APPROVED AND DIRECTED BY THE GEOTECHNICAL ENGINEER ALL IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

1.24 SNOW TO BE REMOVED OFF SITE.

2.0 SANITARY

2.1 ALL SANITARY SEWER MAINS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OSPD 1005.01. SANITARY SEWER MATERIALS TO BE:
250mmØ AND SMALLER - PVC DR 35

2.2 ALL SANITARY MAINTENANCE HOLES TO BE 1.2m DIAMETER AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, RUNGS, FRAME AND COVER, DROP PIPES AND LANDINGS WHERE NEEDED.

2.3 SANITARY MANHOLE COVERS TO BE CITY OF OTTAWA STD. S25 (MOD. OPSD. 401.020). SANITARY MANHOLE COVER TO BE CLOSED COVER TYPE, AS PER CITY STANDARD S24.

2.4 SANITARY SEWER LEAKAGE TEST AND CCTV INSPECTION SHALL BE COMPLETED AS PER CITY SPECIFICATIONS PRIOR TO INSTALLATION OF BASE COURSE ASPHALT.

2.5 ANY SANITARY SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

2.6 CONNECTION TO THE EXISTING SANITARY SEWER TO BE INCLUDED IN THE COST FOR SANITARY SEWER INSTALLATION. THIS INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARDS.

3.0 STORM

3.1 ALL STORM SEWERS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ALL STORM SEWERS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. ONLY FACTORY FITTINGS TO BE USED. STORM SEWER MATERIALS TO BE : 375mmØ AND SMALLER - PVC DR 35, 450Ø AND LARGER CL-100D, 825Ø AND LARGER CL-65D.

3.2 ALL STORM MAINTENANCE HOLES TO BE SIZED IN ACCORDANCE WITH THE PLANS AND AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, RUNGS, AND FRAME AND COVER.

3.3 STORM MH COVERS TO BE OPEN TYPE, AS PER CITY STANDARD S24, FRAMES TO BE PER CITY OF OTTAWA STD. S25. CONTRACTOR TO INSTALL FILTER FABRIC UNDER STORM MH COVER UNTIL SODDING IS COMPLETE.

3.4 STORM MAINTENANCE HOLES TO BE OPSD, SIZE AS SPECIFIED, TAPER TOP.

3.5 ALL CATCH BASINS TO BE AS PER OPSD 705.010, FRAME & FISH TYPE GRATE AS PER CITY OF OTTAWA STD. S19.1.

3.6 150mm DIAMETER SOCK-WRAPPED PERFORATED PVC SUBDRAINS TO BE INSTALLED AT THE LIMIT OF THE HEAVY DUTY ROAD STRUCTURE WHERE IT MEETS THE LIGHT DUTY ROAD STRUCTURE AND AT ALL CB'S IN HEAVY DUTY ROADS AS IDENTIFIED ON PLAN. SUBDRAINS TO DISCHARGE TO CB'S AS SHOWN.

3.7 ANY STORM SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

3.8 CONNECTION TO THE EXISTING STORM SEWER TO BE INCLUDED IN THE COST FOR STORM SEWER INSTALLATION. THIS INCLUDES REINSTATEMENT OF ROAD CUT TO CITY STANDARDS.

3.9 CONTRACTOR TO PROVIDE IPEX-TEMPEST MHF ICD'S SHOP DRAWINGS, OR EQUIVALENT, FOR ENGINEERS REVIEW PRIOR TO ORDERING ICD'S.

3.10 ALL LEADS FOR CB's CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 1% SLOPE UNLESS NOTED OTHERWISE.

4.0 WATER

4.1 ALL WATERMAINS TO BE PVC DR 18, WITH MINIMUM COVER OF 2.4m AND INSTALLED PER CITY OF OTTAWA STANDARDS. ALL WATER SERVICES ARE TO BE AS NOTED.

4.2 THRUST BLOCKS TO BE INSTALLED AT ALL BENDS, TEES, AND CAPS ALL AS PER OPSD 1103.01 AND 1103.02.

4.3 CONTRACTOR TO CONDUCT PRESSURE AND LEAKAGE TESTING OF ALL WATERMAINS AND DISINFECT AND CHLORINATE ALL WATERMAINS TO THE SATISFACTION OF M.O.E. AND THE CITY OF OTTAWA.

4.4 TRACER WIRE TO BE INSTALLED ALONG THE FULL LENGTH OF WATERMAIN AND ATTACHED TO EACH MAIN STOP AS PER CITY OF OTTAWA STANDARDS.

4.5 ALL COMPONENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE CATHODICALLY PROTECTED AS PER CITY OF OTTAWA STANDARDS.

4.6 ALL VALVES & VALVE BOXES AND CHAMBERS, HYDRANTS, AND HYDRANT VALVES AND ASSEMBLIES SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARDS.

4.7 ANY WATERMAIN WITH LESS THAN 2.4m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

4.8 CONTRACTOR IS RESPONSIBLE FOR ACQUIRING THE WATER PERMIT FROM THE CITY OF OTTAWA AND PAYMENT OF ANY FEES ASSOCIATED WITH SECURING THE WATER PERMIT. OWNER IS RESPONSIBLE FOR REIMBURSING THE CONTRACTOR FOR THE ACTUAL COST OF ACQUIRING THE WATER PERMIT.

4.9 CONNECTION TO EXISTING WATERMAIN TO BE INCLUDED IN THE COST FOR THE WATERMAIN INSTALLATION. THIS COST INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARDS.

4.10 THESE CROSSINGS WERE PROVIDED FOR THE PREVIOUS SITE PLAN APPLICATION AND ARE NO LONGER NECESSARY BASED ON THE REVISED SANITARY SEWER WATERMAIN CONFIGURATION.

5.0 PARKING LOT AND WORK IN PUBLIC RIGHTS OF WAY

5.1 CONTRACTOR TO REINSTATE ROAD CUTS PER CITY OF OTTAWA STANDARD R-10.

5.2 THE CONTRACTOR SHALL PREPARE A TRAFFIC MANAGEMENT PLAN FOR REVIEW AND APPROVAL BY THE CITY OF OTTAWA. CONTRACTOR TO MAINTAIN TRAFFIC FLOW DURING THE ENTIRE CONSTRUCTION PERIOD. MAINTENANCE OF ROAD CUTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROVISION OF FLAGMEN, DETOURS AS NECESSARY, BARRICADES AND SIGNS TO THE FULL SATISFACTION OF THE ENGINEER AND ROAD AUTHORITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

5.3 CONTRACTOR TO PREPARE SUBGRADE, INCLUDING PROOFROLLING, TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER PRIOR TO THE COMMENCEMENT OF PLACEMENT OF GRANULAR B MATERIAL.

5.4 FILL TO BE PLACED AND COMPACTED PER THE GEOTECHNICAL REPORT REQUIREMENTS.

5.5 CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR B MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOETCHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF GRANULAR B MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.6 GRANULAR A MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL ENGINEER OF GRANULAR B PLACEMENT.

5.7 CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR A MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOETCHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF GRANULAR A MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.8 ASPHALT MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL ENGINEER OF GRANULAR A PLACEMENT.

5.9 CONTRACTOR TO SUPPLY, PLACE AND COMPACT ASPHALT MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF ASPHALT MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.10 CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING LINE AND GRADE IN ACCORDANCE WITH THE PLANS, AND FOR PROVIDING THE ENGINEER WITH VERIFICATION PRIOR TO PLACEMENT.

5.11 DITCHES DISTURBED DURING CULVERT INSTALLATION AND GRADING OPERATIONS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITION AND FLOWLINE GRADES.

5.12 EXISTING EAST SIDE ROAD DITCH ALONG PALLADIUM DRIVE TO BE REALIGNED AS PER THE GRADING PLAN. ADJACENT AREAS BETWEEN ROAD SIDE DITCH AND PARKING LOT TO BE RE GRADED AS PER THE GRADING PLAN. ALL RE GRADED AREAS IN EXISTING PUBLIC RIGHTS OF WAY AND ANY OTHER DISTURBED AREAS IN EXISTING PUBLIC RIGHTS OF WAY ARE TO BE FINISHED WITH SOD ON 100mm TOPSOIL.

5.13 ALL EXCESS MATERIAL TO BE HAULED OFFSITE AND DISPOSED OF AT AN APPROVED DUMP SITE. SHOULD THE CONTRACTOR DISCOVER ANY HAZARDOUS MATERIAL, CONTRACTOR IS TO NOTIFY ENGINEER. ENGINEER TO DETERMINE APPROPRIATE DISPOSAL METHOD/LOCATION.

5.14 PAVEMENT STRUCTURE (MATERIAL TYPES AND THICKNESSES) FOR HEAVY DUTY AND LIGHT DUTY AREAS TO BE AS SPECIFIED IN THE GEOTECHNICAL REPORT AND SHOWN ON THE PLANS.

CATCH BASIN DATA TABLE

STRUCTURE ID	AREA ID	STRUCTURE	COVER	ELEVATION: TOP OF GRATE	ELEVATION: INVERT INLET	ELEVATION: INVERT OUTLET	OUTLET PIPE: DIAMETER (mm)	OUTLET PIPE: TYPE	HEAD (m)	FLOW (l/s)	ICD TYPE
CB11	P12	OPSD 705.010	S19	97.10		95.500	200	PVC DR-35	2.20	7.0	Tempest LHF
CB12	P11A	OPSD 705.010	S19	97.20		95.600	200	PVC DR-35	2.10	6.0	Tempest LHF
CB13	P11B	OPSD 705.010	S19	97.45		95.850	200	PVC DR-35	2.10	14.0	Tempest LHF
CBMH14	P11C	OPSD 701.010	S25 & S28.1 Open	97.75		95.703	300	PVC DR-35	2.55	6.0	Tempest LHF
CB15	P10A	OPSD 705.010	S19	97.15		95.778	200	PVC DR-35	1.77	6.0	Tempest LHF
CB16	P10B	OPSD 705.010	S19	97.00		95.786	200	PVC DR-35	1.66	6.0	Tempest LHF
CB17	P10C	OPSD 705.010	S19	97.10		95.500	200	PVC DR-35	2.10	6.0	Tempest LHF
CB19	P10D	OPSD 705.010	S19	97.10		95.500	200	PVC DR-35	2.10	6.0	Tempest LHF
CB20	P10E	OPSD 705.010	S19	97.30		95.700	200	PVC DR-35	2.10	6.0	Tempest LHF
CB21	P20A	OPSD 705.010	S19	97.05	95.710	95.700	200	PVC DR-35	1.80	6.0	Tempest LHF
CB22	P21	OPSD 705.010	S19	97.20		95.600	200	PVC DR-35	2.00	6.0	Tempest LHF
CB24	L3	OPSD 705.010	S19	97.00	95.761	95.660	250	PVC DR-35	1.42	33.0	Tempest HF
CB25	P3	OPSD 705.010	S19	97.25		95.650	200	PVC DR-35			
CB27	N/A	OPSD 705.010	S19	98.45		97.050	200	PVC DR-35			
TD28	UN2	Watts Dead Level DX		97.35		96.000	200	PVC DR-35			

Bold font indicates CB's with ICD's

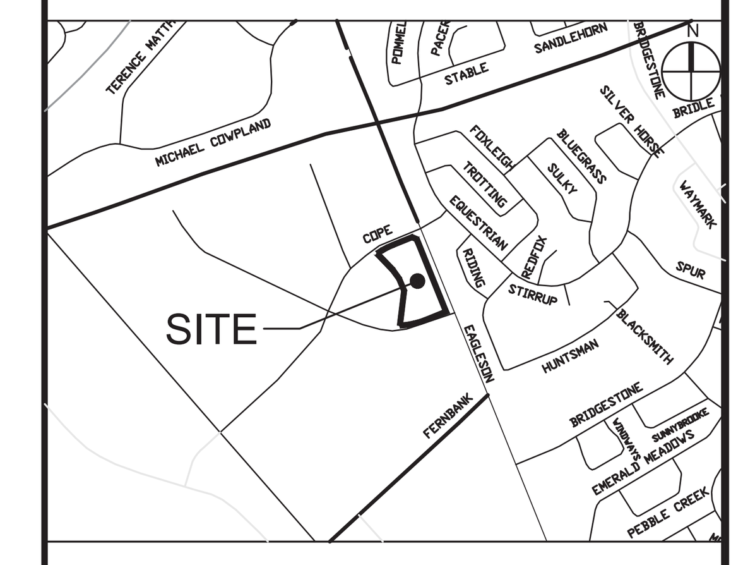
Revision: 2018-12-07

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______

Date ______ 2018

Plan Number ______



No.	REVISIONS	By	Date
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5			
4	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27

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Project Title
KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

Drawing Title
GENERAL NOTES, LEGEND AND CB DATA TABLE

Scale
N.T.S.

Design	Date
J.E.B.	APR 2018
Drawn	Checked
D.D. / E.H.	T.R.B.
Project No.	Drawing No.
33681	010

CITY PLAN No. D07-12-18-0074

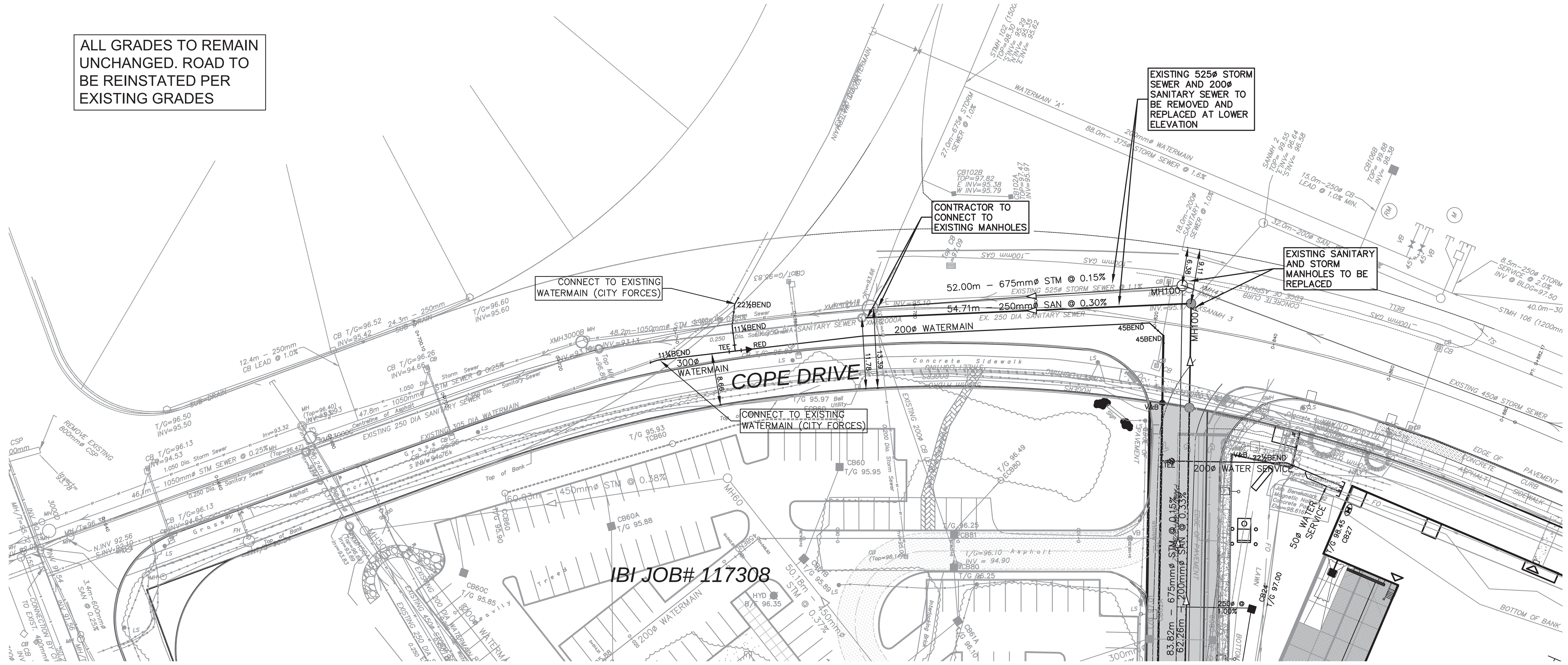
CITY FILE No. 17689

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________ 2018

Plan Number ______________________



No.	REVISIONS	By	Date
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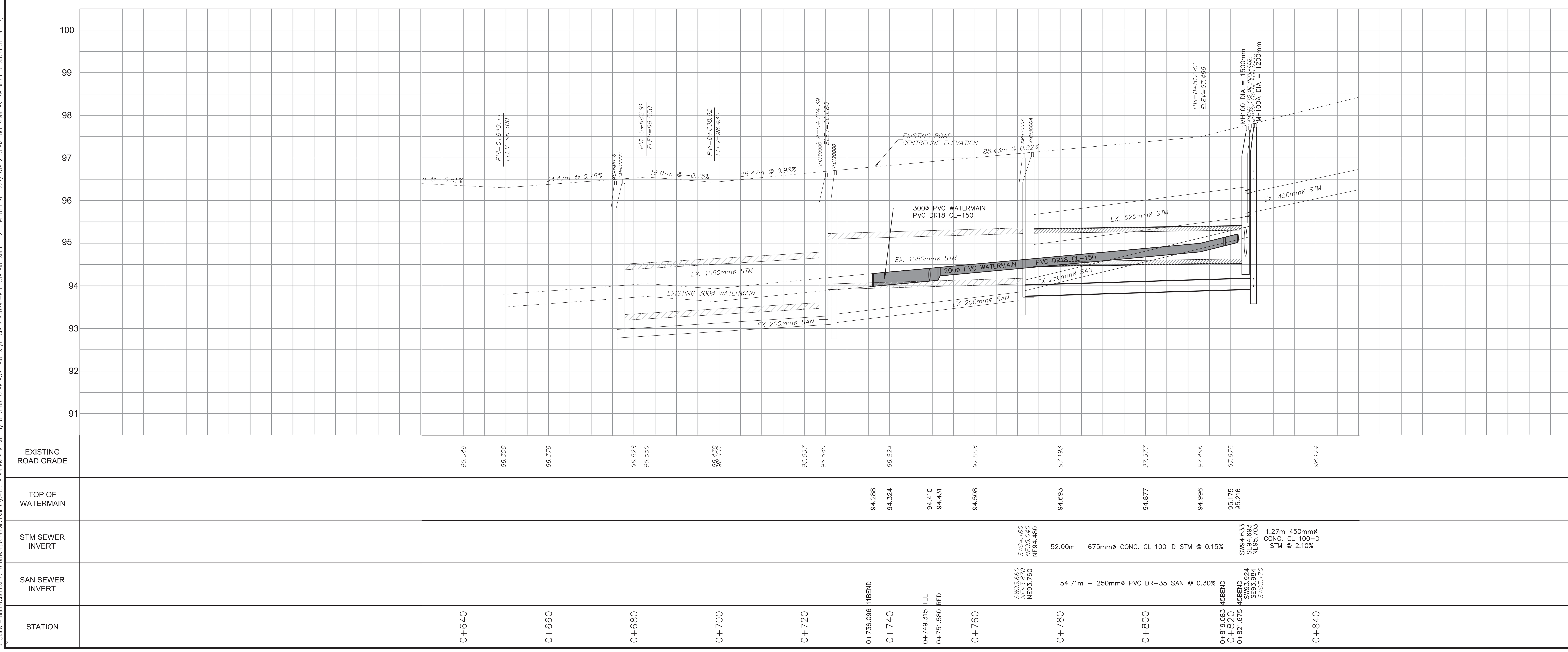
5	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
4	ISSUED FOR MUNICIPAL CONSENT	T.R.B.	2018:12:04
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27



TAGGART REALTY MANAGEMENT

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Project Title

KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

Drawing Title

COPE ROAD
PLAN AND PROFILE

Scale
HORIZ. SCALE 1 : 500
VERT. SCALE 1 : 50

Design	Date
J.E.B.	APR 2018
Drawn	**Checked**
D.D. / E.H.	T.R.B.
Project No.	**Drawing No.**
33681	C-100

CITY PLAN No. D07-12-18-0074

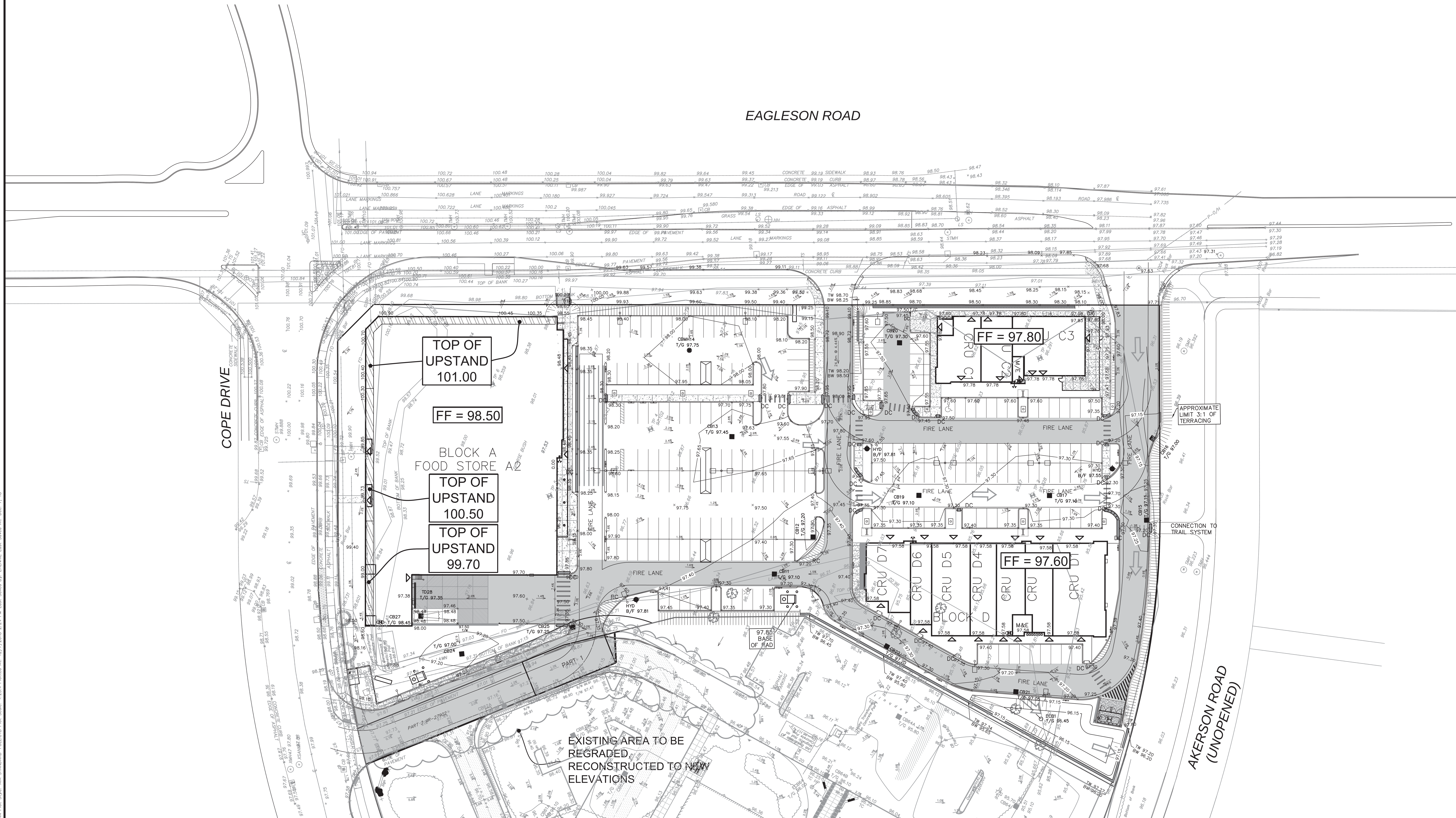
CITY FILE No. 17689

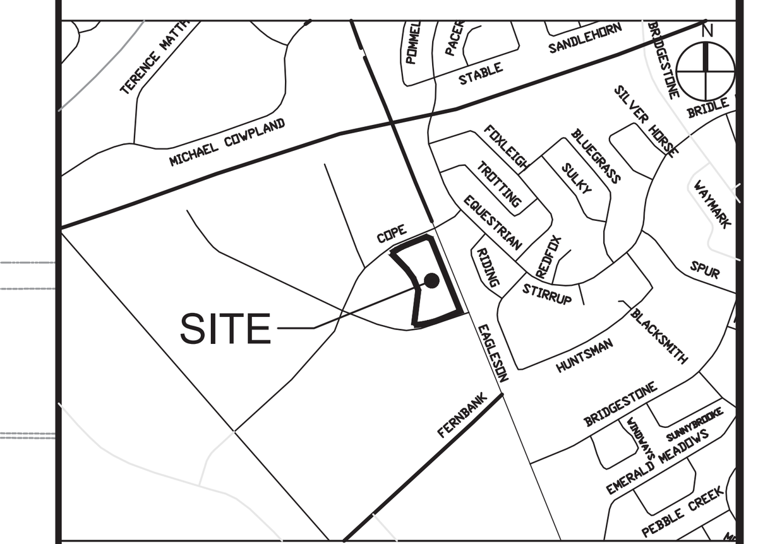
REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ____________________

Date ____________________ 2018

Plan Number ____________________





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4	REVISED BLOCK A FOOTPRINT	T.R.B.	2018:12:07
3	ISSUED FOR CONTRACTOR	T.R.B.	2018:10:29
2	REVISED PER CITY COMMENTS	T.R.B.	2018:08:15
1	ISSUED FOR CITY APPROVAL	T.R.B.	2018:04:27

TAGGART REALTY MANAGEMENT

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Project Title

KANATA SOUTH CENTER
10 COPE DRIVE

LICENSED PROFESSIONAL ENGINEER
T. R. BRULE
2018/12/07
PROVINCE OF ONTARIO

Drawing Title

GRADING PLAN

Scale: 1 : 500

Design	Date
J.E.B.	APR 2018
Drawn	Checked
D.D. / E.H.	T.R.B.
Project No.	Drawing No.
33681	C-200

CITY PLAN No. D07-12-18-0074

CITY FILE No. 17689