PROJECT: 117308 - 5.2.2

DESIGN BRIEF
CCR WAREHOUSE ADDITION
20 COPE DRIVE

Prepared for Farmhouse Investments Inc.
by IBI Group

SEPTEMBER 2018

Table of Contents

Table of Contents (continued)

List of Figures

Table of Contents (continued)

List of Appendices

1 INTRODUCTION

1.1 Scope

IBI Group has been retained by Farmhouse Investments Inc. 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 CCR facility is located at 20 Cope Drive at the southwest corner of the Eagleson Road and Cope Drive intersection. The parcel is approximately 2.16 hectares in size and is bounded by Akerson Road allowance to the south, 10 Cope Drive (proposed Kanata West Center) to the east, and Cope Drive to the north. Please refer to **Figure 1** for more information regarding the site location.

The proposed expansion of the CCR facility will consist of the construction of a warehouse building to be connected to the existing building and the expansion and reconfiguring of vehicular access routes, dedicated parking space and landscaping areas. The proposed Site Plan A1.0 is included in **Appendix A**.

1.3 Previous Studies

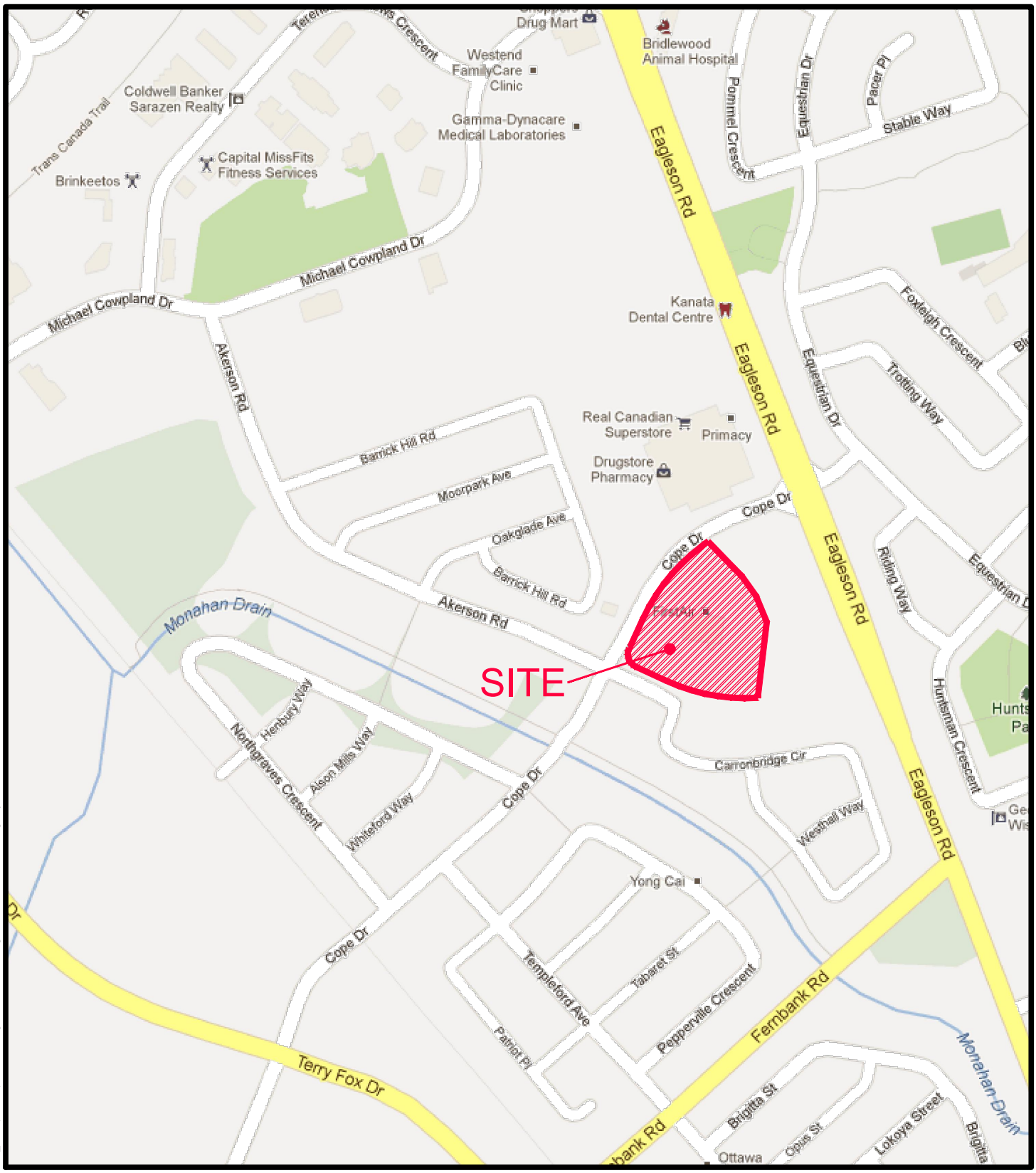
Design of this project has been undertaken in accordance with the following reports:

- 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

Pre-consultation with the City was held June 7, 2018 regarding the proposed development. Notes from this meeting may be found in **Appendix A**.

It should be noted that pre-consultation with the Ministry of the Environment and Climate Change will be arranged imminently.



J:\117308_20CopeDrExp\5.9 Drawings\59civil\current\Figures\FIGURES 1 & 2.dwg Layout Name: FIGURE 1

Plot Style: AIA STANDARD COLOR-HALF.CTB Plot Scale: 0.0408:1 Plotted At: Sep. 19, 18 10:06 AM Printed By: DENIS DORE Last Saved By: DDORE Last Saved At: Sep. 19, 18

IBI

KANATA SOUTH CENTER
20 COPE DRIVE

LOCATION PLAN

FIGURE 1

2 WATER SUPPLY

2.1 Existing Conditions

As previously noted, the 2.16 hectare site is located west of Eagleson Road and south of Cope Drive. An existing 305 mm diameter watermain is located within the Cope Drive right of way and an existing 200 mm watermain services the site off the Cope Drive watermain. The 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 subject site. A consumption rate for commercial development of 28,000 l/gross/ha/day is taken from Table 4.2 of the Ottawa Design Guidelines – Water Distribution and is 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 0.70 l/s
- Maximum Day 1.05 l/s
- Peak Hour 1.89 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 CCR facility site plan consists of a two storey office building and a one storey warehouse building addition which are linked by a common entrance and mechanical room. 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 11,000 l/min or 183.3 l/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 Akerson and Cope

SCENARIO	HGL
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 provided by the City. The model has been created by adding the subject site to a water model created for the adjacent Kanata South Center site.

2.3 Proposed Water Plan

2.3.1 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. The existing connection to the 305 mm watermain within the Cope Drive right of way will be maintained, and a connection to the proposed 200Ø main to service the adjacent 10 Cope Drive development which will connect to the existing 406 mm watermain within the unopened Akerson Road allowance. A fire hydrant is placed at the northwest corner of the office building and is approximately 35 meters from the building sprinkler system fire connection. All watermains on-site are 200mm diameter as required to meet the fire flow criteria.

2.3.2 Modeling Results

The hydraulic model was run under basic day, maximum day with fire flows and under peak hour conditions. Basic day and peak hour pressures are taken at node J-3 which represents the building while the fire flow is taken at node J-4 which is the location of the hydrant.

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

Scenario

Basic Day (Max HGL) Pressure Range	639.9 kPa
Peak Hour (Min HGL) Pressure Range	587.9 kPa
Min Design Fire Flow @ 140 kPa and 183 L/s	620.6 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 the fire node.

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

The CCR facility 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 subject lands were included in the analysis and it was established 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 utilizing the existing 200 mm PVC sewer from the main to the existing monitoring MH. A new sewer will be constructed from the existing monitoring MH to the expanded building since the proposed expansion is over top of the existing sewer. The existing and proposed sewer capacity to accommodate the warehouse expansion have been verified using the criteria noted above in section 3.2A copy of the sanitary drainage area plan 117308-C-400 and the sanitary sewer design sheet can be found in **Appendix B.** Please refer to the site servicing plan 117308-C-001 and details plan 117308-C-010 for further details.

4 SITE STORMWATER MANAGEMENT

4.1 Existing Conditions

When the site was originally development in 1999, the detail design for that SPA included stormwater management strategy for site. In 2006, the parking lot was reconfigured and the 2006 Trow Stormwater Management Report detailed the on-site stormwater management measures where the site was limited to 148.3 l/s which equated to the 5 year design. On site storage was provided to accommodate up to the 100 year event. The site has two service connections to the Cope storm sewer system, a 200Ø and 450Ø service, see record drawing in **Appendix C**. The existing storm system included an oil grit separator, this was required because at the time of the facilities construction, the downstream infrastructure (sewers and stormwater management pond) had not yet been constructed. Now that these facilities are in place there is no need to retain the OGS.

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 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 A**.

As this is a private storm sewer system, the site owners will be responsible for regular maintenance of the on-site catch basins and inlet control devices (ICDs) at 20 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.

4.4 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 and rooftop 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 300 mm during a 1:100 year event.

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

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**.

4.5 Inlet Controls

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

$\mathbf{Q_{allowable}}$	= 70 L/s/Ha as per JFSA Monahan Drain Cell 1 report
Tributary Area	= 2.26 Ha (includes area from adjacent lands)
	= **158.2 L/s**

The only portion of the site will be left to discharge into the storm sewer system uncontrolled is the loading dock ramp which will drain via the buildings internal pluming into the storm sewer.

Based on a 1:100 year event, the flow from the 0.01 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 = 0.9 (1.0 for 100 yr)
$\mathbf{i_{100yr}}$	= 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 = 0.01 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 1.0 x 178.56 x 0.01
	= **4.96 L/s**

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

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

$$= 158.2\ L/s - 4.96\ L/s$$

$$= \mathbf{153.24\ L/s}$$

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 117308-C-600, and included in **Appendix C**.

4.6 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 0.30 m of vertical separation has been provided from all maximum ponding elevations to lowest building openings.

4.6.1 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)
P63	0.51	121.78	44.00	123.94	44.00	35.02
P61	0.30	30.99	25.00	84.84	25.00	24.72
P60A	0.22	1.94	30.00	26.95	30.00	4.99
P60	0.19	53.43	10.00	131.12	10.00	19.62
P50A	0.16	83.54	20.00	117.71	20.00	11.64
P50	0.04	8.04	10.00	40.12	10.00	1.06
P51	0.69	200.00	10.00	193.38	10.00	57.36
Ex. Roof	0.15	112.00	2.52	80.96	2.52	35.76
TOTAL	**2.26**	**611.72**	**151.52**	**799.02**	**151.52**	**190.17**

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. Also refer to Average Runoff Coefficient Calculation table in **Appendix C**.

4.6.2 Roof Inlet Controls

The proposed building expansion has a sloped roof and will not have roof inlet controls, however, the existing building will have roof inlet controls installed to control the amount of stormwater being released into the system. The restricted flow rate for the existing building is shown in the table above.

4.6.3 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 (149 l/s + 2.52 l/s + 4.96) 156.48 l/s, which is less than the allowable release of 158.20 l/s noted in Section 4.5.

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

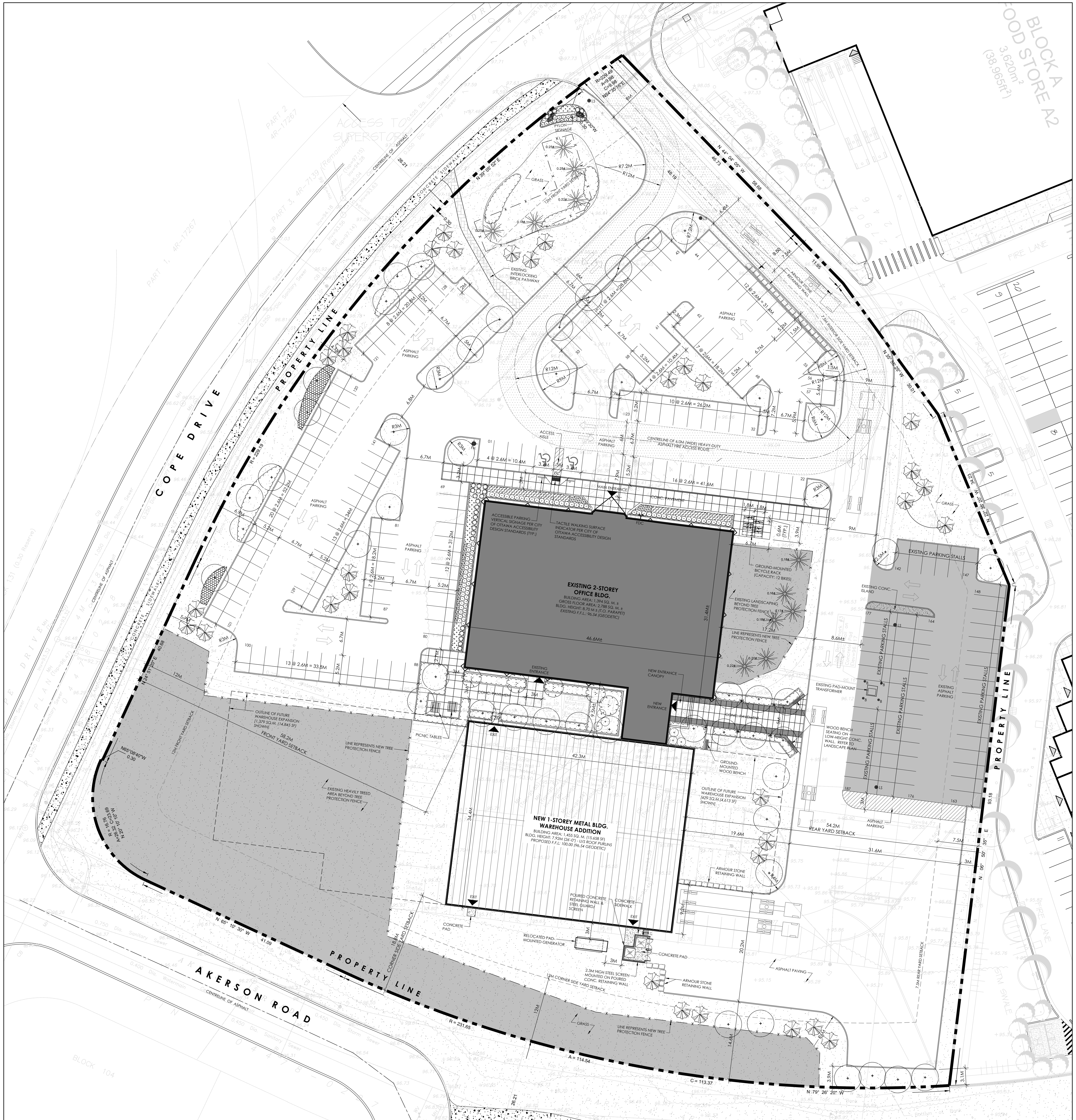
This report has illustrated that the proposed expansion to the existing CCR facility at 20 Cope Drive can be serviced via existing municipal services. The water network will be extended to provide necessary service. All sanitary and storm sewer designs for this development will be completed in conformance 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.

Demetrius Yannoulopoulos, P. Eng.
Director, Ottawa Lead

APPENDIX A

- **Site Plan A1.0**
- **Pre-Consultation Notes**
- **Watermain Boundary Condition**
- **Watermain Demand Calculation Sheet**
- **Fire Flow Calculations**
- **Water Model Schematic and Results**



1 A1.0 SITE PLAN
SCALE 1:250

LEGEND

PROPERTY LINE	FIRE HYDRANT - NEW/RELOCATED (FH)
REQUIRED MINIMUM ZONING SETBACK	FIRE DEPT. CONNECTION (SPRINKLER SYSTEM SIAMESE CONNECTION) (FDC)
CENTRELINE OF FIRE ACCESS ROUTE	DEPRESSED CURB (DC)
SHADE REPRESENTS EXISTING BUILDING	EXISTING LIGHT STANDARD (LS)
DIRECTION OF NEW METAL BUILDING ROOF SLOPE	EXISTING STEEL BOLLARD (B)
SHADE REPRESENTS EXISTING AREAS TO REMAIN 'UNTOUCHED'	ARMOUR STONE RETAINING WALL
6.0M (W) HEAVY DUTY ASPHALT FOR FIRE DEPT. TRUCK ACCESS ROUTE	NEW DECIDUOUS TREE. REFER TO THE LANDSCAPE PLAN
GRASS/TURF. REFER TO THE LANDSCAPE PLAN	NEW CONIFEROUS TREE. REFER TO THE LANDSCAPE PLAN
ASPHALT MARKING - NO PARKING	NEW TREE PROTECTION FENCE. REFER TO THE LANDSCAPE PLAN
CONCRETE PAVEMENT. REFER TO THE LANDSCAPE PLAN FOR FINISH	

ZONING DATA (BASED ON ZONING BY-LAW 2008-250)

Municipal Address:
20 Cope Drive, Kanata, Ontario

Legal Description:
Golbourn, Concession 10, Part Lot 31, RP 4R27902, PARTS 3 AND 4, Pin: 044781247.

Zoning Designation:
Business Park Industrial Zone [IP5H(21.5)] - Area C Suburban

Site Area: 2.0 Ha (20,699 Sq.M.)

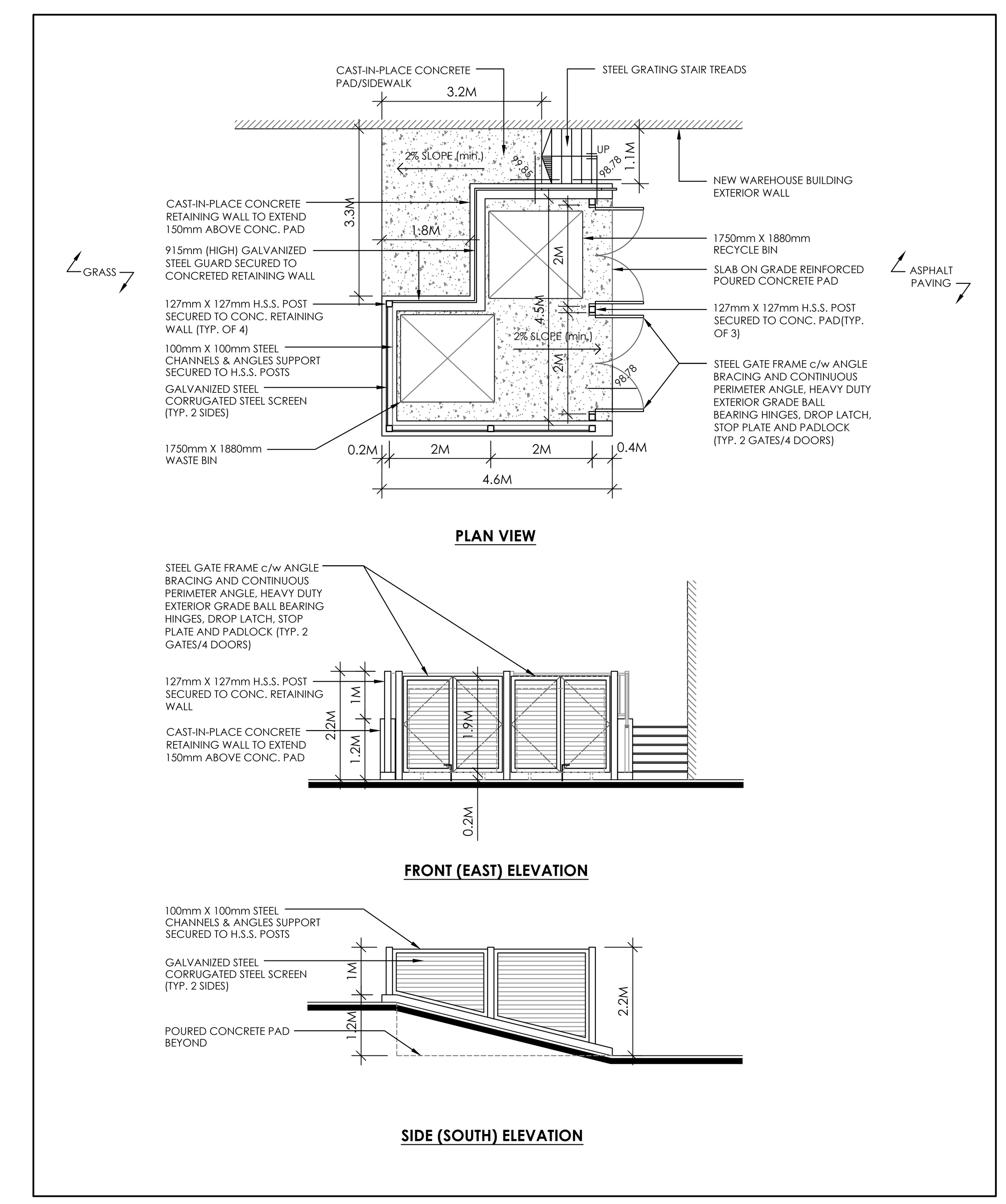
Building Area:
- **New Warehouse Bldg.:** 1,455 Sq. M.
- **Existing Building:** 1,394 Sq. M.
- **Total Building Area:** 2,849 Sq. M.

Lot Coverage: (2,849/ 20,699) x 100 = 13.76%

Gross Floor Area:
- **First Floor Area:** 2,849 Sq. M.
- **Second Floor Area:** 1,394 Sq. M.
- **Total Gross Floor Area:** 4,243 Sq. M.

ZONING PROVISIONS - ZONE (IP5H)

ZONING MECHANISM	REQUIRED	PROVIDED
Lot Area	4,000 Sq. M. (min.)	20,699 Sq. M.
Lot width	45M (min.)	171.73M
Lot Coverage	55% (max.)	13.76%
Front Yard Setback	12M (min.)	58.2M
Corner Side Yard Setback	12M (min.)	18.8M
Interior Side Yard Setback	7.5M (min.)	N/A
Rear Yard Setback	7.5M (min.)	54.2M
Floor Space Index	2 (max.)	< 0.2
Building Height	11M (max.) - within 20M from a res. zone	9.78M
	22M (max.) - all other cases	9.78M
Landscaping Width	3M (min.) - abutting a street No Minimum - all other cases	VARIES. 3.1M (min.)
Parking Requirements	Office Use: 2.4/100 Sq. M. GFA *(Table 101 - Row N59)* 2,788 Sq. M./100 X 2.4 = 67 spaces Warehouse: 0.8/100 Sq. M. GFA *(Table 101 - Row N95)* 1,455 Sq. M./100 X 0.8 = 12 spaces Total Required Parking Spaces: 67 + 12 = 79 spaces	187
Accessible Parking Spaces	2 spaces	2
Landscaping Buffer	N/A for Industrial Zones	VARIES. 3.0M (min.)
Bicycle Parking Spaces	Office Use: 1 space per 250 Sq. M. GFA 2,788 Sq. M./250 = 11 spaces Warehouse: 1 space per 1,000 Sq. M. GFA 1,455 Sq. M./1,000 = 1 space Total Required Bicycle Parking Spaces: 11 + 1 = 12 spaces	12
Loading Spaces	Office Use: 1 space required Warehouse: 1 space required Total Req'd = 2 spaces	2
Oversized Vehicle	N/A	-



2 A1.0 GARBAGE/RECYCLE BINS ENCLOSURE DETAILS
SCALE 1:75

ARGUE CONSTRUCTION LTD.

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR MUST COMPLY WITH ALL CODES AND BYLAWS AND OTHER REGULATIONS BY AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- DO NOT SCALE THIS DRAWING.
- THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNLESS SEALED/SIGNED BY THE ARCHITECT.
- COPYRIGHT OF THIS DRAWINGS IS RESERVED.

DISCLAIMER

- THIS DRAWING IS PREPARED BASED ON A TOPOGRAPHIC SURVEY PLAN PROVIDED TO A+ ARCHITECTURE INC. AS A TRUE REPRESENTATION OF EXISTING LAND FEATURES, INCLUDING BUT NOT LIMITED TO, EXISTING LEGAL BOUNDARIES, LOT LINES, GRADES, TOPOGRAPHY, VEGETATION ETC., AS PREPARED BY **FAIRHALL, MOFFATT & WOODLAND LIMITED**, ONTARIO LAND SURVEYOR, DATED **JUNE 11, 2018** WITHOUT ANY ALTERATION WHATSOEVER, AND IS SHOWN ON THIS DRAWING FOR REFERENCE AND COORDINATION PURPOSES ONLY.
- THE INFORMATION SHOWN ON THE PROPERTY LOCATED AT 10 COPE DRIVE, ARE DERIVED FROM A SITE PLAN DRAWING PROVIDED BY **TAGGART REALTY MANAGEMENT**, PREPARED BY **HOBBIN ARCHITECTURE INC.**, DATED **JUNE 18, 2018**, ISSUED FOR **UDRP SUBMISSION**, WITHOUT ANY ALTERATION WHATSOEVER, AND IS SHOWN ON THIS DRAWING FOR REFERENCE AND COORDINATION PURPOSED ONLY.
- A+ ARCHITECTURE INC. DOES NOT ASSUME ANY LIABILITY, WHATSOEVER, AS TO THE ACCURACY OF THE INFORMATION, PREPARED BY OTHER PARTIES AND PROVIDED ON THE INCORPORATED PLANS.

NO.	ISSUE	DATE (YY/MM/DD)
00	ISSUED FOR SPA	2018/09/##

REVISIONS

ORIENTATION

SEAL

A+ Architecture Inc.
555 LEGGET DRIVE
TOWER A, SUITE 304
Kanata, ON K2K 2X3
+1 613 699 6860
info@aplus-arch.com
www.aplus-arch.com
architecture

CLIENT
CCR PROCESS PRODUCTS

PROJECT
CCR WAREHOUSE ADDITION & OFFICE RENOVATIONS
20 COPE DRIVE, KANATA, ONTARIO

DRAWING TITLE
SITE PLAN

DRAWN BY	A.A.	DRAWING NO.	**A1.0**
REVIEWED BY	A.A.		
START DATE	2018/04/25		
PROJECT NO.	18007	REVISION NO.	00

Demetrius Yannoulopoulos

From: Jen Martens <jen@farmhouseinvestments.ca>
Sent: Tuesday, July 10, 2018 5:26 PM
To: Demetrius Yannoulopoulos
Subject: Fwd: Pre-Consultation Follow-Up: 20 Cope Drive
Attachments: City of Ottawa 2017 TIA Guidelines Screening Form - V3 (1).docx; Plan & Study List.pdf

Hi Demetrius

Thanks for your time this afternoon. I will chase up the action items we noted and be back to you as answers become available. In the meantime, here are the pre-consultation notes.

Begin forwarded message:

From: "McCreight, Laurel" <Laurel.McCreight@ottawa.ca>
Subject: Pre-Consultation Follow-Up: 20 Cope Drive
Date: June 19, 2018 at 10:35:34 AM EDT
To: Jen Martens <jen@farmhouseinvestments.ca>

Hi Jen,

Please refer to the below regarding the Pre-Consultation Meeting held on Thursday June 7th, 2018 for the property at 20 Cope Drive for an addition to a warehouse to an existing office building. I have also attached the Plans & Study List.

General

- Addition of a 15,000 square foot warehouse to an existing office building
- Reconfiguration of some of the existing parking lot
- Will coordinate with the proposal at 10 Cope Drive
- Provided the previous approvals still have an agreement registered on title, the application can be treated as a revision to an existing application

Planning/Design

- The site is heavily treed so it is recommended to retain as many trees where possible
  - Especially as a buffer to the residential community
- Retain the pedestrian connection to Cope Drive
- It is important to screen the southern edge
- Provide a pedestrian connection to the existing multi-use pathway
- Lighting and landscaping will be important (east side)
  - Crime prevention through environmental design concerns for the parking lot at night

Engineering

- Confirm capacity for stormwater expansion
  - Turn around near loading dock
  - Monahan Drain
  - 0.43 run-off coefficient or equivalent required
- Verify what is existing and what was approved
- An ECA from the MOECC will be required for the industrial use

- Please contact Brad Cripps (brad.cripps@ottawa.ca) for any engineering related questions

Transportation

- Fill out TIA screening form (attached) to determine if a full study is required
- Please provide all line work and paintings on the site plan
- Cope is a sensitive road- please be mindful of how it is treated
- Cope has a 24 metre right-of-way
- If any mechanical is exposed, a noise study will be required
- Clear through lengths must be illustrated
- Please provide turning templates for the largest trucks
- Keep curbs as tight as possible
- Show all lane widths
- Show connection with neighbouring access
- Please contact Rosanna Baggs rosanna.baggs@ottawa.ca and he will meet the consultant on site

Forestry

- Permit required for any trees greater than 10 cm in diameter
- A Tree Conservation Report is required
- The information required in a Tree Conservation Report:
    - Tree species, diameter and health condition
    - Trees proposed for retention or removal
    - Protection details of retained trees
- Please contact Mark Richardson mark.richardson@ottawa.ca and he will meet the consultant on site

Please do not hesitate to contact me if you have any questions.

Regards,
Laurel

Laurel McCreight MCIP, RPP
Planner
Development Review West
Urbaniste
Examen des demandes d'aménagement ouest

City of Ottawa | Ville d'Ottawa

613.580.2424 ext./poste 16587
ottawa.ca/planning / ottawa.ca/urbanisme

Jen Martens
President
Farmhouse Investments Inc.
jen@farmhouseinvestments.ca
613-878-5061

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	
Description of Location	
Land Use Classification	
Development Size (units)	
Development Size (m^2)	
Number of Accesses and Locations	
Phase of Development	
Buildout Year	

If available, please attach a sketch of the development or site plan to this form.

2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2
Gas station or convenience market	75 m^2

** If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Legend: **S** indicates that the study or plan is required with application submission.
A indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information and guidance on preparing required studies and plans refer to:

http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S	10	1. Site Servicing Plan	2. Site Servicing Brief	S	3
S	10	3. Grade Control and Drainage Plan	4. Geotechnical Study	S	3
	2	5. Composite Utility Plan	6. Groundwater Impact Study		6
	5	7. Servicing Options Report	8. Wellhead Protection Study		6
S	6	9. TIA Screening Form	10.Erosion and Sediment Control Plan / Brief	S	3
S	3	11.Storm water Management Brief	12.Hydro geological and Terrain Analysis		8
S	3	13.Hydraulic Water main Analysis	14.Stationary Noise Study	S	2
S	10	15.Roadway Modification Design Plan	16.Confederation Line Proximity Study		9
S/A	**Number of copies**	**PLANNING / DESIGN / SURVEY**		**S/A**	**Number of copies**
	15	17.Draft Plan of Subdivision	18.Plan Showing Layout of Parking Garage		2
	30	19.Draft Plan of Condominium	20.Planning Rationale	S	3
S	10	21.Site Plan	22.Minimum Distance Separation (MDS)		3
	15	23.Concept Plan Showing Proposed Land Uses and Landscaping	24.Agrology and Soil Capability Study		5
	3	25.Concept Plan Showing Ultimate Use of Land	26.Cultural Heritage Impact Statement		3
S	10	27.Landscape Plan	28.Archaeological Resource Assessment Requirements: S (site plan) A (subdivision, condo)		3
S	1	29.Survey Plan	30.Shadow Analysis		3
S	3	31.Architectural Building Elevation Drawings (dimensioned)	32.Design Brief (includes the Design Review Panel Submission Requirements)		Available online
	6	33.Wind Analysis			
S/A	**Number of copies**	**ENVIRONMENTAL**		**S/A**	**Number of copies**
	3	34.Phase 1 Environmental Site Assessment	35.Impact Assessment of Adjacent Waste Disposal/Former Landfill Site		6
	5	36.Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37.Assessment of Landform Features		7
	4	38.Record of Site Condition	39.Mineral Resource Impact Assessment		4
S	3	40.Tree Conservation Report	41.Environmental Impact Statement / Impact Assessment of Endangered Species		5
	4	42.Mine Hazard Study / Abandoned Pit or Quarry Study	43.Integrated Environmental Review (Draft, as part of Planning Rationale)		3
S/A	**Number of copies**	**ADDITIONAL REQUIREMENTS**		**S/A**	**Number of copies**
S	3	44. Site Light Lighting Plan/Letter	45.		

Meeting Date: June 7th, 2018

Application Type: *Site Plan Control*

File Lead (Assigned Planner): Laurel McCreight

Infrastructure Approvals Project Manager: Brad Cripps

Site Address (Municipal Address: 20 Cope Drive

*Preliminary Assessment: 1☐ 2☐ 3☐ 4☐ 5☐

*One (1) indicates that considerable major revisions are required before a planning application is submitted, while five (5) suggests that proposal appears to meet the City's key land use policies and guidelines. **This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.**

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, the Planning, Infrastructure and Economic Development Department *will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the* Planning, Infrastructure and Economic Development Department.

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

IBI GROUP

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

117308.5.7

PROJECT : **CCR Warehouse Addition** DATE: 17-Sep-18

LOCATION : **20 Cope Drive** DESIGN: LME

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
CCR Facility																		
J-3							2.16			0.00	0.70	0.70	0.00	1.05	1.05	0.00	1.89	1.89
Kanata South Center																		
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

20 Cope Drive Building Floor Area

Existing office	3,045	m^2
Warehouse addition	1,430	m^2
Total	4,475	m^2

Fire Flow

$F = 220C\sqrt{A}$

C	1.0		C =	1.5 wood frame
A	4,475	m^2		1.0 ordinary
				0.8 non-combustile
F	14,717	l/min		0.6 fire-resistive
use	15,000	l/min		

Occupancy Adjustment

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

Sprinkler Adjustment

-30% system conforming to NFPA 13
-50% complete automatic system

Use	-30%	
Adjustment	-4500	l/min

Exposure Adjustment

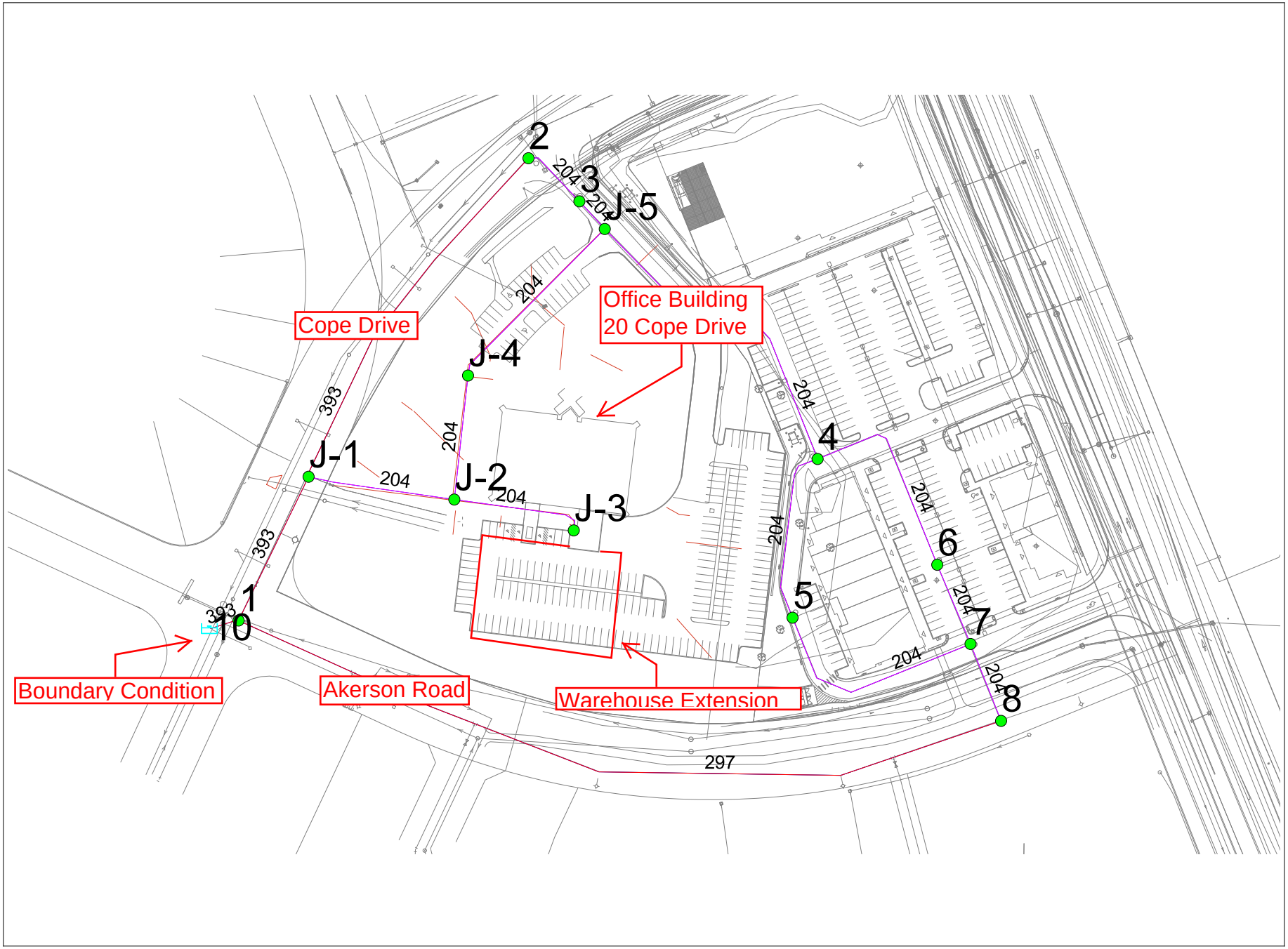
Building Face	Separation		Charge
north	0	> 45	0%
east	0	> 45	0%
south	0	> 45	0%
west	0	> 45	0%
Total			0%
Adjustment			- l/min

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

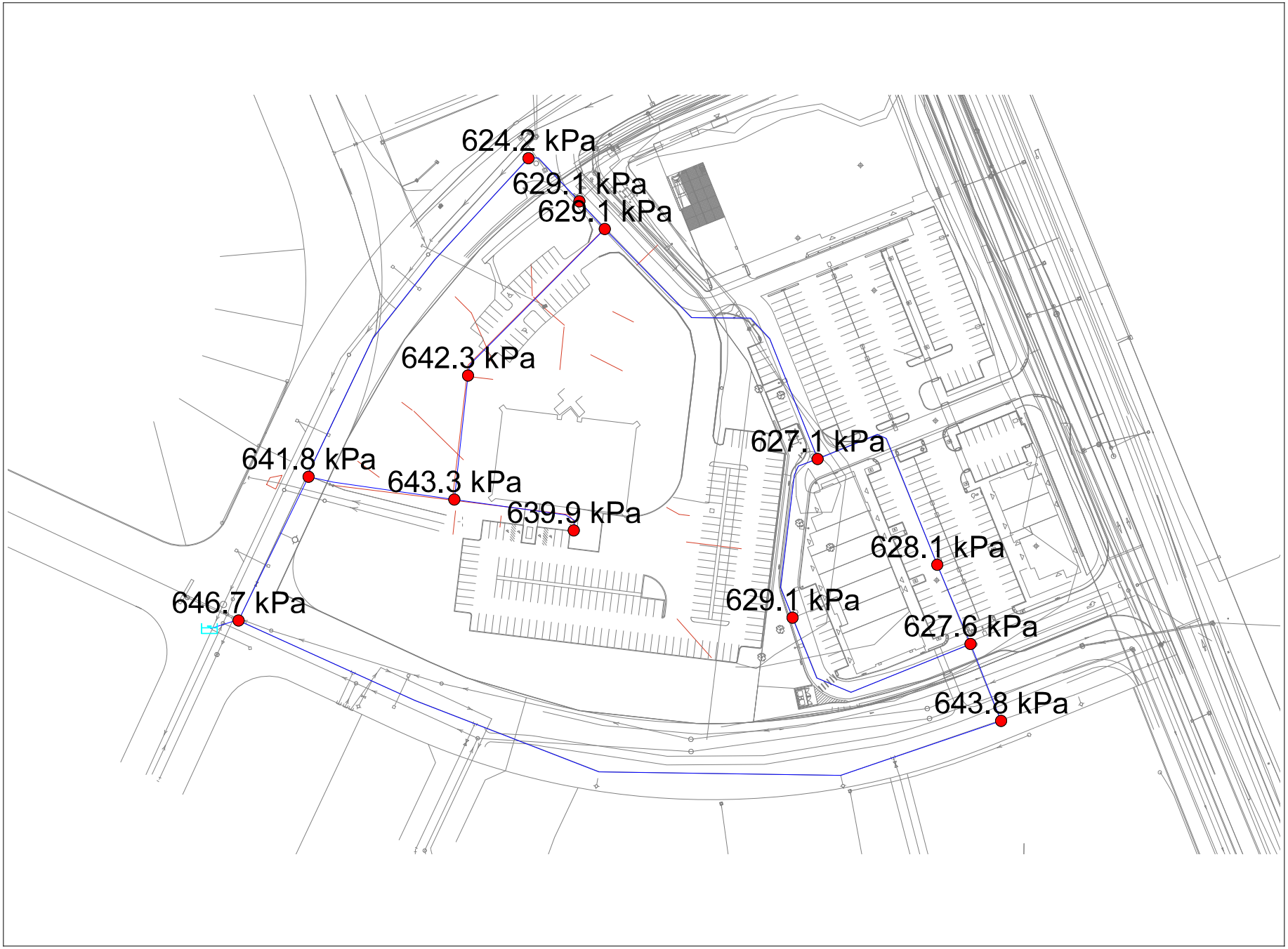
Total adjustments	(4,500)	l/min
Fire flow	10,500	l/min
Use	**11,000**	**l/min**
	183.3	**l/s**

Pipe Sizes and Node ID's



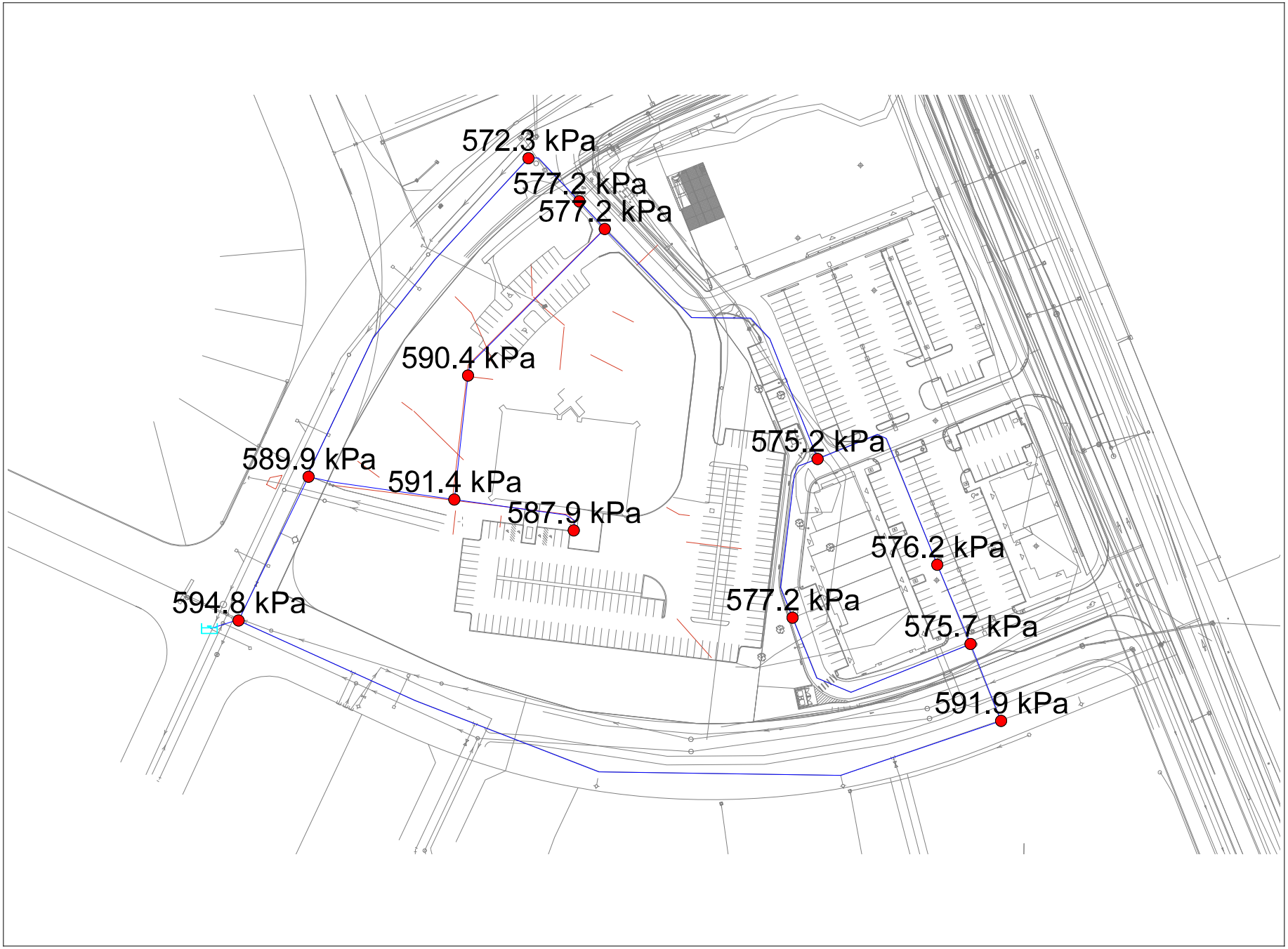
Date: Monday, September 17, 2018

Basic Day (Max HGL) Pressures



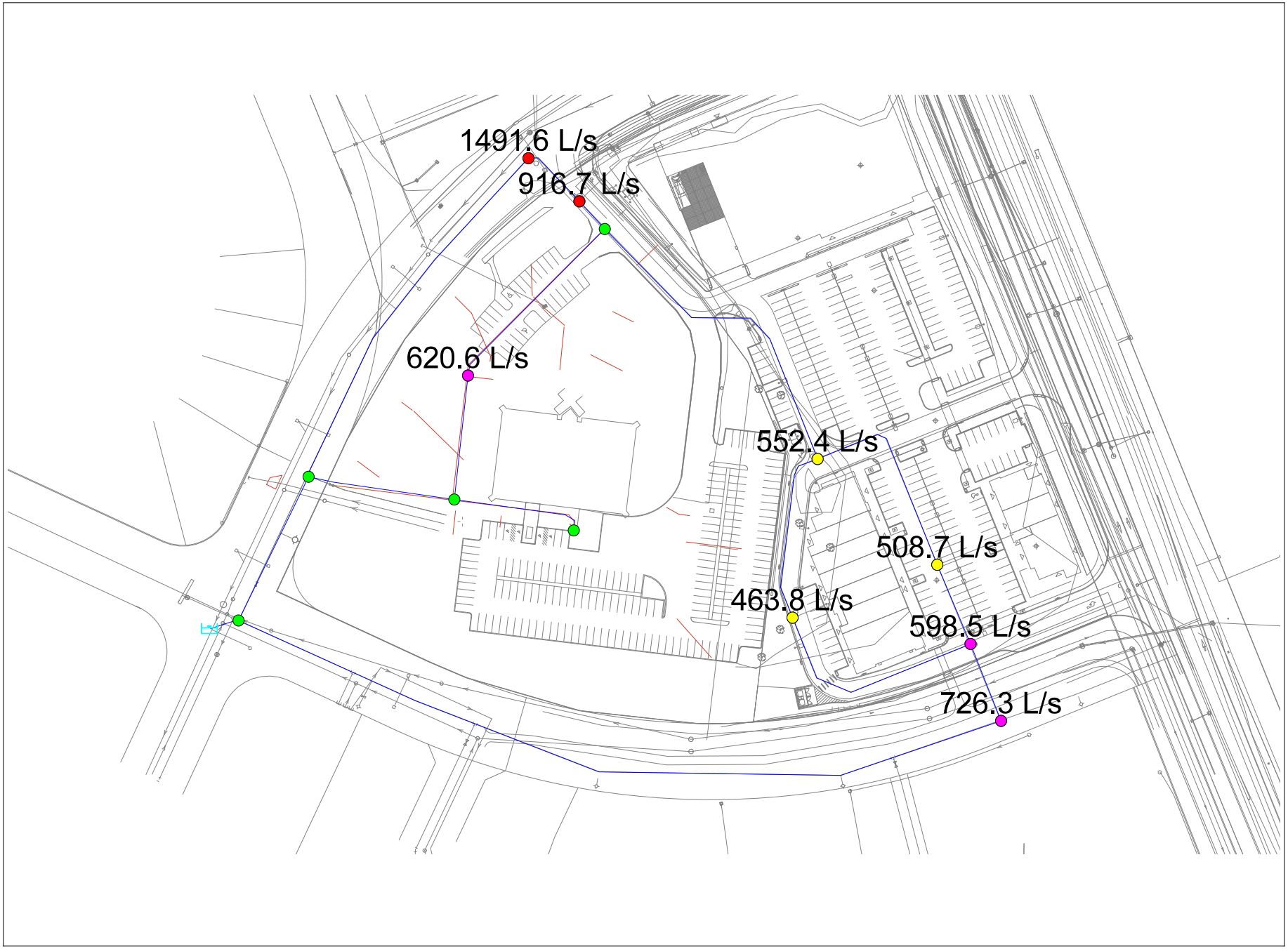
Date: Monday, September 17, 2018

Peak Hour Pressures



Date: Monday, September 17, 2018

Max Day + Fire - Design Fireflows



Date: Monday, September 17, 2018

APPENDIX B

- **SOHO West – Sanitary Sewer Flow Allocation, *Stantec***
- **Sanitary Drainage Area Plan Drawing No 117308-C-400**
- **Sanitary Sewer Design Sheet**
- **General Plan 117308-C-001**
- **General Notes and Legend Plan 117308-C-10**

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)*

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

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

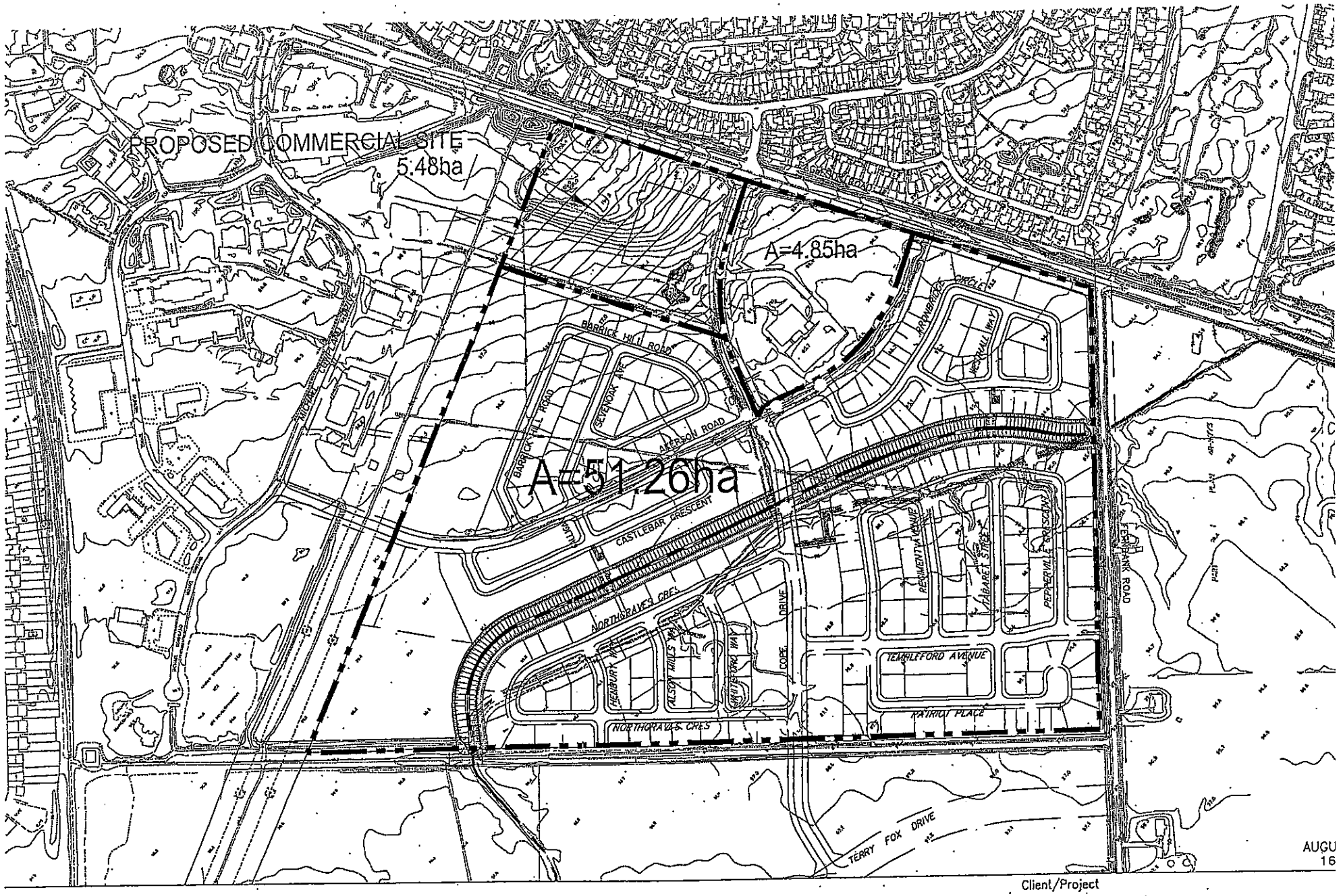
Residential:

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

Peak Factor

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

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



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 :

- AREA NUMBER
- LAND USE
- AREA IN HECTARES
- AREA NUMBER
- AREA IN HECTARES
- AREA BOUNDARY

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3			
2			
1	ISSUED FOR CITY APPROVAL	DGY	2018:09:17

CCR PROCESS PRODUCTS

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

Project Title

CCR WAREHOUSE ADDITION & OFFICE RENOVATION
20 COPE DRIVE, KANATA, ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
xx/xx/xx
PROVINCE OF ONTARIO

N

Drawing Title

SANITARY DRAINAGE AREA PLAN

Scale	
1 : 500	
Design: ST	Date: SEPT 2018
Drawn: ST	Checked: DGY
Project No.: 117308	Drawing No.: C-400

CITY PLAN No.####

CITY FILE No. ####

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

20 Cope Dr
CITY OF OTTAWA
Farmhouse Investments

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														
	1	Blding	51A													2.16	2.16			1.50	1.05	2.16	2.16	0.71			1.76	34.22	6.50	200	1.00	1.055	32.45	94.85%
		51A	ex MM													0.00	2.16			1.50	1.05	0.00	2.16	0.71			1.76	20.24	78.01	200	0.35	0.624	18.48	91.29%
		ex MM	ex MH													0.00	2.16			1.50	1.05	0.00	2.16	0.71			1.76	21.83	14.50	200	0.41	0.673	20.07	91.92%

Design Parameters:

Residential

SF	3.4	p/p/u
TH/SD	2.7	p/p/u
APT	1.8	p/p/u
Other	60	p/p/Ha

ICI Areas

INST	28,000	L/Ha/day	1.5
COM	28,000	L/Ha/day	1.5
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

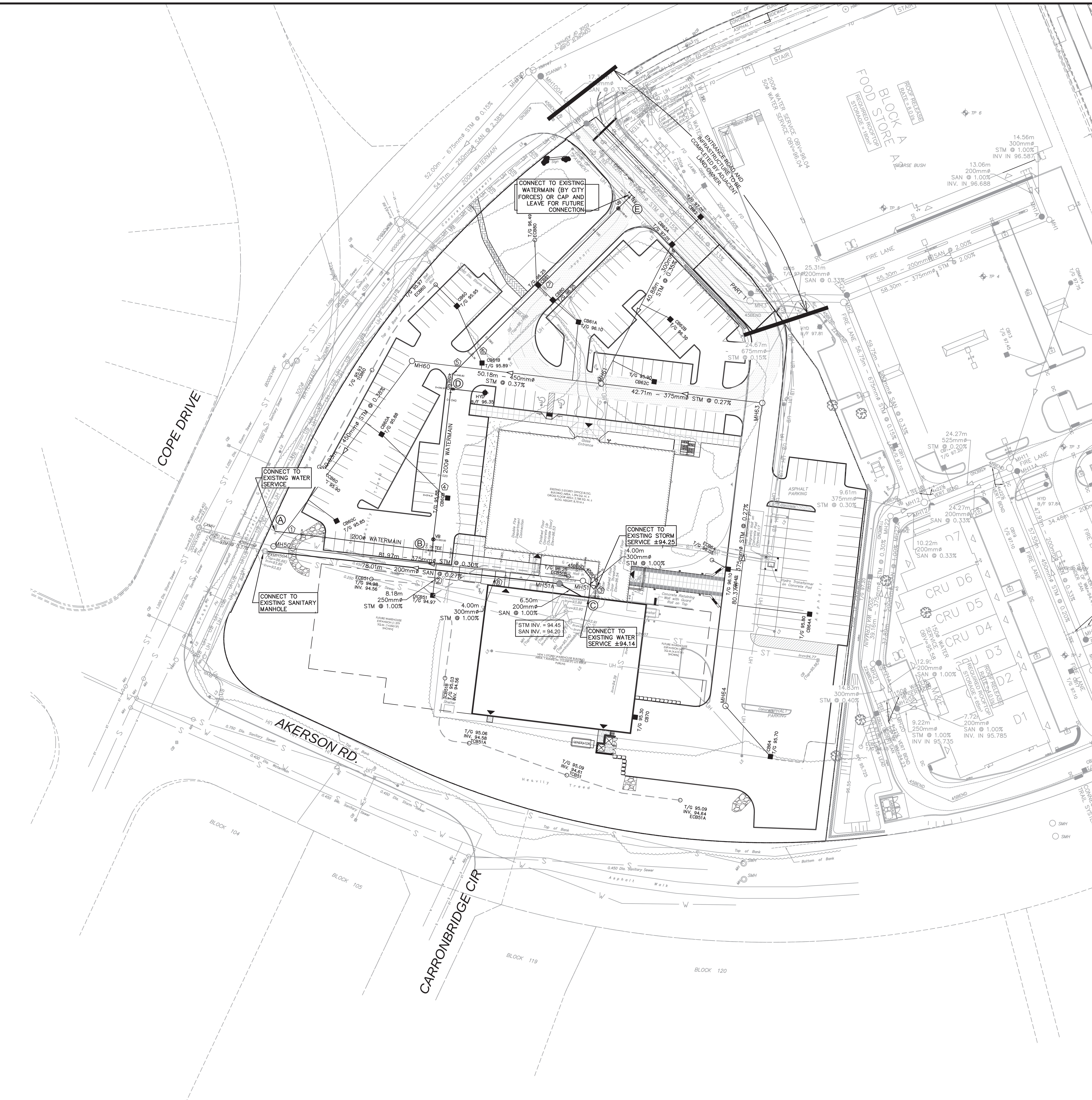
Designed: ST

Checked: DY

Dwg. Reference: 117308-600

No.	Revision	Date
1.	Submitted for Site Plan Application	2018-09-05
2		

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



SANITARY SEWER STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT OUT	DESCRIPTION
EXMH50A	96.20	*E93.890*	*W93.830*	EXISTING MANHOLE
MH51A	96.29	SE94.210	W94.101	1200 DIA. OPSD 701.010

STORM SEWER STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT OUT	DESCRIPTION
EXMH	96.40	E93.550		1200 DIA. OPSD 701.010
MH50	96.06	NE93.700 E93.775	W93.625	1200 DIA. OPSD 701.010
MH51	96.28	SE94.210	W94.021	1200 DIA. OPSD 701.010
MH60	96.13	E93.991	SW93.931	1200 DIA. OPSD 701.010
MH61	96.11	NE94.327 E94.251	W94.177	1200 DIA. OPSD 701.010 C/W TEMPEST MHF ICD 25L/s @ 1.67 HEAD
MH63	96.62	S94.427	W94.366	1200 DIA. OPSD 701.010 C/W TEMPEST MHF ICD 44L/s @ 1.44 HEAD
MH64	95.96	SE94.730	N94.644	1200 DIA. OPSD 701.010

WATERMAIN SCHEDULE

STATION		DESCRIPTION	FINISHED GRADE	TOP OF WATERMAIN	AS-BUILT WATERMAIN
A	0+000.00	CONNECT TO EXISTING	95.88	93.40	
B	0+041.60	TEE	96.09	93.69	
	0+081.90	45° BEND	96.30	93.90	
	0+084.90	45° BEND	96.31	93.75	
C	0+090.00	BUILDING CONNECTION	96.54	94.14	
B	0+000.00	TEE	96.09	93.69	
	0+003.00	V&B	96.04	93.64	
D	0+043.00	150ø HYDRANT	96.15	93.50	
	0+043.90	45° BEND	96.07	93.53	
	0+105.60	V&B	97.17	94.77	
E	0+110.60	TEE	97.38	94.98	

REVISED 2018-09-12

CROSSING SCHEDULE

1	450ø STM 0.27m CLEARANCE OVER 200ø WM.
2	200ø CB LEAD 0.17m CLEARANCE OVER 200ø SAN.
3	200ø WM 0.40m CLEARANCE UNDER 300 STM.
4	200ø CB LEAD 1.02m CLEARANCE OVER 200ø WM.
5	450ø STM 0.50m CLEARANCE OVER 200ø WM.
6	200ø CB LEAD 0.69m CLEARANCE OVER 200ø WM.
7	200ø CB LEAD 0.64m CLEARANCE OVER 200ø WM.
8	300ø STM 0.18m CLEARANCE OVER 200ø WM.

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			
3			
2			
1	ISSUED FOR CITY APPROVAL	DGY	2018:09:17

CCR PROCESS PRODUCTS

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

Project Title
CCR WAREHOUSE ADDITION & OFFICE RENOVATION
20 COPE DRIVE, KANATA, ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
xx/xx/xx
PROVINCE OF ONTARIO

N

Drawing Title
GENERAL PLAN OF SERVICES

Scale 1 : 500

Design	Date
ST	SEPT 2018
Drawn	Checked
ST	DGY
Project No.	Drawing No.
117308	C-001

CITY PLAN No. ####

CITY FILE No. ####

UTILITY LEGEND

Symbol	Description
	TRANSFORMER
	TRANSFORMER C/W CONCRETE WINGS
HSG	HYDRO SWITCHGEAR
HMH	HYDRO MANHOLE
	BELL PEDESTAL
GLB	BELL GRADE LEVEL BOX (l=600mm, w=1200mm, d=750mm) C/W 1.5 x 3.0m easement
FC	BELL FIBER CABINET (l=1200mm, w=750mm, d=500mm)
CSP	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
D	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

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

GENERAL LEGEND

Symbol	Description
	LIMIT OF CONSTRUCTION
	PHASING LINE
	BARRIER CURB
	MOUNTABLE CURB
	DEPRESSED BARRIER CURB
	CONCRETE SIDEWALK
DC	TACTILE WALKING SURFACE INDICATOR, DEPRESSED CURB
	ASPHALT SIDEWALK / PATHWAY
BUS	BUS STOP CONCRETE / ASPHALT
FIRE LANE	FIRE ROUTE

STANTEC GEOMATICS LTD. SURVEY LEGEND

Symbol	Description
	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

Symbol	Description
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
DCICB101 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)
CCB T/G 104.35	REAR YARD "CUSTOM ANGLED" CATCHBASIN C/W TOP OF GRATE (450Ø)
WCB 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

Symbol	Description
	PROPOSED SWALE C/W FLOW DIRECTION
0.5%	PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
1.3%	SLOPE C/W FLOW DIRECTION
	OVERLAND FLOW ROUTE
104.62	PROPOSED SPOT GRADE
104.40 (S)	PROPOSED SWALE GRADE
104.50 (S)HP	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 T/W	TOP OF RETAINING WALL GRADE
	TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
103.50 B/W	PROPOSED BOTTOM OF RETAINING WALL GRADE
	PRESSURE REDUCING VALVE
F.FL. 96.32	FINISHED FLOOR ELEVATION
T.FND. 95.96	TOP OF FOUNDATION ELEVATION
U.S.F. 93.36	UNDERSIDE OF FOOTING ELEVATION
RISERS 0	TOTAL NUMBER OF RISERS
M.U.S.F.	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)
F	NOISE FENCE LOCATION
F	NOISE FENCE GATE

ROADWAY STRUCTURE:

CAR PARKING AREA :(590mm)

- 35mm - SURFACE COURSE ASPHALTIC CONCRETE HL-4 (OPSS 1150)
- 55mm - BINDER COURSE ASPHALTIC CONCRETE HL-8 (OPSS 1150)
- 150mm - BASE COURSE: GRANULAR "A" (OPSS 1010)
- 350mm - SUBBASE Course: GRANULAR "B" TYPE I (OPSS 1010)

ACCESS LANES :(720mm)

- 35mm - SURFACE COURSE ASPHALTIC CONCRETE HL-4 (OPSS 1150)
- 85mm - BINDER COURSE ASPHALTIC CONCRETE HL-8 (OPSS 1150)
- 150mm - BASE COURSE: GRANULAR "A" (OPSS 1010)
- 450mm - SUBBASE Course: GRANULAR "B" TYPE I (OPSS 1010)

PER PINCHIN LTD. REPORT

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 A+ 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 PINCHIN LTD. REPORT .

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.

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 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.

5.13 PAVEMENT STRUCTURE (MATERIAL TYPES AND THICKNESS) 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
DICB51	**BUSH**	**OPSD 705.030**	**3:1**	**94.97**	**94.540**	**94.420**	**250**	**PVC DR-35**	**0.72**	**10**	**TEMPEST MHF**
CB60	CB60	OPSD 705.010	S19	95.95	94.600	94.550	250	PVC DR-35			
CB60A	**CB60A**	**OPSD 705.010**	**S19**	**95.88**	**94.250**	**94.120**	**250**	**PVC DR-35**	**1.86**	**20**	**TEMPEST MHF**
CB60B	CB60B	OPSD 705.010	S19	95.88		94.500	200	PVC DR-35			
CB60C	**CB60C**	**OPSD 705.010**	**S19**	**95.85**		**94.450**	**200**	**PVC DR-35**	**1.45**	**10**	**TEMPEST MHF**
CB61A	**CB61A**	**OPSD 705.010**	**S19**	**96.10**	**94.640**	**94.520**	**250**	**PVC DR-35**	**1.56**	**30**	**TEMPEST MHF**
CB61B	**CB61B**	**OPSD 705.010**	**S19**	**95.89**	**94.410**	**94.290**	**250**	**PVC DR-35**	**1.74**	**10**	**TEMPEST MHF**
CB62	CB62	OPSD 705.010	S19	97.01		95.610	200	PVC DR-35			
CB62A	CB62A	OPSD 705.010	S19	97.01	95.410	94.470	300	PVC DR-35			
CB62B	CB62B	OPSD 705.010	S19	96.30		94.900	200	PVC DR-35			
CB62C	CB62C	OPSD 705.010	S19	95.90		94.500	200	PVC DR-35			
CB64	CB64	OPSD 705.010	S19	95.70		94.910	200	PVC DR-35			
CB64A	CB64A	OPSD 705.010	S19	95.80		94.950	200	PVC DR-35			
CB64B	CB64B	OPSD 705.010	S19	96.10	94.850	94.750	250	PVC DR-35			
CB70	CB70	OPSD 705.010	S19	95.30		94.840	200	CONNECT TO FOUNDATION DRAIN			
CB80	CB80	OPSD 705.010	S19	96.25	94.790	94.740	250	PVC DR-35			
CB81	CB81	OPSD 705.010	S19	96.25	94.874	94.850	200	PVC DR-35			

Bold font indicates CB's with ICD's

Revision: 2018-09-17

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			
3			
2			
1	ISSUED FOR CITY APPROVAL	DGY	2018:09:17

CCR PROCESS PRODUCTS

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

Project Title
CCR WAREHOUSE ADDITION & OFFICE RENOVATION
20 COPE DRIVE, KANATA, ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
xx/xx/xx
PROVINCE OF ONTARIO

Drawing Title
GENERAL NOTES, LEGEND AND CB DATA TABLE

Scale: N.T.S.

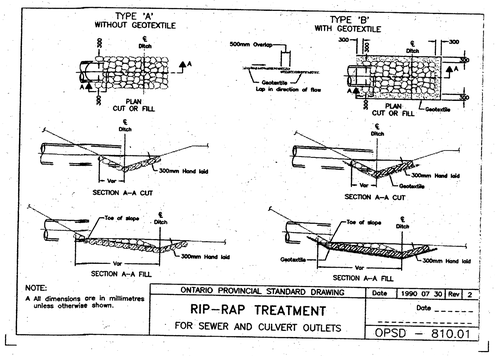
Design	Date
ST	APR 2018
Drawn	**Checked**
ST	DGY
Project No.	**Drawing No.**
117308	010

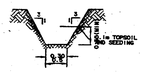
CITY PLAN No.#####

CITY FILE No. #####

APPENDIX C

- **Existing Conditions Site Plan, *OMM TROW***
- **Monahan Drain Cell 1 Modelling – Figure 3, *J.F. Sabourin & Associates Inc.***
- **Storm Drainage Area Plan Drawing No. 117308-C-500**
- **Storm Sewer Design Sheet**
- **Stormwater Management Calculations**
- **Ponding Plan Drawing No. 117308-C-600**
- **Average Runoff Coefficient Calculations**



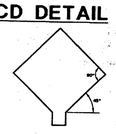


TYPICAL DITCH SECTION

ICD DETAIL

SPECIFICATIONS		
HEAD (m)	FLOW (L/S)	LOCATION
1.55	77.9	CB/MH #104

NOTES
1. THE ICD MUST BE A PVC FRAMED ORIFICE PLATE TO CONTROL OUTLET TO THE STRUCTURE.
2. THE CONTRACTOR MUST SUBMIT DRAWINGS OF THE ICD TO THE ENGINEER FOR APPROVAL.

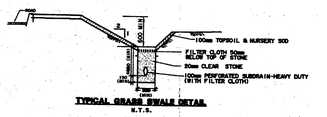


ICD TYPE DETAIL
N.T.S.

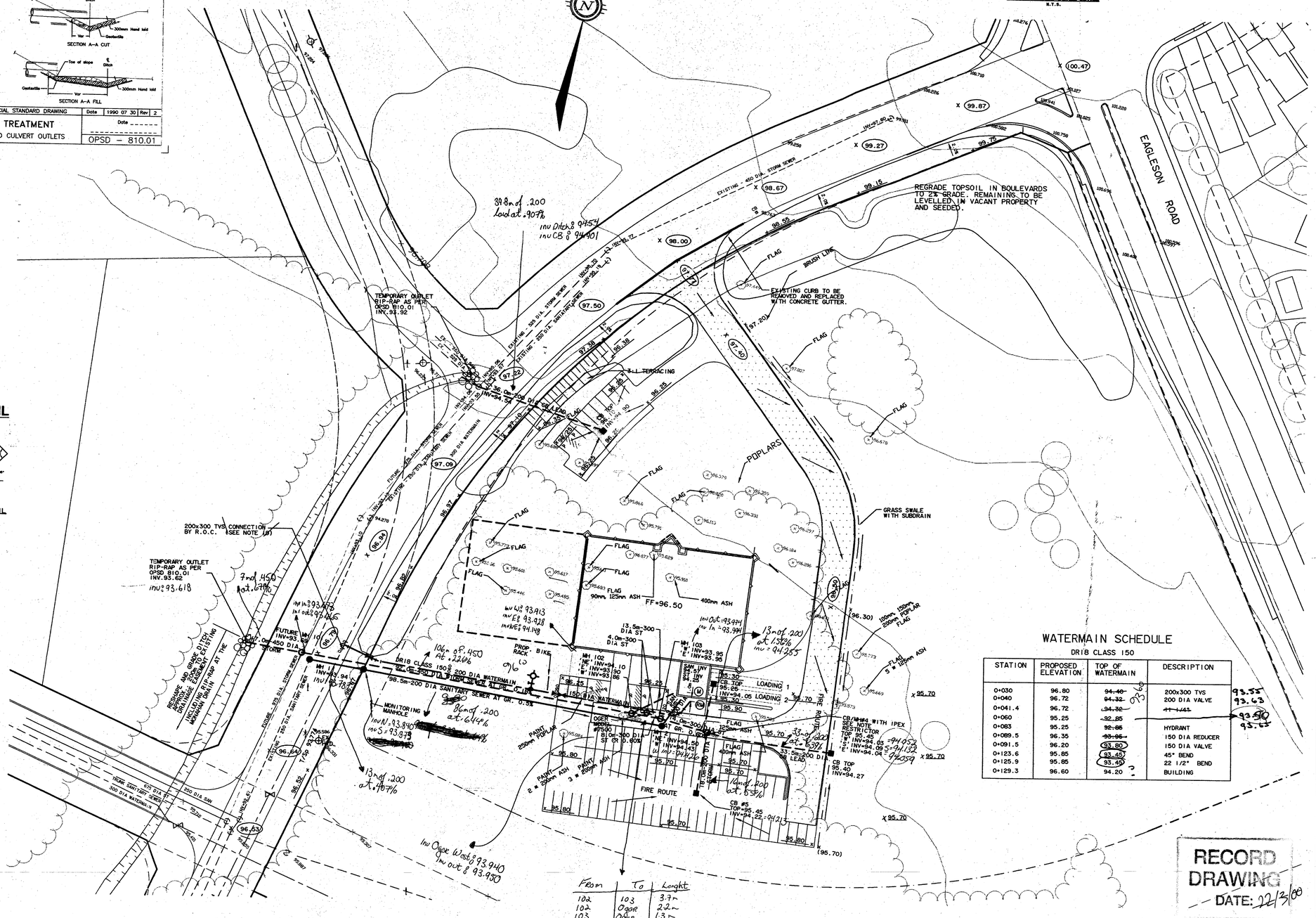
LEGEND

- EXIST STORM MANHOLE
- EXIST SANITARY MANHOLE
- EXIST WATERMAIN
- EXIST STORM SEWER
- EXIST SANITARTY SEWER
- EXIST HYDRANT
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED WATEMAIN
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SWALE
- PROPOSED HYDRANT
- PROPOSED CATCHBASIN
- PROPOSED VALVE
- 125.96 PROPOSED GRADE
- x (126.15) PROPOSED CL ROAD GRADE
- x(95.40) PROPOSED SWALE GRADE
- PROPOSED HEAVY DUTY ASPHALT (SEE DETAIL)
- (M) PROPOSED WATER METER
- (RM) PROPOSED REMOTE READ-OUT

TEMPORARY BENCHMARK
FIRE HYDRANT
NORTHWEST CORNER OF
EAGLESON & CADENCE
ELEV 102.56



TYPICAL GRASS SWALE DETAIL
N.T.S.



WATERMAIN SCHEDULE

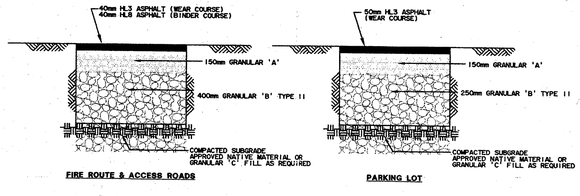
DR18 CLASS 150

STATION	PROPOSED ELEVATION	TOP OF WATERMAIN	DESCRIPTION
0+030	96.80	~~94.40~~ 93.55	200x300 TVS
0+040	96.72	~~94.32~~ 93.63	200 DIA VALVE
0+041.4	96.72	~~94.32~~ 93.63	11 1/4 BEND
0+060	95.25	~~92.85~~ 93.50	HYDRANT
0+063	95.25	~~92.85~~ 93.50	150 DIA REDUCER
0+089.5	96.35	~~93.95~~ 93.63	150 DIA VALVE
0+091.5	96.20	~~93.80~~ 93.63	45° BEND
0+123.6	95.85	~~93.45~~ 93.63	22 1/2° BEND
0+125.9	95.85	~~93.45~~ 93.63	BUILDING
0+129.3	96.60	94.20	

From	To	Lenght
102	103	3.7m
102	Ogde	22m
103	Ogde	13m
103	104	14.6m

GENERAL NOTES

1/ ALL MATERIALS AND CONSTRUCTION METHODS TO OPSS, THE CITY OF KANATA AND R.M.O.C. STANDARD SPECIFICATIONS.
2/ ALL TOPSOIL TO BE REMOVED AND STOCKPILED ON-SITE IN A SUITABLE LOCATION.
3/ ALL MUNICIPAL SERVICES TO BE CONSTRUCTED TO WITHIN THE ROAD ALLOWANCE RIGHT-OF-WAY.
4/ THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND ELEVATION OF EXIST. SEWERS, WATERMAINS, BELL, HYDRO, CABLEVISION AND GAS SERVICES.
5/ THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED TO COMPLETE THIS WORK AND BEAR COST OF SAME.
6/ THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION AND TRENCHING ALONG WITH BACKFILL TO STANDARDS SPECIFIED ON THIS DRAWING.
7/ THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL CONNECTIONS INTO THE EXISTING SEWERS.
8/ SITE LAYOUT IS THE RESPONSIBILITY OF THE CONTRACTOR.
9/ AS-BUILT "SITE SERVICING & GRADING PLANS" WILL BE MAINTAINED ON SITE BY THE CONTRACTOR.
10/ ALL ROADWAY REINSTATEMENTS SHALL CONFORM TO THE CITY OF KANATA OR REGIONAL MUNICIPALITY OF OTTAWA CARLETON SPECIFICATIONS.
11/ A WRITTEN VERIFICATION FROM THE CIVIL ENGINEER CONFIRMING THAT ALL ENGINEERING RELATED WORKS FOR THE SITE HAVE BEEN CARRIED OUT IN ACCORDANCE WITH CITY STANDARDS, SPECIFICATIONS & BYLAWS INCLUDING ALL WORKS WITHIN THE REGIONAL ROAD ALLOWANCE.
12/ ALL WATERMAIN TO BE 2.4m BELOW FINISHED CENTRE LINE GRADE.
13/ THERMAL INSULATION AT OPEN STRUCTURES AS PER RMOC WSD-23.
14/ CATHODIC PROTECTION FOR WATERMAINS AS PER RMOC WSD-40, WSD-42.
15/ FIRE HYDRANT ISOLATION VALVE TO BE 0.6m FROM WATERMAIN.
16/ CATCH BASIN LEADS WILL BE 200mm DIAMETER (MINIMUM) AND HAVE A MINIMUM SLOPE OF 0.7%
17/ SEWER SERVICES TO BE PVC SDR 28 AND HAVE A MINIMUM SLOPE OF 1.0%.
18/ CONTRACTOR TO ADJUST EXISTING CATCH BASINS, MANHOLES, FIRE HYDRANTS, VALVE CHAMBERS AND VALVE BOXES AS REQUIRED.
19/ CONNECTION TO EXISTING WATER MAIN BY RMOC FORCES. CONTRACTOR RESPONSIBLE FOR PROVIDING EXCAVATION, BACKFILLING.
20/ SUB-EXCAVATE SOFT AREAS & FILL WITH GRANULAR 'B' COMPACTED IN 0.15m LAYERS.
21/ WEAR COURSE OF ASPHALT TO BE PLACED AFTER A VIDEO INSPECTION OF SEWERS & RESULTING REPAIRS ARE CARRIED OUT.
22/ SEWERS SHALL BE VIDEO INSPECTED AFTER CONSTRUCTION.
23. SANITARY MANHOLES SHALL BE 1.200 mm DIAMETER IN ACCORDANCE WITH OPSD-1001.01
24. CATCH BASINS SHALL BE IN ACCORDANCE WITH OPSD-700.01 COMPLETE WITH FRAME AND GRATE AS PER OPSD 400. PROVIDE 150mm ADJUSTED SPACERS FOR REAR YARD CATCH BASINS.
25. FOR THE ENTIRE CONSTRUCTION PERIOD MAINTAIN A FILTER FABRIC AROUND ALL CATCH BASIN AND MANHOLE TOPS.
26. GRANULAR "A" SHALL BE PLACED TO A MINIMUM THICKNESS OF 300 mm AROUND ALL STRUCTURES WITHIN PAVEMENT AREA.
27. SEWER TRENCH SHALL CONSIST OF A CLASS "B" BEDDING CONSISTING OF 150 mm OF GRANULAR "A" BEDDING AND BACKFILLED WITH GRANULAR "A" TO 300mm OVER SEWER. COMPACTION SHALL BE A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
28. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
29. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR.
30. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING FOUNDATION OF ADJACENT BUILDINGS DURING EXCAVATION AND CONSTRUCTION PERIOD.
31. BOULEVARDS TO BE SODDED
32. THE INSTALLATION OF SANITARY SEWERS SHALL INCLUDE SEEPAGE BARRIERS AT LOCATIONS SHOWN ON CONTRACT DRAWINGS, CONSISTING OF 1.0M WIDE OF WEATHERED CLAY FROM THE TOP OF THE TRENCH BACKFILL MATERIAL TO 0.3M BELOW THE PIPE FOR THE ENTIRE LENGTH OF THE TRENCH OR AS DIRECTED BY THE ENGINEER.
33. CONTRACTOR TO PROVIDE TEMPORARY PONDS AND SILT FENCES LOCATIONS TO ENGINEER PRIOR TO CONSTRUCTION.
34. CATCHBASIN/MANHOLE #104 TO HAVE A IPEX TYPE INLET RESTRICTOR
35. LINE PAINTING COLOUR TO BE WHITE
36. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH CONSUMERS GAS. ANY FEES OR COST TO BE THE CONTRACTORS RESPONSIBILITY.



FIRE ROUTE & ACCESS ROADS — PARKING LOT

TYPICAL PAVEMENT STRUCTURES
N.T.S.

RECORD DRAWING
DATE: 22/3/00

5356

12984

1695-65t

Conforms to Region of Ottawa-Carleton Water Standards
Conforme aux standards d'eau de la Région d'Ottawa-Carleton
S. Dauvet Date: 16 Aug 99
x2661 Ottawa-Carleton

No.	DESCRIPTION	DATE	BY
5	REVISED AS PER R.O.C. COMMENTS	JULY 14/99	AMC
4	REVISED AS PER R.O.C. COMMENTS	JULY 12/99	GBJ
3	REMOVE PARKING ISLAND AND PARKING SPOTS	JUNE 2/99	AMC
2	REVISED GRADES, CHANGE INCD	MAY 26/99	NMR
1	ADDED BIKE RACK, RELOCATED FIRE HYDRANT & REV STORM	MAY 12/99	NMR

REVISIONS

LICENCE PROFESSIONAL ENGINEER S. J. PICHETTE PROVINCE OF ONTARIO July 15/99
LICENCE PROFESSIONAL ENGINEER C.B.WARNOCK PROVINCE OF ONTARIO July 15/99

OMM A TROW COMPANY Trow
CONSULTING ENGINEERS, HYDROGEOLOGISTS & PLANNERS
Oliver, Mangione, McCalla & Associates a division of Trow Consulting Engineers Ltd.
154 COLONNADE RD. S. NEPEAN ONTARIO
PHONE (613) 225-9940
FAX (613) 225-7337

CLIENT
SOFPAK INC.

PROJECT
SOFPAK CENTRE
KANATA SOUTH TECHNOLOGY PARK

DRAWING
SITE SERVICING & GRADING PLAN

design by	S.J.P.	project no.	MP13095
drawn by	M.M.R.	drawing no.	C1
checked by	S.J.P.		REV.
date	MAY 1999	revision no.	
scale	1:500		

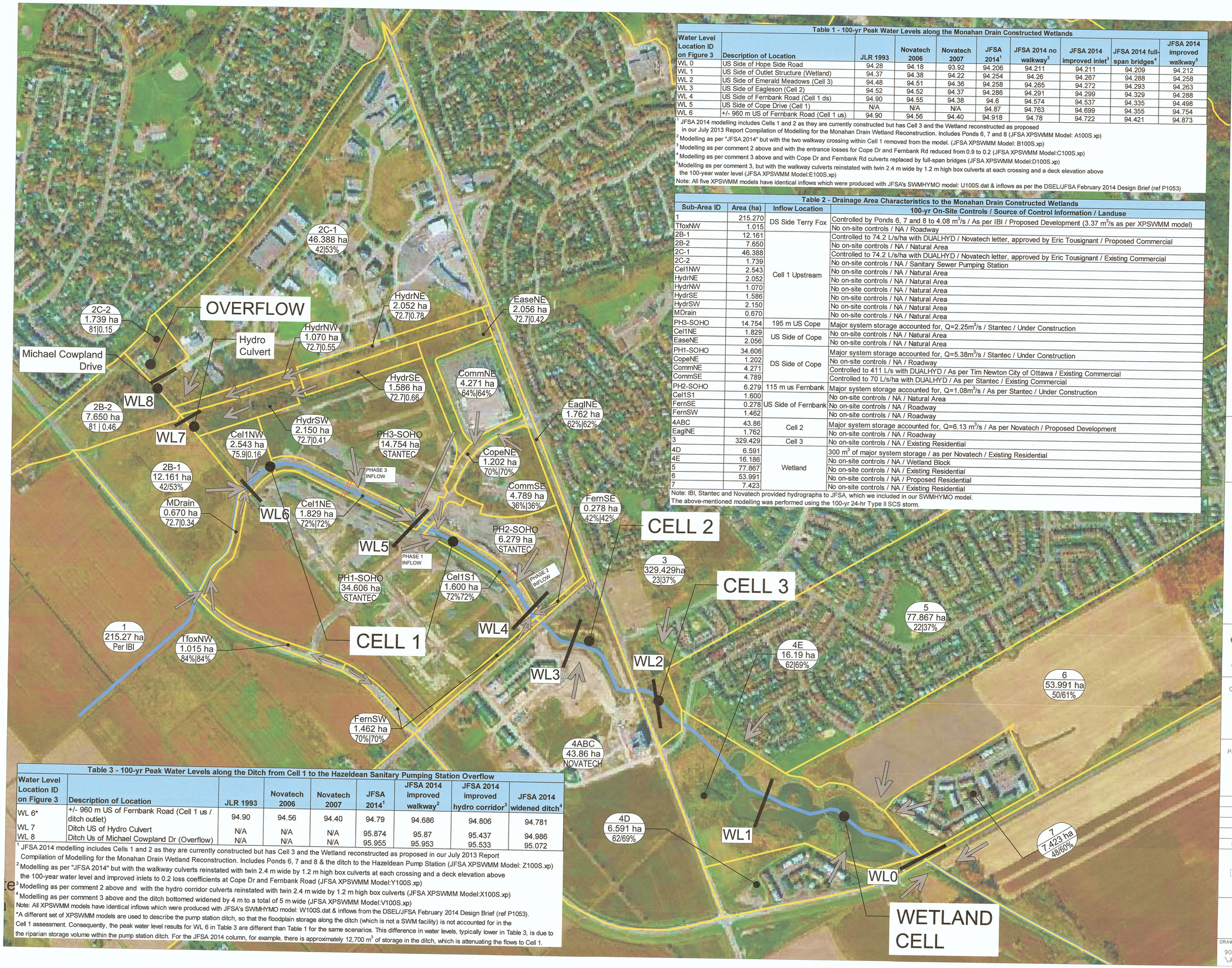


Table 1 - 100-yr Peak Water Levels along the Monahan Drain Constructed Wetlands

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

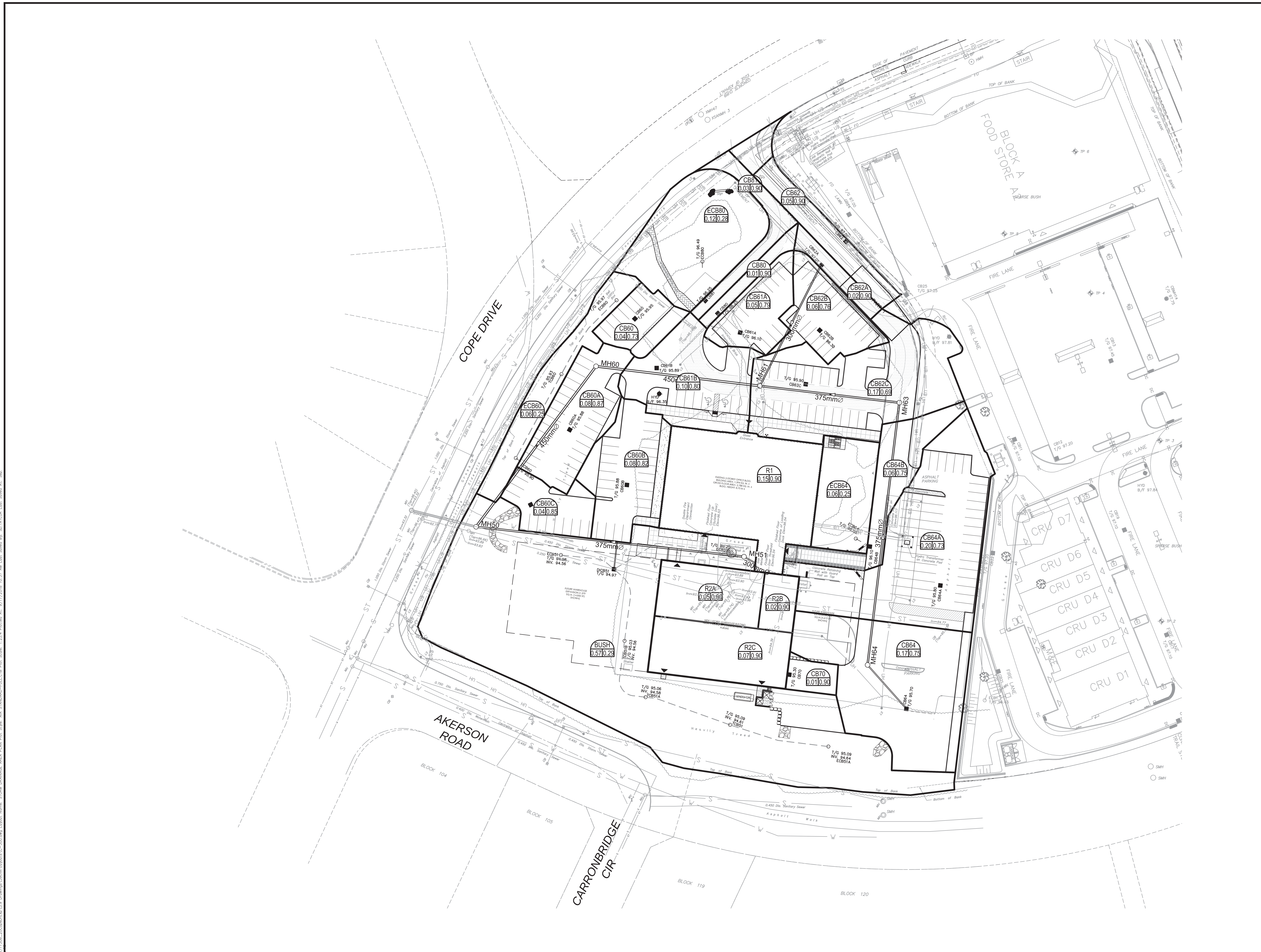
DETAILED DRAINAGE AREAS TO CELL 1 + WATER LEVELS ALONG the MDCW

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



REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________2018

Plan Number ______________________

LEGEND :

CB64B — AREA NUMBER
0.06 — AREA IN HECTARES
0.75 — RUN OFF COEFFICIENT
— AREA BOUNDARY

SITE

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3			
2			
1	ISSUED FOR CITY APPROVAL	DGY	2018:09:17

CCR PROCESS PRODUCTS

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

Project Title

CCR WAREHOUSE ADDITION & OFFICE RENOVATION
20 COPE DRIVE, KANATA, ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
xx/xx/xx
PROVINCE OF ONTARIO

N

Drawing Title

STORM DRAINAGE AREA PLAN

Scale 1 : 500

Design ST | Date SEPT 2018

Drawn ST | Checked DGY

Project No. 117308 | Drawing No. C-500

CITY PLAN No. ####

CITY FILE No. ####

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

CCR WAREHOUSE ADDITION AND OFFICE RENOVATION
20 COPE DRIVE, KANATA, ONTARIO
FIRST AIR

LOCATION				AREA (Ha)														RATIONAL DESIGN FLOW												SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.25	C= 0.29	C= 0.28	C= 0.37	C= 0.50	C= 0.69	C= 0.75	C= 0.73	C= 0.77	C= 0.79	C= 0.80	C= 0.82	C= 0.85	C= 0.87	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 (mm) DIA	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	(%)
	R1	Bldg	MH51															0.15	0.38	0.38	10.00	0.05	10.05	76.81	104.19	122.14	178.56	28.82	39.10	45.84	67.01		28.82	100.88	4.00	300			1.00	1.383	72.06	71.43%
	BUSH, R1, R2A, R2C,CB70	MH51	MH50		0.57													0.13	0.78	0.78	10.05	1.55	11.60	76.62	103.94	121.84	178.12	60.13	81.57	95.62	139.79		60.13	100.18	81.97	375			0.30	0.879	40.05	39.98%
	CB64,CB64A,ECB64,CB64B,R2B	MH64	MH63	0.06						0.23	0.20							0.02	0.98	0.98	10.00	1.61	11.61	76.81	104.19	122.14	178.56	75.05	101.81	119.35	174.48		75.05	95.04	80.37	375			0.27	0.834	19.99	21.03%
		MH63	MH61																0.00	0.98	11.61	0.85	12.46	71.14	96.41	112.97	165.09	69.52	94.21	110.40	161.33		69.52	95.04	42.71	375			0.27	0.834	25.53	26.86%
	CB62,CB62A,CB62B,CB62C	CB62A	MH61						0.17			0.06						0.07	0.63	0.63	10.00	0.83	10.83	76.81	104.19	122.14	178.56	48.36	65.61	76.91	112.43		48.36	59.68	40.88	300			0.35	0.818	11.32	18.97%
	CB61B,ECB80,CB81,CB80,CB61A,ECB60, CB60	MH61	MH60	0.06		0.12					0.04		0.05	0.10				0.05	0.59	2.20	12.46	0.76	13.22	68.49	92.77	108.70	158.81	150.63	204.03	239.05	349.27		150.63	180.92	50.18	450			0.37	1.102	30.29	16.74%
	CB60A,CB60B,CB60C	MH60	MH50												0.08	0.04	0.08		0.47	2.67	13.22	0.91	14.13	66.32	89.79	105.18	153.65	177.04	239.70	280.80	410.20		177.04	183.35	60.93	450			0.38	1.117	6.31	3.44%
	EXISTING SERVICE	*MH50*	*EXMH*	*FLOW RESTRICTION TO 156.48 l/s*																*3.45*	*14.13*	*0.31*	*14.43*	*FLOW RESTRICTION TO 151.2 l/s*								*156.48*	*156.48*	*180.92*	*20.24*	*450*			*0.37*	*1.102*	*24.44*	*13.51%*

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: SDT
Checked: DY
Dwg. Reference: 117308-500

No.	Revision	Date
1.	Submission No. 1	31/08/2018

File Reference: 117308-5.7
Date: 31/08/2018
Sheet No: 1 of 1

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: 20 Cope Dr
DATE: 9/10/2018
FILE: 117308.5.7
REV #:
DESIGNED BY: ST
CHECKED BY: dy

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)

Rate	70.00	L/S/Ha
A_{TOTAL} =	2.26	Ha
$Q_{Restricted}$ =	158.20	L/s
$Q_{Restricted}$ =	158.20	L/s

Existing Building fixed Release (4 drains at 0.63 l/s each)

drain =	0.63	l/s
number of drains	4	
Q_{fixed} =	2.52	L/s

Uncontrolled Release (Q uncontrolled = 2.78*C*i100yr*A uncontrolled)

C =	1.00	
Tc =	10.00	min
i100yr =	178.56	mm/hr
Auncontrolled =	0.01	Ha
$Q_{Uncontrolled}$ =	4.96	L/s

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

$Q_{max\ allowable}$ = 150.72 L/s

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

Drainage Area	***P63***		
Area (Ha)	0.510		
C =	0.86	Restricted Flow Q_r (L/s)=	44.00

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)***
22	112.88	137.64	44.00	93.64	123.60
23	109.68	133.74	44.00	89.74	123.84
24	106.68	130.07	44.00	86.07	**123.94**
25	103.85	126.62	44.00	82.62	123.93
27	98.66	120.30	44.00	76.30	123.60

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	123.94	121.78	0.00	2.16

overflows to: P51

Drainage Area	***P63***		
Area (Ha)	0.510		
C =	0.69	Restricted Flow Q_r (L/s)=	44.00

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)***
9	109.79	107.41	44.00	63.41	34.24
11	99.19	97.04	44.00	53.04	35.00
12	94.70	92.64	44.00	48.64	**35.02**
13	90.63	88.66	44.00	44.66	34.84
15	83.56	81.74	44.00	37.74	33.97

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	35.02	121.78	0.00	0.00

overflows to: P51

Drainage Area	P61
Area (Ha)	0.300
C =	0.94
Restricted Flow Q_r (L/s)=	25.00

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	81.41	25.00	56.41	84.62
27	98.66	77.35	25.00	52.35	84.80
28	96.27	75.48	25.00	50.48	**84.80**
29	94.01	73.70	25.00	48.70	84.74
31	89.83	70.42	25.00	45.42	84.48

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	84.80	30.99	0.00	53.81

overflows to: P60

Drainage Area	P61
Area (Ha)	0.300
C =	0.75
Restricted Flow Q_r (L/s)=	25.00

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)
10	104.19	65.17	25.00	40.17	24.10
12	94.70	59.23	25.00	34.23	24.65
13	90.63	56.69	25.00	31.69	**24.72**
14	86.93	54.38	25.00	29.38	24.68
16	80.46	50.33	25.00	25.33	24.31

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	24.72	30.99	0.00	0.00

overflows to: P60

Drainage Area	P60A
Area (Ha)	0.220
C =	0.68
Restricted Flow Q_r (L/s)=	30.00

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)
9	188.25	78.29	30.00	48.29	26.08
11	169.91	70.66	30.00	40.66	26.84
12	162.13	67.43	30.00	37.43	**26.95**
13	155.11	64.51	30.00	34.51	26.92
15	142.89	59.43	30.00	29.43	26.49

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	26.95	1.94	0	25.01

overflows to: P60

Drainage Area	P60A
Area (Ha)	0.220
C =	0.54
Restricted Flow Q_r (L/s)=	30.00

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	182.69	60.34	30.00	30.34	3.64
4	152.51	50.37	30.00	20.37	4.89
5	141.18	46.63	30.00	16.63	**4.99**
6	131.57	43.45	30.00	13.45	4.84
8	116.11	38.35	30.00	8.35	4.01

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	4.99	1.94	0	3.05

overflows to: P60

Drainage Area	P60
Area (Ha)	0.190
C =	0.80
Restricted Flow Q_r (L/s)=	10.00

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	35.61	10.00	25.61	52.24
36	80.96	34.21	10.00	24.21	52.30
37	79.42	33.56	10.00	23.56	**52.30**
38	77.93	32.93	10.00	22.93	52.28
40	75.15	31.75	10.00	21.75	52.21

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
78.82	131.12	53.43	0	77.69

overflows to: P50A

Drainage Area	P60
Area (Ha)	0.190
C =	0.64
Restricted Flow Q_r (L/s)=	10.00

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	28.25	10.00	18.25	16.42
17	77.61	26.23	10.00	16.23	16.56
18	74.97	25.34	10.00	15.34	**16.57**
19	72.53	24.52	10.00	14.52	16.55
21	68.13	23.03	10.00	13.03	16.42

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
3.05	19.62	53.43	0	0.00

overflows to: P50A

Drainage Area	P50A
Area (Ha)	0.160
C =	1.00

Restricted Flow Q_r (L/s)= 20.00

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)
17	132.63	58.99	20.00	38.99	39.77
19	123.87	55.10	20.00	35.10	40.01
20	119.95	53.35	20.00	33.35	**40.02**
21	116.30	51.73	20.00	31.73	39.98
23	109.68	48.79	20.00	28.79	39.73

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
77.69	117.71	83.51	0	34.20

overflows to: P50

Drainage Area	P50A
Area (Ha)	0.160
C =	0.85

Restricted Flow Q_r (L/s)= 20.00

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)
7	123.30	46.62	20.00	26.62	11.18
9	109.79	41.51	20.00	21.51	11.62
10	104.19	39.39	20.00	19.39	**11.64**
11	99.19	37.50	20.00	17.50	11.55
13	90.63	34.27	20.00	14.27	11.13

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	11.64	83.51	0	0.00

overflows to: P50

Drainage Area	P50
Area (Ha)	0.040
C =	1.00

Restricted Flow Q_r (L/s)= 10.00

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)
7	211.67	23.54	10.00	13.54	5.69
9	188.25	20.93	10.00	10.93	5.90
10	178.56	19.86	10.00	9.86	**5.91**
11	169.91	18.89	10.00	8.89	5.87
13	155.11	17.25	10.00	7.25	5.65

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
34.20	40.12	8.04	0	32.08

overflows to: P51

Drainage Area	P50
Area (Ha)	0.040
C =	0.85

Restricted Flow Q_r (L/s)= 10.00

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)
1	203.51	19.24	10.00	9.24	0.55
3	166.09	15.70	10.00	5.70	1.03
4	152.51	14.42	10.00	4.42	**1.06**
5	141.18	13.34	10.00	3.34	1.00
7	123.30	11.65	10.00	1.65	0.69

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	1.06	8.04	0	0.00

overflows to: P51

Drainage Area	51
Area (Ha)	0.690
C =	0.50

Restricted Flow Q_r (L/s)= 10.00

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)
79	45.42	43.57	10.00	33.57	159.11
81	44.57	42.74	10.00	32.74	159.13
82	44.15	42.35	10.00	32.35	**159.14**
83	43.74	41.95	10.00	31.95	159.13
85	42.95	41.20	10.00	31.20	159.11

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
34.24	193.38	200.00	0	0.00

Drainage Area	51
Area (Ha)	0.690
C =	0.40

Restricted Flow Q_r (L/s)= 10.00

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)
37	46.67	35.81	10.00	25.81	57.30
39	44.98	34.51	10.00	24.51	57.36
40	44.18	33.90	10.00	23.90	**57.36**
41	43.42	33.31	10.00	23.31	57.35
43	41.97	32.20	10.00	22.20	57.29

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	57.36	200.00	0	0.00

Drainage Area	Ex Roof
Area (Ha)	0.150
C =	1.00

Restricted Flow Q_r (L/s)= 2.52

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)
142	28.83	12.02	2.52	9.50	80.95
144	28.51	11.89	2.52	9.37	80.96
145	28.36	11.83	2.52	9.31	**80.96**
146	28.21	11.76	2.52	9.24	80.96
148	27.90	11.64	2.52	9.12	80.95

Required	Surface	depth
80.96	750.00	0.107941933

Drainage Area	Ex Roof
Area (Ha)	0.150
C =	0.90

Restricted Flow Q_r (L/s)= 2.52

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)
74	28.17	10.57	2.52	8.05	35.75
76	27.61	10.36	2.52	7.84	35.76
77	27.34	10.26	2.52	7.74	**35.76**
78	27.08	10.16	2.52	7.64	35.76
80	26.56	9.97	2.52	7.45	35.75

Required	Surface	depth
35.76	750.00	0.047683844

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			
3			
2			
1	ISSUED FOR CITY APPROVAL	DGY	2018.09.17

CCR PROCESS PRODUCTS

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

Project Title

CCR WAREHOUSE ADDITION & OFFICE RENOVATION
20 COPE DRIVE, KANATA, ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
xx/xx/xx
PROVINCE OF ONTARIO

N

Drawing Title

PONDING PLAN

Scale
1 : 500

Design	Date
ST	SEPT 2018
Drawn	Checked
ST	DGY
Project No.	Drawing No.
117308	C-600

CITY PLAN No.#####

CITY FILE No. #####

J:\117308_20CopeDr\Dwgs\3Sub\Layouts\C-600.dwg Layout Name: PONDING PLAN Plot Style: AIA STANDARD--FULL.CTB Plot Scale: 1:25.4 Plotted At: 9/17/2018 10:38 AM Last Saved By: AMY.ZHUANG Last Saved At: Sep. 14, 18

Average C calaculation
20 Cope Dr.

Sept 2018
Project # 117308

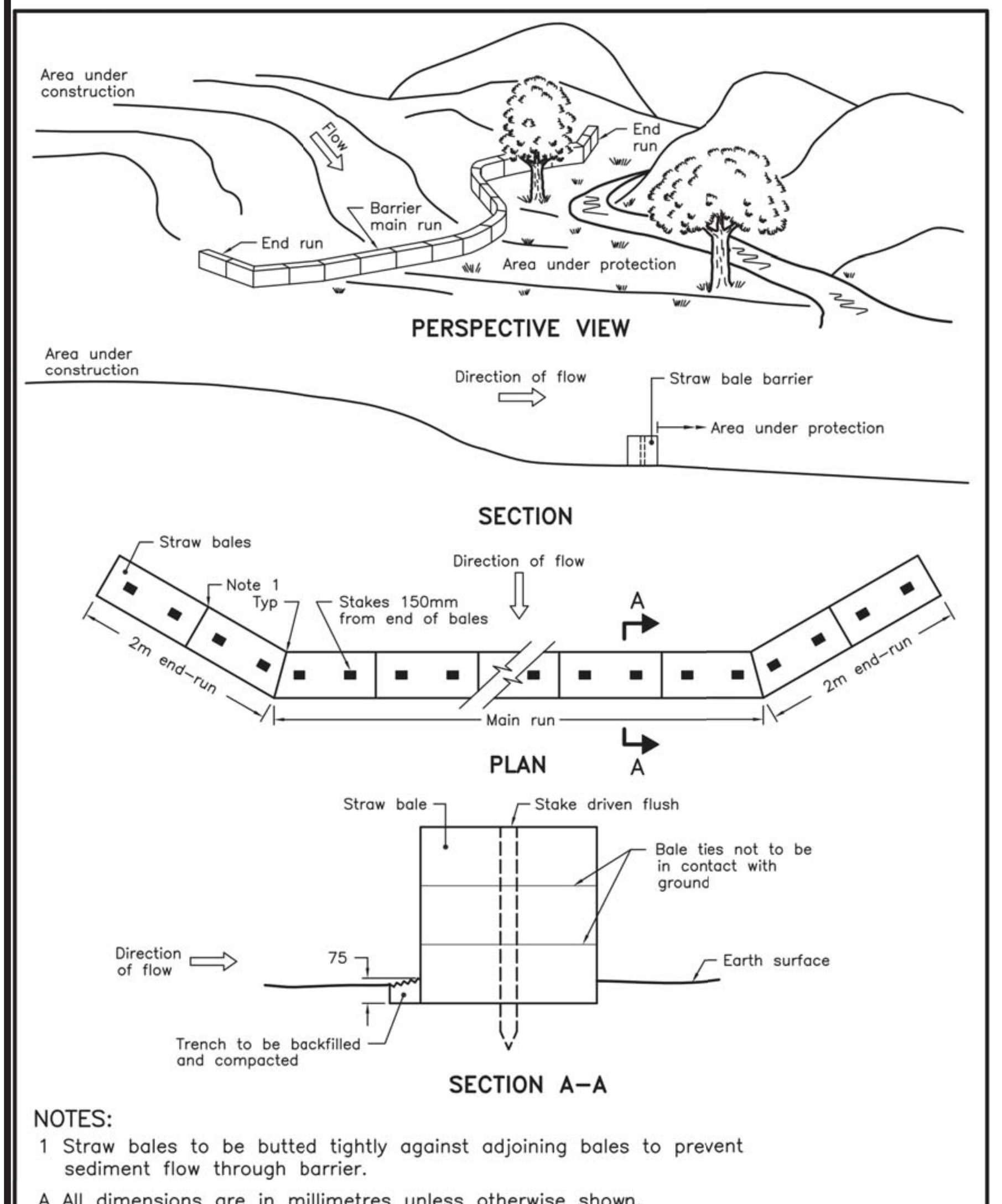
Trib Area	**Area**	**C value**	**AC**	
CB70	0.01	0.9	0.009	
Total Area	0.01		0.009	
Ponding Area P70			**Combined C**	0.9
Trib Area	**Area**	**C value**	**AC**	
ECB64	0.06	0.25	0.015	
CB64B	0.06	0.75	0.045	
CB64A	0.2	0.73	0.146	
CB64	0.17	0.75	0.1275	
R2B	0.02	0.9	0.018	
Total Area	0.51		0.3515	
Ponding Area P63			Combined C	0.689216
Trib Area	**Area**	**C value**	**AC**	
CB62	0.05	0.9	0.045	
CB62A	0.02	0.9	0.018	
CB62B	0.06	0.76	0.0456	
CB62C	0.17	0.69	0.1173	
Total Area	0.3		0.2259	
Ponding Area P61			Combined C	0.753
Trib Area	**Area**	**C value**	**AC**	
CB61B	0.1	0.8	0.08	
ECB60	0.05	0.25	0.0125	
CB60	0.04	0.73	0.0292	
Total Area	0.19		0.1217	
Ponding Area P60			Combined C	0.640526
Trib Area	**Area**	**C value**	**AC**	
CB61A	0.05	0.79	0.0395	
ECB80	0.12	0.28	0.0336	
CB80	0.02	0.9	0.018	
CB81	0.03	0.9	0.027	
Total Area	0.22		0.1181	
Ponding Area P60A			Combined C	0.536818
Trib Area	**Area**	**C value**	**AC**	
CB60A	0.08	0.87	0.0696	
CB60B	0.08	0.82	0.0656	
Total Area	0.16		0.1352	
Ponding Area P50A			Combined C	0.845
Trib Area	**Area**	**C value**	**AC**	
CB60C	0.04	0.85	0.034	
Ponding Area P50			Combined C	0.85
Trib Area	**Area**	**C value**	**AC**	
BUSH	0.57	0.29	0.1653	
R2A	0.05	0.9	0.045	
R2C	0.07	0.9	0.063	
Total Area	0.69		0.2733	
Ponding Area P51			Combined C	0.396087

APPENDIX D

- **Erosion and Sediment Control Plan Drawing No. 117308-C-900**

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.

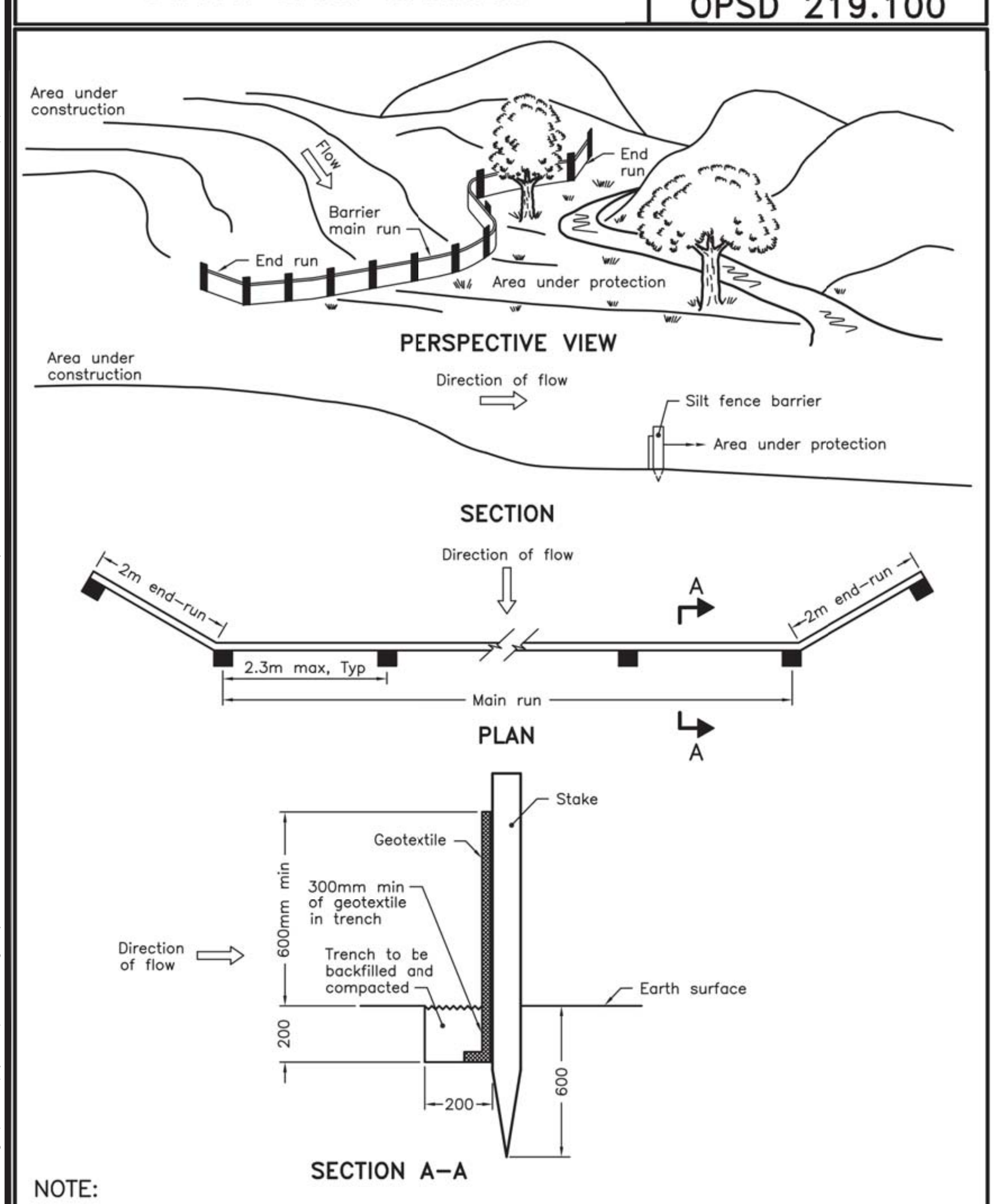


NOTES:
1 Straw bales to be butted tightly against adjoining bales to prevent sediment flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

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
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- SILT SACK PLACED UNDER EXISTING CB COVER

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
3			
2			
1	ISSUED FOR CITY APPROVAL	DGY	2018:09:17

CCR PROCESS PRODUCTS

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

Project Title

CCR WAREHOUSE ADDITION & OFFICE RENOVATION

20 COPE DRIVE, KANATA, ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
xx/xx/xx
PROVINCE OF ONTARIO

N

Drawing Title

EROSION SEDIMENT CONTROL PLAN

Scale: 1 : 500

Design	Date
ST	SEPT 2018
Drawn	Checked
ST	DGY
Project No.	Drawing No.
117308	C-900

CITY PLAN No. ####

CITY FILE No. ####