File: 141991 – 6.04-03

Design Brief
Building 17 – Chick-Fil-A

333 Huntmar Drive

Prepared for RioCan REIT
by IBI Group
June 2023

Document Control Page

CLIENT:	
PROJECT NAME:	Building 17 – Chick-Fil-A
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HISTORY:	

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1 INTRODUCTION

1.1 Scope

IBI Group has been retained by RioCan REIT to prepare the necessary engineering plans, specifications and documents to support a 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 that will review water supply, wastewater disposal, minor and major stormwater management along with erosion and sediment control.

1.2 Subject Site

The Tanger Outlets Centre (TOC) in Ottawa consists of a large parking lot that rings a mega pad which includes 13 buildings. The Owners, Riocan Management Inc. received site plan approval for these buildings in 2013 and started construction and opened for business in October 2014. The legal description of the property is Part of Lot 3, Concession 1 (Parts as Closed by By-laws OC1621835 AND OC1627030), Geographic Township of Huntley, City of Ottawa. Subsequently, additional stand-alone buildings have since been constructed along the perimeter of TOC.

Part of the development of TOC included construction of municipal infrastructure including watermains and sewers. All the municipal infrastructure on the TOC site is currently in place and in service. **Figure 1** shows the location of the proposed site. **Figure 2** contains an aerial image of the current pre-development condition of the site in relation to TOC.

This proposal covers the redevelopment of Part 4, a 0.28 ha portion of the old Palladium Drive alignment. The subject property is presently unimproved. The proposed re-development of the site will include a 458m2 fast-food restaurant with two-lane drive-thru facility and surface parking. Per the pre-construction meeting minutes, the subject site is currently in the process of being merged with TOC and is considered one lot for zoning purposes. A current concept of the envisioned development is shown on **Figure 4**.

1.3 Previous Studies

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

- **Kanata West Business Park (KWBP) Phase 5 Design Brief – 425 Huntmar** prepared by IBI Group, dated September 2019, revised October 2019
- **Kanata West Business Park (KWBP) Phase 6 Design Brief – 333 Huntmar** prepared by IBI Group, dated February 2013, revised October 2013
- **Ammended Environmental Compliance Approval, 333 Huntmar Drive – Tanger Outlets Centre**, Number 8617-AHGRV5, by Ministry of the Environment and Climate Change, issued January 13, 2017
- **Geotechnical Investigation, Proposed Commercial Building, 333 Huntmar Drive, Ottawa, Ontario** dated March 5, 2023 by Paterson Group
- **Phase 1 Environmental Site Assessment, 333 Huntmar Drive – Vacant Land at Palladium Drive and Campeau Drive, Ottawa, Ontario** dated February 8, 2023 by Paterson Group

1.4 Pre-Consultation

A pre-consultation meeting with the Owner and City Staff was held on January 19, 2023. Attached in **Appendix A** is a copy of the meeting notes from that meeting. Some of the items discussed during the meeting dealt with the following subjects:

- Official Plan & Zoning
- Infrastructure/Servicing
- Planning
- Urban Design
- Parks
- Environment
- Transportation
- Forestry

1.5 Geotechnical Investigation

A geotechnical report entitled “Geotechnical Investigation, Proposed Commercial Building, 333 Huntmar Drive, Ottawa, Ontario” dated March 5, 2023 by Paterson Group has been prepared for the subject site.

The objective of the investigation report include:

- Determination of the subsoil and groundwater conditions;
- Provision of geotechnical recommendations pertaining to the design and development of the subject site including construction considerations.

Among other items, the report comments on the following:

- Site grading;
- Foundation design;
- Pavement structure;
- Infrastructure construction;
- Groundwater control;
- Contamination/corrosive environment.

The report concludes that the subject site is considered suitable for the proposed development

2 WATER SUPPLY

2.1 Existing Conditions

As previously noted, the 0.28 hectare Building 17 site is located in pressure zone 3W, east of Palladium Drive, south of the access road to TOC, and on the western edge of TOC (see **Figure 1**). There is an existing 254 mm dia PVC municipal watermain in Palladium Drive and a 203mm PVC private watermain in the access road to the north. Connecting to the 203mm private watermain was determined to be less destructive and is therefore the proposed water source for the subject lands.

2.2 Design Criteria

2.2.1 Water Demands

Water demands have been calculated for the development using consumption rates from Table 4.2 of the Ottawa Design Guidelines – Water Distribution. The proposed development will include one fast-food restaurant with a floor area of 458m2. Per unit population density and consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Residential Average Day Demand 280 l/cap/day
- Residential Peak Daily Demand 700 l/cap/day
- Residential Peak Hour Demand 1540 l/cap/day

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

- Average Day 0.01 l/s
- Maximum Day 0.02 l/s
- Peak Hour 0.04 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 subject site plan will contain one building. Calculations using the Fire Underwriting Survey (FUS) method were conducted to determine the fire flow requirement for the site for the building. The FUS method considers building floor area, type of building construction, type of occupancy, availability of sprinkler systems and separations from adjacent buildings. The building will be made of ordinary construction, will have an occupancy adjustment based on use as a restaurant, and be unsprinklered. Results of the calculations show a fire demand of 5,000 l/min (83.3 l/s). A copy of the FUS calculation is included in **Appendix B**.

2.2.4 Boundary Conditions

The City of Ottawa has provided hydraulic boundary conditions based on the above noted water demands and fire flow. The boundary conditions are included in **Appendix B** and are summarized as follows;

Table 2.2.4: Boundary Conditions Summary

SCENARIO	HEAD
Max HGL (Basic Day)	160.7 m
Peak Hour	156.5 m
Max Day + Fire (5,000 l/min)	153.7 m

2.3 Proposed Water Plan

The site will be serviced by the 203mm PVC private watermain to the north. The single water service is proposed to be 50mm, see site servicing plan 141991-C-001 in **Appendix E**. Two existing fire hydrants are expected to provide fire flow coverage for the site. For the purposes of this report, assuming a minimal loss within the service connection the pressures within the site can be estimated as follows:

Minimum Pressure (Peak Hour) – The minimum peak hour pressure on the site can be estimated as HGL 160.7m – meter elevation (assumed to be 1m above finished floor) 104.15 m = 56.55 m or 554.7 kPa which exceeds the minimum requirement of 276 kPa.

Fire Flow – The max day plus fire flow can be estimated as HGL 153.7 m – ground floor 103.15 = 50.55 m or 495.9 KPa which exceeds the minimum of 140kPa.

Max HGL (High Pressure Check) – The high-pressure check can be estimated as HGL 156.5 m – lowest level 103.15 m = 53.35m or 523.3 KPa which is below the maximum of 552 kPa, therefore no pressure reducing valve is required.

The above results indicate the municipal infrastructure can support the proposed development.

Two hydrants are available to service the subject property. With 2 AA hydrants within 150m of the building the minimum number of hydrants needed to deliver the required fire flow to the structure is being provided in accordance with Technical Bulletin ISTB-2018-02 dated March 21, 2018.

Table 2.3: Hydrant Proximity Summary

BUILDING ID	FIRE FLOW DEMAND (L/MIN)	FIRE HYDRANT(S) WITHIN 75M (5,700 L/MIN)	FIRE HYDRANT(S) WITHIN 150M (3,800 L/MIN)	COMBINED FIRE FLOW (L/MIN)
Building 17	5,000	0	2	7,600

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

There are no existing sanitary sewers in the Palladium right-of-way adjacent to this site or in the access road to the north. The nearest sanitary connection in TOC is a 250mm PVC sanitary sewer to the northeast. This sewer has been determined to have sufficient capacity and is the proposed connection for this project.

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:

- Residential flow 280 l/p/d
- Unit Population 1.8 ppu
- Peaking factor Modified Harmon Formula
- 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 sanitary sewer in TOC will be extended to be able to service this project. The sewers have been designed using the criteria noted above in Section 3.2 and outlet via a connection to the sanitary sewer at MH1A located north of the food court in TOC. The route was chosen so as to minimize the impact to existing features. A copy of the sanitary drainage area plan 141991 C-400 and the sanitary sewer design sheet can be found in **Appendix C.** Please refer to the site servicing plan 141991 C-001, which is located in **Appendix F**, for further details.

Based on the proposed commercial land use for Building 17, the calculated wastewater flow is estimated to be 0.32 l/s. Based on the sanitary design sheet from TOC, the downstream wastewater system has more than sufficient available capacity to accommodate the proposed site.

4 SITE STORMWATER MANAGEMENT

4.1 Existing Conditions

There is an existing 450mm concrete storm sewer in Palladium Drive as well as a 375mm PVC storm sewer in the access road to the north. Both of these sewers, however, are considered to be too shallow to service the proposed project. Inside TOC there is a 525mm concrete storm sewer to the east, but it lacks sufficient capacity to cover the entire site. Another option is the 675mm concrete storm service to the northeast, near the proposed sanitary connection.

4.2 Design Criteria

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 — 1:2 year return (Ottawa)
- Rational Method Sewer Sizing — 1:2 year return (Ottawa)
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients
  - Landscaped Areas — C = 0.20
  - 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 (drawing 141991 C-500) are both included in **Appendix D**. The General Plan of Services, drawing 141991 C-001, depicting all on-site storm sewers can be found in **Appendix F**. Based on the TOC storm sewer design sheet, the calculated minor storm flow from the subject site will be within capacity for the overall system.

The proposed minor storm sewers will range in size between 250 mm diameter and 300 mm diameter. Catchbasin lead pipes will be 200 mm in diameter. Additionally, six 100mm drain pipes will connect to each central canopy column. The minor storm sewer outlet will be via the 675 mm dia sewer at MH1 located just north of the food court in TOC.

The existing downstream sewers in TOC eventually outlet to the Pond 6 East Stormwater Management Facility. That facility provides water quality control so no additional on-site stormwater quality control is required within the subject lands, per the Kanata West Business Park (KWBP) Phase 5 Design Brief – 425 Huntmar prepared by IBI Group, dated September 2019, revised October 2019. An excerpt of this brief can be found in **Appendix D**.

This report assigns a runoff coefficient value of 0.85 over the subject site (noted as Area 170C, refer to Drawing 14289-500 in **Appendix D**). Refer to Section 4.5 for proposed quantity control.

There is an infiltration target for the greater area of Tanger Outlets Centre and Hotel Site of 87mm/year. This project falls under Area ID 400R as shown in KWBP Stormwater Management Report and Pond 6 East Design Brief - Appendix A, Figure 2 (excerpt can be found in **Appendix D** of this report). Sufficient infiltration provisions in the form of infiltration galleries have been constructed to meet this requirement as shown in the excerpt provided, therefore no further infiltration measures are required for this parcel.

A previous ECA has been obtained for the greater Tanger Outlets and Hotel Site area that accounts for the proposed land use, no amendments to the ECA should be required. The latest amended ECA can be found in **Appendix D**.

4.4 Stormwater Management

All surface runoff from the proposed Building 17 is tributary to the local storm sewer system which outlets to an existing stormwater management facility. The treatment facility, known as the Pond 6 East SWM facility provides water quality control of stormwater runoff from the tributary drainage area, which includes the Tanger Outlets Centre and the proposed Building 17 area. The Pond 6 East SWM facility was previously design to accommodate the drainage area for Buildling 17 (area 170C on Drawing 14289-500 in **Appendix D**). **Appendix D** includes excerpts from the 2019 Kanata West Business Park (KWBP) Phase 5 Design Brief (which was amended that support the statement that the site was designed to accommodate the development proposal.

Drawing 141991-C500 in **Appendix D** illustrates the storm drainage areas. Surface runoff from drainage areas A and B are captured via catchbasins and directed to existing MH1 in TOC. The extremities of the site, where it is not feasible to capture and redirect runoff as part of this project, are permitted to flow towards existing catchbasins that feed into MH24. Refer to the storm sewer design sheet in **Appendix D** for confirmation of capacity in the downstream sewers.

4.5 Inlet Controls

The allowable release rate for the 0.28 Ha site can be calculated as follows:

$\mathbf{Q_{allowable}}$ = **2.78** x **C** x $\mathbf{i_{5yr}}$ x **A** where:

C = 0.85 (per Drawing 14289-500)

$\mathbf{I_{5yr}}$ = Intensity of 5-year storm event (mm/hr)

= $998.071 / (T_c + 6.053)^{0.814}$ = 104.19 mm/hr; where T_c = 10 minutes

A = Area = 0.28 Ha

= **68.94 L/s**

As noted in Section 4.4, a portion of the site (catchment areas D, E, F) will be left to discharge to the existing parking areas at an uncontrolled rate.

Based on a 1:100 year event, the flow from the 0.07 Ha uncontrolled areas to EX MH24 can be determined as:

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

$\mathbf{C_{100yr}}$ = Average 100yr runoff coefficient of uncontrolled area = 1.25*0.51 = 0.6375

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

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

A = Uncontrolled Area = 0.07 Ha

Therefore, the uncontrolled release rate can be determined as:

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

= 2.78 x 0.6375 x 178.56 x 0.07

= **22.15 L/s**

Additionally, catchment areas C will be released into MH103 at an uncontrolled rate. CB3 has no pond and its purpose is to reduce water flowing over the patio.

Based on a 1:100 year event, the flow from the 0.01 Ha uncontrolled area to MH103 can be determined as:

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

$\mathbf{C_{100yr}}$ = Average 100yr runoff coefficient of uncontrolled area = 1.25*0.53 = 0.6625

$\mathbf{i_{100yr}}$ = 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 0.6625 x 178.56 x 0.01

= **3.29 L/s**

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

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

= 68.94 L/s – (22.15+3.29) L/s

= **43.50 L/s**

4.5.1 Onsite Detention

The proposed buildings will have roof inlet controls that help to control the amount of stormwater being released into the system. MH102 will also have an ICD to limit the amount of water leaving site. Stormwater Management Calculations can be found in **Appendix D** and is sumarized below.

Table 4.5.1 SWM Summary

ICD AREA	TRIBUTARY AREA	AVAILABLE STORAGE	100-YEAR STORM		5-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
Building Roof	0.05	18.00	5.00	14.15	5.00	4.94
ICD in MH102	0.16	18.58	38.50	17.95	38.50	3.46
TOTAL	0.21	36.58	43.50	32.10	43.50	8.40

Correspondance confirming the rooftop storage capacity and inlet control specifications can be found in **Appendix D**. Rooftop inlet controls to be Watts Adjustable Flow Control for Roof Drains or approved equivalent.

4.5.2 Overall Release Rate

As noted 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, in structure/pipe and rooftop storage. In the 100 year event, there will be no off-site overflow.

The sum of restrictions on the site, rooftops and uncontrolled flows is 68.94 l/s (25.44 l/s uncontrolled + 5.00 l/s rooftop ICD + 38.50 l/s MH102 ICD), which adheres to the allowable release 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 is constructed, groundwater in trenches will be pumped into a filter mechanism prior to release to the environment. One half diameter bulkhead barriers will be installed at the nearest downstream manhole in each sewer which connects to an existing downstream sewers.
- 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.
- Silt fence on the site perimeter.

Due to the geometry of the site, silt fence will not be practical in this instance. The overland flow route is over an asphalt parking lot. To prevent excess sediment from entering the existing minor storm system, it is recommended to install surface structure filters on catchbasins that may receive sediment during construction. Refer to drawing C-900 for these locations.

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, ½ diameter bulkheads will be constructed over the lower half of the outletting sewers 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 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 CONCLUSIONS & RECOMMENDATIONS

6.1 Conclusions

Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

This report has demonstrated sanitary and storm flows from and water supply to the subject site can be accommodated by the existing infrastructure. Also, the proposed servicing criteria has been established in accordance with MECP and City of Ottawa current level of service requirements.

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on the adjacent environment.

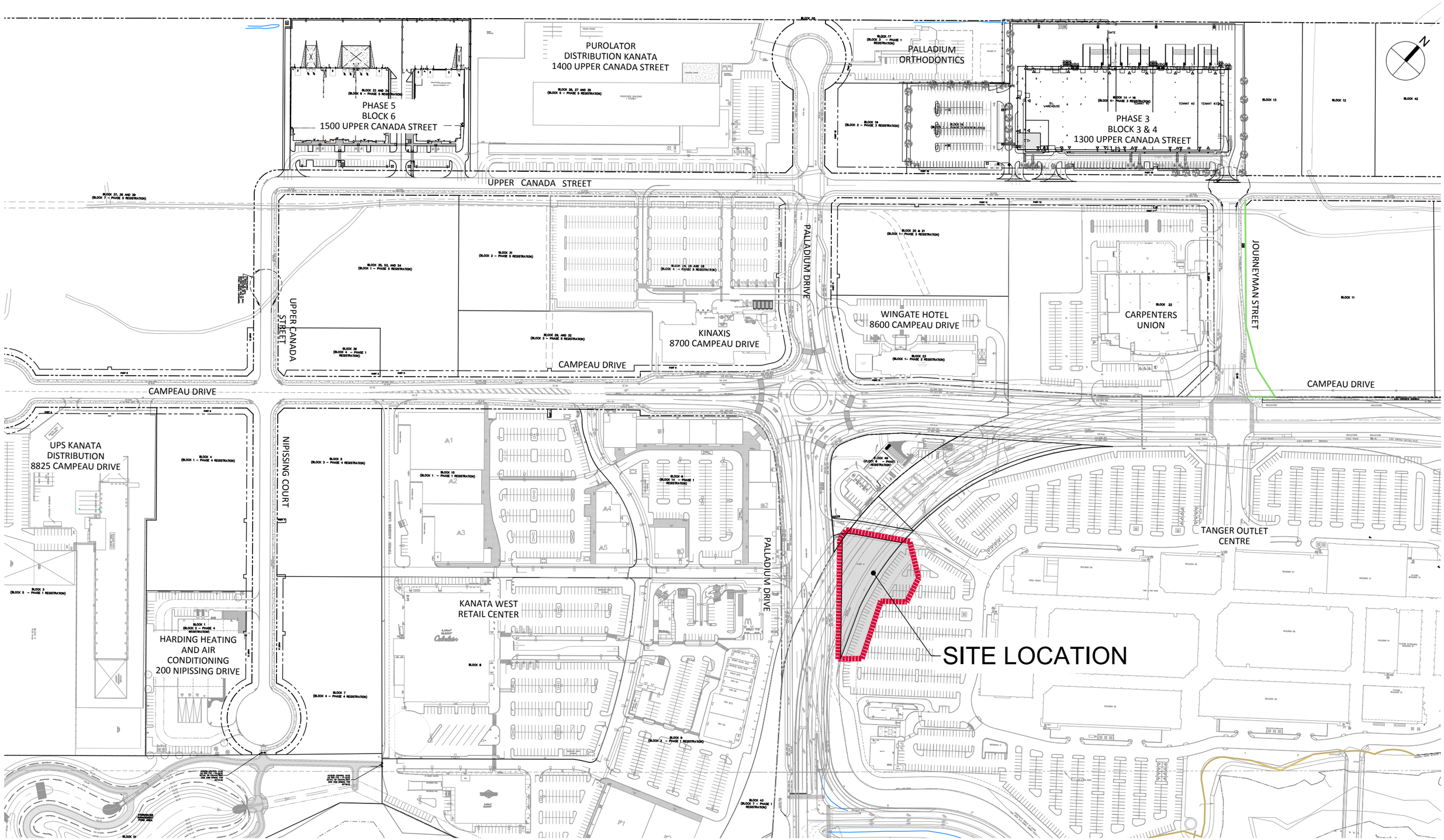
Based on the information provided herein, the development can be serviced to meet City of Ottawa requirements.

6.2 Recommendations

It is recommended that the regulators review this submission with an aim of providing the requisite approvals to permit the owners to proceed to the construction stage of the subject site.

Samantha E. Labadie, P.Eng.
Civil Engineer

https://ibigroup.sharepoint.com/sites/Projects3/141991/Internal Documents/6.0_Technical/6.04_Civil/03_Reports/2023-06-02 Design Brief Submission 2/CTR-Design Brief-2022-06-02.docx



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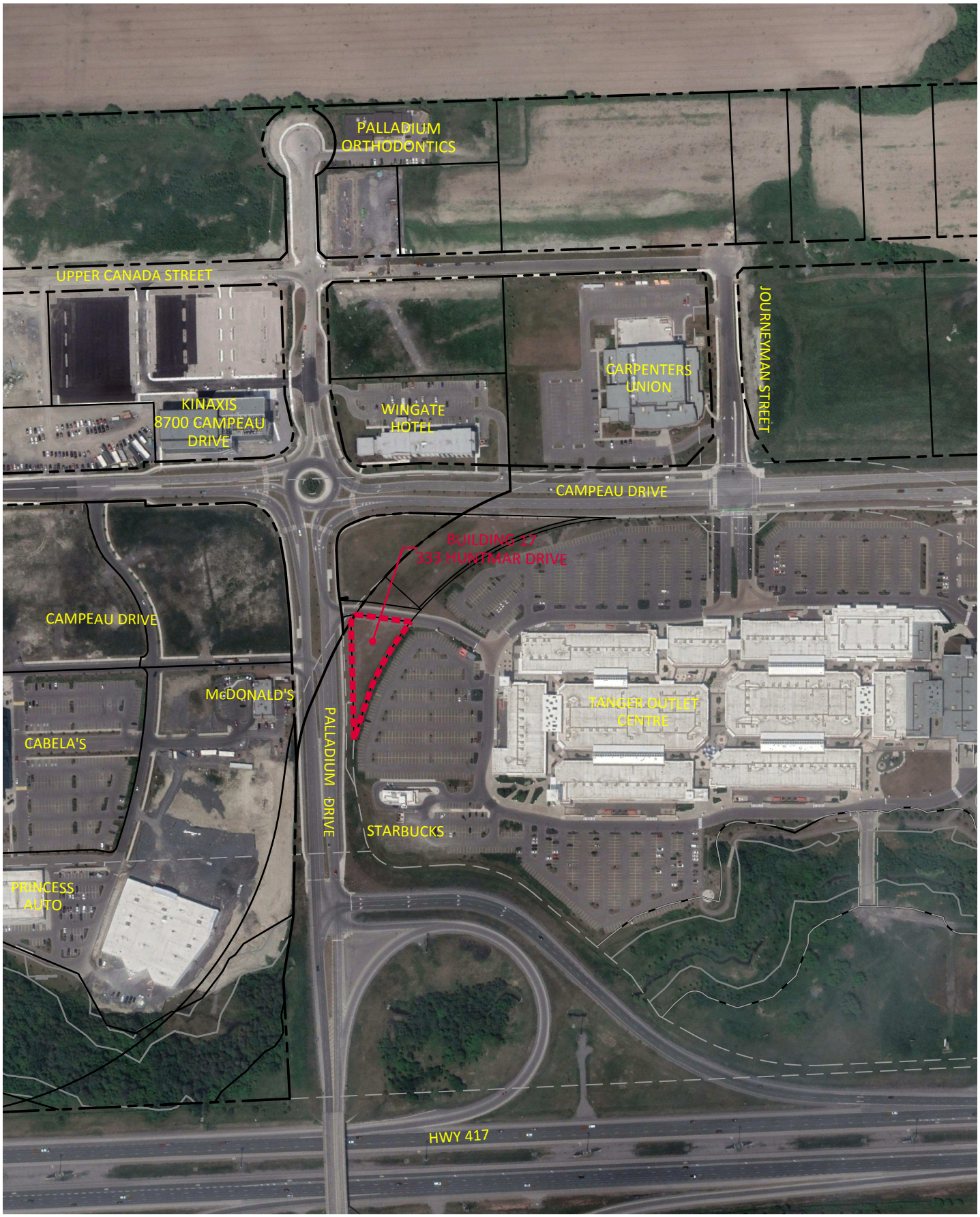
333 HUNTMAR DRIVE

Drawing Title: LOCATION PLAN

Sheet No.: FIGURE 1



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Project Title	Drawing Title	Sheet No.
BUILDING 17 333 HUNTMAR DRIVE	EXISTING CONDITIONS	FIGURE 2

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE: _____

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

PLAN 4R-_____
RECEIVED AND DEPOSITED

DATE: _____

REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON No. 4

SCHEDULE

PART	LOT/BLOCK	CONCESSION/PLAN	PIN
1	ALL OF 6	4M - 1566	ALL OF 04508 - 0143
2			
3			
4	PART OF 3	1	PART OF 04508 - 0232
5			
6			PART OF 04508 - 0108
7			
8			

PARTS 1, 2, AND 3 COMPRISE ALL OF PIN 04508 - 0143
PARTS 4, 5, AND 6 COMPRISE PART OF PIN 04508 - 0232
PARTS 7 AND 8 COMPRISE PART OF PIN 04508 - 0108
PARTS 1, 2, AND 3 ARE SUBJECT TO EASEMENT PER INST. NO. OC1776587

PLAN OF SURVEY of

BLOCK 6 REGISTERED PLAN 4M - 1566
PART OF LOT 3 CONCESSION 1
GEOGRAPHIC TOWNSHIP OF HUNTLEY
CITY OF OTTAWA

Scale 1:500
10 0 10 20 30 METRES

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

LEGEND

	DENOTES	
■		FOUND MONUMENTS
□		SET MONUMENTS
IB		IRON BAR
IBB		ROUND IRON BAR
SIB		STANDARD IRON BAR
SSIB		SHORT STANDARD IRON BAR
CC		CUT CROSS
CP		CONCRETE PIN
WIT		WITNESS
PIN		PROPERTY IDENTIFICATION NUMBER
MEAS		MEASURED
PREP		PROPORTIONED
OU		ORIGIN UNKNOWN
SG		STANTEC GEOMATICS LTD.
ORP		OBSERVED REFERENCE POINT

GRID SCALE CONVERSION
DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99994.

BEARING NOTE
BEARINGS ARE GRID, DERIVED FROM THE CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).

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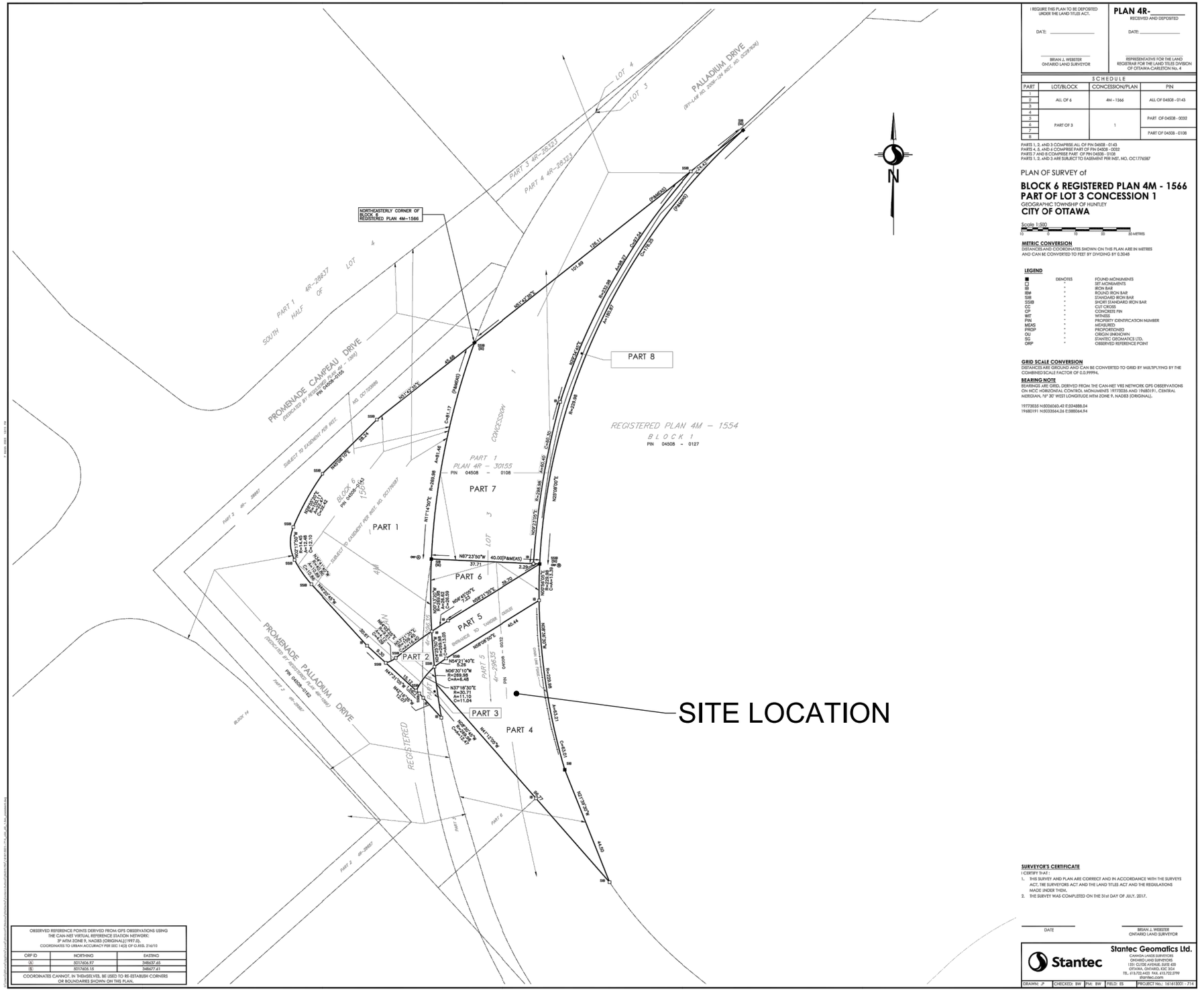
19680191 N5033564.26 E388064.94



OBSERVED REFERENCE POINTS DERIVED FROM GPS OBSERVATIONS USING THE CAN-NET VIRTUAL REFERENCE STATION NETWORK: 3° MTM ZONE 9, NAD83 (ORIGINAL)((1997.0), COORDINATES TO URBAN ACCURACY PER SEC 14(3) OF O.REG. 216/10

ORP ID	NORTHING	EASTING
(A)	5017606.97	348637.65
(B)	5017606.15	348677.41

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

SURVEYOR'S CERTIFICATE
I CERTIFY THAT :
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 31st DAY OF JULY, 2017.

DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

Stantec

Stantec Geomatics Ltd.
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DRAWN: JP | CHECKED: BW | PM: BW | FIELD: BS | PROJECT NO.: 161613001 - 714

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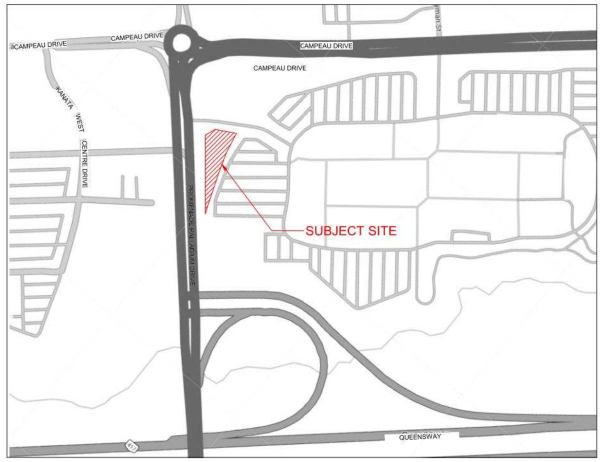
Scale: N.T.S.

Project Title: BUILDING 17
333 HUNTMAR DRIVE

Drawing Title: LEGAL PLAN

Sheet No.: FIGURE 3



2 KEY PLAN
A100 N.T.S.

STATISTICS

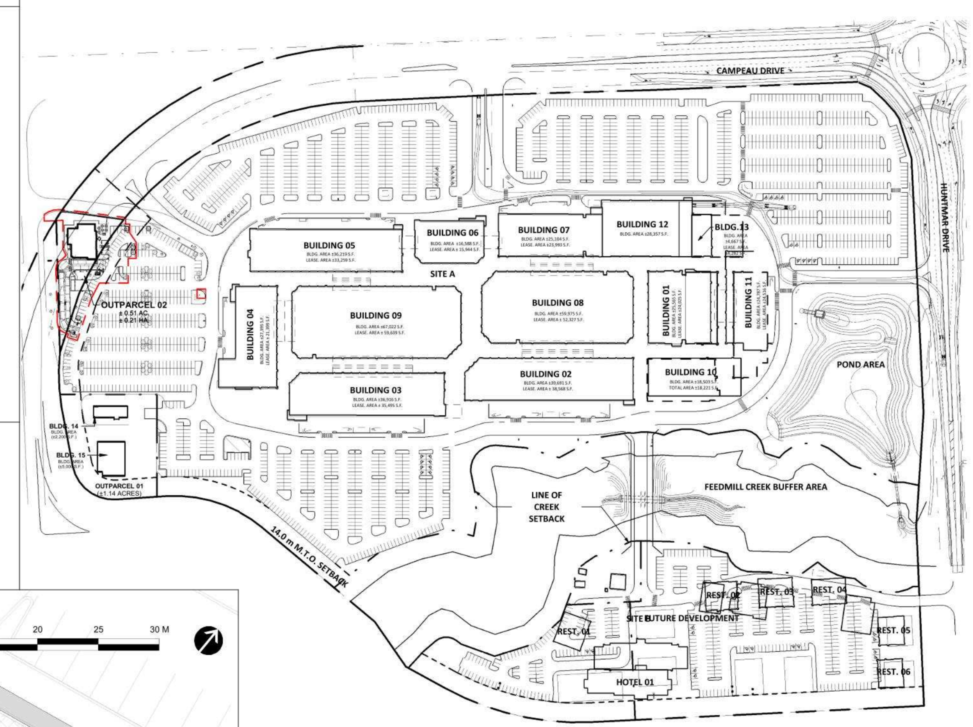
SITE A AREA	± 36.72 AC.	± 14.86 HA.
FEEDMILL CREEK	± 9.22 AC.	± 3.73 HA.
OUTPARCEL 01	± 1.14 AC.	± 0.46 HA.
ADDITIONSL SITE	± 3.03 AC.	± 1.23 HA.
OUTPARCEL 02	± 0.51 AC.	± 0.21 HA.
POND AREA	± 2.56 AC.	± 1.04 HA.
TOTAL SITE AREA	± 53.18 AC.	± 21.52 HA.
BUILDING 01	± 25,565 S.F.	± 2,375 S.M.
BUILDING 02	± 39,691 S.F.	± 3,687 S.M.
BUILDING 03	± 36,916 S.F.	± 3,430 S.M.
BUILDING 04	± 27,395 S.F.	± 2,545 S.M.
BUILDING 05	± 36,219 S.F.	± 3,365 S.M.
BUILDING 06	± 16,588 S.F.	± 1,541 S.M.
BUILDING 07	± 25,104 S.F.	± 2,332 S.M.
BUILDING 08	± 59,975 S.F.	± 5,572 S.M.
BUILDING 09	± 67,022 S.F.	± 6,227 S.M.
BUILDING 10	± 28,357 S.F.	± 2,634 S.M.
BUILDING 11	± 18,503 S.F.	± 1,719 S.M.
BUILDING 12	± 24,787 S.F.	± 2,303 S.M.
BUILDING 13	± 4,667 S.F.	± 434 S.M.
BUILDING 14	± 2,200 S.F.	± 204 S.M.
BUILDING 15	± 1,800 S.F.	± 167 S.M.
BUILDING 16	± 2,400 S.F.	± 223 S.M.
BUILDING 17	± 4,935 S.F.	± 458 S.M.
M+E	± 150 S.F.	± 14 S.M.
TOTAL BUILDING AREA	± 422,274 S.F.	± 39,231 S.M.
BUILDING LEASE 01	± 24,025 S.F.	± 2,232 S.M.
BUILDING LEASE 02	± 38,568 S.F.	± 3,583 S.M.
BUILDING LEASE 03	± 35,495 S.F.	± 3,298 S.M.
BUILDING LEASE 04	± 21,399 S.F.	± 1,988 S.M.
BUILDING LEASE 05	± 33,259 S.F.	± 3,090 S.M.
BUILDING LEASE 06	± 15,944 S.F.	± 1,481 S.M.
BUILDING LEASE 07	± 23,993 S.F.	± 2,229 S.M.
BUILDING LEASE 08	± 52,327 S.F.	± 4,861 S.M.
BUILDING LEASE 09	± 59,639 S.F.	± 5,541 S.M.
BUILDING LEASE 10	± 28,357 S.F.	± 2,634 S.M.
BUILDING LEASE 11	± 18,221 S.F.	± 1,693 S.M.
BUILDING LEASE 12	± 24,516 S.F.	± 2,278 S.M.
BUILDING LEASE 13	± 4,282 S.F.	± 398 S.M.
BUILDING LEASE 14	± 2,200 S.F.	± 204 S.M.
BUILDING LEASE 15	± 1,800 S.F.	± 167 S.M.
BUILDING LEASE 16	± 4,935 S.F.	± 458 S.M.
PROP. BUILDING 17 (C.F.A.)	± 4,935 S.F.	± 458 S.M.
TOTAL BUILDING AREA	± 393,895 S.F.	± 36,594 S.M.
PARKING PROVIDED FOR BUILDING 17		37 CARS
PARKING REQUIRED		1317 CARS
PARKING PROVIDED		1920 CARS
(INCL. OUTPARCEL .02)	4.87/1000 S.F.	5.25/100 S.M.
(W/O OUTPARCEL .02)		1883 CARS
	4.78/1000 S.F.	5.15/100 S.M.
COVERAGE		23.71%

ZONING COMPLIANCE CHART

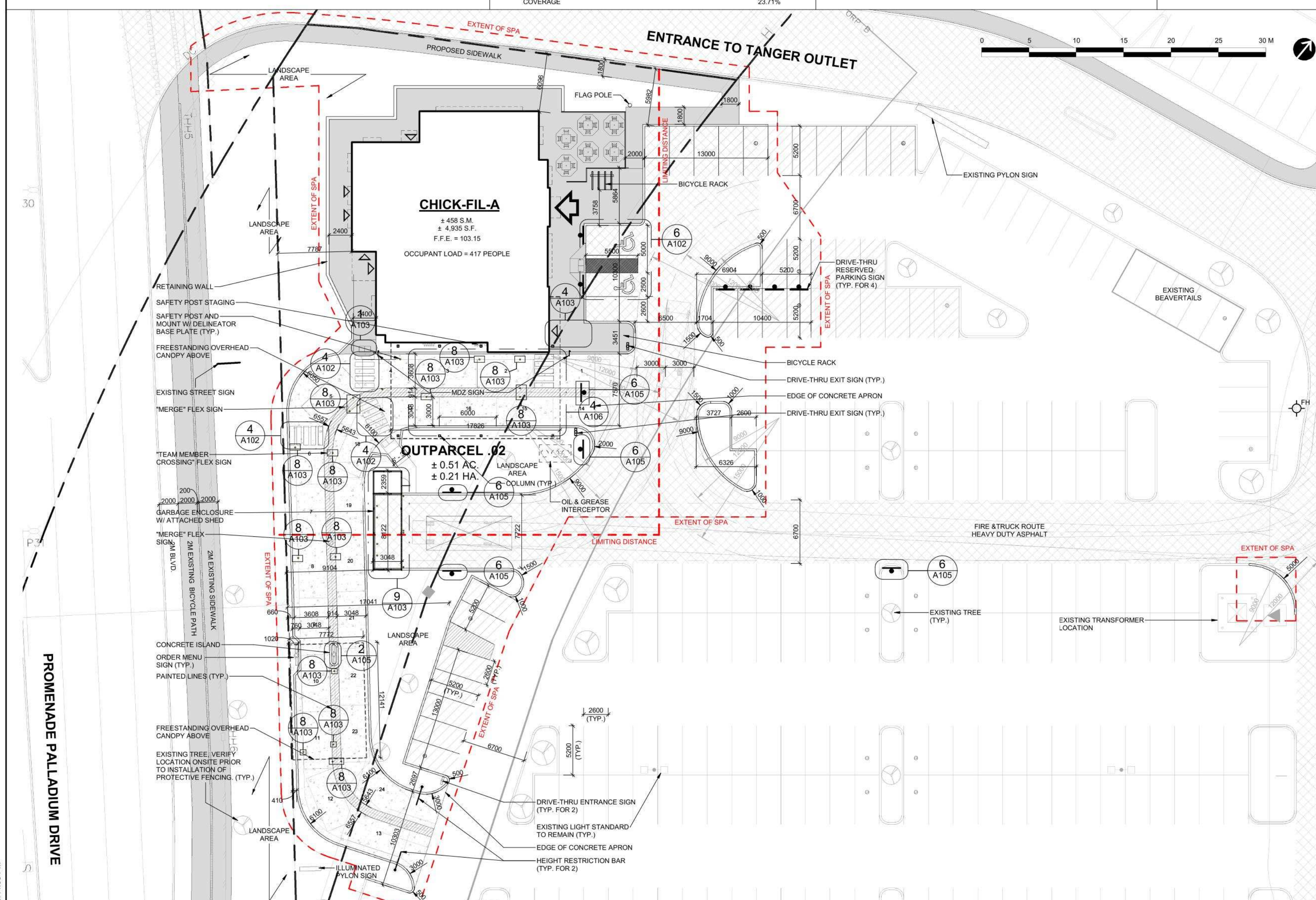
MC [2015] H(18) ZONE:	REQUIRED	PROPOSED
MIN. LOT AREA	NO MINIMUM	±52.67 ACRES
MIN. LOT WIDTH	NO MINIMUM	632 METERS
MIN. FRONT YARD & CORNER SIDEYARD SETBACK	NO MINIMUM	14 METERS
MIN. INTERIOR SIDE YARD SETBACK	NO MINIMUM	21 METERS
MIN. REAR SIDE YARD SETBACK	NO MINIMUM	224 METERS
MIN. M.T.O. SETBACK	14.0 METRES	14 METERS
MAX. FLOOR SPACE INDEX	NO MAXIMUM	18.22%
MIN. BUILDING HEIGHT	NO MAXIMUM	6.1 METERS
MAX. BUILDING HEIGHT	NO MAXIMUM	11.1 METERS
MIN. LANDSCAPE SETBACK	NO MINIMUM	14 METERS

LEGEND

- ENTRANCE ARROW
- EXIT ARROW
- FIRE HYDRANT
- PROPOSED FIRE & TRUCK ROUTE (HEAVY DUTY ASPHALT)
- EXISTING SIDEWALK
- HATCH DENOTES PARKING ALLOCATED FOR OUTPARCEL .02



3 OVERALL SITE PLAN
A100 1 : 2200



1 SITE PLAN
A100 1 : 250

TURNER FLEISCHER

Turner Fleischer Architects Inc.

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com

The site plan prepared by Turner Fleischer is reliant on a legal survey showing the boundaries of the lands together with the current location of any existing buildings, features or encroachment prepared by Stantec Geomatics Ltd., dated February 24, 2023 as provided by RioCan.

#	DATE	DESCRIPTION	BY
2	2023-03-14	ISSUE FOR SPA SUBMISSION	MHB
1	2023-03-07	ISSUE FOR REVIEW	MHB

RIO CAN

PROJECT
CHICK-FIL TANGER OUTLETS OTTAWA

333 HUNTMAR DRIVE,
STITTSVILLE, ON. K2S 1B9

DRAWING
KEY PLAN, ZONING COMPLIANCE CHART, STATISTICS, LEGEND, OVERALL SITE PLAN, SITE PLAN

PROJECT NO. 12.258P01
PROJECT DATE 2023-02-14
DRAWN BY Author
CHECKED BY Checker
SCALE As indicated
DRAWING NO. A100
REV. 2

2023-05-29 3:44:05 PM

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	BUILDING 17 333 HUNTMAR DRIVE	SITE PLAN	FIGURE 4

IBI

APPENDIX A

Pre-Application Consultation Meeting Notes

3:00pm to 4:00pm, January 19, 2023 via Microsoft Teams
Property Address: 333 Huntmar Drive
File No.: PC2022-0329

Attendees:

Samantha Gatchene – Planner, City of Ottawa
Lisa Stern – Planner, City of Ottawa
Selma Hassan – Urban Designer, City of Ottawa
Abi Dieme – Infrastructure Project Manager, City of Ottawa
Cam Elsby – Infrastructure Project Manager, City of Ottawa
Mike Giampa – Transportation Project Manager, City of Ottawa
Matthew Vihant – Riocan
Stuart Craig – Riocan
Evan Saunders – Fotenn
Miguel Tremblay - Fotenn
Austin Whitley – CFA Corp
Shawn Seymour – CFA Corp
Doug Cave – Civil Engineer, IBI
Samantha Labadie - Civil Engineer, IBI
Ryan DeCosimo – Architect, Turner Fleischer
Edward Uzoma – Architect, Turner Fleischer
Jason Blunt – EXP

Regrets:

Jeff Goettling – Parks Planner, City of Ottawa
Nancy Young – Planning Forester, City of Ottawa

Applicant's Proposal:

- The Applicant is proposing to develop a 458.44 sqm fast-food restaurant, two lane drivethrough facility and surface parking lot.
- The subject site is currently in the process of being merged on title with the larger Tanger Outlet (Riocan) site also located at 333 Huntmar Drive. The lots will be considered One Lot for Zoning Purposes.

Policy and Zoning Context for Site:

- In the Official Plan the site is located within the Suburban Transect and is designated as Neighbourhood.
- The site is zoned Mixed Use Centre Zone, Urban Exception 2598 (MC[2598] H(18)). Restaurant and Drive-through Facility are permitted uses.
- The Kanata West Concept Plan applies.

Planning:

- The application will be considered Site Plan Control (Standard – Manager Approval, No Consultation), Please find the application form and information on fees here.
- Pedestrian connections are requested to connect the proposed building to Palladium Drive. The location and width of all pedestrian walkways should be labeled on the site plan.
- Please consider enhancing the amount of landscape throughout the site. In particular:
    - Landscaping along the Palladium Drive frontage and the abutting access to the north to define the street edge; and
    - Around the perimeter of the building and throughout the interior of the site to break up the continuous impervious surfaces.
- Please show the proposed bicycle parking on the site.
- Please show how the vehicle parking space requirements for the proposed restaurant/drive-through use will be met as part of the shared parking lot with the Tanger Outlet mall. A total of 37 parking spaces are required.
- Please provide barrier-free parking spaces in proximity to the new building. As per Ontario Reg. 191/11, a total of 2 barrier-free spaces are required for the use (4% of the total required spaces). One Type A Space and one Type B space are required.
- Please provide an enlarged version of site plan to show how it integrates with the larger Tanger Outlet site.
- The the City of Ottawa's Urban Design Guidelines for Drive-Through Facilities and the City of Ottawa's Urban Design Guidelines for Large-Format Retail apply to the development. Please ensure that they are addressed in the Planning Rationale and Design Brief.
- Please show what type of visual screening or noise barrier is proposed for the outdoor patio area.
- The site is located within the MTO Permit Control Area. In advance of the application, please contact MTO regarding any additional requirements.
- Please reach out to Councillor Cathy Curry (Cathy.Curry@ottawa.ca) so that the Ward Councillor is aware of the plans for the site.

Please contact Development Review Planner Samantha Gatchene (Samantha.Gatchene@ottawa.ca) for follow-up questions.

Urban Design:

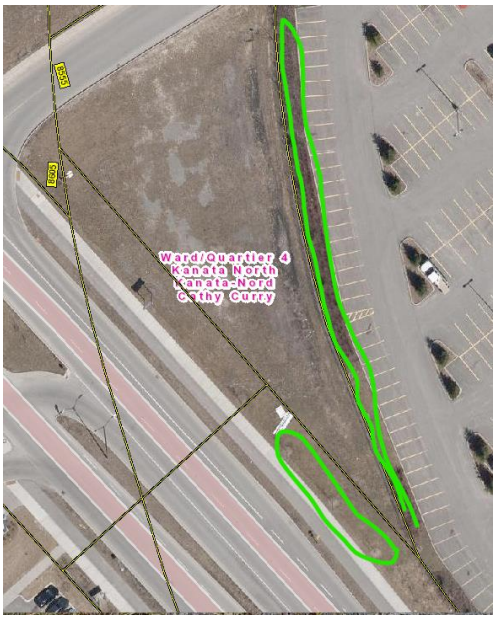
1. A simple Design Brief will be required. A Terms of Reference for the Brief is attached; all elements highlighted in yellow must be addressed.
2. There is significant amount of vehicular cueing. The landscape plan is expected to show significant vegetative buffering of the cueing lanes.
3. The landscape plan should also provide vegetative buffering to soften the interface between the outdoor patio and the entrance drive into the Tanger site.

4. It is unclear from the drawing provided, how far into the Tanger site the sidewalk along Palladium and the entrance drive extends. If it does not already, this sidewalk should be extended at least to the patio entrance of the drive-through, ideally further. The applicant is asked to consider whether there are other locations where safe and defined pedestrian walkways need to be defined.

Please contact Urban Designer Selma Hassan Selma.Hassan@ottawa.ca for follow-up questions.

Forestry:

- A Tree Conservation Report and Landscape Plan are required, in accordance with the requirements listed below.
- There are several existing trees along the southwest and east property lines of this site (outlined in green) which will be impacted by the development as proposed. These trees must be included in the TCR to determine which are able to be protected and which require removal and replacement on site or within the ROW. Appropriate setbacks and tree protection fencing locations must be shown on the TCR.
- The Landscape Plan must show where the replacement trees will be planted, with a priority of planting large-growing species, to improve the future streetscape and canopy cover.



<u>TCR requirements:</u>

1. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    1. an approved TCR is a requirement of Site Plan approval.
    2. The TCR may be combined with the LP provided all information is supplied

2. Any removal of privately-owned trees 10cm or larger in diameter, or city-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. Compensation may be required for the removal of city owned trees.
4. The TCR must contain 2 separate plans:
    1. Plan/Map 1 - show existing conditions with tree cover information
    2. Plan/Map 2 - show proposed development with tree cover information
    3. Please ensure retained trees are shown on the landscape plan
5. the TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, with information on the species, diameter and health condition
6. please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
7. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
8. All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    1. the location of tree protection fencing must be shown on the plan
    2. show the critical root zone of the retained trees
9. The new Official Plan places a strong priority on retention of existing trees. All opportunities to retain protected trees must be considered in the design of plans to maintain and improve the existing canopy cover of the site.

Tree Planting Requirements:

- The new Official Plan requires that "On urban properties subject to site plan control or community planning permits, development shall create tree planting areas within the site and in the adjacent boulevard, as applicable, that meet the soil volume requirements in any applicable City standards or best management practices or in accordance with the recommendation of a Landscape Architect;"

- The Landscape Plan (LP) must account for the following:

- Minimum Setbacks
    - 1.5m from sidewalks, MUP/cycle tracks, and water service laterals
    - 2.5m from curb
    - Conifers: 4.5m setback from curb, sidewalk or MUP/cycle track/pathway
    - Street Trees: 7.5m between large growing trees, 4m between small growing trees

- Park or open space planting: 10m spacing between trees, except where otherwise approved in naturalization / afforestation areas
    - Adhere to the relevant Hydro Ottawa or Hydro One planting guidelines (species and setbacks) in proximity to above and below-ground hydro

- Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification and will include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant a diversity of native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary

- Hard surface planting
  - Curb style planter is highly recommended
  - No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
  - Trees are to be planted at grade

- Soil Volume
  - Please document on the LP that adequate soil volumes can be met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

- Sensitive Marine Clay
  - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

For more information on the process or help with tree retention options, contact Nancy Young nancy.young@ottawa.ca or on City of Ottawa

Transportation:

- A TIA is not required for this site.
- The right of way protection on Palladium Drive is 44.5m.
- The intersection of the drive-thru and the outlet drive aisle is an atypical intersection and should have warning or wayfinding signage to indicate the two exiting lanes.

Please contact Transportation Project Manager Mike Giampa Mike.Giampa@ottawa.ca for follow-up questions.

Infrastructure:

Water:

Pressure Zone 3W

Frontage charges apply ($190.00 per metre) ☐ **Yes** ☒ **No**

There is direct access to the 254mm PVC municipal watermain on Palladium Drive. However, should the applicant consider connection to the 203mm PVC private watermain near the access road, note that an easement may be required from 8605 Campeau Drive. The City may also require an easement to access the future connection water valve.

Submission documents must include:

- Boundary Conditions - civil consultant to request boundary conditions from the City's assigned Project Manager, Development Review. Water boundary conditions request must include the location of the service and the expected loads required by the proposed development. Please provide all the following information:
  - Location of service (show on a plan or map)
  - Type of development
  - Average daily demand: ___ l/s.
  - Maximum daily demand: ___l/s.
  - Maximum hourly daily demand: ___ l/s.
  - Required fire flow and completed FUS Design Declaration if applicable
  - Supporting Calculations for all demands listed above and required fire flow as per Ontario Building Code or Fire Underwriter Surveys (See technical Bulletin ISTB-2021-03.
- Watermain system analysis demonstrating adequate pressure as per section 4.2.2 of the Water Distribution Guidelines.
- Demonstrate adequate hydrant coverage for fire protection. Please review Technical Bulletin ISTB-2018-02, Appendix I table 1 – maximum flow to be considered from a given hydrant.
- Any proposed emergency route (to be satisfactory to Fire Services).

Sanitary Sewers:
Accessible Sanitary Sewer: None in Right-of-Way (Palladium Drive)

- Private connection into existing Tanger outlets development to be considered.

Is a monitoring maintenance hole required on private property? ☐ yes ☒ no

- For connection to the sanitary system within Tanger site (8555 Campeau), please demonstrate that the additional flow from the restaurant does not result in exceeding the

overall allowable peak flow allocated to the Tanger Site. Should the total flow exceed the allowable peak flow from Tanger Site, demonstrate that the City's downstream sanitary system has capacity for the additional flow.

- Please apply the wastewater design flow parameters in Technical Bulletin PIEDTB-2018-01.

Storm Sewers:

Accessible Municipal Storm Sewer: There is direct access to a 450mm storm sewer on Palladium Drive, and there's also a 375mm storm sewer running through the property. The 375mm storm sewer was publicly owned prior to the land transfer from MTO. The proponent shall assume ownership and maintenance of the sewer now that it is on private property

Is a monitoring maintenance hole required on private property? ☐ yes ☒ no

Storm Water Management:

- Quality Control:
    - Refer to the Kanata West Business Park (KWBP) Phase 5 Design Brief – 425 Huntmar prepared by IBI Group, dated September 2019, revised October 2019
    - Enhanced level water quality control provided through the Tanger Outlet Centre SWM Facility, identified as Pond 6 East. Please include excerpt from the KWBP Design Brief in the Servicing and Stormwater Management report.
- Quantity Control:
    - Refer to the Kanata West Business Park (KWBP) Phase 5 Design Brief – 425 Huntmar prepared by IBI Group, dated September 2019, revised October 2019
    - Minor system capture based on 5-year, 3hour Chicago storm
    - Minor system release rate: Refer to section 4.4.1 of the KWBP Phase 5 Design Brief. A release rate of 257 l/s and required storage of 111 cu.m were allocated to a group of drainage areas including the subject site with a runoff coefficient C of 0.85. Applicant to proportionally deduct the required site release rate based on the site area .
    - Major System design requirements: store 100-year storm 3-hour Chicago event on-site.
    - Time of concentration Tc = 10mins
    - The site is within the Carp River Watershed/Subwatershed Study boundary with required 50-70mm/year infiltration rate on-site as per the KWBP design brief.

Additional Notes:

- No Capital Work Project that would impact the application has been identified at this time
- No road moratorium that would impact the application has been identified
- Any easement identified should be shown on all plans
- For any proposed exterior light fixtures, please provide certification from a licensed professional engineer confirming lighting has been designed only using fixtures that meet

the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America and result in minimal light spillage onto adjacent properties (maximum allowable spillage is 0.5 fc). Additionally, include in the submission the location of the fixtures, fixture type (make, model, part number and mounting height)

- Sensitive Marine Clay (SMC) is widely found across Ottawa - geotechnical reports should include Atterberg Limits, consolidation testing, sensitivity values, and vane

For information on preparing required studies and plans refer to: http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

Servicing and site works shall be in accordance with the following documents:

- Ottawa Sewer Design Guidelines (October 2012)
- Ottawa Design Guidelines – Water Distribution (2010)
- Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
- City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
- City of Ottawa Environmental Noise Control Guidelines (January, 2016)
- City of Ottawa Park and Pathway Development Manual (2012)
- City of Ottawa Accessibility Design Standards (2012)
- Ottawa Standard Tender Documents (latest version)

Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455

Please contact Infrastructure Project Manager Abi Dieme (Abibatou.Dieme@ottawa.ca) for follow-up questions.

Parks:

- As per the Parkland Dedication (By-law No. 2022-280) | City of Ottawa and provincial Bill 23, parkland dedication will be required as a condition of development. In this circumstance given the parcel size and proposed use, Cash in Lieu of Parkland (CILP) would be considered appropriate.
- Based in the details provided, the proposal would be best considered a commercial or industrial development for the purposes of the parkland dedication by-law. The applicant is encouraged to review the parkland dedication by-law should they feel that an alternative land use category be more appropriate. The parkland requirement for a commercial, industrial or retail use is calculated as 2% of the gross land area of the site being developed.
- Given the above comments and should Cash in Lieu of Parkland (CILP) be collected, the value of the land shall be determined by the City's Realty Services Branch or submitted otherwise according to By-law No. 2022-280. The owner is responsible for any appraisal costs incurred by the City.
- Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the requested supporting documentation. Additionally, if the

proposed land use changes, then the parkland dedication requirement will be re-evaluated accordingly.

Please contact Parks Planner Jeff Goettling (Jeff.Goettling@ottawa.ca) for follow-up questions.

Other

Please refer to the links to the guide to preparing studies and plans and development application fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are generally valid for one year, unless impacted by business process changes in response to Bill 109. You may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.
Please do not hesitate to contact me if you have any questions.

Regards,
Samantha Gatchene

Planner / Urbaniste
Development Review West / Examen des demandes d'aménagement ouest
City of Ottawa / Ville d'Ottawa
613.580.2424 ext. 25478

APPENDIX B

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : Chick-Fil-A Restaurant
LOCATION : 333 Huntmar Drive
DEVELOPER : RioCan REIT

FILE: 141991-6.4.4
DATE PRINTED: 08-Mar-23
DESIGN: SEL
PAGE : 1 OF 1

NODE	RESIDENTIAL UNITS 1BD	2BD	3BD	POP'N	NON-RESIDENTIAL INDTRL (ha.)	INST. (ha.)	COMM. (m^2)	AVERAGE DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM HOURLY Res.	Non-res.	Total	FIRE DEMAND (l/s)
Site				0			458	0.00	0.01	0.01	0.00	0.02	0.02	0.00	0.04	0.04	83.3

ASSUMPTIONS

RESIDENTIAL DENSITIES

1 Bedroom Apartment	1.4 persons/unit
2 Bedroom Apartment	2.1 persons/unit
3 Bedroom Apartment	3.1 persons/unit

AVG. DAILY DEMAND

Residential	280 l / cap / day
Commercial	2,500 l / 1000m^2 / day

MAX. DAILY DEMAND

Residential	700 l / cap / day
Commercial	3,750 l / 1000m^2 / day

MAX. HOURLY DEMAND

Residential	1,540 l / cap / day
Commercial	6,750 l / 1000m^2 / day

FIRE FLOW

Site	5,000 l / min

Fire Flow Requirement from Fire Underwriters Survey

Building 'A' - Chick-Fil-A

Building Floor Area

Floor 1	458	m^2
Total	458	m^2

Fire Flow

$F = 220C\sqrt{A}$

C	1.0	C =	1.5	wood frame
A	458 m^2		1.0	ordinary
			0.8	non-combustile
F	4,708 l/min		0.6	fire-resistive
Use	5,000 l/min			

Occupancy Adjustment

		-25%	non-combustile
		-15%	limited combustile
Use	0%	0%	combustile
		+15%	free burning
Adjustment	0 l/min	+25%	rapid burning
Fire flow	5,000 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	0%		
Adjustment	0 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall			Exposure Charge *
		Length	Stories	L*H Factor	
north	>45				0%
east	>45				0%
south	>45				0%
west	>45				0%
Total					0%

Adjustment - l/min

Required Fire Flow

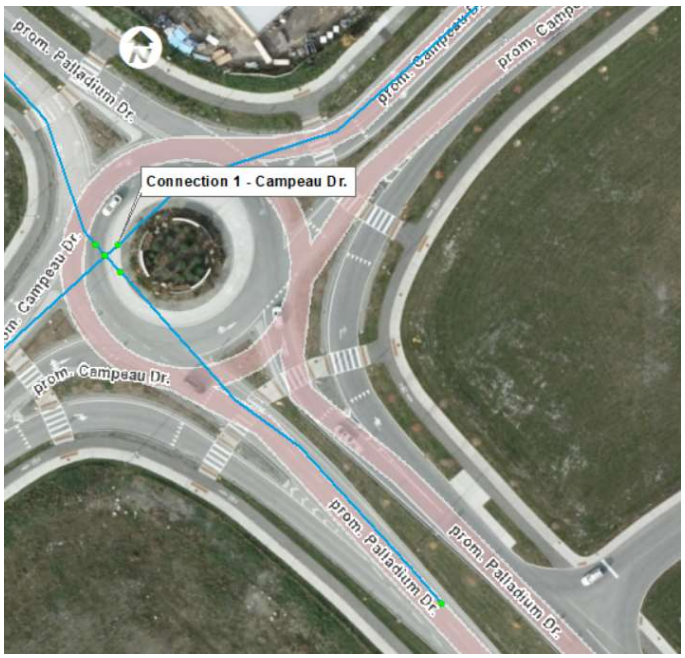
Total adjustments	-	l/min
Fire flow	5,000	l/min
Use	**5,000**	**l/min**
	83.3	**l/s**

Boundary Conditions
333 Huntmar Drive

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	1	0.01
Maximum Daily Demand	1	0.02
Peak Hour	2	0.04
Fire Flow Demand #1	5,000	83.33

Location



Results

Connection 1 – Campeau Dr.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.7	84.8
Peak Hour	156.5	78.8
Max Day plus Fire Flow	153.7	74.8

[1] Ground Elevation = 101.1 m

Notes

1. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:

a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

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

APPENDIX C

IBI GROUP
IBI Group
400-333 Preston Street
Ottawa, Ontario
K1S 5N4

SANITARY SEWER DESIGN SHEET

PROJECT: TANGER OUTLET CENTRES
LOCATION: CITY OF OTTAWA
CLIENT: RIO-CAN MANAGEMENT INC

LOCATION				RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE			TOTAL	PROPOSED SEWER DESIGN						
				UNIT TYPES				AREA	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						PEAK FLOW (L/s)	AREA (Ha)		FLOW	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
													INSTITUTIONAL		HIGH PROFILE EMPLOY		PRESTIGE BUSINESS PK												
STREET	AREA ID	FROM MH	TO MH	SF	SD	TH	APT	(Ha)	IND	CUM			IND	CUM	IND	CUM	IND	CUM		IND	CUM	(L/s)	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
Chick-Fil-A Site		102A	103A						0.0		4.00	0.00			**0.28**	0.28			0.24	0.28	0.28	0.08	0.32	34.22	24.04	200	1.00	1.055	33.90	99.06
Chick-Fil-A Site		103A	104A						0.0		4.00	0.00			0.00	0.28			0.24	0.00	0.28	0.08	0.32	21.91	43.93	200	0.41	0.676	21.59	98.53
Chick-Fil-A Site		104A	1A						0.0		4.00	0.00			0.00	0.28			0.24	0.00	0.28	0.08	0.32	23.46	86.33	200	0.47	0.723	23.14	98.63
Tanger Site	with CFA	1A	2A						0.0		4.00	0.00			2.21	2.49			2.16	2.21	2.49	0.70	2.86	37.22	50.16	250	0.36	0.735	34.36	92.32
Tanger Site		2A	3A						0.0		4.00	0.00			0.92	3.41			2.96	0.92	3.41	0.95	3.91	38.24	52.42	250	0.38	0.755	34.33	89.76
Tanger Site		3A	7A						0.0		4.00	0.00			1.03	4.44			3.85	1.03	4.44	1.24	5.10	39.72	91.80	250	0.41	0.784	34.63	87.17
Tanger Site		7A	8A						0.0		4.00	0.00			1.03	5.47			4.75	1.03	5.47	1.53	6.28	38.24	57.25	250	0.38	0.755	31.96	83.58
Tanger Site		8A	8Anew						0.0		4.00	0.00			0.00	5.47			4.75	0.00	5.47	1.53	6.28	36.70	10.00	250	0.35	0.724	30.42	82.89
Tanger Site		9A	8Anew						0.0		4.00	0.00			0.64	0.64			0.56	0.64	0.64	0.18	0.73	87.96	42.20	250	2.01	1.736	87.22	99.16
Tanger Site		8Anew	23B						0.0		4.00	0.00			0.00	6.11			5.30	0.00	6.11	1.71	7.01	35.64	53.46	250	0.33	0.703	28.62	80.32
Tanger Site		23B	602A						0.0		4.00	0.00			0.00	6.11			5.30	0.00	6.11	1.71	7.01	39.24	36.60	250	0.40	0.774	32.22	82.12
Tanger Site		BLKHD	22A						0.0		4.00	0.00			0.77	0.77			0.67	0.77	0.77	0.22	0.88	34.54	32.00	250	0.31	0.682	33.66	97.44
Tanger Site		22A	21A						0.0		4.00	0.00			0.82	1.59			1.38	0.82	1.59	0.45	1.83	38.74	81.66	250	0.39	0.765	36.92	95.29
Tanger Site		21A	20A						0.0		4.00	0.00			2.32	3.91			3.39	2.32	3.91	1.09	4.49	35.64	99.28	250	0.33	0.703	31.15	87.40
Tanger Site		20A	19A						0.0		4.00	0.00			0.00	3.91			3.39	0.00	3.91	1.09	4.49	34.54	35.14	250	0.31	0.682	30.05	87.00
Tanger Site		19A	18A						0.0		4.00	0.00			1.52	5.43			4.71	1.52	5.43	1.52	6.23	36.17	93.44	250	0.34	0.714	29.94	82.77
Tanger Site		18A	17A						0.0		4.00	0.00			0.00	5.43			4.71	0.00	5.43	1.52	6.23	31.63	19.26	250	0.26	0.624	25.40	80.29
Hotel Site		103A	102A						0.0		4.00	0.00			0.66	0.66			0.57	0.66	0.66	0.18	0.76	NOT CONSTRUCTED						
Hotel Site		102A	101A						0.0		4.00	0.00			1.42	2.08			1.81	1.42	2.08	0.58	2.39							
Hotel Site		101A	100A						0.0		4.00	0.00			0.06	2.14			1.86	0.06	2.14	0.60	2.46							
Feedmill Creek Crossing		100A	17A						0.0		4.00	0.00			0.17	2.31			2.01	0.17	2.31	0.65	2.65	45.12	98.75	300	0.20	0.618	42.46	94.12
Tanger Site		17A	16A						0.0		4.00	0.00			0.29	8.03			6.97	0.29	8.03	2.25	9.22	43.97	67.35	300	0.19	0.603	34.75	79.04
Tanger Site		16A	15A						0.0		4.00	0.00			0.18	8.21			7.13	0.18	8.21	2.30	9.43	46.23	33.06	300	0.21	0.634	36.80	79.61
Tanger Site		15A	14A						0.0		4.00	0.00			0.00	8.21			7.13	0.00	8.21	2.30	9.43	48.38	25.97	300	0.23	0.663	38.96	80.52
Tanger Site		13A	14A						0.0		4.00	0.00			0.55	0.55			0.48	0.55	0.55	0.15	0.63	62.04	69.00	250	1.00	1.224	61.41	98.98
Tanger Site		14A	12A						0.0		4.00	0.00			0.13	8.89			7.72	0.13	8.89	2.49	10.21	47.32	59.08	300	0.22	0.648	37.11	78.43
Tanger Site		12A	11A						0.0		4.00	0.00			1.68	10.57			9.18	1.68	10.57	2.96	12.13	54.33	93.58	300	0.29	0.745	42.19	77.66
Huntmar Drive		11A	302A						0.0		4.00	0.00			0.00	10.57			9.18	0.00	10.57	2.96	12.13	50.44	12.11	300	0.25	0.691	38.31	75.94
Huntmar Drive		302A	301A						0.0		4.00	0.00			0.29	10.86			9.43	0.29	10.86	3.04	12.47	37.75	36.63	300	0.14	0.517	25.28	66.97
Huntmar Drive		301A	600A						0.0		4.00	0.00			0.37	11.23			9.75	0.37	11.23	3.14	12.89	45.12	118.25	300	0.20	0.618	32.22	71.42
External (West)			604A						0.0		4.00	0.00					52.66	52.66	32.00	52.66	52.66	14.74	46.74							
External (North)		BULKHEAD	604A						0.0		4.00	0.00					4.76	4.76	2.89	4.76	4.76	1.33	4.23	46.43	23.97	250	0.56	0.916	42.20	90.90
Campeau Drive		604A	603A						0.0		4.00	0.00					0.44	57.86	35.16	0.44	57.86	16.20	51.36	62.19	102.12	300	0.38	0.852	10.83	17.41
External (North)		BULKHEAD	603A						0.0		4.00	0.00					5.14	5.14	3.12	5.14	5.14	1.44	4.56	31.63	22.98	250	0.26	0.624	27.07	85.58
Campeau Drive		603A	602A						0.0		4.00	0.00					0.50	63.50	38.59	0.50	63.50	17.78	56.37	103.47	105.24	375	0.32	0.908	47.11	45.53
Campeau Drive		602A	601A						0.0		4.00	0.00			0.00	6.11	0.50	64.00	44.19	0.50	70.11	19.63	63.82	109.75	107.73	375	0.36	0.963	45.92	41.84
External (North)		BULKHEAD	601A						0.0		4.00	0.00					5.00	5.00	3.04	5.00	5.00	1.40	4.44	31.63	29.00	250	0.26	0.624	27.20	85.97
Campeau Drive		601A	600A						0.0		4.00	0.00			0.00	6.11	0.39	69.39	47.47	0.39	75.50	21.14	68.61	109.75	106.95	375	0.36	0.963	41.14	37.49

Design Parameters:

Residential

SF	3.4	p/p/u
TH/SD	2.7	p/p/u
APT	2.3	p/p/u
Other	60	p/p/Ha

ICI Areas

			Peak Factor
INST	50,000	L/Ha/day	1.5
EMP	50,000	L/Ha/day	1.5
BUSS	35,000	L/Ha/day	1.5

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 350 L/day
3. Infiltration allowance: 0.28 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+P^0.5))
where P = population in thousands

Designed: SEL

Checked: JIM

Dwg. Reference: 32862 C-501/C-501A
141991 C-500

No.	Revision	Date
1.	1st Submission for Site Plan Application	30/01/2013
2.	2nd Submission for Site Plan Application	20/05/2013
3.	Submitted For MOE Application	25/06/2013
4.	Revised external pipe lengths	17/09/2013
5.	Revised Per New Building 7/12 Site Plan	2014-02-07
6.	Revised pipe data	2014-11-08
7.	As-built	2015-02-02
8.	Chick-Fil-A Addition	2023-03-03

File Reference: 32862.5.7.1
Date: 2023-03-03
Sheet No: 1 of 1

APPENDIX D

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
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STORM SEWER DESIGN SHEET

Tanger Outlets Centre
City of Ottawa
Rio-Can Management Inc.

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA							
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.46	C= 0.56	C= 0.60	C= 0.65	C= 0.69	C= 0.70	C= 0.85	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	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 (5yr) (L/s)	(%)
				TC to MH 604 is 15 min (see Section4.3 in Design Brief) plus credit of 2 min for future upstream storm sewer in Campeau Drive																														
Campeau Drive			604										6.18	15.46	15.46	17.00			77.61	90.86	132.63	1,199.99												
Campeau Drive			604									1.91		4.51	4.51	17.00		17.00	77.61	90.86	132.63		410.06			1,610.05	1,911.03		1050			0.45	2.138	300.98	15.75%
Campeau Drive		DI2	604										4.76	11.91	11.91	14.79	0.14	14.93	84.24	98.66	144.08	1,003.28				1,003.28	2,073.93	15.00	1200			0.26	1.776	1070.65	51.62%
Campeau Drive		604	603											0.00	27.37	17.00			77.61	90.86	132.63	1,319.32												
Campeau Drive		604	603									0.44		1.04	5.55	17.00	0.75	17.75	77.61	90.86	132.63		504.52			1,823.84	3,340.91	101.49	1350			0.36	2.261	1517.06	45.41%
Campeau Drive		BULKHEAD	603										5.14	12.86	12.86	14.75	0.33	15.08	84.37	98.81	144.30	1,085.07				1,085.07	1,363.92	18.02	1350			0.06	0.923	278.85	20.44%
Campeau Drive		603	602											0.00	40.23	17.75			75.62	88.51	129.20	3,042.18												
Campeau Drive		603	602									0.26		0.61	6.17	17.75	0.71	18.46	75.62	88.51	129.20		545.91			3,588.09	3,971.29	92.77	1500			0.29	2.177	383.21	9.65%
Campeau Drive		602	601A											0.00	40.23	18.46			73.83	86.41	126.11	2,970.23												
Campeau Drive		602	601A									0.32		0.76	6.92	18.46	0.49	18.95	73.83	86.41	126.11		598.29			3,568.52	4,605.38	74.50	1500			0.39	2.525	1036.86	22.51%
Campeau Drive		600	601A									0.78		1.84	1.84	10.00	1.58	11.58	104.19	122.14	178.56		225.12			225.12	429.61	110.08	675			0.24	1.163	204.48	47.60%
Campeau Drive		BULKHEAD	601A										5.00	12.51	12.51	12.51	0.18	12.69	92.57	108.46	158.46	1,158.08				1,158.08	1,772.90	16.00	1200			0.19	1.519	614.81	34.68%
Campeau Drive		601A	601B											0.00	52.74	18.95			72.64	85.02	124.07	3,831.35												
Campeau Drive		601A	601B											0.00	8.77	18.95	0.20	19.15	72.64	85.02	124.07		745.36			4,576.71	9,316.42	50.95	1650			0.96	4.221	4739.71	50.87%
Tanger Site		601B	9											0.00	52.74	19.15			72.17	84.47	123.26	3,806.44												
Tanger Site		601B	9											0.00	8.77	19.15	0.24	19.39	72.17	84.47	123.26		740.49			4,546.93	9,505.48	43.50	1950			0.41	3.083	4958.55	52.17%
CFA		101	102				0.21							0.33	0.33	10.00	0.46	10.46	104.19	122.14	178.56	34.06				34.06	58.86	32.23	250			0.90	1.162	24.79	42.12%
CFA		102	103											0.00	0.33	10.46	0.32	10.79	101.81	119.34	174.44	33.29				33.29	55.14	21.19	250			0.79	1.088	21.86	39.64%
CFA		103	104											0.00	0.33	10.79	0.86	11.64	100.21	117.45	171.67	32.76				32.76	63.80	44.87	300			0.40	0.874	31.04	48.65%
CFA		104	1											0.00	0.33	11.64	1.12	12.76	96.25	112.79	164.82	31.47				31.47	60.53	55.70	300			0.36	0.830	29.06	48.01%
Tanger Site	with CFA	1	2										0.90	2.25	2.58	12.76	1.42	14.18	91.56	107.27	156.72	236.12				236.12	361.57	83.45	675			0.17	0.979	125.45	34.70%
Tanger Site		BLDG 05	117																						14.40	14.40	41.63	35.60	200			1.48	1.284	27.23	65.41%
Tanger Site		117	GALLERY																						14.40	14.40	40.49	3.15	200			1.40	1.248	26.09	64.43%
Tanger Site		GALLERY	2																						14.40	14.40	81.19	6.22	200			5.63	2.504	66.79	82.26%
Tanger Site		2	3										0.62	1.55	4.13	14.18	0.66	14.84	86.30	101.07	147.62	356.40			14.40	370.80	568.97	49.20	750			0.24	1.248	198.17	34.83%
Tanger Site		BLDG 09	118																						25.20	25.20	118.85	7.35	250			3.67	2.346	93.65	78.80%
Tanger Site		118	119																						25.20	25.20	50.40	29.00	250			0.66	0.995	25.20	50.00%
Tanger Site		119	120																						25.20	25.20	44.74	66.00	250			0.52	0.883	19.54	43.67%
Tanger Site		120	GALLERY																						25.20	25.20	48.85	4.50	250			0.62	0.964	23.65	48.41%
Tanger Site		GALLERY	3																						25.20	25.20	142.01	17.00	250			5.24	2.803	116.81	82.26%
Tanger Site		3	4										0.19	0.48	4.61	14.84	0.50	15.34	84.08	98.47	143.80	387.22			39.60	426.82	677.21	44.37	750			0.34	1.485	250.40	36.97%
Tanger Site		5	6											0.00	0.00	10.00	0.62	10.62	104.19	122.14	178.56	0.00				0.00	172.56	56.15	375			0.89	1.514	172.56	100.00%
Tanger Site		BLDG 06	121																						7.20	7.20	49.58	18.10	200			2.10	1.529	42.38	85.48%
Tanger Site		121	GALLERY																						7.20	7.20	31.55	13.00	200			0.85	0.973	24.35	77.18%
Tanger Site		GALLERY	6																						7.20	7.20	43.87	8.00	250			0.50	0.866	36.67	83.59%
Tanger Site		6	4										0.17	0.43	0.43	10.62	0.18	10.80	101.04	118.42	173.10	42.97			7.20	50.17	228.46	15.15	450			0.59	1.392	178.29	78.04%
Tanger Site		4	7										0.30	0.75	5.78	15.34	0.65	15.99	82.48	96.59	141.04	476.86			46.80	523.66	686.24	48.60	825			0.21	1.244	162.58	23.69%
Tanger Site		BLDG 07	122																						18.00	18.00	41.91	36.00	200			1.50	1.292	23.91	57.05%
Tanger Site		122	GALLERY																						18.00	18.00	28.01	2.00	200			0.67	0.864	10.01	35.73%
Tanger Site		GALLERY	7																						18.00	18.00	75.97	7.00	200			4.93	2.343	57.97	76.31%
Tanger Site		7	8										1.06	2.65	8.43	15.99	1.03	17.02	80.49	94.25	137.61	678.83			64.80	743.63	981.98	110.20	825			0.43	1.780	238.35	24.27%
Tanger Site		8	9											0.00	8.43	17.02	0.07	17.09	77.55	90.79	132.53	654.01			64.80	718.81	1,305.49	10.51	825			0.76	2.366	586.68	44.94%
Tanger Site		9	12											0.00	61.18	19.39			71.63	83.83	122.32	4,381.84												
Tanger Site		9	12											0.00	8.77	19.39	0.82	20.21	71.63	83.83	122.32		734.89		64.80	5,181.53	5,352.46	85.59	1950			0.13	1.736	170.93	3.19%
Tanger Site		CB17	CBMH18										0.27	0.68	0.68	10.00	0.55	10.55	104.19	122.14	178.56	70.39				70.39	100.38	45.40	300			0.99	1.376	29.99	29.88%
Tanger Site		CBMH18	11										0.19	0.48	1.15	10.55	0.67	11.22	101.37	118.82	173.68	116.67				116.67	161.54	56.60	375			0.78	1.417	44.87	27.78%
Tanger Site	Bioswale	CB19	11										0.71	1.78	1.78	15.00	0.26	15.26	83.56	97.85	142.89	148.43				148.43	159.83	34.60	300			2.51	2.190	11.39	7.13%
Tanger Site		CBMH21	11										0.16	0.40	0.40	10.00	0.27	10.27	104.19	122.14	178.56	41.71				41.71	197.85	28.30	375			1.17	1.735	156.14	78.92%
Tanger Site		11	25										0.25	0.63	3.95	11.22	0.61	11.83	98.18	115.06	168.16	388.13				388.13	470.71	59.40	600			0.54	1.613	82.59	17.54%
Tanger Site		25	26										0.23	0.58	4.53	11.83	0.56	12.38	95.43	111.82	163.40	432.16				432.16	568.97	41.55	750			0.24	1.248	136.81	24.05%
Tanger Site		26	12											0.00	4.53	12.38	0.16	12.54	93.08	109.06	159.35	421.54				421.54	506.25	10.50	750			0.19	1.110	84.70	16.73%
Tanger Site		12	13											0.00	65.70	20.21			69.80	81.68	119.17	4,586.01												
Tanger Site		12	13											0.00	8.77	20.21	0.21	20.42	69.80	81.68	119.17	611.90			64.80	611.90	6,470.81	26.67	1950			0.19	2.099	5858.91	90.54%

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 = 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: P.K.
Checked:
Dwg. Reference: 32862 - C-500/C-500A

No.	Revision	Date
1.	As-built (Tanger Outlets)	2015-02-02
2.	Chick-Fil-A Addition	2023-03-03

File Reference: 32862.5.7.1
Date: 2023-03-03
Sheet No: 1 of 2

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
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STORM SEWER DESIGN SHEET

Tanger Outlets Centre
City of Ottawa
Rio-Can Management Inc.

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA							
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.46	C= 0.56	C= 0.60	C= 0.65	C= 0.69	C= 0.70	C= 0.85	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	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 (5yr) (L/s)	(%)
Tanger Site	with CFA	24	23			**0.07**							0.83	2.17	2.17	10.00	0.94	10.94	104.19	122.14	178.56	225.70				225.70	228.77	58.00	525			0.26	1.024	3.07	1.34%
Tanger Site		BLDG 04	116																						10.80	10.80	45.26	28.00	200			1.75	1.396	34.46	76.14%
Tanger Site		116	GALLERY																						10.80	10.80	33.00	3.00	200			0.93	1.018	22.20	67.27%
Tanger Site		GALLERY	23																						10.80	10.80	114.15	9.70	200			11.13	3.520	103.35	90.54%
Tanger Site		23	22										0.67	1.68	3.84	10.94	0.86	11.81	99.46	116.56	170.36	382.16			10.80	392.96	464.03	65.00	675			0.28	1.256	71.07	15.31%
Tanger Site		BULKHEAD	22										0.23	0.58	0.58	10.00	0.61	10.61	104.19	122.14	178.56	59.96				59.96	71.33	36.00	300			0.50	0.978	11.38	15.95%
Tanger Site		22	21										0.79	1.98	6.39	11.81	0.67	12.47	95.53	111.94	163.57	610.87				610.87	1,058.89	76.83	825			0.50	1.919	448.02	42.31%
Tanger Site		21	20										0.71	1.78	8.17	12.47	1.04	13.51	92.72	108.63	158.72	757.61				757.61	1,237.13	99.99	975			0.28	1.605	479.52	38.76%
Tanger Site		BLDG 03	115																						14.40	14.40	34.22	34.00	200			1.00	1.055	19.82	57.92%
Tanger Site		115	GALLERY																						14.40	14.40	30.98	10.00	200			0.82	0.955	16.58	53.53%
Tanger Site		GALLERY	20																						14.40	14.40	79.29	8.00	200			5.37	2.445	64.89	81.84%
Tanger Site		20	19										0.35	0.88	9.05	13.51	0.46	13.97	88.69	103.89	151.76	802.39			25.20	827.59	1,071.38	38.18	975			0.21	1.390	243.80	22.76%
Tanger Site		19	18										0.24	0.60	9.65	13.97	1.27	15.24	87.04	101.95	148.91	839.69			25.20	864.89	871.65	86.41	975			0.14	1.131	6.76	0.78%
Tanger Site		18	16										0.09	0.23	9.87	15.24	1.05	16.30	82.78	96.94	141.55	817.23			25.20	842.43	1,237.13	101.50	975			0.28	1.605	394.70	31.90%
Tanger Site		16	15										0.20	0.50	10.37	16.30	0.39	16.68	79.59	93.18	136.05	825.55			25.20	850.75	1,533.10	46.00	975			0.43	1.989	682.35	44.51%
Tanger Promenade		30	31										0.10	0.25	0.25	10.00	2.39	12.39	104.19	122.14	178.56	26.07				26.07	59.68	117.50	300			0.35	0.818	33.61	56.32%
Tanger Promenade		32	31										0.04	0.10	0.10	10.00	0.48	10.48	104.19	122.14	178.56	10.43				10.43	68.24	38.85	250			1.21	1.347	57.81	84.72%
Tanger Promenade		31	34										0.04	0.10	0.45	12.39	0.80	13.19	93.05	109.02	159.28	41.90				41.90	98.50	41.50	375			0.29	0.864	56.60	57.46%
Tanger Promenade		34	35										0.06	0.15	0.60	13.19	0.39	13.58	89.88	105.29	153.82	53.97				53.97	136.30	19.38	450			0.21	0.830	82.33	60.40%
Tanger Promenade		36	35										0.04	0.10	0.10	10.00	0.63	10.63	104.19	122.14	178.56	10.43				10.43	43.43	32.50	250			0.49	0.857	33.00	75.99%
Tanger Promenade		35	37										0.03	0.08	0.78	13.58	1.95	15.53	88.43	103.58	151.31	68.59				68.59	155.42	81.42	525			0.12	0.696	86.83	55.87%
Tanger Promenade		37	38										0.06	0.15	0.93	15.53	1.76	17.30	81.87	95.87	139.98	75.79				75.79	179.46	85.00	525			0.16	0.803	103.67	57.77%
Tanger Promenade		38	39										0.04	0.10	1.03	17.30	1.19	18.49	76.80	89.90	131.23	78.78			5.40	84.18	195.57	62.50	525			0.19	0.875	111.38	56.96%
Tanger Promenade		50	49										0.03	0.08	0.08	10.00	0.97	10.97	104.19	122.14	178.56	7.82				7.82	44.30	51.10	250			0.51	0.874	36.48	82.35%
Tanger Promenade		49	48										0.06	0.15	0.23	10.97	1.08	12.06	99.31	116.40	170.12	22.36				22.36	66.92	59.50	300			0.44	0.917	44.55	66.58%
Tanger Promenade		48	46										0.03	0.08	0.30	12.06	0.45	12.51	94.46	110.68	161.73	28.36				28.36	348.14	57.48	450			1.37	2.121	319.78	91.85%
Tanger Promenade		47	46										0.04	0.10	0.10	10.00	0.26	10.26	104.19	122.14	178.56	10.43				10.43	95.51	29.54	250			2.37	1.885	85.08	89.08%
Tanger Promenade		46	44										0.03	0.08	0.48	12.51	0.65	13.16	92.58	108.47	158.48	44.01				44.01	89.23	21.30	450			0.09	0.544	45.22	50.68%
Tanger Promenade		45	44										0.08	0.20	0.20	10.00	0.99	10.99	104.19	122.14	178.56	20.86				20.86	41.62	49.00	250			0.45	0.821	20.76	49.89%
Tanger Promenade		44	441											0.00	0.68	13.16	0.10	13.26	90.01	105.45	154.04	60.81				60.81	249.80	6.54	525			0.31	1.118	188.99	75.66%
Tanger Promenade		441	43										0.03	0.08	0.75	13.26	0.88	14.14	89.64	105.01	153.40	67.29				67.29	228.77	54.00	525			0.26	1.024	161.48	70.59%
Tanger Promenade		43	401										0.04	0.10	0.85	14.14	1.28	15.42	86.45	101.26	147.89	73.54				73.54	212.45	56.00	600			0.11	0.728	138.91	65.38%
Tanger Promenade		401	40											0.00	0.85	15.42	0.05	15.47	82.23	96.29	140.60	69.95				69.95	424.90	4.50	600			0.44	1.456	354.95	83.54%
Tanger Promenade		41	40										0.03	0.08	0.08	10.00	1.09	11.09	104.19	122.14	178.56	7.82				7.82	42.53	55.00	250			0.47	0.839	34.71	81.61%
Tanger Promenade		42	40										0.03	0.08	0.08	10.00	0.63	10.63	104.19	122.14	178.56	7.82				7.82	41.62	31.00	250			0.45	0.821	33.80	81.21%
Tanger Promenade		40	39										0.03	0.08	1.08	15.47	0.71	16.18	82.07	96.10	140.32	88.29				88.29	338.95	49.50	600			0.28	1.161	250.66	73.95%
Tanger Promenade		39	15											0.00	2.10	18.49	0.54	19.03	73.75	86.32	125.98	155.00			5.40	160.40	500.29	55.50	600			0.61	1.714	339.89	67.94%
Tanger Site		15	14											0.00	12.47	19.03	0.38	19.41	72.46	84.80	123.75	903.87			30.60	934.47	1,366.23	34.63	1050			0.23	1.529	431.77	31.60%
Tanger Site		14	13											0.00	12.47	19.41	0.04	19.45	71.58	83.77	122.24	892.94			30.60	923.54	2,034.45	5.90	1050			0.51	2.276	1110.91	54.60%
Tanger Site		13	POND											0.00	78.18	20.42			69.34	81.14	118.39	5,421.14												
Tanger Site		13	POND											0.00	8.77	20.42	0.03	20.45	69.34	81.14	118.39		711.36		95.40	6,227.90	14,011.46	6.70	2100			0.60	3.919	7783.56	55.55%
																TC = (240 m / 0.84 m/s) + 13.39 min = 18.15																		
Palladium Drive	existing ditch west		DI1	0.59									0.40	1.33	1.33	18.15	#DIV/0!	#DIV/0!	74.59	87.31	127.43	99.12				99.12	#DIV/0!						#DIV/0!	#DIV/0!	#DIV/0!
																TC = 1300 m / 0.28 m/s = 77.38 min																		
Campeau Drive	existing ditch west		DI2	10.14										5.64	5.64	77.38	0.14	77.52	27.24	31.78	46.15	153.57				153.57	2,073.93	15.00	1200			0.26	1.776	1920.36	92.60%
																TC = 500 m / 0.15 m/s = 55.55 min																		
Campeau Drive	proposed ditch east		DI2	29.83										16.59	16.59	55.55	0.14	55.69	34.87	40.70	59.19	578.30				578.30	2,073.93	15.00	1200			0.26	1.776	1495.62	72.12%

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 = 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: SEL
Checked: JIM
Dwg. Reference: 32862 - C-500/C-500A
141991 - C500

No.	Revision	Date
1.	As-built (Tanger Outlets)	2015-02-02
2.	Chick-Fil-A Addition	2023-03-03

File Reference: 32862.5.7.1
Date: 2023-03-03
Sheet No: 2 of 2

RUNOFF COEFFICIENT CALCULATION SHEET

TO MH101 (CAPTURED BY NEW CBs)

A	Area (m^2)	C
Softscape	737	0.20
Hardscape	521	0.90
Total	1258	**0.49**

B	Area (m^2)	C
Softscape	185	0.20
Hardscape	148	0.90
Total	333	**0.51**

Total	Area (m^2)	C
A	1258	0.49
B	333	0.51
Total	1591	**0.49**

TO MH24 (CAPTURED BY EX CBs)

D	Area (m^2)	C
Softscape	127	0.20
Hardscape	80	0.90
Total	207	**0.47**

E	Area (m^2)	C
Softscape	215	0.20
Hardscape	0	0.90
Total	215	**0.20**

F		
Softscape	60	0.20
Hardscape	231	0.90
Total	291	**0.76**

Total	Area (m^2)	C
D	207	0.47
E	215	0.20
F	291	0.76
Total	713	**0.51**

TO MH103 (CAPTURED BY STORM SERVICE)

C	Area (m^2)	C
Softscape	51	0.20
Hardscape	46	0.90
Total	97	**0.53**

G	Area (m^2)	C
Softscape	0	0.20
Hardscape	458	0.90
Total	458	**0.90**

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: 333 Huntmar Drive
DATE: 2022-05-25
FILE: 141991.6.04
REV #: 1
DESIGNED BY: SL
CHECKED BY: JM

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

Flow Allocation

C =	0.85	
T_c =	10	min
$i5_{yr}$ =	104.19	mm/hr
A_{TOTAL} =	0.28	Ha
Q_{TOTAL} =	68.94	L/s

Uncontrolled Release MH24 ($Q_{uncontrolled} = 2.78*C*i_{100yr}*A_{uncontrolled}$)

C =	0.6375	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.070	Ha
$Q_{uncontrolled}$ =	22.15	L/s

Uncontrolled Release MH103 ($Q_{uncontrolled} = 2.78*C*i_{100yr}*A_{uncontrolled}$)

C =	0.6625	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.010	Ha
$Q_{uncontrolled}$ =	3.29	L/s

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

$Q_{max\ allowable}$ =	43.50	L/s

MODIFIED RATIONAL METHOD (100-Year & 5-YearPonding)

Drainage Area	*MH102 (A+B)*		
Area (Ha)	0.16	Restricted Flow Q_r (L/s)=	38.50
C =	0.61	50% Effective Flow Q_r (L/s)=	19.25

100-Year Ponding

T_c Variable (min)	*i_{100yr} (mm/hour)*	*Peak Flow $Q_p=2.78xCi_{100yr}A$ (L/s)*	*Q_r (L/s)*	*Q_p-Q_r (L/s)*	*Volume 100yr (m^3)*
10	178.56	48.65	19.25	29.40	17.64
12	162.13	44.17	19.25	24.92	17.94
13	155.11	42.26	19.25	23.01	**17.95**
14	148.72	40.52	19.25	21.27	17.87
16	137.55	37.47	19.25	18.22	17.49

Storage (m^3)

Overflow	Required	Surface	Underground	Balance
0.00	17.95	6.67	11.91	0.00

Drainage Area	*MH102 (A+B)*		
Area (Ha)	0.160	Restricted Flow Q_r (L/s)=	38.50
C =	0.49	50% Effective Flow Q_r (L/s)=	19.25

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	39.82	19.25	20.57	2.47
4	152.51	33.24	19.25	13.99	3.36
5	141.18	30.77	19.25	11.52	**3.46**
6	131.57	28.68	19.25	9.43	3.39
8	116.11	25.31	19.25	6.06	2.91

Storage (m^3)

Overflow	Required	Surface	Underground	Balance
0.00	3.46	6.67	11.91	0.00

Drainage Area	*Rooftop*		
Area (Ha)	0.05		
C =	1.00	Restricted Flow Q_r (L/s)=	5.00

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)*
21	116.30	16.17	5.00	11.17	14.07
23	109.68	15.25	5.00	10.25	14.14
24	106.68	14.83	5.00	9.83	**14.15**
25	103.85	14.43	5.00	9.43	14.15
27	98.66	13.71	5.00	8.71	14.12

Storage (m^3)

Overflow	Required	Surface	Underground	Balance
0.00	14.15	18.00	0.00	0.00

Drainage Area	*Rooftop*		
Area (Ha)	0.050		
C =	0.90	Restricted Flow Qr (L/s)=	5.00

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	13.03	5.00	8.03	4.82
12	94.70	11.85	5.00	6.85	4.93
13	90.63	11.34	5.00	6.34	**4.94**
14	86.93	10.88	5.00	5.88	4.94
16	80.46	10.07	5.00	5.07	4.86

Storage (m^3)

Overflow	Required	Surface	Underground	Balance
0.00	4.94	18.00	0.00	0.00

Samantha Labadie

From: Samantha Labadie
Sent: Monday, May 29, 2023 9:58 AM
To: John Sousa
Cc: Austin Whitley; Shawn.Seymour@cushwake.com
Subject: RE: CFA - Rooftop Storage
Attachments: Watts Adjustable Flow Control Roof Drain Spec.PDF

Hi John,

See attached for spec sheet for Watts Adjustable Flow Control for Roof Drains.

Thank you,

Sam

From: John Sousa <john.sousa@exp.com>
Sent: Monday, May 29, 2023 8:33 AM
To: Samantha Labadie <samantha.labadie@ibigroup.com>
Cc: Austin Whitley <austin.whitley@cfacorp.com>; Shawn.Seymour@cushwake.com
Subject: RE: CFA - Rooftop Storage

*** Exercise caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***
Hi Samantha

It will be acceptable to store an average of up to 2” of water on 80% of the rooftop, as noted below.

Please provided roof drain spec so we may updated or mechanical drawings.

Thanks.

John Sousa
EXP | Sr. Project Manager/Architectural Designer
t : +1.905.793.9800, 62514 | m : +1.647.402.4235 | e : john.sousa@exp.com
exp.com | legal disclaimer
keep it green, read from the screen

From: Samantha Labadie <samantha.labadie@ibigroup.com>
Sent: Friday, May 26, 2023 1:50 PM
To: Austin Whitley <austin.whitley@cfacorp.com>; Shawn.Seymour@cushwake.com; John Sousa <john.sousa@exp.com>
Subject: CFA - Rooftop Storage

Hi all,

To reiterate, we are hoping to be able to store an average of up to 2” of water on 80% of the rooftop.

If we are able to restrict the roof flowrate to 5L/s, then during a 100-year storm event we would have a maximum of 14.15m3 on the roof.

458m2*0.80 = 366m2
14.15m3/366m2 = 0.04m avg depth

Thank you,

Sam Labadie P.ENG

Civil Engineer

Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
cell +1 613 899 5717

WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

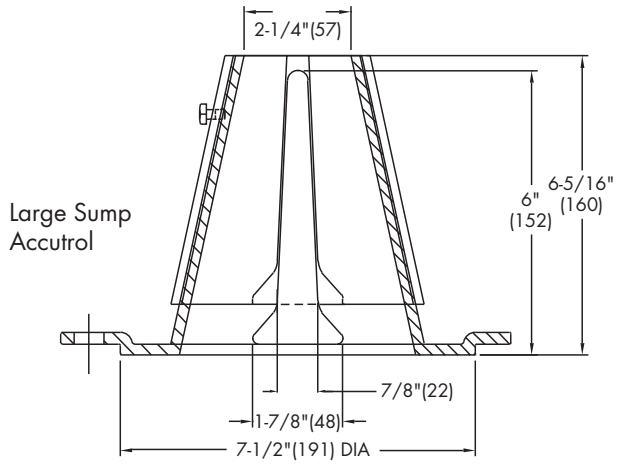
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

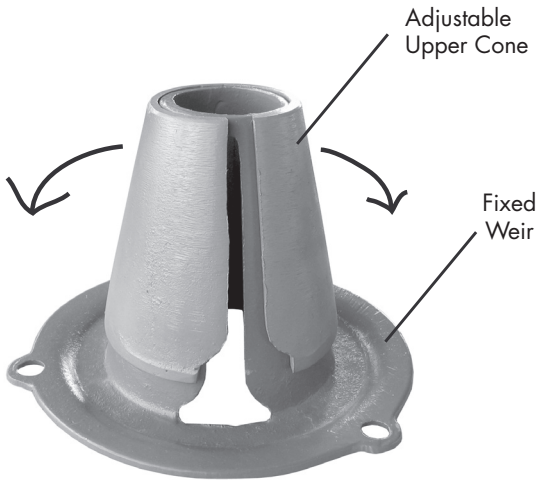
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

WATTS®
A Watts Water Technologies Company

4 SITE STORMWATER MANAGEMENT

4.1 Synopsis of Previous Studies

In June 2006, Stantec and CCL/IBI Group completed the "Kanata West Master Servicing Study" (MSS), which recommended the preferred stormwater management solution to accommodate sustainable development while protecting the existing natural environment and the receiving Feedmill Creek. Water quality targets for Feedmill Creek were maintained for this report. That study recommended that minor storm runoff for the urban development lands west of Huntmar Road and north of Feedmill Creek be routed to a stormwater management facility, identified as Pond 6, which was proposed to be located north of Feedmill Creek adjacent to Huntmar Road. That study also recommended that minor storm runoff for the block south of Feedmill Creek be routed to a stormwater management facility, identified as Pond 2, which was proposed to be located south of Feedmill Creek at the confluence with the Carp River.

In June 2011, Greenland International Consulting Ltd. completed the "Model Calibration/Validation Exercise Carp River Restoration Plan – Final Report" (C/V Report) which outlined the validation of the modelling used for the Carp River. That report concluded that the modelling that had been completed indicated that the stormwater management facilities proposed in the MSS did not result in increased water levels and flow conditions further downstream. As outlined within the C/V Report, all stormwater management facilities are to be designed with limited water quantity control to meet target hydrographs.

In September 2012, IBI Group completed the study "Conceptual Site Servicing Plan Stormwater Management Plan and Erosion and Sediment Control Plan Taggart Kanata West Business Park and Tanger Outlets Centre 333 Huntmar Dr.", which outlined the conceptual stormwater management servicing the entire Kanata West Business Park (KWBP) including analysis for the proposed development. That study outlined the proposed adjustment in servicing from the MSS document, which originally recommended that Pond 6 be sized to service all of the drainage area west of Huntmar Road. The servicing report recommended that two stormwater facilities, to be referenced as Pond 6 West and Pond 6 East, provide the required treatment for the drainage area. It was proposed that Pond 6 East be located north of Feedmill Creek adjacent to Huntmar Rd., and Pond 6 West be located north of Feedmill Creek at the western edge of the site. That study also outlined minor system capture for the Kanata West Business Park would be set to minimum 5 year Chicago design storm.

In June 2013, IBI Group completed the study "Design Brief Tanger Outlets Centre 333 Huntmar Drive." That approved report outlined the detailed site stormwater management design and analysis for the Tanger/RioCan development.

In November 2013, IBI Group completed the study "Kanata West Business Park Stormwater Management Report and Pond 6 East Design Brief, 333 Huntmar Drive – Tanger Outlets Centre." That study outlined the conceptual stormwater management for the Kanata West Business Park, the detailed site stormwater management for the Tanger Site, and the detailed design for the Pond 6 East Stormwater Management Facility. Pond 6 East was constructed in 2014.

In November 2015, IBI Group completed the study "Addendum Report: Kanata West Business Park Stormwater Management Report and Pond 6 East Design Brief." That study outlined the revisions to the drainage areas tributary to the existing Pond 6 East SWM facility. The drainage boundaries tributary to each of the Pond 6 West and Pond 6 East SWM facilities are identified within Figure 2 of that report, a copy is provided within Appendix C of this report. That study also established the minor system capture rates and on site storage requirements for the KWBP.

In November 2015, IBI Group completed the study "Kanata West Business Park Stormwater Management Report and Pond 6 West Design Brief." That study outlined the detailed design of the Pond 6 West Stormwater Management Facility.

In January of 2017, IBI Group completed the study "Design Brief UPS Canada Inc. 8825 Campeau Drive." That study outlined the detailed design of the UPS site tributary to the Pond 6 West SWM facility.

In July of 2017, IBI Group completed the study "Design Brief Kanata West Retail Centre 3015, 3075 and 3095 Palladium Drive." That study outlined the detailed design of the Kanata West Retail Centre tributary to the Pond 6 West SWM facility.

4.2 Objective

The stormwater management for the KWBP carries forward with the findings and criteria of the previous studies listed within Section 4.1. The purpose of this section is to present the dual drainage design, including the minor and major system, for the Kanata West Business Park development. The design includes the sizing of inlet control devices, maximum depth and velocity of flow on the surface and hydraulic grade line analysis. The evaluation takes into consideration the City of Ottawa Sewer Design Guidelines (OSDG) (October 2012), the February 2014 Technical Bulletin ISDTB-2014-01, and the September 2016 Technical Bulletin PIEDTB-2016-01.

4.3 Overall Stormwater Management Approach

4.3.1 Pond 6 West

The Pond 6 West Stormwater Management Facility is located at the western edge of the site, north of Feedmill Creek. The facility provides water quality and water quantity control for the existing and proposed development west of Palladium Dr. and discharges to Feedmill Creek in accordance with the Kanata West Business Park Stormwater Management report and Pond 6 West Design Brief Report 14289-5.2.3, November 2015. That study established the minimum minor system capture rates for the KWBP development tributary to the West Pond. The location of Pond 6 West is illustrated within **Figure 1**.

4.3.2 Pond 6 East and Trunk Storm Sewer

The existing Pond 6 East Stormwater Management Facility is located to the east of the Tanger Outlets Centre development, north of Feedmill Creek. The facility provides water quality and water quantity control for the proposed development east of Palladium Dr. and discharges to Feedmill Creek as outlined within the "Addendum Report: Kanata West Business Park Stormwater Management Report and Pond 6 East Design Brief, 333 Huntmar Drive – Tanger Outlets Centre Report 32862-5.2.3, November 2015. That study established the minor system capture rates for the KWBP development tributary to the East Pond. The location of Pond 6 East is illustrated within **Figure 1**.

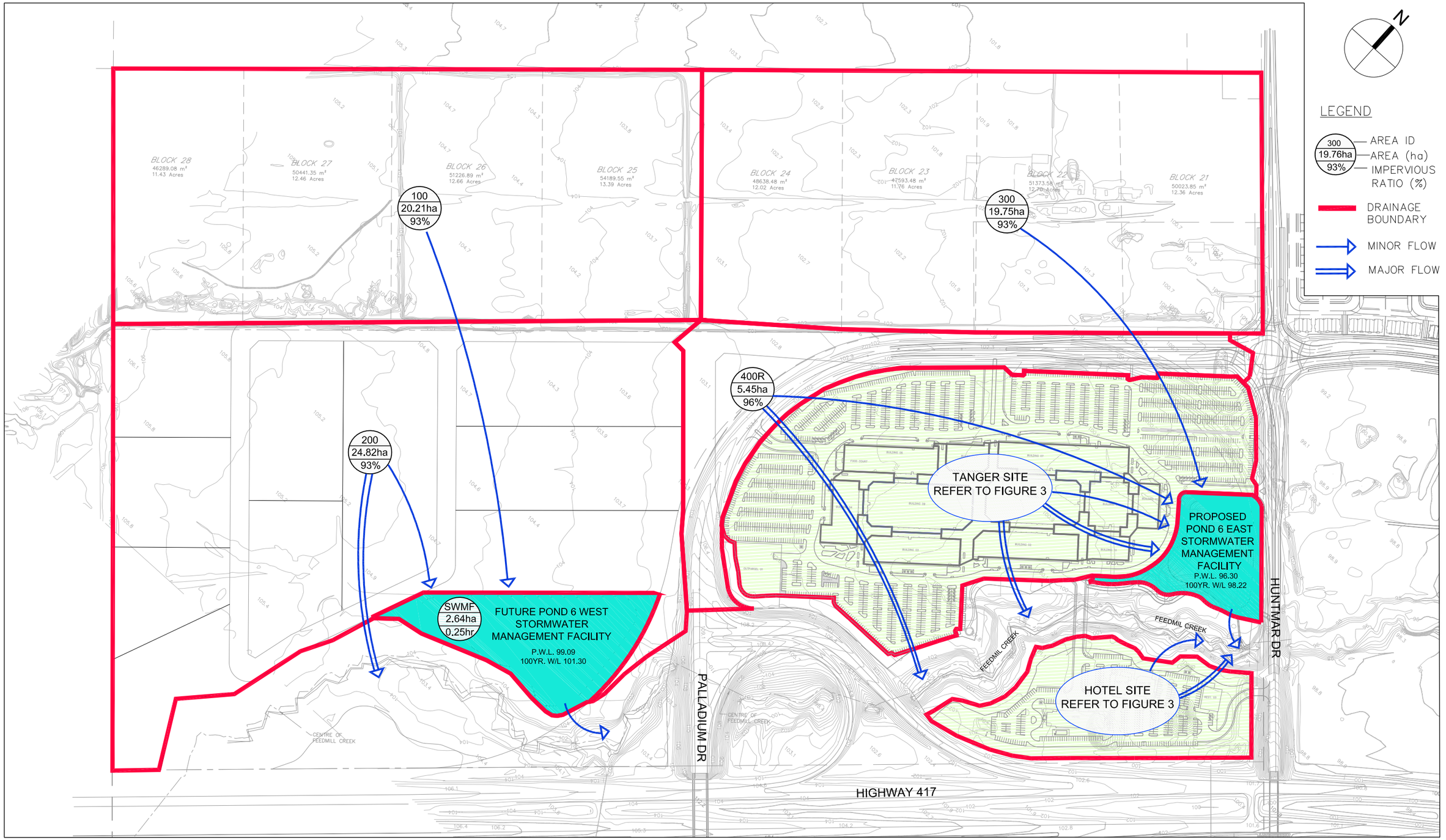
4.3.3 Target Hydrograph

Water quantity control requirements for the Kanata West development area, including the subject site, were established within the KWMSS, the C/V report and carried forward for use in the detailed design as presented within the above noted studies. The existing Pond 6 West and Pond 6 East stormwater management facilities have been designed and constructed with water quantity control to meet the target hydrograph. A comparison of the Target Hydrograph used for the detailed design with the outflow hydrograph from the Kanata West Business Park as part of the current study is presented within Figure 9. This comparison demonstrates that the existing Pond 6 West and Pond 6 East provide water quantity control to respect the Target Hydrograph.

RIOCAN MANAGEMENT INC.
KANATA WEST BUSINESS PARK
STORMWATER MANAGEMENT REPORT AND
POND 6 EAST DESIGN BRIEF
333 HUNTMAR DRIVE - TANGER OUTLET CENTRES

Appendix A – Water Quality and Infiltration Calculations

REV 4 OCTOBER 2013
REV 3 JULY 2013
REV 2 JUNE 2013
REV 1 APRIL 2013
FEBRUARY 2013



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IBI GROUP

Scale

N.T.S.

Project Title

TANGER OUTLETS CENTRE STORMWATER MANAGEMENT FACILITY

Drawing Title

POST-DEVELOPMENT SWM DRAINAGE BOUNDARIES OVERALL SITE

Sheet No.

FIGURE 2

Water Quality Calculations for Stormwater Facilities

Stormwater Management Facility Sizing
(From *Stormwater Management Planning and Design Manual*, Ontario Ministry of the Environment, March 2003).

Pond 6 West

Facility Characteristics

- Enhanced (Level 1) Treatment Protection (80% TSS Removal)
- Wet Pond
- Urban drainage area: 45.05 ha
- Total Imperviousness: 93%

Determination of Storage Volume

Storage volume = 265 m^3/ha (extrapolated from Table 3.2 in 2003 MOE Manual)

Extended Storage
40 m^3/ha * 45.05ha = 1802 m^3

Permanent Storage
265 – 40 m^3/ha = 225 m^3/ha* 45.05ha = 10,136 m^3

Total Storage
1802 + 10,136 m^3 = 11,938 m^3 = 1.19 ha-m

Pond 6 East

Facility Characteristics

- Enhanced (Level 1) Treatment Protection (80% TSS Removal)
- Wet Pond
- Urban drainage area: 39.35 ha
- Total Imperviousness: 96%

Determination of Storage Volume

Storage volume = 268 m^3/ha (extrapolated from Table 3.2 in 2003 MOE Manual)

Extended Storage
40 m^3/ha * 39.35ha = 1574 m^3

Permanent Storage
268 – 40 m^3/ha = 228 m^3/ha* 39.35ha = 8972 m^3

Total Storage
1574 + 8972 m^3 = 10,546 m^3 = 1.06 ha-m

Infiltration Calculations
Tanger Outlets Centre and Hotel Site

The Site Specific Hydrogeological Analysis of the site indicates existing site infiltration is approximately 69.25mm/year. The KWMSS indicated that post development infiltration rates are to be increased by 25% above this rate, to 87mm/year. The subject site has a certain amount of infiltration under every rainfall event which will contribute to the required infiltration rate of approximately 87 mm/year. This site will also be provided with infiltration galleries fed by rooftop drains. The subject site has been modeled using hydrological computer model to confirm effective runoff coefficient, which accounts for depression storage and initial abstraction losses. Evapotranspiration losses from the pervious areas have also been accounted for using the MOE Stormwater Management Planning and Design Manual (March, 2003) Table 3.1. The following table outlines the infiltration calculations for the site.

1. **Infiltration Volume Summary:**

Area ID		Area (ha)	Effective Runoff Coefficient	ET (m^3)	Infiltration Volume (m^3)		Balance (m^3)
					Req'd	Prov'd	
Campeau Dr Extension/Palladium							
400R		5.45	0.952	1431	4742	954	-3787
Tanger Site							
401		5.32	0.991	279	4628	162	-4466
402		3.93	0.990	206	3419	0	-3419
403		0.83	0.988	44	722	0	-722
404		4.08	0.991	214	3550	139	-3411
405		0.66	0.264	3465	574	1002	428
Pond 6 East	Grassed Area	0.49	0.264	2573	1340	744	-579
	Permanent Pool	1.05	0.843	n/a		17	
Hotel Site							
500		2.29	0.992	120	1992	56	-1936
501		0.27	1.000	0	235	0	-235
500A		1.37	0.204	7193	1192	2840	1648
Totals		**25.74**	**0.901**	**15524**	**22394**	**5916**	**-16478**

Where:

- Effective Runoff Coefficient is the runoff coefficient from the 25 mm 4 hour Chicago storm event (SWMHYMO) accounting for depression storage and initial abstraction losses
- ET is Evapotranspiration losses, which are based on the MOE Stormwater Management Planning and Design Manual (March, 2003) Table 3.1, indicating 525mm/year for Urban Lawns/Shallow Rooted Crops in Clay.
- Required infiltration is based on the 86mm/year as per the KWMSS (25% increase of existing condition 69mm/year)
- Provided infiltration is based on drainage area, Effective Runoff Coefficient and annual precipitation of 920 mm/year as obtained from the Government of Canada Climate Normals Data for Station Ottawa CDA (January through December). Example calculation for Area 405 is provided below:

$$Provided\ Infiltration\ Volume = \left[(1 - 0.264)\ x\ 0.66ha\ x \frac{920mm}{year} x\ 10\right] - 3465 = 1002m^3$$

2. Calculation of Infiltration from Bottom of SWM Facility

$$Q = kiA = \frac{1x10^{-9}m}{s} x0.0102x5433m^2 x \frac{3600s}{hr} x \frac{24hr}{day} x \frac{365days}{year} = 17.6m^3/year$$

Where:

- *i* is the hydraulic gradient calculated as:
  - $i = \frac{96.30-95.38}{90m} = 0.0102$
    Where 96.30m is the permanent water level in Pond 6 East, 95.38m is the invert of the adjacent Feedmill Creek. The distance from the approximate centroid of the SWM facility to Feedmill Creek is approximately 90m.
- 0.036 mm/hour is the hydraulic conductivity of silty clay
- A is the area of the bottom of the pond.

On an annual basis, approximately 22394m^3 of infiltration is required for the site based on the 25.74ha drainage area and 87mm/year infiltration target. Based on the hydrological modeling completed, the site will provide approximately 5916m^3 of infiltration on an annual basis, or 23mm/year. This approximation is a conservative estimate and based on hydrological simulations using a relatively high volume 25 mm 4 hour Chicago storm event. In reality, the percentage of infiltration is much higher since typical storm events are about 1 to 5 mm. The above calculations indicate that additional stormwater management measures will be required to meet the required infiltration targets for the site.

Therefore, it is proposed that the balance of the required infiltration for the site will be provided by Infiltration Galleries fed by rooftop drains. The proposed infiltration galleries have been sized to maximize infiltration potential for the site. The sizing was based on individual roof drainage area, daily precipitation data (taken for wet year to minimize overflow), infiltration through the bottom and the bottom 1/3 of the side walls, and percolation rates confirmed by Hydrogeological investigation of the site. The sizing of the galleries has been tailored for each Building roof area, with average overflow volume calculated at approximately 6% of annual runoff volume into the galleries. Detailed building specific example calculation is provided herewith for reference. The calculations are also based on 95% of the annual 920mm precipitation from rooftops being available as runoff to fill the infiltration galleries. A summary of the infiltration calculations are provided below:

3. Infiltration Gallery Calculations on an Annual Basis:

Building ID	Area (m^2)	Annual Runoff Volume (m^3)	Overflow Volume (m^3)	Annual Volume Infiltrated (m^3)
Building03	3732	3262	193	3069
Building04	2679	2341	166	2175
Building05	3519	3076	232	2843
Building06	1505	1315	109	1206
Building07	5025	4392	242	4150
Building09	6857	5993	453	5540
	Totals	20379	1395	18984

Where:

- Annual Runoff Volume is based on rooftop area and 95% of the annual 920mm precipitation (874mm/year) from rooftops available as runoff
- Overflow Volume is based on building specific infiltration gallery sizing

The balance of required infiltration will be provided by infiltration galleries fed by rooftop drains. The infiltration galleries will provide an additional 18984m^3 of infiltration on an annual basis, or 74mm/year. The total infiltration provided by the site is therefore 97mm/year, above the required post-development rate of 86mm/year.

SUMMARY OF INFILTRATION GALLERY CALCULATIONS

annual precipitation (mm)	920
95% available runoff (mm)	874
area (ha)	25.74

Building ID	Area (m^2)	Available Runoff Volume (m^3)	Infiltration Gallery Overflow (%)	Overflow Volume (m^3)	Infiltration Volume (m^3)
BUILDING03	3732	3262	5.91%	193	3069
BUILDING04	2679	2341	7.10%	166	2175
BUILDING05	3519	3076	7.55%	232	2843
BUILDING06	1505	1315	8.30%	109	1206
BUILDING07	5025	4392	5.51%	242	4150
BUILDING 09	6857	5993	7.56%	453	5540
TOTAL		20379		1395	18984

BUILDING03 INFILTRATION GALLERY SIZING CALCULATION

BUILDING 03	3732 ha		PRECIPITATION DATA APRIL 1 TO OCTOBER 31 (WET YEAR)		
Effective Runoff	0.95 %		TOT PRECIP DEPTH	800.4	mm
Percolation	0.288 (50 mins/cm=0.288m/day)		TOTAL PRECIP VOLUME	2837	m3
INFILTRATION GALLERY SIZING			TOT INFILTRATION VOL	2679	m3
Width	9 m		TANGER/HOTEL/CAMPEAU AREA	25.74	ha
Length	42 m		INFIL RATE	10.41	mm/year
depth	0.75 m		OVERFLOW VOL	158	m3/year
3 Cells	1				
void ratio	0.38 (3/4" clearstone)		RUNOFF VOLUME OVERFLOW	5.91%	
	107.73 TOTAL DRYCELL VOL				

DATE	RAINFALL	RAINFALL INTENSITY (AVG)	RAINWATER AVAILABLE	VOLUME INFLOW TO DRYCELL	VOLUME IN DRY CELL	VOLUME PASSING DRY CELL	INFILTRATION FROM BOTTOM	INFILTRATION FROM SIDES (BOTTOM 1/3)	BALANCE IN DRYCELL
	[MM]	[MM/HR]	[M^3]	[M^3]	[M^3]	[M^3]	[M^3]	[M^3]	[M^3]
1-Apr	0.2	0.008	0	0	0	0	0	0	0
2-Apr	0.4	0.017	1	1	1	0	1	0	0
3-Apr	0	0.000	0	0	0	0	0	0	0
4-Apr	0	0.000	0	0	0	0	0	0	0
5-Apr	0	0.000	0	0	0	0	0	0	0
6-Apr	7.8	0.325	28	28	28	0	28	0	0
7-Apr	3.4	0.142	12	12	12	0	12	0	0
8-Apr	4.6	0.192	16	16	16	0	16	0	0
9-Apr	4.2	0.175	15	15	15	0	15	0	0
10-Apr	0	0.000	0	0	0	0	0	0	0
11-Apr	0	0.000	0	0	0	0	0	0	0
12-Apr	0	0.000	0	0	0	0	0	0	0
13-Apr	0	0.000	0	0	0	0	0	0	0
14-Apr	0	0.000	0	0	0	0	0	0	0
15-Apr	0	0.000	0	0	0	0	0	0	0
16-Apr	0	0.000	0	0	0	0	0	0	0
17-Apr	0	0.000	0	0	0	0	0	0	0
18-Apr	0	0.000	0	0	0	0	0	0	0
19-Apr	0	0.000	0	0	0	0	0	0	0
20-Apr	8.2	0.342	29	29	29	0	29	0	0
21-Apr	2.8	0.117	10	10	10	0	10	0	0
22-Apr	0	0.000	0	0	0	0	0	0	0
23-Apr	0	0.000	0	0	0	0	0	0	0
24-Apr	0	0.000	0	0	0	0	0	0	0
25-Apr	0	0.000	0	0	0	0	0	0	0
26-Apr	0	0.000	0	0	0	0	0	0	0
27-Apr	0	0.000	0	0	0	0	0	0	0
28-Apr	0	0.000	0	0	0	0	0	0	0
29-Apr	0	0.000	0	0	0	0	0	0	0
30-Apr	0	0.000	0	0	0	0	0	0	0
1-May	9	0.375	32	32	32	0	32	0	0
2-May	0	0.000	0	0	0	0	0	0	0
3-May	0	0.000	0	0	0	0	0	0	0
4-May	2.4	0.100	9	9	9	0	9	0	0
5-May	8	0.333	28	28	28	0	28	0	0
6-May	1	0.042	4	4	4	0	4	0	0
7-May	1.6	0.067	6	6	6	0	6	0	0
8-May	0.8	0.033	3	3	3	0	3	0	0
9-May	0	0.000	0	0	0	0	0	0	0
10-May	0	0.000	0	0	0	0	0	0	0
11-May	0	0.000	0	0	0	0	0	0	0
12-May	0	0.000	0	0	0	0	0	0	0
13-May	0	0.000	0	0	0	0	0	0	0
14-May	0	0.000	0	0	0	0	0	0	0
15-May	1	0.042	4	4	4	0	4	0	0
16-May	17.4	0.725	62	62	62	0	62	0	0
17-May	0	0.000	0	0	0	0	0	0	0
18-May	11	0.458	39	39	39	0	39	0	0
19-May	30.2	1.258	107	107	107	0	107	0	0
20-May	29.4	1.225	104	104	104	0	104	0	0
21-May	5.9	0.246	21	21	21	0	21	0	0
22-May	26.9	1.121	95	95	95	0	95	0	0
23-May	11.3	0.471	40	40	40	0	40	0	0
24-May	0.4	0.017	1	1	1	0	1	0	0
25-May	0	0.000	0	0	0	0	0	0	0
26-May	0	0.000	0	0	0	0	0	0	0
27-May	7.8	0.325	28	28	28	0	28	0	0
28-May	0	0.000	0	0	0	0	0	0	0
29-May	0	0.000	0	0	0	0	0	0	0
30-May	0	0.000	0	0	0	0	0	0	0
31-May	0	0.000	0	0	0	0	0	0	0
1-Jun	10.6	0.442	38	38	38	0	38	0	0
2-Jun	0	0.000	0	0	0	0	0	0	0
3-Jun	0	0.000	0	0	0	0	0	0	0
4-Jun	0	0.000	0	0	0	0	0	0	0
5-Jun	1.4	0.058	5	5	5	0	5	0	0
6-Jun	0	0.000	0	0	0	0	0	0	0
7-Jun	5	0.208	18	18	18	0	18	0	0
8-Jun	0.2	0.008	1	1	1	0	1	0	0
9-Jun	0	0.000	0	0	0	0	0	0	0
10-Jun	0	0.000	0	0	0	0	0	0	0
11-Jun	4.8	0.200	17	17	17	0	17	0	0
12-Jun	26.2	1.092	93	93	93	0	93	0	0
13-Jun	1	0.042	4	4	4	0	4	0	0
14-Jun	0	0.000	0	0	0	0	0	0	0
15-Jun	0	0.000	0	0	0	0	0	0	0
16-Jun	5.6	0.233	20	20	20	0	20	0	0
17-Jun	0	0.000	0	0	0	0	0	0	0
18-Jun	0	0.000	0	0	0	0	0	0	0
19-Jun	4	0.167	14	14	14	0	14	0	0
20-Jun	0	0.000	0	0	0	0	0	0	0
21-Jun	0	0.000	0	0	0	0	0	0	0
22-Jun	0	0.000	0	0	0	0	0	0	0
23-Jun	1	0.042	4	4	4	0	4	0	0
24-Jun	27.2	1.133	96	96	96	0	96	0	0
25-Jun	0	0.000	0	0	0	0	0	0	0
26-Jun	0	0.000	0	0	0	0	0	0	0
27-Jun	29	1.208	103	103	103	0	103	0	0
28-Jun	0	0.000	0	0	0	0	0	0	0
29-Jun	0.2	0.008	1	1	1	0	1	0	0
30-Jun	0	0.000	0	0	0	0	0	0	0
1-Jul	0	0.000	0	0	0	0	0	0	0
2-Jul	10	0.417	35	35	35	0	35	0	0
3-Jul	14.8	0.617	52	52	52	0	52	0	0
4-Jul	7.6	0.317	27	27	27	0	27	0	0
5-Jul	14.8	0.617	52	52	52	0	52	0	0
6-Jul	0	0.000	0	0	0	0	0	0	0
7-Jul	0	0.000	0	0	0	0	0	0	0

8-Jul	0	0.000	0	0	0	0	0	0	0
9-Jul	0	0.000	0	0	0	0	0	0	0
10-Jul	0	0.000	0	0	0	0	0	0	0
11-Jul	0	0.000	0	0	0	0	0	0	0
12-Jul	0	0.000	0	0	0	0	0	0	0
13-Jul	10.6	0.442	38	38	38	0	38	0	0
14-Jul	0.4	0.017	1	1	1	0	1	0	0
15-Jul	0	0.000	0	0	0	0	0	0	0
16-Jul	0	0.000	0	0	0	0	0	0	0
17-Jul	0	0.000	0	0	0	0	0	0	0
18-Jul	0	0.000	0	0	0	0	0	0	0
19-Jul	0	0.000	0	0	0	0	0	0	0
20-Jul	6.2	0.258	22	22	22	0	22	0	0
21-Jul	0	0.000	0	0	0	0	0	0	0
22-Jul	0	0.000	0	0	0	0	0	0	0
23-Jul	0	0.000	0	0	0	0	0	0	0
24-Jul	0	0.000	0	0	0	0	0	0	0
25-Jul	3.6	0.150	13	13	13	0	13	0	0
26-Jul	31.6	1.317	112	108	108	4	108	0	0
27-Jul	0	0.000	0	0	0	0	0	0	0
28-Jul	0	0.000	0	0	0	0	0	0	0
29-Jul	42.4	1.767	150	108	108	43	108	0	0
30-Jul	2.4	0.100	9	9	9	0	9	0	0
31-Jul	0	0.000	0	0	0	0	0	0	0
1-Aug	0.6	0.025	2	2	2	0	2	0	0
2-Aug	10.8	0.450	38	38	38	0	38	0	0
3-Aug	0	0.000	0	0	0	0	0	0	0
4-Aug	0	0.000	0	0	0	0	0	0	0
5-Aug	0.4	0.017	1	1	1	0	1	0	0
6-Aug	4	0.167	14	14	14	0	14	0	0
7-Aug	1.2	0.050	4	4	4	0	4	0	0
8-Aug	2.8	0.117	10	10	10	0	10	0	0
9-Aug	11	0.458	39	39	39	0	39	0	0
10-Aug	0	0.000	0	0	0	0	0	0	0
11-Aug	0	0.000	0	0	0	0	0	0	0
12-Aug	0	0.000	0	0	0	0	0	0	0
13-Aug	0	0.000	0	0	0	0	0	0	0
14-Aug	0	0.000	0	0	0	0	0	0	0
15-Aug	2	0.083	7	7	7	0	7	0	0
16-Aug	0	0.000	0	0	0	0	0	0	0
17-Aug	0	0.000	0	0	0	0	0	0	0
18-Aug	14.2	0.592	50	50	50	0	50	0	0
19-Aug	0	0.000	0	0	0	0	0	0	0
20-Aug	0	0.000	0	0	0	0	0	0	0
21-Aug	15.6	0.650	55	55	55	0	55	0	0
22-Aug	0	0.000	0	0	0	0	0	0	0
23-Aug	6.6	0.275	23	23	23	0	23	0	0
24-Aug	0.8	0.033	3	3	3	0	3	0	0
25-Aug	0	0.000	0	0	0	0	0	0	0
26-Aug	3.8	0.158	13	13	13	0	13	0	0
27-Aug	24.2	1.008	86	86	86	0	86	0	0
28-Aug	0.8	0.033	3	3	3	0	3	0	0
29-Aug	0	0.000	0	0	0	0	0	0	0
30-Aug	0	0.000	0	0	0	0	0	0	0
31-Aug	0	0.000	0	0	0	0	0	0	0
1-Sep	0	0.000	0	0	0	0	0	0	0
2-Sep	0.4	0.017	1	1	1	0	1	0	0
3-Sep	0	0.000	0	0	0	0	0	0	0
4-Sep	1.9	0.079	7	7	7	0	7	0	0
5-Sep	5.8	0.242	21	21	21	0	21	0	0
6-Sep	0	0.000	0	0	0	0	0	0	0
7-Sep	0	0.000	0	0	0	0	0	0	0
8-Sep	0	0.000	0	0	0	0	0	0	0
9-Sep	0	0.000	0	0	0	0	0	0	0
10-Sep	6.4	0.267	23	23	23	0	23	0	0
11-Sep	61.8	2.575	219	108	108	111	108	0	0
12-Sep	20.6	0.858	73	73	73	0	73	0	0
13-Sep	5.8	0.242	21	21	21	0	21	0	0
14-Sep	0	0.000	0	0	0	0	0	0	0
15-Sep	8.1	0.338	29	29	29	0	29	0	0
16-Sep	2.3	0.096	8	8	8	0	8	0	0
17-Sep	0	0.000	0	0	0	0	0	0	0
18-Sep	0	0.000	0	0	0	0	0	0	0
19-Sep	0	0.000	0	0	0	0	0	0	0
20-Sep	0.8	0.033	3	3	3	0	3	0	0
21-Sep	0	0.000	0	0	0	0	0	0	0
22-Sep	0	0.000	0	0	0	0	0	0	0
23-Sep	13	0.542	46	46	46	0	46	0	0
24-Sep	0	0.000	0	0	0	0	0	0	0
25-Sep	0	0.000	0	0	0	0	0	0	0
26-Sep	0	0.000	0	0	0	0	0	0	0
27-Sep	0	0.000	0	0	0	0	0	0	0
28-Sep	1.3	0.054	5	5	5	0	5	0	0
29-Sep	14.1	0.588	50	50	50	0	50	0	0
30-Sep	25.2	1.050	89	89	89	0	89	0	0
1-Oct	0	0.000	0	0	0	0	0	0	0
2-Oct	0.4	0.017	1	1	1	0	1	0	0
3-Oct	7.8	0.325	28	28	28	0	28	0	0
4-Oct	7.8	0.325	28	28	28	0	28	0	0
5-Oct	6	0.250	21	21	21	0	21	0	0
6-Oct	0.4	0.017	1	1	1	0	1	0	0
7-Oct	0	0.000	0	0	0	0	0	0	0
8-Oct	1	0.042	4	4	4	0	4	0	0
9-Oct	1.2	0.050	4	4	4	0	4	0	0
10-Oct	0	0.000	0	0	0	0	0	0	0
11-Oct	0	0.000	0	0	0	0	0	0	0
12-Oct	0	0.000	0	0	0	0	0	0	0
13-Oct	10.4	0.433	37	37	37	0	37	0	0
14-Oct	9	0.375	32	32	32	0	32	0	0
15-Oct	0	0.000	0	0	0	0	0	0	0
16-Oct	0.2	0.008	1	1	1	0	1	0	0
17-Oct	1.6	0.067	6	6	6	0	6	0	0
18-Oct	0	0.000	0	0	0	0	0	0	0
19-Oct	0	0.000	0	0	0	0	0	0	0
20-Oct	0	0.000	0	0	0	0	0	0	0
21-Oct	5.8	0.242	21	21	21	0	21	0	0
22-Oct	0	0.000	0	0	0	0	0	0	0
23-Oct	1	0.042	4	4	4	0	4	0	0
24-Oct	0	0.000	0	0	0	0	0	0	0
25-Oct	0	0.000	0	0	0	0	0	0	0
26-Oct	1.3	0.054	5	5	5	0	5	0	0
27-Oct	10.9	0.454	39	39	39	0	39	0	0
28-Oct	0	0.000	0	0	0	0	0	0	0
29-Oct	13	0.542	46	46	46	0	46	0	0
30-Oct	0	0.000	0	0	0	0	0	0	0
31-Oct	0	0.000	0	0	0	0	0	0	0

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 8617-AHGRV5
Issue Date: January 13, 2017

RioCan Management Inc.
2300 Yonge Street, No. 500
Toronto, Ontario
M4P 1E4

Site Location: 333 Huntmar Drive - Tanger Outlet Centre
Part of Lots 3 and 4, Concession 1 (Huntley)
City of Ottawa

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

An amendment to reposition existing storm sewers as well as include additional stormwater management works to service the approximately 20 hectare Tanger Outlet Mall and Hotel Site commercial development, located at 33 Huntmar Drive, between Palladium Drive and Huntmar Drive, immediately south of Campeau Drive in the City of Ottawa, in addition to the existing stormwater management facilities for the collection, treatment and disposal of stormwater run-off from the development and from approximately 25.2 hectares of land external to the development and draining to the Tanger Outlet Centre SWM Facility, identified as Pond 6 East providing Enhanced Level water quality control and erosion protection, and attenuating post-development peak flows to targeted outflow rates established in the Kanata West Master Servicing Study for various storm events, discharging via Feedmill Creek to the Carp River and the Ottawa River, to increase the catchment area draining to the Kanata West Pond 6 East, consisting of the following:

Proposed Works;

storm sewers connecting through the Tanger Outlet Mall development in an altered placement to accommodate a proposed mega pad, outletting to the stormwater management facility, identified below;

bioswale (catchment area 0.23 hectares): - one (1) bioswale located on the west side of the site approximately 55 m east of Palladium Drive, having a 2 m bottom width, with a surface area of approximately 111 m^2, discharging to catch basin 33 to the storm sewers described below;

bioswale (catchment area 0.31 hectares): - one (1) bioswale located on the west side of the site approximately 125 m east of Palladium Drive, having a 2 m bottom width, with a surface area of approximately 200 m^2, discharging to catch basin 35 to the storm sewers described below;

bioswale (catchment area 0.71 hectares): - one (1) bioswale located on the east side of the site approximately 35 m west of Huntmar Drive, having a 2 m bottom width, with a width of 5 m and a length of 100m for a surface area of approximately 500 m^2, discharging to catch basin 19 to the storm sewers described below;

infiltration gallery: one (1) approximately 42 m long by 9 m wide infiltration gallery, located on the west side of the site approximately 270 m east of Palladium Drive, having a storage volume of 107.7 m^3, receiving inflow from roof drain collector on Building 3;

infiltration gallery: one (1) approximately 17 m long by 15 m wide infiltration gallery, located on the west side of the site approximately 100 m east of Palladium Drive, having a storage volume of 72.7 m^3, receiving inflow from roof drain collector on Building 4;

infiltration gallery: one (1) approximately 17 m long by 15 m wide infiltration gallery, located on the north side of the site approximately 80m south of Campeau Drive, having a storage volume of 96.9 m^3, receiving inflow from roof drain collector on Building 5;

infiltration gallery: one (1) approximately 20 m long by 6 m wide infiltration gallery, located on the north side of the site approximately 80m south of Campeau Drive, having a storage volume of 38.8 m^3, receiving inflow from roof drain collector on Building 6;

infiltration gallery: one (1) approximately 35 m long by 15 m wide infiltration gallery, located on the north side of the site approximately 80m south of Campeau Drive, having a storage volume of 149.6 m^3, receiving inflow from roof drain collector on Building 7;

infiltration gallery: one (1) approximately 25 m long by 24m wide infiltration gallery, located on the north side of the site approximately 80m south of Campeau Drive, having a storage volume of 182.4 m^3, receiving inflow from roof drain collector on Building 9;

Previous Works:

stormwater management facility (Pond 6 East - catchment area 45.74 hectares): - a wet pond located west of Huntmar Drive, south of Campeau Drive, adjacent to and on the north side of Feedmill Creek with a sediment forebay, having a permanent pool volume of 10,477 m^3, an extended detention volume of 1,830 m^3, and a total storage volume of approximately 24,525 m^3, including the permanent pool volume, at a total depth of approximately 5.4 m, discharging to Feedmill Creek, just upstream of Huntmar Drive;

sanitary sewer on Huntmar Drive from the development, and on Campeau Drive, connecting to an existing 375 mm diameter sanitary sewer at the intersection of Huntmar Drive and Campeau Drive which discharges to the Signature Ridge Pumping Station at Didsbury Road and Terry Fox Drive to the east;

storm sewer on Campeau Drive, west from Huntmar Drive, connecting through the Tanger Outlet Mall development to the stormwater management facility, identified below;

oil and grit separator and outfall (catchment area 2.37 hectares): - an oil and grit separator (Model Number Vortechs 16000 or Equivalent), receiving flows from the approximately 2.4 hectare Tanger Outlet Centre Hotel Site, located west of Huntmar Drive, adjacent to and on the south side of Feedmill Creek, having a sediment storage capacity of 5.43 m^3, an oil storage capacity of 3,175 L, a total storage volume of 18,349 L, and a peak treatment capacity of 707.9 L/s, discharging via an 825 mm diameter storm sewer outfall to Feedmill Creek, just upstream of Huntmar Drive;

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted application and supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

"Approval" means this entire document including the application and any supporting documents listed in any schedules in this Approval;

"District Manager" means the District Manager of the Ottawa office of the Ministry;

"Director" means a person appointed by the Minister pursuant to section 5 of the Environmental Protection Act for the purposes of Part II.1 of the Environmental Protection Act;

"Equivalent" means a substituted product that meets the required quality and performance standards of a named product;

"Ministry" means the ministry of the government of Ontario responsible for the Environmental Protection Act and the Ontario Water Resources Act and includes all officials, employees or other persons acting on its behalf;

"Owner" means RioCan Management Inc. and includes their successors and assignees;

"Previous Works" means those portions of the sewage Works previously approved under an Approval;

"Significant Drinking Water Threat Policies" has the same meaning as in the Clean Water Act, 2006;

"Source Protection Plan" means a drinking water source protection plan prepared under the Clean Water Act,

2006;

"Works" means the sewage works described in the Owner's application(s) and this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the Conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) The designation of the City of Ottawa as the operating authority of the site on the application for approval of the Works does not relieve the Owner from the responsibility of complying with any and all of the Conditions of this Approval.

(3) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

(4) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(5) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(6) The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such Condition to other circumstances and the remainder of this Approval shall not be affected thereby.

(7) The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

(8) This Approval includes the treatment and disposal of stormwater run-off from the Tanger Outlet Mall commercial development, located between Palladium Drive and Huntmar Drive, immediately south of Campeau Drive in the Kanata West Business Park (approximately 19.75 hectares). This Approval is also for the treatment and disposal of stormwater run-off from lands to the north and adjacent to the commercial development draining to the stormwater management facility (Pond 6 East), for a total drainage area of 45.74 hectares, assuming an average imperviousness of 93%. Any future development changes within the total drainage area that might increase the required storage volumes or increase the flows to or from the wet pond or any structural/physical changes to the wet pond including the inlets or outlets will require an amendment to this Approval. This Approval is also for the temporary oil and grit separator and outfall for the Tanger Outlet Centre Hotel Site. Any modification or removal of the temporary outfall to Feedmill Creek will require an amendment to this Approval.

2. EXPIRY OF APPROVAL

This Approval will cease to apply to those parts of the Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17 shall be included in the notification to the District Manager;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

(2) In the event of any change in ownership of the Works, other than a change in ownership to the municipal, i.e. assumption of the Works, the Owner shall notify the succeeding owner in writing of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

(3) Notwithstanding any other requirements in this Approval, upon transfer of the ownership of the Works to a municipality, if applicable, any reference to the "District Manager" within the Terms and Conditions of this Approval shall be replaced with "Water Supervisor".

4. OPERATION AND MAINTENANCE

(1) The Owner shall ensure that the design minimum liquid retention volume is maintained at all times.

(2) The Owner shall inspect the Works at least **once a year** and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

(3) The Owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the Owner's office for inspection by the Ministry. The logbook shall include the following:

(a) the name of the Works

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

5. MONITORING AND REPORTING

(1) The Owner shall carry out a monitoring program for the inspection and maintenance of the Works as per the standardized SWM monitoring program specified by the City of Ottawa for the Kanata West Area and the requirements of the Mississippi Valley Conservation Authority.

(2) The Owner shall copy the District Manager on any and all reports submitted to the City of Ottawa and/or the Mississippi Valley Conservation Authority related to the operation and maintenance of the Works.

(3) After the Owner obtains a minimum of **two (2) years** of monitoring results following completion of the Works, the requirement to copy the District Manager in subsection (2) above may be modified by the District Manager upon written request.

6. TEMPORARY EROSION AND SEDIMENT CONTROL

(1) The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

(2) The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

7. RECORD KEEPING

The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the operation and maintenance activities required by this Approval.

8. SOURCE WATER PROTECTION

(1) The Owner shall ensure, if applicable, that the design, construction and operation of the Works conforms to any Significant Drinking Water Threat Policies in any Source Protection Plan that applies to the location of the Works.

Schedule "A"

Application for Environmental Compliance Approval for Municipal and Private Sewage Works, dated May 13, 2016 and received on July 4, 2016, submitted by RioCan Management Inc.;

MOE ECA Application For the Amendment of Existing Approved ECA for Sewage Works (Stormwater Management Pond) – Kanata West SWM Pond 6 East in the City of Ottawa, dated May 2016 prepared by IBI Group;

Technical Memorandum, dated May 13, 2016, prepared by IBI Group;

Engineering Drawings: 333 Huntmar Drive – Tanger Outlets Centre – Phase 1 – Expansion Blocks 1, 10, 11 &13, dated January 2016 prepared by IBI Group;

E-mail from Jim Moffatt, dated December 20, 2016;

E-mail from Ed Ireland, dated December 21 2016; and

E-mail from Ed Ireland, dated January 9-12 2017.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that any subsequent Owner of the Works is made aware of the Approval and continues to operate the Works in compliance with it.

4. Condition 4 is included to require that the Works be properly operated and maintained such that the environment is protected.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment to the receiving watercourse.

6. Condition 6 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

7. Condition 7 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

8. Condition 8 is included to ensure that the Works conform to the policies of the local Source Water Protection Plan.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 4648-A2KQFP issued on September 28, 2015.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

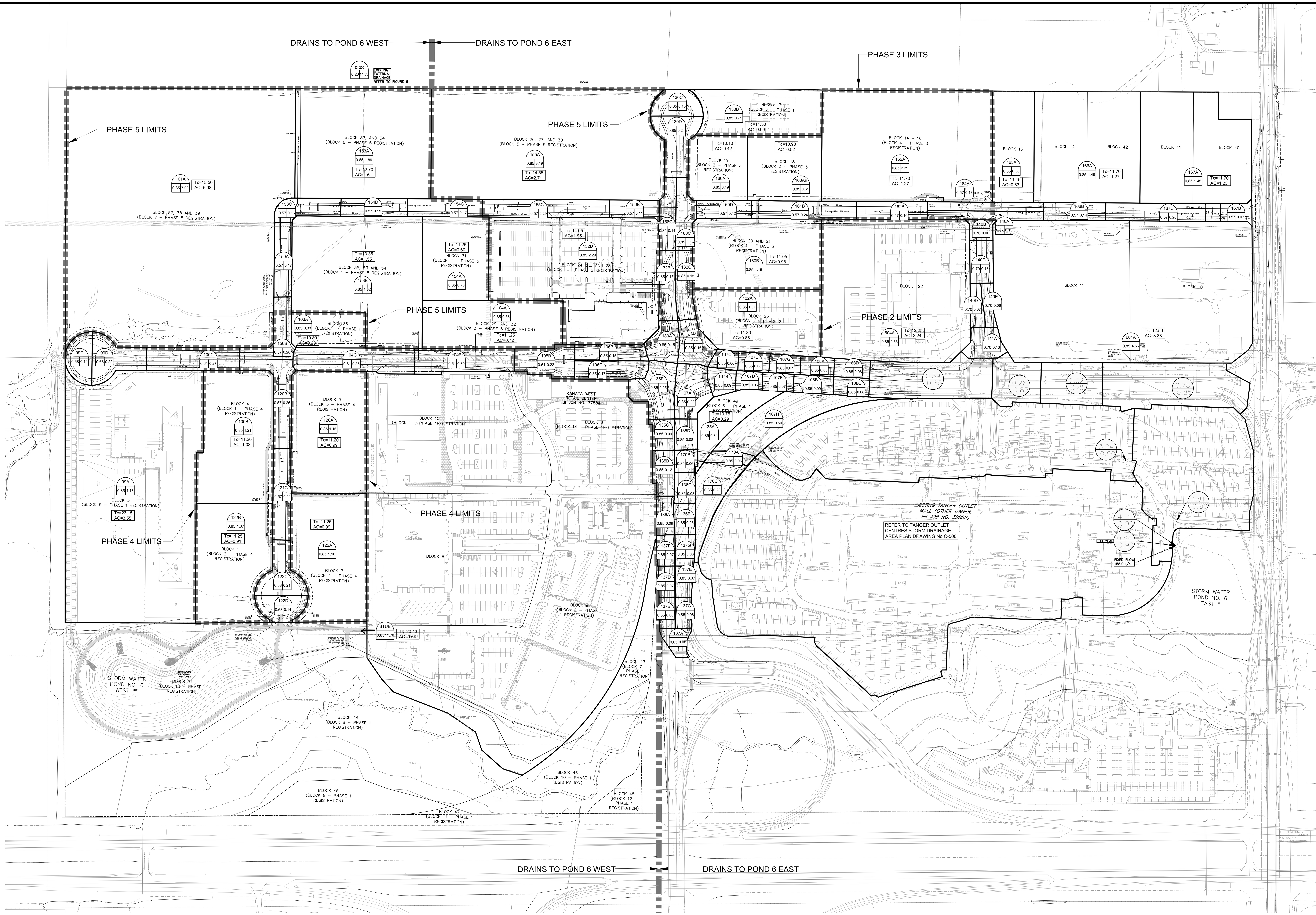
The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 13th day of January, 2017

THIS APPROVAL WAS MAILED
ON 01/19/2017
(Signed)

Gregory Zimmer, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

EC/
c: DWMD Supervisor, MOECC Ottawa
West Ottawa Land Holdings Inc. and West Ottawa Land Holdings (2) Inc.
Jim Moffatt, IBI Group



LEGEND:

- DRAINAGE AREA LIMITS
- MH601 STORM MANHOLE & NUMBER
- STORM SEWER & FLOW DIRECTION
- 604A / 0.85 / 2.63: AREA ID; AREA IN HECTARES; RUNOFF COEFFICIENT
- EMERGENCY OVERLAND FLOW ROUTE
- Tc=11.70 / AC=1.23: ESTIMATED TIME OF CONCENTRATION IN MINUTES; PRODUCT OF AREA AND RUNOFF COEFFICIENT

EXISTING TANGER OUTLET CENTRE

- 0.56 / 0.85: AREA IN HECTARES; RUNOFF COEFFICIENT

No.	REVISIONS	By	Date
20			
19			
18			
17			
16			
15	ISSUED FOR PHASE 5 REGISTRATION	LME	19:09:10
14	REVISED AS PER PHASE 4 COMMENTS	LME	19:07:25
13	REVISED AS PER PHASE 4 COMMENTS	LME	19:07:22
12	REVISED AS PER PHASE 4 COMMENTS	LME	19:06:24
11	ISSUED FOR PHASE 4 REGISTRATION	LME	19:04:25
10	REVISED AS PER PHASE 3 COMMENTS	LME	19:03:08
9	ISSUED FOR PHASE 3 TENDER	LME	19:01:11
8	REVISED AS PER PHASE 3 COMMENTS	LME	18:12:14
7	REVISED FOR PHASE 3 REGISTRATION	LME	18:09:14
6	REVISED FOR PHASE 2 REGISTRATION	LME	18:04:20
5	REVISED AS PER CITY COMMENTS	LME	15:11:05
4	REVISED AS PER CITY COMMENTS	LME	15:10:15
3	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	LME	15:06:19
2	REVISED AS PER CITY COMMENTS	LME	15:04:08
1	ISSUED TO CITY FOR APPOVAL	LME	14:11:27

TAGGART REALTY MANAGEMENT

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

Project Title

KANATA WEST BUSINESS PARK PHASE 5

LICENSED PROFESSIONAL ENGINEER
M. ERION
13379508
2019/09/10
PROVINCE OF ONTARIO

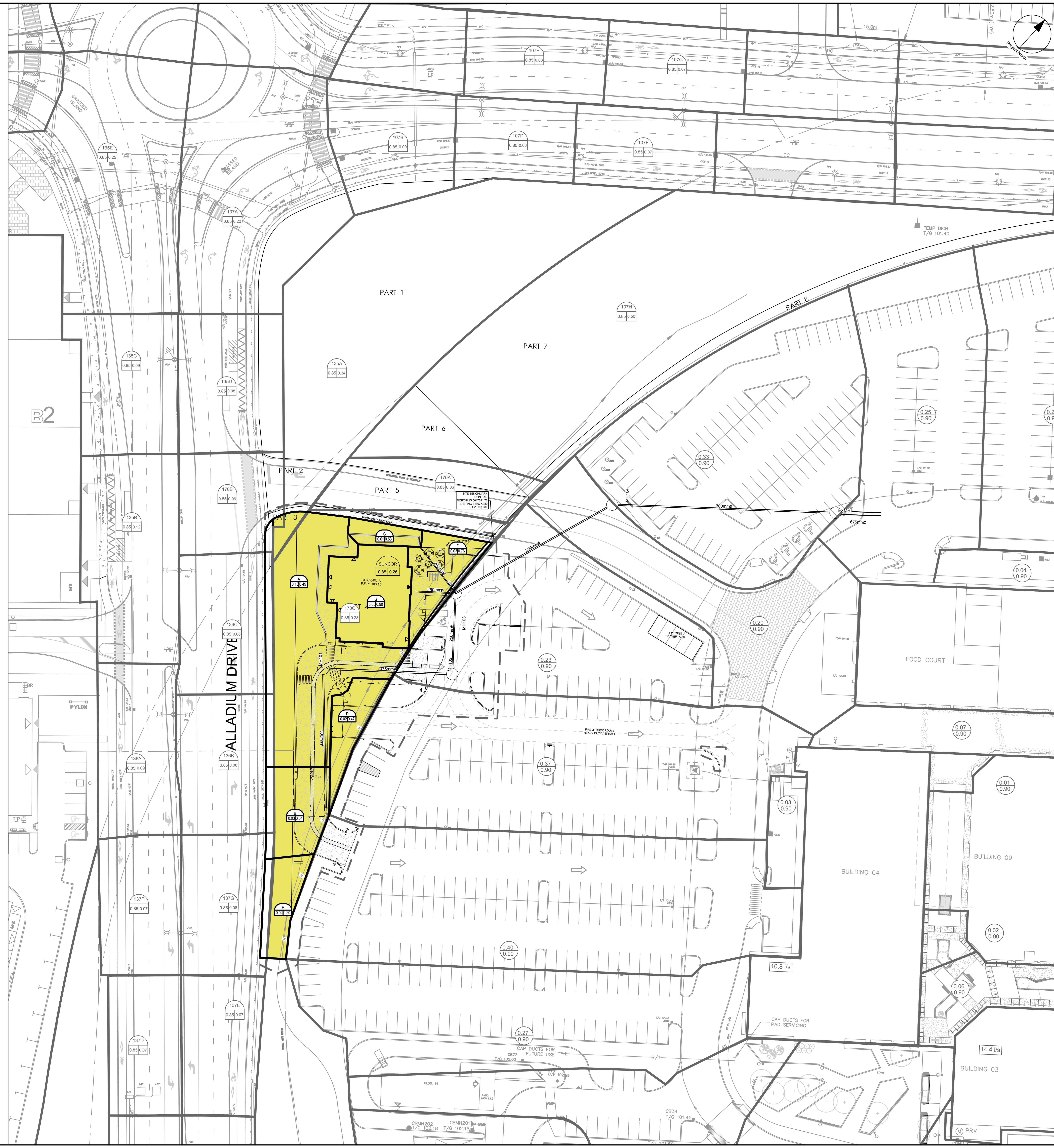
Drawing Title

STORM DRAINAGE AREA PLAN

Scale: 1:2000	
Design: LME	Date: NOV. 2014
Drawn: DPS	Checked: TRB
Project No.: 14289	Drawing No.: 500

D07-16-14-0003_P5

#17661



LEGEND :

- WH / 1.01 | 0.0 — AREA NUMBER; RUNOFF COEFFICIENT; AREA IN HECTARES
- WH / 1.01 | 0.0 (existing) — EXISTING AREA NUMBER; EXISTING AREA IN HECTARES; EXISTING RUNOFF COEFFICIENT
- 0.06 / 0.90 — EXISTING AREA IN HECTARES; EXISTING RUN OFF COEFFICIENT
- Tc=11.70 / AC=1.23 — ESTIMATED TIME OF CONCENTRATION IN MINUTES; PRODUCT OF AREA AND RUNOFF COEFFICIENT
- DRAINAGE AREA LIMITS
- EXISTING DRAINAGE AREA LIMITS
- EXISTING EMERGENCY OVERLAND FLOW

CLIENT

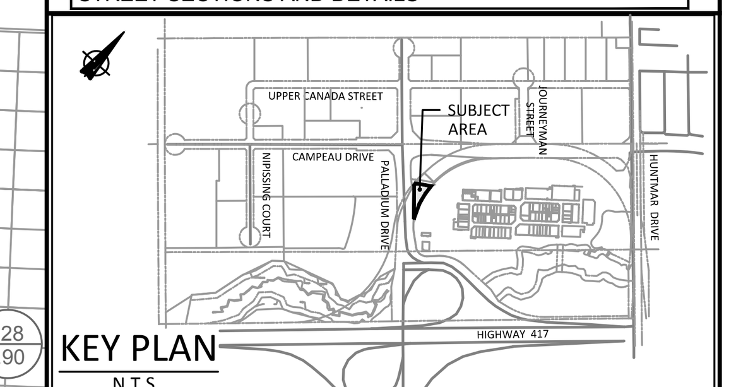
RIOCAN REIT

RIOCAN YONGE EGLINTON CENTER, 2300 YONGE ST, SUITE 500

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2023-03-06
2	ISSUED FOR SPA	2023-03-15
3	REVISED PER CLIENT COMMENTS	2023-04-24
4	ISSUED FOR BUILDING PERMIT	2023-05-12
5	REVISED PER CITY COMMENTS	2023-05-31
6		
7		
8		
9		
10		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN
N.T.S.

CONSULTANTS

1:500 0 5 15 25m

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2023/05/31
PROVINCE OF ONTARIO

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

PROJECT

BUILDING 17
CHICK-FIL-A

333 HUNTMAR DRIVE

PROJECT NO:
141991

DRAWN BY: D.P.S. / S.P.G.	CHECKED BY: S.L.B
PROJECT MGR: S.L.B.	APPROVED BY: J.I.M.

SHEET TITLE

STORM DRAINAGE AREA PLAN

SHEET NUMBER C-500 — ISSUE 5

CITY FILE No. D07-12-23-0030

CITY PLAN No. xxxxx

APPENDIX E

PALLADIUM DRIVE

PART 1
PART 2
PART 3
PART 4
PART 5
PART 6

BREAK INTO PVC SLEEVE AND CONNECT TO EXISTING WATERMAIN (CITY FORCES)
REMOVE AND REPLACE EXISTING CONCRETE SIDEWALK AND CURB
ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
WATERMAIN DIRECT BORE
200ø WATERMAIN
CONCRETE CURB & SIDEWALK
PROPOSED SIDEWALK
TIE INTO EXISTING CONCRETE SIDEWALK
500 WATERMAIN
67.40m – 375mmø STM @ 0.62%
SITE BENCHMARK
IRON BAR
NORTHING 5017591.76
EASTING 348677.380
ELEV. 103.069
MH170
250ø STM @ 0.50%
CULVERT 400mm
INV. 101.66
REMOVE AND REPLACE EXISTING CONCRETE SIDEWALK AND CURB
ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
MH104
T/G103.15
SW99.700
NE99.650
REPLACE EXISTING LANDSCAPE FEATURES
ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
REPLACE EXISING LANDSCAPE FEATURES
ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
REPLACE EXISING LANDSCAPE FEATURES
ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
55.70m - 300mmø STM @ 0.36%
88.33m - 200mmø SAN @ 0.47%
MH104A
T/G103.08
NE99.140
S99.200
EXMH1
T/G101.55
SW98.450
NE98.739EX
EXMH1A
T/G101.61
SW98.730
NE98.140EX
50.16m – 2
CONNECT TO EXISTING MH
CONNECT TO EXISTING MH
SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS
T/G 103.35
INV. 102.35
CB3
T/G 102.97
FLAG POLE
ABANDON EXISTING CSP PER CITY STD S11.4
44.87m - 300mmø STM @ 0.40%
43.93m - 200mmø SAN @ 0.41%
MH103
T/G102.72
SE99.980
SW100.250
N99.880
W101.279
MH103A
T/G102.68
SE99.800
N99.380
SW99.500
CHICK-FIL-A
F.F. = 103.15
14.54m
200mmø
STM @ 2.00%
50mmø WATER SERVICE
TOP=100.520m
10.16m
250mmø
STM @ 2.46%
INV IN 100.500
11.82m
200mmø
SAN @ 1.27%
INV. IN 99.650
10.81m
200mmø
SAN @ 1.00%
INV. IN 101.598
20.20m - 250mmø STM @ 0.79%
24.04m - 200mmø SAN @ 1.00%
ICD FLOW RATE 38.50l/s
MH101
T/G102.77
SE100.550
NE100.490
MH102
T/G102.56
SW100.200
NW100.140
32.23m - 375mmø STM @ 0.90%
16.24m - 200mmø SAN @ 5.11%
100mm STORM PIPE CAPPED 0.5m FROM CANOPY POSTS (TYPICAL)
INSULATE PER CITY STD S35
MH101A
T/G102.61
NE101.430
NW101.490
OGI
T/G 102.88
SW101.410
NE101.380
MH102A
T/G102.38
NW100.040
SW100.550
2.00m
200mmø
SAN @ 1.00%
34.49m – 200mmø STM @ 1.50%
100mm STORM PIPE CAPPED 0.5m FROM CANOPY POSTS (TYPICAL)
CB1
T/G 102.65
EXISTING BEAVERTAILS
FIRE &TRUCK ROUTE
HEAVY DUTY ASPHALT
FOOD COURT
BUILDING 04
9.68~200ø ST. @ 5.00%
HEADER INV. 99.57m
15.00
12.00
MH33
T/G 101.48
CB31
MH30
CB30
T/G 101.45
CB29
T/G 101.50
CB28
T/G 101.44
CB27
T/G 101.86
T/G 101.35
CB2
T/G 104.56
CB215
T/G 104.88
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T/G 105.48
CB218
T/G 104.46
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CLIENT
RIOCAN REIT
RIOCAN YONGE EGLINTON CENTER, 2300 YONGE ST, SUITE 500

IBI Group Professional Services (Canada) Inc.
is a member of the IBI Group of companies

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2023-03-06
2	ISSUED FOR SPA	2023-03-15
3	REVISED PER CLIENT COMMENTS	2023-04-24
4	ISSUED FOR BUILDING PERMIT	2023-05-12
5	REVISED PER CITY COMMENTS	2023-05-31
6		
7		
8		
9		
10		

KEY PLAN
N.T.S.
SUBJECT AREA
UPPER CANADA STREET
CAMPEAU DRIVE
HUNTMAR DRIVE
YONGE STREET
HIGHWAY 401

CONSULTANTS

1:250 0 2.5 7.5 12.5m

SEAL
LICENCED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2023/05/31
PROVINCE OF ONTARIO

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

PROJECT
BUILDING 17
CHICK-FIL-A
333 HUNTMAR DRIVE

PROJECT NO: 141991
DRAWN BY: D.P.S. / S.P.G.
CHECKED BY: J.I.M.
PROJECT MGR: S.E.L.
APPROVED BY: S.E.L.

SHEET TITLE
SITE SERVICING PLAN

SHEET NUMBER C-001
ISSUE 5

SCALE CHECK 1:xxx

CITY FILE No. D07-12-23-0030
CITY PLAN No. xxxxx

File Location: J:\141991_Chick-Fil-A_17 O_Production\7 0\3_Design\0A_Civil\Sheets\C-001-SITE SERVICING PLAN.dwg Last Saved: May 30, 2023, by dsiuma Plotted: Wednesday, May 31, 2023 10:04:57 AM by Don Siuma

UTILITY LEGEND

TRANSFORMER
TRANSFORMER C/W CONCRETE WINGS
HYDRO SWITCHGEAR
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
P30 — STREET LIGHT
STREET LIGHT DISCONNECT
STREET LIGHT GROUNDING
H/B/T/G/S — JOINT UTILITY TRENCH
H — HYDRO CABLE AND DUCTS
B — BELL CABLE
BB — BELL DUCTS
T — ROGERS CABLE
TT — ROGERS DUCTS
G — GAS
S — STREET LIGHT CABLE
UTILITY DROP LOCATIONS
10-DUCTS 6-H 4-T — CONCRETE ENCASED DUCT BANK C/W NUMBER OF DUCTS
CMB — COMMUNITY MAILBOX
PROPOSED TREE LOCATION
ROOT MANAGEMENT BARRIER

SEDIMENT EROSION LEGEND

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

GRADING LEGEND

PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
SLOPE C/W FLOW DIRECTION
MAJOR OVERLAND FLOW ROUTE
104.62 — PROPOSED SPOT GRADE
104.40 — PROPOSED SWALE GRADE
104.50 — PROPOSED SWALE HIGH POINT GRADE
104.60 / 103.55 — LOT CORNER GRADE C/W EXISTING GRADE
FULL STATIC PONDING GRADE
RETAINING WALL C/W TOP OF WALL AND GRASS GRADE
TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
PRESSURE REDUCING VALVE
F.FL. / T.FND. / U.S.F. / M.G.S.F. / M.G.G. — FINISHED FLOOR ELEVATION; TOP OF FOUNDATION; ELEVATION UNDERSIDE OF FOOTING ELEVATION; NUMBER OF RISER FROM GARAGE GRADE; MINIMUM UNDERSIDE OF FOOTING (Based on the higher of the sewer obverts, or hydraulic grade line); MINIMUM GARAGE GRADE
WU — WALKUP UNIT
WO — WALKOUT UNIT
NS — NON-STANDARD FOUNDATION (Frost cover not provided for standard unit)
BS — BACKSPLIT UNIT (1.5m frost cover on footings)
NOISE BARRIER LOCATION
NOISE BARRIER GATE
RIP-RAP

GENERAL LEGEND

LIMIT OF CONSTRUCTION
PHASING LINE
BARRIER CURB
MOUNTABLE CURB
DEPRESSED BARRIER CURB
CONCRETE SIDEWALK — CONCRETE SIDEWALK
TACTILE WALKING SURFACE INDICATOR
ASPHALT SIDEWALK — ASPHALT SIDEWALK / PATHWAY
BUS — BUS STOP CONCRETE / ASPHALT
LIGHT DUTY ASPHALT
HEAVY DUTY ASPHALT

SERVICING LEGEND

MH118A — SANITARY MANHOLE
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 — DOUBLE CURB INLET CATCHBASIN C/W GUTTER GRADE
DI101 T/G 103.59 — DITCH INLET MANHOLE C/W TOP OF GRATE
CBMH101 T/G 103.59 — CATCHBASIN MANHOLE C/W TOP OF GRATE
RYCB T/G 104.35 — REAR YARD CATCHBASIN IN ROAD CONNECTING STRUCTURE C/W SOLID GRATE
T/G 104.35 INV 103.35 — REAR YARD "TEE" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT
T/G 104.50 INV 103.50 — REAR YARD "END" CATCHBASIN (300Ø) C/W TOP OF GRATE AND INVERT OUT
T/G 104.35 INV 103.35 — REAR YARD "CUSTOM ANGLED " CATCHBASIN (450Ø) C/W TOP OF GRATE AND INVERT OUT
T/G 104.35 INV 103.35 — REAR YARD "THREE WAY" CATCHBASIN (450Ø) C/W TOP OF GRATE AND INVERT OUT
PERFORATED REAR YARD SUBDRAIN
300mmØ CSP — CSP CULVERT C/W DIAMETER
V&VB — VALVE AND VALVE BOX
V&VC — VALVE AND VALVE CHAMBER
PARK VALVE CHAMBER C/W SERVICE POST
HYD 104.35 — FIRE HYDRANT C/W BOTTOM OF FLANGE ELEVATION
200Ø WM RED 150Ø WM — WATERMAIN REDUCER
2 VBENDS — VERTICAL BEND LOCATION
SIAMESE CONNECTION (IF REQUIRED)
M — METER (IF REQUIRED)
RM — REMOTE METER (IF REQUIRED)
WATERMAIN IDENTIFICATION (IF REQUIRED)
PIPE CROSSING IDENTIFICATION (IF REQUIRED)
SINGLE SERVICE LOCATION
DOUBLE SERVICE LOCATION
BH 12 102.00 — INFERRED REFUSAL (SEE GEOTECHNICAL REPORT)
HGL 101.79 — 100 YEAR STORM HYDRAULIC GRADE LINE AT MANHOLE
USF 101.79 — UNDERSIDE OF FOOTING ELEVATION
CLAY SEAL IN SEWER / WATERMAIN TRENCH

CROSSING SCHEDULE

1	250mmØ STORM SEWER OVER 200mm SANITARY SEWER - CLEARANCE 0.255m (INSULATION REQUIRED)
2	200mmØ SANITARY SEWER OVER 375mmØ STORM SEWER - CLEARANCE 0.765m
3	375mmØ STORM SEWER UNDER 50mmØ WATER SERVICE - CLEARANCE 0.250m (INSULATION REQUIRED)

WATERMAIN SCHEDULE

	Station	Description	Finished Grade	Top of Watermain	Watermain Cover	As Built Watermain
A	0+000.00`	CONNECT TO EXISTING 200mmØ WITH 50mmø TVS	104.50	*101.69*	2.81	
	0+004.70	11 1/4 BEND	104.42	102.02	2.40	
	0+010.94	-	104.40	102.25	2.15	
	0+011.57	50V&VB	104.39	101.99	2.40	
	0+020	-	103.41	101.01	2.40	
	0+031.81	45 BEND	103.16	100.76	2.40	
	0+033.95	45 BEND	103.05	100.65	2.40	
B	0+036.98	50mmø SERVICE CONNECTION	102.92	100.52	2.40	

INSULATE PER W22

REVISED 2023-05-31

NOTES :

1. ALL MATERIALS AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF OTTAWA STANDARD DRAWINGS & SPECIFICATIONS OR OPSD/OPSS IF CITY DRAWINGS AND SPECIFICATIONS DO NOT APPLY.
2. THE POSITION OF UNDERGROUND AND ABOVEGROUND SERVICE, UTILITIES AND STRUCUTRES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH SERVICE, UTILITIES AND STRUCTURES IS NOT GUARENTEED. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL REPORT ALL CONFLICTS, DISCOVERIES OF ERROR AND DESCREPENCIES TO THE ENGINEER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND ASSUME RESPONSIBILITY FOR ALL UTILITIES WHETHER OR NOT SHOW ON THESE DRAWINGS.
5. FOR GEOTECHNICAL INFORMATION REFER TO GEOTECHNICAL REPORT PG6571-1 DATED MARCH 5, 2023 PREPARED BY PATERSON GROUP.
6. FOR GEODETIC **BENCHMARK** AND GEOMETRIC LAYOUT OF STREET AND LOTS, REFER TO TOPOGRAPHICAL SURVEY AND PLAN OF SUBDIVISION PREPARED BY STANTEC GEOMATICS LTD. BENCHMARK BASED ON CAN--NET VIRTUAL REFERENCE SYSTEM NETWORK.
7. FOR SITE PLAN INFORMATION, REFER TO SITE PLAN PREPARED BY TURNER FLEISCHER ARCHITECTS INC.
8. THESE DRAWINGS ARE NOT TO BE SCALED OR USED FOR LAYOUT PURPOSES
9. ROADWAY SECTIONS REQUIRING GRADE RAISE TO PROPOSED SUB GRADE LEVEL TO BE FILLED WITH ACCEPTABLE NATIVE EARTH BORROW OR IMPORTED OPSS SELECTED SUBGRADE MATERIAL IF NATIVE MATERIAL IS DEFICIENT AS PER RECOMMENDATION OF GEOTECHNICAL ENGINEER.
10. IN AREAS WHERE EXISTING GROUND IS BELOW THE PROPOSED ELEVATION OF SEWER AND WATERMAINS, GRADE RAISING AND FILLING IS TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. AS PER CITY GUIDELINES ALL WATERMAINS IN FILL AREAS ARE TO BE TIED WITH RESTRAINING JOINTS AND THRUST BLOCKS.
11. THE CONTRACTOR SHALL IMPLEMENT THE EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE COMMENCEMENT OF ANY SITE CONSTRUCTION. ALL EROSION AND SEDIMENT CONTRAL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, OR ANY REGULATORY AGENCY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL VEGETATION IS ESTABLISH OR UNTIL THE START OF A SUBSEQUENT PHASE.
12. CONTRACTORS SHALL BE RESPONSIBLE FOR KEEPING CLEAN ALL ROADS WHICH BECOME COVERED IN DUST, DEBRIS AND/OR MUD AS A RESULT OF ITS CONSTRUCTION OPERATIONS.
13. UNLESS SPECIFICALLY NOTED OTHERWISE, PIPE MATERIALS SHALL BE AS FOLLOWS;
 -WATERMAINS TO BE PVC DR18
 -SANITARY SEWER TO BE PVC DR35
 -PERFORATED STORM SEWERS IN REAR YARDS AND LANDSCAPE AREAS TO BE HDPE
 -STORM SEWERS 375MM DIAMETER AND LESS TO BE PVC DR35
 -STORM SEWERS 450MM DIAMETER AND GREATER TO BE CONCRETE CLASS 65-D
14. ALL CONNECTIONS TO EXISTING WATERMAINS ARE TO BE COMPLETED BY CITY FORCES. CONTRACTOR IS TO EXCAVATE, BACKFILL, COMPACT AND REINSTATE.
15. ANY WATERMAIN WITH LESS THAN 2.4M, AND ANY SEWER WITH LESS THAN 2.0M DEPTH OF COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.
16. ALL STUBBED SEWERS SHALL HAVE PRE-MANUFACTURED CAPS INSTALLED.
17. ALL LEADS FOR STREET CATCHBASIN'S AND CURB INLET CATCHBASIN'S CONNECTED TO MAIN SHALL BE 200MMØ PVC DR35 @ MIN 2% SLOPE UNLESS NOTED OTHERWISE. ALL LEADS FOR RYCB'S CONNECTED TO MAIN SHALL BE 200MMØ PVC DR35 @ MIN 1% SLOPE UNLESS NOTED OTHERWISE.
18. INLET CONTROL DEVICES SHALL BE INSTALLED PRIOR TO COMPLETING THE ROAD BASE (GRANULAR A).
19. EACH BUILDING SHALL BE EQUIPPED WITH A SANITARY AND STORM SEWER BACKWATER VALVE AND CLEAN-OUT ON ITS PRIMARY SERVICE, AS PER ONTARIO BUILDING CODE REQUIREMENTS (BY OTHERS).

PAVEMENT STRUCTURE:

LIGHT DUTY:

40mm - SUPERPAVE 12.5-FC2 ASPHALTIC CONCRETE
150mm - OPSS GRANULAR "A" CRUSHED STONE
400mm - OPSS GRANULAR "B" TYPE II CRUSHED STONE

SUBGRADE - EITHER FILL, INSITU SILTY CLAY OR SAND/CRUSHED STONE MATERIAL PLACED OVER IN SITU SOIL

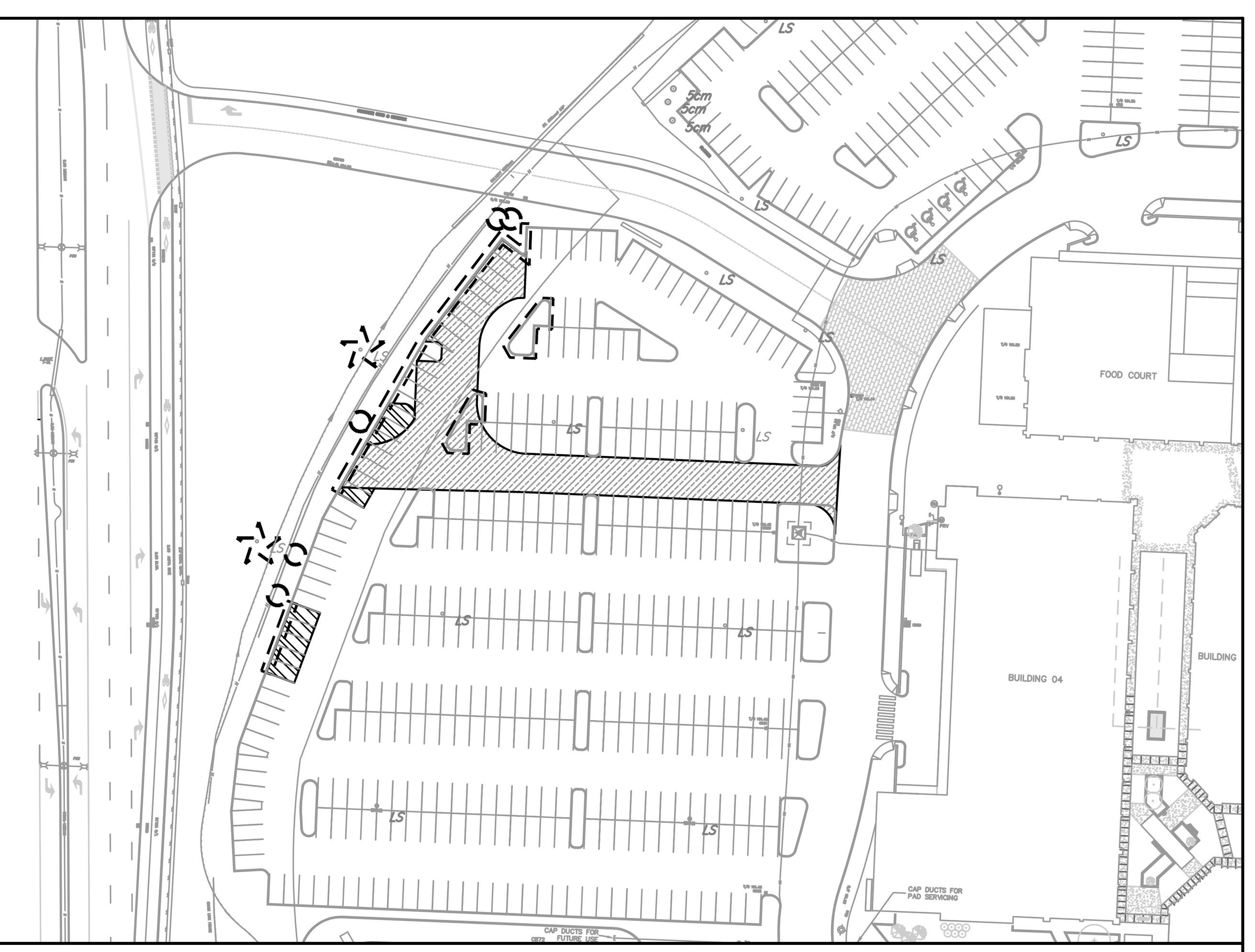
HEAVY DUTY

40mm - SUPERPAVE 12.5-FC2 ASPHALTIC CONCRETE
50mm - SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm - OPSS GRANULAR "A" CRUSHED STONE
450mm - OPSS GRANULAR "B" TYPE II CRUSHED STONE

SUBGRADE - EITHER FILL, INSITU SILTY CLAY OR SAND/CRUSHED STONE MATERIAL PLACED OVER IN SITU SOIL

REMOVALS LEGEND:

CONCRETE CURB/SIDEWALK TO BE REMOVED
REMOVE EXISTING STREETLIGHT BASE
EXISTING STREETLIGHT TO BE RELOCATED
EXISTING TREES TO BE REMOVED
EXISTING LIGHT DUTY PAVEMENT STRUCTURE TO BE REMOVED AND REPLACED WITH HEAVY DUTY PAVEMENT STRUCTURE
EXISTING ASPHALT TO BE REMOVED



REMOVALS DETAIL
N.T.S.

CLIENT

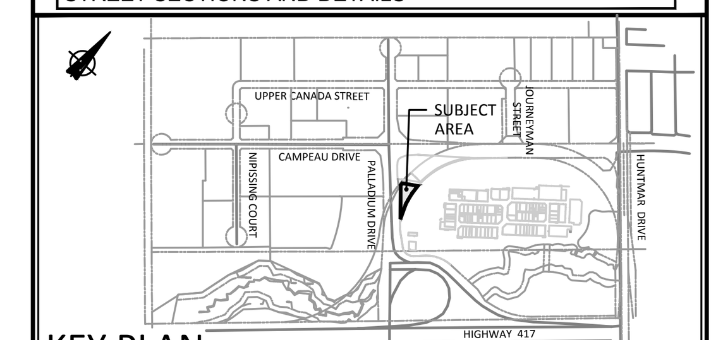
RIOCAN REIT

RIOCAN YONGE EGLINTON CENTER, 2300 YONGE ST, SUITE 500

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2023-03-06
2	ISSUED FOR SPA	2023-03-15
3	REVISED PER CLIENT COMMENTS	2023-04-24
4	ISSUED FOR BUILDING PERMIT	2023-05-12
5	REVISED PER CITY COMMENTS	2023-05-31
6		
7		
8		
9		
10		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN
N.T.S.

CONSULTANTS

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2023/05/31
PROVINCE OF ONTARIO

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

PROJECT

CHICK-FIL-A

333 HUNTMAR DRIVE

PROJECT NO:
141991

DRAWN BY: **D.P.S. / S.P.G.**
CHECKED BY: **J.I.M.**
PROJECT MGR: **S.E.L.**
APPROVED BY: **S.E.L.**

SHEET TITLE
GENERAL NOTES LEGEND AND CB DATA TABLE

SHEET NUMBER
C-010

ISSUE
5

CITY PLAN No. xxxxx

SCALE CHECK 1 in 10mm

CITY FILE No. D07-12-23-0030

File Location: J:\141991_Chick-Fil-A_\7.0_Production\7.03_Design\04_Civil\Sheets\C-010-GENERAL NOTES LEGEND AND CB DATA TABLE.dwg Last Saved: May 31, 2023, by dsiurna Plotted: Wednesday, May 31, 2023 11:04:11 AM by Don Siurna

PART 2

PART 5

PART 3

PART 4

CONCRETE CURB & SIDEWALK

PROPOSED SIDEWALK

SITE BENCHMARK
IRON BAR
NORTHING 5017591.76
EASTING 348677.580
ELEV. 103.069

FLAG POLE

CHICK-FIL-A
F.F. = 103.15

Rooftop Storage
Restricted Flowrate = 5 L/s
100-Yr Storage Volume = 14.15 L/s
Total Area = 458m2
Usable Area for Storage = 366m2
Average Depth during 100-Yr = 0.04m

LIMIT OF GRADING

EXISTING BEAVERTAILS

FIRE &TRUCK ROUTE
HEAVY DUTY ASPHALT

LIMIT OF GRADING

LIMIT OF GRADING

PALLADIUM DRIVE

FOOD COURT

BUILDING 04

PLANTER

Project North

CLIENT

RIOCAN REIT

RIOCAN YONGE EGLINTON CENTER, 2300 YONGE ST, SUITE 500

ISSUES

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1	ISSUED FOR COORDINATION	2023-03-06
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KEY PLAN
N.T.S.

CONSULTANTS

1:250 0 2.5 7.5 12.5m

SEAL

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

PROJECT

BUILDING 17
CHICK-FIL-A

333 HUNTMAR DRIVE

PROJECT NO: 141991	
DRAWN BY: **D.P.S. / S.P.G.**	CHECKED BY: **J.I.M.**
PROJECT MGR: **S.E.L.**	APPROVED BY: **S.E.L.**

SHEET TITLE

SITE GRADING PLAN

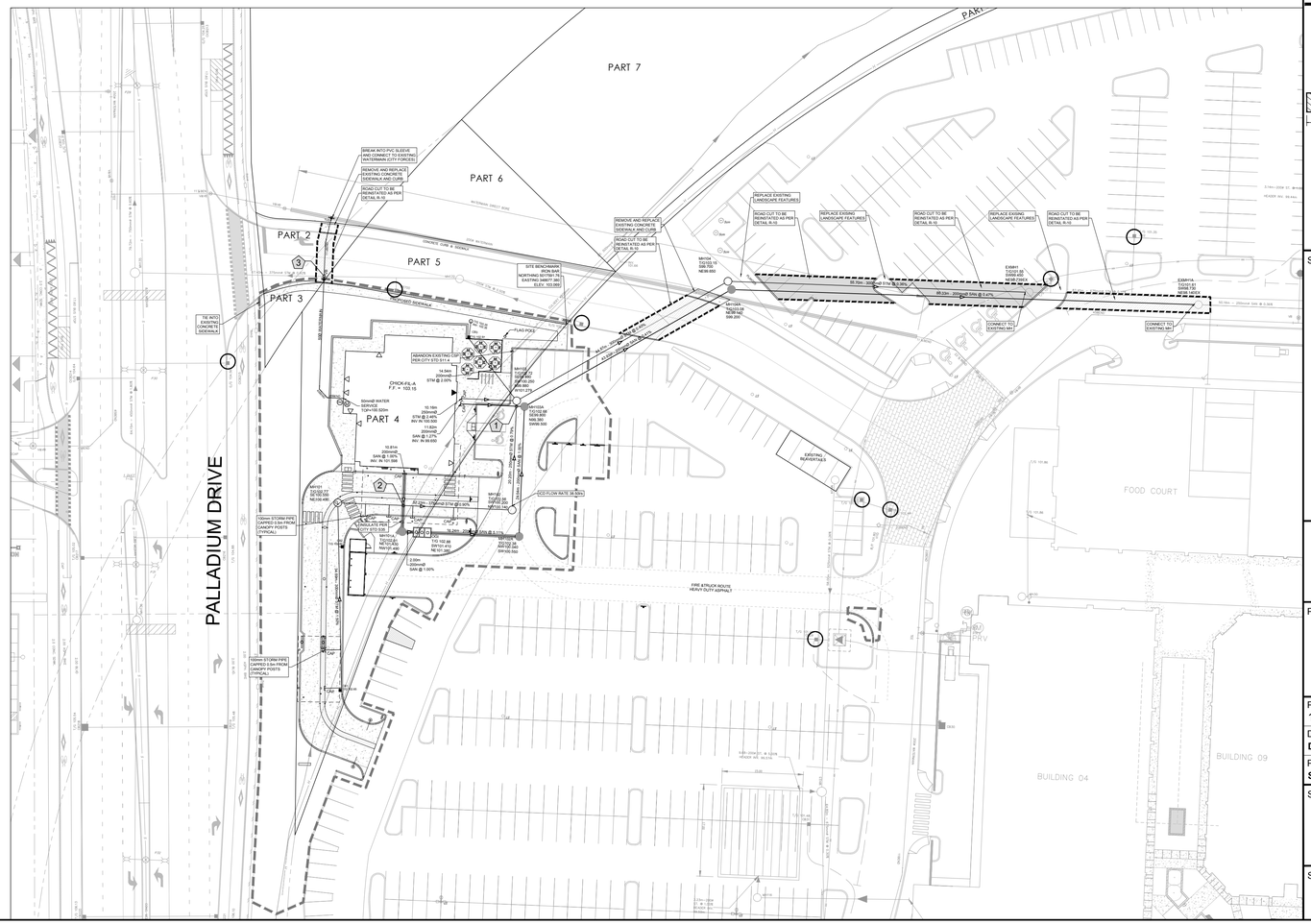
SHEET NUMBER	ISSUE
C-200	5

CITY FILE No. D07-12-23-0030

CITY PLAN No. xxxxx

SCALE CHECK

File Location: J:\141991_Chick-Fil-A_17.0_Production\7.03_Design\04_Civil\Sheets\C-200-SITE GRADING PLAN.dwg Last Saved: May 29, 2023, by dsiuma Plotted: Wednesday, May 31, 2023 10:11:07 AM by Don Siuma



NOTES:

LEGEND :

1. 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,
2. SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
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. CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
5. WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
6. THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT

▬ ▬ ▬	LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- - -	SNOW FENCE
▤	STRAW BALE CHECK DAM AS PER OPSD-219.180
◇	ROCK CHECK DAM AS PER OPSD-219.210
○ CB	SILT SACK PLACED UNDER EXISTING CB COVER
▨	TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

North

CLIENT

RIOCAN REIT

RIOCAN YONGE EGLINTON CENTER, 2300
YONGE ST, SUITE 500

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ISSUES

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SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN

KEY PLAN
N.T.S.

LEGEND

▬	LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- · -	SNOW FENCE
▤	STRAW BALE CHECK DAM AS PER OPSD-219.180
◇	ROCK CHECK DAM AS PER OPSD-219.210
○	SILT SACK PLACED UNDER EXISTING CB COVER
▨	TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

1:500 0 5 15 25m

SEAL

S. E. LABADIE
100214983
2023/05/31

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

BUILDING 17
CHICK-FIL-A

333 HUNTMAR DRIVE

PROJECT NO: 141991	
DRAWN BY: **D.P.S. / S.P.G.**	CHECKED BY: **J.I.M.**
PROJECT MGR: **S.E.L.**	APPROVED BY: **S.E.L.**

SHEET TITLE

EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER	ISSUE
C-900	5

SCALE CHECK 1 in 10mm

CITY FILE No. D07-12-23-0030

File Location: J:\141991_Chick-Fil-A_\7.0_Production\7.03_Design\04_Civil\Sheets\C-900 SEDIMENT - EROSION PLAN.dwg Last Saved: May 31, 2023, by dsiurna Plotted: Wednesday, May 31, 2023 10:21:15 AM by Don Siurna

CITY PLAN No. xxxxx