Minto Communities

Arcadia Commercial Site

Design Brief

November 13, 2024

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Design Brief
City of Ottawa
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Contents

Tables

Figures

Appendices

Arcadia Commercial Site – Design Brief

Appendix A

- Site Plan
- Site Servicing Plan 147391-C-001
- AOV Legal Plan
- Pre-Consultation City Comments
- Study and Plan Identification List

Appendix B

- Watermain Boundary Conditions
- Water Demand Calculations
- FUS Calculations
- Water Model Results

Appendix C

- Sanitary Design Sheet
- Sanitary Drainage Area Plan 147391-C-400
- Sanitary Design Sheet 53533
- Sanitary Drainage Area Plan 53533-C-400
- Sanitary Design Sheet – Kanata West Servicibility Study

Appendix D

- Storm Design Sheet
- Storm Drainage Area Plan 147391-C-500
- Ponding Plan 147391-C-600
- Storm Water Management Calculations
- Orifice Sizing Calculations
- Overflow Depth Calculations
- Runoff Coefficient Calculations
- Stormtech Chamber Specifications
- Watts Adjustable Flow Control for Roof Drains
- Storm Design Sheet 53533
- Storm Drainage Area Plan 53533-C-500

Appendix E

- Grading Plan 147391-C-200
- Sediment and Erosion Plan 147391-C-900
- Grading Plan 35355-C-200

1 Introduction

1.1 Scope

Arcadis Professional Services (Canada) Inc., hereinafter referred to as “Arcadis”, has been retained by Minto Communities to prepare the necessary engineering plans, specifications and documents to support the proposed Site Plan Application for the subject lands, following the policies set out by the Planning and Development Branch of the City of Ottawa. This Brief will present a detailed grading and servicing scheme to support the development of the property and will include sections on water supply, wastewater management, minor and major stormwater management, site grading and erosion and sediment control. Minto Communities intends to sever a small portion of the remaining undeveloped lands of its 370 Huntmar Road site for use as its Sales and Design Centre.

This parcel of land is part of the proponent’s larger “Arcadia” development lands, which are currently being developed. This subject parcel is referred to as Stage 5 in other previously approved Minto reports, including “Conceptual Site Servicing Arcadia Stages 1, 2, 5 and 8”, and “Arcadia Interim SWMF”, which provide details related to the construction and operation of the downstream infrastructure which will service these lands. The subject lands were previously Site Plan Approved (circa 2014), and subsequently severed for the Microtel Hotel. The public road portion of the original Site Plan Application (Country Glen Way), has been constructed and is in service.

This report was prepared in accordance with the Servicing Study Guidelines for Development Applications in the City of Ottawa. **Appendix A** contains a customized copy of the City’s checklist which can be used as a quick reference for the location within this study report of each of the checklist items.

1.2 Background

In 2002, the City of Ottawa expanded its urban area to include the lands currently known as Kanata West. In March 2003, the Ottawa City Council approved the general land use and development principles of the Kanata West Concept Plan (KWCP). The plan is a mixed-use community with a population of about 17,000 persons in 6,300 households, 24,000 jobs and approximately 1 million square meters of commercial space. After approval of the KWCP, several supporting technical documents, including the Kanata West Master Servicing Study (KWSS), were prepared. The KWSS provided a master servicing plan for the entire KWCP, including major infrastructure such as water supply, wastewater disposal and stormwater management.

As mentioned, the site was previously Site Plan Approved (D07-12-14-0014). IBI Group (now Arcadis) prepared the Site Servicing Brief and Engineering Drawings to support the original SPA. The approval has since lapsed. This report aims to follow the principles established in the original site plan approval and engineering drawings, and provide adjustments to suit the new severance.

1.3 Subject Site

The Arcadia Commercial Site is located at 370 Huntmar Road, at the East intersection of Campeau Drive and Huntmar Drive in Ottawa, to the northeast of Tanger Outlets, and is part of the Kanata West Business Park

(KWBP). The KWBP is proposed to include several types of non-residential uses including Prestige Business Park, High Profile Employment and Extensive Employment.

The subject site severance is approximately 0.46 ha and consists of a two-storey Office and Showroom building as a small phase of a larger future commercial development.

Refer to **Figure 1**, below, for more information regarding the site location.

Figure 1 Subject Site Location

The site's natural topography, with the existing grade sloping from west to east, the proposed concept aims to seamlessly integrate the proposed two-storey building into the existing natural slope while taking the future design of the more significant commercial site into consideration to ensure there are no potential conflicts with future work. The building's facades will be maintained at an accessible grade to permit entry into the main levels of the building.

The primary vehicular and pedestrian access to the site is located off Campeau Drive and provides unimpeded access to the site office through a parking area to the South of the building. Two entrances with pedestrian access will be provided to the north of the building.

This project will consist of the construction of a two-storey office and showroom building. The site will also contain vehicular access routes for future commercial area, dedicated parking spaces, Tactile Walking Surface Indicators (TWSI) and landscaping areas. A site plan of the proposed development is included in **Appendix A**.

1.4 Previous Studies

1. Kanata West Concept Plan

The Kanata West Concept Plan (KWCP) was approved by the City of Ottawa in 2003. The plan provides a framework for the current and future development of the Kanata West lands. It also provides the guidelines and requirements for concept planning, the recommended concept plan, and an implementation strategy. The plan focuses on development of the urban lands with mix uses including office, housing, retail, institutional, entertainment and leisure activities.

2. Kanata West Servicing Study

The Kanata West Servicing Study (KWSS) was completed by the City of Ottawa in 2006. That study provided detailed guidelines for provision of major municipal infrastructure in support of the Kanata West Concept Plan. Among other things it provided guidelines and criteria for water supply, wastewater collection and stormwater management.

3. Third Party Review

The Third Party Review (TPR) was completed after potential omissions in the stormwater management model for KWSS were identified. The TPR was commissioned to be an arm's length review of the model to ensure that it was property calibrated and validated.

4. Signature Ridge Pump Station Hydraulic Grade Line Analysis

A March 2012 report by IBI Group was completed for Minto Properties and completed an update to the Signature Ridge Pump Station sanitary hydraulics. The report predicted HGL's for several scenarios for the tributary sewers including the sanitary sewer servicing the subject parcel. The HGL analysis was further refined in September 2012 based on current overflow proposals by the City.

5. Implementation Plan – Kanata West Development Area

This Plan was prepared for the City of Ottawa and the Kanata West Land Owners Group. The Implementation Plan recognizes that Kanata West is a large planning area which will take years to fully develop and therefore includes a mixture of short and long-term development plans and the associated infrastructure requirements to support them. The Plan builds on the framework of the KWCP and KWSS and provides updated comments for future approvals and the actions that would bring about the approval requirements. The Plan further reviews actions that would be conducted if "triggered" by an event or set of circumstances, while allowing sufficient flexibility to ensure that appropriate changes to the undertaking(s), once identified, are made.

6. Conceptual Site Servicing Arcadia Stages 1, 2, 5 & 8 Kanata West – Minto Communities

This IBI Group report, completed in September 2012, provided a high-level conceptual site servicing plan specifically for Minto Arcadia Lands, including the subject site which is Stage 5 of the report. The report focused on details related to water supply, wastewater disposal and stormwater management.

7. Arcadia Interim Stormwater Management Facility Design Brief June 2012

This IBI Group report outlines the design of the interim SWM Facility to service Minto's Arcadia development lands, including these commercial lands, until such time as the ultimate stormwater management facility is constructed.

8. Arcadia Commercial, 370 Huntmar Drive Design Brief October 2014

This IBI Group report provides a detailed servicing scheme to support the development of the Arcadia commercial site.

An engineering pre-consultation with the City of Ottawa was held in August, 2024 regarding the proposed development. Notes from this meeting are included in **Appendix A**.

1.5 Geotechnical Considerations

Paterson Group Inc. was retained to prepare a geotechnical investigation for the site. The objectives of the investigation were to prepare a report to:

- Determine the subsoil and groundwater conditions at the site by means of boreholes
- To provide geotechnical recommendations pertaining to the design of the proposed development including construction considerations

The geotechnical investigation report PG3045-1R Dated June 26th, 2014 confirmed that the site consists of topsoil underlain by silt clay deposit, over a glacial till layer. Based on the presence of the silty clay layer, a varying permissible grade raise plan was provided. The permissible elevations are 2.0m for grading within 5m of the proposed buildings and 3.0m grade raise for the parking areas and access lanes.

The report contains recommendations which include but are not limited to the following:

- Fill used for grading beneath the proposed development to meet OPSS Granular 'A' or Granular 'B' Type II placed in lifts no greater than 300 mm compacted to 98% SPMDD
- Pavement Structures as identified below:

Table 1-1 Pavement Structure – Car Only Parking Areas

Local Road – Parking Areas	Thickness
12.5 Asphaltic Concrete	50 mm
OPSS Granular A Base	150 mm
OPSS Granular B Type II Subbase	400 mm

Table 1-2 Pavement Structure – Heavy Truck Parking Areas and Access Lanes

Local Road	Thickness
12.5 Asphaltic Concrete	40 mm
19.0 Asphaltic Concrete	50 mm
OPSS Granular A Base	150 mm
OPSS Granular B Type II Subbase	450 mm

The report contains recommendations which include but are not limited to the following:

- Pipe bedding and cover: The pipe bedding for sewer and water pipes should consist of at least 150 mm of OPSS Granular A crushed stone. Where the bedding is located within the firm grey silty clay, the thickness of the bedding material should be increase to a minimum of 300 mm. The material should be placed in maximum 300 mm thick lifts and compacted to a minimum of 95% of its SPMDD. The cover material, which should consist of OPSS Granular A, should extend from the spring line of the pipe to at least 300 mm above the obvert of the pipe.
- The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level.

2 Water Supply

2.1 Existing Conditions

As previously noted, the 0.46 ha office and showroom building site is surrounded by Huntmar Drive to the southwest, Campeau Drive to the northwest, and undeveloped land in the remaining surrounding area. An existing PVC 203 mm diameter watermain stub from Campeau Drive was previously installed and is located at the property line to the proposed site. This watermain falls within the City of Ottawa's pressure district Pressure Zone 3W which will provide the water supply to the site.

2.2 Design Criteria

2.2.1 Water Demands

Water demands have been calculated for this proposed site. This site consists of a two-storey office and showroom building. Siamese connections will be provided for this building. Consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Commercial Shopping Center 2500 l/1000m^2/day
- Other Commercial 28,000 l/gross ha/day
- ICI Average Day Demand 28,000 l/gross ha/day
- ICI peak Daily Demand 42,000 l/gross ha/day
- ICI Peak Hour Demand 75,600 l/gross ha/day

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

- Average Day 0.03 l/s
- Maximum Day 0.04 l/s
- Peak Hour 0.07 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 150 kPa (22 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 proposed site plan contains one commercial building, with automatic sprinkler systems. The building will fall under OBC Section 3.10, F-2 or F3 occupancy and combustibility. The sprinkler system will be designed and installed in accordance with NFPA-13 requirements. The sprinkler system will be supplied from the city water connection and the demand will be calculated using the hazard classification plus the appropriate inside/outside hose allowances.

Calculations using the Fire Underwriting Survey (FUS version 2020) were conducted to determine the fire flow requirement for the site. Results of the analysis provides a maximum fire flow rate of 5,000 l/min or 83.3 l/s is required which is used in the hydraulic analysis. A copy of the FUS calculations is included in **Appendix B**.

2.2.4 Boundary Conditions

The City of Ottawa has provided the hydraulic boundary conditions at the site. A copy of the boundary conditions is included in **Appendix B** and summarized as follows:

Table 2-1 Hydraulic Boundary Conditions

Criteria	Hydraulic Head	Pressure
Max HGL (Basic Day)	160.7 m	88.8 psi
Peak Hour	156.5 m	82.8 psi
Max Day + Fire Flow (5,000 L/m)	155.4 m	81.2 psi

Ground elevation: 127.5 m

2.2.5 Hydraulic Model

A computer model for the subject site has been developed using the InfoWater Pro program by Autodesk. The model includes the existing watermain and boundary condition at Campeau Drive.

2.3 Proposed Water Plan

2.3.1 Proposed Water Plan

This site will be serviced by connecting to an existing 200mm diameter watermain extending from Campeau Drive. The building will be serviced by a lateral service connection from the proposed watermain. There is one hydrant proposed on site located at the east side of the proposed parking area, within 45m of the proposed building.

Refer to the general plan of services **Drawing C-001** for detailed watermain layout for the subject site.

2.3.2 Hydraulic Analysis

The hydraulic model was run under basic day conditions to determine the maximum pressure for the site. The minimum pressure for the site is determined in the peak hour analysis using the provided boundary condition. Results of the analysis for the site are summarized in Section 2.3.2 and the water model schematic and model results are included in **Appendix B**.

2.3.3 Modeling Results

The hydraulic model was run under basic day, maximum day with fire flows and under peak hour conditions. Results of the hydraulic model are included in **Appendix B** and summarized as follows:

- Basic Day (Max HGL) Pressure Range (kPa) 608.24 – 611.96
- Peak Hour (Min HGL) Pressure Range (kPa) 553.36 – 557.09
- Fire Flow @ 5,000 L/min Residual Pressure (kPa) 514.42
- Residual Pressure @ 150 kPa Available Fire Flow (l/s) 280.14

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

Maximum Pressure	All nodes in basic day scenario exceed 552 kPa (80 psi), therefore pressure reducing control is required for the proposed building in this development.
Minimum Pressure	All nodes in the model exceed the minimum value of 276 kPa (40 psi).
Fire Flow	The minimum design fire flow under maximum day conditions with minimum system pressure of 150 kPa is 280.14 l/s for retail which exceeds the requirement of 83.3 l/s (5,000 l/min) from Section 2.3.3.

3 Wastewater Disposal

3.1 Existing Conditions

There is an existing 375mm diameter sanitary sewer along Campeau Drive, which flows east along Campeau Drive and flows ultimately to the Ottawa Wastewater Treatment Plant at 395 Terry Fox Drive. There is an existing 200mm sanitary cap from existing MH301 to the property line in anticipation of this development. This sewer has been designed to provide wastewater service to the subject development site.

3.2 Previous Studies

The October, 2014 IBI Group Design Brief for Arcadia Commercial provided the wastewater servicing plan for the Arcadia Retail Development, including the subject site. The detailed sanitary sewer design sheets and related sanitary drainage area plan 35355 - C-501 are included in **Appendix C**.

3.3 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:

- Average commercial flow = 28,000 l/s/ha
- Peak ICI flow factor = 1.5 if ICI area is > 20% total area
  1.0 if ICI area is ≤ 20% total area
- Inflow and Infiltration Rate = 0.33 l/s/ha
- Minimum Full Flow Velocity = 0.60 m/s
- Maximum Full Flow Velocity = 3.0 m/s
- Minimum Pipe Size = 200 mm diameter

3.4 Recommended Wastewater Plan

The on-site sanitary system will consist of 200mm PVC sewer installed at standard depth and slope and will provide 150mm service connections to the proposed building. The sewers have been designed using the criteria noted above in section 3.2 and outlet via the existing sanitary stub connection to the sanitary sewer to Campeau Drive.

As noted in the pre-consultation meeting with the City of Ottawa, a monitoring maintenance hole was included just inside the property line of the subject site. The July 2012 Site Servicing Report ‘Arcadia – Kanata West Ph 1’ by IBI Group identified conceptually the servicing for the 9.84 Ha parcel of land south of Campeau Drive. This site comprises approximately 1.79 Ha of that area. The Campeau Drive sewer was designed and constructed assuming 0.85 Ha of commercial lands connecting to MH301A, with peak flows of 0.98 l/s. This site generates approximately 1.47 l/s to MH 301A. The minor (0.49 l/s) increase in flow to MH 301A has negligible impact on the system as it has over 34 l/s spare capacity up to MH 303A.

This site is comprised of slab on grade construction (no basements). The minor (0.49 l/s) increase in flow from MH 301A to 303A will not negatively impact this site. Sanitary design sheet from 'Arcadia – Kanata West Ph 1' site servicing report, which demonstrates the capacity in the receiving and downstream wastewater system is included in **Appendix C**.

As identified in the Arcadia Commercial Design Brief, there are existing houses along Campeau Drive and the current freeboard between the HGL and USF is approximately 1.18 m at MH301A. It is anticipated that any minor HGL adjustment (1 to 2 cm) due to the 0.49 l/s increase at this MH will leave these units within excess of 1 m of freeboard.

A copy of the sanitary sewer design sheet can be found in **Appendix C.** Please refer to the General Plan of Services **Drawing C-001** for further details.

4 Site Stormwater Management

4.1 Existing Conditions

The undeveloped subject lands currently drain east away from Campeau Drive and Huntmar Drive intersection to the recently developed Country Glen Way. There is an existing 825mm diameter downstream storm sewer along Campeau Drive with a 600mm storm stub from the existing MH301 to the property line with an allocation of flows from this development previously taken into consideration.

The Arcadia Commercial Site Plan was allocated a total 100-year release rate of 240L/s/Ha. The original site plan approval included two separate outlets, one to Campeau Drive and one to Country Glen Way. Based on the original site area draining to Campeau, of 0.8Ha, the theoretical maximum release rate is 192.00L/s. However, the site stormwater management plan identified a release rate to Outlet #2 (MH 301 in Campeau Drive) of **125.94 L/s**. This report aims to meet the more restrictive target to MH301 established in the Site Plan. An excerpt from the Arcadia Commercial Stormwater Management Calculations has been provided in **Appendix D.**

4.2 Design Criteria

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow. The on-site minor system design criteria identified below are consistent with the current City of Ottawa Sewer Design Guidelines.

Some of the key criteria include the following:

- Design Storm — 1:2year return (Ottawa)
- Rational Method Sewer Sizing
- 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 — 200 mm diameter (200 mm CB Leads)

4.3 Proposed Minor System

Where possible, the minor system storm sewers for the subject site will be sized based on the rational method and the City of Ottawa 2-year event. Minor storm flow to the downstream storm sewer network will be controlled by Inlet Control Devices (ICDs) to limit flow and prevent sewer surcharging downstream.

Due to the severance area and the need to maintain maximum flexibility for future development opportunities within the existing site, a rebalancing of tributary areas to Campeau has been completed. General Areas 122, 123, 110A and Roof Areas BLK700 and BLK800 (as identified on the original site plan) have been removed from the tributary outletting to Campeau. The sum of the areas removed from Outlet #2 is 0.30Ha. This has permitted an expansion

of the parking lot area adjacent to the proposed sales Center drain into the Campeau outlet without constructing services through the remainder of the site, as originally intended. The sum of the area added to Outlet #2 is 0.23Ha. An overall drainage area plan has been provided in **Appendix D** which demonstrates the areas removed (in red) and the areas added (in green).

The proposed minor storm sewer will range between 300 mm diameter and 600 mm diameter. Catch basin lead pipes will be 200 mm in diameter. The minor storm sewer outlet will be via the 600 mm diameter pipe which is proposed to connect to the existing 825 mm diameter storm sewer in Campeau Drive.

An allocation has been provided in the minor system for future flows to the east. This includes Future Building Block 600 and future parking lot area 120, as were identified on the original site plan approval.

A detailed storm sewer design sheet and the associated storm sewer drainage area plan is included in **Appendix D**. The General Plan of Services, depicting all on-site storm sewers can be found in **Appendix A**.

4.4 Stormwater Management

As previously noted, the overall site release rate was determined based on a level of service of 240 L/s/Ha. However, the original SWM concept for the approved site plan had adjusted the overall release rate between the two outlets, and Outlet #2 (MH301 to Campeau) is slightly overcontrolled relative to the level of service for the whole site. The intent is to maintain the outlet dispersion with **125.94 L/s** as the maximum permissible release rate to Campeau.

At certain locations within the site, the opportunity to capture and/or store runoff is limited due to grading constraints and site plan geometry. These locations are generally located at the site's perimeter, where it is necessary to tie into public ROWs and adjacent properties or in areas where ponding stormwater is undesirable. These “uncontrolled” areas – 0.064 hectares in total, have a C value of 0.20 and increased by 25% during 100-year events (as per City SDG). It should be noted that the total uncontrolled areas are based on the uncontrolled areas identified in the original site plan SWM concept and are all located adjacent to future development areas. All areas within the severed parcel are captured and controlled.

4.5 Inlet Control

Per the original stormwater management calculations provided for the entire site, the restricted flow rate was used for the Campeau outlet is:

$\mathbf{Q_{restricted}}$ = **125.94 L/s**

As noted in Section 4.4, a small, landscaped area along the west property line will drain offsite uncontrolled.

Based on a 100-year event, the flow from the 0.015 Ha uncontrolled area can be determined as:

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

C = Average runoff coefficient of uncontrolled area = 0.20 x 1.25

$\mathbf{i_{100yr}}$ = 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 = 0.064 Ha

Therefore, the uncontrolled release rate can be determined as:

$$Q_{uncontrolled} = \mathbf{2.78} \times \mathbf{1.25C} \times i_{100yr} \times \mathbf{A}$$

$$= 2.78 \times 1.25 \times 0.020 \times 178.56 \times 0.064$$

$$= \mathbf{7.94\ L/s}$$

The maximum allowable release rate to Campeau Drive (Outlet #2/MH301) can then be determined as:

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

$$= 125.94\ L/s - 7.94\ L/s$$

$$= \mathbf{118.00\ L/s}$$

Based on the flow allowance at the various inlet locations, various sizes of inlet control devices (ICDs) were chosen in the design. The design of the inlet control devices is unique to each drainage area and is determined based on various factors, including hydraulic head and allowable release rate. Ponding locations and elevations are summarized on the Ponding Plan **Drawing C-600**, and included in **Appendix D**.

4.6 On-Site Detention

The site was designed to limit runoff to the allowable release rate up to the 2-year post-development storm event. Flows exceeding the maximum allowable release rate will be contained on-site via underground and surface storage at strategic locations. Orifices are proposed in manholes, catch basins and roof drains to control runoff from the site. The modified rational method determined the storage volumes during a 2-year and 100-year storm event. Available surface ponding volumes at each inlet were determined using CAD surface volume tools. As per the Ottawa SDG, when underground storage is considered available storage, the ICD release rate is to be reduced by 50% to determine the storage requirements.

The proposed roof is partially flat and partially peaked. The drainage area plan considers the roof structure of this building. The flat roof area has accounted for ponding storage with depths not exceeding 150mm per the OBC, and there are five roof drains. Watts roof drain flow control weirs are proposed on each inlet, set to 2 L/s or 30GPM each.

Major flow up to the 100-year storm is contained on-site and is gradually released to the minor system. Apart from the small uncontrolled areas, major flow does not leave the site via overland flow.

The site's stormwater management has ensured that surface ponding will not occur during the 2-year storm event.

Stormwater management and on-site underground storage volume calculations, and manufacturers spec sheets are included in **Appendix D**.

A summary of the ICD type for each drainage area and corresponding storage details is provided in Table 4.1 below.

Table 4-1 Post-Development Storage Summary Table

Post – Development Flows							
Location	ICD Type	Drainage Area (Ha)	Restricted / Uncontrolled Flow (L/s)	Storage Required (m^3)	Storage Provided (m^3)		
			2 - Year	2 - Year	Surface	UGS	Total
Controlled Storm Sewer System							
FUT 600	-	0.06	2	7.22	33.75	0	33.75
FUT 120	-	0.11	15	4.18	33.99	0	33.99
ROOF	WATTS	0.09	10	4.44	24.75	0	24.75
110	IPEX MHF	0.12	42	0	4.43	0	4.43
102	IPEX MHF	0.24	25	20.49	25.20	68.80	94.00
MH100B	IPEX MHF	0.04	24	0	1.56	0	1.56
Total		0.66	118	36.33	123.68	68.80	192.48

The area Future 120 has identified surface level ponding during the 2-year event. The drainage area and release rate have been carried form the original site plan SWM concept. Future site plan development will need to address 2-year ponding in this area.

Area 102 identifies a 20.49m3 storage required during the 2-year event. 68.80m3 of storage is provided underground, therefore there will be no surface ponding during the 2-year event.

4.7 100-Year Overflow

A review of the 100-year event, and overflow depth has been performed using the modified rational method. The calculations are included in the modified rational stormwater management sheets **Appendix D.**

A summary of the required storage volumes and overflow balances is provided below.

Table 4-2 Post-Development 100yr Storage Summary Table

Drainage Area	ICD Restricted Flow (L/s)	100 Year Storage Required (m^3)	Total Storage Provided* (m3)	Upsteam Overflow (m^3)	100 – Year Overflow (m^3)
FUT 600	2	26.48	33.75	0	0
FUT 120	15	26.10	33.99	0	0

Drainage Area	ICD Restricted Flow (L/s)	100 Year Storage Required (m^3)	Total Storage Provided* (m3)	Upsteam Overflow (m^3)	100 – Year Overflow (m^3)
ROOF	10	24.08	24.75	0	0
110	42	4.36	4.43	0	0
102	12.5	90.65	94.00	0	0
MH100B	24	1.41	1.56	0	0
Total	118	173.08	192.48	0	0

*includes surface storage and underground storage. For building Areas, it includes rooftop storage.

The 100-year flow from all areas within the proposed site plan is contained on-site, with no overland flow offsite or to other areas.

4.8 100-Year + 20% Stress Test

A cursory review of the 100-year event + 20% has been performed using the modified rational method. The peak flow from each area during a 100-year event has increased by 20%. The calculations have been included in **Appendix D.**

A summary of the require storage volumes, and overflow balances is provided below.

Table 4-3 Post-Development 100yr+20% Stress Test Storage Summary Table

Drainage Area	ICD Restricted Flow (L/s)	100 Year + 20% Storage Required (m^3)	Total Storage Provided	Upsteam Overflow (m^3)	100 Year + 20% Overflow (m^3)
FUT 600	2	33.48	33.75	0	0
FUT 120	15	34.56	33.99	0	0.57
ROOF	10	31.54	24.75	0	6.79
110	42	7.25	3.54	0	2.82
102	12.5	115.68	94	6.79	28.46
MH100B	24	2.55	2.55	0	4.38
Total	118		192.48		

The overland flow from 110 is directed to Campeau Drive. The 100yr +20% overflow volume from Area 110 is **2.82** m3 at peak. Based on a peak Tc of 4 minutes, the volume can be reverse calculated to **11.75** L/s. A channel depth conveyance calculation has been provided to determine the overflow depth of **0.03m** above the static ponding elevation.

The overland flow from the area tributary to 102 is directed south to future development lands. The 100yr +20% overflow volume from Area 102, including upstream roof contribution (6.79 m3), is **28.46** m3 at peak. Based on a peak Tc of 46 minutes, this volume can be reverse-calculated to **10.31 L/s**. A channel depth conveyance calculation has been provided to determine the overflow depth of **0.04m** above static ponding elevation. These stress test flows will need to be considered in future SWM analysis.

The overland flow from the area tributary to MH100B is directed to Campeau Drive. The volume of overflow from MH100B is **4.38** m3 at peak. Based on a peak Tc of 3 minutes, this volume can be reverse calculated to **24.35 L/s**. A channel depth conveyance calculation has been provided to determine the overflow depth of **0.06m** above static ponding elevation.

4.9 Underground Storage

Due to the site's constraints and the stormwater management plan, underground storage was deemed the best option to contain the 100-year storm event on site. The table below summarizes underground storage, and additional information about the underground storage structures is found in **Appendix D.**

Table 4-3 Underground Storage Summary Table

Storage Name	Structure Type	Storage Provided (m^3)
CB102	Stormtech DC-780 or approved equivalent	68.80

4.10 Quality Control

As noted in the Arcadia Commercial Design Brief, flows from the subject site discharged into the Arcadia Interim SWM facility, which provided an interim quality and quantity control facility for the Arcadia community. We understand that the ultimate SWM facility has been constructed and is operational.

4.11 Hydraulic Grade Line

As identified in the Arcadia Commercial Design Brief, as part of the original site plan approval, the storm Hydraulic Grading Line (HGL) is dictated by downstream infrastructure. The storm HGL within the existing storm sewer on Campeau Drive is at 96.05m at existing MH's 301. The sewers are not surcharged at these points, since the internal sewers are restricted to meet the downstream system design requirements and sized to accommodate the restricted flow. The onsite sewers will not be surcharged, and as such, the HGL will follow the obvert of the pipes. Additionally, this is a slab on grade development, and the City requirement for 0.3 m freeboard to USF to protect basements from flooding is not applicable. The minimum freeboard from the onsite HGL (obvert of storm sewer) to the finished floor elevation is 1.51 m.

5 Grading and Roads

5.1 Site Grading

The existing grades within portions of the proposed development lands vary significantly due to the existing topography of the site. The grading plan will require the balancing of various requirements including but not limited to geotechnical constraints, minimum/maximum slopes, overland routing of stormwater, all to ensure the site is graded following municipal and accessibility standards.

Special consideration is needed for the building, where elevated foundation walls are required along the west façade to maintain the grade. A minimum of 150mm foundation exposure is required around the perimeter of the building. Internal and external steps will also be required to match grades. The main entrance has been designed to provide barrier-free access to the parking areas.

The parking areas have been designed to meet accessibility requirements, with slopes ranging between 0.5% along curbs to a maximum of 5%.

Refer to the grading plan provided in **Appendix E**.

5.2 Road Network

No public roads are proposed through the site. A minimum 8.0m wide drive aisle has been provided, as shown on the Site Plan in **Appendix A.** An internal Fire route has been shown where fire truck access is required, as determined by the site architect.

There are 39 parking stalls provided on the site, of which two are barrier-free.

Pedestrian access facilities and multiple connections to Campeau Drive and Huntmar are provided.

A bicycle parking facility has been proposed adjacent to each building entrance.

Noise attenuation features and indoor noise clause provisions will not be required for commercial use lands for road noise generated by the adjacent roads.

6 Source Controls

6.1 General

Since an end-of-pipe treatment facility is already provided for the development lands, stormwater site management for the subject lands will focus on the site level or source control management of runoff. Such controls or mitigative measures are proposed for this development not only for final development but also during construction and build-out. Some of these measures are:

- Flat site grading where possible
- Vegetation planting
- Groundwater recharge in landscaped areas

6.2 Lot Grading

Where possible, all of the proposed blocks within the development will make use of gentle surface slopes on hard surfaces such as asphalt and concrete. In accordance with local municipal standards, all grading will be between 0.5 and 5.0 percent for hard surfaces and 2.0 and 7.0 percent for all landscaped areas. Significant grade changes will be accomplished through the use of terracing (3:1 max slope), ramps and/or retaining walls. All street and parking lot catchbasins shall be equipped with 3.0m subdrains on opposite sides of a curbside catchbasin running parallel to the curb, and with 3.0m subdrains extending out from all 4 sides of parking lot catchbasins.

6.3 Vegetation

As with most site plans, the developer will be required to complete a vegetation and planting program. Vegetation throughout the development including planting along roadsides and within the individual blocks provides opportunities to re-create lost vegetation.

6.4 Groundwater Recharge

Groundwater recharge targets have not been identified for this site. Perforated sub-drain systems will be implemented at capture locations in all vegetated areas. This will promote increased infiltration during low flow events before water is collected by the storm sewer system.

7 Conveyance Controls

7.1 Generals

Besides source controls, the development also proposes to use several conveyance control measures to improve runoff quality. These will include:

- Vegetated swales
- Catchbasin sumps and manhole sumps

7.2 Catchbasins and Maintenance Hole Sumps

All catchbasins within the development, either rear yard or street, will be constructed with minimum 600 mm deep sumps. These sumps trap pollutants, sand, grit and debris which can be mechanically removed prior to being flushed into the minor pipe system. Both rear yard and street catchbasins will be to OPSD 705.02. All storm sewer maintenance holes serving local sewers less than 900 mm diameter shall be constructed with a 300 mm sump as per City standards.

8 Sediment and Erosion Control Plan

8.1 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 construction trenches shall be pumped into a filter mechanism prior to release to the environment
- Vegetated swale 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 will be installed

8.2 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).

8.3 Seepage Barriers

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

8.4 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.

9 Conclusion

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

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

Demetrius Yannoulopoulos, P. ENG.
Director – Office Lead Engineering

Ryan Magladry, C.E.T
Associate – Manager, Land

Amy Zhuang, P.ENG.
Project Engineer

Appendix A

Site Plan

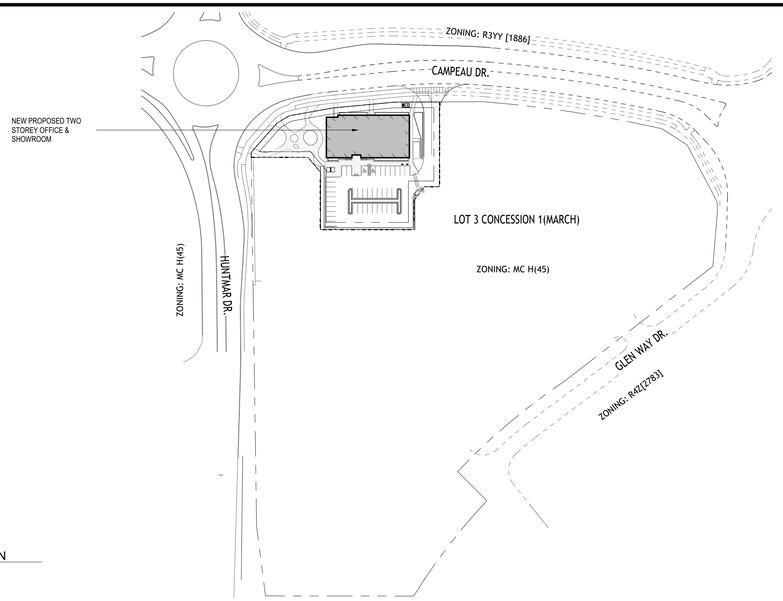
AOV Legal Plan

Site Servicing Plan 147391-C-001

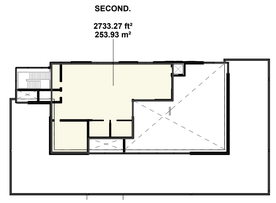
Arcadia Site Servicing Plan 35355-C-100

Pre-Consultation City Comments

Study and Plan Identification List

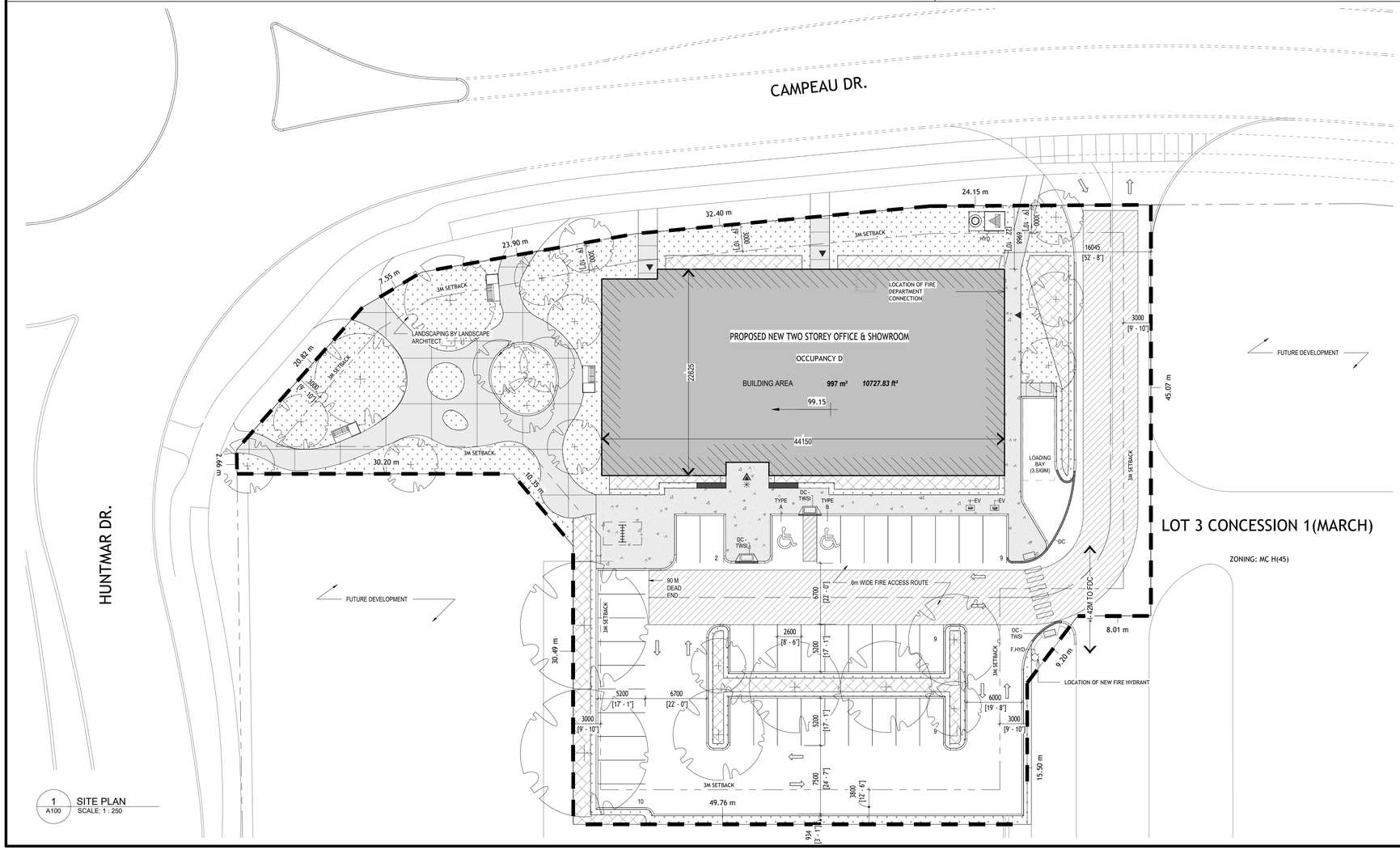


2 A100 SITE KEYPLAN
SCALE: 1 : 1500



4 A100 2ND. - GROSS FLOOR AREA I2I
SCALE: 1 : 500

3 A100 GF - GROSS FLOOR AREA I2I
SCALE: 1 : 500



1 A100 SITE PLAN
SCALE: 1 : 250

LEGEND

- PROPOSED BUILDING LOCATION
- EXISTING NEIGHBOURING BUILDING
- LANDSCAPED AREA
- CONCRETE/ SIDEWALK
- FIRE ROUTE
- BARRIER-FREE PARKING CLEARANCE
- TACTILE WALKING SURFACE INDICATOR
- FIRE DEPARTMENT CONNECTION
- BUILDING ENTRANCE / EXIT
- PRINCIPAL ENTRANCE (& TRAVEL PATH EXIT)
- EXIT AT REQUIRED TRAVEL PATH
- FIRE HYDRANT
- BOLLARD
- MH — MANHOLE (SEE CIVIL)
- HYD — TRANSFORMER (HYDRO)
- CATCH BASIN (SEE CIVIL)
- LS — LIGHT STANDARD (SEE ELECTRICAL)
- EV — EV CHARGE STATION (SEE ELECTRICAL)
- BARRIER-FREE PARKING
- VEHICULAR TRAFFIC DIRECTION
- CURB
- DC — DEPRESSED CURB
- TREE. SEE LANDSCAPE.
- TYPICAL BIKE RACK (1800 / 600)
- TYPICAL PARKING (5200 / 2600)
- TYPICAL BF PARKING (TYPE A) (5200 / 3900)

GENERAL SITE PLAN NOTES:

TOPOGRAPHICAL INFORMATION:
PART OF LOT 3
CONCESSSION 1 (MARCH)
GEOGRAPHIC TOWNSHIP OF KANATA
CITY OF OTTAWA

SURVEY BY:

SITE AND BUILDING DATA:

NEW SITE SUB-DIVISION AREA	4,624 m²	
NEW BUILDING HEIGHT	11.7M	
(*1.) **GROSS BUILDING AREA (1)**	**1266 m²**	***13623.23 ft²***
(*2.) **GROSS FLOOR AREA (2)**	**1126 m²**	***12116.95 ft²***

(*) SEE GROSS BUILDING AREA NOTES BELOW

GENERAL NOTES:

1. FOR PAVED SURFACES, GRADING, SITE SERVICING, DRAINAGE EROSION AND SEDIMENT CONTROL, REFER TO CIVIL DRAWINGS.
2. FOR PLANTING DETAILS, REFER TO LANDSCAPE DRAWINGS.

GROSS BUILDING AREA:
1. * (ONTARIO BUILDING CODE DEFINITION): THE TOTAL AREA OF ALL FLOORS ABOVE GRADE MEASURED BETWEEN THE OUTSIDE SURFACES OF EXTERIOR WALLS.
2. * GROSS FLOOR AREA (CITY OF OTTAWA ZONING BYLAW):
   DEFINITION FOR THE PURPOSE OF DETERMINING PARKING REQUIREMENTS): GROSS LEASABLE FLOOR AREA MEANS THE TOTAL FLOOR AREA DESIGNED FOR TENANT OCCUPANCY AND EXCLUSIVE USE, MEASURED FROM THE INTERIORS OF OUTSIDE WALLS EXCLUDING FLOOR AREA OCCUPIED BY PARTY WALLS AND EXCLUDING:
3. INTERIOR PARKING / LOADING (DRIVE THRU).
4. FLOOR AREA OCCUPIED BY SHARED MECHANICAL, SERVICE AND ELECTRICAL EQUIPMENT THAT SERVE THE BUILDING; (BY-LAW 2008-326)
5. COMMON HALLWAYS; CORRIDORS; STAIRWELLS, ELEVATOR SHAFTS AND OTHER VOIDS; STEPS AND LANDINGS; (BY-LAW 2008-326)
6. BICYCLE PARKING; MOTOR VEHICLE PARKING OR LOADING FACILITIES; COMMON LAUNDRY, STORAGE AND WASHROOM FACILITIES THAT SERVE THE BUILDING OR TENANTS;
7. COMMON STORAGE AREAS THAT ARE ACCESSORY TO THE PRINCIPAL USE OF THE BUILDING; (BY-LAW 2008-326)
8. COMMON AMENITY AREA AND PLAY AREAS ACCESSORY TO A PRINCIPLE USE ON THE LOT; AND (BY-LAW 2008-326) LIVING QUARTERS FOR A CARETAKER OF THE BUILDING.

ZONING:

ZONING DESIGNATIONS (PART 10):
GM ZONE

ZONING PROVISIONS

MINIMUM LOT WIDTH (m):	N/A
MINIMUM LOT AREA (m²):	N/A
MINIMUM FRONT YARD SETBACK:	3 m
MINIMUM REAR YARD SETBACK:	-
MINIMUM INTERIOR SIDE YARD SETBACK:	-
MINIMUM CORNER SIDE YARD SETBACK:	3 m

BUILDING HEIGHT

MAXIMUM (GM ZONES):	-
PROPOSED:	-

LANDSCAPING (SECTION 110):

REQUIRED FRONT AND CORNER SIDE YARDS TO BE LANDSCAPED, EXCEPT FOR DRIVEWAYS CROSSING THE FRONT OR CORNER SIDE YARD LEADING TO PARKING AREA

-	PARKING (HARDSCAPE) AREA PROVIDED	MIN. LANDSCAPE REQUIREMENT OF 15%
PARKING AREA (HARDSCAPE)	2430 m²	364.6 m²

-	LANDSCAPE AREA PROVIDED
LANDSCAPING	1207 m²

VEHICLE PARKING (SECTION 101):

PERSONAL SERVICE BUSINESS (N64):	[3.4 Per 100 m2] : = 1126m2 x 0.034
MINIMUM REQUIRED:	38

PARKING FOR THE PHYSICALLY DISABLED (PARKING BYLAW 2003-530, SECTION 122):

MINIMUM REQUIRED:	- No. [1x TYPE 'A' I 1x TYPE 'B']
NUMBER PROVIDED:	- No. [1x TYPE 'A' I 1x TYPE 'B']

(*) PARKING PROVIDED:	PARKING BAY TYPE:	No.
PARK-S-2X2-6	1. SITE PARKING	37
PARK-BF-S-2X3-4-TYPE-A	2. BARRIER FREE BAY TYPE A	1
PARK-BF-S-2X2.6-TYPE-B	3. BARRIER FREE BAY TYPE B	1
PARKING TOTAL PROVIDED.....		39

BICYCLE PARKING (SECTION 111): .

MINIMUM REQUIRED:	[1 / 500m²] : 1190 / 500 = 3
NUMBER PROVIDED:	3

LOADING ZONE (SECTION 113):

MINIMUM REQUIRED:	-
NUMBER PROVIDED:	1* [3.5M x 9M]

GENERAL NOTES

1. DO NOT SCALE DRAWINGS; ONLY FIGURED DIMENSIONS ARE TO BE USED. WHERE DOUBT EXISTS; FILE REQUEST FOR INTERPRETATION AND REQUEST CLARITY.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO VERIFY DIMENSIONS ON SITE; REPORT DISCREPANCIES TO THE ARCHITECT PROMPTLY.
3. GENERAL CONTRACTOR TO TAKE INTO ACCOUNT CONSTRUCTION TOLERANCE; GENERAL CONTRACTOR TO COORDINATE THE WORK OF DIFFERENT TRADES TO COMPLY WITH DESIGN INTENT.
4. ALL WORK DESCRIBED IN THESE DRAWINGS AND SPECIFICATIONS ARE TO COMPLY WITH THE CURRENT EDITION OF THE ONTARIO BUILDING CODE (2010) INCLUDING MOST RECENT AMMENDMENTS.
5. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND ARE TO BE READ TOGETHER.

ACTUAL NORTH / project north

ONTARIO ASSOCIATION OF ARCHITECTS
TOON F. DREESSEN
LICENCE
5910
2024-10-15

ISSUE RECORD

NO.	DESCRIPTION	DATE
1	SITE PLAN APPLICATION	2024-10-15

CLIENT
MINTO COMMUNITIES
200 180 KENT STREET, OTTAWA, ON, K1P 0B6
T: 613 - 404 - 4235

DCA
A GROUP OF ARCHITECTS
201-1339 WELLINGTON ST. W OTTAWA ON K1Y 3B8
WWW.ARCHITECTSDCA.COM 613.725.2294

PROJECT TITLE
MINTO DESIGN CENTRE

DRAWING TITLE
SITE PLAN

DATE	DRAWN	JOB NO.	DRAWING NO.
JUN 2024	Author	3622	A100
SCALE As indicated	REVIEWED Checker		

ARCHITECTURAL

APPROVED UNDER SECTION 51 OF THE PLANNING ACT BY THE CITY OF OTTAWA THIS _____ DAY OF _____, 2013.

_____
JOHN L. MOSER, GENERAL MANAGER
PLANNING AND GROWTH MANAGEMENT DEPARTMENT
PLANNING AND INFRASTRUCTURE PORTFOLIO
CITY OF OTTAWA

CERTIFICATE OF REGISTRATION

PLAN 4M-_ _ _ _ _

I CERTIFY THAT THIS PLAN IS REGISTERED IN THE LAND REGISTRY OFFICE FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON NO.4 AT_____O'CLOCK ON THE _____ DAY OF _____, 2013 AND ENTERED IN THE PARCEL REGISTER FOR PROPERTY IDENTIFIER _____, AND THAT THE REQUIRED CONSENTS ARE REGISTERED AS PLAN DOCUMENT NUMBER _____.

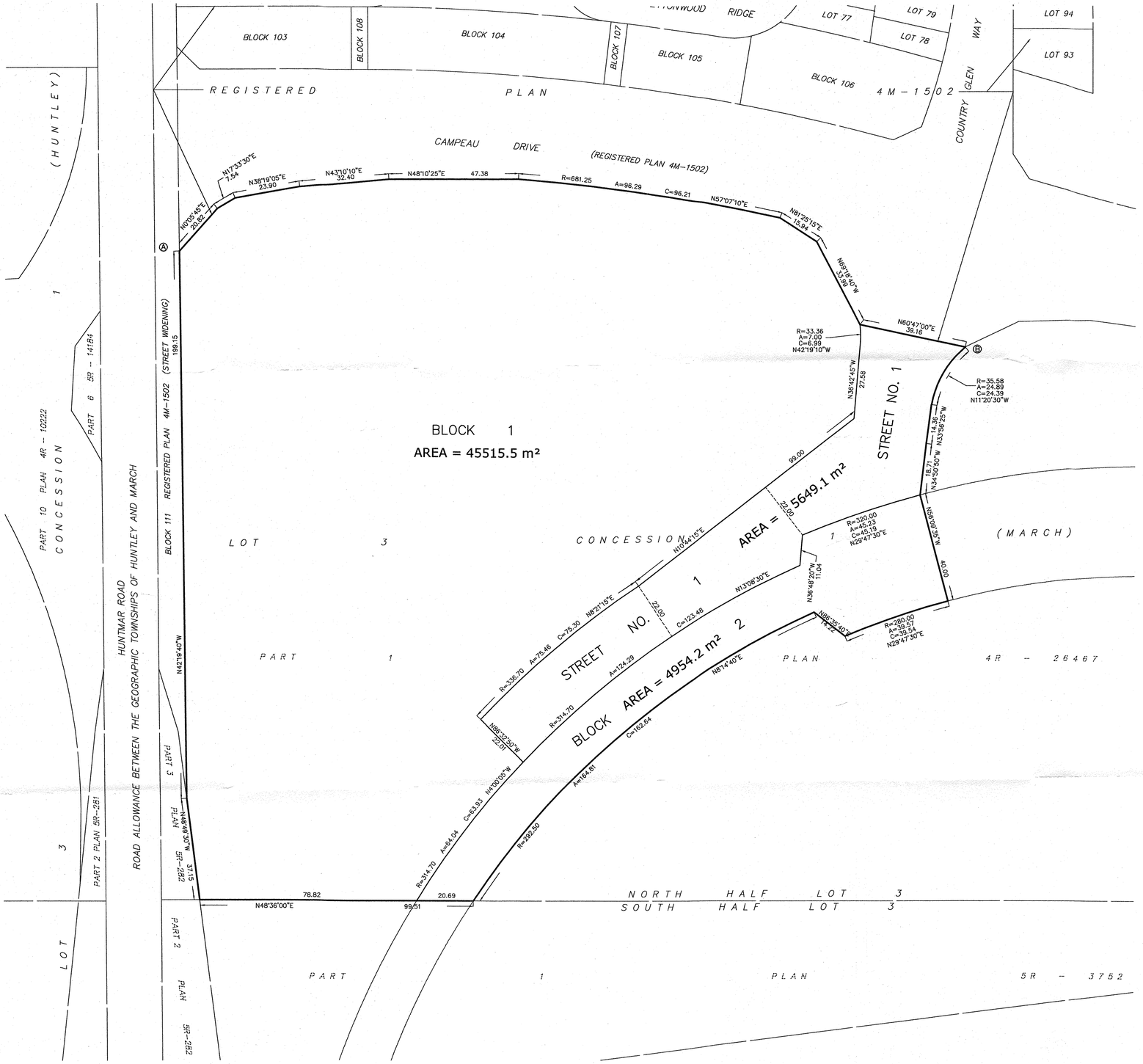
_____
REPRESENTATIVE FOR THE LAND REGISTRAR

THIS PLAN COMPRISES ALL THE LAND IDENTIFIED BY PIN XXXXX-XXXX.

PLAN OF SUBDIVISION of

PART OF LOT 3
CONCESSION 1
GEOGRAPHIC TOWNSHIP OF MARCH
CITY OF OTTAWA

Stantec Geomatics Ltd.



Scale 1 : 750

30 22.5 15 7.5 0 15 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

GRID SCALE CONVERSION

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999914.

BEARING NOTE

BEARINGS HEREON ARE GRID BEARINGS DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT - OTTAWA - (N 5036741.327, E 327757.614) AND FITZROY (N 5036741.327, E 327757.614) AND ARE REFERRED TO THE CENTRAL MERIDIAN 76° 30' WEST LONGITUDE OF THE 3° MTM ONTARIO COORDINATE SYSTEM, NAD83 (CSRS) ZONE 9.

OBSERVED REFERENCE POINTS DERIVED FROM GPS OBSERVATIONS USING THE CAN-NET VIRTUAL REFERENCE STATION NETWORK:
MTM ZONE 9, NAD83 (ORIGINAL)(CSRS)(1997.0).
COORDINATES TO URBAN ACCURACY PER SEC 14(2) OF O.REG. 216/10

POINT ID	NORTHING	EASTING
(A)	5018037.34	349095.66
(B)	5018201.04	349332.80

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 __ DAY OF _____, 2013.

_____ DATE

_____
BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT :

1. BLOCKS 1 AND 2 INCLUSIVE, THE STREET, NAMELY STREET NO. 1 HAVE BEEN LAID OUT IN ACCORDANCE WITH OUR INSTRUCTIONS.
2. THE STREET AND STREET WIDENING ARE DEDICATED AS PUBLIC HIGHWAYS.

DATED : _____

_____
XXXXXXXXXXXXXXX
(COMPANY NAME)
(TITLE)
I HAVE THE AUTHORITY
TO BIND THE CORPORATION

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	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
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
P1	"	REGISTERED PLAN
P2	"	PLAN
P3	"	PLAN
P4	"	PLAN
P5	"	PLAN

ALL SET MONUMENTS SHOWN HEREON ARE IRON BARS (IB) UNLESS OTHERWISE NOTED.

Stantec Geomatics Ltd.
Ontario Land Surveyors
Canada Lands Surveyors
1331 CLYDE AVENUE, SUITE 400, OTTAWA, ON. K2C 3G4
PHONE (613)722-4420 FAX (613)722-0789
brian.webster@stantec.com
stantec.com

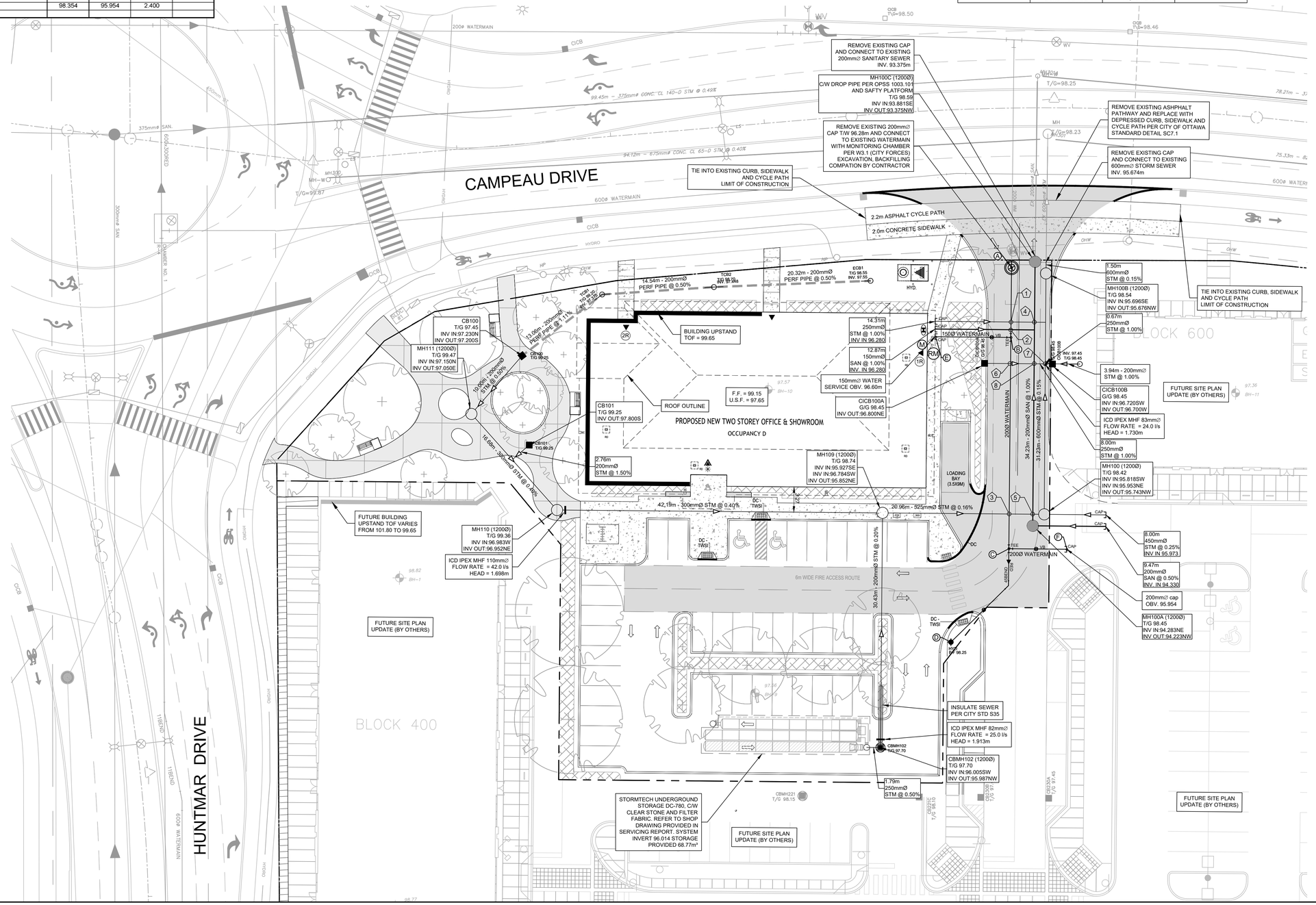
DRAWN BY:CEC	CHECKED BY: *	PM: BW	FIELD: *	PROJECT No.: 161613058-132

WATERMAIN SCHEDULE

	Station	Description	Finished Grade	Top of Watermain	Watermain Cover	As Built Watermain
A	0+000.00	MONITORING CHAMBER	98.597	96.197	2.400	
	0+006.00	-	98.566	96.166	2.400	
	0+007.00	-	98.560	95.674	2.886	
	0+008.00	-	98.555	95.678	2.877	
B	0+009.04	200x150 TEE WATER SERVICE	98.550	96.150	2.400	
	0+020.00	-	98.630	96.230	2.400	
	0+030.50	-	98.511	95.309	3.202	
	0+032.000	-	98.522	96.122	2.400	
	0+036.44	200x200 TEE	98.416	96.016	2.400	
C	0+038.05	200x150 REDUCER	98.369	95.969	2.400	
	0+041.23	45 BEND	98.282	95.882	2.400	
	0+045.70	HYDRANT VALVE	98.101	95.701	2.400	
D	0+051.68	HYDRANT	98.170	95.770	2.400	
B	0+000.00	200x150mm TEE WATER SERVICE	98.550	96.150	2.400	
	0+002.46	150 VB	98.484	96.084	2.400	
E	0+059.81	150 CAP	99.000	96.600	2.400	
C	0+000.00	200x200 TEE	98.416	96.016	2.400	
	0+003.50	50mm WATER SERVICE	98.365	95.965	2.400	
F	0+007.50	200 CAP	98.354	95.954	2.400	

Pipe Interference Table

Crossing No.	PIPE 1	PIPE 2	Clearance
1	STM Bottom 96.174	WTR Top 95.674	0.500
2	SAN Bottom 96.178	WTR Top 95.678	0.500
3	STM Bottom 95.809	WTR Top 95.309	0.500
4	STM Bottom 96.144	SAN Top 94.165	1.978
5	STM Bottom 95.804	SAN Top 94.414	1.390
6	STM Bottom 96.763	WTR Top 96.146	0.617
7	STM Bottom 96.718	STM Top 96.409	0.309
8	STM Bottom 96.732	SAN Top 94.219	2.513



CLIENT

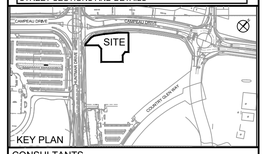
minto Communities

Arcadis Professional Services (Canada) Inc.
formerly IBI Group Professional Services (Canada) Inc

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2024-11-13
2		
3		
4		
5		

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



KEY PLAN

1:250 0 2.5 5 7.5 12.5m

CONSULTANTS

SEAL

LICENSED PROFESSIONAL ENGINEER
I.D. K. Tannoulopoulos
2024/11/13
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS

333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT

MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE

SITE SERVICING PLAN

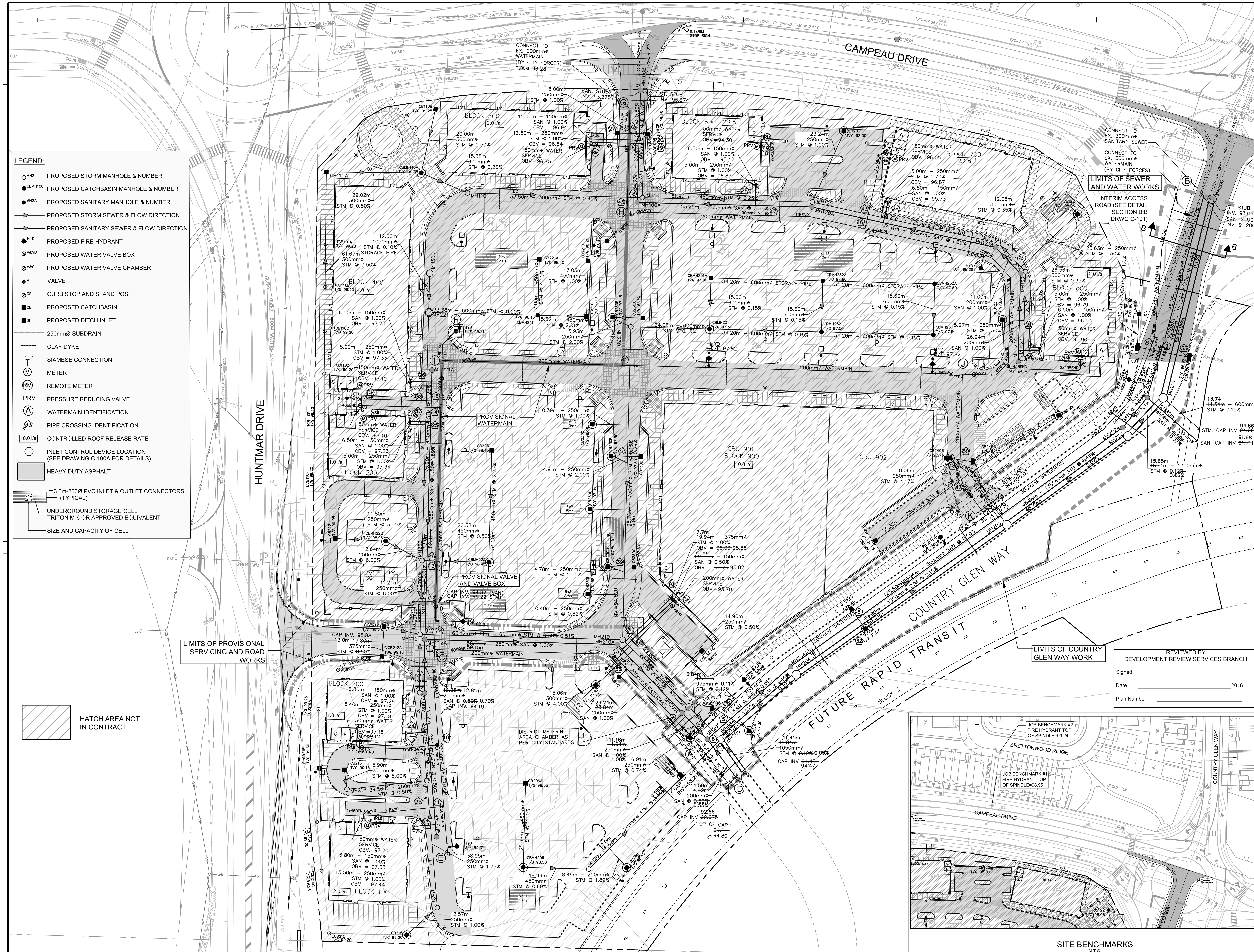
SHEET NUMBER	ISSUE
C-001	1

SCALE CHECK 1 in

File Location: J:\147391_ArcadiaComm\7.0_Production\7.03_Design\04_Civil\Sheets\C-001.dwg Last Saved: November 13, 2024, by siumad3150 Plotted: November 13, 2024 2:52:43 PM by Siuma, Don

D07-XX-XX-XXXX

XXXXX



KEY PLAN

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF __________, 20____

DERRICK MOODIE, ACTING MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	Description	Date	Checked
10	As-built	17:01:17	DPS
9	Revised as per City Comments	16:08:26	DGY
8	Revised Campeau Dr per Stantec Plans	16:08:03	DGY
7	Issued for Construction	16:07:13	DGY
6	Add Interim Access Rd.	16:05:16	DGY
5	Issued for Tender	16:04:05	DGY
4	Revised as per City Comments	14:10:02	DGY
3	Revised as per City Comments	14:08:22	DGY
2	Issued for SPA Resubmission	14.06.27	DGY
1	Issued for SPA	13.11.18	D.G.Y.

Issued for

All measurements and conditions must be checked on the work by the contractor. This drawing not to be used for construction until signed.

Date

plotted J:\35355-ArcadiaComm\5.9 Drawings\59civil\layouts\C-100.dwg Layout Name: Servicing Plan Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:1 Plotted At: 3/16/2017 11:06 AM Last Saved By: dslumo Last Saved At: Mar. 16, 17

TN PN

D. G. Yannoulopoulos

drawn by DPS	scale 1:500
checked by DGY	date NOV. 2013
printed	file 35355

Arcadia Retail Development

Kanata, Ontario

Minto Properties
200 Kent Street • Suite 180 • Ottawa, Ontario • K1P 0B6
Telephone: (613)782-3137 Fax: (613)782-5777

drawing title:

SITE SERVICING PLAN 370 HUNTMAR DRIVE OTTAWA, ON.

drawing no. C-100

IBI GROUP
333 Preston Street Tower 1, Suite 400
Ottawa, Ontario Canada K1S 5N4 Tel (613)225-1311 FAX (613)225-9868

D07-12-14-0014

File No.: PC2024-0304

August 21, 2024

Kevin Harper
Minto Communities Inc.
Via email: kharper@minto.com

Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control Application – 370 Huntmar Drive

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on August 13, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☒

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

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken.

2. In your subsequent submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

3. Please note, if your development proposal changes significantly in scope, design, or density before the next submission, you may be requested to repeat the pre-consultation process before filing an Official application.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline

the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Comments:

1. The following policies apply to the site:

    a. The site is designated Minor Corridor on Schedule B5 – Suburban (West) Transect.

    b. Huntmar Drive and Campeau Drive are both identified as Arterial Roads on Schedule C4 – Urban Road Network.

    c. The site is subject to Area-Specific Policy 2 – Kanata West, per Annex 5 – Urban and Rural aras Subject to Area-Specic Policies. Refer to Volume 2C for applicable policies.

2. It is understood that the owner no longer intends to proceed with the previously approved commercial development on the site (File No. D07-12-14-0014) has lapsed and the owner no longer intends to proceed.

    a. Please ensure this is clear on any plans submitted in support of the proposed development. The current plans showing the proposal in the context of the previously approved development may be misleading to staff, technical agencies, public, etc. in future reviews.

    b. Is there an intention to release the registered site plan agreement (Instrument No. OC1817302) on the subject site and surrounding lands?

3. Provide further details on the use(s) of the proposed building. Staff understand that there is an intention to have offices, a combined sales and design centre, as well as showroom space in the building. Zoning interpretation have confirmed that more information is required to confirm whether there is a “retail” component to the use.

4. Landscaping

    a. Please ensure that the minimum landscaping requirements identified in Section 110(1) of the Zoning By-law are met. Please note that a landscaped

buffer with a minimum width of 1.5 metres must be provided between the permitter of the parking lot and a lot line not abutting a street, per Table 110(b). It appears that there are deficiencies along the west, south and east lot line.

b. Consider opportunities for additional trees and landscaping in the development. It appears that parking is being provided above the minimum zoning requirements – consider removing excess parking spaces to meet minimum landscaping buffer requirements and allow for the introduction of additional landscaped islands within the surface parking lot. Refer to Policy 11 of Section 4.1.4 of the Official Plan for additional direction on surface parking lot design.

5. Consider opportunities to visually screen the loading dock from the sightline of the front lot line. Policy 3 of Section 4.6.5 of the Official Plan directs development along corridors shall improve the attractiveness of the realm by internalizing loading areas and visually screening surface parking.

6. Explore opportunities to provide additional bicycle parking on-site to promote active transportation.

7. Required Applications

    a. Site Plan Control (Standard) – more information on the process can be found here.

    b. If required, zoning relief can be sought through a Minor Variance or Minor Zoning By-law Amendment application.

        i. Minor Variance – more information on the process can be found here.

        ii. Zoning By-law Amendment (Minor) – more information on the process can be found here.

    c. Consent for Severance – more information on this process can be found here. Please continue to engage with Elizabeth King, Planner I (DRAW), on the proposed severance.

Feel free to contact Colette Gorni, Planner II (DR West), for follow-up questions.

Urban Design

Comments:

8. An Urban Design Brief is not required as the project ties into the larger approved Site Plan Control Application for the site.

9. Urban Design staff require an architectural package which includes a Site Plan and Building Elevations, as well as a Landscape Plan as part of the Applicant's submission.

10. Urban Design staff look forward to seeing the planting strategy and would encourage the Applicant to explore opportunities for tree planting.

Feel free to contact Kadri Nader (kadri.nader@ottawa.ca), Urban Design Planner, for follow-up questions.

Engineering

Comments:

11. Water Design

    a. A water boundary condition request should be made for this development. Please provide the following information including supporting calculations:

        i. Location of service

        ii. Type of development

        iii. Amount of fire flow required.

        iv. Average daily demand: ___ l/s.

        v. Maximum daily demand: ___l/s.

        vi. Maximum hourly daily demand: ___ l/s.

    b. A 203mm PVC watermain is available at the site propoerty line

    c. Submission to include watermain system analysis demonstrating adequate pressure as per section 4.2.2 of the Water Distribution Guidelines.

    d. 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.

    e. Any proposed emergency route (to be satisfactory to Fire Services).

12. Sanitary Design

    a. A 200mm sanitary sewer is available at the site property line

    b. A monitoring maintenance hole is required just inside the property line for the proposed development.

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

d. Demonstrate that there is adequate residual capacity in the receiving and downstream wastewater system

13. Storm Design

a. There is access to a 600mm storm sewer at the site property line

b. IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997 must be applied

c. The pre-development runoff shall be the lower of the existing coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).

d. Time of concentration: to be calculated, min Tc = 10mins

e. Design storm for receiving sewer: 5-year design storm

f. Allowable release rate: 240L/s/Ha.

g. Storm sewer outlets should not be submerged.

h. Proovide information on the monitoring manhole – should be located in an accessible location on private property near the property line (ie. Not in a parking area).

14. An MECP Environmental Compliance Approval [Private Sewage Works] will be required should the proposed storm system collect off-site drainage. An exemption to review the application under City's Transfer of Review may be granted for the proposed development provided that specific criteria are met.

15. Geotechnical

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

16. Additional Notes

a. No road moratorium that would impact the application has been identified

b. Any easement identified should be shown on all plans

c. 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.

Feel free to contact Abibatou Dieme (abibatou.dieme@ottawa.ca), Infrastructure Project Manager, for follow-up questions.

Noise

Comments:

17. Not required for sales office.

Feel free to contact Mike Giampa (mike.giampa@ottawa.ca), Transportation Project Manager, for follow-up questions.

Transportation

Comments:

18. Right-of-way protection (if required)

    a. See Schedule C16 of the Official Plan.

    b. Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

19. A TIA is not required.

Feel free to contact Mike Giampa (mike.giampa@ottawa.ca), Transportation Project Manager, for follow-up questions.

Environment

Comments:

20. There are no natural heritage features, surface water features, or species-at-risk habitat on or near the site that would trigger the need for an Environmental Impact Statement (EIS). An EIS is not required as part of this application.

21. Please consider additional tree plantings wherever possible to help meet the City's urban forest canopy goals and to help mitigation the impacts of the urban heat island effect and climate change. Please note that the City prefers that all plantings be of native and non-invasive species.

Feel free to contact Mark Elliott (mark.elliot@ottawa.ca), Environmental Planner, for follow-up questions.

Forestry

Comments:

22. Tree Conservation Report

    a. **Please confirm whether any trees >10cm in diameter exist on site or of any size in the ROW**; if yes, a Tree Conservation Report is required, in accordance with Schedule E of the Tree Protection By-law. Ownership of all trees on the subject site and with Critical Root Zones extending onto the subject site must be determined, and plans must show how they will be protected from proposed works.

    b. A permit is required prior to removal of any protected trees on site. The tree permit will be released upon site plan approval. Please contact the planner associated with the file or the Planning Forester, Nancy Young (Nancy.young@ottawa.ca) for information on obtaining the tree permit.

    c. To ensure that no harm is caused to breeding birds, tree removal and vegetation clearing should be avoided during the migratory bird season (April 15 – August 15) as specified by The City of Ottawa's Environmental Impact Study Guidelines.

23. Landscape Plan

    a. A Landscape Plan is required with this application and must address all requirements within the Landscape Plan Terms of Reference https://documents.ottawa.ca/sites/documents/files/landscape_tor_en.pdf , including the projection of canopy cover toward the target of 40%, and confirmation of adequate soil volumes to support any proposed trees.

    b. The Landscape Plan must show the soil volumes and setback distances between proposed and existing trees to buildings and underground structures to ensure that both the above and below-ground space proposed is sufficient for tree planting in the Right of Way and other landscaped areas.

    c. The Official Plan section 4.8.2, sub 3 provides the following direction related to tree planting related to site plans:

        i. Preserve and provide space for mature, healthy trees on private and public property, including the provision of adequate volumes of high-quality soil as recommended by a Landscape Architect;

ii. 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

d. It is a Best Management Practice to plant one tree for every 5 parking spaces to help address the urban heat island effect created by paved areas, and also to work toward the Official Plan target of 40% canopy cover.

e. Consider increasing the size of the landscape buffers and/or parking lot islands to create plantable spaces with sufficient soil volumes.

Feel free to contact Nancy Young (nancy,young@ottawa.ca), Planning Forester, for follow-up questions.

Parkland

Comments:

24. The amount of parkland dedication that is required is to be calculated as per the City of Ottawa Parkland Dedication By-law No 2022-280. For commercial and Industrial development, parkland dedication is required to be provided at the rate of 2% the gross land area.

25. Parks & Facilities Planning is requesting **Cash in Lieu** of for this proposal. The value of the property will be determined by market appraisal approved by the City prior to planning approval for the site plan.

26. Please provide the City with a surveyor's area certificate/memo which specifies the exact gross land area of the property parcel being developed.

27. If parkland dedication for the parcel has been satisfied previously, please provide Parks & Facilities Planning with the supporting documentation.

28. Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application and the requested supporting documentation. Additionally, if the proposed residential product or land use changes, then the parkland dedication requirement be re-evaluated accordingly.

Feel free to contact Anissa McAlpine (anissa.mcalpine@ottawa.ca), Parks Planner, for follow-up questions.

Other

29. The High-Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design. The HPDS was passed by Council on April 13, 2022.

    a. At this time, the HPDS is not in effect and Council has referred the 2023 HPDS Update Report back to staff with direction to bring forward an updated report to Committee with recommendations for revised phasing timelines, resource requirements and associated amendments to the Site Plan Control By-law by no later than Q1 2024.

    b. Please refer to the HPDS information attached and ottawa.ca/HPDS for more information.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,
Colette Gorni, Planner II (DR West)

c.c. Nishant Dave, Planner I (DR West)
Kadri Nader, Urban Design
Abibatou Dieme, Infrastructure Project Manager
Mike Giampa, Transportation Project Manager
Nancy Young, Planning Forester
Mark Elliot, Environmental Planner
Anissa McAlpine, Parks Planner
Elizabeth King, Planner I (DRAW)

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Proposed Site Plan Control Application – 370 Huntmar Drive – PC2024-0304

Legend: **R** = Required, the study or plan is required with application submission
A = Advised, the study or plan is advised to evaluate the application or satisfy a condition of approval/draft approval
1 - OPA, **2** - ZBA, **3** - Plan of Subdivision, **4** - Plan of Condominium, **5** - SPC

Core studies required for certain applications all the time (Remaining studies are site specific)

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

ENGINEERING										
R	**A**	**Study/ Plan Name**	**Description**	**When Required**					**Applicable Study Components & Other Comments**
				1	**2**	**3**	**4**	**5**	
☒	☐	1. Environmental Site Assessment (Phase 1 & Phase 2)	Ensures development only takes place on sites where the environmental conditions are suitable for the proposed use	☒	☒	☒	☒	☒	Record of Site Condition Yes ☐ No ☒
				Study Trigger Details: All cases					
☒	☐	2. Geotechnical Study	Geotechnical design requirements for the subsurface conditions	☒	☒	☒	☒	☒	
				Study Trigger Details: All cases					
☒	☐	3. Grading and Drainage Plan	Grading relationships between connecting (or abutting) properties and surface runoff control	☐	☐	☒	☐	☒	
				Study Trigger Details: All cases					
☐	☐	4. Hydrogeological and Terrain Analysis	A scientific study or evaluation that includes a description of the ground and surface hydrology, geology, terrain, affected landform and its susceptibility	☐	☐	☒	☒	☒	Reasonable Use Study Yes ☐ No ☐ Groundwater Impact Study Yes ☐ No ☐
				Study Trigger Details: When developing on private services or when urban development is in close proximity to existing private serviced development					
☐	☐	5. Noise Control Study	Potential impacts of noise on a development	☒	☒	☒	☒	☒	Vibration Study Yes ☐ No ☐
				Study Trigger Details: See Terms of Reference for full details.					

☐	☐	6. Rail Proximity Study	Development on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan, to follow rail safety and risk mitigation best practices	☐	☒	☒	☒	☒	Rail Safety Report Yes ☐ No ☐ O-Train Network Proximity Study Yes ☐ No ☐
				Study Trigger Details: Within the Development Zone of Influence for existing and future rapid transit stations and corridors, as shown on Annex 2 of the OP OR on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan					
☒	☐	7. Site Servicing Study	Provides servicing details based on proposed scale of development with an engineering overview taking into consideration surrounding developments and connections.	☐	☒	☒	☒	☒	Fluvial Geomorphological Report Yes ☐ No ☒ Assessment of Adequacy of Public Services Yes ☒ No ☐ Servicing Options Report Yes ☐ No ☒ Erosion and Sediment Control Plan / Brief Yes ☒ No ☐ Hydraulic Water Main Analysis Yes ☒ No ☐ Stormwater Management Report and Detailed Design Brief Yes ☒ No ☐
				Study Trigger Details: All cases					
☐	☐	8. Slope Stability Study	Assessment of slope stability and measures to provide safe set-back.	☐	☒	☒	☒	☒	Retrogressive Landslide Analysis Yes ☐ No ☐
				Study Trigger Details: Where the potential for Hazard Lands exists on a site.					
☐	☐	9. Transportation Impact Assessment	Identify on and off-site measures to align a development with City transportation objectives.	☐	☒	☒	☒	☒	Roadway Modification Functional Design Yes ☐ No ☐
				Study Trigger Details: If the development generates 60 person-trips or more; or if the development is located in a Location Trigger; or if the development has a Safety Trigger.					

☐	☐	10. Water Budget Assessment	Identify impact of land use changes on the hydrologic cycle and post-development mitigation targets.	☐	☒	☒	☒	☒	
				Study Trigger Details: May be required for site plan control applications for sites with private servicing and / or proximity to hydrogeologically-sensitive areas. Draft plans of subdivision are required to integrate water budget assessments into supporting stormwater management plans and analysis for the study area.					
☐	☐	11. Wellhead Protection Study	Delineate a Wellhead Protection Area (WHPA) and characterize vulnerability for new communal residential drinking water well systems, in accordance with Technical Rules under *Clean Water Act.*	☐	☒	☒	☒	☒	
				Study Trigger Details: Required for all new communal residential drinking water well systems; including new municipal wells, new private communal wells (small water works) that require a Municipal Responsibility Agreement (MRA), expansions or increased water takings from an existing municipal well or existing private communal well and new private communal wells.					

PLANNING									
R	**A**	**Study/Plan Name**	**Description**	**When Required**					**Applicable Study Components & Other Comments**
				1	**2**	**3**	**4**	**5**	
☐	☐	12. Agrology and Soil Capability Study	Confirm or recommend alterations to mapping of agricultural lands in the City.	☒	☐	☐	☐	☐	
				Study Trigger Details: For the expansion of a settlement area or identification of a new settlement area through a comprehensive review; or where it is demonstrated that the land does not meet the requirements for an Agricultural Resource Area.					
☐	☐	13. Archaeological Assessment	Discover any archaeological resources on site, evaluate cultural heritage value and conservation strategies	☒	☒	☒	☒	☒	
				Study Trigger Details: When the land has either: a known archaeological site; or the potential to have archaeological sites; or where the City's Archaeological Resource Potential Mapping Study indicates archaeological potential, outside of the historic core; or upon discovery of any archaeological resource during construction in the City's historic core area.					
☒	☐	14. Building Elevations	Visual of proposed development to understand facing of building including direction of sunlight, height, doors, and windows.	☒	☒	☐	☐	☒	
				Study Trigger Details: Site Plan: for residential buildings with 25 or more residential units; or for residential buildings with less than 25 residential units, if the units are within the Urban area or the High-performance Development Standard threshold in the rural area. Official Plan or Zoning By-law: if staff deem it necessary to determine compliance with OP policies, the Zoning By-law or City of Ottawa Urban Design Guidelines.					

☐	☐	15. Heritage Impact Assessment	Determine impacts of proposed development on cultural heritage resources.	☒	☒	☒	☒	☒	Study Trigger Details: Where development or an application under the Ontario Heritage Act is proposed on, adjacent to, across the street from or within 30 metres of a protected heritage property; or for any development adjacent to the Rideau Canal UNESCO World Heritage Site and its landscaped buffer.	Conservation Plan Yes ☐ No ☐
☐	☐	16. Heritage Act Acknowledgement Report	A submission requirement to demonstrate that the *Ontario Heritage Act* requirements have been satisfied, to ensure that multiple applications are considered currently.	☐	☒	☒	☒	☒	Study Trigger Details: Where the subject property is listed on the Heritage Register and the applicant must submit a Heritage Permit Application (designated heritage property listed on the Heritage Register) or provide notice of intent to demolish or remove a building (non-designated property listed on the Heritage Register).	Heritage Permit Application Yes ☐ No ☐ Notice of Intent to Demolish Yes ☐ No ☐
☐	☐	17. Impact Assessment Study – Mineral Aggregate	Mineral aggregate extraction activities; and to protect known high quality mineral aggregate resources from development and activities that would preclude or hinder their existence (ability to be extracted) or expansion.	☒	☒	☒	☒	☒	Study Trigger Details: New Development within 500 metres of lands within the Bedrock Overlay , or within 300 metres of lands within the Sand and Gravel Resource Area Overlay.	
☐	☐	18. Impact Assessment Study – Mining Hazards	To identify or confirm known mineral deposits or petroleum resources and significant areas of mineral potential. To protect mineral and petroleum resources from development and activities which would preclude or hinder the establishment of new operations or access to the resources.	☒	☒	☒	☒	☒	Study Trigger Details: For all applications in proximity to mining operations.	

☐	☐	19. Impact Assessment Study – Waste Disposal Sites / Former Landfill Sites	To identify or confirm known proximity of existing or former waste disposal sites. To ensure issues of public health, public safety and environmental impact are addressed.	☒	☒	☒	☒	☒	Study Trigger Details: For the establishment of any new Solid Waste Disposal Site or for a footprint expansion of an operating Solid Waste Disposal Site; or development within three kilometers of an operating or non-operating Waste Disposal Site.	
☒	☐	20. Landscape Plan	A plan to demonstrate how the canopy cover, urban design, health, and climate change objectives of Official Plan will be met through tree planting and other site design elements.	☒	☒	☒	☒	☒	Study Trigger Details: Site Plan, Plan of Subdivision, and Plan of Condominium: always required, except where it is demonstrated that the landscape component of a project is not relevant to the review of the application. A high-level conceptual Landscape Plan may be required to support Zoning By-law and Official Plan Amendment applications.	
☐	☐	21. Mature Neighbourhood Streetscape Character Analysis	In the Mature Neighbourhoods a Streetscape Character Analysis is required to determine the applicable zoning requirements.	☐	☒	☐	☐	☐	Study Trigger Details: Zoning By-law amendment application in areas covered by the Mature Neighbourhoods zoning overlay for applications of residential development of four storeys or less located in a R1, R2, R3, or R4 zone.	
☐	☐	22. Minimum Distance Separation	Provincial land use planning tool that determines setback distances between livestock barns, manure storages or anaerobic digesters and surrounding land uses, with the objective of minimizing land use conflicts and nuisance complaints related to odour.	☒	☒	☒	☒	☒	Study Trigger Details: Applications in the Rural Area, outside of a village.	

☐	☐	23. Parking Plan	A tool to assess the sufficiency of on-street parking in plans of subdivision.	☐	☐	☒	☒	☐	
				Study Trigger Details: For new or revised plans of subdivision with public streets.					
☒	☐	24. Plan of Survey	A Plan of Survey depicts legal boundaries and is a specialized map of a parcel of land and it delineates boundary locations, building locations, physical features and other items of spatial importance.	☒	☒	☒	☒	☒	
				Study Trigger Details: Required for all *Planning Act* applications.					
☐	☐	25. Plan of Subdivision	Proposed subdivision layout to be used for application approval	☐	☒	☒	☐	☐	
				Study Trigger Details: Always required with the submission of plan of subdivision application. Only required with a Zoning By-law Amendment application, where such ZBLA is in response to enable a subdivision.					
☐	☐	26. Plan of Condominium	Proposed condominium layout to be used for application approval	☐	☐	☐	☒	☐	
				Study Trigger Details: With the submission of plan of condominium application.					
☐	☐	27. Planning Rationale	Provides the planning justification in support of the *Planning Act* application and to assist staff and the public in the review of the proposal.	☒	☒	☒	☐	☐	Integrated Environmental Review Summary Yes ☐ No ☐
				Study Trigger Details: For all Official Plan amendment, Zoning By-law amendment, or plan of subdivision applications.					
☒	☐	28. Preliminary Construction Management Plan	A checklist that shows a development proposal's anticipated impacts to all modes of transportation and all elements in the right of way during construction.	☐	☐	☒	☐	☒	
				Study Trigger Details: For all Site Plan and plan of subdivision applications.					

☐	☐	29. Public Consultation Strategy	Proposal to reach and collect public input as part of development application.	☒	☒	☒	☒	☒	Study Trigger Details: Official Plan Amendment, Zoning By-law Amendment and Subdivision: Always required. Condominium: Vacant Land only Site Plan: At the discretion of the City's file lead in consultation with the Business and Technical Support Services Manager.	
☐	☐	30. Shadow Analysis	A visual model of how the proposed development will cast its shadow.	☐	☒	☐	☐	☐	Study Trigger Details: When there is an increase in height or massing proposed for a residential, commercial or office use. Two triggers: 1. Inside the Greenbelt: proposed development is over 5 storeys in height (≤15 meters). If a development proposal is 5 storeys or less, but is proposing an increase in height and/or massing and is in close proximity to a shadow sensitive area, a shadow analysis may be requested. 2. Outside the Greenbelt: proposed development is over 3 storeys in height (≤9 meters) and is in close proximity to a shadow sensitive area. Where a proposed development is not in close proximity to a shadow sensitive area (e.g. industrial development) the trigger for a shadow analysis is over 5 storeys in height (≤15 meters).	
☒	☐	31. Site Plan	A Site Plan is a visual drawing that illustrates the proposed development of a site in two dimensions.	☒	☒	☒	☒	☒	Study Trigger Details: Site Plan: All Other applications: where a layout of the	Site Plan Yes ☒ No ☐ Concept Plan Yes ☐ No ☐

				public realm, building massing, heights, densities or massing of the proposal provides changes to the planned context; sites proposing multiple land uses; sites with multiple landowners; sites with two or more buildings, on-site park dedication, and/or a new public or private street(s); sites with proposed changes to connectivity (such as active transportation networks, vehicular circulation or access to transit); sites where the development potential on adjacent properties may be impacted by or could be integrated into the proposed site.	Facility Fit Plan Yes ☐ No ☐
☐	☐	32. Urban Design Brief	Illustrate how a development proposal represents high-quality and context sensitive design that implements policies of the Official Plan, relevant secondary plans, and Council approved plans and guidelines.	☒ ☒ ☒ ☐ ☒ Study Trigger Details: For all Official Plan amendment, Zoning By-law amendment, and plan of subdivision applications. For SPC applications: proposals for residential buildings with 25 or more residential units, or for proposals for residential buildings with less than 25 residential units, if the units are within the Urban area or the High-performance Development Standard threshold in the rural area where OP Policy 11.3 (3) is relevant; for non-residential and mixed-use proposals.	
☐	☐	33. Urban Design Review Panel Report	Demonstrates that a development proposal has attended an Urban Design Review Panel formal review meeting, received, and responded to the associated recommendations, if applicable	☒ ☒ ☒ ☒ ☒ Study Trigger Details: Required for all planning act applications subject to UDRP review, in accordance with the UDRP Panel Terms of Reference.	
☐	☐	34. Wind Analysis	A visual model and a written evaluation of how a proposed development will impact pedestrian-level wind conditions.	☐ ☒ ☐ ☐ ☒ Study Trigger Details: Applications seeking an increase in height and/or massing which is either: a tall building(s), 10 storeys or more or a proposed building that is more than twice the height of	

				adjacent existing buildings and is greater than five storeys in height and is adjacent to existing or planned low rise development, open spaces, water bodies and large public amenity areas.						
☒	☐	35. Zoning Confirmation Report	The purpose of the Zoning Confirmation Report (ZCR) is to identify all zoning compliance issues, if any, at the outset of a planning application.	☐	☒	☐	☐	☒		
				Study Trigger Details: Required for all SPC and ZBLA applications.						

ENVIRONMENTAL										
R	**A**	**Study / Plan Name**	**Description**	**When Required**					**Applicable Study Components & Other Comments**
				1	**2**	**3**	**4**	**5**	
☐	☐	36. Community Energy Plan	Includes a community energy analysis, alongside mitigation measures, and other associated information. The community energy analysis refers to the overall assessment process to identify on and off-site measures to align the design of the development with City climate objectives.	☐	☐	☐	☐	☐		
				NOT IMPLEMENTED & NOT REQUIRED						
☐	☐	37. Energy Modelling Report	The Energy Modeling Report is a Site Plan Control application submission requirement to show how climate change mitigation, and energy objectives will be met through exterior building design elements.	☐	☐	☐	☐	☐		
				NOT IMPLEMENTED & NOT REQUIRED						
☐	☐	38. Environmental Impact Study	Assessment of environmental impacts of a project and documents the existing natural features, identifies the potential environmental impacts,	☒	☒	☒	☐	☒	Assessment of Landform Features Yes ☐ No ☐ Integrated Environmental Review Yes ☐ No ☐	
				Study Trigger Details: Is required when development or site alteration is proposed in or within a						

			recommends ways to avoid and reduce the negative impacts, and proposes ways to enhance natural features and functions.	specified distance of environmentally designated lands, natural heritage features, the City's Natural Heritage System, or hazardous forest types for wildland fire. The EIS Decision Tool (Appendix 2 of the Environmental Impact Study Guidelines) provides a checklist of the natural heritage features and adjacent areas within which an EIS is required to support development applications under the *Planning Act.*	Protocol for Wildlife Protection during Construction Yes ☐ No ☐ Significant Woodlands Guidelines for Identification, Evaluation, and Impact Assessment Yes ☐ No ☐
☐	☐	39. Environmental Management Plan	A comprehensive environmental planning document that identifies, evaluates, and mitigates the potential impacts of proposed development on the natural environment and its ecological functions at local planning stage.	☒ ☐ ☐ ☐ ☐ Study Trigger Details: Official Plan amendments for local plans (area-specific policy or secondary plan, where: there is significant change in the conditions upon which the original study was based; there are proposed changes to planned infrastructure needed to service a subdivision that would have a significant impact on the infrastructure needs of another subdivision within the EMP study area, or the applicable Class Environmental Assessment approval has expired.	
☐	☐	40. High-performance Development Standard	A collection of voluntary and required standards that raise performance of new building projects to achieve sustainable and resilient design	☐ ☐ ☐ ☐ ☐ NOT IMPLEMENTED & NOT REQUIRED	
☐	☒	41. Tree Conservation Report	Demonstrates how tree cover will be retained and protected on the site, including mature trees, stands of trees, and hedgerows.	☐ ☐ ☒ ☒ ☒ Study Trigger Details: Where there is a tree of 10 centimeters in diameter or greater on the site and/or if there is a tree on an adjacent site that has a Critical Root Zone (CRZ) extending onto the development site.	

Appendix B

Watermain Boundary Conditions

Water Demand Calculations

FUS Calculations

Water Model Results

Boundary Conditions
370 Huntmar Drive

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	2	0.03
Maximum Daily Demand	2	0.04
Peak Hour	4	0.07
Fire Flow Demand #1	5,000	83.33
Fire Flow Demand #2	6,000	100.00

Location

Results

Connection Option 1 – Campeau Dr.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.7	88.8
Peak Hour	156.5	82.8
Max Day plus Fire Flow #1	155.4	81.2
Max Day plus Fire Flow #2	154.6	80.1

[1] Ground Elevation = 127.5 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:
    - 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.
    - 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.
2. Demands for proposed Connection 1 at existing stub off Campeau Drive were assigned to upstream junction at Campeau Drive off the public looped watermains. The engineer must calculate headloss off the dead-end main.

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.

ARCADIS IBI GROUP
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Ottawa, Ontario K1S 5N4 Canada
arcadis.com

WATERMAIN DEMAND CALCULATION SHEET

Arcadia Commercial Site | Minto
147391 -6.0 | Rev #0 | 2024-11-13
Prepared By: MP | Checked By: RM

NODE	RESIDENTIAL				NON-RESIDENTIAL (ICI)			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/min)
	Towns	Medium Density		POPULATION	INDUST. (ha)	COMM. (ha)	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
Arcadia						0.090			0.03	0.03		0.04	0.04		0.07	0.07	5,000
TOTAL						**0.09**				**0.03**			**0.04**			**0.07**	

ASSUMPTIONS

POPULATION DENSITY

Townhouse	2.7 persons/unit
Medium Density (Stacks)	1.8 persons/unit

WATER DEMAND RATES

Residential	280 l/cap/day
Commercial Shopping Center	2,500 L/(1000m2)/day

PEAKING FACTORS FOR POP. OF 501 TO 3000

Maximum Daily	
Residential	2.5 x avg. day
Commercial	1.5 x avg. day
Maximum Hourly	
Residential	2.2 x max. day
Commercial	1.8 x max. day

FIRE DEMANDS

Single Family	10,000 l/min (166.7 l/s)
Semi Detached & Townhouse	12,000 l/min (200.0 l/s)
Medium Density	15,000 l/min (250.0 l/s)

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Ottawa, Ontario K1S 5N4 Canada
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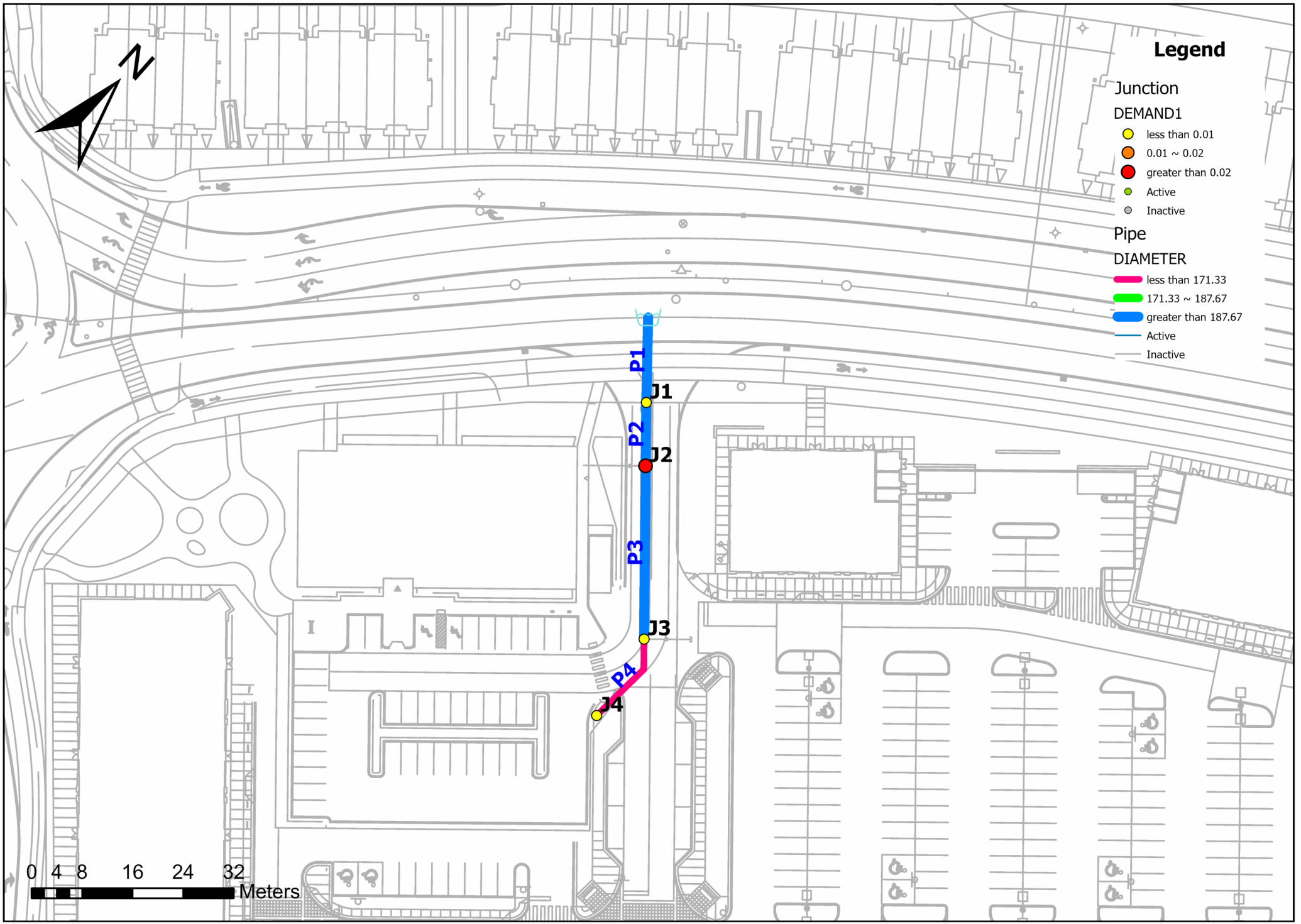
FIRE UNDERWRITERS SURVEY
Arcadia Commercial Site | Minto
147391-6.0 | Rev #0 | 2024-11-13
Prepared By: MP | Checked By: RM

STEP	Contents	Description		Adjustment Factor		Result	
1	Floor Area	Arcadia Commercial Site				997	m2
	Total Storey					2	storey
	Total Effective Floor Area					**1994**	m2
2	**Type of Construction**	**Type V** Wood Frame	1.5	Noncombustible Construction	0.8		
		Type III Ordinary Construction	1.0				
		Type II Noncombustible Construction	0.8				
		Type I Fire Resistive Construction	0.6				
3	**Required Fire Flow**	RFF = 220C√A				**8000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents	-25%	Limited Combustible Contents	-15%	-1200	L/min
		Limited Combustible Contents	-15%				
		Combustible Contents	0%				
		Free Burning Contents	15%				
		Rapid Burning Contents	25%				
	Fire Flow					**6800**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13	-30%	Yes		0	L/min
		Standard Water Supply for both the system and Fire Department Hose Lines	-10%	No	-30%	-2040	L/min
		Fully Supervised System	-10%	No			
	Fire Flow					**-2040**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	East (Future)	Separation (m)	24.07	Without unprotected opening	0%	0	L/min
		Length X Height Factor (m.storeys)	20				
		Construction Type	Type II				
	South-West (Future)	Separation (m)	10.6	Without unprotected opening	6%	408	L/min
		Length X Height Factor (m.storeys)	64				
		Construction Type	Type II				
	Fire Flow					**408**	L/min
7	**Total Required Fire Flow**					**5168**	
		Rounded to Nearest 1000 L/min				**5000**	L/min

Notes 1. Fire flow calculation are based on Fire Underwriters Survey version 2020.

Junctions and Pipes Layout



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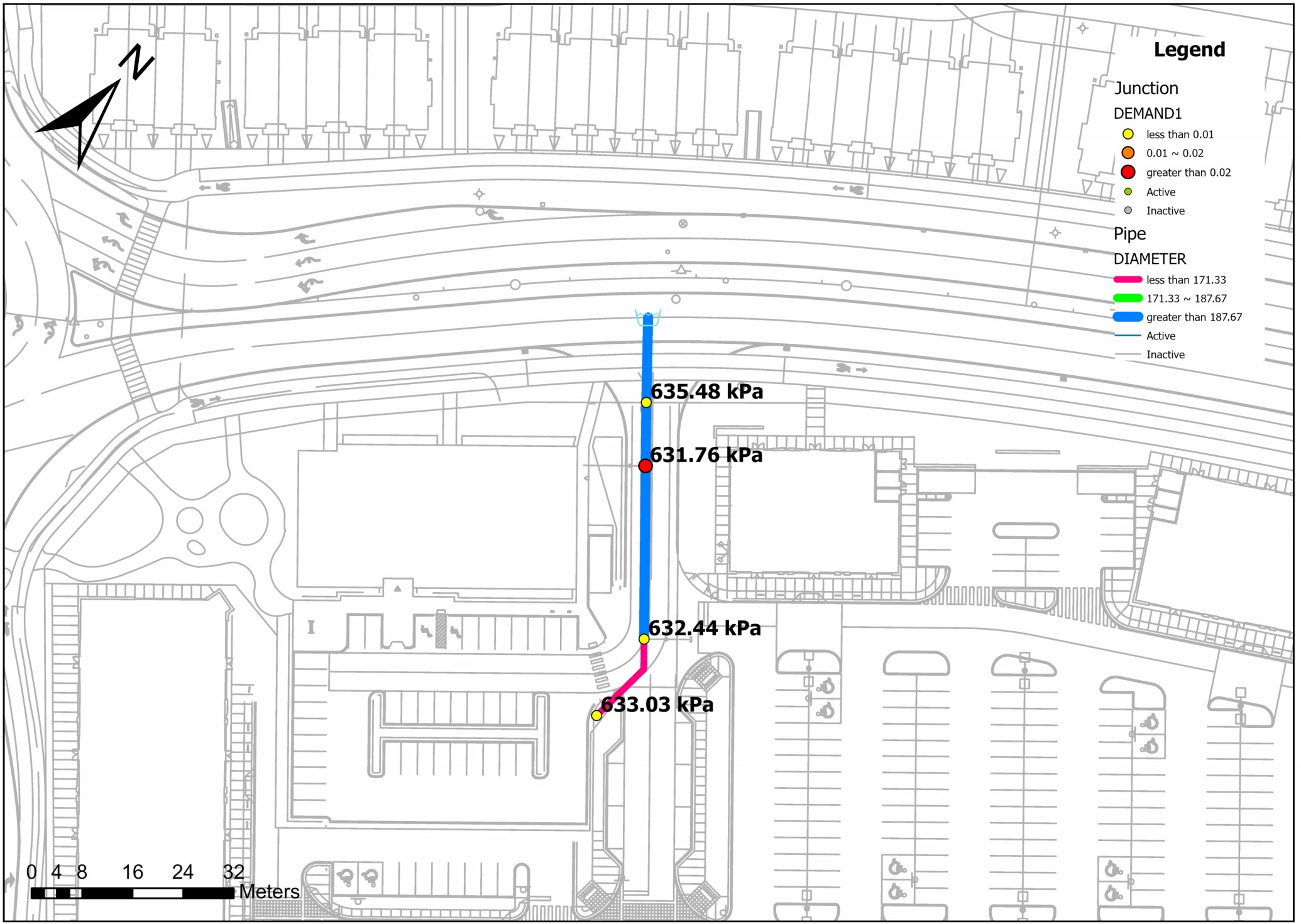
Average Day Pressures



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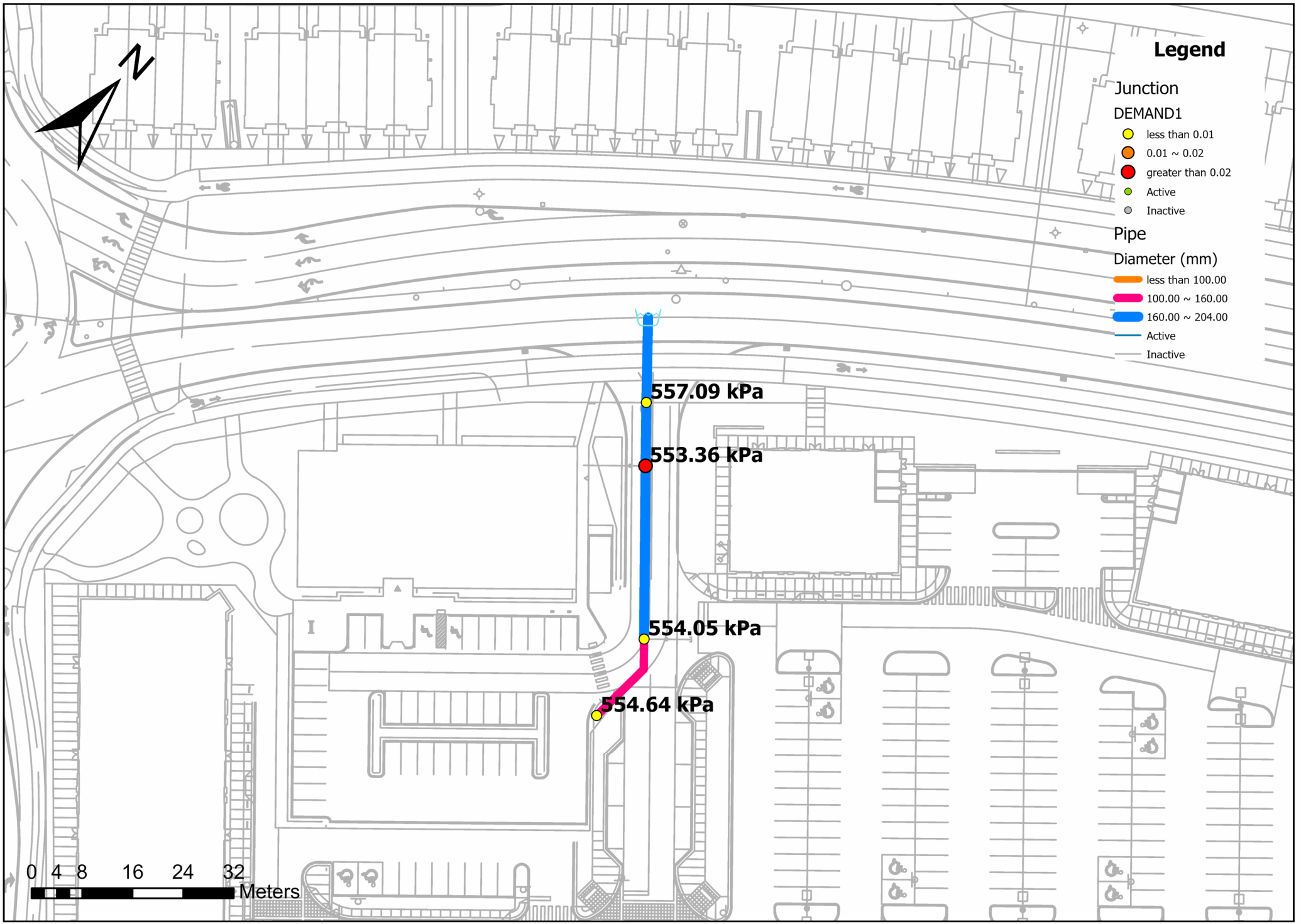
Average Day Pressures

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	J1	0.00	98.25	160.70	611.96
2	☐	J2	0.03	98.63	160.70	608.24
3	☐	J3	0.00	98.56	160.70	608.92
4	☐	J4	0.00	98.50	160.70	609.51

Peak Hour Pressures



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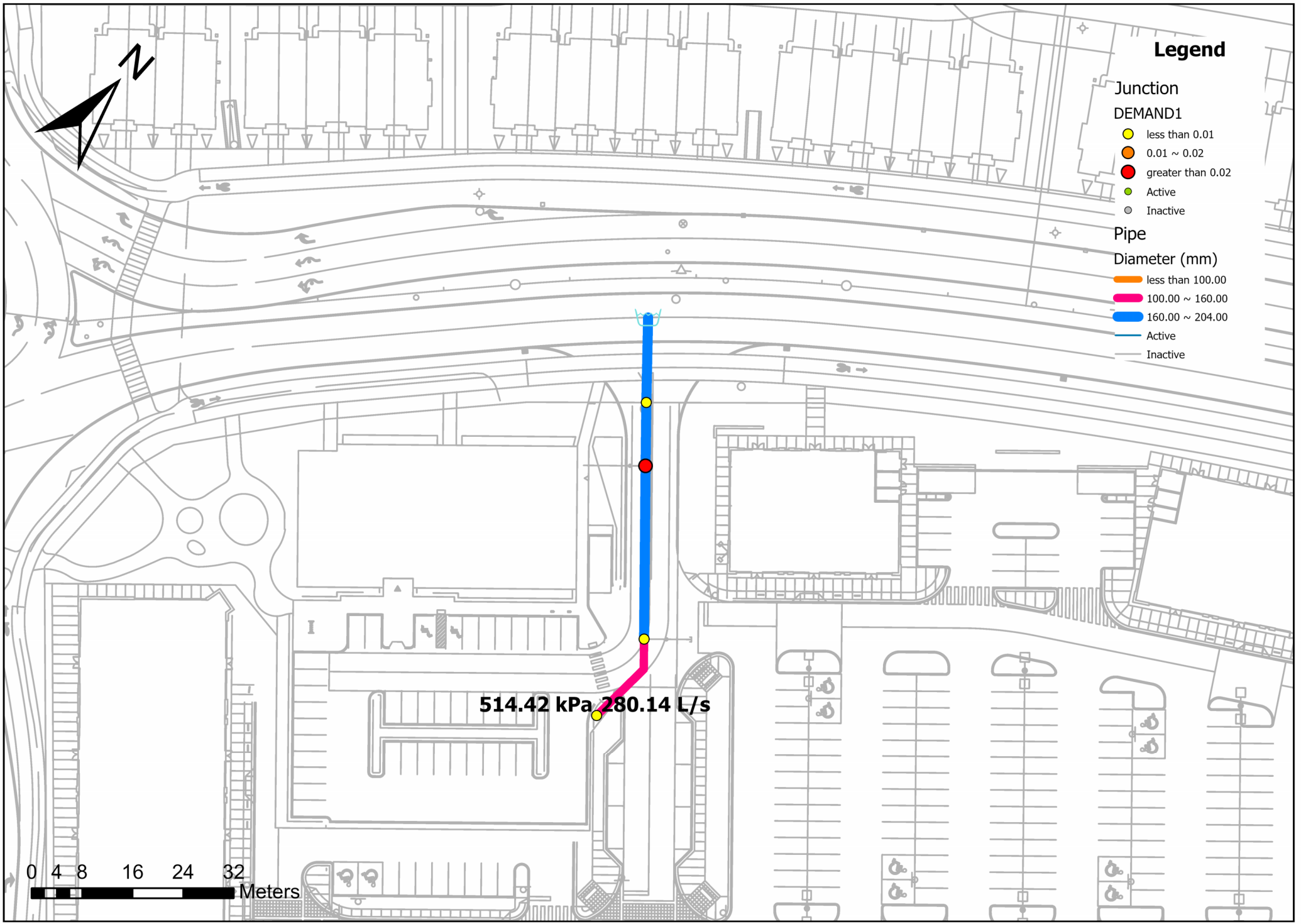
Peak Hour Pressures

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	J1	0.00	98.25	155.10	557.09
2	☐	J2	0.07	98.63	155.10	553.36
3	☐	J3	0.00	98.56	155.10	554.05
4	☐	J4	0.00	98.50	155.10	554.64

Max Day + Fire Flow



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Max Day + Fire Flow

		ID	Static Demand (L/s)	Static Pressure (kPa)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (kPa)	Hydrant Available Flow (L/s)	Hydrant Pressure at Available Flow (kPa)
1	☐	J4	0.00	557.58	155.40	83.33	514.42	280.14	149.96

Appendix C

Sanitary Sewer Design Sheet

Sanitary Drainage Area Plan 147391-C-400

Sanitary Sewer Design Sheet 35355

Sanitary Drainage Area Plan 35355-C-501

Sanitary Sewer Design Sheet – Kanata West Servicibility Study

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SANITARY SEWER DESIGN SHEET

147391 - Arcadia Commercial Site
CITY OF OTTAWA
Minto Communities

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH		SF	TH/SD	APT	OTHER		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL				IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
														IND	CUM	IND	CUM	IND	CUM														
Arcadia Commercial Site																																	
SITE PLAN		CAP	MH100A							0.0	0.0	3.80	0.00		0.00	1.24	1.24		0.00	1.50	0.60	1.24	1.24	0.41		0.00	1.01	24.19	9.47	200	0.50	0.746	23.18	95.82%
	BLK500	BLDG SVC	SEWER							0.0	0.0	3.80	0.00		0.00	0.10	1.34		0.00	1.50	0.65	0.10	1.34	0.44		0.00	1.09	19.46	12.87	150	1.50	1.067	18.37	94.38%
		MH100A	MH100C							0.0	0.0	3.80	0.00		0.00	0.45	1.79		0.00	1.50	0.87	0.45	1.79	0.59		0.00	1.46	34.22	34.23	200	1.00	1.055	32.76	95.73%
																														200			

Design Parameters:

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

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

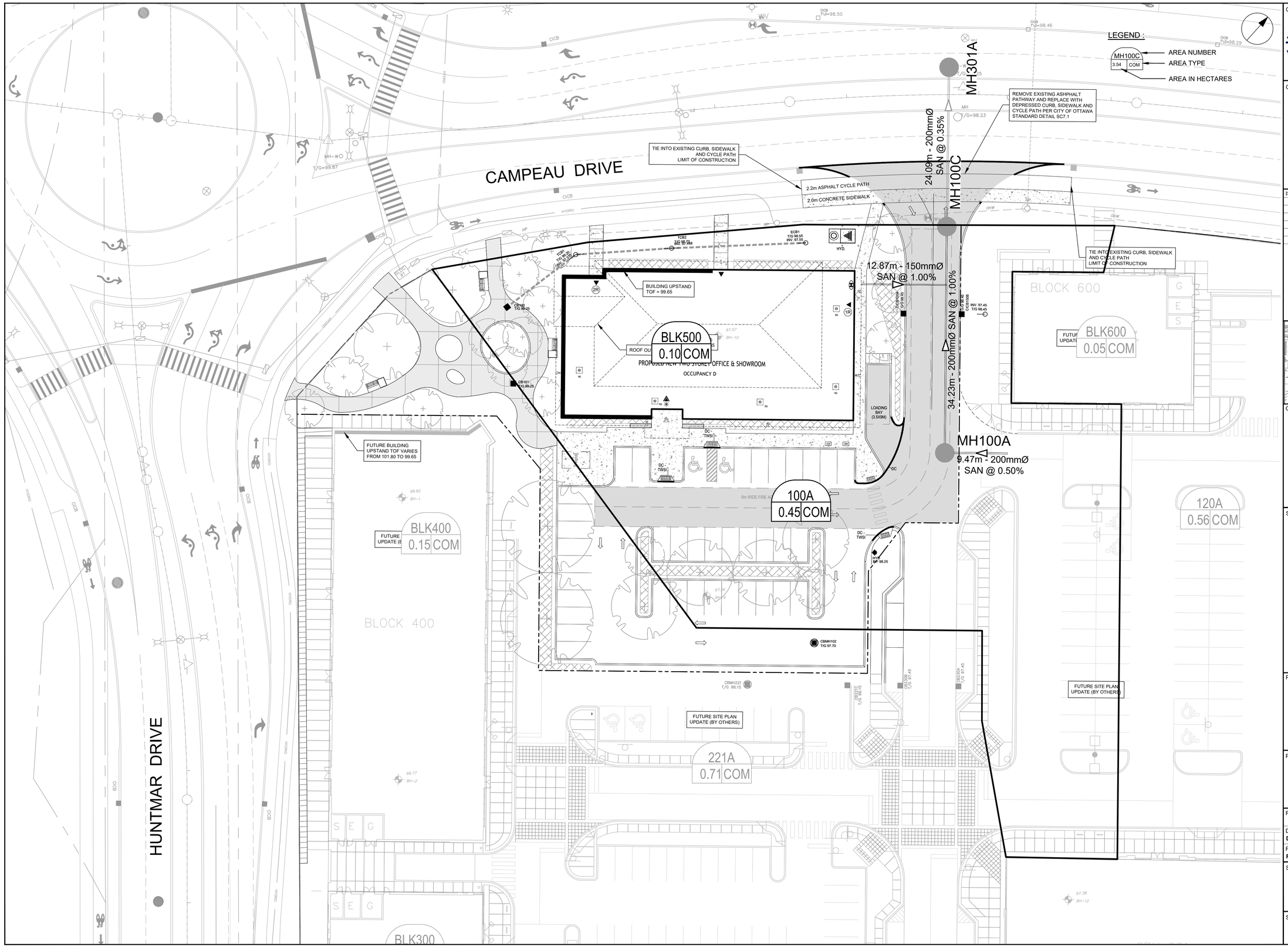
Designed:

Checked:

Dwg. Reference: 147391-400

No.	Revision	Date
1.	Submission No. 1 for City Review	2024-11-13

File Reference: 147391-6.04.04
Date: 2024-11-13
Sheet No: 1 of 1



CLIENT

minto Communities

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2024-11-13
2		
3		
4		
5		

CONSULTANTS

1:250 0 2.5 7.5 12.5m

SEAL

LICENCED PROFESSIONAL ENGINEER
L.I.D. AS. Tannoulopoulos R.
2024/11/13
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS

333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT

MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE

SANITARY DRAINAGE AREA PLAN

SHEET NUMBER	ISSUE
C-400	1

SCALE CHECK: 1 in

File Location: J:\147391_ArcadisComm\7.0_Production\7.03_Design\04_Civil\Sheets\C-400.dwg Last Saved: November 6, 2024, by siumad3150 Plotted: November 13, 2024 2:55:00 PM by Siuma, Don

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

SANITARY SEWER DESIGN SHEET

PROJECT: NAME OF PROJECT
LOCATION: CITY OF OTTAWA
CLIENT: NAME OF CLIENT

LOCATION				RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE		TOTAL	PROPOSED SEWER DESIGN							
				UNIT TYPES				AREA	POPULATION		PEAK FACTOR	PEAK FLOW	AREA (Ha)						PEAK FLOW	AREA (Ha)		FLOW	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	VELOCITY (actual)	AVAILABLE CAPACITY	
													INSTITUTIONAL		COMMERCIAL		INDUSTRIAL													
STREET	AREA ID	FROM MH	TO MH	SF	SD	TH	APT	(Ha)	IND	CUM		(L/s)	IND	CUM	IND	CUM	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	(m/s)	L/s	(%)
	BLK800	BLK800A	MAIN						0.0	0.0	4.00	0.00		0.00	0.06	0.06		0.00	0.05	0.06	0.06	0.02	0.07	15.89	6.50	150	1.00	0.871		15.82	99.57
	123A	MH123A	MH122A						0.0	0.0	4.00	0.00		0.00	0.29	0.35		0.00	0.30	0.29	0.35	0.10	0.40	34.22	26.94	200	1.00	1.055		33.81	98.83
	122A	MH122A	MH121A						0.0	0.0	4.00	0.00		0.00	0.09	0.44		0.00	0.38	0.09	0.44	0.12	0.51	34.22	11.00	200	1.00	1.055		33.71	98.52
	BLK700	BLK700A	MAIN						0.0	0.0	4.00	0.00		0.00	0.10	0.10		0.00	0.09	0.10	0.10	0.03	0.11	15.89	6.50	150	1.00	0.871		15.77	99.28
	121A	MH121A	MH120A						0.0	0.0	4.00	0.00		0.00	0.08	0.62		0.00	0.54	0.08	0.62	0.17	0.71	34.22	57.61	200	1.00	1.055		33.50	97.92
	BLK600	BLK600A	MAIN						0.0	0.0	4.00	0.00		0.00	0.06	0.06		0.00	0.05	0.06	0.06	0.02	0.07	15.89	6.50	150	1.00	0.871		15.82	99.57
	120A	MH120A	MH100A						0.0	0.0	4.00	0.00		0.00	0.56	1.24		0.00	1.08	0.56	1.24	0.35	1.42	24.19	53.29	200	0.50	0.746		22.77	94.12
	BLK500	BLK500A	MAIN						0.0	0.0	4.00	0.00		0.00	0.09	0.09		0.00	0.08	0.09	0.09	0.03	0.10	15.89	15.00	150	1.00	0.871		15.78	99.35
	100A	MH100A	MH100C						0.0	0.0	4.00	0.00		0.00	0.46	1.79		0.00	1.55	0.46	1.79	0.50	2.06	24.19	34.23	200	0.50	0.746		22.14	91.51
		MH100C	*EXMH301A*						0.0	0.0					0.00	1.79			1.55	0.00	1.79	0.50	2.06	*24.19*	*23.50*	*200*	*0.50*	*0.746*		*22.14*	*91.51*
	BLK400	BLK400A	MAIN						0.0	0.0	4.00	0.00		0.00	0.15	0.15		0.00	0.13	0.15	0.15	0.04	0.17	15.89	6.50	150	1.00	0.871		15.72	98.92
	BLK300	BLK300A	MAIN						0.0	0.0	4.00	0.00		0.00	0.05	0.05		0.00	0.04	0.05	0.05	0.01	0.06	15.89	6.50	150	1.00	0.871		15.83	99.64
	221A	MH221A	MH212A						0.0	0.0	4.00	0.00		0.00	0.71	0.91		0.00	0.79	0.71	0.91	0.25	1.04	75.98	82.40	250	1.50	1.500	0.522	74.94	98.63
	BLK100	BLK100A	MAIN						0.0	0.0	4.00	0.00		0.00	0.06	0.06		0.00	0.05	0.06	0.06	0.02	0.07	15.89	6.85	150	1.00	0.871		15.82	99.57
	BLK200	BLK200A	MAIN						0.0	0.0	4.00	0.00		0.00	0.05	0.05		0.00	0.04	0.05	0.05	0.01	0.06	15.89	6.75	150	1.00	0.871		15.83	99.64
	214A	MH214A	MH213A						0.0	0.0	4.00	0.00		0.00	0.42	0.53		0.00	0.46	0.42	0.53	0.15	0.61	43.87	44.12	250	0.50	0.866	0.301	43.26	98.61
	213A	MH213A	MH212A						0.0	0.0	4.00	0.00		0.00	0.13	0.66		0.00	0.57	0.13	0.66	0.18	0.76	43.87	16.38	250	0.50	0.866	0.325	43.11	98.27
	212A	MH212A	MH210A						0.0	0.0	4.00	0.00		0.00	0.31	1.88		0.00	1.63	0.31	1.88	0.53	2.16	62.04	58.88	250	1.00	1.224	0.551	59.88	96.52
	BLK900	BLK900A	MAIN						0.0	0.0	4.00	0.00		0.00	0.47	0.47		0.00	0.41	0.47	0.47	0.13	0.54	11.23	22.08	150	0.50	0.616		10.69	95.20
	210A	MH210A	MH205C						0.0	0.0	4.00	0.00		0.00	0.32	2.67		0.00	2.32	0.32	2.67	0.75	3.07	62.04	28.84	250	1.00	1.224	0.633	58.97	95.06
		MH205C	MH205A						0.0	0.0	4.00	0.00		0.00	0.19	2.86		0.00	2.48	0.19	2.86	0.80	3.28	62.04	11.04	250	1.00	1.224	0.633	58.76	94.71
External South mixed	EXT 2	STUB	MH205A						0.0	0.0	4.00	0.00		0.00		0.00		0.00	3.01	2.82	2.82	0.79	3.80	24.19	14.51	200	0.50	0.746		20.39	84.29
Country Glen Way	205A	MH205A	MH204A						0.0	0.0	4.00	0.00		0.00	0.08	2.94		0.00	5.56	0.08	5.76	1.61	7.18	71.33	33.73	300	0.50	0.978	0.620	64.16	89.94
Country Glen Way	204A	MH204A	MH202A						0.0	0.0	4.00	0.00		0.00	0.32	3.26		0.00	5.84	0.32	6.08	1.70	7.54	71.33	125.25	300	0.50	0.978	0.628	63.79	89.43
Country Glen Way	202A	MH202A	MH201A						0.0	0.0	4.00	0.00		0.00	0.04	3.30		0.00	5.87	0.04	6.12	1.71	7.59	71.33	11.74	300	0.50	0.978	0.633	63.75	89.36
External East Mix	EXT-1	Stub	MH201A						0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.79	0.74	0.74	0.21	1.00	24.19	20.27	200	0.50	0.746		23.19	95.87
Country Glen Way	201A	MH201A	MH200A						0.0	0.0	4.00	0.00		0.00	0.10	3.40		0.00	6.75	0.10	6.96	1.95	8.70	71.33	18.49	300	0.50	0.978	0.659	62.63	87.80
Country Glen Way	200A	MH200A	*EX CAP*						0.0	0.0	4.00	0.00		0.00		3.40		0.00	6.75	0.00	6.96	1.95	8.70	58.82	45.35	300	0.34	0.806	0.630	50.12	85.20
Campeau Dr		*EX CAP*	*EXMH303A*						0.0	0.0			*0.00*	*0.00*	*0.00*	*3.40*	*0.00*	*0.00*	*6.75*	*0.00*	*6.96*	*1.95*	*8.70*	*58.82*	*20.50*	*300*	*0.34*	*0.806*	*0.630*	*50.12*	*85.20*

Design Parameters:

Residential			ICI Areas			
						Peak Factor
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	50,000	L/Ha/day	1.5
APT	1.8	p/p/u	COM	50,000	L/Ha/day	1.5
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart
				17000	L/Ha/day	

Notes:

1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 350 L/day 300 L/day
3. Infiltration allowance: 0.28 L/s/Ha 0.4 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+P^0.5))
   where P = population in thousands

Designed: RM

Checked: DY

Dwg. Reference: 12345-501

No.	Revision	Date
1.	Issued for SPA	2013-11-15
2.	Revised as per City Comments	2014-06-24
3.	Revised as per City Comments	2014-08-22
4.	Revised as per City Comments	2014-10-02

File Reference:	Date:	Sheet No:
12345.5.7.1	2013-11-15	1 of 1

AREA TO CAMPEAU SANITARY SYSTEM

CAMPEAU DRIVE

HUNTMAR DRIVE

COUNTRY GLEN WAY

FUTURE RAPID TRANSIT

AREA TO COUNTRY GLEN WAY SANITARY SYSTEM

BLOCK 500 — BLK500 — 0.09 COM

BLOCK 600 — BLK600 — 0.06 COM

BLOCK 700 — BLK700 — 0.10 COM

BLOCK 800 — BLK800 — 0.06 COM

BLOCK 300 — BLK300 — 0.05 COM

BLOCK 200 — BLK200 — 0.05 COM

BLOCK 100 — BLK100 — 0.06 COM

CRU 901 BLOCK 900 — BLK900 — 0.47 COM

CRU 902

100A — 0.46 COM

120A — 0.56 COM

121A — 0.08 COM

122A — 0.09 COM

123A — 0.29 COM

201A — 0.10 COM

202A — 0.04 COM

204A — 0.32 COM

205A — 0.08 COM

205C — 0.19 COM

210A — 0.32 COM

212A — 0.31 COM

213A — 0.13 COM

214A — 0.42 COM

221A — 0.71 COM

EXT-1 — 0.74 MIX — 1.0 L/s

EXT-2 — 2.82 MIX — 3.8 L/s

EXT-3 — 1.11 FLOOD

CAP INV 94.664

CAP INV 91.711

CAP INV 94.451

CONNECT TO EX. 300mmø SANITARY SEWER

ST. STUB INV. 93.645 SAN= STUB INV. 91.200m

TEMPORARY SWALE

1.0m GRAVEL SHOULDER

INTERIM STOP SIGN

MH100A — MH120A — MH121A — MH123A — MH202A — MH204A — MH205A — MH205C — MH210A — MH212A — MH214A — MH221A

53.29m – 200mmø SAN @ 0.50%

57.61m – 200mmø SAN @ 1.00%

11.00m 200mmø SAN @ 1.00%

26.94m 200mmø SAN @ 1.00%

58.88m – 250mmø SAN @ 1.00%

82.40m – 250mmø SAN @ 1.50%

44.12m – 250mmø SAN @ 0.50%

16.38m 250mmø SAN @ 0.50%

28.84m 250mmø SAN @ 1.00%

11.04m 250mmø SAN @ 1.00%

14.11m 200mmø SAN @ 1.50%

137.5m – 300mmø SAN @ 0.50%

158.26m – 300mmø SAN @ 0.50%

84.49m – 300mmø SAN @ 0.50%

EXTERNAL DRAINAGE AREA

LEGEND:

121A 0.57 COM — AREA IDENTIFICATION / TYPE / AREA IN HECTARES

DRAINAGE AREA LIMITS

SANITARY MANHOLE & NUMBER

SANITARY SEWER & FLOW DIRECTION

REVIEWED BY DEVELOPMENT REVIEW SERVICES BRANCH

Signed _____

Date _____ 2016

Plan Number _____

KEY PLAN

SITE — CAMPEAU — HWY 417 — CYCLONE TAYLOR — HUNTMAR — FRANK FINEGAN

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

DERRICK MOODIE, ACTING MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	Description	Date	Checked
5	Revised as per City Comments	16:08:26	DGY
4	Revised as per City Comments	14:10:02	DGY
3	Revised as per City Comments	14:08:22	DGY
2	Issued for SPA Resubmission	14.06.27	DGY
1	Issued for SPA	13.11.18	DGY

Issued for

All measurements and conditions must be checked on the work by the contractor. This drawing not to be used for construction until signed.

Date

plotted J:\35355-ArcadiaComm\5.0 Drawings\59civil\Layouts\C-501.dwg Layout Name: Sanitary Drainage Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:1 Plotted At: 9/1/2016 10:57 AM Last Saved By: dslurna Last Saved At: Sep. 1, 16

TN PN

2016/08/26

drawn by DPS	scale 1:500
checked by DGY	date NOV. 2013
printed	file 35355

Arcadia Retail Development

Kanata, Ontario

Minto Properties

200 Kent Street • Suite 180 • Ottawa, Ontario • K1P 0B6
Telephone: (613)782-3137 Fax: (613)782-5777

drawing title:
SANITARY DRAINAGE AREA PLAN
370 HUNTMAR DRIVE
OTTAWA, ON.

IBI GROUP

drawing no. C-501

333 Preston Street Tower 1, Suite 400
Ottawa, Ontario Canada K1S 5N4 Tel (613)225-1311 FAX (613)225-9868

D07-12-14-0014

SANITARY SEWER DESIGN SHEET
PROJECT : Kanata West Servicibility Study
LOCATION : CITY OF OTTAWA

PROJECT: 3598-LD-03
DATE: April 2006
DESIGN: JM
FILE: 3598LD.sewers.XLS

MODEL 1 ULTIMATE (population based criteria..ICI simultaneous peaking)

LOCATION				TOTAL AREA	RESIDENTIAL							EMPLOYMENT/RETAIL/BUSINESS PARK/OPEN SPACES						INFILTRATION			PEAK FLOW	TOTAL FLOW	PROPOSED SEWER					HARMON PF	ACTUAL q/Q	va/Vf	ACTUAL VELOCITY
																PEAK FLOW							CAPACITY	VELOCITY (full)	LGTH.	PIPE	GRADE	AVAIL. CAP.				
STREET	FROM MH	TO MH			APPLIC AREA	UNIT/Ha	TOTAL UNITS	POPULATION INDIV	POPULATION ACCUM	PEAK FACTOR	PEAK FLOW	APPLIC AREA	ACCUM AREA	TOTAL AREA	FLOW RATE	INDIV	ACCUM	TOTAL	AREA (Ha) INDIV	AREA (Ha) CUMUL	TOTAL CUMUL	FLOW (l/s)	(l/s)	l/s	m/s	(m)	(mm)	%	(%)				(m/s)
				(Ha)	(Ha)						(l/s)	(Ha)	(Ha)	(Ha)	(l/Ha/d)	(l/s)	(l/s)	(l/s)														
Campeau Drive Trunk Sewer	1	2	Area 1 (FBP)	38.11								38.11	38.11		35000	23.16	23.16		38.11	38.11												
			Area 2 (FBP)	27.29								27.29	65.40		35000	16.58	39.74		27.29	65.40												
			Area 3 Ext Employment	14.05								14.05	79.45		50000	12.20	51.94		14.05	79.45												
			Area 4 HP Employment	10.93								10.93	90.38	90.38	50000	9.49	61.42	61.42	10.93	90.38	90.38	25.31	86.73	283.79	1.27	525.0	525	0.40	69.44%		0.308	0.730	0.927
	2	3	Area 5 Residential	29.19	29.19	19	555	1664	1664	3.65	24.58			98.83					29.19	29.19										3.65			
			Area 9 Ext Employment	8.45							24.58	8.45	8.45		50000	7.34	7.34	68.76	8.45	128.01	128.02	35.85	129.18	286.61	0.98	700.0	600	0.20	54.93%		0.451	0.830	0.815
	14	3	Area 6/8 Ext Employment	16.65								16.65	16.65		50000	14.45	14.45		16.65	16.65												
			Area 7 HP Employment	5.48								5.48	22.13	22.13	50000	4.76	19.21	19.21	5.48	22.13	22.13	6.20	25.41	148.74	0.91	910.0	450	0.25	82.92%		0.171	0.630	0.571
	3	4						1664	3.65	24.58		0.00	0.00	120.96		0.00	0.00	87.97	27.86	27.86	27.86	7.80	31.36	148.74	0.91	750.0	450	0.25	78.92%	3.65	0.394	0.790	0.839
	4A	4	Area 10 Residential	27.86	27.86	19	529	1588	1588	3.66	23.55								4.13	4.13	182.14	51.00	188.58	392.29	1.06	450.0	675	0.20	51.93%	3.68	0.211	0.680	0.598
	4	5	14 Mixed Use	4.13	1.76	50	88	263	3515	3.38	48.17	2.37	2.37	123.33	35000	1.44	1.44	89.41												3.38	0.481	0.840	0.692
	Queensway	5	Area 13 Community Retail	6.35								6.35	6.35	6.35	35000	3.86	3.86	3.86	6.35													
			Area 11/12 Mixed Use	11.80	5.02	50	251	752	752	3.88	11.81	6.79	13.14	13.14	35000	4.12	7.98	7.98	11.80	18.15	18.15	5.08	34.88	43.88	0.87	420.0	250	0.50	43.31%	3.86	0.567	0.860	0.762
	5	5A	Area 15 Community Retail	3.88				0	4267	3.31	57.19	3.88			35000	2.36			3.88											3.31			
First Line Road Sewer			Area 44	25.54							57.19	25.54	29.42	165.89	35000	15.52	17.88	115.27	25.54	29.42	229.71	64.32	236.77	519.43	1.14	300.0	750	0.20	54.42%		0.456	0.830	0.945
				229.71							57.19							115.27				64.32	236.77						3.23			
Signature Ridge		5A	Area 100 Residential	90.20	90.20	19	1714	5141	5141	3.23	67.35	0.00																				
Signature Ridge		5A	Area 100 Non-Residential	4.88							67.35	4.88	4.88	4.88	50000	4.24	4.24	4.24	95.08	95.08	95.08	26.62	98.21									
Interstitial Lands & Broughton/Richardson		5A																					65.00								
Total To SRPS	**5A**	**SRPS**		**324.79**	**154.02**		**3136**		**9409**		**124.54**	**170.77**						**119.51**			**324.79**	**90.94**	**399.98**	**580.53**	**1.27**	**30.0**	**750**	**0.25**	**31.10%**	**2.98**	**0.689**	**0.940**	**1.197**
Palladium Drive Trunk Sewer	6	7	Area 32 (FBP)	57.03								57.03	57.03		50000	49.51	49.51		57.03	57.03												
			Area 32A Park	8.34								8.34	65.37		0	0.00	49.51		8.34	65.37												
			Area 33/34 Ext Employment	54.85								54.85	120.22	120.22	50000	47.61	97.12	97.12	54.85	120.22	120.22												
	7	8	Area 37 Mixed Use	36.70	15.60	50	780	2340	2340	3.53	33.47	21.10	21.10	141.32	50000	18.32	18.32	115.44	36.70	36.70	156.92	43.94	192.85	455.83	1.23	925.0	675	0.27	57.69%	3.53	0.423	0.810	1.000
				156.92	15.60		780		2340		33.47	141.32						115.44	156.92		156.92	43.94	192.85						3.53			
Corel Centre Etc. (Existing Sewer) *		16	Area 35 HP Employment	6.05								6.05	6.05		30000	3.15	3.15		6.05			30.00										
		16	Area 36 (Corel Centre)																													
		16	Area 38 Exten Employment	20.15								20.15	26.20	26.20	14400	5.04	8.19	8.19	20.15	26.20	26.20	7.34	45.52			*Existing*						
First Line Road Sewer	15	16	Area 40 Employment	14.59								14.59	14.59		35000	8.87	8.87		14.59	14.59												
			Area 41 Employment	11.97								11.97	26.56		35000	7.27	16.14		11.97	26.56												
			Area 42 Employment	20.66								20.66	47.22		35000	12.55	28.69		20.66	47.22												
			Area 43 Employment	28.89								28.89	76.11	76.11	35000	17.55	46.25	46.25	28.89	76.11	76.11	21.31	67.56	224.35	1.00	525.0	525	0.25	69.89%		0.301	0.730	0.733
Carp River Trunk	16	8	Nothing To Add	102.31	15.60		780		2340	3.53	33.47	102.31	102.31	102.31	0	0.00	54.44	54.44	0.00	102.31	102.31	28.65	113.08	286.61	0.98	400.0	600	0.20	60.54%	3.53	0.395	0.780	0.776
Carp River Trunk	8	10A	Nothing To Add	259.23	15.60		780		2340		33.47	0.00	0.00	243.63		0.00	0.00	169.87	0.00	139.01	259.23	109.92	305.93	579.95	1.05	550.0	825	0.15	47.25%	3.53	0.526	0.860	0.904
																														3.72			
Marie Grove Road Trunk Sewer	9	10	Area 18/19 Exist. Residential	23.34	23.34	19	443	1330	1330										23.34	23.34										3.03	0.327	0.740	1.027
			Area 22/16/27 Residential	79.32	79.32	30	2380	7139	8469	3.03	103.82								79.32	102.66	102.66	28.74	132.56	405.11	1.39	775.0	600	0.40	67.28%				
																														3.20			
Hazeldean/Huntmar Trunk Sewer	11	12	Area 16/20 Residential	99.01	99.01	19	1881	5644	5644	3.20	73.06								99.01	99.01												
			Area 16/20 Commercial	33.50								33.50	33.50	33.50	50000	29.08	29.08	29.08	33.50	132.51												
			Area 16/20 Open Space	14.13								14.13							14.13	146.64												
			Area 17 Ex. Commercial	3.44							73.06	3.44	36.94	36.94	35000	2.09	31.17	31.17	3.44	150.08	150.08	42.02	146.26	554.82	1.50	775.0	675	0.40	73.64%		0.264	0.700	1.051
	12	10	Area 21 Exist. Employment	10.89								10.89	10.89	10.89	50000	9.45	9.45		10.89	10.89												
			Area 19A Exist Residential	6.63	6.63	19	126	378									9.45		6.63	17.52												
			Area 23/24 Community Retail	17.61								17.61	28.50	28.50	35000	10.70	20.15	51.32	17.61	35.13												
			Area 28/30 Residential	27.10	27.10	30	813	2439	8460	3.03	103.72	0.00	0.00	65.44				51.32	27.10	62.23	212.31	59.45	214.49	519.43	1.14	950.0	750	0.20	58.71%	3.03	0.413	0.800	0.911
												12.15	12.15	77.59	35000	7.38	7.38	58.71	21.13												
Marie Grove Road Trunk Sewer	10	10A	Area 39 Mixed Use	21.13	8.98	50	449	1347										58.71	15.00	36.13	351.10	98.31	368.56	669.89	1.21	1000.0	825	0.20	44.98%	2.66	0.550	0.870	1.066
			Area 29 Residential	15.00	15.00	30	450	1350	19627	2.66	211.54								20.24													
Carp River Trunk Sewer	13	10A	Area 25 Community Retail	20.24								20.24	20.24	20.24	35000	12.30	12.30	12.30	38.72	58.96	58.96	16.51	76.61	320.17	1.10	1000.0	600	0.25	76.07%	3.38	0.239	0.680	0.746
			Area 31 residential	38.72	38.72	30	1162	3485	3485	3.39	47.80							12.30	0.75	0.75	0.75	0.21	0.86	36.69	0.72	100.0	250	0.35	97.65%		0.023	0.340	0.246
				0.75								0.75	0.75	0.75	50000	0.65	0.65	0.65													
		10A	Area 31A (PBP)																													
																		241.53			670.04	224.95	759.29	1273.71	1.43	30.0	1050	0.20	40.39%	2.55	0.598	0.900	1.283
Pumping Station 2 to KWPS	**10A**	**KWPS**		**670.04**	**313.70**		**8484**		**25451**		**292.82**	**356.34**																				
																														2.41			
STUDY TOTALS				994.83	467.72		11620		34860			527.11																				

Average Daily Per capita Flow Rate = 350 l/cap/d
Infiltration Allowance Flow Rate = 0.28 l/sec/Ha
Residential Peaking Factor = 1+(14/(4+(P^0.5))), P=Pop. in 1000's, Max of 4
Population density per unit = 3.00
Peaking Factor Employment/Retail/Business Park = 1.50
Mixed Uses Assumes: 15% Community Retail, 42.5% Business Park and 42.5% Residential

Revision No. 1: April 01, 2005
Revision No. 2: April 11, 2005
Revision No. 3: April 21, 2005
Revision No. 4: June 07, 2005
Revision No. 5: August 10, 2005
Revision No. 6: Oct. 14, 2005
Revision No. 7: Nov. 10, 2005
Revision No. 8: Nov. 11, 2005
Revision No. 9: Apr. 19, 2006

FCCL/IBI
Stantec

FIG. 4.2-1

SANITARY SEWER DESIGN SHEET
PROJECT : Kanata West Servicibility Stury
LOCATION : CITY OF OTTAWA

PROJECT: 3598-LD-03
DATE: Apr 2005
DESIGN: JIM
FILE: 3598LD.sewers.XLS

PHASE 1 SIGNATURE RIDGE (population based criteria..ICI simultaneous peaking)

LOCATION				TOTAL AREA	RESIDENTIAL							EMPLOYMENT/RETAIL/BUSINESS PARK/OPEN SPACES							INFILTRATION				TOTAL FLOW	PROPOSED SEWER					
STREET	FROM MH	TO MH			APPLIC AREA	UNIT/Ha	TOTAL UNITS	POPULATION INDIV	POPULATION ACCUM	PEAK FACTOR	PEAK FLOW	APPLIC AREA	ACCUM AREA	TOTAL AREA	FLOW RATE	PEAK FLOW INDIV	PEAK FLOW ACCUM	PEAK FLOW TOTAL	AREA (Ha) INDIV	AREA (Ha) CUMUL	AREA (Ha) TOTAL CUMUL	PEAK FLOW		CAPACITY	VELOCITY (full)	LGTH.	PIPE	GRADE	AVAIL. CAP.
				(Ha)	(Ha)						(l/s)	(Ha)	(Ha)	(Ha)	(l/Ha/d)	(l/s)	(l/s)	(l/s)				(l/s)	(l/s)	l/s	m/s	(m)	(mm)	%	(%)
Campeau Drive Trunk Sewer	1	2	Area 1 (PBP)	0.00								0.00	0.00		35000	0.00	0.00		0.00	0.00								
			Area 2 (PBP)	0.00								0.00	0.00		35000	0.00	0.00		0.00	0.00								
			Area 3 Ext Employment	0.00								0.00	0.00		50000	0.00	0.00		0.00	0.00								
			Area 4 HP Employment	0.00								0.00	0.00	0.00	50000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	283.79	1.27	500.0	525	0.40	100.00%
	2	3	Area 5 Residential	29.19	29.19	19	555	1664	1664	3.65	24.58			0.00				0.00	29.19	29.19								
			Area 9 Ext Employment	0.00							24.58	0.00	0.00		50000	0.00	0.00	0.00	0.00	0.00	0.00	29.19	8.17	32.75	286.61	0.98	700.0	600	0.20	88.57%
	14	3	Area 6/8 Ext Employment	0.00								0.00	0.00	0.00	50000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
			Area 7 HP Employment	0.00								0.00	0.00	0.00	50000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.74	0.91	920.0	450	0.25	100.00%
	3	4							1664	3.65	24.58	0.00	0.00	0.00			0.00	0.00	0.00	0.00	0.00	29.19	8.17	32.75	200.67	0.90	150.0	675	0.20	83.68%
	4A	4	Area 10 Residential	27.86	27.86	19	529	1588	1588	3.66	23.55								27.86	27.86	27.86	7.80	31.36	34.00	0.67	750.0	450	0.25	7.76%
	4	5	14 Mixed Use	4.13	1.76	50	88	263	3515	3.38	48.17	2.37	2.37	123.33	35000	1.44	1.44	1.44	4.13	4.13	61.18	17.13	66.74	200.67	0.90	600.0	750	0.20	66.74%
Corel Centre Etc. (Existing Sewer)		15	Area 35 HP Employment	6.05								6.05	6.05		30000	3.15	3.15		6.05										
			Area 36 (Corel Centre)																			30.00							
			Area 38 Exten Employment	20.15								20.15	26.20	26.20	14400	5.04	8.19	8.19	20.15	26.20	26.20	7.34	45.52				*Existing*		
First Line Road Sewer		15	Area 40 Employment	14.59								14.59	14.59		35000	8.87	8.87		14.59	14.59								
			Area 41 Employment	11.97								11.97	26.56		35000	7.27	16.14		11.97	26.56								
			Area 42 Employment	20.66								20.66	47.22		35000	12.55	28.69		20.66	47.22								
			Area 43 Employment	28.89								28.89	76.11	76.11	35000	17.55	46.25	46.25	28.89	76.11	76.11	21.31	67.56	*100.21*	*0.88*	*694.0*	*375*	*0.30*	*32.59%*
Totals South Of Queensway To SRPS	15	5A		102.31	0.00		0		0		0.00	102.31						54.44	102.31		102.31	58.65	113.08	203.90	1.24	230.0	450	0.47	44.54%
	Queensway	5	Area 13 Community Retail	6.35								6.35	108.66		35000	3.86	58.29		6.35	6.35									
			Area 11/12 Mixed Use	11.80	5.02	50	251	752	752	3.88	11.81	6.79	115.45	115.45	35000	4.12	62.42	62.42	11.80	18.15	120.46	63.73	137.96	*203.90*	*1.24*	*420.0*	*450*	*0.47*	*32.34%*
	5	5A	Area 15 Community Retail	3.88								3.88	119.33		35000	2.36	64.77		3.88	124.34									
			Area 44	25.54							59.98	25.54	144.87	268.20	35000	15.52	81.73	81.73	25.54	149.88	211.06	89.10	230.81	*519.43*	*1.14*	*300.0*	*750*	*0.20*	*55.56%*
				149.88																		63.73	63.73						
Heritage Hills		5A	Area 100 Residential	90.20	90.20	19	1714	5141	5141	3.23	67.35	0.00							90.20										
Heritage Hills		5A	Area 100 Non-Residential	4.88							67.35	4.88	4.88	4.88	50000	4.24	4.24	4.24	4.88	95.08	95.08	26.62	98.21						
Broughton-Richardson / Interatitial		5A																					65.00						
Total To SRPS	**5A**	**SRPS**		**306.14**	**154.03**		**3136**		**9409**		**127.33**	**152.12**						**85.97**			**306.14**	**115.72**	**394.02**	**625.68**	**1.37**	**30.0**	**750**	**0.29**	**37.03%**

Average Daily Per capita Flow Rate = 350 l/cap/d
Infiltration Allowance Flow Rate = 0.28 l/sec/Ha
Residential Peaking Factor = 1+(14/(4+(P^0.5))), P=Pop. in 1000's, Max of 4
Population density per unit = 3.00
P. F. For Employment/Retail/Business Park = 1.50
Mixed Uses Assumes: 15% Community Retail, 42.5% Business Park and 42.5% Residential

Note: Sewer from node 5 to SRPS is existing and is to be replaced.

Revision No. 1: April 11, 2005
Revision No. 2: April 20, 2005
Revision No. 3: June 07, 2005
Revision No. 4: Oct. 14, 2005
Revision No. 5: Feb. 15, 2006

Stantec CCL/IBI

FIG. 4.2-2

Appendix D

Storm Sewer Design Sheet

Storm Drainage Area Plan 147391-C-500

Ponding Plan 147391-C-600

Storm Water Management Sheet

Orifice Sizing Calculations

Overflow Depth Calculations

Runoff Coefficient Calculations

Stormtech Chamber Specifications

Watts Adjustable Flow Control for Roof Drains

Storm Sewer Design Sheet 35355

Storm Drainage Area Plan 35355-C-500

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STORM SEWER DESIGN SHEET

147391 - Arcadia Commercial Site
CITY OF OTTAWA
Minto Properties

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW														SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.40	C= 0.50	C= 0.55	C= 0.57	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 (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW IND	FIXED FLOW CUM	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
4816 Bank Street																																					
SITE PLAN	110	MH111	MH110					0.12						0.18	0.18	10.00	0.32	10.32	76.81	104.19	122.14	178.56	14.09	19.12	22.41	32.76	0.00	0.00	14.09	63.80	16.68	300			0.40	0.874	49.71	77.91%
		MH110	MH109											0.00	0.18	10.32	0.80	11.12	75.61	102.54	120.20	175.70	13.87	18.81	22.05	32.24	0.00	0.00	13.87	63.80	42.19	300			0.40	0.874	49.93	78.26%
		CBMH102	MH109									0.24		0.57	0.57	10.00	0.63	10.63	76.81	104.19	122.14	178.56	43.56	59.09	69.27	101.26	0.00	0.00	43.56	133.02	30.43	450			0.20	0.810	89.46	67.25%
	102	MH109	MH100											0.00	0.75	11.12	0.43	11.56	72.75	98.62	115.58	168.91	54.61	74.02	86.75	126.79	0.00	0.00	54.61	179.46	20.96	525			0.16	0.803	124.86	69.57%
		CAP	MH100											0.00	0.00	10.00	0.15	10.15	76.81	104.19	122.14	178.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.72	8.00	450			0.25	0.906	148.72	100.00%
		BLDG	SEWER											0.00	0.00	10.00	0.19	10.19	76.81	104.19	122.14	178.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.04	14.31	250			1.00	1.224	62.04	100.00%
		MH100	MH100B											0.00	0.75	11.56	0.61	12.17	71.30	96.63	113.24	165.48	53.52	72.53	84.99	124.21	0.00	0.00	53.52	248.09	31.23	600			0.15	0.850	194.57	78.43%
	100A, 100B	MH100B	EX CAP					0.02	0.02					0.06	0.81	12.17	0.03	12.20	69.37	93.98	110.11	160.89	56.39	76.39	89.51	130.79	0.00	0.00	56.39	248.09	1.50	600			0.15	0.850	191.70	77.27%
																															600					

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

Notes:
1. Mannings coefficient (n) = 0.013

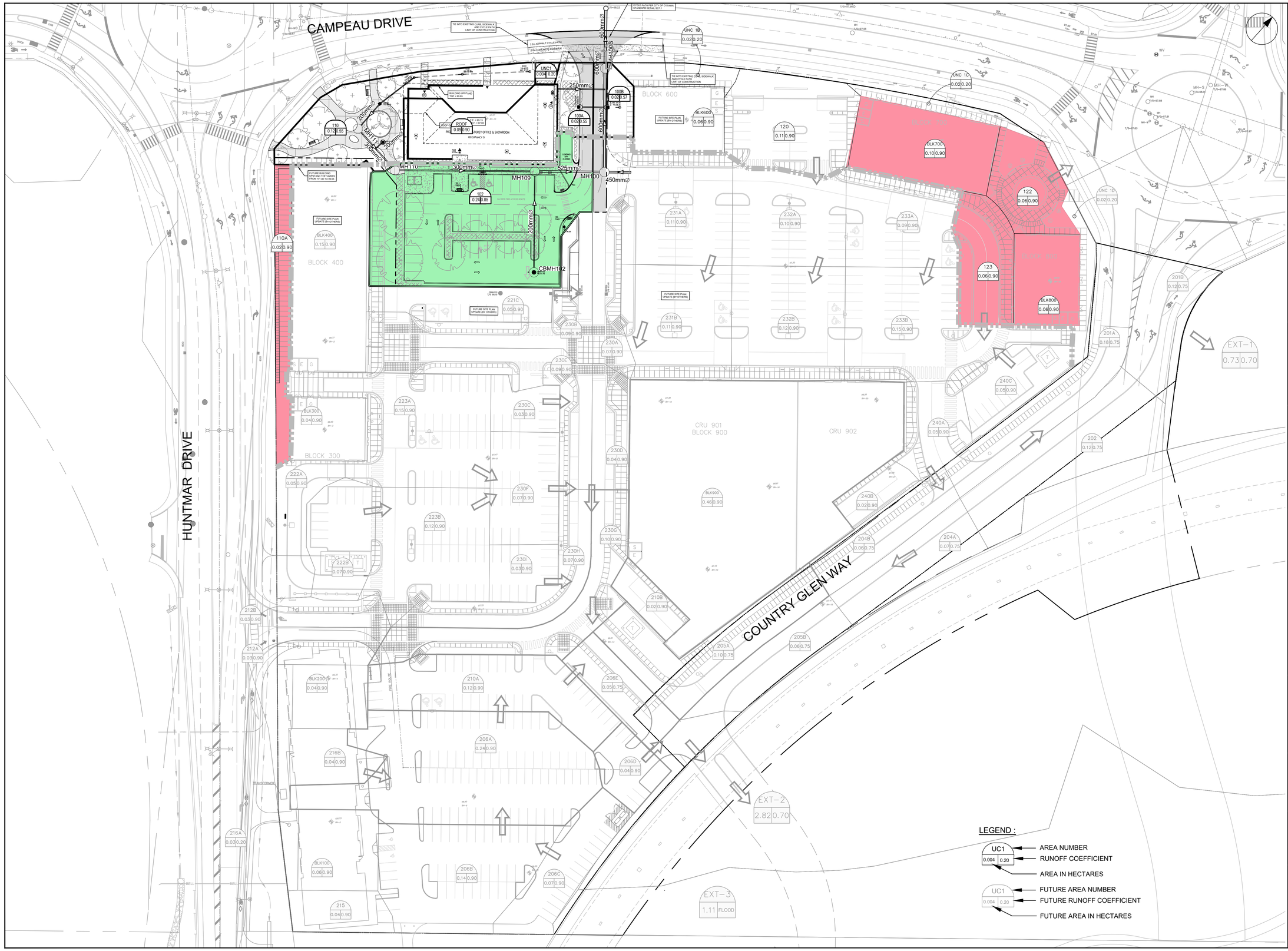
Designed:

Checked:

Dwg. Reference: 147391 - 500

No.	Revision	Date
1.	Submission No. 1 for City Review	2024-11-13

File Reference: 147391-6.04.04
Date: 2024-11-13
Sheet No: 1 of 1



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ISSUES

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2		
3		
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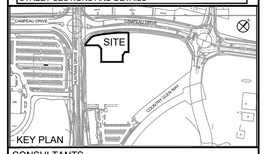
SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



CONSULTANTS

1:500 0 5 15 25m

SEAL

LICENCED PROFESSIONAL ENGINEER
L.D. 45. Yannoulopoulos
2024/11/13
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS

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tel 613 225 1311
www.arcadis.com

PROJECT
MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE
STORM DRAINAGE AREA PLAN

SHEET NUMBER	ISSUE
C-500	1

SCALE CHECK 1 in

XXXXX 12mm

D07-XX-XX-XXXX

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LEGEND :

UC1 — AREA NUMBER
0.004 | 0.20 — RUNOFF COEFFICIENT; AREA IN HECTARES

UC1 — FUTURE AREA NUMBER
0.004 | 0.20 — FUTURE RUNOFF COEFFICIENT; FUTURE AREA IN HECTARES

CAMPEAU DRIVE

HUNTMAR DRIVE

TIE INTO EXISTING CURB, SIDEWALK AND CYCLE PATH LIMIT OF CONSTRUCTION

2.2m ASPHALT CYCLE PATH
2.0m CONCRETE SIDEWALK

REMOVE EXISTING ASHPHALT PATHWAY AND REPLACE WITH DEPRESSED CURB, SIDEWALK AND CYCLE PATH PER CITY OF OTTAWA STANDARD DETAIL SC7.1

TIE INTO EXISTING CURB, SIDEWALK AND CYCLE PATH LIMIT OF CONSTRUCTION

BUILDING UPSTAND TOF = 99.65

FUTURE BUILDING UPSTAND TOF VARIES FROM 101.80 TO 99.65

ROOF
0.09 | 0.90
F.F. = 99.15
S.F. = 97.65
PROPOSED 2 STOREY OFFICE & SHOWROOM
OCCUPANCY D

LOADING BAY (3.5X9M)

6m WIDE FIRE ACCESS ROUTE

UNC1
0.004 | 0.20

100A
0.02 | 0.55

100B
0.02 | 0.57

110
0.12 | 0.55

102
0.24 | 0.85

UNC 1B
0.02 | 0.20

110A
0.02 | 0.90

BLK400
0.15 | 0.90

BLOCK 400

BLOCK 600

BLK600
0.06 | 0.90

231A
0.11 | 0.90

231B
0.11 | 0.90

230A
0.07 | 0.90

230B
0.09 | 0.90

221C
0.05 | 0.90

MH301 — MH — T/G=98.23
MH — T/G=98.25
MH100 — INV. 97.45 — T/G 98.45
MH109
MH110
MH111
CBMH102 — T/G 97.70
CBMH221 — T/G 98.15
CBMH230A — T/G 97.45
CBMH230B — T/G 97.45
ECB1 — T/G 98.55 — INV. 97.55
CBMH2 — T/G 99.25 — INV. 97.55
CBMH1 — T/G 99.25 — INV. 97.55
CBMH3 — T/G 99.25
MH — W — T/G=99.87
MH — W — T/G=98.25
CICB — T/G=98.50
CICB — T/G=98.46
CICB — T/G=98.29

600mmØ
250mmØ
200mmØ
300mmØ
525mmØ
450mmØ

FUTURE SITE PLAN UPDATE (BY OTHERS)

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

KEY PLAN

1:250 0 2.5 7.5 12.5m

CLIENT

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ISSUES

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CONSULTANTS

SEAL

LICENCED PROFESSIONAL ENGINEER
L.D. Yannoulopoulos
2024/11/13
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PROJECT
MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE
DESIGN CENTRE
STORM DRAINAGE
AREA PLAN

SHEET NUMBER **C-501** | ISSUE **1**

SCALE CHECK 1 cm

D07-XX-XX-XXXX

XXXXX

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GRADING LEGEND

- PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
- SLOPE C/W FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED SPOT GRADE
- PROPOSED SWALE GRADE
- PROPOSED SWALE HIGH POINT GRADE
- LOT CORNER GRADE C/W EXISTING GRADE
- FULL STATIC PONDING GRADE
- RETAINING WALL C/W TOP OF CURB AND GRASS GRADE
- TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
- PRESSURE REDUCING VALVE
- FINISHED FLOOR ELEVATION
- TOP OF FOUNDATION ELEVATION
- UNDERSIDE OF FOOTING ELEVATION
- 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)
- HB HIGHBACK UNIT (1.5m frost cover on footings)
- NOISE BARRIER LOCATION
- NOISE BARRIER GATE
- DOOR ENTRANCE

CAMPEAU DRIVE

HUNTMAR DRIVE

POND ID	TCB1
TOP OF GRATE (m)	99.20
STATIC ELEV (m)	99.40
STATIC DEPTH (m)	0.20
STATIC VOLUME (m³)	1.47
100yr ELEV (m)	98.80
100yr+20 ELEV	98.83

POND ID	CB100
TOP OF GRATE (m)	98.25
STATIC ELEV (m)	99.35
STATIC DEPTH (m)	0.10
STATIC VOLUME (m³)	0.80
100yr ELEV (m)	98.80
100yr+20 ELEV	98.83

POND ID	CB101
TOP OF GRATE (m)	99.25
STATIC ELEV (m)	99.35
STATIC DEPTH (m)	0.10
STATIC VOLUME (m³)	1.11
100yr ELEV (m)	98.80
100yr+20 ELEV	98.83

POND ID	TCB2
TOP OF GRATE (m)	98.70
STATIC ELEV (m)	98.96
STATIC DEPTH (m)	0.26
STATIC VOLUME (m³)	2.32
100yr ELEV (m)	98.80
100yr+20 ELEV	98.83

POND ID	ECB1
TOP OF GRATE (m)	98.55
STATIC ELEV (m)	98.80
STATIC DEPTH (m)	0.25
STATIC VOLUME (m³)	3.54
100yr ELEV (m)	98.80
100yr+20 ELEV	98.83

POND ID	CICB100A
TOP OF GRATE (m)	98.45
STATIC ELEV (m)	98.53
STATIC DEPTH (m)	0.08
STATIC VOLUME (m³)	0.77
100yr ELEV (m)	98.52
100yr+20 ELEV	98.59

POND ID	CICB100B
TOP OF GRATE (m)	98.45
STATIC ELEV (m)	98.53
STATIC DEPTH (m)	0.08
STATIC VOLUME (m³)	0.79
100yr ELEV (m)	98.52
100yr+20 ELEV	98.59

POND ID	CBMH102
TOP OF GRATE (m)	97.70
STATIC ELEV (m)	98.00
STATIC DEPTH (m)	0.30
STATIC VOLUME (m³)	25.20
100yr ELEV (m)	97.96
100yr+20 ELEV	98.04

TIE INTO EXISTING CURB, SIDEWALK AND CYCLE PATH LIMIT OF CONSTRUCTION

REMOVE EXISTING ASHPHALT PATHWAY AND REPLACE WITH DEPRESSED CURB, SIDEWALK AND CYCLE PATH PER CITY OF OTTAWA STANDARD DETAIL SC7.1

2.2m ASPHALT CYCLE PATH

2.0m CONCRETE SIDEWALK

ROOF OUTLINE

F.F. = 99.15
U.S.F. = 97.65

PROPOSED NEW TWO STOREY OFFICE & SHOWROOM

OCCUPANCY D

LOADING BAY (3.5X9M)

6m WIDE FIRE ACCESS ROUTE

FUTURE BUILDING UPSTAND TOF VARIES FROM 101.80 TO 99.65

FUTURE SITE PLAN UPDATE (BY OTHERS)

F.F.=99.50
U.S.F.=98.00
BLOCK 400

F.F.=98.70
U.S.F.=97.20
BLOCK 600

PRV

1.2m WIDE ARMOUR STONE WALL WITH GUARD RAIL SEE PATERSON GROUP DETAILS.

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

KEY PLAN

CLIENT

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Arcadis Professional Services (Canada) Inc.
formerly IBI Group Professional Services (Canada) Inc

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2024-11-13
2		
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4		
5		

CONSULTANTS

1:250 (0, 2.5, 7.5, 12.5m)

SEAL

LICENSED PROFESSIONAL ENGINEER
I.D. 45 Yannoulopoulos
2024/11/13
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS

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tel 613 225 1311
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PROJECT
MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE
SITE PONDING PLAN

SHEET NUMBER
C-600

ISSUE
1

SCALE CHECK 1 in

XXXXX

D07-XX-XX-XXXX

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Formulas and Descriptions

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

Maximum Allowable Release Rate

Restricted Flowrate

Per the previously completed SWM calculations for the overall commercial site development, the total flow to Outlet #2 (Ex. MH301) is calculated at 125.94 L/s.

$Q_{restricted}$ =	125.94	L/s

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

Uncontrolled Area

C_{100} =	0.25	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.064	Ha

Total Uncontrolled

$Q_{uncontrolled}$ =	7.94	L/s

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

$Q_{max\ allowable}$ =	118.00	L/s

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

Drainage Area	FUT 600			
Area (Ha)	0.06	Restricted Flow ICD $_{Actual}$ (L/s)=	2.00	
C =	1.00	Restricted Flow $Q_{r\ for\ swm\ calc}$ (L/s)=	2.00	50% reduction if sub-surface storage

100-Year Ponding						100-Year +20% 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)	100YRQ_p 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m^3)
69	50.33	8.40	2.00	6.40	26.48			
70	49.79	8.30	2.00	6.30	26.48			
71	49.26	8.22	2.00	6.22	**26.48**	9.86	7.86	**33.48**
72	48.74	8.13	2.00	6.13	26.48			
73	48.23	8.05	2.00	6.05	26.48			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	26.48	33.75	0	0.00	0.00	33.48	0.00
					convert to flow with peak Tc (L/s)		0.00

overflows to: FUT 120

Drainage Area	FUT 600		
Area (Ha)	0.06		
C =	0.90	Restricted Flow Q_r (L/s)=	2.00

2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
27	42.95	6.45	2.00	4.45	7.21
28	41.93	6.29	2.00	4.29	7.21
29	40.96	6.15	2.00	4.15	**7.22**
30	40.04	6.01	2.00	4.01	7.22
31	39.17	5.88	2.00	3.88	7.22

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	7.22	33.75	0	0.00

overflows to: FUT 120

Calculations for future block 600 taken from overall Arcadia Commercial site plan swm calculations

Drainage Area	FUT 120			
Area (Ha)	0.11	Restricted Flow ICD $_{Actual}$ (L/s)=	15.00	
C =	1.00	Restricted Flow $Q_{r\ for\ swm\ calc}$ (L/s)=	15.00	50% reduction if sub-surface storage

100-Year Ponding						100-Year +20% 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)	100YRQ_p 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m^3)
16	137.55	42.06	15.00	27.06	25.98			
17	132.63	40.56	15.00	25.56	26.07			
18	128.08	39.17	15.00	24.17	**26.10**	47.00	32.00	**34.56**
19	123.87	37.88	15.00	22.88	26.08			
20	119.95	36.68	15.00	21.68	26.02			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	26.10	33.99	0	0.00	0.00	34.56	0.57
					convert to flow with peak Tc (L/s)		0.53

overflows to: offsite

Drainage Area	FUT 120		
Area (Ha)	0.11		
C =	0.90	Restricted Flow Q_r (L/s)=	15.00

2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
5	103.57	28.50	15.00	13.50	4.05
6	96.64	26.60	15.00	11.60	4.17
7	90.66	24.95	15.00	9.95	**4.18**
8	85.46	23.52	15.00	8.52	4.09
9	80.87	22.26	15.00	7.26	3.92

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	4.18	61.88	0	0.00

overflows to: offsite

Calculations for future block 120 taken from overall Arcadia Commercial site plan swm calculations

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STORMWATER MANAGEMENT
Arcadia Comm | Minto Properties
147391-6.0 | Rev #1 | 2024-11-13
Prepared By: MP | Checked By: RM/WZ

Drainage Area	***ROOF***			
Area (Ha)	0.09	Restricted Flow ICD $_{Actual}$ (L/s)=	10.00	
C =	1.00	Restricted Flow $Q_{r\ for\ swm\ calc}$ (L/s)=	10.00	50% reduction if sub-surface storage

100-Year Ponding						**100-Year +20% 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)***	***100YRQ$_p$ 20% (L/s)***	***Qp - Qr (L/s)***	***Volume 100+20 (m^3)***
20	119.95	30.01	10.00	20.01	24.01			
21	116.30	29.10	10.00	19.10	24.06			
22	112.88	28.24	10.00	18.24	**24.08**	33.89	23.89	**31.54**
23	109.68	27.44	10.00	17.44	24.07			
24	106.68	26.69	10.00	16.69	24.03			

Storage (m^3)					100+20		
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**	**Overflow**	**Required**	**Balance**
0.00	24.08	24.75	0	0.00	0.00	31.54	6.79
					convert to flow with peak Tc (L/s)		5.14

overflows to: 102

Drainage Area	***ROOF***		
Area (Ha)	0.09		
C =	0.90	Restricted Flow Q_r (L/s)=	10.00

2-Year Ponding					
T_c Variable (min)	***i_{2yr} (mm/hour)***	***Peak Flow Q_p=2.78xCi $_{2yr}$A (L/s)***	***Q_r (L/s)***	***Q_p-Q_r (L/s)***	***Volume 2yr (m^3)***
6	96.64	21.76	10.00	11.76	4.23
7	90.66	20.42	10.00	10.42	4.37
8	85.46	19.24	10.00	9.24	**4.44**
9	80.87	18.21	10.00	8.21	4.43
10	76.81	17.29	10.00	7.29	4.38

Storage (m^3)				
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**
0.00	4.44	24.75	0	0.00

overflows to: 102.00

Note: The roof storage volume was calculated by taking the following into consideration:
Flat roof area = 495m2 with no obstructions (i.e. 100% of usable area), max ponding depth of 0.15m

Drainage Area	***110***			
Area (Ha)	0.12	Restricted Flow ICD $_{Actual}$ (L/s)=	42.00	
C =	0.69	Restricted Flow $Q_{r\ for\ swm\ calc}$ (L/s)=	42.00	50% reduction if sub-surface storage

100-Year Ponding						**100-Year +20% 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)***	***100YRQ$_p$ 20% (L/s)***	***Qp - Qr (L/s)***	***Volume 100+20 (m^3)***
2	315.00	72.25	42.00	30.25	3.63			
3	286.05	65.61	42.00	23.61	4.25			
4	262.41	60.18	42.00	18.18	**4.36**	72.22	30.22	**7.25**
5	242.70	55.66	42.00	13.66	4.10			
6	226.01	51.84	42.00	9.84	3.54			

Storage (m^3)					100+20		
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**	**Overflow**	**Required**	**Balance**
0.00	4.36	4.43	0	0.00	0.00	7.25	2.82
					convert to flow with peak Tc (L/s)		11.75

overflows to: Campeau Drive

Drainage Area	***110***		
Area (Ha)	0.12		
C =	0.55	Restricted Flow Q_r (L/s)=	42.00

2-Year Ponding					
T_c Variable (min)	***i_{2yr} (mm/hour)***	***Peak Flow Q_p=2.78xCi $_{2yr}$A (L/s)***	***Q_r (L/s)***	***Q_p-Q_r (L/s)***	***Volume 2yr (m^3)***
8	85.46	15.68	42.00	-26.32	-12.63
9	80.87	14.84	42.00	-27.16	-14.67
10	76.81	14.09	42.00	-27.91	**-16.74**
11	73.17	13.42	42.00	-28.58	-18.86
12	69.89	12.82	42.00	-29.18	-21.01

Storage (m^3)				
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**
0.00	0.00	4.43	0	0.00

overflows to: Campeau Drive

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Drainage Area	***102***		
Area (Ha)	0.24	Restricted Flow ICD $_{Actual}$ (L/s)=	25.00
C =	1.00	Restricted Flow $Q_{r\ for\ swm\ calc}$ (L/s)=	12.50

50% reduction if sub-surface storage

100-Year Ponding						**100-Year +20% 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)***	***100YRQ$_p$ 20% (L/s)***	***Qp - Qr (L/s)***	***Volume 100+20 (m^3)***
44	70.18	46.82	12.50	34.32	90.62			
45	69.05	46.07	12.50	33.57	90.64			
46	67.96	45.34	12.50	32.84	**90.65**	54.41	41.91	**115.68**
47	66.91	44.64	12.50	32.14	90.64			
48	65.89	43.96	12.50	31.46	90.61			

Storage (m^3)					100+20		
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**	**Overflow**	**Required**	**Balance**
0.00	90.65	25.20	68.80	0.00	6.79	122.46	28.46
		convert to flow with peak Tc (L/s)		0.00	convert to flow with peak Tc (L/s)		10.31

overflows to: offsite

Drainage Area	***102***		
Area (Ha)	0.24		
C =	0.85	Restricted Flow Q_r (L/s)=	12.50

2-Year Ponding					
T_c Variable (min)	***i_{2yr} (mm/hour)***	***Peak Flow Q_p=2.78xCi $_{2yr}$A (L/s)***	***Q_r (L/s)***	***Q_p-Q_r (L/s)***	***Volume 2yr (m^3)***
16	59.50	33.75	12.50	21.25	20.40
17	57.42	32.56	12.50	20.06	20.46
18	55.49	31.47	12.50	18.97	**20.49**
19	53.70	30.45	12.50	17.95	20.47
20	52.03	29.51	12.50	17.01	20.41

Storage (m^3)				
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**
0.00	20.49	25.20	68.8	0.00

overflows to: offsite

Drainage Area	***MH100B***	CICB100A, CICB100B	
Area (Ha)	0.04	Restricted Flow ICD $_{Actual}$ (L/s)=	24.00
C =	1.00	Restricted Flow $Q_{r\ for\ swm\ calc}$ (L/s)=	24.00

50% reduction if sub-surface storage

100-Year Ponding						**100-Year +20% 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)***	***100YRQ$_p$ 20% (L/s)***	***Qp - Qr (L/s)***	***Volume 100+20 (m^3)***
1	351.38	39.07	24.00	15.07	0.90			
2	315.00	35.03	24.00	11.03	1.32			
3	286.05	31.81	24.00	7.81	**1.41**	38.17	14.17	**2.55**
4	262.41	29.18	24.00	5.18	1.24			
5	242.70	26.99	24.00	2.99	0.90			

Storage (m^3)					100+20		
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**	**Overflow**	**Required**	**Balance**
0.00	1.41	1.56	0	0.00	3.39	5.94	4.38
		convert to flow with peak Tc (L/s)		0.00	convert to flow with peak Tc (L/s)		24.35

overflows to: offsite

Drainage Area	***MH100B***		
Area (Ha)	0.04		
C =	0.90	Restricted Flow Q_r (L/s)=	24.00

2-Year Ponding					
T_c Variable (min)	***i_{2yr} (mm/hour)***	***Peak Flow Q_p=2.78xCi $_{2yr}$A (L/s)***	***Q_r (L/s)***	***Q_p-Q_r (L/s)***	***Volume 2yr (m^3)***
8	85.46	8.55	24.00	-15.45	-7.41
9	80.87	8.09	24.00	-15.91	-8.59
10	76.81	7.69	24.00	-16.31	**-9.79**
11	73.17	7.32	24.00	-16.68	-11.01
12	69.89	6.99	24.00	-17.01	-12.24

Storage (m^3)				
Overflow	**Required**	**Surface**	**Sub-surface**	**Balance**
0.00	0.00	1.56	0	0.00

overflows to: offsite

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Stormwater Management Summary Table			
Drainage Area	**ICD Restricted Flow (L/s)**	**100 Year Storage Required (m3)**	**Storage Provided**
FUT 600	2.00	26.48	33.75
FUT 120	15.00	26.10	33.99
ROOF	10.00	24.08	24.75
110	42.00	4.36	4.43
102	25.00	90.65	94.00
MH100B	24.00	1.41	1.56
TOTAL	**118.00**	**173.08**	**192.48**

5-yr Max Allowable: **118.00 L/s**

100-yr Overflow: **0.00 L/s**
100-yr Total Release Rate: **118.00 L/s**

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ORIFICE SIZING
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Prepared By: MP | Checked By: RM/WZ

Orifice coefficients	
Cv =	0.60

							Theoretical		Recommended	
	Invert	Diameter	Centre ICD	Max. Pond Elevation	Hydraulic Slope	Target Flow	Orifice	Actual Flow	Orifice	Actual Flow
	(m)	(mm)	(m)	(m)	(m)	(l/s)	(m)	(l/s)	(m)	(l/s)
Area 110	96.952	300	97.102	98.800	1.698	42.00	0.1101	42.00	0.110	42.00
Area 102	95.987	200	96.087	98.000	1.913	25.00	0.0825	25.00	0.082	25.00
MH100B	96.700	200	96.800	98.530	1.730	24.00	0.0853	25.44	0.083	24.00
						91.00				**91.00**

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OVERFLOW DEPTH CALCULATIONS

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Prepared By: WZ | Checked By: RM

Overflow Area 110

New Flow Section Required 1:100 year flow =			**0**	l/s	or	**0.000**	Cu m/sec		
New Flow Section Required 1:100 year + 20% flow			**11.75**	l/s	or	**0.012**	Cu m/sec		
Overflow Slope			Overflow X-Section					Overflow Capacity - Q	
Length =	**8.79**	m	Side Slope 1 =	**1.10**	%			From Seelye n =	0.040 (Channels)
Up Stream Ground Elev =	**98.80**	m	Side Slope 2 =	**1.30**	%				
Down Stream Ground Elev =	**98.56**	m	Bottom Width =	**0.00**	m			100 Year Q =	m^3/s
Difference =	0.24	m		100 Year		100 Year + 20%		100 Year Velocity =	m/s
Ditch Slope =	2.73	%	Water depth =	**0.000**	m	**0.03**	m		
			X-Sect. Area =	0.00	m^2	0.05	m^2	100 Y +20% Q =	**0.012** m^3/s
			Wetted Per. =	0.00	m	4.21	m	100 Y + 20% Velocity =	0.22 m/s

Q = A*(1.0/n)*R^2/3*S^1/2

where:
A = cross sectional area in Sq. m
n = friction coefficient
R = hydraulic radius = A/wetted perimetre (wp) in m

Overflow Area 102

New Flow Section Required 1:100 year flow =			**0**	l/s	or	**0.000**	Cu m/sec		
New Flow Section Required 1:100 year + 20% flow			**10.31**	l/s	or	**0.010**	Cu m/sec		
Overflow Slope			Overflow X-Section					Overflow Capacity - Q	
Length =	-	m	Side Slope 1 =	**3.80**	%			From Seelye n =	0.040 (Channels)
Up Stream Ground Elev =	-	m	Side Slope 2 =	**1.33**	%				
Down Stream Ground Elev =	-	m	Bottom Width =	**0.00**	m			100 Year Q =	m^3/s
Difference =	-	m		100 Year		100 Year + 20%		100 Year Velocity =	m/s
Ditch Slope =	1.00	%	Water depth =	**0.000**	m	**0.04**	m		
	Estimated		X-Sect. Area =	0.00	m^2	0.06	m^2	100 Y +20% Q =	**0.011** m^3/s
			Wetted Per. =	0.00	m	3.57	m	100 Y + 20% Velocity =	0.17 m/s

Q = A*(1.0/n)*R^2/3*S^1/2

where:
A = cross sectional area in Sq. m
n = friction coefficient
R = hydraulic radius = A/wetted perimetre (wp) in m

Overflow Area MH100B

New Flow Section Required 1:100 year flow =			**0**	l/s	or	**0.000**	Cu m/sec		
New Flow Section Required 1:100 year + 20% flow			**24.35**	l/s	or	**0.024**	Cu m/sec		
Overflow Slope			Overflow X-Section					Overflow Capacity - Q	
Length =	**20.00**	m	Side Slope 1 =	**2.00**	%			From Seelye n =	0.040 (Channels)
Up Stream Ground Elev =	**98.53**	m	Side Slope 2 =	**100.00**	%				
Down Stream Ground Elev =	**98.23**	m	Bottom Width =	**0.00**	m			100 Year Q =	m^3/s
Difference =	0.30	m		100 Year		100 Year + 20%		100 Year Velocity =	m/s
Ditch Slope =	1.50	%	Water depth =	**0.000**	m	**0.06**	m		
			X-Sect. Area =	0.00	m^2	0.08	m^2	100 Y +20% Q =	**0.024** m^3/s
			Wetted Per. =	0.00	m	2.96	m	100 Y + 20% Velocity =	0.29 m/s

Q = A*(1.0/n)*R^2/3*S^1/2

where:
A = cross sectional area in Sq. m
n = friction coefficient
R = hydraulic radius = A/wetted perimetre (wp) in m

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RUN-OFF COEFFICIENTS

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147391-6.0 | Rev #1 | 2024-11-13
Prepared By: MP | Checked By: RM

	110			102			100A			100B			ROOF			UNC1		
	GRASS	ROOF	ASPHALT	GRASS	ROOF	ASPHALT	GRASS	ROOF	ASPHALT	GRASS	ROOF	ASPHALT	GRASS	ROOF	ASPHALT	GRASS	ROOF	ASPHALT
	676.46	279.77	291.25	164.21		2194.73	116.22		117.65	118.26		129.88		857.86		37.25		
TOTAL (m^2)	676.46	279.77	291.25	164.21	0.00	2194.73	116.22	0.00	117.65	118.26	0.00	129.88	0.00	857.86	0.00	37.25	0.00	0.00
	1247.48			2358.94			233.87			248.14			857.86			37.25		
Runoff Coefficient (C) :	0.2	0.9	0.9	0.2	0.9	0.9	0.2	0.9	0.9	0.2	0.9	0.9	0.2	0.9	0.9	0.2	0.9	0.9
Ave. Runoff Coefficient (C):	0.52			0.85			0.55			0.57			0.90			0.20		
Runoff Coefficient Used(C):	**0.52**			**0.85**			**0.55**			**0.57**			**0.90**			**0.20**		

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
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ARCADIACOMM

OTTAWA, ON, CANADA

DC-780 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH DC-780.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL BE CERTIFIED TO CSA B184, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES", AND MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
10. MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
11. ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE DC-780 CHAMBER SYSTEM

1. STORMTECH DC-780 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 150 mm (6") SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER DC-780 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

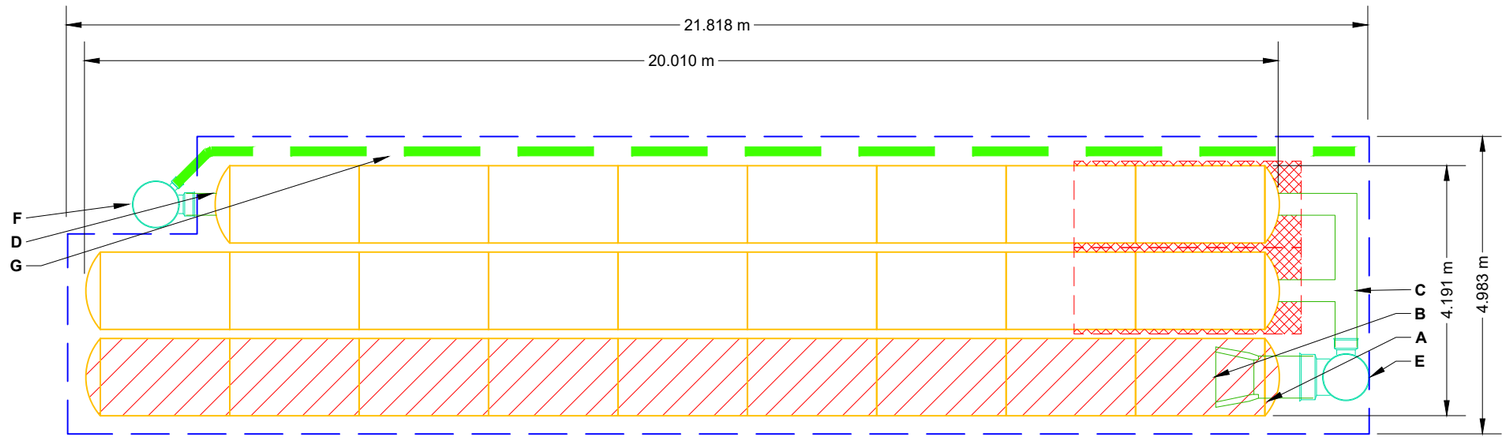
USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS:	
26	STORMTECH DC-780 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	4.648
6	STORMTECH DC-780 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	1.600
152	STONE ABOVE (mm)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	1.448
229	STONE BELOW (mm)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	1.448
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	1.448
68.8	INSTALLED SYSTEM VOLUME (m^3) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	1.143
		TOP OF DC-780 CHAMBER:	0.991
		300 mm x 300 mm TOP MANIFOLD INVERT:	0.546
		300 mm BOTTOM CONNECTION INVERT:	0.259
105.2	SYSTEM AREA (m^2)	600 mm ISOLATOR ROW PLUS INVERT:	0.231
53.6	SYSTEM PERIMETER (m)	BOTTOM OF DC-780 CHAMBER:	0.229
		UNDERDRAIN INVERT:	0.000
		BOTTOM OF STONE:	0.000

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED EZ END CAP	A	600 mm BOTTOM PREFABRICATED EZ END CAP, PART#: SC740ECEZ / TYP OF ALL 600 mm BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	3 mm	
FLAMP	B	INSTALL FLAMP ON 600 mm ACCESS PIPE / PART#: SC74024RAMP		
MANIFOLD	C	300 mm x 300 mm TOP MANIFOLD, ADS N-12	318 mm	
PIPE CONNECTION	D	300 mm BOTTOM CONNECTION	30 mm	
NYLOPLAST (INLET W/ ISO PLUS ROW)	E	750 mm DIAMETER (610 mm SUMP MIN)		130 L/s IN
NYLOPLAST (OUTLET)	F	750 mm DIAMETER (DESIGN BY ENGINEER)		57 L/s OUT
UNDERDRAIN	G	150 mm ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		



ISOLATOR ROW PLUS
(SEE DETAIL)

PLACE MINIMUM 3.810 m OF ADSPLUS625 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- **NOT FOR CONSTRUCTION**: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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PROJECT #:

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Chamber System
1-800-821-6710 | WWW.STORMTECH.COM

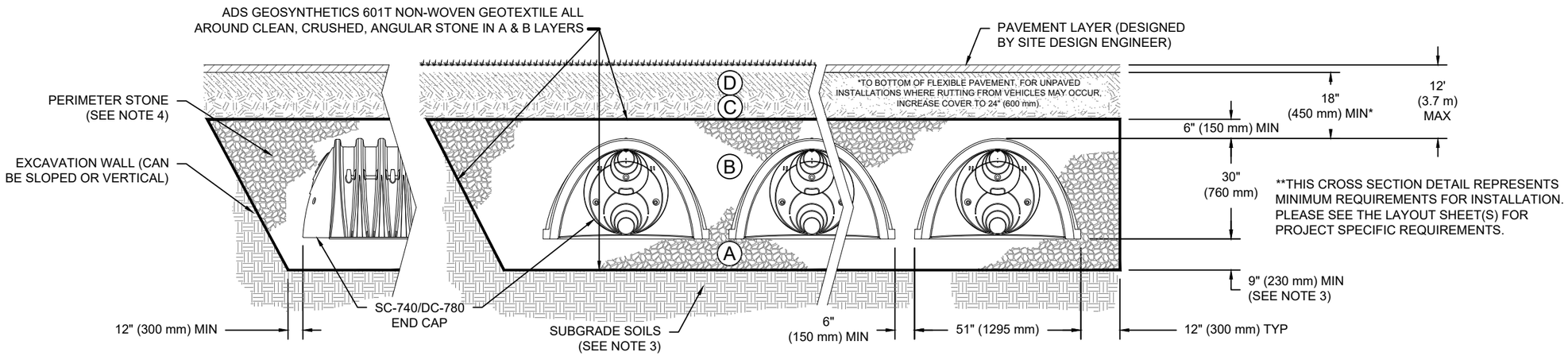
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

SCALE = 1 : 100

ACCEPTABLE FILL MATERIALS: STORMTECH DC-780 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. DC-780 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE ENGINEER OF RECORD (EOR) OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECT'S ENGINEER OF RECORD. IT IS THE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

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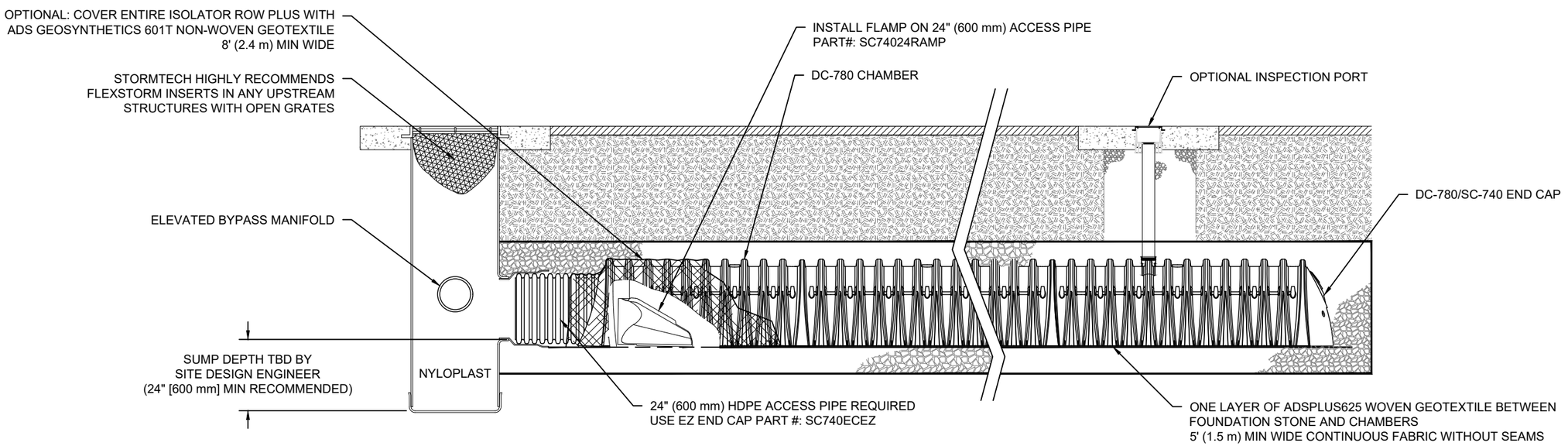

DC-780 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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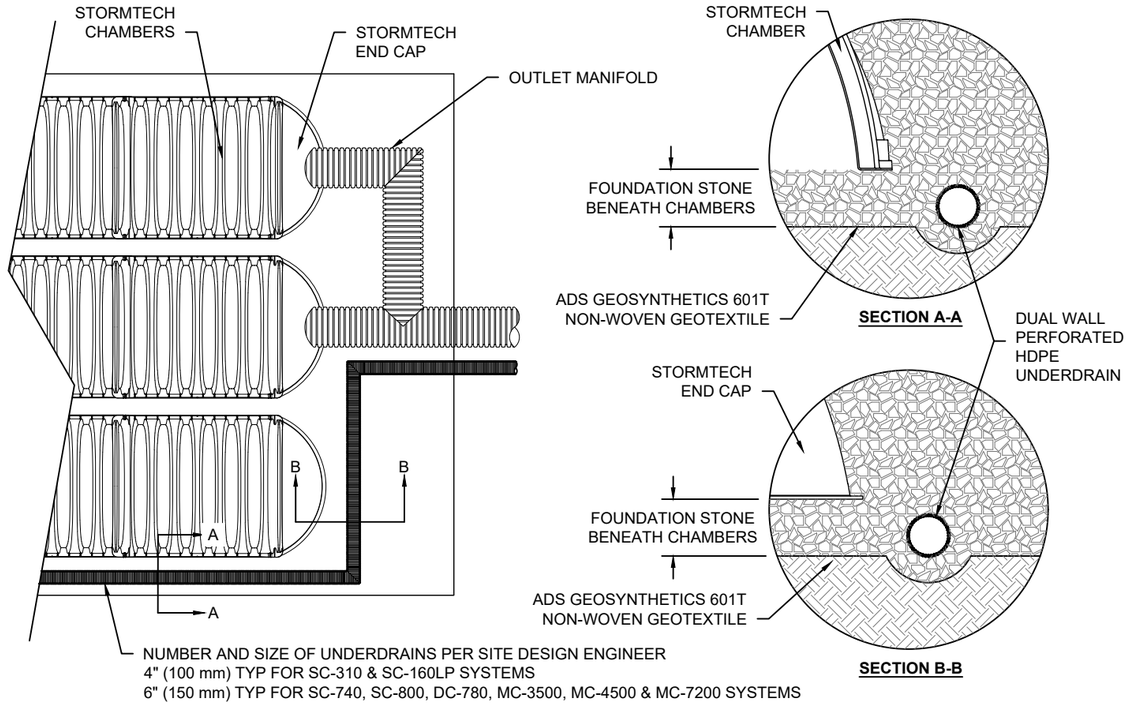
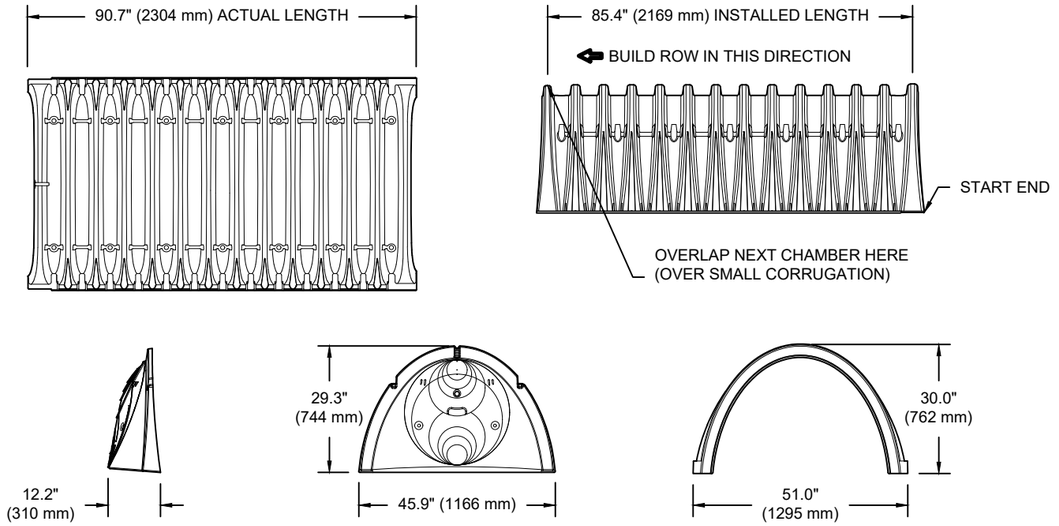
UNDERDRAIN DETAIL

NTS



DC-780 TECHNICAL SPECIFICATION

NTS

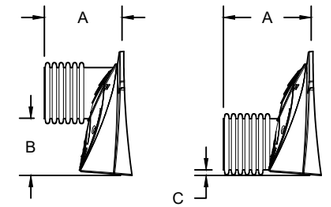


NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	46.2 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	78.4 CUBIC FEET	(2.20 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	45.9" X 29.3" X 9.6"	(1166 mm X 744 mm X 244 mm)
END CAP STORAGE	2.6 CUBIC FEET	(0.07 m³)
MINIMUM INSTALLED STORAGE**	14.4 CUBIC FEET	(0.40 m³)
WEIGHT	11.7 lbs.	(5.3 kg)



* ASSUMES 6" (152 mm) STONE ABOVE, 9" (229 mm) BELOW, AND 6" (152 mm) BETWEEN CHAMBERS
**ASSUMES 6" (152 mm) STONE ABOVE, 9" (229 mm) BELOW END CAPS, 6" (152 mm) BETWEEN ROWS, 12" (305 mm) BEYOND END CAPS

PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-800-821-6710.

* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

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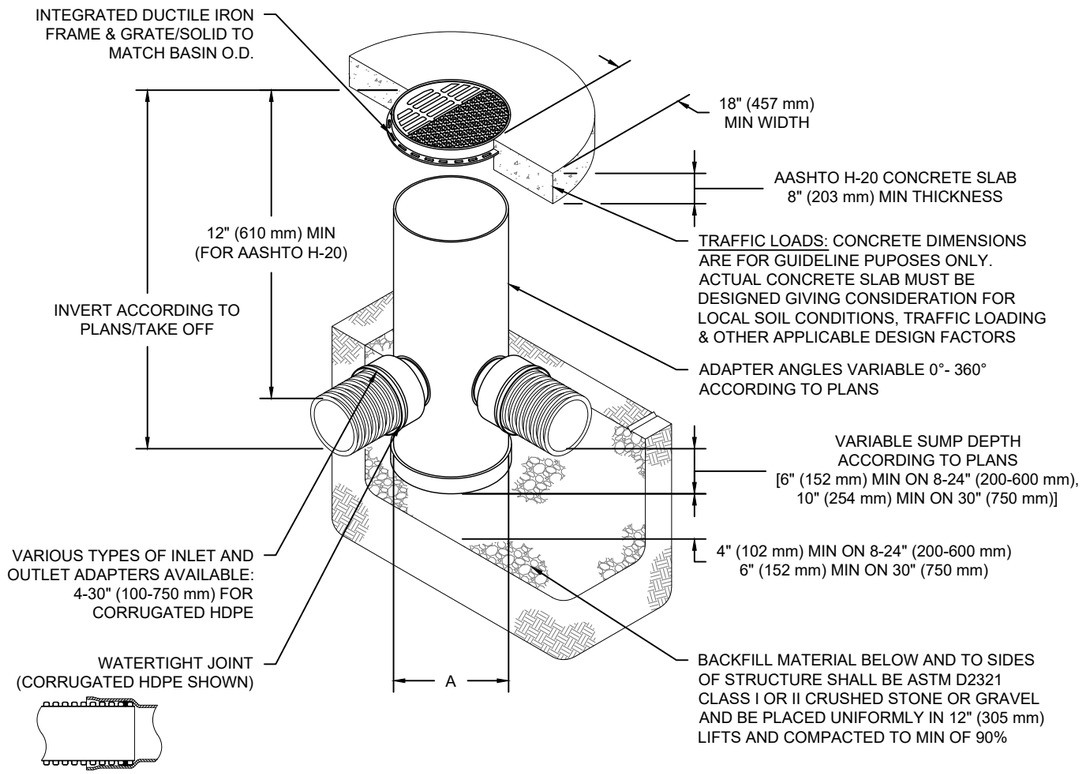
NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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DESCRIPTION	CHK	DRW	DATE

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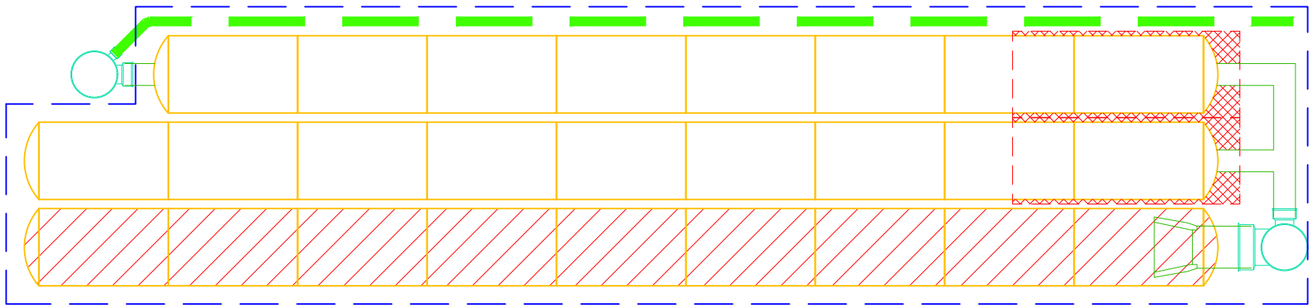


WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

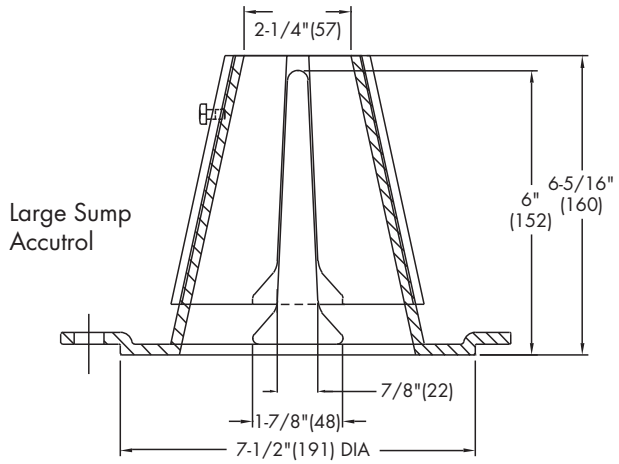
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

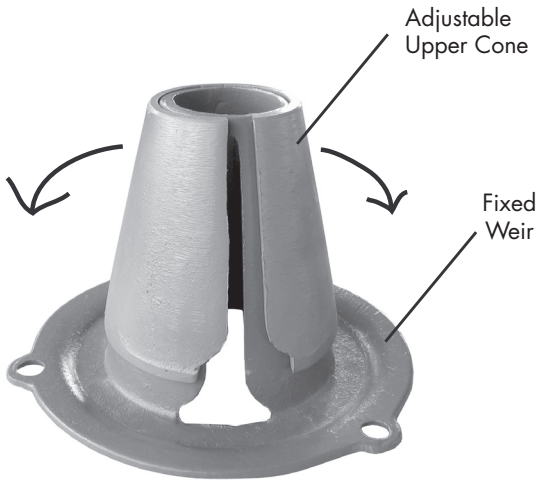
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the 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 _____

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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

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K1S 5N4

STORM SEWER DESIGN SHEET

PROJECT: Arcadia Commercial
LOCATION: CITY OF OTTAWA
CLIENT: Minto Development Group

*HGL at obvert of pipe if pipe is not surcharged
** Finished floor for slab on grade commercial building
***Freeboard is from upstream MH HGL to FF

LOCATION				AREA (Ha)				RATIONAL DESIGN FLOW												SEWER DATA													
STREET	AREA ID	FROM MH	TO MH	C= 0.20	C= 0.70	C= 0.75	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)	ICD 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)	(%)	surcharged pipe	upstream obvert	HGL* m	FF** m	Freeboard*** m
	BLK800	BLK800	MAIN				0.06	0.15	0.15	10.00	0.07	10.07	104.19	122.14	178.56	15.64				15.64	62.04	5.00	250			1.00	1.224	46.40	74.79%			96.79	98.30	1.51
	123	CICB123	MAIN				0.06	0.15	0.15	10.00	0.11	10.11	104.19	122.14	178.56	15.64				15.64	43.87	5.97	250			0.50	0.866	28.23	64.34%					
	-	MH123	MH122					0.00	0.30	10.07	0.54	10.61	103.83	121.72	177.94	31.18				31.18	59.68	26.56	300			0.35	0.818	28.51	47.76%	no	96.79	96.79		
	122	CB122	MAIN				0.06	0.15	0.15	10.00	0.45	10.45	104.19	122.14	178.56	15.64				15.64	43.87	23.63	250			0.50	0.866	28.23	64.34%					
	-	MH122	MH121					0.00	0.45	10.61	0.25	10.86	101.08	118.48	173.18	45.52				45.52	59.68	12.08	300			0.35	0.818	14.16	23.72%	no	96.67	96.67		
	BLK700	BLK700	MAIN				0.10	0.25	0.25	10.00	0.08	10.08	104.19	122.14	178.56	26.07				26.07	51.91	5.00	250			0.70	1.024	25.84	49.78%			96.63	98.45	1.82
	-	MH121	MH120					0.00	0.70	10.86	1.21	12.06	99.88	117.06	171.10	69.97				69.97	91.46	58.21	375			0.25	0.802	21.48	23.49%	no	96.63	96.63		
	120	CB120	MH120				0.11	0.28	0.28	10.00	0.32	10.32	104.19	122.14	178.56	28.68				28.68	62.04	23.24	250			1.00	1.224	33.36	53.78%					
	BLK600	BLK600	MAIN				0.06	0.15	0.15	10.00	0.07	10.07	104.19	122.14	178.56	15.64				15.64	62.04	5.00	250			1.00	1.224	46.40	74.79%			96.45	98.70	2.25
	-	MH120	MH100					0.00	1.13	12.06	0.96	13.02	94.42	110.63	161.66	106.31				106.31	148.72	51.96	450			0.25	0.906	42.41	28.52%	no	96.45	96.45		
	110	CB110A	CBMH110A				0.08	0.20	0.20	10.00	0.49	10.49	104.19	122.14	178.56	20.86				20.86	71.33	29.02	300			0.50	0.978	50.48	70.76%					
		CB110B	CBMH110A				0.04	0.10	0.10	10.00	0.34	10.34	104.19	122.14	178.56	10.43				10.43	71.33	20.00	300			0.50	0.978	60.91	85.38%					
		CBMH110A	MH110					0.00	0.30	10.49	0.26	10.76	101.65	119.15	174.16	30.52				30.52	286.47	15.38	600			0.20	0.982	255.95	89.35%					
	-	MH110	MH100					0.00	0.30	10.76	1.02	11.78	100.36	117.63	171.93	30.13				30.13	63.80	53.50	300			0.40	0.874	33.67	52.77%	no	96.54	96.54		
	BLK500	BLK500	MAIN				0.09	0.23	0.23	10.00	0.22	10.22	104.19	122.14	178.56	23.46				23.46	62.04	16.50	250			1.00	1.224	38.58	62.18%			96.32	99.15	2.83
	100A	CICB100A	CICB100B				0.03	0.08	0.08	10.00	0.11	10.11	104.19	122.14	178.56	7.82				7.82	62.04	8.00	250			1.00	1.224	54.22	87.39%					
	100B	CICB100B	MAIN				0.03	0.08	0.15	10.11	0.01	10.12	103.62	121.47	177.57	15.56				15.56	62.04	0.74	250			1.00	1.224	46.48	74.93%					
	-	MH100	MH100B					0.00	1.80	13.02	0.64	13.66	90.55	106.08	154.97	163.12				163.12	248.09	32.73	600			0.15	0.850	84.97	34.25%	no	96.32	96.32		
	EXISTING	*MH100B*	*EXMH301*					*0.00*	*1.80*	*13.66*	*0.31*	*13.98*	*88.14*	*103.25*	*150.81*	*158.78*				*158.78*	*248.09*	*16.00*	*600*			*0.15*	*0.850*	*89.30*	*36.00%*	no				
				0.00	0.00	0.00	0.72	1.80	TRUE																				no	96.25	96.052		

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

STORM SEWER DESIGN SHEET

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CLIENT: Minto Development Group

*HGL at obvert of pipe if pipe is not surcharged
** Finished floor for slab on grade commercial building
***Freeboard is from upstream MH HGL to FF

LOCATION				AREA (Ha)				RATIONAL DESIGN FLOW												SEWER DATA															
STREET	AREA ID	FROM MH	TO MH	C= 0.20	C= 0.70	C= 0.75	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)	ICD 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)	(%)	surcharged pipe	upstream obvert	HGL* m	FF** m	Freeboard*** m
	233A	CBMH233A	CBMH233				0.09	0.23	0.23	10.00	0.31	10.31	104.19	122.14	178.56	23.46				23.46	248.09	15.60	600			0.15	0.850	224.63	90.54%					
	233B	CBMH233	CBMH232				0.15	0.38	0.60	10.31	0.67	10.98	102.60	120.27	175.81	61.61				61.61	248.09	34.20	600			0.15	0.850	186.48	75.17%					
	232A	CBMH232A	CBMH232				0.10	0.25	0.25	10.00	0.31	10.31	104.19	122.14	178.56	26.07				26.07	248.09	15.60	600			0.15	0.850	222.02	89.49%					
	232B	CBMH232	CBMH231				0.12	0.30	1.15	10.98	0.67	11.65	99.30	116.38	170.10	114.29				114.29	248.09	34.20	600			0.15	0.850	133.80	53.93%					
	231A	CBMH231A	CBMH231				0.11	0.28	0.28	10.00	0.31	10.31	104.19	122.14	178.56	28.68				28.68	248.09	15.60	600			0.15	0.850	219.41	88.44%					
	231B	CBMH231	MH230				0.11	0.28	1.70	11.65	0.47	12.12	96.23	112.76	164.79	163.72				163.72	248.09	24.08	600			0.15	0.850	84.37	34.01%					
	230A	CICB230A	CICB230B				0.06	0.15	0.15	10.00	0.11	10.11	104.19	122.14	178.56	15.64				15.64	62.04	8.04	250			1.00	1.224	46.40	74.79%					
	230B	CICB230B	MH230				0.13	0.33	0.48	10.11	0.06	10.17	103.62	121.47	177.56	49.26				49.26	87.74	5.93	250			2.00	1.731	38.48	43.86%					
	230C	CB230C	MAIN				0.03	0.08	0.08	10.00	0.14	10.14	104.19	122.14	178.56	7.82				7.82	62.04	10.39	250			1.00	1.224	54.22	87.39%					
	230D	CB230D	CB230E				0.04	0.10	0.10	10.00	0.11	10.11	104.19	122.14	178.56	10.43				10.43	62.04	7.95	250			1.00	1.224	51.61	83.19%					
	230E	CB230E	MAIN				0.09	0.23	0.33	10.11	0.05	10.16	103.62	121.47	177.58	33.70				33.70	87.74	4.91	250			2.00	1.731	54.03	61.58%					
	230F	CB230F	MAIN				0.07	0.18	0.18	10.00	0.17	10.17	104.19	122.14	178.56	18.25				18.25	62.04	12.50	250			1.00	1.224	43.79	70.59%					
	230G	CB230G	CB230H				0.10	0.25	0.25	10.00	0.11	10.11	104.19	122.14	178.56	26.07				26.07	62.04	8.00	250			1.00	1.224	35.97	57.98%					
	230H	CB230H	MAIN				0.07	0.18	0.43	10.11	0.05	10.15	103.62	121.47	177.57	44.07				44.07	87.74	4.78	250			2.00	1.731	43.66	49.77%					
	230I	CB230I	MAIN				0.03	0.08	0.08	10.00	0.12	10.12	104.19	122.14	178.56	7.82				7.82	62.04	8.57	250			1.00	1.224	54.22	87.39%					
	-	MH230	MH210					0.00	3.75	12.12	1.62	13.74	94.19	110.36	161.26	306.36				306.36	449.81	95.70	750			0.15	0.986	143.45	31.89%	no	95.70	95.70		
	221A	CB221A	CBMH221				0.16	0.40	0.40	10.00	0.11	10.11	104.19	122.14	178.56	41.71				41.71	420.63	17.05	450			2.00	2.562	378.92	90.08%					
	221B	CB221B	CB221C				0.03	0.08	0.08	10.00	0.16	10.16	104.19	122.14	178.56	7.82				7.82	297.43	17.05	450			1.00	1.812	289.61	97.37%					
	221C	CB221C	CBMH221				0.02	0.05	0.13	10.16	0.09	10.24	103.37	121.17	177.14	12.93				12.93	488.73	15.52	450			2.70	2.977	475.80	97.35%					
	221D	CBMH221	MH221				0.08	0.20	0.73	10.24	0.57	10.81	102.92	120.65	176.36	74.68				74.68	286.47	33.38	600			0.20	0.982	211.79	73.93%					
	BLK400	BLK400	MAIN				0.15	0.38	0.38	10.00	0.07	10.07	104.19	122.14	178.56	39.10				39.10	62.04	5.00	250			1.00	1.224	22.94	36.97%			96.03	99.50	3.47
	BLK300	BLK300	MAIN				0.04	0.10	0.10	10.00	0.07	10.07	104.19	122.14	178.56	10.43				10.43	62.04	5.00	250			1.00	1.224	51.61	83.19%			96.03	99.50	3.47
		MH500	MH221				0.00	0.00	0.00	10.00	0.20	10.20	104.19	122.14	178.56	0.00				0.00	900.87	12.00	1050			0.10	1.008	900.87	100.00%					
	-	MH221	MH220					0.00	1.20	10.81	1.40	12.21	100.10	117.32	171.47	120.21				120.21	148.72	75.90	450			0.25	0.906	28.50	19.17%	no	96.03	96.03		
	222A	CB222	CBMH222				0.05	0.13	0.13	10.00	0.12	10.12	104.19	122.14	178.56	13.03				13.03	107.45	14.80	250			3.00	2.121	94.42	87.87%					
	222B	CBMH222	MH220				0.07	0.18	0.30	10.12	0.07	10.19	103.58	121.42	177.50	31.10				31.10	151.96	12.64	250			6.00	2.999	120.86	79.53%					

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*HGL at obvert of pipe if pipe is not surcharged
** Finished floor for slab on grade commercial building
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STREET	AREA ID	FROM MH	TO MH	C= 0.20	C= 0.70	C= 0.75	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)	ICD 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)	(%)	surcharged pipe	upstream obvert	HGL* m	FF** m	Freeboard*** m
	223A	CB223	CBMH223				0.15	0.38	0.38	10.00	0.21	10.21	104.19	122.14	178.56	39.10				39.10	446.15	34.20	450			2.25	2.718	407.05	91.24%					
	223B	CBMH223	MH220				0.12	0.30	0.68	10.21	0.27	10.47	103.10	120.85	176.66	69.65				69.65	210.32	20.38	450			0.50	1.281	140.67	66.88%					
	-	MH220	MH212					0.00	2.18	12.21	0.44	12.65	93.82	109.93	160.62	204.22				204.22	248.09	22.60	600			0.15	0.850	43.86	17.68%	no	95.84	95.84		
	212A	CICB212A	CICB212B				0.03	0.08	0.08	10.00	0.12	10.12	104.19	122.14	178.56	7.82				7.82	62.04	8.61	250			1.00	1.224	54.22	87.39%					
	212B	CICB212B	MH212				0.03	0.08	0.15	10.12	0.06	10.18	103.58	121.42	177.49	15.55				15.55	151.96	11.24	250			6.00	2.999	136.41	89.77%					
	215	CB215	MH215				0.04	0.10	0.10	10.00	0.17	10.17	104.19	122.14	178.56	10.43				10.43	62.04	12.57	250			1.00	1.224	51.61	83.19%					
	BLK100	BLK100	MAIN				0.06	0.15	0.15	10.00	0.07	10.07	104.19	122.14	178.56	15.64				15.64	62.04	5.50	250			1.00	1.224	46.40	74.79%			97.23	99.60	2.37
	-	MH215	MH214					0.00	0.25	10.17	0.40	10.57	103.30	121.09	177.01	25.85				25.85	82.07	38.95	250			1.75	1.620	56.22	68.51%	no	97.23	97.23		
	216A	RYCB216	CB216	0.03				0.02	0.02	10.00	0.05	10.05	104.19	122.14	178.56	1.74				1.74	124.08	7.40	250			4.00	2.449	122.34	98.60%					
	216B	CB216	MH216				0.04	0.10	0.12	10.00	0.04	10.04	104.19	122.14	178.56	12.17				12.17	138.72	5.90	250			5.00	2.738	126.56	91.23%					
		MH216	MH214					0.00	0.12	10.05	0.47	10.52	103.93	121.83	178.10	12.13				12.13	43.87	24.56	250			0.50	0.866	31.73	72.34%	no	97.07	97.07		
	BLK200	BLK200	MAIN				0.04	0.10	0.10	10.00	0.07	10.07	104.19	122.14	178.56	10.43				10.43	62.04	5.40	250			1.00	1.224	51.61	83.19%			96.55	99.55	3.00
	-	MH214	MH213					0.00	0.47	10.57	0.40	10.97	101.27	118.69	173.49	47.30				47.30	129.34	27.00	375			0.50	1.134	82.04	63.43%	no	96.55	96.55		
	-	MH213	MH212					0.00	0.47	10.97	0.26	11.23	99.34	116.43	170.16	46.40				46.40	129.34	17.80	375			0.50	1.134	82.94	64.13%	no	96.39	96.39		
	-	MH212	MH210					0.00	2.79	11.23	0.86	12.09	98.12	114.98	168.05	274.12				274.12	350.85	61.94	600			0.30	1.202	76.72	21.87%	no	95.74	95.74		
	210A	CB210A	MAIN				0.12	0.30	0.30	10.00	0.09	10.09	104.19	122.14	178.56	31.28				31.28	201.76	15.06	300			4.00	2.765	170.48	84.50%					
	BLK900	BLK900	MAIN				0.46	1.15	1.15	10.00	0.21	10.21	104.19	122.14	178.56	119.92				119.92	182.91	19.94	375			1.00	1.604	62.99	34.44%			95.56	98.10	2.54
DEPRESSED LOADING	210B	CB210B	MAIN				0.02	0.05	0.05	10.00	0.29	10.29	104.19	122.14	178.56	5.21				5.21	43.87	14.90	250			0.50	0.866	38.65	88.11%					
		MH210	MH205B					0.60	7.55	13.74	0.41	14.15	87.88	102.93	150.35	663.26				663.26	905.48	28.86	975			0.15	1.175	242.23	26.75%	no	95.56	95.56		
	206E	CICB206D	MAIN			0.09		0.19	0.19	10.00	0.02	10.02	104.19	122.14	178.56	19.55				19.55	87.74	2.57	250			2.00	1.731	68.18	77.72%					
	-	MH205B	MH205					0.00	7.74	14.15	0.20	14.34	86.42	101.22	147.84	668.51				668.51	905.48	13.88	975			0.15	1.175	236.97	26.17%	no	95.50	95.50		
	206A	CB206A	CBMH206				0.24	0.60	0.60	10.00	0.17	10.17	104.19	122.14	178.56	62.57				62.57	420.63	25.66	450			2.00	2.562	358.07	85.13%					
	206B	CBMH206	MH206				0.14	0.35	0.95	10.17	0.26	10.43	103.32	121.11	177.05	98.23				98.23	210.32	19.99	450			0.50	1.281	112.09	53.29%					
	206C	CB206B	MAIN				0.07	0.18	0.18	10.00	0.08	10.08	104.19	122.14	178.56	18.25				18.25	85.29	8.49	250			1.89	1.683	67.04	78.60%					
	206D	CB206C	MAIN				0.04	0.10	0.10	10.00	0.02	10.02	104.19	122.14	178.56	10.43				10.43	87.74	2.32	250			2.00	1.731	77.31	88.11%					
	-	MH206	MH205					0.00	1.23	10.43	0.59	11.02	101.99	119.55	174.75	125.04				125.04	182.91	56.62	375			1.00	1.604	57.87	31.64%	no	96.05	96.05		
External South	EXT-2	STUB	MH205		2.82			5.49	5.49	12.00	0.17	12.17	94.70	110.96	162.13	519.66				519.66	986.85	11.55	1050			0.12	1.104	467.19	47.34%	no	95.50	95.50		

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STREET	AREA ID	FROM MH	TO MH	C= 0.20	C= 0.70	C= 0.75	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)	ICD 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)	AVAIL CAP (5yr) (%)	surcharged pipe	upstream obvert	HGL* m	FF** m	Freeboard*** m
	205A	CICB205A	CICB205B			0.10		0.21	0.21	10.00	0.16	10.16	104.19	122.14	178.56	21.72				21.72	62.04	11.97	250			1.00	1.224	40.31	64.98%				
	205B	CICB205B	MAIN			0.06		0.13	0.33	10.00	0.01	10.01	104.19	122.14	178.56	34.76				34.76	87.74	0.64	250			2.00	1.731	52.98	60.38%				
Street 1	-	MH205	MH204					0.00	14.78	14.34	0.39	14.73	85.74	100.42	146.67	1,267.51				1,267.51	1,928.87	30.36	1350			0.12	1.305	661.36	34.29%	no	95.48	95.48	
Street 1	204B	CICB204B	CICB204A			0.06		0.13	0.13	10.00	0.12	10.12	104.19	122.14	178.56	13.03				13.03	62.04	9.00	250			1.00	1.224	49.00	78.99%				
Street 1	204A	CICB204A	MAIN			0.07		0.15	0.27	10.12	0.02	10.14	103.55	121.38	177.45	28.07				28.07	87.74	2.34	250			2.00	1.731	59.67	68.01%				
	-	MH204	MH203					0.00	15.05	14.73	1.01	15.74	84.44	98.89	144.42	1,271.12				1,271.12	1,928.87	79.00	1350			0.12	1.305	657.75	34.10%	no	95.43	95.43	
	240A	CICB240A	CICB240B					0.00	0.00	10.00	0.14	10.14	104.19	122.14	178.56	0.00				0.00	62.04	10.23	250			1.00	1.224	62.04	100.00%				
		CICB240B	MH240				0.05	0.13	0.13	10.14	0.16	10.30	103.46	121.28	177.30	12.94				12.94	87.74	16.81	250			2.00	1.731	74.79	85.25%				
DEPRESSED LOADING	240B	CB240C	MH240				0.02	0.05	0.05	10.00	0.68	10.68	104.19	122.14	178.56	5.21				5.21	43.87	35.30	250			0.50	0.866	38.65	88.11%				
	240C	CB240D	MH240				0.05	0.13	0.13	10.00	0.44	10.44	104.19	122.14	178.56	13.03				13.03	62.04	32.56	250			1.00	1.224	49.00	78.99%				
	-	MH240	MH203					0.00	0.30	10.68	0.37	11.05	100.74	118.07	172.58	30.24				30.24	63.80	19.34	300			0.40	0.874	33.56	52.60%	no	95.39	95.39	
Street 1	-	MH203	MH202					0.00	15.35	15.74	0.59	16.32	81.24	95.13	138.90	1,247.42				1,247.42	1,928.87	45.86	1350			0.12	1.305	681.46	35.33%	no	95.31	95.31	
Street 1		MH202	MH201					0.00	15.35	16.32	0.20	16.53	79.51	93.09	135.91	1,220.78				1,220.78	1,928.87	15.91	1350			0.12	1.305	708.09	36.71%	no	95.23	95.23	
Street 1	201A	DCICB201A	DCICB201B	0.02		0.18		0.39	0.39	12.00	0.20	12.20	94.70	110.96	162.13	36.59				36.59	62.04	14.74	250			1.00	1.224	25.45	41.02%				
Street 1	201B, 202	DCICB201B	MAIN			0.24		0.50	0.89	12.00	0.03	12.03	94.70	110.96	162.13	83.98				83.98	87.74	3.43	250			2.00	1.731	3.76	4.28%				
External East	EXT-1	CAP	MH201		0.73			1.42	1.42	10.00	0.29	10.29	104.19	122.14	178.56	148.01				148.01	248.09	14.54	600			0.15	0.850	100.07	40.34%	no	95.23	95.23	
street 1	-	MH201	CAP					0.00	17.66	16.53	0.82	17.34	78.93	92.41	134.90	1,393.95				1,393.95	2,332.02	62.55	1500			0.10	1.278	938.07	40.23%	no	95.21	95.21	
street 1	*existing*	*Ex CAP*	*EXMH303*					*0.00*	*17.66*	*17.34*	*0.32*	*17.66*	*76.68*	*89.77*	*131.03*	*1,354.27*				*1,354.27*	*2,332.02*	*24.50*	*1500*			*0.10*	*1.278*	*977.75*	*41.93%*	no			
				0.05	3.55	0.80	3.62	17.66	TRUE																					no	95.17	95.088	

AREA CHECK	
TOTAL AREA	8.02
EXTERNAL AREA	3.55
	4.47

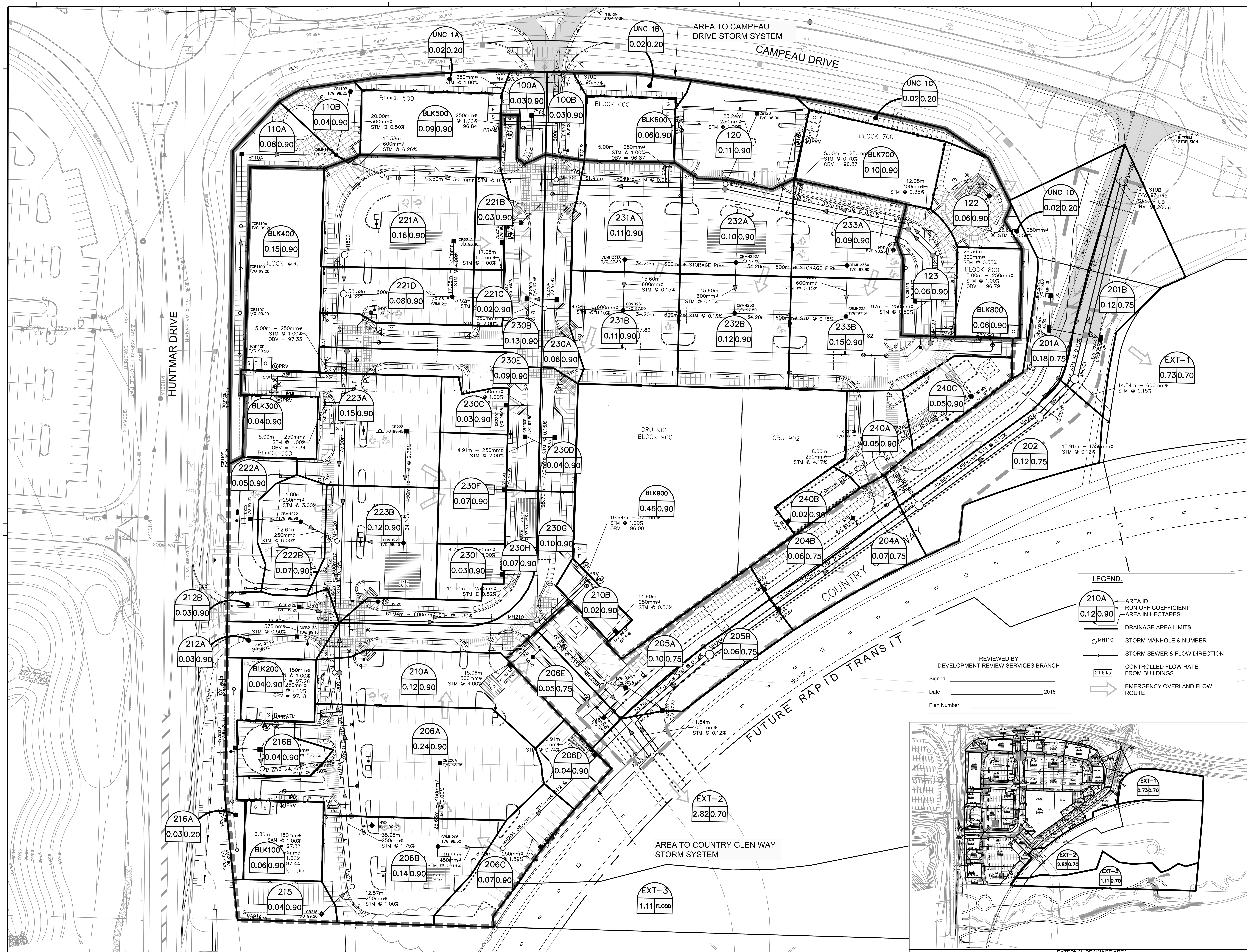
Definitions:
Q = 2.78CIA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) =

Designed: RM
Checked: DY
Dwg. Reference: 31855-500

No.	Revision	Date
1.	Issued for SPA	11/15/2013
2	Revised per City Comments	6/27/2014
3	Revised per City Comments	8/22/2014
	Revised per City Comments	10/2/2014

File Reference: 31855.5.7.1 | **Date:** 11/15/2013 | **Sheet No:** 3 of 3

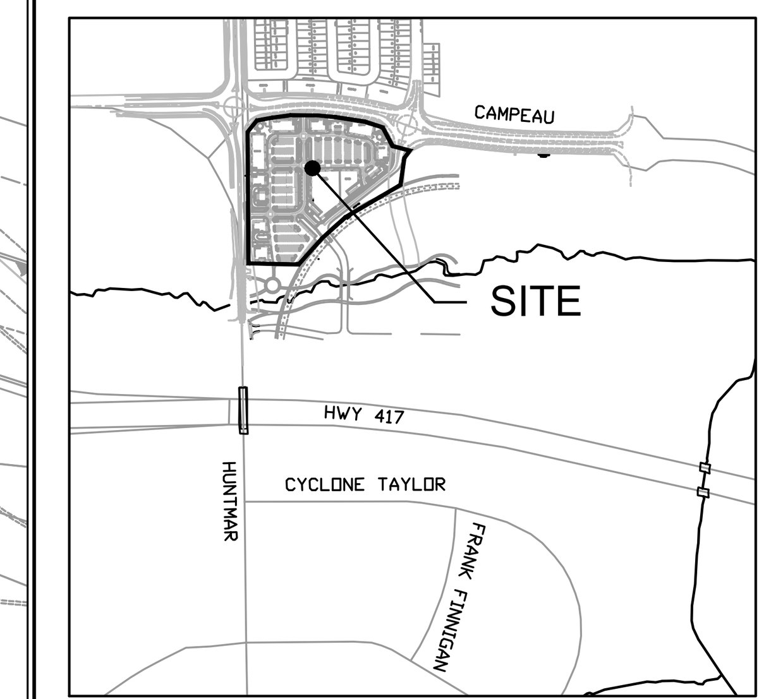


REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________ 2016

Plan Number ______________________



KEY PLAN

APPROVED ☐ REFUSED ☐

THIS____DAY OF ____________, 20______

DERRICK MOODIE, ACTING MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	Description	Date	Checked
5	Revised as per City Comments	16:08:26	DGY
4	Revised as per City Comments	14:10:02	DGY
3	Revised as per City Comments	14:08:22	DGY
2	Issued for SPA Resubmission	14.06.27	DGY
1	Issued for SPA	13.11.18	DGY

Issued for

All measurements and conditions must be checked on the work by the contractor. This drawing not to be used for construction until signed.

Date

plotted J:\35355–ArcadiaComm\5.9 Drawings\59civil\layouts\C–500.dwg Layout Name: Storm Drainage Plot Style: AIA STANDARD–FULL.CTB Plot Scale: 1:1 Plotted At: 9/1/2016 10:55 AM Last Saved By: dsiurna Last Saved At: Sep. 1, 16

TN PN

LICENSED PROFESSIONAL ENGINEER D. G. Yannoulopoulos 16/08/26 PROVINCE OF ONTARIO

drawn by DPS	scale 1:500
checked by DGY	date NOV. 2013
printed	file 35355

Arcadia Retail Development
Kanata, Ontario

Minto Properties
200 Kent Street • Suite 180 • Ottawa, Ontario • K1P 0B6
Telephone: (613)782-3137 Fax: (613)782-5777

drawing title:
STORM DRAINAGE AREA PLAN
370 HUNTMAR DRIVE
OTTAWA, ON.

IBI GROUP

drawing no. C–500

333 Preston Street Tower 1, Suite 400 Ottawa, Ontario Canada K1S 5N4 Tel (613)225–1311 FAX (613)225–9868

D07-12-14-0014

Appendix E

Grading Plan 147391-C-200

Erosion and Sediment Control Plan 147391-C-900

Grading Plan 35355-C-200

GRADING LEGEND

- PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
- SLOPE C/W FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED SPOT GRADE
- PROPOSED SWALE GRADE
- PROPOSED SWALE HIGH POINT GRADE
- LOT CORNER GRADE C/W EXISTING GRADE
- FULL STATIC PONDING GRADE
- RETAINING WALL C/W TOP OF CURB AND GRASS GRADE
- TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
- PRESSURE REDUCING VALVE
- FINISHED FLOOR ELEVATION
- TOP OF FOUNDATION ELEVATION
- UNDERSIDE OF FOOTING ELEVATION
- 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)
- HB — HIGHBACK UNIT (1.5m frost cover on footings)
- NOISE BARRIER LOCATION
- NOISE BARRIER GATE
- DOOR ENTRANCE

CAMPEAU DRIVE

HUNTMAR DRIVE

TIE INTO EXISTING CURB, SIDEWALK AND CYCLE PATH LIMIT OF CONSTRUCTION

REMOVE EXISTING ASHPHALT PATHWAY AND REPLACE WITH DEPRESSED CURB, SIDEWALK AND CYCLE PATH PER CITY OF OTTAWA STANDARD DETAIL SC7.1

2.2m ASPHALT CYCLE PATH

2.0m CONCRETE SIDEWALK

BUILDING UPSTAND TOF = 99.65

ROOF OUTLINE

F.F. = 99.15
U.S.F. = 97.65

PROPOSED NEW TWO STOREY OFFICE & SHOWROOM

OCCUPANCY D

LOADING BAY (3.5X9M)

6m WIDE FIRE ACCESS ROUTE

FUTURE BUILDING UPSTAND TOF VARIES FROM 101.80 TO 99.65

FUTURE SITE PLAN UPDATE (BY OTHERS)

F.F.=99.50
U.S.F.=98.00
BLOCK 400
PRV

F.F.=98.70
U.S.F.=97.20
BLOCK 600
PRV

1.2m WIDE ARMOUR STONE WALL WITH GUARD RAIL SEE PATERSON GROUP DETAILS.

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

KEY PLAN

1:250 0 2.5 7.5 12.5m

CLIENT

minto Communities

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2024-11-13
2		
3		
4		
5		

CONSULTANTS

SEAL

LICENSED PROFESSIONAL ENGINEER
L.D. G. Yannoulopoulos
2024/11/13
PROVINCE OF ONTARIO

PRIME CONSULTANT
ARCADIS
333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT
MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE
SITE GRADING PLAN

SHEET NUMBER	ISSUE
C-200	1

SCALE CHECK 1 m XXXXX 1pmm

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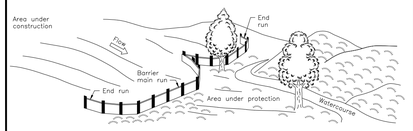
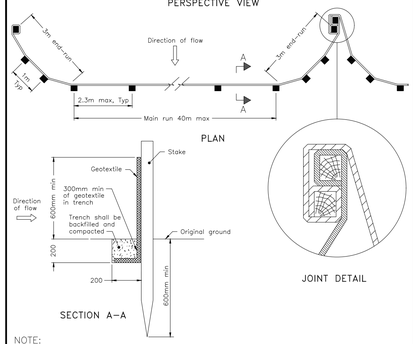
D07-XX-XX-XXXX



PERSPECTIVE VIEW



PLAN

JOINT DETAIL

SECTION A–A

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

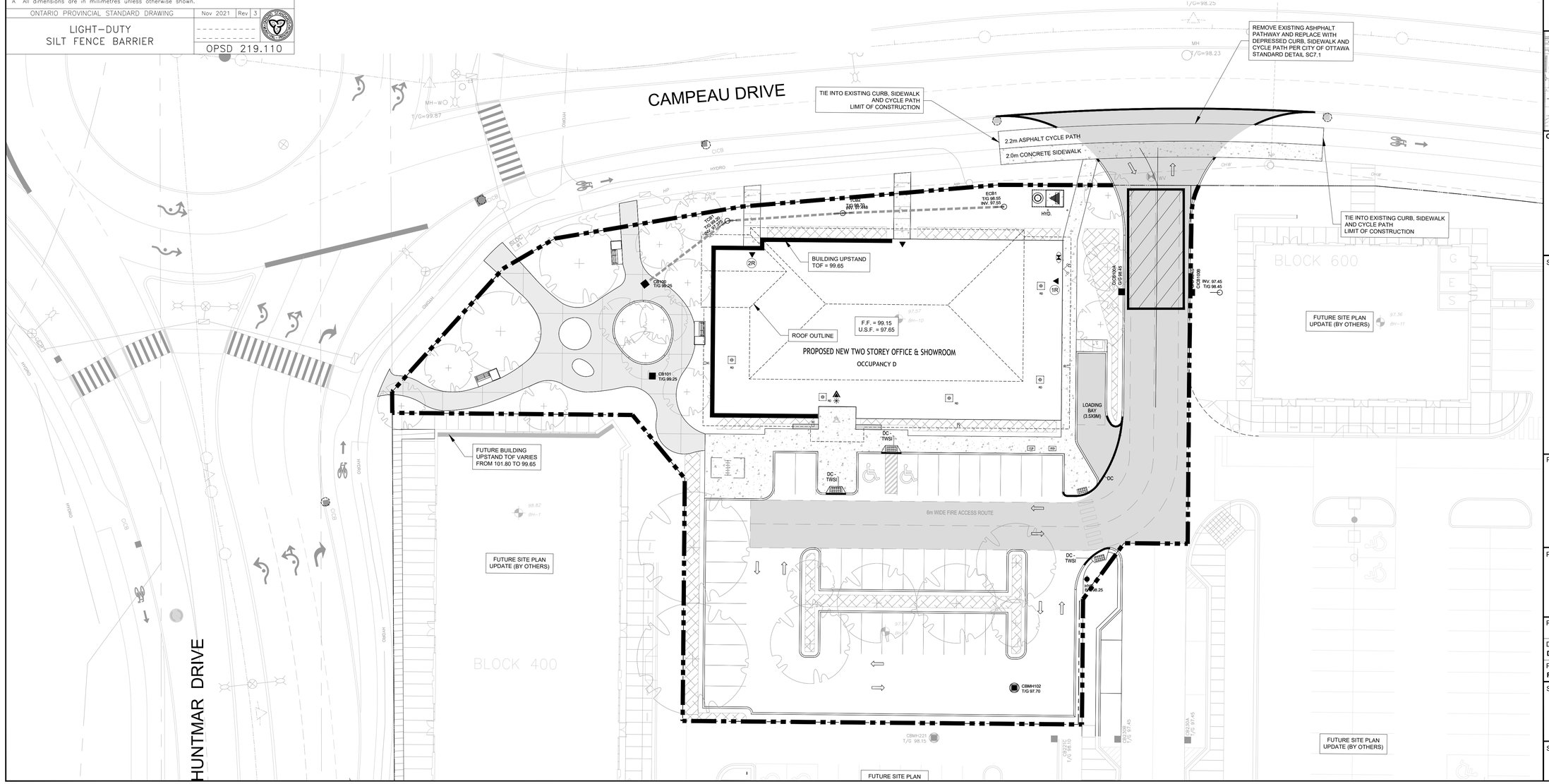
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110

NOTES:

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 FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
3. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
4. 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.
5. 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.
6. CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
7. WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
8. THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT.

LEGEND:

- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH (7.0 × 15.0)



CLIENT

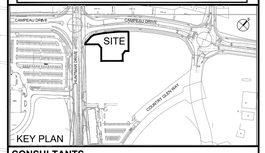
minto Communities

Arcadis Professional Services (Canada) Inc.
formerly IBI Group Professional Services (Canada) Inc

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2024-11-13
2		
3		
4		
5		

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



KEY PLAN

CONSULTANTS

1:250 0 2.5 5 7.5 12.5m

SEAL

LICENSED PROFESSIONAL ENGINEER
L.D. S. Yannoulopoulos
2024/11/13
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS

333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT
MINTO DESIGN CENTRE
370 HUNTMAR DRIVE

PROJECT NO: 147391	
DRAWN BY: **D.P.S.**	CHECKED BY: **D.G.Y.**
PROJECT MGR: **R.M.**	APPROVED BY: **R.M.**

SHEET TITLE
SEDIMENT - EROSION PLAN

SHEET NUMBER	ISSUE
C-900	1

SCALE CHECK 1 in

XXXXX

D07-XX-XX-XXXX

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LEGEND:

- BORE HOLE LOCATIONS
- EXISTING GRADE
- PROPOSED GRADE
- PROPOSED GRADE
- FUTURE DECK HEIGHT OF RAPID TRANSIT (STA. AND GRADE FROM DELCAN)
- TOP OF RETAINING WALL
- BOTTOM OF RETAINING WALL
- RISERS REQUIRED
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED DEPRESSED CURB AND RAMP
- PROPOSED ARMOUR STONE RETAINING WALL
- PROPOSED BUILDING UPSTAND
- PROPOSED BUILDING FINISHED FLOOR ELEVATION
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED CATCHBASIN C/W TOP OF GRATE ELEVATION
- PROPOSED DITCH INLET C/W TOP OF GRATE ELEVATION
- PROPOSED TEE CB (ECB OR TCB) C/W TOP OF GRATE
- PROPOSED SUBDRAIN
- MAJOR STORM ROUTING
- PRESSURE REDUCING VALVE
- TERRACING @ 3:1 UNLESS OTHERWISE NOTED

SEE CAMPEAU DRIVE EXTENSION PROJECT NO. ISD12-5240 PREPARED BY STANTEC FOR ULTIMATE DESIGN AND DETAILS

CAMPEAU DRIVE

INTERIM STOP SIGN

INTERIM ACCESS

INTERIM SWALE

PROVIDE POSITIVE DRAINAGE TO INTERIM SWALE MAX. 3:1 SIDE SLOPES

1.0m GRAVEL SHOULDER

TEMPORARY SWALE

HUNTMAR DRIVE

COUNTRY GLEN WAY

FUTURE RAPID TRANS LT

BLOCK 500

BLOCK 600

BLOCK 700

BLOCK 800

BLOCK 400

BLOCK 300

BLOCK 200

BLOCK 100

CRU 901
BLOCK 900

CRU 902

PROVIDE POSITIVE DRAINAGE AWAY FROM ROAD MAX. 3:1 SIDE SLOPES

INTERIM ACCESS ROAD (SEE DETAIL SECTION B:B DRWG C-101)

INTERIM WORKS:
INTERIM WORKS ARE ONLY REQUIRED IF CITY OF OTTAWA DELAYS THE CONSTRUCTION OF THE CAMPEAU DRIVE EXTENSION. ENGINEER TO ADVISE CONTRACTOR IF WORKS ARE NECESSARY.

TOP OF DECK AT STA 12+394 =±105.60
PROPOSED ROAD ±97.20
6.0m CLEARANCE WITH 2.0m DECK STRUCTURE THICKNESS.

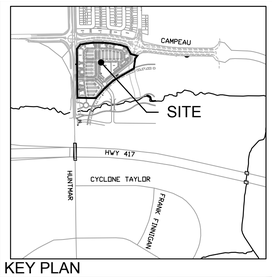
LIMIT OF GRADING CONTRACT

±99.25 12+550

TERRACING 2:1

TERRACE 3:1 TO MATCH EXISTING

1.2m WIDE ARMOUR STONE WALL WITH GUARD RAIL SEE PATERSON GROUP DETAILS.



KEY PLAN

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____ , 20 _____

DERRICK MOODIE, ACTING MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	Description	Date	Checked
10	Revised as per City Comments	16:08:25	DGY
9	Revised as per City Comments	16:08:18	DGY
8	Revised Campeau per Stantec plans	16:08:03	DGY
7	Issued for Construction	16:07:13	DGY
6	Add Interim Access Rd.	16:05:16	DGY
5	Issued for Tender	16:04:05	DGY
4	Revised as per City Comments	14:10:02	DGY
3	Revised as per City Comments	14:08:22	DGY
2	Issued for SPA Resubmission	14.06.27	DGY
1	Issued for SPA	13.11.18	DGY
Issued for			

All measurements and conditions must be checked on the work by the contractor. This drawing not to be used for construction until signed.

Date

plotted J:\35355-ArcadiaComm\5.9 Drawings\59civil\layouts\C-200.dwg
Layout Name: Grading Plan Plot Style: AIA STANDARD-FULL.CTB
Plot Scale: 1:1 Plotted At: 9/1/2016 10:45 AM Last Saved By: dslurno Last Saved At: Sep. 1, 16

TN PN

2016/08/25

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH
Signed _____
Date _____ 2016
Plan Number _____

drawn by DPS	scale 1:500
checked by DGY	date NOV. 2013
printed	file 35355

Arcadia Retail Development
Kanata, Ontario

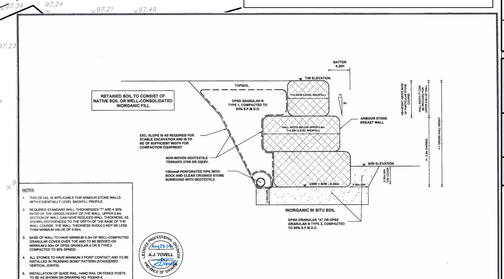
Minto Properties
200 Kent Street • Suite 180 • Ottawa, Ontario • K1P 0B6
Telephone: (613)782-3137 Fax: (613)782-5777

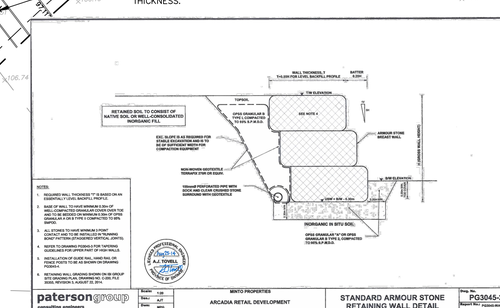
drawing title:
SITE GRADING PLAN
370 HUNTMAR DRIVE
OTTAWA, ON.

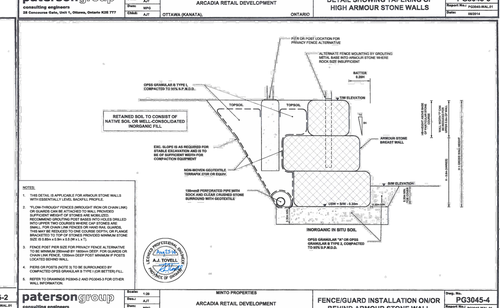
IBI GROUP
333 Preston Street Tower 1, Suite 400
Ottawa, Ontario Canada K1S 5N4 Tel (613)225-1311 FAX (613)225-9868

drawing no.
C-200

D07-12-14-0014







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