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Site Servicing Report

Arcadia Stage 6
450 Huntmar Drive

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1.0 INTRODUCTION

1.1 General

In 2022, J.L. Richards & Associates Limited (JLR) was retained by Minto Communities Inc. (Minto) to prepare the detailed design of municipal infrastructure for Site Plan Approval (SPA) of Arcadia Stage 6. This Site Servicing Report (SSR) presents the servicing constraints and strategies for water, wastewater, stormwater servicing, and stormwater management in accordance with the City of Ottawa Design Guidelines, the associated technical bulletins and relevant design excerpts. This SSR also includes strategies for implementing erosion and sedimentation control measures throughout the construction phase of the project.

1.2 Site Description

Minto's Arcadia Stage 6 is located within the City of Ottawa's Official Plan boundary and consists of a ±5.58 ha parcel bounded by Campeau Drive and Arcadia Stage 3 to the north, Campeau Drive SWMF and Donum Lane to the east, Country Glen Way to the west and by the Light Rail Transit (LRT) / Feedmill Creek to the south (refer to **Error! Reference source not found.**). The l egal description of the subject property is Part of Block 2, Registered Plan 4M-1563 and Part of Lot 3, Concession 1 (Geographic Township of March), City of Ottawa (refer to Appendix A1 for the Legal Plan)

A topographical survey was completed by Stantec Inc. in May 2022 (Appendix A1). The survey indicates that the existing ground surface contains fill piles and generally slopes downwards in a northeasterly direction towards Donum Lane.

1.3 Proposed Development

The proposed development will consist of 368 residential units and one public parkette (0.56 ha). Overall, the site will feature 11 Executive Towns, 80 Avenue Towns, 13 Urban Towns and 264 Metro Towns. The Concept Plan for Arcadia Stage 6 is attached to Appendix A1.

1.4 Proposed Connections to Existing Infrastructure

A review of existing services was completed along both frontages of the subject property to identify existing sewers and watermains to service the development. The proposed connections to the existing infrastructure consists of the following (refer to Appendix A3 for a copy of the background drawings):

Watermain

- East: Connection to existing 305 mm diameter PVC watermain along Donum Lane.
- West: Connection to existing 305 mm diameter PVC watermain along Country Glen Way.

Sanitary

- East: Removal and relocation of existing maintenance hole on Donum Lane and connection using 375 mm pipe.

Storm

- East: Removal and relocation of existing maintenance hole on Donum Lane and connection using 1500 mm pipe.
- West: Connection to existing maintenance hole on Country Glen Way using 900 mm pipe. The existing 600 mm pipe initially intended to service the proposed development will be removed.

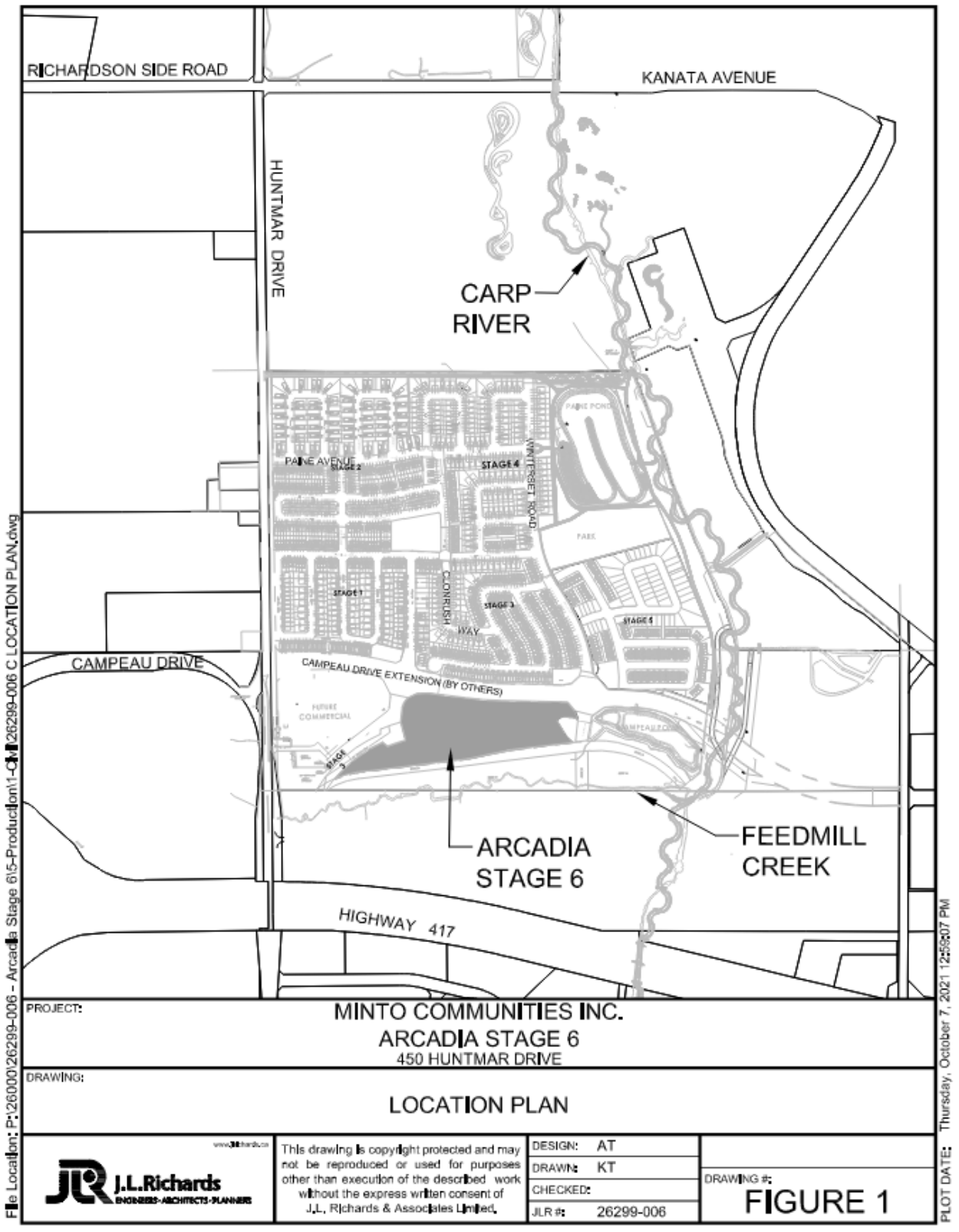
The existing watermain, storm and sanitary stubs on Donum Lane will be removed.

1.5 Consultation and Permits

A pre-consultation meeting was held on September 2, 2021, to discuss the planning process, design criteria, and servicing constraints. A copy of the pre-consultation meeting notes has been provided in Appendix A2.

As stated during the pre-consultation meeting, Stage 6 will be a Site Plan Control Application to the City of Ottawa. Existing structures are in place at the East and West side of the property line. These structures will be removed and/or relocated. As noted in the Servicing Drawings (S1 and S2), Stage 6 will have two storm, one sanitary and two watermain connections. An Environmental Compliance Approval (ECA) will be necessary to meet the Ministry of Environment, Conservation and Parks (MECP) requirements. In addition, a Servicing Study Checklist has been included in Appendix A4 of this report. The checklist provides all the details associated with this development as well as the approval and permit requirements.

Figure 1-1: Location Plan



2.0 WATER SERVICING

2.1 Water Supply Design Criteria

A Hydraulic Network Analysis (HNA) was carried out to confirm the site's watermain sizing and to demonstrate its compliance to the Ottawa Design Guidelines for Water Distribution (July 2010) and Technical Bulletins ISDTB-2014-02, ISTB-2018-02 and ISTB-2021-03. These documents are herein referred to as the Design Guidelines and TB-2014-02, TB-2018-02, and TB-2021-03, respectively.

Section 4.2.2 of the Design Guidelines states the following criteria for development additions to the public water distribution system:

- Under maximum hourly demand conditions (peak hour), the residual pressures shall not be less than 276 kPa (40 psi);
- During periods of maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 140 kPa (20 psi);
- In accordance with the Ontario Building Code (OBC) in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi);
- The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 689 kPa (100 psi); and
- Feedermains, which have been provided primarily for the purpose of redundancy, shall meet, at a minimum, the basic day plus fire flow demand.

2.2 Domestic Water Demands

The estimated domestic water demands presented in this section are based on the site layout and unit count proposed in the Concept Plan (Appendix A1).

The residential consumption rate for average day demand was set in accordance with the City's TB-2021-03. To represent water usage from the Public Parkette, a demand of 4.0 L/s was applied to junction node J-13 for all three (3) demand scenarios (average day demand, maximum day demand and peak hour demand). Please note that the peaking factor was not applied to the parkette demand as it is assumed to be a constant demand for each scenario. Table 2-1 summarizes the water consumption rates and total estimated water demands used in the HNA. Calculated in accordance with Section 4.2.8 of the Design Guidelines, the detailed water demand distribution is presented in Appendix B1.

Table 2-1: Water Demands

Demand Scenario	Water Consumption or Peaking Factor	Domestic Demands (L/s)	Parkette Plug Flow (L/s)	Total Demands (L/s)
Average Day Demand	280 L/c/d	2.88	4.0	6.88
Maximum Day Demand	2.5 x Avg Day	7.20	4.0	11.20
Peak Hour Demand	2.2 x Max Day	15.83	4.0	19.83

2.3 Fire Flow Requirements

The City has specified that the Fire Underwriters Survey (FUS) method shall be used for any public or private site where new fire hydrants are being designed. Specifically, the required fire flow (RFF) for each structure was calculated in accordance with TB-2018-02. Based on discussions with the City, the maximum fire flow supply is limited to 300 L/s for the area. Critical fire areas for Arcadia Stage 6 and calculated fire flows are presented in Table 2-2.

Table 2-2: Fire Flow Requirements

Location	Block Number	Calculated Fire Flow L/min (L/s)
Critical Fire Area 1	Block 24	17,000 (283)
Critical Fire Area 2	Block 27	15,000 (250)
Critical Fire Area 3	Block MT-06	15,000 (267)
Critical Fire Area 4	Block MT-11	15,000 (250)
Critical Fire Area 5	Block MT-01	10,000 (167)
Critical Fire Area 6	Block MT-02	14,000 (233)
Critical Fire Area 7	Block MT-04	14,000 (233)
Critical Fire Area 8	Block MT-05	15,000 (250)
Critical Fire Area 9	Block MT-12	14,000 (233)
Critical Fire Area 10	Block MT-14	12,000 (200)

Refer to Appendix B1 for the detailed RFF calculations for the critical fire areas.

2.4 Proposed Water Servicing, Boundary Conditions and Water Model

2.4.1 Proposed Water Servicing

The proposed water servicing for Arcadia Stage 6 includes a private 203 mm watermain loop connected to the following existing watermains:

- Connection-1: the existing 305 mm watermain south of the intersection of Donum Lane and Campeau Drive; and

- Connection-2: the existing 305 mm watermain ±150 m south of the intersection of Country Glen Way and Campeau Drive.

The water demands will be supplied by local 200 mm PVC watermains. A 50 mm PEX water service will be extended from the mainline to provide domestic water service to units which are not fronting the 200 mm watermains. All units will be provided with an individual 19 mm PEX water service from the front except for the duplex blocks with underground parking, which will be provided with a shared water service into the mechanical room for each complex. The water service for the public parkette is proposed as a 50 mm copper pipe. Refer to Drawing S1 and S2 for the water servicing layout.

The construction will be carried out in phases. Phase 1 will consist of constructing and servicing MT-08, MT-10, MT-11, MT-12, MT-13 and MT-14, including the east underground parking structure. The proposed watermain along Feedmill Private and Creekway Private (north and east sides) will be constructed in Phase 1 to service these buildings. The full RFF can be achieved at every phase of construction for each building within that phase.

2.4.2 Boundary Conditions

Hydraulic boundary conditions were provided by the City at the two proposed connection locations (Connection-1 and Connection-2) listed in Section 2.4.1 above. Tables 2-3 summarizes the hydraulic boundary conditions received (refer to Appendix B2 for a copy of the City correspondence).

Table 2-3: Hydraulic Boundary Conditions

Demand Scenarios	Connection-1 Head (m)	Connection-2 Head (m)
Maximum HGL	161.2	161.2
Peak Hour	156.4	156.4
Max Day plus Fire 1 (283 L/s)	148.3	139.1

2.4.3 Water Model

A hydraulic water model within the WaterCAD® software platform was used to carry out the HNA (refer to the overall schematics presented in Appendix B3). The water demands from Table 2-1 and the boundary conditions from Table 2-3 were input into the model for each demand scenario. Table 2-4 summarizes the watermain diameters and roughness coefficients used in the model, based on Sections 4.2.12 and 4.3.5 of the Design Guidelines.

Table 2-4: Watermain Internal Diameters and C-Factors

Nominal Diameter	Inside Diameter	C-Factor
50 mm	41 mm (PEX) 50 mm (Copper)	100
150 mm	155 mm	100
200 mm	204 mm	110
300 mm	297 mm	120

2.5 Simulation Results

The HNA was carried out under steady-state peak hour, maximum day plus fire flow, and maximum pressure conditions to confirm that the proposed water servicing can meet the design criteria outlined in Section 2.1.

2.5.1 Peak Hour

The simulation results found the minimum pressure at the site during the peak hour condition to be 524 kPa (76.0 psi) (refer to Appendix B4), which exceeds the minimum pressure criterion of 276 kPa (40 psi) per the Design Guidelines.

2.5.2 Maximum Day Plus Fire Flow

Fire water supply will be provided by hydrants located along the 203 mm watermains. Hydrant spacing was carried out in accordance with the Design Guidelines.

To ensure adequate fire protection, the maximum day demand shown in Table 2-1 was analyzed simultaneously with the fire flow requirements. The fire flow simulation was carried out by allowing WaterCAD® to calculate the maximum fire flow that can be drawn from each hydrant without allowing any part of the system to experience pressures less than 140 kPa (20 psi). It is expected that the target fire flow of 17,000 L/min (283 L/s) can be provided throughout the site (refer to Appendix B5). As shown in Appendix B2, contributing fire hydrants were assessed for each structure within the site to confirm that adequate water supply is available per Appendix I of TB-2018-02.

2.5.3 Maximum Pressure

Based on a zero (0 L/s) demand condition, the simulation results found the pressures at the site during the maximum pressure condition to range between 604 kPa (87.6 psi) and 648 kPa (93.9 psi) (refer to Appendix B6). Since these values exceed the maximum pressure constraint of 552 kPa (80 psi) per the Design Guidelines, all units within Arcadia Stage 6 will require pressure reducing valves (PRVs).

2.6 Summary and Conclusions

Based on the water simulation results, the proposed development can be serviced by a 203 mm watermain loop, 203 mm local watermains and 50 mm water service extensions as shown on

Drawing S1 and S2. Simulation results under peak hour demand and maximum pressure conditions showed that the design criteria can be achieved with the installation of PRVs for all of the units within the site. Furthermore, adequate fire water supply can be achieved with the proposed servicing.

3.0 WASTEWATER SERVICING

3.1 Background

In accordance with the Kanata West Master Servicing Study (KWMSS), wastewater servicing in Arcadia Stage 6 is designed to outlet to the existing 675 mm diameter gravity sanitary sewer on Campeau Drive. Sanitary sewage will then be conveyed by gravity to the Signature Ridge Pump Station (SRPS) which, in turn, will eventually outlet to the Robert O. Pickard Environmental Centre where wastewater is processed and treated prior to discharge into the Ottawa River.

3.2 Design Criteria

The sanitary sewer system within Arcadia Stage 6 is designed in accordance with the Ottawa Sewer Design Guidelines and subsequent technical bulletins. The design parameters are applied under two scenarios as per ISTB Technical Bulletin 2018-01. In addition to the typical design values, annual values are used for the simulation of the system with failure of the pump station and operation of the overflows. The simulation of the pump station failure should show that the HGL of the sanitary system remains below the underside of footings due to the operation of the overflows. The key design parameters have been summarized in Table 3-1.

Table 3-1: Wastewater Key Design Parameters

Design Parameter	Design Value	Annual Value
Duplex[1] Population Density	2.3 ppu	Same as design
Row Townhouse[2] Population Density	2.7 ppu	Same as design
Residential Average Flow	280 L/Cap/Day	200 L/cap/day
Residential Peaking Factor	Harmon's Formula	Same as design
Harmon's Correction Factor (K)	0.8	0.6
Infiltration Allowance	0.33 L/s/ha	0.3
Manning's Roughness Coefficient (n)	0.013	0.013
Allowable Slopes	Varies (Refer to Section 6.1.2.2 of ODSG)	-
Allowable Velocities	0.6 m/s – 3.0 m/s	-
Allowable Freeboard	-	> 0 m

(1) The product "Metro Towns" are duplex units.
(2) The products "Rear Lane (or Urban) Towns", "Executive Towns", and "Avenue Towns" are row townhouse units.

3.3 Proposed Sanitary Servicing and Design Flows

Wastewater generated from Arcadia Stage 6 will be conveyed via a local 200 mm diameter sanitary sewer system that will discharge into the existing 375 mm sewer on Donum Lane as shown in the Servicing Drawings (S1-S2).

Wastewater flows from the proposed development are presented in the Arcadia Stage 6 Sanitary Design Sheet (refer to Appendix C1). Based on the design criteria (Table 3-1) and the site constraints, a total design peak flow of 11.19 L/s is calculated for the development. Table 3-2 summarizes the results from the sanitary design sheet.

Table 3-2: Sanitary Design Flow Summary

Unit Type	Site Area	Unit Count	Unit Density	Average Flow	Res. Peak Flow	Infilt. Flow	Total Flow
Duplex	5.42 ha	264	2.3 ppu	280 L/cap/day	9.40 L/s	1.79 L/s	11.19 L/s
Row Townhouse		104	2.7 ppu				

The peak wastewater flow calculated for the proposed Arcadia Stage 6 development is 11.19 L/s as shown in Table 3-2. This is based on a total population of 888 people. The sanitary design spreadsheet prepared by IBI (Appendix C2) shows that a flow of 4.80 L/s was allocated for the western portion of Stage 6 and a flow of 20.06 L/s was allocated for a 24.3 ha land parcel which included the eastern portion of Stage 6. This amounts to a pro-rated flow allocation of 1.75 L/s for the eastern portion. Thus, the total flow allocation for the entire Stage 6 development is 6.55 L/s (4.80 L/s + 1.75 L/s).

It is noted that previously, the sanitary flows from this site were to be split between the western portion discharging to Country Glen Way and the eastern portion discharging to Donum Lane. Though two outlets were identified for this site, the flows were anticipated to quickly converge along Campeau Drive into the same sewer located northeast of the site at the Donum Lane/Winterset Road/Campeau Drive intersection (i.e., at ex. MH 307A). Although the calculated peak flow for Arcadia Stage 6 is 11.19 L/s which is greater than the original combined allocated flow of 6.55 L/s the following points discuss the downstream capacities:

1) The Donum Lane detailed design sheets completed as part of Arcadia Stage 3 & 4, show that there is sufficient residual downstream capacity to accept the 11.19 L/s from Arcadia Stage 6 on Donum Lane.

2) The design sheets from the KWMSS for Campeau Drive (Appendix C2) indicate that there is sufficient residual capacity in the downstream system up to the signature ridge pumping station to accommodate the increase in flow.

Given there is sufficient residual capacity in the sewer system, it is proposed to adopt the sanitary servicing strategy described in this section.

3.4 Overflow and Sanitary Hydraulic Grade Line Analysis

Protection against basement flooding within the existing Arcadia Stages 1 to 4 is currently provided by an existing overflow that outlets to the Paine Pond stormwater management facility along with other overflows in the wastewater sewer network. No new overflows are proposed for additional basement protection for Stage 6.

The hydraulic grade line (HGL) analysis carried out for the detailed design of Stage 4 (latest analysis dated February 2020) demonstrated that the design criterion for freeboard was met within the system for Arcadia Stages 1 to 4, including a flow allowance from Stage 6. An updated HGL analysis has been carried out to confirm the HGL within the Stage 6 development.

The HGL analysis was completed using the PCSWMM software platform. The HGL analysis was based on the Signature Ridge HGL analysis completed by IBI in September 2014 with the following revisions:

- Peak wastewater flows were calculated in accordance with the parameters prescribed in Technical Bulletin ISTB-2018-01 and based on residential unit counts and land uses per the current proposed Arcadia Development (Appendix 'A1').
- The local sanitary sewers in Stage 6 were added to the model.
- Land use and residential unit counts were updated using design documents from Arcadia Stages 1, 2 and the Arcadia Retail Development. Appendix C references all applicable documents. Allocations are shown on Drawing OSAN.
- Populations and land uses on the eastern side of the Carp River were maintained as per the 2014 HGL analysis; however, wastewater flows were recalculated based on the parameters in the Technical Bulletin ISTB-2018-01.
- Existing overflows in the model on the East side of the Carp River were maintained in the model although all sanitary sewers were updated as per the GeoOttawa information.
- As per the recent constructed works implemented in Stage 4, an emergency sanitary sewer overflow was included at the Paine SWMF at the 1:25 year design elevation of 93.37 m.

The revisions to the sewer shed areas are shown in the marked-up Figures from the September 2014 report (Appendix C8) along with the revised Sanitary Design Sheets for the Dry Weather Flow and Wet Weather Flow with the Annual Parameters. Table 3-4 summarize the wet and dry weather flows for Arcadia Stage 6 under the annual event.

The resulting flows at the overflows are listed in Table 3-3 below using the Annual Parameters for the Dry Weather Flow condition and the Wet Weather Flow Condition. The values can be summed to give the equivalent flow to the SRPS when the pump is operating.

Table 3-3: Sanitary Annual Flows at Overflow Locations

Overflow Location	Overflow Elevation (m)	Dry Weather Flow (l/s)	Wet Weather Flow (l/s)
Paine SWMF	93.37	29	42
SRPS Emergency Overflow	93.70	97	244

Overflow Location	Overflow Elevation (m)	Dry Weather Flow (l/s)	Wet Weather Flow (l/s)
Richardson Ridge Overflow	94.10	6	34
Total Flow	-	132	319

The simulated HGL elevations were then compared to underside of footing (USF) elevations of Stage 4 and Stage 3. It should be noted that the USF used in this HGL analysis are generally lower than those assumed as part of the 2013 IBI HGL analysis due to changes in the development criteria of the site during the design phases.

Table 5 6 displays the freeboard under dry and wet weather flows. Results in Table 5 6 indicate that a minimum freeboard greater 0.01m will be achieved throughout Stage 6. HGL levels for conceptual future stages can be found in Appendix 'C8'.

Table 3-4: Freeboard from Sanitary HGL under Pumping Station Failure

Manhole ID	Underside of Footing (m)	DWF Max HGL (m)	DWF Freeboard (m)	WWF Max HGL (m)	WWF Freeboard (m)
100A	94.24	93.92	0.32	94.20	0.04
101	94.24	93.92	0.32	94.20	0.04
101A	94.24	93.92	0.32	94.21	0.03
101B	94.24	93.92	0.32	94.21	0.03
102	94.24	93.92	0.32	94.21	0.03
102A	94.24	93.93	0.31	94.21	0.03
102B	94.44	93.93	0.51	94.22	0.22
103	94.62	93.92	0.70	94.21	0.41
104	94.24	93.92	0.32	94.21	0.03
105	94.24	93.92	0.32	94.21	0.03
106	94.24	93.93	0.31	94.22	0.02
107	94.69	93.93	0.76	94.22	0.47
109	94.80	93.93	0.87	94.23	0.57
110	94.80	93.93	0.87	94.23	0.57
110A	94.80	93.93	0.87	94.23	0.57
110B	94.80	93.93	0.87	94.23	0.57
111	94.80	93.93	0.87	94.23	0.57
112	95.10	93.93	1.17	94.23	0.87

Manhole ID	Underside of Footing (m)	DWF Max HGL (m)	DWF Freeboard (m)	WWF Max HGL (m)	WWF Freeboard (m)
113	95.10	93.93	1.17	94.23	0.87
114	95.10	93.93	1.17	94.23	0.87
114A	95.15	93.93	1.22	94.23	0.92
115	95.30	94.46	0.84	94.47	0.83
116	95.43	93.94	1.49	94.23	1.20
117	95.75	93.94	1.81	94.24	1.51
118	95.85	93.94	1.91	94.24	1.61
119	95.50	93.99	1.51	94.24	1.26
120	96.14	94.28	1.86	94.28	1.86
121	96.14	94.13	2.01	94.24	1.90
122	96.14	94.71	1.43	94.72	1.42
123	96.14	94.27	1.87	94.27	1.87
124	96.14	94.07	2.07	94.07	2.07
124A	96.14	93.83	2.31	94.24	1.90

The table presented below displays the freeboard values for existing Arcadia Stages along with existing downstream infrastructure up to the Signature Ridge Pumping Station. The information summarized below provides a comparison of the updated results from the current JLR model to those presented in the SRPS report.

Table 3-5: 2014 Signature Ridge Pumping Station (IBI Group)

IBI Node ID	Ground Elevation (approx USF elev. From IBI) (m)	USF Elevation (from IBI)	IBI Ultimate Buildout Scenario HGL(m)	IBI Min. FB to ground (FB to approx. USF elev.) (m)	JLR Model Node	JLR HGL (m)	JLR Revised Minimum Freeboard to USF or Ground Elevation (m)	Difference from IBI
Campeau Drive								
1	103.5		99.53	3.97	MHSA66062	96.99	6.51	-2.54
2		96.68	95.47	1.21	MHSA66066	94.44	2.24	-1.03
2B		95.14	94.76	0.38	MHSA65328	94.27	0.87	-0.49
14	99.5		94.64	4.86	MHSA65349	94.19	5.31	-0.45
14A	96		94.52	1.48	MHSA65349	94.19	1.81	-0.33
3		94.8	94.5	0.3	MHSA65349	94.19	0.61	-0.31
4	94.86		94.44	0.42	MHSA65352	94.15	0.71	-0.29

IBI Node ID	Ground Elevation (approx USF elev. From IBI) (m)	USF Elevation (from IBI)	IBI Ultimate Buildout Scenario HGL(m)	IBI Min. FB to ground (FB to approx. USF elev.) (m)	JLR Model Node	JLR HGL (m)	JLR Revised Minimum Freeboard to USF or Ground Elevation (m)	Difference from IBI
5		94.2	94.23	-0.03	MHSA65123	94.12	0.08	-0.11
12465	95.7		94.27	1.43	MHSA12465	94.12	1.58	-0.15
South of Highway 417								
15	97.6		94.77	2.83	MHSA43765	94.26	3.34	-0.51
Didsbury Road								
20011	97.55		94.29	3.26	MHSA20011	94.13	3.42	-0.16
12461	96.05		94.26	1.79	MHSA12461	94.12	1.93	-0.14
Prop 5E	94.45		94.17	0.28	MHSA69564	94.11	0.34	-0.06
Prop5D	94.38		94.11	0.27	MHSA69565	94.1	0.28	-0.01
Prop 5C	94.33		94.06	0.27	MHSA69566	94.08	0.25	0.02
5A	95.15		94.03	1.12	MHSA65995	94.07	1.08	0.04
Arcadia Stage 1 and 2								
MH9			94.79		MHSA69409	94.29		-0.5
MH41		95.12	94.77	0.35	MHSA69400	94.29	0.83	-0.48
MH32			94.75		MHSA69392	94.29		-0.46
MH31		95.11	94.81	0.3	MHSA69391	94.55	0.56	-0.26
MH30		95.17	94.87	0.3	MHSA69390	94.76	0.41	-0.11
MH29		95.46	95.05	0.41	MHSA69389	94.99	0.47	-0.06
MH28		95.46	95.17	0.29	MHSA69388	95.1	0.36	-0.07
MH27		95.8	95.4	0.4	MHSA69387	95.33	0.47	-0.07
MH26		96.5	95.73	0.77	MHSA69386	95.66	0.84	-0.07
MH25 [S1]		97.77	96.02	1.75	MHSA69385	95.97	1.8	-0.05
MH40		95.11	94.77	0.34	MHSA69399	94.44	0.67	-0.33
MH39		95.1	94.77	0.33	MHSA69398	94.68	0.42	-0.09
MH38		95.17	94.53	0.64	MHSA69397	94.88	0.29	0.35
MH36		95.59	94.76	0.83	MHSA69396	95.1	0.49	0.34
MH37		96.07	95.06	1.01	MHSA69410	95.38	0.69	0.32
MH35		96.04	95.02	1.02	MHSA69395	95.35	0.69	0.33
MH34		96.5	95.46	1.04	MHSA69394	95.78	0.72	0.32
MH33			96.37		MHSA69393	96.67		0.3
MH8			94.8		MHSA69408	94.29		-0.51
MH7			94.8		MHSA69407	94.29		-0.51
MH6		95.27	94.82	0.45	MHSA69406	94.29	0.98	-0.53
MH24		95.2	94.82	0.38	MHSA69556	94.48	0.72	-0.34

IBI Node ID	Ground Elevation (approx USF elev. From IBI) (m)	USF Elevation (from IBI)	IBI Ultimate Buildout Scenario HGL(m)	IBI Min. FB to ground (FB to approx. USF elev.) (m)	JLR Model Node	JLR HGL (m)	JLR Revised Minimum Freeboard to USF or Ground Elevation (m)	Difference from IBI
MH23		95.37	94.82	0.55	MHSA69555	94.73	0.64	-0.09
MH22		95.16	94.82	0.34	MHSA69554	94.79	0.37	-0.03
MH21		95.5	94.7	0.8	MHSA69553	95.02	0.48	0.32
MH5		95.16	94.86	0.3	MHSA69405	94.38	0.78	-0.48
MH4		95.47	94.9	0.57	MHSA69404	94.54	0.93	-0.36
MH20		95.52	94.9	0.62	MHSA69551	94.83	0.69	-0.07
MH19		95.32	94.66	0.66	MHSA69552	95.05	0.27	0.39
MH3		96.17	95.02	1.15	MHSA69403	94.94	1.23	-0.08
MH18		96.24	95.03	1.21	MHSA69421	95.36	0.88	0.33
MH17		96.59	95.3	1.29	MHSA69420	95.63	0.96	0.33
MH16		96.59	95.41	1.18	MHSA69419	95.73	0.86	0.32
MH15		96.59	95.83	0.76	MHSA69417	96.26	0.33	0.43
MH13		97.25	95.94	1.31	MHSA69417	96.26	0.99	0.32
MH2		97.27	95.73	1.54	MHSA69402	95.68	1.59	-0.05
MH14		97.09	95.7	1.39	MHSA69416	96.02	1.07	0.32
MH13		97.25	95.94	1.31	MHSA69417	96.26	0.99	0.32
MH1 [S2]		98.12	96.31	1.81	MHSA69401	96.25	1.87	-0.06
S6		95.19	94.77	0.42	MHSA65325	94.28	0.91	-0.49
MH104A			94.725		MHSA65342	94.28		-0.445
Heritage Hills								
20116	107.9		103.86	4.04	MHSA20116	103.84	4.06	-0.02
20164	107.3		101.66	5.64	MHSA20164	101.64	5.66	-0.02
12735	102.01		96.37	5.64	MHSA12735	96.35	5.66	-0.02
12732	99.4		95.19	4.21	MHSA12732	94.84	4.56	-0.35
20098	106.8		104.32	2.48	MHSA20098	104.32	2.48	0
20179	106.6		103.67	2.93	MHSA20179	103.63	2.97	-0.04
20123	106.1		103.39	2.71	MHSA20123	103.33	2.77	-0.06
20127	105.4		101.7	3.7	MHSA20127	101.67	3.73	-0.03
20130	102.9		99.29	3.61	MHSA20130	99.27	3.63	-0.02
13058	98		95.06	2.94	MHSA13058	94.98	3.02	-0.08
20161	98		94.84	3.16	MHSA20161	94.61	3.39	-0.23
Terry Fox Drive (Richardson Ridge)								
Baylis	97.15		94.65	2.5	MHSA64878	95.03	2.12	0.38
Rchrdsn N.	96		94.6	1.4	MHSA64876	94.89	1.11	0.29

IBI Node ID	Ground Elevation (approx USF elev. From IBI) (m)	USF Elevation (from IBI)	IBI Ultimate Buildout Scenario HGL(m)	IBI Min. FB to ground (FB to approx. USF elev.) (m)	JLR Model Node	JLR HGL (m)	JLR Revised Minimum Freeboard to USF or Ground Elevation (m)	Difference from IBI
L. Rchrdsn		94.8	94.5	0.3	MHSA64834	94.45	0.35	-0.05
MH329A		94.81	94.49	0.32	MHSA64833	94.46	0.35	-0.03
MH328A		94.84	94.51	0.33	MHSA64832	94.46	0.38	-0.05
L. Rchrdsn Ea.		94.97	94.46	0.51	MHSA63532	94.45	0.52	-0.01
N62		94.7	94.44	0.26	MHSA63527	94.42	0.28	-0.02
Terry Fox Drive (Broughton to SRPS)								
Broughton		94.7	94.42	0.28	MHSA58579	94.39	0.31	-0.03
MH205	96.99		94.8	2.19	MHSA58578	94.46	2.53	-0.34
MH207		97.26	94.95	2.31	MHSA58577	94.52	2.74	-0.43
TBD	95.42		94.34	1.08	MHSA58582	94.29	1.13	-0.05
SRPS	95.35		94.03	1.32	SPRS	94.07	1.28	0.04

3.5 Summary and Conclusions

Wastewater servicing for Arcadia Stage 6 will be designed in accordance with the City of Ottawa Sewer Design Guidelines, the associated technical bulletins, and various background documents as highlighted throughout this section. The proposed collection and conveyance of wastewater will consist of a local 200 mm diameter sewer which will outlet into Donum Lane as shown on Drawings S1 and S2. It is recommended that this wastewater servicing plan be implemented in order to provide adequate sanitary servicing for the proposed development.

4.0 STORM SERVICING AND STORMWATER MANAGEMENT

4.1 Background

Similar to Arcadia Stages 1 to 4 stormwater management requirements for this development were originally set by the 2006 Kanata West Master Servicing Study (KWMSS), which identified a single stormwater management facility (referred as a Pond One) to service the area of the then proposed Arcadia developments. In 2018, after development of Stages 1 and 2, JLR evaluated various storm servicing strategies for the remainder of the Arcadia Development as part of the document entitled "Stormwater Management Strategy Report - Arcadia Residential Stages 3, 4 and Commercial Stage 2, JLR, May 2018". The 2018 report identified that the preferred solution for the remainder of the Arcadia development was to incorporate a second stormwater management facility (SWM facility) on the south side of Campeau Drive which would improve HGL issues, allow for the immediate servicing of Campeau Drive extension and Light Rail Transit (LRT) and reduce submergence along the minor system when compared to a single pond servicing strategy. The two-pond concept was accepted by the City of Ottawa. The second SWM facility referred to as the Campeau Drive SWMF is the dedicated storm outlet for Stage 3, which included part of the Stage 6 lands.

Storm flows from the west side of Arcadia Stage 6 discharge to existing stubs on Country Glen Road that were included as part of the design for the commercial development on the west side of Country Glen Road. Discharges to the minor system on Country Glen Road flow via the existing minor system through Stages 1, 2 and 4 of Arcadia development and outlet to the Paine Pond, which provides water quantity and quality control for discharges to Carp River. Release rates to Country Glen Road were set in the Arcadia Commercial 370 Huntmar Drive Design Brief by IBI Group, October 2014.

Storm flows from the east side of Arcadia Stage 6 discharge to an existing storm sewer on Donum Lane, which discharges into Campeau Drive SWMF. This facility provides water quantity and quality controls prior to releasing controlled flows into the Carp River. Allowable release rates from the east side of Arcadia Stage 6 were set out in the JLR 2018 report and confirmed in the design of Arcadia Stage 3.

4.2 Design Criteria

Storm and stormwater management servicing for the Arcadia Stage 6 was developed in accordance with the City of Ottawa 2012 Sewer Design Guidelines (OSDG) and the more recent Technical Bulletin PIEDTB-2016-01 (September 6, 2016). These two documents are herein referred to as the Design Guidelines in this section. A summary of the key storm and stormwater management criteria follows:

- Control minor system flows to the allowable release rates at existing stubs at Country Glen Road and Donum Lane;
- Storm sewers are designed to capture the 1:5 year storm event as a minimum using the Rational Method and using the regressions derived from Intensity-Duration-Frequency (IDF) equations as per the Design Guidelines;
- Provide a freeboard in the sewer network to the underside of footing (USF) of 300 mm during the 1:100-year storm where weeping tile connections are present;

- The runoff coefficients (C-factors) for the residential development were based on the maximum lot coverage permitted by the proposed zoning, as per the Design Guidelines. C-factors for non-residential land uses to be calculated based on the ratio of pervious and impervious surfaces depicted on proposed site plans;
- Minimum roadway profile grades at 0.5%;
- Roadway cross-fall of 3% was used for all streets;
- Minimum roadway slope of 0.1% from crest-to-crest for overland flow route;
- Minimum rear yard slope in the absence of perforated pipe system of 1.5% along with swale side slopes of 3 horizontal to 1 vertical;
- Maximum street ponding depth of 350 mm (static and dynamic) as per the Design Guidelines and maximum depth of rear yard flow to be 300 mm;
- Minimum vertical clearance of 0.15 m between the spill elevation on the street and the finished grade (garage elevation);
- Minimum vertical clearance of 0.30 m between the rear yard spill elevation and the ground elevation at the building in the rear yards;
- During the Climate Change event, the street ponding is not to reach the lowest building opening while the storm HGL must remain at or below the USF;
- The product of the velocity and depth of major system flows on streets during the 1:100-year design storm event is not to exceed 0.60 m^2/s; and,
- Major system flows up to and including the 1:100-year design storm event are contained within the site and internally are self-contained within the park and amenity blocks.

4.3 Proposed Stormwater Management Approach

It is proposed to utilize both the west and east connection points to the existing minor storm sewers on Country Glen Road and Donum Lane respectively. The Country Glen Road sewer will utilize the two existing stubs located approximately 70 m (MH201, Ext 1) and 130 m (MH205, Ext 2) upstream of the intersection with Campeau Drive, while the Donum Lane sewer will have one connection point at the existing stub to the east of the proposed development. The stormwater management approach will require that the discharges to these locations are controlled to the allowable release rates identified in the design of Phase 1 and Stage 3 of the Arcadia site. These allowable release rates are identified in Table 4-1.

Table 4-1: Allowable Release Rates

Outlet	Allowable Release Rate (m^3/s)	Set By
West – Country Glen Road (MH201, Ext 1)	0.148	Arcadia Commercial 370 Huntmar Drive Design Brief by IBI Group, October 2014
West – Country Glen Road (MH205, Ext 2)	0.492	Arcadia Commercial 370 Huntmar Drive Design Brief by IBI Group, October 2014 (Prorated by Contributing Area)
East – Donum Lane	0.567	Stormwater Management Strategy report- Arcadia Residential Stages 3, 4 and Commercial Stage 2, JLR, May 2018

The release rate to MH205 identified in the Arcadia Commercial 370 Huntmar Drive Design Brief (IBI Group, October 2014) design sheets, 520 L/s, was based on an upstream contributing area of 2.82 ha with a runoff coefficient of 0.70. However it is now intended to split the lands to this inlet stub and therefore the release rate will be prorated to each contributing area. Arcadia Stage 6 will contribute runoff from an area of 2.67 ha. At the same runoff coefficient, 0.70, and time of concentration, 12 minutes, the smaller area will have an allowable release rate of 492 L/s, which is shown in Table 4-1. The remaining area of 0.15 ha will remain undeveloped and subject to future site plans. The combined allowable release rate for lands covering the Stage 6 development to the Country Glen Road storm sewer is 640 L/s.

In order to achieve the allowable release rates, the stormwater management of the site will include online detention of the stormwater runoff in underground oversized sewers and allowing increased headwater depths in sewer sections with no weeping tile connections. Where weeping tile connections are proposed at houses with basements, the 1:5-year free flow capacity of the pipe network will be maintained, the 1:100-year HGL will remain 300mm below the underside of footing of connected units and the climate change event HGL will remain below the underside of footing of connected units.

4.4 Proposed Minor System Servicing

4.4.1 Runoff Coefficient

Runoff coefficients (C-Factors) were calculated for Arcadia Stage 6 based on the weighted product between the percentage of the pervious area at a C-Factor of 0.2 and the percentage of the impervious area at a C-Factor of 0.9. GIS Mapping of the impervious and pervious surfaces was used in the PCSWMM software spatial weighting tool to develop an overall weighted C-Factor for the site, excluding the park and amenity site. Due to consistency and density of the site, this approach provides a conservative C-Factor to be used across the site. C-Factors are provided in Table 4-2.

Table 4-2: C-Factors

Area	C-Factor
Site Development Area	0.78
Parkland (Public)	0.4
Amenity Space (Private)	0.58

One of the amenity spaces, which will remain private, has runoff from residential area and the C value for this subcatchment has been calculated separately based on an area weighting between 0.78 and 0.4 areas. A similar approach was used for three subcatchment areas with predominant open space and a reduced C-Factor of 0.58 was used.

4.4.2 Minor System Servicing

The proposed storm sewers of Arcadia Stage 6 were sized using the Rational Method based on the C-Factors presented in Table 4-2. Appropriate rainfall intensities were used in the Rational Method based on the rainfall regression

equations presented in Section 5.4.2 of the OSDG along with an inlet time of ten (10) minutes at the upstream end of the system. The Rational Method Storm Sewer Design Sheet is included in Appendix 'D1', while the Storm Drainage Plans included in the drawing set provide details associated with the storm drainage areas.

The storm drainage design sheet includes sewer sections which are used to control upstream flows through a restricted size. The restricted sewer sections operate under pressure in the minor system design event to control flows downstream and so show as operating beyond capacity in the design sheet, however these sewers are accounted for in the modelling HGL analysis.

4.4.3 Inlet Control Devices

Storm servicing for Arcadia Stage 6 was developed to limit all flows transmitted to the storm sewers and meet the 0.35 m criterion as the maximum street ponding depth requirement. To achieve this criterion, servicing was developed using ICDs at inlets to the minor system.

The response under the 1:5-year rational method calculation was used to determine the minimum ICD targeted flow for Arcadia Stage 6. The ICDs were selected based on the dynamic model head differential between the maximum HGL at the grate and the higher of the geodetic elevation of the centroid of the ICD or the downstream HGL, in each catch basin lead. Therefore, each ICD was sized to transmit the targeted peak flow based on the calculated water level depth at the top of grate. When water rises above the top of grate in the roadway sag, flows transmitted to the storm sewers will marginally increase due to the increase in the hydraulic head. Based on the range of flows and hydraulic heads at each catch basin, the following types of ICDs are proposed in Stage 6:

- IPEX Tempest Type A;
- IPEX Tempest Type B; and
- IPEX Tempest Type C;

Comprehensive ICD Tables referred to as the Catch Basin Table were prepared and are included in Appendix 'E2'. The Catch Basin Tables show specific information including top of grate elevation, pipe size and invert, the restricted capture rate and ICD type. The information shown on the Catch Basin Tables was extracted and shown on Drawing D1.

4.4.4 Water Quality

The storm discharge criterion for the subdivision is based on the enhanced protection level of 80% TSS removal. As described in JLR design briefs for Stormwater Management Facilities for Campeau and Paine Ponds, the 80 % of TSS removal was used as a design criterion to complete the detailed design of aforementioned facilities to provide water quality treatment for Arcadia Stage 6 development. Campeau Drive Pond services flows coming from eastern portion of

development while Paine Pond services flows from western portion of development.

The comparison of the design values used and the proposed values are shown in Table 4-3 and demonstrate that the ponds have the required water quality treatment capacity.

Table 4-3: Water Quality Capacity Analysis

	Stage 6 Area	Stage 6 C Factor	Stage 6 AxC
Campeau Pond Allocated	2.45	0.80	1.96
Campeau Pond Proposed	2.15	0.78	1.67
Paine Pond Allocated	3.55	0.70	2.48
Paine Pond Proposed	3.33	0.70	2.31

In Table 4-3 the allocated values to Campeau Pond are from the Arcadia Stage 3 Campeau Drive Pond Stormwater Management Facility Design Brief and the Stormwater Drainage Plan is contained in Appendix E. The allocated values to Paine Pond are from the design sheet in the Arcadia Commercial 370 Huntmar Drive Design Brief by IBI Group, October 2014 (also copied in Appendix E). Since the design sheet does not have any GIS mapping associated with it the split between Campeau Pond and Paine Pond is not specifically mapped, however the allocations were made in the modelling and the areas calculated now are consistent with the latest boundaries and GIS spatial mapping.

Table 4-3 shows that the overall AxC value proposed going to each pond is less than that originally allocated under the previous modelling which was used to size the pond permanent pool and extended detention volumes and therefore there is sufficient water quality control capacity in the downstream facilities. It is also recognized that the overall C-Factor of 0.78 used for the areas going to Campeau Pond is conservative as it does not reflect the park or amenity areas within the site boundaries, despite these areas being included in the area calculation.

4.5 Stormwater Management Modelling Approach

4.5.1 Dual Drainage Model

The analysis of both major and minor drainage systems was carried out to demonstrate their compliance with respect to the design criteria described in Section 4.2. The performance of the major overland system and minor storm sewer system was analyzed with PCSWMM. This software is a dynamic model which allows both hydrologic and hydraulic components to be simulated in the same platform and also allows the simulation of the interaction between the major and minor systems. The PCSWMM software platform was used to:

- Generate the surface runoff hydrograph for each sub-area under various recurrences.

- Subdivide each inflow hydrograph into its minor and major system components based on the proposed inlet capture rates and roadway sag storage.
- Assess cascading, if any, and carry out dynamic routing of storm flows to determine flow depths along the roadways. As previously stated, the maximum major overland flow depths along the subdivision's roadways are to be limited to 350 mm or less, as per Technical Bulletin PIEDTB-2016-01.
- Demonstrate that the HGL along the storm sewers during the 1:100-year event without sedimentation is 300 mm below the basement's USFs.

PCSWMM was set-up to evaluate the proposed servicing as detailed on Drawings G1 (Grading), Drawings SWM1 (Ponding Plan), Drawings DST, ODST (Drainage) and Drawings S1-S2 & OS (Servicing). As per Drawings DST, the Arcadia Stage 6 lands were discretized into more refined sub-catchments for the immediate drainage area of Stage 6 and lumped sub-catchments for the entire modelled extents. To demonstrate the model schematic, Figure E1-1 and Figure E1-2 (Appendix E1) were prepared and depict the major and minor system elements of the model along with the subcatchments.

4.5.2 Integration with the Carp River Modelling and Boundary Conditions

In order to evaluate the design of the Paine and Campeau Stormwater Management Facilities and the impact on the Carp River, a sub-model of the City of Ottawa PCSWMM Carp River model was extracted to act as the downstream receiver for the stormwater management facilities. The inflow hydrograph at the upstream end of the sub-section of the Carp and the downstream stage hydrograph were both extracted from the overall Carp River model and used as inputs for the respective storm events in the Arcadia Detailed Design model.

Details of the detailed design model and the control of flows released to the Carp River were provided in the Paine Stormwater Management Facility Design Brief, JLR February 2020 for Arcadia Stage 4 and the Stormwater Management Facility Design Brief, Campeau Drive SWMF, JLR May 2019 for Arcadia Stage 3.

Both reports demonstrated that the use of the sub-model was a representation of the flows in the Carp River from the full model and that the stormwater management ponds provided sufficient controls to achieve no impact to the peak flows or maximum water levels in the Carp River.

Since the Arcadia Stage 6 development is internal to the detailed model used in these two reports and discharges to the two ponds, the Arcadia Stage 6 model will use the detailed sub-model to demonstrate that flows to the ponds can be maintained under the proposed Stage 6 stormwater management strategy and therefore there will be no impact on the Carp River.

4.5.3 Simulation of Street Segments

Flow directed to a street segment is split at the major system node; flows are broken down into minor and major system components using an outlet rating curve

representing the ICD capture and assigning the minor system flow directly into the minor conduit while maintaining the major system flows on the surface conduit. Flow through the outlet link is calculated based on the HGL above the elevation of the ICD and its rated capacity under various water surface elevations. The ICD rating curves are those provided by the manufacturer.

The storage in roadway sag is included in the model as being inherent within the major system conduits. The dynamic capability of PCSWMM means that the static and any dynamic flow is calculated in the model to provide one depth value at each sag location. The low points and high points in the street conduits are taken from the Civil 3D surface.

The subdivision's grading was developed with roadway static storage depths to maximize detention and attenuation of major overland flows while those of lesser volume sags were designed to maximize the conveyance capability of the dynamic section of the cross-section during events where cascading occurs.

4.5.4 Adjoining Existing Areas

The western half of Campeau Drive, from Huntmar Drive to 160 metres east of the roundabout with Country Glen Road, was included in the SWMHYMO modelling for Arcadia Phase I, which included flows from Campeau Drive, residential facing Campeau Drive, Country Glen Road and minor flows from the commercial areas. The minor system flows were extracted from the approved SWMHYMO modelling and imported into the PCSWMM modelling. The IBI design allowed for some major overland flow to continue down Campeau Drive to the low point at the junction with Donum Lane and this hydrograph was also extracted from the SWMHYMO model and imported into the PCSWMM model.

It should be noted that the previous modelling for Arcadia Phase I included Stage 6 as commercial with all major overland flows retained on site, however, due to the change to residential and some of the properties facing Campeau Drive, the grading means that there is some runoff contributing directly to Campeau Drive flows. In order to capture the change in major system flow and small changes in drainage areas as a result of Stage 4, the hydrographs along Campeau Drive from the Phase I model were removed and replaced with subcatchments, inlet links and weirs representing the runoff and conveyance included in the SWMHYMO model.

The hydrologic parameters used are consistent with the Phase I modelling and the flows in the model are consistent with those in the Phase I modelling. A comparison of the flows is provided in Table 4-4.

Table 4-4: Major Overland Flow Comparison along Campeau Drive

Section of Major Overland Flow along Campeau Drive	SWMHYMO 1:100 year 3-hour Chicago flow (m^3/s)	PCSWMM 1:100 year 3-hour Chicago flow (m^3/s)
MH300 to MH301 at commercial access on Campeau Drive	0.221	0.221
MH301 to MH302	0.267	0.263
MH302 to Country Glen Road roundabout	0.319	0.306
Country Glen Road roundabout to MH304	0.357	0.354
MH304 to Donum Lane roundabout	0.430	0.430

In addition, the total inflow to the low points on Campeau Drive at the Donum Lane roundabout were simulated in the Stage 4 model. The inlet capture defined in the Stage 4 model was set at the 1:10-year rate at each of the low point inlets. Additional flows to the low points at the Donum Lane roundabout included the immediate catchments in the model. In a change to the Stage 4 model, the actual impervious surface coverage was used to refine the imperviousness values used in the hydrology for the Campeau Drive catchment. The imperviousness reduced from 85.7% to 72.0% reflecting the front yards facing the north side of Campeau Drive covered by the catchment area. A comparison of the incoming flow for the 1:10-year and 1:100-year 3-hour Chicago storms at the north and south low points is provided in Table 4-5.

Table 4-5: Incoming Flow to the North and South Low Points – 3-hour Chicago Storm

Low Point	Stage 4 Model 1:10-year incoming flow (m^3/s)	Stage 4 Model 1:100-year incoming flow (m^3/s)	Stage 6 Model 1:10-year incoming flow (m^3/s)	Stage 6 Model 1:100-year incoming flow (m^3/s)	Stage 4 Modelled Minor System Inlet Capture Rate (m^3/s)
North	0.198	0.517	0.174	0.480	0.2
South	0.156	0.452	0.159	0.457	0.16

The comparison with the flows in the SWMHYMO model with those in the Stage 4 modelling shows that the changes to the drainage areas have negligible impact on the hydraulics of Campeau Drive. The flows from upstream are consistent with the previous modelling and the inclusion of the runoff from Stage 6 front yards, along with refinement of the imperviousness values for Campeau Drive, means that the 1:10-year flow rate remains below, or at, the modelled inlet capture rate and the 1:100-year event flows are no greater, or at, previously simulated flow rates.

4.6 Modelling Parameters

4.6.1 Hydrological Parameters

The following parameters were used in the hydrologic component of PCSWMM:

- **Areas and Imperviousness**: Catchment ID and drainage areas used by PCSWMM match those shown on either Drawing DST or Figure E-1 (Appendix E1). In regard to the imperviousness of subcatchments, C-Factors reported in Section 4.4.1 were used to estimate PCSWMM's imperviousness.

- **Catchment Width**: The catchment width is approximately twice the length of the street segment through the subcatchment, in accordance with the OSDG for the majority of catchments where there is an even split on the road. In some cases the catchment width is the length of the road section if the catchment is all to one side of the road.

- **Manning's Roughness Coefficient**: Manning's Roughness Coefficients of 0.013 and 0.25 were used for the impervious and pervious surfaces, respectively within the Stage 6 area, which are consistent with the OSDG. Historically other values have been used for the pervious component in other stages and these have been maintained.

- **CN Infiltration parameters**: For consistency with the City of Ottawa Carp River Model the CN infiltration approach was used. The CN value of 75 for pervious land cover was maintained from the Carp River Model.

  Since PCSWMM is based on the Nonlinear Reservoir Routing Method (SWMM 5 engine) to generate runoff from subcatchments, the infiltration and depression storage are accounted for separately. The formulation of the SCS Loss Method incorporated into SWMM does not include the Initial Abstraction term. CN is used in SWMM to compute infiltration losses only, not total hydrologic losses as in the original SCS methodology. Therefore, the CN value is used and not a modified CN (CN*) as this alters for term to account for the difference in Initial Abstraction.

- **Initial Abstraction**: Initial abstraction of 4.67 mm and 1.57 mm was used for the pervious and impervious surfaces respectively, consistent with the OSDG and Carp River Model.

Note that for catchments that were previously modelled in SWMHYMO for Arcadia Phase I maintained the catchment parameters as per the SWMHYMO model to maintain consistency with previous work.

4.6.2 Simulation of Storm Distributions

The City of Ottawa requires that the performance of the minor and major systems be investigated under the 3-hour Chicago design storm. As such, 1:2-year, 1:5-year, 1:10-year, 1:25-year, 1:50-year, and 1:100-year 3-hour Chicago storms were

evaluated. In addition, the critical storm distribution for the Carp River is the 12-hour SCS storm and so this distribution was also assessed by the model for the same durations, in addition to the standard 24-hour SCS storm distribution for the same durations. The 12-hour SCS storm was found to be critical for the minor system HGL while the Chicago 3-hour storm for the major overland flow system.

It should be noted that the 12-hour SCS storm used in the modeling was labelled as the MTO 12-hour SCS storm in the Carp River modelling and the nomenclature has been maintained to differentiate it from the storms for Arcadia derived from the City of Ottawa IDF and OSDG.

The Climate Change stress test event was run for all three storm distributions used. As per the requirements of the Ottawa Sewer Design Guidelines, historical storms were also assessed, including the July 1, 1979 storm, the August 4, 1988 storm and the August 8, 1996 storm.

4.6.3 Simulation of Park and Amenity Blocks

For the park and amenity blocks the model includes a storage node with an outlet link to restrict flow to the minor system to the 1:5-year runoff rate for the blocks. In events greater than the 1:5-year return period then the storage node detains runoff over and above the release rate for the block. The 1:5-year release rates for the blocks are shown in Table 4-6.

Table 4-6: Release Rates for the Park and Amenity Area

Block	Area (ha)	Imperviousness (%)	Runoff Coefficient	1:5-year Release Rate (m^3/s)	Storage Requirement (m^3)
Park Block	0.50	28.57	0.40	0.058	50
Amenity Block	0.12	54.29	0.58	0.021	11

4.6.4 Simulation of Garage Access Ramps

Two of the units within the Stage 6 development have depressed garage access ramps. One of these will be able to drain via gravity to the storm sewer system while the other to the east of the site will require to be pumped to the minor system. A maximum pump rate of 9 L/s, approximately equivalent to a 1:10 year event. Where the gravity connection is provided the drain is above the underside of footing for the unit and 300mm freeboard should be maintained below the grate elevation.

4.7 Simulation Results

This section of the Report presents the results of the simulation of Stage 6 as part of the detailed model for the Arcadia site as a whole, incorporating Stages 1 to 4 and the Paine Pond and Campeau Drive stormwater management facilities. The modelling includes the future Stage 5 at a conceptual level with the same parameters as used in the Stage 3 and 4 models.

The objective of this section is to assess the performance of the following systems under the build-out condition:

- The major overland system under extreme storm events (i.e., 1:100 year and climate change events) as per the OSDG; and
- The major overland system during the 1:2-year storm event and determine whether surface ponding is to occur.
- Appendices E4 and E5 provide Storm HGL analyses and Street Ponding Analyses respectively for a range of historical storms and interim conditions.

4.7.1 Low Point Ponding Analysis

The results at each of the low points, as generated by a 3-hour Chicago storm distribution, are set out in Table 4-7 and in The simulation results compiled in Table 4-7 above shows ponding depths at the locations where the catchbasin manhole structures were utilized to convey the surface flow into storm sewer. At these locations the modelling is such that surface flow head is required to be present to drive the flow through grate opening into the minor system. Ponding hydrographs for the 1:2 year and 1:5 year event showed that surface ponding is only present for the peak of the event to create the head in the model. The depths in the 1:2 year and 1:5 year events are only from the grate and are not as a result of any downstream ICD.

Table 4-8. Low points correspond to Area IDs from the ponding plan Drawing SWM1.

Table 4-7: Catchbasin Ponding Depths (3-hour Chicago Event)

Low Point ID	Top of Grate (m)	Maximum Static Depth	1:2 year Depth (mm)	1:5 year Depth (mm)	1:100 year Depth (mm)	Climate Change Depth (mm)
2	97.3	300	10	10	10	20
3	97.25	300	20	30	50	70
10	96.67	180	-	10	210	310
20	95.8	150	20	20	40	50
21	96.3	100	20	30	60	80
24	96.22	230	60	70	150	220
25	96.2	300	-	-	90	130

The simulation results compiled in Table 4-7 above shows ponding depths at the locations where the catchbasin manhole structures were utilized to convey the surface flow into storm sewer. At these locations the modelling is such that surface flow head is required to be present to drive the flow through grate opening into the minor system. Ponding hydrographs for the 1:2 year and 1:5 year event showed that surface ponding is only present for the peak of the event to create the head in

the model. The depths in the 1:2 year and 1:5 year events are only from the grate and are not as a result of any downstream ICD.

Table 4-8: Low Point Major System Ponding (3-hour Chicago Event)

Low Point ID	Top of Grate (m)	Maximum Static Depth	1:2 year Depth (mm)	1:5 year Depth (mm)	1:100 year Depth (mm)	Climate Change Depth (mm)
4	97.15	300	-	-	100	120
4	97.15	300	-	-	50	120
5	96.9	250	-	-	-	-
5	96.9	250	-	-	30	90
6	96.92	230	-	-	160	290
7	96.85	150	-	-	-	-
7	96.85	150	-	-	-	40
8	96.77	180	-	-	170	310
9	96.8	140	-	-	-	-
9	96.8	140	-	-	-	90
11	96.7	150	-	-	-	-
11	96.7	150	-	-	-	50
12	96.2	190	-	-	100	140
13	96	250	-	-	150	180
13	96	250	-	-	20	130
14	95.6	150	-	-	160	200
14	95.6	150	-	-	-	10
15	95.6	200	-	-	150	250
22	95.71	140	-	-	180	190
23	95.9	150	-	-	90	130
26	96.15	200	-	-	110	160
27	96.57	150	-	-	150	190
28	96.77	250	-	-	120	160
29	96.87	240	-	-	160	260

Low Point ID	Top of Grate (m)	Maximum Static Depth	1:2 year Depth (mm)	1:5 year Depth (mm)	1:100 year Depth (mm)	Climate Change Depth (mm)
30	97.07	130	-	-	-	-
31	97.22	130	-	-	-	50
32	97.02	200	-	-	160	210
33	97.17	130	-	-	-	50
34	97.07	220	-	-	60	100
36	97.25	300	-	-	150	200
36	97.3	200	-	-	-	30

The simulation results compiled in Table 4-8 shows that:

- No ponding nor dynamic flow will occur in the 1:2-year or 1:5 year events within the site; and,
- Maximum ponding depth of 210 mm during the 1:100-year event;
- In the climate change event, the peak ponding depth is below 350mm

4.7.2 Major System Flow

The major system overland flow route simulation results for the 3-hour Chicago storm are summarized in Table 4-11 showing the values for Velocity x Depth design criteria where overland flow is present. A full list of all locations is included in Appendix E.

Table 4-9: Major System Overland Flow Routes Analysis – Velocity x Depth (3hr Chicago)

Street Segment ID	U/S ID	D/S ID	Velocity x Depth (m²/s)			
			1:2 year	1:5 year	1:100 year	Climate Change
HP_ST6_J17-LP_ST6_J12	HP_ST6_J17	LP_ST6_J12	0	0	0	0.01
HP_ST6_J17-LP_ST6_J13	HP_ST6_J17	LP_ST6_J13	0	0	0	0.04
HP_ST6_J18-LP_ST6_J12	HP_ST6_J18	LP_ST6_J12	0	0	0.01	0.03
HP_ST6_J19-HP_ST6_J18	HP_ST6_J19	HP_ST6_J18	0	0	0	0.02
HP_ST6_J19-LP_ST6_J11	HP_ST6_J19	LP_ST6_J11_W	0	0	0	0.05
HP_ST6_J19-LP_ST6_J11_E	HP_ST6_J19	LP_ST6_J11_E	0	0	0	0.05

Street Segment ID	U/S ID	D/S ID	Velocity x Depth (m^2/s)			
			1:2 year	1:5 year	1:100 year	Climate Change
HP_ST6_J19-LP_ST6_J2	HP_ST6_J19	LP_ST6_J2_W	0	0	0	0.04
HP_ST6_J19-LP_ST6_J2_E	HP_ST6_J19	LP_ST6_J2_E	0	0	0	0.04
HP_ST6_J1-LP_ST6_J24_2	J35	LP_ST6_J24	0	0	0	0.01
HP_ST6_J20-HP_ST6_J21	HP_ST6_J20	HP_ST6_J21	0	0	0	0.02
HP_ST6_J20-J29_E	HP_ST6_J20	J29_E	0	0	0	0.05
HP_ST6_J20-LP_ST6_J1	HP_ST6_J20	LP_ST6_J1_W	0	0	0	0.05
HP_ST6_J20-LP_ST6_J1_E	HP_ST6_J20	LP_ST6_J1_E	0	0	0	0.05
HP_ST6_J20-LP_ST6_J2_1	HP_ST6_J20	J29_W	0	0	0	0.06
HP_ST6_J20-LP_ST6_J2_2	J29_W	LP_ST6_J2_W	0	0	0	0.05
HP_ST6_J21-LP_ST6_J10	HP_ST6_J21	LP_ST6_J10	0	0	0	0.03
HP_ST6_J22-LP_ST6_J10	HP_ST6_J22	LP_ST6_J10	0	0	0.02	0.02
HP_ST6_J22-LP_ST6_J9	HP_ST6_J22	LP_ST6_J9	0	0	0.01	0.04
HP_ST6_J26-LP_ST6_J5	HP_ST6_J26	LP_ST6_J5	0	0	0	0.03
HP_ST6_J27-LP_ST6_J1_1	HP_ST6_J27_W	J28_W	0	0	0	0.05
HP_ST6_J27-LP_ST6_J1_2	J28_W	LP_ST6_J1_W	0	0	0	0.03
HP_ST6_J27-LP_ST6_J2	HP_ST6_J27_W	LP_ST6_J26_W	0	0	0	0.03
HP_ST6_J2-LP_ST6_J23	HP_ST6_J2	LP_ST6_J23	0	0	0.03	0.04
HP_ST6_J2-LP_ST6_J24	HP_ST6_J2	LP_ST6_J24	0	0	0.02	0.02
HP_ST6_J8-LP_ST6_J19	HP_ST6_J8	LP_ST6_J19	0	0	0	0.01
J12_S-LP_ST6_J25_S	J12_S	LP_ST6_J25_S	0	0	0.01	0.01
J29_E-LP_ST6_J2_E	J29_E	LP_ST6_J2_E	0	0	0	0.05
J32_W-LP_ST6_J21_W	J32_W	LP_ST6_J21_W	0	0	0.02	0.02

Street Segment ID	U/S ID	D/S ID	Velocity x Depth (m^2/s)			
			1:2 year	1:5 year	1:100 year	Climate Change
J6-LP_ST6_J16	J6	LP_ST6_J16	0	0	0.01	0.02
J7_LP_ST6_J16	J7	LP_ST6_J16	0	0	0.02	0.02

Cascading flow only occurs through the street network in the events greater than the 1:5 year. In rainfall events where cascading flow does occur the velocity x depth of each of these major overland flow routes are under the allowable maximum of 0.6 m^2/s and meeting design criteria for the events up to the 1:100 year design storm event.

4.7.3 Storm Sewer HGL Analysis

The storm sewer HGL under the ultimate servicing scenario is shown at each of the manhole nodes in Table 4-10. Where there is no Underside of Footing (USF) associated with the manhole a dash is shown in the table.

Table 4-10: HGL Analysis (12-hour SCS Storm)

MH ID	USF Elevation (m)	1:100 year Event Max HGL (m)	1:100 year Freeboard (m)-	Climate Change Max HGL (m)	Climate Change Freeboard (m)-
EXMH201	-	94.83	-	94.95	-
EXMH203	-	94.91	-	95.02	-
CBMH114	-	95.35	-	95.49	-
CBMH115	-	95.31	-	95.45	-
CBMH116	-	95.26	-	95.4	-
221	96.04	95.19	0.85	95.31	0.73
219	-	95.14	-	95.25	-
224A	96.04	95.11	0.93	95.22	0.82
CBMH2	-	95.57	-	95.57	-
224	-	95.03	-	95.12	-
211	-	95.92	-	96.08	-
210	-	95.9	-	96.06	-
216	-	95.89	-	96.05	-
217	-	95.85	-	96.01	-
218	-	95.77	-	95.93	-
213A	-	95.89	-	96.06	-
214A	-	95.86	-	96.02	-
212	95.28	94.85	0.43	94.97	0.31
213	95.36	94.85	0.51	94.97	0.39
214	95.47	94.85	0.62	94.97	0.5

MH ID	USF Elevation (m)	1:100 year Event Max HGL (m)	1:100 year Freeboard (m)-	Climate Change Max HGL (m)	Climate Change Freeboard (m)-
218A	95.52	94.86	0.66	94.98	0.54
215	95.43	94.85	0.58	94.97	0.46
208	-	94.05	-	94.27	-
207	94.89	94	0.89	94.21	0.68
206	95.09	93.94	1.15	94.13	0.96
205	94.24	93.87	0.37	94.05	0.19
201B	94.24	93.8	0.44	93.96	0.28
201	94.54	93.73	0.81	93.88	0.66
200A	-	93.65	-	93.88	-
200	-	93.65	-	93.88	-
CB102	-	94.77	-	94.85	-
CBMH103	94.72	94.51	0.21	94.53	0.19
204A	-	94.06	-	94.29	-
204	-	94.04	-	94.26	-
203	-	95.31	-	95.4	-
202	-	95.31	-	95.4	-
201A	-	95.3	-	95.39	-
CBMH107	-	95.34	-	95.43	-
202A	-	95.32	-	95.41	-
CB108	-	93.68	-	93.88	-
CB109	-	93.67	-	93.88	-
105A	-	93.65	-	93.88	-
CBMH104	-	93.65	-	93.88	-

The simulation results compiled in Table 4-10 shows that:

- All nodes achieve HGLs with 300 mm freeboard to the underside of footing in the 1:100-year event with the smallest freeboard being 300 mm; and,
- All nodes maintain a clearance to the underside of footing in the climate change stress test event.

4.7.4 Storm Sewer HGL Analysis for Existing Arcadia Stages

The storm sewer HGL under the ultimate servicing scenario is shown at each of the existing Arcadia Stages 1 and 2 manhole nodes in Table 4-11. Where there is no Underside of Footing (USF) associated with the manhole, a dash is shown in the table.

Table 4-11: Storm HGL Analysis Arcadia Stage 1 and 2 (12-hour SCS)

MH ID	USF (m)	Stage 1 or 2 Interim Buildout HGL (m)	Ultimate Buildout HGL (m)	Difference between Stage 1 Interim & Stage 6 Ultimate HGL (m)[(1)]	Freeboard
MH200	95.15	94.75	94.36	-	0.79
MH201	95.31	94.96	94.57	-	0.74
MH202	95.37	95.07	94.71	-	0.66
MH203	95.43	95.13	94.79	-	0.64
MH204	95.69	95.20	94.92	-	0.77
MH205	97.59	95.87	95.92	0.05	1.67
MH206	97.59	96.01	96.05	0.04	1.54
MH207	97.74	96.50	96.54	0.04	1.20
MH208	97.64	97.13	97.17	0.04	0.47
MH209	96.71	95.74	95.66	-	1.05
MH210	95.94	95.27	95.07	-	0.87
MH211	95.64	95.31	95.16	-	0.48
MH212	96.14	95.54	95.50	-	0.64
MH213	95.89	95.31	95.20	-	0.69
MH214	95.89	95.27	95.15	-	0.74
MH215	95.49	95.15	94.86	-	0.63
MH216	95.39	95.09	94.67	-	0.72
MH217	95.64	95.21	94.74	-	0.90
MH501	97.82	95.72	95.54	-	2.28
MH502	96.32	95.37	94.99	-	1.33
MH503	95.57	94.87	94.23	-	1.34
MH504	95.23	94.53	93.96	-	1.27
MH505	95.16	94.48	93.92	-	1.24
MH506	95.12	94.42	93.87	-	1.25
MH513	97.25	96.48	96.11	-	1.14
MH514	96.87	96.01	95.67	-	1.20
MH515	96.59	96.14	95.74	-	0.85
MH516	96.59	95.63	95.27	-	1.32
MH517	96.52	95.51	95.11	-	1.41

MH ID	USF (m)	Stage 1 or 2 Interim Buildout HGL (m)	Ultimate Buildout HGL (m)	Difference between Stage 1 Interim & Stage 6 Ultimate HGL (m)(1)	Freeboard
MH518	96.17	95.26	94.83	-	1.34
MH519	95.32	94.85	94.33	-	0.99
MH520	95.27	94.81	94.26	-	1.01
MH521	95.14	94.81	94.05	-	1.09
MH522	95.14	94.73	94.03	-	1.11
MH523	95.31	94.72	94.03	-	1.28
MH524	95.16	94.63	93.98	-	1.18
MH525	97.77	95.25	95.25	-	2.52
MH526	96.42	95.25	95.16	-	1.26
MH527	95.77	95.05	94.70	-	1.07
MH528	95.47	94.88	94.57	-	0.90
MH529	95.46	94.81	94.51	-	0.95
MH530	95.23	94.68	94.40	-	0.83
MH531	95.11	94.54	94.28	-	0.83
MH533	97.68	95.58	95.58	-	2.10
MH534	96.42	95.78	95.38	-	1.04
MH535	96.04	95.31	94.71	-	1.33
MH536	95.59	95.05	94.56	-	1.03
MH537	96.07	95.16	94.81	-	1.26
MH538	95.31	94.81	94.39	-	0.92
MH539	95.11	94.59	94.23	-	0.88
MH540	95.11	94.46	94.13	-	0.98
(1) If the HGL in ultimate buildout condition is greater than the HGL of the Stage 1 Interim buildout, then the difference in HGL levels is provided.					

The simulation results compiled in Table 4-12 shows that:

- The HGL levels for the ultimate buildout condition are lower than the HGL levels in Arcadia Stages 1 and 2 interim buildout conditions, except in Stage 1 at MH205, MH206, MH207, and MH208.
- A minimum freeboard of 0.3m is provided at all manhole nodes in the existing Arcadia Stages.

The storm sewer HGL under the ultimate servicing scenario is shown at each of the existing Arcadia Stages 3 manhole nodes in Table 4-12. Where there is no Underside of Footing (USF) associated with the manhole, a dash is shown in the table.

Table 4-12: Storm HGL Analysis Arcadia Stage 3 (12-hour SCS)

MH ID	USF (m)	Stage 1 or 2 Interim Buildout HGL (m)	Ultimate Buildout HGL (m)	Difference between Stage 3 & Stage 6 Ultimate HGL (m)(1)	Freeboard
MH100	-	93.65	93.65	-	-

Table 4-12 shows that there is no impact on Donham Lane HGLs from the Stage 6 development.

4.7.5 System Release Rates and Downstream HGLs

The allowable release rates for the system to Donum Lane and Country Glen Road were identified in Section 4.3. The results of the modelling for the 1:100-year event for the three storm distributions are shown in Table 4-13

Table 4-13: System Release Rates Comparison

Event	Stage 6 to Donum Lane (m^3/s)	Allowable to Donum Lane (m^3/s)	Stage 6 to Country Glen Road (m^3/s)	Allowable Release Rate to Country Glen Road (m^3/s)
3-hour Chicago	0.563	0.567	0.640	0.640
12-hour SCS	0.500	0.567	0.616	0.640
24-hour SCS	0.497	0.567	0.603	0.640

Table 4-13 shows that the system meets the allowable release rate in each of the storm distributions for events up to the 1:100-year event. Since the allowable release rates are achieved the operations of the Paine Pond and Campeau Drive SWMF will be maintained as per the Design Briefs for the facilities and there will be no impact on the downstream Carp River.

4.8 Summary and Conclusions

The stormwater servicing and management concept is proposed to provide stormwater servicing for Arcadia Stage 6, as shown on the Servicing Plan (Drawing S1 and S2).

5.0 Erosion and Sedimentation Control

Erosion and sediment control measures, as outlined in the Ontario Ministry of Natural Resources (MNR) Guidelines on Erosion and Sediment Control for Urban Construction Sites, will be implemented to trap sediment on site. The following erosion and sediment control measures can be implemented during construction as shown on the Erosion and Sediment Control Plan (Drawing ESC):

- Supply and installation of a silt fence barrier, as per OPSD 219.110.
- Supply and installation of siltsack or sentinel CB inserts between the frame and cover of catch basins and maintenance holes adjacent to the project area during construction, to prevent sediment from entering the sewer system.
- Stockpiling of material during construction is to be located along flat areas away from drainage paths. For material placed on sloped areas, stockpiles are to be enclosed with a silt fence to protect watercourses.
- All catch basins are to be equipped with sumps, inspected frequently, and cleaned as required.
- Temporary ICDs are to be placed blocking part of the sewer pipe in the connecting storm maintenance holes to eliminate construction debris from entering the existing storm sewer system. The ICDs are to be removed after the proposed storm sewers have been fully cleaned.
- A mud mat is to be built at each of the site entranceways to prevent the transport of sediment onto paved surfaces. The mud mat shall be:
    - Minimum of 20 m in length for the full width of the entrance way (10 m wide minimum).
    - Minimum of 400 mm thick underlain with a geotextile (or graded aggregate filter); and
    - Constructed with 50 mm diameter clear stone for the first 10 m (extending from the paved street) and the remainder of the length with 150 mm diameter clear stone.

The proposed removal and reinstatement measures as well as the erosion control measures shall conform to the following documents:

- "Guidelines on Erosion and Sediment Control for Urban Construction Sites" published by Ontario Ministries of Natural Resources, Environment, Municipal Affairs, and Transportation & Communication, Association of Construction Authorities of Ontario and Urban Development Institute, Ontario, May 1987.
- "MTO Drainage Manual", Chapter F: "Erosion of Materials and Sediment Control", Ministry of Transportation & Communications, 1985.
- "Erosion and Sediment Control" Training Manual by Ministry of Environment, Spring 1998.
- Applicable Regulations and Guidelines of the Ministry of Natural Resources.

6.0 CONCLUSIONS

Servicing of Minto's Arcadia Stage 6 development, as depicted on the detailed design drawings, has been accounted for in previous studies completed for the subject area. In General, the lands will be serviced as follows:

- Water servicing will be provided by connections to existing watermains on Country Glen Way and Donum Lane, and to the existing feedermain located on Campeau Drive.

- Wastewater servicing will be provided by a local sanitary sewer system that will outlet to existing sanitary sewers on Campeau Drive.

- Storm servicing is to be provided on-site by means of local sewers that outlet to the existing storm sewers on Donum Land and Country Glen way.

- Flows in excess of the prescribed allowable peak flow are to be detained by means of on-site storage methods; either above ground or underground or a combination of both.

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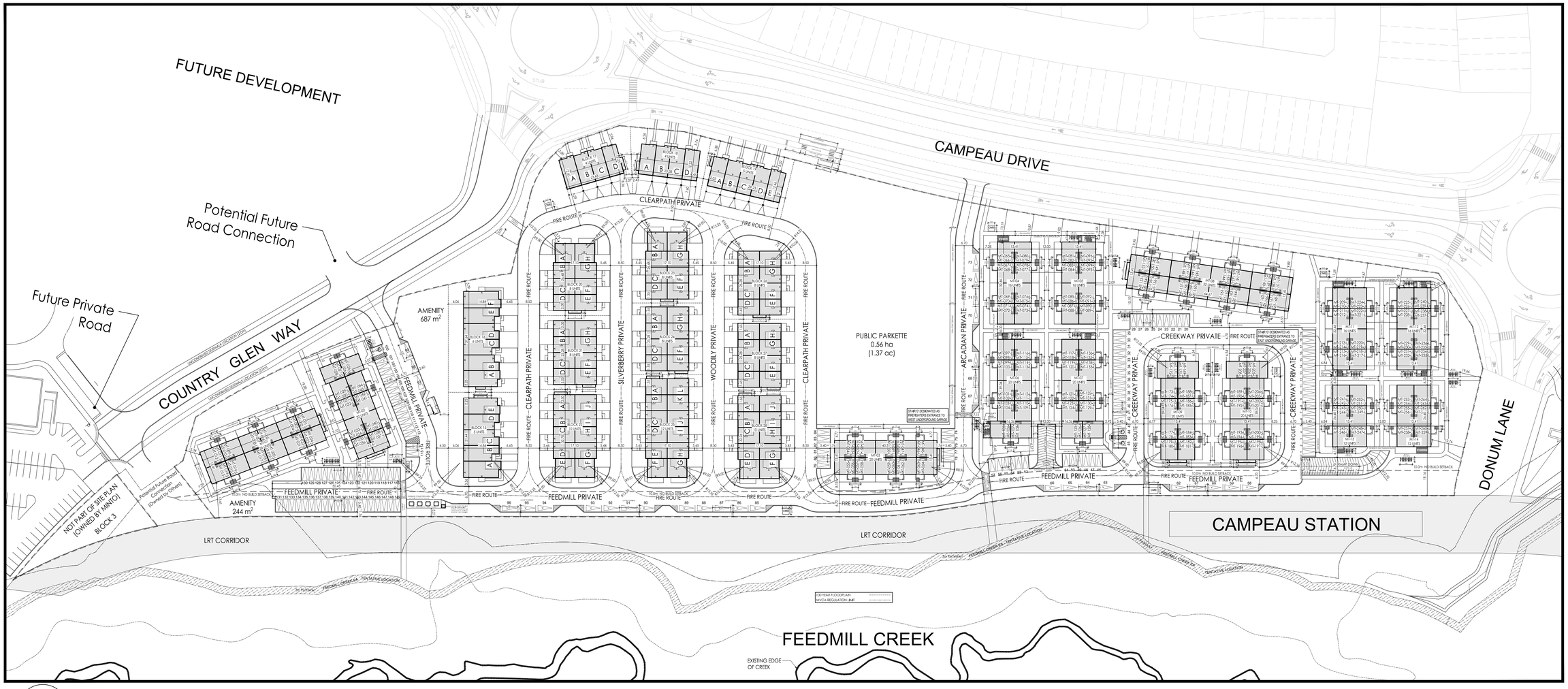
Ivan Dzeparoski, P. Eng.,
Water Resources Engineer

Reviewed by:

Karla Ferrey, P.Eng.,
Senior Associate,
Manager, Ottawa, Civil Development
Senior Civil Engineer

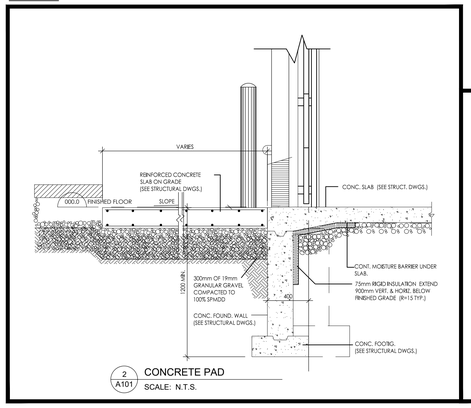
Appendix A1

Concept Plan, Draft Plan of Subdivision and Topographical Survey

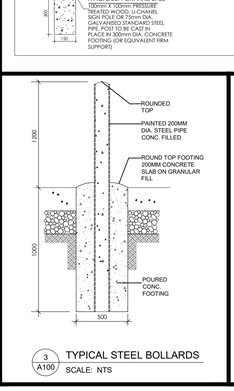


1 SITE PLAN
SP-100 1:650

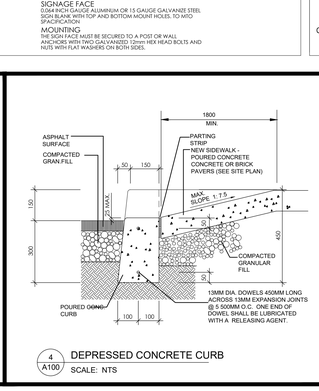
KEY PLAN



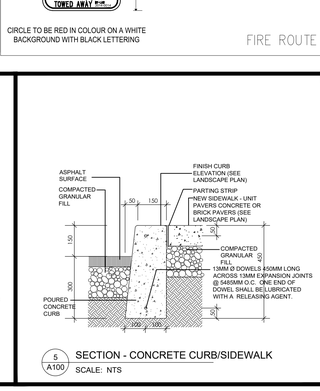
2 A101 CONCRETE PAD
SCALE: N.T.S.



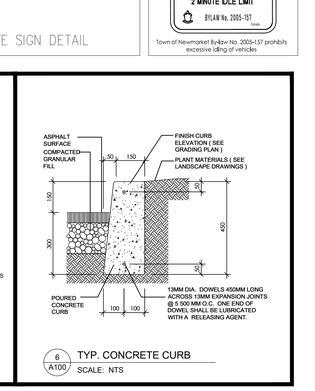
3 A100 TYPICAL STEEL BOLLARDS
SCALE: NTS



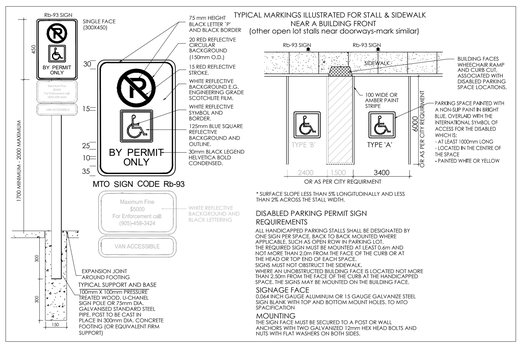
4 A100 DEPRESSED CONCRETE CURB
SCALE: NTS

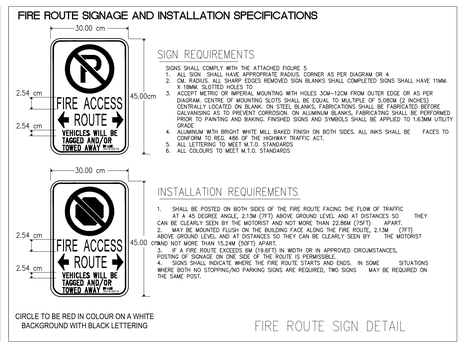


5 A100 SECTION - CONCRETE CURB/SIDEWALK
SCALE: NTS



6 A100 TYP. CONCRETE CURB
SCALE: NTS





Town of Newmarket By-law No. 2005-157 prohibits excessive idling of vehicles

THESE DRAWINGS ARE NOT TO BE SCALED:
ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES MUST BE REPORTED DIRECTLY TO SRN ARCHITECTS INC.

NO.	DATE:	ISSUED FOR:
8	26-AUG-22	REV PER CLIENT COMMENT
9	23-SEP-22	REV PER CLIENT COMMENT
10	09-NOV-22	REV PER SPA COMMENTS
11	18-NOV-22	REV PER CLIENT COMMENT
12	17-JAN-23	REV PER CLIENT COMMENT
13	24-FEB-23	REV PER CLIENT COMMENT
14	12-APR-23	RE-ISSUED FOR SPA
15	29-MAY-23	RE-ISSUED FOR PERMIT
15	12-JUN-23	REV PER CLIENT COMMENT
15	29-JUN-23	REV PER CLIENT COMMENT

ADDITIONAL NOTES:
PART OF BLOCK 2,
REGISTERED PLAN 4M-1563 AND
PART OF LOT 3
CONCESSION 1
(GEOGRAPHIC TOWNSHIP OF MARCH)
STANTEC GEOMATICS, 2022

LEGEND

- MAIN ENTRANCE
- BICYCLE PARKING, REFER TO LANDSCAPE DRAWINGS
- BARRIER FREE PARKING
- VISITOR PARKING
- FH FIRE HYDRANT, REFER TO CIVIL DRAWINGS
- LS LIGHT POLE, REFER TO ELECTRICAL DRAWINGS
- LB LIGHT BOLLARD, REFER TO ELECTRICAL DRAWINGS
- WL WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS
- F.R. FIRE ROUTE SIGN AS PER CITY STANDARD
- H.S. BARRIER FREE PARKING SIGN, AS PER CITY STANDARD
- S.S. STOP SIGN
- I.S. IDLE FREE ZONE SIGN
- P.S. POPS SIGN
- TACTILE INDICATOR
- DC DEPRESSED CURB
- G GAS METER
- H HYDRO METER
- NFHB NON FREEZABLE HOSE BIB
- EVCS ELECTRIC VEHICLE CHARGING STATION
- SIAMESE CONNECTION
- XXX SUITE NUMBER
- F.B. FIRE BREAK BLOCK
- LLE LOWER LEVEL ELEVATION
- FFE FIRST FLOOR ELEVATION

REFER TO ASSI FOR SIGNAGE

PRELIMINARY, NOT FOR CONSTRUCTION
ALL AREAS CALCULATIONS ARE PRELIMINARY

NO.	DATE:	REVISION COMMENT:

SITE STATISTICS

PROVISION	REQUIRED	PROPOSED		COMPLIANCE
NET LOT AREA (excludes dedication):	**NO MINIMUM**	48559.08 SM [522685.59 SF]		N/A
DEDICATION AREA (municipal park):	**NO MINIMUM**	5577.22 SM [60032.69 SF]		N/A
GROSS LOT AREA (includes dedication):	**1400 SM**	54136.30 SM [582718.27 SF]		YES
BUILDING AREA	**NO MINIMUM**	13394.78 SM [144180.24 SF]		N/A
LOT COVERAGE (building area/net lot area):	**NO MINIMUM**	27.58 %		N/A
GROSS FLOOR AREA	**NO MINIMUM**	40205.88 SM [432772.49 SF]		N/A
NET F.S.I. (gross floor area/net lot area):	**NO MINIMUM**	**0.81**		N/A
GROSS F.S.I. (gross floor area/gross lot area):	**NO MINIMUM**	**0.73**		N/A
SETBACKS :				
MIN. FRONT YARD:	**3.00 M**	**4.46 M**		YES
MIN CORNER SIDE YARD (WEST):	**3.00 M**	**3.00 M**		YES
MIN CORNER SIDE YARD (EAST):	**3.00 M**	**5.5 M**		YES
MIN REAR YARD:	**6.00 M**	**13.95 M**		YES
NUMBER OF TOWNHOUSE UNITS :				
METRO-TOWNS - 2 BED:		**264 SUITES**		
TRADITIONAL-TOWNS - 3 BED:		**104 SUITES**		
TOTAL NUMBER OF UNITS :		**368 SUITES**		
TOTAL PARKING SPACES :		**208 PS**	**RATIO**	
RESIDENT PARKING SPACES (TRADITIONAL-TOWNS):	**2 SPACES/UNIT = (104x2) MIN 208 SP**	SURFACE: 208 U/G: 0 TOTAL: **208**	2:1	YES
VISITOR PARKING SPACES (TRADITIONAL-TOWNS) (INCLUDES BARRIER FREE PS) :	**N/A**	SURFACE: 0 U/G: 0 TOTAL: **0**	N/A	N/A
TOTAL PARKING SPACES :		**306 PS**		
RESIDENT PARKING SPACES (METRO-TOWNS):	**0.9 SPACES/UNIT = (264x0.9) MIN. 238 SP**	SURFACE: 116 U/G: 156 TOTAL: **272**	1:1	YES
VISITOR PARKING SPACES (METRO-TOWNS) (INCLUDES BARRIER FREE PS) :	**0.1 SPACES/UNIT = (264x0.1) MIN. 27 SP**	SURFACE: 35 U/G: 0 TOTAL: **35**	0.1:1	YES
BARRIER FREE PARKING SPACES DEDICATED FOR VISITORS : *[As per City of Ottawa Traffic and Parking By-law (No. 2017-301), Section 111]*	**0**	SURFACE: 3 U/G: 0 TOTAL: **3**	N/A	N/A
BICYCLE SPACES (METRO-TOWNS):				
LONG-TERM BICYCLE SPACES :	**0.5 SPACES/UNIT = (264x0.5) MIN. 132**	**132**		YES
TOTAL LANDSCAPE :	**30%**	17885.58 SM [192518.74 SF] (36.83% OF NET LOT AREA)		YES
LANDSCAPED OPEN SPACE AREA :				
SOFT LANDSCAPE AREA :	**N/A**	12464.27 SM [134164.29 SF] (69.68% OF LANDSCAPING)		N/A
HARD LANDSCAPE AREA :	**N/A**	5421.31 SM [58354.45 SF] (30.31% OF LANDSCAPING)		N/A
AMENITY:				
TOTAL AMENITY AREA: (6 SM PER METRO UNIT INCULDES PRIVATE + COMMUNAL)	**264 UNITS X 6 SM = 1584 SM**	LOWER PATIO = ~16 SM X 132 UNITS + BALCONY AREA ~6 SM X 132 = 2904 SM TOTAL PRIVATE AREA =PRIVATE (2904 SM) + COMMUNAL (1714 SM) = 4618 SM TOTAL AMENITY		YES
COMMUNAL AMENITY AREA: (50% OF REQUIRED)	**264 UNITS X 3 SM = 792 SM**	AREA BETWEEN MT-11 To MT-14 (475 SM) + AREA BETWEEN MT-09 & MT-10 (308 SM) + AREA BEHIND BLOCK 15 & 16 (687 SM) + AREA SOUTH OF MT-01 (244 SM) = 1714 SM TOTAL COMMUNAL AREA		YES

SRN ARCHITECTS
8395 JANE STREET, SUITE 203
VAUGHAN, ONTARIO. L4K 5Y2
PHONE: 905.417.5515 FAX: 905.417.5517

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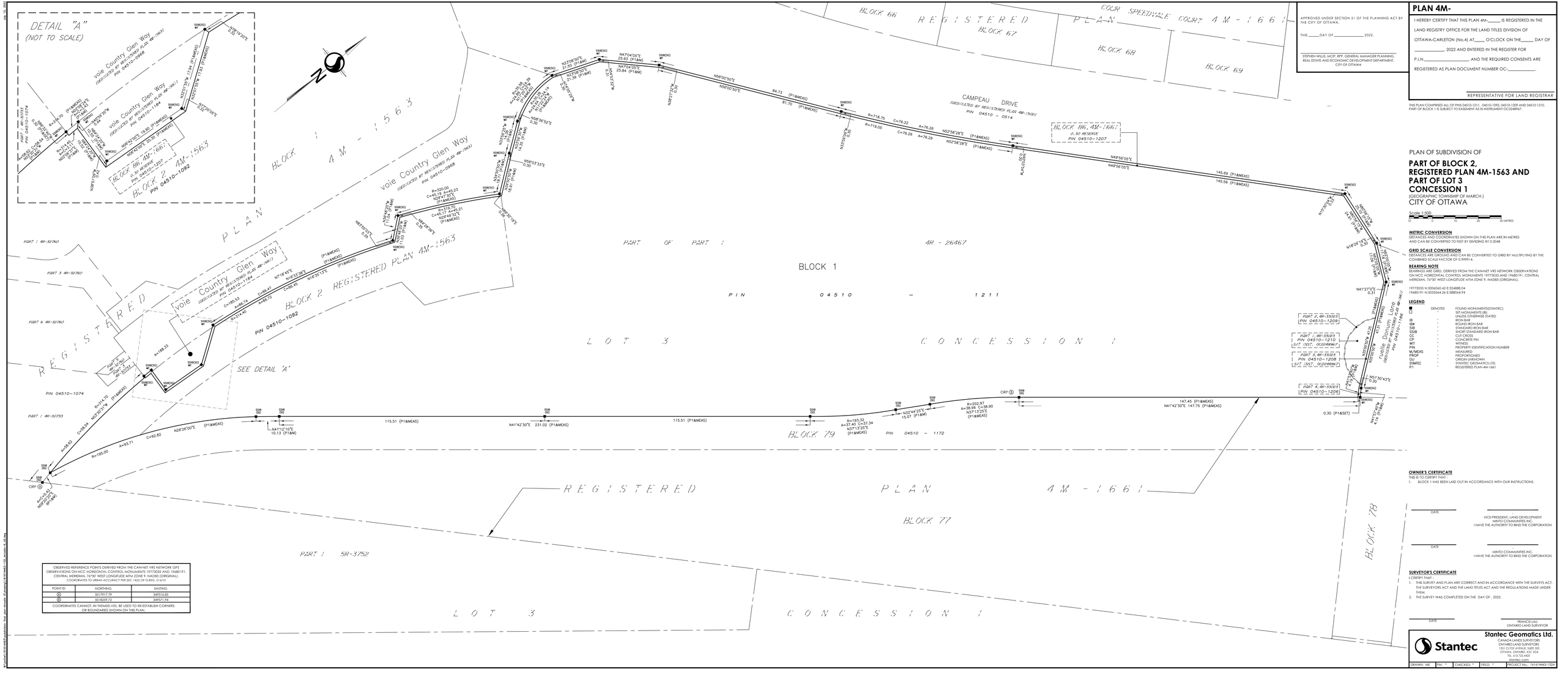
CLIENT:
Minto Communities Canada
200-180 Kent Street
Ottawa, Ontario K1P 0B6

PROJECT:
PARKSIDE
Ottawa, Ontario

DRAWING TITTLE:
SITE PLAN

DATE: 2022-02-14	SCALE: 1:500
DRAWN BY: AB	CHECKED BY: GR
PROJECT NUMBER: S22009	DRAWING NUMBER: A100

File:H:\Acad SRN Projects\S22009 - Arcadia Stage 6 Ottawa CP\ACAD Drawings\02 WORKING\S22009-SP-100.dwg Plotted: Jun 29, 2023 By:Andrew B



OBSERVED REFERENCE POINTS DERIVED FROM THE CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76°30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL), COORDINATES TO URBAN ACCURACY PER SEC 14(2) OF O.REG. 216/10

POINT ID	NORTHING	EASTING
Ⓧ	5017917.79	349316.85
Ⓨ	5018259.72	349571.94

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

APPROVED UNDER SECTION 51 OF THE PLANNING ACT BY THE CITY OF OTTAWA.

THIS _____DAY OF _____, 2022.

STEPHEN WILLIS, MCIP, RPP, GENERAL MANAGER PLANNING, REAL ESTATE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

PLAN 4M-

I HEREBY CERTIFY THAT THIS PLAN 4M-_____ IS REGISTERED IN THE LAND REGISTRY OFFICE FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON (No.4) AT_____ O'CLOCK ON THE_____ DAY OF _____, 2022 AND ENTERED IN THE REGISTER FOR P.I.N._____ AND THE REQUIRED CONSENTS ARE REGISTERED AS PLAN DOCUMENT NUMBER OC-_____.

_____
REPRESENTATIVE FOR LAND REGISTRAR

THIS PLAN COMPRISES ALL OF PINS 04510-1211, 04510-1092, 04510-1209 AND 04510-1210, PART OF BLOCK 1 IS SUBJECT TO EASEMENT AS IN INSTRUMENT OC2249967.

PLAN OF SUBDIVISION OF

PART OF BLOCK 2, REGISTERED PLAN 4M-1563 AND PART OF LOT 3 CONCESSION 1

(GEOGRAPHIC TOWNSHIP OF MARCH)

CITY OF OTTAWA

Scale 1:500

0 5 10 20 30 METRES

METRIC CONVERSION

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

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

19773035 N:5006060.42 E:324888.04
19680191 N:5003564.26 E:588064.94

LEGEND

■	DENOTES	FOUND MONUMENT(S)(STANTEC)
□	-	SET MONUMENTS (IB) UNLESS OTHERWISE STATED
IB	-	IRON BAR
SSIB	-	STANDARD IRON BAR
SIB	-	STANDARD IRON BAR
SSIB	-	SHORT STANDARD IRON BAR
CC	-	CUT CROSS
CP	-	CONCRETE PIN
WIT	-	WITNESS
PIN	-	PROPERTY IDENTIFICATION NUMBER
M/MEAS	-	MEASURED
PROP	-	PROPORTIONED
OU	-	ORIGIN UNKNOWN
STANTEC	-	STANTEC GEOMATICS LTD.
P1	-	REGISTERED PLAN 4M-1661

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT :

1. BLOCK 1 HAS BEEN LAID OUT IN ACCORDANCE WITH OUR INSTRUCTIONS.

_____ DATE

_____
VICE-PRESIDENT, LAND DEVELOPMENT
MINTO COMMUNITIES INC.
I HAVE THE AUTHORITY TO BIND THE CORPORATION

_____ DATE

_____
MINTO COMMUNITIES INC.
I HAVE THE AUTHORITY TO BIND THE CORPORATION

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 , 2022.

_____ DATE

_____
FRANCIS LAU
ONTARIO LAND SURVEYOR

Stantec
Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 300
OTTAWA, ONTARIO, K2C 3G4
TEL: 613-722-4420
stantec.com

DRAWN: ME | PM: * | CHECKED: * | FIELD: * | PROJECT NO.: 161614463-1324

Oct 12, 2022 - 9:20am
M:\active\161614463\Application - Plan of Subdivision - 4R Survey\161614463-132-Model-4-2.dwg

Stantec

Stantec Geomatics Ltd.
300-1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

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TOPOGRAPHIC SKETCH OF
BLOCK 86
REGISTERED PLAN 4M-1661
AND
PART OF BLOCK 2
REGISTERED PLAN 4M-1563
AND
PART OF LOT 3
CONCESSION 1
(GEOGRAPHIC TOWNSHIP OF MARCH)

CITY OF OTTAWA
Scale 1:100
2 0 2 4 6 METRES

Stantec Geomatics Ltd.
ONTARIO LAND SURVEYORS

BOUNDARY NOTE
BOUNDARY LINEWORK AND INFORMATION IS COMPILED FROM REGISTERED PLAN 1563 AND IS NOT BASED ON ACTUAL SURVEY.

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

ELEVATION NOTE
ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: OTTAWA ELEVATION=95.230.

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
M/MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
STANTEC	"	STANTEC GEOMATICS LTD.
P1	"	REGISTERED PLAN 4M-1563
P2	"	REGISTERED PLAN 4M-1661
CB	"	CATCH BASIN
SICB	"	SIDE INLET CB
HH	"	UTILITY ACCESS
LS	"	LIGHT STANDARD
MHSAN	"	MAINTENANCE HOLE SANITARY
MHSTM	"	MAINTENANCE HOLE STORM
MHTRAFFIC	"	MAINTENANCE HOLE TRAFFIC
SN	"	SIGN
TCB	"	TRAFFIC CONTROL BOX
UP	"	UTILITY POLE

—— OHW —— OHW —— OHW ——
OVERHEAD WIRE

SURVEYOR'S CERTIFICATE
I CERTIFY THAT :
1. THE SURVEY WAS COMPLETED ON THE 21st DAY OF MARCH, 2022.

DATE

FRANCIS LAU
ONTARIO LAND SURVEYOR

DRAWN: TMT CHECKED: FL PM: FL FIELD: CA PROJECT No.: 161614463-111

Appendix A2

Pre-consultation Meeting Notes

File Number: PC2021-0275
September 2, 2021

Pre-application Consultation Meeting Notes

Site Address: 370 Huntmar Drive and 450 Huntmar Drive
Location: Virtual - Microsoft Teams
Meeting Date: August 12, 2021

Attendees: Colette Gorni – Planner, City of Ottawa
Wendy Tse – Planner, City of Ottawa
Justin Armstrong – Project Manager (Infrastructure), City of Ottawa
Mark Young – Planner (Urban Design), City of Ottawa
Jeff Goettling – Planner (Parks), City of Ottawa
Mike Russett – Planner (Parks), City of Ottawa
Jeffrey Ren – Co-op Student, City of Ottawa
Matt Craig – MVCA
Erica Ogden – MVCA
Curtiss Scarlett – Minto Communities Inc.
Bronwyn Anderson – Minto Communities Inc.
Kiara Gonzales – Minto Communities Inc.
Danielle Forget – Minto Communities Inc.
Alexandre Tourigny – J.L Richards
Eric Forhan – J.L Richards
Lucie Dalrymple – J.L Richards
Andrew Harte – CGH Transportation

Regrets: Mark Richardson – Planning Forester, City of Ottawa
Mike Giampa – Project Manager (Transportation), City of Ottawa
Matthew Hayley – Planner (Environmental), City of Ottawa

APPLICANT COMMENTS:

1. Two separate developments are proposed:

    a. Stage 5 will be a Plan of Subdivision application and a Zoning By-law Amendment application:

        - Stage 5 is located east of Arcadia Stages 1-4; it is the last piece north of Campeau Drive;
        - Existing infrastructure extends to the boundaries of the site and two accesses off of Winterset Road are proposed;
        - A total of 225 low-rise units are proposed in the form of singles, townhouses and back-to-back townhouses; and,

- The site is designated as General Urban Area in the Official Plan; the Carp River Restoration Policy Area Overlay applies; and the site is zoned Development Reserve (DR).

b. Stage 6 will be a Site Plan Control application and a Zoning By-law Amendment application:

- Stage 6 lands are located south of Campeau Drive, the parcel closest to the intersection of Huntmar Drive and Campeau Drive was sold by Minto to a hotel developer;
- The site is designated as Mixed-Use Centre in the Official Plan, the Kanata West Concept Plan identifies this area as a community core, and the site is zoned Development Reserve;
- Land dedications have been made for the proposed future Campeau Station LRT Station;
- Two accesses, one off of Campeau Drive is proposed and one off of Country Glen Way, are proposed;
- Infrastructure connections are proposed to be made from Country Glen Way and Donum Lane;
- A total of 480 units are proposed in the form of stacked townhouses (please note that the submitted plans reference a higher unit count); and,
- 2 communal amenity spaces are proposed.

2. The separate applications for both developments are expected to be submitted in September 2021 (Stage 5) and October 2021 (Stage 6).

STAFF COMMENTS:

Planning

Stage 5

1. A Major Zoning By-law Amendment application will be required for the Stage 5 lands to permit the proposed development. Urban Exception 1932 can removed through this application as the Holding Symbol has now been lifted.
2. A new Plan of Subdivision application will be required to permit the proposed development, as Stage was not included in the previous draft approval.
3. Please note that there is a 30cm reserve along Winterset Road that will need to be lifted.
4. Staff are generally satisfied with the current layout.

5. Please consider adding another pedestrian connection between Street 1 and 6; please consider providing a pedestrian plan with the application submissions.
6. Please submit a streetscape plan with your application. The location of trees and sidewalks should be considered early in the design process.

Stage 6

7. A Major Zoning By-law Amendment application will be required to permit the proposed development on the Stage 6 lands.
8. The Phase 6 lands previously received draft approval through a previous plan of subdivision application (File No. D07-16-16-0025).
9. It is understood that the applicant currently intends to allow the draft approval to lapse and pursue Site Plan Control and Plan of Condominium applications to permit the proposed development.
    a. The proposed development requires a Complex (Manager Approval, Public Consultation) Site Plan Control Application.
10. Please note that there are 30cm reserves along Country Glen Way, Campeau, and Donum Lane.
11. It is understood that the applicant is interested in straightening the jagged section of the Country Glen Way right-of-way. Staff have reach out to the City's Corporate Real Estate Office (CREO) to discuss the possibility of a land swap, and will provide more information once a response is received.
12. Please ensure that adequate bicycle parking is provided both in and outside the proposed storage building.
13. Please review the City's Urban Design Guidelines for Transit Oriented Development to ensure that proposed development conforms to the guidelines

General

14. Fees and forms for the above mentioned applications can be found here; please note that each planning application fee will be reduced by 10 per cent if two or more applications are submitted at the same time and for the same lands.
15. Please ensure that each submission considers the Official Plan policies that are applicable at the time of the submission of the application
    a. If a complete application is received by no later than the day before the new Official Plan is adopted (October 2021), it will be processed on the basis of existing Official Plan policy provided it is consistent with the 2020 Provincial Policy Statement.

b. Applications received after the day before the new Official Plan is adopted (October 2021), will be reviewed and evaluated on the basis of the policies of the new Official Plan, which is consistent with the 2020 Provincial Policy Statement.

Please contact the Planner, Colette Gorni, at Colette.Gorni@ottawa.ca if you have any questions or require additional information relating to the comments above.

Urban Design

Stage 5

1. A design brief is required. A terms of reference is attached.
2. Please ensure the pathway connections to the Carp River Open Space Lands are accessible. This may require co-locating the two blocks in the vicinity of Lot 25 and Block 8 to provide additional length for these blocks.
3. Please consider locations for sidewalks and trees at the time of submission, as it relates to utilities and clay soils.
4. Orientation of units to minimize the need for noise walls on Winterset Road should be considered.
5. A pathway connection should be provided within Block 43 – Dry Pond to provide access to Winterset Road.

Stage 6

6. A design brief is required. A terms of reference is attached.
7. The subject lands are located within a design priority area. A high-quality site and building design are expected, suitable for a mixed use centre.
8. Consideration should be given to providing more than one product/dwelling type for this site.
9. Options to eliminate the need for a single loaded private street abutting Campeau Drive should be explored.
10. The current access on Campeau should be considered for a more urban treatment vs. a pork chop island.
11. The units abutting Campeau Drive in the Western Block, should be oriented to be in alignment with Campeau Drive vs. being offset.
12. The treatment of built form abutting Country Glen Way should be reviewed. Opportunities to regularize this property line should also be explored if possible.
13. Connectivity to the MUP along Feedmill Creek should be strengthened at key locations.

14. Consideration should be given to allowing for live/work arrangements at grade.

15. Consideration should be given to allowing for a mix of uses on-site.

Please contact Urban Design Planner Mark Young at Mark.Young@ottawa.ca if you have any questions or require additional information relating to the comments above.

Engineering

1. The Servicing Study Guidelines for Development Applications are available at the following address: http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications

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

   - ⇨ Ottawa Sewer Design Guidelines (October 2012)
   - ⇨ Ottawa Design Guidelines – Water Distribution (2010)
   - ⇨ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
   - ⇨ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
   - ⇨ City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - ⇨ City of Ottawa Park and Pathway Development Manual (2012)
   - ⇨ City of Ottawa Accessibility Design Standards (2012)
   - ⇨ Ottawa Standard Tender Documents (latest version)
   - ⇨ Ontario Provincial Standards for Roads & Public Works (2013)

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

4. The Stormwater Management Criteria, for the subject site, is to be based on the criteria outlined in the KWMSS. Understanding that deviations have been made to the KWMSS in previous phases and that Phases 5 & 6 are the final two phases in the Arcadia subdivision area, and that infrastructure and stormwater management facilities surrounding the sites have been constructed as part of previous phases of development, it will be important to demonstrate that the surrounding infrastructure has been designed with enough capacity to support the proposed developments.

Deviations from previous design assumption shall be justified in the plans and reports.

5. As was mentioned in the pre-consultation meeting, Phases 5 & 6 are the final two phases in the Arcadia subdivision area, and the surrounding infrastructure intended to provide servicing for Phases 5 & 6 has been constructed as part of previous Phases. The plans and reports that are to be submitted in support of Phase 5 & 6 will need to demonstrate that the surrounding/downstream infrastructure has been designed with enough capacity to support the proposed developments and that any works required by the KWMSS to support the proposed developments have been completed. Any deviations within Phase 5 & 6 from previous design assumptions will need to be clearly justified.

6. Preference for servicing of Phase 5 would be entirely internal to Phase 5 (i.e., individual building service connections to Winterset to be avoided) in order to eliminate any potential service disruptions to existing residents.

7. Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:

    i. Location of service

    ii. Type of development and the amount of fire flow required (as per FUS, 1999).

    iii. Average daily demand: ___ l/s.

    iv. Maximum daily demand: ___l/s.

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

8. As mentioned in the pre-consultation meeting, soil and geotechnical conditions are of potential concern for these sites. Sufficient justification should be provided to support the feasibility of Phase 5 and 6 proposals from a geotechnical perspective. For these proposals, where sensitive marine clays exist, the following information must be provided to the City:

    - A map that shows:

        i. Location and depth of sensitive soils

        ii. Location of utilities

iii. Location of proposed landscaping

9. MOECC ECA Requirements

   It is anticipated that an MECP Environmental Compliance Approval(s) (ECA) will be needed (or existing will need to be amended) for sewers as well as for any deviation from previous ECA approvals.

10. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Please contact Infrastructure Project Manager Justin Armstrong at Justin.Armstrong@ottawa.ca if you have any questions or require additional information relating to the comments above.

Transportation

1. A TIA is warranted- proceed to scoping.
2. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable). Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended.
3. Synchro files are required with Step 4.
4. ROW protection on Campeau is 37.5m.
5. Geometric Road Design (GRD) drawings will be required with the first submission of underground infrastructure and grading drawings.
6. These drawings should include such items as, but is not limited to:
   a. Road Signage and Pavement Marking for the subdivision;
   b. Intersection control measure at new internal intersections; and
   c. Location of depressed curbs and TWSIs;
   d. Include traffic calming measures on roads within the limits of their subdivision to limit vehicular speed to 30 kph and improve pedestrian safety. These measures may include either vertical or horizontal features.
7. Site triangles at the following locations on the final plan will be required:
   a. Local Road to Local Road: 3 metre x 3 metres
   b. Local Road to Collector Road: 5 metre x 5 metres
   c. Collector Road to Collector Road: 5 metre x 5 metres

d. Collector Road to Arterial Road: 5 metre x 5 metres

8. A Road Noise Impact Study is required.

9. Please note that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual. The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021. The document will be available in French and English on the TRANS website http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation. The new manual has simplified the conversion from vehicle trips to person trips and then trips by modal share.

10. Any Development Charge road work may be front ended by the applicant, so long as the work is listed in the affordable network. Repayment will be based on warrants, as determined solely by the Transportation Services Department. A Front Ending application is required.

Please contact Transportation Project Manager Mike Giampa at Mike.Giampa@ottawa.ca if you have any questions or require additional information relating to the comments above.

Parks

1. Staff understand that the applicant intends to provide cash-in-lieu rather than dedicate land for parkland for both Stages 5 and 6.

2. Please confirm lands that are to be dedicated to the City (e.g., corner park blocks, dry ponds, open space blocks, etc.) in each application..

3. Please provide more information on pedestrian pathways to the adjacent park and open space blocks for Stage 5.

4. Please reach out to Councillor Sudds to discuss the cash-in-lieu of parkland proposal.

Please contact Parks Planner Mike Russett at Mike.Russett@ottawa.ca if you have any questions or require additional information relating to the comments above.

Environment

1. Up-dated EIS, should focus on the transition from the developed lands to the natural area/watercourse blocks.

2. Implementing all recommendations from older EIS if still applicable.

Please contact Environmental Planner Matthew Hayley at Matthew.Hayley@ottawa.ca if you have any questions or require additional information relating to the comments above.

Forestry

TCR requirements:

1. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    a. An approved TCR is a requirement of Site Plan approval.
    b. The TCR may be combined with eh LP provided all information is supplied
2. As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
    a. If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
    b. Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
4. The TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition
5. Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
6. the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
7. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
8. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
        a. The location of tree protection fencing must be shown on a plan;
        b. Show the critical root zone of the retained trees; and,
        c. If excavation will occur within the critical root zone, please show the limits of excavation .

9. The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.

For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

Landscape Plan Tree Planting requirements:

10. Minimum Setbacks

    a. Maintain 1.5m from sidewalk or MUP/cycle track.

    b. Maintain 2.5m from curb

    c. Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.

    d. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.

    e. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

11. Tree specifications

    a. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

    b. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage

    c. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).

    d. Plant native trees whenever possible

    e. No root barriers, dead-man anchor systems, or planters are permitted.

    f. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

12. Hard surface planting

    a. Curb style planter is highly recommended

    b. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

c. Trees are to be planted at grade

13. Soil Volume

a. Please ensure adequate soil volumes are met:

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

**Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

14. Sensitive Marine Clay

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

Please contact Adam Palmer at adam.palmer@Ottawa.ca if you have any questions or require additional information relating to the landscape plan tree planting requirements.

MVCA

1. MVCA staff have recently reviewed permit applications and related documents required as part of the Lifting of a Holding Symbol application for the Stage 5 lands.
2. Please ensure that the Campeau pond setbacks and LRT alignment are considered as the site designs for both applications are further refined.
3. Please note that the MVCA will be conducting a floodplain mapping update by the end of the year.
4. Please refer to MVCA comments provided for previous stages of the Arcadia subdivision.

Please contact the MVCA's Planning Manager, Matt Craig, at MCraig@mvc.on.ca if you have any questions or require additional information relating to the comments above.

NEXT STEPS:

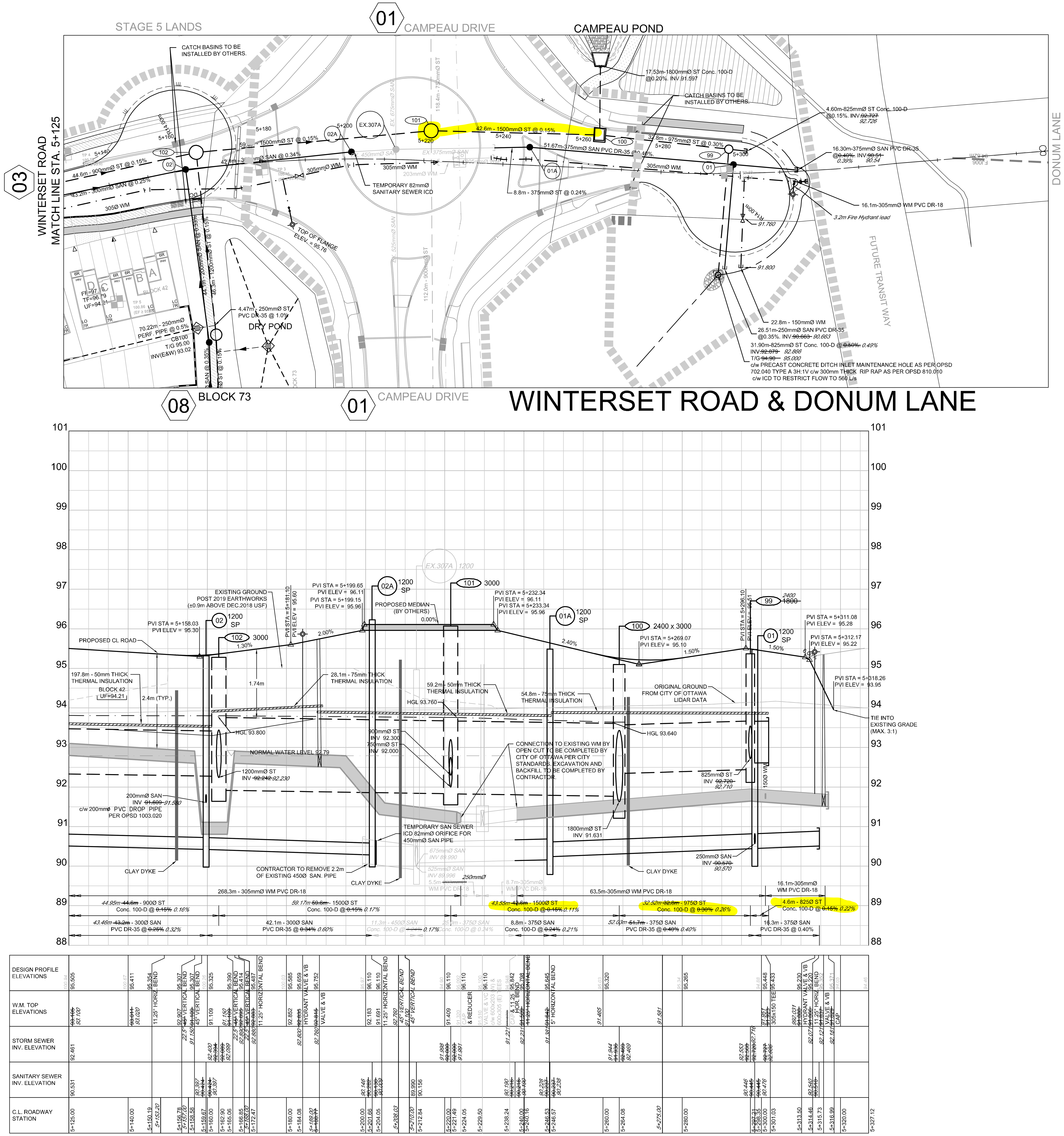
Please refer to the links to Guide to preparing studies and plans and fees for further information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development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

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to Colette Gorni, at Colette.Gorni@ottawa.ca, if you have any questions.

Appendix A3

As-Built Information



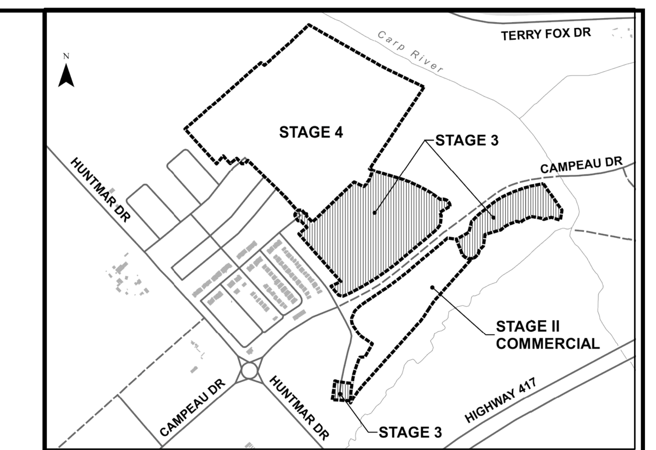
AS CONSTRUCTED INFORMATION

PRODUCED FROM INFORMATION PROVIDED BY FIELD INSPECTOR

date: DECEMBER 17, 2019

J.L. RICHARDS & ASSOCIATES LIMITED

NOTE: ALL SANITARY SERVICES FOR BLOCKS 38, 39, 40, 41 AND 42 ARE REQUIRED TO HAVE CONTROLLED SETTLEMENT JOINTS INSTALLED.



LEGEND:

- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN c/w ICD
- PROPOSED MAINTENANCE HOLE c/w ICD
- FUTURE CATCH BASIN BY OTHERS
- PROPOSED CATCH BASIN & LEAD
- PROPOSED ELBOW CATCHBASIN
- PROPOSED TEE CATCHBASIN
- PROPOSED 3-WAY CATCHBASIN
- 250mmØ PERFORATED PIPE AS PER CITY OF OTTAWA STANDARD DRAWING S29
- PROPOSED WATERMAIN, VALVE & HYDRANT
- PROPOSED WATERMAIN REDUCER
- EXISTING WATERMAIN, VALVE & HYDRANT
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- PROPOSED SANITARY SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- MANHOLE NUMBER AND SIZE (mm) C/W SAFETY PLATFORM PER OPSD 404.020
- SINGLE SERVICE CONNECTION (STORM, SANITARY AND WATER)
- DOUBLE SERVICE CONNECTION (STORM, SANITARY AND WATER)
- SERVICE CONNECTION REQUIRING BENDS
- PHASING LIMIT
- ACOUSTIC WALL
- CONCRETE SIDEWALK
- ASPHALT SIDEWALK
- GRAVEL ACCESS ROAD

No.	ISSUE / REVISION	DD/MM/YY
09	AS-CONSTRUCTED INFORMATION ADDED	17/12/2019
08	ISSUED FOR SI-006 - GEOMETRY UPDATES	13/09/2019
07	ISSUED FOR SI-003 - SERVICE LATERAL UPDATES FOR 2-CAR GARAGE UNITS	13/08/2019
06	ISSUED FOR CONSTRUCTION	28/06/2019
05	ISSUED FOR TENDER	11/06/2019
04	ISSUED TO MECP, REVISED PER CITY COMMENTS	23/05/2019

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VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:500H, 1:50V

NOTE: SEE LEGEND & GENERAL NOTES FOR SERVICE BEND REQUIREMENTS.

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

MINTO COMMUNITIES INC.
ARCADIA STAGE 3

450 HUNTMAR DRIVE

DRAWING:

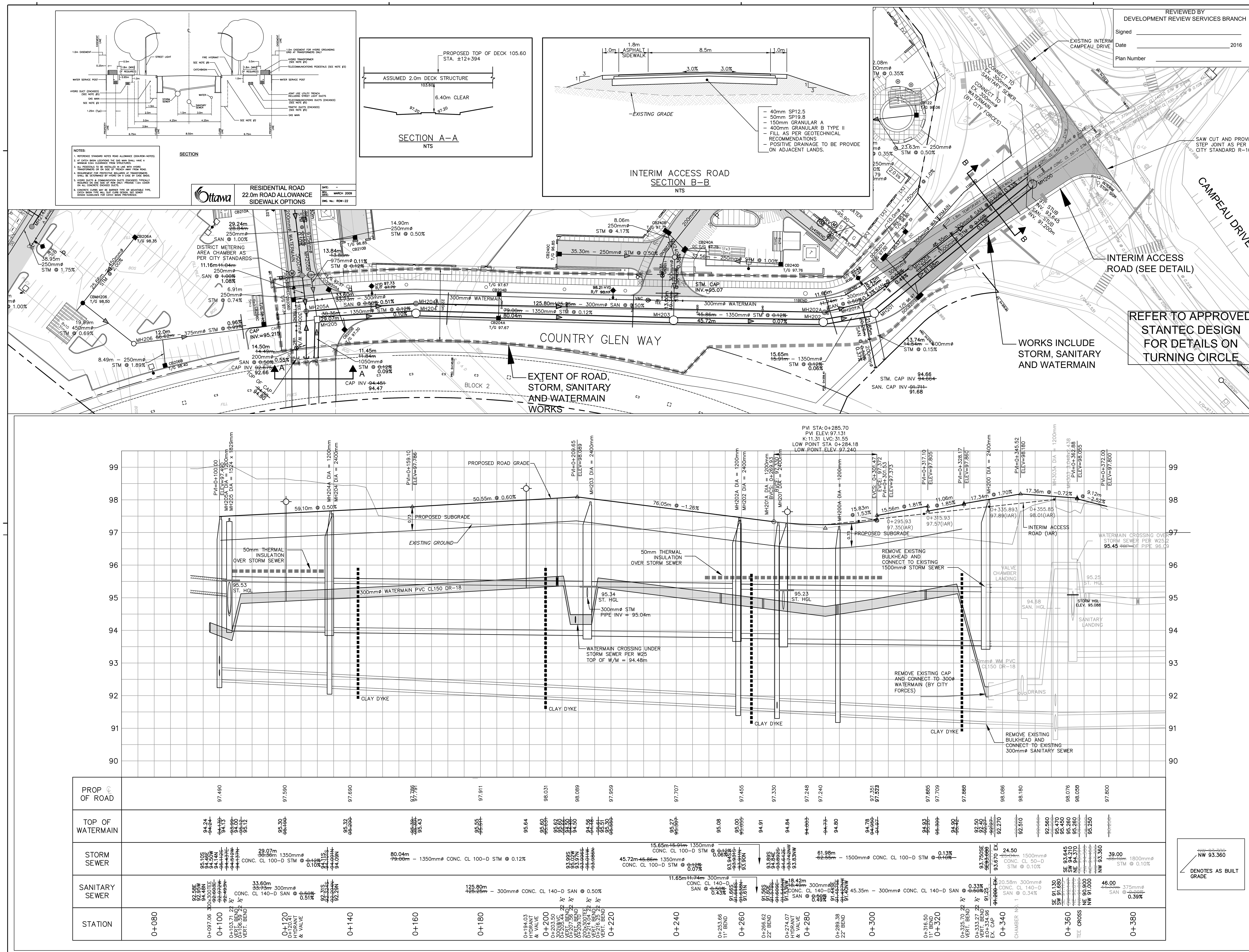
PLAN & PROFILE
WINTERSET ROAD & DONUM LANE
STA 5+125 TO 5+327.12

DESIGN:	AT		
DRAWN:	CJM	DRAWING #:	02
CHECKED:	LD		
JLR #:	26299-03		

City File No: DO7-16-16-0025 Plan No: 17816

PLOT DATE: Friday, December 20, 2019 2:08:06 PM

File Location: V:\26000\26299-03 Arcadia - Stage 3 and Campeau Pond\3-JLR DWG\1-Civil\26299-03 C P&P 02-03 RIVERCHASE.dwg



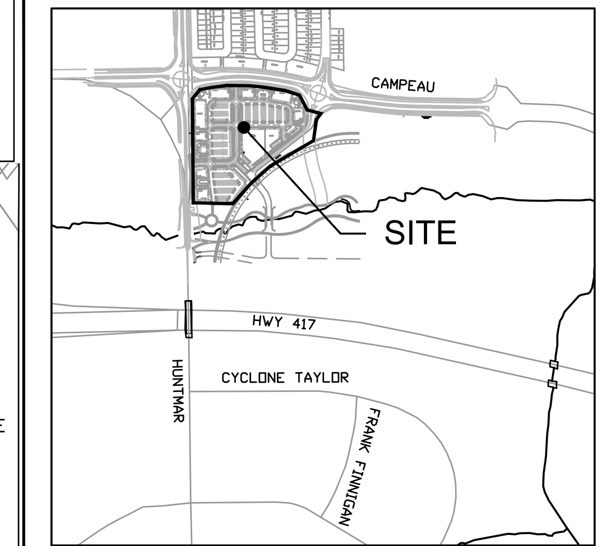
REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

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
10	As-built	17:01:17	DPS
9	Revised as per City Comments	16:08:26	DGY
8	Revised as per new Campeau & asbuilt w/m	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-101.dwg Layout Name: C-101 Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:1 Plotted At: 3/16/2017 11:10 AM Last Saved By: dsiurna Last Saved At: Mar. 16, 17

TN PN

LICENSED PROFESSIONAL ENGINEER D. G. Yanroulopoulos PROVINCE OF ONTARIO

drawn by DPS	scale HOR 1:500 VERT. 1:50
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:
PLAN AND PROFILE
COUNTRY GLEN WAY
370 HUNTMAR DRIVE
OTTAWA, ON.

IBI GROUP

drawing no.
C-101

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

D07-12-14-0014

LEGEND:

- MH2 — PROPOSED STORM MANHOLE & NUMBER
- CBMH100 — PROPOSED CATCHBASIN MANHOLE & NUMBER
- MH2A — PROPOSED SANITARY MANHOLE & NUMBER
- PROPOSED STORM SEWER & FLOW DIRECTION
- PROPOSED SANITARY SEWER & FLOW DIRECTION
- HYD — PROPOSED FIRE HYDRANT
- V&VB — PROPOSED WATER VALVE BOX
- V&C — PROPOSED WATER VALVE CHAMBER
- V — VALVE
- CS — CURB STOP AND STAND POST
- CB — PROPOSED CATCHBASIN
- DI — PROPOSED DITCH INLET
- 250mmØ SUBDRAIN
- CLAY DYKE
- SIAMESE CONNECTION
- M — METER
- RM — REMOTE METER
- PRV — PRESSURE REDUCING VALVE
- A — WATERMAIN IDENTIFICATION
- PIPE CROSSING IDENTIFICATION
- 10.0 l/s — CONTROLLED ROOF RELEASE RATE
- INLET CONTROL DEVICE LOCATION (SEE DRAWING C-100A FOR DETAILS)
- HEAVY DUTY ASPHALT
- 6x2 5cm — 3.0m-200Ø PVC INLET & OUTLET CONNECTORS (TYPICAL)
- UNDERGROUND STORAGE CELL TRITON M-6 OR APPROVED EQUIVALENT
- SIZE AND CAPACITY OF CELL

HATCH AREA NOT IN CONTRACT

CAMPEAU DRIVE

HUNTMAR DRIVE

CONNECT TO EX. 200mmø WATERMAIN (BY CITY FORCES) T/WM 96.28

INTERIM STOP SIGN

BLOCK 500 — 2.0 l/s
- 8.00m — 250mmø STM @ 1.00%
- SAN. STUB INV. 93.375
- ST. STUB INV. 95.674
- 20.00m — 300mmø STM @ 0.50%
- 15.00m — 150mmø SAN @ 1.00% OBV = 96.84
- 16.50m — 250mmø STM @ 1.00% OBV = 96.84
- 150mmø WATER SERVICE OBV.=96.75
- 15.38m — 600mmø STM @ 5.26%

BLOCK 600 — 2.0 l/s
- 50mmø WATER SERVICE OBV.=94.30
- 6.50m — 150mmø SAN @ 1.00% OBV = 95.42
- 5.00m — 250mmø STM @ 1.00% OBV = 96.87
- 23.24m — 250mmø STM @ 1.00%

BLOCK 700 — 2.0 l/s
- 150mmø WATER SERVICE OBV.=96.05
- 5.00m — 250mmø STM @ 0.70% OBV = 96.87
- 6.50m — 150mmø SAN @ 1.00% OBV = 95.73
- 12.08m — 300mmø STM @ 0.35%

BLOCK 400 — 4.0 l/s
- 12.00m — 1050mmø STM @ 0.10% STORAGE PIPE
- 61.67m — 300mmø STM @ 0.50%
- 6.50m — 150mmø SAN @ 1.00% OBV = 97.23
- 5.00m — 250mmø STM @ 1.00% OBV = 97.33
- 150mmø WATER SERVICE OBV.=97.10

BLOCK 300 — 1.0 l/s
- 50mmø WATER SERVICE OBV.=97.10
- 6.50m — 150mmø SAN @ 1.00% OBV = 97.23
- 5.00m — 250mmø STM @ 1.00% OBV = 97.34

BLOCK 800 — 2.0 l/s
- 26.56m — 300mmø STM @ 0.35%
- 5.00m — 250mmø STM @ 1.00% OBV = 96.79
- 6.50m — 150mmø SAN @ 1.00% OBV = 96.03
- 50mmø WATER SERVICE OBV.=95.80

LIMITS OF SEWER AND WATER WORKS

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

CONNECT TO EX. 300mmø SANITARY SEWER

CONNECT TO EX. 300mmø WATERMAIN (BY CITY FORCES)

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

PROVISIONAL WATERMAIN

PROVISIONAL VALVE AND VALVE BOX
CAP INV. ~~94.37~~ (SAN)
CAP INV. ~~95.22~~ STM)

LIMITS OF PROVISIONAL SERVICING AND ROAD WORKS

BLOCK 200
- 6.80m — 150mmø SAN @ 1.00% OBV = 97.28
- 5.40m — 250mmø STM @ 1.00% OBV = 97.18
- 50mmø WATER SERVICE OBV.=97.15

BLOCK 100
- 50mmø WATER SERVICE OBV.=97.20
- 6.80m — 150mmø SAN @ 1.00% OBV = 97.33
- 5.50m — 250mmø STM @ 1.00% OBV = 97.44

CRU 901 BLOCK 900 — 10.0 l/s

CRU 902

DISTRICT METERING AREA CHAMBER AS PER CITY STANDARDS

FUTURE RAPID TRANSIT

BLOCK 2

COUNTRY GLEN WAY

LIMITS OF COUNTRY GLEN WAY WORK

REVIEWED BY DEVELOPMENT REVIEW SERVICES BRANCH

Signed _____

Date _____ 2016

Plan Number _____

SITE BENCHMARKS
N.T.S.

JOB BENCHMARK #2 FIRE HYDRANT TOP OF SPINDLE=99.24

JOB BENCHMARK #1 FIRE HYDRANT TOP OF SPINDLE=98.95

BRETTONWOOD RIDGE

CAMPEAU DRIVE

COUNTRY GLEN WAY

KEY PLAN

CAMPEAU

SITE

HWY 417

CYCLONE TAYLOR

HUNTMAR

TENNYSON

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\5.0 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: dslurno Last Saved At: Mar. 16, 17

TN PN

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

Arcadia Retail Development
Kanata, Ontario

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

IBI GROUP

drawing no.
C-100

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

D07-12-14-0014

WATERMAIN SCHEDULE					
	STATION	DESCRIPTION	FINISHED	TOP OF	AS-BUILT
A	0+000.00	300Ø x 300Ø TEE	97.24	94.24	
	0+004.00	-	97.31	94.18	
	0+007.00	-	97.32	93.92	
	0+008.47	22.5° VERTICAL BEND	97.33	94.25	
	0+009.92	22.5° VERTICAL BEND	97.28	94.88	
	0+013.98	-	97.29	94.89	
	0+015.00	-	97.30	94.90	
	0+027.40	300ø x 150ø HYDRANT TEE	97.34	94.94	
	0+040.00	-	97.24	94.98	
	0+058.95	300Ø – 11 1/4° BEND	97.44	95.04	
	0+075.00	-	97.55	95.15	
	0+092.41	300Ø x 150Ø HYDRANT TEE	97.67	95.27	
	0+109.87	300ø V&C	97.77	95.37	
	0+110.60	22.5° VERTICAL BEND	97.78	95.37	
	0+112.71	22.5° VERTICAL BEND	97.79	94.48	
K	0+114.22	300ø x 200ø TEE	97.79	94.48	
	0+118.37	22.5° VERTICAL BEND	97.76	94.48	
	0+120.51	22.5° VERTICAL BEND	97.75	95.35	
	0+135.00	--	97.67	95.27	
	0+153.49	300Ø-22 ½° BEND	95.57	95.17	
	0+159.43	300Ø -11 ¼° BEND	97.50	95.10	
	0+166.99	300Ø -11 ¼° BEND	97.46	95.06	
	0+181.92	300Ø -11 ¼° BEND	97.37	94.97	
	0+185.96	300Ø x 150Ø HYDRANT TEE	97.33	94.93	
	0+195.40	300Ø -11 ¼° BEND	97.28	94.89	
	0+210.00	-	97.34	94.94	
	0+230.00	-	97.41	95.01	
B	0+245.15	EX. 300Ø CAP	97.46	95.06	
C	0+000.00	200Ø x 200ø TEE	99.23	96.83	96.91
	0+003.50	200ø V&VB	99.12	96.72	96.73
	0+025.00	-	98.43	96.03	96.12
	0+050.19	200ø 45° BEND	97.62	95.22	95.20
	0+055.85	200ø x 200ø TEE DOMESTIC SERVICE	97.57	95.17	95.17
	0+060.32	200ø x 150ø HYDRANT TEE	97.53	95.13	95.12
	0+083.70	200ø V&VB	97.33	94.93	94.95
	0+088.00	200ø x 300ø REDUCER	97.28	94.88	94.90
	0+089.13	22.5° VERTICAL BEND	97.27	94.87	94.85
	0+090.79	22.5° VERTICAL BEND	97.25	94.25	94.30
A	0+092.29	300ø x 300ø TEE	97.23	94.24	94.30
	0+099.50	22.5° VERTICAL BEND	97.26	94.25	94.80
	0+100.96	22.5° VERTICAL BEND	97.25	94.85	94.80
	0+103.70	300Ø V&C	97.26	94.86	94.75
D	0+107.06	300Ø CAP	97.28	94.88	94.80
E	0+000.00	200Ø CAP	99.18	96.78	
	0+003.33	200Ø x 150Ø HYDRANT TEE	99.17	96.77	
	0+009.80	200Ø C/W 50ø TVS DOMESTIC SERVICE	99.12	96.72	
	0+028.68	200Ø C/W 50Ø TVS DOMESTIC SERVICE	99.16	96.76	
	0+045.08	TEMP 200Ø CAP 200Ø -11 ¼° BEND	99.18	96.78	96.80
	0+054.52	200ø V&VB	99.22	96.82	96.82
C	0+058.02	200ø x 200Ø TEE	99.23	96.83	96.82
	0+066.80	200Ø x 150Ø HYDRANT TEE	99.21	96.81	96.80
	0+071.10	200Ø V&VB			
	0+085.00	TEMP 200Ø CAP	99.19	96.79	96.79
	0+100.00	-	99.17	96.77	
	0+115.00	--	99.15	96.75	
	0+132.00	200Ø C/W 50Ø TVS DOMESTIC SERVICE	99.13	96.73	
	0+134.00	200Ø x 150Ø TEE DOMESTIC SERVICE	99.13	96.73	
	0+140.92	200Ø V&VB	99.13	96.73	
I	0+146.42	200Ø x 200Ø TEE	99.13	96.73	
	0+151.50	200Ø - 45° BEND	99.10	96.70	
	0+153.50	200ø MV	99.07	96.67	
F	0+157.18	HYDRANT	99.22	96.82	
G	0+000.00	200Ø CAP	98.68	96.28	
	0+009.34	200Ø x 150Ø TEE DOMESTIC SERVICE	98.36	95.96	
	0+015.00	-	98.35	95.95	
	0+025.52	45° BEND VERTICAL BEND	98.58	96.18	
	0+026.09	45° BEND VERTICAL BEND	98.56	95.52	
	0+027.24	--	98.53	95.52	
	0+028.39	45° BEND VERTICAL BEND	98.52	95.52	
	0+028.91	45° BEND VERTICAL BEND	98.52	96.12	
H	0+031.74	200Ø x 200Ø TEE	98.45	96.05	
	0+034.84	200Ø – 45°BEND	98.36	95.96	
	0+039.30	200Ø MV	98.27	95.87	
	0+043.16	HYDRANT	98.40	96.00	
H	0+000.00	200Ø X200ø TEE	98.45	96.05	
	0+003.53	200Ø V&VB	98.43	96.03	
	0+025.00	--	98.34	95.94	
	0+042.60	200Ø C/W 50Ø TVS DOMESTIC SERVICE	98.33	95.93	
	0+056.07	200Ø -11 ¼° BEND	98.32	95.92	
	0+073.14	200Ø x 150Ø TEE DOMESTIC SERVICE	98.09	95.69	
	0+076.14	200Ø V&VB	98.10	95.70	
	0+090.00	-	98.09	95.69	
	0+110.32	200Ø x 150ø HYDRANT TEE	98.08	95.68	
	0+110.74	200Ø -11 ¼° BEND	98.08	95.68	
	0+113.24	200Ø – 22 ½ °BEND	98.05	95.65	
	0+121.21	200Ø – 45°BEND	97.99	95.59	
	0+135.00	-	97.92	95.52	
	0+147.40	200Ø – 45°BEND	97.86	95.46	
	0+148.08	200Ø C/W 50Ø TVS DOMESTIC SERVICE	97.84	95.44	
	0+152.76	200Ø – 45°BEND	97.82	95.42	
	0+159.42	200Ø – V&VB	97.76	95.36	
J	0+162.92	200Ø X200ø TEE	97.72	95.32	
	0+166.42	200Ø – V&VB	97.72	95.32	
	0+172.13	200Ø x 150Ø HYDRANT TEE	97.73	95.33	
	0+185.00	-	97.73	95.33	
	0+205.00	-	97.73	95.33	
	0+225.00	-	97.73	95.33	
	0+240.53	200Ø x 150Ø HYDRANT TEE	97.73	95.33	
	0+255.00	-	97.71	95.31	
	0+265.51	45° BEND VERTICAL BEND	97.69	95.29	
	0+266.29	45° BEND VERTICAL BEND	97.71	94.30	
	0+268.96	45° BEND VERTICAL BEND	97.65	94.30	
	0+269.80	45° BEND VERTICAL BEND	97.75	95.35	
	0+275.00	-	97.88	95.48	
	0+300.00	-	98.53	96.13	
	0+319.53	200ø V&VB	99.04	96.64	
I	0+323.03	200Ø x 200ø TEE	99.13	96.73	
J	0+000.00	200Ø X200ø TEE	97.72	95.32	
	0+015.00	-	97.81	95.41	
	0+030.95	200Ø – 22 ½ °BEND	97.90	95.40	
	0+034.23	200Ø -11 ¼° BEND	97.93	95.39	
	0+037.14	45° BEND VERTICAL BEND	97.91	95.38	
	0+037.63	45° BEND VERTICAL BEND	97.83	95.00	
	0+038.76	-	97.90	94.70	
	0+045.04	200Ø – V&VB	98.05	94.59	
K	0+052.68	300ø x 200ø TEE	97.79	94.48	

REVISED 2017-01-17

REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed ______________________

Date ______________________ 2016

Plan Number ______________________

CATCH BASIN DATA TABLE									
		ELEVATION			OUTLET PIPE				
STRUCTURE ID	AREA ID	TOP OF GRATE	INVERT INLET	INVERT OUTLET	DIAMETER (mm)	TYPE	100 yr HEAD	FLOW (l/s)	CUSTOM IPEX TEMPEST ICD *SEE NOTE 3.9*
CICB123	123	97.80		96.55	250	PVC DR-35	1.225	15.0	LMF
CB122	122	98.06	97.03	96.61	250	PVC DR-35	1.265	10.0	LMF
			96.71						
CB120	120	98.00		96.55	250	PVC DR-35	1.475	15.0	LMF
CB110B		99.25		97.75	300	PVC DR-35			
CB110A		99.25	97.60	97.45	300	PVC DR-35			
CBMH110A	110	99.35	97.45	97.35	600	PVC DR-35	1.700	40.0	HF
CICB100A		98.45		97.05	250	PVC DR-35			
CICB100B	100	98.45	96.97	96.91	250	PVC DR-35	1.515	30.0	LMF
CBMH233A		97.80		95.64	600	CONC			
CBMH233		97.50	95.62	95.56	600	CONC			
CBMH232A		97.80	96.77	95.57	600	CONC			
			96.37						
CBMH232		97.50	95.51	95.49	600	CONC			
CBMH231A		97.80		95.46	600	CONC			
CBMH231	231	97.50	95.44	95.14	600	CONC	2.264	150.0	HF
CICB230A		97.45		96.00	250	PVC DR-35			
CICB230B	230B	97.45	95.92	95.79	250	PVC DR-35	1.715	70.0	HF
CB230C	230C	98.08	97.05	96.63	250	PVC DR-35	1.395	10.0	LMF
			96.73						
CB230D		97.50		96.05	250	PVC DR-35			
CB230E	230D	97.50	95.97	95.85	250	PVC DR-35	1.679	67.0	HF
CB230F	230F	97.99	96.96	96.54	250	PVC DR-35	1.535	38.0	HF
			96.64						
CB230G		97.50		96.05	250	PVC DR-35			
CB230H	230G	97.50	95.97	95.84	250	PVC DR-35	1.710	53.0	HF
			96.47(N)						
			96.07(N)						
CB230I	230I	98.09	97.06	96.64	250	PVC DR-35	1.435	11.0	LMF
			96.74						
CB221A		98.40	97.37	96.75	450	CONC			
			96.97						
CB221B		98.25		96.50	450	CONC			
CB221C		98.10	96.33	96.33	450	CONC			
CBMH221		98.15	96.02	95.87	600	CONC			
MH221	221	99.22	95.80	95.58	450	CONC	2.349	85.0	HF
CB222		99.05		97.60	250	PVC DR-35			
CBMH222	222	98.96	97.16	96.58	250	PVC DR-35	2.440	15.0	LMF
CB223		98.45		96.80	450	CONC			
CBMH223	223	98.45	96.03	95.81	450	CONC	2.669	32.0	HF
			97.42(S)						
			97.02(S)						
CICB212A		99.16		97.71	250	PVC DR-35			
CICB212B	212	99.16	97.62	97.50	250	PVC DR-35	1.626	24.0	LMF
CB215	215	99.20		97.75	250	PVC DR-35	1.575	10.0	LMF
RYCB216		99.30		97.50	250	PVC DR-35			
CB216		99.15		97.17	250	PVC DR-35			
MH216		99.29	96.88	96.82	250	PVC DR-35			
CB210A	210A	97.90	96.87	96.40	300	PVC DR-35	1.550	77.0	HF
			96.50						
CB210B		96.85		95.40	250	PVC DR-35			
CB206A		98.35		96.70	450	PVC DR-35			
CBMH206	206A	98.50	96.19	95.96	450	CONC	2.413	85.0	HF
			97.47(S)						
			97.07(S)						
MH206		98.58	95.82	95.67	375	PVC DR-35			
CB206B	206B	98.40		96.95	250	PVC DR-35	1.575	10.0	LMF
CB206C	206C	98.40	97.37	96.95	250	PVC DR-35	1.475	14.0	LMF
			97.05						
CB206D	206D	97.34		95.89	250	PVC DR-35	1.465	60.0	HF
CB205A		97.37		95.92	250	PVC DR-35			
CB205B	205	97.30	95.80	95.68	250	PVC DR-35	1.680	60.0	HF
CB204B		97.67		96.25	250	PVC DR-35			
CB204A	204	97.67	96.16	96.04	250	PVC DR-35	1.510	55.0	HF
CB240A		97.75	96.72	96.30	250	PVC DR-35			
			96.40						
CB240B	240A	97.75	96.20	96.07	250	PVC DR-35	1.652	10.0	LMF
CB240C		96.85		95.40	250	PVC DR-35			
CB240D	240D	97.76	96.73	96.31	250	PVC DR-35	1.465	10.0	LMF
			96.43						
DCB201A		97.02		95.57	250	PVC DR-35			
DCB201B	201	97.02	95.42	95.30	250	PVC DR-35	1.707	60.0	HF

CROSSING SCHEDULE

Location	Below Pipe Size (mm)	Below Pipe Obvert	Above Pipe Size (mm)	Above Pipe Invert	Difference (m)
1	250Ø SAN	94.41	200Ø W/M	96.65	2.20
2	250Ø SAN	93.68	250Ø STM	95.95	2.23
3	250Ø SAN	93.33	200Ø W/M	93.85	0.50
4	250Ø SAN	93.69	300Ø W/M	96.16	2.42
5	300Ø SAN	92.80	250Ø STM	95.67	2.79
6	300Ø SAN	92.82	975Ø STM	94.57	1.55
7	300Ø SAN	92.24	300Ø STM	95.07	2.69
8	300Ø SAN	92.50	250Ø STM	96.00	3.43
9	300Ø SAN	91.78	250Ø STM	95.68	3.83
10	250Ø SAN	94.79	50Ø W/M	97.35	2.52
11	250Ø SAN	94.69	50Ø W/M	97.15	2.41
12	250Ø SAN	94.52	600Ø STM	95.19	0.54
13	250Ø SAN	94.86	450Ø STM	95.50	0.55
14	250Ø SAN	95.56	50Ø W/M	96.73	1.12
15	250Ø SAN	95.59	150Ø W/M	96.63	0.99
16	250Ø SAN	94.95	150Ø W/M	95.47	0.50
17	250Ø SAN	94.68	50Ø W/M	95.35	0.63
18	250Ø SAN	93.30	300Ø STM	96.09	2.68
19	250Ø SAN	93.23	250Ø STM	96.99	3.72
20	250Ø SAN	93.21	250Ø STM	96.44	3.19
21	250Ø SAN	95.91	250Ø STM	96.57	0.62
22	250Ø SAN	92.91	375Ø STM	95.19	2.18
23	250Ø STM	96.83	150Ø SAN	97.13	0.26
24	375Ø STM	96.52	150Ø SAN	97.07	0.47
25	450Ø STM	95.99	150Ø SAN	97.03	0.97
26	450Ø STM	96.02	150Ø SAN	97.03	0.94
27	200Ø W/M	95.98	150Ø SAN	96.67	0.69
28	150Ø SAN	95.36	450Ø STM	96.02	0.59
29	150Ø SAN	95.68	375Ø STM	96.23	0.47

Location	Below Pipe Size (mm)	Below Pipe Obvert	Above Pipe Size (mm)	Above Pipe Invert	Difference (m)
30	150Ø SAN	95.98	300Ø STM	96.55	0.49
31	975Ø STM	95.61	150Ø SAN	96.01	0.27
32	1350Ø STM	95.44	250Ø STM	95.97	0.37
33	1500Ø STM	95.23	250Ø STM	95.63	0.25
34	600Ø STM	95.78	200Ø W/M	96.62	0.73
35	250Ø STM	96.74	50Ø W/M	97.35	0.57
36	375Ø STM	96.54	50Ø W/M	97.15	0.52
37	450Ø STM	96.00	50Ø W/M	96.75	0.68
38	450Ø STM	96.01	150Ø W/M	96.65	0.57
39	675Ø STM	95.64	250Ø STM	95.91	0.15
40	675Ø STM	95.70	250Ø STM	95.99	0.18
41	200Ø W/M	94.30	675Ø STM	95.06	0.65
42	300Ø W/M	94.48	300Ø STM	95.04	0.56
43	150Ø W/M	95.63	375Ø STM	96.21	0.50
44	50Ø W/M	95.42	450Ø STM	96.03	0.53
45	200Ø W/M	95.60	300Ø STM	96.10	0.50
46	450Ø STM	96.10	200Ø W/M	96.78	0.68
47	200Ø W/M	94.70	250Ø STM	95.23	0.50
48	200Ø W/M	95.40	250Ø STM	95.90	0.50
49	300Ø W/M	94.35	375Ø STM	95.23	0.79
50	200Ø W/M	95.45	250Ø STM	96.26	0.79
51	300Ø W/M	94.89	250Ø STM	95.71	0.79
52	200Ø W/M	96.24	250Ø STM	97.02	0.76
53	975Ø STM	95.60	200Ø W/M	96.15	0.50
54	300Ø W/M	94.01	975Ø STM	94.57	0.50
55	200Ø W/M	95.16	250Ø STM	96.15	0.97
56	200Ø W/M	95.97	250Ø STM	96.47	0.50
57	300Ø W/M	94.89	250Ø STM	95.71	0.80

DRAWING NOTES

1.0 GENERAL

1.1 CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

1.2 DO NOT SCALE DRAWINGS.

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

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

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

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

1.7 FOR LEGAL SURVEY INFORMATION REFER TO REGISTERED PLAN.

1.8 REFER TO SITE PLAN BY PELLOW + ASSOCIATES ARCHITECTS INC.FOR SITE PLAN LAYOUT.

1.9 REFER TO LANDSCAPE ARCHITECTURAL DRAWINGS FOR SURFACE FEATURES DETAILS.

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

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

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

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

1.14 ALL CONSTRUCTION TRAFFIC TO ACCESS SITE FROM CAMPEAU DRIVE.

1.15 FOR DETAILS OF TEST PITS SEE GEOTECHNICAL REPORT.

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

1.17 THE POSITION OF POLE LINES, CONDUITS, WATERMAIN, SEWERS, AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK THE CONTRACTOR SHALL INFORM ITSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, SHALL PROTECT ALL UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

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

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

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

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

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

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

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

1.25 ALL PIPE BEDDING TO BE OPSS GRANULAR 'A' PLACED A MINIMUM OF 300mm BELOW SEWER AND WATER PIPES AND COMPACTED TO SPRING LINE. BEDDING AND COVER MATERIAL AS PER RECOMMENDATIONS FROM GEOTECHNICAL ENGINEER.

2.0 SANITARY

2.1 ALL SANITARY SEWER MAINS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OSPD 1005.01. SANITARY SEWER MATERIALS TO BE:
250mmØ AND SMALLER - PVC DR 28
300mmØ AND LARGER - CONC. CL. 140-D

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

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

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

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

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

3.0 STORM

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

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

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

3.4 STORM MAINTENANCE HOLES AND CBMH'S TO BE OPSD, SIZE AS SPECIFIED, TAPER TOP FOR MH AND FLAT TOP FOR CBMH, UNLESS OTHERWISE NOTED.

3.5 ALL CATCH BASINS TO BE AS PER OPSD 705.010, FRAME & FISH TYPE GRATE AS PER CITY OF OTTAWA STD. S19.1, ALL CB LEAD PIPES TO BE 250mm DIAMETER PVC DR 35 @ 1.00% SLOPE WITH OUTLET INVERT AT 1.45m BELOW TOP OF GRATE, UNLESS OTHERWISE NOTED.

3.6 150mm DIAMETER SOCK-WRAPPED PERFORATED PVC SUBDRAINS TO BE INSTALLED AT ALL CB'S, EXTEND 3.0m FROM 4 SIDES OF CB. WHERE CB IS ADJACENT TO CURB EXTEND SUBDRAIN 3.0m IN EACH DIRECTION ALONG CURB.

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

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

3.9 CONTRACTOR TO PROVIDE IPEX-TEMPEST ICD'S (OR EQUIVALENT)SHOP DRAWINGS BASED ON HEAD AND FLOW RATE SPECIFIED IN CB DATA TABLE, FOR ENGINEERS REVIEW PRIOR TO ORDERING ICD'S.

3.10 CONTRACTOR TO PROVIDE TRITON M-6 STORAGE CELL (OR EQUIVALENT) SHOP DRAWING BASED ON VOLUME SPECIFIED FOR ENGINEERS APPROVAL PRIOR TO ORDERING MATERIAL.

4.0 WATER

4.1 ALL WATERMAINS TO BE PVC DR 18, WITH MINIMUM COVER OF 2.4m AND INSTALLED PER CITY OF OTTAWA STANDARDS. ALL DOMESTIC WATER SERVICES ARE TO BE 200mmØ.

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

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

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

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

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

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

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

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

5.0 PARKING LOT AND WORK IN PUBLIC RIGHTS OF WAY

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

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

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

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

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

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

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

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

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

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

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

5.12 ALL RE GRADED AREAS IN EXISTING PUBLIC RIGHTS OF WAY AND ANY OTHER DISTURBED AREAS IN EXISTING PUBLIC RIGHTS OF WAY ARE TO BE FINISHED WITH SOD ON 100mm TOPSOIL.

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

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

Commercial–Storm STRUCTURE TABLE						
NAME	RIM ELEV.	INVERT IN	INVERT IN AS–BUILT	INVERT OUT	INVERT OUT AS–BUILT	DESCRIPTION
MH100	98.51	NE95.873 SW96.023		NW95.723		1200ø OPSD 701.010
MH100B	98.58	SE95.674		NW95.674		1200ø OPSD 701.010
MH110	98.95	W96.387		NE96.237		1200ø OPSD 701.010
MH120	98.24	NE96.108 N96.318		SW96.003		1200ø OPSD 701.010
MH121	98.17	E96.329		SW96.254		1200ø OPSD 701.010
MH122	98.24	SE96.401		W96.371		1200ø OPSD 701.010
MH123	97.97			NW96.494		1200ø OPSD 701.010
MH200	97.80	~~SE93.680~~	SE93.75	NW93.670		2400ø OPSD 701.013
MH201	97.27	~~S93.892~~ ~~E94.642~~	SE93.89 SE94.64	~~NW93.742~~	NW93.83	2400ø OPSD 701.013
MH202	97.38	~~S93.931~~	SE93.94	~~N93.911~~	N93.90	2400ø OPSD 701.013
MH203	97.94	~~S93.996~~ ~~W95.011~~	S93.99 W95.02	~~N93.986~~	N93.97	2400ø OPSD 701.013
MH204	97.57	~~S94.101~~	S94.11	~~N94.091~~	N94.09	2400ø OPSD 701.013
MH205	97.43	~~W94.512~~ ~~E94.437~~ ~~S95.112~~	W94.50 E94.46 S95.10	~~N94.137~~	N94.14	1524x1829mm Rectangular Metric
MH205B	97.47	~~W94.538~~	W94.52	~~E94.528~~	E94.515	1800ø OPSD 701.012
MH206	98.59	SW95.824		N95.674		1200ø OPSD 701.010
MH210	97.78	~~SW94.957~~ ~~NW94.807~~	SW94.83 NW94.80	~~E94.582~~	E94.55	1500ø OPSD 701.011
MH212	99.30	~~SE95.927~~ ~~NW95.202~~ ~~SW96.824~~	SE95.80 NW95.18 SW96.83	~~NE95.142~~	NE95.15	1200ø OPSD 701.010
MH213	99.27	SE96.036		NW96.016		1200ø OPSD 701.010
MH214	99.19	SE96.296 SW96.696		NW96.171		1200ø OPSD 701.010
MH215	99.30	S97.624		NW96.978		1200ø OPSD 701.010
MH216	99.29	NW96.879		NE96.819		1200ø OPSD 701.010
MH220	99.12	NW95.386 W95.826 NE95.704		SE95.236		1200ø OPSD 701.010
MH221	99.22	NE95.801 NW95.596		SE95.576		1800ø OPSD 701.012
MH230	97.56	NE95.100 W95.676		SE94.950		1200ø OPSD 701.010
MH240	97.86	S95.224 N95.984 W95.737		E95.089		1200ø OPSD 701.010
MH500	99.21			SE95.608		1800ø OPSD 701.012

Commercial–Sanitary STRUCTURE TABLE						
NAME	RIM ELEV.	INVERT IN	INVERT IN AS–BUILT	INVERT OUT	INVERT OUT AS–BUILT	DESCRIPTION
BLK100A	99.58			NE97.184		BLDG SERVICE
BLK200A	99.44			NE97.126		BLDG SERVICE
BLK300A	99.43			NE97.081		BLDG SERVICE
BLK400A	99.40			NE97.077		BLDG SERVICE
BLK600A	98.68			SE95.265		BLDG SERVICE
BLK700A	98.43			SE95.580		BLDG SERVICE
BLK800A	98.28			SW95.878		BLDG SERVICE
BLK900A	97.99					BLDG SERVICE
MH100A	98.50	NE94.283		NW93.061		OPSD 701.010
MH100C	94.42	SE92.890				OPSD 701.010
MH120A	98.21	NE94.580		SW94.550		OPSD 701.010
MH121A	98.13	E95.356		SW95.156		OPSD 701.010
MH122A	98.06	SE95.566		W95.466		OPSD 701.010
MH123A	97.93			NW95.835		OPSD 701.010
MH200A	97.18	~~SE91.457~~	SE91.44	~~NW91.427~~	NW91.40	OPSD 701.010
MH201A	97.30	~~S91.579~~ ~~E91.609~~	S91.56 E91.60	~~NW91.549~~	NW91.53	OPSD 701.010
MH202A	97.45	~~S91.668~~	S91.66	~~N91.638~~	N91.61	OPSD 701.010
MH204A	97.66	~~S92.324~~	S92.31	~~N92.294~~	N92.29	OPSD 701.010
MH205A	97.49	~~W92.972~~ ~~E92.603~~	W92.95 E92.58	~~N92.493~~	N92.48	OPSD 701.010
MH205C	97.55	~~W93.112~~	W93.09	~~E93.082~~	E93.07	OPSD 701.010
MH210A	97.82	~~SW93.530~~	SW93.46	~~E93.400~~	E93.39	OPSD 701.010
MH212A	99.24	~~SE94.179~~ ~~NW94.179~~	SE94.10 NW94.15	~~NE94.119~~	NE94.05	OPSD 701.010
MH213A	99.23	SE94.291		NW94.261		OPSD 701.010
MH214A	99.25			NW94.512		OPSD 701.010
MH221A	99.18			SE95.415		OPSD 701.010

PAVEMENT STRUCTURE

LIGHT DUTY

50mm 12.5 SUPERPAVE
150mm GRANULAR 'A'
400mm GRANULAR 'B' TYPE II

HEAVY DUTY

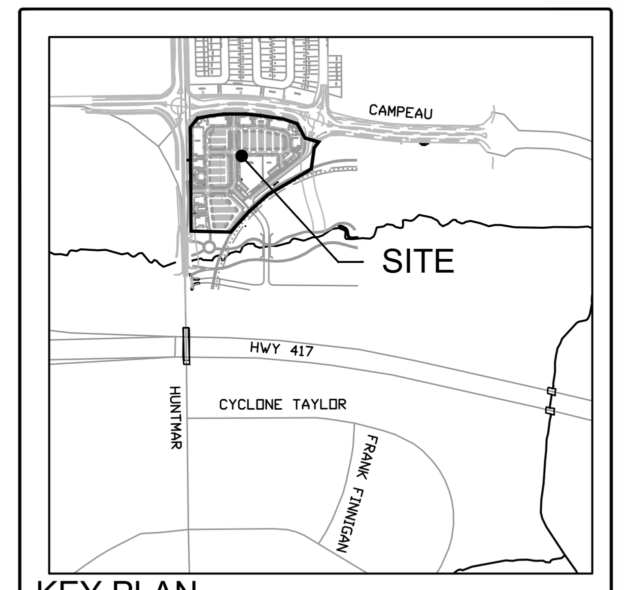
40mm 12.5 SUPERPAVE
50mm 19.0 SUPERPAVE
150mm GRANULAR 'A'
450mm GRANULAR 'B' TYPE II

COUNTRY GLEN WAY

40mm 12.5 SUPERPAVE
50mm 19.8 SUPERPAVE
50mm 19.8 SUPERPAVE
150mm GRANULAR 'A'
450mm GRANULAR 'B' TYPE II

INTERIM ACCESS ROAD

40mm 12.5 SUPERPAVE
50mm 19.8 SUPERPAVE
150mm GRANULAR 'A'
400mm GRANULAR 'B' TYPE II



KEY PLAN

APPROVED ☐ REFUSED ☐

THIS____DAY OF ____________ , 20______

DERRICK MOODIE, ACTING MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	Description	Date	Checked
9	As–built	17:01:17	DPS
8	Revised as per City Comments	16:08:26	DGY
7	Issued for Construction	16:07:13	DGY
6	Revised per Interim Access Road	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–100A.dwg Layout Name: Detail Sheet Plot Style: AIA STANDARD–FULL.CTB Plot Scale: 1:1 Plotted At: 3/16/2017 11:08 AM Last Saved By: dsiurna Last Saved At: Mar. 16, 17

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
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:
DETAILS AND SCHEDULES
370 HUNTMAR DRIVE
OTTAWA, ON.

IBI GROUP

drawing no.
C–100A

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 A4

Servicing Study Checklist

MINTO COMMUNITIES INC. ARCADIA STAGE 6

DEVELOPMENT SERVICING STUDY CHECKLIST

REFERENCED STUDIES AND REPORTS	REFERENCE
Site Servicing Report for Minto Communities Inc., Arcadia Stage 6 (J.L. Richards & Associates Limited, Revision 0 dated July 2022)	SSR
Geotechnical Investigation, Proposed Residential Development – Arcadia Stage 6, Campeau Drive - Ottawa, Ontario" Report Number PG5648-1, Revision 4 dated June 30, 2022	GR

4.1	GENERAL CONTENT	REFERENCE
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	SSR (Title Page)
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	SSR (Figure 1-1, Appendix 'A1')
☒	Plan showing the site and location of all existing services.	Site Servicing Plan (S1)
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	SSR (Sect. 1.0)
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	SSR (Appendix 'A2')
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	SSR (Sect. 1.0)
☒	Statement of objectives and servicing criteria.	SSR (Sect. 2.1, 3.1, 3.2, 4.1, 4.2)
☒	Identification of existing and proposed infrastructure available in the immediate area.	SSR (Sect. 1.4) Site Servicing Plan (S1)
☒	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	SSR (Sect. 3.1, 4.1)
☒	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	GR Grading Plans (G1, G2) Ponding Plans (SWM1, SWM2)

☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☒	Reference to geotechnical studies and recommendations concerning servicing.	GR
☒	All preliminary and formal site plan submissions should have the following information: ▪ Metric scale ▪ North arrow (including construction North) ▪ Key plan ▪ Name and contact information of applicant and property owner ▪ Property limits, including bearings and dimensions ▪ Existing and proposed structures and parking areas ▪ Easements, road widening and rights-of-way ▪ Adjacent street names	All Drawings

4.2	DEVELOPMENT SERVICING REPORT: WATER	REFERENCE
☒	Confirm consistency with Master Servicing Study, if available.	SSR (Sect. 2)
☒	Availability of public infrastructure to service proposed development.	SSR (Sect. 1.4, 2.4) Site Servicing Plan (S1)
☒	Identification of system constraints.	SSR (Sect. 2.0)
☒	Identify boundary conditions.	SSR (Sect. 2.4)
☒	Confirmation of adequate domestic supply and pressure.	SSR (Sect. 2.5, Appendix B)
☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	SSR (Sect. 2.3, 2.5, Appendix B)
☒	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	SSR (Sect. 2.5)
☐	Definition of phasing constraints. Hydraulic modelling is required to confirm servicing for all defined phases of the project, including the ultimate design.	N/A
☒	Address reliability requirements, such as appropriate location of shutoff valves.	Site Servicing Plan (S1)
☐	Check on the necessity of a pressure zone boundary modification.	N/A

☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	SSR (Sect. 2.0)
☒	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants), including special metering provisions.	SSR (Sect. 2.0) Site Servicing Plan (S1)
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	SSR (Sect. 2.2)
☒	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	SSR (Appendix B)

4.3	DEVELOPMENT SERVICING REPORT: WASTEWATER	REFERENCE
☒	Summary of proposed design criteria (Note: Wet weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	SSR (Sect. 3.2)
☒	Confirm consistency with Master Servicing Study and/or justifications for deviations.	SSR (Sect. 3)
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the Guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	SSR (Sect. 1.4, 3.1, Appendix C)
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable.)	SSR (Sect. 3.3)
☒	Calculations related to dry weather and wet weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	SSR (Appendix C)
☒	Description of proposed sewer network, including sewers, pumping stations and forcemains.	SSR (Sect. 3.4, Appendix C)

☒	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	GR
☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☒	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	SSR (Section 3.4)
☐	Special considerations, such as contamination, corrosive environment, etc.	N/A

4.4	DEVELOPMENT SERVICING REPORT: STORMWATER	REFERENCE
☒	Description of drainage outlets and downstream constraints, including legality of outlets (i.e., municipal drain, right-of-way, watercourse, or private property).	SSR (Sect. 1.6, 6.1, 6.2)
☒	Analysis of available capacity in existing public infrastructure.	SSR (Sect. 1.3)
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawing DST, ODST
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected sub watersheds, taking into account long-term cumulative effects.	SSR (Sect. 4.2, 4.3)
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	SSR (Sect. 4.3)
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	SSR (Sect. 4, Drawing S1, DST, ODST)
☐	Setback from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A2

☒	Confirm consistency with subwatershed and Master Servicing Study, if applicable study exists.	SSR (Sect. 4)
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:2 year return period) and major events (1:100 year return period).	SSR (Sect. 4, Appendix E)
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre- and post-development peak flow rates, including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	SSR (Sect. 4, Appendix E)
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☒	Proposed minor and major systems, including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Site Servicing Plan (S1) Plan and Profile Drawings Ponding Plans Appendix E
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☒	Identification of potential impacts to receiving watercourses.	SSR (Sect 4.3)
☐	Identification of municipal drains and related approval requirements.	N/A
☒	Description of how the conveyance and storage capacity will be achieved for the development.	SSR (Sect. 4.3)
☒	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	SSR (Sect. 4.3) Site Servicing Plan (S1) Ponding Plans (SWM1 & SWM2) Appendix E
☒	Inclusion of hydraulic analysis, including hydraulic grade line elevations.	SSR (Sect. 4.3, Appendix E)
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	SSR (Sect. 5.0) Erosion & Sediment Control Plan (ESC)
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☒	Identification of fill constraints related to floodplain and geotechnical investigation.	GR

4.5	APPROVAL AND PERMIT REQUIREMENTS	REFERENCE
The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development, as well as the relevant issues affecting such approval. The approval and permitting shall include but not be limited to the following:		
☐	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams, as defined in the Act.	N/A
☐	Application for Environmental Compliance Approval (ECA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation, etc.).	N/A

4.6	CONCLUSION CHECKLIST	REFERENCE
☒	Clearly stated conclusions and recommendations.	SSR (Sect. 2, 3 & 4)
☐	Comments received from review agencies, including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N/A (first submission)
☒	All draft and final reports shall be signed and stamped by a Professional Engineer registered in Ontario.	SSR, Drawings

Appendix B1

Water Demands and FUS Calculations

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : ARCADIA STAGE 6
LOCATION : CITY OF OTTAWA
DEVELOPER : MINTO COMMUNITIES INC.

NODE	RESIDENTIAL						NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			PEAK HOUR DEMAND (l/s)		
	METRO (DUPLEX) TOWNHOUSE	EXECUTIVE TOWNHOUSE	REAR LANE TOWNHOUSE	AVENUE (B2B) TOWNHOUSE	UNIT COUNT	POP'N	COMM (ha.)	INST. (ha.)	PARK (ha.)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total
ARCADIA STAGE 6																		
J-3		5		5	10	27	0.00	0.00	0.00	0.09	0.00	0.09	0.22	0.00	0.22	0.48	0.00	0.48
J-4				11	11	30	0.00	0.00	0.00	0.10	0.00	0.10	0.24	0.00	0.24	0.53	0.00	0.53
J-5				11	11	30	0.00	0.00	0.00	0.10	0.00	0.10	0.24	0.00	0.24	0.53	0.00	0.53
J-6				5	5	14	0.00	0.00	0.00	0.04	0.00	0.04	0.11	0.00	0.11	0.24	0.00	0.24
J-7		6		8	14	38	0.00	0.00	0.00	0.12	0.00	0.12	0.31	0.00	0.31	0.67	0.00	0.67
J-8			4	16	20	54	0.00	0.00	0.00	0.18	0.00	0.18	0.44	0.00	0.44	0.96	0.00	0.96
J-9			4	16	20	54	0.00	0.00	0.00	0.18	0.00	0.18	0.44	0.00	0.44	0.96	0.00	0.96
J-10			5	8	13	35	0.00	0.00	0.00	0.11	0.00	0.11	0.28	0.00	0.28	0.63	0.00	0.63
J-11							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-12	10				10	23	0.00	0.00	0.00	0.07	0.00	0.07	0.19	0.00	0.19	0.41	0.00	0.41
J-13	10				10	23	0.00	0.00	0.00	0.07	0.00	0.07	0.19	0.00	0.19	0.41	0.00	0.41
J-14	72				72	166	0.00	0.00	0.00	0.54	0.00	0.54	1.34	0.00	1.34	2.95	0.00	2.95
J-15	8				8	18	0.00	0.00	0.00	0.06	0.00	0.06	0.15	0.00	0.15	0.33	0.00	0.33
J-16							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-17	8				8	18	0.00	0.00	0.00	0.06	0.00	0.06	0.15	0.00	0.15	0.33	0.00	0.33
J-18	24				24	55	0.00	0.00	0.00	0.18	0.00	0.18	0.45	0.00	0.45	0.98	0.00	0.98
J-19	16				16	37	0.00	0.00	0.00	0.12	0.00	0.12	0.30	0.00	0.30	0.66	0.00	0.66
J-20							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-21	16				16	37	0.00	0.00	0.00	0.12	0.00	0.12	0.30	0.00	0.30	0.66	0.00	0.66
J-22							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-23							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-24	56				56	129	0.00	0.00	0.00	0.42	0.00	0.42	1.04	0.00	1.04	2.30	0.00	2.30
J-33	0						0.00	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
J-34	0						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-35	0						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-126	4				4	9	0.00	0.00	0.00	0.03	0.00	0.03	0.07	0.00	0.07	0.16	0.00	0.16
J-133	6				6	14	0.00	0.00	0.00	0.04	0.00	0.04	0.11	0.00	0.11	0.25	0.00	0.25
J-139							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J-134	4				4	9	0.00	0.00	0.00	0.03	0.00	0.03	0.07	0.00	0.07	0.16	0.00	0.16
J-135	6				6	14	0.00	0.00	0.00	0.04	0.00	0.04	0.11	0.00	0.11	0.25	0.00	0.25
J-136	12				12	28	0.00	0.00	0.00	0.09	0.00	0.09	0.22	0.00	0.22	0.49	0.00	0.49
J-138	12				12	28	0.00	0.00	0.00	0.09	0.00	0.09	0.22	0.00	0.22	0.49	0.00	0.49
J-143	0						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	264	11	13	80	368	888	0.00	0.00	4.00	**2.88**	**4.00**	**6.88**	**7.20**	**4.00**	**11.20**	**15.83**	**4.00**	**19.83**

ASSUMPTIONS

RESIDENTIAL DENSITIES

- DUPLEX (INFUSION TERRACES) 2.3 p / p / u
- TOWNHOUSE UNITS (AVENUE, EXECUTIVE, ROW) 2.7 p / p / u

AVG. DAILY DEMAND

- Residential 280 l / cap / day
- Institutional 28,000 l / ha / day
- Commercial 28,000 l / ha / day

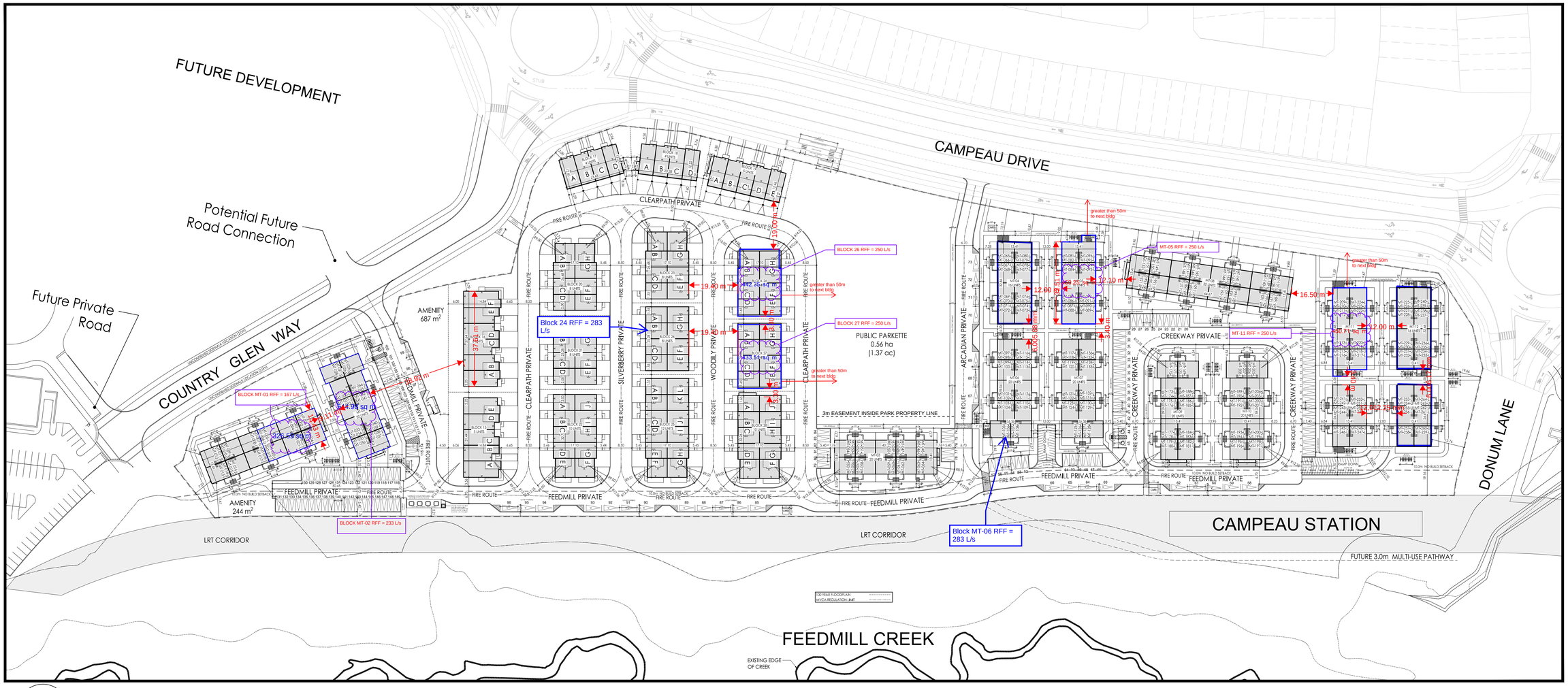
MAX. DAILY DEMAND

- Residential 700 l / cap / day
- Institutional 42,000 l / ha / day
- Commercial 42,000 l / ha / day

MAX. HOURLY DEMAND

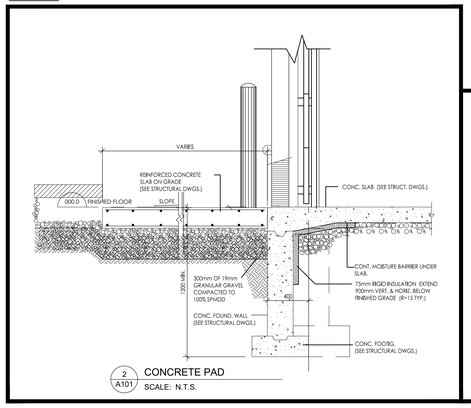
- Residential 1,540 l / cap / day
- Institutional 75,600 l / ha / day
- Commercial 75,600 l / ha / day

Demand for public parkette assumed to be 4.0 l/s for avg. day, max day, and peak hour

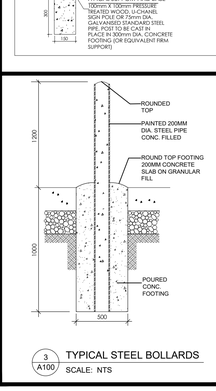


1 SITE PLAN
SP-100 1:650

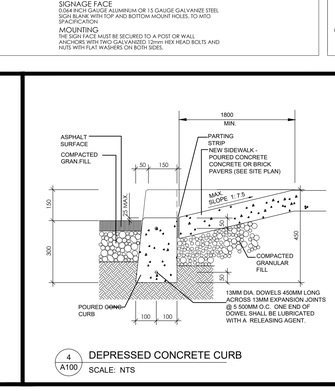
KEY PLAN



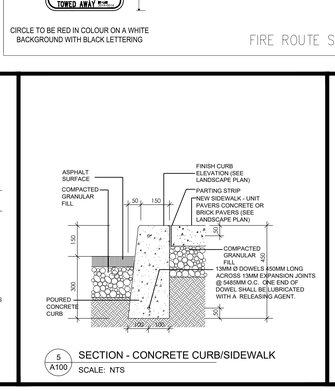
2 A101 CONCRETE PAD
SCALE: N.T.S.



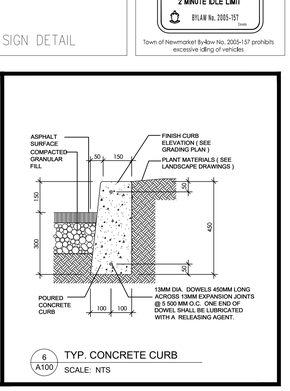
3 A100 TYPICAL STEEL BOLLARDS
SCALE: NTS



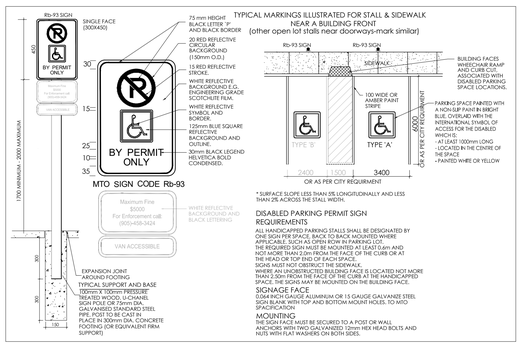
4 A100 DEPRESSED CONCRETE CURB
SCALE: NTS

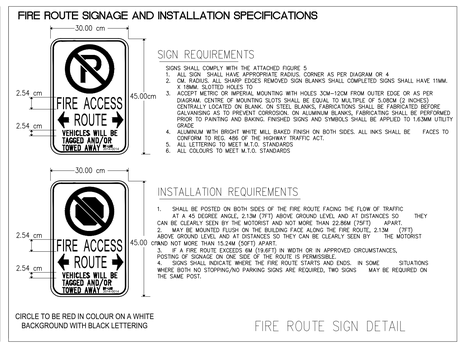


5 A100 SECTION - CONCRETE CURB/SIDEWALK
SCALE: NTS



6 A100 TYP. CONCRETE CURB
SCALE: NTS





Town of Newmarket By-law No. 2005-157 prohibits excessive idling of vehicles

SITE STATISTICS

PROVISION	REQUIRED	PROPOSED		COMPLIANCE
NET LOT AREA (excludes dedication):	**NO MINIMUM**	48559.08 SM [522685.59 SF]		N/A
DEDICATION AREA (municipal park):	**NO MINIMUM**	5577.22 SM [60032.69 SF]		N/A
GROSS LOT AREA (includes dedication):	**1400 SM**	54136.30 SM [582718.27 SF]		YES
BUILDING AREA	**NO MINIMUM**	13394.78 SM [144180.24 SF]		N/A
LOT COVERAGE (building area/net lot area):	**NO MINIMUM**	27.58 %		N/A
GROSS FLOOR AREA	**NO MINIMUM**	40205.88 SM [432772.49 SF]		N/A
NET F.S.I. (gross floor area/net lot area):	**NO MINIMUM**	**0.81**		N/A
GROSS F.S.I. (gross floor area/gross lot area):	**NO MINIMUM**	**0.73**		N/A
SETBACKS :				
MIN. FRONT YARD:	**3.00 M**	**4.84 M**		YES
MIN CORNER SIDE YARD (WEST):	**3.00 M**	**3.00 M**		YES
MIN CORNER SIDE YARD (EAST):	**3.00 M**	**5.5 M**		YES
MIN REAR YARD:	**6.00 M**	**13.95 M**		YES
NUMBER OF TOWNHOUSE UNITS :				
METRO-TOWNS - 2 BED:		**264 SUITES**		
TRADITIONAL-TOWNS - 3 BED:		**104 SUITES**		
TOTAL NUMBER OF UNITS :		**368 SUITES**		
TOTAL PARKING SPACES :		**208 PS**	**RATIO**	
RESIDENT PARKING SPACES (TRADITIONAL-TOWNS):	**2 SPACES/UNIT = (104x2) MIN 208 SP**	SURFACE: 208 U/G: 0 TOTAL: **208**	2:1	YES
VISITOR PARKING SPACES (TRADITIONAL-TOWNS) (INCLUDES BARRIER FREE PS) :	**N/A**	SURFACE: 0 U/G: 0 TOTAL: **0**	N/A	N/A
TOTAL PARKING SPACES :		**306 PS**		
RESIDENT PARKING SPACES (METRO-TOWNS):	**0.9 SPACES/UNIT = (264x0.9) MIN. 238 SP**	SURFACE: 116 U/G: 156 TOTAL: **272**	1:1	YES
VISITOR PARKING SPACES (METRO-TOWNS) (INCLUDES BARRIER FREE PS) :	**0.1 SPACES/UNIT = (264x0.1) MIN. 27 SP**	SURFACE: 34 U/G: 0 TOTAL: **34**	0.1:1	YES
BARRIER FREE PARKING SPACES DEDICATED FOR VISITORS : *[As per City of Ottawa Traffic and Parking By-law (No. 2017-301), Section 111]*	**0**	SURFACE: 3 U/G: 0 TOTAL: **3**	N/A	N/A
BICYCLE SPACES (METRO-TOWNS):				
LONG-TERM BICYCLE SPACES :	**0.5 SPACES/UNIT = (264x0.5) MIN. 132**	**132**		YES
TOTAL LANDSCAPE :	**30%**	17885.58 SM [192518.74 SF] (36.83% OF NET LOT AREA)		YES
LANDSCAPED OPEN SPACE AREA :				
SOFT LANDSCAPE AREA :	**N/A**	12464.27 SM [134164.29 SF] (69.68% OF LANDSCAPING)		N/A
HARD LANDSCAPE AREA :	**N/A**	5421.31 SM [58354.45 SF] (30.31% OF LANDSCAPING)		N/A

THESE DRAWINGS ARE NOT TO BE SCALED:
ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES MUST BE REPORTED DIRECTLY TO SRN ARCHITECTS INC.

NO.	DATE:	ISSUED FOR:
5	20-JUN-22	REV PER CLIENT COMMENT
6	07-JUL-22	REV PER CLIENT COMMENT
7	13-JUL-22	ISSUED FOR SPA
8	26-AUG-22	REV PER CLIENT COMMENT
9	23-SEP-22	REV PER CLIENT COMMENT
10	09-NOV-22	REV PER SPA COMMENTS
11	18-NOV-22	REV PER CLIENT COMMENT
12	17-JAN-23	REV PER CLIENT COMMENT
13	24-FEB-23	REV PER CLIENT COMMENT
14	06-APR-23	RE-ISSUED FOR SPA

ADDITIONAL NOTES:
PART OF BLOCK 2,
REGISTERED PLAN 4M-1563 AND
PART OF LOT 3
CONCESSION 1
(GEOGRAPHIC TOWNSHIP OF GEMARCH)
STANTEC GEOMATICS, 2022

LEGEND

- MAIN ENTRANCE
- BICYCLE PARKING, REFER TO LANDSCAPE DRAWINGS
- BARRIER FREE PARKING
- VISITOR PARKING
- SEE PLAN
- FH FIRE HYDRANT, REFER TO CIVIL DRAWINGS
- LS LIGHT POLE, REFER TO ELECTRICAL DRAWINGS
- LB LIGHT BOLLARD, REFER TO ELECTRICAL DRAWINGS
- WL WALL MOUNTED LIGHT FIXTURE, REFER TO ELECTRICAL DWGS
- F.R. FIRE ROUTE SIGN AS PER CITY STANDARD
- H.S. BARRIER FREE PARKING SIGN, AS PER CITY STANDARD
- S.S. STOP SIGN
- I.S. IDLE FREE ZONE SIGN
- P.S. POPS SIGN
- TACTILE INDICATOR
- DC DEPRESSED CURB
- G GAS METER
- H HYDRO METER
- NFHB NON FREEZABLE HOSE BIB
- EVCS ELECTRIC VEHICLE CHARGING STATION
- SIAMESE CONNECTION
- XXX SUITE NUMBER
- FIRE BREAK BLOCK
- LLE LOWER LEVEL ELEVATION
- FFE FIRST FLOOR ELEVATION

REFER TO A500 FOR SIGNAGE

PRELIMINARY, NOT FOR CONSTRUCTION
ALL AREAS CALCULATIONS ARE PRELIMINARY

NO.	DATE:	REVISION COMMENT:

SRN ARCHITECTS
8395 JANE STREET, SUITE 203
VAUGHAN, ONTARIO. L4K 5Y2
PHONE: 905.417.5515 FAX: 905.417.5517

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CLIENT:
Minto Communities Canada
200-180 Kent Street
Ottawa, Ontario K1P 0B6

PROJECT:
ARCADIA - STAGE 6
Ottawa, Ontario

DRAWING TITTLE:
SITE PLAN

DATE: 2022-02-14	SCALE: 1:500
DRAWN BY: AB	CHECKED BY: GR
PROJECT NUMBER: S22009	DRAWING NUMBER: SP-100

File:H:\Acad SRN Projects\S22009 - Arcadia Stage 6 Ottawa CP\ACAD Drawings\02 WORKING\S22009-SP-100.dwg Plotted: Apr 06, 2023 By Andrew B

FUS Fire Flow Calculations

Arcadia Stage 6 - Duplex Unit (MT-01)

(JLR 26299-006)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Sum of All Floors	318	m^2	
C	Height in storeys	3	storeys	
	Total Floor Area	955	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	10197	L/min	
	Rounded Fire Flow	10000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential unit
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1500		
	Fire Flow	8500	L/min	No rounding applied.
F	Sprinkler Protection	None		
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*South Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	West Side Exposure Charge	0%		
	North Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.7	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	41.2	m-storeys	
	Separation Distance	8.98	m	
	East Side Exposure Charge	18%		
	Total Exposure Charge	18%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	1530	L/min	
H	Fire Flow	10030	L/min	
	Rounded Fire Flow	10000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**10000**	**L/min**	The City of Ottawa's cap does not apply since the building is a high rise building.
		167	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-02 - Metro Townhouse Units
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	543.33	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1629.99	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	13323	L/min	
	Rounded Fire Flow	13000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1950		
	Fire Flow	11050	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	39.0	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	117.1	m-storeys	
	Separation Distance	28.56	m	
	East Side Exposure Charge	10%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Non-combustible		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	9.1	m	
	West Side Exposure Charge	18%		
	Total Exposure Charge	28%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	3094	L/min	
H	Fire Flow	14144	L/min	
	Rounded Fire Flow	14000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**14000**	**L/min**	City Cap Does Not Apply
		233	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-11 - Metro Townhouse Units
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	435.34	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1306.02	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	11926	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1800		
	Fire Flow	10200	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	32.5	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	97.4	m-storeys	
	Separation Distance	12	m	
	East Side Exposure Charge	15%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	6	m	
	South Side Exposure Charge	18%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	20.0	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	60.0	m-storeys	
	Separation Distance	25	m	
	West Side Exposure Charge	8%		
	Total Exposure Charge	41%		
	Increase for Exposures	4182	L/min	
H	Fire Flow	14382	L/min	
	Rounded Fire Flow	14000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**14000**	**L/min**	City Cap Does Not Apply
		233	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block 27 - Back to Backs
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	432.46	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1297.38	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	11886	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1800		
	Fire Flow	10200	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	17.1	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	51.3	m-storeys	
	Separation Distance	3.3	m	
	North Side Exposure Charge	18%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	East Side Exposure Charge	0%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	17.1	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	51.3	m-storeys	
	Separation Distance	3.3	m	
	South Side Exposure Charge	18%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	22.2	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	66.5	m-storeys	
	Separation Distance	19.39	m	
	West Side Exposure Charge	14%		
	Total Exposure Charge	50%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	5100	L/min	
H	Fire Flow	15300	L/min	
	Rounded Fire Flow	15000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**15000**	**L/min**	City Cap Does Not Apply
		250	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-06 - Metro Townhouse Units
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	543.33	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1629.99	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	13323	L/min	
	Rounded Fire Flow	13000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1950		
	Fire Flow	11050	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	6	m	
	North Side Exposure Charge	18%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	39.1	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	117.2	m-storeys	
	Separation Distance	12	m	
	East Side Exposure Charge	15%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Non-combustible		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	20.99	m	
	West Side Exposure Charge	8%		
	Total Exposure Charge	41%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	4531	L/min	
H	Fire Flow	15581	L/min	
	Rounded Fire Flow	16000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**16000**	**L/min**	City Cap Does Not Apply
		267	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block 24 - Back to Backs
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	432.46	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1297.38	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	11886	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1800		
	Fire Flow	10200	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	17.1	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	51.3	m-storeys	
	Separation Distance	3.1	m	
	North Side Exposure Charge	18%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	22.0	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	65.9	m-storeys	
	Separation Distance	19.39	m	
	East Side Exposure Charge	14%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	17.1	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	51.3	m-storeys	
	Separation Distance	3.1	m	
	South Side Exposure Charge	18%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	21.3	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	63.8	m-storeys	
	Separation Distance	19.38	m	
	West Side Exposure Charge	14%		
	Total Exposure Charge	64%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	6528	L/min	
H	Fire Flow	16728	L/min	
	Rounded Fire Flow	17000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**17000**	**L/min**	City Cap Does Not Apply
		283	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-12 - Metro Townhouse Units

(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	435.34	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1306.02	m^2	
D	Fire Flow Formula	F=220C√A		
	Fire Flow	11926	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1800		
	Fire Flow	10200	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	East Side Exposure Charge	0%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	6	m	
	South Side Exposure Charge	18%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	32.5	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	97.4	m-storeys	
	Separation Distance	12	m	
	West Side Exposure Charge	15%		
	Total Exposure Charge	33%		
	Increase for Exposures	3366	L/min	
H	Fire Flow	13566	L/min	
	Rounded Fire Flow	14000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**14000**	**L/min**	City Cap Does Not Apply
		233	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-14 - Metro Townhouse Units
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	327.36	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	982.08	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	10342	L/min	
	Rounded Fire Flow	10000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1500		
	Fire Flow	8500	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	6	m	
	North Side Exposure Charge	18%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	East Side Exposure Charge	0%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	25.63	m	
	South Side Exposure Charge	8%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	24.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	73.2	m-storeys	
	Separation Distance	12	m	
	West Side Exposure Charge	14%		
	Total Exposure Charge	40%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	3400	L/min	
H	Fire Flow	11900	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**12000**	**L/min**	City Cap Does Not Apply
		200	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-04 - Metro Townhouse Units

(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	435.34	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1306.02	m^2	
D	Fire Flow Formula	F=220C√A		
	Fire Flow	11926	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1800		
	Fire Flow	10200	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	32.0	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	96.0	m-storeys	
	Separation Distance	12	m	
	East Side Exposure Charge	15%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Non-combustible		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	South Side Exposure Charge	0%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	6	m	
	West Side Exposure Charge	18%		
	Total Exposure Charge	33%		
	Increase for Exposures	3366	L/min	
H	Fire Flow	13566	L/min	
	Rounded Fire Flow	14000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**14000**	**L/min**	City Cap Does Not Apply
		233	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

FUS Fire Flow Calculations

ARCADIA STAGE 6 - Block MT-05 - Metro Townhouse Units
(JLR 26299-06)

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	435.34	m^2	
C	Height in storeys	3	storeys	Basements are excluded.
	Total Floor Area	1306.02	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	11926	L/min	
	Rounded Fire Flow	12000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential units have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-1800		
	Fire Flow	10200	L/min	No rounding applied.
F	Sprinkler Protection	None		No sprinkler.
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	0.0	m	
	Height of Exposed Wall:	0	storeys	
	Length-Height Factor	0.0	m-storeys	
	Separation Distance	50	m	
	North Side Exposure Charge	0%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	32.0	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	96.0	m-storeys	
	Separation Distance	12	m	
	East Side Exposure Charge	15%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	6	m	
	South Side Exposure Charge	18%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	13.4	m	
	Height of Exposed Wall:	3	storeys	
	Length-Height Factor	40.2	m-storeys	
	Separation Distance	13	m	
	West Side Exposure Charge	13%		
	Total Exposure Charge	46%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	4692	L/min	
H	Fire Flow	14892	L/min	
	Rounded Fire Flow	15000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**15000**	**L/min**	City Cap Does Not Apply
		250	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018

Arcadia Stage 6

FIRE FLOW ANALYSIS - HYDRANT SPACING

BIOCK 26

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-8	40	95	95
H-9	59	95	95
H-7	32	95	95
		Total Available Fire Flow (L/s):	285

BLOCK 27

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-9	14	95	95
H-7	27	95	95
H-10	49	95	95
		Total Available Fire Flow (L/s):	285

BLOCK MT-04

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-13	145	63	63
H-11	85	63	63
H-14	121	63	63
H-5	90	63	63
		Total Available Fire Flow (L/s):	252

BLOCK MT-05

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-10	110	63	63
H-11	85	63	63
H-14	85	63	63
H-16	120	63	63
		Total Available Fire Flow (L/s):	252

BLOCK MT-11

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-16	66	95	95
H-15	149	63	63
H-14	74	95	95
		Total Available Fire Flow (L/s):	253

BIOCK MT-02

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-EX COUNTRY GLEN NORTH	91.91	63	63
H-2	74.91	95	95
H-EX COUNTRY GLEN SOUTH	149.59	63	63
H-3	146.55	63	63
		Total Available Fire Flow (L/s):	284

BLOCK MT-03

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-10	19	95	95
H-11	67	95	95
H-9	71	95	95
		Total Available Fire Flow (L/s):	285

BLOCK 28

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-7	33	95	95
H-9	47	95	95
H-6	46	95	95
		Total Available Fire Flow (L/s):	285

BLOCK MT-01

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-EX COUNTRY GLEN SOUTH	107.87	63	63
H-EX COUNTRY GLEN NORTH	82.34	63	63
H-2	94.96	63	63
		Total Available Fire Flow (L/s):	189

BLOCK MT-08

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-14	50.32	95	95
H-16	83.28	63	63
H-13	96.13	63	63
H-15	142.88	63	63
		Total Available Fire Flow (L/s):	284

BLOCK MT-14

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-16	88.08	63	63
H-13	112.07	63	63
H-15	57.91	95	95
H-14	117.49	63	63
		Total Available Fire Flow (L/s):	284

BLOCK MT-12

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-16	66	95	95
H-14	102	63	63
H-15	140	63	63
DONUM HYDRANT	50	95	95
		Total Available Fire Flow (L/s):	316

BLOCK 22

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-2	34	95	95
H-6	29	95	95
H-3	5	95	95
H-5	15	95	95
		Total Available Fire Flow (L/s):	380

BLOCK 21

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-2	45	95	95
H-3	5	95	95
H-4	55	95	95
H-5	15	95	95
		Total Available Fire Flow (L/s):	380

BLOCK 24

Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-5	5	95	95
H-4	35	95	95
H-8	40	95	95
H7	15	95	95
		Total Available Fire Flow (L/s):	380

BLOCK 28			
Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-7	5	95	95
H-9	15	95	95
H-6	32	95	95
H-10	17	95	95
		Total Available Fire Flow (L/s):	380
BLOCK MT-06			
Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-9	137	63	63
H-11	15	95	95
H-10	80	63	63
H-13	27	95	95
		Total Available Fire Flow (L/s):	316
BLOCK MT-07			
Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-16	78	63	63
H-11	45	95	95
H-14	45	95	95
H-13	27	95	95
		Total Available Fire Flow (L/s):	348
BLOCK MT-09			
Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-14	15	95	95
H-16	50	95	95
H-5	49	95	95
H-13	13	95	95
		Total Available Fire Flow (L/s):	380
BLOCK MT-10			
Hydrant ID	Distance to Critical Structure (m)	Max. Flow[1] (L/s)	Fire Flow Contribution (L/s)
H-14	15	95	95
H-16	20	95	95
H-5	53	95	95
H-15	15	95	95
		Total Available Fire Flow (L/s):	380

Appendix B2

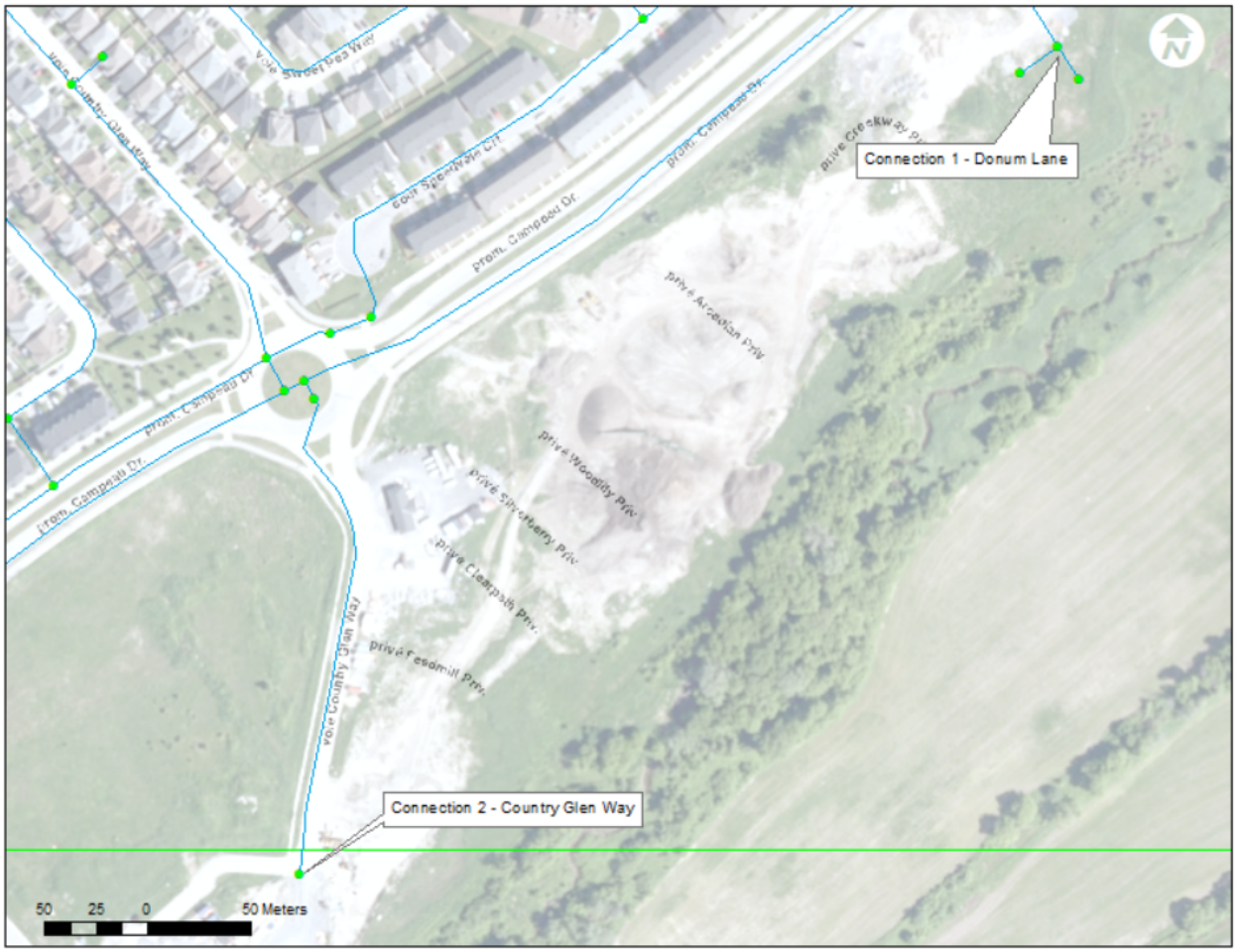
City Correspondence –
Boundary Conditions

Boundary Conditions
Arcadia Stage 6

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	413	6.88
Maximum Daily Demand	672	11.20
Peak Hour	1,190	19.83
Fire Flow Demand #1	17,000	283.33

Location



Results

Connection 1 – Donum Lane

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.2	95.3
Peak Hour	156.4	88.5
Max Day plus Fire Flow #1	148.3	77.0
[1] Ground Elevation =	94.2	m

Connection 2 – Country Glen Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.2	88.7
Peak Hour	156.4	81.9
Max Day plus Fire Flow #1	139.1	57.3
[1] Ground Elevation =	98.8	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.). Connections 1 & 2 for "Maximum HGL" & "Peak Hour" scenarios do not respect this requirement. Pressure control measures to be considered are as follows, in order of preference:
    a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
    b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

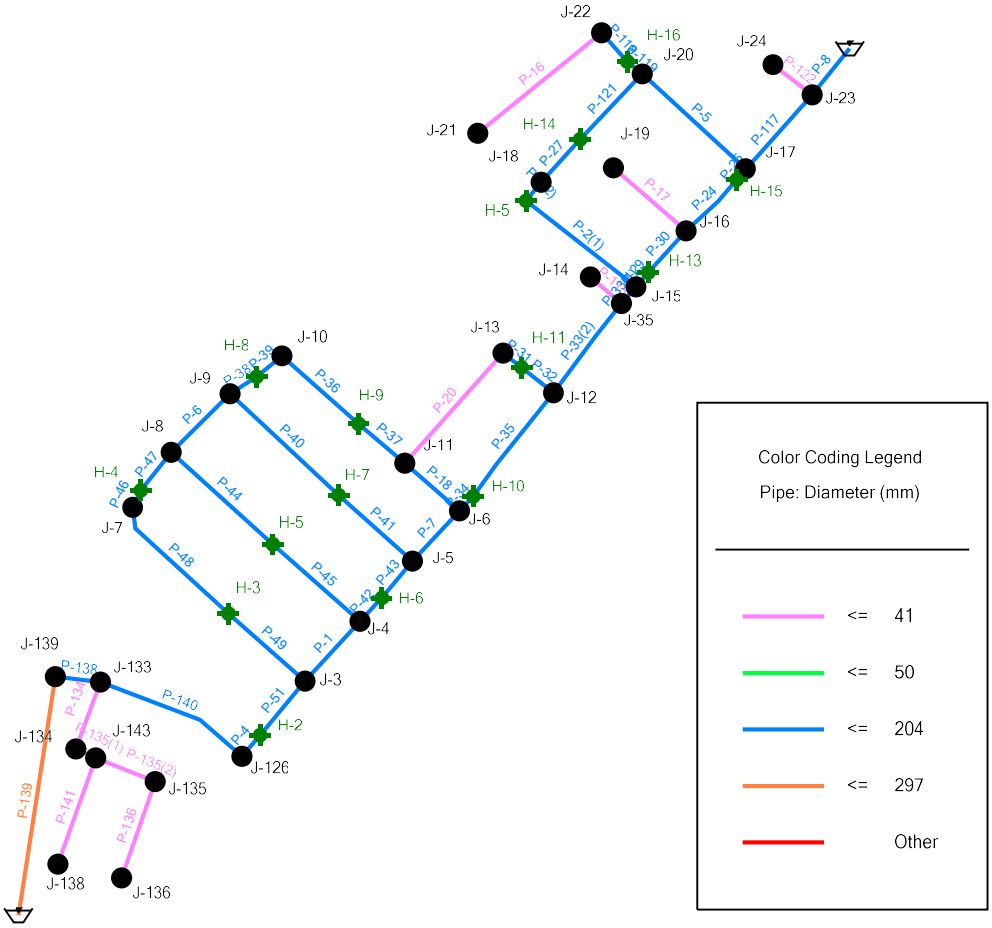
Disclaimer

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

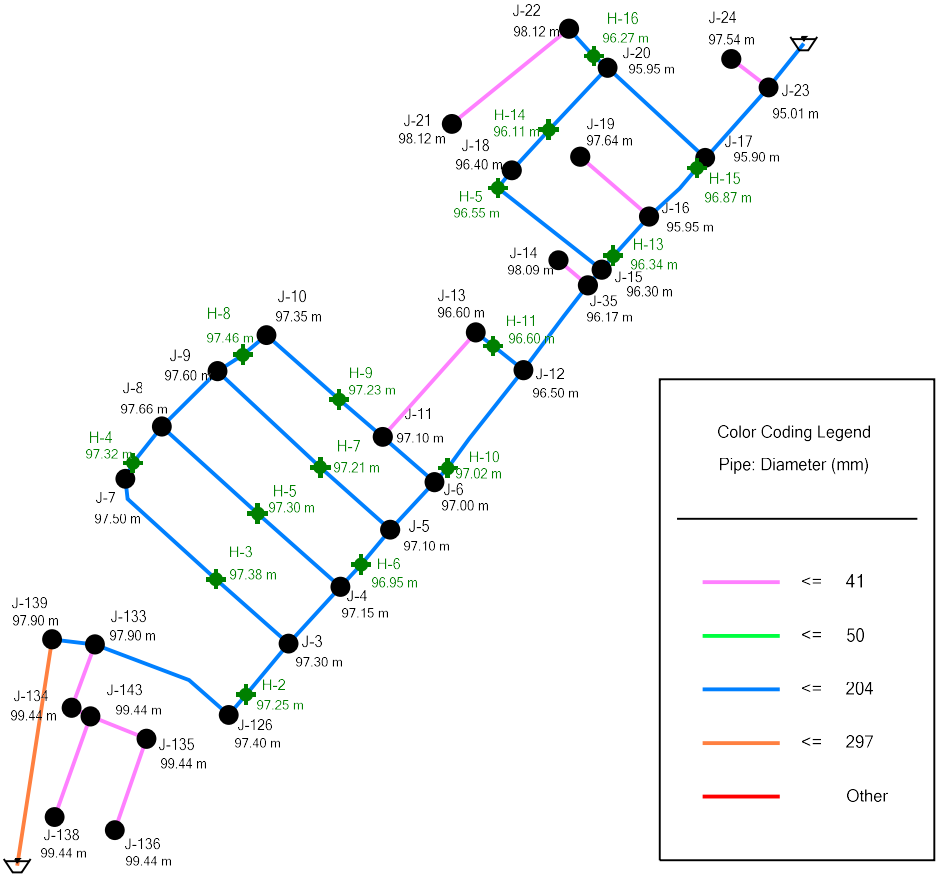
Appendix B3

WaterCAD Schematics

Arcadia Stage 6
Model Schematic



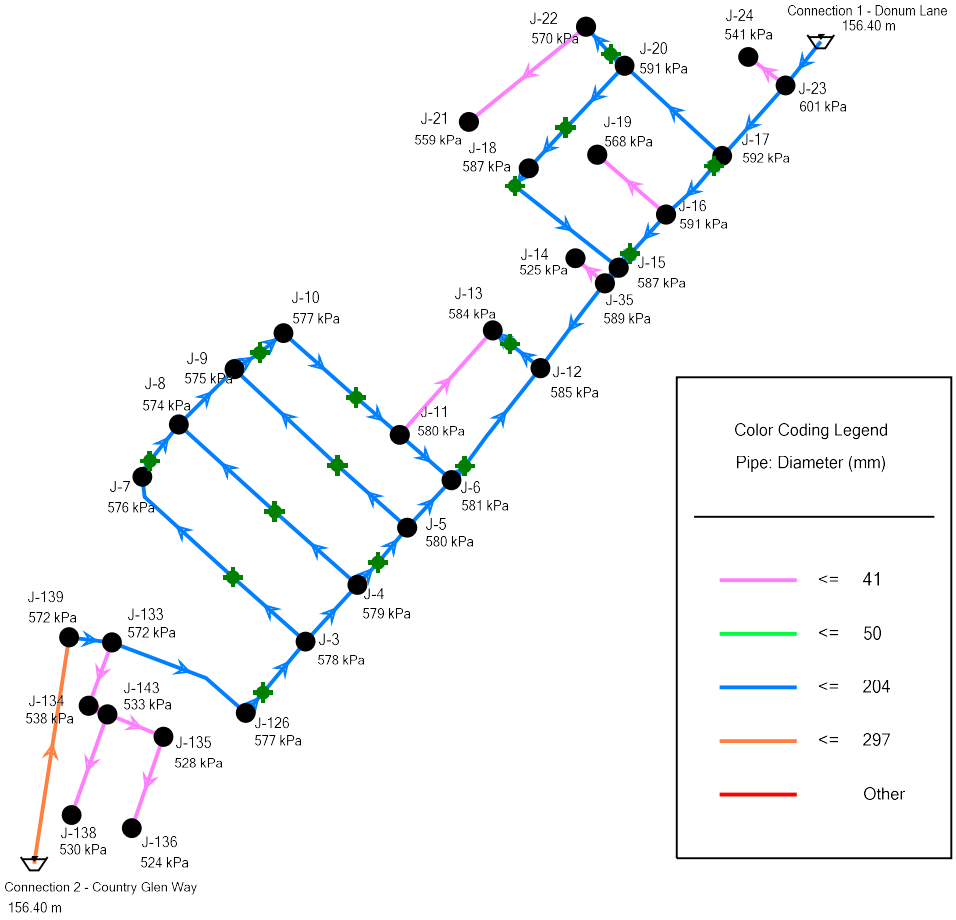
Arcadia Stage 6
Model Schematic
Elevation Model



Appendix B4

Simulation Results – Peak Hour Demand

Arcadia Stage 6
Peak Hour Demand
Existing Condition



Arcadia Stage 6
Peak Hour Demand
Existing Condition
Junction Table

Label	ID	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
J-136	518	99.44	0.49	152.94	524
J-14	461	98.09	2.95	151.74	525
J-135	516	99.44	0.25	153.35	528
J-138	521	99.44	0.41	153.58	530
J-143	534	99.44	0.08	153.91	533
J-134	514	99.44	0.16	154.39	538
J-24	476	97.54	2.30	152.87	541
J-21	349	98.12	0.66	155.21	559
J-19	354	97.64	0.66	155.66	568
J-22	347	98.12	0.00	156.33	570
J-133	512	97.90	0.25	156.38	572
J-139	523	97.90	0.00	156.39	572
J-8	54	97.66	0.96	156.32	574
J-9	167	97.60	0.97	156.32	575
J-7	53	97.50	0.67	156.32	576
J-126	500	97.40	0.16	156.35	577
J-10	55	97.35	0.63	156.32	577
J-3	44	97.30	0.48	156.33	578
J-4	47	97.15	0.53	156.32	579
J-11	360	97.10	0.00	156.32	580
J-5	171	97.10	0.53	156.32	580
J-6	50	97.00	0.24	156.32	581
J-13	363	96.60	4.41	156.31	584
J-12	62	96.50	0.41	156.32	585
J-18	70	96.40	0.98	156.33	587
J-15	67	96.30	0.33	156.33	587
J-35	462	96.17	0.00	156.32	589
J-16	351	95.95	0.00	156.33	591
J-20	471	95.95	0.00	156.33	591
J-17	74	95.90	0.33	156.34	592
J-23	34	95.01	0.00	156.37	601

Arcadia Stage 6
Peak Hour Demand
Existing Condition
Pipe Table

ID	Length (Scaled) (m)	Diameter (mm)	Material	Hazen-Williams C	Hydraulic Grade (Start) (m)	Hydraulic Grade (Stop) (m)	Flow (L/s)	Velocity (m/s)
48	37	204	PVC	110.0	156.33	156.32	4	0.12
168	38	204	PVC	110.0	156.32	156.32	2	0.05
173	31	204	PVC	110.0	156.32	156.32	2	0.05
178	27	204	PVC	110.0	156.37	156.40	-11	0.34
350	72	41	PEX	100.0	156.33	155.21	1	0.50
355	44	41	PEX	100.0	156.33	155.66	1	0.50
362	33	204	PVC	110.0	156.32	156.32	0	0.01
366	67	41	PEX	100.0	156.31	156.32	0	0.03
378	33	204	PVC	110.0	156.33	156.34	-5	0.16
379	6	204	PVC	110.0	156.34	156.34	4	0.11
385	26	204	PVC	110.0	156.33	156.33	-3	0.08
388	9	204	PVC	110.0	156.33	156.33	-5	0.14
389	25	204	PVC	110.0	156.33	156.33	-5	0.14
396	11	204	PVC	110.0	156.31	156.32	-4	0.13
397	18	204	PVC	110.0	156.32	156.32	-4	0.13
400	9	204	PVC	110.0	156.32	156.32	2	0.06
401	59	204	PVC	110.0	156.32	156.32	2	0.06
403	46	204	PVC	110.0	156.32	156.32	0	0.01
404	27	204	PVC	110.0	156.32	156.32	0	0.01
406	14	204	PVC	110.0	156.32	156.32	1	0.03
407	15	204	PVC	110.0	156.32	156.32	1	0.03
410	67	204	PVC	110.0	156.32	156.32	0	0.01
411	45	204	PVC	110.0	156.32	156.32	0	0.01
413	14	204	PVC	110.0	156.32	156.32	3	0.08
414	22	204	PVC	110.0	156.32	156.32	3	0.08
416	62	204	PVC	110.0	156.32	156.32	-1	0.03
417	53	204	PVC	110.0	156.32	156.32	-1	0.03
419	9	204	PVC	110.0	156.32	156.32	2	0.05
420	22	204	PVC	110.0	156.32	156.32	2	0.05
422	67	204	PVC	110.0	156.32	156.33	-2	0.07
423	46	204	PVC	110.0	156.33	156.33	-2	0.07
426	32	204	PVC	110.0	156.34	156.33	7	0.21
463	10	204	PVC	110.0	156.33	156.32	6	0.18
464	51	204	PVC	110.0	156.32	156.32	3	0.09
466	18	41	PEX	100.0	151.74	156.32	-3	2.23
470	51	204	PVC	110.0	156.34	156.37	-9	0.27
472	18	204	PVC	110.0	156.33	156.33	-1	0.02
473	9	204	PVC	110.0	156.33	156.33	-1	0.02
475	41	204	PVC	110.0	156.33	156.33	-3	0.08
477	22	41	PEX	100.0	152.87	156.37	-2	1.74
515	32	41	PEX	100.0	156.38	154.39	1	1.05
519	46	41	PEX	100.0	153.35	152.94	0	0.37

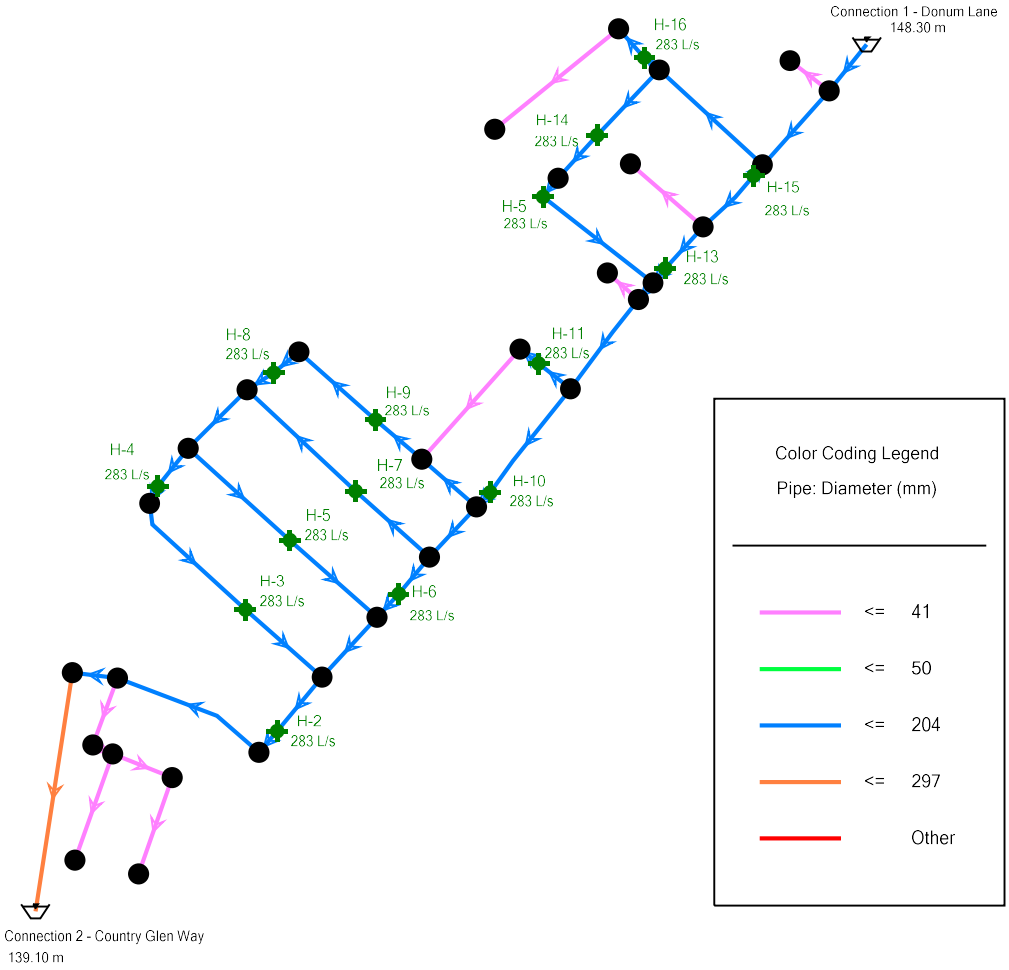
Arcadia Stage 6
Peak Hour Demand
Existing Condition
Pipe Table

ID	Length (Scaled) (m)	Diameter (mm)	Material	Hazen-Williams C	Hydraulic Grade (Start) (m)	Hydraulic Grade (Stop) (m)	Flow (L/s)	Velocity (m/s)
524	21	204	PVC	110.0	156.38	156.39	-9	0.27
525	109	297	PVC	120.0	156.39	156.40	-9	0.13
531	73	204	PVC	110.0	156.35	156.38	-7	0.21
535	10	41	PEX	100.0	154.39	153.91	1	0.93
536	29	41	PEX	100.0	153.91	153.35	1	0.56
537	51	41	PEX	100.0	153.91	153.58	0	0.31
569	13	204	PVC	110.0	156.34	156.35	-7	0.21
581	63	204	PVC	110.0	156.33	156.33	-2	0.05
582	11	204	PVC	110.0	156.33	156.33	-2	0.05
583	63	204	PVC	110.0	156.34	156.33	3	0.10

Appendix B5

Simulation Results – Maximum Day + Required Fire Flow

Arcadia Stage 6
Maximum Day Plus Fire Flow (RFF= 283 L/s)



Arcadia Stage 6

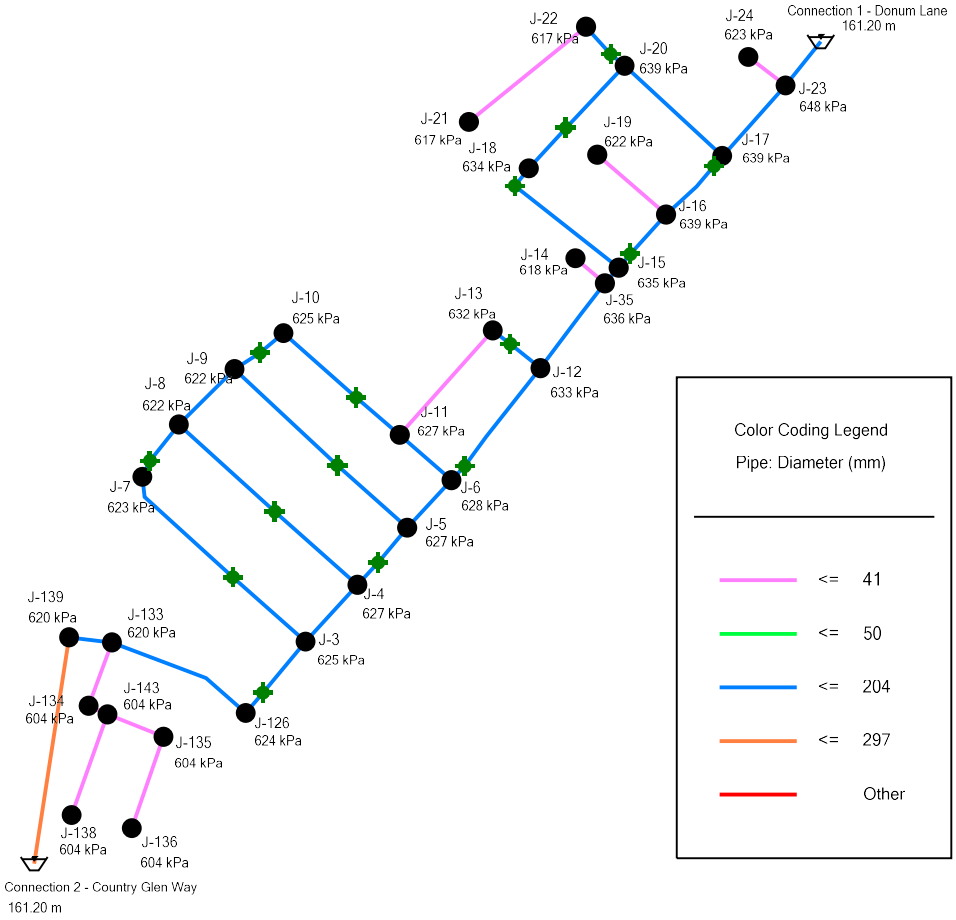
Maximum Day Plus Fire Flow (RFF= 283 L/s)

Label	Fire Flow (Available) (L/s)	Flow (Total Available) (L/s)	Satisfies Fire Flow Constraints?	Pressure (Residual Lower Limit) (kPa)	Pressure (Calculated System Lower Limit) (kPa)	Pressure (Calculated Residual) (kPa)	Junction w/ Minimum Pressure (System)
H-15	283	283	True	140	300	312	J-14
H-14	283	283	True	140	230	207	J-21
H-13	283	283	True	140	263	278	J-14
H-11	283	283	True	140	159	159	J-13
H-10	283	283	True	140	221	212	J-6
H-9	283	283	True	140	183	146	J-11
H-8	283	283	True	140	170	161	J-10
H-7	283	283	True	140	206	155	J-9
H-6	283	283	True	140	215	200	J-4
H-5	283	283	True	140	205	153	J-8
H-4	283	283	True	140	161	157	J-7
H-3	283	283	True	140	198	155	J-7
H-2	283	283	True	140	255	239	J-126
H-16	283	283	True	140	164	184	J-21
H-5	283	283	True	140	222	212	J-18

Appendix B6

Simulation Results – Maximum HGL

Arcadia Stage 6
Maximum HGL Analysis
Existing Condition



Arcadia Stage 6
Maximum HGL Analysis
Existing Condition
Junction Table

Label	ID	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
J-134	514	99.44	0	161.20	604
J-135	516	99.44	0	161.20	604
J-136	518	99.44	0	161.20	604
J-138	521	99.44	0	161.20	604
J-143	534	99.44	0	161.20	604
J-22	347	98.12	0	161.20	617
J-21	349	98.12	0	161.20	617
J-14	461	98.09	0	161.20	618
J-133	512	97.90	0	161.20	620
J-139	523	97.90	0	161.20	620
J-8	54	97.66	0	161.20	622
J-19	354	97.64	0	161.20	622
J-9	167	97.60	0	161.20	622
J-24	476	97.54	0	161.20	623
J-7	53	97.50	0	161.20	623
J-126	500	97.40	0	161.20	624
J-10	55	97.35	0	161.20	625
J-3	44	97.30	0	161.20	625
J-4	47	97.15	0	161.20	627
J-5	171	97.10	0	161.20	627
J-11	360	97.10	0	161.20	627
J-6	50	97.00	0	161.20	628
J-13	363	96.60	0	161.20	632
J-12	62	96.50	0	161.20	633
J-18	70	96.40	0	161.20	634
J-15	67	96.30	0	161.20	635
J-35	462	96.17	0	161.20	636
J-16	351	95.95	0	161.20	639
J-20	471	95.95	0	161.20	639
J-17	74	95.90	0	161.20	639
J-23	34	95.01	0	161.20	648

Arcadia Stage 6
Maximum HGL Analysis
Existing Condition
Pipe Table

ID	Length (Scaled) (m)	Diameter (mm)	Material	Hazen-Williams C	Hydraulic Grade (Start) (m)	Hydraulic Grade (Stop) (m)	Flow (L/s)	Velocity (m/s)
48	37	204	PVC	110.0	161.20	161.20	0	0.00
168	38	204	PVC	110.0	161.20	161.20	0	0.00
173	31	204	PVC	110.0	161.20	161.20	0	0.00
178	27	204	PVC	110.0	161.20	161.20	0	0.00
350	72	41	PEX	100.0	161.20	161.20	0	0.00
355	44	41	PEX	100.0	161.20	161.20	0	0.00
362	33	204	PVC	110.0	161.20	161.20	0	0.00
366	67	41	PEX	100.0	161.20	161.20	0	0.00
378	33	204	PVC	110.0	161.20	161.20	0	0.00
379	6	204	PVC	110.0	161.20	161.20	0	0.00
385	26	204	PVC	110.0	161.20	161.20	0	0.00
388	9	204	PVC	110.0	161.20	161.20	0	0.00
389	25	204	PVC	110.0	161.20	161.20	0	0.00
396	11	204	PVC	110.0	161.20	161.20	0	0.00
397	18	204	PVC	110.0	161.20	161.20	0	0.00
400	9	204	PVC	110.0	161.20	161.20	0	0.00
401	59	204	PVC	110.0	161.20	161.20	0	0.00
403	46	204	PVC	110.0	161.20	161.20	0	0.00
404	27	204	PVC	110.0	161.20	161.20	0	0.00
406	14	204	PVC	110.0	161.20	161.20	0	0.00
407	15	204	PVC	110.0	161.20	161.20	0	0.00
410	67	204	PVC	110.0	161.20	161.20	0	0.00
411	45	204	PVC	110.0	161.20	161.20	0	0.00
413	14	204	PVC	110.0	161.20	161.20	0	0.00
414	22	204	PVC	110.0	161.20	161.20	0	0.00
416	62	204	PVC	110.0	161.20	161.20	0	0.00
417	53	204	PVC	110.0	161.20	161.20	0	0.00
419	9	204	PVC	110.0	161.20	161.20	0	0.00
420	22	204	PVC	110.0	161.20	161.20	0	0.00
422	67	204	PVC	110.0	161.20	161.20	0	0.00
423	46	204	PVC	110.0	161.20	161.20	0	0.00
426	32	204	PVC	110.0	161.20	161.20	0	0.00
463	10	204	PVC	110.0	161.20	161.20	0	0.00
464	51	204	PVC	110.0	161.20	161.20	0	0.00
466	18	41	PEX	100.0	161.20	161.20	0	0.00
470	51	204	PVC	110.0	161.20	161.20	0	0.00
472	18	204	PVC	110.0	161.20	161.20	0	0.00
473	9	204	PVC	110.0	161.20	161.20	0	0.00
475	41	204	PVC	110.0	161.20	161.20	0	0.00
477	22	41	PEX	100.0	161.20	161.20	0	0.00
515	32	41	PEX	100.0	161.20	161.20	0	0.00
519	46	41	PEX	100.0	161.20	161.20	0	0.00

Arcadia Stage 6
Maximum HGL Analysis
Existing Condition
Pipe Table

ID	Length (Scaled) (m)	Diameter (mm)	Material	Hazen-Williams C	Hydraulic Grade (Start) (m)	Hydraulic Grade (Stop) (m)	Flow (L/s)	Velocity (m/s)
524	21	204	PVC	110.0	161.20	161.20	0	0.00
525	109	297	PVC	120.0	161.20	161.20	0	0.00
531	73	204	PVC	110.0	161.20	161.20	0	0.00
535	10	41	PEX	100.0	161.20	161.20	0	0.00
536	29	41	PEX	100.0	161.20	161.20	0	0.00
537	51	41	PEX	100.0	161.20	161.20	0	0.00
569	13	204	PVC	110.0	161.20	161.20	0	0.00
581	63	204	PVC	110.0	161.20	161.20	0	0.00
582	11	204	PVC	110.0	161.20	161.20	0	0.00
583	63	204	PVC	110.0	161.20	161.20	0	0.00

Appendix C1

Sanitary Sewer Design Sheet

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

ARCADIA STAGE 6
SANITARY DESIGN SHEET

DESIGNED BY: MM
CHECKED BY: AW
2023-04-27

LOCATION			RESIDENTIAL AREA AND POPULATION								PARKS/ROADS		INFILTRATION			Peak Design Flow L/s	Pipe Data									Upstream Geometry				Downstream Geometry				
Street Name	From	To	Area (ha)	Cum. Area (ha)	Duplex Units	Townhouse Units	Pop.	Cum. Pop.	Peaking Factor	Residential Flows (L/s)	Area (ha)	Cum. Area (ha)	Total Area (ha)	Total Cum. Area (ha)	Infilt. Flow (L/s)		Type	Nominal Dia. (mm)	Actual Dia. (mm)	Slope	Length (m)	Q Full (L/s)	V Full (m/s)	Residual Capacity (L/s)	% Full	TG From	Obvert	Invert	Cover	TG To	Drop	Obvert	Invert	Cover
DONUM LANE OUTLET (TO EX.307A ON CAMPEAU DRIVE)																																	
FEEDMILL	122	122A	0.13	0.13	12		28	28	3.69	0.33	0.00	0.00	0.13	0.13	0.04	0.38	Circular	200	203.20	0.50%	49.04	24.19	0.75	23.82	2%	97.838	**94.893**	**94.689**	2.946	97.914	0.060	**94.647**	**94.444**	3.267
FEEDMILL	122A	121A	0.03	0.16	6		14	42	3.66	0.50	0.00	0.00	0.03	0.16	0.05	0.55	Circular	200	203.20	0.50%	23.51	24.19	0.75	23.64	2%	97.914	**94.587**	**94.384**	3.327	97.888		**94.470**	**94.267**	3.418
FEEDMILL	120	121A	0.17	0.17	12		28	28	3.69	0.33	0.00	0.00	0.17	0.17	0.06	0.39	Circular	200	203.20	0.50%	51.59	24.19	0.75	23.80	2%	97.776	**94.788**	**94.585**	2.988	97.888	0.060	**94.530**	**94.327**	3.358
FEEDMILL	121A	121	0.02	0.35	2		4	74	3.62	0.87	0.00	0.00	0.02	0.35	0.12	0.98	Circular	200	203.20	0.50%	19.93	24.19	0.75	23.21	4%	97.888	**94.470**	**94.267**	3.418	97.217	0.060	**94.370**	**94.167**	2.847
FEEDMILL	121	119	0.00	0.35			0	74	3.62	0.87	0.05	0.05	0.05	0.40	0.13	1.00	Circular	200	203.20	0.50%	29.08	24.19	0.75	23.19	4%	97.217	**94.310**	**94.107**	2.907	97.378		**94.165**	**93.962**	3.213
FEEDMILL	123	124	0.04	0.04	4		9	9	3.74	0.11	0.00	0.00	0.04	0.04	0.01	0.12	Circular	200	203.20	0.50%	27.63	24.19	0.75	24.07	1%	98.000	**94.769**	**94.566**	3.231	97.940	0.060	**94.631**	**94.428**	3.309
FEEDMILL	124	124A	0.19	0.23	8		18	27	3.69	0.32	0.00	0.00	0.19	0.23	0.08	0.40	Circular	200	203.20	0.50%	47.99	24.19	0.75	23.80	2%	97.940	**94.571**	**94.368**	3.369	97.535		**94.331**	**94.128**	3.204
FEEDMILL	124A	119	0.00	0.23			0	27	3.69	0.32	0.03	0.03	0.03	0.26	0.09	0.41	Circular	200	203.20	0.50%	21.26	24.19	0.75	23.79	2%	97.535	**94.331**	**94.128**	3.204	97.378	0.060	**94.225**	**94.022**	3.153
FEEDMILL	119	118	0.00	0.58			0	101	3.59	1.18	0.04	0.12	0.04	0.70	0.23	1.41	Circular	200	203.20	0.50%	39.02	24.19	0.75	22.79	6%	97.378	**94.165**	**93.962**	3.213	97.299		**93.970**	**93.767**	3.330
CLEARPATH	115	118	0.49	0.49		24	65	65	3.63	0.77	0.00	0.00	0.49	0.49	0.16	0.93	Circular	200	203.20	0.65%	102.21	27.59	0.85	26.66	3%	97.375	**94.634**	**94.431**	2.740	97.299		**93.970**	**93.767**	3.330
FEEDMILL	118	117	0.00	1.07			0	166	3.54	1.91	0.04	0.16	0.04	1.23	0.41	2.31	Circular	200	203.20	0.50%	36.50	24.19	0.75	21.88	10%	97.299	**93.970**	**93.767**	3.330	97.149		**93.787**	**93.584**	3.362
CLEARPATH	114A	114	0.07	0.07		3	8	8	3.74	0.10	0.00	0.00	0.07	0.07	0.02	0.12	Circular	200	203.20	0.65%	24.48	27.59	0.85	27.47	0%	97.272	**94.048**	**93.845**	3.223	97.639		93.889	**93.686**	3.750
CLEARPATH	114	113	0.15	0.22		6	16	24	3.70	0.29	0.00	0.00	0.15	0.22	0.07	0.36	Circular	200	203.20	0.50%	36.70	24.19	0.75	23.83	1%	97.639	93.889	**93.686**	3.750	97.575		93.706	**93.502**	3.870
SILVERBERRY	114	117	0.39	0.39		27	73	73	3.62	0.86	0.00	0.00	0.39	0.39	0.13	0.99	Circular	200	203.20	0.65%	116.29	27.59	0.85	26.60	4%	97.639	94.603	**94.400**	3.036	97.149	0.060	**93.847**	**93.644**	3.302
FEEDMILL	117	116	0.00	1.46		0	0	239	3.50	2.71	0.04	0.20	0.04	1.66	0.55	3.25	Circular	200	203.20	0.50%	36.49	24.19	0.75	20.94	13%	97.149	**93.787**	**93.584**	3.362	97.099		**93.605**	**93.402**	3.494
WOODILY	113	116	0.38	0.38		27	73	73	3.62	0.86	0.00	0.00	0.38	0.38	0.13	0.98	Circular	200	203.20	0.65%	112.50	27.59	0.85	26.60	4%	97.575	94.396	**94.193**	3.179	97.099	0.060	**93.665**	**93.462**	3.434
FEEDMILL	116	110	0.00	1.84			0	312	3.46	3.50	0.04	0.24	0.04	2.08	0.69	4.18	Circular	200	203.20	0.50%	36.52	24.19	0.75	20.01	17%	97.099	**93.605**	**93.402**	3.494	96.999	0.460	**93.422**	**93.219**	3.577
CLEARPATH	113	112	0.09	0.31		4	11	35	3.67	0.42	0.00	0.00	0.09	0.31	0.10	0.52	Circular	200	203.20	0.65%	31.46	27.59	0.85	27.07	2%	97.575	93.706	**93.502**	3.870	97.284		**93.501**	**93.298**	3.783
CLEARPATH/PUBLIC PARKETTE	112	111	0.02	0.33		1	3	38	3.67	0.45	0.00	0.00	0.02	0.33	0.11	0.56	Circular	200	203.20	0.50%	9.72	24.19	0.75	23.63	2%	97.284	**93.501**	**93.298**	3.783	97.278		**93.453**	**93.249**	3.825
CLEARPATH	111	110A	0.15	0.48		9	24	62	3.64	0.73	0.56	0.56	0.71	1.04	0.34	1.07	Circular	200	203.20	0.50%	69.64	24.19	0.75	23.12	4%	97.278	**93.453**	**93.249**	3.825	96.813		**93.104**	**92.901**	3.708
MT-03 SERVICE	110B	110A	0.06	0.06	10		23	23	3.70	0.28	0.00	0.00	0.06	0.06	0.02	0.30	Circular	200	203.20	0.65%	51.48	27.59	0.85	27.29	1%	96.533	**93.439**	**93.236**	3.094	96.813		**93.104**	**92.901**	3.708
CLEARPATH	110A	110	0.07	0.61		3	8	93	3.60	1.09	0.00	0.56	0.07	1.17	0.39	1.47	Circular	200	203.20	0.50%	28.44	24.19	0.75	22.72	6%	96.813	**93.104**	**92.901**	3.708	96.999		**92.962**	**92.759**	4.037
FEEDMILL	110	109	0.03	2.48	2		5	410	3.41	4.54	0.00	0.80	0.03	3.28	1.08	5.62	Circular	200	203.20	0.50%	22.24	24.19	0.75	18.58	23%	96.999	**92.962**	**92.759**	4.037	96.549		**92.851**	**92.648**	3.698
FEEDMILL	109	107	0.08	2.56	8		18	428	3.41	4.72	0.00	0.80	0.08	3.36	1.11	5.83	Circular	200	203.20	0.50%	40.69	24.19	0.75	18.36	24%	96.549	**92.851**	**92.648**	3.698	96.494		**92.648**	**92.444**	3.846
FEEDMILL	107	106	0.00	2.56			0	428	3.41	4.72	0.24	1.04	0.24	3.60	1.19	5.91	Circular	200	203.20	0.50%	33.44	24.19	0.75	18.28	24%	96.494	**92.648**	**92.444**	3.846	96.195		**92.480**	**92.277**	3.714
FEEDMILL	106	105	0.43	2.99	72		166	594	3.35	6.44	0.00	1.04	0.43	4.03	1.33	7.77	Circular	200	203.20	0.50%	36.28	24.19	0.75	16.42	32%	96.195	**92.480**	**92.277**	3.714	96.288		**92.299**	**92.096**	3.989
CREEKWAY	104	105	0.17	0.17	8		18	18	3.71	0.22	0.00	0.00	0.17	0.17	0.06	0.27	Circular	200	203.20	0.65%	38.77	27.59	0.85	27.31	1%	96.213	**93.151**	**92.948**	3.062	96.288	0.600	**92.899**	**92.696**	3.389
FEEDMILL	105	101A	0.00	3.16			0	612	3.34	6.63	0.03	1.07	0.03	4.23	1.40	8.02	Circular	200	203.20	0.50%	29.03	24.19	0.75	16.17	33%	96.288	**92.299**	**92.096**	3.989	95.916		**92.154**	**91.951**	3.762
MT-09 AND MT-10 SERVICE	101B	101A	0.10	0.10	16		37	37	3.67	0.44	0.00	0.00	0.10	0.10	0.03	0.47	Circular	200	203.20	1.00%	37.71	34.22	1.06	33.74	1%	96.100	**93.131**	**92.928**	2.969	95.916	0.600	**92.754**	**92.551**	3.162
FEEDMILL	101A	101	0.00	3.26			0	649	3.33	7.01	0.03	1.10	0.03	4.36	1.44	8.44	Circular	200	203.20	0.65%	32.20	27.59	0.85	19.14	31%	95.916	**92.154**	**91.951**	3.762	96.080		**91.945**	**91.741**	4.135
MT-05 AND MT-08 SERVICE	102B	102A	0.13	0.13	16		37	37	3.67	0.44	0.00	0.00	0.13	0.13	0.04	0.48	Circular	200	203.20	0.65%	70.21	27.59	0.85	27.10	2%	96.396	**93.465**	**93.262**	2.931	95.889		**93.008**	**92.805**	2.880
MT-11 SERVICE	102A	102	0.00	0.13	0		0	37	3.67	0.44	0.04	0.04	0.04	0.17	0.06	0.50	Circular	200	203.20	0.65%	29.42	27.59	0.85	27.09	2%	95.889	**93.008**	**92.805**	2.880	95.903	0.672	**92.817**	**92.614**	3.085
CREEKWAY	103	102	0.22	0.22	24		55	55	3.64	0.65	0.00	0.00	0.22	0.22	0.07	0.72	Circular	200	203.20	1.73%	62.34	45.00	1.39	44.28	2%	96.281	**93.283**	**93.080**	2.997	95.903	0.060	**92.205**	**92.002**	3.698
CREEKWAY	102	101	0.16	0.51	8		18	110	3.59	1.28	0.00	0.04	0.16	0.55	0.18	1.46	Circular	200	203.20	0.35%	57.28	20.24	0.62	18.78	7%	95.903	**92.145**	**91.942**	3.758	96.080		**91.945**	**91.741**	4.135
FEEDMILL	101	100A	0.40	4.17	56		129	888	3.27	9.40	0.00	1.14	0.40	5.31	1.75	11.15	Circular	300	304.80	1.00%	63.35	100.88	1.38	89.73	11%	96.080	**91.945**	**91.640**	4.135	95.097		**91.311**	**91.006**	3.786
FEEDMILL/DONUM LANE	100A	100	0.00	4.17			0	888	3.27	9.40	0.11	1.25	0.11	5.42	1.79	11.19	Circular	300	304.80	1.50%	16.76	123.55	1.69	112.37	9%	95.097	**91.311**	**91.006**	3.786	95.354	0.200	**91.060**	**90.755**	4.294
			4.17				888				1.25		5.42																				
DONUM LANE	100	01A		4.17			0	888	3.27	9.40	0.17	0.17	0.17	5.59	1.84	11.24	Circular	**375**	381.00	0.40%	60.16	115.68	1.01	104.44	10%	95.220	90.860	90.479	4.360	95.290		90.619	90.238	4.671
DONUM LANE/CAMPEAU	01A	EX.307A		4.17			0	888	3.27	9.40	0.21	0.38	0.21	5.80	1.91	11.31	Circular	**375**	381.00	0.21%	33.84	83.82	0.74	72.51	13%	95.290	90.609	90.228	4.681	95.000	-0.139	90.537	90.156	4.463
					264	104	888				1.63		5.80																				

Design Parameters		
Duplex	2.3	Cap/Unit
Townhouse	2.7	Cap/Unit
Residential Flows	280	L/Cap/d
Infiltration Flows	0.33	L/s/ha
Harmon's Correction Factor (K)	0.8	unitless
Manning Coefficient	0.013	unitless

Existing Infrastructure (Downstream Info)	OBV	INV
@ MH 01A on Donum Lane	**90.619**	90.238
@ MH EX.307A on Campeau Drive/Donum Lane	**90.537**	90.156

Legend

89.232	Proposed Mainline Sewers
89.232	Proposed Service Sewers for Duplexes
89.232	Existing (As-Built Information)

Appendix C2

Background Sanitary Documents

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

ARCADIA STAGES 3 & 4
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26299-03

Single Family	3.4	pers/unit
Semi-Detached/Townhouse (row)	2.7	pers/unit
*Future Stage 5 Unit Density	44.0	units/ha
Manning's Coeff. N =	0.013	

q =	280	L/cap/day
I =	0.330	L/s/ha
Inst. =	28000	L/ha/day

	Denotes Existing Sanitary Sewers from Arcadia Stage 2 Development as per JLR's design sheet dated July 2015
	Sanitary Drainage Areas/population for future Arcadia Stages 4 and 5
	Sanitary Drainage Areas/population for Arcadia Stage 3

STREET	M.H. #		RESIDENTIAL								COMMERCIAL				PARK/ROAD		INFILTRATION			PEAK DESIGN FLOW L/s
			NUMBER OF UNITS		AREA	POPUL.	CUMULATIVE POPUL.	CUMULATIVE AREA	PEAKING FACTOR	POPUL. FLOW	AREA	CUMM. AREA	PEAKING FACTOR	INST. FLOW	AREA	CUMM. AREA	AREA	CUMM. AREA	PEAK EXTR. FLOW	
	FROM	TO	SING.	MULT.	ha	peop.	peop.	ha		l/s	ha	ha		l/s	ha	ha	ha	ha	l/s	
Eramosa Crescent (Stage 3B)	90	91	14.0		0.65	48	48	0.65	3.65	0.57		0.0	1.5	0.0		0.00	0.65	0.65	0.21	0.78
Eramosa Crescent (Stage 3B)	91	92	2.0		0.18	7	55	0.83	3.64	0.65		0.0	1.5	0.0		0.00	0.18	0.83	0.27	0.92
Eramosa Crescent (Stage 3B)	92	93	4.0		0.28	14	69	1.11	3.63	0.81		0.0	1.5	0.0		0.00	0.28	1.11	0.37	1.18
Eramosa Crescent (Stage 3B)	93	94	2.0		0.17	7	76	1.28	3.62	0.89		0.0	1.5	0.0		0.00	0.17	1.28	0.42	1.31
Eramosa Crescent (Stage 3B)	94	81	14.0		0.65	48	124	1.93	3.57	1.44		0.0	1.5	0.0		0.00	0.65	1.93	0.64	2.07
Paine Avenue (Stage 3B)	EX.9	81	6.0		0.28	20	20	0.28	3.70	0.24		0.0	1.5	0.0		0.00	0.28	0.28	0.09	0.33
Paine Avenue (Stage 3B)	81	80	12.0		0.52	41	185	2.73	3.53	2.12		0.0	1.5	0.0		0.00	0.52	2.73	0.90	3.02
Coco (Stage 3B)	27 E	23	5.0		0.30	17	17	0.30	3.71	0.20		0.0	1.5	0.0		0.00	0.30	0.30	0.10	0.30
Winterset Road (Stage 3B)	24	23	2.0		0.15	7	7	0.15	3.74	0.08		0.0	1.5	0.0		0.00	0.15	0.15	0.05	0.13
Winterset Road (Stage 3B)	23	22	17.0		0.83	58	82	1.28	3.61	0.96		0.0	1.5	0.0		0.00	0.83	1.28	0.42	1.38
Coco (Stage 3B)	27	28	2.0		0.18	7	7	0.18	3.74	0.08		0.0	1.5	0.0		0.00	0.18	0.18	0.06	0.14
Coco (Stage 3B)	28	80	15.0		0.69	51	58	0.87	3.64	0.68		0.0	1.5	0.0		0.00	0.69	0.87	0.29	0.97
Paine Avenue (Stage 3B)	80	22	5.0		0.33	17	260	3.93	3.48	2.94		0.0	1.5	0.0		0.00	0.33	3.93	1.30	4.23
Winterset Road (Stage 3B)	22	22B	1.0		0.16	3	345	5.37	3.44	3.85		0.0	1.5	0.0		0.00	0.16	5.37	1.77	5.62
Winterset Road (Stage 3B)	22B	21	5.0		0.32	17	362	5.69	3.43	4.03		0.0	1.5	0.0		0.00	0.32	5.69	1.88	5.91
Parabolica	72	71	2.0		0.17	7	7	0.17	3.74	0.08		0.0	1.5	0.0		0.00	0.17	0.17	0.06	0.14
Parabolica	71	21	14.0		0.67	48	55	0.84	3.64	0.65		0.0	1.5	0.0		0.00	0.67	0.84	0.28	0.93
Riverchase Drive (Stage 4)	21	20	11		0.56	37	454	7.09	3.40	5.00		0.0	1.5	0.0		0.00	0.56	7.09	2.34	7.34
Parabolica	73 S	61	5		0.30	17	17	0.30	3.71	0.20		0.0	1.5	0.0		0.00	0.30	0.30	0.10	0.30
Parabolica	72 S	73	7		0.33	24	24	0.33	3.70	0.29		0.0	1.5	0.0		0.00	0.33	0.33	0.11	0.40
Basalt	73	20	6	9	0.60	45	69	0.93	3.63	0.81		0.0	1.5	0.0		0.00	0.60	0.93	0.31	1.12
Winterset Road (Stage 4)	20	19		4	0.17	11	534	8.19	3.37	5.83		0.0	1.5	0.0		0.00	0.17	8.19	2.70	8.53
Winterset Road (Stage 4)	19	18		3	0.15	8	542	8.34	3.36	5.91		0.0	1.5	0.0		0.00	0.15	8.34	2.75	8.66
Calvington Avenue (Stage 3B)	62	61	6		0.31	20	20	0.31	3.70	0.24		0.0	1.5	0.0		0.00	0.31	0.31	0.10	0.34
Calvington Avenue (Stage 3B)	61	60	5	7	0.44	36	73	1.05	3.62	0.86		0.0	1.5	0.0		0.00	0.44	1.05	0.35	1.20
Calvington Avenue (Stage 3B)	60	18	2	2	0.22	12	85	1.27	3.61	0.99		0.0	1.5	0.0		0.00	0.22	1.27	0.42	1.41
Park (Stage 3B)	Stub	18				0	0	0.00				0.0	1.5	0.0	2.46	2.46	2.46	2.46	0.81	0.81
Winterset Road (Stage 3B)	18	16	5		0.30	17	644	9.91	3.33	6.95		0.0	1.5	0.0		2.46	0.30	12.37	4.08	11.04
Stage 5*	Stub	16		180	4.10	486	486	4.10	3.38	5.33		0.0	1.5	0.0		0.00	4.10	4.10	1.35	6.68

J.L.Richards
ENGINEERS · ARCHITECTS · I

SANITARY SEWER DESIGN SHEET

ARCADIA STAGES 3 & 4
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26299-03

Designed by: NG

Checked by: TC

Date : April 2019

Single Family	3.4	pers/unit
Semi-Detached/Townhouse (row)	2.7	pers/unit
*Future Stage 5 Unit Density	44.0	units/ha
Manning's Coeff. N =	0.013	

Denotes Existing Sanitary Sewers from Arcadia Stage 2 Development as per JLR's design sheet dated July 2015

Sanitary Drainage Areas/population for future Arcadia Stages 4 and 5

Sanitary Drainage Areas/population for Arcadia Stage 3

STREET	M.H. #		Actual	SEWER DATA					RESIDUAL	UPSTREAM					DOWNSTREAM					SELF-CLEANSING VELOCITIES							
	FROM	TO	DIA.	DIA.	SLOPE	CAPAC.	VEL.	LENGTH	CAP.	Center Line	Obvert Drop	Obvert	Invert	Cover	Center Line	Obvert Drop	Obvert	Invert	Cover	Angle	Depth (m)	Area (m^2)	Wetted Perimeter	Flow	Flow (L/s)	Velocity (L/s)	Q/Qmax
			mm	mm	%	l/s	m/s	m	l/s																		
Eramosa Crescent (Stage 3B)	90	91	203	200	0.35	20.2	0.62	79.430	19.46	96.710		94.573	94.370	2.137	96.780		94.295	94.092	2.485	86.9263	0.027	0.003	0.152	0.001	0.783	0.3	0.302
Eramosa Crescent (Stage 3B)	91	92	203	200	0.35	20.2	0.62	7.951	19.32	96.780		94.295	94.092	2.485	96.750		94.268	94.064	2.482	90.6673	0.030	0.003	0.158	0.001	0.924	0.3	0.317
Eramosa Crescent (Stage 3B)	92	93	203	200	0.35	20.2	0.62	61.890	19.07	96.750		94.268	94.064	2.482	96.550		94.051	93.848	2.499	96.5054	0.033	0.003	0.168	0.001	1.178	0.3	0.341
Eramosa Crescent (Stage 3B)	93	94	203	200	0.35	20.2	0.62	10.750	18.93	96.550		94.051	93.848	2.499	96.550		94.013	93.810	2.537	99.2827	0.035	0.004	0.173	0.001	1.313	0.4	0.352
Eramosa Crescent (Stage 3B)	94	81	203	200	0.35	20.2	0.62	116.510	18.17	96.550		94.013	93.810	2.537	96.060		93.606	93.402	2.454	112.088	0.044	0.005	0.196	0.002	2.073	0.4	0.403
Paine Avenue (Stage 3B)	EX.9	81	203	200	0.77	30.0	0.92	48.060	29.64	96.060		93.974	93.771	2.086	96.627		93.606	93.402	3.021	63.8425	0.015	0.001	0.111	0.000	0.333	0.3	0.307
Paine Avenue (Stage 3B)	81	80	203	200	0.35	20.2	0.62	72.060	17.23	96.060		93.606	93.402	2.454	95.850		93.353	93.150	2.497	124.328	0.053	0.007	0.217	0.003	3.016	0.4	0.449
Coco (Stage 3B)	27 E	23	203	200	0.65	27.6	0.85	70.240	27.28	96.000		93.938	93.734	2.062	95.550		93.481	93.278	2.069	63.7538	0.015	0.001	0.111	0.000	0.304	0.3	0.282
Winterset Road (Stage 3B)	24	23	254	250	0.25	31.0	0.61	23.320	30.88	95.340		93.539	93.285	1.801	95.550		93.481	93.227	2.069	50.9399	0.012	0.001	0.111	0.000	0.134	0.2	0.153
Winterset Road (Stage 3B)	23	22	254	250	0.25	31.0	0.61	116.700	29.64	95.550		93.481	93.227	2.069	95.250	0.102	93.189	92.935	2.061	90.1089	0.037	0.004	0.197	0.001	1.382	0.3	0.309
Coco (Stage 3B)	27	28	203	200	0.65	27.6	0.85	7.560	27.44	95.960		93.894	93.691	2.066	95.980	0.030	93.845	93.642	2.135	53.2136	0.011	0.001	0.093	0.000	0.144	0.2	0.224
Coco (Stage 3B)	28	80	203	200	0.35	20.2	0.62	114.710	19.27	95.980		93.815	93.612	2.165	95.850	0.060	93.413	93.210	2.437	91.8319	0.030	0.003	0.160	0.001	0.971	0.3	0.322
Paine Avenue (Stage 3B)	80	22	203	200	0.35	20.2	0.62	76.040	16.01	95.850		93.353	93.150	2.497	95.250		93.087	92.884	2.163	137.121	0.063	0.009	0.239	0.004	4.232	0.5	0.494
Winterset Road (Stage 3B)	22	22B	254	250	0.35	36.7	0.72	5.420	31.08	95.300		93.087	92.833	2.213	95.480	0.870	93.068	92.814	2.412	125.29	0.068	0.011	0.273	0.006	5.620	0.5	0.525
Winterset Road (Stage 3B)	22B	21	254	250	0.35	36.7	0.72	70.600	30.80	95.250		92.198	91.944	3.052	95.350		91.951	91.697	3.399	127.072	0.069	0.011	0.277	0.006	5.906	0.5	0.532
Parabolica	72	71	203	200	0.65	27.6	0.85	11.700	27.45	95.470		92.579	92.376	2.891	95.480	0.030	92.503	92.300	2.977	52.9392	0.010	0.001	0.092	0.000	0.140	0.2	0.223
Parabolica	71	21	203	200	0.35	20.2	0.62	110.810	19.32	95.480		92.473	92.270	3.007	95.350	0.134	92.085	91.882	3.265	90.7404	0.030	0.003	0.158	0.001	0.927	0.3	0.318
Riverchase Drive (Stage 4)	21	20	254	250	0.35	36.7	0.72	77.580	29.37	95.350		91.951	91.697	3.399	95.450		91.680	91.426	3.770	135.315	0.077	0.013	0.295	0.007	7.337	0.6	0.566
Parabolica	73 S	61	203	200	1.00	34.2	1.06	74.370	33.91	96.200		92.738	92.535	3.462	96.800		91.994	91.791	4.806	60.4855	0.014	0.001	0.106	0.000	0.304	0.3	0.327
Parabolica	72 S	73	203	200	0.65	27.6	0.85	68.200	27.19	95.500		92.582	92.379	2.918	96.200		92.138	91.935	4.062	67.9896	0.017	0.001	0.119	0.000	0.396	0.3	0.306
Basalt	73	20	203	200	0.35	20.2	0.62	116.810	19.12	96.200		92.138	91.935	4.062	95.450	0.050	91.730	91.526	3.720	95.2179	0.033	0.003	0.166	0.001	1.118	0.3	0.336
Winterset Road (Stage 4)	20	19	254	250	0.35	36.7	0.72	42.140	28.17	95.450		91.680	91.426	3.770	95.370		91.532	91.278	3.838	141.532	0.084	0.014	0.309	0.009	8.528	0.6	0.591
Winterset Road (Stage 4)	19	18	254	250	0.35	36.7	0.72	32.390	28.04	95.370		91.532	91.278	3.838	95.550		91.419	91.165	4.131	142.197	0.085	0.015	0.310	0.009	8.661	0.6	0.593
																	91.403										
Calvington Avenue (Stage 3B)	62	61	203	200	0.65	27.6	0.85	58.210	27.24	96.750		92.372	92.169	4.378	96.800		91.994	91.791	4.806	65.6322	0.016	0.001	0.115	0.000	0.343	0.3	0.292
Calvington Avenue (Stage 3B)	61	60	203	200	0.35	20.2	0.62	61.700	19.04	96.800		91.994	91.791	4.806	95.680		91.778	91.575	3.902	97.0541	0.034	0.004	0.169	0.001	1.204	0.3	0.343
Calvington Avenue (Stage 3B)	60	18	203	200	0.35	20.2	0.62	64.400	18.83	95.680		91.778	91.575	3.902	95.550	0.134	91.553	91.350	3.997	101.213	0.037	0.004	0.177	0.001	1.414	0.4	0.360
Park (Stage 3B)	Stub	18	203	200	0.65	27.6	0.85	15.340	26.77	94.018		91.518	91.315	2.500	95.550		91.419	91.216	4.131	81.1472	0.024	0.002	0.142	0.001	0.812	0.4	0.379
Winterset Road (Stage 3B)	18	16	305	300	0.25	50.4	0.69	62.820	39.41	95.550		91.419	91.114	4.131	95.690		91.262	90.957	4.428	138.987	0.097	0.020	0.364	0.011	11.035	0.6	0.554
Stage 5*	Stub	16	203	200	0.35	20.2	0.62	15.350	13.56	94.288		91.788	91.585	2.500	95.690	0.473	91.735	91.532	3.955	158.051	0.081	0.012	0.276	0.007	6.683	0.6	0.561

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ARCADIA STAGES 3 & 4
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26299-03

Single Family	3.4	pers/unit
Semi-Detached/Townhouse (row)	2.7	pers/unit
*Future Stage 5 Unit Density	44.0	units/ha
Manning's Coeff. N =	0.013	

q =	280	L/cap/day
I =	0.330	L/s/ha
Inst. =	28000	L/ha/day

	Denotes Existing Sanitary Sewers from Arcadia Stage 2 Development as per JLR's design sheet dated July 2015
	Sanitary Drainage Areas/population for future Arcadia Stages 4 and 5
	Sanitary Drainage Areas/population for Arcadia Stage 3

			RESIDENTIAL								COMMERCIAL				PARK/ROAD		INFILTRATION			
STREET	M.H. #		NUMBER OF UNITS				CUMULATIVE		PEAKING FACTOR	POPUL. FLOW	AREA	CUMM. AREA	PEAKING FACTOR	INST. FLOW	AREA	CUMM. AREA	AREA	CUMM. AREA	PEAK EXTR. FLOW	PEAK DESIGN FLOW
	FROM	TO	SING.	MULT.	AREA ha	POPUL. peop.	POPUL. peop.	AREA ha		l/s	ha	ha		l/s	ha	ha	ha	ha	l/s	L/s
Winterset Road	16	14		14	0.60	38	1168	14.61	3.20	12.13		0.0	1.5	0.0		2.46	0.60	17.07	5.63	17.76
Winterset Road	14	13		8	0.29	22	1189	14.90	3.20	12.33		0.0	1.5	0.0		2.46	0.29	17.36	5.73	18.06
Winterset Road	13	2		4	0.18	11	1200	15.08	3.20	12.44		0.0	1.5	0.0		2.46	0.18	17.54	5.79	18.23
Natare	45 E	46		17	0.48	46	46	0.48	3.66	0.54		0.0	1.5	0.0		0.00	0.48	0.48	0.16	0.70
Natare	47	46		3	0.13	8	8	0.13	3.74	0.10		0.0	1.5	0.0		0.00	0.13	0.13	0.04	0.14
Speedvale	46	39				0	54	0.61	3.65	0.64		0.0	1.5	0.0	0.03	0.03	0.03	0.64	0.21	0.85
Speedvale	39	38		16	0.48	43	97	1.09	3.60	1.13		0.0	1.5	0.0		0.03	0.48	1.12	0.37	1.50
Speedvale	38	37		12	0.31	32	130	1.40	3.57	1.50		0.0	1.5	0.0		0.03	0.31	1.43	0.47	1.97
Speedvale	37	36		9	0.24	24	154	1.64	3.55	1.77		0.0	1.5	0.0		0.03	0.24	1.67	0.55	2.32
Speedvale	36	30		7	0.24	19	173	1.88	3.54	1.98		0.0	1.5	0.0		0.03	0.24	1.91	0.63	2.61
Natare	45	44		4	0.19	11	11	0.19	3.73	0.13		0.0	1.5	0.0		0.00	0.19	0.19	0.06	0.19
Natare	44	43		6	0.18	16	27	0.37	3.69	0.32		0.0	1.5	0.0		0.00	0.18	0.37	0.12	0.44
Natare	43	42		10	0.31	27	54	0.68	3.65	0.64		0.0	1.5	0.0		0.00	0.31	0.68	0.22	0.86
Sweet Pea	54	53	17		0.80	58	58	0.80	3.64	0.68		0.0	1.5	0.0		0.00	0.80	0.80	0.26	0.95
Sweet Pea	53	52	2		0.15	7	65	0.95	3.63	0.77		0.0	1.5	0.0		0.00	0.15	0.95	0.31	1.08
Sweet Pea	52	51	10		0.44	34	99	1.39	3.60	1.15		0.0	1.5	0.0		0.00	0.44	1.39	0.46	1.61
Sweet Pea	51	50	1		0.10	3	102	1.49	3.59	1.19		0.0	1.5	0.0		0.00	0.10	1.49	0.49	1.68
Sweet Pea	50	42			0.01	0	102	1.50	3.59	1.19		0.0	1.5	0.0	0.01	0.01	0.02	1.51	0.50	1.69
Natare	42	40		16	0.48	43	199	2.66	3.52	2.27		0.0	1.5	0.0		0.01	0.48	2.67	0.88	3.15
Natare	40	31		5	0.18	14	213	2.84	3.51	2.42		0.0	1.5	0.0		0.01	0.18	2.85	0.94	3.36
Speedvale	34	33		6	0.27	16	16	0.27	3.71	0.19		0.0	1.5	0.0		0.00	0.27	0.27	0.09	0.28
Speedvale	33	32		29	0.68	78	95	0.95	3.60	1.10		0.0	1.5	0.0		0.00	0.68	0.95	0.31	1.42
Speedvale	32	31		12	0.30	32	127	1.25	3.57	1.47		0.0	1.5	0.0		0.00	0.30	1.25	0.41	1.88
Speedvale	31	30		14	0.32	38	377	4.41	3.43	4.19		0.0	1.5	0.0		0.01	0.32	4.42	1.46	5.65
	30	30A				0	550	6.29	3.36	5.99		0.0	1.5	0.0		0.04		6.33	2.09	8.08
Speedvale	30A	2			0.20	0	550	6.49	3.36	5.99		0.0	1.5	0.0	0.20	0.24	0.40	6.73	2.22	8.22
Stage 5*	Stub	2		180	4.10	486	486	4.10	3.38	5.33		0.0	1.5	0.0		0.00	4.10	4.10	1.35	6.68
Winterset Road	2	2A			0.18	0	2236	25.85	3.04	22.02		0.0	1.5	0.0	0.18	2.88	0.36	28.73	9.48	31.50
Winterset Road	2A	ex. 307A				0	2236	25.85	3.04	22.02		0.0	1.5	0.0		2.88	0.00	28.73	9.48	31.50
Campeau Drive	ex.306A	ex. 307A			23.00	1700	1700	23.00	3.11	17.14	95.58	95.6	1.5	46.5	5.10	5.10	123.68	123.68	40.81	104.42
Donum Lane	South Stub	1A					0	0.00			24.28	24.3	1.5	11.8	0.37	0.37	24.65	24.65	8.13	19.94
Donum Lane	1A	ex. 307A					0	0.00				24.3	1.5	11.8	0.37	0.37	0.37	25.02	8.26	20.06
Campeau Drive	ex. 307A	ex. 308A					3936	48.85	2.87	36.63		119.9	1.5	58.3		8.35	0.00	177.43	58.55	153.45

SANITARY FLOW ALLOCATIONS
24.65 Ha, 20.06 L/s
Stage 6 Lands 2.15ha, 1.75 L/s

J.L.Richards
ENGINEERS · ARCHITECTS · I

ARCADIA STAGES 3 & 4
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26299-03

SANITARY SEWER DESIGN SHEET

Designed by: NG

Checked by: TC

Date : April 2019

Single Family	3.4	pers/unit
Semi-Detached/Townhouse (row)	2.7	pers/unit
*Future Stage 5 Unit Density	44.0	units/ha
Manning's Coeff. N =	0.013	

	Denotes Existing Sanitary Sewers from Arcadia Stage 2 Development as per JLR's design sheet dated July 2015
	Sanitary Drainage Areas/population for future Arcadia Stages 4 and 5
	Sanitary Drainage Areas/population for Arcadia Stage 3

STREET	M.H. #		Actual	SEWER DATA					RESIDUAL	UPSTREAM					DOWNSTREAM					SELF-CLEANSING VELOCITIES							
	FROM	TO	DIA. mm	DIA. mm	SLOPE %	CAPAC. l/s	VEL. m/s	LENGTH m	CAP. l/s	Center Line	Obvert Drop	Obvert	Invert	Cover	Center Line	Obvert Drop	Obvert	Invert	Cover	Angle	Depth (m)	Area (m^2)	Wetted Perimeter	Flow	Flow (L/s)	Velocity (L/s)	Q/Qmax
Winterset Road	16	14	305	300	0.25	50.4	0.69	119.600	32.68	95.690		91.262	90.957	4.428	95.440		90.963	90.658	4.477	161.429	0.126	0.028	0.423	0.018	17.752	0.6	0.631
Winterset Road	14	13	305	300	0.25	50.4	0.69	50.600	32.38	95.440		90.963	90.658	4.477	95.320		90.836	90.531	4.484	162.348	0.127	0.028	0.425	0.018	18.056	0.6	0.634
Winterset Road	13	2	305	300	0.25	50.2	0.69	43.200	32.01	95.320		90.836	90.531	4.484	94.860		90.729	90.424	4.131	162.839	0.128	0.029	0.426	0.018	18.146	0.6	0.633
Natare	45 E	46	203	200	0.96	33.6	1.03	60.200	32.86	96.430		93.626	93.423	2.804	96.100	0.237	93.047	92.843	3.053	75.2809	0.021	0.002	0.131	0.001	0.730	0.4	0.421
Natare	47	46	203	200	0.65	27.5	0.85	18.900	27.34	95.790		93.009	92.805	2.781	96.100	0.077	92.887	92.683	3.213	53.0113	0.011	0.001	0.093	0.000	0.141	0.2	0.222
Speedvale	46	39	203	200	0.35	20.2	0.62	9.800	19.34	96.100		92.810	92.606	3.290	95.940	0.030	92.776	92.572	3.164	88.7314	0.029	0.003	0.155	0.001	0.847	0.3	0.308
Speedvale	39	38	203	200	0.35	20.2	0.62	74.800	18.71	95.940		92.746	92.542	3.194	95.600		92.484	92.281	3.116	102.859	0.038	0.004	0.180	0.002	1.501	0.4	0.366
Speedvale	38	37	203	200	0.35	20.2	0.62	45.100	18.21	95.600		92.484	92.281	3.116	95.660		92.328	92.124	3.332	110.571	0.043	0.005	0.193	0.002	1.965	0.4	0.396
Speedvale	37	36	203	200	0.35	20.2	0.62	32.000	17.92	95.660		92.328	92.124	3.332	95.700		92.216	92.012	3.484	115.603	0.047	0.006	0.202	0.002	2.322	0.4	0.416
Speedvale	36	30	203	200	0.35	20.2	0.62	33.900	17.60	95.700		92.216	92.012	3.484	95.700		92.097	91.894	3.603	119.404	0.050	0.006	0.208	0.003	2.607	0.4	0.430
Natare	45	44	203	200	0.65	27.6	0.85	16.900	27.39	96.430		93.787	93.583	2.643	96.460	0.030	93.677	93.473	2.783	57.1272	0.012	0.001	0.100	0.000	0.193	0.2	0.246
Natare	44	43	203	200	0.33	19.5	0.60	35.300	19.09	96.460		93.647	93.443	2.813	96.160		93.532	93.328	2.628	75.4648	0.021	0.002	0.132	0.000	0.429	0.2	0.246
Natare	43	42	203	200	0.35	20.2	0.62	47.900	19.38	96.160		93.532	93.328	2.628	96.400	0.300	93.364	93.161	3.036	89.0885	0.029	0.003	0.155	0.001	0.862	0.3	0.311
Sweet Pea	54	53	203	200	0.35	20.2	0.62	105.982	19.29	97.070		93.956	93.753	3.114	96.770	0.030	93.585	93.382	3.185	91.1911	0.030	0.003	0.159	0.001	0.945	0.3	0.319
Sweet Pea	53	52	203	200	0.35	20.2	0.62	10.580	19.16	96.770		93.555	93.352	3.215	96.750	0.030	93.518	93.315	3.232	94.1148	0.032	0.003	0.164	0.001	1.069	0.3	0.331
Sweet Pea	52	51	203	200	0.35	20.2	0.62	70.071	18.63	96.750		93.488	93.285	3.262	96.130		93.243	93.040	2.887	104.734	0.039	0.004	0.183	0.002	1.609	0.4	0.374
Sweet Pea	51	50	203	200	0.35	20.2	0.62	25.280	18.56	96.130		93.243	93.040	2.887	96.320		93.154	92.951	3.166	105.874	0.040	0.004	0.185	0.002	1.676	0.4	0.378
Sweet Pea	50	42	203	200	0.35	20.2	0.62	8.680	18.56	96.320		93.154	92.951	3.166	96.400	0.060	93.124	92.921	3.276	105.985	0.040	0.004	0.185	0.002	1.683	0.4	0.379
Natare	42	40	203	200	0.35	20.2	0.62	63.600	17.03	96.400		93.064	92.861	3.336	95.730	0.030	92.843	92.639	2.887	125.856	0.054	0.007	0.220	0.003	3.140	0.5	0.453
Natare	40	31	203	200	0.35	20.2	0.62	34.300	16.82	95.730		92.813	92.609	2.917	96.000	0.060	92.693	92.490	3.307	128.167	0.056	0.007	0.224	0.003	3.347	0.5	0.461
Speedvale	34	33	203	200	0.65	27.6	0.85	17.100	27.30	97.430		93.410	93.206	4.020	97.220	0.050	93.299	93.095	3.921	62.926	0.015	0.001	0.110	0.000	0.288	0.3	0.277
Speedvale	33	32	203	200	0.36	20.4	0.63	100.900	19.03	97.220		93.249	93.045	3.971	96.680	0.031	92.888	92.685	3.792	101.258	0.037	0.004	0.177	0.001	1.430	0.4	0.364
Speedvale	32	31	203	200	0.34	20.0	0.62	65.500	18.13	96.680		92.857	92.654	3.823	96.000		92.633	92.430	3.367	109.186	0.042	0.005	0.191	0.002	1.859	0.4	0.387
Speedvale	31	30	203	200	0.35	20.2	0.62	74.300	14.59	96.000		92.633	92.430	3.367	95.700	0.276	92.373	92.170	3.327	149.732	0.074	0.011	0.261	0.006	5.647	0.5	0.535
	30	30A	203	200	0.35	20.2	0.62	39.890	12.16	95.700		92.097	91.894	3.603	95.700		91.958	91.754	3.742	168.505	0.090	0.014	0.294	0.008	8.080	0.6	0.589
Speedvale	30A	2	203	200	0.33	19.7	0.61	44.100	11.44	95.700		91.958	91.754	3.742	94.860	1.083	91.812	91.609	3.048	168.984	0.090	0.014	0.295	0.008	7.910	0.6	0.574
Stage 5*	Stub	2	305	300	0.35	59.7	0.82	19.200	53.00	93.493		90.993	90.688	2.500	94.860	0.197	90.926	90.621	3.934	114.846	0.069	0.012	0.301	0.007	6.683	0.5	0.542
Winterset Road	2	2A	305	300	0.34	58.7	0.80	42.100	27.15	94.860		90.729	90.424	4.131	94.860		90.587	90.282	4.273	186.472	0.158	0.038	0.488	0.031	30.821	0.8	0.814
Winterset Road	2A	ex. 307A	457	450	1.04	303.3	1.85	13.460	271.83	94.860		90.587	90.130	4.273	95.500	-0.229	90.447	89.990	5.053	112.381	0.100	0.026	0.441	0.031	31.363	1.2	1.195
Campeau Drive	ex.306A	ex. 307A	533	525	0.24	219.8	0.98	120.080	115.38	95.500		90.817	90.284	4.683	95.500		90.529	89.996	4.971	179.408	0.261	0.108	0.822	0.104	104.420	1.0	0.971
Donum Lane	South Stub	1A	381	375	0.40	115.8	1.02	67.970	95.89	94.740		90.891	90.510	3.849	95.290		90.618	90.237	4.672	103.197	0.071	0.015	0.338	0.009	8.707	0.6	0.599
Donum Lane	1A	ex. 307A	381	375	0.24	89.6	0.79	8.800	69.55	95.290		90.618	90.237	4.672	95.500		90.537	90.156	4.963	103.197	0.071	0.015	0.338	0.007	6.736	0.5	0.463
Campeau Drive	ex. 307A	ex. 308A	686	675	0.25	438.5	1.19	118.960	285.02	95.500		90.676	89.990	4.824	94.400		90.379	89.693	4.021	156.838	0.270	0.133	0.924	0.141	141.389	1.1	1.059

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	PEAK	AREA (Ha)						PEAK	AREA (Ha)		FLOW	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	VELOCITY	AVAILABLE CAPACITY	
													INSTITUTIONAL		COMMERCIAL		INDUSTRIAL										(full)	(actual)		
STREET	AREA ID	FROM MH	TO MH	SF	SD	TH	APT	(Ha)	IND	CUM	FACTOR	FLOW (L/s)	IND	CUM	IND	CUM	IND	CUM	FLOW (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			
SF	3.4	p/p/u				Peak Factor
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	11/15/2013
2.	Revised as per City Comments	6/24/2014
3.	Revised as per City Comments	8/22/2014
4.	Revised as per City Comments	10/2/2014

File Reference:	Date:	Sheet No:
12345.5.7.1	11/15/2013	1 of 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 (l/s)		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	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	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						
			Area 7 HP Employment	0.00								0.00	0.00	0.00	50000	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 / Interstitial		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%**

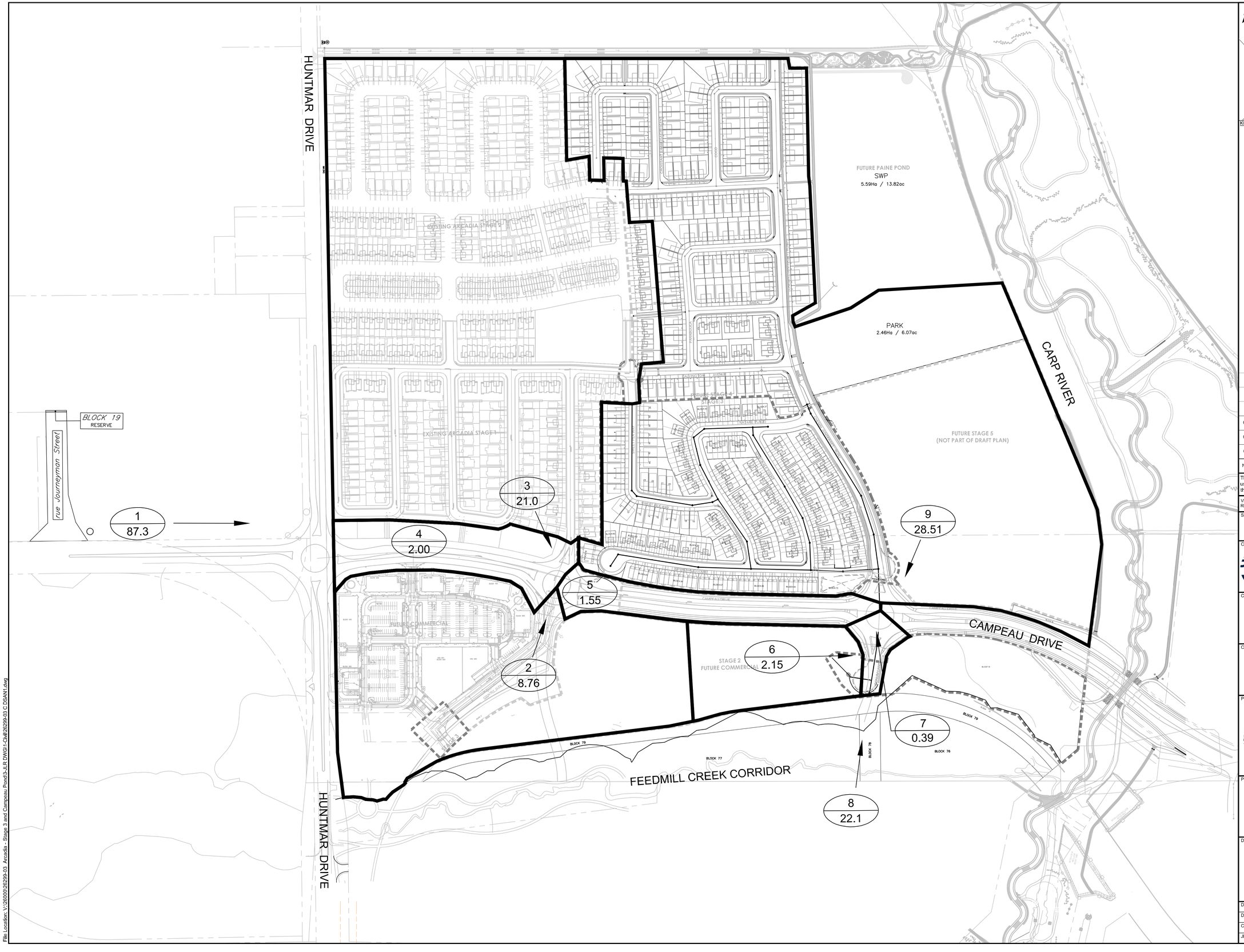
Average Daily Per capita Flow Rate = 350 l/cap/d
Infiltration Allowance Flow Rate = 0.28 l/sec/Ha
Residential Peaking Factor = 1+(14/(4+(P^0.5))), P=Pop. in 1000's, Max of 4
Population density per unit = 3.00
P. F. For Employment/Retail/Business Park = 1.50
Mixed Uses Assumes: 15% Community Retail, 42.5%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

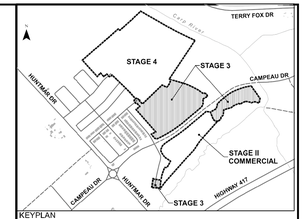
Note: Sewer from node 5 to SRPS is existing and is to be replaced.

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





KEYPLAN

AREA ID
10
2.15
AREA (ha)

AREA DESCRIPTIONS

1. 87.3 ha COMMERCIAL / EMPLOYMENT AS PER SIGNATURE RIDGE PUMPING STATION HYDRAULIC GRADE ANALYSIS , IBI GROUP, 2014 (REV 2)
2. 5.2 COMMERCIAL & 3.56 ha INFILTRATION AS PER ARCADIA RETAIL DEVELOPMENT DESIGN (IBI GROUP, 2014)
3. 21 ha RESIDENTIAL DEVELOPEMITN AS PER ARCADIA STAGE 1 DETAILED DESIGN (IBI GROUP 2012) AND ARCADIA STAGE 2 DETAILED DESIGN (JLR 2014)
4. 2 ha RESIDENTIAL & R.O.W. AS PER ARCADIA STAGE 1 DETAILED DESIGN (IBI GROUP 2012)
5. 1.54 ha R.O.W. AS PER CURRENT DESIGN (JLR)
6. 2.15 ha FUTURE COMMERCIAL AS PER CURRENT DESIGN (JLR)
7. 0.37 ha R.O.W. AS PER CURRENT DESIGN (JLR)
8. 22.13 Ha COMMERCIAL AS PER SIGNATURE RIDGE PUMPING STATION HYDRAULIC GRADE ANALYSIS , IBI GROUP, 2014 (REV 2)

No.	ISSUE / REVISION	DD/MM/YY
03	ISSUED TO CITY FOR REVIEW - SUBMISSION 3	26/04/2019
02	ISSUED TO CITY FOR REVIEW - SUBMISSION 2	22/02/2019
01	ISSUED TO CITY FOR REVIEW - SUBMISSION 1	27/11/2018

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VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:2000

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

LICENSED PROFESSIONAL ENGINEER
M. N. L. DALRYMPLE
PROVINCE OF ONTARIO

PROJECT NORTH

PROJECT:

MINTO COMMUNITIES INC.
ARCADIA STAGE 3

450 HUNTMAR DRIVE

DRAWING:

OVERALL SANITARY DRAINAGE PLAN

DESIGN:	AT
DRAWN:	CJM
CHECKED:	LD
JLR #:	26299-03

DRAWING #: OSAN

City File No: DO7-16-16-0025 Plan No: 17816

PLOT DATE: May 1, 2019 - 12:53:41 PM

File Location: V:\26000\26299-03 Arcadia - Stage 3 and Campeau Pond\5-JLR DWG\1-Civil\26299-03 C DSAN1.dwg

Appendix D1

Storm Sewer Design Sheet

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

ARCADIA STAGE 6
STORM SEWER DESIGN SHEET

DESIGNED BY: MM
CHECKED BY: AW
6/30/2023

LOCATION			DRAINAGE AREAS						PEAK FLOW ESTIMATION (RATIONAL METHOD)																			Pipe Data								Upstream Geometry					Downstream Geometry				
			C-Factor (1:5 Yr)			C-Factor (1:10 Yr)						1:2 Year Storm					1:5 Year Storm					1:10 Year Storm																				
Street Name	From	To	0.40	0.58	0.78	0.80	Total Area (ha)	Cum. Total Area (ha)	Inlet Time (min.)	In Pipe Flow Time (min)	Total Time	2.78AR	Add. 2.78AR	Cum. 2.78AR	1:2 Yr Intensity (mm/hr)	Peak Flow (L/s)	2.78AR	Add. 2.78AR	Cum. 2.78AR	1:5 Yr Intensity (mm/hr)	Peak Flow (L/s)	2.78AR	Add. 2.78AR	Cum. 2.78AR	1:10 Yr Intensity (mm/hr)	Peak Flow (L/s)	Plug Flow (L/s)	Total Peak Flow (L/s)	Type	CAD Dia.	Nominal Dia. (mm)	Actual Dia. (mm)	Slope	Length (m)	Q Full (L/s)	V Full (m/s)	Residual Capacity (L/s)	% Full	TG From	Obvert	Invert	Springline Elev	Cover	TG To	Drop	Obvert	Invert	Springline Elev	Cover
COUNTRY GLEN WAY OUTLET (TO PAINE POND)																																											
CLEARPATH (EAST LEG)	211	210	0.50		0.27		0.77	0.77	10.00	0.79	10.79						1.14		1.14	104.19	118.93						118.93	Circular	0.600	600	609.60	0.15%	40.15	248.09	0.85	129.15	48%	96.936	95.408	94.798	95.103	1.528	96.917		95.348	94.738	95.043	1.569
FEEDMILL	210	216			0.04		0.04	0.81	10.79	0.77	11.56						0.09		1.23	100.21	123.08						123.08	Circular	0.600	600	609.60	0.15%	39.52	248.09	0.85	125.01	50%	96.917	95.348	94.738	95.043	1.569	97.312		95.289	94.679	94.984	2.023
WOODILY	213A	216			0.38		0.38	0.38	10.00	2.06	12.06						0.82		0.82	104.19	85.85						85.85	Circular	0.600	600	609.60	0.15%	104.90	248.09	0.85	162.23	35%	97.470	95.446	94.836	95.141	2.024	97.312		95.289	94.679	94.984	2.023
FEEDMILL	216	217			0.04		0.04	1.23	12.06	0.72	12.77						0.09		2.14	94.45	202.03						202.03	Circular	0.600	600	609.60	0.15%	36.49	248.09	0.85	46.06	81%	97.312	95.289	94.679	94.984	2.023	97.073		95.234	94.624	94.929	1.839
SILVERBERRY	214A	217			0.39		0.39	0.39	10.00	2.13	12.13						0.85		0.85	104.19	88.11						88.11	Circular	0.600	600	609.60	0.15%	108.74	248.09	0.85	159.97	36%	97.532	95.397	94.787	95.092	2.135	97.073		95.234	94.624	94.929	1.839
FEEDMILL	217	218			0.12		0.12	1.74	12.77	1.20	13.97						0.26		3.24	91.52	296.97						296.97	Circular	0.675	675	685.80	0.15%	65.93	339.63	0.92	42.67	87%	97.073	95.234	94.548	94.891	1.839	97.192		95.135	94.449	94.792	2.057
FEEDMILL *See note in Legend	218	219					0.00	1.74	13.97	0.16	14.13						0.00		3.24	87.05	282.45						282.45	Circular	0.375	375	381.00	0.15%	6.10	70.84	0.62	-211.61	399%	97.192	94.830	94.449	94.640	2.362	97.369		94.821	94.440	94.630	2.548
FEEDMILL	221	219		0.02	0.38		0.40	0.40	10.00	1.30	11.30						0.86		0.86	104.19	89.21						89.21	Circular	0.525	525	533.40	0.16%	62.68	179.46	0.80	90.25	50%	97.546	95.302	94.769	95.036	2.243	97.369		95.202	94.669	94.935	2.167
FEEDMILL	219	224A					0.00	2.14	14.13	0.31	14.44						0.00		4.10	86.47	354.63						354.63	Circular	0.750	750	762.00	0.15%	18.28	449.81	0.99	95.18	79%	97.369	95.202	94.440	94.821	2.167	97.483		95.175	94.413	94.794	2.309
FEEDMILL	224A	224		0.12	0.19		0.31	2.45	14.44	0.87	15.31						0.61		4.71	85.41	401.99						401.99	Circular	0.750	750	762.00	0.15%	51.62	449.81	0.99	47.82	89%	97.483	95.175	94.413	94.794	2.309	97.917		95.097	94.335	94.716	2.820
FEEDMILL	224	EXMH203					0.00	**2.45**	15.31	0.25	15.56						0.00		**4.71**	82.56	388.58						388.58	Circular	0.750	750	762.00	0.15%	14.87	449.81	0.99	61.24	86%	97.917	95.097	94.335	94.716	2.820	97.793	0.038	95.075	94.313	**94.694**	2.718
																	4.71																													
CLEARPATH (WEST LEG)	218A	215			0.32		0.32	0.32	10.00	1.95	11.95						0.69		0.69	104.19	72.30						72.30	Circular	0.600	600	609.60	0.15%	99.57	248.09	0.85	175.79	29%	97.158	95.068	94.458	94.763	2.090	97.871		94.918	94.309	94.779	2.953
CLEARPATH (NORTH LEG)	212	213			0.07		0.07	0.07	10.00	0.69	10.69						0.15		0.15	104.19	15.82						15.82	Circular	0.600	600	609.60	0.15%	35.36	248.09	0.85	232.27	6%	97.293	95.083	94.474	94.779	2.209	97.507		95.030	94.421	94.726	2.477
CLEARPATH (NORTH LEG)	213	214			0.10		0.10	0.17	10.69	0.72	11.41						0.22		0.37	100.67	37.11						37.11	Circular	0.600	600	609.60	0.15%	36.69	248.09	0.85	210.98	15%	97.507	95.030	94.421	94.726	2.477	97.580		94.975	94.366	94.671	2.605
CLEARPATH (NORTH LEG)	214	215			0.10		0.10	0.27	11.41	0.75	12.16						0.22		0.59	97.28	56.95						56.95	Circular	0.600	600	609.60	0.15%	38.12	248.09	0.85	191.13	23%	97.580	94.975	94.366	94.671	2.605	97.871		94.918	94.309	94.613	2.953
COUNTRY GLEN WAY	215	EXMH201					0.00	**0.59**	12.16	0.28	12.44						0.00		**1.28**	94.02	120.28						120.28	Circular	0.600	600	609.60	0.15%	14.23	248.09	0.85	127.81	48%	97.871	94.918	94.309	94.613	2.953	97.150		94.897	94.287	**94.592**	2.253
							3.04										**1.28**																													
FUTURE COMMERCIAL (IBI 2013)	EXMH205B	EXMH205							14.15	0.23	**14.38**						0.00	7.74	7.74	86.41	668.80						668.80	Circular	**975**	**975**	990.60	0.11%	13.84	775.41	1.01	106.61	86%	**97.470**	95.506	94.515	95.010	1.964	97.430		95.491	94.500	94.995	1.939
FUTURE COMMERCIAL (IBI 2013)	EXMH206	EXMH205							10.43	0.13	10.56						0.00	1.23	1.23	101.98	125.43						125.43	Circular	375	375	381.00	0.96%	12.00	179.22	1.57	53.79	70%	**98.590**	95.596	95.215	95.406	2.994	97.430		95.481	95.100	95.291	1.949
COUNTRY GLEN WAY	EXMH205	EXMH204							**14.38**	0.41	14.79						0.00	0.33	9.30	85.62	796.25						796.25	Circular	**1350**	**1350**	1371.60	0.10%	29.07	1760.81	1.19	964.57	45%	**97.430**	95.512	94.140	94.826	1.918	97.570		95.482	94.110	94.796	2.088
COUNTRY GLEN WAY	EXMH204	EXMH203							14.79	1.02	15.81						0.00	0.27	9.57	84.26	806.33						806.33	Circular	**1350**	**1350**	1371.60	0.12%	80.04	1928.87	1.31	1122.55	42%	**97.570**	95.462	94.090	94.776	2.108	97.940		95.362	93.990	94.676	2.578
COUNTRY GLEN WAY	EXMH203	EXMH202							15.81	0.76	16.57						0.00	0.30	14.58	81.04	1181.22						1181.22	Circular	**1350**	**1350**	1371.60	0.07%	45.72	1473.20	1.00	291.99	80%	**97.940**	95.342	93.970	**94.656**	2.598	97.380		95.312	93.940	94.626	2.068
COUNTRY GLEN WAY	EXMH202	EXMH201							16.57	0.28	**16.85**						0.00	0.89	15.47	78.80	1218.77						1218.77	Circular	**1350**	**1350**	1371.60	0.06%	15.65	1363.92	0.92	145.15	89%	**97.380**	95.272	93.900	94.586	2.108	97.270		95.262	93.890	94.576	2.008
COUNTRY GLEN WAY	EXMH201	EXMH200							**16.85**	0.71	17.56						0.00		16.75	78.01	1306.31						1306.31	Circular	**1500**	**1500**	1524.00	0.13%	61.98	2658.92	1.46	1352.60	49%	98.000	95.354	93.830	**94.592**	2.646	98.000		95.274	93.750	94.512	2.726
COUNTRY GLEN WAY/CAMPEAU	EXMH200	EXMH303							17.56	0.32	**17.88**						0.00		16.75	76.10	1274.31						1274.31	Circular	**1500**	**1500**	1524.00	0.10%	24.50	2332.02	1.28	1057.71	55%	98.000	95.194	93.670	94.432	2.806	98.100		95.169	93.645	94.407	2.931
DONUM LANE OUTLET (TO CAMPEAU POND)																																										
ARCADIAN	208	207			0.29		0.29	0.29	10.00	1.10	11.10						0.63		0.63	104.19	65.52						65.52	Circular	0.375	375	381.00	0.35%	62.45	108.21	0.95	42.69	61%	**96.490**	94.249	93.868	94.058	2.241	**96.434**		94.030	93.649	93.840	2.403
FEEDMILL	207	206			0.12		0.12	0.41	11.10	0.52	11.62						0.26		0.89	98.74	87.78						87.78	Circular	0.450	450	457.20	0.35%	33.47	175.96	1.07	88.18	50%	**96.434**	94.030	93.573	93.802	2.403	**96.248**		93.913	93.456	93.684	2.334
FEEDMILL	206	205			0.25		0.25	0.66	11.62	0.66	12.28						0.54		1.43	96.36	137.91						137.91	Circular	0.525	525	533.40	0.21%	36.42	205.60	0.92	67.69	67%	**96.248**	93.913	93.380	93.646	2.334	**96.284**		93.837	93.303	93.570	2.447
BLOCK MT-5	CB102	CBMH103			0.14		0.14	0.14	10.00	0.29	10.29						0.30		0.30	104.19	31.63						31.63	Circular	Circular	250	254.00	1.00%	21.32	62.04	1.22	30.41	51%	**96.300**	94.812	94.558	94.685	1.488	**96.300**		94.599	**94.345**	94.472	1.701
BLOCK MT-8	CBMH103	204A			0.07		0.07	0.21	10.29	0.60	10.89						0.15		0.46	102.68	46.76						46.76	Circular	Circular	375	381.00	1.10%	60.98	191.61	1.68	144.86	24%	**96.300**	94.726	94.345	94.535	**1.574**	**96.250**		94.056	93.675	93.866	2.194
BLOCK MT-8	204A	204					0.00	0.21	10.89	0.10	11.00						0.00		0.46	99.69	45.40						45.40	Circular	0.375	375	381.00	0.90%	9.50	173.52	1.52	128.13	26%	**96.258**	94.056	93.675	**93.866**	2.201	**96.108**		**93.971**	93.590	93.780	2.137
CREEKWAY	204	205			0.15		0.15	0.36	11.00	0.42	11.42						0.33		0.78	99.20	77.44						77.44	Circular	0.375	375	381.00	0.48%	27.97	126.72	1.11	49.29	61%	**96.108**	**93.971**	93.590	93.780	2.137	**96.284**		**93.837**	93.456	93.646	2.447
FEEDMILL	205	201B					0.00	1.02	12.28	0.50	12.78						0.00		2.21	93.53	206.87						206.87	Circular	0.600	600	609.60	0.24%	32.17	313.81	1.08	106.94	66%	**96.284**	**93.837**	93.227	93.532	2.447	**95.886**		**93.759**	93.150	93.455	2.127
FEEDMILL	201B	201			0.15		0.15	1.17	12.78	0.50	13.28						0.33		2.54	91.51	232.16						232.16	Circular	0.600	600	609.60	0.24%	32.44	313.81	1.08	81.65	74%	**95.886**	**93.759**	93.150	93.455	2.127	**95.971**		**93.682**	93.072	93.377	2.289
BLOCK MT-12	CBMH107	202A			0.14		0.14	0.14	10.00	0.78	10.78						0.30		0.30	104.19	31.63						31.63	Circular	300	300	304.80	0.39%	40.52	63.11	0.86	31.48	50%	**95.500**	94.235	93.930	94.082	1.265	**96.000**		94.076	93.771	**93.924**	1.924
BLOCK MT-8	202A	202			0.05		0.05	0.19	10.78	0.32	11.10						0.11		0.41	100.24	41.30						41.30	Circular	300	300	304.80	0.34%	15.53	58.82	0.81	17.52	70%	**96.000**	94.076	93.771	**93.924**	1.924	**95.900**		94.023	93.719	**93.871**	1.877
CREEKWAY	203	202			0.27		0.27	0.27	10.00	1.06	11.06						0.59		0.59	104.19	61.00						61.00	Circular	**0.675**	**675**	685.80	0.16%	60.35	350.77	0.95	289.77	17%	**96.230**	94.310	93.625	93.968	1.920	**95.916**		94.214	**93.528**	93.871	1.703
CREEKWAY	202	201A			0.19		0.19	0.65	11.10	0.90	12.00						0.41		1.41	98.71	139.13						139.13	Circular	**0.675**	**675**	685.80	0.16%	51.04	350.77	0.95	211.64	40%	**95.916**	94.214	**93.528**	**93.871**	1.703	**95.989**		94.132	**93.446**	93.789	1.857
CREEKWAY *See note in Legend	201A	201					0.00	0.65	12.00	0.09	12.08						0.00		1.41	94.71	133.48						133.48	Circular	0.450	450	457.20	0.43%	6.24	195.49	1.19	62.01	68%	**95.989**	93.904	**93.446**	93.675	2.086	**95.971**	0.500	93.877	**93.420**	93.648	2.094
BLOCK MT-13	201	200A	0.15	0.02			0.17	1.99	13.28	1.00	14.28						0.29		4.23	89.57	379.02						379.02	Circular	0.750	750	762.00	0.15%	59.47	449.81	0.99	70.79	84%	**95.971**	**93.682**	**92.920**	93.301	2.289	**95.010**		**93.592**	92.830	93.211	1.418
BLOCK MT-12	CB108	CB109		0.09			0.09	0.09	10.00	0.29	10.29						0.15		0.15	104.19	15.12						15.12	Circular	525	375	381.00	1.00%	27.61	182.91	1.60	167.79	8%	**95.400**	93.887	93.506	93.696	1.513	**94.950**		93.610	93.229	**93.420**	1.340
BLOCK MT-12	CB109	105A		0.07			0.07	0.16	10.29	0.20	10.49						0.11		0.26	102.70	26.50						26.50	Circular	525	375	381.00	1.00%	19.61	182.91	1.60	156.42	14%	**94.950**	93.610	93.229	93.420	1.340	**94.950**		93.414	93.033	**93.224**	1.536
BLOCK MT-12	105A	200A					0.00	0.16	10.49	0.05	10.54						0.00		0.26	101.67	26.23						26.23	Circular	525	375	381.00	1.00%	5.06	182.91	1.60	156.68	14%	**95.200**	93.414	93.033	93.224	1.786	**95.010**		93.364	92.983	**93.173**	1.646
FEEDMILL/DONUM LANE	200A	200					0.00	**2.15**	14.28	0.38	14.67						0.00		**4.49**	85.95	385.87						385.87	Circular	0.825	825	838.20	0.15%	24.14	579.98	1.05	194.10	67%	**95.010**	**93.592**	92.754	**93.173**	1.418	**95.326**		**93.556**	92.718	93.137	1.770
							2.15										**4.49**																													
DONUM LANE	FUTURE	200				1.68	1.68	1.68	10.00	0.00	10.00	0.00		0.00	76.81	0.00	0.00		0.00	104.19	0.00	3.74		3.74	122.14	456.36		456.36																				
DONUM LANE	200	EX100					0.00	3.83	**14.67**	0.40	15.07	0.00		0.00	62.57	0.00	0.00		4.49	84.65	380.06	0.00		3.74	99.14	370.42		750.48	Circular	**975**	**975**	990.60	0.26%	37.12	1192.13	1.55	441.65	63%	95.400	**93.556**	92.566	93.061	1.844	95.470		93.460	92.469	92.964	2.010
DONUM LANE/CAMPEAU DRIVE	EX101	EX100				0.30	13.91	13.91	**17.69**	0.54	**18.23**	0.00	10.97	10.97	56.07	615.09	0.00	9.57	9.57	75.77	725.08	0.67	5.69	6.36	88.69	564.08		1904.25	Circular	**1500**	**1500**	1524.00	0.11%	43.55	2445.85	1.34	541.59	78%	95.520	93.515	91.991	92.753	2.005	95.470		93.468	91.944	92.706	2.002
CAMPEAU POND	EX100	POND					0.00	17.74	**18.23**	0.15	**18.38**	0.00		10.97	55.06	604.03	0.00		14.06	74.39	1045.88	0.00		10.10	87.07	879.11		2529.02	Circular	**1800**	**1800**	1828.80	0.19%	17.53	5227.09	1.99	2698.07	48%	95.470	93.468	91.631	92.545	2.002	95.430		93.426	91.597	92.511	2.004

Design Parameter	
Manning's Coefficient	0.013

Legend

89.232	Proposed Mainline Sewers
89.232	Proposed Storage Sewers
89.232	Proposed Connection to Courtyard CB
89.232	Existing (As-Built Information)
*Note for sewer pipes over capacity:	Sewer operating under pressure to provide flow control

Appendix E1

Modelling Schematics

Appendix E2

CB Tables

STREET CATCHBASINS

Street Name	CB ID Number	T/G	Inlet		Outlet		Return Period (years)	Rational Method Capture Rate (1:5 yr) (L/s)	Max Depth (100 yr) (m)	1:100 Yr Restricted Capture Rate (L/s)	ICD TYPE
			Pipe Dia. (mm)	Invert	Pipe Dia. (mm)	Invert					
Feedmill	CB1	97.15	-	-	200	95.35	1:5	29.00	1.9	35.00	MHF_IPEX_TYPE_B
	CB2	97.15	-	-	200	95.35	1:5	10.00	1.85	25.00	MHF_IPEX_TYPE_A
	CB3	97.3	-	-	200	95.50	1:5	6.00	0.63	14.00	MHF_IPEX_TYPE_A
	CB4	97.3	-	-	200	95.50	1:5	22.00	1.93	25.00	MHF_IPEX_TYPE_A
	CB5	96.85	-	-	200	95.05	1:5	3.00	0.81	5.00	MHF_IPEX_TYPE_A
	CB4A	96.9	-	-	200	95.10	1:5	5.00	0.71	8.00	MHF_IPEX_TYPE_A
	CB5A	96.9	-	-	200	95.10	1:5	13.00	1.83	22.00	MHF_IPEX_TYPE_A
	CB6	96.85	-	-	200	95.05	1:5	6.00	0.9	10.00	MHF_IPEX_TYPE_A
	CB7	96.8	-	-	200	95.00	1:5	3.00	0.9	5.00	MHF_IPEX_TYPE_A
	CB8	96.8	-	-	200	95.00	1:5	6.00	0.98	10.00	MHF_IPEX_TYPE_A
	CB9	96.7	-	-	200	94.90	1:5	3.00	1.01	4.00	MHF_IPEX_TYPE_A
	CB10	96.7	-	-	200	94.90	1:5	6.00	1.09	10.00	MHF_IPEX_TYPE_A
	CBMH11	96.2	200	94.45	250	94.40	1:5	28.00	1.90	35.00	MHF_IPEX_TYPE_B
	CB12	96.2	-	-	200	94.51	1:5	-	-	-	NO ICD
	CB13	96	-	-	200	94.20	1:5	42.00	1.95	47.00	MHF_IPEX_TYPE_C
	CB14	96	-	-	200	94.20	1:5	11.00	1.82	24.00	MHF_IPEX_TYPE_A
	CB15	95.6	-	-	200	93.80	1:5	23.00	1.96	25.00	MHF_IPEX_TYPE_A
	CB16	95.6	-	-	200	93.80	1:5	11.00	1.29	20.00	MHF_IPEX_TYPE_A
Clearpath	CB17	96.92	-	-	200	95.12	1:5	21.50	1.96	25.00	MHF_IPEX_TYPE_A
	CB18	96.92	-	-	200	95.12	1:5	21.50	1.96	25.00	MHF_IPEX_TYPE_A
	CB19	97.07	-	-	200	95.27	1:5	15.00	1.86	25.00	MHF_IPEX_TYPE_A
	CB20	97.07	-	-	200	95.27	1:5	15.00	1.86	25.00	MHF_IPEX_TYPE_A
	CB21	97.17	-	-	200	95.37	1:5	11.50	1.59	23.00	MHF_IPEX_TYPE_A
	CB22	97.17	-	-	200	95.37	1:5	11.50	1.59	23.00	MHF_IPEX_TYPE_A
	CB23	97.22	-	-	200	95.42	1:5	11.50	1.53	22.00	MHF_IPEX_TYPE_A
	CB24	97.22	-	-	200	95.42	1:5	11.50	1.53	22.00	MHF_IPEX_TYPE_A
	CB25	97.07	-	-	200	95.27	1:5	8.00	0.82	16.00	MHF_IPEX_TYPE_A
	CB26	97.07	-	-	200	95.27	1:5	8.00	0.82	16.00	MHF_IPEX_TYPE_A
	CB27	96.77	-	-	200	95.08	1:5	-	-	-	NO ICD
	CBMH28	96.77	200	95.02	250	94.97	1:5	27.00	1.92	33.00	MHF_IPEX_TYPE_B
	CB29	96.57	-	-	200	94.77	1:5	16.50	1.95	22.00	MHF_IPEX_TYPE_A
	CB30	96.57	-	-	200	94.77	1:5	16.50	1.95	22.00	MHF_IPEX_TYPE_A
Silverberry	CB31	96.77	-	-	200	94.97	1:5	21.00	1.97	24.00	MHF_IPEX_TYPE_A
	CB32	96.77	-	-	200	94.97	1:5	21.00	1.97	24.00	MHF_IPEX_TYPE_A
	CB33	97.02	-	-	200	95.22	1:5	22.00	1.96	25.00	MHF_IPEX_TYPE_A
	CB34	97.02	-	-	200	95.22	1:5	22.00	1.96	25.00	MHF_IPEX_TYPE_A
Woodily	CB35	96.67	-	-	200	94.87	1:5	21.50	2.01	23.00	MHF_IPEX_TYPE_A
	CB36	96.67	-	-	200	94.87	1:5	21.50	2.01	23.00	MHF_IPEX_TYPE_A
	CB37	96.87	-	-	200	95.07	1:5	21.00	1.96	24.00	MHF_IPEX_TYPE_A
	CB38	96.87	-	-	200	95.07	1:5	21.00	1.96	24.00	MHF_IPEX_TYPE_A
Arcadian	CB39	96.15	-	-	200	94.35	1:5	18.00	1.91	25.00	MHF_IPEX_TYPE_A
	CB40	96.15	-	-	200	94.35	1:5	18.00	1.91	25.00	MHF_IPEX_TYPE_A
	CBMH41	96.2	200	94.45	250	94.40	1:5	15.00	1.87	25.00	MHF_IPEX_TYPE_A
	CB42	96.2	-	-	200	94.51	1:5	15.00	1.87	25.00	MHF_IPEX_TYPE_A
Creekway	CB43	95.9	-	-	200	94.10	1:5	17.00	1.89	25.00	MHF_IPEX_TYPE_A
	CB44	95.9	-	-	200	94.10	1:5	17.00	1.89	25.00	MHF_IPEX_TYPE_A
	CB45	95.71	-	-	200	93.91	1:5	31.00	1.98	43.00	MHF_IPEX_TYPE_C
	CB46	95.71	-	-	200	93.91	1:5	31.00	1.98	43.00	MHF_IPEX_TYPE_C
	CB47	95.6	-	-	200	93.80	1:5	21.50	1.95	31.00	MHF_IPEX_TYPE_B
	CB48	95.6	-	-	200	93.80	1:5	21.50	1.95	31.00	MHF_IPEX_TYPE_B
	CB106	95.77	-	-	200	93.60	1:5	-	-	-	NO ICD

COURTYARD ICD TABLE

STREET	CB ID Number	T/G	INLET				OUTLET				1:100 Yr Restricted Flow (L/s)	ICD TYPE
			Pipe Dia. (mm)	Material	Pipe Length (m)	Invert	Pipe Dia. (mm)	Material	Pipe Length (m)	Invert		
BLOCK MT-12	CB108	95.40	-	-	-	-	375	HDPE	27.61	93.51	25.00	MHF_IPEX_TYPE_A
	CB109	95.35	375	HDPE	27.61	93.23	375	HDPE	19.61	93.23	24.00	MHF_IPEX_TYPE_A
	CB107	95.50	-	-	-	-	300	PVC	33.61	93.93	39.00	MHF_IPEX_TYPE_C
	CBMH202A	95.80	300	PVC	33.61	93.77	300	PVC	24.48	93.77	-	NO ICD
	CBMH104	94.75	-	-	-	-	375	HDPE	3.43	92.81	32.00	MHF_IPEX_TYPE_B
BLOCK MT-5	CB102	96.22	-	-	-	-	250	PVC	21.32	94.55	-	NO ICD
	CBMH103	96.30	250	PVC	21.32	94.34	375	PVC	60.98	94.34	-	NO ICD
AMENITY	CBMH2	97.25	-	-	-	-	300	PVC	12.74	95.45	24.00	MHF_IPEX_TYPE_A
	CBMH114	97.40	-	-	-	-	300	PVC	18.66	95.13	36.00	MHF_IPEX_TYPE_B
	CBMH115	97.30	300	PVC	18.66	95.07	300	PVC	19.63	95.07	-	NO ICD
	CBMH116	97.25	300	PVC	19.63	95.00	300	PVC	23.51	95.00	-	NO ICD
	CB111	95.90	-	-	-	-	200	PVC	34.15	95.00	-	NO ICD
BLOCK 2	PARK ST	96.60	-	-	-	-	250	PVC	8.00	94.70	58.00	CUSTOM 142 mm ICD
BLOCK 1	CB110	97.24	-	-	-	-	200	PVC	5.35	94.79	-	NO ICD

*HDPE to be Non-Perforated Smooth Interior

Appendix E3

HGL Analysis

ARCADIA ALL STAGES HGL ANALYSIS

MH ID	USF Elevation (m)	1:2 Year Event (12 hr SCS)		1:5 Year Event (12 hr SCS)		1:10 Year Event (12 hr SCS)		1:25 Year Event (12 hr SCS)		1:50 Year Event (12 hr SCS)		1:100 Year Event (12 hr SCS)		1:100 Year Event (24 hr SCS)		1:100 Year Event (3hr Chicago)		Climate Change Event (12 hr SCS)		Historical Storm July 1979		Historical Storm August 1988		Historical Storm August 1996	
		Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)
OTT_SCS24_100_	'S6 MTO_SC	'S6 MTO_SCS12_2 Storages'		'S6 MTO_SCS12_5 Storages'		'S6 MTO_SCS12_10 Storage		'S6 MTO_SCS12_25 Storage		'S6 MTO_SCS12_50 Storag		'S6 MTO_SCS12_100 Storag		'S6 OTT_SCS24_100 Storage		'S6 OTT_CHI3_100 Storages'		'S6 MTO_SCS12_120 Storag		'S6 HIST_1979 Storages'		'S6 HIST_1988 Storages'		'S6 HIST_1996 Storages'	
		'S6 MTO_SCS12_2 Junctions		'S6 MTO_SCS12_5 Junctions		'S6 MTO_SCS12_10 Junction		'S6 MTO_SCS12_25 Junction		'S6 MTO_SCS12_50 Junctior		'S6 MTO_SCS12_100 Junctic		'S6 OTT_SCS24_100 Junctio		'S6 OTT_CHI3_100 Junctions		'S6 MTO_SCS12_120 Junctic		'S6 HIST_1979 Junctions'		'S6 HIST_1988 Junctions'		'S6 HIST_1996 Junctions'	
Inlet Node	USF (m)	MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)		MaxHGL (m)	
EXMH201	-	94.37	-	94.53	-	94.62	-	94.72	-	94.78	-	94.83	-	94.81	-	94.80	-	94.95	-	94.76	-	94.78	-	94.64	-
EXMH203	-	94.55	-	94.68	-	94.75	-	94.83	-	94.87	-	94.91	-	94.90	-	94.89	-	95.02	-	94.86	-	94.87	-	94.77	-
CBMH114	-	95.27	-	95.30	-	95.32	-	95.33	-	95.34	-	95.35	-	95.35	-	95.36	-	95.49	-	95.33	-	95.34	-	95.33	-
CBMH115	-	95.21	-	95.24	-	95.26	-	95.28	-	95.29	-	95.31	-	95.30	-	95.33	-	95.45	-	95.28	-	95.29	-	95.27	-
CBMH116	-	95.12	-	95.14	-	95.16	-	95.20	-	95.23	-	95.26	-	95.25	-	95.27	-	95.40	-	95.21	-	95.23	-	95.17	-
221	96.04	94.99	1.05	95.04	1.00	95.08	0.96	95.13	0.91	95.16	0.88	95.19	0.85	95.18	0.86	95.19	0.85	95.31	0.73	95.14	0.90	95.15	0.89	95.09	0.95
219	-	94.85	-	94.94	-	95.01	-	95.07	-	95.10	-	95.14	-	95.12	-	95.13	-	95.25	-	95.09	-	95.09	-	95.02	-
224A	96.04	94.82	1.22	94.91	1.13	94.98	1.06	95.04	1.00	95.07	0.97	95.11	0.93	95.09	0.95	95.10	0.94	95.22	0.82	95.06	0.98	95.06	0.98	94.99	1.05
CBMH2	-	95.54	-	95.56	-	95.57	-	95.57	-	95.57	-	95.57	-	95.57	-	95.57	-	95.57	-	95.57	-	95.57	-	95.57	-
224	-	94.75	-	94.83	-	94.90	-	94.96	-	94.99	-	95.03	-	95.02	-	95.02	-	95.12	-	94.98	-	94.99	-	94.91	-
211	-	95.09	-	95.35	-	95.61	-	95.80	-	95.86	-	95.92	-	95.88	-	95.89	-	96.08	-	95.88	-	95.83	-	95.63	-
210	-	95.08	-	95.34	-	95.60	-	95.79	-	95.85	-	95.90	-	95.87	-	95.88	-	96.06	-	95.87	-	95.82	-	95.62	-
216	-	95.07	-	95.34	-	95.59	-	95.78	-	95.84	-	95.89	-	95.85	-	95.86	-	96.05	-	95.85	-	95.80	-	95.61	-
217	-	95.06	-	95.31	-	95.56	-	95.74	-	95.80	-	95.85	-	95.82	-	95.82	-	96.01	-	95.81	-	95.77	-	95.58	-
218	-	95.03	-	95.27	-	95.50	-	95.67	-	95.72	-	95.77	-	95.74	-	95.75	-	95.93	-	95.74	-	95.69	-	95.52	-
213A	-	95.08	-	95.34	-	95.59	-	95.78	-	95.84	-	95.89	-	95.86	-	95.87	-	96.06	-	95.86	-	95.81	-	95.61	-
214A	-	95.06	-	95.32	-	95.56	-	95.75	-	95.80	-	95.86	-	95.82	-	95.83	-	96.02	-	95.82	-	95.77	-	95.58	-
212	95.28	94.59	0.69	94.63	0.65	94.68	0.60	94.75	0.53	94.80	0.48	94.85	0.43	94.83	0.45	94.82	0.46	94.97	0.31	94.79	0.49	94.78	0.50	94.69	0.59
213	95.36	94.59	0.77	94.63	0.73	94.68	0.68	94.75	0.61	94.80	0.56	94.85	0.51	94.83	0.53	94.82	0.54	94.97	0.39	94.79	0.57	94.79	0.57	94.69	0.67
214	95.47	94.57	0.90	94.62	0.85	94.67	0.80	94.75	0.72	94.80	0.67	94.85	0.62	94.83	0.64	94.82	0.65	94.97	0.50	94.79	0.68	94.79	0.68	94.69	0.78
218A	95.52	94.61	0.91	94.65	0.87	94.69	0.83	94.77	0.75	94.81	0.71	94.86	0.66	94.85	0.67	94.84	0.68	94.98	0.54	94.80	0.72	94.81	0.71	94.71	0.81
215	95.43	94.55	0.88	94.60	0.83	94.66	0.77	94.75	0.68	94.80	0.63	94.85	0.58	94.83	0.60	94.82	0.61	94.97	0.46	94.78	0.65	94.79	0.64	94.68	0.75
208	-	93.98	-	94.00	-	94.01	-	94.02	-	94.03	-	94.05	-	94.05	-	94.05	-	94.27	-	94.02	-	94.09	-	94.03	-
207	94.89	93.76	1.13	93.79	1.10	93.82	1.07	93.86	1.03	93.89	1.00	94.00	0.89	94.00	0.89	93.91	0.98	94.21	0.68	93.87	1.02	94.05	0.84	93.86	1.03
206	95.09	93.62	1.47	93.67	1.42	93.71	1.38	93.77	1.32	93.82	1.27	93.94	1.15	93.94	1.15	93.83	1.26	94.13	0.96	93.78	1.31	93.98	1.11	93.75	1.34
205	94.24	93.51	0.73	93.58	0.66	93.63	0.61	93.70	0.54	93.76	0.48	93.87	0.37	93.87	0.37	93.75	0.49	94.05	0.19	93.72	0.52	93.92	0.32	93.66	0.58
201B	94.24	93.43	0.81	93.50	0.74	93.56	0.68	93.64	0.60	93.70	0.54	93.80	0.44	93.80	0.44	93.65	0.59	93.96	0.28	93.70	0.54	93.84	0.40	93.56	0.68
201	94.54	93.30	1.24	93.41	1.13	93.49	1.05	93.58	0.96	93.65	0.89	93.73	0.81	93.73	0.81	93.55	0.99	93.88	0.66	93.67	0.87	93.77	0.77	93.53	1.01
200A	-	93.21	-	93.33	-	93.42	-	93.51	-	93.57	-	93.65	-	93.64	-	93.52	-	93.88	-	93.64	-	93.68	-	93.51	-
200	-	93.21	-	93.33	-	93.41	-	93.51	-	93.57	-	93.65	-	93.62	-	93.51	-	93.88	-	93.63	-	93.62	-	93.51	-
CB102	-	94.67	-	94.69	-	94.71	-	94.73	-	94.75	-	94.77	-	94.77	-	94.92	-	94.85	-	94.73	-	94.82	-	94.74	-
CBMH103	94.72	94.45	0.27	94.47	0.25	94.48	0.24	94.49	0.23	94.50	0.22	94.51	0.21	94.51	0.21	94.54	0.18	94.53	0.19	94.49	0.23	94.52	0.20	94.50	0.22
204A	-	93.81	-	93.85	-	93.88	-	93.92	-	93.96	-	94.06	-	94.06	-	94.11	-	94.29	-	93.93	-	94.11	-	93.93	-
204	-	93.78	-	93.83	-	93.86	-	93.89	-	93.93	-	94.04	-	94.04	-	94.06	-	94.26	-	93.90	-	94.09	-	93.90	-
203	-	94.12	-	94.59	-	94.92	-	95.20	-	95.26	-	95.31	-	95.28	-	95.32	-	95.40	-	95.32	-	95.25	-	94.97	-
202	-	94.12	-	94.59	-	94.92	-	95.20	-	95.26	-	95.31	-	95.28	-	95.31	-	95.40	-	95.31	-	95.25	-	94.97	-
201A	-	94.12	-	94.59	-	94.92	-	95.19	-	95.25	-	95.30	-	95.27	-	95.30	-	95.39	-	95.30	-	95.24	-	94.96	-
CBMH107	-	94.14	-	94.62	-	94.98	-	95.23	-	95.29	-	95.34	-	95.31	-	95.35	-	95.43	-	95.35	-	95.28	-	95.02	-
202A	-	94.13	-	94.61	-	94.95	-	95.21	-	95.27	-	95.32	-	95.29	-	95.33	-	95.41	-	95.33	-	95.26	-	94.99	-
CB108	-	93.56	-	93.57	-	93.58	-	93.59	-	93.61	-	93.68	-	93.68	-	93.60	-	93.88	-	93.65	-	93.71	-	93.58	-
CB109	-	93.31	-	93.36	-	93.44	-	93.54	-	93.60	-	93.67	-	93.68	-	93.52	-	93.88	-	93.64	-	93.70	-	93.52	-
105A	-	93.21	-	93.34	-	93.42	-	93.52	-	93.58	-	93.65	-	93.65	-	93.52	-	93.88	-	93.64	-	93.69	-	93.51	-
CBMH104	-	93.21	-	93.34	-	93.42	-	93.52	-	93.58	-	93.65	-	93.65	-	93.52	-	93.88	-	93.64	-	93.68	-	93.51	-
Ex._508	94.73	93.09	1.64	93.30	1.43	93.45	1.28	93.62	1.11	93.71	1.02	93.80	0.93	93.78	0.95	93.60	1.13	93.95	0.78	93.78	0.95	93.83	0.90	93.52	1.21
116	94.10	93.16	0.94	93.30	0.80	93.42	0.68	93.59	0.51	93.69	0.41	93.77	0.33	93.76	0.34	93.62	0.48	93.88	0.22	93.77	0.33	93.79	0.31	93.49	0.61
173	94.17	93.17	1.00	93.24	0.93	93.32	0.85	93.44	0.73	93.52	0.65	93.60	0.57	93.59	0.58	93.47	0.70	93.76	0.41	93.61	0.56	93.64	0.53	93.44	0.73
120	93.90	93.08	0.82	93.20	0.70	93.29	0.61	93.39	0.51	93.48	0.42	93.56	0.34	93.55	0.35	93.42	0.48	93.76	0.14	93.57	0.33	93.59	0.31	93.42	0.48
171	93.98	93.24	0.74	93.27	0.71	93.30	0.68	93.41	0.57	93.49	0.49	93.56	0.42	93.55	0.43	93.43	0.55	93.76	0.22	93.58	0.40	93.59	0.39	93.44	0.54
121	93.89	93.08	0.81	93.20	0.69	93.29	0.60	93.36	0.53	93.45	0.44	93.53	0.36	93.51	0.38	93.39	0.50	93.76	0.13	93.55	0.34	93.56	0.33	93.41	0.48
122	93.84	93.08	0.76	93.20	0.64	93.29	0.55	93.36	0.48	93.41	0.43	93.51	0.33	93.49	0.35	93.38	0.46	93.76	0.08	93.51	0.33	93.51	0.33	93.40	0.44
192	95.08	93.33	1.75	93.39	1.69	93.52	1.56	93.69	1.39	93.77	1.31	93.85	1.23	93.83	1.25	93.67	1.41	94.00	1.08	93.84	1.24	93.88	1.20	93.56	1.52
193	94.86	93.13	1.73	93.33	1.53	93.47	1.39	93.63	1.23	93.71	1.15	93.80	1.06	93.78	1.08	93.61	1.25	93.93	0.93	93.79	1.07	93.83	1.03	93.53	1.33
194	94.74	93.09	1.65	93.32	1.42	93.46	1.28	93.61	1.13	93.70	1.04	93.78	0.96	93.76	0.98	93.59	1.15	93.92	0.82	93.77	0.97	93.81	0.93	93.52	1.22
191	95.05	93.46	1.59	93.48	1.57	93.54	1.51	93.70	1.35	93.79	1.26	93.87	1.18	93.85	1.20	93.68	1.37	94.01	1.04	93.85	1.20	93.89	1.16	93.57	1.48
Ex._509	94.54	93.08	1.46	93.29	1.25	93.43	1.11	93.60	0.94	93.69	0.85	93.77	0.77	93.75	0.79	93.58	0.96	93.91	0.63	93.75	0.79	93.80	0.74	93.51	1.03
Ex._510	94.14	93.08	1.06	93.25	0.89	93.38	0.76	93.53	0.61	93.62	0.52	93.70	0.44	93.68	0.46	93.51	0.63	93.83	0.31	93.70	0.44	93.73	0.41	93.48	0.66
127	94.16	93.08	1.08	93.27	0.89	93.41	0.75	93.56	0.60	93.64	0.52	93.71	0.45	93.70	0.46	93.55	0.61	93.83	0.33	93.72	0.44	93.75	0.41	93.49	0.67
128	94.04	93.08	0.96	93.27	0.77	93.41	0.63	93.56	0.48	93.64	0.40	93.71	0.33	93.70	0.34	93.55	0.49	93.83	0.21	93.72	0.32	93.75	0.29	93.49	0.55
124	93.87	93.08	0.79	93.20	0.67	93.29	0.58	93.38	0.49	93.46	0.41	93.54	0.33	93.52	0.35	93.39	0.48	93.76	0.11	93.56	0.31	93.57	0.30	93.41	0.46
123	93.87	93.08	0.79	93.20	0.67	93.29	0.58	93.38	0.49	93.46	0.41	93.54	0.33	93.52	0.35	93.39	0.48	93.76	0.11	93.55	0.32	93.57	0.30	93.40	0.47
160	94.09	93.08	1.01	93.22	0.87	93.32	0.77	93.46	0.63	93.57	0.52	93.65	0.44	93.63	0.46	93.50	0.59	93.76	0.33	93.64	0.45	93.67	0.42	93.45	0.64
172	94.54	93.44	1.10	93.46	1.08	93.47	1.07	93.47	1.07	93.51	1.03	93.57	0.97	93.55	0.99	93.48	1.06	93.76	0.78	93.58	0.96	93.60	0.94	93.47	1.07
118	94.01	93.08	0.93	93.20	0.81	93.30	0.71	93.45	0.56	93.55	0.46	93.63	0.38	93.62	0.39	93.48	0.53	93.76	0.25	93.63	0.38	93.65	0.36	93.44	0.57
119	94.01	93.08	0.93	93.20	0.81	93.29	0.72	93.43	0.58	93.53	0.48	93.60	0.41	93.59	0.42	93.46	0.55	93.76	0.25	93.61	0.40	93.63	0.38	93.43	0.58
161	94.63	94.13	0.50	94.15	0.48	94.16	0.47	94.17	0.46	94.17	0.46	94.17	0.46	94.17	0.46	94.17	0.46	94.17	0.46	94.17	0.46	94.17	0.46	94.17	0.46
162	94.79	94.10	0.69	94.13	0.66	94.14	0.65	94.16	0.63	94.16	0.63	94.16	0.63	94.16	0.63	94.17	0.62	94.17	0.62	94.16	0.63	94.16	0.63	94.15	0.64
180	94.02	93.08	0.94	93.20	0.82	93.30	0.72	93.44	0.58	93.52	0.50	93.59	0.43	93.58	0.44	93.42	0.60	93.76	0.26	93.60	0.42	93.63	0.39	93.44	0.58
PAINE_POND	-	93.08	-	93.20	-	93.29	-	93.36	-	93.40	-	93.51	-	93.49	-	93.38	-	93.76	-	93.47	-	93.44	-	93.39	-
104_(Ex-Stm)	-	93.23	-	93.34	-	93.42	-	93.52	-	93.59	-	93.66	-	93.67	-	93.52	-	93.89	-	93.65	-	93.75	-	93.52	-
103_(Ex-Stm)	-	93.22	-	93.34	-	93.42	-	93.51	-	93.57	-	93.65	-	93.63	-	93.52	-	93.89	-	93.64	-	93.62	-	93.52	-
100_(Ex-Stm)	-	93.21	-	93.33	-	93.41	-	93.51	-	93.56	-	93.65	-	93.62	-	93.51	-	93.88	-	93.62	-	93.59	-	93.51	-
101_(Ex-Stm)	-	93.21	-	93.33	-	93.41	-	93.51	-	93.57	-	93.65	-	93.62	-	93.52	-	93.88	-	93.63	-	93.62	-	93.51	-
102_(Ex-Stm)	94.21	93.21	1.00	93.33	0.88	93.41	0.80	93.51	0.70	93.58	0.63	93.66	0.55	93.66	0.55	93.52	0.69	93.88	0.33	93.66	0.55	93.65	0.56	93.52	0.69
113_(Ex-Stm)	94.21	93.21	1.00	93.33	0.88	93.42	0.79	93.51	0.70	93.59	0.62	93.66	0.55	93.66	0.55	93.52	0.69	93.89	0.32	93.66	0.55	93.65	0.56	93.52	0.69
114_(Ex-Stm)	94.21	93.21	1.00	93.33	0.88	93.42	0.79	93.51	0.70	93.60	0.61	93.68	0.53	93.67	0.54	93.52	0.69	93.89	0.32	93.66	0.55	93.66	0.55	93.52	0.69
115_(Ex-Stm)	94.24	93.21	1.03	93.34	0.90	93.43	0.81	93.53	0.71	93.62	0.62	93.70	0.54	93.70	0.54	93.53	0.71	93.89	0.35	93.67	0.57	93.70	0.54	93.52	0.72
130_(Ex-Stm)	94.25	93.21	1.04	93.36	0.89	93.44	0.81	93.55	0.70	93.62	0.63	93.70	0.55	93.69	0.56	93.53	0.72	93.89	0.36	93.70	0.55	93.69	0.56	93.54	0.71
130A_(Ex-Stm)	-	93.21	-	93.34	-	93.42	-	93.53	-	93.60	-	93.68	-	93.68	-	93.52	-	93.89	-	93.68	-	93.67	-	93.53	-
131_(Ex-Stm)	94.26	93.24	1.02	93.40	0.86	93.48	0.78	93.58	0.68	93.65	0.61	93.73	0.53	93.72	0.54	93.56	0.70	93.89	0.37	93.73	0.53	93.73	0.53	93.56	0.70
132_(Ex-Stm)	94.93	93.54	1.39	93.57	1.36	93.59	1.34	93.63	1.30	93.68	1.25	93.75	1.18	93.74	1.19	93.61	1.32	93.89	1.04	93.76	1.17	93.77	1.16	93.61	1.32
133_(Ex-Stm)	95.43	93.77	1.66	93.80	1.63	93.80	1.63	93.80	1.63	93.80	1.63	93.82	1.61	93.82	1.61	93.80	1.63	93.91	1.52	93.83	1.60	93.83	1.60	93.80	1.63
134_(Ex-Stm)	95.62	93.48	2.14	93.64	1.98	93.77	1.85	93.80	1.82	93.80	1.82	93.82	1.80	93.82	1.80	93.81	1.81	93.91	1.71	93.83	1.79	93.83	1.79	93.80	1.82
136_(Ex-Stm)	94.25	93.23	1.02	93.37	0.88	93.46	0.79	93.56	0.69	93.63	0.62	93.71	0.54	93.70	0.55	93.54	0.71	93.89	0.36	93.71	0.54	93.71	0.54	93.54	0.71

ARCADIA ALL STAGES HGL ANALYSIS

MH ID	USF Elevation (m)	1:2 Year Event (12 hr SCS)		1:5 Year Event (12 hr SCS)		1:10 Year Event (12 hr SCS)		1:25 Year Event (12 hr SCS)		1:50 Year Event (12 hr SCS)		1:100 Year Event (12 hr SCS)		1:100 Year Event (24 hr SCS)		1:100 Year Event (3hr Chicago)		Climate Change Event (12 hr SCS)		Historical Storm July 1979		Historical Storm August 1988		Historical Storm August 1996	
		Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)	Max HGL (m)	Freeboard (m)
137_(Ex-Stm)	94.26	93.27	0.99	93.40	0.86	93.48	0.78	93.58	0.68	93.64	0.62	93.72	0.54	93.72	0.54	93.55	0.71	93.89	0.37	93.72	0.54	93.73	0.53	93.55	0.71
139_(Ex-Stm)	94.26	93.39	0.87	93.47	0.79	93.53	0.73	93.61	0.65	93.67	0.59	93.74	0.52	93.74	0.52	93.57	0.69	93.89	0.37	93.75	0.51	93.75	0.51	93.57	0.69
138_(Ex-Stm)	94.26	93.31	0.95	93.42	0.84	93.50	0.76	93.59	0.67	93.65	0.61	93.73	0.53	93.72	0.54	93.56	0.70	93.89	0.37	93.73	0.53	93.74	0.52	93.56	0.70
146_(Ex-Stm)	94.43	93.55	0.88	93.58	0.85	93.59	0.84	93.64	0.79	93.68	0.75	93.75	0.68	93.75	0.68	93.61	0.82	93.89	0.54	93.75	0.68	93.76	0.67	93.59	0.84
147_(Ex-Stm)	94.43	93.71	0.72	93.73	0.70	93.73	0.70	93.73	0.70	93.74	0.69	93.77	0.66	93.77	0.66	93.73	0.70	93.89	0.54	93.77	0.66	93.78	0.65	93.73	0.70
145_(Ex-Stm)	94.39	93.91	0.48	93.95	0.44	93.97	0.42	93.97	0.42	93.97	0.42	93.98	0.41	93.98	0.41	93.98	0.41	93.98	0.41	93.97	0.42	93.97	0.42	93.97	0.42
140_(Ex-Stm)	94.26	93.29	0.97	93.43	0.83	93.51	0.75	93.60	0.66	93.66	0.60	93.74	0.52	93.74	0.52	93.58	0.68	93.89	0.37	93.75	0.51	93.75	0.51	93.57	0.69
142_(Ex-Stm)	94.48	93.53	0.95	93.61	0.87	93.64	0.84	93.68	0.80	93.73	0.75	93.79	0.69	93.79	0.69	93.67	0.81	93.89	0.59	93.80	0.68	93.80	0.68	93.64	0.84
143_(Ex-Stm)	94.43	93.91	0.52	93.95	0.48	93.96	0.47	93.96	0.47	93.96	0.47	93.96	0.47	93.96	0.47	93.96	0.47	93.97	0.46	93.96	0.47	93.96	0.47	93.96	0.47
144_(Ex-Stm)	94.51	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77	93.74	0.77
150_(Ex-Stm)	94.43	93.66	0.77	93.71	0.72	93.71	0.72	93.72	0.71	93.75	0.68	93.80	0.63	93.80	0.63	93.72	0.71	93.89	0.54	93.81	0.62	93.81	0.62	93.71	0.72
151_(Ex-Stm)	94.50	93.81	0.69	93.87	0.63	93.88	0.62	93.88	0.62	93.88	0.62	93.89	0.61	93.89	0.61	93.89	0.61	93.95	0.55	93.90	0.60	93.90	0.60	93.88	0.62
152_(Ex-Stm)	94.75	93.88	0.87	93.94	0.81	93.95	0.80	93.95	0.80	93.96	0.79	93.96	0.79	93.96	0.79	93.96	0.79	94.00	0.75	93.96	0.79	93.96	0.79	93.95	0.80
153_(Ex-Stm)	94.89	94.04	0.85	94.08	0.81	94.09	0.80	94.09	0.80	94.09	0.80	94.10	0.79	94.10	0.79	94.10	0.79	94.10	0.79	94.09	0.80	94.09	0.80	94.09	0.80
154_(Ex-Stm)	95.06	94.16	0.90	94.18	0.88	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87	94.19	0.87
CAMPEAU_PON	-	93.21	-	93.33	-	93.41	-	93.51	-	93.56	-	93.65	-	93.62	-	93.51	-	93.88	-	93.61	-	93.58	-	93.51	-
TEXT	Stage 6																								
TEXT	Stage 4																								
TEXT	Stage3																								
TEXT	Stages 1 & 2																								
MH305	-	94.80	-	94.84	-	94.87	-	94.91	-	94.91	-	94.92	-	94.92	-	94.92	-	94.97	-	94.91	-	94.91	-	94.88	-
MH304	-	94.80	-	94.84	-	94.87	-	94.90	-	94.91	-	94.92	-	94.92	-	94.92	-	94.97	-	94.91	-	94.90	-	94.88	-
MH303C	-	94.63	-	94.66	-	94.68	-	94.72	-	94.76	-	94.80	-	94.78	-	94.77	-	94.91	-	94.74	-	94.75	-	94.69	-
MH303B	-	94.64	-	94.70	-	94.74	-	94.80	-	94.84	-	94.89	-	94.86	-	94.85	-	94.99	-	94.83	-	94.84	-	94.76	-
MH303	-	94.22	-	94.41	-	94.52	-	94.64	-	94.71	-	94.78	-	94.75	-	94.73	-	94.90	-	94.70	-	94.72	-	94.54	-
MH302	-	95.25	-	95.30	-	95.34	-	95.38	-	95.41	-	95.43	-	95.41	-	95.42	-	95.48	-	95.41	-	95.41	-	95.35	-
MH301	-	95.76	-	95.82	-	95.85	-	95.91	-	95.94	-	95.97	-	95.94	-	95.95	-	96.01	-	95.95	-	95.95	-	95.87	-
MH300	-	96.29	-	96.36	-	96.41	-	96.47	-	96.51	-	96.51	-	96.51	-	96.51	-	96.51	-	96.47	-	96.51	-	96.42	-
MH217	95.44	94.17	1.27	94.37	1.07	94.48	0.96	94.61	0.83	94.68	0.76	94.74	0.70	94.72	0.72	94.69	0.75	94.87	0.57	94.67	0.77	94.69	0.75	94.51	0.93
MH216	95.20	94.07	1.13	94.27	0.93	94.40	0.80	94.53	0.67	94.60	0.60	94.67	0.53	94.65	0.55	94.61	0.59	94.80	0.40	94.59	0.61	94.62	0.58	94.42	0.78
MH215	95.40	94.65	0.75	94.72	0.68	94.76	0.64	94.81	0.59	94.83	0.57	94.86	0.54	94.85	0.55	94.85	0.55	94.92	0.48	94.82	0.58	94.84	0.56	94.78	0.62
MH214	95.51	95.02	0.49	95.07	0.44	95.11	0.40	95.14	0.37	95.14	0.37	95.15	0.36	95.15	0.36	95.15	0.36	95.17	0.34	95.14	0.37	95.15	0.36	95.12	0.39
MH213	96.19	95.11	1.08	95.14	1.05	95.17	1.02	95.20	0.98	95.20	0.98	95.20	0.98	95.20	0.98	95.21	0.98	95.21	0.98	95.20	0.98	95.20	0.98	95.19	1.00
MH212	95.89	95.40	0.49	95.45	0.44	95.49	0.40	95.50	0.39	95.50	0.39	95.50	0.39	95.50	0.39	95.50	0.39	95.50	0.39	95.50	0.39	95.50	0.39	95.50	0.39
MH211	95.53	95.01	0.52	95.08	0.45	95.13	0.40	95.15	0.38	95.15	0.38	95.16	0.37	95.16	0.37	95.16	0.37	95.17	0.36	95.15	0.38	95.16	0.37	95.14	0.39
MH210	95.79	94.90	0.89	94.96	0.83	95.00	0.79	95.04	0.75	95.06	0.73	95.07	0.72	95.07	0.72	95.07	0.72	95.11	0.68	95.04	0.75	95.06	0.73	95.01	0.78
MH209	96.10	95.50	0.60	95.56	0.54	95.60	0.50	95.63	0.47	95.65	0.45	95.66	0.44	95.66	0.44	95.66	0.44	95.68	0.42	95.63	0.47	95.66	0.44	95.61	0.49
MH208	97.64	97.12	0.52	97.15	0.49	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47	97.17	0.47
MH207	97.64	96.50	1.14	96.53	1.11	96.54	1.10	96.54	1.10	96.54	1.10	96.54	1.10	96.54	1.10	96.55	1.09	96.55	1.09	96.54	1.10	96.54	1.10	96.54	1.10
MH206	97.64	95.99	1.65	96.03	1.61	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59	96.05	1.59
MH205	96.85	95.87	0.98	95.90	0.95	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93	95.92	0.93
MH204	95.62	94.72	0.90	94.78	0.84	94.83	0.79	94.87	0.75	94.90	0.72	94.92	0.70	94.92	0.70	94.91	0.71	94.98	0.64	94.88	0.74	94.90	0.72	94.84	0.78
MH203	95.43	94.46	0.97	94.56	0.87	94.62	0.81	94.70	0.73	94.74	0.69	94.79	0.64	94.78	0.65	94.76	0.67	94.88	0.55	94.71	0.72	94.76	0.67	94.64	0.79
MH202	95.35	94.30	1.05	94.41	0.94	94.47	0.88	94.57	0.78	94.64	0.71	94.71	0.64	94.70	0.65	94.66	0.69	94.81	0.54	94.61	0.74	94.67	0.68	94.49	0.86
MH201	95.11	93.92	1.19	94.13	0.98	94.27	0.84	94.41	0.70	94.49	0.62	94.57	0.54	94.55	0.56	94.49	0.62	94.69	0.42	94.47	0.64	94.52	0.59	94.28	0.83
MH200	95.11	93.70	1.41	93.89	1.22	94.03	1.08	94.19	0.92	94.28	0.83	94.36	0.75	94.34	0.77	94.25	0.86	94.51	0.60	94.28	0.83	94.33	0.78	94.03	1.08
MH541	95.10	93.17	1.93	93.42	1.68	93.59	1.51	93.79	1.31	93.90	1.20	94.00	1.10	93.98	1.12	93.80	1.30	94.17	0.93	93.95	1.15	94.01	1.09	93.60	1.50
MH532	95.10	93.20	1.90	93.46	1.64	93.63	1.47	93.85	1.25	93.96	1.14	94.07	1.03	94.05	1.05	93.87	1.23	94.25	0.85	94.00	1.10	94.07	1.03	93.62	1.48
MH104	95.32	93.25	2.07	93.50	1.82	93.67	1.65	93.88	1.44	93.99	1.33	94.10	1.22	94.07	1.25	93.90	1.42	94.27	1.05	94.03	1.29	94.09	1.23	93.64	1.68
MH513	97.18	95.84	1.34	95.93	1.25	96.01	1.17	96.08	1.10	96.09	1.09	96.11	1.07	96.10	1.08	96.12	1.06	96.12	1.06	96.08	1.10	96.09	1.09	96.07	1.11
MH519	95.33	94.13	1.20	94.18	1.15	94.22	1.11	94.22	1.11	94.23	1.10	94.33	1.00	94.31	1.02	94.23	1.10	94.51	0.82	94.25	1.08	94.32	1.01	94.22	1.11
MH540	95.25	93.62	1.63	93.70	1.55	93.76	1.49	93.91	1.34	94.02	1.23	94.13	1.12	94.11	1.14	93.93	1.32	94.32	0.93	94.05	1.20	94.12	1.13	93.78	1.47
MH531	95.68	93.62	2.06	93.70	1.98	93.79	1.89	94.04	1.64	94.17	1.51	94.28	1.40	94.26	1.42	94.10	1.58	94.47	1.21	94.18	1.50	94.25	1.43	93.81	1.87
MH520	95.33	93.92	1.41	93.99	1.34	94.03	1.30	94.05	1.28	94.12	1.21	94.26	1.07	94.23	1.10	94.08	1.25	94.44	0.89	94.16	1.17	94.24	1.09	94.04	1.29
MH501	97.83	95.37	2.46	95.42	2.41	95.45	2.38	95.49	2.34	95.52	2.31	95.54	2.29	95.54	2.29	95.54	2.29	95.54	2.29	95.50	2.33	95.50	2.33	95.46	2.37
MH518	96.37	94.66	1.71	94.71	1.66	94.75	1.62	94.80	1.57	94.81	1.56	94.83	1.54	94.83	1.54	94.83	1.54	94.86	1.51	94.80	1.57	94.82	1.55	94.78	1.59
MH529	95.47	93.94	1.53	94.00	1.47	94.05	1.42	94.26	1.21	94.38	1.09	94.51	0.96	94.48	0.99	94.35	1.12	94.72	0.75	94.41	1.06	94.44	1.03	94.08	1.39
MH517	96.57	94.99	1.58	95.03	1.54	95.07	1.50	95.09	1.48	95.10	1.47	95.11	1.46	95.10	1.47	95.11	1.46	95.12	1.45	95.10	1.47	95.10	1.47	95.09	1.48
MH527	96.23	94.56	1.67	94.61	1.62	94.64	1.59	94.66	1.57	94.66	1.57	94.70	1.53	94.68	1.55	94.66	1.57	94.93	1.30	94.66	1.57	94.66	1.57	94.66	1.57
MH528	95.78	94.02	1.76	94.08	1.70	94.13	1.65	94.31	1.47	94.44	1.34	94.57	1.21	94.54	1.24	94.41	1.37	94.78	1.00	94.46	1.32	94.49	1.29	94.16	1.62
MH526	96.51	95.06	1.45	95.10	1.41	95.13	1.38	95.15	1.36	95.16	1.35	95.16	1.35	95.16	1.35	95.16	1.35	95.16	1.35	95.15	1.36	95.15	1.36	95.15	1.36
MH525	97.77	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52	95.25	2.52
MH524	95.17	93.32	1.85	93.41	1.76	93.56	1.61	93.79	1.38	93.89	1.28	93.98	1.19	93.96	1.21	93.78	1.39	94.15	1.02	93.94	1.23	94.00	1.17	93.59	1.58
MH523	95.23	93.86	1.37	93.90	1.33	93.92	1.31	93.93	1.30	93.96	1.27	94.03	1.20	94.02	1.21	93.93	1.30	94.22	1.01	94.00	1.23	94.05	1.18	93.93	1.30
MH522	95.15	93.75	1.40	93.75	1.40	93.75	1.40	93.75	1.40	93.75	1.40	94.03	1.12	93.85	1.30	93.75	1.40	94.22	0.93	93.75	1.40	94.05	1.10	93.75	1.40
MH521	95.28	94.05	1.23	94.05	1.23	94.05	1.23	94.05	1.23	94.05	1.23	94.05	1.23	94.05	1.23	94.05	1.23	94.37	0.91	94.05	1.23	94.05	1.23	94.05	1.23
MH516	96.60	95.17	1.43	95.21	1.39	95.24	1.36	95.26	1.34	95.27	1.33	95.27	1.33	95.27	1.33	95.28	1.32	95.28	1.32	95.26	1.34	95.27	1.33	95.26	1.34
MH505	95.16	93.16	2.00	93.37	1.79	93.52	1.64	93.72	1.44	93.82	1.34	93.92	1.24	93.90	1.26	93.71	1.45	94.07	1.09	93.87	1.29	93.93	1.23	93.56	1.60
Ex._509	94.54	93.08	1.46	93.29	1.25	93.43	1.11	93.60	0.94	93.69	0.85	93.77	0.77	93.75	0.79	93.58	0.96	93.91	0.63	93.75	0.79	93.80	0.74	93.51	1.03
MH515	96.73	95.60	1.13	95.64	1.09	95.68	1.05	95.71	1.02	95.72	1.01	95.74	0.99	95.74	0.99	95.76	0.97	95.77	0.96	95.72	1.01	95.72	1.01	95.71	1.02
MH504	95.28	93.20	2.08	93.40	1.88	93.56	1.72	93.75	1.53	93.86	1.42	93.96	1.32	93.94	1.34	93.75	1.53	94.12	1.16	93.91	1.37	93.97	1.31	93.58	1.70
MH514	97.10	95.41	1.69	95.50	1.60	95.57	1.53	95.64	1.46	95.65	1.45	95.67	1.43	95.67	1.43	95.68	1.42	95.71	1.39	95.64	1.46	95.66	1.44	95.61	1.49
MH502	96.38	94.74	1.64	94.82	1.56	94.87	1.51	94.93	1.45	94.96	1.42	94.99	1.39	94.99	1.39	94.99	1.39	94.99	1.39	94.94	1.44	94.94	1.44	94.90	1.48
MH503	95.98	93.90	2.08	93.98	2.00	94.04	1.94	94.11	1.87	94.16	1.82	94.23	1.75	94.22	1.76	94.16	1.82	94.44	1.54	94.16	1.82	94.21	1.77	94.07	1.91
MH530	95.47	93.75	1.72	93.83	1.64	93.90	1.57	94.15	1.32	94.28	1.19	94.40	1.07	94.37	1.10	94.22	1.25	94.60	0.87	94.29	1.18	94.35	1.12	93.93	1.54
MH506	95.13	93.11	2.02	93.33	1.80	93.49	1.64	93.69	1.44	93.78	1.35	93.87	1.26	93.85	1.28	93.67	1.46	94.02	1.11	93.84	1.29	93.89	1.24	93.55	1.58
TEXT	Stage 6																								
TEXT	Stage 4																								
TEXT	Stage3																								
TEXT	Stages 1 & 2																								

Appendix E4

Street Ponding Areas

STREET PONDING TABLE

Ponding Area ID	Top of Grate (m)	Maximum Static Depth (m)	1:2 year		1:5 year Depth		1:10 year		1:25 year		1:50 year		1:100 year		Climate Change		Lowest Opening Grade (m)
			Total Ponding Depth (m)	Max. HGL (m)	Total Ponding Depth (m)	Max. HGL (m)	Total Ponding Depth (m)	Max. HGL (m)	Total Ponding Depth (m)	Max. HGL (m)	Total Ponding Depth (m)	Max. HGL (m)	Total Ponding Depth (m)	Max. HGL (m)	Total Ponding Depth (m)	Max. HGL (m)	
1	97.40	0.30	0.00	-	0.02	97.42	0.07	97.47	0.11	97.51	0.14	97.54	0.17	97.57	0.21	97.61	98.15
2	97.30	0.30	0.01	97.31	0.01	97.31	0.01	97.31	0.01	97.31	0.01	97.31	0.01	97.31	0.02	97.32	98.15
3	97.25	0.30	0.02	97.27	0.03	97.28	0.04	97.29	0.04	97.29	0.05	97.30	0.05	97.30	0.07	97.32	98.15
4	97.15	0.30	0.00	-	0	-	0.03	97.18	0.07	97.22	0.09	97.24	0.1	97.25	0.12	97.27	98.15
4	97.15	0.30	0.00	-	0	-	0	-	0	-	0	-	0.05	97.20	0.12	97.27	98.15
5	96.90	0.25	0	-	0	-	0	-	0	-	0.00	-	0	-	0	-	97.42
5	96.90	0.25	0	-	0	-	0	-	0	-	0.00	-	0.03	96.93	0.09	96.99	97.42
6	96.92	0.23	0	-	0	-	0.05	96.97	0.09	97.01	0.11	97.03	0.16	97.08	0.29	97.21	97.33
7	96.85	0.15	0	-	0	-	0	-	0	-	0.00	-	0	-	0	-	97.15
7	96.85	0.15	0	-	0	-	0	-	0	-	0.00	-	0	-	0.04	96.89	97.15
8	96.77	0.18	0	-	0	-	0.05	96.82	0.09	96.86	0.11	96.88	0.17	96.94	0.31	97.08	97.10
9	96.80	0.14	0	-	0	-	0	-	0	-	0.00	-	0	-	0	-	97.10
9	96.80	0.14	0	-	0	-	0	-	0	-	0.00	-	0	-	0.09	96.89	97.10
10	96.67	0.18	0	-	0.01	96.68	0.06	96.73	0.1	96.77	0.12	96.79	0.21	96.88	0.31	96.98	97.10
11	96.70	0.15	0	-	0	-	0	-	0	-	0.00	-	0	-	0	-	96.95
11	96.70	0.15	0	-	0	-	0	-	0	-	0.00	-	0	-	0.05	96.75	96.95
12	96.20	0.19	0	-	0	-	0.01	96.21	0.06	96.26	0.08	96.28	0.1	96.30	0.14	96.34	97.00
13	96.00	0.25	0	-	0	-	0.06	96.06	0.1	96.10	0.13	96.13	0.15	96.15	0.18	96.18	96.80
13	96.00	0.25	0	-	0	-	0	-	0	-	0.00	-	0.02	96.02	0.13	96.13	96.80
14	95.60	0.15	0	-	0	-	0.06	95.66	0.1	95.70	0.13	95.73	0.16	95.76	0.2	95.80	96.35
14	95.60	0.15	0	-	0	-	0	-	0	-	0.00	-	0	-	0.01	95.61	96.35
15	95.60	0.20	0	-	0	-	0.01	95.61	0.07	95.67	0.10	95.70	0.15	95.75	0.25	95.85	96.25
16	94.75	0.30	0	-	0	-	0.03	94.78	0.12	94.87	0.17	94.92	0.22	94.97	0.3	95.05	96.25
17	95.40	0.30	0	-	0	-	0	-	0	-	0.00	-	0.05	95.45	0.11	95.51	96.25
18	95.35	0.25	0	-	0	-	0	-	0	-	0.00	-	0	-	0.08	95.43	96.25
19	95.50	0.25	0.00	-	0	-	0.08	95.58	0.16	95.66	0.21	95.71	0.25	95.75	0.27	95.77	96.25
20	95.80	0.15	0.02	95.82	0.02	95.82	0.03	95.83	0.03	95.83	0.04	95.84	0.04	95.84	0.05	95.85	96.25
21	96.30	0.10	0.02	96.32	0.03	96.33	0.04	96.34	0.05	96.35	0.06	96.36	0.06	96.36	0.08	96.38	96.80
22	95.71	0.14	0	-	0	-	0.04	95.75	0.13	95.84	0.16	95.87	0.18	95.89	0.19	95.90	96.17
23	95.90	0.15	0	-	0	-	0	-	0.03	95.93	0.07	95.97	0.09	95.99	0.13	96.03	96.35
24	96.22	0.23	0.06	96.28	0.07	96.29	0.08	96.30	0.09	96.31	0.12	96.34	0.15	96.37	0.22	96.44	96.80
25	96.20	0.30	0	-	0	-	0	-	0.02	96.22	0.06	96.26	0.09	96.29	0.13	96.33	96.80
26	96.15	0.20	0	-	0	-	0	-	0.05	96.20	0.08	96.23	0.11	96.26	0.16	96.31	96.80
27	96.57	0.15	0	-	0	-	0.03	96.60	0.09	96.66	0.13	96.70	0.15	96.72	0.19	96.76	96.95
28	96.77	0.25	0	-	0	-	0.03	96.80	0.08	96.85	0.10	96.87	0.12	96.89	0.16	96.93	97.15
29	96.87	0.24	0	-	0	-	0.05	96.92	0.09	96.96	0.11	96.98	0.16	97.03	0.26	97.13	97.22
30	97.07	0.13	0	-	0	-	0	-	0	-	0.00	-	0	-	0	-	97.37
31	97.22	0.13	0	-	0	-	0	-	0	-	0.00	-	0	-	0.05	97.27	97.50
32	97.02	0.20	0.00	-	0.00	-	0.05	97.07	0.09	97.11	0.12	97.14	0.16	97.18	0.21	97.23	97.32
33	97.17	0.13	0	-	0	-	0	-	0	-	0.00	-	0	-	0.05	97.22	97.53
34	97.07	0.22	0	-	0	-	0	-	0	-	0.03	97.10	0.06	97.13	0.1	97.17	97.46
35	97.25	0.30	0	-	0	-	0.04	97.29	0.09	97.34	0.12	97.37	0.15	97.40	0.2	97.45	97.82
36	97.30	0.20	0	-	0	-	0	-	0	-	0.00	-	0	-	0.03	97.33	97.91
36	97.30	0.20	0	-	0	-	0.04	97.34	0.09	97.39	0.12	97.42	0.13	97.43	0.15	97.45	97.91

Street Segment ID	U/S ID	D/S ID	Velocity x Depth (m^2/s)			
			1:2 year	1:5 year	1:100 year	Climate Change
HP_ST6_J10-LP_J7	HP_ST6_J10	J7	0	0	0	0
HP_ST6_J11-HP_ST6_J10	HP_ST6_J11	HP_ST6_J10	0	0	0	0
HP_ST6_J11-LP_ST6_J11	HP_ST6_J11	LP_ST6_J11_W	0	0	0	0
HP_ST6_J11-LP_ST6_J11_E	HP_ST6_J11	LP_ST6_J11_E	0	0	0	0
HP_ST6_J11-LP_ST6_J17	HP_ST6_J11	LP_ST6_J17	0	0	0	0
HP_ST6_J12-J6	HP_ST6_J12	J6	0	0	0	0
HP_ST6_J12-LP_ST6_J15	HP_ST6_J12	LP_ST6_J15	0	0	0	0
HP_ST6_J13-LP_ST6_J14	HP_ST6_J13	LP_ST6_J14	0	0	0	0
HP_ST6_J13-LP_ST6_J15	HP_ST6_J13	LP_ST6_J15	0	0	0	0
HP_ST6_J14-LP_ST6_J9	HP_ST6_J14	LP_ST6_J9	0	0	0	0
HP_ST6_J15-HP_ST6_J16	HP_ST6_J15	HP_ST6_J16	0	0	0	0
HP_ST6_J15-LP_ST6_J14	HP_ST6_J15	LP_ST6_J14	0	0	0	0
HP_ST6_J15-LP_ST6_J7	HP_ST6_J15	LP_ST6_J7	0	0	0	0
HP_ST6_J16-LP_ST6_J13	HP_ST6_J16	LP_ST6_J13	0	0	0	0
HP_ST6_J17-LP_ST6_J12	HP_ST6_J17	LP_ST6_J12	0	0	0	0.01
HP_ST6_J17-LP_ST6_J13	HP_ST6_J17	LP_ST6_J13	0	0	0	0.04
HP_ST6_J18-LP_ST6_J12	HP_ST6_J18	LP_ST6_J12	0	0	0.01	0.03
HP_ST6_J19-HP_ST6_J18	HP_ST6_J19	HP_ST6_J18	0	0	0	0.02
HP_ST6_J19-LP_ST6_J11	HP_ST6_J19	LP_ST6_J11_W	0	0	0	0.05
HP_ST6_J19-LP_ST6_J11_E	HP_ST6_J19	LP_ST6_J11_E	0	0	0	0.05
HP_ST6_J19-LP_ST6_J2	HP_ST6_J19	LP_ST6_J2_W	0	0	0	0.04
HP_ST6_J19-LP_ST6_J2_E	HP_ST6_J19	LP_ST6_J2_E	0	0	0	0.04
HP_ST6_J1-J32_E	HP_ST6_J1	J32_E	0	0	0	0
HP_ST6_J1-J32_W	HP_ST6_J1	J32_W	0	0	0	0
HP_ST6_J1-LP_ST6_J21_2	J32_E	LP_ST6_J21_E	0	0	0	0
HP_ST6_J1-LP_ST6_J24_1	HP_ST6_J1	J35	0	0	0	0
HP_ST6_J1-LP_ST6_J24_2	J35	LP_ST6_J24	0	0	0	0.01
HP_ST6_J20-HP_ST6_J21	HP_ST6_J20	HP_ST6_J21	0	0	0	0.02
HP_ST6_J20-J29_E	HP_ST6_J20	J29_E	0	0	0	0.05
HP_ST6_J20-LP_ST6_J1	HP_ST6_J20	LP_ST6_J1_W	0	0	0	0.05
HP_ST6_J20-LP_ST6_J1_E	HP_ST6_J20	LP_ST6_J1_E	0	0	0	0.05
HP_ST6_J20-LP_ST6_J2_1	HP_ST6_J20	J29_W	0	0	0	0.06
HP_ST6_J20-LP_ST6_J2_2	J29_W	LP_ST6_J2_W	0	0	0	0.05
HP_ST6_J21-LP_ST6_J10	HP_ST6_J21	LP_ST6_J10	0	0	0	0.03
HP_ST6_J22-LP_ST6_J10	HP_ST6_J22	LP_ST6_J10	0	0	0.02	0.02
HP_ST6_J22-LP_ST6_J9	HP_ST6_J22	LP_ST6_J9	0	0	0.01	0.04
HP_ST6_J23-HP_ST6_J14	HP_ST6_J23	HP_ST6_J14	0	0	0	0
HP_ST6_J23-LP_ST6_J7	HP_ST6_J23	LP_ST6_J7	0	0	0	0
HP_ST6_J23-LP_ST6_J8	HP_ST6_J23	LP_ST6_J8	0	0	0	0
HP_ST6_J24-LP_ST6_J6_2	HP_ST6_J24	LP_ST6_J6	0	0	0	0
HP_ST6_J24-LP_ST6_J8	HP_ST6_J24	LP_ST6_J8	0	0	0	0
HP_ST6_J25-LP_ST6_J5	HP_ST6_J25	LP_ST6_J5	0	0	0	0
HP_ST6_J25-LP_ST6_J6	HP_ST6_J25	LP_ST6_J6	0	0	0	0
HP_ST6_J26-LP_ST6_J5	HP_ST6_J26	LP_ST6_J5	0	0	0	0.03
HP_ST6_J27_E-LP_ST6_J26	HP_ST6_J27	LP_ST6_J26_E	0	0	0	0
HP_ST6_J27-HP_ST6_J26	HP_ST6_J27	HP_ST6_J26	0	0	0	0
HP_ST6_J27-J28_E	HP_ST6_J27	J28_E	0	0	0	0
HP_ST6_J27-LP_ST6_J1_1	HP_ST6_J27	J28_W	0	0	0	0.05
HP_ST6_J27-LP_ST6_J1_2	J28_W	LP_ST6_J1_W	0	0	0	0.03
HP_ST6_J27-LP_ST6_J2	HP_ST6_J27_	LP_ST6_J26_W	0	0	0	0.03
HP_ST6_J28-J16_E	HP_ST6_J28	J16_E	0	0	0	0
HP_ST6_J28-J16_W	HP_ST6_J28	J16_W	0	0	0	0
HP_ST6_J2-LP_ST6_J23	HP_ST6_J2	LP_ST6_J23	0	0	0.03	0.04
HP_ST6_J2-LP_ST6_J24	HP_ST6_J2	LP_ST6_J24	0	0	0.02	0.02
HP_ST6_J30-CGW_J11	HP_ST6_J30	CGW_J11	0	0	0	0
HP_ST6_J30-J10_N	HP_ST6_J30	J10_N	0	0	0	0
HP_ST6_J30-J10_S	HP_ST6_J30	J10_S	0	0	0	0
HP_ST6_J31_N-J13_N	HP_ST6_J31	J13_N	0	0	0	0
HP_ST6_J31_N-J14	HP_ST6_J31	J14	0	0	0	0
HP_ST6_J31_S-J13_S	HP_ST6_J31	J13_S	0	0	0	0
HP_ST6_J31_S-J15_W	HP_ST6_J31	J15_W	0	0	0	0
HP_ST6_J3-LP_ST6_J22	HP_ST6_J3	LP_ST6_J22	0	0	0	0
HP_ST6_J3-LP_ST6_J23_1	HP_ST6_J3	J34	0	0	0	0
HP_ST6_J3-LP_ST6_J23_2	J34	LP_ST6_J23	0	0	0	0
HP_ST6_J4-LP_ST6_J22_1	HP_ST6_J4	J33	0	0	0	0
HP_ST6_J4-LP_ST6_J22_2	J33	LP_ST6_J22	0	0	0	0.01
HP_ST6_J5-HP_ST6_J4	HP_ST6_J5	HP_ST6_J4	0	0	0	0
HP_ST6_J5-J31_E	HP_ST6_J5	J31_E	0	0	0	0
HP_ST6_J5-J31_W	HP_ST6_J5	J31_W	0	0	0	0
HP_ST6_J5-LP_ST6_J21_E	HP_ST6_J5	LP_ST6_J21_E	0	0	0	0
HP_ST6_J5-LP_ST6_J21_W	HP_ST6_J5	LP_ST6_J21_W	0	0	0	0
HP_ST6_J6-LP_ST6_J18	HP_ST6_J6	LP_ST6_J18	0	0	0	0
HP_ST6_J7-LP_ST6_J18	HP_ST6_J7	LP_ST6_J18	0	0	0	0
HP_ST6_J7-LP_ST6_J19	HP_ST6_J7	LP_ST6_J19	0	0	0	0
HP_ST6_J8-LP_ST6_J19	HP_ST6_J8	LP_ST6_J19	0	0	0	0.01
HP_ST6_J9-HP_ST6_J8	HP_ST6_J9	HP_ST6_J8	0	0	0	0
HP_ST6_J9-J30_E	HP_ST6_J9	J30_E	0	0	0	0
HP_ST6_J9-J30_W	HP_ST6_J9	J30_W	0	0	0	0
HP_ST6_J9-LP_ST6_J17	HP_ST6_J9	LP_ST6_J17	0	0	0	0
J10_E-LP_ST6_J26_E	J10_E	LP_ST6_J26_E	0	0	0	0
J10_N-LP_ST6_J25_N	J10_N	LP_ST6_J25_N	0	0	0	0
J10_S-LP_ST6_J25_S	J10_S	LP_ST6_J25_S	0	0	0	0
J10_W-LP_ST6_J26_W	J10_W	LP_ST6_J26_W	0	0	0	0
J12_N-LP_ST6_J25_N	J12_N	LP_ST6_J25_N	0	0	0	0
J12_S-LP_ST6_J25_S	J12_S	LP_ST6_J25_S	0	0	0.01	0.01
J13_N-J12_N	J13_N	J12_N	0	0	0	0
J13_S-J12_S	J13_S	J12_S	0	0	0	0
J14-J10_W	J14	J10_W	0	0	0	0
J15_E-J10_E	J15_E	J10_E	0	0	0	0
J15_E-LP_ST6_J4_E	J15_E	LP_ST6_J4_E	0	0	0	0
J15_W-LP_ST6_J4_W	J15_W	LP_ST6_J4_W	0	0	0	0
J16_E-LP_ST6_J4_E	J16_E	LP_ST6_J4_E	0	0	0	0
J16_W-LP_ST6_J4_W	J16_W	LP_ST6_J4_W	0	0	0	0
J28_E-LP_ST6_J1_E	J28_E	LP_ST6_J1_E	0	0	0	0
J29_E-LP_ST6_J2_E	J29_E	LP_ST6_J2_E	0	0	0	0.05
J30_E-LP_ST6_J20_E	J30_E	LP_ST6_J20_E	0	0	0	0
J30_W-LP_ST6_J20_W	J30_W	LP_ST6_J20_W	0	0	0	0
J31_E-LP_ST6_J20_E	J31_E	LP_ST6_J20_E	0	0	0	0
J31_W-LP_ST6_J20_1	J31_W	LP_ST6_J20_W	0	0	0	0
J32_W-LP_ST6_J21_W	J32_W	LP_ST6_J21_W	0	0	0.02	0.02
J6-LP_ST6_J16	J6	LP_ST6_J16	0	0	0.01	0.02
J7_LP_ST6_J16	J7	LP_ST6_J16	0	0	0.02	0.02

Appendix E5

Historical References

AREA TO CAMPEAU DRIVE STORM SYSTEM

CAMPEAU DRIVE

HUNTMAR DRIVE

UNC 1A 0.02|0.20

UNC 1B 0.02|0.20

UNC 1C 0.02|0.20

UNC 1D 0.02|0.20

BLOCK 500

BLOCK 600

BLOCK 700

BLOCK 400

BLOCK 300

BLOCK 800

CRU 901 BLOCK 900

CRU 902

COUNTRY GLEN WAY

FUTURE RAPID TRANSIT BLOCK 2

Areas of Stage 6 contributing to Country Glen Way and Paine Pond

AREA TO COUNTRY GLEN WAY STORM SYSTEM

EXT-1 0.73|0.70

EXT-2 2.82|0.70

EXT-3 1.11|FLOOD

EXTERNAL DRAINAGE AREA PLAN

LEGEND:

- 210A / 0.12|0.90 — AREA ID / RUN OFF COEFFICIENT / AREA IN HECTARES
- DRAINAGE AREA LIMITS
- MH110 — STORM MANHOLE & NUMBER
- STORM SEWER & FLOW DIRECTION
- 21.6 l/s — CONTROLLED FLOW RATE FROM BUILDINGS
- EMERGENCY OVERLAND FLOW ROUTE

KEY PLAN

SITE — CAMPEAU, HWY 417, CYCLONE TAYLOR, HUNTMAR, PAINE PUDDAM

APPROVED ☐ REFUSED ☐

DATE _____

Felice Petti, P.Eng., Manager, Development Review
Suburban Services
City of Ottawa

No.	Description	Date	Checked
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: 10/8/2014 3:42 PM Last Saved By: dslurno Last Saved At: Oct. 3, 14

TN PN

14/10/02

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

IBI Group
400-333 Preston Street
Ottawa, Ontario
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
	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					0.00	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		

IBI Group
400-333 Preston Street
Ottawa, Ontario
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
	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%					
Country Glen Way	-	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		
Country Glen Way	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%					
Country Glen Way	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%					
Country Glen Way	-	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		
Country Glen Way	-	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		
Country Glen Way		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		
Country Glen Way	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%					
Country Glen Way	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		
Country Glen Way	-	MH201	MH200/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		
Campeau Dr.	*existing*	*MH 200/ 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

PARK
2.46Ha / 6.07ac

2.46
PAINE POND

FUTURE ST
(NOT PART OF D

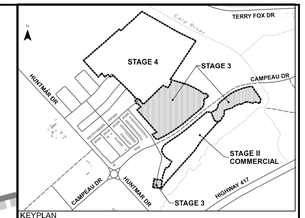
4.20 | 0.7
STAGE 5 -116

4.20 | 0.7
STAGE 5 -102

2.45 | 0.8
CAMPEAU POND

Water quality area and imperviouness
to Campeau Pond from Stage 6

STAGE 2



KEYPLAN

LEGEND:

- DRAINAGE BOUNDARY
- ARCADIA STAGE 1 & 2 DRAINAGE BOUNDARY
- FUTURE ARCADIA STAGES 3B, 4, & 5 DRAINAGE BOUNDARY
- PHASING LIMIT
- AREA IN HECTARES
- RUNOFF COEFFICIENT
- 0.21 | 0.66 / 104-710HDS — PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE
- EXISTING STORM SEWER & MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- FUTURE STORM SEWER & MANHOLE
- UPDATED — 0.22 | 0.72 / 510-509 — UPDATED DRAINAGE AREA FROM EXISTING ARCADIA STAGES.
- 0.24 / 0.57 R202 — DRAINAGE AREA FROM EXISTING ARCADIA STAGES.

No.	ISSUE / REVISION	DD/MM/YY
04	ISSUED FOR TENDER, ISSUED TO MECP, REVISED PER CITY COMMENTS	23/05/2019
03	ISSUED TO CITY FOR REVIEW - SUBMISSION 3	26/04/2019
02	ISSUED TO CITY FOR REVIEW - SUBMISSION 2	22/02/2019
01	ISSUED TO CITY FOR REVIEW - SUBMISSION 1	27/11/2018

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SCALE: 1:750

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca
J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP: LICENSED PROFESSIONAL ENGINEER — M. N. L. DALRYMPLE — May 23/19 — PROVINCE OF ONTARIO

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
ARCADIA STAGE 3
450 HUNTMAR DRIVE

DRAWING:
STORM DRAINAGE PLAN

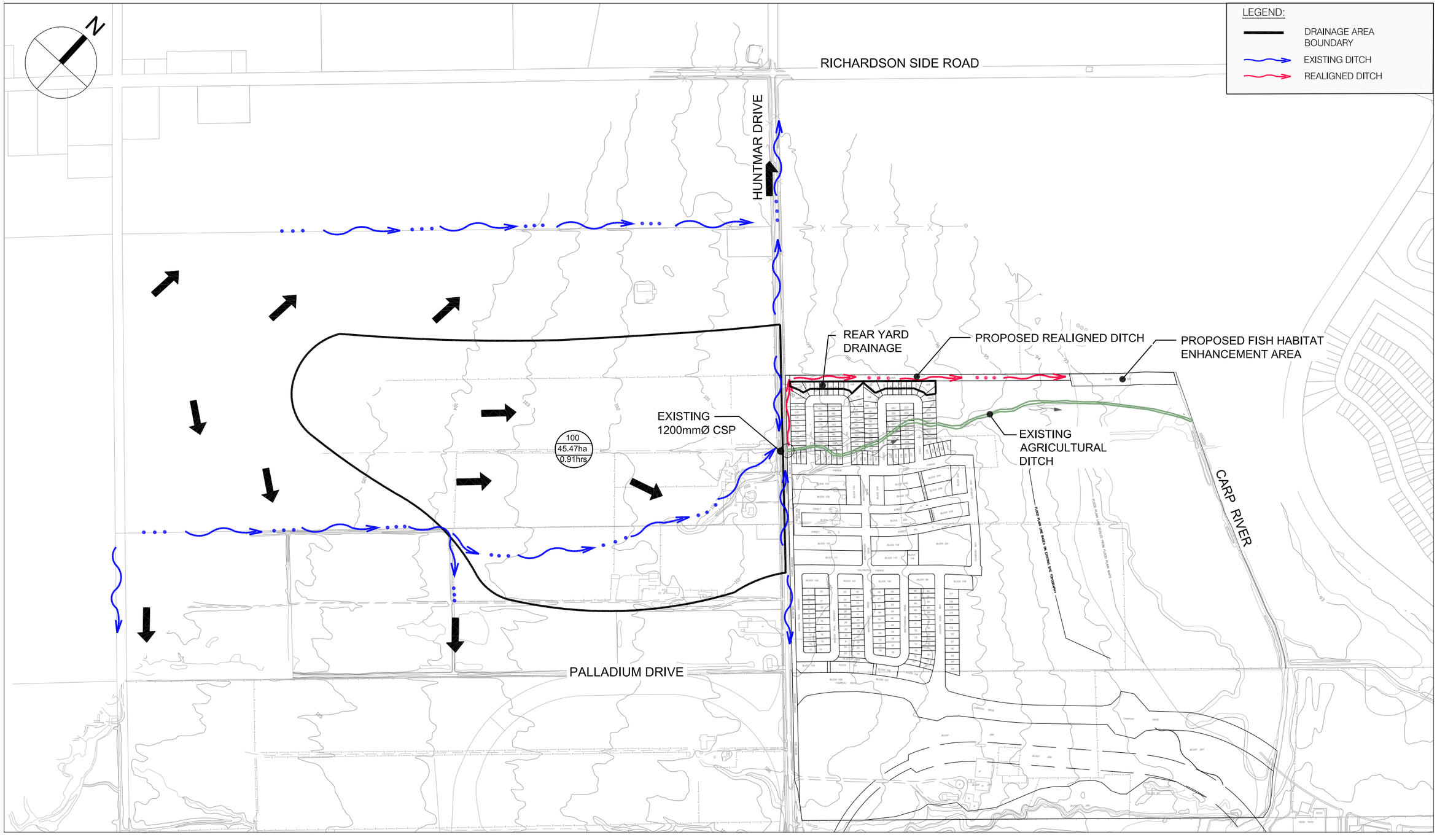
DESIGN:	AT
DRAWN:	CJM
CHECKED:	LD
JLR #:	26299-03

DRAWING #: DST1

PLOT DATE: May 23, 2019 2:30:21 PM

City File No: DO7-16-16-0025 Plan No: 17816

File Location: V:\26000\26299-03 Arcadia - Stage 3 and Campeau Pond\3-JLR DWG\1-Civil\26299-03 C DST1.dwg



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IBI GROUP

Scale

7500

Project Title

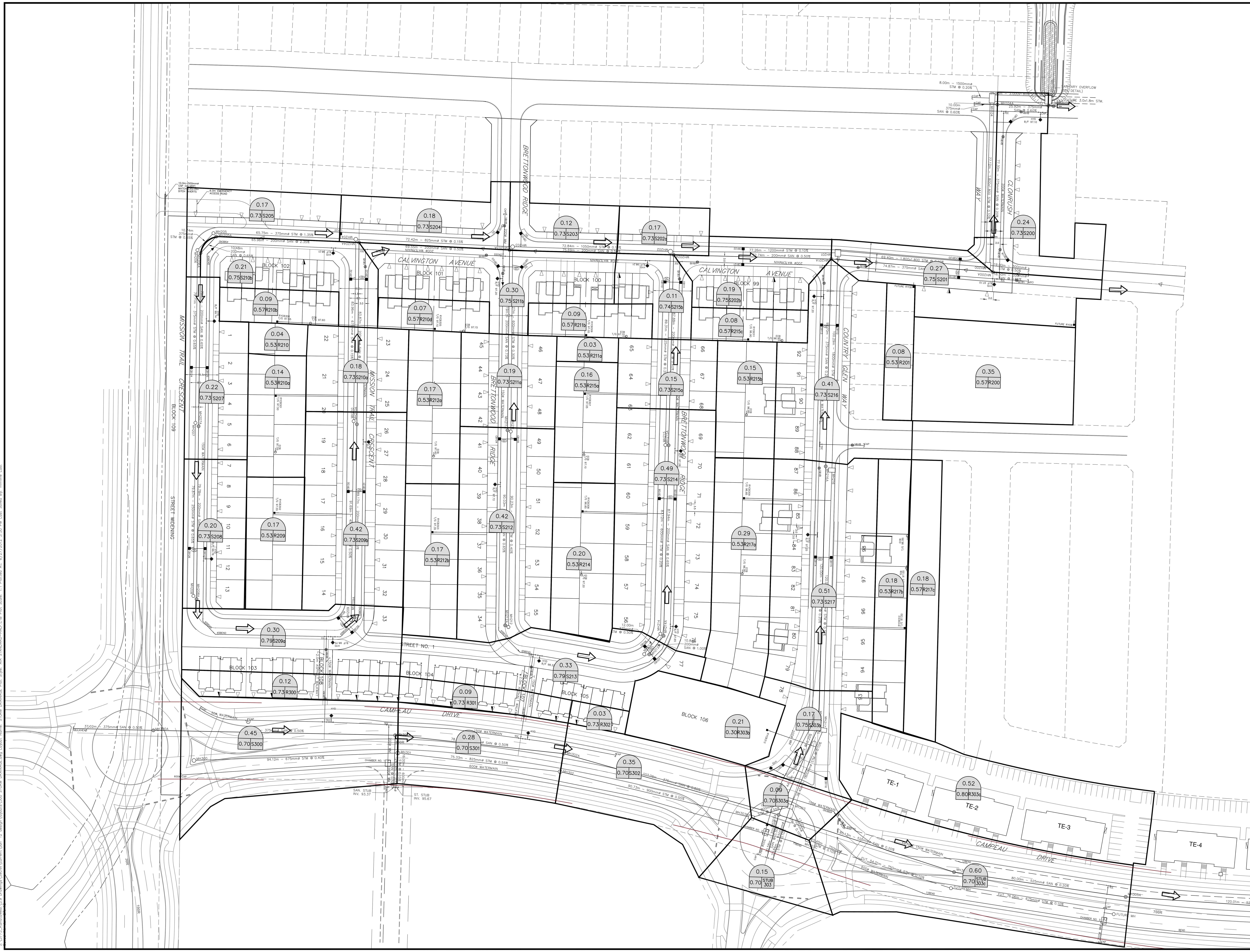
ARCADIA - STAGE 2
SWM REPORT

Drawing Title

PROPOSED REALIGNED DITCH

Sheet No.

FIGURE 5



LEGEND:

- 0.35 — AREA IN HECTARES
- R200 — RECEIVING MANHOLE/ AREA ID
- 0.57 — RUN OFF COEFFICIENT

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED PER CITY COMMENTS		12:06:27
3	REVISED PER LEGAL & CITY COMMENTS	LME	12:05:16
2	REVISED PER NEW LEGAL	LME	12:02:17
1	ISSUED FOR SUBMISSION	LME	10:11:26

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

Project Title

ARCADIA
KANATA WEST
PHASE I

LICENSED PROFESSIONAL ENGINEER
L. M. ERION
PROVINCE OF ONTARIO

N

Drawing Title

STORM DRAINAGE AREA PLAN

Scale	1:750
Design: L.M.E.	Date: MARCH '09
Drawn: M.M.	Checked: R.W.W.
Project No.: 3775	Drawing No.: 500

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No.	REVISIONS	By	Date
3	REVISED PER CITY COMMENTS	P.S.	12:05:16
2	REVISED PER NEW LEGAL	P.S.	12:02:21
1	ISSUED FOR SUBMISSION	LME	10:11:26

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

Project Title
ARCADIA
KANATA WEST
PHASE I

Drawing Title
PONDING PLAN

Scale: 1:750	
Design: L.M.E.	Date: MARCH '09
Drawn: M.B.	Checked: P.S.
Project No.: 3775	Drawing No.: 400

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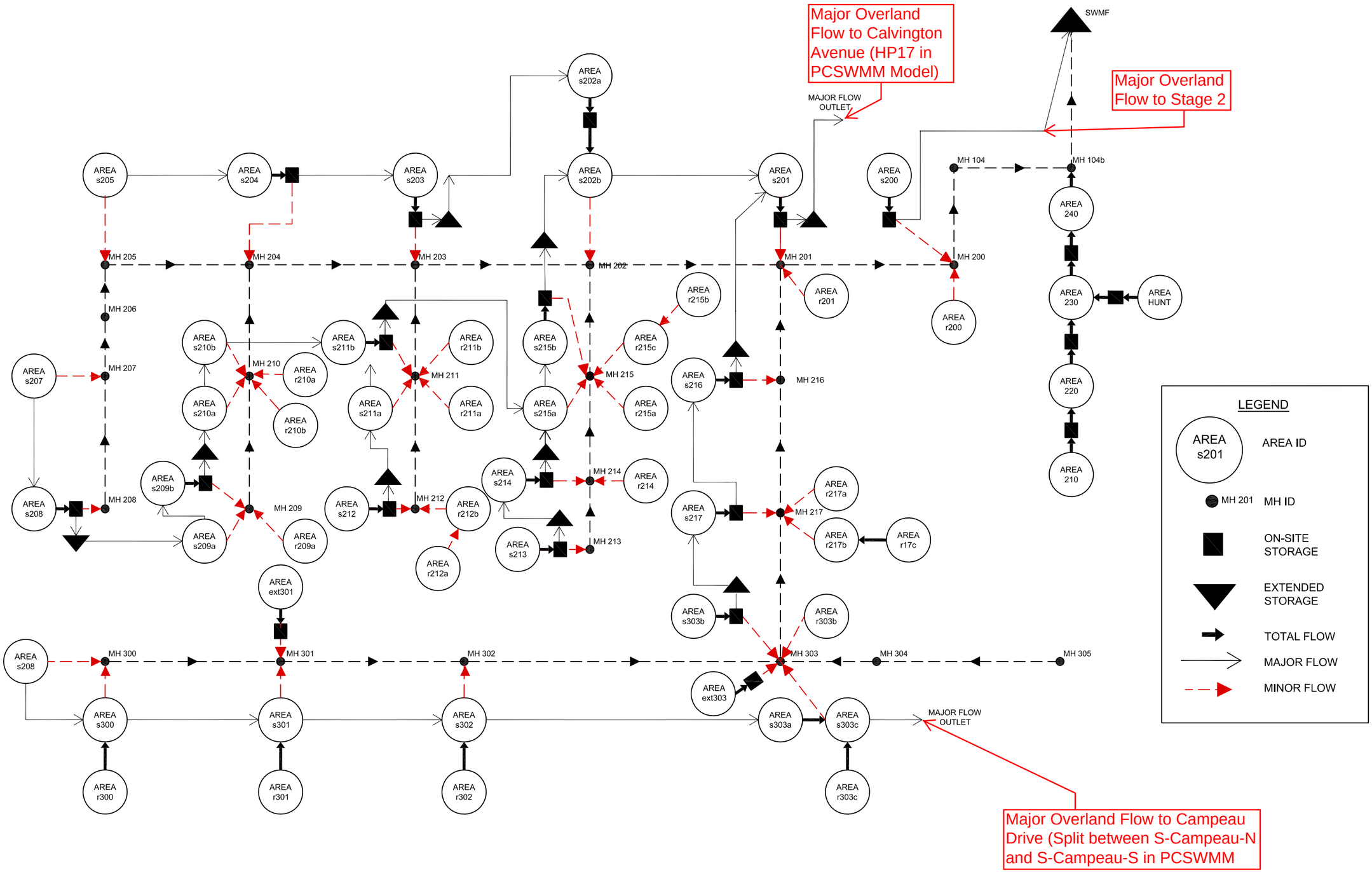

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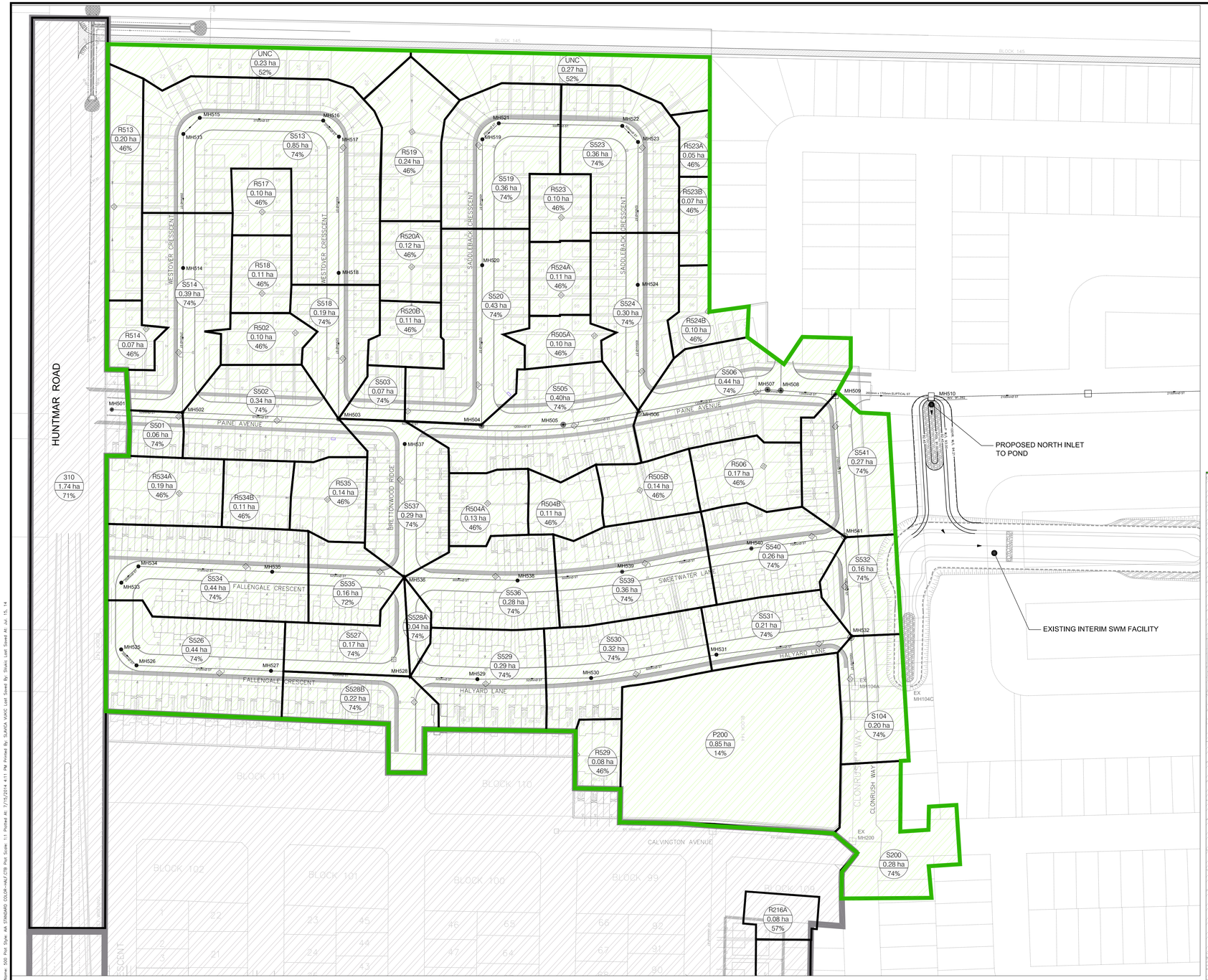
IBI GROUP

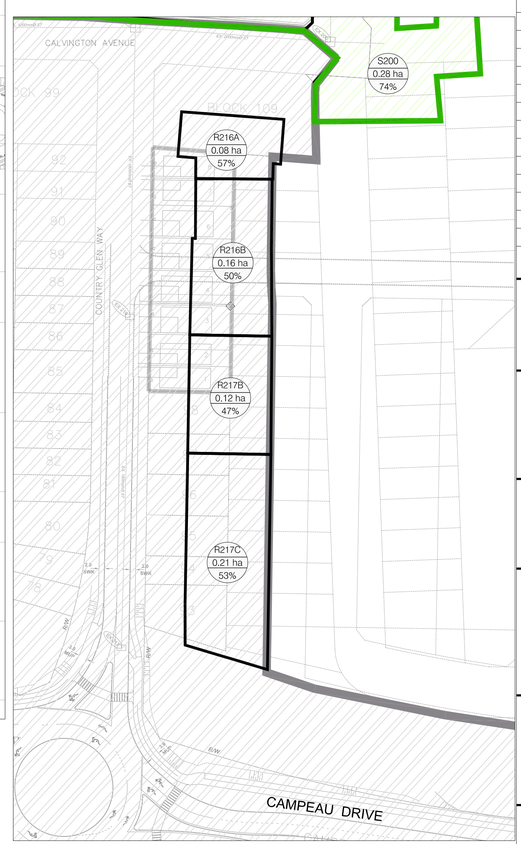
Scale: N.T.S.

Project Title: ARCADIA PHASE 1

Drawing Title: SWMHYMO SCHEMATIC

Sheet No.: SCHEMATIC





LEGEND:

R531 | 0.21 ha | 72% — AREA ID, AREA (ha), Imp.(%)/Tp.(hr)

DRAINAGE BOUNDARY

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4			
2	REVISED AS PER CITY COMMENTS	P.S.	14/07/11
1	ISSUED FOR CITY REVIEW	P.S.	14/03/31

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333 Preston Street
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Project Title
MINTO COMMUNITIES INC.
ARCADIA STAGE 2
370 HUNTMAR DRIVE

Drawing Title
SWM MODEL DRAINAGE AREA PLAN

Scale
1:1000

Design	Date
P.D.	MARCH. 2014
Drawn	Checked
S.V.	P.S.
Project No.	Drawing No.
35805	500

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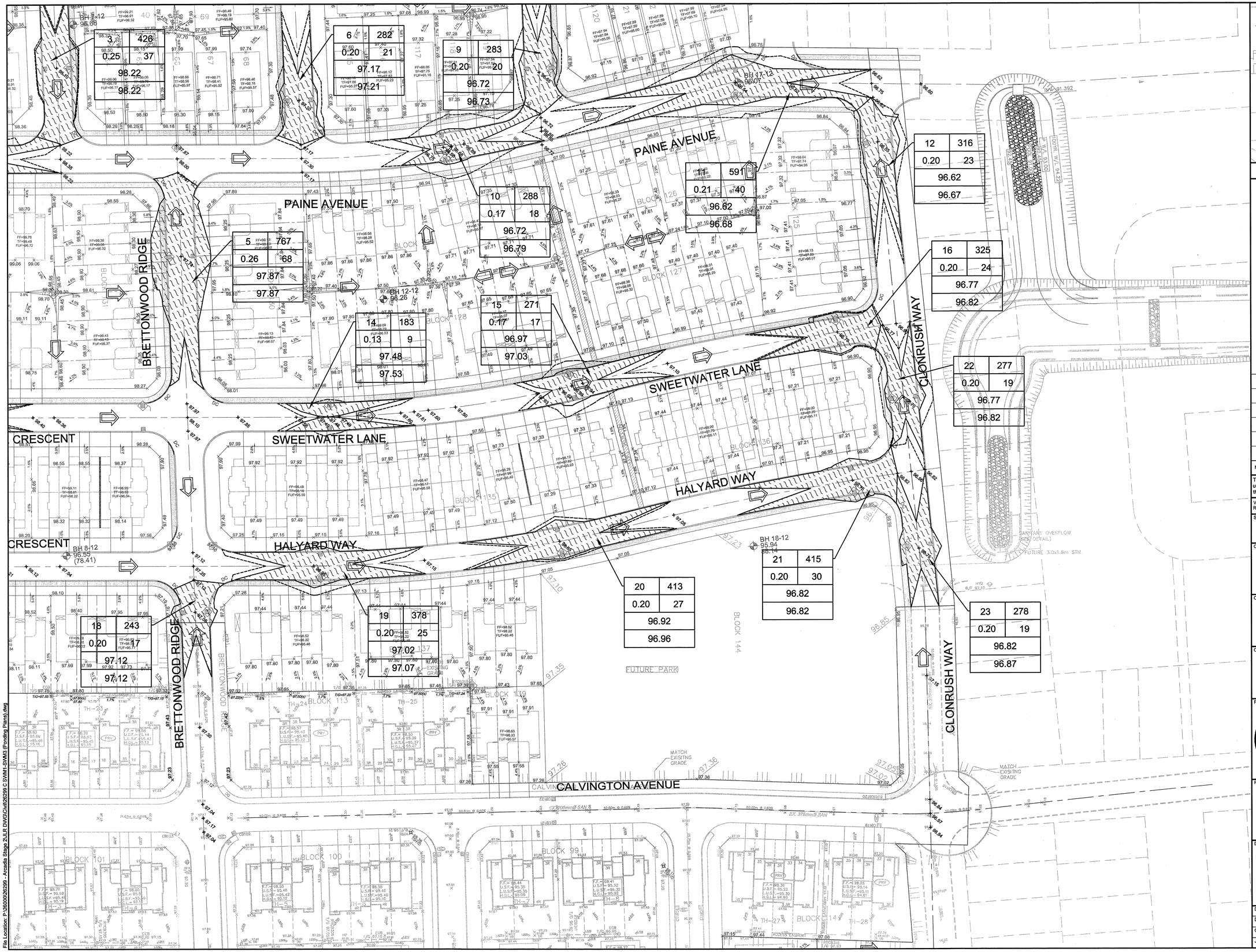

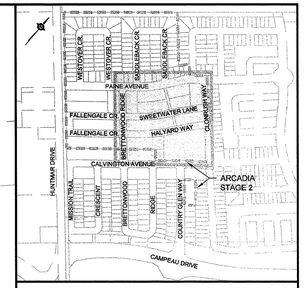

KEYPLAN

NOTE:

MAX. WATER ELEVATION OF EACH PONDING AREA (100YR STATIC + DYNAMIC) PROVIDED BY IBI IN ACCORDANCE WITH ARCADIA - STAGE 2 SWM REPORT AND STAGE 2 INLET DESIGN BRIEF DATED JULY 2014.

No.	ISSUE / REVISION	DD/MM/YY
2	ISSUED TO CITY FOR REVIEW - 2ND SUBMISSION	11/07/14
1	ISSUED TO CITY FOR REVIEW - 1ST SUBMISSION	31/03/14

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SCALE: 1:500

CLIENT:
MINTO COMMUNITIES INC.
200-180 KENT STREET
OTTAWA, ON
K1P 0B6

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J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS
www.jlrichards.ca

CONSULTANT:

PROFESSIONAL STAMP
LICENSED PROFESSIONAL ENGINEER
K.R. FERREY MORENO
100122432
July 15, 2014
PROVINCE OF ONTARIO

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
ARCADIA STAGE 2
370, 404, 410, 450 HUNTMAR DRIVE

DRAWING:
PONDING PLAN

DESIGN: H.M.
DRAWN: S.K.
CHECKED: K.F.
JLR #: 26299

DRAWING #: SWM3

PLOT DATE: July 15, 2014 6:43:02 PM

File Location: P:\26000\26299 - Arcadia Stage 2\JLR DWG\Civil\26299 C SWM1-SWM3 (Ponding Plans).dwg

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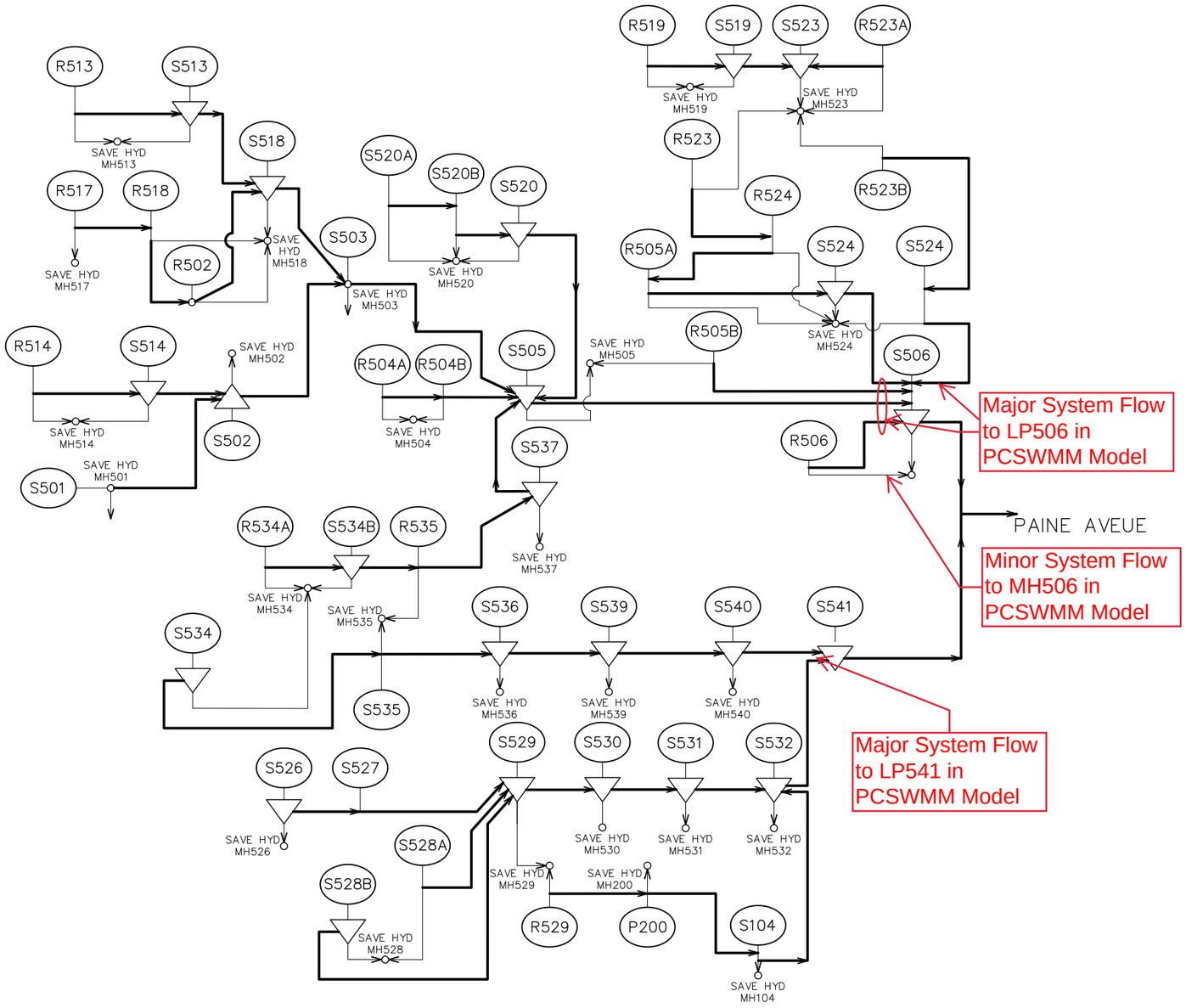


Scale	Project Title	Drawing Title	Sheet No.
IBI GROUP	ARCADIA STAGE 2 SWM REPORT	STAGE 2 SWMHYMO MODEL SCHEMATIC	FIGURE 4

Area ID	Available Storage (m^3)			Storage Utilized (m^3)	Major System Cascading Overflow (l/s)
	Static	Dynamic	Total		
s217	44.41	N/A	44.41	44.42	44
r215b	N/A	N/A	N/A	N/A	N/A
r215c	N/A	N/A	N/A	N/A	0
s216	12.78	74.05	86.83	18.51	66
r201	N/A	N/A	N/A	N/A	0
s201	4.30	127.66	131.96	16.70	120
r200	N/A	N/A	N/A	N/A	0
s200	44.27	N/A	44.27	22.20	0

The overland flow was evaluated at downstream locations, based on proposed grades. Using the channel routing routine in SWMHYMO, maximum normal depth and velocity of flow have been quantified and results are presented below.

Table 2.4 Maximum Cumulative Overland Flow at Key Locations (100 year Chicago and SCS events)

Location		Max. Cum. Flow (l/s)		Depth (m)		Velocity (m/s)		d x v (m2/s)	
		CHI	SCS	CHI	SCS	CHI	SCS	CHI	SCS
s210b	Calvington Avenue	141	145	0.08	0.08	0.68	0.68	0.05	0.05
s211b	Mission Trail Crescent	264	263	0.01	0.10	0.79	0.79	0.08	0.08
s215a	Brettonwood Ridge	313	313	0.11	0.11	0.77	0.83	0.09	0.09
s202b	Calvington Avenue	66	76	0.06	0.06	0.56	0.58	0.03	0.04
s216	Country Glen Way	66	66	0.06	0.06	0.56	0.56	0.03	0.03
s200	Clonrush Way *(to SWM facility)*	52	0	0.05	n/a	0.52	n/a	0.03	n/a
s201	Calvington Avenue *(most downstream street segment)*	119	120	0.07	0.07	0.65	0.65	0.05	0.05
s303c	Campeau Drive *(to be confirmed at detailed design stage)*	418	429	0.11	0.11	1.07	1.08	0.11	0.11

At each location, the maximum ponding depth is less than the maximum allowable 0.3 m, and the d x v product is less than the maximum allowable product of 0.6 per City of Ottawa Sewer Design Guidelines.

Table 2.1 Hydrological parameters – Arcadia Phase 1 (continued)

Drainage Area		Receiving MH	Imp. (%)		Length LGI (m)	Minor System Restriction	
ID	Area (ha)		Timp	Ximp		Rational Method Flow (l/s)	ICD Flow* (l/s)
r303b	0.21	303	20	1	52	32	45
s303b	0.17	303	76	76	38	36.47	63.4
r217a	0.29	217	47	1	75	*incl. in r217b*	85
r217c	0.18	217	53	1	81	*incl. in r217b*	*incl. in r217b*
r217b	0.18	217	47	1	79	175	108
s217	0.51	217	76	76	82	107	106
r215b	0.15	215	47	1	42	*incl. in r215b*	*incl. in r215c*
r215c	0.08	216	53	1	39	62.5	73
s216	0.41	216	76	76	73	86	83.7
r201	0.08	201	47	1	43	23	26
s201	0.27	201	79	79	84	58	61.4
r200	0.35	200	53	1	60	*incl. in s200*	92
s200	0.24	200	76	76	75	51	54

** For rear yard catchments, 100 year simulated flow is captured*

The below table summarizes the hydrological parameters for the external lands upstream of Arcadia Phase 1.

Table 2.2 Hydrological parameters – External Areas

Drainage Area			Receiving XPSWMM Node	Imp. (%)		Length LGI (m)	Surface Storage (cu-m)	Minor System Restriction (l/s)
ID		Area (ha)		Timp	Ximp			
Phase 2	210	5.42	104	66	50	260	181	1301
	220	2.13	104	71	51	179	128	511
	230	2.26	104	69	51	184	116	542
	240	1.41	104	38	25	109	163	338
Huntmar	310	1.74	104	71	71	289	0	414
	300	1.73	300	71	71	196	0	412
Commercial Block	301	0.85	301	71	71	128	79[†]	197
	303	8.99	303	71	71	372	790[†]	1823

[†] *Required storage, to be confirmed at detail design stage*

The overland flow was evaluated at downstream locations, based on proposed grades. Using the channel routing routine in SWMHYMO, maximum normal depth and velocity of flow have been quantified and results are presented below. It should be noted that the 100 year SCS design storm is critical in terms of peak major system cascading flow.

Table 5.5 Summary of Cascading Major Overflow for Arcadia Stage 2

MAJOR SYSTEM SEGMENT ID	STREET NAME	ROAD ROW SECTION	CASCADING OVERFLOW (L/S)*		LONGITUDINAL SLOPE (%)	MAXIMUM VELOCITY (M/S)	MAXIMUM DEPTH (M)	VELOCITY X DEPTH (M2/S)
			100 YR, 12HR SCS	100 YR, 3HR CHI				
S513	Westover Cres. (NO 1)	18	14	2	1.10%	0.48	0.03	0.01
S518	Westover Cres. (NO 1)	18	0	0	0.98%	0.00	0.00	0.00
S514	Westover Cres. (NO 1)	18	0	0	2.70%	0.00	0.00	0.00
S502	PAINE	22	87	74	0.98%	0.72	0.06	0.04
S537	BRETTONWOOD	18	0	0	1.83%	0.00	0.00	0.00
S520	Saddleback Cres. (NO 2)	18	40	25	1.49%	0.68	0.04	0.03
S505	PAINE	22	100	80	0.50%	0.58	0.07	0.04
S519	Saddleback Cres. (NO 2)	18	7	0	0.83%	0.34	0.02	0.01
S523	Saddleback Cres. (NO 2)	18	0	0	0.84%	0.00	0.00	0.00
S524	Saddleback Cres. (NO 2)	18	1	0	0.50%	0.10	0.01	0.00
S506	PAINE	22	53	32	0.50%	0.49	0.06	0.03
S534	Fallengale Cres. (NO 3)	18	34	31	0.63%	0.49	0.05	0.02
S535	Fallengale Cres. (NO 3)	18	38	34	1.62%	0.69	0.04	0.03
S536	Sweetwater Lane (NO 4)	18	63	59	1.83%	0.84	0.05	0.04
S539	Sweetwater Lane (NO 4)	18	71	66	0.75%	0.62	0.06	0.04
S540	Sweetwater Lane (NO 4)	18	34	31	0.62%	0.48	0.05	0.02
S526	Fallengale Cres. (NO 3)	18	49	47	1.70%	0.77	0.04	0.03
S529	Halyard Way (NO 5)	18	59	50	0.71%	0.58	0.05	0.03
S104	CLONRUSH	18	66	22	1.09%	0.69	0.05	0.04
S530	Halyard Way (NO 5)	18	20	13	0.54%	0.39	0.04	0.01
S531	Halyard Way (NO 5)	18	0	0	1.09%	0.00	0.00	0.00
S532	CLONRUSH	18	34	0	0.62%	0.48	0.05	0.02
S541	CLONRUSH	18	20	0	0.50%	0.29	0.03	0.01

Notes: Major system segment overflow from the 100 year 12 hour SCS and 100 year 3 hour Chicago design storm events were taken from the results of the SWMHYMO model (35805IM.dat/out). The output file is presented in **Appendix C**. Maximum velocity and maximum depth results are for the 100 year 12 hour SCS design storm as it generates higher peak flows.

The above table results indicate that at each location, the maximum ponding depth is less than the maximum allowable 0.3 m, and the d x v product is less than the maximum allowable product of 0.6 per City of Ottawa Sewer Design Guidelines.

NOTES

GRADING SURROUNDING TREES TO PROMOTE DRAINAGE TO TREE ROOT ZONE (IN SUCH A MANNER AS NOT TO BE DETRIMENTAL TO THE TREE)
REFER TO APPROVED LANDSCAPE PLAN FROM FOTENN PLANNING & DESIGN

MINTO COMMUNITIES
EARTHWORKS STOCK PILE AREA
(SURVEY INFORMATION PROVIDED BY J.L. RICHARDS DATED: JULY 17 2019)

CATCH BASINS TO BE INSTALLED BY OTHERS.

DRAINAGE TO BE MAINTAINED WITHIN FUTURE STAGE 5 TO BE COORDINATED WITH STAGE 5 EARTHWORKS

EMERGENCY SPILL POINT FOR RETURN PERIODS GREATER THAN 1:100 YR TO CAMPEAU DRIVE ELEVATION 95.26

REFER TO DWG C7 FOR SECTION F-F

SEE NOTE 2

GRADES OUTSIDE OF STAGE 3 LIMIT BY OTHERS

GRADES OUTSIDE OF STAGE 3 LIMIT BY OTHERS

100m FEEDMILL CREEK REGULATION LIMIT (FROM MVCA)

FEEDMILL CREEK 100 YEAR FLOOD PLAIN (FROM MVCA)

CATCH BASINS TO BE INSTALLED BY OTHERS.

602m³ SEDIMENT DRYING AREA

TOP OF PONDACTIVE STORAGE = 93.51
NORMAL WATER LEVEL = 92.79

R=14.00m

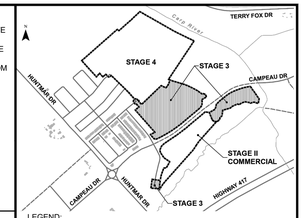
95.40 x

95.15

CATCH BASIN/MH ICD AND ROOF DRAIN INTERCONNECTED
CATCH BASIN/MH ICD AND SOLID COVER
CATCH BASIN/MH ICD AND ROOF DRAIN (BY OTHERS)

LEGEND:

91.00	CONTOUR
x92.52	PROPOSED ELEVATION
92.49	ORIGINAL GROUND ELEVATION FROM CITY LIDAR
x 92.52	EXISTING ELEVATION POST 2019 EARTHWORKS (±0.9m ABOVE DEC. 2018 USF)
95.000	PROPOSED CL ROAD HIGH/LOW POINT
1.5%	CAMPEAU DRIVE EXTENSION (COUNTRY GLEN WAY TO DDSBURY ROAD BY STANTEC SEPT. 2019
	SURFACE SLOPE
	FLOW DIRECTION
	MAJOR OVERLAND FLOW DIRECTION (1:100 YR)
	EMERGENCY OVERLAND FLOW DIRECTION
FF = 93.50	FINISHED FLOOR ELEVATION
TF = 93.20	TOP OF FOUNDATION ELEVATION
UF = 90.65	UNDERSIDE OF FOOTING ELEVATION
	TERRACING (MAX. 3:1)
	PERFORATED PIPE SUBDRAIN
	SWALE
	DITCH CENTERLINE
	NOISE FENCE IN ACCORDANCE WITH THE NOISE FENCE DETAILED STUDY DATED APRIL 29, 2019
TP 1 95.48	TESTPIT NUMBER
BH 1 95.48	BOREHOLE NUMBER
95.48	GROUND SURFACE ELEVATION (m)
(95.48)	UNDERSIDE OF TOPSOIL WHERE PRESENT (m)
(95.48)	PG - PREENGINEERED FILL LEVEL FROM TEST PIT INVESTIGATION (m)
(EF ≥ 95.48)	GROUND SURFACE ELEVATION (m) MAX. WATER LEVEL (STATIC)
PVR	PRESSURE REDUCING VALVE
	MOUNTABLE CURB
	BARRIER CURB



NOTES

GRADING SURROUNDING TREES TO PROMOTE DRAINAGE TO TREE ROOT ZONE (IN SUCH A MANNER AS NOT TO BE DETRIMENTAL TO THE TREE)
REFER TO APPROVED LANDSCAPE PLAN FROM FOTENN PLANNING & DESIGN

CATCH BASINS TO BE INSTALLED BY OTHERS.

PL
PROPOSED NOISE FENCE
2.5m
0.3m
1.0m
1.0m
PROPOSED SWALE OPENING BELOW NOISE FENCE

SECTION F-F NOISE
NOISE DETAIL
N.T.S

PONDING AREA TABLE

AREA NUMBER	MAXIMUM STATIC PONDING DEPTH (m)	CB T/G (m)	MAXIMUM STATIC PONDING ELEVATION (m)	MAXIMUM STATIC PONDING VOLUME (m³)	MAXIMUM STATIC PONDING AREA (m²)	100 YEAR HGL (m)	MAX. 100 YEAR PONDING DEPTH (MEASURED ABOVE CB T/G)	100 YR +20% HGL
LP1	0.30	96.77	97.07	64.81	643.76	97.08	0.31	97.10
LP2	0.30	95.32	95.62	62.72	616.00	95.62	0.30	95.65
LP3	0.78	95.33	95.62	330.87	989.00	95.50	0.17	95.62
LP4	0.30	95.37	95.67	118.71	1169.69	95.60	0.23	95.67
LP5	0.30	95.30	95.60	93.13	1133.25	95.44	0.14	95.48
LP6	0.17	95.57	95.74	9.04	284.64	95.88	0.31	95.93
LP7	0.22	95.96	96.18	36.78	465.06	96.31	0.35	96.36
LP8	0.23	96.42	96.65	53.56	677.81	96.65	0.23	96.73
LP9	0.14	95.39	95.53	3.48	121.57	-	-	-
LP30	0.24	95.97	96.21	50.72	666.38	96.15	0.18	96.24
LP31	0.16	95.67	95.83	7.78	173.34	95.89	0.22	95.97
LP33	0.18	95.47	95.65	21.84	364.11	95.61	0.14	95.67
RY1	0.80	96.11	96.41	-	-	-	-	-
RY2	0.14	95.77	95.91	-	-	-	-	-
RY3	0.29	95.65	95.94	-	-	-	-	-
RY4	0.35	94.97	95.22	-	-	-	-	-
RY5	0.20	95.30	95.30	-	-	-	-	-
RY6	0.30	96.04	96.34	-	-	-	-	-

MINIMUM BUILDING ELEVATIONS

Lot / Block Number	Unit	Min. USF	USF	Min Proposed Finished Grade	Fnd Depth	Lowest Permissable Building Opening Grade (Front)	Lowest Permissable Building Opening Grade (Rear)
1	-	94.49	95.20	97.36	2.16	96.80	97.51
2	-	94.48	95.20	97.36	2.16	96.80	97.51
3	-	94.49	95.20	97.36	2.16	96.80	97.51
4*	-	94.48	95.22	97.20	1.98	96.80	97.53
5*	-	94.48	95.22	97.20	1.98	96.80	97.53
6*	-	94.48	95.22	97.02	1.80	96.80	97.53
7*	-	94.48	95.25	97.05	1.80	96.80	97.56
8*	-	94.48	95.25	97.05	1.80	96.80	97.56
9*	-	94.47	95.25	97.05	1.80	96.80	97.56
10*	-	94.47	95.32	97.12	1.80	96.80	97.60
11*	-	94.47	95.61	97.23	1.62	96.80	97.60
12*	-	94.42	95.61	97.23	1.62	96.33	97.60
13*	-	94.42	95.35	97.15	1.80	96.33	96.71
14*	-	94.42	95.16	96.96	1.80	96.33	96.71
15*	-	94.41	95.10	96.90	1.80	96.33	96.71
16*	-	94.41	94.82	96.60	1.98	96.33	96.71
17*	-	94.40	94.76	96.74	1.98	96.33	96.71
18*	-	94.40	94.61	96.59	1.98	96.33	96.71
19	-	94.40	94.43	96.59	2.16	96.33	96.71
20	-	94.41	94.53	96.65	2.12	96.33	96.64
21	-	94.41	94.53	96.65	2.12	96.33	96.64
22	-	94.42	94.74	96.86	2.12	96.33	96.64
23	-	94.42	94.74	96.86	2.12	96.33	96.64
24	-	94.48	94.61	96.93	2.32	96.80	96.64
25	-	94.48	94.61	96.93	2.32	96.80	96.64
26	-	94.48	94.86	97.18	2.32	96.80	96.64
27	-	94.48	94.86	97.18	2.32	96.80	96.64
28	-	94.49	95.01	97.33	2.32	96.80	96.68
29	-	94.49	95.01	97.13	2.12	96.80	96.68
30*	-	94.49	95.17	96.89	1.72	96.80	96.68
31	A	94.33	94.43	96.66	2.23	96.36	96.64
31	B	94.33	94.43	96.66	2.23	96.36	96.64
31	C	94.33	94.43	96.66	2.23	96.36	96.64
31	D	94.33	94.43	96.66	2.23	96.36	96.64
32	A	94.33	94.51	96.70	2.19	96.36	96.64
32	B	94.33	94.51	96.70	2.19	96.36	96.64
32	C	94.33	94.51	96.70	2.19	96.36	96.64
32	D	94.33	94.51	96.74	2.23	96.36	96.64
33*	A	94.33	94.51	96.74	2.23	96.36	96.64
33*	B	94.28	94.99	97.04	2.05	96.36	96.68
33*	C	94.37	94.83	97.06	2.23	96.36	96.68
34	A	94.37	94.83	97.06	2.23	96.36	96.64
34	B	94.37	94.83	97.06	2.23	95.99	96.68
35*	A	94.38	94.71	96.70	2.05	95.99	96.11
35*	B	94.38	94.71	96.70	1.99	95.99	96.11
36*	A	94.38	94.39	96.44	2.05	95.99	96.11
36*	B	94.38	94.39	96.44	2.05	95.99	96.11
36*	C	94.38	94.39	96.44	2.05	95.99	96.11
36*	D	94.38	94.39	96.38	1.99	95.99	96.11
36*	E	94.38	94.39	96.38	1.99	95.99	96.11
36*	F	94.35	94.39	96.38	1.99	95.99	96.11
37*	A	94.30	94.43	96.22	1.79	95.99	96.11
37*	B	94.30	94.43	96.22	1.79	95.99	96.11
37*	C	94.30	94.43	96.22	1.79	95.78	96.11
37*	D	94.30	94.43	96.22	1.79	95.78	96.11
37*	E	94.30	94.43	96.22	1.79	95.78	96.11
37*	F	94.30	94.43	96.22	1.79	95.78	96.11
38*	A	94.17	94.24	96.63	1.59	95.75	95.60
38*	B	94.17	94.24	96.63	1.59	95.75	95.60
38*	C	94.17	94.24	96.63	1.79	95.75	95.60
38*	D	94.17	94.24	96.03	1.79	95.75	95.60
38*	E	94.17	94.24	96.11	1.87	95.75	95.60
38*	F	94.17	94.24	96.11	1.87	95.75	96.06
39*	A	94.19	94.24	96.63	1.39	95.75	95.60
39*	B	94.19	94.24	96.63	1.39	95.75	95.60
39*	C	94.19	94.24	96.63	1.39	95.75	95.60
39*	D	94.19	94.24	96.63	1.39	95.75	95.52
39*	E	94.19	94.24	96.63	1.39	95.75	95.52
39*	F	94.19	94.24	96.63	1.39	95.75	95.52
40*	A	94.19	94.24	96.63	1.39	95.75	95.52
40*	B	94.19	94.24	96.63	1.39	95.75	95.52
40*	C	94.19	94.24	96.63	1.39	95.75	95.52
40*	D	94.19	94.24	96.63	1.39	95.75	95.52
40*	E	94.19	94.24	96.63	1.39	95.75	95.52
40*	F	94.19	94.24	96.63	1.39	95.75	95.52
41*	A	94.19	94.21	96.60	1.39	95.41	95.52
41*	B	94.19	94.21	96.60	1.39	95.41	95.52
41*	C	94.19	94.21	96.60	1.39	95.41	95.52
41*	D	94.19	94.21	96.60	1.39	95.41	95.52
42*	E	94.10	94.21	96.60	1.39	95.41	95.30
42*	A	94.10	94.21	96.60	1.39	95.41	95.30
42*	B	94.10	94.21	96.60	1.39	95.41	95.30
42*	C	94.10	94.21	96.60	1.39	95.41	95.30
42*	D	94.10	94.21	96.60	1.39	95.41	95.30
42*	E	94.10	94.21	96.60	1.39	95.41	95.30
43*	A	94.23	94.25	96.64	1.39	95.77	95.30
43*	B	94.23	94.25	96.64	1.39	95.77	95.30
43*	C	94.23	94.25	96.64	1.39	95.77	95.30
43*	D	94.23	94.25	96.64	1.39	95.77	95.52
43*	A	94.23	94.26	96.65	1.39	95.77	95.52
44*	C	94.23	94.26	96.65	1.39	95.77	95.52
44*	A	94.24	94.31	95.70	1.39	95.82	95.52
44*	B	94.24	94.31	95.70	1.39	95.82	95.52
45*	C	94.24	94.31	95.70	1.39	95.77	95.52
45*	A	94.24	94.31	95.70	1.39	95.82	95.52
45*	E	94.24	94.31	95.70	1.39	95.77	95.52
45*	F	94.24	94.31	95.70	1.39	95.77	95.52
46*	C	94.24	94.26	95.65	1.39	95.82	95.60
46*	A	94.24	94.26	95.65	1.39	95.82	95.60
46*	D	94.24	94.26	95.65	1.39	95.82	95.60
46*	E	94.24	94.26	95.65	1.39	95.82	95.60
46*	F	94.24	94.26	95.65	1.39	95.82	95.60
47*	A	94.26	94.29	96.68	1.79	95.82	96.06
47*	B	94.26	94.29	96.16	1.87	95.82	96.06
47*	C	94.26	94.29	96.16	1.87	95.82	95.60
47*	D	94.26	94.29	96.16	1.87	95.82	95.60
47*	E	94.26	94.29	95.98	1.69	95.82	95.60
47*	F	94.26	94.29	95.98	1.69	95.82	95.60
48*	A	94.23	94.25	95.94	1.69	95.77	95.83
48*	B	94.23	94.25	95.94	1.69	95.77	95.83
48*	C	94.23	94.25	95.94	1.69	95.77	96.21
48*	D	94.23	94.25	95.94	1.69	95.77	96.21
48*	A	94.23	94.33	96.02	1.69	95.77	96.21
49*	B	94.23	94.33	96.02	1.69	95.77	96.21
49*	C	94.23	94.33	96.20	1.87	95.77	96.21
49*	D	94.23	94.33	96.20	1.87	95.68	96.21
49*	E	94.24	94.27	96.14	1.87	95.95	96.24
49*	A	94.24	94.27	96.14	1.87	95.95	96.24
49*	B	94.24	94.27	96.14	1.87	95.95	96.24
50*	C	94.24	94.27	96.14	1.87	95.95	96.24
50*	D	94.24	94.27	96.14	1.87	95.95	96.24
50*	E	94.24	94.27	96.14	1.87	95.95	96.24
51*	A	94.26	94.26	95.95	1.69	95.95	96.24
51*	B	94.26	94.26	95.95	1.69	95.95	96.24
51*	C	94.26	94.26	96.13	1.87	95.95	96.24
51*	D	94.26	94.26	96.13	1.87	95.95	96.24
51*	E	94.26	94.26	96.13	1.87	95.95	96.24
51*	F	94.26	94.26	96.13	1.87	95.95	96.24
52*	A	94.34	94.35	96.34	1.99	96.25	96.35
52*	B	94.34	94.35	96.34	1.99	96.25	96.35
52*	C	94.34	94.35	96.34	1.99	96.25	96.35
52*	A	94.38	94.50	96.49	1.99	96.25	96.35
52*	B	94.38	94.50	96.49	1.99	96.25	96.35
53*	C	94.38	94.50	96.49	1.99	96.25	96.35
53*	D	94.38	94.50	96.49	1.99	96.25	96.35
54*	A	94.33	94.72	96.31	1.59	96.61	96.31
54*	B	94.33	94.72	96.31	1.59	96.61	96.31
54*	A	94.33	94.72	96.51	1.79	96.61	96.31
54*	E	94.33	94.72	96.51	1.79	96.61	96.24
54*	F	94.33	94.72	96.51	1.79	96.61	96.24
55*	A	94.31	94.48	96.27	1.79	95.89	96.24
55*	B	94.31	94.48	96.27	1.79	95.89	96.24
55*	C	94.31	94.48	96.27	1.79	95.89	96.24
55*	D	94.31	94.48	96.27	1.79	95.89	96.24
55*	E	94.31	94.48	96.27	1.79	95.89	96.24
55*	F	94.31	94.48	96.27	1.79	95.89	96.24
56*	A	94.26	94.40	96.27	1.87	95.89	96.24
56*	B	94.26	94.40	96.27	1.87	95.89	96.24
56*	C	94.26	94.40	96.27	1.87	95.89	96.21
56*	D	94.26	94.40	96.27	1.87	95.89	96.21
56*	A	94.26	94.26	96.25	1.99	95.89	96.21
57*	B	94.26	94.26	96.25	1.99	95.89	96.21
57*	C	94.26	94.26	96.25	1.99	95.89	96.21
57*	D	94.26	94.26	96.25	1.99	95.89	95.83
57*	A	94.34	94.75	96.62	1.87	96.15	96.71
57*	B	94.34	94.75	96.62	1.87	96.15	96.71
57*	C	94.34	94.75	96.62	1.87	96.15	96.71
58*	D	94.34	94.75	96.62	1.87	96.15	96.71
58*	A	94.29	94.51	96.38	1.87	96.15	96.80
58*	B	94.34	94.75	96.62	1.87	96.15	96.71
58*	C	94.29	94.51	96.38	1.87	96.15	96.71
59*	A	94.27	94.93	96.92	1.99	96.15	96.71
59*	B	94.27	94.93	96.72	1.79	96.15	96.71
59*	C	94.27	94.93	96.72	1.79	96.15	96.71
60*	A	94.27	94.93	96.72	1.79	96.15	96.71
60*	B	94.27	94.93	96.72	1.79	96.15	96.71
60*	C	94.27	94.93	96.72	1.79	96.15	96.71
60*	D	94.27	94.93	96.72	1.79	96.15	96.71
60*	E	94.27	94.93	96.72	1.79	96.15	96.71
60*	F	94.27	94.93	96.72	1.79	96.15	96.71
61*	A	94.29	95.25	97.44	2.19	97.35	96.71
61*	B	94.29	95.25	97.44	2.19	97.35	96.71
61*	C	94.29	95.25	97.24	1.99	96.15	96.71
61*	D	94.29	95.25	97.24	1.99	96.15	96.71
61*	E	94.29	95.25	97.24	1.79	96.15	96.71
61*	F	94.29	95.25	97.04	1.79	96.15	96.71
62*	A	94.30	95.57	97.44	1.87	97.35	96.71
62*	B	94.30	95.57	97.44	1.87	97.35	96.71
62*	C	94.29	95.57	97.44	1.87	97.35	96.71
62*	D	94.29	95.57	97.44	1.87	97.35	96.71
62*	E	94.29	95.57	97.44	1.87	97.35	96.71
62*	F	94.30	95.57	97.44	1.87	97.35	96.71
63*	A	94.30	95.62	97.67	2.05	97.45	97.75
63*	B	94.30	95.62	97.67	2.05	97.45	97.75
63*	C	94.30	95.62	97.83	1.61	97.35	96.94
63*	D	94.30	95.62	97.83	1.61	97.35	96.94
63*	E	94.30	95.62	97.83	1.61	97.35	96.94
63*	F	94.30	95.62	97.83	1.61	97.35	96.94
64*	A	94.30	95.58	97.38	1.80	97.35	96.05
64*	B	94.30	95.58	97.38	1.80	97.35	96.05
64*	C	94.30	95.58	97.38	1.80	97.35	96.05
64*	D	94.30	95.58	97.38	1.80	97.35	96.05
64*	E	94.30	95.58	97.38	1.80	97.35	96.05
64*	F	94.30	95.58	97.38	1.80	97.35	96.05
65*	A	94.24	94.96	96.25	1.99	95.83	96.71
65*	B	94.27	95.46	97.28	1.79	96.15	96.05
65*	C	94.27	95.46	97.28	1.79	96.15	96.05
65*	D	94.27	95.46	97.28	1.79	96.15	96.05
65*	E	94.28	95.46	97.28	1.79	96.15	96.05
65*	F	94.28	95.46	97.28	1.79	96.15	96.05
66*	A	94.27	95.49	97.28	1.79	96.15	96.05
66*	B	94.27	95.49	97.28	1.79	96.15	96.05
66*	C	94.27	95.49	97.28	1.79	96.15	96.05
66*	D	94.27	95.49	97.28	1.79	96.15	96.05
66*	E	94.28	95.49	97.28	1.79	96.15	96.05
66*	F	94.28	95.49	97.28	1.79	96.15	96.05
66*	G	94.26	95.49	97.46	1.97	96.15	96.05
66*	H	94.28	95.49	97.46	1.97	96.15	96.05
67*	A	94.25	95.01	96.80	1.79	96.15	96.05
67*	B	94.25	95.01	96.80	1.79	96.15	96.05
67*	C	94.25	95.01	96.80	1.79	96.15	96.05
67*	D	94.25	95.01	96.80	1.79	96.15	96.05
67*	E	94.26	95.01	96.80	1.79	96.15	96.05
67*	F	94.26	95.01	96.80	1.79	96.15	96.05
68*	A	94.24	94.33	96.13	1.80	95.77	96.05
68*	B	94.24	94.33	96.13	1.80	95.77	96.05
68*	C	94.26	95.01	96.99	1.96	96.15	96.05
68*	D	94.26	94.33	96.13	1.80	95.77	96.05
68*	E	94.24	94.51	96.31	1.80	95.77	96.05
68*	F	94.24	94.51	96.31	1.80	95.77	96.05
68*	G	94.24	94.51	96.31	1.80	95.77	96.05
68*	H	94.24	94.51	96.31	1.80	95.77	96.05
69*	A	94.23	94.13	95.93	1.80	95.77	96.05
69*	B	94.23	94.13	95.93	1.80	95.77	96.05
69*	C	94.23	94.13	95.93	1.80	95.77	96.05
69*	D	94.23	94.13	95.93	1.80	95.77	96.05
69*	E	94.23	94.13	95.93	1.80	95.77	96.05
69*	F	94.23	94.13	95.93	1.80	95.77	96.05
69*	G	94.23	94.13	95.93	1.80	95.77	96.05
69*	H	94.23	94.13	95.93	1.80	95.77	96.05

No.	ISSUE / REVISION	DD/MM/YY
13	REVISED UNIT BLOCK 60 AND REVISED USF UNIT BLOCKS 65 & 66	13/05/2020
12	REVISED UNIT BLOCKS 47 & 54 - RE-ISSUED FOR CITY REVIEW	31/03/2020
11	REVISED USF REAR LANE TOWNHOMES	12/02/2020
10	REVISED PER CITY COMMENTS	08/01/2020
09	REVISED PER CITY COMMENTS	01/11/2019
08	ISSUED GRADING PLANS TO CITY FOR REVIEW	13/09/2019
07	ISSUED FOR TENDER ADDENDUM NO.1	29/05/2019
06	ISSUED FOR TENDER, ISSUED TO MECP, REVISED PER CITY COMMENTS	23/05/2019

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CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
ARCADIA STAGE 3
450 HUNTMAR DRIVE

DRAWING:
GRADING PLAN

DESIGN:	AT
DRAWN:	CJM
CHECKED:	LD
JLR #:	26299-03

DRAWING #: G1

PLOT DATE: March 2, 2023 11:32:10 AM

City File No: DO7-16-0025 Plan No: 17816

AS CONSTRUCTED INFORMATION

This drawing comprises the original design drawing updated to reflect Contractor supplied information as to final "as constructed" conditions. The Contractor supplied information has not been verified and, as such, this drawing is not warranted by J.L Richards & Associates Limited for completeness or accuracy.

Date of Issue: 03/02/23

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FUTURE REAR YARD DITCH TO BE COMPLETED AS PART OF ARCADIA STAGE 4 WORKS.

SEE DRAWING G3

MAX 3:1 TERRACING TO EXISTING (SEE G3)

MAX 3:1 TERRACING TO EXISTING (SEE G3)

LIMIT OF STAGE 3

COUNTRY GLEN WAY

voie Sweet Pea Way

SWEET PEA WAY

NATARE PLACE

place Natare Place

CHEMIN WINTERSET

chemin Winterset

cour Speedvale Court

SPEEDVALE COURT

Speedvale Court

Place Natare Place

NATARE PLACE

Road

CAMPEAU DRIVE

BLOCK 70

BLOCK 73

BLOCK 74

REFER TO DWG D-2

REFER TO DWG D-2

REFER TO DWG G7 FOR SECTION F-F

SEE NOTE 2

SITE BENCH MARK
TOP OF SPINDLE
ELEV. = 98.28m

GRADES OUTSIDE OF STAGE 3 LIMIT BY OTHERS

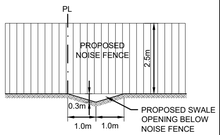
GRADES OUTSIDE OF STAGE 3 LIMIT BY OTHERS

SEE DRAWING G1

AS-CONSTRUCTED SURVEY GRADES ARE PER THE ABG SURVEY DATED JUNE 23, 2022 FROM J.D. BARNES

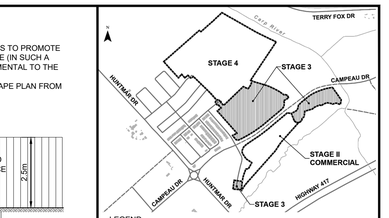
NOTES

GRADING SURROUNDING TREES TO PROMOTE DRAINAGE TO TREE ROOT ZONE (IN SUCH A MANNER AS NOT TO BE DETRIMENTAL TO THE TREE)
REFER TO APPROVED LANDSCAPE PLAN FROM FOTENN PLANNING & DESIGN



SECTION F-F NOISE NOISE DETAIL

N.T.S



LEGEND:

- 91.00 — CONTOUR
- ×92.52 — PROPOSED ELEVATION
- 92.49 — ORIGINAL GROUND ELEVATION FROM CITY LIDAR
- 92.49 — EXISTING ELEVATION POST 2019 EARTHWORKS (±0.5m ABOVE DEC. 2018 USF)
- × 92.52 — PROPOSED CL ROAD HIGH/LOW POINT
- 95.000 — CAMPEAU DRIVE EXTENSION (COUNTRY GLEN WAY TO DIDSBURY ROAD BY STANTEC SEPT. 2019
- 1.5% — SURFACE SLOPE
- FLOW DIRECTION
- MAJOR OVERLAND FLOW DIRECTION (1:100 YR)
- EMERGENCY OVERLAND FLOW DIRECTION
- FF = 93.50 — FINISHED FLOOR ELEVATION
- TF = 93.20 — TOP OF FOUNDATION ELEVATION
- UF = 90.65 — UNDERSIDE OF FOOTING ELEVATION
- TERRACING (MAX. 3:1)
- PERFORATED PIPE SUBDRAIN
- SWALE
- DITCH CENTERLINE
- NOISE FENCE IN ACCORDANCE WITH THE NOISE FENCE DETAILED STUDY DATED APRIL 29, 2019
- TP 1 95.48 — TESTPIT NUMBER
- BH 1 95.48 — BOREHOLE NUMBER
- GROUND SURFACE ELEVATION (m)
- (95.48) — UNDERSIDE OF TOPSOIL WHERE PRESENT (m)
- (95.48) — PG - PREENGINEERED FILL LEVEL FROM TEST PIT INVESTIGATION (m)
- (EF ≥ 95.48) — GROUND SURFACE ELEVATION (m)
- MAX. WATER LEVEL (STATIC)
- PVR — PRESSURE REDUCING VALVE
- MOUNTABLE CURB
- BARRIER CURB

No.	ISSUE / REVISION	DD/MM/YY
13	REVISED UNIT BLOCK 60 AND REVISED USF UNIT BLOCKS 65 & 66	13/05/2020
12	REVISED UNIT BLOCKS 47 & 54 - RE-ISSUED FOR CITY REVIEW	31/03/2020
11	REVISED USF REAR LANE TOWNHOMES	12/02/2020
10	REVISED PER CITY COMMENTS	08/01/2020
09	REVISED PER CITY COMMENTS	01/11/2019
08	ISSUED GRADING PLANS TO CITY FOR REVIEW	13/09/2019
07	ISSUED FOR TENDER ADDENDUM NO.1	29/05/2019
06	ISSUED FOR TENDER, ISSUED TO MECP, REVISED PER CITY COMMENTS	23/05/2019

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SCALE: 1:500

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca
J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
ARCADIA STAGE 3
450 HUNTMAR DRIVE

DRAWING:
GRADING PLAN

AS CONSTRUCTED INFORMATION

This drawing comprises the original design drawing updated to reflect Contractor supplied information as to final "as constructed" conditions. The Contractor supplied information has not been verified and, as such, this drawing is not warranted by J.L Richards & Associates Limited for completeness or accuracy.

Date of Issue: 03/02/23

FILE: $FILE$

DESIGN:	AT
DRAWN:	CJM
CHECKED:	LD
JLR #:	26299-03

DRAWING #: G2

File Location: \\projects-ot\projects\26000\26299-03 Arcadia - Stage 3 and Campeau Pond\3-JLR DWG\1-Civil\Grading As-built Review\26299-03 C G1 AS CONSTRUCTED.dwg

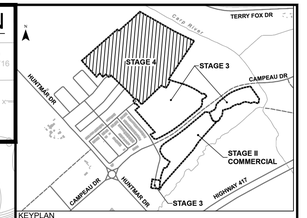
PLOT DATE: March 2, 2023 11:33:38 AM

City File No: DO7-16-16-0025 Plan No: 17816

AS CONSTRUCTED INFORMATION

This drawing comprises the original design drawing updated to reflect Contractor supplied information as to final "as constructed" conditions. The Contractor supplied information has not been verified and, as such, this drawing is not warranted by J.L Richards & Associates Limited for completeness or accuracy.

Date of Issue: 2023-03-02



KEYPLAN

LEGEND:

- 91.00 — CONTOUR
- ×92.52 — PROPOSED ELEVATION
- 92.40 — BALANCED GROUND ELEVATION (0.9m ABOVE PROPOSED USF FROM DEC 2018)
- 92.49 — EXISTING ELEVATION FROM STANTEC SURVEY FROM OCTOBER, 2018
- ×92.52 — PROPOSED CL ROAD HIGH/LOW POINT
- 1.5% — SURFACE SLOPE
- FLOW DIRECTION
- MAJOR OVERLAND FLOW DIRECTION (1:100 YR)
- FF = 93.50 — FINISHED FLOOR ELEVATION
- TF = 93.20 — TOP OF FOUNDATION ELEVATION
- UF = 90.65 — UNDERSIDE OF FOOTING ELEVATION
- TERRACING (MAX. 3:1)
- PERFORATED PIPE SUBDRAIN
- SWALE
- DITCH CENTERLINE
- NOISE FENCE IN ACCORDANCE WITH THE NOISE FENCE DETAILED STUDY DATED APRIL 29, 2019
- TP17-19 — TEST/PIT NUMBER
- BH 1 — BOREHOLE NUMBER
- 95.48 — GROUND SURFACE ELEVATION (m)
- (95.48) — UNDERSIDE OF TOPSOIL WHERE PRESENT (m)
- [95.48] — PG - PREENGINEERED FILL LEVEL FROM TEST PIT INVESTIGATION (m)
- (EF ≥ 95.68) — GROUND SURFACE ELEVATION (m)
- TYPICAL REINFORCED GRASS SERVICE ROAD

1:100 YEAR CARP RIVER WSEL FROM" CARP RIVER PCSWMM MODEL DOCUMENTATION DRAFT REPORT MARCH 2016" PREPARED BY THE CITY OF OTTAWA, DATED MARCH 2016.

CJ068 1:100 YR WSEL 93.51
CJ069 1:100 YR WSEL 93.51
CJ070 1:100 YR WSEL 93.51

REFER TO DWG G3 FOR NODES.

No,	ISSUE / REVISION	DD/MM/YY
12	ISSUED TO MINTO FOR UPDATED LOTS 36 AND 54	20/04/21
11	REVISED TO INCLUDE CLONRUSH WAY	16/10/20
10	PAINE AVENUE PAVEMENT WIDENING	25/09/20
09	REVISED PER CITY COMMENTS / ISSUED TO PATERSON	03/0920
08	ISSUED FOR SI-002- RELOCATION OF LOT 135 SERVICE LATERAL & RELOCATION OF CB61	19/06/20
07	ISSUED FOR CITY STAMP	28/05/20

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SCALE: 1:500

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca — J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

MINTO COMMUNITIES INC.
ARCADIA STAGE 4

450 HUNTMAR DRIVE

DRAWING:

GRADING PLAN

DESIGN: AT	
DRAWN: SK	DRAWING #:
CHECKED: LD	G1
JLR #: 26299-004	

PLOT DATE: March 2, 2023 3:38:55 PM

City File No: D07-16-16-0025 Plan No: 17816

NOTES

WITH RESPECT TO THE MEDIUM TREES AND THE TREE PLANTING IN SENSITIVE MARINE CLAY SOILS - 2017 GUIDELINES, THE LANDSCAPE PLAN AND DESIGN WILL NEED TO REQUIRE THAT GRADING SURROUNDING THE TREE PROMOTES DRAINING TO THE TREE ROOT ZONE (IN SUCH A MANNER AS NOT TO BE DETRIMENTAL TO THE TREE).

File Location: V:\2600\0026299-004 - Arcadia Stage 4\6-Contract Admin\1. Contract for Servicing\14. Close Out\15. As-Constructed Grading\26299-004 C AS CONSTRUCTED GRD 2023-03-02.dwg

AS CONSTRUCTED INFORMATION

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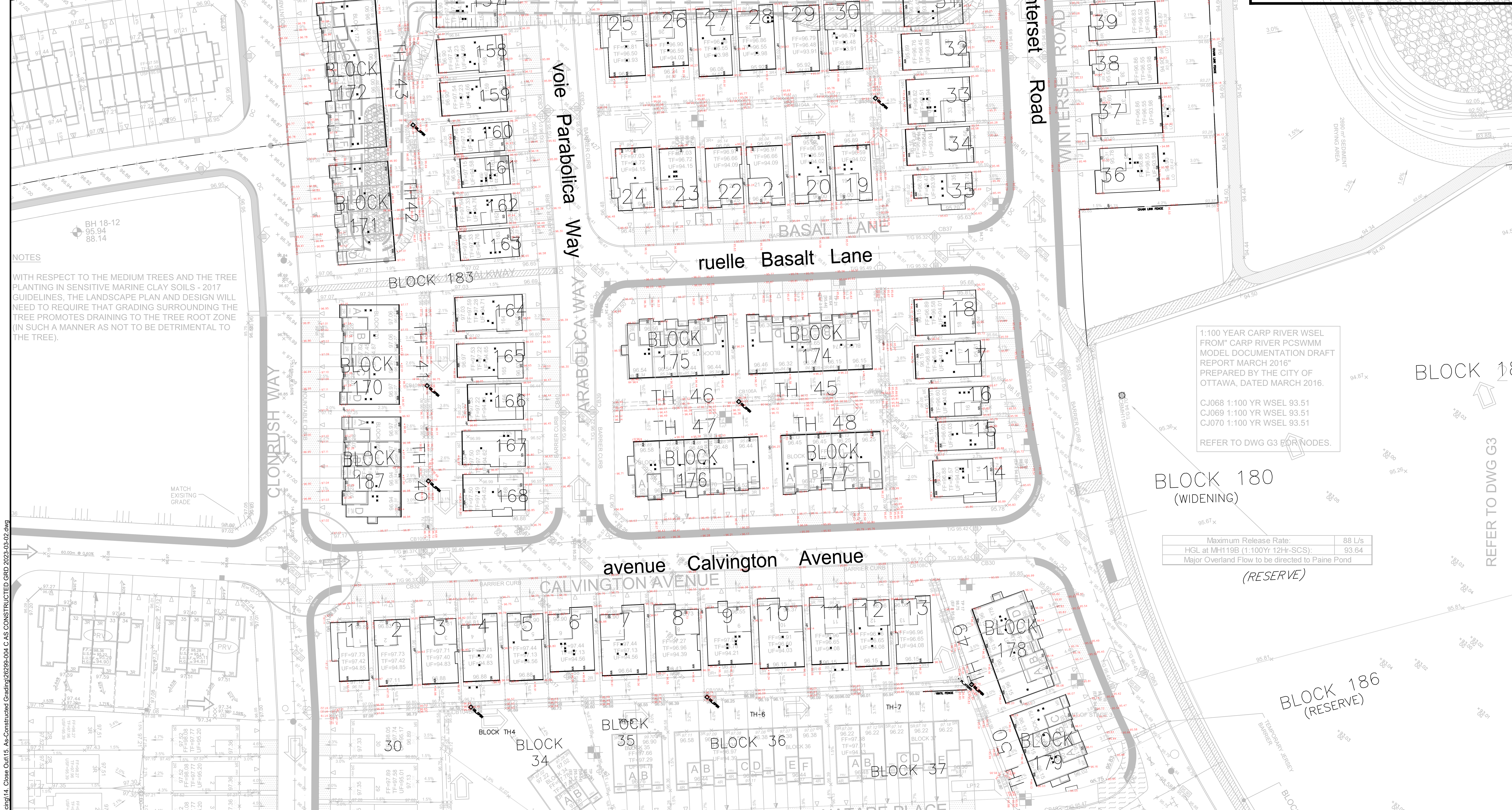
Date of Issue: 2023-03-02



Lot / Block Number	Unit Number	Min. USF	USF	Fnd Depth	Lowest Permissible Building Opening Grade (Front)	Lowest Permissible Building Opening Grade (Rear)
1	-	94.45	94.85	1.98	96.69	96.88
2	-	94.45	94.85	2.88	96.69	96.88
3	-	94.34	94.83	1.98	96.69	96.88
4	-	94.34	94.83	1.98	96.69	96.88
5	-	94.34	94.56	2.34	96.69	96.88
6	-	94.22	94.56	2.34	96.69	96.88
7	-	94.22	94.56	2.34	95.70	96.88
8	-	94.10	94.39	2.34	95.70	96.88
9	-	94.10	94.21	2.34	95.70	96.88
10	-	93.98	94.03	2.34	95.70	96.88
11	-	93.98	94.08	2.16	95.70	96.88
12	-	93.97	94.08	1.98	95.70	96.88
13	-	93.97	94.08	1.98	95.70	96.88
14	-	93.93	94.00	1.98	95.59	96.33
15	-	93.94	94.03	1.80	95.59	96.33
16	-	93.94	94.03	1.80	95.59	96.33
17	-	93.92	94.01	1.80	95.59	96.15
18	-	93.92	94.01	1.80	95.59	96.15
19	-	93.92	94.02	1.87	95.57	95.92
20	-	93.93	94.02	1.90	95.57	95.92
21	-	93.93	94.09	1.83	95.57	95.92
22	-	93.93	94.09	1.99	95.57	95.92
23	-	93.95	94.15	2.12	95.57	95.92
24	-	93.95	94.15	2.12	95.57	95.92
25	-	93.89	93.93	2.32	95.30	95.92
26	-	93.89	94.02	2.16	95.30	95.92
27	-	93.87	93.98	1.98	95.30	95.92
28	-	93.87	93.98	1.98	95.30	95.92
29	-	93.88	93.91	1.80	95.30	95.92
30	-	93.88	93.91	1.80	95.30	95.92
31	-	93.86	93.88	1.62	95.31	95.89
32	-	93.87	93.88	1.62	95.31	95.89
33	-	93.88	93.94	1.62	95.31	96.19
34	-	93.88	93.94	1.62	95.31	96.19
35	-	93.89	93.90	1.80	95.31	96.19
36	-	93.89	93.98	0.92	95.31	94.95
37	-	93.88	93.98	0.92	95.31	95.00
38	-	93.88	93.98	0.92	95.31	95.02

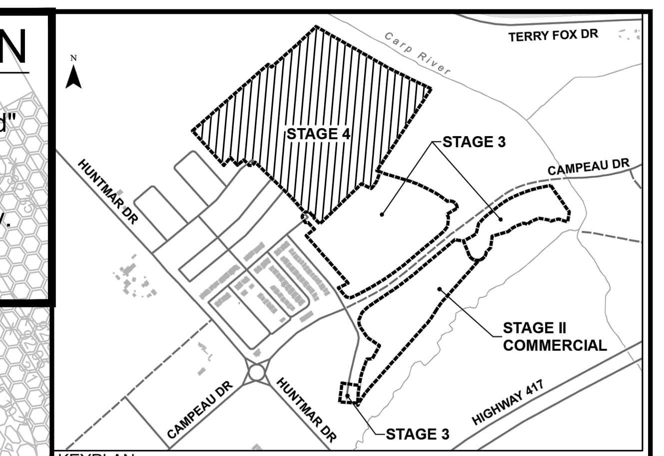
Lot / Block Number	Unit Number	Min. USF	USF	Fnd Depth	Lowest Permissible Building Opening Grade (Front)	Lowest Permissible Building Opening Grade (Rear)
39	-	93.86	93.95	0.92	95.31	95.89
40	-	93.86	93.95	0.92	95.31	95.89
41	-	93.86	93.87	0.92	95.30	94.95
42	-	93.86	93.87	0.92	95.30	94.92
43	-	93.84	93.87	0.92	95.30	94.92
44	-	93.84	93.87	0.92	95.30	94.92
45	-	93.82	93.87	0.92	95.30	94.92
46	-	93.81	93.82	0.94	95.32	94.92
47	-	93.81	93.82	0.94	95.32	94.92
48	-	93.84	93.87	0.89	95.32	94.92
49	-	93.84	93.87	0.89	95.32	94.92
50	-	93.86	93.87	0.89	95.32	94.92
51	-	93.86	93.87	0.89	95.32	94.92
52	-	93.87	93.87	0.89	95.32	94.82
53	-	93.87	93.87	0.69	95.32	94.67
54	-	93.87	93.87	0.59	95.35	94.62
55	-	93.87	93.87	0.72	95.35	94.62
56	-	93.87	93.87	1.80	95.32	96.00
57	-	93.86	93.87	1.80	95.32	96.00
58	-	93.85	93.87	1.62	95.32	96.00
59	-	93.84	93.86	1.62	95.32	95.71
60	-	93.84	93.84	1.62	95.32	95.71
61	-	93.81	93.84	1.62	95.32	95.71
62	-	93.81	93.84	1.62	95.32	95.71
63	-	93.81	93.84	1.62	95.32	95.67
64	-	93.96	94.02	1.65	95.71	95.67
65	-	93.96	94.02	1.65	95.71	95.71
66	-	93.97	94.08	1.59	95.71	95.71
67	-	93.98	94.08	1.59	95.71	95.71
68	-	93.99	94.09	1.62	95.71	95.71
69	-	94.00	94.09	1.62	95.71	96.00
70	-	94.01	94.04	1.75	95.71	96.00
71	-	94.00	94.04	1.76	95.71	96.00
72	-	93.91	94.03	0.98	96.43	95.02
73	-	93.91	94.03	0.98	96.43	95.02
74	-	93.95	94.00	1.08	96.43	95.23
75	-	93.99	94.00	1.14	96.43	95.23
76	-	93.99	94.07	1.32	96.43	95.44

Lot / Block Number	Unit Number	Min. USF	USF	Fnd Depth	Lowest Permissible Building Opening Grade (Front)	Lowest Permissible Building Opening Grade (Rear)
77	-	94.00	94.23	1.97	96.43	96.13
78	-	94.00	94.23	2.16	95.71	96.21
79	-	94.00	94.34	1.98	95.71	96.21
80	-	94.01	94.28	1.98	95.71	96.21
81	-	94.01	94.28	1.98	95.71	96.21
82	-	94.00	94.10	1.98	95.71	96.21
83	-	93.99	94.10	1.98	95.71	96.21
84	-	93.99	94.10	1.80	95.71	96.21
85	-	93.81	94.10	1.80	95.71	96.21
86	-	93.97	94.00	1.98	95.82	96.21
87	-	93.97	94.00	1.98	95.82	96.21
88	-	94.00	94.00	1.98	95.82	96.21
89	-	94.03	94.13	1.98	95.82	96.21
90	-	94.03	94.13	2.16	95.82	96.21
91	-	94.08	94.16	2.05	96.25	96.21
92	-	94.10	94.34	1.87	96.25	96.21
93	-	94.10	94.34	1.94	96.25	96.21
94	-	94.10	94.39	2.05	96.25	96.21
95	-	94.12	94.59	2.01	96.25	96.21
96	-	94.12	94.84	1.81	96.25	95.90
97	-	94.14	94.84	1.81	96.25	95.90
98	-	94.14	95.01	1.32	96.25	96.48
99	-	94.16	95.01	1.17	97.03	96.42
100	-	94.18	95.03	1.32	97.03	96.55
101	-	94.18	95.03	1.32	97.03	96.67
102	-	94.20	95.21	1.32	97.03	96.67
103	-	94.20	95.21	1.32	97.03	97.06
104	-	94.22	95.21	1.70	97.03	97.65
105	-	94.23	95.21	2.32	96.81	97.65
106	-	94.23	95.42	1.98	96.81	97.25
107	-	94.22	95.42	1.98	96.81	97.25
108	-	94.22	95.06	2.16	96.81	97.25
109	-	94.22	95.06	2.16	96.81	97.25
110	-	94.22	95.06	1.98	96.81	97.25
111	-	94.20	95.06	1.98	96.81	97.20
112	-	94.20	94.93	1.98	96.81	96.76
113	-	94.20	94.74	2.02	96.81	96.76
114	-	94.20	94.86	1.90	96.81	96.76

Lot / Block Number	Unit Number	Min. USF	USF	Fnd Depth	Lowest Permissible Building Opening Grade (Front)	Lowest Permissible Building Opening Grade (Rear)
115	-	94.20	94.86	1.98	96.81	96.76
116	-	94.22	95.04	1.80	96.81	96.76
117	-	94.22	95.04	1.93	96.81	96.76
118	-	94.22	95.12	2.09	96.81	96.76
119	-	94.22	95.12	2.14	96.81	96.76
120	-	94.12	94.91	2.16	96.25	96.76
121	-	94.12	94.91	1.98	96.25	96.76
122	-	94.10	94.78	1.98	96.25	96.76
123	-	94.10	94.60	1.98	96.25	96.76
124	-	94.10	94.64	1.80	96.25	96.76
125	-	94.10	94.64	1.80	96.25	96.76
126	-	94.08	94.50	1.80	96.25	96.76
127	-	94.08	94.44	2.32	95.82	96.76
128	-	94.10	94.44	2.32	95.82	96.76
129	-	93.84	94.60	2.16	95.82	96.76
130	-	93.84	94.60	2.16	95.82	96.76
131	-	93.84	94.66	2.16	95.82	96.76
132	-	94.10	94.51	2.16	95.82	96.13
133	-	94.07	94.51	2.16	95.82	96.13
134	-	94.06	94.35	2.16	95.82	96.13
135	-	94.06	94.35	2.16	95.82	96.13
136	-	94.03	94.12	2.16	95.82	96.13
137	-	94.03	94.12	2.16	95.82	96.13
138	-	94.00	94.12	1.98	95.82	96.13
139	-	93.97	94.12	1.98	95.82	96.13
140	-	93.94	94.04	1.98	95.82	96.13
141	-	93.94	94.04	1.98	95.82	95.48
142	-	93.91	94.03	1.80	95.33	95.48
143	-	93.91	94.03	1.72	95.33	95.48
144	-	93.88	94.03	1.56	95.33	95.48
145	-	93.86	94.03	1.45	95.33	95.48
146	-	93.84	93.84	1.60	95.33	95.48
147	-	93.86	93.86	1.62	95.30	95.48
148	-	93.87	93.92	1.56	95.30	95.48
149	-	93.87	93.92	1.62	95.30	95.48
150	-	93.88	93.92	1.80	95.30	95.48
151	-	93.88	93.92	1.98	95.30	95.48
152	-	93.88	93.97	2.16	95.30	96.13

Lot / Block Number	Unit Number	Min. USF	USF	Fnd Depth	Lowest Permissible Building Opening Grade (Front)	Lowest Permissible Building Opening Grade (Rear)
153	-	93.88	93.97	2.16	95.30	96.13
154	-	93.89	93.97	2.16	95.30	96.13
155	-	93.89	94.51	1.98	95.30	96.13
156	-	93.89	94.51	1.98	96.17	96.13
157	-	93.89	94.58	1.80	96.17	96.90
158	-	93.91	94.66	1.62	96.17	96.90
159	-	93.91	94.66	1.62	96.17	96.90
160	-	93.93	94.58	1.80	96.17	97.16
161	-	93.93	94.58	1.80	96.17	97.16
162	-	93.94	94.76	1.80	96.17	97.16
163	-	93.96	94.76	1.80	96.17	97.16
164	-	94.09	94.71	1.98	96.43	97.24
165	-	94.22	94.65	1.98	96.43	97.24
166	-	94.22	94.65	1.98	96.43	96.97
167	-	94.34	94.62	2.16	96.43	96.97
168	-	94.47	94.62	2.16	96.43	96.94
169	A	94.68	94.87	2.10	96.97	96.97
169	B	94.68	94.87	2.10	96.97	96.97
169	C	94.75	94.87	2.07	96.97	96.97
169	D	94.75	94.87	2.07	96.97	96.94
170	A	94.60	94.87	2.16	96.97	97.24
170	B	94.60	94.87	2.19	96.97	97.24
170	C	94.68	94.87	2.10	96.97	97.24
170	D	94.68	94.87	2.10	96.97	96.97
171	A	94.50	94.75	2.15	96.97	97.16
171	B	94.50	94.75	2.15	96.97	97.16
171	C	94.52	94.75	2.24	96.97	97.16
171	D	94.52	94.75	2.24	96.97	97.16
172	A	94.46	94.77	2.13	96.97	97.16
172	B	94.46	94.77	2.13	96.97	96.13
172	C	94.46	94.77	2.13	96.97	96.90
172	D	94.48	94.77	2.13	96.97	96.90
172	E	94.51	94.77	2.13	96.97	96.90
172	F	94.52	94.77	2.13	96.97	97.16
173	A	94.34	94.66	2.19	96.77	96.93
173	B	94.34	94.66	2.19	96.77	96.93
173	C	94.36	94.66	2.22	96.77	96.93
173	D	94.38	94.66	2.19	96.77	96.93

Lot / Block Number	Unit Number	Min. USF	USF	Fnd Depth	Lowest Permissible Building Opening Grade (Front)	Lowest Permissible Building Opening Grade (Rear)
173	E	94.41	94.66	2.19	96.77	96.90
173	F	94.41	94.66	2.19	96.77	96.90
174	B	93.92	94.07	2.05	95.57	96.42
174	C	93.92	94.07	2.23	95.57	96.42
174	D	93.93	94.07	2.23	95.57	96.42
174	E	93.93	94.07	2.23	95.57	96.42
175	A	93.95	94.15	2.23	95.57	96.77
175	B	93.95	94.15	2.23	95.57	96.77
175	C	93.95	94.15	2.39	95.57	96.77
175	D	93.95	94.15	2.39	95.57	96.77
176	A	93.97	94.29	2.29	95.70	96.77
176	B	93.97	94.29	2.29	95.70	96.77
176	C	93.97	94.29	2.19	95.70	96.77
176	D	93.97	94.29	2.19	95.70	96.77
176	E	93.97	94.29	2.15	95.70	96.42
177	A	93.98	94.06	2.39	95.70	96.42
177	B	93.98	94.06	2.39	95.70	96.42
177	C	93.98	94.06	2.19	95.70	96.42
177	D	93.98	94.06	2.19	95.70	96.42
178	A	94.03	94.10	2.05	95.65	96.21
178	B	94.03	94.10	2.05	95.65	96.15
178	C	93.99	94.10	1.87	95.65	96.15
178	D	93.99	94.10	1.87	95.65	96.15
179	A	94.07	94.10	2.05	95.65	96.21
179	B	94.08	94.10	2.05	95.65	96.21
179	C	94.10	94.10	1.87	95.65	96.21
179	D	94.10	94.10	1.87	95.65	96.21



KEYPLAN

LEGEND:

- 91.00 — CONTOUR
- ×92.52 — PROPOSED ELEVATION
- 92.49 — BALANCED GROUND ELEVATION (0.9m ABOVE PROPOSED USF FROM DEC.2018)
- 92.49 — EXISTING ELEVATION FROM STANTEC SURVEY FROM OCTOBER, 2018
- × 92.52 — PROPOSED CL ROAD HIGH/LOW POINT
- 1.5% — SURFACE SLOPE
- FLOW DIRECTION
- MAJOR OVERLAND FLOW DIRECTION (1:100 YR)
- FF = 93.50 — FINISHED FLOOR ELEVATION
- TF = 93.20 — TOP OF FOUNDATION ELEVATION
- UF = 90.65 — UNDERSIDE OF FOOTING ELEVATION
- TERRACING (MAX. 3:1)
- PERFORATED PIPE SUBDRAIN
- SWALE
- DITCH CENTERLINE
- NOISE FENCE IN ACCORDANCE WITH THE NOISE FENCE DETAILED STUDY DATED APRIL 29, 2019
- TESTPIT NUMBER (TP 1, 95.48)
- BOREHOLE NUMBER (BH 1, 95.48)
- GROUND SURFACE ELEVATION (m)
- {95.48} — UNDERSIDE OF TOPSOIL WHERE PRESENT (m)
- [95.48] — PG - PREENGINEERED FILL LEVEL FROM TEST PIT INVESTIGATION (m)
- (EF ≥ 95.48) — GROUND SURFACE ELEVATION (m)
- TYPICAL REINFORCED GRASS SERVICE ROAD

No.	ISSUE / REVISION	DD/MM/YY
11	ISSUED TO MINTO FOR UPDATED LOTS 36 AND 54	20/04/21
10	REVISED TO INCLUDE CLONRUSH WAY	16/10/20
09	REVISED PER CITY COMMENTS / ISSUED TO PATERSON	03/09/20
08	ISSUED FOR SI-002- RELOCATION OF LOT 135 SERVICE LATERAL & RELOCATION OF CB61	19/06/20
07	ISSUED FOR CITY STAMP	28/05/20
06	ISSUED FOR CONSTRUCTION	04/05/20

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SCALE: 1:500

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

MINTO COMMUNITIES INC.
ARCADIA STAGE 4

450 HUNTMAR DRIVE

DRAWING:

GRADING PLAN

DESIGN:	AT
DRAWN:	SK
CHECKED:	LD
JLR #:	26299-004

DRAWING #: G2

City File No: D07-16-16-0025 Plan No: 17816

PLOT DATE: March 2, 2023 3:40:06 PM

File Location: V:\26000\26299-004 - Arcadia Stage 4\6-Contract Admin\1. Contract for Servicing\14. Close Out\15. As-Constructed Grading\26299-004 C AS CONSTRUCTED GRD 2023-03-02.dwg

AS CONSTRUCTED INFORMATION

This drawing comprises the original design drawing updated to reflect Contractor supplied information as to final "as constructed" conditions. The Contractor supplied information has not been verified and, as such, this drawing is not warranted by J.L Richards & Associates Limited for completeness or accuracy.

Date of Issue: 2023-03-02

1:100 YEAR CARP RIVER WSEL FROM" CARP RIVER PCSWMM MODEL DOCUMENTATION DRAFT REPORT MARCH 2016" PREPARED BY THE CITY OF OTTAWA, DATED MARCH 2016.

CJ068 1:100 YR WSEL 93.51
CJ069 1:100 YR WSEL 93.51
CJ070 1:100 YR WSEL 93.51

REFER TO DWG G3 FOR NODES.

REFER TO DWG SWMF-P1 AS PART OF MINTO COMMUNITIES INC. PAINE POND DRAWING SET BY J.L. RICHARDS AND ASSOCIATES FOR COMPLETE PAINE POND GRADING.

TYPICAL REINFORCED GRASS SERVICE ROAD, REFER TO FIGURE 7.3 ON DWG D1.

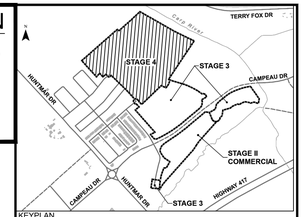
2690 m² SEDIMENT DRYING AREA

REFER TO DWG G1

NOTES

WITH RESPECT TO THE MEDIUM TREES AND THE TREE PLANTING IN SENSITIVE MARINE CLAY SOILS - 2017 GUIDELINES, THE LANDSCAPE PLAN AND DESIGN WILL NEED TO REQUIRE THAT GRADING SURROUNDING THE TREE PROMOTE PLANNING TO THE TREE ROOT ZONE (IN SUCH A MANNER AS NOT TO BE DETRIMENTAL TO THE TREE).

KEYPLAN



LEGEND:

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- TERRACING (MAX. 3:1)
- PERFORATED PIPE SUBDRAIN
- SWALE
- DITCH CENTERLINE
- NOISE FENCE IN ACCORDANCE WITH THE NOISE FENCE DETAILED STUDY DATED APRIL 29, 2019
- TESTPIT NUMBER
- BOREHOLE NUMBER
- GROUND SURFACE ELEVATION (m)
- UNDERSIDE OF TOPSOIL WHERE PRESENT (m)
- PG - PREENGINEERED FILL LEVEL FROM TEST PIT INVESTIGATION (m)
- GROUND SURFACE ELEVATION (m)
- TYPICAL REINFORCED GRASS SERVICE ROAD

No.	ISSUE / REVISION	DD/MM/YY
09	REVISED PER CITY COMMENTS / ISSUED TO PATERSON	03/0920
08	ISSUED FOR SI-002- RELOCATION OF LOT 135 SERVICE LATERAL & RELOCATION OF CB61	19/06/20
07	ISSUED FOR CITY STAMP	28/05/20
06	ISSUED FOR CONSTRUCTION	04/05/20
05	ISSUED FOR TENDER	18/03/20
04	ISSUED FOR MECP ECA APPLICATION	09/03/20

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SCALE: 1:500

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PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
ARCADIA STAGE 4
450 HUNTMAR DRIVE

DRAWING:
GRADING PLAN

DESIGN:	AT
DRAWN:	SK
CHECKED:	LD
JLR #:	26299-004

DRAWING #: G3

City File No: D07-16-16-0025 Plan No: 17816

PLOT DATE: March 2, 2023 3:41:28 PM

File Location: V:\26000\26299-004 - Arcadia Stage 4\6-Contract Admin\1. Contract for Servicing\14. Close Out\15. As-Constructed Grading\26299-004 C AS CONSTRUCTED GRD 2023-03-02.dwg

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