Site Services Design Brief

2200 Bank Street
South Keys – Phase 1
City of Ottawa

October 20, 2026

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1 Introduction

1.1 Scope

Arcadis Professional Services (Canada) Inc. (Arcadis) has been retained by SmartCentres Real Estate Investment Trust (REIT) on behalf of the Joint Venture Applicant, Calloway REIT (South Keys) Inc. and Canadian Property Holdings (South Keys) Inc. to undertake the suite of civil engineering documents needed in support of a Site Plan Control application and a Zoning By-Law Amendment Application for a proposed high rise residential development to be located at 2200 Bank Street, Ottawa. This report will contain the following documents: A Site Servicing Plan; a Grading and Drainage Plan; a Stormwater Management Plan; a Water Hydraulic Assessment and an Erosion and Sedimentation Control Plan.

This report will present a detailed servicing scheme to support the development including sections on water supply, wastewater collection and disposal and management of stormwater. This brief will also demonstrate the adequacy of the municipal services needed to support the ultimate development of the site. Although the proposed development will temporarily be viewed as a private site, this report has been prepared in general accordance with the current Servicing Study Guidelines for development applications in the City of Ottawa.

1.2 Subject Property

The proposed development is located in the South Keys Shopping Centre. The site is bounded by Daze Street to the east, existing commercial, including a Walmart outlet, to the north, a transit station to the west and a parking lot to the south. The ultimate Master Plan will include up to four high rise buildings to be constructed in up to four phases.

The total property covers 3.34 ha and Phase 1 which covers an area of 1.80 ha also includes an area called Transit Plaza. It is the intention that in time, ownership of that area be transferred to the City of Ottawa. **Figure 1** shows the ultimate buildout Master Plan and **Figure 2** shows the Phase 1 plan.

The subject site is currently a commercial area supported with surface parking. The site is presently improved with three retail outlets, a Cineplex movie theatre and a Montana's Steak House restaurant.

Phase 1 will include the removal of the three retail outlets adjacent to the cinema and construction of one 21 storey high rise tower. Phase 1 will include about 290 units and about 645m^2 of ground floor retail space. Parking will be accommodated in a 2-storey podium.

1.3 Existing Conditions

As noted earlier, the subject property consists of retail outlets, a cinema, and a restaurant. All parking is accommodated on a surface lot. **Figure 3** shows the location of existing major infrastructure including watermains, sanitary and storm sewers. Access to the site is available from one of three locations from Daze Street.

Water is provided to the site from the existing 300 mm main on Daze Street. There is an existing looped watermain system throughout the site, with two connections to the 300 mm watermain on Daze Street that presently supplies a reliable water network for the site.

The existing sanitary outlet for the site includes a 250 mm dia pipe that runs west to east along the Transit Plaza area which in turn discharges into a 375 mm dia sanitary sewer located northwest of the property. There are several sewer connections to the 250 mm sanitary sewer including a 150 mm dia pipe which services the restaurant and a 250 mm dia pipe provides service to the retail outlets and the movie theatre.

All storm sewers on the site drain towards a 1200 x 3000 mm concrete culvert which is located in the Transit Plaza. That trunk sewer eventually discharges into the Sawmill Creek Stormwater Facility which is located immediately west of the transit station. Similar to the sanitary sewer system, two storm sewers service the existing developments; a 250 mm dia storm sewer collects runoff from the restaurant and surrounding parking lot and a series of storm sewers ranging in size from 375 mm dia to 525 mm dia service the balance of the site. The latter storm sewer system also provides an outlet for a portion of an office building site located to the south of the subject site. The existing parking lot is fitted with a number of catchbasins which connect to the two local storm sewers.

1.4 Geotechnical

As noted above, the Owner proposes to re-develop the site in up to four phases. Phase 1 will include one 21-storey tower. Phase 1 will also include two roadway connections to Daze Street, one on either side of the Montana Steakhouse restaurant. The one to the north, and adjacent to the Transit Plaza, will be a new connection to Daze Street including a right-in, right-out operation. The second, located to the south of the restaurant, will replace an existing driveway which presently provides a “3/4” movement entrance.

The Phase 1 development will also include provision of modified parking lots for the restaurant and movie theatre. Development of the new driveways will include removal of about 100 parking spaces but will leave sufficient parking for both the restaurant and theatres. The timing of development of the site, including Phase 1, will be market driven and is therefore presently unknown.

1.5 Pre-Consultation

There was a pre-consultation meeting with the City of Ottawa on June 10, 2021 to discuss development of the subject property. A copy of the meeting notes is included in **Appendix A**. Among other things, some of the items discussed were as follows:

- Official Plan
- Zoning Information
- Infrastructure
- Planning
- Urban Design
- Parks
- Trees
- Environment
- Conservation Authority
- Transportation
- OC Transpo

As a result of the time lag since 2021, there have been numerous meetings with the City since then. Those meetings and follow up consultations have resulted in a series of city comments and proponent responses. The

latest of these responses was forwarded to the city dated Oct 6, 2026. A copy of the civil engineering only responses from that date are included in **Appendix A**.

1.6 Geotechnical Investigations

A geotechnical report "Proposed Multi-Storey Buildings, South Keys Redevelopment – Phase 1, 2210 Bank Street, Ottawa, Ontario" dated September 13, 2021, has been prepared by Paterson Group for Phase 1.

The objective of the investigation was to prepare a report to:

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

The report recommendations were based on the findings and observations from several boreholes and test pits. Among other items, the report recommendations deal with:

- Site Grading
- Foundations Design, including Rock Anchors
- Pavement Structure
- Sewer and Watermain Construction
- Groundwater Control
- Grade Raises
- Design of Earthquakes
- Basement Wall
- Winter Construction
- Corrosion Potential and Sulphate

The report confirmed that the site consists mostly of brown silty sand over a layer of vey stiff to stiff silty clay up to 4.5 m deep. Underlying the silty clay deposit below approximate depths of 9 m to 12 m, interbedded layers of compact to dense sandy silt, silty sand and/or firm to stiff silty clay were encountered. Practical refusal of the DCPT's were encountered at depths ranging from 25.1 m to 29.4 m below the existing ground surface.

1.7 Watercourses and Setbacks

There are no watercourses on the subject property, so developments will not be subject to setback distances.

1.8 Existing Private Services

It is unlikely there are any private wells or septic systems on or adjacent to the subject property. The site and surrounding properties are likely serviced from the City's central water supply.

2 Water Supply

2.1 Existing Conditions

As stated in Section 1.3 there is an existing 300 mm watermain on Daze Street to which there are two watermains, which form a looped system throughout the site are connected. The proposed water system for Phase 1 will make appropriate use of the existing watermain system.

2.2 Design Criteria

2.2.1 Water Demands

Water demands are based on Table 4.2 - Consumption Rates for Subdivisions of 501 to 3,000 persons of the Ottawa Design Guidelines – Water Distribution. Water demands have been calculated for the Phase 1 which consists of 294 apartment units, calculations are also provided for the ultimate buildout which contains three additional residential buildings. A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

	Phase 1	**Ultimate**
Average Day	1.73 l/s	9.11 l/s
Maximum Day	4.32 l/s	22.75 l/s
Peak Hour	9.48 l/s	50.03 l/s

2.2.2 System Pressure

The 2026 City of Ottawa Water Distribution Guidelines states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 350 kPa (50 psi) and 480 kPa (70 psi) under maximum daily flow conditions. Other pressure criteria identified in the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	Maximum pressure at any point in the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rate

A fire flow rate for the Phase 1 building has been calculated with the Fire Underwriters Survey (FUS). A flow rate of 14,000 l/min (233 l/s) has been determined, whereas for future buildings will be 11,000 l/min (183 l/s). A copy of the FUS calculations are included in **Appendix B**.

2.2.4 Boundary Conditions

The City of Ottawa has provided two hydraulic boundary conditions at proposed connection locations to the 300 mm main on Daze Street. The boundary conditions which cover both Phase 1 interim conditions and the ultimate buildout scenarios are based on the water demand and fire flow rates provided to the City. A copy of the updated boundary conditions received on May 22, 2026 is included in **Appendix B** and are summarized as follows:

BOUNDARY CONDITIONS				
SCENARIO	HGL (M) INTERIM		HGL (M) ULTIMATE	
	CONNECTION 1	CONNECTION 2	CONNECTION 1	CONNECTION 2
Minimum HGL	125.4	125.4	125.3	125.3
Maximum HGL	130.7	130.7	132.3	132.4
Max Day + Fire Flow (233 l/s)	125.3	125.5	124.8	125.1
Max Day + Fire Flow (183 l/s)	126.2	126.3	125.9	126.0

2.2.5 Hydraulic Model

A computer model for both the Phase 1 Interim condition and Ultimate development has been developed using the InfoWater program. The models incorporate the boundary conditions provided by the City and is run for basic day (maximum HGL), peak hour (minimum HGL) and max day plus fire which evaluates the fire flows. A schematic of the water model is included in **Appendix B**.

2.3 Proposed Water Plan

The hydraulic water model was run for the ultimate development for minimum pressure and fire flows and for Phase 1 for maximum HGL. Results of the hydraulic model are included in **Appendix B** and summarized as follows:

SCENARIO	INTERIM CONDITION PRESSURE (kPa)	ULTIMATE CONDITION PRESSURE (kPa)
Basic Day Pressure (Max HGL)	389.5 – 437.5	404.9 – 455.2
Peak Hour Pressure (Min HGL)	337.4 – 387.5	330.4 – 385.7
Max Day & Fire Residual Pressure	259.8 - 359.8	140.1 – 359.7

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

Maximum Pressure	Under Basic Day no nodes have pressure that exceeds 552 kPa (80 psi), therefore no pressure reducing control is required for the buildings. There is no area where the pressure exceeds the maximum level of 689 kPa (100 psi) in unoccupied areas.
Minimum Pressure	The lowest minimum pressure during peak hour conditions is 330.4 kPa which exceeds the minimum 276 kPa (40 psi) requirement.
Fire Flow	The residual pressure at all nodes during Max Day + Fire conditions exceeds the minimum of 140 kPa.

3 Wastewater Disposal

3.1 Existing Conditions

The site is presently serviced with two sanitary sewers; a 150 mm dia pipe that services the Montana restaurant and a 250 mm dia sewer that services the three retail outlets and the Cineplex theatres. Neither of these sewers is over sized for upstream properties. Both the sewers outlet to a 250 mm sanitary sewer located in the Transit Plaza area which in turn outlets to a 375 mm dia sanitary sewer that runs northward in front of the Walmart building.

3.2 Design Criteria

The proposed sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Our analysis is threefold; flow calculation for existing conditions and flow calculations for both the interim condition (Phase 1) and for the ultimate buildout situation. The following criteria were used in our calculations.

- Minimum Velocity — 0.6 m/s
- Maximum Velocity — 3.0 m/s
- Manning Roughness Coefficient — 0.013
- Total # residential of units — 290 (Phase1)–1554 (Ultimate)
- Population Density — 1.9 ppu
- Residential Average Flow — 280 l/p/d
- Commercial/Institutional Average Flow — 28.000 l/gross Ha/d
- Residential Peaking Factor — Modified Harmon Formula (max 4, min 2)
- Commercial/Institutional Peaking Factor — K=0.8
1.5 if ICI >20%
1.0 if ICI in <20%
- Infiltration Allowance — 0.33 L/s/Ha
- Minimum Sewer Slopes - 200 mm diameter — 0.32%

A spreadsheet with both the Phase 1 and ultimate buildout conditions and related drainage area plans are included in **Appendix C**.

Based on the Phase 1 analysis which assumes some of the site remains as commercial, there is plenty of spare capacity in the proposed sewer system. The existing 150 mm dia sewer which serves the restaurant has a spare capacity of 99% and the existing 250 mm dia pipe which will service the cinema and the Phase 1 tower will have a spare capacity of 91%. The 250 mm dia outlet sewer which collects wastewater from the total property, as well as the transit station, will have a spare capacity of about 78%. The flow from the transit station is considered negligible.

The second analysis for full buildout of the site also indicates that the phase 1 and existing sewers will also have spare capacity. The ultimate buildout scenarios will include four towers and associated driveways. For this situation

there will be only one 250 mm dia sanitary sewer for the site and all drainage areas will be residential with a total buildout of 1554 units and a total expected population of 2956.

The existing 250 mm dia sewer immediately north of building 1 will have a spare capacity of 75% and the downstream 250 mm dia sewer will have a spare capacity of 29%. Therefore, the existing downstream sanitary sewers have sufficient available capacity to provide an adequate outlet for both the Phase 1 development and full buildout of the south Master Plan.

3.3 Sanitary Sewer Design

The proposed sanitary plan for Phase 1 is shown as Drawing C-001 which is located in **Appendix C**. The existing 150 mm dia sanitary sewer serving the Montana's Steakhouse restaurant is proposed to remain. The existing sanitary sewer system which services the retail outlets and cinema is proposed to be modified. The latter system includes two sewer sections with 250 mm dia sewers. For Phase 1 it is proposed to leave some of the existing pipes near the cinema as is and replace the centre section in front of Phase 1 with a new relocated 250 mm dia pipe between MH's 4A and 6A. MH 4A is proposed to be located at the existing downstream 250 mm dia pipe. A 200 mm dia service connection will serve the new Phase 1 development.

4 Stormwater Management

4.1 Background

The proposed development is located in the South Keys Shopping Centre. The site is bounded by Daze Street to the east, existing commercial development, including a Walmart outlet, to the north, a transit station to the west, and a parking lot to the south.

The site lies within the Sawmill Creek subwatershed, which was studied as part of the Sawmill Creek Subwatershed Study Update (SCSWS) prepared by CH2M Hill in 2003. The SCSWS reviewed existing conditions and anticipated development. It confirmed the design of the Sawmill Creek stormwater management facility and set stormwater management recommendations for future developments. Guidelines for infill and redevelopment sites recommended by the study include achieving quantity control to avoid sewer surcharging issues and exploring all opportunities for infiltration and pollutant source control.

The constructed wetland facility was designed to provide quantity and quality control for the service area identified in Figure 14 of the SCSWS included in **Appendix D**. During high flow events, flows from Sawmill Creek are diverted to the facility by a structure adjacent to the South Keys Shopping Centre via a 1200 x 3000 mm box culvert. Baseflows from the creek continue in the main channel and are not treated by the facility.

The site is within the service area of the constructed wetland determined by the SCSWS and was incorporated into the sizing and design of the facility as an existing development. Unlike areas upstream of the site in the subwatershed, whose flows are diverted to the wetland facility and treated only during high flow events, all flows from the subject site pass through the facility and are treated.

Under existing conditions, runoff is collected by storm sewers shown on **Figure 3**. The storm sewer outlet for the property is an existing 1200 x 3000 mm box culvert located in the Transit Plaza which conveys flows from the primary diversion structure in Sawmill Creek to the constructed wetland. Two smaller storm sewers collect runoff from the property and route the flows to the box culvert. A 250 mm dia sewer serves the Montana's restaurant and a nearby portion of the surface parking lot. A second sewer system, ranging in size from 375 mm dia to 525 mm dia, serves the balance of the site including the retail outlets and the cinema. The latter sewer is also oversized to convey runoff from the neighbouring development south of the subject site. No on-site controls are present on the property.

4.2 Minor System Design Criteria

The following design criteria was used to assess the capacity of the existing storm sewer system using the Rational Method.

- Design Storm — 1:5-year return
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients — 0.20 to 0.90
- Pipe Velocities — 0.80 m/s to 3.0 m/s

Most of the site has a runoff coefficient of 0.90 including buildings and parking lots. Based on the proposed Phase 1 plan, which includes some landscaped areas, runoff coefficients of some sub-drainage areas were adjusted to account for the landscaping.

Based on these criteria, an assessment was completed for Phase 1. The relevant drainage area plan and spreadsheet are included in **Appendix D**. The analysis uses PCSWMM modelling software to assess the ability of the proposed Phase 1 minor storm sewer system to adequately drain the site. The analysis includes a review of the Phase 1 interim system and Ultimate system, see Section 4.4 for further discussion on the results of the model.

4.3 Proposed Minor System

Per the pre-design consultation with the City of Ottawa meeting notes from June 10, 2021 (meeting notes included in **Appendix A**), the quantity control for the redeveloped site is to be restricted to an allowable runoff coefficient of C = 0.5 (lesser than existing conditions), a time of concentration Tc = 10 minutes, and the intensity of a 5-year storm during the 100-year storm event. The total controlled area is 3.2 Ha, however two drainage areas (Drainage Areas 14 and 15) are offsite. It is proposed that these external drainage areas, 0.10 Ha and 0.38 Ha respectively, maintain their pre-existing runoff co-efficient as they are separate privately owned areas that are not under redevelopment.

The release rate can be therefore calculated as follows,

$\mathbf{Q_{restricted(onsite)}}$ = **2.78** x **C** x $\mathbf{i_{5yr}}$ x **A** where:
C = Runoff coefficient = 0.50
$\mathbf{i_{5yr}}$ = Intensity of 5-year storm event (mm/hr)
= $998.071 \times (T_c + 6.053)^{0.814}$ =104.19 mm/hr; where T_c = 10 minutes
$\mathbf{A_{onsite}}$ = 2.72 Ha

$\mathbf{Q_{restricted(onsite)}}$ = **2.78** x **C** x $\mathbf{i_{5yr}}$ x **A**
= 2.78 x 0.50 x 104.19 x 2.72
= 393.92 L/s

Plus the rate of the external areas, Drainage Area 14,

$\mathbf{Q_{restricted(DA\ 14)}}$ = **2.78** x **C** x $\mathbf{i_{5yr}}$ x **A** where:
C = Runoff coefficient = 0.73 (existing)
$\mathbf{i_{5yr}}$ = Intensity of 5-year storm event (mm/hr)
= $998.071 \times (T_c + 6.053)^{0.814}$ =104.19 mm/hr; where T_c = 10 minutes
$\mathbf{A_{(DA\ 14)}}$ = 0.10 Ha

$\mathbf{Q_{restricted(DA\ 14)}}$ = **2.78** x **C** x $\mathbf{i_{5yr}}$ x **A**
= 2.78 x 0.73 x 104.19 x 0.10
= 21.14 L/s

And Drainage Area 15,

$\mathbf{Q_{restricted(DA\ 15)}}$ = **2.78** x **C** x $\mathbf{i_{5yr}}$ x **A** where:
C = Runoff coefficient = 0.90 (existing)
$\mathbf{i_{5yr}}$ = Intensity of 5-year storm event (mm/hr)
= $998.071 \times (T_c + 6.053)^{0.814}$ =104.19 mm/hr; where T_c = 10 minutes
$\mathbf{A_{(DA\ 15)}}$ = 0.38 Ha

$Q_{restricted(DA\ 15)}$ = **2.78** x **C** x i_{5yr} x **A**
= 2.78 x 0.73 x 104.19 x 0.38
= 99.06 L/s

For a total restricted release rate of 393.92 L/s + 21.14 L/s + 99.06 L/s = 514.12 L/s

It is therefore proposed to restrict the 100-year stormwater outflow from the subject site to 514.12 L/s. This will be achieved through a combination of inlet control devices (ICD's), underground storage, surface storage where possible, and roof storage.

Surface flows in excess of the site's allowable release rate will be stored on site and gradually released into the minor system to respect the site's allowable release rate.

Along the perimeter of the site, the opportunity to capture and store runoff is limited due to grading constraints and building geometry. These minor areas will discharge uncontrolled to Daze Road and Transit Plaza. These areas are located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties or in areas where ponding stormwater is undesirable.

The proposed minor storm plan for Phase 1 Interim condition is demonstrated on Drawing C-001 in **Appendix C**. The existing 250 mm dia storm sewer servicing the restaurant and adjacent parking area is proposed to remain as is during the interim condition. This area will be later developed in the Ultimate condition.

The proposed Ultimate condition servicing plan is shown on Drawing C-002, also in **Appendix C**. The Ultimate condition is included to demonstrate that the site can be developed to meet city standards in the future, however only Phase 1 is proposed to be constructed at this time.

4.4 Dual Drainage Design

The subject site is designed with dual drainage features, accommodating minor and major system flow. During frequent storm events, the effective runoff of a catchment area is directly released via catchbasin inlets to the network of storm sewers, called the minor system. During less frequent storm events, the balance of the flow (in excess of the minor flow) is accommodated by a system of swales and street segments, called the major system.

The dual drainage system has been evaluated using the fully dynamic PCSWMM model for both the hydrologic and hydraulic analysis. The PCSWMM hydrologic evaluation offers single storm event flow generation and routing. The major system evaluation is fully dynamic and based on typical road cross sections and road profiles.

Inlet control devices (ICDs) are proposed at low points to maximize the use of available on site storage and control surcharge of the minor system during infrequent storm events. Per the OSDG, local streets are required to provide a 2-year level of service without ponding.

4.5 On Site Controls

In addition to inlet control devices placed at low points to limit surcharging, on site storage is proposed for buildings on the site. Release rates and estimated storages are summarized in Section 4.7.2.2.

4.6 Water Quality

Stormwater from the site discharges to the Sawmill Creek Stormwater Management Facility. The design of the constructed wetland facility is discussed in the Sawmill Creek Subwatershed Study Update (SCSWS) prepared by CH2M Hill in 2003. It included the site, in its current existing condition, within the wetland service area as part of the sizing of the facility for water quality treatment. A copy of Figure 14 from the SCSWS showing the wetland service area is included in **Appendix D**. Unlike areas upstream of the site in the subwatershed, whose flows are diverted to the wetland facility and treated only during high flow events, all flows from the subject site pass through the facility and are treated.

The proposed development will not increase the impervious area of the already highly impervious site. As such, no water quality treatment measures are proposed. Opportunities to introduce filtration and infiltration LID measures were explored and not considered feasible due to the space and servicing constraints of the site plan. Furthermore, as observed by the geotechnical investigation recently updated by Paterson Group in 2023 and in Paterson's October 2026 memo included in **Appendix D**, a silty clay deposit underlies the site which precludes the introduction of infiltration measures.

4.7 Stormwater Evaluation

A fully dynamic model using SWMM 5.2.4 was developed to evaluate the stormwater management for the site under interim Phase 1 and ultimate build out scenarios. The modeling was undertaken to confirm maximum ponding depths on streets, confirm release rates and storage requirements for blocks, and confirm the total outflow from the site does not exceed the maximum allowable release rate.

4.7.1 Modeling Parameters

Land use, selected modeling routines, and input parameters are discussed in the following sections for the subject site only. The main hydrologic parameters for the subject site are summarized below.

Storms and Drainage Area Parameters

The main hydrology parameters are summarized below and in Table 4-1 for the Phase 1 scenario and Table 4-2 for the Ultimate scenario.

- **Design storms:** The site was evaluated using the following storms:
  - 2 year, 3 hour Chicago storm events with a 10 minute time step;
  - 100 year 3 hour Chicago storm event with a 10 minute time step; and
  - 100 year 3 hour Chicago storm event + 20% increase in intensity with a 10 minute time step.
- **Area:** Drainage areas have been divided into sub-drainage areas based on the minor system network of storm sewers and the rational method spreadsheet. Drainage areas included in the modeling are shown on Drawing C-500 for the Phase 1 scenario and Drawing C-501 for the Ultimate scenario. Select drainage areas have been split to facilitate modeling.
- **Imperviousness:** The imperviousness values are based on the runoff coefficients, with calculations included in **Appendix D**. PCSWMM provides an opportunity to specify direct and indirect routing to a

pervious or impervious area. For this evaluation, all drainage areas were assumed to be 100% routed to an outlet.

- **Infiltration:** Infiltration losses were selected to be consistent with the OSDG. The Horton values are as follows: Max. infiltration rate = 76.2 mm/h, Min. infiltration rate = 13.2 mm/h, Decay constant = 4.14 1/hr.
- **Subcatchment Width:** The catchment width was based on the conveyance route length of the drainage area and multiplied by two. The multiplier of two was only used if the drainage area had runoff contribution from both sides of the drainage area. This approach is consistent with the OSDG.
- **Slope:** The average surface slope was based upon the average slope for both impervious and pervious area. Based on the surface grading of the subject site an average slope of 1% has been used for subcatchment flow routing.
- **Initial Abstraction (Depression Storage):** Detention storage depths of 1.57 mm and 4.67 mm were used for impervious and pervious areas, respectively. These values are consistent with the OSDG.
- **Manning's Roughness:** Manning's roughness coefficients of 0.013 and 0.25 were used for impervious and pervious areas, respectively.
- **Baseflow:** No baseflow components were assumed for any of the areas contributing runoff to the minor system within the PCSWMM model.
- **Major System Storage and Routing:** The subject site is comprised of sawtoothed road profiles and parking areas. For drainage areas with sawtoothing, flow is attenuated within low points with potential overflow cascading to the next segment downstream. The total volume at each low point, up to the overflow depth, is the maximum static storage. Static ponding depths and static storage are shown on the ponding plan presented on Drawing 135853 C-600 for the Phase 1 scenario and on Drawing 135853 C-601 for the Ultimate scenario.

  For areas with ponding, the minor system capture is set to utilize storage during the 100 year design storm, while minimizing ponding during the 2 year event. Cascading overflow from a low point to a downstream segment utilizes the static storage available plus an additional amount of storage equivalent to the depth required for the flow to cascade over the downstream high point. The attenuation in street sags was evaluated to account for static storage and, if overflow occurs, dynamic storage.

  For areas with sawtoothing, simulations were based on the constraint that during the 100-year design storm the maximum depth of ponding (including cascading flow where applicable) does not exceed 0.35 m. Surface storages for parking lots were modeled in PCSWMM using stage storage curves. Surface storages for street segments were modeled in PCSWMM using a combination of nodes with inverts corresponding to CB grill (T/G) elevations, and links with corresponding cross-sections. The evaluation was undertaken assuming dynamic flow conditions. It should be noted that the visual interpretation of street links in the model is based on illustrating street nodes along the center of the road. However, the invert elevations are modified to correspond to the CB grill elevations as indicated above.
- **Minor system capture:** Flow from the site has been limited to the 5-year runoff with a C value of 0.5 for onsite areas corresponding to a maximum allowable release rate of 514 L/s. Calculations have been included in Section 4.2. Outflows from the site, including to the minor system outlet are summarized in Section 4.7.2.5. Capture for future public ROWs have been set to a 2-year level of service. Blocks have

been controlled to approximately 64 L/s/ha. On site control modeling results for blocks are summarized in Section 4.7.2.2.

Release rates will be achieved through a combination of inlet control devices (ICD's) at inlet locations, surface storage where possible, and on-site detention within blocks provided by underground and or rooftop storage.

ICDs have been modeled in PCSWMM as circular orifices with the discharge coefficient set to 0.61 in accordance with the OSDG. The ICD size, head and flow are summarized in Section 4.7.2.1 and provided on the CB table presented on Drawing 135853 C-010.

- **Downstream Hydraulic Boundary Condition:** The downstream boundary condition was set to a fixed elevation of 85.1 m. The value was set by extending the 100-year water surface elevation at the shown on the Sawmill Creek Constructed Wetland Drawing 13614-13, included in **Appendix D**, at the Transitway Crossing and extending it 50 m upstream at a 0.2% slope.

Summary of Modeling Files

For ease of review, the following is a reference list of the computer modeling files provided as part of the digital submission.

PCSWMM

Phase 1 Interim Conditions

- 135853-SouthKeys_3H2CHI_V01-PH1.pcz – 2-year 3 hour Chicago
- 135853-SouthKeys_3H100CHI_V01-PH1.pcz – 100-year 3 hour Chicago
- 135853-SouthKeys_3H120CHI_V01-PH1.pcz – 100-year 3 hour Chicago increased by 20%

Ultimate Conditions

- 135853-SouthKeys_3H2CHI_V01-ULT.pcz – 2-year 3 hour Chicago
- 135853-SouthKeys_3H100CHI_V01-ULT.pcz – 100-year 3 hour Chicago
- 135853-SouthKeys_3H120CHI_V01-ULT.pcz – 100-year 3 hour Chicago increased by 20%

Table 4-1: Phase 1 – Subcatchment Hydrologic Parameters

Drainage Area	Area (ha)	Receiving MH	Impervious Ratio (%)	Subcatchment Width (m)	Available Static Storage (m^3) (1)
1	0.081	MH1	37	100	18.1
2	0.154	MH2	37	155	16.6
8	0.065	MH1	69	70	N/A
10	0.189	MH7	56	160	1.1
5	0.073	ST-001	100	46	3.45
6	0.162	ST-002	81	68	59.3
7	0.077	ST-004	71	47	3.3
EX_103	0.056	ST-006	100	40	8.5
MONTA	0.068	EXMH104A	100	44	N/A
9_1	0.145	MH10	71	80	2.3
9_2	0.026	MH10	71	28	N/A
UNC-1	0.028	N/A	100	28	N/A
UNC-2	0.048	N/A	100	40	N/A
UNC-3	0.001	N/A	43	6	N/A

Drainage Area	Area (ha)	Receiving MH	Impervious Ratio (%)	Subcatchment Width (m)	Available Static Storage (m^3) (1)
UNC-4	0.075	N/A	7	47	N/A
BLD	0.411	MH10	100	109	N/A
11	0.151	EXMH100	100	66	N/A
12	0.136	EXMH100	100	63	N/A
13	0.182	EXMH100	86	72	N/A
14	0.172	J-009	90	70	N/A
15	0.46	EXCBMH1	100	115	N/A
16	0.101	J-007	100	54	1.6
MOVIES	0.363	MH10	100	102	N/A
22	0.54	N/A	100	125	N/A

(1) Available static storage is based on Drawing 135853 C-600

Table 4-2: Ultimate – Subcatchment Hydrologic Parameters

Drainage Area	Area (ha)	Receiving MH	Impervious Ratio (%)	Subcatchment Width (m)	Available Static Storage (m^3) (1)
1	0.098	MH1	53	100	20.8
2	0.162	MH2	69	155	16.5
3_1	0.068	MH9	67	70	N/A
3_2	0.07	MH9	67	70	N/A
4	0.18	MH7	69	160	4.8
5_1	0.136	MH10	60	120	3.3
5_2	0.04	MH10	60	120	N/A
6	0.184	EXCBMH1	66	140	N/A
7	0.043	EXCBMH1	0	35	N/A
8	0.063	EXCBMH1	0	43	N/A
UNC-1	0.025	N/A	100	27	N/A
UNC-2	0.049	N/A	39	40	N/A
BLDG_A	0.4	MH9	100	108	N/A
BLDG_B	0.41	MH10	100	109	N/A
BLDG_C	0.403	EXCBMH1	100	108	N/A
BLDG_D	0.395	MH7	100	107	N/A
UNC-3	0.018	N/A	0	23	N/A
14	0.101	J-009	76	54	N/A
15	0.381	EXCBMH1	100	105	N/A
22	0.54	N/A	100	125	N/A

(1) Available static storage is based on Drawing 135853 C-601

4.7.2 Stormwater Evaluation Results

In SWMM 5.2.4, the hydraulic grade line and major system are simulated simultaneously. Modeling results are summarized in the following sections.

4.7.2.1 Inlet Control Devices

The assigned size of the inlet control devices (ICDs) for the subject site have been optimized using SWMM 5.2.4. ICDs are incorporated into the stormwater management design to protect the minor system from surcharge during infrequent storm events. The ICDs used for the subject site are provided in the CB table presented on Drawing 135853 C-010. ICD modeling results are summarized in Table 4-3 for the Phase 1 scenario and in Table 4-4 for the Ultimate scenario.

Table 4-3: Phase 1 – Inlet Control Device Summary

Model Link	CB	Drainage Area	Inlet Control Device		100 Year Head (m)	100 Year Flow (L/s)
OL-CB1	CB1	1	HYDROVEX	75 VHV-1	1.46	6.1
OL-CB2	CB2	1	HYDROVEX	75 VHV-1	1.46	6.1
OR-CB3	CB3	2	IPEX MHF	108 mm	1.60	31.3
OR-CB4	CB4	2	IPEX MHF	108 mm	1.60	31.3
OL-CB5	CB5	8	No ICD		2.11	25.1
OL-CB6	CB6	8	No ICD		2.11	25.1
OR-CB7	CB7	9_1	IPEX MHF	83 mm	2.90	18.4
OR-CB8	CB8	9_1	IPEX MHF	83 mm	2.90	18.4
OR-CB9	CB9	10	IPEX MHF	127 mm	1.68	41.3
OR-CB10	CB10	10	IPEX MHF	127 mm	1.68	41.3
OR-CB11	CB11	5	IPEX MHF	83 mm	1.48	18.5
OR-CB12	CB12	6	IPEX MHF	83 mm	1.52	19.4
OR-CB13	CB13	16	IPEX MHF	83 mm	3.34	18.1
OR-CB14	CB14	9_2	No ICD		N/A	12.1
OR-001	Existing CB	7	No ICD		N/A	34.6
OR-004	Existing CB	EX_103	No ICD		N/A	33.4
OR-005	Existing CB	15	No ICD		N/A	118.0
OR-006	Existing CB	14	No ICD		N/A	83.2
OR-021	Existing CB	13	No ICD		N/A	86.5
OR-022	Existing CB	11	No ICD		N/A	68.1

Table 4-4: Ultimate – Inlet Control Device Summary

Model Link	CB	Drainage Area		Inlet Control Device	100 Year Head (m)	100 Year Flow (L/s)
OL-CB1	CB1	1	HYDROVEX	75 VHV-1	1.58	6.0
OL-CB2	CB2	1	HYDROVEX	75 VHV-1	1.58	6.0
OR-CB3	CB3	2	IPEX MHF	108 mm	1.74	18.4
OR-CB4	CB4	2	IPEX MHF	108 mm	1.74	18.4
OL-CB5	CB5	3_1	No ICD		2.99	37.3
OL-CB6	CB6	3_1	No ICD		2.99	37.3
OR-CB7	CB7	5_1	IPEX MHF	83 mm	3.17	18.2
OR-CB8	CB8	5_1	IPEX MHF	83 mm	3.17	18.2
OR-CB9	CB9	4	IPEX MHF	127 mm	2.59	41.4
OR-CB10	CB10	4	IPEX MHF	127 mm	2.59	41.4
OR-CB11	CB11	7	IPEX MHF	83 mm	0.80	8.8
OR-CB14	CB14	5_2	No ICD		N/A	18.1
OR-001	Future(1)	6	IPEX MHF	83 mm	N/A	17.6
OR-002	Future(1)	6	IPEX MHF	83 mm	N/A	17.6
OR-005	Future(1)	8	IPEX MHF	83 mm	N/A	20.1
OR-006	Existing CB	14	No ICD		N/A	46.0

(1) To be confirmed at ultimate detailed design

4.7.2.2 On Site Controls

Modeling results for on-site controls are summarized in Table 4-5 and apply to the proposed building for Phase 1 of the development, and for future buildings in the Ultimate condition. Design release rates for buildings must not exceed the values listed below. Estimated storages have been provided as additional information. The final required storage must be confirmed at the design stage for each building block based on the configuration of proposed on

site controls. On site controls can be provided on site through any combination of rooftop, surface, or underground storage.

Table 4-5: On Site Control Modeling Results

Drainage Area	100 Year 3 Hour Chicago		100 Year 3 Hour Chicago + 20%	
	Estimated Storage (m^3)	Release Rate (L/s)	Estimated Storage (m^3)	Release Rate (L/s)
BLDG_A	164	25.6	202	28.4
BLD / BLDG_B	168	25.9	208	28.8
BLDG_C	165	25.7	204	28.5
BLDG_D	161	25.4	199	28.2

4.7.2.3 Major System

Major system results for the 2 year 3 hour Chicago event are presented in Table 4-6 for the Phase 1 scenario and in Table 4-7 for the ultimate scenario. Results indicate ponding depths of 0.19 m in at the drainage area 9_1 low point and at the drainage area 6 parking lot low point. Ponding at both these locations is limited to the interim scenario with durations less than 1 hour.

In the Ultimate scenario, results indicate a ponding depth of 0.26 m at drainage area 8. This area is a significant low point and receives significant runoff from the external drainage area to the south. It is expected to remain a private access street in the ultimate condition.

Table 4-6: Phase 1 – Major System Results for the 2 Year 3 hour Chicago Design Storm Event

Drainage Area	Catchment Description	Available Static Storage (m^3)	Available Static Depth (m)	Maximum Depth of Ponding (m)	Cascading Flow (L/s)	Ponding Duration (min)
1	Street Sag	18.1	0.20	0.00	0	0
2	Street Sag	16.6	0.20	0.00	0	0
8	Street Continuous	N/A	N/A	0.03	20	-
10	Street Sag	1.1	0.09	0.00	0	0
5	Parking Sag	3.5	0.25	0.00	0	0
6	Parking Sag	59.5	0.47	0.19	0	17
7	Parking Sag	3.3	0.15	0.00	0	0
EX_103	Existing Parking Sag	8.5	0.21	0.00	0	0
9_1	Street Sag	2.3	0.10	0.16	46	32
9_2	Swale	N/A	N/A	0.00	0	0

Table 4-7: Ultimate – Major System Results for the 2 Year 3 Hour Chicago Design Storm Event

Drainage Area	Catchment Description	Available Static Storage (m^3)	Available Static Depth (m)	Maximum Depth at Low Point (m)	Cascading Flow (L/s)	Ponding Duration (min)
1	Street Sag	20.8	0.20	0.00	0	0
2	Street Sag	16.5	0.20	0.00	0	0
3_1	Street Continuous	N/A	N/A	0.02	4	-
3_2	Street Continuous	N/A	N/A	0.02	5	-
4	Street Sag	4.8	0.16	0.00	0	0
5_1	Street Sag	3.3	0.10	0.00	2	0
5_2	Swale	N/A	N/A	0.00	0	0
6	Street Continuous	N/A	N/A	0.00	0	0
7	Grass Area	N/A	N/A	0.00	0	0
8	Street Sag	N/A	N/A	0.26	0	36

Major system results for the 100 year and stress test design storm events are shown on Table 4-8 for the Phase 1 scenario and Table 4-9 for the ultimate scenario. Depths of ponding do not exceed 0.35 m except for the drainage area 6 parking lot low point during the Phase 1 scenario.

Table 4-8: Phase 1 – Major System Results for the 100 Year and Stress Test Design Storm Events

Drainage Area	Catchment Description	100 Year 3 Hour Chicago				100 Year 3 Hour Chicago + 20%			
		Maximum Depth (m)	Cascading Depth (m)	Cascading Flow (L/s)	Velocity x Depth (m^2/s)	Maximum Depth (m)	Cascading Depth (m)	Cascading Flow (L/s)	Velocity x Depth (m^2/s)
1	Street Sag	0.24	0.04	34	0.03	0.27	0.06	132	0.04
2	Street Sag	0.25	0.05	57	0.01	0.28	0.07	139	0.01
8	Street Continuous	0.07	0.07	190	0.08	0.08	0.08	260	0.09
10	Street Sag	0.12	0.02	16	0.02	0.17	0.05	125	0.03
5	Parking Sag	0.26	0.02	14	0.00	0.27	0.03	37	0.01
6	Parking Sag	0.40	0.00	15	0.00	0.48	0.01	66	0.00
7	Parking Sag	0.00	0.00	0	0.00	0.00	0.00	0	0.00
EX_103	Existing Parking Sag	0.18	0.00	0	0.00	0.22	0.01	22	0.00
9_1	Street Sag	0.22	0.11	205	0.12	0.23	0.11	262	0.13
9_2	Swale	0.00	0.00	0	0.00	0.00	0.00	0	0.00

Table 4-9: Ultimate – Major System Results for the 100 Year and Stress Test Design Storm Events

Drainage Area	Catchment Description	100 Year 3 Hour Chicago				100 Year 3 Hour Chicago + 20%			
		Maximum Depth (m)	Cascading Depth (m)	Cascading Flow (L/s)	Velocity x Depth (m^2/s)	Maximum Depth (m)	Cascading Depth (m)	Cascading Flow (L/s)	Velocity x Depth (m^2/s)
1	Street Sag	0.18	0.00	0	0.00	0.25	0.05	69	0.00
2	Street Sag	0.22	0.02	8	0.00	0.26	0.06	83	0.00
3_1	Street Continuous	0.05	0.05	70	0.05	0.07	0.07	161	0.06
3_2	Street Continuous	0.07	0.07	124	0.12	0.08	0.08	173	0.13
4	Street Sag	0.13	0.00	0	0.00	0.20	0.03	45	0.00
5_1	Street Sag	0.18	0.08	101	0.09	0.20	0.10	184	0.11
5_2	Swale	0.00	0.00	0	0.00	0.00	0.00	0	0.00
6	Street Continuous	0.08	0.08	202	0.07	0.09	0.09	277	0.08
7	Grass Area	0.00	0.00	0	0.00	0.00	0.00	0	0.00
8	Street Sag	0.32	0.06	166	0.06	0.33	0.07	217	0.06

4.7.2.4 Hydraulic Grade Line

Hydraulic grade line results are summarized in Table 4-10 for both the Phase 1 and Ultimate scenarios. Freeboard exceeding 1.5 m is maintained within the site for all scenarios and designs storm events.

Table 4-10: Hydraulic Grade Line Modeling Results

MH	Finished Floor (FF) Elevation (m)	Phase 1				Ultimate			
		100 Year 3 Hour Chicago		100 Year 3 Hour Chicago + 20%		100 Year 3 Hour Chicago		100 Year 3 Hour Chicago + 20%	
		HGL (m)	FF – HGL (m)	HGL (m)	FF – HGL (m)	HGL (m)	FF – HGL (m)	HGL (m)	FF – HGL (m)
MMH8	N/A	85.88	N/A	85.88	N/A	85.88	N/A	85.88	N/A
MH3	N/A	85.90	N/A	85.93	N/A	85.90	N/A	85.90	N/A
MH2	N/A	86.08	N/A	86.13	N/A	85.88	N/A	85.88	N/A
MH1	N/A	86.10	N/A	86.16	N/A	85.90	N/A	85.90	N/A
MH4	N/A	86.06	N/A	86.13	N/A	85.90	N/A	85.90	N/A

MH	Finished Floor (FF) Elevation (m)	Phase 1				Ultimate			
		100 Year 3 Hour Chicago		100 Year 3 Hour Chicago + 20%		100 Year 3 Hour Chicago		100 Year 3 Hour Chicago + 20%	
		HGL (m)	FF – HGL (m)	HGL (m)	FF – HGL (m)	HGL (m)	FF – HGL (m)	HGL (m)	FF – HGL (m)
MH9	N/A	86.88	N/A	87.02	N/A	85.90	N/A	85.90	N/A
MH10	88.65	87.01	1.64	87.17	1.48	86.51	2.14	86.51	2.14
MH5	N/A	86.92	N/A	87.06	N/A	85.90	N/A	85.90	N/A
MH7B	89.45	86.94	2.51	87.08	2.37	85.90	3.55	85.90	3.55
MH7	89.45	86.95	2.50	87.09	2.36	85.90	3.55	85.92	3.53
MH6	N/A	87.10	N/A	87.24	N/A	86.04	N/A	86.05	N/A
EXMH100	N/A	87.49	N/A	87.65	N/A	86.35	N/A	86.36	N/A
EXCBMH1	N/A	88.28	N/A	88.54	N/A	88.18	N/A	88.20	N/A

4.7.2.5 Outflows

Outflow modeling results are shown in Table 4-11 and include 100-year peak flows for both major and minor flow connections. Under ultimate conditions, the total outflow from the site is less than the maximum allowable release rate of 514 L/s.

Table 4-11: Site Outflow Modeling Results

Model Node	Location	Type	Phase 1	Ultimate
			100 Year Peak Flow (L/s)	
EXMH104A	Existing MH104A Minor System Outlet	Minor	46	0
EXMH102	Existing MH102 Minor System Outlet	Minor	738	425
OF-001	North Daze Street Intersection	Major	35	18
OF-003	South Daze Street Intersection	Major	118	0
OF-004	UNC-4 Drainage Area	Major	17	5
OF-005	West Swale Outlet	Major	0	0
OF-006	UNC-1 Uncontrolled Area	Major	14	12
Total			**868**	**460**

5 Erosion and Sedimentation Control Plan

During construction, existing stream and storm water conveyance systems can be exposed to significant sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings may be used such as;

- The installation of straw bales within existing drainage features surrounding the site;
- Bulkhead barriers will be installed in the outlet pipes;
- Sediment capture filter socks will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use;
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.

During construction of the services, any trench dewatering using pumps will be fitted with a “filter sock.” Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed these structures will be protected with a sediment capture filter sock to prevent sediment from entering the minor storm sewer system. These will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

During construction of any development both imported and native soils are stockpiled. Mitigative measures and proper management to prevent these materials entering the sewer systems is needed.

During construction of the deeper watermains and sewers, imported granular bedding materials are temporarily stockpiled on site. These materials are however quickly used up and generally before any catchbasins are installed.

The Erosion and Sedimentation Control Plan 135853-C-900 is included in **Appendix E**.

6 Grading and Drainage Plan

The proposed Grading and Drainage Plan is shown on drawing 135853-C-200 which is included in **Ap**pendix F. The Plan provides details of how the development ties into adjacent properties including Daze Street and the Transit Plaza. The plan indicates that much of the existing parking lot will remain to service the cinema and restaurant. Some modest changes to the existing parking lot are proposed west of the restaurant to ensure positive drainage to two proposed parking lot catchbasins.

The plan is designed to route major flow towards Daze Street and safely away from the site. The new driveway has been designed where possible to maximize on-site parking in order to minimize site runoff.

7 Approvals and Permit Requirements

7.1 City of Ottawa

The City of Ottawa reviews all development documents including this report and working drawings. Upon completion, the City will approve the local watermains, under Permit No. 008-202, submit the sewer ECA application to the province and eventually issue a Commence Work Notification.

7.2 Existing Conditions

The Ministry of Environment, Conservation, and Parks (MECP) will approve the local sewers under Section 53 of the Ontario Water Resources Act and issue an Environmental Compliance Approval. The MECP may also have to issue a Permit To Take Water.

7.3 Conservation Authority

The Rideau Valley Conservation Authority (RVCA) has been contacted to discuss quality treatment of surface runoff. Arcadis has responded to the RVCA comments about the Sawmill Creek Sub-Watershed Study and the potential use of Low Impact Elements.

8 Conclusions and Recommendations

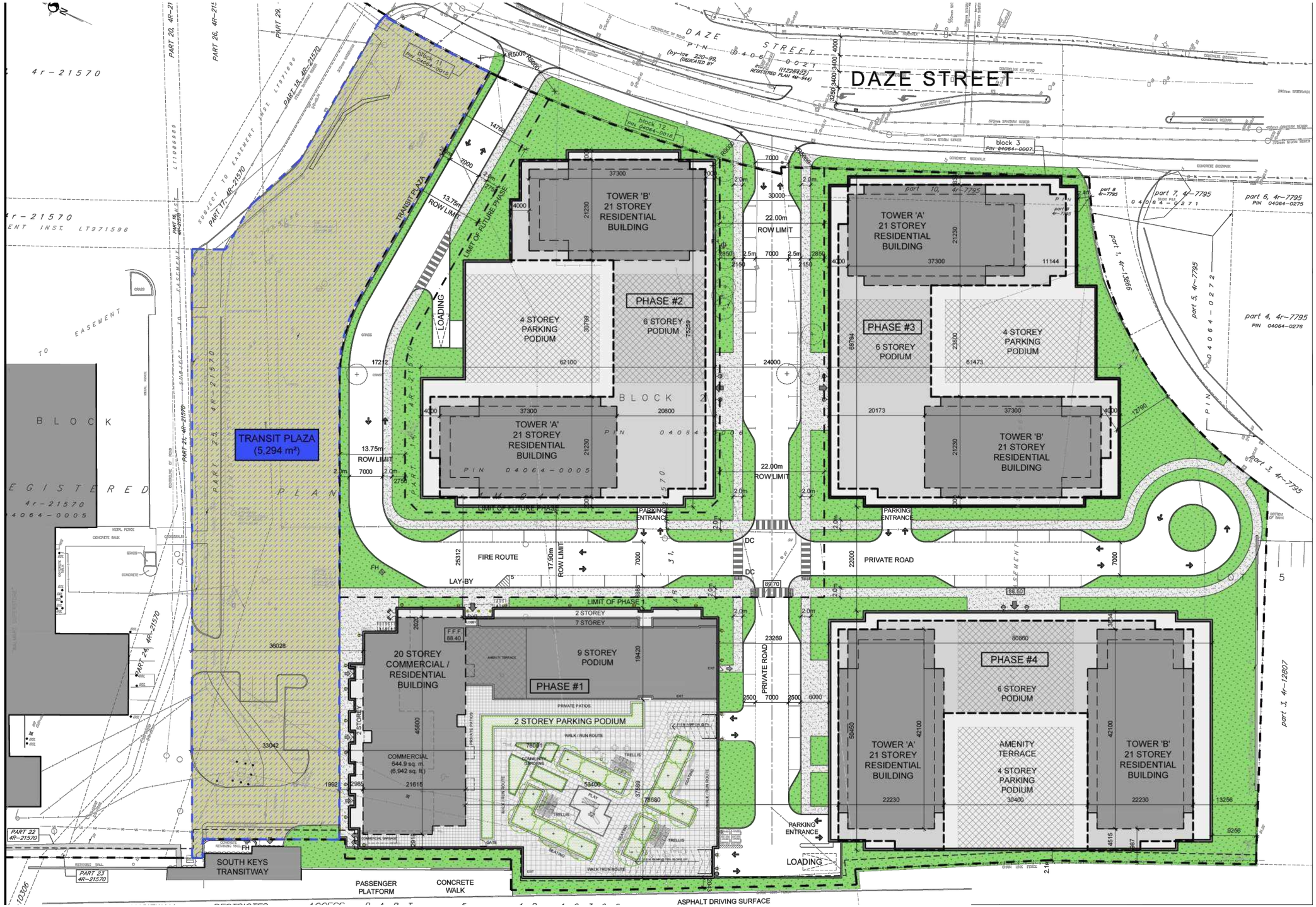
8.1 Conclusions

This report and the accompanying working drawings clearly indicate that the proposed development meets the requirements of the stakeholder regulators, including the City of Ottawa, provincial MECP and RVCA. The proposed development is in general conformance with the City of Ottawa design guidelines.

Downstream sanitary sewers were designed with the proposed development area included. There is a reliable water supply available adjacent to the proposed development and the Owner will be required to detail stormwater on site to ensure the existing downstream storm sewers are not surcharged.

8.2 Recommendations

This report concludes that the existing infrastructure, including sewers and watermain, and completing appropriate modifications to right-of-ways will provide both the Phase 1 and Ultimate developments with reliable municipal infrastructure. The Site Plan Control Approval should not be held up because of the lack of municipal infrastructure.



J:\135853_SouthKeyPhs1\7.0_Production\7.03_Design\04_Civil_Land\Figures\FIGURE 1 – MASTER PLAN BUILD OUT.dwg Layout Name: Layout1 Plot Scale: 1:5.13 Plotted At: 10/16/2026 Last Saved By: petitpan

ARCADIS

Project Title
SOUTH KEYS MALL
2200 BANK STREET
SOUTH - PHASE 1

Drawing Title
MASTER PLAN BUILD OUT

Sheet No.
FIGURE 1

DAZE STREET

"MONTANA'S" RESTAURANT

EXISTING AREA TO BE RETAINED (NOT A PART OF THIS SITE PLAN CONTROL APPLICATION)

ALTERED RESTAURANT PARKING LOT - 94 SPACES

TRANSIT PLAZA (5,294 m²)

ALTERED CINEPLEX PARKING LOT 126 SPACES

"CINEPLEX"

EXISTING ENTRY ELEVATION 92.42

6 SPACES

20 STOREY COMMERCIAL / RESIDENTIAL BUILDING

2 STOREY

7 STOREY

9 STOREY PODIUM

53400

78000

2 STOREY PARKING PODIUM

COMMERCIAL 409.1 sq. m. (4,404 sq. ft.)

11th - 20th FLOOR TOWER OUTLINE

SOUTH KEYS TRANSITWAY

PASSENGER PLATFORM

CONCRETE WALK

2.0m SETBACK

FIRE ROUTE

LAY-BY

LIMIT OF FUTURE PHASE

LIMIT OF PHASE 1

TRANSIT PLAZA

10.00m ROW LIMIT

13.75m ROW LIMIT

19.25m ROW LIMIT

15.77m ROW LIMIT

12.75m ROW LIMIT

13.65m ROW LIMIT

block 12 PIN 04064-0016

block 3 PIN 04064-0007

part 10, 4r-7795

part 9 4r-7795

part 8 4r-7795

part 7, 4r-7795 04064-0271

part 6, 4r-7795 PIN 04064-0275

part 5, 4r-7795 04064-0272

part 4, 4r-7795 PIN 04064-0276

part 3, 4r-7795 PIN 04064-0272

part 1, 4r-13866

PART 17, 4R-21570

PART 24, 4R-21570

PART 23 4R-21570

PART 25, 4R-21570

PART 21, 4R-21570

PART 16, 4R-21570

4M-944

LOT 5 (RIDEAU FRONT) CONCESSION 3

EASEMENT

CONCRETE RETAINING WALL

CHAIN LINK FENCE

METAL FENCE

J:\135853_SouthKeyPhs1\7.0_Production\7.03_Design\04_Civil_Land\Figures\FIGURE 2 – PHASE 1 PLAN.dwg Layout Name: FIGURE 2 – PHASE 2 PLAN Plot Scale: 1:5.13 Plotted At: 10/16/2026 Last Saved By: 15, 26

Project Title

SOUTH KEYS MALL
2200 BANK STREET
SOUTH - PHASE 1

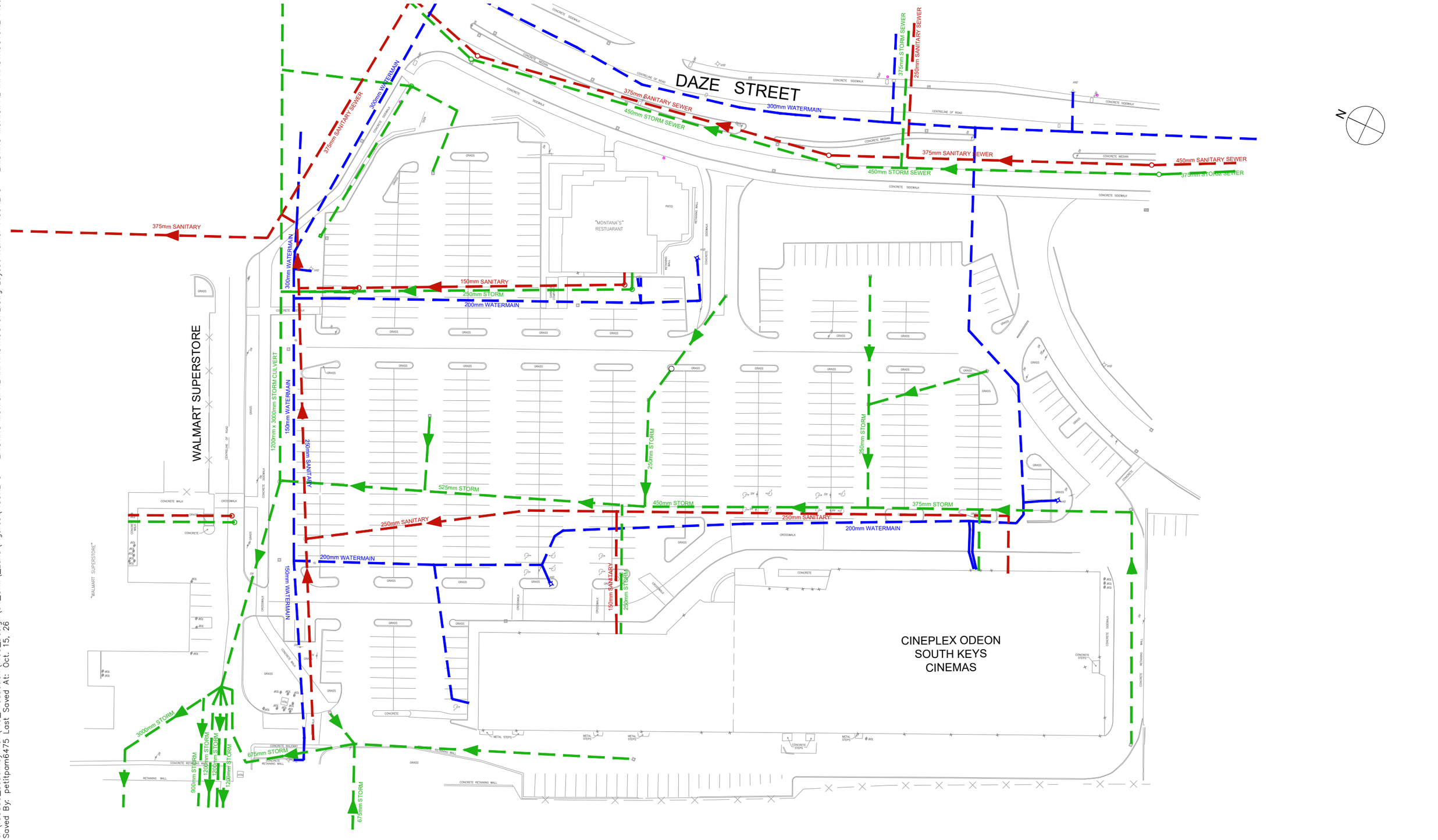
Drawing Title

PHASE 1 PLAN

Sheet No.

FIGURE 2

ARCADIS



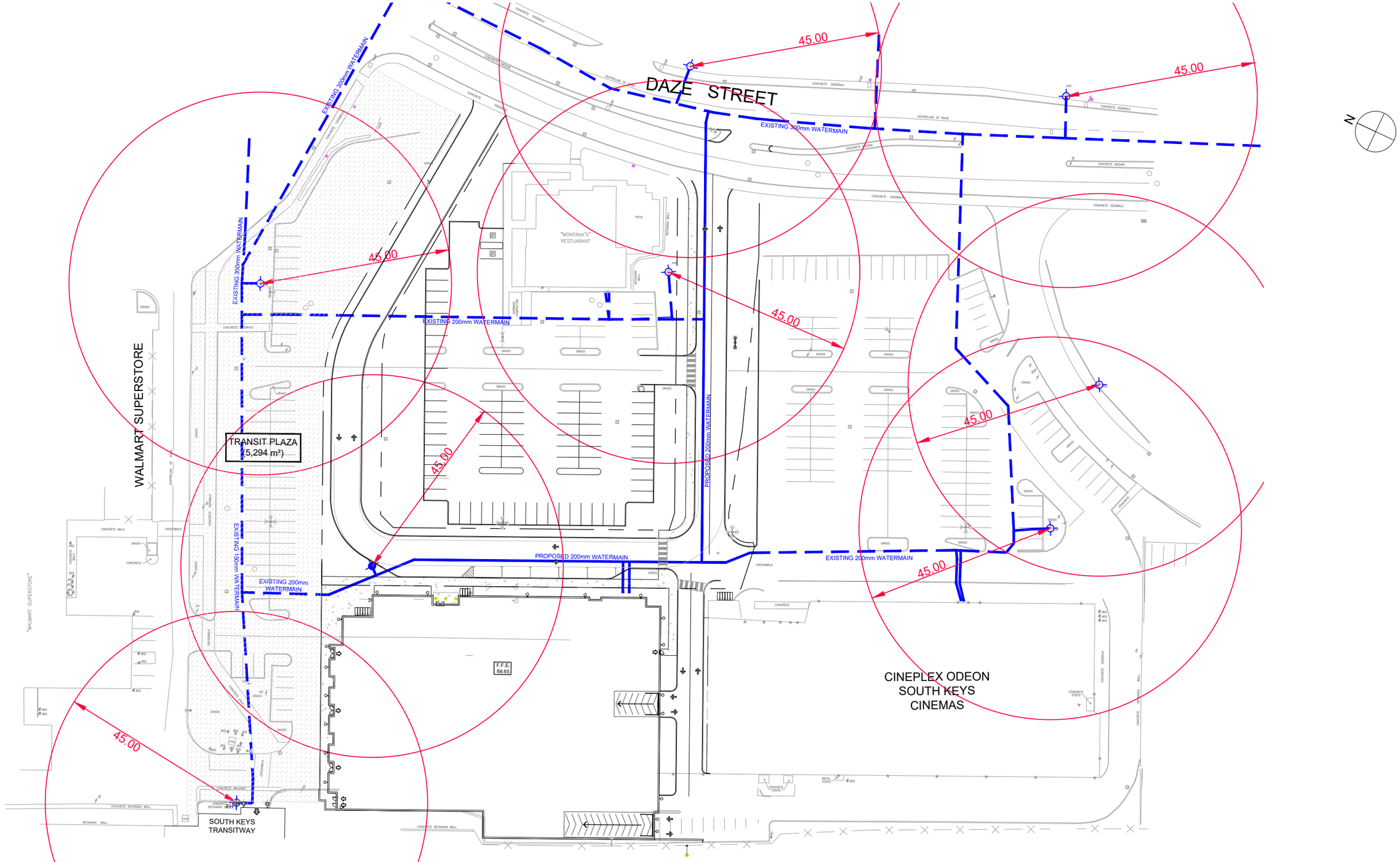
J:\135853_SouthKeyPhs1\7.0_Production\7.03_Design\04_Civil_Land\Figures\FIGURE 3 - EXISTING MUNICIPAL INFRASTRUCTURE.dwg Layout Name: FIGURE 3 - EXISTING MUNICIPAL INFRASTRUCTURE Plot Scale: 1
Saved By: petitpam6475 Last Saved At: Oct. 15, 26

ARCADIS

Project Title
SOUTH KEYS MALL
2200 BANK STREET
SOUTH - PHASE 1

Drawing Title
EXISTING MUNICIPAL
INFRASTRUCTURE

Sheet No.
FIGURE 3



J:\135853_SouthKeyPhs1\7.0_Production\7.03_Design\04_Civil_Land\Figures\FIGURE 4 - HYDRANT COVERAGE.dwg Layout Name: FIGURE 4 HYDRANT COVERAGE Plot Scale: 1:5.13 Plotted At: 10/16/2026 Last At: Oct. 15, 26

ARCADIS

Project Title
SOUTH KEYS MALL
2200 BANK STREET
SOUTH - PHASE 1

Drawing Title
HYDRANT COVERAGE

Sheet No.
FIGURE 4

Appendix A

June 10, 2021 City of Ottawa Pre-Consultation notes

October 6, 2026 Engineering Responses to City Comments

2200 Bank Street

Meeting Summary Notes
June 10, 2021, Online Teams Meeting

Attendees:

- Heather Jenkins, Smart Centres
- Mauro Pambianchi, Smart Centres
- Nancy Meloshe, Consultant
- Barrett Wagar, Consultant
- Rod Lahey, Architect
- Pat McMahon (Transportation Project Manager, City of Ottawa)
- Golam Sharif (Project Manager, City of Ottawa)
- Bruce Bramah, Engineering Intern, City of Ottawa
- Mark Young (Urban Designer, City of Ottawa)
- Phil Castro, Parks Planner, City of Ottawa
- Claire Lee, Urban Design Student
- Yvonne Mitchell, Planning Student
- Tracey Scaramozzino (File Lead, Planner, City of Ottawa)

Not in Attendance:

- Matthew Hayley, Environmental Planner
- Mark Richardson, Planning Forester
- Jamie Batchelor/Eric Lalonde (RVCA)

Issue of Discussion:

- Phase 1 of re-development of 2200 Bank Street, Former Children's Place/Retail Area – abutting movie theatre
- 1 mixed-use building with 6-storey podium, 2 21-storey towers (481 du), 5-storey above ground parking podium and 1 storey u/g (348 parking spaces), 629 m2 ground floor retail, indoor amenity area, Transit Plaza
- Applicant indicated that their understanding of the level of public transit, even at the O-train station, was not sufficient enough to reduce the parking rate.





Overall Concept



Shows animated street frontages

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1. **Official Plan:**
    a. General Urban Area
    b. South Keys to Blossom Park Bank Street Secondary Plan and CDP

2. **Zoning Information**
    a. MC [2284] S349-h

3. **Infrastructure/Servicing (Golam Sharif, Bruce Bramah)**

Infrastructure

If existing services are to be reused, a CCTV scan is required to verify the absence of any service or structural defects. A stamped and signed memo prepared by a relevant professional is also required that addresses the condition of the service and provides any recommendations.

Please provide water boundary conditions and expected flow rates for both Sanitary and Storm including phase 1 or the complete site to ensure the sewer capacity is available.

Water

Existing public services:

- Daze Street. – 305mm PVC

Water redundancy would be required for this development based on the number of proposed units.

- Watermain Frontage Fees to be paid ($190.00 per metre) ☐ **Yes** ☒ **No**

Boundary conditions:
Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first submission.

- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:
    - Location of service(s)
    - Type of development and the amount of fire flow required (as per FUS, 1999).
    - Average daily demand: ___ l/s.
    - Maximum daily demand: ___l/s.
    - Maximum hourly daily demand: ___ l/s.
- Fire protection (Fire demand, Hydrant Locations)
- A water meter sizing questionnaire (water data card) will have to be completed prior to receiving a water permit (water card will be provided post approval)

Sanitary Sewer

Existing public services:

- Daze Street – 375mm PVC

Is a monitoring manhole required on private property? ☒ **Yes** ☐ **No**

- The designer should be aware there may be limited capacity in the downstream sanitary sewer system. The sanitary demand needs to be coordinated with the City Planning Dept. to determine if the existing sanitary sewer system has sufficient capacity to support the proposed rezoning. Provide sanitary demands to the City project manager for coordination.

Storm Sewer

Existing public services:

- Daze Street – 450mm PVC (Suggested connection)
- 3000mm STM Trunk north of property
- The Environmental Site Assessment (ESA) may provide recommendations where site contamination may be present. The recommendations from the ESA need to be coordinated with the servicing report to ensure compliance with the Sewer Use By-Law.



Stormwater Management

Quality Control:

- Rideau Valley Conservation Authority to provide quality control requirements for property. (Sawmill Creek)

Quantity Control:

- Allowable Runoff coefficient (C): C = the lesser of the existing pre-development conditions to a maximum of 0.5.
- Time of concentration (Tc): Tc = pre-development; maximum Tc = 10 min
- Allowable flowrate: Control the 100-year storm events to the 5-year storm event.

Ministry of Environment, Conservation and Parks (MECEP)

All development applications should be considered for an Environmental Compliance Approval, under MECP regulations.

a. The consultants determine if an approval for sewage works under Section 53 of OWRA is required and determines what type of application. The City's project manager may help confirm and coordinate with the MECP as required.
b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.
c. Pre-consultation is not required if applying for standard or additional works (Schedule A of the Agreement) under Transfer Review.
d. Pre-consultation with local District office of MECP is recommended for direct submission.
e. Consultant completes an MECP request form for a pre-consultation. Sends request to moeccottawasewage@ontario.ca
f. ECA applications are required to be submitted online through the MECP portal. A business account required to submit ECA application. For more information visit https://www.ontario.ca/page/environmental-compliance-approval

g. It is unclear if the proposed development will remain as one property. An ECA will be required where the stormwater management services more than one property parcel.

NOTE: Site Plan Approval, or Draft Approval, is required before any Ministry of the Environment and Climate Change (MOECC) application is sent.

General Service Design Comments

- The City of Ottawa requests that all new services be located within the existing service trench to minimize necessary road cuts.
- Monitoring manholes should be located within the property near the property line in an accessible location to City forces and free from obstruction (i.e. not a parking).
- Where service length is greater than 30 m between the building and the first maintenance hole / connection, a cleanout is required.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The upstream and downstream manhole top of grate and invert elevations are required for all new sewer connections.
- Services crossing the existing watermain or sewers need to clearly provide the obvert/invert elevations to demonstration minimum separation distances. A watermain crossing table may be provided.

Other

Are there are Capital Works Projects scheduled that will impact the application?

☐ **Yes** ☒ **No**

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans are to be submitted on standard A1 size sheets (594mm x 841mm) sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.
- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre: InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca> (613) 580-2424 ext. 44455

- geoOttawa
  http://maps.ottawa.ca/geoOttawa/

4. Initial Planning Comments (Tracey Scaramozzino)

a. Rezoning is req'd for lifting of the holding provision, and to increase floorplate size
b. More comments will be provided once more detailed plans are submitted.
c. Concern over the abundance of vehicular parking that is being provided – especially when NO parking is required.
d. Sidewalks on the east-west road should be on both sides, as detailed in the Secondary Plan. The sidewalks are currently only shown on the south side.
e. Ensure ample plantings within the site and along perimeter and along the transit plaza – along with street furniture
f. Discuss proposal with local Councillor and Community Associations
g. Subject to the UDRP
h. Ensure metric dimensions are on the actual submission drawings.
i. Provide ped connection out from cul-de-sac out to private road into the medical bldg.
j. (This site has a drop-off space in front of the 6-storey podium, while none of the other buildings/phases have one because this site has been more detailed)
k. Show adequate/ample amenity space inside and outside.
l. As per Applicant's request on projections, please see S. 64 of the Zoning Bylaw which permits projections (with caveats) for "mechanical and service equipment penthouse, elevator or stairway penthouses – bylaw 2014-94)"
m. Will the transit plaza be conveyed to the City or stay under private ownership?

5. Urban Design Comments (Mark Young)

1. The subject site is located in a Design Priority Area. The applications will be subject to the review of the Urban Design Review Panel.
2. A Design Brief is required as part of your application submission. A terms of reference is included.
3. Thank you for providing concept plans for the entire redevelopment of the subject lands. This is very helpful in understanding how the first phase fits within the larger long-term vision.

Zoning By-law Amendment:

1. Additional information, study and justification are required to support an increase in the floorplate size above the currently required maximum of 750 sq. m. as indicated in the Secondary Plan and Zoning By-law.

Site Plan Application:

1. It is understood that the proposed internal streets will be private. They should be designed to look and feel like public streets and be accessible to the general public. Please provide additional cross-sections to provide a better sense of what is proposed within the private streets.
2. A private street adjacent to the Transit Plaza may be challenging, given a general desire to use this for drop off and pick up associated with the transit station.
3. Layout and access as they relate to this site and the transit station should be included as part of design brief materials.
4. Grade related units should be considered where feasible and designed to allow for the appropriate relationship between public and private realm.

6. Parks (Phil Castro)

a. Parkland dedication will be required as a condition of site plan control. The determination of the parkland area to be dedicated will be in accordance with the City's Parkland Dedication By-law and will be capped at 10 percent of the land area under consideration for residential apartment purposes. As discussed during the preapplication consultation meeting, the final parkland area to be dedicated will depend upon the future proposed uses and densities. How this is determined and addressed will require further discussion during the review of a formal submission.

7. Trees (Mark Richardson)

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

LP tree planting requirements:

For additional information on the following please contact tracy.smith@Ottawa.ca

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
- Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

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

Soil Volume

- Please 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

Sensitive Marine Clay

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

8. Environment (Matthew Hayley)

1. Sawmill Creek runs along a portion of the eastern boundary of the larger site (visible on page 3 of the Concept Master Plan along Bank Street). That area currently zoned EP will need to continue be zoned EP and set aside. The redevelopment site does not share a boundary with Sawmill Creek, however any servicing and site alterations need to support the redevelopment adjacent to the watercourse will need to be mindful of the impact on the feature and the direction from the RVCA followed.

2. Bird Safe Design, Given the height of the proposal (mid to high rise) the proposal will need to review and incorporate bird safe design elements and as part of the site plan a review of elevation drawings will be needed to assess impact due to the proximity of green corridor to the west. Please review the Bird Safe Design Guidelines for details however in brief some items of concern are glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, some types of landscaping, and light pollution.

3. Consider the impact this site has on the urban heat island effect and look for ways to reduce the heat generated through the provision of shade or other approaches (look to the high performance building standards for example).

9. Conservation Authority (Jamie Batchelor, RVCA)

Stormwater Management

Any new development will need to be in accordance with the Samwill Creek Subwatershed Study. This includes water quality treatment of 'enhanced' (80%TSS Removal). The opportunity for the inclusion of LID measures should be considered for the stormwater management plan.

10. Transportation (Pat McMahon)

- Ensure that a Transportation Impact Assessment (TIA) Screening form is included with the application. In this case, a TIA is required and should be started as soon as possible.
    - Start this process as soon as possible.
    - An update to the TRANS Trip Generation Manual has been completed (October 2020). This manual (and trip calculator) is to be utilized for this TIA and can be provided upon request.
    - Applicant advised that their application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package and/or monitoring report (if applicable). Collaboration and communication between development proponents and City staff are required at the end of every step of the TIA process.
- Noise Impact Studies required for the following:
    - Road (within 100m of light rail corridor)
    - Aircraft (within the Airport Vicinity Development Zone)
- Clear throat requirements for residential developments with greater than 200 units and accessing a collector road are 25m.
- As the proposed site is commercial and residential, AODA legislation applies to all areas accessible to the public (i.e. outdoor pathways, parking, etc.).
- On site plan:
    - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    - Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    - Show lane/aisle widths.
    - Sidewalk is to be continuous across accesses as per City Specification 7.1.
- Site is within 100m of future South Keys LRT Station – therefore TOD measures apply. As per the South Keys to Blossom Park CDP, a site-specific plan as well as a local Transportation Management Association is encouraged. To achieve

target mode shares within TOD zones, we highly recommend developments to provide as many TDM measures as possible. Given the need for sustainable travel modes, providing at least one bicycle space per unit is strongly encouraged. To reduce provided parking costs, car-sharing options would be equitable for the residents and could also save the development in costs for providing and maintaining the parking structure.

- As per the CDP, 30m ROW protection is encouraged along Daze. As the development progresses, be aware that the frontage along Daze may change, and the layout of the plaza as well as a result.
- The plaza forms part of the Hunt Club Neighbourhood Extension, consider working with the cycling group to consolidate efforts.
- Sidewalks are required on both sides of local streets, as per the CDP.

11. OC Transpo/O-train (Erica Springate will comment on future revisions)

a. There won't be any changes to the OC Transpo Bus station at South Keys. The only changes will be the pedestrian underpass between the Bus Station and O-train and the O-train platform itself (Tracey Scaramozzino, via Mark Antunes-Alves)
b. The former Trillium Line service operated at a 12-minute headway in all time periods. The timing will remain, once the Trillium Line expansion is complete.
c. The Confederation Line runs between a 3-5 mine headway. (Tracey via Matthew Wolstenholme)

12. Waste Collection

a. Please see City's Waste Management Guidelines for multi-unit residential: http://ottawa.ca/calendar/ottawa/citycouncil/pec/2012/11-13/Solid%20Waste%20Collection%20Guidelines%20-%20Doc%201.pdf

13. General Information

a. Ensure that all plans and studies are prepared as per City guidelines – as available online…
   https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans

Consider using temporary road names for clarity.

Applicant, Aug 2026: Refer to the response to Comment 2 by OC Transpo. The ROW Cross Sections have temporary names identified on Plan C-003 (North Leg, West Leg, South Leg).

City, September 2026: Noted that the cross sections have temporary names. The location of the curb cut should be in the location below.



Applicant, Oct 2026: A depressed curb has been shown on the submitted updated plans (refer to "DC" label for depressed curb and associated grey curb hatching showing extents) and its location supports a conceptual curb return design informed by swept path analysis of a standard Aerial Fire Truck (refer to submitted PDF of swept paths). It remains noted this is a consideration by SC and that the City will be responsible for all works and associated costs to establish a vehicle connection between the Phase 1 interim ROW and the future transit plaza at the time of the transit plaza construction by the City.

3. **City, September 2026: re Cross Sections submitted to the City in July 2026:** No concerns with the cross-sections.

   Applicant, Oct 2026: Noted.

Engineering Drawings (Tyler Cassidy, ~~Bruce Bramah~~) – outstanding comments only:

City: Please consider these comments in combination with comments you receive from other technical groups, agencies, and the public. Contact me if it is necessary to resolve any conflicting comments and/or include the above comments with your summary to the applicant.

Applicant Response Feb 2026: Per the MoU the U-shaped road with boundaries defined in the MoU will be a public road. Based on this, as well as other components of the MoU, the servicing for the site is being updated and will be presented to the City as part of a forthcoming meeting to include, at minimum, the servicing consultant and City reviewer as well as Derrick Moodie and Geraldine Wildman. The servicing and ROW cross section(s) must be reviewed within the context of the MoU.

Applicant Response April 2026: These comments relate to the 2023 version of the

servicing submission. Given the MoU executed in 2025, a new servicing submission is required and is forthcoming.
City, May 2026: Staff look forward to reviewing the updated submission.
City, September 2026: Comments will be provided once the detailed design engineering documents are received.
Applicant, Oct 2026: The "U" shaped road will remain private until Phase 2 at which time the ultimate design standards will be reviewed. In the interim we will move forward with the Phase 1 cross sections the City confirmed are satisfactory. The revised civil submission includes the accepted Phase 1 cross sections and details connections to public infrastructure.

1. **City, March 18, 2026:** A revised SSP will be required with the proposed public road meeting City standard ROW cross sections. Connections to the public services within the park are to be limited as much as possible. A meeting between myself and the civil consultant to go over proposed servicing prior to submission is recommended.
   Applicant Response April 2026: Refer to the response to Transportation Comment 2.
   City, May 2026: Staff look forward to reviewing the updated submission.
   Applicant, Oct 2026: A meeting with City staff took place on September 22, 2026, and the City reviewer confirmed no issues or additional comments with the proposed Phase 1 / interim cross sections.

2. **City, March 18, 2026:** An updated SWM brief is required to clearly demonstrate how the Sawmill Creek Subwatershed Study recommendations have been implemented. There also needs to be a section discussing LID measures for the stormwater management for the site. The consultant should explore all opportunities to implement LID measures into the stormwater management plan.
   Applicant Response April 2026: The revised design brief will include discussion on the recommendation of the Sawmill Creek Subwatershed Study and applicability to this site and a section discussing applicability of LID measures. The latter will be done in concert with the findings of the geotechnical investigation and will consider the urban design and grading and drainage of the site. The site is comprised of clays and almost 100% hard surfaces. This will be reviewed and presented in greater detail in the revised design brief.
   City, May 2026: Staff look forward to reviewing the updated submission.
   Applicant, Oct 2026: Refer to the revised design brief that includes discussion on the recommendation of the Sawmill Creek Subwatershed Study and applicability to this site and a section discussing applicability of LID measures. This is supported by the submitted memo by Paterson Group.

3. **City, August 2026:** The future public infrastructure that will be transferred to the City is required to meet the design standards outlined in the MECP "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations

Authorized under an Environmental Compliance Approval" (May 2023) document.

Applicant, Aug 2026: Comments are forthcoming.

City, September 2026: Waiting for a response from the Applicant.

Applicant, Oct 2026: The "U" shaped road will remain private until Phase 2 at which time the ultimate design standards will be reviewed. In the interim we will move forward with the Phase 1 cross sections the City confirmed are satisfactory.

4. **City, August 2026:** Trees were notably missing from proposed cross-sections.

   Applicant, Aug 2026: Tree planting locations in the ROW will be confirmed once City engineering is satisfied with the cross-section designs.

   City, September 2026: Staff look forward to reviewing the updated submission. Please include fire hydrants on the cross-section(s) as well.

   Applicant, Oct 2026: One new hydrant is proposed near the northeast corner of the Phase 1 building. That hydrant doesn't "fit" any of the cross sections given its placement in a transitional area between the north and west cross sections. There is an existing hydrant near the Montana's restaurant which has been added to the south cross section even though its about two metres outside the section. Regarding trees in the Phase 1 cross sections, refer to submitted landscape plan and response to Landscape Plan Comment 1.

5. **City, August 2026:** Cross-sections that propose a 7.0m asphalt width will have difficulty connecting one of the catch basins to the proposed storm sewer. The applicant should demonstrate how these catch basins will connect to the minor system.

   Applicant, Aug 2026: Comments are forthcoming.

   City, September 2026: Waiting for a response from the Applicant.

   Applicant, Oct 2026: The cross section at this location has been changed to show the storm sewer 2.0m from the curb with the catchbasin, as such a standard CB connection will suffice.

6. **City, August 2026:** The interim cross-sections shown on "C-003" (ROW Phase 1) were not contemplated as part of the MOU. The applicant will need to demonstrate the proposed cross-sections for phase 1 can be integrated into the full ROW width as part of the ultimate design without introducing unnecessary conflicts.

   Applicant, Aug 2026: Phase 1 was clearly defined in the MoU (see the following: definition of "Phase 1" on Page 2; Phase 1 details on Page 3, Section 3; and, Phase 1 plan on Schedule B). It was known to the City since the initial SPC and ZBLA submissions in 2021 that the road would be constructed in a phased manner and that the asphalt width would be 7 metres. This was re-confirmed during the June 10, 2026 meeting which Bruce Bramah

attended on behalf of the City.

City, September 2026: Acknowledged. Note that the owner of the lands will be responsible for constructing the ultimate road configuration and implementing any required design changes related to the future right-of-way cross-section that the City will be assuming. The future right-of-way design should be as close to City Standards as possible while meeting engineering and utility requirements. The completed ultimate cross-section will be reviewed through a standard CUP and Utility Circulation, either as a condition of Site Plan Approval, or during review of the phase 2 (ultimate) works.

Applicant, Oct 2026: SC confirmed via email response to the City on September 11, 2026, that they are agreeable to deferring the ultimate cross sections and the CUP circulation and approval process to the Phase 2 development as identified on Schedule C of the MoU.

7. **City, August 2026:** The proposed ~~interim and~~ ultimate build-out cross-sections will need to undergo a utility circulation process. Sign-off from each relevant utility or stakeholder will need to be provided. This can be done through a Composite Utility Plan circulation process. It is in the applicant's best interest to complete this before engaging in Phase 1 works.

   Applicant, Aug 2026: ~~The CUP will be a condition of the Site Plan Agreement and will precede the Phase 1 works.~~

   City, September 2026: Acknowledged. There may be further discussion on the timing of the CUP process between SmartCentres and the City of Ottawa in order to facilitate approval of the Phase 1 works.

   Applicant, Oct 2026: As noted above, SC confirmed via email response to the City on September 11, 2026, that they are agreeable to deferring the ultimate cross sections and the CUP circulation and approval process to the Phase 2 development as identified on Schedule C of the MoU.

8. **City, August 2026:** Review Appendix 11 of the City of Ottawa Sewer Design Guidelines (2025) for any additional monitoring requirements for LID and stormwater management works.

   Applicant, Aug 2026: Comments are forthcoming.

   City, September 2026: Waiting for a response from the Applicant.

   Applicant, Oct 2026: Due to the presence of clay soils, infiltration-based low-impact development (LID) strategies are not considered suitable for the subject site nor compatible with the subject site in accordance with the City of Ottawa's current Sewer Design Guidelines (2025). Paterson has reviewed the current site servicing plans prepared by Arcadis (Sheet Number C-001, Issue, Project No: 135853, Revision 4 dated June 2, 2026) and confirmed there is no presence of infiltration-based LID's or other geotechnically-sensitive or Appendix 11-pertinent stormwater management features (see their submitted memo).

9. **City, September 11, 2026: Mark-ups were sent regarding the road profile.** For streets with lay-by parking, a W-shaped road profile likely won't be accepted by the City. The City reserves the right to comment on the proposed road profile for the streets that are planned to be assumed by the City during the formal Utility Circulation and CUP review process. The City is under no obligation to assume any street segments that would result in increased operations and maintenance spending or that would pose a risk to public safety. For this reason, it is recommended the road profile be designed to City Standards.
   Applicant, Sept 14, 2026, email in response to above: "Thank you for your below mark-ups, we have reviewed with Arcadis and agree to the crest design."

10. **City, September 2026:** At ultimate buildout, the streets with lay-by parking shall have the catchbasins relocated to the curbline, and the street shall be designed to provide positive drainage to the catchbasins.
    Applicant, Oct 2026: Noted.

11. **City, September 2026:** The U-shaped street in the interim design will have to meet the requirements of the Building Code & any relevant by-laws for fire route design and EMS access.
    Applicant, Oct 2026: The internal U-shaped road is designed to ensure an inner 9-metre radius, centreline 12-metre radius and outer 15-metre radius, in accordance with the City Fire Services and Building Code requirements for a designed fire route and emergency access. Refer to submitted PDF of swept paths.

12. **City, September 2026:** Sanitary sewer, watermain, and storm sewer separation distances identified on the cross sections meet City and Provincial standards and are therefore acceptable.
    Applicant, Oct 2026: Noted.

Conservation Authority (RVCA – Stephen Bohan) outstanding comments only:

Stormwater Management

1. In support of the application, the applicant has submitted the report "Site Servicing & Stormwater Management Design Brief, South Keys Mall, South Phase – Phase 1, 2200 Bank Street, city of Ottawa" dated October 28th, 2021, prepared by IBI Group. While the report does note that the stormwater from this site ultimately outlets to the Sawmill Creek Constructed Wetland facility, it does not reference whether the stormwater management plan is consistent with the Sawmill Creek Subwatershed Study. The subwatershed study provides direction for development and redevelopment within the Sawmill Creek subwatershed. Therefore, the report needs to be clearly demonstrate how it has implemented the recommendations of the subwatershed study. There was also no section discussing LID measures for the stormwater management for the site. The consultant

should explore all opportunities to implement LID measures into the stormwater management plan.

Applicant Response April 2026: The revised design brief will include discussion on the recommendation of the Sawmill Creek Subwatershed Study and applicability to this site and a section discussing applicability of LID measures. The latter will be done in concert with the findings of the geotechnical investigation and will consider the urban design and grading and drainage of the site. The site is comprised of clays and almost 100% hard surfaces. This will be reviewed and presented in greater detail in the revised design brief.

City May 2026: The City and RVCA will review and comment once this is provided.

City, Aug 2026: The City and RVCA will review and comment once this is provided.

Applicant, Aug 2026: Comments are forthcoming.

City, September 2026: Waiting for a response from the Applicant.

Applicant, Oct 2026: Refer to the revised design brief that includes discussion on the recommendation of the Sawmill Creek Subwatershed Study and applicability to this site and a section discussing applicability of LID measures. This is supported by the submitted memo by Paterson Group.

Ottawa Airport Authority (Delroy Brown) outstanding comments only:

1. **Airport March 2026:** The referenced site plan application proposes two 21-storey towers for commercial and residential use within an area governed by the Ottawa Macdonald-Cartier International Airport Zoning Regulations (AZR) within the Outer Surface. The site is also within the Airport Vicinity Development Zone (AVDZ) external to the 25 NEF/NEP contour line.

   Applicant Response April 2026: Noted. The Applicant advises that the design was previously modified in 2023 to include a single high-rise building respecting maximum height permissions.

   Airport, May 2026: The proposal should demonstrate compliance with the maximum height permitted by the AZR. The method of confirmation is the legal survey, plan, and profile, prepared by an Ontario Land Surveyor, OLS, submitted for review to demonstrate conformity prior to site plan approval, and as a condition prior to building permit issuance. Structures below the surface as presented in the current concept are permissible if no impact on navigation / communication has been identified. The OIAA will confirm position on the proposal following review of the requested survey. Building permit should not be issued before clearance from the TC and OIAA.

   Applicant Response June 2026: Refer to April 2026 response to Airport Comment 2.

   Airport, Aug 2026: the requirement for the legal survey, plan and profile prepared by an O.L.S illustrating conformance with the AZR remains.

   Applicant, Aug 2026: Given the building has been designed to comply with the maximum building height of the Zoning By-law (including projections), which is tied to the elevation of the Outer Surface, the intent is to have the Aeronautical Assessment Form for Obstacle Evaluation and legal survey, plan, and profile completed and submitted as a condition of

Appendix B

Watermain Demand Calculations

Fire Flow Calculations

2026 Boundary Conditions

Hydraulic Model Results

WATERMAIN DEMAND CALCULATION SHEET

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT : South Keys - Smart Centers
LOCATION : City of Ottawa

FILE: 135853.6.04
DATE PRINTED: 2026-05-06
DESIGN: 2026-05-06
PAGE : 1 OF 1

NODE	RESIDENTIAL				NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND
	Single	Town	Apt	POP'N	INDTRL (ha.)	COMM. (ha.)	RETAIL (m^2)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	(l/min)
Phase 1																	
J16			294	529			409	1.72	0.01	**1.73**	4.29	0.03	**4.32**	9.43	0.05	**9.48**	**14,000**
Phase 2 & 3																	
J12			807	1,453				4.71	0.00	**4.71**	11.77	0.00	**11.77**	25.89	0.00	**25.89**	**11,000**
Phase 4																	
J14			457	823				2.67	0.00	**2.67**	6.66	0.00	**6.66**	14.66	0.00	**14.66**	**11,000**
Ultimate - Total			1264	2,804						**9.11**	18.43		**22.75**	40.55		**50.03**	

ASSUMPTIONS

RESIDENTIAL DENSITIES
Apartment (avg) 1.8 p / p / u

** Residential Daily Demand reduced to coincide with current waste water guidelines

AVG. DAILY DEMAND
Residential:** 280 l / cap / day
Industrial: l / ha / day
Commercial: l / ha / day
Retail: 2,500 l / 1000m^2 / day

MAX. DAILY DEMAND
Residential: 700 l / cap / day
Industrial: l / ha / day
Commercial: l / ha / day
Retail: 6,250 l / 1000m^2 / day

MAX. HOURLY DEMAND
Residential: 1,540 l / cap / day
Industrial: l / ha / day
Commercial: l / ha / day
Retail: 11,250 l / 1000m^2 / day

FIRE FLOW
From FUS Calculation 14,000 l / min

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Ottawa, Ontario K1S 5N4 Canada
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FIRE UNDERWRITERS SURVEY
South Keys Phase 1 | Smart Centers
135853-6.0 | Rev #3 | 2026-05-06
Prepared By: SL | Checked By: JM

STEP	Contents	Description		Adjustment Factor		Result	
1	Floor Area	Ph1 20-Storey Com/Residential					m2
	Total Storey	Ultimate Conditions				20	storey
	Total Effective Floor Area					**7506**	m2
2	**Type of Construction**	**Type V** Wood Frame	1.5	Type II Noncombustible Construction	0.8		
		Type III Ordinary Construction	1.0				
		Type II Noncombustible Construction	0.8				
		Type I Fire Resistive Construction	0.6				
3	**Required Fire Flow**	RFF = 220C√A				**15000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents	-25%	Combustible Contents	0%	0	L/min
		Limited Conbustible Contents	-15%				
		Combustible Contents	0%				
		Free Burning Contents	15%				
		Rapid Burning Contents	25%				
	Fire Flow					**15000**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13	-30%	Yes	-30%	-4500	L/min
		Standard Water Supply for both the system and Fire Department Hose Lines	-10%	No		0	L/min
		Fully Supervised System	-10%	No			
	Fire Flow					**-4500**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	North	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	South	Separation (m)	23.3	With unprotected opening	10%	1500	L/min
		Length X Height Factor (m.storeys)	882				
		Construction Type	Type II				
	East	Separation (m)	21.4	With unprotected opening	10%	1500	L/min
		Length X Height Factor (m.storeys)	777				
		Construction Type	Type II				
	West	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	Fire Flow					**3000**	L/min
7	**Total Required Fire Flow**					**13500**	
		Rounded to Nearest 1000 L/min				**14000**	L/min

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

Floor	Area (m2)	Two Largerst Floor	Floors Above at 50%
4	1525	1525	
5	1525	1525	
6	1525		762.5
7	1525		762.5
8	1442		721
9	1442		721
10	637		318.5
11	780		390
12	780		390
13	780		390
Total	11125		**7505.5**

(Note: For Construction Coefficient below 1.0, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

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Prepared By: SL | Checked By: JM

STEP	Contents	Description		Adjustment Factor		Result	
1	Floor Area	Ph1 20-Storey Com/Residential					m2
	Total Storey	Interim Conditions				20	storey
	Total Effective Floor Area					**7506**	m2
2	**Type of Construction**	**Type V** Wood Frame	1.5	Type II Noncombustible Construction	0.8		
		Type III Ordinary Construction	1.0				
		Type II Noncombustible Construction	0.8				
		Type I Fire Resistive Construction	0.6				
3	**Required Fire Flow**	RFF = 220C√A				**15000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents	-25%	Combustible Contents	0%	0	L/min
		Limited Conbustible Contents	-15%				
		Combustible Contents	0%				
		Free Burning Contents	15%				
		Rapid Burning Contents	25%				
	Fire Flow					**15000**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13	-30%	Yes	-30%	-4500	L/min
		Standard Water Supply for both the system and Fire Department Hose Lines	-10%	No		0	L/min
		Fully Supervised System	-10%	No			
	Fire Flow					**-4500**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	North	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	South	Separation (m)	11.1	With unprotected opening	15%	2250	L/min
		Length X Height Factor (m.storeys)	109.5				
		Construction Type	Type II				
	East	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	West	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	Fire Flow					**2250**	L/min
7	**Total Required Fire Flow**					**12750**	
		Rounded to Nearest 1000 L/min				**13000**	L/min

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

Floor	Area (m2)	Two Largerst Floor	Floors Above at 50%
4	1525	1525	
5	1525	1525	
6	1525		762.5
7	1525		762.5
8	1442		721
9	1442		721
10	637		318.5
11	780		390
12	780		390
13	780		390
Total	11125		**7505.5**

(Note: For Construction Coefficient below 1.0, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

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STEP	Contents	Description		Adjustment Factor		Result	
1	Floor Area	Ph2 21-Storey Residential					m2
	Total Storey	Ultimate Conditions				21	storey
	Total Effective Floor Area					**6410**	m2
2	**Type of Construction**	**Type V** Wood Frame	1.5	Type II Noncombustible Construction	0.8		
		Type III Ordinary Construction	1.0				
		Type II Noncombustible Construction	0.8				
		Type I Fire Resistive Construction	0.6				
3	**Required Fire Flow**	RFF = 220C√A				**14000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents	-25%	Limited Conbustible Contents	-15%	-2100	L/min
		Limited Conbustible Contents	-15%				
		Combustible Contents	0%				
		Free Burning Contents	15%				
		Rapid Burning Contents	25%				
	Fire Flow					**11900**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13	-30%	Yes	-30%	-3570	L/min
		Standard Water Supply for both the system and Fire Department Hose Lines	-10%	No		0	L/min
		Fully Supervised System	-10%	No			
	Fire Flow					**-3570**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	North	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	South	Separation (m)	24	With unprotected opening	10%	1190	L/min
		Length X Height Factor (m.storeys)	336				
		Construction Type	Type II				
	East	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	West	Separation (m)	25.3	With unprotected opening	10%	1190	L/min
		Length X Height Factor (m.storeys)	603				
		Construction Type	Type II				
	Fire Flow					**2380**	L/min
7	**Total Required Fire Flow**					**10710**	
		Rounded to Nearest 1000 L/min				**11000**	L/min

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

Floor	Area (m2)	Two Largerst Floor	Floors Above at 50%
5	2043	2043	
6	2043	2043	
7	581		290.5
8	581		290.5
9	581		290.5
10	581		290.5
11	581		290.5
12	581		290.5
13	581		290.5
14	581		290.5
Total	11125		**6410**

(Note: For Construction Coefficient below 1.0, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

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Prepared By: SL | Checked By: JM

STEP	Contents	Description		Adjustment Factor		Result	
1	Floor Area	Ph3 21-Storey Residential					m2
	Total Storey	Ultimate Conditions				21	storey
	Total Effective Floor Area					**6372**	m2
2	**Type of Construction**	**Type V** Wood Frame	1.5	Type II Noncombustible Construction	0.8		
		Type III Ordinary Construction	1.0				
		Type II Noncombustible Construction	0.8				
		Type I Fire Resistive Construction	0.6				
3	**Required Fire Flow**	RFF = 220C√A				**14000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents	-25%	Limited Conbustible Contents	-15%	-2100	L/min
		Limited Conbustible Contents	-15%				
		Combustible Contents	0%				
		Free Burning Contents	15%				
		Rapid Burning Contents	25%				
	Fire Flow					**11900**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13	-30%	Yes	-30%	-3570	L/min
		Standard Water Supply for both the system and Fire Department Hose Lines	-10%	No		0	L/min
		Fully Supervised System	-10%	No			
	Fire Flow					**-3570**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	North	Separation (m)	24	With unprotected opening	10%	1190	L/min
		Length X Height Factor (m.storeys)	336				
		Construction Type	Type II				
	South	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	East	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	West	Separation (m)	22	With unprotected opening	10%	1190	L/min
		Length X Height Factor (m.storeys)	348				
		Construction Type	Type II				
	Fire Flow					**2380**	L/min
7	**Total Required Fire Flow**					**10710**	
		Rounded to Nearest 1000 L/min				**11000**	L/min

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

Floor	Area (m2)	Two Largerst Floor	Floors Above at 50%
5	2024	2024	
6	2024	2024	
7	581		290.5
8	581		290.5
9	581		290.5
10	581		290.5
11	581		290.5
12	581		290.5
13	581		290.5
14	581		290.5
Total	11125		**6372**

(Note: For Construction Coefficient below 1.0, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

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Prepared By: SL | Checked By: JM

STEP	Contents	Description		Adjustment Factor		Result	
1	Floor Area	Ph4 21-Storey Residential					m2
	Total Storey	Ultimate Conditions				21	storey
	Total Effective Floor Area					**7094**	m2
2	**Type of Construction**	**Type V** Wood Frame	1.5	Type II Noncombustible Construction	0.8		
		Type III Ordinary Construction	1.0				
		Type II Noncombustible Construction	0.8				
		Type I Fire Resistive Construction	0.6				
3	**Required Fire Flow**	RFF = 220C√A				**15000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents	-25%	Limited Conbustible Contents	-15%	-2250	L/min
		Limited Conbustible Contents	-15%				
		Combustible Contents	0%				
		Free Burning Contents	15%				
		Rapid Burning Contents	25%				
	Fire Flow					**12750**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13	-30%	Yes	-30%	-3825	L/min
		Standard Water Supply for both the system and Fire Department Hose Lines	-10%	No		0	L/min
		Fully Supervised System	-10%	No			
	Fire Flow					**-3825**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	North	Separation (m)	23.3	With unprotected opening	10%	1275	L/min
		Length X Height Factor (m.storeys)	174.6				
		Construction Type	Type II				
	South	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	East	Separation (m)	22	With unprotected opening	10%	1275	L/min
		Length X Height Factor (m.storeys)	234				
		Construction Type	Type II				
	West	Separation (m)	>30			0	L/min
		Length X Height Factor (m.storeys)					
		Construction Type					
	Fire Flow					**2550**	L/min
7	**Total Required Fire Flow**					**11475**	
		Rounded to Nearest 1000 L/min				**11000**	L/min

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

Floor	Area (m2)	Two Largerst Floor	Floors Above at 50%
5	2139	2139	
6	2139	2139	
7	704		352
8	704		352
9	704		352
10	704		352
11	704		352
12	704		352
13	704		352
14	704		352
Total	11125		**7094**

(Note: For Construction Coefficient below 1.0, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

Labadie, Sam

From: Bramah, Bruce <bruce.bramah@ottawa.ca>
Sent: May 22, 2026 10:39 AM
To: Labadie, Sam
Subject: RE: South Keys Ph 1 - Updated Boundary Conditions Request
Attachments: 2200-2216 Bank Street (South Keys) May 2026.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Arcadis Warning: Exercise caution with email messages from external sources such as this message. Always verify the sender and avoid clicking on links or scanning QR codes unless certain of their authenticity.

Hi Sam,

See BC below and attached.

Phase 1 Interim Conditions:

Connection 1: 305mm on Daze Street (North)
Minimum HGL = 125.4 m
Maximum HGL = 130.7 m
MaxDay + FireFlow (233.33 L/s) = 125.3 m
Max Day + Fire Flow (183.33 L/s) = 126.2 m

Connection 2: 305mm on Daze Street (South)
Minimum HGL = 125.4 m
Maximum HGL = 130.7 m
MaxDay + FireFlow (233.33 L/s) = 125.5 m
Max Day + Fire Flow (183.33 L/s) = 126.3 m

Ultimate Conditions:

Connection 1: 305mm on Daze Street (North)
Minimum HGL = 125.3m
Maximum HGL = 132.3 m
MaxDay + FireFlow (233.33 L/s) = 124.8 m
Max Day + Fire Flow (183.33 L/s) = 125.9 m

Connection 2: 305mm on Daze Street (South)
Minimum HGL = 125.3 m
Maximum HGL = 132.4 m
MaxDay + FireFlow (233.33 L/s) = 125.1 m
Max Day + Fire Flow (183.33 L/s) = 126.0 m

Thanks,
--
Bruce Bramah, P.Eng
Project Manager
Planning, Development and Building Services department (PDBS)/ Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB) - South Branch
City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext. 29686, Bruce.Bramah@ottawa.ca

Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Labadie, Sam <samantha.labadie@arcadis.com>
Sent: Wednesday, May 6, 2026 11:59 AM
To: Bramah, Bruce <bruce.bramah@ottawa.ca>
Subject: South Keys Ph 1 - Updated Boundary Conditions Request

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Hi Bruce,

We are requesting two sets of updated boundary conditions for the proposed project at South Keys: one for Phase 1 conditions and another for Ultimate buildout.

Phase 1 Interim Conditions:
Average Day: 1.74 L/s
Peak Hour: 4.32 L/s
Ma Day: 9.48 L/s
Fireflow #1: 14,000 L/min
Fireflow #2: 11,000 L/min

Ultimate Conditions:
Average Day: 9.11 L/s
Peak Hour: 22.75 L/s
Ma Day: 50.03 L/s
Fireflow #1: 14,000 L/min
Fireflow #2: 11,000 L/min

Additionally, would you be aware of the HGL level at the downstream EXMH102 in the transit plaza?

Thank you,

Sam Labadie P.Eng
Civil Engineer
Arcadis Professional Services (Canada) Inc.
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www.arcadis.com

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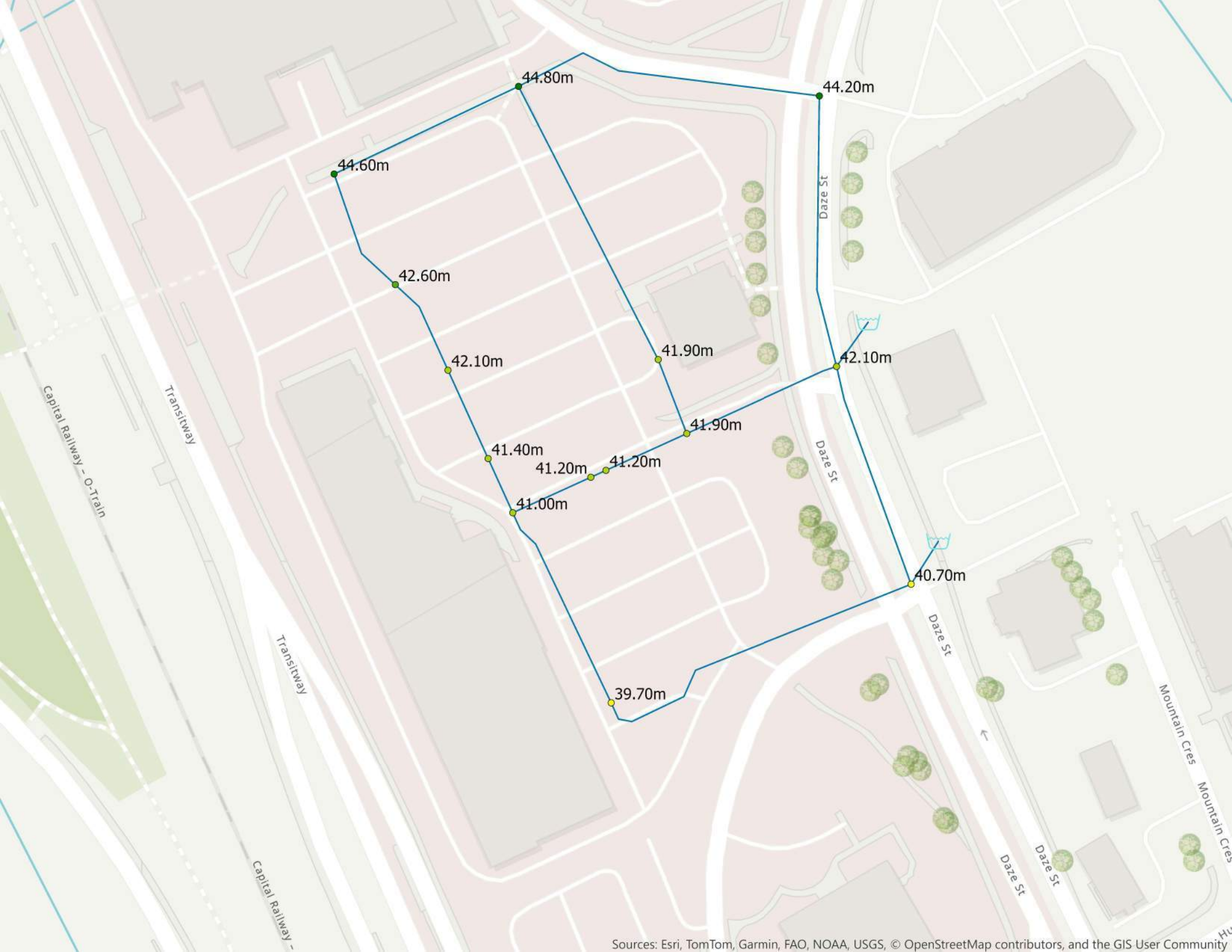
NODE AND PIPE IDs
- PHASE 1 (INTERIM)
J10
J12
J14
J16
J18
J20
J22
J24
J26
J28
J30
J32
J34
J36
P11
P13
P15
P17
P19
P21
P23
P25
P27
P29
P31
P33
P35
P37
P39
P41
P43
P45
Daze St
Transitway
Capital Railway – O-Train
Mountain Cres
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)
1	☐	J10	0.00	86.50	130.70	44.20
2	☐	J12	0.00	88.60	130.70	42.10
3	☐	J14	0.00	90.00	130.70	40.70
4	☐	J16	0.00	85.90	130.70	44.80
5	☐	J18	0.00	88.80	130.70	41.90
6	☐	J20	0.00	86.10	130.70	44.60
7	☐	J22	0.00	88.10	130.70	42.60
8	☐	J24	0.00	89.70	130.70	41.00
9	☐	J26	0.12	91.00	130.70	39.70
10	☐	J28	0.02	88.80	130.70	41.90
11	☐	J30	1.73	89.30	130.70	41.40
12	☐	J32	0.00	88.60	130.70	42.10
13	☐	J34	0.00	89.50	130.70	41.20
14	☐	J36	0.00	89.50	130.70	41.20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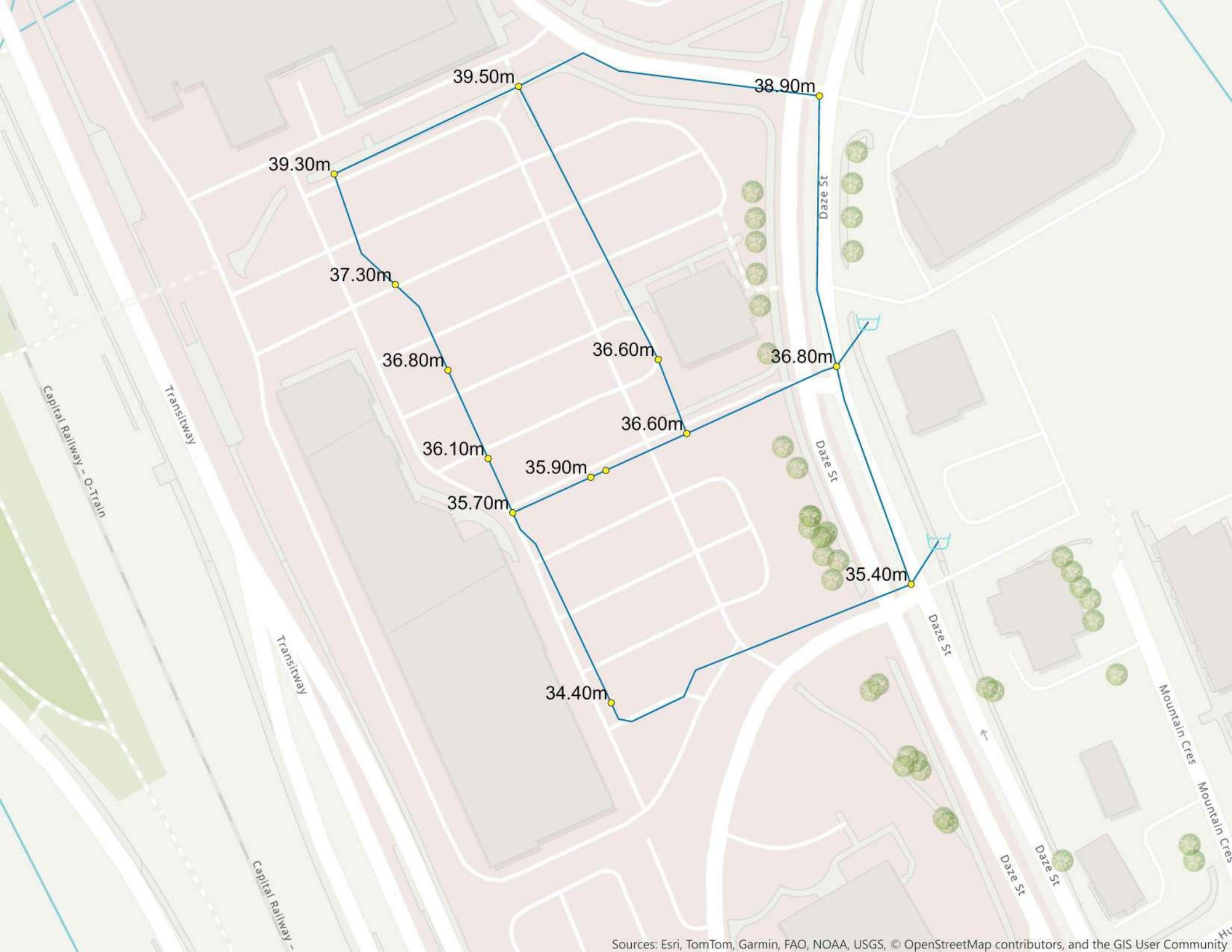
41.20m
41.20m
41.00m
40.70m
39.70m
Daze St
Daze St
Daze St
Daze St
Transitway
Transitway
Capital Railway – O-Train
Capital Railway –
Mountain Cres
Mountain Cres
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Int - Max Day + Fire 14,000 L/min

		ID	Static Demand (L/s)	Static Pressure (m)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (m)	Hydrant Available Flow (L/s)	Hydrant Pressure at Available Flow (m)
1	☐	J10	0.00	38.80	125.30	233.00	37.04	964.27	14.28
2	☐	J12	0.00	36.70	125.30	233.00	36.68	8,231.36	14.31
3	☐	J14	0.00	35.50	125.50	233.00	35.44	7,984.76	14.31
4	☐	J16	0.00	39.41	125.31	233.00	36.60	762.08	14.28
5	☐	J18	0.00	36.51	125.31	233.00	33.12	644.64	14.28
6	☐	J20	0.00	39.21	125.31	233.00	30.84	420.86	14.28
7	☐	J22	0.00	37.21	125.31	233.00	28.06	383.40	14.28
8	☐	J24	0.00	35.62	125.32	233.00	30.41	501.95	14.28
9	☐	J26	0.18	34.39	125.39	233.00	26.48	386.84	14.28
10	☐	J28	0.02	36.51	125.31	233.00	31.10	500.45	14.28
11	☐	J30	4.32	36.01	125.31	233.00	29.07	438.49	14.28
12	☐	J32	0.00	36.71	125.31	233.00	28.14	393.05	14.28
13	☐	J34	0.00	35.82	125.32	233.00	30.59	502.48	14.28
14	☐	J36	0.00	35.81	125.31	233.00	30.73	509.88	14.28

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)
1	☐	J10	0.00	86.50	125.40	38.90
2	☐	J12	0.00	88.60	125.40	36.80
3	☐	J14	0.00	90.00	125.40	35.40
4	☐	J16	0.00	85.90	125.40	39.50
5	☐	J18	0.00	88.80	125.40	36.60
6	☐	J20	0.00	86.10	125.39	39.29
7	☐	J22	0.00	88.10	125.39	37.29
8	☐	J24	0.00	89.70	125.39	35.69
9	☐	J26	0.33	91.00	125.39	34.39
10	☐	J28	0.04	88.80	125.40	36.60
11	☐	J30	9.48	89.30	125.38	36.08
12	☐	J32	0.00	88.60	125.38	36.78
13	☐	J34	0.00	89.50	125.39	35.89
14	☐	J36	0.00	89.50	125.39	35.89

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	☐	P11	J10	J12	81.68	297.00	120.00	-3.96	0.06	0.00	0.02	Open	0
2	☐	P13	J12	J14	68.92	297.00	120.00	-0.54	0.01	0.00	0.00	Open	0
3	☐	P15	J10	J16	94.37	297.00	120.00	3.96	0.06	0.00	0.02	Open	0
4	☐	P17	J16	J20	61.10	204.00	110.00	3.13	0.10	0.01	0.09	Open	0
5	☐	P19	J16	J28	91.78	204.00	110.00	0.83	0.03	0.00	0.01	Open	0
6	☐	P21	J28	J18	23.75	204.00	110.00	0.79	0.02	0.00	0.01	Open	0
7	☐	P23	J20	J22	38.88	204.00	110.00	3.13	0.10	0.00	0.09	Open	0
8	☐	P25	J22	J32	30.57	204.00	110.00	3.13	0.10	0.00	0.09	Open	0
9	☐	P27	J32	J30	29.06	204.00	110.00	3.13	0.10	0.00	0.09	Open	0
10	☐	P29	J30	J24	17.80	204.00	110.00	-6.35	0.19	0.01	0.35	Open	0
11	☐	P31	J24	J26	64.44	204.00	110.00	-2.51	0.08	0.00	0.06	Open	0
12	☐	P33	J26	J14	104.85	204.00	110.00	-2.84	0.09	0.01	0.08	Open	0
13	☐	P35	J24	J34	25.68	204.00	110.00	-3.84	0.12	0.00	0.14	Open	0
14	☐	P37	J34	J36	4.97	204.00	110.00	-3.84	0.12	0.00	0.14	Open	0
15	☐	P39	J36	J18	26.55	204.00	110.00	-3.84	0.12	0.00	0.14	Open	0
16	☐	P41	J18	J12	49.32	204.00	110.00	-3.05	0.09	0.00	0.09	Open	0
17	☐	P43	CONN1	J12	1.00	297.00	120.00	6.46	0.09	0.00	0.05	Open	0
18	☐	P45	CONN2	J14	1.00	297.00	120.00	3.39	0.05	0.00	0.02	Open	0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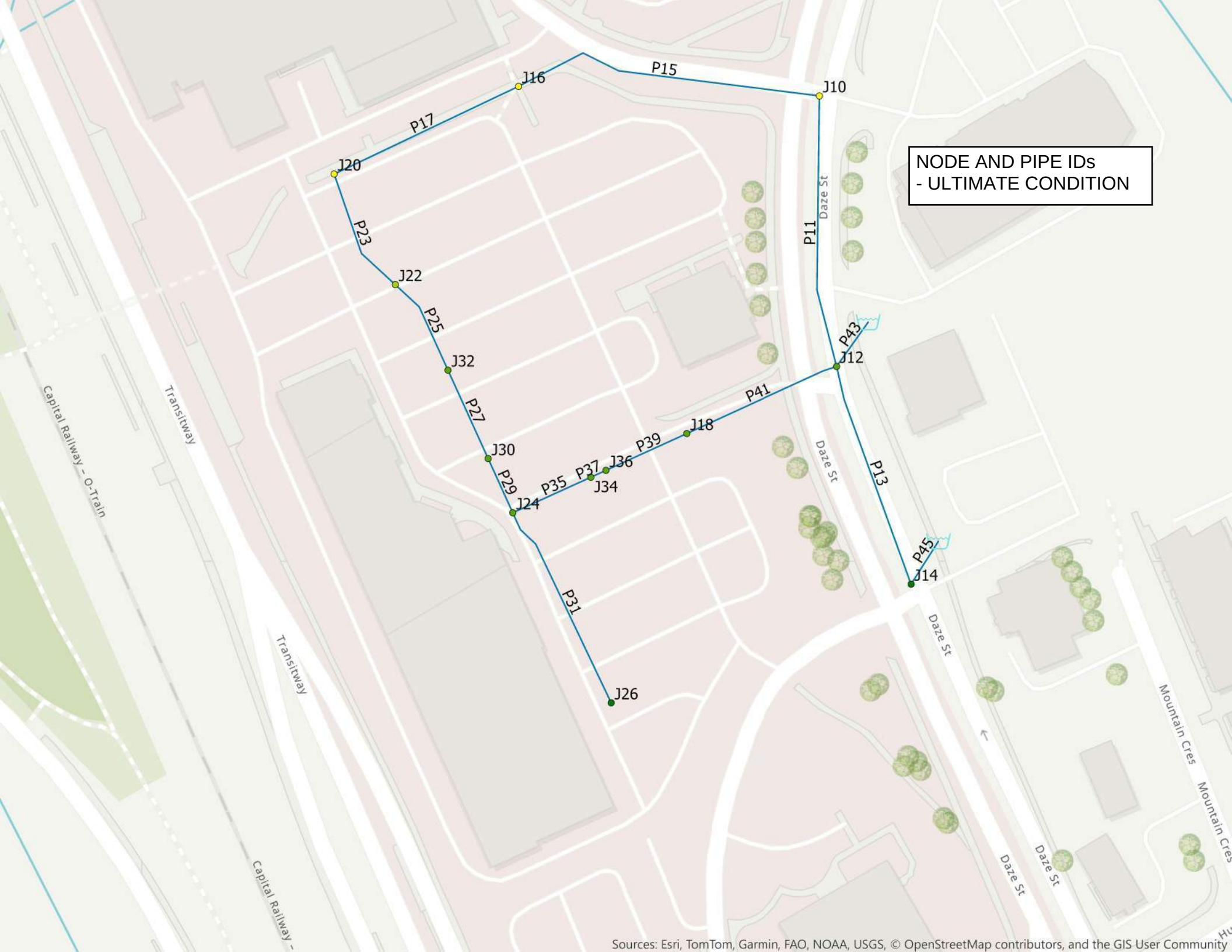
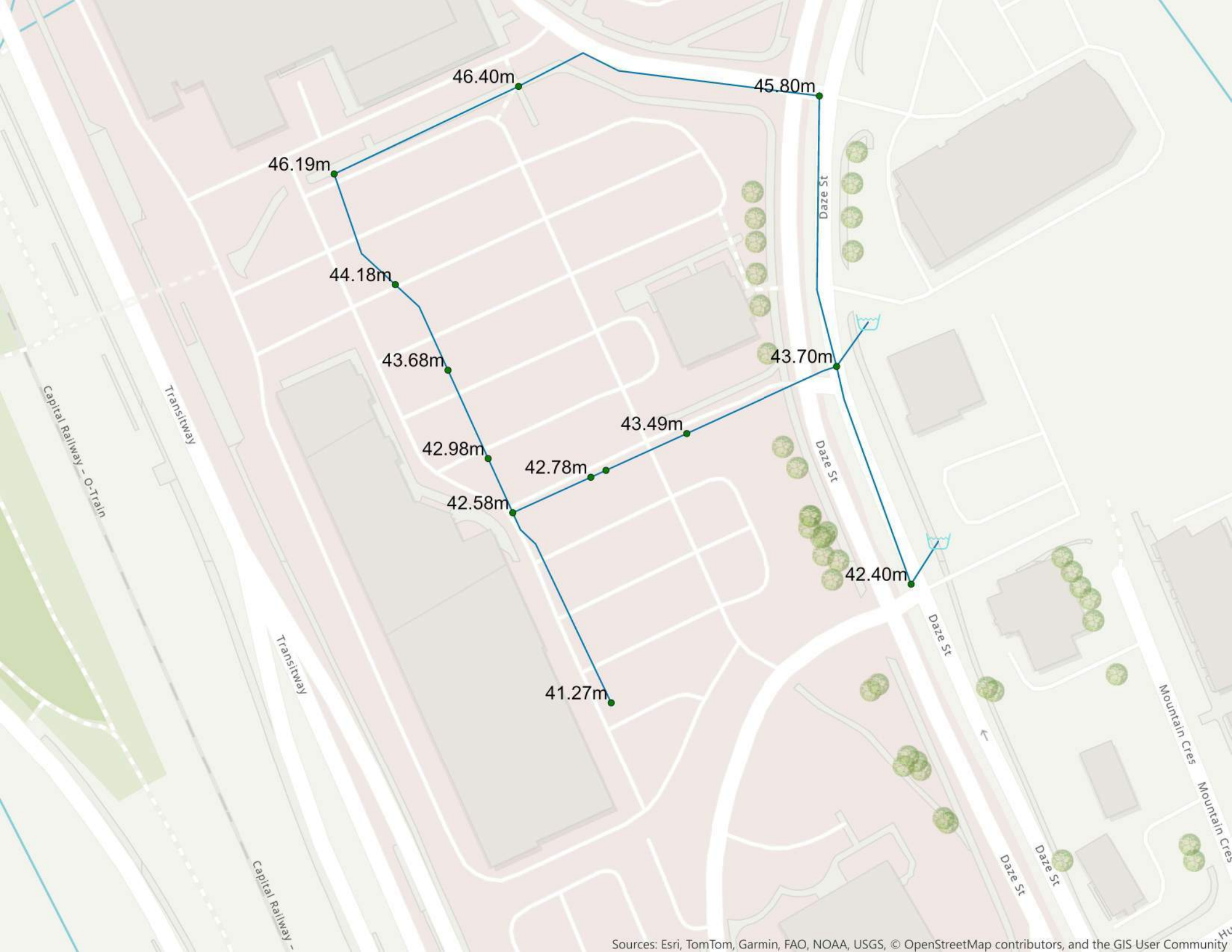
38.90m
39.30m
37.30m
36.80m
36.60m
36.80m
36.60m
36.10m
35.90m
35.70m
35.40m
34.40m
Daze St
Daze St
Daze St
Daze St
Daze St
Transitway
Transitway
Capital Railway – O-Train
Capital Railway –
Mountain Cres
Mountain Cres
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community


NODE AND PIPE IDs
- ULTIMATE CONDITION
J16
P15
J10
P17
J20
P23
J22
P25
J32
P27
J30
P29
J24
P31
J26
P35
P37
J34
J36
P39
J18
P41
J12
P43
P11
P13
P45
J14
Daze St
Transitway
Capital Railway – O-Train
Mountain Cres
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)
1	☐	J10	0.00	86.50	132.30	45.80
2	☐	J12	0.00	88.60	132.30	43.70
3	☐	J14	0.00	90.00	132.40	42.40
4	☐	J16	0.00	85.90	132.30	46.40
5	☐	J18	0.00	88.80	132.29	43.49
6	☐	J20	0.00	86.10	132.29	46.19
7	☐	J22	0.00	88.10	132.28	44.18
8	☐	J24	0.00	89.70	132.28	42.58
9	☐	J26	2.67	91.00	132.27	41.27
10	☐	J30	1.73	89.30	132.28	42.98
11	☐	J32	2.35	88.60	132.28	43.68
12	☐	J34	2.36	89.50	132.28	42.78
13	☐	J36	0.00	89.50	132.28	42.78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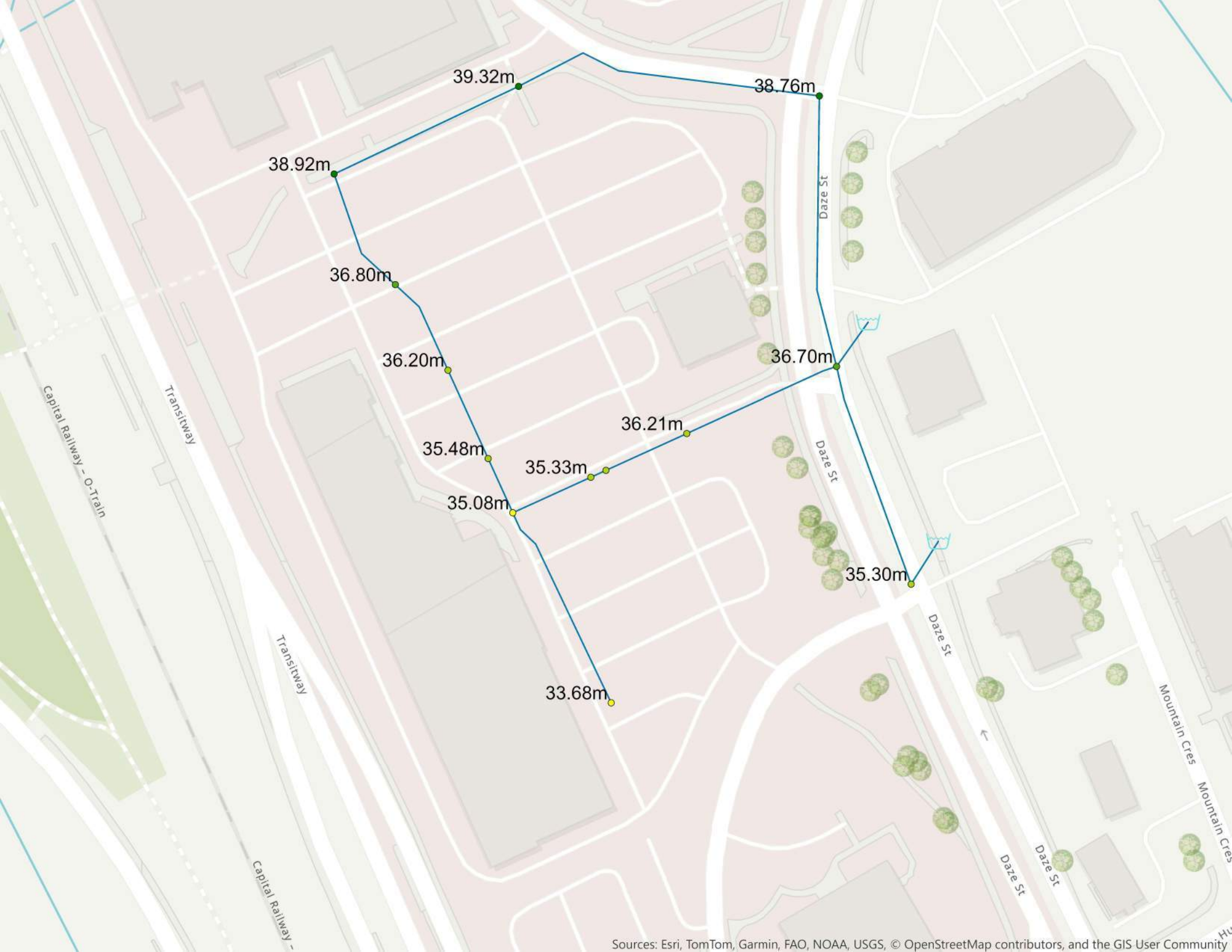
46.19m
44.18m
43.68m
43.70m
43.49m
42.98m
42.78m
42.58m
42.40m
41.27m
Daze St
Transitway
Capital Railway – O-Train
Mountain Cres
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

		ID	Static Demand (L/s)	Static Pressure (m)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (m)	Hydrant Available Flow (L/s)	Hydrant Pressure at Available Flow (m)
1	☐	J10	0.00	38.29	124.79	183.00	36.67	813.95	14.28
2	☐	J12	0.00	36.20	124.80	183.00	36.19	7,977.86	14.31
3	☐	J14	0.00	35.10	125.10	183.00	35.06	7,770.08	14.31
4	☐	J16	0.00	38.88	124.78	183.00	35.86	587.58	14.28
5	☐	J18	0.00	35.94	124.74	183.00	30.56	405.64	14.28
6	☐	J20	0.00	38.64	124.74	183.00	31.58	367.89	14.28
7	☐	J22	0.00	36.61	124.71	183.00	28.31	321.36	14.28
8	☐	J24	0.00	34.98	124.68	233.00	22.49	311.43	14.28
9	☐	J26	6.66	33.66	124.66	183.00	13.33	184.73	14.28
10	☐	J30	4.32	35.38	124.68	233.00	22.34	311.39	14.28
11	☐	J32	5.88	36.09	124.69	183.00	27.34	315.17	14.28
12	☐	J34	5.89	35.19	124.69	183.00	27.89	341.81	14.28
13	☐	J36	0.00	35.20	124.70	183.00	28.15	342.66	14.28

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)
1	☐	J10	0.00	86.50	125.26	38.76
2	☐	J12	0.00	88.60	125.30	36.70
3	☐	J14	0.00	90.00	125.30	35.30
4	☐	J16	0.00	85.90	125.22	39.32
5	☐	J18	0.00	88.80	125.01	36.21
6	☐	J20	0.00	86.10	125.02	38.92
7	☐	J22	0.00	88.10	124.90	36.80
8	☐	J24	0.00	89.70	124.78	35.08
9	☐	J26	14.66	91.00	124.68	33.68
10	☐	J30	9.48	89.30	124.78	35.48
11	☐	J32	12.93	88.60	124.80	36.20
12	☐	J34	12.96	89.50	124.83	35.33
13	☐	J36	0.00	89.50	124.86	35.36

		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	☐	P11	J10	J12	81.68	297.00	120.00	-21.13	0.31	0.04	0.44	Open	0
2	☐	P13	J12	J14	68.92	297.00	120.00	-4.59	0.07	0.00	0.03	Open	0
3	☐	P15	J10	J16	94.37	297.00	120.00	21.13	0.31	0.04	0.44	Open	0
4	☐	P17	J16	J20	61.10	204.00	110.00	21.13	0.65	0.20	3.22	Open	0
5	☐	P23	J20	J22	38.88	204.00	110.00	21.13	0.65	0.13	3.22	Open	0
6	☐	P25	J22	J32	30.57	204.00	110.00	21.13	0.65	0.10	3.22	Open	0
7	☐	P27	J32	J30	29.06	204.00	110.00	8.20	0.25	0.02	0.56	Open	0
8	☐	P29	J30	J24	17.80	204.00	110.00	-1.28	0.04	0.00	0.02	Open	0
9	☐	P31	J24	J26	64.44	204.00	110.00	14.66	0.45	0.11	1.64	Open	0
10	☐	P35	J24	J34	25.68	204.00	110.00	-15.94	0.49	0.05	1.91	Open	0
11	☐	P37	J34	J36	4.97	204.00	110.00	-28.90	0.88	0.03	5.75	Open	0
12	☐	P39	J36	J18	26.55	204.00	110.00	-28.90	0.88	0.15	5.75	Open	0
13	☐	P41	J18	J12	49.32	204.00	110.00	-28.90	0.88	0.28	5.75	Open	0
14	☐	P43	CONN1	J12	1.00	297.00	120.00	45.44	0.66	0.00	1.81	Open	0
15	☐	P45	CONN2	J14	1.00	297.00	120.00	4.59	0.07	0.00	0.03	Open	0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33.68m
Daze St
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Daze St
Daze St
Transitway
Transitway
Capital Railway – O-Train
Capital Railway –
Mountain Cres
Mountain Cres
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Appendix C

Sanitary Sewer Design Sheet – Phase 1 and Master Plan

Drawing 135853 C-400 Phase 1 Sanitary Drainage Area Plan

Drawing 135853 C-401 Ultimate Sanitary Drainage Area Plan

Drawing 135853 C-001 Phase 1 Site Servicing Plan

Drawing 135853 C-002 Ultimate Site Servicing Plan

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Ottawa, Ontario K1S 5N4 Canada
arcadis.com

SANITARY SEWER DESIGN SHEET

South Keys Phase 1
Smart Centers
CITY OF OTTAWA

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA w/ Units	UNIT TYPES				AREA w/o Units	POPULATION		RES PEAK FACTOR	PEAK FLOW	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH	(Ha)	SF	TH/SD	1 Bed APT	2 Bed APT	(Ha)	IND	CUM		(L/s)	INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			(L/s)	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)	L/s	(%)
														IND	CUM	IND	CUM	IND	CUM														
Phase 1 Conditions																																		
Montana's Restaurant	P1-2	ExMH 103A	ExMH 104A							0.0	0.0	3.80	0.00			0.34	0.34			1.50	0.17	0.34	0.34	0.11		0.0	0.28	28.06	66.13	150	3.12	1.538	27.79	99.01%
Phase 1 Building	P1-3	ExMH 100A	MH6A							0.0	0.0	3.80	0.00			1.18	1.18			1.50	0.57	1.18	1.18	0.39		0.0	0.96	66.09	55.48	250	1.14	1.304	65.13	98.54%
	P1-4	MH6A	MH5A							0.0	0.0	3.80	0.00			0.12	1.30			1.50	0.63	0.12	1.30	0.43		0.0	1.06	67.96	10.00	250	1.20	1.341	66.90	98.44%
		MH5A	MH9A							0.0	0.0	3.80	0.00			0.00	1.30			1.50	0.63	0.00	1.30	0.43		0.0	1.06	67.96	7.50	250	1.20	1.341	66.90	98.44%
	P1-5	MH10A	MH9A	1.11				290	0.12	551.0	551.0	3.36	6.00			0.00	0.00			1.00	0.00	1.23	1.23	0.41		0.0	6.41	29.63	59.56	200	0.75	0.914	23.22	78.37%
	P1-1	MH9A	MH4A						0.58	34.8	585.8	3.35	6.36			0.00	1.30			1.50	0.63	0.58	1.88	0.62		0.0	7.61	67.96	69.14	250	1.20	1.341	60.35	88.80%
		MH4A	MMH8A							0.0	585.8	3.35	6.36			0.00	1.30			1.50	0.63	0.00	1.88	0.62		0.0	7.61	122.20	15.32	250	3.88	2.412	114.59	93.77%
		MMH8A	EXMH102A							0.0	585.8	3.35	6.36			0.00	1.30			1.50	0.63	0.00	1.88	0.62		0.0	7.61	122.20	18.08	250	3.88	2.412	114.59	93.77%
Building Service Lateral										0.0	585.8	3.35	6.36			0.00	1.30			1.50	0.63	0.00	1.88	0.62		0.0	7.61	34.22	5.51	200	1.00	1.055	26.60	77.75%
																													0.00	250	0.00			
Total Flow	TP-1	ExMH 102A	ExMH 106A	0.54						0.0	585.8	3.35	6.36			0.00	1.30			1.50	0.63	0.54	2.42	0.80		0.00	7.79	42.08	50.70	250	0.46	0.830	34.29	81.48%
Master Plan (Full Buildout)																																		
	UL-3, UL-4	ExMH 100A	MH6A	1.35				861		1635.9	1635.9	3.12	16.55			0.00	0.00			1.00	0.00	1.35	1.35	0.45		0.00	16.99	65.42	58.95	250	1.11	1.291	48.43	74.02%
		MH6A	MH5A							0.0	1635.9	3.12	16.55			0.00	0.00			1.00	0.00	0.00	1.35	0.45		0.00	16.99	67.96	5.37	250	1.20	1.341	50.97	74.99%
		MH5A	MH9A							0.0	1635.9	3.12	16.55			0.00	0.00			1.00	0.00	0.00	1.35	0.45		0.00	16.99	67.96	8.60	250	1.20	1.341	50.97	74.99%
	UL-1, UL-2	MH9A	MH4A	1.39				693		1316.7	2952.6	2.96	28.31			0.00	0.00			1.00	0.00	1.39	2.74	0.90		0.00	29.21	67.99	61.90	250	1.20	1.342	38.77	57.03%
		MH4A	ExMH 102A							0.0	2952.6	2.96	28.31			0.00	0.00			1.00	0.00	0.00	2.74	0.90		0.00	29.21	122.20	22.62	250	3.88	2.412	92.99	76.09%
Total Flow		ExMH 102A	ExMH 106A	0.54					0.53	0.0	2952.6	2.96	28.31			0.00	0.00			1.00	0.00	1.07	3.81	1.26		0.00	29.57	39.24	78.51	250	0.40	0.774	9.67	24.64%
																														250				

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u	INST	28,000	L/Ha/day	
TH/SD	2.7	p/p/u	COM	28,000	L/Ha/day	
1 Bed	1.4	p/p/u	IND	35,000	L/Ha/day	MOE Chart
2 Bed	1.9	p/p/u		17000	L/Ha/day	
Other	60	p/p/Ha				

Notes:

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

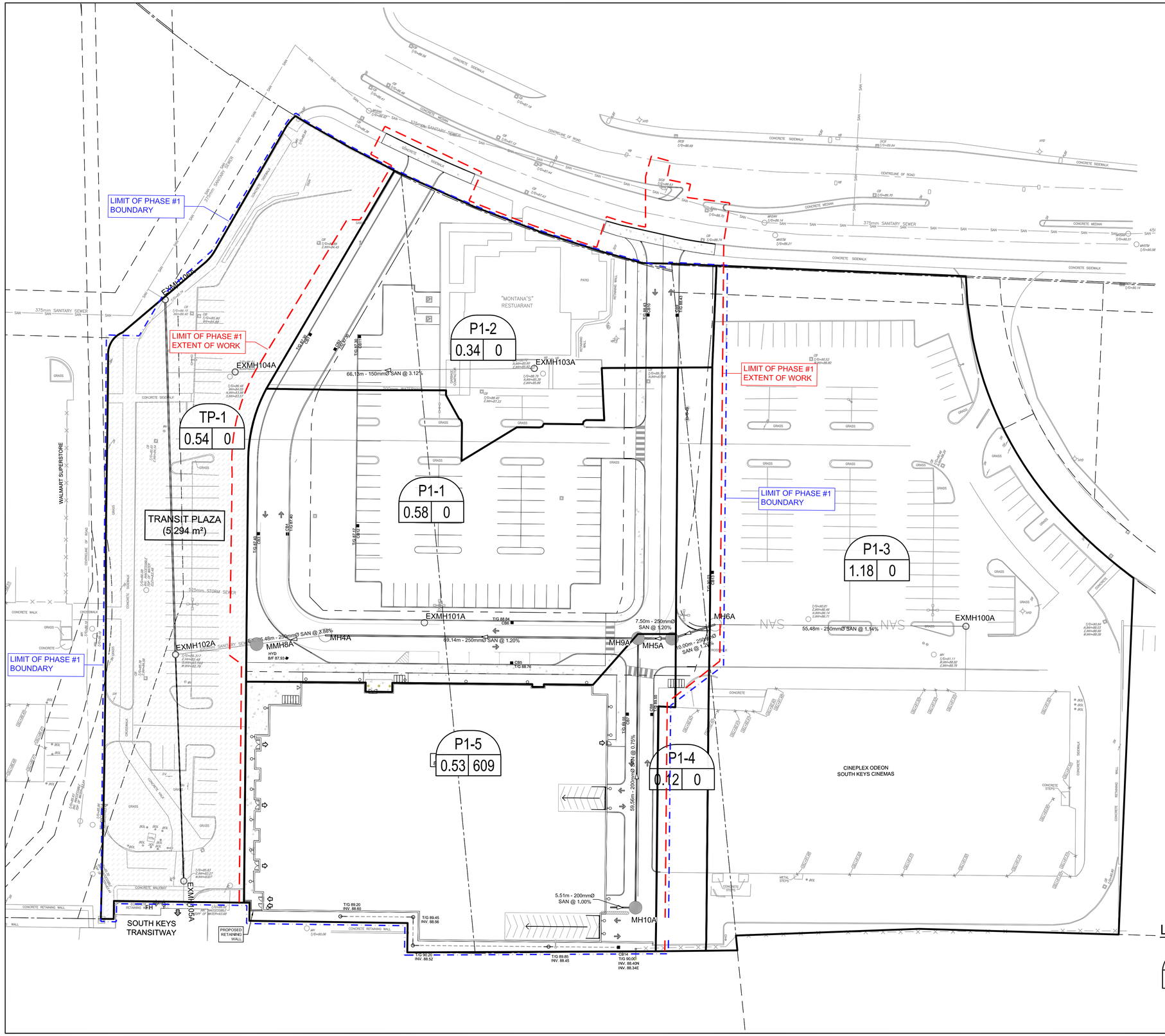
Designed: AC

Checked: DRC

Dwg. Reference: 135853-400 and 401

No.	Revision	Date
1.	SPA Submission No. 1 for City Review	2021-10-28
2.	SPA Submission No. 2 for City Review	2023-10-19
3.	SPA Submission No. 3 for City Review	2026-10-15

File Reference:	Date:	Sheet No:
135853-6.04.04	2026-10-15	1 of 1



LEGEND :

P1-1 | 0.54 | 235.6

- AREA NUMBER
- POPULATION (1.9 PERSONS PER UNIT)
- AREA IN HECTARES

CLIENT

SMARTCENTRES® REAL ESTATE INVESTMENT TRUST
3200 HIGHWAY 7
VAUGHAN, ON L4K 5Z6
TEL: 905 326 6400

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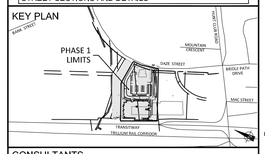
Arcadis Professional Services (Canada) Inc.
formerly IBI Group Professional Services (Canada) Inc.

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-10-28
2	REVISED AS PER NEW SITE PLAN	2023-10-19
3	ISSUED FOR COORDINATION	2026-05-14
4	ISSUED FOR CLIENT REVIEW	2026-06-02
5	ISSUED FOR CLIENT REVIEW	2026-10-16
6	ISSUED TO CITY FOR SPA	2026-10-20
7		

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

KEY PLAN



CONSULTANTS

Project Coordinator
Architect: RLA Architectue
Landscape: Levstek consultants
Surveyor: Stantec
Geotech: Paterson Group
Transportation Engineer: ARCADIS
Urban Planner: Stantec

1:400 (0, 4, 12, 20m / 0, 4, 12, 20m)

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2026/10/20
PROVINCE OF ONTARIO

PRIME CONSULTANT

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

PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853	
DRAWN BY: **D.P.S.**	CHECKED BY: **S.E.L**
PROJECT MGR: **S.E.L.**	APPROVED BY: **J.I.M.**

SHEET TITLE
PHASE 1 SANITARY DRAINAGE AREA PLAN

SHEET NUMBER	ISSUE
C-400	6

SCALE CHECK 1:400

CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

File Location: J:\135853_SouthKeysPhs1\7.0_Production\7.03_Design\04_Civil\Sheets\C-400 SANITARY DRAINAGE AREA PLAN.dwg Last Saved: October 15, 2026, by siumua3150 Plotted: October 21, 2026 10:44:52 AM by Siuma, Don

Project North

UL-1
0.61 847.4

UL-2
0.78 765.7

UL-3
0.68 767.6

UL-4
0.67 868.3

TP
0.54 0

TRANSIT PLAZA
(5,294 m²)

FFE 88.65
FFE 89.40
FFE 89.40
FFE 90.70

EXMH106A
EXMH102A
EXMH105A
MMH8A
MH4A
MH9A
MH6A
MH10A
EXMH100A

250mmØ
200mmØ
150mmØ

300mm WATERMAIN
375mm SANITARY SEWER
300mm STORM SEWER
200mm WATERMAIN
450mm SANITARY SEWER

CONCRETE SIDEWALK
CONCRETE MEDIAN
CENTRELINE OF ROAD
CONCRETE RETAINING WALL
CONCRETE BALCONY
GRASS
WALMART SUPERSTORE

PROPOSED RETAINING WALL

CB11 T/G 91.24 INV. 90.45
CB12 T/G 91.20 INV. 90.40
CB13 T/G 91.20 INV. 90.40
CB14 T/G 90.00 INV. 88.40N INV. 88.34E
CB15 T/G 90.88
CB16 T/G 90.32
CB5 T/G 88.76
CB6 T/G 88.84
CB7 T/G 88.95
CB8 T/G 89.20
CB9 T/G 89.35
CB10 T/G 89.54
CB4 T/G 87.40

T/G 89.20 INV. 88.60
T/G 89.45 INV. 88.56
T/G 90.20 INV. 88.52
T/G 89.85 INV. 88.45

23.0 M MANHOLE TO FLOWLINE

LEGEND :

P1-1
0.54 | 235.6

AREA NUMBER
POPULATION
(1.9 PERSONS PER UNIT)
AREA IN HECTARES

CLIENT

SMARTCENTRES®
REAL ESTATE INVESTMENT TRUST
3200 HIGHWAY 7
VAUGHAN, ON L4K 5Z6
TEL: 905 326 6400

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

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-10-28
2	REVISED AS PER NEW SITE PLAN	2023-10-19
3	ISSUED FOR COORDINATION	2026-05-14
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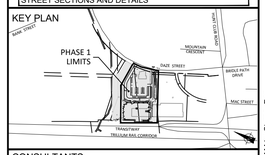
5	ISSUED FOR CLIENT REVIEW	2026-10-16
6	ISSUED TO CITY FOR SPA	2026-10-20
7		

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

KEY PLAN



CONSULTANTS

Project Coordinator
Architect: RLA Architectue
Landscape: Levstek consultants
Surveyor: Stantec
Geotech: Paterson Group
Transportation Engineer: ARCADIS
Urban Planner: Stantec

1:400 0 4 12 20m

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2026/10/20
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS
333 Preston Street - Suite 500
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tel 613 225 1311
www.arcadis.com

PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853

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

SHEET TITLE
ULTIMATE SANITARY DRAINAGE AREA PLAN

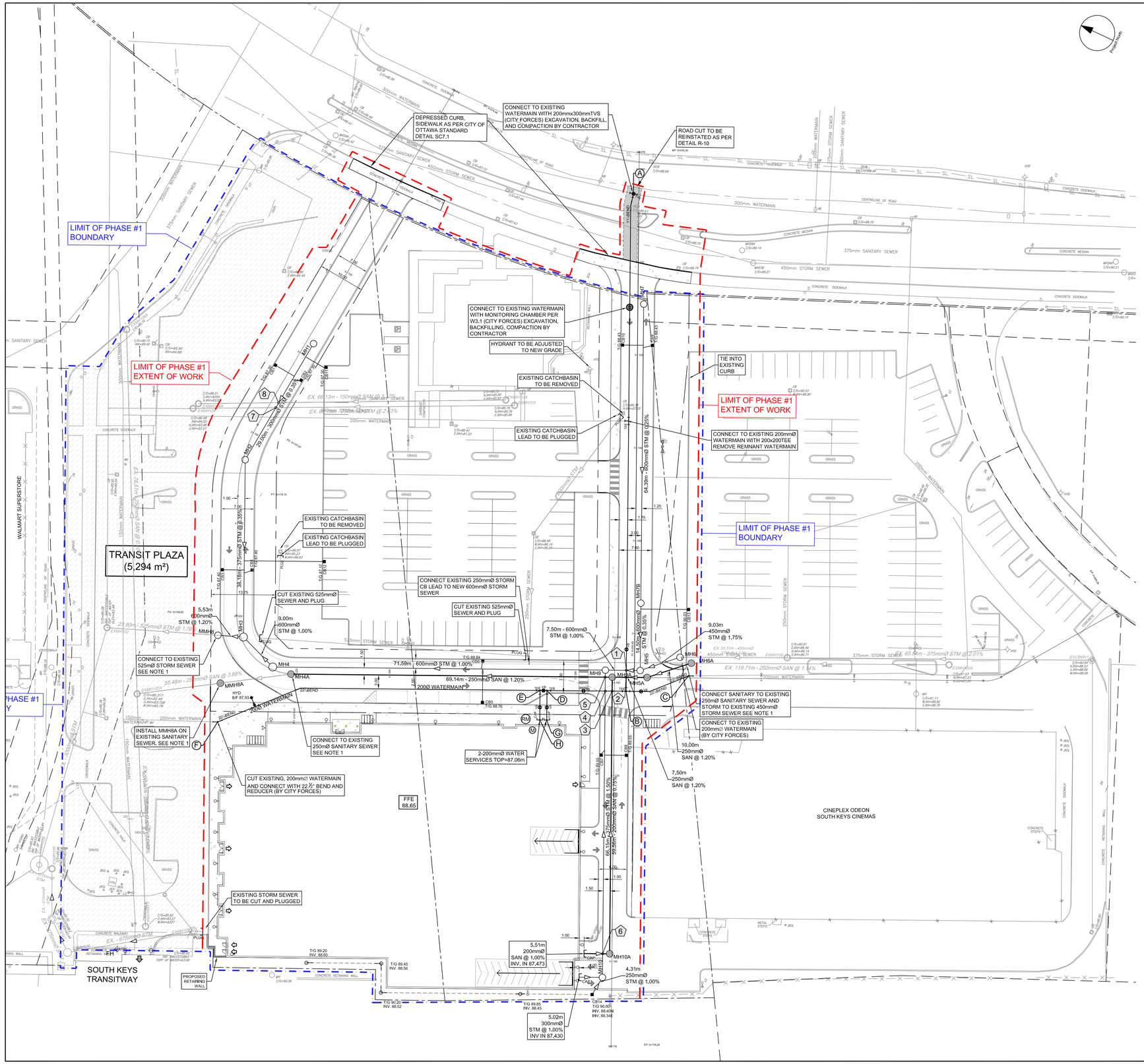
SHEET NUMBER	ISSUE
C-401	6

CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

SCALE CHECK

File Location: J:\135853_SouthKey\Phs17.0_Production\7.03_Design\04_Civil\Sheets\C-401 SANITARY DRAINAGE PLAN MASTER PLAN.dwg Last Saved: October 20, 2026, by slurma3150 Plotted: October 21, 2026 11:28:39 AM by Slurma, Don



NOTE 1
PRIOR TO CONSTRUCTION, THE CONTRACTOR IS TO EXCAVATE AT EXISTING SEWERS TO CONFIRM EXACT VERTICAL AND HORIZONTAL LOCATIONS.

STM STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS-BUILT	INVERT OUT	INVERT OUT AS-BUILT	DESCRIPTION
EXCBMH1	90,94			NW88,030		EXISTING CB MANHOLE
EXMH100	90,78	SE86,710		NW86,140		EXISTING MANHOLE
EXMH101	89,26	SE85,520 NE85,590		N85,400		EXISTING MANHOLE
EXMH102	86,32	S83,747		W83,450		EXISTING MANHOLE
MH1	87,41			W85,050		1200mmØ OPSD-701,010
MH2	87,65	E84,949		SW84,874		1200mmØ OPSD-701,010
MH3	87,73	NE84,740 S84,286		N84,234		1500mmØ OPSD-701,011
MH4	88,02	SE84,406		N84,376		1500mmØ OPSD-701,011
MH5	89,86	SE85,692 NE85,277		NW85,217		1200mmØ OPSD-701,010
MH6	90,36	SE85,882		NW85,850		1200mmØ OPSD-701,010
MH7	88,58			SW85,509		1200mmØ OPSD-701,010
MH7B	89,52	NE85,348		SW85,328		1200mmØ OPSD-701,010
MH9	89,58	SE85,142 SW85,354		NW85,122		1200mmØ OPSD-701,010
MH10	90,04	NW87,380 W88,297		NE86,347		1200mmØ OPSD-701,010
MMH8	87,75	S84,168		N84,168		1200mmØ OPSD-701,010

SAN STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS-BUILT	INVERT OUT	INVERT OUT AS-BUILT	DESCRIPTION
EXMH100A	91,03			NW87,230		1200mmØ OPSD-701,010
EXMH101A	88,51					1200mmØ OPSD-701,010
EXMH102A	86,32	SE83,728 SW82,780		NE82,480		1200mmØ OPSD-701,010
MH4A	88,16	SE85,100		NW85,023		1200mmØ OPSD-701,010
MH5A	89,99	SE86,419		NW86,180		1200mmØ OPSD-701,010
MH6A	90,33	SE86,600		NW86,539		1200mmØ OPSD-701,010
MH9A	89,66	SE86,090 SW86,187		NW85,930		1200mmØ OPSD-701,010
MH10A ★	89,98	NW87,418		NE86,634		1200mmØ OPSD-701,010
MMH8A	87,52	SE84,429		NW84,429		1200mmØ OPSD-701,010

★ 200mmØ DROP PIPE PER CITY STD. 12.1

WATERMAIN SCHEDULE

	Station	Description	Finished Grade	Top of Watermain	Watermain Cover	As Built Watermain
A	0+000.00	CONNECT TO EXISTING 300 Ø WITH 200TVS	88.67	±86.27	2.40	
	0+002.66	11.25 BEND	88.58	86.18	2.40	
	0+020.00	-	88.56	86.16	2.40	
	0+024.51	MONITORING CHAMBER PER W3.1	88.56	86.16	2.40	
	0+040.00	-	88.65	86.25	2.40	
	0+048.99	200mmØ TEE	88.85	86.45	2.40	
	0+060.00	-	89.09	86.69	2.40	
	0+080.00	-	89.37	86.97	2.40	
	0+098.19	200V&VB	89.61	87.21	2.40	
	0+100.00	-	89.64	87.24	2.40	
B	0+107.19	200mmg TEE	89.76	87.36	2.40	
C	0+000.00	CONNECT TO EXISTING 200mmØ WITH 22.5 BEND	90.44	±88.04	2.40	
	0+009.04	22.5 BEND	90.10	87.70	2.40	
	0+010.87	200V&VB	89.96	87.56	2.40	
B	0+014.10	200mmg TEE	89.76	87.36	2.40	
	0+020.00	-	89.56	87.16	2.40	
	0+023.26	200V&VB	89.45	87.05	2.40	
D	0+031.11	200mmg TEE FOR BUILDING SERVICE	89.21	86.81	2.40	
	0+031.86	200V&VB	89.19	86.79	2.40	
E	0+032.61	200mmg TEE FOR BUILDING SERVICE	89.17	86.77	2.40	
	0+040.00	-	88.98	86.58	2.40	
	0+060.00	-	88.55	86.15	2.40	
	0+080.00	-	88.26	85.86	2.40	
	0+084.14	22.5 BEND	88.13	85.73	2.40	
	0+094.70	150mmg HY DRANT TEE	87.91	85.51	2.40	
F	0+103.41	CONNECT TO EXISTING 200mmØ WITH 22.5 BEND	87.50	±84.66	±2.74	
D	0+000.00	200mmg TEE FOR BUILDING SERVICE	89.21	86.81	2.40	
	0+003.63	200V&VB	89.40	87.00	2.40	
G	0+00.737	200mmØ CAP FOR BUILDING SERVICE	89.46	87.06	2.40	
E	0+000.00	200mmg TEE FOR BUILDING SERVICE	89.17	86.77	2.40	
	0+003.63	200V&VB	89.33	86.93	2.40	
H	0+00.737	200mmØ CAP FOR BUILDING SERVICE	89.46	87.06	2.40	

DATE: 2026-10-15

Pipe Interference Table

Crossing No.	PIPE 1	PIPE 2	Clearance
1	WTR Bottom 87.118	STM Top 85.852	1.266
2	WTR Bottom 87.154	SAN Top 86.384	0.771
3	WTR Bottom 87.022	SAN Top 86.408	0.614
4	WTR Bottom 87.069	STM Top 85.777	1.293
5	SAN Bottom 86.044	STM Top 85.732	0.313
6	SAN Bottom 87.427	STM Top 86.640	0.787
7	STM Bottom 84.988	STM Top 84.281	0.706
8	STM Bottom 84.992	SAN Top 84.214	0.778

CLIENT

SMARTCENTRES® REAL ESTATE INVESTMENT TRUST
3200 HIGHWAY 7
VAUGHAN, ON L4K 5Z6
TEL: 905 326 6400

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

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-10-28
2	REVISED AS PER NEW SITE PLAN	2023-10-19
3	ISSUED FOR COORDINATION	2026-05-14
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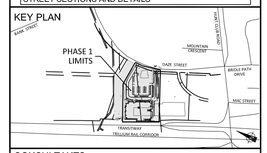
5	ISSUED FOR CLIENT REVIEW	2026-10-16
6	ISSUED TO CITY FOR SPA	2026-10-20
7		

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

KEY PLAN



CONSULTANTS

Project Coordinator
Architect: RLA Architectue
Landscape: Levstek consultants
Surveyor: Stantec
Geotech: Paterson Group
Transportation Engineer: ARCADIS
Urban Planner: Stantec

1:400 0 4 12 20m

SEAL



PRIME CONSULTANT

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

PROJECT
SOUTH KEYS MALL 2200 BANK STREET

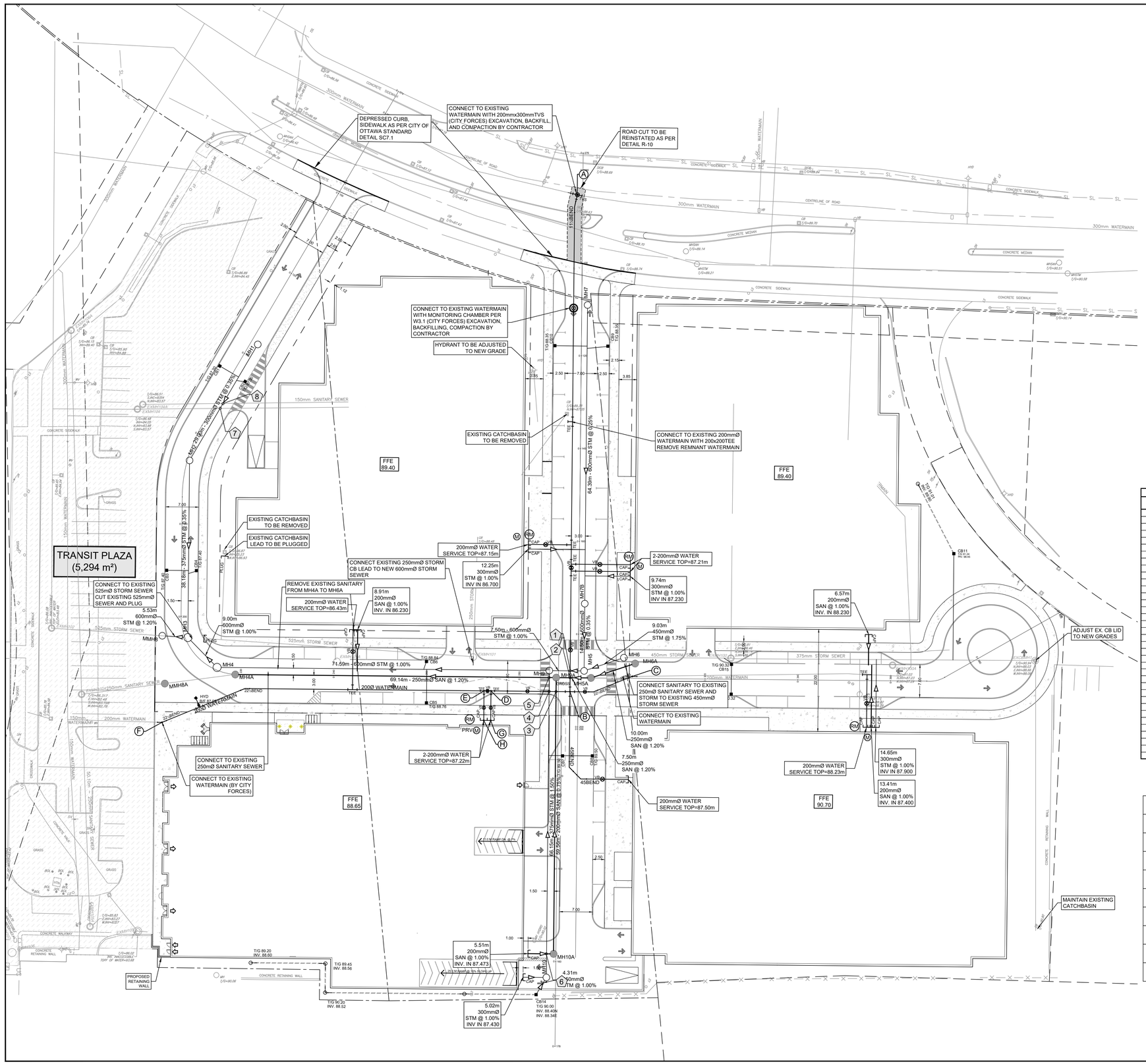
PROJECT NO: 135853
DRAWN BY: **D.P.S.** | CHECKED BY: **S.E.L**
PROJECT MGR: **S.E.L.** | APPROVED BY: **J.I.M.**

SHEET TITLE
PHASE 1 SITE SERVICING PLAN

SHEET NUMBER **C-001** | ISSUE **6**

CITY FILE No. D07-12-21-0182
CITY PLAN No. 18595

File Location: J:\135853_SouthKeysPhs1\7.0_Production\7.03_Design\04_Civil\Sheets\C-001 SITE SERVICING PLAN.dwg Last Saved: October 20, 2026, by slumsa3150 Plotted: October 21, 2026 10:37:38 AM by Slumsa, Don



STM-ult STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS-BUILT	INVERT OUT	INVERT OUT AS-BUILT	DESCRIPTION
EXCBMH1	90.94	SW88.090		NW88.030		EXISTING CB MANHOLE
EXMH100	90.78	SE86.710		NW86.140		EXISTING MANHOLE
EXMH101	89.26	SE85.520 NE85.590		N85.400		EXISTING MANHOLE
EXMH102	86.32	S83.747		W83.450		EXISTING MANHOLE
MH1	87.41			W85.050		1200mmØ OPSD-701.010
MH2	87.65	E84.949		SW84.874		1200mmØ OPSD-701.010
MH3	87.73	NE84.740 S84.286		N84.234		1500mmØ OPSD-701.011
MH4	88.02	SE84.406		N84.376		1500mmØ OPSD-701.011
MH5	89.86	SE85.692 NE85.277		NW85.217		1200mmØ OPSD-701.010
MH6	90.36	SE85.882		NW85.850		1200mmØ OPSD-701.010
MH7	88.58			SW85.481		1200mmØ OPSD-701.010
MH7B	89.52	NE85.320		SW85.328		1200mmØ OPSD-701.010
MH9	89.58	SE85.142 SW85.355		NW85.122		1200mmØ OPSD-701.010
MH10	90.07	NW87.380 W88.297		NE86.347		1200mmØ OPSD-701.010
MMH8	87.75	S84.168		N84.168		1200mmØ OPSD-701.010

SAN STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS-BUILT	INVERT OUT	INVERT OUT AS-BUILT	DESCRIPTION
EXMH100A	91.03			NW87.230		1200mmØ OPSD-701.010
EXMH101A	88.51	SE85.900		NW85.880		1200mmØ OPSD-701.010
EXMH102A	86.32	SE83.728 SW82.780		NE82.480		1200mmØ OPSD-701.010
MH4A	88.16	SE85.100		NW85.307		1200mmØ OPSD-701.010
MH5A	89.99	SE86.419		NW86.180		1200mmØ OPSD-701.010
MH6A	90.33	SE86.575		NW86.539		1200mmØ OPSD-701.010
MH9A	89.66	SE86.090 SW86.187		NW85.930		1200mmØ OPSD-701.010
MH10A	89.98	NW87.418		NE86.634		1200mmØ OPSD-701.010
MMH8A	87.52	SE84.429		NW84.429		1200mmØ OPSD-701.010

WATERMAIN SCHEDULE

	Station	Description	Finished Grade	Top of Watermain	Watermain Cover	As Built Watermain
A	0+000.00	CONNECT TO EXISTING 300 Ø WITH 200TVS	88.67	±86.27	2.40	
	0+002.66	11.25 BEND	88.58	86.18	2.40	
	0+020.00	-	88.55	86.15	2.40	
	0+024.51	MONTORING CHAMBER PER W3.1	88.56	86.16	2.40	
	0+040.00	-	88.83	86.43	2.40	
	0+048.99	200mmØ TEE	88.97	86.57	2.40	
	0+060.00	-	89.13	86.73	2.40	
	0+080.00	-	89.36	86.96	2.40	
	0+098.19	200V&VB	89.64	87.24	2.40	
	0+100.00	-	89.69	87.29	2.40	
B	0+106.19	200mmø TEE	89.84	87.44	2.40	
C	0+000.00	CONNECT TO EXISTING 200mmØ WITH 22.5 BEND	90.30	±87.90	2.40	
	0+006.26	22.5 BEND	90.30	87.90	2.40	
	0+008.58	200V&VB	90.01	87.61	2.40	
B	0+011.81	200mmø TEE	89.84	87.44	2.40	
	0+020.00	-	89.55	87.15	2.40	
	0+020.97	200V&VB	89.52	87.12	2.40	
D	0+028.83	200mmø TEE FOR BUILDING SERVICE	89.30	86.90	2.40	
	0+029.58	200V&VB	89.28	86.88	2.40	
E	0+030.33	200mmø TEE FOR BUILDING SERVICE	89.26	86.86	2.40	
	0+040.00	-	88.98	86.58	2.40	
	0+060.00	-	88.56	86.16	2.40	
	0+079.47	22.5 BEND	88.13	85.73	2.40	
	0+080.00	-	88.11	85.71	2.40	
	0+089.24	150mmø HYDRANT TEE	87.97	85.57	2.40	
F	0+101.33	CONNECT TO EXISTING 200mmØ WITH 22.5 BEND	87.40	±84.66	±2.74	
D	0+000.00	200mmø TEE FOR BUILDING SERVICE	89.30	86.90	2.40	
	0+001.00	200V&VB	89.31	86.91	2.40	
G	0+000.737	200mmØ CAP FOR BUILDING SERVICE	89.62	87.22	2.40	
E	0+000.00	200mmø TEE FOR BUILDING SERVICE	89.26	86.86	2.40	
	0+001.00	200V&VB	89.28	86.88	2.40	
H	0+000.737	200mmØ CAP FOR BUILDING SERVICE	89.62	87.22	2.40	

Pipe Interference Table

Crossing No.	PIPE 1	PIPE 2	Clearance
1	WTR Bottom 87.118	STM Top 85.852	1.266
2	WTR Bottom 87.154	SAN Top 86.384	0.771
3	WTR Bottom 87.022	SAN Top 86.408	0.614
4	WTR Bottom 87.069	STM Top 85.777	1.293
5	SAN Bottom 86.044	STM Top 85.732	0.313
6	SAN Bottom 87.427	STM Top 86.640	0.787
7	STM Bottom 84.988	STM Top 84.281	0.706
8	STM Bottom 84.992	SAN Top 84.214	0.778

CLIENT

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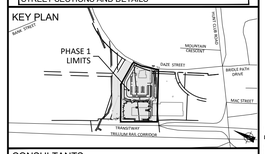
No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-10-28
2	REVISED AS PER NEW SITE PLAN	2023-10-19
3	ISSUED FOR COORDINATION	2026-05-14
4	ISSUED FOR CLIENT REVIEW	2026-06-02
5	ISSUED FOR CLIENT REVIEW	2026-10-16
6	ISSUED TO CITY FOR SPA	2026-10-20
7		

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

KEY PLAN



CONSULTANTS

Project Coordinator
Architect: RLA Architectue
Landscape: Levstek consultants
Surveyor: Stantec
Geotech: Paterson Group
Transportation
Engineer: ARCADIS
Urban Planner: Stantec

1:400 0 4 12 20m

SEAL



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

PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853

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

SHEET TITLE
ULTIMATE SITE SERVICING PLAN

SHEET NUMBER	ISSUE
C-002	6

CITY FILE No. D07-12-21-0182
CITY PLAN No. 18595

Appendix D

Storm Sewer Design Sheets

Drawing 135853 C-500 Phase 1 Storm Drainage Area Plan

Drawing 135853 C-501 Ultimate Storm Drainage Area Plan

Drawing 135853 C-600 Phase 1 Ponding Plan

Drawing 135853 C-601 Ultimate Ponding Plan

Sawmill Creek Subwatershed Study Update Figure 14

Sawmill Creek Constructed Wetland Phase 2 Drawing 13614-2

Geotechnical Response to City Comments

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500-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
arcadis.com

STORM SEWER DESIGN SHEET

South Keys Phase 1
Smart Centers
City of Ottawa

LOCATION				AREA (Ha)															RATIONAL DESIGN FLOW															SEWER DATA									
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.40	C= 0.46	C= 0.53	C= 0.57	C= 0.62	C= 0.66	C= 0.67	C= 0.68	C= 0.70	C= 0.73	C= 0.76	C= 0.77	C= 0.84	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW IND	FIXED FLOW CUM	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
Ultimate																																										
	1	MH 1	MH2						0.10										0.16	0.16	10.00	0.48	10.48	76.81	104.19	122.14	178.56	12.17	16.51	19.35	28.29	0.00	0.00	16.51	59.68	23.50	300			0.35	0.818	43.17	72.34%
	2	MH 2	MH 3										0.16						0.30	0.46	10.48	0.74	11.22	75.01	101.73	119.24	174.30	34.58	46.89	54.96	80.34	0.00	0.00	46.89	108.37	42.41	375			0.35	0.951	61.48	56.73%
	6, 7, 8, 14, 15, BLDGC	ExClCB1	ExMH 100	0.10							0.18				0.10				0.38	1.54	1.54	11.00	0.48	11.48	73.17	99.19	116.25	169.91	112.65	152.71	178.98	261.58	25.00	25.00	152.71	259.58	65.54	375			2.01	2.277	106.87	41.17%
		ExMH 100	MH6																	0.00	1.54	11.48	0.20	11.68	71.55	96.98	113.64	166.08	110.16	149.30	174.96	255.68	0.00	25.00	149.30	314.77	23.07	450			1.12	1.917	165.47	52.57%
		MH6	MH5																	0.00	1.54	11.68	0.06	11.74	70.90	96.08	112.59	164.53	109.16	147.93	173.34	253.31	0.00	25.00	147.93	393.47	8.76	450			1.75	2.397	245.54	62.40%
	4, BLDGD	MH7	MH7B										0.18							0.34	0.34	10.00	0.98	10.98	76.81	104.19	122.14	178.56	26.13	35.45	41.56	60.76	25.00	25.00	35.45	320.28	64.39	600			0.25	1.097	284.83	88.93%
		MH7B	MH5																	0.00	0.34	10.98	0.17	11.15	73.24	99.30	116.37	170.09	24.92	33.79	39.60	57.88	0.00	25.00	33.79	378.96	13.50	600			0.35	1.298	345.17	91.08%
		MH5	MH9																	0.00	1.88	11.74	0.06	11.80	70.71	95.82	112.28	164.07	132.92	180.12	211.06	308.42	0.00	50.00	180.12	640.56	7.50	600			1.00	2.195	460.44	71.88%
	5, BLDGB	MH10	MH9							0.18										0.31	0.31	10.00	0.57	10.57	76.81	104.19	122.14	178.56	23.83	32.33	37.89	55.40	25.00	25.00	32.33	224.02	67.15	375			1.50	1.965	191.69	85.57%
	3, BLDGA	MH9	MH4									0.14								0.26	2.45	11.80	0.53	12.33	70.53	95.57	111.98	163.64	172.85	234.22	274.45	401.05	25.00	100.00	234.22	640.88	70.25	600			1.00	2.196	406.66	63.45%
		MH4	MH3																	0.00	2.45	12.33	0.06	12.39	68.88	93.30	109.32	159.73	168.81	228.67	267.93	391.47	0.00	100.00	228.67	640.56	7.91	600			1.00	2.195	411.89	64.30%
		MH3	MMH8																	0.00	2.91	12.39	0.05	12.44	68.70	93.06	109.03	159.30	200.04	270.96	317.47	463.85	0.00	100.00	270.96	701.70	7.33	600			1.20	2.404	430.74	61.39%
		MMH8	ExTrunk																	0.00	2.91	12.39	0.15	12.54	68.70	93.06	109.03	159.30	200.04	270.96	317.47	463.85	0.00	100.00	270.96	605.27	23.90	525			1.82	2.709	334.31	55.23%

Definitions:

Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)

[i = 732.951 / (TC+6.199)^0.810]	2 YEAR
[i = 998.071 / (TC+6.053)^0.814]	5 YEAR
[i = 1174.184 / (TC+6.014)^0.816]	10 YEAR
[i = 1735.688 / (TC+6.014)^0.820]	100 YEAR

Notes:

1. Mannings coefficient (n) = 0.013

Designed: AC

Checked: DRC

Dwg. Reference: 135853-500

No.	Revision	Date
1.	SPA Submission No. 1 for City Review	2021-10-28
2.	SPA Submission No. 2 for City Review	2023-10-19
3.	SPA Submission No. 3 for City Review	2026-10-15

File Reference: 135853-6.04.04
Date: 2026-10-15
Sheet No: 1 of 1

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500-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
arcadis.com

STORM SEWER DESIGN SHEET

South Keys Phase 1
Smart Centers
City of Ottawa

LOCATION				AREA (Ha)														RATIONAL DESIGN FLOW														SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.40	C= 0.46	C= 0.53	C= 0.59	C= 0.66	C= 0.68	C= 0.70	C= 0.73	C= 0.76	C= 0.77	C= 0.80	C= 0.83	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW IND	FIXED FLOW CUM	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr) (L/s)	AVAIL CAP (5yr) (%)
Phase 1 Interim Conditions																																							
Montana's Restaurant	EX103, MONTA	Ex MH 103	Ex MH 104														0.13	0.33	0.33	10.00	0.58	10.58	76.81	104.19	122.14	178.56	24.98	33.89	39.73	58.08	0.00	0.00	33.89	100.61	69.19	250			2.63	1.986	66.72	66.32%
Cinema and Outlets	1, 5	MH 1	MH2				0.08										0.07	0.28	0.28	10.00	0.59	10.59	76.81	104.19	122.14	178.56	21.31	28.91	33.89	49.54	0.00	0.00	28.91	59.68	29.00	300			0.35	0.818	30.77	51.56%
	2, 6	MH 2	MH 3				0.15								0.16			0.53	0.81	10.59	0.67	11.26	74.61	101.17	118.58	173.33	60.56	82.13	96.26	140.70	0.00	0.00	82.13	108.21	38.18	375			0.35	0.949	26.08	24.10%
	14, 15, MOVIES	ExCICB1	ExMH 100														0.82	2.44	2.44	11.00	0.48	11.48	73.17	99.19	116.25	169.91	178.81	242.41	284.11	415.23	0.00	0.00	242.41	259.58	65.54	375			2.01	2.277	17.16	6.61%
	11, 12, 13	ExMH 100	MH6													0.18	0.29	0.73	3.17	11.48	0.20	11.68	71.55	96.98	113.64	166.08	226.79	307.37	360.19	526.37	0.00	0.00	307.37	314.77	23.00	450			1.12	1.917	7.41	2.35%
		MH6	MH5															0.00	3.17	11.68	0.06	11.74	70.91	96.09	112.59	164.54	224.74	304.54	356.87	521.49	0.00	0.00	304.54	393.47	9.03	450			1.75	2.397	88.93	22.60%
	10	MH7	MH7B						0.19									0.31	0.31	10.00	0.98	10.98	76.81	104.19	122.14	178.56	23.94	32.47	38.06	55.65	0.00	0.00	32.47	320.28	64.39	600			0.25	1.097	287.81	89.86%
	16	MH7B	MH5														0.10	0.25	0.56	10.98	0.19	11.16	73.24	99.30	116.37	170.09	41.15	55.79	65.38	95.56	0.00	0.00	55.79	378.96	14.50	600			0.35	1.298	323.17	85.28%
		MH5	MH9															0.00	3.73	11.74	0.06	11.80	70.70	95.81	112.27	164.06	263.82	357.50	418.91	612.15	0.00	0.00	357.50	640.56	7.50	600			1.00	2.195	283.06	44.19%
	9, BLD	MH10	MH9									0.17						0.33	0.33	10.00	0.56	10.56	76.81	104.19	122.14	178.56	25.41	34.47	40.41	59.07	25.00	25.00	34.47	224.02	66.15	375			1.50	1.965	189.55	84.61%
	7, 8	MH9	MH4								0.06	0.08						0.27	4.33	11.80	0.54	12.34	70.52	95.56	111.98	163.63	305.45	413.90	485.00	708.71	0.00	25.00	413.90	640.56	71.59	600			1.00	2.195	226.66	35.39%
		MH4	MH3															0.00	4.33	12.34	0.07	12.41	68.84	93.26	109.26	159.64	298.18	403.91	473.24	691.46	0.00	25.00	403.91	640.56	9.00	600			1.00	2.195	236.65	36.94%
		MH3	MMH8															0.00	5.14	12.41	0.04	12.45	68.64	92.97	108.93	159.16	353.01	478.17	560.24	818.55	0.00	25.00	478.17	701.70	5.53	600			1.20	2.404	223.53	31.86%
		MMH8	ExTrunk															0.00	5.14	12.41	0.15	12.56	68.64	92.97	108.93	159.16	353.01	478.17	560.24	818.55	0.00	25.00	478.17	605.27	23.90	525			1.82	2.709	127.10	21.00%

Definitions:
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A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
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Notes:
1. Mannings coefficient (n) = 0.013

Designed: AC
Checked: DRC
Dwg. Reference: 135853-500

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File Reference: 135853-6.04.04
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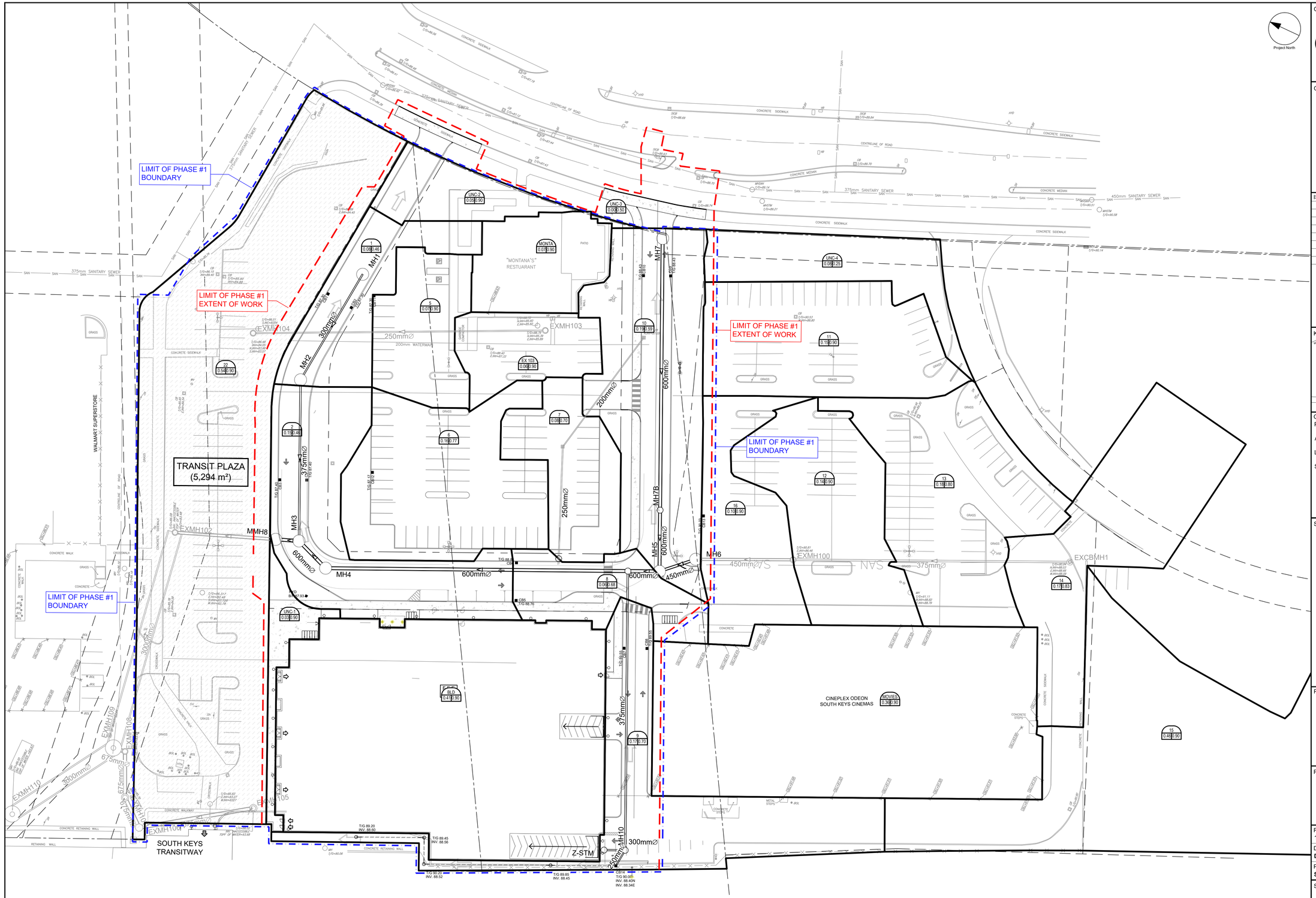

LEGEND :

P1-1 | 0.54 | 0.45
- AREA NUMBER
- RUNOFF COEFFICIENT
- AREA IN HECTARES

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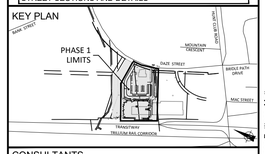
7		

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

KEY PLAN



CONSULTANTS

Project Coordinator
Architect:
RLA Architectue
Landscape:
Levstek consultants
Surveyor:
Stantec
Geotech:
Paterson Group
Transportation Engineer:
ARCADIS
Urban Planner:
Stantec

1:400 0 4 12 20m

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100214983
2026/10/16
PROVINCE OF ONTARIO

PRIME CONSULTANT

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PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853

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

SHEET TITLE
PHASE 1 STORM DRAINAGE AREA PLAN

SHEET NUMBER	ISSUE
C-500	5

CITY PLAN No. 18595

CITY FILE No. D07-12-21-0182

SCALE CHECK | NOT

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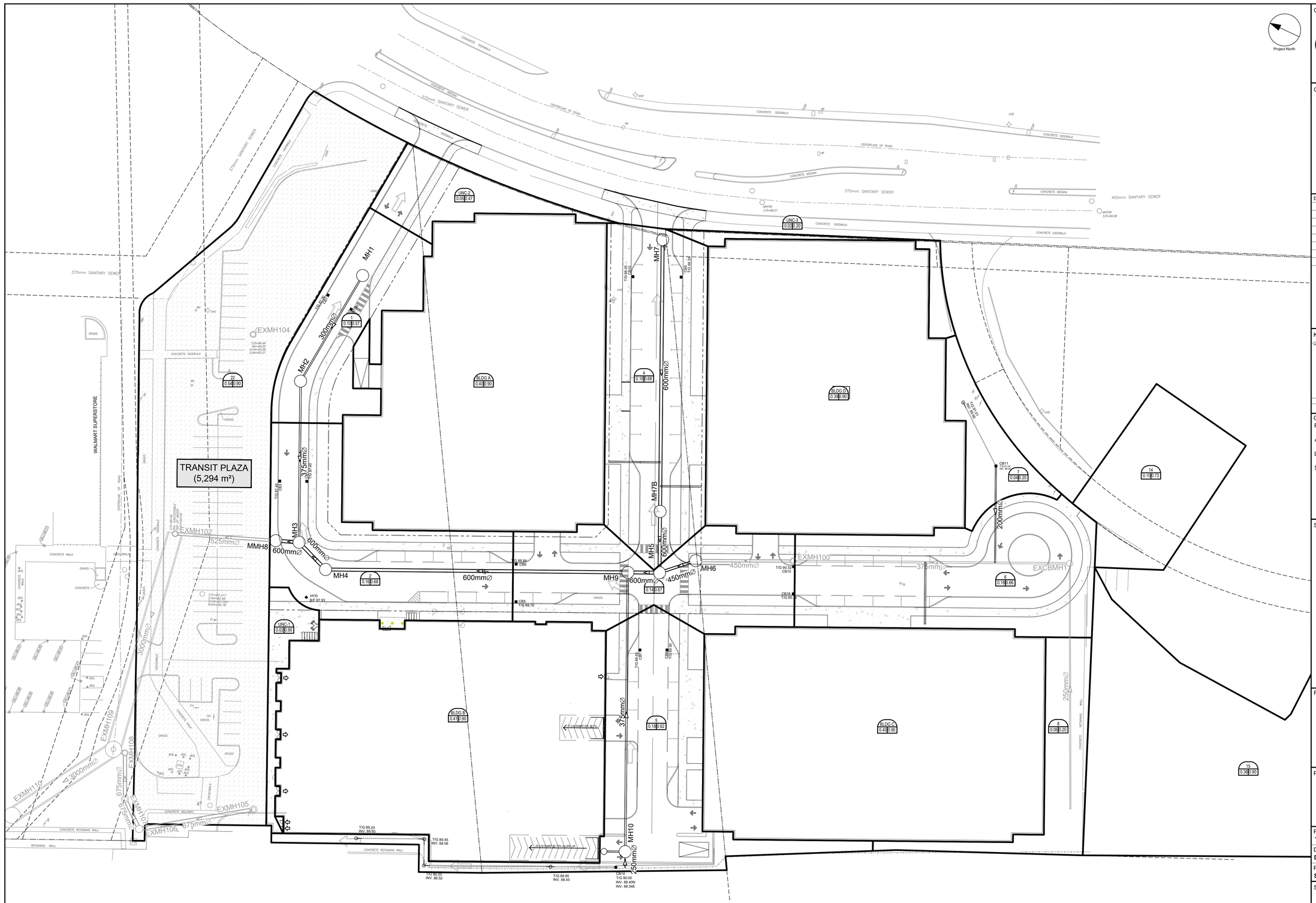

LEGEND :

P1-1
0.54 | 0.45
AREA NUMBER
RUNOFF COEFFICIENT
AREA IN HECTARES

CLIENT

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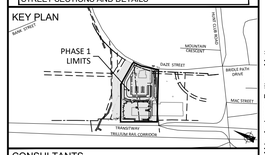
KEY PLAN



CONSULTANTS

Project Coordinator	Geotech: Paterson Group
Architect: RLA Architectue	Transportation Engineer: ARCADIS
Landscape: Levstek consultants	Urban Planner: Stantec
Surveyor: Stantec	

1:400 0 4 12 20m

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2026/10/16
PROVINCE OF ONTARIO

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www.arcadis.com

PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853	
DRAWN BY: **D.P.S.**	CHECKED BY: **S.E.L.**
PROJECT MGR: **S.E.L.**	APPROVED BY: **J.I.M.**

SHEET TITLE
ULTIMATE STORM DRAINAGE AREA PLAN

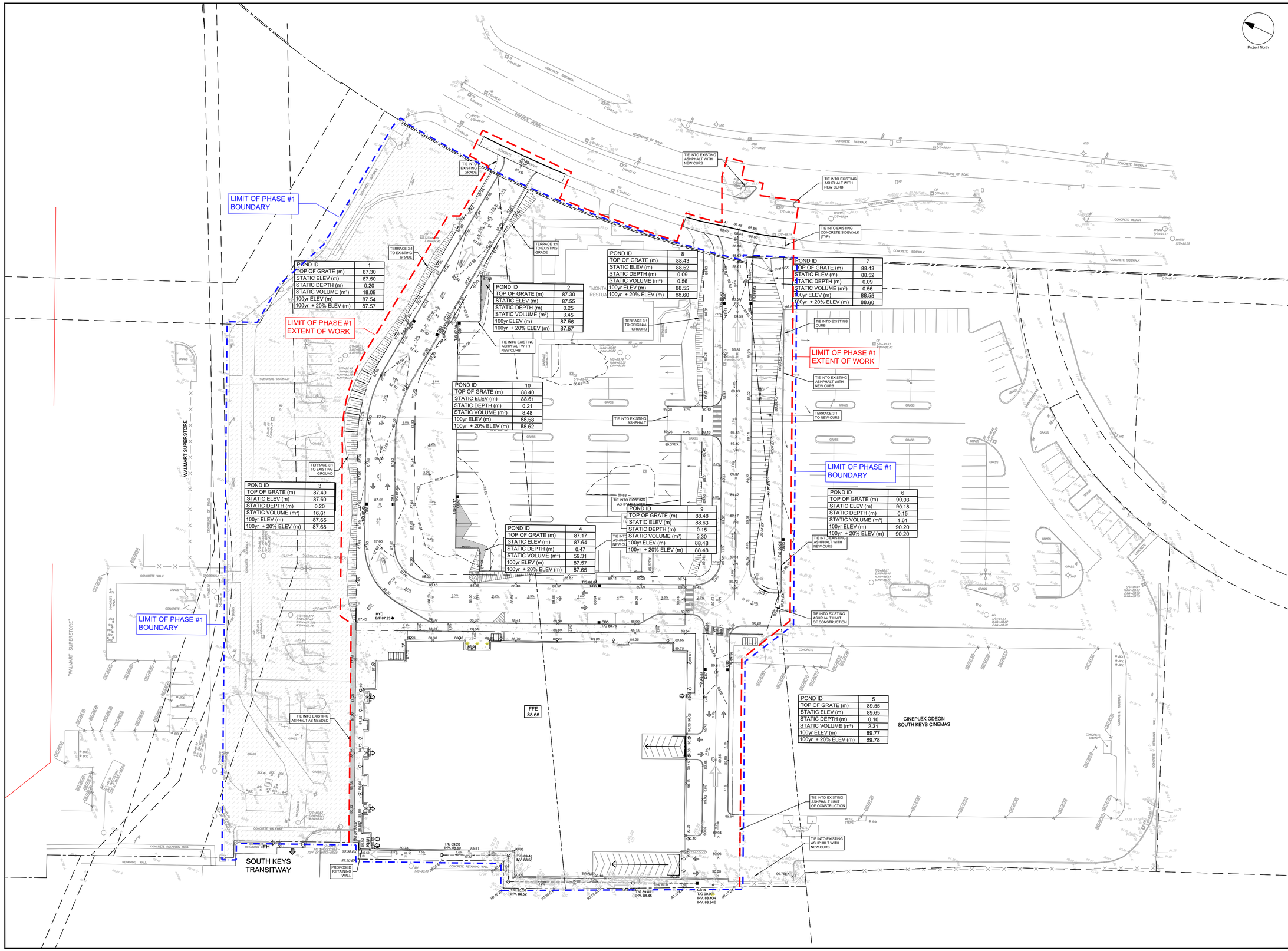
SHEET NUMBER	ISSUE
C-501	5

SCALE CHECK

CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

File Location: J:\135853_SouthKeysPhs1\7.0_Production\7.03_Design\04_Civil\Sheets\C-501 ULTIMATE STORM DRAINAGE AREA PLAN.dwg Last Saved: October 15, 2026, by siuma3150 Plotted: October 16, 2026 10:09:06 AM by Anderson Pettpas, Matt



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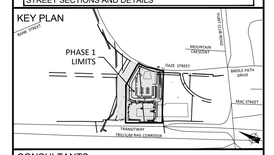
6	ISSUED TO CITY FOR SPA	2026-10-20
7		

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

KEY PLAN



CONSULTANTS

Project Coordinator
Architect: RLA Architectue
Landscape: Levstek consultants
Surveyor: Stantec
Geotech: Paterson Group
Transportation Engineer: ARCADIS
Urban Planner: Stantec

1:400 0 4 12 20m

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2026/10/20
PROVINCE OF ONTARIO

PRIME CONSULTANT

ARCADIS
333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
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PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853

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

SHEET TITLE
PHASE 1 SITE PONDING PLAN

SHEET NUMBER	ISSUE
C-600	6

CITY FILE No. D07-12-21-0182
CITY PLAN No. 18595

File Location: J:\135853_SouthKeysPhs1\7.0_Production\7.03_Design\04_Civil\Sheets\C-600-SITE PONDING PLAN.dwg Last Saved: October 20, 2026, by slurma3150 Plotted: October 21, 2026 10:50:53 AM by Slurma, Don

SCALE CHECK

POND ID	1
TOP OF GRATE (m)	87.30
STATIC ELEV (m)	87.50
STATIC DEPTH (m)	0.20
STATIC VOLUME (m³)	20.84
100yr ELEV (m)	87.48
100yr + 20% ELEV (m)	87.55

POND ID	2
TOP OF GRATE (m)	87.40
STATIC ELEV (m)	87.60
STATIC DEPTH (m)	0.20
STATIC VOLUME (m³)	16.52
100yr ELEV (m)	87.62
100yr + 20% ELEV (m)	85.66

POND ID	3
TOP OF GRATE (m)	89.50
STATIC ELEV (m)	89.60
STATIC DEPTH (m)	0.10
STATIC VOLUME (m³)	1.69
100yr ELEV (m)	89.68
100yr + 20% ELEV (m)	89.70

POND ID	4
TOP OF GRATE (m)	89.50
STATIC ELEV (m)	89.60
STATIC DEPTH (m)	0.10
STATIC VOLUME (m³)	1.59
100yr ELEV (m)	89.68
100yr + 20% ELEV (m)	89.70

POND ID	5
TOP OF GRATE (m)	88.36
STATIC ELEV (m)	88.52
STATIC DEPTH (m)	0.16
STATIC VOLUME (m³)	2.40
100yr ELEV (m)	88.49
100yr + 20% ELEV (m)	88.56

POND ID	6
TOP OF GRATE (m)	88.36
STATIC ELEV (m)	88.52
STATIC DEPTH (m)	0.16
STATIC VOLUME (m³)	2.40
100yr ELEV (m)	88.49
100yr + 20% ELEV (m)	88.56

FFE 89.40

FFE 89.65

FFE 89.40

FFE 90.70

PROPOSED RETAINING WALL

CLIENT

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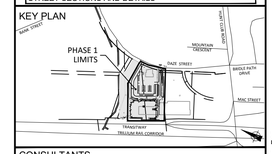
SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN



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Project Coordinator
Architect:
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Landscape:
Levstek consultants
Surveyor:
Stantec
Geotech:
Paterson Group
Transportation
Engineer:
ARCADIS
Urban Planner:
Stantec

1:400 0 4 12 20m

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PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853

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

SHEET TITLE
ULTIMATE SITE PONDING PLAN

SHEET NUMBER	ISSUE
C-601	6

CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

Plotted: October 21, 2026 11:38:50 AM by slurma Don
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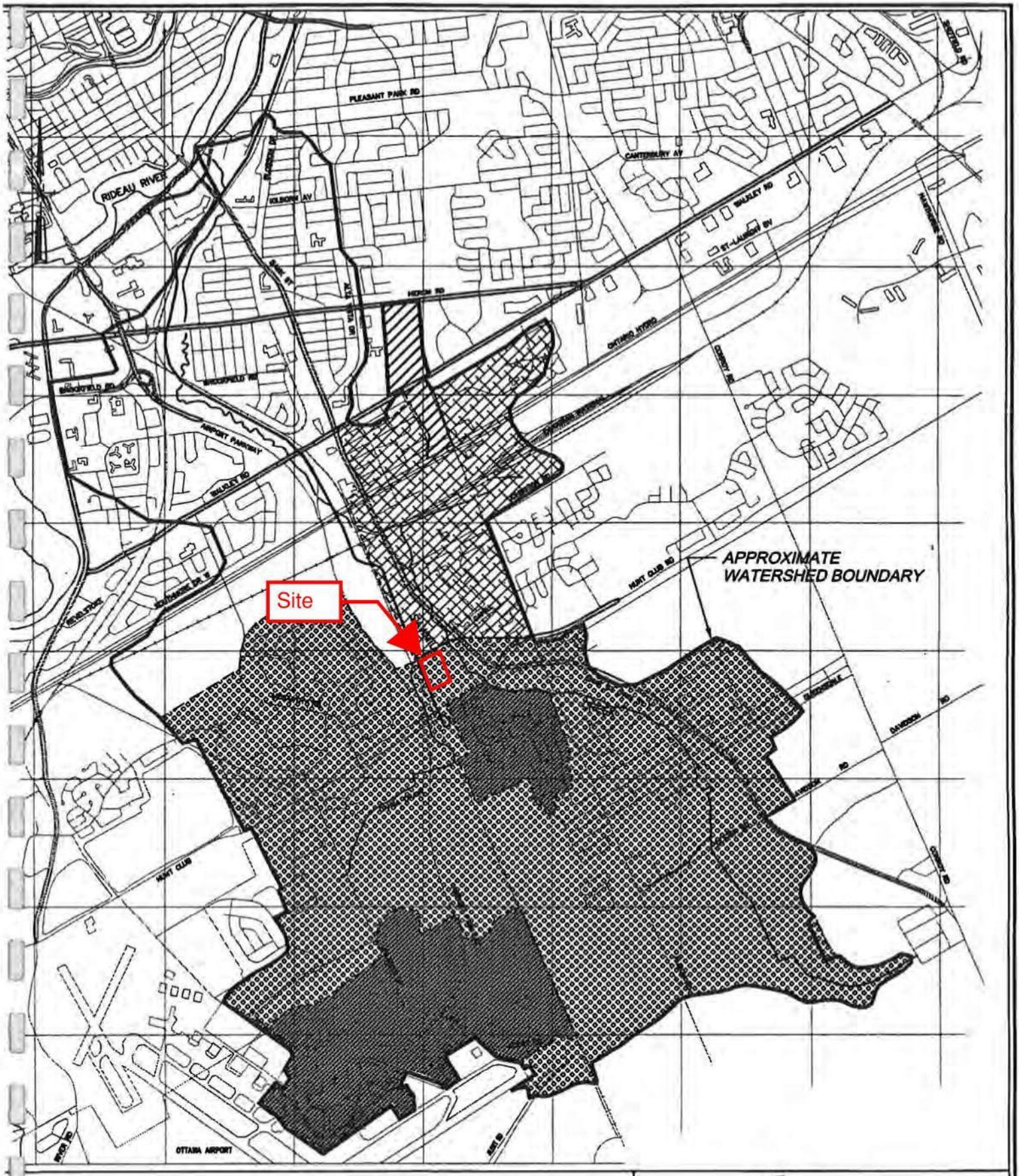


Legend

- Area serviced by Constructed Wetland (for existing development only)
- Area proposed in 1997 for diversion, no longer considered feasible
- Area serviced by Constructed Wetland draining to existing Hunt Club Ridge and Airport facilities
- New recent development area serviced by new SWM Facility

Ottawa

SAWMILL CREEK SUBWATERSHED STUDY UPDATE

WETLAND SERVICE AREA

April 2003 | 0 500 1000 m | FIGURE 17

RECORD DRAWINGS

These record documents have been prepared based on information provided by others. The design professional has not verified the accuracy and/or the completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result.

DEC. 2007

CH2MHILL

NO.	REVISIONS	BY	DATE
5.	ISSUED FOR CONSTRUCTION		Jan/06
4.	ISSUED FOR TENDER		Nov/05
3.	ISSUED FOR 99% REVIEW		Jul/05
2R	REISSUED FOR APPROVALS		Jun/05
2.	ISSUED FOR APPROVALS		Dec/03
1.	ISSUED FOR 90% REVIEW		Oct/03
6.	REVISED FOR 4th PIPE		OCT./06

NOTE:
The location of the utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned.
The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

SAWMILL CREEK CONSTRUCTED WETLAND PHASE 2

CIVIL

CAPITAL RAILWAY & TRANSITWAY CROSSING

PLAN & PROFILE

W. NEWELL, P.ENG. Director Infrastructure Services

W CLOUTHIER. P.ENG. Manager Construction Services

Dwn: DKL | Chkd: BRG | Des: BRG | Chkd: MP

Ottawa

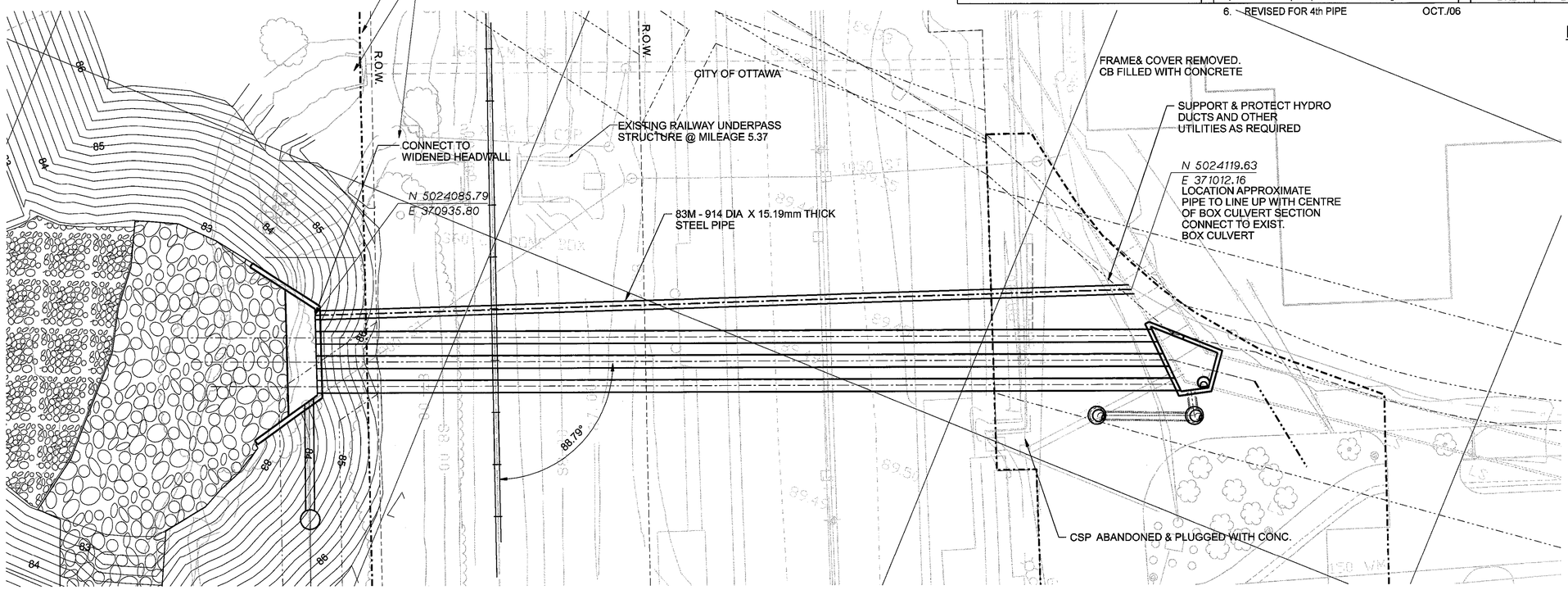
CONTRACT NO. ISB05-2031

DWG. NO. 13614-13

SHEET 13 OF 42

Date: July 2005

Scale: HORIZ 1:250 (5 0 5 10M); VERT 1:50 (1.0 0 1.0 2.0M)



NOTES:

1. JACK & BORE CONTRACTOR TO ASSESS WALL THICKNESS WITH RESPECT TO THE PROPOSED INSTALLATION METHOD.
2. GROUT VOIDS OUTSIDE CASING AS DESCRIBED IN SPECIFICATIONS.
3. STEEL PIPE TO HAVE MINIMUM YEILD STRENGTH OF 241 Mpa.
4. CONTRACTOR TO ENSURE CONSTANT ACCESS TO MALL LOADING BAYS.
5. PROVIDE A TEMPORARY 2.4m HIGH SECURE FENCE AROUND THE PERIMETER OF THE CONSTRUCTION LIMITS WITH GATES & TRUCK ENTRANCES. FENCE TO BE REMOVED AT THE COMPLETION OF THE CONSTRUCTION.

13-JAN-2006 13:43:01 otd05cph2-213_122212.dgn

01M05cph2-115_122212.dgn	1-37, 64-64	01M05cph2-101_122212.dgn 1-33, 35-175
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01M05cph2-115_122212.dgn	1-3, 5-37, 64-64	01TSC0DR03-ph2.dgn 1-62, 64-65

PATERSON GROUP

memorandum

re: **Geotechnical Response to City Comments**
Proposed Multi-Storey Building
2200 Bank Street – Ottawa, Ontario
to: Smartcentres – **Heather Jenkins** – HJenkins@smartcentres.com
date: October 2, 2026
file: PG5242-MEMO.04

Further to your request, Paterson Group (Paterson) has prepared the current memo to provide our responses to the geotechnical-related comments from the City of Ottawa. This memo should be read in conjunction with the updated Geotechnical Investigation Report (Paterson Group Report PG5242-1 Revision 4 dated April 9, 2026).

City Comments

Comment 8: *Review Appendix 11 of the City of Ottawa Sewer Design Guidelines (2025) for any additional monitoring requirements for LID and stormwater management works.*

Response: Due to the presence of clay soils, infiltration-based low-impact development (LID) strategies are not considered suitable for the subject site nor compatible with the subject site in accordance with the City of Ottawa's current Sewer Design Guidelines (2025). Paterson has reviewed the current site servicing plans prepared by Arcadis (Sheet Number C-001, Issue, Project No: 135853, Revision 4 dated June 2, 2026) and confirmed there is no presence of infiltration-based LID's or other geotechnically-sensitive or Appendix 11-pertinent stormwater management features.

Based on this, there is no additional geotechnical fieldwork that is required to be completed to satisfy Appendix 11 requirements pertaining to LID's or stormwater management infrastructure throughout the subject site from a geotechnical perspective.

We trust that the current submission meets your immediate requirements.

Best Regards,

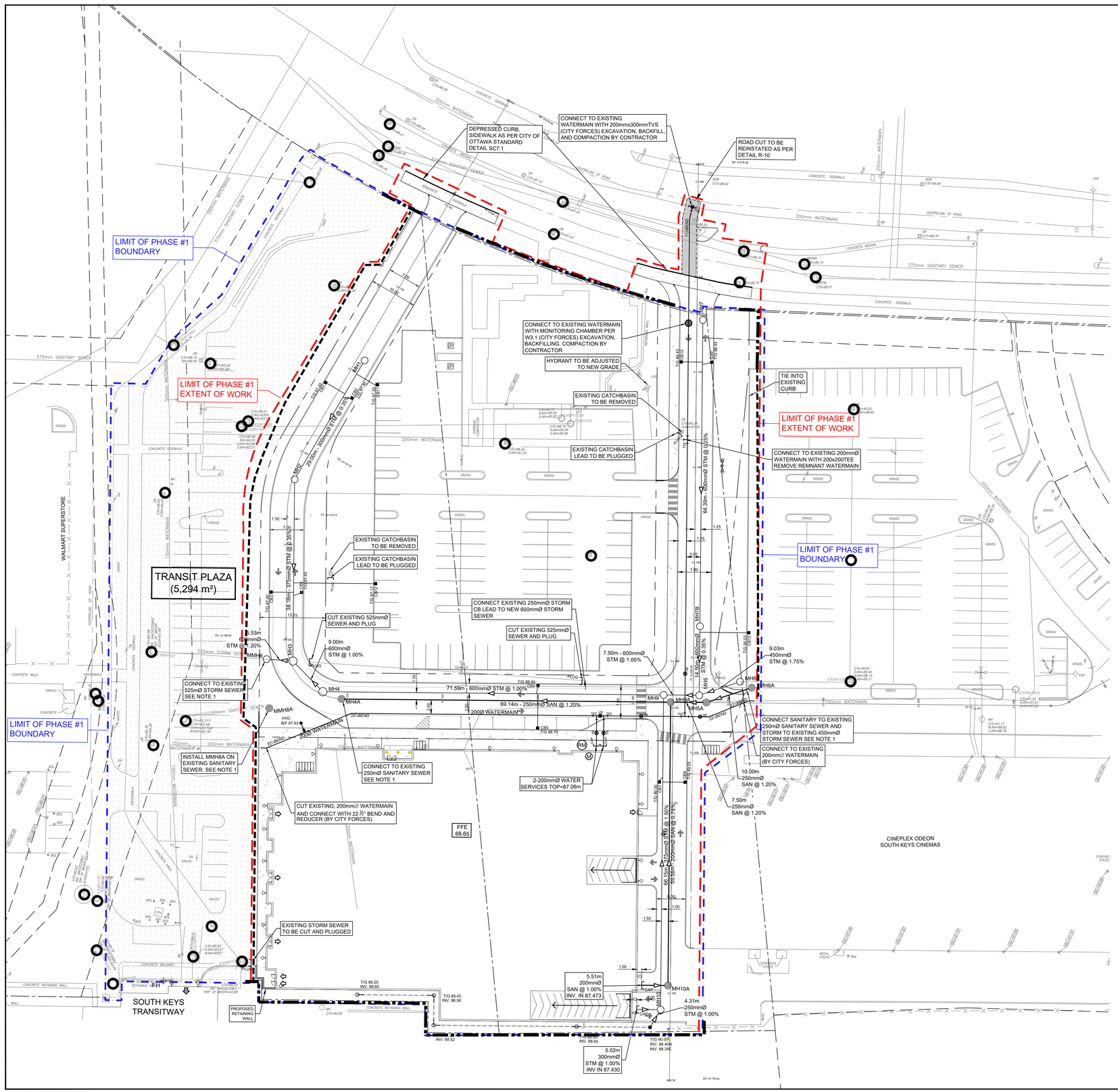
Paterson Group Inc.

Drew Petahtegoose, P.Eng.

LICENSED PROFESSIONAL ENGINEER
October 2, 2026
D. J. PETAHTEGOOSE
100568013
PROVINCE OF ONTARIO

Appendix E

Drawing 135853-C-900 Phase 1 Erosion and Sedimentation Control Plan



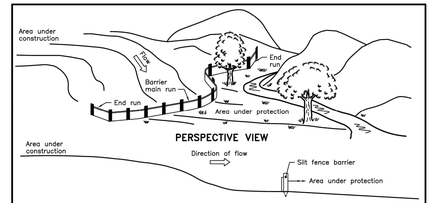
LEGEND :

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

NOTES:

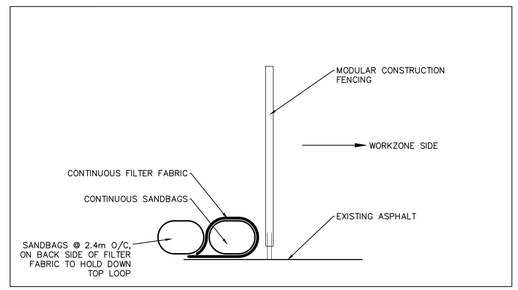
THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY,

1. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
2. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
3. SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
4. CONTRACTOR TO PROVIDE DETAILS ON LOCATION(S) AND DESIGN OF DEWATERING TRAP(S) PRIOR TO COMMENCING WORK. CONTRACTOR ALSO RESPONSIBLE FOR MAINTAINING TRAP(S) AND ADJUSTING SIZE(S) IF DEEMED REQUIRED BY THE ENGINEER DURING CONSTRUCTION.
5. CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
6. WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
7. THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT



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

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



CUSTOM SILT FENCE DETAIL FOR SITE PERIMETER LOCATION AS REQUIRED

CLIENT

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VAUGHAN, ON L4K 5Z6
TEL: 905 326 6400

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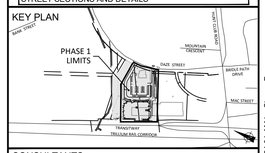
SEE 010, 011, 012 FOR NOTES, LEGEND; CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN



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Project Coordinator
Architect: RLA Architectue
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Urban Planner: Stantec

1:400 0 4 12 20m

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PROJECT
SOUTH KEYS MALL 2200 BANK STREET

PROJECT NO: 135853	
DRAWN BY: D.P.S.	CHECKED BY: S.E.L
PROJECT MGR: S.E.L.	APPROVED BY: J.I.M.

SHEET TITLE
PHASE 1 EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER	ISSUE
C-900	6

SCALE CHECK 1:400

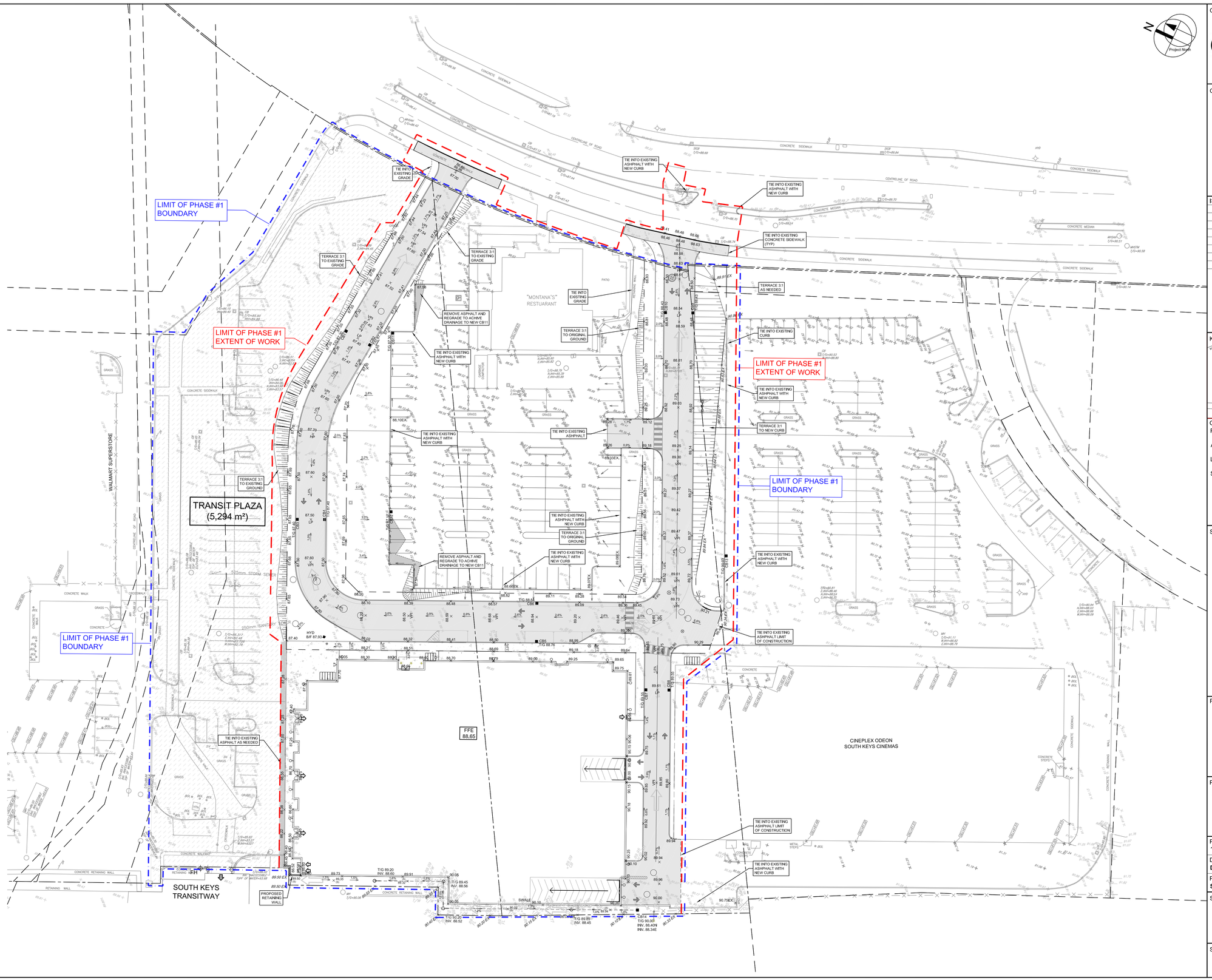
CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

October 21, 2026 10:54:01 AM by Siuma, Don
File Location: J:\135853_SouthKeyPhase1\7.0_Production\7.03_Design\04_Civil\Sheets\C-900 EROSION AND SEDIMENTATION CONTROL PLAN.dwg Last Saved: October 20, 2026, by siumad3150 Plotted: October 21, 2026

Appendix F

Drawing 135853-C-200 Grading and Drainage Plan



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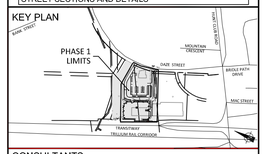

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Surveyor:
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Geotech:
Paterson Group
Transportation Engineer:
ARCADIS
Urban Planner:
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1:400 0 4 12 20m

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PROJECT NO: 135853	
DRAWN BY: **D.P.S.**	CHECKED BY: **S.E.L**
PROJECT MGR: **S.E.L.**	APPROVED BY: **J.I.M.**

SHEET TITLE
PHASE 1 GRADING AND DRAINAGE PLAN

SHEET NUMBER	ISSUE
C-200	6

SCALE CHECK 1:400 @ 11x17

CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

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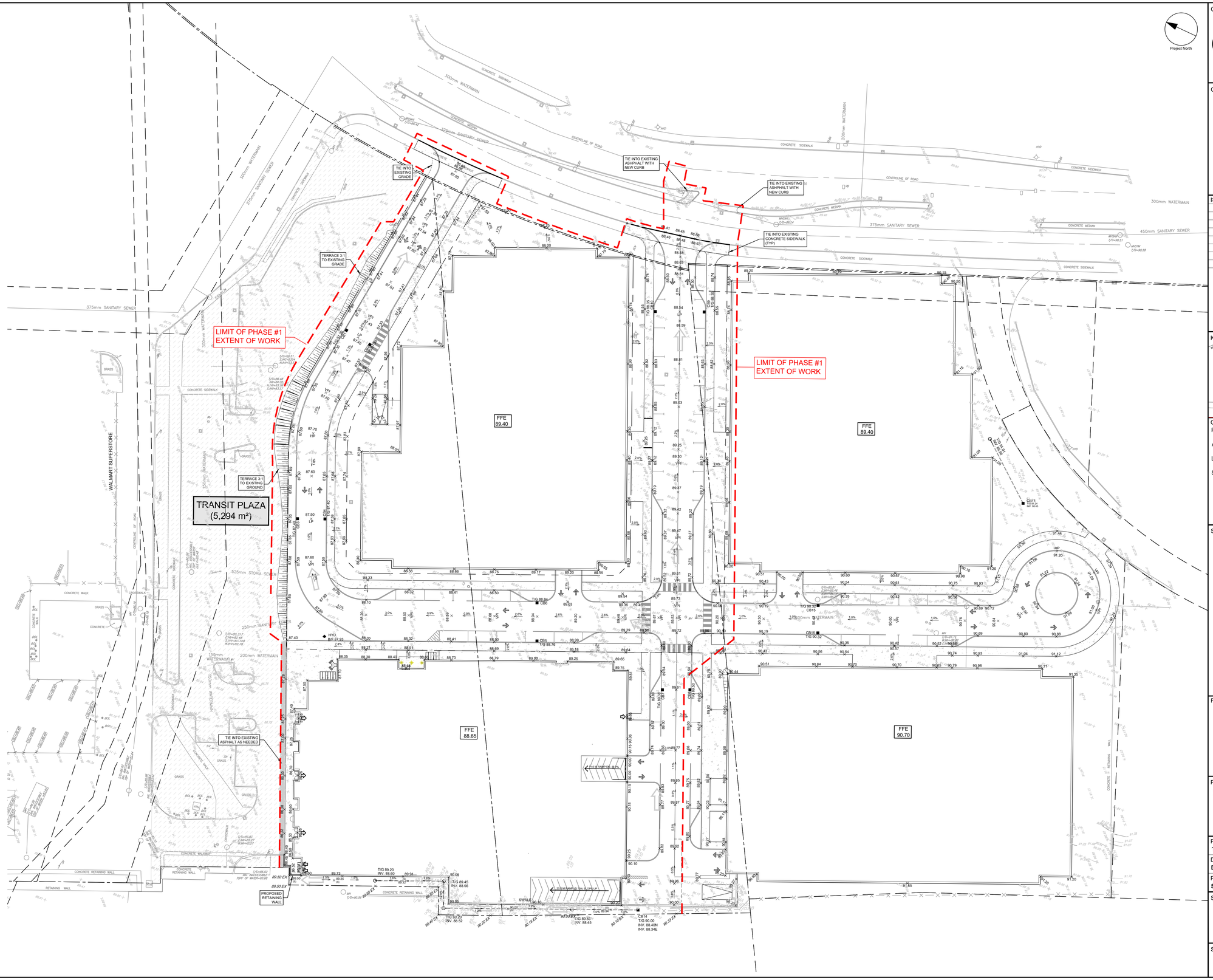

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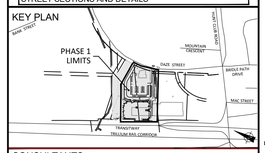

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PROJECT MGR: **S.E.L.**	APPROVED BY: **J.I.M.**

SHEET TITLE

ULTIMATE GRADING AND DRAINAGE PLAN

SHEET NUMBER	ISSUE
C-201	6

SCALE CHECK

CITY FILE No. D07-12-21-0182

CITY PLAN No. 18595

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