VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK
Picton, Ontario

Servicing and Stormwater Management Report

February 2026

Submitted by:

SCS Consulting Group Ltd
30 Centurian Drive, Suite 100
Markham, ON L3R 8B8
Phone 905 475 1900
Fax 905 475 8335

Project Number: 2365B

Table of Contents

Page

1.0 Introduction 4
1.1 Purpose of the Report 4
1.2 Proposed Development 4
1.3 Background Servicing Information 6
2.0 Geotechnical and Hydrogeological Conditions 8
3.0 Topography and Grading 9
4.0 Storm Drainage 10
4.1 Existing Conditions 10
4.1.1 Storm Drainage 10
4.1.2 Storm Servicing 10
4.2 Proposed Conditions 10
4.2.1 Storm Drainage 10
4.2.2 Storm Servicing 11
4.2.2.1 Minor System 11
4.2.2.2 Major System 11
5.0 Stormwater Management 13
5.1 Village A – Base 31 Stormwater Management Facility 13
5.2 Onsite Quantity Controls 14
Sanitary Servicing 16
5.3 Existing Sanitary Servicing 16
5.4 Proposed Sanitary Servicing 17
6.0 Water Servicing 20
6.1 Existing Water Servicing 20
6.2 Proposed Water Servicing 20
7.0 Utility Considerations 23
8.0 Erosion and Sediment Control During Construction 24
9.0 Summary 25

List of Figures

Figure 1.1 Site Location Plan
Figure 4.1 Existing Storm Drainage Plan
Figure 4.2 Proposed Storm Drainage Plan
Figure 5.3 Existing Sanitary System

List of Drawings

Drawing N-1 General Notes
Drawing S-1 Servicing Plan
Drawing STRM-1 Storm Drainage Plan (Rental Building Site Plan)
Drawing 201 Storm Drainage Plan 1 (Subdivision)
Drawing 302 Sanitary Drainage Plan 2 (Subdivision)
Drawing GR-1 Grading Plan
Drawing ESC-1 Erosion and Sediment Control Stage 1
Drawing ESC-2 Erosion and Sediment Control Stage 2
Drawing ESC-3 Erosion and Sediment Control Notes
Drawing ESC-4 Erosion and Sediment Control Details
Drawing D-1 Details Plan 1
Drawing D-2 Details Plan 2
Drawing D-3 Details Plan 3
Drawing DS-1 Design Sheet – Sanitary
Drawing DS-2 Design Sheet – 5 Year Storm (Rental Building Site Plan)
Drawing DS-3 Design Sheet – 100 Year Storm (Rental Building Site Plan)
Drawing DS-4 Design Sheet – 5 Year Storm (Subdivision)

List of Appendices

Figures
Drawings
Appendix A Site Plan
Appendix B Background Information
Appendix B1 Pre-Consultation Memo
Appendix B2 Geotechnical Report
Appendix B3 Topographic Survey
Appendix B4 Village A SWM Report
Appendix B5 Village A Functional Servicing and Stormwater Management Report (FSSR)
Appendix B6 Village A Civil Design Drawings
Appendix C Stormwater Management Calculations
Appendix D Storm Sewer Servicing Calculations

Appendix E Water Distribution Analysis
Appendix E1 Fire Flow Memo
Appendix E2 Picton Heights Booster Pump Station Upgrade Report
Appendix E3 Watermain Hydraulic Analysis and Water Demands

Submission History

Submission	Date	In Support Of	Distributed To
1st	February 2026	Site Plan Approval	Prince Edward County

1.0 Introduction

SCS Consulting Group Ltd. has been retained by PEC Community Partners Inc ('PEC') to prepare a Site Servicing and Stormwater Management (SWM) Report for a proposed residential development located within the community of Picton, in Prince Edward County.

1.1 Purpose of the Report

This Site Servicing and SWM Report has been prepared in support of the Site Plan application for Village A – Southern Medium Density Block ("the proposed development") located at the northeast corner of County Road 22 and Kingsley Road. The proposed development is located within the proposed Village A Draft Plan of Subdivision, as identified in the Village A – Base 31 Functional Servicing and Stormwater Management Report by SCS Consulting Group Ltd. dated August 2025 and the Village A – Base 31 Stormwater Management Report by SCS Consulting Group Ltd. dated December 2025. The proposed Village A draft plan of subdivision and the Village A – Southern Medium Density Block Site Plan are provided in **Appendix A**.

The purpose of this report is to demonstrate that the proposed development can be accommodated by the proposed Village A external storm, sanitary and water infrastructure and to demonstrate that it can be graded and serviced in accordance with the Ontario Building Code, Prince Edward County, Quinte Conservation and the Ministry of Environment, Conservation and Parks (MECP) design criteria.

This report has been prepared in collaboration with RA Engineering Inc. and DLW Engineering Ltd. with regard to the mechanical aspects of water and wastewater facilities.

1.2 Proposed Development

The proposed development is approximately 1.42 ha and is bound by County Road 22 to the west, Kingsley Road and the Base 31 Revitalization District to the south, the proposed Village A residential Draft Plan of Subdivision to the east and a future phase, Phase 2, of the Village A – Southern Medium Density Block to the north. The proposed development lands are currently vacant. Refer to **Figure 1.1** for the subject site in context of its surroundings.

Figure 1.1: Site Location Plan

The proposed development is approximately 1.42 ha in size and is proposed to consist of a 120 unit seven-storey residential rental building with surface parking fronting County Road 22 and two blocks of freehold townhomes consisting of 4 units in each block fronting Kingsley Road, (refer to the Site Plan in **Appendix A**). Access to the proposed development is proposed from County Road 22 and Kingsley Road.

1.3 Background Servicing Information

A pre-consultation meeting with Prince Edward County was completed for this application on January 12, 2026 and comments were provided to the applicant via email. Refer to **Appendix B1** for the pre-consultation meeting summary.

The following design guidelines and standards were used in preparation of the servicing, grading and stormwater management (SWM) strategies for the proposed development:

- Sanitary, Storm and Water Systems Design Manual, prepared by the County of Prince Edward, March 2023;
- Grading and Drainage Manual, prepared by the County of Prince Edward, March 2023;
- Transportation Design Manual, prepared by the County of Prince Edward, March 2023;
- Ministry of Environment, Conservation, and Parks (MECP) Environmental Compliance Approval for a Municipal Stormwater Management System (April 2022);
- Quinte Conservation Stormwater Management Submission Guidelines, Quinte Conservation (May 2012);
- Bay of Quinte Remedial Action Plan (BQRAP) Implementation Area Stormwater Management Design Guidelines (Revised March 2006);
- Stormwater Management Planning and Design Manual, prepared by Ministry of Environment (March 2003); and
- The Ontario Building Code (2024).

The following documents were used in preparation of the servicing, grading and SWM strategies for the proposed development:

- Water Distribution Analysis Report for the Proposed Interim Historic District, Phase 1 of Rental Unit and Phase 1 of Village A Development, prepared by RA Engineering, dated February 18, 2026;
- Geotechnical Investigation; Building A – Village A Development, Southern Medium Density Block, prepared by Gemtec, dated February 3, 2026;
- Fire Flow Memorandum – The Base 31 Revitalization District, prepared by DLW Engineering Services, dated February 2026;
- Letter re: Stormwater Management Pond Outfall Target Flow, prepared by SCS Consulting Group Ltd., dated February 2026
- Picton Heights Booster Pumping Station Upgrades Design Report, prepared by DLW Engineering Services, dated December 2025;
- Base31 Subdivision – Village A – Phase 1, Draft Plan of Subdivision 13-T-24-504 Civil Engineering Design Drawings, prepared by SCS Consulting Group, dated December 2025;

- Village A – Base 31 Stormwater Management Report, prepared by SCS Consulting Group, dated December 2025; and
- Village A – Base31 Functional Servicing and Stormwater Management Report, prepared by SCS Consulting Group, dated August 2025.

2.0 Geotechnical and Hydrogeological Conditions

Gemtec has completed a geotechnical investigation for the proposed rental building development entitled Geotechnical Investigation – Building A – Village A Development, dated February 3, 2026 include here as **Appendix B2**. The information in this section of the report is derived from Gemtec's report.

The site is located within the physiographic region of southern Ontario, known as the Prince Edward Peninsula. This region consists of clays, sandy/silty sands and till deposits and is underlain, specifically in the subject site, by Palaeozoic bedrock.

As noted in the Geotechnical Investigation (Gemtec, 2026), the geotechnical and hydrogeological information for the proposed rental building development is derived from the previously conducted investigation that was completed for the larger development area of Village A which was carried out in July to August 2024. This investigation included the advancement of 18 boreholes and 47 test pits throughout the Village A Draft Plan limits. Monitoring wells were installed on 7 of the 18 boreholes to monitor groundwater levels. Of the 18 completed boreholes, BH24-3, BH24-4 and BH24-17 are considered the most relevant to the proposed rental building development. BH24-4 and BH24-17 had monitoring wells installed within them.

The subsurface conditions at the site generally consist of topsoil (50 mm to 125 mm), overlying silty sand to silt sand and gravel, overlying the weathered bedrock. Bedrock was encountered at depths ranging from 0.30 mbgs to 1.6 mbgs.

The groundwater levels recorded in monitoring wells BH24-4 and BH24-17, were recorded at depths ranging from 2.8 to 3.9 mbgs (137.6- 140.8m). Groundwater levels at the site are anticipated to vary between and beyond borehole locations, and fluctuate on a seasonal basis.

As noted in the Geotechnical Report (Gemtec, 2026), dewatering requirements will be dependent on excavation depths, construction methodologies and the groundwater levels at the time of construction. Should pumping volumes exceed 50,000 L/day, an application under the Environmental Activity Section Registry of the Ministry of Environment Conservation and Parks should be submitted.

3.0 Topography and Grading

3.1 Existing Conditions Topography

An existing topographic survey has been completed by Schaeffer Dzaldov, dated May 1st, 2023. A copy of this survey has been included in **Appendix B3** for reference.

The existing topography of the proposed development has gradients in the range of 0.50% to 8.00% and generally slopes from its highest point at the southeast corner, located along Kingsley Road, to its lowest point at the northwest corner, located along County Road 22. The ground surface elevations through the proposed development range from approximately 147.25 m adjacent to Kingsley Road, to approximately 140.75 m adjacent to County Road #22.

3.2 Proposed Conditions Site Grading

In general, the site is graded in a manner which satisfies the following criteria:

- Satisfy lot and site plan grading best practices including:
  - Minimum Parking Lot Grade: 0.5%
  - Maximum Parking Lot Grade: 5.0%
  - Maximum Parking Lot Driveway Entrance Grade: 8.0%
  - Minimum Lot Grade: 2%
  - Maximum Lot Grade: 5%
- Provide continuous site grades for overland flow conveyance;
- Minimize the need for retaining walls;
- Minimize the volume of earth to be moved and minimize cut/fill differential;
- Achieve the stormwater management objectives required for the site; and
- Meet all applicable Accessibility for Ontarians with Disabilities Act, 'AODA' guidelines and standards.

The grading design for the proposed development is provided on the site Grading Plan (**Drawing GR-1**). The proposed development has been graded with an emphasis on minimizing the required cut and on-site excavations in consideration the bedrock present on the subject site.

4.0 Storm Drainage

4.1 Existing Conditions

4.1.1 Storm Drainage

Under existing conditions, the subject lands generally drain northwesterly overland towards County Road 22, where flows are conveyed via the easterly road side ditch to an existing 400 mm diameter culvert. Refer to Catchments 101 and 102 on **Figure 4.1**. Drainage then crosses County Road 22, and is conveyed within a swale towards the top of the valley slope, ultimately draining to Marsh Creek.

A small portion of the southeast corner of the site adjacent to Kingsley Road drains overland towards Kingsley Road, and is conveyed easterly through the road side ditch, ultimately to East Lake. Refer to Catchment 103 on **Figure 4.1**.

Refer to **Figure 4.1** for the existing conditions drainage area plan.

4.1.2 Storm Servicing

Currently, there are no storm sewer services present within, or adjacent to the subject site. However, the proposed development is part of the greater Village A Draft Plan of Subdivision, for which there is a storm sewer proposed within the Street 'K' right-of-way to service the subject development. This storm sewer has been sized to accommodate the 5 year design storm flow from the proposed development. Refer to **Appendix B4** for the Storm Sewer Drainage Plans and Storm Sewer Design Sheets (SSDS) for Village A.

4.2 Proposed Conditions

4.2.1 Storm Drainage

Drainage from Phase 1 of the proposed development, will ultimately drain via minor and major systems through Phase 2 of the proposed development towards Street K and the Village A – Phase 1 Stormwater Management (SWM) Facility. Until such time as Phase 2 is designed and constructed, there is an interim condition whereby major system drainage from Phase 1 will not be able to flow overland towards the SWM Facility. As such an interim storm drainage strategy is required as described below. Refer to **Figure 4.2** for an illustration of the proposed interim drainage conditions.

During the interim condition, runoff for all storm events, up to and including the 100 year storm event, from Catchment 201 (refer to **Figure 4.2**) will be captured within Phase 1 and conveyed through the proposed storm sewer system, discharging to MH47 within Street 'K'.

Until Phase 2 of the proposed development develops, runoff from Catchment 202 (i.e. Phase 2) will continue draining northwesterly towards County Road 22, where it will be conveyed via the road side ditch to the existing culvert crossing, as it does under existing conditions.

Runoff from Catchment 203 (refer to **Figure 4.2**) will also drain overland though the roadside ditch of County Road 22.

A culvert is required at the proposed entrance to the subject development from County Road 22 to convey flows from Catchment 203 northerly within the eastern ditch towards to the existing culvert crossing County Road 22. A 400 mm diameter HDPE driveway culvert has been sized in accordance with the County Standards. Refer to **Appendix C** for sizing calculations and Servicing Plan (**Drawing S-1**) for the location of the culvert.

4.2.2 Storm Servicing

4.2.2.1 Minor System

The private storm sewer system (minor system) within the proposed development will be designed for the 5-year return period storm event for the proposed development. The storm sewers are proposed to drain through the future Phase 2 lands connecting to MH47 within Street 'K' (refer to **Drawing S-1**).

The storm sewer system has been designed in accordance with the County Standards, Ontario Building Code and MECP guidelines, including the following:

- Minimum Pipe Size: 300 mm diameter
- Maximum Flow Velocity: 6.0 m/s
- Minimum Flow Velocity: 1.0 m/s
- Minimum Pipe Depth: 1.5 m to obvert

The private storm sewer network will collect roof drainage and the majority of the parking lot runoff via several catchbasins throughout the site.

The storm sewers and catchbasin leads within the site will have slopes ranging between 0.35% and 5% (typical) and are kept shallow to minimize fill activities on-site. Refer to **Appendix D** for the proposed storm sewer design sheet for the private site plan.

4.2.2.2 Major System

Under interim conditions until such time as Phase 2 of the proposed development is developed, the major system flows (above the 5 year storm event) from the proposed development, i.e. Phase 1 of the proposed development, will be conveyed overland to

an interim 100 year capture point within the site at CBMH86, refer to **Drawing S-1**. The 100 year flows will be captured and conveyed from this point through the proposed storm sewer to MH47 within Street 'K' of the Village A development and ultimately discharging to the Village A SWM Facility. The 100 year catchbasin capture calculations have been included in **Appendix D**.

Upon the development of Phase 2 of the proposed development, major system flows from Phase 1 will be conveyed overland through Phase 2 to Street 'K'. The storm sewer system will convey the 5 year flows from both phases to MH47 within Street 'K', where flows will be conveyed to the Village A SWM Facility through the minor system. Major flows from the proposed development will be conveyed overland to Street 'K', where flows will be directed to the Village A SWM Facility via the overland flow route. Further details on the proposed development Phase 2 storm servicing will be provided under a separate Site Plan application. Refer to Village A – Base 31 Stormwater Management Report by SCS Consulting Group Ltd., dated December 2025 for more information on the minor and major system design for Village A (**Appendix B4**).

5.0 Stormwater Management

5.1 Village A – Base 31 Stormwater Management Facility

As discussed in the Village A – Base 31 Stormwater Management Report by SCS Consulting Group Ltd., dated December 2025 and the subsequent letter re: Stormwater Management Pond Outfall Target Flow, prepared by SCS Consulting Group Ltd., dated February 2026, the Village A SWM Facility has been sized to provide quality, erosion and quantity controls for Catchment 2101 which includes the subject development, as illustrated on the Post Development Drainage Plan included in **Appendix B4**.

An analysis of the proposed imperviousness based on the Site Plan for Phase 1 of the proposed development was completed to ensure the Village A SWM facility has been designed with sufficient capacity to accommodate the development. Originally, as part of the design of the Village A SWM facility, the overall weighted percent imperviousness of the drainage area contributing to the SWM Facility was determined utilizing a percent imperviousness applied to each land use based on the proposed draft plan. A percent imperviousness of 85% was applied to the entire 2.96 ha area for the proposed development, resulting in an allowable Area x Imperviousness (A x I) value of 2.52 contributing to the SWM Facility. Refer to **Appendix B4** for the proposed parameter sheet used to size the Village A SWM Facility.

A measured percent imperviousness based on the proposed Site Plan and interim drainage conditions for Phase 1 has now been determined, refer to **Appendix C** for supporting calculations. The proposed drainage area contributing to the Village A SWM Facility under interim conditions is 1.38 ha with a measured imperviousness of 79%, resulting in a proposed A x I value of 1.09 contributing to the SWM Facility in the interim condition.

The proposed A x I value of the area contributing to the SWM Facility from the proposed development in the interim conditions of 1.09 is therefore less than the allocated A x I value of 2.52. The proposed SWM Facility therefore has adequate capacity to meet the quality, erosion and quantity control criteria established in the Village A – Base 31 Stormwater Management Report by SCS Consulting Group Ltd. dated December 2025 along with the updated target flows established in the letter re: Stormwater Management Pond Outfall Target Flow, prepared by SCS Consulting Group Ltd., dated February 2026.

Based on the current understanding of the The proposed development Phase 2 Site Plan, it has been established that an additional 0.92 ha with an imperviousness of 88% will ultimately contribute to the Village A SWM Facility. The A x I value ultimately contributing to the SWM Facility will therefore be 1.89, and as such the Village A SWM Facility will have the capacity to provide the SWM controls under the ultimate

conditions. The drainage contributing to the SWM Facility under ultimate conditions once Phase 2 of the proposed development develops will be further evaluated and confirmed through the separate Site Plan Application for these lands.

5.2 Onsite Quantity Controls

As noted above, the SWM facility has adequate capacity to provide the required SWM controls in the interim (Phase 1 only) and ultimate (Phase 1 and 2) conditions. However, the storm sewers within the Village A – Phase 1 development, have been sized to accommodate the 5 year flows generated by all of the proposed development, Phase 1 and 2; however, it is proposed to capture the 100 year flows from Phase 1 within the storm sewer for Phase 1. The 100 year peak flows generated by Phase 1 have been evaluated to ensure the capacity allocated to the storm sewer within Street 'K' is not exceeded. The capacity allocated to the storm sewer within Street 'K' at MH 47 to convey 5 year flows from the proposed development to the SWM Facility is 296 L/s. Refer to **Appendix B4** for the Village A SSDS.

Using the Rational Method, measured runoff coefficients based on the proposed Site Plan, Prince Edward County rainfall intensity information and the time of concentration established in the SSDS for flows entering MH47 from the proposed development, the 100 year peak flow generated by Phase 1 under the interim condition was determined to be 340 L/s. The proposed flows exceed the capacity allocated to the Street 'K' storm sewer system from the proposed development. Onsite controls are therefore required under the interim condition, until such time as the The proposed development Phase 2 lands develop, and the major system flows can be conveyed overland to the Village A SWM Facility. Refer to **Appendix D** for the The proposed development SSDS.

Onsite controls are proposed to be provided through a temporary 310 mm diameter orifice plate placed on the southwestern opening of MH47 within Street 'K', to control flows to be less than or equal to 296 L/s at a maximum ponding elevation of 143.14 m. Using the Modified Rational Method, it was determined that approximately 49 m^3 of storage is required to control the proposed 100 year flow to 295 L/s. This storage is proposed to be provided within the storm sewers and underground structures (maintenance holes/catchbasins). Based on the proposed servicing, as illustrated on **Drawing S-1**, 56 m^3 of storage is available within the storm sewer system and underground structures at a ponding elevation of 143.14 m. The proposed flows from the subject site in the interim condition will therefore not exceed the allowable release rate of 296 L/s allocated to the Street 'K' storm sewer from the proposed development. Supporting calculations are included in **Appendix C**.

Ultimately, as Phase 2 of the Site Plan develops, the orifice plate will be removed to allow for the minor storm sewer system to drain to the MH47 uncontrolled, with major

flows being conveyed overland. Further discussion will be provided with a separate Site Plan Application for Phase 2.

Sanitary Servicing

5.3 Existing Sanitary Servicing

As identified on the site Servicing Plan (**Drawing S-1**), the Village A – Base31 Functional Servicing and Stormwater Management Report (**Appendix B5**) and the Base31 Subdivision – Village A – Phase 1 Civil Engineering Design Drawings plan and profiles (**Drawings 426-431, Appendix B6**), the sizes and locations of the existing sanitary infrastructure surrounding the proposed development are:

- An existing 75mm and 200 mm diameter private sanitary force main flowing north on County Road 22 from the existing private sanitary pump station located at the south end of the Revitalization District, to just north of London Avenue, where it connects to an existing 200 mm diameter municipal gravity sanitary sewer. The existing 200 mm diameter municipal gravity sanitary sewer conveys sanitary flows to the Lalor Sanitary Pump Station and ultimately to the Picton Water Pollution Control Plant;

- The Lalor Sanitary Pumping Station (SPS) located on the east side of Lalor Street, located north of the proposed development; and

- The Picton Water Pollution Control Plant (WWTP) on the west side of Church Street, located north of the proposed development.

There is no existing sanitary connection servicing the proposed development lands.

All existing sanitary flows from the residential area north of the proposed development and Village A lands are conveyed by a 200 mm diameter sanitary sewer across County Road #22 to the Lalor Sanitary Pumping Station (SPS).

From the Lalor SPS, the sanitary flow from all of Picton is pumped to the Picton Water Pollution Control Plant (WWTP), located south of the Lalor SPS.

Both the Lalor Sanitary Pumping Station and Picton Water Pollution Control Plant have existing capacity to accommodate the proposed development as identified in the accepted Village A – Base 31 Functional Servicing and Stormwater Management Report, prepared by SCS Consulting Group, dated August 2025.

The existing sanitary network is also shown on **Figure 5.** below:

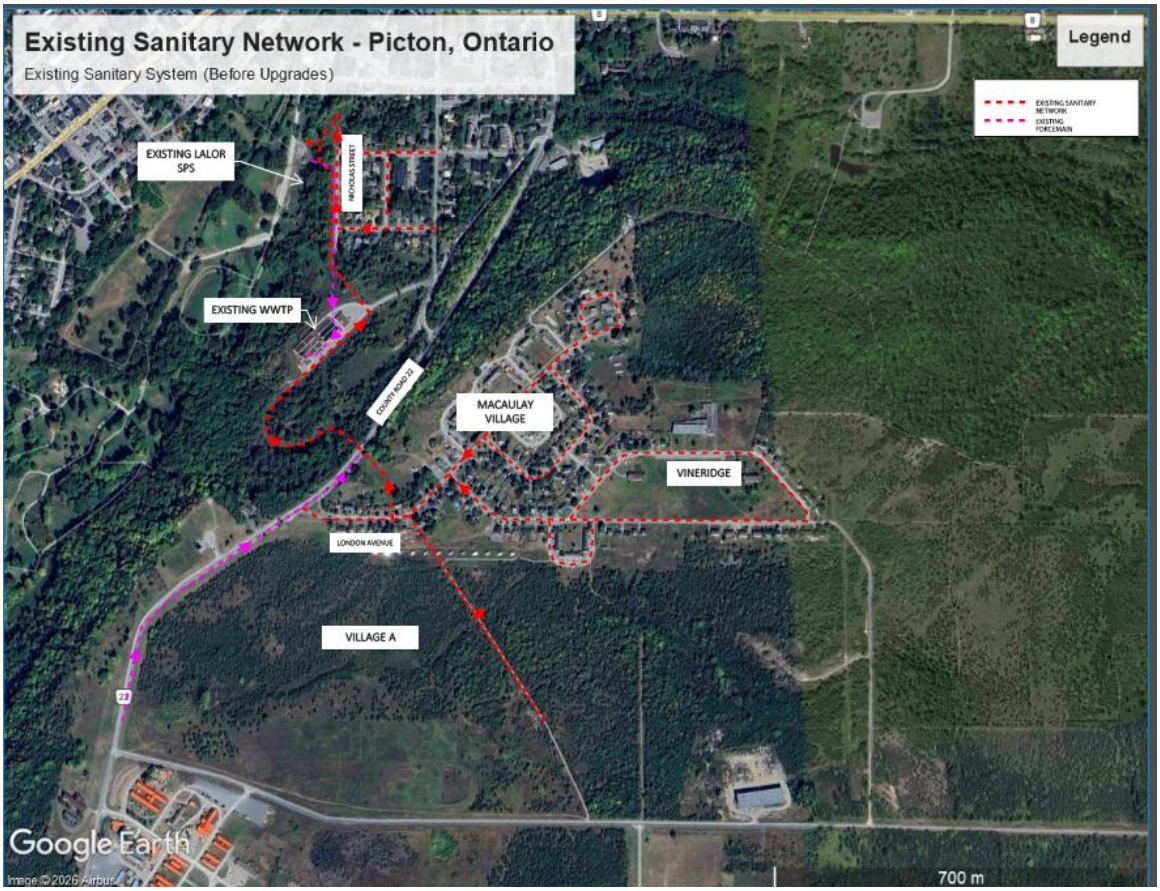


Figure 5.3: **Existing Sanitary System**

5.4 Proposed Sanitary Servicing

As part of the proposed Village A – Phase 1 external sanitary sewer improvements, the existing 75 mm and 200 mm diameter private sanitary force mains on County Road 22 will be decommissioned north of Kingsley Road and replaced with a series of proposed municipal gravity sanitary sewers ranging in diameter from 300 mm to 600 mm. Refer to the Base31 Subdivision – Village A – Phase 1 Civil Engineering Design Drawings plan and profiles (**Drawings 426-431, Appendix B**) for details on the removal and replacement of the existing sanitary infrastructure.

The proposed development will be supplied with the following connections from the proposed 250 mm diameter gravity sanitary sewer on County Road 22, fronting the proposed development:

- A 200 mm diameter municipal gravity sanitary sewer within a proposed municipal easement, to service the 8 freehold townhomes which front Kingsley Road; and

- A proposed 200 mm diameter sanitary service connection for the proposed 7 story rental building.

The proposed connections have been designed in accordance with Prince Edward County and MECP sanitary design criteria including but not limited to that which is identified below, as well as the site statistics (120 apartment rental units and 8 townhomes) for the proposed development as identified on the architectural site plan by Turner Fleischer Architects (**Appendix A**). This results in a total population of 234 with a total flow of 3.54 L/s (including infiltration). Refer to the updated Village A – Phase 1 sanitary design sheet (**DS-1, Appendix G**) for the calculated sanitary flow from the proposed development.

Prince Edward County and MECP sanitary design criteria:

- Slopes ranging between 0.5% and 2% (typically) and will be provided at 3.3 m to 5 m deep.
- Residential Sanitary Generation Rate: 320 L/c/day (excluding extraneous flows)
- Residential Population Density:
  - Medium Density – Triplexes, fourplexes, townhouses - 2.5 PPU.
  - High Density – apartment Dwellings – at the following PPU:
  - Bachelor/1 Bedroom – 1.4 PPU
  - 2 Bedroom – 2.1 PPU
- Peaking Factor: Harmon (Min 2.0)
- Infiltration Rate: 0.28 L/s/ha
- Minimum pipe size: 200 mm diameter in residential areas
- Minimum pipe cover: 2.5 below centerline road elevation to obvert
- Maximum velocity: 3.0 m/s at full flow
- Minimum actual velocity: 0.6 m/s
- Minimum slope (first run): 1.0%

Refer to the, the site Servicing Plan (**Drawing S-1**), the updated Village A – Phase 1 Sanitary Drainage Plan (**Drawing 302**) and updated Village A- Phase 1 Sanitary Design Sheet (**Drawing DS-1**) for the sanitary design for the proposed development.

A total population of 755 people from The proposed development have been accounted for in the Village A – Phase 1 external sanitary improvements on County Road 22 as identified in the accepted Village A – Base 31 Functional Servicing and Stormwater Management Report prepared by SCS Consulting Group dated August 2025 and the sanitary drainage plans and design sheets (**Drawings 302 and 1001, Appendix B6**) in the Base31 Subdivision – Village A – Phase 1, Draft Plan of Subdivision 13-T-24-504 Civil Engineering Design Drawings, prepared by SCS Consulting Group, dated December 2025.

Of the 755 population, Phase 1 of the proposed development will account for a population of only 234. Therefore, there will be sufficient capacity in the proposed Village A – Phase 1 external sanitary improvements to accommodate the proposed development. An updated sanitary drainage plan and design sheet (**Drawing 302 and Drawing DS-1**) for the Village A – Phase 1 subdivision is included in the site plan drawing set which separates the population of the proposed development from the remainder of the proposed development.

6.0 Water Servicing

6.1 Existing Water Servicing

The proposed development is located within the Picton Heights/Macaulay Village pressure zone, which is supplied with water by the Picton Reservoir and Macaulay Village Booster Pumping Station and Picton Water Treatment Plant located within Picton Bay.

As identified on the site Servicing Plan (**Drawing S-1**), the Village A – Base31 Functional Servicing and Stormwater Management Report (**Appendix B5**) and the Base31 Subdivision – Village A – Phase 1 Civil Engineering Design Drawings plan and profiles (**Drawings 422, 426-431, Appendix B6**) the sizes and locations of the existing water infrastructure surrounding the proposed development are:

- An existing 300 mm diameter private watermain located on the west side of County Road 22 which extends from the Base 31 Revitalization District to the existing Picton Reservoir and Macaulay Village Booster Pumping Station;
- An existing 350 mm diameter municipal watermain located on the west side of County Road 22 which extends from the existing Picton Water Treatment Plant to the Picton Reservoir and Macaulay Village Booster Pumping Station; and
- The existing Picton Reservoir and Macaulay Village Booster Pumping Station (BPS) located on the west side of County Road 22, north-west of the subject site.

There is no existing water connection servicing the proposed development lands.

It should be noted that the existing 300 mm diameter watermain located on the west side of County Road 22, is intended to transition to public ownership with the development of Village A – Phase 1.

6.2 Proposed Water Servicing

As part of the proposed Village A – Phase 1 external watermain improvements, a proposed 300 mm diameter watermain will be constructed on Kingsley Road, extending east from County Road 22 to proposed Street C of the Village A – Phase 1 subdivision. The proposed 300 mm diameter watermain will connect to the existing 300 mm diameter watermain on County Road 22. Refer to the Base31 Subdivision – Village A – Phase 1 Civil Engineering Design Drawings plan and profiles (**Drawing 422, Appendix B6**) for details.

The proposed development will be supplied with the following connections from the proposed 300 mm diameter watermain on Kingsley Road, fronting the proposed development:

- A proposed 200 mm diameter PVC watermain connection for the proposed Rental building; and
- Eight proposed 19 mm diameter type 'K' copper water connections. One for each of the eight proposed townhomes fronting Kingsley Road.

DLW Engineering in partnership with RA Engineering have been retained to prepare a hydraulic model and general assessment of the existing and proposed system. This includes validating domestic and fire flow demands, sizing internal watermains and service connections, and assessing the pressure impacts on the surrounding system. Additionally, the assessment includes an analysis of the residual supply and storage capabilities of the BPS and Heights Reservoir. Results of this model and assessment are provided in the following reports:

- Fire Flow Memorandum – The Base 31 Revitalization District, prepared by DLW Engineering Services, dated February 2026 (**Appendix E1**);
- Water Distribution Analysis Report for the Proposed Interim Historic District, Phase 1 of Rental Unit and Phase 1 of Village A Development, prepared by RA Engineering, dated February 18, 2026 (**Appendix E2**); and
- Picton Heights Booster Pumping Station Upgrades Design Report, prepared by DLW Engineering Services, dated December 2025 (**Appendix E3**).

As identified in the above reports, there is sufficient capacity in the existing and proposed water system to service the proposed development upon the completion of the external watermain improvements which are being constructed as part of the proposed Village A – Phase 1 development. This includes the proposed watermain on Kingsley Road and the upgrade to the existing fire pump in the BPS.

As identified in the Water Distribution Analysis Report prepared by RA Engineering, the proposed water connections for the proposed development have been designed in accordance with Prince Edward County, MECP and OBC water design criteria, including but not limited to that which is identified below, as well as the site statistics (120 apartment rental units and 8 townhomes) for the proposed development as identified on the architectural site plan by Turner Fleischer Architects (**Appendix A**). This results in a total population of 234 with a total water demand of 152.17 L/s (Max Day Demand + Fire). Refer to the Fire Flow Memorandum by DLW Engineering and the Water

Distribution Analysis Report by RA Engineering (**Appendix E1**) for the calculated domestic and fire flow demand for the proposed development.

Prince Edward County, MECP and OBC water design criteria:

- Residential Sanitary Generation Rate: 320 L/c/day
- Residential Population Density:
  - Medium Density – Triplexes, fourplexes, townhouses - 2.5 PPU.
  - High Density – apartment Dwellings – at the following PPU:
  - Bachelor/1 Bedroom – 1.4 PPU
  - 2 Bedroom – 2.1 PPU
- Minimum residential service connection size: 19mm unless distance to main is greater than 30 m than minimum size shall be 25mm
- Minimum pipe cover: 1.8 below finished grade to obvert
- Fire Flow Demands – Ontario Building Code and Office of Fire Marshal (OBC A-3.2.5.7 and OFM TG-03-199)

Refer to the, the site Servicing Plan (**Drawing S-1**) for the proposed watermain layout for the proposed development. Refer to the Village A – Phase 1 Sanitary Drainage Plan (**Drawing 302**) and updated Village A- Phase 1 Sanitary Design Sheet (**Drawing DS-1**) for the sanitary design for the proposed development.

7.0 Utility Considerations

Callidus Engineering, has been retained to prepare the lighting design and coordinate the utility (electrical, gas, telecom) requirements and connections for the proposed development. The details in regard to this information were not yet available at the time this report was prepared. However, upon its availability, the utility design will be coordinated with the civil engineering design to ensure there are no conflicts.

It is understood that all new utilities shall be buried to protect against winter conditions and freezing. It is anticipated that the 8 townhomes will be serviced by a joint utility trench that will be constructed under the proposed 1.5 m wide sidewalk within the proposed municipal easement located within the proposed development immediately north of the townhouse blocks. It is anticipated that the rental building will be serviced by the existing utilities located on County Road 22. Existing utilities shall remain in their current state.

8.0 Erosion and Sediment Control During Construction

Erosion and sediment control measures have been designed with a focus on erosion control practices (such as stabilization, track walking, staged earthworks, etc.) as well as sediment controls (such as fencing, mud mats, catchbasin sediment control devices, check dams and temporary sediment traps). These measures are designed and will be constructed as per the "Erosion and Sediment Control Guideline for Urban Construction" document (December 2019). Detailed erosion and sediment control plans (**Drawings ESC-1 to ESC-4**) have been prepared for the proposed development. The plans address phasing, inspection and monitoring aspects of erosion and sediment control. All reasonable measures will be taken to ensure sediment loading to the adjacent properties and drainage features are minimized both during and following construction.

9.0 Summary

This Servicing and Stormwater Management Report has been prepared in support of the Site Plan Application for the Village A – Southern Medium Density Block located at the north east corner of Kingsley Road and County Road 22 in community of Picton, Prince Edward County. This report outlines the means by which the proposed development can be graded and serviced in accordance with the Prince Edward County, Quinte Conservation Authority, the Ministry of Environment, Conservation and Parks and the Ontario Building Code design criteria and policies.

Grading

- The proposed development grading has been developed to match to the existing surrounding grades, and provide conveyance of stormwater runoff, including external drainage.
- The proposed development has been graded with an emphasis on minimizing the required cut and on-site excavations in consideration the bedrock present on the subject site.

Storm Drainage and Servicing

- Storm runoff will be conveyed by storm sewers designed in accordance with Municipality and MECP criteria.
- Storm sewers have been designed to capture and convey the 5 year storm event.

Stormwater Management

- The Village A SWM Facility has been sized to provide quality, erosion and quantity controls for Catchment 2101 which includes the subject development;
- The release rate allocated to the receiving storm sewer system with Street ‘K’ from the proposed development is 296 L/s;
- Under interim conditions flows up to the 100 year storm event will be captured onsite, and released to the storm sewer within Street ‘K’, exceeding the allowable release rate;
- A temporary 310 mm diameter orifice is provided in MH47, controlling flows to a maximum release rate of 295 L/s at a ponding elevation of 143.14 m;
- The storage required to control flows to the target release rate is 49 m^3, a total of 56 m^3 of storage is provided within the storm sewer and underground structures at this ponding elevation.

Sanitary Servicing

- A proposed 200 mm diameter municipal gravity sanitary sewer within a proposed municipal easement will extend from County Road 22 and will service the 8 freehold townhomes which front Kingsley Road.
- A proposed 200 mm diameter sanitary service connection from County Road 22 will be provided for the proposed 7 story rental building.
- There will be sufficient capacity in the proposed Village A – Phase 1 external sanitary improvements to accommodate the proposed development.

Water Supply and Distribution

- A proposed 200 mm diameter PVC watermain connection will be provided for the proposed Rental building from the proposed 300 mm diameter municipal watermain on Kingsley Road.
- Eight proposed 19 mm diameter type 'K' copper water connections. One for each of the eight proposed townhomes fronting Kingsley Road will be provided from the proposed 300 mm diameter municipal watermain on Kingsley Road.
- RA Engineering and DLW Engineering has prepared an assessment of the existing and proposed system and has determined there is sufficient capacity to service the proposed development upon the completion of the external watermain improvements which are being constructed as part of the proposed Village A – Phase 1 development. This includes the proposed watermain on Kingsley Road and the upgrade to the existing fire pump in the BPS.

Utility Considerations

- Callidus Engineering, has been retained to prepare the lighting design and coordinate the utility (electrical, gas, telecom) requirements and connections for the proposed development.
- The details in regard to this information were not yet available at the time this report was prepared. However, upon its availability, the utility design will be coordinated with the civil engineering design to ensure there are no conflicts.

Erosion and Sediment Control during Construction

- An erosion and sediment control plan has been prepared in accordance with the "Erosion and Sediment Control Guideline for Urban Construction" document (December 2019).

Respectfully Submitted:

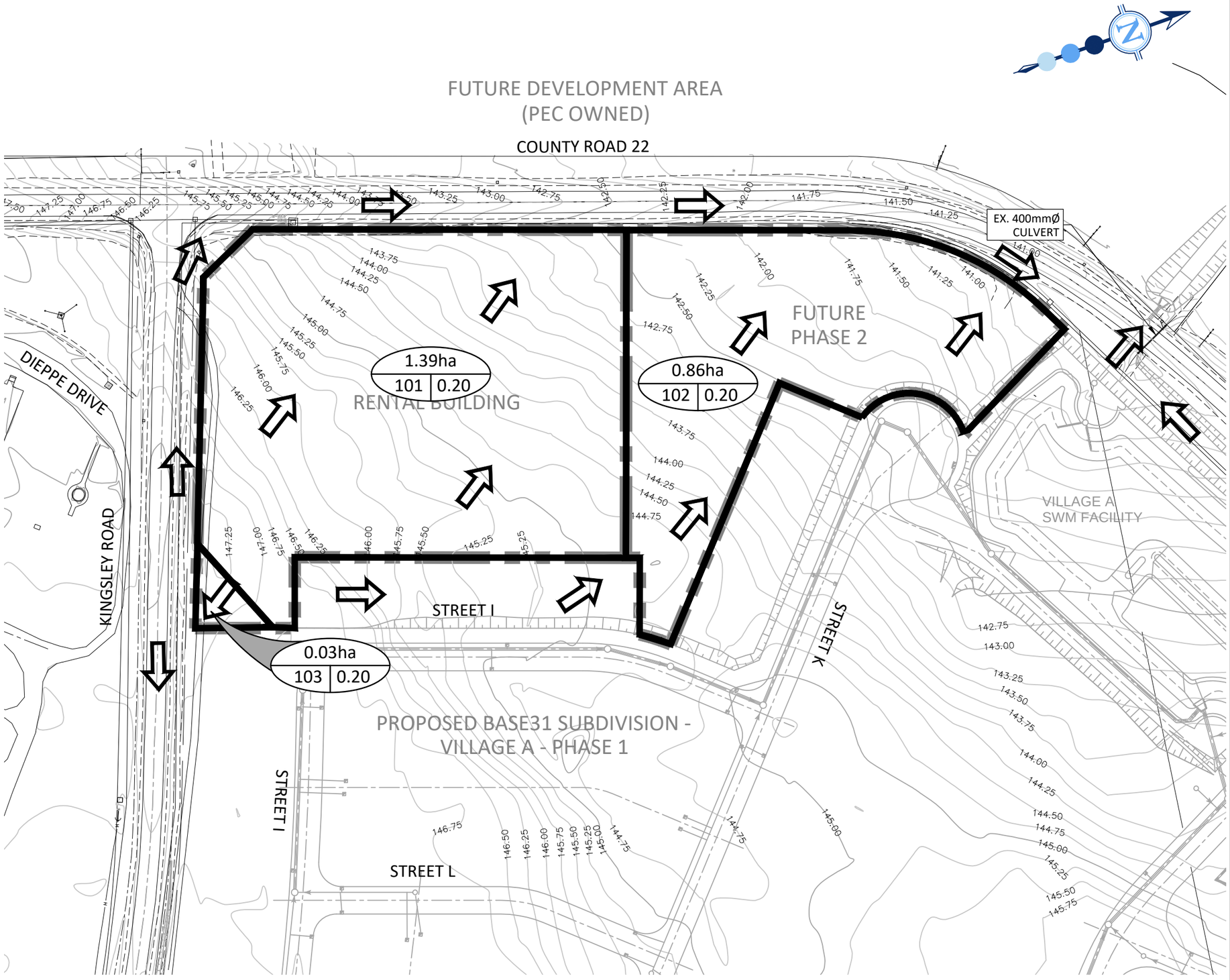
SCS Consulting Group Ltd.

Ryan Brockie, P.Eng
rbrockie@scsconsultinggroup.com

Cosimo Costa, P.Eng
ccosta@scsconsultinggroup.com

P:\2365 Picton Airport - Tercot\Design\Reports\FSSR\Rental Unit\2026 02(Feb) 26 - 2365B - Site Servicing and SWM Report.docx

Figures



LEGEND:

- LIMIT OF DEVELOPMENT
- LIMIT OF PHASE
- STORM DRAINAGE BOUNDARY
- 142.00 — EXISTING CONTOUR AND ELEVATIONS
- MAJOR SYSTEM - OVERLAND FLOW
- 1.95ha / 301 | 0.70 — DRAINAGE AREA (HECTARES), RUNOFF COEFFICIENT, CATCHMENT ID

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

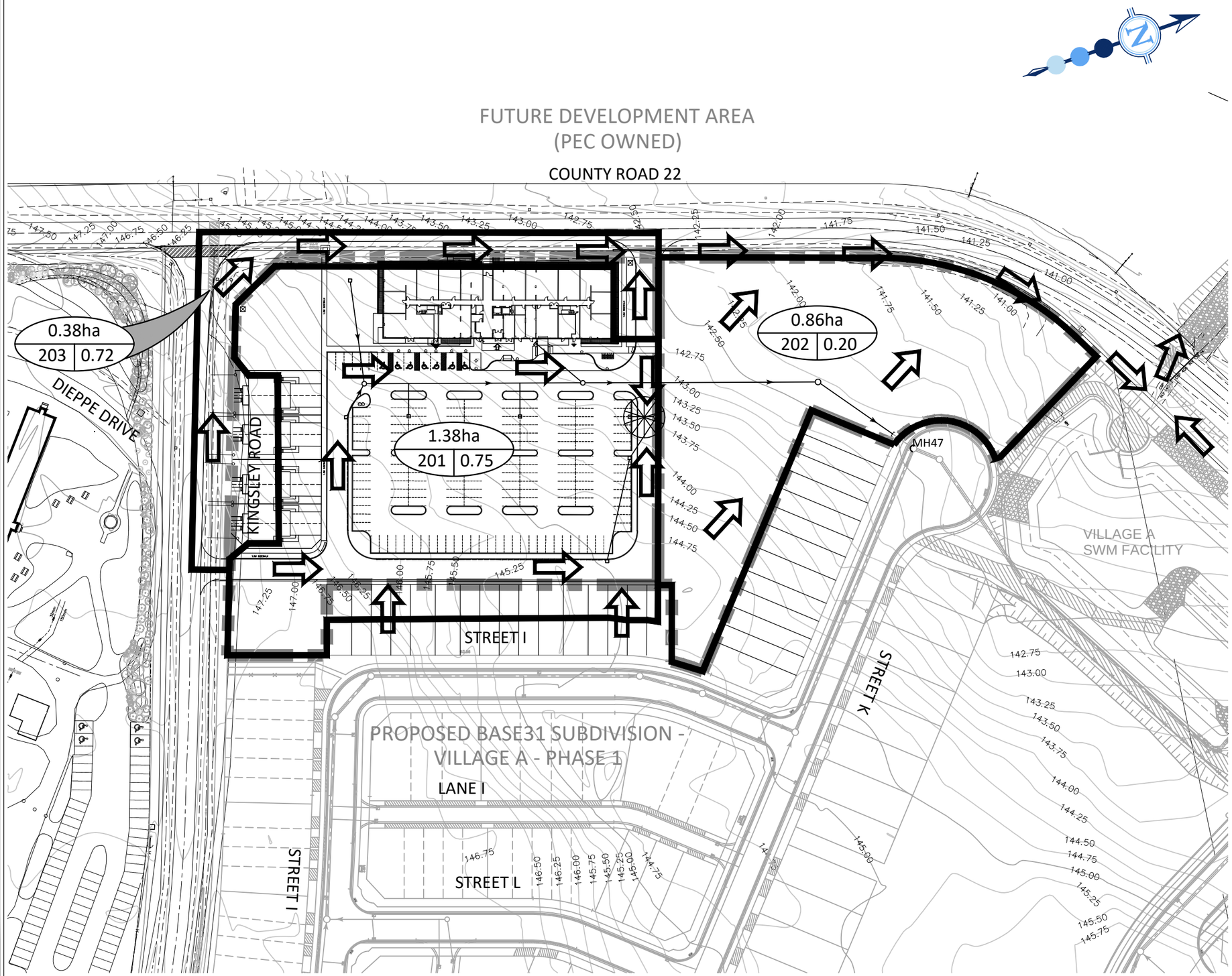
PEC COMMUNITY PARTNERS INC.

VILLAGE A - RENTAL BUILDING

EXISTING STORM DRAINAGE PLAN

DESIGNED BY:	R.B.	CHECKED BY:	A.K.
SCALE:	1:1250	DATE:	FEBRUARY 2026
PROJECT No:	2365B	FIGURE No:	4.1

File: P:\2365 Picton Airport – Tercot\Drawings\Village A – Rental Building\Swm\Report Figures\2365D–4.1–STRM–EXST.dwg – Revised by <DDILAY> : Fri, Feb 27 2026 – 9:45am



LEGEND:

- LIMIT OF DEVELOPMENT
- LIMIT OF PHASE
- STORM DRAINAGE BOUNDARY
- 142.00 — EXISTING CONTOUR AND ELEVATIONS
- MAJOR SYSTEM - OVERLAND FLOW
- 1.95ha / 301 | 0.70 — DRAINAGE AREA (HECTARES), RUNOFF COEFFICIENT, CATCHMENT ID
- PROPOSED STORM SEWER
- 100 YEAR CAPTURE LOCATION

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

PEC COMMUNITY PARTNERS INC.

VILLAGE A - RENTAL BUILDING

PROPOSED STORM DRAINAGE PLAN

DESIGNED BY:	R.B.	CHECKED BY:	A.K.
SCALE:	1:1250	DATE:	FEBRUARY 2026
PROJECT No:	2365B	FIGURE No:	4.2

File: P:\2365 Picton Airport – Tercot\Drawings\Village A – Rental Building\Swm\Report Figures\2365D–4.2–STRM–PROP.dwg – Revised by <DDILAY> : Fri, Feb 27 2026 – 9:55am

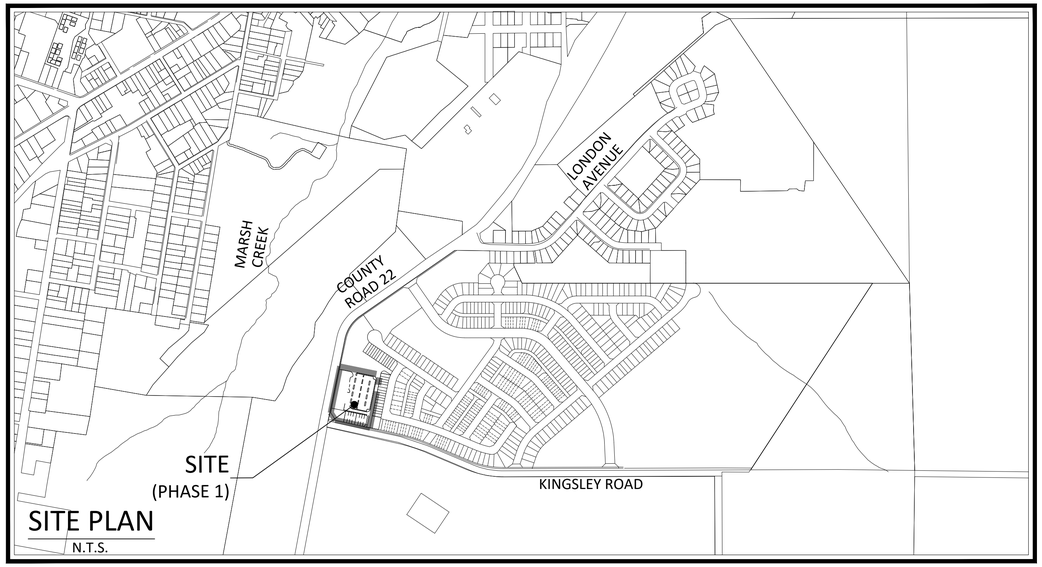
Drawings

SCS consulting group ltd

VILLAGE A - SOUTHERM MEDIUM DENSITY BLOCK - PHASE 1

DRAFT PLAN OF SUBDIVISION 13-T-24-504

PRINCE EDWARD COUNTY



SITE PLAN
N.T.S.

SITE PLAN APPLICATION - FIRST SUBMISSION

DATE: FEBRUARY 2026

SCS PROJECT No. 2365B

DRAWING LIST

N-1	GENERAL NOTES
S-1	SERVICING PLAN
STRM-1	STORM DRAINAGE PLAN (RENTAL BUILDING SITE PLAN)
201	STORM DRAINAGE PLAN 1 (SUBDIVISION)
302	SANITARY DRAINAGE PLAN 2 (SUBDIVISION)
GR-1	GRADING PLAN 1
ESC-1	EROSION AND SEDIMENT CONTROL STAGE 1
ESC-2	EROSION AND SEDIMENT CONTROL STAGE 2
ESC-3	EROSION AND SEDIMENT CONTROL NOTES
ESC-4	EROSION AND SEDIMENT CONTROL DETAILS
D-1	DETAILS PLAN 1
D-2	DETAILS PLAN 2
D-3	DETAILS PLAN 3
DS-1	DESIGN SHEET - SANITARY
DS-2	DESIGN SHEET - 5 YEAR STORM (RENTAL BUILDING SITE PLAN)
DS-3	DESIGN SHEET - 100 YEAR STORM (RENTAL BUILDING SITE PLAN)
DS-4	DESIGN SHEET - 5 YEAR STORM (SUBDIVISION)

SUBMISSIONS				
No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

DESIGNED BY:	V.S./Y.A.	CHECKED BY:	V.S./C.C.
DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

Date

CONSULTING ENGINEER:

SCS CONSULTING GROUP LTD.
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

OWNER:

PEC COMMUNITY PARTNERS INC.
570 APPLEWOOD CRESCENT
VAUGHAN, ONTARIO L4K 4B4
TEL: (905) 907-0300

MUNICIPALITY:

332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

File: P:\2365 Picton Airport – Tercot\Drawings\Village A – Rental Building\Gen\2365D-0000-VRNT-COVR.dwg – Revised by <TMCNEIL> : Tue, Feb 17 2026 – 4:26pm

GENERAL NOTES

1. PRIOR TO STARTING ANY WORKS, THE CONTRACTOR SHALL ENSURE THAT ALL NECESSARY APPROVALS ARE IN PLACE FROM THE COUNTY AND ALL OTHER APPLICABLE AGENCIES AS REQUIRED.
2. THE NOTES ON THIS DRAWING APPLY TO ALL WORKS UNDER THIS CONTRACT UNLESS OTHERWISE NOTED ON THE PLAN AND PROFILE DRAWINGS AND/OR SPECIFIC DETAIL DRAWINGS.
3. A PRE-CONSTRUCTION MEETING MUST BE HELD WITH THE MUNICIPAL ENGINEER OR THEIR DESIGNATE BEFORE ANY WORKS BEGIN ON-SITE.
4. ALL MUNICIPAL WORKS SHALL BE IN ACCORDANCE WITH CURRENT PRINCE EDWARD COUNTY STANDARD DRAWINGS (PSD) & ONTARIO PROVINCIAL STANDARDS (OPSD). ORDER OF PRECEDENCE SHALL BE FIRSTLY "PSD" AND SECONDLY "OPSD".
5. ALL WORK WITHIN PRIVATE PROPERTY SHALL BE IN ACCORDANCE WITH THE CURRENT ONTARIO BUILDING CODE (OBC), PRINCE EDWARD COUNTY STANDARDS (PSD) AND ONTARIO PROVINCIAL STANDARDS (OPSD)
6. ALL CONSTRUCTION WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA) AND REGULATIONS.
7. VERIFY LOCATION, DIMENSIONS AND ELEVATIONS OF ALL EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION. EXISTING INFRASTRUCTURE TO BE PROTECTED AND/OR SUPPORTED DURING CONSTRUCTION. DISCREPANCIES BETWEEN THE DRAWINGS AND FIELD CONDITIONS TO BE IMMEDIATELY REPORTED TO THE CONSULTING ENGINEER.
8. LOCATION OF SERVICES ARE NOT GUARANTEED. THE CONTRACTORS SHALL NOTIFY VARIOUS UTILITY COMPANIES AS PER REQUIREMENTS PRIOR TO COMMENCEMENT OF ANY WORKS.
9. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND HE SHALL REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER IMMEDIATELY. DETAILS SHOWN THESE DRAWINGS SHALL NOT BE SCALED. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE NOTED.
10. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM), BOOK 7 – TEMPORARY CONDITIONS.
11. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, AT NO COST TO THE COUNTY.
12. ALL SILT CONTROL AND EROSION PROTECTION DEVICES SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE AND THE GRASS HAS ESTABLISHED GROWTH, SUBJECT TO APPROVAL BY THE CONSULTING ENGINEER.
13. THE CONTRACTOR SHALL PROTECT THE EXISTING ROADWAY OR UNDERGROUND UTILITIES FROM DAMAGE BY PROVIDING PROPER METHOD OF OPERATIONS. CONSTRUCTION FOR SHORING, BRACING AND PROTECTION MEASURES SHALL CONFORM TO RELEVANT ONTARIO PROVINCIAL STANDARD SPECIFICATIONS & DRAWINGS (OPSS & OPSD).
14. REFER TO GEOTECHNICAL INVESTIGATION REPORT FOR ALL GEOTECHNICAL INFORMATION INCLUDING BUT NOT LIMITED TO REQUIREMENTS FOR COMPACTION, BACKFILL MATERIAL, BEDDING MATERIAL, GROUNDWATER, EXCAVATION, ETC.
15. A ROAD OCCUPANCY PERMIT SHALL BE REQUIRED PRIOR TO COMMENCEMENT OF WORKS WITHIN THE MUNICIPAL ROW.
16. NATIVE MATERIAL, SUITABLE FOR BACKFILL, SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY OR AS SPECIFIED IN THE APPROVED GEOTECHNICAL REPORT.
17. GRANULAR MATERIAL, USED FOR BACKFILL, SHALL BE PLACED IN LAYERS 150mm MAXIMUM THICKNESS, AND COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY OR AS SPECIFIED IN THE APPROVED GEOTECHNICAL REPORT.
18. ALL DISTURBED AREAS SHALL BE REINSTATED TO THEIR ORIGINAL CONDITION OR BETTER, AS DETERMINED BY THE CONSULTING ENGINEER.
19. PARKLANDS SHALL BE KEPT FREE OF DELETERIOUS MATERIAL THROUGHOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES.
20. ALL AREAS TO BE LANDSCAPED e.g.BOULEVARDS, TRAFFIC ISLANDS, DITCHES, ETC. SHALL BE FREE OF DELETERIOUS MATERIAL PRIOR TO INSTALLATION OF WORKS.
21. PARKLANDS SHALL NOT BE USED AS STORAGE OR STOCKPILING AREAS.
22. THE LATEST COUNTY DESIGN CRITERIA SHALL BE REFERRED TO FOR ALL DESIGN/CONSTRUCTION STANDARDS TO ENSURE COMPLIANCE.

GRADING AND ROADWORKS

1. CURB TERMINATIONS SHALL EITHER BE JOINED TO EXISTING CONCRETE CURBS OR TERMINATED AS PER OPSD 608.010.
2. THE MINIMUM GUTTER GRADIENT SHALL BE 0.5%.
3. CONSTRUCTION OF CONCRETE SIDEWALK SHALL CONFORM WITH OPSD 310 AND OPSS.MUNI 351
4. RAMPS AND "RADIUS TYPE" TACTILE PLATES SHALL BE PROVIDED AT ALL INTERSECTIONS OF CONCRETE SIDEWALK WITH CURB, AS THE ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT 2005. COUNTY TO SPECIFY PREFERRED TACTILE PLATE MANUFACTURER/PRODUCT.
5. ALL WALKWAYS SHALL BE CONFORM WITH ACCESSIBIUTY FOR ONTARIANS WITH DISABILITIES ACT (AODA). WALKWAYS SHALL BE A MINIMUM OF 1.5m WIDE. WALKWAYS SHALL BE RAISED 0.15m EXCEPT AT ACCESSIBLE PARKING STALLS AND HARD SURFACED WITH MATERIAL OTHER THAN ASPHALT TO ENSURE PEDESTRIANS CAN DISTINGUISH FROM PARKING AREA.
6. ALL TOPSOIL AND ORGANIC MATERIAL WITHIN THE SITE SHALL BE STRIPPED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
7. SUBDRAINS SHALL BE INSTALLED THE FULL LENGTH UNDER ALL CURB TO WHICH WATER IS DIRECTED, AS IDENTIFIED ON THE SERVICING PLAN (S-1), IN ACCORDANCE WITH STANDARD DRAWING PSD-026. CONTRACTOR TO ENSURE THAT THE SUBGRADE IS GRADED TO PROVIDE POSITIVE DRAINAGE TO THE SUBDRAINS AND THAT THE SUBDRAINS OUTLET INTO CATCHBASINS.
8. SUBDRAINS SHALL BE INSTALLED ON ALL CATCHBASINS AND CATCHBASIN MANHOLES LOCATED AT SAGS/LOW POINTS AS PER DETAIL ON DRAWING D-3.
9. PAVEMENT DESIGN (THE ROAD PAVEMENT MINIMUM STRUCTURE SHALL CONSIST OF THE FOLLOWING AS PER GEOTECHNICAL RECOMMENDATIONS (GEMTEC)):
   - LIGHT DUTY PAVEMENT
     40mm HL-3/ SLP 12.5 SURFACE ASPHALT COURSE
     50mm HL-8/ SLP 19 BASE ASPHALT COURSE
     150mm- GRANULAR 'A'
     300mm- GRANULAR 'B'
   - HEAVY DUTY PAVEMENT STRUCTURE (FIRE ROUTE)
     50mm HL-3
     70mm HL-8
     150mm- GRANULAR 'A'
     400mm- GRANULAR 'B'
10. MATERIALS AND TESTING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
    - ASPHALT: OPSS 310;
    - GRANULAR: OPSS 1010;
    - CONCRETE CURB AND GUTTER: OPSS 353;
    - CONCRETE SIDEWALK: OPSS 351.
11. PRIOR TO COMMENCEMENT OF EARTHWORKS, SITE ALTERATION PLANS MUST BE APPROVED AND ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND OPERATIONAL. THE CONTRACTOR SHALL MAINTAIN ALL WORKS UNTIL CONSTRUCTION IS COMPLETED TO THE SATISFACTION OF THE ENGINEER.
12. ENGINEERED FILL SHALL CONFORM TO THE SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL REPORT, OR LATEST AMENDMENT THEREOF.
13. ENGINEERED FILL SHALL BE INSPECTED AND TESTED BY THE GEOTECHNICAL CONSULTANT. PROOF ROLLING OF SUBGRADE WILL BE REQUIRED PRIOR TO PLACEMENT OF GRANULAR MATERIALS. COORDINATE INSPECTIONS WITH GEOTECHNICAL CONSULTANT.
14. GRANULAR COMPACTION: PER THE SPECIFICATIONS PROVIDED IN THE PRELIMINARY GEOTECHNICAL SITE INVESTIGATION BY GEMTEC, OR LATEST AMENDMENT THEREOF.
15. ASPHALT COMPACTION: PER THE SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL REPORT, OR LATEST AMENDMENT THEREOF.
16. ALL CURBS ON SITE SHALL BE BARRIER CURB: OPSD 600.110.
17. CONCRETE SIDEWALK: 125mm DEEP WITH 125mm GRANULAR 'A' BASE.
    CONCRETE SIDEWALK ACROSS RESIDENTIAL DRIVEWAY: 175mm DEEP WITH 125mm GRANULAR 'A' BASE.
    CONCRETE SIDEWALK ACROSS LANEWAYS, ROADS, COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL DRIVEWAYS: 200mm DEEP WITH 125mm GRANULAR 'A' BASE.
18. LAP JOINTS SHALL BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT AS PER DETAIL ON DRAWING D-3.
19. PAVEMENT MARKINGS SHALL BE PLACED AS SHOWN ON THE ARCHITECTURAL SITE PLAN WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT BASED PAINT AS PER OPSS 1712.
20. INSTALL SIGNAGE AS PER THE ARCHITECTURAL SITE PLAN.
21. ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED OFFSITE TO THE CONTRACTOR'S APPROVED DISPOSAL SITE.
22. EMBANKMENTS SHALL BE SLOPED AT A MAXIMUM OF 3H:1V, UNLESS OTHERWISE SPECIFIED.
23. DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER. THE RELOCATION OR REMOVAL OF TREES AND SHRUBS SHALL BE SUBJECT TO APPROVAL BY THE ARBORIST.
24. PLACE 300mm THICK TOPSOIL IN ALL PLANTING AND SOD AREAS.
25. REFER TO LANDSCAPE DRAWINGS FOR LOCATION AND TYPE OF ALL HARD LANDSCAPE SURFACES.

STORM SEWERS

1. FOR PIPE DIAMETERS 375mm OR BELOW SEWERS SHALL BE POLYVINYL CHLORIDE (PVC) AND HAVE A MAXIMUM STANDARD DIMENSION RATIO (SDR) OF 35 WITH RUBBER GASKET CONNECTIONS, PER CSA STANDARD B182.2-B182.4
2. FOR PIPE DIAMETERS 450mm OR GREATER SEWER SHALL BE CONCRETE - CSA#A257.2 (REINFORCED), MINIMUM CLASS 65-D.
3. POLYVINYL CHLORIDE (PVC) PIPE AND PIPE JOINTS SHALL CONFORM TO THE FOLLOWING CSA STANDARDS:
   a. 250mm AND LARGER DIAMETER: CSA B182.2 (327 kPA STIFFNESS)
4. CONCRETE PIPE AND PIPE JOINTS SHALL CONFORM TO THE LATEST REVISIONS OF OPSS 1820, CSA A257.2 AND THE FOLLOWING STANDARDS:
   a. NON-REINFORCED CONCRETE PIPE: CSA A257.1, ASTM C14
   b. REINFORCED CONCRETE PIPE: CSA A257.2, (MINIMUM PIPE CLASS 65-D)
5. BEDDING SHALL BE AS PER OPSD-802.010 OR 802.013 (GRAN 'A' MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030, 802.031, 802.032 OR 802.033 CLASS 'B' BEDDING (GRAN 'A' MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE CONSULTING ENGINEER.
6. CATCHBASINS SHALL BE IN ACCORDANCE WITH OPSD 400.020 FRAME AND GRATE OR APPROVED EQUAL. ALL SINGLE AND DOUBLE CATCHBASIN CONNECTIONS SHALL BE 300mm WITH 1.0% GRADE SINGLE OR 375mm PVC PIPE 0.7% GRADE DOUBLE, UNLESS OTHERWISE NOTED. MINIMUM DEPTH OF COVER SHALL BE 1.5m.
7. ALL STORM MAINTENANCE HOLES SHALL BE IN ACCORDANCE WITH APPLICABLE OPSD DETAILS UNLESS OTHERWISE NOTED. FRAME AND COVER SHALL BE OPSD 401.010 TYPE A OR APPROVED EQUAL. ALL SEWER MAINTENANCE HOLE BENCHING TO BE TO THE OBVERT OF THE PIPE.
8. CONTRACTOR SHALL ENSURE THAT LOW POINT OF CURB OCCURS AT CATCHBASIN LOCATION AT SAG AREAS OF PROPOSED ROADS.
9. STORM SYSTEMS SHALL BE COLOUR CODED 'WHITE'.
10. STORM SEWERS SHALL BE PROVIDED AS IDENTIFIED ON THE SITE SERVICING PLAN (DRAWING S-1)
11. ALL CONNECTIONS TO STORM SEWER MAIN, MAINTENANCE HOLES AND CATCH BASINS SHALL BE MADE AS PER OPSDs-708.010, 708.020, 708.030.
12. MINIMUM PIPE CLASS FOR REINFORCED CONCRETE STORM SEWERS SHALL BE 65-D.
13. MAINTENANCE HOLES TOPS (FRAMES) ARE TO BE SET TO BASE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN TOP LIFT OF ASPHALT IS PLACED.
14. TRENCH BACKFILL: PER THE SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL REPORT, OR LATEST AMENDMENT THEREOF.
3. INSULATION: TO BE PROVIDED IF COVER TO OBVERT IS LESS THAN 1.5 METRES AS PER COUNTY MANUAL. IN GENERAL, THICKNESS OF INSULATION TO BE 50mm FOR EVERY 300mm REDUCTION IN THE DEPTH OF COVER. INSULATION MATERIAL SHALL BE POLYSTYRENE FOAM HI 60 OR PLASTISPAN 60.
4. JOINTS-PIPE AND MAINTENANCE HOLE: CSA A257.3.
5. PVC AND CONCRETE SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL CURRENT C.S.A SPECIFICATIONS.
6. CATCHBASIN LEADS AND SERVICE LATERALS ON PRIVATE PROPERTY SHALL BE CONNECTED TO MAINLINE SEWER WITH WYE FITTING.
7. MAINTENANCE HOLE BENCHING: OPSD 701.021. CATCHBASIN MAINTENANCE HOLES TO BE BENCHED.
8. DROP STRUCTURES: ONE SIZE SMALLER THAN THE SEWER LINE WITH A MINIMUM DIAMETER OF 200 mm, AND AS PER OPSD-1003.020.
9. CONCRETE ADJUSTMENT UNITS FOR MAINTENANCE HOLES AND CATCHBASINS: OPSD 704.010, OPSS 407 AND CSA A257.4. MAXIMUM HEIGHT OF ADJUSTMENT UNITS SHALL BE 300mm.
10. CONNECT RESIDENTIAL LOT FOUNDATION DRAINS TO SUMP PUMPS TO DRAIN TO SURFACE
11. EXTERNAL RAINWATER LEADERS TO DRAIN TO SURFACE
12. LASER ALIGNMENT AND ELEVATION CONTROL TO BE UTILIZED FOR SEWER INSTALLATIONS.
13. TERMINATE SEWERS 1.5 METRE FROM THE OUTSIDE FACE OF BUILDING, UNLESS OTHERWISE NOTED ON DRAWING.
14. FLUSH AND INSPECT SEWERS VIA CCTV CAMERA. DEFLECTION AND LEAK TESTING REQUIRED. SUBMIT ONE WRITTEN REPORT AND TWO DIGITAL VIDEOS IN AN ACCEPTABLE FORMAT TO THE ENGINEER FOR REVIEW.
15. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER AN AS-CONSTRUCTED SERVICING DRAWING.

SANITARY SEWERS

1. SANITARY SEWER PIPE MATERIALS SHALL GENERALLY BE POLYVINYL CHLORIDE (PVC), ,MINIMUM CLASS SDR-35 PIPE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, UNLESS OTHERWISE NOTED:
   a. 200mm AND LARGER DIAMETER: CSA 182.2
2. CONCRETE SANITARY SEWER PIPE AND PIPE JOINTS SHALL CONFORM TO CSA A257.2, MINIMUM CLASS 65-D.
3. BEDDING SHALL BE AS PER OPSDs-802.010, 802.013 (GRAN 'A' MATERIAL) FOR FLEXIBLE PIPES AND OPSDs-802.030, 802.031, 802.032, 802.033 CLASS 'B' BEDDING (GRAN 'A' MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE CONSULTING ENGINEER.
4. SANITARY SEWER MAINTENANCE HOLES SHALL BE IN ACCORDANCE WITH APPLICABLE OPSD DETAILS UNLESS OTHERWISE NOTED. FRAME AND COVER SHALL BE OPSD 401.010 TYPE A OR APPROVED EQUAL. ALL SEWER MAINTENANCE HOLE BENCHING TO BE TO THE OBVERT OF THE PIPE. WATER TIGHT COVERS PER OPSD 401.030 TO BE USED IN ROAD PONDING AREAS.
5. ALL RESIDENTIAL CONNECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING PSD-021.
6. ALL PVC SANITARY SEWERS AND LATERAL PIPES SHALL BE GREEN IN COLOUR.
7. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A, O.P.S OR MANUFACTURER'S RECOMMENDED AND SPECIFICATIONS.
8. PVC AND CONCRETE SEWERS SHALL HAVE RUBBER GASKET TYPE JOINS AND SHALL BE CERTIFIED TO CONFORM TO ALL CURRENT C.S.A SPECIFICATION.
9. MAINTENANCE HOLES TOPS (FRAMES) ARE TO BE SET TO BASE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN TOP LIFT OF ASPHALT IS PLACED.
10. DROP STRUCTURES SHALL BE AS PER OPSD-1003.020.
11. THE SANITARY MAINTENANCE HOLES SHALL BE EXTERNALLY WRAPPED WITH WATERPROOF MEMBRANE PLACED EXTERNALLY AROUND ALL PRECAST JOINTS, INCLUDING JOINTS BELOW THE MAINTENANCE HOLE FRAME AND COVER, WITH A MINIMUM 300mm WIDE STRIP.
12. FROST STRAPS (INTERNAL OR EXTERNAL) SHALL BE PROVIDED TO HOLD MAINTENANCE HOLE SECTIONS TOGETHER (AT LEAST TWO (2) BETWEEN EACH SECTION). EXTERNAL STRAPS TO EXTEND VERTICALLY FROM TOP TO BOTTOM AND FOR DEEP MAINTENANCE HOLES EXTENDED AT LEAST 1m BELOW FROST DEPTH.
13. JOINTS BETWEEN MAINTENANCE HOLE SECTIONS, AND INLET AND OUTLET PIPES SHALL BE SEALED WITH GASKETED FLEXIBLE WATERTIGHT CONNECTIONS. WHERE WORKS ARE CAST-IN-PLACE, SEALING IS REQUIRED ONLY AT THE POINT OF CONNECTION BETWEEN INDIVIDUAL COMPONENTS OF THE MAINTENANCE HOLE STRUCTURES

SANITARY SERVICE LATERALS

1. LOCATION OF LATERAL TO BE MARKED 2.0m PAST PROPERTY LINE WITH A 50 x 100mm WOODEN STAKE PAINTED GREEN, EXTENDED FROM SERVICE INVERT TO 300mm ABOVE GROUND LEVEL.
2. PIPE TO BE PVC SDR28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO C.S.A (B-182.2)(GREEN), MINIMUM 125mm DIA. PVC SDR 28 FOR RESIDENTIAL AND MINIMUM 150mm DIA. PVC SDR28 FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT.
3. MINIMUM DEPTH OF LATERAL AT PROPERTY LINE SHALL BE 2.0m MEASURED FROM THE SEWER OBVERT TO FINISHED GROUND SURFACE ELEVATION UNLESS NOTED OTHERWISE.
4. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR APPROVED SADDLES IN STRICT CONFORMANCE TO MANUFACTURER'S RECOMMENDATIONS.
5. MINIMUM SLOPE TO BE 1.0% RECOMMENDED 2.0% (SEE OPSD-1006.010)

WATERMAINS

1. WATERMAIN PIPE SHALL BE PVC PIPE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, UNLESS OTHERWISE NOTED:
   a. 300mm AND SMALLER DIAMETER: AWWA C900, DR 18, CSA B137.3
   b. >300mm DIAMETER:
   b.a. PVC: AWWA C905, DR 18, CSA B137.3
2. MINIMUM COVER OVER WATERMAIN SHALL BE 1.8m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE 2.5m. WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER AT ALL TIMES.
3. INSULATION: TO BE PROVIDED IF COVER TO OBVERT IS LESS THAN 1.8 METRES AS PER COUNTY MANUAL. IN GENERAL, THICKNESS OF INSULATION TO BE 50mm FOR EVERY 300mm REDUCTION IN THE DEPTH OF COVER. INSULATION MATERIAL SHALL BE POLYSTYRENE FOAM HI 60 OR PLASTISPAN 60.
4. BEDDING SHALL BE AS PER OPSDs-802.010, 802.013 (GRAN 'A' MATERIAL) FOR FLEXIBLE PIPES AND OPSDs-802.030, 802.031, 802.032, 802.033 CLASS 'B' BEDDING (GRAN 'A' MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY THE CONSULTING ENGINEER. THE COMPACTION TESTING SHALL INCLUDE THE ENTIRE EMBEDMENT ENVELOPES (HAUNCHES, BEDDING, TOP OF PIPE AND COVER). PRIVATE WATERMAIN BEDDING SHALL CONFIRM TO GEOTECHNICAL RECOMMENDATION.
5. CONCRETE THRUST BLOCKS, WHERE REQUIRED TO CONFORM TO ASTM A276/A276M, TYPE 316 STAINLESS STEEL.
6. TRACING WIRE SHALL BE #8 AWG INSULATED UNDERGROUND APPLICATION COPPER TRACER WIRE AND SHALL BE INSTALLED ON THE TOTAL UTILIZE CONNECTORS AS PER MANUFACTURER'S RECOMMENDATIONS.
7. HYDRANTS: SHALL CONFORM TO AWWA C502 AND NSF/ANSI 61 AND SHALL CONFORM WITH ALL COUNTY SPECIFICATIONS AND STANDARDS. STORZ NOZZLE TO BE ORIENTED PERPENDICULAR TO THE FIRE ROUTE. HYDRANT FLANGE ELEVATION TO BE 0.15m ABOVE PROPOSED FINISHED GRADE AT THE HYDRANT. HYDRANT TO BE PAINTED "FIRE HYDRANT RED" AS PER FIRE DEPARTMENT SPECIFICATIONS.
8. HYDRANT ANCHOR TEES: ATTACH HYDRANT VALVE TO THE ANCHOR TEE, PROVIDED THAT THE MAXIMUM DISTANCE FROM HYDRANT TO VALVE DOES NOT EXCEED 6.1 METRES. ENSURE VALVE BOX DOES NOT CONFLICT WITH CURBS.
9. HYDRANT FLOW TEST TO BE COMPLETED BY CONTRACTOR PER NFPA 291 AND RESULTS TO CONSULTING ENGINEER.
10. THE CONTRACTOR SHALL NOTE THAT THE DEPTH OF THE PROPOSED WATERMAIN MAY VARY AND HE SHALL SATISFY HIMSELF AS TO THE REQUIRE HEIGHT OF THE HYDRANT RISER AND DEPTHS OF VALVE CHAMBERS.
11. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS UNLESS OTHERWISE RECOMMENDED IN THE APPROVED GEOTECHNICAL REPORT. SIZE AND INSTALLATION SHALL BE IN ACCORDANCE WITH OPSD 1109.11 AND 1109.010 AND COUNTY REQUIREMENTS OR AS RECOMMENDED BY GEOTECHNICAL ENGINEER. COUNTY MINIMUM REQUIREMENTS FOR SACRIFICIAL ANODES:
    a. NEW METALLIC WATERMAIN: 14.5 KG MAGENISUM ANODE NOT SPACED MORE THAN 100m
    b. ON EXPOSED EXISTING METALLIC WATERMAIN: 14.5 KG MAGNESIUM ANODE
    c. ON CONNECTION TO EXISTING METALLIC WATERMAIN: 14.5 KG MAGNESIUM ANODE
    d. ON NON METALLIC WATERMAIN 300mm AND SMALLER IN DIAMETER: 5.4 KG ZINC ANODE
    e. ON NON METALLIC WATERMAIN GREATER THAN 300mm DIAMETER: 10.8 KG ZINC ANODE
    f. HYDRANTS: 10.8 KG ZINC ANODE
    g. TRACER WIRE: 10.8 KG ZINC ANODE SPACED NOT MORE THAN 1000m APART
    h. CURB STOP: 5.4 KG ZINC ANODE
    i. COPPER SERVICES: 5.4 KG ZINC ANODE
12. PIPE FITTINGS: CAST IRON, CEMENT LINED, MECHANICAL JOINT, SHORT BODY CONFORMING TO ANSI/AWWA C110/A21.10. JOINTS: RUBBER GASKET CONFORMING TO ANSI/AWWA C111/A21.11. REFER TO COUNTY MANUAL FOR APPROVED MATERIALS. SHOP DRAWINGS WILL BE REQUIRED AND MATERIALS WILL BE APPROVED AT TIME OF CONSTRUCTION.
13. DOMESTIC WATER SERVICE CONNECTIONS TO BE 19mm DIAMETER TYPE 'K' COPPER TUBING AND INSTALLED AS PER COUNTY STANDARD DRAWING PSD-021 AND OPSD 1104.010, UNLESS OTHERWISE SPECIFIED. SADDLES ARE REQUIRED FOR SERVICE CONNECTION SIZES LARGER THAN 19mm AND UP TO 50mm IN DIAMETER. CURB STOPS ARE NOT PERMITTED IN DRIVEWAYS.
14. NO WATERMAIN OR APPURTENANCE SHALL BE PLACED ON PREVIOUSLY EXCAVATED SOIL UNLESS PROPER ENGINEERED SUPPORT IS IN PLACE TO THE SATISFACTION OF THE COUNTY.
15. MECHANICAL RESTRAINTS: REQUIRED AT ALL CHANGES IN PIPE DIRECTION AND AT ALL FITTINGS, REDUCERS AND CAPS. RESTRAIN PIPE 12.2 METRES BACK FROM STUBS AND 6.1 METRES ON EITHER SIDE OF VALVES 100mm OR LARGER. RESTRAIN ALL JOINTS WITHIN ENGINEERED FILL AREAS. RESTRAINT RODS AND INSTALLATION SHALL CONFORM TO NFPA 24 (STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES).
16. WATERMAIN WITHIN FILL AREAS ARE TO HAVE ALL FITTINGS AND PIPE JOINTS MECHANICALLY RESTRAINED.
17. ALL VALVES ON 300 MM DIAMETER AND GREATER PVC WATERMAINS SHALL HAVE RESTRAINED JOINTS
18. MINIMUM CURVATURE OF ANY WATERMAIN SHALL BE COMPLETED BY PIPE DEFLECTION IN ACCORDANCE WITH THE MANUFACTURER'S RADIUS GUIDELINES.
19. CONTRACTOR SHALL INFORM THE PRINCE EDWARD COUNTY WATER OPERATIONS DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF THEIR INTENTIONS TO PERFORM WORK ON WATER INFRASTRUCTURE. WORKS ON COUNTY WATERMAINS IS NOT PERMITTED WITHOUT ATTENDANCE OF COUNTY WATER OPERATIONS DEPARTMENT STAFF.
20. RESTRAINING SHALL BE REQUIRED AT ALL HYDRANTS. THRUST BLOCKS SHALL BE AS OPSDs1103.010 AND 1103.020.
21. SERVICING TAPPING SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m FROM JOINTS.
22. ALL NEW CURB STOPS AND BOXED SHALL BE LOCATED AT OUT OF DRIVEWAYS AND SIDEWALKS.
23. TERMINATE SERVICES 1.0 METER FROM THE OUTSIDE FACE OF BUILDING, UNLESS OTHERWISE NOTED ON DRAWING. TERMINATE STUBS WITH A PLUG AND 50 mm BLOW OFF.
24. SERVICE TAPPING SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m FROM JOINTS.
25. ISOLATE NEW WATERMAIN FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATION.
26. PRESSURE AND BACTERIOLOGICAL TESTING: AS PER COUNTY STANDARD SPECIFICATIONS; ONTARIO BUILDING CODE AND MINISTRY OF THE ENVIRONMENT. TREAT CHLORINATED WATER TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE.
27. BACKFLOW PREVENTER: INSTALL PER CSA B64.10 and B64.10.01 TEST AND PROVIDE CERTIFICATION REPORT TO ENGINEER PER COUNTY REQUIREMENTS.
28. WHERE THE DISTANCE FROM THE PROPERTY LINE TO THE BUILDING WATER METER LOCATION EXCEEDS 30 m, A WATER METER CHAMBER SHALL BE INSTALLED ON PRIVATE PROPERTY WITHIN 3 m OF THE PROPERTY LINE.

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

GENERAL NOTES

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

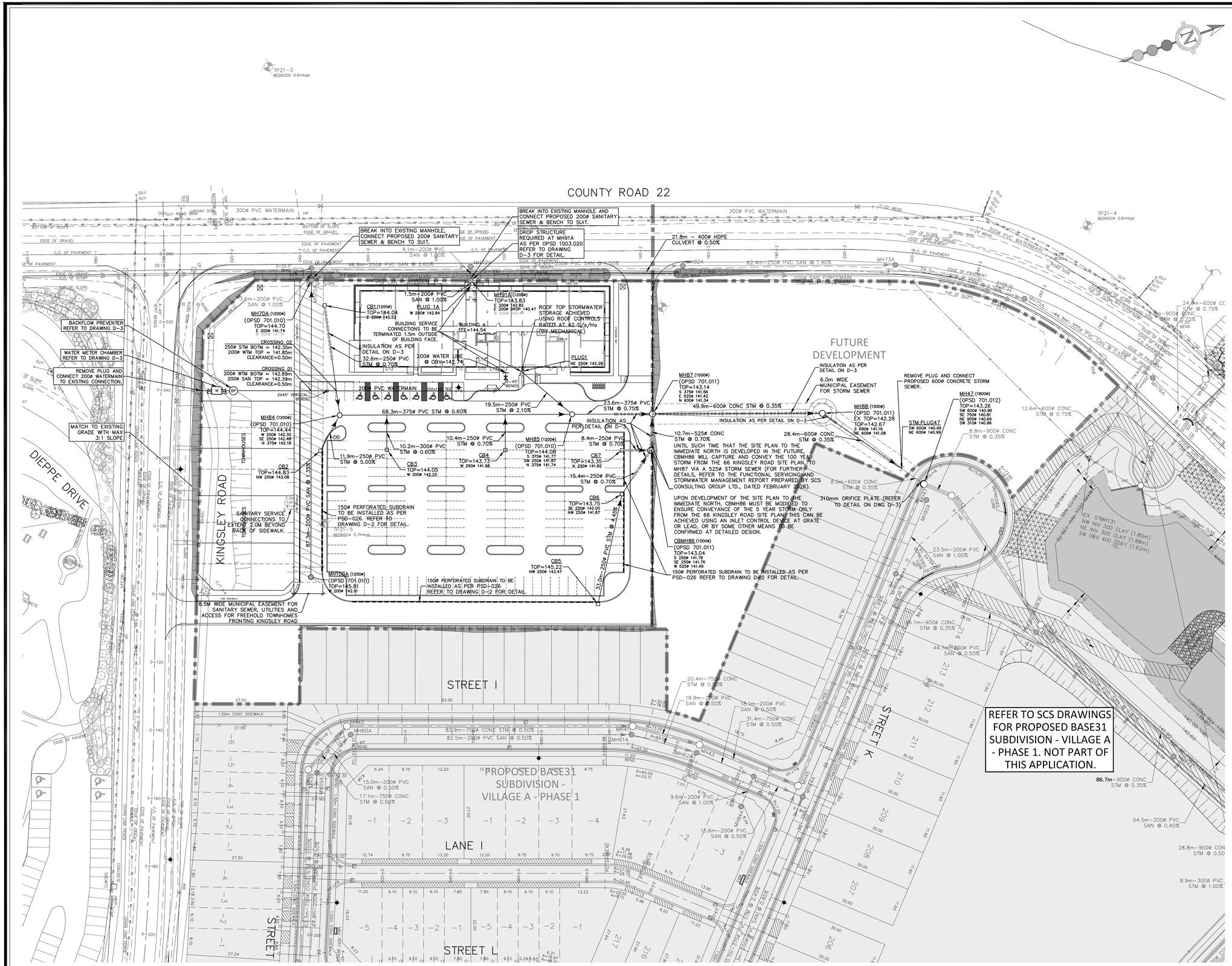
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

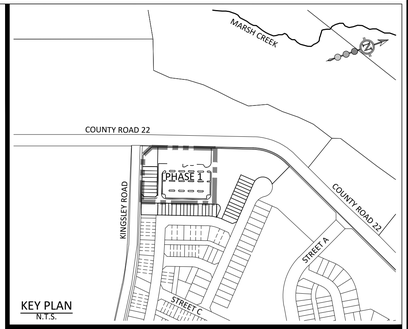
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

DRAWING No: N-1





KEY PLAN
N.T.S.

BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF SITE PLAN APPLICATION
- LIMIT OF PHASE
- SANITARY SEWER / MAINTENANCE HOLE
- STORM SEWER / MAINTENANCE HOLE
- WATERMAIN / VALVE BOX
- WATERMAIN / REDUCER
- HYDRANT AND VALVE
- METER CHAMBER
- BACKFLOW PREVENTOR (CSA B64.10 AND B64.10.01)
- WATER SERVICE BOX AND LATERAL
- SINGLE SANITARY (125Ø) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- DRIVEWAY LOCATION
- PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1 (NOT PART OF THIS APPLICATION)
- SANITARY EASEMENT
- RETAINING WALL
- PROPOSED EASEMENT LIMIT
- TACTILE PLATE AS PER OPSD 310.039
- BH24-8 BOREHOLE LOCATION
- TP21-8 TEST PIT LOCATION
- STORM SEWER PIPE INSULATION (REFER TO DETAIL ON DWG. D-3)
- SEWERS & MAINTENANCES HOLES TO BE GROUNDED AND ABANDONED
- EXISTING FEATURE TO BE REMOVED
- EXISTING OVERHEAD WIRE
- EXISTING CHAINLINK FENCE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING GAS MAIN
- EXISTING HYDRO POLE
- EXISTING MANHOLE
- EXISTING WATERMAIN VALVE
- EXISTING HYDRANT
- EXISTING MONITORING WELL
- EXISTING UTILITY
- EXISTING ROAD SIGN
- EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., NOVEMBER 2022.
UTILITY INVESTIGATION PROVIDED BY 4SIGHT UTILITY ENGINEERS DATED JANUARY 18, 2023.

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

SERVICING PLAN

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	V.S./C.C.
SCALE:	1:500	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

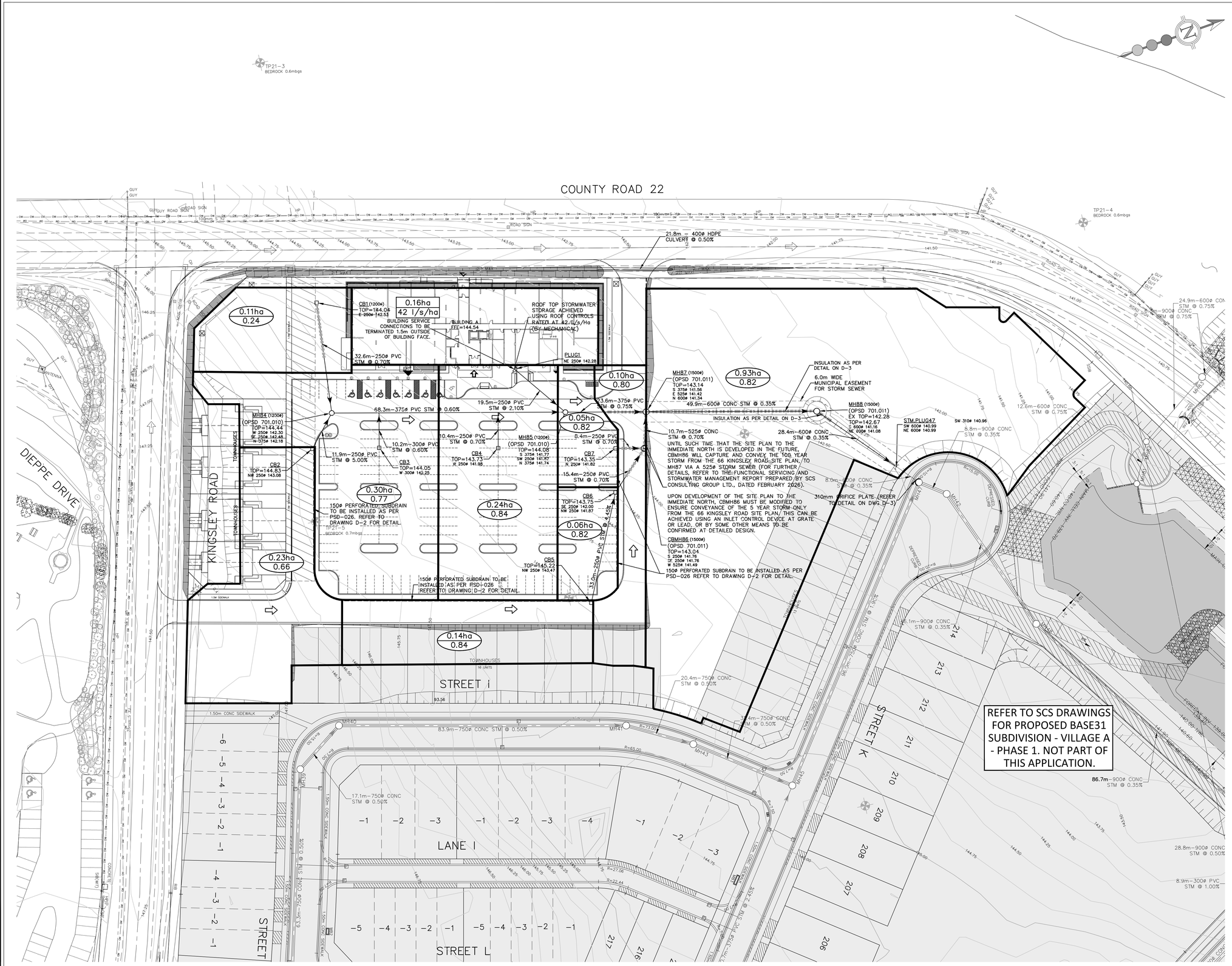
Peter Moyer, P.Eng.
Director Of Development Services

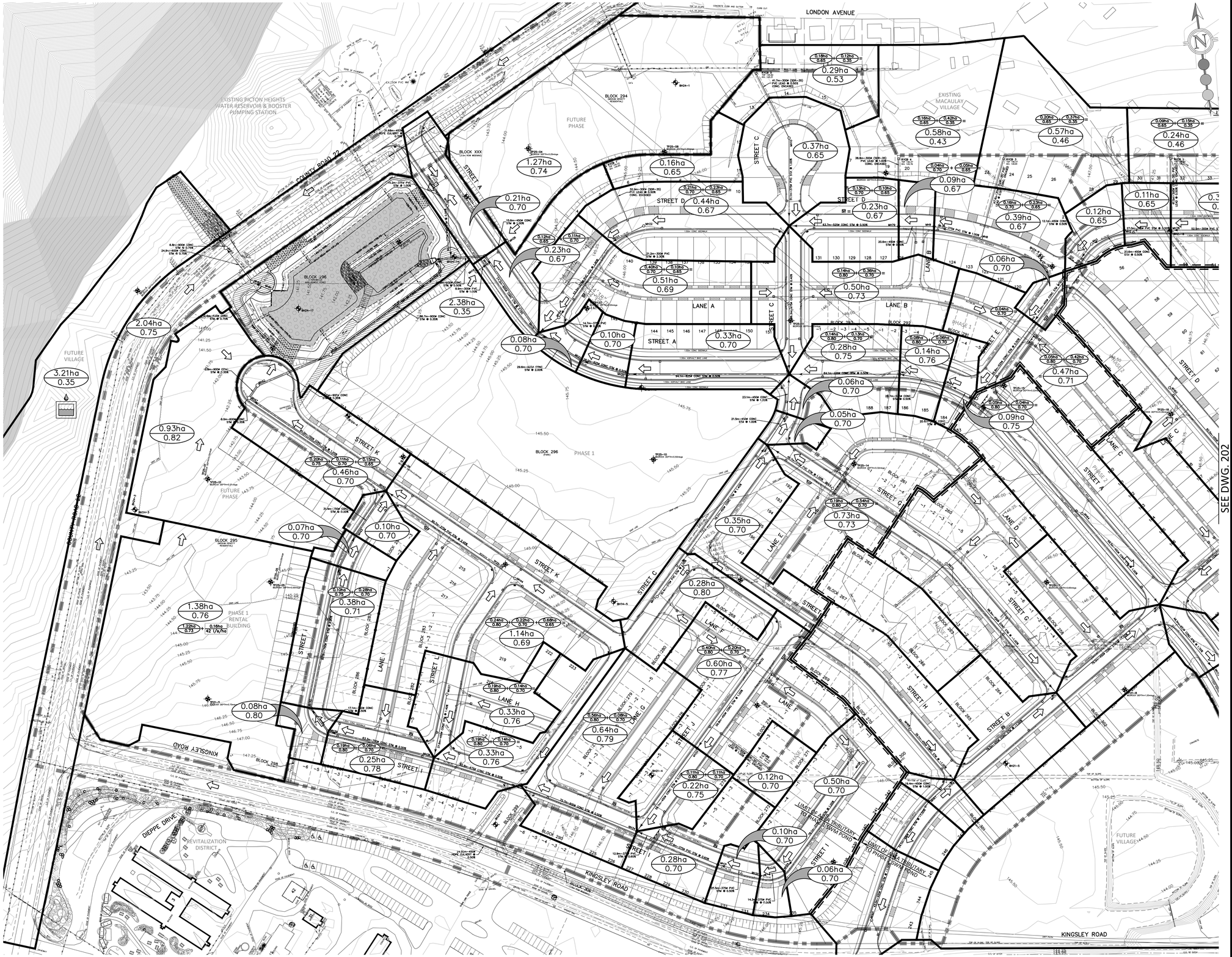
Date

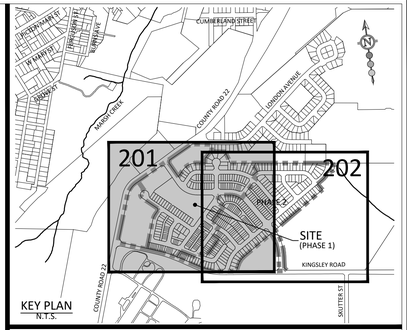
PROJECT No: 2365B

DRAWING No: S-1

File: P:\2365 Picton Airport – Tercot\Drawings\Village A – Rental Building\Gen\2365D-VRNT-GENP-S1.dwg – Revised by <SOZDEMIR> : Fri, Feb 20 2026 – 5:23pm


COUNTY ROAD 22
DIEPPE DRIVE
KINGSLEY ROAD
STREET i
STREET K
STREET L
LANE I
TOWNHOUSES
16 UNITS
0.11ha 0.24
0.16ha 42 l/s/ha
0.10ha 0.80
0.93ha 0.82
0.05ha 0.82
0.30ha 0.77
0.24ha 0.84
0.06ha 0.82
0.23ha 0.66
0.14ha 0.84
CB1(1200ø) TOP=144.04 E 250ø 142.53
BUILDING SERVICE CONNECTIONS TO BE TERMINATED 1.5m OUTSIDE OF BUILDING FACE.
BUILDING A FFE=144.54
ROOF TOP STORMWATER STORAGE ACHIEVED USING ROOF CONTROLS RATED AT 42 l/s/ha (BY MECHANICAL)
PLUG1 NE 250ø 142.28
32.6m–250ø PVC STM @ 0.70%
MH84 (1200ø) (OPSD 701.010) TOP=144.44 W 250ø 142.30 SE 250ø 142.48 N 375ø 142.18
CB2 TOP=144.83 NW 250ø 143.08
CB3 TOP=144.05 W 300ø 142.25
68.3m–375ø PVC STM @ 0.60%
19.5m–250ø PVC STM @ 2.10%
11.9m–250ø PVC STM @ 5.00%
10.2m–300ø PVC STM @ 0.60%
10.4m–250ø PVC STM @ 0.70%
MH85 (1200ø) (OPSD 701.010) TOP=144.05 S 375ø 141.77 SW 250ø 141.87 N 375ø 141.74
CB4 TOP=143.73 W 250ø 141.98
CB7 TOP=143.35 N 250ø 141.82
8.4m–250ø PVC STM @ 0.70%
15.4m–250ø PVC STM @ 0.70%
CB6 TOP=143.75 SE 250ø 142.00 NW 250ø 141.87
CB5 TOP=145.22 NW 250ø 143.47
150ø PERFORATED SUBDRAIN TO BE INSTALLED AS PER PSD–026. REFER TO DRAWING D–2 FOR DETAIL.
TP21–5 BEDROCK 0.7mbgs
TP21–3 BEDROCK 0.6mbgs
TP21–4 BEDROCK 0.6mbgs
21.8m – 400ø HDPE CULVERT @ 0.50%
MH87 (1500ø) (OPSD 701.011) TOP=143.14 S 375ø 141.56 E 525ø 141.42 N 600ø 141.34
49.9m–600ø CONC STM @ 0.35%
INSULATION AS PER DETAIL ON D–3
6.0m WIDE MUNICIPAL EASEMENT FOR STORM SEWER
MH88 (1500ø) (OPSD 701.011) EX TOP=142.26 TOP=142.67 E 600ø 141.16 NE 600ø 141.08
28.4m–600ø CONC STM @ 0.35%
STM.PLUG47 SW 600ø 140.99 NE 600ø 140.99
SW 310ø 140.96
8.8m–900ø CONC STM @ 0.35%
24.9m–600ø CONC STM @ 0.75%
12.6m–600ø CONC STM @ 0.75%
10.7m–525ø CONC STM @ 0.70%
UNTIL SUCH TIME THAT THE SITE PLAN TO THE IMMEDIATE NORTH IS DEVELOPED IN THE FUTURE, CBMH86 WILL CAPTURE AND CONVEY THE 100 YEAR STORM FROM THE 66 KINGSLEY ROAD SITE PLAN, TO MH87 VIA A 525ø STORM SEWER (FOR FURTHER DETAILS, REFER TO THE FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT PREPARED BY SCS CONSULTING GROUP LTD., DATED FEBRUARY 2026).
UPON DEVELOPMENT OF THE SITE PLAN TO THE IMMEDIATE NORTH, CBMH86 MUST BE MODIFIED TO ENSURE CONVEYANCE OF THE 5 YEAR STORM ONLY FROM THE 66 KINGSLEY ROAD SITE PLAN. THIS CAN BE ACHIEVED USING AN INLET CONTROL DEVICE AT GRATE OR LEAD, OR BY SOME OTHER MEANS TO BE CONFIRMED AT DETAILED DESIGN.
CBMH86 (1500ø) (OPSD 701.011) TOP=143.04 S 250ø 141.76 SE 250ø 141.76 W 525ø 141.40
150ø PERFORATED SUBDRAIN TO BE INSTALLED AS PER PSD–026 REFER TO DRAWING D–2 FOR DETAIL.
310mm ORIFICE PLATE (REFER TO DETAIL ON DWG D–3)
8.0m–600ø CONC STM @ 0.35%
83.9m–750ø CONC STM @ 0.50%
17.1m–750ø CONC STM @ 0.50%
63.3m–750ø CONC STM @ 0.50%
20.4m–750ø CONC STM @ 0.50%
96.7m–750ø CONC STM @ 1.80%
33.4m–750ø CONC STM @ 0.50%
86.7m–900ø CONC STM @ 0.35%
28.8m–900ø CONC STM @ 0.50%
8.9m–300ø PVC STM @ 1.00%
REFER TO SCS DRAWINGS FOR PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1. NOT PART OF THIS APPLICATION.
MH40
MH41
MH42
MH43
MH44
MH45
MH46
MH47
1.5m CONC SIDEWALK
1.5m SIDEWALK
TRANSITION CONC SIDEWALK
DEPRESSED CURB
ROAD SIGN
GUY
HP
OH
UG
MANTENNA
CB
MH
SAN MH
STM MH
HYDRO POLE
TRANSFORMER
GAS VALVE
GAS METER
SIGN
CONC. PAD
MAIL BOX
CURB STOP
WATER VALVE
WATER METER
FIRE HYDRANT
SAN MAN
STM MAN
SAN CB
STM CB
CATCH BASIN
SAN SEWER
STM SEWER
WATER MAIN
GAS MAIN
UNDERGROUND HYDRO
OVERHEAD HYDRO
BELL
TELEPHONE
CABLE TV
FIBRE OPTIC
TOP OF BANK
TOE OF BANK
CULVERT
DITCH
FENCE
CONIFEROUS TREE
DECIDUOUS TREE
SHRUB
HEDGE
BUSH
TREE LINE
WOOD
WOOD LINE
WOOD POST
WOOD FENCE
WIRE FENCE
CHAIN LINK FENCE
METAL FENCE
CONCRETE
CONC. WALL
RETAINING WALL
CONC. CURB
CURB & GUTTER
ASPHALT
GRAVEL
GRAVEL SHOULDER
PAVED SHOULDER
PAVED DRIVEWAY
GRAVEL DRIVEWAY
CONC. DRIVEWAY
CONC. SIDEWALK
CONC. STEPS
CONC. PATIO
CONC. FOOTING
CONC. PILLAR
CONC. SLAB
CONC. PAD
CONC. BASE
CONC. FOUNDATION
CONC. WALL
CONC. CURB





BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- STORM SEWER / MAINTENANCE HOLE
- CATCHBASIN/DOUBLE CATCHBASIN (NO ICD)
- CATCHBASIN/DOUBLE CATCHBASIN WITH TYPE B ICD (28.3 L/s)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAINWGS)
- STORM DRAINAGE BOUNDARY
- EXTERNAL STORM DRAINAGE BOUNDARY
- LIMIT OF TRIBUTARY AREA
- MAJOR FLOW DIRECTION
- EXISTING FLOW DIRECTION
- 0.38ha / 0.45 DRAINAGE AREA / RUNOFF COEFFICIENT
- 0.38ha / 0.45 EXISTING DRAINAGE AREA / EXISTING RUNOFF COEFFICIENT
- 5.00ha / 0.45 l/s/ha EXTERNAL DRAINAGE AREA / EXTERNAL FLOW RATE
- 218.50 EXISTING CONTOUR
- MAJOR SYSTEM CAPTURE POINT
- ON-SITE CONTROLS

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	
2.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.
VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1
STORM DRAINAGE PLAN 1

DATE:	FEBRUARY 2026	DESIGNED BY:	J.Z./Y.A.	CHECKED BY:	J.S.S./C.C.
SCALE:	1:1000	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

10 5 0 10 20 30 40 50 60 70 80

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

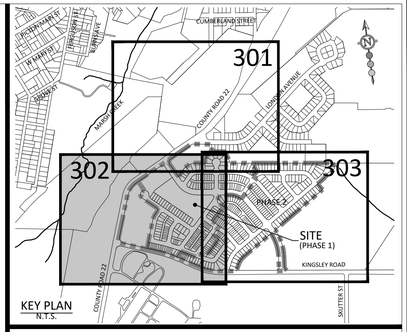
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365

DRAWING No: 201

File: P:\2365 Picton Airport – Tercot\Drawings\Village A\Phase 1\Dr\2365D-0201-0202-VLGA-STRM.dwg – Revised by <MCOUGLER> : Mon, Dec 15 2025 – 12:58pm



BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 010198202 16 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- SANITARY SEWER / MAINTENANCE HOLE
- SANITARY DRAINAGE BOUNDARY
- EXTERNAL SANITARY DRAINAGE BOUNDARY
- SINGLE SANITARY (125ØJ) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 — LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- 0.20ha / 4 | 4.0* — CATCHMENT AREA; NUMBER OF PERSONS PER AREA; NUMBER OF UNITS
- 0.75ha / 45ppha* — CATCHMENT AREA; NUBMER OR PERSON PER AREA
- SANITARY FLOW DIRECTION
- EXISTING SANITARY FLOW DIRECTION
- 0.40ha / 500 * — EXTERNAL CATCHMENT AREA; EXTERNAL ESTIMATED EQUIVALENT POPULATION

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	
2.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

BASE31 SUBDIVISION VILLAGE A - PHASE 1

SANITARY DRAINAGE PLAN 2

DATE:	FEBRUARY 2026	DESIGNED BY:	J.Z./Y.A.	CHECKED BY:	J.S.S./C.C.
SCALE:	1:1000	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

10 5 0 10 20 30 40 50 60 70 80

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

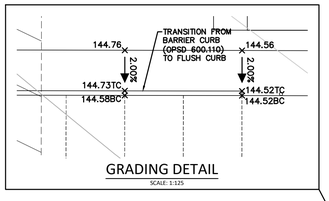
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365

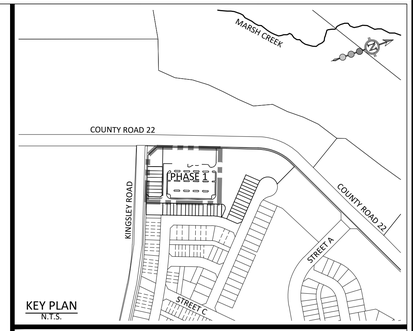
DRAWING No: 302

File: P:\2365 Picton Airport - Tercot\Drawings\Village A\Phase 1\Dr\2365D-0301-0303-VLGA-SANI.dwg - Revised by <STAN> : Tue, Dec 16 2025 - 1:24pm



GRADING DETAIL

SCALE: 1:125



KEY PLAN
N.T.S.

BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF SITE PLAN APPLICATION
- LIMIT OF PHASE
- SANITARY MAINTENANCE HOLE
- STORM SEWER MAINTENANCE HOLE
- WATERMAIN VALVE BOX
- HYDRANT AND VALVE
- METER CHAMBER
- BACKFLOW PREVENTOR (CSA B64.10 AND B64.10.01)
- 112.00 EXISTING CONTOUR AND ELEVATION
- ×123.23EX EXISTING ELEVATION
- ×106.52 PROPOSED ELEVATION
- ×106.52TC PROPOSED TOP OF CURB ELEVATION
- ×106.52BC PROPOSED BOTTOM OF CURB ELEVATION
- ×106.52FC PROPOSED FINISHED ELEVATION
- ×123.23(G) PROPOSED GUTTER ELEVATION
- ×123.23 TDC PROPOSED TOP OF DEPRESSED CURB ELEVATION
- 107.18 SW PROPOSED SWALE ELEVATION
- F FRONT DRAINING LOT
- S SPLIT DRAINAGE LOT
- B/S BACK SPLIT TYPE LOT
- W/O WALKOUT TYPE LOT
- TR TRANSITION TYPE LOT
- 53 LOT NUMBER
- EMERGENCY OVERLAND FLOW
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- RETAINING WALL
- DRIVEWAY LOCATION
- HEAVY DUTY PAVEMENT STRUCTURE (REFER TO DWG. N-1)
- PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1 (NOT PART OF THIS APPLICATION)
- SANITARY EASEMENT
- TACTILE PLATE AS PER OPSD 310.039/CURB DEPRESSIONS
- BH24-8 BOREHOLE LOCATION
- TP21-8 TEST PIT LOCATION
- EXISTING OVERHEAD WIRE
- EXISTING CHAINLINK FENCE
- HP EXISTING HYDRO POLE
- MH EXISTING MANHOLE
- WV EXISTING WATERMAIN VALVE
- FH EXISTING HYDRANT
- EXISTING MONITORING WELL
- GM/HM EXISTING UTILITY
- SIGN EXISTING ROAD SIGN
- CB EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., NOVEMBER 2022.
UTILITY INVESTIGATION PROVIDED BY 4SIGHT UTILITY ENGINEERS DATED JANUARY 18, 2023.

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

GRADING PLAN

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	V.S./C.C.
SCALE:	1:500	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

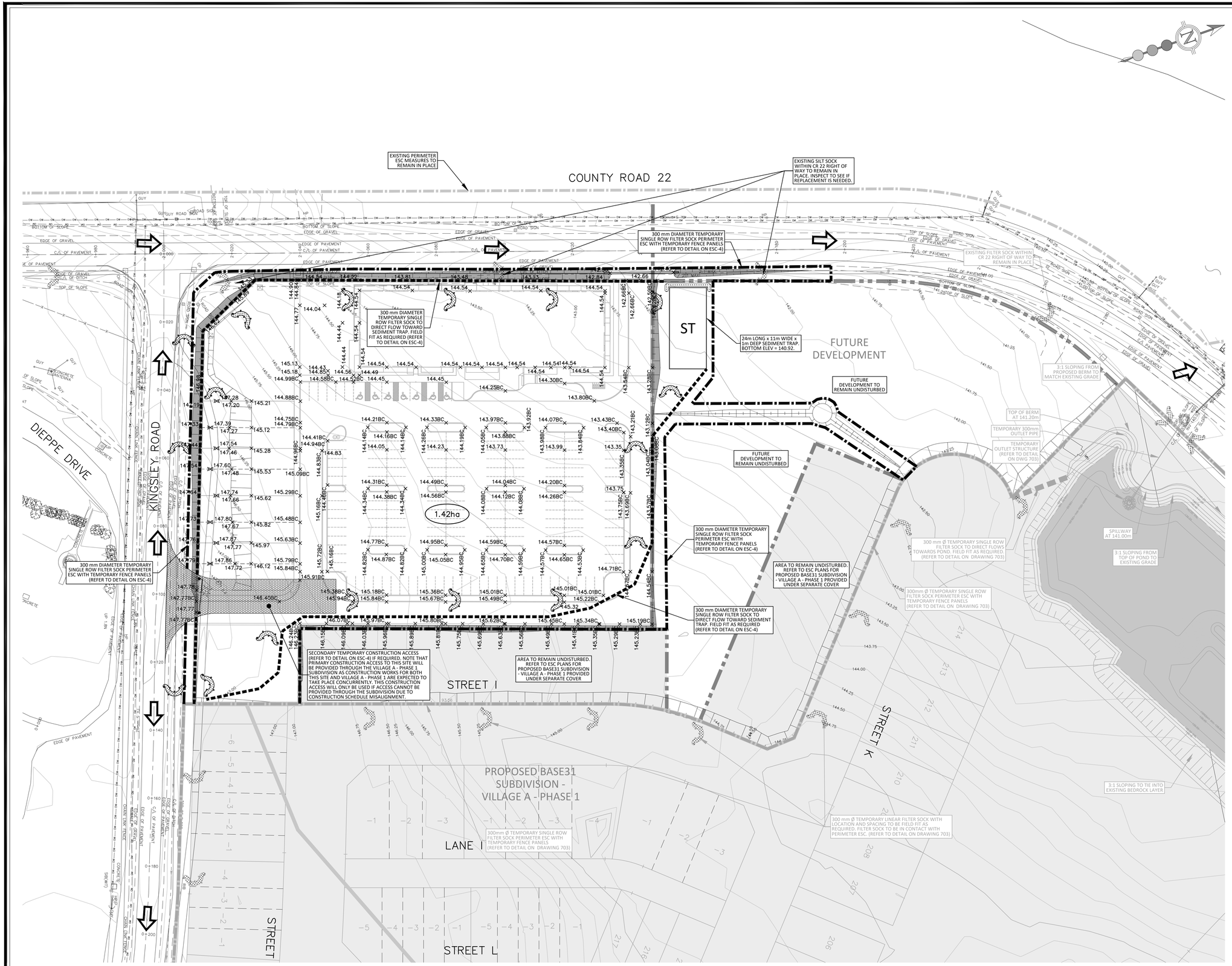
Peter Moyer, P.Eng.
Director Of Development Services

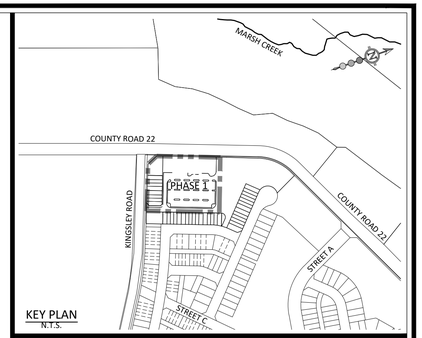
Date

PROJECT No: 2365B

DRAWING No: GR-1

File: P:\2365 Picton Airport – Tercot\Drawings\Village A – Rental Building\Grad\2365D–VRNT–GRAD–GR1.dwg – Revised by <SOZDEMIR> : Fri, Feb 20 2026 – 5:19pm





KEY PLAN
N.T.S.

BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF SITE PLAN APPLICATION
- LIMIT OF PHASE
- 168.00 — EXISTING CONTOUR AND ELEVATION
- TEMPORARY 300mm SINGLE ROW FILTER SOCK PERIMETER ESC AND FENCE PANELS (SEE DETAIL ON DWG. ESC-4)
- TEMPORARY 300mm SINGLE ROW FILTER SOCK (SEE DETAIL ON DWG. ESC-4)
- EXISTING STORM DRAINAGE BOUNDARY
- EXISTING OVERLAND FLOW ROUTE
- TEMPORARY 300mm FILTER SOCK CHECK DAM (REFER TO DETAIL ON DWG. ESC-4)
- ST — TEMPORARY SEDIMENT TRAP (REFER TO DETAIL ON DWG. ESC-4)
- TEMPORARY CONSTRUCTION ACCESS / MUD MAT (SEE DETAIL ON DWG. ESC-4)
- PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1 (NOT PART OF THIS APPLICATION)
- LOCKABLE GATE (SEE DETAIL ON DWG. ESC-4)
- PROPOSED EMBANKMENT MAX. 3:1 UNLESS OTHERWISE NOTED)
- × 222.50 — PROPOSED ELEVATION
- × 222.50BC — PROPOSED BOTTOM OF CURB ELEVATION

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., NOVEMBER 2022.
UTILITY INVESTIGATION PROVIDED BY 4SIGHT UTILITY ENGINEERS DATED JANUARY 18, 2023.

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

EROSION & SEDIMENT CONTROL STAGE 1 - EARTHWORKS AND TOPSOIL STRIPPING

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	V.S./C.C.
SCALE:	1:500	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

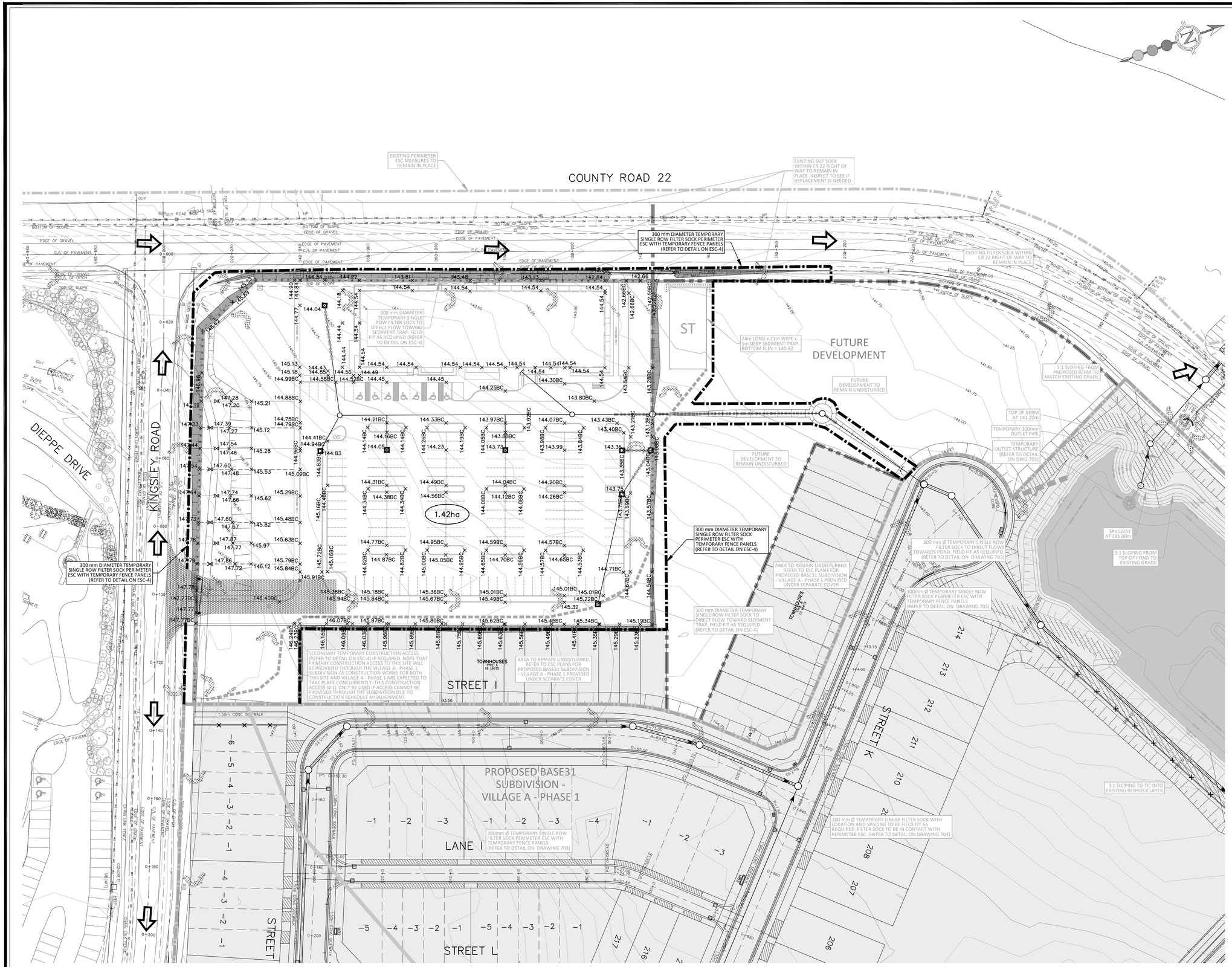
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

DRAWING No: ESC-1

File: P:\2365 Picton Airport – Tercot\Drawings\Village A – Rental Building\Esc\2365D-VRNT-EROS-ESC1.dwg – Revised by <MCOUGLER> : Thu, Feb 26 2026 – 11:05am


COUNTY ROAD 22
EXISTING PERIMETER ESC MEASURES TO REMAIN IN PLACE
EXISTING SILT SOCK WITHIN CR 22 RIGHT OF WAY TO REMAIN IN PLACE. INSPECT TO SEE IF REPLACEMENT IS NEEDED.
300 mm DIAMETER TEMPORARY SINGLE ROW FILTER SOCK PERIMETER ESC WITH TEMPORARY FENCE PANELS (REFER TO DETAIL ON ESC-4)
EXISTING FILTER SOCK WITHIN CR 22 RIGHT OF WAY TO REMAIN IN PLACE
300 mm DIAMETER TEMPORARY SINGLE ROW FILTER SOCK PERIMETER ESC WITH TEMPORARY FENCE PANELS (REFER TO DETAIL ON ESC-4)
300 mm DIAMETER TEMPORARY SINGLE ROW FILTER SOCK PERIMETER ESC WITH TEMPORARY FENCE PANELS (REFER TO DETAIL ON ESC-4)
300 mm DIAMETER TEMPORARY SINGLE ROW FILTER SOCK TO DIRECT FLOW TOWARD SEDIMENT TRAP. FIELD FIT AS REQUIRED (REFER TO DETAIL ON ESC-4)
ST
24m LONG x 11m WIDE x 1m DEEP SEDIMENT TRAP. BOTTOM ELEV = 140.92.
FUTURE DEVELOPMENT
FUTURE DEVELOPMENT TO REMAIN UNDISTURBED
FUTURE DEVELOPMENT TO REMAIN UNDISTURBED
3:1 SLOPING FROM PROPOSED BERM TO MATCH EXISTING GRADE
TOP OF BERM AT 141.20m
TEMPORARY 300mm OUTLET PIPE
TEMPORARY OUTLET STRUCTURE (REFER TO DETAIL ON DWG 703)
SPILLWAY AT 141.00m
3:1 SLOPING FROM TOP OF POND TO EXISTING GRADE
300 mm Ø TEMPORARY SINGLE ROW FILTER SOCK TO DIRECT FLOWS TOWARDS POND. FIELD FIT AS REQUIRED. (REFER TO DETAIL ON DRAWING 703)
300mm Ø TEMPORARY SINGLE ROW FILTER SOCK PERIMETER ESC WITH TEMPORARY FENCE PANELS. (REFER TO DETAIL ON DRAWING 703)
300 mm Ø TEMPORARY LINEAR FILTER SOCK WITH LOCATION AND SPACING TO BE FIELD FIT AS REQUIRED. FILTER SOCK TO BE IN CONTACT WITH PERIMETER ESC. (REFER TO DETAIL ON DRAWING 703)
3:1 SLOPING TO TIE INTO EXISTING BEDROCK LAYER
AREA TO REMAIN UNDISTURBED. REFER TO ESC PLANS FOR PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1 PROVIDED UNDER SEPARATE COVER
AREA TO REMAIN UNDISTURBED REFER TO ESC PLANS FOR PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1 PROVIDED UNDER SEPARATE COVER
300 mm DIAMETER TEMPORARY SINGLE ROW FILTER SOCK TO DIRECT FLOW TOWARD SEDIMENT TRAP. FIELD FIT AS REQUIRED (REFER TO DETAIL ON ESC-4)
1.42ha
TOWNHOUSES TYPE A 16 UNITS
TOWNHOUSES TYPE A 8 UNITS
SECONDARY TEMPORARY CONSTRUCTION ACCESS (REFER TO DETAIL ON ESC-4) IF REQUIRED. NOTE THAT PRIMARY CONSTRUCTION ACCESS TO THIS SITE WILL BE PROVIDED THROUGH THE VILLAGE A - PHASE 1 SUBDIVISION AS CONSTRUCTION WORKS FOR BOTH THIS SITE AND VILLAGE A - PHASE 1 ARE EXPECTED TO TAKE PLACE CONCURRENTLY. THIS CONSTRUCTION ACCESS WILL ONLY BE USED IF ACCESS CANNOT BE PROVIDED THROUGH THE SUBDIVISION DUE TO CONSTRUCTION SCHEDULE MISALIGNMENT.
PROPOSED BASE31 SUBDIVISION - VILLAGE A - PHASE 1
300mm Ø TEMPORARY SINGLE ROW FILTER SOCK PERIMETER ESC WITH TEMPORARY FENCE PANELS (REFER TO DETAIL ON DRAWING 703)
DIEPPE DRIVE
KINGSLEY ROAD
STREET I
STREET K
STREET L
LANE I
1.50m CONC SIDEWALK
EDGE OF PAVEMENT
C/L OF PAVEMENT
TOP OF SLOPE
BOTTOM OF SLOPE
EDGE OF GRAVEL
TOP OF DITCH
BOTTOM OF DITCH
ROAD SIGN
GUY
HP
CONCRETE
CONCRETE PEDESTRIAN
TOP OF BANK
TOE OF SLOPE
CONC CURB & GUTTER
CONC CURB
CONC CURB & GUTTER
CONC CURB
CONC SIDEWALK

GENERAL NOTES

1. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS FROM THE MUNICIPALITY AND ANY REQUIRED EXTERNAL AGENCIES PRIOR TO ANY SITE ALTERATION ACTIVITY.

2. PRIOR TO COMMENCEMENT OF ANY SITE ALTERATION ACTIVITY, PERIMETER EROSION AND SEDIMENT CONTROL (ESC) MEASURES AND CONSTRUCTION ACCESS MAT(S) MUST BE INSTALLED, AS PER APPROVED SITE ALTERATION/EROSION AND SEDIMENT CONTROL PLAN. ADDITIONAL ESC MEASURES, IF REQUIRED, SHALL BE INSTALLED AS DIRECTED BY THE MUNICIPALITY. THE ESC MEASURES SHALL REMAIN IN PLACE UNTIL DIRECTED BY THE MUNICIPALITY/APPLICABLE AGENCIES/CIVIL CONSULTANT FOR THEIR REMOVAL.

3. PRIOR TO COMMENCEMENT OF OVERBURDEN REMOVAL AND EARTHWORKS, ALL PERIMETER EROSION AND SEDIMENT CONTROL (ESC) MEASURES (SUCH AS PERIMETER SEDIMENT CONTROL, CONSTRUCTION ACCESS MATS, MUST BE INSTALLED AND FUNCTIONING.

4. PRIOR TO EARTHWORKS OPERATIONS AND/OR AS DIRECTED BY THE CIVIL CONSULTANT, ALL SEDIMENT CONTROL MEASURES REQUIRED (SUCH AS ESC PONDS, SEDIMENT TRAPS, SWALES, AND CHECK DAMS, ETC.) MUST BE INSTALLED AND FUNCTIONING.

5. ALL TEMPORARY STOCKPILES TO BE LOCATED A MINIMUM OF 10m FROM ANY PROPERTY LINE AND A MINIMUM OF 30m FROM ANY WATERCOURSE.

6. CHECK DAMS ARE TO BE INSTALLED IN ALL SWALES AND DITCHES IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL DRAWINGS AND DETAILS DRAWING.

7. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE ESC PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED TO MINIMIZE RUN-OFF, EROSION, AND SEDIMENT FROM BREACHING THE PERIMETER OF THE SITE, AS A RESULT OF THE DYNAMIC NATURE OF CONSTRUCTION.

8. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL ESC MEASURES IN WORKING CONDITIONS AT ALL TIMES.

   a. THE CONTRACTOR AND/OR CIVIL CONSULTANT SHALL ROUTINELY INSPECT ALL ESC DEVICES AT A MINIMUM OF ONCE A WEEK AND AFTER EACH SIGNIFICANT SNOW MELT AND RAINFALL GREATER THAN 10mm TO ENSURE THAT ESC MEASURES ARE IN PROPER WORKING CONDITION. DURING INACTIVE PERIODS, WHERE THE SITE HAS LITTLE OR NO CONSTRUCTION ACTIVITY FOR 30 DAYS OR LONGER, A MONTHLY INSPECTION WILL BE CONDUCTED.

   b. ESC PERIMETER MEASURES THAT HAVE OR ARE LIKELY TO CAUSE A SEDIMENT BREACH ARE TO BE REPAIRED WITHIN 48 HOURS OF IDENTIFICATION. ALL OTHER DAMAGED OR MISSING ESC MEASURES WILL BE REPAIRED AS IDENTIFIED AS PER ESC INSPECTION REPORTS.

   c. CONTRACTOR TO ENSURE THAT ADDITIONAL EROSION AND SEDIMENT CONTROL MATERIALS (SUCH AS CLEAR STONE, FILTER FABRIC, PUMPS, HOSES, FILTER SOCKS, STAKES, SEDIMENT FILTER BAGS, CATCHBASIN SILT SACKS) ARE READILY AVAILABLE WITHIN 24 HOURS FROM OFF-SITE SECURE STORAGE TO FACILITATE THE COMPLETION OF REPAIRS WITHIN 48 HOURS.

   d. CONTRACTOR WILL BE RESPONSIBLE FOR CLEAN-UP AND RESTORATION, INCLUDING ALL COSTS, DUE TO THE RELEASE OF SEDIMENT FROM THE SITE CAUSED BY INCORRECTLY INSTALLED OR UN-REPLACED ESC MEASURES.

9. NO CONSTRUCTION ACTIVITY OR MACHINERY SHALL BE ALLOWED BEYOND THE PERIMETER SEDIMENT CONTROL MEASURES OR LIMITS OF THE LANDS OWNED BY THE APPLICANT WITHOUT WRITTEN AUTHORIZATION.

10. THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT DUST CONTROL MEASURES AS APPROVED BY THE APPLICABLE AGENCIES.

11. ALL CONSTRUCTION VEHICLES MUST ENTER AND EXIT THE SITE ONLY FROM THE APPROVED CONSTRUCTION ACCESS ROUTE(S) AS SHOWN. TEMPORARY CONSTRUCTION ACCESS(ES) WILL BE MAINTAINED TO THE SATISFACTION OF THE APPLICABLE AGENCIES. STREET SWEEPING TO BE COMPLETED AS REQUIRED.

12. SURFACE ROUGHENING TO TAKE PLACE ON ALL EXPOSED SOIL SLOPES (WHEN POSSIBLE), AND ON ANY OTHER INACTIVE DISTURBED SURFACES THAT WILL BE LEFT EXPOSED ON A TEMPORARY BASIS. SURFACE ROUGHENING TO BE ACHIEVED BY TRACKWALKING PARALLEL TO THE DIRECTION OF FLOW OR PREFERABLY WITH A SHEEPSFOOT PACKER.

13. ALL DISTURBED GROUND LEFT INACTIVE, OR TO BE LEFT INACTIVE WHICH IS NOT DIRECTED TO A TEMPORARY EROSION AND SEDIMENT CONTROL MEASURE SHALL BE STABILIZED WITHIN 72 HOURS, SUBJECT TO WEATHER CONDITIONS..

14. CONTRACTOR TO CONFIRM THE LOCATION OF THE EXISTING UTILITIES PRIOR TO INITIATING ANY ON-SITE WORKS.

15. TREES ARE TO BE PRESERVED OR REMOVED AS PER THE APPROVED TREE PRESERVATION PLAN.TREE RELOCATIONS WILL TAKE PLACE BEFORE STRIPPING COMMENCES.

16. CONTRACTOR TO ENSURE THAT SEDIMENT LADEN RUNOFF IS DIRECTED TO APPROPRIATE ESC CONTROLS THROUGHOUT THE STAGED CONSTRUCTION PROCESS, INCLUDING TRANSITIONAL WORKS BETWEEN STAGES.

17. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO THE DOWNSTREAM WATERCOURSE/WATERBODY/ENVIRONMENT/STORM SEWER/ETC. REFUELING AND MAINTENANCE WILL BE CONDUCTED 30 m FROM ANY WATERCOURSE/WATERBODY/NATURAL FEATURE/SENSITIVE HABITAT/STORM SEWER/ETC.

18. ANY DEWATERING / UNWATERING OCCURRING ON-SITE MUST BE IN ACCORDANCE WITH AN APPROVED PLAN. PUMPING MUST BE TO SEDIMENT FILTER BAGS PLACED ON NON-ERODIBLE SURFACE OR VEGETATED GROUND. FILTER SOCK TO SURROUND FILTER BAG. ADDITIONAL DEWATERING / UNWATERING REQUIREMENTS MAY BE DEEMED NECESSARY AND SHALL BE IMPLEMENTED AS DIRECTED TO THE SATISFACTION OF THE APPLICABLE AGENCIES.

19. AN APPROVED SPILLS MANAGEMENT PLAN IS TO BE KEPT ON-SITE. SPILL CLEANUP EQUIPMENT, SUCH AS ABSORPTIVE MEDIA, IS TO BE MAINTAINED ON-SITE FOR IMMEDIATE USE IN THE EVENT OF A SPILL. SPILLS ARE TO BE REPORTED IMMEDIATELY TO THE MECP SPILLS ACTION CENTRE (SAC) AT 1-800-268-6060.

20. FOR EROSION AND SEDIMENT CONTROL RELATED QUESTIONS AND CONCERNS CONTACT SCS CONSULTING GROUP AT (905) 475-1900.

ESC STAGE 1 - OOVERBURDEN REMOVAL AND EARTHWORKS

1. SEDIMENT COLLECTED IN THE TEMPORARY SEDIMENT TRAP(S) SHALL BE REMOVED WHEN 50% OF THE STORAGE CAPACITY IS FILLED. THE TRAP(S) SHALL BE KEPT IN OPERATION UNTIL THE DRAINAGE AREA IS REDUCED TO 0.5 ha OR LESS.

2. SEDIMENT COLLECTED / ACCUMULATED AGAINST FILTER SOCKS AND CHECK DAMS MUST BE REMOVED AND/OR THE ESC MEASURE RESET ONCE SEDIMENT REACHES 50% OF THE FILTER SOCK OR CHECK DAM HEIGHT.

3. SEDIMENT COLLECTED / ACCUMULATED AGAINST SILT FENCE MUST BE REMOVED ONCE SEDIMENT REACHES 30% OF THE GEOTEXTILE HEIGHT. CLOGGED AND HEAVILY SEDIMENT-STAINED SILT FENCE GEOTEXTILE MUST BE REPLACED ONCE THE LOWER HALF OF THE GEOTEXTILE IS NO LONGER ABLE TO ALLOW RUNOFF TO FILTER THROUGH THE FABRIC.

4. CONTRACTOR TO COORDINATE WITH CIVIL CONSULTANT TO EXPLORE THE POSSIBILITY OF A STAGED STRIPPING AND EARTHWORKS APPROACH TO MINIMIZE THE AREA DISTURBED AT ONE TIME.

5. CROP SEED MIXTURE IS TO BE APPLIED AT A MINIMUM RATE OF 60 kg/ha.

ESC STAGE 2 - UNDERGROUND SERVICING, ROADWORS AND HOUSE CONSTRUCTION

1. CATCHBASIN SEDIMENT CONTROL DEVICES (SILT SACKS AND/OR FILTER SOCKS). FOR SITE CATCHBASINS TO BE INSTALLED IMMEDIATELY AFTER BASE ASPHALT (REFER TO ESC DETAILS DRAWING.

2. SEDIMENT COLLECTED IN THE TEMPORARY SEDIMENT TRAP(S) SHALL BE REMOVED WHEN 50% OF THE STORAGE CAPACITY IS FILLED. THE TRAP(S) SHALL BE KEPT IN OPERATION UNTIL THE DRAINAGE AREA IS REDUCED TO 0.5 ha OR LESS.

3. EXTRA CATCHBASIN SILT SACKS AND FILTER CLOTH ARE TO BE AVAILABLE ON-SITE OR FROM AN OFF-SITE SECURE STORAGE AREA, AS REQUIRED.

4. ALL PERFORATED STORM SEWER MH COVERS TO HAVE FILTER CLOTH INSTALLED UNDERNEATH THE COVER.

5. STREET SWEEPING/CATCHBASIN CLEANING PROGRAM SHALL BE IMPLEMENTED TO THE SATISFACTION OF THE MUNICIPALITY. THIS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER UNTIL ASSUMPTION BY THE CONDOMINIUM CORPORATION.

6. TEMPORARY SEDIMENT TRAP TO REMAIN UNTIL SEWERS ARE INSTALLED AND/OR DRAINAGE AREA TO TEMPORARY SEDIMENT TRAP SIGNIFICANTLY REDUCED, AND/OR STABILIZED. TEMPORARY SEDIMENT CONTROL MEASURES (E.G., FILTER SOCK, CHECK DAMS) TO BE INSTALLED FOLLOWING REMOVAL OF SEDIMENT TRAP AS REQUIRED. TEMPORARY SEDIMENT TRAP(S) TO BE DECOMMISSIONED IN THE FOLLOWING MANNER:

A. CONFIRM WEATHER FORECAST TO ENSURE DRY CONDITIONS.
B. CONFIRM PUMP DISCHARGE LOCATION AND PUMPING SCHEDULE WITH CIVIL CONSULTANT PRIOR TO INITIATING PUMPING.
C. PUMP WATER FROM TEMPORARY SEDIMENT TRAP(S) TO SEDIMENT FILTER BAGS PLACED WITHIN VEGETATED AREA, ENCIRCLED WITH FILTER SOCKS, AND AS FAR FROM WATERCOURSE AS POSSIBLE, WHILE STILL ENSURING POSITIVE DRAINAGE AWAY FROM SITE.
D. CONTRACTOR TO MONITOR DISCHARGE THROUGHOUT PUMPING OPERATION.
E. CONTRACTOR TO ENSURE ADEQUATE AMOUNT OF SPARE FILTER BAGS ARE STORED ON-SITE OR FROM AN OFF-SITE SECURE STORAGE AREA.
F. BACKFILL TEMPORARY ESC POND(S) WITH ENGINEERED FILL PER GEOTECHNICAL RECOMMENDATION.
G. AREA TO BE STABILIZED.

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

EROSION & SEDIMENT CONTROL NOTES

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	V.S./C.C.
SCALE:	N.T.S.	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

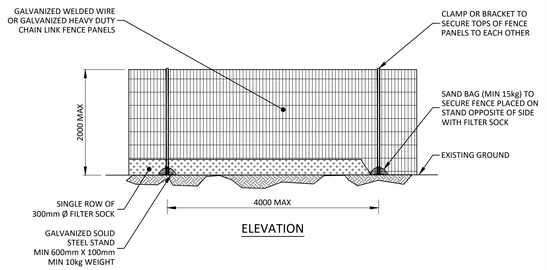
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

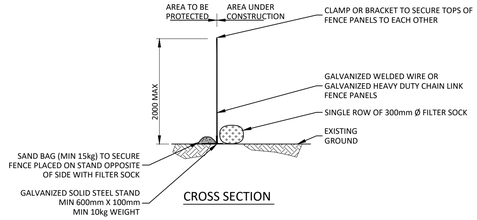
Date

PROJECT No: 2365B

DRAWING No: ESC-3



ELEVATION



CROSS SECTION

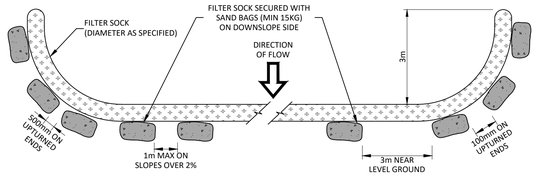
NOTES:

1. FILTER SOCKS INTENDED TO LEAVE PERMANENTLY MUST HAVE 100% BIODEGRADABLE NETTING.
2. SMOOTH OUT OR REMOVE ALL SURFACE OBSTRUCTIONS GREATER THAN 50mm FROM GROUND THE FILTER SOCK IS TO BE INSTALLED UPON.
3. SHOULD STAKE AND/OR FENCE INSTALLATION NOT BE POSSIBLE DUE TO CONDITIONS, WHERE FILTER SOCK IS REQUIRED IT MAY BE SUPPORTED BY BOULDERS (MIN 10kg AND 250mm DIAMETER) OR SAND BAGS PLACED ON DOWNSLOPE SIDE OF SOCK AT 3m SPACING FOR SLOPES <2% AND 1m SPACING FOR SLOPES >2%.
4. WHERE INSTALLED ON HIGHLY ERODIBLE SURFACES THE UPSLOPE SIDE OF THE FILTER SOCK BASE IS TO BE PACKED WITH A MINIMUM 100mm OF NATIVE MULCH SOCK FILL MEDIA TO REDUCE POTENTIAL FOR SOCK UNDERMINING.

ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE SHOWN

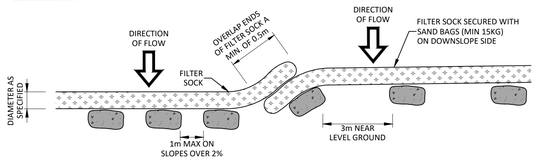
TEMPORARY SINGLE ROW FILTER SOCK PERIMETER ESC WITH TEMPORARY FENCE PANELS

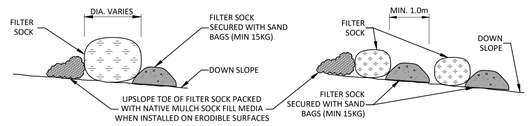
SCALE: N.T.S.



SLOPES GREATER THAN 2% - PLAN VIEWS

SLOPES NEAR LEVEL GROUND - PLAN VIEWS





SINGLE ROW

DOUBLE ROW

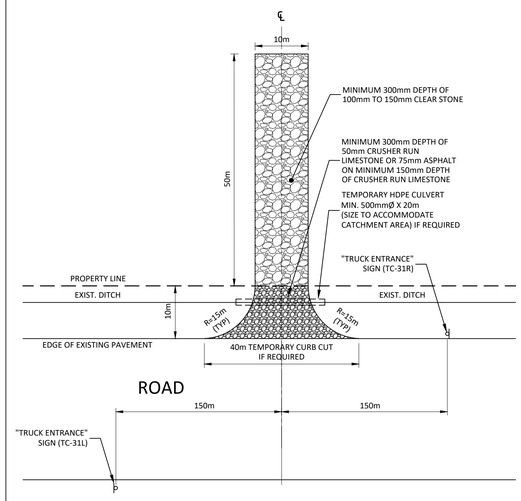
NOTES:

1. SMOOTH OUT OR REMOVE ALL SURFACE OBSTRUCTIONS GREATER THAN 50mm FROM GROUND THE FILTER SOCK IS TO BE INSTALLED UPON.
2. ENDS OF FILTER SOCK SHALL BE OVERLAPPED BY A MINIMUM OF 0.5m
3. ALL FILTER SOCK TO HAVE NATIVE MULCH FILL AND UV STABILIZED POLYPROPYLENE NETTING.
4. WHERE INSTALLED ON HIGHLY ERODIBLE SURFACES THE UPSLOPE SIDE OF THE FILTER SOCK BASE IS TO BE PACKED WITH A MINIMUM 100mm OF NATIVE MULCH SOCK FILL MEDIA TO REDUCE POTENTIAL FOR SOCK UNDERMINING.
5. EXCESS SEDIMENT ACCUMULATED ON THE UPSLOPE SIDE OF THE FILTER SOCK IS TO BE REMOVED ONCE IT REACHES HALF THE TOTAL HEIGHT OF THE SOCK OR THE SOCK IS TO BE RESET.
6. FILTER SOCKS INTENDED TO LEAVE PERMANENTLY MUST HAVE 100% BIODEGRADABLE NETTING.
7. FILTER SOCK ON SURFACES OF <2% SLOPE MAY BE SUPPORTED BY ANGULAR BOULDERS SOURCED FROM ON-SITE BLASTING DEBRIS (MIN 10kg AND 250mm DIAMETER) INSTEAD OF SAND BAGS.

ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE SHOWN

TEMPORARY LINEAR FILTER SOCK SEDIMENT CONTROL BARRIER ON HARD SURFACE

SCALE: N.T.S.

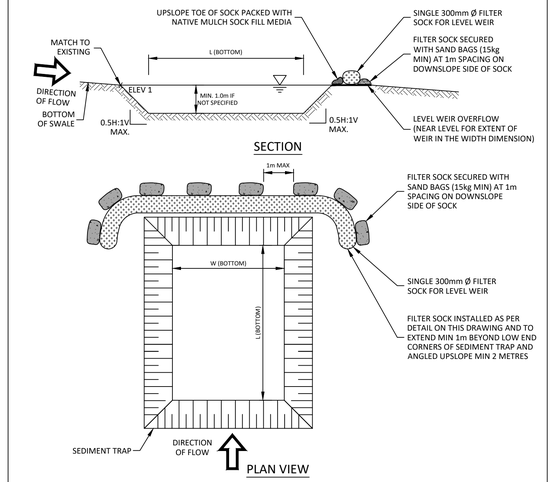


NOTES

1. TEMPORARY "TRUCK ENTRANCE" SIGNS(TC–31) SHALL BE INSTALLED ON THE SHOULDER, 150M IN ADVANCE OF THE ACCESS (NOTE: SEE DETAILS ON USE OF THESE SIGNS IN THE ONTARIO TRAFFIC MANUAL, BOOK 7.) THE APPLICANT WILL BE RESPONSIBLE FOR THE COST OF OBTAINING, ERECTING AND MAINTAINING THESE SIGNS.
2. TEMPORARY CONSTRUCTION ACCESS SHALL BE REMOVED FROM THE ROAD ALLOWANCE AND ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.

MUD MAT FOR TEMPORARY CONSTRUCTION ACCESS

SCALE: N.T.S.



PLAN VIEW

SEDIMENT TRAP ID	L (m)	W (m)	D (m)	GROUND ELEVATION AT LEVEL WEIR OVERFLOW(m)
101	24	11	1	140.92

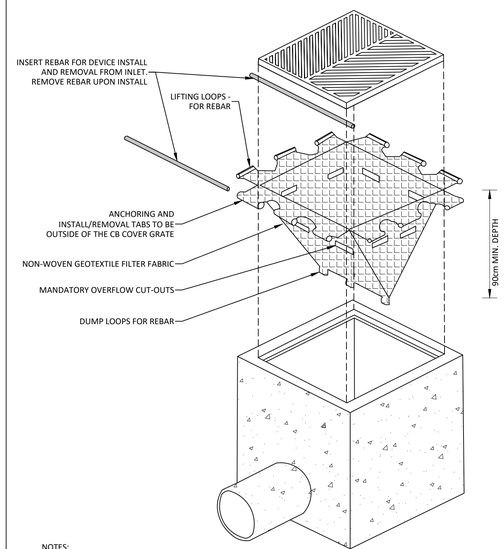
NOTES:

1. COLLECTED SEDIMENT TO BE REMOVED ONCE CAPACITY REACHES 50% OF DESIGNED CAPACITY.
2. FILTER SOCK LEVEL WEIR TO BE PLACED ON SMOOTHED SURFACE THAT IS LEVEL FROM SIDE TO SIDE (L DIMENSION)
3. TWO ROWS OF FILTER SOCK ARE REQUIRED AT LOCATIONS WHERE THE SEDIMENT TRAP DISCHARGES OFF-SITE ALONG SITE PERIMETERS. FILTER SOCK ROWS SEPARATED BY MIN 1 METRE OF OPEN GROUND.
4. SMOOTH OUT OR REMOVE ALL SURFACE OBSTRUCTIONS GREATER THAN 50mm FROM GROUND THE FILTER SOCK IS TO BE INSTALLED UPON.
5. ALL FILTER SOCK TO HAVE NATIVE MULCH FILL AND UV STABILIZED POLYPROPYLENE NETTING.
6. WHERE INSTALLED ON HIGHLY ERODIBLE SURFACES THE UPSLOPE SIDE OF THE FILTER SOCK BASE IS TO BE PACKED WITH A MIN 100mm OF NATIVE MULCH SOCK FILL MEDIA TO REDUCE POTENTIAL FOR SOCK UNDERMINING.

ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE SHOWN

TEMPORARY SEDIMENT TRAP WITH FILTER SOCK LEVEL WEIR ON HARD SURFACES

SCALE: N.T.S.



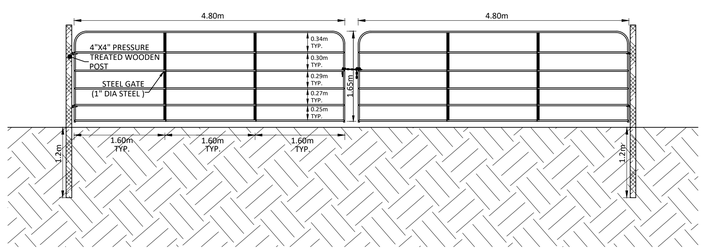
NOTES:

1. CATCHBASIN SEDIMENT CONTROL SILT SACK TO BE INSPECTED ONCE EVERY TWO WEEKS AND IMMEDIATELY AFTER EVERY RAINFALL EVENT >10mm WITHIN 24 HRS. AND CLEANED-OUT WHEN THE CATCHBASIN INSERT IS 50% FULL OF SEDIMENT OR WHEN EXPANSION RESTRAINT CORD IS NO LONGER VISIBLE. REPLACE SILT SACK WHEN DAMAGED.
2. STANDARD SIZE IS FOR 600MM X 600MM CATCHBASINS BUT AVAILABLE IN DIFFERENT AND CUSTOM SIZES (E.G., SUPER CATCHBASINS, LARGER DITCH INLET CB).
3. INSTALLATION TO OCCUR IMMEDIATELY (WITHIN 24 HRS) UPON CB GRATE BEING INSTALLED.
4. SUITABLE PRODUCTS: FERGUSON WATERWORKS ACF SILT SACK WITH OVERFLOW PRODUCT CODE: ACFSSRF2X2YOF (OR APPROVED EQUIVALENT)
5. CATCHBASIN SEDIMENT CONTROL SILT SACK TO BE EQUIPED WITH EXPANSION RESTRAINT CORD AND OVERFLOW CUT-OUTS/PORTS.
6. HINGED CB COVER GRATES MUST BE FULLY REMOVED TO INSTALL SILT SACK AND FILTER FABRIC UNDER THE HINGE PINS.

ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE SHOWN

CATCHBASIN TEMPORARY SEDIMENT CONTROL SILT SACK

SCALE: N.T.S.



LOCKABLE GATE FOR MUD MAT - CONSTRUCTION ENTRANCE

SCALE: N.T.S.

REVISIONS				
No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

EROSION & SEDIMENT CONTROL DETAILS

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	V.S./C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

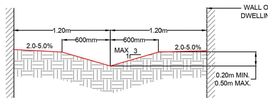
Peter Moyer, P.Eng.
Director Of Development Services

Date

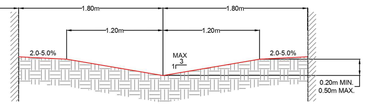
PROJECT No: 2365B

DRAWING No: ESC-4

RESIDENTIAL OFFSETS
DETACHED & SEMI-DETACHED



RESIDENTIAL OFFSETS
STREET TOWNHOUSES

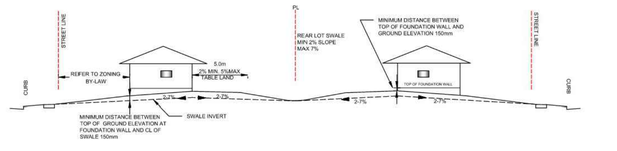


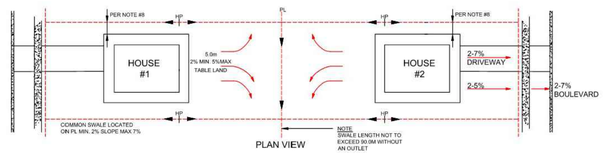
NOTES

1. BUILDING OFFSETS FROM PROPERTY LINE AS PER ZONING BY-LAW.
2. THIS STANDARD IS FOR URBAN LOTS AND GENERAL IN NATURE. CERTAIN LOTS MAY REQUIRE CHANGES.
3. THIS STANDARD IS MEANT TO BE READ IN CONJUNCTIONS WITH THE PRINCE EDWARD COUNTY LOT GRADING AND DRAINAGE STANDARDS AND DESIGN MANUAL.
4. HOUSE STYLES ARE TO BE USED TO SUIT LOT GRADING.
5. REAR TO FRONT YARD DRAINAGE IS DISCOURAGED FOR STREET TOWNHOUSE DEVELOPMENT TO AVOID MID-YARD SWALES ACROSS THE UNITS.
6. BELOW GRADE WALKOUTS AND REVERSE GRADED DRIVEWAYS WILL NOT BE PERMITTED.

STANDARD DETAIL	TYPICAL SIDE YARD DRAINAGE	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-002

PROFILE VIEW





PLAN VIEW

NOTES:

1. ALTHOUGH MAXIMUM SLOPES ARE SHOWN, THEY SHOULD BE AVOIDED UNLESS NO OTHER ALTERNATIVE IS AVAILABLE.
2. THIS STANDARD IS FOR URBAN LOTS AND GENERAL IN NATURE. CERTAIN LOTS MAY REQUIRE CHANGES.
3. THIS STANDARD IS MEANT TO BE READ IN CONJUNCTION WITH THE PRINCE EDWARD COUNTY LOT GRADING AND DRAINAGE MANUAL.
4. HOUSE STYLES USED TO SUIT LOT GRADING.
5. REAR TO FRONT YARD DRAINAGE IS DISCOURAGED FOR STREET TOWNHOUSE DEVELOPMENT TO AVOID MID-YARD SWALES ACROSS THE UNITS.
6. BELOW GRADE WALKOUTS AND REVERSE GRADE DRIVEWAYS WILL NOT BE PERMITTED.
7. ALL REAR LOT SWALES SHALL OUTLET TO CURBS, SIDEWALKS OR CATCHBASINS AS PER THE PRINCE EDWARD COUNTY GRADING AND DRAINAGE MANUAL.
8. GRASSED WALKWAY AS PER THE PRINCE EDWARD COUNTY GRADING AND DRAINAGE MANUAL.

STANDARD DETAIL	SPLIT DRAINAGE	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-004

GENERAL NOTES - SANITARY SYSTEMS

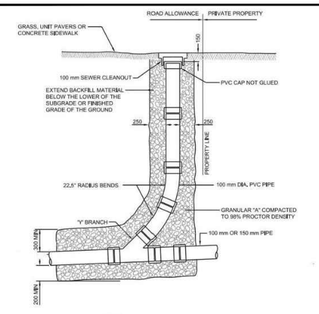
SANITARY SEWERS

1. BEDDING SHALL BE AS PER OPSDs-802.010, 802.013 (GRAN 'A' MATERIAL) FOR FLEXIBLE PIPES AND OPSDs-802.030, 802.031, 802.032, 802.033 CLASS 'B' BEDDING (GRAN 'A' MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY DEVELOPMENT ENGINEER.
2. MAXIMUM DEFLECTION FROM COMBINED LIVE AND DEAD LOADING SHALL NOT EXCEED ANY C.S.A, O.P.S OR MANUFACTURER'S RECOMMENDED SPECIFICATIONS.
3. PVC AND CONCRETE SEWERS SHALL HAVE RUBBER GASKET TYPE JOINTS AND SHALL BE CERTIFIED TO CONFORM TO ALL CURRENT C.S.A SPECIFICATIONS.
4. MINIMUM PIPE CLASS FOR REINFORCED CONCRETE SANITARY SEWERS SHALL BE 65-D.
5. MAINTENANCE HOLES TOPS (FRAMES) ARE TO BE SET TO BASE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN TOP LIFT OF ASPHALT IS PLACED.
6. DROP STRUCTURES SHALL BE AS PER OPSD-1003.020.

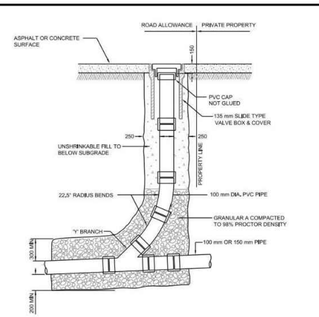
SANITARY SERVICE LATERALS

1. LOCATION OF LATERAL TO BE MARKED 2.0m PAST PROPERTY LINE WITH A 50 x 100mm WOODEN STAKE PAINTED GREEN, EXTENDED FROM SERVICE INVERT TO 300mm ABOVE GROUND LEVEL.
2. PIPE TO BE PVC SDR28, RUBBER GASKET TYPE JOINTS AND SHALL CONFORM TO C.S.A (B-182.2) (GREEN), MINIMUM 125mm DIA. PVC SDR28 FOR RESIDENTIAL AND MINIMUM 150mm DIA. PVC SDR28 FOR INDUSTRIAL/COMMERCIAL DEVELOPMENT.
3. MINIMUM DEPTH OF LATERAL AT PROPERTY LINE SHALL BE 2.3m MEASURED FROM THE SEWER OBVERT TO FINISHED GROUND SURFACE ELEVATION UNLESS NOTED OTHERWISE.
4. ALL CONNECTIONS TO NEW SANITARY MAINS SHALL BE PRE-MANUFACTURED, FABRICATED TEES. CONNECTIONS TO EXISTING SANITARY SEWER SHALL BE MADE WITH APPROVED FACTORY MADE TEES OR APPROVED SADDLES IN STRICT CONFORMANCE TO MANUFACTURER'S RECOMMENDATIONS.
5. MINIMUM PIPE SLOPE TO BE 1.0%, RECOMMENDED 2.0% (SEE OPSD-1006.010)

STANDARD DETAIL	GENERAL NOTES SANITARY SYSTEMS	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-006



"A"



"B"

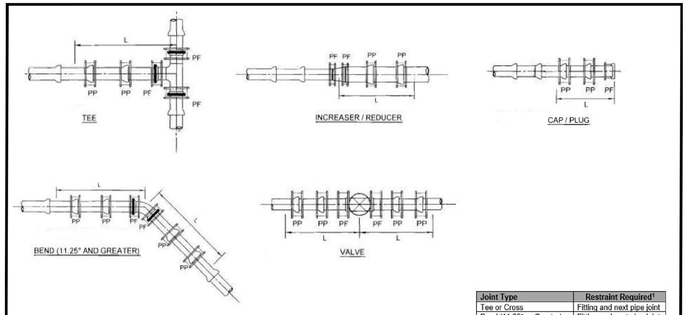
NOTES (TYPE 'A')

1. INSTALL 100mm CLEAN-OUT MARKED "SEWER CLEAN-OUT" BOLTED.
2. FOR USE IN SIDEWALK OR GRASS BOULEVARD.
3. FOR RESIDENTIAL CONNECTIONS ONLY.

NOTES (TYPE 'B')

1. INSTALL 135mm SLIDE TYPE VALVE BOX AND COVER MARKED "SEWER" OVER PVC CAP, NOT GLUED.
2. FOR USE IN PAVED AREAS.
3. FOR RESIDENTIAL CONNECTIONS ONLY.

STANDARD DETAIL	SANITARY SEWER CLEANOUTS RESIDENTIAL	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-007



Joint Type	Restraint Required¹
Tee or Cross	Fitting and next pipe joint
Bend (11.25° or Greater)	Fitting and next pipe joint
Increaser/Reducer	Fitting and next pipe joint
Valve	Fitting and next pipe joint
Cap /Plug	Fitting and next pipe joint

Note: 1- If pipe length less than 6.1 m, then any joint within 6.1 m of a fitting shall be restrained.

NOTES:

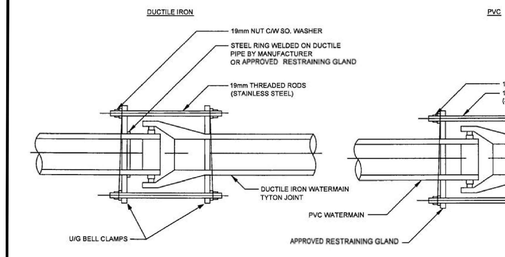
1. DRAWING NOT TO SCALE. L= 6.1m.
2. "PF" IS PIPE-FITTING MECHANICAL RESTRAINING DEVICE.
3. "PP" IS PIPE-PIPE MECHANICAL RESTRAINING DEVICE.
4. PROVIDE CORROSION PROTECTION AS PER THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.
5. TO BE READ IN CONJUNCTION WITH THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.

STANDARD DETAIL	JOINT RESTRAINT STANDARDS FOR WATERMAINS	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-010

GENERAL NOTES - STORM SYSTEMS

1. STORM SEWERS SHALL BE PROVIDED ON ALL ROADS WITH CURB AND GUTTER. MINIMUM SIZE 300mm DIA.
2. CATCH BASIN LATERAL SIZE & GRADES: MINIMUM 300mm DIA. WITH 1.0% GRADE SINGLE, MINIMUM 375mm DIA. WITH 0.7% GRADE DOUBLE. MINIMUM DEPTH OF COVER SHALL BE 1.5m.
3. ALL CONNECTIONS TO STORM SEWER MAIN, MAINTENANCE HOLES AND CATCH BASINS SHALL BE MADE AS PER OPSDs-708.010, 708.020, 708.030.
4. BEDDING SHALL BE AS PER OPSD-802.010 OR 802.013 (GRAN 'A' MATERIAL) FOR FLEXIBLE PIPES AND OPSD-802.030, 802.031, 802.032 OR 802.033 CLASS 'B' BEDDING (GRAN 'A' MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY DEVELOPMENT ENGINEER.
5. MINIMUM PIPE CLASS FOR REINFORCED CONCRETE STORM SEWERS SHALL BE 65-D.
6. MAINTENANCE HOLES TOPS (FRAMES) ARE TO BE SET TO BASE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE WHEN TOP LIFT OF ASPHALT IS PLACED.
7. STORM SYSTEMS SHALL BE COLOUR CODED 'WHITE'.

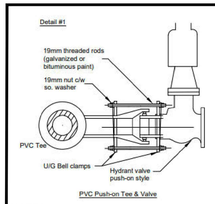
STANDARD DETAIL	GENERAL NOTES STORM SYSTEMS	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-008

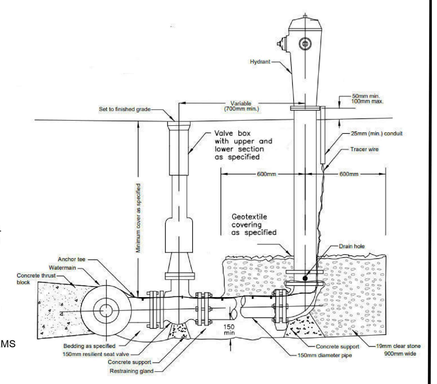


NOTES:

1. DRAWING NOT TO SCALE.
2. PROVIDE CORROSION PROTECTION AS PER THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.
3. TO BE READ IN CONJUNCTION WITH THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.

STANDARD DETAIL	TYPICAL JOINT RESTRAINT FOR WATERMAINS DI OR PVC	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-011





NOTES:

1. DRAWING NOT TO SCALE.
2. ALL CONCRETE THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED GROUND.
3. BOND BREAKER SHALL BE APPLIED BETWEEN THE CONCRETE AND THE FITTINGS AND APPURTENANCES.
4. BOLTS AND NUTS FOR BURIED FLANGE TO FLANGE CONNECTIONS SHALL BE STAINLESS STEEL.
5. HYDRANT LEAD SHALL BE RESTRAINED FROM WATERMAIN TO HYDRANT BOOT.
6. PROVIDE CORROSION PROTECTION AS PER THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.
7. TO BE READ IN CONJUNCTION WITH THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.

STANDARD DETAIL	HYDRANT INSTALLATION	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-014

REVISIONS				
No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

DETAILS PLAN 1

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

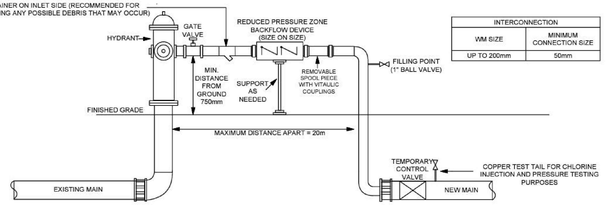
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

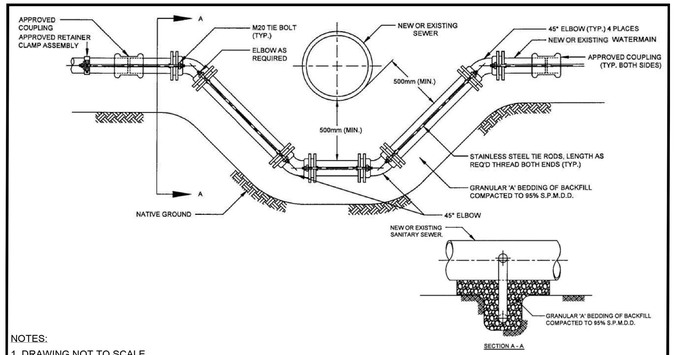
DRAWING No: D-1

File: P:\2365 Picton Airport – Tercat\Drawings\Village A – Rental Building\Det\2365D-D1-D3-VRNT-DETL.dwg – Revised by <MCOUGLER> : Thu, Feb 26 2026 – 9:14am



NOTES:
1. THE REDUCED PRESSURE ZONE BACKFLOW PREVENTER (RPZ) SHALL BE PROVIDED BY THE CONTRACTOR, IN GOOD WORKING CONDITION, AND TESTED AS PER CSA B64.10-01 (AS AMENDED) WITH THE EXCEPTION OF REDUCED PRESSURE ZONES INITIALLY TESTED AND THEN RELOCATED WITHIN THE SAME DAY.
2. THE BACKFLOW PREVENTION ASSEMBLY AND THE BACKFLOW PREVENTION VALVE ASSEMBLY SHALL BE PHYSICALLY SEPARATED FROM THE NEW MAIN DURING WATERMAIN PRESSURE TESTS. THE FINAL CONNECTION OF THE WATERMAIN SHALL BE COMPLETED ONLY AFTER AUTHORIZATION BY THE PRINCE EDWARD COUNTY.
3. THE WATERMAIN SHALL BE DRAINED BY CONTROLLED MEANS, DE-CHLORINATING AS REQUIRED AS PER AWWA, AND TEMPORARY CAPS OR PLUGS INSTALLED AS REQUIRED.
4. THE WATERMAIN SHALL BE CUT BACK TO REMOVE THE TAPPING POINTS OF THE TEMPORARY WATERMAIN BY-PASS ASSEMBLY. ENSURE COMPLETION PIECE IS LESS THAN 5.5m AND DISINFECTED AS PER AWWA 651 (AS AMENDED).
5. ONLY PRINCE EDWARD COUNTY WATER OPERATIONS SHALL OPERATE VALVES AND/OR OTHER APPURTENANCES WITHIN THE NEW SYSTEM ONCE COMMISSIONING PROCEDURES ARE INITIATED.
6. ALL NEW PIPINGS AND APPURTENANCES PLACED IN THE CONNECTION SHALL BE DISINFECTED AS PER AWWA C651: DISINFECTING WATERMAIN (AS AMENDED).
7. A PHYSICAL SEPARATION MUST BE MAINTAINED AT ALL CONNECTION POINTS OF NEW WATERMAINS TO THE EXISTING SYSTEM UNTIL BACTERIOLOGICAL SAMPLES CONFIRM SATISFACTORY RESULTS. A SAMPLING TAP MUST BE PROVIDED AT THE END OF EACH BRANCH OR STUB.
8. THE ACTUAL CONFIGURATION USED MUST SATISFY THE INTENT OF THIS DRAWING AND IS AT THE DISCRETION OF THE MUNICIPAL REPRESENTATIVE. PRINCE EDWARD COUNTY WATER OPERATIONS SHALL BE CONSULTED PRIOR TO ANY CONNECTION TO THE EXISTING DRINKING WATER SYSTEM.
9. WINTER PROTECTION SHALL BE PROVIDED AS APPLICABLE.
10. ALL TEMPORARY CAPS MUST BE RESTRAINED. ALL RESTRAINED JOINTS SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
11. PRINCE EDWARD COUNTY WATER OPERATIONS MAINTAINS THE RIGHT TO REQUEST AN ALTERNATE BY-PASS ASSEMBLY SIZING IN AREAS WHERE PRESSURE AND FLOW RATE MAY BE AN ISSUE.

STANDARD DETAIL	WATERMAIN CONNECTION FROM HYDRANT UPTO 200mm DIA.	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-015



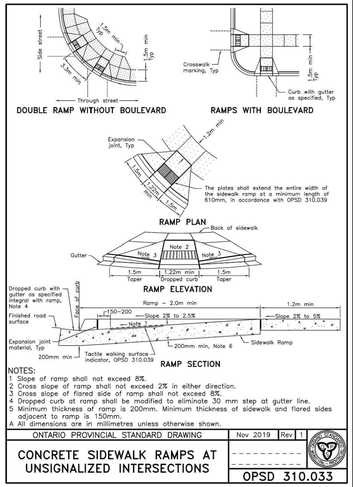
NOTES:
1. DRAWING NOT TO SCALE.
2. PROVIDE ADDITIONAL PERMANENT SUPPORT FOR SEWER WHERE REQUIRED TO AVOID SETTLEMENT.
3. WATERMAIN DEFLECTION SHALL BE PLACED BEFORE SEWER FOR NEW CONSTRUCTION.
4. PROVIDE CORROSION PROTECTION AS PER THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.
5. JOINT RESTRAINTS AS PER PSD-009 AND PSD-010.
6. TO BE READ IN CONJUNCTION WITH THE PRINCE EDWARD COUNTY WATER SYSTEMS MANUAL.

STANDARD DETAIL	LOWERING DETAIL WATERMAIN CROSSINGS	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-016

GENERAL NOTES - WATER SYSTEMS

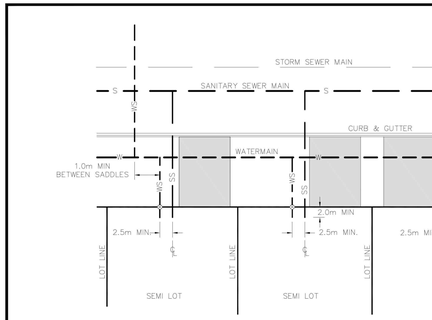
1. CONTRACTORS SHALL INFORM THE PRINCE EDWARD COUNTY WATER OPERATIONS DEPARTMENT A MINIMUM OF 48 HOURS IN ADVANCE OF THEIR INTENTIONS TO PERFORM WORK ON WATER INFRASTRUCTURE.
2. MINIMUM COVER OVER WATERMAIN SHALL BE 1.8m. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE 2.5m. WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECT WATERMAIN HORIZONTALLY OR VERTICALLY WHILE PROVIDING A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER AT ALL TIMES.
3. BEDDING SHALL BE AS PER OPSDs-802.010, 802.013 (GRAN 'A' MATERIAL) FOR FLEXIBLE PIPES AND OPSDs-802.030, 802.031, 802.032, 802.033 CLASS 'B' BEDDING (GRAN 'A' MATERIAL) FOR RIGID PIPE UNLESS OTHERWISE APPROVED BY DEVELOPMENT ENGINEER. THE COMPACTION TESTING SHALL INCLUDE THE ENTIRE EMBEDMENT ENVELOPE (HAUNCHES, BEDDING, TOP OF PIPE AND COVER).
4. RESTRAINING SHALL BE REQUIRED AT ALL HYDRANTS. THRUST BLOCKS SHALL BE AS OPSDs-1103.010 and 1103.020.
5. TRACING WIRE SHALL BE #12 AWG HIGH STRENGTH COPPER CLAD (HS-CSS) AND SHALL BE INSTALLED ON THE TOTAL LENGTH OF ALL WATERMAIN AND BROUGHT UP TO EACH HYDRANT AND CONNECTED TO FLANGE BOLT. ALL SPLICE TO UTILIZE CONNECTORS AS PER MANUFACTURER'S RECOMMENDATIONS.
6. SERVICE TAPPING SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m FROM JOINTS.
7. ALL NEW CURB STOPS AND BOXED SHALL BE LOCATED AT OUT OF DRIVEWAYS AND SIDEWALKS.

STANDARD DETAIL	GENERAL NOTES WATER SYSTEMS	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-017



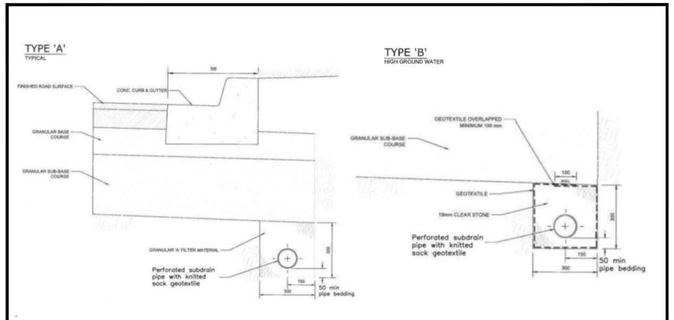
NOTES:
1 Slope of ramp shall not exceed 8%.
2 Cross slope of ramp shall not exceed 2% in either direction.
3 Cross slope of flared side of ramp shall not exceed 8%.
4 Dropped curb at ramp shall be modified to eliminate 30 mm step at gutter line.
5 Minimum thickness of ramp is 200mm. Minimum thickness of sidewalk and flared sides adjacent to ramp is 150mm.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 1
CONCRETE SIDEWALK RAMPS AT UNSIGNALIZED INTERSECTIONS		OPSD 310.033



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. ALL SERVICES TO BE BROUGHT 2.0m MIN. PAST PROPERTY LINE AND PROPERLY MARKED WITH A 50x100mm STAKE EXTENDING FROM THE INVERT OF THE LATERAL TO GROUND LEVEL.
MARKINGS AS FOLLOWS: SANITARY LATERAL - GREEN
WATER LATERAL - BLUE
3. SANITARY LATERAL TO BE LOCATED AT CENTRE LINE OF EACH UNIT.
4. WATER LATERAL TO BE LOCATED 2.5m OFFSET NORTH OR WEST OF THE SANITARY LATERAL.
5. WATER VALVES INSTALLED AT PROPERTY LINE SHALL BE OFFSET 150mm AWAY FROM THE PROPERTY LINE AND LOCATED IN THE MUNICIPAL ROW.

	SERVICE CONNECTIONS	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-021



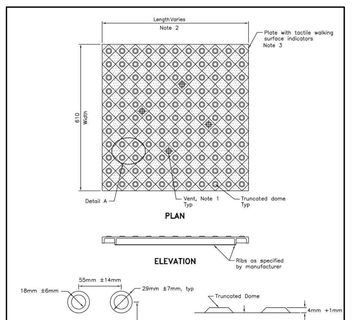
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. ALL CONNECTIONS TO BE MADE ON THE UPSTREAM SIDE OF ALL CATCH BASINS, MORTARED INSIDE AND OUTSIDE.
3. SUBDRAINS SHALL BE PLUGGED AT THE HIGH END WITH A MANUFACTURED PLUG.
4. TYPE 'B' SUBDRAIN TRENCH SHALL BE LINED WITH CLASS II, NON-WOVEN GEOTEXTILE, WITH F.D.S OF 75-150 µm AND A MINIMUM THICKNESS OF 1 mm.
5. TRENCH DIMENSIONS SHOWN TO ACCOMMODATE 100mm OR 150mm DIA. SUBDRAIN PIPE.

	SUBDRAIN - DETAIL	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-026

GENERAL NOTES

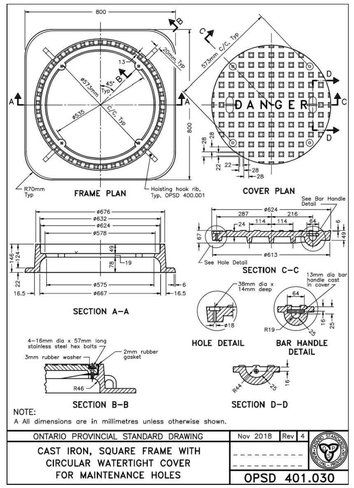
1. ALL WORKS SHALL BE IN ACCORDANCE WITH CURRENT PRINCE EDWARD COUNTY STANDARD DRAWINGS (PSD) & ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD). ORDER OF PRECEDENCE SHALL BE FIRSTLY "PSD" AND SECONDLY "OPSD".
2. LOCATION OF SERVICES ARE NOT GUARANTEED. THE CONTRACTOR SHALL NOTIFY VARIOUS UTILITY COMPANIES AS PER REQUIREMENTS PRIOR TO COMMENCEMENT OF ANY WORKS.
3. A ROAD OCCUPANCY PERMIT SHALL BE REQUIRED PRIOR TO COMMENCEMENT OF WORKS WITHIN THE MUNICIPAL ROW.
4. NATIVE MATERIAL, SUITABLE FOR BACKFILL, SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.
5. GRANULAR MATERIAL, USED FOR BACKFILL, SHALL BE PLACED IN LAYERS 150mm MAXIMUM THICKNESS, AND COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.
4. ALL SILT CONTROL AND EROSION PROTECTION DEVICES SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE AND THE GRASS HAS ESTABLISHED GROWTH, SUBJECT TO APPROVAL BY THE DEVELOPMENT ENGINEER.
5. ALL DISTURBED AREAS SHALL BE REINSTATED TO THEIR ORIGINAL CONDITION OR BETTER, AS DETERMINED BY THE DEVELOPMENT ENGINEER.
6. PARKLANDS SHALL BE KEPT FREE OF DELETERIOUS MATERIAL THROUGHOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES.
7. PARKLANDS SHALL NOT BE USED AS STORAGE OR STOCKPILING AREAS.
8. ALL AREAS TO BE LANDSCAPED e.g. BOULEVARDS, TRAFFIC ISLANDS, DITCHES ETC. SHALL BE FREE OF DELETERIOUS MATERIAL PRIOR TO INSTALLATION OF WORKS.

STANDARD DETAIL	GENERAL NOTES	REV No. 1	DATE: JUNE 2022	SCALE: N.T.S.	PSD-031



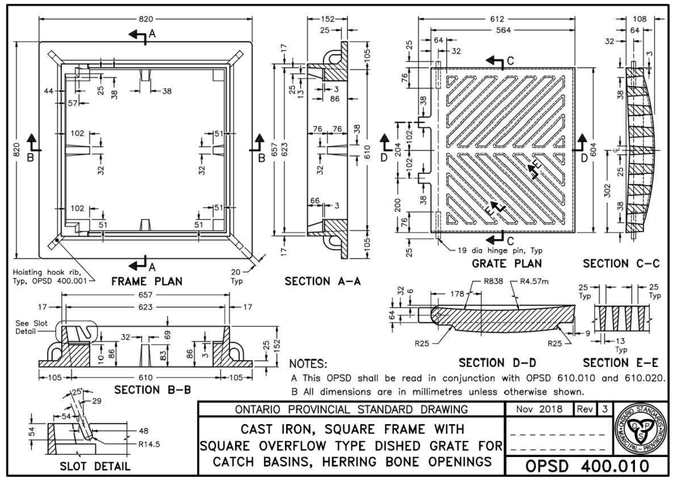
NOTES:
1 Vents shall be as specified by the manufacturer.
2 Length of plate may be increased to suit the curb depression width.
3 Material of plate shall be as specified in Contract Documents.
A Adjacent cast iron plates shall be permanently connected using a locking mechanism and any hardware shall be hot dipped galvanized.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 1
CONCRETE SIDEWALK RAMPS TACTILE WALKING SURFACE INDICATORS COMPONENT		OPSD 310.039



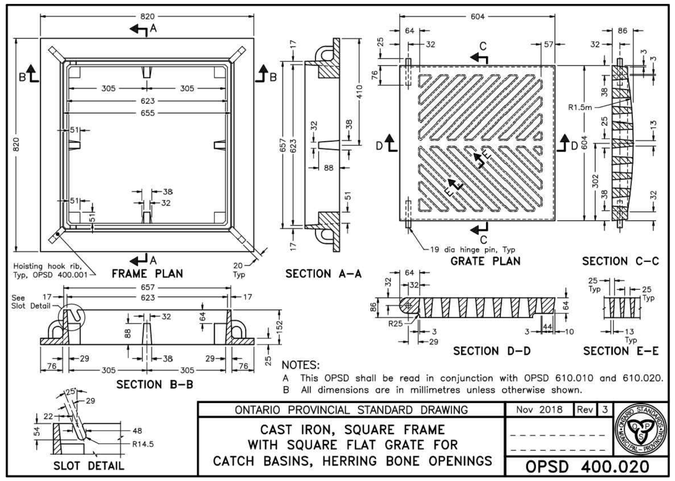
NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, SQUARE FRAME WITH CIRCULAR WATERTIGHT COVER FOR MAINTENANCE HOLES		OPSD 401.030



NOTES:
A This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CAST IRON, SQUARE FRAME WITH SQUARE OVERFLOW TYPE DISHED GRATE FOR CATCH BASINS, HERRING BONE OPENINGS		OPSD 400.010



NOTES:
A This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CAST IRON, SQUARE FRAME WITH SQUARE FLAT GRATE FOR CATCH BASINS, HERRING BONE OPENINGS		OPSD 400.020

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.
VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1
DETAILS PLAN 2

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

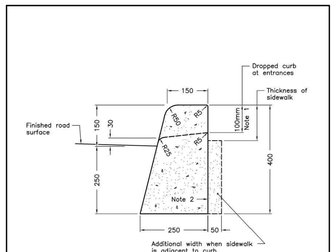
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

Date

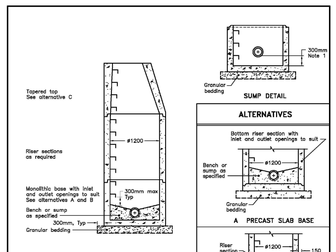
PROJECT No: 2365B

DRAWING No: D-2



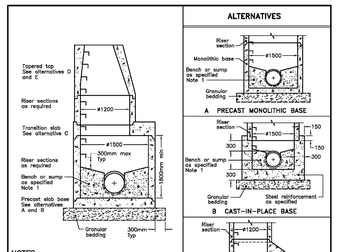
NOTES:
1 When sidewalk is continuously adjacent, the dropped curb at entrances shall be reduced to 75mm.
2 For slipforming procedure a 5% batter is acceptable.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2012	Rev 2
CONCRETE BARRIER CURB		
	OPSD 600.110	



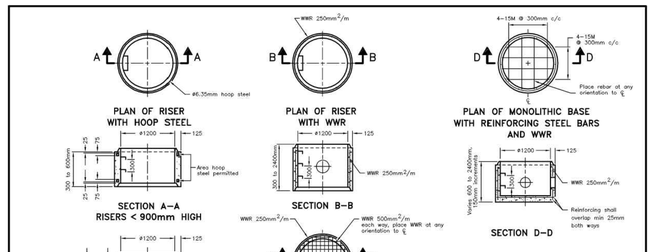
NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		
	OPSD 701.010	



NOTES:
1 For sump detail, see OPSD 701.010.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, 701.040, 701.041, 703.011, 703.021, and 706.010.
C Structures exceeding 5.0m in depth shall include safety platform according to OPSD 404.020 or 404.021.
D Pipe support shall be according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

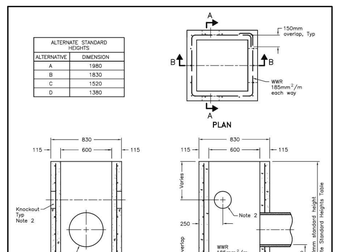
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1500mm DIAMETER		
	OPSD 701.011	



NOTES:
A This drawing shall be read in conjunction with OPSD 600 series curb with gutter drawings.
B All dimensions are in millimetres unless otherwise shown.

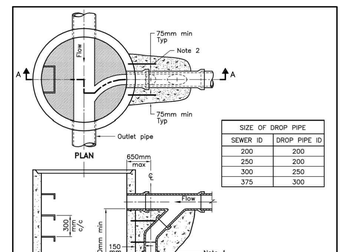
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 2
PRECAST CONCRETE MAINTENANCE HOLE COMPONENTS 1200mm DIAMETER RISER AND MONOLITHIC BASE		
	OPSD 701.031	

ALTERNATE STANDARD HEIGHTS	
ALTERNATIVE	DIMENSION
A	1980
B	1830
C	1520
D	1380



NOTES:
1 Outlet hole size 525mm diameter maximum, location as required.
2 200mm diameter knockout to accommodate subdrain. Knockout shall be 60mm deep.
A Centre reinforcing in base slab and walls ±20mm.
B Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.
D Pipe support shall be according to OPSD 708.020.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

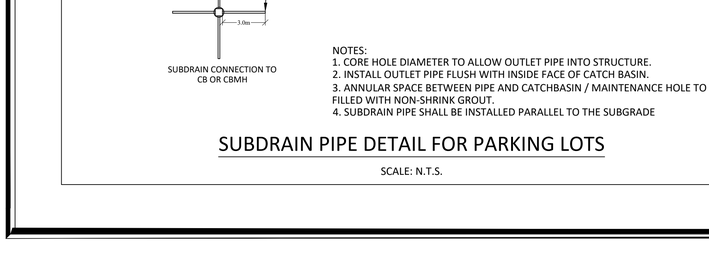
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 4
PRECAST CONCRETE CATCH BASIN 600x600mm		
	OPSD 705.010	



SIZE OF DROP PIPE	
SEWER ID	DROP PIPE ID
200	200
250	200
300	250
375	300

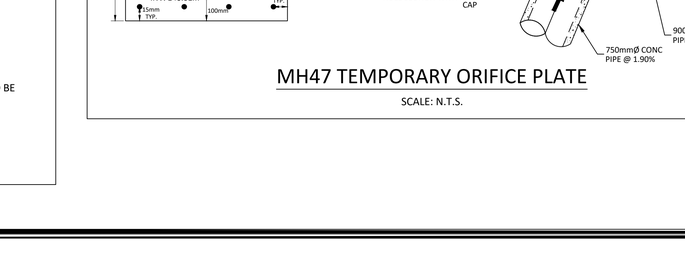
NOTES:
1 Concrete shall be placed to undisturbed ground and the outside face of the maintenance hole, but there shall be a minimum of 150mm of 15MPa concrete around the drop pipe.
2 Concrete shall be secured to the maintenance hole with 450mm long, 13mm diameter threaded rods and drilled expansion anchors down either side of the drop pipe at 300mm centres.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 3
CAST–IN–PLACE MAINTENANCE HOLE DROP STRUCTURE WYE		
	OPSD 1003.020	



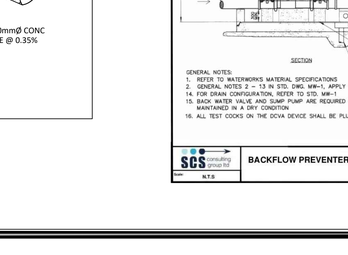
TYPICAL PIPE INSULATION

SCALE: N.T.S.



LAP JOINT DETAIL

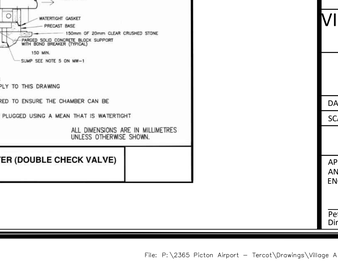
SCALE: N.T.S.



NOTES:
1 Slope shall match existing shoulder.
A This drawing shall be read in conjunction with OPSD 600 series curb with gutter drawings.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2012	Rev 2
METHOD OF TERMINATION FOR CONCRETE CURB WITH GUTTER		
	OPSD 608.010	

*MODIFIED TOWN OF WHITBY STANDARD 413

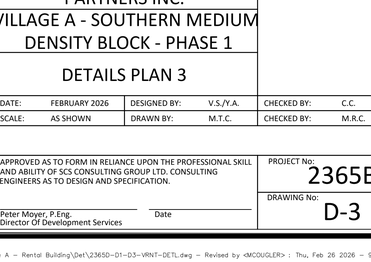


1. Asphalt to be flush with sidewalk.
2. Sidewalk to be barrier free.
3. Accessible parking sign to be minimum of 0.3m offset from sidewalk. Preferred location behind sidewalk, alternate location front of sidewalk.
4. Sign location will be site specific.
5. Access aisles must be provided for all parking spaces and may be shared by two spaces.

All dimensions in millimetres except where noted

SCS consulting group ltd	Accessibility Parking
Scale: N.T.S.	

MODIFIED CITY OF MARKHAM STANDARD MW22



LEGEND
1) VICTAULIC COUPLING OR APPROVED ALTERNATIVE
2) SPACER, FLANGE END TO VICTAULIC END
3) 200 mm MINIMUM
4) SPACER, FLANGE END TO FLANGE
5) SPACER, FLANGE TO PLAIN END
6) SPACER, FLANGE END TO FLANGE ADAPTER
7) SPACER, FLANGE TO VICT. END

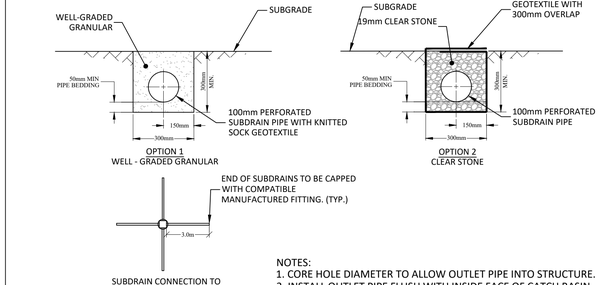
NOTE 1 ALL PIPE JOINTS INSIDE METER CHAMBER SHALL BE FLANGE TO FLANGE FOR SIZES 100 mm AND LARGER.

LAYING LENGTH FOR PROTECTIVE TYPE METER WITH STRAINER

METER SIZE	DIM. A
4"/100 mm	35"/838 mm
6"/150 mm	45"/1143 mm
8"/200 mm	53"/1346 mm
10"/250 mm	66"/1727 mm

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

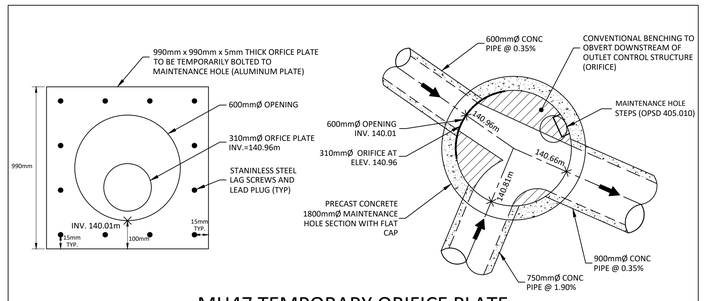
SCS consulting group ltd	WATER METER INSTALLATION IN CHAMBER (FOR COMBINED FIRE & DOMESTIC)
Scale: N.T.S.	



NOTES:
1. CORE HOLE DIAMETER TO ALLOW OUTLET PIPE INTO STRUCTURE.
2. INSTALL OUTLET PIPE FLUSH WITH INSIDE FACE OF CATCH BASIN.
3. ANNULAR SPACE BETWEEN PIPE AND CATCHBASIN / MAINTENANCE HOLE TO BE FILLED WITH NON-SHRINK GROUT.
4. SUBDRAIN PIPE SHALL BE INSTALLED PARALLEL TO THE SUBGRADE

SUBDRAIN PIPE DETAIL FOR PARKING LOTS

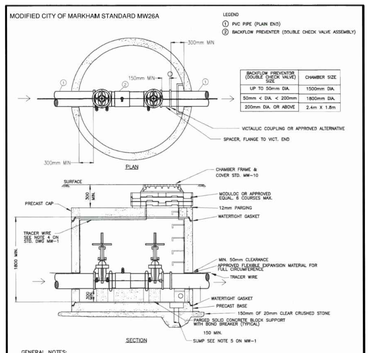
SCALE: N.T.S.



MH47 TEMPORARY ORIFICE PLATE

SCALE: N.T.S.

MODIFIED CITY OF MARKHAM STANDARD MW26A



GENERAL NOTES:
1. REFER TO WATERWORKS MATERIAL SPECIFICATIONS
2. GENERAL NOTES 2 – 13 IN STD. DWG. MH–1, APPLY TO THIS DRAWING
14. FOR DRAIN CONFIGURATION, REFER TO STD. MH–1
15. BACK WATER VALVE AND SUMP PUMP ARE REQUIRED TO ENSURE THE CHAMBER CAN BE MAINTAINED IN A DRY CONDITION
16. ALL TEST COCKS ON THE DCVA DEVICE SHALL BE PLUGGED USING A MEAN THAT IS WATERTIGHT

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

SCS consulting group ltd	BACKFLOW PREVENTER (DOUBLE CHECK VALVE)
Scale: N.T.S.	

REVISIONS				
No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

DETAILS PLAN 3

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Mayer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

DRAWING No: D-3

Sanitary Design Sheet
Base 31 Subdivision
Village A Phase 1
Picton, Prince Edward County

Minimum Sewer Diameter (mm) =	200	Avg. Domestic Flow (l/cap/day) =	320
Mannings n =	0.013	Infiltration Rate (l/s/ha) =	0.28
Minimum Velocity (m/s) =	0.60	Max. Harmon Peaking Factor =	4.0
Maximum Velocity (m/s) =	3	Min. Harmon Peaking Factor =	2.0
Minimum Pipe Slope (%) =	0.40	NOMINAL PIPE SIZE USED	

Future Site Plan Block Population
Village A Phase 1 Sewers
Ultimate Flow: 10 L/s Includes Infiltration.
PEC PCSWM Model: 34 L/S Includes Infiltration.
Future Sewers

Project: Base 31 Subdivision -Village A Phase 1
Project No. 2365
Date: 19-Feb-26
Designed By: Y.A
Reviewed By: J.S
P:\2365 Picton Airport - Tercot\Design\Pipe Design\Sanitary\Village A Tender Design\SANITARY.dwg

LOCATION			RESIDENTIAL						INDUSTRIAL/COMMERCIAL/INSTITUTIONAL					FLOW CALCULATIONS								PIPE DATA					
STREET	MAINTENANCE HOLE		AREA	ACCUM. AREA	UNITS	DENSITY		RESIDENTIAL POPULATION	ACCUM. RESIDENTIAL POPULATION	AREA	ACCUM. AREA	POPULATION DENSITY	FLOW RATE	ACCUM. EQUIV. POPULATION	INFILTRATION	TOTAL ACCUM. POPULATION	AVG. DOMESTIC FLOW	ACCUM. AVG. DOMESTIC FLOW	PEAKING FACTOR	PEAKED RESIDENTIAL FLOW	IC1 FLOW	TOTAL FLOW	LENGTH	PIPE DIAMETER	SLOPE	FULL FLOW CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY
	FROM	TO				PER UNIT	PER HA																					
			(ha)	(ha)	(#)	(p/unit)	(p/ha)			(ha)	(ha)	(p/ha)	(l/s/ha)		(L/s)		(L/s)	(L/s)		(L/s)	(L/s)	(L/s)	(m)	(mm)	(%)	(L/s)	(m/s)	(m/s)
STREET B	MH1A	MH2A	0.22	0.22	2	3		6.0	6.0	0	0	0	0	0	0.1	6.0	0.0	0.0	4.00	0.1	0.0	0.2	31.8	200	1.00	32.8	1.04	0.23
STREET B	MH2A	MH3A	0.11	0.33	1	3		3.0	9.0	0	0	0	0	0	0.1	9.0	0.0	0.0	4.00	0.1	0.0	0.2	29.2	200	1.00	32.8	1.04	0.27
STREET B	MH3A	MH7A	0.18	0.51	2	3		6.0	15.0	0	0	0	0	0	0.1	15.0	0.0	0.1	4.00	0.2	0.0	0.4	42.5	200	1.00	32.8	1.04	0.33
STREET E	MH4A (E)	MH5A	0.73	0.73	13	3		39.0	39.0	0	0	0	0	0	0.2	39.0	0.1	0.1	4.00	0.6	0.0	0.8	89.4	200	1.50	40.1	1.28	0.48
STREET E	MH5A	MH6A	0.2	0.93	2	3		6.0	45.0	0	0	0	0	0	0.3	45.0	0.0	0.2	4.00	0.7	0.0	0.9	20.4	200	1.00	32.8	1.04	0.44
STREET E	MH6A	MH7A	0.06	0.99	0	3		0.0	45.0	0	0	0	0	0	0.3	45.0	0.0	0.2	4.00	0.7	0.0	0.9	45.7	200	1.00	32.8	1.04	0.44
STREET B	MH7A	MH8A	0.39	1.89	7	3		21.0	81.0	0	0	0	0	0	0.5	81.0	0.1	0.3	4.00	1.2	0.0	1.7	51.5	200	1.00	32.8	1.04	0.54
STREET B	MH8A	MH10A	0.3	2.19	4	3		12.0	93.0	0	0	0	0	0	0.6	93.0	0.0	0.3	4.00	1.4	0.0	2.0	51.5	200	1.00	32.8	1.04	0.56
STREET F	MH9A	MH10A	0.77	0.77	9	3		27.0	27.0	0	0	0	0	0	0.2	27.0	0.1	0.1	4.00	0.4	0.0	0.6	92.2	200	1.00	32.8	1.04	0.39
STREET B	MH10A	MH16A	0.43	3.39	6	3		18.0	138.0	0	0	0	0	0	0.9	138.0	0.1	0.5	4.00	2.0	0.0	3.0	83.0	200	1.00	32.8	1.04	0.64
STREET E	MH4A (W)	MH11A	0.64	0.64	11	3		33.0	33.0	0	0	0	0	0	0.2	33.0	0.1	0.1	4.00	0.5	0.0	0.7	94.2	200	1.00	32.8	1.04	0.39
STREET E	MH11A	MH12A	0.15	0.79	2	3		6.0	39.0	0	0	0	0	0	0.2	39.0	0.0	0.1	4.00	0.6	0.0	0.8	21.8	200	0.50	23.2	0.74	0.33
STREET E	MH12A	PLUG12A	0.15	0.94	0	3		0.0	39.0	0	0	0	0	0	0.3	39.0	0.0	0.1	4.00	0.6	0.0	0.8	12.8	200	0.50	23.2	0.74	0.35
STREET E	PLUG12A	MH13A (W)	0.15	1.09	0	3		0.0	39.0	0	0	0	0	0	0.3	39.0	0.0	0.1	4.00	0.6	0.0	0.9	10.0	200	0.50	23.2	0.74	0.35
STREET D	MH4A	MH15A	0.58	0.58	13	3		39.0	39.0	0	0	0	0	0	0.2	39.0	0.1	0.1	4.00	0.6	0.0	0.7	66.5	200	1.13	34.8	1.11	0.44
STREET D	MH15A	MH16A	0.55	1.13	12	3		36.0	75.0	0	0	0	0	0	0.3	75.0	0.1	0.3	4.00	1.1	0.0	1.4	99.9	200	0.79	29.1	0.93	0.48
STREET B	MH16A	MH27A	0.36	4.88	5	3		15.0	228.0	0	0	0	0	0	1.4	228.0	0.1	0.8	4.00	3.4	0.0	4.7	85.8	200	3.10	57.7	1.84	1.10
STREET B	MH17A	MH18A	0.23	0.23	3	3		9.0	9.0	0	0	0	0	0	0.1	9.0	0.0	0.0	4.00	0.1	0.0	0.2	39.3	200	1.00	32.8	1.04	0.27
STREET B	MH18A	MH19A	0.15	0.38	2	3		6.0	15.0	0	0	0	0	0	0.1	15.0	0.0	0.1	4.00	0.2	0.0	0.3	33.5	200	0.50	23.2	0.74	0.26
STREET B	MH19A	MH22A	0.06	0.44	0	3		0.0	15.0	0	0	0	0	0	0.1	15.0	0.0	0.1	4.00	0.2	0.0	0.3	21.6	200	0.50	23.2	0.74	0.26
STREET H	MH20A (E)	MH21A	0.31	0.31	10	2.5		25.0	25.0	0	0	0	0	0	0.1	25.0	0.1	0.1	4.00	0.4	0.0	0.5	38.7	200	1.00	32.8	1.04	0.36
STREET H	MH21A	MH22A	0.53	0.84	12	2.5		30.0	55.0	0	0	0	0	0	0.2	55.0	0.1	0.2	4.00	0.8	0.0	1.1	83.9	200	1.00	32.8	1.04	0.47
STREET B	MH22A	MH26A	0.4	1.68	6	3		18.0	88.0	0	0	0	0	0	0.5	88.0	0.1	0.3	4.00	1.3	0.0	1.8	78.0	200	0.50	23.2	0.74	0.43
STREET G	MH23A (E)	MH24A	0.32	0.32	10	2.5		25.0	25.0	0	0	0	0	0	0.1	25.0	0.1	0.1	4.00	0.4	0.0	0.5	44.4	200	0.94	31.8	1.01	0.35
STREET G	MH24A	MH25A	0.37	0.69	13	2.5		32.5	57.5	0	0	0	0	0	0.2	57.5	0.1	0.2	4.00	0.9	0.0	1.0	53.1	200	1.00	32.8	1.04	0.47
STREET G	MH25A	MH26A	0.28	0.97	9	2.5		22.5	80.0	0	0	0	0	0	0.3	80.0	0.1	0.3	4.00	1.2	0.0	1.5	46.5	200	4.30	68.0	2.16	0.87
STREET B	MH26A	MH27A	0.34	2.99	4	3		12.0	180.0	0	0	0	0	0	0.8	180.0	0.0	0.7	4.00	2.7	0.0	3.5	79.5	200	0.50	23.2	0.74	0.53
FUTURE EXTERNAL 1 - FUTURE VILLAGE8	EXT1A	MH27A	219.2	219.2	0		74.7	16376.0	16376.0	0	0	0	0	0	61.4	16376.0	60.7	60.7	2.74	166.2	0.0	227.6	100.0	600	0.40	388.1	1.37	1.43
STREET A	MH27A	MH28A	1.07	228.14	28	3		84.0	16868.0	0	0	0	0	0	63.9	16868.0	0.3	62.5	2.73	170.4	0.0	234.2	141.9	600	0.40	388.1	1.37	1.44
STREET A	MH28A	PLUG28A	0.09	228.23	3	3		9.0	16877.0	0	0	0	0	0	63.9	16877.0	0.0	62.5	2.73	170.4	0.0	234.3	13.7	600	0.40	388.1	1.37	1.44
STREET A	PLUG28A	MH29A	0.09	228.32	1	3		3.0	16880.0	0	0	0	0	0	63.9	16880.0	0.0	62.5	2.73	170.5	0.0	234.4	10.0	600	0.40	388.1	1.37	1.44
STREET A	MH29A	MH30A	0.12	228.44	3	2.7		8.1	16888.1	0	0	0	0	0	64.0	16888.1	0.0	62.5	2.73	170.5	0.0	234.5	19.4	600	0.40	388.1	1.37	1.44
STREET A	MH30A	MH31A	0.23	228.67	7	2.6		18.2	16906.3	0	0	0	0	0	64.0	16906.3	0.1	62.6	2.73	170.7	0.0	234.7	27.4	600	0.40	388.1	1.37	1.44
STREET A	MH31A	MH37A	0.38	229.05	10	2.7		27.0	16933.3	0	0	0	0	0	64.1	16933.3	0.1	62.7	2.73	170.9	0.0	235.0	61.9	600	0.40	388.1	1.37	1.44
STREET C	MH32A (E)	MH33A	0.18	0.18	4	2.5		10.0	10.0	0	0	0	0	0	0.1	10.0	0.0	0.0	4.00	0.1	0.0	0.2	68.1	200	1.00	32.8	1.04	0.27
STREET H	MH20A (W)	MH33A	0.36	0.36	11	2.5		27.5	27.5	0	0	0	0	0	0.1	27.5	0.1	0.1	4.00	0.4	0.0	0.5	82.3	200	1.00	32.8	1.04	0.36
STREET C	MH33A	MH34A	0.31	0.85	6	3		18.0	55.5	0	0	0	0	0	0.2	55.5	0.1	0.2	4.00	0.8	0.0	1.1	78.5	200	1.05	33.6	1.07	0.48
STREET G	MH23A (W)	PLUG23A	0.26	0.26	8	2.5		20.0	20.0	0	0	0	0	0	0.1	20.0	0.1	0.1	4.00	0.3	0.0	0.4	33.2	200	2.00	46.4	1.48	0.43
STREET G	PLUG23A	MH34A	0.07	0.33	0	2.5		0.0	20.0	0	0	0	0	0	0.1	20.0	0.0	0.1	4.00	0.3	0.0	0.4	46.8	200	1.00	32.8	1.04	0.33
STREET C	MH34A	MH35A	0.07	1.25	1	3		3.0	78.5	0	0	0	0	0	0.4	78.5	0.0	0.3	4.00	1.2	0.0	1.5	19.6	200	0.50	23.2	0.74	0.41
STREET C	MH35A	MH37A	0.09	1.34	1	3		3.0	81.5	0	0	0	0	0	0.4	81.5	0.0	0.3	4.00	1.2	0.0	1.6	27.0	200	0.50	23.2	0.74	0.41
STREET A	MH37A	MH38A	0.42	230.81	8	3		24.0	17038.8	0	0	0	0	0	64.6	17038.8	0.1	63.1	2.72	171.8	0.0	236.4	93.7	600	0.40	388.1	1.37	1.44
BLOCK 296 (PARK)	MH6A	MH47A	0	0	0			0.0	0.0	2.02	2.02	60	0	121.2	0.6	121.2	0.4	0.4	4.00	1.8	0.0	2.4	11.1	200	1.00	32.8	1.04	0.60
STREET A	MH38A	MH39A	0.14	230.95	2	3		6.0	17044.8	0	0	0	0	0	64.7	17044.8	0.0	63.1	2.72	171.9	0.0	236.5	29.4	600	0.40	388.1	1.37	1.44
STREET A	MH39A	MH47A	0.11	231.06	1	3		3.0	17047.8	0	0	0	0	0	64.7	17047.8	0.0	63.1	2.72	171.9	0.0	236.6	30.5	600	0.40	388.1	1.37	1.44
STREET D	MH13A (W)	MH40A	0.32	1.41	5	3		15.0	54.0	0	0	0	0	0	0.4	54.0	0.1	0.2	4.00	0.8	0.0	1.2	39.0	200	0.50	23.2	0.74	0.38
STREET D	MH40A	MH41A	0.34	1.75	7	3		21.0	75.0	0	0	0	0	0	0.5	75.0	0.1	0.3	4.00	1.1	0.0	1.6	42.1	200	0.50	23.2	0.74	0.41
STREET D	MH41A	MH43A	0.42	2.17	9	3		27.0	102.0	0	0	0	0	0	0.6	102.0	0.1	0.4	4.00	1.5	0.0	2.1	82.7	200	0.50	23.2	0.74	0.45
STREET D	MH43A	MH44A	0.48	3.39	11	3		33.0	162.0	0	0	0	0	0	0.9	162.0	0.1	0.6	4.00	2.4	0.0	3.3	87.6	200	0.50	23.2	0.74	0.52
STREET D	MH44A	MH45A	0.19	3.58	3	3		9.0	171.0	0	0	0	0	0	1.0	171.0	0.0	0.6	4.00	2.5	0.0	3.5	22.5	200	0.50	23.2	0.74	0.53
STREET D	MH45A	MH46A	0.26	3.84	4	3		12.0	183.0	0	0	0	0	0	1.1	183.0	0.0	0.7	4.00	2.7	0.0	3.8	53.4	200	2.30	49.7	1.58	0.91
STREET D	MH46A	MH47A	0	3.84	0	3		0.0	183.0	0	0	0	0	0	1.1	183.0	0.0	0.7	4.00	2.7	0.0	3.8	11.2	200	0.70	27.4	0.87	0.61
STREET A	MH47A	MH69A	0.13	235.03	0	3		0.0	17230.8	0	2.02	0	0	121.2	66.4	17582.0	0.0	64.3	2.71	174.5	0.0	240.8	55.2	600	0.40	388.1	1.37	1.45
STREET I	MH48A	MH49A	0.73	0.73	15	2.7		40.5	40.5	0	0	0	0	0	0.2	40.5	0.2	0.2	4.00	0.6	0.0	0.8	71.1	200	1.00	32.8	1.04	0.42
STREET I	MH49A	MH50A	0.13	0.86	2	3		6.0	46.5	0	0	0	0	0	0.2	46.5	0.0	0.2	4.00	0.7	0.0	0.9	12.6	200	0.98	32.5	1.03	0.44
STREET I	MH50A	MH51A	0.16	1.02	3	3		9.0	55.5	0	0	0	0	0	0.3	55.5	0.0	0.2	4.00	0.8	0.0	1.1	24.8	200	3.77	63.7	2.03	0.76
STREET I	MH51A	PLUG51A	0.18	1.2	3	3		9.0	64.5	0	0	0	0	0	0.3	64.5	0.0	0.2	4.00	1.0	0.0	1.3	37.2	200	0.66	26.6	0.85	0.42
STREET I	PLUG51A	MH54A	0.04	1.24	1	3		3.0	67.5	0	0	0	0	0	0.3	67.5	0.0	0.3	4.00	1.0	0.0	1.3	10.3	200	0.50	23.2	0.74	0.40
STREET J	MH52A	MH53A	0.46	0.46	14	2.5		35.0	35.0	0	0	0	0	0	0.1	35.0	0.1	0.1	4.00	0.5	0.0	0.6	56.1	200	1.00	32.8	1.04	0.39
STREET J	MH53A	MH54A	0.31	0.77	10	2.5		25.0	60.0	0	0	0	0	0	0.2	60.0	0.1	0.2	4.00	0.9	0.0	1.1	50.3	200	0.65	26.4	0.84	0.40
STREET I	MH54A	MH56A	0.3	2.31	8	2.6		20.8	148.3	0	0	0	0	0	0.6	148.3	0.1	0.5	4.00	2.2	0.0	2.8	72.7	200	0.50	23.2	0.74	0.49
STREET C	MH32A (W)	MH55A	0.16	0.16	6	2.5		15.0	15.0	0	0	0	0	0	0.0	15.0	0.1	0.1	4.00	0.2	0.0	0.3	45.3	200	1.70	42.7	1.36	0.35
STREET C	MH55A	MH56A	0.24	0.4	6	2.6		15.6	30.6	0	0	0	0	0	0.1	30.6	0.1	0.1	4.00	0.5	0.0	0.6	51.4	200	2.00	46.4	1.48	0.47
STREET I	MH56A	MH58A	0.29	3	10	2.5		25.0	203.9	0	0	0	0	0	0.8	203.9	0.1	0.8	4.00	3.0	0.0	3.9	54.1	200	0.50	23.2	0.74	0.54
STREET L	MH57A (W)	MH58A	0.23	0.23	10	2.6		26.0	26.0	0	0	0	0	0	0.1	26.0	0.1	0.1	4.00	0.4	0.0	0.4	69.8	200	1.05	33.6	1.07	0.37
STREET I	MH59A	MH59A	0.28	3.51	9	2.6		23.4	253.3	0	0	0	0	0	1.0	253.3	0.1	0.9	4.00	3.8	0.0	4.7	64.8	200	0.50	23.2	0.74	0.57
STREET I	MH59A	MH60A	0.13	3.64	4	2.5		10.0	263.3	0	0	0	0	0	1.0	263.3	0.0	1.0	4.00	3.9	0.0	4.8	15.0	200	0.50	23.2	0.74	0.58
STREET I	MH60A	MH61A	0.34	3.98	13	2.5		32.5	295.8	0	0	0	0	0	1.1	295.8	0.1	1.1	4.00	4.4	0.0	5.5	82.5	200	0.50	23.2	0.74	0.60
STREET I	MH61A	MH62A	0.06	4.04	1	2.5		2.5	298.3	0	0	0	0	0	1.1	298.3	0.0	1.1	4.00	4.4	0.0	5.6	19.9	200	0.50	23.2	0.74	0.60
STREET I	MH62A	MH85A	0.06	4.1	0	2.5		0.0	298.3	0	0	0	0	0	1.1	298.3	0.0	1.1	4.00	4.4	0.0	5.6	18.1	200	0.50	23.2	0.74	0.60
STACKED TOWNHOUSES (BLOCKS 284-286)	MH84A	MH85A	0.33	0.33	30	2.5		75.0	75.0	0	0	0	0	0	0.1	75.0	0.3	0.3	4.00	1.1	0.0	1.2	9.6	200	1.00	32.8	1.04	0.49
STREET I	MH85A	MH64A	0	4.43	0	2.5		0.0	373.3	0	0	0	0	0	1.2	373.3	0.0	1.4	4.00	5.5	0.0	6.8	15.6	200	0.50	23.2	0.74	0.64
STREET K	MH32A (N)	MH63A	0.47	0.47	8	3		24.0	24.0	0	0	0	0	0	0.1	24.0	0.1	0.1	4.00	0.4	0.0	0.5	81.6	200	2.05	53.4	1.70	0.49
STREET L	MH57A (E)	MH63A	0.23	0.23	5	2.9		14.5	14.5	0	0	0	0	0	0.1	14.5	0.1	0.1	4.00	0.2	0.0	0.3	47.4	200	1.00	32.8	1.04	0.30
STREET K	MH63A	MH64A	0.4	1.1	7	3		21.0	59.5	0	0	0	0	0	0.3	59.5	0.1	0.2	4.00	0.9	0.0	1.2	82.3	200	0.85	30.2	0.96	0.46
STREET K	MH64A	MH85A	0.5	6.03	15	2.7		40.5	473.3	0	0	0	0	0	1.7	473.3	0.2	1.8	3.99	7.0	0.0	8.7	71.1	200	1.60	41.5	1.32	1.04
STREET K	MH90A	MH85A	0.19	0.19	4	2.5		10.0	10.0	0	0	0	0	0	0.1	10.0	0.0	0.0	4.00	0.1	0.0	0.2	23.5	200	1.00	32.8	1.04	0.27
BLOCK 296	MH65A	MH66A	0.03	6.25	0	3		0.0	483.3	0	0	0	0	0	1.8	483.3	0.0	1.8	3.98	7.1	0.0	8.9	44.7	200	0.50	23.2	0.74	0.68
BLOCK 296	MH66A	MH67A	0.05	6.3	0	3		0.0	483.3	0	0	0	0	0	1.8	483.3	0.0	1.8	3.98	7.1	0.0	8.9	54.5	200	0.40	20.7	0.66	0.63
BLOCK296	MH67A	MH69A	0.04	6.34	0	3		0.0	483.3	0	0	0	0	0	1.8	483.3	0.0	1.8	3.98	7.1	0.0	8.9	54.5	200	0.40	20.7	0.66	0.63
BLOCK 294 - MEDIUM DENSITY	MH68A	MH69A	1.27	1.27	150	2.5		375.0	375.0	0	0	0	0	0	0.4	375.0	1.4	1.4	4.00	5.6	0.0	5.9	12.5	200	1.00	32.8	1.04	0.78
STREET A	MH69A	MH78A	0.15	242.79	0	3		0.0	18089.1	0	2.02	0	0	121.2	68.5	18210.3	0.0	67.4	2.69	181.7	0.0	280.2	73.7	600	1.00	613.7	2.17	2.05
FUTURE EXTERNAL 2 - VILLAGE F1	EXT2A	MH71A	5.54	5.54	200	2.5		500.0	500.0	0	0	0	0	0	1.6	500.0	1.9	1.9	3.97	7.4	0.0	8.9	100.0	200	1.00	32.8	1.04	0.88
FUTURE EXTERNAL 3 - REVITALIZATION DISTRICT - ULTIMATE FLOW	EXT3A	MH71A	0	0	0			0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	4.00	0.0	10.0	10.0	100.0	200	1.00	32.8	1.04	0.91
BLOCK 295 - TOWNHOUSES	MH70A	MH71A	0.39	0.39	8	2.5		20.0	20.0	0	0	0	0	0	0.1	20.0	0.1	0.1	4.00	0.3	0.0	0.4	3.6	200	1.00	32.8	1.04	0.33
COUNTY ROAD 22	MH71A	MH72A	0.11	6.04	0	3		0.0	520.0	0	0.0	0	0	0	1.7	520.0	0.0	1.9	3.97	7.6	10.0	19.3	46.8	250	2.05	96.8	1.97	1.53
BLOCK 295 - MEDIUM DENSITY BUILDING	MH91A	MH72A	1.03	1.03	120	1.785		214.2	214.2	0	0	0	0	0	0.3	214.2	0.8	0.8	4.00	3.2	0.0	3.5	4.1	200	1.00	32.8	1.04	0.66
COUNTY ROAD 22	MH72A	MH92A	0.14	7.21	0	3		0.0	734.2	0	0.0	0	0	0	2.0	734.2	0.0	2.7	3.88	10.6	10.0	22.6	62.4	250	1.50	72.8	1.48	1.30
COUNTY ROAD 22	MH92A	MH71A	0.99	8.2	448	1		448	1182.2	0	0	0	0	0	2.3	1182.2	1.7	4.4	3.75	16.4	10.0	28.7	62.4	250	1.40	70.3	1.43	1.35
COUNTY ROAD 22	MH71A	MH75A	0.1	8.3	0	3		0.0	1182.2	0	0.0	0	0	0	2.3	1182.2	0.0	4.4	3.75	16.4	10.0	28.8	39.3	250	1.30	67.8	1.38	1.32
COUNTY ROAD 22	MH75A	MH76A	0.11	8.41	0	3		0.0	1182.2	0	0.0	0	0	0	2.4	1182.2	0.0	4.4	3.75	16.4	10.0	28.8	44.3	300	0.55	71.7	1.01	0.96
COUNTY ROAD 22	MH76A	MH77A	0.16	8.57	0	3		0.0	1182.2	0	0.0	0	0	0	2.4	1182.2	0.0	4.4	3.75	16.4	10.0	28.8	67.8	300	0.40	61.1	0.86	0.85
COUNTY ROAD 22	MH77A	MH78A	0.16	8.73	0	3		0.0	1182.2	0	0.0	0	0	0	2.4	1182.2	0.0	4.4	3.75	16.4	10.0	28.9	67.8	300	0.40	61.1	0.86	0.85
COUNTY ROAD 22	MH78A	MH79A	0.04	251.56	0	3		0.0	19271.3	0	2.0	0	0	121.2	71.0	19392.5	0.0	71.8	2.67	191.5	10.0	272.5	20.0	600	0.40	388.1	1.37	1.48
COUNTY ROAD 22	MH79A	MH80A	0.24	251.8	0	3		0.0	19271.3	0	2.0	0	0	121.2	71.1	19392.5	0.0	71.8	2.67	191.5	10.0	272.5	95.0	600	0.40	388.1	1.37	1.48
COUNTY ROAD 22

5-Year Storm Design
Base 31 - Site Plan Rental Building Phase 1
Storm Drainage to Phase 1 SWM Pond Facility
Picton, Prince Edward County

Rainfall Intensity (i) = $\frac{A}{(T_c+B)^c}$

A= 26.4
B= 0
c= 0.677

Starting T_c (min)= 15

Project: Base 31 - Site Plan Rental Building Phase 1
Project No. 2365
Date: 26-Feb-26
Designed By: Y.A
Reviewed By: V.S

P:\2365 Picton Airport - Tercot\Design\Pipe Design\Storm\Village A - Rental Building\[Storm Design Sheet - Rental - 5 yr.xlsm]Design

LOCATION			5 YEAR						EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA						
STREET	MAINTENANCE HOLE		5-YEAR AREA	RUNOFF COEFF.	"AR"	ACCUM. "AR"	RAINFALL INTENSITY	ACCUM. FLOW	AREA	FLOW RATE	EXT. FLOW	ACCUM. EXT. FLOW	TOTAL (Qdes)	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	TIME OF CONC.	ACCUM. TIME OF CONC.
	FROM	TO	(ha)	(R)			(mm/hr)	(m3/s)	(ha)	(l/s/ha)	(m3/s)	(m3/s)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
RENTAL BUILDING - PHASE 1	CB1	MH84	0.11	0.24	0.03	0.03	67.48	0.005	0.000	0.000	0.000	0.000	0.005	32.6	0.70	250	0.050	1.014	0.54	15.54
RENTAL BUILDING - PHASE 1	CB2	MH84	0.23	0.66	0.15	0.15	67.48	0.028	0.000	0.000	0.000	0.000	0.028	11.9	5.00	250	0.133	2.709	0.07	15.07
RENTAL BUILDING - PHASE 1	CB3	MH84	0.30	0.77	0.23	0.23	67.48	0.043	0.000	0.000	0.000	0.000	0.043	10.2	0.60	300	0.075	1.060	0.16	15.16
RENTAL BUILDING - PHASE 1	CB4	MH84	0.24	0.84	0.20	0.20	67.48	0.038	0.000	0.000	0.000	0.000	0.038	10.4	0.70	250	0.050	1.014	0.17	15.17
RENTAL BUILDING - PHASE 1	MH84	MH85	0.00	0.00	0.00	0.61	65.90	0.112	0.000	0.000	0.000	0.000	0.112	68.3	0.60	375	0.136	1.230	0.93	16.46
BUILDING A	PLUG 1	MH85	0.00	0.00	0.00	0.00	67.48	0.000	0.160	42.000	0.007	0.007	0.007	19.5	2.10	250	0.086	1.756	0.19	15.19
RENTAL BUILDING - PHASE 1	MH85	MH87	0.00	0.00	0.00	0.61	63.37	0.108	0.000	0.000	0.000	0.007	0.114	23.6	0.75	375	0.152	1.375	0.29	16.75
RENTAL BUILDING - PHASE 1	CB5	CB6	0.14	0.84	0.12	0.12	67.48	0.022	0.000	0.000	0.000	0.000	0.022	33.0	4.45	250	0.125	2.556	0.22	15.22
RENTAL BUILDING - PHASE 1	CB6	CBMH86	0.06	0.82	0.05	0.17	66.84	0.031	0.000	0.000	0.000	0.000	0.031	15.4	0.70	250	0.050	1.014	0.25	15.47
RENTAL BUILDING - PHASE 1	CB7	CBMH86	0.05	0.82	0.04	0.04	67.48	0.008	0.000	0.000	0.000	0.000	0.008	8.4	0.70	250	0.050	1.014	0.14	15.14
RENTAL BUILDING - PHASE 1	CBMH86	MH87	0.10	0.80	0.08	0.29	66.09	0.053	0.000	0.000	0.000	0.000	0.053	10.7	0.70	300	0.081	1.145	0.16	15.62
RENTAL BUILDING - PHASE 2	MH87	MH88	0.93	0.82	0.76	1.66	62.63	0.289	0.000	0.000	0.000	0.007	0.296	49.9	0.35	600	0.363	1.285	0.65	17.40
RENTAL BUILDING - PHASE 2	MH88	PLUG 47	0.00	0.00	0.00	1.66	62.63	0.289	0.000	0.000	0.000	0.007	0.296	28.4	0.35	600	0.363	1.285	0.37	17.76
VILLAGE A SUBDIVISION PHASE 1	PLUG 47	MH47	0.00	0.00	0.00	1.66	62.63	0.289	0.000	0.000	0.000	0.007	0.296	8.0	0.35	600	0.363	1.285	0.10	17.87

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty. PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.
VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1
DESIGN SHEET - 5 YEAR STORM (RENTAL BUILDING SITE PLAN)

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

DRAWING No: DS-2

100-Year Storm Design
Base 31 - Site Plan Rental Building Phase 1
Storm Drainage to Phase 1 SWM Pond Facility
Picton, Prince Edward County

Rainfall Intensity (i) = $\frac{A}{(T_c+B)^c}$

A= 43
B= 0
c= 0.678

Starting T_c (min)= 15

Phase 1 Rental Building Interim 100-Year Flow
Orifice at MH47 – Controlled Rate of 295 L/s

Project: Base 31 - Site Plan Rental Building Phase 1
Project No. 2365
Date: 26-Feb-26
Designed By: Y.A
Reviewed By: V.S

P:\2365 Picton Airport - Tercot\Design\Pipe Design\Storm\Village A - Rental Building\[Storm Design Sheet - Rental - 100 yr.xlsm]Design

LOCATION			100 YEAR						CB FLOW			EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA						
STREET	MAINTENANCE HOLE		100-YEAR AREA	RUNOFF COEFF.	"AR"	ACCUM. "AR"	RAINFALL INTENSITY	ACCUM. FLOW	CB's	FLOW	ACCUM. CB FLOW	AREA	FLOW RATE	EXT. FLOW	ACCUM. EXT. FLOW	TOTAL (Qdes)	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	TIME OF CONC.	ACCUM. TIME OF CONC.
	FROM	TO	(ha)	"R"			(mm/hr)	(m3/s)	(#)	(m3/s)	(m3/s)	(ha)	(l/s/ha)	(m3/s)	(m3/s)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
RENTAL BUILDING - PHASE 1	CBMH86	MH87	0.000	0.000	0.000	0.000	110.07	0.000	0	0.000	0.000	1.000	373.000	0.373	0.373	0.373	10.7	0.70	525	0.360	1.662	0.11	15.62
RENTAL BUILDING - PHASE 1	MH87	MH88	0.000	0.000	0.000	0.000	109.54	0.000	0	0.000	0.000	0.000	0.000	0.000	0.340	0.340	49.9	0.35	600	0.363	1.285	0.65	17.40
RENTAL BUILDING - PHASE 2	MH88	PLUG 47	0.000	0.000	0.000	0.000	106.47	0.000	0	0.000	0.000	0.000	0.000	0.000	0.340	0.340	28.4	0.35	600	0.363	1.285	0.37	17.76
VILLAGE A SUBDIVISION - PHASE 1	PLUG 47	MH47	0.000	0.000	0.000	0.000	104.81	0.000	0	0.000	0.000	0.000	0.000	0.000	0.295	0.295	8.0	0.35	600	0.363	1.285	0.10	17.87

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty. PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

DESIGN SHEET - 100 YEAR STORM (RENTAL BUILDING SITE PLAN)

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

DRAWING No: DS-3

File: P:\2365 Picton Airport - Tercot\Drawings\Village A - Rental Building\Ds\2365D-DS1-DS4-VRNT-DSHT.dwg - Revised by <TMCNEIL> : Thu, Feb 19 2026 - 10:55am

5-Year Storm Design
Base 31 Subdivision - Village A Phase 1
Storm Drainage to Phase 1 SWM Pond Facility
Picton, Prince Edward County

Rainfall Intensity (i) = $\frac{A}{(T_c+B)^c}$

A= 26.4
B= 0
c= 0.677

Starting T_c (min)= 15

Rental Building
External Areas
Village A Phase 2 Sewers

Project: Base 31 Subdivision - Village A Phase 1
Project No. 2365
Date: 23-Feb-26
Designed By: Y.A
Reviewed By: J.S

P:\2365 Picton Airport - Tercot\Design\Pipe Design\Storm\Village A Storm Design\[Storm Design Sheet - MASTER.xlsm]Design

LOCATION			5 YEAR						EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA						
STREET	MAINTENANCE HOLE FROM	MAINTENANCE HOLE TO	5-YEAR AREA (ha)	RUNOFF COEFF. (R)	"AR"	ACCUM. "AR"	RAINFALL INTENSITY (mm/hr)	ACCUM. FLOW (m3/s)	AREA (ha)	FLOW RATE (l/s/ha)	EXT. FLOW (m3/s)	ACCUM. EXT. FLOW (m3/s)	TOTAL (Qdes) (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	TIME OF CONC. (min)	ACCUM. TIME OF CONC. (min)
REAR YARD AREA	RYCB1	MH1	0.17	0.47	0.08	0.08	67.48	0.015	0.000	0	0.000	0.000	0.015	41.0	0.50	300	0.068	0.967	0.71	15.71
STREET E	MH1	MH78	0.31	0.65	0.20	0.28	65.41	0.051	0.000	0	0.000	0.000	0.051	52.5	1.00	300	0.097	1.368	0.64	16.35
REAR YARD AREA	RYCB2	MH78	0.24	0.46	0.11	0.11	67.48	0.021	0.000	0	0.000	0.000	0.021	41.0	0.50	300	0.068	0.967	0.71	15.71
STREET E	MH78	MH2	0.11	0.65	0.07	0.46	63.67	0.082	0.000	0	0.000	0.000	0.082	27.0	0.50	375	0.124	1.123	0.40	16.75
STREET E	MH2	MH3	0.11	0.65	0.07	0.53	62.63	0.093	0.000	0	0.000	0.000	0.093	20.6	0.50	450	0.201	1.268	0.27	17.02
STREET E	MH3	PLUG3	0.01	0.70	0.01	0.54	61.96	0.093	0.000	0	0.000	0.000	0.093	12.1	0.50	450	0.201	1.268	0.16	17.18
STREET E	PLUG3	MH4	0.06	0.70	0.04	0.58	61.57	0.100	0.000	0	0.000	0.000	0.100	44.2	0.50	450	0.201	1.268	0.58	17.76
STREET E	MH4	MH5	0.47	0.71	0.33	0.92	60.20	0.153	0.000	0	0.000	0.000	0.153	55.8	0.50	525	0.304	1.405	0.66	18.42
STREET A	MH5	MH6	0.09	0.75	0.07	0.99	58.72	0.161	0.000	0	0.000	0.000	0.161	20.8	0.50	525	0.304	1.405	0.25	18.67
STREET A	MH6	MH7	0.14	0.76	0.11	1.09	58.20	0.176	0.000	0	0.000	0.000	0.176	26.7	0.50	525	0.304	1.405	0.32	18.98
STREET A	MH7	MH18	0.28	0.75	0.21	1.30	57.54	0.208	0.000	0	0.000	0.000	0.208	64.1	0.50	600	0.434	1.536	0.70	19.68
REAR YARD AREA	RYCB3	MH8	0.57	0.46	0.26	0.26	67.48	0.049	0.000	0	0.000	0.000	0.049	47.4	0.50	375	0.124	1.123	0.70	15.70
STREET D	MH8	MH9	0.39	0.67	0.26	0.52	65.42	0.095	0.000	0	0.000	0.000	0.095	28.2	1.00	375	0.175	1.587	0.30	16.00
STREET D	MH9	MH79	0.09	0.67	0.06	0.58	64.60	0.105	0.000	0	0.000	0.000	0.105	20.6	0.50	450	0.201	1.268	0.27	16.27
REAR YARD AREA	RYCB4	MH79	0.58	0.43	0.25	0.25	67.48	0.047	0.000	0	0.000	0.000	0.047	38.8	1.00	300	0.097	1.368	0.47	15.47
STREET D	MH79	MH11 (S)	0.23	0.67	0.15	0.99	63.87	0.175	0.000	0	0.000	0.000	0.175	63.7	0.50	525	0.304	1.405	0.76	17.03
REAR YARD AREA	RYCB5	MH10	0.29	0.53	0.15	0.15	67.48	0.029	0.000	0	0.000	0.000	0.029	41.7	0.50	300	0.068	0.967	0.72	15.72
STREET C	MH10	MH11 (S)	0.37	0.65	0.24	0.39	65.38	0.072	0.000	0	0.000	0.000	0.072	51.1	1.00	375	0.175	1.587	0.54	16.25
STREET C	MH11 (S)	MH18	0.50	0.73	0.37	1.75	61.94	0.300	0.000	0	0.000	0.000	0.300	86.3	0.40	675	0.531	1.486	0.97	17.99
STREET C	MH12	MH13	0.28	0.80	0.22	0.22	67.48	0.042	0.000	0	0.000	0.000	0.042	30.4	1.00	375	0.175	1.587	0.32	15.32
STREET C	MH13	MH15	0.35	0.70	0.25	0.47	66.53	0.087	0.000	0	0.000	0.000	0.087	78.5	1.40	450	0.337	2.121	0.62	15.94
STREET G	MH14	MH15	0.73	0.73	0.53	0.53	67.48	0.100	0.000	0	0.000	0.000	0.100	45.7	1.00	375	0.175	1.587	0.48	15.48
STREET C	MH15	MH16	0.05	0.70	0.04	1.04	64.77	0.187	0.000	0	0.000	0.000	0.187	21.5	1.00	450	0.285	1.793	0.20	16.14
STREET C	MH16	MH18	0.06	0.70	0.04	1.08	64.23	0.192	0.000	0	0.000	0.000	0.192	23.1	1.25	450	0.319	2.004	0.19	16.33
STREET A	MH18	MH20	0.33	0.70	0.23	4.36	56.15	0.680	0.000	0	0.000	0.000	0.680	94.1	0.50	900	1.279	2.012	0.78	20.46
STREET A	MH20	MH21	0.10	0.70	0.07	4.43	54.69	0.673	0.000	0	0.000	0.000	0.673	28.0	0.50	900	1.279	2.012	0.23	20.69
STREET A	MH21	MH25	0.08	0.70	0.06	4.48	54.28	0.676	0.000	0	0.000	0.000	0.676	29.6	2.00	900	2.559	4.024	0.12	20.81
REAR YARD AREA	RYCB7	MH22	0.16	0.65	0.10	0.10	67.48	0.019	0.000	0	0.000	0.000	0.019	32.9	0.50	300	0.068	0.967	0.57	15.57
STREET D	MH22	MH23	0.44	0.67	0.29	0.40	65.81	0.073	0.000	0	0.000	0.000	0.073	21.2	2.30	300	0.147	2.075	0.17	15.74
STREET D	MH23	MH24	0.51	0.69	0.35	0.75	65.33	0.136	0.000	0	0.000	0.000	0.136	53.2	1.90	375	0.242	2.188	0.41	16.14
STREET D	MH24	MH25	0.00	0.00	0.00	0.75	64.21	0.134	0.000	0	0.000	0.000	0.134	14.7	0.95	450	0.278	1.747	0.14	16.28
BLOCK 296 - PARK	MH19	MH25	2.38	0.35	0.83	0.83	67.48	0.156	0.000	0	0.000	0.000	0.156	8.9	1.00	450	0.285	1.793	0.08	15.08
STREET A	MH25	MH27	0.23	0.67	0.15	6.22	54.06	0.934	0.000	0	0.000	0.000	0.934	54.2	3.50	900	3.385	5.324	0.17	20.98
BLOCK 294 - MEDIUM DENSITY	MH26	MH27	1.27	0.74	0.94	0.94	67.48	0.176	0.000	0	0.000	0.000	0.176	15.6	1.00	525	0.430	1.987	0.13	15.13
STREET I	MH28	MH29	0.50	0.70	0.35	0.35	67.48	0.066	0.000	0	0.000	0.000	0.066	78.1	1.00	375	0.175	1.587	0.82	15.82
STREET I	MH29	MH30	0.06	0.70	0.04	0.39	65.10	0.071	0.000	0	0.000	0.000	0.071	14.3	0.50	375	0.124	1.123	0.21	16.03
STREET I	MH30	MH31	0.10	0.70	0.07	0.46	64.51	0.083	0.000	0	0.000	0.000	0.083	25.5	0.50	375	0.124	1.123	0.38	16.41
STREET I	MH31	PLUG31	0.24	0.70	0.17	0.63	63.50	0.111	0.000	0	0.000	0.000	0.111	37.9	0.60	375	0.136	1.230	0.51	16.92
STREET I	PLUG31	MH34	0.04	0.70	0.03	0.66	62.19	0.114	0.000	0	0.000	0.000	0.114	12.9	0.60	375	0.136	1.230	0.17	17.10
REAR YARD AREA	RYCB6	MH32	0.12	0.70	0.08	0.08	67.48	0.016	0.000	0	0.000	0.000	0.016	33.2	1.00	300	0.097	1.368	0.40	15.40
STREET J	MH32	MH33	0.60	0.77	0.46	0.55	66.28	0.101	0.000	0	0.000	0.000	0.101	59.8	1.00	450	0.285	1.793	0.56	15.96
STREET J	MH33	MH34	0.22	0.75	0.17	0.71	64.71	0.128	0.000	0	0.000	0.000	0.128	59.7	0.50	450	0.201	1.268	0.78	16.75
STREET I	MH34	MH36	0.64	0.79	0.51	1.87	61.76	0.322	0.000	0	0.000	0.000	0.322	72.7	0.50	600	0.434	1.536	0.79	17.89
STREET I	MH36	MH38	0.33	0.76	0.25	2.13	59.90	0.354	0.000	0	0.000	0.000	0.354	52.8	0.50	675	0.594	1.661	0.53	18.42
STREET L	MH37	MH38	0.33	0.76	0.25	0.25	67.48	0.047	0.000	0	0.000	0.000	0.047	37.6	1.40	450	0.337	2.121	0.30	15.30
STREET I	MH38	MH39	0.25	0.78	0.20	2.57	58.73	0.419	0.000	0	0.000	0.000	0.419	63.3	0.50	750	0.787	1.782	0.59	19.01
STREET I	MH39	MH40	0.08	0.80	0.06	2.64	57.48	0.421	0.000	0	0.000	0.000	0.421	17.1	0.50	750	0.787	1.782	0.16	19.17
STREET I	MH40	MH41	0.38	0.71	0.27	2.91	57.16	0.461	0.000	0	0.000	0.000	0.461	83.9	0.50	750	0.787	1.782	0.78	19.96
STREET I	MH41	MH43	0.07	0.70	0.05	2.96	55.63	0.457	0.000	0	0.000	0.000	0.457	20.4	0.50	750	0.787	1.782	0.19	20.15
STREET I	MH43	MH45	0.10	0.70	0.07	3.03	55.27	0.464	0.000	0	0.000	0.000	0.464	31.4	0.50	750	0.787	1.782	0.29	20.44
STREET K	MH44	MH45	1.14	0.69	0.79	0.79	67.48	0.147	0.000	0	0.000	0.000	0.147	90.7	2.45	375	0.274	2.485	0.61	15.61
STREET K	MH45	MH47	0.46	0.70	0.32	4.13	54.73	0.628	0.000	0	0.000	0.000	0.628	96.0	1.90	750	1.534	3.474	0.46	20.90
BLOCK 295	MH87	MH88	0.00	0.00	0.00	0.00	67.48	0.000	1.000	296	0.296	0.296	0.296	49.9	0.35	600	0.363	1.285	0.65	17.40
BLOCK 295	MH88	PLUG47	0.00	0.00	0.00	0.00	61.03	0.000	0.000	0	0.000	0.296	0.296	28.4	0.35	600	0.363	1.285	0.37	17.77
BLOCK 295	PLUG47	MH47	0.00	0.00	0.00	0.00	60.17	0.000	0.000	0	0.000	0.296	0.296	8.0	0.35	600	0.363	1.285	0.10	17.87
STREET K	MH47	MH42	0.00	0.00	0.00	4.13	53.91	0.619	0.000	0	0.000	0.296	0.914	8.8	0.35	900	1.070	1.683	0.09	20.99
BLOCK 296	MH42	MH48	0.00	0.00	0.00	4.13	53.76	0.617	0.000	0	0.000	0.296	0.913	46.1	0.35	900	1.070	1.683	0.46	21.44
BLOCK 296	MH48	HW1	0.00	0.00	0.00	4.13	52.98	0.608	0.000	0	0.000	0.296	0.904	86.7	0.35	900	1.070	1.683	0.86	22.30
STREET A	MH27	HW1	0.05	0.70	0.04	7.34	53.77	1.097	0.000	0	0.000	0.000	1.097	28.8	0.50	1050	1.930	2.230	0.22	21.20
STREET A	CBMH50	MH51	0.21	0.70	0.15	0.15	67.48	0.028	0.000	0	0.000	0.000	0.028	14.2	1.00	375	0.175	1.587	0.15	15.15
STREET A	MH51	MH27	0.00	0.00	0.00	0.15	67.03	0.027	0.000	0	0.000	0.000	0.027	30.7	0.50	375	0.124	1.123	0.46	15.60
OUTLET	MH81	MH82	0.00	0.00	0.00	0.00	67.48	0.000	1.000	65	0.065	0.065	0.065	12.6	0.75	600	0.531	1.881	0.11	15.11
OUTLET	MH82	MH83	0.00	0.00	0.00	0.00	67.15	0.000	0.000	0	0.000	0.065	0.065	24.9	0.75	600	0.531	1.881	0.22	15.33
COUNTY ROAD 22	EXT1	MH83	2.04	0.75	1.53	1.53	67.48	0.287	0.000	0	0.000	0.000	0.287	100.0	1.00	600	0.614	2.172	0.77	15.77
VILLAGE F1	EXT2	MH83	3.21	0.35	1.12	1.12	67.48	0.211	0.000	0	0.000	0.000	0.211	100.0	1.00	600	0.614	2.172	0.77	15.77
OUTLET	MH83	HW2	0.00	0.00	0.00	2.65	65.24	0.481	0.000	0	0.000	0.065	0.546	6.8	0.75	900	1.567	2.464	0.05	15.81

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	ISSUED FOR SITE PLAN APPLICATION - FIRST SUBMISSION	FEB 26	C.C.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK - PHASE 1

DESIGN SHEET - 5 YEAR STORM (SUBDIVISION)

DATE:	FEBRUARY 2026	DESIGNED BY:	V.S./Y.A.	CHECKED BY:	C.C.
SCALE:	AS SHOWN	DRAWN BY:	M.T.C.	CHECKED BY:	M.R.C.

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

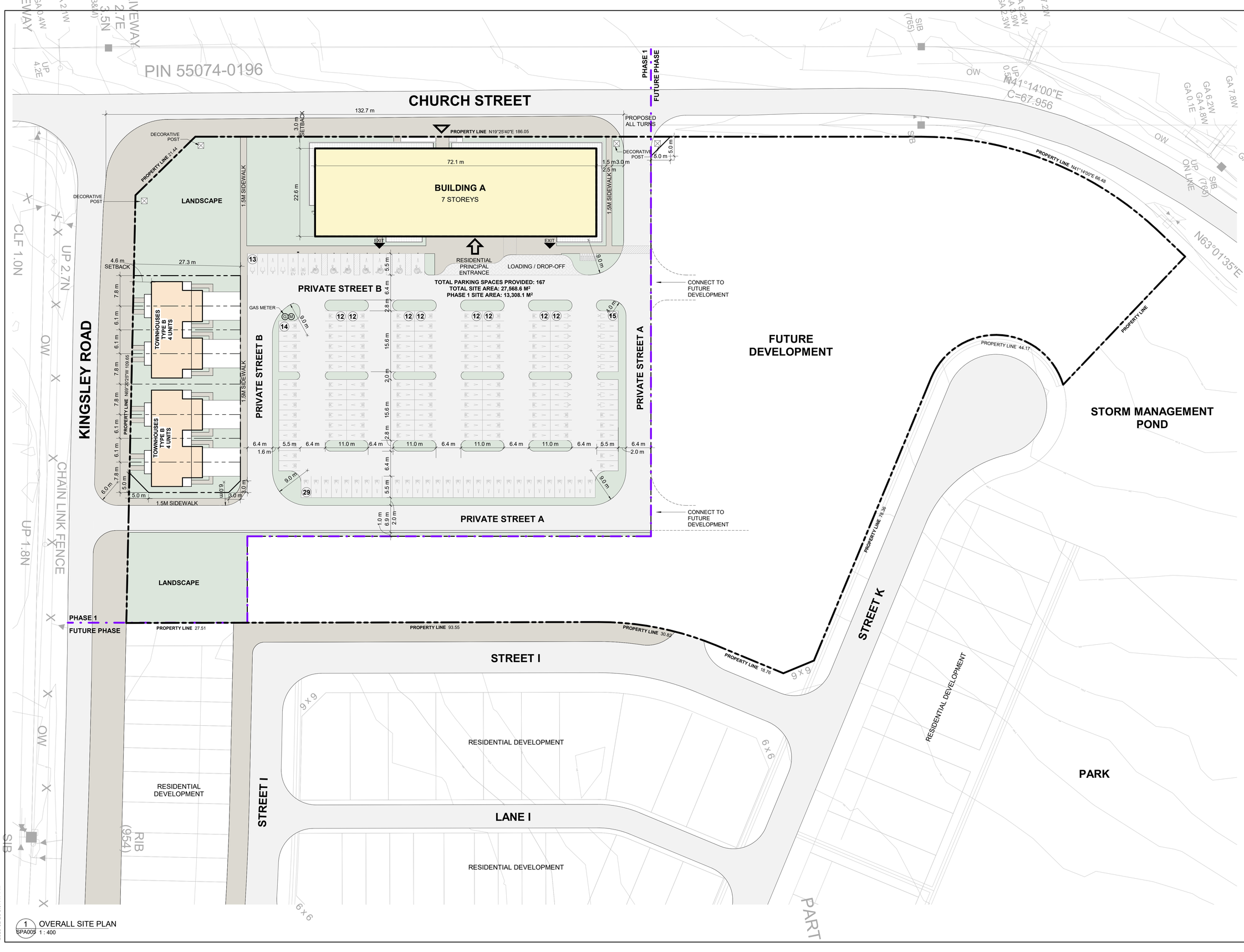
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365B

DRAWING No: DS-4

Appendix A Site Plan



1 OVERALL SITE PLAN
SPA005 1 : 400

2026-02-28 5:07:47 PM

TURNER FLEISCHER

Turner Fleischer Architects Inc.

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

This drawing, as an instrument of service, is provided by and is the property of Turner Fleischer Architects Inc. The contractor must verify and accept responsibility for all dimensions and conditions on site and must notify Turner Fleischer Architects Inc. of any variations from the supplied information. This drawing is not to be scaled. The architect is not responsible for the accuracy of digital files or reproductions of original drawings issued previously. Refer to the most recent appropriate consultant's drawings before proceeding with the work. Construction must conform to all applicable codes and requirements of authorities having jurisdiction. The contractor working from drawings not specifically marked 'For Construction' must assume full responsibility and bear costs for any corrections or damages resulting from his work.

LEGEND

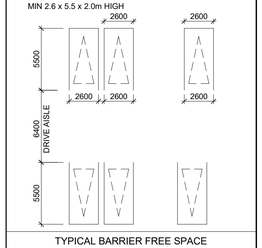
	PRIMARY RESIDENTIAL ENTRANCE
	SECONDARY RESIDENTIAL ENTRANCE
EXIT	EXIT
FH	FIRE HYDRANT
	SIAMESE CONNECTION
	WALL- MOUNTED LIGHT FIXTURE
	LIGHT STANDARD
A	FIRE ROUTE SIGN
B	NO PARKING SIGN PICK-UP AND DROP-OFF ONLY
C	NO PARKING / LOADING ZONE SIGN
D	BARRIER-FREE PARKING SIGN
000.00	SPOT ELEVATION
M / G	GAS/HYDRO METER

MINIMUM PERMITTED PARKING DIMENSIONS

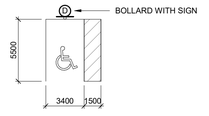
TYPICAL PARKING DIMENSIONS

AISLE WIDTH: MIN 6.4m

TYPICAL PARKING SPACE:
MIN 2.6 x 5.5 x 2.0m HIGH



TYPICAL BARRIER FREE SPACE



#	DATE	DESCRIPTION	BY
1	2026-02-25	ISSUED FOR SPA COORDINATION	

PROJECT

BASE31
66 KINGSLEY ROAD

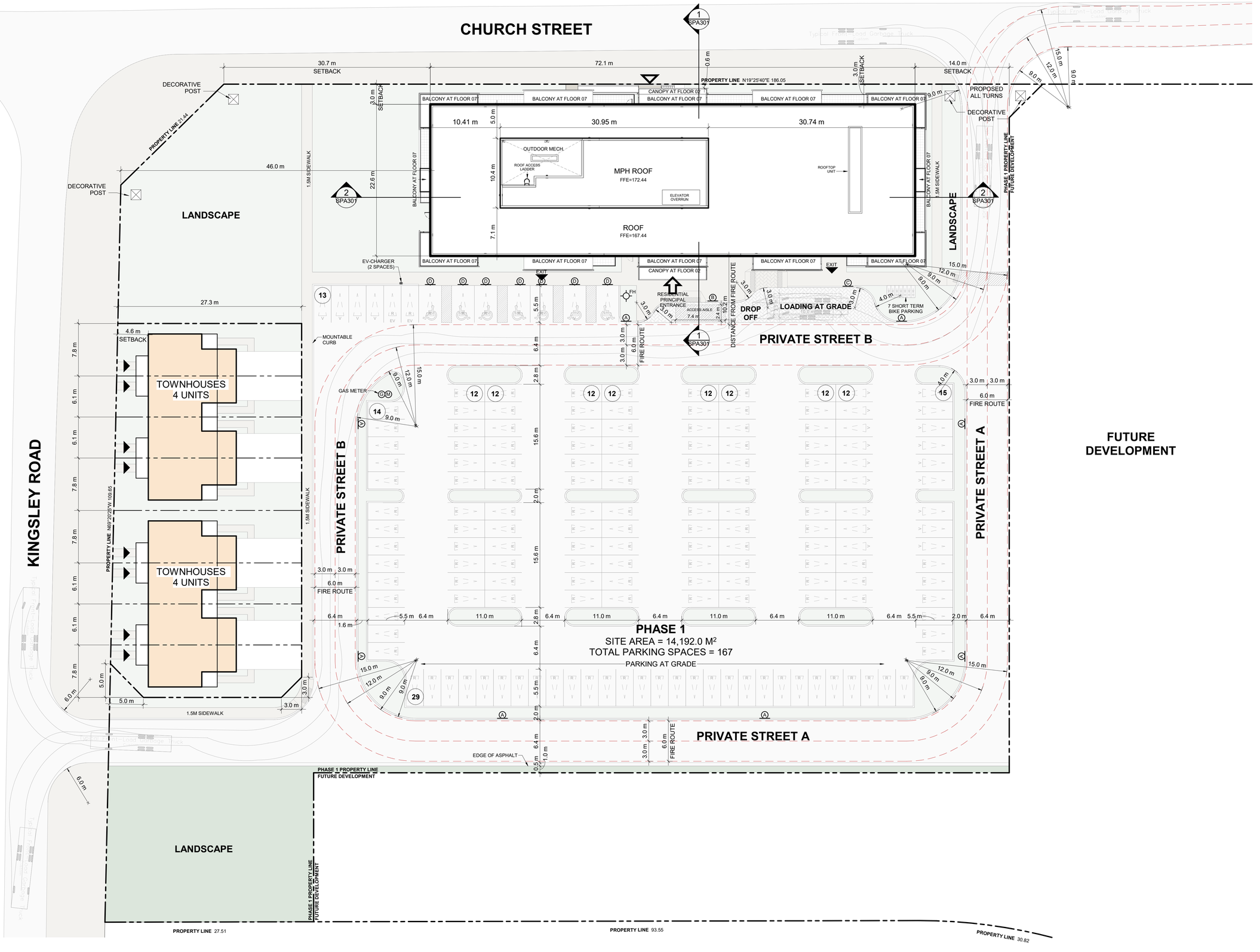
PICTON, ON

DRAWING

OVERALL SITE PLAN

PROJECT NO.	23.148P03
PROJECT DATE	2026-02-27
DRAWN BY	MZH
CHECKED BY	HHO
SCALE	1: 400

DRAWING NO. SPA005 REV. 1



2026-02-26 5:07:51 PM

TURNER FLEISCHER

Turner Fleischer Architects Inc.

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

This drawing, as an instrument of service, is provided by and is the property of Turner Fleischer Architects Inc. The contractor must verify and accept responsibility for all dimensions and conditions on site and must notify Turner Fleischer Architects Inc. of any variations from the supplied information. This drawing is not to be scaled. The architect is not responsible for the accuracy of digital files or for reproductions of original drawings issued digitally. Refer to the drawings of the appropriate consultant's drawings before proceeding with the work. Construction must conform to all applicable codes and requirements of authorities having jurisdiction. The contractor working from drawings not specifically marked 'For Construction' must assume full responsibility and bear costs for any corrections or damages resulting from his work.

LEGEND

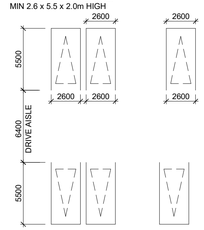
	PRIMARY RESIDENTIAL ENTRANCE
	SECONDARY RESIDENTIAL ENTRANCE
EXIT	EXIT
FH	FIRE HYDRANT
	SIAMESE CONNECTION
	WALL- MOUNTED LIGHT FIXTURE
	LIGHT STANDARD
A	FIRE ROUTE SIGN
B	NO PARKING SIGN PICK-UP AND DROP-OFF ONLY
C	NO PARKING / LOADING ZONE SIGN
D	BARRIER-FREE PARKING SIGN
000.00	SPOT ELEVATION
M G	GAS/HYDRO METER

MINIMUM PERMITTED PARKING DIMENSIONS

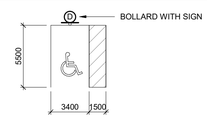
TYPICAL PARKING DIMENSIONS

AISLE WIDTH: MIN 6.4m

TYPICAL PARKING SPACE:
MIN 2.6 x 5.5 x 2.0m HIGH



TYPICAL BARRIER FREE SPACE



#	DATE	DESCRIPTION	BY
1	2026-02-25	ISSUED FOR SPA COORDINATION	

PEC

PROJECT

BASE31
66 KINGSLEY ROAD

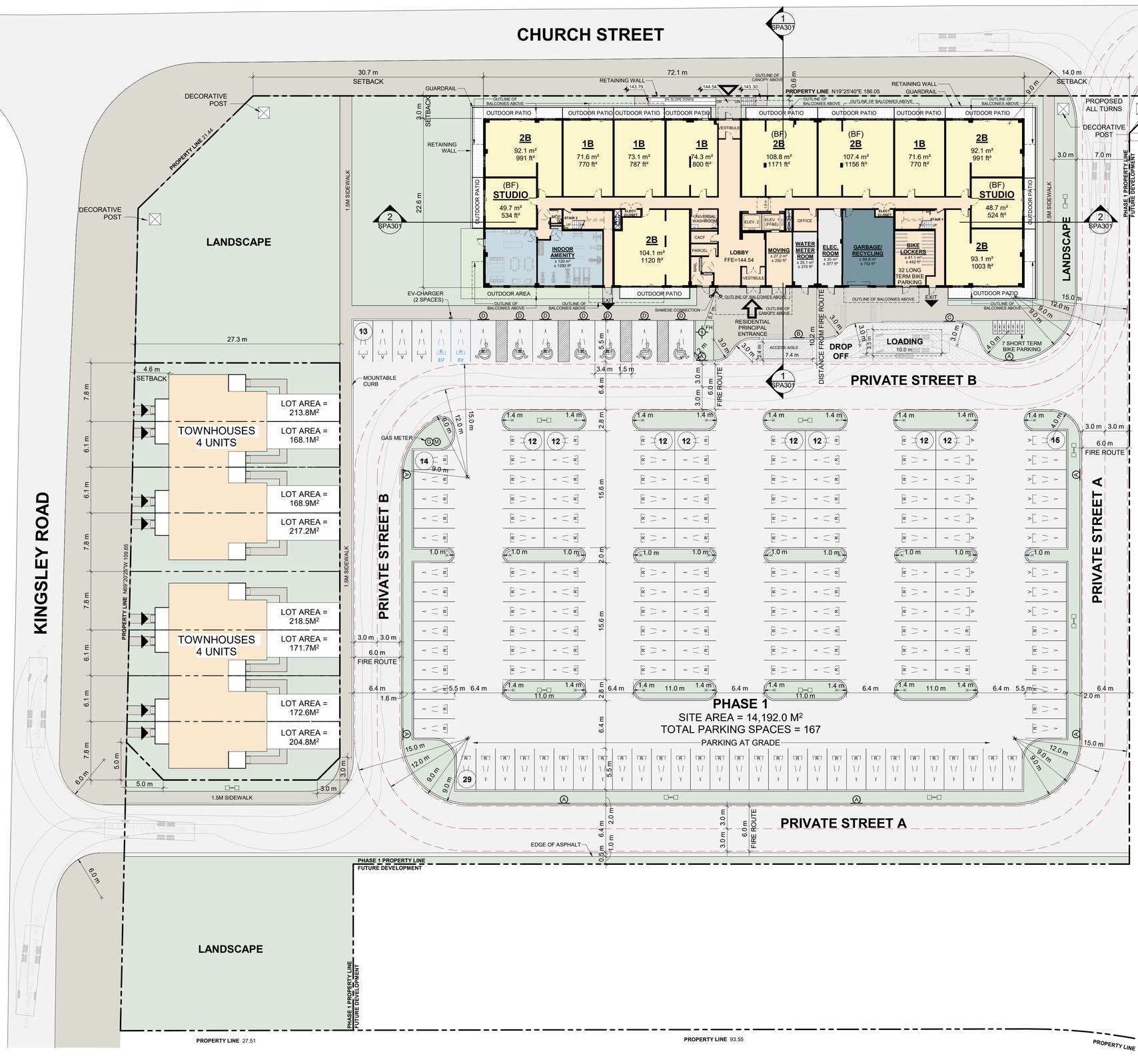
PICTON, ON

DRAWING

SITE PLAN / ROOF PLAN

PROJECT NO.	23.148P03
PROJECT DATE	2026-02-27
DRAWN BY	MZH
CHECKED BY	HHO
SCALE	1: 250

DRAWING NO. SPA006 | REV. 1



2026-02-26 5:07:53 PM

TURNER FLEISCHER

Turner Fleischer Architects Inc.

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

This drawing, as an instrument of service, is provided by and is the property of Turner Fleischer Architects Inc. The contractor must verify and accept responsibility for all dimensions and conditions on site and must notify Turner Fleischer Architects Inc. of any variations from the supplied information. This drawing is not to be scaled. The architect is not responsible for the accuracy of structural, mechanical, electrical, or other consultant's drawings except where this firm has the appropriate consultant's drawings before proceeding with the work. Construction must conform to all applicable codes and requirements of authorities having jurisdiction. The contractor working from drawings not specifically marked 'For Construction' must assume full responsibility and bear costs for any corrections or damages resulting from his work.

LEGEND

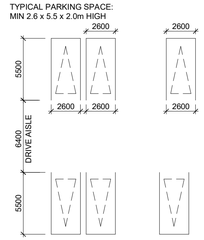
	PRIMARY RESIDENTIAL ENTRANCE
	SECONDARY RESIDENTIAL ENTRANCE
EXIT	EXIT
FH	FIRE HYDRANT
	SIAMESE CONNECTION
	WALL- MOUNTED LIGHT FIXTURE
	LIGHT STANDARD
A	FIRE ROUTE SIGN
B	NO PARKING SIGN PICK-UP AND DROP-OFF ONLY
C	NO PARKING / LOADING ZONE SIGN
D	BARRIER-FREE PARKING SIGN
000.00	SPOT ELEVATION
M G	GAS/HYDRO METER

MINIMUM PERMITTED PARKING DIMENSIONS

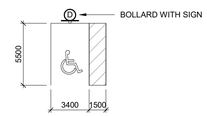
TYPICAL PARKING DIMENSIONS

AISLE WIDTH: MIN 6.4m

TYPICAL PARKING SPACE:
MIN 2.6 x 5.5 x 2.0m HIGH



TYPICAL BARRIER FREE SPACE



#	DATE	DESCRIPTION	BY
1	2026-02-25	ISSUED FOR SPA COORDINATION	

PEC

PROJECT

BASE31
66 KINGSLEY ROAD

PICTON, ON

DRAWING

GROUND FLOOR PLAN

PROJECT NO.	23.148P03
PROJECT DATE	2026-02-27
DRAWN BY	MZH
CHECKED BY	HHO
SCALE	1 : 250

DRAWING NO. SPA151 | REV. 1

Appendix B Background Information

SCS consulting group ltd

Appendix B1 Pre-Consultation Memo

SCS consulting group ltd

Development Services
The Corporation of the County of Prince Edward
Office: 280 Picton Main Street, Picton, ON K0K 2T0
Mailing: 332 Picton Main Street, Picton, ON K0K 2T0
T: 416.662.6742 | F: 613.471.2051
csellors@pecounty.on.ca | www.thecounty.ca

January 19, 2026

PEC Community Partners Inc.
570 Applewood Crescent, Unit 1
Vaughan, ON L4K 4B4

via email: cmarchese@decocommunities.ca
Kathryn@rockportgroup.net

Dear Mr. Marchese and Ms. Randle

RE: Base 31 - Village A Rental Building A with 8 Townhouses
Pre-Consultation Record & Complete Application Requirements

Prince Edward County Development Services Department received a request on December 17th, 2025, for a pre-consultation for a Site Plan Control application for a Rental Building and eight (8) Townhouses in the property known as Base 31 - Village A in the Ward of Picton. The property is currently zoned *Picton Base 31 Village 8 (PB31-V8) within the Minister's Zoning Order 125/25.*

The proposed Site Plan Control Application would facilitate the approval of a seven (7) storey rental apartment building along County Road 22 and eight (8) dual frontage freehold Townhouse units along Kingsley Road with 167 surface parking spaces and two vehicular accesses into the site, within Block 292 of Village A. The Pre-consultation submission included the Concept Plan Package, completed Pre-Consultation Request Form, Accessibility Checklist, the Plans and Stats for the Rental Building and the required fee.

The item was presented at the January 12, 2025, Pre-consultation Meeting and it was advised that a Traffic Brief will need to review the entrances and parking, a Stormwater Management Report will be required which is tied to the previous report, and a Functional Servicing Report which will show sizing and demarcations.

During the meeting, it was raised that there was concern with the right in/right out along Kingsley Road and further information is required to approve a final future entrance. The entrances will require commercial entrance standards. Fire Department noted that a seven (7) storey building will need a sprinkler system and a fire route along the front of the building. Back water valves will need to be shown for the townhouses.

Quinte Conservation Authority will require a change to the Intake Protection Zone, that can be completed directly through a permit with the QCA Source Water Protection Risk Manager. There is no permit required regarding natural hazards as QCA had already signed off on the wetland in 2024.

This letter identifies the materials required by the Municipality for a Site Plan Control application to be considered complete.

Requirements for a complete Site Plan Control application:

- Completed Application form
- Cover Letter describing the proposal
- Parcel Registry
- Survey Plan
- Site Plan showing the following:
    - Key Map
    - Property Boundaries and dimensions
    - North arrow, scale, metric units, revision block, date
    - Adjacent Land uses and Zoning
    - Existing and proposed buildings with setbacks, heights and gross floor area
    - parking layout (number, dimensions, accessible spaces and loading spaces)
    - Driveways, aisles, dimensions, turning radii, fire routes
    - pedestrian walkways, connections, accessibility features
    - Garbage /recycling storage and enclosures
    - outdoor amenities / open space areas
    - fencing and screening locations and details
- Grading and Drainage Plan
- Servicing Plan with lighting, and mailbox locations
- Erosion and Sediment Control Plan
- Photometric Plan
- Floor Plans and Building Elevations
- Landscape Plan, Planting Plan and Details
- Traffic Studies that analyze entrances and parking
- Stormwater Management Report which ties into previous report
- Functional Servicing Report that shows sizing and demarcation

The Functional Servicing and Stormwater Study and Traffic Impact Study (or memo or brief) should include terms the same as the Block 2 RD Rental Building application (SP-14-24), specific to this new location. We appreciate that there may be info previously completed through other applications so it's fine to recycle what works and add any new

work needed to support a complete application specific to this new proposal at this new location. The general terms of reference below should inform the work:

- servicing, grading and sediment/erosion control drawings required

- Functional Servicing Study required for water and sanitary:
  - water and wastewater servicing capacity allocation is subject to the approval of Council via policy EV 800
  - discussion to date with SCS has advised that water analysis specific to this site would be included as part of future Site Plan Control, not the Village A review process so a detailed assessment of the existing water system, proposed demand and any recommended improvements is required
  - sanitary allocation is determined differently than within the Revitalization District approach (direct to gravity sewer versus via private pump station) but if the Village A, Phase 1 submission already includes this info then please package the details specific to this site to demonstrate wastewater function
  - unclear how freehold lots fronting Kingsley are serviced directly by municipal sanitary sewers (no sewers on Kingsley)
  - a single water service per property is permitted
  - water service will require a reduced pressure double backflow preventor
  - the sanitary service requires an inspection manhole at the property limit for sampling purposes

- Stormwater Management Brief required
  - if the Stormwater Management Report (December 2025) from the Village A, Phase 1 submission already includes this info then please package the details specific to this site to demonstrate SWM function
  - the stormwater service requires an inspection manhole at the property limit for sampling purposes

- Traffic Impact Assessment or Memo required, considering auto, pedestrians, cycling and transit
  - consider intro/site context, study area and scope (assessment for both project completion and future horizon - 2034 has been used to date and this is still fine), existing transportation conditions, future anticipated background conditions, estimated project volumes, impact analysis and any recommendations and key conclusions, with a summary
  - please assess both the AM/PM peak as well as the Saturday peak hours
  - please include a site circulation review assessing heavy vehicles, waste collection and emergency response
  - TIA to account for future improvements to the intersection of CR22/Kingsley per the Base31 Master Servicing Concept
  - please consider cut through traffic between CR22/Church and Street K and any design measures to mitigate
  - assess site distance on municipal roadways for all proposed vehicular entrances
  - the sight distance for the CR22/Church access appears constrained in the

northerly direction; a demonstration is required
- TIA work for Village A proposes speed limit reductions on CR22/Church St in order to achieve sight distances; please be advised that requests for changes to speed limits are considered through County committee and subject to the approval of Council; a memo requesting this consideration of Committee would be required to initiate
- demonstrate suitable connectivity to the existing municipal sidewalk network
- Reminder that CR22/Church St and Kingsley are both Rural road cross sections at present; the timing, funding and details for the future urbanization of CR22/Church St and Kingsley per the Base31 Master Servicing Concept are not determined at this time

Please note that we require 1 digital copy of the entire submission and two (2) hard copies of all the drawings listed above. Also, the information contained within this letter is not meant to be exhaustive and the Municipality reserves the right to ask for additional materials if other requirements arise through the application process. The Pre-Consultation Record is valid for one (1) year and will lapse **January 19, 2027.**

Once a formal application has been received and deemed complete, the submission will be circulated to the relevant departments and agencies for comment. Furthermore, the materials that are submitted may be subject to staff and peer review at the owner's expense. When submitting your formal application, please include the Site Plan Control Application fee of $6,166.44 and the Site Plan Agreement Deposit of $2,242.34.

Should you have any questions regarding the above, please feel free to contact the undersigned at 416.662.6742.

Sincerely,

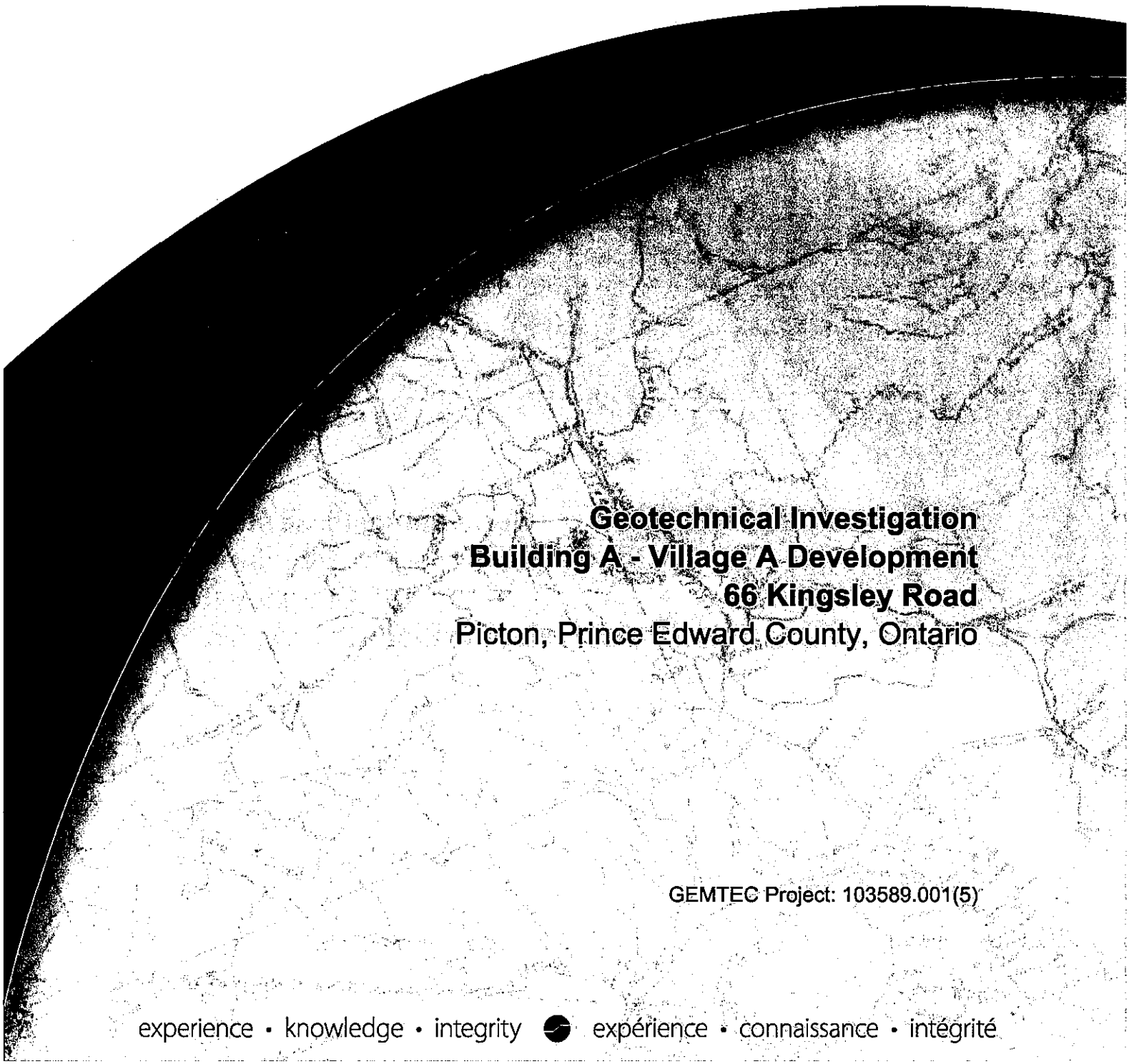
Chris Sellors
Application Coordinator, Base 31
Development Services Department
The Corporation of the County of Prince Edward

cc: Angela Buonamici, MCIP, RPP Manager of Planning

Appendix B2 Geotechnical Report

SCS consulting group ltd

GEMTEC
www.gemtec.ca



Geotechnical Investigation
Building A - Village A Development
66 Kingsley Road
Picton, Prince Edward County, Ontario

GEMTEC Project: 103589.001(5)

experience • knowledge • integrity expérience • connaissance • intégrité

GEMTEC
www.gemtec.ca

Submitted to:

Base31 Residences Inc.
570 Applewood Crescent
Vaughan, Ontario
L4K 4B4

Geotechnical Investigation
Building A - Village A Development
66 Kingsley Road
Picton, Prince Edward County, Ontario

February 3, 2026
GEMTEC Project: 103589.001(5)

experience • knowledge • integrity

GEMTEC Consulting Engineers and Scientists Limited
1100 Bennett Road, Unit 4
Bowmanville, ON, Canada
L1C 0Y7

February 3, 2026

Project: 103589.001(5) – Rev0

Base31 Residences Inc.
570 Applewood Crescent
Vaughan, Ontario
L4K 4B4

Attention: Kathryn Randle

Re: Geotechnical Investigation
Building A – Village A Development
66 Kingsley Road, Picton, Prince Edward County, Ontario

Enclosed is our geotechnical site investigation report in support of the proposed development located at 66 Kingsley Road in Picton, Prince Edward County, Ontario. The report presented herein is based on the scope of work summarized in the Change Order dated December 17, 2025. This report was prepared by Rafael Abdulla, M.Eng., P.Eng., PMP and reviewed by Dale Edwards, C.Tech.

R. Abdulla

Rafael Abdulla, M.Eng., P.Eng., PMP
Senior Geotechnical Engineer

Dale Edwards, C.Tech.
Branch Manager – Clarington

RA/DBE/af

\\Lucid\Drawings and Files\Projects\103500\103589.001\03_Submittals\Reports\Bldg A Village A\103589.001(5)_RPT_Geotech_Village A Building A_2026-02-03_Rev0.docx

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 PROJECT AND SITE DESCRIPTION 1

2.1 Background Information 1
2.2 Project Location and Site Description 1
2.3 Regional Geology 2

3.0 PREVIOUS INVESTIGATION 2

4.0 SITE INVESTIGATION METHODOLOGY 3

5.0 SUBSURFACE AND GROUNDWATER CONDITIONS 5

5.1 Subsurface Conditions 5
5.1.1 Topsoil 5
5.1.2 Overburden 5
5.1.3 Fresh Bedrock 6
5.1.4 Geotechnical Laboratory Tests 7

5.2 Groundwater Levels 8

6.0 DISCUSSION AND RECOMMENDATIONS 8

6.1 General Site Preparation 8
6.2 Engineered Fill 9
6.3 Shallow Foundations 10
6.3.1 Frost Penetration 11
6.3.2 Foundation Walls and Isolated Piers 11
6.3.3 Permanent Drainage 12
6.3.4 Seismic Site Classification 12
6.3.5 Slab-on-Grade (Heated Areas Only) Floor 13

6.4 Temporary Excavation 13
6.4.1 Overburden Excavation 13
6.4.2 Bedrock Excavation 14

6.5 Temporary Groundwater Control 14
6.6 Site Servicing 15
6.6.1 Trench Cut-Offs 15

7.0 ADDITIONAL CONSIDERATIONS 16

7.1 Monitoring Well Abandonment 16
7.2 Corrosion Considerations 16
7.3 Management of Excess Soil 16
7.4 Effects of Construction Induced Vibration 16

7.5 Design Review and Construction Observation 16
8.0 CLOSURE 18

LIST OF TABLES

Table 4.1 – Summary of Borehole Information 4
Table 5.1 – Summary of Overburden Conditions 6
Table 5.2 – Approximate Depth and Elevations of Bedrock 6
Table 5.3 – Summary of Rock Quality at Borehole Location 7
Table 5.4 – Summary of Grain Size Distribution Tests (Overburden) 7
Table 5.5 – Bedrock UCS Test Results 7
Table 5.6 – Approximate Groundwater Depths and Elevations 8
Table 6.1 – Recommended ULS and SLS for Shallow Foundations 11

LIST OF APPENDICES

Appendix A	Conditions and Limitations of This Report
Appendix B	Figures
Appendix C	Record of Borehole Sheets
Appendix D	Geotechnical Laboratory Results
Appendix E	Rock Core Photographs

NOTE: This document and any attachments are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this document in error, please notify the sender immediately and delete the document from your system. Any unauthorized disclosure, copying, distribution, or reliance on the contents of this document is prohibited. Thank you for your cooperation.

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) has been retained by Base31 Residences Inc. (the BRI / Client) to carry out a geotechnical assessment based on information obtained from a site investigation carried out in 2024, in support of the design of the proposed residential mid-rise building to be located at 66 Kingsley Road in Picton, Prince Edward County, Ontario (herein referred to as the "Site" – Building A).

The purpose of the geotechnical site investigation was to characterize the general subsurface and groundwater conditions at the Site by means of a limited number of boreholes, laboratory tests and monitoring wells. Based on an interpretation of the information obtained, this report provides geotechnical recommendations for the proposed construction and other aspects of the project, including construction considerations, that could influence design decisions. It should be noted that this report addresses only the geotechnical (physical) aspects of the subsurface conditions at the Site. The geo-environmental (chemical) aspects, including the consequences of possible surface and/or subsurface contamination resulting from previous activities or uses of the Site and/or resulting from the introduction onto the Site of materials from off-site sources, are beyond the terms of reference for this assignment and are not addressed herein.

This report is subject to the *Conditions and Limitations of This Report*, which follows the text of the report, and are considered an integral part of the report (Appendix A).

2.0 PROJECT AND SITE DESCRIPTION

2.1 Background Information

The following reports and project documents have been provided to and considered by GEMTEC in the preparation of the geotechnical recommendations:

- Conceptual drawings issued for BRI prepared by Turner Fleischer and dated July 31, 2025.
- Geotechnical Report titled "*Preliminary Geotechnical Investigation, Village A – Base 31 Residential Subdivision, Picton, Prince Edward County, Ontario*", Report No. 103306.002 prepared by GEMTEC dated September 20, 2024 (*GEMTEC 2024*).

2.2 Project Location and Site Description

The Site is located approximately 50 metres (m) northeast of the intersection of Kingsley Road and Church Street (County Road 22) in Picton, Prince Edward County, Ontario as shown on the Site Location Plan (Figure 1 in Appendix B).

The Site occupies an area of approximately 2.8 hectare (ha) and is currently vacant. The Site is part of the proposed Village A development, and is bounded by Church Street to the west, Kingsley Road to the south, and vacant lands which will be part of the Village A residential development on the other sides.

The topographic information available indicates that the Site generally slopes down to the north with elevations ranging from approximately Elevation (Elev.) 146 metres (m) to Elev. 143 m.

At the time of preparing this report, the information available indicated that the Site will be developed with Building A, which will be a seven-storey slab-on-grade residential building. The remainder of the Site will be occupied by access roads and parking.

2.3 Regional Geology

The surficial geology aspects of the general site area were reviewed from the following publications:

- Chapman, L.J., and Putnam, D.F., 2007, "*The Physiography of Southern Ontario*"; 4th Edition, Ontario Geological Survey; and,
- The Ontario Geological Survey, 2003, "*Surficial Geology of Southern Ontario*".

Physiographic mapping in the area according to the above-noted reference indicates that the Site lies within the physiographic region of southern Ontario known as the Prince Edward Peninsula. Prince Edward County is a plain or low plateau of limestone projecting in the eastern part of Lake Ontario and separated from the mainland by the Bay of Quinte. The Prince Edward Peninsula consists of clays, sands/silty sands, and till deposits and is underlain by the Lindsay Formation (Upper Ordovician) / Shadow Lake Formation (Middle Ordovician) bedrock. The surficial geology mapping indicates that the Site lies within an area of Palaeozoic bedrock.

In general, the subsurface conditions encountered during the previous and current investigations were generally consistent with the physiographic and surficial geological mapping.

3.0 PREVIOUS INVESTIGATION

As noted above, a preliminary geotechnical investigation was previously conducted for the larger development area of Village A, and extracts of this report are provided in Appendices C to E.

The geotechnical report *GEMTEC 2024* involved drilling seventeen boreholes for the proposed Village A development designated as Boreholes BH24-1 to BH24-17. The subsurface conditions of the overall Site are consistent. Based on the results of the 2024 geotechnical investigation, subsurface conditions at the Site generally consist of topsoil overlying silty sand to silty sand and gravel (probably disturbed native soils) overlying the limestone bedrock. The weathered bedrock was encountered at depths ranging from about 0.3 mbgs to 0.8 mbgs.

At the location of the proposed Building A, the relevant boreholes from *GEMTEC 2024* are Boreholes BH24-3, BH24-4 and BH24-17.

4.0 SITE INVESTIGATION METHODOLOGY

The field work for the Village A site investigation was carried out on July 22 to 30, 2024, during which time the three relevant boreholes, designated as Boreholes BH24-3, BH24-4 and BH24-17, were advanced to depths ranging from approximately 4.7 mbgs to 6.2 mbgs (between Elev. 135.2 m and Elev. 138.9 m).

The borehole locations are shown on the Borehole Location Plan in Appendix B. Descriptions of the subsurface conditions observed in the boreholes are provided on the Record of Borehole Sheets in Appendix C. The results of the geotechnical laboratory tests are provided on the Record of Boreholes and in Appendix D.

The boreholes were advanced using a track mounted drill rig operated by Pontil Drilling of Mount Albert, Ontario, who is a MECP-licensed Water Well Contractor. The field work was observed throughout by a member of our geotechnical engineering staff who directed the drilling operations and logged the samples and boreholes.

The boreholes through the overburden were advanced to the sampling depths by means of continuous flight hollow stem augers using conventional 50-millimetre (mm) external diameter split spoon sampling equipment driven by an automatic hammer in accordance with the SPT procedures outlined in ASTM International standard D1586: "*Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*". SPT "N"-values were recorded for the sampled intervals as the number of blows required to drive a split spoon sampler 305 mm into the soil, using a 63.5 kg drop hammer falling 750 mm, as per ASTM D1586 procedures. The split-spoon samplers used in the investigation limit the maximum particle size that can be sampled and tested to about 40 mm. Therefore, particles or objects that may exist within the soils that are larger than this dimension were not sampled and are not represented in the grain size distributions contained herein. The results of the field tests (i.e., SPT "N" -values) as presented on the Record of Borehole sheets and in subsequent sections of this report are the values measured directly in the field and are unfactored.

The bedrock was cored using rotary wet coring techniques with HQ core size (63.5 mm outside diameter) at all borehole locations and the results are presented on the Record of Borehole Sheets in Appendix C. Photos of the bedrock cores are provided in Appendix E.

Monitoring wells were installed in two boreholes. The monitoring wells were constructed using nominal 50 mm diameter, Schedule 40 polyvinyl chloride (PVC) pipe with a No. 10 machine slotted screen (0.01-inch slot). The annular space between the monitoring well screen and surrounding soils was backfilled with a silica sand filter to a maximum of 0.3 m above the top of the screen, and the remainder of the annular space was sealed with bentonite. All monitoring wells were completed with above-ground steel casing. The monitoring well installation details are provided in the Record of Borehole Sheets (Appendix C).

The field work for this investigation was observed by members of GEMTEC's technical staff, who located the boreholes in the field, arranged for the clearance of underground utilities, observed the borehole drilling, sampling and in situ testing operations, logged the boreholes as well as examined and took custody of the recovered soil and rock samples. The samples were identified in the field, placed in appropriate containers, labelled, and transported to our Oshawa geotechnical laboratory for further visual examination by the project engineer and for laboratory testing.

Groundwater conditions were noted in the open boreholes during and upon completion of drilling. Monitoring wells were installed in the bedrock, following the completion of drilling to allow for subsequent groundwater measurements. All other boreholes were backfilled and sealed in accordance with Ontario Regulation (O.Reg.) 903, as amended.

Following completion of the drilling, the soil and rock core samples were returned to GEMTE's laboratory for examination by a geotechnical engineer. Selected samples were submitted for grain size distribution, uniaxial compressive strength (UCS), and moisture content testing. The geotechnical laboratory test results from the relevant boreholes are provided in Appendix D.

The borehole locations were selected by GEMTEC and positioned on-Site relative to existing features, including underground and above ground utility constraints. The ground surface elevations and coordinates at the borehole and monitoring well locations were surveyed by SCS Consulting Group Ltd.(SCS) in August 2024 and provided to GEMTEC.

A summary of the relevant borehole information (including ground surface elevations and monitoring well locations) are provided in Table 4.1.

Table 4.1 – Summary of Borehole Information

Borehole ID	Ground Surface Geodetic Elevation (m)	Borehole Depth (m)	Notes
BH24-3	142.5	6.2	
BH24-4	143.6	4.7	50-mm diameter monitoring well
BH24-17	141.5	6.2	50-mm diameter monitoring well

Notes:
[1]Bedrock cored in all three boreholes (HQ size)

5.0 SUBSURFACE AND GROUNDWATER CONDITIONS

5.1 Subsurface Conditions

The detailed soil profiles encountered in the boreholes are indicated on the Record of Borehole Sheets in Appendix C. The Record of Boreholes indicate the subsurface conditions at the specific borehole locations only. Boundaries between the different soils on the Records are often not distinct, but rather are transitional and have been interpreted. The precision with which subsurface conditions are indicated depends on the method of drilling, the frequency and recovery of samples, the method of sampling, and the uniformity of the subsurface conditions. Subsurface conditions at locations other than the boreholes may vary from the conditions encountered in the boreholes, both laterally and with depth. In addition to soil variability, fill of variable physical and chemical composition can be present over portions of the Site or on adjacent properties.

The soil descriptions in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves judgement and GEMTEC does not guarantee descriptions as exact but infers accuracy to the extent that is common in current geotechnical practice.

Based on the results of the geotechnical investigation, subsurface conditions at the Site generally consist of topsoil overlying silty sand to silty sand and gravel (probably disturbed native soils) overlying the limestone bedrock. The weathered bedrock was encountered at a depth of about 0.3 mbgs.

5.1.1 Topsoil

Topsoil about 50 mm to 125 mm thick was encountered at the borehole locations.

5.1.2 Overburden

The subsurface conditions of the overburden encountered in the boreholes drilled at the Site are described in the following sections.

Please note that:

- Depths given in the table describing the subsurface conditions are measured from ground surface.
- The SPT "N"-values given are blows for 0.3 m of penetration unless otherwise indicated; and,
- Top of the weathered bedrock was inferred at the depth where the grinding of the augers commenced. However, bedrock coring commenced at a depth of about 1.6 mbgs.

A summary of the encountered soil conditions of the Site is presented below in Table 5.1.

Table 5.1 – Summary of Overburden Conditions

Soil Type	Depth (m)		Elevation (m)		SPT "N" Values	Compactness Condition	Approx. Water Content (%)
	From	To	From	To			
Topsoil	0	0.1	-	-	-	-	-
Silty Sand to Silty Sand and Gravel	0.1	0.3	141.4 to 143.5	141.2 to 143.3	19 to 50/0.08 mm	Compact to very dense	1 to 5
Weathered Bedrock	0.3	1.6	141.2 to 143.3	139.9 to 142.0	50/0.03 to 50/0.08 mm	Very dense	1 to 3

The overburden was present in all boreholes near surface, and contained oxidation stains, and rock fragments.

5.1.3 Fresh Bedrock

Bedrock was encountered at the following depths and elevations at each borehole location as summarized below in Table 5.2. Photographs taken of the bedrock cores are provided in Appendix E.

Table 5.2 – Approximate Depth and Elevations of Bedrock

Borehole ID	Depth (mbgs)	Geodetic Elevation (m)
BH24-3	0.3	142.2
BH24-4	0.3	143.3
BH24-17	0.3	141.2

The upper 1 m to 1.5 m of overburden overlying the fresh bedrock is anticipated to be completely weathered to highly weathered bedrock.

The fresh bedrock encountered can be described as fine to medium grained, dark grey to black, strong to very strong fresh limestone with shale/siltstone interbeds of the Lindsay Formation. The recovery and quality parameters measured during the rock coring are summarized in Table 5.3.

Table 5.3 – Summary of Rock Quality at Borehole Location

Borehole ID	Run	Total Core Recovery (TCR) %	Solid Core Recovery (SCR) %	Rock Quality Designation (RQD) %
BH24-3	Run 1	100	97	83
	Run 2	100	92	85
	Run 3	100	97	90
BH24-4	Run 1	100	100	100
	Run 2	100	100	95
BH24-17	Run 1	100	98	97
	Run 2	100	98	98
	Run 3	100	98	97

5.1.4 Geotechnical Laboratory Tests

Grain size distribution testing was undertaken on one sample of the overburden, and the results are provided in Appendix D and summarized in Table 5.4.

Table 5.4 – Summary of Grain Size Distribution Tests (Overburden)

Borehole	Sample Depth (m)	Gravel (%)	Sand (%)	Silt / Clay (%)	USCS Soil Description
BH24-4	0.8	30.4	44.0	25.6	Gravelly Silty Sand

One uniaxial compressive strength (UCS) test was carried out on the HQ size core and the detailed laboratory results are presented in Appendix D. A summary of the laboratory result is presented in Table 5.5 below:

Table 5.5 – Bedrock UCS Test Results

Borehole	Sample Depth (m)	UCS (MPa)
BH24-4	3.5 – 3.8	105.0

5.2 Groundwater Levels

Un-stabilized groundwater levels were measured in the open boreholes upon completion of drilling, and the details are provided in Record of Borehole Sheets in Appendix C. Groundwater level measured in the two monitoring wells on August 13, 2024, are provided in Table 5.6.

Table 5.6 – Approximate Groundwater Depths and Elevations

Monitoring Wells	Groundwater Depth (mbgs)	Groundwater Elevations (m)
BH24-4	2.8	140.8
BH24-17	3.9	137.6

The measured groundwater levels reflect the groundwater conditions in the boreholes at the time of the field work. Groundwater levels at the Site are anticipated to vary between and beyond the borehole locations and to fluctuate on a seasonal basis and in response to significant precipitation or snowmelt events.

6.0 DISCUSSION AND RECOMMENDATIONS

This section of the report provides guidance on the geotechnical engineering design aspects of the project based on our interpretation of the boreholes advanced as part of the site investigation by GEMTEC. It is stressed that the information in the following sections is provided for the guidance of the designers and is intended for this project only. Contractors bidding on or undertaking the works should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of the factual data as it affects their construction techniques, schedule, safety, and equipment capabilities.

6.1 General Site Preparation

Minor cut and fill operations may be required to level the Site. Surficial vegetation and topsoil should be stripped from the proposed development area. Topsoil and fill materials are not considered suitable to provide foundation support for the proposed building foundations, floor slabs, other settlement-sensitive structures. To reduce the potential for differential settlements, all existing topsoil within the proposed building footprint and paved areas, should be completely sub-excavated and replaced with approved engineered fill materials, as required. Any topsoil and materials with significant quantities of organics and deleterious materials (i.e., construction debris, etc.) are not appropriate for use as engineered fill.

Proposed building foundations, floor slabs, pavements or other settlement-sensitive structures may be supported on approved native undisturbed compact to very dense soils or bedrock that are free of organics and other deleterious materials or on approved engineered fill materials.

It is strongly recommended that construction should be carried out under dry conditions. If construction is required during freezing temperatures, the subgrade should be protected immediately from freezing using straw, propane heaters and insulated tarpaulins, or other suitable means. Backfilling during the winter is not recommended, but recommendations can be provided if required.

6.2 Engineered Fill

Engineered fill may be required to achieve final grades and support structural elements such as foundations and / or floor slab depending on the final grades. The following is recommended for the construction of engineered fill:

- Prior to placing engineered fill, topsoil and any disturbed native soil, or deleterious materials within the limits of the engineered fill must first be removed to competent subgrade. The native soils can be re-used as engineered fill. Ponded water and sloughed soil due to erosion during rainfall event should be cleaned and/or re-compacted.
- The area of the engineered fill should extend horizontally 1 m beyond the outside edge of the foundations then extend downward at a 1H:1V slope to the competent approved native soil.
- Based on the soil classification and frost group described in Table 14.1 of the Canadian Foundation Engineering Manual (CFEM, 2023), the non-cohesive deposits encountered on the Site are regarded as being of low to moderate frost susceptibility. This should be considered for any design elements exposed to freezing temperatures (concrete flatworks, exterior concrete slabs, and the like).
- The subgrade or base of the engineered fill area must be approved by GEMTEC prior to placement of any new fill, to ensure that suitability of subgrade condition. The area(s) should then be proof rolled in conjunction with an inspection by GEMTEC to confirm that the exposed soils are native, undisturbed, and competent, and have been adequately cleaned of ponded water and all disturbed, loosened, softened, organic and other deleterious material. Any soil containing organic matter or loose soils will also need to be removed prior to placement of engineered fill as directed by GEMTEC during proofrolling.
- Materials for reuse as engineered fill must be approved by GEMTEC prior to placement and should be free of organic, and deleterious materials. In this regard, the native non-cohesive soil which are near their optimum water contents and do not contain topsoil or organics or any other deleterious materials can be reused on-Site as engineered fill. The materials for use as engineered fill must be maintained within about 2 percent of optimum water content for compaction. The natural water contents of the native non-cohesive soil are below their optimum water contents and wetting of these soils will be required during fill placement to achieve compaction.

- If native soils from the Site are not used as engineered fill, imported material for engineered fill should consist of clean, non-organic soils, free of chemical contamination or deleterious material. Imported materials to be used for engineered fill must be approved by GEMTEC at the source(s), prior to hauling to the Site. In this regard, imported materials which meet the requirements for OPSS 1010.MUNI Select Subgrade Material (SSM) placed in maximum 300 mm thick loose lifts and uniformly compacted to 98 percent of SPMDD throughout. The water contents at the time of placement should be within +/- 2 percent of its optimum moisture content to achieve the required compaction. Placement of fill is not recommended in the winter season, if unavoidable, any frost penetration into the fill material must be removed prior to placement of subsequent lifts of fill and reviewed by GEMTEC. Additional recommendations for engineered fill placement during winter, if required, will need to be provided at the detailed design stage.
- Cobbles and boulders exceeding 150 mm in diameter should be removed from the engineered fill prior to compaction. It is recommended that the contractor consider the possible presence of cobbles / boulders and bedrock or other obstructions when developing their excavation and engineered fill construction methodology.
- Full time testing and inspection during fill placement is required as outlined in Section 4.2.2.2 of the 2012 Ontario Building Code (OBC).

6.3 Shallow Foundations

At the time of writing this report, information available indicated that the proposed buildings will be a slab-on-grade without any basement level. Footing bases and elevator shafts are anticipated to extend about 1 m to 2 m below the finished floor level.

Based on the subsurface information, the proposed structure can be supported by conventional strip and/or spread footing foundations founded on the fresh bedrock at depths of about1.6 mbgs or greater (Elev. 139.9 m to 142.0 m).

The factored Ultimate Limit States (ULS)bearing resistance for the bedrock was assessed based on the required bearing resistance factor of 0.5 for shallow spread/strip footings. The Serviceability Limit States (SLS) reaction values for less than 25 mm of settlement were also assessed for the various sizes of footings. At the calculated ULS values settlements were below the SLS value of 25 mm for strip footings up to 1 m wide and for spread footings up to 5 m x 5 m (i.e., the SLS reaction for 25 mm of settlement would exceed the factored ULS resistance, and hence, the ULS resistance value will govern the design).

Table 6.1 provides a summary of the factored ULS resistance with foundations placed directly on fresh to slightly weathered bedrock.

Please note that these bearing capacities are for vertical concentric loads only. The effects of load inclination and eccentricity need to be taken into account as appropriate should those loading conditions develop.

Table 6.1 – Recommended ULS and SLS for Shallow Foundations

Footings Dimensions	Factored Geotechnical Resistance at ULS	Geotechnical Reaction at SLS (for 25 mm of settlement)	Settlement
5 m x 5 m spread footings Strip footings up to 1 m wide	10 MPa	ULS capacity govern	<10 mm

It is recommended that the footings be founded on a flat lying surface to convey loads vertically to the bedrock. All footing excavations must be inspected prior to placing concrete to ensure that the base has been adequately cleaned, and that the bedrock conditions as exposed at the founding level are consistent with the design assumptions. Where possible, the footing foundations should be excavated to provide a flat bearing surface at right angles to the axis of the loads. Rock protrusions, cavities, or large open joints should be avoided to provide a uniform bearing pressure across the full area of the footing. All loose, shattered or highly weathered rock within the footprint of the footings and at the footing level should be removed and replaced with concrete with a 28-day compressive strength of at least 15 MPa. All footing foundations should be cleaned of deleterious material. Also, all footings must be inspected by a geotechnical engineer prior to placing any concrete for the footings.

6.3.1 Frost Penetration

Based on the Ontario Provincial Standard Drawing (OPSD) 3090.101, the typical frost penetration depth is expected to be approximately 1.4 mbgs. All exterior footings and footings in unheated areas should be provided with at least 1.4 m of earth cover after final grading or a thermally equivalent thickness of insulation, in order to address the potential for damage due to frost action.

6.3.2 Foundation Walls and Isolated Piers

To avoid ad-freeze and possible jacking (heaving) of the foundations, the interior and exterior of the foundation walls should be backfilled with free draining, non-frost susceptible material that meets OPSS requirements for Granular B Type I or II. The backfill should be compacted in maximum 300 mm thick lifts to at least 95 percent SPMDD using suitable vibratory compaction equipment. Alternatively, where the native soils are used as backfill at the building exterior, appropriate external insulation (e.g., a semi-rigid glass fibre/SM Styrofoam) should be installed to help absorb the adfreezing forces. The insulation should extend to the footing depth. Where the backfill will ultimately support areas of hard surfacing (pavement, sidewalks, or other similar surfaces), the backfill should be placed in maximum 200 mm thick lifts and compacted to 95 percent SPMDD using suitable compaction equipment.

Backfilling against isolated (unheated) walls or piers should consist of free draining, non-frost susceptible material meeting OPSS Granular B Type I or II requirements. Other measures to prevent frost jacking of foundation elements can be provided if required.

Where areas of hard surfacing (pavement etc.) abut the proposed structures, a gradual transition should be provided between those areas of hard surfacing underlain by non-frost susceptible granular wall backfill and those areas underlain by existing frost susceptible material to reduce the effects of differential frost heaving. It is suggested that granular frost tapers be constructed from 1.4 m below finished grade to the underside of the granular subbase material for the hard surfaced areas. The frost tapers should be sloped at 1H:1V or flatter.

6.3.3 Permanent Drainage

The groundwater level measurement taken in the monitoring wells ranges from about 2.8 mbgs to 3.9 mbgs. Based on the information provided, the building on-Site will be a slab-on-grade building.

If the finished floor slab elevation is at or above the finished exterior grade, an underfloor drainage system would not be required.

The extent of drainage measures such as a composite synthetic drainage system or equivalent, under slab drainage and sump system should be assessed during the final design stages and GEMTEC can provide geotechnical input as required.

The exterior grade around any buildings should be sloped from the walls to direct surface runoff away from the building.

If an underfloor drainage system connected to sumps is required, it should be provided to collect seepage and to limit pore water pressure build-up on the underside of the floor slab. The subfloor drainage system may consist of a network of robust sub-drainpipes conveying collected groundwater to a sump or sumps from which the groundwater can be pumped to a municipal storm sewer. The drainage system would consist of interconnected perforated drainpipes (bedded on, and within, free draining granular soils wrapped in geotextile fabric) installed around the perimeter of the building and within the building footprint.

6.3.4 Seismic Site Classification

Seismic hazard is defined in the 2012 OBC (as amended) by uniform hazard spectra (UHS) at spectral coordinates of 0.2 second, 0.5 second, 1.0 second and 2.0 seconds and a probability of exceedance of 2 percent in 50 years. The OBC method uses a site classification system defined by the average soil/bedrock properties (e.g., shear wave velocity, Standard Penetration Test (SPT) resistance, undrained soil shear strength, etc.) in the 30 m of the soil profile extending below the foundation level. There are 6 site classes from A to F, decreasing in ground stiffness from A, hard rock, to E, soft soil; with site class F used to denote problematic soils (e.g., sites underlain by thick peat deposits and/or liquefiable/collapsible soils). The site class is then used to

obtain acceleration and velocity-based site coefficients F_a and F_v, respectively, used to modify the UHS to account for the effects of site-specific soil conditions in design.

The site classification recommendation is based on the available information as well as our interpretation of conditions below the boreholes and our knowledge of the soil/bedrock conditions in the area. In accordance with Table 4.1.8.4.A of the OBC (2012), it is recommended that Site Class "C" (very dense soils and soft rock) be applied for structural design at the Site. The site classification may be improved by site-specific testing such as seismic cone penetration testing or multi-channel analysis of surface waves (MASW) testing.

6.3.5 Slab-on-Grade (Heated Areas Only) Floor

It is anticipated that the floor slab can be designed as a concrete slab-on-grade. Based on the existing borehole information, the subgrade will consist of engineered fill or compact to very dense native soils, and limestone bedrock. The final rock surface should be cleared of any loose or shattered rock and debris for slab in the bedrock.

Any low areas may be brought up to within at least 200 mm of the underside of the floor slabs, as required, using Ontario Provincial Standard Specification (OPSS) Granular 'B', Type I material or other approved material, placed in maximum 200-mm thick loose lifts and uniformly compacted to at least 98 percent of the material's SPMDD.

The final lift of granular fill beneath floor slabs should consist of a minimum thickness of 200 mm of OPSS 1010 Granular A compacted to 100 percent of its SPMDD in order to create a stable working surface, to distribute loadings, and for drainage purposes.

The floor slabs should be structurally separate from the foundation walls and columns. Sawcut control joints should be provided at regular intervals and along column lines to control shrinkage cracking and to allow for differential settlement of the floor slabs.

6.4 Temporary Excavation

Depending on the finished grades, finished floor elevations, and inverts of site servicing, it is anticipated that excavations will extend into the compact to very dense non-cohesive deposits and the underlying bedrock.

6.4.1 Overburden Excavation

The sides of the excavations should be sloped in accordance with the requirements in Ontario Regulation 213/91 under the Occupational Health and Safety Act (OHSA). It is anticipated that temporary excavations in compact to very dense native soils can be classified as Type 2 soils with unsupported side slopes no steeper than 1 horizontal to 1 vertical (1H:1V).

Flattening and / or blanketing of the side slopes may be required in the non-cohesive materials depending on the weather conditions and construction procedure adopted by the contractor.

Further, excavations should be left open for as short a duration as possible and completely backfilled at the end of each working day.

All excavated material should be stockpiled well away (i.e., minimum 2 m) from the sides / crest of the excavation. In general, stockpiles of excavated materials should be kept at least the same horizontal distance from the top edge of the excavation as the depth to not negatively impact excavation slope stability, subject to confirmation by a geotechnical engineer in the field during construction.

6.4.2 Bedrock Excavation

All excavations should be carried out in accordance with Ontario Regulation 213 (Ontario Occupational Health and Safety Act, OHSA, for Construction projects).

The measured UCS of the selected rock samples ranged from about 53 MPa to 105 MPa and it is anticipated that the rock excavation in the Lindsay Formation will require the use of hydraulic rock breakers (i.e., hoe ramming) and large hydraulic excavators may not be able to penetrate the shale or limestone encountered in the boreholes.

A hydraulic excavator equipped with rock teeth may be able to excavate fractured bedrock horizons, but will need to be supplemented with equipment such as a road header or hydraulic rock breaker in the more competent bedrock at depth. The rate of excavation through the bedrock is highly dependent on the method and equipment chosen by the contractor. Any excavations into a minimum of moderately fractured bedrock (150 mm to 300 mm bedding planes) can have vertical side slopes; excavations in closely fractured bedrock (20 mm to 150 mm bedding planes) should be benched or sloped back with side slopes no steeper than 1H:1V, provided that all loosened rock fragments are removed from the excavated rock faces.

Alternatively, blasting may be considered for excavation into the fresh strong to very strong limestone bedrock. Blasting would be carried out by a specialist contractor.

Noise, vibration and dust would be a significant issue during excavation of the bedrock. Pre- and post-construction condition surveys are recommended on structures (if any within the zone of influence) that could be impacted by the construction activities.

6.5 Temporary Groundwater Control

The groundwater levels measured in the monitoring wells installed were about 2.8 mbgs and 3.9 mbgs (or Elev. 140.8 m and Elev. 137.6 m, respectively) at the time of the investigation in August 2024. It is anticipated that excavations will be generally not extend below the groundwater level. Based on these observations, it is assumed that the groundwater table will be within the bedrock; however, it should be noted that the groundwater table is influenced by seasonal fluctuations and major precipitation events. Large open excavations or excavations extending into the bedrock may experience groundwater seepage during heavy precipitation events. Therefore,

minor groundwater seepage may be anticipated during typical excavations but should be controllable with filtered sumps and pumps. In any event, groundwater levels should be lowered to at least 1 m below the excavation invert.

The rate and volume required for dewatering will be dependent on the depth of the required excavations, the groundwater levels at the time of construction and the construction methods and staging chosen by the Contractor. As of July 1, 2025, an application under the Environmental Activity Section Registry (EASR) of the Ontario Ministry of the Environment, Conservation and Parks (MECP) should be submitted if the pumping volumes exceed 50,000 L/day.

The dewatering system is the Contractor's responsibility and the rate and volume required for dewatering is dependent on the construction methods and staging chosen by the contractor. Further, the contractor will be responsible for obtaining any required discharge approvals.

6.6 Site Servicing

Trench excavations should follow general guidelines of Section 6.4.

The bedding for the site servicing pipes should be compatible with the type and class of pipe, the surrounding subsoil and anticipated loading conditions and should be designed in accordance with provincial and municipal standards.

Where granular bedding is deemed to be acceptable, it should consist of at least 200 mm of well graded crushed stone meeting OPSS gradation requirements for Granular A or 19 mm Crusher Run Limestone material. Crushed rock mined from the Site can be used as bedding meeting the gradation of OPSS 1010 Granular A. The physical properties as per OPS standards must be confirmed and met prior to use on-Site.

Cover material, from pipe spring line to at least 300 mm above the top of the pipe, should consist of granular material, such as OPSS Granular A or sand. The use of 'high-performance bedding' as the bedding or cover material should not be permitted.

The bedding and cover materials should be compacted in maximum 200 mm loose lift thickness to at least 98 percent SPMDD

6.6.1 Trench Cut-Offs

Where the invert levels of the services are located below the measured groundwater levels, consideration should be given to installation of low hydraulic conductivity water-stops or cut-offs (trench plugs) at strategic locations in accordance with OPSD 802.095. This should be done, as appropriate, to reduce the potential for preferential groundwater flow through the granular bedding and trench backfill where the trench is within the bedrock or along steep grades. The need for and frequency of trench plugs should be evaluated during the detailed design phase and should

be considered at the construction limits, and equally spaced at a maximum 100 m spacing (depending on pipe length, may be less).

7.0 ADDITIONAL CONSIDERATIONS

7.1 Monitoring Well Abandonment

All monitoring wells installed as part of this investigation should be decommissioned when no longer required by a licensed Water Well Contractor in accordance with applicable legislation. The well abandonment could be carried out in advance of or during construction.

7.2 Corrosion Considerations

The potential for the subsurface soil and groundwater conditions to corrode concrete and steel elements, or the like, should be considered in the final design. Additional sampling and / or testing may be required, or suitable protection measures (i.e., sulphate resistance concrete, sacrificial thickness, cathodic protection, etc.) should be considered by the designer.

7.3 Management of Excess Soil

It is noted that the professional services retained for this project include only the geotechnical aspects of the subsurface conditions at this Site. The presence or implications of possible surface and/or subsurface contamination, including naturally occurring sources of contamination, are outside the terms of reference for this report. This report does not constitute a Phase II Environmental Site Assessment (ESA), nor does it constitute a contaminated material management plan. It is recommended that soil samples be collected prior to and/or during construction to support the disposal or re-use of excess soil generated from the Site.

7.4 Effects of Construction Induced Vibration

Some of the construction operations (such as excavation, granular material compaction, depth foundation installation, etc.) will cause ground vibration on and off the Site. The vibrations will attenuate with distance from the source but may be felt at nearby structures. Assuming that excavation is carried out in accordance with the guidelines in this report, the magnitude of the vibrations may be less than that which could cause damage to the nearby structures or infrastructure in good condition but are anticipated to be felt at and within the adjacent nearby structures. Construction planning / scheduling and vibration monitoring should be considered, especially if work within the underlying bedrock is to be undertaken and given the proximity to the existing residential development to the north.

7.5 Design Review and Construction Observation

The engagement of the services of the geotechnical consultant during construction is recommended to confirm that the subsurface conditions throughout the proposed Site development and excavations do not materially differ from those given in the report, and that the construction activities do not adversely affect the intent of the design. The subgrade surfaces for

the services and pavement construction should be inspected by experienced geotechnical personnel to ensure that suitable materials have been reached and properly prepared. The placing and compaction of earth fill and imported granular materials should be inspected to ensure that the materials used conform to the grading and compaction specifications.

8.0 CLOSURE

We trust that this report meets your immediate requirements. If conditions that differ from those assumed in this geotechnical report are encountered during construction, GEMTEC should be given the opportunity to review the recommendations presented herein.

If you have any questions or require additional information, please contact the undersigned.

Regards,

GEMTEC Consulting Engineers and Scientists Limited

Rafael Abdulla, M.Eng., P.Eng., PMP
Senior Geotechnical Engineer

Dale Edwards, C.Tech.
Branch Manager - Clarington

APPENDIX A

Conditions and Limitations of This Report

GEMTEC
CONSULTING ENGINEERS AND SCIENTISTS

Conditions and Limitations of This Report

1. **Standard of Care:** GEMTEC has prepared this report in a manner consistent with generally accepted engineering or environmental consulting practice in the jurisdiction in which the services are provided at the time of the report. No other warranty, expressed or implied is made.
2. **Copyright:** The contents of this report are subject to copyright owned by GEMTEC, save to the extent that copyright has been legally assigned by us to another party or is used by GEMTEC under license. To the extent that GEMTEC owns the copyright in this report, it may not be copied without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to the Client in confidence and must not be disclosed or copied to third parties without the prior written agreement of GEMTEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.
3. **Complete Report:** This report is of a summary nature and is not intended to stand alone without reference to the instructions given to GEMTEC by the Client, communications between GEMTEC and the Client and to any other reports prepared by GEMTEC for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. GEMTEC can not be responsible for use of portions of the report without reference to the entire report.
4. **Basis of Report:** This Report has been prepared for the specific site, development, design objectives and purposes that were described to GEMTEC by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document, subject to the limitations provided herein, are only valid to the extent that this report expressly addresses the proposed development, design objectives and purposes. Any change of site conditions, purpose or development plans may alter the validity of the report and GEMTEC cannot be responsible for use of this report, or portions thereof, unless GEMTEC is requested to review any changes and, if necessary, revise the report.
5. **Time Dependence:** If the proposed project is not undertaken by the Client within 18 months following the issuance of this report, or within the timeframe understood by GEMTEC to be contemplated by the Client, the guidance and recommendations within the report should not be considered valid unless reviewed and amended or validated by GEMTEC in writing.
6. **Use of This Report:** The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without GEMTEC's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, GEMTEC may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process.

   Contractors bidding on, or undertaking the work, should rely on their own investigations, as well as their own interpretations of the factual data presented in the report, as to how subsurface conditions may affect their work, including but not limited to proposed construction techniques, schedule, safety and equipment capabilities.
7. **No Legal Representations:** GEMTEC makes no representations whatsoever concerning the legal significance of its findings, or as to other legal matters touched on in this report, including but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

8. **Decrease in property value:** GEMTEC shall not be responsible for any decrease, real or perceived, of the property or site's value or failure to complete a transaction, as a consequence of the information contained in this report.
9. **Reliance on Provided Information:** The evaluation and conclusions contained in this report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations. information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of misstatements, omissions, misrepresentations. or fraudulent acts of the Client or other persons providing information relied on by us. We are entitled to rely on such representations, information and instructions and are not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
10. **Investigation Limitations:** Site investigation programs are a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions but even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions.

    The data derived from the site investigation program and subsequent laboratory testing are interpreted by trained personnel and extrapolated across the site to form an inferred geological representation and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Conditions between and beyond the borehole/test hole locations may differ from those encountered at the borehole/test hole locations and the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. Accordingly, GEMTEC does not warrant or guarantee the exactness of of the subsurface descriptions.

    Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination-or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities (traffic, excavation, groundwater level lowering, pile driving, blasting, etc.) on the site or on adjacent sites. Excavation may expose the soils to changes due to wetting, drying or frost. Unless otherwise indicated the soil must be protected from these changes during construction.

    In addition, fill of variable physical and chemical composition can be present over portions of the site or on adjacent properties. The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.
11. **Sample Disposal:** GEMTEC will dispose of all uncontaminated soil and/or rock samples 60 days following issue of this report or, upon written request of the Client, will store uncontaminated samples and materials at the Client's expense. In the event that actual contaminated soils, fills or groundwater are encountered or are inferred to be present, all contaminated samples shall remain the property and responsibility of the Client for proper disposal.
12. **Follow-Up and Construction Services:** All details of the design were not known at the time of submission of GEMTEC's report. GEMTEC should be retained to review the final design, project plans and documents prior to construction, to confirm that they are consistent with the intent of GEMTEC's report.

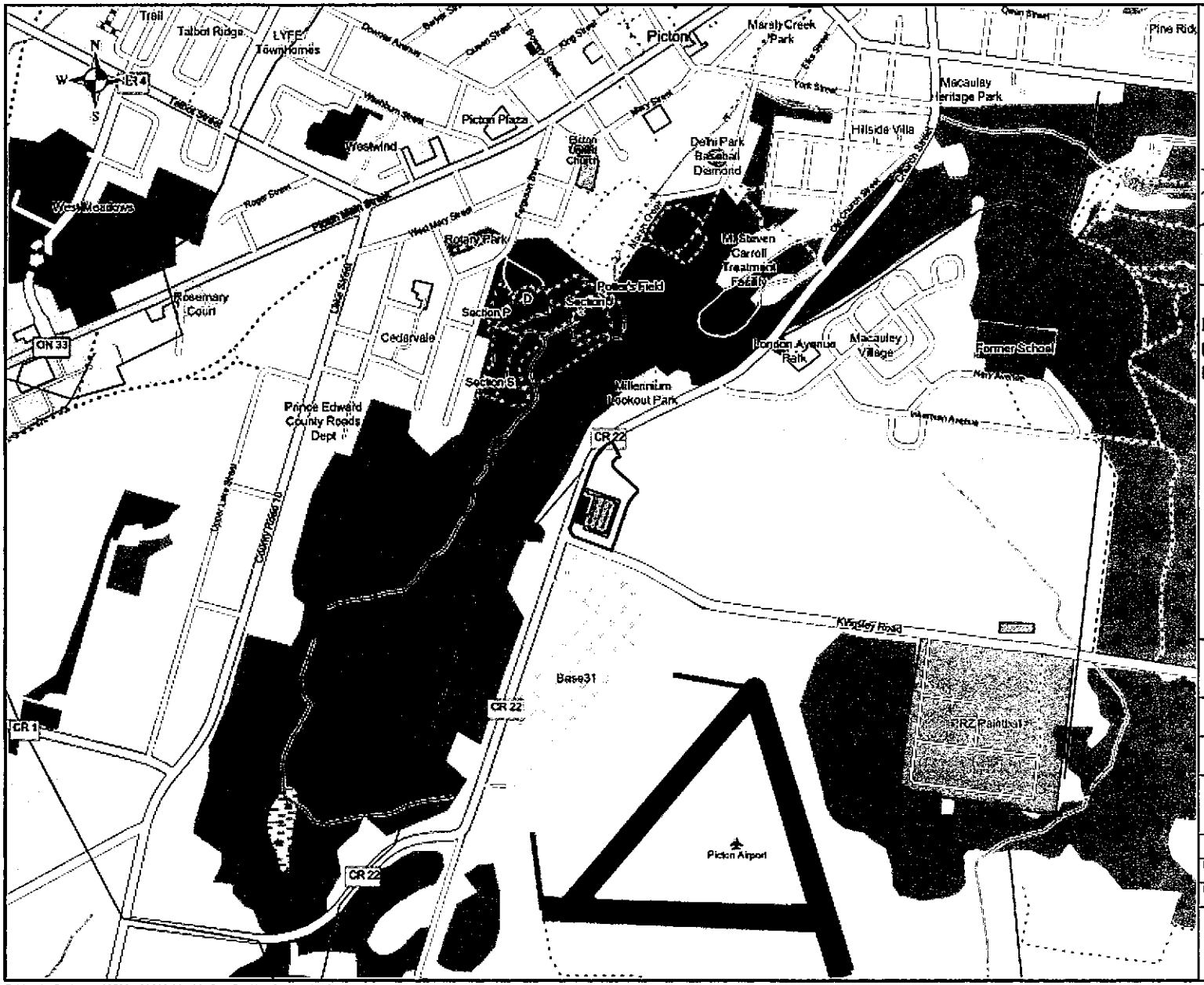
    During construction, GEMTEC should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not

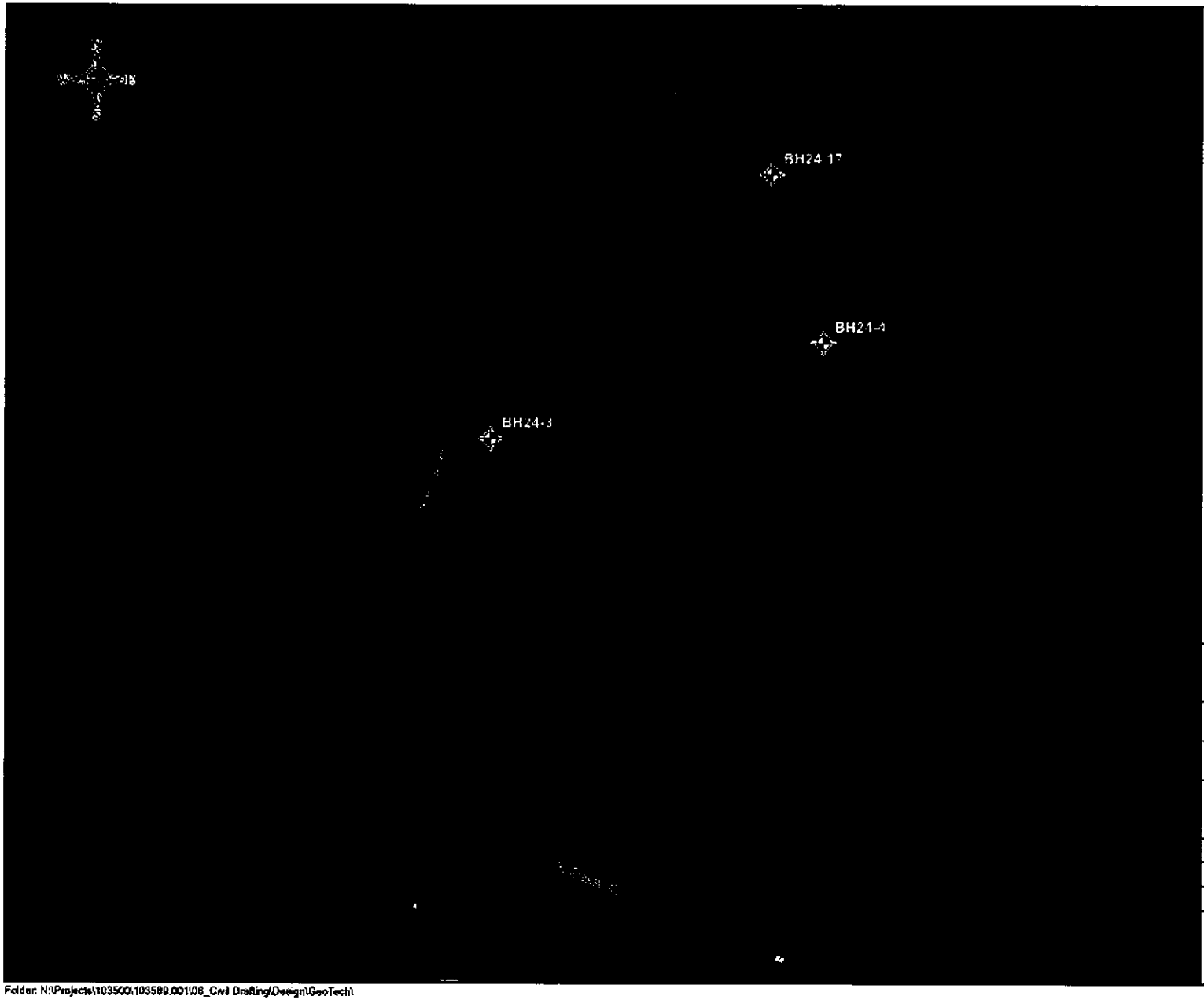
materially differ from those interpreted conditions considered in the preparation of GEMTEC's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in GEMTEC's report. Adequate field review, observation and testing during construction are necessary for GEMTEC to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, GEMTEC's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

13. **Changed Conditions:** Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that GEMTEC be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that GEMTEC be employed to visit the site with sufficient frequency to detect if conditions have changed significantly.
14. **Drainage:** Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. GEMTEC takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

APPENDIX B

Figures
Site Location Plan and Borehole Location Plan


Picton
Talbot Ridge
LYFE! Townhomes
Marsh Creek Park
Pine Rid
Macaulay Heritage Park
Picton Plaza
Westwind
Hillside Villa
Delhi Park Baseball Diamond
West Meadows
Rotary Park
M. Steven Carroll Treatment Facility
Potter's Field
Section P
Section J
Section S
Rosemary Court
Cedarvale
London Avenue Park
Macaulay Village
Former School
Millennium Lookout Park
Prince Edward County Roads Dept
CR 22
CR 1
CR 13
Base31
TRZ Paintball
Picton Airport
Kingsley Road
Main Street
Union Street
Queen Street
Bridge Street
Ridge Street
Talbot Street
Dundas Avenue
Wellington Street
Mary Street
Second Street
Third Main Street
Rogers Street
Ridge Street
Church Street
Bridge Street
Fork Street
Glenora Road
Wood Lane Street
Old Street
Prince Edward County Rd 13
Wellington Avenue
Mary Avenue
Trail
Bayside
Queen Street
Bay Street
Fox Street
Fourth



Legend

BH # BOREHOLE ID

APPROXIMATE BOREHOLE LOCATION

APPROXIMATE MONITORING WELL LOCATION

PROPOSED BUILDING A

PROPOSED PARKING LOT

PROPERTY LINE

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 18N.
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. Basemap Layer Credits: World Imagery: Microsoft, Vantor.

Scale: 1:1,500

0 20 40 80 120 Metres

Drawing: BOREHOLE LOCATION PLAN

Client: BASE31 RESIDENCES INC.

Project: GEOTECHNICAL INVESTIGATION
BUILDING A, VILLAGE A, 66 KINGSLEY ROAD
PICTON, ONTARIO

Drwn By:	M.Y.	Chkd By:	R.A.
Project No.	103589.001 (5)	Revision No.	0
Date	JANUARY 2026		FIGURE 2

GEMTEC
Consulting Engineers and Scientists
1100 Bennett Road, Unit 4
Bowmanville, ON L1C 0Y7
T: (289) 274-6476
www.gemtec.ca

Folder: N:\Projects\103500\103589.001\06_Civil Drafting\Design\GeoTech\

APPENDIX C

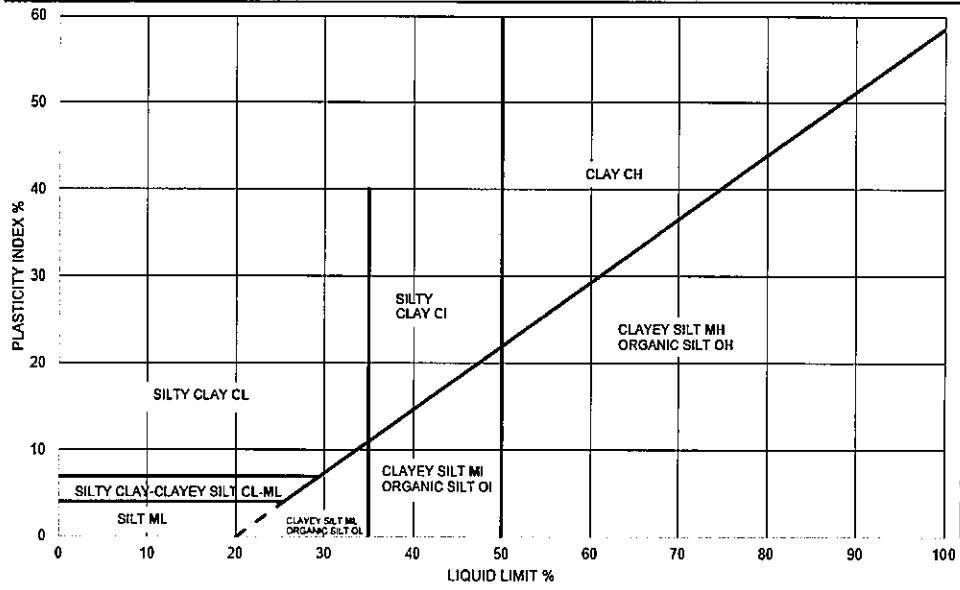
Abbreviations and Terminology Used on Records of Boreholes
Record of Borehole Sheets

Method of Soil Classification

GEMTEC's Soil Classification is based on the MTC Soil Classification Manual (January 1980)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} X D_{60}}$	USCS Group Symbol	Group Name
Inorganic (Organic Content less than 30%)	Coarse Grained Soils (>50% is larger than 0.075 mm)	Gravel (>50% of coarse fraction is > 4.75 mm)	Gravel with ≤12% fines	Poorly Graded	<4	≤1 or ≥3	GP	Gravel
				Well Graded	≥4	1 to 3	GW	Gravel
			Gravel with >12% fines	Below A Line	N/A		GM	Silty Gravel
				Above A Line	N/A		GC	Clayey Gravel
		Sand (≥50% coarse fraction is > 4.75 mm)	Sand with ≤12% fines	Poorly Graded	<6	≤1 or ≥3	SP	Sand
				Well Graded	≥6	1 to 3	SW	Sand
			Sand with >12% fines	Below A Line	N/A		SM	Silty Sand
				Above A Line	N/A		SC	Clayey Sand

Soil Group	Type of Soil	Liquid Limit	Field Tests			USCS Group Symbol	Group Name
			Dilatancy	Thread Diameter	Toughness		
Fine Grained Soils (≥50% is smaller than 0.075 mm)	Silts (Non-Plastic or PI and LL plot below A-Line)	<50	Rapid	>6 mm	N/A	ML	Silt
			Slow	3 to 6 mm	None to low	ML	Clayey Silt
			Slow to V. Slow	3 to 6 mm	Low	OL	Organic Silt
		≥50	Slow to V. Slow	3 to 6 mm	Low to Medium	MH	Clayey Silt
			None	1 to 3 mm	Medium to High	OH	Organic Silt
	Clays (PI and LL plot above A-Line)	Liquid Limit <35	None	~3 mm	Low to Medium	CL	Silty Clay
		Liquid Limit 35 to 50	None	1 to 3 mm	Medium	CI	Silty Clay
		Liquid Limit >50	None	<1 mm	High	CH	Clay
Peat (Amorphous or Fibrous)						PT	Peat



Dual Symbol – Is used to indicate when soils are transitional. For coarse grained soils, it is used when the soil has between 5 and 12% fines (e.g., SP-SC, Sand to Silty Sand). For fine-grained soils it is used when the plasticity index and liquid limit values plot in the area shown in the plasticity chart on this page.

Borderline Symbol – Is used to indicate soils that are not clearly in one soil type but have similar behaviour and properties as similar materials (e.g., CL/CI or GM/SM).

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

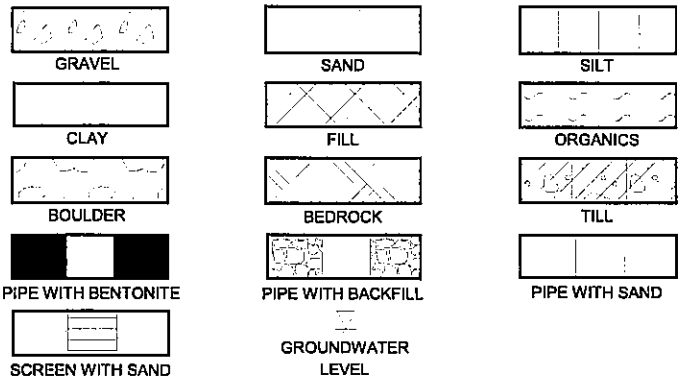
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

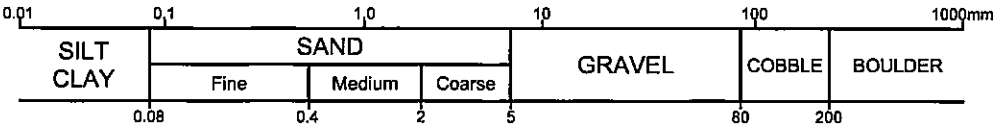
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard

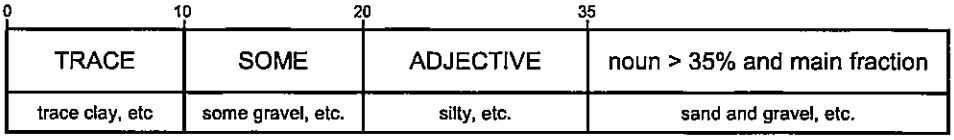


GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

(Based on the CANFEM 4th Edition)



RECORD OF BOREHOLE : BH24-3

CLIENT: PEC Community Partners Inc.
PROJECT: Village A, Base 31 Area, Picton, Ontario
JOB#: 103306.002
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Geodetic
BORING DATE: Jul 29 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	PENETRATION RESISTANCE (N), BLOWS/0.3m ● / DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m ▲	SHEAR STRENGTH (Cu), kPA + NATURAL ⊕ REMOULDED / WATER CONTENT, % W_P W W_L	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger Hollow Stem Auger (152mm OD)	Ground Surface		142.49								
		TOPSOIL (~75mm thick)		0.08	1A	SS						
		(SM) SILTY SAND, some gravel; grey, oxidation stains, rock fragments; non-cohesive, moist, compact to very dense		142.19 0.30	1B	SS	254	19	○ ●			
		- Auger grinding between depths of approximately 0.3 m (start of weathered BEDROCK) and 1.6 m			2	SS	25	50/0.08	○			
1				140.94	3	SS	0	50/0.03				
		End of Augering		1.55								
2	HQ Coring	BEDROCK cored (approximately 1.6 m to 6.2 m depths)										
		Fine to medium grained, dark grey to black, strong to very strong, fresh LIMESTONE with shale/siltstone interbeds (Lindsay Formation)			RC-1	RC	1524	TCR = 100%, SCR = 97%, RQD = 83%				
3												
4					RC-2	RC	1524	TCR = 100%, SCR = 92%, RQD = 85%				
5					RC-3	RC	1524	TCR = 100%, SCR = 97%, RQD = 90%				
6				136.32								
		End of Borehole		6.17								
		Notes:										
		1. Borehole open and dry upon completion of drilling.										
7		2. Borehole was backfilled with bentonite and soil cuttings upon completion of drilling.										
8												
9												
10												

GEMTEC
Consulting Engineers and Scientists

LOGGED: IO
CHECKED: TO

GEO - BOREHOLE LOG 103306.002 VILLAGEA.GINT R0 2024 08 23.GPJ GEMTEC 2018.GDT 9/20/24

RECORD OF BOREHOLE : BH24-4

CLIENT: PEC Community Partners Inc.
PROJECT: Village A, Base 31 Area, Picton, Ontario
JOB#: 103306.002
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Geodetic
BORING DATE: Jul 29 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger (152mm OD) Hollow Stem	Ground Surface		143.60						Monument Casing
		TOPSOIL (~125mm thick)		0.13	1A	SS				
		(SM) SILTY SAND and GRAVEL; grey, rock fragments; non-cohesive, moist, compact to very dense		143.30 0.30	1B	SS	356	21		
1		- Auger grinding between depths of approximately 0.3 m (start of weathered BEDROCK) and 1.6 m			2	SS	76	50/0.08	MH	Bentonite
				142.05	3	SS	0	50/0.03		
		End of Augering		1.55						
2	HQ Coring	BEDROCK cored (approximately 1.7 m to 4.7 m depths)								
		Fine to medium grained, dark grey to black, strong to very strong, fresh LIMESTONE with shale/siltstone interbeds (Lindsay Formation)			RC-1	RC	1524	TCR = 100%, SCR = 100%, RQD = 100%		Filter sand
3										
4					RC-2	RC	1524	TCR = 100%, SCR = 100%, RQD = 95%	UCS	50 mm dia. Well Screen
				138.90						End of Coring
		End of Borehole		4.70						
5		Notes:								
		1. Borehole open and dry upon completion of drilling.								
		2. Monitoring well installed as shown upon completion of drilling.								
6		3. Groundwater level measured in monitoring well at approximately 2.8 mbgs (Elev. 140.8 m) on August 13, 2024.								
7										
8										
9										
10										

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m ●
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m ▲
SHEAR STRENGTH (Cu), kPA + NATURAL ⊕ REMOULDED
WATER CONTENT, % W_P W W_L
10 20 30 40 50 60 70 80 90

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/08/13	2.8 ▽	140.8

GEMTEC
Consulting Engineers and Scientists

LOGGED: IO
CHECKED: TO

GEO - BOREHOLE LOG 103306.002 VILLAGEA GINT_R0_2024 08 23.GPJ GEMTEC 2018.GDT 9/20/24

RECORD OF BOREHOLE : BH24-17

CLIENT: PEC Community Partners Inc.
PROJECT: Village A, Base 31 Area, Picton, Ontario
JOB#: 103306.002
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Geodetic
BORING DATE: Jul 25 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	PENETRATION RESISTANCE (N), BLOWS/0.3m / DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	SHEAR STRENGTH (Cu), kPa (+ NATURAL, ⊕ REMOULDED) / WATER CONTENT, % (W_P, W, W_L)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger / Hollow Stem Auger (152mm OD)	Ground Surface		141.46								Monument Casing
		TOPSOIL (~50mm thick)		0.05	1A	SS						
		(SM) SILTY SAND, some gravel; grey, rock fragments; non-cohesive, moist, very dense		141.16 0.30	1B	SS	102	50/0.08				
1		- Auger grinding between depths of approximately 0.3 m (start of weathered BEDROCK) and 1.6 m			2	SS	25	50/0.03				
		End of Augering		139.91 1.55	3	SS	25	50/0.03				
2	HQ Coring	BEDROCK cored (approximately 1.7 m to 6.2 m depths)										Bentonite
		Fine to medium grained, dark grey to black, strong to very strong, fresh LIMESTONE with shale/siltstone interbeds (Lindsay Formation)			RC-1	RC	1524	TCR = 100%, SCR = 98%, RQD = 97%				
3												
4					RC-2	RC	1524	TCR = 100%, SCR = 98%, RQD = 98%				Filter sand
5					RC-3	RC	1524	TCR = 100%, SCR = 98%, RQD = 97%				50 mm dia. Well Screen
6		End of Borehole		135.24 6.22								End of Coring
7		Notes: 1. Borehole open and dry upon completion of drilling. 2. Monitoring well installed as shown upon completion of drilling. 3. Groundwater level measured in monitoring well at approximately 3.9 mbgs (Elev. 137.6 m) on August 13, 2024.										
8												
9												
10												

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/08/13	3.9 ▽	137.6

GEMTEC
Consulting Engineers and Scientists

LOGGED: IO
CHECKED: TO

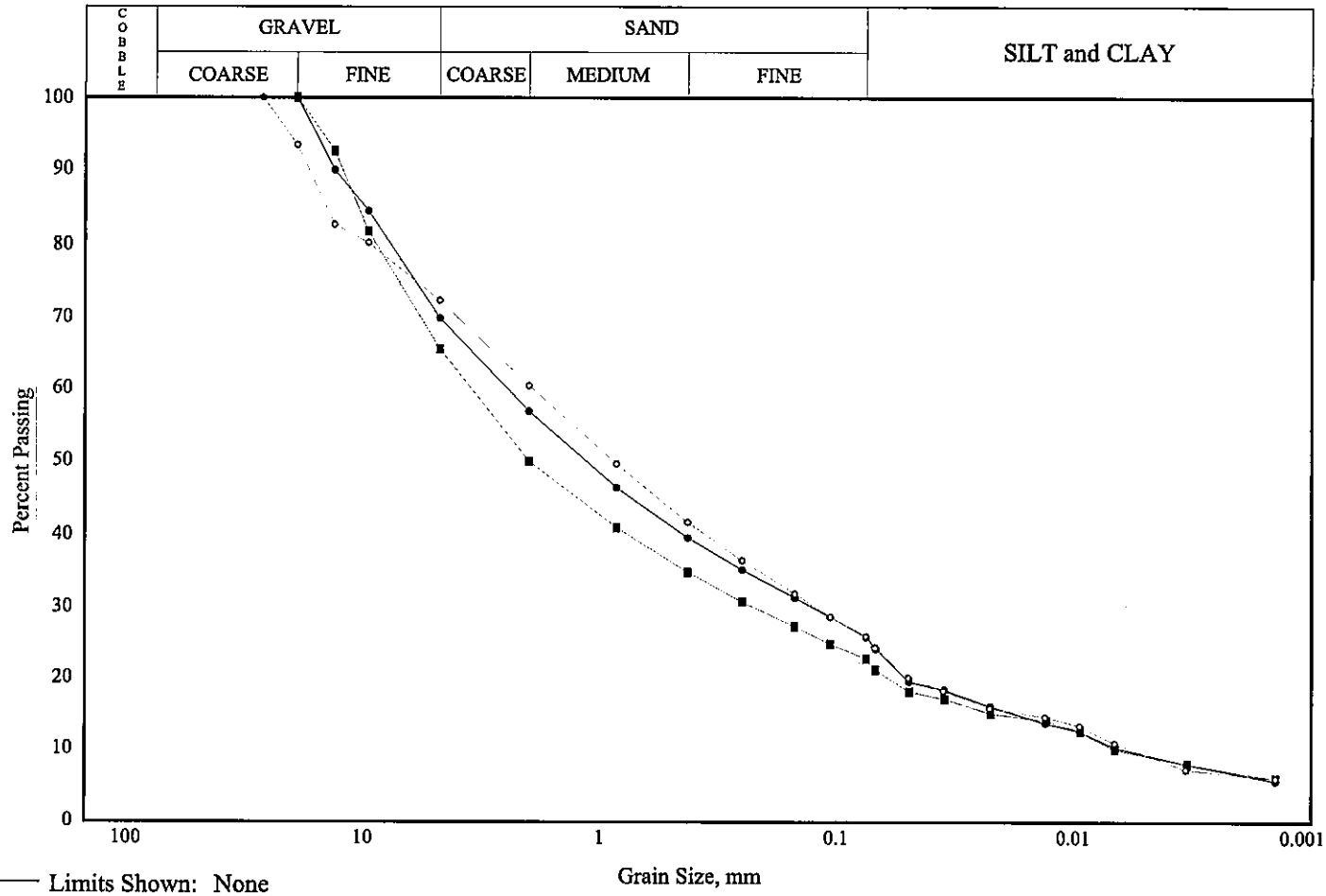
GEO - BOREHOLE LOG 103306.002_VILLAGEA_GINT_R0_2024_08_23.GPJ GEMTEC 2018.GDT 9/20/24

APPENDIX D

Geotechnical Laboratory Results

GEMTEC Consulting Engineers and Scientists	Client: PEC Community Partners Inc.	Soils Grading LS-702/ASTM D-422
	Project: Village A, Base 31 Area, Picton, Ontario	
	Project #: 103306002	

Note: More information available upon request



Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth (m)	% Cob.+ Gravel	% Sand	% Silt and Clay
—●—	(SM) Gravelly SILTY SAND	BH24-4	SA-2	0.8	30.4	44.0	25.6
—■—	(SM) SILTY SAND and GRAVEL	BH24-11	SA-2	0.8-1.4	34.6	42.8	22.6
---○---	(SM) Gravelly SILTY SAND	BH24-13	SA-2	0.8	28.0	46.4	25.6

Line Symbol	USCS Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
—●—	Gravelly SILTY SAND	SM	0.006	0.018	0.13	1.16	2.49	9.85	19.0
—■—	SILTY SAND and GRAVEL	SM	0.007	0.022	0.23	2.02	3.52	10.52	15.8
---○---	Gravelly SILTY SAND	SM	0.006	0.016	0.13	0.89	1.96	14.35	19.1

GEMTEC
Consulting Engineers and Scientists

Client: PEC Community Partners Inc.

Project: Village A, Base 31 Area, Picton, Ontario

Project #: 103306002

Rock Core Compressive Strength

Date/Time Sampled: 24/08/21 1:12:36 PM	Date/Time Tested: 24/08/21 1:12:36 PM

BH	Sample No	Depth (m)	Description	Diameter, mm	Area, mm^2	Length After Capping, mm	L/D	Load, kN	Comp. Str., MPa
24-4	1890	3.5-3.8		63.3	3150	124	1.95	330.350	105.0
24-6	1891	4.2-4.5		63.3	3148	123	1.94	166.760	53.0
24-9	1892	2.7-2.9		63.3	3149	123	1.94	278.180	88.4

APPENDIX E

Rock Core Photographs

Base31 Residences Inc.
Building A - Village A Development
Picton, Prince Edwards County, Ontario

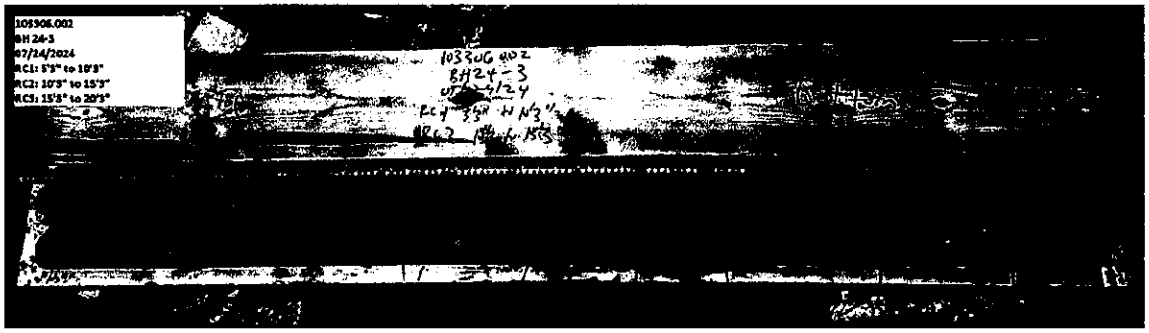


Photo 1: BH24-3

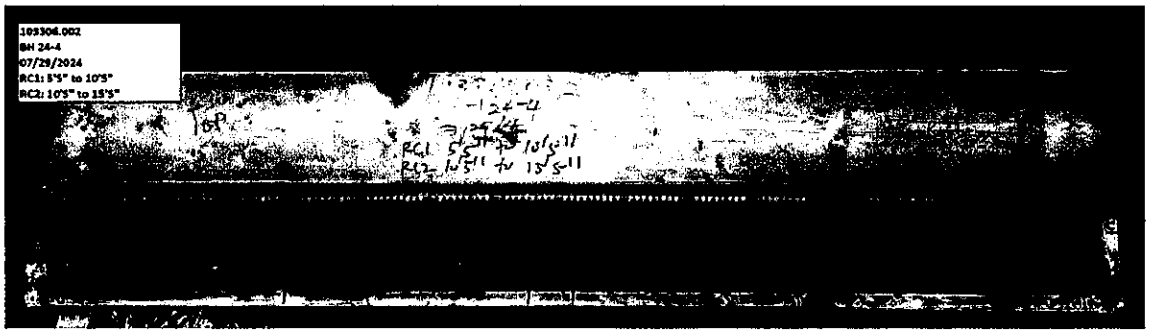


Photo 2: BH24-4

GEMTEC
Consulting Engineers and Scientists

Date:	January 30, 2026
Project No:	103589.001(5)
Figure No:	1

Base31 Residences Inc.
Building A - Village A Development
Picton, Prince Edwards County, Ontario

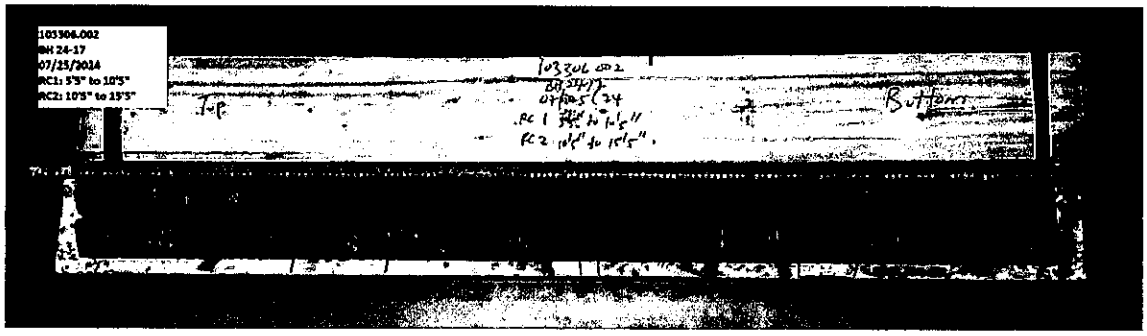
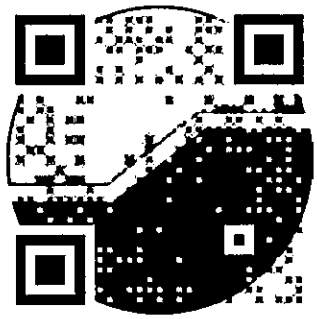


Photo 3: BH24-17

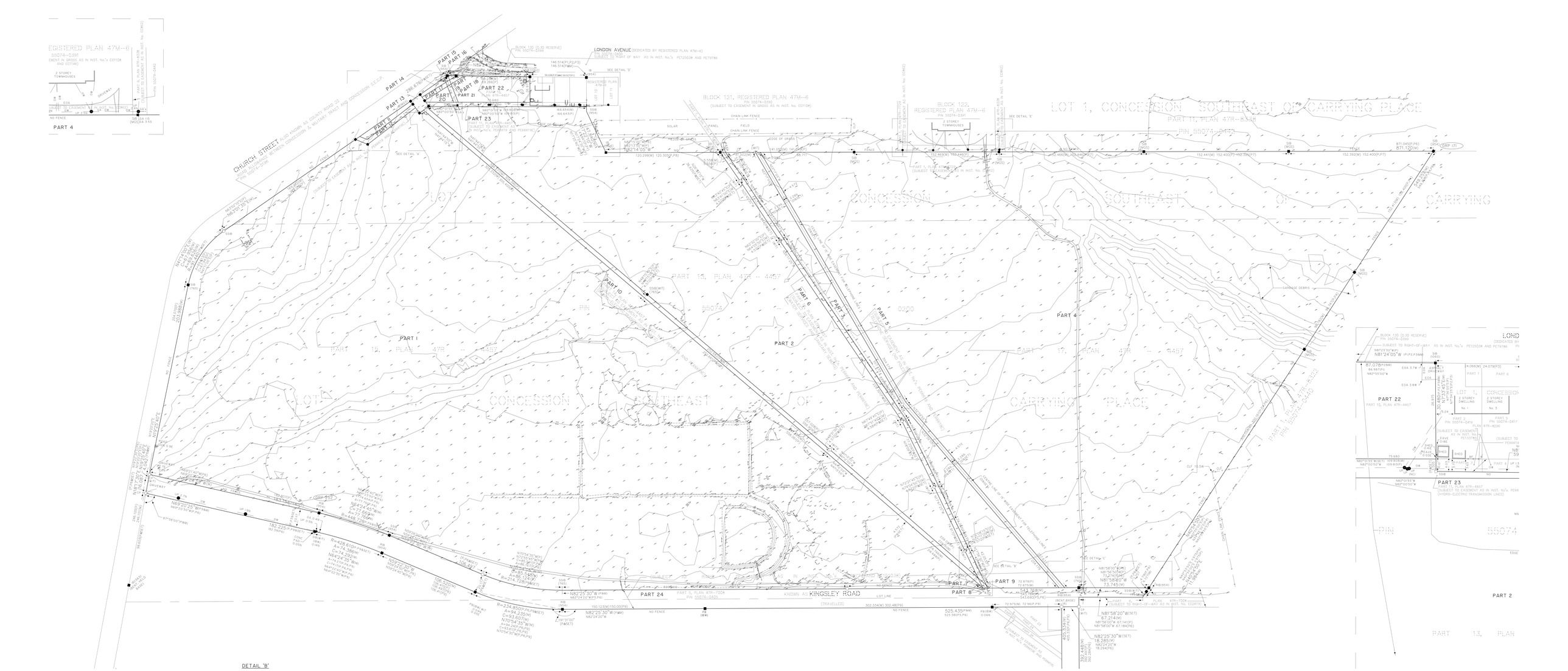
experience • knowledge • integrity



civil	civil
geotechnical	géotechnique
environmental	environnement
structural	structures
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité

Appendix B3 Topographic Survey


REGISTERED PLAN 47M-6
55074-0391
EMENT IN GROSS AS IN INST. No.'s EC1106 AND EC1146)
2 STOREY TOWNHOUSES
DRIVEWAY
PART 4
LONDON AVENUE (DEDICATED BY REGISTERED PLAN 47M-6)
PIN 55074-0399
(SUBJECT TO RIGHT OF WAY AS IN INST. No.'s PE125036 AND PE79786)
BLOCK 130 (0.30 RESERVE)
PIN 55074-0399
SEE DETAIL 'D'
REGISTERED PLAN 47M-6
LOT 12
LOT 11
PART 16
PART 15
PART 14
PART 13
PART 17
PART 18
PART 19
PART 20
PART 21
PART 22
PART 10, PLAN 47R-4457
PART 23
PART 11, PLAN 47R-4457
BLOCK 121, REGISTERED PLAN 47M-6
PIN 55074-0392
(SUBJECT TO EASEMENT IN GROSS AS IN INST. No. EC1106)
BLOCK 122
REGISTERED PLAN 47M-6
PIN 55074-0397
(SUBJECT TO EASEMENT IN GROSS AS IN INST. No. EC1106)
CHURCH STREET (ALSO KNOWN AS STONEY ROAD 22)
PLAN 30R-5018 AND PLAN 30R-5019
(FORMERLY BEING CONCESSION 3, MILITARY TRACT AND CONCESSION B.C.R.)
LOT 1, CONCESSION SOUTHEAST OF CARRYING PLACE
PART 11, PLAN 47R-4457
PIN 55074-0417
LOT 1, CONCESSION SOUTHEAST OF CARRYING PLACE
PART 1, PLAN 47R-4457
PART 1
PART 2
PART 3
PART 4
PART 5
PART 6
PART 7
PART 8
PART 9
PART 24
PART 15, PLAN 47R-4457
PIN 55074-0416
PART 15, PLAN 47R-7026
PIN 55074-0400
KINGSLEY ROAD
(TRAVELLED)
(KINDERN AS KINGSLEY ROAD)
CARRYING PLACE
(SUBJECT TO RIGHT-OF-WAY AS IN INST. No. EC6819)
(SUBJECT TO EASEMENT AS IN INST. No. PE79792)
(HYDRO-ELECTRIC TRANSMISSION LINES)
DETAIL 'B'
DETAIL 'C'
DETAIL 'D'
DETAIL 'E'
55074
PART 2
PART 15, PLAN

Appendix B4 Village A SWM Report

VILLAGE A SWM REPORT INCLUDED UNDER SEPARATE COVER TO REDUCE FILE SIZE

SCS consulting group ltd

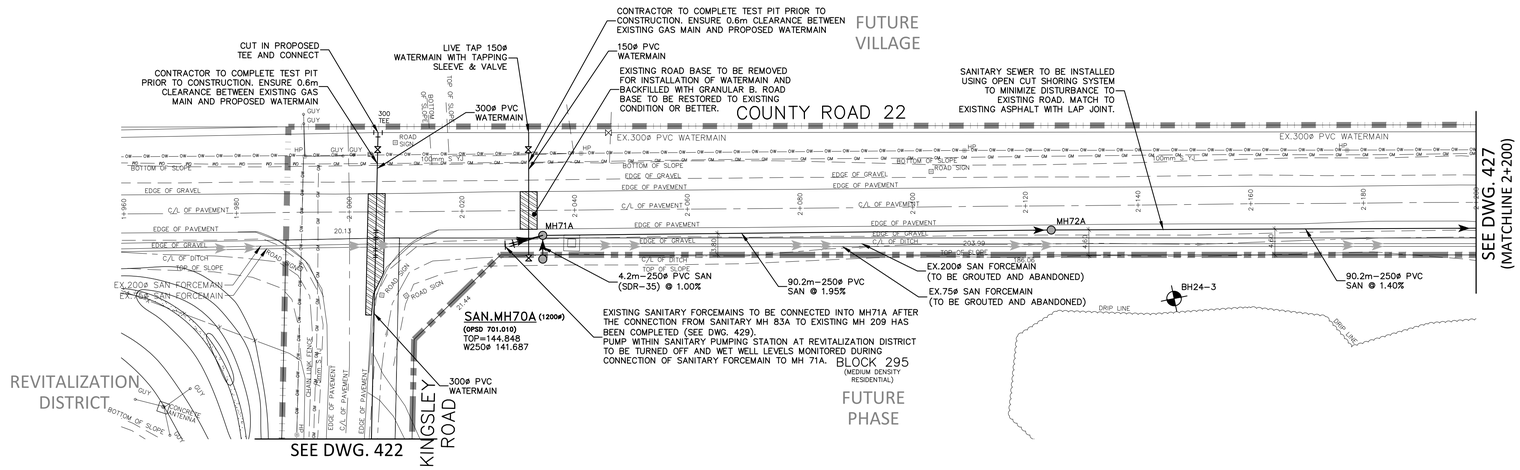
Appendix B5 **Village A Functional Servicing and Stormwater Management Report (FSSR)**

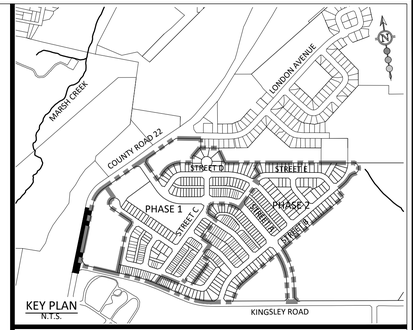
VILLAGE A FSSR REPORT INCLUDED UNDER SEPARATE COVER TO REDUCE FILE SIZE

SCS consulting group ltd

Appendix B6 Village A Civil Design Drawings

SCS consulting group ltd





BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- SANITARY SEWER / MAINTENANCE HOLE
- STORM SEWER / MAINTENANCE HOLE
- WATERMAIN / VALVE BOX
- WATERMAIN / REDUCER
- HYDRANT AND VALVE
- CATCHBASIN/DOUBLE CATCHBASIN WITH TYPE B ICD (28.3 L/s)
- WATER SERVICE BOX AND LATERAL
- SINGLE SANITARY (125ø) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- DRIVEWAY LOCATION
- PRIVACY FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH ACOUSTIC FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH CHAINLINK FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- CMB(#MOD) COMMUNITY MAILBOX PAD, SEE DETAILS ON 900 SERIES DRAWINGS
- # NUMBER OF MODULES
- TACTILE PLATE AS PER OPSD 310.039
- BH24–8 BOREHOLE LOCATION
- TP21–8 TEST PIT LOCATION
- SEWERS & MAINTENANCES HOLES TO BE GROUNDED AND ABANDONED
- EXISTING FEATURE TO BE REMOVED
- EXISTING OVERHEAD WIRE
- EXISTING CHAINLINK FENCE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING GAS MAIN
- HP EXISTING HYDRO POLE
- MH EXISTING MANHOLE
- WV EXISTING WATERMAIN VALVE
- FH EXISTING HYDRANT
- GM/HM EXISTING MONITORING WELL
- EXISTING UTILITY
- SIGN EXISTING ROAD SIGN
- CB EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

BASE31 SUBDIVISION
VILLAGE A - PHASE 1

COUNTY ROAD 22
STA. 1+960 TO 2+200

DATE:	DECEMBER 2025	DESIGNED BY:	J.Z./Y.A.	CHECKED BY:	J.S.S./C.C.
SCALE:	H 1:500 V 1:50	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

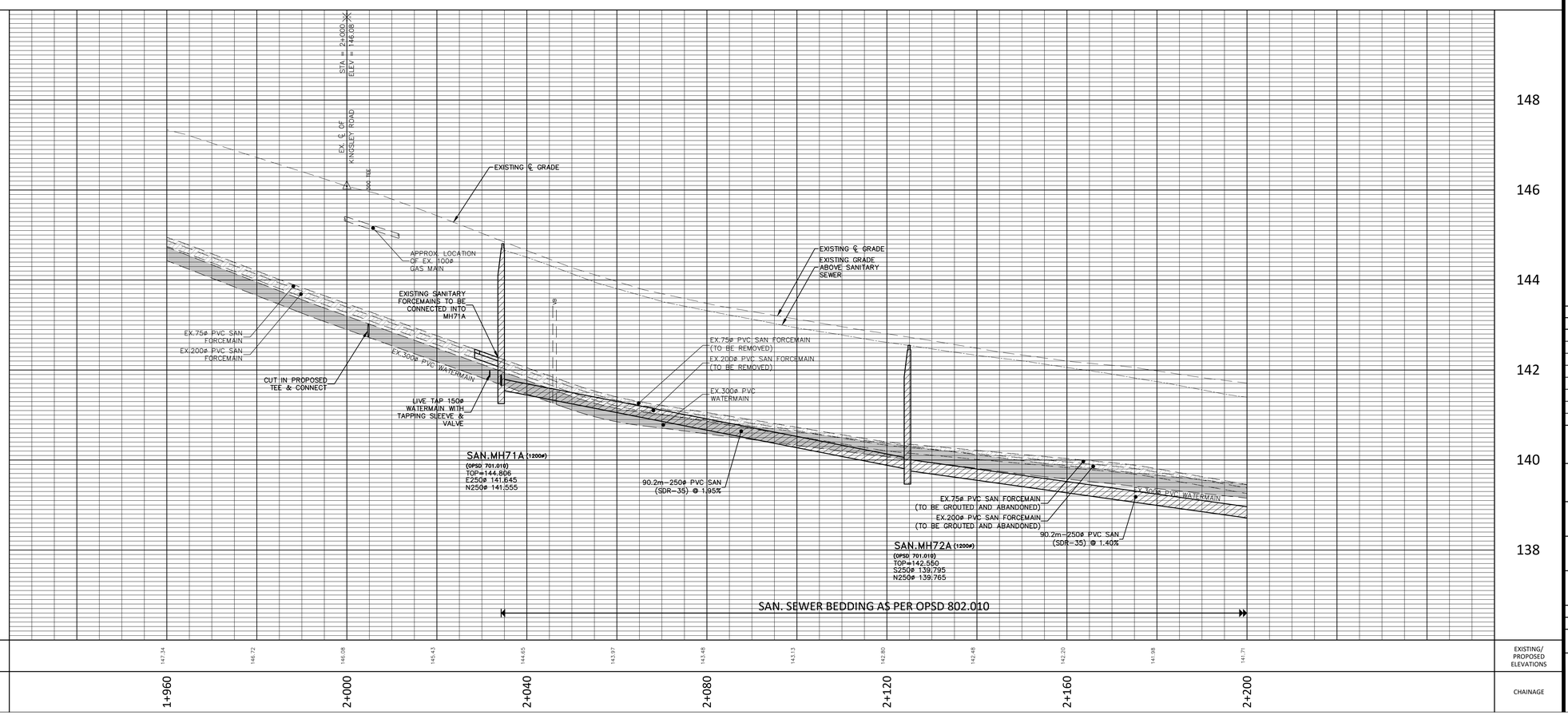
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

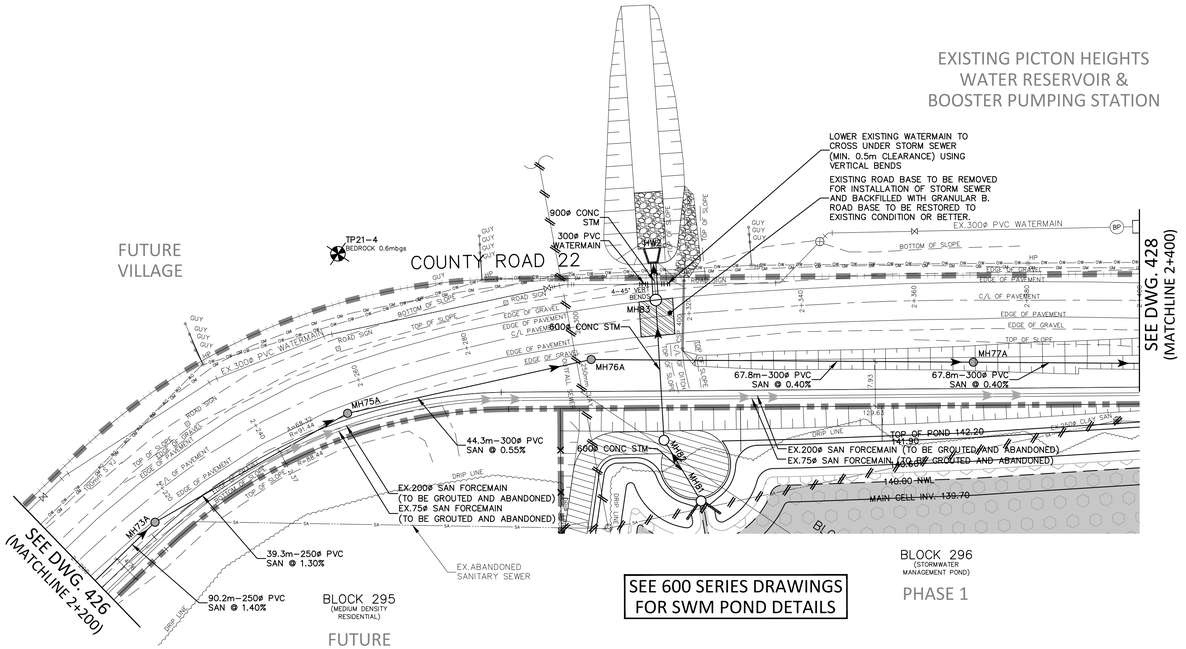
Date

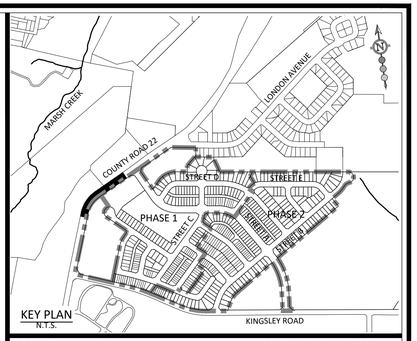
PROJECT No: 2365

DRAWING No: 426



CL EXISTING/ PROPOSED ELEVATIONS	147.34	146.72	146.08	145.43	144.65	143.97	143.48	143.13	142.80	142.48	142.20	141.98	141.71	EXISTING/ PROPOSED ELEVATIONS
CHAINAGE	1+960	2+000	2+040	2+080	2+120	2+160	2+200							CHAINAGE





BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- SANITARY SEWER / MAINTENANCE HOLE
- STORM SEWER / MAINTENANCE HOLE
- WATERMAIN / VALVE BOX
- WATERMAIN / REDUCER
- HYDRANT AND VALVE
- CATCHBASIN/DOUBLE CATCHBASIN WITH TYPE B ICD (28.3 L/s)
- WATER SERVICE BOX AND LATERAL
- SINGLE SANITARY (125ØJ) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- DRIVEWAY LOCATION
- PRIVACY FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH ACOUSTIC FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH CHAINLINK FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- CMB(#MOD) COMMUNITY MAILBOX PAD, SEE DETAILS ON 900 SERIES DRAWINGS
  - # NUMBER OF MODULES
  - TACTILE PLATE AS PER OPSD 310.039
- BH24-8 BOREHOLE LOCATION
- TP21-8 TEST PIT LOCATION
- SEWERS & MAINTENANCES HOLES TO BE GROUNDED AND ABANDONED
- EXISTING FEATURE TO BE REMOVED
- EXISTING OVERHEAD WIRE
- EXISTING CHAINLINK FENCE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING GAS MAIN
- HP EXISTING HYDRO POLE
- MH EXISTING MANHOLE
- WV EXISTING WATERMAIN VALVE
- FH EXISTING HYDRANT
- EXISTING MONITORING WELL
- GM/HM EXISTING UTILITY
- SIGN EXISTING ROAD SIGN
- CB EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

BASE31 SUBDIVISION
VILLAGE A - PHASE 1

COUNTY ROAD 22
STA. 2+200 TO 2+400

DATE:	DECEMBER 2025	DESIGNED BY:	J.Z./Y.A.	CHECKED BY:	J.S.S./C.C.
SCALE:	H 1:500 V 1:50	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

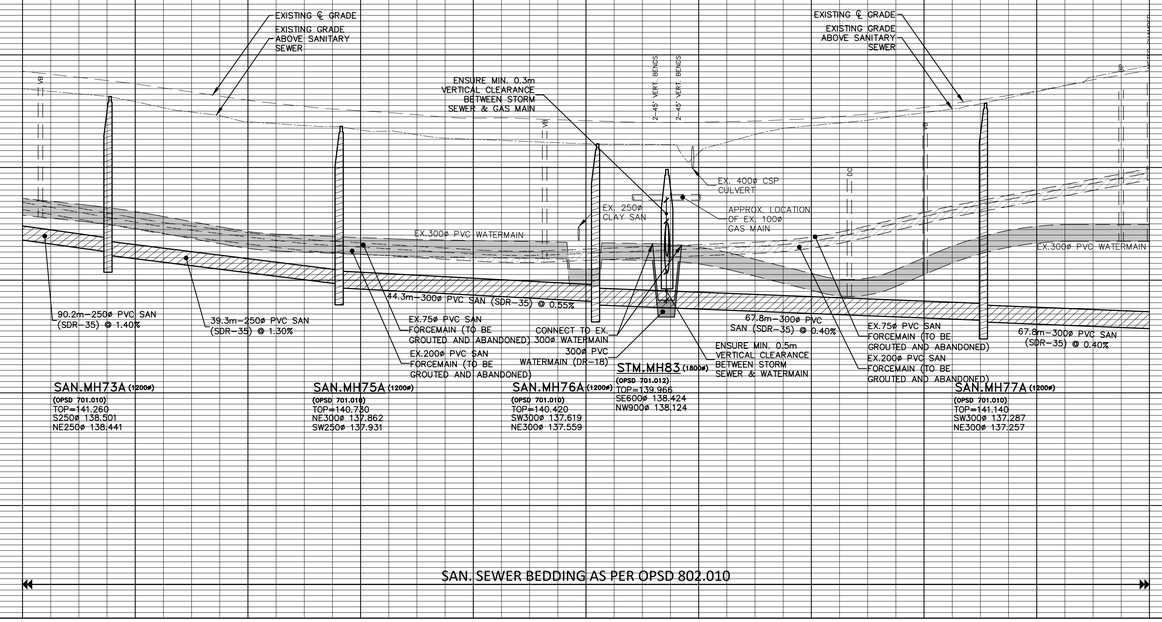
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365

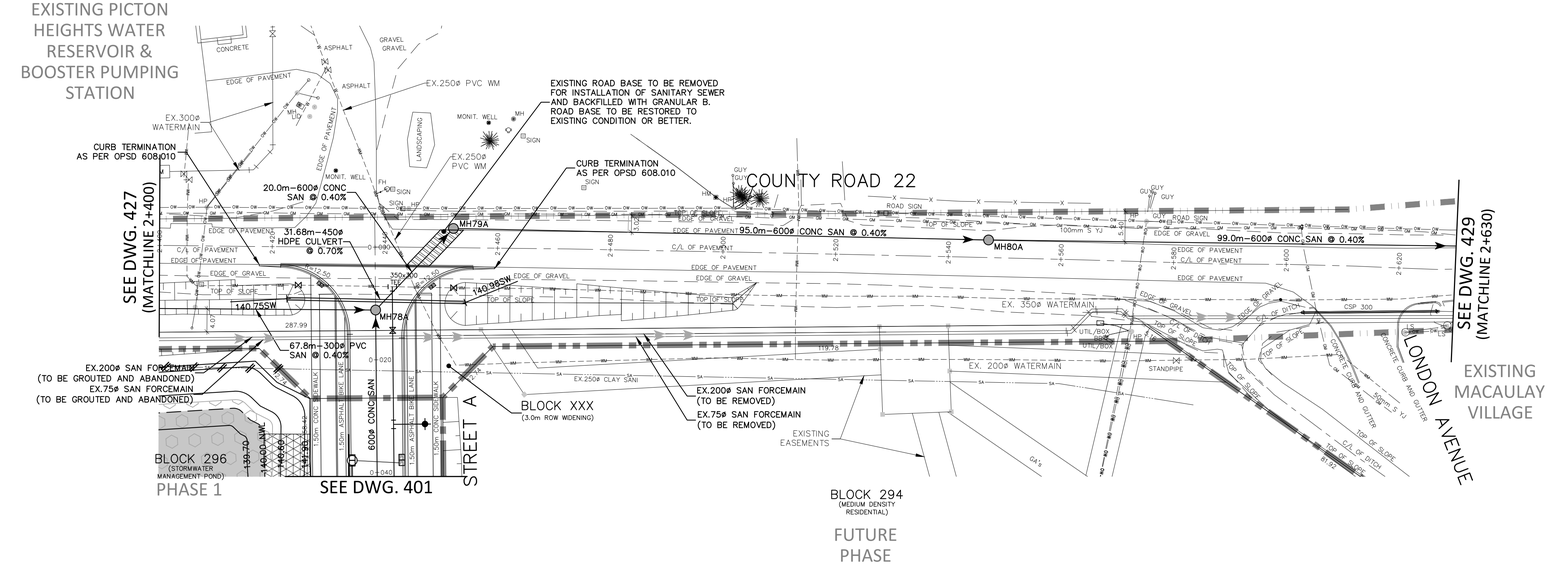
DRAWING No: 427

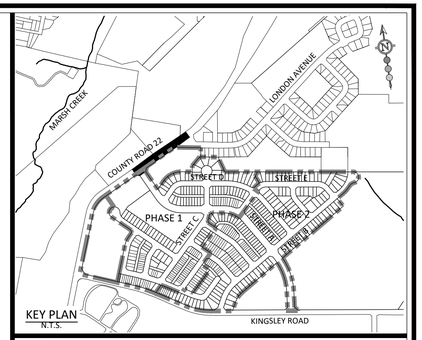


CL EXISTING/ PROPOSED ELEVATIONS	141.71	141.48	141.20	141.01	140.88	140.83	140.80	140.87	141.07	141.36	141.72
CHAINAGE	2+200		2+240		2+280		2+320		2+360		2+400

EXISTING/ PROPOSED ELEVATIONS

CHAINAGE





BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

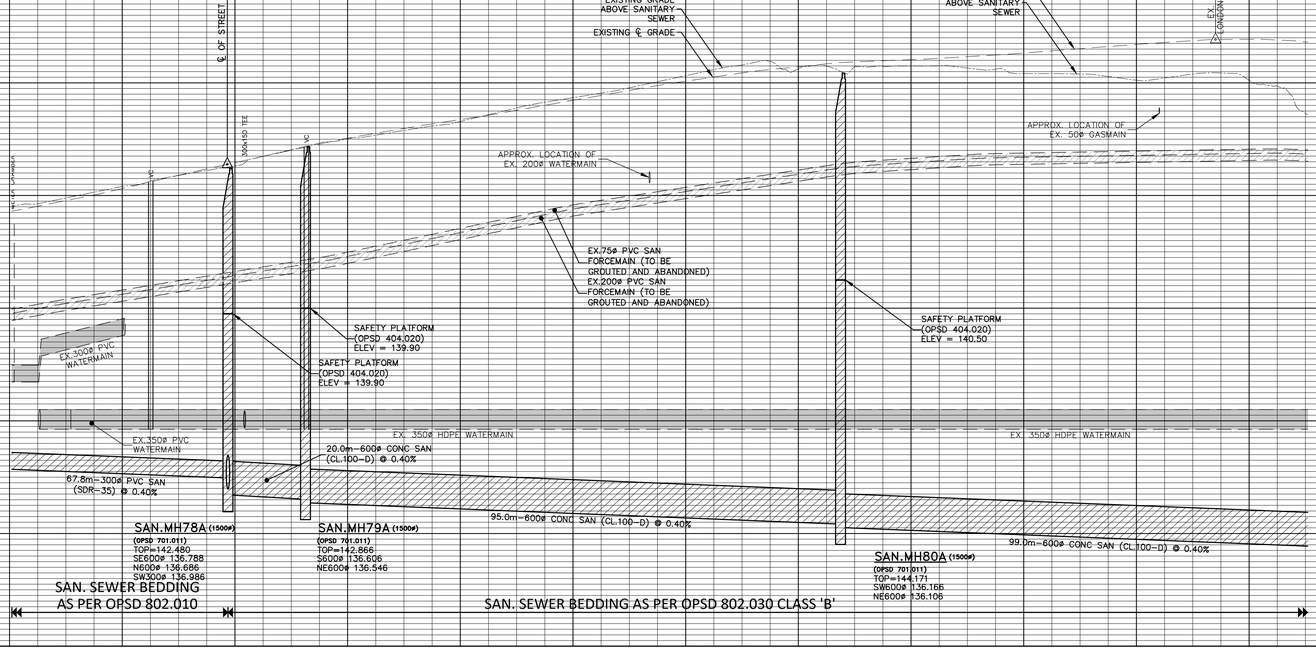
LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- SANITARY SEWER / MAINTENANCE HOLE
- STORM SEWER / MAINTENANCE HOLE
- WATERMAIN / VALVE BOX
- WATERMAIN / REDUCER
- HYDRANT AND VALVE
- CATCHBASIN/DOUBLE CATCHBASIN WITH TYPE B ICD (28.3 L/s)
- WATER SERVICE BOX AND LATERAL
- SINGLE SANITARY (125Ø) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- DRIVEWAY LOCATION
- PRIVACY FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH ACOUSTIC FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH CHAINLINK FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- CMB(#MOD) COMMUNITY MAILBOX PAD, SEE DETAILS ON 900 SERIES DRAWINGS
  - NUMBER OF MODULES
  - TACTILE PLATE AS PER OPSD 310.039
- BH24–8 BOREHOLE LOCATION
- TP21–8 TEST PIT LOCATION
- SEWERS & MAINTENANCES HOLES TO BE GROUNDED AND ABANDONED
- EXISTING FEATURE TO BE REMOVED
- EXISTING OVERHEAD WIRE
- EXISTING CHAINLINK FENCE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING GAS MAIN
- HP EXISTING HYDRO POLE
- MH EXISTING MANHOLE
- WV EXISTING WATERMAIN VALVE
- FH EXISTING HYDRANT
- GM/HM EXISTING MONITORING WELL
- SIGN EXISTING ROAD SIGN
- CB EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	



CL EXISTING/ PROPOSED ELEVATIONS	141.72	142.13	142.59	143.03	143.35	143.70	144.04	144.29	144.41	144.53	144.68	144.77		EXISTING/ PROPOSED ELEVATIONS
CHAINAGE	2+400		2+440		2+480		2+520		2+560		2+600			CHAINAGE

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

BASE31 SUBDIVISION
VILLAGE A - PHASE 1

COUNTY ROAD 22
STA. 2+400 TO 2+630

DATE:	DECEMBER 2025	DESIGNED BY:	J.Z./Y.A.	CHECKED BY:	J.S.S./C.C.
SCALE:	H 1:500 V 1:50	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

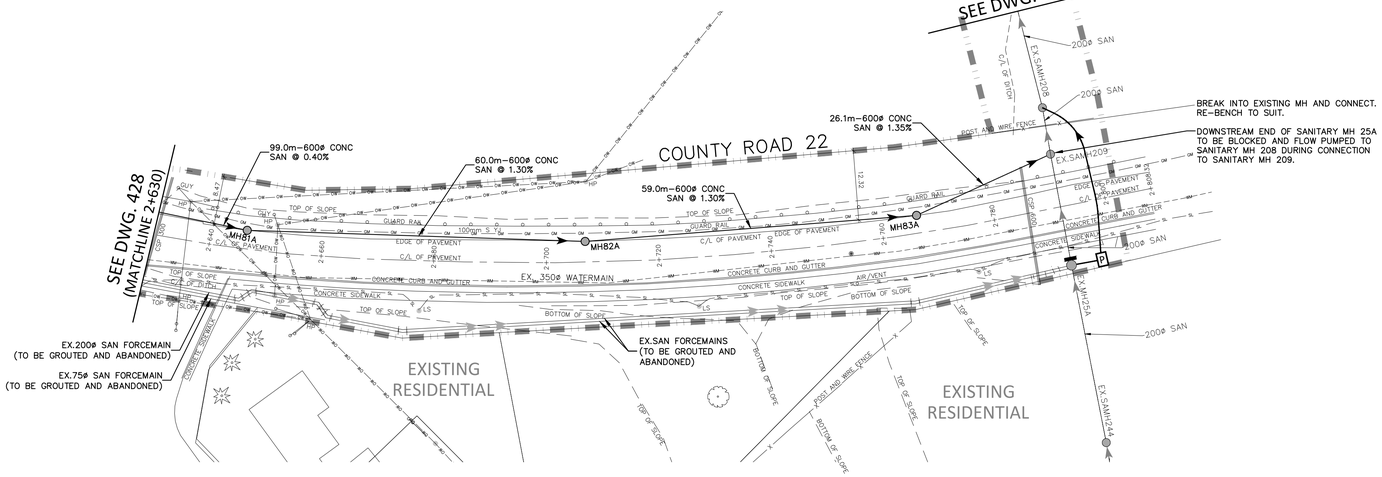
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

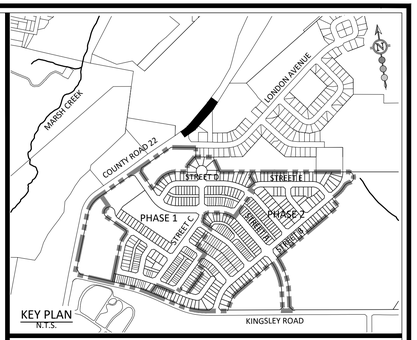
Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365

DRAWING No: 428





BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- SANITARY SEWER / MAINTENANCE HOLE
- STORM SEWER / MAINTENANCE HOLE
- WATERMAIN / VALVE BOX
- WATERMAIN / REDUCER
- HYDRANT AND VALVE
- CATCHBASIN/DOUBLE CATCHBASIN WITH TYPE B ICD (28.3 L/s)
- WATER SERVICE BOX AND LATERAL
- SINGLE SANITARY (125ø) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- DRIVEWAY LOCATION
- PRIVACY FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH ACOUSTIC FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH CHAINLINK FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- CMB(#MOD) COMMUNITY MAILBOX PAD, SEE DETAILS ON 900 SERIES DRAWINGS
- NUMBER OF MODULES
- TACTILE PLATE AS PER OPSD 310.039
- BH24–8 BOREHOLE LOCATION
- TP21–8 TEST PIT LOCATION
- SEWERS & MAINTENANCES HOLES TO BE GROUNDED AND ABANDONED
- EXISTING FEATURE TO BE REMOVED
- EXISTING OVERHEAD WIRE
- EXISTING CHAINLINK FENCE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING GAS MAIN
- HP EXISTING HYDRO POLE
- MH EXISTING MANHOLE
- WV EXISTING WATERMAIN VALVE
- FH EXISTING HYDRANT
- EXISTING MONITORING WELL
- GM/HM EXISTING UTILITY
- SIGN EXISTING ROAD SIGN
- CB EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty
PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

BASE31 SUBDIVISION VILLAGE A - PHASE 1

COUNTY ROAD 22
STA. 2+620 TO 2+620

DATE:	DECEMBER 2025	DESIGNED BY:	J.Z./Y.A.	CHECKED BY:	J.S.S./C.C.
SCALE:	H 1:500 V 1:50	DRAWN BY:	M.T.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

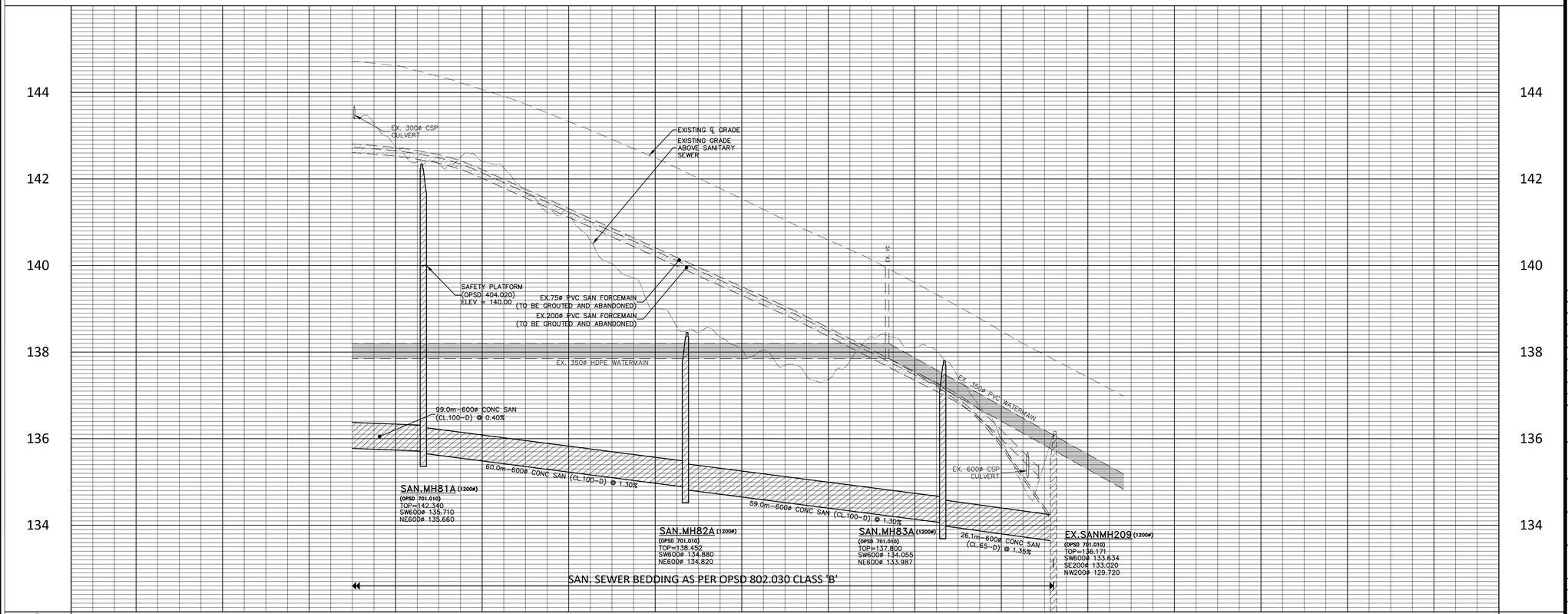
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

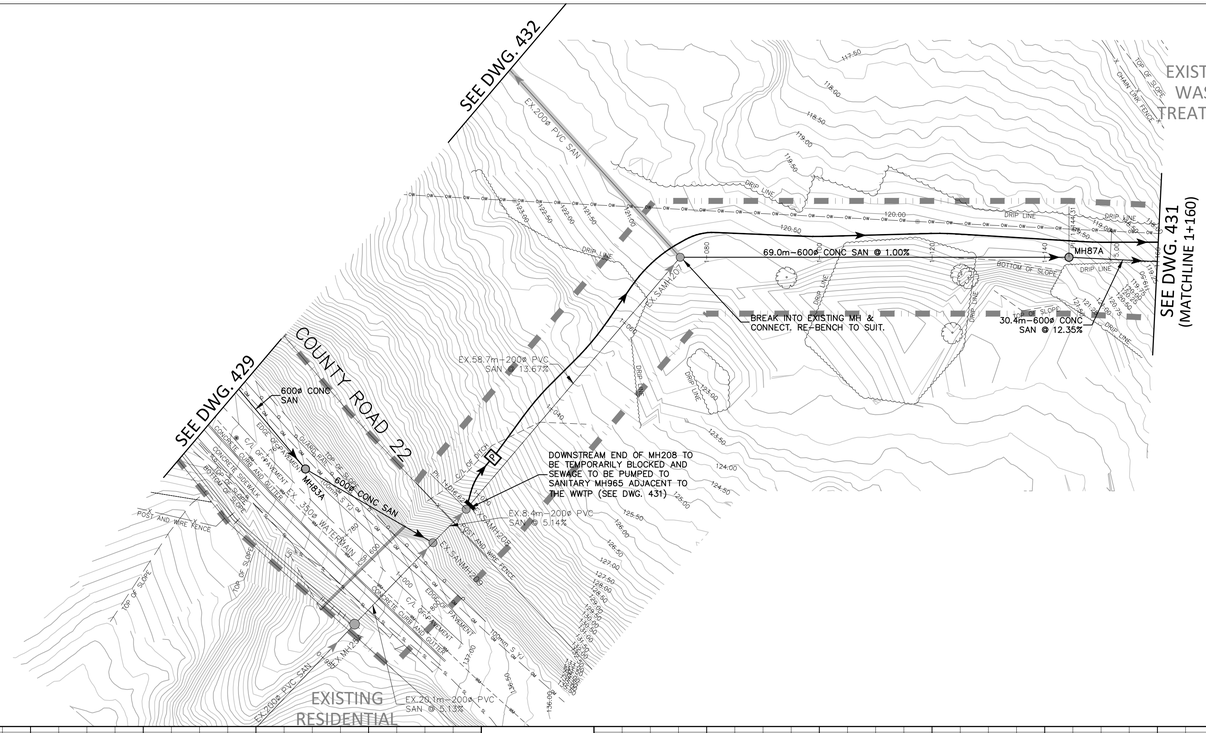
Peter Moyer, P.Eng.
Director Of Development Services

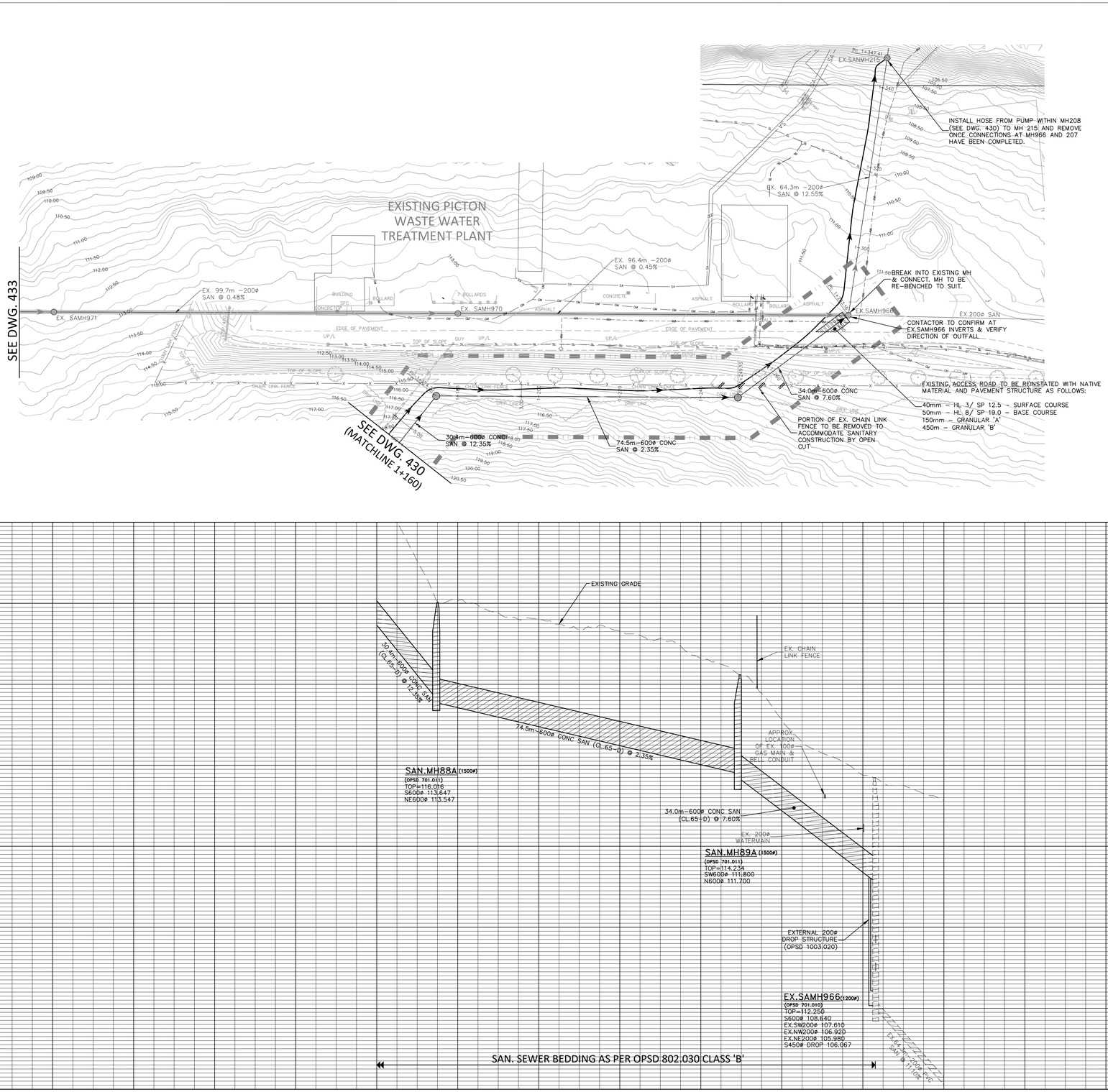
Date

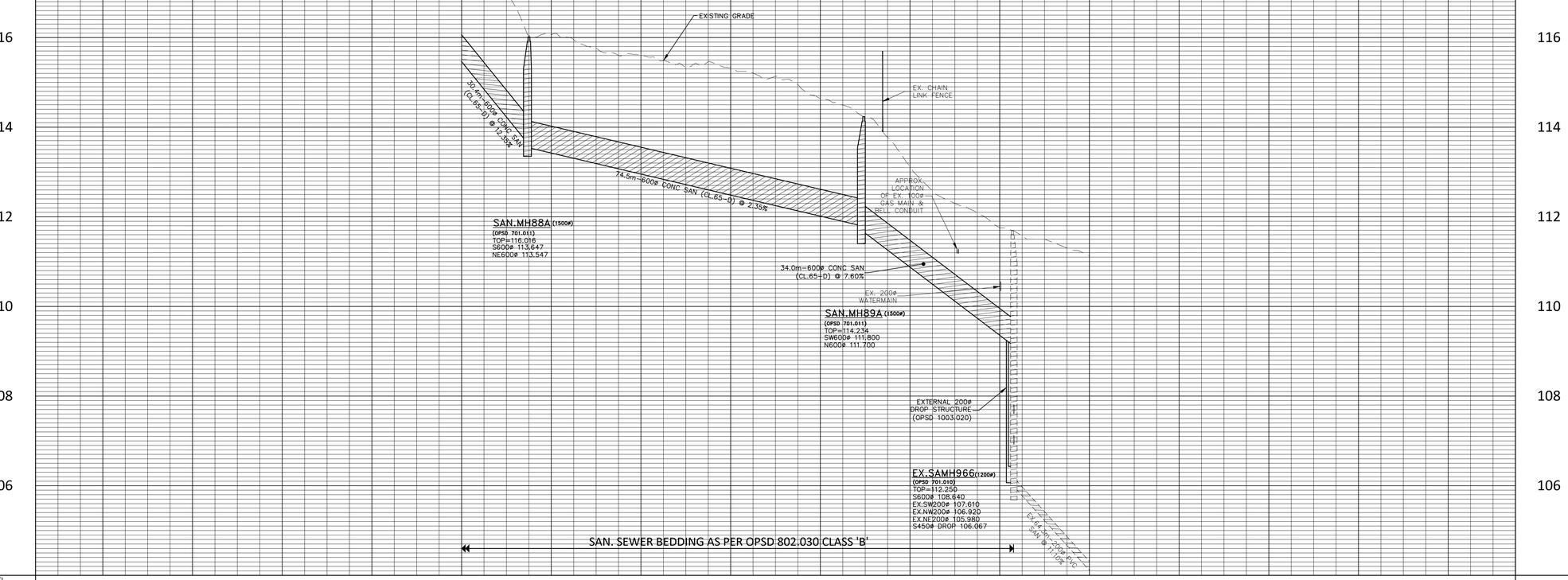
PROJECT No: 2365

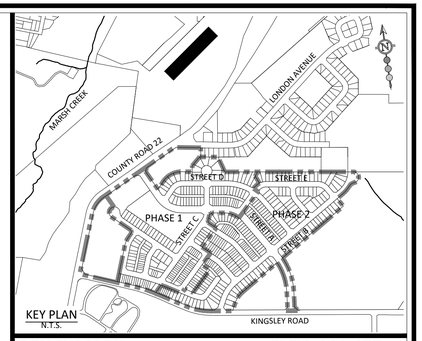
DRAWING No: 429




SEE DWG. 432
EXISTING PICTON
WASTE WATER
TREATMENT PLANT
SEE DWG. 429
COUNTY ROAD 22
600ø CONC SAN
MH85A
EX.58.7m–200ø PVC SAN @ 13.67%
69.0m–600ø CONC SAN @ 1.00%
MH87A
BREAK INTO EXISTING MH & CONNECT, RE-BENCH TO SUIT.
30.4m–600ø CONC SAN @ 12.35%
SEE DWG. 431
(MATCHLINE 1+160)
DOWNSTREAM END OF MH208 TO BE TEMPORARILY BLOCKED AND SEWAGE TO BE PUMPED TO SANITARY MH965 ADJACENT TO THE WWTP (SEE DWG. 431)
EX.8.4m–200ø PVC SAN @ 5.14%
EXISTING RESIDENTIAL
EX.26.1m–200ø PVC SAN @ 5.13%
EX.SAMH208
EX.SAMH209
EX.SAMH210
EX.SAMH211
EX.SAMH212
EX.SAMH213
EX.SAMH214
EX.SAMH215
EX.SAMH216
EX.SAMH217
EX.SAMH218
EX.SAMH219
EX.SAMH220
EX.SAMH221
EX.SAMH222
EX.SAMH223
EX.SAMH224
EX.SAMH225
EX.SAMH226
EX.SAMH227
EX.SAMH228
EX.SAMH229
EX.SAMH230
EX.SAMH231
EX.SAMH232
EX.SAMH233
EX.SAMH234
EX.SAMH235
EX.SAMH236
EX.SAMH237
EX.SAMH238
EX.SAMH239
EX.SAMH240
EX.SAMH241
EX.SAMH242
EX.SAMH243
EX.SAMH244
EX.SAMH245
EX.SAMH246
EX.SAMH247







BENCHMARK: ELEV. 141.477m

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MNRF BENCHMARK No. 01019820216 HAVING A PUBLISHED ELEVATION OF 141.477 METERS.

LEGEND:

- LIMIT OF DEVELOPMENT/SUBDIVISION
- LIMIT OF PHASE
- LIMIT OF EXTERNAL WORKS
- SANITARY SEWER / MAINTENANCE HOLE
- STORM SEWER / MAINTENANCE HOLE
- WATERMAIN / VALVE BOX
- WATERMAIN / REDUCER
- HYDRANT AND VALVE
- CATCHBASIN/DOUBLE CATCHBASIN WITH TYPE B ICD (28.3 L/s)
- WATER SERVICE BOX AND LATERAL
- SINGLE SANITARY (125Ø) CONNECTION (AS PER STD. PSD-021 ON 900 SERIES DRAWINGS)
- 53 LOT NUMBER
- ANTI-SEEPAGE COLLAR (SEE DETAIL ON 900 SERIES DRAWINGS)
- PROPOSED EMBANKMENT (MAX. 3:1 UNLESS OTHERWISE NOTED)
- DRIVEWAY LOCATION
- PRIVACY FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH ACOUSTIC FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- 1.8m HIGH CHAINLINK FENCE (SEE LANDSCAPE DWGS FOR DETAILS)
- CMB(#MOD) COMMUNITY MAILBOX PAD, SEE DETAILS ON 900 SERIES DRAWINGS
- NUMBER OF MODULES
- TACTILE PLATE AS PER OPSD 310.039
- BH24-8 BOREHOLE LOCATION
- TP21-8 TEST PIT LOCATION
- SEWERS & MAINTENANCES HOLES TO BE GROUNDED AND ABANDONED
- EXISTING FEATURE TO BE REMOVED
- OH — EXISTING OVERHEAD WIRE
- X — EXISTING CHAINLINK FENCE
- WM — EXISTING WATERMAIN
- SA — EXISTING SANITARY SEWER
- GM — EXISTING GAS MAIN
- HP EXISTING HYDRO POLE
- MH EXISTING MANHOLE
- WV EXISTING WATERMAIN VALVE
- FH EXISTING HYDRANT
- EXISTING MONITORING WELL
- CM/HM EXISTING UTILITY
- SIGN EXISTING ROAD SIGN
- CB EXISTING CATCHBASIN
- EXISTING TREES

TOPOGRAPHIC SURVEY PROVIDED BY SCHAEFFER DZALDOV BENNET LTD., OCTOBER 2022

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED
1.	FIRST SUBMISSION	DEC 25	J.S.S.	

SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1900
FAX: (905) 475-8335

TheCounty PRINCE EDWARD COUNTY • ONTARIO
332 PICTON MAIN STREET,
PICTON ON, K0K 2T0
TEL: 613.476.2148 EXT. 1023
TEL: 613.962.9108 EXT. 1023

PEC COMMUNITY PARTNERS INC.

BASE31 SUBDIVISION VILLAGE A - PHASE 1

SANITARY OUTFALL TO LALOR STATION STA. 1+250 TO 1+540

DATE:	DECEMBER 2025	DESIGNED BY:	J.Z./Y.A.
SCALE:	H 1:500 V 1:50	DRAWN BY:	M.T.C.
CHECKED BY:	J.S.S./C.C.	CHECKED BY:	C.C./M.R.C.

5 0 10 20 30 40 HORIZONTAL

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF SCS CONSULTING GROUP LTD. CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION.

Peter Moyer, P.Eng.
Director Of Development Services

Date

PROJECT No: 2365

DRAWING No: 431

Appendix C Stormwater Management Calculations

SCS consulting group ltd

Project Number: 2365B
Date: February 2026
Designer Initials: R.B.

OVERLAND FLOW CALCULATIONS TO KINGSLEY ROAD CULVERT

203			
	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient (5 Year)
Asphalt	0.90	0.28	0.66
Grass	0.25	0.10	0.07
TOTAL		0.38	0.72

203	**Return Period**
	5 Year
Area (ha)=	0.38
Runoff Coeff. =	0.72
T_c (min)=	10.00
a =	**26.4**
b =	**0.00**
c =	**0.677**
Intensity (mm/hr) =	88.80
Runoff (m^3/s) =	**0.068**

*Area and Runoff coefficient per **Figure 4.2**
*IDF parameters per Prince Edward County

5 Year Flow (203)

Q_{5yr} (m^3/s) = 0.068

100 Year Flow(203)

Q_{100yr} (m^3/s) = 0.125

Culvert Calculator Report
Culvert - County Road 22

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	142.56	m	Headwater Depth/Height	0.97	
Computed Headwater Elev	142.14	m	Discharge	0.1250	m³/s
Inlet Control HW Elev.	142.13	m	Tailwater Elevation	141.84	m
Outlet Control HW Elev.	142.14	m	Control Type	Outlet Control	

Grades					
Upstream Invert	141.75	m	Downstream Invert	141.64	m
Length	21.80	m	Constructed Slope	0.005046	m/m

Hydraulic Profile					
Profile	M2		Depth, Downstream	0.26	m
Slope Type	Mild		Normal Depth	0.27	m
Flow Regime	Subcritical		Critical Depth	0.26	m
Velocity Downstream	1.47	m/s	Critical Slope	0.005620	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.012	
Section Material	HDPE (Smooth Interior)		Span	0.40	m
Section Size	400 mm		Rise	0.40	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	142.14	m	Upstream Velocity Head	0.10	m
Ke	0.20		Entrance Loss	0.02	m

Inlet Control Properties					
Inlet Control HW Elev.	142.13	m	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	0.1	m²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK
MEASURED PERCENT IMPERVIOUS

Project Number: 2365B
Date: February 2026
Designer Initials: R.R.B.

	Area (ha)	Impervious Area (ha)	Percent Impervious	A x I
Village A - Rental Bldg (Phase 1)	0.11	0.01	6%	0.01
	0.16	0.16	100%	0.16
	0.30	0.25	82%	0.25
	0.24	0.22	91%	0.22
	0.05	0.05	88%	0.05
	0.06	0.05	87%	0.05
	0.23	0.15	64%	0.15
	0.14	0.13	92%	0.13
	0.10	0.08	85%	0.08
Phase 1 Total	***1.39***	***1.09***	***79%***	***1.09***
Village A - Rental Bldg (Phase 2)	0.92	0.92	88%	0.81
Total	**2.31**	**2.01**	**82%**	**1.90**

PROPOSED WEIGHTED RUNOFF COEFFICIENT

Project Number: 2365B
Date: February 2026
Designer Initials: R.R.B.

Catchment 201 Outlets to: Street K

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient	Weighted Runoff Coefficient (100 Year)
Village A - Rental Bldg (Phase 1)	0.90	0.16	0.10	0.12
	0.24	0.11	0.02	0.02
	0.80	0.10	0.06	0.07
	0.82	0.11	0.07	0.08
	0.84	0.24	0.15	0.17
	0.77	0.30	0.17	0.21
	0.66	0.22	0.11	0.13
	0.84	0.14	0.09	0.10
TOTAL		1.38	0.75	0.91

Drainage Areas and Runoff Coefficients per Drawing STRM-1

INTERIM 100 YEAR RELEASE RATE FROM VILLAGE A - SOUTHERN MEDIUM DENSITY BLOCK TO STREET K (MH47)

Project Number: 2365B
Date: February 2026
Designer Initials: R.R.B.

100 Year storm

IDF Parameters*
- **a =** 43
- **t =** 17.87 min (Tc at MH47 per SSDS, refer to **Appendix D**)
- **b =** 0.00
- **c =** 0.68

Runoff Coefficient:
- **C1 =** 0.91
- **C2 =** 0.00
- **C3 =** 0.00

Allowable Release Rate Calculation

Outlet ID	Area	time	Intensity	Flow
		t	i=a/(t+b)^c	Q=CiA/360
	ha	*min*	*mm/hr*	*l/s*
Street K	1.390	17.87	97.75	342.5

* a,b,c's per Prince Edward County

SUMMARY

Project Number: 2365B
Date: February 2026
Designer Initials: R.R.B.

			100 Year								
Catchment ID	Runoff Coef.	Area (ha)	Release Rate (L/s) [2]	Storage Required (m^3) [2]	Ponding Depth (m)	Storage Available (m^3) [3]	Orifice Size (mm) [4]	Orifice Release Rate (L/s)	Location of Orifice	Invert	VERTICAL/TUBE Control
201	0.91	1.39	295.0	51.3	0.00	55.8	310	295.0	MH47	140.960	VERTICAL

Street K Allowable Release Rate 296.0 L/s (To MH 47 wihtin Street K of Village A, refer to **Appendix B**)
Street K Proposed Release Rate 295.0 L/s

MODIFIED RATIONAL METHOD

Project Number: 2365B
Date: February 2026
Designer Initials: R.R.B.

Area ID: 201

Area = **1.390** ha
"C" = **0.91**
AC= **1.2615**
Tc = **17.9** min (Tc at MH47 per SSDS, refer to **Appendix D**)
Time Increment = **3.0** min

Release Rate = **294.96** l/s
Max.Storage = **51.3** m^3

Prince Edward County 100 Year
a= 43
b= 0
c= 0.678

Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff[1] (l/s)	Runoff Volume (m^3)	Released Volume (m^3)	Storage Volume (m^3)	
17.9	97.75	342.80	367.56	316.3	51.3	<<<<
20.9	87.99	308.57	386.39	342.8	43.6	
23.9	80.33	281.71	403.47	369.4	34.1	
26.9	74.13	259.98	419.14	395.9	23.2	
29.9	69.00	241.98	433.67	422.4	11.2	

ON-SITE DETENTION AND ORIFICE DETAILS

Project Number: 2365B
Date: February 2026
Designer Initials: R.R.B.

Area ID 201

Orifice Equation: $Q = C_d A(2gh)^{1/2}$

Orifice Diameter:	310	mm
Area:	0.075	m^2
g =	9.81	m/sec^2
C_d =	0.62	

Type of Control:	VERTICAL
Location:	MH47

Pipe Storage

Diameter (mm)	Area (m^2)	Length (m)	Volume (m^3)
250	0.049	131	6.4
300	0.071	10	0.7
375	0.110	92	10.2
525	0.216	11	2.3
600	0.283	86	24.4
750	0.442	0	0.0
825	0.535	0	0.0
900	0.636	0	0.0
1050	0.866	0	0.0
	Total Sewer Volume		**44.0**

MH Storage

Diameter (mm)	Area (m^2)	Depth (m)	Volume (m^3)
1200	1.131	1.40	1.6
1200	1.131	0.96	1.1
1500	1.767	2.06	3.6
1500	1.767	1.80	3.2
1500	1.767	1	2.2
	Total MH Volume		**11.7**

Total Volume	**55.8**

Appendix D Storm Sewer Servicing Calculations

SCS consulting group ltd

5-Year Storm Design
Base 31 - Site Plan Rental Building Phase 1
Storm Drainage to Phase 1 SWM Pond Facility
Picton, Prince Edward County

Rainfall Intensity (i) = $\frac{A}{(T_c+B)^c}$

A= 26.4
B= 0
c= 0.677

Starting T_c (min)= 15

Project: Base 31 - Site Plan Rental Building Phase 1
Project No. 2365
Date: 26-Feb-26
Designed By: Y.A
Reviewed By: V.S

P:\2365 Picton Airport - Tercot\Design\Pipe Design\Storm\Village A - Rental Building\[Storm Design Sheet - Rental - 5 yr.xlsm]Design

LOCATION			5 YEAR						EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA						
STREET	MAINTENANCE HOLE		5-YEAR AREA	RUNOFF COEFF.	"AR"	ACCUM. "AR"	RAINFALL INTENSITY	ACCUM. FLOW	AREA	FLOW RATE	EXT. FLOW	ACCUM. EXT. FLOW	TOTAL (Qdes)	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	TIME OF CONC.	ACCUM. TIME OF CONC.
	FROM	TO	(ha)	(R)			(mm/hr)	(m3/s)	(ha)	(l/s/ha)	(m3/s)	(m3/s)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
RENTAL BUILDING - PHASE 1	CB1	MH84	0.11	0.24	0.03	0.03	67.48	0.005	0.000	0.000	0.000	0.000	0.005	32.6	0.70	250	0.050	1.014	0.54	15.54
RENTAL BUILDING - PHASE 1	CB2	MH84	0.23	0.66	0.15	0.15	67.48	0.028	0.000	0.000	0.000	0.000	0.028	11.9	5.00	250	0.133	2.709	0.07	15.07
RENTAL BUILDING - PHASE 1	CB3	MH84	0.30	0.77	0.23	0.23	67.48	0.043	0.000	0.000	0.000	0.000	0.043	10.2	0.60	300	0.075	1.060	0.16	15.16
RENTAL BUILDING - PHASE 1	CB4	MH84	0.24	0.84	0.20	0.20	67.48	0.038	0.000	0.000	0.000	0.000	0.038	10.4	0.70	250	0.050	1.014	0.17	15.17
RENTAL BUILDING - PHASE 1	MH84	MH85	0.00	0.00	0.00	0.61	65.90	0.112	0.000	0.000	0.000	0.000	0.112	68.3	0.60	375	0.136	1.230	0.93	16.46
BUILDING A	PLUG 1	MH85	0.00	0.00	0.00	0.00	67.48	0.000	0.160	42.000	0.007	0.007	0.007	19.5	2.10	250	0.086	1.756	0.19	15.19
RENTAL BUILDING - PHASE 1	MH85	MH87	0.00	0.00	0.00	0.61	63.37	0.108	0.000	0.000	0.000	0.007	0.114	23.6	0.75	375	0.152	1.375	0.29	16.75
RENTAL BUILDING - PHASE 1	CB5	CB6	0.14	0.84	0.12	0.12	67.48	0.022	0.000	0.000	0.000	0.000	0.022	33.0	4.45	250	0.125	2.556	0.22	15.22
RENTAL BUILDING - PHASE 1	CB6	CBMH86	0.06	0.82	0.05	0.17	66.84	0.031	0.000	0.000	0.000	0.000	0.031	15.4	0.70	250	0.050	1.014	0.25	15.47
RENTAL BUILDING - PHASE 1	CB7	CBMH86	0.05	0.82	0.04	0.04	67.48	0.008	0.000	0.000	0.000	0.000	0.008	8.4	0.70	250	0.050	1.014	0.14	15.14
RENTAL BUILDING - PHASE 1	CBMH86	MH87	0.10	0.80	0.08	0.29	66.09	0.053	0.000	0.000	0.000	0.000	0.053	10.7	0.70	300	0.081	1.145	0.16	15.62
RENTAL BUILDING - PHASE 2	MH87	MH88	0.93	0.82	0.76	1.66	62.63	0.289	0.000	0.000	0.000	0.007	0.296	49.9	0.35	600	0.363	1.285	0.65	17.40
RENTAL BUILDING - PHASE 2	MH88	PLUG 47	0.00	0.00	0.00	1.66	62.63	0.289	0.000	0.000	0.000	0.007	0.296	28.4	0.35	600	0.363	1.285	0.37	17.76
VILLAGE A SUBDIVISION PHASE 1	PLUG 47	MH47	0.00	0.00	0.00	1.66	62.63	0.289	0.000	0.000	0.000	0.007	0.296	8.0	0.35	600	0.363	1.285	0.10	17.87

scs consulting group ltd

100-Year Storm Design
Base 31 - Site Plan Rental Building Phase 1
Storm Drainage to Phase 1 SWM Pond Facility
Picton, Prince Edward County

Rainfall Intensity (i) = $\frac{A}{(T_c+B)^c}$

A= 43
B= 0
c= 0.678

Starting T_c (min)= 15

Phase 1 Rental Building Interim 100-Year Flow
Orifice at MH47 – Controlled Rate of 295 L/s

Project: Base 31 - Site Plan Rental Building Phase 1
Project No. 2365
Date: 26-Feb-26
Designed By: Y.A
Reviewed By: V.S

P:\2365 Picton Airport - Tercot\Design\Pipe Design\Storm\Village A - Rental Building\[Storm Design Sheet - Rental - 100 yr.xlsm]Design

LOCATION			100 YEAR						CB FLOW			EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA						
STREET	MAINTENANCE HOLE		100-YEAR AREA	RUNOFF COEFF.	"AR"	ACCUM. "AR"	RAINFALL INTENSITY	ACCUM. FLOW	CB's	FLOW	ACCUM. CB FLOW	AREA	FLOW RATE	EXT. FLOW	ACCUM. EXT. FLOW	TOTAL (Qdes)	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	TIME OF CONC.	ACCUM. TIME OF CONC.
	FROM	TO	(ha)	"R"			(mm/hr)	(m3/s)	(#)	(m3/s)	(m3/s)	(ha)	(l/s/ha)	(m3/s)	(m3/s)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
RENTAL BUILDING - PHASE 1	CBMH86	MH87	0.000	0.000	0.000	0.000	110.07	0.000	0	0.000	0.000	1.000	373.000	0.373	0.373	0.373	10.7	0.70	525	0.360	1.662	0.11	15.62
RENTAL BUILDING - PHASE 1	MH87	MH88	0.000	0.000	0.000	0.000	109.54	0.000	0	0.000	0.000	0.000	0.000	0.000	0.340	0.340	49.9	0.35	600	0.363	1.285	0.65	17.40
RENTAL BUILDING - PHASE 2	MH88	PLUG 47	0.000	0.000	0.000	0.000	106.47	0.000	0	0.000	0.000	0.000	0.000	0.000	0.340	0.340	28.4	0.35	600	0.363	1.285	0.37	17.76
VILLAGE A SUBDIVISION - PHASE 1	PLUG 47	MH47	0.000	0.000	0.000	0.000	104.81	0.000	0	0.000	0.000	0.000	0.000	0.000	0.295	0.295	8.0	0.35	600	0.363	1.285	0.10	17.87

OVERLAND FLOW CALCULATIONS

Catchment 201a

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient (5 Year)	Weighted Runoff Coefficient (100 Year)
Village A - Rental Bldg (Phase 1)	0.75	1.29	0.75	0.90
TOTAL		1.29	0.75	0.90

Catchment 201a	**Return Period**
	5 Year
Area (ha)=	1.29
Runoff Coeff. =	0.75
T_c (min)=	15.62
a =	**26.4**
b =	**0**
c =	**0.677**
Intensity (mm/hr) =	65.66
Runoff (m^3/s) =	**0.176**

(Tc at CBMH86 per SSDS, refer to **Appendix D**)

Catchment 201a	**Return Period**
	100 Year
Area (ha)=	1.29
Runoff Coeff. =	0.90
T_c (min)=	15.62
a =	**43**
b =	**0**
c =	**0.678**
Intensity (mm/hr) =	107.09
Runoff (m^3/s) =	**0.345**

*IDF parameters per Prince Edward County

5 Year Flow (Catchment 201a)

Q_{5yr} (m^3/s) = 0.176

100 Year Flow(Catchment 201a)

Q_{100yr} (m^3/s) = 0.345

100 Year Conveyance to CBMH86

$Q_{100-5yr}$ (m^3/s) = 0.169

OVERLAND FLOW CALCULATIONS

Catchment 201b

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient (5 Year)	Weighted Runoff Coefficient (100 Year)
Village A - Rental Bldg (Phase 1)	0.80	0.10	0.80	1.00
TOTAL		0.10	0.80	1.00

Catchment 201b	**Return Period**
	100 Year
Area (ha)=	0.10
Runoff Coeff. =	1.00
T_c (min)=	15.62
a =	**43**
b =	**0**
c =	**0.678**
Intensity (mm/hr) =	107.09
Runoff (m^3/s) =	**0.030**

(Tc at CBMH86 per SSDS, refer to **Appendix D**)

*IDF parameters per Prince Edward County

100 Year Flow(Catchment 201b)

Q_{100yr} (m^3/s) = **0.030**

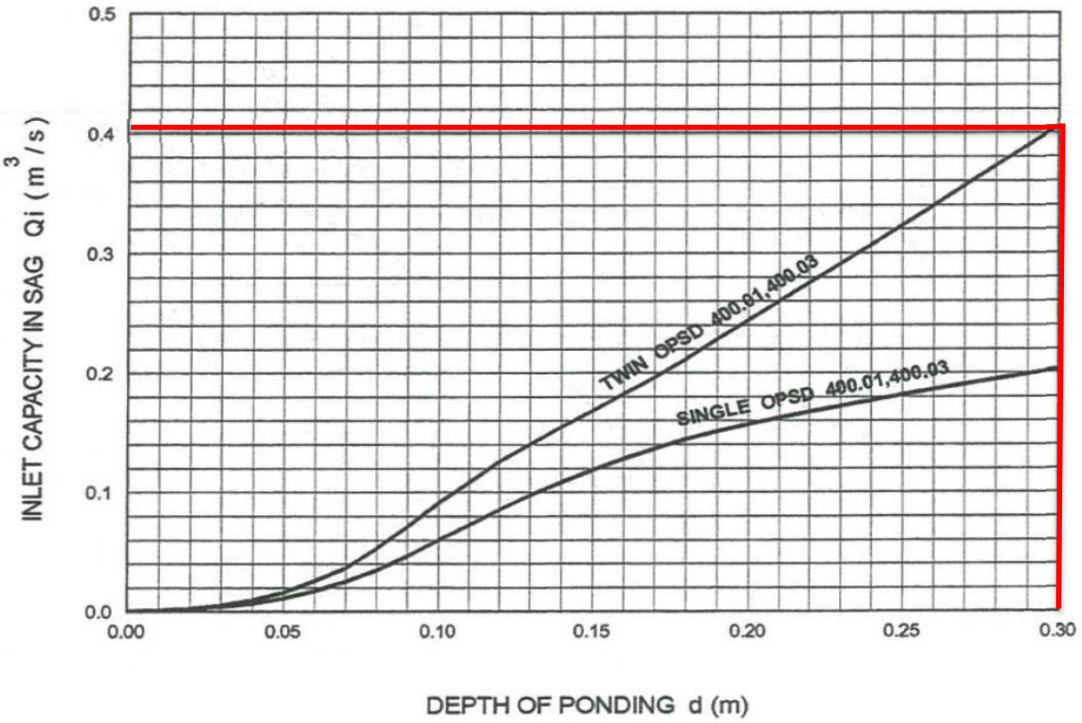
Required 100 Year Capture/Conveyance Capacity

201a $_{(Q100-5yr)}$ + 201b $_{(Q100)}$ = **0.199**

CATCHBASIN CAPTURE CALCULATIONS

Design Charts

Design Chart 4.19: Inlet Capacity at Road Sag



*Per Ministry of Transportation Ontario Drainage Manual

100 Year Capture Capacity for OPSD 400.01 & 400.03		
Required Capture Capacity	0.20	m^3/s
Required Capture Capacity with 50% Blockage	0.40	m^3/s
Type of Catch Basin	Twin	
Number of Catchbasins	1	
Required Capture Capacity Per Catchbasin	0.40	m^3/s
Provided Capture Capacity per Catchbasin	0.41	m^3/s
Ponding Depth Required	0.30	m
Ponding Depth Provided	0.30	m

Sizing CB Lead		
Grate Elevation =	143.04	
Lead Invert =	141.49	
CB Lead Diameter =	0.525	m
Head over Lead Invert =	1.29	m
Super CB Lead Capacity =	0.80	m^3/s

Appendix E Water Distribution Analysis

Appendix E1 Fire Flow Memo

FIRE FLOW MEMORANDUM

THE BASE 31 REVITALIZATION DISTRICT

PEC COMMUNITY PARTNERS INC

C/O SCS CONSULTING GROUP LTD.
PRINCE EDWARD COUNTY

PREPARED BY:
DLW ENGINEERING SERVICES LIMITED
1900 Dundas Street West, Suite A242
Mississauga ON CA
L5K 1P9

February 2026

DLW FILE NO – PEC-001

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. DLW Engineering Services Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report without the express written consent of DLW Engineering Services Limited.

1. Introduction

DLW Engineering Services Limited (DLW) has been retained by PEC Community Partners Inc to provide consulting engineering services related to the assessment of water supply in support of the servicing for the Base 31 Revitalization District, in the Prince Edward County. As part of the water distribution system analysis for this development, DLW has previously established the fire flow requirements for some of the buildings in this development (DLW Fire Flow Memorandum, July 2023). In this memo, we will evaluate and compare the fire flow requirements for the proposed Rental Building (Building A) and the freehold townhouses which are located within Village A.

2. Basis of Fire Flows

In this memo, we will evaluate and compare the fire flow requirements for Building A and the freehold townhouses using Ministry of Environment, Conservation and Parks (MECP, 2008), Ontario Building Code (OBC Div. B. A 3.2.5.7, 2012), Office of Fire Marshal (OFM, TG-03-1999), and Fire Underwriter Survey (FUS, 2020).

3. Fire Flow Development Computations

3.1. Ministry of Environment, Conservation and Parks

According to the MECP guidelines (section 8.4.1 and 10.1.2), to design the water demand for fire flow one should refer to Fire Code (O. Reg. 388/97) made under Fire Protection and Prevention Act in 1997 and, most recent edition of Fire Underwriter Survey's (FUS) document 'Water Supply for Public Fire Protection'. However, the Government of Ontario website cites that Fire Code (O. Reg. 388/97) has been revoked in 2007, and thus we have assumed that MECP references the FUS for developing fire flow computations.

3.2. Ontario Building Code and Office of Fire Marshal

Both OBC A-3.2.5.7.and OFM TG-03-1999 represent that fire flow could be computed using the formula below:

$Q = K\ V\ S_{total}$

Where,
Q = Quantity of water in litres,
K = water supply coefficient
V = Volume of the building in m^3
S = Spatial separation coefficient
$S = 1 + (S_{side1} + S_{side\ 2} + S_{side\ 3} + \ldots.)$ which has maximum value of 2

Table 1 Water Supply Coefficient

Water Supply Coefficient - K					
Type of Construction	Classification by Group or Division in Accordance with Table 3.1.2.1. of the Building Code				
	A-2 B-1 B-2 B-3 C D	A-4 F-3	A-1 A-3	E F-2	F-1
Building is of noncombustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2., including loadbearing walls, columns and arches.	10	12	14	17	23
Building is of noncombustible construction or of heavy timber construction conforming to Article 3.1.4.6. Floor assemblies are fire separations but with no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating.	16	19	22	27	37
Building is of combustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2., including loadbearing walls, columns and arches. Noncombustible construction may be used in lieu of fire-resistance rating where permitted in Subsection 3.2.2.	18	22	25	31	41
Building is of combustible construction. Floor assemblies are fire separations but with no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating.	23	28	32	39	53
Column 1	2	3	4	5	6

K could be determined using Table 1 (OBC A 3.2.5.7, 2012 & OFM TG-03-1999). Both Building A and the Townhouses will be classified under Group C Occupancy / Combustible construction but with fire resistance ratings as per OBC 3.2.2). Based on this classification of building conforming OBC Div. B. A 3.1.2.1 (1), the value of K would be **18** for Building A as well as the Townhouses.

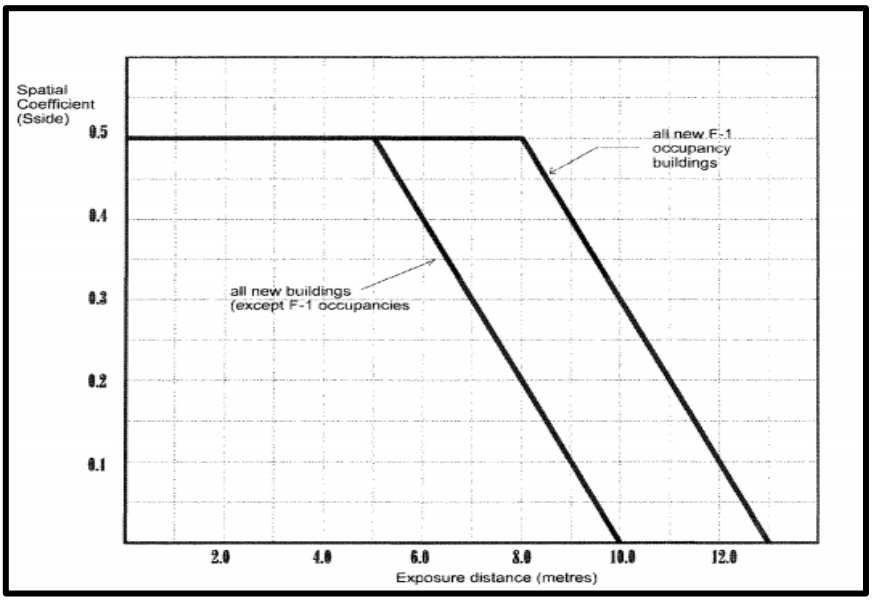


Figure 1: Spatial Separation Coefficient

The S value is determined using Figure 1 above.
For Building A, the value of S is 2 (S_{side1} + $S_{side\ 2}$ + $S_{side\ 3}$ + …. =1) because the total separation coefficient for all the direction i.e., north, south, east, and west is **1**.

Similarly, for the townhouses (Block of 4 Units), the value of S is 2 (S_{side1} + $S_{side\ 2}$ + $S_{side\ 3}$ + …. =1) because the total separation coefficient for all the direction i.e., north, south, east, and west is **1**.

The total proposed GFA for Building A is 11,289.3 m^2 and the average height of each floor is 3.5 m. Thus, the volume of the building is **39,512.55 m^3**.

The total proposed GFA for the freehold townhouses (includes 4 units and 2 floors each) is 406.5 m^2 and the average height of each floor is 3.5 m. Thus, the volume of the building is **2,845.5 m^3**.

This methodology assumes the quantity of water for fire fighting purposes is:

Building A

$Q = K\ V\ S_{side}$

$= 18 * 39512.55 * 2$

Q = 1,422,451.8 L ~ 1,423,000 L

Townhouses

$Q = K\ V\ S_{side}$

$= 18 * 1422.75 * 2$

Q = 51,219 L ~ 52,000 L

Table 2 : Minimum Flow Rate, L/min

Part 3 Buildings under the Building Code	Required Minimum Water Supply Flow Rate, L/min
One-storey building with building area not exceeding 600 m²	1 800
All other buildings	2 700 (if Q ≤ 108 000 L)(1) 3 600 (if Q > 108 000 L and ≤ 135 000 L)(1) 4 500 (if Q > 135 000 L and ≤ 162 000 L)(1) 5 400 (if Q > 162 000 L and ≤ 190 000 L)(1) 6 300 (if Q > 190 000 L and ≤ 270 000 L)(1) 9 000 (if Q > 270 000 L)(1)

Alternatively, OBC and OFM suggest determining the minimum fire flowrate based on Table 2 above.

For Building A, Q > 270,000 L, therefore the minimum required flow rate is **9,000 L/min or 150 L/s.** Therefore, the minimum quantity of water for fire fighting purposes and the associated flow rate based on OBC and the Office of the Fire Marshall is **1,423,000 L** (**1,423 m^3**) and **150 L/s**, respectively.

For the Townhouses, Q < 108,000 L, therefore the minimum required flow rate is **2,700 L/min or 45 L/s.** Therefore, the minimum quantity of water for fire fighting purposes and the associated flow rate based on OBC and the Office of the Fire Marshall is **103,000 L (103 m^3)** and **45 L/s**, respectively

It is worth noting that in the DLW memorandum dated 29 October 2024 entitled "Picton Airport Lands – Base31 Picton – Village A Development Water Servicing Memorandum" the fire storage requirement for the development was calculated as 1,988 m^3 assuming a fire flow of 184.1 L/s for 3 hours duration. That memo concluded that there is sufficient storage in the reservoir to accommodate the rental building and Village A development. Therefore, there is sufficient fire storage available to comply with OBC/OFM. Likewise, there is also sufficient fire storage available for the townhouse units.

3.3. Fire Underwriter Survey

The fire flow demand based on Fire Underwriter Survey's document Water Supply for Public Fire Protection is:

RFF = 220 C $\sqrt{A}$

Where,
RFF = required fire flow in liters per minute (L/min)
C = construction coefficient based on the construction material
A = total effective area in m^2
Figure 2 shows different values of C for different type of construction.

C = 1.5 for **Type V** Wood Frame Construction
= 0.8 for **Type IV-A** Mass Timber Construction
= 0.9 for **Type IV-B** Mass Timber Construction
= 1.0 for **Type IV-C** Mass Timber Construction
= 1.5 for **Type IV-D** Mass Timber Construction
= 1.0 for **Type III** Ordinary Construction
= 0.8 for **Type II** Noncombustible Construction
= 0.6 for **Type I** Fire Resistive Construction

Figure 2: Construction Coefficient

As noted earlier, both Building A and the Townhouses are Type III ordinary construction. Hence, C is 1 from Figure-2 and the RFF is

Table 3: Summary of FUS Computations

Building no	Type of Building	Area, m^2	Construction Coefficient, C	RFF, L/Min	RFF, L/s	RFF, L/s (Sprinkler Adjustment Credits)
Rental Unit (Building A)	Type-3	11289.3	1	24000	400.00	200.00
Townhouse (Block of 4 Units)	Type-3	406.5	1	5000	83.33	41.67

Therefore, we calculate that based on FUS, the fire flows for Building A would be 400 L/s. As per FUS guidelines, if automatic sprinkler system is used, the fire flow may be reduced by up to a maximum of 50%. (Table 4- Sprinkler Credits: Water Supply for Public Fire Protection, 2020). If sprinkler systems are provided, we commonly use a fire flow reduction of 50%, in this instance, the adjusted RFF would be 200 L/s (for Building A). The fire flow requirement based on FUS for the townhouses is 41.67 L/s.

We normally assume at least 2 hours for fire fighting purposes, and this would result in a fire storage volume of 1,440,000 L (1,440 m^3) for Building A rental unit and 300,024 L (300 m^3) for the Townhouses. As noted earlier, the DLW memorandum dated 29 October 2024 entitled "Picton Airport Lands – Base31 Picton – Village A Development Water Servicing Memorandum" the fire storage requirement for the development was calculated as 1,988 m^3 assuming a fire flow of 184.1 L/s for 3 hours duration. That memo concluded that there is sufficient storage in the reservoir to accommodate the rental building and Village A development. Therefore, there is sufficient fire storage available to comply with FUS criteria. Likewise, there is also sufficient fire storage available for the townhouse units.

3.3.1. FUS Adjustments for Correction Factors and Sprinklers

- Certain adjustments could be made based on the FUS guidelines. FUS states that approximately 15% of water demand could be reduced to the fire flow calculated for Residential Occupancies *(Table 3: Water Supply for Public Fire Protection, 2020).*
- As per FUS guidelines, if automatic sprinkler system is used, the fire flow may be reduced by up to 50 %. *(Table 4- Sprinkler Credits: Water Supply for Public Fire Protection, 2020).* When sprinkler systems are provided, we commonly use a fire flow reduction of 50%.
    - It is mentioned that 30% of reduction could be made if automatic sprinkler protection is designed and installed in accordance with NFPA 13 *(Table 4- Sprinkler Credits: Water Supply for Public Fire Protection, 2020).*
    - Additional 10 % could be reduced if standards for sprinklers system and fire department hose lines are met (*Table 4- Sprinkler Credits: Water Supply for Public Fire Protection, 2020).*
    - If the sprinkler system is fully supervised, it qualifies for additional 10% reduction *(Table 4- Sprinkler Credits: Water Supply for Public Fire Protection, 2020).*

This suggests reduction of a maximum of **50%** with the installation of the automatic sprinkler system.

4. Summary and Recommendations

Based on the foregoing we have calculated the fire fighting flow requirements for Building A and the freehold townhouses.

Table 4: Summary Table for OBC/OFM and FUS

Summary Table				
Building Name	**Bldg No**	**Fire Flow, L/S**		
		OBC/OFM	**FUS**	**FUS with Sprinkler Adjustments**
Rental Unit (Building A)	--	150	400.00	200.00
Townhouse (Block of 4 Units)		45	83.33	41.67

Given the above, and in recognition of the fact that we are complying with OBC requirements on this project we recommend that the rental unit will require a fire flow of 150 L/s and the freehold townhouses will require a fire flow of 41.7 L/s. We also recommend that there is sufficient storage available in the existing Picton Heights Reservoir to accommodate these fire flow requirements.

Appendix E2 Picton Heights Booster Pump Station Upgrade Report

SCS consulting group ltd

PICTON HEIGHTS BOOSTER PUMPING STATION UPGRADES

DESIGN REPORT

PEC COMMUNITY PARTNERS INC

C/O SCS CONSULTING GROUP LTD.
PRINCE EDWARD COUNTY

PREPARED BY:
DLW ENGINEERING SERVICES LIMITED
1900 Dundas Street West, Suite A242
Mississauga ON CA
L5K 1P9

December 2025

DLW FILE NO – PEC-004

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. DLW Engineering Services Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report without the express written consent of DLW Engineering Services Limited.

TABLE OF CONTENTS

1. Introduction 1
2. Existing Facility 2
3. Design Population 2
4. Design Flows 3
5. Booster Pumping Station Configuration 4
5.1 Existing Duty Pumps 4
5.2 Total Dynamic Head for Duty Pumps 4
5.3 Pressure Tanks 9
5.4 Selection of Pressure Tanks 10
5.5 Fire Pump 10
5.6 Total Dynamic Head for Fire Pump 11
5.7 Selection of Fire Pump 16
6. Standby Power Generator 16
7. Electrical Service 17
8. HVAC 17
9. System Controls/Alarms 17
10. Monitoring 17
11. Other Considerations 18
12. Conclusions & Recommendations 18

APPENDIX A – HYDRAULIC CALCULATIONS
APPENDIX B – FIRE PUMP TECHNICAL INFORMATION
APPENDIX C - PRESSURE TANK TECHNICAL INFORMATION

1. Introduction

DLW Engineering Services Limited (DLW) has been retained by PEC Community Partners Inc. to provide consulting engineering services for the proposed Village A development in Prince Edward County including the upgrades to the Picton Heights Booster Pumping Station (PHBPS).

The proposed development area is approximately 29 ha in size and is bound by County Road No. 22 to the west, Kingsley Road to the south and an existing residential community known as Macaulay Village to the north. The PHBPS, is located on the west side of County Road No. 22, north of Kingsley Road and is accessible from the existing driveway entrance off County Road No. 22.

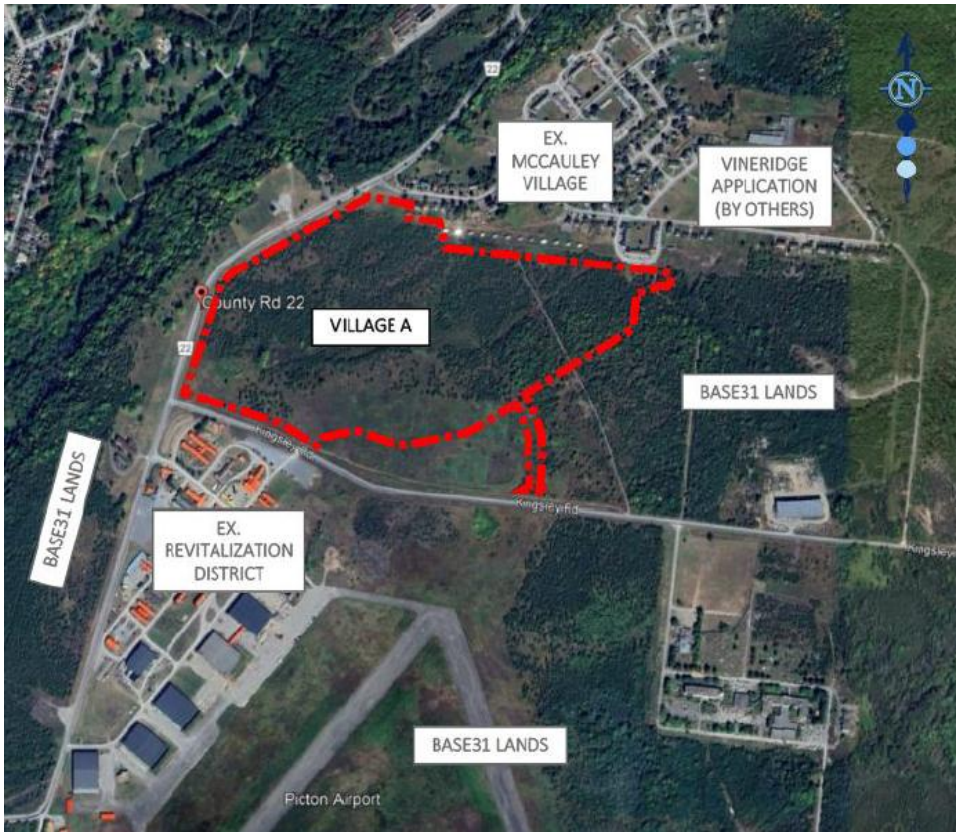


Figure 1 – Location Plan

The PHBPS draws water from the existing reservoir located adjacent to the PHBPS by a 450 mm suction line. Based on the FSSR, by SCS Consulting Group Limited, August 2025, and DLW Memorandum, October 2024, the existing reservoir is sufficiently sized to service the proposed development. Furthermore, Village A will be supplied potable by the existing Picton WTP via a connection to the existing PHBPS. A connection will be made to the recently constructed 300 mm diameter watermain installed for the Revitalization District from the PHBPS to service the proposed Village A development.

The purpose of this report is to provide design basis and details for the upgrades required at the Picton Heights Booster Pumping Station (PHBPS) to service the proposed Village A development.

The proposed PHBPS upgrades will be designed and constructed in accordance with the following reports and guidelines:

- Functional Servicing and Stormwater Management Report, by SCS Consulting Group Ltd, August 2025
- Picton Heights Booster Pumping Station Design Brief, by Ainley and Associates Ltd., January 2012
- Picton Heights Booster Pumping Station Operations Manual, by Ainley and Associates Ltd., November 2014
- MECP Design Guidelines for Drinking Water Systems, 2008
- Prince Edward County design guidelines

2. Existing Facility

The existing Picton Heights Booster Pumping Station (PHBPS) was originally sized to service a development of 1,567 persons, based on the January 2012 design report prepared by Ainley & Associates Limited for this facility. The report states that the existing design flows are as follows:

- Average Day Flow of 6.35 L/s
- Maximum Day Flow of 19.04 L/s
- Peak Hour Flow of 23.80 L/s
- Fire Flow of 83.77 L/s
- Maximum Day plus Fire Flow of 102.81 L/s

The PHBPS includes the following pumping configuration:

1) 4 x 15 HP Booster (Duty) Pumps each pump with a design capacity of 11.9 L/s at 50 m.

2) 1 Maximum Duty Fire Pump (75 HP) with a design capacity of 82 L/s at 50 m

3) 250 kW Standby Diesel Generator

The report further states that two 11.9 L/s duty pumps can provide the peak hour flows and that the maximum day plus fire flow will be satisfied with the operation of the 82 L/s maximum day pump working in combination with two 11.9 L/s duty pumps. In this configuration, the station is equipped with two 11.9 L/s standby pumps. However, the County has determined that when the fire pump is operating, the duty pumps continue to be energized but add no additional flow to the development other than flow being delivered by the fire pump. This implies that the Picton Heights Booster Pumping Station cannot currently deliver the design Maximum Day plus Fire flows to the distribution system during fire events, but will deliver the fire flows under those conditions. The County has also identified that when the fire pump is called for, there is a momentary drop in system pressures resulting from a lag introduced in the programming of the station future development.

3. Design Population

The Village A development is anticipated to proceed in two phases: Phase-1 with a population of approximately 579 people and Phase-2 with an additional population of approximately 695 people, with a total population for both phases of 1,274 people. The PHBPS upgrades will be implemented

to accommodate the demand associated with the completion of both Phase 1 and Phase 2 developments in Village A.

Table 1 Design Population for Village A Development

Development	Population	
	Phase 1	Phase 2
MacCauley Village Development Population	700	700
Initial Base 31 Revitalization District Development	363	363
Village A Development (Phase 1 & 2)	579	1,274
Revitalization District Rental Unit	204	204
Total	1,846	2,541

4. Design Flows

The PHBPS will require the following design flows based on adding the proposed Village A + the Interim Base31 Revitalization District development + the Base31 Rental Unit to the existing MacCauley Village flows and water demand design factors are considered as per MECP Design Guidelines for Drinking Water System, 2008.

Table 4 Water Design Criteria

Average Day Demand	320 L/Capita/day
Minimum Hour Factor	0.45
Maximum Day Factor	2.25
Peak Hour Factor	3.38
Fire Flow	150 L/s for 2 hrs

The design water demand based on Village A development is estimated as follows:

Average Day Demand = Population × Average Day Demand

= 2541 × 320 L/Capita/d
= 816,320 L/d
= 9.41 L/s

Minimum Hour Demand = Average Day Flow × Minimum Hour Factor

= 9.41 L/s × 0.45
= 4.23 L/s

Maximum Day Demand = Average Day Flow × Maximum Day Factor

= 9.41 L/s × 2.25
= 21.17 L/s

Peak Hour Demand = Average Day Flow × Peak Hour Factor

= 9.41 L/s × 3.38
= 31.80 L/s

Fire Demand = **150 L/s for 2 hrs**

Maximum Day + Fire Demand = **171.2 L/s**

5. Booster Pumping Station Configuration

5.1 Existing Duty Pumps

The average day flow, maximum day flow, and peak hour flow for the proposed Village A development are 9.41 L/s, 21.17 L/s, and 31.8 L/s, respectively. The existing duty pumps can be retained and reconfigured to meet the new design flows. Under average day demand, only one duty pump will be in operation to meet the demand. When the demand increases to maximum day demand, two duty pumps will be operated to keep up with the increased demand. And all three duty pumps will be operated to meet up the peak hour demand. This configuration will thus have 3 duty pumps and 1 standby pump. Appendix A shows the System Curves for Average Day Flow (one pump operation), Maximum Day Flow (two pump operation) and Peak Hour Flow (three pump operation).

5.2 Total Dynamic Head for Duty Pumps

The total dynamic head is critical in the selection of a pump as it determines the type of pump required to deliver the water at the required pressure for a given flow rate and also the power required for a pump. The total dynamic head of the pump can be calculated as follows:

Total Dynamic Head = Static Head + Friction losses at PHBPS to Revitalization District on County Road 22 (HF1 + HF2) + Distribution Network Losses (HF3) + Minimum Supply Pressure (HF4)

- **Static Head**

Max Static Head = Min Hydraulic Grade at PHBPS – Hydraulic Grade Line (HGL) at highest point in Distribution Network

Max Static Head = Max Hydraulic Grade at PHBPS – Hydraulic Grade Line (HGL) at highest point in Distribution Network

- **Friction Losses at PHBPS**

The friction losses (h_f) through pipe fittings and pipe occur when water flows through the fittings and encounters resistance to flow. This resistance causes a pressure drop or head loss. The amount of friction loss in a pipe fitting is determined by several factors including the type of fitting, diameter of pipe, roughness coefficient of the pipe, and so on. Friction losses can be calculated using the equivalent length method:

$$(h_f) = \frac{10.634 \times L_{eq} \times Q^{1.852}}{C^{1.852} \times D_{element}^{4.87}}$$

Where, $L_{eq} = L_{eq(element)} (D_{eq} / D_{element})^5$

L_{eq} = equivalent length

$L_{eq(element)}$ = equivalent length of element

D_{eq} = diameter at which equivalent length estimated

$D_{element}$ = diameter of element

$L_{eq(element)} = K D_{element}/f$

K = head loss coefficient

$D_{element}$ = diameter of element

f = friction factor

Q = flow

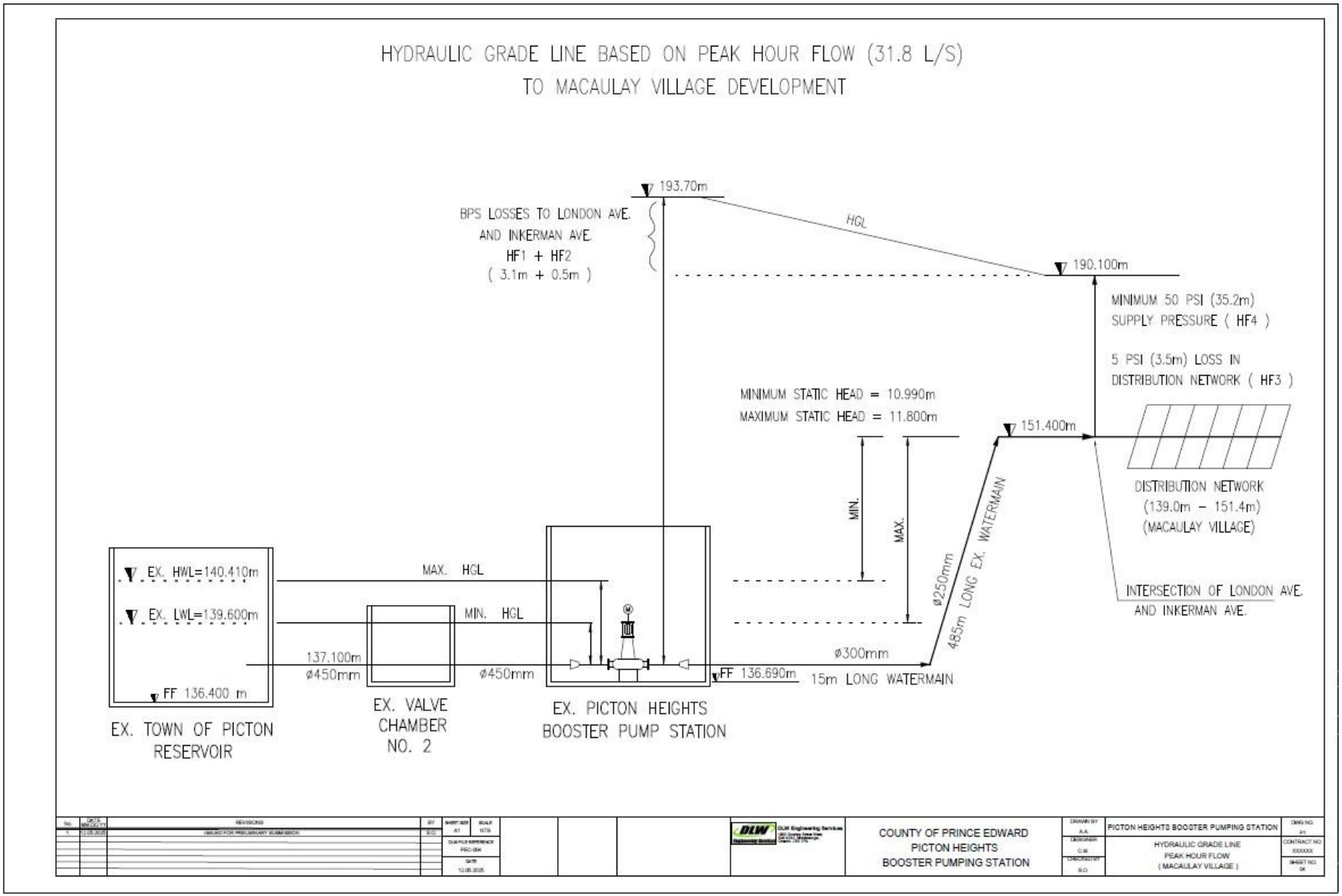
C = roughness coefficient

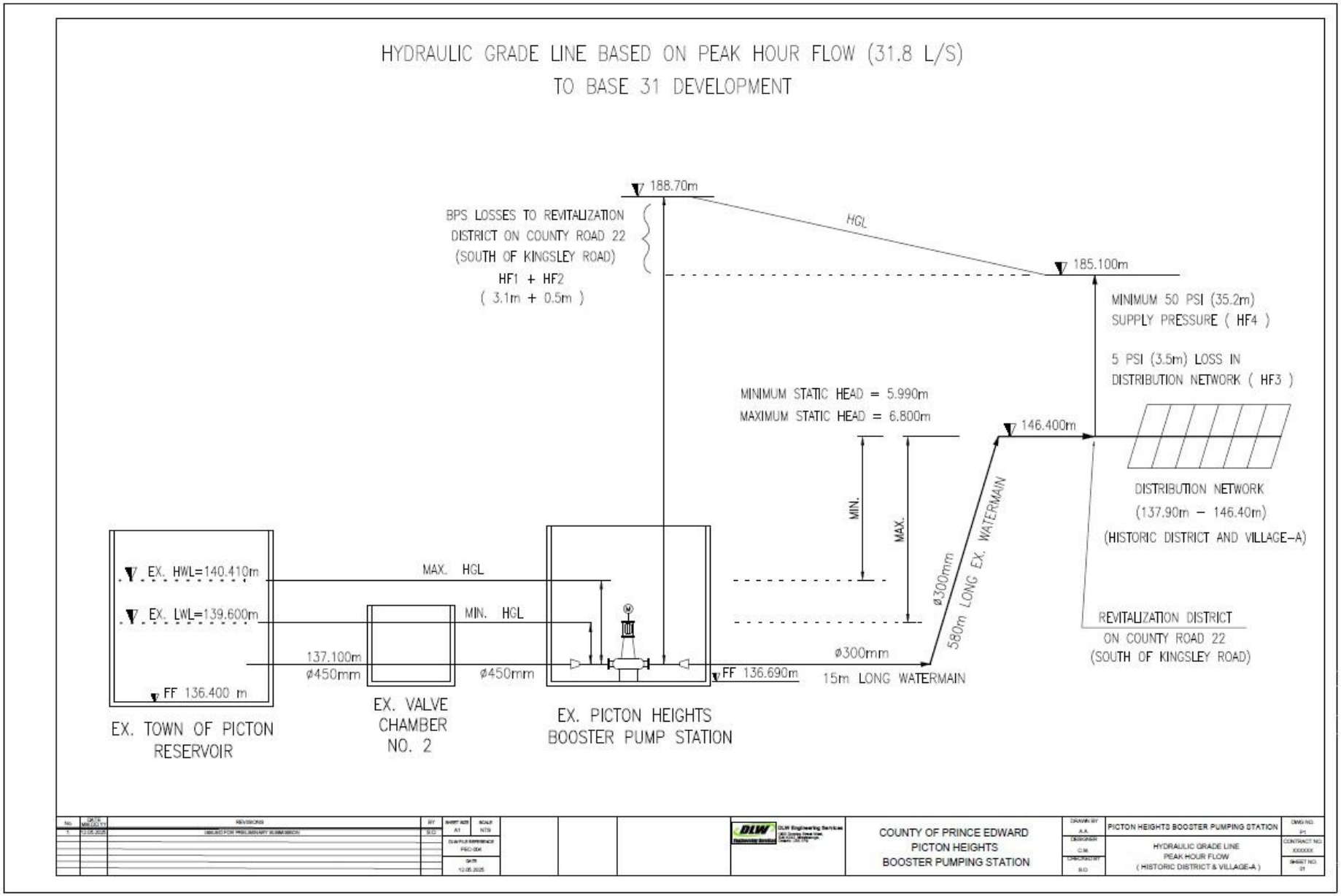
$D_{element}$ = diameter of element

Based on the water modeling analysis by RAE (Appendix C), the losses in the distribution network are estimated to be 5 psi (3.5m) at peak hour flows and the minimum supply pressure of 50 psi (35.2m). Table 3 shows the total dynamic head at the PHBPS under peak hour flow, maximum day flow, and average day flow conditions.

Table 5 Total Dynamic Head for Duty Pumps (C=130)

Design Flows	Flow Rate (L/s)	TDH (m)
Average Day Flow	9.41	45.04
Maximum Day Flow	21.17	47.03
Peak Hour Flow	31.8	48.37


HYDRAULIC GRADE LINE BASED ON PEAK HOUR FLOW (31.8 L/S)
TO MACAULAY VILLAGE DEVELOPMENT
193.70m
BPS LOSSES TO LONDON AVE.
AND INKERMAN AVE.
HF1 + HF2
(3.1m + 0.5m)
HGL
190.100m
MINIMUM 50 PSI (35.2m)
SUPPLY PRESSURE (HF4)
5 PSI (3.5m) LOSS IN
DISTRIBUTION NETWORK (HF3)
MINIMUM STATIC HEAD = 10.990m
MAXIMUM STATIC HEAD = 11.800m
151.400m
MIN.
MAX.
ø250mm
485m LONG EX. WATERMAIN
DISTRIBUTION NETWORK
(139.0m – 151.4m)
(MACAULAY VILLAGE)
INTERSECTION OF LONDON AVE.
AND INKERMAN AVE.
EX. HWL=140.410m
EX. LWL=139.600m
FF 136.400 m
MAX. HGL
MIN. HGL
137.100m
ø450mm
ø450mm
ø300mm
FF 136.690m
15m LONG WATERMAIN
EX. TOWN OF PICTON
RESERVOIR
EX. VALVE
CHAMBER
NO. 2
EX. PICTON HEIGHTS
BOOSTER PUMP STATION
COUNTY OF PRINCE EDWARD
PICTON HEIGHTS
BOOSTER PUMPING STATION
PICTON HEIGHTS BOOSTER PUMPING STATION
HYDRAULIC GRADE LINE
PEAK HOUR FLOW
(MACAULAY VILLAGE)


HYDRAULIC GRADE LINE BASED ON PEAK HOUR FLOW (31.8 L/S)
TO BASE 31 DEVELOPMENT
188.70m
BPS LOSSES TO REVITALIZATION
DISTRICT ON COUNTY ROAD 22
(SOUTH OF KINGSLEY ROAD)
HF1 + HF2
(3.1m + 0.5m)
HGL
185.100m
MINIMUM 50 PSI (35.2m)
SUPPLY PRESSURE (HF4)
5 PSI (3.5m) LOSS IN
DISTRIBUTION NETWORK (HF3)
MINIMUM STATIC HEAD = 5.990m
MAXIMUM STATIC HEAD = 6.800m
146.400m
MIN.
MAX.
Ø300mm
580m LONG EX. WATERMAIN
DISTRIBUTION NETWORK
(137.90m – 146.40m)
(HISTORIC DISTRICT AND VILLAGE–A)
EX. HWL=140.410m
EX. LWL=139.600m
FF 136.400 m
MAX. HGL
MIN. HGL
137.100m
ø450mm
ø450mm
FF 136.690m
Ø300mm
15m LONG WATERMAIN
REVITALIZATION DISTRICT
ON COUNTY ROAD 22
(SOUTH OF KINGSLEY ROAD)
EX. TOWN OF PICTON
RESERVOIR
EX. VALVE
CHAMBER
NO. 2
EX. PICTON HEIGHTS
BOOSTER PUMP STATION
COUNTY OF PRINCE EDWARD
PICTON HEIGHTS
BOOSTER PUMPING STATION
PICTON HEIGHTS BOOSTER PUMPING STATION
HYDRAULIC GRADE LINE
PEAK HOUR FLOW
(HISTORIC DISTRICT & VILLAGE-A)

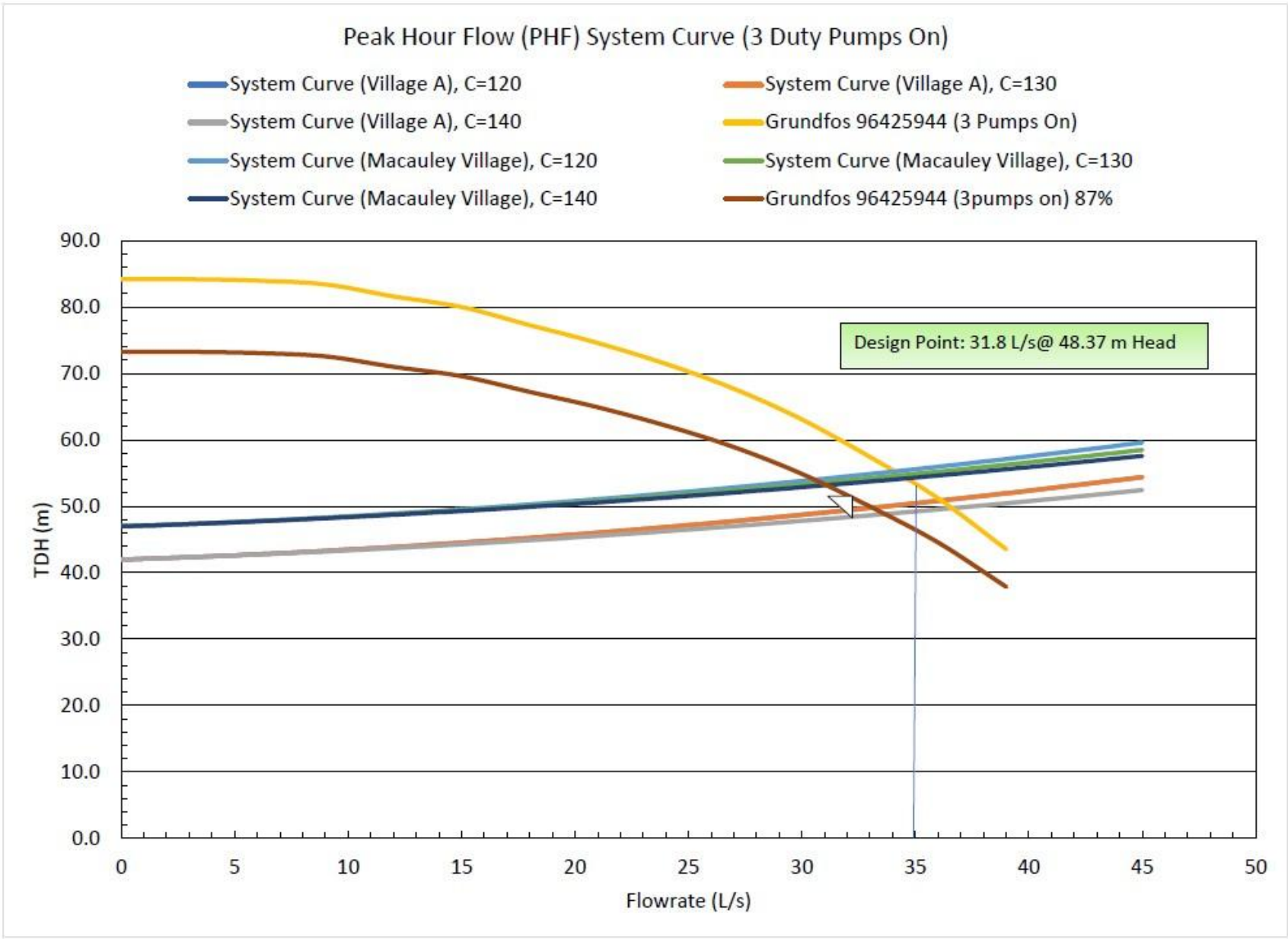

Peak Hour Flow (PHF) System Curve (3 Duty Pumps On)
System Curve (Village A), C=120
System Curve (Village A), C=130
System Curve (Village A), C=140
Grundfos 96425944 (3 Pumps On)
System Curve (Macauley Village), C=120
System Curve (Macauley Village), C=130
System Curve (Macauley Village), C=140
Grundfos 96425944 (3pumps on) 87%
Design Point: 31.8 L/s@ 48.37 m Head
TDH (m)
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0
5
10
15
20
25
30
35
40
45
50
Flowrate (L/s)

Table 4 Specification of Existing Duty Pump

Pump Performance Data	
Capacity (rated/normal) (L/s)	11.9
Total Developed Head (m)	50 m
Make	Grundfos
Model	CR32-3
Style	Vertical
Voltage/Phase	575/3 with VFD
Pump Motor Size	15 HP (11 kW)

5.3 Pressure Tanks

Pressure tanks are used to store and regulate water pressure within the system, especially during periods of low flow. They maintain consistent pressure when pumps are not running, ensuring a steady supply throughout the distribution network. By stabilizing pressure levels, pressure tanks prevent excessive strain on the pumps and minimize fluctuations caused by varying water demand. Additionally, they help smooth out water flow, reducing the frequency of pump cycling and thereby extending the lifespan of the pumping equipment. The pressure tank will be fed using a duty pumps. Therefore, the pressure tanks will be designed based on the capacity and characteristics of the duty pumps.

To determine the volume of pressure tanks,

$$\text{Flow} = \frac{\text{Flow at Cut-in Pressure} + \text{Flow at Cut-out Pressure}}{2}$$

Where,

Cut-in Pressure = lower pressure level at which the pressure switch will turn the duty pump on

Cut-out Pressure = higher pressure level at which the pressure switch will turn the duty pump off

The cut-in pressure and cut-out pressure are 72.4 psi (51 m) and 113.57 psi (80 m), respectively. Thus, flows at cut-in pressure and cut-out pressure are 5 L/s and 11.9 L/s, respectively.

$$\text{Flow} = \frac{5\frac{\text{L}}{\text{s}} + 11.9\frac{\text{L}}{\text{s}}}{2}$$

$$= 8.45 \text{ L/s}$$

To determine the volume of pressure tank,

$$\text{Volume of Pressure Tank} = \frac{\text{Volume of Water in Pressure Tank (Acceptance Volume)}}{\text{Acceptance Factor}}$$

Volume of Water in Pressure Tank = Flow × Pump Run Time

Pump will be operated for the pressure tank based on run time of 1.5 minutes.

Volume of Water in Pressure Tank = Flow × Pump Run Time

= 8.45 L/s × 60 s/minute × 1.5 minutes

= 760.5 L

Acceptance Factor $= 1 - \frac{\text{Cut-in Pressure} + 14.7}{\text{Cut-out Pressure} + 14.7}$

= 0.32

Total Volume of Pressure Tank $= \frac{\text{Volume of Water in Pressure Tank (acceptance volume)}}{\text{Acceptance Factor}}$

$= \frac{760.5\ L}{0.32}$

= 2369.5 L

Therefore, two pressure tanks with a working volume of 1200 L each will be required.

5.4 Selection of Pressure Tanks

Well-X-Trol has large capacity pressure tanks that are suitable for this application. Based on their catalogue we have selected WELL-X-TROL model WX-454C pressure tanks.

Table 5 Specification of the Proposed Pressure Tank

Parameter	Measurements
Volume (L)	1200
Height (mm)	2,489
Diameter (mm)	914
Maximum Working Pressure (psi g)	125
No of Tanks	2

5.5 Fire Pump

DLW has identified that the large hangar buildings in the Revitalization District will require larger fire flows than typical domestic fire flows and will be based on the Ontario Building Code (OBC) requirements. DLW has shown that the OBC fire flows will be 150 L/s based on these large hangar buildings. DLW had identified that the OBC-based fire flows will be provided at the PHBPS when Village A development is being serviced. Thus, based on the proposed development, the existing 82 L/s Fire Pump will need to be upgraded. The following Fire Flows are needed to service the proposed Village A development as per OBC and MECP guidelines.

	Design Flows (L/s)	
	Based on Ontario Building Code Requirements	**Based on MECP Design Guidelines**
Fire Flow	150	103.1
Fire Flow + Max Day Flow	171.2	126.6

Based on DLW's assessment of the Village A development system curve for Fire Flow and available pump selections, the following upgrade options have been considered:

i) Replace the existing Fire Pump, with a new Fire Pump sized for 160-166 L/s. This option falls slightly short of the requirements for Max Day + OBC Fire Flow but meets the Max Day + MECP Fire Flows.

ii) Operate the new 160-166 L/s Fire Pump in conjunction with the 2 duty pumps – which we know to operate at approximately 171.2 L/s, which meets both the MECP and OBC criteria for Max Day + Fire Flow.

iii) Replace the existing fire pump with a pump rated for 171.2 L/s, which meets both the MECP and OBC criteria for Max Day + Fire Flow. The motor required to drive this pump would require

5.6 Total Dynamic Head for Fire Pump

Total Dynamic Head = Static Head + Friction losses at PHBPS to Revitalization District on County Road 22 + Distribution Network Losses + Minimum Supply Pressure

- **Static Head**

Max Static Head = Min Hydraulic Grade at PHBPS – Hydraulic Grade Line (HGL) at highest point in Distribution Network

Max Static Head = Max Hydraulic Grade at PHBPS – Hydraulic Grade Line (HGL) at highest point in Distribution Network

- **Friction Losses at PHBPS**

The friction losses (h_f) through pipe fittings and pipe occur when water flows through the fittings and encounters resistance to flow. This resistance causes a pressure drop or head loss. The amount of friction loss in a pipe fitting is determined by several factors including the type of fitting, diameter of pipe, roughness coefficient of the pipe, and so on. Friction losses can be calculated using the equivalent length method:

$$(h_f) = \frac{10.634 \times L_{eq} \times Q^{1.852}}{C^{1.852} \times D_{element}^{4.87}}$$

Where, $L_{eq} = L_{eq(element)} (D_{eq} / D_{element})^5$

L_{eq} = equivalent length

$L_{eq(element)}$ = equivalent length of element

D_{eq} = diameter at which equivalent length estimated

$D_{element}$ = diameter of element

$L_{eq(element)} = K D_{element}/f$

K = head loss coefficient

$D_{element}$ = diameter of element

f = friction factor

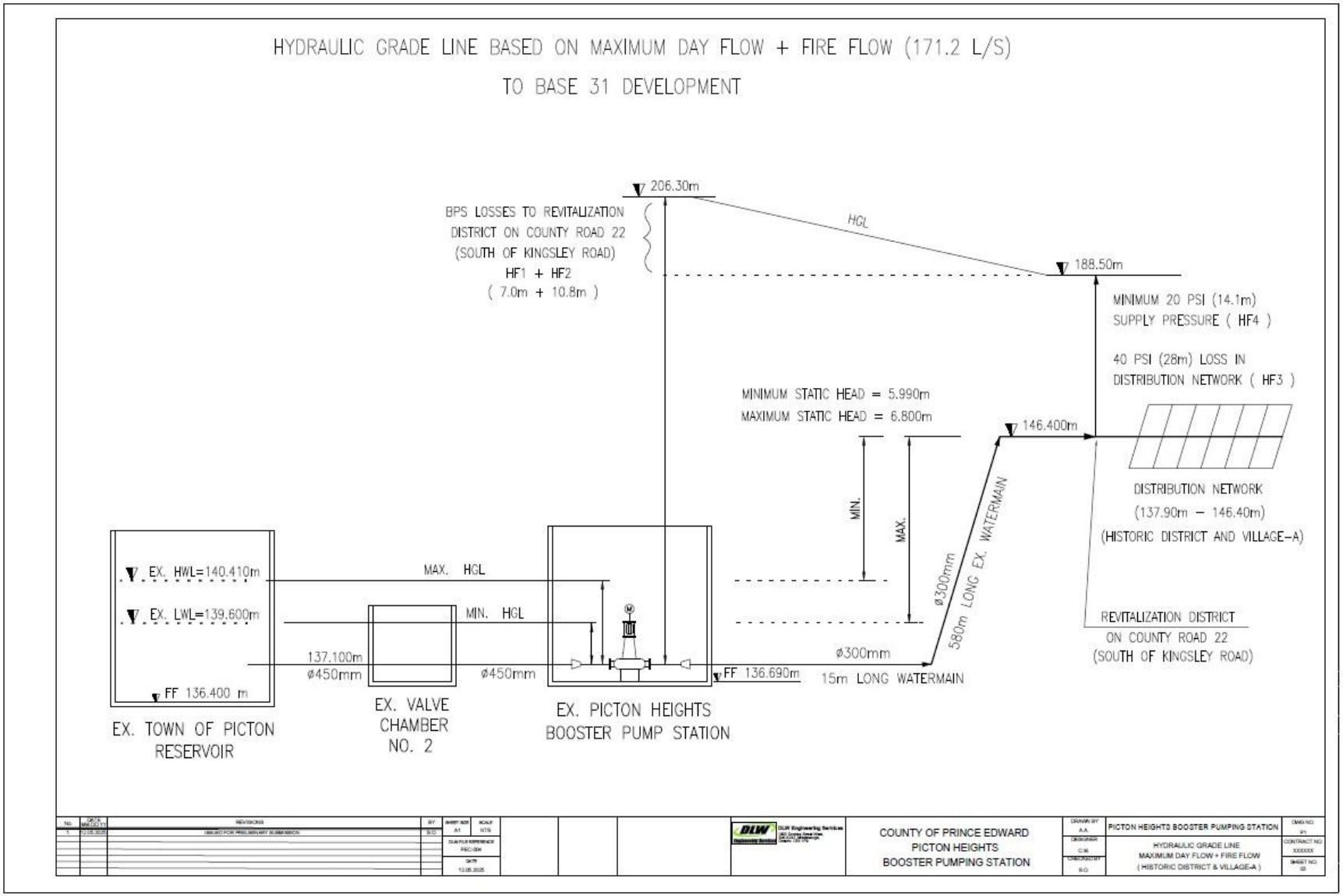
Q = flow

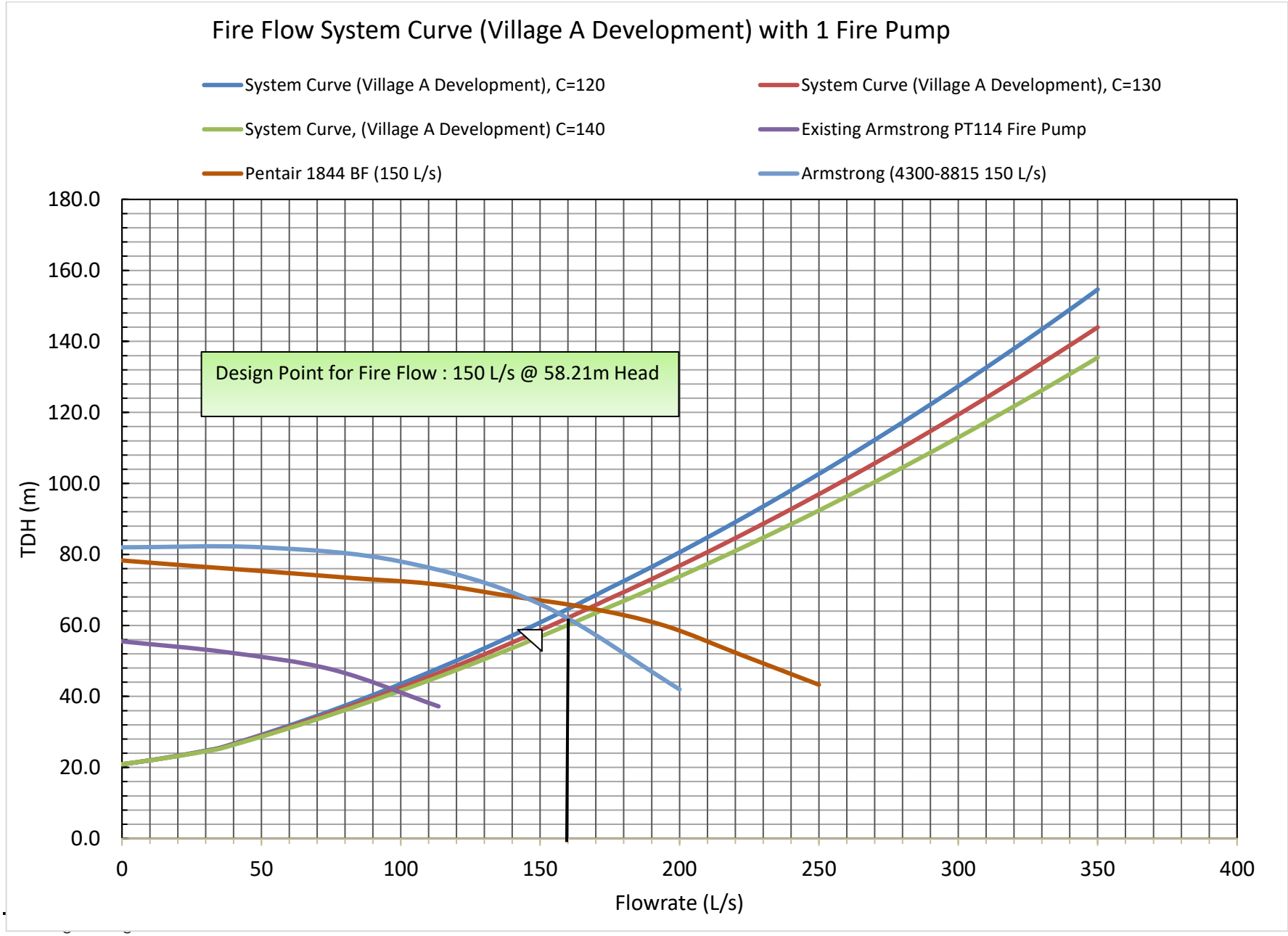
C = roughness coefficient

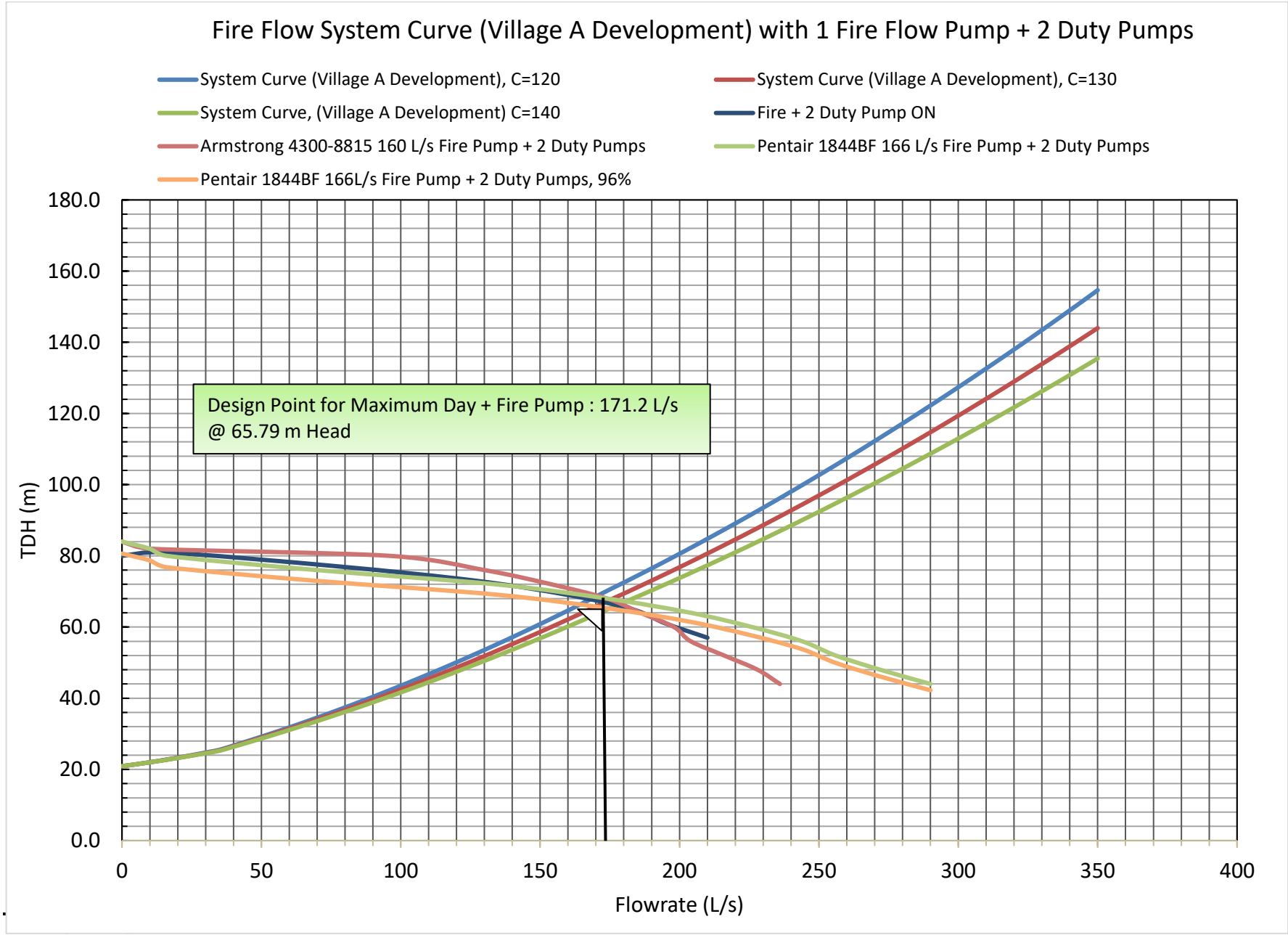
$D_{element}$ = diameter of element

Based on the water modeling analysis by RAE (Appendix C), the losses in the proposed distribution network for the Base31 development under fire plus maximum day flows are estimated to be 40 psi (28m) and the minimum supply pressure of 20 psi (14m) is maintained under these conditions. For C=130, the TDH for Fire Flow (150 L/s) is 58.62m. For Max Day + Fire Flow (171.2 L/s) the TDH would be 65.8m.

It is important to note that the new fire pump will deliver approximately 25 psi higher discharge pressure compared to the existing fire pump. As noted in the hydraulic modelling report, the design fire flows that will be delivered to the existing MacCauley Village development are not expected to match the fire flows at Base31 development. Based on the small diameter watermains in the existing MacCauley Village the flows are expected to be greater than their current 82 L/s but well below the 171.2 L/s that will be delivered to the Base31 development. The new fire flow pump will further improve fire flows and pressures being delivered to MacCauley Village during fire events.


HYDRAULIC GRADE LINE BASED ON MAXIMUM DAY FLOW + FIRE FLOW (171.2 L/S)
TO BASE 31 DEVELOPMENT
206.30m
BPS LOSSES TO REVITALIZATION DISTRICT ON COUNTY ROAD 22 (SOUTH OF KINGSLEY ROAD)
HF1 + HF2
(7.0m + 10.8m)
HGL
188.50m
MINIMUM 20 PSI (14.1m) SUPPLY PRESSURE (HF4)
40 PSI (28m) LOSS IN DISTRIBUTION NETWORK (HF3)
MINIMUM STATIC HEAD = 5.990m
MAXIMUM STATIC HEAD = 6.800m
146.400m
MIN.
MAX.
ø300mm
580m LONG EX. WATERMAIN
DISTRIBUTION NETWORK
(137.90m – 146.40m)
(HISTORIC DISTRICT AND VILLAGE–A)
REVITALIZATION DISTRICT
ON COUNTY ROAD 22
(SOUTH OF KINGSLEY ROAD)
EX. HWL=140.410m
EX. LWL=139.600m
FF 136.400 m
MAX. HGL
MIN. HGL
137.100m
ø450mm
ø450mm
FF 136.690m
ø300mm
15m LONG WATERMAIN
EX. TOWN OF PICTON RESERVOIR
EX. VALVE CHAMBER NO. 2
EX. PICTON HEIGHTS BOOSTER PUMP STATION
COUNTY OF PRINCE EDWARD
PICTON HEIGHTS
BOOSTER PUMPING STATION
PICTON HEIGHTS BOOSTER PUMPING STATION
HYDRAULIC GRADE LINE
MAXIMUM DAY FLOW + FIRE FLOW
(HISTORIC DISTRICT & VILLAGE-A)


Fire Flow System Curve (Village A Development) with 1 Fire Pump
System Curve (Village A Development), C=120
System Curve (Village A Development), C=130
System Curve, (Village A Development) C=140
Existing Armstrong PT114 Fire Pump
Pentair 1844 BF (150 L/s)
Armstrong (4300-8815 150 L/s)
Design Point for Fire Flow : 150 L/s @ 58.21m Head
TDH (m)
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
0
50
100
150
200
250
300
350
400
Flowrate (L/s)


Fire Flow System Curve (Village A Development) with 1 Fire Flow Pump + 2 Duty Pumps
System Curve (Village A Development), C=120
System Curve (Village A Development), C=130
System Curve, (Village A Development) C=140
Fire + 2 Duty Pump ON
Armstrong 4300-8815 160 L/s Fire Pump + 2 Duty Pumps
Pentair 1844BF 166 L/s Fire Pump + 2 Duty Pumps
Pentair 1844BF 166L/s Fire Pump + 2 Duty Pumps, 96%
Design Point for Maximum Day + Fire Pump : 171.2 L/s
@ 65.79 m Head
TDH (m)
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
0
50
100
150
200
250
300
350
400
Flowrate (L/s)

5.7 Selection of Fire Pump

The fire pump selections were provided by MPC (Pentair Pumps) and Directrik (Flowserve and Armstrong Pumps). The pump curves, catalogue information, and supplier quotations are included in Appendix B.

To retain the existing standby generator, pump options were limited to a maximum motor size of 200 hp (149 kW). Preference was also given to pump styles similar to the existing unit due to space constraints at the PHBPS. Among the suppliers contacted, only Pentair and Armstrong offered a vertical split-case pump comparable to the existing fire pump.

MPC (Pentair 1844 BF) provided the most suitable selection, offering a pump capable of delivering a flow up to 166 L/s at the required pressure. Directrik (Armstrong 4300-8815) offered a pump capable of delivering a flow of 160 L/s. Both options can operate in parallel with the two existing duty pumps to achieve a combined flow of approximately 171.2 L/s, satisfying both MECP and OBC requirements for Max Day + Fire Flow.

It is important to note that both MPC (Pentair) and Directrik (Armstrong 4300-1015) also presented pump options rated at 171.2 L/s (Max Day + Fire Flow). However, these were pumps that would be required to be driven using 250 hp (189 kW) motors, which would require upsizing the existing standby generator.

6. Standby Power Generator

The existing standby generator at the Picton Heights Booster Pumping Station is rated at 250 kW. In accordance with standard practice, generators are typically loaded to a maximum of 80% of their rated capacity. Therefore, the total connected load should not exceed 200 kW to ensure reliable operation. The generator must be capable of supplying sufficient power to operate the fire pump, as well as the duty pumps (if required) and all essential building electrical loads.

The existing fire pump was supplied with a solid-state soft starter to reduce inrush current at pump startup. The proposed design is based on the provision of a new variable frequency drive for the fire flow pump and continued use of the variable frequency drives for the booster pumps. Based on the upgrade options discussed for the fire flow pumps and the existing duty pumps, the proposed loads on the generator, in addition to the building loads are as follows:

Load Summary

Component	**Hp**	**kW**
Max Duty Pump	200	149
Booster Pump-1	15	11
Booster Pump -2	15	11
Station Building Load		30
Total Loads services by generator		201

Based on the above and in order to retain the existing generator, DLW recommends upgrading to a new 150-166 L/s Fire Pump with a VFD in order to mitigate motor inrush on the existing generator. Without the provision of a VFD for the fire flow pump, the standby generator would likely need to be increased in size. Likewise, the provision a standalone 171.17 L/s fire flow pump would result in increasing the size of the generator.

7. Electrical Service

The existing station electrical service is based on a 400AF/250AT, 600V, 3P, 4W service entrance. The utility supply is based on 3-75kVA=225kVA pole mounted transformers. To accommodate the new fire flow pump the following electrical upgrades will be required:

i) Upgrade the existing MCC main breaker from 400AF/250AT to 400AF/350AT
ii) Remove the existing 75Hp soft starter and field retrofit the MCC to install a 300A, 600V breaker to feed the new VFD.
iii) Provide a new standalone VFD for the new Fire Pump

The existing power cabling from the pole mounted transformers to the MCC is 2-250MCM per phase rated for 510Amps and does not need to be changed, provided the utility leaves the pole mounted transformers unchanged. We see no reason to change the transformers.

8. HVAC

To mitigate heat rejection from the new Fire Flow Pump VFD a split air conditioning system has been designed.

i) Heat load to be mitigated is in the order of 5.0kW

9. System Controls/Alarms

The control systems will be designed in coordination with the Prince Edward County. Key elements of this system will include:

- The existing station automation is based on a SCADA PAC PLC.
- The new fire flow pump VFD will be integrated into the existing SCADA PAC PLC
- The existing system automation and programming will be modified to suit any operational modifications.
- The new fire flow pump VFD will be operated based on a fixed speed and not variable speed

10. Monitoring

The Owner will contract a qualified firm to provide ongoing operations and maintenance of the station including routine inspections and completing repairs as required. The Owner will also contract a 24-hour alarm company to monitor the station alarms and contact on-call service personnel as retained by the Owner.

11. Other Considerations

The station will be equipped with the following:

- Provision of VFD for the new fire flow pump
- Re-use the existing SCADA PAC PLC.
- The existing MCC will be field retrofit to increase the main breaker from a 250AT to a 350AT.
- The existing MCC will be field retrofit to remove the existing fire flow pump soft starter and provide a 300A breaker to fed the new fire flow pump VFD
- The continued use of a PRV for the existing Macauley Village Development will be assessed.

12. Conclusions & Recommendations

Based on DLW's assessment, the existing booster pumps could be retained but need to be reconfigured with 3 duty and 1 standby pump, to meet the peak hour demand for the proposed Village A development. The existing fire pump will need to be upgraded to a new fire flow pump rated at 160-166 L/s, which can be operated in combination with 2 existing duty pumps (if required) to satisfy both MECP and OBC requirements for Maximum Day Flow + Fire Flow. Furthermore, the PHBPS is equipped with an existing 250 kW standby generator which is sufficiently sized to accommodate the proposed upgrades, including the proposed fire flow pump replacement with new fire flow pump and associated soft starter. Also, the addition of a pressure tank will eliminate the momentary drops in system pressure when the fire pump is called for or potentially when the booster pump stop operating under low flow conditions.

Respectfully Submitted,

DLW ENGINEERING SERVICES LTD.

SOBrien

Stephen O'Brien, P.Eng.
President

APPENDIX A

HYDRAULIC CALCULATIONS

Equivalent Length (Duty Pump)

Equivalent Length (mm) 300 Pipe Size

	No.	Element	No. of Elements	Headloss Co-efficient (K)	Friction Factor (f)	Diameter (mm)	Equivalent Length of Element (m)	Equivalent Length @ 300 mm (m)
Lateral	1	Inlet Loss	1	0.50	0.018	62	1.7	4,568
	2	Φ 62 mm × Φ 75 mm Increaser	1	0.06	0.015	62	0.2	658
	3	1.9 m of Φ 75 mm Pipe	1	-	0.018	75	1.9	1,946
	4	Φ 75 mm Check Valve	1	2.50	0.018	75	10.4	10,667
	5	Φ 75 mm Butterfly Valve	1	0.65	0.018	75	2.7	2,773
	6	Φ 75 × Φ 75 × Φ 75 mm Tee (Branch Flow)	1	0.69	0.018	75	2.9	2,944
	7	1.4 m of Φ 75 mm Pipe	1	-	0.018	75	1.4	1,434
	8	Φ 75 mm × Φ 150 mm Increaser	1	0.06	0.015	150	0.6	19
	9	Φ 75 × Φ 150 × Φ 150 mm Tee (Straight Flow)	1	0.14	0.015	150	1.4	45
	10	1.4 m of Φ 150 mm Pipe	1	-	0.018	150	1.4	45
	11	Φ 75 × Φ 150 × Φ 150 mm Tee (Straight Flow)	1	0.14	0.015	150	1.4	45
	12	1.4 m of Φ 150 mm Pipe	1	-	0.018	150	1.4	45
	13	Φ 75 × Φ 150 × Φ 150 mm Tee (Straight Flow)	1	0.14	0.015	150	1.4	45
	14	Φ 150 mm × Φ 75 mm Reducer	1	0.06	0.018	75	0.3	256
	15	2.4 m of Φ 75 mm Pipe	1	-	0.018	75	2.4	2,458
	16	Φ 75 mm Butterfly Valve	1	0.65	0.018	75	2.7	2,773
							Sub-Total of Equivalent - Length Lateral (m) - $L_{eq(Lateral)}$:	**30,719**

	No.	Element	No. of Elements	Headloss Co-efficient (K)	Friction Factor (f)	Diameter (mm)	Equivalent Length of Element (m)	Equivalent Length @ 300 mm (m)
Header	1	Φ 250 × Φ 75 × Φ 250 mm Tee (Branch Flow)	1	0.69	0.014	250	12.3	30.7
	2	Φ 250 mm × Φ 300 mm Increaser	1	0.06	0.013	300	1.4	1.4
	3	0.2 m of Φ 300 mm Pipe	1	-	0.013	300	0.2	0.2
	4	Φ 300 × Φ 250 × Φ 300 mm Tee (Straight Flow)	1	0.14	0.013	300	3.2	3.2
	5	15 m of Φ 300 mm Pipe	1	-	0.013	300	15.0	15
	6	Φ 300 × Φ 250 × Φ 250 mm Tee (Branch Flow)	1	0.69	0.014	300	14.8	15
	7	485 m of Φ 250 mm Pipe	1	-	0.014	300	580.0	580
							Sub-Total of Equivalent - Length Header (m) - $L_{eq(Header)}$:	**645.3**

Total Equivalent Length (m): **31,365**

Notes:

Headloss coefficient Source: Fluid mechanics Table 5.3

Friction Factor Source: Midhurst WTP

Headloss Coefficient for Increaser/Reducer: Steves KMK Book

d1	d2	angle	K
300	400	14	0.0608823

$L_{eq}=(K*D)/f$
Derived from:
$h_f=(f*L_{eq}*V^2)/(D*2g)$

$L_{eq(400)}=L_{eq(400)}*(D300/D_{150})^5$
Derived from:
$h_f=(f*L_{eq1}*V_1^2)/(D_1*2g)=(f*L_{eq2}*V_2^2)/(D_2*2g)$

Equivalent Length (Fire Pump)

Equivalent Length (mm) 300

	No.	Element	No. of Elements	Headloss Co-efficient (K)	Friction Factor (f)	Diameter (mm)	Equivalent Length of Element (m)	Equivalent Length @ 250 mm (m)
Lateral	1	Inlet Loss	1	0.50	0.014	200	7.1	54.2
	2	0.3 m of Φ 300 mm Pipe	1	-	0.014	200	0.3	2.3
	3	Φ 200 mm Check Valve	1	2.50	0.014	200	35.7	271.2
	4	Φ 200 mm Butterfly Valve	1	0.65	0.014	200	9.3	71
	5	Φ 200 mm × Φ 250 mm Increaser	1	0.06	0.015	250	1.0	2
	6	0.3 m of Φ 250 mm Pipe	1	-	0.015	250	0.3	0.7
							Sub-Total of Equivalent - Length Lateral (m) - $L_{eq(Lateral)}$:	**401.5**

	No.	Element	No. of Elements	Headloss Co-efficient (K)	Friction Factor (f)	Diameter (mm)	Equivalent Length of Element (m)	Equivalent Length @ 250 mm (m)
Header	1	Φ 250 × Φ 75 × Φ 250 mm Tee (Straight Flow)	1	0.14	0.015	250	2.3	5.8
	2	0.3 m of Φ 250 mm Pipe	1	-	0.015	250	0.3	0.7
	3	Φ 250 mm × Φ 300 mm Increaser	1	0.06	0.013	300	1.4	1.4
	4	0.3 m of Φ 300 mm Pipe	1	-	0.013	300	0.3	0.3
	5	Φ 300 × Φ 250 × Φ 300 mm Tee (Straight Flow)	1	0.14	0.013	300	3.2	3.2
	6	15 m of Φ 300 mm Pipe	1	-	0.013	300	15.0	15
	7	Φ 300 × Φ 250 × Φ 250 mm Tee (Branch Flow)	1	0.69	0.014	300	14.8	15
	8	485 m of Φ 250 mm Pipe	1	-	0.014	300	580.0	580
							Sub-Total of Equivalent - Length Header (m) - $L_{eq(Header)}$:	**621.3**

Total Equivalent Length (m): **1022.7**

Notes:

Headloss coefficient Source: Fluid mechanics Table 5.3

Friction Factor Source: Midhurst WTP

Headloss Coefficient for Increaser/Reducer: Steves KMK Book

d1	d2	angle	K
300	400	14	0.0608823

L_{eq}=(K*D)/f

Derived from:

$h_f=(f*L_{eq}*V^2)/(D*2g)$

$L_{eq(300)}=L_{eq(300)}*(D300/D_{150})^5$

Derived from:

$h_f=(f*L_{eq1}*V_1^2)/(D_1*2g)=(f*L_{eq2}*V_2^2)/(D_2*2g)$

TDH Calculation based on Peak Hour Flow

C **130**

Q_T	$h_{f(Lateral)}$	$h_{f(Header)}$	$h_{f3(head\ loss\ in\ Distribution\ Network)}$	$h_{f4(Minimum\ Supply\ Pressure)}$	Min TDH	Max TDH
(L/s)	(m)	(m)	(m)	(m)	(m)	(m)
0.00	0.000000	0.000000	0.000000	35.2	41.19	42.00
0.50	0.001407	0.000226	0.050287	35.2	41.24	42.05
1.00	0.005080	0.000816	0.100575	35.2	41.30	42.11
1.50	0.010765	0.001730	0.150862	35.2	41.35	42.16
2.00	0.018339	0.002947	0.201149	35.2	41.41	42.22
2.50	0.027724	0.004455	0.251437	35.2	41.47	42.28
3.00	0.038860	0.006244	0.301724	35.2	41.54	42.35
3.50	0.051700	0.008307	0.352011	35.2	41.60	42.41
4.00	0.066205	0.010638	0.402299	35.2	41.67	42.48
4.50	0.082343	0.013231	0.452586	35.2	41.74	42.55
5.00	0.100085	0.016081	0.502874	35.2	41.81	42.62
5.50	0.119406	0.019186	0.553161	35.2	41.88	42.69
6.00	0.140285	0.022541	0.603448	35.2	41.96	42.77
6.50	0.162701	0.026142	0.653736	35.2	42.03	42.84
7.00	0.186637	0.029988	0.704023	35.2	42.11	42.92
7.50	0.212075	0.034075	0.754310	35.2	42.19	43.00
8.00	0.239000	0.038402	0.804598	35.2	42.27	43.08
8.50	0.267399	0.042965	0.854885	35.2	42.36	43.17
9.00	0.297257	0.047762	0.905172	35.2	42.44	43.25
9.50	0.328563	0.052793	0.955460	35.2	42.53	43.34
10.00	0.361306	0.058053	1.005747	35.2	42.62	43.43
10.50	0.395474	0.063543	1.056034	35.2	42.71	43.52
10.68	0.408121	0.065576	1.074138	35.2	42.74	43.55
11.00	0.431057	0.069261	1.106322	35.2	42.80	43.61
11.50	0.468045	0.075204	1.156609	35.2	42.89	43.70
12.00	0.506429	0.081371	1.206897	35.2	42.98	43.79
12.50	0.546201	0.087762	1.257184	35.2	43.08	43.89
13.00	0.587352	0.094374	1.307471	35.2	43.18	43.99
13.50	0.629873	0.101206	1.357759	35.2	43.28	44.09
14.00	0.673759	0.108257	1.408046	35.2	43.38	44.19
14.50	0.719000	0.115527	1.458333	35.2	43.48	44.29
15.00	0.765590	0.123013	1.508621	35.2	43.59	44.40
15.50	0.813522	0.130714	1.558908	35.2	43.69	44.50
16.00	0.862791	0.138630	1.609195	35.2	43.80	44.61
16.50	0.913388	0.146760	1.659483	35.2	43.91	44.72
17.00	0.965310	0.155103	1.709770	35.2	44.02	44.83
17.50	1.018548	0.163657	1.760057	35.2	44.13	44.94
18.00	1.073099	0.172422	1.810345	35.2	44.25	45.06
18.50	1.128957	0.181397	1.860632	35.2	44.36	45.17
19.00	1.186115	0.190581	1.910920	35.2	44.48	45.29
19.50	1.244570	0.199973	1.961207	35.2	44.60	45.41
20.00	1.304316	0.209573	2.011494	35.2	44.72	45.53
20.50	1.365348	0.219380	2.061782	35.2	44.84	45.65
21.00	1.427662	0.229392	2.112069	35.2	44.96	45.77
21.50	1.491253	0.239610	2.162356	35.2	45.08	45.89
22.00	1.556116	0.250032	2.212644	35.2	45.21	46.02
22.50	1.622248	0.260658	2.262931	35.2	45.34	46.15
23.00	1.689644	0.271487	2.313218	35.2	45.46	46.27
23.50	1.758300	0.282518	2.363506	35.2	45.59	46.40
24.00	1.828211	0.293751	2.413793	35.2	45.73	46.54
24.50	1.899375	0.305186	2.464080	35.2	45.86	46.67
25.00	1.971787	0.316820	2.514368	35.2	45.99	46.80
25.50	2.045444	0.328655	2.564655	35.2	46.13	46.94
26.00	2.120342	0.340690	2.614943	35.2	46.27	47.08
26.50	2.196476	0.352923	2.665230	35.2	46.40	47.21
27.00	2.273845	0.365354	2.715517	35.2	46.54	47.35
27.50	2.352444	0.377983	2.765805	35.2	46.69	47.50
28.00	2.432270	0.390809	2.816092	35.2	46.83	47.64
28.50	2.513321	0.403832	2.866379	35.2	46.97	47.78
29.00	2.595591	0.417051	2.916667	35.2	47.12	47.93
29.50	2.679079	0.430466	2.966954	35.2	47.27	48.08
30.00	2.763782	0.444076	3.017241	35.2	47.42	48.23
30.50	2.849696	0.457880	3.067529	35.2	47.57	48.38
31.00	2.936818	0.471878	3.117816	35.2	47.72	48.53
31.80	3.078720	0.494679	3.198276	35.2	47.96	48.77
32.00	3.114677	0.500456	3.218391	35.2	48.02	48.83
32.50	3.205407	0.515034	3.268678	35.2	48.18	48.99
33.00	3.297335	0.529805	3.318966	35.2	48.34	49.15
33.50	3.390457	0.544768	3.369253	35.2	48.49	49.30
34.00	3.484770	0.559922	3.419540	35.2	48.65	49.46
34.50	3.580273	0.575267	3.500000	35.2	48.85	49.66
35.00	3.676963	0.590803	3.520115	35.2	48.98	49.79
35.50	3.774836	0.606529	3.570402	35.2	49.14	49.95
36.00	3.873891	0.622444	3.620690	35.2	49.31	50.12
36.50	3.974126	0.638550	3.670977	35.2	49.47	50.28
37.00	4.075537	0.654844	3.721264	35.2	49.64	50.45
37.50	4.178122	0.671327	3.771552	35.2	49.81	50.62
38.00	4.281879	0.687999	3.821839	35.2	49.98	50.79
38.50	4.386806	0.704858	3.872126	35.2	50.15	50.96
39.00	4.492901	0.721905	3.922414	35.2	50.33	51.14
39.50	4.600161	0.739139	3.972701	35.2	50.50	51.31
40.00	4.708584	0.756560	4.022989	35.2	50.68	51.49
40.50	4.818168	0.774168	4.073276	35.2	50.86	51.67
41.00	4.928910	0.791961	4.123563	35.2	51.03	51.84
41.50	5.040809	0.809941	4.173851	35.2	51.21	52.02
42.00	5.153863	0.828106	4.224138	35.2	51.40	52.21
42.50	5.268069	0.846456	4.274425	35.2	51.58	52.39
43.00	5.383426	0.864992	4.324713	35.2	51.76	52.57
43.50	5.499932	0.883711	4.375000	35.2	51.95	52.76
44.00	5.617584	0.902615	4.425287	35.2	52.14	52.95
44.50	5.736380	0.921703	4.475575	35.2	52.32	53.13
45.00	5.856320	0.940975	4.525862	35.2	52.51	53.32

Notes:

Hazen Williams Equation

$h_f = 10.634 * L_{eq} * Q^{1.852} / (C^{1.852} * D^{4.87})$

TDH (Total Dynamic Head) = Static Head+Loss at BPS+Hydraulic Head

TDH Calculation based on Fire Flow

C **130**

Q_T (L/s)	$h_{f(Lateral)}$ (m)	$h_{f(Header)}$ (m)	$h_{f3(head\ loss\ in\ Distribution\ Network)}$ (m)	$h_{f4(Minimum\ Supply\ Pressure)}$ (m)	Min TDH (m)	Max TDH (m)
0.00	0.000000	0.000000	0.000000	14.10	20.09	20.90
5.00	0.010006	0.015483	0.502874	14.10	20.62	21.43
10.00	0.036120	0.055894	1.005747	14.10	21.19	22.00
15.00	0.076537	0.118436	1.508621	14.10	21.79	22.60
20.00	0.130394	0.201776	2.011494	14.10	22.43	23.24
25.00	0.197122	0.305033	2.514368	14.10	23.11	23.92
30.00	0.276298	0.427554	3.017241	14.10	23.81	24.62
31.80	0.307783	0.476274	3.198276	14.10	24.07	24.88
35.00	0.367590	0.568822	3.520115	14.10	24.55	25.36
40.00	0.470722	0.728412	4.418529	14.10	25.71	26.52
45.00	0.585462	0.905965	5.301730	14.10	26.88	27.69
50.00	0.711609	1.101170	6.184932	14.10	28.09	28.90
55.00	0.848987	1.313753	7.068133	14.10	29.32	30.13
60.00	0.997437	1.543470	7.951334	14.10	30.58	31.39
65.00	1.156817	1.790101	8.834535	14.10	31.87	32.68
70.00	1.326999	2.053447	9.717736	14.10	33.19	34.00
75.00	1.507865	2.333326	10.600937	14.10	34.53	35.34
82.00	1.778822	2.752614	11.837419	14.10	36.46	37.27
85.00	1.901223	2.942022	12.367340	14.10	37.30	38.11
90.00	2.113520	3.270538	13.250541	14.10	38.72	39.53
95.00	2.336110	3.614982	14.133742	14.10	40.17	40.98
100.00	2.568912	3.975228	15.016943	14.10	41.65	42.46
105.00	2.811847	4.351156	15.900144	14.10	43.15	43.96
110.00	3.064844	4.742652	16.783345	14.10	44.68	45.49
115.00	3.327833	5.149611	17.666547	14.10	46.23	47.04
120.00	3.600749	5.571931	18.549748	14.10	47.81	48.62
125.00	3.883528	6.009514	19.432949	14.10	49.42	50.23
130.00	4.176113	6.462270	20.316150	14.10	51.04	51.85
135.00	4.478445	6.930111	21.199351	14.10	52.70	53.51
140.00	4.790472	7.412951	22.082552	14.10	54.38	55.19
145.00	5.112139	7.910712	22.965753	14.10	56.08	56.89
150.00	5.443399	8.423315	23.848955	14.10	57.81	58.62
155.00	5.784202	8.950686	24.732156	14.10	59.56	60.37
160.00	6.134503	9.492754	25.615357	14.10	61.33	62.14
165.00	6.494256	10.049450	26.498558	14.10	63.13	63.94
170.00	6.863420	10.620707	27.381759	14.10	64.96	65.77
171.17	6.951158	10.756477	27.588428	14.10	65.39	66.20
175.00	7.241951	11.206461	28.264960	14.10	66.80	67.61
180.00	7.629812	11.806650	29.048991	14.10	68.58	69.39
185.00	8.026962	12.421215	29.855908	14.10	70.39	71.20
190.00	8.433363	13.050096	30.662824	14.10	72.24	73.05
195.00	8.848981	13.693237	31.469741	14.10	74.10	74.91
200.00	9.273778	14.350584	32.276657	14.10	75.99	76.80
205.00	9.707721	15.022084	33.083573	14.10	77.90	78.71
210.00	10.150777	15.707684	33.890490	14.10	79.84	80.65
215.00	10.602912	16.407335	34.697406	14.10	81.80	82.61
220.00	11.064096	17.120988	35.504323	14.10	83.78	84.59
225.00	11.534298	17.848596	36.311239	14.10	85.78	86.59
230.00	12.013487	18.590111	37.118156	14.10	87.81	88.62
235.00	12.501635	19.345489	37.925072	14.10	89.86	90.67
240.00	12.998713	20.114686	38.731988	14.10	91.94	92.75
245.00	13.504693	20.897658	39.538905	14.10	94.03	94.84
250.00	14.019549	21.694364	40.345821	14.10	96.15	96.96
255.00	14.543253	22.504763	41.152738	14.10	98.29	99.10
260.00	15.075780	23.328814	41.959654	14.10	100.45	101.26
265.00	15.617104	24.166479	42.766571	14.10	102.64	103.45
270.00	16.167201	25.017720	43.573487	14.10	104.85	105.66
275.68	16.802724	26.001151	44.490144	14.10	107.38	108.19
280.00	17.293616	26.760776	45.187320	14.10	109.33	110.14
285.00	17.869888	27.652520	45.994236	14.10	111.61	112.42
290.00	18.454838	28.557693	46.801153	14.10	113.90	114.71
295.00	19.048445	29.476262	47.608069	14.10	116.22	117.03
300.00	19.650686	30.408191	48.414986	14.10	118.56	119.37
305.00	20.261540	31.353450	49.221902	14.10	120.93	121.74
310.00	20.880986	32.312003	50.028818	14.10	123.31	124.12
315.00	21.509003	33.283821	50.835735	14.10	125.72	126.53
320.00	22.145572	34.268870	51.642651	14.10	128.15	128.96
325.00	22.790672	35.267121	52.449568	14.10	130.60	131.41
330.00	23.444283	36.278544	53.256484	14.10	133.07	133.88
335.00	24.106387	37.303107	54.063401	14.10	135.56	136.37
340.00	24.776964	38.340783	54.870317	14.10	138.08	138.89
345.00	25.455997	39.391543	55.677233	14.10	140.61	141.42
350.00	26.143466	40.455358	56.484150	14.10	143.17	143.98

Notes:

Hazen Williams Equation

$h_i = 10.634 * L_{eq} * Q^{1.852} / (C^{1.852} * D^{4.87})$

TDH (Total Dynamic Head) = Static Head+Loss at BPS

Pressure Tank Sizing

Q at Cut-out pressure	5	L/S		
Q at Cut-in pressure	11.9	L/S		
Flow	8.45	L/S		
				(1 L/S = 15.85 US Gallon/minute)
	133.9325	US Gallon/minute		
Pump Flow Rate	133.9325	US Gallon/minute		
Minimum Pump Run Time	1.5	minute		
Minimum Tank Volume	760.5	L		
Minimum Tank Pressure	72.4020443	PSI	51	m
Maximum Tank Pressure	113.571834	PSI	80	m
Acceptance Factor	0.32			
Min Required Volume	**2369.5**	L	789.8245303	
Supplier: WELL-X-TROL; Model:WX-454C	792	US Gallon		
	1200	L		
Min Number of Tanks	**2.0**			

APPENDIX B

FIRE PUMP TECHNICAL INFORMATION

Submittal

Ref. #: SQJKM001185_1

split-coupled vertical in-line pump

Model: Series 4300 - 8x8x15 - 4p - 200 hp - (Factory Choice Motor)

Project name:		**Representative:**	Jeff Walsh
Location:		**Phone number:**	
Date submitted:	10/31/2025 6:17 PM	**e-mail:**	jwalsh@directrik.com
Engineer:		**Submitted by:**	Walsh, Jeff

Application design data

Tag number:		Piping configuration:	Single
Service:		Suction pressure:	0 ft
Equipment Location:		Fluid:	Non-Potable Fluid - Water
Qty:	1	Fluid operating temp.:	60 ˚F
Total system flow:	150 L/s	Duty flow per pump:	150 L/s
System head:	66 m	Viscosity:	31 SSU
Total dissolved solids:	0 ppm	Specific gravity:	1.0000
NPSHR:	4.59 m	Absorbed Power/BHP:	160.42 hp
%Mtr Safety*:	24.67%	Efficiency at Design:	81.02 %
Outlet velocity:	15.25 ft/s	Impeller diameter:	15.5 in
PEIcl:	0.99	ERcl:	1
Standby qty:	0	Pump/motor run qty:	1
Load Profile Location:	NA	Building Type:	NA
Climate Zone Type:	NA	Time Period:	8760 (1 Year)
Ambient Temperature Range:	14 ˚F to 104 ˚F		

*Motor safety factor above duty point.

Materials of construction

Construction:	Bronze Fitted	Impeller:	Bronze
Rating:	ANSI-125	Pump shaft:	416 Stainless Steel
Connections:	Inlet: 8 in, Outlet: 8 in	Flush line:	Braided Stainless Steel
Casing (volute):	Cast Iron	Casing gasket:	Confined Non-Asbestos Fiber

Mechanical seal data

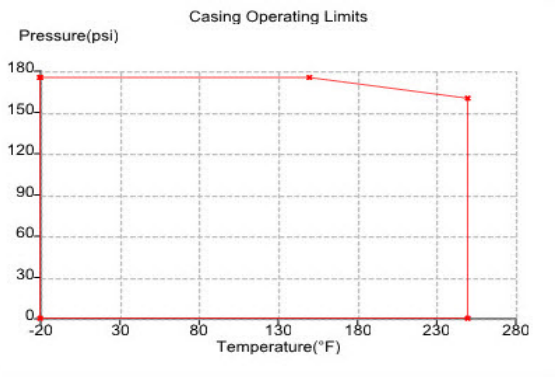
Seal type:	Outside Balanced	Rotating face:	Resin Bonded Carbon
Manufacturer code:	C-SSC AB2	Stationary seat:	Sintered Silicon Carbide
Springs:	Stainless Steel	Secondary seal:	Viton
Rotating hardware:	Stainless Steel	Maximum total dissolved solids (TDS)*:	2000 PPM

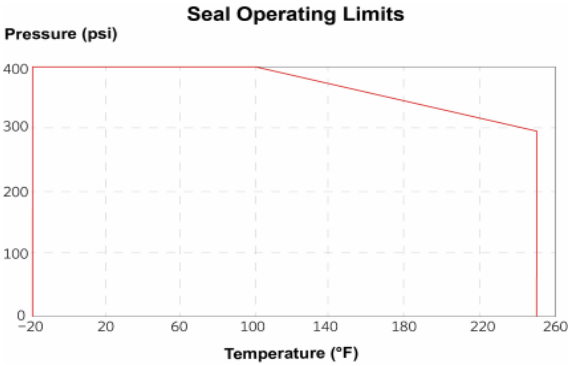
*Note: Please ensure proper seal is selected by inputting Total Dissolved Solids (TDS) in PPM in ADEPT if water quality is poor at site. Also select Flush Line Filter or Cyclone Separator if there are other contaminants in the fluid.

Electrical data

Supplier:	Factory Choice	Insulation class:	Class F Insulation
Frame size:	445TC	Motor type:	Induction
Speed:	1790 rpm	Size:	200 hp
Enclosure:	ODP	Efficiency:	NEMA Premium 12.12
Power supply:	575/3/60		

Operating limits (fluid temperature - pressure)



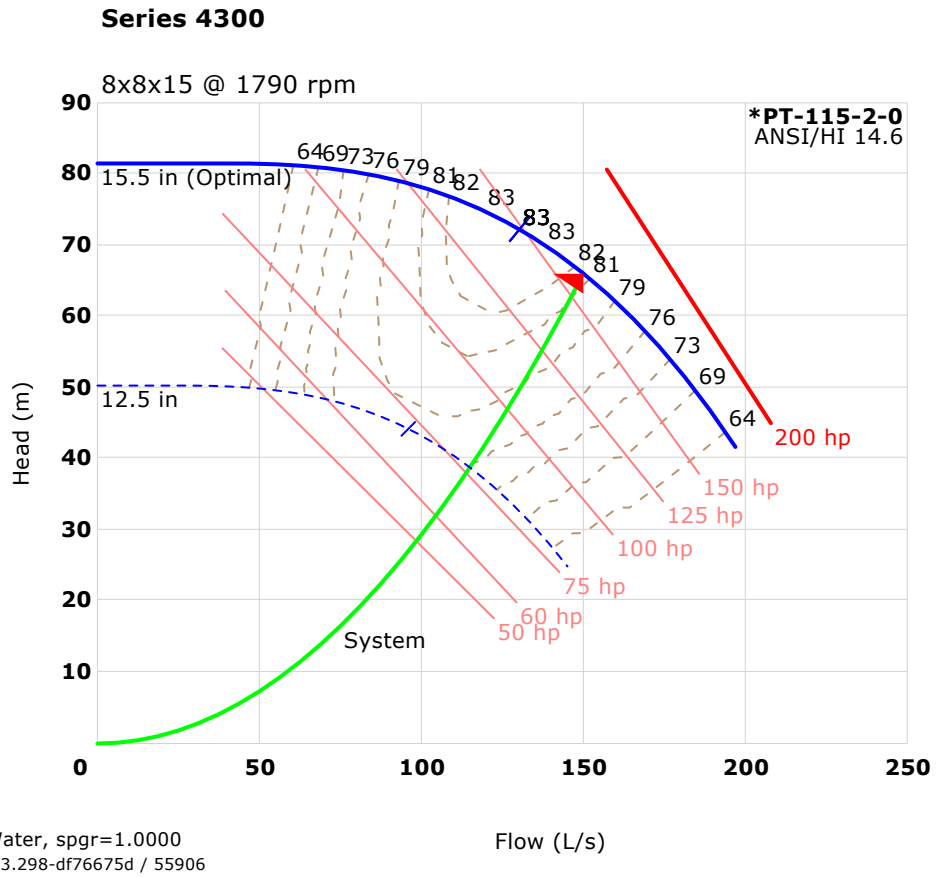


Maximum pressure: 175 psi

Maximum fluid temperature: 250 F

All Pump casings are hydrostatically tested to requirements of ANSI/HI 14.6 standard.

Performance curve



Water, spgr=1.0000
3.3.298-df76675d / 55906

----Admin Data----
Tag Num:
Service:
Location:

----Motor Data----
Motor Size: 200 hp

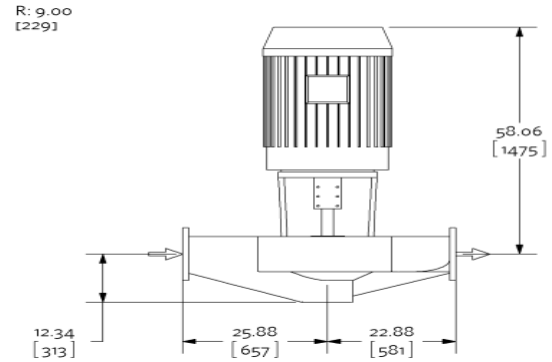
----Design Duty Points---
Flow: 150 L/s
Head: 66 m
Impeller: 15.5 in

----Performance Data---
- NPSHR: 4.59 m
- Eff. @ Design: 81.02 %
- Absorbed Power/BHP @ Design: 160.42 hp
- Mtr Capability @ Rated Spd: 200 hp hp
- Motor safety factor: 24.67%
- BEP @ Design Imp: 82.5 % @ 119.88 L/s
- %maximp.range: 69.86%
- Outlet velocity: 15.25 ft/s

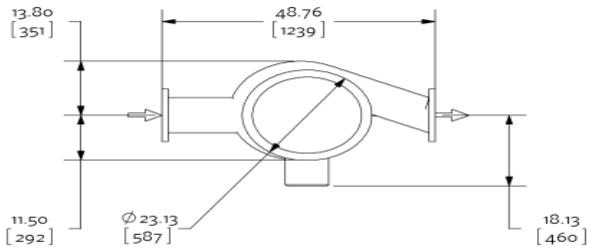
Ambient Temperature Derating Factor: 1

Dimensional data (not for construction)

Side view



Top view



Inverter motor type: Inverter duty

Weight: 2791 lb [1265.98 kg], Units of measure: inches [millimeters]
- Not to scale
- R = minimum lifting clearance required above motor
- Coupling guard and flush line (not shown) are supplied
- Tolerance of ± 0.125 inch (± 3 mm) should be used
- For certified dimensions, please contact your Armstrong representative
- Pump equipped drain plug and ¼ inch NPT suction with casing and discharge gauge ports

Connection details

Connection	Size	Rating	OD	Bolt quantity*	BCD	Bolt size
Inlet	8	ANSI-125	13.50	8	11.75	0.75
Outlet	8	ANSI-125	13.50	8	11.75	0.75

*Equally spaced straddling centreline

Special instructions

Reference Motor Specification AES 05007.
NSF Approved epoxy coating will be applied to the internal and external surfaces of the pump volute (and adaptor where applicable). NOTE that the seal cavity and machined surfaces will NOT be coated

Impeller Balancing: Standard (Grade G6.3)
Pump Primer: Armstrong Standard Primer

Selected options

Testing: Certified Test Curves (Flow & Head) (cth)
Seal Environment Accessories: None
Pre-Wired Control Bridge: No
Space Heater: No
Motor Thermistor: No Thermistors
Wye-Delta Starting: No
Bearing Current Handling: Insulated NDE Bearing
NSF Epoxy Coating

Design Envelope 4300 | Typical Specifications

ARMSTRONG GUIDE NOTE: This master specification section includes ARMSTRONG GUIDE NOTEs identified as "ARMSTRONG GUIDE NOTE" for information purposes and to assist the specification writer in making appropriate decisions. The ARMSTRONG GUIDE NOTE always immediately precedes the text to which it is referring. The section serves as a guideline only and should be edited with deletions and additions to meet specific project requirements.

ARMSTRONG GUIDE NOTE: This specification section follows the recommendations of the Construction Specifications Institute, Project Resource Manual including MasterFormat™, SectionFormat™, and PageFormat™. Optional text is indicated by square brackets [ ]; delete the optional text including the brackets in the final copy of the specification. Delete the ARMSTRONG GUIDE NOTEs in the final copy of the specification. Trade/brand names with appropriate product model numbers, styles and types are used in ARMSTRONG GUIDE NOTEs and in the specification text Article or Paragraph titled "Acceptable Material".

1. GENERAL

1.1. SUMMARY OF WORK

A. This Section specifies single stage, single or double suction type, split-coupled vertical in-line pump with integrated or stand-alone intelligent controls.

1.2. RELATED REQUIREMENTS

ARMSTRONG GUIDE NOTE: Include in this Paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the Paragraph below. Do not include Division 00 Documents or Division 01 Sections since it is assumed that all technical sections are related to all project Division 00 Documents and Division 01 Sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered a legal part of the Contract. Edit the following paragraphs to suit specific project conditions.

1.2.1. Section [23 05 29 – Hangers and Supports for HVAC Piping and Equipment: pump supports].

1.2.2. Section [23 05 48 – Vibration and Seismic Controls for HVAC: vibration isolation and seismic restraints].

1.2.3. Section [26 05 00 – Common Work Results for Electrical: electrical connections].

ARMSTRONG GUIDE NOTE: In the following Article, include only those reference standards which appear in the finished version of the project specification.

1.3. REFERENCE STANDARDS

1.3.1. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).
- 1.3.1.1. ANSI/ASME B16.5-[2009], Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.

1.3.2. American National Standards Institute/International Electrical Commission (ANSI/IEC).
- 1.3.2.1. IEC 60529-[2004], Degrees of Protection Provided By Enclosures (IP Code).

1.3.3. American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE).
- 1.3.3.1. ASHRAE 90.1-[2007], Energy Standard for Buildings except Low-Rise Residential Buildings.

ARMSTRONG GUIDE NOTE: The following standard is ANSI approved and is co-sponsored by the US Green Building Council and the Illuminating Engineering Society of North America.

- 1.3.3.2. ASHRAE 189.1P-[2009], Standard for the Design of High-Performance Green Buildings except Low-Rise Residential Buildings.

1.3.4. ASTM International (ASTM).
- 1.3.4.1. ASTM A48/A48M-[2003 (2008)], Standard Specification for Gray Iron Castings.
- 1.3.4.2. ASTM A536-[1984 (2009)], Standard Specification for Ductile Iron Castings.
- 1.3.4.3. ASTM A582/A582M-[2005], Standard Specification for Free-Machining Stainless Steel Bars.
- 1.3.4.4. ASTM B584-[2011], Standard Specification for Copper Alloy Sand Castings for General Applications.

1.3.5. CSA International (CSA).
1.3.5.1. CAN/CSA C22.2 No.108-[2001 (R2010)], Liquid Pumps.
1.3.6. German Institute for Standardization (DIN).
1.3.6.1. DIN EN 61800-3-[2004], Adjustable Speed Electrical Power Drive Systems - Part 3: EMC Requirements and Specific Test Methods.
1.3.7. Institute of Electrical and Electronics Engineers (IEEE).
1.3.7.1. IEEE 519-[1992], Recommended Practices and Requirements for Harmonic Control In Electrical Power Systems.
1.3.8. National Electrical and Manufacturers Association (NEMA).
1.3.8.1. NEMA MG-1 Standard-[2009, Revision 2010], Motors and Generators, Revision 1.
1.3.9. Underwriter's Laboratories (UL).
1.3.9.1. UL 778-[2011], Motor-Operated Water Pumps.
1.3.10. US Green Building Council (USGBC).
1.3.10.1. LEED® NC Version 2.2-[2009], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package for New Construction and Major Renovations.
1.3.11 Office of Statewide Health Planning and Development (OSHPD)
Facilities Development Division – Pre-Approval Programs
OSHPD Special Seismic Certification Preapproval (OSP)

1.4. ADMINISTRATIVE REQUIREMENTS

1.4.1. Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

1.4.2. Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
1.4.2.1. Comply with Section 01 31 19 Project Meetings and co-ordinate with other similar pre installation meetings.
1.4.2.2. Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
1.4.2.2.1. Owner;
1.4.2.2.2. Consultant;
1.4.2.2.3. Mechanical Subcontractor;
1.4.2.2.4. Manufacturer's Technical Representative.
1.4.2.3. Ensure meeting agenda includes review of methods and procedures related to hydronic pump installation including co-ordination with related work.
1.4.2.4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

ARMSTRONG GUIDE NOTE: Article below includes submittals of relevant data to be furnished by Contractor.

1.5. ACTION AND INFORMATIONAL SUBMITTALS

1.5.1. Make submittals in accordance with Contract Conditions and Section 01 33 00 Submittal Procedures.

1.5.2. Product Data: Submit product data including manufacturer's literature for hydronic pump, controls, components and accessories, indicating compliance with specified requirements and material characteristics.
1.5.2.1. Submit list on pump manufacturer's letterhead of materials, components and accessories to be incorporated into Work.
1.5.2.2. Include pump performance curves indication where project pumps appear in curve range with pre-defined performance envelope showing optimum efficiency region.
1.5.2.3. Include product names, types and series numbers.
1.5.2.4. Include contact information for manufacturer and their representative for this Project.
1.5.2.4.1. Include information on costs for wiring of pump to motor, and wiring pump mounted (internal/external) or remotely mounted differential pressure sensor(s). Also include costs for piping and commissioning of differential pressure sensor(s).
1.5.3. Shop Drawings: Submit shop drawings indicating dimensions and materials for pump components and controls
1.5.3.1. Show pump and control enclosure dimensions on shop drawings.
1.5.3.2. Include control system wiring diagrams.
1.5.4. Test Reports:
1.5.4.1. Submit test reports showing compliance with specified performance characteristics and physical properties including structural performance.

1.5.5. Field Reports: Submit manufacturer's field reports within 3 days of each manufacturer representative's site visit and inspection.
1.5.6. Sustainable Design (LEED).
1.5.6.1. LEED Submittals: In accordance with Section [01 35 21 – LEED Requirements].
1.5.7. Installer Qualifications:
1.5.7.1. Submit [verification of manufacturer's approval of installer] [letter verifying installer's experience with work similar to work of this Section].

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operation and Maintenance Data: Supply maintenance data including marked performance curves for each hydronic pump for incorporation into manual specified in Section 01 78 00 Closeout Submittals.

ARMSTRONG GUIDE NOTE: If LEED is not a part of the project delete the following Paragraph in its entirety.

1.6.2. Sustainable Design Closeout Documentation (LEED).
1.6.2.1. Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates for work of this Section demonstrating percentage of construction wastes which were recycled.
1.6.2.2. Submit verification from recycling facility showing receipt of materials.
1.6.3. Record Documentation: In accordance with Section 01 78 00 Closeout Submittals.
1.6.3.1. List materials used in hydronic pump work.
1.6.3.1.1. Include marked up performance curves for each pump.
1.6.3.2. Warranty: Submit warranty documents specified.

1.7. QUALITY ASSURANCE

1.7.1. The pump and controls shall be integrated by the manufacturer in the factory, including assembly, wiring, programming and testing. Sensorless data shall be mapped in the integrated controls using tested performance measurements for each specific pump. The use of catalog data for Sensorless data mapping will not be acceptable.

1.7.2. The complete pump and control package shall be Underwriter's Laboratories listed and carry UL778 approval

1.7.3. Sustainability Standards Certification (LEED).
1.7.3.1. LEED NC Version 2.2 submittals: In accordance with Section [01 35 21 LEED Requirements].
1.7.4 The complete pump and control package shall Office of Statewide Health Planning and Development (OSHPD) Special Seismic Certification Preapproval (OSP)

ARMSTRONG GUIDE NOTE: The following Article although not part of Quality Assurance, can be used to enhance the quality of materials by ensuring that they are delivered and handled properly at the work site.

1.8. DELIVERY STORAGE AND HANDLING

1.8.1. Delivery and Requirements:
1.8.1.1. Deliver material in accordance with Section 01 61 00 Common Product Requirements.
1.8.1.2. Deliver materials and components in manufacturer's original packaging with identification labels intact and in sizes to suit project.
1.8.1.2.1. Include manufacturer's name, job number, pump location, and pump model and series numbers on identification labels.
1.8.2. Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
1.8.2.1. Exercise care to avoid damage during unloading and storing.
1.8.2.2. Leave pump port protection plates in place until pumps are ready to connect to piping.
1.8.2.3. Do not place cable slings around pump shaft or integrated control enclosure.
1.8.3. Packaging Waste Management:

ARMSTRONG GUIDE NOTE: For smaller projects that do not have a separate Section for waste management and disposal, delete the following paragraph.

1.8.3.1. Separate and recycle waste packaging materials in accordance with Section 01 74 19 Construction Waste Management and Disposal.
1.8.3.2. Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.

ARMSTRONG GUIDE NOTE: For smaller projects that do not have a Waste Management Plan, delete the option referring to a Waste management Plan.

1.8.3.3. Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling [in accordance with Waste Management Plan].

1.9. FIELD CONDITIONS

ARMSTRONG GUIDE NOTE: To avoid the controls unit getting overheated, the ambient temperature is not to exceed 113˚F / 45˚C when installed at sea level. Operating in higher ambient temperatures will require de-rating of the controls unit. Verify maximum temperatures with manufacturer for elevations other than sea level.

1.9.1. Ambient Temperature: 113˚F / 45˚C maximum at [sea level] [up to [3,300 feet] [1,000m] above sea level].
1.9.2. Relative Humidity: [95] % maximum.

1.10. WARRANTY

1.10.1. Project Warranty: Refer to Contract Conditions for project warranty provisions.

1.10.2. Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

ARMSTRONG GUIDE NOTE: Coordinate article below with manufacturer's warranty requirements.

1.10.3. Warranty period: 12 months from installation but not more than 18 months from date of shipping.

2. PRODUCTS

ARMSTRONG GUIDE NOTE: Included in this section are specification items for [2] similar pump types in that they are both vertical inline pumping units. The 4300 series describes a split-coupled shaft design which allows mechanical seals to be removed without disturbing the pump, motor or controls. (Recommended for above 7.5hp motors) The 4380 series contain close-coupled pumps where the mechanical seal can be serviced without disturbing the in-line casing (Recommended for 7.5hp and smaller motors).

2.1. MANUFACTURER

2.1.1. Armstrong Fluid Technology, 23 Bertrand Avenue, Toronto, Ontario, M1L 2P3, Canada, Phone: (416) 755 2291, FAX: (416) 759-9101, e-mail: info@armstrongfluidtechnology.com. URL: www.armstrongfluidtechnology.com.

2.1.2. Armstrong Fluid Technology, 93 East Avenue, North Tonawanda, New York, 14120-6594, U.S.A, Phone: (716) 693-8813, FAX: (716) 693-8970, e-mail: info@armstrongfluidtechnology.com. URL: www.armstrongfluidtechnology.com.

2.2. DESCRIPTION

2.2.1. Single stage, [single] [double] suction type, vertical inline design pump with integrated intelligent controls/ optimized intelligent standalone controls.
2.2.1.1. Seals: Split-coupled serviceable without disturbing motor or the piping connections.
2.2.1.2. Include casing drain plug and 1/4-inch suction and discharge gauge ports.
2.2.2. Acceptable Material: ARMSTRONG, 4300 Design Envelope Pump.

2.3. DESIGN CRITERIA

2.3.1. Design pump for variable flow applications and selected for hydraulic design conditions and minimum system pressure with [sensorless load Demand Based control] [pressure sensor across most remote load] [IPS control panel / BMS control].

ARMSTRONG GUIDE NOTE: Use the following paragraph for variable flow applications (Note that constant flow applications can also be served by the intelligent control (Sensorless) or IPS control panel / BMS control. (Note that constant flow applications can also be served by intelligent controls operating at reduced speed to match actual system head) Pump head can be specified at design conditions and maximum head capability at design flow for the specific pump selected. The maximum head is displayed on the selection software pump curve and it could be specified that the data be detailed on submittals.

2.3.1.1. Select hydraulic design conditions and minimum pressure with [sensorless load control] [pressure sensor across most remote load].

2.3.1.2. For Sensorless control the operating control curve shall be [quadratic with adjustable minimum head setting] [constant pressure] [not operative to allow BMS or IPS control panel operation]

2.3.2 Meet or exceed energy saving requirements of ASHRAE 90.1[2010] [2013] by pump selection, based on optimum performance at part load, to save 70% of design flow energy at 50% part-load

2.3.3 Supply pumping units with Office of Statewide Health Planning and Development (OSHPD) Special Seismic Certification Preapproval (OSP)

2.3.4 Design pumping units to UL STD 778 & CSA STD C22.2 No.108

2.3.5 Pump Operating Conditions:
- 2.3.5.1 Pump head: [36.3 m] minimum [76.01 m] maximum.
- 2.3.5.2 Pump capacity: [_____] minimum [86.75 L/s] maximum.

ARMSTRONG GUIDE NOTE: Use 175 psig at ≤140˚F and 100 psig at 300˚] for ANSI/ASME Class 150 flanged piping systems [175 psig at 140˚F] for lower temperatures and [100 psig at 300˚F] maximum for fluid temperatures higher than 140˚F
ARMSTRONG GUIDE NOTE: Use 375 psig at ≤100˚F and 275 psig at 300˚F for ANSI/ASME Class 300 flanged piping systems. [375 psig at 100˚F] for lower temperatures and [275 psig at 300˚F] maximum for fluid temperatures higher than 100˚F

2.4 MATERIALS

ARMSTRONG GUIDE NOTE: NSF Epoxy coating provide erosion- corrosion protection that reduce further deterioration, increase pump efficiency and reduce frequent maintenance costs

2.4.1 Casing: Cast iron to ASTM A48, Class 30.
- 2.4.1.1 Test casing to 150 % maximum working pressure.
- 2.4.1.2 Ensure casing is radially split to allow for removal of rotating element without disturbing pipe connections.
- 2.4.1.3 Casing wetted surfaces shall be coated with a NSF-61 epoxy to provide long-term corrosion and erosion protection.
- 2.4.1.4 Drill and tap casing for gauge ports on both suction and discharge connections.
- 2.4.1.5 Drill and tap casing at lowest point for drain port.

2.4.2 Impeller: To ASTM B584, bronze, fully enclosed and dynamically balanced to ANSI G6.3 and fitted to shaft with key. Use two-plane balancing when installed impeller diameter is less than 6 times impeller width.

2.4.3 Pump Shafts:
- 2.4.3.1 4300 Split-coupled: Stainless steel to ASTM A582/A582M, 416 Stainless Steel.

ARMSTRONG GUIDE NOTE: Use the following paragraph for DE 4300 split coupled pumps only. that rigid couplings allow simple and quick seal replacements and maintain permanent shaft alignment. NO FIELD SHAFT ALIGNMENT IS NECESSARY ON ARMSTRONG DE 4300 pumping units Note

2.4.4 Coupling: Rigid spacer type, high tensile aluminum.
- 2.4.4.1 Design coupling for easy removal on site to reveal space between pump and motor shaft.
  - 2.4.4.1.1 Ensure revealed space is sufficient for removal of mechanical seal components without disturbing pump, controls or motor.
  - 2.4.4.1.2 Include coupling guard.
  - 2.4.4.1.3 Include lower seal chamber throttle bushing to ensure seals maintain positive cooling and lubrication.

ARMSTRONG GUIDE NOTE: Use the following paragraph where extra seal chamber cleanliness is required.

- 2.4.4.2 Include sight flow indicator in flush line to mechanical seal and [50 micron cartridge filter to suit system working pressure] [maintenance- free sediment separator for pump differential pressures greater than 30 psig].

ARMSTRONG GUIDE NOTE: Flanges are suitable for the following system pressures with ambient temperature fluid: ANSI Class 125 is suitable to 175psig; ANSI Class 250 is suitable to 375psig

2.4.5 Flanges: ANSI-125.

2.4.6 Flush Line: 3/8 inch braided stainless steel complete with vent.

2.4.7 Gasket: Synthetic fiber.

ARMSTRONG GUIDE NOTE: For split-coupled pumps in most HVAC applications specify Type AB2, outside balanced seals visit

http://www.armstrongpumps.com/Data/submitaldatas/Links/01_01_001/43.50_Mechanical Seal Data.pdf

ARMSTRONG GUIDE NOTE: Specify AB2 type seal with resin bonded carbon rotating face for potable and general non-potable water systems to 200˚F. Specify the G30 seal with a carbon rotating face for non-potable systems (>200˚F to 300˚F) and glycol applications (>30% concentration) under low or high-temperature conditions where TDS is ≤ 2000 ppm. For low or high temperature for abrasives above 2000ppm, specify G30P type seal with Sintered Silicon Carbide rotating face.

ARMSTRONG GUIDE NOTE: Specify Viton® secondary seal for [AB2] potable and general non-potable water systems to 200˚F. For non-potable higher temperature to 300˚F specify [G30/G30P] with Viton® secondary seal elastomer

2.4.8 Mechanical Seal: Non-Potable Fluid, Type A1: Armstrong Type AB2 outside balanced seal design and rated to [200˚F] [300˚F] maximum
- 2.4.8.1 Rotating face: Resin Bonded Carbon
- 2.4.8.2 Stationary face: Sintered Silicon Carbide
- 2.4.8.3 Seal rotating hardware: Stainless Steel
- 2.4.8.4 Secondary / shaft seal elastomer:Viton
- 2.4.8.5 Maximum total dissolved solids (TDS): 2000 PPM

2.5 MOTOR

2.5.1 NEMA Premium® Motor: To ANSI/NEMA MG 1
- 2.5.1.1 Horsepower: 250 hp.
- 2.5.1.2 Enclosure: ODP.
- 2.5.1.3 Efficiency: NEMA Premium 12.12
- 2.5.1.4 Power supply:575/3/60

2.6 PUMP CONTROLS

ARMSTRONG GUIDE NOTE: All integrated controls need a minimum of UL Type 12 (IP54/55) enclosure as water splashes may occur. For outdoor or perhaps sprinklered space service UL Type 4X (IP66) enclosure is available. UL Type 4X units are normally supplied with a touchscreen cover to protect the interface from UV degradation, and a weather shield to protect the motor fan from freezing rain or snow. Specify 'less weather shield' if pump will be installed with protection from other overhead coverage.

2.6.1 2.6.1 Control: Integrated with UL Type 12/IP55 minimum enclosure rating, sensorless controls complete with fused disconnect switch and menu-driven graphical keypad interface.

2.6.2 Provide near unity displacement power factor (cos Ø) without need for external power factor correction capacitors at all loads and speeds using VVC-PWM type integrated controls
- 2.6.2.1.1 Incorporate DC link reactors for reduction of mains borne harmonic currents and DC link ripple current to increase DC link capacitor lifetime.
- 2.6.2.1.2 Fit RFI filters as standard to ensure integrated controls meets low emission and immunity requirements.

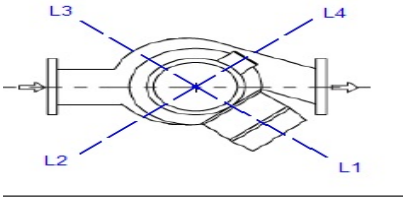
ARMSTRONG GUIDE NOTE: Controls with saturating (non-linear) DC link reactors shall require an additional 3% AC line reactor to provide acceptable harmonic performance at full load, where harmonic performance is most critical.

- 2.6.2.1.3 Ensure additional 3 % AC line reactor is available for controls with saturating (nonlinear) DC link reactors.

ARMSTRONG GUIDE NOTE: Minimum maintained pressure for speed control from a remote sensor placement would be the value of the sensor setting. Sensorless control would use that same setting value for the control curve pressure at zero flow. If minimum maintained system pressure is not known, default to 40% of design head.

2.6.1.2 Minimum system pressure to be maintained: [_____] [feet] [psig] head

ARMSTRONG GUIDE NOTE: The default for orientation is typically L1 with controls mounted NE at discharge flange on plan view. If not convenient for other equipment, motor and controls may be rotated and mounted at 45-degree increments CW for L2, L3 and L4 being NW of discharge on plan view.



2.6.1.3 Orientation: [L1].

ARMSTRONG GUIDE NOTE: Armstrong pump controls support Modbus RTU, BACnet™ MS/TP, Modbus TCP/IP and BACnet™ TCP/IP as standard protocols. Contact Armstrong Fluid Technology for further information.

2.6.1.4 Communication protocol: Default Field Reconfigurable
2.6.1.5 Sensorless override for BAS/BMS control signal.
2.6.1.6 Manual pump control/ Closed loop PID control
2.6.1.7 Enclosure: UL Type 12/IP55
2.6.1.8 EMI/RFI Control: Integrated filter designed to DIN EN61800-3.

ARMSTRONG GUIDE NOTE: The **IVS** intelligent variable speed drive is a low harmonic drive via built-in DC line reactors. This does not guaranty performance to any system wide harmonic specification or the costs to meet a system wide specification. If supplied with the system electrical details, Armstrong will run a computer simulation of the system wide harmonics. If system harmonic levels are exceeded Armstrong can also recommend additional harmonic mitigation and the costs for such mitigation.

2.6.1.9 Harmonic suppression: Dual DC-link reactors (Equivalent: 5% impedance AC line reactor) to mitigate harmonics to support IEEE 519 system requirements.
2.6.1.10 Programmable skip Frequencies and adjustable switching frequency for noise and vibration control.
2.6.1.11 Cooling: Fan cooled through back panel.
2.6.1.12 Ambient working conditions: 113˚F / 45˚C, up to [3300] feet above sea level.
2.6.1.13 Analog I/O: 2 Current or voltage inputs minimum, 1 current output.
2.6.1.14 Digital I/O: 6 programmable inputs minimum with 2 minimum able to be configured as outputs.
2.6.1.15 Pulse inputs: 2 programmable minimum.
2.6.1.16 Relay outputs: 2 programmable minimum.
2.6.1.17 Communications ports: 1- RS485, 1- USB minimum.
2.6.1.18 One volt free contact.
2.6.1.19 Auto alarm reset.

2.6.2 Software: Ensure software for sensorless control includes automatic speed control in variable volume systems without need for pump mounted (internal/external) or remotely mounted differential pressure sensor.
2.6.2.3 Operating mode under sensorless control: Quadratic Pressure Control (QPC).
2.6.2.3.1 Ensure head reduction with reducing flow conforms to quadratic control curve.
2.6.2.3.2 Head at zero flow:[40]% minimum of design duty head.
2.6.2.2 Linear or Proportional Pressure Control without sensor is unacceptable.
2.6.2.4 Ensure control mode setting and minimum/maximum head set points are user adjustable using built-in programming interface.
2.6.2.5 Ensure integrated control software is capable of controlling pump performance for non-overloading power at every point of operation.
2.6.2.6 Ensure integrated control software is capable of flow rate display and data output of ± 5% accuracy to BAS/BMS.
2.6.2.7 Ensure the controls can displayed and digitally transmit real-time flow & values

ARMSTRONG GUIDE NOTE: The following paragraph may contribute towards LEED credits.

2.6.3 Include energy monitoring log function to ASHRAE 189.1P.

2.6.4 For multiple pump configuration ensure [duty/standby] [parallel Sensorless pump control with best efficiency staging] is applied

2.7 PUMP MOTOR AND CONTROLS PROTECTION

2.7.1 Include protection as follows:
2.7.1.3 Motor phase to phase fault.

2.7.1.4 Motor phase to ground fault.
2.7.1.5 Loss of supply phase.
2.7.1.6 Over voltage.
2.7.1.7 Under voltage.
2.7.1.8 Motor over temperature.
2.7.1.9 Inverter overload.
2.7.1.10 Over current

2.7.2 Ensure controls run automatic motor adaptation (AMA) for superior motor protection and control.

2.7.3 Ensure controls have automatic energy optimization (AEO) to maximize energy consumption reduction at part load operation

2.8 FABRICATION

2.8.1 Install integrated controls on each pump for use with BAS/BMS for energy logging to ASHRAE 189.1P.

ARMSTRONG GUIDE NOTE: Split-coupled [DE 4300] and close-coupled [DE 4380] are supplied with flush lines. Split-coupled [DE 4300] seals are installed in isolated seal chambers and lubricated and cooled by a flush line piped in from the pump discharge. This allows for a clean-up of the flush fluid (See item 2.4.4.4). A vent is necessary on this design to eliminate air blockage of the flush line. Close-coupled [DE 4380] seal flush line evacuates air from the seal area automatically, by being piped to the (Lower pressure) suction area

2.8.2 Pre-program integrated intelligent controls for each pump before pump leaves factory.
2.8.2.1 Install flush / vent line in factory.
2.8.2.1.1 Ensure flush / vent line runs from seal chamber to [pump discharge] [pump suction].
2.8.2.2 Mark pumps and controls with co-ordinated identification.

2.9 ACCESSORIES

2.9.1 Pipe Flanges: To ANSI/ASME B16.5, Class [150] [300].

2.9.2 Hangers and Supports: in accordance with Section [23 05 29 – Hangers and Supports for HVAC Piping and Equipment].

ARMSTRONG GUIDE NOTE: Use the following paragraph only when vibration isolators or isolation pads are deemed absolutely necessary to meet unique project requirements. Armstrong Fluid Technology recommends piping system designs that do not require vibration or isolation pads for inline pumps.

2.9.3 Vibration isolators, neoprene isolation pads in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC].

ARMSTRONG GUIDE NOTE: Use the following paragraphs if required by seismic criteria applicable to project location.

2.9.4 Ensure pumping units are supplied with an OSHPD Special Seismic Certification Preapproval (OSP)
2.9.5 Seismic restraint in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC]

2.9.6 Suction Diffuser: For [ANSI Class 150 pipe flange and ANSI 125 pump flange] [grooved pipe and ANSI 125 pump flange] [ANSI Class 300 pipe flange and ANSI 250 pump flange].

ARMSTRONG GUIDE NOTE: Specify SG for ANSI 150 Flange, SGG for Grooved Pipe and SGHH for ANSI 300 flange.

2.9.6.1 Acceptable Material: ARMSTRONG, [SG] [SGG] [SGHH].

ARMSTRONG GUIDE NOTE: Armstrong recommends using FTV combination / triple duty valves for variable flow applications. There are instances where the pump may operate off-the- curve. Varying the speed does not bring the duty point back on the pump curve. In these cases, throttling is required. Use the Flo-Trex valve generally only with constant speed pump applications in accordance with ASHRAE 90.1 standards. Specify cast iron for ANSI Class 150 pipe flanges and ductile iron for ANSI Class 300 pipe flanges.

2.9.7 Triple Duty Valve: Cast iron/[Ductile iron valve body, tight shut-off, spring -closure type silent non-slam check valve with effective throttling design capability.
2.9.7.1 Valve stem: Stainless steel with flat surfaces for adjustment with open-end wrench.

2.9.7.2 Acceptable Material: ARMSTRONG, Model FTV Flo-Trex Combination Valve.

2.9.8 Pressure Gauges: 4-1/2 inch diameter sized to meet system pressure requirements.

2.10 PRODUCT SUBSTITUTIONS

2.10.1 Substitutions: [In accordance with Section 01 23 13 - Product Substitution Procedures] [No substitutions permitted].

2.10.1.3 Ensure materials and installation costs are supplied by single manufacturer.

3 EXECUTION

3.1 INSTALLERS

3.1.1 Use only installers with 2 years minimum experience in work similar to work of this Section.

3.2 EXAMINATION

3.2.1 Verification of Conditions: Verify that conditions of piping previously installed under other Sections or Contracts are acceptable for pump installation in accordance with manufacturer's written recommendations.

3.2.1.1 Visually inspect piping, piping configuration and piping location in presence of Consultant.

3.2.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.

3.2.1.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.3 PREPARATION

3.3.1 Weld pipe flanges to piping system for installation of pump.

3.3.1.1 Ensure suction and discharge pipe flanges are aligned and square to pipe.

3.4 INSTALLATION

ARMSTRONG GUIDE NOTE: View DE 4300 installation and operating instructions (I&O) at:

http://armstrongfluidtechnology.com/en/resources-and-tools/installation-and-maintenance-and-parts/installation-and-operating-instructions

3.4.1 Install pumps level in accordance with pump manufacturer's written recommendations.

3.4.2 Ensure that pump is pipe-mounted and free to float with any movement, expansion and contraction of piping system.

3.4.2.1 Support pump using floor mounted saddle as required.

3.4.2.2 For vertical in-line pumps supported from structure, ensure no pipe strain is imposed on pump flanges.

ARMSTRONG GUIDE NOTE: Use the following paragraph only when vibration isolators or isolation pads are deemed absolutely necessary to meet unique project requirements. Armstrong Fluid Technology recommends piping system designs that do not require vibration or isolation pads for inline pumps.

3.4.2.3 Use vibration isolators, neoprene isolation pads to meet project conditions in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC].

ARMSTRONG GUIDE NOTE: Use the following paragraphs if required by seismic criteria applicable to project location.

3.4.2.4 The complete pump and control package shall Office of Statewide Health Planning and Development (OSHPD) Special Seismic Certification Preapproval (OSP)

3.4.2.5 Use seismic restraint to meet project conditions in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC]

3.4.2.6 Where pumps are supported entirely by piping system ensure hangers are sized for extra load of pump weight.

3.4.3 Install Flo-Trex valve [At [90Deg – Discharge up only] [180Deg - Straight] after recommended length (2D min) of spool piece on discharge connection from pump] [vertically-up after long radius elbow off pump discharge valve]

3.4.4 Install suction guides on pump suction connection.

3.4.5 Install pressure gauges on suction and discharge pump connections.

3.4.6 Install hangers and supports in accordance with Section [23 05 29 – Hangers and Supports for HVAC Piping and Equipment].

3.4.6.1 Adjust hangers and supports after pump is installed to ensure proper support.

3.4.7 Align pipe flanges with pump flanges and bolt together in accordance with pump manufacturer's written recommendations.

ARMSTRONG GUIDE NOTE: A sensor is not acceptable in the mechanical room. The costs and labor for wiring to the most remote load and the sensor itself should be incorporated. If the controls are not integrated to the pumping unit, additional wiring material and wiring installation will be required.

3.4.8 Connect pumps and integrated control system to electrical distribution system to IEEE regulations and with authority having jurisdiction in accordance with Section [26 05 00 – Common Work Results for Electrical].

ARMSTRONG GUIDE NOTE: Use the following paragraph when a sensor at the most remote load condition is to be used.

3.4.8.1 Include wiring to most remote sensor in system where applicable.

3.4.8.1.1 Do not run pumps dry to check rotation.

3.5 FIELD QUALITY CONTROL

3.5.1 Field Inspection: Coordinate field inspection in accordance with Section [01 45 00 Quality Control].

ARMSTRONG GUIDE NOTE: Specify requirements if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Manufacturer field reports are included under PART 1, Action and Informational Submittals.

3.5.2 Manufacturer's Services:

ARMSTRONG GUIDE NOTE: Use the following Paragraphs only when manufacturer's field services are provided and are required to verify the quality of the installed components. Establish the number and duration of periodic site visits required by manufacturer and specify below. Consult manufacturer for services required. Delete if field services are not required.

3.5.2.1 Coordinate manufacturer's services with Section [01 45 00 - Quality Control].

3.5.2.1.1 Have manufacturer review work involved in handling, installation, protection, and cleaning of hydronic pumps and components, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.

3.5.2.2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.

3.5.2.2.1 Report any inconsistencies from manufacturer's recommendations immediately to Consultant.

3.5.2.3 Schedule site visits to review work at stages listed:

3.5.2.3.1 After delivery and storage of pumps, controls and components, and when preparatory work on which Work of this Section depends is complete, but before installation begins.

3.5.2.3.2 Upon completion of Work, after cleaning is carried out.

3.5.2.3.3 Obtain reports within three days of review and submit immediately to Consultant.

3.6 COMMISSIONING

3.6.1 Validate alignment, rotation, motor current draw, flows and pressures in accordance with Section [23 08 00 – Commissioning of HVAC].

3.7 CLEANING

ARMSTRONG GUIDE NOTE: For smaller projects that do not have a separate Division 01 Section for cleaning, delete the reference to Section 01 74 00 – Cleaning in the following two Paragraphs.

3.7.1 Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 Cleaning and Waste Management].

3.7.1.1 Leave work area clean end of each day.

3.7.2 Final leaning: Upon completion, remove surplus materials, rubbish, tools, and equipment [in accordance with Section 01 74 00 – Cleaning and Waste Management].

3.7.3 Waste Management:

3.7.3.1 Co-ordinate recycling of waste materials with 01 74 19 Construction Waste Management and Disposal.

3.7.3.2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

3.7.3.3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

3.8.1 Protect installed products and components from damage during construction.

3.8.2 Repair damage to adjacent materials caused by hydronic pump installation.

END OF SECTION 23 21 23 – HYDRONIC PUMPS

Vertical Inline Pump 4300|

File No:
Date: Jan. 25, 2013
Supersedes: New
Date: New

Typical Specifications

ARMSTRONG GUIDE NOTE: This master specification section includes ARMSTRONG GUIDE NOTEs identified as "ARMSTRONG GUIDE NOTE" for information purposes and to assist the specification writer in making appropriate decisions. The ARMSTRONG GUIDE NOTE always immediately precedes the text to which it is referring. The section serves as a guideline only and should be edited with deletions and additions to meet specific project requirements.

ARMSTRONG GUIDE NOTE: This specification section follows the recommendations of the Construction Specifications Institute, Project Resource Manual including MasterFormat™, SectionFormat™, and PageFormat™. Optional text is indicated by square brackets [ ]; delete the optional text including the brackets in the final copy of the specification. Delete the ARMSTRONG GUIDE NOTEs in the final copy of the specification. Trade/brand names with appropriate product model numbers, styles and types are used in ARMSTRONG GUIDE NOTEs and in the specification text Article or Paragraph titled "Acceptable Material".

1 GENERAL

1.1 SUMMARY OF WORK

A. This Section specifies single stage, single or double suction type, vertical inline design pumps.

1.2 RELATED REQUIREMENTS

ARMSTRONG GUIDE NOTE: Include in this Paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the Paragraph below. Do not include Division 00 Documents or Division 01 Sections since it is assumed that all technical sections are related to all project Division 00 Documents and Division 01 Sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered a legal part of the Contract. Edit the following paragraphs to suit specific project conditions.

1.2.1. Section [23 05 29 – Hangers and Supports for HVAC Piping and Equipment: pump supports].

1.2.2. Section [23 05 48 – Vibration and Seismic Controls for HVAC: vibration isolation and seismic restraints].

1.2.3. Section [26 05 00 – Common Work Results for Electrical: electrical connections].

ARMSTRONG GUIDE NOTE: In the following Article, include only those reference standards which appear in the finished version of the project specification.

1.3 REFERENCE STANDARDS

1,3,1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).
1.3.1.1 ANSI/ASME B16.5-[2009], Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.

1.3.2 American National Standards Institute/International Electrical Commission (ANSI/IEC).
1.3.2.1 IEC 60529-[2004], Degrees Of Protection Provided By Enclosures (IP Code).

1.3.3 ASTM International (ASTM).
1.3.3.1 ASTM A48/A48M-[2003 (2008)], Standard Specification for Gray Iron Castings.
1.3.3.2 ASTM A536-[1984 (2009)], Standard Specification for Ductile Iron Castings.
1.3.3.3 ASTM A582/A582M-[2005], Standard Specification for Free-Machining Stainless Steel Bars.
1.3.3.4 ASTM B584-[2011], Standard Specification for Copper Alloy Sand Castings for General Applications.

1.3.4 CSA International (CSA).
1.3.4.1 CAN/CSA C22.2 No.108-[2001 (R2010)], Liquid Pumps.

1.3.5 German Institute for Standardization (DIN).
1.3.5.1 DIN EN 61800-3-[2004], Adjustable Speed Electrical Power Drive Systems - Part 3: EMC Requirements And Specific Test Methods.

1.3.6 Institute of Electrical and Electronics Engineers (IEEE).
1.3.6.1 IEEE 519-[1992], Recommended Practices And Requirements For Harmonic Control In Electrical Power Systems.

1.3.7. National Electrical and Manufacturers Association (NEMA).
1.3.7.1 NEMA MG-1 Standard-[2009, Revision 2010], Motors and Generators, Revision 1.

1.4 ADMINISTRATIVE REQUIREMENTS

1.4.1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

1.4.2 Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
1.4.2.1 Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.
1.4.2.2 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
1.4.2.2.1 Owner;
1.4.2.2.2 Consultant;
1.4.2.2.3 Mechanical Subcontractor;
1.4.2.2.4 Manufacturer's Technical Representative.
1.4.2.3 Ensure meeting agenda includes review of methods and procedures related to hydronic pump installation including co-ordination with related work.
1.4.2.4 Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

ARMSTRONG GUIDE NOTE: Article below includes submittals of relevant data to be furnished by Contractor.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

1.5.1 Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.

1.5.2 Product Data: Submit product data including manufacturer's literature for hydronic pump, components and accessories, indicating compliance with specified requirements and material characteristics.
1.5.2.1 Submit list on pump manufacturer's letterhead of materials, components and accessories to be incorporated into Work.
1.5.2.2 Include pump performance curves indication where project pumps appear in curve range.
1.5.2.3 Include product names, types and series numbers.
1.5.2.4 Include contact information for manufacturer and their representative for this Project.
1.5.2.5 Include information on costs for wiring of pump to motor, and wiring pump mounted (internal/external) or remotely mounted differential pressure sensor.
1.5.3 Shop Drawings: Submit shop drawings indicating dimensions and materials for pump components
1.5.3.1 Show pump and control enclosure dimensions on shop drawings.
1.5.3.2 Include control system wiring diagrams.
1.5.4 Test Reports:
1.5.4.1 Submit test reports showing compliance with specified performance characteristics and physical properties including structural performance.
1.5.5 Field Reports: Submit manufacturer's field reports within 3 days of each manufacturer representative's site visit and inspection.
1.5.6 Installer Qualifications:
1.5.6.1 Submit [verification of manufacturer's approval of installer] [letter verifying installer's experience with work similar to work of this Section].

1.6 CLOSEOUT SUBMITTALS

1.6.1 Operation and Maintenance Data: Supply maintenance data including marked performance curves for each hydronic pump for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6.2 Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.

1.6.2.1 List materials used in hydronic pump work.
1.6.2.1.1 Include marked up performance curves for each pump.
1.6.2.2 Warranty: Submit warranty documents specified.

ARMSTRONG GUIDE NOTE: The following Article although not part of Quality Assurance, can be used to enhance the quality of materials by ensuring that they are delivered and handled properly at the work site.

1.8 DELIVERY STORAGE AND HANDLING

1.8.1 Delivery and Requirements:
1.8.1.1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
1.8.1.2 Deliver materials and components in manufacturer's original packaging with identification labels intact and in sizes to suit project.
1.8.1.2.1 Include manufacturer's name, job number, pump location, and pump model and series numbers on identification labels.

1.8.2 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
1.8.2.1 Exercise care to avoid damage during unloading and storing.
1.8.2.2 Leave pump port protection plates in place until pumps are ready to connect to piping.
1.8.2.3 Do not place cable slings around pump shaft or integrated control enclosure.

1.8.3 Packaging Waste Management:

ARMSTRONG GUIDE NOTE: For smaller projects that do not have a separate Section for waste management and disposal, delete the following paragraph.

1.8.3.1 Separate and recycle waste packaging materials in accordance with Section 01 74 19 - Construction Waste Management and Disposal.
1.8.3.2 Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.

ARMSTRONG GUIDE NOTE: For smaller projects that do not have a Waste Management Plan, delete the option referring to a Waste Management Plan.

1.8.3.3 Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling [in accordance with Waste Management Plan].

1.10 WARRANTY

1.10.1 Project Warranty: Refer to Contract Conditions for project warranty provisions.

1.10.2 Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

ARMSTRONG GUIDE NOTE: Coordinate article below with manufacturer's warranty requirements.

1.10.3 Warranty period: 12 months from installation but not more than 18 months from date of shipping.

2 PRODUCTS

2.1 MANUFACTURER

2.1.1 Armstrong Fluid Technology, 23 Bertrand Avenue, Toronto, Ontario, M1L 2P3, Canada,
Phone: (416) 755-2291, FAX: (416) 759-9101, e-mail: info@armstrongfluidtechnology.com,
URL: www.armstrongfluidtechnology.com.

2.1.2 Armstrong Fluid Technology, 93 East Avenue, North Tonawanda, New York, 14120-6594, U.S.A, Phone: (716) 693-8813, FAX: (716) 693-8970, e-mail: e-mail: info@armstrongfluidtechnology.com, URL: www.armstrongfluidtechnology.com.

2.2 DESCRIPTION

2.2.1 Single stage, [single] [double] suction type, vertical inline pump.
- 2.2.1.1 Seals: Split-coupled serviceable without disturbing motor or the piping connections.
- 2.2.1.2 Include casing drain plug and 1/4 inch suction and discharge ports.

2.2.2 Acceptable Material: ARMSTRONG, 4300 pumps.

2.3 DESIGN CRITERIA

2.3.1 Design pump for constant speed applications operating at reduced pre-set speed and selected for hydraulic design conditions and minimum pressure.

2.3.3 Design pumps to CSA C22.2 No.108.
- 2.3.3.1 Pump head: [36.3 m] minimum [0 m] maximum.
- 2.3.3.2 Pump capacity: [_____] minimum [75 L/s] maximum.

2.3.4 Pump Operating Conditions:

ARMSTRONG GUIDE NOTE: Use 100 psig at 300˚F and 175 psig at 140˚F for cast iron piping systems.

- 2.3.4.1 [100 psig at 300˚F] minimum to [175 psig at 140˚F] maximum.

ARMSTRONG GUIDE NOTE: Use 275 psig at 300˚F and 375 psig at 100˚F for ductile iron piping systems.

- 2.3.4.2 [275 psig at 300˚F] minimum to [375 psig at 100˚F] maximum.

2.4 MATERIALS

2.4.1 Casing: Cast iron to ASTM A48, Class 30, Epoxy.
- 2.4.1.1 Test casing to 150 % maximum working pressure.
- 2.4.1.2 Ensure casing is radially split to allow for removal of rotating element without disturbing pipe connections.
- 2.4.1.3 Drill and tap casing for gauge ports on both suction and discharge connections.
- 2.4.1.4 Drill and tap casing on bottom for drain port.

2.4.2 Impeller: To ASTM B584, bronze, fully enclosed and dynamically balanced to ANSI G6.3 and fitted to shaft with key. Use two-plane balancing when installed impeller diameter is less than 6 times impeller width.

2.4.3 Pump Shafts:
- 2.4.3.1 4300 Split Coupled: Stainless steel to ASTM A582/A582M, Grade 416.

2.4.4 Coupling: Rigid spacer type, high tensile aluminum.
- 2.4.4.1 Design coupling for easy removal on site to reveal space between pump and motor shaft.
  - 2.4.4.1.1 Ensure revealed space is sufficient for removal of mechanical seal components without disturbing pump or motor.
- 2.4.4.2 Include coupling guard.
- 2.4.4.3 Include lower seal chamber throttle bushing to ensure seals maintain positive cooling and lubrication.

ARMSTRONG GUIDE NOTE: Use the following paragraph where extra seal chamber cleanliness is required.

- 2.4.4.4 Include sight flow indicator in flush line to mechanical seal and [50-micron cartridge filter to suit system working pressure] [maintenance- free sediment separator for pump differential pressures greater than 30 psig].

2.4.5 Flanges: To ANSI/ASME B16.5, Class250.

2.4.6 Flush Line: 3/8 inch braided stainless steel complete with vent.

2.4.7 Gasket: Synthetic fiber.

ARMSTRONG GUIDE NOTE: For split-coupled pumps specify Type AB2, outside balanced seals. For close coupled pumps specify Type 2A inside single spring seals. For Armstrong seal details visit http://www.armstrongpumps.com/Data/submitaldatas/Links/01_01_001/43.50_Mechanical_Seal_Data.pdf.

2.4.8 Mechanical Seal: Non-Potable Fluid, Type A1: Armstrong Type AB2, Outside Balanced and rated to 230°F maximum.

2.5 MOTOR

2.5.1 NEMA Premium® Motor: To ANSI/NEMA MG 1
- 2.5.1.1 Horsepower: 200 hp.
- 2.5.1.2 Enclosure: ODP.
- 2.5.1.3 Efficiency: NEMA Premium 12.12.
- 2.5.1.4 Power supply: 575/3/60

2.6 ACCESSORIES

2.6.1 Pipe Flanges: To ANSI/ASME B16.5, Class 250.

2.6.2 Hangers and Supports: in accordance with Section [23 05 29 – Hangers and Supports for HVAC Piping and Equipment].

ARMSTRONG GUIDE NOTE: Use the following paragraph only when vibration isolators or isolation pads are deemed absolutely necessary to meet unique project requirements. S.A. Armstrong recommends piping system designs that do not require vibration or isolation pads for inline pumps.

2.6.3 Vibration isolators, neoprene isolation pads in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC].

ARMSTRONG GUIDE NOTE: Use the following paragraph if required by seismic criteria applicable to project location.

2.6.4 Seismic restraint in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC].

2.6.5 Suction Guides: For [ANSI 150 flange and ANSI 125 pump flange] [grooved pipe and ANSI 125 pump flange] [ANSI 150 flange and ANSI 250 pump flange].

ARMSTRONG GUIDE NOTE: Specify SG for ANSI 150 Flange, SGG for Grooved Pipe and SGHH for ANSI 300 flange.

2.9.5.1 Acceptable Material: ARMSTRONG, [SG] [SGG] [SGHH].

ARMSTRONG GUIDE NOTE: Armstrong recommends using FTVs for variable flow applications. There are instances where the pump may operate off the curve. Varying the speed does not bring the duty point back on the pump curve. In these cases, throttling is required. Use the Flo-Trex valve only with constant speed pump applications. Specify ductile iron for ANSI 125 and ANSI 250.

2.6.6 Triple Duty Valve: Ductile iron valve body, tight shut-off, spring -closure type silent non-slam check valve with effective throttling design capability.
- 2.9.6.1 Valve stem: Stainless steel with flat surfaces for adjustment with open-end wrench.
- 2.9.6.2 Acceptable Material: ARMSTRONG, Model FTV Flo-Trex Combination Valve.

2.6.7 Pressure Gauges: 4-1/2 inch diameter sized to meet system pressure requirements.

2.7 PRODUCT SUBSTITUTIONS

2.7.1 Substitutions: [In accordance with Section 01 23 13 - Product Substitution Procedures] [No substitutions permitted].

2.7.1.1 Ensure materials and installation costs are supplied by single manufacturer.

3 EXECUTION

3.1 INSTALLERS

3.1.1 Use only installers with 2 years minimum experience in work similar to work of this Section.

3.2 EXAMINATION

3.2.1 Verification of Conditions: Verify that conditions of piping previously installed under other Sections or Contracts are acceptable for pump installation in accordance with manufacturer's written recommendations.

3.2.1.1 Visually inspect piping, piping configuration and piping location in presence of Consultant.

3.2.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.

3.2.1.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.3 PREPARATION

3.3.1 Weld pipe flanges to piping system for installation of pump.

3.3.1.1 Ensure suction and discharge pipe flanges are aligned and square to pipe.

3.4 INSTALLATION

3.4.1 Install pumps level in accordance with pump manufacturer's written recommendations.

3.4.2 Ensure that pump is pipe-mounted and free to float with any movement, expansion and contraction of piping system.

3.4.2.1 Support pump using floor mounted saddle as required.

3.4.2.2 For vertical in-line pumps supported from structure, ensure no pipe strain is imposed on pump flanges.

ARMSTRONG GUIDE NOTE: Use the following paragraph only when vibration isolators or isolation pads are deemed absolutely necessary to meet unique project requirements. S.A. Armstrong recommends piping system designs that do not require vibration or isolation pads for inline pumps.

3.4.2.3 Use vibration isolators, neoprene isolation pads to meet project conditions in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC].

ARMSTRONG GUIDE NOTE: Use the following paragraph if required by seismic criteria applicable to project location.

3.4.2.4 Use seismic restraint to meet project conditions in accordance with Section [23 05 48 – Vibration and Seismic Controls for HVAC].

3.4.1.5 Where pumps are supported entirely by piping system ensure hangers are sized for extra load of pump weight.

3.4.3 Install Flo-Trex valve after recommended length of spool piece on discharge connection from pump.

3.4.4 Install suction guides on pump suction connection.

3.4.5 Install pressure gauges on suction and discharge pump connections.

3.4.6 Install hangers and supports in accordance with Section [23 05 29 – Hangers and Supports for HVAC Piping and Equipment].

3.4.6.1 Adjust hangers and supports after pump is installed to ensure proper support.

3.4.7 Align pipe flanges with pump flanges and bolt together in accordance with pump manufacturer's written recommendations.

3.4.8 Connect pumps and integrated control system to electrical distribution system to IEE regulations and with authority having jurisdiction in accordance with Section [26 05 00 – Common Work Results for Electrical].

ARMSTRONG GUIDE NOTE: Use the following paragraph when a sensor at the most remote load condition is to be used.

3.4.8.1 Include wiring to most remote sensor in system where applicable.

3.4.8.1.1 Do not run pumps dry to check rotation.

3.5 FIELD QUALITY CONTROL

3.5.1 Field Inspection: Coordinate field inspection in accordance with Section [01 45 00 - Quality Control].

ARMSTRONG GUIDE NOTE: Specify requirements if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Manufacturer field reports are included under PART 1, Action and Informational Submittals.

3.5.2 Manufacturer's Services:

ARMSTRONG GUIDE NOTE: Use the following Paragraphs only when manufacturer's field services are provided and are required to verify the quality of the installed components. Establish the number and duration of periodic site visits required by manufacturer and specify below. Consult manufacturer for services required. Delete if field services are not required.

3.5.2.1 Coordinate manufacturer's services with Section [01 45 00 - Quality Control].
3.5.2.1.1 Have manufacturer review work involved in handling, installation, protection, and cleaning of hydronic pumps and components, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.
3.5.2.2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.
3.5.2.2.1 Report any inconsistencies from manufacturer's recommendations immediately to Consultant.
3.5.2.3 Schedule site visits to review work at stages listed:
3.5.2.3.1 After delivery and storage of pumps and components, and when preparatory work on which Work of this Section depends is complete, but before installation begins.
3.5.2.3.2 Upon completion of Work, after cleaning is carried out.
3.5.2.3.3 Obtain reports within three days of review and submit immediately to Consultant.

3.6 COMMISSIONING

3.6.1 Validate alignment, rotation, motor current draw, flows and pressures in accordance with Section [23 08 00 – Commissioning of HVAC].

3.7 CLEANING

ARMSTRONG GUIDE NOTE: For smaller projects that do not have a separate Division 01 Section for cleaning, delete the reference to Section 01 74 00 – Cleaning in the following two Paragraphs.

3.7.1 Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 - Cleaning and Waste Management].
3.7.1.1 Leave work area clean end of each day.

3.7.2 Final leaning: Upon completion, remove surplus materials, rubbish, tools, and equipment [in accordance with Section 01 74 00 – Cleaning and Waste Management].

3.7.3 Waste Management:
3.7.3.1 Co-ordinate recycling of waste materials with 01 74 19 - Construction Waste Management and Disposal.
3.7.3.2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
3.7.3.3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

3.8.1 Protect installed products and components from damage during construction.

3.8.2 Repair damage to adjacent materials caused by hydronic pump installation.

END OF SECTION 23 21 23 – HYDRONIC PUMPS

Quote Reference: SQJKM001185_1
Quote Name: budget Picton BPS fire pump
Project Name:
Date: 2025-10-31

Recommended Spare Parts and Kits

Item No.	Description
1.0	**Design Envelope and Commercial Pumps** **Available spare parts and kits for Design Envelope Sensorless 4300 1015-250.0**

Part/Kit	Armstrong Part number	Includes
Pump Casing Gasket Parts	8426401-008	Gasket
Pump Split Coupling Parts Kits	8427870-000K	Split Coupling, Collar, Capscrew & Washer
Pump Braided Hose Parts	8939031-730	Braided Hose
Pump Hardware Parts Kits	89981000-079K	Air Vent, Tee, Adapter, Nipple & Elbow
Pump Mechanical Seal Parts	8975002-374	Mechanical Seal
Spare Filter	8975000-303	filter-cartridge

Note: List above is the complete list of all available spare parts or kits for the pump size mentioned and not a commitment of inclusion in project supply scope.
Ensure required spare parts and kits are configured with pump separately. More details of those selected parts/kits (if any) shall be included in earlier page(s).

CONFIDENTIAL
ARMSTRONG FLUID TECHNOLOGY

Quote Reference: SQJKM001185_1
Quote Name: budget Picton BPS fire pump
Project Name:
Date: 2025-10-31

Recommended Spare Parts and Kits

2.0

Design Envelope and Commercial Pumps

Available spare parts and kits for 4300 - 8x8x15 - 4p - 200 hp - (Factory Choice Motor)

Part/Kit	Armstrong Part number	Includes
Pump Casing Gasket Parts	8426401-008	Gasket
Pump Split Coupling Parts Kits	8427870-000K	Split Coupling, Collar, Capscrew & Washer
Pump Braided Hose Parts	8939031-730	Braided Hose
Pump Hardware Parts Kits	89981000-079K	Air Vent, Tee, Adapter, Nipple & Elbow
Pump Mechanical Seal Parts	8975002-374	Mechanical Seal
Spare Filter	8975000-303	filter-cartridge

Note: List above is the complete list of all available spare parts or kits for the pump size mentioned and not a commitment of inclusion in project supply scope.
Ensure required spare parts and kits are configured with pump separately. More details of those selected parts/kits (if any) shall be included in earlier page(s).

CONFIDENTIAL
ARMSTRONG FLUID TECHNOLOGY

APPENDIX C

PRESSURE TANK TECHNICAL INFORMATION

AMTROL

EXTROL®

ASME Commercial Expansion Tanks

3 Years

Turbulator

DeepDrawn

AMTROL

EXTROL®

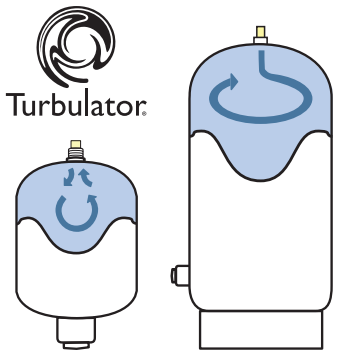
The Deep Drawn Difference.

Deep Drawn Construction

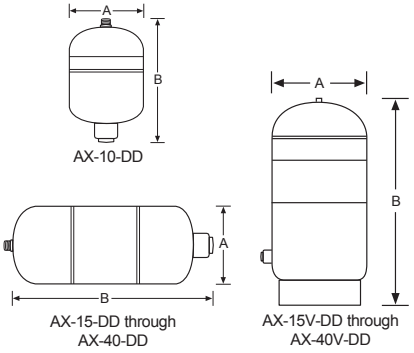
- Deep Drawing the domes doubles the strength of the steel.
- Half the welds vs. head & shell reducing potential leak paths.
- Integral diaphragm design features a unique hoop ring and groove configuration that securely locks together the diaphragm and domes.
- Industry's smallest footprint fits tight mechanical room spaces.
- In-line models feature end-mounted charging valve for easy air adjustments.

Patented Turbulator®

- Agitates incoming water to flush debris that can abrade the diaphragm.
- Helps extend the life of the tank.
- Featured in all diaphragm tank models.



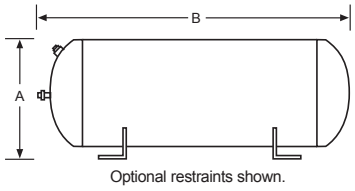
ASME Hydronic Expansion Tanks



AX Deep Drawn Diaphragm Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Length/ Height (Inches)	System Conn.[1] (Inches)	Shipping Weight (lbs.) Max. Working Pressure				
						125 PSI	150 PSI	175 PSI	250 PSI	300 PSI
In-Line & Horizontal Models										
AX-10-DD	6.4	3.2	12	18	¾	9	10	-	-	-
AX-15-DD	8.6	3.2	12	22	¾	22	24	-	-	-
AX-20-DD	16.5	11.3	15	25	¾	44	46	-	-	-
AX-40-DD	23.0	11.3	15	33	¾	64	66	-	-	-
Vertical Models										
AX-15V-DD	8.6	3.2	12	24	¾	38	26	-	-	-
AX-20V-DD	16.5	11.3	15	27	¾	51	48	-	-	-
AX-40V-DD	23.0	11.3	15	35	¾	72	68	-	-	-

Stainless Steel NPTM System Connection. Location: Center.

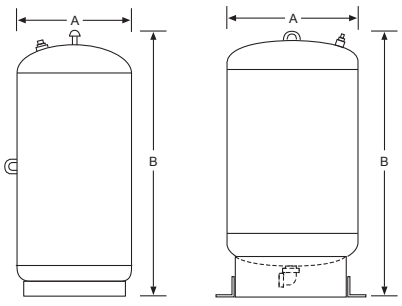


Optional restraints shown.

AX Horizontal Head & Shell Diaphragm Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Length (Inches)	System Conn.[1] (Inches)	Shipping Weight (lbs.) Max. Working Pressure				
						125 PSI	150 PSI	175 PSI	250 PSI	300 PSI
AX-15	8.0	2.4	12	19	½	-	-	48	55	59
AX-20	10.9	2.4	12	26	½	-	-	60	69	74
AX-40	21.7	11.3	16	29	½	-	-	96	111	118
AX-60	33.6	11.3	16	43	½	96	120	125	144	154
AX-80	44.4	22.6	24	29	1	153	160	200	230	245
AX-100	55.7	22.6	24	33	1	174	180	227	261	279
AX-120	68.0	34.0	24	41	1	204	245	266	306	327
AX-144	77.0	34.0	24	46	1	218	250	285	327	350
AX-180	90.0	34.0	24	54	1	232	265	301	348	372
AX-200	110.0	34.0	24	64	1	269	320	350	404	430
AX-240	132.0	46.0	30	51	1	401	403	522	602	642
AX-260	159.0	56.0	30	62	1¼	455	460	572	683	728
AX-280	211.0	84.0	30	80	1¼	580	600	755	870	930

[1]AX-15 through AX-100: Malleable Iron NPTF System Connection. Location: Center.
AX-120 through AX-240: Malleable Iron NPTM System Connection. Location: Center.
AX-260 and AX-280: Malleable Iron NPTM System Connection. Location: Top Offset.

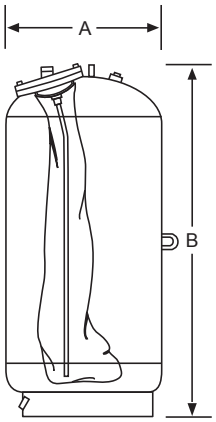


AX Vertical Head & Shell Diaphragm Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn.[2] (Inches)	Shipping Weight (lbs.) Max. Working Pressure				
						125 PSI	150 PSI	175 PSI	250 PSI	300 PSI
AX-15V	8.0	2.4	12	20	½	-	-	49	59	62
AX-20V	10.9	2.4	12	27	½	-	-	61	71	75
AX-40V	21.7	11.3	16	30	½	-	-	99	114	122
AX-60V	33.6	11.3	16	45	½	99	103	127	147	157
AX-80V	44.4	22.6	24	29	1	166	167	201	233	248
AX-100V	55.7	22.6	24	34	1	178	187	229	264	282
AX-120V	68.0	34.0	24	47	1	220	255	278	321	342
AX-144V	77.0	34.0	24	52	1	232	267	299	345	368
AX-180V	90.0	34.0	24	60	1	241	275	352	407	434
AX-200V	110.0	34.0	24	66	1	269	358	377	435	464
AX-240V	132.0	46.0	30	58	1	432	403	521	602	642
AX-260V	159.0	56.0	30	65	1¼	475	467	598	690	736
AX-280V	211.0	84.0	30	82	1¼	599	605	767	885	945

[2]AX-15V through AX-100V: Malleable Iron NPTF System Connection. Location: Top Center.
AX-120V through AX-240V: Malleable Iron NPTF System Connection. Location: Bottom.
AX-260V and AX-280V: Malleable Iron NPTM System Connection. Location: Top Offset.

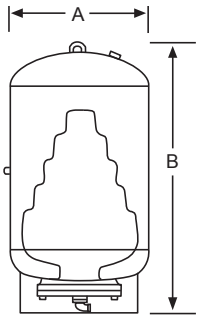
ASME Hydronic Expansion Tanks



L Series Full Acceptance Bladder Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn.[1] NPTF (Inches)	Shipping Weight (lbs.) Max. Working Pressure				
						125 PSI	150 PSI	175 PSI	250 PSI	300 PSI
200-L	53	53	24	38	1	190	205	250	290	297
300-L	80	80	24	52	1	230	292	320	385	372
400-L	106	106	24	66	1	275	343	375	465	595
500-L	132	132	24	79	1	311	372	435	545	750
600-L	158	158	30	64	1½	439	510	595	720	810
800-L	211	211	30	82	1½	543	565	620	905	950
1000-L	264	264	36	74	1½	609	750	750	1,015	1,065
1200-L	317	317	36	86	1½	700	860	860	1,175	1,235
1400-L	370	370	36	98	1½	783	970	970	1,335	1,400
1600-L	422	422	48	69	1½	1,106	1,425	1,615	1,916	2,015
2000-L	528	528	48	84	1½	1,284	1,675	2,386	2,410	2,651
2500-L	660	660	48	101	2	1,544	1,945	2,411	2,585	2,715
3000-L	792	792	48	118	2	1,719	2,225	2,500	2,950	3,100
3500-L	925	925	54	111	2	2,187	2,375	2,620	3,660	3,780
4000-L	1,057	1,057	54	125	2	2,352	2,640	3,000	4,080	4,285
5000-L	1,321	1,321	60	128	2	2,450	3,740	4,100	4,200	5,200
7500-L	1,980	1,980	72	127	3	4,000	4,300	4,500	5,550	6,750
10000-L	2,640	2,640	72	159	3	4,900	5,300	5,500	6,800	11,000
15000-L	3,963	3,963	72	233	3	6,000	7,600	7,900	9,800	12,500

[1]Malleable Iron System Connection.

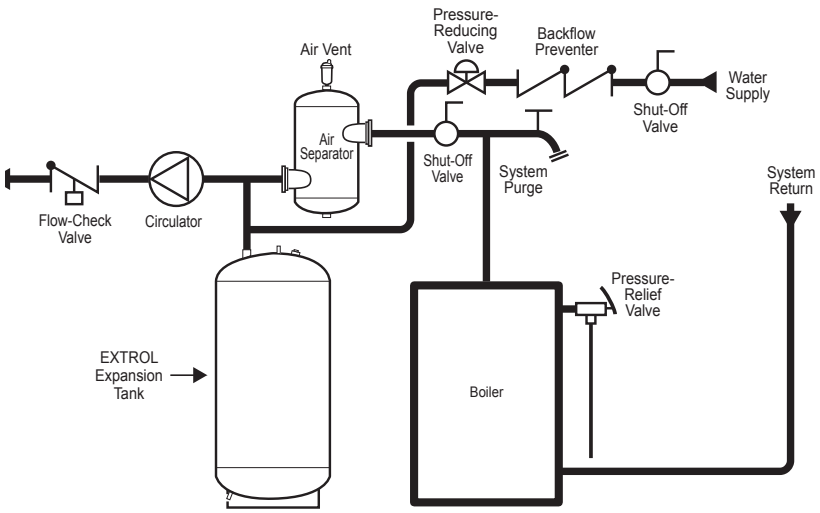


LBC Series Partial Acceptance Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn.[1] NPTF (Inches)	Shipping Weight (lbs.) Max. Working Pressure				
						125 PSI	150 PSI	175 PSI	250 PSI	300 PSI
35-LBC	10	10	10	37	1	67	76	80	94	100
50-LBC	13	11	12	37	1	76	78	91	106	114
85-LBC	22	11	16	35	1	92	95	110	129	138
100-LBC	26	11	16	39	1	99	102	119	138	150
130-LBC	34	27	20	35	1	135	140	162	189	202
165-LBC	44	27	20	40	1	149	153	178	214	225
200-LBC	53	27	24	41	1	195	205	234	273	293
300-LBC	80	27	24	56	1	233	254	280	326	350
400-LBC	106	53	24	69	1	274	308	329	383	411
500-LBC	132	53	24	83	1	310	352	372	434	465
600-LBC	158	53	30	67	1	438	442	525	613	657

[1]Malleable Iron System Connection.

Typical Installation



Hydronic Expansion Tanks

Amtrol hydronic expansion tanks are for use in closed, non-potable hydronic heating and chilled water systems. Available in diaphragm, full acceptance and partial acceptance bladder designs, all Extrol expansion tanks are made at our ISO 9001: 2015 certified facility. ASME tanks meet all Section VIII, Division I standards and have an industry leading 3-year warranty.

AX Series
Diaphragm Models
Head & Shell Design
AX-15(V) through AX-280(V)

- Industry's thickest diaphragm.
- Horizontal and vertical models are available with optional restraints.
- Factory pre-charge: 12 psig.
- Maximum operating temperature: 240° F.

L Series
Full Acceptance Models
200-L through 15000L

- Replaceable, full acceptance bladder design.
- Industry's thickest heavy duty butyl bladder.
- Free-standing on integral, welded ring base.
- Factory pre-charge: 12 psig.
- Maximum operating temperature: 240° F.

LBC Series
Partial Acceptance Models
35-LBC through 600-LBC

- Replaceable, partial acceptance bladder design.
- Industry's thickest heavy duty butyl bladder.
- Free-standing on integral, welded ring base.
- Factory pre-charge: 12 psig.
- Maximum operating temperature: 240° F.

Sizing Guide

Things You Must Know:

1. Total System Volume . . . . . _____ gallons
2. Minimum System Temperature . . . . . _____ °F
3. Maximum System Temperature . . . . . _____ °F
4. Minimum Operating Pressure at Expansion Tank . . _____ psig
5. Maximum Operating Pressure at Expansion Tank . _____ psig

Selection of Expansion Tank:

6. Find and enter "Water Expansion Factor" . . . . . _____ (see Table 1)
7. Amount of Expanded Water = Line (1) x Line (6) . . _____ gallons
8. Find and enter "Tank Acceptance Factor" . . . . . _____ (see Table 2)
9. Minimum Volume = Line (7) ÷ Line (8) . . . . . _____ gallons
10. Select an Expansion Tank that is at least equal to Line (9) for Tank Volume (gallons) and Line (7) for Max. Acceptance Volume (gallons). Multiple tanks may be required.

Table 1: Water Expansion Factor

Maximum System Temp.	Minimum System Temperature						
	40° F	50° F	60° F	70° F	80° F	90° F	100° F
60° F	.0005	.0049	—	—	—	—	—
70° F	.0015	.0014	.0009	—	—	—	—
80° F	.0026	.0025	.0020	.0011	—	—	—
90° F	.0041	.0040	.0035	.0026	.0015	—	—
100° F	.0058	.0057	.0052	.0043	.0031	.0017	—
110° F	.0077	.0077	.0072	.0062	.0051	.0037	.0019
120° F	.0100	.0099	.0095	.0086	.0074	.0060	.0043
130° F	.0124	.0123	.0118	.0109	.0098	.0083	.0066
140° F	.0150	.0149	.0145	.0135	.0124	.0110	.0093
150° F	.0179	.0178	.0173	.0164	.0153	.0133	.0121
160° F	.0209	.0208	.0204	.0194	.0181	.0165	.0148
170° F	.0242	.0241	.0236	.0227	.0216	.0201	.0184
180° F	.0276	.0275	.0271	.0261	.0250	.0236	.0219
190° F	.0313	.0312	.0307	.0298	.0287	.0272	.0255
200° F	.0351	.0350	.0346	.0336	.0325	.0311	.0294
210° F	.0391	.0390	.0386	.0376	.0365	.0351	.0334
220° F	.0434	.0433	.0428	.0419	.0408	.0393	.0376
230° F	.0476	.0475	.0471	.0461	.0450	.0436	.0419
240° F	.0522	.0521	.0517	.0507	.0496	.0482	.0465

For fluid applications other than water, consult AMTROL technical services.

Table 2: Tank Acceptance Factor

Maximum Operating Pressure (psig)	Minimum Operating Pressure at Tank (psig)										
	5	10	12	15	20	30	40	50	60	70	80
27	0.527	0.408	0.360	0.288	0.168	—	—	—	—	—	—
30	0.560	0.447	0.403	0.336	0.224	—	—	—	—	—	—
35	0.604	0.503	0.463	0.403	0.302	0.101	—	—	—	—	—
40	0.640	0.548	0.512	0.457	0.366	0.183	—	—	—	—	—
45	0.670	0.586	0.553	0.503	0.419	0.251	0.084	—	—	—	—
50	0.696	0.618	0.587	0.541	0.464	0.309	0.155	—	—	—	—
55	0.717	0.646	0.617	0.574	0.502	0.359	0.215	0.072	—	—	—
60	0.736	0.669	0.643	0.602	0.536	0.402	0.268	0.134	—	—	—
65	0.753	0.690	0.665	0.627	0.565	0.439	0.314	0.188	0.062	—	—
70	0.767	0.708	0.685	0.649	0.590	0.472	0.354	0.236	0.118	—	—
75	0.780	0.725	0.702	0.669	0.613	0.502	0.390	0.279	0.167	0.056	—
80	0.792	0.739	0.718	0.686	0.634	0.528	0.422	0.317	0.211	0.106	—
90	0.812	0.764	0.745	0.716	0.669	0.573	0.478	0.382	0.287	0.191	0.096
100	0.828	0.785	0.767	0.741	0.698	0.610	0.523	0.436	0.347	0.261	0.174
110	0.842	0.802	0.786	0.762	0.723	0.642	0.561	0.481	0.401	0.321	0.240

Acceptance factors based on expansion tank charged to minimum operating pressure while empty of liquid.

Non-ASME & Residential Models can be found in catalog MC2680.

ISO 9001:2015 CERTIFIED

3 Years

1400 Division Road, West Warwick, RI 02893 USA
T: 800.426.8765 www.amtrol.com

PHCC PLUMBING-HEATING-COOLING CONTRACTORS ASSOCIATION

MADE IN USA WITH GLOBAL COMPONENTS

© 2024 Worthington Enterprises
One or more features of this product are covered by U.S. patents, visit www.amtrol.com/patents for more information.

WELL-X-TROL®

Full Acceptance Bladder Well Tanks: WX-440C — WX-460C Series ASME

125 PSIG Working Pressure

Construction

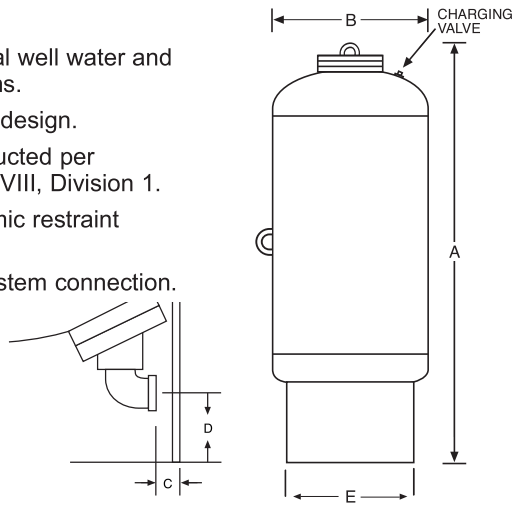
Shell	ASME Approved Steel
Full Acceptance Bladder	Heavy Duty Butyl
Bladder Thickness	.100 In. Minimum
System Connection	Malleable Iron (NPTF)
Finish	Red Oxide Primer
Air Valve	Schrader Valve w/EPDM Seats
Factory Precharge	25 PSIG (1.7 bar)

Performance

Maximum Operating Temperature	240°F (115°C)
Maximum Working Pressure	125 PSIG (8.6 bar)
Warranty	3-Years

Application

- For use in commercial well water and booster pump systems.
- Replaceable bladder design.
- Designed and constructed per ASME Code Section VIII, Division 1.
- Sight glass and seismic restraint options available.
- Available with S/S system connection.



ASME Models

Model Number	Tank Volume		Max. Accept. Volume		A Tank Height		B Tank Diameter		C Sys. Conn. Inset		D Sys. Conn. Centerline		E Stand Diameter		System Conn. (NPTF)	Shipping Weight	
	Gal	Lit	Gal	Lit	In	mm	In	mm	In	mm	In	mm	In	mm	In	Lbs	Kg
WX-447C	53	200	53	200	45	1143	24	610	2	51	3¾	95	19	483	2	263	119
WX-448C	80	300	80	300	59	1498	24	610	2	51	3¾	95	19	483	2	315	143
WX-449C	106	400	106	400	73	1854	24	610	2	51	3¾	95	19	483	2	319	145
WX-450C	132	500	132	500	87	2210	24	610	2	51	3¾	95	19	483	2	351	159
WX-451C	158	600	158	600	73	1854	30	762	3½	89	5½	140	24	610	2	493	224
WX-452C	211	800	211	800	91	2311	30	762	3½	89	5½	140	24	610	2	602	273
WX-453C	264	1000	264	1000	86	2184	36	914	3⅞	98	6¾	171	30	762	3	676	307
WX-454C	317	1200	317	1200	98	2489	36	914	3⅞	98	6¾	171	30	762	3	762	346
WX-455C	370	1400	370	1400	110	2794	36	914	3⅞	98	6¾	171	30	762	3	843	382
WX-456C	422	1600	422	1600	82	2083	48	1219	7½	191	7⅛	181	42	1067	3	1154	523
WX-457C	528	2000	528	2000	97	2464	48	1219	7½	191	7⅛	181	42	1067	3	1331	604
WX-458C	660	2500	660	2500	84	2134	60	1524	7⅝	194	7⅛	181	54	1372	4	1450	658
WX-459C	792	3000	792	3000	99	2515	60	1524	7⅝	194	7⅛	181	54	1372	4	2169	984
WX-460C	925	3500	925	3500	107	2718	60	1524	7⅝	194	7⅛	181	54	1372	4	2300	1043
WX-461C	1056	4000	1056	4000	121	3073	60	1524	7⅝	194	7⅛	181	54	1372	4	2638	1197
WX-462C	1320	5000	1320	5000	104	2642	72	1829	8⅜	213	4¾	121	60	1524	4	3500	1588
WX-463C	1980	7500	1980	7500	140	3556	72	1829	8	203	6	152	60	1524	4	4100	1860

All dimensions and weights are approximate.

Job Name _____ Notes _____

Engineer _____ _____

Contractor _____ _____

P.O. No. _____ _____

Sales Rep. _____ _____

Model No. _____ _____

BLADDER ONLY

LEAD FREE

Amtrol Inc., 1400 Division Road, West Warwick, RI 02893 USA T: 401.884.6300 **www.amtrol.com**

MC4400 (01/24)

Appendix E3 Watermain Hydraulic Analysis and Water Demands

SCS consulting group ltd

WATER DISTRIBUTION ANALYSIS REPORT FOR THE PROPOSED INTERIM HISTORIC DISTRICT, PHASE 1 OF RENTAL UNIT AND PHASE 1 OF VILLAGE A DEVELOPMENT

INTERIM HISTORIC DISTRICT, PHASE 1 OF RENTAL UNIT AND PHASE 1 OF VILLAGE A DEVELOPMENT
PICTON, PRINCE EDWARD COUNTY
ONTARIO

PREPARED FOR: PEC COMMUNITY PARTNERS INC (PEC)
RAE PROJECT NUMBER: 26021001
DATE: 18/02/2026

RA ENGINEERING INC. 18075 LESLIE STREET, UNIT 210, NEWMARKET, ON. L3Y 9A4.
Tel: (905)235-9105, Fax: (905)235-9150
E-Mail: info@raengineer.com, Web: www.raengineer.com

DISCLAIMER

This document has been prepared by RA Engineering Inc (RAE) for PEC Community Partners Inc., (PEC) for the Phase 1 of Rental with 8 Townhouses and Phase 1 of Village A Development Water Distribution System in the Picton and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization of RAE being obtained. Neither RAE nor PEC accept any responsibility or liability to any third party using or relying upon this document and such third party (ies) will by their use or reliance be taken to confirm their agreement to indemnify, defend and hold harmless RAE and PEC for all losses, claims, expenses or damages (“Losses”) resulting in whole or in part from any such use or reliance herein. To the extent that this document is based on information supplied by party (ies) other than PEC, then in such instance(s) RAE accept no responsibility or liability for any Losses suffered by any such third party (ies), whether through contract or tort, stemming from any conclusions based on data supplied by parties other than PEC or RAE and used by RAE in preparing this document.

DOCUMENT REVISION HISTORY

VERSION	DATE	AUTHOR(S)	REVISION NOTES
0	18/02/2026	ABI RAJAGOPAL, M.A.SC. RAGU NATHAN, P.ENG.	FIRST SUBMISSION (VER0)

TABLE OF CONTENTS

1 INTRODUCTION 1

2 DESIGN CRITERIA, SCENARIOS AND DEMANDS 2

- 2.1 Development Criteria 2
- 2.2 Scenario modeled, Respective Population Counts and Water Demand .. 3
- 2.3 Fire Demands 4
- 2.4 System Pressure Requirements 4
- 2.5 Watermain Sizing 4
- 2.6 Water Supply System 5

3 ANALYSIS 6

- 3.1 Model Setup 6
- 3.2 Model Setup for Free Chlorine Residual Analysis 6
- 3.3 Model Results and System Pressures 7

4 RECOMMENDATION AND CONCLUSION 9

FIGURES

Figure 1: Location of Existing Picton Heights, Proposed Interim Historic District, Rental Unit & Phase 1 of Village A Development 2
Figure 2: Parameters used to analyse the Chlorine decay ... 7

TABLES

Table 1: Water Design criteria 3
Table 2: Water Design Peaking Factors 3
Table 3: Total Population Count and Water Demands 3
Table 4: Fire Flow Demand for the Scenario 4
Table 5: Hazen – Williams Roughness Factors(Source: MECP) 5
Table 6: Estimated Velocity for Various Diameter of the Feedermain 5
Table 7: Total Demand from the HBPS 5
Table 8: Model Results For ADD, MDD & PHD 7
Table 9: Model Results for Fire Flow plus MDD 8

APPENDICES

Appendix A: Criteria, Demands, Layouts & Pump Curve
Appendix B: Model Results
Appendix C: Chlorine Residual Analysis Results
Appendix D: Color coded map for MDD+FF & Residual Pressure Summary at Existing Picton Heights

1 INTRODUCTION

RA Engineering Inc. (RAE) is retained by PEC community Inc. (PEC) to conduct a water distribution analysis for the proposed Phase 1 of Rental Units with 8 Townhouses and Phase 1 of Village A development in Picton Prince Edward County (County), Ontario.

As part of this hydraulic assessment RAE has completed the following:

1. Connect the water distribution network from the Picton Heights Booster Pumping Station (HBPS) to the proposed Interim Historic District, Phase 1 of Rental units with 8 Townhouses and to the proposed Phase 1 of Village A development.
2. Run the model to;
    - Verify the proposed water distribution network to achieve service criteria during Average Day Demand (ADD) , Maximum Day Demand (MDD), Peak Hour Demand (PHD), & Fire Flow during Maximum Day demand (FF+MDD).
    - Verify the impact on existing systems (Picton heights development already developed in the model provided by the County) connected to the Picton HBPS based on Interim Historic District Flows, Phase 1 of Rentals with 8 Townhouses Flows and Phase 1 of Village A Flows.
    - Analyse the Free Chlorine Residual in the system.
    - Evaluate Heights Booster Station pump – system upgrade requirements.
3. Prepare this report summarizing the modeling results & recommendations for agency review and detailed design purposes.

The proposed Phase 1 of Rental with 8 Townhouses is located at the southwest of Phase 1 of Village A development which is located on the east side of County Rd 22, west side of undeveloped land, south side of Macaulay Village and future VineRidge, and north side of Kingsley Road in Picton.

The proposed developments include residential and commercial units as follows.

1. Interim phase of Historic District is comprised of commercial units and mixed-use development with an equivalent population of 363 persons.
2. A proposed Phase 1 of Rental Unit within Block 295 comprised of 120 units with 214 persons.
3. A proposed Townhouses within Block 295 comprised of 8 units with 20 persons.
4. Phase 1 of Village A comprised of approximately 213 units including 92 Singles, 91 Street Townhouses and 30 Stacked Townhouses totaling an equivalent to 579 persons.

To complete this analysis, water distribution network models for these developments have been added to the model (InfoWater Pro) provided by the County. The existing and proposed development locations are shown in **Figure 1**.

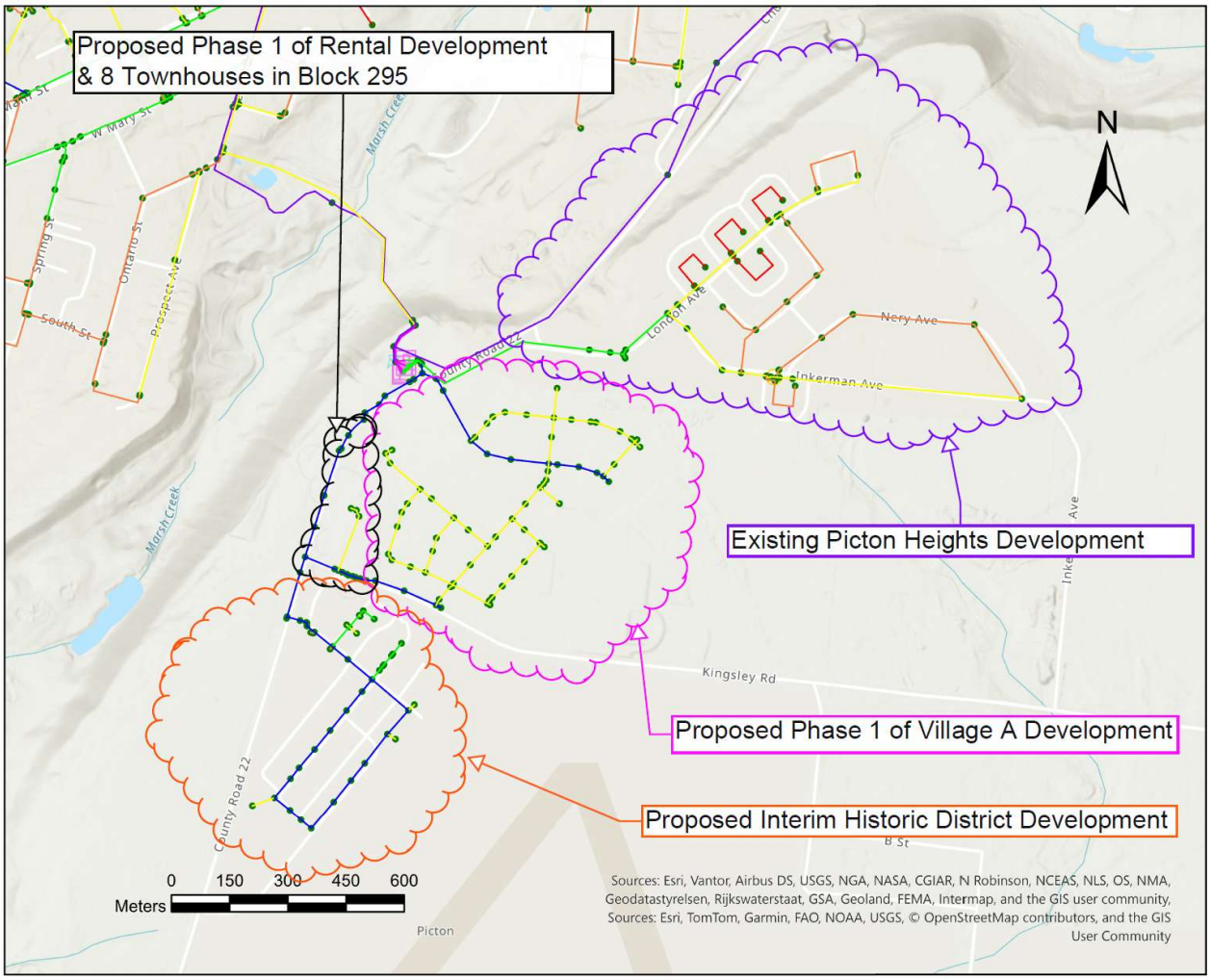


Figure 1: Location of Existing Picton Heights, Proposed Interim Historic District, Phase 1 of Rental Unit & Phase 1 of Village A Development

2 DESIGN CRITERIA, SCENARIOS AND DEMANDS

2.1 Development Criteria

The design criteria used to determine water demands were based on the Design Guidelines for Drinking water systems, Ministry of Environment (2008), MECP as appropriate.

Demands were calculated using the Average Day consumption rate of 320 Litres/Capita/Day. The equivalent population for the development as listed in **Table 1** below.

Table 1: Water Design criteria

PICTON HISTORIC DISTRICT (INTERIM & RENTAL) AND PHASE 1 of VILLAGE A	CRITERIA	UNITS
Average Day Consumption Rates - Residential	320	L/c/day
Equivalent Population (Interim - Historic District)	1.7	People/unit
Equivalent Population (Phase 1 of Rental)	54 units @1.4; 66 units@2.1	People/unit
Equivalent Population (Phase 1 of Village A- Singles)	3.0	People/unit
Equivalent Population (Townhouses in Block 295 & Phase 1 of Village A – Street Townhouses/Stacked Townhouses)	2.5	People/unit

After determining the Average Day design flow, the corresponding Maximum Day and Peak Hour demands were calculated based on MECP guideline. Total population for the Historic District interim is 363, Phase 1 of Rental Development with 8 Townhouses in Block 295 is 234, Phase 1 of Village A Development is 579, existing population of Picton Heights based on manual count is 700. **Table 2** provides peaking factors used in model based on MECP for the total populations of 1,876.

Table 2: Water Design Peaking Factors

DEVELOPMENT	Population	Population Range	PEAKING FACTOR	
			MAXIMUM DAY	PEAK HOUR
Interim Historic, Phase 1 of Rental , Existing Picton Heights & Phase 1 of Village A	1,876	1,001 – 2,000	2.50	3.75

2.2 Scenario modeled, Respective Population Counts and Water Demand

The following Scenario has been modeled in this exercise. The population count and calculated demands for the proposed developments for this scenario are summarized in **Table 3 .** Details of water demand calculations by nodes for proposed developments are included in **Appendix A**.

Scenario :

The model was developed for Interim Historic District, Phase 1 of Rental with 8 Townhouses, Existing Picton Heights and Phase 1 of Village A.

Table 3: Total Population Count and Water Demands

Scenario (Interim + Phase 1 of Rental + Existing Picton Heights + Phase 1 of Village A)			Peaking factor for population between 1,001 to 2,000	
			2.5	3.75
DEVELOPMENT	POPULATION	ADD	MDD	PHD
Interim Historic District	363	1.34	3.36	5.04
Phase 1 of Rental in Block 295	214	0.79	1.98	2.98
8 Townhouses in Block 295	20	0.07	0.19	0.28
Picton Heights (Existing)	700	2.59	6.48	9.72
Phase 1 of Village A	579	2.14	5.36	8.04
Total	**1,876**	**6.95**	**17.37**	**26.05**

Demands for the proposed development were added to the hydraulic model. Analysis was conducted for average day demand (ADD), maximum day demand (MDD), peak hour demand (PHD), maximum day plus fire flow (FF + MDD) and free chlorine residual for the proposed developments for the scenario mentioned above.

2.3 Fire Demands

Fire demand was calculated based on total service population for the scenario as per Table 8.1 of MECP Guidelines. The required fire flow for the Scenario is 89 L/s. The required fire flow for the scenario is provided in **Table 4** below.

Table 4: Fire Flow Demand for the Scenario

Fire Flow (Interim+Rental+Picton Heights_Existing & Phase 1 of Village A)			
Scenario	**Population**	**FIRE FLOWS (L/S)**	**Duration (Hours)**
	1,500	73	2
Proposed Developments with Existing Picton Heights	**1,876**	**89.5**	**2**
	2,000	95	2

Even though the required fire flow is 89.5 L/s as per MECP guidelines, Fire Flow Memorandum prepared by DLW Engineering Services Limited in July 2023 described that the calculated governing fire flow rate for Historic District Development based on OBC is 150 L/s for 2 hrs as shown in Table 5 of the memorandum. As such, it is assumed 82 L/s fire pump would be upgraded to 150 L/s and this fire flow for the proposed development has been used to run the model while maintaining the existing fire flow of 82 L/s at Picton Heights.

2.4 System Pressure Requirements

In addition of meeting fire flows, the development must be within operating pressure requirements.

As per the MECP, OBC guidelines and PEC Criteria,

1. The normal operating pressure in the distribution system should be approximately 350 to 480 kPa (50 to 70 psi) and not less than 275 kPa (40 psi).
2. The maximum pressures in the distribution system should not exceed 700 kPa (100psi) and when static pressures exceed 700 kPa (100 psi), pressure reducing valves are required at the service connection.
3. Under fire flow conditions, pressures above 140 kPa (20 psi) must be maintained.

2.5 Watermain Sizing

Watermains are to be sized appropriately to maintain adequate flows without causing excessive energy loss or resulting in water quality decay. It should therefore be sized to carry the maximum of

- Maximum day plus fire demand
- Peak hour demand

Friction factors were assigned according to the pipe diameter as suggested by the MECP Specifications for PVC pipes and as shown in **Table 5.**

Table 5: Hazen – Williams Roughness Factors(Source: MECP)

DIAMETER - NOMINAL	C - FACTOR
150 mm	100
200 mm to 250 mm	110
300 mm to 600 mm	120
Over 600 mm	130

Table 6 below provides the estimated velocity of the flow for various diameters of the Feedermain servicing the development. Based on the **Table 6**, we have proposed a 300 mm diameter Feedermain which gives a maximum velocity slightly less than 3m/s during FF+MDD for the development.

Table 6: Estimated Velocity for Various Diameter of the Feedermain

Development	FF+MDD (L/s) through Feedermain servicing the proposed development	Diameter 1 (mm)	Diameter 2 (mm)	Diameter 3 (mm)
		250	300	400
		Estimated Velocity (m/s)	Estimated Velocity (m/s)	Estimated Velocity(m/s)
Proposed Interim Historic, Phase 1 of Rental & Phase 1 of Village A Development	167.37	3.41	2.37	1.33

2.6 Water Supply System

The Picton HBPS which services the existing development in the Picton Area (Existing Picton Heights development) is equipped with a 4,500 m^3 reservoir, two 12 L/s duty pumps, two 12L/s stand by and 82 L/s Fire Pump. The proposed system will assume the same reservoir, 3 duty pumps and one standby pump to service the population. Existing 82 L/s Fire pump is expected to be upgraded for the proposed developments.

Total water supply needed from the HBPS to the existing Picton Heights development and proposed developments is provided in the **Table 7** below.

Table 7: Total Demand from the HBPS

DEVELOPMENT	TOTAL DEMAND (L/S)		
	ADD	MDD	PHD
	L/s	L/s	L/s
Existing & Proposed Development	**6.95**	**17.37**	**26.05**

3 ANALYSIS

3.1 Model Setup

The analysis was conducted under the assumption that water supply and connecting watermain are in place from the Picton HBPS to the proposed Development.

The assumptions made for the boundary condition for the hydraulic analysis were:

1. The entire Picton Heights and proposed development is a closed system serviced by the Picton Heights Reservoir.
2. The Reservoir always has capacity to service the proposed development as well as Picton Heights development.
3. The water level at the reservoir will be maintained between 139.2 m to 139.8 m.

New pipes and nodes were built in InfoWater Pro from Picton HBPS to the development and demands were added to the model as described in **Section 2.** Node elevations are derived from Grading Plan provided by SCS Consulting Group Ltd. Friction factors for pipes within the model were assigned according to **Table 5.** The analysis was conducted under Average Day, Maximum Day, Peak Hour and Maximum Day plus fire flow conditions.

As described in **Section 2.5**, the proposed 300 mm feedermain pipe has been connected from the existing Node J1996 at the HBPS along County Rd 22 to service the proposed development. The water distribution system within the proposed development comprised of 300 mm, 250 mm & 200 mm diameter pipes in the model as shown in the distribution layouts of each scenario provided in **Appendix A.**

The Model was run to provide total maximum day demand of 17.37 L/s as shown in **Table 7**.It is assumed 82 L/s fire pump would be upgraded to 150 L/s and this fire flow for the proposed development has been used to run the model while maintaining the existing fire flow of 82 L/s at existing Picton Heights. Pump Performance curve provided by DLW Engineering services Ltd has been used to run the fire flow model. See attached ARMSTRONG Pump Performance Curve in **Appendix A**.

3.2 Model Setup for Free Chlorine Residual Analysis

Before running the model for this analysis, the resident time of the water in the feedermain was estimated to understand the timescale involved in the chlorine decay reactions. The proposed 300mm feedermain from the HBPS to the development along County Rd #22 is approximately 563 m with an estimated volume of 40m^3. The average estimated resident time based on ADD is 5 hrs for Scenario which indicates a chlorine residual analysis for an extended period simulation of 36 or 48 hours is adequate for this development.
Water Quality Model in InfoWater Pro used to perform the chlorine decay analysis. Initial free chlorine concentration is set to 1.5 mg/L at the HBPS reservoir & all nodes in the Picton, Historic District, Phase 1 of Rental & Phase 1 of Village A. 1st order reaction kinetic equation has been used for the analysis. The reaction rate of free chlorine (Global Bulk Coefficient) of "-1" has been used to indicate the decay rather than growth within the pipes in the system whereas "-0.5" is used for the reaction rate of free chlorine (Global Wall Coefficient) at the walls of the pipes in the system. See **Figure 2** for the setting of the water quality model simulation.

The model has been run for the Average day demand for extended period simulation (EPS) of 48 hrs.

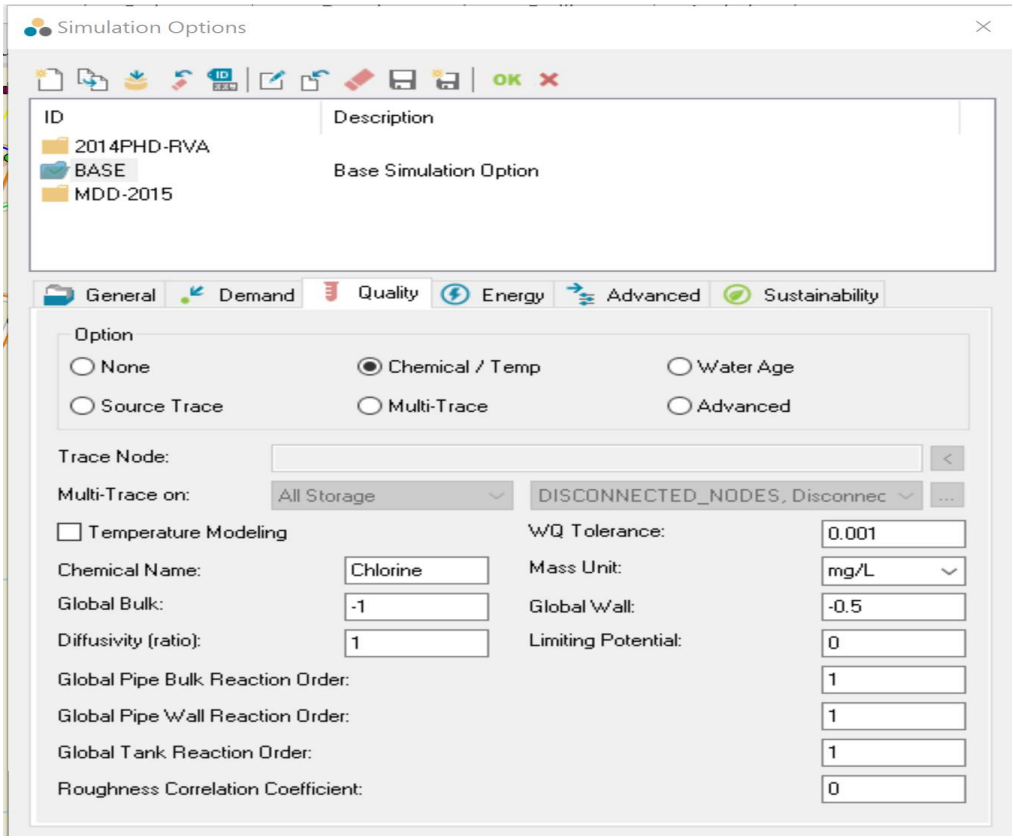


Figure 2: Parameters used to analyse the Chlorine decay

3.3 Model Results and System Pressures

The model results of the hydraulic and chlorine residual analysis are presented in this section.

3.3.1 Model Results for Hydraulic Analysis

The model results show that all pressures remain within the required operating range under ADD, MDD & PHD scenarios for the proposed Historic Development, Phase 1 of Rental with 8 Townhouse development, Phase 1 of Village A development and existing Picton Heights development as shown in the **Table 8**.

Table 8: Model Results For ADD, MDD & PHD

Development	Average Day	Maximum Day	Peak Hour
Phase 1 of Rental in Block 295	62.38 psi (430 kPa)	62.32 psi (430 kPa)	62.29 psi (430 kPa)
8 Townhouses in Block 295	57.36 – 58.20 psi (396– 402kPa)	57.31– 58 psi (396 – 402 kPa)	57.28– 58.12 psi (396 – 401 kPa)
Interim Historic District	57.44 -68.93 psi (397-476 kPa)	57.38 -68.89 psi (396-476 kPa)	57.35 -68.88 psi (396-476 kPa)
Phase 1 of Village A	56.06 – 64.62 psi (387-446 kPa)	56.00 – 64.59 psi (387-446 kPa)	55.97 – 64.58 psi (386-446 kPa)
Picton Heights	50.17 – 56.33 psi (346-389 kPa)	50.05 – 56.25 psi (346-389 kPa)	49.93 – 56.19 psi (345-388 kPa)

The results of the model for the development are attached to this report in **Appendix B1**.

3.3.2 Model Results for Fire Flow Analysis

The Fire flow analysis has been conducted for the maximum day plus fire demand of 167.37 L/s as shown in **Table 9.** The maximum day plus required fire flow in the proposed development in Interim Historic district, Phase 1 of Rental and Phase 1 of Village A will provide the minimum pressures in the proposed water distribution system as summarized in **Table 9**.

Color-coded maps representing the residual pressures has been provided in **Appendix B2**.

Table 9: Model Results for Fire Flow plus MDD

Scenario	REQUIRED MDD	REQUIRED FIRE FLOW	REQUIRED FIRE FLOW + MDD	MINIMUM AVAILABLE RESIDUAL PRESSURE DURING FF + MDD		
	L/s	L/s	L/s	Phase 1 of Rental	Interim Historic District	Phase 1 of Village A
Proposed Development	17.37	150	167.37	50.74 psi	51.42 psi	37.56 psi

The model results show the resulting minimum available residual pressure under fire flow condition for the proposed development is greater than the required minimum pressure of 20.

The fire flow simulation for the existing development (Picton heights) shows the minimum available residual pressure at the many of the hydrant locations are less than 20psi under the fire flow condition and even negative residual pressures due to the smaller watermain (100mm/150mm) and/or dead ends. See color coded map provided in **Appendix D. Appendix D** also provides a Table which summarizes the residual pressures (Column A & C) and hydrant available fire flows (Column B & D) for the existing and proposed conditions.

The results of the proposed developments with the existing model show that water pressures and Hydrant available fire flow are better at the Picton Heights. Refer Column C & D of **Appendix D**. In this model simulation, the proposed development will not impact the existing condition.

3.3.3 Model Results for Free Chlorine Residual Analysis

As per O'Reg. 269/03:DRINKING-WWATER SYSTEMS, the free chlorine residual should not be less than 0.05 mg/L in the drinking water and Government of Canada -Page 3: Guidelines for Canadian Drinking Water Quality: Guideline Technical Document for Chlorine shows the data provided by six provinces and territories indicate that typical levels of free chlorine in Canadian drinking water systems range from 0.4 to 2.0 mg/L leaving the treatment plant, from 0.4 to1.2 mg/L at intermediate points in the distribution system, and from 0.04 to 0.8 mg/L at the far end of the distribution system.

Based on 1.5mg/L initial free chlorine residual at the HBPS reservoir, the results of the EPS of free chlorine residual analysis done for ADD show the free chlorine residual present in the pipes of the development is minimum residual of 0.12 mg/L at 48hrs. This range is within the guidelines described above.

The results of the free chlorine residual analysis are attached in **Appendix C.**

4 RECOMMENDATION AND CONCLUSION

The proposed watermain layout for the Historic Development, Phase 1 of Rental with 8 Townhouses and Phase 1 of Village A can achieve hydraulic requirements prescribed by the MECP & OBC watermain design criteria as summarized below.

- The service pressures at all nodes in interim historical district, Phase 1 of rental unit with 8 Townhouses and Phase 1 of Village A development are expected to range between 56– 69 psi (387 – 476 kPa)
- The maximum day plus required fire flow for the proposed development will provide the minimum pressure of 20 psi in the water distribution system.
- The service pressures at all nodes in Picton Heights development under maximum day flows and peak hours flows are expected to range between 50 – 56 psi (345 – 389 kPa).
- The existing 82 L/s fire pump has to be upgraded to 150 L/s to comply with OBC requirements per the DLW July 2023 memo.
- The addition of proposed developments to the existing model while maintaining the existing required fire flow at Picton Heights has improved the residual pressures at the existing development due to the upgraded pump.
- The free chlorine residue within the proposed development and in the proposed 300 mm pipe on County Rd #22 was minimum of 0.12 mg/ at 48hrs. This range is within the acceptable limit as per the MECP guidelines.

APPENDIX A

Criteria, Demands, Layout, Fire Pump Performance Curve

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Date: 10/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Design Criteria
Picton
Prince Edward County
Design Guidelines for Drinking water systems, Ministry of Environment, MECP (2008) **& OBC**

Type of Development	Average Day Consumption Rates	Source
Residential	320 Litre/Capita/Day	*MECP (2008)*

Water Design Peaking Factors as per MECP

Development (Population:1,001 - 2,000)		
Peaking Factor	**Residential**	
Maximum Day	2.50	*MECP (2008)*
Peak Hour	3.75	

Coefficient of Roughness

Size of Pipe (mm Dia.)	Coefficient of Roughness (C)	
150	100	*MECP (2008) - Table 10-1:C-Factor*
200-250	110	
300-600	120	
Over 600	130	

Minimum Pipe Size

Type of Development	Size of Pipe (mm Dia.)	
Residential	150	*MECP (2008)*

Working Pressures

Parameter	Pressure	
Normal Condition		
Minimum Pressure	275 kPa (40 psi)	*MECP (2008)*
Acceptable Maximum	550 kPa (80 psi)	*OBC*
Fire Flow Conditions		
Minimum Pressure	140 kPa (20 psi)	*MECP (2008)*

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Date: 10/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Water Demand Calculations
Existing Picton Heights, Historic District- Interim Historic District,Phase 1 of Village A & Phase 1 of Rental
Picton, Prince Edward County

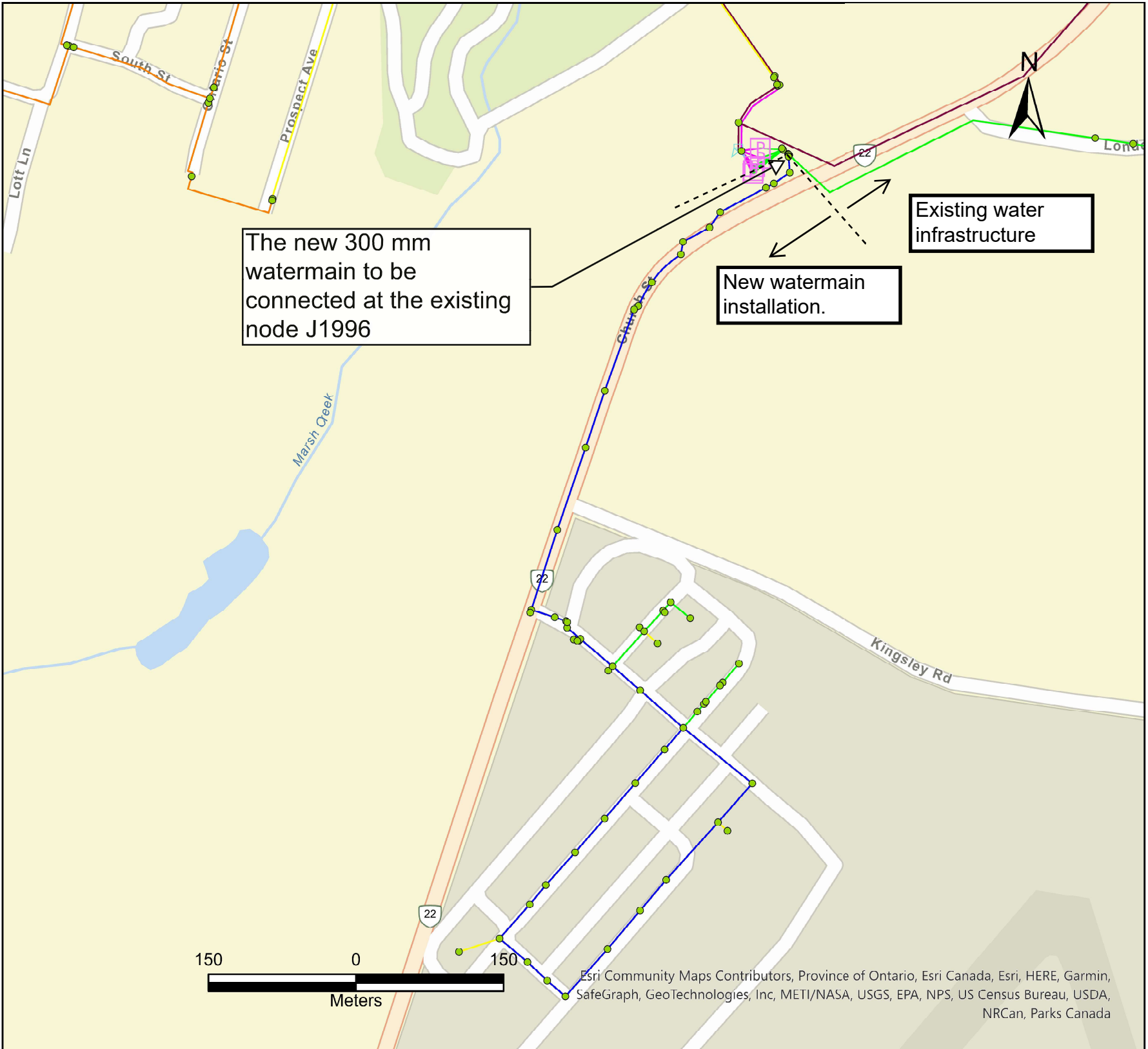
Node	Equivalent Population		Water Demands		
	Residential/ Commercial	Total Population	Average Day	Maximum Day	Peak Hour
	(Units)/(Area,ha)		(L/s)	(L/s)	(L/s)
Exiting Picton Heights					
Total_Existing Picton Heights		***700***	***2.59***	***6.48***	***9.72***
Interim_Historic District					
J2283	20	28	0.10	0.26	0.39
	0.15	34	0.13	0.32	0.48
J2301	0.07	16	0.06	0.15	0.22
J2292	0.07	16	0.06	0.15	0.22
J2295	0.14	32	0.12	0.30	0.45
J2279	0.10	23	0.08	0.21	0.32
J2281	0.13	30	0.11	0.28	0.41
J2406	0.01	2	0.01	0.01	0.02
J2434	0.50	115	0.43	1.07	1.60
J2303	0.05	11	0.04	0.11	0.16
J2424	0.24	55	0.20	0.51	0.77
Total_Interim Historic District	***1.46***	***363***	***1.34***	***3.36***	***5.04***
Rental Development with 8 Townhouses_Phase 1					
Rental_Phase 1_J2532	***120.00***	***214***	***0.79***	***1.98***	***2.98***
J2514-2	1.00	2.5	0.009	0.023	0.035
J2514-3	1.00	2.5	0.009	0.023	0.035
J2514-4	1.00	2.5	0.009	0.023	0.035
J2514-5	1.00	2.5	0.009	0.023	0.035
J2514-6	1.00	2.5	0.009	0.023	0.035
J-2514-7	1.00	2.5	0.009	0.023	0.035
J2514-8	1.00	2.5	0.009	0.023	0.035
J2514-9	1.00	2.5	0.009	0.023	0.035
Total_Rental with 8 Townhouses_ Phase 1	***128.00***	***234.20***	***0.87***	***2.17***	***3.25***

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Node	Equivalent Population		Water Demands		
	Residential/ Commercial	Total Population	Average Day	Maximum Day	Peak Hour
	(Units)/(Area,ha)		(L/s)	(L/s)	(L/s)
Phase 1 of Village A Development					
J2472-1	0	0	0.00	0.00	0.00
J2473	0.00	0	0.00	0.00	0.00
J2474	5.00	15	0.06	0.14	0.21
J2475	5.00	15	0.06	0.14	0.21
J2476	11.00	31	0.11	0.28	0.42
J2477	1.00	3	0.01	0.03	0.042
J2478	8.00	24	0.09	0.22	0.33
J2479	4.00	12	0.04	0.11	0.17
J2480	5.00	15	0.06	0.14	0.21
J2481	4.00	12	0.04	0.11	0.17
J2482	0.00	0	0.00	0.00	0.00
J2483	6.00	18	0.07	0.17	0.25
J2484	8.00	24	0.09	0.22	0.33
J2485	7.00	21	0.08	0.19	0.29
J2486	0.00	0	0.00	0.00	0.00
J2487	0.00	0	0.00	0.00	0.00
J2488	0.00	0	0.00	0.00	0.00
J2489	0.00	0	0.00	0.00	0.00
J2490	0.00	0	0.00	0.00	0.00
J2491	5.00	13	0.05	0.12	0.17
J2492	4.00	10	0.04	0.09	0.14
J2493	0.00	0	0.00	0.00	0.00
J2494	6.00	18	0.07	0.17	0.25
J2495	0.00	0	0.00	0.00	0.00
J2496	7.00	18	0.06	0.16	0.24
J2497	0.00	0	0.00	0.00	0.00
J2498	0.00	0	0.00	0.00	0.00
J2499	9.00	23	0.08	0.21	0.31
J2500	10.00	25	0.09	0.23	0.35
J2501	5.00	13	0.05	0.12	0.17
J2502	0.00	0	0.00	0.00	0.00
J2503	0.00	0	0.00	0.00	0.00
J2504	0.00	0	0.00	0.00	0.00
J2505	5.00	13	0.05	0.12	0.17
J2506	6.00	16	0.06	0.14	0.22
J2507-1	6.00	15	0.06	0.14	0.21
J2508	0.00	0	0.00	0.00	0.00
J2509	0.00	0	0.00	0.00	0.00
J2510	0.00	0	0.00	0.00	0.00
J2511	0.00	0	0.00	0.00	0.00

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Node	Equivalent Population		Water Demands		
	Residential/ Commercial	Total Population	Average Day	Maximum Day	Peak Hour
	(Units)/(Area,ha)		(L/s)	(L/s)	(L/s)
J2512	0.00	0	0.00	0.00	0.00
J2513	0.00	0	0.00	0.00	0.00
J2514	0.00	0	0.00	0.00	0.00
J2515	0.00	0	0.00	0.00	0.00
J2516	10.00	25	0.09	0.23	0.35
J2517	6.00	16	0.06	0.14	0.22
J2518	6.00	16	0.06	0.14	0.22
J2519	8.00	24	0.09	0.22	0.33
J2520	7.00	21	0.08	0.19	0.29
J2521	1.00	3	0.01	0.03	0.04
J2522	10.00	25	0.09	0.23	0.35
J2523	9.00	23	0.08	0.21	0.31
J2524	12.00	30	0.11	0.28	0.42
J2525	9.00	23	0.08	0.21	0.31
J2526	4.00	12	0.04	0.11	0.17
J2527	4.00	12	0.04	0.11	0.17
J2528	0.00	0	0.00	0.00	0.00
J2529	0.00	0	0.00	0.00	0.00
Total Stacked Townhouses	30	75	0.28	0.69	1.04
Total Street Townhouses	91	228	0.84	2.11	3.16
Total Singles	92	276	1.02	2.56	3.83
Total Residential Units in Phase 1 of Village A	***213***	***579***	***2.14***	***5.36***	***8.03***
Total_Picton Heights, Interim Historic District, Phase 1 of Rental with 8 Townhouses & Phase 1 of Village A		**1876.0**	**6.95**	**17.37**	**26.05**



PICTON

PIPE LAYOUT INTERIM PHASE

Legend

Pipe

Diameter (mm)

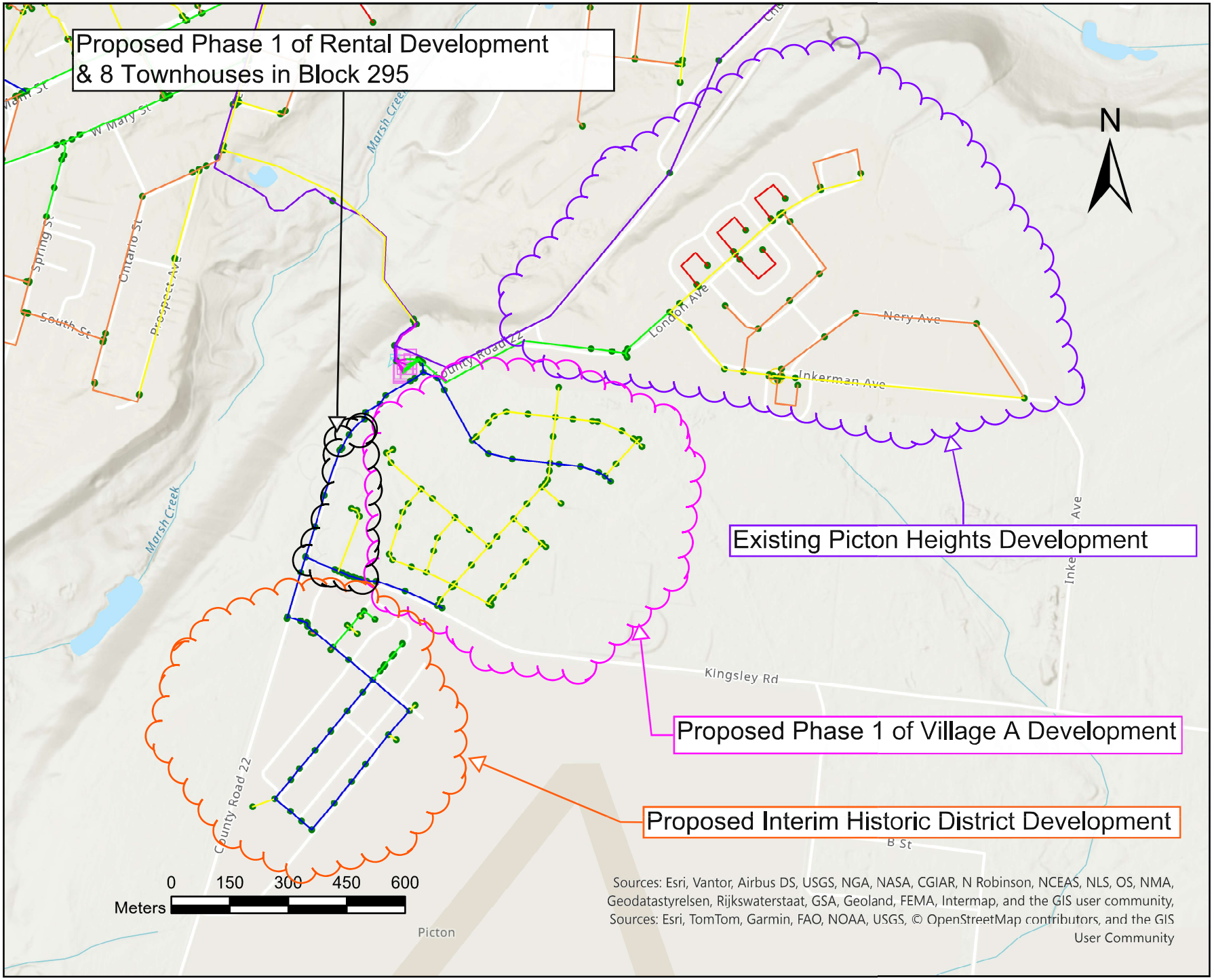
- 100
- 150
- 200
- 250
- 300
- 350
- 400
- Domain
- Inactive

Junction

Phase

- Domain
- Inactive
- All other values

RA ENGINEERING



PICTON

PIPE LAYOUT

Pipe Display
PIPEHYD.DIAM
- 100
- 150
- 200
- 250
- 300
- 350
- 400

RA ENGINEERING

Submittal

Ref. #: SQJKM001185_1

split-coupled vertical in-line pump

Model: Series 4300 - 8x8x15 - 4p - 200 hp - (Factory Choice Motor)

Project name:		**Representative:**	Jeff Walsh
Location:		**Phone number:**	
Date submitted:	10/31/2025 6:17 PM	**e-mail:**	jwalsh@directrik.com
Engineer:		**Submitted by:**	Walsh, Jeff

Application design data

Tag number:		Piping configuration:	Single
Service:		Suction pressure:	0 ft
Equipment Location:		Fluid:	Non-Potable Fluid - Water
Qty:	1	Fluid operating temp.:	60 ˚F
Total system flow:	150 L/s	Duty flow per pump:	150 L/s
System head:	66 m	Viscosity:	31 SSU
Total dissolved solids:	0 ppm	Specific gravity:	1.0000
NPSHR:	4.59 m	Absorbed Power/BHP:	160.42 hp
%Mtr Safety*:	24.67%	Efficiency at Design:	81.02 %
Outlet velocity:	15.25 ft/s	Impeller diameter:	15.5 in
PEIcl:	0.99	ERcl:	1
Standby qty:	0	Pump/motor run qty:	1
Load Profile Location:	NA	Building Type:	NA
Climate Zone Type:	NA	Time Period:	8760 (1 Year)
Ambient Temperature Range:	14 ˚F to 104 ˚F		

*Motor safety factor above duty point.

Materials of construction

Construction:	Bronze Fitted	Impeller:	Bronze
Rating:	ANSI-125	Pump shaft:	416 Stainless Steel
Connections:	Inlet: 8 in, Outlet: 8 in	Flush line:	Braided Stainless Steel
Casing (volute):	Cast Iron	Casing gasket:	Confined Non-Asbestos Fiber

Mechanical seal data

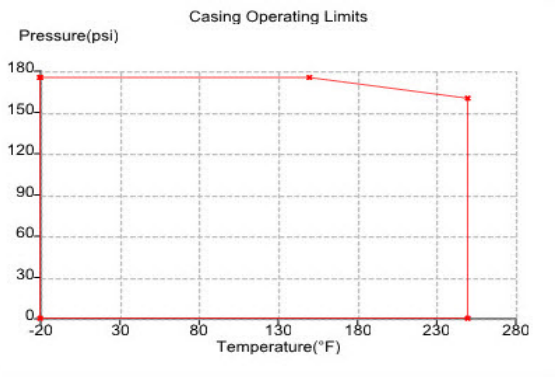
Seal type:	Outside Balanced	Rotating face:	Resin Bonded Carbon
Manufacturer code:	C-SSC AB2	Stationary seat:	Sintered Silicon Carbide
Springs:	Stainless Steel	Secondary seal:	Viton
Rotating hardware:	Stainless Steel	Maximum total dissolved solids (TDS)*:	2000 PPM

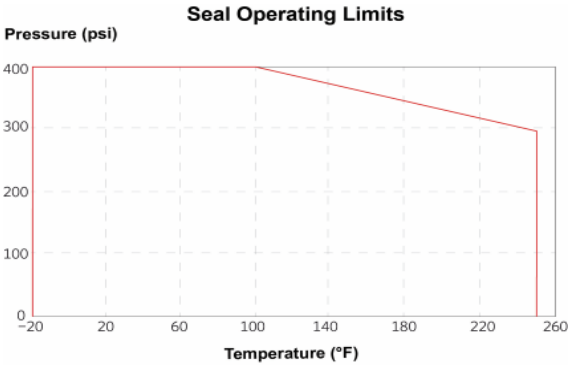
*Note: Please ensure proper seal is selected by inputting Total Dissolved Solids (TDS) in PPM in ADEPT if water quality is poor at site. Also select Flush Line Filter or Cyclone Separator if there are other contaminants in the fluid.

Electrical data

Supplier:	Factory Choice	Insulation class:	Class F Insulation
Frame size:	445TC	Motor type:	Induction
Speed:	1790 rpm	Size:	200 hp
Enclosure:	ODP	Efficiency:	NEMA Premium 12.12
Power supply:	575/3/60		

Operating limits (fluid temperature - pressure)



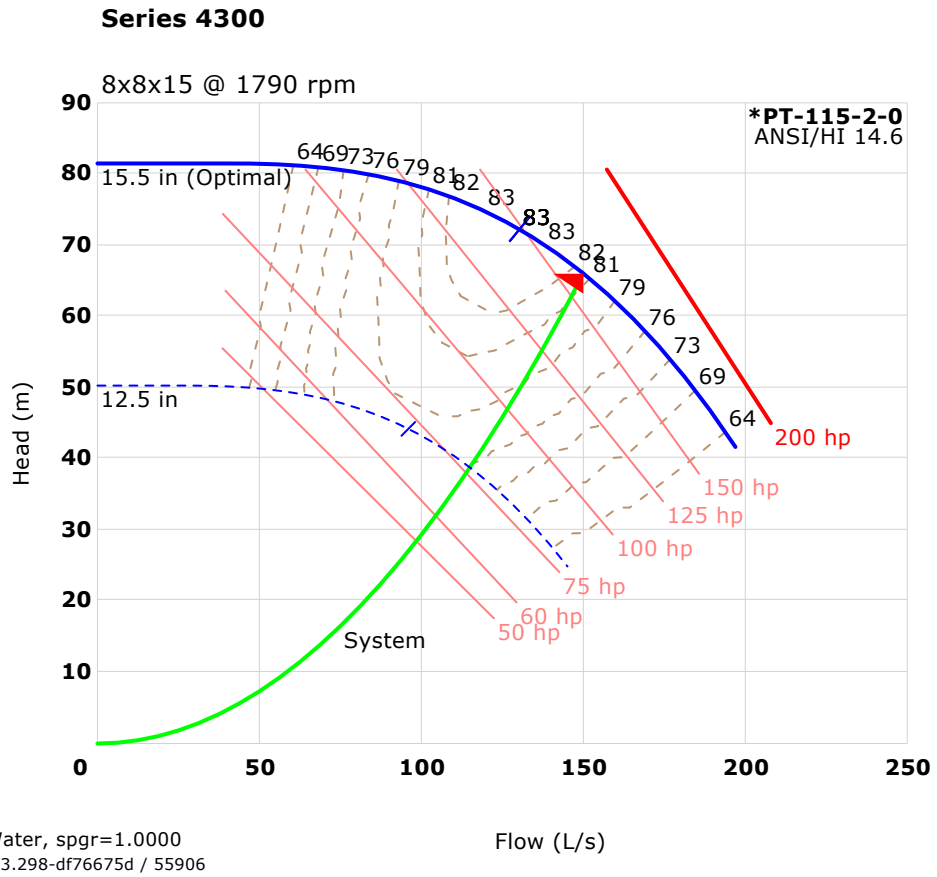


Maximum pressure: 175 psi

Maximum fluid temperature: 250 F

All Pump casings are hydrostatically tested to requirements of ANSI/HI 14.6 standard.

Performance curve



Water, spgr=1.0000
3.3.298-df76675d / 55906

----Admin Data----
Tag Num:
Service:
Location:

----Motor Data----
Motor Size: 200 hp

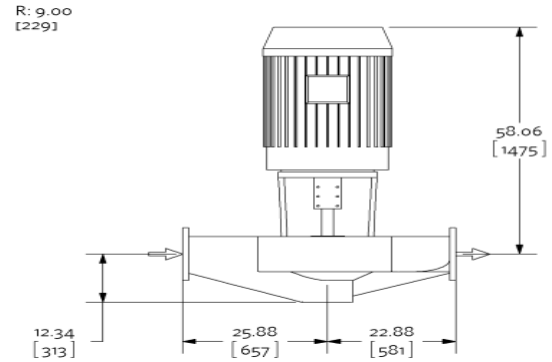
----Design Duty Points---
Flow: 150 L/s
Head: 66 m
Impeller: 15.5 in

----Performance Data---
- NPSHR: 4.59 m
- Eff. @ Design: 81.02 %
- Absorbed Power/BHP @ Design: 160.42 hp
- Mtr Capability @ Rated Spd: 200 hp hp
- Motor safety factor: 24.67%
- BEP @ Design Imp: 82.5 % @ 119.88 L/s
- %maximp.range: 69.86%
- Outlet velocity: 15.25 ft/s

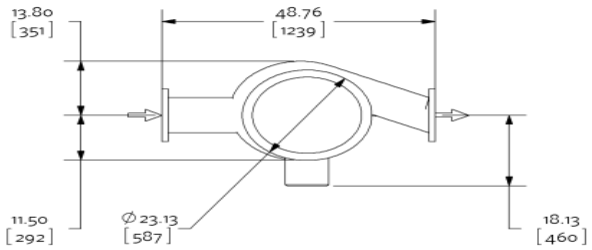
Ambient Temperature Derating Factor: 1

Dimensional data (not for construction)

Side view



Top view



Inverter motor type: Inverter duty

Weight: 2791 lb [1265.98 kg], Units of measure: inches [millimeters]
- Not to scale
- R = minimum lifting clearance required above motor
- Coupling guard and flush line (not shown) are supplied
- Tolerance of ± 0.125 inch (± 3 mm) should be used
- For certified dimensions, please contact your Armstrong representative
- Pump equipped drain plug and ¼ inch NPT suction with casing and discharge gauge ports

Connection details

Connection	Size	Rating	OD	Bolt quantity*	BCD	Bolt size
Inlet	8	ANSI-125	13.50	8	11.75	0.75
Outlet	8	ANSI-125	13.50	8	11.75	0.75

*Equally spaced straddling centreline

Special instructions

Reference Motor Specification AES 05007.
NSF Approved epoxy coating will be applied to the internal and external surfaces of the pump volute (and adaptor where applicable). NOTE that the seal cavity and machined surfaces will NOT be coated

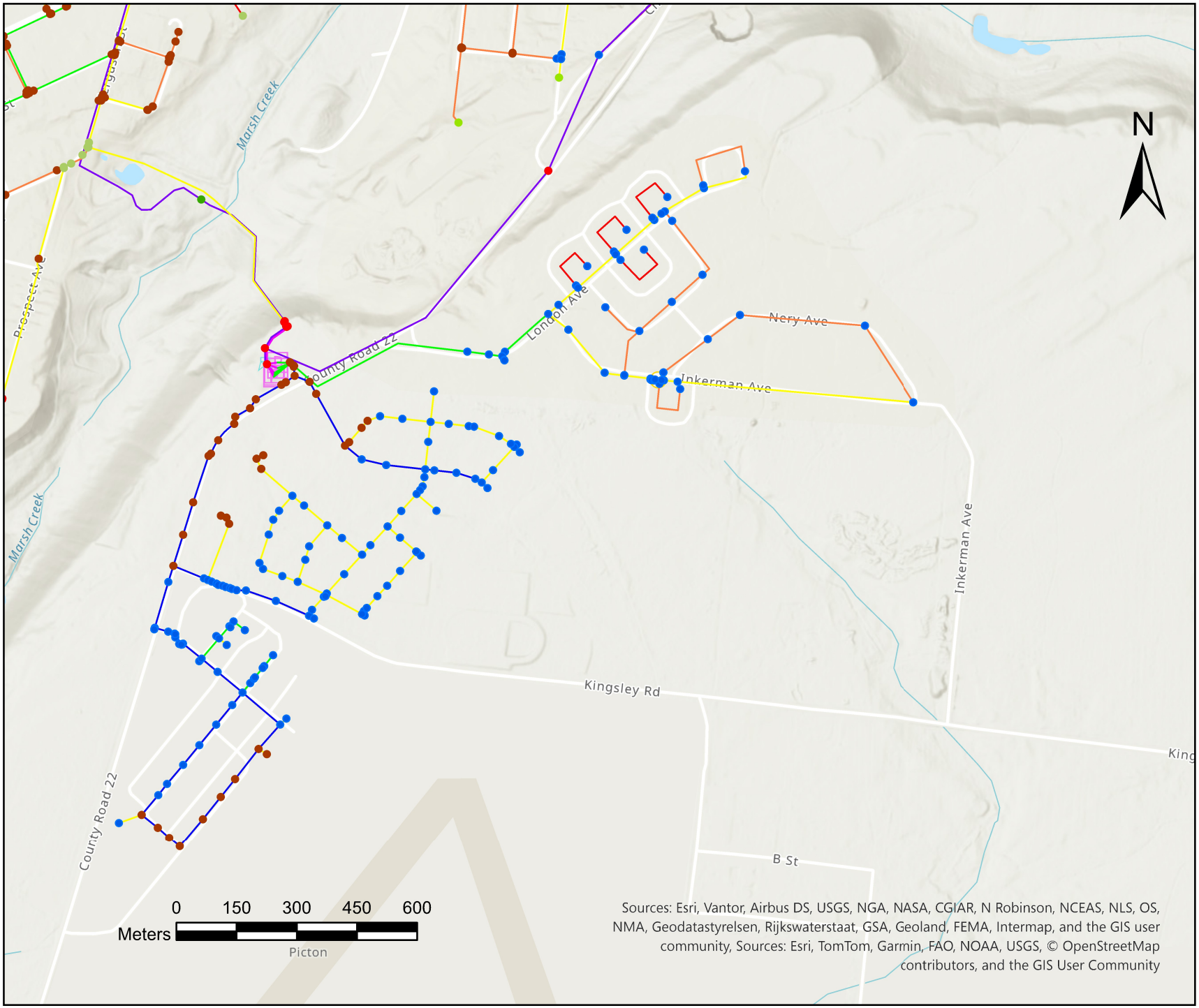
Impeller Balancing: Standard (Grade G6.3)
Pump Primer: Armstrong Standard Primer

Selected options

Testing: Certified Test Curves (Flow & Head) (cth)
Seal Environment Accessories: None
Pre-Wired Control Bridge: No
Space Heater: No
Motor Thermistor: No Thermistors
Wye-Delta Starting: No
Bearing Current Handling: Insulated NDE Bearing
NSF Epoxy Coating

Appendix B1

Model Results for ADD, MDD, PHD



PICTON

PRESSURE DURING ADD

Junction Display

JCTOUT.PRESSURE

- Less than 40
- 40-50
- 50-60
- 60-70
- 70-80
- 80-90
- 90-100

Pipe Display

PIPEHYD.DIAMETER

- 100
- 150
- 200
- 250
- 300
- 350
- 400

RA ENGINEERING

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Date: 12/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Results
Proposed Historic District - Interim Development,Phase 1 of Rental Development with 8 Townhouses, Phase 1 of Village A Development & Picton Heights Development,
Picton,
Prince Edward County

Average Daily Demand (ADD)

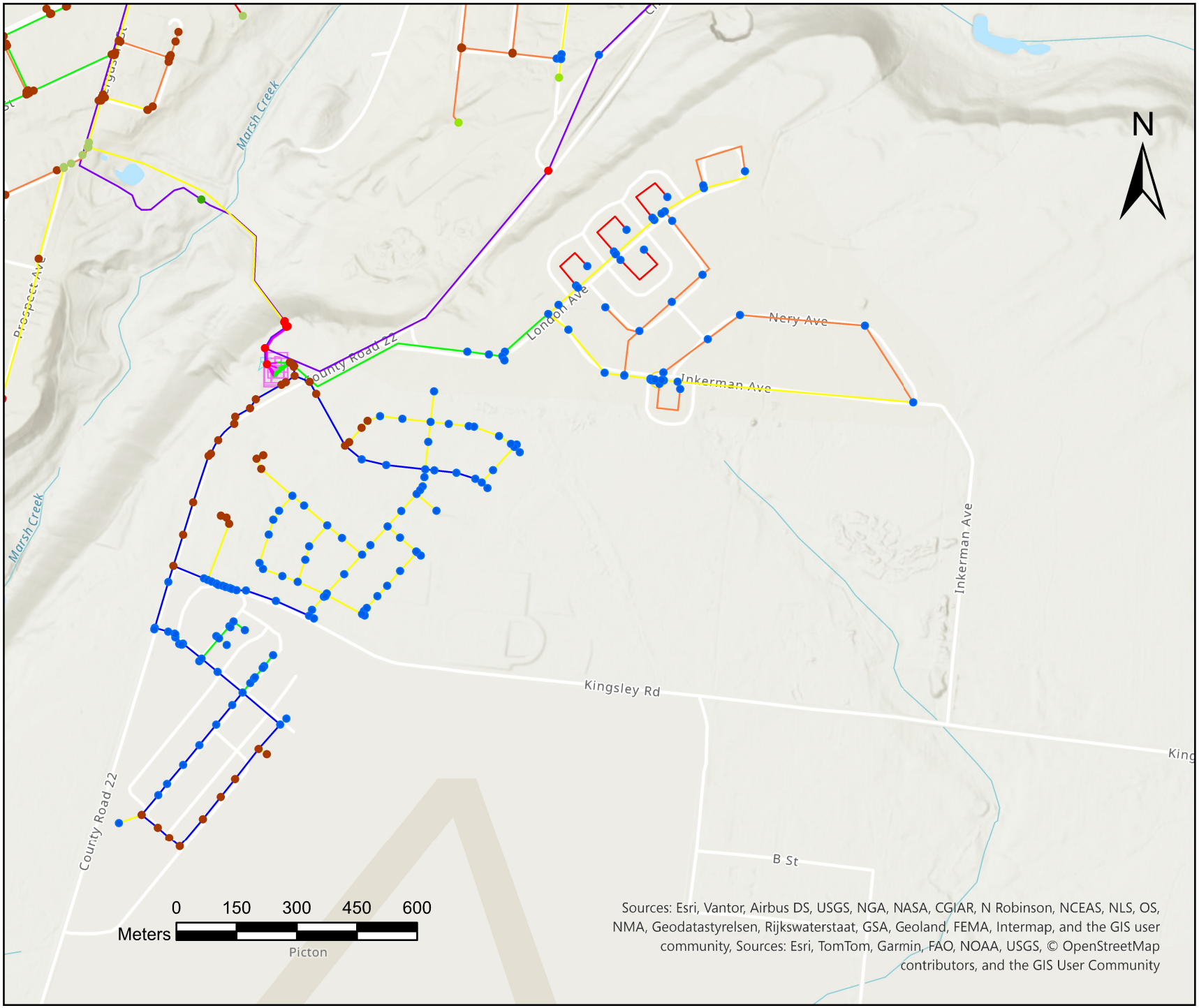
Node ID	Demand L/s	Elevation m	Head m	Pressure kPa	Location of the Nodes
J2257	0.000	139.84	186.34	456.47	Historic District
J2258	0.000	139.54	186.34	459.41	Historic District
J2259	0.000	139.14	186.34	463.34	Historic District
J2261	0.000	138.83	186.34	466.37	Historic District
J2263	0.000	138.68	186.34	467.84	Historic District
J2265	0.000	139.76	186.33	457.23	Historic District
J2267	0.000	140.70	186.33	448.00	Historic District
J2269	0.000	145.82	186.33	397.73	Historic District
J2271	0.000	145.63	186.33	399.59	Historic District
J2273	0.000	145.65	186.33	399.39	Historic District
J2275	0.000	145.59	186.33	399.98	Historic District
J2277	0.000	145.47	186.33	401.16	Historic District
J2279	0.080	145.70	186.33	398.90	Historic District
J2281	0.110	145.25	186.33	403.32	Historic District
J2283	0.230	145.31	186.33	402.73	Historic District
J2285	0.000	145.17	186.33	404.10	Historic District
J2287	0.000	145.12	186.33	404.59	Historic District
J2289	0.000	145.17	186.33	404.10	Historic District
J2291	0.000	144.79	186.33	407.83	Historic District
J2292	0.060	144.71	186.33	408.62	Historic District
J2293	0.000	144.64	186.33	409.31	Historic District
J2295	0.120	144.43	186.33	411.36	Historic District
J2297	0.000	144.69	186.33	408.81	Historic District
J2299	0.000	144.50	186.33	410.68	Historic District
J2301	0.060	144.19	186.33	413.72	Historic District
J2303	0.040	144.14	186.33	414.26	Historic District
J2305	0.000	143.22	186.33	423.24	Historic District
J2332	0.000	137.85	186.34	476.00	Historic District
J2392	0.000	138.25	186.34	472.07	Historic District
J2394	0.000	139.18	186.33	462.93	Historic District
J2396	0.000	139.58	186.33	459.00	Historic District
J2398	0.000	141.71	186.33	438.08	Historic District
J2402	0.000	145.65	186.33	399.39	Historic District
J2404	0.000	145.50	186.33	400.86	Historic District
J2406	0.010	145.10	186.33	404.79	Historic District
J2408	0.000	145.50	186.33	400.86	Historic District
J2410	0.000	145.53	186.33	400.57	Historic District
J2412	0.000	145.27	186.33	403.12	Historic District
J2414	0.000	144.70	186.33	408.71	Historic District
J2416	0.000	144.71	186.33	408.62	Historic District
J2418	0.000	144.75	186.33	408.22	Historic District
J2420	0.000	144.19	186.33	413.72	Historic District
J2422	0.000	143.69	186.33	418.63	Historic District
J2424	0.200	143.44	186.33	421.08	Historic District
J2426	0.000	142.77	186.33	427.66	Historic District
J2428	0.000	141.66	186.33	438.56	Historic District
J2430	0.000	143.63	186.33	419.22	Historic District
J2432	0.000	143.90	186.33	416.56	Historic District
J2434	0.430	143.69	186.33	418.63	Historic District
J2450	0.000	145.93	186.33	396.64	Historic District
J2452	0.000	145.25	186.33	403.32	Historic District
J2454	0.000	145.33	186.33	402.53	Historic District
J2456	0.000	144.44	186.33	411.27	Historic District
J2457	0.000	144.88	186.33	406.95	Historic District
J2458	0.000	144.60	186.33	409.69	Historic District
J2460	0.000	144.19	186.33	413.72	Historic District
J2464	0.000	142.70	186.33	428.35	Historic District
Total Demand_ADD Historic District	**1.34**				
Minimum Pressure in Historic District, kPa				**396.64**	
Maximum Pressure in Historic District, kPa				**476.00**	
Minimum Pressure in Historic District, psi				**57.44**	
Maximum Pressure in Historic District, psi				**68.93**	
J2530	0.000	142.45	186.33	430.80	Phase 1 of Rental
J2531	0.000	142.45	186.33	430.80	Phase 1 of Rental
J2532	0.790	142.45	186.33	430.80	Phase 1 of Rental
J2514-2	0.010	145.39	186.33	401.94	Townhome_1
J2514-3	0.010	145.64	186.33	399.49	Townhome_2
J2514-4	0.010	145.64	186.33	399.49	Townhome_3
J2514-5	0.010	145.84	186.33	397.53	Townhome_4
J2514-6	0.010	145.84	186.33	397.53	Townhome_5
J2514-7	0.010	145.96	186.33	396.35	Townhome_6
J2514-8	0.010	145.96	186.33	396.35	Townhome_7
J2514-9	0.010	145.98	186.33	396.15	Townhome_8
Total Demand_ADD Phase 1_Rental with 8 Townhouses	**0.87**				
Minimum Pressure in Phase 1_Rental_8 Townhouses, kPa				**396.15**	
Maximum Pressure in Phase 1_Rental_8 Townhouses, kPa				**430.80**	
Minimum Pressure in Phase 1_Rental_8 Townhouses, kPa				**57.36**	
Maximum Pressure in Phase 1_Rental_8 Townhouses, kPa				**62.38**	
J2472-1	0.000	140.88	186.34	446.25	Phase 1 of Village A
J2473	0.000	141.21	186.34	443.01	Phase 1 of Village A
J2474	0.060	143.45	186.34	421.02	Phase 1 of Village A
J2474-1	0.000	144.60	186.34	409.73	Phase 1 of Village A
J2475	0.060	144.65	186.34	409.23	Phase 1 of Village A
J2476	0.110	145.25	186.34	403.34	Phase 1 of Village A
J2477	0.010	143.69	186.34	418.66	Phase 1 of Village A
J2477-1	0.000	143.18	186.34	423.66	Phase 1 of Village A
J2477-2	0.000	143.52	186.34	420.33	Phase 1 of Village A
J2478	0.090	144.63	186.34	409.43	Phase 1 of Village A
J2479	0.040	145.26	186.34	403.24	Phase 1 of Village A
J2480	0.060	145.51	186.34	400.79	Phase 1 of Village A
J2481	0.040	146.08	186.34	395.19	Phase 1 of Village A
J2482	0.000	145.28	186.34	403.05	Phase 1 of Village A
J2483	0.070	145.78	186.33	398.14	Phase 1 of Village A
J2483-1	0.000	146.05	186.33	395.49	Phase 1 of Village A
J2484	0.090	145.97	186.33	396.28	Phase 1 of Village A
J2485	0.080	146.19	186.33	394.11	Phase 1 of Village A
J2485-1	0.000	146.28	186.33	393.23	Phase 1 of Village A
J2486	0.000	146.25	186.33	393.53	Phase 1 of Village A
J2487	0.000	146.36	186.33	392.44	Phase 1 of Village A
J2488	0.000	146.33	186.33	392.74	Phase 1 of Village A
J2489	0.000	145.83	186.33	397.65	Phase 1 of Village A
J2490	0.000	145.73	186.33	398.63	Phase 1 of Village A
J2491	0.050	145.71	186.33	398.82	Phase 1 of Village A
J2492	0.040	145.52	186.33	400.69	Phase 1 of Village A
J2492-1	0.000	145.71	186.34	398.82	Phase 1 of Village A
J2492-2	0.000	145.33	186.34	402.56	Phase 1 of Village A

Link ID	Start Node	End Node	Length m	Diameter mm	Roughness	Flow L/s	Velocity m/s	Location of the Nodes
1110	J2257	J2258	19.58	300	120	2.410	0.034	Historic District
1111	J2258	J2259	9.15	300	120	2.410	0.034	Historic District
1112	J2259	J2332	52.68	300	120	2.410	0.034	Historic District
1113	J2332	J2261	19.16	300	120	2.410	0.034	Historic District
1114	J2261	J2392	30.62	300	120	2.410	0.034	Historic District
1115	J2392	J2263	12.88	300	120	2.410	0.034	Historic District
1116	J2263	J2394	44.24	300	120	2.410	0.034	Historic District
1117	J2394	J2265	27.52	300	120	2.410	0.034	Historic District
1118	J2265	J2396	5.77	300	120	2.410	0.034	Historic District
1119	J2396	J2267	87.59	300	120	2.410	0.034	Historic District
1120	J2267	J2398	60.83	300	120	2.410	0.034	Historic District
1122	J2457	J2269	84.90	300	120	1.340	0.019	Historic District
1123	J2450	J2269	2.95	300	120	0.000	0.000	Historic District
1124	J2269	J2271	25.03	300	120	1.340	0.019	Historic District
1126	J2271	J2273	12.16	300	120	1.340	0.019	Historic District
1127	J2273	J2402	1.53	300	120	1.340	0.019	Historic District
1128	J2402	J2275	5.73	300	120	1.340	0.019	Historic District
1129	J2275	J2404	17.70	300	120	1.340	0.019	Historic District
1130	J2404	J2277	2.16	150	100	0.080	0.005	Historic District
1131	J2277	J2410	3.98	150	100	0.080	0.005	Historic District
1132	J2410	J2279	3.98	150	100	0.080	0.005	Historic District
1133	J2404	J2412	42.96	300	120	1.260	0.018	Historic District
1134	J2412	J2281	6.25	150	100	0.110	0.006	Historic District
1135	J2412	J2452	47.90	250	110	0.240	0.005	Historic District
1136	J2452	J2283	6.31	200	110	0.230	0.007	Historic District
1137	J2452	J2454	18.24	200	110	0.000	0.000	Historic District
1138	J2452	J2285	28.61	250	110	0.010	0.000	Historic District
1139	J2285	J2287	11.35	250	110	0.010	0.000	Historic District
1140	J2287	J2406	25.66	250	120	0.010	0.000	Historic District
1141	J2285	J2408	2.34	200	110	0.000	0.000	Historic District
1142	J2412	J2289	37.16	300	120	0.910	0.013	Historic District
1143	J2289	J2414	58.07	300	120	0.910	0.013	Historic District
1144	J2414	J2291	88.66	300	120	0.430	0.006	Historic District
1145	J2414	J2292	21.80	250	110	0.180	0.004	Historic District
1146	J2292	J2293	10.29	250	110	0.120	0.002	Historic District
1147	J2293	J2416	3.08	250	110	0.120	0.002	Historic District
1148	J2416	J2456	21.72	250	110	0.120	0.002	Historic District
1149	J2456	J2295	4.29	250	110	0.120	0.002	Historic District
1150	J2295	J2297	25.29	250	110	0.000	0.000	Historic District
1151	J2414	J2418	29.04	300	120	0.300	0.004	Historic District
1152	J2418	J2458	45.40	300	120	0.300	0.004	Historic District
1153	J2299	J2420	45.78	300	120	0.300	0.004	Historic District
1154	J2420	J2460	44.62	300	120	0.300	0.004	Historic District
1155	J2301	J2422	46.32	300	120	0.240	0.003	Historic District
1156	J2422	J2303	43.37	200	120	0.040	0.001	Historic District
1157	J2422	J2424	36.95	300	120	0.200	0.003	Historic District
1158	J2424	J2305	27.70	300	120	0.000	0.000	Historic District
1159	J2305	J2426	24.53	300	120	0.000	0.000	Historic District
1179	J2426	J2428	64.45	300	120	0.000	0.000	Historic District
1180	J2428	J2464	51.23	300	120	0.000	0.000	Historic District
1181	J2430	J2432	68.50	300	120	0.000	0.000	Historic District
1182	J2432	J2434	17.52	200	110	0.430	0.014	Historic District
1183	J2458	J2299	47.62	300	120	0.300	0.004	Historic District
1184	J2460	J2301	25.55	300	120	0.300	0.004	Historic District
1186	J2464	J2430	41.03	300	120	0.000	0.000	Historic District
1192	J2432	J2291	58.43	300	120	-0.430	0.006	Historic District
1294	J2515	J2457	30.21	300	120	1.340	0.019	Historic District
1238-10	J2514-1	J2530	93.36	200	110	0.760	0.024	Phase 1 of Rental
1238-11	J2530	J2531	2.50	200	110	0.760	0.024	Phase 1 of Rental
1238-12	J2531	J2532	3.20	200	110	0.760	0.024	Phase 1 of Rental
1238-2	J2514-1	J2514-2	6.50	300	120	0.310	0.004	Townhome_1
1238-3	J2514-2	J2514-3	11.80	300	120	0.300	0.004	Townhome_2
1238-4	J2514-3	J2514-4	1.10	300	120	0.290	0.004	Townhome_3
1238-5	J2514-4	J2514-5	11.95	300	120	0.280	0.004	Townhome_4
1238-6	J2514-5	J2514-6	2.80	300	120	0.270	0.004	Townhome_5
1238-7	J2514-6	J2514-7	11.95	300	120	0.260	0.004	Townhome_6
1238-8	J2514-7	J2514-8	1.10	300	120	0.250	0.004	Townhome_7
1238-9	J2514-8	J2514-9	10.26	300	120	0.240	0.003	Townhome_8
1193	J2257	J2472-1	29.0	300	120	1.920	0.027	Phase 1 of Village A
1194	J2472-1	J2473	24.4	300	120	1.920	0.027	Phase 1 of Village A
1195	J2473	J2474	106.2	300	120	1.920	0.027	Phase 1 of Village A
1195-1	J2474	J2474-1	38.7	300	120	1.398	0.020	Phase 1 of Village A
1196	J2474-1	J2475	45.1	300	120	1.398	0.020	Phase 1 of Village A
1197	J2475	J2476	70.6	300	120	1.338	0.019	Phase 1 of Village A
1198-1	J2474	J2477-1	9.8	200	110	0.462	0.015	Phase 1 of Village A
1198-2	J2477-1	J2477-2	33.9	200	110	0.462	0.015	Phase 1 of Village A
1198-3	J2477-2	J2477	16.5	200	110	0.462	0.015	Phase 1 of Village A
1199	J2477	J2478	24.0	200	110	0.452	0.014	Phase 1 of Village A
1200	J2478	J2479	40.3	200	110	0.362	0.012	Phase 1 of Village A
1201	J2479	J2480	51.0	200	110	0.322	0.010	Phase 1 of Village A
1202	J2480	J2481	55.1	200	110	0.040	0.001	Phase 1 of Village A
1203	J2480	J2482	36.0	200	110	0.056	0.002	Phase 1 of Village A
1204	J2482	J2476	49.5	200	110	0.056	0.002	Phase 1 of Village A
1205	J2480	J2483	32.8	200	110	0.166	0.005	Phase 1 of Village A
1205-1	J2483	J2483-1	36.1	200	110	0.096	0.003	Phase 1 of Village A
1206	J2483-1	J2484	9.6	200	110	0.096	0.003	Phase 1 of Village A
1207	J2484	J2485	47.9	200	110	0.006	0.000	Phase 1 of Village A
1207-1	J2485	J2485-1	25.6	200	110	-0.074	0.002	Phase 1 of Village A
1208	J2485-1	J2488	8.2	200	110	-0.074	0.002	Phase 1 of Village A
1209	J2488	J2486	6.0	200	110	0.000	0.000	Phase 1 of Village A
1210	J2488	J2487	13.7	200	110	0.000	0.000	Phase 1 of Village A
1211	J2488	J2489	56.5	200	110	-0.074	0.002	Phase 1 of Village A
1212	J2489	J2491	29.9	200	110	-0.074	0.002	Phase 1 of Village A
1213	J2490	J2491	14.3	300	120	0.000	0.000	Phase 1 of Village A
1214	J2491	J2492	13.4	300	120	-0.124	0.002	Phase 1 of Village A
1214-1	J2492	J2492-1	35.5	300	120	-0.164	0.002	Phase 1 of Village A

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Node ID	Demand	Elevation	Head	Pressure	Location of the Nodes
	L/s	m	m	kPa	
J2493	0.000	145.37	186.33	402.16	Phase 1 of Village A
J2493-1	0.000	145.03	186.33	405.50	Phase 1 of Village A
J2494	0.070	145.31	186.33	402.75	Phase 1 of Village A
J2494-1	0.000	145.29	186.33	402.94	Phase 1 of Village A
J2495	0.000	145.37	186.33	402.16	Phase 1 of Village A
J2496	0.060	146.49	186.33	391.15	Phase 1 of Village A
J2496-1	0.000	146.20	186.33	394.00	Phase 1 of Village A
J2497	0.000	146.74	186.33	388.69	Phase 1 of Village A
J2497-1	0.000	146.56	186.33	390.46	Phase 1 of Village A
J2497-2	0.000	146.74	186.33	388.69	Phase 1 of Village A
J2498	0.000	146.79	186.33	388.20	Phase 1 of Village A
J2499	0.080	146.52	186.33	390.85	Phase 1 of Village A
J2500	0.090	146.22	186.33	393.80	Phase 1 of Village A
J2501	0.050	145.93	186.33	396.65	Phase 1 of Village A
J2502	0.000	145.75	186.33	398.41	Phase 1 of Village A
J2502-1	0.000	145.67	186.33	399.20	Phase 1 of Village A
J2503	0.000	145.89	186.33	397.03	Phase 1 of Village A
J2504	0.000	145.90	186.33	396.94	Phase 1 of Village A
J2505	0.050	146.90	186.33	387.12	Phase 1 of Village A
J2505-1	0.000	146.75	186.33	388.60	Phase 1 of Village A
J2506	0.060	146.19	186.33	394.09	Phase 1 of Village A
J2507	0.000	145.39	186.33	401.94	Phase 1 of Village A
J2507-1	0.060	145.39	186.33	401.94	Phase 1 of Village A
J2508	0.000	144.87	186.33	407.05	Phase 1 of Village A
J2508-1	0.000	144.85	186.33	407.25	Phase 1 of Village A
J2509	0.000	145.05	186.33	405.29	Phase 1 of Village A
J2510	0.000	145.14	186.33	404.40	Phase 1 of Village A
J2511	0.000	146.05	186.33	395.47	Phase 1 of Village A
J2512	0.000	145.54	186.33	400.47	Phase 1 of Village A
J2513	0.000	145.56	186.33	400.28	Phase 1 of Village A
J2514-1	0.000	144.20	186.33	413.63	Phase 1 of Village A
J2516	0.090	145.18	186.33	404.00	Phase 1 of Village A
J2517	0.060	145.24	186.33	403.42	Phase 1 of Village A
J2518	0.060	145.28	186.33	403.02	Phase 1 of Village A
J2519	0.090	146.09	186.33	395.07	Phase 1 of Village A
J2520	0.080	145.27	186.33	403.13	Phase 1 of Village A
J2521	0.010	144.30	186.33	412.64	Phase 1 of Village A
J2522	0.090	144.96	186.33	406.16	Phase 1 of Village A
J2522-1	0.000	145.15	186.33	404.30	Phase 1 of Village A
J2523	0.080	144.70	186.33	408.72	Phase 1 of Village A
J2524	0.110	144.69	186.33	408.82	Phase 1 of Village A
J2525	0.080	144.29	186.33	412.75	Phase 1 of Village A
J2526	0.040	144.14	186.33	414.22	Phase 1 of Village A
J2526-1	0.000	144.13	186.33	414.31	Phase 1 of Village A
J2527	0.040	142.36	186.33	431.69	Phase 1 of Village A
J2528	0.000	141.61	186.33	439.05	Phase 1 of Village A
J2529	0.000	141.65	186.33	438.66	Phase 1 of Village A
Total Demand_ADD Phase 1_Village A	**2.15**				
Minimum Pressure in Phase 1_Village A, kPa				**387.12**	
Maximum Pressure in Phase 1_Village A, kPa				**446.25**	
Minimum Pressure in Phase 1_Village A, psi				**56.06**	
Maximum Pressure in Phase 1_Village A, psi				**64.62**	
J1980	0.000	147.27	186.33	383.44	Picton Heights
J2012	0.060	149.99	186.32	356.70	Picton Heights
J2014	0.060	149.79	186.32	358.62	Picton Heights
J2016	0.060	148.29	186.33	373.44	Picton Heights
J2018	0.060	149.43	186.32	362.20	Picton Heights
J2020	0.060	149.63	186.32	360.24	Picton Heights
J2022	0.060	149.48	186.33	361.70	Picton Heights
J2024	0.060	150.01	186.32	356.54	Picton Heights
J2026	0.060	150.08	186.32	355.76	Picton Heights
J2028	0.060	149.99	186.32	356.66	Picton Heights
J2030	0.060	149.82	186.32	358.34	Picton Heights
J2032	0.060	150.08	186.32	355.76	Picton Heights
J2034	0.060	149.74	186.32	359.14	Picton Heights
J2036	0.060	150.12	186.32	355.38	Picton Heights
J2038	0.060	149.83	186.32	358.28	Picton Heights
J2040	0.060	149.90	186.32	357.61	Picton Heights
J2042	0.060	149.82	186.32	358.31	Picton Heights
J2044	0.060	149.79	186.32	358.68	Picton Heights
J2046	0.060	150.03	186.32	356.24	Picton Heights
J2048	0.060	148.71	186.32	369.27	Picton Heights
J2050	0.060	149.64	186.32	360.09	Picton Heights
J2052	0.070	147.69	186.32	379.27	Picton Heights
J2054	0.070	147.97	186.32	376.54	Picton Heights
J2056	0.070	148.02	186.32	376.05	Picton Heights
J2058	0.070	148.24	186.32	373.84	Picton Heights
J2060	0.070	148.56	186.32	370.79	Picton Heights
J2062	0.070	148.15	186.32	374.74	Picton Heights
J2064	0.000	148.07	184.29	355.59	Picton Heights
J2066	0.000	148.28	184.29	353.51	Picton Heights
J2068	0.060	147.48	186.32	381.37	Picton Heights
J2070	0.060	147.67	186.32	379.49	Picton Heights
J2072	0.060	148.17	186.32	374.60	Picton Heights
J2074	0.070	148.14	186.32	374.85	Picton Heights
J2076	0.000	148.13	184.29	354.98	Picton Heights
J2078	0.050	148.44	184.29	351.97	Picton Heights
J2080	0.070	148.06	186.32	375.63	Picton Heights
J2082	0.000	148.07	184.29	355.58	Picton Heights
J2084	0.000	148.32	184.29	353.18	Picton Heights
J2152	0.070	149.25	186.32	363.96	Picton Heights
J2154	0.060	150.75	186.32	349.23	Picton Heights
J2226	0.070	147.20	186.33	384.11	Picton Heights
J2232	0.140	149.00	184.29	346.46	Picton Heights
J2234	0.090	149.00	184.29	346.46	Picton Heights
J2334	0.000	150.02	186.32	356.36	Picton Heights
J2336	0.110	148.71	184.29	349.28	Picton Heights
J2350	0.000	148.70	184.29	349.40	Picton Heights
J76	0.060	146.89	186.33	387.21	Picton Heights
J78	0.000	147.04	186.33	385.70	Picton Heights
J80	0.000	147.13	186.33	384.85	Picton Heights
J82	0.000	146.89	186.33	387.22	Picton Heights
J84	0.000	146.70	186.33	389.02	Picton Heights
J86	0.000	146.76	186.33	388.47	Picton Heights
Total Demand_ADD Picton Heights	**2.59**				
Minimum Pressure in Picton Heights, kPa				**346.46**	
Maximum Pressure in Picton Heights, kPa				**389.02**	
Minimum Pressure in Picton Heights, psi				**50.17**	
Maximum Pressure in Picton Heights, psi				**56.33**	
Total Demand, ADD, L/s	**6.95**				

Link ID	Start Node	End Node	Length	Diameter	Roughness	Flow	Velocity	Location of the Nodes
			m	mm		L/s	m/s	
1214-2	J2492-1	J2492-2	39.8	300	120	-0.164	0.002	Phase 1 of Village A
1215	J2492-2	J2476	16.5	300	120	-0.164	0.002	Phase 1 of Village A
1216	J2476	J2493-1	14.0	200	110	1.120	0.036	Phase 1 of Village A
1217	J2493-1	J2493	16.9	200	110	1.120	0.036	Phase 1 of Village A
1218	J2493	J2494-1	8.1	200	110	1.120	0.036	Phase 1 of Village A
1219	J2494-1	J2494	9.2	200	110	1.120	0.036	Phase 1 of Village A
1220	J2494	J2495	46.5	200	110	0.000	0.000	Phase 1 of Village A
1221	J2494	J2496-1	41.1	200	110	1.050	0.033	Phase 1 of Village A
1222	J2496-1	J2496	37.0	200	110	1.050	0.033	Phase 1 of Village A
1223	J2496	J2497-1	30.0	200	110	0.383	0.012	Phase 1 of Village A
1224	J2497-1	J2497-2	38.2	200	110	0.383	0.012	Phase 1 of Village A
1225	J2497-2	J2497	2.0	200	110	0.383	0.012	Phase 1 of Village A
1226	J2497	J2498	9.1	200	110	0.000	0.000	Phase 1 of Village A
1227	J2497	J2499	45.2	200	110	0.383	0.012	Phase 1 of Village A
1228	J2499	J2500	35.3	200	110	0.303	0.010	Phase 1 of Village A
1229	J2500	J2501	25.5	200	110	0.213	0.007	Phase 1 of Village A
1230	J2501	J2502-1	28.5	200	110	0.163	0.005	Phase 1 of Village A
1231	J2502-1	J2502	7.7	200	110	0.163	0.005	Phase 1 of Village A
1232	J2502	J2504	6.3	200	110	0.163	0.005	Phase 1 of Village A
1233	J2511	J2510	10.1	300	120	0.000	0.000	Phase 1 of Village A
1234	J2511	J2509	11.9	200	110	0.230	0.007	Phase 1 of Village A
1235	J2512	J2511	65.2	300	120	0.230	0.003	Phase 1 of Village A
1236	J2513	J2512	56.8	300	120	0.230	0.003	Phase 1 of Village A
1237	J2514-9	J2513	27.5	300	120	0.230	0.003	Phase 1 of Village A
1238-1	J2515	J2514-1	52.2	300	120	1.070	0.015	Phase 1 of Village A
1239	J2504	J2503	5.3	200	110	0.000	0.000	Phase 1 of Village A
1240	J2496	J2505-1	45.5	200	110	0.607	0.019	Phase 1 of Village A
1241	J2505-1	J2505	22.6	200	110	0.607	0.019	Phase 1 of Village A
1242	J2505	J2506	47.5	200	110	0.145	0.005	Phase 1 of Village A
1243	J2506	J2507-1	46.5	200	110	0.085	0.003	Phase 1 of Village A
1244	J2507-1	J2507	2.5	200	110	0.025	0.001	Phase 1 of Village A
1245	J2507	J2508-1	2.9	200	110	-0.230	0.007	Phase 1 of Village A
1246	J2508-1	J2508	3.0	200	110	-0.230	0.007	Phase 1 of Village A
1247	J2507	J2504	73.2	200	110	-0.163	0.005	Phase 1 of Village A
1248	J2508	J2509	31.7	200	110	-0.230	0.007	Phase 1 of Village A
1249	J2507	J2516	56.0	200	110	0.418	0.013	Phase 1 of Village A
1250	J2516	J2517	41.8	200	110	0.084	0.003	Phase 1 of Village A
1251	J2517	J2518	25.1	200	110	0.024	0.001	Phase 1 of Village A
1252	J2518	J2520	49.6	200	110	-0.036	0.001	Phase 1 of Village A
1253	J2505	J2519	46.9	200	110	0.412	0.013	Phase 1 of Village A
1254	J2519	J2520	34.8	200	110	0.322	0.010	Phase 1 of Village A
1255	J2516	J2522-1	29.5	200	110	0.244	0.008	Phase 1 of Village A
1256	J2522-1	J2522	37.0	200	110	0.244	0.008	Phase 1 of Village A
1257	J2522	J2523	12.5	200	110	0.154	0.005	Phase 1 of Village A
1258	J2523	J2524	53.5	200	110	0.074	0.002	Phase 1 of Village A
1259	J2524	J2525	27.9	200	110	-0.036	0.001	Phase 1 of Village A
1260	J2525	J2526-1	19.1	200	110	-0.116	0.004	Phase 1 of Village A
1261	J2526-1	J2526	35.9	200	110	-0.116	0.004	Phase 1 of Village A
1262	J2520	J2521	54.7	200	110	0.206	0.007	Phase 1 of Village A
1263	J2521	J2526	27.3	200	110	0.196	0.006	Phase 1 of Village A
1264	J2526	J2527	73.7	200	110	0.040	0.001	Phase 1 of Village A
1265	J2527	J2528	20.1	200	110	0.000	0.000	Phase 1 of Village A
1266	J2528	J2529	13.6	200	110	0.000	0.000	Phase 1 of Village A
1019	J1978	J1980	345.0	250	130	2.590	0.053	Picton Heights
1029	J1980	J80	39.0	250	130	2.590	0.053	Picton Heights
1045	J2012	J2014	91.8	200	70	0.461	0.015	Picton Heights
1046	J78	J2016	24.6	200	70	1.061	0.034	Picton Heights
1047	J2018	J2020	112.9	100	40	0.060	0.008	Picton Heights
1048	J2018	J2022	5.1	100	40	-0.120	0.015	Picton Heights
1049	J2016	J2022	46.5	200	70	1.001	0.032	Picton Heights
1050	J2024	J2026	120.1	100	40	0.060	0.008	Picton Heights
1051	J2024	J2012	5.7	100	40	-0.120	0.015	Picton Heights
1052	J2022	J2028	90.1	200	70	0.821	0.026	Picton Heights
1053	J2030	J2032	122.8	100	40	0.060	0.008	Picton Heights
1054	J2034	J2036	89.2	200	70	0.048	0.002	Picton Heights
1055	J2036	J2038	176.6	150	70	-0.012	0.001	Picton Heights
1056	J2038	J2034	5.4	150	70	-0.072	0.004	Picton Heights
1057	J2040	J2034	81.7	200	70	0.180	0.006	Picton Heights
1058	J2030	J2014	5.2	100	40	-0.120	0.015	Picton Heights
1059	J2014	J2042	17.3	200	70	0.281	0.009	Picton Heights
1060	J2044	J2046	127.2	100	40	0.060	0.008	Picton Heights
1061	J2044	J2028	13.4	100	40	-0.120	0.015	Picton Heights
1062	J2028	J2012	1.1	200	70	0.641	0.020	Picton Heights
1063	J2048	J2152	77.9	150	70	-0.060	0.003	Picton Heights
1064	J2050	J2040	21.4	150	70	0.019	0.001	Picton Heights
1065	J2042	J2040	7.1	200	70	0.221	0.007	Picton Heights
1066	J2052	J2054	47.5	200	130	0.940	0.030	Picton Heights
1067	J2056	J2058	22.6	150	100	0.140	0.008	Picton Heights
1068	J2058	J2060	119.5	150	100	0.070	0.004	Picton Heights
1069	J2054	J2062	4.4	200	130	0.660	0.021	Picton Heights
1070	J2064	J2066	14.5	150	100	0.206	0.012	Picton Heights
1071	J2068	J2052	35.6	200	130	1.339	0.043	Picton Heights
1072	J2052	J2070	0.9	150	70	0.329	0.019	Picton Heights
1073	J2054	J2056	1.7	150	100	0.210	0.012	Picton Heights
1074	J2062	J2072	0.8	200	130	0.590	0.019	Picton Heights
1075	J2072	J2074	4.3	200	130	0.530	0.017	Picton Heights
1076	J2076	J2078	24.8	200	130	0.184	0.006	Picton Heights
1078	J2064	J2082	0.4	200	130	0.184	0.006	Picton Heights
1079	J2066	J2084	0.5	250	100	0.206	0.004	Picton Heights
1080	J2074	J2080	3.1	200	130	0.460	0.015	Picton Heights
1081	J2082	J2076	3.9	200	130	0.184	0.006	Picton Heights
32	J76	J78	103.1	250	130	2.530	0.052	Picton Heights
33	J80	J82	24.3	250	130	2.590	0.053	Picton Heights
34	J82	J84	7.4	250	130	0.000	0.000	Picton Heights
35	J84	J86	1.0	250	130	0.000	0.000	Picton Heights
36	J82	J76	9.6	250	130	2.590	0.053	Picton Heights
P155	J78	J2226	45.8	200	130	1.469	0.047	Picton Heights
P157	J2226	J2068	100.9	200	130	1.399	0.045	Picton Heights
P163	J2084	J2336	99.3	150	100	0.206	0.012	Picton Heights
P385	J2334	J2154	73.4	150	70	0.139	0.008	Picton Heights
P387	J2336	J2232	72.2	150	100	0.096	0.005	Picton Heights
P429	J2070	J2152	88.2	150	70	0.269	0.015	Picton Heights
P473	V8000	J2064	6.0	200	130	0.390	0.012	Picton Heights
P489	J2350	J2234	163.2	150	100	0.134	0.008	Picton Heights
P491	J2078	J2350	426.3	200	110	0.134	0.004	Picton Heights
P493	J2232	J2234	225.2	150	100	-0.044	0.003	Picton Heights
P61	J2152	J2334	78.2	150	70	0.139	0.008	Picton Heights
P63	J2154	J2050	125.0	150	70	0.079	0.004	Picton Heights



PICTON

PRESSURE DURING MDD

Junction Display

JCTOUT.PRESSURE

- Less than 40
- 40-50
- 50-60
- 60-70
- 70-80
- 80-90
- 90-100

Pipe Display

PIPEHYD.DIAMETER

- 100
- 150
- 200
- 250
- 300
- 350
- 400

RA ENGINEERING

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Date: 12/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Results
Proposed Historic District - Interim Development,Phase 1 of Rental Development with 8 Townhouses, Phase 1 of Village A Development & Picton Heights Development,
Picton,
Prince Edward County

Maximum Daily Demand (MDD)

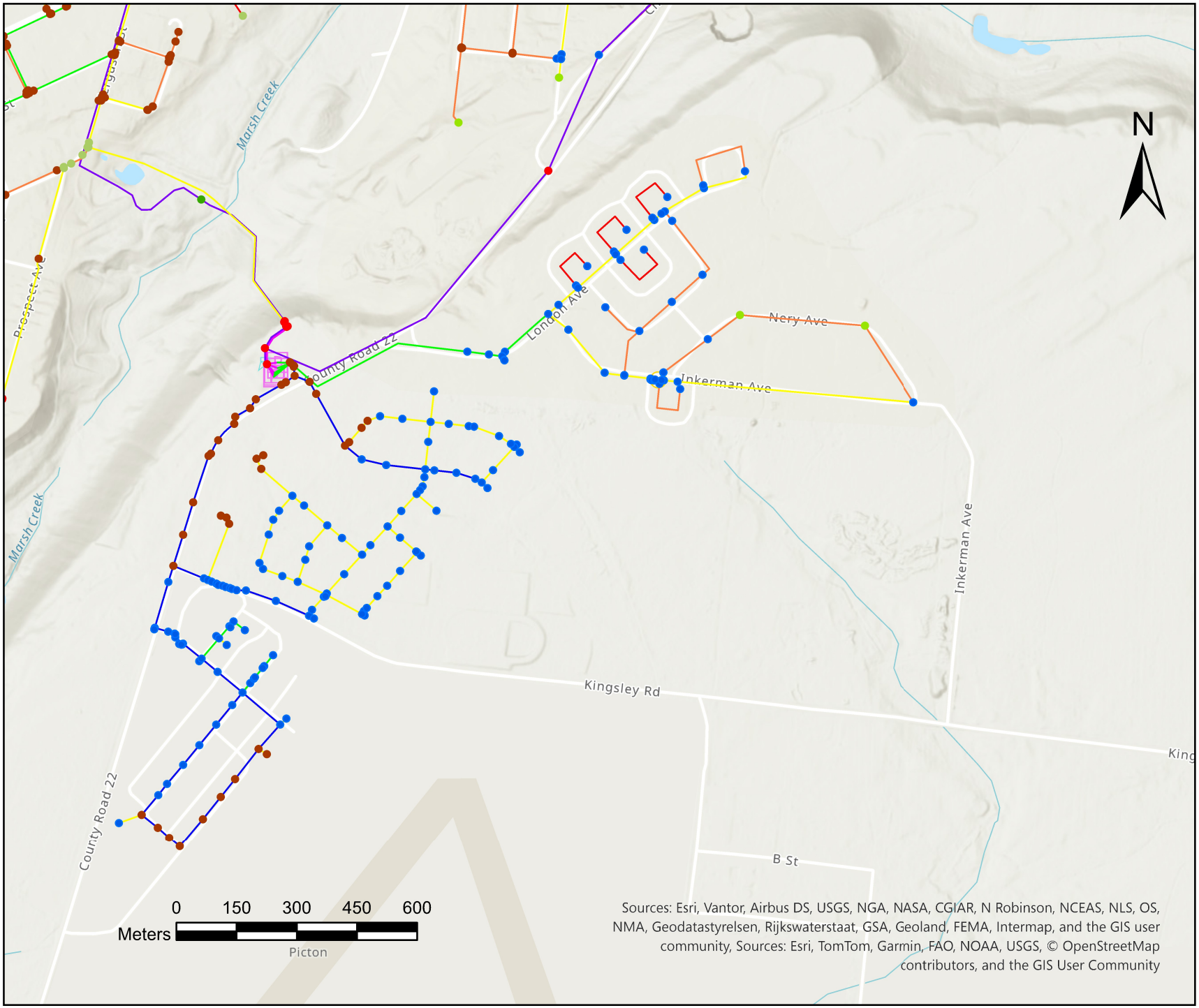
Node ID	Demand	Elevation	Head	Pressure	Location of the Nodes
	L/s	m	m	kPa	
J2257	0.000	139.84	186.31	456.24	Historic District
J2258	0.000	139.54	186.31	459.17	Historic District
J2259	0.000	139.14	186.31	463.10	Historic District
J2261	0.000	138.83	186.31	466.11	Historic District
J2263	0.000	138.68	186.31	467.57	Historic District
J2265	0.000	139.76	186.30	456.94	Historic District
J2267	0.000	140.70	186.30	447.67	Historic District
J2269	0.000	145.82	186.29	397.34	Historic District
J2271	0.000	145.63	186.29	399.20	Historic District
J2273	0.000	145.65	186.29	399.00	Historic District
J2275	0.000	145.59	186.29	399.59	Historic District
J2277	0.000	145.47	186.29	400.76	Historic District
J2279	0.200	145.70	186.29	398.51	Historic District
J2281	0.280	145.25	186.29	402.92	Historic District
J2283	0.580	145.31	186.29	402.33	Historic District
J2285	0.000	145.17	186.29	403.71	Historic District
J2287	0.000	145.12	186.29	404.20	Historic District
J2289	0.000	145.17	186.29	403.71	Historic District
J2291	0.000	144.79	186.29	407.43	Historic District
J2292	0.150	144.71	186.29	408.22	Historic District
J2293	0.000	144.64	186.29	408.91	Historic District
J2295	0.300	144.43	186.29	410.96	Historic District
J2297	0.000	144.69	186.29	408.41	Historic District
J2299	0.000	144.50	186.29	410.27	Historic District
J2301	0.150	144.19	186.29	413.32	Historic District
J2303	0.100	144.14	186.29	413.86	Historic District
J2305	0.000	143.22	186.29	422.84	Historic District
J2332	0.000	137.85	186.31	475.74	Historic District
J2392	0.000	138.25	186.31	471.80	Historic District
J2394	0.000	139.18	186.31	462.64	Historic District
J2396	0.000	139.58	186.30	458.70	Historic District
J2398	0.000	141.71	186.30	437.73	Historic District
J2402	0.000	145.65	186.29	399.00	Historic District
J2404	0.000	145.50	186.29	400.47	Historic District
J2406	0.030	145.10	186.29	404.39	Historic District
J2408	0.000	145.50	186.29	400.47	Historic District
J2410	0.000	145.53	186.29	400.18	Historic District
J2412	0.000	145.27	186.29	402.73	Historic District
J2414	0.000	144.70	186.29	408.31	Historic District
J2416	0.000	144.71	186.29	408.22	Historic District
J2418	0.000	144.75	186.29	407.82	Historic District
J2420	0.000	144.19	186.29	413.32	Historic District
J2422	0.000	143.69	186.29	418.23	Historic District
J2424	0.500	143.44	186.29	420.68	Historic District
J2426	0.000	142.77	186.29	427.26	Historic District
J2428	0.000	141.66	186.29	438.16	Historic District
J2430	0.000	143.63	186.29	418.82	Historic District
J2432	0.000	143.90	186.29	416.16	Historic District
J2434	1.080	143.69	186.29	418.22	Historic District
J2450	0.000	145.93	186.29	396.26	Historic District
J2452	0.000	145.25	186.29	402.92	Historic District
J2454	0.000	145.33	186.29	402.13	Historic District
J2456	0.000	144.44	186.29	410.87	Historic District
J2457	0.000	144.88	186.29	406.58	Historic District
J2458	0.000	144.60	186.29	409.29	Historic District
J2460	0.000	144.19	186.29	413.32	Historic District
J2464	0.000	142.70	186.29	427.95	Historic District
Total Demand_MDD Historic District	**3.37**				
Minimum Pressure in Historic District, kPa				**396.26**	
Maximum Pressure in Historic District, kPa				**475.74**	
Minimum Pressure in Historic District, psi				**57.38**	
Maximum Pressure in Historic District, psi				**68.89**	
J2514-2	0.023	145.39	186.29	401.57	Townhome 1
J2514-3	0.023	145.64	186.29	399.11	Townhome 2
J2514-4	0.023	145.64	186.29	399.11	Townhome 3
J2514-5	0.023	145.84	186.29	397.15	Townhome 4
J2514-6	0.023	145.84	186.29	397.15	Townhome 5
J2514-7	0.023	145.96	186.29	395.98	Townhome 6
J2514-8	0.023	145.96	186.29	395.98	Townhome 7
J2514-9	0.023	145.98	186.29	395.78	Townhome 8
J2530	0.000	142.45	186.29	430.40	Phase 1 of Rental
J2531	0.000	142.45	186.29	430.40	Phase 1 of Rental
J2532	1.980	142.45	186.29	430.40	Phase 1 of Rental
Total Demand_MDD Phase 1_Rental with 8 Townhouses	**2.16**				
Minimum Pressure in Phase 1_Rental_8 Townhouses, kPa				**395.78**	
Maximum Pressure in Phase 1_Rental_8 Townhouses, kPa				**430.40**	
Minimum Pressure in Phase 1_Rental_8 Townhouses, kPa				**57.31**	
Maximum Pressure in Phase 1_Rental_8 Townhouses, kPa				**62.32**	
J2472-1	0.000	140.88	186.31	446.03	Phase 1 of Village A
J2473	0.000	141.21	186.31	442.78	Phase 1 of Village A
J2474	0.140	143.45	186.31	420.76	Phase 1 of Village A
J2474-1	0.000	144.60	186.31	409.46	Phase 1 of Village A
J2475	0.140	144.65	186.31	408.96	Phase 1 of Village A
J2476	0.280	145.25	186.31	403.06	Phase 1 of Village A
J2477	0.030	143.69	186.31	418.39	Phase 1 of Village A
J2477-1	0.000	143.18	186.31	423.41	Phase 1 of Village A
J2477-2	0.000	143.52	186.31	420.07	Phase 1 of Village A
J2478	0.220	144.63	186.31	409.16	Phase 1 of Village A
J2479	0.110	145.26	186.31	402.97	Phase 1 of Village A
J2480	0.140	145.51	186.31	400.51	Phase 1 of Village A
J2481	0.110	146.08	186.31	394.91	Phase 1 of Village A
J2482	0.000	145.28	186.31	402.77	Phase 1 of Village A
J2483	0.170	145.78	186.31	397.86	Phase 1 of Village A
J2483-1	0.000	146.05	186.31	395.21	Phase 1 of Village A
J2484	0.220	145.97	186.31	395.99	Phase 1 of Village A
J2485	0.190	146.19	186.31	393.84	Phase 1 of Village A
J2485-1	0.000	146.28	186.31	392.95	Phase 1 of Village A
J2486	0.000	146.25	186.31	393.24	Phase 1 of Village A
J2487	0.000	146.36	186.31	392.17	Phase 1 of Village A
J2488	0.000	146.33	186.31	392.46	Phase 1 of Village A
J2489	0.000	145.83	186.31	397.37	Phase 1 of Village A
J2490	0.000	145.73	186.31	398.35	Phase 1 of Village A
J2491	0.120	145.71	186.31	398.55	Phase 1 of Village A
J2492	0.090	145.52	186.31	400.41	Phase 1 of Village A
J2492-1	0.000	145.71	186.31	398.55	Phase 1 of Village A
J2492-2	0.000	145.33	186.31	402.28	Phase 1 of Village A

Link ID	Start Node	End Node	Length	Diameter	Roughness	Flow	Velocity	Location of the Nodes
			m	mm		L/s	m/s	
1110	J2257	J2258	19.58	300	120	6.127	0.087	Historic District
1111	J2258	J2259	9.15	300	120	6.127	0.087	Historic District
1112	J2259	J2332	52.68	300	120	6.127	0.087	Historic District
1113	J2332	J2261	19.16	300	120	6.127	0.087	Historic District
1114	J2261	J2392	30.62	300	120	6.127	0.087	Historic District
1115	J2392	J2263	12.88	300	120	6.127	0.087	Historic District
1116	J2263	J2394	44.24	300	120	6.127	0.087	Historic District
1117	J2394	J2265	27.52	300	120	6.127	0.087	Historic District
1118	J2265	J2396	5.77	300	120	6.127	0.087	Historic District
1119	J2396	J2267	87.59	300	120	6.127	0.087	Historic District
1120	J2267	J2398	60.83	300	120	6.127	0.087	Historic District
1122	J2457	J2269	84.90	300	120	3.370	0.048	Historic District
1123	J2450	J2269	2.95	300	120	0.000	0.000	Historic District
1124	J2269	J2271	25.03	300	120	3.370	0.048	Historic District
1126	J2271	J2273	12.16	300	120	3.370	0.048	Historic District
1127	J2273	J2402	1.53	300	120	3.370	0.048	Historic District
1128	J2402	J2275	5.73	300	120	3.370	0.048	Historic District
1129	J2275	J2404	17.70	300	120	3.370	0.048	Historic District
1130	J2404	J2277	2.16	150	100	0.200	0.011	Historic District
1131	J2277	J2410	3.98	150	100	0.200	0.011	Historic District
1132	J2410	J2279	3.98	150	100	0.200	0.011	Historic District
1133	J2404	J2412	42.96	300	120	3.170	0.045	Historic District
1134	J2412	J2281	6.25	150	100	0.280	0.016	Historic District
1135	J2412	J2452	47.90	250	110	0.610	0.012	Historic District
1136	J2452	J2283	6.31	200	110	0.580	0.018	Historic District
1137	J2452	J2454	18.24	200	110	0.000	0.000	Historic District
1138	J2452	J2285	28.61	250	110	0.030	0.001	Historic District
1139	J2285	J2287	11.35	250	110	0.030	0.001	Historic District
1140	J2287	J2406	25.66	250	120	0.030	0.001	Historic District
1141	J2285	J2408	2.34	200	110	0.000	0.000	Historic District
1142	J2412	J2289	37.16	300	120	2.280	0.032	Historic District
1143	J2289	J2414	58.07	300	120	2.280	0.032	Historic District
1144	J2414	J2291	88.66	300	120	1.078	0.015	Historic District
1145	J2414	J2292	21.80	250	110	0.450	0.009	Historic District
1146	J2292	J2293	10.29	250	110	0.300	0.006	Historic District
1147	J2293	J2416	3.08	250	110	0.300	0.006	Historic District
1148	J2416	J2456	21.72	250	110	0.300	0.006	Historic District
1149	J2456	J2295	4.29	250	110	0.300	0.006	Historic District
1150	J2295	J2297	25.29	250	110	0.000	0.000	Historic District
1151	J2414	J2418	29.04	300	120	0.752	0.011	Historic District
1152	J2418	J2458	45.40	300	120	0.752	0.011	Historic District
1153	J2299	J2420	45.78	300	120	0.752	0.011	Historic District
1154	J2420	J2460	44.62	300	120	0.752	0.011	Historic District
1155	J2301	J2422	46.32	300	120	0.602	0.009	Historic District
1156	J2422	J2303	43.37	200	120	0.100	0.003	Historic District
1157	J2422	J2424	36.95	300	120	0.502	0.007	Historic District
1158	J2424	J2305	27.70	300	120	0.002	0.000	Historic District
1159	J2305	J2426	24.53	300	120	0.002	0.000	Historic District
1179	J2426	J2428	64.45	300	120	0.002	0.000	Historic District
1180	J2428	J2464	51.23	300	120	0.002	0.000	Historic District
1181	J2430	J2432	68.50	300	120	0.002	0.000	Historic District
1182	J2432	J2434	17.52	200	110	1.080	0.034	Historic District
1183	J2458	J2299	47.62	300	120	0.752	0.011	Historic District
1184	J2460	J2301	25.55	300	120	0.752	0.011	Historic District
1186	J2464	J2430	41.03	300	120	0.002	0.000	Historic District
1192	J2432	J2291	58.43	300	120	-1.078	0.015	Historic District
1294	J2515	J2457	30.21	300	120	3.370	0.048	Historic District
1238-10	J2514-1	J2530	93.36	200	110	1.890	0.060	Townhome 1
1238-11	J2530	J2531	2.50	200	110	1.890	0.060	Townhome 2
1238-12	J2531	J2532	3.20	200	110	1.890	0.060	Townhome 3
1238-2	J2514-1	J2514-2	6.50	300	120	0.717	0.010	Townhome 4
1238-3	J2514-2	J2514-3	11.80	300	120	0.694	0.010	Townhome 5
1238-4	J2514-3	J2514-4	1.10	300	120	0.671	0.009	Townhome 6
1238-5	J2514-4	J2514-5	11.95	300	120	0.648	0.009	Townhome 7
1238-6	J2514-5	J2514-6	2.80	300	120	0.625	0.009	Townhome 8
1238-7	J2514-6	J2514-7	11.95	300	120	0.602	0.009	Phase 1 of Rental
1238-8	J2514-7	J2514-8	1.10	300	120	0.579	0.008	Phase 1 of Rental
1238-9	J2514-8	J2514-9	10.26	300	120	0.556	0.008	Phase 1 of Rental
1193	J2257	J2472-1	29.0	300	120	4.817	0.068	Phase 1 of Village A
1194	J2472-1	J2473	24.4	300	120	4.817	0.068	Phase 1 of Village A
1195	J2473	J2474	106.2	300	120	4.817	0.068	Phase 1 of Village A
1195-1	J2474	J2474-1	38.7	300	120	3.513	0.050	Phase 1 of Village A
1196	J2474-1	J2475	45.1	300	120	3.513	0.050	Phase 1 of Village A
1197	J2475	J2476	70.6	300	120	3.373	0.048	Phase 1 of Village A
1198-1	J2474	J2477-1	9.8	200	110	1.164	0.037	Phase 1 of Village A
1198-2	J2477-1	J2477-2	33.9	200	110	1.164	0.037	Phase 1 of Village A
1198-3	J2477-2	J2477	16.5	200	110	1.164	0.037	Phase 1 of Village A
1199	J2477	J2478	24.0	200	110	1.134	0.036	Phase 1 of Village A
1200	J2478	J2479	40.3	200	110	0.914	0.029	Phase 1 of Village A
1201	J2479	J2480	51.0	200	110	0.804	0.026	Phase 1 of Village A
1202	J2480	J2481	55.1	200	110	0.110	0.004	Phase 1 of Village A
1203	J2480	J2482	36.0	200	110	0.149	0.005	Phase 1 of Village A
1204	J2482	J2476	49.5	200	110	0.149	0.005	Phase 1 of Village A
1205	J2480	J2483	32.8	200	110	0.405	0.013	Phase 1 of Village A
1205-1	J2483	J2483-1	36.1	200	110	0.235	0.007	Phase 1 of Village A
1206	J2483-1	J2484	9.6	200	110	0.235	0.007	Phase 1 of Village A
1207	J2484	J2485	47.9	200	110	0.015	0.000	Phase 1 of Village A
1207-1	J2485	J2485-1	25.6	200	110	-0.175	0.006	Phase 1 of Village A
1208	J2485-1	J2488	8.2	200	110	-0.175	0.006	Phase 1 of Village A
1209	J2488	J2486	6.0	200	110	0.000	0.000	Phase 1 of Village A
1210	J2488	J2487	13.7	200	110	0.000	0.000	Phase 1 of Village A
1211	J2488	J2489	56.5	200	110	-0.175	0.006	Phase 1 of Village A
1212	J2489	J2491	29.9	200	110	-0.175	0.006	Phase 1 of Village A
1213	J2490	J2491	14.3	300	120	0.000	0.000	Phase 1 of Village A
1214	J2491	J2492	13.4	300	120	-0.295	0.004	Phase 1 of Village A
1214-1	J2492	J2492-1	35.5	300	120	-0.385	0.005	Phase 1 of Village A

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Node ID	Demand	Elevation	Head	Pressure	Location of the Nodes
	L/s	m	m	kPa	
J2493	0.000	145.37	186.30	401.86	Phase 1 of Village A
J2493-1	0.000	145.03	186.31	405.21	Phase 1 of Village A
J2494	0.170	145.31	186.30	402.44	Phase 1 of Village A
J2494-1	0.000	145.29	186.30	402.64	Phase 1 of Village A
J2495	0.000	145.37	186.30	401.84	Phase 1 of Village A
J2496	0.160	146.49	186.30	390.79	Phase 1 of Village A
J2496-1	0.000	146.20	186.30	393.66	Phase 1 of Village A
J2497	0.000	146.74	186.30	388.33	Phase 1 of Village A
J2497-1	0.000	146.56	186.30	390.10	Phase 1 of Village A
J2497-2	0.000	146.74	186.30	388.33	Phase 1 of Village A
J2498	0.000	146.79	186.30	387.84	Phase 1 of Village A
J2499	0.210	146.52	186.30	390.48	Phase 1 of Village A
J2500	0.230	146.22	186.29	393.42	Phase 1 of Village A
J2501	0.120	145.93	186.29	396.27	Phase 1 of Village A
J2502	0.000	145.75	186.29	398.04	Phase 1 of Village A
J2502-1	0.000	145.67	186.29	398.82	Phase 1 of Village A
J2503	0.000	145.89	186.29	396.66	Phase 1 of Village A
J2504	0.000	145.90	186.29	396.57	Phase 1 of Village A
J2505	0.120	146.90	186.29	386.75	Phase 1 of Village A
J2505-1	0.000	146.75	186.30	388.22	Phase 1 of Village A
J2506	0.140	146.19	186.29	393.71	Phase 1 of Village A
J2507	0.000	145.39	186.29	401.57	Phase 1 of Village A
J2507-1	0.140	145.39	186.29	401.57	Phase 1 of Village A
J2508	0.000	144.87	186.29	406.68	Phase 1 of Village A
J2508-1	0.000	144.85	186.29	406.87	Phase 1 of Village A
J2509	0.000	145.05	186.29	404.91	Phase 1 of Village A
J2510	0.000	145.14	186.29	404.02	Phase 1 of Village A
J2511	0.000	146.05	186.29	395.09	Phase 1 of Village A
J2512	0.000	145.54	186.29	400.10	Phase 1 of Village A
J2513	0.000	145.56	186.29	399.90	Phase 1 of Village A
J2514-1	0.000	144.20	186.29	413.26	Phase 1 of Village A
J2516	0.230	145.18	186.29	403.62	Phase 1 of Village A
J2517	0.140	145.24	186.29	403.04	Phase 1 of Village A
J2518	0.140	145.28	186.29	402.64	Phase 1 of Village A
J2519	0.220	146.09	186.29	394.69	Phase 1 of Village A
J2520	0.190	145.27	186.29	402.74	Phase 1 of Village A
J2521	0.030	144.30	186.29	412.26	Phase 1 of Village A
J2522	0.230	144.96	186.29	405.78	Phase 1 of Village A
J2522-1	0.000	145.15	186.29	403.91	Phase 1 of Village A
J2523	0.210	144.70	186.29	408.33	Phase 1 of Village A
J2524	0.280	144.69	186.29	408.43	Phase 1 of Village A
J2525	0.210	144.29	186.29	412.36	Phase 1 of Village A
J2526	0.110	144.14	186.29	413.83	Phase 1 of Village A
J2526-1	0.000	144.13	186.29	413.93	Phase 1 of Village A
J2527	0.110	142.36	186.29	431.30	Phase 1 of Village A
J2528	0.000	141.61	186.29	438.66	Phase 1 of Village A
J2529	0.000	141.65	186.29	438.28	Phase 1 of Village A
Total Demand_MDD Phase 1_Village A	**5.35**				
Minimum Pressure in Phase 1_Village A, kPa				**386.75**	
Maximum Pressure in Phase 1_Village A, kPa				**446.03**	
Minimum Pressure in Phase 1_Village A, psi				**56.00**	
Maximum Pressure in Phase 1_Village A, psi				**64.59**	
J1980	0.000	147.27	186.28	382.95	Picton Heights
J2012	0.150	149.99	186.24	355.90	Picton Heights
J2014	0.150	149.79	186.24	357.80	Picton Heights
J2016	0.150	148.29	186.26	372.79	Picton Heights
J2018	0.150	149.43	186.25	361.48	Picton Heights
J2020	0.150	149.63	186.24	359.45	Picton Heights
J2022	0.150	149.48	186.25	360.98	Picton Heights
J2024	0.150	150.01	186.24	355.73	Picton Heights
J2026	0.150	150.08	186.23	354.88	Picton Heights
J2028	0.150	149.99	186.24	355.86	Picton Heights
J2030	0.150	149.82	186.24	357.51	Picton Heights
J2032	0.150	150.08	186.23	354.86	Picton Heights
J2034	0.150	149.74	186.24	358.31	Picton Heights
J2036	0.150	150.12	186.24	354.55	Picton Heights
J2038	0.150	149.83	186.24	357.45	Picton Heights
J2040	0.150	149.90	186.24	356.79	Picton Heights
J2042	0.150	149.82	186.24	357.49	Picton Heights
J2044	0.150	149.79	186.24	357.86	Picton Heights
J2046	0.150	150.03	186.23	355.35	Picton Heights
J2048	0.150	148.71	186.24	368.46	Picton Heights
J2050	0.150	149.64	186.24	359.26	Picton Heights
J2052	0.180	147.69	186.25	378.50	Picton Heights
J2054	0.180	147.97	186.24	375.76	Picton Heights
J2056	0.180	148.02	186.24	375.27	Picton Heights
J2058	0.180	148.24	186.24	373.06	Picton Heights
J2060	0.180	148.56	186.24	370.00	Picton Heights
J2062	0.180	148.15	186.24	373.96	Picton Heights
J2064	0.000	148.07	184.21	354.77	Picton Heights
J2066	0.000	148.28	184.21	352.69	Picton Heights
J2068	0.150	147.48	186.25	380.63	Picton Heights
J2070	0.150	147.67	186.25	378.73	Picton Heights
J2072	0.150	148.17	186.24	373.82	Picton Heights
J2074	0.180	148.14	186.24	374.07	Picton Heights
J2076	0.000	148.13	184.21	354.17	Picton Heights
J2078	0.130	148.44	184.21	351.15	Picton Heights
J2080	0.180	148.06	186.24	374.84	Picton Heights
J2082	0.000	148.07	184.21	354.76	Picton Heights
J2084	0.000	148.32	184.21	352.35	Picton Heights
J2152	0.180	149.25	186.24	363.15	Picton Heights
J2154	0.150	150.75	186.24	348.40	Picton Heights
J2226	0.180	147.20	186.26	383.46	Picton Heights
J2232	0.350	149.00	184.21	345.62	Picton Heights
J2234	0.230	149.00	184.21	345.62	Picton Heights
J2334	0.000	150.02	186.24	355.55	Picton Heights
J2336	0.280	148.71	184.21	348.44	Picton Heights
J2350	0.000	148.70	184.21	348.58	Picton Heights
J76	0.150	146.89	186.27	386.67	Picton Heights
J78	0.000	147.04	186.26	385.07	Picton Heights
J80	0.000	147.13	186.28	384.33	Picton Heights
J82	0.000	146.89	186.27	386.69	Picton Heights
J84	0.000	146.70	186.27	388.49	Picton Heights
J86	0.000	146.76	186.27	387.94	Picton Heights
Total Demand_MDD Picton Heights	**6.54**				
Minimum Pressure in Picton Heights, kPa				**345.62**	
Maximum Pressure in Picton Heights, kPa				**388.49**	
Minimum Pressure in Picton Heights, psi				**50.05**	
Maximum Pressure in Picton Heights, psi				**56.25**	
Total Demand, MDD, L/s	**17.42**				

Link ID	Start Node	End Node	Length	Diameter	Roughness	Flow	Velocity	Location of the Nodes
			m	mm		L/s	m/s	
1214-2	J2492-1	J2492-2	39.8	300	120	-0.385	0.005	Phase 1 of Village A
1215	J2492-2	J2476	16.5	300	120	-0.385	0.005	Phase 1 of Village A
1216	J2476	J2493-1	14.0	200	110	2.857	0.091	Phase 1 of Village A
1217	J2493-1	J2493	16.9	200	110	2.857	0.091	Phase 1 of Village A
1218	J2493	J2494-1	8.1	200	110	2.857	0.091	Phase 1 of Village A
1219	J2494-1	J2494	9.2	200	110	2.857	0.091	Phase 1 of Village A
1220	J2494	J2495	46.5	200	110	0.000	0.000	Phase 1 of Village A
1221	J2494	J2496-1	41.1	200	110	2.687	0.086	Phase 1 of Village A
1222	J2496-1	J2496	37.0	200	110	2.687	0.086	Phase 1 of Village A
1223	J2496	J2497-1	30.0	200	110	0.980	0.031	Phase 1 of Village A
1224	J2497-1	J2497-2	38.2	200	110	0.980	0.031	Phase 1 of Village A
1225	J2497-2	J2497	2.0	200	110	0.980	0.031	Phase 1 of Village A
1226	J2497	J2498	9.1	200	110	0.000	0.000	Phase 1 of Village A
1227	J2497	J2499	45.2	200	110	0.980	0.031	Phase 1 of Village A
1228	J2499	J2500	35.3	200	110	0.770	0.025	Phase 1 of Village A
1229	J2500	J2501	25.5	200	110	0.540	0.017	Phase 1 of Village A
1230	J2501	J2502-1	28.5	200	110	0.420	0.013	Phase 1 of Village A
1231	J2502-1	J2502	7.7	200	110	0.420	0.013	Phase 1 of Village A
1232	J2502	J2504	6.3	200	110	0.420	0.013	Phase 1 of Village A
1233	J2511	J2510	10.1	300	120	0.000	0.000	Phase 1 of Village A
1234	J2511	J2509	11.9	200	110	0.533	0.017	Phase 1 of Village A
1235	J2512	J2511	65.2	300	120	0.533	0.008	Phase 1 of Village A
1236	J2513	J2512	56.8	300	120	0.533	0.008	Phase 1 of Village A
1237	J2514-9	J2513	27.5	300	120	0.533	0.008	Phase 1 of Village A
1238-1	J2515	J2514-1	52.2	300	120	2.757	0.039	Phase 1 of Village A
1239	J2504	J2503	5.3	200	110	0.000	0.000	Phase 1 of Village A
1240	J2496	J2505-1	45.5	200	110	1.547	0.049	Phase 1 of Village A
1241	J2505-1	J2505	22.6	200	110	1.547	0.049	Phase 1 of Village A
1242	J2505	J2506	47.5	200	110	0.383	0.012	Phase 1 of Village A
1243	J2506	J2507-1	46.5	200	110	0.243	0.008	Phase 1 of Village A
1244	J2507-1	J2507	2.5	200	110	0.103	0.003	Phase 1 of Village A
1245	J2507	J2508-1	2.9	200	110	-0.533	0.017	Phase 1 of Village A
1246	J2508-1	J2508	3.0	200	110	-0.533	0.017	Phase 1 of Village A
1247	J2507	J2504	73.2	200	110	-0.420	0.013	Phase 1 of Village A
1248	J2508	J2509	31.7	200	110	-0.533	0.017	Phase 1 of Village A
1249	J2507	J2516	56.0	200	110	1.056	0.034	Phase 1 of Village A
1250	J2516	J2517	41.8	200	110	0.193	0.006	Phase 1 of Village A
1251	J2517	J2518	25.1	200	110	0.053	0.002	Phase 1 of Village A
1252	J2518	J2520	49.6	200	110	-0.087	0.003	Phase 1 of Village A
1253	J2505	J2519	46.9	200	110	1.044	0.033	Phase 1 of Village A
1254	J2519	J2520	34.8	200	110	0.824	0.026	Phase 1 of Village A
1255	J2516	J2522-1	29.5	200	110	0.634	0.020	Phase 1 of Village A
1256	J2522-1	J2522	37.0	200	110	0.634	0.020	Phase 1 of Village A
1257	J2522	J2523	12.5	200	110	0.404	0.013	Phase 1 of Village A
1258	J2523	J2524	53.5	200	110	0.194	0.006	Phase 1 of Village A
1259	J2524	J2525	27.9	200	110	-0.086	0.003	Phase 1 of Village A
1260	J2525	J2526-1	19.1	200	110	-0.296	0.009	Phase 1 of Village A
1261	J2526-1	J2526	35.9	200	110	-0.296	0.009	Phase 1 of Village A
1262	J2520	J2521	54.7	200	110	0.546	0.017	Phase 1 of Village A
1263	J2521	J2526	27.3	200	110	0.516	0.016	Phase 1 of Village A
1264	J2526	J2527	73.7	200	110	0.110	0.004	Phase 1 of Village A
1265	J2527	J2528	20.1	200	110	0.000	0.000	Phase 1 of Village A
1266	J2528	J2529	13.6	200	110	0.000	0.000	Phase 1 of Village A
1019	J1978	J1980	345.0	250	130	6.540	0.133	Picton Heights
1029	J1980	J80	39.0	250	130	6.540	0.133	Picton Heights
1045	J2012	J2014	91.8	200	70	1.163	0.037	Picton Heights
1046	J78	J2016	24.6	200	70	2.663	0.085	Picton Heights
1047	J2018	J2020	112.9	100	40	0.150	0.019	Picton Heights
1048	J2018	J2022	5.1	100	40	-0.300	0.038	Picton Heights
1049	J2016	J2022	46.5	200	70	2.513	0.080	Picton Heights
1050	J2024	J2026	120.1	100	40	0.150	0.019	Picton Heights
1051	J2024	J2012	5.7	100	40	-0.300	0.038	Picton Heights
1052	J2022	J2028	90.1	200	70	2.063	0.066	Picton Heights
1053	J2030	J2032	122.8	100	40	0.150	0.019	Picton Heights
1054	J2034	J2036	89.2	200	70	0.122	0.004	Picton Heights
1055	J2036	J2038	176.6	150	70	-0.028	0.002	Picton Heights
1056	J2038	J2034	5.4	150	70	-0.178	0.010	Picton Heights
1057	J2040	J2034	81.7	200	70	0.450	0.014	Picton Heights
1058	J2030	J2014	5.2	100	40	-0.300	0.038	Picton Heights
1059	J2014	J2042	17.3	200	70	0.713	0.023	Picton Heights
1060	J2044	J2046	127.2	100	40	0.150	0.019	Picton Heights
1061	J2044	J2028	13.4	100	40	-0.300	0.038	Picton Heights
1062	J2028	J2012	1.1	200	70	1.613	0.051	Picton Heights
1063	J2048	J2152	77.9	150	70	-0.150	0.008	Picton Heights
1064	J2050	J2040	21.4	150	70	0.037	0.002	Picton Heights
1065	J2042	J2040	7.1	200	70	0.563	0.018	Picton Heights
1066	J2052	J2054	47.5	200	130	2.400	0.076	Picton Heights
1067	J2056	J2058	22.6	150	100	0.360	0.020	Picton Heights
1068	J2058	J2060	119.5	150	100	0.180	0.010	Picton Heights
1069	J2054	J2062	4.4	200	130	1.680	0.053	Picton Heights
1070	J2064	J2066	14.5	150	100	0.520	0.029	Picton Heights
1071	J2068	J2052	35.6	200	130	3.397	0.108	Picton Heights
1072	J2052	J2070	0.9	150	70	0.817	0.046	Picton Heights
1073	J2054	J2056	1.7	150	100	0.540	0.031	Picton Heights
1074	J2062	J2072	0.8	200	130	1.500	0.048	Picton Heights
1075	J2072	J2074	4.3	200	130	1.350	0.043	Picton Heights
1076	J2076	J2078	24.8	200	130	0.470	0.015	Picton Heights
1078	J2064	J2082	0.4	200	130	0.470	0.015	Picton Heights
1079	J2066	J2084	0.5	250	100	0.520	0.011	Picton Heights
1080	J2074	J2080	3.1	200	130	1.170	0.037	Picton Heights
1081	J2082	J2076	3.9	200	130	0.470	0.015	Picton Heights
32	J76	J78	103.1	250	130	6.390	0.130	Picton Heights
33	J80	J82	24.3	250	130	6.540	0.133	Picton Heights
34	J82	J84	7.4	250	130	0.000	0.000	Picton Heights
35	J84	J86	1.0	250	130	0.000	0.000	Picton Heights
36	J82	J76	9.6	250	130	6.540	0.133	Picton Heights
P155	J78	J2226	45.8	200	130	3.727	0.119	Picton Heights
P157	J2226	J2068	100.9	200	130	3.547	0.113	Picton Heights
P163	J2084	J2336	99.3	150	100	0.520	0.029	Picton Heights
P385	J2334	J2154	73.4	150	70	0.337	0.019	Picton Heights
P387	J2336	J2232	72.2	150	100	0.240	0.014	Picton Heights
P429	J2070	J2152	88.2	150	70	0.667	0.038	Picton Heights
P473	V8000	J2064	6.0	200	130	0.990	0.032	Picton Heights
P489	J2350	J2234	163.2	150	100	0.340	0.019	Picton Heights
P491	J2078	J2350	426.3	200	110	0.340	0.011	Picton Heights
P493	J2232	J2234	225.2	150	100	-0.110	0.006	Picton Heights
P61	J2152	J2334	78.2	150	70	0.337	0.019	Picton Heights
P63	J2154	J2050	125.0	150	70	0.187	0.011	Picton Heights



PICTON

PRESSURE DURING PHD

Junction Display

JCTOUT.PRESSURE

- Less than 40
- 40-50
- 50-60
- 60-70
- 70-80
- 80-90
- 90-100

Pipe Display

PIPEHYD.DIAMETER

- 100
- 150
- 200
- 250
- 300
- 350
- 400

RA ENGINEERING

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Date: 12/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Results
Proposed Historic District - Interim Development,Phase 1 of Rental Development with 8 Townhouses, Phase 1 of Village A Development & Picton Heights Development,
Picton,
Prince Edward County

Peak Hour Demand (PHD)

Node ID	Demand	Elevation	Head	Pressure	Location of the Nodes		Link ID	Start Node	End Node	Length	Diameter	Roughness	Flow	Velocity	Location of the Nodes
	L/s	m	m	kPa						m	mm		L/s	m/s	
J2257	0.000	139.84	186.31	456.23	Historic District		1110	J2257	J2258	19.58	300	120	9.025	0.128	Historic District
J2258	0.000	139.54	186.31	459.16	Historic District		1111	J2258	J2259	9.15	300	120	9.025	0.128	Historic District
J2259	0.000	139.14	186.31	463.08	Historic District		1112	J2259	J2332	52.68	300	120	9.025	0.128	Historic District
J2261	0.000	138.83	186.30	466.07	Historic District		1113	J2332	J2261	19.16	300	120	9.025	0.128	Historic District
J2263	0.000	138.68	186.30	467.50	Historic District		1114	J2261	J2392	30.62	300	120	9.025	0.128	Historic District
J2265	0.000	139.76	186.29	456.83	Historic District		1115	J2392	J2263	12.88	300	120	9.025	0.128	Historic District
J2267	0.000	140.70	186.29	447.53	Historic District		1116	J2263	J2394	44.24	300	120	9.025	0.128	Historic District
J2269	0.000	145.82	186.27	397.13	Historic District		1117	J2394	J2265	27.52	300	120	9.025	0.128	Historic District
J2271	0.000	145.63	186.27	398.99	Historic District		1118	J2265	J2396	5.77	300	120	9.025	0.128	Historic District
J2273	0.000	145.65	186.27	398.79	Historic District		1119	J2396	J2267	87.59	300	120	9.025	0.128	Historic District
J2275	0.000	145.59	186.27	399.38	Historic District		1120	J2267	J2398	60.83	300	120	9.025	0.128	Historic District
J2277	0.000	145.47	186.27	400.55	Historic District		1122	J2457	J2269	84.90	300	120	5.040	0.071	Historic District
J2279	0.320	145.70	186.27	398.28	Historic District		1123	J2450	J2269	2.95	300	120	0.000	0.000	Historic District
J2281	0.410	145.25	186.27	402.70	Historic District		1124	J2269	J2271	25.03	300	120	5.040	0.071	Historic District
J2283	0.870	145.31	186.27	402.10	Historic District		1126	J2271	J2273	12.16	300	120	5.040	0.071	Historic District
J2285	0.000	145.17	186.27	403.48	Historic District		1127	J2273	J2402	1.53	300	120	5.040	0.071	Historic District
J2287	0.000	145.12	186.27	403.97	Historic District		1128	J2402	J2275	5.73	300	120	5.040	0.071	Historic District
J2289	0.000	145.17	186.27	403.48	Historic District		1129	J2275	J2404	17.70	300	120	5.040	0.071	Historic District
J2291	0.000	144.79	186.27	407.19	Historic District		1130	J2404	J2277	2.16	150	100	0.320	0.018	Historic District
J2292	0.220	144.71	186.27	407.98	Historic District		1131	J2277	J2410	3.98	150	100	0.320	0.018	Historic District
J2293	0.000	144.64	186.27	408.67	Historic District		1132	J2410	J2279	3.98	150	100	0.320	0.018	Historic District
J2295	0.450	144.43	186.27	410.73	Historic District		1133	J2404	J2412	42.96	300	120	4.720	0.067	Historic District
J2297	0.000	144.69	186.27	408.18	Historic District		1134	J2412	J2281	6.25	150	100	0.410	0.023	Historic District
J2299	0.000	144.50	186.27	410.05	Historic District		1135	J2412	J2452	47.90	250	110	0.890	0.018	Historic District
J2301	0.220	144.19	186.27	413.08	Historic District		1136	J2452	J2283	6.31	200	110	0.870	0.028	Historic District
J2303	0.160	144.14	186.27	413.62	Historic District		1137	J2452	J2454	18.24	200	110	0.000	0.000	Historic District
J2305	0.000	143.22	186.27	422.61	Historic District		1138	J2452	J2285	28.61	250	110	0.020	0.000	Historic District
J2332	0.000	137.85	186.31	475.70	Historic District		1139	J2285	J2287	11.35	250	110	0.020	0.000	Historic District
J2392	0.000	138.25	186.30	471.73	Historic District		1140	J2287	J2406	25.66	250	120	0.020	0.000	Historic District
J2394	0.000	139.18	186.30	462.55	Historic District		1141	J2285	J2408	2.34	200	110	0.000	0.000	Historic District
J2396	0.000	139.58	186.29	458.60	Historic District		1142	J2412	J2289	37.16	300	120	3.420	0.048	Historic District
J2398	0.000	141.71	186.28	437.56	Historic District		1143	J2289	J2414	58.07	300	120	3.420	0.048	Historic District
J2402	0.000	145.65	186.27	398.79	Historic District		1144	J2414	J2291	88.66	300	120	1.619	0.023	Historic District
J2404	0.000	145.50	186.27	400.25	Historic District		1145	J2414	J2292	21.80	250	110	0.670	0.014	Historic District
J2406	0.020	145.10	186.27	404.17	Historic District		1146	J2292	J2293	10.29	250	110	0.450	0.009	Historic District
J2408	0.000	145.50	186.27	400.24	Historic District		1147	J2293	J2416	3.08	250	110	0.450	0.009	Historic District
J2410	0.000	145.53	186.27	399.96	Historic District		1148	J2416	J2456	21.72	250	110	0.450	0.009	Historic District
J2412	0.000	145.27	186.27	402.50	Historic District		1149	J2456	J2295	4.29	250	110	0.450	0.009	Historic District
J2414	0.000	144.70	186.27	408.08	Historic District		1150	J2295	J2297	25.29	250	110	0.000	0.000	Historic District
J2416	0.000	144.71	186.27	407.98	Historic District		1151	J2414	J2418	29.04	300	120	1.131	0.016	Historic District
J2418	0.000	144.75	186.27	407.59	Historic District		1152	J2418	J2458	45.40	300	120	1.131	0.016	Historic District
J2420	0.000	144.19	186.27	413.08	Historic District		1153	J2299	J2420	45.78	300	120	1.131	0.016	Historic District
J2422	0.000	143.69	186.27	417.99	Historic District		1154	J2420	J2460	44.62	300	120	1.131	0.016	Historic District
J2424	0.770	143.44	186.27	420.45	Historic District		1155	J2301	J2422	46.32	300	120	0.911	0.013	Historic District
J2426	0.000	142.77	186.27	427.03	Historic District		1156	J2422	J2303	43.37	200	120	0.160	0.005	Historic District
J2428	0.000	141.66	186.27	437.92	Historic District		1157	J2422	J2424	36.95	300	120	0.751	0.011	Historic District
J2430	0.000	143.63	186.27	418.58	Historic District		1158	J2424	J2305	27.70	300	120	-0.019	0.000	Historic District
J2432	0.000	143.90	186.27	415.93	Historic District		1159	J2305	J2426	24.53	300	120	-0.019	0.000	Historic District
J2434	1.600	143.69	186.27	417.99	Historic District		1179	J2426	J2428	64.45	300	120	-0.019	0.000	Historic District
J2450	0.000	145.93	186.27	396.05	Historic District		1180	J2428	J2464	51.23	300	120	-0.019	0.000	Historic District
J2452	0.000	145.25	186.27	402.69	Historic District		1181	J2430	J2432	68.50	300	120	-0.019	0.000	Historic District
J2454	0.000	145.33	186.27	401.91	Historic District		1182	J2432	J2434	17.52	200	110	1.600	0.051	Historic District
J2456	0.000	144.44	186.27	410.63	Historic District		1183	J2458	J2299	47.62	300	120	1.131	0.016	Historic District
J2457	0.000	144.88	186.27	406.38	Historic District		1184	J2460	J2301	25.55	300	120	1.131	0.016	Historic District
J2458	0.000	144.60	186.27	409.06	Historic District		1186	J2464	J2430	41.03	300	120	-0.019	0.000	Historic District
J2460	0.000	144.19	186.27	413.08	Historic District		1192	J2432	J2291	58.43	300	120	-1.619	0.023	Historic District
J2464	0.000	142.70	186.27	427.71	Historic District		1294	J2515	J2457	30.21	300	120	5.040	0.071	Historic District
Total Demand_PHD Historic District	**5.04**														
Minimum Pressure in Historic District, kPa				**396.05**											
Maximum Pressure in Historic District, kPa				**475.70**											
Minimum Pressure in Historic District, psi				**57.35**											
Maximum Pressure in Historic District, psi				**68.88**											
J2514-2	0.035	145.39	186.27	401.37	Townhome_1		1238-10	J2514-1	J2530	93.36	200	110	2.830	0.090	Townhome_1
J2514-3	0.035	145.64	186.27	398.92	Townhome_2		1238-11	J2530	J2531	2.50	200	110	2.830	0.090	Townhome_2
J2514-4	0.035	145.64	186.27	398.92	Townhome_3		1238-12	J2531	J2532	3.20	200	110	2.830	0.090	Townhome_3
J2514-5	0.035	145.84	186.27	396.95	Townhome_4		1238-2	J2514-1	J2514-2	6.50	300	120	1.155	0.016	Townhome_4
J2514-6	0.035	145.84	186.27	396.95	Townhome_5		1238-3	J2514-2	J2514-3	11.80	300	120	1.120	0.016	Townhome_5
J2514-7	0.035	145.96	186.27	395.78	Townhome_6		1238-4	J2514-3	J2514-4	1.10	300	120	1.085	0.015	Townhome_6
J2514-8	0.035	145.96	186.27	395.78	Townhome_7		1238-5	J2514-4	J2514-5	11.95	300	120	1.050	0.015	Townhome_7
J2514-9	0.035	145.98	186.27	395.58	Townhome_8		1238-6	J2514-5	J2514-6	2.80	300	120	1.015	0.014	Townhome_8
J2530	0.000	142.45	186.27	430.16	Phase 1 of Rental		1238-7	J2514-6	J2514-7	11.95	300	120	0.980	0.014	Phase 1 of Rental
J2531	0.000	142.45	186.27	430.16	Phase 1 of Rental		1238-8	J2514-7	J2514-8	1.10	300	120	0.945	0.013	Phase 1 of Rental
J2532	2.980	142.45	186.27	430.16	Phase 1 of Rental		1238-9	J2514-8	J2514-9	10.26	300	120	0.910	0.013	Phase 1 of Rental
Total Demand_PHD Phase 1_Rental with 8 Townhouses	**3.26**														
Minimum Pressure in Phase 1_Rental_8 Townhouses, kPa				**395.58**											
Maximum Pressure in Phase 1_Rental_8 Townhouses, kPa				**430.16**											
Minimum Pressure in Phase 1_Rental_8 Townhouses, kPa				**57.28**											
Maximum Pressure in Phase 1_Rental_8 Townhouses, kPa				**62.29**											
J2472-1	0.000	140.88	186.31	446.01	Phase 1 of Village A		1193	J2257	J2472-1	29.0	300	120	7.057	0.100	Phase 1 of Village A
J2473	0.000	141.21	186.31	442.76	Phase 1 of Village A		1194	J2472-1	J2473	24.4	300	120	7.057	0.100	Phase 1 of Village A
J2474	0.210	143.45	186.30	420.71	Phase 1 of Village A		1195	J2473	J2474	106.2	300	120	7.057	0.100	Phase 1 of Village A
J2474-1	0.000	144.60	186.30	409.40	Phase 1 of Village A		1195-1	J2474	J2474-1	38.7	300	120	5.183	0.073	Phase 1 of Village A
J2475	0.210	144.65	186.30	408.90	Phase 1 of Village A		1196	J2474-1	J2475	45.1	300	120	5.183	0.073	Phase 1 of Village A
J2476	0.420	145.25	186.30	402.99	Phase 1 of Village A		1197	J2475	J2476	70.6	300	120	4.973	0.070	Phase 1 of Village A
J2477	0.042	143.69	186.30	418.33	Phase 1 of Village A		1198-1	J2474	J2477-1	9.8	200	110	1.665	0.053	Phase 1 of Village A
J2477-1	0.000	143.18	186.30	423.35	Phase 1 of Village A		1198-2	J2477-1	J2477-2	33.9	200	110	1.665	0.053	Phase 1 of Village A
J2477-2	0.000	143.52	186.30	420.00	Phase 1 of Village A		1198-3	J2477-2	J2477	16.5	200	110	1.665	0.053	Phase 1 of Village A
J2478	0.220	144.63	186.30	409.10	Phase 1 of Village A		1199	J2477	J2478	24.0	200	110	1.623	0.052	Phase 1 of Village A
J2479	0.165	145.26	186.30	402.90	Phase 1 of Village A		1200	J2478	J2479	40.3	200	110	1.403	0.045	Phase 1 of Village A
J2480	0.210	145.51	186.30	400.44	Phase 1 of Village A		1201	J2479	J2480	51.0	200	110	1.238	0.039	Phase 1 of Village A
J2481	0.165	146.08	186.30	394.85	Phase 1 of Village A		1202	J2480	J2481	55.1	200	110	0.165	0.005	Phase 1 of Village A
J2482	0.000	145.28	186.30	402.70	Phase 1 of Village A		1203	J2480	J2482	36.0	200	110	0.248	0.008	Phase 1 of Village A
J2483	0.255	145.78	186.30	397.79	Phase 1 of Village A		1204	J2482	J2476	49.5	200	110	0.248	0.008	Phase 1 of Village A
J2483-1	0.000	146.05	186.30	395.14	Phase 1 of Village A		1205	J2480	J2483	32.8	200	110	0.614	0.020	Phase 1 of Village A
J2484	0.330	145.97	186.30	395.92	Phase 1 of Village A		1205-1	J2483	J2483-1	36.1	200	110	0.359	0.011	Phase 1 of Village A
J2485	0.285	146.19	186.30	393.76	Phase 1 of Village A		1206	J2483-1	J2484	9.6	200	110	0.359	0.011	Phase 1 of Village A
J2485-1	0.000	146.28	186.30	392.88	Phase 1 of Village A		1207	J2484	J2485	47.9	200	110	0.029	0.001	Phase 1 of Village A
J2486	0.000	146.25	186.30	393.17	Phase 1 of Village A		1207-1	J2485	J2485-1	25.6	200	110	-0.255	0.008	Phase 1 of Village A
J2487	0.000	146.36	186.30	392.09	Phase 1 of Village A		1208	J2485-1	J2488	8.2	200	110	-0.255	0.008	Phase 1 of Village A
J2488	0.000	146.33	186.30	392.39	Phase 1 of Village A		1209	J2488	J2486	6.0	200	110	0.000	0.000	Phase 1 of Village A
J2489	0.000	145.83	186.30	397.30	Phase 1 of Village A		1210	J2488	J2487	13.7	200	110	0.000	0.000	Phase 1 of Village A
J2490	0.000	145.73	186.30	398.28	Phase 1 of Village A		1211	J2488	J2489	56.5	200	110	-0.255	0.008	Phase 1 of Village A
J2491	0.180	145.71	186.30	398.47	Phase 1 of Village A		1212	J2489	J2491	29.9	200	110	-0.255	0.008	Phase 1 of Village A
J2492	0.135	145.52	186.30	400.34	Phase 1 of Village A		1213	J2490	J2491	14.3	300	120	0.000	0.000	Phase 1 of Village A
J2492-1	0.000	145.71	186.30	398.47	Phase 1 of Village A		1214	J2491	J2492	13.4	300	120	-0.435	0.006	Phase 1 of Village A
J2492-2	0.000	145.33	186.30	402.21	Phase 1 of Village A		1214-1	J2492	J2492-1	35.5	300	120	-0.570	0.008	Phase 1 of Village A

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Node ID	Demand	Elevation	Head	Pressure	Location of the Nodes
	L/s	m	m	kPa	
J2493	0.000	145.37	186.29	401.76	Phase 1 of Village A
J2493-1	0.000	145.03	186.30	405.13	Phase 1 of Village A
J2494	0.255	145.31	186.29	402.32	Phase 1 of Village A
J2494-1	0.000	145.29	186.29	402.53	Phase 1 of Village A
J2495	0.000	145.37	186.29	401.72	Phase 1 of Village A
J2496	0.240	146.49	186.28	390.61	Phase 1 of Village A
J2496-1	0.000	146.20	186.28	393.51	Phase 1 of Village A
J2497	0.000	146.74	186.28	388.14	Phase 1 of Village A
J2497-1	0.000	146.56	186.28	389.91	Phase 1 of Village A
J2497-2	0.000	146.74	186.28	388.14	Phase 1 of Village A
J2498	0.000	146.79	186.28	387.65	Phase 1 of Village A
J2499	0.315	146.52	186.28	390.29	Phase 1 of Village A
J2500	0.345	146.22	186.27	393.22	Phase 1 of Village A
J2501	0.180	145.93	186.27	396.07	Phase 1 of Village A
J2502	0.000	145.75	186.27	397.84	Phase 1 of Village A
J2502-1	0.000	145.67	186.27	398.62	Phase 1 of Village A
J2503	0.000	145.89	186.27	396.46	Phase 1 of Village A
J2504	0.000	145.90	186.27	396.37	Phase 1 of Village A
J2505	0.180	146.90	186.27	386.54	Phase 1 of Village A
J2505-1	0.000	146.75	186.28	388.03	Phase 1 of Village A
J2506	0.210	146.19	186.27	393.51	Phase 1 of Village A
J2507	0.000	145.39	186.27	401.36	Phase 1 of Village A
J2507-1	0.210	145.39	186.27	401.36	Phase 1 of Village A
J2508	0.000	144.87	186.27	406.48	Phase 1 of Village A
J2508-1	0.000	144.85	186.27	406.67	Phase 1 of Village A
J2509	0.000	145.05	186.27	404.71	Phase 1 of Village A
J2510	0.000	145.14	186.27	403.82	Phase 1 of Village A
J2511	0.000	146.05	186.27	394.89	Phase 1 of Village A
J2512	0.000	145.54	186.27	399.90	Phase 1 of Village A
J2513	0.000	145.56	186.27	399.70	Phase 1 of Village A
J2514-1	0.000	144.20	186.27	413.06	Phase 1 of Village A
J2516	0.345	145.18	186.27	403.41	Phase 1 of Village A
J2517	0.220	145.24	186.27	402.82	Phase 1 of Village A
J2518	0.220	145.28	186.27	402.43	Phase 1 of Village A
J2519	0.330	146.09	186.27	394.49	Phase 1 of Village A
J2520	0.285	145.27	186.27	402.53	Phase 1 of Village A
J2521	0.045	144.30	186.27	412.05	Phase 1 of Village A
J2522	0.345	144.96	186.27	405.56	Phase 1 of Village A
J2522-1	0.000	145.15	186.27	403.71	Phase 1 of Village A
J2523	0.315	144.70	186.27	408.12	Phase 1 of Village A
J2524	0.420	144.69	186.27	408.22	Phase 1 of Village A
J2525	0.315	144.29	186.27	412.14	Phase 1 of Village A
J2526	0.165	144.14	186.27	413.62	Phase 1 of Village A
J2526-1	0.000	144.13	186.27	413.71	Phase 1 of Village A
J2527	0.165	142.96	186.27	431.09	Phase 1 of Village A
J2528	0.000	141.61	186.27	438.45	Phase 1 of Village A
J2529	0.000	141.65	186.27	438.06	Phase 1 of Village A
Total Demand_PHD Phase 1_Village A	**7.93**				
Minimum Pressure in Phase 1_Village A, kPa				**386.54**	
Maximum Pressure in Phase 1_Village A, kPa				**446.01**	
Minimum Pressure in Phase 1_Village A, psi				**55.97**	
Maximum Pressure in Phase 1_Village A, psi				**64.58**	
J1980	0.000	147.27	186.24	382.59	Picton Heights
J2012	0.230	149.99	186.16	355.10	Picton Heights
J2014	0.230	149.79	186.15	356.96	Picton Heights
J2016	0.230	148.29	186.20	372.19	Picton Heights
J2018	0.230	149.43	186.18	360.77	Picton Heights
J2020	0.230	149.63	186.16	358.65	Picton Heights
J2022	0.230	149.48	186.18	360.30	Picton Heights
J2024	0.230	150.01	186.16	354.92	Picton Heights
J2026	0.230	150.08	186.14	353.96	Picton Heights
J2028	0.230	149.99	186.16	355.06	Picton Heights
J2030	0.230	149.82	186.15	356.66	Picton Heights
J2032	0.230	150.08	186.13	353.90	Picton Heights
J2034	0.230	149.74	186.15	357.46	Picton Heights
J2036	0.230	150.12	186.15	353.70	Picton Heights
J2038	0.230	149.83	186.15	356.60	Picton Heights
J2040	0.230	149.90	186.15	355.94	Picton Heights
J2042	0.230	149.82	186.15	356.65	Picton Heights
J2044	0.230	149.79	186.15	357.02	Picton Heights
J2046	0.230	150.03	186.13	354.40	Picton Heights
J2048	0.230	148.71	186.16	367.66	Picton Heights
J2050	0.230	149.64	186.15	358.42	Picton Heights
J2052	0.260	147.69	186.17	377.77	Picton Heights
J2054	0.260	147.97	186.17	375.00	Picton Heights
J2056	0.260	148.02	186.17	374.51	Picton Heights
J2058	0.260	148.24	186.17	372.30	Picton Heights
J2060	0.260	148.56	186.17	369.23	Picton Heights
J2062	0.260	148.15	186.17	373.20	Picton Heights
J2064	0.000	148.07	184.13	353.98	Picton Heights
J2066	0.000	148.28	184.13	351.88	Picton Heights
J2068	0.230	147.48	186.18	379.92	Picton Heights
J2070	0.230	147.67	186.17	377.99	Picton Heights
J2072	0.230	148.17	186.17	373.06	Picton Heights
J2074	0.260	148.14	186.17	373.31	Picton Heights
J2076	0.000	148.13	184.13	353.38	Picton Heights
J2078	0.190	148.44	184.13	350.36	Picton Heights
J2080	0.260	148.06	186.17	374.08	Picton Heights
J2082	0.000	148.07	184.13	353.96	Picton Heights
J2084	0.000	148.32	184.13	351.55	Picton Heights
J2152	0.260	149.25	186.16	362.35	Picton Heights
J2154	0.230	150.75	186.15	347.57	Picton Heights
J2226	0.260	147.20	186.20	382.85	Picton Heights
J2232	0.530	149.00	184.12	344.80	Picton Heights
J2234	0.340	149.00	184.12	344.81	Picton Heights
J2334	0.000	150.02	186.16	354.74	Picton Heights
J2336	0.410	148.71	184.12	347.63	Picton Heights
J2350	0.000	148.70	184.13	347.77	Picton Heights
J76	0.230	146.89	186.23	386.23	Picton Heights
J78	0.000	147.04	186.21	384.52	Picton Heights
J80	0.000	147.13	186.24	383.93	Picton Heights
J82	0.000	146.89	186.23	386.26	Picton Heights
J84	0.000	146.70	186.23	388.05	Picton Heights
J86	0.000	146.76	186.23	387.50	Picton Heights
Total Demand_PHD Picton Heights	**9.82**				
Minimum Pressure in Picton Heights, kPa				**344.80**	
Maximum Pressure in Picton Heights, kPa				**388.05**	
Minimum Pressure in Picton Heights, psi				**49.93**	
Maximum Pressure in Picton Heights, psi				**56.19**	
Total Demand, PHD, L/s	**26.05**				

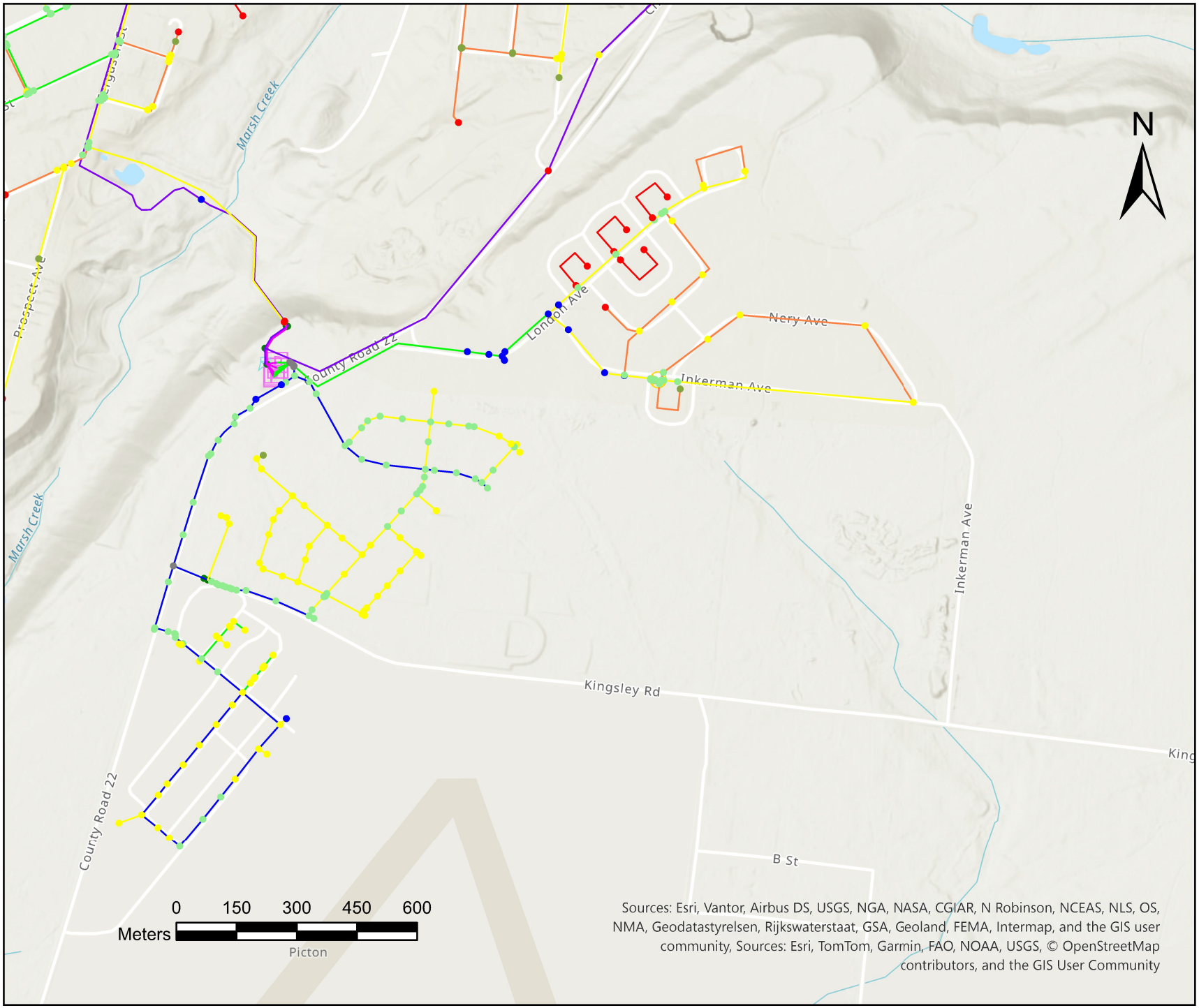
Link ID	Start Node	End Node	Length	Diameter	Roughness	Flow	Velocity	Location of the Nodes
			m	mm		L/s	m/s	
1214-2	J2492-1	J2492-2	39.8	300	120	-0.570	0.008	Phase 1 of Village A
1215	J2492-2	J2476	16.5	300	120	-0.570	0.008	Phase 1 of Village A
1216	J2476	J2493-1	14.0	200	110	4.230	0.135	Phase 1 of Village A
1217	J2493-1	J2493	16.9	200	110	4.230	0.135	Phase 1 of Village A
1218	J2493	J2494-1	8.1	200	110	4.230	0.135	Phase 1 of Village A
1219	J2494-1	J2494	9.2	200	110	4.230	0.135	Phase 1 of Village A
1220	J2494	J2495	46.5	200	110	0.000	0.000	Phase 1 of Village A
1221	J2494	J2496-1	41.1	200	110	3.975	0.127	Phase 1 of Village A
1222	J2496-1	J2496	37.0	200	110	3.975	0.127	Phase 1 of Village A
1223	J2496	J2497-1	30.0	200	110	1.449	0.046	Phase 1 of Village A
1224	J2497-1	J2497-2	38.2	200	110	1.449	0.046	Phase 1 of Village A
1225	J2497-2	J2497	2.0	200	110	1.449	0.046	Phase 1 of Village A
1226	J2497	J2498	9.1	200	110	0.000	0.000	Phase 1 of Village A
1227	J2497	J2499	45.2	200	110	1.449	0.046	Phase 1 of Village A
1228	J2499	J2500	35.3	200	110	1.134	0.036	Phase 1 of Village A
1229	J2500	J2501	25.5	200	110	0.789	0.025	Phase 1 of Village A
1230	J2501	J2502-1	28.5	200	110	0.609	0.019	Phase 1 of Village A
1231	J2502-1	J2502	7.7	200	110	0.609	0.019	Phase 1 of Village A
1232	J2502	J2504	6.3	200	110	0.609	0.019	Phase 1 of Village A
1233	J2511	J2510	10.1	300	120	0.000	0.000	Phase 1 of Village A
1234	J2511	J2509	11.9	200	110	0.875	0.028	Phase 1 of Village A
1235	J2512	J2511	65.2	300	120	0.875	0.012	Phase 1 of Village A
1236	J2513	J2512	56.8	300	120	0.875	0.012	Phase 1 of Village A
1237	J2514-9	J2513	27.5	300	120	0.875	0.012	Phase 1 of Village A
1238-1	J2515	J2514-1	52.2	300	120	3.985	0.056	Phase 1 of Village A
1239	J2504	J2503	5.3	200	110	0.000	0.000	Phase 1 of Village A
1240	J2496	J2505-1	45.5	200	110	2.286	0.073	Phase 1 of Village A
1241	J2505-1	J2505	22.6	200	110	2.286	0.073	Phase 1 of Village A
1242	J2505	J2506	47.5	200	110	0.540	0.017	Phase 1 of Village A
1243	J2506	J2507-1	46.5	200	110	0.330	0.010	Phase 1 of Village A
1244	J2507-1	J2507	2.5	200	110	0.120	0.004	Phase 1 of Village A
1245	J2507	J2508-1	2.9	200	110	-0.875	0.028	Phase 1 of Village A
1246	J2508-1	J2508	3.0	200	110	-0.875	0.028	Phase 1 of Village A
1247	J2507	J2504	73.2	200	110	-0.609	0.019	Phase 1 of Village A
1248	J2508	J2509	31.7	200	110	-0.875	0.028	Phase 1 of Village A
1249	J2507	J2516	56.0	200	110	1.603	0.051	Phase 1 of Village A
1250	J2516	J2517	41.8	200	110	0.306	0.010	Phase 1 of Village A
1251	J2517	J2518	25.1	200	110	0.086	0.003	Phase 1 of Village A
1252	J2518	J2520	49.6	200	110	-0.134	0.004	Phase 1 of Village A
1253	J2505	J2519	46.9	200	110	1.567	0.050	Phase 1 of Village A
1254	J2519	J2520	34.8	200	110	1.237	0.039	Phase 1 of Village A
1255	J2516	J2522-1	29.5	200	110	0.952	0.030	Phase 1 of Village A
1256	J2522-1	J2522	37.0	200	110	0.952	0.030	Phase 1 of Village A
1257	J2522	J2523	12.5	200	110	0.607	0.019	Phase 1 of Village A
1258	J2523	J2524	53.5	200	110	0.292	0.009	Phase 1 of Village A
1259	J2524	J2525	27.9	200	110	-0.128	0.004	Phase 1 of Village A
1260	J2525	J2526-1	19.1	200	110	-0.443	0.014	Phase 1 of Village A
1261	J2526-1	J2526	35.9	200	110	-0.443	0.014	Phase 1 of Village A
1262	J2520	J2521	54.7	200	110	0.818	0.026	Phase 1 of Village A
1263	J2521	J2526	27.3	200	110	0.773	0.025	Phase 1 of Village A
1264	J2526	J2527	73.7	200	110	0.165	0.005	Phase 1 of Village A
1265	J2527	J2528	20.1	200	110	0.000	0.000	Phase 1 of Village A
1266	J2528	J2529	13.6	200	110	0.000	0.000	Phase 1 of Village A
1019	J1978	J1980	345.0	250	130	9.820	0.200	Picton Heights
1029	J1980	J80	39.0	250	130	9.820	0.200	Picton Heights
1045	J2012	J2014	91.8	200	70	1.753	0.056	Picton Heights
1046	J78	J2016	24.6	200	70	4.053	0.129	Picton Heights
1047	J2018	J2020	112.9	100	40	0.230	0.029	Picton Heights
1048	J2018	J2022	5.1	100	40	-0.460	0.059	Picton Heights
1049	J2016	J2022	46.5	200	70	3.823	0.122	Picton Heights
1050	J2024	J2026	120.1	100	40	0.230	0.029	Picton Heights
1051	J2024	J2012	5.7	100	40	-0.460	0.059	Picton Heights
1052	J2022	J2028	90.1	200	70	3.133	0.100	Picton Heights
1053	J2030	J2032	122.8	100	40	0.230	0.029	Picton Heights
1054	J2034	J2036	89.2	200	70	0.188	0.006	Picton Heights
1055	J2036	J2038	176.6	150	70	-0.042	0.002	Picton Heights
1056	J2038	J2034	5.4	150	70	0.272	0.015	Picton Heights
1057	J2040	J2034	81.7	200	70	0.690	0.022	Picton Heights
1058	J2030	J2014	5.2	100	40	-0.460	0.059	Picton Heights
1059	J2014	J2042	17.3	200	70	1.063	0.034	Picton Heights
1060	J2044	J2046	127.2	100	40	0.230	0.029	Picton Heights
1061	J2044	J2028	13.4	100	40	-0.460	0.059	Picton Heights
1062	J2028	J2012	1.1	200	70	2.443	0.078	Picton Heights
1063	J2048	J2152	77.9	150	70	-0.230	0.013	Picton Heights
1064	J2050	J2040	21.4	150	70	0.087	0.005	Picton Heights
1065	J2042	J2040	7.1	200	70	0.833	0.027	Picton Heights
1066	J2052	J2054	47.5	200	130	3.520	0.112	Picton Heights
1067	J2056	J2058	22.6	150	100	0.520	0.029	Picton Heights
1068	J2058	J2060	119.5	150	100	0.260	0.015	Picton Heights
1069	J2054	J2062	4.4	200	130	2.480	0.079	Picton Heights
1070	J2064	J2066	14.5	150	100	0.773	0.044	Picton Heights
1071	J2068	J2052	35.6	200	130	5.047	0.161	Picton Heights
1072	J2052	J2070	0.9	150	70	1.267	0.072	Picton Heights
1073	J2054	J2056	1.7	150	100	0.780	0.044	Picton Heights
1074	J2062	J2072	0.8	200	130	2.220	0.071	Picton Heights
1075	J2072	J2074	4.3	200	130	1.990	0.063	Picton Heights
1076	J2076	J2078	24.8	200	130	0.697	0.022	Picton Heights
1078	J2064	J2082	0.4	200	130	0.697	0.022	Picton Heights
1079	J2066	J2084	0.5	250	100	0.773	0.016	Picton Heights
1080	J2074	J2080	3.1	200	130	1.730	0.055	Picton Heights
1081	J2082	J2076	3.9	200	130	0.697	0.022	Picton Heights
32	J76	J78	103.1	250	130	9.590	0.195	Picton Heights
33	J80	J82	24.3	250	130	9.820	0.200	Picton Heights
34	J82	J84	7.4	250	130	0.000	0.000	Picton Heights
35	J84	J86	1.0	250	130	0.000	0.000	Picton Heights
36	J82	J76	9.6	250	130	9.820	0.200	Picton Heights
P155	J78	J2226	45.8	200	130	5.537	0.176	Picton Heights
P157	J2226	J2068	100.9	200	130	5.277	0.168	Picton Heights
P163	J2084	J2336	99.3	150	100	0.773	0.044	Picton Heights
P385	J2334	J2154	73.4	150	70	0.547	0.031	Picton Heights
P387	J2336	J2232	72.2	150	100	0.363	0.021	Picton Heights
P429	J2070	J2152	88.2	150	70	1.037	0.059	Picton Heights
P473	V8000	J2064	6.0	200	130	1.470	0.047	Picton Heights
P489	J2350	J2234	163.2	150	100	0.507	0.029	Picton Heights
P491	J2078	J2350	426.3	200	110	0.507	0.016	Picton Heights
P493	J2232	J2234	225.2	150	100	-0.167	0.009	Picton Heights
P61	J2152	J2334	78.2	150	70	0.547	0.031	Picton Heights
P63	J2154	J2050	125.0	150	70	0.317	0.018	Picton Heights

Appendix B2

Model Results for Maximum Day Plus Fire Flow

FF at Proposed Development: 150L/s

FF at Existing Development: 82 L/s



PICTON

PRESSURE DURING FF+MDD
FF AT PROPOSED DEVELOPMENT: 150 L/s
FF AT EXISITNG DEVELOPMENT: 82 L/s

Junction Display

Residual Pressure (psi)

- less than 20.000
- 20.000 ~ 40.000
- 40.000 ~ 60.000
- 60.000 ~ 80.000
- 80.000 ~ 100.000
- greater than 100.000

Pipe Display

PIPEHYD.DIAMETER

- 100
- 150
- 200
- 250
- 300
- 350
- 400

RA ENGINEERING

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

Date: 17/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Results
Proposed Historic District - Interim Development,Phase 1 of Rental Development with 8 Townhouses, Phase 1 of Village A Development & Picton Heights Development,
Picton,
Prince Edward County

Maximum Day Plus Fire Flow
FF at Proposed Development -150 L/s & FF at Existing Development - 82 L/s

ID	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Hydrant Available Flow	Hydrant Pressure at Available Flow	Location of the Nodes
	L/s	psi	m	L/s	psi	L/s	psi	
J2257	0.00	113.87	219.94	150.00	79.85	215.90	20.00	Historic District
J2258	0.00	114.30	219.94	150.00	79.85	215.49	20.00	Historic District
J2259	0.00	114.87	219.94	150.00	80.24	215.73	20.00	Historic District
J2261	0.00	115.30	219.94	150.00	79.44	213.70	20.00	Historic District
J2263	0.00	115.51	219.94	150.00	79.01	212.65	20.00	Historic District
J2265	0.00	113.97	219.93	150.00	76.52	209.24	20.00	Historic District
J2267	0.00	112.63	219.93	150.00	74.10	205.91	20.00	Historic District
J2269	0.00	105.34	219.92	150.00	62.95	192.33	20.00	Historic District
J2271	0.00	105.61	219.92	150.00	62.64	191.71	20.00	Historic District
J2273	0.00	105.58	219.92	150.00	62.32	191.26	20.00	Historic District
J2275	0.00	105.67	219.92	150.00	62.24	191.09	20.00	Historic District
J2277	0.00	105.84	219.92	150.00	60.00	187.78	20.00	Historic District
J2279	0.20	105.51	219.92	150.00	52.33	178.32	20.00	Historic District
J2281	0.28	106.15	219.92	150.00	55.53	182.04	20.00	Historic District
J2283	0.58	106.07	219.92	150.00	56.92	184.13	20.00	Historic District
J2285	0.00	106.27	219.92	150.00	56.49	182.93	20.00	Historic District
J2287	0.00	106.34	219.92	150.00	55.83	182.07	20.00	Historic District
J2289	0.00	106.27	219.92	150.00	60.56	188.38	20.00	Historic District
J2291	0.00	106.80	219.92	150.00	58.58	185.44	20.00	Historic District
J2292	0.15	106.92	219.92	150.00	58.47	185.39	20.00	Historic District
J2293	0.00	107.02	219.92	150.00	57.91	184.46	20.00	Historic District
J2295	0.30	107.32	219.92	150.00	56.33	182.64	20.00	Historic District
J2297	0.00	106.95	219.92	150.00	54.34	180.04	20.00	Historic District
J2299	0.00	107.22	219.92	150.00	58.72	185.44	20.00	Historic District
J2301	0.15	107.66	219.92	150.00	58.51	185.13	20.00	Historic District
J2303	0.10	107.74	219.92	150.00	51.42	176.54	20.00	Historic District
J2305	0.00	109.04	219.92	150.00	59.65	185.89	20.00	Historic District
J2332	0.00	116.70	219.94	150.00	81.14	215.79	20.00	Historic District
J2392	0.00	116.12	219.94	150.00	79.80	213.65	20.00	Historic District
J2394	0.00	114.80	219.93	150.00	77.69	210.75	20.00	Historic District
J2396	0.00	114.23	219.93	150.00	76.70	209.37	20.00	Historic District
J2398	0.00	111.19	219.93	150.00	72.04	203.36	20.00	Historic District
J2402	0.00	105.58	219.92	150.00	62.29	191.21	20.00	Historic District
J2404	0.00	105.80	219.92	150.00	61.95	190.60	20.00	Historic District

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

ID	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Hydrant Available Flow	Hydrant Pressure at Available Flow	Location of the Nodes
	L/s	psi	m	L/s	psi	L/s	psi	
J2406	0.03	106.37	219.92	150.00	54.46	180.41	20.00	Historic District
J2408	0.00	105.80	219.92	150.00	55.58	181.96	20.00	Historic District
J2410	0.00	105.75	219.92	150.00	56.24	182.80	20.00	Historic District
J2412	0.00	106.12	219.92	150.00	61.28	189.46	20.00	Historic District
J2414	0.00	106.93	219.92	150.00	59.89	187.14	20.00	Historic District
J2416	0.00	106.92	219.92	150.00	57.61	184.11	20.00	Historic District
J2418	0.00	106.86	219.92	150.00	59.33	186.41	20.00	Historic District
J2420	0.00	107.66	219.92	150.00	58.85	185.42	20.00	Historic District
J2422	0.00	108.37	219.92	150.00	59.08	185.42	20.00	Historic District
J2424	0.50	108.72	219.92	150.00	59.37	186.15	20.00	Historic District
J2426	0.00	109.68	219.92	150.00	60.28	186.44	20.00	Historic District
J2428	0.00	111.25	219.92	150.00	61.92	187.91	20.00	Historic District
J2430	0.00	108.45	219.92	150.00	59.39	185.79	20.00	Historic District
J2432	0.00	108.07	219.92	150.00	59.38	185.94	20.00	Historic District
J2434	1.08	108.37	219.92	150.00	56.30	183.00	20.00	Historic District
J2450	0.00	105.19	219.92	150.00	62.73	192.08	20.00	Historic District
J2452	0.00	106.15	219.92	150.00	58.21	185.21	20.00	Historic District
J2454	0.00	106.04	219.92	150.00	54.63	180.70	20.00	Historic District
J2456	0.00	107.30	219.92	150.00	56.60	182.67	20.00	Historic District
J2457	0.00	106.68	219.92	150.00	66.28	196.75	20.00	Historic District
J2458	0.00	107.07	219.92	150.00	59.00	185.87	20.00	Historic District
J2460	0.00	107.66	219.92	150.00	58.61	185.11	20.00	Historic District
J2464	0.00	109.78	219.92	150.00	60.56	186.77	20.00	Historic District
Minimum Residual Pressure in Historic District					**51.42**			
Minimum Hydrant Available Flow in Historic District						**176.54**		
J2514-2	0.02	105.96	219.92	150.00	65.78	196.44	20.00	Townhome_1
J2514-3	0.02	105.60	219.92	150.00	65.34	195.94	20.00	Townhome_2
J2514-4	0.02	105.60	219.92	150.00	65.33	195.93	20.00	Townhome_3
J2514-5	0.02	105.32	219.92	150.00	64.96	195.50	20.00	Townhome_4
J2514-6	0.02	105.32	219.92	150.00	64.94	195.47	20.00	Townhome_5
J2514-7	0.02	105.15	219.92	150.00	64.69	195.17	20.00	Townhome_6
J2514-8	0.02	105.15	219.92	150.00	64.68	195.15	20.00	Townhome_7
J2514-9	0.02	105.12	219.92	150.00	64.58	195.01	20.00	Townhome_8
J2530	0.00	110.13	219.92	150.00	51.85	176.25	20.00	Rental_Phase 1
J2531	0.00	110.13	219.92	150.00	51.36	175.73	20.00	Rental_Phase 1
J2532	1.98	110.13	219.92	150.00	50.74	176.96	20.00	Rental_Phase 1
Minimum Residual Pressure in Phase 1_Rental_8 Townhouses, kPa					**50.74**			
Minimum Hydrant Available Flow in Phase 1_Rental_8 Townhouses, kPa						**175.73**		
J2472-1	0.00	112.39	219.94	150.00	77.78	213.07	20.00	Phase 1 of Village A
J2473	0.00	111.92	219.94	150.00	76.87	211.69	20.00	Phase 1 of Village A
J2474	0.14	108.73	219.94	150.00	72.09	205.40	20.00	Phase 1 of Village A
J2474-1	0.00	107.10	219.94	150.00	70.01	202.74	20.00	Phase 1 of Village A
J2475	0.14	107.03	219.94	150.00	69.57	202.16	20.00	Phase 1 of Village A
J2476	0.28	106.17	219.94	150.00	68.32	200.72	20.00	Phase 1 of Village A
J2477	0.03	108.39	219.94	150.00	66.93	196.62	20.00	Phase 1 of Village A
J2477-1	0.00	109.12	219.94	150.00	71.14	203.22	20.00	Phase 1 of Village A
J2477-2	0.00	108.63	219.94	150.00	67.95	198.09	20.00	Phase 1 of Village A
J2478	0.22	107.05	219.94	150.00	64.89	194.41	20.00	Phase 1 of Village A
J2479	0.11	106.16	219.94	150.00	63.80	193.15	20.00	Phase 1 of Village A
J2480	0.14	105.80	219.94	150.00	64.97	195.23	20.00	Phase 1 of Village A

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

ID	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Hydrant Available Flow	Hydrant Pressure at Available Flow	Location of the Nodes
	L/s	psi	m	L/s	psi	L/s	psi	
J2481	0.11	104.99	219.94	150.00	53.69	179.93	20.00	Phase 1 of Village A
J2482	0.00	106.13	219.94	150.00	65.30	195.41	20.00	Phase 1 of Village A
J2483	0.17	105.42	219.94	150.00	62.38	191.47	20.00	Phase 1 of Village A
J2483-1	0.00	105.03	219.94	150.00	60.57	188.85	20.00	Phase 1 of Village A
J2484	0.22	105.15	219.94	150.00	60.44	188.83	20.00	Phase 1 of Village A
J2485	0.19	104.84	219.94	150.00	59.74	187.96	20.00	Phase 1 of Village A
J2485-1	0.00	104.71	219.94	150.00	59.93	188.11	20.00	Phase 1 of Village A
J2486	0.00	104.75	219.94	150.00	59.02	186.81	20.00	Phase 1 of Village A
J2487	0.00	104.59	219.94	150.00	57.41	184.69	20.00	Phase 1 of Village A
J2488	0.00	104.64	219.94	150.00	60.05	188.30	20.00	Phase 1 of Village A
J2489	0.00	105.35	219.94	150.00	63.26	192.67	20.00	Phase 1 of Village A
J2490	0.00	105.49	219.94	150.00	65.67	196.41	20.00	Phase 1 of Village A
J2491	0.12	105.52	219.94	150.00	66.02	197.09	20.00	Phase 1 of Village A
J2492	0.09	105.79	219.94	150.00	66.47	197.63	20.00	Phase 1 of Village A
J2492-1	0.00	105.52	219.94	150.00	66.71	198.13	20.00	Phase 1 of Village A
J2492-2	0.00	106.06	219.94	150.00	67.91	199.80	20.00	Phase 1 of Village A
J2493	0.00	106.00	219.93	150.00	65.82	196.35	20.00	Phase 1 of Village A
J2493-1	0.00	106.48	219.93	150.00	67.46	198.75	20.00	Phase 1 of Village A
J2494	0.17	106.08	219.93	150.00	64.94	195.07	20.00	Phase 1 of Village A
J2494-1	0.00	106.11	219.93	150.00	65.45	195.70	20.00	Phase 1 of Village A
J2495	0.00	106.00	219.93	150.00	56.01	182.33	20.00	Phase 1 of Village A
J2496	0.16	104.40	219.93	150.00	61.14	190.25	20.00	Phase 1 of Village A
J2496-1	0.00	104.81	219.93	150.00	62.15	191.35	20.00	Phase 1 of Village A
J2497	0.00	104.04	219.92	150.00	55.82	182.90	20.00	Phase 1 of Village A
J2497-1	0.00	104.30	219.93	150.00	58.37	186.19	20.00	Phase 1 of Village A
J2497-2	0.00	104.04	219.92	150.00	55.90	183.01	20.00	Phase 1 of Village A
J2498	0.00	103.97	219.92	150.00	54.02	180.66	20.00	Phase 1 of Village A
J2499	0.21	104.35	219.92	150.00	54.79	181.69	20.00	Phase 1 of Village A
J2500	0.23	104.78	219.92	150.00	54.98	181.78	20.00	Phase 1 of Village A
J2501	0.12	105.19	219.92	150.00	55.64	182.35	20.00	Phase 1 of Village A
J2502	0.00	105.44	219.92	150.00	56.89	183.73	20.00	Phase 1 of Village A
J2502-1	0.00	105.56	219.92	150.00	56.73	183.48	20.00	Phase 1 of Village A
J2503	0.00	105.25	219.92	150.00	55.94	182.59	20.00	Phase 1 of Village A
J2504	0.00	105.23	219.92	150.00	56.93	183.87	20.00	Phase 1 of Village A
J2505	0.12	103.81	219.92	150.00	59.14	187.62	20.00	Phase 1 of Village A
J2505-1	0.00	104.02	219.92	150.00	59.20	187.49	20.00	Phase 1 of Village A
J2506	0.14	104.82	219.92	150.00	59.28	187.36	20.00	Phase 1 of Village A
J2507	0.00	105.96	219.92	150.00	62.92	191.93	20.00	Phase 1 of Village A
J2507-1	0.14	105.96	219.92	150.00	62.65	191.66	20.00	Phase 1 of Village A
J2508	0.00	106.70	219.92	150.00	63.78	192.81	20.00	Phase 1 of Village A
J2508-1	0.00	106.72	219.92	150.00	63.74	192.75	20.00	Phase 1 of Village A
J2509	0.00	106.44	219.92	150.00	64.48	194.03	20.00	Phase 1 of Village A
J2510	0.00	106.31	219.92	150.00	64.63	194.34	20.00	Phase 1 of Village A
J2511	0.00	105.02	219.92	150.00	63.56	193.44	20.00	Phase 1 of Village A
J2512	0.00	105.74	219.92	150.00	64.66	194.74	20.00	Phase 1 of Village A
J2513	0.00	105.71	219.92	150.00	64.99	195.28	20.00	Phase 1 of Village A
J2516	0.23	106.25	219.92	150.00	59.04	186.49	20.00	Phase 1 of Village A
J2517	0.14	106.17	219.92	150.00	56.79	183.48	20.00	Phase 1 of Village A
J2518	0.14	106.11	219.92	150.00	56.55	183.19	20.00	Phase 1 of Village A
J2519	0.22	104.96	219.92	150.00	57.66	185.18	20.00	Phase 1 of Village A
J2520	0.19	106.13	219.92	150.00	58.18	185.36	20.00	Phase 1 of Village A
J2521	0.03	107.50	219.92	150.00	55.43	181.17	20.00	Phase 1 of Village A
J2522	0.23	106.57	219.92	150.00	54.10	180.10	20.00	Phase 1 of Village A

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

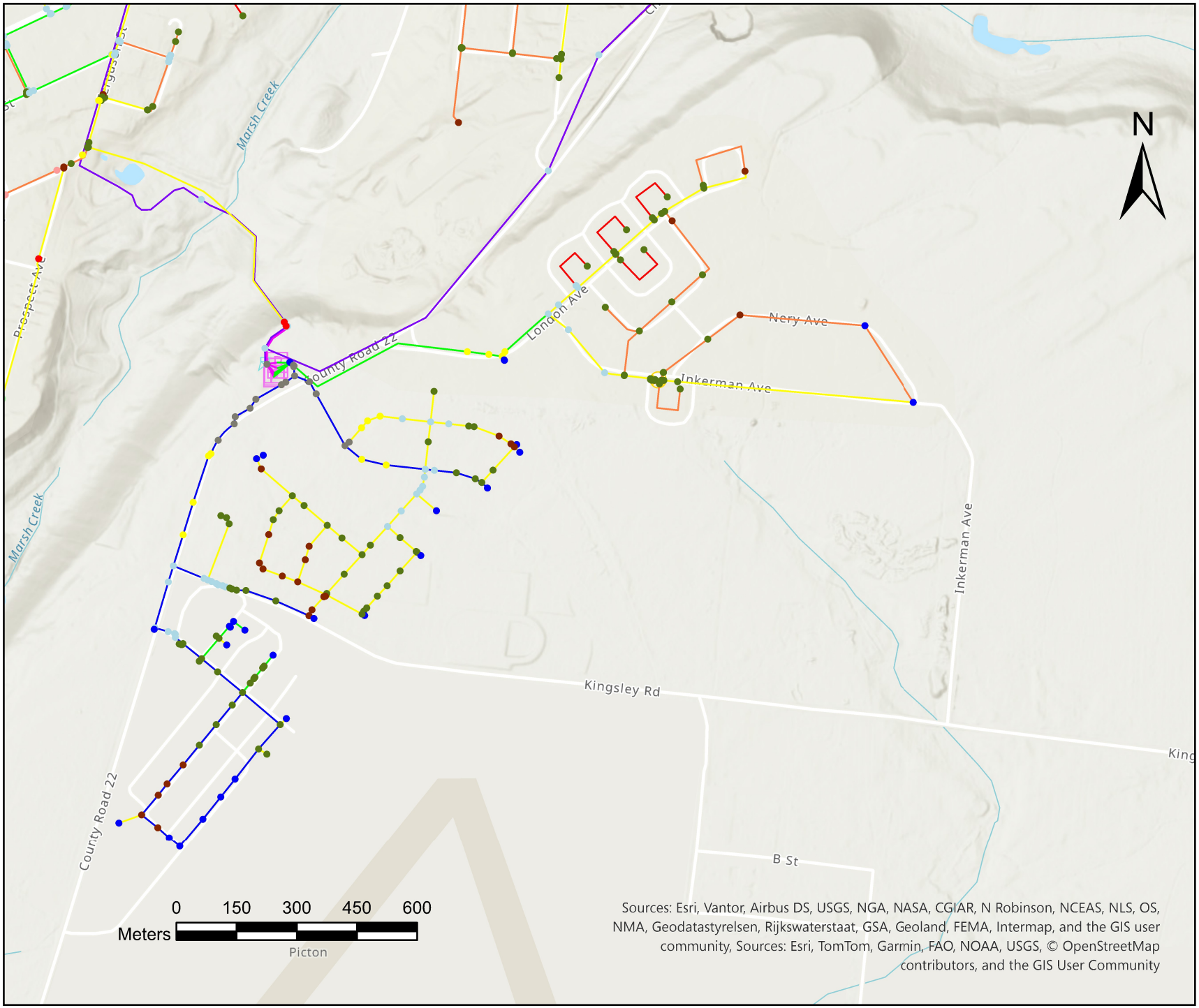
ID	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Hydrant Available Flow	Hydrant Pressure at Available Flow	Location of the Nodes
	L/s	psi	m	L/s	psi	L/s	psi	
J2522-1	0.00	106.30	219.92	150.00	56.18	182.51	20.00	Phase 1 of Village A
J2523	0.21	106.94	219.92	150.00	53.91	179.73	20.00	Phase 1 of Village A
J2524	0.28	106.95	219.92	150.00	52.62	178.30	20.00	Phase 1 of Village A
J2525	0.21	107.52	219.92	150.00	53.14	178.65	20.00	Phase 1 of Village A
J2526	0.11	107.73	219.92	150.00	54.46	180.02	20.00	Phase 1 of Village A
J2526-1	0.00	107.75	219.92	150.00	53.58	178.86	20.00	Phase 1 of Village A
J2527	0.11	110.26	219.92	150.00	42.96	167.52	20.00	Phase 1 of Village A
J2528	0.00	111.33	219.92	150.00	40.20	164.83	20.00	Phase 1 of Village A
J2529	0.00	111.27	219.92	150.00	37.56	162.83	20.00	Phase 1 of Village A
Minimum Residual Pressure in Phase 1 of Village A					**37.56**			
Minimum Hydrant Available Flow in Phase 1 of Village A						**162.83**		
J1980	0.00	103.26	219.91	82.00	90.90	178.80	20.00	Picton Heights
J2012	0.15	99.34	219.87	82.00	68.23	131.09	20.00	Picton Heights
J2014	0.15	99.62	219.87	82.00	62.59	121.69	20.00	Picton Heights
J2016	0.15	101.79	219.89	82.00	83.17	160.07	20.00	Picton Heights
J2018	0.15	100.15	219.88	82.00	15.60	79.85	20.00	Picton Heights
J2020	0.15	99.86	219.87	82.00	-1325.90	17.28	20.00	Picton Heights
J2022	0.15	100.08	219.88	82.00	76.56	147.12	20.00	Picton Heights
J2024	0.15	99.32	219.87	82.00	0.15	72.98	20.00	Picton Heights
J2026	0.15	99.19	219.86	82.00	-1425.74	16.58	20.00	Picton Heights
J2028	0.15	99.34	219.87	82.00	68.30	131.23	20.00	Picton Heights
J2030	0.15	99.58	219.87	82.00	0.20	73.01	20.00	Picton Heights
J2032	0.15	99.19	219.86	82.00	-1458.35	16.39	20.00	Picton Heights
J2034	0.15	99.69	219.87	82.00	49.48	104.68	20.00	Picton Heights
J2036	0.15	99.15	219.87	82.00	41.24	97.13	20.00	Picton Heights
J2038	0.15	99.57	219.87	82.00	46.91	102.15	20.00	Picton Heights
J2040	0.15	99.47	219.87	82.00	61.09	119.53	20.00	Picton Heights
J2042	0.15	99.57	219.87	82.00	61.58	120.21	20.00	Picton Heights
J2044	0.15	99.63	219.87	82.00	-90.59	51.56	20.00	Picton Heights
J2046	0.15	99.26	219.86	82.00	-1601.74	15.63	20.00	Picton Heights
J2048	0.15	101.16	219.87	82.00	11.16	77.77	20.00	Picton Heights
J2050	0.15	99.83	219.87	82.00	57.30	113.79	20.00	Picton Heights
J2052	0.18	102.62	219.88	82.00	80.30	151.93	20.00	Picton Heights
J2054	0.18	102.22	219.87	82.00	77.62	146.44	20.00	Picton Heights
J2056	0.18	102.15	219.87	82.00	77.04	145.18	20.00	Picton Heights
J2058	0.18	101.83	219.87	82.00	69.86	131.33	20.00	Picton Heights
J2060	0.18	101.38	219.87	82.00	33.30	90.37	20.00	Picton Heights
J2062	0.18	101.96	219.87	82.00	77.15	145.74	20.00	Picton Heights
J2064	0.00	99.18	217.84	82.00	71.19	136.61	20.00	Picton Heights
J2066	0.00	98.88	217.84	82.00	67.35	129.70	20.00	Picton Heights
J2068	0.15	102.92	219.88	82.00	81.79	154.97	20.00	Picton Heights
J2070	0.15	102.65	219.88	82.00	79.98	151.11	20.00	Picton Heights
J2072	0.15	101.94	219.87	82.00	77.09	145.61	20.00	Picton Heights
J2074	0.18	101.97	219.87	82.00	76.93	145.21	20.00	Picton Heights
J2076	0.00	99.09	217.84	82.00	70.92	136.18	20.00	Picton Heights
J2078	0.13	98.65	217.84	82.00	69.48	134.06	20.00	Picton Heights
J2080	0.18	102.09	219.87	82.00	76.90	144.97	20.00	Picton Heights
J2082	0.00	99.18	217.84	82.00	71.17	136.58	20.00	Picton Heights
J2084	0.00	98.83	217.84	82.00	67.29	129.65	20.00	Picton Heights
J2152	0.18	100.39	219.87	82.00	55.94	111.63	20.00	Picton Heights
J2154	0.15	98.26	219.87	82.00	44.19	99.94	20.00	Picton Heights
J2226	0.18	103.33	219.89	82.00	85.90	163.92	20.00	Picton Heights
J2232	0.35	97.85	217.83	82.00	46.05	101.94	20.00	Picton Heights
J2234	0.23	97.85	217.83	82.00	42.97	98.94	20.00	Picton Heights

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

ID	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Hydrant Available Flow	Hydrant Pressure at Available Flow	Location of the Nodes
	L/s	psi	m	L/s	psi	L/s	psi	
J2334	0.00	99.29	219.87	82.00	46.64	101.75	20.00	Picton Heights
J2336	0.28	98.26	217.83	82.00	52.24	108.29	20.00	Picton Heights
J2350	0.00	98.28	217.84	82.00	54.72	110.96	20.00	Picton Heights
J76	0.15	103.80	219.90	82.00	90.16	175.16	20.00	Picton Heights
J78	0.00	103.57	219.89	82.00	88.12	169.34	20.00	Picton Heights
J80	0.00	103.46	219.91	82.00	90.41	176.66	20.00	Picton Heights
J82	0.00	103.80	219.90	82.00	90.33	175.55	20.00	Picton Heights
J84	0.00	104.06	219.90	82.00	90.47	175.38	20.00	Picton Heights
J86	0.00	103.98	219.90	82.00	90.38	175.26	20.00	Picton Heights
Minimum Residual Pressure in Picton Heights					**-1601.74**			
Minimum Hydrant Available Flow in Picton Heights						**15.63**		

APPENDIX C

Free Chlorine Residual Analysis Results



PICTON

CHLORINE RESIDUAL AT 48 HRS.

Junction Display

Chlorine (mg/L)

- less than 0.040
- 0.040 ~ 0.080
- 0.080 ~ 0.100
- 0.100 ~ 0.200
- 0.200 ~ 0.400
- 0.400 ~ 0.800
- 0.800 ~ 1.000
- 1.000 ~ 1.200
- 1.200 ~ 1.500

Pipe Display

PIPEHYD.DIAMETER

- 100
- 150
- 200
- 250
- 300
- 350
- 400

RA ENGINEERING

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Date: 17/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Results
Proposed Historic District - Interim Development,Phase 1 of Rental Development with 8 Townhouses, Phase 1 of Village A Development & Picton Heights Development, Picton,
Prince Edward County

Free Chlorine Residual

Node ID	Free Chlorine Residual at						Location of the Nodes
	0:00 hr	1:00 hr	5:00 hr	24:00 hr	36:00 hr	48:00 hr	
J2257	1.50	1.44	1.44	1.44	1.44	1.44	Historic District
J2258	1.50	1.42	1.42	1.42	1.42	1.42	Historic District
J2259	1.50	1.41	1.41	1.41	1.41	1.41	Historic District
J2261	1.50	1.34	1.32	1.32	1.32	1.32	Historic District
J2263	1.50	1.34	1.27	1.27	1.27	1.27	Historic District
J2265	1.50	1.34	1.19	1.19	1.19	1.19	Historic District
J2267	1.50	1.34	1.09	1.09	1.09	1.09	Historic District
J2269	1.50	1.38	0.90	0.85	0.85	0.85	Historic District
J2271	1.50	1.38	0.91	0.82	0.82	0.82	Historic District
J2273	1.50	1.38	0.91	0.81	0.81	0.81	Historic District
J2275	1.50	1.38	0.91	0.80	0.80	0.80	Historic District
J2277	1.50	1.38	0.92	0.77	0.77	0.77	Historic District
J2279	1.50	1.38	0.94	0.75	0.75	0.75	Historic District
J2281	1.50	1.38	0.94	0.72	0.72	0.72	Historic District
J2283	1.50	1.42	1.08	0.64	0.64	0.64	Historic District
J2285	1.50	1.43	1.20	0.51	0.51	0.12	Historic District
J2287	1.50	1.43	1.19	0.50	0.50	0.17	Historic District
J2289	1.50	1.39	0.96	0.70	0.70	0.70	Historic District
J2291	1.50	1.43	1.15	0.52	0.52	0.52	Historic District
J2292	1.50	1.43	1.06	0.58	0.58	0.58	Historic District
J2293	1.50	1.42	1.10	0.55	0.55	0.55	Historic District
J2295	1.50	1.42	1.16	0.46	0.46	0.46	Historic District
J2297	1.50	1.44	1.21	0.54	0.54	0.20	Historic District
J2299	1.50	1.43	1.18	0.43	0.43	0.43	Historic District
J2301	1.50	1.43	1.18	0.32	0.32	0.30	Historic District
J2303	1.50	1.43	1.17	0.47	0.47	0.16	Historic District
J2305	1.50	1.44	1.22	0.55	0.55	0.20	Historic District
J2332	1.50	1.34	1.34	1.34	1.34	1.34	Historic District
J2392	1.50	1.34	1.28	1.28	1.28	1.28	Historic District
J2394	1.50	1.34	1.22	1.22	1.22	1.22	Historic District
J2396	1.50	1.34	1.18	1.18	1.18	1.18	Historic District
J2398	1.50	1.34	1.03	1.03	1.03	1.03	Historic District
J2402	1.50	1.38	0.91	0.81	0.81	0.81	Historic District
J2404	1.50	1.38	0.92	0.78	0.78	0.78	Historic District
J2406	1.50	1.43	1.20	0.51	0.51	0.17	Historic District
J2408	1.50	1.44	1.21	0.54	0.54	0.19	Historic District
J2410	1.50	1.38	0.93	0.76	0.76	0.76	Historic District
J2412	1.50	1.38	0.93	0.74	0.74	0.74	Historic District
J2414	1.50	1.39	1.00	0.63	0.63	0.63	Historic District
J2416	1.50	1.42	1.11	0.54	0.54	0.54	Historic District
J2418	1.50	1.43	1.07	0.58	0.58	0.58	Historic District
J2420	1.50	1.43	1.18	0.37	0.37	0.37	Historic District
J2422	1.50	1.43	1.18	0.40	0.40	0.25	Historic District
J2424	1.50	1.43	1.18	0.46	0.46	0.21	Historic District
J2426	1.50	1.44	1.22	0.55	0.55	0.20	Historic District
J2428	1.50	1.44	1.22	0.55	0.55	0.20	Historic District
J2430	1.50	1.44	1.22	0.55	0.55	0.20	Historic District
J2432	1.50	1.43	1.18	0.46	0.46	0.46	Historic District
J2434	1.50	1.41	1.16	0.44	0.44	0.44	Historic District
J2450	1.50	1.44	1.22	0.55	0.55	0.20	Historic District
J2452	1.50	1.43	1.08	0.65	0.65	0.65	Historic District
J2454	1.50	1.44	1.21	0.54	0.54	0.19	Historic District
J2456	1.50	1.43	1.16	0.47	0.47	0.47	Historic District
J2457	1.50	1.36	0.94	0.94	0.94	0.94	Historic District
J2458	1.50	1.43	1.17	0.50	0.50	0.50	Historic District
J2460	1.50	1.43	1.18	0.32	0.32	0.32	Historic District
J2464	1.50	1.44	1.22	0.55	0.55	0.20	Historic District
Minimum Free Chlorine Residual in Historic District, mg/l	**1.50**	**1.34**	**0.90**	**0.32**	**0.32**	**0.12**	
Maximum Free Chlorine Residual in Historic District, mg/l	**1.50**	**1.44**	**1.44**	**1.44**	**1.44**	**1.44**	

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

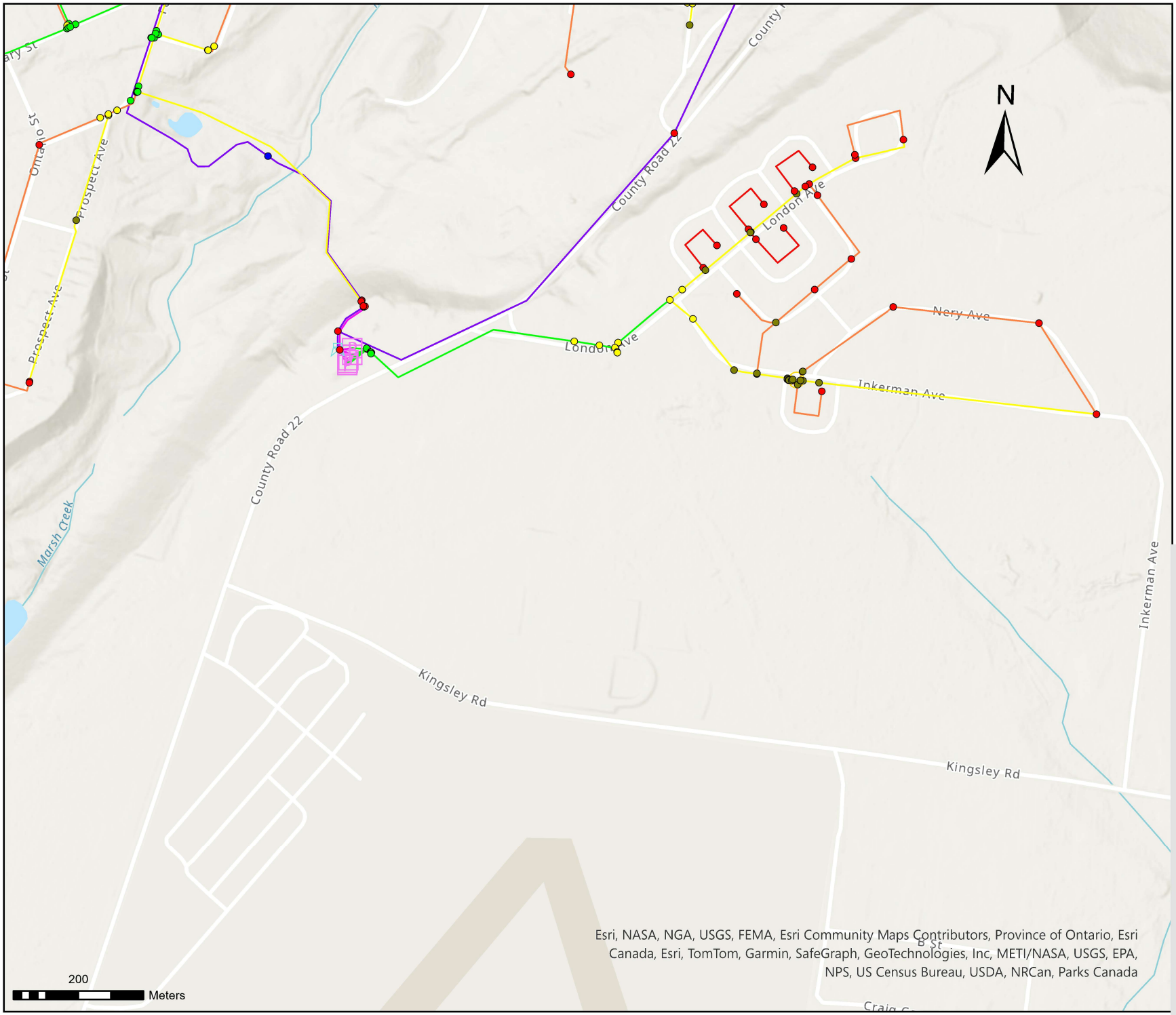
Node ID	Free Chlorine Residual at						Location of the Nodes
	0:00 hr	1:00 hr	5:00 hr	24:00 hr	36:00 hr	48:00 hr	
J2514-2	1.50	1.40	0.91	0.89	0.89	0.89	Townhome_1
J2514-3	1.50	1.42	0.95	0.85	0.85	0.85	Townhome_2
J2514-4	1.50	1.42	0.96	0.85	0.85	0.85	Townhome_3
J2514-5	1.50	1.42	1.01	0.81	0.81	0.81	Townhome_4
J2514-6	1.50	1.42	1.02	0.81	0.81	0.81	Townhome_5
J2514-7	1.50	1.43	1.07	0.77	0.77	0.77	Townhome_6
J2514-8	1.50	1.42	1.08	0.77	0.77	0.77	Townhome_7
J2514-9	1.50	1.42	1.13	0.73	0.73	0.73	Townhome_8
J2530	1.50	1.32	0.87	0.79	0.79	0.79	Phase 1 of Rental
J2531	1.50	1.32	0.87	0.79	0.79	0.79	Phase 1 of Rental
J2532	1.50	1.32	0.87	0.79	0.79	0.79	Phase 1 of Rental
Minimum Free Chlorine Residual in Phase 1_Rental_8 Townhousest, mg/l	**1.50**	**1.32**	**0.87**	**0.73**	**0.73**	**0.73**	
Maximum Free Chlorine Residual in Phase 1_Rental_8 Townhouses, mg/l	**1.50**	**1.43**	**1.13**	**0.89**	**0.89**	**0.89**	
J2472-1	1.50	1.40	1.40	1.40	1.40	1.40	Phase 1 of Village A
J2473	1.50	1.37	1.36	1.36	1.36	1.36	Phase 1 of Village A
J2474	1.50	1.36	1.22	1.22	1.22	1.22	Phase 1 of Village A
J2474-1	1.50	1.37	1.17	1.17	1.17	1.17	Phase 1 of Village A
J2475	1.50	1.37	1.10	1.10	1.10	1.10	Phase 1 of Village A
J2476	1.50	1.38	1.02	0.99	0.99	0.99	Phase 1 of Village A
J2477	1.50	1.36	1.09	1.09	1.09	1.09	Phase 1 of Village A
J2477-1	1.50	1.36	1.20	1.20	1.20	1.20	Phase 1 of Village A
J2477-2	1.50	1.36	1.13	1.13	1.13	1.13	Phase 1 of Village A
J2478	1.50	1.36	1.04	1.04	1.04	1.04	Phase 1 of Village A
J2479	1.50	1.42	0.99	0.99	0.99	0.99	Phase 1 of Village A
J2480	1.50	1.42	1.01	0.91	0.91	0.91	Phase 1 of Village A
J2481	1.50	1.43	1.18	0.51	0.51	0.51	Phase 1 of Village A
J2482	1.50	1.43	1.17	0.69	0.69	0.69	Phase 1 of Village A
J2483	1.50	1.42	1.09	0.83	0.83	0.83	Phase 1 of Village A
J2483-1	1.50	1.42	1.15	0.70	0.70	0.70	Phase 1 of Village A
J2484	1.50	1.42	1.15	0.67	0.67	0.67	Phase 1 of Village A
J2485	1.50	1.42	1.15	0.46	0.46	0.25	Phase 1 of Village A
J2485-1	1.50	1.42	1.16	0.46	0.46	0.30	Phase 1 of Village A
J2486	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
J2487	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
J2488	1.50	1.43	1.17	0.45	0.45	0.31	Phase 1 of Village A
J2489	1.50	1.42	1.16	0.45	0.45	0.44	Phase 1 of Village A
J2490	1.50	1.44	1.22	0.55	0.55	0.20	Phase 1 of Village A
J2491	1.50	1.43	1.18	0.54	0.54	0.53	Phase 1 of Village A
J2492	1.50	1.43	1.18	0.59	0.59	0.58	Phase 1 of Village A
J2492-1	1.50	1.43	1.19	0.72	0.72	0.72	Phase 1 of Village A
J2492-2	1.50	1.43	1.04	0.90	0.90	0.90	Phase 1 of Village A
J2493	1.50	1.36	0.98	0.95	0.95	0.95	Phase 1 of Village A
J2493-1	1.50	1.37	1.00	0.97	0.97	0.97	Phase 1 of Village A
J2494	1.50	1.34	0.96	0.93	0.93	0.93	Phase 1 of Village A
J2494-1	1.50	1.35	0.97	0.94	0.94	0.94	Phase 1 of Village A
J2495	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
J2496	1.50	1.30	0.89	0.85	0.85	0.85	Phase 1 of Village A
J2496-1	1.50	1.32	0.91	0.89	0.89	0.89	Phase 1 of Village A
J2497	1.50	1.37	0.90	0.73	0.73	0.73	Phase 1 of Village A
J2497-1	1.50	1.34	0.90	0.80	0.80	0.80	Phase 1 of Village A
J2497-2	1.50	1.37	0.90	0.73	0.73	0.73	Phase 1 of Village A
J2498	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
J2499	1.50	1.37	0.90	0.66	0.66	0.66	Phase 1 of Village A
J2500	1.50	1.42	0.93	0.63	0.63	0.63	Phase 1 of Village A
J2501	1.50	1.42	1.00	0.59	0.59	0.59	Phase 1 of Village A
J2502	1.50	1.42	1.09	0.53	0.53	0.53	Phase 1 of Village A
J2502-1	1.50	1.42	1.08	0.55	0.55	0.54	Phase 1 of Village A
J2503	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
J2504	1.50	1.41	1.10	0.52	0.52	0.52	Phase 1 of Village A
J2505	1.50	1.34	0.88	0.76	0.76	0.76	Phase 1 of Village A
J2505-1	1.50	1.32	0.89	0.79	0.79	0.79	Phase 1 of Village A
J2506	1.50	1.42	0.98	0.65	0.65	0.65	Phase 1 of Village A
J2507	1.50	1.42	1.15	0.39	0.39	0.39	Phase 1 of Village A
J2507-1	1.50	1.43	1.16	0.52	0.52	0.51	Phase 1 of Village A
J2508	1.50	1.42	1.17	0.36	0.36	0.36	Phase 1 of Village A
J2508-1	1.50	1.42	1.16	0.36	0.36	0.36	Phase 1 of Village A
J2509	1.50	1.42	1.18	0.39	0.39	0.39	Phase 1 of Village A
J2510	1.50	1.44	1.22	0.55	0.55	0.20	Phase 1 of Village A
J2511	1.50	1.43	1.19	0.40	0.40	0.40	Phase 1 of Village A
J2512	1.50	1.43	1.19	0.52	0.52	0.52	Phase 1 of Village A
J2513	1.50	1.43	0.00	0.65	0.65	0.65	Phase 1 of Village A
J2514	1.50	0.58	0.91	0.91	0.91	0.91	Phase 1 of Village A
J2516	1.50	1.36	1.10	0.37	0.37	0.35	Phase 1 of Village A
J2517	1.50	1.43	1.13	0.38	0.38	0.28	Phase 1 of Village A
J2518	1.50	1.43	1.18	0.39	0.39	0.29	Phase 1 of Village A
J2519	1.50	1.36	0.88	0.69	0.69	0.69	Phase 1 of Village A
J2520	1.50	1.41	0.91	0.65	0.65	0.65	Phase 1 of Village A
J2521	1.50	1.42	1.05	0.58	0.58	0.58	Phase 1 of Village A
J2522	1.50	1.42	1.08	0.37	0.37	0.31	Phase 1 of Village A
J2522-1	1.50	1.42	1.09	0.37	0.37	0.33	Phase 1 of Village A
J2523	1.50	1.42	1.08	0.23	0.23	0.29	Phase 1 of Village A
J2524	1.50	1.43	1.17	0.35	0.35	0.25	Phase 1 of Village A
J2525	1.50	1.42	1.14	0.44	0.44	0.43	Phase 1 of Village A
J2526	1.50	1.42	1.12	0.54	0.54	0.54	Phase 1 of Village A
J2526-1	1.50	1.42	1.15	0.47	0.47	0.47	Phase 1 of Village A
J2527	1.50	1.43	1.18	0.37	0.37	0.25	Phase 1 of Village A
J2528	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
J2529	1.50	1.44	1.21	0.54	0.54	0.19	Phase 1 of Village A
Minimum Free Chlorine Residual in Phase 1 of Village A, mg/l	**1.50**	**0.58**	**0.00**	**0.23**	**0.23**	**0.19**	
Maximum Free Chlorine Residual in Phase 1 of Village A, mg/l	**1.50**	**1.44**	**1.40**	**1.40**	**1.40**	**1.40**	

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4
Phone:(905)235-9105

Node ID	Free Chlorine Residual at						Location of the Nodes
	0:00 hr	1:00 hr	5:00 hr	24:00 hr	36:00 hr	48:00 hr	
J1980	1.50	1.29	1.11	1.11	1.11	1.11	Picton Heights
J2012	1.50	1.32	0.77	0.77	0.77	0.77	Picton Heights
J2014	1.50	1.36	0.79	0.65	0.65	0.65	Picton Heights
J2016	1.50	1.29	0.93	0.93	0.93	0.93	Picton Heights
J2018	1.50	1.30	0.87	0.87	0.87	0.87	Picton Heights
J2020	1.50	1.41	1.01	0.67	0.67	0.67	Picton Heights
J2022	1.50	1.29	0.88	0.88	0.88	0.88	Picton Heights
J2024	1.50	1.32	0.76	0.76	0.76	0.76	Picton Heights
J2026	1.50	1.41	1.04	0.58	0.58	0.58	Picton Heights
J2028	1.50	1.32	0.78	0.78	0.78	0.78	Picton Heights
J2030	1.50	1.35	0.79	0.64	0.64	0.64	Picton Heights
J2032	1.50	1.41	1.07	0.48	0.48	0.48	Picton Heights
J2034	1.50	1.43	1.14	0.50	0.50	0.48	Picton Heights
J2036	1.50	1.43	1.18	0.40	0.40	0.21	Picton Heights
J2038	1.50	1.41	1.14	0.48	0.48	0.47	Picton Heights
J2040	1.50	1.40	0.87	0.59	0.59	0.59	Picton Heights
J2042	1.50	1.39	0.83	0.63	0.63	0.63	Picton Heights
J2044	1.50	1.33	0.76	0.76	0.76	0.76	Picton Heights
J2046	1.50	1.41	1.07	0.56	0.56	0.56	Picton Heights
J2048	1.50	1.42	1.15	0.51	0.51	0.51	Picton Heights
J2050	1.50	1.42	1.15	0.35	0.35	0.35	Picton Heights
J2052	1.50	1.27	0.79	0.79	0.79	0.79	Picton Heights
J2054	1.50	1.28	0.75	0.75	0.75	0.75	Picton Heights
J2056	1.50	1.29	0.74	0.74	0.74	0.74	Picton Heights
J2058	1.50	1.39	0.74	0.71	0.71	0.71	Picton Heights
J2060	1.50	1.42	1.15	0.45	0.45	0.45	Picton Heights
J2062	1.50	1.29	0.74	0.74	0.74	0.74	Picton Heights
J2064	1.50	1.33	0.72	0.71	0.71	0.71	Picton Heights
J2066	1.50	1.36	0.73	0.69	0.69	0.69	Picton Heights
J2068	1.50	1.27	0.82	0.82	0.82	0.82	Picton Heights
J2070	1.50	1.27	0.79	0.79	0.79	0.79	Picton Heights
J2072	1.50	1.29	0.74	0.74	0.74	0.74	Picton Heights
J2074	1.50	1.30	0.73	0.73	0.73	0.73	Picton Heights
J2076	1.50	1.35	0.72	0.70	0.70	0.70	Picton Heights
J2078	1.50	1.42	0.81	0.66	0.66	0.66	Picton Heights
J2080	1.50	1.30	0.73	0.73	0.73	0.73	Picton Heights
J2082	1.50	1.33	0.72	0.71	0.71	0.71	Picton Heights
J2084	1.50	1.36	0.73	0.69	0.69	0.69	Picton Heights
J2152	1.50	1.41	0.80	0.72	0.72	0.72	Picton Heights
J2154	1.50	1.42	1.12	0.53	0.53	0.53	Picton Heights
J2226	1.50	1.28	0.92	0.92	0.92	0.92	Picton Heights
J2232	1.50	1.42	1.14	0.48	0.48	0.38	Picton Heights
J2234	1.50	1.42	1.15	0.47	0.47	0.13	Picton Heights
J2334	1.50	1.42	1.05	0.61	0.61	0.61	Picton Heights
J2336	1.50	1.42	0.91	0.60	0.60	0.60	Picton Heights
J2350	1.50	1.43	1.19	0.49	0.49	0.18	Picton Heights
J76	1.50	1.29	1.04	1.04	1.04	1.04	Picton Heights
J78	1.50	1.29	0.96	0.96	0.96	0.96	Picton Heights
J80	1.50	1.29	1.07	1.07	1.07	1.07	Picton Heights
J82	1.50	1.29	1.05	1.05	1.05	1.05	Picton Heights
J84	1.50	1.44	1.21	0.54	0.54	0.20	Picton Heights
J86	1.50	1.44	1.21	0.54	0.54	0.20	Picton Heights
Minimum Free Chlorine Residual in Picton Heights, mg/l	**1.50**	**1.27**	**0.72**	**0.35**	**0.35**	**0.13**	
Maximum Free Chlorine Residual in Picton Heights, mg/l	**1.50**	**1.44**	**1.21**	**1.11**	**1.11**	**1.11**	

APPENDIX D

Color Coded Maps for Maximum Day Plus Fire Flow for Existing Development (Picton Heights)
&
Residual Pressure & Hydrant Available Fire Flow Summary at Picton Heights for Existing & Proposed Model



PICTON

PRESSURE DURING FF+MDD EXISTING DEVELOPMENT (PICTON HEIGHTS) FF - 82 L/s

Legend

Residual Pressure (psi)

- less than 20.
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 ~ 100
- greater than 100
- Domain
- Inactive

Pipe

Pipe

Diameter (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400
- Domain
- Inactive

Residual Pressure (psi)

RA ENGINEERING

- Domain
- Inactive

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

Date: 17/02/2026
Prepared By: Abi Rajagopal
Reviewed By: Ragu Nathan

Hydraulic Analysis - Results
Proposed Historic District - Interim Development,Phase 1 of Rental Development with 8 Townhouses, Phase 1 of Village A Development & Picton Heights Development,
Picton,
Prince Edward County

Residual Pressure Summary at Picton Heights					
	Fire Flows used at Picton Heights is 82 L/s & at Proposed Development is 150 L/s				
Models	**Existing Only**		**Existing with Proposed**		
Fire Flow used at Picton Heights	**82 L/s**		**82 L/s**		
Fire Flow used at Proposed Developments	**N/A**		**150 L/s**		
	A	**B**	**C**	**D**	
Nodes at Picton Heights	**Residual Pressure**	**Hydrant Available Flow**	**Residual Pressure**	**Hydrant Available Flow**	**Location of the Nodes**
J1980	47.84	123.97	90.90	178.80	Picton Heights
J2012	25.57	88.50	68.23	131.09	Picton Heights
J2014	20.22	82.36	62.59	121.69	Picton Heights
J2016	40.16	108.92	83.17	160.07	Picton Heights
J2018	-27.29	55.66	15.60	79.85	Picton Heights
J2020	-1368.48	12.87	-1325.90	17.28	Picton Heights
J2022	33.65	99.19	76.56	147.12	Picton Heights
J2024	-42.53	50.93	0.15	72.98	Picton Heights
J2026	-1469.22	12.32	-1425.74	16.58	Picton Heights
J2028	25.64	88.59	68.30	131.23	Picton Heights
J2030	-42.15	51.11	0.20	73.01	Picton Heights
J2032	-1500.36	12.17	-1458.35	16.39	Picton Heights
J2034	7.19	71.51	49.48	104.68	Picton Heights
J2036	-1.04	66.28	41.24	97.13	Picton Heights
J2038	4.62	69.77	46.91	102.15	Picton Heights
J2040	18.80	80.95	61.09	119.53	Picton Heights
J2042	19.26	81.40	61.58	120.21	Picton Heights
J2044	-133.18	36.82	-90.59	51.56	Picton Heights
J2046	-1643.99	11.62	-1601.74	15.63	Picton Heights
J2048	-22.91	57.46	11.16	77.77	Picton Heights
J2050	15.30	77.80	57.30	113.79	Picton Heights
J2052	37.35	103.57	80.30	151.93	Picton Heights
J2054	34.67	99.80	77.62	146.44	Picton Heights
J2056	34.08	99.01	77.04	145.18	Picton Heights
J2058	26.91	89.78	69.86	131.33	Picton Heights

RA Engineering Inc.
18075 Leslie Street - Unit 210
Newmarket
ON L3Y 9A4

Fire Flow used at Picton Heights	82 L/s		82 L/s		
Fire Flow used at Proposed Developments	**N/A**		**150 L/s**		
J2060	-9.66	62.72	33.30	90.37	Picton Heights
J2062	34.20	99.25	77.15	145.74	Picton Heights
J2064	28.23	92.09	71.19	136.61	Picton Heights
J2066	24.51	87.02	67.35	129.70	Picton Heights
J2068	38.81	105.64	81.79	154.97	Picton Heights
J2070	37.20	103.36	79.98	151.11	Picton Heights
J2072	34.14	99.18	77.09	145.61	Picton Heights
J2074	33.98	98.94	76.93	145.21	Picton Heights
J2076	27.96	91.72	70.92	136.18	Picton Heights
J2078	26.55	89.67	69.48	134.06	Picton Heights
J2080	33.95	98.79	76.90	144.97	Picton Heights
J2082	28.21	92.06	71.17	136.58	Picton Heights
J2084	24.37	86.84	67.29	129.65	Picton Heights
J2152	21.86	83.91	55.94	111.63	Picton Heights
J2154	4.44	69.41	44.19	99.94	Picton Heights
J2226	42.87	113.02	85.90	163.92	Picton Heights
J2232	19.41	81.58	46.05	101.94	Picton Heights
J2234	5.01	70.07	42.97	98.94	Picton Heights
J2236	8.89	72.75	52.24	108.29	Picton Heights
J2350	12.98	75.67	54.72	110.96	Picton Heights
J76	47.10	121.74	90.16	175.16	Picton Heights
J78	45.07	117.16	88.12	169.34	Picton Heights
J80	47.35	122.63	90.41	176.66	Picton Heights
J82	47.27	121.87	90.33	175.55	Picton Heights
J84	47.41	121.90	90.47	175.38	Picton Heights
J86	47.32	121.76	90.38	175.26	Picton Heights

Red Font refers residual pressure less than 20 psi.

SCS
consulting
group ltd