

SERVICING BRIEF

DATED: NOVEMBER 2023

PROJECT:

6 JOHN STREET TOWNHOUSE DEVELOPMENT

LOCATED IN PICTON, CORPORATION OF THE
COUNTY OF PRINCE EDWARD

PREPARED FOR:

JAMR Developments inc.
P.O. Box 1642
Belleville, ON K8N 0A5

PREPARED BY:

Noah Dionne, B. Eng.
Nancy Dionne, P.Eng.



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FIGURES

Figure 1: Water Servicing Plan

Figure 2: Sanitary Drainage Plan

APPENDICES

APPENDIX A: Record drawings of plan and profile for Union Street and John Street

APPENDIX B: Required Fire Flow (RFF) and Domestic Water Demand Calculations

APPENDIX C: Sanitary Sewer Design Sheet and email consultation with County staff

1.0 INTRODUCTION

This Report has been prepared to support approvals of a proposed residential development located at 6 John Street in Picton, within the Corporation of the County of Prince Edward (the County). The proposed development is intended to support two 4-unit townhouses.

The site area is 0.23 hectares and has frontages along the east side of John Street, north of Union Street. There is an existing two-storey single family home, a garage and gravel driveway to be demolished. Site development will also require removal of some vegetation.

Property Location Map



The purpose of this Report is to demonstrate how the proposed development will be serviced, including water and sanitary connections to existing municipal infrastructure, and availability of capacity in the municipal system to accommodate additional capacity of the proposed development. The Servicing Brief will also address all impacts on downstream infrastructure that could require system upgrades.

It should be noted that changes may materialize during the detailed design process with the building permit application.

2.0 DESIGN GUIDELINES

Water and sanitary servicing design for the proposed development has considered the following Guidelines:

- Prince Edward County Guidelines and Technical Standards
- Ontario Building Code

3.0 EXISTING SERVICES

Based on the John Street and Union St plan and profile record drawings obtained through the municipality, included in *Appendix A*, the site is currently serviced with municipal water, sanitary, hydro, and natural gas fronting the property. The existing service connections will not be retained and will be abandoned at the property lines (as opposed to the mains).

4.0 WATER SUPPLY AND DISTRIBUTION

The proposed development will be provided with individual 20mm water services connecting to the existing 200mm dia PVC watermain. The proposed water servicing plan is provided in Figure 1.

4.1 System Pressure Requirements

In accordance with MECP and municipal Guidelines, the system should be designed to maintain a minimum pressure of 140 kPa (20 psi) under maximum day demand plus fire flow conditions. 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).

4.2 Fire Flow Requirements

In accordance with municipal guidelines, fire flow requirement calculations shall be based on the Fire Underwriters Survey (FUS) document Water Supply for Public Protection 2000. The estimated amount of water required for fire protection in a building has been calculated using the Fire Underwriters Survey Formula for Required Fire Flow (RFF), and is provided in *Appendix B*.

$RFF (l/s) = 220 C \sqrt{A}$, where:
C = Construction Coefficient
A (sqm) = total effective floor area

Based on the FUS formula, the Required Fire Flow (RFF) is 117 L/s (7000 L/min) for buildings 1 and 2.

4.3 Domestic Water Demand

In accordance with municipal guidelines, design flows are based on average day per capita of 320L per person/day and the domestic water demand is calculated based on the following factors:

- Maximum Day Factor: 1.90
- Peak Hour Factor 2.85

It is noted that the based on the MECP Design Guidelines for Drinking-Water Systems Peaking Factors Table 3-1, for the population of Prince Edward County of 25,000, the Maximum Day Factor:1.90 and Peak Hour Factor 2.85.

The proposed development density for the two 4-unit buildings has been assumed as a Medium Density development 2.5 persons/unit.

The domestic water demand calculations are provided in *Appendix B*.

4.4 Proposed Development Flows

The proposed development system requirements were calculated to confirm adequacy of the existing municipal system. Based on the design criteria above, calculations for the proposed development result are as follows:

- Average Day Flow (at 40 psi): 2.2 L/min
- Maximum Day Flow (at 40 psi): 4.2 L/min
- Peak Hour Flow (at 40 psi): 6.3 L/min
- Required Fire Flow Buildings 1 and 2: 117 L/sec = 7000 L/min
- Total Demand = Maximum Day Flow + Fire Flow (at 20 psi): 7,004 L/min

Should it be determined that the available flows are less than required, additional fire protection may be implemented through the building designs.

5.0 WASTEWATER

The proposed development will be serviced by the municipal wastewater system. A single unit service connections will discharge to the existing 200mm dia PVC sanitary sewer fronting the property draining northerly toward Owen Street. A new sanitary sewer will be required to connect the other 7 units to the existing sanitary sewer on Union Street. The proposed sanitary servicing plan is provided in Figure 2.

5.1 Design Criteria

The Rational Method calculation was used to calculate the proposed sewage flow rates with the following municipal parameters below.

- Residential (q) : average daily per capita flow (L/day/person) = 320
- Extraneous (i) : Unit of peak extraneous flow (L/s/ha) = 0.28
- Population density: Person per unit:
Med Density: Triplex, Fourplex, THs PPU : 2.5

5.2 Sewage Flow Rates and Downstream Capacity Assessment

The sewage flow rates for the proposed development were calculated using the rational method. The results are provided on the sanitary sewer design sheet for the proposed flows in *Appendix C*.

Through our consultation with County Staff (see attached email provided in *Appendix C*), the downstream system on Union Street should have capacity to accommodate the proposed development design flows of 0.44 L/s. As also directed by the County, flows to the existing John Street sewer shall not exceed pre-development flows.

Based on the available capacity of the existing sanitary sewer system downstream as determined by the County, there is no known impact due to the proposed development and no need for expansions or upgrades.

6.0 STORM SEWER

The site development will not necessitate storm infrastructure improvements to convey post-development site drainage. The project Stormwater Management Brief prepared by INSITE details how the stormwater drainage conforms with the County of Prince Edward Guidelines.

7.0 PUBLIC UTILITIES

The proposed buildings will be serviced with public utilities including Canada Post, as well as natural gas and electrical power. Providers will design the proposed infrastructure upon receipt of a request for service by the applicant.

8.0 CONCLUSIONS

- The proposed residential development of 0.23 Ha located at 6 John Street in Picton is intended to support two 4-unit townhouses with driveways connecting to John Street.
- The existing service connections will not be retained and will be abandoned at the property lines.
- Each lot will be serviced with a water service line connecting to the existing 200mm watermain fronting the property on John Street.
- Domestic water demands and fire flow requirements for the proposed development system were calculated to confirm adequacy of the existing municipal system. Should it be determined that the available flows are less than required, additional fire protection may be implemented through the building designs.
- Each lot will be serviced by a sanitary connection, where one unit will discharge to the existing 200mm dia sanitary sewer fronting the property on John Street, and 7 units will discharge to a proposed 200mm dia sanitary sewer which will discharge to the existing sewer on Union Street approximately 80m from the project site.
- The proposed development design flows are 0.55 L/s. Based on the available capacity of the existing sanitary sewer system downstream as determined by the County, there is no known impact due to the proposed development and no need for expansions or upgrades.
- The site development will not necessitate storm infrastructure improvements to convey post-development site drainage.
- The proposed buildings will be serviced with public utilities including Canada Post, as well as natural gas and electrical power.

This Report has been prepared by:

Noah Dionne, B.Eng;
Noah.dionne@insiteconsulting.ca



This Report has been reviewed by:

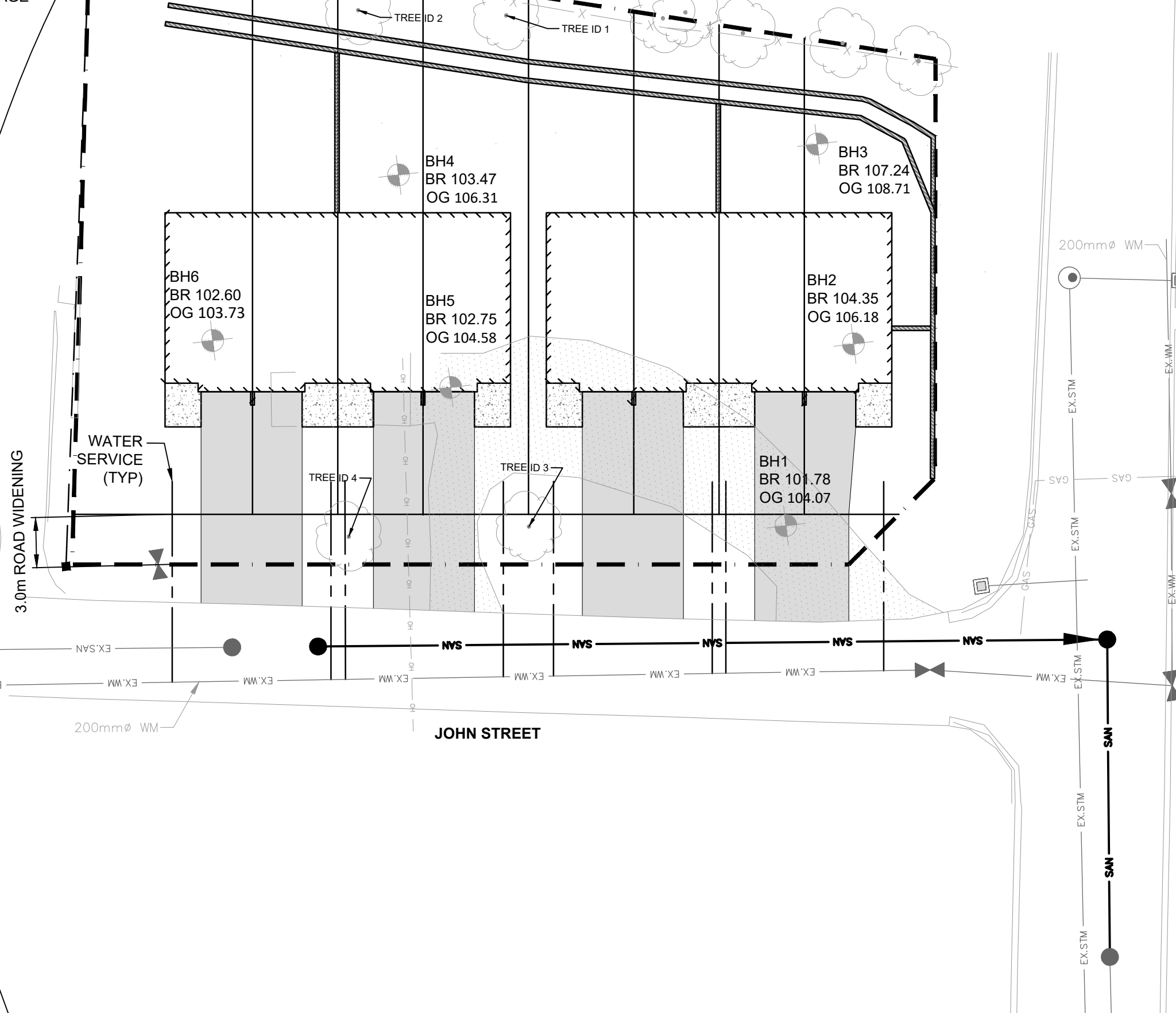


Nancy Dionne, P. Eng,
nancy.dionne@insiteconsulting.ca

FIGURES



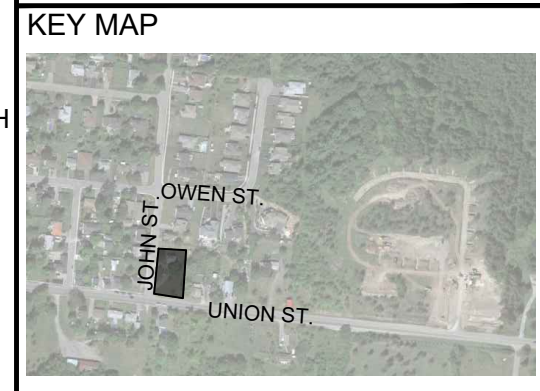
90m HYDRANT
COVERAGE



CLIENT
JAMR DEVELOPMENTS INC.

PROJECT 23-110
6 JOHN STREET

- LEGEND
- PROJECT BOUNDARY
 - LOTLINES
 - BUILDING BOUNDARY
 - EXISTING FIRE HYDRANT
 - EXISTING WATERMAIN VALVE
 - EXISTING WATERMAIN PIPE



INSITE
PROJECT CONSULTING INC.

REVISIONS

#	M/D/Y	BY	ISSUED FOR

DRAWING TITLE
WATER SERVICING PLAN

SCALE 1:300	DWG. NO. 4
SHEET ANSI B (11" X 17")	

C:\USERS\NHP\INSTE PROJECT CONSULTING INC\INSTE PROJECT CONSULTING - PROJECTS\23-110 6 JOHN ST TRSDRAWING FOLDER\03 FIGURES\ENG REPORTS\WATERMAIN CONCEPT.DWG

APPENDIX A

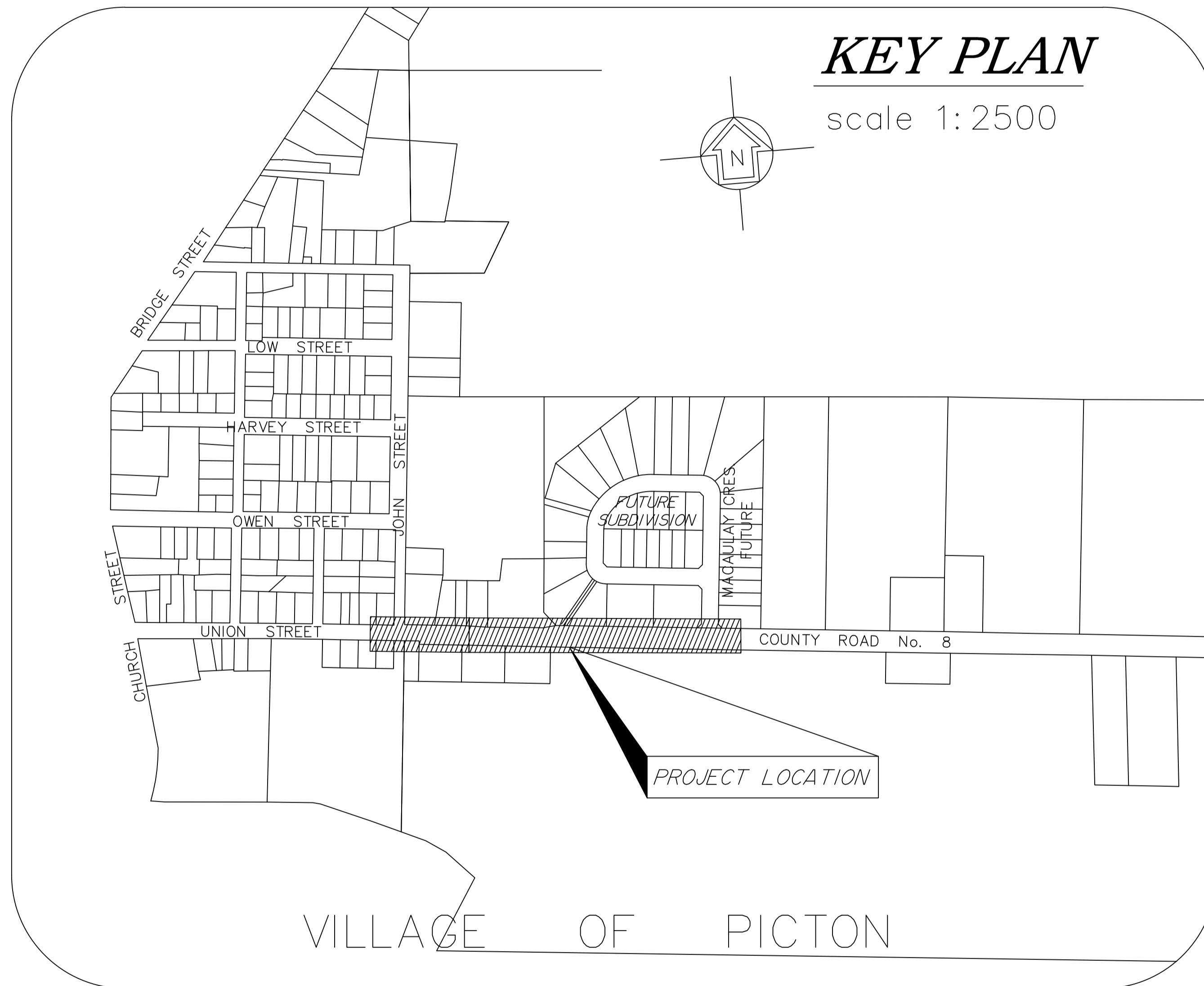
John Street and Union Street
Plan and profile drawings

VILLAGE OF PICTON

WATERMAIN EXTENSION

COUNTY ROAD 8 TO JOHN STREET

PROJECT No. 16539-1



INDEX

DWG. No.	DESCRIPTION
16539-GEN	GENERAL NOTES AND DETAILS
16539-P1	Sta. 0+000 To Sta. 0+170
16539-P2	Sta. 0+170 - Sta. 0+340
16539-P3	Sta. 0+340 - MACAULAY CRESCENT



TheCounty
PRINCE EDWARD COUNTY • ONTARIO

RECORD DRAWING

These drawings may include information provided by others. Ainley Graham & Associates believes this information to be reliable, but has not verified its accuracy and/or completeness.



NOTES:

GENERAL

- A) All measurements in metres, pipe size in millimeters, unless otherwise specified.
- B) All trenching in accordance with the Occupational Health and Safety Act and O.P.S.S. 120.
- C) All services, utilities, to be supported as per O.P.S.D. 1007.01.
- D) Laser alignment control to be used.
- E) For dimensions and details not shown, refer to O.P.S.D.
- F) Contractor shall reinstate all private and municipal properties disturbed during construction, to existing conditions or better. (O.P.S.S. 504).
- G) All services shall be constructed in accordance with Municipal design criteria and standards or Ontario Provincial Standards.
- H) All work shall have Municipal approval before commencement of construction and will be subject to inspection and approval by the Municipality.
- I) All work shall be completed in accordance with the "Occupational Health and Safety Act". The General Contractor shall be deemed to be the Constructor as defined by the Act.
- J) The Contractor shall incorporate preventive measures for erosion control of the construction site as required by the Municipality.
- K) The location and elevation of all existing services and utilities are to be verified in the field by the Contractor at their expense. The Contractor shall be responsible for the restoration and/or repair of existing utilities disturbed during construction.
- P) These drawings may include information provided by others. Aninley Group believes this information to be reliable but has not verified its accuracy and/or completeness and, accordingly, shall not be responsible for any errors or omissions which may result from its incorporation herein.
- Q) No blasting is permitted in accordance with the Municipality's directions.
- R) The Contractor shall be responsible for maintaining traffic flow at all times during construction. Two 3.25m (each) lanes of traffic are to be provided. When one lane is required as approved by the Engineer, the lane width shall be 4.0m and flagmen shall be used.
- S) The Contractor shall maintain these roads to the County's satisfaction which shall include the placing of dust palliatives, the removal of mud and other materials carried out onto paved streets adjoining the area of work and the repair to the satisfaction of the Director of Engineering of any damages caused to the streets
- T) All construction signing must conform to the M.T.C. manual of "Uniform Traffic Control Devices".
- U) Contractor shall remove all surplus excavated material from the site as directed in accordance with O.P.S.S. 180.

WATERMANS (O.P.S.S. 701)

- A) Pipe (Dia as shown)
Shall be PVC Class 150 DR18 (or approved equal to ANSI/AWWA standard C900-97 (current version)), C/W #6 AWG Insulated Copper Tracer Wire.
- B) Fittings:
Fittings shall be gray or ductile iron conforming to AWWA C110/A21.10, ductile iron conforming to AWWA C153/A21.53, or injection molded polyvinyl chloride (PVC) conforming to CSA B137.2. Mechanical restrainers are to be utilized two joints back from each bend or fitting.
- C) Gate Valves:
Gate valves shall be Muller Super-Seal Resilient Seat or approved equivalent in accordance with AWWA Standard C509-94 for gate valves with iron body, bronze mounted non-rising stem, open left, resilient seat with a working pressure of 1035 kPa.
- D) Valve Boxes:
Valve Boxes shall be cast iron three piece slide type (SSL) complete with round base, lower section, upper section and cover. The size shall be determined by the size of valve and depth of Watermain.
- E) Fire Hydrants: - Prince Edward County Standard Drawing
Fire Hydrants shall be breakaway, McAvity M 67 or Mueller Centurion to AWWA Std. C502-94(Latest version). Hydrants to be located 1.0m off property line and located at the projection of abutting lot lines. Two 60 mm outlets with 5 threads per 25 mm, nominal 1.80 m bury, open left with mechanical joint to base. The actual bury of the hydrant shall be determined by the actual depth of the main and the finished grade at the hydrant, 1.8 m minimum. All hydrants to have two 60 mm and one 100 mm outlet.
Fire Hydrants shall be installed with a clear and unobstructed area of 3.0m around the hydrant. Fire Hydrants shall meet the Ontario Standard 33B, two 63mm CSA standard threads with a pumper connection of 145mm O.D. with 4.5 threads per 25mm. All hydrants to be installed utilizing anchor tees and valves.
- F) Thrust Blocks:
As per OPSD 1103.01, 1103.02.
- G) Service Connections (20mm Copper, Type K):
Spatial separation of the sanitary and water service connections, shall be in accordance with section 7.3.5.6 of the Ontario Building Code and subsection 1.4 of the Ontario Plumbing Code. Subject to conditions set out below, service pipe material to be copper. Services are not to be installed in proposed driveways. Copper services require approved compression-type corporation main stop, compression-type curb stop and drain and compression-type unions to be used. It should be noted that only compression fittings are to be used. Adjustable sliding-type service box bases (Type #8) are to be used on all services over a bronze stop and drain curb stop. These are to be located on the property line.
- H) Bedding:
As per OPSD 802.010 and 802.013 for both mainline and service connections. Bedding and cover material shall be granular 'A' or 19mm crusher run limestone. Backfill to be approved native material to 100% S.P.M.D.D.
- I) Service Markers:
Shall be installed to indicate valve box or curb stop locations at property lines. (50mm x 100mm - Painted blue).
- J) Blowoff Assembly:
As per OPSD 1104.030.
- K) Watermain Testing:
As per Prince Edward County "Watermain sampling and testing policy and procedure" December 2015
- L) Sampling Stations:
Water sampling stations shall be in accordance with Prince Edward County standard drawings.
- M) Frost Protection:
All water piped shall have a minimum of 1.7m cover, or add 50mm thick insulation for every 0.3m cover.
- N) Tracer-wire:
All non-metallic watermain and services shall have 14 gauge tracer wire. tracer wire shall be looped up the outside of all main valve boxes and extend into the valve box by 50mm through a saw cut 50mm below the bottom of cover bell. tracer wire is to be extended to the hydrant. all non-metallic services shall have the tracer wire thermowelded to the curb box.
- O) Cathodic protection:
Tracer wire on mains shall be protected with a 23kg zinc anode, at each end a maximum spacing of which shall be 500m. valves, metallic fittings and hydrants shall be protected with a 7.7kg magnesium anodes. metallic services of 25mm or smaller and less than 20m in length shall be protected with a 2.3kg zinc anode. other metallic services of 50mm or smaller shall be protected with a 5.5kg zinc anode.
- P) Sampling Stations:
Water sampling stations shall be in accordance with Prince Edward County standard drawings.

SEPARATION OF SEWERS AND WATERMAIN AT CROSSINGS

- A) Under normal conditions, watermains shall cross above sewers with sufficient vertical separation to allow for proper bedding and structural support of the watermain and sewer main.
- B) when it is not possible for the watermain to cross above the sewer, the watermain passing under a sewer shall be protected by providing:
 - A vertical separation of at least 0.5 metres between the invert of the sewer and the crown of the watermain.
 - Adequate structural support for the sewers to prevent excessive deflection of joints and settling.
 - That the length of water pipe shall be centred at the point of crossing so that the joints will be equally distant and as far as possible from the sewer.

ROAD DESIGN (O.P.S.S. 206/310/313/314/501/502/507)

A) Road Structure		Material Specification
HL3 (PG 58-34)	40mm (min.)	O.P.S.S. 1003 / 1101 / 1150
HL8 (PG 58-34)	50mm (min.)	O.P.S.S. 1003 / 1101 / 1150
Granular 'A'	150mm	O.P.S.S. 1010
Granular 'B' (type I)	300mm	O.P.S.S. 1010

Granular 'A' and granular 'B' type II used for base and subbase material shall meet the requirements of O.P.S.S. 1010 and shall be compacted to 100% SPMDD.

Inspection by qualified geotechnical personnel should be carried out during the construction process to verify the competence of the subgrade material and to verify the compaction densities of both the subbase and base course materials.

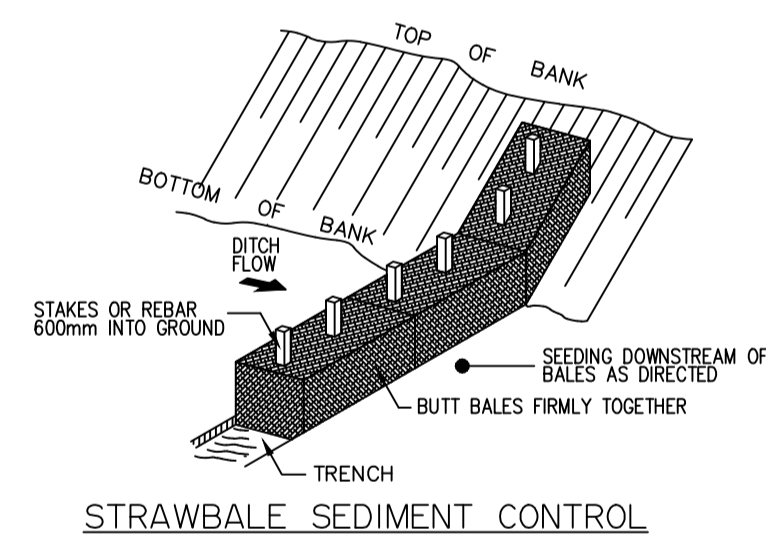
Curb and gutter shall be O.P.S.D. 600.040 or match existing.

- B) Contractor shall provide minimum asphalt depths as listed above or match existing in cases where existing depths are greater than that shown.
- C) The construction of the roads shall consist of removing all organic and loose fill materials to expose the underlying silty sand or glacial till surface. In areas where earth fill is required, acceptable fill shall be placed to a minimum of 95% SPMDD.
- D) Boulevards shall be constructed as per typical road section within construction limits.

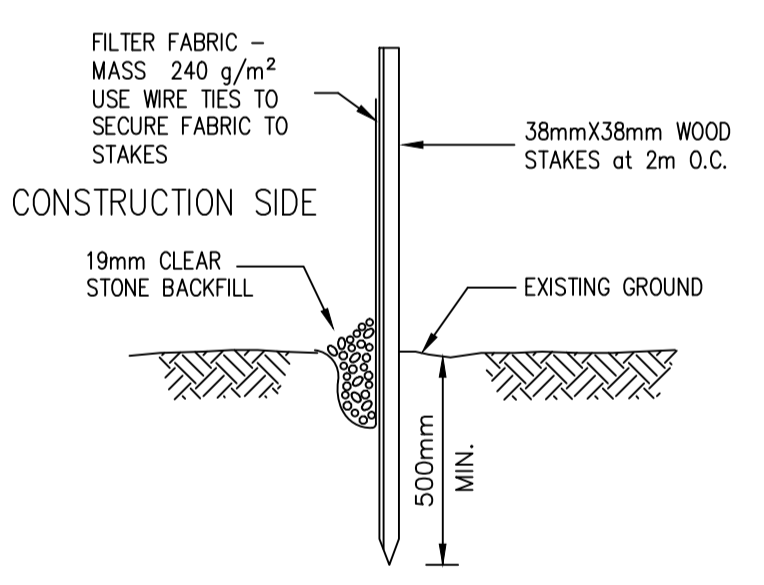
EROSION AND SEDIMENT CONTROL

Erosion and Sediment Control on construction sites and the removal of sediments from construction site run-off is very important if downstream areas are to be protected during all construction. erosion and sedimentation should be controlled by the following techniques:

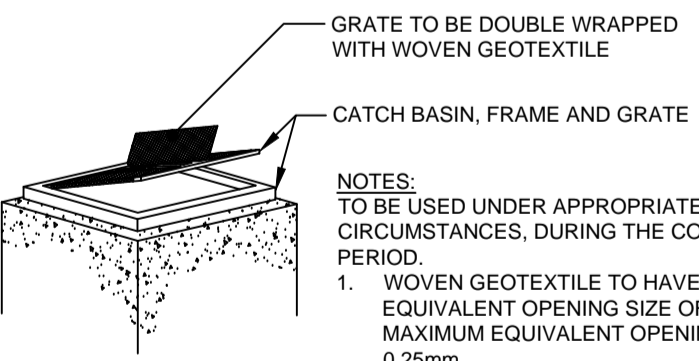
1. Limiting the extent of exposed soils at any given time.
2. Revegetation of exposed areas as soon as possible.
3. Minimization of area to be cleared and grubbed.
4. Protection of exposed slopes with plastic or synthetic mulches.
5. Installation of filter cloth between frame and cover on all proposed catch basins and catch basin manholes and on all existing catch basins that will be affected by run-off from the site.
6. A silt fence to be installed around the perimeter of stockpiles of any topsoil to be used or removed from site. (location to be determined)
7. A visual inspection to be done daily on sediment control measures and cleaned of any accumulated silt as required. the deposits will be disposed of as per the requirement of the contract.
8. In some cases some filter barriers may be removed temporarily to accommodate the construction operations. the affected barriers will be reinstated at night when construction is completed. no removal will occur if there is a run off or predicted rain fall unless a new device has been installed to ensure the existing storm and sanitary sewer systems will not be contaminated.
9. No refueling or cleaning of equipment near any existing waterways.
10. Contractor shall incorporate preventative measures for erosion control of construction site as required by the municipality. Filter fabric to be used at the grades in all street and backlot cb's to trap sediment. these silt traps are to be cleaned regularly by the contractor and not to be removed until such time as the curbs are constructed and boulevards are sodded or backyards are graded and sodded.



STRAWBALE SEDIMENT CONTROL
N.T.S



SILTATION FENCE
N.T.S



- NOTES:**
TO BE USED UNDER APPROPRIATE DRAINAGE CIRCUMSTANCES, DURING THE CONSTRUCTION PERIOD.
1. WOVEN GEOTEXTILE TO HAVE A MINIMUM EQUIVALENT OPENING SIZE OF 0.15mm AND A MAXIMUM EQUIVALENT OPENING SIZE OF 0.25mm.
 2. WOVEN GEOTEXTILE TO BE REPLACES PERIODICALLY WHEN ACCUMULATED SEDIMENTS INTERFERE WITH DRAINAGE.
 3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

CATCH BASIN SEDIMENT BARRIER
N.T.S

6	ISSUED FOR CONSTRUCTION	26/10/16	ND	Not Valid Unless Signed And Dated
5	ISSUED FOR TENDER	27/09/16	ND	
4	PRE-TENDER SUBMISSION	03/06/16	ND	
3	SUBMISSION FOR PRE-SERVICING AGREEMENT	11/06/15	ND	
2	REVISIONS AS PER PEC COMMENT-MAY 6, 2009	07/05/09	AJW	
NO.	REVISIONS	DATE	INITIAL	

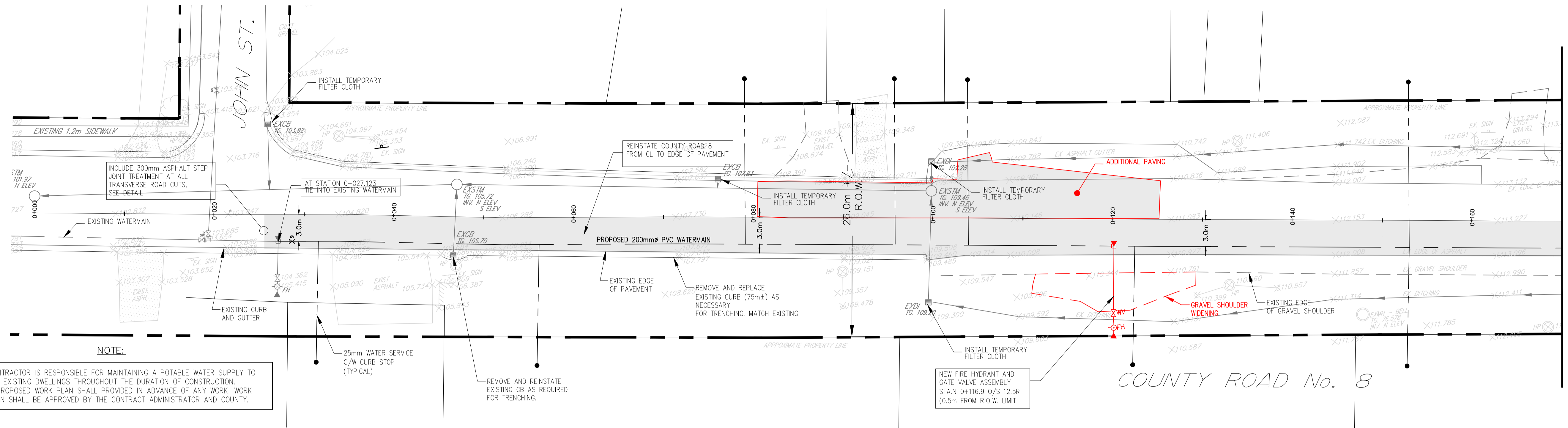
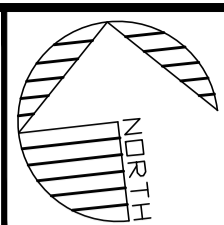
SCALE:	N.T.S.
DESIGN:	AJW
DRAWN:	CAD
CHECKED:	RJF
DATE:	JAN. 2009

WATERMAIN EXTENSION
VILLAGE OF PICTON
MUNICIPALITY OF PRINCE EDWARD COUNTY

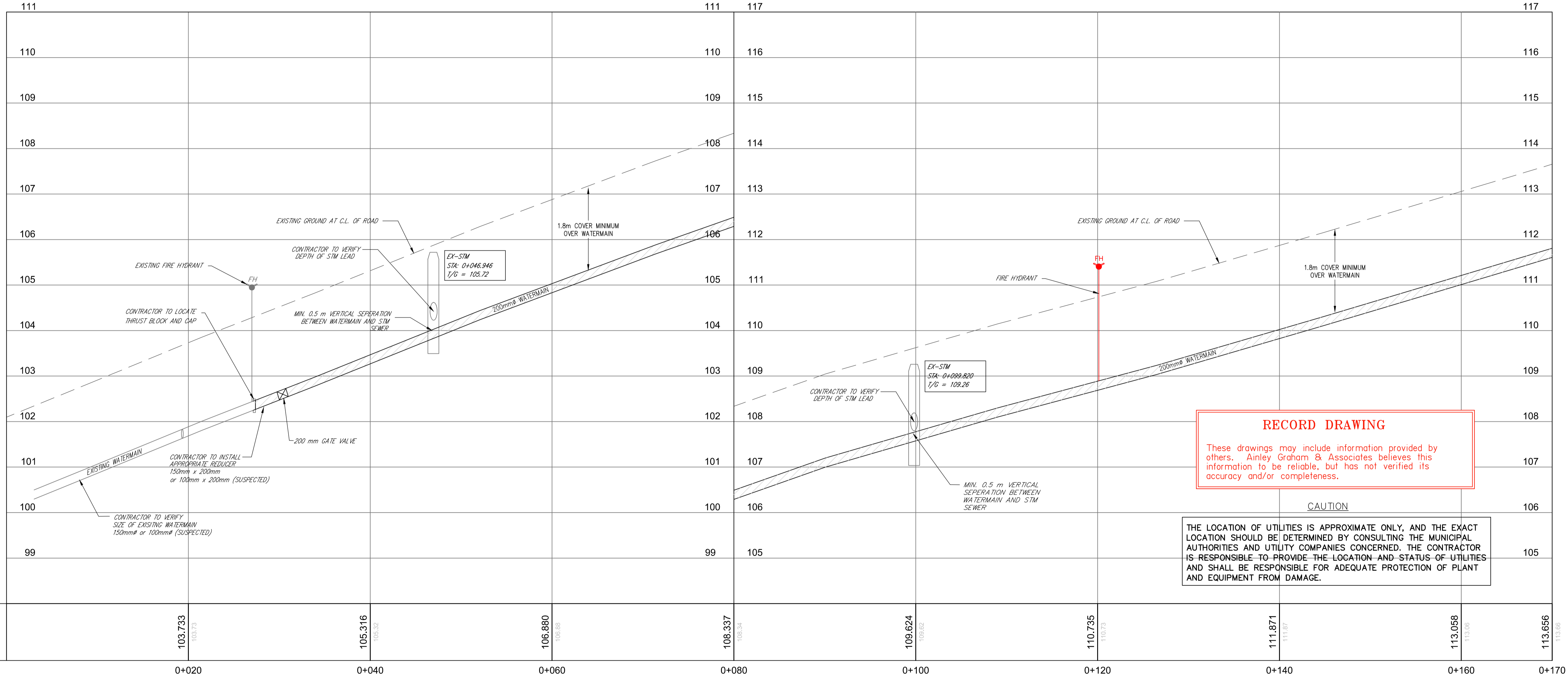
GENERAL NOTES
AND DETAILS

CONTRACT No. 16539-1 | DWG. 16539-GEN

PROJECT BENCHMARKS
ELEVATIONS ARE GEODETIC, DERIVED FROM GPS OBSERVATIONS AND ARE REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD28) BY DIRECT MEASUREMENT TO A REAL TIME NETWORK



NOTE:
 1. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A POTABLE WATER SUPPLY TO ALL EXISTING DWELLINGS THROUGHOUT THE DURATION OF CONSTRUCTION.
 2. A PROPOSED WORK PLAN SHALL PROVIDED IN ADVANCE OF ANY WORK. WORK PLAN SHALL BE APPROVED BY THE CONTRACT ADMINISTRATOR AND COUNTY.



RECORD DRAWING
 These drawings may include information provided by others. Ainley Graham & Associates believes this information to be reliable, but has not verified its accuracy and/or completeness.

CAUTION
 THE LOCATION OF UTILITIES IS APPROXIMATE ONLY, AND THE EXACT LOCATION SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE LOCATION AND STATUS OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION OF PLANT AND EQUIPMENT FROM DAMAGE.

PRINCE EDWARD COUNTY • ONTARIO

LEGEND

- R.O.W.
- PROPERTY LINE
- EXIST. ROAD SHOULDER
- EXISTING GRAVEL DRIVE
- EXISTING ASPHALT DRIVE
- EXISTING DITCH LINE
- EXISTING ELEVATION
- DENOTE'S AS-BUILT ELEVATION

- EXISTING SIGN
- EXISTING CATCHBASIN
- EXISTING STORM MH
- EXISTING STORM SEWER
- EXISTING HYDRO POLE
- EXISTING FIRE HYDRANT

- PROPOSED FIRE HYDRANT
- PROPOSED WATERMAIN
- PROPOSED WATER SERVICE C/W CURB STOP
- PROPOSED WATER VALVE
- AS-BUILT FIRE HYDRANT
- AS-BUILT WATER VALVE

NO.	REVISIONS	DATE	INITIAL
7	RECORD DRAWINGS	28/05/18	ND
6	ISSUED FOR CONSTRUCTION	26/10/16	ND
5	ISSUED FOR TENDER	27/09/16	ND
4	PRE-TENDER SUBMISSION	03/06/16	ND
3	SUBMISSION FOR PRE-SERVICING AGREEMENT	11/06/15	ND

Not Valid Unless Signed And Dated

SCALE: H 1:250
V 1:50

DESIGN: AJW

DRAWN: CAD

CHECKED: RJF

DATE: JAN. 2009

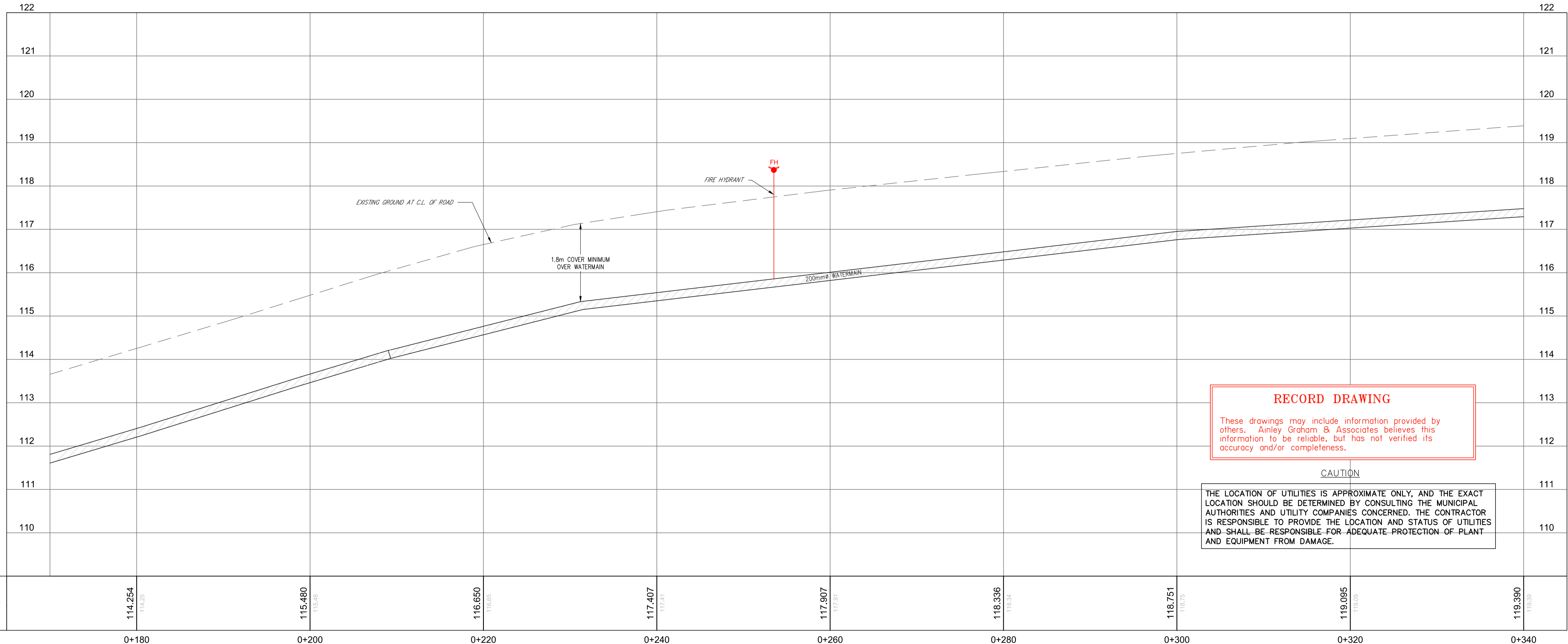
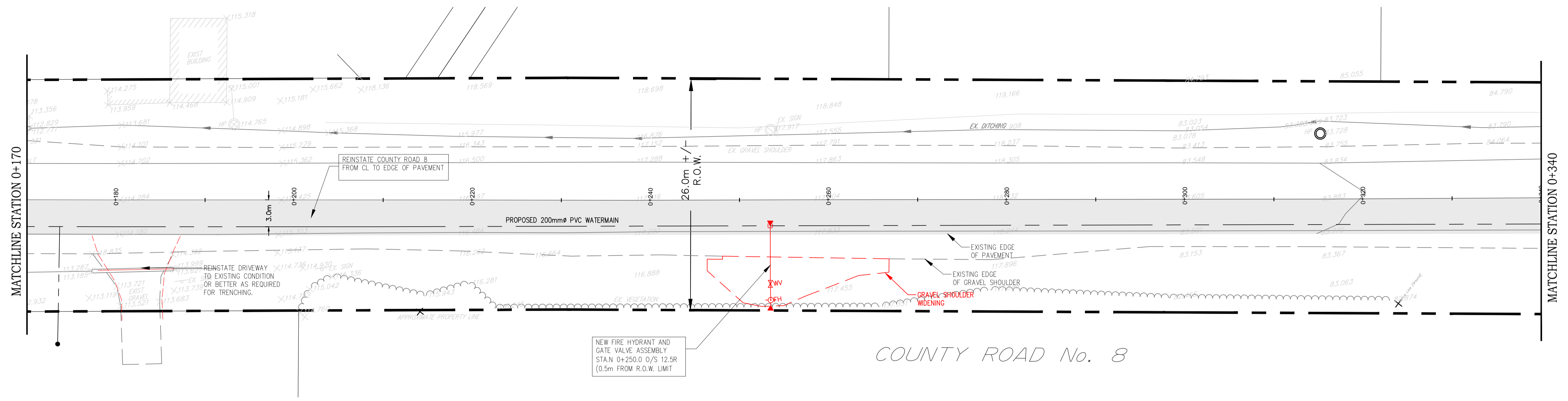
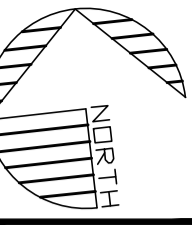
WATERMAIN EXTENSION
 VILLAGE OF PICTON
 MUNICIPALITY OF PRINCE EDWARD COUNTY

COUNTY ROAD 8
 Sta. 0+000 - Sta. 0+170

CONSULTING ENGINEERS PLANNERS

CONTRACT No. 16539-1 DWG. 16539-P1

K:\Projects\16539 - County Road 8 Watermain Extension\16539 - 10 Drawings\16539 - 10 Drawings\16539 - CR8 WATERMAIN.dwg



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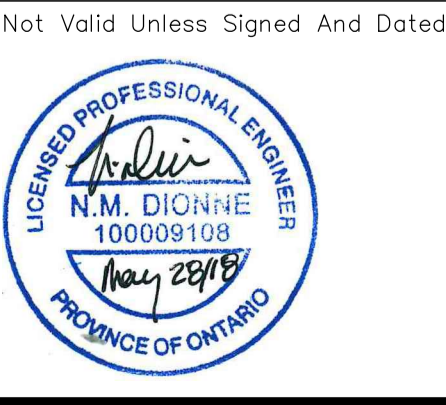
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LEGEND	
	R.O.W.
	PROPERTY LINE
	EXIST. ROAD SHOULDER
	EXISTING GRAVEL DRIVE
	EXISTING ASPHALT DRIVE
	EXISTING DITCH LINE
	EXISTING ELEVATION
	EXISTING SIGN
	EXISTING CATCHBASIN
	EXISTING STORM MH
	EXISTING STORM SEWER
	EXISTING HYDRO POLE
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
	PROPOSED WATERMAIN
	PROPOSED WATER SERVICE C/W CURB STOP
	PROPOSED WATER VALVE
	AS-BUILT FIRE HYDRANT
	AS-BUILT WATER VALVE

NO.	REVISIONS	DATE	INITIAL
7	RECORD DRAWINGS	28/05/18	ND
6	ISSUED FOR CONSTRUCTION	26/10/16	ND
5	ISSUED FOR TENDER	27/09/16	ND
4	PRE-TENDER SUBMISSION	03/06/16	ND
3	SUBMISSION FOR PRE-SERVICING AGREEMENT	11/06/15	ND



Not Valid Unless Signed And Dated

SCALE: H 1:250
V 1:50

DESIGN: AJW

DRAWN: CAD

CHECKED: RJF

DATE: JAN. 2009

WATERMAIN EXTENSION
VILLAGE OF PICTON
MUNICIPALITY OF PRINCE EDWARD COUNTY

COUNTY ROAD 8
Sta. 0+170 To Sta. 0+340



K:\Projects\16539 - County Road 8 Watermain Extension\16539-1\Drawings\Civil\16539_CRS3_WATERMAIN.dwg

APPENDIX B

Required Fire Flow (RFF)

Domestic Water Demand Calculations

1. FIRE FLOW REQUIREMENT CALCULATIONS

6 John Street Townhouses

Municipal Criteria: The Corporation of the County of Prince Edward



Prepared by: Noah Dionne, B.Eng, Reviewed by: Nancy Dionne, P.Eng.

Date: November 2023

Fire flow requirements per Fire Underwriters Survey Water Supply for Public Fire Protection, 2020

RFF (l/s) = 220 C √A, to the nearest 1,000 LPM, where:

C = Construction Coefficient

A (sqm)= total effective floor area

	Building 1	Building 2
A. Determine Construction Coefficient '<C)		
1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)		
0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls)		
0.6 for fire resistive construction (fully protected frame, floors, roof)	1	1
B. Determine Total Effective Floor Area (A)		
Construction Type of Exposed Building Face	Type III w. unprotected openings	Type III w. unprotected openings
"For a building classified with a Construction Coefficient from 1.0 to 1.5: 100% of all Floor Areas are considered in determining the Total Effective Area to be used in the formula."	573.6	573.6
C. Calculate Required Fire Flow (LPM)		
Fire Flow Equation:	5269	5269
C1 - Fire Flow (Rounded to nearest 1,000 LPM)	5000	5000
D. Determine Occupancy Content Adjustment Factor:		
C1 - Residential (Limited Combustible)	-15%	-15%
E. Determine Automatic Sprinkler Protection:		
E1 - % Reduction for Sprinkler Credit	0%	0%
F. Determine Total Exposure Adjustment Charge (max 75%):		
a) Exposure distance: Between interior buildings	3	3.0
Table 6 Max. Exposure Adjustment Charge	25%	25%
b) Exposure distance: Distance to existing house to the west	35	35.0
Table 6 Max. Exposure Adjustment Charge	5%	5%
c) Exposure distance: Distance to existing house to the north	10.0	3.0
Table 6 Max. Exposure Adjustment Charge	20%	25%
d) Exposure distance: Distance to existing house to the east	35.0	35.0
Table 6 Max. Exposure Adjustment Charge	5%	5%
F1 - Total Max. Exposure Charge = a + b + c + d	55%	60%
G. Final Required Fire Flow (nearest 1000 LPM):		

	Building 1	Building 2
Adjusted Fire Flow (L/min) = $C1+C1*(D1+E1+F1)$	7000	7250
Adjusted Fire Flow, rounded to nearest 1000 (L/min)	7000	7000
Verify Simple Method for one or two family dwellings less than 450 sqm, and 3-10m exposure distances	4000.0	4000.0
Wood shingle or shake roof (add'l charge of 2000-4000 L/min)	no	no
Required Fire Flow (L/s)	117	117

2. DOMESTIC WATER DEMAND CALCULATIONS



6 John Street Townhouses

Municipal Criteria: The Corporation of the County of Prince Edward

Prepared by: Noah Dionne, B.Eng, Reviewed by: Nancy Dionne, P.Eng.

Date: November 2023

DESIGN DENSITIES (POP)		
Low Density: Singles, semis / duplex PPU :	3.0	
Med Density: Triplex, Fourplex, THs PPU :	2.5	
High Density: Apartments (54 to 300 units/Ha) PPU :		
	1 bdrm: 1.4	3 bdrm: 2.4
	2 bdrm: 2.1	4 bdrm: 3.0

BUILDING 1 and 2

Average day per capita (L per person/day)	320	A
Number of Units (Apartments)	4	B
PPU Density (Number of Person /unit) 4 unit TH	2.5	C
Maximum Day Factor:	1.9	D
Peak Hour Factor	2.85	E
Required Fire Flow (RFF) L/s	117	F

FLOW REQUIREMENTS	L/day	L/min	L/sec
Average Day Demand ADD $Q_{ave} = A \times B \times C$	3,200.0	2.2	0.0
Max Day Demand MDD $Q_{mdd} = Q_{ave} \times D$	6,080.0	4.2	0.1
Peak Hour Demand PHD $Q_{phd} = Q_{ave} \times E$	9,120.0	6.3	0.1
Total Demand TD $Q_{td} = Q_{mdd} + RFF$		7,004.2	116.7

APPENDIX C

Sanitary Sewer Design Sheet

Email Correspondence with County Staff

SANITARY SEWER DESIGN SHEET

6 John Street, Picton

Municipal Criteria: The Corporation of the County of Prince Edward



Prepared by: Nancy Dionne, P.Eng

Insite Project Consulting Inc.

Date: November 2023

RATIONAL METHOD: Qd = Qp + Qi
 Q(p) = peak population flow (L/s)
 Q(i) = peak extraneous flow (L/s)
 Q(d) = peak design flow (L/s)

$Q(p) = P * q * M / 86.4$ (L/s)
 $Q(i) = i * A$ (L/s)

P = Population in thousands = POP/1000
 q = average daily per capita flow (L/day/person)
 i = Unit of peak extraneous flow (L/s/ha)
 A = Gross Tributary Area (Ha)

M = Harmon's Peaking Factor Formula:
 $M = 1 + 14 / (4 + (POP/1000) ^ 0.5)$
 Min M Permissible per MECP: 2
 M = 2.75 for maximum flow and 4.0 for minimum flow

MUNICIPAL GUIDELINES

Residential (q) : 350 (225 to 450 L/cap.d)
 Extraneous (i) : 0.28 (0.1 to 0.28 L.s/ha)

DESIGN DENSITIES (POP)
 Low Density: Singles, semis / duplex PPU : 3.0
 Med Density: Triplex, Fourplex, THs PPU : 2.5
 High Density: Apartments (54 to 300 units/Ha) PPU :

1 bdrm: 1.4 3 bdrm: 2.4
 2 bdrm: 2.1 4 bdrm: 3

Commerical and Industrial: Per municipal Guidelines
 Per MECP Sewage Works Guidelines

Velocity: Min: 0.6 m/s (for pipe flow above pipe depth of 0.3 of pipe dia.)
 Max 3.0 m/s
 Min Slope: 1% min for first leg of sewer
 Max full flow capacity: 80%

MANNING EQUATION FOR FULL PIPE FLOW:

$Q_{cap} \text{ (cum/s)} = 1/n * A * R^{2/3} * S^{1/2}$
 $= 1/n * ((\pi D^2)/4) * (D/4)^{2/3} * S^{1/2}$
 Mean Velocity (m/s) = Q / A

D = Pipe Diameter (m)
 R = Hydraulic radius (m) = A / Pw = D / 4
 A (sqm) = Cross sectional flow area = $(\pi D^2)/4$
 Pw = Wetted Perimeter = $\pi * D$
 S = slope (grade) of pipe (m/m)

n = Manning's roughness coefficient
 Concrete, PVC and HDPE:
 n = 0.013

LOCATION			RATIONAL METHOD FLOWS										SEWER CHARACTERISTICS			MANNING'S EQUATION			
AREA ID	FROM MH	TO MH	INDIVIDUAL			ACCUMULATIVE			PEAKING FACTOR (M)	PEAK FLOWS			DIA. (m)	SLOPE (m/m)	LENGTH (m)	PIPE VELOCITY Vcap (m/s)	PIPE CAPACITY Qcap (L/s)	% CAPACITY	
			Type of UNIT	Total LOTS	Total TH Units	POP (persons)	AREA (ha)	POP (persons)		AREA (ha)	POP Qp (L/s)	EXTRAN Qi (L/s)							DESIGN Qd (L/s)
John Street																			
Ex.	Node 550	Node 551	RES.	1.0	0.0	3.0	0.23	3.0	0.23	4.45	0.05	0.06	0.12	0.200	0.004	17.8	0.66	20.7	1%
Prop.	Node 550	Node 551	RES.	0.0	1.0	2.5	0.23	2.5	0.23	4.46	0.05	0.06	0.11	0.200	0.010	65.6	1.04	32.8	0%
THE PROPOSED DESIGN FLOW OF 0.11 L/S ARE LESS THAN THE EXISTING FLOWS TO THE EXISTING JOHN ST SEWER																			
Union Street																			
Prop.	SAN 01	SAN 02	RES.	0.0	7.0	17.5	0.23	17.5	0.23	4.39	0.31	0.06	0.38	0.200	0.010	54.5	1.04	32.8	1%
Prop.	SAN 02	SAN 553	RES.	0.0	0.0	0.0	0.23	17.5	0.5	4.39	0.31	0.13	0.44	0.200	0.004	22.0	0.66	20.7	2%
THE PROPOSED DESIGN FLOW OF 0.44 L/S ARE PROPOSED TO THE EXISTING UNION STREET SEWER.																			

From: [Robert MacDonald](#)
To: [Nancy Dionne](#)
Cc: [Matthew Coffey](#); [Tim Hoornweg](#)
Subject: RE: 6 John Street - Sanitary Sewer Servicing concept
Date: Monday, October 2, 2023 2:58:40 PM

Nancy,

I have spoken to operations and depending on timing, there are no issues with using Union for this development. However, an increase on Owen St can't be accommodated, so only one unit can flow in this direction until the issues are resolved.

Regards,

Robert MacDonald
Development Engineering
Department of Development Services
The Corporation of the County of Prince Edward
T: 613.476.2148 ext. 2007 | F: 613.471.2050
rmacdonald@pecounty.on.ca



TheCounty™

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From: Nancy Dionne <nancy.dionne@insiteconsulting.ca>
Sent: September 27, 2023 11:56 AM
To: Robert MacDonald <rmacdonald@pecounty.on.ca>
Cc: Matthew Coffey <mcoffey@pecounty.on.ca>; Tim Hoornweg <nevencorp@gmail.com>
Subject: FW: 6 John Street - Sanitary Sewer Servicing concept

Hi Robert,

We would appreciate the County's response on this before the end of the week, so that the client can move forward based on certainty of site servicing.

Nancy Dionne, P.Eng.



CEO and Senior Project Manager

Cell 613-449-7092

<https://insiteconsulting.ca>

From: Nancy Dionne

Sent: Tuesday, September 19, 2023 9:37 AM

To: Robert MacDonald <rmacdonald@pecounty.on.ca>

Cc: Tim Hoornweg <nevencorp@gmail.com>; nanton@fotenn.com; Matthew Coffey <mcoffey@pecounty.on.ca>

Subject: RE: 6 John Street - Sanitary Sewer Servicing concept

Thanks Robert.

Based on the available information, sanitary servicing to Union Street for 6 TH, and remaining 2 THs to Owen Street should be feasible by gravity.

We look forward to the County confirming they will agree to this proposed site servicing concept, with no required financial contribution by the applicant towards improvements to the existing municipal system downstream.

Nancy Dionne, P.Eng.



CEO and Senior Project Manager

Cell 613-449-7092

<https://insiteconsulting.ca>

From: Robert MacDonald <rmacdonald@pecounty.on.ca>

Sent: Tuesday, September 19, 2023 9:00 AM

To: Nancy Dionne <nancy.dionne@insiteconsulting.ca>

Cc: Tim Hoornweg <nevencorp@gmail.com>; nanton@fotenn.com; Matthew Coffey <mcoffey@pecounty.on.ca>

Subject: RE: 6 John Street - Sanitary Sewer Upgrades

Nancy,

Apologies, I had this drafted last week but I didn't hit send. I can't find an as-built for this section but I have the manhole depths. Servicing via Union is something that we would be in favour with, but there is a red section near Lalor in the model, but I have reached out to the wastewater department to find out if there are any operational issues with this section.