Municipality of Cumberland

Parrsboro Wastewater System - Collection System

Issued for Tender

March 2017

Contract No. 161039.00

Municipality of Cumberland

Parrsboro Wastewater System - Collection System

Issued for Tender	JAB	Mar. 9/17	JAB
Issued for Approval	JAB	Feb. 27/17	TB
Issued for 50% Review	-	Dec. 16/16	-
Issue or Revision	***Reviewed By:***	***Date***	***Issued By:***

CBCL LIMITED
Consulting Engineers

REGISTERED PROFESSIONAL ENGINEER
DATE Mar. 9/17
T. W. Bragnalo
10229
PROVINCE OF NOVA SCOTIA

Contract No. 161039.00

THESE PROJECT DOCUMENTS HAVE BEEN PREPARED FOR USE WITH AND REQUIRE BEING READ IN CONJUNCTION WITH **THE STANDARD SPECIFICATION FOR MUNICIPAL SERVICES** AS PUBLISHED BY THE NOVA SCOTIA ROAD BUILDERS ASSOCIATION - CONSULTING ENGINEERS OF NOVA SCOTIA AND THE **JOINT COMMITTEE ON CONTRACT DOCUMENTS.** COPIES OF THESE DOCUMENTS ARE AVAILABLE FROM THE JOINT COMMITTEE ON CONTRACT DOCUMENTS, 455 COLBY DRIVE, DARTMOUTH, NS, B2V 2K4; PHONE: (902) 430-2534 OR (902)233-9362 OR BY EMAIL AT: NSMUNICIPALSERVICES@GMAIL.COM

The Table of Contents includes sections applicable to this project and also indicates those sections in the Standard Specification for Municipal Services that have revisions and new sections added.

END

BIDDING AND CONTRACT REQUIREMENTS

PROJECT: Municipality of Cumberland
Parrsboro Wastewater System - Collection System
Contract No. 161039.00

OWNER: Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS
B4H 3Y4

ENGINEER: CBCL Limited
1489 Hollis Street
Halifax, NS B3J 2R7

1. TENDER SUBMISSION

.1 Submit completed Tender Form for above project in sealed envelope marked as follows:

TENDER

Municipality of Cumberland
Parrsboro Wastewater System – Collection System
Contract No. 161039.00

Closing up to 2:00:00 p.m., local time on Wednesday, March 29th, 2017, and delivered to:

Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS
B4H 3Y4

Attention: Justin Waugh-Cress, P.Eng.
Director of Engineering and Operations

2. TENDER OPENING

.1 Tender opening will be public.

3. ACCURACY OF REFERENCING

.1 Indexing and cross-referencing are for convenience only.

4. CONDITIONS OF TENDERING

.1 Take full cognizance of content of all Contract Documents in preparation of Tender. Refer to Section 00 41 43 – Tender Form, Subsection 3.9 for a complete list of Contract Documents.

5. TENDERERS TO INVESTIGATE	.1	Tenderers will be deemed to have familiarized themselves with existing site and working conditions and all other conditions, which may affect performance of the Contract. No plea of ignorance of such conditions as a result of failure to make all necessary examinations will be accepted as a basis for any claims for extra compensation or an extension of time.
6. CLARIFICATION AND ADDENDA	.1	Notify Engineer not less than two (2) working days before Tender Closing of omissions, errors or ambiguities found in Contract Documents. If Engineer considers that correction, explanation or interpretation is necessary, a written addendum will be issued. All addenda will form part of Contract Documents.
	.2	Confirm in the Tender Form that all addenda have been received.
	.3	Direct enquires to Aaron Ballie P.Eng (email:aaronb@cbcl.ca; ph:902-492-6750).
7. PREPARATION OF TENDER	.1	Complete Tender Form provided with Project Documents in ink. Tender all items and fill in all blanks. Have corrections initialed by person signing Tender.
8. TAXES	.1	Include all taxes except Harmonized Sales Tax in tender unit prices.
9. TENDER SECURITY	.1	Provide Tender Security in amount of ten percent (10%) of the Total Amount Payable with Tender in the form of a Certified Cheque payable to the Owner, or a Bid Bond on CCDC Form 220.
10. CONTRACT SECURITY	.1	Refer to Section 00 72 45 and Section 00 73 00 for form and amount of Contract Security.
11. INSURANCE	.1	Refer to Section 00 72 45, GENERAL CONDITIONS, subsection GC11.1 - INSURANCE, for insurance required.
12. AGREEMENT	.1	Form of Agreement is attached for information purposes only.

13. RETURN OF TENDER SECURITY	.1	Tender Security will be returned to: .1 All except the three (3) lowest acceptable Tenderers within seven (7) days of Tender Opening. .2 Two (2) remaining unsuccessful Tenderers within twenty-one (21) days of date of Award. .3 Successful Tenderer following receipt by Owner of executed Agreement, specified Contract Security, and Insurance documents.
14. AMENDMENT OR WITHDRAWAL OF TENDER	.1	Tenders may be amended or withdrawn by post or facsimile prior to date and time of closing.
	.2	Amendment of individual unit prices is the only acceptable price amendment. Amendments shall not disclose either original or revised total price.
	.3	Head amendment or withdrawal as follows: "[Amendment]/[Withdrawal] of Tender for Municipality of Cumberland, Parrsboro Wastewater System – Collection System, Contract No. 161039.00”. Sign and seal as required for Tender, and submit at address given for receipt of Tenders prior to time of Tender Closing.
15. INFORMAL OR UN-BALANCED TENDERS	.1	Tenders which in the opinion of the Owner are considered to be informal or unbalanced may be rejected.
16. RIGHT TO ACCEPT OR REJECT ANY TENDER	.1	Owner reserves right to accept or reject any Tender.
17. SAFETY CERTIFICATION	.1	Submit with Tender a copy of Tenderer’s current and valid Letter of Good Standing issued by an organization approved by Workers’ Compensation Board of Nova Scotia.
18. CLEARANCE LETTER FROM WORKERS COMPENSATION BOARD	.1	Submit with Tender, a copy of Tenderer’s current valid clearance letter, issued by Workers’ Compensation Board of Nova Scotia.

19.PRE-TENDER SITE MEETING.1 A non mandatory site meeting will be held on Monday March 20th, 2017 at the Parrsboro Town Hall (4030 Eastern Avenue) at 1:30PM. Questions may be asked and description of the Work may be discussed during this meeting, however no minutes of the meeting will be distributed and modifications made by way of addenda, to tendering requirements or the Contract Documents, shall be binding.

END

1. SALUTATION:

.1 To: Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS
B4H 3Y4

.2 For: Parrsboro Wastewater System – Collection System
Contract No. 161039.00

.3 From: _____

2. TENDERER DECLARES:

.1 That this tender was made without collusion or fraud.

.2 That the proposed work was carefully examined.

.3 That the Tenderer was familiar with local conditions.

.4 That Contract Documents and Addenda No. ___ to ___ inclusive were carefully examined.

.5 That all the above were taken into consideration in preparation of this Tender.

3. TENDERER AGREES:

.1 To enter into a contract to supply all labour, material and equipment and to do all work necessary to construct the Work as described and specified herein for the unit prices stated in Subsection 4 hereunder, Schedule of Quantities and Unit Prices.

.2 That the estimated Contract Price shall be the sum of the products of the tendered unit prices times the estimated quantities in Subsection 4 hereunder.

.3 That this Tender is valid for acceptance for sixty (60) days from the time of Tender Closing.

.4 That measurement and payment for items listed in Subsection 4 hereunder shall be in accordance with corresponding items in Section 01 22 00 Measurement and Payment.

.5 To provide evidence of ability and experience within 7 days of request, including experience in similar work, work currently under contract, senior supervisory staff available for the project,

equipment available for use on the Work, and financial resources. This information will be taken in consideration at the time of Contract Award.

.6 To execute in triplicate the Agreement and forward same together with the specified contract security and insurance documents to the Owner within fourteen (14) days of written notice of award.

.7 That failure to enter into a formal contract and give specified insurance documents and contract security within time required will constitute grounds for forfeiture of certified cheque or enforcement of bid bond.

.8 That if certified cheque is forfeited, Owner will retain difference in money between amount of Tender and amount for which Owner legally contracts with another party to perform the Work and will refund balance, if any, to Tenderer.

.9 That the Contract Documents include:

.1 Standard Specifications for Municipal Services listed in Table of Contents Page Dated January 2016.

.2 Project Documents:

.1 Tender Form

.2 Form of Agreement

.3 General Conditions of the Civil Work Contract

.4 Supplementary Specifications

.5 Drawings

Dwg. No.	Title
-	Cover Sheet
C001	Overall Site Plan
C100	Spring Street STA 0+000 to STA 0+260
C101	Chapel Street STA 0+240 to STA 0+435
C102	Church Street STA 0+000 to STA 0+160
C103	Eastern Avenue STA 0+000 to STA 0+320
C104	Eastern Avenue STA 0+320 to STA 0+600
C105	Jenks Avenue STA 0+000 to STA 0+340
C106	Jenks Avenue STA 0+340 to STA 0+490
C107	Templar Street STA 0+000 to STA 0+190
C108	Moore Street STA 0+000 to STA 0+260
C109	Main Street STA 0+000 to STA 0+200
C110	Main Street STA 0+200 to STA 0+535
C200	Western Ave. STA 0+000 to STA 0+340
C201	Western Ave. STA 0+340 to STA 0+680
C202	Western Ave. STA 0+680 to STA 0+850
C203	Queen Street STA 3+000 to STA 3+340
C204	King Street STA 0+000 to STA 0+280
C205	Maple Court STA 1+000 to STA 1+200
C206	Main Street STA 0+000 to STA 0+330
C207	Trail Alignment STA 0+000 to STA 0+170
C208	Whitehall Road Watermain STA 0+000 to STA

	0+160
C300	Two Islands Road STA 0+000 to STA 0+320
C301	Two Islands Road STA 0+320 to STA 0+660
C302	Two Islands Road STA 0+660 to STA 0+820
C303	Pier Road STA 0+000 to STA 0+320
C304	Pier Road STA 0+320 to STA 0+620
C305	Pier Road STA 0+620 to STA 0+920
C306	Pier Road STA 0+920 to STA 1+090
C307	Skidmore Lane STA 0+000 to STA 0+260
C308	Eddy Street STA 0+000 to STA 0+240
C400	Pump Station 1, 3 & 4 Site Plans
C401	Pump Station 1, 3 & 4 Plan and Sections
C402	Pump Station 2 Site Plan & Section
C403	Miscellaneous Details 1
C404	Miscellaneous Details 2
C405	Miscellaneous Details 3
E100	Pump Station 1,2,3 & 4 Site Plans
E101	Single Line and Electrical Details
E102	Electrical Details

.6 Addenda as issued and as confirmed in subsection 2.4 of this section.

4. SCHEDULE OF QUANTITIES AND UNIT PRICES

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
1.	Removals				
.1	1050mm dia. Manhole	Ea	5		
.2	1200mm dia. Catchbasin	Ea	1		
.3	Moore St. Pump Station	Ea	1		
.4	200mm dia. Sanitary Main	m	9		
.5	600mm Dia. Sanitary Main	m	16		
.6	150mm dia. C.I. Watermain	m	430		
.7	100mm dia. D.I. Watermain	m	100		
.8	Watermain Interconnections (Main (Street)	Ea	3		
2.	Sanitary Sewer System – Gravity Sewers				
.1	100mm dia. PVC DR 28 San. Service Laterals	m	3000		
.2	200mm dia. PVC DR 35	m	5991		
.3	200mm dia. PVC DR 18 – Casing Pipe (Provisional)	m	240		
.4	300mm dia. PVC DR 18 – Casing Pipe(Provisional)	m	9		
.5	450mm dia. PVC DR35	m	59		
.6	600mm dia. PVC DR 35	m	165		
.7	750mm dia. PVC DR 35	m	7		
3.	Sanitary Sewer System – Pressure Sewers				
.1	100mm dia. PVC DR 25 Sanitary Forcemain	m	519		
.2	150mm dia. PVC DR 25 Sanitary Forcemain	m	720		
.3	200mm dia. PVC DR 25 Sanitary Forcemain	m	436		
.4	Bridge Crossing	L.S.	1		
4.	Sanitary Sewer System - Structures				
.1	Sanitary Manholes - 1050mm Diameter	Ea	72		
.2	Sanitary Manholes - 1200mm Diameter	Ea	6		
.3	Sanitary Manholes – 1500mm Diameter	Ea	3		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
.4	Sanitary Manhole – 1800mm Diameter	Ea	1		
.5	Connection to Existing Manholes	Ea	5		
.6	Sanitary Cleanouts	Ea	5		
5.	Submersible PS				
.1	PS#1 2400mm Dia.	L.S.	1		
.2	PS#2 3600mm Dia.	L.S.	1		
.3	PS#3 2400mm Dia.	L.S.	1		
.4	PS#4 2400mm Dia.	L.S.	1		
6.	Storm Sewer System				
.1	300mm dia. PVC DR35	m	25		
.2	375mm dia. PVC DR35	m	30		
.3	450mm dia. Conc. 65-D	m	20		
.4	600mm dia. Conc. 65-D	m	32		
.5	450mm dia. HDPE Culvert (Provisional)	m	200		
.6	Precast Concrete Culvert Headwall (Provisional)	Ea	40		
.7	1200mm dia. Storm Catchbasin	Ea	2		
.8	1500mm dia. Storm Manhole	Ea	1		
.9	Connection to Existing Pipe	Ea	2		
.10	300mm in-line Check Valve	Ea	1		
.11	375mm in-line Check Valve	Ea	1		
7.	Water System				
.1	19mm dia. Copper Water Service Laterals (Provisional)	m	250		
.2	Service Lateral Replacements (Main St.)	m	270		
.3	200mm dia. DI Cl. 52 Watermain	m	120		
.4	Fire Hydrants	Ea	1		
.5	Connection to Existing Watermain				
	.1 Jenks Ave.	Ea	1		
	.2 Smith St.	Ea	1		
	.3 Main St. – North	Ea	1		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
	.4 Main St. – South	Ea	1		
	.5 Whitehall Road	Ea	2		
	.6 Relocate Existing Watermain (Provisional)	Ea	2		
8.	Environmental Protection				
	.1 Sediment Control Fencing	m	2000		
	.2 Straw/Hay Cover	m^2	2000		
	.3 Check Dams	Ea	10		
9.	150mm Topsoil and Sod	m^2	800		
10.	Topsoil and Hydroseeding	m^2	1000		
11.	Insulation – 50mm Rigid	m^2	1400		
12.	Pipe Bollards	Ea	16		
13.	Electrical				
	.1 PS#1	L.S.	1		
	.2 PS#2	L.S.	1		
	.3 PS#3	L.S.	1		
	.4 PS#4	L.S.	1		
14.	Control Panel Allowance	L.S.	1	$100,000	$100,000
15.	Submersible Pumping Equipment Allowance	L.S.	1	$80,000	$80,000
16.	Nova Scotia Power Allowance	L.S.	1	$10,000	$10,000

SUBTOTAL $_____

TENDER SUMMARY

Estimated Contract Price **$**_____

Add HST (15% of the Estimated Contract Price) $_____

TOTAL AMOUNT PAYABLE **$**_____

TENDERER'S HST REGISTRATION NO. _____

5. COMPLETION TIME

.1 Tenderer agrees to complete the Work within _____ weeks from date of award of Contract.

6. SIGNATURE *

DATED THIS _____ DAY OF_____ , 201___.

[Seal]

_____
Name of Firm Tendering

_____
Signature of Signing Officer

_____ _____
Witness Name and Title (Printed)

_____ _____
Witness Signature of Signing Officer

_____ _____
Name and Title (Printed)

_____
Company Address

_____
Telephone No.

_____
Fax No.

*NOTE: Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.

END

This Agreement made on the _____ day of _____ in the year_____.

BY AND BETWEEN

Municipality of Cumberland

hereinafter called the "Owner"

and

hereinafter called the "Contractor"

The Owner and the Contractor agree as follows:

ARTICLE A1 - THE WORK

The Contractor shall:

.1 Perform the Work required by the Contract Documents for

Parrsboro Wastewater System – Collection System

Contract No. 161039.00

located at Town of Parrsboro, N.S. for which the Agreement has been signed by the parties, and for which

CBCL Limited is acting as and is hereinafter called the “Engineer”,

and

.2 do and fulfill everything indicated by this Agreement, and

.3 commence the Work by the _____ day of _____in the year 201__ and attain Substantial Performance of the work as certified by the Engineer by the _____ day of _____ in the year 201__, but in no case later than_____.

ARTICLE A2 – AGREEMENTS AND AMENDMENTS

The Contract supersedes all prior negotiations, representations or agreements, either written or oral, relating in any manner to the work, including the bidding documents that are not expressly listed in Article 3 of the Agreement.

ARTICLE A3 - CONTRACT DOCUMENTS

The following are the Contract Documents referred to in Article A1 of the Agreement – THE WORK:

.1 STANDARD SPECIFICATIONS FOR MUNICIPAL SERVICES.
Table of Contents Dated January 2016.

.2 Project Documents:
- .1 Tender Form
- .2 Form of Agreement
- .3 General Conditions of the Civil Work Contract
- .4 Supplementary Specifications
- .5 Drawings

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-	Cover Sheet
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C404	Miscellaneous Details 2

C405 Miscellaneous Details 3
E100 Pump Station 1,2,3 & 4 Site Plans
E101 Single Line and Electrical Details
E102 Electrical Details

.6 Addenda _____ through _____.

ARTICLE A4 - CONTRACT PRICE

.1 The estimated Contract Price is the sum of the products of the estimated quantities multiplied by the appropriate Unit Price in the Tender Form excluding the amount of HST. The estimated Contract Price is:

_____

_____/100 dollars $_____

.2 All amounts are in Canadian funds. Unit Prices exclude HST and Total Amount Payable includes HST.

.3 These amounts shall be subject to adjustments as provided in the Contract Documents.

.4 The final Contract Price will be the sum of the products of the actual final quantities that are incorporated in, or made necessary by the Work, as confirmed by count and measurement, multiplied by the appropriate Unit Prices from the Tender Form together with any adjustments that are made in accordance with the provisions of the Contract Documents plus the amount of HST.

ARTICLE A5 - PAYMENT

.1 The Owner shall pay the Contractor in Canadian funds for the performance of the Contract.

.2 The Owner shall make monthly payments on account to the Contractor for the Work performed, as certified by the Engineer, subject to a 10% holdback.

.3 The amount of the monthly payments shall be calculated as follows:
- .1 The quantity for each pay item on which actual work has been performed shall be measured.
- .2 For each Unit Price item this quantity shall be multiplied by the applicable Unit Price as provided in the Tender Form.
- .3 For each lump sum item, multiply the percent complete by the value of the lump sum item.
- .4 The total value of work completed for the payment period shall be calculated by adding the total of the products for all pay items from subsection 5.3.2 and 5.3.3 of this section.
- .5 The amount of the monthly payment shall be determined by deducting the 10% holdback and the total of all previous payments from the total value of such completed work as determined under subsection 5.3.4 of this section.

.6 To the amount calculated above, the Harmonized Tax will be added.

.4 The last day of the payment period shall be the last day of the month.

.5 Upon Substantial Performance of the Work as certified by the Engineer the Owner shall pay to the Contractor the holdback monies then due in accordance with the provisions of Section 00 72 45 - General Conditions, subsection GC5.8 – PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK.

.6 Upon the issuance of the final certificate for payment, Work as certified by the Engineer the Owner shall pay to the Contractor the balance of monies then due in accordance with the provision of Section 00 72 45 - General Conditions, subsection GC5.10 – FINAL PAYMENT.

.7 In the event of loss or damage occurring where payment becomes due under the property and boiler insurance policies, payment shall be made to the Contractor in accordance with the provisions of Section 00 72 45 - General Conditions, subsection GC11.1 - INSURANCE.

.8 If the Owner fails to make payments to the Contractor as they become due under the terms of the Contract, interest shall be payable as follows:
.1 The annual interest rate applicable to the contract is 2% compounded semi-annually.
.2 Interest shall be calculated on the overdue balance from the due date.

ARTICLE A6 - RECEIPT OF AND ADDRESSES FOR NOTICES

.1 Communications in writing between the parties or between them and the Engineer shall be considered to have been received by the addressee on the date of delivery if delivered by hand to the individual, or to a member of the firm, or to an officer of the corporation for whom they are intended, or if sent by post or by facsimile, to have been delivered within five (5) working days of the date of the mailing, dispatch or of delivery to the company when addressed as follows:

.1 The Owner at 1395 Blair Lake Road, Upper Nappan, NS, B4H 3Y4

.2 The Contractor at _____

.3 The Engineer at 1489 Hollis Street, Halifax, NS, B3J 2R7

ARTICLE A7 - QUANTITIES AND MEASUREMENT

.1 The quantities shown in Section 00 41 43 Tender Form - Schedule of Quantities and Unit Prices are estimated.

.2 Measurement for the actual quantities used to determine payments and Contract Price shall be in accordance with Section 01 22 00 - Measurement and Payment.

ARTICLE A8 - SUCCESSION

The aforesaid Contract Documents are to be read into and form part of the Agreement and the whole shall constitute the Contract between the parties and subject to law and the provisions of the Contract Documents shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors and assigns.

ARTICLE A9 - RIGHTS AND REMEDIES

No action or failure to act by the Owner, Engineer, or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

ARTICLE A10 - TIME

Time shall be construed as being of the essence of the Contract.

In witness whereof the parties hereto have executed this Agreement and by the hands of their duly authorized representatives.

SIGNED AND DELIVERED
In the presence of:

OWNER

Municipality of Cumberland
Name of Owner

WITNESS

Signature

Name and Title of Person Signing

Signature

Name and Title of Person Signing

Signature

Name and Title of Person Signing

CONTRACTOR

Name of Contractor

WITNESS

Signature

Name and Title of Person Signing

Signature

Name and Title of Person Signing

Signature

Name and Title of Person Signing

N.B. Where legal jurisdiction, local practice or Owner or Contractor requirements calls for (a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or (b) the affixing of a corporate seal, this Agreement should be properly sealed.

END

THESE SUPPLEMENTARY GENERAL CONDITIONS AMEND THE DEFINITIONS AND GENERAL CONDITIONS

DEFINITIONS

1. Page 2, after definitions for Project, add new definitions for Project Documents as follows:

   Project Documents
   Project Documents are those documents prepared to supplement the Standard Specifications for the Work on a specific Project. Where applicable, they consist of the Information for Tenderers, Tender Form, Form of Agreement, Supplementary Specifications, drawings and addenda.

2. Page 3, after definitions for Specifications, add new definitions for Standard Specification as follows:

   Standard Specification
   The Standard Specifications consist of Definitions, General Conditions, Supplementary General Conditions, Measurement and Payment, General Requirements, other Technical Specifications and standard details developed by the Nova Scotia Road Builders Association and the Consulting Engineers of Nova Scotia Joint Committee on Contract Documents and published with the title of Standard Specifications for Municipal Services.

3. Page 3, after definitions for Supplemental Instruction, add new definitions for Supplemental Specifications as follows:

   Supplementary Specifications
   Supplementary Specifications are the specifications for a specific project which amend or add to the Standard Specifications.

4. Where the term “Consultant” is used throughout the General Conditions, revise to read “Engineer”.

5. Page 6, delete Definition 7 and replace with the following new definition:

   “7. The Contract Price shall be the sum of the products of the actual final quantities that are incorporated in, or made necessary by the Work, as confirmed by count and measurement, multiplied by the appropriate Unit Prices from the Tender Form together with any adjustments that are made in accordance with the provisions of the Contract Documents plus the amount of Harmonized Sales Tax.”

SECTION 00 72 45 - GENERAL CONDITIONS OF CONTRACT

1. GC 2.4 – DEFECTIVE WORK

Page 11, clause 2.4.3, add the following sentence at the end of the clause:

"If the Engineer determination is not accepted by either party, then the matter shall be settled in accordance with the requirements of Part 8 of the General Conditions – DISPUTE RESOLUTION."

2. GC 3.7 – LAYOUT OF THE WORK

Page 13, delete clause 3.7.1 in its entirety and replace with the following:

"3.7.1 The Contractor shall have all reference points established on site by a licensed surveyor, at the place of the Work, at no additional cost to the Owner."

3. GC 3.11 – SHOP DRAWINGS

Page 14, clause 3.11.4, delete second sentence and replace to read:

"Contractor shall prepare and jointly review with Engineer, a schedule of dates for submission of shop drawings."

4. GC 5.4 – BASIS OF PAYMENT FOR COST PLUS WORK

Page 16, after clause 5.4.2, add the following:

"5.4.3 The percentage fee as stated in clause 5.4.1 shall be ten percent (10%) of the cost plus work, but shall not be applied to the cost of construction equipment when such cost is based on rates which already include overhead and profit."

5. GC 5.6 – PROGRESS PAYMENT

Page 18, in clause 5.6.1, line 1, change "5 working days" to read "10 calendar days" and in line 2, change "GC5.2" to read "GC 5.5".

Page 18, delete clause 5.6.2 in its entirety and replace with the following:

"5.6.2 The Owner shall make payment to the Contractor on account as provided in Article A-5 of the Agreement – PAYMENT on or before twenty (20) calendar days after the later of:
.1 receipt by the Engineer of the application for payment; or
.2 the last day of the monthly payment period covered by the application for payment."

Page 18, after clause 5.6.3, add the following additional clause:

"5.6.4 The Contractor shall agree interim quantities with the Engineer for the purposes of progress payment claims, prior to submission of progress payment application.

"5.6.5 The Contractor shall pay promptly any and all accounts for labour, services and materials used for the purpose of the fulfillment of this Contract as and when such accounts become due and payable and shall furnish the Engineer with proof of payment of such accounts in such form and as often as the Engineer may request."

6. GC 5.7 – SUBSTANTIAL PERFORMANCE OF THE WORK

Page 18, after clause 5.7.4, add the following additional clause:

"5.7.5 Fifteen (15) days before the Contractor submits the application for Substantial Performance of the Work, all Operations and Maintenance Manual materials shall be submitted to the Engineer in accordance with the Contract Documents. The Certificate of Substantial Performance will not be issued until the Engineer received the required documents."

7. GC 5.8 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

Page 18, clause 5.8.1.2, first line change "sworn or affirmed statement" to read "Statutory Declaration on CCDC Form 9A, latest edition"

Page 18, after clause 5.8.1.2, add the following:

"5.8.1.3 Submit a clearance letter from the Workers' Compensation Board.

5.8.1.4 All such documents shall be dated not earlier than the expiry of the lien period."

Page 18, clause 5.8.2, first line, change "sworn or affirmed statement" to read "Statutory Declaration on CCDC Form 9A, latest edition"

8. GC 5.10 – FINAL PAYMENT

Page 19, delete clause 5.10.1 in its entirety and replace with the following:

"5.10.1 When the Contractor considers that the Work is completed, the Contractor shall submit an application for final payment. The Contractor's application for final payment is considered to be valid when:

.1 Work has been completed in compliance with the Contract Documents and the Engineer is satisfied that all the requirements of the Contract have been fulfilled by the

Contractor.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational and written reports as outlined in the Contract Documents have been provided to the Engineer.

.4 Certificates required by utility companies, manufacturer's representative and inspectors have been submitted.

.5 Spare parts, maintenance materials, warranties and bonds have been provided.

5.10.2 If Work is deemed incomplete by the Engineer, complete outstanding items and request re-inspection.

5.10.3 If, in the opinion of the Engineer, it is not expedient to correct defective work or work is not performed in accordance with the requirements of the Contract, the Owner may deduct from the Contract Price the difference in value between work performed and that called for by the Contract Documents, the amount of which shall be determined by the Engineer."

Page 19, renumber existing clauses 5.10.2, 5.10.3 and 5.10.4 to 5.10.4, 5.10.5, and 5.10.6 respectively. In renumbered clause 5.10.6, change "5 working days" to read "20 calendar days".

9. GC 6.2 – CHANGE ORDER

Page 20, add new clause 6.2.4 as follows:

"6.2.4 If the method of adjustment of the Contract Price presented by the Contractor is a lump sum or a unit price quotation as indicated in 6.2.2.2, the mark-up on changes shall be as follow:

.1 Work performed by Contractor's own forces: cost plus ten percent (10%) overhead plus ten percent (10%) fee.

.2 Work performed by Subcontractor's forces: cost plus ten percent (10%) overhead plus five percent (5%) fee.

10. GC 6.3 – CHANGE DIRECTIVE

Page 21, in clause 6.3.8, add the following sentence at the end of the paragraph:

"If such determination by the Engineer is not accepted by either party, then the decision shall be made in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION."

11. GC 6.5 – DELAYS

Page 21, clause 6.5.2, delete last sentence of paragraph and replace with the following sentence:

"The Contractor will not be reimbursed by the Owner for costs incurred by the Contractor as a result of such delay."

12. GC 9.5 – CONSTRUCTION SAFETY

Page 22, after GC 9.5.1, add the following:

"9.5.2 W.H.M.I.S. – Workplace Hazardous Materials Information Systems & Hazardous Products Act – Government of Canada Regulations under the Hazardous Products Act and the regulation regarding the handling and storage of hazardous materials must be complied with (reference: Regulation 88-221). These regulations stipulate that employees must be trained in the proper handling of workplace hazardous material."

13. GC 10.1 – TAXES AND DUTIES

Page 28, after clause 10.1.2, add the following:

"10.1.3 The Contractor shall indicate on each application for payment, as a separate amount, the appropriate Harmonized Sales Tax that the Owner is legally obliged to pay. This amount will be paid to the Contractor in addition to the amount certified for payment under the Contract."

14. GC 10.2 – LAWS, NOTICES, PERMITS AND FEES

Page 28, delete paragraph 10.2.2 and replace with the following:

"10.2.2 The Contractor shall obtain the permits, including (if required) the permit for Breaking of Soil of Highways from the Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR); licenses; letters of approval and certificates and pay the fees required for the performance of the Work which are in force at the date of tender closing, but this shall not include the obtaining of permanent easements or rights-of-way."

Page 28, in paragraph 10.2.3, add new sentences to end of paragraph as follows:

"Various jurisdictions have requirements for posting non-refundable fees before excavations are carried out within public rights-of-way. The Contractor is responsible for the determination of the requirement for each specific project and for any required deposits."

15. GC 11.2 - CONTRACT SECURITY

Page 31, delete GC 11.2.1 in its entirety and replace with the following:

"11.2.1 The Contractor shall, prior to commencement of the Work, provide to the Owner a Performance Bond and a Labour and Materials Bond, each in the amount of 50% of the Total Amount Payable or an Irrevocable Letter of Credit in the amount of 20% of the Total Amount Payable. The Irrevocable Letter of Credit shall be issued by a certified financial institution for a period of no less than twelve (12) months after the issue of Substantial Performance Certificate. Include the cost of providing the Irrevocable Letter of Credit in Contract Price. Should it become apparent that the final cost of the project will exceed the Total Amount Payable by more than 10%, the Contractor shall arrange to have his bonds or Irrevocable Letter of Credit reissued, based on the projected final cost."

Page 31, add new clause GC 11.2.3 as follows:

"11.2.3 The Contract Security will be retained until the expiration of the Warranty Period."

16. GC 12.3 – WARRANTY

Page 22, add new clause GC 12.3.7 as follows:

"12.3.7 All work of repair or replacement carried out during the Warranty Period shall be maintained for a period of one (1) year from the date of the Engineer's acceptance of the work of repair or replacement notwithstanding that the Warranty Period expires before the expiration of the said year. This clause shall not apply to normal operation maintenance, which shall be carried out by the Owner."

17. Add new GC as follows:

GC 13 - EASEMENTS

.1 The acquisition or obtaining of easements in respect of the lands comprising the Site will be effected by the Owner.

.2 If the Contractor deems it advisable to acquire the right or rights to use, enjoy or occupy any additional or adjacent land or lands in order to facilitate the execution of the Works, the Contractor shall obtain such right or rights at own expense and shall, at all times, indemnify and save harmless the Authority from any and all claims arising from the acquisition of such right or rights or the use, enjoyment or occupancy of such lands or land.

END

SUPPLEMENTARY SPECIFICATIONS

INTENT OF THE SUPPLEMENTARY SPECIFICATIONS

.1 The Work of this Contract is to be constructed in accordance with the Standard Specifications for Municipal Services (2016 Revision) as developed and published by the Nova Scotia Road Builders Association - Consulting Engineers of Nova Scotia and the Joint Committee on Contract Documents, except as modified herein.

.2 These Supplementary Specifications modify the specification sections to which they refer.

.3 The Supplementary Specifications take precedence over the Specification to which they refer.

SECTION 00 21 00 – INFORMATION TO TENDERERS

Delete Section 00 21 00 in its entirety and replace with new section attached.

SECTION 00 41 43 – TENDER FORM

Delete Section 00 41 43 in its entirety and replace with new section attached.

SECTION 00 53 43 – FORM OF AGREEMENT

Delete Section 00 53 43 in its entirety and replace with new section attached.

SECTION 00 73 00 – SUPPLEMENTARY GENERAL CONDITIONS

Delete Section 00 73 00 in its entirety and replace with new section attached.

SECTION 01 10 00 - GENERAL REQUIREMENTS

Page 1, delete subsection 2 and replace with the following:

2. SUMMARY OF WORK .1 The project is located on several streets in Parrsboro, Nova Scotia. The Work consists of the supply and installation of new sanitary system complete with new sanitary main, forcemain, sanitary manholes, submersible pumping stations, connections to the existing system, reinstatement of roadway surface and underlying gravels, reinstatement of concrete sidewalks and the construction and maintenance of environmental protection including sediment control fences.

Page 1, delete subsection 4 and replace with the following:

4. SETTING OUT THE WORK

.1 Set out the Work. Before the work of the Contract starts the Engineer will once only provide sufficient reference points to identify the site on the ground and maintain these, or re-establish them as required by a licenced surveyor as indicated in Section 00 73 00, clause 3.7.1, during the Contract period. Reference points to identify the site on the ground are provided on Project Drawings.

Page 2, delete subsection 7.1 and replace with the following:

7.1 SHOP DRAWINGS

.1 Submit shop detail or working drawings and manufacturer’s data for all items requiring fabrication, on or off the Site, and for all proprietary equipment to the Engineer for review before any such items or equipment are incorporated into the Works. This review of Shop Drawings by Engineer is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that Engineer approves the detailed design inherent in the Shop Drawings, responsibility for which remains with the Contractor submitting them, and such review shall not relieve the Contractor of responsibility for errors or omissions in Shop Drawings or of responsibility for meeting all requirements of the Construction and Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of the work of all sub-trades.

.2 Submit electronic copies of all relevant shop drawings to the Engineer in PDF format. Where it is not practical to provide electronic copies and where approved by the Engineer, submit three (3) paper copies of shop drawings.

.3 Submit shop drawings with such promptness as not to cause delay in this work, or of the works of any Sub-Contractors.

.4 The information submitted shall clearly show the dimensions, materials or construction, performance, finish, service and installation requirements and other characteristics in sufficient detail to permit the Engineer to evaluate the suitability of the articles for the use intended.

.5 Make corrections required by the Engineer as noted, and resubmit corrected copies to the Engineer for review before fabrication.

.6 The Engineer will mark comments on one (1) copy of each drawing or document submitted and will return this as an electronic copy for the Contractor's purposes.

.7 The Engineer will not review shop drawings and other material involving a large amount of work in those instances where it is evident that the Contractor has not used all the information contained in, or where such details are obviously not consistent with the Contract Documents.

.8 Provide the section number of the specification with each submitted shop drawing for the purpose of identification.

Page 3, add new subsection 8.3 as follows:

.3 Record Drawings:

.1 After award of Contract, Engineer will provide a three hard copies and one electronic Autocad file for purpose of maintaining record drawings. Accurately record deviations from Contract Documents caused by site conditions and changes ordered by Engineer.

.2 Identify drawings as "Project Record Copy". Maintain in new condition and make available for inspection on site by Engineer.

.3 On completion of Work and prior to final inspection, submit record documents to Engineer.

Page 5, add new subsection 12.6 as follows:

.6 Maintain one way traffic flow to be at all times.

Page 7, after subsection 16, add new subsections as follows:

17. PHOTOGRAPHS

.1 Prior to commencement of the Works, the Engineer may arrange for photographs to be taken of the site and those properties adjacent to the site.

.2 Accompany the Engineer during the taking of photographs to make any comments on the conditions of the site or adjacent properties.

.3 Engineer will retain photographs, together with a written report, on the condition of existing roads, sidewalks, trees, lawns, and adjacent properties as determined by mutual agreement as a record of existing conditions prior to the start of the Work.

18. UTILITIES

.1 Do not operate valves, electrical and telephone controls on existing utility systems.

.2 Apply to the utility having jurisdiction for permission to operate such systems if it becomes necessary, and only operate such system in accordance with and in the presence of a representative of the utility company affected.

.3 Include an amount in the contract price to cover the cost of having a utility company representative present when the Work passes under or in close proximity to underground cables, structures or utility poles.

.4 Provide a letter from the utility affected stating that any services damaged during construction have been repaired to the utility company's approval.

SECTION 01 22 00 – MEASUREMENT AND PAYMENT

Delete Section 01 22 00 in its entirety and replace with new Section, attached.

SECTION 01 57 00 - ENVIRONMENTAL PROTECTION

Page 1, add new subsections 1 and 2 as follows, and renumber subsequent subsections:

1. WORK INCLUDED

.1 This section specifies requirements for providing temporary erosion and sedimentation control measures, if required or directed.

2. RELATED WORK

.1 Earthwork: Section 31 20 00

Page 3, add new subsection 8.4 as follows:

.4 When required, erosion and sediment control plans to be submitted for approval of Nova Scotia Environment (NSE) and the Owner prior to start of construction and should be reviewed at the project pre-construction meeting.

SECTION 31 20 00 - EARTHWORK

Page 3, add new subsections 1.6 and 1.7 as follows:

1.6 EXISTING STRUCTURES AND UNDERGROUND SERVICES

.1 Furnish temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers, power lines and other existing site items affected by the Works. Notify Engineer before altering or supporting an existing structure.

.2 Restore, upon completion of the Work, structures that have been disturbed.

.3 Proceed with caution in excavation and preparation of trenches so exact location of all buried pipes and services and underground structures may be determined and be responsible for repair of pipes, services, and structures when broken or otherwise damaged.

.4 During progress of the Works, do not unreasonably interfere with flow of sewage or water in any existing sewer or drain. Do not jeopardize the public health in any way. Wherever sanitary sewage is pumped or diverted, it shall be carried entirely in closed pipes. Temporary diversion of sanitary sewage through open channel shall not be permitted.

.5 Whenever it is necessary to explore and excavate to determine the location of existing underground utility structures, make such examination and excavation at no additional cost to the Contract.

1.7 GEOTECH REPORT

.1 A geotechnical investigation has been carried out at the Site. Report for Project #034-207, dated October 26, 2016 by Conquest Engineering is available for viewing upon request to the Engineer. The Engineer can not be held liable for its contents and any interpretation or extrapolation of its contents is at the sole discretion of the Contractor.

Page 3, delete subsection 2.1.1 and replace with the following:

.1 Selected Backfill: common material from site excavation, free from stumps, trees, roots, sod, organics, rocks, boulders, masonry and any other deleterious materials. Material to be well graded having a maximum particle size not exceeding 150mm

with 40% to 60% of the material retained on 75mm sieve.

Page 6, delete subsection 2.1.5 and replace with the following:

.5 Gravels: Crushed and screened rock. Material shall consist of hard and durable stone particles meeting the physical requirements of Division 3, Section 2 of the Nova Scotia Transportation and Public Works Standard Specification for Highway Construction and Maintenance. Gradation shall be dense, well graded and as follows:

Page 6, delete subsection 2.1.8 and replace with the following:

.8 Pipe bedding material: type 1 gravel, as specified.

Page 7, add new subsection 3.1.15 as follows:

.15 Leave hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, manhole covers and other utility controls unobstructed and accessible at all times.

Page 7, delete subsection 3.4 in its entirety. Blasting will not be permitted. Remove rock, if encountered, by mechanical means.

Page 9, delete subsection 3.7.7.3 and replace as follows:

.3 Pipe bedding material to 98% standard Proctor density.

Page 11, add new subsection 3.11.3 and 3.11.4 as follows:

.3 Proof roll subgrade in presence of Geotechnical Engineer to determine if the surge rock is required under the sub-base gravels. Over excavate any soft spots and backfill with compacted approved granular fill. Place granular sub-base after subgrade is inspected and approved by Engineer.

.4 The Owner will be responsible for engaging the services of a qualified geotechnical engineer, registered in Nova Scotia to carry out compaction inspection and testing.

.1 Tests will be conducted every 50 feet left, right and centre on the subgrade base and sub-base material.

.2 They will provide both the Contractor and the Engineer one (1) copy of Test Reports each.

.3 Contractor will be responsible to coordinate testing with the Geotechnical Engineer.

Page 11, add new subsections 3.12 and 3.13 as follows:

3.12 DISPOSAL OF SURPLUS EXCAVATED MATERIAL	.1	Dispose of surplus excavated material as directed by the Engineer to disposal sites approved by the Municipality of Cumberland.
3.13 RESTORATION	.1	Reinstate disturbed areas to condition, elevation and thickness equal to or better than that which existed before excavation, as specified in Section 32 98 00.

SECTION 32 98 00 - REINSTATEMENT

Page 1, delete subsection 2.1.1 and replace with the following:

2.1 MATERIALS	.1	Gravel: Type indicated as specified in Section 31 20 00.

Page 2, delete subsection 3.1.1 and replace with the following:

3.1 GENERAL	.1	Reinstate all disturbed surfaces using existing material types to the levels, elevations and dimensions which existed prior to construction and as detailed on the Drawings.

SECTION 33 31 00 – SANITARY SEWERS

Page 2, delete subsection 2.1 and replace with the following:

2.1 GENERAL	.1	Sanitary sewer pipe, services and fittings to be PVC, size and dimensional ratio as shown on the Project Drawings.

SECTION 33 32 14 – SUBMERSIBLE PUMPING STATION

Page 1, delete subsection 1.1 and replace with the following:

1.1 WORK INCLUDED	.1	This section specifies requirements for constructing submersible pumping stations. Work includes the installation of Owner-preselected pumps and control panels for PS1, PS3, PS4 and PS5 complete with the supply and installation of all appurtenances for a complete pump station.

Page 2, delete subsections 2.1 and 2.2 and replace with the following:

2.1 GENERAL

.1 Provide pre-cast concrete sections in accordance with Section 33 39 00.

.2 Pumps and control panels will be pre-selected by the Owner.

Page 5, delete sub-clause 2.7.1 and replace with the following:

.1 Wet well mounted air supply type, complete with remote fan control board for installation in pump control panel, 8m remote panel cable, and for use in Class 1, zone 2 environment, as indicated on the drawings.
.1 Acceptable product: Dexon SMDV2 or approved equal.

Page 5, add sub-clause 2.7.3 as follows:

.3 Vent pipe to be XFR DWV PVC, with socket welded flange and located as shown on the Project Drawings.

Page 6, delete sub-clause 2.8.1 and replace it with the following:

.1 Pipe: all interior station piping to be ductile iron special class 54.

Page 6, delete sub-clause 2.8.4 and replace with the following:

.4 Wall Penetrations: all wall penetrations to have LinkSeal, Pen-Seal, or approved equivalent. Exterior wall pieces to be cement-lined ductile iron with pipe ends as indicated on drawings. Exterior connections to forcemain to be by suitable coupling with joint restraint.

Page 6, to clause 2.8 add the following new sub-clauses:

.6 Check valves:
.1 Ball check valves: flanged ends, non-clog, unobstructed free flow type.
.1 Acceptable Products: Flygt HDL Type 5087 or approved equal.

.7 Plug Valves:
.1 Non-lubricated eccentric plug type, cast iron body to ASTM A126, Class B, with exterior epoxy finish and BUNA-N interior coating; full round port, wrench operated, with 125 lb. flanges.
.1 Acceptable products: Keystone

Ballcentric, or approved equivalent.

.8 Air release valves: pressure type short bodied sewage air release valve complete with backflush attachments designed for use on a wastewater system . Inlet connection to be 50mm NPT, epoxy fusion coated (interior), cast iron body, 316 stainless steel trim.

.1 Acceptable products: Golden Anderson Fig. 929 or approved equivalent.

Page 6, delete clause 2.9 and replace with the following:

2.9 MISCELLANEOUS ITEMS

.1 Baffle: fabricated from stainless steel to ASTM A36.

Page 9, delete sub-clause 2.13.2 and replace with the following:

.2 Level control by mechanical switches and pressure transmitter. Mercury liquid level switches not permitted. Refer to Section 26 90 00 for details.

Page 9, delete clause 2.14 and replace with the following:

2.14 PUMP CONTROL PANEL

.1 The control panel will be preselected by the Owner.

Page 12, add new clause 2.17 as follows as follows:

2.17 PAINTING

.1 Paint products by Glidden/Devoe and Pittsburgh Paint Ltd. (PPG) or approved equivalent.

Page 14, add new sub-clause 3.5.4 as follows:

.4 Remove all construction debris from the wet-well, service enclosure and station site prior to the Owners acceptance.

Page 15, add new clause 3.8 as follows:

3.8 PAINTING

.1 All paint applications and methods to be done in strict accordance with recommendation of the applicable CGSB Standards. Manufacturer’s instructions are subject to the approval of the Engineer.

.2 Do not paint when temperature is below 10°C.

.3 Do not paint name plates.

.4 Remove from surfaces grease, oil, dirt, dust, ridges and other soil and materials that would

adversely affect the adhesion or appearance of finish coatings.

.5 Touch up shop primer or paint with same type as originally used.

.6 Formula for equipment enclosure ductile iron piping coated with manufacturer's asphalt sealer:
- .1 One (1) coat BIN pigmented white shelac sealer.
- .2 Two (2) coats semi-gloss enamel CAN/CGSB-1.59 (medium grey in colour PPG 506-4).

.7 Formula for exterior galvanized and zinc coated ferrous metals, including access hatches:
- .1 One (1) coat galvanized sheet primer CAN/CGSB-1.213 (Devoe 4120, PPG 97-687).
- .2 Two (2) coats semi-gloss enamel CAN/CGSB-1.59 (medium grey in colour PPG 506-4).

SECTION 33 34 00 – PRESSURE SEWERS

Delete Section 33 34 00 in its entirety and replace with new Section 33 34 00, attached.

SECTION 33 40 00 – STORM SEWERS AND CULVERTS

Page 3, add new subsection 2.9 a follows:

2.9 CHECK VALVE .1 Tideflex CM-SL slip-in check valve, sized to fit as indicated on the Project Drawings.

Page 4, add new subsection 3.3 as follows and renumber subsequent subsections:

3.3 VALVE INSTALLATION.1 Install check valve in accordqance with the manufacturer's written instructions.

SECTION 39 00 00 – STANDARD DETAILS

Delete Standard Details as applicable and replace with new details on the Drawings.

Add the following new Sections:

Section 13 34 23 – FRP Enclosure
Section 26 05 00 – Electrical General Requirements
Section 26 05 20 – Wire and Box Connectors (0-1000V)
Section 26 05 21 – Wires and Cables (0-1000V)
Section 26 05 28 – Grounding – Secondary
Section 26 05 29 – Hangers and Supports for Electrical Systems
Section 26 05 31 – Junction and Pull Boxes
Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings
Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings
Section 26 05 44 – Installation of Cables in Trenches and Ducts
Section 26 90 00 - Instrumentation

END

PART 1 - GENERAL

1. Unit prices for all items in the Schedule of Quantities and Unit Prices are full compensation for the work necessary to complete each item in the contract and in combination for all work necessary to complete the Work as a whole.

2. **Include all of the following as required where individual quantities are not provided in the Tender Form: mobilization, demobilization, traffic control, location of in-ground services by external utilities and coordination of work by external utilities (NSPI, Aliant, etc.), environmental protection, protection of existing trees, clearing, grubbing, common excavation, shoring, dewatering, backfilling, bedding, compaction, disposal of surplus materials, protective coatings, thrust blocks, mechanical joint restraints, marker tape, reinstatement of all disturbed surfaces with matching materials and thicknesses, temporary potable water service, testing, pipe cleaning, disinfection, marker stakes, recording as-constructed features, video inspection, and all incidentals.**

3. The unit and lump sum prices for all items in the Form of Tender "Schedule of Quantities and Unit Prices" shall include the cost for furnishing all materials, labour, tools, and equipment necessary to complete the work in accordance with the Contract, the Drawings and Specification, and shall cover all costs of surety, mobilization, permits, assistance to the Engineer and site offices and other general costs. Each item shall include for all necessary supervision, labour, materials, plant and services, security provisions, survey and all operations and allowances customary and necessary to complete each item and the Contract as a whole notwithstanding the fact that not every such necessary operation is mentioned or included specifically for measurement.

4. All measurement shall be along a horizontal plane unless otherwise indicated.

5. The numbers of items described below correspond to the numbers of the items in Section 00 41 43, subsection 4, Schedule of Quantities and Unit Prices.

6. Provisional items shall mean that the unit price as tendered shall be included in the estimated Contract Price and that the Owner reserves the right to delete all or portions of this item from the estimated Contract Price.

PART 2 - ITEMS

1. Removals

.1 1050mm dia. Manhole

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of precast concrete manhole where indicated on the Project Drawings. Turn over the frame and cover to the Owner.

.2 1200mm dia. Catchbasin

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of precast concrete manhole where indicated on the Project Drawings. Turn over the frame and cover to the Owner.

.3 Moore St. Pump Station

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of pump station, chamber, internal piping and all electrical power and installations including conduits, grounding, control panel and utility service.

.4 200mm dia. Sanitary Main

Unit of Measurement: metre (m)

Method of Measurement: along the centreline of pipe through catchbasins and manholes.

This item includes: sealing of abandoned manhole connections as required and the removal and off Site disposal of sanitary sewer and fittings where shown on the Project Drawings.

.5 600mm Dia. Sanitary Main

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: sealing of abandoned manhole connections as required and the removal and off Site disposal of sanitary sewer and fittings where shown on the Project Drawings.

.6 150mm dia. C.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of ductile iron pipe complete with all fittings and incidentals.

.7 100mm dia. D.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of ductile iron pipe complete with all fittings and incidentals.

.8 Watermain Interconnections (Main Street)

Unit of Measurement: Each (Ea)

This item includes: the location, removal and off Site disposal of existing watermain connection including thrust block and all fittings.

2. Sanitary Sewer System – Gravity Sewers

.1 100mm dia. PVC DR 28 San. Service Laterals

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: locating existing service lateral where required; supply and installation of PVC sanitary sewer laterals complete with all fittings and incidentals.

.2 200mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

.3 200mm dia. PVC DR 18 – Casing Pipe (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC casing pipe complete with link seals, gaskets, spacers and all fittings and incidentals.

.4 300mm dia. PVC DR 18 – Casing Pipe (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC casing pipe complete with link seals, gaskets, spacers and all fittings and incidentals.

.5 450mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals

.6 600mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

.7 750mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

3. Sanitary Sewer System – Pressure Sewers

.1 100mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.2 150mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.3 200mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.4 Bridge Crossing

Unit of Measurement: Lump Sum (L.S.)

This item includes: supply and installation of new pre-insulated forcemain and watermain complete with integral heat tracing; removal and replacement of existing wooden decking; reinstatment of timber walkway; removal and relocation of existing watermain including new pre-insultaed pipe and fittings. This item also includes the supply and installation of an air release valve chamber complete with air release valve, piping and fittings.

4. Sanitary Sewer System – Structures

.1 Sanitary Manholes – 1050mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.2 Sanitary Manholes – 1200mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system

.3 Sanitary Manholes – 1500mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.4 Sanitary Manholes – 1800mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.5 Connection to Existing Manholes

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary system connection to existing manhole including re-benching as required and all incidentals where indicated on the Project Drawings.

.6 Sanitary Cleanouts

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary cleanout complete with frame, cover, concrete collar, pipe, gaskets, grade adjustment, conection to sanitary laterals and all incidentals shown on the Project Drawings.

5. Submersible Pumping Stations

Unit of Measurement: Lump Sum (L.S.)

This item includes: supply, installation and commissioning assitance of pumping stations as shown on the Project Drawings for a complete and operational pumping station. Limit of in ground piping included in this item is to within one meter of the station. The supply of the control panels will be paid under the allowance provided in item 14 herein. The

supply of the submersible pumping equipment will be paid under the allowance provided in item 15 herein. This item includes the installation only of Owner-supplied equipment. Electrical installations for the pumping station will be paid under item 13 herein.

6. Storm Sewer System

.1 300mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC storm sewer complete with all fittings and incidentals.

.2 375mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC storm sewer complete with all fittings and incidentals.

.3 450mm dia. Concrete 65-D

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of pre-cast concrete storm sewer pipe complete with all grout and all fittings and incidentals.

.4 600mm dia. Concrete 65-D

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of pre-cast concrete storm sewer pipe complete with all grout and all fittings and incidentals.

.5 450mm dia. HDPE Culvert (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the cenreline of culvert

This item includes: supply and installation of HDPE culvert as directed by the Engineer.

.6 Precast Concrete Culvert Headwall (Provisional)

Unit of Measurement: Each (Ea)

This item includes: supply and installation of precast concrete headwall as directed by the Engineer.

.7 1200mm dia. Storm Catchbasin

Unit of Measurement: Each (Ea)

This item includes: supply and installation of storm catchbasin complete with frame, grate, benching, gaskets, grade adjustment joint sealants and connection to the storm system.

.8 1500mm dia. Storm Manhole

Unit of Measurement: Each (Ea)

This item includes: supply and installation of storm manhole complete with frame, grate, benching, gaskets, grade adjustment joint sealants and connection to the storm system.

.9 Connection to Existing Pipe

Unit of Measurement: Each (Ea)

This item includes: locating existing pipe to connect to, supply and installation of all fittings for a functional connection.

.10 300mm In-Line Check Valve

Unit of Measurement: Each (Ea)

This item includes: supply and installation of in-line check valve complete with all appurtenances.

.11 375mm In-Line Check Valve

Unit of Measurement: Each (Ea)

This item includes: supply and installation of in-line check valve complete with all appurtenances.

7. Water System

.1 19mm dia. Copper Water Service Laterals (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centre of lateral between the main and the residence/dwelling.

This item includes: supply and installation of pipe, insulation as required, polyethylene encasement, connection to the main, anodes, saddle, corporation stop, curb stop, fittings and incidentals for a complete connection to both the main and the residence/dwelling.

.2 Service Lateral Replacements (Main St.)

Unit of Measurement: metre (m)

Method of Measurement: along the centre of lateral from curb stop to corporation stop.

This item includes: supply and installation of lateral pipe complete with all fittings as requried including saddles, corporation stop, curb stop and service box.

.3 200mm dia. DI Cl. 52 Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: supply and installation of ductile iron pipe complete with all fittings and incidentals.

.4 Fire Hydrants

Unit of Measurement: Each (Ea)

This item includes: supply and installation of hydrant complete with lead, hydrant valve, thrust block and connection to the ductile iron watermain.

.5 Connection to Existing Watermain

Unit of Measurement: each (Ea)

This item includes: supply and installation of watermain connection including all pipe, valves, fittings and all appurtenances where indicated on the Project Drawings.

.6 Relocate Existing Watermain (Provisional)

Unit of Measurement: Each (Ea)

This item includes: removal, supply and installation of ductile iron water pipe complete with all fittings and incidentals required for the lowering of existing watermain that conflicts with the proposed path of the sanitary sewer being installed in this Work as directed by the Engineer.

8. Environmental Protection

.1 Sediment Control Fencing

Unit of Measurement: metre (m)

Method of Measurement: along the top of filter fabric through wooden stakes.

This item includes: supply, installation, maintenance, and subsequent removal of fence complete with wooden stakes, fabric and staples.

.2 Straw/Hay Cover

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at grade.

This item includes: supply, placement and maintenance of straw/hay cover.

.3 Check Dams

Unit of Measurement: Each (Ea)

This item includes: excavation ,maintenance and subsequent removal before the completion of the Work.

9. 150mm Topsoil and Sod

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at mean depth.

This item includes: supply and placement of topsoil, lime, fertilizer, stakes and maintenance until turn over to Owner.

10. Topsoil and Hydroseeding

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at mean depth.

This item includes: supply and placement of topsoil, lime, fertilizer,

mulch, erosion control agent, seed and maintenance until turn over to Owner.

.11 Insulation – 50mm Rigid

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area at mean depth.

This item includes: supply and placement of insulation where indicated on the Project Drawings.

12. Pipe Bollards

Unit of Measurement: Each (Ea)

This item includes: supply and installation of pipe bollards where shown on the Project Drawings.

13. Electrical

Unit of Measurement: Lump Sum (L.S.)

This item includes: all electrical and instrumentation work associated with the pumping stations including precast concrete structure, FRP enclosures, grounding, installation of Owner supplied pump control panel and radio antennas, supply and installation of lighting, heating, temperature sensors, floats, level transmitters and magnetic flow transmitters.

14. Control Panel Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs associated with the supply, coordination of delivery and commissioning of the control panels and instrumentation being installed in the submersible pumping stations provided in item 5 herein.

15. Submersible Pumping Equipment Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs associated with the supply, coordination of delivery and commissioning of the submersible pumping equipment being installed in the submersible pumping stations provided in item 5 herein.

16. Nova Scotia Power Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs charged by NSP to provide power service to the pumping station. These costs are to be billed at cost, with no markup. This allowance does not cover permit and application fees.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 General Requirements: Section 01 10 00

.2 Concrete: Section 03 30 00

.3 Electrical: Division 26

.4 Submersible Pumping Station: Section 33 32 14

1.2 REFERENCE STANDARDS

.1 ASTM D256-2010, Standard Test Method for Determining the Izod Pedulum Impact Resistance of Plastics.

.2 ASTM D618-13, Standard Practice for Conditioning Plastics for Testing.

.3 ASTM D638-14, Standard Test Method for Tensile Properties of Plastics.

.4 ASTM D732-2010, Standard Test Method for Shear Strength Plastics by Punch Tool.

.5 ASTM D790-15e2, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.6 ASTM D792-13, Standard Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement.

.7 ASTM D2583-13A, Standard Test Method for Indentation Harness of Rigid Plastics by Means of a Barcol Impressor.

1.3 SUBMITTALS

.1 Submit shop drawings for enclosure in accordance with Section 01 10 00. Drawings shall include all critical dimensions and locations of all accessories that are part of the enclosure.

1.4 CLOSEOUT SUBMITTALS

.1 Submit manufacturer’s Installation Instruction for all components for inclusion in Operation and Maintenance Manuals in accordance with Section 01 10 00.

1.4 CLOSEOUT SUBMITTALS (Cont'd)

.2 Submit manufacturer's latest operation and/or maintenance procedures for inclusion in Operations and Maintenance Manuals in accordance with Section 01 10 00.

.3 Submit manufacturer's warranty.

1.5 STRUCTURAL DESIGN

.1 Anchor enclosure to concrete foundation.

.2 Design enclosure to withstand wind and snow loads for the geographical region.

.3 Design anchorage system to distribute loading equally between designated anchoring points on enclosure.

1.6 WARRANTY

.1 Provide standard 24 month warranty for the Owner's acceptance.

PART 2 - PRODUCTS

2.1 CONSTRUCTION

.1 General construction: provide enclosure with a smooth interor and exterior finish. Walls and roof must be integral with smooth radii for all corners.

.2 Laminate: isophthalic polyester resin with high performance, chopped, commercial grade glass strand fiber reinforcement with a suitable coupling agent.
.1 Minimum glass content: 30%.
.2 Exterior surface: 15mil (minimum) gel coat with U.V. inhibitors, flame inhibitors and a satain finish lightly textured and free from fiber pattern, roughness or other irregularites.
.3 Exterior laminate: 3mm thick (minimum); chemically bonded to the surface gel coat and encapsulating the foam core.
.4 Foam core, insulation value of R-10.
.5 Interior laminate: 3mm thick (minimum); chemically bonded to the interior gel coat and encapsulating the foam core.
.6 Interior surface: 15mil (minimum) gel coat with U.V. inhibitors, flame inhibitors and a textured finish, free from exposed glass and other irregularities.
.7 Laminate properties:

2.1 CONSTRUCTION (Cont'd)

.2 (Cont'd)

.7 (Cont'd)

.1 Tensile strength (ASTM D638): 14,000 psi.

.2 Flexural strength (ASTM D790): 27,000 psi.

.3 Flexural modulus (ASTM D790): 1,000,000 psi.

.4 Shear strength (ASTM D732): 12,000 psi.

.5 Barcol hardness (ASTM D2583): 40.

.6 Density/specific gravity (ASTM D632): 93.6pcf/1.5.

.8 Colour to be grey to match existing enclosures in the Municipality.

.3 The manufacturer must maintain a continuous quality control program and upon request furnish to the Engineer certified test results of the physical properties.

2.2 ACCESSORIES

.1 Door hardware: galvanized or stainless steel.

.2 Embedded metal wear plates in thresholds for top and bottom door latches.

.3 Door gaskets to be a full rubber gasket.

.4 Partition wall to be fully laminated into the interior of the enclosure and suitable for an equipment mounting structure.

2.3 ACCEPTABLE PRODUCT

.1 Dura-Tech, ZCL Composites, RPS Coomposites, Denyg, or approved equivalent.

PART 3 - EXECUTION

3.1 ASSEMBLY

.1 Handle and install enclosure and material in strict accordance with manufacturer's written instructions. Ensure instructions are issued at the time of shop drawing issue and are available on site.

.2 Take necessary field measurements to ensure accurate and proper fitting of work and equipment supplied.

.3 Provide temporary supports, hoists and bracing to prevent overloading of structure during installation.

3.1 ASSEMBLY (Cont'd)

.4 Provide correct type and full number, size and length of stainless steel anchor bolts and other stainless steel connecting bolts as required by manufacturer. Preset anchor bolts in concrete where convenient otherwise use approved chemical anchoring system.

.5 Coordinate location and provide items for embedding into cast-in-place concrete.

3.2 HANDLING

.1 Do not drop or impact enclosure or sections of enclosure.

.2 Use installation lift lug(s) to lift enclosure where applicable. Guide the enclosure with guidelines. Do not use chains or cables around enclosure.

.3 Check capacity of lifting equipment before handling.

END OF SECTION

1 WORK INCLUDED

.1 Provide all labour, tools, and equipment necessary to complete the electrical and instrumentation installations at each station site as indicated on the drawings and as specified herein.

.1 Provide power services to each station as indicated on the Drawings.

.2 Coordinate with local power utility to have a complete and fully functioning system and to include connections to incoming mains of the power utility. Pay all associated fees.

.3 Install Owner-supplied control panels.

.4 Provide and install general electrical equipment as indicated on the drawings.

.5 Provide and install power and control/ instrumentation wiring and conduits for each site as shown on the drawings.

.6 Provide and install instrumentation equipment as indicated on the drawings and specified herein for each station.

.7 Provide and install grounding necessary to satisfy the CEC - Part 1 and the local provincial inspection authority. Provide dedicated grounding system for radio communcation system.

.8 Document, test and calibrate to the satisfaction of the Engineer all electrical and instrumentation equipment as specified herein and on the drawings.

.9 Be responsible for the safe storage on site of all electrical equipment awaiting installation including Owner-supplied equipment.

.10 Protect all installed electrical equipment during construction.

.11 Repair/replace equipment damaged during construction, or otherwise deemed defective or non-compliant with this specification, at no expense to the Owner. These expenses will include all material, labour and other fees.

.12 Obtain any "scope of work" clarification prior to issuing their Tender. Any cost extras due to any misunderstanding/misinterpretation of the scope of Work will not be entertained during the construction phase of the Work.

1 WORK INCLUDED (Cont'd)

.1 (Cont'd)

.13 Some areas will be considered as hazardous locations. Conduct all electrical installations in these areas in accordance with the Canadian Electrical Code for the specified classification. These areas contain hydrogen sulphide (North American Gas Group C, IEC Gas Group IIB) and methane (North American Gas Group D, IEC Gas Group IIA) gases. These areas are also a Category 2 location in accordance with Section 22 of the Canadian Electrical Code and the electrical installation will be completed as per the requirements of a Category 2 location.

.14 Coordinate and schedule with other trades to ensure that the construction proceeds in a timely and efficient manner.

.15 Coordinate with the Owner, control supplier, pump supplier and power authority having jurisdiction for proper set-up of pump controller and equipment at the time of start-up of new pumping equipment.

.16 Installation of Owner-supplied radio antenna at each pump station site.

.17 Core drill chambers for conduit entry. Grout and seal all conduit penetrations.

.18 Supply and install precast concrete pump controller structure and foundation.

2 REFERENCES

.1 CSA C22.1-2015, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations.

.2 CSA C22.3 No.1-2015, Overhead Systems.

.3 CSA C22.3 No. 7-2015, Underground Systems.

.4 CAN3-C235-83(R2010), Preferred Voltage Levels for AC Systems, 0 to 50 000 V.

3 CODES AND STANDARDS

.1 Do complete installation in accordance with CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1, Overhead Systems, except where specified otherwise.

3 CODES AND STANDARDS (Cont'd)

.3 Conform to CAN3 C235, Preferred Voltage Levels for AC Systems, 0 to 50 000V.

.4 Comply with CSA, provincial electrical inspection and power utility bulletin in force at the time of tender submission.

4 PERMITS, FEES AND INSPECTIONS

.1 Submit to the Electrical Inspection Department, Municipal Authority and Supply Authority the necessary number of drawings and specifications, for examination and approval prior to commencement of work. Submit this information within ten (10) working days of the award of Tender and provide the Engineer with written notice at the time this has been submitted.

.2 Provide the Engineer with a copy of the Electrical Inspection Department and Supply Authority Plans Review Report, immediately upon receipt. No shop drawings will be reviewed prior to receipt of the Plans Review Report from the Contractor.

.3 Obtain all necessary permits including an Electrical Wiring Permit for electrical work and Communications Cabling Permit for communications cabling Work from the authority having jurisdiction, prior to commencement of Work. Provide a copy of each permit to the Engineer upon receipt. Display permits properly on the Work site.

.4 Upon specific request, the Engineer will provide, to the Contractor, up to a maximum of three (3) copies of the drawings and specifications required for submittal to the Electrical Inspection Department and Supply Authority. These drawings and specifications will be provided to the Contractor at no cost.

.5 Arrange for all required inspections to be conducted by the authority having jurisdiction. Provide a copy of all inspection reports to the Engineer immediately upon receipt. Notify the Engineer immediately of changes required by the authority having jurisdiction, prior to making changes.

.6 Furnish Certificates of Acceptance from authorities having jurisdiction upon completion of work. Include a copy in the Operation and Maintenance Manual.

.7 Pay all associated fees.

5 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

.1 Submit shop drawings, product data and samples in accordance with Section 01 10 00.

.2 Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or material.

.3 Where applicable, include wiring, single line and schematic diagrams.

.4 Include wiring drawings or diagrams showing interconnection with work of other Sections.

6 OPERATION AND MAINTENANCE DATA

.1 Provide operation and maintenance data for incorporation into operation and maintenance manual in in accordance with Section 01 10 00.

.2 Include in operations and maintenance data:
.1 Details of design elements, construction features, component function and maintenance requirements, to permit effective start-up, operation, maintenance, repair, modification, extension and expansion of any portion or feature of the installation.
.2 Technical data, product data, supplemented by bulletins, component illustrations, exploded views, technical descriptions of items, and parts lists. Advertising or sales literature not acceptable.
.3 Wiring and schematic diagrams and performance curves.
.4 Names and addresses of local suppliers for items included in maintenance manuals.
.5 Copy of reviewed shop drawings.

7 CARE, OPERATION AND START-UP

.1 Instruct operating personnel in the operation, care and maintenance of equipment.

.2 Arrange and pay for services of manufacturer’s factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components.

.3 Except where note otherwise, provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

8 VOLTAGE RATINGS

.1 Operating voltages: to CAN3-C235.

.2 Motors, heating, ventilation, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

9 MATERIALS AND EQUIPMENT

.1 Provide materials and equipment in accordance with Section 01 10 00.

.2 Equipment and material to be CSA certified or certified by an electrical inspection agency accepted by the Electrical Inspection Department having jurisdiction.

.3 Where there is no alternative to supplying equipment which is not CSA certified or certified by an electrical inspection agency accepted by the Electrical Inspection Department having jurisdiction, obtain special approval, in writing, from Electrical Inspection Department.

.4 Factory assemble control panels and component assemblies.

.5 Use stainless steel fasteners throughout for all conduits, cables and equipment. Fasteners include nuts, bolts, screws and washers.

10 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

.1 Coordinate supplier and installer responsibility to achieve a complete and functioning system.

.2 Control wiring is specified in Section 26 05 21.

11 FINISHES

.1 Shop finish metal enclosure surfaces by removal of rust and scale, cleaning, application of rust resistant primer inside and outside, and at least two coats of finish enamel.

.2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

11 FINISHES (Cont'd)

.3 Clean, prime and paint exposed hangers, racks, fastenings to prevent rusting.

12 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows:

.2 Nameplates:
.1 Lamicoid 3 mm thick plastic engraving sheet, black face, white core, mechanically attached unless specified otherwise.

NAMEPLATE SIZES

Size 1	9 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	19 x 90 mm	1 line	9 mm high letters
Size 5	19 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.3 Have wording on nameplates approved by the Engineer prior to manufacture.

.4 Allow for average of twenty-five (25) letters per nameplate.

.5 Identification to be English.

.6 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

.7 Install lamicoid nameplates on, or adjacent to, all various systems' control panels and/or cabinets. Nameplates to reflect individual system's assigned name and where applicable, must also indicate designated name of power source and branch circuit breaker number(s) and voltage(s) and phase.

.8 Provide clearly visible marking on electrical equipment to warn persons of potential electrical shock and arc flash hazards as specified in Section 2 of the Canadian Electrical Code.

.9 Provide terminal boxes, panels and miscellaneous equipment fed from two (2) or more sources with a warning nameplate prominently displayed: "CAUTION - MORE THAN ONE (1) SOURCE VOLTAGE".

12 EQUIPMENT IDENTIFICATION (Cont'd)

.10 Provide terminal boxes, panels and miscellaneous wire ways containing intrinsically safe circuits with a warning nameplate prominently displayed: "INTRINSICALLY SAFE CIRCUIT".

13 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

.3 Colour code: to CSA C22.1.

14 WIRING TERMINATIONS

.1 Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

15 MANUFACTURERS' AND CSA LABELS

.1 Visible and legible after equipment is installed.

16 WARNING SIGNS

.1 Provide warning signs as specified and to meet requirements of Electrical Inspection Department. Include arc flash hazard equipment labels.

.2 Porcelain enamel signs, minimum 180 x 250 mm.

17 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.

.2 If mounting height of equipment is not indicated verify before proceeding with installation.

.3 Install electrical equipment at the following heights unless indicated otherwise.
.1 Panelboards: as required by the code or as indicated.

18 PROTECTION

.1 Protect exposed live equipment during construction for personnel safety.

.2 Shield and mark live parts "LIVE 120 VOLTS", or with appropriate voltage in English.

19 LOAD BALANCE

.1 Measure phase current to panelboards with normal loads operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

.2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.

20 TESTS

.1 Conduct and pay for tests of the following:
.1 Power distribution system including phasing, voltage, grounding and load balancing.
.2 Circuits originating from branch distribution panels.
.3 Lighting and its control.
.4 Motors, heaters, ventilation fans and associated control equipment including sequenced operation of systems where applicable.

.2 Furnish manufacturer’s, certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturers instructions.

.3 Carry out tests in presence of the Engineer. Provide five (5) days notice of such tests.

.4 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

.5 Submit test results for the Engineer’s review and approval.

.6 Insulation Resistance Testing:
.1 Megger circuits, feeders and equipment up to 350 V with 500 V instrument.
.2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
.3 Check resistance to ground before energizing.

20 TESTS (Cont'd)

.7 Provide a typewritten tabular report indicating the normal field measured load current for all motors indicating the motor circuit overcurrent protection settings. Indicate the motor nameplate current.

21 CO-ORDINATION OF PROTECTIVE DEVICES

.1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings. Obtain motor data from the equipment supplier.

22 CLEANING

.1 Do final cleaning in accordance with Section 01 10 00.

.2 Clean the interior of all cabinets and control equipment.

.3 At time of final cleaning, clean lighting reflectors, lenses, and other lighting surfaces that have been exposed to construction dust and dirt.

23 QUALITY ASSURANCE

.1 Instructions:

.1 Interferences: electrical drawings are generally of a diagrammatic nature. Plan and coordinate the Work to eliminate interferences with other trades. Provide all necessary raceway offsets, fittings, and boxes, adjust all equipment boxes, adjust all equipment locations and provide all supporting materials required for a planned, coordinated and neat installation. Where interferences occur, the Engineer's authorized representative will decide which item must be relocated regardless of which was installed first.

.2 Electrical workmanship: provide workmanship of the highest quality. Sub-standard Work will not be accepted. Use only persons skilled in the trades involved.

.3 Electrical materials: provide all materials used in this work, unless particularly specified otherwise, that are new, free from flaws, or imperfections.

.4 Sleeves and inserts: furnish and locate all sleeves and inserts required for this work in accordance with drawings.

.2 Applicable standards:

23 QUALITY ASSURANCE (Cont'd)

.2 (Cont'd)

.1 Electrical Work to conform with the requirements and recommendations of the latest edition of the Canadian Electrical Code and all local codes and ordinances. In conflicts between codes, the more stringent requirements will govern.

.2 In no instance will the standard established by this specification be reduced by any of the codes or standards referred to in this specification.

.3 Standards: the specifications and standards of the following organizations are by reference made as part of these specifications and all electrical Work, unless otherwise indicated, must comply with their requirements and recommendations wherever applicable.

.4 Canadian Standard Association (CSA).

.5 Institute of Electrical and Electronics Engineers (I.E.E.E.).

.6 Instrument Society of America (I.S.A.).

.7 American Society for Testing Materials (A.S.T.M.).

.8 Insulated Power Cable Consultants Association (I.P.C.E.A.).

.9 Electrical Equipment Manufacturer's Association of Canada (E.E.M.A.C.).

.10 National Fire Protection Association (N.F.P.A.).

.11 Underwriter's Laboratories of Canada (U.L.C.).

.12 All local and provincial codes and ordinances.

24 RECORD DRAWINGS

.1 Record Drawings:

.1 After award of Contract, Engineer will provide a set of full-sized drawings for purpose of maintaining record drawings. Accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Engineer.

.2 Identify drawings as "Project Record Copy". Maintain in new condition and make available for inspection on site by Engineer.

.3 On completion of Work and prior to final inspection, submit record documents to Engineer.

.4 Refer to Section 01 10 00 for more details.

25 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all debris and waste materials at appropriate disposal/recycling facilities.

25 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.2 Separate and recycle waste materials in accordance with applicable Construction/Demolition Waste Management and Disposal Regulations.

.3 Refer to Section 01 10 00 for additional requirements for disposal and recycling.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 CSA C22.2 No.65-2013, Wire Connectors.

1.2 PRODUCT DATA

.1 Submit product data in accordance with Secton 01 10 00.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Pressure type wire connectors: with current carrying parts of copper sized to fit copper conductors as required.

.2 Fixture type splicing connectors: with current carrying parts of copper sized to fit copper conductors 10 AWG or less.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Remove insulation carefully from ends of conductors and:

.1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation to meet secureness tests in accordance with CSA C22.2 No. 65.

.2 Install fixture type connectors and tighten. Replace insulating cap.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 CSA C22.2 No. 0.3-09(R2014), Test Methods for Electrical Wires and Cables.

1.2 PRODUCT DATA

.1 Submit product data in accordance with Section 01 10 00.

PART 2 - PRODUCTS

2.1 POWER WIRES

.1 Copper conductors: soft drawn, stranded for 10 AWG and larger. Minimum size: 12AWG.

.2 Copper conductors: size as indicated, with 600 V insulation of chemically cross-linked thermosetting polyethylene material rated RW90 - XLPE.

.3 Copper conductors: size as indicated, with 1000V insulation of chemically cross-linked thermosetting polyethylene material rated RWU90 - XLPE.

.4 Colour code wiring in accordance with the Canadian Electrical Code.

2.2 CONTROL WIRES

.1 Digital Circuits: stranded copper, minimum size: 14 AWG with 600 volt chemically cross-linked thermosetting polyethylene material rated RW90.

.2 Analog Circuits: (minimum size): tinned stranded copper, minimum 16 AWG with individually twisted shielded pairs, chemically cross-linked thermosetting polyethylene insulation, overall shield, minimum 300V, overall PVC jacket.

PART 3 - EXECUTION

3.1 INSTALLATION OF BUILDING WIRES AND CONTROL WIRES

.1 Install wiring as follows:
.1 In conduit systems in accordance with Section 26 05 34.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 IEEE 837-2014, Qualifying Permanent Connections Used in Substation Grounding.

1.2 PRODUCT DATA

.1 Submit product data in accordance with Section 01 10 00.

PART 2 - PRODUCTS

2.1 EQUIPMENT

.1 Grounding conductors: bare stranded copper, soft annealed, size as indicated.

.2 Insulated grounding conductors: green, type RW90.

.3 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:
- .1 Grounding and bonding bushings.
- .2 Protective type clamps.
- .3 Bolted type conductor connectors.
- .4 Thermit welded type conductor connectors.
- .5 Bonding jumpers, straps.
- .6 Pressure wire connectors.

.4 Rod electrodes, copper clad steel, 21mm diameter, 3m long.

.5 Clamps for grounding of conductor, size as required to grounding electrodes.

.6 Copper crimp type compression connectors (cable to cable, cable to ground rod).

.7 Copper crimp type compression connectors (long barrel, one or two hole as space permits).

PART 3 - EXECUTION

3.1 INSTALLATION GENERAL

.1 Install complete permanent, continuous, system and circuit, equipment, grounding systems including conductors, connectors, accessories as indicated to conform to requirements of local authority having jurisdiction over installation. Where PVC conduit is used, run ground wire in conduit.

.2 Install connectors in accordance with manufacturer’s instructions.

.3 Protect exposed grounding conductors from mechanical injury.

.4 Use mechanical connectors for grounding connections to equipment provided with lugs.

.5 Soldered joints not permitted.

.6 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.

.7 Make buried connections, and connections to electrodes, using copper welding by thermit process or inspectable copper, crimp type and compression connectors.

.8 Provide an insulated copper bonding conductor in all conduit runs.

3.2 ELECTRODES

.1 Bond separate, multiple electrodes together.

.2 Use copper conductors, size as indicated, for connections to electrodes.

.3 Install grounding triad near the electrical service entrance and connect to electrical grounding system with copper conductor, size as indicated on the drawings.

3.3 SYSTEM AND CIRCUIT GROUNDING

.1 Install system and circuit grounding connections to neutral of secondary 120/208 V system.

3.4 EQUIPMENT GROUNDING

.1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Service equipment, transformers, switchgear, pipe systems, frames of motors, starters, control panels and distribution panels.

3.5 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00.

.2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of the Engineer and local authority having jurisdiction over installation.

.3 Perform tests before energizing electrical system.

.4 Disconnect ground fault protection during tests.

END OF SECTION

PART 2 - PRODUCT

2.1 SUPPORT CHANNELS

.1 Use stainless steel outside, in wet and corrosive areas and in hazardous areas.

2.2 CLAMPS

.1 Use stainless steel p-clamps for conduit and cables.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Secure equipment to concrete with expandable inserts.

.2 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.3 Conduit straps to match conduits in material and finish. Cable straps to be stainless steel.

.4 For surface mounting of two or more conduits and cable, use support channels spaced in accordance with the Canadian Electrical Code (maximum 1.5m spacing).

.5 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs. All materials to be stainless steel.

.6 Provide adequate support for conduits and cables dropped vertically to equipment where there is no wall support.

.7 Do not use wire lashing or perforated strap to support or secure conduits or cables.

.8 Provide fastenings and supports as required for each type of equipment, cables and conduits, and in accordance with manufacturer’s installation recommendations.

3.1 INSTALLATION (Cont'd)

.9 In addition to C.E.C. minimum conduit spacing requirements, all suspended conduit runs containing horizontal or vertical elbows are to have one additional support rod installed not greater than 300 mm and mid point of "all" 90° bends. Maximum spacings between conduit support channels will be dictated by smallest size conduit(s) being supported and/or secured to same.

END OF SECTION

PART 1 - GENERAL

1.1 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data for cabinets in accordance with Section 01 10 00.

PART 2 - PRODUCTS

2.1 JUNCTION AND PULL BOXES

.1 All junction and pull boxes located in non-hazardous areas and outdoors must be rated minimum NEMA 4X stainless steel.

.2 All NEMA 4X junction and pull box external hardware to be stainless steel.

.3 Junction and pull boxes shall be rated for the hazardous classification as noted on the drawings. Hazardous rated junction and pull boxes shall be die-cast copper free aluminum with factory threaded hubs and mounting feet for surface mounting.

.4 Provide terminal blocks (rated minimum 30A, 600V, quantity as required) in junction boxes used to connect the integral cabling from devices (float switches, level sensors, pumps, lights, heaters, etc) located in the wet well.

PART 3 - EXECUTION

3.1 JUNCTION AND PULL BOX INSTALLATION

.1 Install junction and pull boxes in inconspicuous but accessible locations.

.2 Mount junction and pull boxes as noted on the Drawings and as described in the specifications.

.3 Provide all required stainless steel mounting hardware.

.4 Provide DIN rail mounted terminal strips in all junction boxes.

3.2 IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00.

3.2 IDENTIFICATION (Cont'd)

.2 Install size 2 identification labels indicating voltage and phase.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 CSA C22.1-2015, Canadian Electrical Code, Part 1.

1.2 PRODUCT DATA

.1 Submit product data in accordance with Section 01 10 00.

PART 2 - PRODUCTS

2.1 CONDUIT BOXES

.1 Cast FS or FD aluminum boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacles.

.2 PVC boxes where indicated and as required.

2.2 FITTINGS-GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

.3 Conduit outlet bodies for conduit up to 32 mm and pull boxes for larger conduits.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Support boxes independently of connecting conduits.

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of Work.

.3 Provide correct size of opening in boxes for conduit and cable connections. Reducing washers not allowed.

END OF SECTION

PART 1 - GENERAL

1.1 LOCATION OF CONDUIT

.1 Drawings do not indicate all conduit runs. Those indicated are in diagrammatic form only.

1.2 PRODUCT DATA

.1 Submit product data in accordance with Section 01 10 00.

PART 2 - PRODUCTS

2.1 CONDUITS

.1 Rigid PVC conduit for underground services to and from utility.

.2 Liquid-tight flexible metal conduit.

.3 Rigid aluminum conduit.

2.2 CONDUIT FASTENINGS

.1 One hole cast aluminum straps to secure surface conduits 50 mm and smaller. Two hole cast aluminum straps for conduits larger than 50 mm.

.2 Stainless steel channel type supports for two or more conduits at 1.5 m oc. Use stainless steel "P" clamps to secure conduits to channels.

2.3 CONDUIT FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Factory "ells" where 90° bends are required for 25 mm and larger conduits.

.3 Watertight connectors for liquid tight flexible conduit.

.4 Raintight connectors for vertical connections to enclosures.

.5 Cast type EYS and EYD type seal fittings with factory threaded hubs and rated for installation in the hazardous areas as noted on the drawings.

2.3 CONDUIT FITTINGS (Cont'd)

.5 (Cont'd)
.1 Acceptable product: Appleton, Crouse-Hinds or Killark.

2.4 EXPANSION FITTINGS FOR RIGID CONDUIT

.1 Weatherproof expansion fittings with internal bonding assembly suitable for 100mm linear expansion as required, and as indicated on the Drawings.

.2 Watertight expansion fittings with internal bonding jumper suitable for linear expansion and 19mm deflection in all directions.

.3 Provide expansion fittings at the exit point at each end (above grade) of all underground services and conduits and where indicated on the drawings.

2.5 FISH CORD

.1 Polypropylene.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Surface mount conduits except PVC.

.3 Use rigid aluminum threaded conduit for all surface mount conduit unless otherwise indicated.

.4 Use liquid tight flexible metal conduit for final connection to instrumentation, lights and equipment located in non-hazardous areas. Maximum of 900 mm before converting to rigid conduit.

.5 Minimum conduit size: 21 mm unless indicated otherwise.

.6 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.7 Mechanically bend steel conduit over 19 mm dia.

.8 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

3.1 INSTALLATION (Cont'd)

.9 Install fish cord in empty conduits.

.10 Where conduits become blocked, remove and replace blocked section. Do not use liquids to clean out conduits.

.11 Dry conduits out before installing wire.

.12 Install conduit sealing fittings in hazardous areas in accordance with the Canadian Electrical Code. Fill with compound. All conduits leaving a hazardous area must be sealed using a conduit sealing fitting.

.13 Seal conduit sleeves penetrating into the wet-well using duxseal.

3.2 SURFACE CONDUITS

.1 Run parallel or perpendicular to structure lines.

.2 Group conduits wherever possible on surface channels.

.3 Do not pass conduits through structural members except as indicated.

.4 Provide offsets for conduits entering surface mounted enclosures and device boxes and fittings.

3.3 CONCEALED CONDUITS

.1 Run parallel or perpendicular to structure lines.

.2 Slope conduits to provide to provide drainage.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 Earthworks: Section 31 20 00.

PART 2 - PRODUCTS

2.1 CABLE PROTECTION

.1 Protection materials and methods as indicated on drawings.

2.2 MARKERS

.1 Concrete type cable markers: 600 mm x 600 mm x 100 mm with words: "cable", "joint" or "conduit" impressed in top surface, with arrows to indicate change in direction of cable and duct runs.

PART 3 - EXECUTION

3.1 CABLE INSTALLATION IN DUCTS

.1 Install cables as indicated in ducts.

.2 Do not pull spliced cables inside ducts.

.3 Install multiple cables in duct simultaneously.

.4 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.

.5 To facilitate matching of colour coded multiconductor control cables reel off in same direction during installation.

3.2 MARKERS

.1 Mark cable every 100m along runs and changes in direction.

.2 Mark underground splices.

.3 Where markers are removed to permit installation of additional cables, reinstall existing markers.

.4 Lay concrete markers flat and centered over cable with top flush with finish grade.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00.

.2 Perform tests using qualified personnel. Provide necessary instruments and equipment.

.3 Check phase rotation and identify each phase conductor of each feeder.

.4 Check each feeder for continuity, short circuits and grounds. Confirm resistance to ground of circuits is not less than 50 megohms.

.5 Pre-acceptance tests:
.1 After installing cable but before splicing and terminating, perform insulation resistance test with megger on each phase conductor.
.2 Check insulation resistance after each splice and/or termination to ensure that cable system is ready for acceptance testing.

.6 Remove and replace entire length of cable if cable fails to meet any of test criteria.

END OF SECTION

PART 1 - GENERAL

1.1 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 10 00.

1.2 RELATED WORK

.1 Electrical General Requirements: Section 26 05 00

.2 Submersible pumping station: Section 33 32 14

1.3 OPERATION AND MAINTENANCE DATA

.1 Provide complete operation and maintenance data in accordance with Section 01 10 00.

PART 2 - PRODUCTS

2.1 GENERAL

.1 Instrumentation and controls equipment to be new and of a proven design for each application and designed, manufactured, inspected, and tested to comply with the applicable regulations, codes, and standards.

.2 Select instrumentation and controls equipment to suit the process and environmental requirements for each application as described or implied in this specification and as indicated on the Drawing(s).

.3 Construct instrumentation and controls equipment to operate safely and reliably under all operating conditions without undue wear, vibration, heat, noise, or other operating problems. Parts subject to wear, corrosion, or other deterioration, or requiring adjustment, inspection or repair, must be accessible and capable of convenient field maintenance.

2.1 GENERAL (Cont'd)

.4 Proposed instrumentation and controls equipment will be certified by an agency (preferably CSA) recognized by the applicable provincial Electrical Inspection Department. Where there is no alternative to supplying equipment that is not appropriately certified, special approval from the applicable provincial Electrical Inspection Department will be required. Costs associated with obtaining such approval will be the responsibility of the Contractor.

.5 Instrumentation and controls equipment will have a minimum enclosure rating of NEMA 4X (IP66).

.6 Electronic instrumentation and controls equipment installed in hazardous areas must be rated to match its corresponding hazardous area classification (refer to the Electrical hazardous locations drawings).

.7 Equipment requiring intrinsically safe wiring to meet a hazardous area classification must come complete with all recommended intrinsically safe barriers, etc., as required to meet the applicable hazardous classification.

.8 The minimum instrumentation and controls equipment electrical connection size will be 13 mm NPT.

.9 Instrumentation and controls equipment requiring a power supply will be 120 VAC, 60 Hz.

.10 "Wired" instrumentation and controls equipment must have provision for externally grounding the instrument housing/enclosure.

.11 Instrumentation and controls equipment to be complete with a securely fastened manufacturer's nameplate indicating instrument model, serial number, calibrated range, etc., as required for ordering a replacement item.

.12 All instruments to be EMI and RFI protected.

2.2 LEVEL TRANSMITTERS

.1 Submersible level transmitter in stainless steel housing, suitable for sanitary sewage, complete with 4-20 mA output. Install as per drawings and manufacturer's recommendations.

2.2 LEVEL TRANSMITTERS (Cont'd)

.2 Sensors: suitable for Class 1, Zone 1 environment. Provide intrinsically safe barrier.

.3 Sensor range to be suitable for the wet well depth. Shielded cable to be of sufficient length and include vent tube and aneroid bellows.

.4 Provide sensor complete with surge protection.

.5 Provide one (1) spare level transmitter.

.6 Acceptable manufacturers: KPSI, Ametek or approved equivalent.

2.3 PUMP CONTROLLER/RTU

.1 The Owner will free issue the pump controller panels as well as radio antennae. Store, protect, install and commission the equipment as specified herein.

2.4 FLOW METER

.1 Magnetic flow meter must meet the following design and performance requirements:

.1 Flow meter to be magnetic type suitable for sanitary sewage. The pipe diameter and pipe material is indicated on the drawings. Flow tube assembly to have ANSI Class 150 flanges.

.2 Flow tube liner to be hard rubber and of the "formed" type, complete with SS grid backing.

.3 Flow tube to have minimum 316 SS, self cleaning electrodes.

.4 Flow tube to be suitable for installation with a minimum upstream and downstream pipe lengths and shall be rated for total submergence.

.5 Flow tube to be complete with integral fitted and potted cable. Confirm exact cable length to transmitter to suit field conditions.

.6 Supply grounding hardware for flow meter in accordance with manufacturer's recommendations.

.7 Flow transmitter (converter) to be located remote from the flow tube in the pump control panel and be suitable for connection to a 120V, single phase power supply. Transmitter to have a NEMA 12 enclosure rating.

.8 Flow transmitter to be capable of being programmed locally using keypad via simple menu-driven software. Transmitter to have integral display showing flow rate (engineering units) and totalized flow.

2.4 FLOW METER (Cont'd)

.1 (Cont'd)

.9 Flow transmitter to have online diagnostics of sensor and transmitter including process checks and linearity and calibration checks.

.10 Flow transmitter to have operator alarm notification via transmitter display/relay outputs and output signal (4-20mA upscale/downscale manipulation).

.11 Flow transmitter to have HART communication ability.

.12 Flow transmitter to output a 4-20mA analog signal (flow rate) and a pulsed output signal (dry contact) for determining totalized flow.

.13 Flow meter to have a minimum system flow accuracy of ±0.5 %of reading, when installed with reduced inlet and outlet distances as indicated on the Project Drawings.

.14 Flow meter to have adjustable damping ability.

.15 Flow meter to have an adjustable low-flow cut-off.

.16 Flow meter must be CSA approved (or alternate certification agency as approved by the local electrical inspection department - Refer to Nova Scotia Electrical Inspection bulletin B-2-024.11 latest revision).

.17 Flow meter must have a calibrated flow range.

.18 Flow tube to be rated for a Class 1, Zone 2 installation.

.2 Acceptable manufacturers: Toshiba Mount Anywhere Magmeter, Krone or approved equivalent.

2.5 LEVEL SWITCH

.1 Provide mechanical switch for backup control

.2 One (1) SPDT contact rated at 5amps @ 120VAC (continuous) minimum.

.3 Complete with integral cable, length to suit installation.

.4 Suitable for installation in a Class 1, Zone 1 hazardous location.

.5 Acceptable product: Flygt ENM-10 or approved equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Complete Work in a professional manner and present a neat appearance when completed.

.2 Install instrumentation and control equipment being supplied by, or issued to where and as indicated on the drawings, and in accordance with the manufacturer’s instructions. Adhere to manufacturer’s installation instructions.

.3 The drawings indicate the extent and general arrangement of the instrumentation and controls equipment. Exact installation locations, distances and levels will be governed by actual field conditions and is subject to approval by the Engineer.

.4 If there are any departures from the original intent of the Drawings and Specifications, details of such departures with the Drawings if necessary, together with the reasons for the departure shall be submitted to the Engineer as soon as practical for approval. No such departure will be made without prior written consent of the Engineer.

.5 Fabricate and erect all support and mounting brackets required. Purchase instruments with all necessary mounting brackets from the instrument vendor.

.6 Replace/repair equipment damaged during construction, or otherwise deemed defective or non compliant with the Contract documents at no additional cost to the Contract. These expenses will include all material, labour and other fees.

3.2 PRIMARY ELEMENTS

.1 Install devices where and as indicated on the drawings and in accordance with manufacturer’s instructions.

.2 Coordinate with the panel supplier for the supply and installaltion of the flow meter and level measuring systems.

3.3 TESTING AND CALIBRATION EQUIPMENT

.1 Calibration and test equipment to an industry recognized standard and have affixed proof of calibration along with date of next calibration.

3.4 TESTING, CALIBRATION AND START-UP

.1 Arrange and pay for services of manufacturer’s factory service representative to supervise the installation, start-up, check, adjust, balance and calibrate components and systems to the satisfaction of the Engineer.

.2 Provide services for such period, and for as many visits as necessary to put the installation in working order, and to ensure that the operating personnel are conversant with all aspects of equipment and operation.

.3 Coordinate with Engineer and Owner to schedule control supplier and pump supplier for proper set-up of pump and fan controllers.

.4 Perform a series of start/stops of the pumps under power from the genset to confirm proper operation.

.5 Calibrate program and verify level sensor and transmitter. Control elevations to be programmed on-site. Refer to drawings for elevations.

.6 Program, test and calibrate the flow meter at each site.

.7 Document results of all tests/calibrations and make available to the Engineer and include in the project Operations and Maintenance Manual.

.8 Coordinate with other division suppliers for their required testing and commissioning procedures.

3.5 COMMISSIONING AND START-UP

.1 Coordinate station control panel testing/ commissioning. Arrange and assist the control panel supplier to complete this Work. This work will involve a point-by-point check for all control systems monitored field I/O points, logic checks, communication checks, complete pump station controls integration, and equipment start-ups.

3.5 COMMISSIONING AND START-UP (Cont'd)

.2 Provide technical personnel during this phase of the work for instrument recalibration, re-wiring, reprogramming, etc., as required until the pump station control system is deemed ready for operation.

END OF SECTION

PART 1 – GENERAL

1.1 WORK INCLUDED

.1 This section specifies requirements for constructing pressure sewers and appurtenances. Work includes supply, installation and testing of pipe, fittings and service connections.

.2 This section also specifies the requirements for supplying and installing the factory insulated heat traced piping for the bridge crossing.

1.2 RELATED SECTIONS

.1 Concrete: Section 03 30 00

.2 Metal Fabrications: Section 05 50 00

.3 Earthwork: Section 31 20 00

.4 Reinstatement: Section 32 98 00

.5 Precast Manholes, Catch Basins and Structures: Section 33 39 00

.6 Standard Details: Section 39 00 00

1.3 REFERENCE STANDARDS

.1 ANSI/ASME B16.1-2015, Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.

.2 ANSI/AWWA C509-2015, Resilient-Seated Gate Valves for Water and Sewerage Systems.

.3 ANSI/AWWA C900-16, Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in., for Water Distribution

.4 ANSI/AWWA C901-08, Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. (13 mm) Through 3 in. (76 mm), for Water Service.

.5 ANSI/AWWA C906-15, Polyethylene (PE) Pressure Pipe and Fittings, 4 in. (100 mm) Through 63 in. (1,600 mm), for Water Distribution and Transmission.

.6 ASTM D3035-15 Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.

.7 ASTM F714-13, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR, Based on Outside Diameter.

.8 ASTM F1290-98a(R2011), Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings.

.9 CAN/CSA B137 Series-13, Thermoplastic Pressure Piping Compendium.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 10 00 for bridge crossing.

1.5 CERTIFICATES

.1 Submit manufacturer's test data and certification that products and materials meet requirements of this Section in accordance with Section 01 10 00 for all pipe used in the Work.

.2 For fusion butt jointing for polyethylene pipe provide certification that personnel are trained by manufacturer in current methods and use of equipment.

1.6 HANDLING AND STORAGE

.1 Handle and store pipe, valves, fittings, in such a manner as to avoid shock and damage. Do not use chains or cables passed through pipe bore. Do not damage coatings or linings.

.2 Store gaskets in cool location, out of direct sunlight, and away from petroleum products.

PART 2 – PRODUCTS

2.1 POLYVINYL CHLORIDE PIPE AND FITTINGS

.1 Pipe and Joints: to, AWWA C900 or AWWA C905, CAN/CSA B137, cast-iron outside diameter, gasketed bell-end Joint.

.2 SDR 18, pressure Class 235.

.3 Fittings:
.1 PVC: to CAN/CSA B137.
.2 Gray or ductile-iron: to AWWA C110 and C153, cement mortar lined, minimum pressure rating 1035 kPa for cast, 1720 kPa for

ductile iron.

.3 Cement mortar lining: to AWWA C104. Provide internal seal coat when required by Project Documents.

.4 Joints, mechanical or push-on: to AWWA C153.

2.2 POLYETHYLENE PIPE AND FITTINGS

.1 100 mm diameter and larger: to AWWA C906.

.2 Forcemain pipe to be DR 17 high density polyethylene to PE 3408 resin listed in PPI TR4. Acceptable product: KWH Pipe or approved equivalent.

.3 Joints:

.1 Thermal Butt Fusion with internal bead removed.

.1 Mechanical Connections: polyethylene flange end with stainless steel back-up ring.

.2 Electrofusion coupling to ASTM F 1290. Acceptable product: Central Plastics Company or approved equivalent.

.4 Fittings:

.1 Polyethylene: to AWWA C901 and AWWA C906.

.2 Flanged: to AWWA C110.

2.3 THRUST RESTRAINT

.1 Thrust blocks and anchors: 20 MPa Portland cement concrete and 15 M, Grade 400 reinforcing steel where indicated.

.2 Mechanical joint restraint device: (100 mm to 600 mm) ductile iron follower gland to AWWA C153 and C111 with multiple wedge restraining mechanism, minimum pressure working rating 2410 kPA and minimum safety factor of 2:1 Lugs to have twist-off torque nuts.

2.4 RESTRAINED FLANGE ADAPTER

.1 Ductile iron flange adapter with torque limiting screw type gripping wedges, EPDM gaskets and coated with fusion bonded epoxy.

.1 Acceptable product: EBAA Series 2100 Mega Flange, or approved equivalent.

2.5 FACTORY INSULATED HEAT TRACED PIPE SYSTEM (BRIDGE)

.1 System properties:
.1 System compressive strength: (modified ASTM D1621 with casing jacket) approximately 690 to 1379 kPa (100-200 lbs/in^2), varies with pipe diameter.
.2 Core pipe service temperature range: from -45° to 93°C) (-49° to 200°F); the overall factory insulated system limitations are dependent on core pipe type and application.

.2 Core Pipe: 200mm diameter restrained HDPE as specified.

.3 Heat trace conduit: extruded molding applied to the pipe prior to application of the insulation.

.4 Insulation: rigid polyurethane foam, factory applied with the following properties:
.1 Thickness: 50mm (2 in.) or as required.
.2 Density: (ASTM D1622) 35 to 48 kg/m^3 (2.2 to 3.0 lbs/ft^3).
.3 Closed cell content: to ASTM D6226 90%, minimum.
.4 Water absorption: to ASTM C272, 4.0% by volume.
.5 Thermal conductivity: to ASTM C518, 0,020 to 0,026 W/m °C (0.14 to 0.17 Btu in/ft^2 hr °F).

.5 Outer jacket:
.1 Outer protective jacket on the casing system to consist of a factory-applied spiral galvanized steel.
.1 Jacket thickness to be 22 gauge.
.2 Acceptable Product: Urecon Spinrad System.

.6 Insulated pipe joints to consist of prefabricated rigid polyisocyanurate, heat shrink wrapped complete with clips sized to suit.

.7 Fitting insulation:
.1 Insulation kits for fittings consist of rigid polyisocyanurate insulation with a fully bonded polymer protective coating on all exterior and interior surfaces, including ends. Supply kits complete with silicone caulking for seams, stainless steel attachment straps and clips, and heat-shrink sleeves or butyl mastic tape to seal between pipe and insulation kit.

.1 Rigid Polyisocyanurate insulation:
- .1 Density (ASTM D1622) 27 to 32 kg/m^3 (1.7 to 2.l0 lbs/ft^3).
- .2 Compressive strength (ASTM D1621) 131 to 158 kPa (19 to 23 lbs/in^2).
- .3 Closed cell content 90%, minimum.
- .4 Water absorption: (ASTM C272) 4.0% by volume.
- .5 K factor: (ASTM C518) 0,027 W/m°C, (0.19 Btu • in/ft^2 • hr • °F).
- .6 Thickness to match pipe insulation thickness.

.2 Polymer Coating:
- .1 Two (2) component high density polyurethane coating, black in colour.
- .2 Density 1170 kg/m3 (73 lbs/ft3).
- .3 Durometer D scale 60.
- .4 Tensile strength 11,100 kPa (1610 lbs/in2).
- .5 Tear strength 26,5 N/mm (151 lbs/in).
- .6 Thickness 2.54mm (100 mils) outside surfaces; 0,51mm (20 mils) inside surfaces.

.8 Electric heat tracing: to CSA C22.2 No. 130, wattage and control equipment to manufacturer's recommendations complete with necessary termination, power feed kits and temperature sensors.

.9 Acceptable product: TR Flex Ductile Iron Pipe complete with Urecon Pre-Insulated Pipe Spiwrap Jacket with U.I.P. System including Canusa SuperSeal heat shrink wrap, or approved equivalent.

PART 3 – EXECUTION

3.1 PREPARATION

.1 Carefully inspect material for defects and remove defective materials from site.

.2 Immediately before installation, remove any water, debris, and foreign material from interior of pipe, fittings and valves.

3.2 TRENCHING, BEDDING AND BACKFILLING

.1 Do trenching, bedding and backfilling to Section 31 20 00.

3.3 PIPE INSTALLATION - GENERAL

.1 Lay and join pipe, fittings, and valves as specified herein and according to manufacturer's published instructions.

.2 Lay pipe and fittings on as existing concrete abutment. Secure to pressure treated deck with steel straps.

.3 Install bridge crossing forcemain on a pressure treated timber deck. Pressure treat wood to meet the requirements of CSA O80.

.4 Face bell ends in direction of laying. On grades of 5% or greater lay pipe up grade.

.5 Do not exceed maximum joint deflection recommended by manufacturer.

.6 Prevent entry of bedding material, water or other foreign matter into pipe. Use temporary watertight bulkheads when pipe laying is not in progress.

.7 Join pipes in accordance with manufacturers published instructions. Do not use excessive force to join pipe sections.

.8 Install gaskets in accordance with manufacturers published instructions. Use only lubricant supplied by manufacturer. During cold weather store gaskets in heated area to assure that gaskets remain flexible.

.9 Align pipes carefully before joining.

.10 Support pipes as required to assure concentricity until joint is properly completed.

.11 Keep pipe joints free from soil or other foreign materials.

.12 Avoid displacing gasket or contaminating with dirt, petroleum products or other foreign material. Remove, clean, re- install and

lubricate gaskets so disturbed.

.13 Complete each joint before laying next length of pipe.

.14 Join polyethylene pipe in accordance with manufacturer’s published instructions.

.15 Where deflection at joints is permitted, deflect only after joint is completed.

.16 At structures provide flexible joint not more than 1 metre from outside face of structure.

.17 Cut pipe as required for specials, fittings or closure pieces, square to centerline, and as recommended by manufacturer. Do not damage pipe lining or coating and leave smooth bevelled edge.

.18 Provide concrete thrust blocks to undisturbed ground on all tees, bends, plugs and caps. Construct as indicated and keep joints and couplings free of concrete.

.19 Install mechanical joint restraint to AWWA C111 and tighten lug nuts until all wedges are in firm contact with pipe surface. Continue to tighten alternating between bolts until lug nuts twist off.

.20 Remove internal welding bead from HDPE pipe joints using a methodology approved by the pipe manufacturer.

3.4 HDPE PIPE

.1 Join pipe sections by thermal butt fusion welding process or by electrofusion fittings as per manufacturer’s recommendations. Perform jointing by qualified personnel in accordance with manufacturer’s requirements using pipe jointing equipment approved by the manufacturer.

.2 Provide temporary closed shelter for the jointing equipment as required by the manufacturer to maintain suitable ambient conditions while jointing is in progress.

.3 Clean pipe of surface dust and dirt and prepared for adhesion of foam insulation.

.4 Heat trace conduit to be checked following insulation application to insure they are not plugged.

.5 Plug pipe and heat trace conduit for shipping and installation protection.

.6 Pipe joints and fittings to be field insulated, sealed and jacketed as per the manufacturer’s recommendations.

3.5 HYDROSTATIC AND LEAKAGE TESTING

.1 If water used for flushing or testing is obtained from a potable water supply, the supply is to be continuously separated from the service being flushed or tested by an air gap or a level of protection equal to or greater than that provided by a double check valve backflow prevention device.

.2 Provide labour, equipment and materials required to perform hydrostatic and leakage tests.

.3 Notify Engineer at least 24 hours in advance of all proposed tests. Perform tests in presence of Engineer.

.4 Open all valves in test section.

.5 Expel air from main by slowly filling with water. Install corporation stops at high points where no air-vacuum release valves are installed. After testing, remove corporation stops and install plugs.

.6 Apply test pressure of 1035 kPa or pressure equal to 1.5 times working pressure, whichever is greater, measured at lowest point in test section. The test shall be conducted over a full two (2) hour period, maintaining a constant test pressure. No leakage is permitted by the test process.

.7 Locate and repair defects if test fails. Retest.

3.6 FLUSHING

.1 If water used for flushing or testing is obtained from a potable water supply, the supply is to be continuously separated from the service being flushed or tested by an air gap or a level of

protection equal to or greater than that provided by a double check valve backflow prevention device.

.2 Notify Engineer 24 hours in advance of flushing.

.3 Flush mains with water through available outlets with sufficient flow to produce minimum velocity in main of 1.5 m/s, for 10 minutes. Flush until foreign materials have been removed and water is clear.

.4 Slowly open and close valves to ensure thorough flushing.

END

Conquest Engineering
Experience commitment.
Geotechnical and Materials Engineers

348 Bluewater Road,
Bedford, NS B4B 1J6
902 835 7313
info@conquest-eng.com
www.conquest-eng.com

Saint John
Moncton
Fredericton
Bedford

October 26, 2016

Mr. Aaron Baillie, P.Eng.
CBCL Limited
1489 Hollis Street
Halifax, NS B3J 2R7

Dear Mr. Baillie,

Re: Geotechnical Investigation Preliminary Letter – Parrsboro Wastewater System
Parrsboro, NS

This is our geotechnical investigation preliminary letter for the wastewater system in Parrsboro, Nova Scotia. It is understood that a new sanitary sewer is proposed throughout the town. The subsurface conditions are generally good for construction of the system.

The subsurface conditions encountered throughout the wastewater system route generally consist of asphalt and fill overlying native soil. Bedrock was encountered in only one borehole (BH 8). Fill was encountered in the majority of the boreholes and ranged in thickness from 0.4 m to 2.6 m. Native soil was encountered in all boreholes and generally consisted of compact to dense gravel with silt and sand. The native soil in BH2 consisted of soft to firm organic clay. Groundwater was encountered in several boreholes at depths ranging between 1.7 m and 3.8 m. Bedrock was encountered in BH8 at a depth of 1.7 m and was highly weathered. Boreholes were advanced to depths of up to 4.6 m.

The main findings/recommendations from our investigation are as follows:

- The conditions along the proposed wastewater route indicate that the construction of the system would be practical. It is anticipated that excavations for the underground sanitary sewer will generally be in exisiting fill and native gravel.

- Bedrock is anticipated to be encountered in some areas, such as Borehole 8. Bedrock encountered during drilling was highly weathered and would not require hydraulic breakers or blasting; however, the contractor should include a contingency in case conditions change.

- Construction dewatering will be necessary is some areas. Pumping from the pipe trench should be effective, but cut-off of water from the top of the trench will be necessary in some areas. Discharge of pumped water will have to be carefully planned to avoid impacting adjacent areas.

- Geotechnical inspection of earthworks is recommended. In particular, placement and compaction of the pipe bedding and cover.

The field program consisted of ten (10) boreholes (BH1 to BH10) completed between October 5 and 7, 2016. The borehole locations are shown in Figures A, B, C, and D (Drawing 1, appended, is a complete location plan).

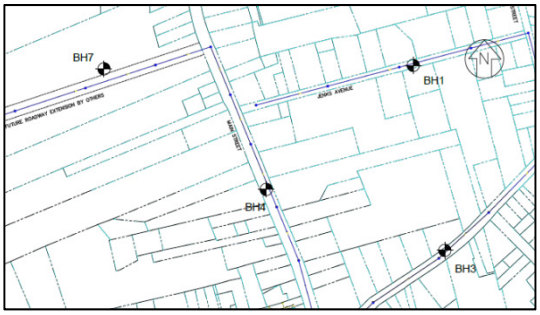


Figure A: Borehole Locations

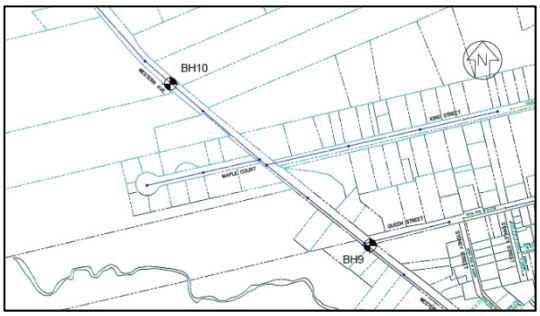


Figure B: Borehole Locations

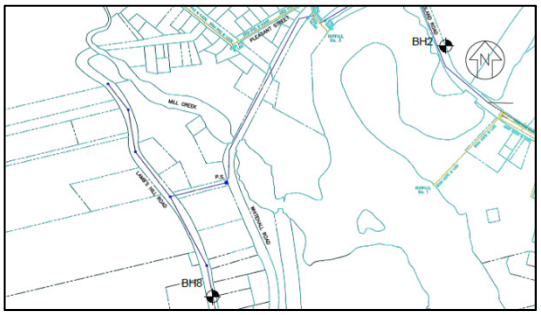


Figure C: Borehole Locations

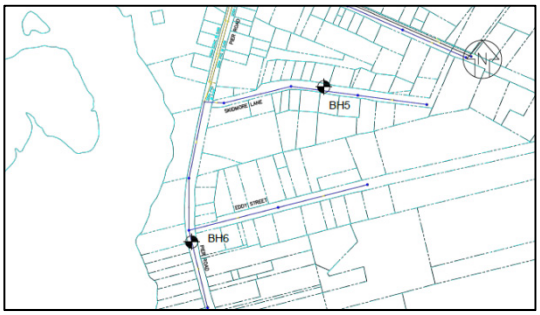


Figure D: Borehole Locations

The boreholes were conducted using a tracked drill rig. Representative samples were taken during the field work and the conditions at the boreholes were logged in detail. The soil conditions encountered at the site are described in detail on the appended Draft Borehole Records and summarized below in Table A.

Table A: Summary of Findings - Boreholes

Location	Elevation[1] (m)	Thickness of Asphalt (mm)	Thickness of Fill (m)	Depth to Native Soil (m)	Groundwater Depth[2] (m)	Depth to Bedrock (m)	Depth of Borehole (m)
BH1	18.9	50	2.1	2.1	--	--	4.6
BH2	8.1	50	1.5	1.5	3.4	--	4.6
BH3	12.5	150	1.1	1.2	3.8	--	4.9
BH4	21.5	150	2.6	2.7	--	--	4.6
BH5	10.6	75	2.0	2.1	--	--	4.6
BH6	9.5	200	1.3	1.5	--	--	4.6
BH7	23.6	--	--	0.1	--	--	4.6
BH8	26.5	75	0.4	0.5	1.7	1.7	4.6
BH9	21.1	225	0.6	0.8	--	--	4.6
BH10	23.6	150	0.7	0.8	--	--	4.6

Notes: [1]Geodetic Datum. Ground surface elevation taken with GPS mapping unit.
[2]Measured during drilling.

Please contact us if you have any questions.

Thank you,

Devan McKenney, EIT
Geotechnical Engineer
dmckenney@conquest-eng.com

R. Bruce MacNeil, P.Eng.
Senior Geotechnical Engineer
bmacneil@conquest-eng.com

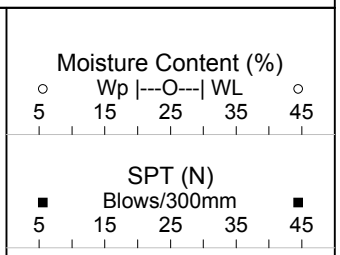
Conquest Engineering Ltd.

BOREHOLE RECORD

Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Jenks Avenue, Parrsboro, NS
Water Level Date: --

Borehole No.: 1
Page: 1 of 1
Date Drilled: Oct 5, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								18.9
							ASPHALT	
		SS	1	205	29		FILL: Compact to dense brown sand with gravel - trace to some silt - subrounded to angular clasts - moist	
1		SS	2	0	30			
		SS	3	455	48			
2		SS	4	485	71			16.8
							SAND: Very dense to compact silty sand with gravel - augered from 2.4 m to 2.7 m - subrounded to subangular clasts - moist to wet	
3		SS	5	510	27			15.5
		SS	6	280	25		GRAVEL: Compact to dense brown gravel with sand - trace to some silt - trace clay - subrounded to subangular clasts - moist to wet	
4		SS	7	430	35			14.3
5							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
6								
7								
8								
9								
10								



Conquest Engineering Ltd.

BOREHOLE RECORD

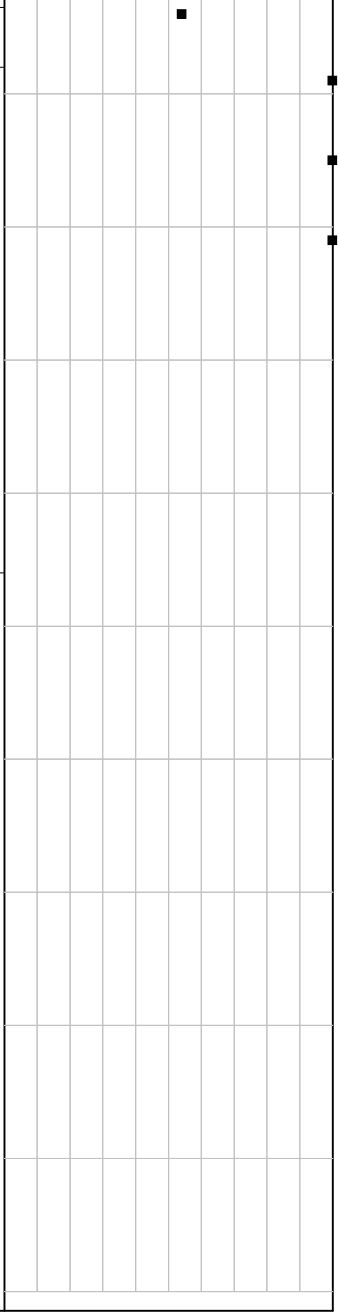
Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Western Avenue, Parrsboro, NS
Water Level Date: --

Borehole No.: 10
Page: 1 of 1
Date Drilled: Oct 7, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								23.6
0							ASPHALT	23.2
		SS	1	380	27		FILL: Compact grey gravel with sand (Type 1 Gravel) - trace silt - subrounded clasts - moist	22.8
1		SS	2	455	56			
		SS	3	405	50		FILL: Compact brown silty sand with gravel - subrounded clasts - moist	
2		SS	4	255	84		GRAVEL: Dense to very dense brown gravel with sand - trace silt - augered from 2.3 m to 4.6 m - subrounded clasts - dry to moist	
3								
4								19.0
							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
5								
6								
7								
8								
9								
10								

Moisture Content (%)
Wp |---O---| WL
5 15 25 35 45

SPT (N)
Blows/300mm
5 15 25 35 45



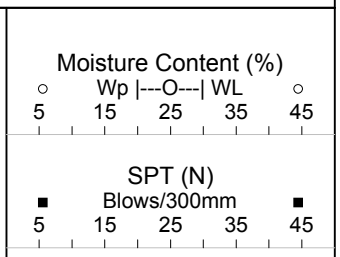
Conquest Engineering Ltd.

BOREHOLE RECORD

Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Two Islands Road, Parrsboro, NS
Water Level Date: Oct 5, 2016

Borehole No.: 2
Page: 1 of 1
Date Drilled: Oct 5, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								8.1
0							ASPHALT	
		SS	1	125	13		FILL: Compact brown gravel with sand (Type 1 Gravel) - trace silt - angular clasts - moist	
1		SS	2	150	8			
		SS	3	0	2			6.6
2		SS	4	280	8		FILL: Compact to loose brown silty gravel with sand - trace wood and clay - subrounded to subangular clasts - dry to wet	
		SS	5	585	5			
3							ORGANIC CLAY: Very soft to firm brown to grey organic clay - trace to some rootlets and wood - trace silt, sand, and gravel - split spoon sunk from 3.0 m to 3.4 m - subrounded to subangular clasts - wet	
		SS	6	610	3			
4		SS	7	255	2			3.5
							End of Borehole at 4.6 m - groundwater encountered at 3.4 m - no bedrock encountered	
5								
6								
7								
8								
9								
10								



Conquest Engineering Ltd.

BOREHOLE RECORD

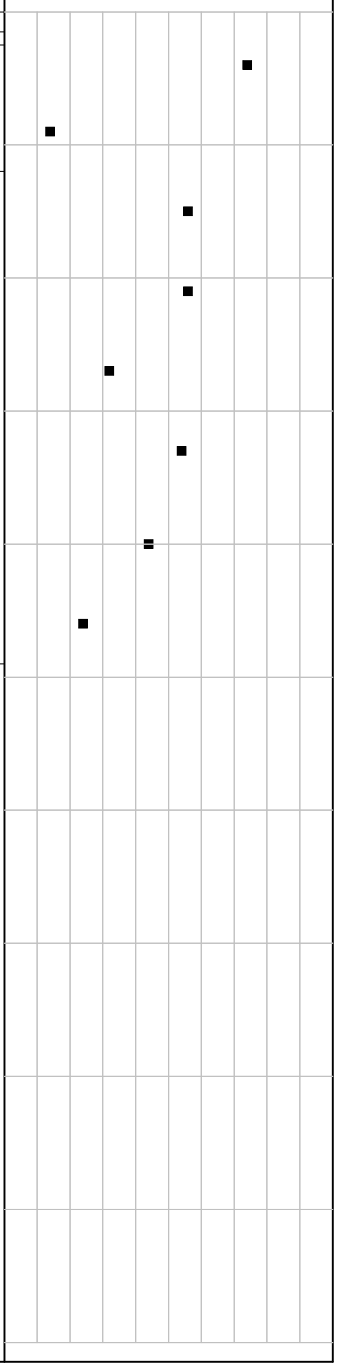
Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Eastern Avenue, Parrsboro, NS
Water Level Date: Oct 6, 2016

Borehole No.: 3
Page: 1 of 1
Date Drilled: Oct 6, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								12.5
							ASPHALT	
		SS	1	280	37		FILL: Dense grey gravel with sand (Type 1 Gravel) - trace silt - angular clasts - dry to moist	
1		SS	2	255	7			11.3
		SS	3	405	28		FILL: Dense to loose brown silty gravel with sand to silty sand - subrounded to angular clasts - moist to wet	
2		SS	4	485	28			
		SS	5	455	16		GRAVEL: Compact brown gravel with sand - trace silt - subrounded to subangular clasts - moist to wet	
3		SS	6	355	27			
4	▼	SS	7	355	22			
		SS	8	485	12			7.6
5							End of Borehole at 4.9 m - groundwater encountered at 3.8 m - no bedrock encountered	
6								
7								
8								
9								
10								

Moisture Content (%)
○ Wp |---O---| WL ○
5 15 25 35 45

SPT (N)
■ Blows/300mm ■
5 15 25 35 45



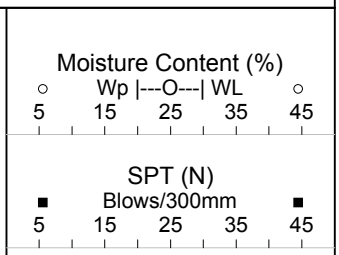
Conquest Engineering Ltd.

BOREHOLE RECORD

Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Main Street, Parrsboro, NS
Water Level Date: --

Borehole No.: 4
Page: 1 of 1
Date Drilled: Oct 6, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								21.5
0							ASPHALT	
		SS	1	455	35		FILL: Compact to dense brown gravel with silt and sand - subrounded to subangular clasts - dry to moist	
1		SS	2	280	20			
		SS	3	485	48			
2		SS	4	485	49			
		SS	5	560	37			18.8
3		SS	6	280	42		GRAVEL: Dense brown silty gravel with sand to gravel with sand - augered from 3.6 m to 4.0 m - subrounded to subangular clasts - moist	
4		SS	7	380	30			16.9
5							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
6								
7								
8								
9								
10								



Conquest Engineering Ltd.

BOREHOLE RECORD

Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Skidmore Lane, Parrsboro, NS
Water Level Date: --

Borehole No.: 5
Page: 1 of 1
Date Drilled: Oct 6, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								10.6
							ASPHALT	
		SS	1	355	16		FILL: Compact to loose brown silty gravel with sand - subrounded to subangular clasts - moist to wet	
1		SS	2	0	6			
		SS	3	0	6			
2		SS	4	305	39			8.5
							GRAVEL: Dense to very dense brown silty gravel with sand - augered from 2.4 m to 2.7 m, and 3.1 m to 4.6 m - subrounded to subangular clasts - moist	
3		SS	5	405	99 for 250			
4								6.0
							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
5								
6								
7								
8								
9								
10								

Moisture Content (%)
○ Wp |---O---| WL ○
5 15 25 35 45

SPT (N)
■ Blows/300mm ■
5 15 25 35 45

BOREHOLE RECORD

Conquest Engineering Ltd.

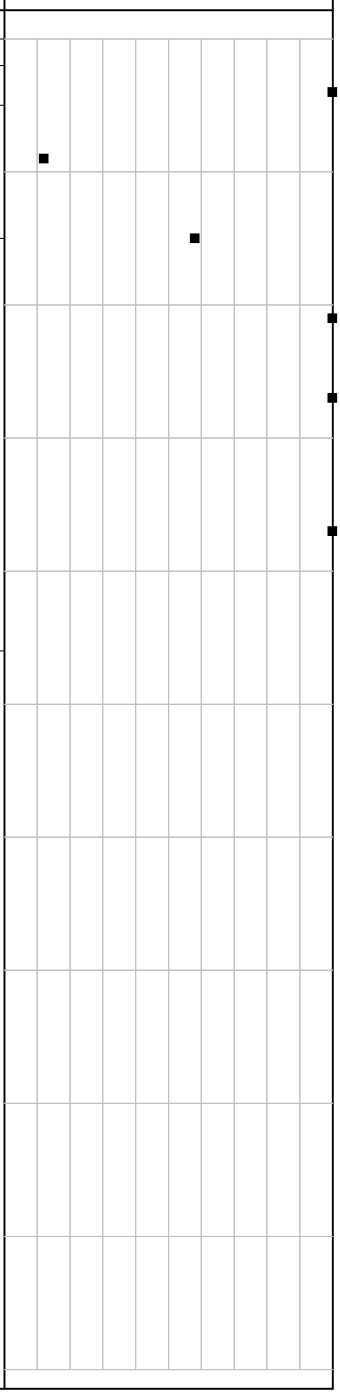
Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Pier Road, Parrsboro, NS
Water Level Date: --

Borehole No.: 6
Page: 1 of 1
Date Drilled: Oct 6, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								9.5
0							ASPHALT	9.3
		SS	1	405	57		FILL: Very dense brown silty gravel with sand - subrounded clasts - moist	9.0
1		SS	2	180	6			
		SS	3	230	29		FILL: Loose black to brown silty gravel with sand - slight hydrocarbon odour - subrounded to subangular clasts - moist	8.0
2		SS	4	510	56		GRAVEL: Compact to very dense brown silty gravel with sand to gravel with silt and sand - augered from 3.0 m to 3.4 m, and 4.0 m to 4.6 m - subrounded to subangular clasts - moist	
		SS	5	380	72			
3								
		SS	6	380	81			
4								4.9
							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
5								
6								
7								
8								
9								
10								

Moisture Content (%)
○ Wp |---O---| WL ○
5 15 25 35 45

SPT (N)
■ Blows/300mm ■
5 15 25 35 45



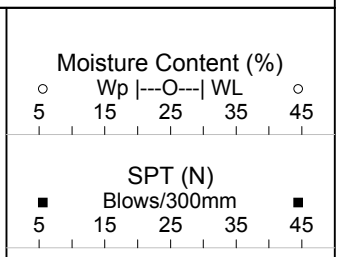
Conquest Engineering Ltd.

BOREHOLE RECORD

Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Triassic Park Ball Field, Parrsboro, NS
Water Level Date: --

Borehole No.: 7
Page: 1 of 1
Date Drilled: Oct 6, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								23.6
0		SS	1	280	9		ROOTMAT GRAVEL: Loose to very dense brown silty gravel with sand to gravel with silt and sand - augered from 2.4 m to 4.6 m - subrounded to subangular clasts - dry to moist	
1		SS	2	430	56			
		SS	3	280	42			
2		SS	4	510	71			
3								
4								19.0
5							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
6								
7								
8								
9								
10								



Conquest Engineering Ltd.

BOREHOLE RECORD

Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Lamb's Hill Road, Parrsboro, NS
Water Level Date: Oct 7, 2016

Borehole No.: 8
Page: 1 of 1
Date Drilled: Oct 7, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								26.5
							ASPHALT	
		SS	1	455	16		FILL: Compact brown gravel with silt and sand - subrounded clasts - moist	26.0
		SS	2	330	6			
		SS	3	430	13		CLAY: Firm to stiff grey sandy clay - trace organics, silt, and gravel - subrounded to subangular clasts - moist	24.8
		SS	4	405	20		BEDROCK: Dark grey mudstone - highly weathered - augered from 4.0 m to 4.6 m - wet	
		SS	5	610	15			
		SS	6	455	63			
		SS	7	255	63 for 100			21.9
							End of Borehole at 4.6 m - groundwater encountered at 1.7 m - bedrock encountered at 1.7 m	

Moisture Content (%)
Wp |---O---| WL
5 15 25 35 45

SPT (N)
Blows/300mm
5 15 25 35 45

0 1 2 3 4 5 6 7 8 9 10

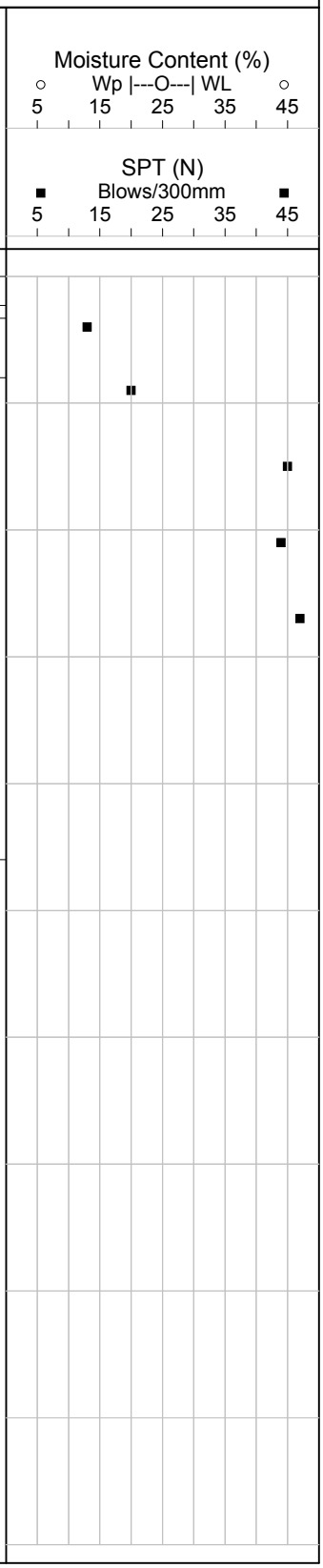
Conquest Engineering Ltd.

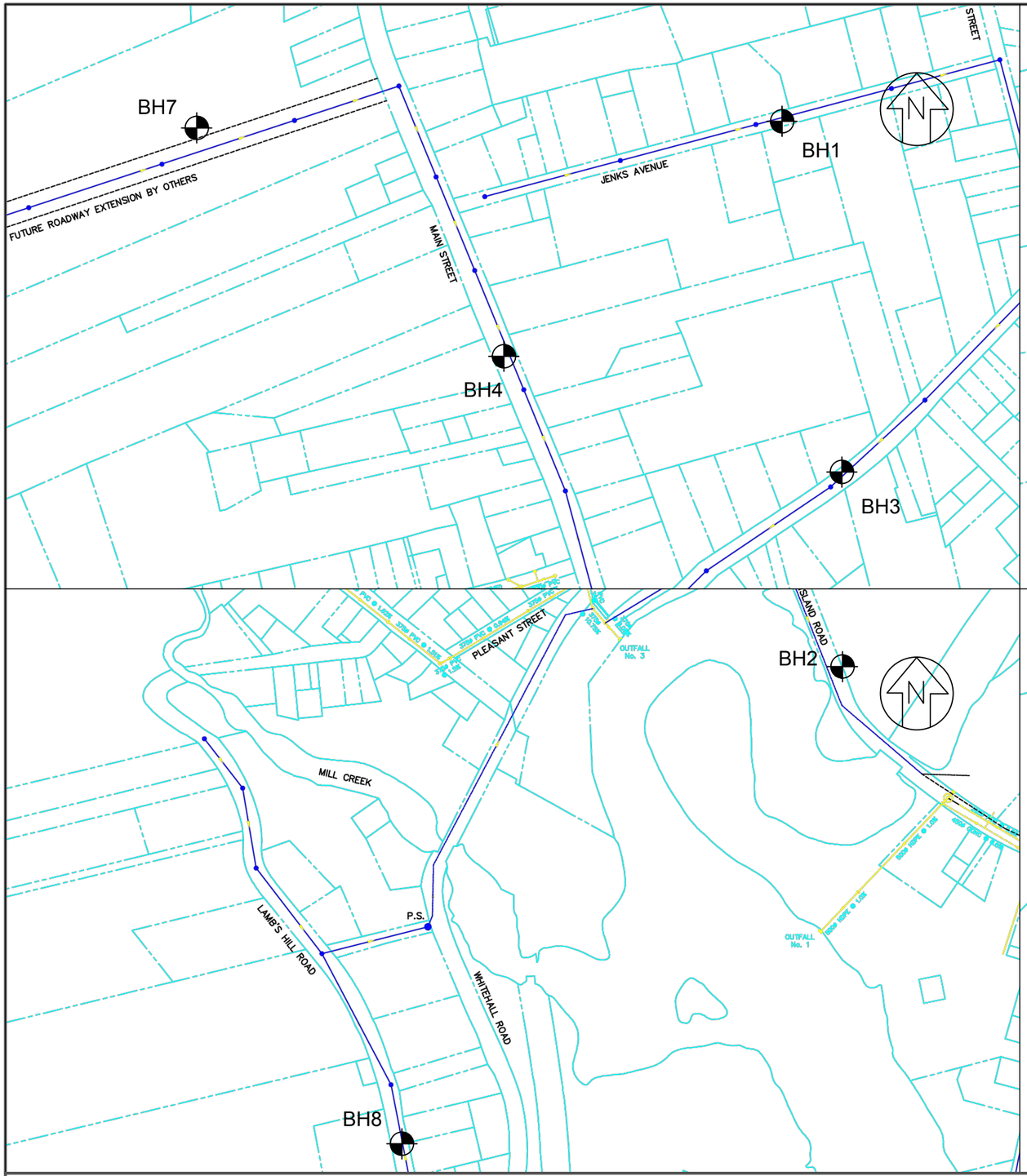
BOREHOLE RECORD

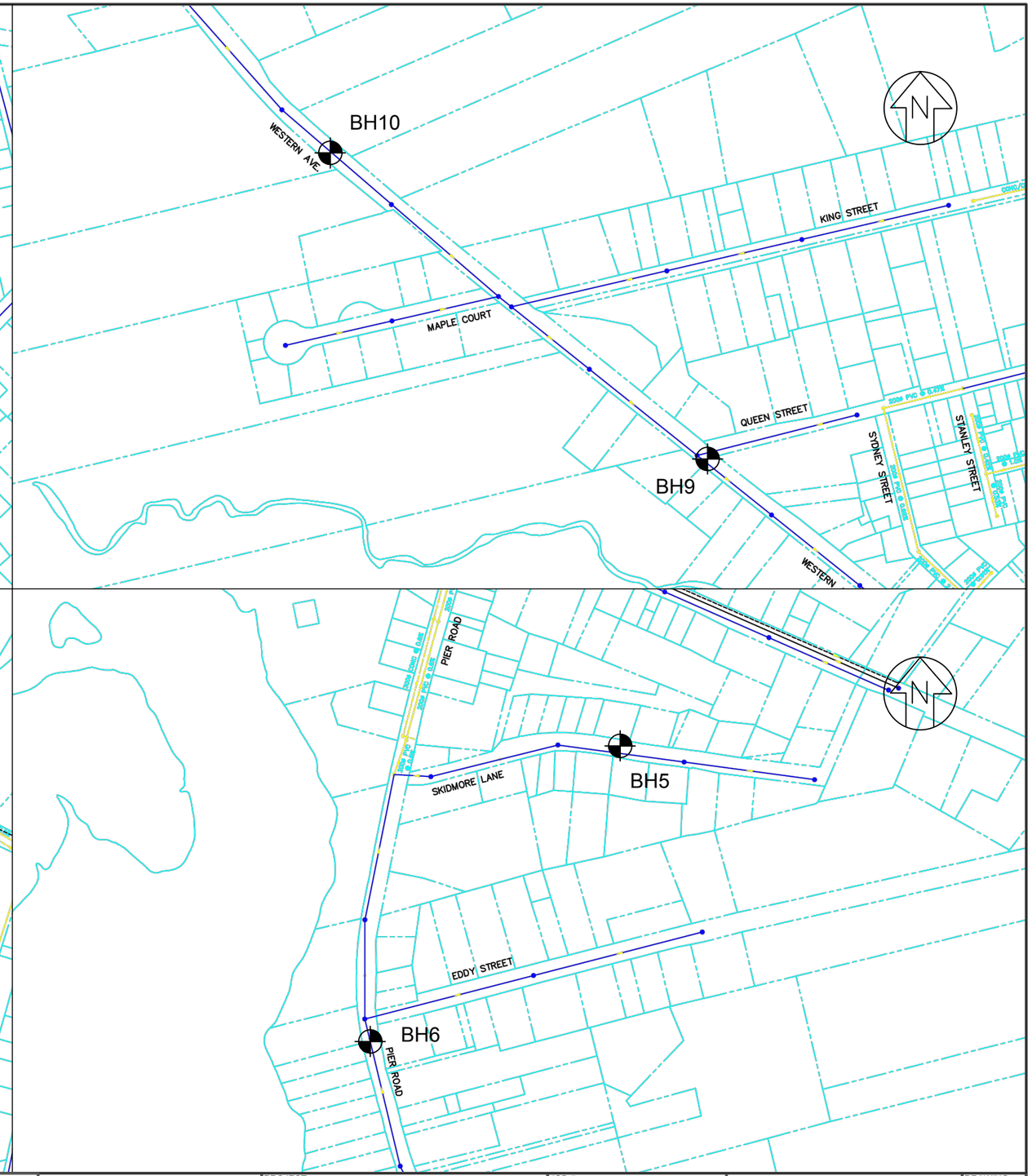
Project Name: Parrsboro Wastewater System
Project No.: 034-207
Client: CBCL Limited
Location: Western Avenue, Parrsboro, NS
Water Level Date: --

Borehole No.: 9
Page: 1 of 1
Date Drilled: Oct 7, 2016
Datum: Geodetic

Depth (m)	Water Level (m)	Sample Type	Sample Number	Recovery (mm)	N Value or RQD %	Symbols	SOIL AND/OR ROCK DESCRIPTION	Elevation (m)
								21.1
0							ASPHALT	20.9
		SS	1	455	13		FILL: Compact brown gravel with silt and sand - subangular clasts - moist	20.3
1		SS	2	405	20		FILL: Compact brown silty sand - trace rootlets and gravel - subangular to angular clasts - moist to wet	
		SS	3	430	45			
2		SS	4	280	44		SAND/GRAVEL: Compact to dense brown sand with silt to silty gravel with sand - augered from 3.0 m to 4.6 m - subrounded clasts - moist	
		SS	5	0	47			
3								
4								16.5
5							End of Borehole at 4.6 m - no groundwater encountered - no bedrock encountered	
6								
7								
8								
9								
10								







LEGEND

APPROXIMATE CONQUEST BOREHOLES (OCT 2016)

CONQUEST ENGINEERING LTD.
348 Bluewater Road
Bedford, Nova Scotia
B4B 1J6

PROJECT

BOREHOLE LOCATION PLAN

PARRSBORO WASTEWATER SYSTEM
PARRSBORO, NS

JOB #:	034-207
SCALE:	NTS
DATE:	20-OCT-2016
DRAWN BY:	DM
CHECKED BY:	RBM

DRAWING: 1

REV: 0

DOCUMENT TRANSMITTAL

CBCL LIMITED
Consulting Engineers

Number: 00005
Date: 3/9/2017

Company	
Attention	Justin Waugh-Cress
From	THOMAS BRAGNALO
Project	PARRSBORO WASTEWATER SYSTEM DESIGN 161039.00
Subject	161039.00 - Parrsboro Wastewater Collection System - IFT Package
Message/Remarks	Justin, Find attached IFT drawings and spec and a copy of the geotechincal report for the Parrsboro Wastewater Collection System project. Tom

1489 Hollis Street
PO Box 606
Halifax, NS
Canada B3J 2R7

Telephone: 902 421 7241
Fax: 902 423 3938
E-mail: info@cbcl.ca
URL: http://www.cbcl.ca

We are a professional team working together, to provide quality services that satisfy our customers, and contribute to our mutual success.

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No. Copies	Doc No.	Revision No.	Title/Description	Action Taken*
1			161039.00SP IFT Mar 9 2017.pdf	
1			Geotech Along Rd.pdf	
1			C000.PDF	
1			C001.PDF	
1			C100.PDF	
1			C101.PDF	
1			C102.PDF	
1			C103.PDF	
1			C104.PDF	
1			C105.PDF	
1			C106.PDF	
1			C107.PDF	
1			C108.PDF	
1			C109.PDF	
1			C110.PDF	
1			C200.PDF	
1			C201.PDF	
1			C202.PDF	
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1			C204.PDF	
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1			C206.PDF	
1			C207.PDF	
1			C208.PDF	
1			C300.PDF	
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1			C302.PDF	
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1			C305.PDF	
1			C306.PDF	
1			C307.PDF	
1			C308.PDF	
1			C400.PDF	
1			C401.PDF	
1			C402.PDF	
1			C403.PDF	
1			C404.PDF	
1			C405.PDF	
1			E100.PDF	

No. Copies	Doc No.	Revision No.	Title/Description	Action Taken*
1			E101.PDF	
1			E102.PDF	

***Actions are:** **NAE no apparent errors** **AEN apparent errors noted**
RRS revise and resubmit **REJ rejected-see remarks**

We are sending by	**For**
Info Exchange	Approval

Copies to

AARON BAILLIE	(CBCL Limited)
THOMAS BRAGNALO	(CBCL Limited)

Contract No. 161039.00

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM - COLLECTION SYSTEM

Sheet List Table

Sheet Number	Sheet Title	Sheet Description
–	COVER SHEET	ISSUED FOR TENDER
C001	OVERALL SITE PLAN	
C100	SPRING STREET	STA 0+000 TO STA 0+260
C101	CHAPEL STREET	STA 0+240 TO STA 0+435
C102	CHURCH STREET	STA 0+000 TO STA 0+160
C103	EASTERN AVENUE	STA 0+000 TO STA 0+320
C104	EASTERN AVENUE	STA 0+320 TO STA 0+600
C105	JENKS AVENUE	STA 0+000 TO STA 0+340
C106	JENKS AVENUE	STA 0+340 TO STA 0+490
C107	TEMPLAR STREET	STA 0+000 TO STA 0+190
C108	MOORE STREET	STA 0+000 TO STA 0+260
C109	MAIN STREET	STA 0+000 TO STA 0+200
C110	MAIN STREET	STA 0+200 TO STA 0+535
C200	WESTERN AVE	STA 0+000 TO STA 0+340
C201	WESTERN AVE	STA 0+340 TO STA 0+680
C202	WESTERN AVE	STA 0+680 TO STA 0+850
C203	QUEEN STREET	STA 3+000 TO STA 3+340
C204	KING STREET	STA 0+000 TO STA 0+280
C205	MAPLE COURT	STA 1+000 TO STA 1+200
C206	MAIN STREET	STA 0+000 TO STA 0+330
C207	TRAIL ALIGNMENT	STA 0+000 TO STA 0+170
C208	WHITEHALL ROAD WATERMAIN	STA 0+000 TO STA 0+160
C300	TWO ISLANDS ROAD	STA 0+000 TO STA 0+320
C301	TWO ISLANDS ROAD	STA 0+320 TO STA 0+660
C302	TWO ISLANDS ROAD	STA 0+660 TO STA 0+820
C303	PIER ROAD	STA 0+000 TO STA 0+340
C304	PIER ROAD	STA 0+320 TO STA 0+620
C305	PIER ROAD	STA 0+620 TO STA 0+920
C306	PIER ROAD	STA 0+920 TO STA 1+090
C307	SKIDMORE LANE	STA 0+000 TO STA 0+260
C308	EDDY STREET	STA 0+000 TO STA 0+240
C400	PUMP STATION 1, 3 & 4 SITE PLANS	
C401	PUMP STATION 1, 3 & 4 PLAN & SECTIONS	
C402	PUMP STATION 2 SITE PLAN & SECTION	
C403	MISCELLANEOUS DETAILS 1	
C404	MISCELLANEOUS DETAILS 2	
C405	MISCELLANEOUS DETAILS 3	
E100	PUMP STATION 1, 2, 3, & 4 SITE PLANS	
E101	SINGLE LINE AND ELECTRICAL DETAILS	
E102	ELECTRICAL DETAILS	

CBCL LIMITED
Consulting Engineers

Project No. 161039.00

municipality of cumberland

ISSUED FOR TENDER

MARCH 2017

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\04 COVER SHEET\161039.00 COVER SHEET.DWG LAYOUT NAME: 610X914 COVER SHEET (ARCH D) PLOT DATE: Thursday, March 09, 2017 5:19:29 PM CAD OPERATOR: JUSTINR

NORTH

EASTSIDE SANITARY SYSTEM
SEE C100 SERIES FOR
PLAN & PROFILE DRAWINGS

WESTSIDE SANITARY SYSTEM
SEE C200 SERIES FOR
PLAN & PROFILE DRAWINGS

RIVERSIDE SANITARY SYSTEM
SEE C300 SERIES FOR
PLAN & PROFILE DRAWINGS

JENKS AVENUE C106
JENKS AVENUE C105
TEMPLAR STREET C107
EASTERN AVENUE
PUMP STATION
(PS 1)
MAIN STREET C110
EASTERN AVE. C104
EASTERN AVE. C103
MOORE STREET C108
CHAPEL
STREET
C101
CHURCH STREET C102
MAIN STREET C109
WESTERN AVE. C200
KING STREET C204
MAPLE COURT C205
QUEEN STREET C203
WESTERN AVE. C201
SPRING STREET C100
TRAIL C207
WESTERN AVE. C202
MILL CREEK
MAIN STREET C206
DOWNTOWN
PUMP
STATION
(PS 2)
TWO ISLAND ROAD C300
RIVERSIDE
PUMP STATION (PS 3)
TWO ISLAND ROAD C301
TWO ISLAND ROAD C302
SKIDMORE LANE C307
PIER ROAD C303
EDDY STREET C308
PIER ROAD C304
PIER ROAD
PUMP STATION (PS 4)
PIER ROAD C305
PIER ROAD C306
WHITEHALL ROAD C208

PLAN
1:4000
0 80 160 240 320 400m
1:4,000

GENERAL NOTES

1. ALL ELEVATIONS ARE IN METRES TO CANADIAN GEODETIC DATUM. BENCHMARK FOR SURVEY IS NSCM 212699, LOCATED AT N5029822.987, E5513540.592 (ATS77) WITH A PUBLISHED ELEV. OF 21.909m.
2. TOPOGRAPHIC INFORMATION IS FROM SURVEY COMPLETED BY CBCL LIMITED.
3. PROPERTY LINE INFORMATION PROVIDED BY COUNTY OF CUMBERLAND AND IS APPROXIMATE ONLY.
4. HOUSE LOCATIONS SHOWN ARE FROM SATELLITE IMAGERY AND ARE APPROXIMATE ONLY.
5. EXISTING UTILITY INFORMATION IS APPROXIMATE ONLY. CONTRACTOR TO CONFIRM LOCATION AND SIZE OF ALL EXISTING INFRASTRUCTURE AND NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN DESIGN AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
6. ALL WORK TO BE DONE IN ACCORDANCE WITH THE NOVA SCOTIA STANDARD SPECIFICATION FOR MUNICIPAL SERVICES (LATEST EDITION) AND TO THE PROJECT SPECIFICATIONS. WHEN CONFLICTS BETWEEN THE DOCUMENTS OCCUR, THE MORE STRINGENT SHALL APPLY AS DIRECTED BY THE ENGINEER.
7. INSTALL TEMPORARY CONSTRUCTION SIGNAGE IN ACCORDANCE WITH THE NOVA SCOTIA TEMPORARY WORKPLACE TRAFFIC CONTROL MANUAL (LATEST EDITION) AND IN ACCORDANCE WITH LOCAL CONSTRUCTION PRACTICES.
8. ARRANGE FOR AND PAY FOR ALL TEMPORARY SERVICES SUCH AS POWER, SANITARY SEWER AND WATER SUPPLY DURING CONSTRUCTION AS REQUIRED.
9. ALL DISTURBED SURFACES TO BE REINSTATED TO MATCH EXISTING CONDITION.
10. OBTAIN DATA NECESSARY FOR RECORD DRAWINGS (IE: ELEVATION DATA, NORTHINGS, EASTINGS, MARK–UP'S, ETC.). RECORD ALL NECESSARY INFORMATION PRIOR TO BURIAL OF SITE SERVICES.
11. THERE SHOULD BE A MINIMUM OF 450mm OF VERTICAL SEPARATION ON ALL CROSSINGS BETWEEN WATER AND SEWER LINES, WITH THE WATER LINE LOCATED ABOVE THE SEWER LINE. WHERE THE WATER LINE IS LESS THAN THIS VERTICAL SEPARATION AND LIES ABOVE THE SEWER OR WHERE THE SEWER CROSSES OVER THE WATERMAIN A FULL LENGTH OF CASING PIPE c/w LINK SEALS CENTERED OVER THE INFRINGEMENT AREA IS TO BE USED.
12. MAINTAIN A MINIMUM OF 500MM OF HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINES AND A MINIMUM OF 300MM OF HORIZONTAL SEPARATION BETWEEN SANITARY AND STORM SEWER LINES.
13. ALL STRUCTURES ARE TO BE INSTALLED FLUSH WITH THE TOP OF THE FINISHED ASPHALT SURFACE.
14. CURB AND GUTTER IS TO BE DEPRESSED AT CATCHBASIN LOCATIONS TO SUIT.
15. AN ELECTRONIC COPY OF THE LAYOUT IN AUTOCAD FORMAT WILL BE SUPPLIED, VERIFY ALL DIMENSIONS AND COORDINATES, AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO CONSTRUCTION.
16. POSITION OF SERVICE LATERALS SHOWN IS APPROXIMATE. EXACT LOCATION TO BE COORDINATED IN FIELD.
17. SANITARY SEWER LATERALS TO BE 100ø PVC DR35 UNLESS OTHERWISE NOTED.
18. WATER SERVICE LATERALS TO BE 19ø TYPE K COPPER UNLESS OTHERWISE NOTED.
19. PRIOR TO PLACING GRANULAR FILL, GEOTECHNICAL ENGINEER TO CONFIRM SUBGRADE IS SUITABLE.
20. GEOTECHNICAL INVESTIGATIONS WERE COMPLETED BY CONQUEST ENGINEERING. LOCATIONS OF THE BOREHOLES HAVE BEEN PROVIDED FOR INFORMATION PURPOSES ONLY. REFER TO GEOTECHNICAL REPORTS FOR ANY GEOTECHNICAL INFORMATION.
21. CONTRACTOR TO SURVEY ELEVATION OF EXISTING ROCK (IF ENCOUNTERED) IN FIELD PRIOR TO ROCK EXCAVATION AND PROVIDE INFORMATION TO THE ENGINEER.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

OVERALL SITE PLAN

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

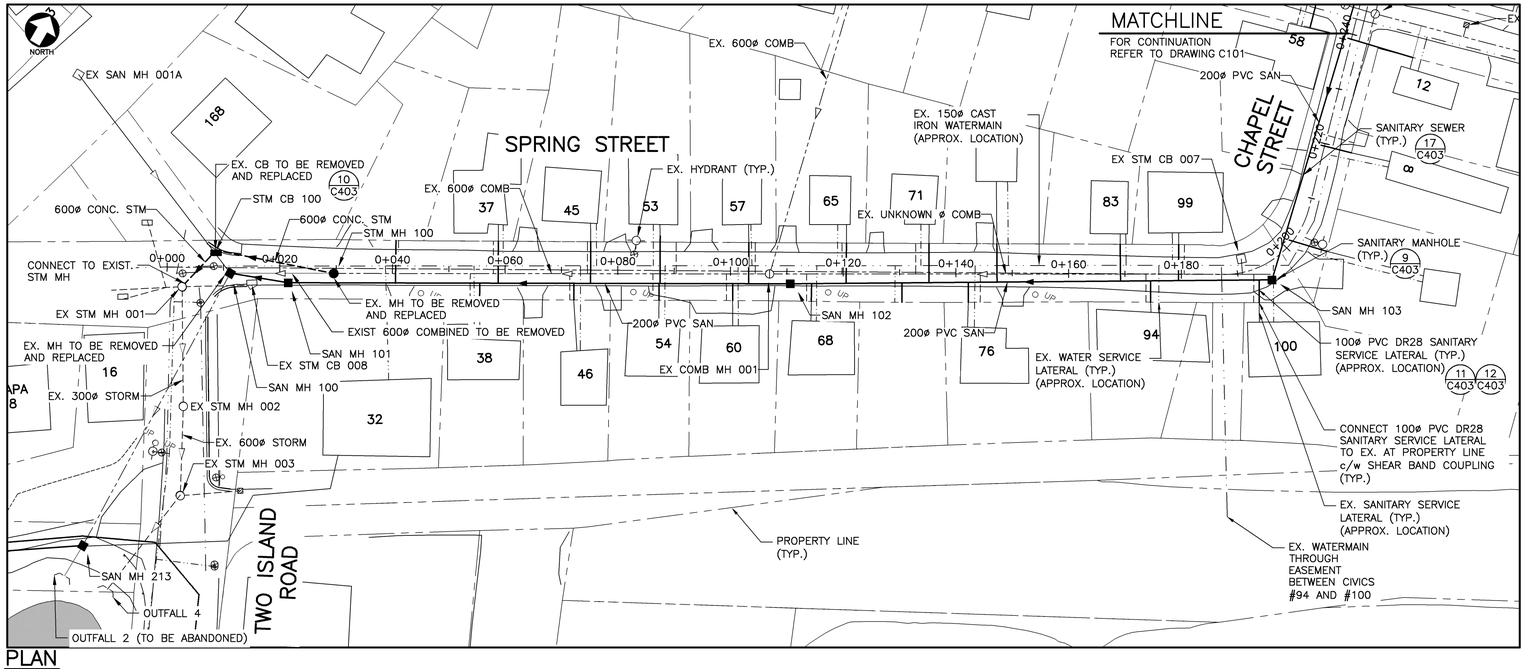
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 1 of 36

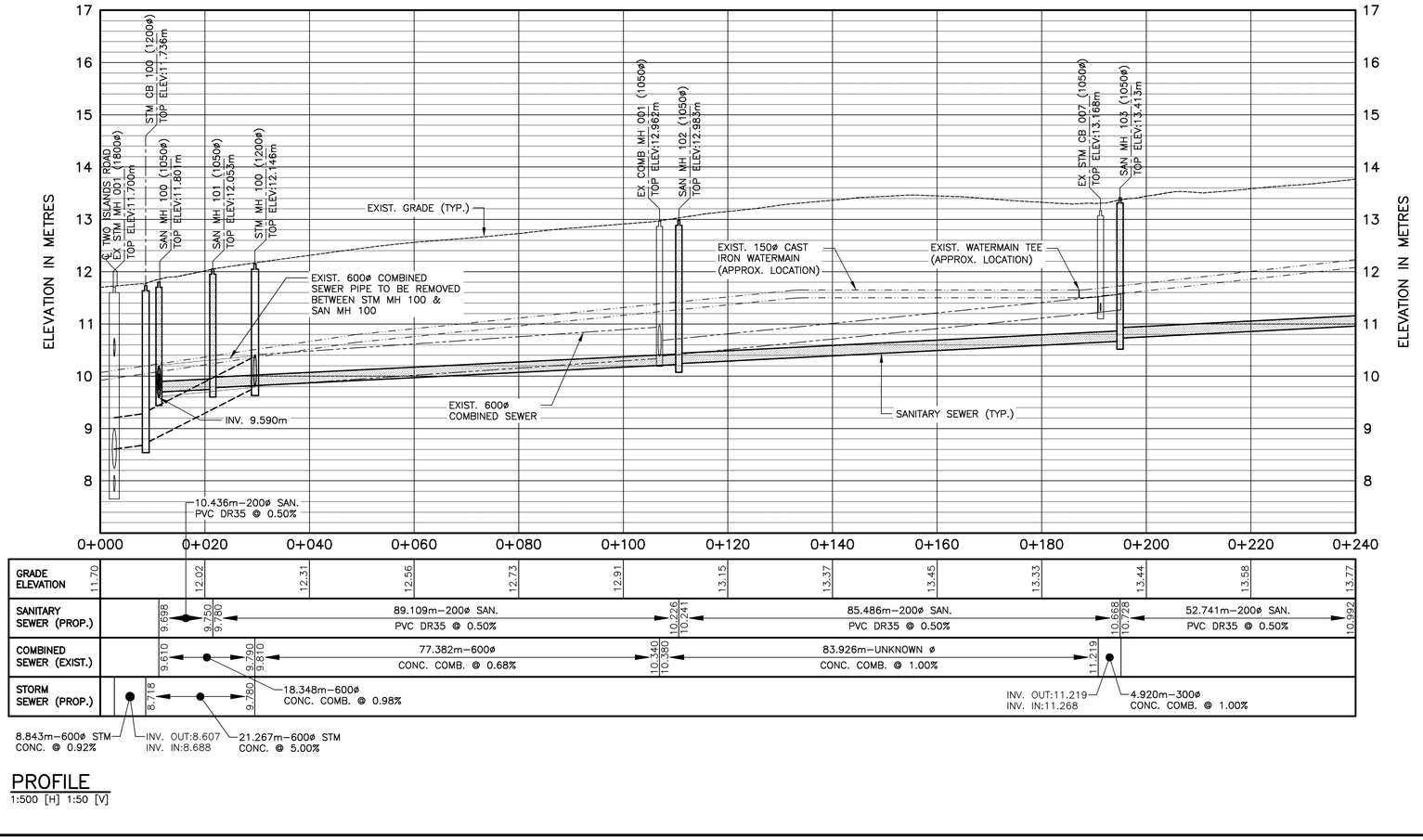
Drawing No **C001**

APPROVED PROFESSIONAL ENGINEER MAR.09/17 T.W. Bragnalo 10229 PROVINCE OF NOVA SCOTIA

DRAWING NAME: C:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\06 OVERALL\161039.00 - SITEPLANE.DWG LAYOUT NAME: C001 PLOT DATE: March-09-17 5:12:19 PM CAD OPERATOR: TBRAGNALO



PLAN
1:500



PROFILE
1:500 [H] 1:50 [V]

SPRING STREET MANHOLE DATA

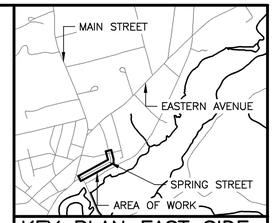
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 100	11.801m	9.698m (200ø) 9.740m (300ø)	SAN MH 101 EX SAN MH 001A	9.590m (600ø)	SAN MH 213
SAN MH 101	12.053m	9.780m (200ø)	SAN MH 102	9.750m (200ø)	SAN MH 100
SAN MH 102	12.983m	10.241m (200ø)	SAN MH 103	10.226m (200ø)	SAN MH 101
SAN MH 103	13.413m	10.728m (200ø)	SAN MH 104	10.668m (200ø)	SAN MH 102

SPRING STREET SANITARY

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
STM MH 100	12.146m	9.810m (600ø)	EX COMB MH 001	9.780m (600ø)	STM CB 100
STM CB 100	11.736m	8.718m (600ø)	STM MH 100	8.688m (600ø)	EX STM MH 001

NOTES

1. EXISTING COMBINED SEWER TO BE CONVERTED TO STORM SEWER AFTER NEW SANITARY SEWER IS INSTALLED.
2. DISCONNECT EXISTING SANITARY LATERAL FROM EXISTING COMBINED SEWER AND CAP AT EXISTING MAIN. EXTEND NEW SANITARY SERVICE LATERAL FROM NEW SANITARY SEWER TO EXISTING SEWER LATERAL AT PROPERTY LINE AND CONNECT.



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
	U/G UTILITIES	
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES

1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

SPRING STREET

STA 0+000 TO STA 0+260

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

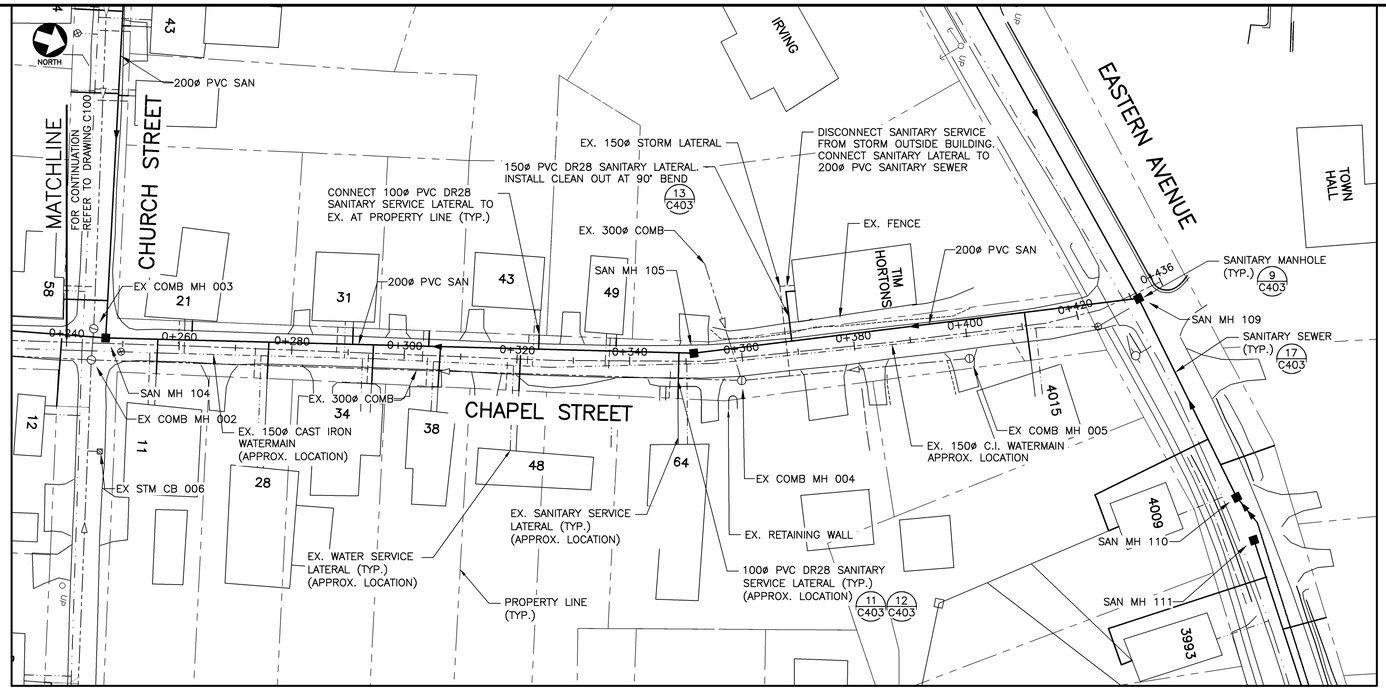
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF NOVA SCOTIA
J.W. Bragnalo
10229
MAR.09/17

Sheet No
2 of 36

Drawing No
C100

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 - ES - EG_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C100 PLOT DATE: Thursday, March 09, 2017 5:12:33 PM CAD OPERATOR: JUSTINR

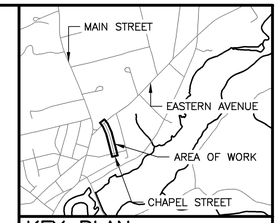


PLAN
1:500

CHAPEL STREET MANHOLE DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 104	13.880m	11.007m (200ø) 11.052m (200ø)	SAN MH 105 SAN MH 107	10.992m (200ø)	SAN MH 103
SAN MH 105	13.649m	11.559m (200ø)	SAN MH 109	11.529m (200ø)	SAN MH 104
SAN MH 109	14.273m	12.315m (200ø) 12.315m (200ø)	SAN MH 108 SAN MH 110	11.957m (200ø)	SAN MH 105

NOTES

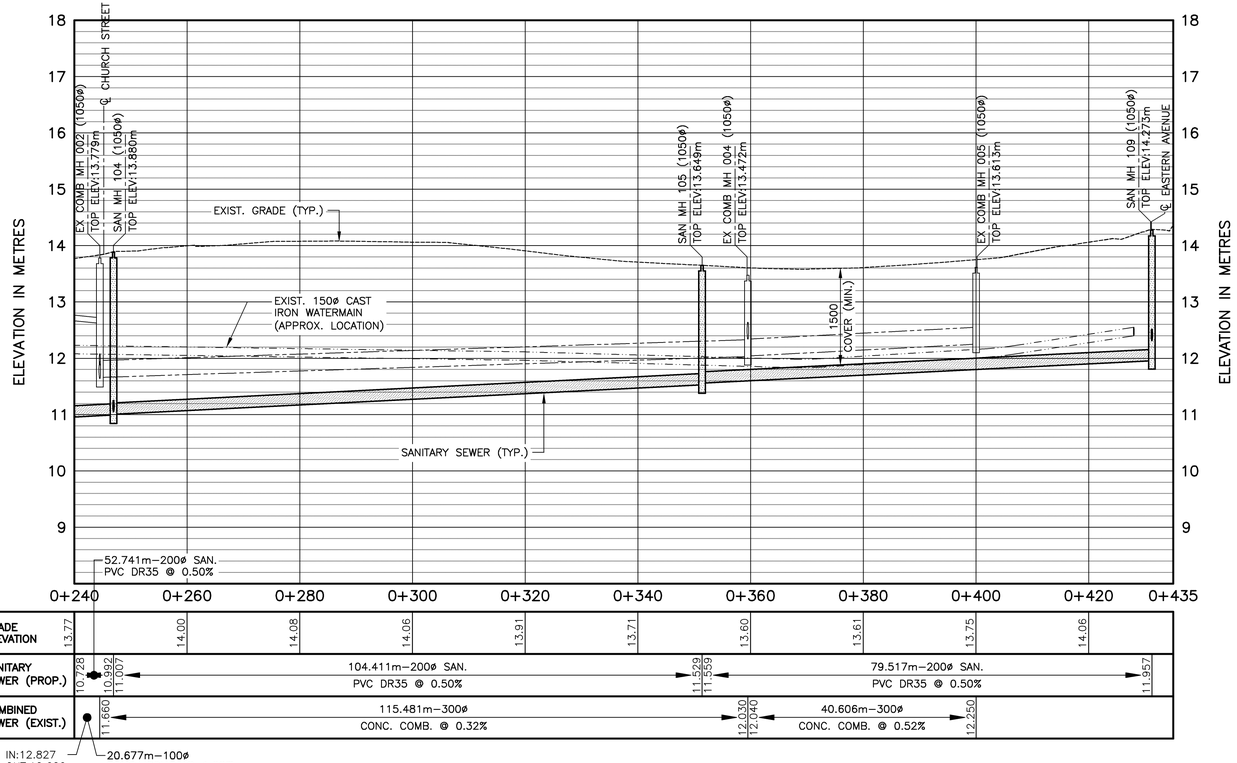
1. EXISTING COMBINED SEWER TO BE CONVERTED TO STORM SEWER AFTER NEW SANITARY SEWER IS INSTALLED.
2. DISCONNECT EXISTING SANITARY LATERAL FROM EXISTING COMBINED SEWER AND CAP AT EXISTING MAIN. EXTEND NEW SANITARY SERVICE LATERAL FROM NEW SANITARY SEWER TO EXISTING SEWER LATERAL AT PROPERTY LINE AND CONNECT.



KEY PLAN
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00



PROFILE
1:500 [H] 1:50 [V]

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

CHAPEL STREET

STA 0+240 TO STA 0+435

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

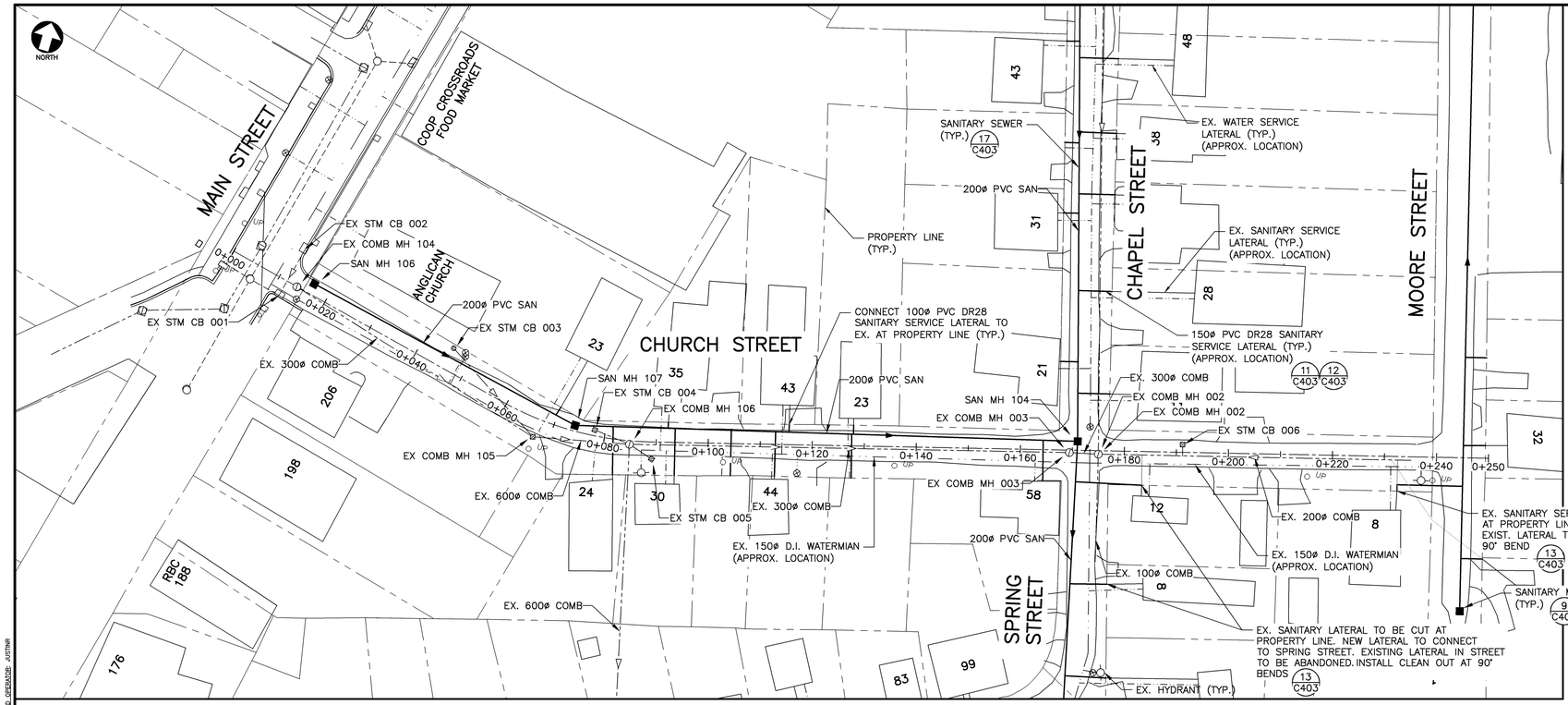
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 3 of 36

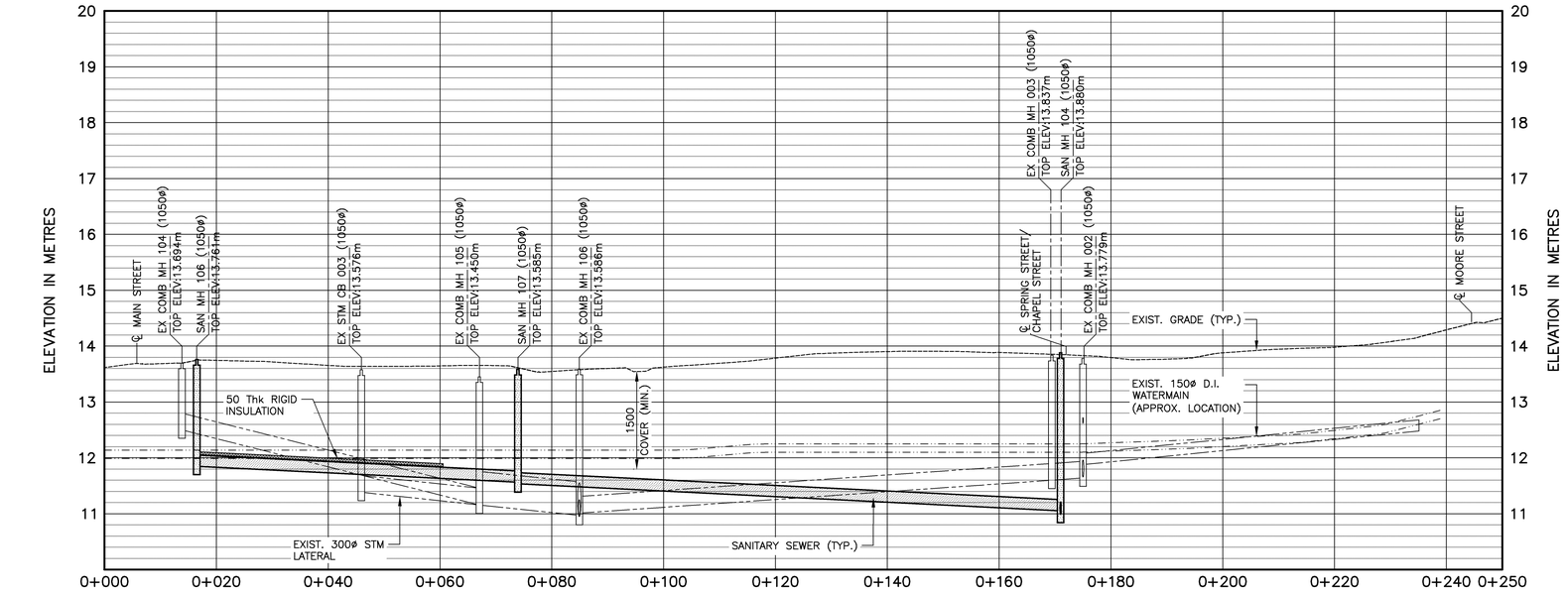
Drawing No C101

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T.W. Bragnalo 10229

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – EG_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C101 PLOT DATE: Thursday, March 09, 2017 5:12:06 PM CAD OPERATOR: JUSTNER



PLAN
1:500



GRADE ELEVATION	13.62	13.75	13.66	13.65	13.55	13.62	13.79	13.90	13.89	13.79	13.88	13.98	14.29	14.50	
SANITARY SEWER (PROP.)		11.850	57.027m–200ø SAN. PVC DR35 @ 0.50%			11.565 / 11.535	96.630m–200ø SAN. PVC DR35 @ 0.50%			11.052					
COMBINED SEWER (EXIST.)		12.500	53.723m–300ø CONC. COMB. @ 2.50%		11.157 / 11.157	10.970 / 11.010	84.565m–300ø CONC. COMB. @ 0.70%			11.600	11.880	60.095m–200ø CONC. COMB. @ 1.00%		12.481	

18.654m–600ø CONC. COMB. @ 1.00%

5.563m–300ø CONC. COMB. @ 0.72%

INV. OUT:11.600
INV. IN:11.640

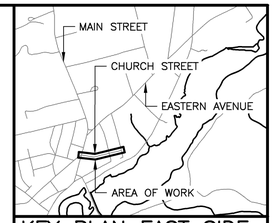
PROFILE
1:500 [H] 1:50 [V]

CHURCH STREET MANHOLE DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 104	13.880m	11.007m (200ø) 11.052m (200ø)	SAN MH 105 SAN MH 107	10.992m (200ø)	SAN MH 103
SAN MH 106	13.761m			11.850m (200ø)	SAN MH 107
SAN MH 107	13.585m	11.565m (200ø)	SAN MH 106	11.535m (200ø)	SAN MH 104

NOTES

1. EXISTING COMBINED SEWER TO BE CONVERTED TO STORM SEWER AFTER NEW SANITARY SEWER IS INSTALLED.
2. DISCONNECT EXISTING SANITARY LATERAL FROM EXISTING COMBINED SEWER AND CAP AT EXISITING MAIN. EXTEND NEW SANITARY SERVICE LATERAL FROM NEW SANITARY SEWER TO EXISTING SEWER LATERAL AT PROPERTY LINE AND CONNECT.



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G	U/G UTILITIES	U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES

1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

CHURCH STREET

STA 0+000 TO STA 0+160

CBCL LIMITED
Consulting Engineers

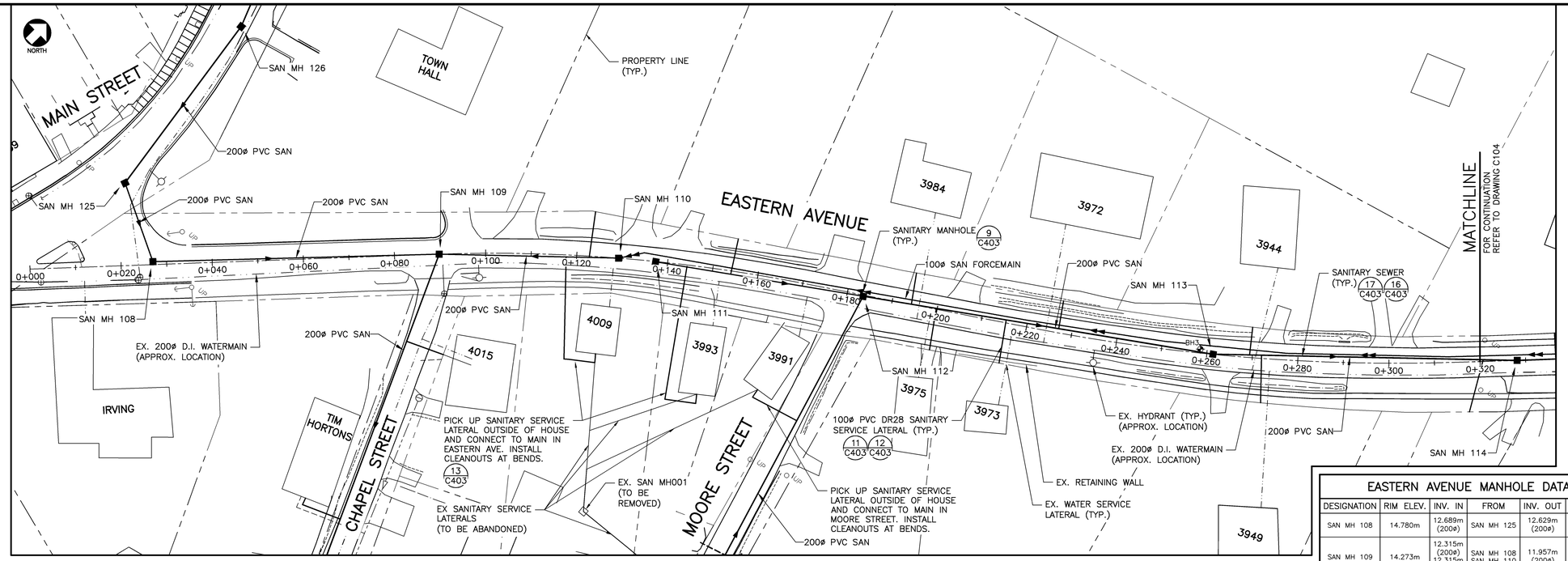
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 4 of 36

Drawing No **C102**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – EXLPLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C102 PLOT DATE: Thursday, March 09, 2017 5:11:30 PM CAD OPERATOR: JUSTINR



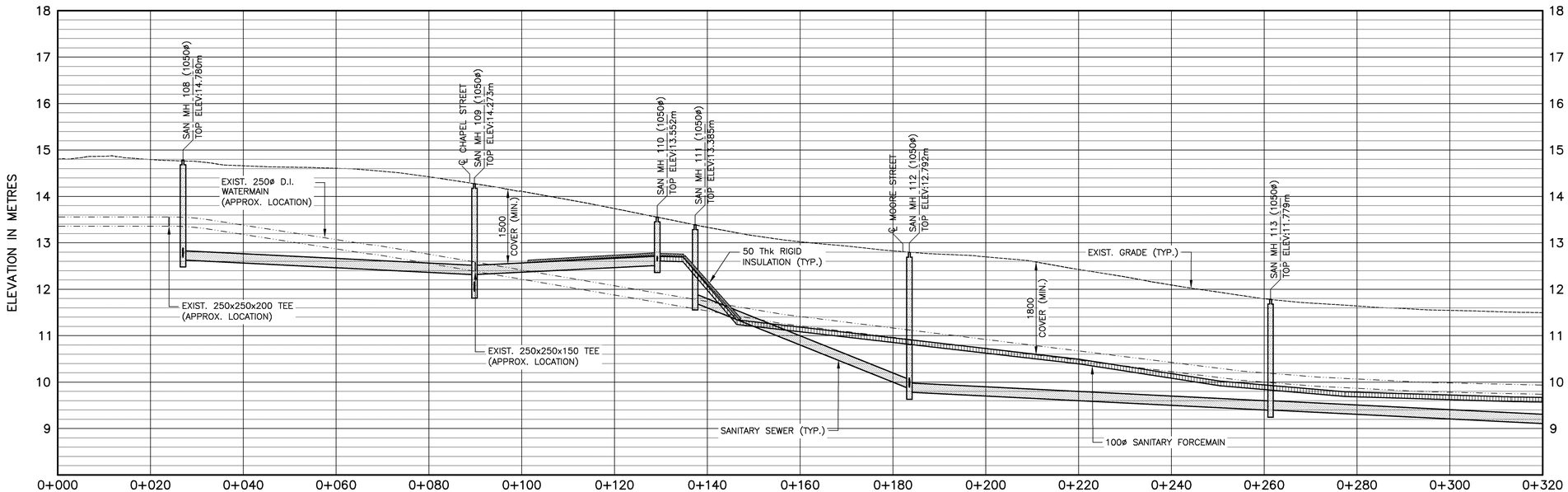
PLAN
1:500

NOTES

1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.

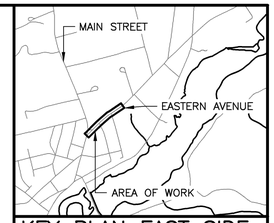
EASTERN AVENUE MANHOLE DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 108	14.780m	12.689m (200ø)	SAN MH 125	12.629m (200ø)	SAN MH 109
SAN MH 109	14.273m	12.315m (200ø) 12.315m (200ø)	SAN MH 108 SAN MH 110	11.957m (200ø)	SAN MH 105
SAN MH 110	13.552m	12.608m (100ø)	PS 1 (FORCEMAIN)	12.512m (200ø)	SAN MH 109
SAN MH 111	13.385m			11.703m (200ø)	SAN MH 112
SAN MH 112	12.792m	9.857m (200ø) 9.889m (200ø)	SAN MH 111 SAN MH 123	9.782m (200ø)	SAN MH 113
SAN MH 113	11.779m	9.393m (200ø)	SAN MH 112	9.400m (200ø)	SAN MH 114
SAN MH 114	11.483m	9.066m (200ø)	SAN MH 113	9.066m (200ø)	SAN MH 115



GRADE ELEVATION	14.80	14.79	14.66	14.61	14.42	14.11	13.74	13.33	13.02	12.83	12.70	12.43	12.09	11.79	11.64	11.54	11.50		
SANITARY SEWER (PROP.)		12.629	62.813m–200ø SAN. PVC DR35 @ 0.50%			12.315 12.315	39.373m–200ø SAN. PVC DR35 @ 0.50%		12.512	11.703	46.140m–200ø SAN. PVC DR35 @ 4.00%		9.857 9.782	77.791m–200ø SAN. PVC DR35 @ 0.50%			9.393 9.400	66.713m–200ø SAN. PVC DR35 @ 0.50%		9.066

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

EASTERN AVENUE

STA 0+000 TO STA 0+320

CBCL LIMITED
Consulting Engineers

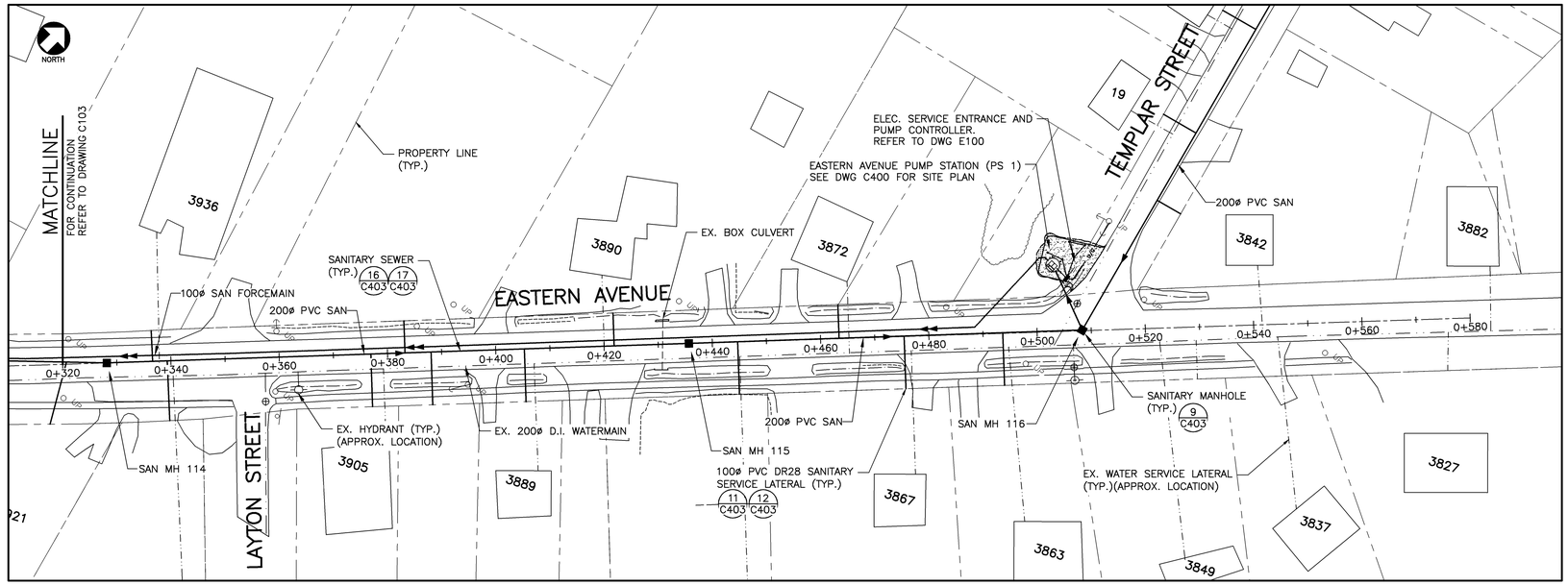
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

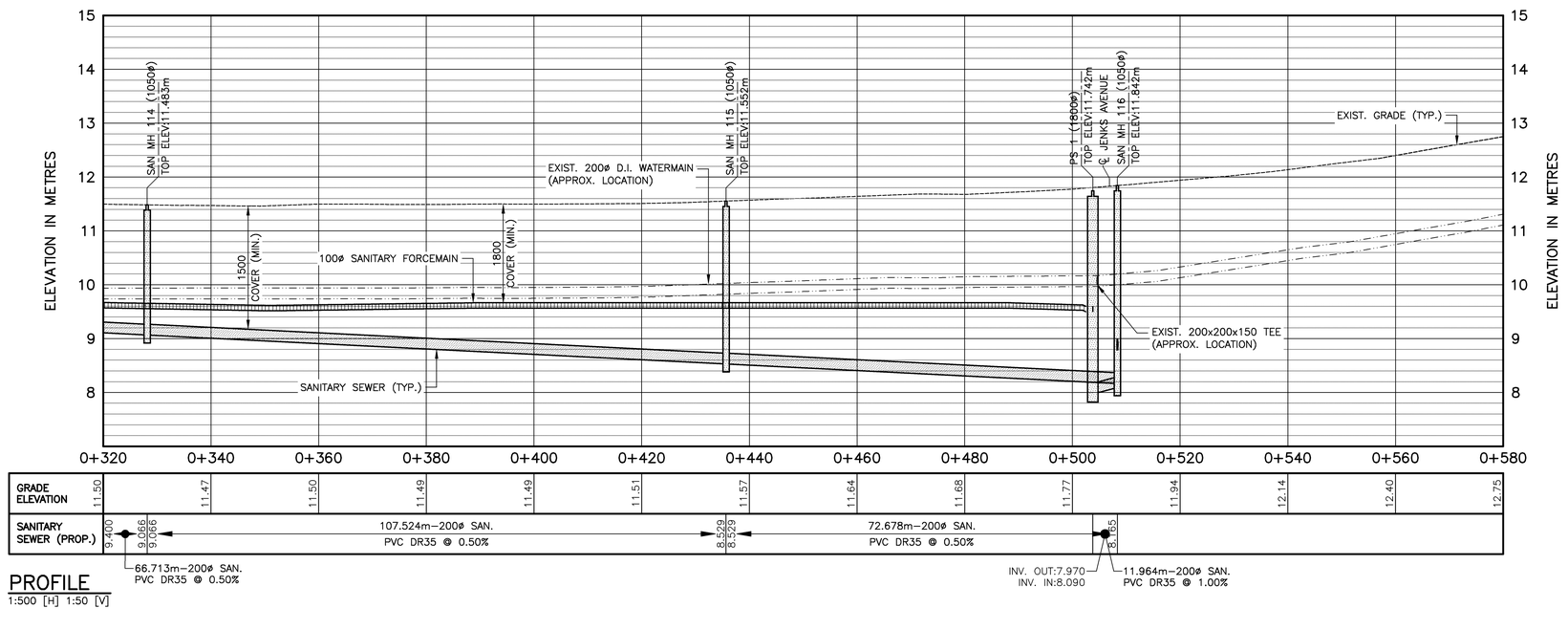
REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 J.W. Bragdo 10229

Sheet No 5 of 36

Drawing No **C103**



PLAN
1:500

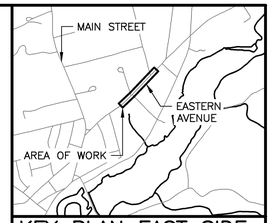


PROFILE
1:500 [H] 1:50 [V]

EASTERN AVENUE MANHOLE DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 1	11.742m	7.970m (200ø)	SAN MH 116	9.500m (100ø)	SAN MH 110 (FORCEMAIN)
SAN MH 114	11.483m	9.066m (200ø)	SAN MH 113	9.066m (200ø)	SAN MH 115
SAN MH 115	11.552m	8.529m (200ø)	SAN MH 114	8.529m (200ø)	SAN MH 116
SAN MH 116	11.842m	8.789m (200ø) 8.165m (200ø)	SAN MH 122 SAN MH 115	8.090m (200ø)	PS 1

NOTES

1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

EASTERN AVENUE

STA 0+320 TO STA 0+600

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

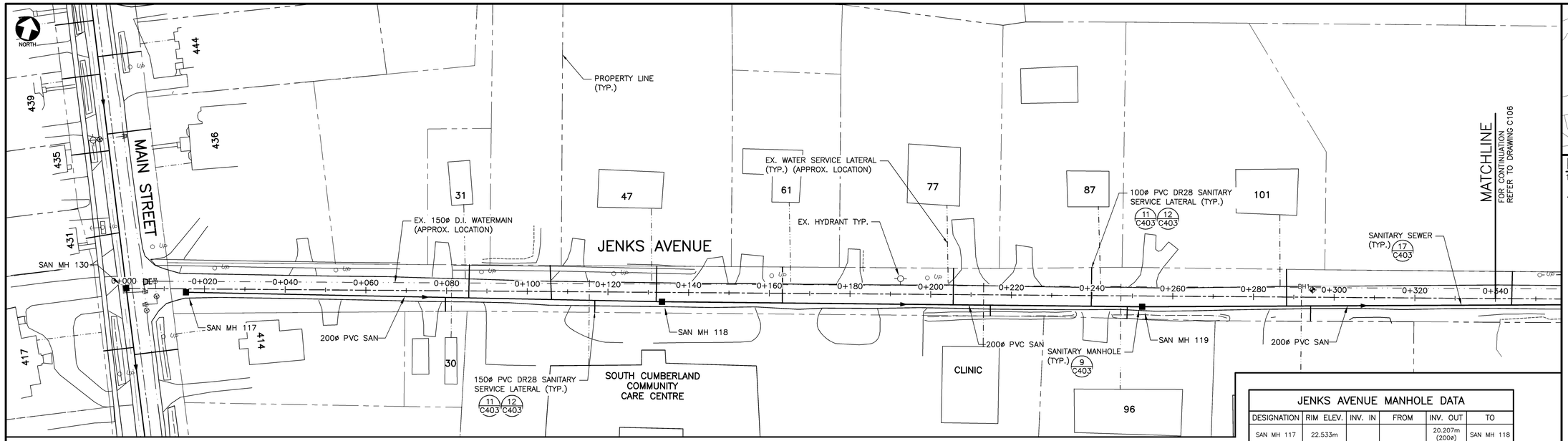
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

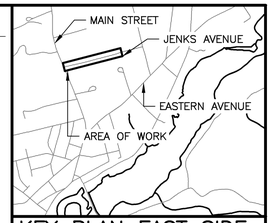
Sheet No
6 of 36

Drawing No
C104

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF NOVA SCOTIA
MAR.09/17
T.W. Bragnalo
10229

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – EO_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C104 PLOT DATE: Thursday, March 09, 2017 5:10:29 PM CAD OPERATOR: JUSTNR



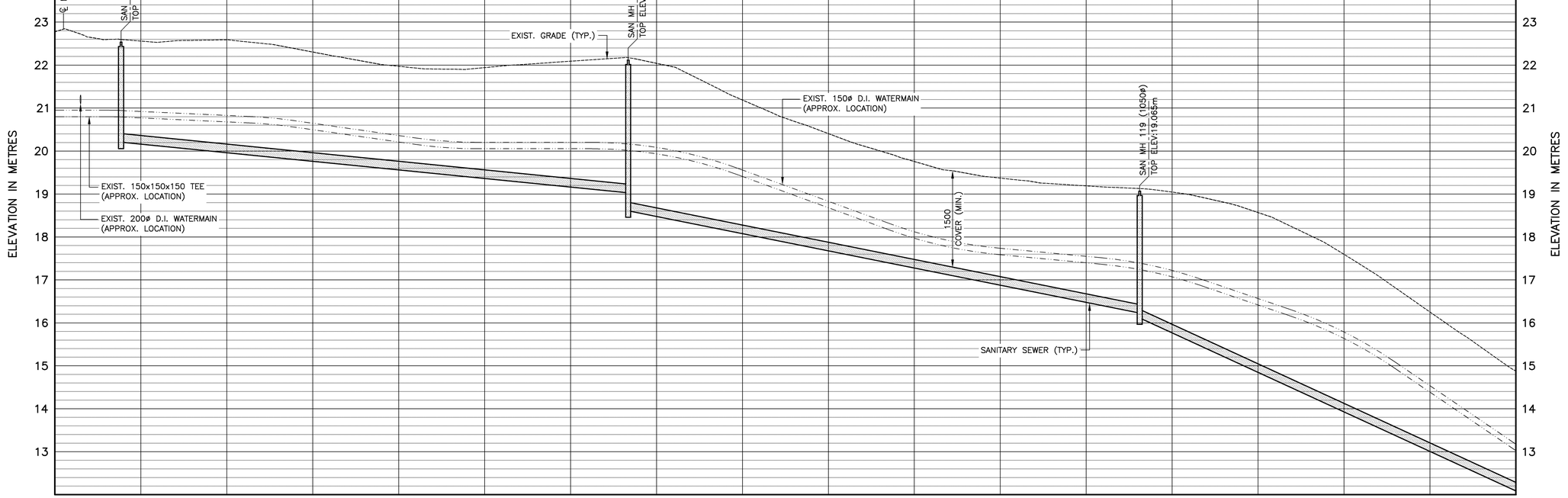


KEY PLAN EAST SIDE
1:5000

PLAN
1:500

JENKS AVENUE MANHOLE DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 117	22.533m			20.207m (200ø)	SAN MH 118
SAN MH 118	22.116m	19.026m (200ø)	SAN MH 117	18.609m (200ø)	SAN MH 119
SAN MH 119	19.065m	16.228m (200ø)	SAN MH 118	16.115m (200ø)	SAN MH 120



GRADE ELEVATION	22.77	22.56	22.59	22.30	21.97	21.94	22.09	22.04	21.19	20.41	19.76	19.37	19.19	19.04	18.57	17.60	16.25	14.88
SANITARY SEWER (PROP.)		20.207	118.015m–200ø SAN. PVC DR35 @ 1.00%					19.026 18.609	119.028m–200ø SAN. PVC DR35 @ 2.00%					16.228 16.115	109.261m–200ø SAN. PVC DR35 @ 4.60%			11.089

PROFILE
1:500 [H] 1:50 [V]

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

JENKS AVENUE

STA 0+000 TO STA 0+340

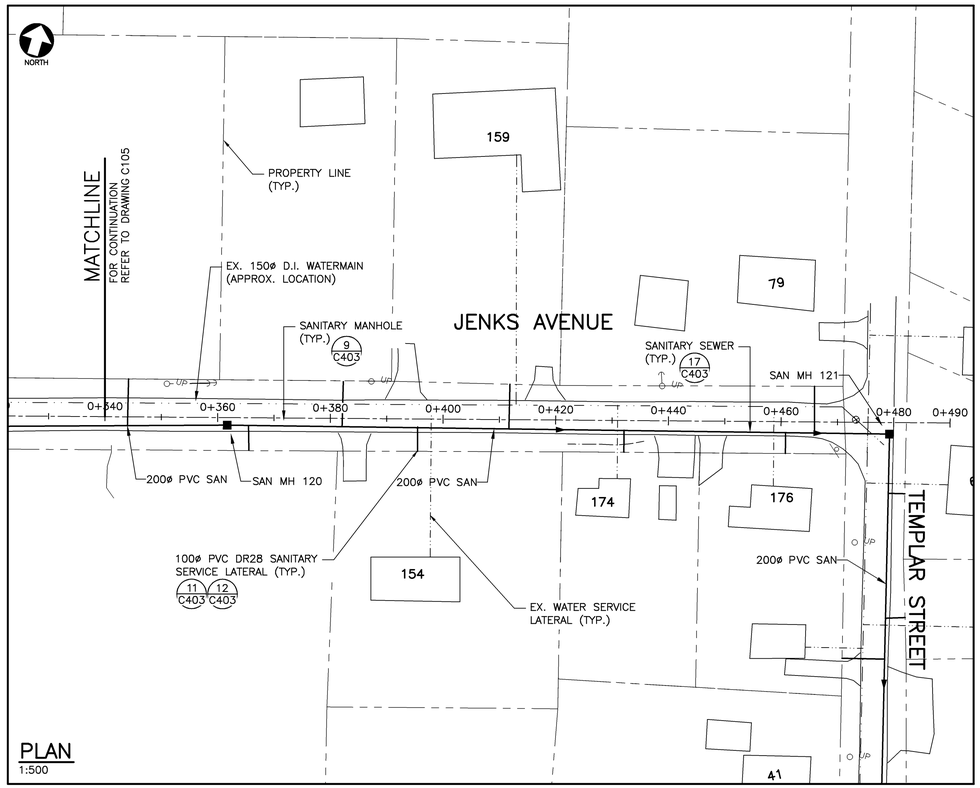
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

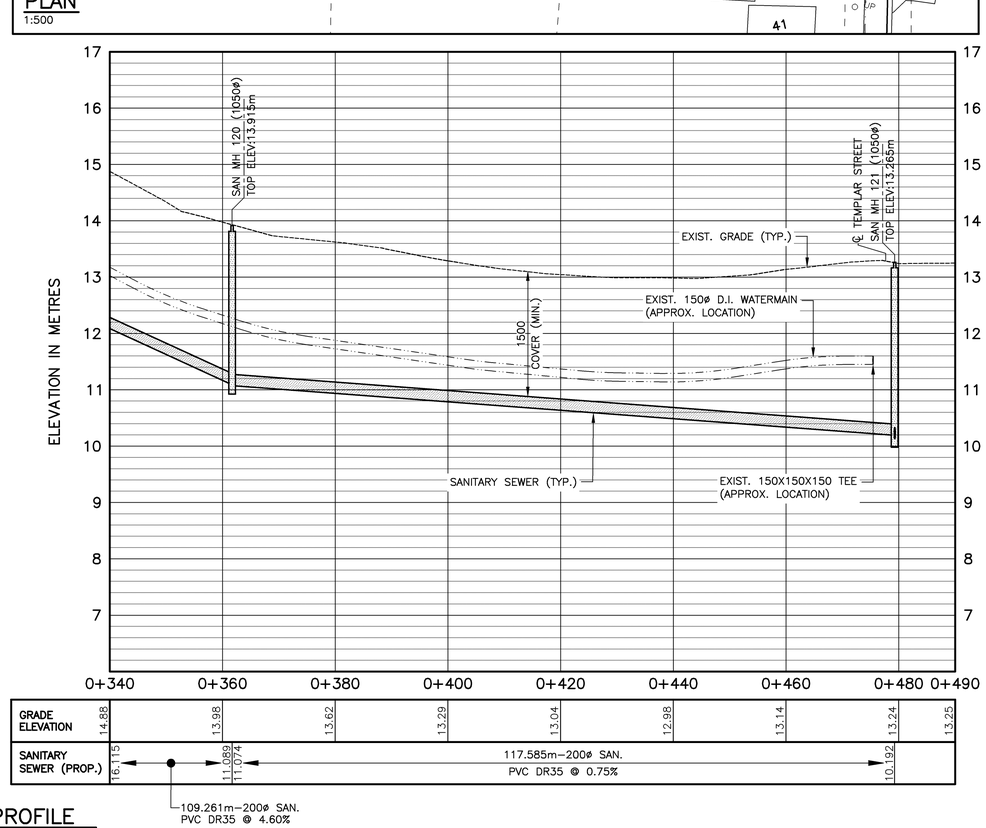
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 7 of 36

Drawing No **C105**

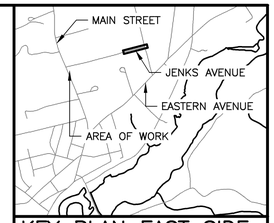


PLAN
1:500



PROFILE
1:500 [H] 1:50 [V]

JENKS AVENUE MANHOLE DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 120	13.915m	11.089m (200ø)	SAN MH 119	11.074m (200ø)	SAN MH 121
SAN MH 121	13.265m	10.192m (200ø)	SAN MH 120	10.132m (200ø)	SAN MH 122



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND
PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

JENKS AVENUE

STA 0+340 TO STA 0+490

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

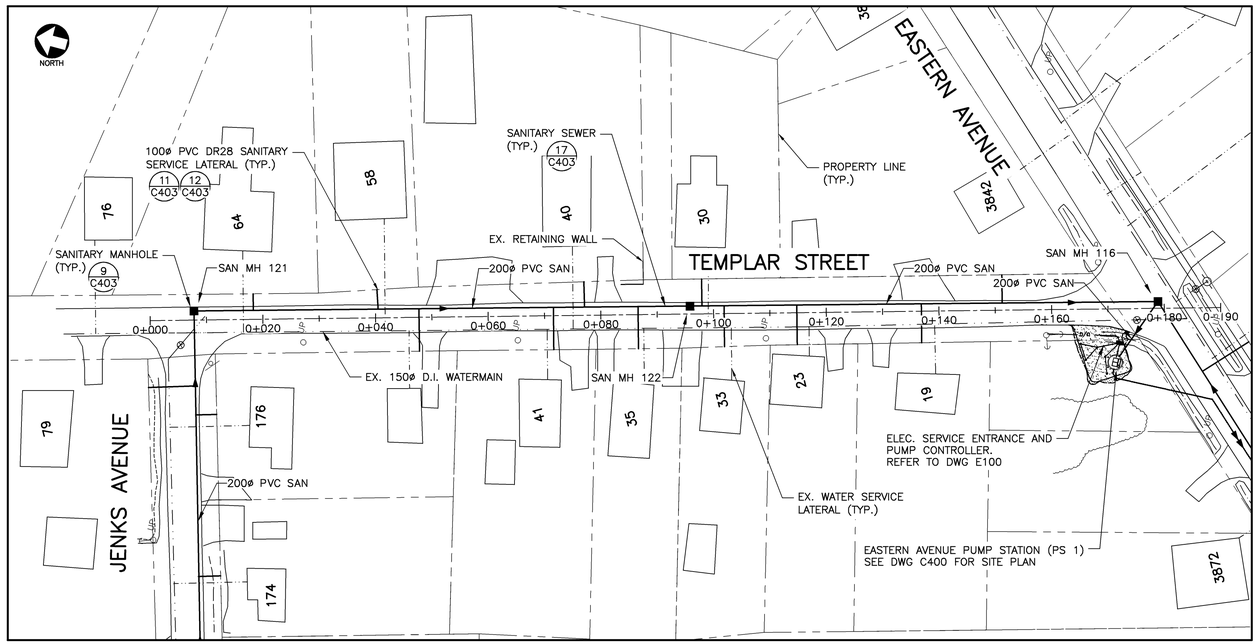
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 8 of 36

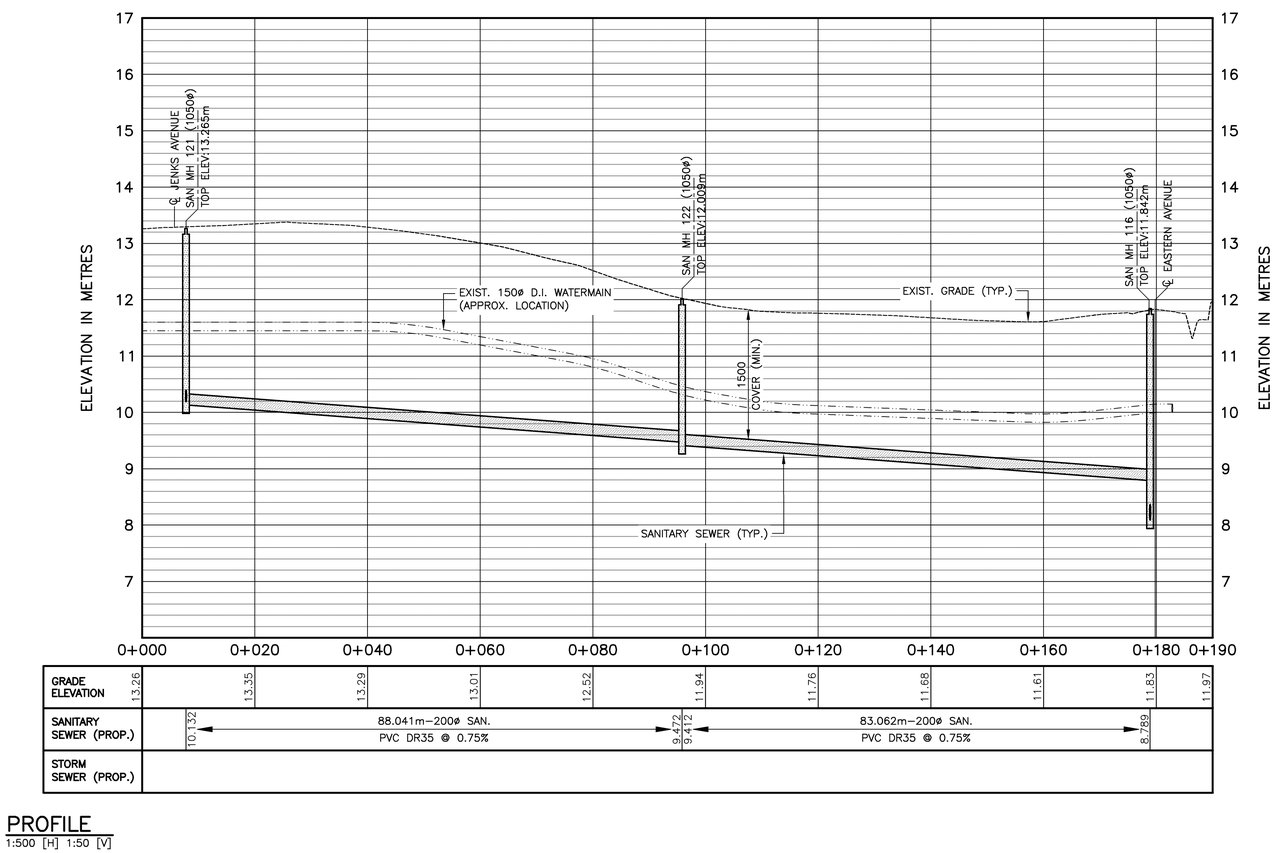
Drawing No C106

REGISTERED PROFESSIONAL ENGINEER MAR.09/17 T. M. Biagioli 10229 PROVINCE OF NOVA SCOTIA

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – ESL_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C106 PLOT DATE: Thursday, March 09, 2017 5:09:35 PM CAD OPERATOR: JUSTINR

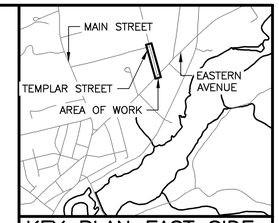


PLAN
1:500



PROFILE
1:500 [H] 1:50 [V]

TEMPLAR STREET MANHOLE DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 116	11.842m	8.789m (200ø) 8.165m (200ø)	SAN MH 122 SAN MH 115	8.090m (200ø)	PS 1
SAN MH 121	13.265m	10.192m (200ø)	SAN MH 120	10.132m (200ø)	SAN MH 122
SAN MH 122	12.009m	9.472m (200ø)	SAN MH 121	9.412m (200ø)	SAN MH 116



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

TEMPLAR STREET

STA 0+000 TO STA 0+190

CBCL LIMITED
Consulting Engineers

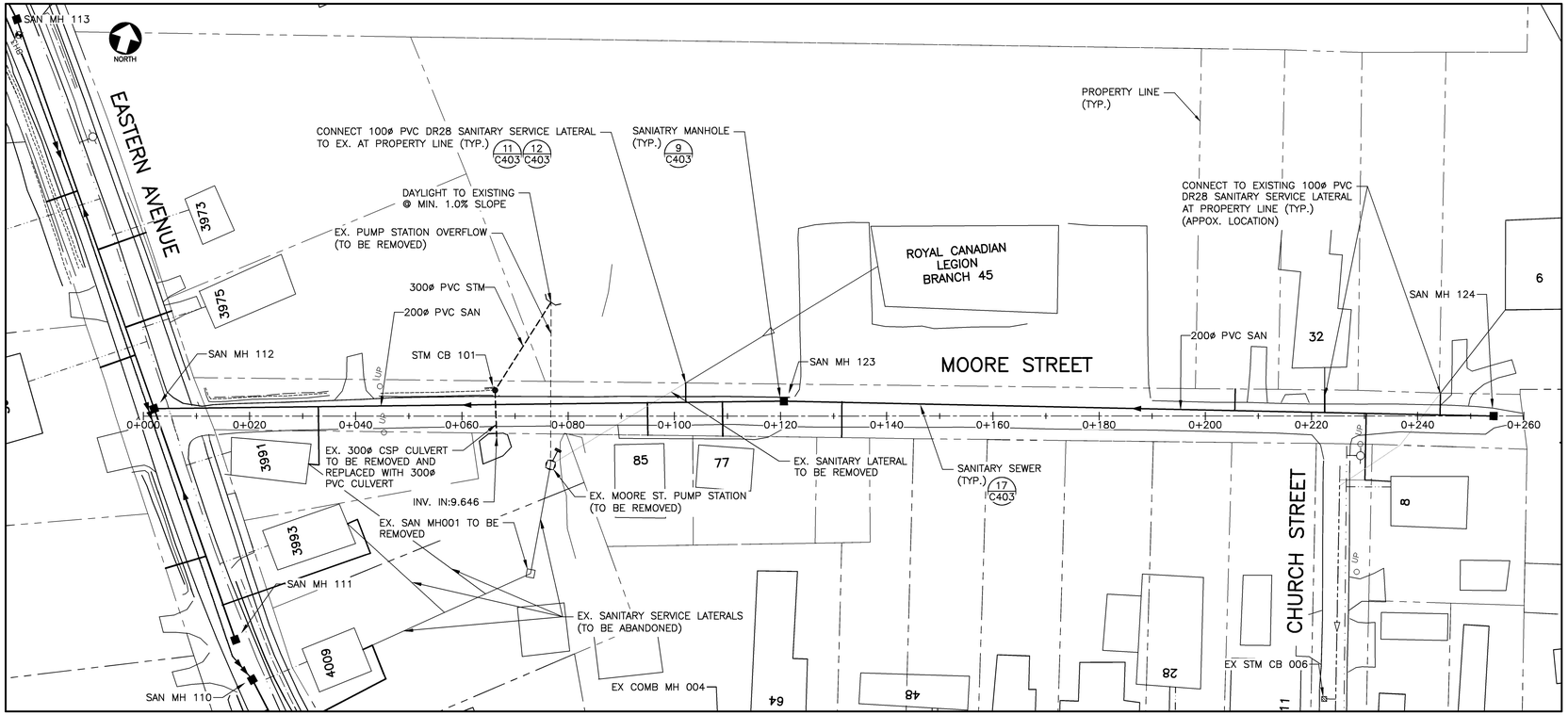
CBCL No	Contract No	Date	Scale
161039.00		NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

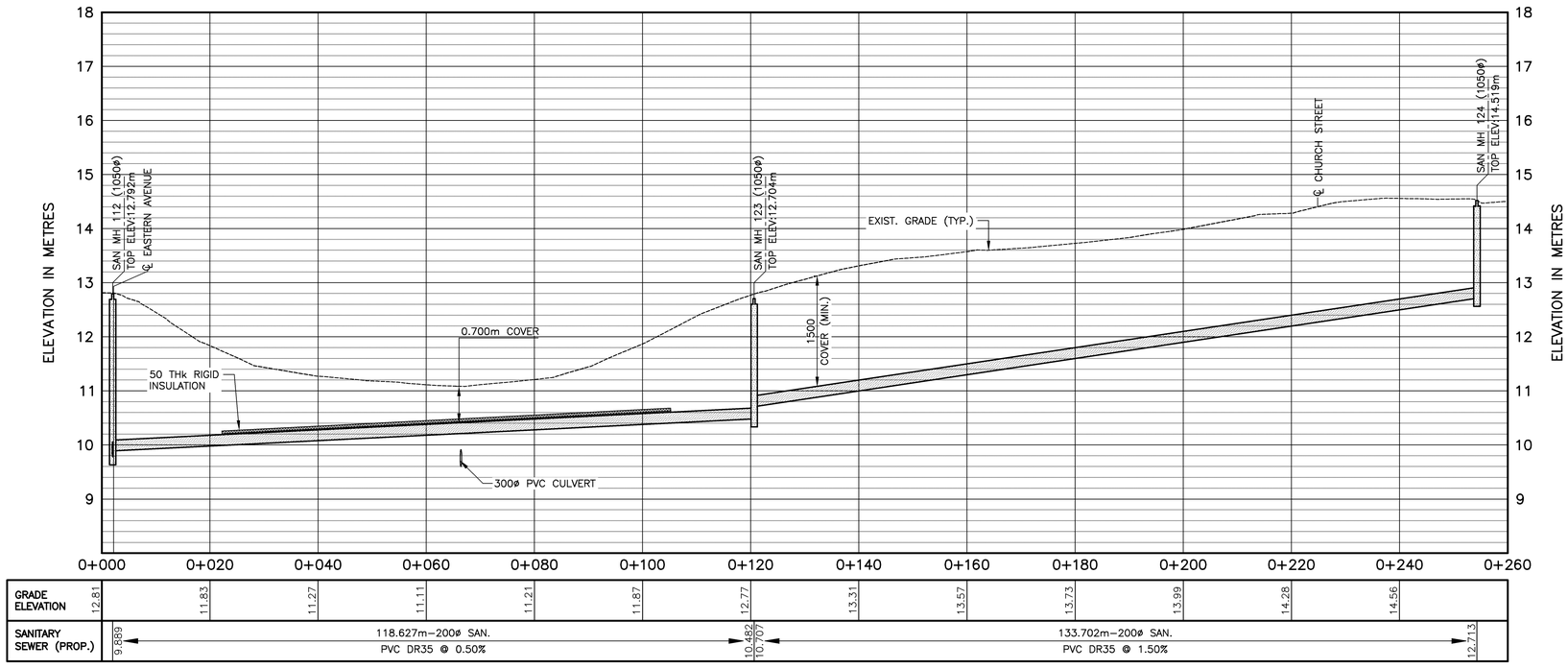
Sheet No 9 of 36

Drawing No C107

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
MAR.09/17
T.W. Bragnalo
10229



PLAN
1:500

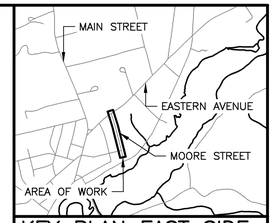


PROFILE
1:500 [H] 1:50 [V]

MOORE STREET MANHOLE DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 112	12.792m	9.857m (200ø) 9.889m (200ø)	SAN MH 111 SAN MH 123	9.782m (200ø)	SAN MH 113
SAN MH 123	12.704m	10.707m (200ø)	SAN MH 124	10.482m (200ø)	SAN MH 112
SAN MH 124	14.519m			12.713m (200ø)	SAN MH 123

NOTES
1. DISCONNECT EXISTING SANITARY LATERAL FROM EXISTING COMBINED SEWER AND CAP. EXTEND NEW SANITARY SERVICE LATERAL FROM NEW SANITARY SEWER TO EXISTING SEWER LATERAL AND CONNECT.



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MOORE STREET

STA 0+000 TO STA 0+260

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00		NOV 2016	AS NOTED

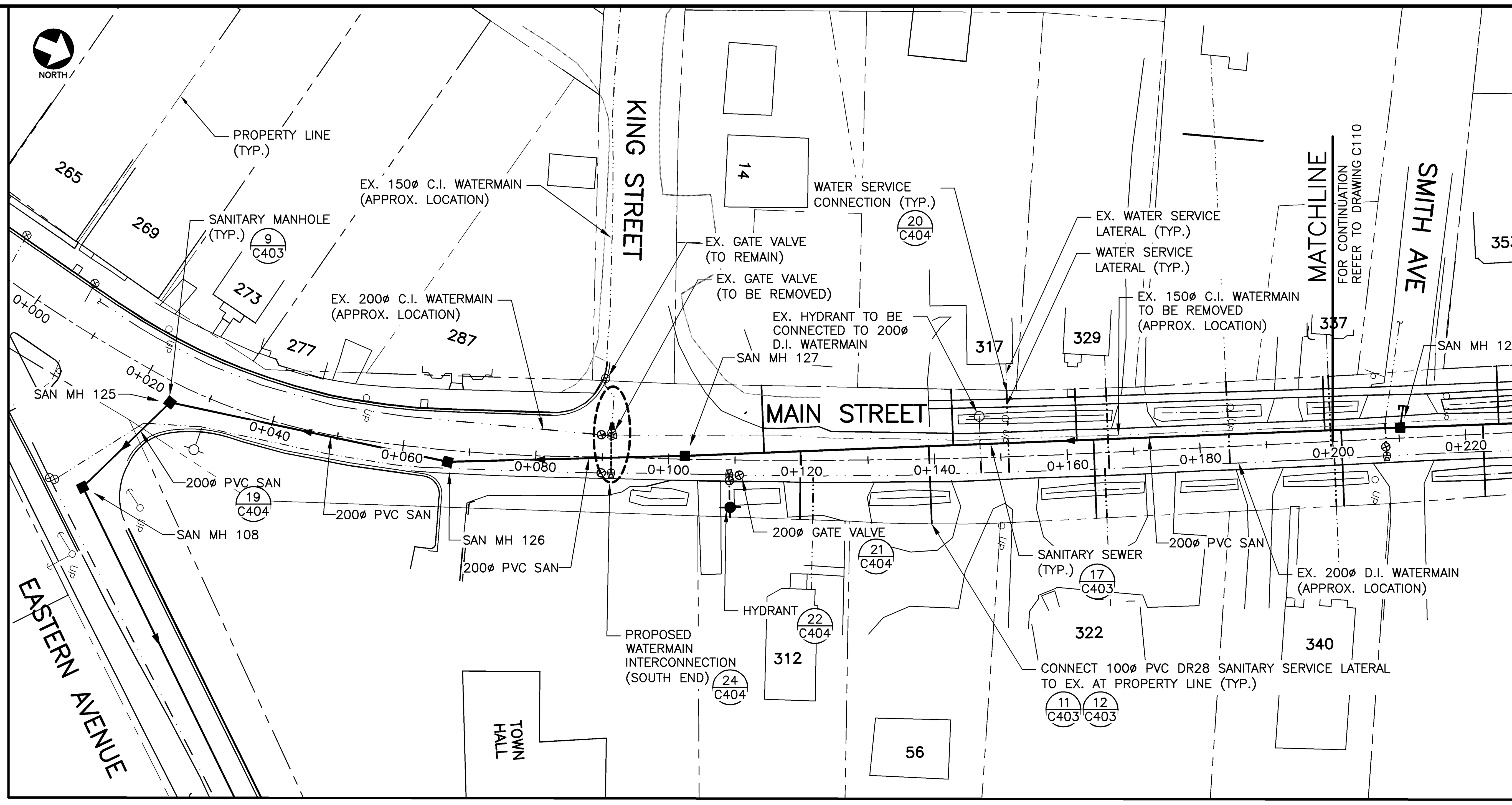
Designed	Drawn
AD	BWM
Checked	**Approved**
TB	JAB

Sheet No 10 of 36

Drawing No **C108**

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T.W. Bragnalo 10229

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – EQ_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C108 PLOT DATE: Thursday, March 09, 2017 5:08:34 PM CAD OPERATOR: JUSTNER

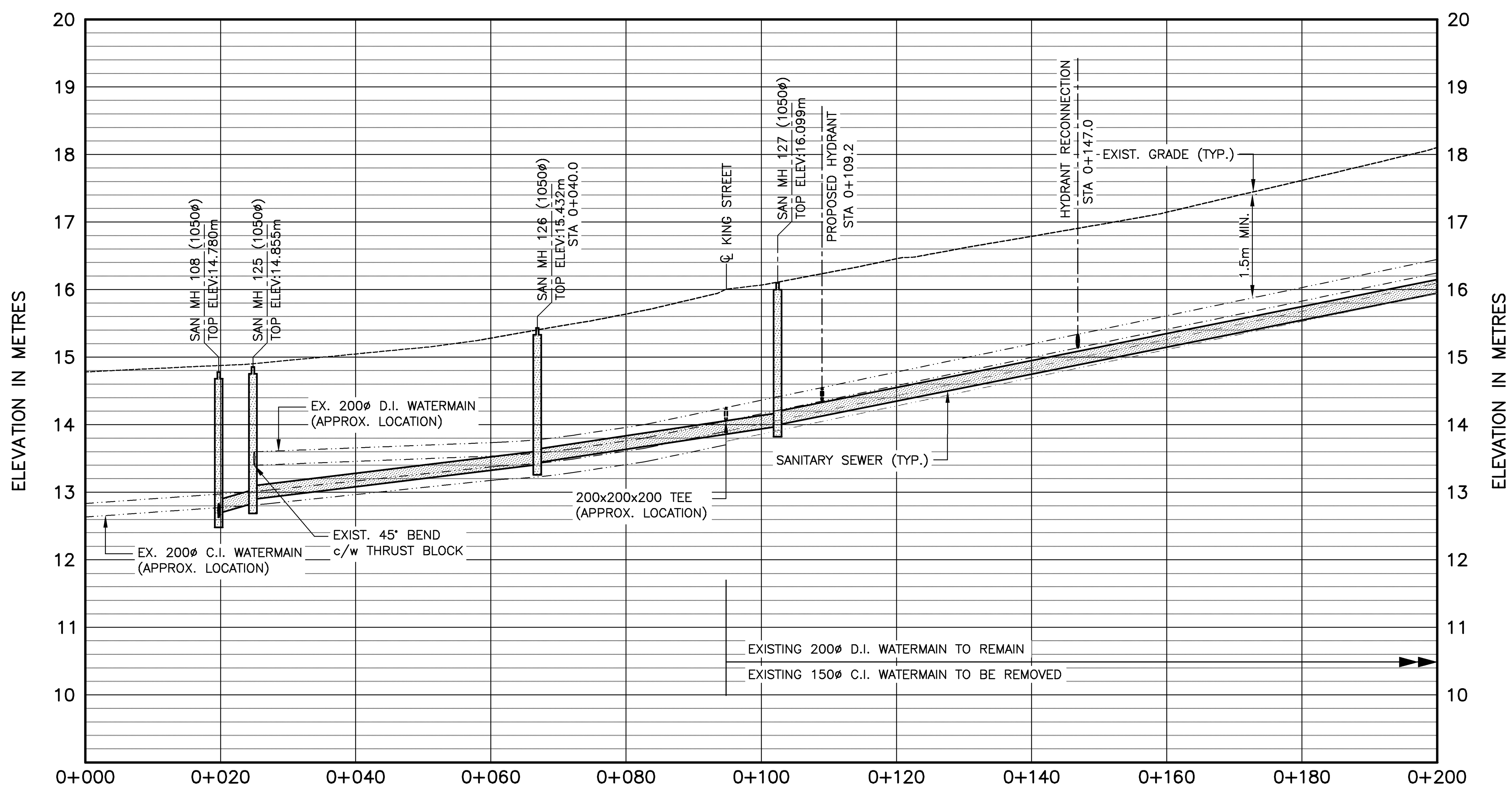


PLAN
1:500

MAIN STREET MANHOLE DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 108	14.780m	12.689m (200ø)	SAN MH 125	12.629m (200ø)	SAN MH 109
SAN MH 125	14.855m	12.895m (200ø)	SAN MH 126	12.835m (200ø)	SAN MH 108
SAN MH 126	15.432m	13.438m (200ø)	SAN MH 127	13.408m (200ø)	SAN MH 125
SAN MH 127	16.099m	13.998m (200ø)	SAN MH 128	13.973m (200ø)	SAN MH 126
SAN MH 128	18.334m	16.242m (200ø) 16.242m (200ø)	SAN MH 129 FUTURE CONNECTION 1	16.152m (200ø)	SAN MH 127

NOTES

1. EXISTING 150ø C.I. WATERMAIN LOCATED ON WESTSIDE OF MAIN STREET TO BE REMOVED. NEW SANITARY SEWER TO BE INSTALLED IN EXISTING TRENCH. MOVE WATER SERVICES FROM 150ø C.I. WATERMAIN TO 200ø D.I. WATERMAIN. EXTEND NEW WATER SERVICE LATERALS TO PROPERTY LINE, INSTALL NEW CURB STOP AND CONNECT TO EXISTING WATER SERVICE LATERAL. REFER TO DETAIL 20/C404.

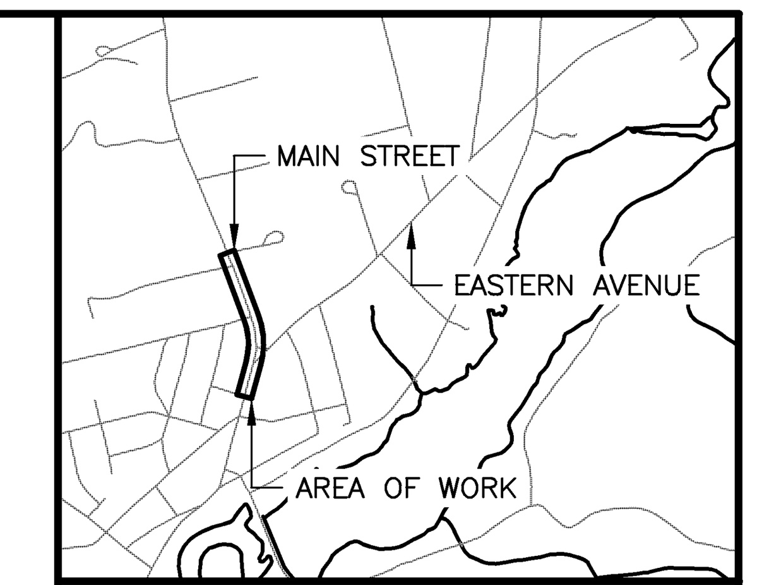


GRADE ELEVATION	14.78	14.88	15.05	15.28	15.64	16.07	16.46	16.79	17.15	17.62	18.10

SANITARY SEWER (PROP.)	INV. OUT:12.689 INV. IN:12.835	12.895	42.718m–200ø SAN. PVC DR35 @ 1.20%	13.408 13.438	35.692m–200ø SAN. PVC DR35 @ 1.50%	13.973 13.998	107.721m–200ø SAN. PVC DR35 @ 2.00%	16.152

18.310m–200ø SAN. PVC DR35 @ 0.80%

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
⊗	GATE VALVE	⊗
	FIRE HYDRANT	
□	SANITARY MH	□
⬡	SANITARY PUMP STATION	⬡
	COMBINED MH	
○	STORM MH	●
	STORM HEADWALL	
▭	STORM CATCHBASIN (SNGL.)	▬
⊘	STORM CATCHBASIN (RND.)	⊘
▨	STORM CATCHBASIN (SQ.)	▨
UP	UTILITY POLE	UP
U/G	U/G UTILITIES	U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MAIN STREET

STA 0+000 TO STA 0+200

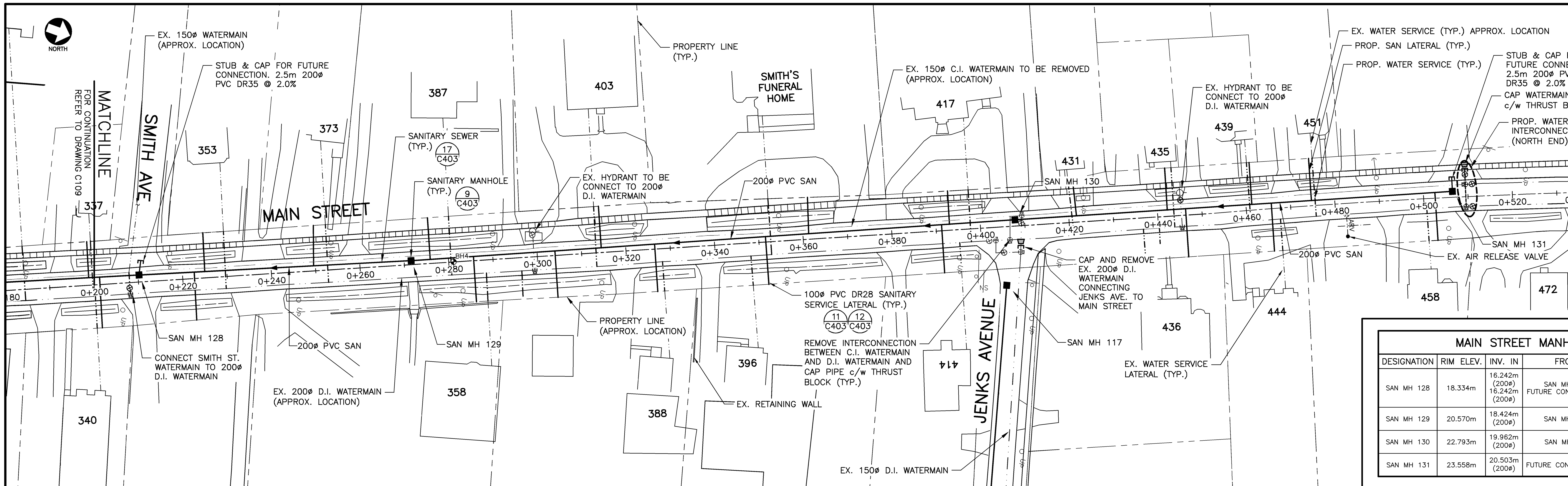
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

REGISTERED PROFESSIONAL ENGINEER MAR.09/17 T.W. Bragnalo 10229 PROVINCE OF NOVA SCOTIA

Designed AD	Drawn BWM
Checked TB	Approved JAB
Sheet No 11 of 36	
Drawing No C109	

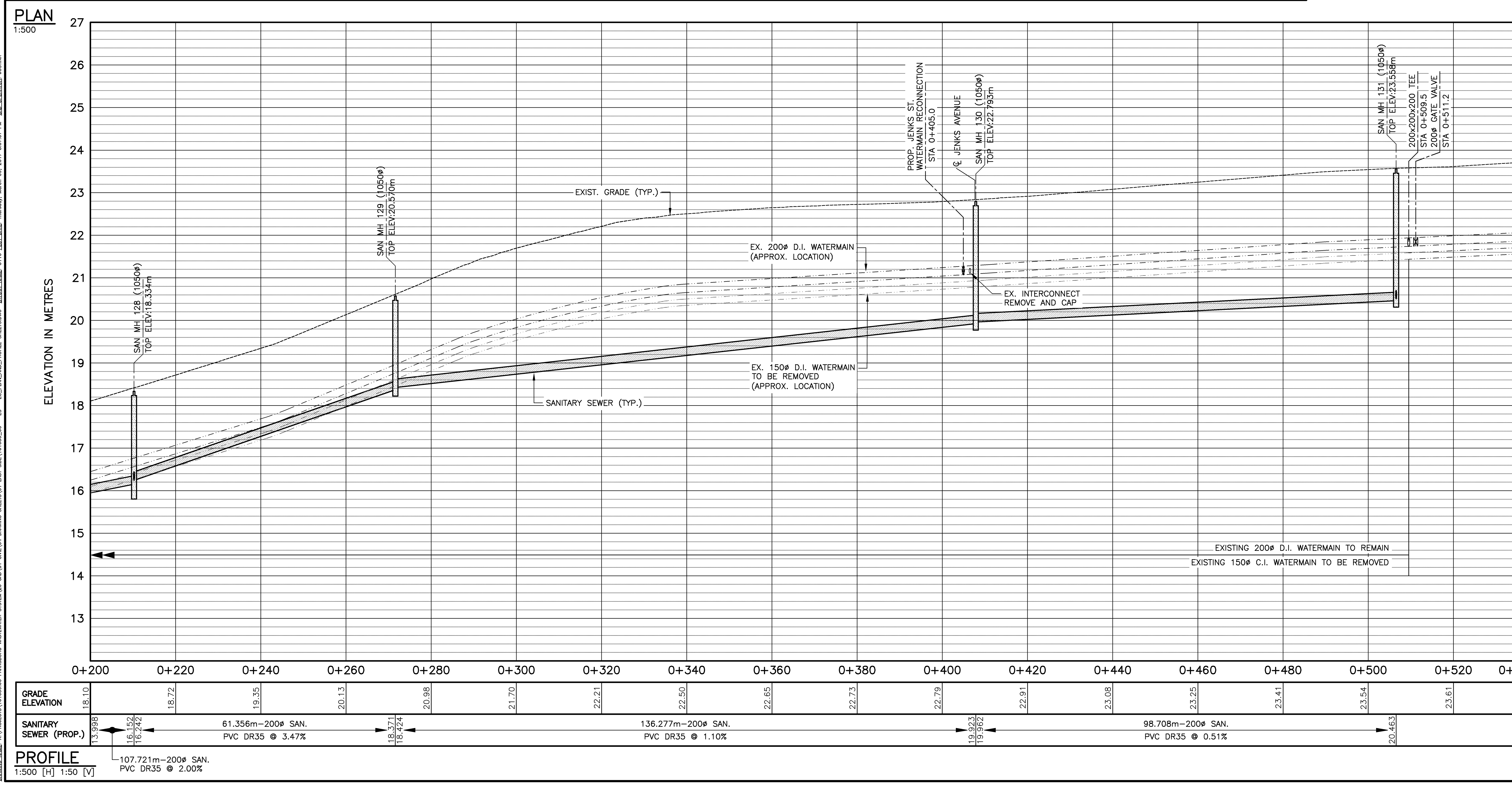
DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – EG_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C109 PLOT DATE: Thursday, March 09, 2017 5:08:13 PM CAD OPERATOR: JUSTINR



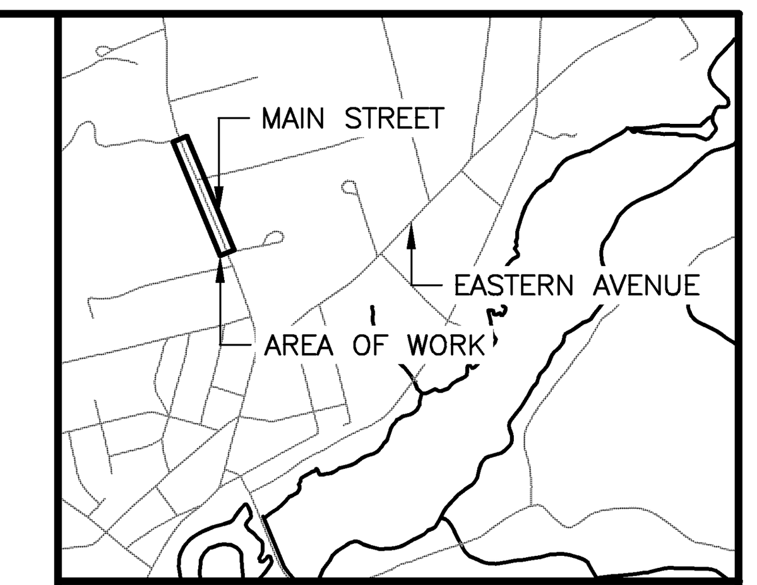
PLAN
1:500

MAIN STREET MANHOLE DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 128	18.334m	16.242m (200ø) 16.242m (200ø)	SAN MH 129 FUTURE CONNECTION 1	16.152m (200ø)	SAN MH 127
SAN MH 129	20.570m	18.424m (200ø)	SAN MH 130	18.371m (200ø)	SAN MH 128
SAN MH 130	22.793m	19.962m (200ø)	SAN MH 131	19.923m (200ø)	SAN MH 129
SAN MH 131	23.558m	20.503m (200ø)	FUTURE CONNECTION 2	20.463m (200ø)	SAN MH 130



PROFILE
1:500 [H] 1:50 [V]



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING / PROPOSED

PROPERTY LINE
WATERMAIN
WATERMAIN (REMOVE)
SANITARY SEWER
SANITARY FORCEMAIN
COMBINED SEWER
STORM SEWER
REMOVALS
DITCH/SWALE
WOODEN FENCE
TOP OF SLOPE
BOTTOM OF SLOPE

BH BOREHOLE
GATE VALVE
FIRE HYDRANT
SANITARY MH
SANITARY PUMP STATION
COMBINED MH
STORM MH
STORM HEADWALL
STORM CATCHBASIN (SNGL.)
STORM CATCHBASIN (RND.)
STORM CATCHBASIN (SQ.)
UP UTILITY POLE
U/G UTILITIES
20.0 MAJOR CONTOUR 20.0
19.0 MINOR CONTOUR 19.0
×19.0 SPOT ELEVATION ×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MAIN STREET

STA 0+200 TO STA 0+535

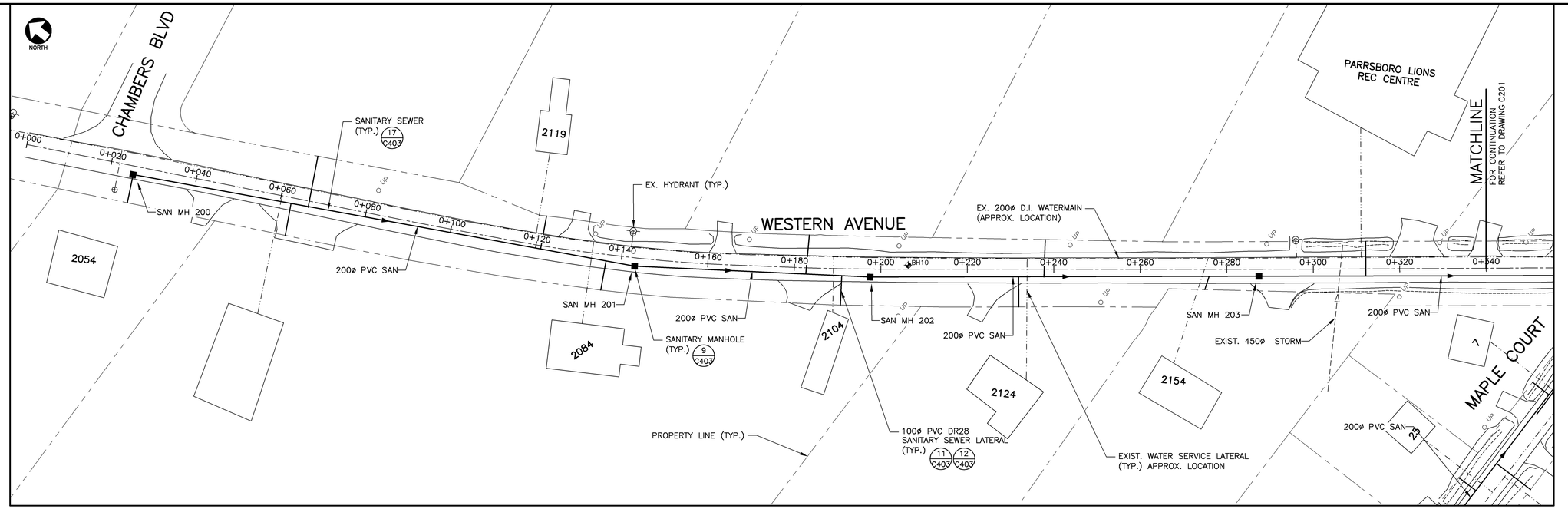
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

REGISTERED PROFESSIONAL ENGINEER MAR.09/17 T.W. Bragnalo 10229 PROVINCE OF NOVA SCOTIA

Designed AD | Drawn BWM
Checked TB | Approved JAB
Sheet No 12 of 36
Drawing No C110

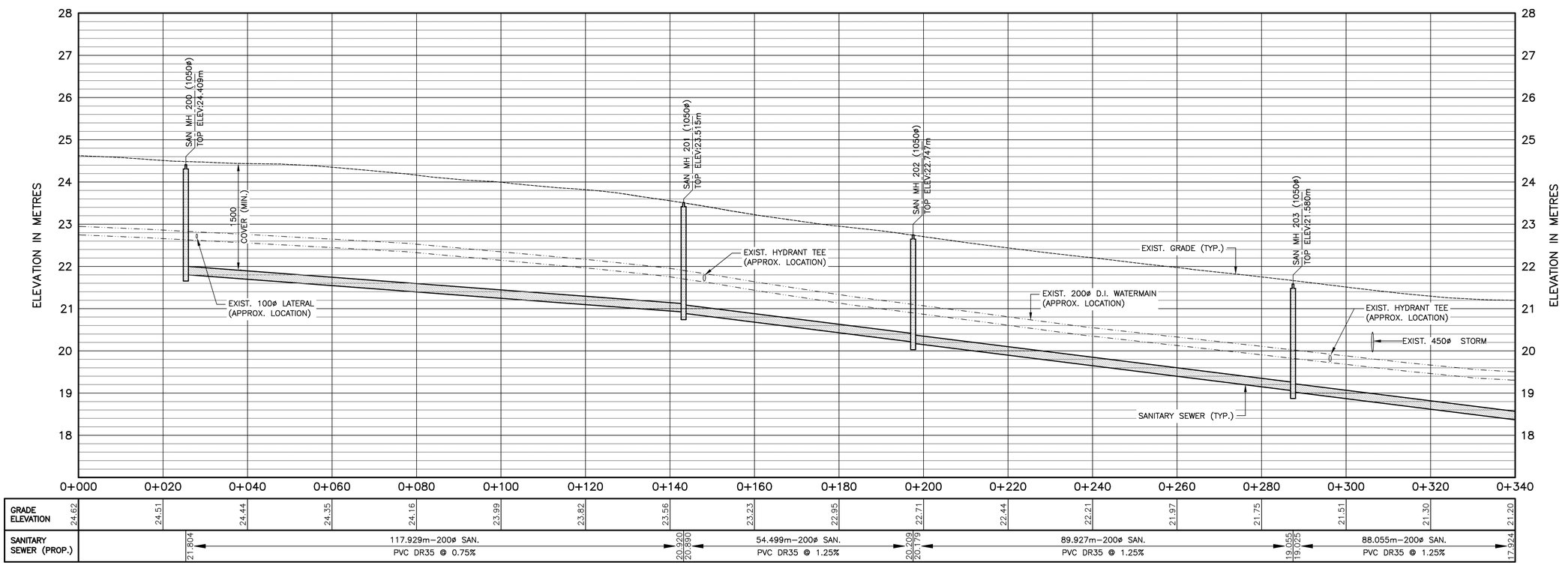
DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\01 EAST SIDE\161039_00 – ES – EG_PLAN_AND_PROFILE SHEETS.DWG LAYOUT NAME: C110 PLOT DATE: Thursday, March 09, 2017 5:07:07 PM CAD OPERATOR: JUSTINR



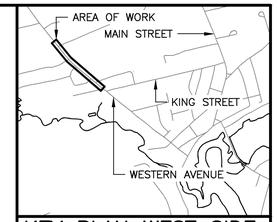
PLAN
1:500

WESTERN AVENUE SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 200	24.409m			21.804m (200ø)	SAN MH 201
SAN MH 201	23.515m	20.920m (200ø)	SAN MH 200	20.890m (200ø)	SAN MH 202
SAN MH 202	22.747m	20.209m (200ø)	SAN MH 201	20.179m (200ø)	SAN MH 203
SAN MH 203	21.580m	19.055m (200ø)	SAN MH 202	19.025m (200ø)	SAN MH 204



PROFILE
1:500 [H] 1:50 [V]



KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

WESTERN AVE

STA 0+000 TO STA 0+340

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

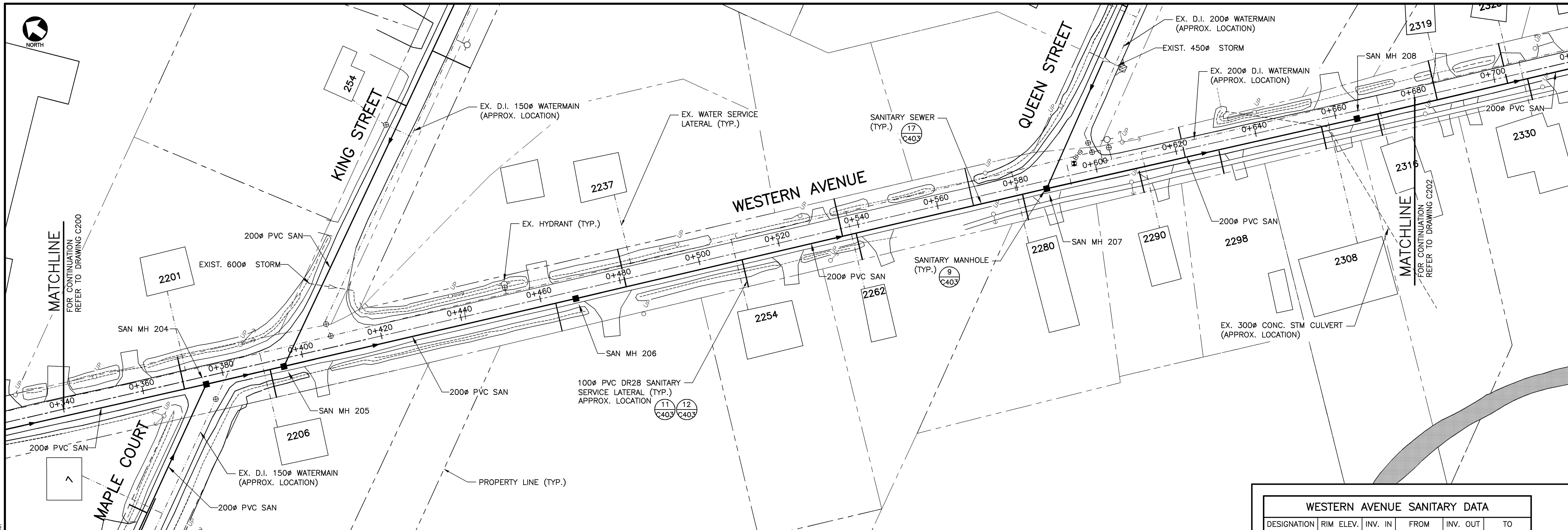
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER T-W. Bragnato 10229 PROVINCE OF NOVA SCOTIA MAR.09/17

Sheet No 13 of 36

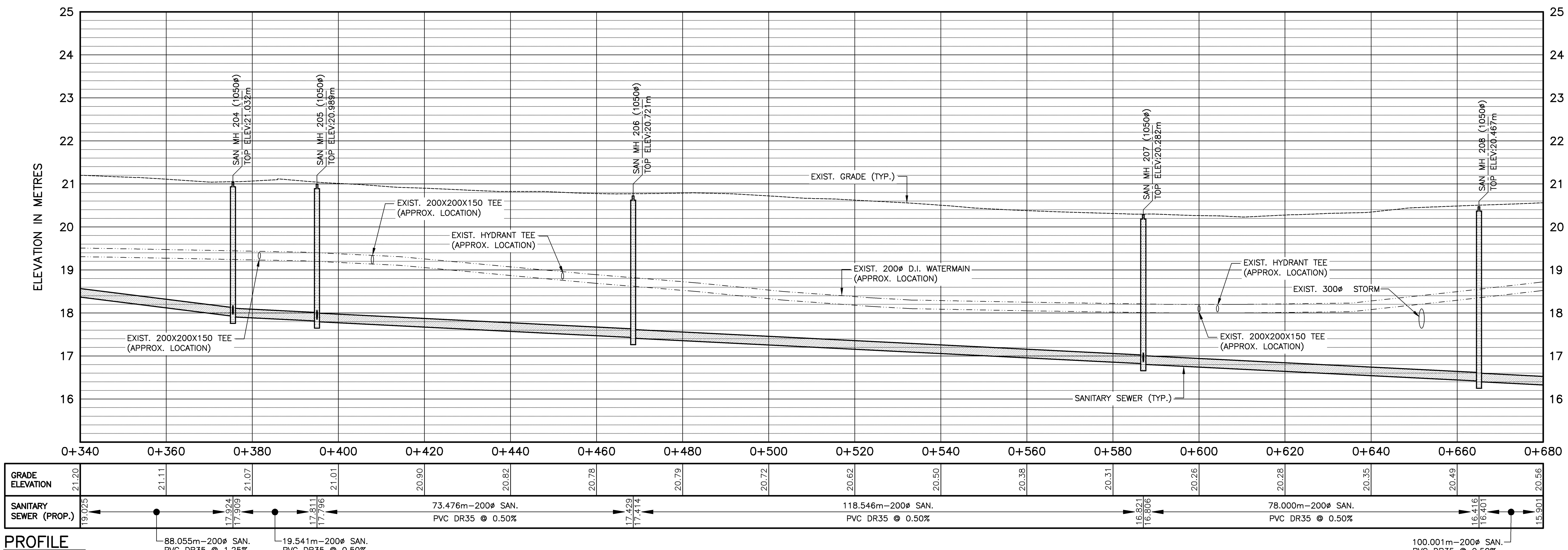
Drawing No **C200**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\02 WEST SIDE\161039_00_WS_EG_PLAN_PROFILE SHEETS.DWG LAYOUT NAME: C200 PLOT DATE: Thursday, March 09, 2017 3:48:06 PM CAD_OPERATOR: JUSTINR

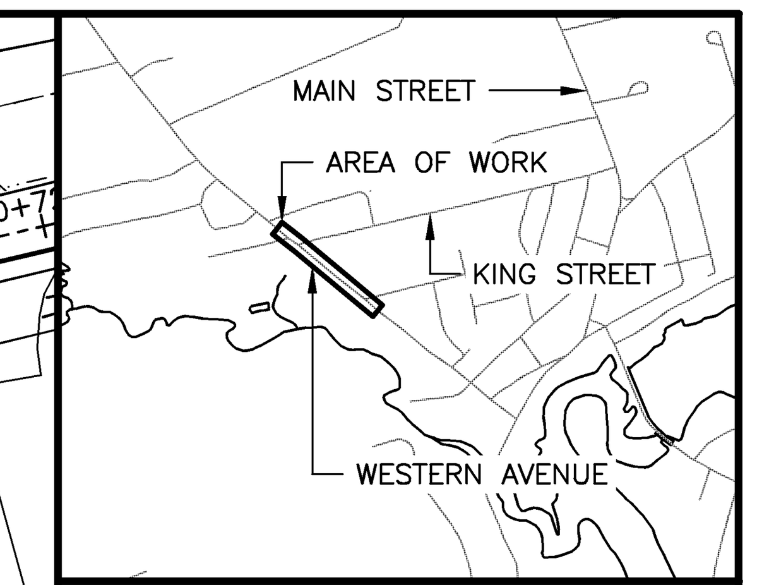


PLAN
1:500

WESTERN AVENUE SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 204	21.032m	17.924m (200ø) 17.969m (200ø)	SAN MH 203 SAN MH 219	17.909m (200ø)	SAN MH 205
SAN MH 205	20.989m	17.811m (200ø) 17.856m (200ø)	SAN MH 204 SAN MH 216	17.796m (200ø)	SAN MH 206
SAN MH 206	20.721m	17.429m (200ø)	SAN MH 205	17.414m (200ø)	SAN MH 207
SAN MH 207	20.282m	16.821m (200ø) 16.866m (200ø)	SAN MH 206 SAN MH 214	16.806m (200ø)	SAN MH 208



PROFILE
1:500 [H] 1:50 [V]



KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G	U/G UTILITIES	U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

WESTERN AVE

STA 0+340 TO STA 0+680

CBCL LIMITED
Consulting Engineers

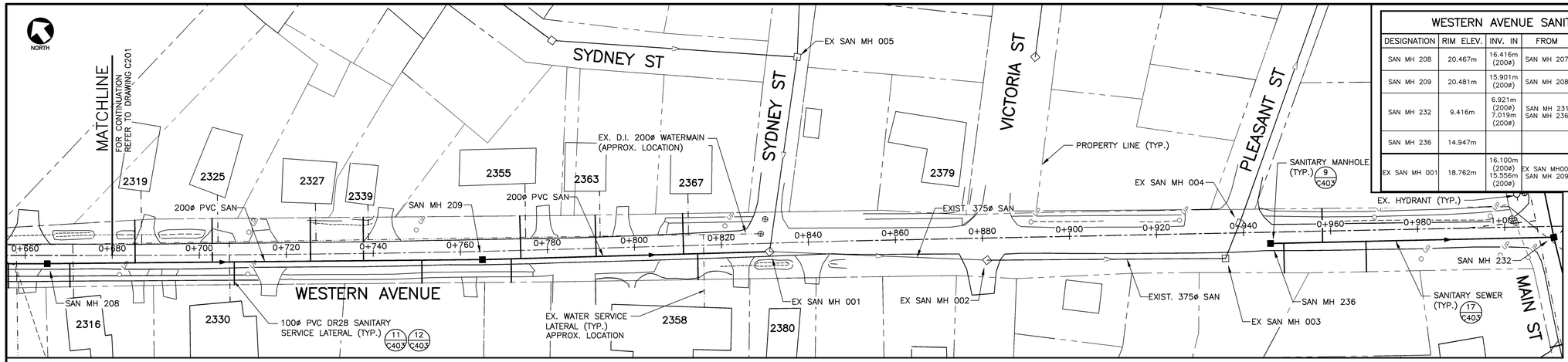
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

REGISTERED PROFESSIONAL ENGINEER — MAR.09/17 — T.W. Bragnalo — 10229 — PROVINCE OF NOVA SCOTIA

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

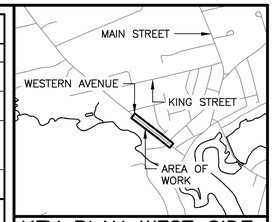
Sheet No 14 of 36

Drawing No **C201**



WESTERN AVENUE SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 208	20.467m	16.416m (200ø)	SAN MH 207	16.401m (200ø)	SAN MH 209
SAN MH 209	20.481m	15.901m (200ø)	SAN MH 208	15.886m (200ø)	EX SAN MH 001
SAN MH 232	9.416m	6.921m (200ø) 7.019m (200ø)	SAN MH 231 SAN MH 236	6.906m (200ø)	SAN MH 233
SAN MH 236	14.947m			12.229m (200ø)	SAN MH 232
EX SAN MH 001	18.762m	16.100m (200ø) 15.556m (200ø)	EX SAN MH005 SAN MH 209	15.530m (375ø)	EX SAN MH 002



KEY PLAN WEST SIDE
1:5000

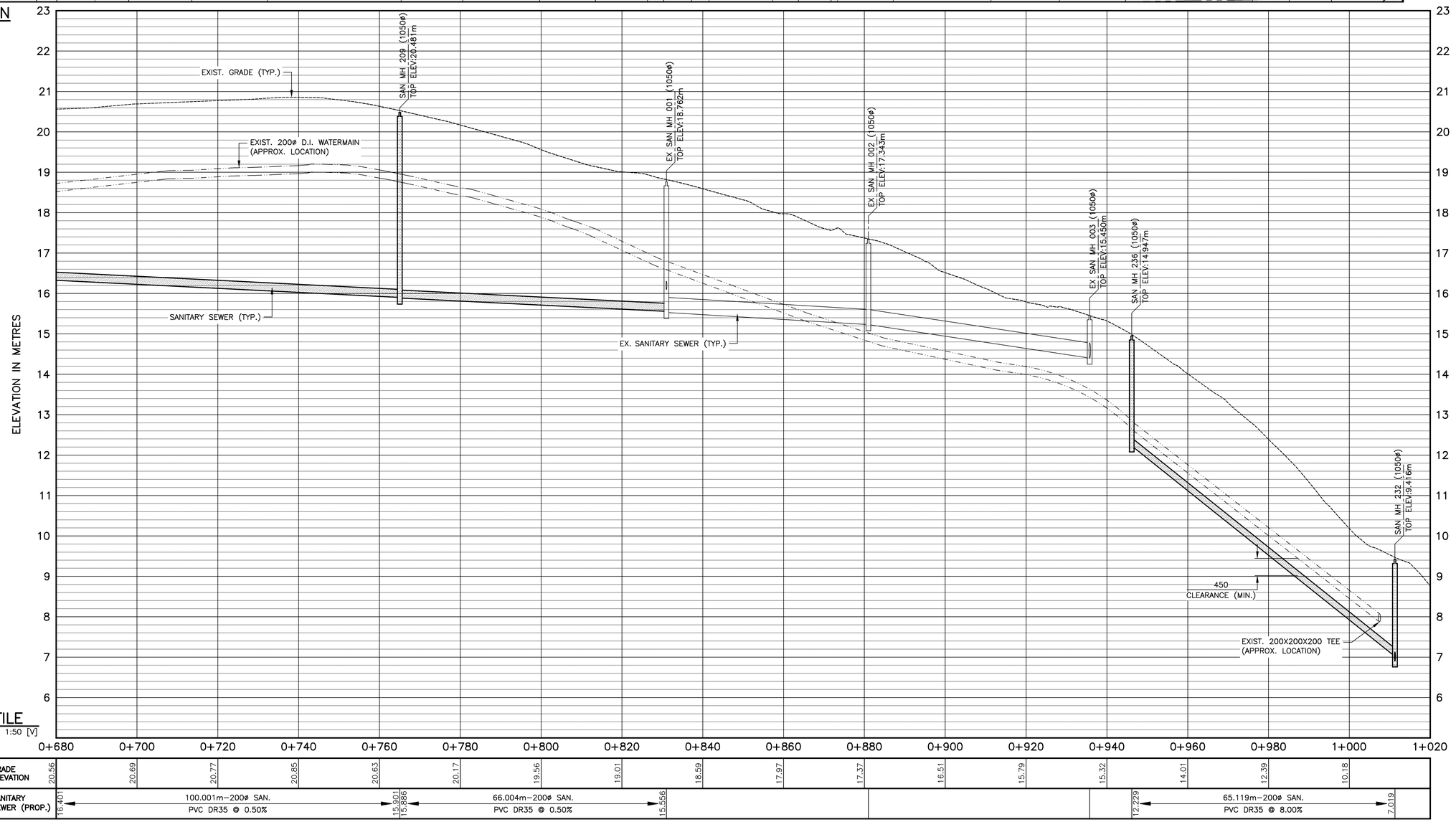
LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	

BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

PLAN
1:500

PROFILE
1:500 [H] 1:50 [V]



GRADE ELEVATION	20.56	20.69	20.77	20.85	20.63	20.17	19.56	19.01	18.59	17.97	17.37	16.51	15.79	15.32	14.01	12.39	10.18		
SANITARY SEWER (PROP.)	16.401	◄ 100.001m–200ø SAN. PVC DR35 @ 0.50% ►				15.901 15.886	◄ 66.004m–200ø SAN. PVC DR35 @ 0.50% ►				15.556				12.229	◄ 65.119m–200ø SAN. PVC DR35 @ 8.00% ►			7.019

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

WESTERN AVE

STA 0+680 TO STA 0+850

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

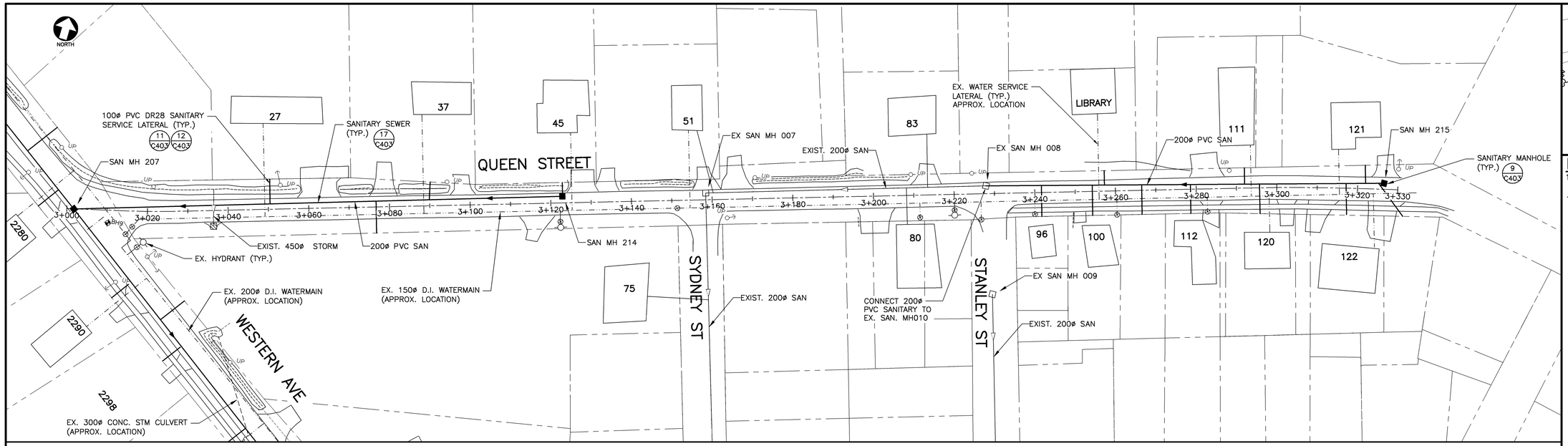
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER T-W Bragnalo 10229 MAR.09/17 PROVINCE OF NOVA SCOTIA

Sheet No 15 of 36

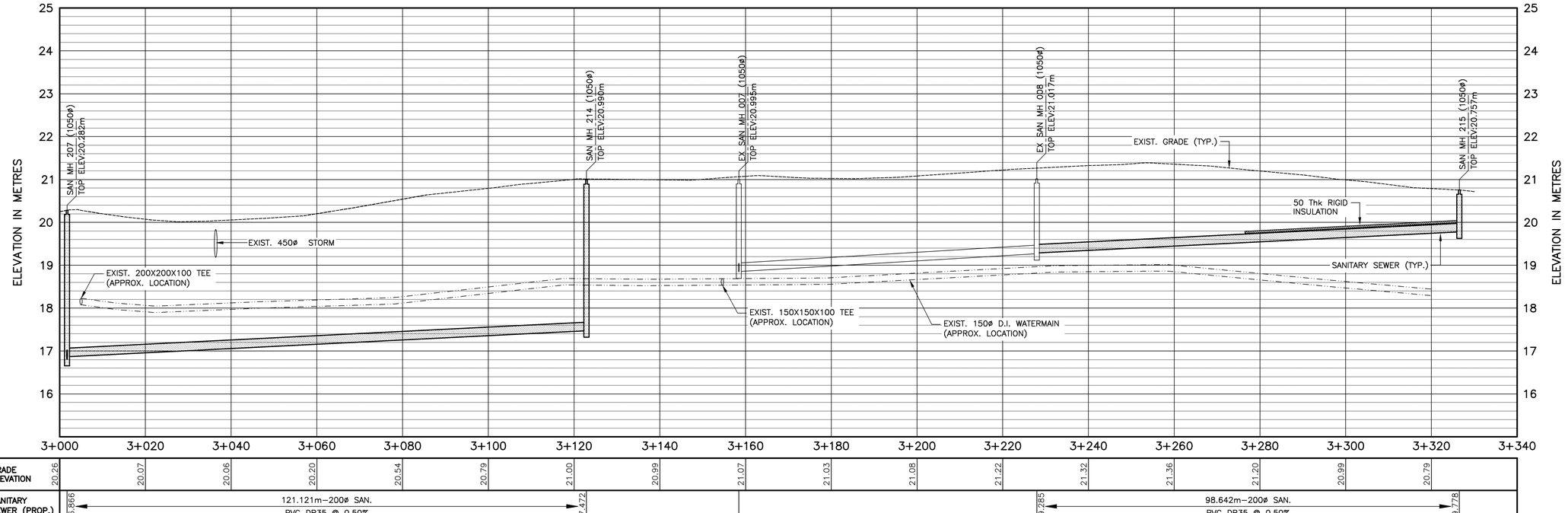
Drawing No **C202**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\02 WEST SIDE\161039_00_WC_EG_PLAN_PROFILE SHEETS.DWG LAYOUT NAME: C202 PLOT DATE: Thursday, March 09, 2017 3:50:51 PM CAD_OPERATOR: JUSTNR



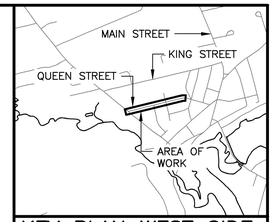
PLAN
1:500

QUEEN STREET SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
EX SAN MH 008	21.017m	19.285m (200ø)	SAN MH 215	19.270m (200ø)	EX SAN MH 007 (FORCEMAIN)
SAN MH 207	20.282m	16.821m (200ø) 16.866m (200ø)	SAN MH 206 SAN MH 214	16.806m (200ø)	SAN MH 208
SAN MH 214	20.990m			17.472m (200ø)	SAN MH 207
SAN MH 215	20.757m			19.778m (200ø)	EX SAN MH 008



GRADE ELEVATION	20.26	20.07	20.06	20.20	20.54	20.79	21.00	20.99	21.07	21.03	21.08	21.22	21.32	21.36	21.20	20.99	20.79
SANITARY SEWER (PROP.)	16.866	121.121m–200ø SAN. PVC DR35 @ 0.50%					17.472					19.285	98.642m–200ø SAN. PVC DR35 @ 0.50%				19.778

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

QUEEN STREET

STA 3+000 TO STA 3+340

CBCL LIMITED
Consulting Engineers

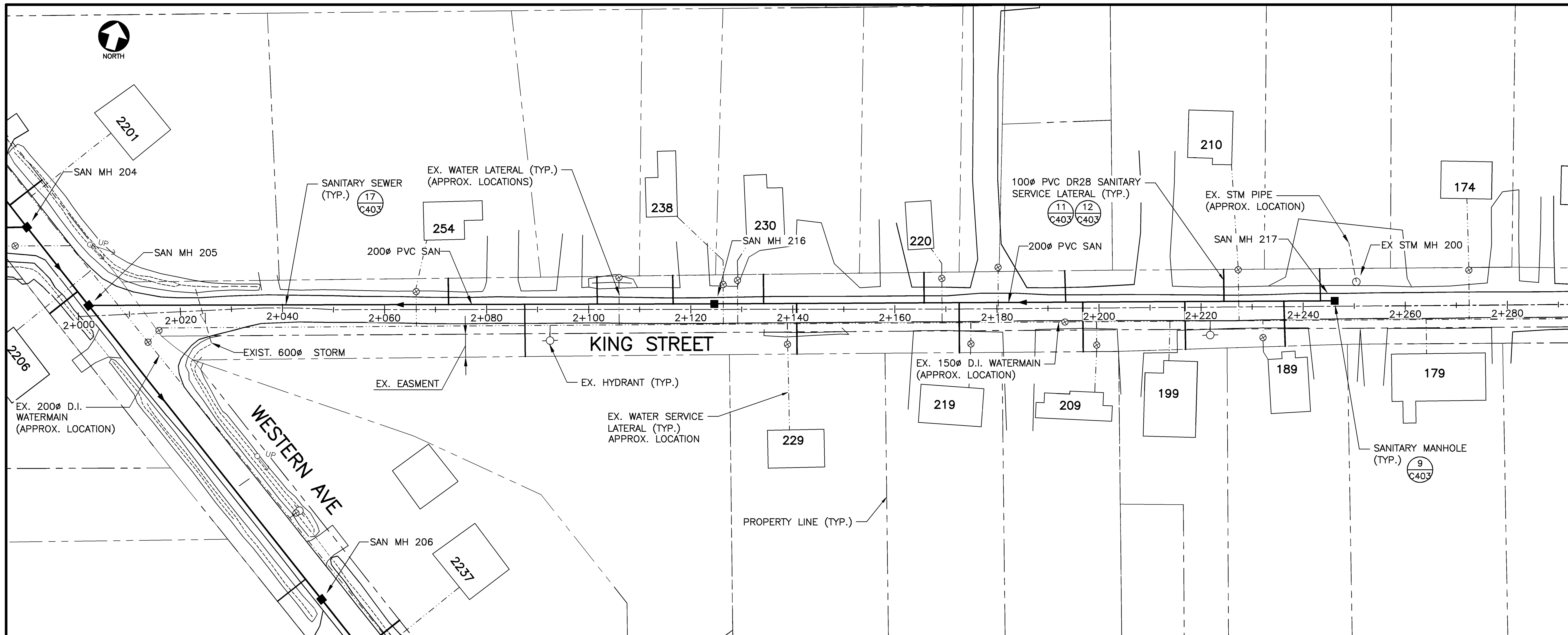
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

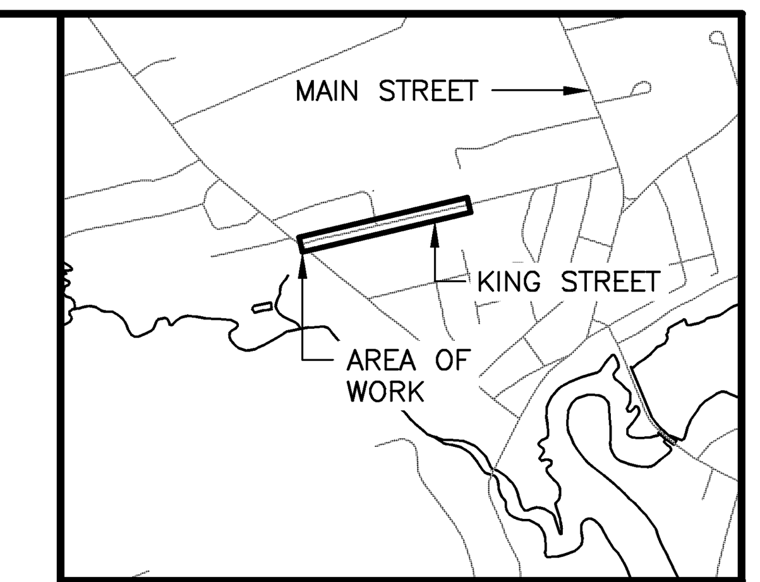
Sheet No 16 of 36

Drawing No **C203**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\C2 WEST SIDE\161039_00_WS_EG_PLAN_PROFILE SHEETS.DWG LAYOUT NAME: C204 PLOT DATE: Thursday, March 09, 2017 3:53:40 PM CAD_OPERATOR: JUSTINR



PLAN
1:500



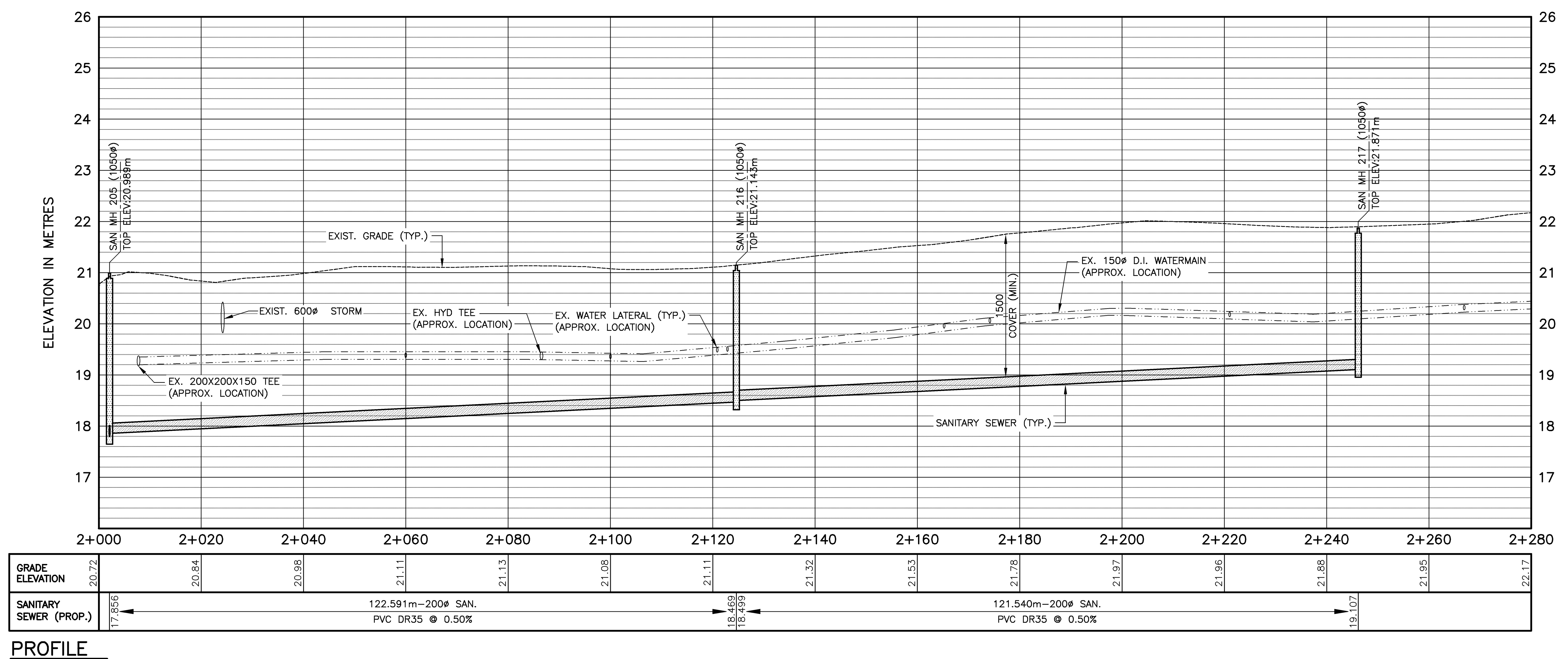
KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

KING STREET SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 205	20.989m	17.811m (200ø) 17.856m (200ø)	SAN MH 204 SAN MH 216	17.796m (200ø)	SAN MH 206
SAN MH 216	21.143m	18.499m (200ø)	SAN MH 217	18.469m (200ø)	SAN MH 205
SAN MH 217	21.871m			19.107m (200ø)	SAN MH 216



PROFILE
1:500 [H] 1:50 [V]

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

CIVIL

KING STREET

STA 0+000 TO STA 0+280

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

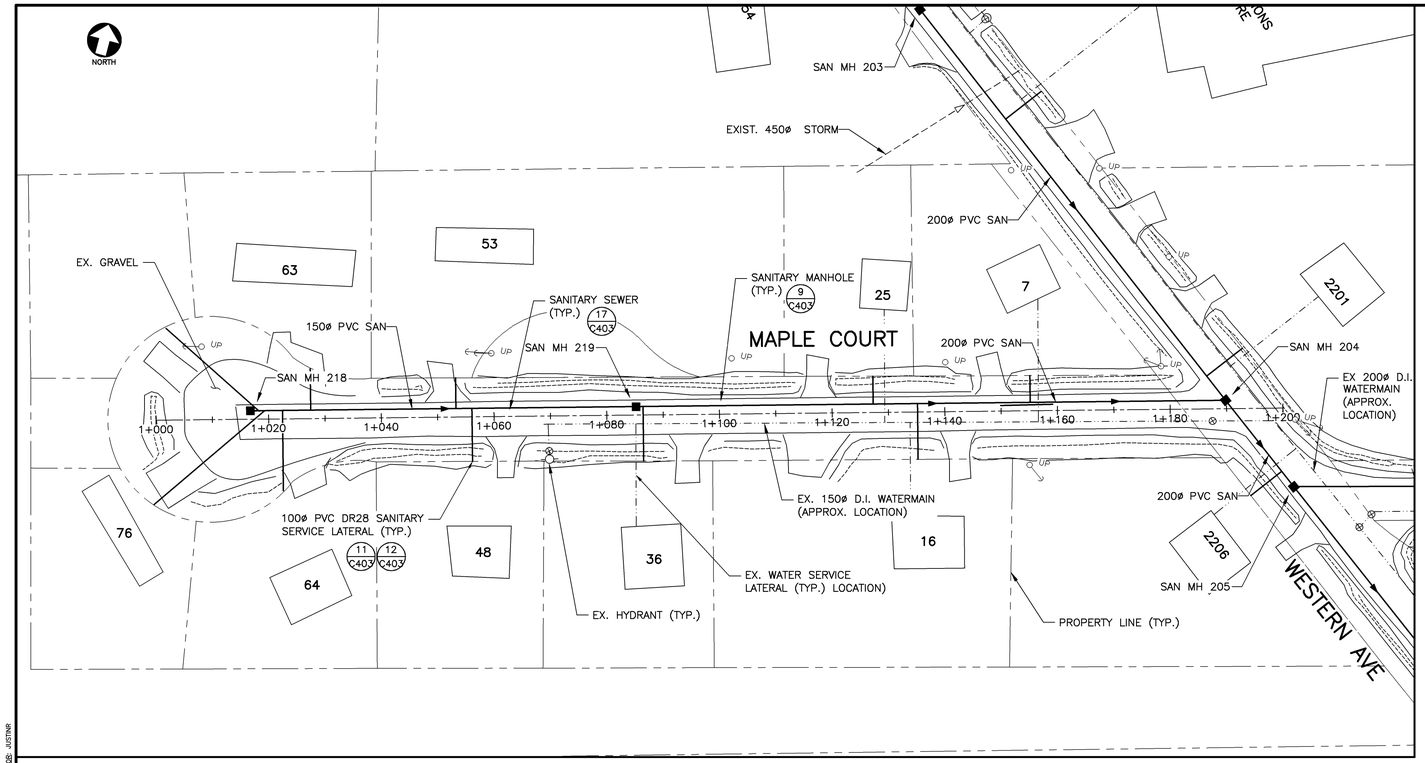
REGISTERED PROFESSIONAL ENGINEER MAR.09/17 T.W. Bragnalo 10229 PROVINCE OF NOVA SCOTIA

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

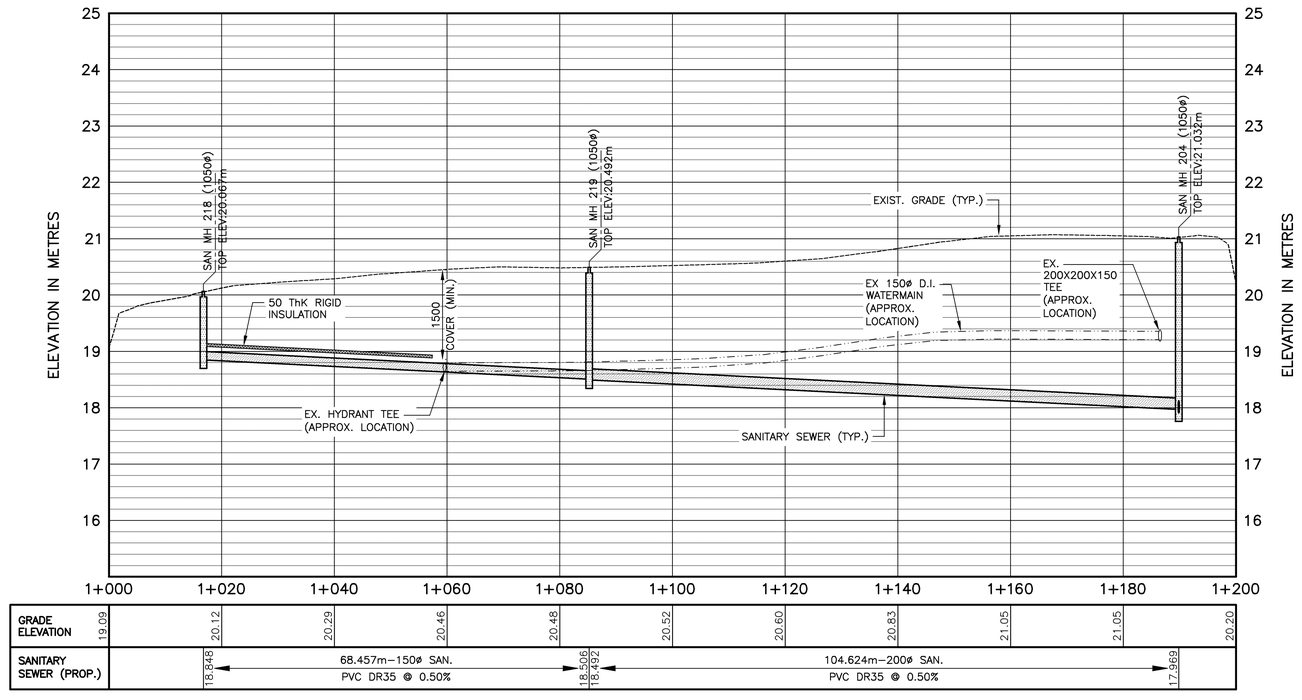
Sheet No 17 of 36

Drawing No **C204**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\02 WEST SIDE\161039_00_WS_EG_PLAN_PROFILE SHEETS.DWG LAYOUT NAME: C205 PLOT DATE: Thursday, March 09, 2017 3:54:23 PM CAD OPERATOR: JUSTINR



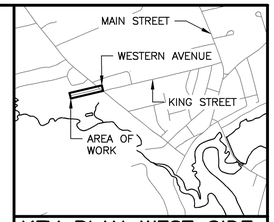
PLAN
1:500



PROFILE
1:500 [H] 1:50 [V]

MAPLE COURT SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 204	21.032m	17.924m (200ø) 17.969m (200ø)	SAN MH 203 SAN MH 219	17.909m (200ø)	SAN MH 205
SAN MH 218	20.067m			18.848m (150ø)	SAN MH 219
SAN MH 219	20.492m	18.506m (150ø)	SAN MH 218	18.492m (200ø)	SAN MH 204



KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MAPLE COURT

STA 1+000 TO STA 1+200

CBCL LIMITED
Consulting Engineers

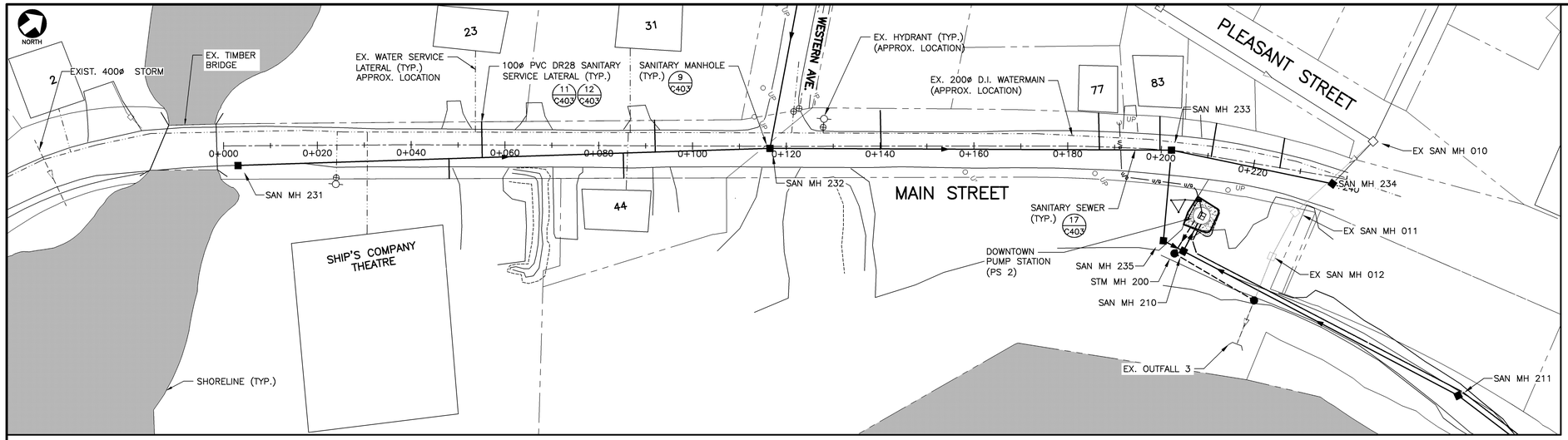
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — MAR.09/17 — T-W. Bragnalo — 10229

Sheet No 18 of 36

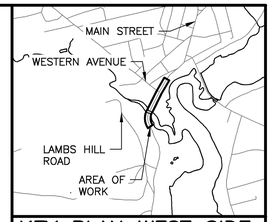
Drawing No **C205**



PLAN
1:500

NOTES

1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



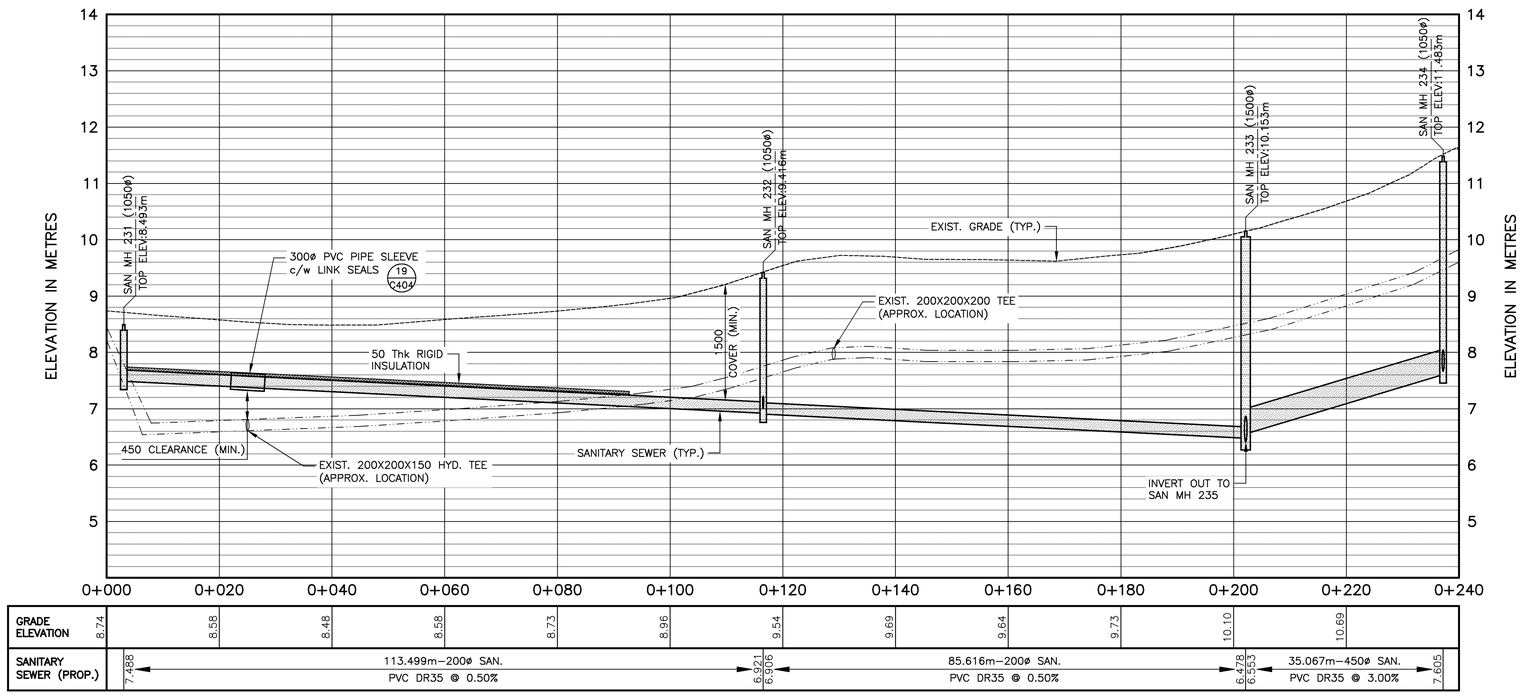
KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

MAIN STREET SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 231	8.493m			7.488m (200ø)	SAN MH 232
SAN MH 232	9.416m	6.921m (200ø) 7.019m (200ø)	SAN MH 231 SAN MH 236	6.906m (200ø)	SAN MH 233
SAN MH 233	10.153m	6.478m (200ø) 6.553m (450ø)	SAN MH 232 SAN MH 234	6.418m (450ø)	SAN MH 235
SAN MH 234	11.483m	7.668m (375ø)	EX SAN MH 010	7.605m (450ø)	SAN MH 233



GRADE ELEVATION	8.74	8.58	8.48	8.58	8.73	8.96	9.54	9.69	9.64	9.73	10.10	10.69
SANITARY SEWER (PROP.)	7.488	113.499m–200ø SAN. PVC DR35 @ 0.50%					6.921 6.906	85.616m–200ø SAN. PVC DR35 @ 0.50%			6.478 6.553	35.067m–450ø SAN. PVC DR35 @ 3.00% 7.605

PROFILE
1:500 [H] 1:50 [V]

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MAIN STREET

STA 0+000 TO STA 0+330

CBCL LIMITED
Consulting Engineers

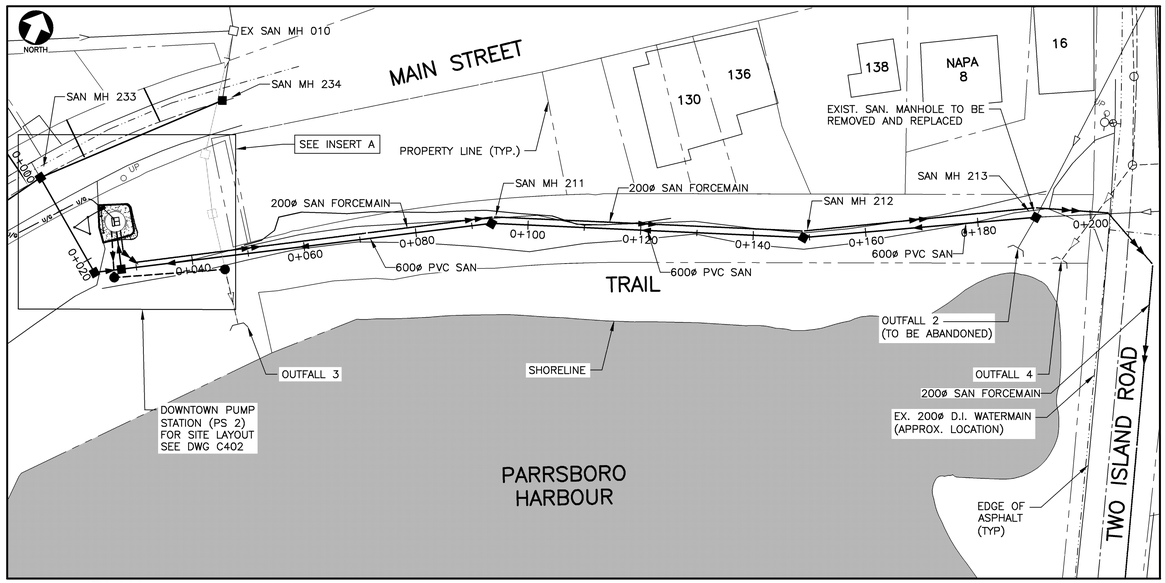
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

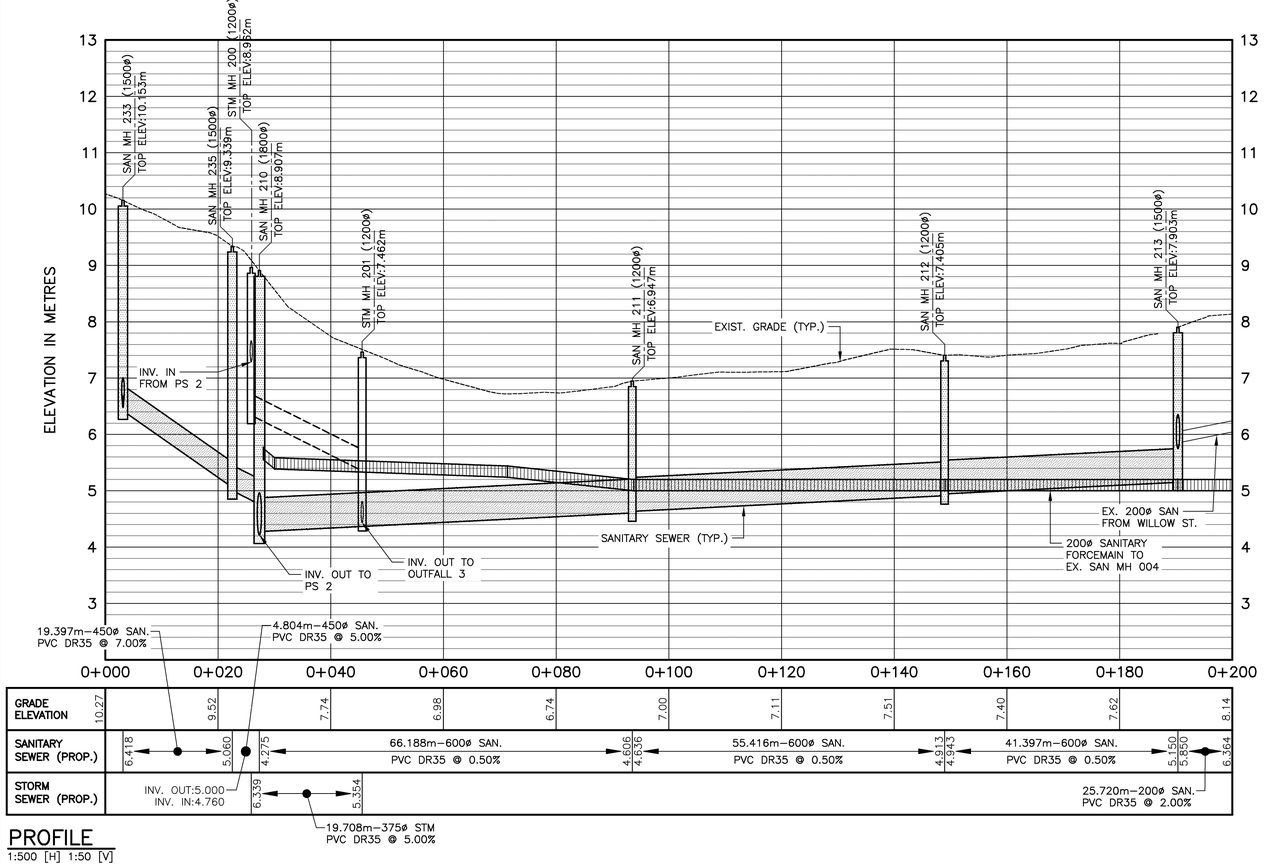
REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — MAR.09/17 — T-W. Bragnalo — 10229

Sheet No 19 of 36

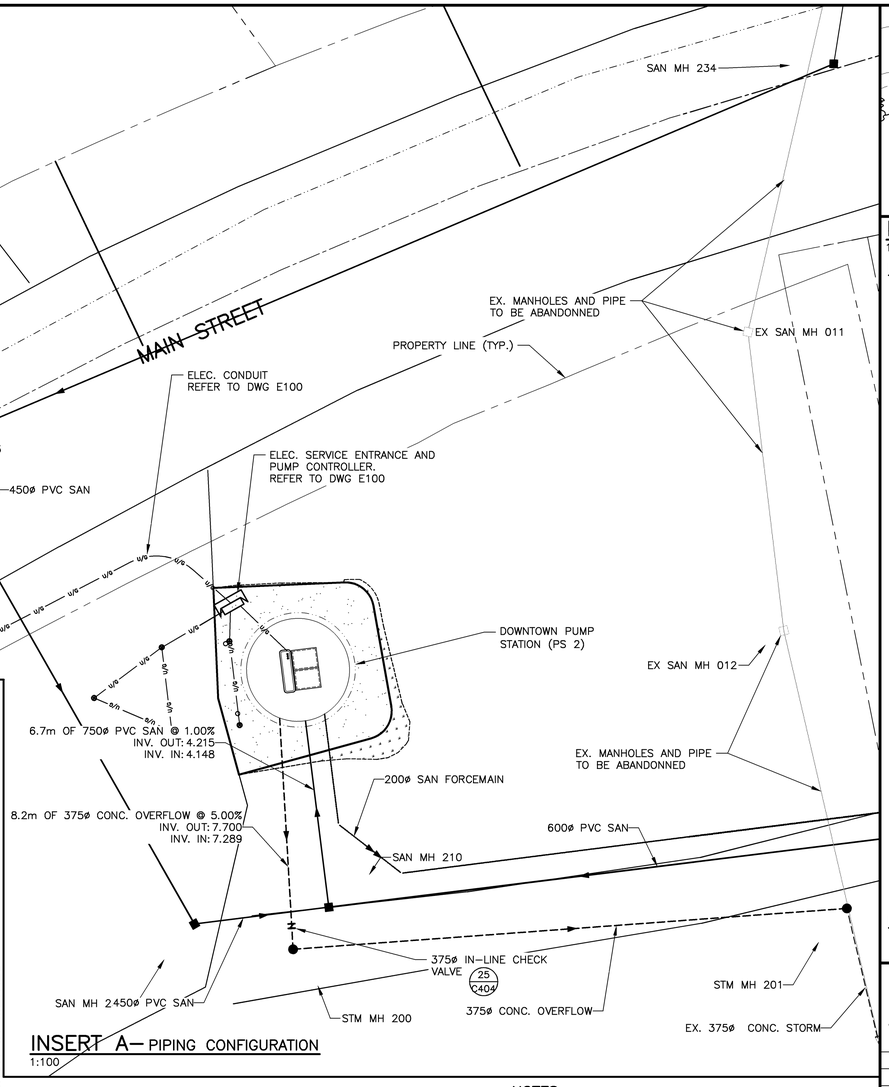
Drawing No **C206**



PLAN
1:500



PROFILE
1:500 [H] 1:50 [V]



INSERT A– PIPING CONFIGURATION
1:100

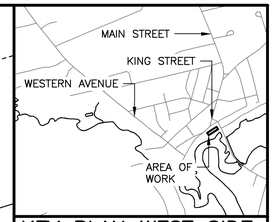
TRAIL SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 2	9.840m	4.148m (750ø)	SAN MH 210	5.400m (200ø)	STM MH 401 (FORCEMAIN)
SAN MH 210	8.907m	4.760m (450ø) 4.275m (600ø)	SAN MH 235 SAN MH 211	4.215m (750ø)	PS 2
SAN MH 211	6.947m	4.636m (600ø)	SAN MH 212	4.606m (600ø)	SAN MH 210
SAN MH 212	7.405m	4.943m (600ø)	SAN MH 213	4.913m (600ø)	SAN MH 211
SAN MH 213	7.903m	5.850m (200ø) 5.750m (600ø)	WILLOW STREET LATERAL SAN MH 100	5.150m (600ø)	SAN MH 212
SAN MH 234	11.483m	7.668m (375ø)	EX SAN MH 010	7.605m (450ø)	SAN MH 233

TRAIL STORM DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 2	9.840m			7.700m (375ø)	STM MH 200
STM MH 200	8.962m	7.289m (375ø)	PS 2	6.339m (375ø)	STM MH 201
STM MH 201	7.462m	5.354m (375ø)	STM MH 200	4.435m (375ø)	EX. OUTFALL 3

NOTES
1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

TRAIL ALIGNMENT

STA 0+000 TO STA 0+170

CBCL LIMITED Consulting Engineers

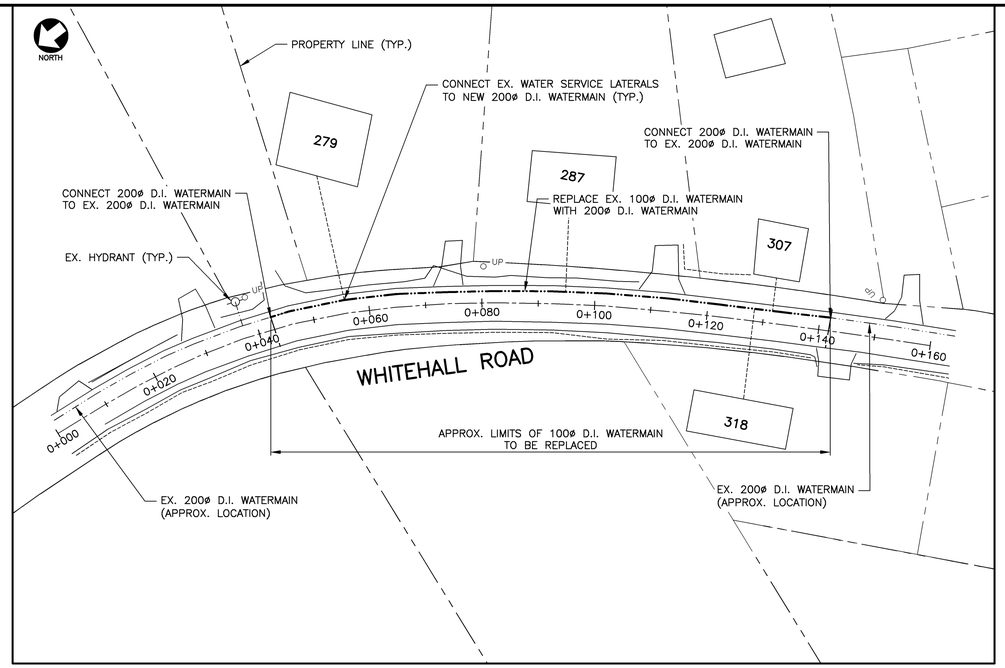
CBCL No	Contract No	Date	Scale
161039.00		NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

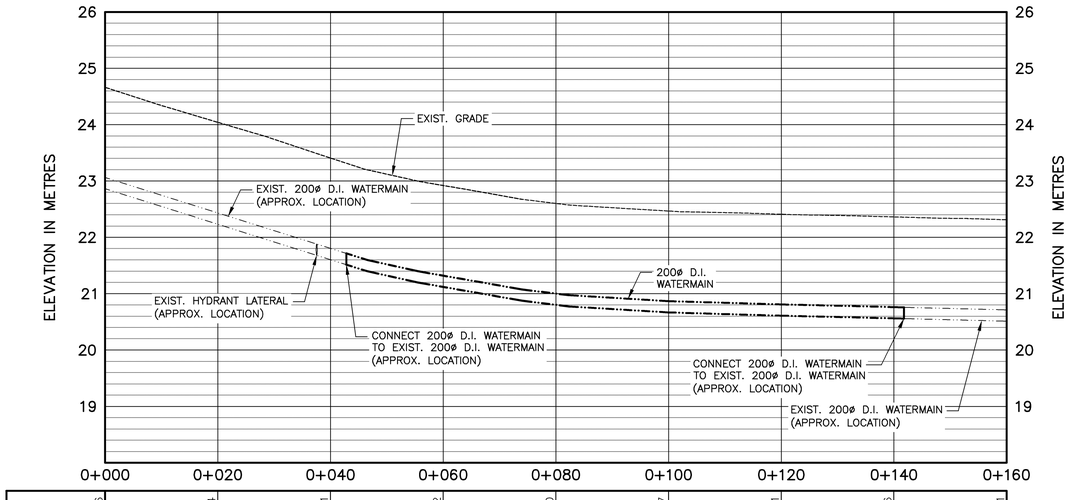
NOVA SCOTIA PROFESSIONAL ENGINEERS MAR.09/17 I.W. Ingram 10229 PROVINCE OF NOVA SCOTIA

Sheet No 20 of 36

Drawing No **C207**

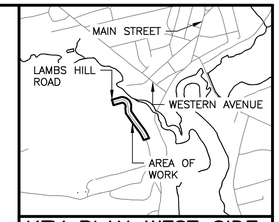


PLAN
1:500



GRADE ELEVATION	24.66	24.04	23.41	22.92	22.60	22.47	22.41	22.36	22.31

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN WEST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

WHITEHALL ROAD WATERMAIN

STA 0+000 TO STA 0+160

CBCL LIMITED
Consulting Engineers

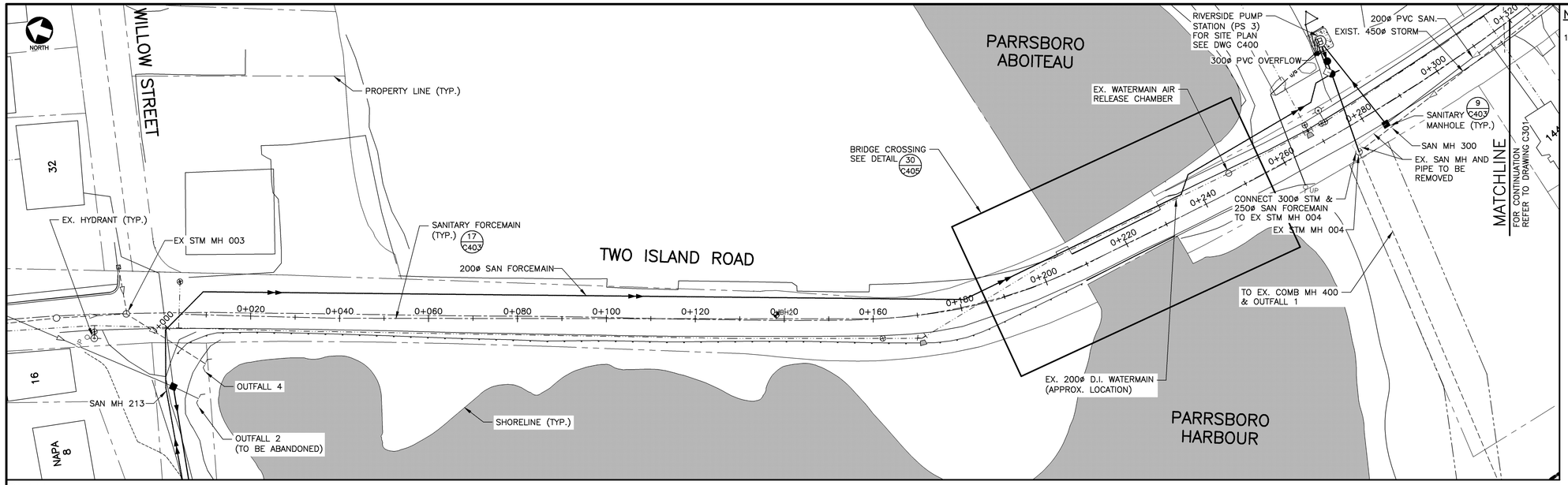
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — MAR.09/17 — T-W. Bragnalo — 10229

Sheet No 21 of 36

Drawing No **C208**



PLAN
1:500

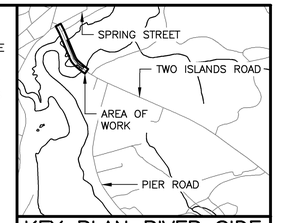
TWO ISLANDS ROAD SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 2	9.630m			5.000m (200ø)	STM MH 401 (FORCEMAIN)
PS 3	8.009m	4.372m (200ø)	SAN MH 300	5.400m (100ø)	STM MH 401 (FORCEMAIN)
SAN MH 300	7.787m	4.650m (200ø)	EX SAN MH 011	4.540m (200ø)	PS 3

TWO ISLANDS ROAD STORM DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 3	8.009m			7.150m (300ø)	STM MH 400
EX STM MH 004	7.928m	6.900m (300ø) 4.419m (450ø) 5.400m (250ø)	STM MH 401 EX STM MH 005 PS 2 (FORCEMAIN)	4.390m (500ø)	EX. COMB MH 400

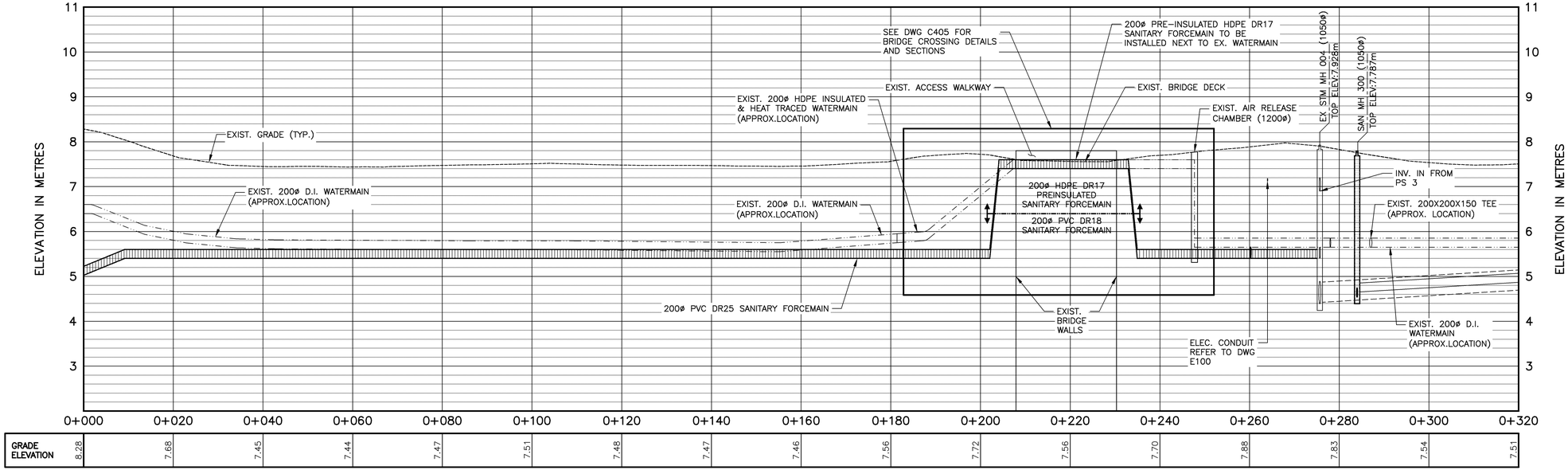
NOTES
1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
u/s u/s	U/G UTILITIES	u/s u/s
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00



PROFILE
1:500 [H] 1:50 [V]

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

TWO ISLANDS ROAD

STA 0+000 TO STA 0+320

CBCL LIMITED
Consulting Engineers

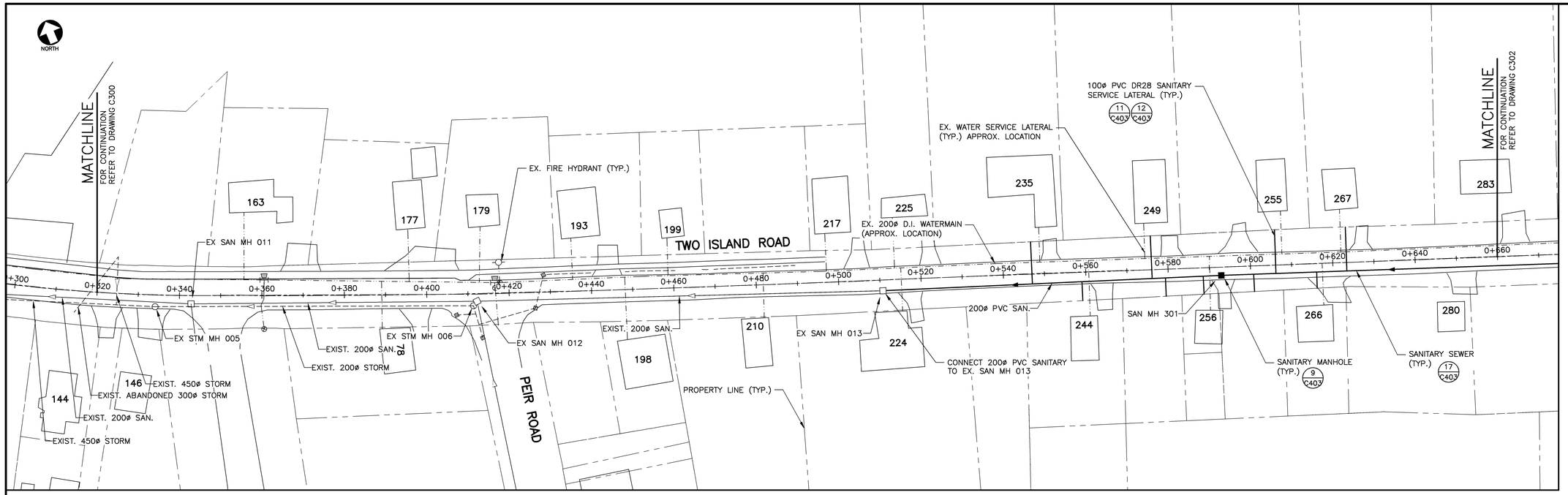
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	
Checked	**Approved**
TB	JAB

Sheet No 22 of 36

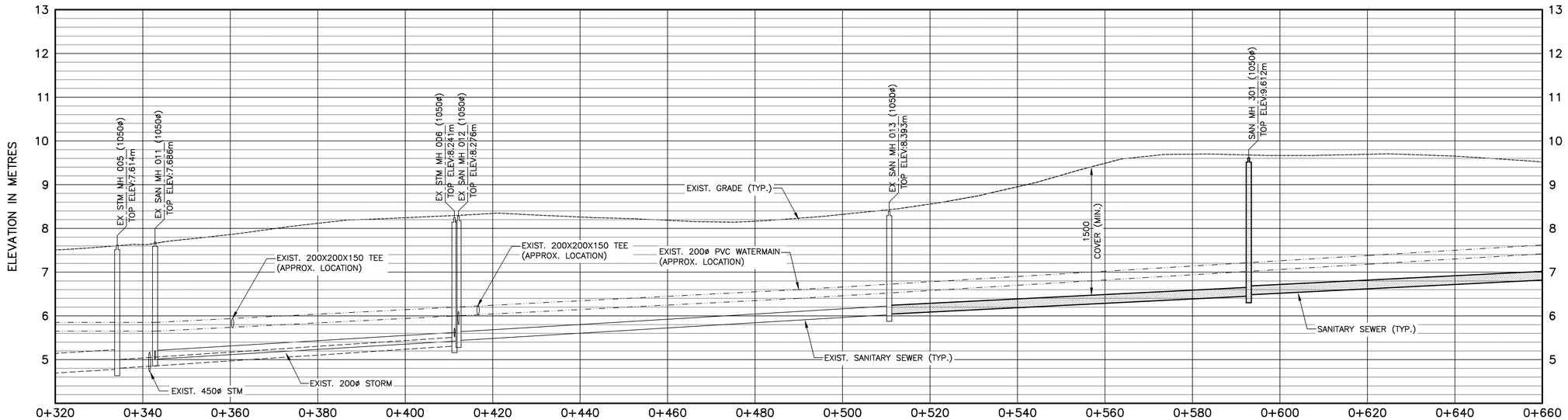
Drawing No **C300**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_RS_EG_PLAN_PROFILE_SHEETS.DWG LAYOUT NAME: C300 PLOT DATE: Thursday, March 09, 2017 3:44:22 PM CAD_OPERATOR: JUSTNR



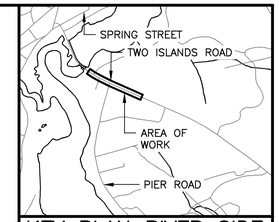
PLAN
1:500

TWO ISLANDS ROAD SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 301	9.612m	6.482m (200ø)	SAN MH 302	6.452m (200ø)	EX SAN MH 013
EX SAN MH 013	8.393m	6.041m (200ø)	SAN MH 301	6.026m (200ø)	EX SAN MH 012



GRADE ELEVATION	7.51	7.63	7.86	8.12	8.24	8.34	8.26	8.19	8.16	8.32	8.56	8.95	9.49	9.70	9.67	9.69	9.65	9.52	
SANITARY SEWER (PROP.)											6.041	82.196m–200ø SAN. PVC DR35 @ 0.50%			6.452 6.482	93.964m–200ø SAN. PVC DR35 @ 0.50%			6.952
SANITARY SEWER (EXIST.)		5.010	69.434m–200ø STM PVC DR35 @ 0.60%			5.427 5.437	98.511m–200ø STM PVC DR35 @ 0.60%				6.026								

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

TWO ISLANDS ROAD

STA 0+320 TO STA 0+660

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00		NOV 2016	AS NOTED

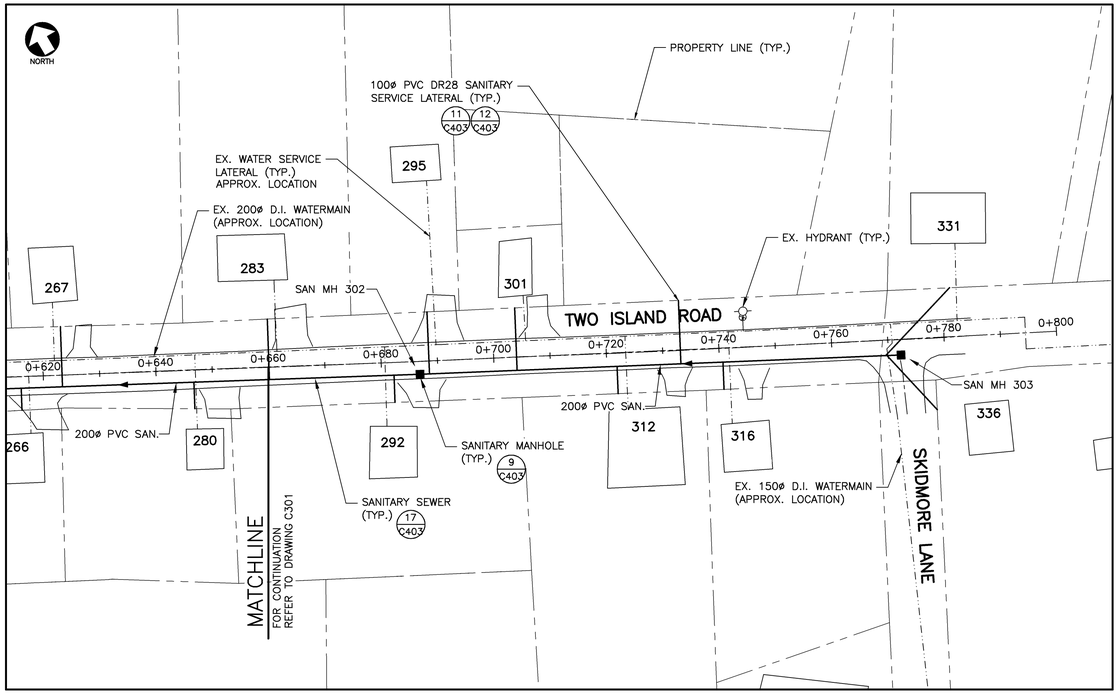
Designed	Drawn
AD	
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T.W. Bragnato 10229

Sheet No 23 of 36

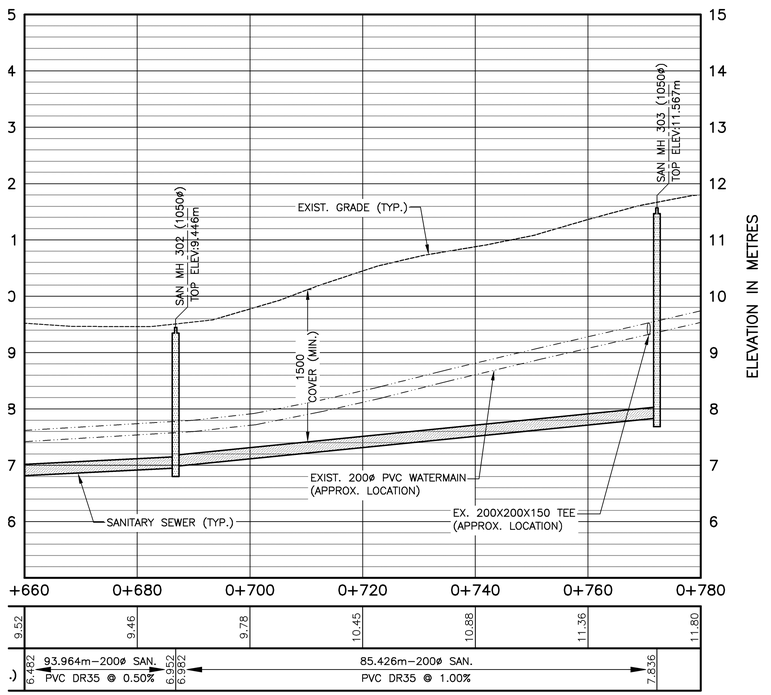
Drawing No **C301**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\30 CAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_PS_EQ_PLAN_PROFILE_SHEETS.DWG LAYOUT NAME: C301 PLOT DATE: Thursday, March 09, 2017 3:43:28 PM CAD_OPERATOR: JUSTNR

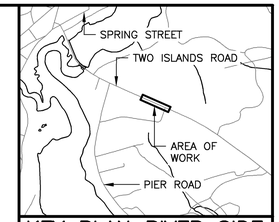


PLAN
1:500

TWO ISLANDS ROAD SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 303	11.567m			7.836m (200ø)	SAN MH 302
SAN MH 302	9.446m	6.982m (200ø)	SAN MH 303	6.952m (200ø)	SAN MH 301



PROFILE
1:500 [H] 1:50 [V]



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

TWO ISLANDS ROAD

STA 0+660 TO STA 0+820

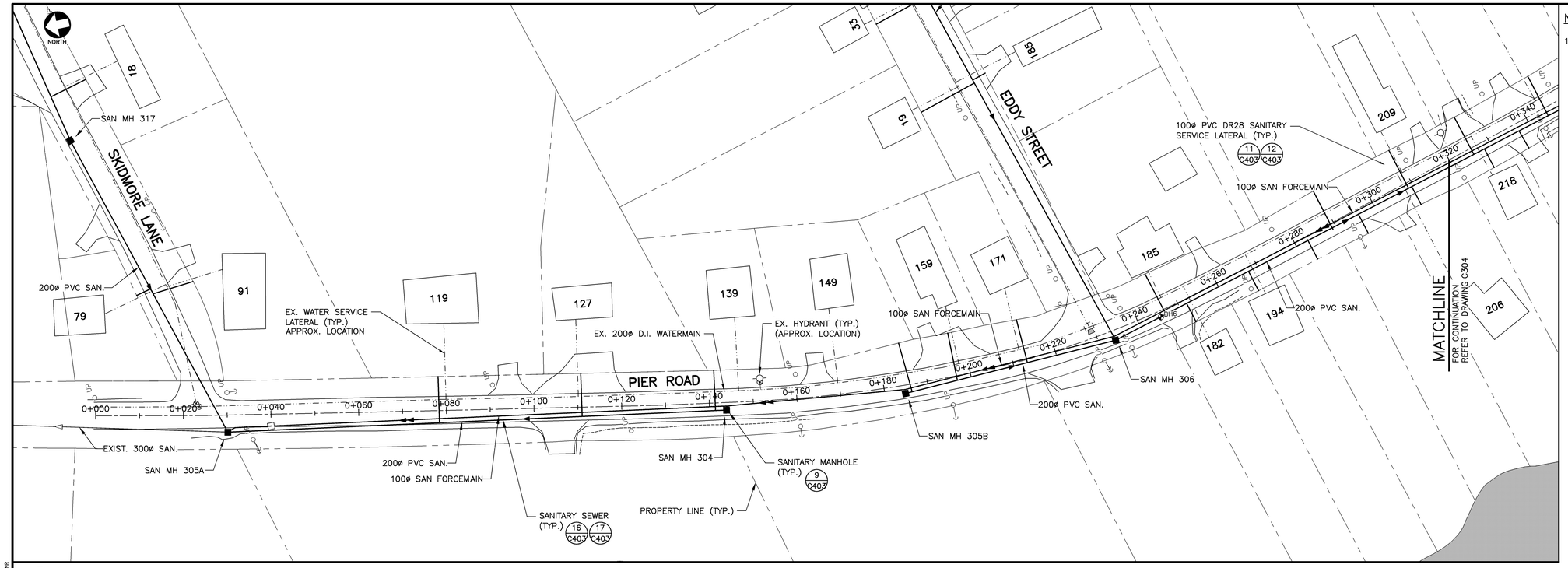
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	
Checked	Approved
TB	JAB

Sheet No 24 of 36

Drawing No C302



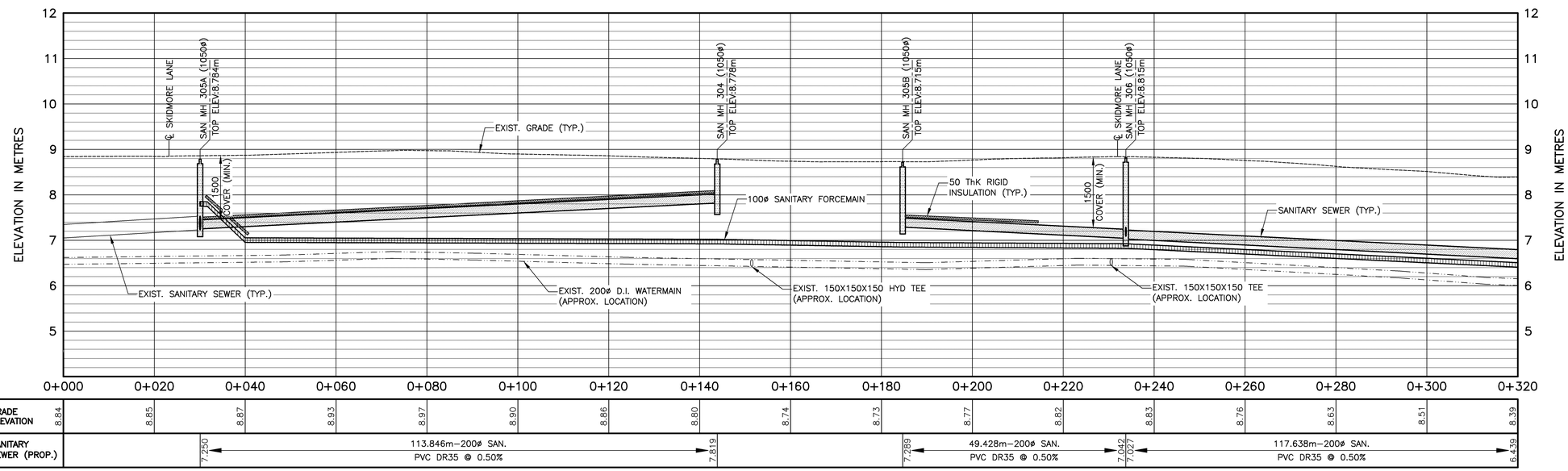
PLAN
1:500

NOTES

1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.

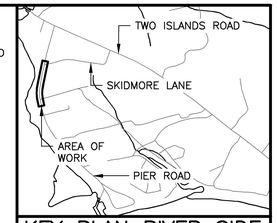
PIER ROAD SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 304	8.778m			7.819m (200ø)	SAN MH 305A
SAN MH 305A	8.784m	7.290m (200ø) 7.250m (200ø) 7.753m (100ø)	SAN MH 317 SAN MH 304 PS 4 (FORCEMAIN)	7.230m (300ø)	EX SAN MH 012
SAN MH 305B	8.715m			7.289m (200ø)	SAN MH 306
SAN MH 306	8.815m	7.042m (200ø) 7.087m (200ø)	SAN MH 305B SAN MH 320	7.027m (200ø)	SAN MH 307



GRADE ELEVATION	8.84	8.85	8.87	8.93	8.97	8.90	8.86	8.80	8.74	8.73	8.77	8.82	8.83	8.76	8.63	8.51	8.39		
SANITARY SEWER (PROP.)		7.250	113.846m–200ø SAN. PVC DR35 @ 0.50%					7.819			7.289	49.428m–200ø SAN. PVC DR35 @ 0.50%		7.042	7.027	117.638m–200ø SAN. PVC DR35 @ 0.50%			6.439

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PIER ROAD

STA 0+000 TO STA 0+340

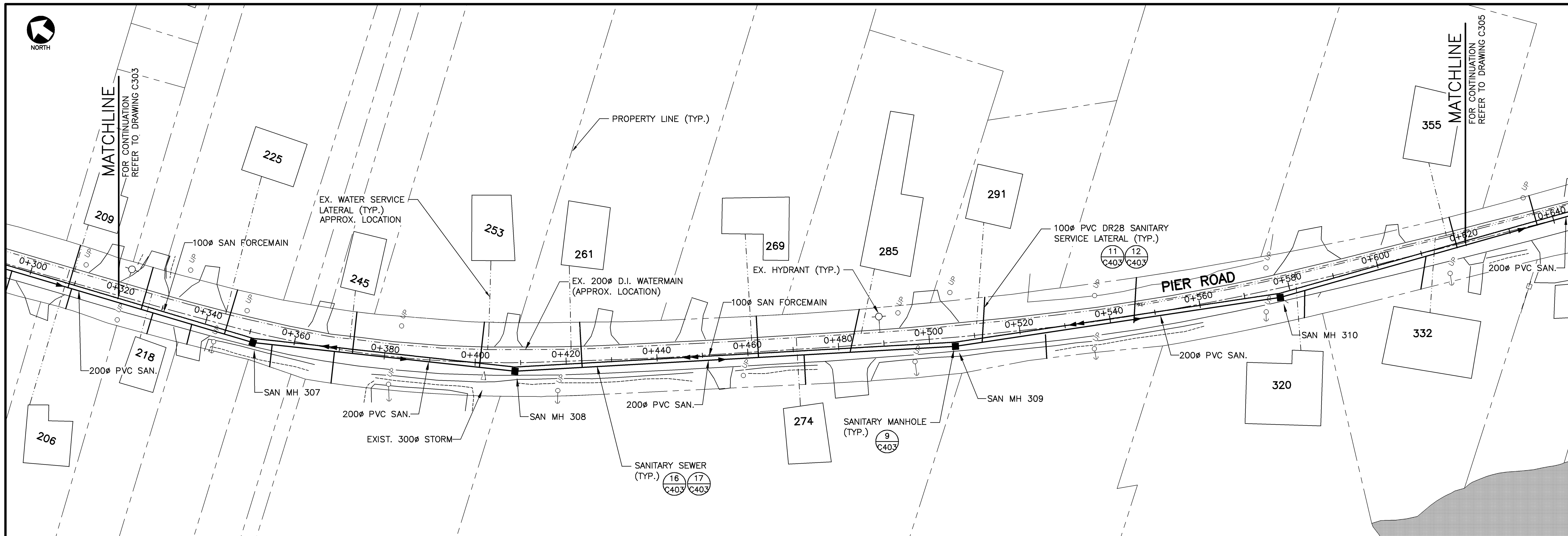
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00		NOV 2016	AS NOTED

Designed	Drawn
AD	
Checked	Approved
TB	JAB

Sheet No 25 of 36

Drawing No **C303**

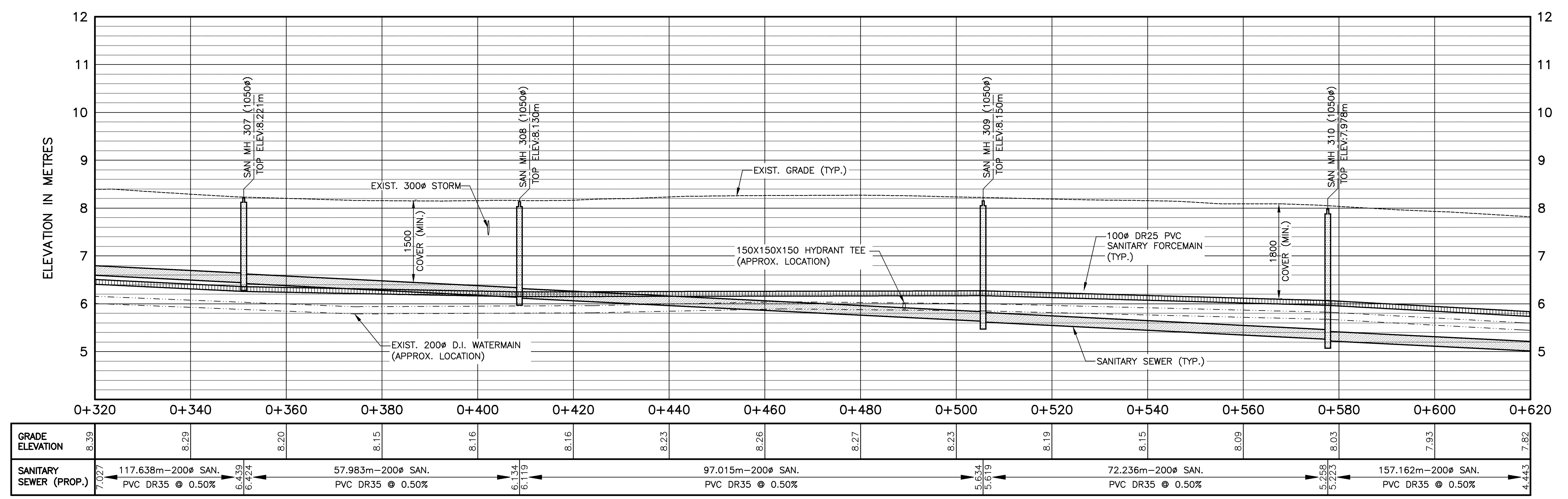


PLAN
1:500

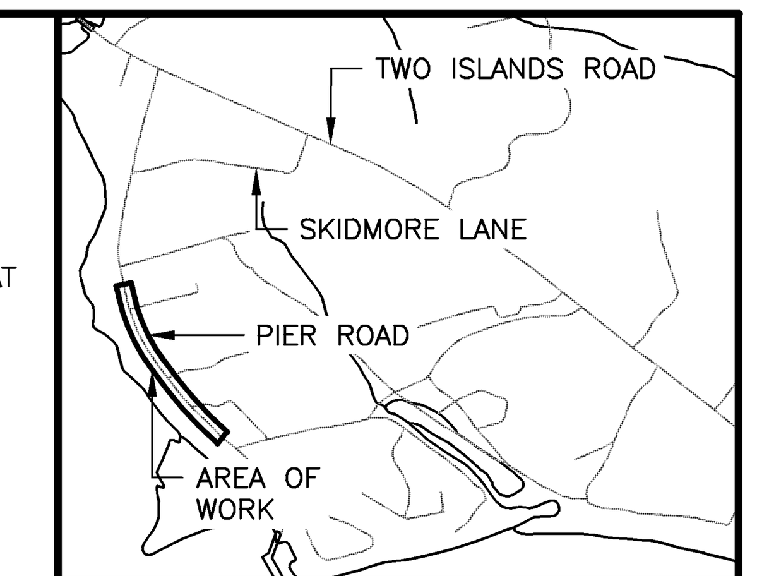
NOTES

1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.

PIER ROAD SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 307	8.221m	6.439m (200ø)	SAN MH 306	6.424m (200ø)	SAN MH 308
SAN MH 308	8.130m	6.134m (200ø)	SAN MH 307	6.119m (200ø)	SAN MH 309
SAN MH 309	8.150m	5.634m (200ø)	SAN MH 308	5.619m (200ø)	SAN MH 310
SAN MH 310	7.978m	5.258m (200ø)	SAN MH 309	5.223m (200ø)	SAN MH 311



PROFILE
1:500 [H] 1:50 [V]



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
⊗	GATE VALVE	⊗
	FIRE HYDRANT	
□	SANITARY MH	□
⬡	SANITARY PUMP STATION	⬡
⦶	COMBINED MH	⦶
○	STORM MH	●
	STORM HEADWALL	
▭	STORM CATCHBASIN (SNGL.)	▬
⊘	STORM CATCHBASIN (RND.)	⊘
▨	STORM CATCHBASIN (SQ.)	▨
UP	UTILITY POLE	UP
U/G	U/G UTILITIES	U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PIER ROAD

STA 0+320 TO STA 0+620

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

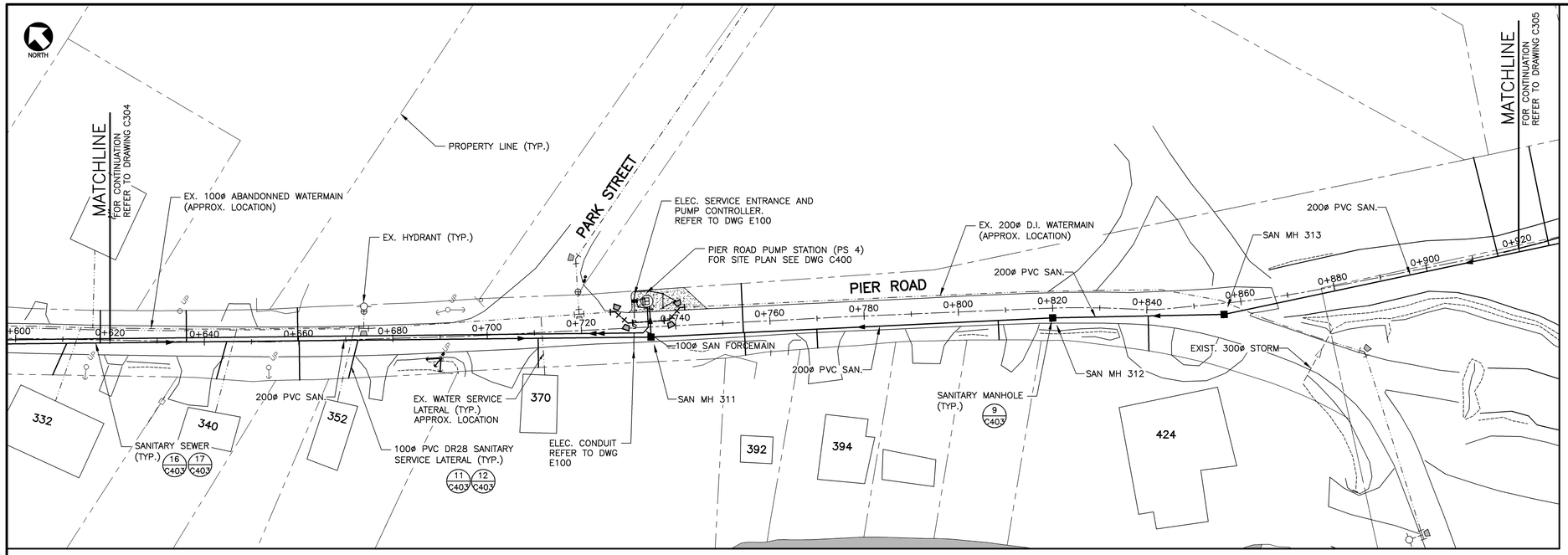
REGISTERED PROFESSIONAL ENGINEER MAR.09/17 T.W. Bragnalo 10229 PROVINCE OF NOVA SCOTIA

Designed	Drawn
AD	
Checked	Approved
TB	JAB

Sheet No 26 of 36

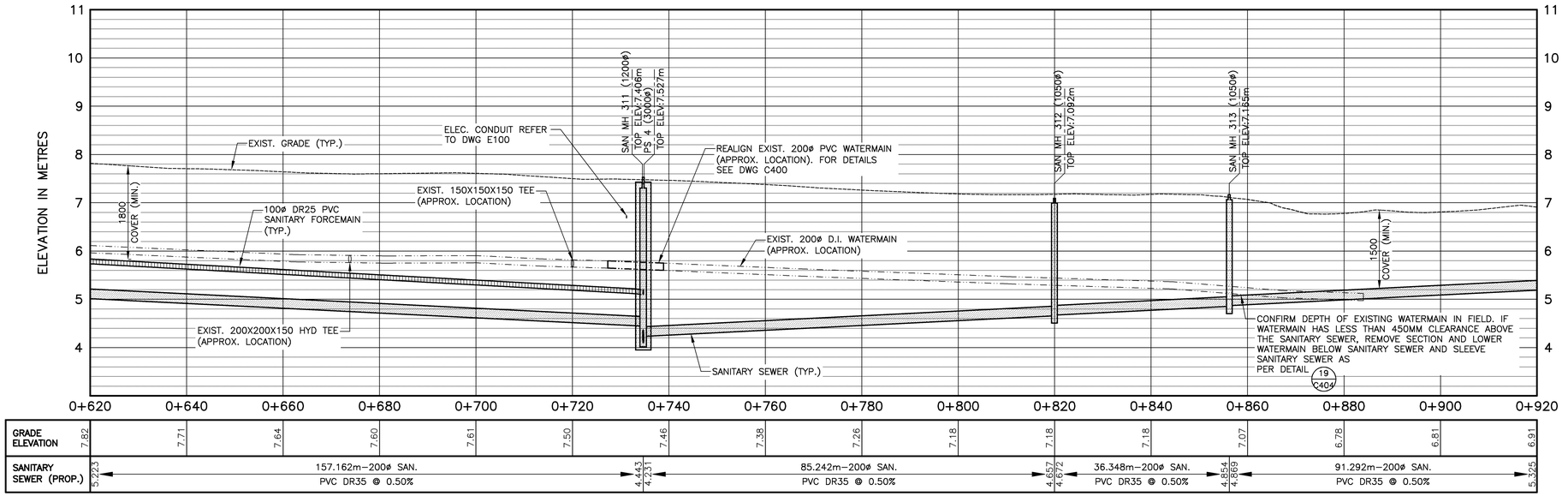
Drawing No **C304**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_RS_EG_PLAN_PROFILE_SHEETS.DWG LAYOUT NAME: C304 PLOT DATE: Thursday, March 09, 2017 3:40:58 PM CAD OPERATOR: JUSTINR



PLAN
1:500

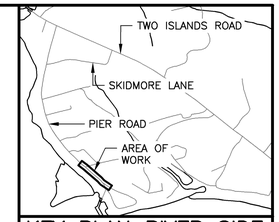
PIER ROAD SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 4	7.527m	4.100m (200ø)	SAN MH 311	5.100m (100ø)	SAN MH 305A (FORCEMAIN)
SAN MH 311	7.406m	4.443m (200ø) 4.231m (200ø)	SAN MH 310 SAN MH 312	4.165m (200ø)	PS 4
SAN MH 312	7.092m	4.672m (200ø)	SAN MH 313	4.657m (200ø)	SAN MH 311
SAN MH 313	7.165m	4.869m (200ø)	SAN MH 314	4.854m (200ø)	SAN MH 312



GRADE ELEVATION	7.82	7.71	7.64	7.60	7.61	7.50	7.46	7.38	7.26	7.18	7.18	7.18	7.07	6.78	6.81	6.91	
SANITARY SEWER (PROP.)	5.223	157.162m–200ø SAN. PVC DR35 @ 0.50%					4.443 4.231	85.242m–200ø SAN. PVC DR35 @ 0.50%			4.657 4.672	36.348m–200ø SAN. PVC DR35 @ 0.50%		4.854 4.669	91.292m–200ø SAN. PVC DR35 @ 0.50%			5.525

PROFILE
1:500 [H] 1:50 [V]

NOTES
1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PIER ROAD

STA 0+620 TO STA 0+920

CBCL LIMITED
Consulting Engineers

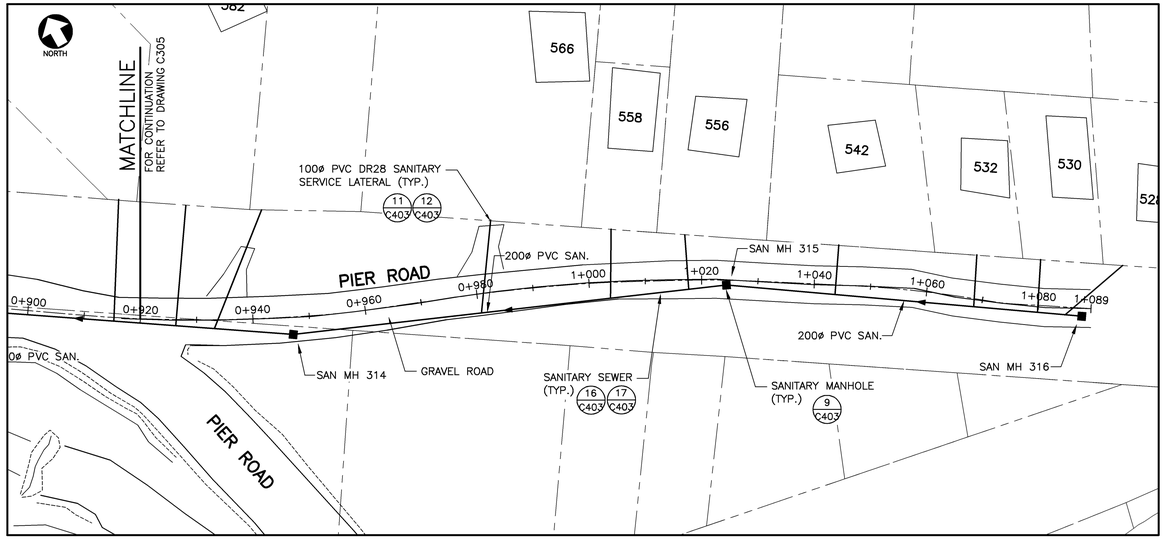
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 27 of 36

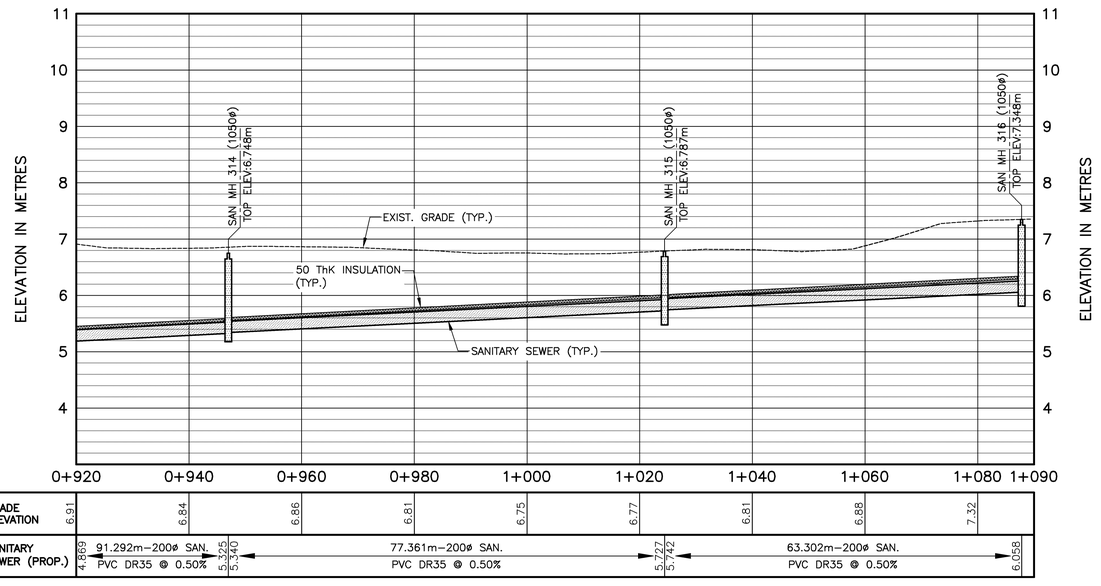
Drawing No **C305**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\30 CAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_PS_02_PLAN_PROFILE_SHEETS.DWG LAYOUT NAME: C305 PLOT DATE: Thursday, March 09, 2017 3:40:13 PM CAD_OPERATOR: JUSTNR

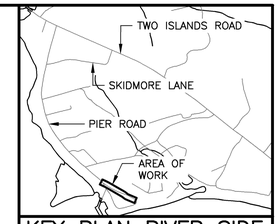


PLAN
1:500

PIER ROAD SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 314	6.748m	5.340m (200ø)	SAN MH 315	5.325m (200ø)	SAN MH 313
SAN MH 315	6.787m	5.742m (200ø)	SAN MH 316	5.727m (200ø)	SAN MH 314
SAN MH 316	7.348m			6.058m (200ø)	SAN MH 315



PROFILE
1:500 [H] 1:50 [V]



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PIER ROAD

STA 0+920 TO STA 1+090

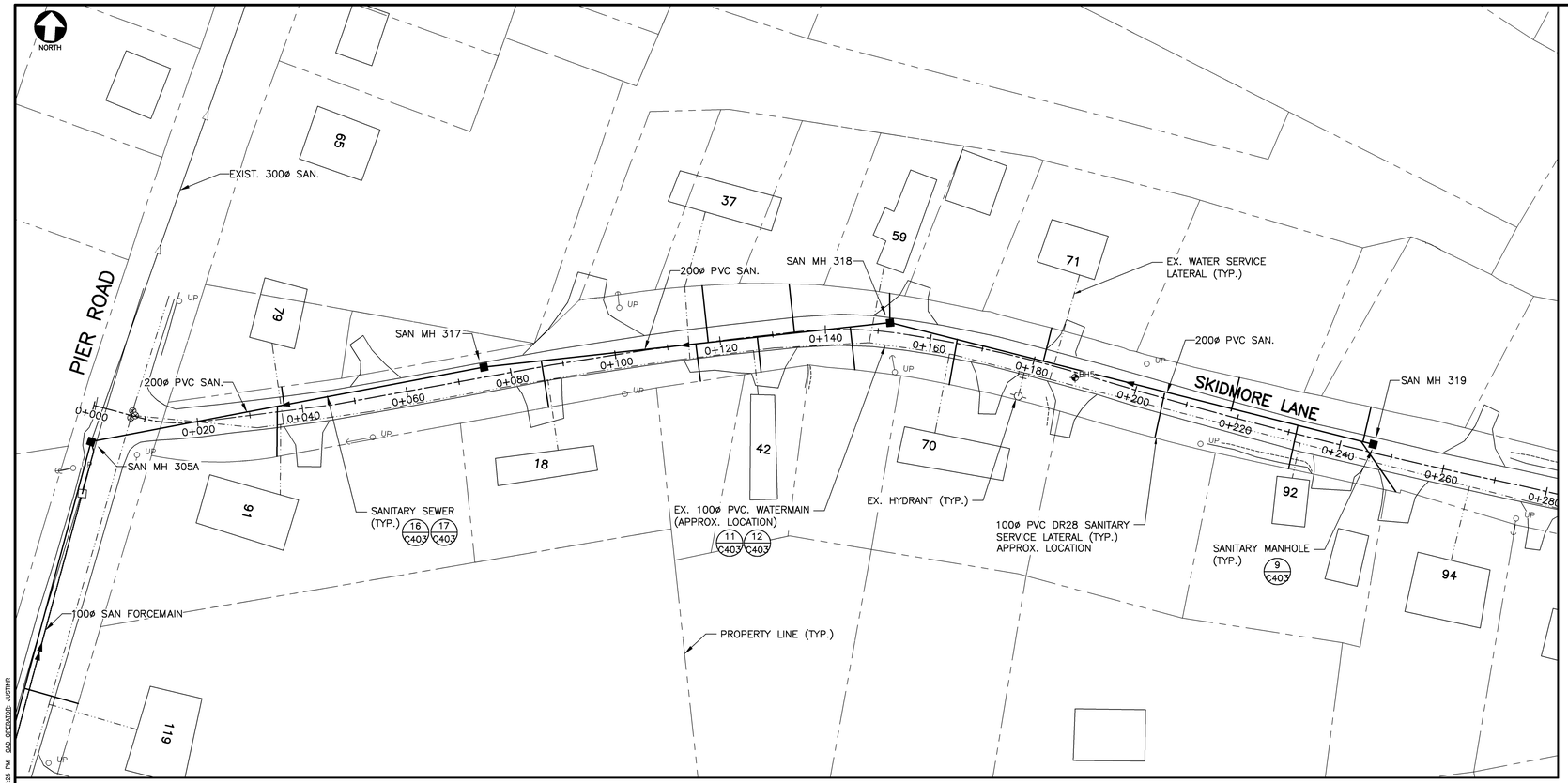
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00		NOV 2016	AS NOTED

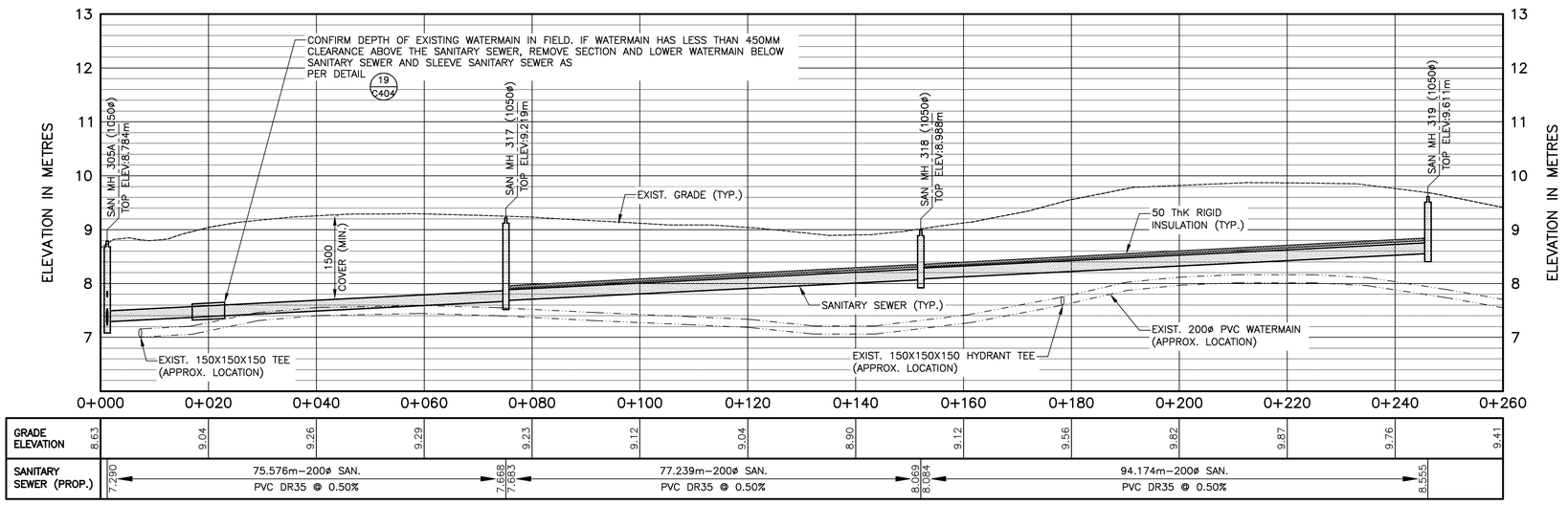
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 28 of 36

Drawing No **C306**



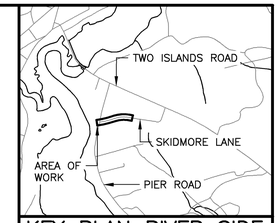
PLAN
1:500



GRADE ELEVATION	8.63	9.04	9.26	9.29	9.23	9.12	9.04	8.90	9.12	9.56	9.82	9.87	9.76	9.41
SANITARY SEWER (PROP.)	7.290	75.576m–200ø SAN. PVC DR35 @ 0.50%			7.668 7.683	77.239m–200ø SAN. PVC DR35 @ 0.50%			8.069 8.084	94.174m–200ø SAN. PVC DR35 @ 0.50%				8.555

PROFILE
1:500 [H] 1:50 [V]

SKIDMORE LANE SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 305A	8.784m	7.290m (200ø) 7.250m (200ø) 7.753m (100ø)	SAN MH 317 SAN MH 304 PS 4	7.230m (300ø)	EX SAN MH 012
SAN MH 317	9.219m	7.683m (200ø)	SAN MH 318	7.668m (200ø)	SAN MH 305A
SAN MH 318	8.988m	8.084m (200ø)	SAN MH 319	8.069m (200ø)	SAN MH 317
SAN MH 319	9.611m			8.555m (200ø)	SAN MH 318



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND
PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

SKIDMORE LANE

STA 0+000 TO STA 0+260

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

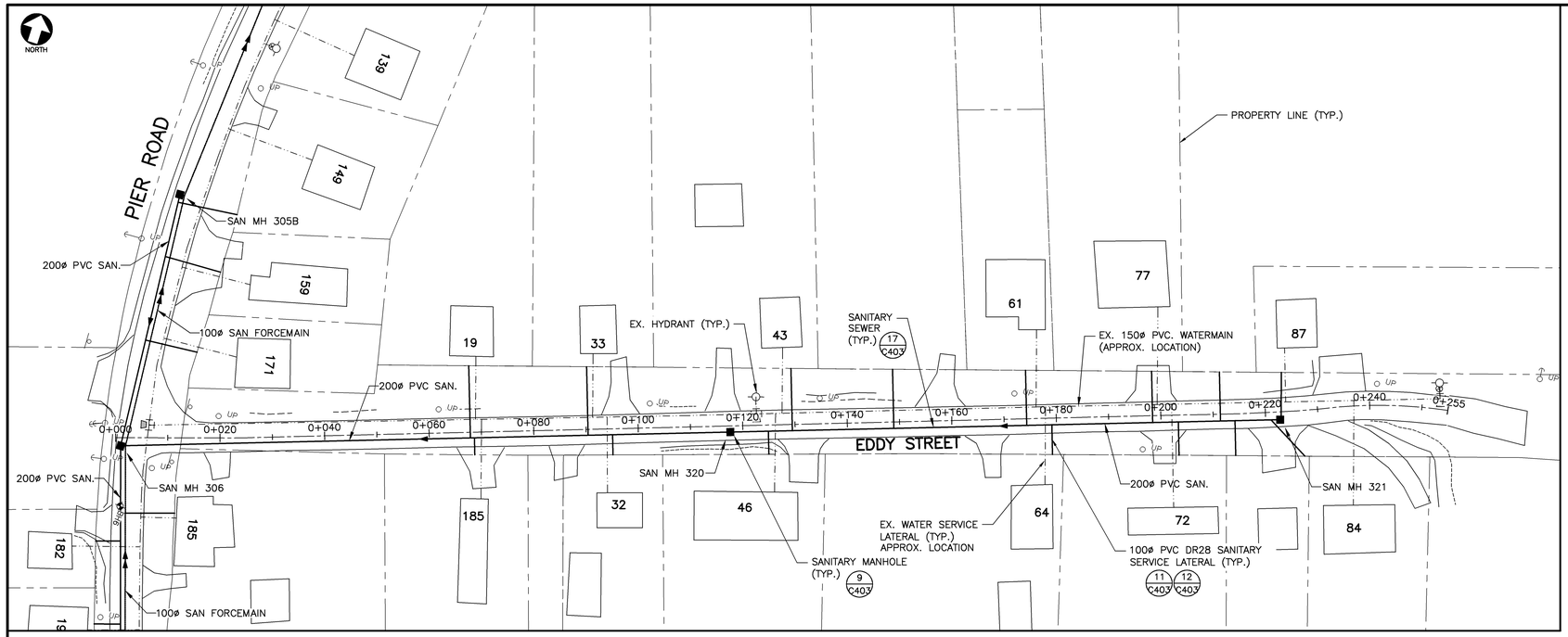
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 29 of 36

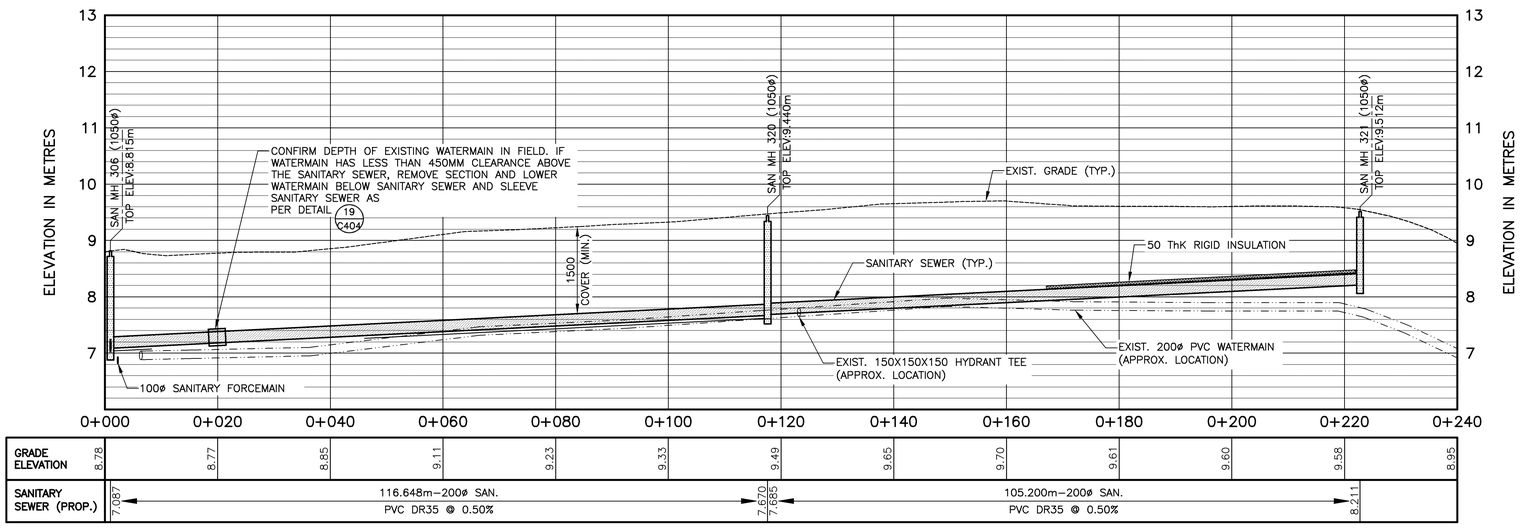
Drawing No C307

APEGNS PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T-M. Brignall 10229

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_RS_EG_PLAN_PROFILE_SHEETS.DWG LAYOUT_NAME: C307 PLOT_DATE: Thursday, March 09, 2017 3:37:25 PM CAD_OPERATOR: JUSTNR

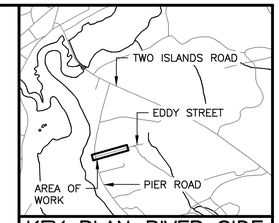


PLAN
1:500



PROFILE
1:500 [H] 1:50 [V]

EDDY STREET SANITARY DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 306	8.815m	7.042m (200ø) 7.087m (200ø)	SAN MH 305B SAN MH 320	7.027m (200ø)	SAN MH 307
SAN MH 320	9.440m	7.685m (200ø)	SAN MH 321	7.670m (200ø)	SAN MH 306
SAN MH 321	9.512m			8.211m (200ø)	SAN MH 320



KEY PLAN RIVER SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

EDDY STREET

STA 0+000 TO STA 0+240

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

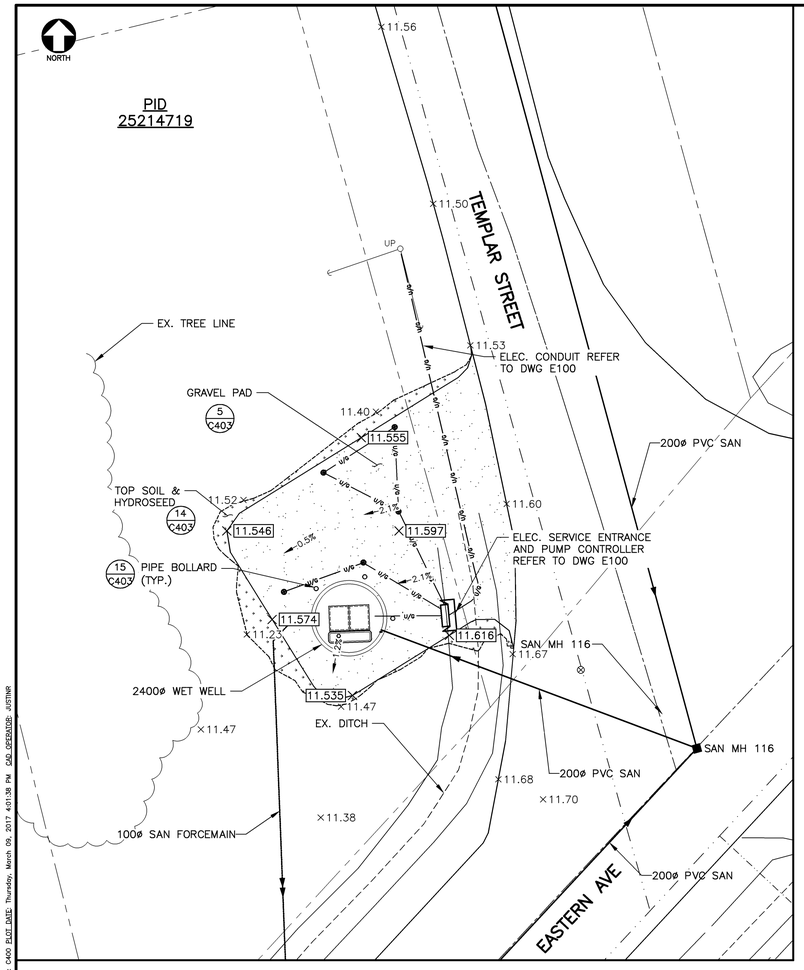
Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 30 of 36

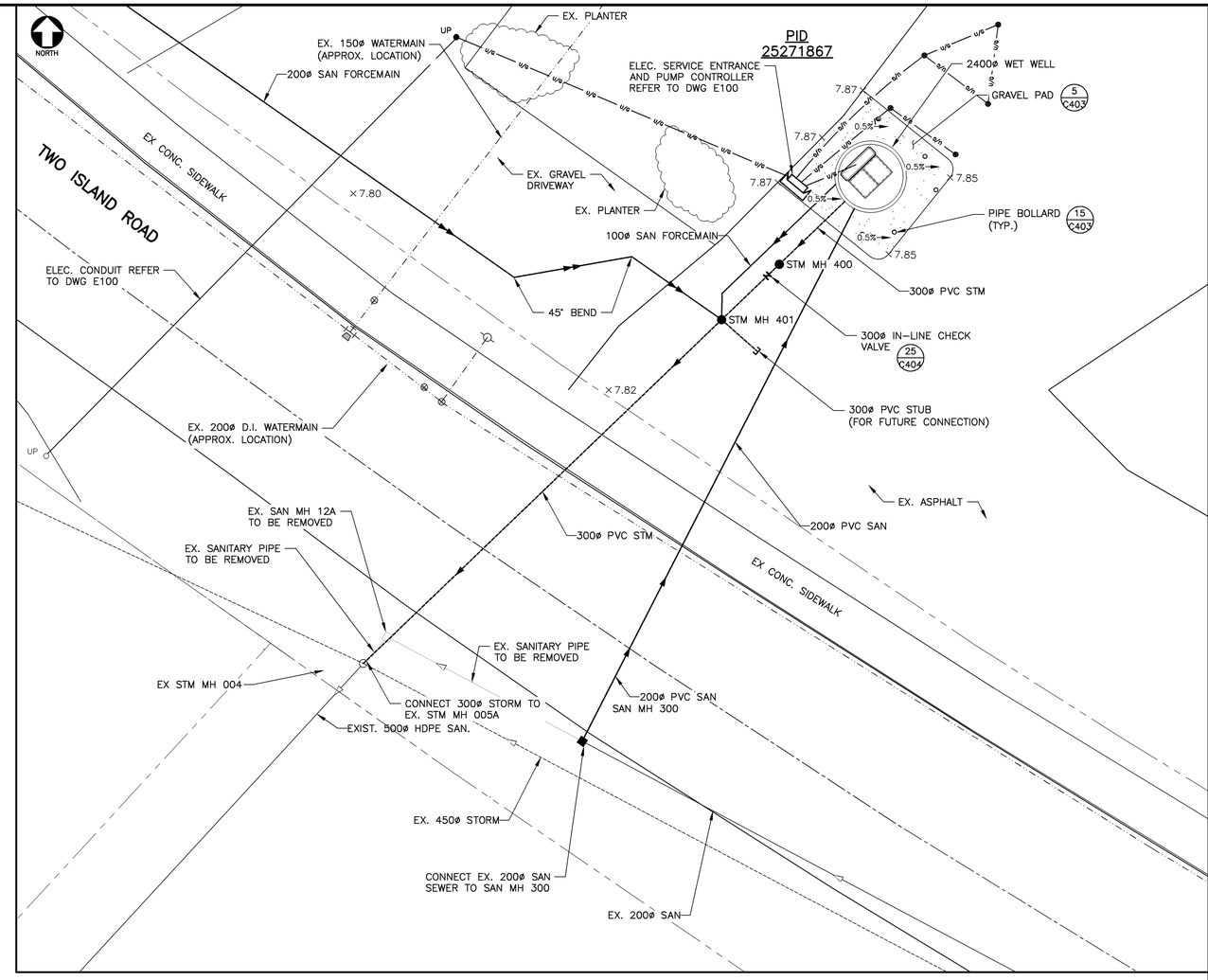
Drawing No C308

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T.W. Bragnalo 10229

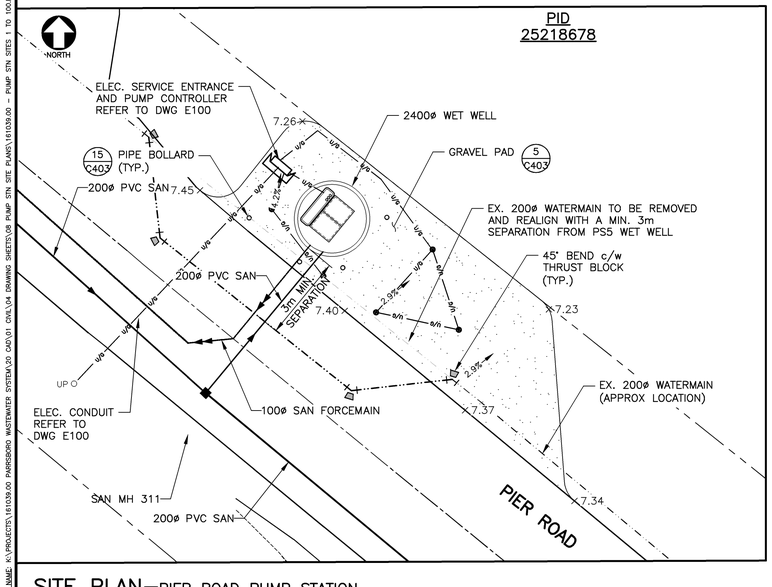
DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\30 CAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_PS_EDL_PLAN_PROFILE_SHEETS.DWG LAYOUT NAME: C308 PLOT DATE: Thursday, March 09, 2017 3:38:27 PM CAD_OPERATOR: JUSTNR



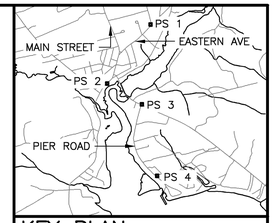
SITE PLAN—EASTERN AVE PUMP STATION
1:100 (PS 1)



SITE PLAN—RIVERSIDE PUMP STATION
1:100 (PS 3)



SITE PLAN—PIER ROAD PUMP STATION
1:100 (PS 4)



KEY PLAN
1:10,000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
u/s s/s	U/G UTILITIES	u/s s/s
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PUMP STATION 1, 3 & 4 SITE PLANS

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 31 of 36

Drawing No **C400**

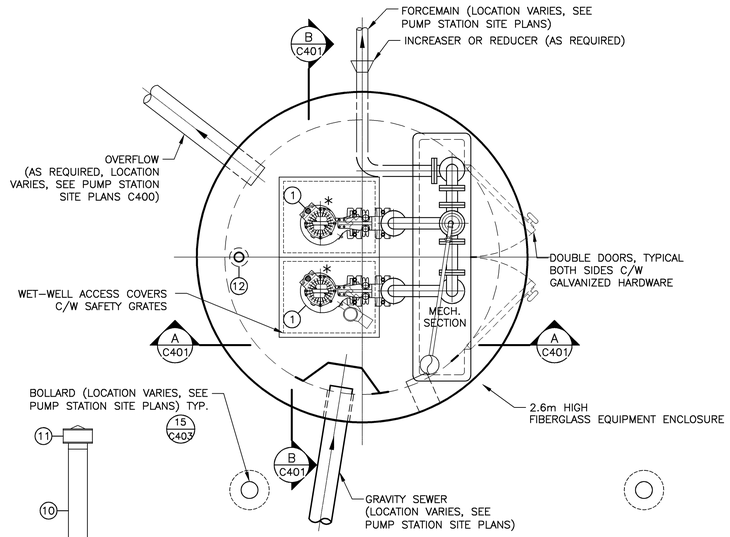
REGISTERED PROFESSIONAL ENGINEER
MAR.09/17
T.W. Bragnato
10229
PROVINCE OF NOVA SCOTIA

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\08 PUMP STN SITE PLANS\161039.00 – PUMP STN SITES 1 TO 100.DWG LAYOUT NAME: C400 PLOT DATE: Thursday, March 09, 2017 4:01:38 PM CAD OPERATOR: JUSTINB

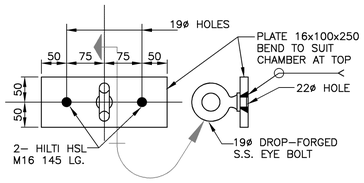
LIST OF FITTINGS

No.	QTY.	DESCRIPTION
①	2	PUMP *
②	14	100ø DUCTILE IRON MAKE UP PIPE (FLG.)
③	5	100ø DUCTILE IRON 45° BEND (FLG.)
④	2	100ø BALL CHECK VALVE (FLG.)
⑤	3	100ø PLUG VALVE (FLG.)
⑥	3	100ø DUCTILE IRON 90° BEND (FLG.)
⑦	2	100ø DUCTILE IRON TEE (FLG.)
⑧	1	100ø MAGNETIC FLOW METER (FLG.)
⑨	1	50ø SHORT BODY SEWAGE AIR RELEASE VALVE
⑩	1	100ø XFR DWV PVC PIPE
⑪	1	100ø PUL–AIR STATIONARY VENTILATOR
⑫	1	CAST–IN LIFTING DAVIT SOCKET SEE NOTE 11.

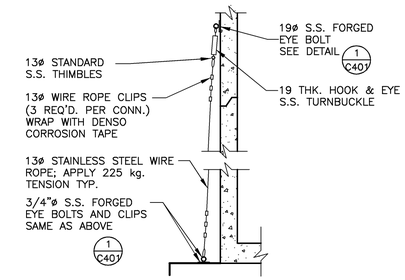
* DENOTES EQUIPMENT SUPPLIED BY THE OWNER AND INSTALLED AND COMMISSIONED UNDER THIS CONTRACT



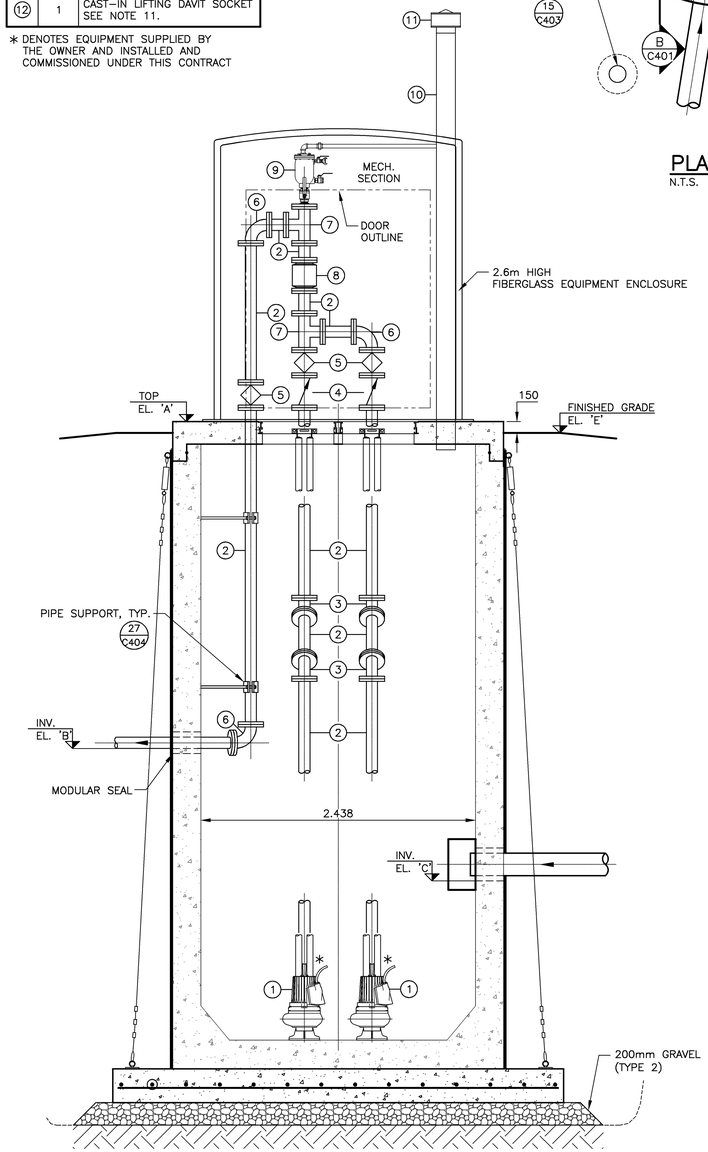
PLAN– SEWAGE LIFT STATION
N.T.S.



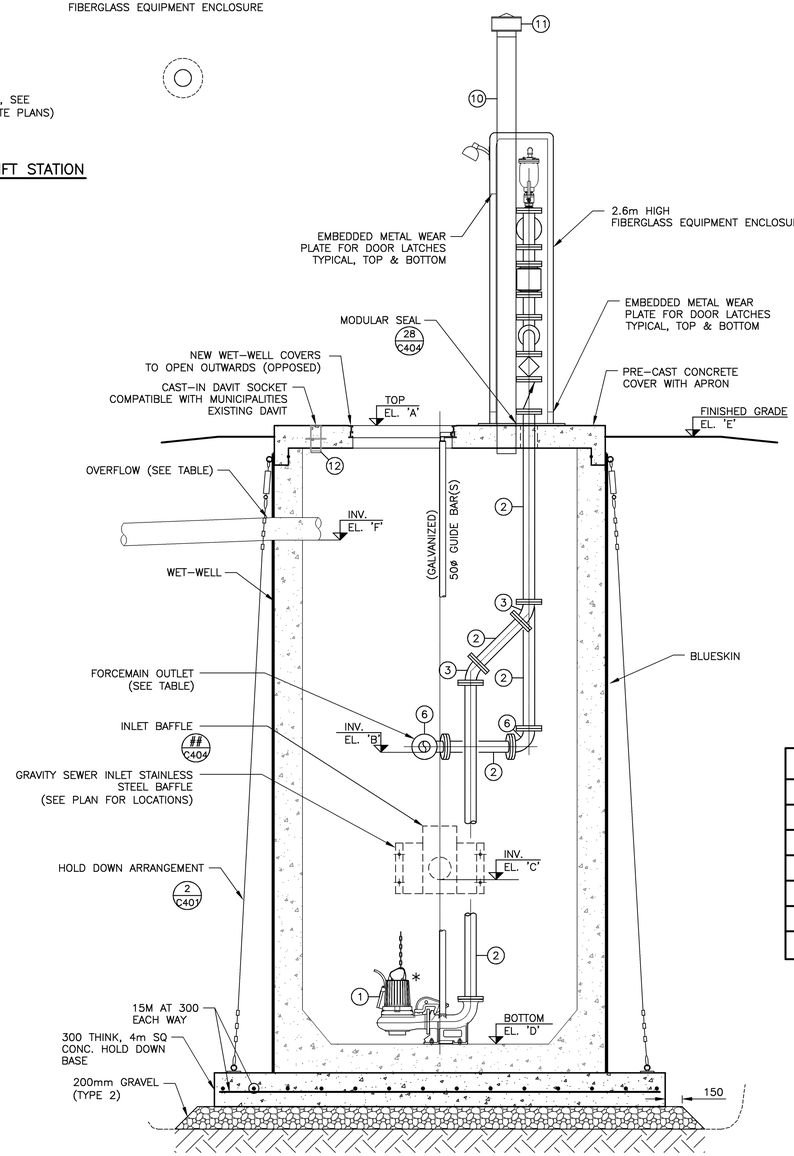
1 C401 DETAIL– EYE BOLT
N.T.S.



2 C401 DETAIL– HOLD DOWN ARRANGEMENT
N.T.S.



A C401 SECTION– SEWAGE LIFT STATION
N.T.S.



B C401 SECTION– SEWAGE LIFT STATION
N.T.S.

WET WELL INVERT TABLE

	PS 1	PS 3	PS 4
'A'	11.742	8.009	7.527
'B'	9.500	5.400	5.100
'C'	7.970	4.372	4.100
'D'	7.230	2.780	3.140
'E'	11.592	7.859	7.377
'F'	N/A	7.150	N/A

NOTES:

1. ALL ELEVATIONS ARE IN METRES.
2. SURVEY INFORMATION IS BASED ON EXISTING INFORMATION AND MAY NOT REFLECT ALL SITE CONDITIONS.
3. EXISTING UTILITY INFORMATION IS APPROXIMATE ONLY. EXACT LOCATIONS AND ELEVATIONS TO BE DETERMINED IN THE FIELD BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE THE ENGINEER IMMEDIATELY.
4. COORDINATE ALL WORK AFFECTING UTILITIES WITH THE APPROPRIATE UTILITY.
5. CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED EROSION AND SEDIMENT CONTROL MEASURES.
6. ALL SURFACES DISTURBED DURING CONSTRUCTION TO BE REINSTATED.
7. CONTRACTOR TO PROVIDE ALL TRAFFIC SAFETY SIGNAGE AND FLAGGERS.
8. PROVIDE INSULATION 150mm ABOVE PIPE WHERE LESS THAN 1500mm OF COVER OCCURS.
9. ALL WORK TO BE DONE IN ACCORDANCE WITH FEDERAL AND PROVINCIAL REGULATIONS INCLUDING NOVA SCOTIA DEPARTMENT OF THE ENVIRONMENT AND THE NOVA SCOTIA DEPARTMENT OF LABOUR.
10. PROVIDE DAVIT SOCKET.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PUMP STATION 1, 3 & 4 PLAN & SECTIONS

CBCL LIMITED
Consulting Engineers

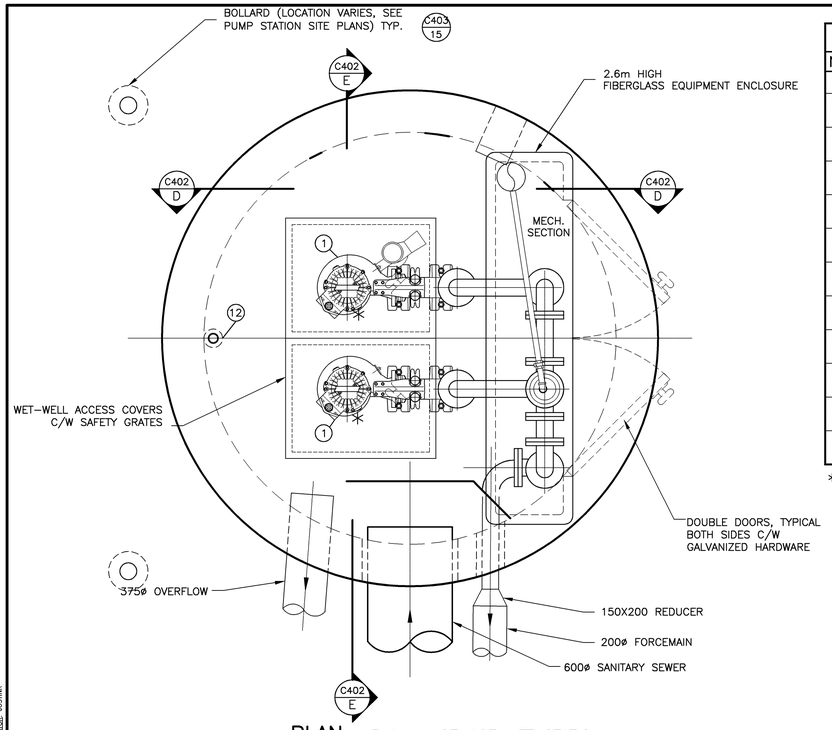
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 32 of 36

Drawing No **C401**

PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T.W. Bragnalo 10229

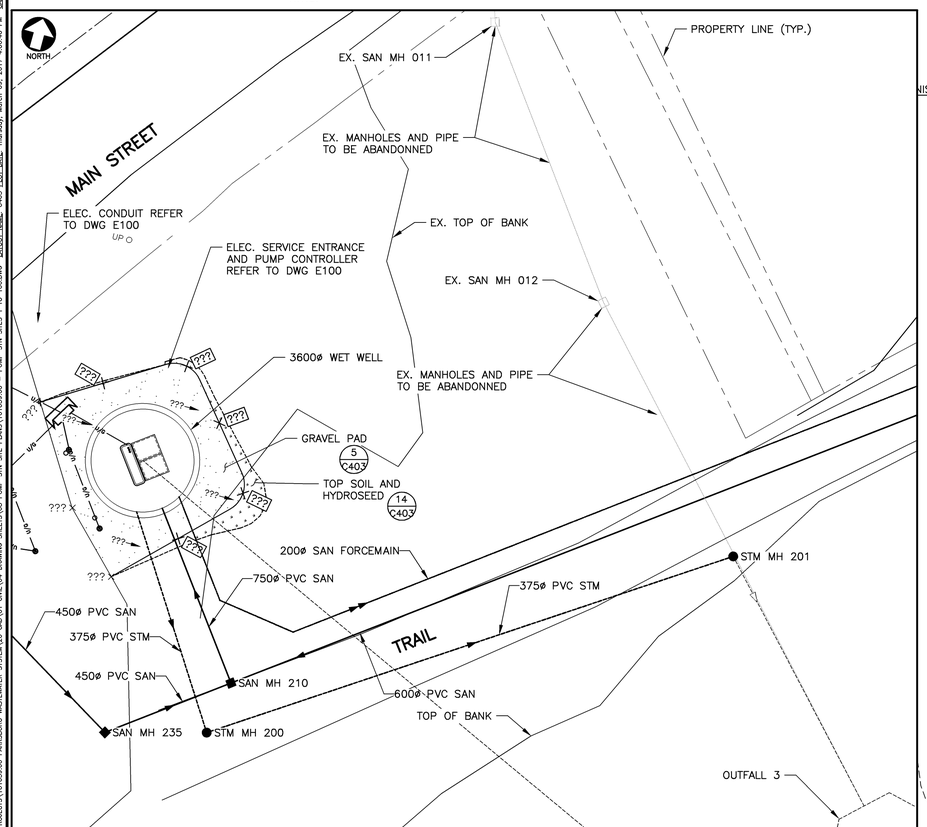


PLAN– PLAN – SEWAGE LIFT STATION

N.T.S.

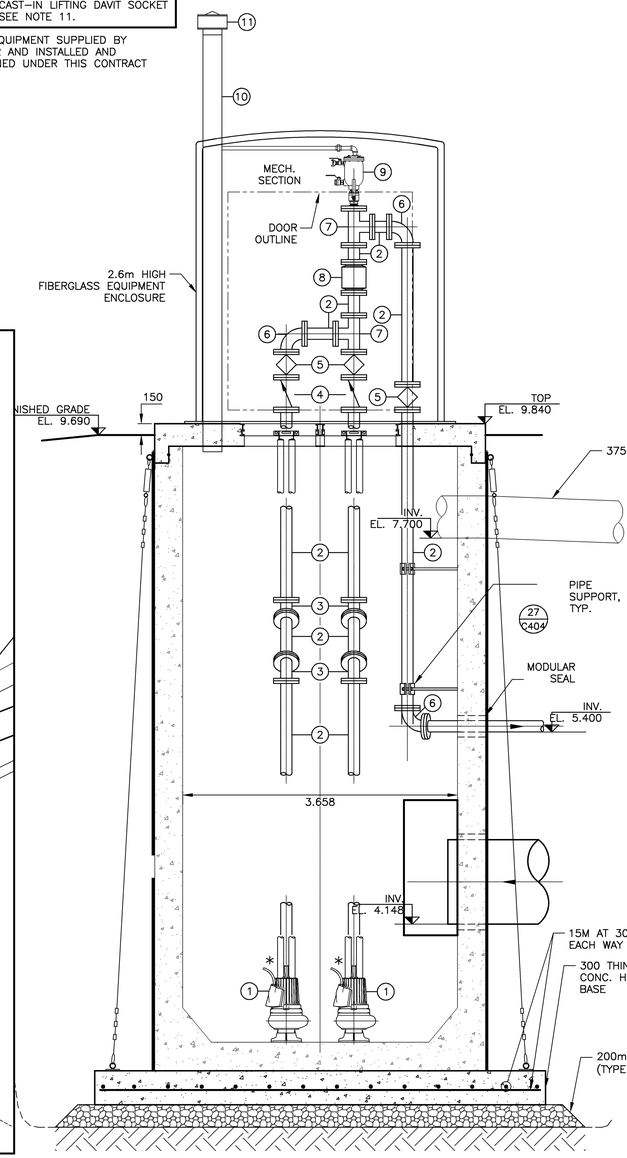
LIST OF FITTINGS		
No.	QTY.	DESCRIPTION
1	2	PUMP *
2	14	150ø DUCTILE IRON MAKE UP PIPE (FLG.)
3	5	150ø DUCTILE IRON 45° BEND (FLG.)
4	2	150ø BALL CHECK VALVE (FLG.)
5	3	150ø PLUG VALVE (FLG.)
6	3	150ø DUCTILE IRON 90° BEND (FLG.)
7	2	150ø DUCTILE IRON TEE (FLG.)
8	1	150ø MAGNETIC FLOW METER (FLG.)
9	1	50ø SHORT BODY SEWAGE AIR RELEASE VALVE
10	1	150ø XFR DWV PVC PIPE
11	1	150ø PUL–AIR STATIONARY VENTILATOR
12	1	CAST–IN LIFTING DAVIT SOCKET SEE NOTE 11.

* DENOTES EQUIPMENT SUPPLIED BY THE OWNER AND INSTALLED AND COMMISSIONED UNDER THIS CONTRACT



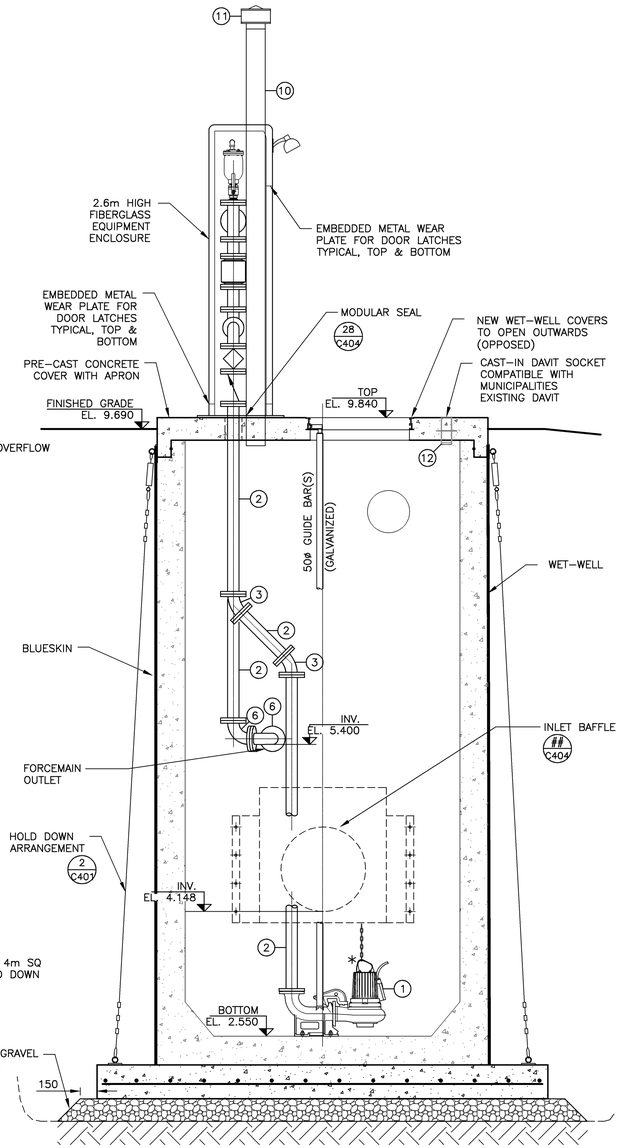
SITE PLAN–DOWNTOWN PUMP STATION (PS 2)

1:100



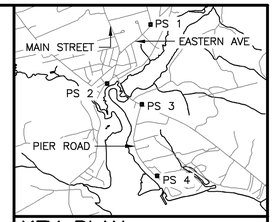
SECTION–SEWAGE LIFT STATION

D C402 N.T.S.



SECTION–SEWAGE LIFT STATION

E C402 N.T.S.



KEY PLAN

1:10,000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
	U/G UTILITIES	
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES

1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PUMP STATION 2 SITE PLAN & SECTION

CBCL LIMITED
Consulting Engineers

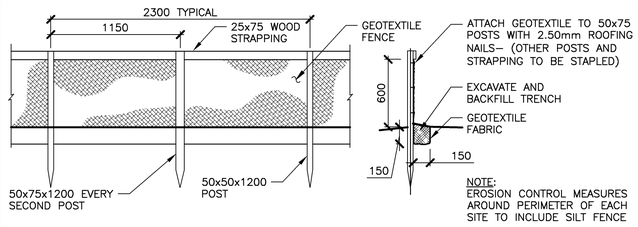
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

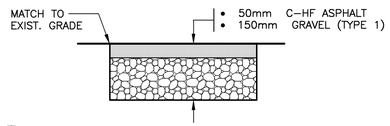
Sheet No 33 of 36

Drawing No **C402**

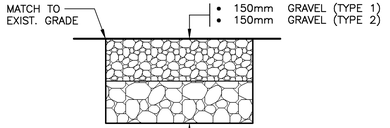
DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\08 PUMP STN SITE PLANS\161039.00 – PUMP STN SITES 1 TO 100.DWG LAYOUT NAME: C403 PLOT DATE: Thursday, March 09, 2017 4:06:40 PM CAD OPERATOR: JUSTINR



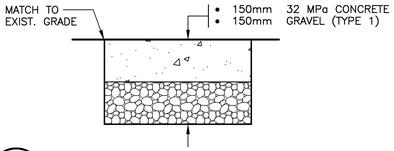
3 C403 DETAIL– SEDIMENT CONTROL FENCE 1:25



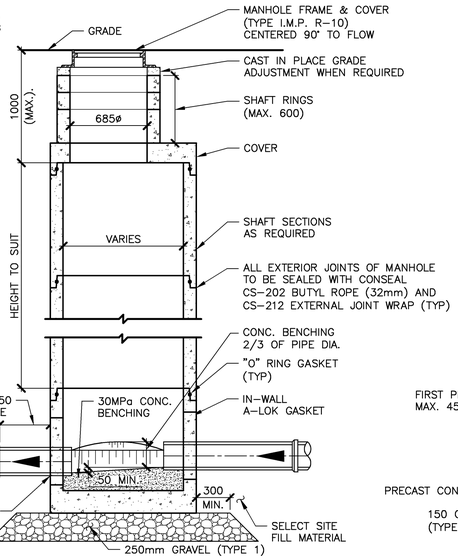
4 C403 DETAIL– ASPHALT DRIVEWAY REINSTATEMENT 1:10



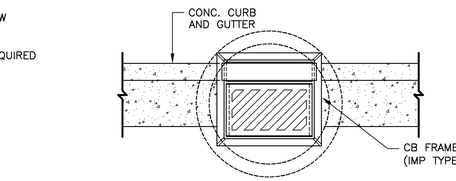
5 C403 DETAIL– GRAVEL DRIVEWAY & PAD REINSTATEMENT 1:10

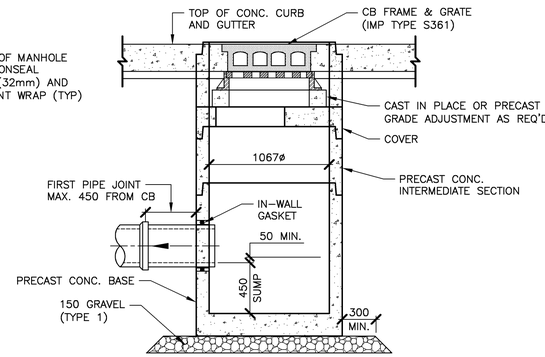


6 C403 DETAIL– CONCRETE DRIVEWAY REINSTATEMENT 1:10

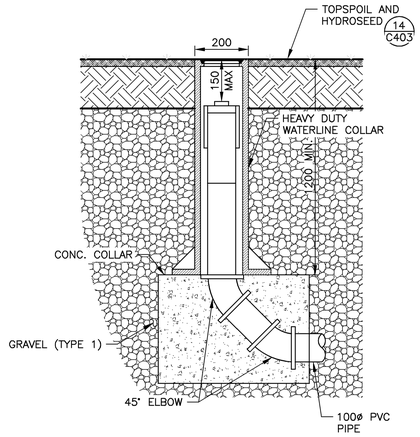


9 C403 DETAIL– PRECAST MANHOLE 1:25

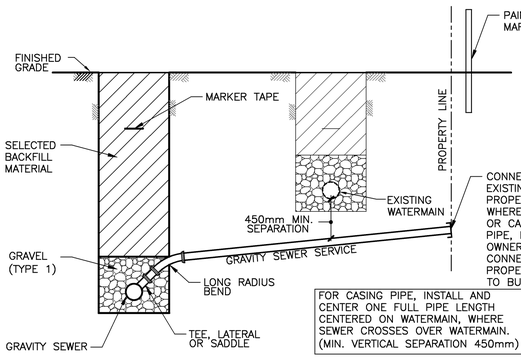




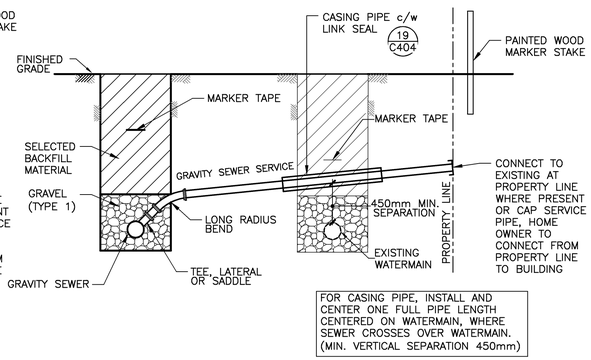
10 C403 DETAIL– CATCHBASIN 1:25



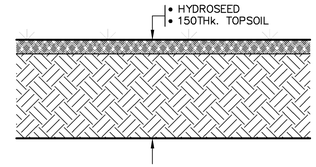
13 C403 DETAIL– CLEANOUT 1:10



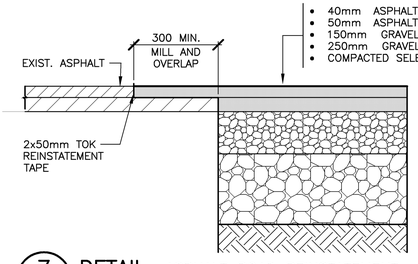
11 C403 DETAIL– TRENCH – TWO PIPE SERVICE CROSSING AND SANITARY SERVICE LATERAL CONNECTION N.T.S.



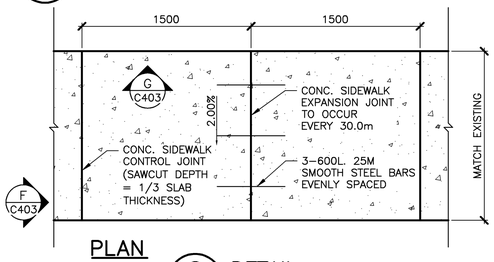
12 C403 DETAIL– TRENCH – TWO PIPE SERVICE CROSSING AND SANITARY SERVICE LATERAL CONNECTION N.T.S.



14 C403 DETAIL– TOPSOIL AND HYDROSEED 1:5

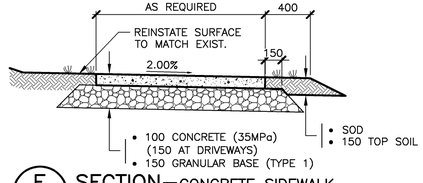


7 C403 DETAIL– ASPHALT ROAD REINSTATEMENT 1:10

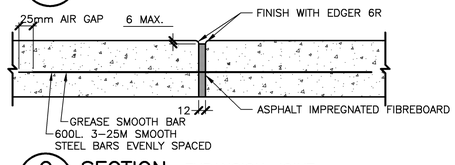


PLAN

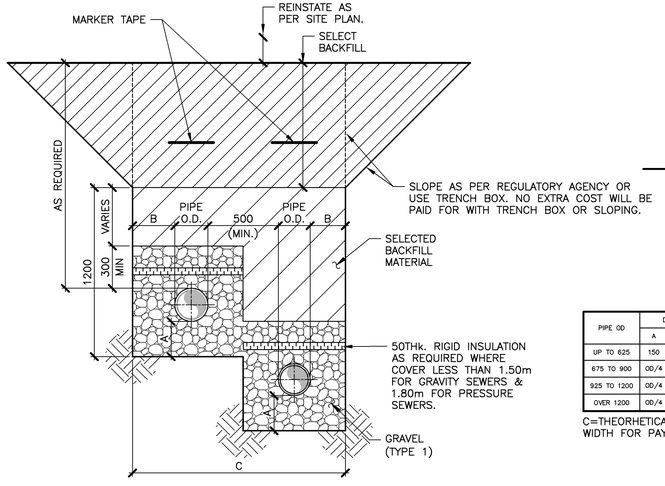
8 C403 DETAIL– CONCRETE SIDEWALK 1:25



F C403 SECTION–CONCRETE SIDEWALK 1:25



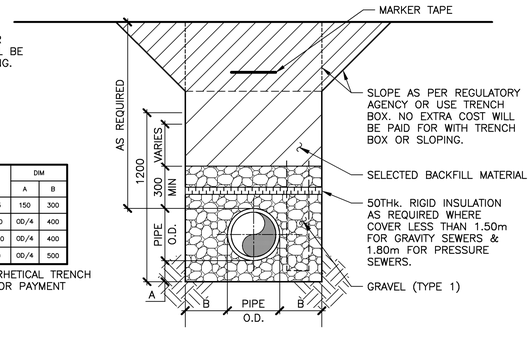
G C403 SECTION–EXPANSION JOINT 1:5



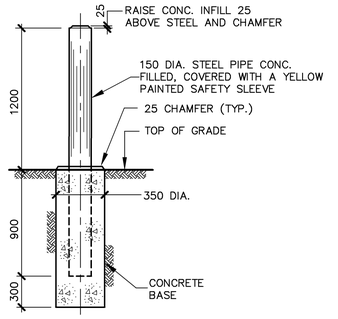
PIPE OD	DIM A	DIM B
UP TO 625	150	300
675 TO 900	OD/4	400
925 TO 1200	OD/4	400
OVER 1200	OD/4	500

C=THEORHETICAL TRENCH WIDTH FOR PAYMENT

16 C403 DETAIL– TYPICAL TRENCH FOR MULTIPLE PIPES 1:20



17 C403 DETAIL– TYPICAL TRENCH FOR ONE PIPE 1:20



15 C403 DETAIL– BOLLARD N.T.S.

NOTES
1. FOR GENERAL NOTES SEE DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND
PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MISCELLANEOUS DETAILS 1

CBCL LIMITED Consulting Engineers

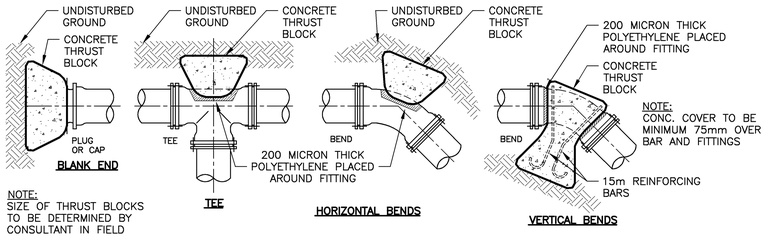
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T.W. Bridgeo 10229

Sheet No 34 of 36

Drawing No **C403**



NOTE:
SIZE OF THRUST BLOCKS TO BE DETERMINED BY CONSULTANT IN FIELD

MINIMUM CONTACT AREAS FOR CONC. THRUST BLOCKS

PIPE ø	AREA m2 FOR SOIL SUPPORTING CAPACITY OF 100 kPa					
mm	CAP/PLUG	TEE	90° BEND	45° BEND	22.5° BEND	11.25° BEND
100	0.25	0.25	0.32	0.20	0.16	0.16
150	0.48	0.48	0.64	0.40	0.24	0.16
200	0.80	0.80	1.12	0.64	0.32	0.16
250	1.28	1.28	1.76	0.96	0.48	0.24
300	1.76	1.76	2.56	1.44	0.72	0.40

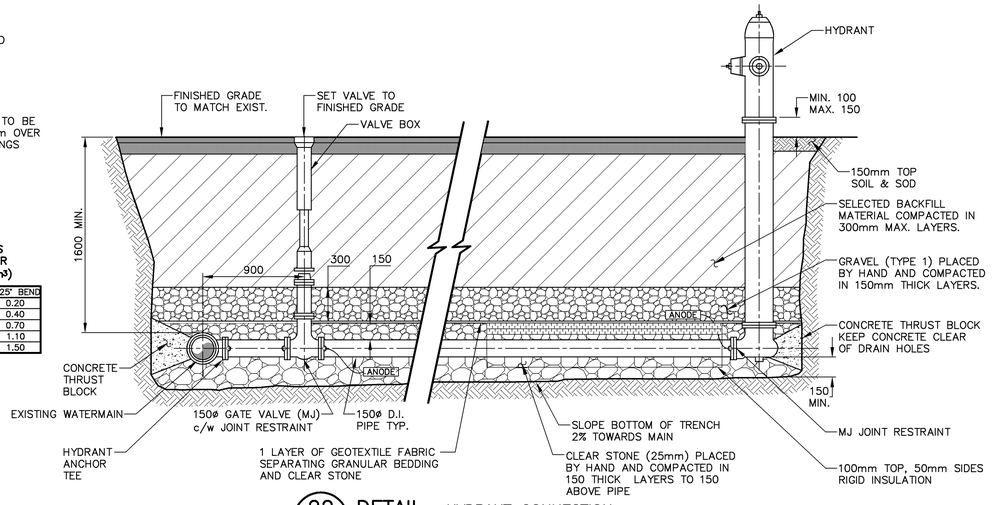
MINIMUM DISTANCE FROM FITTING TO UNDISTURBED GROUND

PIPE ø mm	mm
100	450
150	450
200	450
250	600
300	750

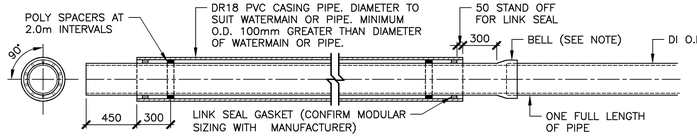
VERTICAL THRUST BLOCKS THRUST COMPENSATED FOR BY MASS OF CONCRETE (m³)

PIPE ø mm	45° BEND	22.5° BEND	11.25° BEND
100	0.40	0.20	0.20
150	0.80	0.40	0.40
200	1.40	0.70	0.70
250	2.10	1.10	1.10
300	3.00	1.50	1.50

18 C404 DETAIL— CONCRETE THRUST BLOCKS
N.T.S.



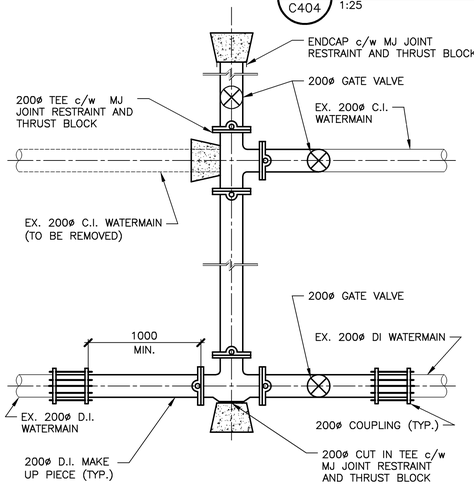
22 C404 DETAIL— HYDRANT CONNECTION
1:25



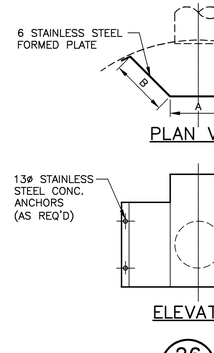
NOTE:
1. PROVIDE LOCKING GASKETS TO WATERMAIN OR PIPE CARRIED WITHIN CARRIER PIPE.
2. TO BE USED WHERE WATERMAIN CROSSES UNDER SANITARY MAIN.

DI PIPE ø	CASING PIPE ø SINGLE DI PIPE LENGTH	CASING PIPE ø MULTIPLE DI PIPE LENGTHS
100	200 DR18	250 DR18
150	250 DR18	300 DR18
200	350 DR18	400 DR18
250	400 DR18	450 DR18
300	450 DR18	500 DR18
400	600 DR18	CUSTOM

19 C404 DETAIL— PIPE SLEEVE
1:25



23 C404 DETAIL— WATERMAIN INTERCONNECTION (NORTH END)
1:25

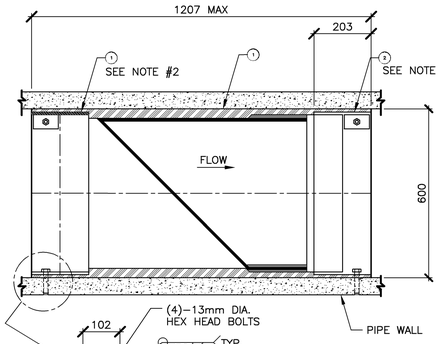


PLAN VIEW

ELEVATION

PIPE OD	DIM A	B	C	D
200	300	275	450	600
750	1125	450	950	1200

26 C404 DETAIL— BAFFLE
N.T.S.

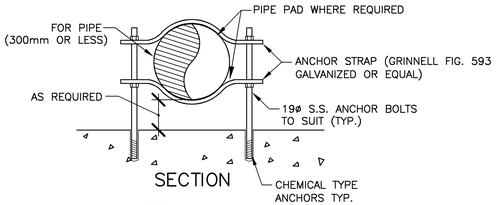


PIN PER NOTE #4
RECOMMENDED PINNING CONFIGURATION (SUPPLIED BY CUSTOMER) (SEE I.O.M.)
NOT TO SCALE

NOTES

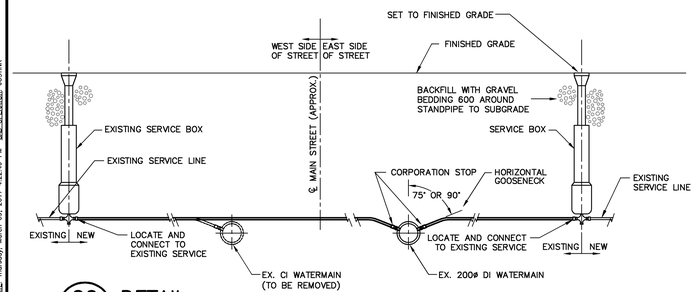
1. PIPE INSIDE DIAMETER—600mm
2. CLAMPS INSTALLED IN UPSTREAM OR DOWNSTREAM CUFF DEPENDING ON INSTALLATION ORIENTATION
3. MAXIMUM ALLOWABLE BACK PRESSURE—200 FEET
4. IT IS RECOMMENDED TO BOLT OR PIN CHECKMATE TO PIPE AS SHOWN, 4 PLACES 90° APART

25 C404 DETAIL— IN-LINE CHECK VALVE
1:10

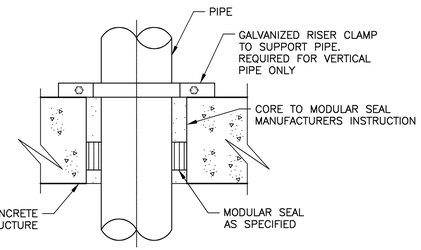


SECTION

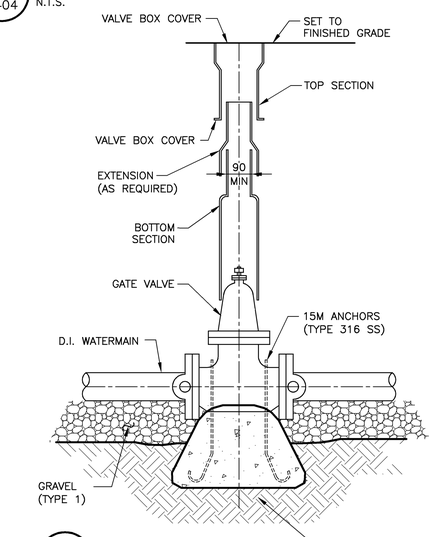
27 C404 DETAIL— PIPE SUPPORT
N.T.S.



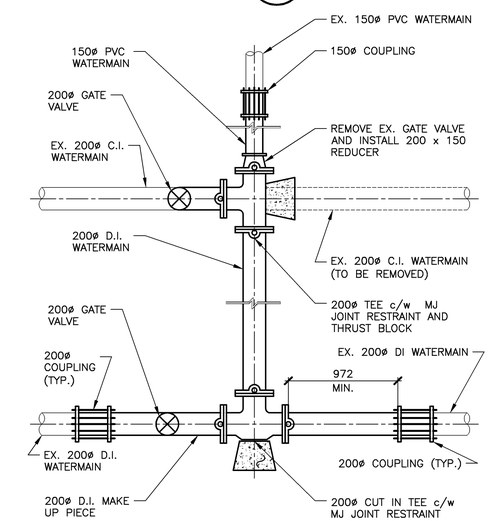
20 C404 DETAIL— WATER SERVICE CONNECTION MAIN STREET
N.T.S.



28 C404 DETAIL—MODULAR SEAL THRU CONCRETE
N.T.S.



21 C404 DETAIL— GATE VALVE
1:10



24 C404 DETAIL—WATERMAIN INTERCONNECTION (SOUTH END)
1:25

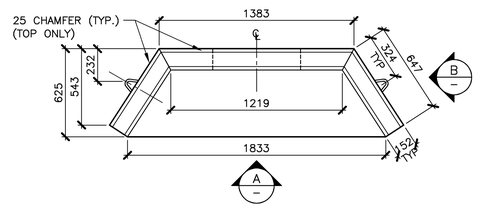
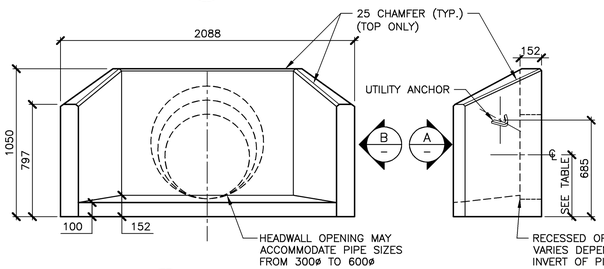


TABLE		
PIPE DIA.	PIPE OPENING	℄
300	450	305
375	550	345
450	600	380
525	700	420
600	800	457



29 C404 DETAIL—PRECAST CONCRETE DRIVEWAY HEADWALL
1:20

NOTES
1. FOR GENERAL NOTES SEE DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND
PARRSBORO WASTERWATER SYSTEM — COLLECTION SYSTEM

CIVIL

MISCELLANEOUS DETAILS 2

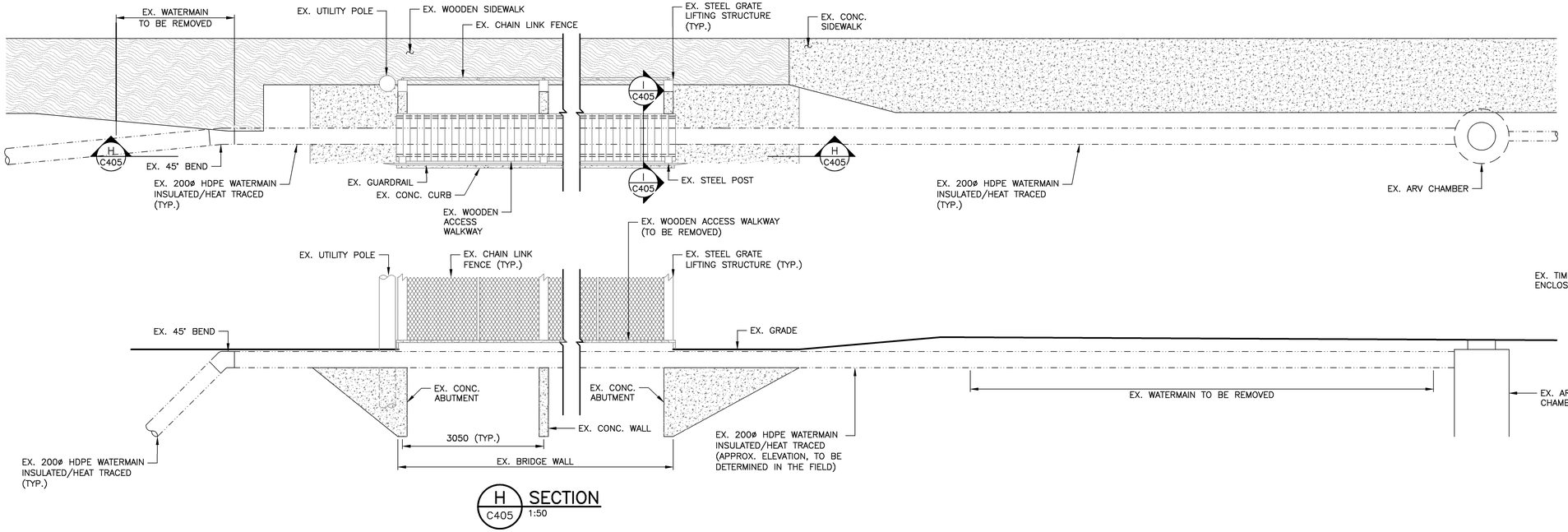
CBCL LIMITED
Consulting Engineers

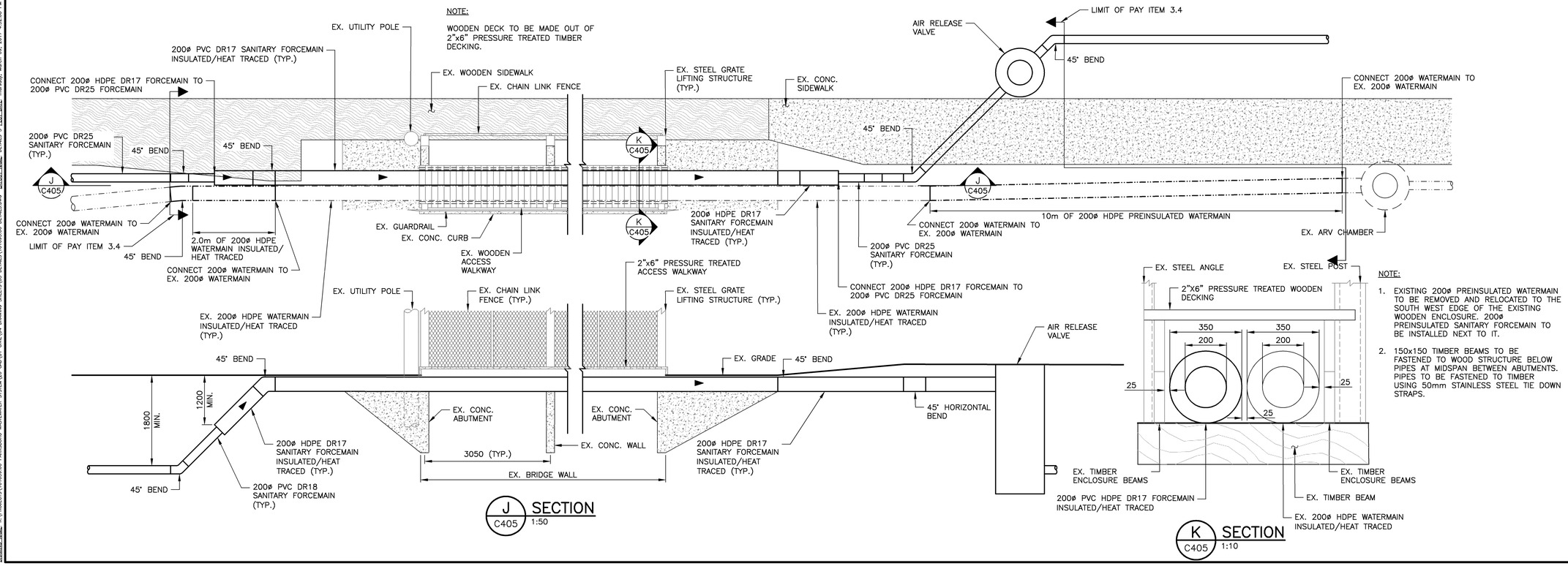
CBCL No	Contract No	Date	Scale
161039.00	161039.00	MAR 04/16	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 35 of 36

Drawing No **C404**





NOTE:

1. EXISTING 200ø PREINSULATED WATERMAIN TO BE REMOVED AND RELOCATED TO THE SOUTH WEST EDGE OF THE EXISTING WOODEN ENCLOSURE. 200ø PREINSULATED SANITARY FORCEMAIN TO BE INSTALLED NEXT TO IT.
2. 150x150 TIMBER BEAMS TO BE FASTENED TO WOOD STRUCTURE BELOW PIPES AT MIDSPAN BETWEEN ABUTMENTS. PIPES TO BE FASTENED TO TIMBER USING 50mm STAINLESS STEEL TIE DOWN STRAPS.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND
PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MISCELLANEOUS DETAILS 3

CBCL LIMITED
Consulting Engineers

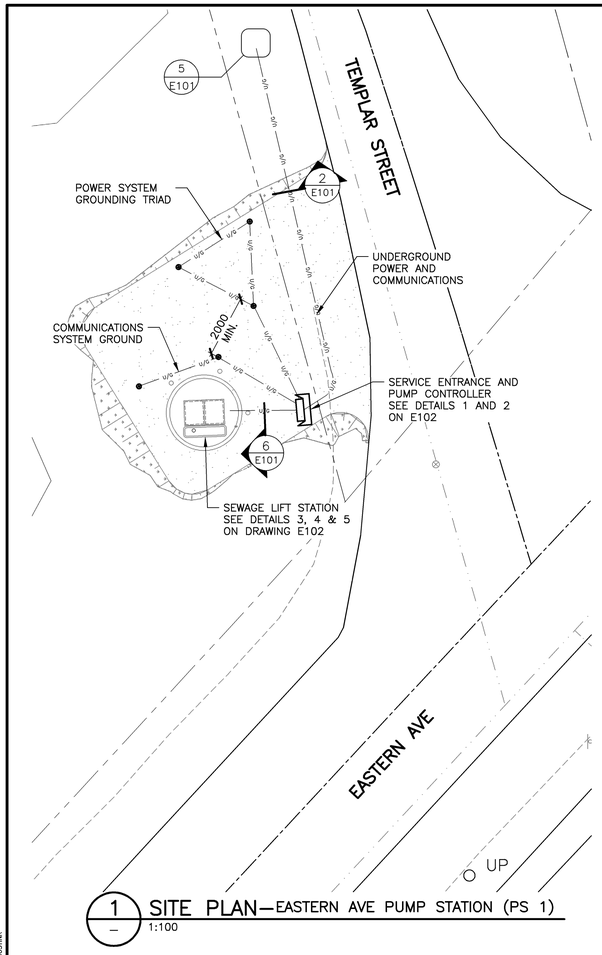
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

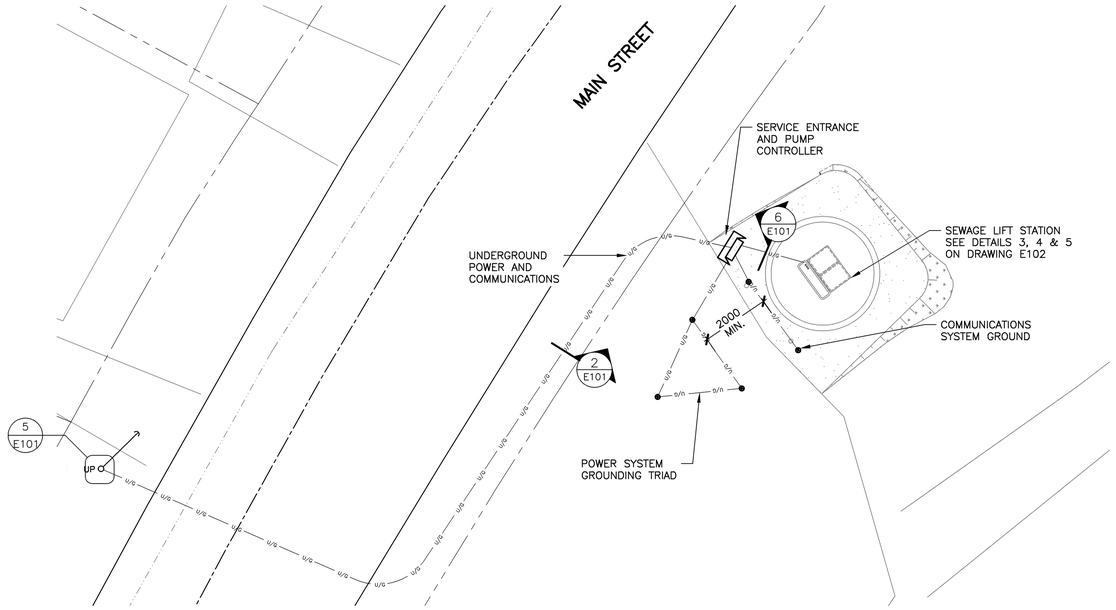
Sheet No 36 of 36

Drawing No **C405**

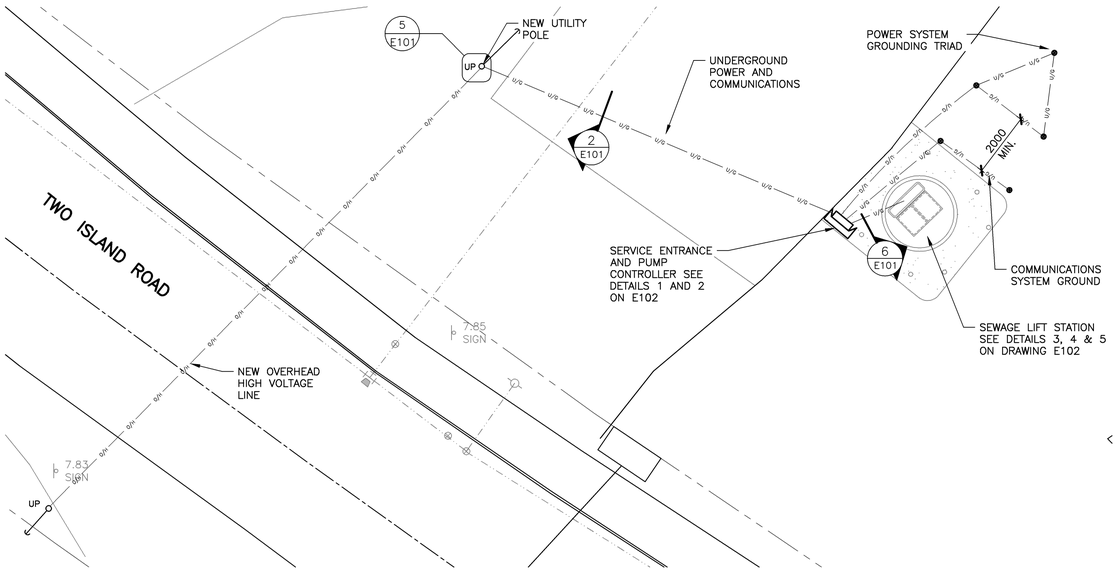
DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\05 DETAILS\161093.00 DETAILS.DWG LAYOUT NAME: DETAILS 3 PLOT DATE: Thursday, March 09, 2017 4:52:08 PM CAD OPERATOR: JUSTINB



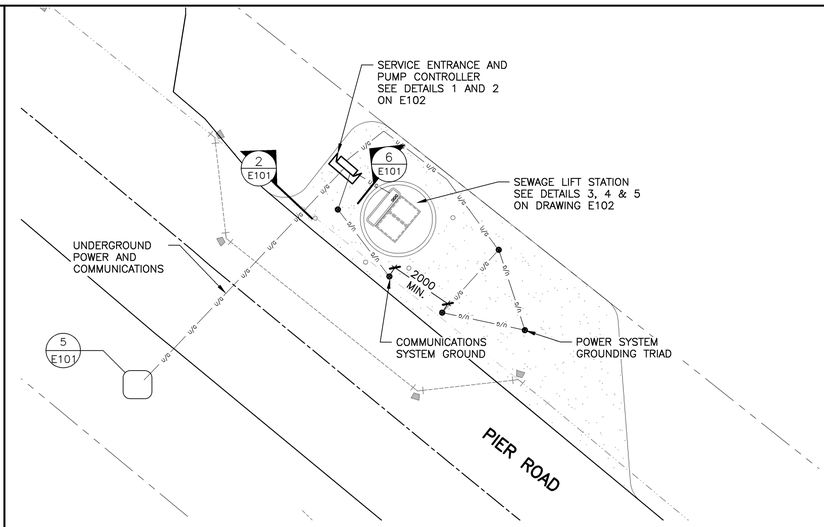
1 — SITE PLAN—EASTERN AVE PUMP STATION (PS 1)
1:100



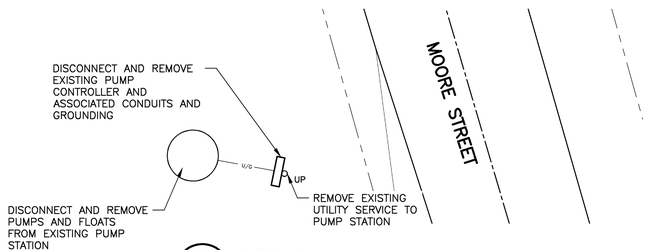
2 — SITE PLAN—DOWN TOWN PUMP STATION (PS 2)
1:100



3 — SITE PLAN— RIVERSIDE PUMP STATION (PS 3)
1:100



4 — SITE PLAN—PIER ROAD PUMP STATION (PS 4)
1:100



5 — SITE PLAN—MOORE STREET PUMP STATION DEMOLITION
1:100

NOTES:

1. LOCATIONS OF SERVICES ARE APPROXIMATE. CONFIRM THE LOCATIONS OF ANY EXISTING OVERHEAD OR BURIED SERVICES AS REQUIRED FOR INSTALLATION OF ANY NEW ELECTRICAL SERVICES.
2. ALL PENETRATIONS INTO THE WET–WELL FROM THE EQUIPMENT ENCLOSURE SHALL BE SEALED AND GAS TIGHT WITH NON–SHRINK GROUT.
3. SUPPLY AND INSTALL LAMICOID NAME PLATE AT THE PORTABLE GENERATOR RECEPTACLE INDICATING '600V, 3ϕ, PORTABLE GENERATOR" AND "NEUTRAL FLOATING ONLY AT THE GENERATOR".

LEGEND:

- ELECTRICAL SERVICE ENTRANCE AND PUMP CONTROLLER
- UP o — UTILITY POLE
- ● — GROUND ROD
- u/g — UNDERGROUND ELECTRICAL
- o/h — OVERHEAD ELECTRICAL

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR. 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

ELECTRICAL

PUMP STATION 1, 2, 3, & 4 SITE PLANS

CBCL LIMITED
Consulting Engineers

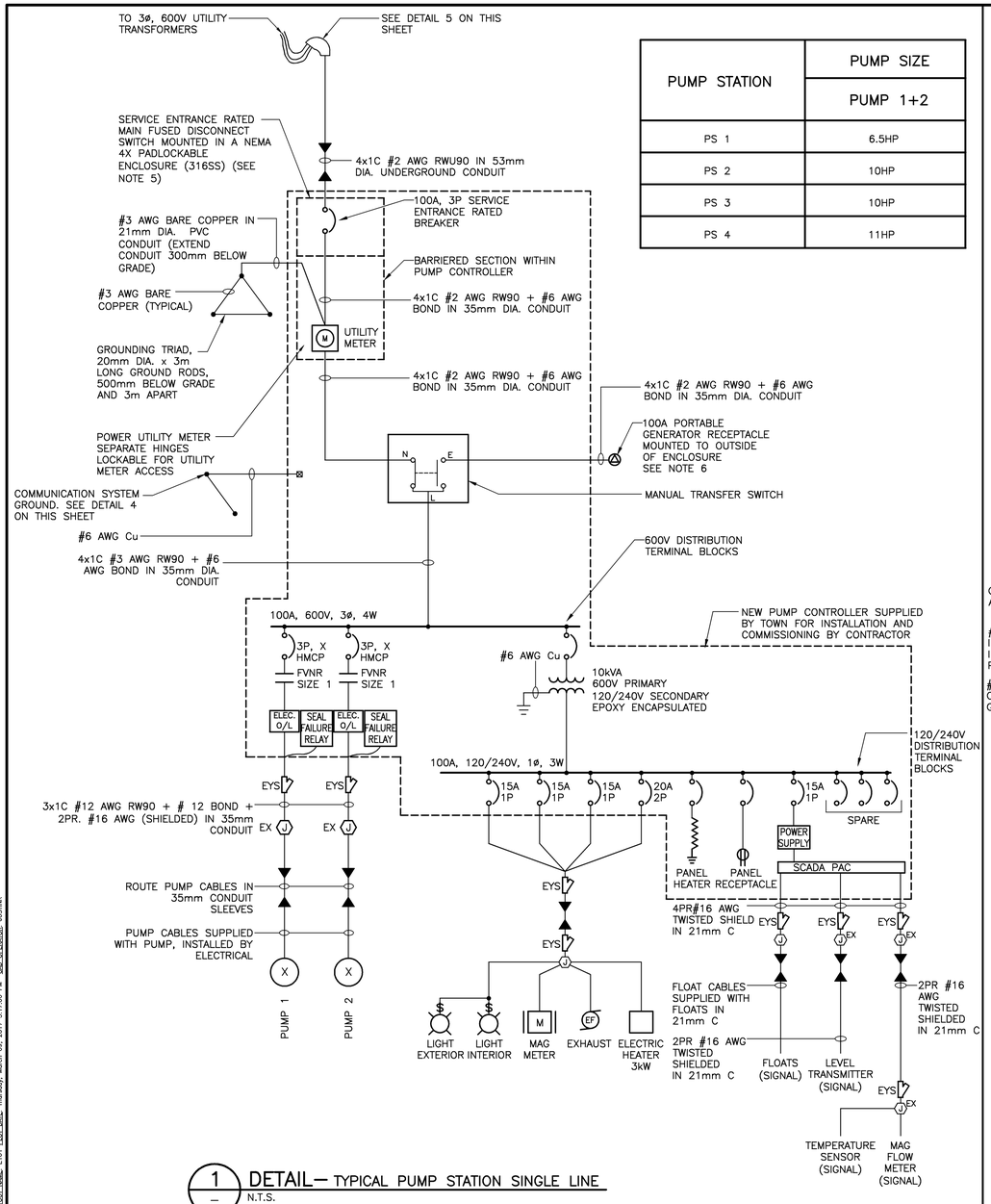
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
RJD	RJD
Checked	Approved
ROC	JAB

REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — R. O'CONNOR — 7785 — DATE MAR 9 2017

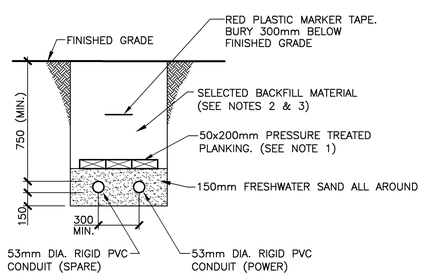
Sheet No 1 of 3

Drawing No **E100**

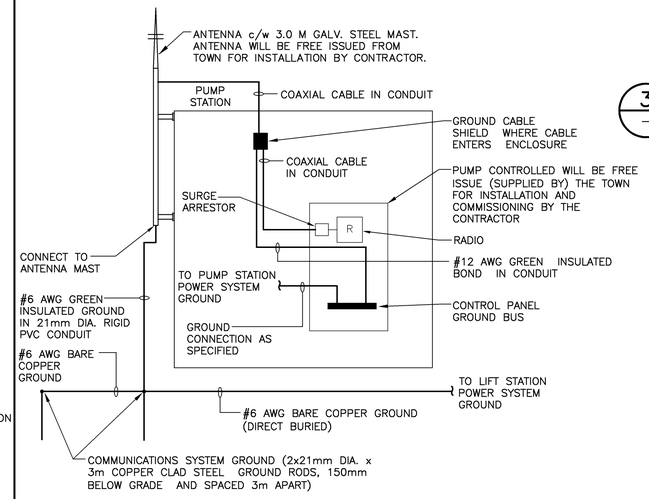


PUMP STATION	PUMP SIZE
	PUMP 1+2
PS 1	6.5HP
PS 2	10HP
PS 3	10HP
PS 4	11HP

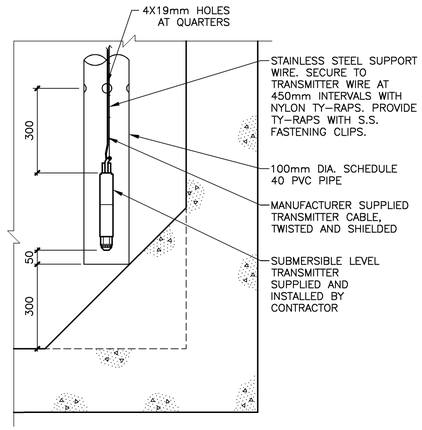
1 DETAIL— TYPICAL PUMP STATION SINGLE LINE
N.T.S.



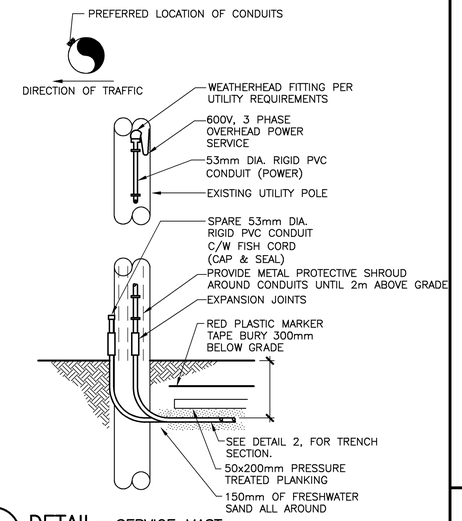
2 DETAIL— TYPICAL DIRECT BURIED CONDUIT
N.T.S. (SEE NOTES 2 & 4)



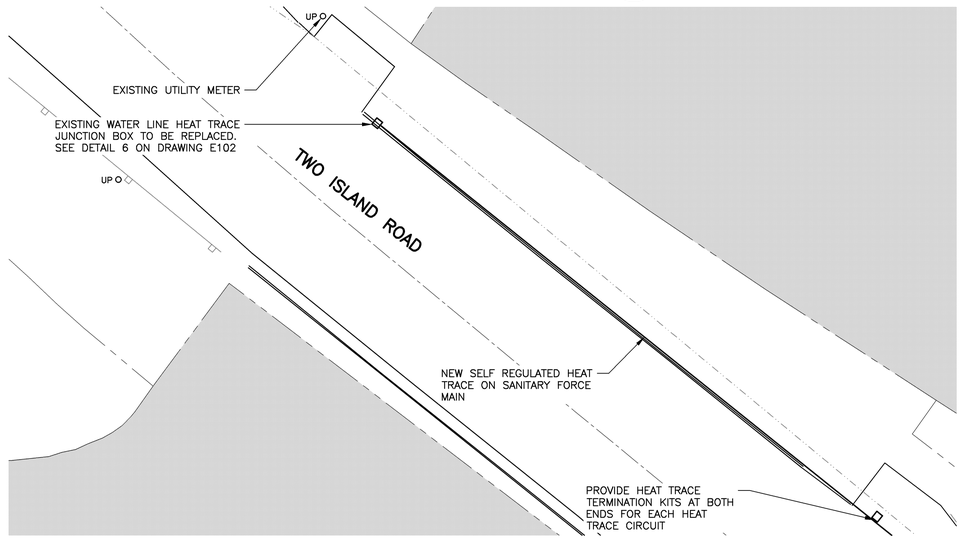
4 DETAIL— COMMUNICATION SYSTEM
N.T.S.



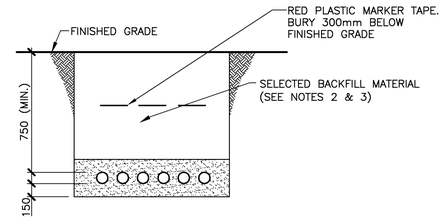
3 DETAIL— LEVEL TRANSMITER
N.T.S.



5 DETAIL— SERVICE MAST
N.T.S.



7 DETAIL— HEAT TRACE FOR SANITARY WASTE FORCE MAIN
1:100



6 DETAIL— TYPICAL DIRECT BURIED CONDUIT
N.T.S. (SEE NOTE 4)

NOTES:

1. PLANKS SHALL EXTEND A MINIMUM OF 50mm ON EITHER SIDE OF CONDUITS. REQUIRED IN VEHICLE TRAFFIC AREAS ONLY.
2. BACKFILLING OF TRENCH TO BE IN LAYER NOT EXCEEDING 300mm (MECHANICALLY TAMPED).
3. BACKFILL TRENCH WITH SELECTED BACKFILL SOIL IN ACCORDANCE WITH SPECIFICATIONS.
4. MAINTAIN MINIMUM 1m LATERAL SEPARATION FROM ALL OTHER PIPING AND MAINTAIN 300mm SEPARATION BETWEEN POWER AND COMMUNICATION /INSTRUMENTATION CONDUITS.
5. ENCLOSURE TO BE COMPLETE WITH A PADLOCKING DOOR HANDLE AND DOOR STOP KIT.
6. GENERATOR PLUG TO BE HUBBELL HBL5100RS1WR C/W BACK BOX AND ANGLE ADAPTER. PLUG WILL BE PART OF TOWN SUPPLIED CONTROL PANEL.
7. ALL CONDUITS BETWEEN PUMP CONTROLLER AND PUMP STATION ARE TO BE RIGID ALUMINUM.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR. 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

ELECTRICAL

SINGLE LINE AND ELECTRICAL DETAILS

CBCL LIMITED
Consulting Engineers

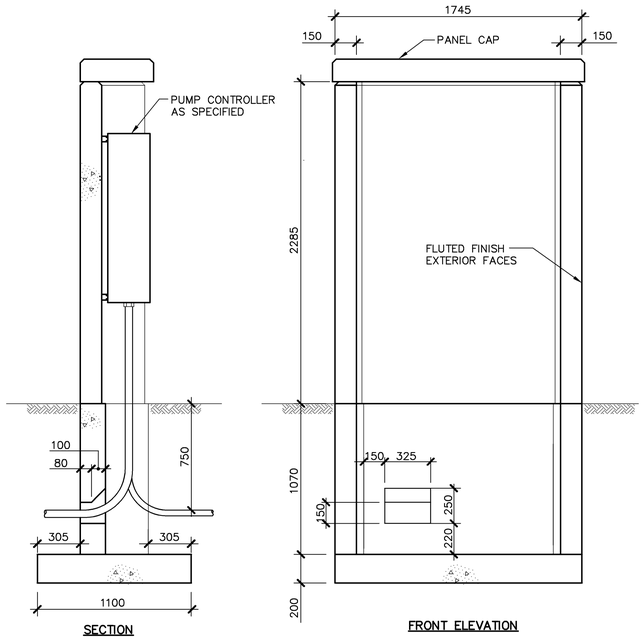
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
RJD	RJD
Checked	Approved
ROC	JAB

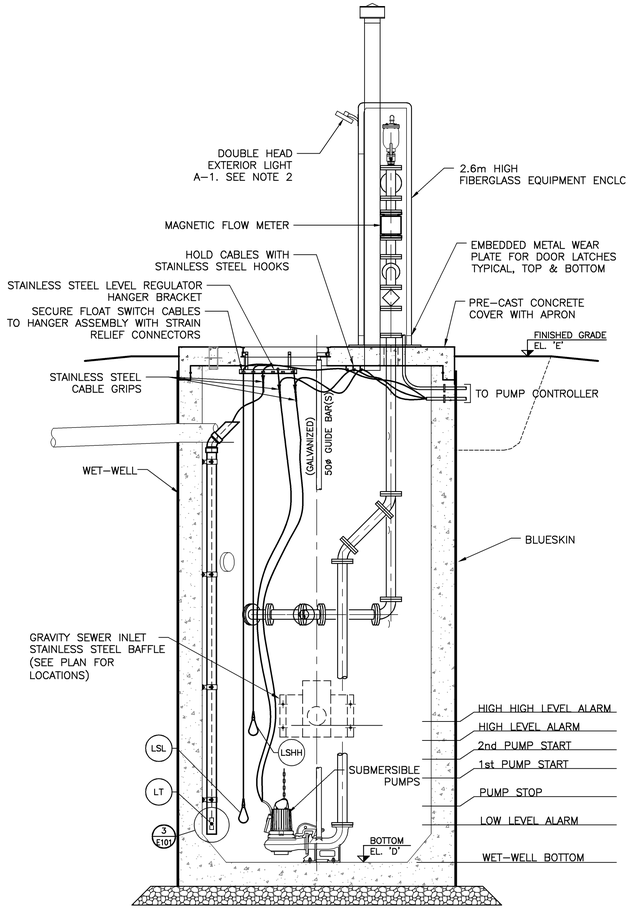
REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — R. O'CONNOR 7785 — DATE MAR 9 2017

Sheet No 2 of 3

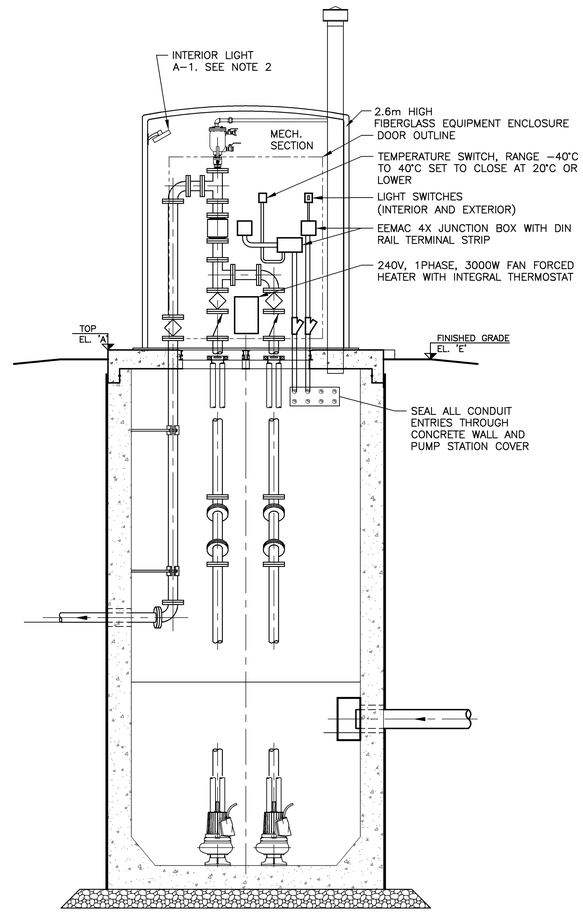
Drawing No **E101**



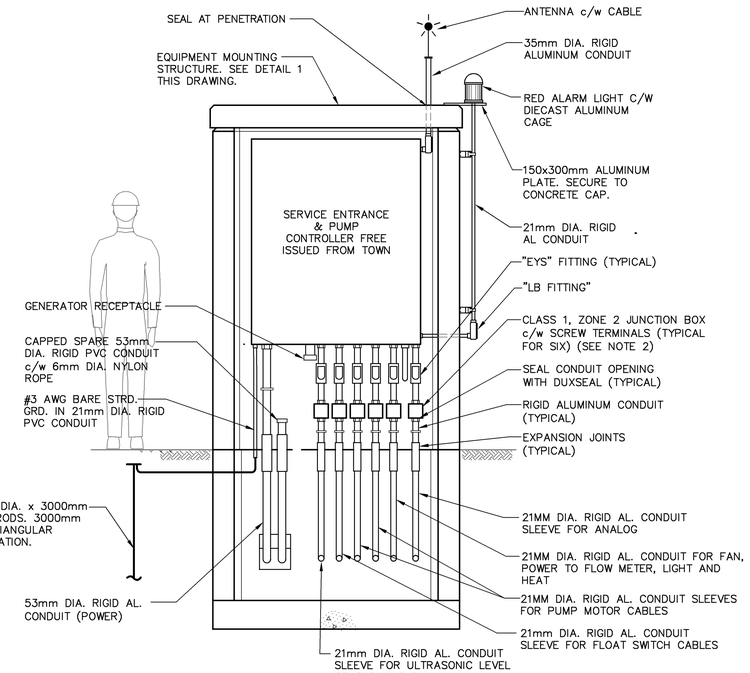
1 — DETAIL— SHAW 097 EQUIPMENT MOUNTING MOUNTING STRUCTURE c/w CAP
1:20



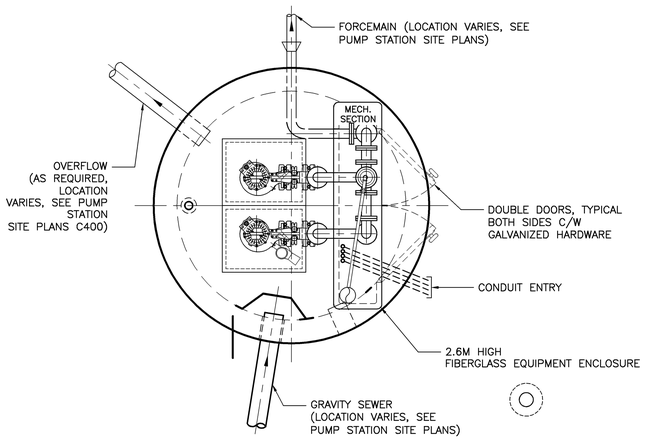
3 — DETAIL— TYPICAL PUMP STATION AND VALVE CHAMBER
1:30



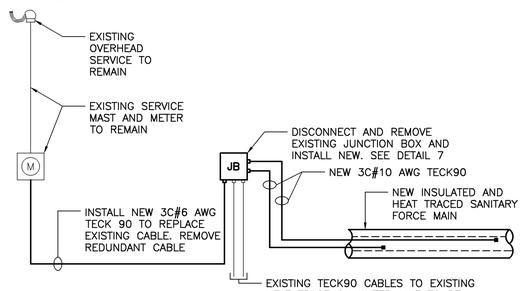
4 — DETAIL— TYPICAL PUMP STATION AND VALVE CHAMBER
1:30



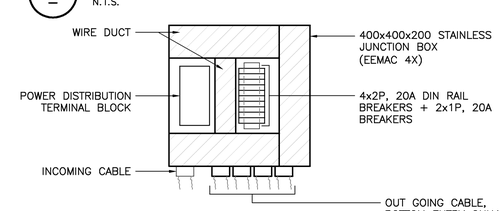
2 — DETAIL— EQUIPMENT MOUNTING STRUCTURE
1:20



5 — DETAIL— TYPICAL SEWAGE LIFT STATION
1:30



6 — DETAIL— HEAT TRACE SANITARY FORCE MAIN
N.T.S.



7 — DETAIL— NEW HEAT TRACE JUNCTION BOX
N.T.S.

NOTES:

1. THE PUMP STATION CONTROLLER AND RADIO ANTENNA WILL BE FREE ISSUED TO THE CONTRACTOR FOR INSTALLATION.
2. SUPPLY AND INSTALL TWO LIGHT FIXTURES AT EACH PUMP STATION COMPLETE WITH ALL NECESSARY MOUNTING HARDWARE. FIXTURES ARE TO BE RATED FOR WET LOCATION CLASS 1 ZONE 2 AREA. FIXTURE TYPE TO BE DIALIGHT, SAFE SITE SERIES, 21 WATT PART NUMBER HZDIC2GW45. WIRE LIGHT FIXTURES TO DEDICATED LIGHT SWITCHES IN FIBERGLASS ENCLOSURES.
3. ORIENTATION AND CONFIGURATION OF EACH PUMP STATION MAY VARY. THIS DRAWING PROVIDES THE STANDARD OF ACCEPTANCE.

municipality of cumberland

No.	Description	Date	By
0	ISSUED FOR TENDER	MAR. 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

ELECTRICAL

ELECTRICAL DETAILS

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
RJD	RJD
Checked	Approved
ROC	JAB

REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — MAR 9 DATE 2017 — R. O'CONNOR — 7785

Sheet No 3 of 3

Drawing No **E102**

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

Contract 161039.00

Addendum No. 1

March 24, 2017

(To be added to and made part of the Tender Documents)
The following changes or modifications shall be made to the Tender Documents:

TO THE SPECIFICATIONS

SECTION 00 21 00 – INFORMATION TO TENDERERS

Page 1, within subsection 1, delete lines 8 and 9 and replace them with the following:

Closing up to 3:00:00 p.m., local time on
Thursday, March 30th, 2017, and delivered to:

SECTION 00 41 43 – TENDER FORM

Delete Section 00 41 43 – Tender Form and replace with new Section 00 41 43, dated March 24, 2017, attached.

SECTION 01 22 00 – MEASUREMENT AND PAYMENT

Delete Section 01 22 00 – Measurement and Payment and replace with new Section 01 22 00, dated March 24, 2017, attached.

SECTION 33 32 14 – SUBMERSIBLE PUMPING STATION

Page 7 of the Supplementary Specifications, within subsection 1.1, delete "PS1, PS3, PS4 and PS5" and replace with "PS1, PS2, PS3 and PS4".

Page 15, delete subsection 3.7 and repalce with the following:

3.7 Commissioning

.1 Submittals:

.1 Verification of the performance will be done by means of a commissioning process. The Contractor is required to provide a commissioning plan three (3) weeks prior to commissioning, which will include schedule of all commissioning-relate activities as specified in individual sections. Work with the Contractor in developing this plan.

.2 The Commissioning Plan, developed by the Contractor, in collaboration with the Equipment Supplier is to include:

.1 Details regarding the roles and responsibilities of the

commissioning team during all phases of commissioning.

.2 Documentation defining design assumptions and performance standards of proposed systems.

.3 Description of systems, intended operation and performance details.

.4 Static testing and verification procedures.

.5 Functional performance testing procedures.

.6 Documentation requirements for test results.

.7 Training plan for operators.

.8 Preparation of the Interim and Final Commissioning Reports.

.9 Consideration to Work restrictions and their impact on existing plant performance as detailed in clause 5 of this Section.

.3 Contractor's responsibilities:

.1 To work with the Equipment Supplier to prepare commissioning plan and manage the commissioning process.

.2 Confirms subcontractors, including pre-purchased Equipment Supplier, carry out applicable tests prior to the Consultant’s review.

.3 Arranges for walkthrough and commissioning reports, procedures and demonstration, after work has been reviewed, tested and commissioned.

.4 Performs and documents all preliminary tests, assembles manuals received from the Equipment Supplier as well as completed test forms and verification forms.

.5 Provide assistance to Equipment Supplier during start up to access installation concerns. Provide a mechanical and electrical trade for start-up assistance for two (2) 8hr/day per pump station.

.6 Performs system start-up and testing.

.7 Is present for operation of system through tests with the Consultant and Owner.

.8 Obtains all code-required inspections and certifications and approvals.

.9 Prepares record drawings.

.10 Obtains and submit all warranties to Owner.

.11 Organizes and submits Operating and Maintenance Manual from the subcontractors, Equipment Suppliers and manufacturers to Owner.

.12 Assembles and delivers all spare parts and special tools to the Owner.

.13 Provides and disposes of water for testing pump system.

.4 Consultant’s responsibilities:

.1 Inspect installation.

.2 Certify completion of Contractor's commissioning.

.3 Receive all test reports from the Contractor and verify results.

.4 Participate in the equipment start-up testing conducted

by the Contractor and verify results.

.5 Review shop drawings.

.6 Communicate apparent deviations from the specifications.

.7 Review the equipment operating and maintenance manuals prepared by the Contractor.

.8 Participate in the performance testing process.

.9 Review the Record Drawings.

.5 Equipment Supplier responsibilities:

.1 Performs and documents all preliminary tests, assembles manuals of completed test forms and verification forms.

.2 Performs component start-up and testing with Contractors.

.3 Manages installation of the systems.

.4 Performs system start-up and testing.

.5 Arranges for training sessions schedule, including preparation and distribution of materials.

.6 Provides training and instruction and prepares Operating and Maintenance Manual for presentation to the operating and maintenance personnel.

.7 Is responsible for filling out the commissioning data sheets and test forms/manual.

.8 Provides training and instruction and prepares Operating and Maintenance Manual for presentation to the operating and maintenance personnel.

.9 Is present for operation of system through tests with the Consultant, Owner and Contractors.

.10 Assembles and delivers all spare parts and special tools to the Owner.

.6 Owner's responsibilities:

.1 The Owner's specific duties include making staff available at appointed times for training by manufacturer's representatives and providing labour to conduct work within existing facilities that is not included in the General Contract.

.7 Commissioning meetings:

.1 All parties shall participate in a pre-commissioning on-site meeting. Commissioning meetings will be coordinated and chaired by the Contractor. The Contractor shall take minutes and distribute minutes within two (2) working days of the subject meeting. The Contractor shall update and circulate the updated commissioning schedule one (1) working day prior to commissioning meetings.

.8 The Contractor, the Consultant, Owner and Equipment Supplier will work together in a concerted effort to fully commission all systems in an organized manner and in a manner that will allow all to carry out their own obligations fully.

.9 General:

.1 The Commissioning Objectives are:

.1 To bring the mechanical and electrical systems and components from a state of "static completion" to a state of "dynamic operation".

.2 To verify conformance to Contract Requirements.

.3 To confirm the equipment meets the design intent of the Specifications and function in accordance with defined operational requirements.

.4 To ensure the completed facility meets user stated requirements.

.5 To provide all testing documents, certification and records.

.6 To fully train and equip personnel to operate, maintain and trouble shoot all systems.

SECTION 33 34 00 – PRESSURE SEWERS

Page 2, delete subsection 2.1.2 and replace with the following:

.2 SDR 25, pressure class 160.

Page 4, delete subsection 2.5.1.2 and replace with the following:

.2 Core pipe service temperature range: from -45° to 93°C) (-49° to 200°F); the overall factory insulated system limitations are dependent on core pipe type and application.

Page 4, delete subsection 2.5.4.5 and replace with the following:

.5 Thermal conductivity: to ASTM C518, 0,020 to 0,026 W/m °C (0.14 to 0.17 Btu in/ft^2 hr °F).

Page 5, delete subsection 2.5.7.1.5 and replace with the following:

.5 K factor: (ASTM C518) 0,020 to 0,026 W/m °C (0.14 to 0.17 Btu in/ft^2 hr °F).

Page 5, within subsection 2.5.9 delete "TR Flex Ductile Iron Pipe" and replace with "HDPE DR17 pipe".

Page 8, add new subsection 3.5 as follows and renumber subsequent subsections:

3.5 INSULATION APPLICATION

.1 Apply insulation after required tests have been completed and approved. Clean and dry insulation and surfaces when installing and during application of any finish. Apply insulation materials, accessories and finishes in accordance with manufacturer's recommendations and as specified herein.

.2 Insulation sections to have all joints firmly butted together and sealed.

.3 Fittings to be pre-shaped or mitered segments, thickness of which is equal to that of the adjoining pipe insulation. Ends to be firmly butted together and sealed.

.4 Flanges to be insulated and jacketed with removable sections so that the flange bolts and nuts can be removed without damage to the insulation or jacket.

.5 Expansion joints to provide for adequate movement without damage to adjacent insulation or jacketing.

.6 Jacketing to overlap by at least 50mm, longitudinally and peripherally. Position jacketing to shed water. Position and seal joints to eliminate ingress of water.

.7 Use piping saddles and shields at hangers and supports.

TO THE DRAWINGS

DRAWING C103 – EASTERN AVENUE STA. 0+000 TO 0+320

Delete Drawing C103 – Eastern Avenue Sta. 0+000 to 0+320 and replace new Drawing C103, dated March 24, 2017, attached.

DRAWING C300 – TWO ISLAND ROAD STA 0+000 TO 0+320

Delete Drawing C300– Two Island Road and replace new Drawing C300, dated March 24, 2017, attached.

DRAWING C400 – PUMP STATION 1, 3 AND 4 SITE PLANS

Delete Drawing C400– Pump Station 1, 3 and 4 and replace new Drawing C400, dated March 24, 2017, attached.

DRAWING C402 – PUMP STATION 2 SITE PLAN AND SECTION

Delete Drawing C402– Pump Station 2 Site Plan and Section and replace new Drawing C402, dated March 24, 2017, attached.

DRAWING C403 – MISCELLANEOUS DETAILS 3

Delete Drawing C403– Miscellaneous Detials 3 and replace new Drawing C403, dated March 24, 2017, attached.

DRAWING E102 – ELECTRICAL DETAILS

The current detail indicates a Shaw 097 equipment mounting structure which is to be changed to a custom sized precast equipment mounting structure to increase the width from 1745 to 2400mm. The panel cap and precast foundation is to be sized to suit the new width.

Aaron Baillie, P.Eng
CBCL Limited
March 24, 2017

1. SALUTATION:

.1 To: Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS
B4H 3Y4

.2 For: Parrsboro Wastewater System – Collection System
Contract No. 161039.00

.3 From: _____

2. TENDERER DECLARES:

.1 That this tender was made without collusion or fraud.

.2 That the proposed work was carefully examined.

.3 That the Tenderer was familiar with local conditions.

.4 That Contract Documents and Addenda No. ___ to ___ inclusive were carefully examined.

.5 That all the above were taken into consideration in preparation of this Tender.

3. TENDERER AGREES:

.1 To enter into a contract to supply all labour, material and equipment and to do all work necessary to construct the Work as described and specified herein for the unit prices stated in Subsection 4 hereunder, Schedule of Quantities and Unit Prices.

.2 That the estimated Contract Price shall be the sum of the products of the tendered unit prices times the estimated quantities in Subsection 4 hereunder.

.3 That this Tender is valid for acceptance for sixty (60) days from the time of Tender Closing.

.4 That measurement and payment for items listed in Subsection 4 hereunder shall be in accordance with corresponding items in Section 01 22 00 Measurement and Payment.

.5 To provide evidence of ability and experience within 7 days of request, including experience in similar work, work currently under contract, senior supervisory staff available for the project,

equipment available for use on the Work, and financial resources. This information will be taken in consideration at the time of Contract Award.

.6 To execute in triplicate the Agreement and forward same together with the specified contract security and insurance documents to the Owner within fourteen (14) days of written notice of award.

.7 That failure to enter into a formal contract and give specified insurance documents and contract security within time required will constitute grounds for forfeiture of certified cheque or enforcement of bid bond.

.8 That if certified cheque is forfeited, Owner will retain difference in money between amount of Tender and amount for which Owner legally contracts with another party to perform the Work and will refund balance, if any, to Tenderer.

.9 That the Contract Documents include:

.1 Standard Specifications for Municipal Services listed in Table of Contents Page Dated January 2016.

.2 Project Documents:

.1 Tender Form

.2 Form of Agreement

.3 General Conditions of the Civil Work Contract

.4 Supplementary Specifications

.5 Drawings

Dwg. No.	Title
-	Cover Sheet
C001	Overall Site Plan
C100	Spring Street STA 0+000 to STA 0+260
C101	Chapel Street STA 0+240 to STA 0+435
C102	Church Street STA 0+000 to STA 0+160
C103	Eastern Avenue STA 0+000 to STA 0+320
C104	Eastern Avenue STA 0+320 to STA 0+600
C105	Jenks Avenue STA 0+000 to STA 0+340
C106	Jenks Avenue STA 0+340 to STA 0+490
C107	Templar Street STA 0+000 to STA 0+190
C108	Moore Street STA 0+000 to STA 0+260
C109	Main Street STA 0+000 to STA 0+200
C110	Main Street STA 0+200 to STA 0+535
C200	Western Ave. STA 0+000 to STA 0+340
C201	Western Ave. STA 0+340 to STA 0+680
C202	Western Ave. STA 0+680 to STA 0+850
C203	Queen Street STA 3+000 to STA 3+340
C204	King Street STA 0+000 to STA 0+280
C205	Maple Court STA 1+000 to STA 1+200
C206	Main Street STA 0+000 to STA 0+330
C207	Trail Alignment STA 0+000 to STA 0+170
C208	Whitehall Road Watermain STA 0+000 to STA

	0+160
C300	Two Islands Road STA 0+000 to STA 0+320
C301	Two Islands Road STA 0+320 to STA 0+660
C302	Two Islands Road STA 0+660 to STA 0+820
C303	Pier Road STA 0+000 to STA 0+320
C304	Pier Road STA 0+320 to STA 0+620
C305	Pier Road STA 0+620 to STA 0+920
C306	Pier Road STA 0+920 to STA 1+090
C307	Skidmore Lane STA 0+000 to STA 0+260
C308	Eddy Street STA 0+000 to STA 0+240
C400	Pump Station 1, 3 & 4 Site Plans
C401	Pump Station 1, 3 & 4 Plan and Sections
C402	Pump Station 2 Site Plan & Section
C403	Miscellaneous Details 1
C404	Miscellaneous Details 2
C405	Miscellaneous Details 3
E100	Pump Station 1,2,3 & 4 Site Plans
E101	Single Line and Electrical Details
E102	Electrical Details

.6 Addenda as issued and as confirmed in subsection 2.4 of this section.

4. SCHEDULE OF QUANTITIES AND UNIT PRICES

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
1.	Removals				
.1	1050mm dia. Manhole	Ea	5		
.2	1200mm dia. Catchbasin	Ea	1		
.3	Moore St. Pump Station	Ea	1		
.4	200mm dia. Sanitary Main	m	9		
.5	600mm Dia. Sanitary Main	m	16		
.6	150mm dia. C.I. Watermain	m	430		
.7	100mm dia. D.I. Watermain	m	100		
.8	Watermain Interconnections (Main (Street)	Ea	3		
2.	Sanitary Sewer System – Gravity Sewers				
.1	100mm dia. PVC DR 28 San. Service Laterals	m	3000		
.2	200mm dia. PVC DR 35	m	6011		
.3	200mm dia. PVC DR 18 – Casing Pipe (Provisional)	m	240		
.4	300mm dia. PVC DR 18 – Casing Pipe(Provisional)	m	9		
.5	450mm dia. PVC DR35	m	59		
.6	600mm dia. PVC DR 35	m	165		
.7	750mm dia. PVC DR 35	m	7		
3.	Sanitary Sewer System – Pressure Sewers				
.1	100mm dia. PVC DR 25 Sanitary Forcemain	m	519		
.2	150mm dia. PVC DR 25 Sanitary Forcemain	m	720		
.3	200mm dia. PVC DR 25 Sanitary Forcemain	m	436		
.4	Bridge Crossing	L.S.	1		
4.	Sanitary Sewer System - Structures				
.1	Sanitary Manholes - 1050mm Diameter	Ea	73		
.2	Sanitary Manholes - 1200mm Diameter	Ea	6		
.3	Sanitary Manholes – 1500mm Diameter	Ea	3		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
.4	Sanitary Manhole – 1800mm Diameter	Ea	1		
.5	Connection to Existing Manholes	Ea	5		
.6	Sanitary Cleanouts	Ea	5		
.7	Air Release Chamber	Ea	1		
5.	Submersible PS				
.1	PS#1 2400mm Dia.	L.S.	1		
.2	PS#2 3600mm Dia.	L.S.	1		
.3	PS#3 2400mm Dia.	L.S.	1		
.4	PS#4 2400mm Dia.	L.S.	1		
6.	Storm Sewer System				
.1	300mm dia. PVC DR35	m	40		
.2	375mm dia. PVC DR35	m	30		
.3	450mm dia. Conc. 65-D	m	20		
.4	600mm dia. Conc. 65-D	m	32		
.5	450mm dia. HDPE Culvert (Provisional)	m	200		
.6	Precast Concrete Culvert Headwall (Provisional)	Ea	40		
.7	1200mm dia. Storm Catchbasin	Ea	3		
.8	1500mm dia. Storm Manhole	Ea	1		
.9	Connection to Existing Pipe	Ea	2		
.10	300mm in-line Check Valve	Ea	1		
.11	375mm in-line Check Valve	Ea	1		
7.	Water System				
.1	19mm dia. Copper Water Service Laterals (Provisional)	m	250		
.2	Service Lateral Replacements (Main St.)	m	270		
.3	200mm dia. DI Cl. 52 Watermain	m	140		
.4	Fire Hydrants	Ea	1		
.5	Connection to Existing Watermain				
	.1 Jenks Ave.	Ea	1		
	.2 Smith St.	Ea	1		
	.3 Main St. – North	Ea	1		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
	.4 Main St. – South	Ea	1		
	.5 Whitehall Road	Ea	2		
	.6 Two Islands Road	Ea	1		
	.6 Relocate Existing Watermain (Provisional)	Ea	2		
8.	Environmental Protection				
	.1 Sediment Control Fencing	m	2000		
	.2 Straw/Hay Cover	m^2	2000		
	.3 Check Dams	Ea	10		
9.	150mm Topsoil and Sod	m^2	800		
10.	Topsoil and Hydroseeding	m^2	1000		
11.	Insulation – 50mm Rigid	m^2	1400		
12.	Pipe Bollards	Ea	16		
13.	Electrical				
	.1 PS#1	L.S.	1		
	.2 PS#2	L.S.	1		
	.3 PS#3	L.S.	1		
	.4 PS#4	L.S.	1		
14.	Control Panel Allowance	L.S.	1	$100,000	$100,000
15.	Submersible Pumping Equipment Allowance	L.S.	1	$121,695	$121,695
16.	Nova Scotia Power Allowance	L.S.	1	$10,000	$10,000

SUBTOTAL $_____

TENDER SUMMARY

Estimated Contract Price **$**_____

Add HST (15% of the Estimated Contract Price) $_____

TOTAL AMOUNT PAYABLE **$**_____

TENDERER'S HST REGISTRATION NO. _____

5. COMPLETION TIME

.1 Tenderer agrees to complete the Work within _____ weeks from date of award of Contract.

6. SIGNATURE *

DATED THIS _____ DAY OF_____ , 201___.

[Seal]

_____
Name of Firm Tendering

_____
Signature of Signing Officer

_____ _____
Witness Name and Title (Printed)

_____ _____
Witness Signature of Signing Officer

_____ _____
Name and Title (Printed)

_____
Company Address

_____
Telephone No.

_____
Fax No.

*NOTE: Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.

END

PART 1 - GENERAL

1. Unit prices for all items in the Schedule of Quantities and Unit Prices are full compensation for the work necessary to complete each item in the contract and in combination for all work necessary to complete the Work as a whole.

2. **Include all of the following as required where individual quantities are not provided in the Tender Form: mobilization, demobilization, traffic control, location of in-ground services by external utilities and coordination of work by external utilities (NSPI, Aliant, etc.), environmental protection, protection of existing trees, clearing, grubbing, common excavation, shoring, dewatering, backfilling, bedding, compaction, disposal of surplus materials, protective coatings, thrust blocks, mechanical joint restraints, marker tape, reinstatement of all disturbed surfaces with matching materials and thicknesses, temporary potable water service, testing, pipe cleaning, disinfection, marker stakes, recording as-constructed features, video inspection, and all incidentals.**

3. The unit and lump sum prices for all items in the Form of Tender "Schedule of Quantities and Unit Prices" shall include the cost for furnishing all materials, labour, tools, and equipment necessary to complete the work in accordance with the Contract, the Drawings and Specification, and shall cover all costs of surety, mobilization, permits, assistance to the Engineer and site offices and other general costs. Each item shall include for all necessary supervision, labour, materials, plant and services, security provisions, survey and all operations and allowances customary and necessary to complete each item and the Contract as a whole notwithstanding the fact that not every such necessary operation is mentioned or included specifically for measurement.

4. All measurement shall be along a horizontal plane unless otherwise indicated.

5. The numbers of items described below correspond to the numbers of the items in Section 00 41 43, subsection 4, Schedule of Quantities and Unit Prices.

6. Provisional items shall mean that the unit price as tendered shall be included in the estimated Contract Price and that the Owner reserves the right to delete all or portions of this item from the estimated Contract Price.

PART 2 - ITEMS

1. Removals

.1 1050mm dia. Manhole

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of precast concrete manhole where indicated on the Project Drawings. Turn over the frame and cover to the Owner.

.2 1200mm dia. Catchbasin

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of precast concrete manhole where indicated on the Project Drawings. Turn over the frame and cover to the Owner.

.3 Moore St. Pump Station

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of pump station, chamber, internal piping and all electrical power and installations including conduits, grounding, control panel and utility service.

.4 200mm dia. Sanitary Main

Unit of Measurement: metre (m)

Method of Measurement: along the centreline of pipe through catchbasins and manholes.

This item includes: sealing of abandoned manhole connections as required and the removal and off Site disposal of sanitary sewer and fittings where shown on the Project Drawings.

.5 600mm Dia. Sanitary Main

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: sealing of abandoned manhole connections as required and the removal and off Site disposal of sanitary sewer and fittings where shown on the Project Drawings.

.6 150mm dia. C.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of ductile iron pipe complete with all fittings and incidentals.

.7 100mm dia. D.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of ductile iron pipe complete with all fittings and incidentals.

.8 Watermain Interconnections (Main Street)

Unit of Measurement: Each (Ea)

This item includes: the location, removal and off Site disposal of existing watermain connection including thrust block and all fittings.

2. Sanitary Sewer System – Gravity Sewers

.1 100mm dia. PVC DR 28 San. Service Laterals

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: locating existing service lateral where required; supply and installation of PVC sanitary sewer laterals complete with all fittings and incidentals.

.2 200mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

.3 200mm dia. PVC DR 18 – Casing Pipe (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC casing pipe complete with link seals, gaskets, spacers and all fittings and incidentals.

.4 300mm dia. PVC DR 18 – Casing Pipe (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC casing pipe complete with link seals, gaskets, spacers and all fittings and incidentals.

.5 450mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals

.6 600mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

.7 750mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

3. Sanitary Sewer System – Pressure Sewers

.1 100mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.2 150mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.3 200mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.4 Bridge Crossing

Unit of Measurement: Lump Sum (L.S.)

This item includes: supply and installation of new pre-insulated forcemain and watermain complete with integral heat tracing; removal and replacement of existing wooden decking; reinstatment of timber walkway; removal and relocation of existing watermain including new pre-insultaed pipe and fittings. This item also includes the supply and installation of an air release valve chamber complete with air release valve, piping and fittings.

4. Sanitary Sewer System – Structures

.1 Sanitary Manholes – 1050mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.2 Sanitary Manholes – 1200mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system

.3 Sanitary Manholes – 1500mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.4 Sanitary Manholes – 1800mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.5 Connection to Existing Manholes

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary system connection to existing manhole including re-benching as required and all incidentals where indicated on the Project Drawings.

.6 Sanitary Cleanouts

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary cleanout complete with frame, cover, concrete collar, pipe, gaskets, grade adjustment, conection to sanitary laterals and all incidentals shown on the Project Drawings.

.7 Air Release Chamber

Unit of Measurement: Each (Ea)

This item includes: construction of Air Release Valve (ARV) Chamber complete with associated fittings including installation of precast units, access manhole cover, waterproofing system, insulation, venting, piping, air release valve assembly, and all other items required to commission and operate the chamber as indicated in

Project Drawings.

5. Submersible Pumping Stations

Unit of Measurement: Lump Sum (L.S.)

This item includes: supply, installation and commissioning assitance of pumping stations as shown on the Project Drawings for a complete and operational pumping station. Limit of in ground piping included in this item is to within one meter of the station. The supply of the control panels will be paid under the allowance provided in item 14 herein. The supply of the submersible pumping equipment will be paid under the allowance provided in item 15 herein. This item includes the installation only of Owner-supplied equipment. Electrical installations for the pumping station will be paid under item 13 herein.

6. Storm Sewer System

.1 300mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC storm sewer complete with all fittings and incidentals.

.2 375mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC storm sewer complete with all fittings and incidentals.

.3 450mm dia. Concrete 65-D

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of pre-cast concrete storm sewer pipe complete with all grout and all fittings and incidentals.

.4 600mm dia. Concrete 65-D

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of pre-cast concrete storm sewer pipe complete with all grout and all fittings and incidentals.

.5 450mm dia. HDPE Culvert (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the cenreline of culvert

This item includes: supply and installation of HDPE culvert as directed by the Engineer.

.6 Precast Concrete Culvert Headwall (Provisional)

Unit of Measurement: Each (Ea)

This item includes: supply and installation of precast concrete headwall as directed by the Engineer.

.7 1200mm dia. Storm Catchbasin

Unit of Measurement: Each (Ea)

This item includes: supply and installation of storm catchbasin complete with frame, grate, benching, gaskets, grade adjustment joint sealants and connection to the storm system.

.8 1500mm dia. Storm Manhole

Unit of Measurement: Each (Ea)

This item includes: supply and installation of storm manhole complete with frame, grate, benching, gaskets, grade adjustment joint sealants and connection to the storm system.

.9 Connection to Existing Pipe

Unit of Measurement: Each (Ea)

This item includes: locating existing pipe to connect to, supply and installation of all fittings for a functional connection.

.10 300mm In-Line Check Valve

Unit of Measurement: Each (Ea)

This item includes: supply and installation of in-line check valve complete with all appurtenances.

.11 375mm In-Line Check Valve

Unit of Measurement: Each (Ea)

This item includes: supply and installation of in-line check valve complete with all appurtenances.

7. Water System

.1 19mm dia. Copper Water Service Laterals (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centre of lateral between the main and the residence/dwelling.

This item includes: supply and installation of pipe, insulation as required, polyethylene encasement, connection to the main, anodes, saddle, corporation stop, curb stop, fittings and incidentals for a complete connection to both the main and the residence/dwelling.

.2 Service Lateral Replacements (Main St.)

Unit of Measurement: metre (m)

Method of Measurement: along the centre of lateral from curb stop to corporation stop.

This item includes: supply and installation of lateral pipe complete with all fittings as requried including saddles, corporation stop, curb stop and service box.

.3 200mm dia. DI Cl. 52 Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: supply and installation of ductile iron pipe complete with all fittings and incidentals.

.4 Fire Hydrants

Unit of Measurement: Each (Ea)

This item includes: supply and installation of hydrant complete with lead, hydrant valve, thrust block and connection to the ductile iron watermain.

.5 Connection to Existing Watermain

Unit of Measurement: each (Ea)

This item includes: locate existing main, supply and installation of watermain connection including all pipe, tapping sleeves, nipples, valves, fittings and all appurtenances where indicated on the Project Drawings.

.6 Relocate Existing Watermain (Provisional)

Unit of Measurement: Each (Ea)

This item includes: removal, supply and installation of ductile iron water pipe complete with all fittings and incidentals required for the lowering of existing watermain that conflicts with the proposed path of the sanitary sewer being installed in this Work as directed by the Engineer.

8. Environmental Protection

.1 Sediment Control Fencing

Unit of Measurement: metre (m)

Method of Measurement: along the top of filter fabric through wooden stakes.

This item includes: supply, installation, maintenance, and subsequent removal of fence complete with wooden stakes, fabric and staples.

.2 Straw/Hay Cover

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at grade.

This item includes: supply, placement and maintenance of straw/hay cover.

.3 Check Dams

Unit of Measurement: Each (Ea)

This item includes: excavation ,maintenance and subsequent removal before the completion of the Work.

9. 150mm Topsoil and Sod

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at mean depth.

This item includes: supply and placement of topsoil, lime, fertilizer, stakes and maintenance until turn over to Owner.

10. Topsoil and Hydroseeding

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at mean depth.

This item includes: supply and placement of topsoil, lime, fertilizer, mulch, erosion control agent, seed and maintenance until turn over to Owner.

.11 Insulation – 50mm Rigid

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area at mean depth.

This item includes: supply and placement of insulation where indicated on the Project Drawings.

12. Pipe Bollards

Unit of Measurement: Each (Ea)

This item includes: supply and installation of pipe bollards where shown on the Project Drawings.

13. Electrical

Unit of Measurement: Lump Sum (L.S.)

This item includes: all electrical and instrumentation work associated with the pumping stations including precast concrete structure, FRP enclosures, grounding, installation of Owner supplied pump control panel and radio antennas, supply and installation of lighting, heating, temperature sensors, floats, level transmitters and magnetic flow transmitters.

14. Control Panel Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs associated with the supply, coordination of delivery and commissioning of the control panels and instrumentation being installed in the submersible pumping stations provided in item 5 herein.

15. Submersible Pumping Equipment Allowance

Unit of Measurement: Lump Sum (L.S.)

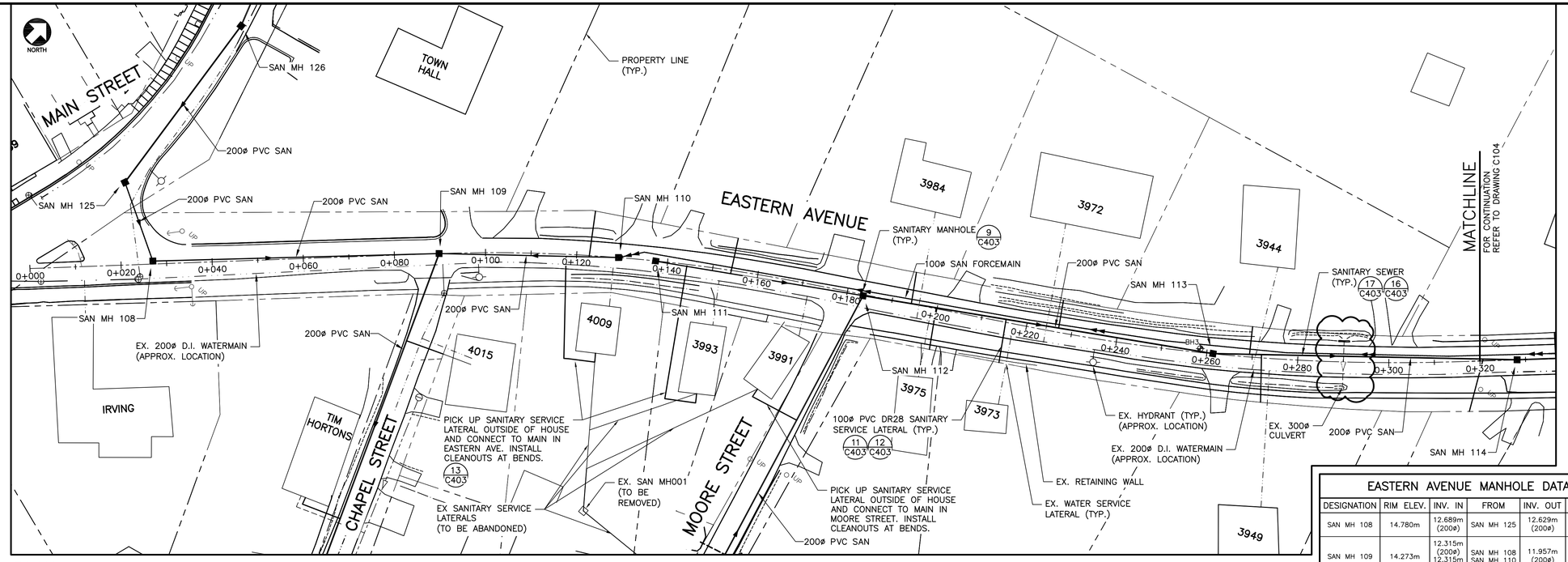
This item includes: this allowance is to cover all costs associated with the supply, coordination of delivery and commissioning of the submersible pumping equipment being installed in the submersible pumping stations provided in item 5 herein.

16. Nova Scotia Power Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs charged by NSP to provide power service to the pumping station. These costs are to be billed at cost, with no markup. This allowance does not cover permit and application fees.

END

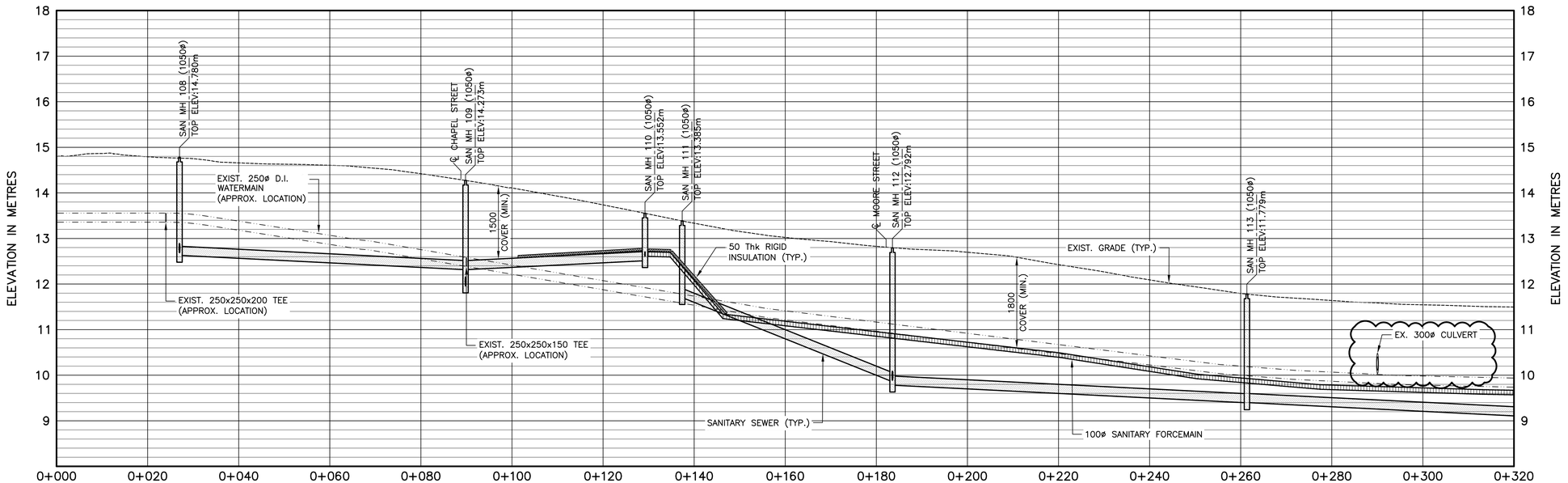


PLAN
1:500

EASTERN AVENUE MANHOLE DATA					
DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
SAN MH 108	14.780m	12.689m (200ø)	SAN MH 125	12.629m (200ø)	SAN MH 109
SAN MH 109	14.273m	12.315m (200ø) 12.315m (200ø)	SAN MH 108 SAN MH 110	11.957m (200ø)	SAN MH 105
SAN MH 110	13.552m	12.608m (100ø)	PS 1 (FORCEMAIN)	12.512m (200ø)	SAN MH 109
SAN MH 111	13.385m			11.703m (200ø)	SAN MH 112
SAN MH 112	12.792m	9.857m (200ø) 9.889m (200ø)	SAN MH 111 SAN MH 123	9.782m (200ø)	SAN MH 113
SAN MH 113	11.779m	9.393m (200ø)	SAN MH 112	9.400m (200ø)	SAN MH 114
SAN MH 114	11.483m	9.066m (200ø)	SAN MH 113	9.066m (200ø)	SAN MH 115

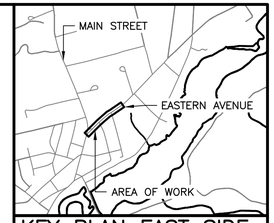
NOTES

1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



GRADE ELEVATION	14.80	14.79	14.66	14.61	14.42	14.11	13.74	13.33	13.02	12.83	12.70	12.43	12.09	11.79	11.64	11.54	11.50
SANITARY SEWER (PROP.)		12.629	62.813m–200ø SAN. PVC DR35 @ 0.50%			12.315 12.315	39.373m–200ø SAN. PVC DR35 @ 0.50%		12.512	11.703	46.140m–200ø SAN. PVC DR35 @ 4.00%		9.857 9.782	77.791m–200ø SAN. PVC DR35 @ 0.50%		9.393 9.400	66.713m–200ø SAN. PVC DR35 @ 0.50%		9.066

PROFILE
1:500 [H] 1:50 [V]



KEY PLAN EAST SIDE
1:5000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
1	ADDENDUM 1	MAR 24/17	JAB
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

EASTERN AVENUE

STA 0+000 TO STA 0+320

CBCL LIMITED
Consulting Engineers

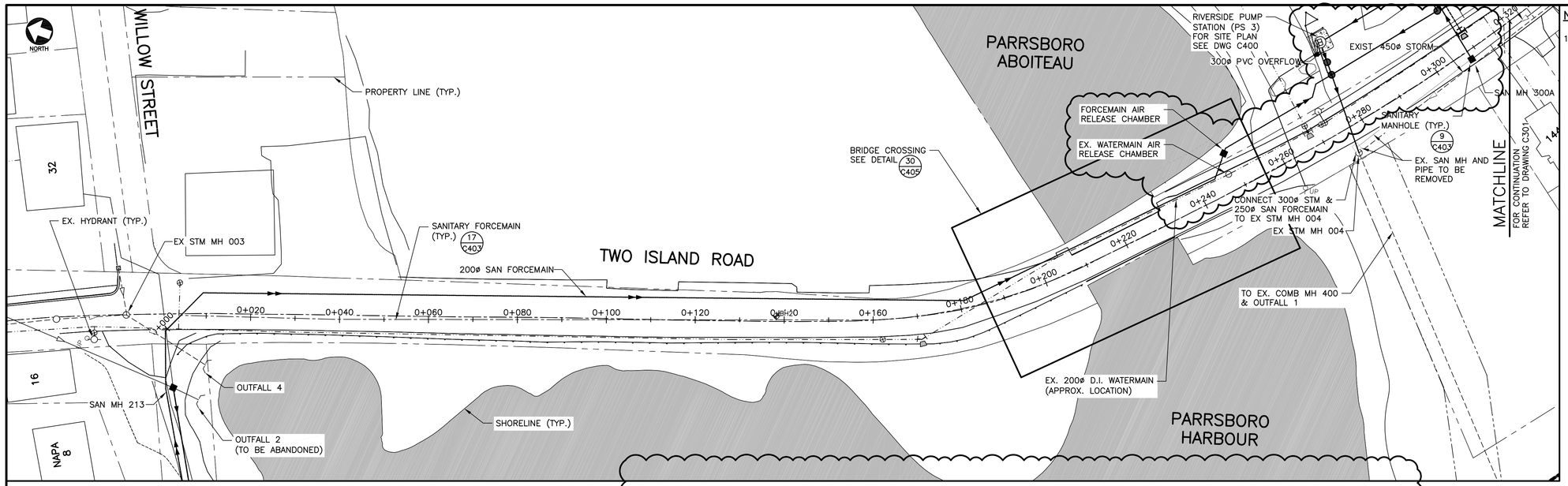
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA MAR.09/17 T-W. Bragnalo 10229

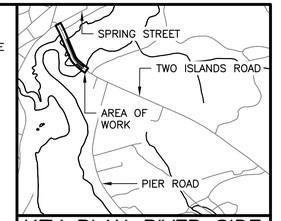
Sheet No 5 of 36

Drawing No C103



PLAN
1:500

NOTES
1. ALL FORCEMAIN BENDS TO BE MECHANICALLY RESTRAINED. RESTRAIN JOINTS 2 PIPE LENGTHS ON BOTH SIDES OF JOINTS. USE THRUST BLOCKS AT ALL BENDS.



KEY PLAN RIVER SIDE
1:5000

LEGEND

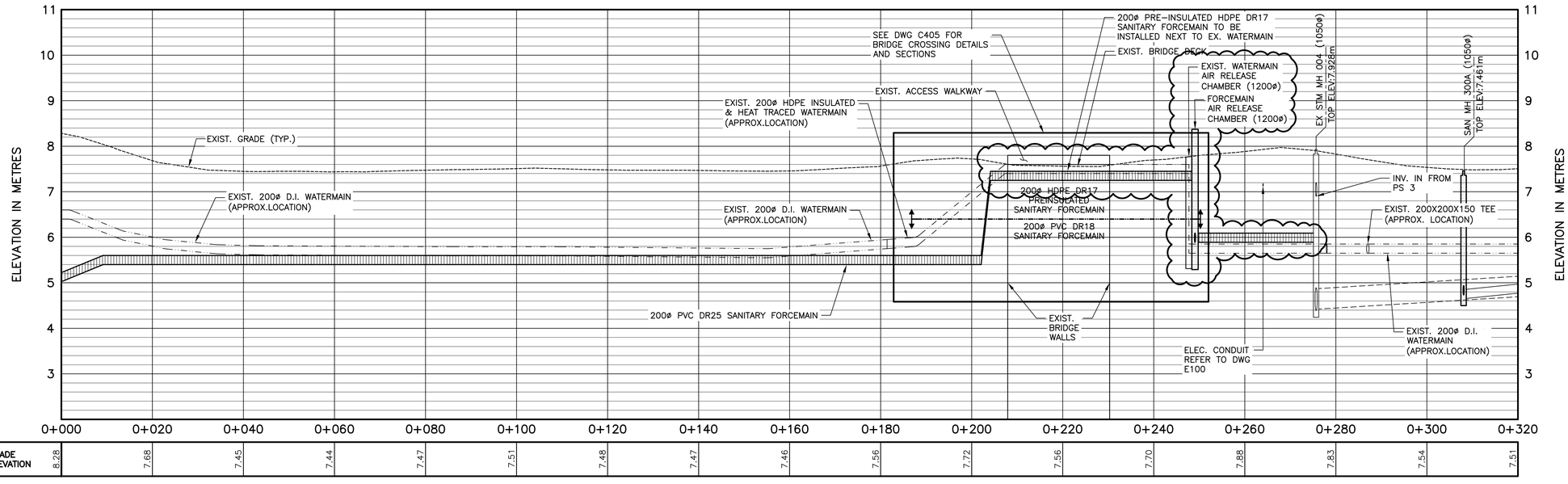
EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/G U/G	U/G UTILITIES	U/G U/G
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

EDDY STREET SANITARY DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
PS 2	9.630m			5.000m (200ø)	STM MH 401 (FORCEMAIN)
PS 3	8.004m	4.372m (200ø)	SAN MH 300B	5.400m (100ø)	STM MH 401 (FORCEMAIN)
SAN MH 300A	7.461m	4.650m (200ø)	EX SAN MH 011	4.736m (200ø)	SAN MH 300B
SAN MH 300B	5.086m	4.579m (200ø) 4.579m (200ø)	SAN MH 300A FUTURE SAN CONNECTION	4.501m (200ø)	PS 3

TWO ISLANDS ROAD STORM DATA

DESIGNATION	RIM ELEV.	INV. IN	FROM	INV. OUT	TO
EX STM MH 004	7.928m	6.900m (300ø) 4.419m (450ø)	STM MH 401 EX STM MH 005	4.390m (500ø)	EX. COMB MH 400
PS 3	8.009m			7.150m (300ø)	STM MH 400
STM MH 400	7.823m	7.116m (300ø)	PS 3	7.086m (300ø)	STM MH 401
STM MH 401	7.663m	7.056m (300ø) 7.100m (300ø) 5.890m (250ø)	STM MH 400 STM MH 402 PS 2 (FORCEMAIN)	7.039m (300ø)	EX STM MH 004
STM MH 402	7.985m	7.438m (300ø)	FUTURE STM CONNECTION	7.378m (300ø)	STM MH 401



PROFILE
1:500 [H] 1:50 [V]

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
1	ADDENDUM 1	MAR 24/17	JAB
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

TWO ISLANDS ROAD

STA 0+000 TO STA 0+320

CBCL LIMITED
Consulting Engineers

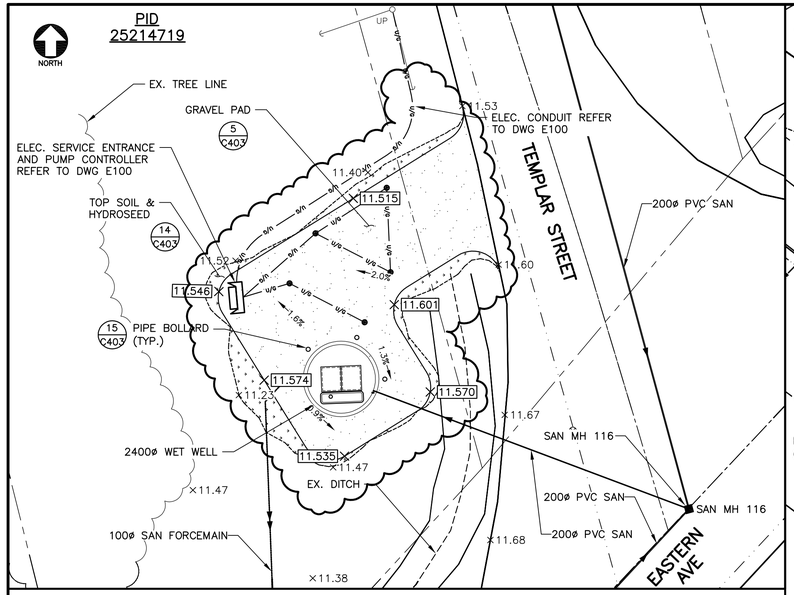
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	
Checked	Approved
TB	JAB

Sheet No 22 of 36

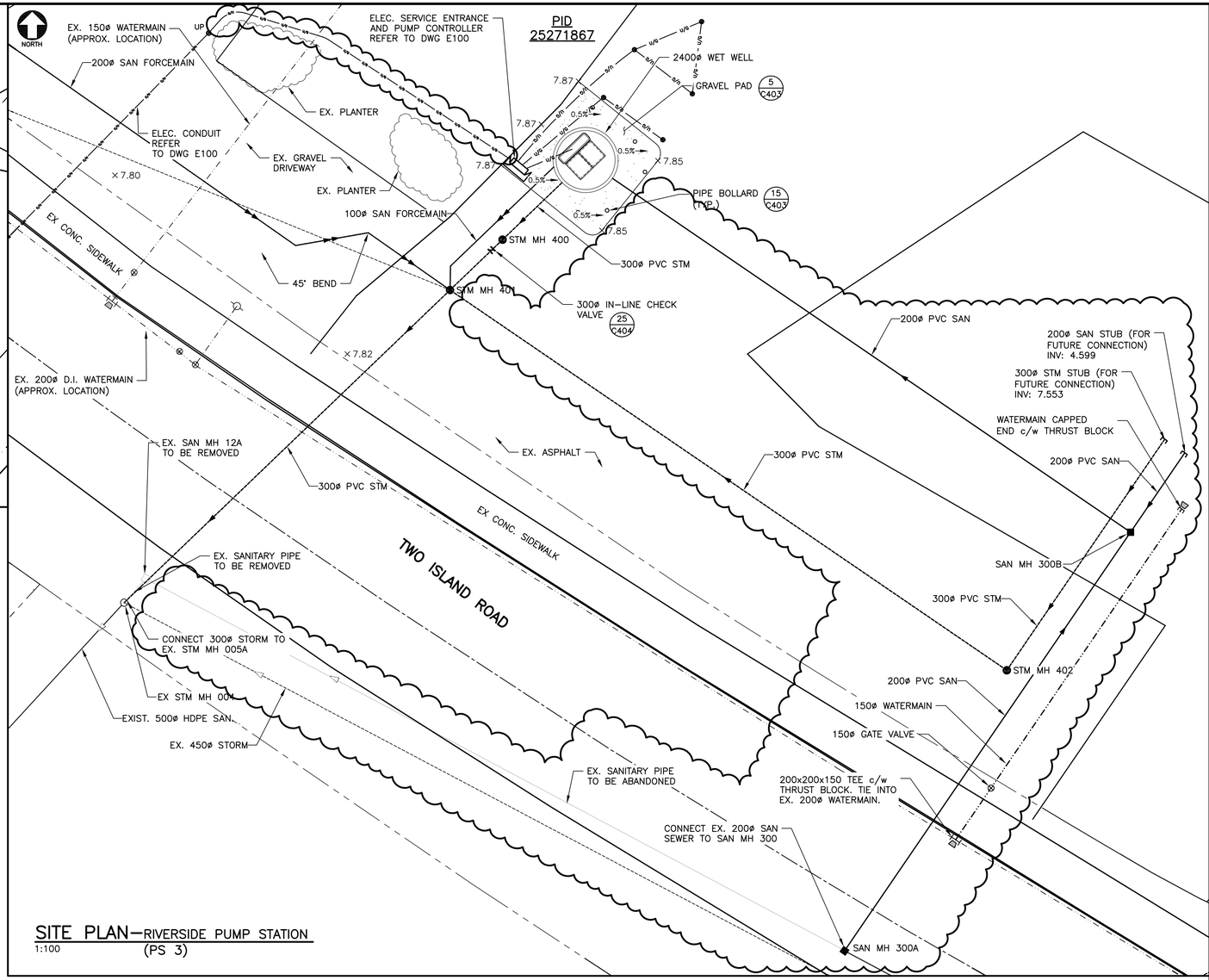
Drawing No **C300**

DRAWING NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 DAD\01 CIVIL\04 DRAWING SHEETS\03 RIVER SIDE\161039_00_RS_EG_PLAN_PROFILE_SHEETS.DWG LAYOUT NAME: C300 PLOT DATE: March-27-17 3:30:36 PM CAD OPERATOR: BMORVAN



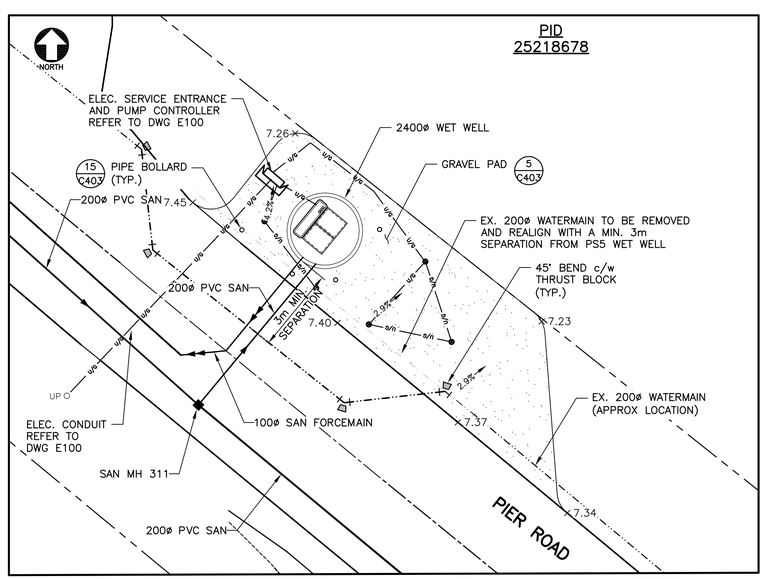
SITE PLAN—EASTERN AVE PUMP STATION (PS 1)

1:100



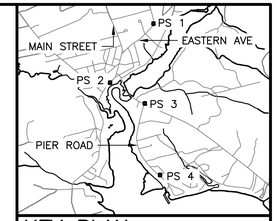
SITE PLAN—RIVERSIDE PUMP STATION (PS 3)

1:100



SITE PLAN—PIER ROAD PUMP STATION (PS 4)

1:100



KEY PLAN

1:10,000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
U/S U/S	U/G UTILITIES	U/S U/S
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES

1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
1	ADDENDUM 1	MAR 24/17	JAB
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PUMP STATION 1, 3 & 4 SITE PLANS

CBCL LIMITED
Consulting Engineers

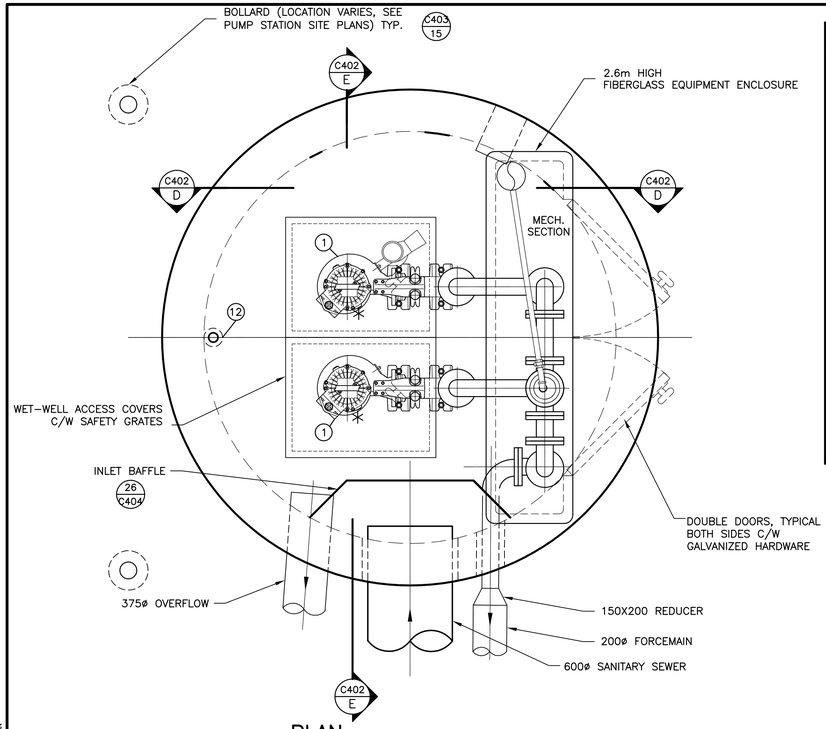
CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 31 of 36

Drawing No **C400**

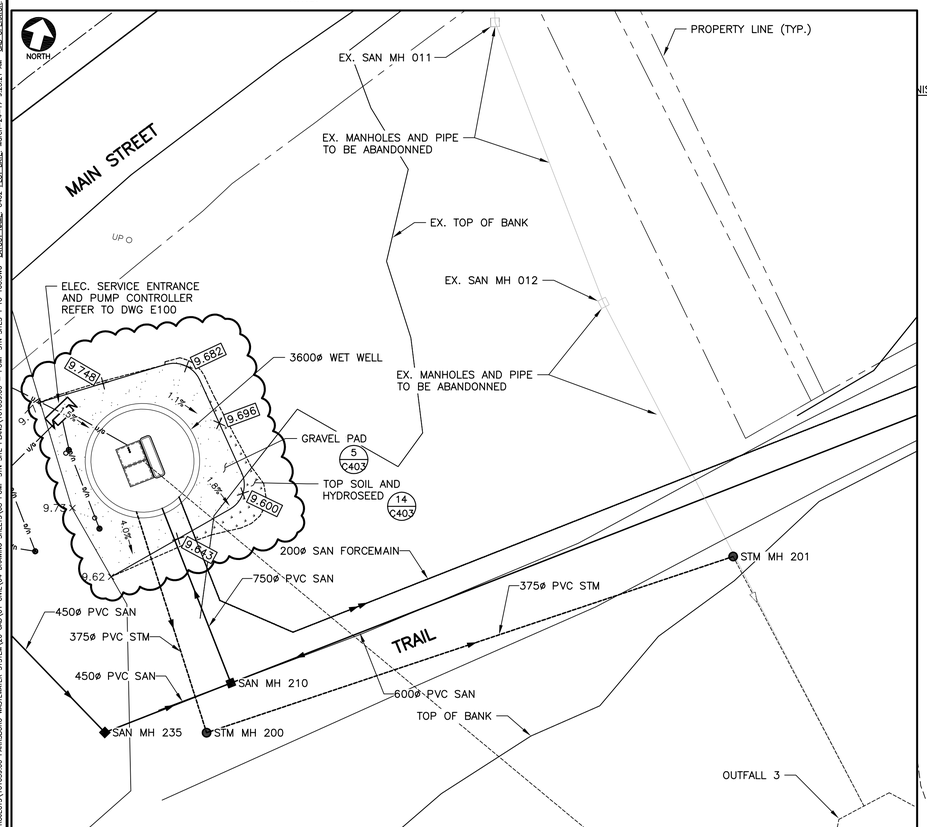
DRAWING_NAME: K:\PROJECTS\161039.00 PARRSBORO WASTEWATER SYSTEM\20 CAD\01 CIVIL\04 DRAWING SHEETS\08 PUMP STN SITE PLANS\161039.00 – PUMP STN SITES 1 TO 100.DWG LAYOUT_NAME: C400 PLOT_DATE: March-27-17 3:41:06 PM CAD_OPERATOR: BMORVAN



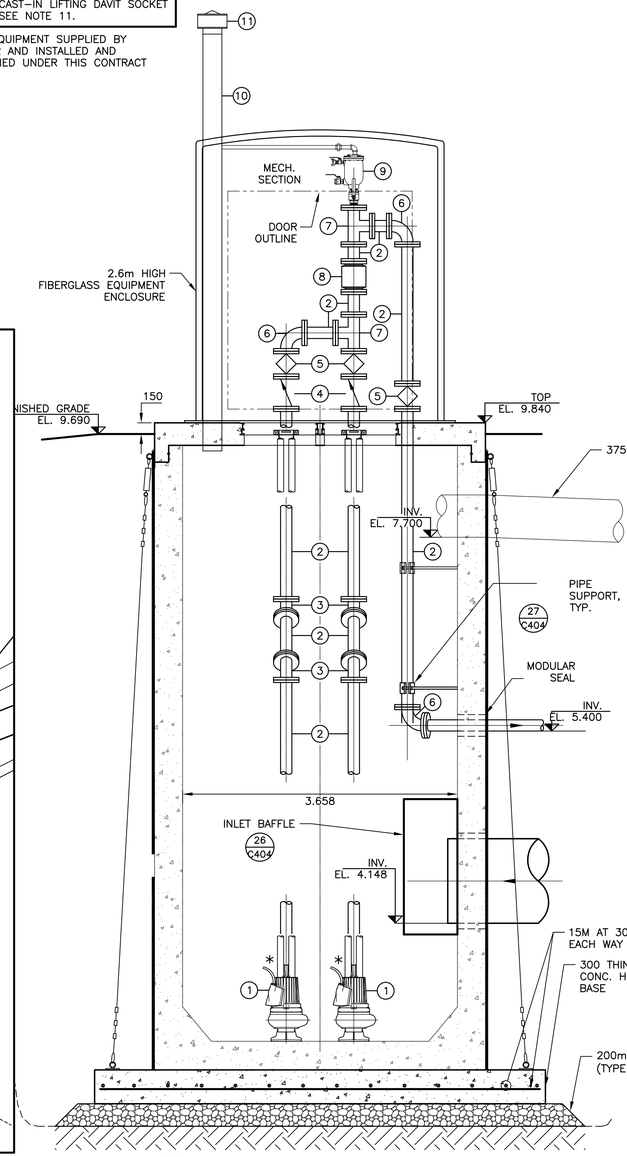
PLAN– PLAN – SEWAGE LIFT STATION
N.T.S.

LIST OF FITTINGS		
No.	QTY.	DESCRIPTION
1	2	PUMP *
2	14	150ø DUCTILE IRON MAKE UP PIPE (FLG.)
3	5	150ø DUCTILE IRON 45° BEND (FLG.)
4	2	150ø BALL CHECK VALVE (FLG.)
5	3	150ø PLUG VALVE (FLG.)
6	3	150ø DUCTILE IRON 90° BEND (FLG.)
7	2	150ø DUCTILE IRON TEE (FLG.)
8	1	150ø MAGNETIC FLOW METER (FLG.)
9	1	50ø SHORT BODY SEWAGE AIR RELEASE VALVE
10	1	150ø XFR DWV PVC PIPE
11	1	150ø PUL–AIR STATIONARY VENTILATOR
12	1	CAST–IN LIFTING DAVIT SOCKET SEE NOTE 11.

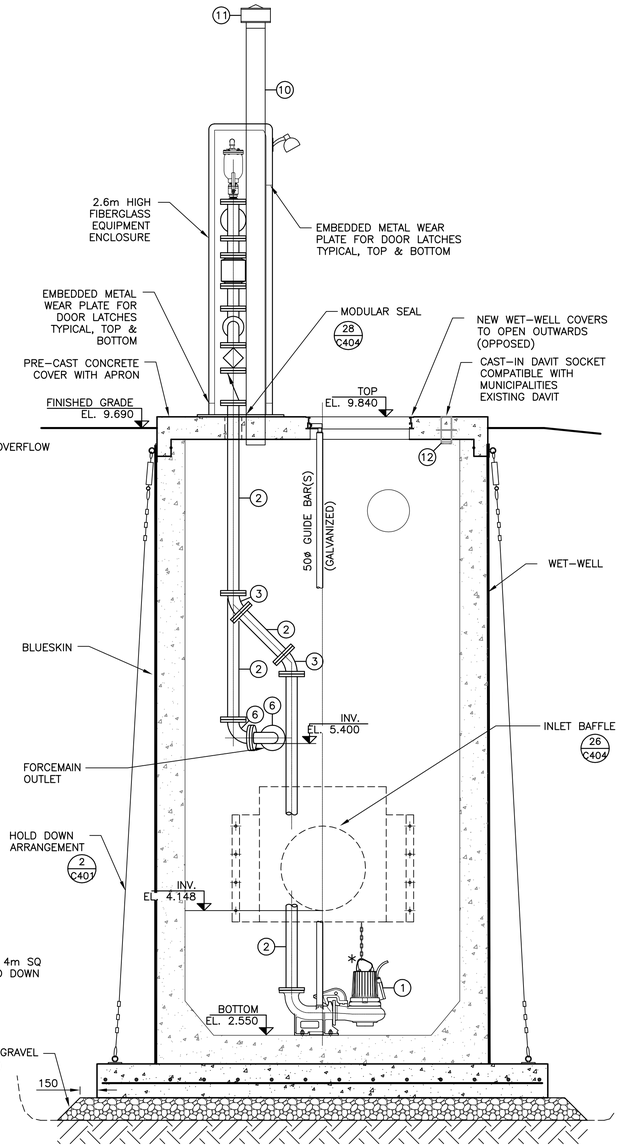
* DENOTES EQUIPMENT SUPPLIED BY THE OWNER AND INSTALLED AND COMMISSIONED UNDER THIS CONTRACT



SITE PLAN–DOWNTOWN PUMP STATION (PS 2)
1:100



D SECTION–SEWAGE LIFT STATION
C402 N.T.S.



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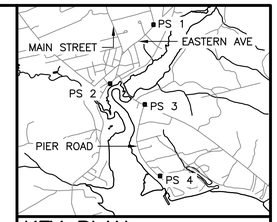
C402 N.T.S.



KEY PLAN
1:10,000

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	WATERMAIN	
	WATERMAIN (REMOVE)	
	SANITARY SEWER	
	SANITARY FORCEMAIN	
	COMBINED SEWER	
	STORM SEWER	
	REMOVALS	
	DITCH/SWALE	
	WOODEN FENCE	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	
BH	BOREHOLE	
	GATE VALVE	
	FIRE HYDRANT	
	SANITARY MH	
	SANITARY PUMP STATION	
	COMBINED MH	
	STORM MH	
	STORM HEADWALL	
	STORM CATCHBASIN (SNGL.)	
	STORM CATCHBASIN (RND.)	
	STORM CATCHBASIN (SQ.)	
UP	UTILITY POLE	UP
	U/G UTILITIES	
20.0	MAJOR CONTOUR	20.0
19.0	MINOR CONTOUR	19.0
×19.0	SPOT ELEVATION	×19.00

NOTES
1. FOR GENERAL NOTES SEE DRAWING C001.

municipality of cumberland

No.	Description	Date	By
1	ADDENDUM 1	MAR 24/17	JAB
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTERWATER SYSTEM – COLLECTION SYSTEM

CIVIL

PUMP STATION 2 SITE PLAN & SECTION

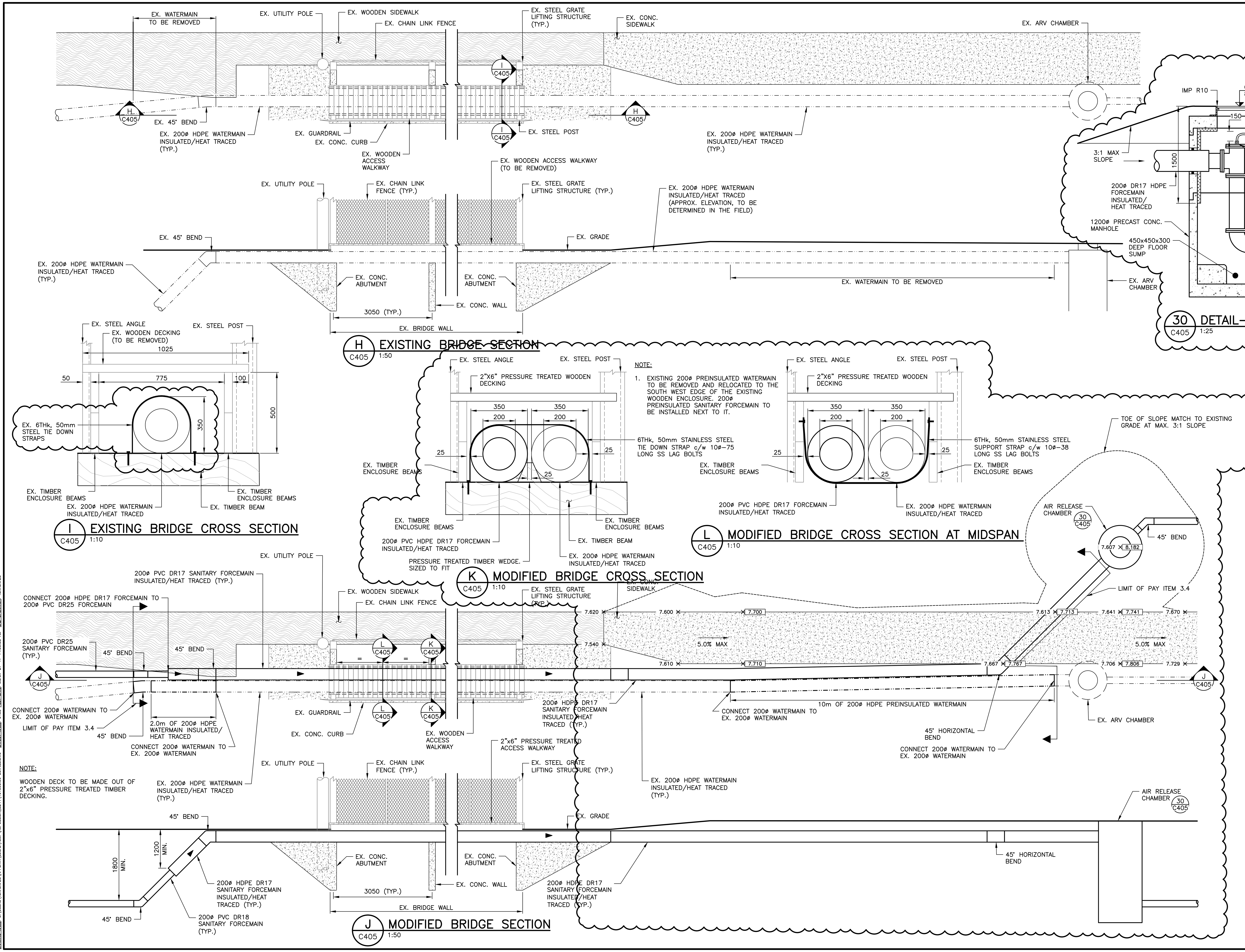
CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

Designed	Drawn
AD	BWM
Checked	Approved
TB	JAB

Sheet No 33 of 36

Drawing No **C402**



EX. WATERMAIN
TO BE REMOVED
EX. UTILITY POLE
EX. WOODEN SIDEWALK
EX. CHAIN LINK FENCE
EX. STEEL GRATE
LIFTING STRUCTURE
(TYP.)
EX. CONC.
SIDEWALK
EX. ARV CHAMBER
EX. 45° BEND
EX. 200ø HDPE WATERMAIN
INSULATED/HEAT TRACED
(TYP.)
EX. GUARDRAIL
EX. CONC. CURB
EX. WOODEN
ACCESS
WALKWAY
EX. STEEL POST
EX. CHAIN LINK
FENCE (TYP.)
EX. WOODEN ACCESS WALKWAY
(TO BE REMOVED)
EX. STEEL GRATE
LIFTING STRUCTURE (TYP.)
EX. 200ø HDPE WATERMAIN
INSULATED/HEAT TRACED
(APPROX. ELEVATION, TO BE
DETERMINED IN THE FIELD)
EX. GRADE
EX. CONC.
ABUTMENT
EX. CONC. WALL
3050 (TYP.)
EX. BRIDGE WALL
EX. WATERMAIN TO BE REMOVED
EX. ARV
CHAMBER
H C405 EXISTING BRIDGE SECTION
1:50
IMP R10
COVER ELEV.
8.182
FINISHED GRADE
150
EX. GRADE
3:1 MAX
SLOPE
1500
25ø PLASTIC TUBING
25ø BALL VALVE
200ø DR17 HDPE
FORCEMAIN
INSULATED/
HEAT TRACED
50mm THk
POLYSTYRENE
INSULATION
1200ø PRECAST CONC.
MANHOLE
LINK SEALS (TYP.)
450x450x300
DEEP FLOOR
SUMP
TO DISCHARGE
200
300
200ø DR25 PVC
FORCEMAIN
LIMIT OF HEAT TRACING
30 C405 DETAIL– AIR RELEASE CHAMBER
1:25
EX. STEEL ANGLE
EX. WOODEN DECKING
(TO BE REMOVED)
1025
50
775
100
500
350
EX. 6THk, 50mm
STEEL TIE DOWN
STRAPS
EX. TIMBER
ENCLOSURE BEAMS
EX. 200ø HDPE WATERMAIN
INSULATED/HEAT TRACED
EX. TIMBER BEAM
I C405 EXISTING BRIDGE CROSS SECTION
1:10
2"X6" PRESSURE TREATED WOODEN
DECKING
200
25
6THk, 50mm STAINLESS STEEL
TIE DOWN STRAP c/w 10ø–75
LONG SS LAG BOLTS
200ø PVC HDPE DR17 FORCEMAIN
INSULATED/HEAT TRACED
PRESSURE TREATED TIMBER WEDGE.
SIZED TO FIT
K C405 MODIFIED BRIDGE CROSS SECTION
1:10
NOTE:
1. EXISTING 200ø PREINSULATED WATERMAIN TO BE REMOVED AND RELOCATED TO THE SOUTH WEST EDGE OF THE EXISTING WOODEN ENCLOSURE. 200ø PREINSULATED SANITARY FORCEMAIN TO BE INSTALLED NEXT TO IT.
6THk, 50mm STAINLESS STEEL
SUPPORT STRAP c/w 10ø–38
LONG SS LAG BOLTS
L C405 MODIFIED BRIDGE CROSS SECTION AT MIDSPAN
1:10
TOE OF SLOPE MATCH TO EXISTING
GRADE AT MAX. 3:1 SLOPE
AIR RELEASE
CHAMBER 30 C405
45° BEND
7.607
8.182
LIMIT OF PAY ITEM 3.4
200ø PVC DR17 SANITARY FORCEMAIN
INSULATED/HEAT TRACED (TYP.)
CONNECT 200ø HDPE DR17 FORCEMAIN TO
200ø PVC DR25 FORCEMAIN
200ø PVC DR25
SANITARY FORCEMAIN
(TYP.)
7.620
7.600
7.700
7.540
5.0% MAX
7.610
7.710
7.613
7.713
7.641
7.741
7.670
7.667
7.767
7.706
7.806
7.729
CONNECT 200ø WATERMAIN TO
EX. 200ø WATERMAIN
LIMIT OF PAY ITEM 3.4
2.0m OF 200ø HDPE
WATERMAIN INSULATED/
HEAT TRACED
200ø HDPE DR17
SANITARY FORCEMAIN
INSULATED/HEAT
TRACED (TYP.)
10m OF 200ø HDPE PREINSULATED WATERMAIN
45° HORIZONTAL
BEND
NOTE:
WOODEN DECK TO BE MADE OUT OF
2"x6" PRESSURE TREATED TIMBER
DECKING.
2"x6" PRESSURE TREATED
ACCESS WALKWAY
1800
MIN.
1200
MIN.
200ø PVC DR18
SANITARY FORCEMAIN
(TYP.)
J C405 MODIFIED BRIDGE SECTION
1:50

DRAWING NAME: C:\USERS\TBRAGNALO\APPDATA\LOCAL\TEMP\ACPUBLISH_3244\161093.00 DETAILS.DWG LAYOUT NAME: C405 PLOT DATE: March-27-17 11:00:38 AM CAD OPERATOR: TBRAGNALO

municipality of cumberland

No.	Description	Date	By
1	ADDENDUM 1	MAR 24/17	JAB
0	ISSUED FOR TENDER	MAR 09/17	JAB

Revision or Issue

MUNICIPALITY OF CUMBERLAND
PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

CIVIL

MISCELLANEOUS DETAILS 3

CBCL LIMITED
Consulting Engineers

CBCL No	Contract No	Date	Scale
161039.00	161039.00	NOV 2016	AS NOTED

REGISTERED PROFESSIONAL ENGINEER
MAR.09/17
T.W. Bragnalo
10229
PROVINCE OF NOVA SCOTIA

Designed	Drawn
AD	BWM
Checked TB	Approved JAB

Sheet No 36 of 36

Drawing No **C405**

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

Contract 161039.00

Addendum No. 1

March 24, 2017

CONFIRMATION OF RECEIPT

I/We hereby confirm on behalf of

_____

Name of Tenderer

That the above Addendum No. 1 was received by fax or email on the date stated above.

Signed: _____

Date: _____

****

Please fax or email confirmation to CBCL
Attention: Aaron Baillie, P.Eng
Fax: (902) 423-3938
Email: aaronb@cbcl.ca

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

Contract 161039.00

Addendum No. 2

March 28, 2017

(To be added to and made part of the Tender Documents)
The following changes or modifications shall be made to the Tender Documents:

TO THE SPECIFICATIONS

SECTION 00 41 43 – TENDER FORM

Delete Section 00 41 43 – Tender Form and replace with new Section 00 41 43, dated March 28, 2017, attached.

SECTION 01 22 00 – MEASRUEMENT AND PAYMENT

Delete Section 01 22 00 – Measurement and Payment and replace with new Section 01 22 00, dated March 28, 2017, attached

Aaron Baillie, P.Eng
CBCL Limited
March 28, 2017

1. SALUTATION:

.1 To: Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS
B4H 3Y4

.2 For: Parrsboro Wastewater System – Collection System
Contract No. 161039.00

.3 From: _____

2. TENDERER DECLARES:

.1 That this tender was made without collusion or fraud.

.2 That the proposed work was carefully examined.

.3 That the Tenderer was familiar with local conditions.

.4 That Contract Documents and Addenda No. ___ to ___ inclusive were carefully examined.

.5 That all the above were taken into consideration in preparation of this Tender.

3. TENDERER AGREES:

.1 To enter into a contract to supply all labour, material and equipment and to do all work necessary to construct the Work as described and specified herein for the unit prices stated in Subsection 4 hereunder, Schedule of Quantities and Unit Prices.

.2 That the estimated Contract Price shall be the sum of the products of the tendered unit prices times the estimated quantities in Subsection 4 hereunder.

.3 That this Tender is valid for acceptance for sixty (60) days from the time of Tender Closing.

.4 That measurement and payment for items listed in Subsection 4 hereunder shall be in accordance with corresponding items in Section 01 22 00 Measurement and Payment.

.5 To provide evidence of ability and experience within 7 days of request, including experience in similar work, work currently under contract, senior supervisory staff available for the project,

equipment available for use on the Work, and financial resources. This information will be taken in consideration at the time of Contract Award.

.6 To execute in triplicate the Agreement and forward same together with the specified contract security and insurance documents to the Owner within fourteen (14) days of written notice of award.

.7 That failure to enter into a formal contract and give specified insurance documents and contract security within time required will constitute grounds for forfeiture of certified cheque or enforcement of bid bond.

.8 That if certified cheque is forfeited, Owner will retain difference in money between amount of Tender and amount for which Owner legally contracts with another party to perform the Work and will refund balance, if any, to Tenderer.

.9 That the Contract Documents include:

.1 Standard Specifications for Municipal Services listed in Table of Contents Page Dated January 2016.

.2 Project Documents:

.1 Tender Form

.2 Form of Agreement

.3 General Conditions of the Civil Work Contract

.4 Supplementary Specifications

.5 Drawings

Dwg. No.	Title
-	Cover Sheet
C001	Overall Site Plan
C100	Spring Street STA 0+000 to STA 0+260
C101	Chapel Street STA 0+240 to STA 0+435
C102	Church Street STA 0+000 to STA 0+160
C103	Eastern Avenue STA 0+000 to STA 0+320
C104	Eastern Avenue STA 0+320 to STA 0+600
C105	Jenks Avenue STA 0+000 to STA 0+340
C106	Jenks Avenue STA 0+340 to STA 0+490
C107	Templar Street STA 0+000 to STA 0+190
C108	Moore Street STA 0+000 to STA 0+260
C109	Main Street STA 0+000 to STA 0+200
C110	Main Street STA 0+200 to STA 0+535
C200	Western Ave. STA 0+000 to STA 0+340
C201	Western Ave. STA 0+340 to STA 0+680
C202	Western Ave. STA 0+680 to STA 0+850
C203	Queen Street STA 3+000 to STA 3+340
C204	King Street STA 0+000 to STA 0+280
C205	Maple Court STA 1+000 to STA 1+200
C206	Main Street STA 0+000 to STA 0+330
C207	Trail Alignment STA 0+000 to STA 0+170
C208	Whitehall Road Watermain STA 0+000 to STA

	0+160
C300	Two Islands Road STA 0+000 to STA 0+320
C301	Two Islands Road STA 0+320 to STA 0+660
C302	Two Islands Road STA 0+660 to STA 0+820
C303	Pier Road STA 0+000 to STA 0+320
C304	Pier Road STA 0+320 to STA 0+620
C305	Pier Road STA 0+620 to STA 0+920
C306	Pier Road STA 0+920 to STA 1+090
C307	Skidmore Lane STA 0+000 to STA 0+260
C308	Eddy Street STA 0+000 to STA 0+240
C400	Pump Station 1, 3 & 4 Site Plans
C401	Pump Station 1, 3 & 4 Plan and Sections
C402	Pump Station 2 Site Plan & Section
C403	Miscellaneous Details 1
C404	Miscellaneous Details 2
C405	Miscellaneous Details 3
E100	Pump Station 1,2,3 & 4 Site Plans
E101	Single Line and Electrical Details
E102	Electrical Details

.6 Addenda as issued and as confirmed in subsection 2.4 of this section.

4. SCHEDULE OF QUANTITIES AND UNIT PRICES

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
1.	Removals				
.1	1050mm dia. Manhole	Ea	5		
.2	1200mm dia. Catchbasin	Ea	1		
.3	Moore St. Pump Station	Ea	1		
.4	200mm dia. Sanitary Main	m	9		
.5	600mm Dia. Sanitary Main	m	16		
.6	200mm dia. C.I. Watermain	m	20		
.7	100mm dia. D.I. Watermain	m	100		
.8	Watermain Interconnections (Main (Street)	Ea	3		
2.	Sanitary Sewer System – Gravity Sewers				
.1	100mm dia. PVC DR 28 San. Service Laterals	m	3000		
.2	200mm dia. PVC DR 35	m	6011		
.3	200mm dia. PVC DR 18 – Casing Pipe (Provisional)	m	240		
.4	300mm dia. PVC DR 18 – Casing Pipe(Provisional)	m	9		
.5	450mm dia. PVC DR35	m	59		
.6	600mm dia. PVC DR 35	m	165		
.7	750mm dia. PVC DR 35	m	7		
3.	Sanitary Sewer System – Pressure Sewers				
.1	100mm dia. PVC DR 25 Sanitary Forcemain	m	1100		
.2	200mm dia. PVC DR 25 Sanitary Forcemain	m	436		
.3	Bridge Crossing	L.S.	1		
4.	Sanitary Sewer System - Structures				
.1	Sanitary Manholes - 1050mm Diameter	Ea	73		
.2	Sanitary Manholes - 1200mm Diameter	Ea	6		
.3	Sanitary Manholes – 1500mm Diameter	Ea	3		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
.4	Sanitary Manhole – 1800mm Diameter	Ea	1		
.5	Connection to Existing Manholes	Ea	5		
.6	Sanitary Cleanouts	Ea	5		
.7	Air Release Chamber	Ea	1		
5.	Submersible PS				
.1	PS#1 2400mm Dia.	L.S.	1		
.2	PS#2 3600mm Dia.	L.S.	1		
.3	PS#3 2400mm Dia.	L.S.	1		
.4	PS#4 2400mm Dia.	L.S.	1		
6.	Storm Sewer System				
.1	300mm dia. PVC DR35	m	40		
.2	375mm dia. PVC DR35	m	30		
.3	450mm dia. Conc. 65-D	m	20		
.4	600mm dia. Conc. 65-D	m	32		
.5	450mm dia. HDPE Culvert (Provisional)	m	200		
.6	Precast Concrete Culvert Headwall (Provisional)	Ea	40		
.7	1200mm dia. Storm Catchbasin	Ea	3		
.8	1500mm dia. Storm Manhole	Ea	1		
.9	Connection to Existing Pipe	Ea	2		
.10	300mm in-line Check Valve	Ea	1		
.11	375mm in-line Check Valve	Ea	1		
7.	Water System				
.1	19mm dia. Copper Water Service Laterals (Provisional)	m	250		
.2	Service Lateral Replacements (Main St.)	m	270		
.3	200mm dia. DI Cl. 52 Watermain	m	140		
.4	Fire Hydrants	Ea	1		
.5	Connection to Existing Watermain				
	.1 Jenks Ave.	Ea	1		
	.2 Smith St.	Ea	1		
	.3 Main St. – North	Ea	1		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
	.4 Main St. – South	Ea	1		
	.5 Whitehall Road	Ea	2		
	.6 Two Islands Road	Ea	1		
	.7 Pier Road	Ea	2		
	.6 Relocate Existing Watermain (Provisional)	Ea	2		
8.	Environmental Protection				
	.1 Sediment Control Fencing	m	2000		
	.2 Straw/Hay Cover	m^2	2000		
	.3 Check Dams	Ea	10		
9.	150mm Topsoil and Sod	m^2	800		
10.	Topsoil and Hydroseeding	m^2	1000		
11.	Insulation – 50mm Rigid	m^2	1400		
12.	Pipe Bollards	Ea	16		
13.	Electrical				
	.1 PS#1	L.S.	1		
	.2 PS#2	L.S.	1		
	.3 PS#3	L.S.	1		
	.4 PS#4	L.S.	1		
14.	Control Panel Allowance	L.S.	1	$100,000	$100,000
15.	Submersible Pumping Equipment Allowance	L.S.	1	$121,695	$121,695
16.	Nova Scotia Power Allowance	L.S.	1	$10,000	$10,000

SUBTOTAL $_____

TENDER SUMMARY

Estimated Contract Price **$**_____

Add HST (15% of the Estimated Contract Price) $_____

TOTAL AMOUNT PAYABLE **$**_____

TENDERER'S HST REGISTRATION NO. _____

5. COMPLETION TIME

.1 Tenderer agrees to complete the Work within _____ weeks from date of award of Contract.

6. SIGNATURE *

DATED THIS _____ DAY OF_____ , 201___.

[Seal]

_____
Name of Firm Tendering

_____
Signature of Signing Officer

_____ _____
Witness Name and Title (Printed)

_____ _____
Witness Signature of Signing Officer

_____ _____
Name and Title (Printed)

_____
Company Address

_____
Telephone No.

_____
Fax No.

*NOTE: Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.

END

PART 1 - GENERAL

1. Unit prices for all items in the Schedule of Quantities and Unit Prices are full compensation for the work necessary to complete each item in the contract and in combination for all work necessary to complete the Work as a whole.

2. **Include all of the following as required where individual quantities are not provided in the Tender Form: mobilization, demobilization, traffic control, location of in-ground services by external utilities and coordination of work by external utilities (NSPI, Aliant, etc.), environmental protection, protection of existing trees, clearing, grubbing, common excavation, shoring, dewatering, backfilling, bedding, compaction, disposal of surplus materials, protective coatings, thrust blocks, mechanical joint restraints, marker tape, reinstatement of all disturbed surfaces with matching materials and thicknesses, temporary potable water service, testing, pipe cleaning, disinfection, marker stakes, recording as-constructed features, video inspection, and all incidentals.**

3. The unit and lump sum prices for all items in the Form of Tender "Schedule of Quantities and Unit Prices" shall include the cost for furnishing all materials, labour, tools, and equipment necessary to complete the work in accordance with the Contract, the Drawings and Specification, and shall cover all costs of surety, mobilization, permits, assistance to the Engineer and site offices and other general costs. Each item shall include for all necessary supervision, labour, materials, plant and services, security provisions, survey and all operations and allowances customary and necessary to complete each item and the Contract as a whole notwithstanding the fact that not every such necessary operation is mentioned or included specifically for measurement.

4. All measurement shall be along a horizontal plane unless otherwise indicated.

5. The numbers of items described below correspond to the numbers of the items in Section 00 41 43, subsection 4, Schedule of Quantities and Unit Prices.

6. Provisional items shall mean that the unit price as tendered shall be included in the estimated Contract Price and that the Owner reserves the right to delete all or portions of this item from the estimated Contract Price.

PART 2 - ITEMS

1. Removals

.1 1050mm dia. Manhole

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of precast concrete manhole where indicated on the Project Drawings. Turn over the frame and cover to the Owner.

.2 1200mm dia. Catchbasin

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of precast concrete manhole where indicated on the Project Drawings. Turn over the frame and cover to the Owner.

.3 Moore St. Pump Station

Unit of Measurement: Each (Ea)

This item includes: removal and off Site disposal of pump station, chamber, internal piping and all electrical power and installations including conduits, grounding, control panel and utility service.

.4 200mm dia. Sanitary Main

Unit of Measurement: metre (m)

Method of Measurement: along the centreline of pipe through catchbasins and manholes.

This item includes: sealing of abandoned manhole connections as required and the removal and off Site disposal of sanitary sewer and fittings where shown on the Project Drawings.

.5 600mm Dia. Sanitary Main

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: sealing of abandoned manhole connections as required and the removal and off Site disposal of sanitary sewer and fittings where shown on the Project Drawings.

.6 200mm dia. C.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of ductile iron pipe complete with all fittings and incidentals.

.7 100mm dia. D.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of ductile iron pipe complete with all fittings and incidentals.

.8 Watermain Interconnections (Main Street)

Unit of Measurement: Each (Ea)

This item includes: the location, removal and off Site disposal of existing watermain connection including thrust block and all fittings.

2. Sanitary Sewer System – Gravity Sewers

.1 100mm dia. PVC DR 28 San. Service Laterals

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: locating existing service lateral where required; supply and installation of PVC sanitary sewer laterals complete with all fittings and incidentals.

.2 200mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

.3 200mm dia. PVC DR 18 – Casing Pipe (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC casing pipe complete with link seals, gaskets, spacers and all fittings and incidentals.

.4 300mm dia. PVC DR 18 – Casing Pipe (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC casing pipe complete with link seals, gaskets, spacers and all fittings and incidentals.

.5 450mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals

.6 600mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

.7 750mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary sewer complete with all fittings and incidentals.

3. Sanitary Sewer System – Pressure Sewers

.1 100mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.2 150mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.3 200mm dia. PVC DR 25 Sanitary Forcemain

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC sanitary forcemain complete with all fittings and incidentals.

.4 Bridge Crossing

Unit of Measurement: Lump Sum (L.S.)

This item includes: supply and installation of new pre-insulated forcemain and watermain complete with integral heat tracing; removal and replacement of existing wooden decking; reinstatment of timber walkway; removal and relocation of existing watermain including new pre-insultaed pipe and fittings.

4. Sanitary Sewer System – Structures

.1 Sanitary Manholes – 1050mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.2 Sanitary Manholes – 1200mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system

.3 Sanitary Manholes – 1500mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.4 Sanitary Manholes – 1800mm Dia.

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary manhole complete with frame, cover, benching, gaskets, grade adjustment joint sealants and connection to the sanitary system.

.5 Connection to Existing Manholes

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary system connection to existing manhole including re-benching as required and all incidentals where indicated on the Project Drawings.

.6 Sanitary Cleanouts

Unit of Measurement: Each (Ea)

This item includes: supply and installation of sanitary cleanout complete with frame, cover, concrete collar, pipe, gaskets, grade adjustment, conection to sanitary laterals and all incidentals shown on the Project Drawings.

.7 Air Release Chamber

Unit of Measurement: Each (Ea)

This item includes: construction of Air Release Valve (ARV) Chamber complete with associated fittings including installation of precast units, access manhole cover, waterproofing system, insulation, venting, piping, air release valve assembly, and all other items required to commission and operate the chamber as indicated in Project Drawings.

5. Submersible Pumping Stations

Unit of Measurement: Lump Sum (L.S.)

This item includes: supply, installation and commissioning assitance of pumping stations as shown on the Project Drawings for a complete and operational pumping station. Limit of in ground piping included in this item is to within one meter of the station. The supply of the control panels will be paid under the allowance provided in item 14 herein. The supply of the submersible pumping equipment will be paid under the allowance provided in item 15 herein. This item includes the installation only of Owner-supplied equipment. Electrical installations for the pumping station will be paid under item 13 herein.

6. Storm Sewer System

.1 300mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC storm sewer complete with all fittings and incidentals.

.2 375mm dia. PVC DR 35

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of PVC storm sewer complete with all fittings and incidentals.

.3 450mm dia. Concrete 65-D

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of pre-cast concrete storm sewer pipe complete with all grout and all fittings and incidentals.

.4 600mm dia. Concrete 65-D

Unit of Measurement: metre (m)

Method of Measurement: along the centerline of pipe.

This item includes: supply and installation of pre-cast concrete storm sewer pipe complete with all grout and all fittings and incidentals.

.5 450mm dia. HDPE Culvert (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the cenreline of culvert

This item includes: supply and installation of HDPE culvert as directed by the Engineer.

.6 Precast Concrete Culvert Headwall (Provisional)

Unit of Measurement: Each (Ea)

This item includes: supply and installation of precast concrete headwall as directed by the Engineer.

.7 1200mm dia. Storm Catchbasin

Unit of Measurement: Each (Ea)

This item includes: supply and installation of storm catchbasin complete with frame, grate, benching, gaskets, grade adjustment joint sealants and connection to the storm system.

.8 1500mm dia. Storm Manhole

Unit of Measurement: Each (Ea)

This item includes: supply and installation of storm manhole complete with frame, grate, benching, gaskets, grade adjustment joint sealants and connection to the storm system.

.9 Connection to Existing Pipe

Unit of Measurement: Each (Ea)

This item includes: locating existing pipe to connect to, supply and installation of all fittings for a functional connection.

.10 300mm In-Line Check Valve

Unit of Measurement: Each (Ea)

This item includes: supply and installation of in-line check valve complete with all appurtenances.

.11 375mm In-Line Check Valve

Unit of Measurement: Each (Ea)

This item includes: supply and installation of in-line check valve complete with all appurtenances.

7. Water System

.1 19mm dia. Copper Water Service Laterals (Provisional)

Unit of Measurement: metre (m)

Method of Measurement: along the centre of lateral between the main and the residence/dwelling.

This item includes: supply and installation of pipe, insulation as required, polyethylene encasement, connection to the main, anodes, saddle, corporation stop, curb stop, fittings and incidentals for a complete connection to both the main and the residence/dwelling.

.2 Service Lateral Replacements (Main St.)

Unit of Measurement: metre (m)

Method of Measurement: along the centre of lateral from curb stop to corporation stop.

This item includes: supply and installation of lateral pipe complete with all fittings as requried including saddles, corporation stop, curb stop and service box.

.3 200mm dia. DI Cl. 52 Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: supply and installation of ductile iron pipe complete with all fittings and incidentals.

.4 Fire Hydrants

Unit of Measurement: Each (Ea)

This item includes: supply and installation of hydrant complete with lead, hydrant valve, thrust block and connection to the ductile iron watermain.

.5 Connection to Existing Watermain

Unit of Measurement: each (Ea)

This item includes: locate existing main, supply and installation of watermain connection including all pipe, tapping sleeves, nipples, valves, fittings and all appurtenances where indicated on the Project Drawings.

.6 Relocate Existing Watermain (Provisional)

Unit of Measurement: Each (Ea)

This item includes: removal, supply and installation of ductile iron water pipe complete with all fittings and incidentals required for the lowering of existing watermain that conflicts with the proposed path of the sanitary sewer being installed in this Work as directed by the Engineer.

8. Environmental Protection

.1 Sediment Control Fencing

Unit of Measurement: metre (m)

Method of Measurement: along the top of filter fabric through wooden stakes.

This item includes: supply, installation, maintenance, and subsequent removal of fence complete with wooden stakes, fabric and staples.

.2 Straw/Hay Cover

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at grade.

This item includes: supply, placement and maintenance of straw/hay cover.

.3 Check Dams

Unit of Measurement: Each (Ea)

This item includes: excavation ,maintenance and subsequent removal before the completion of the Work.

9. 150mm Topsoil and Sod

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at mean depth.

This item includes: supply and placement of topsoil, lime, fertilizer, stakes and maintenance until turn over to Owner.

10. Topsoil and Hydroseeding

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure at mean depth.

This item includes: supply and placement of topsoil, lime, fertilizer, mulch, erosion control agent, seed and maintenance until turn over to Owner.

.11 Insulation – 50mm Rigid

Unit of Measurement: square metre (m^2)

Method of Measurement: slope measure of indicated area at mean depth.

This item includes: supply and placement of insulation where indicated on the Project Drawings.

12. Pipe Bollards

Unit of Measurement: Each (Ea)

This item includes: supply and installation of pipe bollards where shown on the Project Drawings.

13. Electrical

Unit of Measurement: Lump Sum (L.S.)

This item includes: all electrical and instrumentation work associated with the pumping stations including precast concrete structure, FRP enclosures, grounding, installation of Owner supplied pump control panel and radio antennas, supply and installation of lighting, heating, temperature sensors, floats, level transmitters and magnetic flow transmitters.

14. Control Panel Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs associated with the supply, coordination of delivery and commissioning of the control panels and instrumentation being installed in the submersible pumping stations provided in item 5 herein.

15. Submersible Pumping Equipment Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs associated with the supply, coordination of delivery and commissioning of the submersible pumping equipment being installed in the submersible pumping stations provided in item 5 herein.

16. Nova Scotia Power Allowance

Unit of Measurement: Lump Sum (L.S.)

This item includes: this allowance is to cover all costs charged by NSP to provide power service to the pumping station. These costs are to be billed at cost, with no markup. This allowance does not cover permit and application fees.

END

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

Contract 161039.00

Addendum No. 2

March 28, 2017

CONFIRMATION OF RECEIPT

I/We hereby confirm on behalf of

_____

Name of Tenderer

That the above Addendum No. 2 was received by fax or email on the date stated above.

Signed: _____

Date: _____

****

Please fax or email confirmation to CBCL
Attention: Aaron Baillie, P.Eng
Fax: (902) 423-3938
Email: aaronb@cbcl.ca

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

Contract 161039.00

Addendum No. 3

March 28, 2017

(To be added to and made part of the Tender Documents)
The following changes or modifications shall be made to the Tender Documents:

TO THE SPECIFICATIONS

SECTION 00 41 43 – TENDER FORM

Delete Section 00 41 43 – Tender Form and replace with new Section 00 41 43, dated March 28, 2017, attached.

SECTION 01 22 00 – MEASRUEMENT AND PAYMENT

Page 3, add new item 1.6 and renumber subsequent items.

.6 200mm dia. C.I. Watermain

Unit of Measurement: metre (m)

Method of Measurement: along centreline of pipe through valves and fittings.

This item includes: removal and off Site disposal of watermain pipe complete with all fittings and incidentals.

Aaron Baillie, P.Eng
CBCL Limited
March 28, 2017

1. SALUTATION:

.1 To: Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS
B4H 3Y4

.2 For: Parrsboro Wastewater System – Collection System
Contract No. 161039.00

.3 From: _____

2. TENDERER DECLARES:

.1 That this tender was made without collusion or fraud.

.2 That the proposed work was carefully examined.

.3 That the Tenderer was familiar with local conditions.

.4 That Contract Documents and Addenda No. ___ to ___ inclusive were carefully examined.

.5 That all the above were taken into consideration in preparation of this Tender.

3. TENDERER AGREES:

.1 To enter into a contract to supply all labour, material and equipment and to do all work necessary to construct the Work as described and specified herein for the unit prices stated in Subsection 4 hereunder, Schedule of Quantities and Unit Prices.

.2 That the estimated Contract Price shall be the sum of the products of the tendered unit prices times the estimated quantities in Subsection 4 hereunder.

.3 That this Tender is valid for acceptance for sixty (60) days from the time of Tender Closing.

.4 That measurement and payment for items listed in Subsection 4 hereunder shall be in accordance with corresponding items in Section 01 22 00 Measurement and Payment.

.5 To provide evidence of ability and experience within 7 days of request, including experience in similar work, work currently under contract, senior supervisory staff available for the project,

equipment available for use on the Work, and financial resources. This information will be taken in consideration at the time of Contract Award.

.6 To execute in triplicate the Agreement and forward same together with the specified contract security and insurance documents to the Owner within fourteen (14) days of written notice of award.

.7 That failure to enter into a formal contract and give specified insurance documents and contract security within time required will constitute grounds for forfeiture of certified cheque or enforcement of bid bond.

.8 That if certified cheque is forfeited, Owner will retain difference in money between amount of Tender and amount for which Owner legally contracts with another party to perform the Work and will refund balance, if any, to Tenderer.

.9 That the Contract Documents include:

.1 Standard Specifications for Municipal Services listed in Table of Contents Page Dated January 2016.

.2 Project Documents:

.1 Tender Form

.2 Form of Agreement

.3 General Conditions of the Civil Work Contract

.4 Supplementary Specifications

.5 Drawings

Dwg. No.	Title
-	Cover Sheet
C001	Overall Site Plan
C100	Spring Street STA 0+000 to STA 0+260
C101	Chapel Street STA 0+240 to STA 0+435
C102	Church Street STA 0+000 to STA 0+160
C103	Eastern Avenue STA 0+000 to STA 0+320
C104	Eastern Avenue STA 0+320 to STA 0+600
C105	Jenks Avenue STA 0+000 to STA 0+340
C106	Jenks Avenue STA 0+340 to STA 0+490
C107	Templar Street STA 0+000 to STA 0+190
C108	Moore Street STA 0+000 to STA 0+260
C109	Main Street STA 0+000 to STA 0+200
C110	Main Street STA 0+200 to STA 0+535
C200	Western Ave. STA 0+000 to STA 0+340
C201	Western Ave. STA 0+340 to STA 0+680
C202	Western Ave. STA 0+680 to STA 0+850
C203	Queen Street STA 3+000 to STA 3+340
C204	King Street STA 0+000 to STA 0+280
C205	Maple Court STA 1+000 to STA 1+200
C206	Main Street STA 0+000 to STA 0+330
C207	Trail Alignment STA 0+000 to STA 0+170
C208	Whitehall Road Watermain STA 0+000 to STA

	0+160
C300	Two Islands Road STA 0+000 to STA 0+320
C301	Two Islands Road STA 0+320 to STA 0+660
C302	Two Islands Road STA 0+660 to STA 0+820
C303	Pier Road STA 0+000 to STA 0+320
C304	Pier Road STA 0+320 to STA 0+620
C305	Pier Road STA 0+620 to STA 0+920
C306	Pier Road STA 0+920 to STA 1+090
C307	Skidmore Lane STA 0+000 to STA 0+260
C308	Eddy Street STA 0+000 to STA 0+240
C400	Pump Station 1, 3 & 4 Site Plans
C401	Pump Station 1, 3 & 4 Plan and Sections
C402	Pump Station 2 Site Plan & Section
C403	Miscellaneous Details 1
C404	Miscellaneous Details 2
C405	Miscellaneous Details 3
E100	Pump Station 1,2,3 & 4 Site Plans
E101	Single Line and Electrical Details
E102	Electrical Details

.6 Addenda as issued and as confirmed in subsection 2.4 of this section.

4. SCHEDULE OF QUANTITIES AND UNIT PRICES

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
1.	Removals				
.1	1050mm dia. Manhole	Ea	5		
.2	1200mm dia. Catchbasin	Ea	1		
.3	Moore St. Pump Station	Ea	1		
.4	200mm dia. Sanitary Main	m	9		
.5	600mm Dia. Sanitary Main	m	16		
.6	150mm dia. C.I. Watermain	m	430		
.7	200mm dia. C.I. Watermain	m	20		
.8	100mm dia. D.I. Watermain	m	100		
.9	Watermain Interconnections (Main (Street)	Ea	3		
2.	Sanitary Sewer System – Gravity Sewers				
.1	100mm dia. PVC DR 28 San. Service Laterals	m	3000		
.2	200mm dia. PVC DR 35	m	6011		
.3	200mm dia. PVC DR 18 – Casing Pipe (Provisional)	m	240		
.4	300mm dia. PVC DR 18 – Casing Pipe(Provisional)	m	9		
.5	450mm dia. PVC DR35	m	59		
.6	600mm dia. PVC DR 35	m	165		
.7	750mm dia. PVC DR 35	m	7		
3.	Sanitary Sewer System – Pressure Sewers				
.1	100mm dia. PVC DR 25 Sanitary Forcemain	m	1100		
.2	200mm dia. PVC DR 25 Sanitary Forcemain	m	436		
.3	Bridge Crossing	L.S.	1		
4.	Sanitary Sewer System - Structures				
.1	Sanitary Manholes - 1050mm Diameter	Ea	73		
.2	Sanitary Manholes - 1200mm Diameter	Ea	6		
.3	Sanitary Manholes – 1500mm Diameter	Ea	3		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
.4	Sanitary Manhole – 1800mm Diameter	Ea	1		
.5	Connection to Existing Manholes	Ea	5		
.6	Sanitary Cleanouts	Ea	5		
.7	Air Release Chamber	Ea	1		
5.	Submersible PS				
.1	PS#1 2400mm Dia.	L.S.	1		
.2	PS#2 3600mm Dia.	L.S.	1		
.3	PS#3 2400mm Dia.	L.S.	1		
.4	PS#4 2400mm Dia.	L.S.	1		
6.	Storm Sewer System				
.1	300mm dia. PVC DR35	m	40		
.2	375mm dia. PVC DR35	m	30		
.3	450mm dia. Conc. 65-D	m	20		
.4	600mm dia. Conc. 65-D	m	32		
.5	450mm dia. HDPE Culvert (Provisional)	m	200		
.6	Precast Concrete Culvert Headwall (Provisional)	Ea	40		
.7	1200mm dia. Storm Catchbasin	Ea	3		
.8	1500mm dia. Storm Manhole	Ea	1		
.9	Connection to Existing Pipe	Ea	2		
.10	300mm in-line Check Valve	Ea	1		
.11	375mm in-line Check Valve	Ea	1		
7.	Water System				
.1	19mm dia. Copper Water Service Laterals (Provisional)	m	250		
.2	Service Lateral Replacements (Main St.)	m	270		
.3	200mm dia. DI Cl. 52 Watermain	m	140		
.4	Fire Hydrants	Ea	1		
.5	Connection to Existing Watermain				
	.1 Jenks Ave.	Ea	1		
	.2 Smith St.	Ea	1		
	.3 Main St. – North	Ea	1		

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Total Price
	.4 Main St. – South	Ea	1		
	.5 Whitehall Road	Ea	2		
	.6 Two Islands Road	Ea	1		
	.7 Pier Road	Ea	2		
	.6 Relocate Existing Watermain (Provisional)	Ea	2		
8.	Environmental Protection				
	.1 Sediment Control Fencing	m	2000		
	.2 Straw/Hay Cover	m^2	2000		
	.3 Check Dams	Ea	10		
9.	150mm Topsoil and Sod	m^2	800		
10.	Topsoil and Hydroseeding	m^2	1000		
11.	Insulation – 50mm Rigid	m^2	1400		
12.	Pipe Bollards	Ea	16		
13.	Electrical				
	.1 PS#1	L.S.	1		
	.2 PS#2	L.S.	1		
	.3 PS#3	L.S.	1		
	.4 PS#4	L.S.	1		
14.	Control Panel Allowance	L.S.	1	$100,000	$100,000
15.	Submersible Pumping Equipment Allowance	L.S.	1	$121,695	$121,695
16.	Nova Scotia Power Allowance	L.S.	1	$10,000	$10,000

SUBTOTAL $_____

TENDER SUMMARY

Estimated Contract Price **$**_____

Add HST (15% of the Estimated Contract Price) $_____

TOTAL AMOUNT PAYABLE **$**_____

TENDERER'S HST REGISTRATION NO. _____

5. COMPLETION TIME

.1 Tenderer agrees to complete the Work within _____ weeks from date of award of Contract.

6. SIGNATURE *

DATED THIS _____ DAY OF_____ , 201___.

[Seal]

_____
Name of Firm Tendering

_____
Signature of Signing Officer

_____ _____
Witness Name and Title (Printed)

_____ _____
Witness Signature of Signing Officer

_____ _____
Name and Title (Printed)

_____
Company Address

_____
Telephone No.

_____
Fax No.

*NOTE: Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.

END

MUNICIPALITY OF CUMBERLAND

PARRSBORO WASTEWATER SYSTEM – COLLECTION SYSTEM

Contract 161039.00

Addendum No. 3

March 28, 2017

CONFIRMATION OF RECEIPT

I/We hereby confirm on behalf of

_____

Name of Tenderer

That the above Addendum No. 3 was received by fax or email on the date stated above.

Signed: _____

Date: _____

****

Please fax or email confirmation to CBCL
Attention: Aaron Baillie, P.Eng
Fax: (902) 423-3938
Email: aaronb@cbcl.ca