NARRAGANSETT BAY COMMISSION
ONE SERVICE ROAD PROVIDENCE, RI 02905

CSO PHASE IIIA
OF-217 Consolidation Conduit
CONTRACT 308.05C

ADDENDUM NO. 1
August 19, 2021

TO ALL BIDDERS:

Bidders are hereby informed that Contract Documents for the above-mentioned contract are modified, corrected, and/or supplemented as follows and the Addendum No. 1 becomes part of the Contract Documents and consists of Items 1-1 through 1-10.

Item 1-1: Minutes from Pre-Bid Meeting held on August 10, 2021 are attached hereto (see Addendum No. 1, Attachment 1).

SPECIFICATIONS

Item 1-2: Section TOC – Table of Contents – **DELETE** Table of Contents in its entirety and **REPLACE** with revised Table of Contents attached hereto (see Addendum No. 1, Attachment 2).

Item 1-3: Section B – Bid – **DELETE** Bid in its entirety and **REPLACE** with revised Bid attached hereto (see Addendum No. 1, Attachment 3).

Item 1-4: Section CA - Contract Agreement – Table A - **DELETE** Table A in its entirety and **REPLACE** with revised Table A attached hereto (see Addendum No. 1, Attachment 4).

Item 1-5: Section 01010 – Paragraph 1.05 A, 2. **DELETE** Paragraph and **REPLACE** with the following:

> "2. Completion of Consolidation Conduit Station 8+00 to Station 18+87.83 including all structures and appurtenances and Outfall Station 0+80 to Station 4+45.88 including all structures and appurtenances. (Sheet C-5 thru C-8, S-1 thru S-5, and E-1, E-2) shall be completed by December 31, 2022."

Item 1-6: Section 02240 – Paragraph 1.01 C - **DELETE** Paragraph and **REPLACE** with the following:

> "C. Not Used"

Item 1-7: **INSERT** Appendix J – 2021 Supplemental Geotechnical Data Package (see Addendum No. 1, Attachment 5).

DRAWINGS

Item 1-8: Drawing C-3 shall be **DELETED** and **REPLACED** with Drawing C-3 attached hereto (see Addendum No. 1, Attachment 6).

Item 1-9: Drawing C-8 shall be **DELETED** and **REPLACED** with Drawing C-8 attached hereto (see Addendum No. 1, Attachment 6).

Item 1-10: Drawing S-2 shall be **DELETED** and **REPLACED** with Drawing S-2 attached hereto (see Addendum No. 1, Attachment 6).

Response to Questions

Provided below are responses to questions received prior to the close of the time allotted to seek clarifications, interpretations, or modifications to this Bid.

1. Sheet C-3 indicates the limit of sidewalk restoration but does not indicate any pavement restoration for any open cut pipe installation in the roadway. Is the intent to only patch the trench in accordance with details C-911 and C-912?

   Response: Correct. Temporary and permanent trench paving is required in accordance with C-911 and C-912 for sections of pipe within paved surfaces that are installed utilizing open cut construction techniques.

2. On Sheets C-4 and C-5, Keynoter F and H state to micro mill and overlay pavement within the limits of work. Are the limits of work from the curb line to the temporary barrier/fence line?

   Response: Correct.

3. Sheet C-7 shows sawcut limits on Tidewater Street and Merry Street but does not show any pavement restoration.

   Response: Temporary and permanent trench paving is required in accordance with C-911 and C-912 for sections of pipe within paved surfaces that are installed utilizing open cut construction techniques.

4. Sheet c-8 profile shows two 6” water lines at stations 2+80 and 3.12 but they are not shown on the plan. Are they in fact there and if so, do will they require cutting and capping?

   Response: Water mains are known to be abandoned. Please see Addendum 1, Item 1-9.

END OF ADDENDUM NO. 1

ADDENDUM NO. 1, ATTACHMENT 1

Pre-Bid Meeting Minutes

Narragansett Bay Commission
Phase III CSO Program
Pre-Bid Meeting Minutes
August 10, 2021 @ 10 am

OF-217 Consolidation Conduit
NBC CONTRACT 308.05C

1. The Pre-Bid Meeting for Contract 308.05C OF-217 Consolidation Conduit commenced at 10 am on August 10, 2021.

2. Sign In: All prospective bidders were requested to sign the attached sign in sheet.

3. Welcome and Introductions: The following parties from Narragansett Bay Commission (NBC), Stantec, and BETA were introduced at the meeting:

    a. Greg Waugh, NBC, gwaugh@narrabay.com, (401) 461-8848 ext. 120
    b. Rich Bernier, NBC rbernier@narrabay.com (401) 461-8848 ext. 326
    c. Gerry Lagesse. NBC, glagesse@narrabay.com (401) 461-8848
    d. Chris Feeney, Stantec christopher.feeney@stantec.com (401) 214-1750
    e. Chris Cronin, Beta CCronin@beta-inc.com (401) 333-2382

4. Bid, Date, Time, Location: As indicated in the Contract Documents, Bids will be received at 2:00 PM on September 2, 2021, at the NBC Corporate Office Building at 1 Service Road Providence, RI. It is mandatory that an additional printed copy of the bid be provided with the bid.

5. Anticipated Award Schedule: The current schedule is to receive bids on or before September 2, 2021, submit a recommendation to the NBC Board for approval at the board meeting on September 28, 2021, and award the contract in October 2021.

6. General Description of Work: Chris Cronin from Beta provided a short overview of the key elements of work. A copy of the presentation materials has been attached hereto. Items to be stressed include the adjacent and active work zones for National Grid completing site remediation work at Tidewater and Fortuitous Developing constructing a soccer stadium. The work requires active coordination amongst the project and interim milestones to complete work ahead of the stadium development.

7. Contract Time: The contract time is 425 calendar days. Milestone 1: Completion of OF-217 outfall pipe, Station 0+00 to 00+80 (March 1, 2022); Milestone 2: Completion of Work on parcels 54//826, 65//662, and 65//645 and Tidewater Street (December 31, 2022). Milestone 2 to be clarified by addendum.

8. Section 01068 Federal and State Requirements: Please reference Section 01068 for referenced State and Federal Requirements mandated by State Revolving Funds (SRF) and Water Infrastructure Finance and Innovation Act (WIFIA): MBE/WBE participation, prevailing wages, and American Iron and Steel (AIS) Requirements.

9. MBE/WBE Participation: The goals for minority and/or women's business enterprise is ten percent of the total dollar value of the work.

10. Addendum 1: Addendum 1 is anticipated next week. Addendum No. 1 to include minutes of this meeting including questions and the results of recently completed supplemental borings.

11. Questions: Questions should be e-mailed to NBC-Bidding@Stantec.com. All questions must be submitted at close of business ten (10) calendar days prior to bid opening.

12. Site Visit: A site visit has been scheduled for August 18, 2021 at 1 pm. An invitation was sent via e-mail to the list of plan holders.

13. National Grid Approved Disposal Facilities – Based on a recent discussion with National Grid, they indicated they have sent material from the Tidewater property to the following facilities on the approved list provided in Appendix C of the Specifications:

- Environmental Soil Management, Inc. (ESMI – Loudon) (Clean Earth)
  67 International Drive
  Loudon, NH 03301
  (603) 783-0228

- Waste Management – Turnkey Landfill
  97 Rochester Neck Road
  Rochester, NH 03867
  (603) 332-2386

- Waste Management Disposal Services of Maine (BDS Waste Disposal, Inc.)
  357 Mercer Road
  Norridgewock, ME 04957
  (207) 634-2714

Response to Questions

Provided below are responses to questions received during the pre-bid meeting.

1. Does the 10% MBE/WBE goal include the allowance items?

   Response: Yes.

2. Does the WIFIA requirements trigger any Disadvantaged Business Enterprise (DBE) requirements?

   Response: The WIFIA DBE requirements are specific to MBE/WBE as defined by the RI Office of Diversity, Equity and Opportunity. Since NBC is receiving funding for this program from both State (SRF) and EPA (WIFIA) loan proceeds, the State requirement of 10% must be met while the EPA percentages are goals.

   Approval by the Office of Diversity, Equity and Opportunity also satisfies the EPA WIFIA program.

3. Is the micro-tunnel soft ground?

   Response: Please see top of rock depicted on plan/profile. The micro-tunneling is mixed face.

4. Is there evidence of groundwater and/or soils contamination?

Response: Yes, please reference Appendix B in Contract Specifications. In addition, National Grid has prepared several reports on the level of contamination on the Tidewater site. See link to project website: TIDEWATER Environmental Project | Former MGP Site (tidewatersite.com).

5. Please clarify and distinguish between pay items 3, 12, and 13.

   Response: Bid Item No. 3 is an allowance to compensate the Contractor for management and disposal of hazardous materials identified during the prosecution of the work. Eligible items for compensation under this allowance include but are not limited to management and disposal of hazardous waste as defined in Specification Section 02075 – Soil Management as "Category 3 soil", and management and disposal of asbestos containing material as defined in Specification Section 02075 – Soil Management as "Category 4 soil". Please note that this allowance applies to hazardous materials generated outside the Tidewater property only. Any excess soil to be disposed that was generated from the Tidewater property shall be paid under Bid Item No. 14.

   Bid Item No. 12 shall be used to compensate the contractor for disposal costs associated with material that exceeds RIDEM R DEC concentrations but is suitable for reuse as alternate daily cover at a non-hazardous solid waste facility, or "Category 1 soil" as defined in Specification Section 02075 – Soil Management. All other costs associated with handling, management, and transporting the soil for disposal shall not be included in this Bid Item but shall be included in Bid Item No. 15.

   Bid Item No. 13 shall be used to compensate the contractor for disposal costs associated with material that is suitable for solid waste disposal at a non-hazardous solid waste facility, or "Category 2 soil" as defined in Specification Section 02075 – Soil Management. All other costs associated with handling, management, and transporting the soil for disposal shall not be included in this Bid Item but shall be included in Bid Item No. 15.

6. Will a copy of the sign-in sheet be made available?

   Response: A copy of the sign-in sheet was distributed to all attendees. A copy of the sign-in sheet has also been attached to the pre-bid meeting minutes.

Provided below are responses to questions posed during the Site Visit which took place on August 18, 2021 @ 1 PM.

1. What are the areas of interaction between National Grid Remediation activities and NBC work areas?

   Response: The work area defined in Contract Drawings will be under control of the Contractor for the completion of the work for the contract durations as defined and/or restricted by milestones and project completion. It is noted that Milestone 1 is defined as a required completion date to allow National Grid to complete capping, bike path construction, and landscaping in the area adjacent to river wall. Additional coordination and shared access points for other areas are defined in Contract Drawings.

2. Will National Grid prepare subgrade to new installed steel bulkhead along the river?

   Response: Yes, National Grid will be completing the grading ahead of the anticipated start date for Contract 308.05C.

3. Please provide records for test pits 320 and 321?

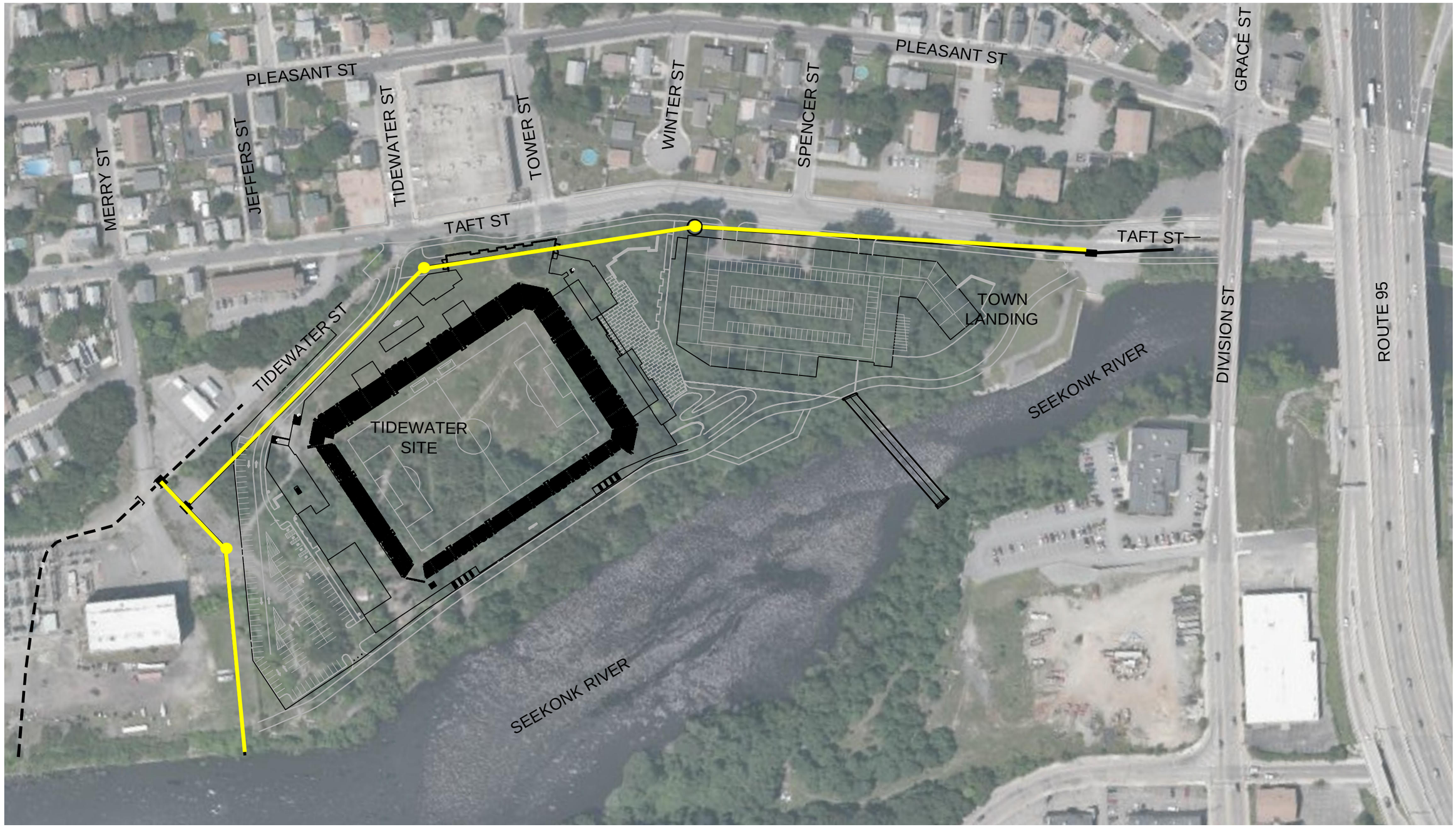
   Response: Test pit 320 is included within Appendix E of Contract Specifications and here for convenience. Test pit 320A and 321 are also provided.

4. What are the environmental acceptance criteria for reuse the materials on-site at Tidewater parcel?

   Response: Materials excavated on-site on Tidewater parcel can be reused and placed under proposed cap to meet the final grading plan. There are not environmental acceptance criteria for this activity. It is noted that some materials will need to be disposed off-site due to geotechnical limitations and suitability for backfill due to excessive moisture content.

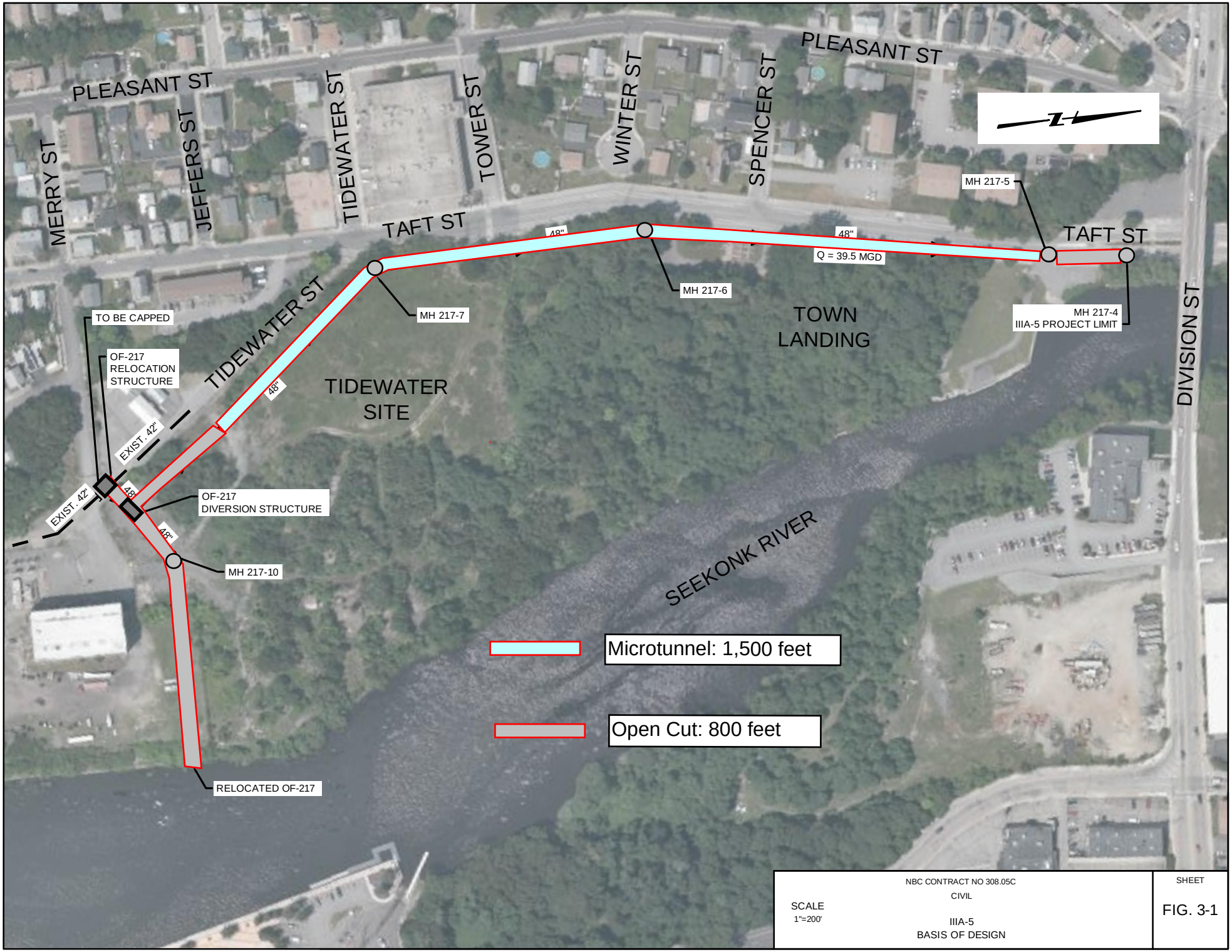
Pre Bid Meeting
CSO Phase IIIA
OF-217 Consolidation Conduit, Contract 308.05C
August 10, 2021

Name	Company	Telephone	Email
Chris Feeney	Stantec	401-214-1738	Christopher.Feeney@Stantec.com
GREG WAUGH	NBC	401 461 8848 x120	GWAUGH@NARRABAY.com
Gerry Lagosso	NBC	401-639-4183	Glagosso@NARRABAY.com
NICK ZOPPO	R. ZOPPO CORP	781-344-8822 &	engineeringassistant@zoppo.com nzoppo@zoppo.com
CARL MURATORE	NORTHEAST REMSCO	646-799-4241	CMURATORE@NORTHEASTREMSCO.COM
Nick Piampiano	Digregorio	401 640 6121	nick@digregoriocorp.com
ARTHUR SCOTTON	"	401-602-3436	ASCOTTON@DIGREGORIOCORP.COM
Anthony Vincenzo	R.P. Iannuccillo & Sons	401-808-2135	avincenzo@rpiannuccillo.com
CHRIS CRONIN	BETA GROUP	401-333-2382	CCRONIN@BETA-INC.COM
Peter Calcagni	Manafort Brothers	401-333-2550	pcalcagni@manafort.com
Tom Day	Barletta	781-737-1733	tday@barlettaco.com



SCALE 1"=80'	NBC CONTRACT NO 308.XXC CIVIL IIIA-5 BASIS OF DISIGN	SHEET FIG. 1

DWG FILE: \\beta-inc.com\nt\ENVIRON\6412 NBC CSO Consolidation Conduits\Drawing Files\Acad - Misc\Alignment\Figure_90%TRANSPARENT.dwg, Monday, February 24, 2020 9:48:59 AM BY: NICK CORVELLO



DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawing Files\Acad - Misc\PAWT_FIG_IIIA-5_BASIS OF DESIGN.dwg PLOT DATE: 12/22/2020 10:49 AM BY: JAIMIE PAYNE

TEST PIT FIELD LOG

GZA GEOENVIRONMENTAL, INC. 530 BROADWAY, PROVIDENCE, RI GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION: Former Tidewater Facility LOCATION: Pawtucket, Rhode Island	TEST PIT NO.: TP-320 FILE NO.: 43654.00 DATE: 6-3-10

EXCAVATION EQUIPMENT

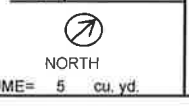
GZA ENGINEER: Sean Connolly	CONTRACTOR: T-Ford OPERATOR: Todd Mandella	DATUM: NGVD 1929 GROUND ELEV.: 16.09
WEATHER:	MAKE: Komatsu MODEL: PC220LC CAPACITY: ± 3 cu. Yds. REACH: ±17 feet	TIME STARTED: 09:50 TIME COMPLETED: 10:30

DEPTH (ft)	ELEVATION (ft)	Field Testing (ppmv)	SOIL DESCRIPTION SW NE	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK NO.
1	15.09	0.3	Brown (10yr 5/3) fine to coarse SAND, some fine to coarse Gravel, little Organics, little Brick (Dry)	M	0	4
2	14.09		Possible Bedrock	M/D	1A	2/3
3	13.09			M/D	2A	
4	12.09	67.6	Black (10yr 2.5/1) fine to coarse SAND, some fine to coarse Gravel, little Coal-like Fragments, little Rock, strong coal tar-like odor, coated-saturated. (Moist-Wet)	M/D	3A	
5	11.09			M/D	3A	1
6	10.09	197		M/D	3A	
7			Refusal @ ± 6' bgs			
8						
9						
10						
11						
12						
13						
14						

REMARKS:

1. GW moderately weeping @ ± 5' bgs in the SW corner of the test pit. Water has coal tar-like impacts.
2. Brick wall in the SW wall of the test pit.
3. Possible bedrock depicted above.
4. Soil samples screened with a 10.6 eV MiniRAE photoionization detector (PID). PID values represent meter response in parts per million/volume air (ppmv) relative to benzene in air and above the background readings. All samples are photo documented. ND=None Detected above background.

TEST PIT PLAN



VOLUME= 5 cu. yd.

LEGEND:

BOULDER SIZE RANGE CLASSIFICATION	COUNT LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" OR LARGER	C

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

EXCAVATION EFFORT	
E	EASY
M	MODERATE
D	DIFFICULT

▽ OBSERVED GROUNDWATER LEVEL

TEST PIT FIELD LOG

GZA GEOENVIRONMENTAL, INC. 530 BROADWAY, PROVIDENCE, RI GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION: Former Tidewater Facility LOCATION: Pawtucket, Rhode Island	TEST PIT NO.: TP-320A FILE NO.: 43654.00 DATE: 6-3-10

EXCAVATION EQUIPMENT

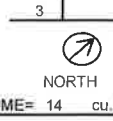
GZA ENGINEER: Sean Connolly	CONTRACTOR: T-Ford OPERATOR: Todd Mandella	DATUM: NGVD 1929 GROUND ELEV.: 16.09
WEATHER: Sunny ~85°F	MAKE: Komatsu MODEL: PC 220LC	TIME STARTED: 10:30
	CAPACITY: ± 3 cu. Yds. REACH: ±17 ft	TIME COMPLETED: 11:30

DEPTH (ft)	ELEVATION (ft)	Field Testing (ppmv)	SOIL DESCRIPTION SW NE	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK NO.
1	15.09	ND	Brown (10yr 5/3) fine to coarse SAND, some fine to coarse Gravel, little Brick, little Organics, trace Silt (Dry)	M	3A/2B	3
2	14.09			M	2A/2B	
3	13.09	ND	Gray-brown (GLEY 1, 6/1) fine to coarse SAND, some fine to coarse Gravel, little Brick (Dry-Moist)	M	2A/2B	
4	12.09			M/D	3A/3B	
5	11.09	172		D	3A/3B	1
6	10.09		See Note 2	D	0	2
7			Refusal @ ± 5'-5.5' bgs. (Possible Bedrock)			
8						
9						
10						
11						
12						
13						
14						

REMARKS:

1. GW moderately weeping in @ ± 4.5' bgs in the NE side of the test pit. GW has petroleum/fuel oil-like impacts.
2. Black (10yr 2.5/1) fine to coarse SAND, little fine to coarse Gravel, strong petroleum/fuel-oil like odor, coated (Wet)
3. Soil samples screened with a 10.6 eV MiniRAE photoionization detector (PID). PID values represent meter response in parts per million/volume air (ppmv) relative to benzene in air and above the background readings. All samples are photo documented. ND=None Detected above background.

TEST PIT PLAN



VOLUME= 14 cu. yd.

LEGEND:

BOULDER SIZE RANGE CLASSIFICATION	COUNT LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" OR LARGER	C

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

EXCAVATION EFFORT	
E	EASY
M	MODERATE
D	DIFFICULT
▽	OBSERVED GROUNDWATER LEVEL

TEST PIT FIELD LOG

GZA GEOENVIRONMENTAL, INC. 530 BROADWAY, PROVIDENCE, RI GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION: Former Tidewater Facility LOCATION: Pawtucket, Rhode Island	TEST PIT NO.: TP-321 FILE NO.: 43654.00 DATE: 6/2/10

EXCAVATION EQUIPMENT

GZA ENGINEER: Sean Connolly	CONTRACTOR: T-Ford OPERATOR: Todd Mandella	DATUM: NGVD 1929 GROUND ELEV.: 20.00
WEATHER: Sunny 90°F	MAKE: Komatsu MODEL: PC220LC CAPACITY: ± 3 cu. Yds. REACH:±17 feet	TIME STARTED: 1059 TIME COMPLETED: 1120

DEPTH (ft)	ELEVATION (ft)	Field Testing (ppmv)	SOIL DESCRIPTION NW SE	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK NO.
1	19.00	ND	Brown (10yr 6/3) fine to coarse SAND, some Organics, little fine to coarse Gravel (Dry) Light brown-brown (10yr 3) fine to coarse SAND, little fine to coarse Gravel, trace	E	0	1/4
2	18.00		Organics (Dry)	E	2A/2B	
3	17.00	ND	Light brown-brown (10yr /3) fine to medium SAND, little fine to coarse Gravel, trace Silt (Dry-Moist)	E	2A/2B	
4	16.00			E	2A/2B	
5	15.00	ND	Light brown-brown-gray (10yr 5/3) fine to coarse SAND, some fine to coarse Gravel (Moist)	E	2A/2B	
6	14.00			E/M	2A/2B	
7	13.00	ND	Brown-yellow/brown (10yr 6/5) fine to coarse SAND and GRAVEL (Moist-Wet)	M/D	3A/3B	2
8	12.00			M/D	5A/5B	3
9	11.00	ND	Brown-yellow/brown (10yr 6/5) fine to coarse GRAVEL and BOULDER, some fine to coarse Sand (Wet)	D	10A/10B	3
10			End of Exploration at ~9' bgs			
11						
12						
13						
14						

REMARKS:

1. Asphault covering part of the area where the test pit was advanced.
2. Slight-moderate groundwater weeping from 6 to 7.5 feet bgs.
3. Heavy groundwater weeping from 7.5 to 9 feet bgs.
4. Soil samples screened with a 10.6 eV MiniRAE photoionization detector (PID). PID values represent meter response in parts per million/volume air (ppmv) relative to benzene in air and above the background readings. All samples are photo documented. ND=None Detected above background.

TEST PIT PLAN

18

3

NORTH

VOLUME= 18 cu. yd.

LEGEND:

BOULDER SIZE RANGE CLASSIFICATION	COUNT LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" OR LARGER	C

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

EXCAVATION EFFORT	
E	EASY
M	MODERATE
D	DIFFICULT
▽	OBSERVED GROUNDWATER LEVEL

ADDENDUM NO. 1, ATTACHMENT 2

Revised Table of Contents

NARRAGANSETT BAY COMMISSION
CSO PHASE IIIA-5
OF-217 CONSOLIDATION CONDUIT
CONTRACT NO. 308.05C

TABLE OF CONTENTS

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ADDENDUM NO. 1, ATTACHMENT 3

Section B - Bid

BID (B)

Bidder's Name _____

To the Narragansett Bay Commission, herein called the Owner, for Construction of CSO Phase IIIA-5, OF-217 Consolidation Conduit, in Pawtucket, Rhode Island.

The Undersigned, as bidder, herein referred to as singular and masculine, declares as follows:

(1) The only parties interested in this BID as Principals are named herein;

(2) this BID is made without collusion with any other person, firm, or corporation;

(3) no officer, agent, or employee of the Owner is directly or indirectly interested in this BID;

(4) he has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and he has carefully read the Specifications and examined the Drawings, and annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

(5) he understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered will be the same as those shown on the Drawings or in any of the other Contract Documents and he agrees that he shall not use or be entitled to use any such information made available to him through the Contract Documents or otherwise or obtained by him in his own examination of the site, as a basis of or ground for any claim against the Owner or the Program Manager arising from or by reason of any variance which may exist between the aforesaid information made available to or acquired by him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and he has made due allowance therefore in this BID;

(6) and he understands that the quantities of work tabulated in this BID or indicated on the Drawings or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Program Manager; and he agrees that, if this BID is accepted he will contract with the Owner, as provided in the copy of the Contract Documents deposited in the office of the Program Manager, this BID form being part of said Contract Documents, and that he will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other necessities required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the Program Manager as therein set forth.

(Note: Bidders must bid on each item. All entries in the entire BID must be made clearly and in ink or be typed; prices bid should be written in both words and figures. In the case of discrepancy the value in words shall govern.)

1.1 BID SCHEDULE

BID ITEM	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	TOTAL COST
1.	Miscellaneous Utility Allowance	ALLOW	1	$200,000.00	$200,000.00
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
2.	Unforeseen Underground Obstruction Allowance	ALLOW	1	$1,000,000.00	$1,000,000.00
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
3.	Hazardous Materials Management / Disposal Allowance	ALLOW	1	$150,000.00	$150,000.00
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
4.	Project Banner Graphics Allowance	ALLOW	1	$10,000.00	$10,000.00
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
5.	Mobilization / Demobilization	LS	1	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				

BID ITEM	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	TOTAL COST
6.	Earth Excavation and Backfill For Test Pits	CY	200	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
7.	Rock Excavation and Disposal	CY	200	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
8.	Additional Gravel Borrow	CY	100	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
9.	Additional Crushed Stone	CY	100	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
10.	Additional Concrete	CY	100	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				

BID ITEM	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	TOTAL COST
11.	Controlled Low Strength Material	CY	100	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
12.	Disposal of Excess Soil - Category #1	TON	1,100	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
13.	Disposal of Excess Soil - Category #2	TON	850	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
14.	Disposal of Tidewater Property Soil	TON	2,300	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				
15.	All Remaining Work	LS	1	_____	_____
	TOTAL PRICE IN WORDS:				
	_____				
	_____				

The Total Amount of this bid, based upon the quantities of materials and labor estimated by the Bidder, (total of Bid Items No. 1 through 15, inclusive), as computed by the Bidder is:

_____ Dollars

and _____ Cents $ _____
(in words) (in figures)

1.2 ADDITIONAL BID PROVISIONS

The undersigned agrees that for extra work, if any, performed in accordance with the provisions of the annexed form of AGREEMENT, he will accept compensation as stipulated therein in full payment for such extra work.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

As provided in the INFORMATION FOR BIDDERS, the bidder hereby agrees that he will not withdraw this BID within 90 calendar days after the actual date of the opening of Bids. If the Owner shall accept this Bid and a Notice of Award accompanied by at least four unsigned copies of the Agreement and all other applicable Contract Documents are delivered to the undersigned within ninety calendar days of the Receipt of Bids, the undersigned will within five days, excluding Saturdays, Sundays, and holidays, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to the Owner. The premiums for all Bonds required shall be paid by the Contractor and shall be included in the Contract Price. The undersigned further agrees that the Bid Security accompanying this Bid shall become the property of the Owner if the Bidder fails to execute the Agreement as stated above.

The undersigned hereby agrees that the Contract Time shall commence upon the date stipulated in a written Notice to Proceed, and that all work required under the Contract shall be completed before the time limit stipulated in Table A of the Agreement.

Delay damages as detailed in Table A of the Agreement shall be imposed upon Bidder for each calendar day of delay in completing all obligations and work required within the time specified.

The bidder shall complete and submit with his bid the pages 1 through 18 inclusive. Failure to submit all bid pages, completed, shall render the bid nonresponsive and result in rejection of the bid.

Bidder acknowledges receipt of the following addendum:
Addendum No. _____ through Addendum No. _____

The bidder, by submittal of this BID, agrees with the Owner that the amount of the bid security deposited with this BID fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the bidder to fulfill his agreements as above provided.

(SEAL)

_____
(Name of Bidder)

By _____
(Signature and title of authorized representative)

_____
(Printed name of authorized representative)

_____
(Business address)

_____
(City and State)

Date_____

The bidder is a corporation incorporated, a partnership or an individual in the State or Commonwealth of _____.

(Note: If the bidder is a corporation, affix corporate seal and give below the names of its president, treasurer, and general manager if any; if a partnership, give full names and residential addresses of all partners; and if an individual, give residential address if different from business addresses.)

The required names and addresses of all persons interested in the foregoing Bid, as Principals, are as follows:

_____

_____

_____

STATEMENT OF BIDDERS QUALIFICATIONS

The following shall accompany the bid and is required as evidence of the bidder's qualifications to perform the work, as bid upon, in accordance with the contract drawings and specifications. This statement must be notarized. All questions must be answered. Additional data may be submitted on separate attached sheets.

1. Name of Bidder _____

2. Permanent Main Office Address _____
_____

3. Official Mailing Address This Contract _____
_____

4. When Organized _____

5. Where Incorporated, If a Corporation _____

6. Years Contracting under Present Name _____

7. List contracts on hand, and those completed similar in nature to this project.

		Work Performed As Contractor			
Owner	Program Manager	Subcontractor	Description of Work	Contract Amount	Date Cmp.

8. List any work the firm has failed to complete, state where and why.

_____

9. If you have ever defaulted on any contract, state where and why.

_____

_____
Name of Bidder

_____
Signature and title of authorized representative

_____
Printed name of authorized representative

_____
Business address

_____
City and State

_____
Date

NOTARIZED

Signed before me on this _____ day of _____, 20_____

Notary Public (seal)

_____

My commission expires _____

CERTIFICATE OF AUTHORIZATION
FOR
BIDDING REPRESENTATIVE

(Note: Bidder must complete for certification of authorized representative signing Bid.)

At a duly authorized meeting of the Board of Directors of the

_____, held on _____ ,
(Name of Corporation) (Date)

at which all the Directors were present or waived notice, it was voted that

_____ _____
(Name of Authorized Representative) (Title)

seal of the company shall be valid and binding upon this company.

A true copy

ATTEST _____
Clerk

Place of business _____

_____

I hereby certify that I am the clerk of the _____
(Name of the Corp.)

_____ , that _____
(Name of Authorized Representative)

the duly elected _____ of said
(Title)

company, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract.

Corporate Seal

.

_____
Clerk

MBE/WBE COMPLIANCE STATEMENT

_____hereby acknowledges (its/my)
(Name of Bidder)

obligation to award a minimum of ten percent (10%) of the dollar value of the entire amount of the bid to minority and/or women's business enterprise and to comply with R.I.G.L. 17-14-1 et seq. and the regulations promulgated thereunder.

By _____
(Signature and title of authorized representative)

_____
(Printed name of authorized representative)

United States Environmental Protection Agency

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work
DBE Certified By: ___ DOT ___SBA ___ Other: _____	Meets/ exceeds EPA certification standards? ___YES ___NO ___Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

EPA FORM 6100-3 (DBE Subcontractor Performance Form)

United States Environmental Protection Agency

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Performance Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

Subcontractor Signature	**Print**
Title	**Date**

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

EPA FORM 6100-3 (DBE Subcontractor Performance Form)

OMB Control No: 2090-0030

Approved: 8/13/2013

United States Environmental Protection Agency

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	__ YES	O
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	**Company Address/ Phone/ Email**	**Est. Dollar Amt**	**Currently DBE Certified**

1 A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

2 Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

EPA FORM 6100-4 (DBE Subcontractor Utilization Form)

OMB Control No: 2090-0030

Approved: 8/13/2013

United States Environmental Protection Agency

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Utilization Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

EPA FORM 6100-4 (DBE Subcontractor Utilization Form)

CERTIFICATION REGARDING DEBARMENT & SUSPENSION AND OTHER RESPONSIBILITY MATTERS

In accordance with the Executive Order 12549, the prospective primary participant certifies to the best of his / her knowledge and belief, that its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offence in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement,
theft, forgery, bribery, falsification or destruction or records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification.

d. Have not within a three-year period preceding this application / proposal had one or more public transactions (federal, state, or local) terminated for cause of default.

e. Acknowledge that all sub-contractors selected for this project must be in compliance with paragraphs (1) (a – d) of this certification.

_____ _____
Name and Title of Authorized Agent Date

_____
Signature of Authorized Agent

_____ I am unable to certify to the above statements. My explanation is attached.

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ADDENDUM NO. 1, ATTACHMENT 4

Section CA – Contract Agreement, Table A

TABLE A

AGREEMENT SUBSECTION	ITEM	LIMITS
§8.3	Contract	Contract Time, as defined in the Contract Agreement Article 1.2.l, shall be on or before 425 consecutive calendar days from date stipulated in the Notice-to-Proceed to commence "Work".
	Milestone 1: Completion of OF-217 Outfall - Station 0+00 to 0+80 (Sheet C-7)	Completion by March 1, 2022
	Milestone 2: ***Completion of Consolidation Conduit Station 8+00 to Station 18+87.83 including all structures and appurtenances and Outfall Station 0+80 to 4+45.88 including all structures and appurtenances. (Sheet C-5 thru C-8, S-1 thru S-5, and E-1, E-2)***	Completion by December 31, 2022
§8.5	Delay Damages	
	Milestone 1:	***All costs associated with surface restoration and remediation cap restoration in all areas impacted by the outfall installation work.***
	Milestone 2:	***$2,500.00 per calendar day***
	Project:	***$2,500.00 per calendar day***
§4.3	Percentage of Progress Estimates to be Retained	5% Until Substantial Completion; 0.5% plus Punch List through one year after the Completion Date
§4.3	Amount of Minimum Progress Estimates	$10,000.00

ADDENDUM NO. 1, ATTACHMENT 5

Appendix J – 2021 Supplemental Geotechnical Data Package

Memorandum

To:	Christopher R. Cronin, PE BETA Group, Inc.	Project:	NBC Phase III CSO Program IIIA-5 Consolidation Conduits
From:	Tennyson M. Muindi, PE McMillen Jacobs Associates	cc:	File
Prepared by:	Katherine R. O'Hara McMillen Jacobs Associates	Job No.:	5980
Date:	August 17, 2021 (Rev. No. 1)		
Subject:	2021 Supplemental Geotechnical Data Package		

1.0 Introduction

This memorandum presents a summary of the supplemental subsurface investigation program that was conducted by McMillen Jacobs Associates (McMillen Jacobs) for the Narraganset Bay Commission (NBC) Phase III Combined Sewer Overflow (CSO) Consolidation Conduits IIIA-5 Project located in Pawtucket, Rhode Island. This work was performed under our Subconsultant Agreement with BETA Group, Inc (BETA), dated 5 March 2019 and subsequent Amendment No. 1, dated 21 July 2021.

The specific objective of the investigatory work was to conduct supplemental geotechnical subsurface explorations and a laboratory testing program to acquire data on engineering characteristics and properties of the subsurface materials along the IIIA-5 microtunneling alignment and at shafts MH217-6 and MH217-7.

In accordance with the referenced contract, McMillen Jacobs completed the following tasks:

- Provided on site supervision during drilling of the subsurface explorations.
- Arranged for and contracted with a geotechnical testing laboratory (GeoTesting Express, of Acton, Massachusetts) to perform geotechnical rock testing on selected samples obtained from the test borings.
- Compiled, prepared, and submitted this geotechnical data package that documents the results of the subsurface investigation program.

2.0 Investigation Program

Four (4) geotechnical test borings were performed by Geologic Earth Exploration, Inc. (Geologic), Norwood, MA, during the period of 20 July to 28 July 2021 under the on-site supervision by McMillen Jacobs personnel. As drilled survey locations and ground surface elevations were provided by BETA (refer to Table A.1 in Attachment A).

Test borings were designated B-14 through B-17 and were terminated at depths ranging from 39 to 53.5 feet below existing ground surface. Vacuum excavation was performed to a depth ranging from about 4 to 5 feet at test boring and groundwater observation well locations to mitigate the potential for damaging any unidentified existing utilities. Soil and rock samples were obtained using techniques and equipment in general accordance with the American Society for Testing and Materials (ASTM) Standard Specifications. Three (3) groundwater observation wells were installed in offset boreholes adjacent to B-14, B-16, and B-17.

A program of geotechnical laboratory testing was performed on selected rock samples collected during the exploration program. Laboratory testing was performed in generally accordance with ASTM Standard Specifications and included two (2) unconfined compression strength (UCS) tests, two (2) Brazilian tensile strength (splitting tensile strength) tests, one (1) Cerchar Abrasivity Index (CAI) test.

Attached are the following items:

Attachment	**Description**
Attachment A	Test Boring Logs
Attachment B	Rock Core Photos
Attachment C	Groundwater Monitoring Well Installation Logs
Attachment D	Geotechnical Laboratory Test Results

ATTACHMENTS

ATTACHMENT A
Test Boring Logs

SOIL

Soil description on logs of subsurface explorations are based on Standard Penetration Test (SPT) results, visual-manual examination of exposed soil samples, and the results of laboratory tests on selected samples. The criteria, descriptive terms, and definitions are presented herein.
The natural soils are identified and described by visual-manual procedures (ASTM D2488) and in accordance with the United Soil Classification System (USCS) (ASTM D2487) as practiced by McMillen Jacobs Associates. Fill materials may not be classified by USCS criteria.

PENETRATION RESISTANCE

Standard penetration resistance (SPT) (ASTM D1586) - Number of blows required to drive a standard 2 in. O.D. split spoon sampler one foot with a 140 lb. weight falling 30 inches freely downward.

DENSITY / CONSISTENCY

Coarse - Grained Soils	
Apparent Density	SPT Resistance, N (BPF)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

Fine - Grained Soils	
Apparent Consistency	SPT Resistance, N (BPF)
Very Soft	0 - 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	>30

Notes: BPF = Blows Per Foot (uncorrected)

WOR = Weight of Rod

COLOR

Basic colors (black, brown, gray, olive, red, and yellow) and combinations (i.e. gray-brown, olive-brown, olive-gray, red-gray, red-brown, yellow-brown, and red-yellow). Modifiers such as light and dark may be used.

SUPPLEMENTAL SOIL DESCRIPTIONS AND STRUCTURE:

Laminating	- 0 to 1/16 in. thick (cohesive)
Parting	- 0 to 1/16 in. thick (granular)
Seam	- 1/16 to 1/2 in. thick
Layer	- 1/2 to 12 in. thick
Stratum	- > 12 in. thick
Pocket	- Small, erratic deposit less than 12 in. size
Lens	- Lenticular deposit larger than a pocket
Occasional	- One or less per 12 in. of thickness
Frequent	- More than one per 12 in. of thickness
Interbedded	- Alternating soil layers of differing composition
Varved	- Alternating thin seams of silt and clay
Mottled	- Variation of color

SAMPLE SYMBOLS

- SPT Sample 2 in. OD
- X SPT Sample 3 in. OD
- Shelby Tube Sample

ADDITIONAL GRAPHIC DESCRIPTIONS

- Asphalt
- Fill

SOIL IDENTIFICATION AND DESCRIPTION

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS Based on ASTM D2488 & D2487)

MAJOR DIVISIONS			GROUP/SYMBOL	TYPICAL DESCRIPTION
COARSE-GRAINED SOILS (50% or more retained on No. 200 sieve)	GRAVELS (more than 50% retained on No. 4 sieve)	CLEAN GRAVELS (less than 5% fines)	GW	WELL-GRADED GRAVEL
			GP	POORLY GRADED GRAVEL
		GRAVELS (with 5 to 12% fines)	GW-GM	WELL-GRADED GRAVEL WITH SILT
			GW-GC	WELL-GRADED GRAVEL WITH CLAY
			GP-GM	POORLY GRADED GRAVEL WITH SILT
			GP-GC	POORLY GRADED GRAVEL WITH CLAY
		GRAVELS WITH FINES (more than 12% fines)	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SANDS (less than 50% retained on No. 4 sieve)	CLEAN SANDS (less than 5% fines)	SW	WELL-GRADED SAND
			SP	POORLY GRADED SAND
		SANDS (with 5 to 12% fines)	SW-SM	WELL-GRADED SAND WITH SILT
			SW-SC	WELL-GRADED SAND WITH CLAY
			SP-SM	POORLY GRADED SAND WITH SILT
			SP-SC	POORLY GRADED SAND WITH CLAY
		SANDS WITH FINES (more than 12% fines)	SM	SILTY SAND
			SC	CLAYEY SAND
FINE-GRAINED SOILS (50% or more passes No. 200 sieve)	SILTS & CLAYS (liquid limit less than 50)	INORGANIC	ML	SILT
			CL	LEAN CLAY
		ORGANIC	OL	LOW PLASTICITY ORGANIC CLAY
	SILTS & CLAYS (liquid limit greater than 50)	INORGANIC	MH	ELASTIC SILT
			CH	FAT CLAY
		ORGANIC	OH	HIGH PLASTICITY ORGANIC CLAY
	SILT/CLAY (liquid limit between 12 and 25)	INORGANIC	CL-ML	CLAYEY SILT / SILTY CLAY
HIGHLY ORGANIC SOILS	PRIMARILY ORGANIC MATTER		PT	PEAT

Notes:

1. Dual symbols (symbols separated by a hyphen, e.g. SP-SM, slightly silty fine SAND) are used for soils between 5% and 12% fines or when liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.

ROCK

Rock descriptions noted on logs of subsurface explorations are based on visual-manual examination of exposed rock outcrops and core samples. The criteria, descriptive terms and definitions used are as follows:

FIELD HARDNESS / STRENGTH

(after ISRM, 1978; CGS, 1985; Marinos & Hoek, 2001)

Extremely Strong	Cannot be scratched with a knife point or sharp pick; can only be chipped with repeated heavy hammer blows.
Very Strong	Cannot be scratched with a knife point or sharp pick; core breaks with repeated heavy hammer blows.
Strong	Can be scratched with a knife or pick; core breaks with heavy hammer blow.
Moderately Weak	Can be grooved 1/16 in. deep by knife or sharp pick; core breaks with light hammer blow.
Weak	Can be grooved easily with a knife or pick; can be scratched with fingernail; core breaks with light pressure.
Very Weak	Can be readily indented; grooved with fingernail or carved with a knife; core beaks with light pressure.

WEATHERING (after ISRM, 1978)

The action of organic and inorganic chemical and physical processes resulting in alteration of color, texture, and composition

Fresh	No visible sign of alteration, except perhaps slight discoloration on major discontinuity surfaces
Slight	Discoloration of rock material and discontinuity surfaces
Moderate	Less than half the rock material decomposed to soil. Some fresh rock; continuous "framework".
High	More than half the rock material decomposed and/or disintegrated to soil.
Completely	All rock material disintegrated to soil, but mass still intact
Residual Soil	All rock material converted to soil. Material has not been significantly transported.

COLOR:

Basic colors and combinations: gray, light gray, brown, red-brown

TEXTURE

Size, shape and arrangements of constituents

Aphantic	Individual grains invisible
Fine-grained	Grains barely visible to the unaided eye, up to 1/16 in. dia.
Medium Grained	Grains between 1/16 and 3/16 in. dia.
Coarse Grained	Grains between 3/16 and 1/4 in. dia.
Very Coarse Grained	Grains larger than 1/4 in. dia.

LITHOLOGY

Rock Classification and modifiers; accepted formation names

DISCONTINUITIES:

Type	Definition
Joint	A natural fracture along which no displacement has occurred. May occur in parallel groups called sets.
Shear	A natural fracture along which displacement has occurred. Surface may be slickensided or striated.
Fault	A natural fracture along which displacement has occurred. Usually lined with gouge and slickensides.
Shear or Fault Zone	Zone of fractured rock and gouge bordering the displacement plane.

ORIENTATION / ATTITUDE

Term	Angle (degrees)
Horizontal	0-5
Low Angle	6-35
Moderately Dipping	36-55
High Angle	56-85
Vertical	86-100

SPACING

Term	Inches
Extremely Close	<3/4
Very Close	3/4 - 2-1/2
Close	2-1/2 - 8
Moderate	8 - 24
Wide	24 - 80
Very Wide	80- 20 ft.
Extremely Wide	> 20 ft.

ROUGHNESS OF DISCONTINUITY SURFACE

Term	Abbreviation	Description
Very Rough	VR	Near-vertical steps and ridges
Rough	R	Ridges, side-steps, and asperities evident; abrasive to the touch
Slightly Rough	SR	Asperities can be felt.
Smooth	SM	Smooth to the touch
Slickensided	SL	Smooth glossy finish with visible striations

APERTURE/GAP

Term	MM
Very Tight	< .1
Tight	0.1 - 0.25
Partly Open	0.25 - 0.5
Open	0.5 - 2.5
Moderately Wide	2.5 - 10
Wide	> 10
Very Wide	10 - 100
Extremely Wide	100 - 1000
Cavernous	> 1000

INFILLING

Material	Abbreviation
Clay	CL
Silt	SI
Sand	SA
Serpentine	SE
Sulfide	SL
Calcite	CA
Pyrite	PY
Quartz	QZ
Chlorite	CH
Iron Oxide Staining	FE
Could not be determined	X

BEDDING

Term	Inches	Term	Inches
Very Thin	< 2.5	Thick	25-36
Thin	2.5 - 8	Very Thick	< 36
Medium	9 - 24		

GENERAL NOTES:

1. Logs of subsurface exploration depict soil, rock and groundwater conditions only at the boring locations specified on the dates indicated. Subsurface conditions may vary at other locations and at other times.
2. Water levels, where noted on the logs, were measured at the times under the conditions indicated. During test boring drilling, these water levels could have been affected by the introduction of water in to the borehole, extraction of tools or other procedures and thus may not reflect actual groundwater levels at the test boring location. Groundwater level fluctuations may also occur as a results of variations in precipitation, temperature, season, tides, river stage, adjacent construction operations, construction dewatering systems, water supply well pumping, and other conditions.

McMILLEN JACOBS ASSOCIATES

SUBSURFACE EXPLORATION KEY

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-14

Date(s) Drilled: **07/27/2021 - 07/28/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **45.0 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **27.5 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359514.39E,287201.73N**	Elevation Source: **Field Survey**	

ELEV. (ft)	WATER LEVEL	DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
									Vacuum excavated from about 0 to 4 ft (FILL)	
23		5	4-6	S-1	12/24	3-3-4-6 (N=7)	ML		Moist, medium stiff, gray SILT (ALLUVIUM)	PID = 0
			6-8	S-2	20/24	3-8-7-8 (N=15)	SM		Moist, medium dense, brown, fine SAND, some silt (ALLUVIUM)	PID = 0
18		10	9-11	S-3	2/24	8-9-8-5 (N=17)	ML		Moist, very stiff, brown SILT (ALLUVIUM)	PID = 0
			11-13	S-4	12/24	3-4-3-5 (N=7)	SM		Moist, loose, brown, fine SAND, some silt (ALLUVIUM)	PID = 0
13	▽	15	14-16	S-5	16/24	4-5-14-13 (N=19)	SP		Moist, medium dense, coarse to fine SAND, little fine gravel (GLACIOFLUVIAL)	PID = 0
8			18-20	S-6	10/24	21-14-10-8 (N=24)	GP		Moist, medium dense, brown, coarse to fine GRAVEL, some sand, trace silt (GLACIOFLUVIAL)	PID = 0

McMILLEN JACOBS ASSOCIATES

▽ - Water Level at Time of Drilling

Boring B-14

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-14

Date(s) Drilled: **07/27/2021 - 07/28/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **45.0 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **27.5 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359514.39E,287201.73N**	Elevation Source: **Field Survey**	

ELEV. (ft) / WATER LEVEL / DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
	20-22	S-7	8/24	13-10-9-8 (N=19)	GP		Moist, medium dense, brown, coarse to fine GRAVEL, some sand (GLACIOFLUVIAL)	PID = 0
	22-24	S-8	12/24	16-12-17-16 (N=29)	GP		Moist, medium dense, brown, coarse to fine GRAVEL, some sand, trace silt (GLACIAL TILL)	PID = 0
-3 / 25	24-24.75	S-9	9/9	15-65/3" (N=65/3")	GP		Moist, very dense, brown, coarse to fine GRAVEL (GLACIAL TILL)	Refusal at 26 ft
-2 / 30							Top of Bedrock at 26.0 ft. See Core Boring Report for rock details.	
-7 / 35								
-12								

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▽ - Water Level at Time of Drilling

Boring B-14

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-14

Date(s) Drilled: **07/27/2021 - 07/28/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **45.0 ft**	
Borehole Diameter: **4.00 in**	Core Barrel Type / Size: **NX / 2 in**	Ground Surface Elevation/Datum: **27.5 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359514.39E,287201.73N**	Elevation Source **Field Survey**	

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DEPTH (FT)	DISCONTINUITIES					
											TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
3	25								See Test Boring Report for Overburden Details							
		26-31	2 3 3 2		C-1	42/ 70%	7/ 12%		Very weak to moderately strong, highly weathered, gray, medium grained SANDSTONE to purple, fine grained SILTSTONE. Discontinuities: 10-20 degrees, smooth to rough, slightly weathered, iron staining, and silt infill.							
-2																

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Boring B-14

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-14

Date(s) Drilled: **07/27/2021 - 07/28/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **45.0 ft**	
Borehole Diameter: **4.00 in**	Core Barrel Type / Size: **NX / 2 in**	Ground Surface Elevation/Datum: **27.5 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359514.39E,287201.73N**	Elevation Source **Field Survey**	

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DISCONTINUITIES DEPTH (FT)	TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
		26-31	2		C-1	42/ 70%	7/ 12%									
			2							31.5	J	60	SL	9.00	SL	FE
										32.0	J	60	SR	1.00	SL	FE
										32.2	J	10	R	2.50	SL	FE
			4							32.4	HJ	0				CA
										32.5	J	60	SR	1.00	SL	FE
										32.7	J	60	SR	1.00	SL	FE
										32.8	J	50	R	1.00	SL	FE
		31-36	5		C-2	57/ 95%	38/ 63%		Strong, slightly weathered, dark gray to purple, fine grained SILTSTONE	33.3	J	70	R	2.50	SL	FE
										33.8	HJ	0				CA
										33.9	HJ	0	SR	9.00	MW	CA
			5							34.1	J	70				FE
-7										34.5	J	70	SR	9.00	MW	FE
	35		5													
			4													
			5													
		36-39.5			C-3	42/ 100%	0/ 0%		Completely weathered, purple, fine grained SILTSTONE							
			6													
-12			7													

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Boring B-14

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-14

Date(s) Drilled:	07/27/2021 - 07/28/2021	Geotechnical Consultant:	McMillen Jacobs Associates	Logged By:	M. MacInnis	Checked By:	K. O'Hara
Drilling Method/ Rig Type:	Mud Rotary/CME 45	Drilling Contractor:	Geologic Earth Exploration, Inc.	Total Depth of Borehole:	45.0 ft		
Borehole Diameter:	4.00 in	Core Barrel Type / Size:	NX / 2 in	Ground Surface Elevation/Datum:	27.5 ft / NGVD 1929		
Location:	Taft Street	Coordinates:	359514.39E,287201.73N	Elevation Source	Field Survey		

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DISCONTINUITIES DEPTH (FT)	TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
			2							40.2	J	60	SM	0.50	SL	CA
										40.4	MB	70	R	0.50	FR	
										40.6	HJ	0				CA
										40.8	HJ	0				CA
			4							41.0	J	60	SR	0.50	SL	
										41.2	J	40	R	2.50	SL	
										41.4	J	60	SM	1.00	SL	
										41.8	J	60	SM	1.00	SL	
										42.2	HJ	30				CA
		40-45	4		C-4	55/ 92%	42/ 70%		Strong, fresh, purple, fine grained SILTSTONE	42.4	HJ	30				CA
										42.8	MB	50	SM	1.00	FR	
										42.8	J	10	R	2.50	SL	
			4							43.2	J	50	SM	1.00	SL	
										43.3	J	50	SM	1.00	SL	
										43.8	J	40	SM	1.00	SL	
										43.8	J	40	SM	1.00	SL	
-17			2							43.9	J	40	SM	2.50	SL	
	45								Bottom of borehole at 45.0 ft.							
-22																

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Boring B-14

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-15

Date(s) Drilled: **07/23/2021 - 07/26/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **53.5 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **38.1 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359561.84E,286954.23N**	Elevation Source: **Field Survey**	

ELEV. (ft)	WATER LEVEL DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
								Vacuum excavated from about 0 to 4 ft (FILL)	
34	5	4-6	S-1	12/24	6-13-16-14 (N=29)	SP		Moist, medium dense, brown, coarse to fine SAND, little gravel (FILL)	PID = 0
		6-8	S-2	21/24	19-17-14-9 (N=31)	GP		Moist, dense, brown, coarse to fine GRAVEL, some sand (FILL)	PID = 0
29	10	9-11	S-3	12/24	10-6-7-9 (N=13)	SP		Moist, medium dense, brown, coarse to fine SAND with gravel grading to stiff, brown SILT (GLACIOFLUVIAL)	PID = 0
24	15	14-16	S-4	12/24	15-21-21-17 (N=42)	GP		Moist, dense, brown, coarse to fine GRAVEL, some sand, trace silt (GLACIOFLUVIAL)	
19								Moist, dense, brown, coarse to fine GRAVEL, some sand (GLACIOFLUVIAL)	

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▽ - Water Level at Time of Drilling

Boring B-15

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-15

Date(s) Drilled: **07/23/2021 - 07/26/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **53.5 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **38.1 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359561.84E,286954.23N**	Elevation Source: **Field Survey**	

ELEV. (ft) / WATER LEVEL / DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
	19-21	S-5	9/24	13-14-12-13 (N=26)	GP		Moist, dense, brown, coarse to fine GRAVEL, some sand (GLACIOFLUVIAL)	
14	24-26	S-6	18/24	3-9-10-18 (N=19)	SM		Moist, medium dense, brown, silty fine SAND, trace gravel (GLACIAL TILL)	
25	26-28	S-7	24/24	24-55-54-100 (N=109)	GM		Moist, very dense, brown, coarse to fine, silty GRAVEL, some sand, rock fragments (GLACIAL TILL)	
	28-28.12	S-8	2/2	50/2" (N=50/2")				
9	30-31	S-9	12/12	26-23-50/0" (N=50/0")	GM		Moist, very dense, brown, coarse to fine, silty GRAVEL, some sand, rock fragments (GLACIAL TILL)	water loss during drilling
30	32-33.25	S-10	16/15	105-123-133/3" (Refusal)			Completely weathered bedrock (DECOMPOSED ROCK)	Refusal at 33.5 ft
4							Top of Bedrock at 33.5 ft. See Core Boring Report for rock details.	
35								
-1								

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▽ - Water Level at Time of Drilling

Boring B-15

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-15

Date(s) Drilled: **07/23/2021 - 07/26/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **53.5 ft**	
Borehole Diameter: **4.00 in**	Core Barrel Type / Size: **NX / 2 in**	Ground Surface Elevation/Datum: **38.1 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359561.84E,286954.23N**	Elevation Source **Field Survey**	

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DEPTH (FT)	DISCONTINUITIES TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
									See Test Boring Report for Overburden Details							
4			2							34.1	J	10	R	2.50	SL	FE
	35		3													
										35.6	J	70	SR	1.00	SL	FE
		33.5-38.5	3		C-1	55/ 92%	24/ 40%		Moderately weak, moderately weathered, dark gray, fine grained SILTSTONE	36.3	HJ	0	R	2.50	MW	CA
										36.4	J	60				SI
										36.7	J	10	R	1.00	SL	FE
			2							37.0	J	10	R	2.50	SL	FE
										37.3	J	90	SM	1.00	SL	SI
										37.4	J	10	SR	1.00	MW	FE
										37.7	J	10	R	1.00	MW	
			4							38.1	J	10	R	1.00	SL	SI
										38.7	J	80	SR	1.00	SL	
-1		38.5-43.5	2		C-2	57/ 95%	43/ 72%		Strong, slightly weathered, fine grained SILTSTONE	39.2	J	70	SR	1.00	SL	CA
										39.2	HJ	20				CA
										39.4	HJ	20				CA
										39.6	HJ	20				CA

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Boring B-15

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-15

Date(s) Drilled: **07/23/2021 - 07/26/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **53.5 ft**	
Borehole Diameter: **4.00 in**	Core Barrel Type / Size: **NX / 2 in**	Ground Surface Elevation/Datum: **38.1 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359561.84E,286954.23N**	Elevation Source **Field Survey**	

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DISCONTINUITIES DEPTH (FT)	TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
			2							39.7	HJ	20				CA
										39.8	HJ	30				CA
										39.9	HJ	30				CA
			2							40.1	HJ	10	R	9.00	SL	CA
										40.2	HJ	30				FE
										40.7	J	20				CA
										40.9	HJ	30				
		38.5-43.5	2		C-2	57/ 95%	43/ 72%		Strong, slightly weathered, fine grained SILTSTONE	41.7	J	30	R	9.00	MW	FE
										41.9	HJ	20				CA
										42.1	J	10	R		SL	FE
										42.2	J	70	S		SL	
			3							42.8	J	70	S	1.00	SL	
-6			1						Very weak, completely weathered fine grained SILTSTONE							
	45		2						Moderately weak to strong, slightly weathered, dark gray, fine grained SILTSTONE	44.8	J	0	R	2.50	SL	SI
		43.5-48.5	2		C-3	60/ 100%	44/ 73%			45.8	J	70	SM	9.00	SL	SI
										46.1	J	20	R	2.50	SL	SI
			2							46.5	J	30	R	2.50	SL	SI
										46.8	J	10	R	2.50	SL	SI
			3							47.6	J	60	SR	1.00	SL	
										48.1	J	60	SR	1.00	SL	
-11		48.5-53.5	4		C-4	50/ 83%	17/ 28%		Very weak, highly weathered, fine grained SILTSTONE	48.7	HJ	20				CA
										48.9	HJ	20				CA

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Boring B-15

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-15

Date(s) Drilled:	07/23/2021 - 07/26/2021	Geotechnical Consultant:	McMillen Jacobs Associates	Logged By:	M. MacInnis	Checked By:	K. O'Hara
Drilling Method/ Rig Type:	Mud Rotary/CME 45	Drilling Contractor:	Geologic Earth Exploration, Inc.	Total Depth of Borehole:	53.5 ft		
Borehole Diameter:	4.00 in	Core Barrel Type / Size:	NX / 2 in	Ground Surface Elevation/Datum:	38.1 ft / NGVD 1929		
Location:	Taft Street	Coordinates:	359561.84E,286954.23N	Elevation Source	Field Survey		

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DEPTH (FT)	DISCONTINUITIES TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
			3						Very weak, highly weathered, fine grained SILTSTONE							
			3							50.8	J	30	R	2.50	SL	SI
										51.2	J	60	SR	1.00	SL	SI
		48.5-53.5	2		C-4	50/ 83%	17/ 28%		Strong, slightly weathered, dark gray, fine grained SILTSTONE. Discontinuity depths are approximate.	52.1	J	60	SR	1.00	SL	SI
			2							52.6	J	50	SR	1.00	SL	SI
-16									Bottom of borehole at 53.5 ft.							
	55															
-21																

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Boring B-15

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-16

Date(s) Drilled	07/22/2021 - 07/23/2021	Geotechnical Consultant	McMillen Jacobs Associates	Logged By	M. MacInnis	Checked By	K. O'Hara
Drilling Method/ Rig Type	Mud Rotary/CME 45	Drilling Contractor	Geologic Earth Exploration, Inc.	Total Depth of Borehole	52.0 ft		
Borehole Diameter/ Sampler Diameter	4.00 in I.D. / 2 & 3 in I.D.	Hammer Weight/Drop (lb/in.)/Type	140 lb / 30 in / Automatic	Ground Surface Elevation/Datum	38.9 ft / NGVD 1929		
Location	Taft Street	Coordinates	359562.59E,286745.02N	Elevation Source	Field Survey		

ELEV. (ft)	WATER LEVEL DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
								Vacuum excavated from about 0 to 4 ft (FILL)	
34	5	4-6	S-1	10/24	9-18-26-16 (N=44)	SP		Moist, dense, brown, coarse to fine SAND, some gravel (FILL)	PID = 0
		6-8	S-2	18/24	18-14-16-16 (N=30)	SM		Moist, dense, brown, silty fine SAND (ALLUVIUM)	PID = 0
29	10	9-11	S-3	21/24	7-5-4-6 (N=9)	ML		Wet, stiff, brown SILT (ALLUVIUM)	PID = 0
24	15	14-16	S-4	8/24	25-29-32-50 (N=61)	GP		Moist, very dense, brown, coarse to fine GRAVEL, some SAND, rock fragments (GLACIOFLUVIAL)	PID = 0
								Moist, very dense, brown, coarse to fine GRAVEL, some SAND (GLACIOFLUVIAL)	

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▽ - Water Level at Time of Drilling

Boring B-16

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-16

Date(s) Drilled: **07/22/2021 - 07/23/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **52.0 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **38.9 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359562.59E,286745.02N**	Elevation Source: **Field Survey**	

ELEV. (ft)	WATER LEVEL	DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
	▽		19-21	S-5	10/24	18-11-12-13 (N=23)	GP		Moist, very dense, brown, coarse to fine GRAVEL, some SAND (GLACIOFLUVIAL)	PID = 0
14		25	24-26	S-6	18/24	15-41-36-31 (N=77)	GM		Moist, very dense, brown, coarse to fine, silty GRAVEL, little sand (GLACIAL TILL)	PID = 0
9		30	29-31	S-7	17/24	20-28-23-29 (N=51)	GM		Moist, very dense, brown, coarse to fine, silty GRAVEL, little sand, rock fragments (GLACIAL TILL)	possible boulder at 28 ft
			31-33	S-8	24/24	52-51-94-124 (N=145)	GM		Moist, very dense, brown, coarse to fine, silty GRAVEL, little sand, rock fragments (GLACIAL TILL)	PID = 0
4		35	33-33.75	S-9	9/9	34-100/3" (N=100)	GM		Moist, very dense, brown, coarse to fine, silty GRAVEL, little sand, rock fragments (GLACIAL TILL)	Refusal at 37 ft
									Top of Bedrock at 37.0 ft. See Core Boring Report for rock details.	

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▽ - Water Level at Time of Drilling

Boring B-16

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-16

Date(s) Drilled: **07/22/2021 - 07/23/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **52.0 ft**	
Borehole Diameter: **4.00 in**	Core Barrel Type / Size: **NX / 2 in**	Ground Surface Elevation/Datum: **38.9 ft / NGVD 1929**	
Location: **Taft Street**	Coordinates: **359562.59E,286745.02N**	Elevation Source **Field Survey**	

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DEPTH (FT)	DISCONTINUITIES TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
									See Test Boring Report for Overburden Details							
4	35															
		37-42	3		C-1	60/ 100%	56/ 93%		Strong, slightly weathered, gray to purple, fine grained SILTSTONE	37.7	HJ	90				CA
										37.9	J	60	SM	1.00	SL	
			2							38.3	J	20	SR	2.50	SL	
										38.9	J	20	SM	2.50	SL	
			3													
-1										39.8	J	50	SR	1.00	SL	

McMILLEN JACOBS ASSOCIATES

Boring B-16

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-16

Date(s) Drilled:	07/22/2021 - 07/23/2021	Geotechnical Consultant:	McMillen Jacobs Associates	Logged By:	M. MacInnis	Checked By:	K. O'Hara
Drilling Method/ Rig Type:	Mud Rotary/CME 45	Drilling Contractor:	Geologic Earth Exploration, Inc.	Total Depth of Borehole:	52.0 ft		
Borehole Diameter:	4.00 in	Core Barrel Type / Size:	NX / 2 in	Ground Surface Elevation/Datum:	38.9 ft / NGVD 1929		
Location:	Taft Street	Coordinates:	359562.59E,286745.02N	Elevation Source	Field Survey		

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DISCONTINUITIES						
										DEPTH (FT)	TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
		37-42	3		C-1	60/ 100%	56/ 93%		Strong, slightly weathered, gray to purple, fine grained SILTSTONE	39.9	J	60	SM	1.00	SL	
										40.1	J	60	SR	1.00	SL	CA
										40.3	HJ	60				
										40.8	S	60	SL	1.00	SL	CA
										40.9	S	60	SL	0.50	SL	CA
										41.1	HJ	70				CA
			3							41.3	HJ	60				CA
										41.6	S	60	SL	0.50	SL	
		42-47	3		C-2	57/ 95%	51/ 84%		Strong, slightly weathered, purple, fine grained SILTSTONE	42.7	J	60	SM	0.50	SL	
										42.8	J	60	SM	0.50	SL	
			2													
			2							44.2	J	60	SM	0.50	SL	
										44.3	J	60	SM	0.50	SL	
										44.4	J	60	SL	1.00	SL	
-6										44.8	J	10	R	1.00	SL	
	45									44.9	J	30	R	1.00	SL	
			2							45.7	S	70	SL	0.50	SL	CA
			2							46.2	J	50	SR	0.50	SL	
		47-52	2		C-3	60/ 100%	42/ 70%		Strong, slightly weathered, purple to gray, fine grained SILTSTONE. Two zones of fine grained SANDSTONE approx. 6-in and 18-in thick.	47.2	J	50	SM	0.50	SL	
										47.6	J	40	SM	0.50	SL	
			2							48.2	HJ	20				CA
										48.9	HJ	20				CA
										49.1	J	50	SR	1.50	SL	
			2							49.6	J	40	SM	0.50	SL	
-11																

McMILLEN JACOBS ASSOCIATES

Boring B-16

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-16

Date(s) Drilled:	07/22/2021 - 07/23/2021	Geotechnical Consultant:	McMillen Jacobs Associates	Logged By:	M. MacInnis	Checked By:	K. O'Hara
Drilling Method/ Rig Type:	Mud Rotary/CME 45	Drilling Contractor:	Geologic Earth Exploration, Inc.	Total Depth of Borehole:	52.0 ft		
Borehole Diameter:	4.00 in	Core Barrel Type / Size:	NX / 2 in	Ground Surface Elevation/Datum:	38.9 ft / NGVD 1929		
Location:	Taft Street	Coordinates:	359562.59E,286745.02N	Elevation Source	Field Survey		

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DISCONTINUITIES DEPTH (FT)	TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
		47-52	3		C-3	60/ 100%	42/ 70%		Strong, slightly weathered, purple to gray, fine grained SILTSTONE. Two zones of fine grained SANDSTONE approx. 6-in and 18-in thick.	50.1	HJ	30				CA
										50.2	HJ	30	SR	1.00	SL	CA
										50.3	J	40	SR	1.00	SL	
										50.5	J	40	SR	1.00	SL	
										50.6	J	60				
			4							51.2	J	60	SM	1.00	SL	
										51.5	J	60	SM	0.50	SL	PY
										51.6	J	60	SR	1.00	SL	
										51.6	J	40	SR	1.00	SL	PY
-16	55								Bottom of borehole at 52.0 ft.	51.8	J	60	SR	0.50	SL	
										51.9	J	60	SR	0.50	SL	
-21																

McMILLEN JACOBS ASSOCIATES

Boring B-16

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-17

Date(s) Drilled: **07/20/2021 - 07/21/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **39.0 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **24.6 ft / NGVD 1929**	
Location: **Tidewater Site**	Coordinates: **359691.55E,286290.88N**	Elevation Source: **Field Survey**	

ELEV. (ft)	WATER LEVEL	DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
20		5							Vacuum excavated from about 0 to 5 ft (FILL)	
			5-7	S-1	16/24	14-20-100 (Refusal)	SP		Wood fragments grading to moist, very dense, brown, coarse to fine SAND, some gravel (FILL)	PID = 0
15	▽	10	9-11	S-2	0/24	18-13-15-16 (N=28)			No Recovery (FILL)	
10		15	14-16	S-3	6/24	7-8-8-8 (N=16)	SP		Moist, medium dense, brown, coarse to fine SAND, trace gravel (GLACIOFLUVIAL)	PID = 0
			16-18	S-4	16/24	7-9-7-8 (N=16)	SP		Moist, medium dense, brown, coarse to fine SAND, trace gravel (GLACIOFLUVIAL)	PID > 1
5			18-20	S-5	12/24	6-83-22-22 (N=105)	SM		Moist, very dense, brown, silty SAND, rock fragments (GLACIAL TILL)	PID = 0

McMILLEN JACOBS ASSOCIATES

▽ - Water Level at Time of Drilling

Boring B-17

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Boring B-17

Date(s) Drilled: **07/20/2021 - 07/21/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **39.0 ft**	
Borehole Diameter/ Sampler Diameter: **4.00 in I.D. / 2 & 3 in I.D.**	Hammer Weight/Drop (lb/in.)/Type: **140 lb / 30 in / Automatic**	Ground Surface Elevation/Datum: **24.6 ft / NGVD 1929**	
Location: **Tidewater Site**	Coordinates: **359691.55E,286290.88N**	Elevation Source: **Field Survey**	

ELEV. (ft) / WATER LEVEL / DEPTH (ft)	SAMPLE DEPTH (ft)	SAMPLE NUMBER	REC (in)/ PEN (in)	BLOW COUNTS	USCS	USCS GRAPHIC	MATERIAL DESCRIPTION	REMARKS AND TESTS
	20-22	S-6	12/24	12-39-63-43 (N=102)	SM		Moist, very dense, brown, silty SAND, rock fragments (GLACIAL TILL)	PID = 0
	22-24	S-7	20/24	29-35-17-16 (N=52)	SP		Moist, very dense, brown, coarse to fine SAND, some fine gravel, trace silt (GLACIAL TILL)	PID = 0
0 / 25	24-26	S-8	8/24	18-10-18-15 (N=28)	GP		Moist, medium dense, sandy GRAVEL, rock fragments (GLACIAL TILL)	PID = 5
-5 / 30							Top of Bedrock at 29.0 ft. See Core Boring Report for rock details.	Refusal at 29ft
-10 / 35								
-15								

McMILLEN JACOBS ASSOCIATES

▽ - Water Level at Time of Drilling

Boring B-17

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-17

Date(s) Drilled: **07/20/2021 - 07/21/2021**	Geotechnical Consultant: **McMillen Jacobs Associates**	Logged By: **M. MacInnis**	Checked By: **K. O'Hara**
Drilling Method/ Rig Type: **Mud Rotary/CME 45**	Drilling Contractor: **Geologic Earth Exploration, Inc.**	Total Depth of Borehole: **39.0 ft**	
Borehole Diameter: **4.00 in**	Core Barrel Type / Size: **NX / 2 in**	Ground Surface Elevation/Datum: **24.6 ft / NGVD 1929**	
Location: **Tidewater Site**	Coordinates: **359691.55E,286290.88N**	Elevation Source **Field Survey**	

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DEPTH (FT)	DISCONTINUITIES TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
0	25								See Test Boring Report for Overburden Details							
-5		29-34	3		C-1	58/ 97%	38/ 63%		Strong, slightly weathered, dark gray, fine grained SILTSTONE	29.8	J	30	SR	0.50	FR	

McMILLEN JACOBS ASSOCIATES

Boring B-17

Project: NBC CSO Phase III A-4 and III A-5 Consolidation Conduits
Project Location: Pawtucket, RI
Project Number: 5980.0

Core Boring B-17

Date(s) Drilled:	07/20/2021 - 07/21/2021	Geotechnical Consultant:	McMillen Jacobs Associates	Logged By:	M. MacInnis	Checked By:	K. O'Hara
Drilling Method/ Rig Type:	Mud Rotary/CME 45	Drilling Contractor:	Geologic Earth Exploration, Inc.	Total Depth of Borehole:	39.0 ft		
Borehole Diameter:	4.00 in	Core Barrel Type / Size:	NX / 2 in	Ground Surface Elevation/Datum:	24.6 ft / NGVD 1929		
Location:	Tidewater Site	Coordinates:	359691.55E,286290.88N	Elevation Source	Field Survey		

ELEV. (FT)	DEPTH (FT)	SAMPLE DEPTH (ft)	DRILL RATE (FT/MIN)	BOX #	RUN #	RECOVERY (in/%)	RQD (in/%)	ROCK TYPE	MATERIAL DESCRIPTION	DISCONTINUITIES DEPTH (FT)	TYPE	DIP	RGH	APT (mm)	WEATHERING	INFILL
		29-34	3		C-1	58/ 97%	38/ 63%		Strong, slightly weathered, dark gray, fine grained SILTSTONE	29.9	J	30	SL	0.50	SL	
										30.1	J	20	SM	0.50	SL	
										30.2	J	20	SR	0.50	SL	
										30.4	J	20	SM	0.50	SL	
										30.8	J	30	SM	1.00	SL	
			3							30.9	J	30	SL	1.00	SL	
										31.4	J	30	SL	2.50	SL	SI
										31.5	J	10	SR	2.50	SL	
										31.8	J	10	SR	2.50	SL	
			3													
			3							33.4	J	30	SR	1.00	SL	
										33.7	J	30	SR	1.00	SL	SI
										33.8	J	30	SM	1.00	SL	SI
-10	35	34-39	2		C-2	60/ 100%	48/ 80%		Strong, fresh, dark gray, fine grained SILTSTONE. Two zones of medium grained SANDSTONE approx. 6-in thick.	34.8	J	25	VR	1.00	SL	
										35.1	J	40	SR	1.00	SL	
			3							35.3	J	25	R	2.50	SL	
										35.6	J	40	SR	1.00	SL	
			3							36.2	J	40	SR	0.50	SL	CA
										36.2	HJ	80				
										36.6	HJ	80				CA
			2							37.1	J	40	SM	2.50	SL	
										37.2	J	40	SL	10.0 0	SL	
			3							38.6	J	30	SR	0.50	SL	
										38.7	J	30	SR	0.50	SL	
-15									Bottom of borehole at 39.0 ft.							

McMILLEN JACOBS ASSOCIATES

Boring B-17

Table A.1. Summary of Supplemental Test Borings

Boring ID	Northing	Easting	Ground Surface Elevation	Station (Offset)
B-14	287201.73	359514.39	27.53	3+13 (10.0 ft right)
B-15	286954.23	359561.84	38.07	5+64 (18.5 ft left)
B-16	286745.02	359562.59	38.86	7+72 (3.0 ft left)
B-17	286290.88	359691.55	24.61	12+45 (1.5 ft left)

Notes:

1. This table provided by BETA via email dated 8/16/2021.
2. Horizontal coordinates projected to Rhode Island Mainland State Plane, North American Datum (NAD) 1983.
3. Elevations referenced to the National Geodetic Vertical Datum (NGVD) 1929, in feet.
4. Right offset = right of centerline, looking up station. Left offset = left of centerline, looking up station.

ATTACHMENT B
Rock Core Photos

CORE PHOTOS

McMILLEN JACOBS ASSOCIATES	**Test Boring B-15, Run C-3 & C-4 (43.5 ft to 53.5 ft)** **Test Boring B-14, Run C-1 & C-2 (26 ft to 36 ft)**	**Project**	NBC Phase III CSO Program IIIA-5 Consolidation Conduits		
		Date	8/13/2021	**Figure**	B.1

CORE PHOTOS

McMILLEN JACOBS ASSOCIATES	**Test Boring B-14, Run C-3 & C-4 (36 ft to 46 ft)**	**Project**	NBC Phase III CSO Program IIIA-5 Consolidation Conduits		
		Date	8/13/2021	**Figure**	B.2

CORE PHOTOS

McMILLEN JACOBS ASSOCIATES	**Test Boring B-16, Run C-1 & C-2 (42 ft to 52 ft)** **Test Boring B-15, Run C-1 & C-2 (33.5 ft to 43.5 ft)**	**Project**	NBC Phase III CSO Program IIIA-5 Consolidation Conduits		
		Date	8/13/2021	**Figure**	B.3

CORE PHOTOS

McMILLEN JACOBS ASSOCIATES	**Test Boring B-17, Run C-1 & C-2 (29 ft to 39 ft)** **Test Boring B-16, Run C-1 (37 ft to 47 ft)**	**Project**	NBC Phase III CSO Program IIIA-5 Consolidation Conduits		
		Date	8/13/2021	**Figure**	B.4

ATTACHMENT C
Groundwater Observation Well Installation Logs

OBSERVATION WELL INSTALLATION LOG

McMILLEN JACOBS ASSOCIATES

Well No. B-14 (OW)
Boring No. B-14

PROJECT	NBC Phase III CSO Program IIIA5 Consolidation Conduit	**FILE NO.**	5980
LOCATION	Pawtucket, RI	**PROJECT MGR.**	T. Muindi
CLIENT	NBC	**FIELD REP.**	M. MacInnis
CONTRACTOR	Geologic Earth Exploration, Inc.	**DATE INSTALLED**	7/28/2021
DRILLER	Paul Fisher	**WATER LEVEL**	15 ft bgs

Ground El.	27.14 ft	**Location**	Taft St	☐	**Guard Pipe**
El. Datum	NVGD 29			☑	**Roadway Box**

SOIL/ROCK CONDITIONS

0-15': Silt

15-24': Gravel and Sand

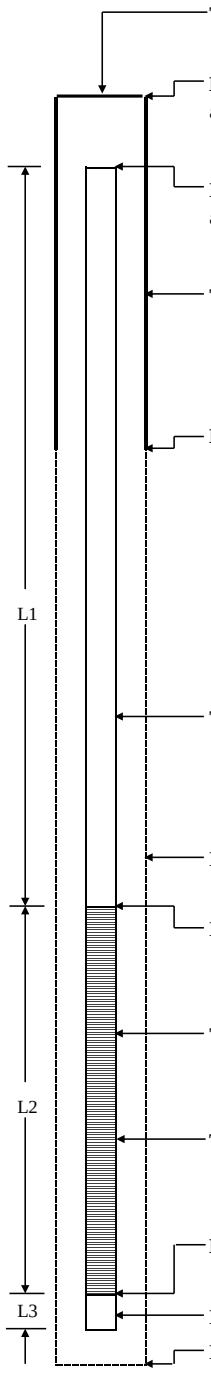
(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

BOREHOLE BACKFILL

0-10': Drill Cuttings and Holliston Sand

10-12': Bentonite Seal

12-24': Holliston Sand



Type of protective cover/lock	Roadway Box	
Height of top of guard pipe above the ground surface	0	ft
Height of top of riser pipe above the ground surface	0	ft
Type of protective casing:	Roadway Box	
Length	0.5	ft
Inside Diameter	6.0	in
Depth of bottom of guard pipe/roadway box	0.5	ft

Type of Seals	**Top of Seal (ft)**	**Thickness (ft)**
Bentonite	10.0	2.0

Type of riser pipe:	Solid PVC	
Inside diameter of riser pipe	2.0	in
Type of backfill around riser	Holliston Sand	
Diameter of borehole	4.0	in
Depth to top of well screen	14.0	ft
Type of screen	Slotted PVC Schedule 40	
Screen gauge or size of openings	0.01	in
Diameter of screen	2.0	in
Type of backfill around screen	Holliston Sand	
Depth of bottom of well screen	24.0	ft
Bottom of Silt trap	-	ft
Depth of bottom of borehole	24.0	ft

(Not to Scale)

ft	ft	ft	ft
Riser Pay Length (L1)	+ Length of screen (L2)	+ Length of silt trap (L3)	= Pay length

COMMENTS:

OBSERVATION WELL INSTALLATION LOG

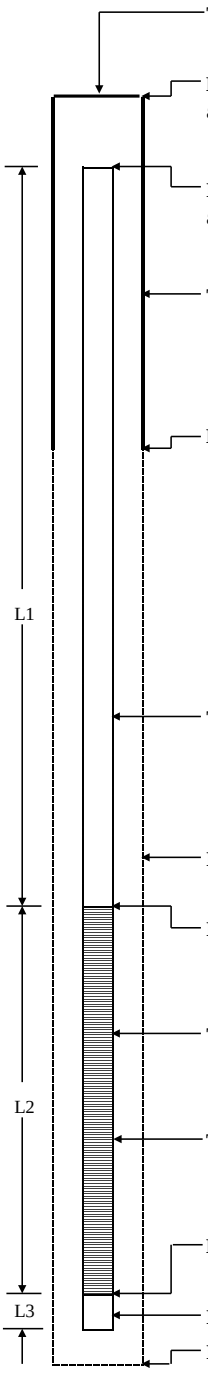
McMILLEN JACOBS ASSOCIATES

Well No. B-16 (OW)
Boring No. B-16

PROJECT	NBC Phase III CSO Program IIIA5 Consolidation Conduit	**FILE NO.**	5980
LOCATION	Pawtucket, RI	**PROJECT MGR.**	T. Muindi
CLIENT	NBC	**FIELD REP.**	M. MacInnis
CONTRACTOR	Geologic Earth Exploration, Inc.	**DATE INSTALLED**	7/23/2021
DRILLER	Paul Fisher	**WATER LEVEL**	22 ft bgs

Ground El.	38.86 ft	**Location**	South Entry to Taft St Community Garden	☐	**Guard Pipe**
El. Datum	NVGD 29			☑	**Roadway Box**

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL
0-6': Fill - Sand, some gravel	0-21': Drill Cuttings and Holliston Sand
6-14': Fine silty Sand to Silt	
14-34': Gravel and Sand	21-23': Bentonite Seal
	23-34': Holliston Sand



Type of protective cover/lock	Roadway Box	
Height of top of guard pipe above the ground surface	0	ft
Height of top of riser pipe above the ground surface	0	ft
Type of protective casing:	Roadway Box	
Length	0.5	ft
Inside Diameter	6.0	in
Depth of bottom of guard pipe/roadway box	0.5	ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Bentonite	21.0	2.0

Type of riser pipe:	Solid PVC	
Inside diameter of riser pipe	2.0	in
Type of backfill around riser	Holliston Sand	
Diameter of borehole	4.0	in
Depth to top of well screen	24.0	ft
Type of screen	Slotted PVC Schedule 40	
Screen gauge or size of openings	0.01	in
Diameter of screen	2.0	in
Type of backfill around screen	Holliston Sand	
Depth of bottom of well screen	34.0	ft
Bottom of Silt trap	-	ft
Depth of bottom of borehole	34.0	ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

	ft	+	ft	+	ft	=	ft
	Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS:

OBSERVATION WELL INSTALLATION LOG

McMILLEN JACOBS ASSOCIATES

Well No. B-17 (OW)
Boring No. B-17

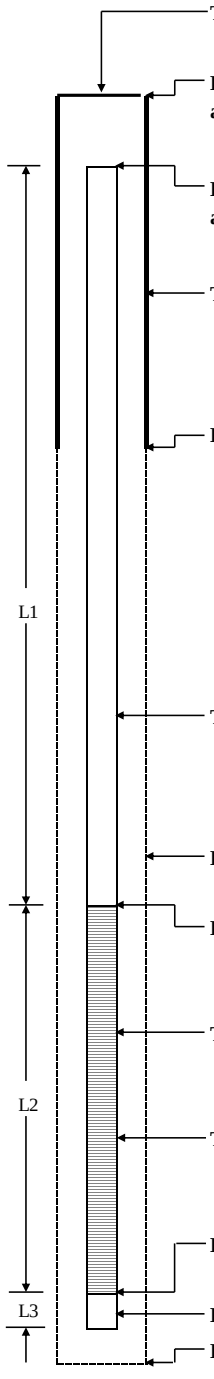
PROJECT	NBC Phase III Consolidation Conduits IIIA-4 and IIIA-5	**FILE NO.**	5980
LOCATION	Pawtucket, RI	**PROJECT MGR.**	T. Muindi
CLIENT	NBC	**FIELD REP.**	M. MacInnis
CONTRACTOR	Geologic Earth Exploration, Inc.	**DATE INSTALLED**	7/21/2021
DRILLER	Paul Fisher	**WATER LEVEL**	11.5 ft bgs

Ground El. 27.6 ft
El. Datum NVGD 29

Location Across Taft St. from charter school on Tidewater Site.

☑ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL
0-14': Fill - Sand, some gravel	0-8': Drill Cuttings and Holliston Sand
	8-9': Bentonite Seal
11-20': Silty Sand, some gravel	9-20': Holliston Sand



Type of protective cover/lock: Guard Pipe with Lock

Height of top of guard pipe above the ground surface: 3 ft

Height of top of riser pipe above the ground surface: 2.5 ft

Type of protective casing: Guard Pipe
- **Length:** 5.0 ft
- **Inside Diameter:** 4.0 in

Depth of bottom of guard pipe/roadway box: 2.5 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Bentonite	8.0	1.0

Type of riser pipe: Solid PVC
- **Inside diameter of riser pipe:** 2.0 in
- **Type of backfill around riser:** Holliston Sand

Diameter of borehole: 4.0 in

Depth to top of well screen: 10.0 ft

Type of screen: Slotted PVC Schedule 40
- **Screen gauge or size of openings:** 0.01 in
- **Diameter of screen:** 2.0 in

Type of backfill around screen: Holliston Sand

Depth of bottom of well screen: 20.0 ft

Bottom of Silt trap: - ft

Depth of bottom of borehole: 20.0 ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

Riser Pay Length (L1)	+	Length of screen (L2)	+	Length of silt trap (L3)	=	Pay length
ft		ft		ft		ft

COMMENTS:

ATTACHMENT D
Geotechnical Laboratory Test Results

GeoTesting EXPRESS

Client:	McMillen Jacobs Associates				
Project:	NBC CSO Ph. III: IIIA-5 Consol. Conduit				
Location:	Providence, RI			Project No:	GTX-314104
Boring ID:	B-15	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	C-1	Test Date:	08/10/21	Checked By:	smd
Depth :	35-35.5	Test Id:	628170		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-15	C-1	35.12-35.22 ft	1	0.6	0.3	0.45	
			2	0.6	0.2	0.40	
			3	0.7	0.5	0.60	
			4	0.5	0.2	0.35	
			5	0.1	0.5	0.30	
			Average CAIs			0.42	
			Average CAI *			0.90	
CERCHAR Abrasiveness Index Classification						**Low abrasiveness**	

Notes

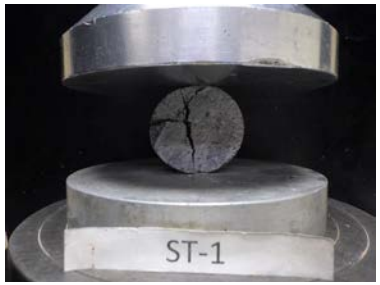
Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:

GeoTesting EXPRESS

Client:	McMillen Jacobs Associates				
Project:	NBC CSO Ph. III: IIIA-5 Consol. Conduit				
Location:	Providence, RI			Project No:	GTX-314104
Boring ID:	B-14	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	C-1	Test Date:	08/12/21	Checked By:	smd
Depth :	27.8-28.2	Test Id:	628166		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
27.84-27.94 ft	ST-1	0.94	1.99	0.47	2,971	1,010	3



Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

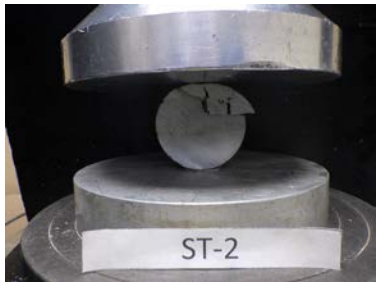
Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

GeoTesting EXPRESS

Client:	McMillen Jacobs Associates				
Project:	NBC CSO Ph. III: IIIA-5 Consol. Conduit				
Location:	Providence, RI			Project No:	GTX-314104
Boring ID:	B-15	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	C-1	Test Date:	08/12/21	Checked By:	smd
Depth :	34-34.8	Test Id:	628167		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
34-34.8 ft	ST-2	0.98	1.98	0.49	1,065	351	3



Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

Client:	McMillen Jacobs Associates				
Project:	NBC CSO Ph. III: IIIA-5 Consol. Conduit				
Location:	Providence, RI			Project No:	GTX-314104
Boring ID:	---	Sample Type:	---	Tested By:	tlm
Sample ID:	---	Test Date:	08/10/21	Checked By:	smd
Depth :	---	Test Id:	628169		

Bulk Density and Compressive Strength of Rock Core Specimens by ASTM D7012 Method C

Boring ID	Sample Number	Depth	Bulk Density, pcf	Compressive strength, psi	Failure Type	Meets ASTM D4543	Note(s)
B-15	C-1	34-34.8 ft	173	2515	3	No	2,*
B-16	C-1	31.98-32.35 ft	173	1797	3	Yes	---

Notes: Density determined on core samples by measuring dimensions and weight and then calculating.

All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.

The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

1: Best effort end preparation. See Tolerance report for details.
2: The as-received core did not meet the ASTM side straightness tolerance due to irregularities in the sample as cored.
3: Specimen L/D < 2.
4: The as-received core did not meet the ASTM minimum diameter tolerance of 1.875 inches.
5: Specimen diameter is less than 10 times maximum particle size.
6: Specimen diameter is less than 6 times maximum particle size.

*Because the indicated tested specimens did not meet the ASTM D4543 standard tolerances, the results reported here may differ from those for a test specimen within tolerances.

Client:	McMillen Jacobs Associates	Test Date:	8/10/2021
Project Name:	NBC CSO Ph. III: IIIA-5 Consol. Conduit	Tested By:	kdp
Project Location:	Providence, RI	Checked By:	smd
GTX #:	314104		
Boring ID:	B-15		
Sample ID:	C-1		
Depth:	34-34.8 ft		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	4.39	4.39	4.39
Specimen Diameter, in:	1.97	1.97	1.97
Specimen Mass, g:	609.4		
Bulk Density, lb/ft^3	173	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? NO

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? NO

END FLATNESS AND PARALLELISM (Procedure FP1)

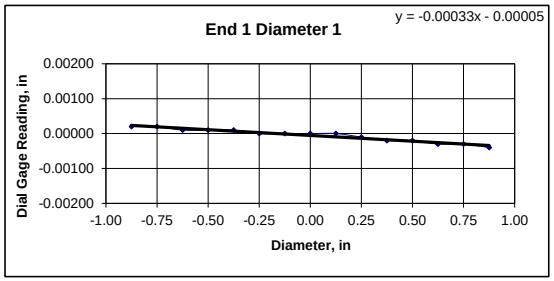
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00020	0.00020	0.00010	0.00010	0.00010	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00020	-0.00020	-0.00030	-0.00030	-0.00040
Diameter 2, in (rotated 90°)	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

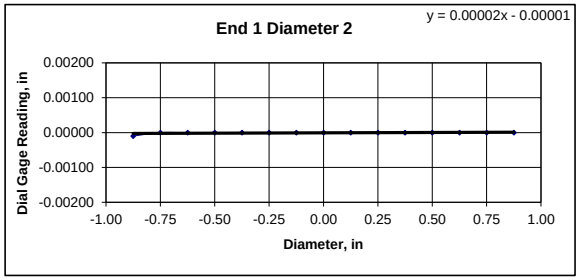
Difference between max and min readings, in:
0° = 0.00060 90° = 0.00010

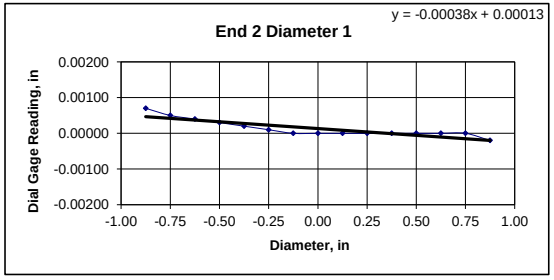
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00070	0.00050	0.00040	0.00030	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00020
Diameter 2, in (rotated 90°)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010

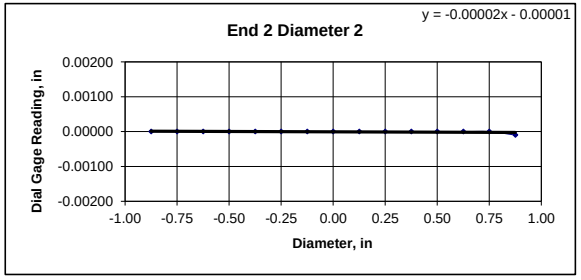
Difference between max and min readings, in:
0° = 0.0009 90° = 0.0001

Maximum difference must be < 0.0020 in. Difference = ± 0.00045
Flatness Tolerance Met? YES









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00033
Angle of Best Fit Line: 0.01883

End 2:
Slope of Best Fit Line 0.00038
Angle of Best Fit Line: 0.02177

Maximum Angular Difference: 0.00295

Parallelism Tolerance Met? YES
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00002
Angle of Best Fit Line: 0.00115

End 2:
Slope of Best Fit Line 0.00002
Angle of Best Fit Line: 0.00115

Maximum Angular Difference: 0.00000

Parallelism Tolerance Met? YES
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00060	1.970	0.00030	0.017	YES
Diameter 2, in (rotated 90°)	0.00010	1.970	0.00005	0.003	YES
END 2					
Diameter 1, in	0.00090	1.970	0.00046	0.026	YES
Diameter 2, in (rotated 90°)	0.00010	1.970	0.00005	0.003	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

Client:	McMillen Jacobs Associates
Project Name:	NBC CSO Ph. III: IIIA-5 Consol. Conduit
Project Location:	Providence, RI
GTX #:	314104
Test Date:	8/10/2021
Tested By:	kdp
Checked By:	smd
Boring ID:	B-15
Sample ID:	C-1
Depth, ft:	34-34.8

After cutting and grinding

After break

Client:	McMillen Jacobs Associates	Test Date:	8/10/2021
Project Name:	NBC CSO Ph. III: IIIA-5 Consol. Conduit	Tested By:	kdp
Project Location:	Providence, RI	Checked By:	smd
GTX #:	314104		
Boring ID:	B-16		
Sample ID:	C-1		
Depth:	31.98-32.35 ft		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	4.30	4.30	4.30
Specimen Diameter, in:	1.98	1.98	1.98
Specimen Mass, g:	603.73		
Bulk Density, lb/ft^3	173	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

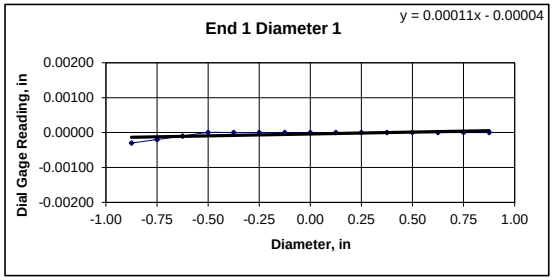
END FLATNESS AND PARALLELISM (Procedure FP1)

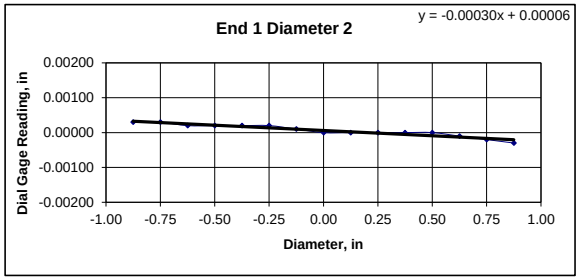
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Diameter 2, in (rotated 90°)	0.00030	0.00030	0.00020	0.00020	0.00020	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00020	-0.00030

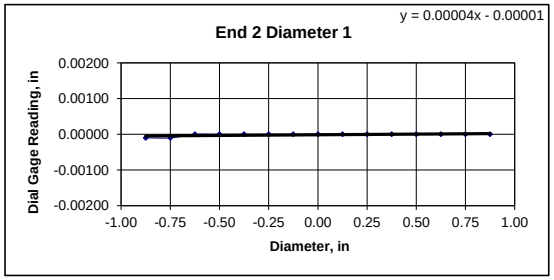
Difference between max and min readings, in:
0° = 0.00030 90° = 0.00060

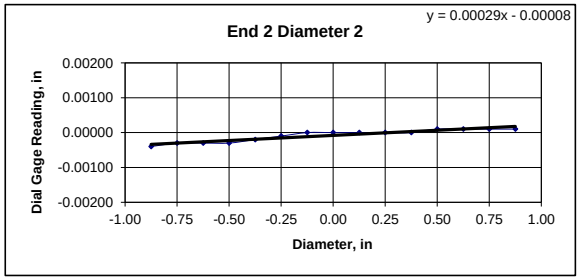
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Diameter 2, in (rotated 90°)	-0.00040	-0.00030	-0.00030	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00010	0.00010	0.00010

Difference between max and min readings, in:
0° = 0.0001 90° = 0.0005
Maximum difference must be < 0.0020 in. Difference = ± 0.00030
Flatness Tolerance Met? YES









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00011
Angle of Best Fit Line: 0.00622

End 2:
Slope of Best Fit Line 0.00004
Angle of Best Fit Line: 0.00213

Maximum Angular Difference: 0.00409

Parallelism Tolerance Met? YES
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00030
Angle of Best Fit Line: 0.01735

End 2:
Slope of Best Fit Line 0.00029
Angle of Best Fit Line: 0.01686

Maximum Angular Difference: 0.00049

Parallelism Tolerance Met? YES
Spherically Seated

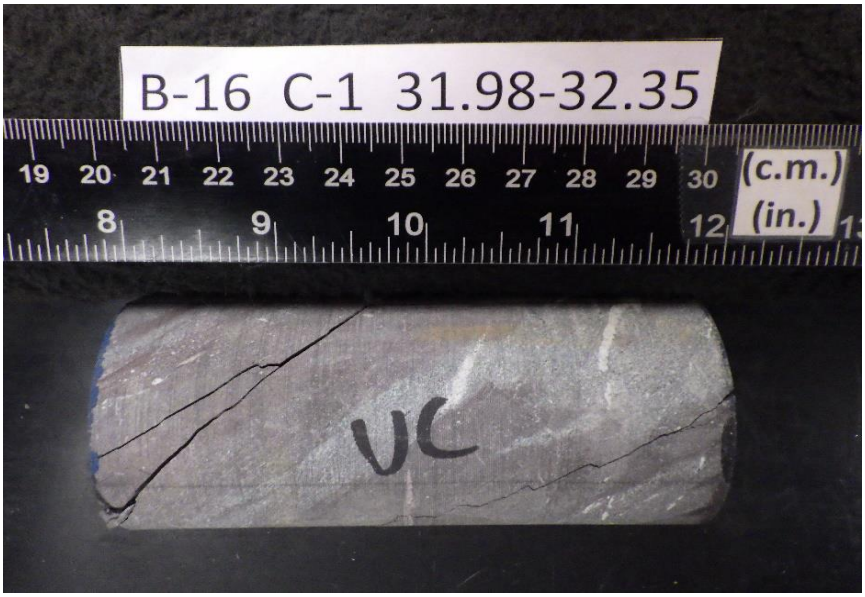
PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00030	1.980	0.00015	0.009	YES
Diameter 2, in (rotated 90°)	0.00060	1.980	0.00030	0.017	YES
END 2					
Diameter 1, in	0.00010	1.980	0.00005	0.003	YES
Diameter 2, in (rotated 90°)	0.00050	1.980	0.00025	0.014	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

Client:	McMillen Jacobs Associates
Project Name:	NBC CSO Ph. III: IIIA-5 Consol. Conduit
Project Location:	Providence, RI
GTX #:	314104
Test Date:	8/10/2021
Tested By:	kdp
Checked By:	smd
Boring ID:	B-16
Sample ID:	C-1
Depth, ft:	31.98-32.35

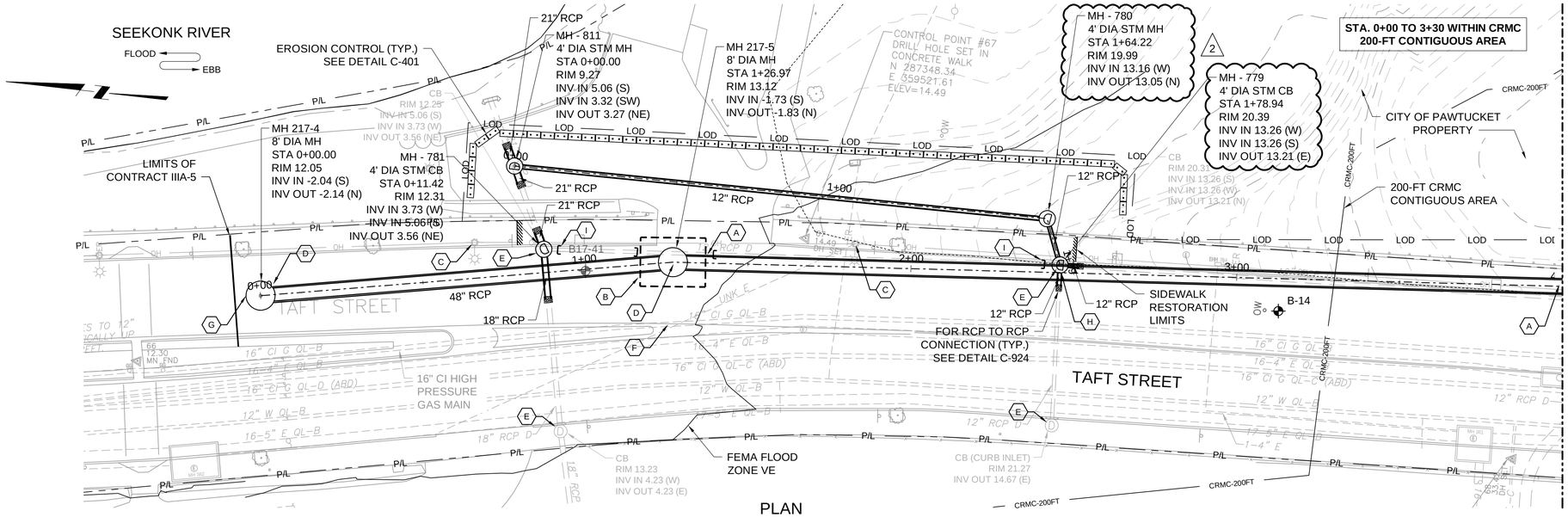
After cutting and grinding



After break

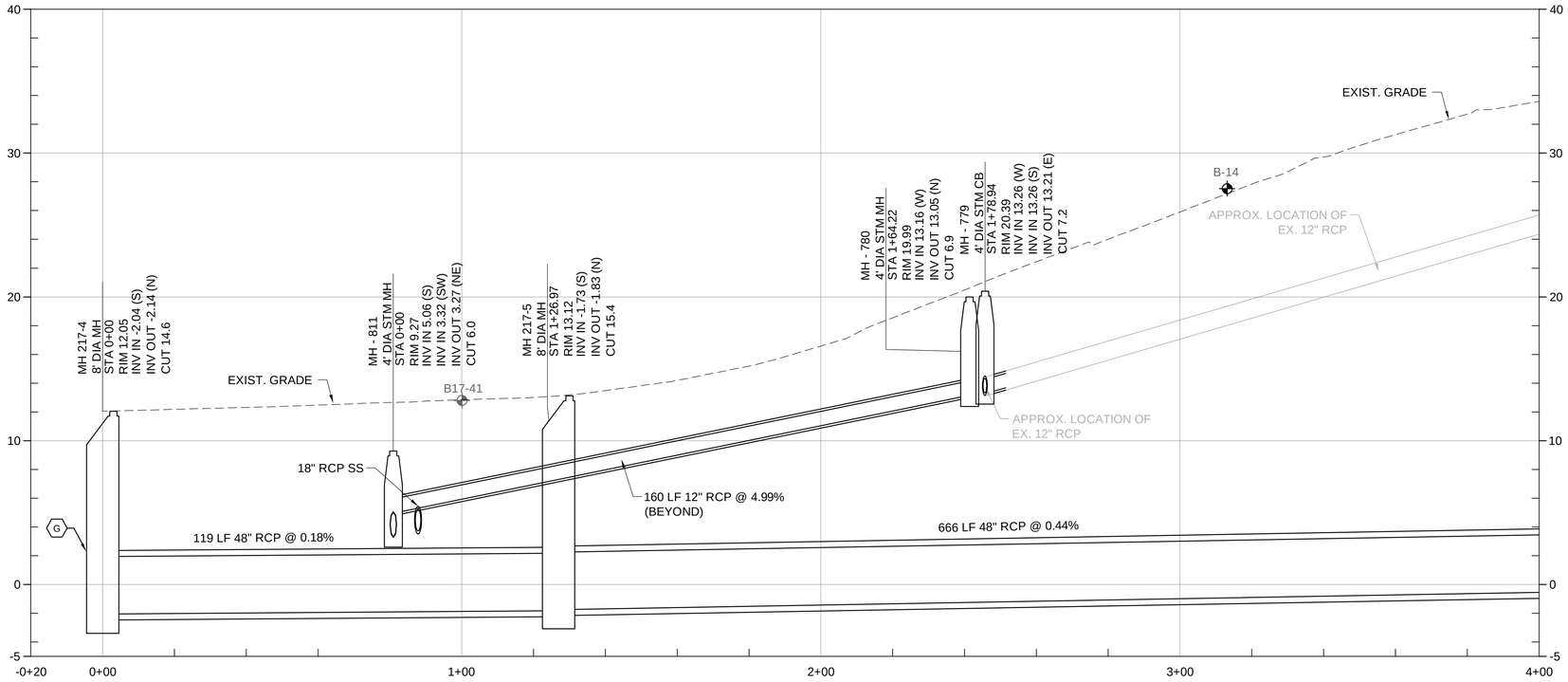
ADDENDUM NO. 1, ATTACHMENT 6

Revised Drawings



PLAN

SCALE:1" = 20'



PROFILE

SCALE:1" = 20' (H)
1" = 5' (V)

KEY PLAN

GENERAL SHEET NOTES

1. UTILITY INFORMATION DEPICTED, PROVIDED BY BSI ENGINEERING INC. SEWER AND DRAIN INFORMATION PROVIDED BY BRYANT AND ASSOCIATES.
2. FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
   - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
   - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
3. VERTICAL DATUM FOR PROJECT IS NGVD29.
4. WORK IN PROPERTY OWNED BY CITY OF PAWTUCKET.

SHEET KEYNOTES

A. MICROTUNNEL: STATION 1+26 TO STATION 4+00

B. EXCAVATION FOR MH 217-5 TO BE CONSTRUCTED AS RECEIVING PIT FOR MICROTUNNEL OPERATION. CONTRACTOR IS FULLY RESPONSIBLE FOR SELECTING SPECIFIC SOE SYSTEM TYPE AND DESIGNING SOE IN ACCORDANCE WITH CRITERIA IN THE CONTRACT DOCUMENTS.

C. COORDINATE WITH NATIONAL GRID FOR TEMPORARY POWER SHUT OFF FOR OVERHEAD WIRES AND SUPPORT POLES AS REQUIRED TO FACILITATE INSTALLATION OF RECEIVING SHAFT, EQUIPMENT, AND STRUCTURES. PROVIDE TEMPORARY STREET LIGHTING FOR DURATION OF POWER INTERRUPTION AND FOR FULL LENGTH OF STREET WHERE LIGHTING HAS BEEN IMPACTED.

D. PROVIDE SEALED AND BOLTED MANHOLE COVERS

E. TYPICAL CATCH BASIN EROSION CONTROL

F. SEE "GAS MAIN ENCROACHMENT COORDINATION" NOTES ON SHEET GC-1.

G. PROVIDE PENETRATION IN NORTH FACE OF MANHOLE TO RECEIVE 48" RCP PIPE TO BE INSTALLED BY OTHERS. CONSTRUCT TEMPORARY BRICK BULKHEAD IN PENETRATION SEE DETAIL C-903. INVERT TO BE CONSTRUCTED BY OTHERS.

H. REMOVE AND REPLACE EXISTING CATCH BASIN TO ACCEPT NEW DISCHARGE PIPE.

I. PLUG & ABANDON EXISTING DRAIN PIPE AND FILL ABANDONED PIPE WITH CLSM. REMOVE TO FACILITATE INSTALLATION OF NEW WORK AS REQUIRED.

CHRISTOPHER R. CRONIN
No. 8509
REGISTERED
PROFESSIONAL ENGINEER
(CIVIL)

REV	DATE	BY	DESCRIPTION
2	8/19/21	JP	ADDENDUM #1
1	5/13/20	JP	STANTEC COMMENTS

SCALE: AS SHOWN

WARNING: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED C CRONIN
DRAWN J PAYNE
CHECKED J. D'ALESIO

FINAL DESIGN - JULY 2021

BETA www.BETA-Inc.com

Narragansett Bay Commission

NARRAGANSETT BAY COMMISSION
PHASE III COMBINED SEWER
OVERFLOW PROGRAM

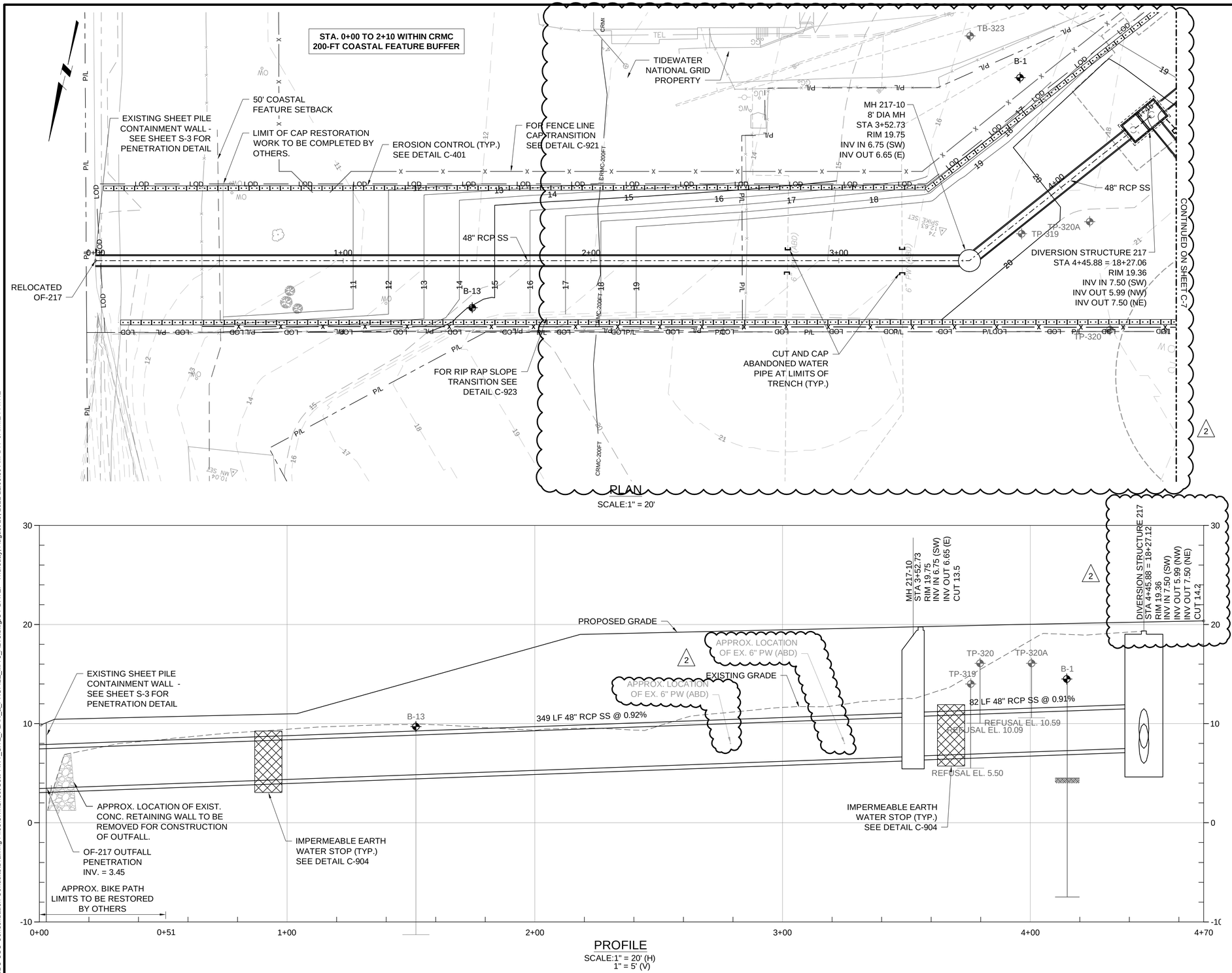
Stantec PARE

NBC CONTRACT NO 308.05C
CIVIL

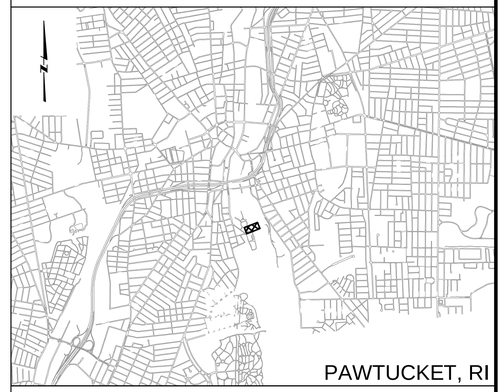
OF-217 CONSOLIDATION CONDUIT
PLAN AND PROFILE I: STA 0+00 - 4+00

SHEET
C-3
195130227

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawing Files\Civil\Sheet Set\PAWT_SITE_PLAN_&_PROFILE_IIIA-5_ALT3.dwg LOT DATE: Tuesday, August 17, 2021 11:31:49 AM BY: JAIMIE PAYNE



KEY PLAN



GENERAL SHEET NOTES

1. UTILITY INFORMATION DEPICTED, PROVIDED BY NATIONAL GRID
2. FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
   - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
   - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
3. WORK IS IN PROPERTY OWNED BY NATIONAL GRID
4. VERTICAL DATUM FOR PROJECT IS NGVD29.
5. EXISTING CONTOURS ARE APPROXIMATE AND BASED ON PROPOSED GRADES PROVIDED BY NATIONAL GRID AND FORTUITOUS PARTNERS.
6. CAP RESTORATION WORK FROM STATION 0+00 TO 0+51 TO BE COMPLETED BY OTHERS AFTER OUTFALL PIPE IS INSTALLED THROUGH STATION 0+80. FOR CAP RESTORATION FROM STATION 0+51 TO 4+46 SEE DETAIL C-920.

SHEET KEYNOTES

CHRISTOPHER R. CRONIN No. 8509 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

REV	DATE	BY	DESCRIPTION
2	8/19/21	JP	ADDENDUM #1
1	5/13/20	JP	STANTEC COMMENTS

SCALE: AS SHOWN

WARNING: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED C CRONIN
DRAWN J PAYNE
CHECKED J. D'ALESIO

FINAL DESIGN - JULY 2021

BETA www.BETA-Inc.com

Narragansett Bay Commission

NARRAGANSETT BAY COMMISSION
PHASE III COMBINED SEWER OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C
CIVIL

OF-217 CONSOLIDATION CONDUIT
OF-217 OUTFALL PLAN AND PROFILE VI: STA 0+00 - 4+46

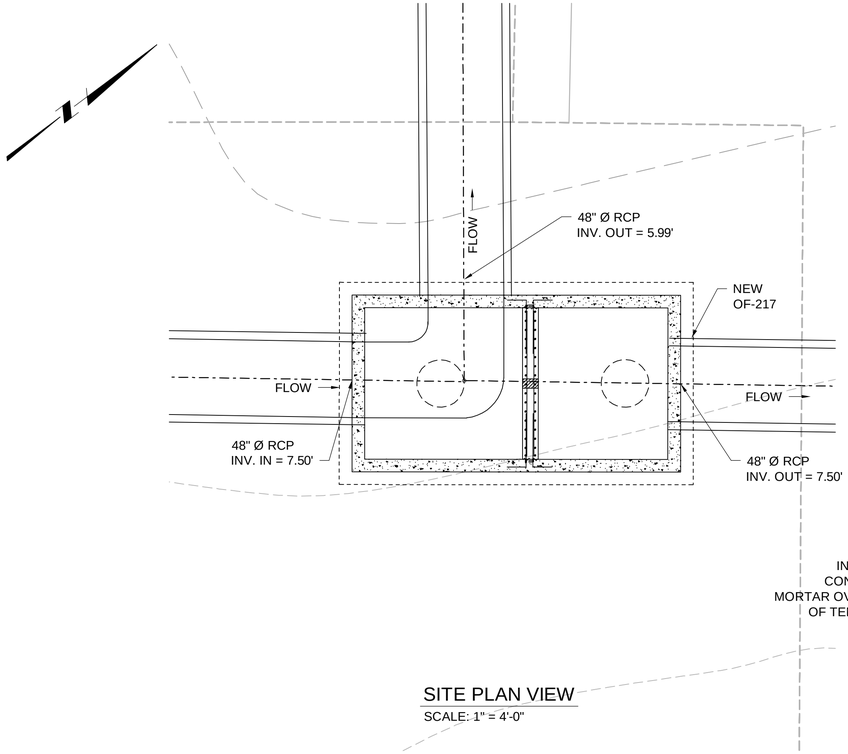
SHEET C-8

195130227

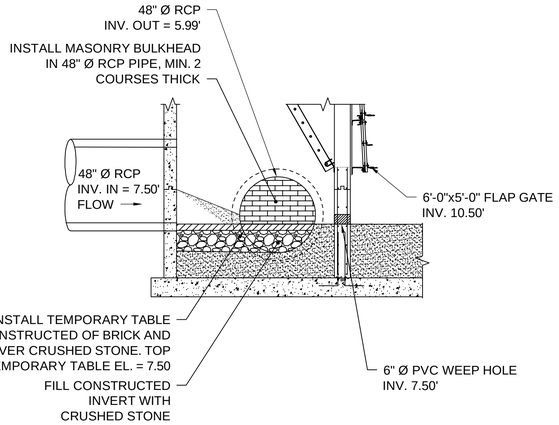
DWG FILE: J:\16412 NBC CSO Consolidation Conduit\Drawing Files\Civil\Sheet Set\PAWT_SITE_PLAN_&_PROFILE_IIIA-5_ALT3.dwg PLOT DATE: Thursday, August 19, 2021 11:05:59 AM BY: JAIMIE PAYNE

GENERAL SHEET NOTES

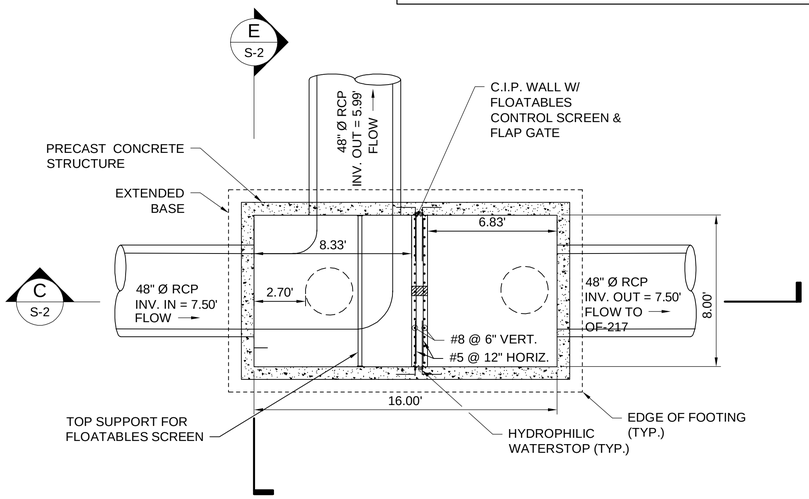
1. VERTICAL DATUM FOR PROJECT IS NGVD29.
2. DETAIL TYPICAL AT PRECAST/C.I.P. WALL INTERFACE. ROUGHEN TO $\frac{1}{4}$" MIN.
3. #5 CORNER BARS SHALL BE SET BY PRECASTER. CONTRACTOR MAY COORDINATE TO HAVE THREADED INSERTS INSTALLED AS AN ALTERNATIVE.



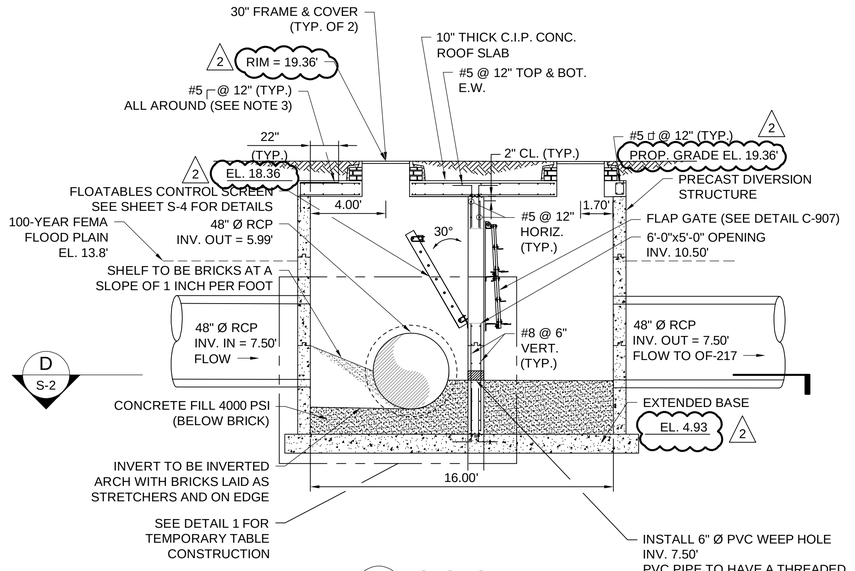
SITE PLAN VIEW
SCALE: 1" = 4'-0"



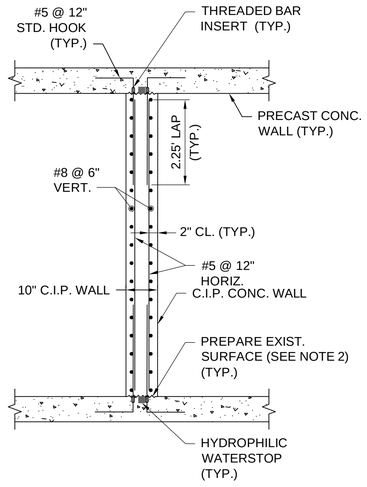
1 S-2 DETAIL
SCALE: 1/4" = 1'-0"



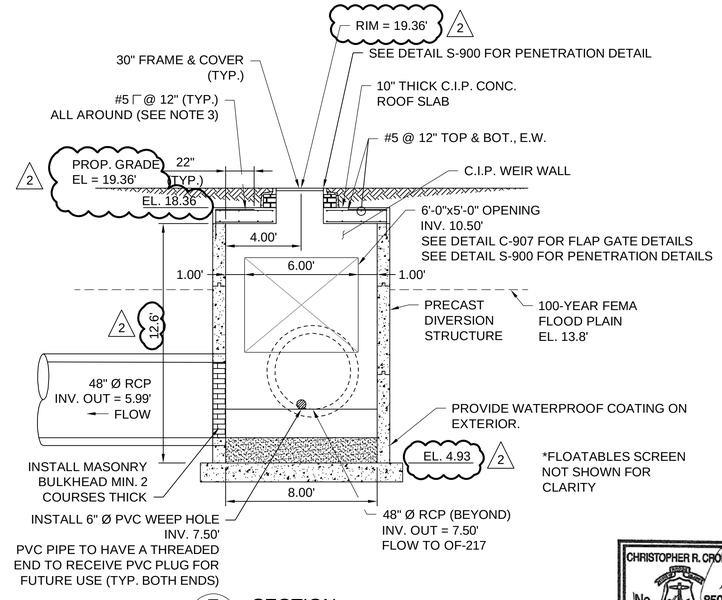
PLAN VIEW
SCALE: 1/4" = 1'-0"



C S-2 SECTION
SCALE: 1/4" = 1'-0"



D S-2 SECTION
SCALE: 1/2" = 1'-0"



E S-2 SECTION
SCALE: 1/4" = 1'-0"

CHRISTOPHER R. CRONIN
No. 8509
REGISTERED
PROFESSIONAL ENGINEER
(CIVIL)

REV	DATE	BY	DESCRIPTION
2	8/19/21	JP	ADDENDUM #1
1	5/13/20	JP	STANTEC COMMENTS

SCALE: AS SHOWN

WARNING: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED C. CRONIN
DRAWN J. PAYNE
CHECKED J. D'ALESIO

FINAL DESIGN - JULY 2021

BETA www.BETA-Inc.com

Narragansett Bay Commission

NARRAGANSETT BAY COMMISSION
PHASE III COMBINED SEWER
OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C
STRUCTURAL
OF-217 CONSOLIDATION CONDUIT
OF-217 DIVERSION STRUCTURE
PLAN AND SECTIONS

SHEET
S-2
195130227

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawing Files\Civil\Sheet Set\PAWT_IIIA-5_DIVERSION STRUCTURES_PLAN AND SECTIONS.dwg, Tuesday, August 17, 2021 1:26:46 PM
BY: JAIMIE PAYNE