

THE NARRAGANSETT ELECTRIC COMPANY (TNEC) STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND

FEBRUARY 10, 2023

REVISION 1 - APRIL 20, 2023

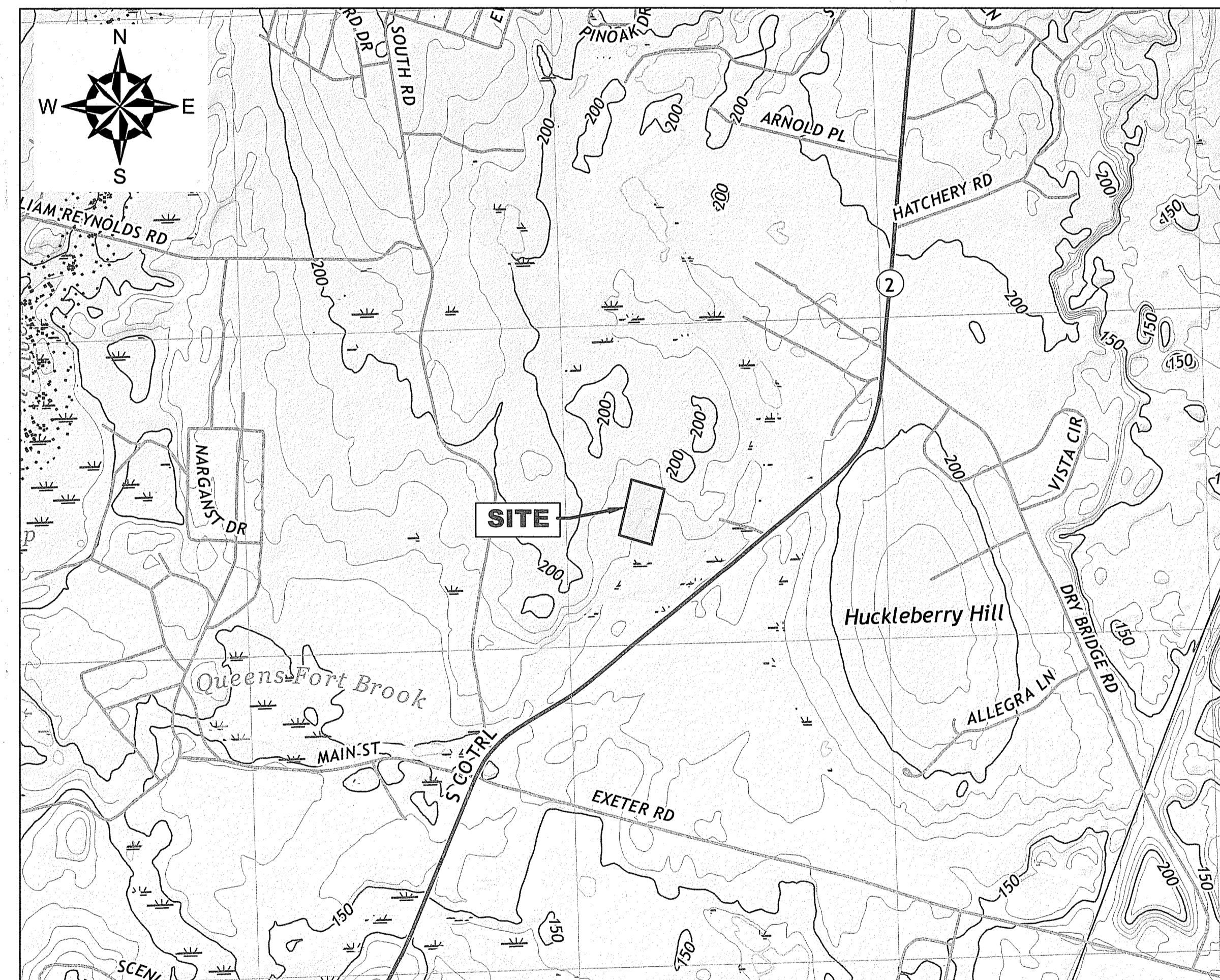
PREPARED FOR:

THE NARRAGANSETT ELECTRIC COMPANY (TNEC)

PREPARED BY:

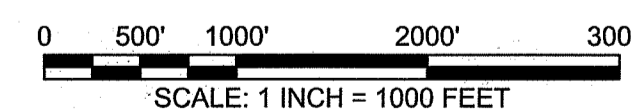


GZA GEOENVIRONMENTAL, INC.
188 VALLEY STREET, SUITE 300
PROVIDENCE, RHODE ISLAND 02909



PROJECT LOCUS MAP

SOURCE: USGSSTORE.GOV



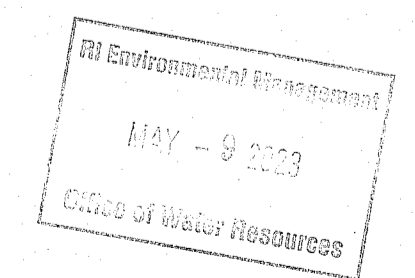
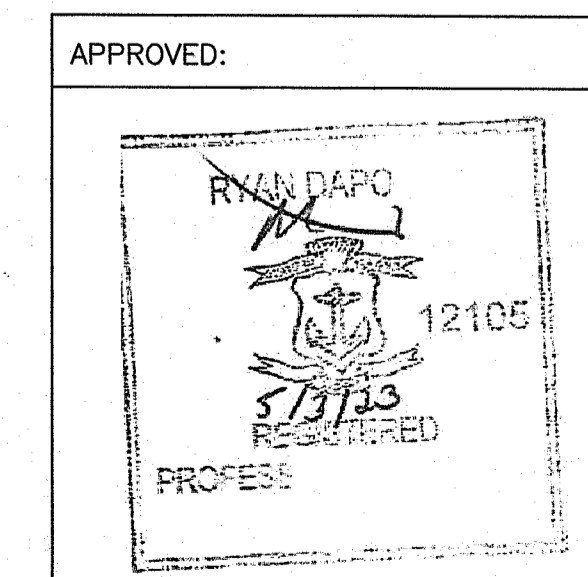
THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY TNEC OR TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

SHEET LIST TABLE	
SHEET #	SHEET TITLE
1	COVER SHEET, LOCUS AND INDEX OF DRAWINGS
2	NOTES
3	AERIAL SITE PLAN
4	EXISTING DRAINAGE AREAS PLAN
5	EROSION AND SEDIMENT CONTROL PLAN AND DETAILS
6	PROPOSED STORMWATER MANAGEMENT PLAN WITH GRADING
7	STORMWATER MANAGEMENT AND OTHER DETAILS
8	PROPOSED RETAINING WALL ALIGNMENT
9	RETAINING WALL DETAILS

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: JUN 14 2023 FILE #: 23-0037
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Andy Chapman

FOR PERMITTING
ONLY



GENERAL NOTES

- 1. ALL UTILITY LOCATIONS ARE APPROXIMATE AND HAVE BEEN ALIGNED AND ADJUSTED FOR THE "BEST FIT" AND THESE DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

- 1. ALL SYSTEM COMPONENTS AND CONSTRUCTION METHODS; SUCH AS PIPE, FITTINGS, CASTINGS, ETC. SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PURCHASE AND INSTALLATION.

A. 3/4-INCH DENSE GRADE AGGREGATE SHALL CONFORM TO SUBSECTION M.01.05 OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND GRADATION SPECIFICATION LISTED BELOW.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 3-INCH, 1 1/2-INCH, 3/4-INCH, NO. 4, NO. 50, NO. 200.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 3/4-INCH, 1/2-INCH, 3/8-INCH, NO. 4, NO. 8, NO. 30, NO. 50, NO. 200, BITUMEN, % VOIDS.

- 12. TACK COAT
A. TACK COAT SHALL CONFORM TO THE REFERENCED STANDARD, SECTION M03.03 OF RIDOT'S STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

Table with 4 columns: PROPERTIES, TEST METHOD, UNITS, SPECIFIED VALUE. Rows include RESIN DENSITY, MELT INDEX, FLEXURAL MODULUS, TENSILE STRENGTH AT YIELD.

DISPOSAL REQUIREMENTS

- 1. CONTRACTOR SHALL CONTRACT DIRECTLY WITH OWNER-APPROVED FACILITIES TO FACILITATE THE OFF-SITE TRANSPORTATION AND DISPOSAL OF EXCESS MATERIALS GENERATED DURING THE WORK.

ENVIRONMENTAL NOTES

- 1. WORK SHALL CONFORM TO RI ENERGY ENVIRONMENTAL POLICY.
2. RI ENERGY ENVIRONMENTAL CONTACTS: BILL HOWARD 401-255-2888 WRHOWARD@RIENERGY.COM

DROP INLET SPECIFICATION

- 1. DROP INLET SHALL BE CONSTRUCTED WITH MINIMUM 4,000 PSI CONCRETE WITH SIZING AND STEEL REINFORCEMENT CONSISTENT WITH THE DRAWINGS.

ASTM C33 SAND

- A. ASTM C33 SAND SHALL BE UTILIZED AS BACKFILL IN THE BASE OF THE STORMWATER SWALE AS SHOWN ON THE DRAWINGS.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 3/8-INCH, NO. 4, NO. 200.

SUITABLE SITE MATERIALS

- A. SUITABLE SITE MATERIALS CONSIST OF NON-HAZARDOUS AND UNSTAINED SOIL GENERATED DURING THE WORK AND ARE DEEMED GEOTECHNICALLY ACCEPTABLE FOR RE-USE AS SUBGRADE BACKFILL BY THE ENGINEER.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 1-INCH, 3/4-INCH, 3/8-INCH, NO. 4, NO. 8, NO. 200.

ASPHALT AND PAVEMENT MARKING SPECIFICATIONS

- 1. ASPHALT AREAS TO BE PAVED VIA PLACEMENT AND COMPACTION OF 2 INCHES OF BINDER COURSE ASPHALT CLASS 12.5 HMA.

2-INCH CRUSHED STONE

- A. 2-INCH CRUSHED STONE TO BE UTILIZED IN CONSTRUCTION OF THE CONSTRUCTION ENTRANCE.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 2-INCH, 1 1/2-INCH, 1 1/4-INCH, 1-INCH, NO. 200.

R-2 RIP RAP

- A. R-2 RIP RAP SHALL BE UTILIZED AS BACKFILL ABOVE THE ASTM C33 SAND LAYER AND SUITABLE SITE MATERIALS WITHIN THE STORMWATER SWALE SYSTEM.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 4-INCH, 2-INCH, 1-INCH.

OTHER PERMITTING REQUIREMENTS

- 1. HOT WORK PERMITS TO BE COMPLETED BY CONTRACTOR WHEN ANY CUTTING OR WELDING WORK RESULTING IN SPARKS IS CONDUCTED.

SAFETY

- 1. WORK SHALL CONFORM TO THE NATIONAL GRID EMPLOYEES SAFETY HANDBOOK, OSHA REQUIREMENTS, AND ALL LOCAL, STATE AND FEDERAL CODES.

SCOPE OF WORK

- 1. ALL SITE WORK, INCLUDING BUT NOT LIMITED TO, BITUMINOUS PAVEMENT, GRAVEL, STONE, AND SAWCUTTING SHALL CONFORM TO THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION (RIDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

GUARDRAIL SPECIFICATIONS

- 1. STEEL GUARDRAILS SHALL BE INSTALLED AS SHOWN ON SHEET 6.

IMPORT MATERIALS

- 1. ALL IMPORT SUBMITTALS (GEOTECHNICAL AND ENVIRONMENTAL TESTING AS DESCRIBED BELOW) SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PURCHASE AND INSTALLATION.

BINDER COURSE ASPHALT

- A. COARSE AND FINE AGGREGATE MATERIALS SHALL BE COMBINED TO PRODUCE THE BINDER COURSE MATERIALS.

Table with 2 columns: SIEVE SIZE, PERCENT FINER BY WEIGHT. Rows include 1-INCH, 3/4-INCH, 3/8-INCH, NO. 8, NO. 30, NO. 50, NO. 200, BITUMEN, % VOIDS.

TOP COURSE ASPHALT

- A. COARSE AND FINE AGGREGATE MATERIALS SHALL BE COMBINED TO PRODUCE THE TOP COURSE MATERIALS.

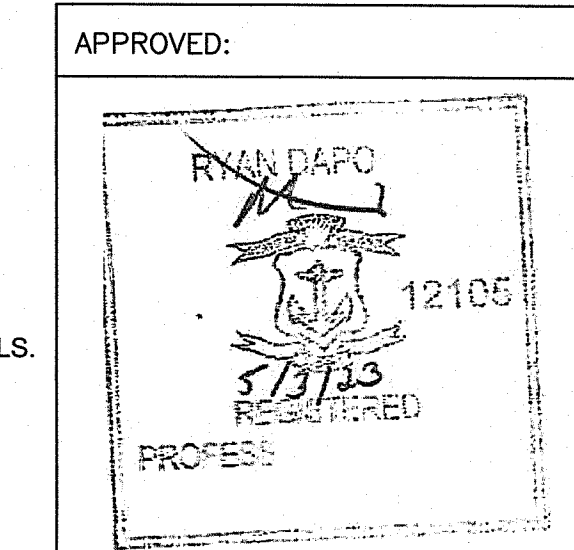
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF WATER RESOURCES FRESHWATER WETLANDS PROGRAM APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Handwritten signature and date: JUN 14 2023


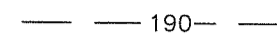
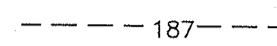


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Approval stamp area containing: THE NARRAGANSETT ELECTRIC COMPANY STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND. Includes a table for issue descriptions and a table for project details (GZA GeoEnvironmental, Inc., GEA).





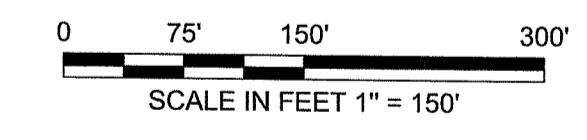
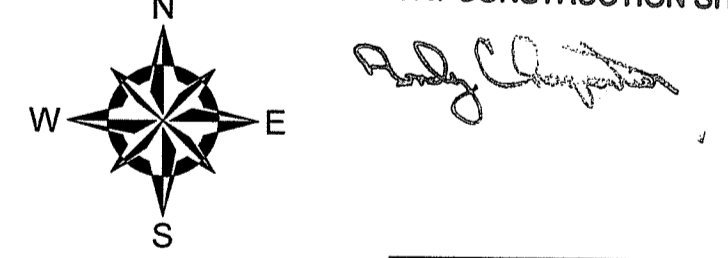
LEGEND

-  LIMIT OF WORK
-  190- EXISTING CONTOUR (5 FOOT INTERVAL)
-  187- EXISTING CONTOUR (1 FOOT INTERVAL)
-  PROPERTY LINE
-  ADJACENT PROPERTY LINE

REFERENCE NOTES:

1. BASE MAP DEVELOPED FROM RHODE ISLAND'S RIGIS AERIAL IMAGERY TAKEN IN FALL 2020.
2. PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM EXETER, RHODE ISLAND GIS DATABASE. GIS DATA ARE FOR PLANNING PURPOSES ONLY. THE DATA DOES NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY, OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.
3. SITE BOUNDARIES ARE APPROXIMATE.

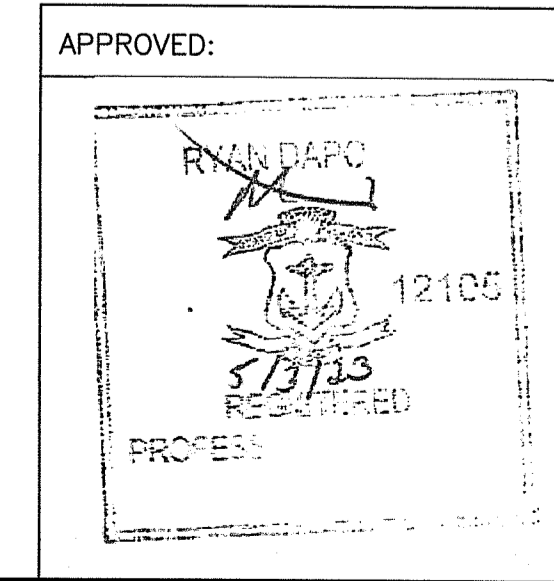
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS
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 DATED: **JUN 14 2023** FILE #: **23-0037**
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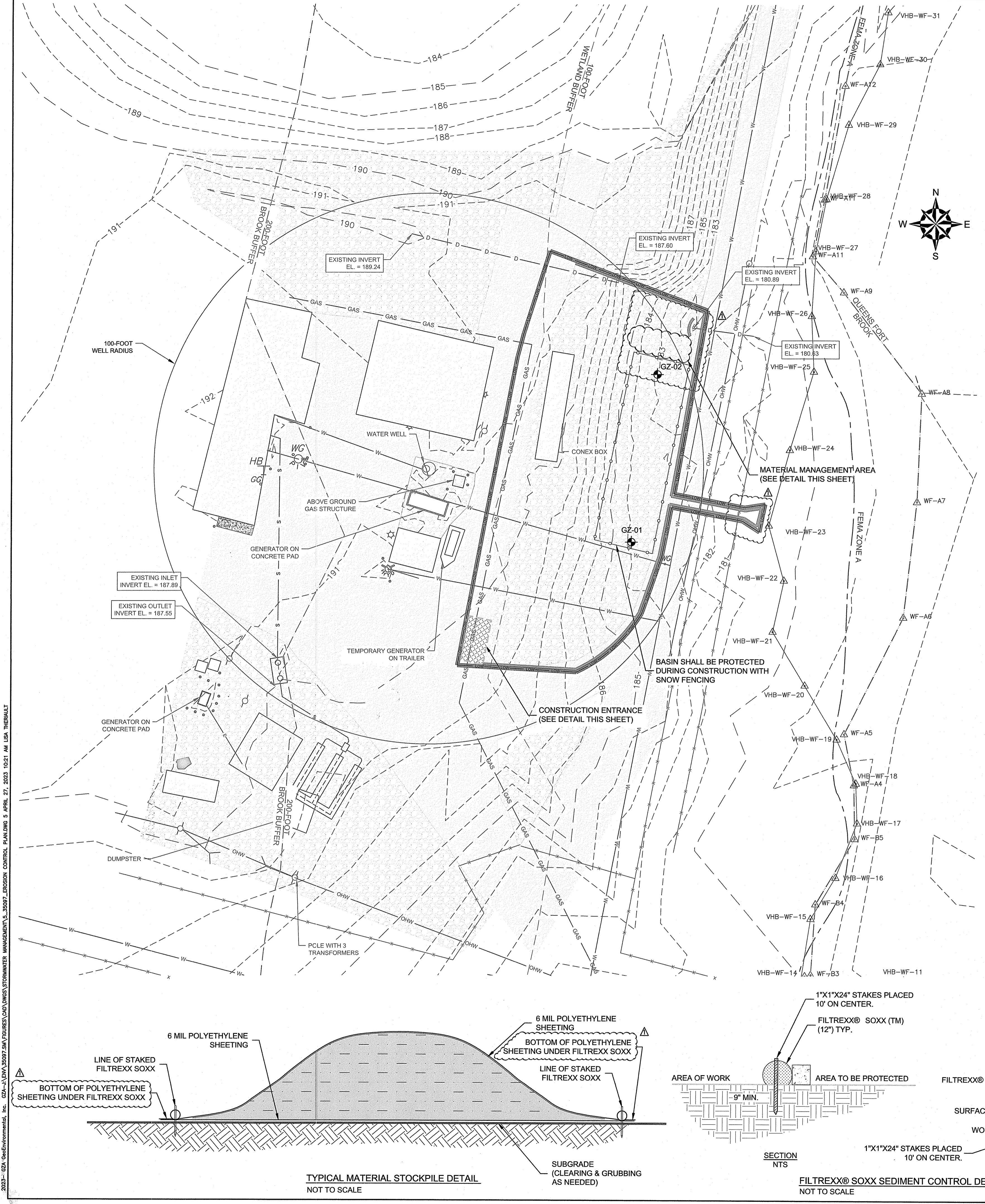
NO.	RESPONSE TO RIDEM COMMENTS	SM	DATE

THE INFORMATION SHOWN ON THIS DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (NEC) OR TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.



THE NARRAGANSETT ELECTRIC COMPANY STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND	
AERIAL SITE PLAN JAN 09 2023	
PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR: THE NARRAGANSETT ELECTRIC COMPANY
PROJ MGR: SM DESIGNED BY: SM DATE: FEBRUARY 10, 2023	REVIEWED BY: RAD DRAWN BY: LDT PROJECT NO.: 35097.00
CHECKED BY: MK SCALE: AS NOTED REVISION NO.: 1	FIGURE 3 SHEET NO. 3 OF 9

2023 - GZA GeoEnvironmental, Inc. GZA-D:\DATA\35097 STA\PROJECTS\CAD\DWG\STORMWATER\MANAGEMENT\35097_EC_COND_PLAN.DWG 3 APRIL 20, 2023 1:00 PM USA THERMAL

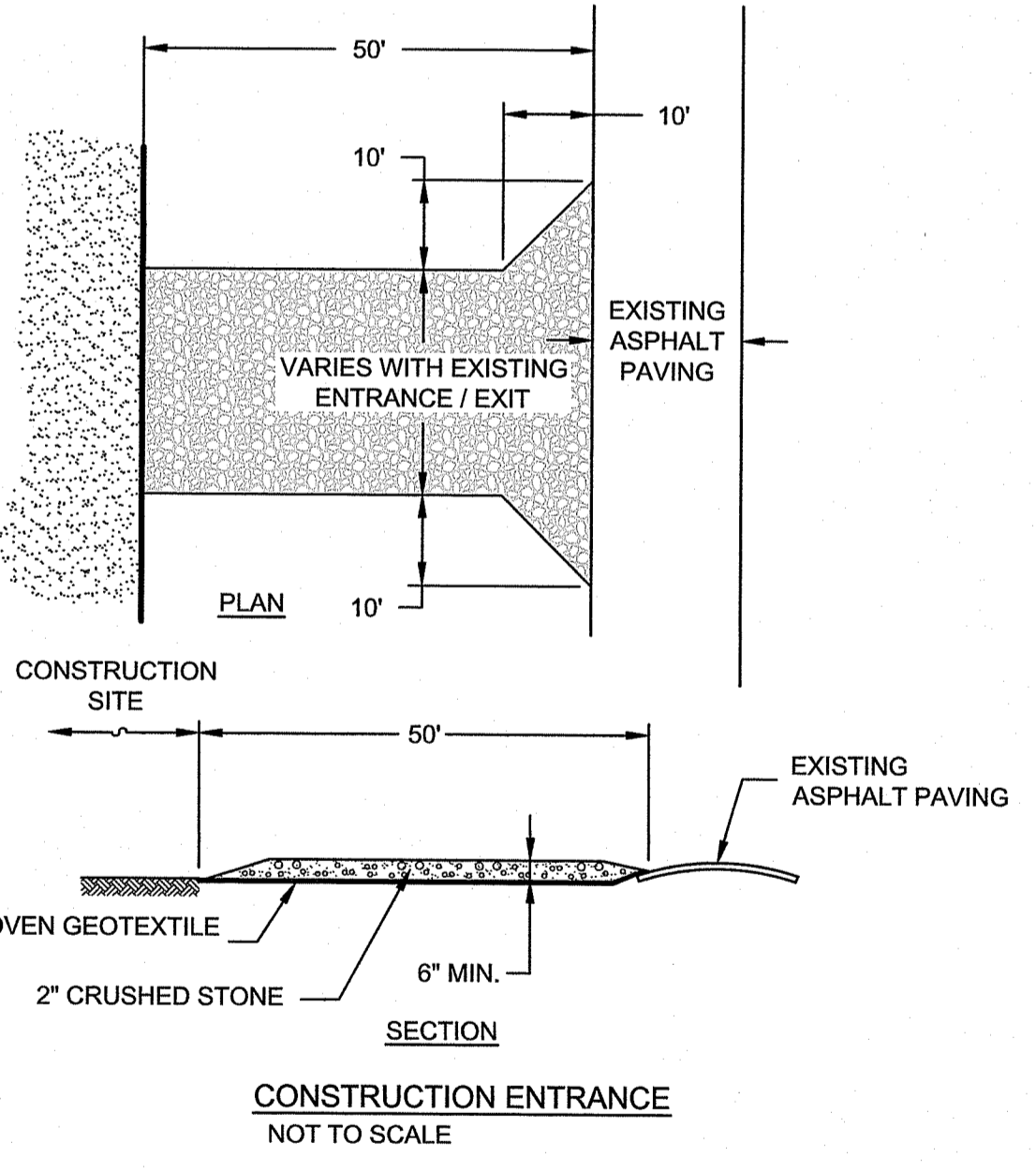


RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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 APPROVED WITH CONDITIONS AS
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 DATED: JUN 14 2023 FILE #: 23-0037
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[Signature]

CONSTRUCTION ENTRANCE NOTES

1. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT OUT OF THE LIMITS OF WORK. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED OUT OF THE LIMITS OF WORK MUST BE REMOVED IMMEDIATELY. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.



LEGEND

[Symbol]	LIMIT OF WORK
[Symbol]	EXISTING BUILDING OR STRUCTURE
[Symbol]	EXISTING CONCRETE
[Symbol]	EXISTING ASPHALT
[Symbol]	EXISTING CRUSHED STONE
[Symbol]	PROPOSED RIP RAP
[Symbol]	EXISTING CONTOUR (5 FOOT INTERVAL)
[Symbol]	EXISTING CONTOUR (1 FOOT INTERVAL)
[Symbol]	RIVER EDGE
[Symbol]	SWAMP EDGE
[Symbol]	100-FOOT WETLAND BUFFER
[Symbol]	QUEENS FORT BROOK (APPROX. EDGE)
[Symbol]	200-FOOT BUFFER FROM QUEENS FORT BROOK
[Symbol]	EXISTING FENCE LINE
[Symbol]	PROPOSED SNOW FENCE
[Symbol]	PROPOSED FILTREXX SOXX (SEE DETAIL THIS SHEET)
[Symbol]	EXISTING BOLLARD
[Symbol]	FLOOD ZONE BOUNDARY
[Symbol]	SUBSURFACE EXPLORATION PERFORMED BY GEOLOGIC EARTH EXPLORATION AND OBSERVED BY GZA PERSONNEL ON AUGUST 11, 2022. SEE GZA'S GEOTECHNICAL DATA REPORT TITLED, "GEOTECHNICAL DATA REPORT EXETER LNG 53 SOUTH COUNTY TRAIL EXETER, RHODE ISLAND, DATED OCTOBER 20, 2022 FOR FURTHER DETAILS.
[Symbol]	CONSTRUCTION ENTRANCE (SEE DETAIL THIS SHEET)
[Symbol]	MATERIAL MANAGEMENT AREA (SEE DETAIL THIS SHEET)

EXISTING UTILITIES

[Symbol]	UTILITY POLE	[Symbol]	EXISTING GAS LINE
[Symbol]	LIGHT POLE	[Symbol]	EXISTING WATER LINE
[Symbol]	UTILITY POLE WITH LIGHT	[Symbol]	EXISTING UNDERGROUND ELECTRIC LINE
[Symbol]	BUILDING MOUNTED LIGHT	[Symbol]	EXISTING OVERHEAD ELECTRIC WIRE
[Symbol]	GUY WIRE	[Symbol]	EXISTING SEWER LINE
[Symbol]	ROOF DOWNSPOUT	[Symbol]	EXISTING DRAIN LINE
[Symbol]	WATER GATE	[Symbol]	POST INDICATOR VALVE
[Symbol]	HYDRANT	[Symbol]	SPIGOT
[Symbol]		[Symbol]	GAS GATE VALVE

0 10' 20' 40'
 SCALE IN FEET 1" = 20'

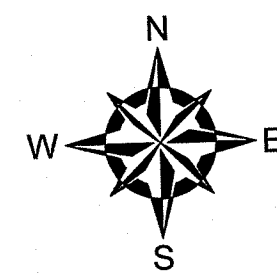
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NOTE:
 1. SEE GENERAL NOTES ON FIGURE 4.

APPROVED:

NO.	RESPONSE TO RIDEM COMMENTS	SM	4-20-23
NO.	ISSUE/DESCRIPTION	BY	DATE
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THE NARRAGANSETT ELECTRIC COMPANY STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND			
EROSION AND SEDIMENT CONTROL PLAN AND DETAILS			
PREPARED BY:	GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR:	THE NARRAGANSETT ELECTRIC COMPANY
PROJ MGR:	SM	REVIEWED BY:	RAD
DESIGNED BY:	SM	DRAWN BY:	LDT
DATE:	FEBRUARY 10, 2023	PROJECT NO.:	35097.00
		CHECKED BY:	MK
		SCALE:	AS NOTED
		REVISION NO.:	1
		FIGURE	5
		SHEET NO.	5 OF 9

2023 GZA GeoEnvironmental, Inc. GZA is a DBA of GZA GROUP, INC. GZA GROUP, INC. IS AN EQUAL OPPORTUNITY EMPLOYER. CONTROL PLAN 5 APRIL 27, 2023 10:21 AM USA TIME



LEGEND

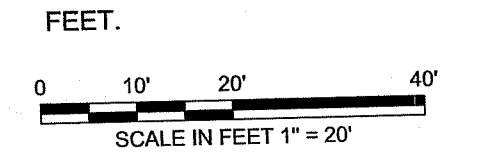
- LIMIT OF WORK
- EXISTING BUILDING OR STRUCTURE
- EXISTING CONCRETE
- EXISTING ASPHALT
- EXISTING CRUSHED STONE
- PROPOSED RIP RAP (SEE DETAIL SHEET 7)
- PAVED SWALE
- PROPOSED RETAINING WALL (SEE DETAIL SHEET 9)
- EXISTING CONTOUR (5 FOOT INTERVAL)
- EXISTING CONTOUR (1 FOOT INTERVAL)
- PROPOSED CONTOUR (5 FOOT INTERVAL)
- PROPOSED EXISTING CONTOUR (1 FOOT INTERVAL)
- RIVER EDGE
- SWAMP EDGE
- 100-FOOT WETLAND BUFFER
- QUEENS FORT BROOK (APPROX. EDGE)
- 200-FOOT BROOK BUFFER
- EXISTING FENCE LINE
- EXISTING BOLLARD
- PROPOSED SPOT GRADE
- PROPOSED CATCH BASIN
- PROPOSED STRIPING
- NO PARKING STRIPING
- PROPOSED GUARD RAIL (SEE DETAIL SHEET 7)
- PROPOSED CAPE COD BERM (SEE DETAIL SHEET 7)
- PROPOSED ASPHALT (SEE DETAIL SHEET 7)
- PROPOSED DRAIN LINE
- FLOOD ZONE BOUNDARY
- DRAINAGE AREA
- FLOW DIRECTION
- SUBSURFACE EXPLORATION PERFORMED BY GEOLOGIC EARTH EXPLORATION AND OBSERVED BY GZA PERSONNEL ON AUGUST 11, 2022. SEE GZA'S GEOTECHNICAL DATA REPORT TITLED, "GEOTECHNICAL DATA REPORT EXETER LNG 53 SOUTH COUNTY TRAIL EXETER, RHODE ISLAND, DATED OCTOBER 20, 2022 FOR FURTHER DETAILS.

EXISTING UTILITIES

- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- BUILDING MOUNTED LIGHT
- GUY WIRE
- ROOF DOWNSPOUT
- WATER GATE
- HYDRANT
- POST INDICATOR VALVE
- SPIGOT
- GAS GATE VALVE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING OVERHEAD ELECTRIC WIRE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE

GENERAL NOTES:

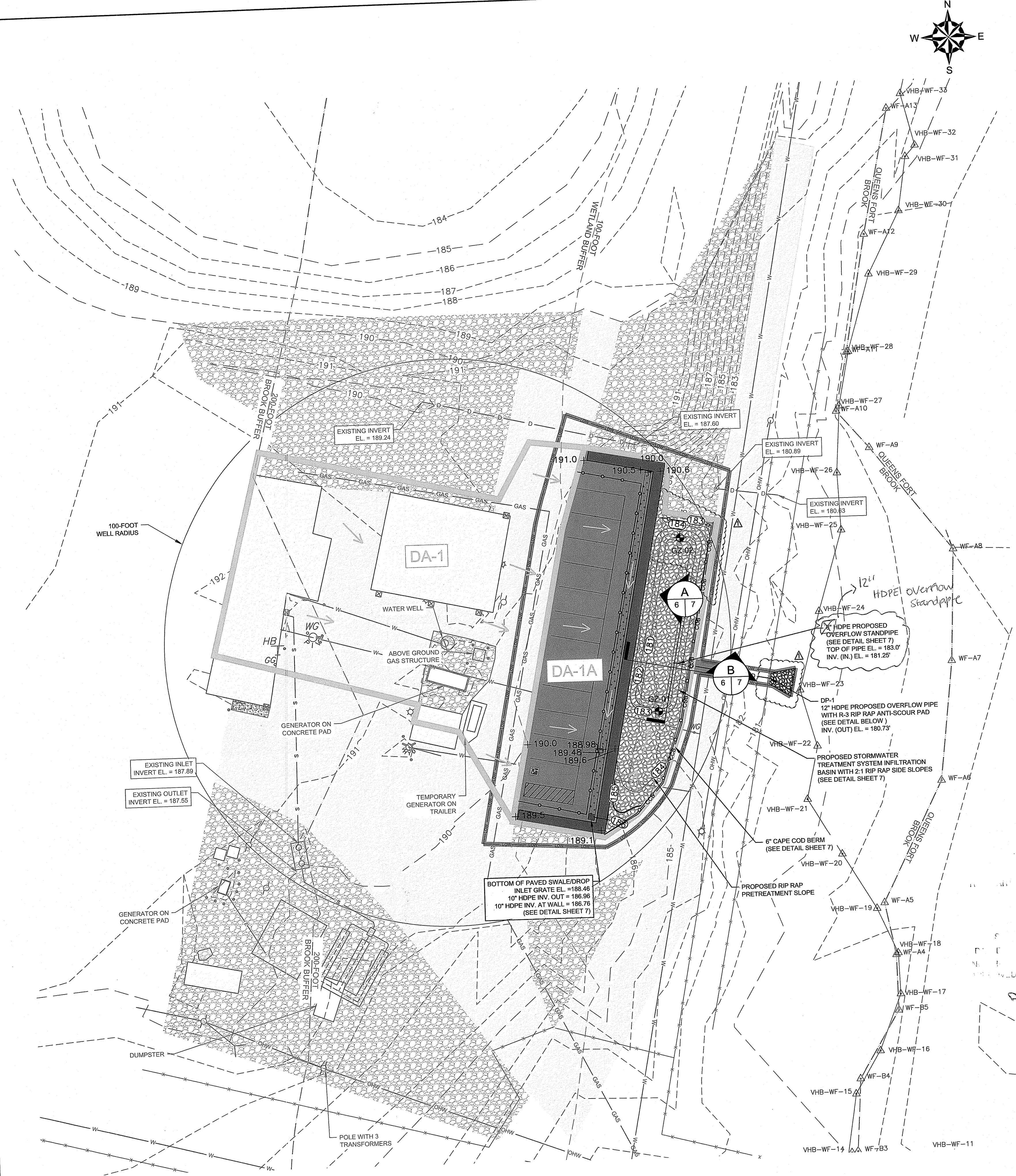
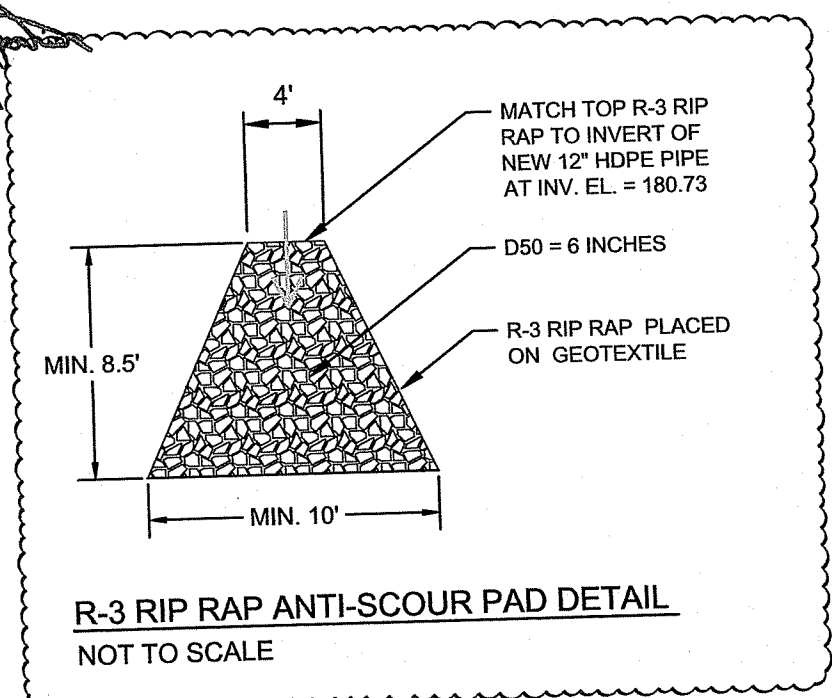
1. EXISTING CONDITIONS BASE MAP DEVELOPED FROM THE FOLLOWING:
 - AN ELECTRONIC TRANSMISSION OF A DRAWING TITLED "SITE PLAN" FOR NATIONAL GRID BY VANASSE HANGEN BRUSTLIN, INC, PROJECT NUMBER 71781, DATED OCTOBER 21, 2009, ORIGINAL SCALE 1"=50', DRAWING C-2, SHEETS 2 OF 3.
 - AN ELECTRONIC TRANSMISSION OF A DRAWING TITLED "INDIVIDUAL SEWAGE DISPOSAL SYSTEM" FOR PROVIDENCE GAS COMPANY BY AMERICAN ENGINEERING, PROJECT NUMBER 99144, DATED SEPTEMBER 16, 1999, ORIGINAL SCALE 1"=20', SHEET 1 OF 1.
 - AN ELECTRONIC TRANSMISSION OF A DRAWING TITLED "GPRS FINDINGS MAP" FOR GZA BY GPRS, DATED AUGUST 9, 2022, NO SCALE, DRAWING 1.
 - SURVEY DATA OBTAINED USING A LEICA GS-18 GNSS DATA COLLECTOR AND CS-20 TABLET WITH CAPTIVATE COLLECTION SOFTWARE AND REAL TIME KINEMATIC (RTK) CORRECTION WITH AN OPTIMAL ACCURACY OF 0.01' HORIZONTAL AND 0.02' VERTICAL BY GZA PERSONNEL DURING A SITE VISIT ON AUGUST 9, 2022, NOVEMBER 2022 AND MARCH 9, 2023.
2. WETLAND DELINEATION SURVEY DATA OBTAINED USING A TOTAL STATION BY GZA PERSONNEL DURING A SITE VISIT ON NOVEMBER 3, 2022.
3. WETLAND FLAGGING BY VHB SURVEY DATA OBTAINED USING A LEICA GS-18 GNSS DATA COLLECTOR AND CS-20 TABLET WITH CAPTIVATE COLLECTION SOFTWARE AND REAL TIME KINEMATIC (RTK) CORRECTION WITH AN OPTIMAL ACCURACY OF 0.01' HORIZONTAL AND 0.02' VERTICAL BY GZA PERSONNEL DURING A SITE VISIT ON MARCH 16, 2023.
4. FEMA FLOOD ZONE DATA ACQUIRED FROM RIGIS, REVISED APRIL 3, 2020. GIS DATA ARE FOR PLANNING PURPOSES ONLY. THE DATA DOES NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY, OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.
5. PROPOSED NEW IMPERVIOUS AREA APPROXIMATELY 4,360 SQUARE FEET.



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**ENVIRONMENTAL MANAGEMENT
WATER RESOURCES
WETLANDS PROGRAM**

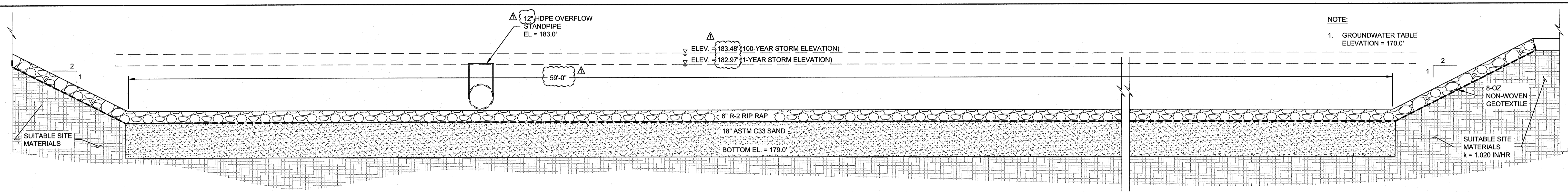
WITH CONDITIONS AS
THE LETTER OF APPROVAL
JUN 14 2023 FILE # 23-0037
ED WITHOUT PRIOR APPROVAL
JUST BE AT CONSTRUCTION SITE



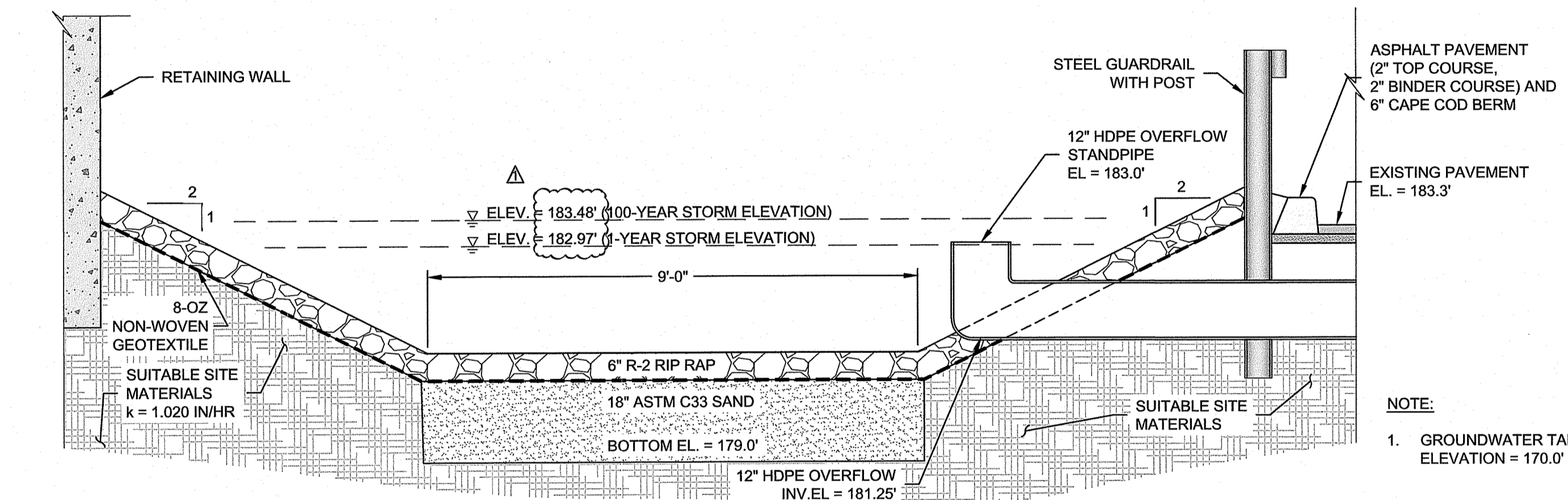
APPROVED:

NO.	RESPONSE TO RIDEW COMMENTS	SM	4-20-23
	ISSUE/DESCRIPTION	BY	DATE
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<p>THE NARRAGANSETT ELECTRIC COMPANY STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND</p>			
<p>PROPOSED STORMWATER MANAGEMENT PLAN WITH GRADING MAY 09 2023</p>			
PREPARED BY:	GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: THE NARRAGANSETT ELECTRIC COMPANY
PROJECT MGR:	SM	REVIEWED BY: RAD	CHECKED BY: MK
DESIGNED BY:	SM	DRAWN BY: LDT	SCALE: AS NOTED
DATE:	FEBRUARY 10, 2023	PROJECT NO. 35097.00	REVISION NO. 1
			FIGURE 6
			SHEET NO. 6 OF 9

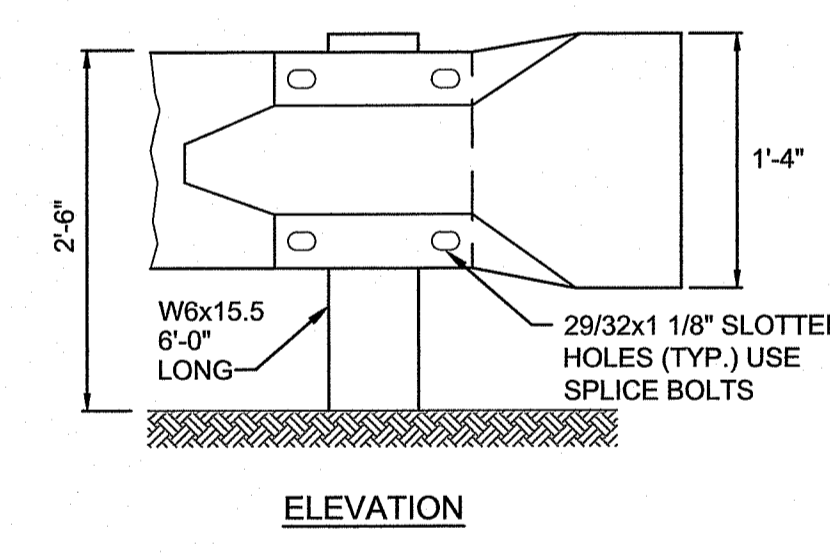
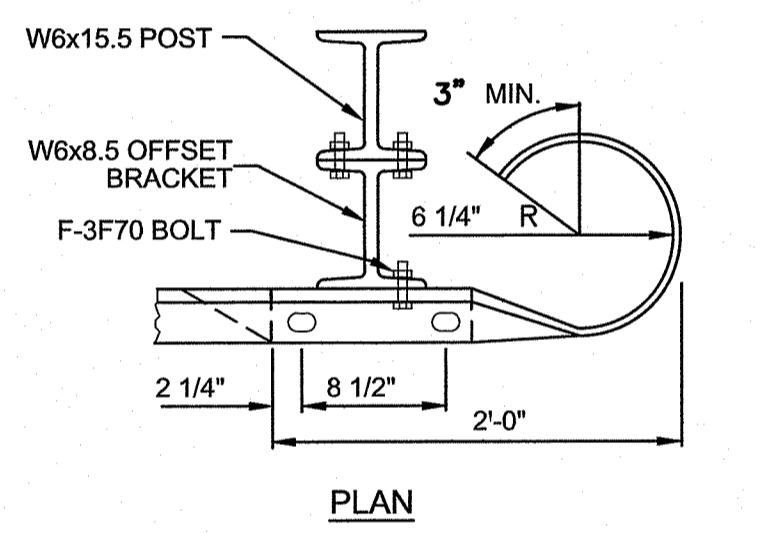
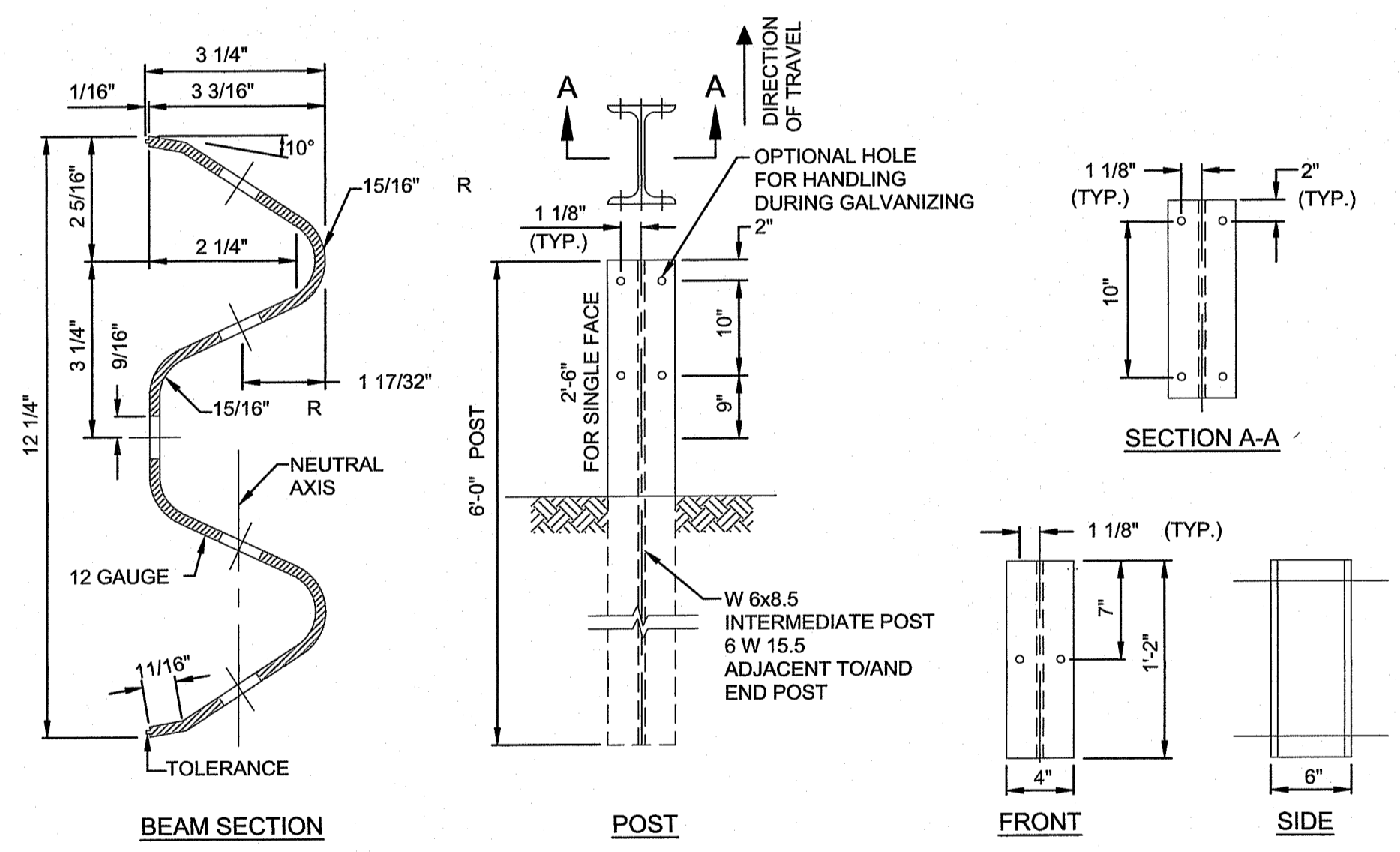
2023 - GZA GeoEnvironmental, Inc. GZA-NARRAGANSETT STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND
 2023 - GZA GeoEnvironmental, Inc. GZA-NARRAGANSETT STORMWATER MANAGEMENT PLAN 53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND
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STORMWATER TREATMENT INFILTRATION BASIN CROSS SECTION A-A
SCALE: 1"=2'

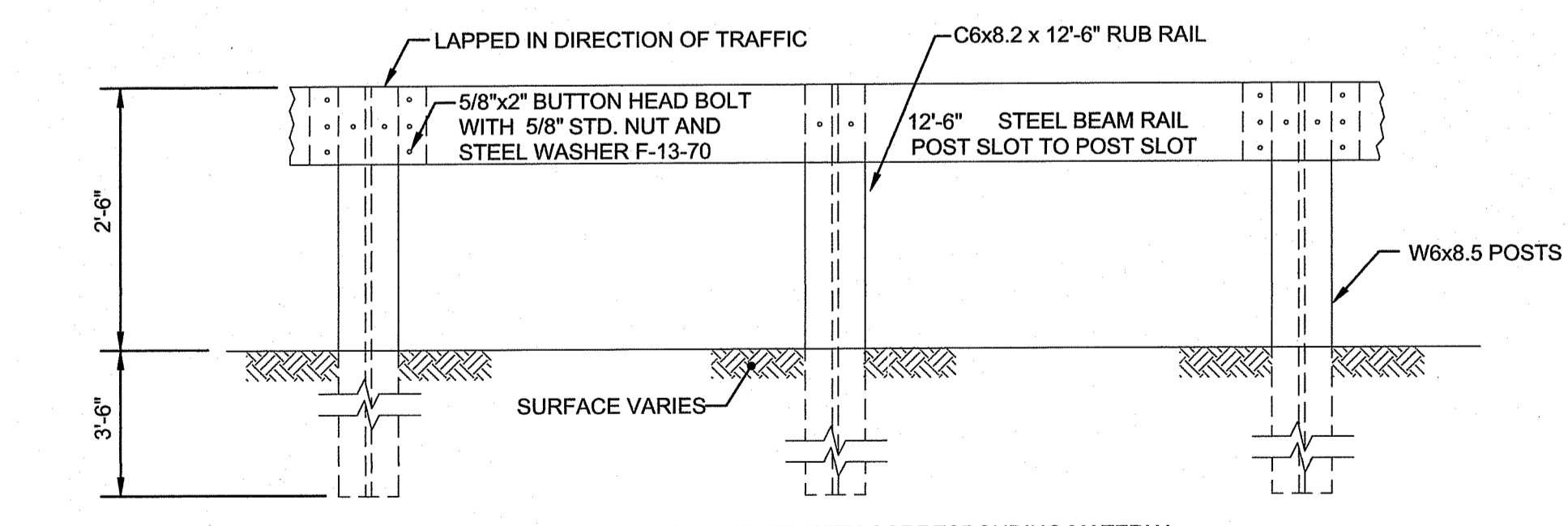


STORMWATER TREATMENT INFILTRATION BASIN CROSS SECTION B-B
SCALE: 1"=2'



STEEL GUARDRAIL TERMINAL END SECTION
NOT TO SCALE

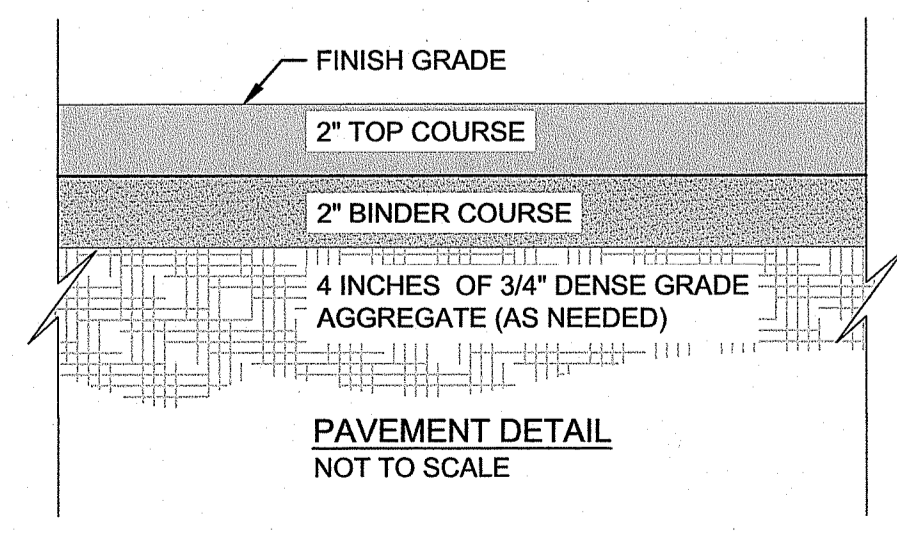
- NOTE:**
- SHALL BE IN ACCORDANCE WITH SECTION 901 OF THE R.I. STANDARD SPECIFICATIONS.
 - TOP OF RAIL TO BE SET AT 2'-6".
 - FRONT FACE OF BEAM TO BE FLUSH WITH EDGE OF PAVEMENT.



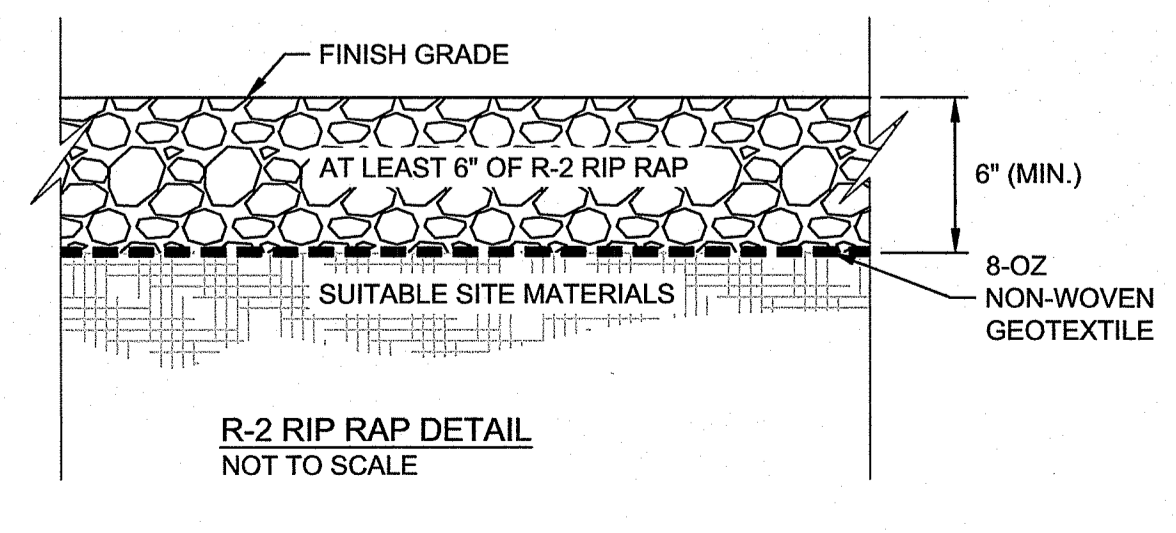
ELEVATION OF RAIL

- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 901 OF THE R.I. STANDARD SPECIFICATIONS.
 - POST AND OFFSET BRACKET TO BE FABRICATED FROM 6"x4" 8 1/2 LBS/FT. STEEL "H" SECTIONS.
 - POST AND BRACKET BOLT HOLES TO BE OVAL UNLESS OTHERWISE SPECIFIED.
 - ALL HOLES IN OFFSET BRACKETS SHALL BE 13/16".
 - TOP OF RAIL SHALL BE AT 2'-6".
 - FRONT FACE OF BEAM TO BE FLUSH WITH EDGE OF PAVEMENT.

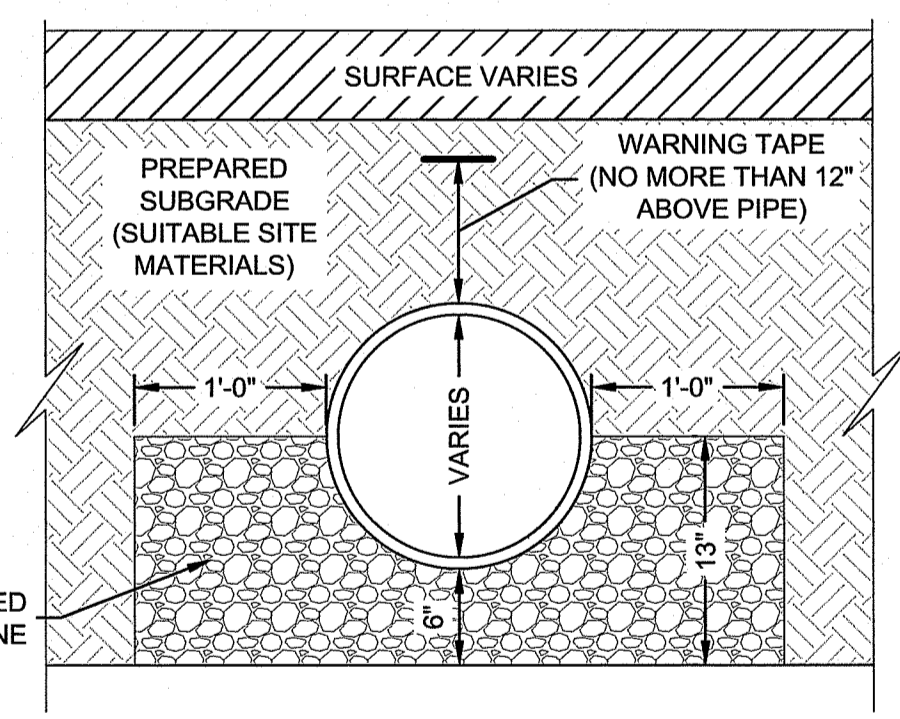
STEEL BEAM GUARDRAIL
NOT TO SCALE



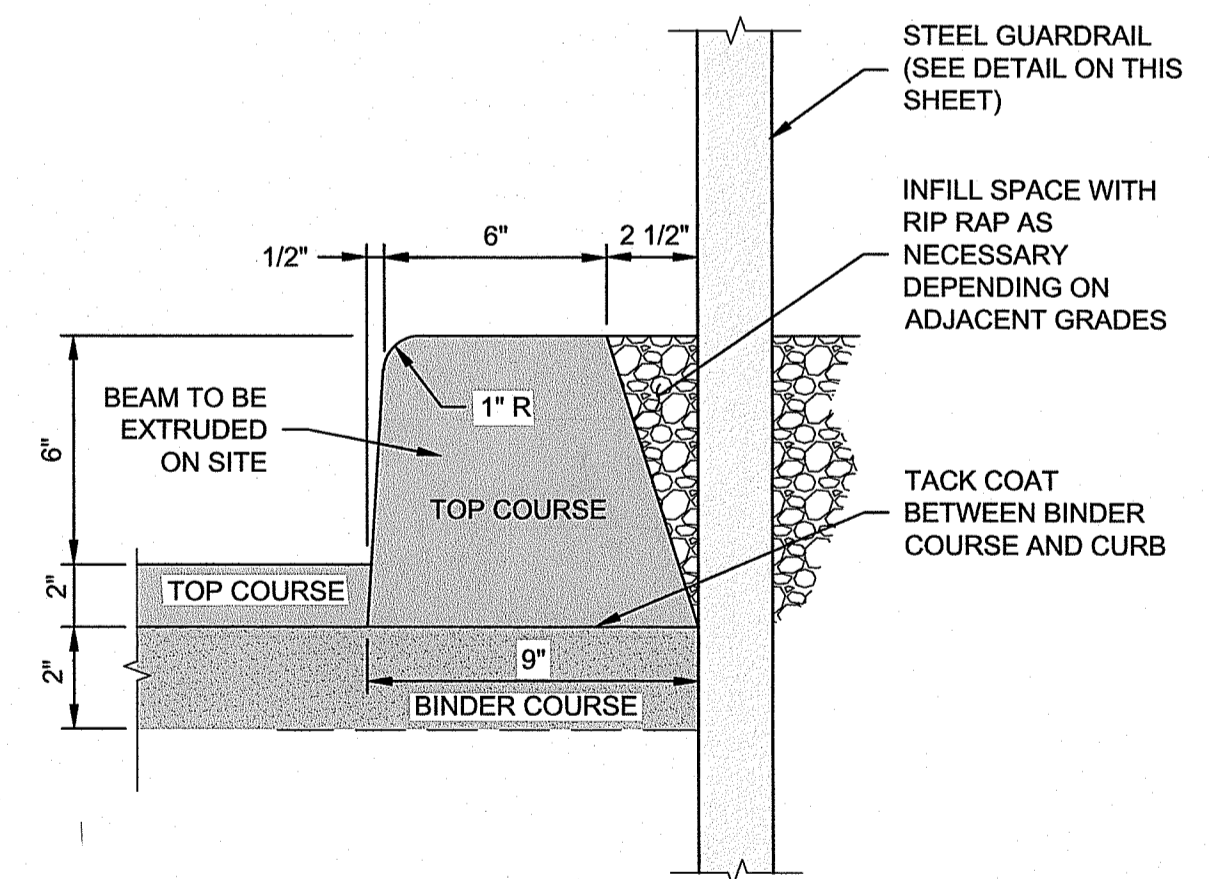
PAVEMENT DETAIL
NOT TO SCALE



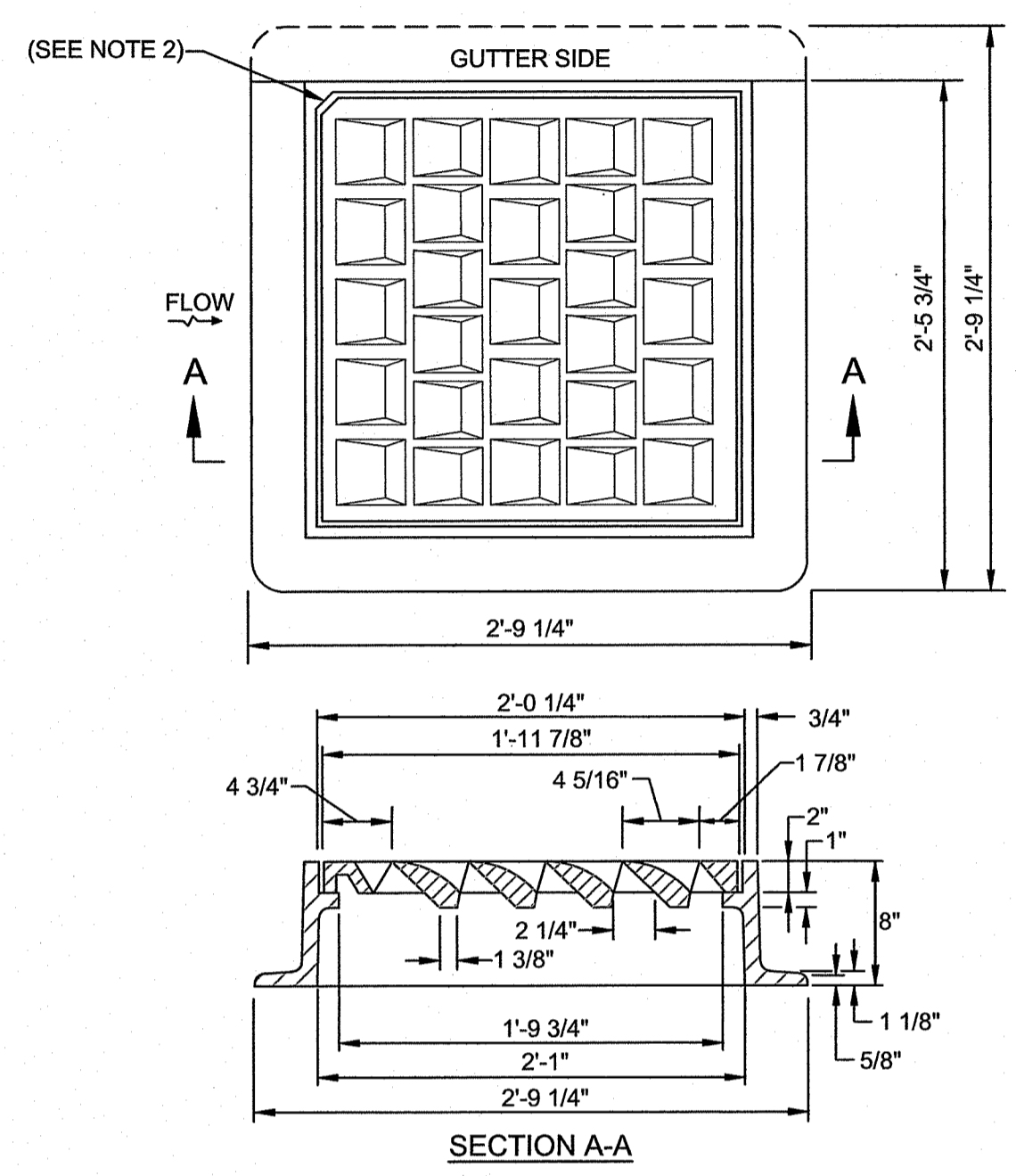
R-2 RIP RAP DETAIL
NOT TO SCALE



HDPE TRENCH BACKFILL DETAIL
NOT TO SCALE

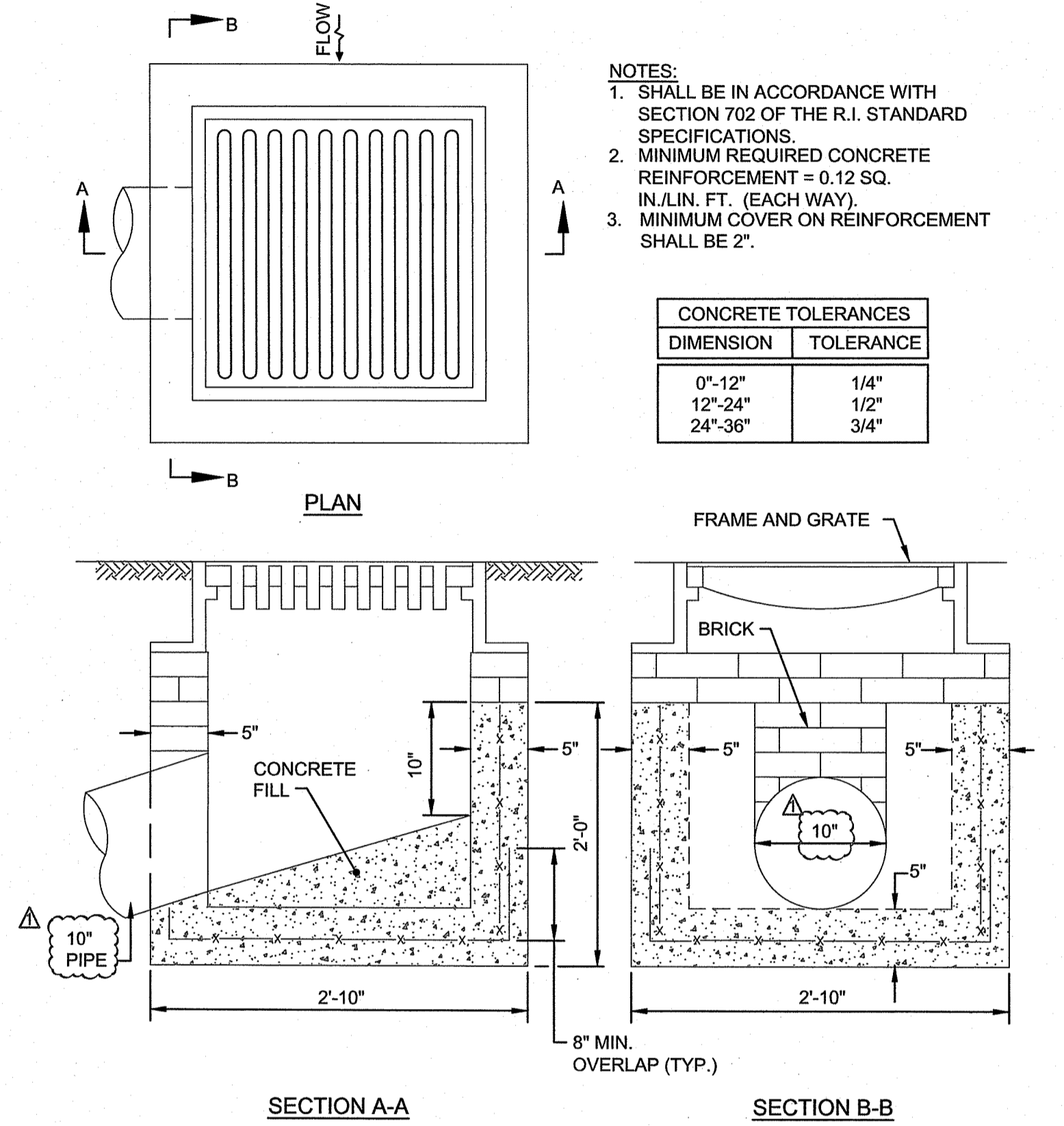


CAPE COD BERM DETAIL
NOT TO SCALE



- NOTES:**
- FRAME AND COVER SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
 - THIS CORNER LEFT FOR "LEFT" GRATE, DIAGONALLY OPPOSITE CORNER FOR "RIGHT" GRATE TO FIT IN KEYS IN FRAME.

HIGH CAPACITY FRAME AND GRATE (BICYCLE SAFE)
NOT TO SCALE



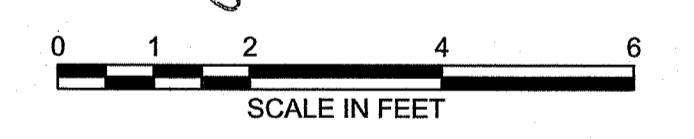
SECTION A-A **SECTION B-B**

PRECAST CONCRETE DROP INLET
NOT TO SCALE

- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
 - MINIMUM REQUIRED CONCRETE REINFORCEMENT = 0.12 SQ. IN./LIN. FT. (EACH WAY).
 - MINIMUM COVER ON REINFORCEMENT SHALL BE 2".

CONCRETE TOLERANCES	
DIMENSION	TOLERANCE
0'-12"	1/4"
12'-24"	1/2"
24'-36"	3/4"

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
DATED: JUN 14 2023 FILE #: 23-0037
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



FOR PERMITTING ONLY

NO.	ISSUE/DESCRIPTION	SM	DATE
1	RESPONSE TO RIDEM COMMENTS	SM	4-20-23

THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (NEC) OR TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

APPROVED: _____

THE NARRAGANSETT ELECTRIC COMPANY
STORMWATER MANAGEMENT PLAN
53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND

STORMWATER MANAGEMENT AND OTHER DETAILS

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com
PREPARED FOR: THE NARRAGANSETT ELECTRIC COMPANY

PROJ MGR: SM REVIEWED BY: RAD CHECKED BY: MK FIGURE
DESIGNED BY: SM DRAWN BY: LDT SCALE: AS NOTED
DATE: FEBRUARY 10, 2023 PROJECT NO. 35097.00 REVISION NO. 1 SHEET NO. 7 OF 9

2023 - GZA GeoEnvironmental, Inc. GZA-RI-EWA-35097-SW-PAVED-COVERTS-STORMWATER-MANAGEMENT-7-35097-SW AND OTHER DETAILS.DWG 7 APRIL 20, 2023 1:30 PM LISA THERIAULT

GENERAL NOTES:

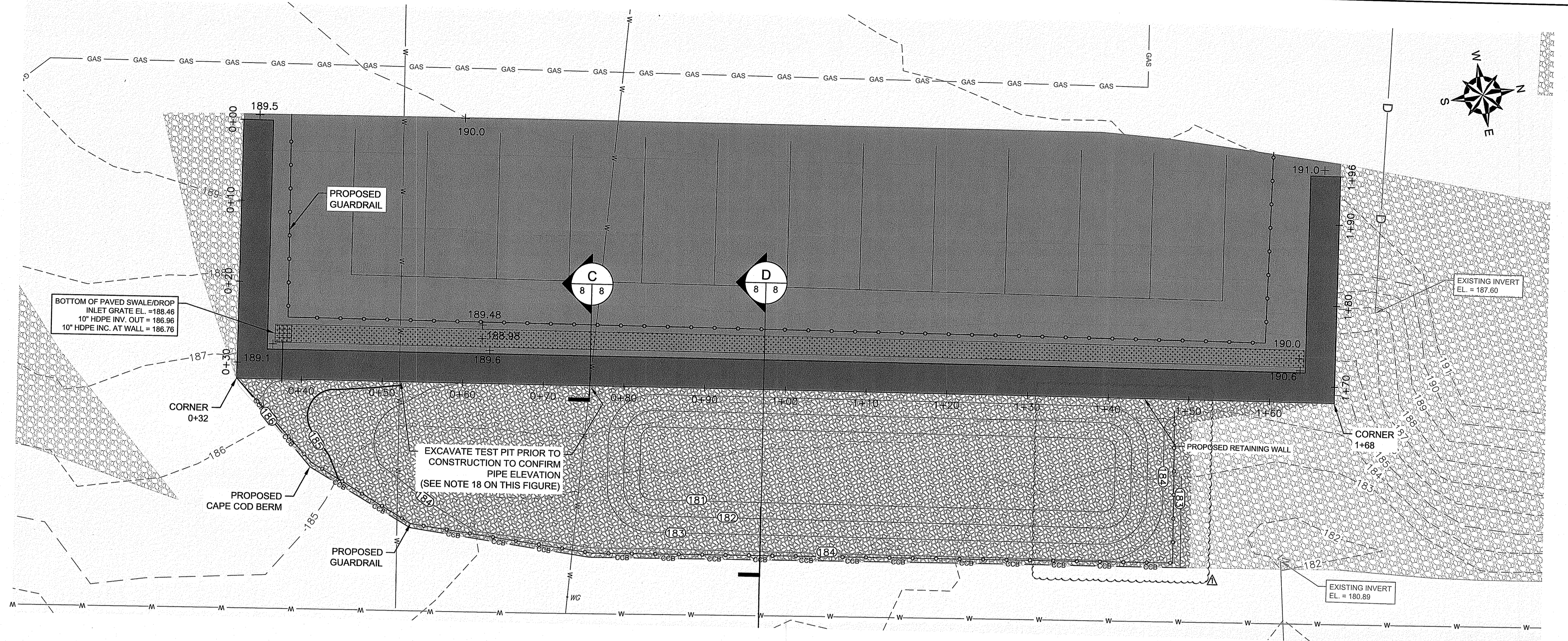
1. PRECAST MODULAR BLOCKS SHALL BE STONE STRONG UNITS MANUFACTURED UNDER LICENSE FROM STONE STRONG, LLC.
2. RETAINING WALL SHALL BE INSTALLED AND CONSTRUCTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS IN "STONE STRONG" SYSTEMS FIELD CONSTRUCTION MANUAL.
3. EXCAVATIONS FOR WALL SHALL BE SLOPED BACK IN ACCORDANCE WITH THE OCCUPATIONAL SAFETY HEALTH ADMINISTRATION (OSHA) CONSTRUCTION INDUSTRY STANDARDS.
4. RETAINING WALL CONSTRUCTION WILL BE SUPERVISED BY THE ENGINEER TO VERIFY FIELD AND SITE SOIL CONDITIONS.
5. ALL WALL ELEVATIONS, GRADES, AND BACKSLOPE CONDITIONS SHALL BE VERIFIED BY THE ENGINEER IN THE FIELD FOR CONFORMANCE WITH APPROVED DESIGN PLANS. ANY REVISIONS TO THE STRUCTURE OR DESIGN CRITERIA SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.
6. STRIP ALL VEGETATION, ORGANIC SOILS, AND UNSUITABLE SOIL FROM THE WALL ALIGNMENT AREA. THE FOUNDATION SOILS AT THE BASE OF THE WALL SHALL BE INSPECTED BY THE ENGINEER. ANY UNSUITABLE SOILS OR IMPROPERLY COMPACTED EMBANKMENT MATERIAL SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER PRIOR TO WALL CONSTRUCTION TO PROVIDE ADEQUATE BEARING CAPACITY AND MINIMIZE SETTLEMENT.
7. DO NOT OVER EXCAVATE UNLESS DIRECTED TO DO SO BY THE ENGINEER IN ORDER TO REMOVE UNSUITABLE SOILS. IF OVER EXCAVATION BELOW THE PROPOSED WALL FOOTING ELEVATION IS NECESSARY, THE EXCAVATION SHOULD EXTEND AT 1H:1V FROM TWO FEET OUTSIDE THE WALL'S BASE BLOCK IN FRONT OF THE WALL FACE.
8. ALL WALL EXCAVATIONS AND RETAINED SOILS SHALL BE INSPECTED FOR GROUNDWATER CONDITIONS. ANY ADDITIONAL DRAINAGE PROVISIONS REQUIRED IN THE FIELD SHALL BE INCORPORATED INTO THE WALL CONSTRUCTION AS DIRECTED BY THE ENGINEER.
9. PROVIDE LATERAL DRAINAGE SWALES TO DIRECT WATER FLOWS AROUND THE ENDS AND AWAY FROM THE WALL DURING CONSTRUCTION.
10. FOLLOWING THE EXCAVATION, AND PRIOR TO PLACEMENT OF THE CRUSHED STONE LEVELING PAD, THE SOIL SUBGRADE SHOULD BE SURFACE COMPACTED WITH A MINIMUM OF SIX PASSES OF A VIBRATORY ROLLER HAVING A DRUM WEIGHT OF AT LEAST 10,000 LBS AND A DYNAMIC FORCE OF AT LEAST 20,000 LBS. ALL AREAS NOT ACCESSIBLE TO LARGE VIBRATORY ROLLERS SHOULD BE COMPACTED WITH A MINIMUM TEN PASSES OF A SELF-PROPELLED COMPACTOR HAVING A CENTRIFUGAL FORCE RATED NOT LESS THAN 15,000 LBS SUCH AS A WACKER NEUSON RT SERIES TRENCH ROLLER.
11. BACKFILL AND COMPACT THE GRANULAR FILL MATERIAL BEHIND THE WALL IN 12-INCH THICK LIFTS TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D1557). COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE ENGINEER.
12. RECOMMENDED COMPACTION EQUIPMENT WITHIN 15 FEET OF THE BACK OF THE WALL IS AS FOLLOWS:
 - 0 TO 4 FEET - VIBRATORY PLATE COMPACTOR
 - 4 TO 15 FEET - NOTHING LARGER THAN A WALK BEHIND, DOUBLE DRUM, SHEEPSFOOT VIBRATORY ROLLER.
 - LARGER ROLLERS CAN BE USED STATICALLY, PROVIDED THEY CAN PROVIDE THE NECESSARY COMPACTION REQUIRED OF THE FILL MATERIAL.
13. THE MINIMUM EMBEDMENT OF THE WALL BELOW FINISH GRADE SHALL BE AS INDICATED ON THE WALL ELEVATION DRAWINGS.
14. FINAL WALL ALIGNMENT SHALL BE LOCATED IN THE FIELD BY THE ENGINEER.
15. ENDS OF THE RETAINING WALL SHALL BE BLENDED INTO THE PROPOSED/EXISTING GRADE IN A MANNER THAT IS SATISFACTORY TO THE ENGINEER.
16. FOR PROPOSED GUARDRAIL OR FENCE POSTS TO BE INSTALLED BEHIND THE WALL, THE POSTS SHALL BE INSTALLED IN ACCORDANCE WITH STEEL BEAM GUARDRAIL DETAIL ON DRAWING 7.
17. THE EVALUATION OF THE STRUCTURAL CAPABILITIES OF ANY GUARDRAIL OR FENCE SYSTEM INSTALLED BEHIND THE WALL WAS NOT PART OF THIS DESIGN AND SHOULD BE DESIGNED BY OTHERS.
18. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE TEST PITS TO CONFIRM THE LOCATION AND ELEVATIONS OF THE EXISTING WATER LINES. THE LOCATION AND ELEVATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON HISTORICAL PLANS PROVIDED BY OTHERS. THE CONTRACTORS SHALL SUBMIT THE LOCATIONS AND ELEVATIONS OF THE EXISTING WATER LINES TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. THE LOCATION AND DESIGN OF THE RETAINING WALL ARE SUBJECT TO CHANGE IF THE LOCATION AND ELEVATIONS VARY FROM WHAT IS SHOWN ON THE PLANS.
19. SUBMIT BAG SAMPLES (40 LBS MINIMUM) OF EACH TYPE OF MATERIAL TO BE USED AS FILL AT LEAST 10 WORKING DAYS IN ADVANCE OF ITS REQUIRED USE. REPRESENTATIVE SAMPLES OF EXCAVATED FILL MATERIAL WHICH WILL BE USED FOR BACKFILL SHALL ALSO BE SUBMITTED FOR TESTING.

FOR OFFSITE MATERIALS, SUBMIT THE NAME OF EACH MATERIAL SUPPLIER WITH SPECIFIC TYPE AND SOURCE OF EACH MATERIAL AT LEAST TWO (2) WEEKS PRIOR TO DELIVERY TO THE SITE. INCLUDE THE RESULTS OF ENVIRONMENTAL TESTING IF REQUIRED. ANY CHANGE IN TYPE OR SOURCE OF MATERIAL DURING THE WORK REQUIRES THE WRITTEN APPROVAL OF THE ENGINEER AND NEW TESTING.
20. ALL GRANULAR FILL BEHIND WALL SHOULD BE FREE FROM ICE, SNOW, ROOTS, SOD, RUBBISH, RUBBLE, AND OTHER DELETERIOUS OR ORGANIC MATTER. GRADATION REQUIREMENTS FOR THE FILL MATERIALS SHOULD MEET THE REQUIREMENTS TABULATED BELOW.

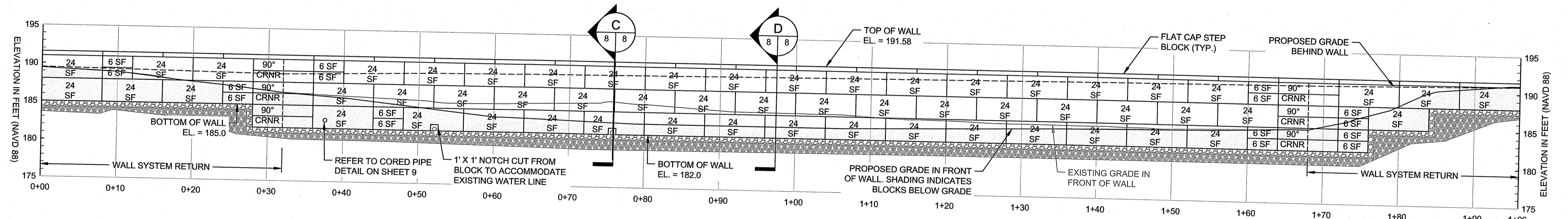
SIEVE SIZE	PERCENT FINER BY WEIGHT		
	SAND-GRAVEL FILL	GRANULAR FILL	3/4 -INCH CRUSHED STONE
*	100	100	-
3/4-INCH	-	-	85-100
1/2-INCH	50-85	-	10-50
NO. 4	40-75	-	0-10
NO. 10	30-60	30-95	-
NO. 40	10-35	10-70	-
NO. 100	5-20**	-	-
NO. 200	0-8	0-10	<1

*THE MAXIMUM RECOMMENDED STONE SIZE IS 4 INCHES WHERE USED AS A BASE COURSE BELOW SLABS AND PAVEMENT; ELSEWHERE, MINIMUM STONE SIZES SHOULD BE 2/3 OF THE LOOSE LIFT THICKNESS.

**THE AMOUNT PASSING THE NO. 100 SIEVE SHOULD BE BETWEEN FORTY PERCENT (40%) AND SEVENTY PERCENT (70%) OF THAT AMOUNT PASSING THE NO. 40 SIEVE.

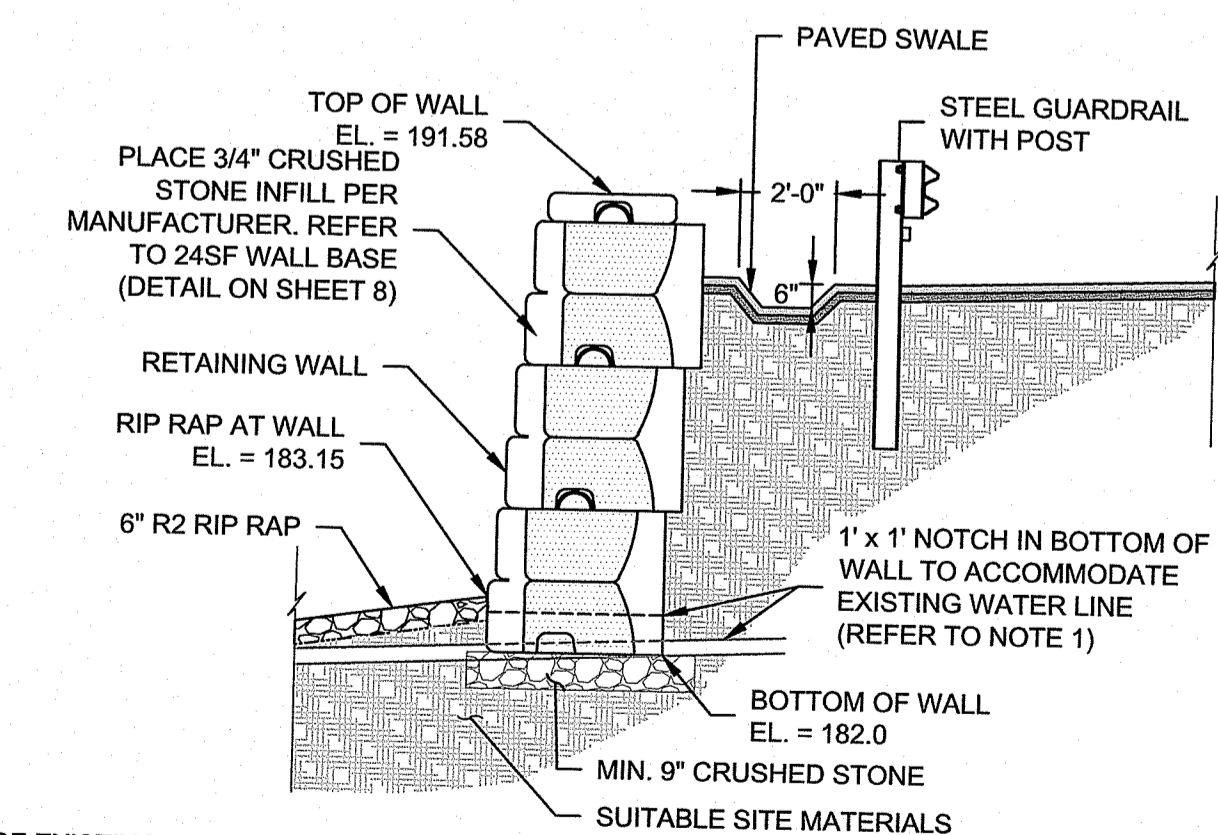


RETAINING WALL LAYOUT - PLAN
SCALE 1"=8"

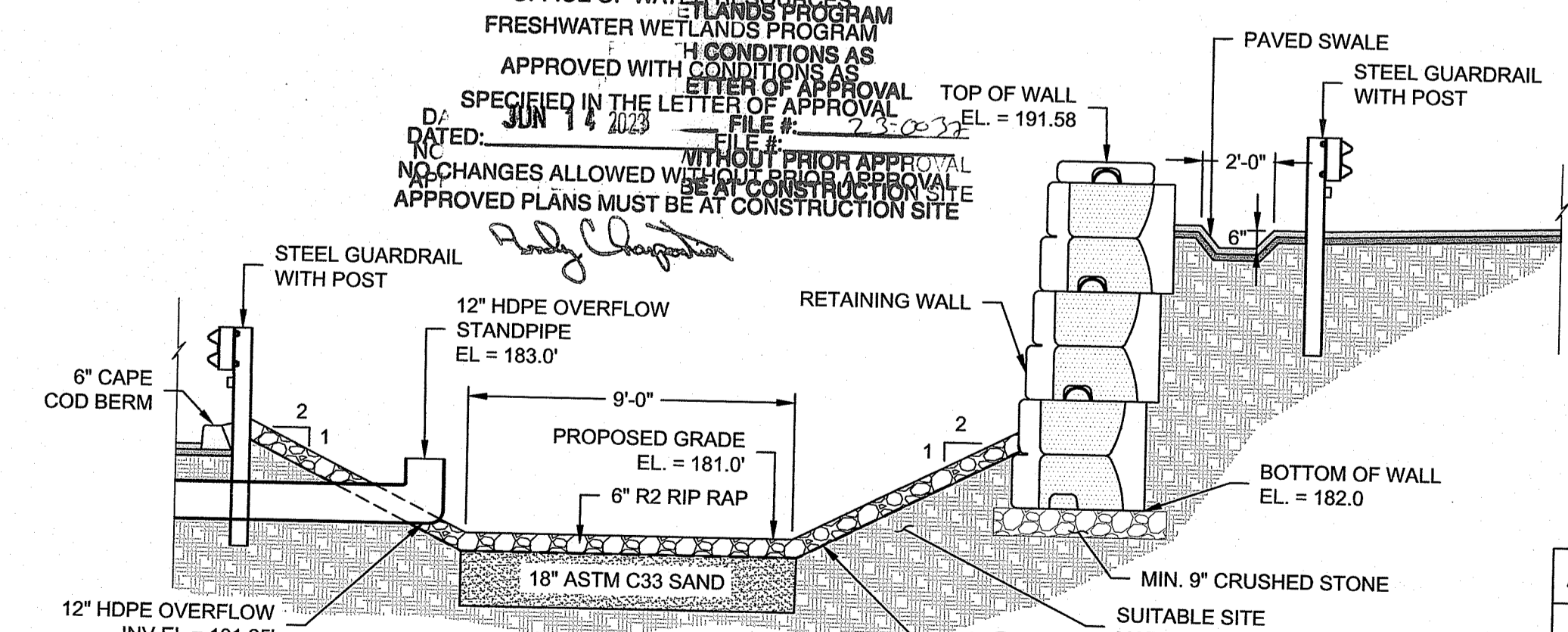


RETAINING WALL ELEVATION
SCALE 1"=8"

BLOCK QUANTITIES		
LABEL	UNIT	QUANTITY
FLAT CAP	CAP	24
24SF	24 SQUARE FOOT	56
6SF	6 SQUARE FOOT	16
90° CORNER	CORNER	12



SECTION C-C'
SCALE 1"=4"



SECTION D-D'
SCALE 1"=4"

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF ENVIRONMENTAL MANAGEMENT
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL DATED: JUN 14 2023
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL BY THE CONSTRUCTION SITE APPROVED PLANS MUST BE AT CONSTRUCTION SITE

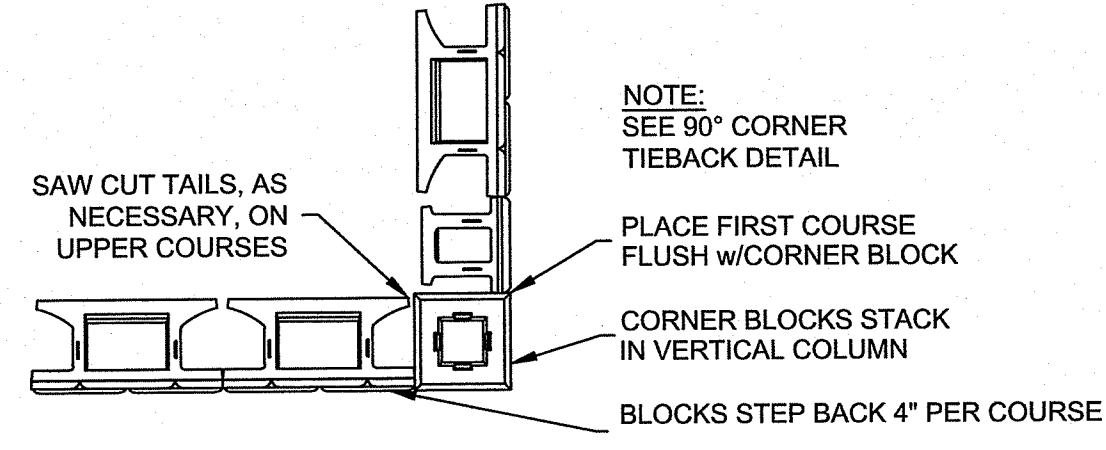
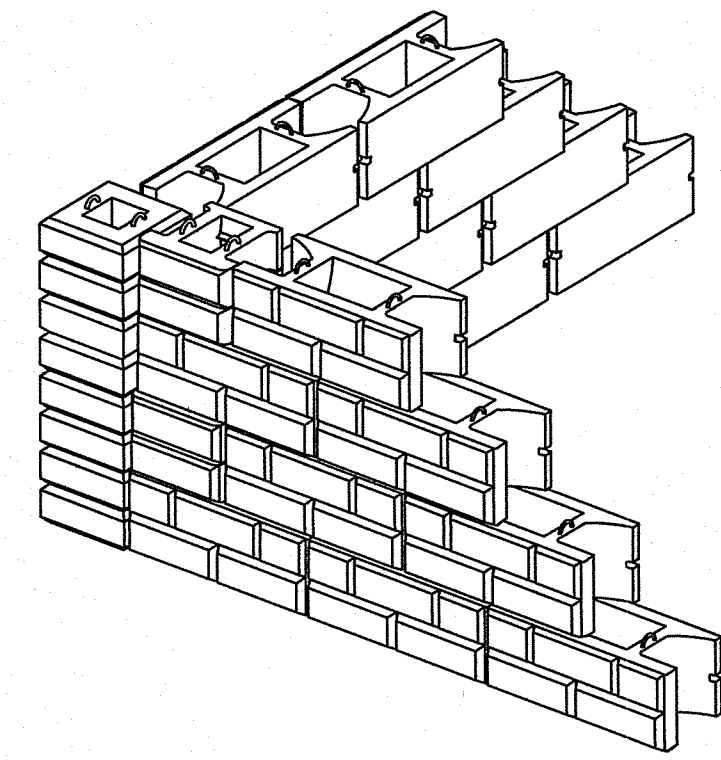
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NO.	RESPONSE TO RIDEM COMMENTS	SM	DATE
1			4-20-23

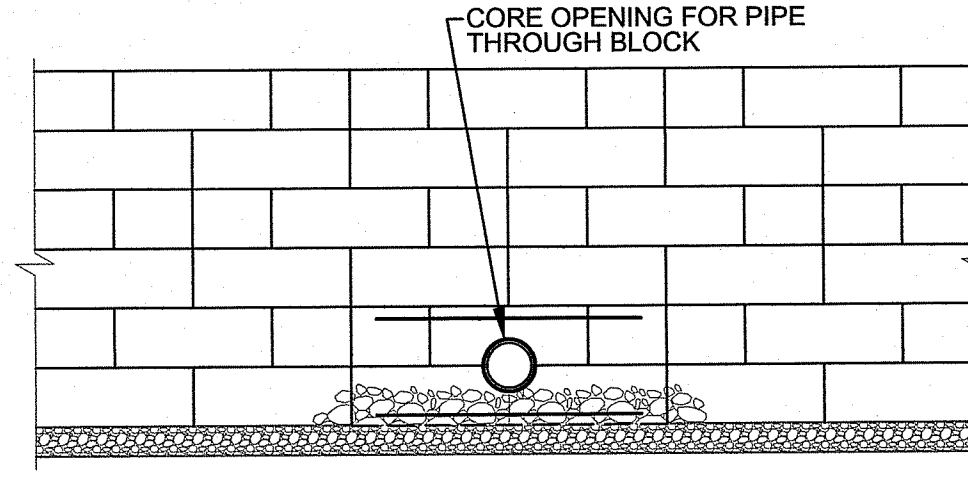
THE NARRAGANSETT ELECTRIC COMPANY
STORMWATER MANAGEMENT PLAN
53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND

PROPOSED RETAINING WALL ALIGNMENT

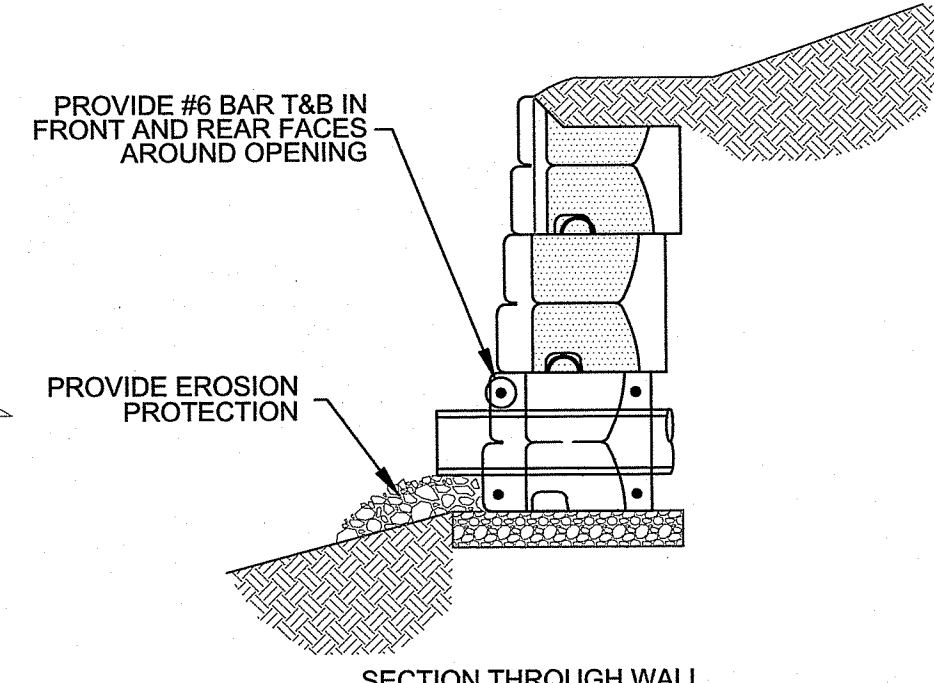
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR: THE NARRAGANSETT ELECTRIC COMPANY
PROJ MGR: SM DESIGNED BY: BC/GFD DATE: FEBRUARY 10, 2023	REVIEWED BY: DRC DRAWN BY: LDT SCALE: AS NOTED REVISION NO: 1
CHECKED BY: MK SCALE: AS NOTED	FIGURE 8
SHEET NO. 8 OF 9	



OUTSIDE 90° CORNER
NOT TO SCALE

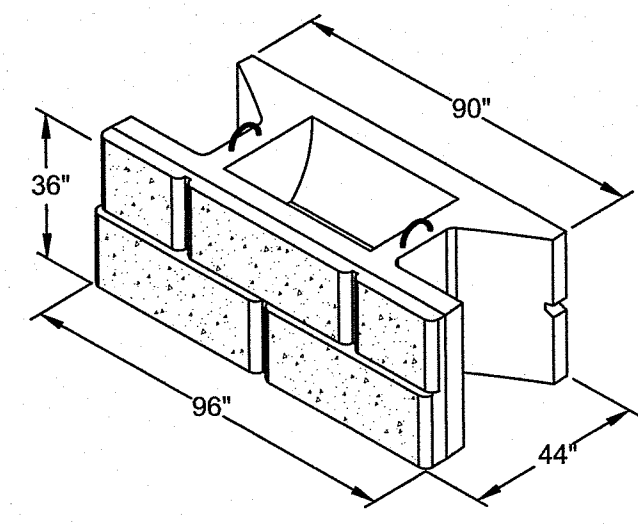


FACE ELEVATION

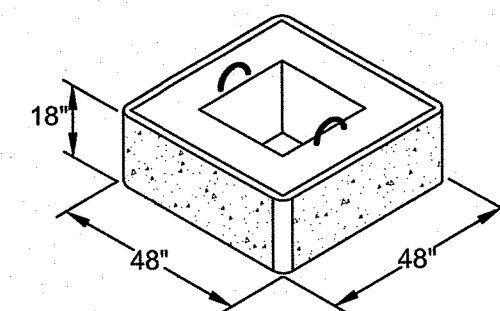


SECTION THROUGH WALL

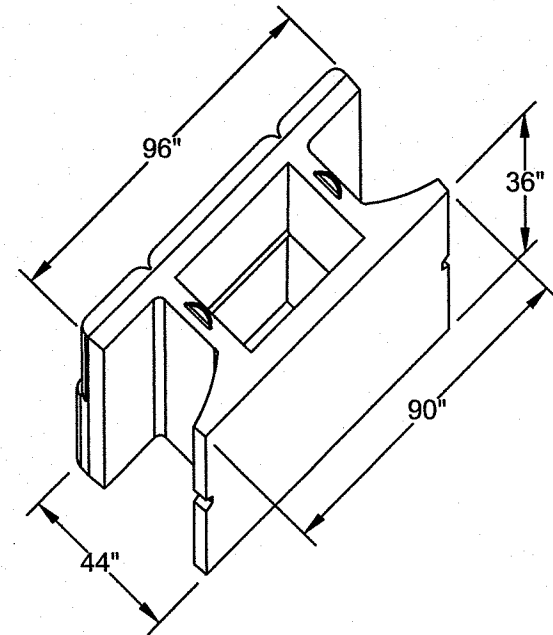
CORED PIPE OUTLET
NOT TO SCALE



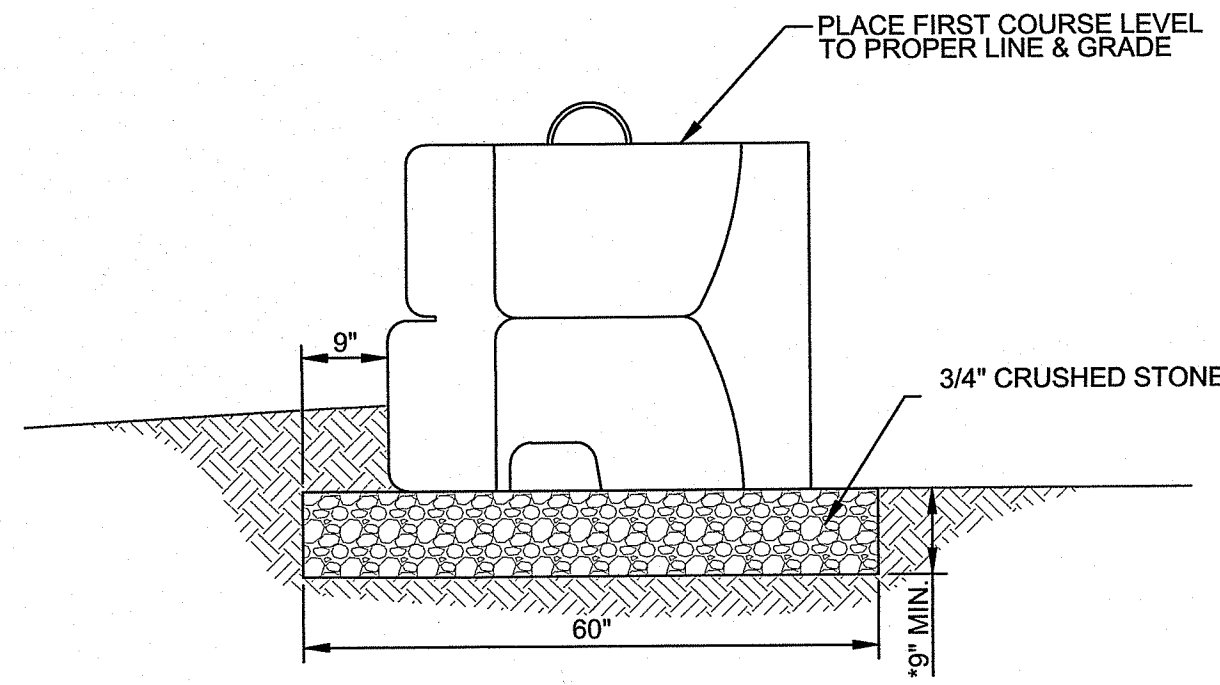
**STONE STRONG 24SF UNIT
BATTERED FACE**
NOT TO SCALE



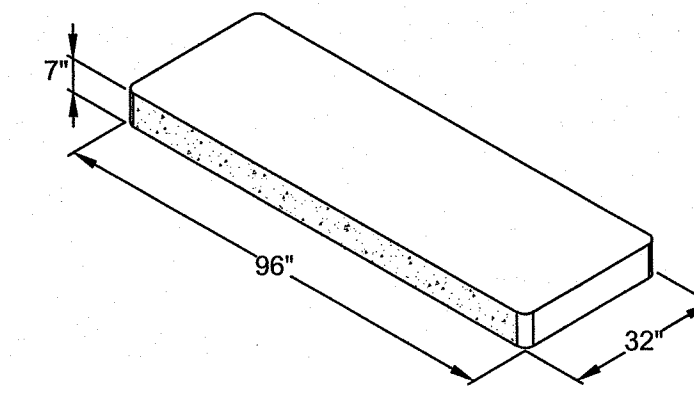
STONE STRONG 90° CORNER UNIT
NOT TO SCALE



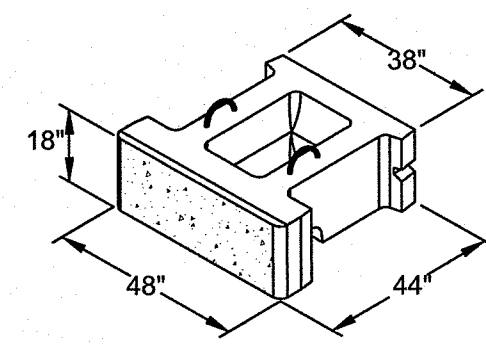
**REAR VIEW
STONE STRONG 24SF UNIT**
NOT TO SCALE



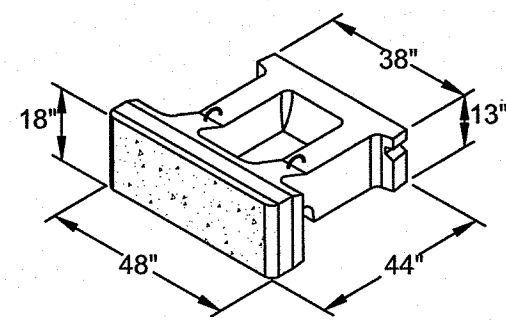
24SF WALL BASE
NOT TO SCALE



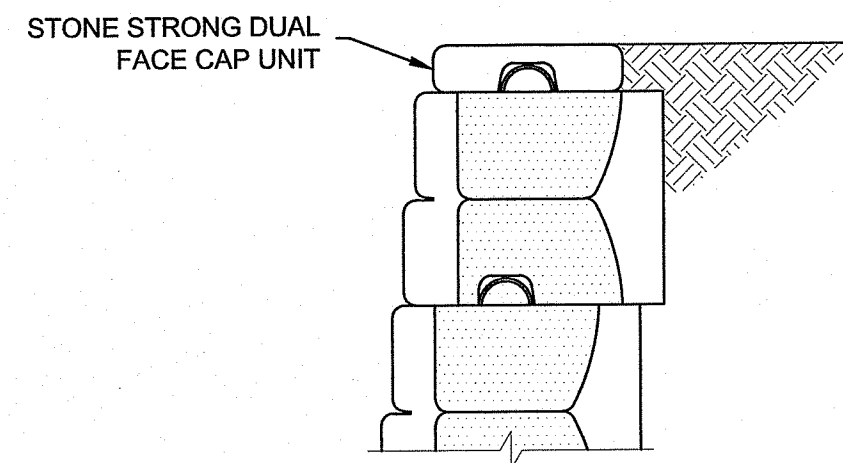
CAP-STEP BLOCK
NOT TO SCALE



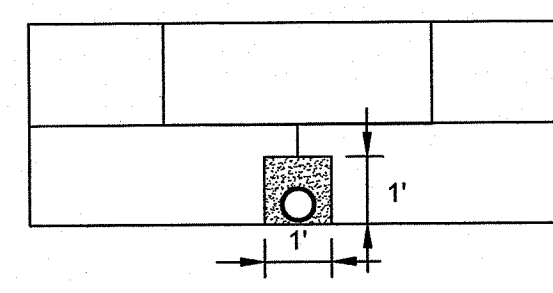
STONE STRONG 6SF UNIT
NOT TO SCALE



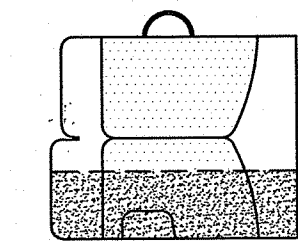
STONE STRONG 6SF TOP UNIT
NOT TO SCALE



STONE STRONG CAP UNIT
NOT TO SCALE



FACE ELEVATION



SECTION THROUGH WALL

**STONE STRONG 24SF UNIT
WITH 1' x 1' NOTCH CUTOUT**
NOT TO SCALE

NOTE: PLACE COMPRESSIBLE
FOAM OR C-333 SAND WITHIN
NOTCH CUTOUT

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM

APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: JUN 14 2023 FILE #: 23-0037

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ONLY**

NO.	RESPONSE TO RIDEM COMMENTS	SM	DATE
			4-20-23

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THE NARRAGANSETT ELECTRIC COMPANY
STORMWATER MANAGEMENT PLAN
53 SOUTH COUNTY TRAIL - EXETER, RHODE ISLAND

RETAINING WALL DETAILS

PREPARED BY: **GZA GeoEnvironmental, Inc.**
Engineers and Scientists
www.gza.com

PREPARED FOR:
THE NARRAGANSETT
ELECTRIC COMPANY

PROJ MGR: SM REVIEWED BY: DRC CHECKED BY: MK
DESIGNED BY: BC/GFD DRAWN BY: LTD SCALE: AS NOTED
DATE: FEBRUARY 10, 2023 PROJECT NO. 35097.00 REVISION NO. 1

FIGURE 9
SHEET NO. 9 OF 9

2023 GZA GeoEnvironmental, Inc. GZA-A-ENV-35097-00-DESIGN-RETAINING WALL ALIGNMENT.DWG 9 APRIL 20, 2023 1:51 PM USA THERIAULT