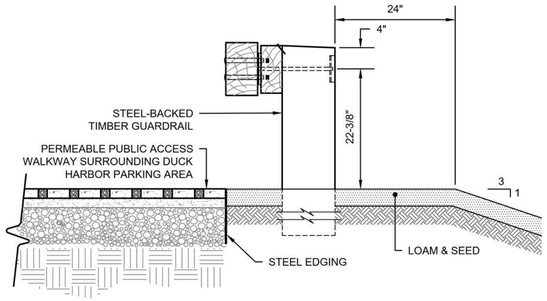
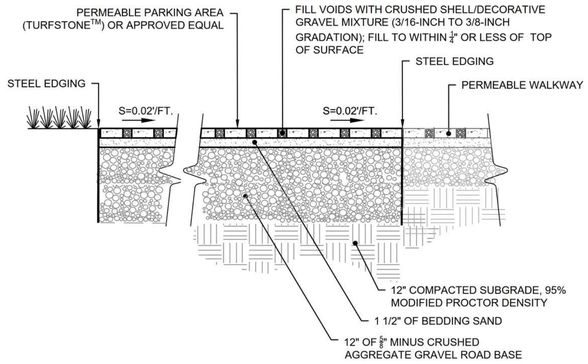


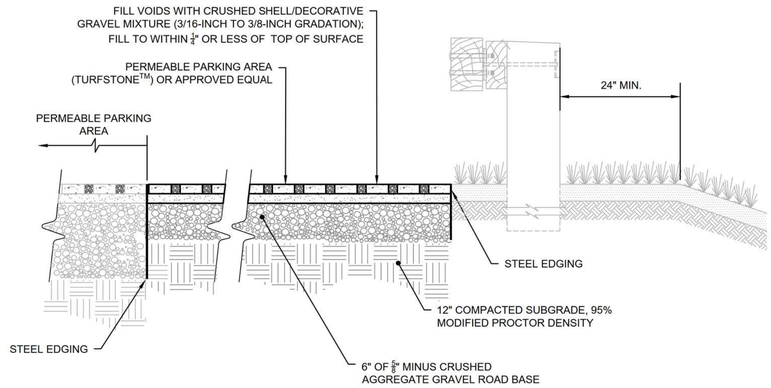
TIMBER GUARD RAIL INSTALLATION FOR DUCK HARBOR ROAD PARKING AREA

NOT TO SCALE



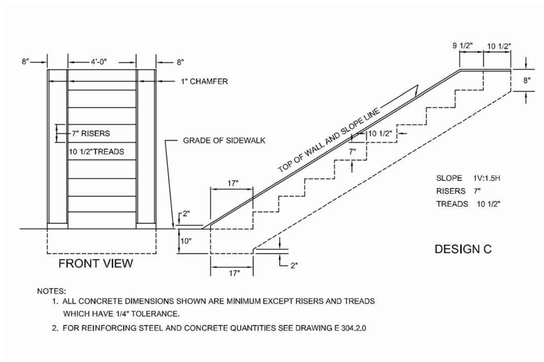
PERMEABLE PARKING AREA AT DUCK HARBOR ROAD

NOT TO SCALE



PERMEABLE PUBLIC ACCESS WALKWAY FROM DUCK HARBOR ROAD PARKING AREA (ABOVE FUTURE MHHW)

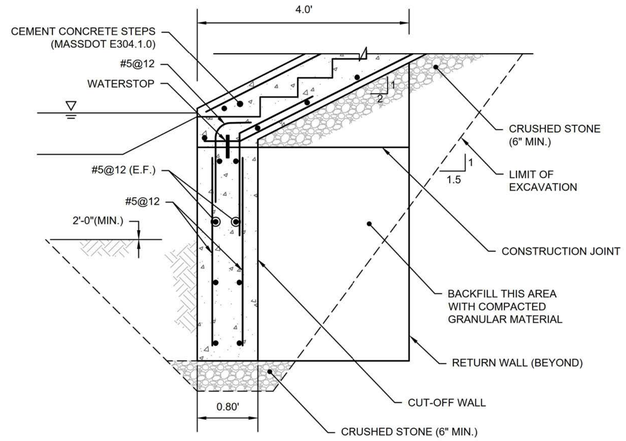
NOT TO SCALE



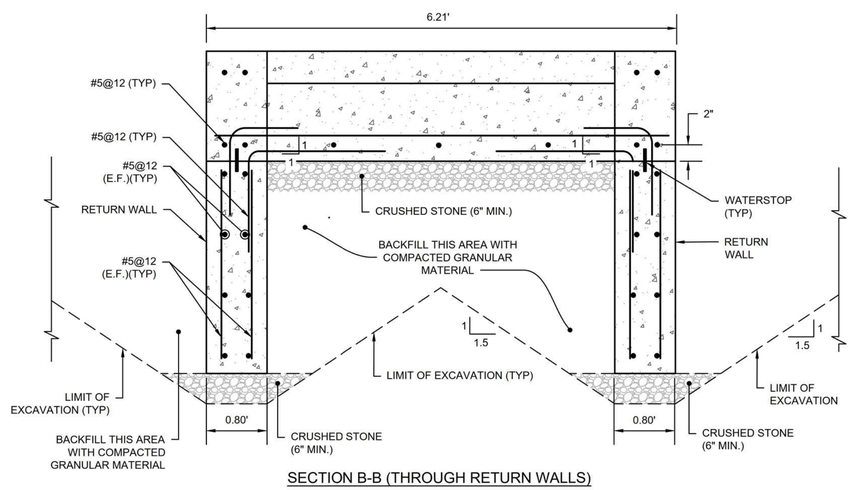
NOTES:
1. ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM EXCEPT RISERS AND TREADS WHICH HAVE 1/4" TOLERANCE.
2. FOR REINFORCING STEEL AND CONCRETE QUANTITIES SEE DRAWING E 304.2.0

CEMENT CONCRETE STEPS (MASSDOT E304.1.0)

NOT TO SCALE



TYPICAL CUT-OFF WALL SECTION



SECTION B-B (THROUGH RETURN WALLS)

CEMENT CONCRETE STEP CUTOFF AND RETURN WALLS

NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED	SDA/DRN	NSW/DEA

COMMONWEALTH OF MASSACHUSETTS
DEANE A. AUDET
Civil
No. 45977
REGISTERED PROFESSIONAL ENGINEER

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401.861.3070
www.fando.com

FRIENDS OF HERRING RIVER

CONSTRUCTION DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

CD-502

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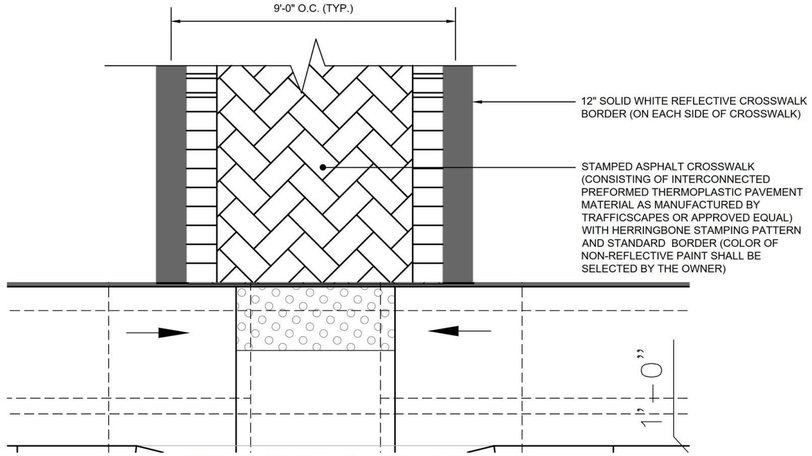
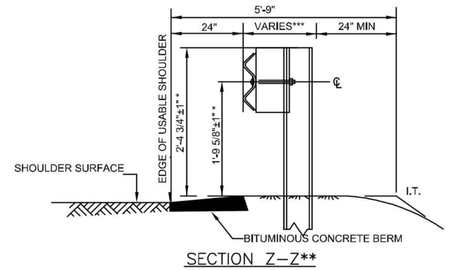


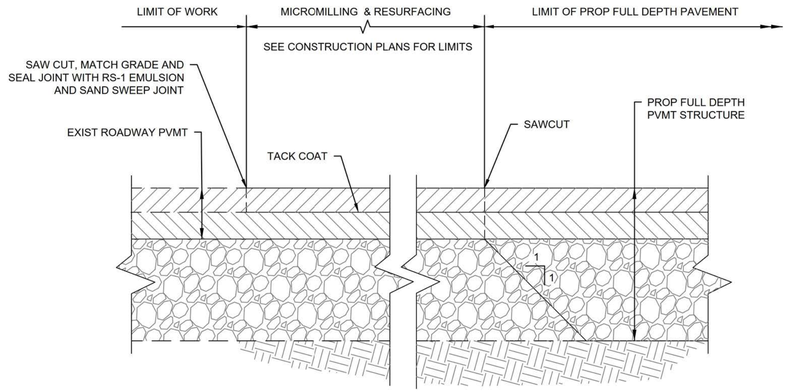
DECORATIVE STAMPED ASPHALT CROSSWALK
NOT TO SCALE



SECTION Z–Z**

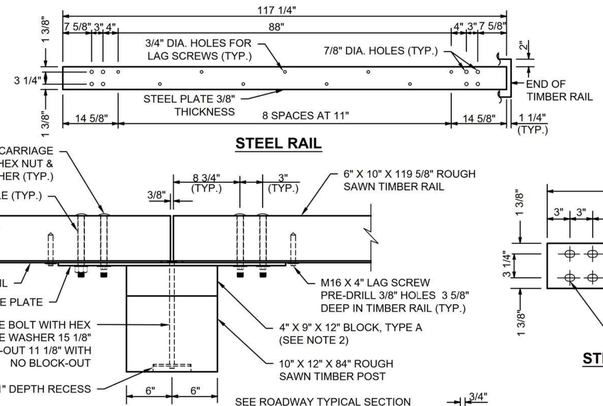
TYPE "A" BERM ALONG EDGE OF SHOULDER

TEMPORARY STEEL 2 BEAM HIGHWAY GUARDRAIL FOR TRAFFIC DIVERSION (MASSDOT E.401.1.0)
NOT TO SCALE



PROPOSED HMA PAVEMENT MATCHING DETAIL
NOT TO SCALE

NOTES:
1. DIMENSIONS NOT LABELED ARE IN MILLIMETERS.
2. USE THE TYPE A, BLOCKED-OUT, SYSTEM OR THE TYPE B, NON-BLOCKED-OUT, SYSTEM AS SPECIFIED.
3. USE WEATHERING STEEL FOR ALL STRUCTURAL STEEL AND FASTENER HARDWARE AS SPECIFIED.
4. PLACE A TERMINAL SECTION (SEE STANDARDS M617-61 AND M617-62) ON BOTH APPROACH AND TRAILING ENDS OF BARRIER INSTALLATIONS.
5. FURNISH HARDWARE IN THE METRIC SIZES SHOWN. EQUIVALENT IMPERIAL SIZES MAY BE USED WHEN METRIC SIZES ARE NOT AVAILABLE.



PLAN

ELEVATION
POST CONNECTION

STEEL RAIL

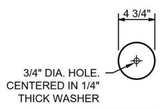
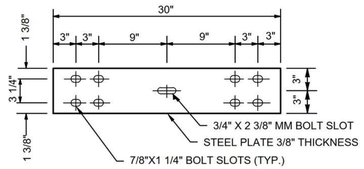
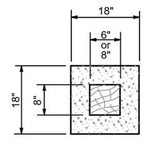
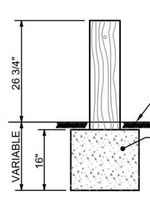


PLATE WASHER



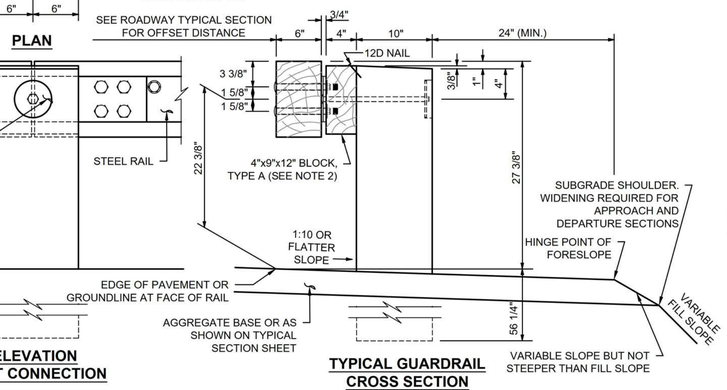
STEEL SPLICE PLATE





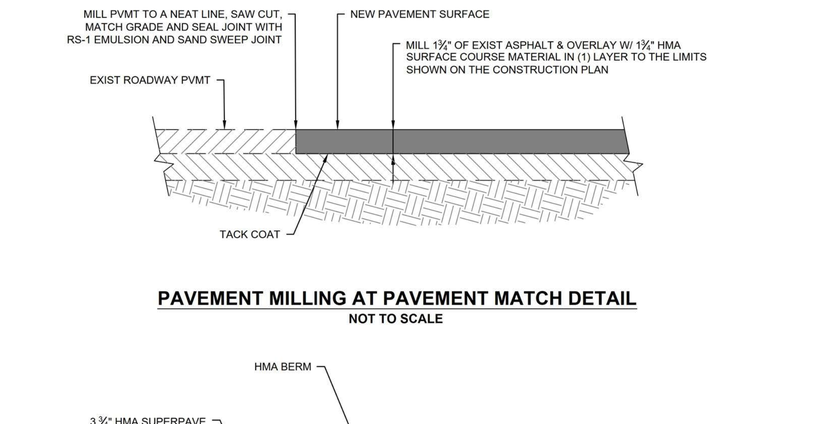
USE 22" DIAMETER ROUND ANCHOR OR 20" SQUARE ANCHOR. REDUCED SIZE ACCEPTABLE IN SOLID ROCK.

CONCRETE ANCHOR FOR SHORT GUARDRAIL POST

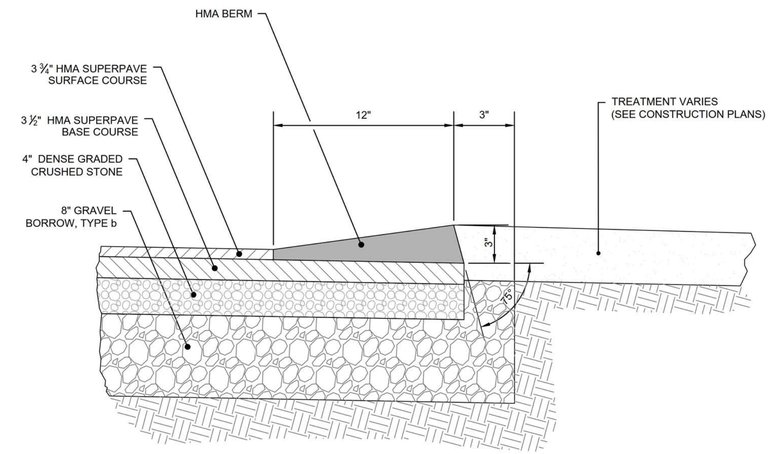


TYPICAL GUARDRAIL CROSS SECTION

STEEL-BACKED PERMANENT TIMBER GUARDRAIL TYPE A & TYPE B
NOT TO SCALE



PAVEMENT MILLING AT PAVEMENT MATCH DETAIL
NOT TO SCALE



MODIFIED HOT MIX ASPHALT BERM TYPE A
NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED	SDA/DRN	NSW/DEA

COMMONWEALTH OF MASSACHUSETTS — DEAN E. AUDET — No. 45977 — REGISTERED PROFESSIONAL ENGINEER

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317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

FRIENDS OF HERRING RIVER

CONSTRUCTION DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

CD-503

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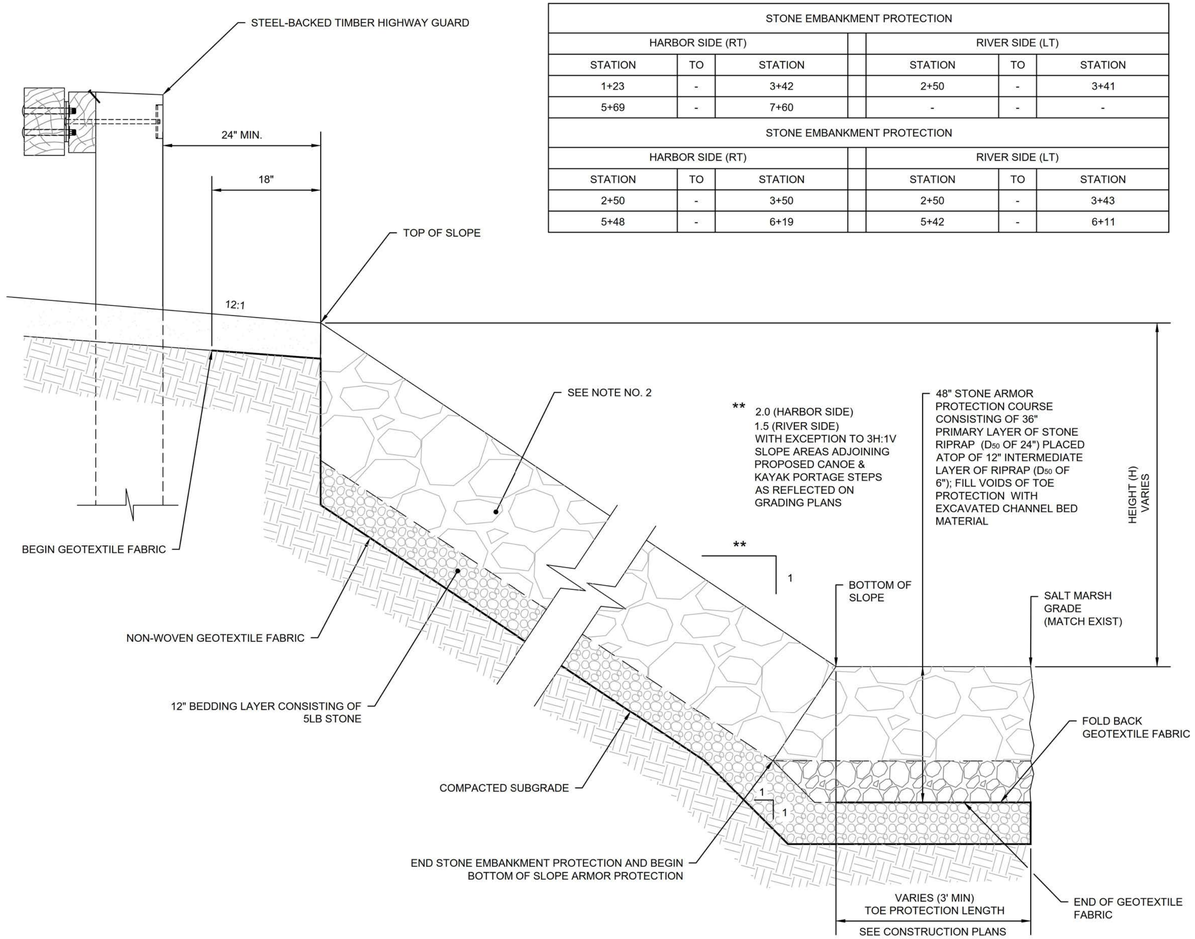


STONE EMBANKMENT PROTECTION					
HARBOR SIDE (RT)			RIVER SIDE (LT)		
STATION	TO	STATION	STATION	TO	STATION
1+23	-	3+42	2+50	-	3+41
5+69	-	7+60	-	-	-

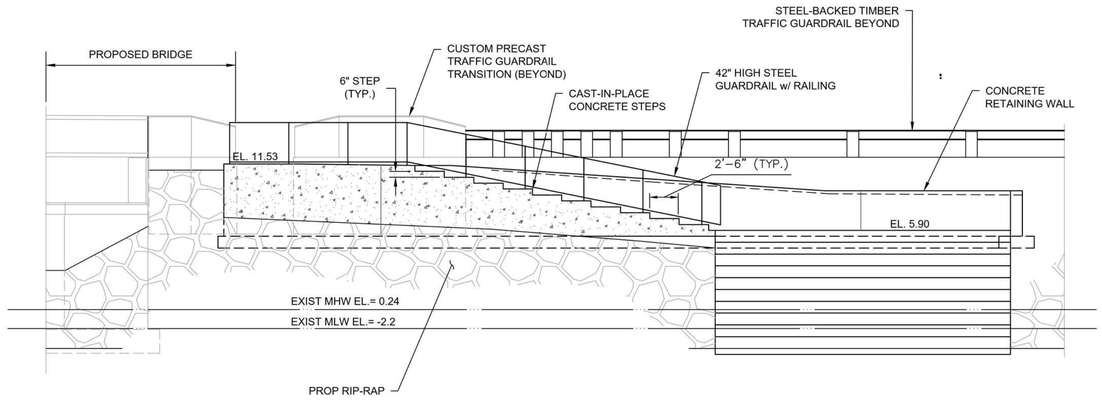
STONE EMBANKMENT PROTECTION					
HARBOR SIDE (RT)			RIVER SIDE (LT)		
STATION	TO	STATION	STATION	TO	STATION
2+50	-	3+50	2+50	-	3+43
5+48	-	6+19	5+42	-	6+11

NOTES:

1. CONSTRUCT EMBANKMENT AND BOTTOM OF SOIL PROTECTION WHERE INDICATED ON THE CONSTRUCTION PLANS.
2. EMBANKMENT SLOPE PROTECTION MATERIAL:
   - HARBOR SIDE - 36" MIN. LAYER OF EXIST STONE REVETMENT WITH A D50 OF 18"-24" PLACED ATOP A 12" LAYER OF 5 LB. BEDDING STONE.
   - RIVER SIDE - 36" LAYER OF VEGETATED, SOIL-FILLED STONE EMBANKMENT SLOPE PROTECTION WITH A D50 OF 18"-24" MIXED WITH EXIST STONE REVETMENT PLACED ATOP A 12" LAYER OF 5 LB. STONE (WITH EXCEPTION TO LEVEL BEACH AREA AS REFLECTED ON GRADING PLANS THAT SHALL RECEIVE 36" MIN. LAYER OF EXISTING STONE REVETMENT).
3. TOE PROTECTION MATERIAL:
   - 36" THICK PRIMARY LAYER SHALL CONSIST OF STONE RIPRAP WITH A D50 = 18" TO 24".
   - 12" THICK INTERMEDIATE LAYER SHALL CONSIST OF STONE RIPRAP WITH A D50 = 4" TO 6".
   - 12" THICK STONE BEDDING LAYER CONSISTING OF 5 LB STONES.

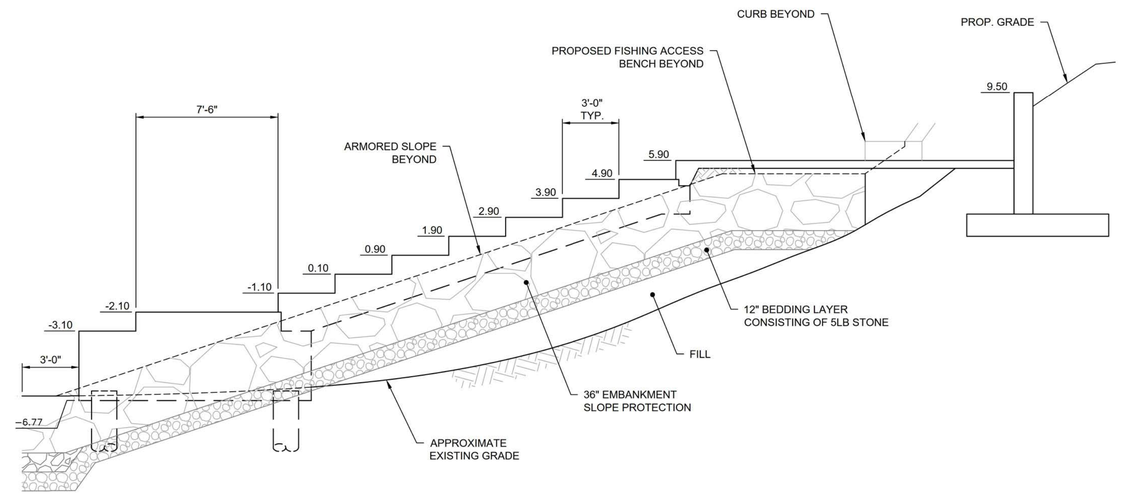
EMBANKMENT AND BOTTOM OF SLOPE PROTECTION DETAIL

NOT TO SCALE



ELEVATION OF PORTAGE STRUCTURE (BOTH SIDES SIMILAR, EAST SIDE SHOWN)

SCALE: NOT TO SCALE



SECTION A THROUGH LAUNCH STAIR (BOTH SIDES SIMILAR, EAST SIDE SHOWN)

SCALE: NOT TO SCALE

STAIRWAY TO CANOE & KAYAK PORTAGE STRUCTURES DETAILS

NOT TO SCALE

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COMMONWEALTH OF MASSACHUSETTS
DEANE E. ANDREI
CIVIL
No. 45977
REGISTERED PROFESSIONAL ENGINEER

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CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

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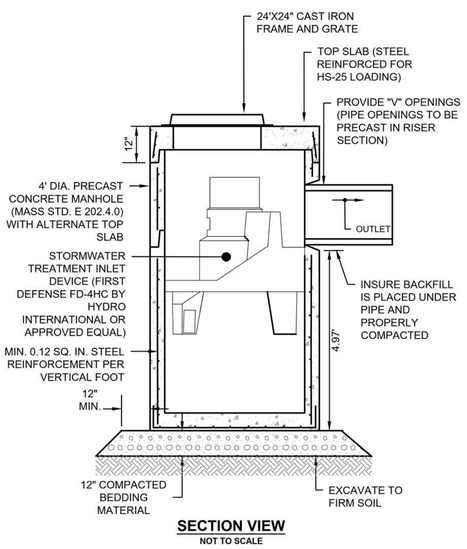


SECTION VIEW
NOT TO SCALE

RECOMMENDED MAINTENANCE:

1. THESE UNITS CAN BE CLEANED WITH A COMMERCIALLY OR MUNICIPALLY OWNED SUMP-VAC OR VACTOR TRUCK BY REMOVING THE INLET GRATE (MUCH LIKE A DEEP-SUMP, CATCH BASIN). NO ENTRY OR REMOVAL OF INTERNAL COMPONENTS IS REQUIRED.
2. INSPECTION EVERY THREE MONTHS IS RECOMMENDED DURING THE FIRST YEAR OF OPERATION (OR FOUR TIMES PER YEAR) IN ORDER TO ESTABLISH A ROUTINE MAINTENANCE AND CLEANING SCHEDULE SINCE SEDIMENT ACCUMULATION IS SITE SPECIFIC.
3. THEREAFTER, IT IS RECOMMENDED THAT INSPECTIONS BE PERFORMED TWO TIMES PER YEAR (AT MINIMUM) AND THAT CLEANING BE PERFORMED TWO TIMES PER YEAR (AT MINIMUM) OR WHEN THE DEPTH OF DEPOSITS IS GREATER THAN OR EQUAL TO ONE HALF THE DEPTH FROM THE BOTTOM OF THE INVERT OF THE OUTLET PIPE (APPROXIMATELY 2 FEET). AN INCREASE IN THE FREQUENCY OF INSPECTIONS AND CLEANING MAY BE REQUIRED (TO FOUR TIMES PER YEAR) IF IT IS DETERMINED THAT SEDIMENT IS ACCUMULATING TO WITHIN 2 FEET OF THE OUTLET INVERT MORE FREQUENTLY THAN SIX MONTHS. THIS SHOULD BE DETERMINED AFTER THE FIRST YEAR OF INSPECTIONS.

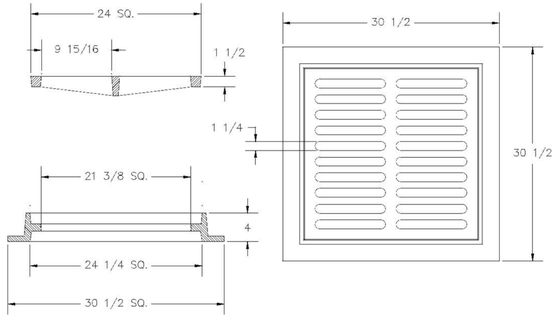
STRUCTURE NOTES:

1. FRAME TO BE FOUR FLANGE 0MA554000002 AS MANUFACTURED BY EAST JORDAN CO. OR APPROVED EQUAL. FRAME HEIGHT SHALL NOT EXCEED 4-INCHES.
2. GRATE SHALL BE 0MA552000043, ADA COMPLIANT AS MANUFACTURED BY EAST JORDAN CO. OR APPROVED EQUAL.
3. FRAME & GRATE SHALL BE ASTM-A48 CLASS 35B GRAY IRON, HEAVY DUTY.
4. STEEL REINFORCEMENT SHALL BE INSTALLED AT MIN. 0.12 SQ. IN. PER VERTICAL FOOT AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM, PLACED ACCORDING TO AASHTO DESIGNATION M199.
5. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI TYPE II CEMENT PER ASTM C-478. THE STRUCTURE SHALL BE REINFORCED TO WITHSTAND AN HS20-44 LOADING. SHIPLAP JOINTS SHALL BE SEALED WITH BUTYL RUBBER MASTIC SEALANT CONFORMING TO ASTM C990.
6. CATCH BASIN DESIGN SHALL CONFORM TO ASTM C-478 FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS." THE BASE SECTION OF THE STRUCTURE SHALL CONSIST OF ONE POUR MONOLITHIC PRECAST BASE SECTION.
7. JOINTS SHALL BE SEALED USING BUTYL RUBBER JOINT SEALANT PER ASTM C-990 & AASHTO M-198.
8. NON-SHRINK GROUT OR HYDRAULIC CEMENT CONFORMING TO ASTM C 595 SHALL BE USED TO PROVIDE A WATER TIGHT SEAL IN THE LIFT HOLES, ANY DRAIN HOLES, AND AROUND THE CONCRETE KNOCK-OUTS FOR THE INLET AND OUTLET PIPES.
9. THE STORMWATER TREATMENT INLET DEVICE SHALL BE BE CROSS-LINKED POLYETHYLENE (XLPE) AND/OR TYPE 304 STAINLESS STEEL OR CARBON STEEL POWDER COATED IN ACCORDANCE WITH ASTM 775/ ASTM A775M. ALL COMPONENTS SHALL BE DESIGNED TO WITHSTAND NORMAL LOADINGS ASSOCIATED WITH FABRICATION, SHIPPING, SITE INSTALLATION, AND NORMAL OPERATION OF THE EQUIPMENT.

PERFORMANCE REQUIREMENTS:

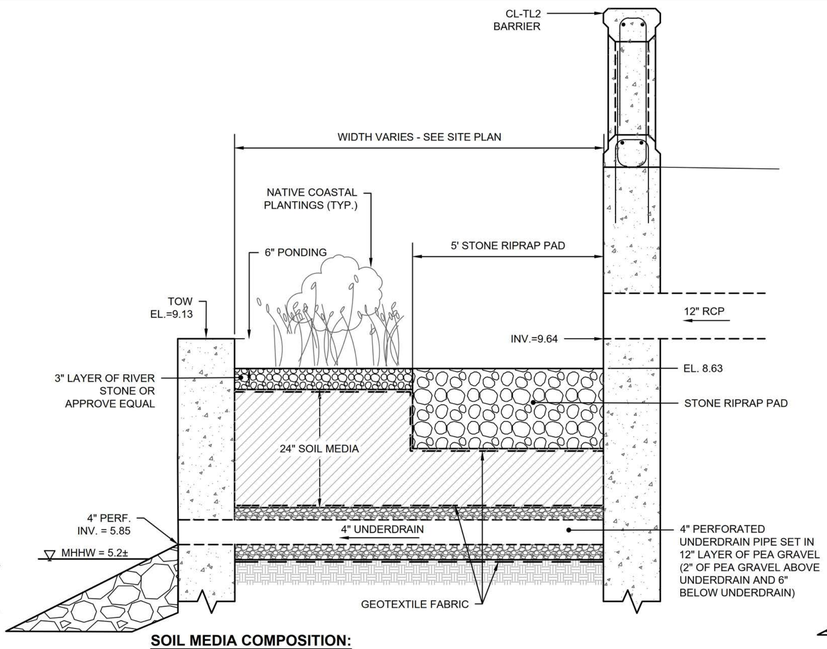
1. STORMWATER TREATMENT INLET DEVICE SHALL BE FIRST DEFENSE FD-4HC BY HYDRO INTERNATIONAL OR APPROVED EQUAL.
2. IN ORDER TO BE CONSIDERED EQUAL, THE DEVICE MUST BE CAPABLE OF PROVIDING 44% TSS REMOVAL FOR FLOWS UP TO 1.5 CFS.

STORMWATER TREATMENT INLET STRUCTURE
NOT TO SCALE



NOTES:
1- MATERIAL: ASTM-A48 CLASS 35B GRAY IRON
2- FRAME WT: 160 LBS. APP.
3- GRATE WT: 150 LBS. APP.

TYPICAL STORMWATER TREATMENT INLET STRUCTURE FRAME & GRATE
NOT TO SCALE



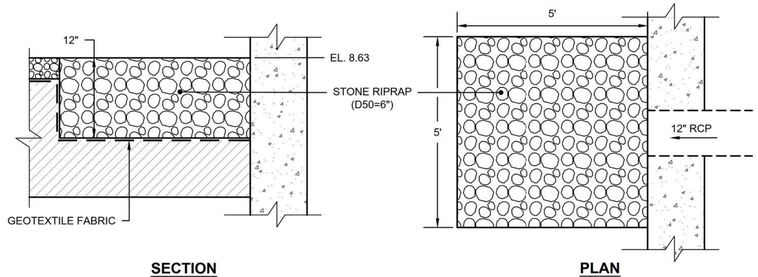
SOIL MEDIA COMPOSITION:

THE SOIL MEDIA SHALL CONSIST OF THE FOLLOWING MIXTURE OF SAND, TOPSOIL/LOAM, AND WELL-AGED, WELL-AERATED, LEAF COMPOST (OR APPROVED EQUIVALENT): 50%-60% SAND, 20%-30% TOPSOIL, AND 20%-30% COMPOST.

RECOMMENDED MAINTENANCE:

1. INSPECT THE PLANTERS TWO TIMES PER YEAR (AT MINIMUM): ONCE DURING THE SPRING AND ONCE DURING THE FALL - IDEALLY WITHIN 24 TO 48 HOURS AFTER A SIGNIFICANT RAINFALL EVENT. DURING THE INSPECTION, PERFORM THE FOLLOWING MAINTENANCE:
   - REMOVE DEBRIS, TRASH, AND LITTER.
   - CUT/TRIM NATIVE GRASSES TWO TIMES PER YEAR (AT MINIMUM).
   - REMOVE DEAD VEGETATION.
   - TRIM/PRUNE ANY WOOD VEGETATION AND TREES.
   - CHECK FOR STANDING WATER. STANDING WATER OBSERVED WITHIN THE PLANTER 24-HOURS AFTER A SIGNIFICANT RAINFALL EVENT INDICATES THAT THE GEOTEXTILE FILTER FABRIC BELOW THE 3-INCHES OF SURFICIAL STONE LAYER MAY BE CLOGGED AN D IN NEED OF REPLACEMENT. IF STANDING WATER IS OBSERVED, REPLACE THE SURFICIAL STONE LAYER AND LAYER OF GEOTEXTILE FILTER FABRIC DIRECTLY BENEATH.
2. IT IS NOT ANTICIPATED THAT THE REPLACEMENT OF THE SOIL MEDIA WILL BE ROUTINELY REQUIRED DUE TO THE PLACEMENT OF FILTER FABRIC BENEATH THE 3-INCH SURFICIAL STONE LAYER. HOWEVER, IF IT IS OBSERVED THAT STANDING WATER STILL EXISTS WITHIN THE PLANTER FOLLOWING THE REPLACEMENT OF THE SURFICIAL STONE AND TOP LAYER OF FILTER FABRIC, THE MEDIA LAYER WILL NEED REPLACED.

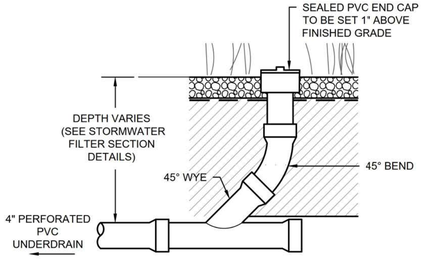
STORMWATER FILTER SECTION - PLANTER NOs. 1&2
NOT TO SCALE



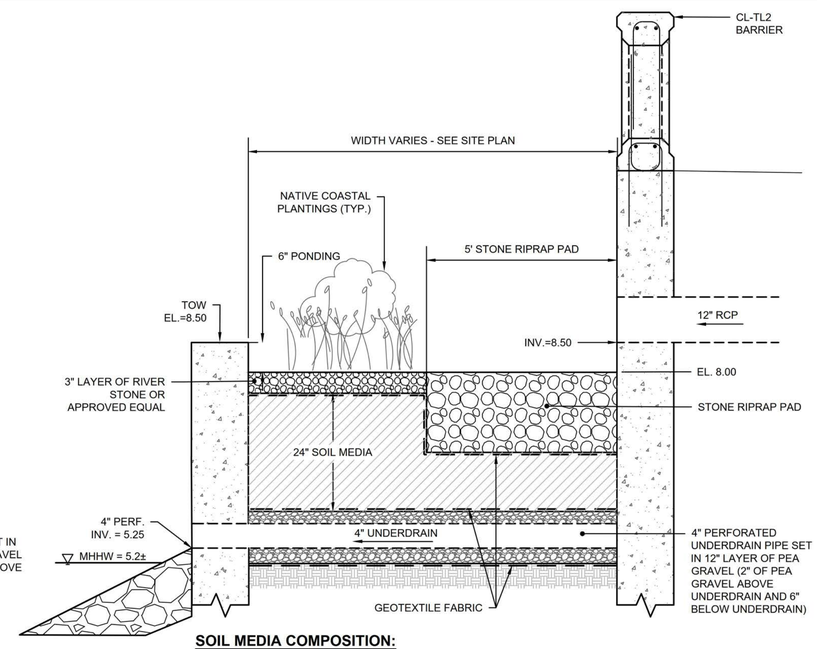
SECTION PLAN

NOTE:
1. STONE RIPRAP PAD SHALL CONSIST OF STONE HAVING A MINIMUM MASS OF 50 LBS.

STONE RIPRAP PAD DETAIL
NOT TO SCALE



TYPICAL CLEANOUT DETAIL
NOT TO SCALE



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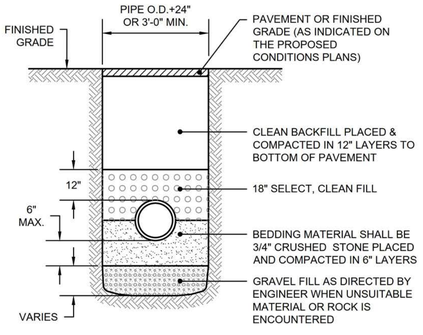
1. INSPECT THE PLANTERS TWO TIMES PER YEAR (AT MINIMUM): ONCE DURING THE SPRING AND ONCE DURING THE FALL - IDEALLY WITHIN 24 TO 48 HOURS AFTER A SIGNIFICANT RAINFALL EVENT. DURING THE INSPECTION, PERFORM THE FOLLOWING MAINTENANCE:
   - REMOVE DEBRIS, TRASH, AND LITTER.
   - CUT/TRIM NATIVE GRASSES TWO TIMES PER YEAR (AT MINIMUM).
   - REMOVE DEAD VEGETATION.
   - TRIM/PRUNE ANY WOOD VEGETATION AND TREES.
   - CHECK FOR STANDING WATER. STANDING WATER OBSERVED WITHIN THE PLANTER 24-HOURS AFTER A SIGNIFICANT RAINFALL EVENT INDICATES THAT THE GEOTEXTILE FILTER FABRIC BELOW THE 3-INCHES OF SURFICIAL STONE LAYER MAY BE CLOGGED AN D IN NEED OF REPLACEMENT. IF STANDING WATER IS OBSERVED, REPLACE THE SURFICIAL STONE LAYER AND LAYER OF GEOTEXTILE FILTER FABRIC DIRECTLY BENEATH.
2. IT IS NOT ANTICIPATED THAT THE REPLACEMENT OF THE SOIL MEDIA WILL BE ROUTINELY REQUIRED DUE TO THE PLACEMENT OF FILTER FABRIC BENEATH THE 3-INCH SURFICIAL STONE LAYER. HOWEVER, IF IT IS OBSERVED THAT STANDING WATER STILL EXISTS WITHIN THE PLANTER FOLLOWING THE REPLACEMENT OF THE SURFICIAL STONE AND TOP LAYER OF FILTER FABRIC, THE MEDIA LAYER WILL NEED REPLACED.

STORMWATER FILTER SECTION - PLANTER NOs. 3&4
NOT TO SCALE



TYPICAL STORM DRAIN TRENCH DETAIL
NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED	SDA/DRN	NSW/DEA

COMMONWEALTH OF MASSACHUSETTS — DEAN E. ANDERT — CIVIL — No. 45977 — REGISTERED PROFESSIONAL ENGINEER

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FRIENDS OF HERRING RIVER

CONSTRUCTION DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

CD-505
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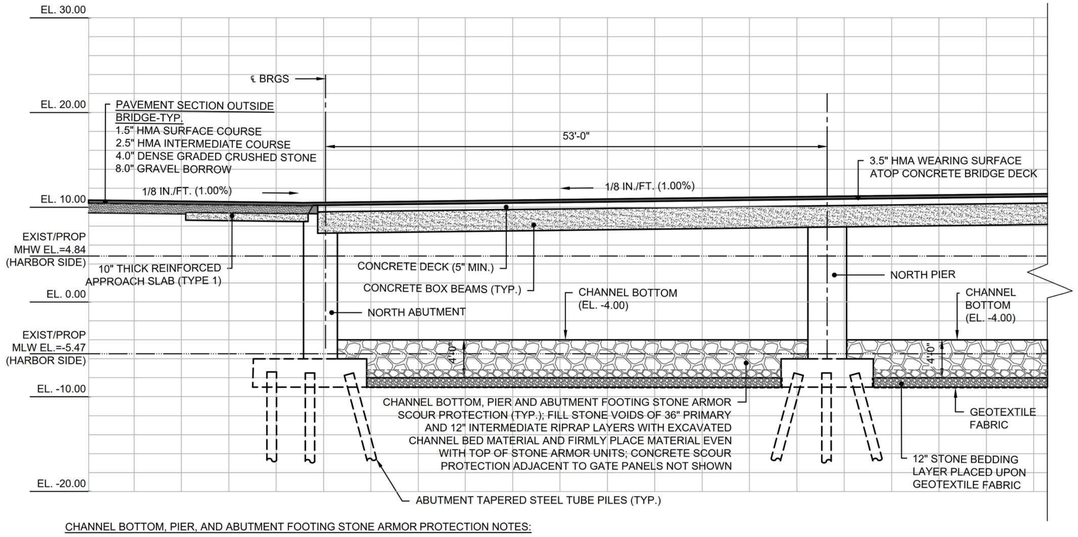
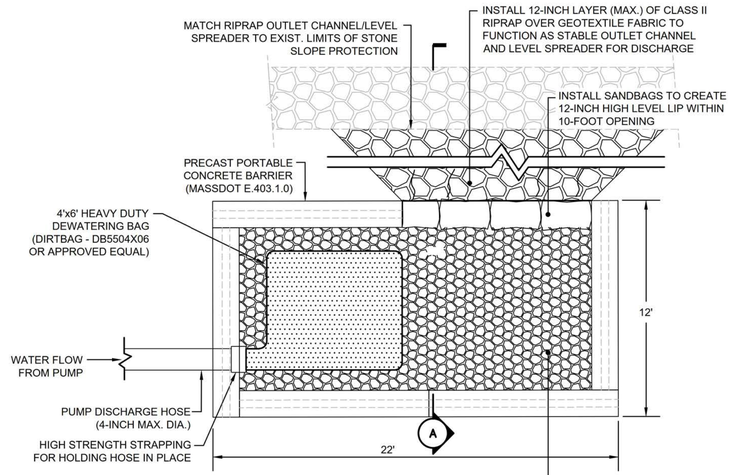


CHANNEL BOTTOM, PIER, AND ABUTMENT FOOTING STONE ARMOR PROTECTION NOTES:

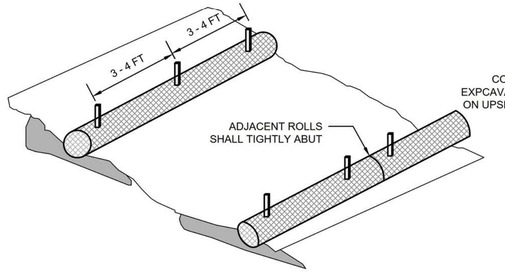
1. 36" THICK PRIMARY LAYER SHALL CONSIST OF STONE RIPRAP WITH A D50 = 18" TO 24".
2. 12" THICK INTERMEDIATE LAYER SHALL CONSIST OF STONE RIPRAP WITH A D50 = 6" TO 8".
3. 12" THICK STONE BEDDING LAYER CONSISTING OF 5 LB STONES.

TYPICAL BRIDGE ABUTMENT AND PIER FOOTING SCOUR PROTECTION (AS VIEWED FROM HARBOR)

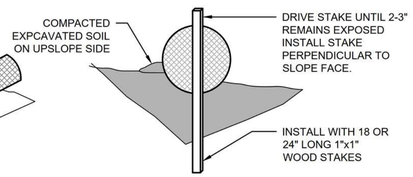
SCALE: 1/8" = 1'-0"



PLAN



TYPICAL WATTLE INSTALLATION GUIDE



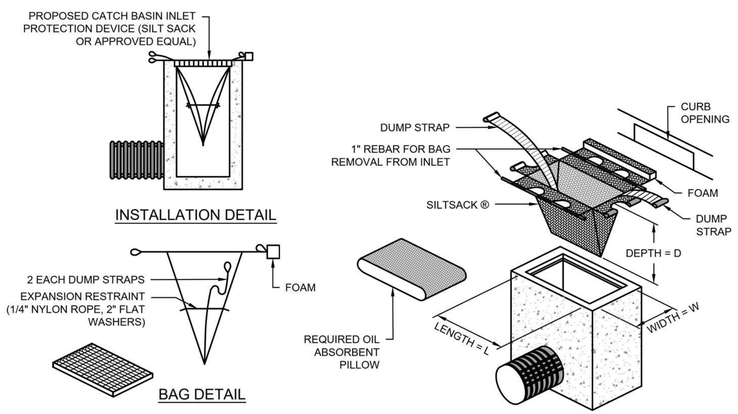
ENTRENCHMENT

NOTES:

1. 12-INCH DIAMETER COMPOST FILTER TUBE SHALL BE INSTALLED WHERE INDICATED ON THE CONTRACT DRAWINGS AND BE CONSTRUCTED OF 100% BIODEGRADABLE MATERIAL. A ROW OF COMPOST FILTER TUBES (WEIGHTED DOWN AND NOT STAKED) SHALL ALSO BE INSTALLED AROUND ANY SOIL STOCKPILE AREAS UTILIZED BY THE CONTRACTOR DURING CONSTRUCTION IN PAVED AREAS.
2. COMPOST FILTER TUBES SHALL BE TRENCHED APPROXIMATELY 2-3 INCHES AND STAKED SUCH THAT COMPOST FILTER TUBES DIRECTLY CONTACT SOIL AND PRECLUDE UNDERMINING OR BLOWOUTS. THE TRENCH SHALL BE APPROXIMATELY 9 INCHES WIDE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE COMPOST FILTER TUBE AT A SPACING OF 3-4 FEET ON CENTER AND NO GREATER THAN 6" FROM THE EACH END OF THE COMPOST FILTER TUBE. STAKES SHALL BE 1-INCH BY 1-INCH WOODEN STAKES WITH A LENGTH OF 18-24 INCHES. COMPACT SOIL EXCAVATED TO CREATE TRENCH ON UPHILL SIDE SIDE.
3. ENDS OF ADJACENT COMPOST FILTER TUBES SHALL BE TIGHTLY BUTTED OR OVERLAPPED SO THAT NO OPENING EXISTS FOR WATER TO PASS THROUGH. COMPOST FILTER TUBES SHALL BE FREE OF DAMAGE OR DEFECTS WHEN DELIVERED TO THE SHIPPER. NO VEHICLES SHALL BE DRIVEN OVER COMPOST FILTER TUBES.

COMPOST FILTER TUBE

NOT TO SCALE

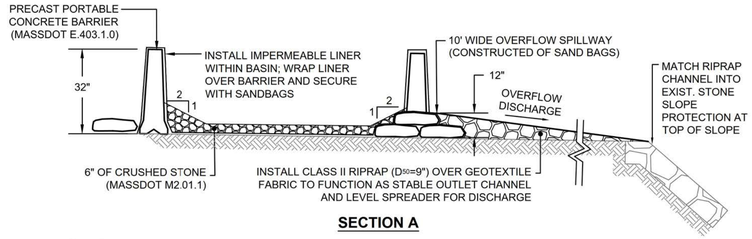


NOTE:

CONTRACTOR SHALL MEASURE ALL REQUIRED CATCH BASIN DIMENSIONS AND PROVIDE APPROPRIATELY-SIZED DEVICES PER MANUFACTURER'S REQUIREMENTS.

CATCH BASIN INLET PROTECTION

NOT TO SCALE



SECTION A

NOTES:

1. THE DEWATERING BAG, DIRTBAG DB 55 OR APPROVED EQUAL, SHALL BE HEAVY DUTY AND CONSIST OF A NONWOVEN BAG SEWN WITH A DOUBLE NEEDLE MATCHING USING A HIGH STRENGTH THREAD.
2. EACH DEWATERING BAG SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE A 4-INCH DISCHARGE HOSE. THE BAG SHALL BE PROVIDED WITH STRAPS TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT BEING FILTERED.
3. MAINTAIN DEWATERING BAG(S) AS NECESSARY TO EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE. USE OF EXCESSIVE FLOW RATES OR OVERFILLING DIRTBAG OF THE HOSE ATTACHMENT STRAPS WITH SEDIMENT WILL CAUSE RUPTURES OF THE BAGS OR FAILURE.
4. DISPOSE OF DEWATERING BAG AND CONTENTS AT OFF-SITE DISPOSAL FACILITY IN ACCORDANCE WITH LOCAL, STATE, AND/OR FEDERAL REGULATIONS.
5. INSTALL DEWATERING BAG AND CRUSHED STONE BEDDING WITH A SLOPE SO INCOMING WATER FLOWS DOWNHILL THROUGH THE BAG WITHOUT CREATING MORE EROSION. STRAP THE NECK OF DEWATERING BAG TIGHTLY TO THE DISCHARGE HOSE.
6. GEOTEXTILE FILTER FABRIC SHALL CONSIST OF A NONWOVEN GEOTEXTILE FABRIC CONFORMING TO TYPE III FABRIC IN ACCORDANCE WITH TABLE III, SECTION M.9.50.0 OF THE MASSDOT STANDARD SPECIFICATIONS.
7. THE IMPERMEABLE LINER SHALL CONSIST OF A 30-MIL THICK PVC LINER.

TEMPORARY CONSTRUCTION DEWATERING BASIN

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CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

CD-506

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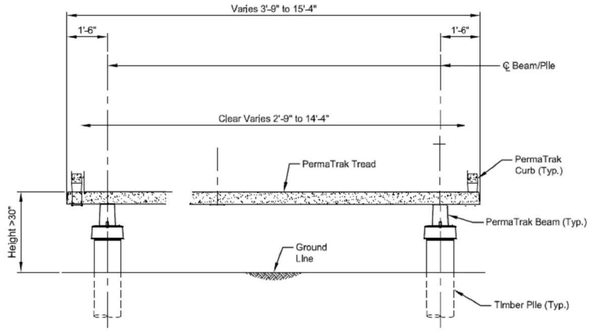

TYPICAL SECTION - PRECAST CONCRETE BOARDWALK ON TIMBER PILES
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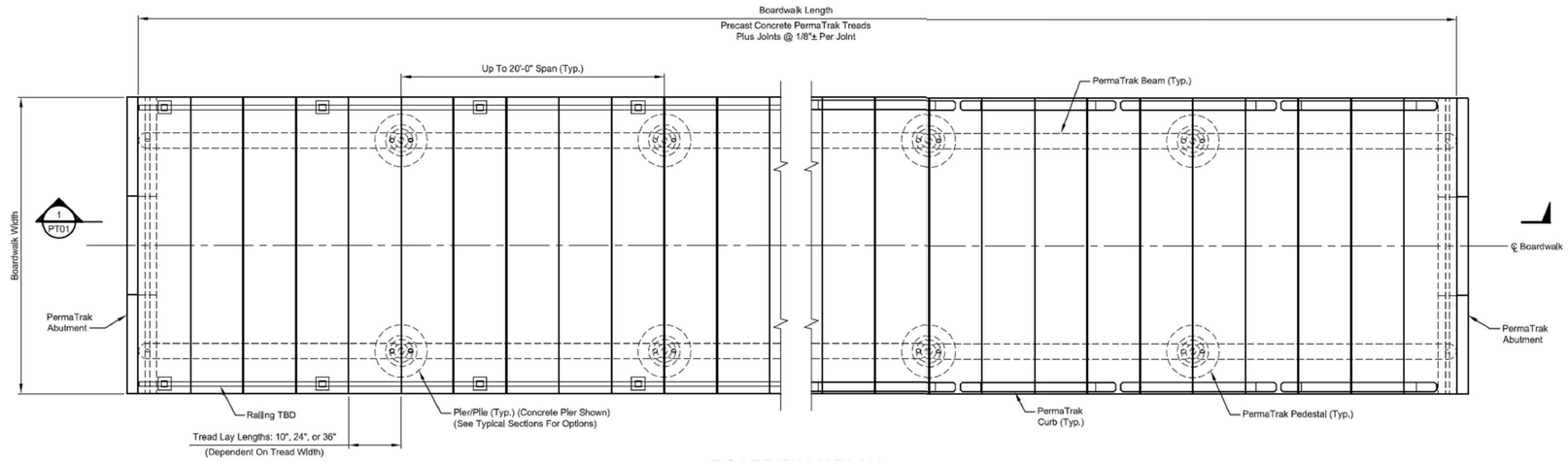
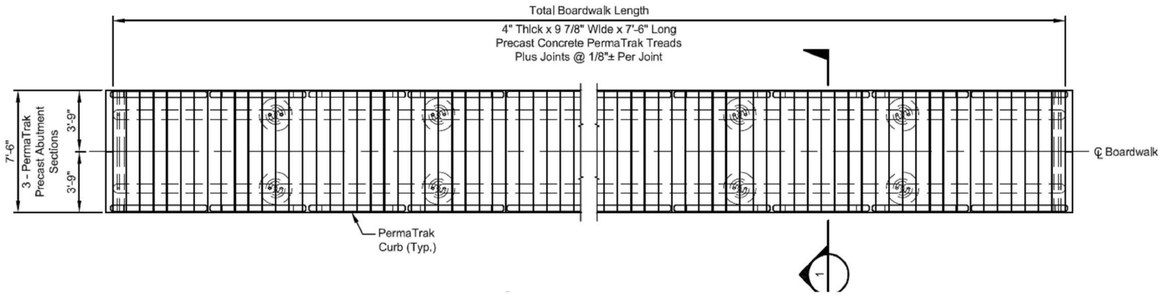
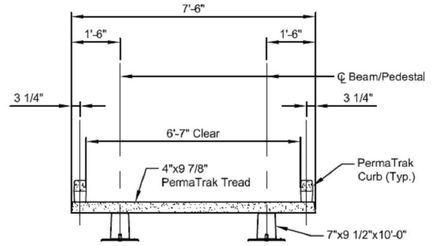


BOARDWALK TYPICAL PLAN
NOT TO SCALE



BOARDWALK PLAN
NOT TO SCALE



TYPICAL SECTION - PRECAST CONCRETE BOARDWALK ON TIMBER PILES
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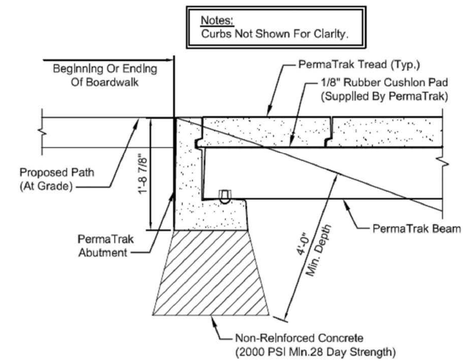


TYPICAL PRECAST ABUTMENT
NOT TO SCALE

DESIGN DATA

1. Boardwalk shall be designed in accordance with the AASHTO LRFD bridge design specifications and the LRFD guide specification for the design of pedestrian bridges.

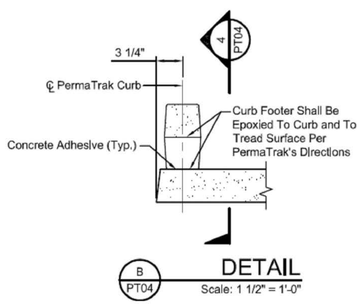
   Design Live Load: Pedestrian Loading - 90 psf Uniform
   Vehicular Loading - 5,000 lbs, 2,500 lbs per axle with min. 96" wheelbase

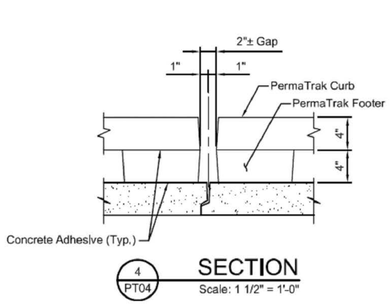
2. Abutments and piers shall be designed for lateral earth pressure, live load surcharge and structure loads. Assumed (net) allowable bearing pressure: 2,000 psf. (Contractor To Verify)

MATERIALS

1. All bolts, nuts, washers, and hardware shall be hot dipped galvanized after fabrication in accordance with ASTM A153.

2. All miscellaneous steel shall be galvanized in accordance with AASHTO A232.





TYPICAL PRECAST BOARDWALK CURB DETAILS
NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED	SDA/DRN	NSW/DEA

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FRIENDS OF HERRING RIVER

CONSTRUCTION DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

CD-507

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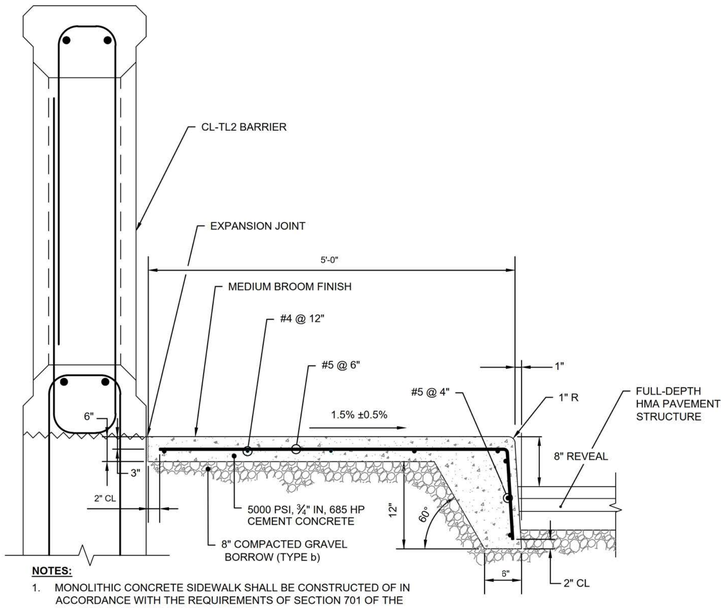
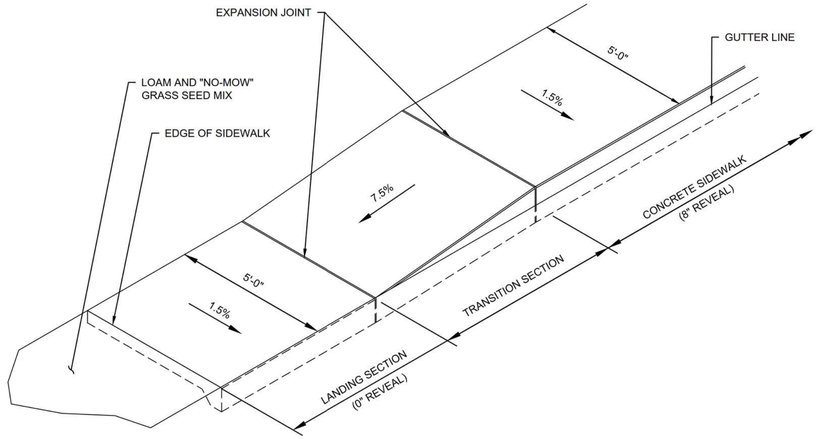


NOTES:

1. MONOLITHIC CONCRETE SIDEWALK SHALL BE CONSTRUCTED OF IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 701 OF THE MassDOT STANDARD SPECIFICATIONS.
2. SEE BRIDGE PLANS FOR TRANSITION FROM BRIDGE SIDEWALK TO MONOLITHIC SIDEWALK

MONOLITHIC CONCRETE SIDEWALK DETAIL

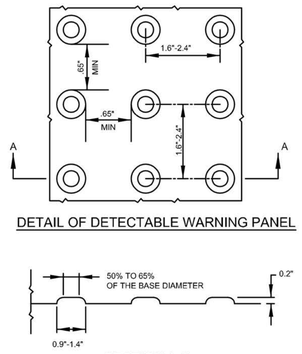
NOT TO SCALE



* - CONSTRUCTION TOLERANCE ±0.5%

MONOLITHIC CONCRETE SIDEWALK TRANSITION DETAIL

NOT TO SCALE



DETAIL OF DETECTABLE WARNING PANEL

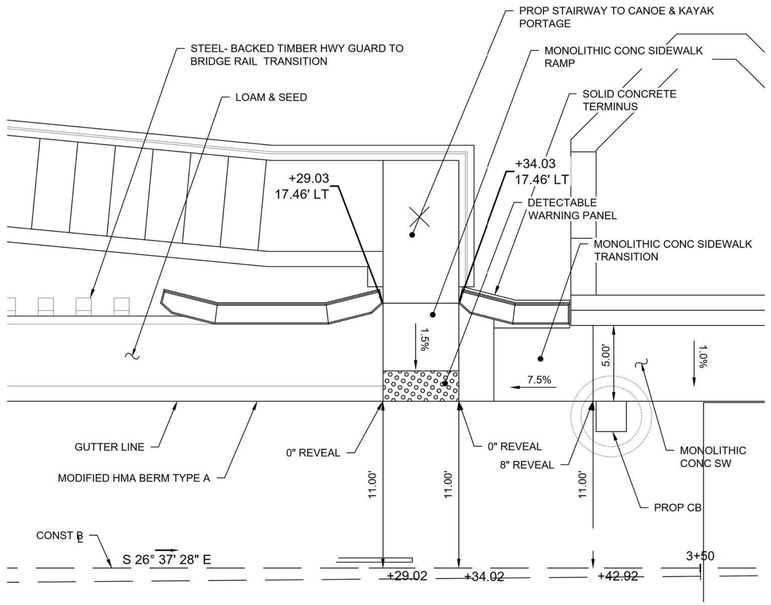
SECTION A-A

NOTE:

PANELS MAY BE CONCRETE PRECAST OR CAST IN PLACE OR OTHER SUITABLE MATERIAL PERMANENTLY APPLIED TO THE RAMP. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

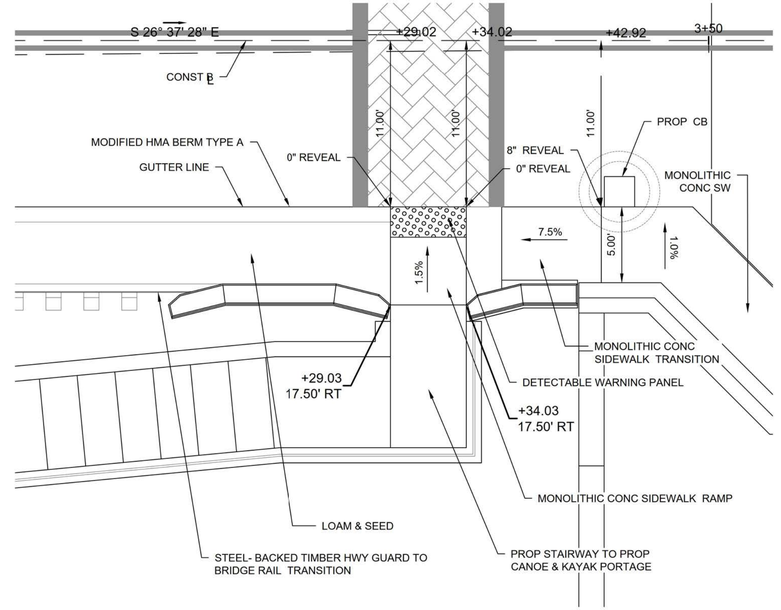
DETECTABLE WARNING PANEL FOR WHEELCHAIR RAMPS AND STANDARD RAMP TERMINOLOGY (MASSDOT E107.6.5R)

NOT TO SCALE



SIDEWALK TRANSITION DETAIL A

SCALE: 1" = 5'



SIDEWALK TRANSITION DETAIL B

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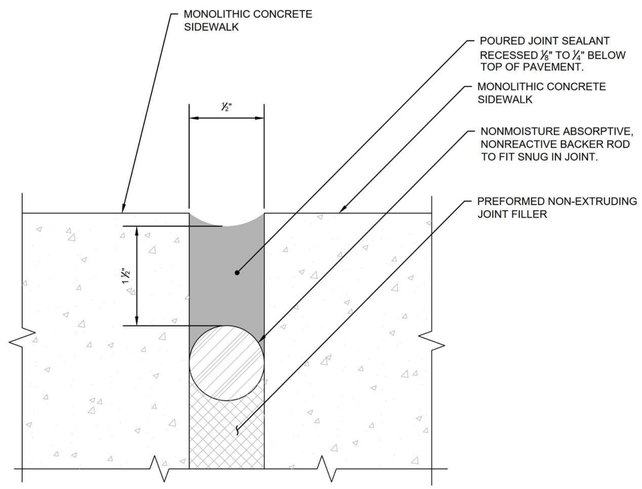

EXPANSION JOINT DETAIL

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WHEEL CHAIR RAMP TRANSITION DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
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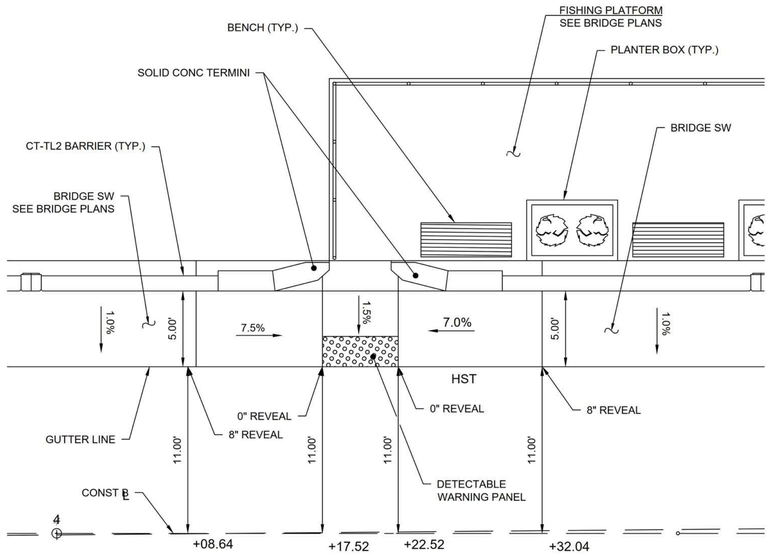

SIDEWALK TRANSITION DETAIL C

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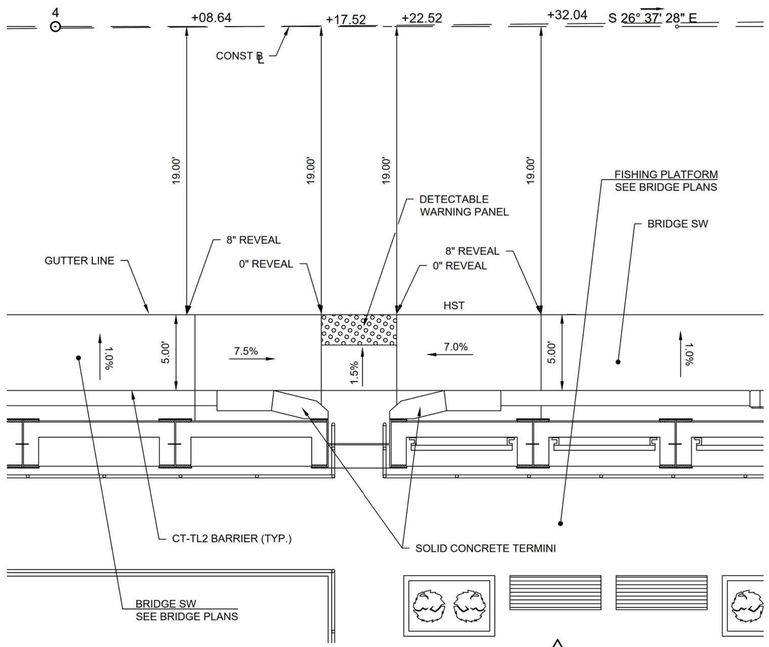

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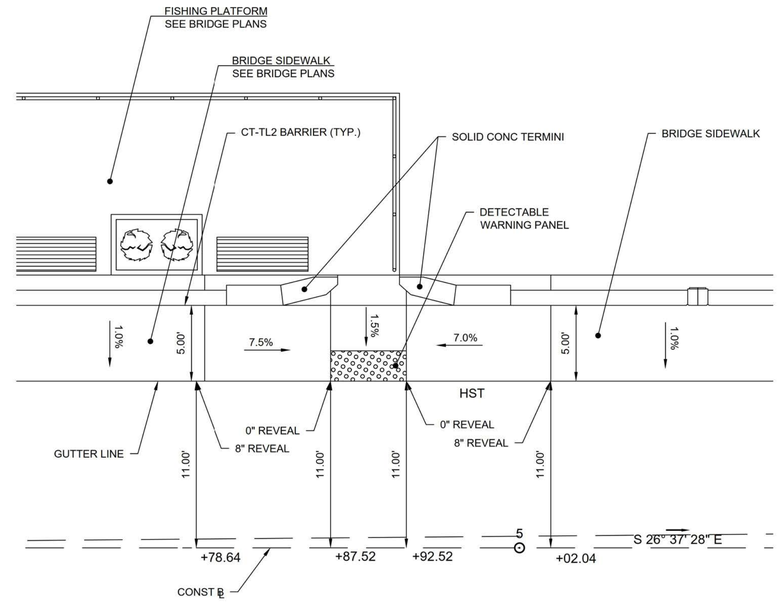

SIDEWALK TRANSITION DETAIL E

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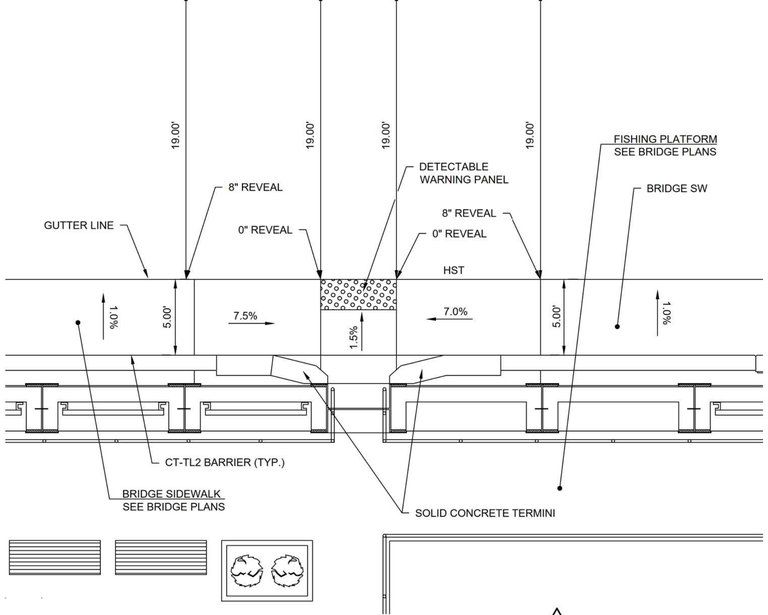

SIDEWALK TRANSITION DETAIL F

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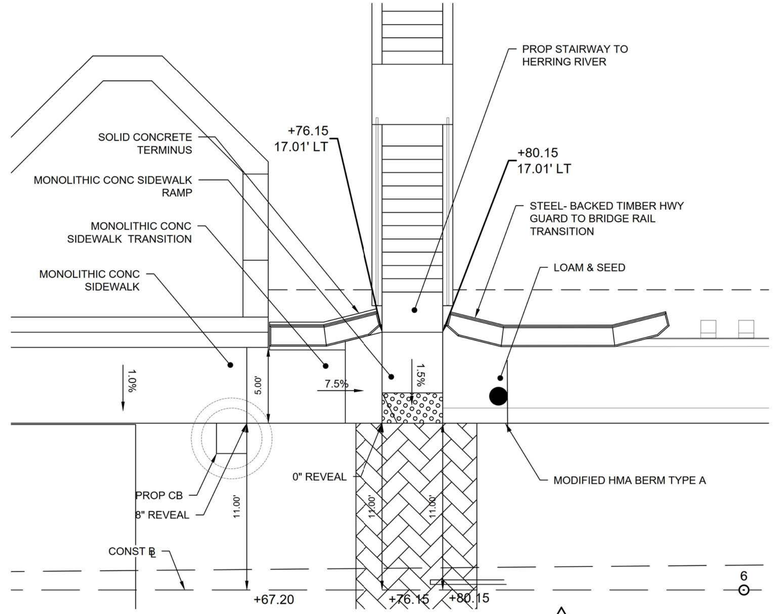

SIDEWALK TRANSITION DETAIL G

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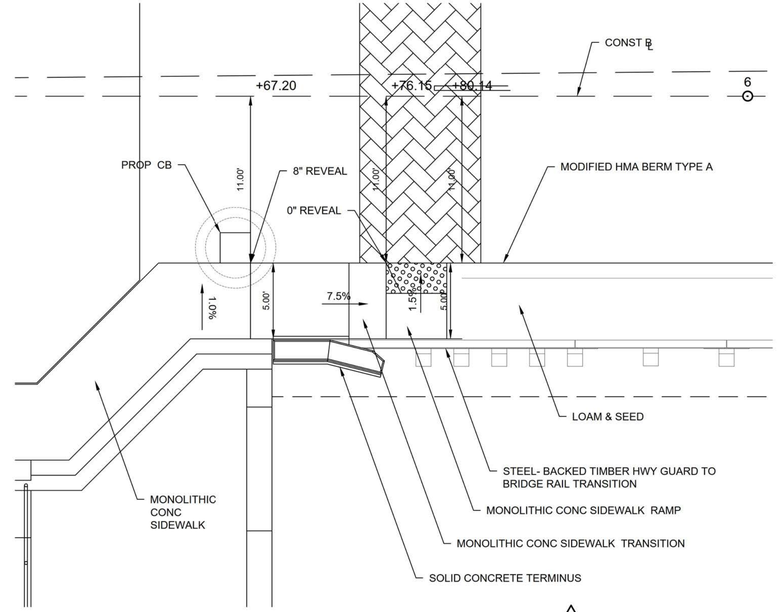

SIDEWALK TRANSITION DETAIL H

SCALE: 1" = 5'

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SIDEWALK TRANSITION DETAILS

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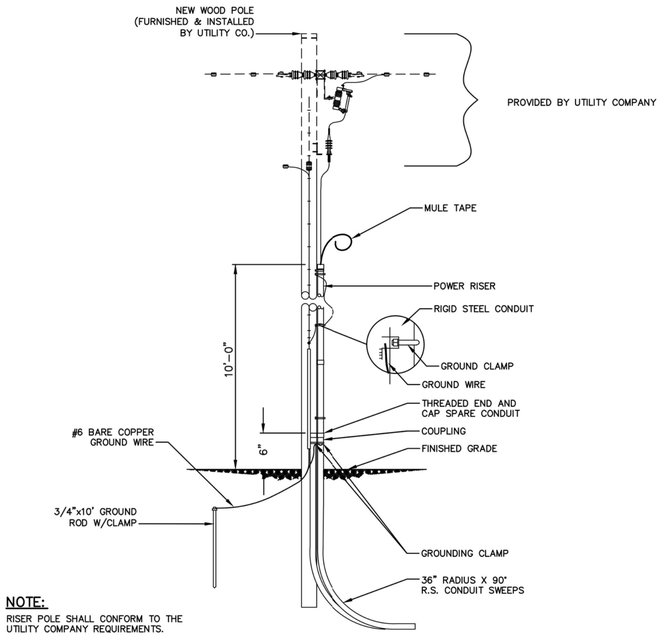
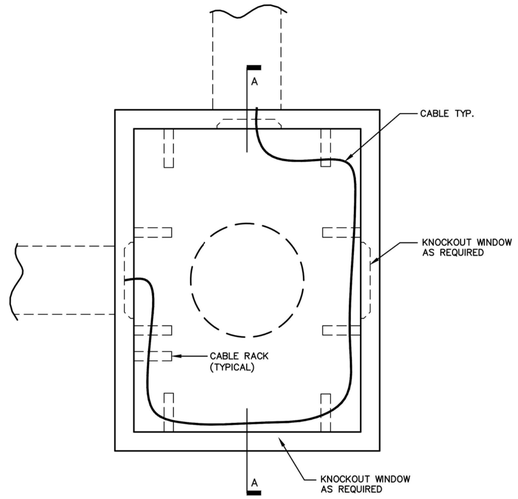
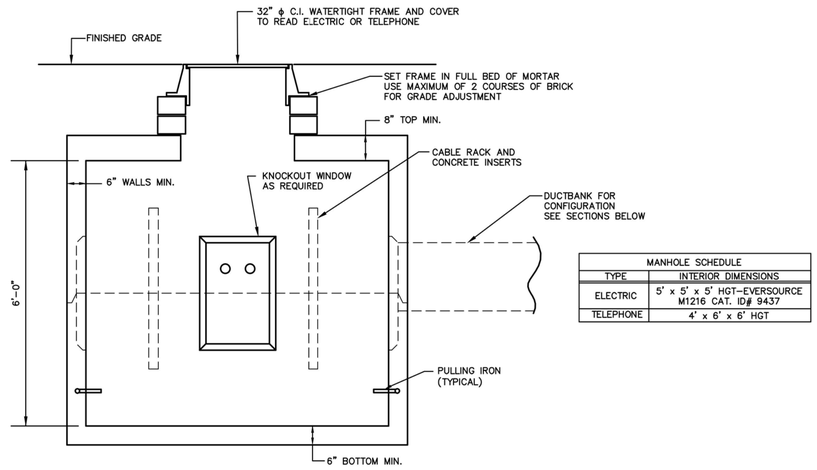


NOTE:
RISER POLE SHALL CONFORM TO THE UTILITY COMPANY REQUIREMENTS.

RP / EA-001 POWER RISER POLE DETAIL
SCALE: N.T.S



INTERIOR PLAN VIEW

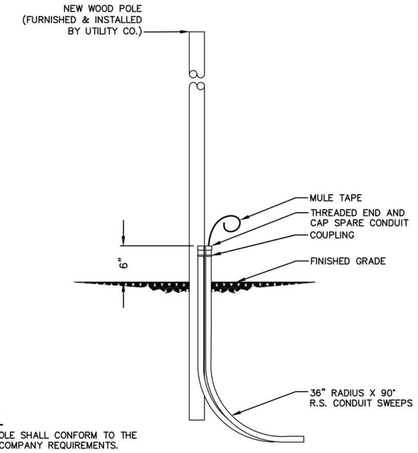


SIDE SECTION A-A

MANHOLE SCHEDULE	
TYPE	INTERIOR DIMENSIONS
ELECTRIC	5' x 5' x 5' HGT-EVERSOURCE M1216 CAT. ID# 9437
TELEPHONE	4' x 6' x 6' HGT

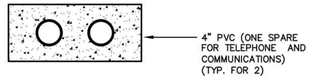
NOTES:
1. THE FRAME AND COVER ASSEMBLY SHALL BE MANUFACTURED WITH BOLTS AND GASKETS IN ORDER TO PROVIDE A WATERTIGHT SEAL.
2. NON-SHRINK GROUT OR HYDRAULIC CEMENT CONFORMING TO ASTM C 595 SHALL BE USED TO PROVIDE A WATER TIGHT SEAL IN ANY LIFT HOLES AND AROUND CONCRETE KNOCK-OUTS AT DUCT BANK CONNECTIONS.
3. STRUCTURE JOINTS SHALL BE SEALED USING BUTYL RUBBER JOINT SEALANT PER ASTM C-990 & AASHTO M-198.

TYPICAL MANHOLE DETAIL-STANDARD TYPE
SCALE: N.T.S

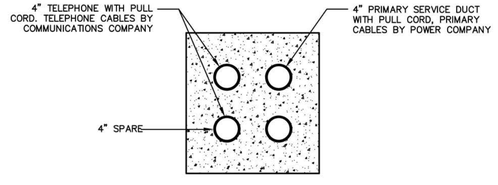


NOTE:
RISER POLE SHALL CONFORM TO THE UTILITY COMPANY REQUIREMENTS.

RP / EA-001 TELEPHONE RISER POLE DETAIL
SCALE: N.T.S



T / EA-001 TELEPHONE DUCTBANK SECTION
SCALE: N.T.S



E/T / EA-001 ELECTRIC/TELEPHONE DUCTBANK SECTION
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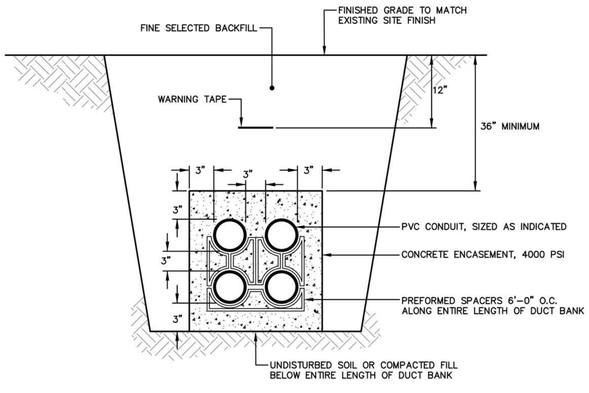

NOTE:
ALL DIMENSIONS ARE MINIMUM REQUIREMENTS.

DB / EA-001 TYPICAL DUCTBANK SECTION
SCALE: N.T.S

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		KS

SEAL

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KEVIN M. SULLIVAN
ELECTRICAL
No. 47127
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

NOT FOR CONSTRUCTION

SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1 0 1
GRAPHIC SCALE

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FRIENDS OF HERRING RIVER

ELECTRICAL SITE DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS
FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

EA-001
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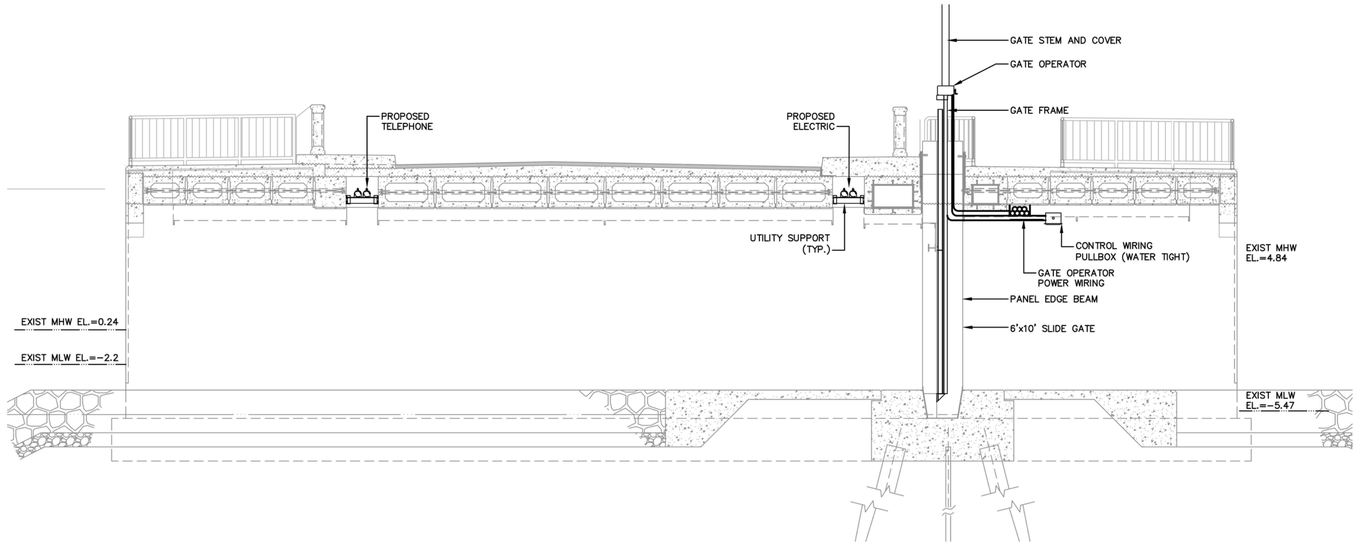
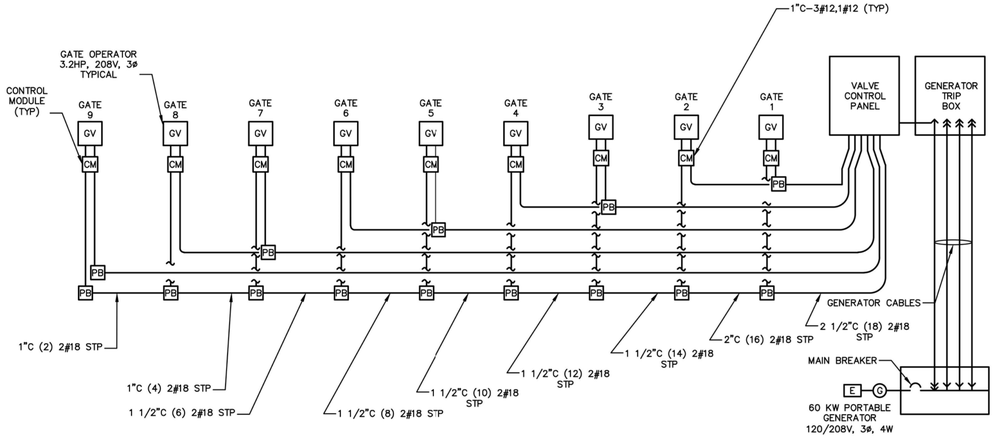


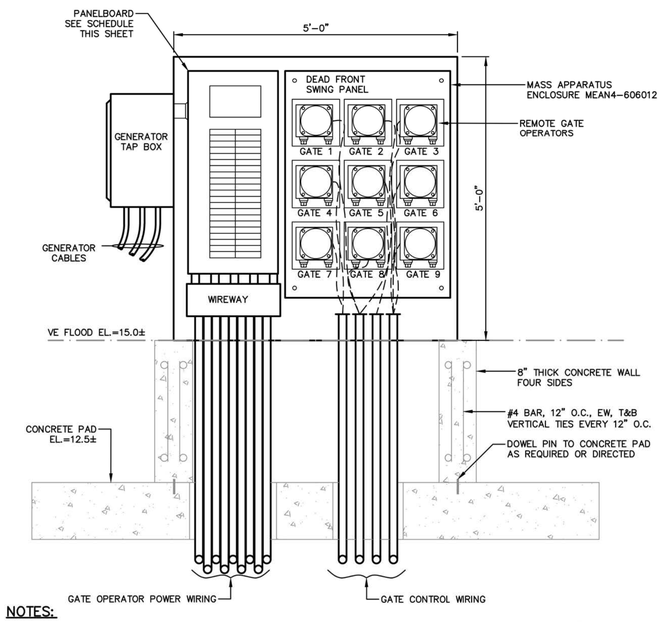
A EA-002 TYPICAL SECTION UNDER BRIDGE WIRING

SCALE: N.T.S



B EA-002 GATE OPERATOR WIRING DIAGRAM

SCALE: N.T.S



NOTES:

1. ELECTRICAL EQUIPMENT AND CONDUIT OPENINGS WITHIN THE CONTROL PANEL BOX SHALL BE ELEVATED TO EL. 15.0± (NAVD88).
2. THE PANEL BOX ENCLOSURE SHALL BE NEMA 4X CONSISTING OF STAINLESS STEEL.

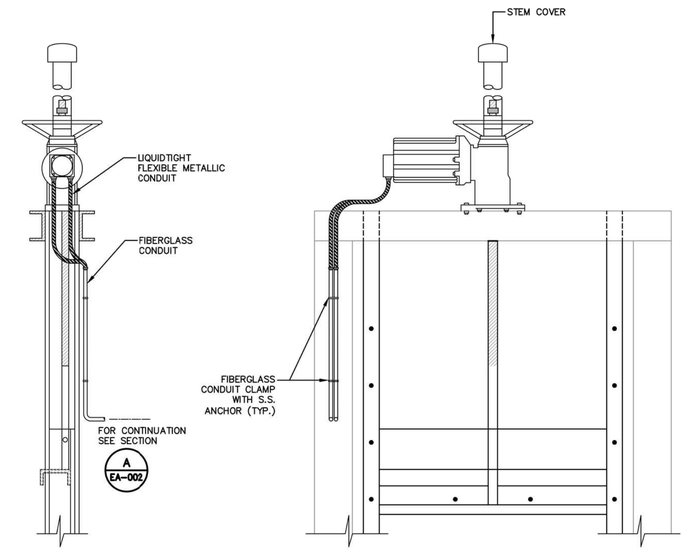
CP EA-002 CONTROL PANEL ELEVATION

SCALE: 3/4" = 1'-0"

PANELBOARD SCHEDULE

PANEL:	Gate Operators	M.L.O.:	
LOCATION:	Control Panel	MAIN BREAKER:	100
VOLTS:	480Y/277	MAIN BUS:	100
PHASE:	3	A.I.C.:	14,000
WIRE:	4	MOUNTING:	Surface
SOLID NEUTRAL:			
POLE PANEL:	30		

	CIRCUIT BREAKER					CIRCUIT BREAKER				
CIRCUIT DESCRIPTION	No.	TRIP	POLE	AMPS	Ø	AMPS	POLE	TRIP	No.	CIRCUIT DESCRIPTION
Gate Operator No.1, 2, 3 & 4	1	20	3	12.80	A	12.80	3	20	2	Gate Operator No. 5, 6, 7 & 8
-	3	-	-	12.80	B	12.80	-	-	4	-
-	5	-	-	12.80	C	12.80	-	-	6	-
Gate Operator No. 9	7	20	3	3.20	A		3	20	8	Spare
-	9	-	-	3.20	B		-	-	10	-
-	11	-	-	3.20	C		-	-	12	-
Spare	13	20	3		A		3	20	14	Spare
-	15	-	-		B		-	-	16	-
-	17	-	-		C		-	-	18	-
Control Power	19	20	2	1.00	A		1	20	20	Spare
-	21	-	-	1.00	B		1	-	22	Space
Spare	23	20	1		C		1	-	24	Space
Space	25	-	1		A		1	-	26	Space
Space	27	-	1		B		1	-	28	Space
Space	29	-	1		C		1	-	30	Space
	A	29.80	B	29.80	C	28.80				



SG EA-002 SLIDE GATE WIRING DETAIL

SCALE: N.T.S.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		KS

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3/4 0 3/4
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FRIENDS OF HERRING RIVER

ELECTRICAL SITE DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

EA-002

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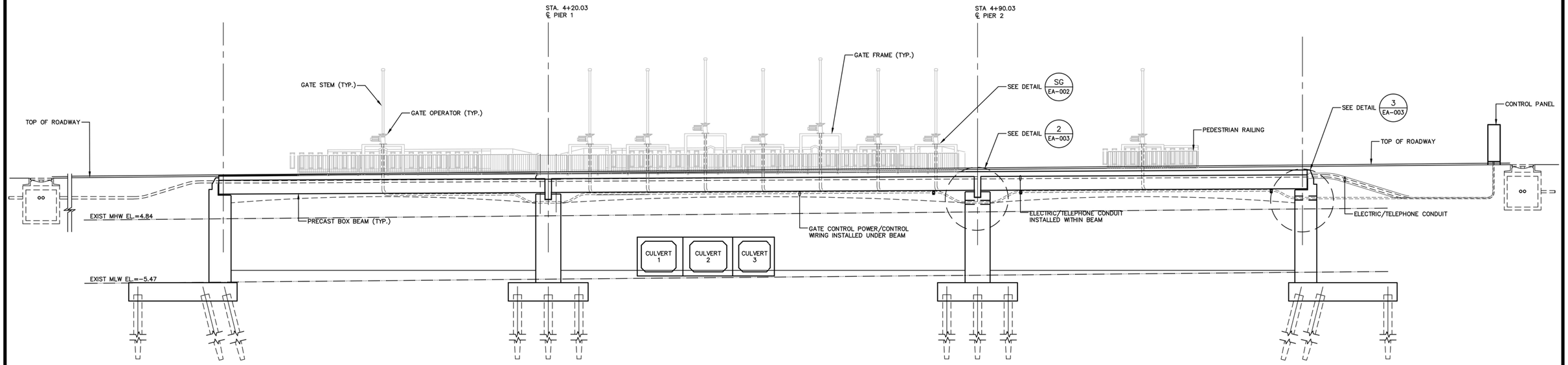
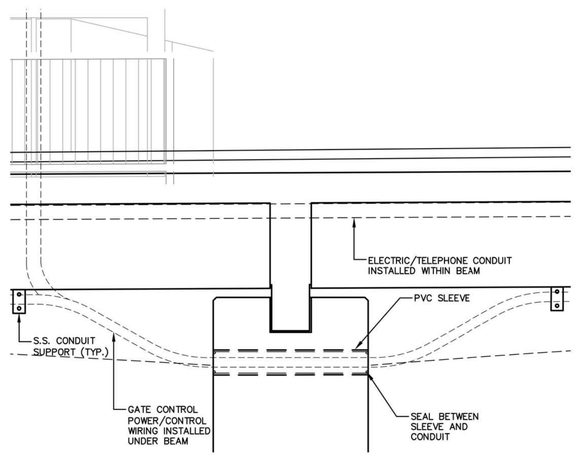


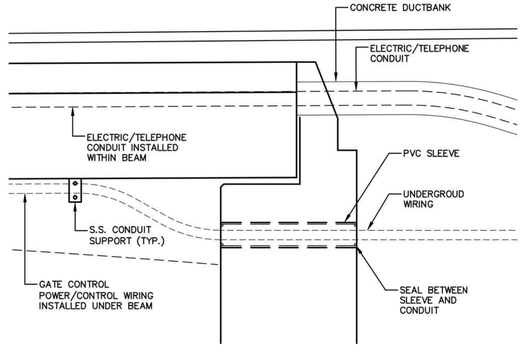
1/EA-003 BRIDGE – LONGITUDINAL SECTION (AS VIEWED FROM HARBOR)

SCALE: 1/8"=1'-0"



2/EA-003 COLUMN WIRING DETAIL

SCALE: 1/2"=1'-0"



3/EA-003 ABUTMENT WIRING DETAIL

SCALE: 1/2"=1'-0"

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		KS

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DATUM:
HORZ.: NAD83
VERT.: NAVD88
1/8 0 1/8
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FRIENDS OF HERRING RIVER

ELECTRICAL BRIDGE ELEVATION

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS
FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

EA-003

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File Path: J:\DWG\P2012\0636\A17\MEP\Electrical\20120636A17_DET02_ELEC.dwg Layout: EA-003 Plotted: Wed, December 11, 2019 - 2:00 PM User: sirons
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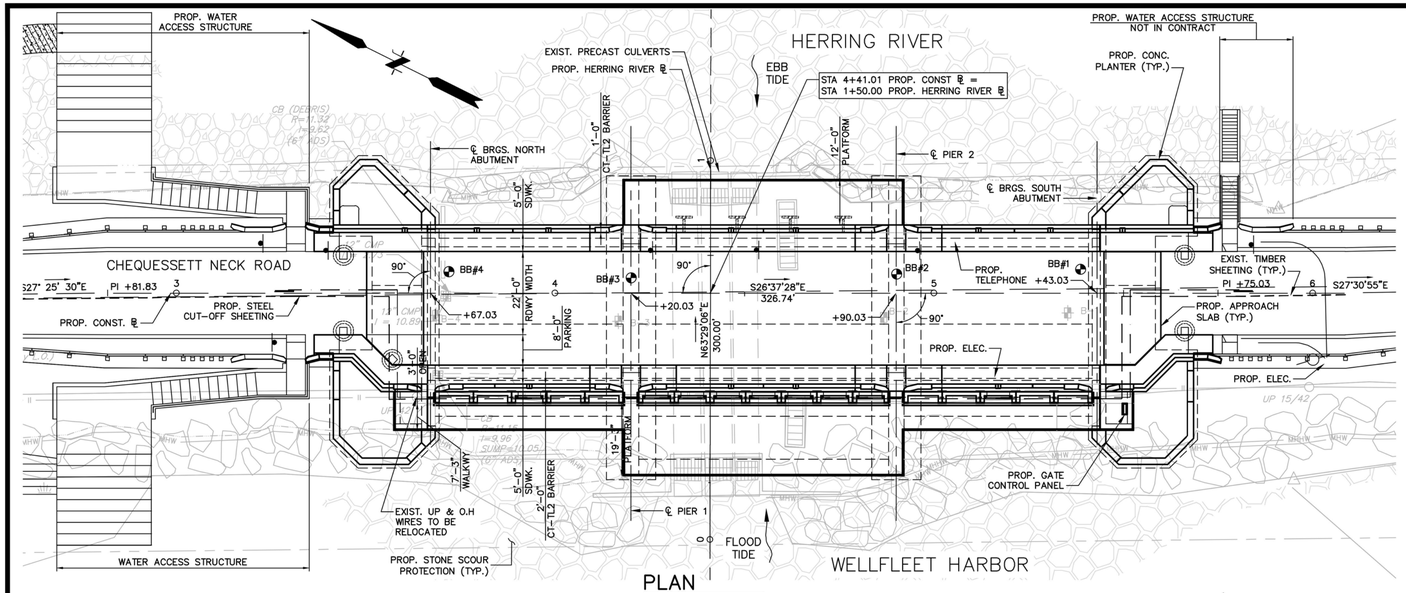
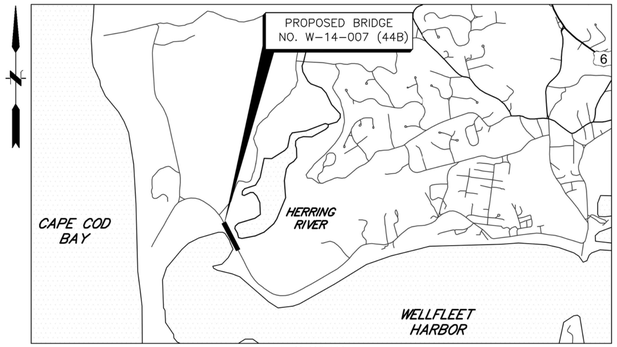


PLAN
SCALE: 1" = 20'



LOCUS
SCALE: 1" = 2000'

GENERAL NOTES	
PROJECT FILE NO.: XXXXXX	
PROJECT DESCRIPTION: NEW BRIDGE	
BRIDGE DESIGN LOADING: HL-93	
SURVEY: SURVEY BY BAXTER NYE, INC.	
ELEVATION REFERENCE: NAVD OF 1988	

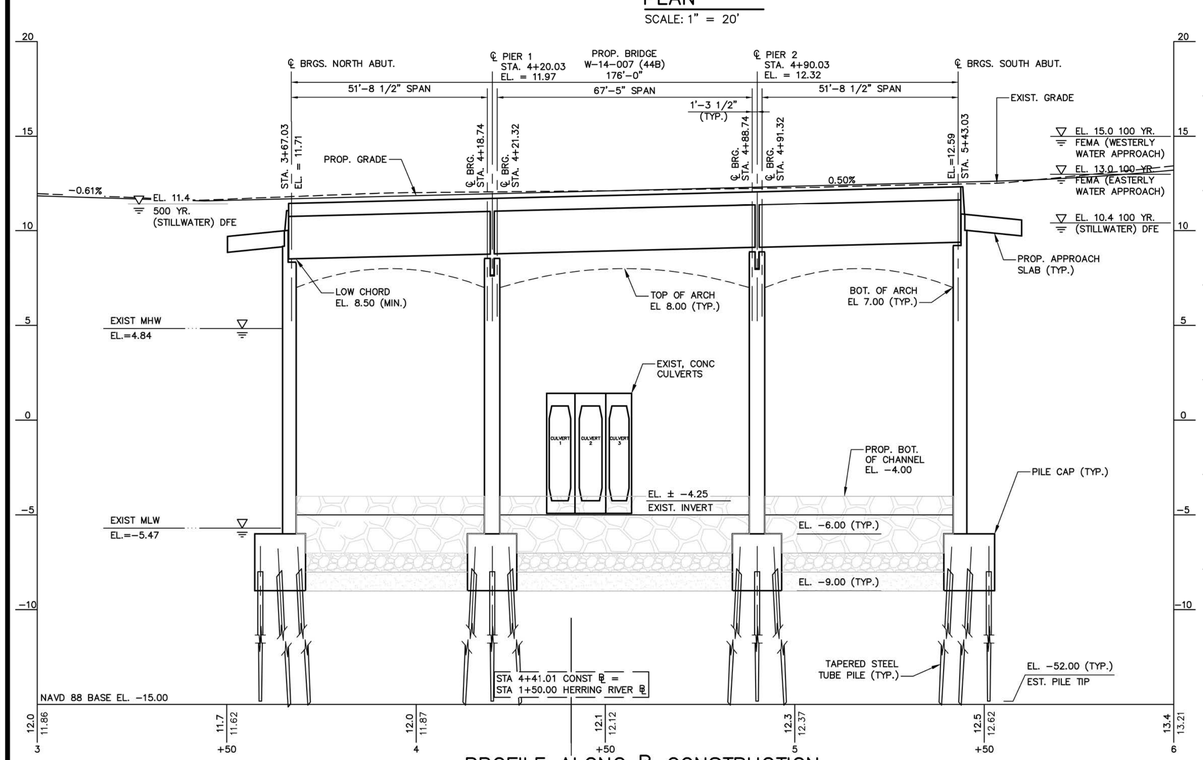
TRAFFIC DATA[1]

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2020	N/A
AVERAGE DAILY TRAFFIC – PRESENT	1078	N/A
AVERAGE DAILY TRAFFIC – DESIGN YEAR	1180	N/A
DESIGN HOURLY VOLUME	115	N/A
DIRECTIONAL DISTRIBUTION	0.62	N/A
TRUCK PERCENTAGE – AVERAGE DAY[2]	3.9%	N/A
TRUCK PERCENTAGE – PEAK HOUR[3]	3.9%	N/A
DESIGN SPEED	35	N/A
DIRECTIONAL DESIGN HOURLY VOLUME	76	N/A

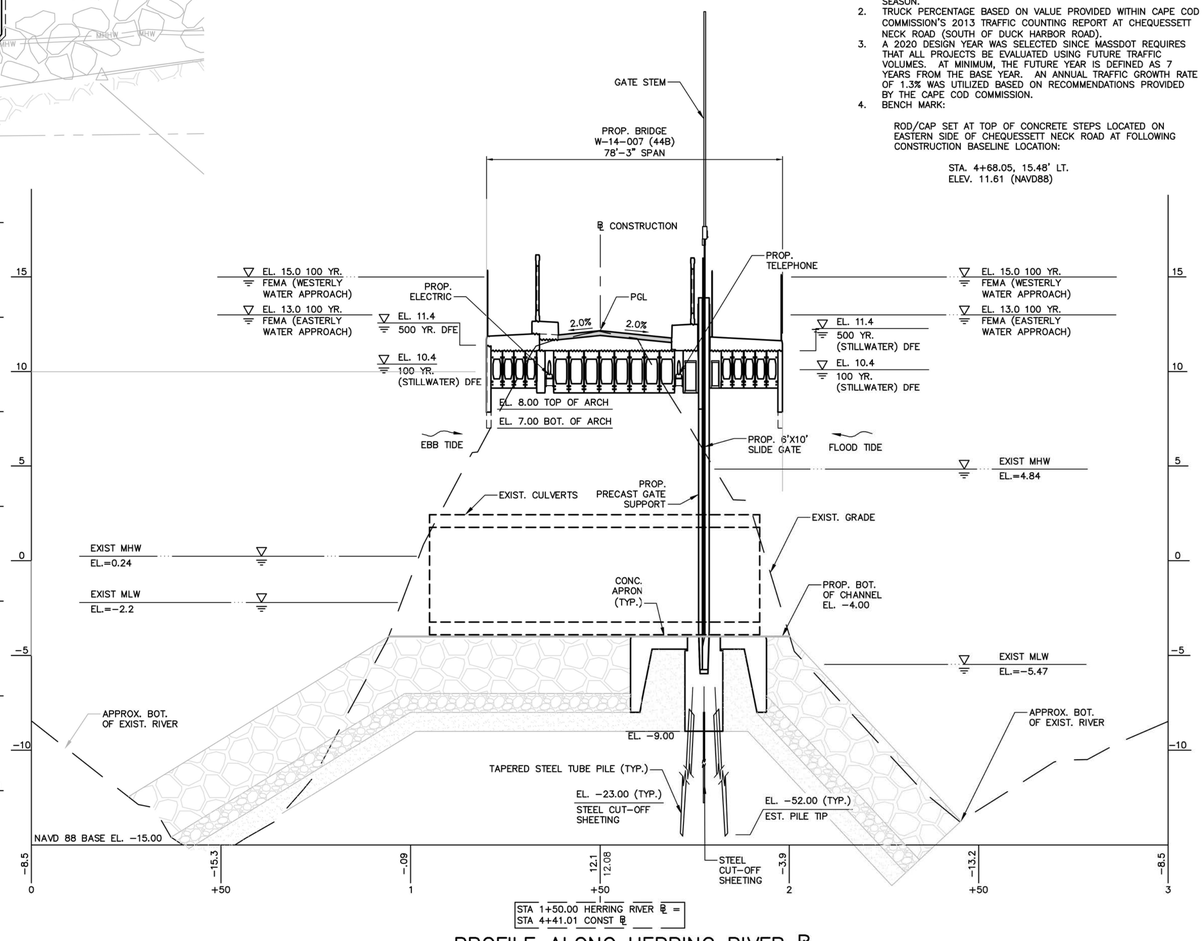
NOTES:
1. TRAFFIC DATA TAKEN INCLUDED IN TABLE WAS OBTAINED FROM THE CAPE COD COMMISSION'S TRAFFIC COUNT DATA PUBLISHED FOR THE TOWN OF WELLFLEET (2013) AT WWW.CAPECODCOMMISSION.ORG. THE PRESENT ADT IS BASED ON READINGS OBTAINED 8/7/12–8/9/12 DURING THE PEAK SUMMER SEASON.
2. TRUCK PERCENTAGE BASED ON VALUE PROVIDED WITHIN CAPE COD COMMISSION'S 2013 TRAFFIC COUNTING REPORT AT CHEQUESSETT NECK ROAD (SOUTH OF DUCK HARBOR ROAD).
3. A 2020 DESIGN YEAR WAS SELECTED SINCE MASSDOT REQUIRES THAT ALL PROJECTS BE EVALUATED USING FUTURE TRAFFIC VOLUMES. AT MINIMUM, THE FUTURE YEAR IS DEFINED AS 7 YEARS FROM THE BASE YEAR. AN ANNUAL TRAFFIC GROWTH RATE OF 1.3% WAS UTILIZED BASED ON RECOMMENDATIONS PROVIDED BY THE CAPE COD COMMISSION.
4. BENCH MARK:

   ROD/CAP SET AT TOP OF CONCRETE STEPS LOCATED ON EASTERN SIDE OF CHEQUESSETT NECK ROAD AT FOLLOWING CONSTRUCTION BASELINE LOCATION:

   STA. 4+68.05, 15.48' LT.
   ELEV. 11.61 (NAVD88)



PROFILE ALONG ℄ CONSTRUCTION
SCALE: 1" = 20' HORIZONTAL; 1" = 4' VERTICAL



PROFILE ALONG HERRING RIVER ℄
SCALE:1" = 20' HORIZONTAL; 1" = 4' VERTICAL

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

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COMMONWEALTH OF MASSACHUSETTS
STUART H. HARRIS
9801 REGISTERED PROFESSIONAL ENGINEER

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20 0 20
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FRIENDS OF HERRING RIVER
PROPOSED BRIDGE No. W-14-007, CHEQUESSETT NECK ROAD OVER THE HERRING RIVER
HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-001
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File Path: j:\DWG\P2012\06\36\A17\Structural\Plan\Permit Set\20120636 FIRST SHEET.dwg Layout: FIRST SHEET Plotted: Wed, December 11, 2019 - 2:18 PM User: dnewhall
Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:

DESIGN :

IN ACCORDANCE WITH THE 2014 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2016, FOR HL–93 LOADING.

BENCH MARKS AND ELEVATIONS :

BENCH MARKS:

ROD/CAP SET N 2803219.4123 E 1046811.0592 ELEV. 11.61 NAVD88

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

MASSDOT SURVEY NOTEBOOKS :

FILE COPIES MAY BE OBTAINED FROM MASSDOT.

FOUNDATIONS :

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

SCALES :

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF–SIZE PRINTS (12"x18").

ANCHOR BOLTS :

ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE BEFORE THE CONCRETE IS PLACED.

CONSTRUCTION REQUIREMENTS AND PROCEDURES:

THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO INSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION. NO LIVE LOAD OR SUPERIMPOSED DEAD LOAD SHALL BE ALLOWED BEHIND THE ABUTMENTS IN THAT CONSTRUCTION STAGE PRIOR TO CONSTRUCTION OF APPROACH SLABS AND BRIDGE DECK.

CONSTRUCTION JOINTS :

CONSTRUCTION JOINTS, OTHER THAN THOSE SHOWN ON THE PLANS, WILL NOT BE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL :

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

REINFORCEMENT :

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

	MODIFICATION CONDITION	#4 BARS	#5 BARS
1.	NONE	21"	26"
2.	12" OF CONCRETE BELOW BAR	29"	36"
3.	COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4.	COATED BARS, ALL OTHER CASES	25"	31"
5.	CONDITION 2. AND 3.	35"	44"
6.	CONDITION 2. AND 4.	34"	43"

IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

EPOXY COATED BARS :

ALL REINFORCING BARS, SUPPORT DEVICES, SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

STEEL AND WELDING :

ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 (ASTM A709), GRADE 50 GALVANIZED. ALL SUPPORT ANGLES AND MECHANICAL REINFORCING BAR SPLICERS AND COUPLERS SHALL BE HOT DIPPED GALVANIZED GRADE 50 STEEL EXCEPT AS NOTED. WELDED FABRICATION SHALL BE IN ACCORDANCE WITH THE BRIDGE WELDING CODE, ANSI/AASHTO/AWS D1.5 AND ALL INTERIM REVISIONS PUBLISHED BY AASHTO AS OF THE BID OPENING DATE.

BOLTED CONNECTIONS SHALL BE AASHTO M164 HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

SEISMIC GROUND SHAKING HAZARD :

DESIGN RETURN PERIOD: 1000 YEAR

DESIGN SPECTRA:
A_S = 0.126
S_{DS} = 0.271
S_{D1} = 0.110

SITE CLASS = E
SEISMIC DESIGN CATEGORY (SDC) = A

DATE :

TO BE PLACED ON THE INSIDE FACE OF THE SOUTHWEST AND NORTHEAST HIGHWAY GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST HIGHWAY GUARDRAIL TRANSITION IS CONSTRUCTED. ALL HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

EXISTING CONDITIONS :

ALL DIMENSIONS AND DETAILS SHOWN FOR EXISTING STRUCTURE ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. EXISTING STRUCTURE IS SHOWN IN A LIGHTER LINE WEIGHT.

THE WATER LEVELS RECORDED ON THE PLANS ARE THOSE MEASURED ON THE DATES GIVEN AND DO NOT NECESSARILY REPRESENT WATER LEVELS AT THE TIME OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE WATER LEVELS. PARTICULAR ATTENTION SHOULD BE GIVEN TO UPSTREAM OR DOWNSTREAM FACILITIES AND CONTROL STRUCTURES WHICH MAY ADVERSELY AFFECT THE WATER LEVELS WITHIN THE RIVER/STREAM WATER BODY WHICH MassDOT HAS NO CONTROL OVER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR WORK INVOLVING VARYING WATER LEVELS OR THOSE THAT DIFFER FROM THE INFORMATION RECORDED ON THE PLANS.

HYDRAULIC DATA :

DRAINAGE AREA:	11.0	SQUARE MILES
DESIGN DISCHARGE:	12,374	CUBIC FEET PER SECOND
DESIGN FREQUENCY:	100	YEARS
DESIGN VELOCITY:	5.00	FEET PER SECOND
DESIGN ELEVATON:	10.4	FEET, NAVD88 (STILLWATER)

NFIP BASE (100–YEAR) FLOOD DATA

Q (100 YEAR)	–	NOT PUBLISHED BY NFIP
WATER SURFACE ELEVATION	15.0	NAVD88 (WESTERLY WATER APPROACH)
	13.0	NAVD88 (EASTERLY WATER APPROACH)

FLOOD OF RECORD

Q =	UNKNOWN
FREQUENCY:	UNKNOWN
MAXIMUM ELEVATION:	9.5 FEET (NAVD88)
DATE:	FEBRUARY 1978
HISTORY OF ICE FLOES:	NONE DOCUMENTED IN NFIP DATABASE
EVIDENCE OF SCOUR OR EROSION:	THERE ARE SCOUR HOLES AT THE WELLFLEET HARBOR SIDE AND LOWER HERRING RIVER SIDE CULVERT OUTLETS WITH MAXIMUM DEPTHS OF 10.5 FEET AND 9.7 FEET, RESPECTIVELY.

CONCRETE MIXES :

UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, CONCRETE SHALL BE AS FOLLOWS:

TYPE:	(1)	(2)	(3)	LOCATION
4000 PSI, 1 1/2 IN, 565	4000	1–1/2	565	HIGHWAY GUARDRAIL TRANSITION BASE, APPROACH SLAB, PRECAST PILE CAP, INTEGRAL WINGWALL CAP
4000 PSI, 3/4 IN, 610	4000	3/4	610	CONCRETE PEDESTAL
4000 PSI, 3/8 IN, 660	4000	3/8	660	CONCRETE REPAIRS, CAP OF WINGWALLS
5000 PSI, 3/4 IN, 685 HP	5000	3/4	685	SIDEWALK, MEDIAN BARRIER (CF–PL3), CP–PL2 BRIDGE BARRIER, DECK CLOSURE POUR, ABUTMENT CAP
4000 PSI, 3/4 IN, 585 HP	4000	3/4	585	DECK SLAB, PRECAST WINGWALLS, END DIAPHRAGMS *
				* INCLUDES REMAINDER OF BRIDGE DECK AT BEAM ENDS
5000 PSI, 3/8 IN, 710 HP	5000	3/8	710	PRECAST PILE VOIDS
RAPID SETTING POLYMER CONCRETE				APPROACH SLAB CLOSURE POUR

(1) 28 DAY COMPRESSIVE STRENGTH (PSI)
(2) MAXIMUM AGGREGATE SIZE (IN)
(3) CEMENT CONTENT (LB/CY)

CEMENT SHALL CONFORM TO AASHTO DESIGNATION M85.

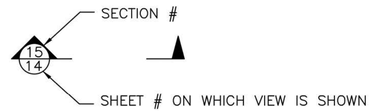
UTILITIES:

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR BRIDGE REPLACEMENT WORK.

TRAFFIC:

THE BRIDGE WILL BE CLOSED TO ALL TRAFFIC DURING ALL PHASES OF DEMOLITION AND RECONSTRUCTION. TRAFFIC WILL BE CONTROLLED AS SHOWN IN THE TEMPORARY TRAFFIC CONTROL PLANS.

SECTION MARK:



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

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SEAL

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SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1 0 1
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

FRIENDS OF HERRING RIVER

GENERAL NOTES

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-002

File Path: j:\DWG\P2012\0636\A17\StructuralPlan\Permit Set\20120636 GEN NOTES.dwg Layout: GENERAL NOTES Plotted: Wed, December 11, 2019 - 2:19 PM User: dnewhall
Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:

FUSS & O'NEILL, INC.	BORING LOG	Boring ID: B-4
CONSULTING ENGINEERS	Project: Herring River Restoration	Sheet 1 of 1
MANCHESTER, CT	Location: Wellfleet, MA	Project No.: 20120636.A13

Contractor: Soil Exploration Corp
Operator: Tim Flores
F&O Rep.: Dan La France
Drilling Method: HSA/Drive & Wash
Sampling Method: Split Spoon (2" OD)
Hammer Wt.: 140 lbs Hammer Fall (in.): 30
Boring Location: North Pier
Ground Elevation:
Date Start: 11/20/13 Date Finish: 11/20/13

Water Level Measurements

Date	Ref. Pt.	Depth	Time

Time & Date of Completion: 1100- 11/20/2013

Depth (ft)	Elevation (NAVD88)	Sample No.	Sample Depth (ft)	Rec/ Pen	Blows/ 6"	Sample Description	Strata Change	USCS Class.	Remarks
0	11		0.0-0.25			Asphalt	Asphalt	AS	
			0.25-0.5			Gravel			
0.5	10.5	S-1	0.5-2.5	14/24	8 14 12 11	Medium dense reddish brown fine to medium SAND, some Gravel	Sandy Fill	FI/SP	
5	6	S-2	5-7	15/24	3 2 2 2	Loose moist reddish brown fine to medium SAND trace Gravel		FI/SP	
10	1		10-12	0	2 2 3 2	No Recovery		FI/SP	
12	-1	S-3	12-14	14/24	3 2 2 3	Loose, wet reddish brown fine to medium SAND,trace Gravel	Sand	SP	
15	-4	S-4	15-17	16/24	2 2 2 4	Loose,wet, yellowish brown fine to medium SAND, trace Gravel		SP	
19	-8	S-5	19-21	6/24	3 2 2 3	Loose, wet, yellowish brown fine to medium SAND, trace Gravel		SP	
24	-13	S-6	24-26	13/24	3 7 9 12	Medium dense, wet, light grey fine to medium SAND, little Gravel		SP	
29	-18	S-7	29-31	11/24	7 7 8 12	Medium dense, wet, light brown fine to medium SAND, little Gravel		SP	
34	-23	S-8	34-36	14/24	5 8 9 11	Medium dense,wet, light brown fine to medium SAND		SP	
39	-28	S-9	39-41	17/24	13 21 27 35	Dense,wet, reddish brown fine to medium SAND, little Gravel		SP	
						End of Boring 41'; No refusal		SP	

BOT. OF ABUT. EL. −9.00

CUT−OFF SHEETING EL. −23.00

PILE TIP EL. −52.00

MINOR CONSTITUENT PROPORTIONS:
Trace 0 to 10% Some 20 to 35%
Little 10 to 20% And 35 to 50%

REMARKS:
End of Boring 41'; No refusal
Auto hammer
Ground water table encountered at 12' from the ground surface.

BORING B−4

FUSS & O'NEILL, INC.	BORING LOG	Boring ID: B-3
CONSULTING ENGINEERS	Project: Herring River Restoration	Sheet 1 of 1
MANCHESTER, CT	Location: Wellfleet, MA	Project No.: 20120636.A13

Contractor: Soil Exploration Corp
Operator: Tim Flores
F&O Rep.: Dan La France
Drilling Method: HSA/Drive & Wash
Sampling Method: Split Spoon (2" OD)
Hammer Wt.: 140 lbs Hammer Fall (in.): 30
Boring Location: North Pier
Ground Elevation:
Date Start: 11/21/13 Date Finish: 11/21/13

Water Level Measurements

Date	Ref. Pt.	Depth	Time

Time & Date of Completion: 1500- 11/21/2013

Depth (ft)	Elevation (NAVD88)	Sample No.	Sample Depth (ft)	Rec/ Pen	Blows/ 6"	Sample Description	Strata Change	USCS Class.	Remarks
0	12.1		0.0-0.3			Asphalt	Asphalt	AS	
			0.3-0.5			Gravel			
0.5	11.6	S-1	0.5-2.5	15/24	8 16 18 14	Dense yellowish brown fine to medium SAND,trace Gravel	Sandy Fill	FI/SP	
5	7.1	S-2	5-7	14/24	7 6 7 9	Medium dense yellowish brown fine to medium SAND		FI/SP	
10	2.1	S-3	10-12	16/24	11 11 13 11	Medium dense yellowish brown moist fine to medium SAND, little Gravel		SP	
15	-2.9	S-4	15-17	11/24	2 2 2 2	Loose,wet, yellowish brown fine to mediumSAND, trace Gravel	Sand	SP	
19	-6.9	S-5	19-21	10/24	10 12 12 12	Medium dense,wet, light grey fine to medium SAND, trace Gravel		SP	
24	-11.9	S-6	24-26	8/24	10 14 13 12	Medium dense,wet, light grey fine to medium SAND, trace Gravel		SP	
29	-16.9	S-7	29-31	0	10 12 22 26	No Recovery, Rock in Spoon tip			
34	-21.9	S-8	34-36	11/24	14 14 16 11	Dense,wet reddish brown fine to medium SAND, some Gravel, trace Silt		SP	
39	-26.9	S-9	39-41	1/24	7 9 10 10	Poor recovery; reddish brown fine to medium SAND, little Gravel		SP	
						End of Boring @ 41 ft			

BOT. OF ABUT. EL. −9.00

CUT−OFF SHEETING EL. −23.00

PILE TIP EL. −52.00

MINOR CONSTITUENT PROPORTIONS:
Trace 0 to 10% Some 20 to 35%
Little 10 to 20% And 35 to 50%

REMARKS:
End of Boring 41'; No refusal
Auto hammer
Ground water table encountered at 15' from the ground surface.

BORING B−3

FUSS & O'NEILL, INC.	BORING LOG	Boring ID: B-2
CONSULTING ENGINEERS	Project: Herring River Restoration	Sheet 1 of 2
MANCHESTER, CT	Location: Wellfleet, MA	Project No.: 20120636.A13

Contractor: Soil Exploration Corp
Operator: Tim Flores
F&O Rep.: Dan La France
Drilling Method: HSA/Drive & Wash
Sampling Method: Split Spoon (2" OD)
Hammer Wt.: 140 lbs Hammer Fall (in.): 30
Boring Location: North Pier
Ground Elevation:
Date Start: 11/18/13 Date Finish: 11/19/13

Water Level Measurements

Date	Ref. Pt.	Depth	Time

Time & Date of Completion: 1300- 11/19/2013

Depth (ft)	Elevation (NAVD88)	Sample No.	Sample Depth (ft)	Rec/ Pen	Blows/ 6"	Sample Description	Strata Change	USCS Class.	Remarks
0	12.3		0-0.5			Asphalt upto 3" and then Gravel	Asphalt	AS	
0.5	11.8	S-1	0.5-2.5	14/24	7 12 14 17	Medium dense brown moist fine to medium SAND, little Gravel	Sandy Fill	FI/SP	
5	7.3	S-2	5-7	12/24	14 10 4 4	Medium dense moist brown fine to medium SAND, little Gravel		FI/SP	
10	2.3	S-3	10-12	11/24	9 11 13 15	Medium dense moist brown fine to medium SAND		FI/SP	
14	-1.7	S-4	14-16	8/24	3 3 3 4	Loose moist brown fine to medium SAND		FI/SP	1
19	-6.7	S-5	19-21	8/24	8 8 7 8	Medium dense wet light grey fine to medium SAND, some Gravel	Sand	SP	
24	-11.7	S-6	24-26	8/24	9 11 12 15	Medium dense wet light grey fine to medium SAND, some Gravel		SP	
29	-16.7	S-7	29-31	0/24	14 16 14 9	No Recovery, Gravel in Spoon tip			
34	-21.7	S-8	34-36	16/24	7 8 9 8	Medium dense wet greyish brown fine to medium SAND, trace Gravel		SP	
39	-26.7	S-9	39-41	9/24	8 9 9 10	Medium dense wet greyish brown fine to medium SAND, trace Gravel		SP	
44	-31.7	S-10	44-46	9/24	6 8 8 10	Medium dense wet greyish brown fine to medium SAND, some Gravel		SP	
49	-36.7	S-11	49-51	11/24	4 5 6 12	Medium dense , wet, reddish brown fine to medium SAND, some Gravel		SP	
54		S-12	54-56	12/24	22 26 25 25	Very dense wet reddish brown fine to medium SAND, little Gravel		SP	
59		S-13	59-61	18/24	7 14 11 22	Medium dense wet reddish brown fine to medium SAND, trace Gravel	Sand	SP	
64		S-14	64-66	13/24	5 9 13 15	Medium dense wet olive grey fine SAND		SP	
69		S-15	69-71	16/24	16 23 29 37	Very dense wet grey fine SAND, trace Silt		SP	
74		S-16	74-76	17/24	16 25 26 33	Very dense dark grey SILT, trace Sand,Moist	Silt	ML	
76		S-17	76-78	16/24	19 21 26 29	Dense dark grey SILT, trace Sand,Moist		ML	
78						End of boring @ 78 ft			

MINOR CONSTITUENT PROPORTIONS:
Trace 0 to 10% Some 20 to 35%
Little 10 to 20% And 35 to 50%

REMARKS:
End of Boring 78'; No refusal
Auto hammer
1. Ground water table encountered at 15' from the ground surface.

BORING B−2

FUSS & O'NEILL, INC.	BORING LOG	Boring ID: B-1
CONSULTING ENGINEERS	Project: Herring River Restoration	Sheet 1 of 1
MANCHESTER, CT	Location: Wellfleet, MA	Project No.: 20120636.A13

Contractor: Soil Exploration Corp
Operator: Tim Flores
F&O Rep.: Dan La France
Drilling Method: HSA/Drive & Wash
Sampling Method: Split Spoon (2" OD)
Hammer Wt.: 140 lbs Hammer Fall (in.): 30
Boring Location: North Pier
Ground Elevation: 12.1 (NAVD88)
Date Start: 11/20/13 Date Finish: 11/20/13

Water Level Measurements

Date	Ref. Pt.	Depth	Time

Time & Date of Completion: 1500- 11/20/2013

Depth (ft)	Elevation (NAVD88)	Sample No.	Sample Depth (ft)	Rec/ Pen	Blows/ 6"	Sample Description	Strata Change	USCS Class.	Remarks
0	12.1		0.0-0.5			Asphalt	Asphalt	AS	
0.5	11.6	S-1	0.5-2.5	6/24	12 20 12 10	Dense red brown fine to medium SAND,some Gravel	Sand/ Fill	FI/SP	
5	7.1	S-2	5-7	12/24	7 6 19 9	Medium dense red brown fine to medium, SAND, trace Gravel. Asphalt fragments in the recovery		FI/SP	
								AS	
10	2.1	S-3	10-12	8/24	3 3 3 4	Loose red brown fine to medium SAND	Sandy Fill	SP	1
14	-1.9	S-4	14-16	7/24	3 5 5 7	Medium dense, yellowish brown fine to medium, SAND, little Gravel,wet	Sand	SP	
19	-6.9	S-5	19-21	9/24	6 6 7 7	Medium dense, greyish fine to medium SAND , trace Gravel, wet		SP	
24	-11.9	S-6	24-26	9/24	12 14 15 9	Medium dense, reddish brown fine to medium SAND , trace Gravel, wet		SP	
29	-16.9	S-7	29-31	5/24	5 7 7 8	Medium dense, yellowish fine to medium SAND , trace Gravel, wet		SP	
34	-21.9	S-8	34-36	14/24	3 5 7 7	Medium dense, greyish fine to medium SAND , trace Gravel, wet		SP	
39	-26.9	S-9	39-41	6/24	4 6 9 10	Medium dense, greyish fine to medium SAND, wet		SP	
						End of Boring 41'; No refusal			

BOT. OF ABUT. EL. −9.00

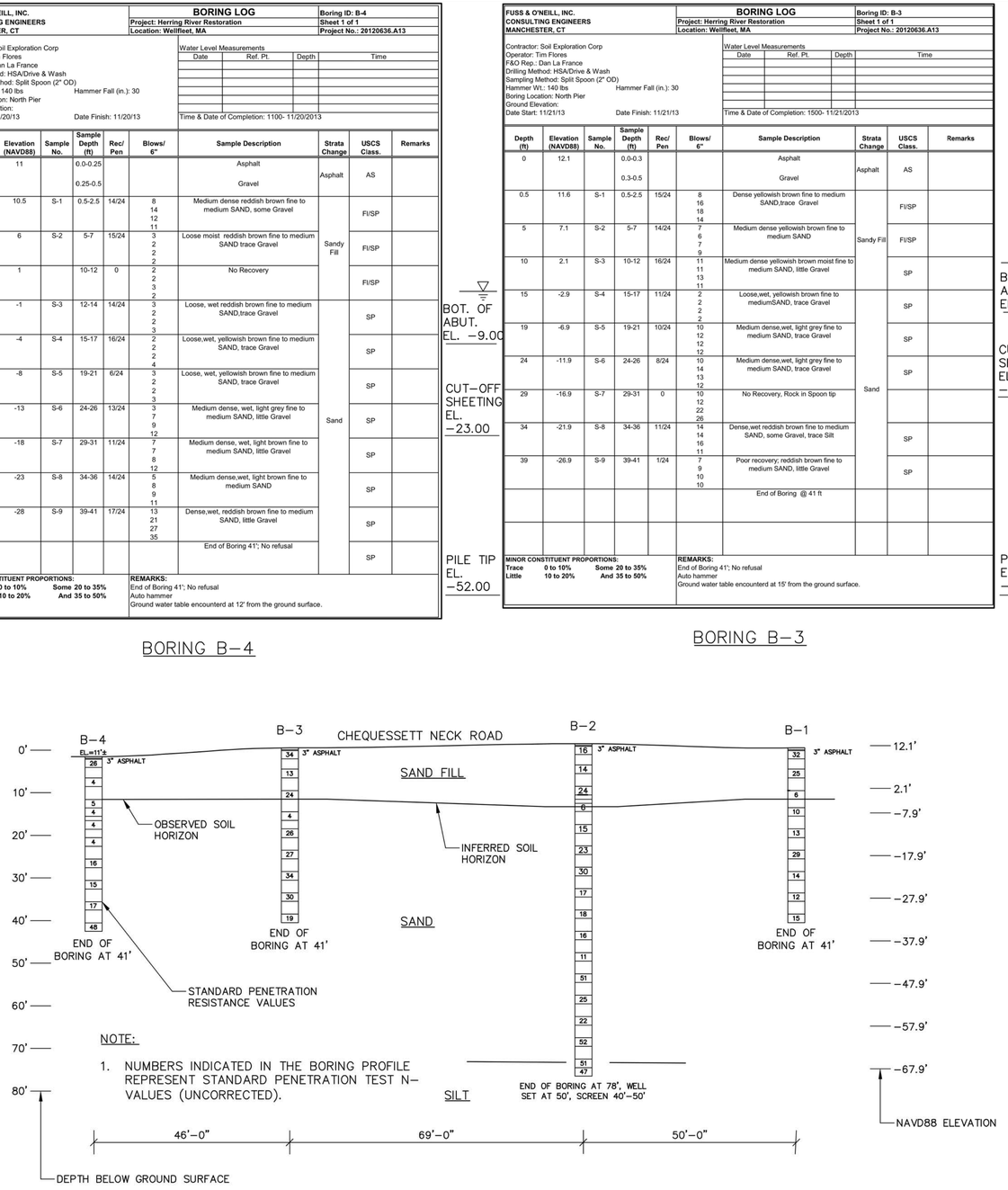
CUT−OFF SHEETING EL. −23.00

PILE TIP EL. −52.00

MINOR CONSTITUENT PROPORTIONS:
Trace 0 to 10% Some 20 to 35%
Little 10 to 20% And 35 to 50%

REMARKS:
End of Boring 41'; No refusal
Auto hammer
1. Ground water table encountered at 13' from the ground surface.

BORING B−1



NOTE:

1. NUMBERS INDICATED IN THE BORING PROFILE REPRESENT STANDARD PENETRATION TEST N−VALUES (UNCORRECTED).

SUBSURFACE SOIL PROFILE

SCALE: N.T.S.

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON PLAN THUS:
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRU GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. ALL BORINGS WERE MADE IN: NOV 18 THROUGH NOV 21, 2013
6. BORINGS WERE MADE BY: BORINGS PERFORMED BY SOIL EXPLORATION CORP., 148 PIONEER DRIVE, LEOMINSTER, MA. 01453. BORINGS LOGGED BY A FUSS & O'NEILL ENGINEER.
7. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

GROUND WATER

GROUND WATER LEVELS RECORDED IN THE TABLE ARE THOSE MEASURED ON THE DATES GIVEN AND DO NOT NECESSARILY REPRESENT GROUNDWATER LEVEL AT TIME OF CONSTRUCTION.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

SEAL

SEAL

STUART H. HARRIS 39523 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

NOT FOR CONSTRUCTION

SCALE:
HORZ.: AS NOTED
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1 0 1
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

FRIENDS OF HERRING RIVER

BORING LOGS AND NOTES

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-003

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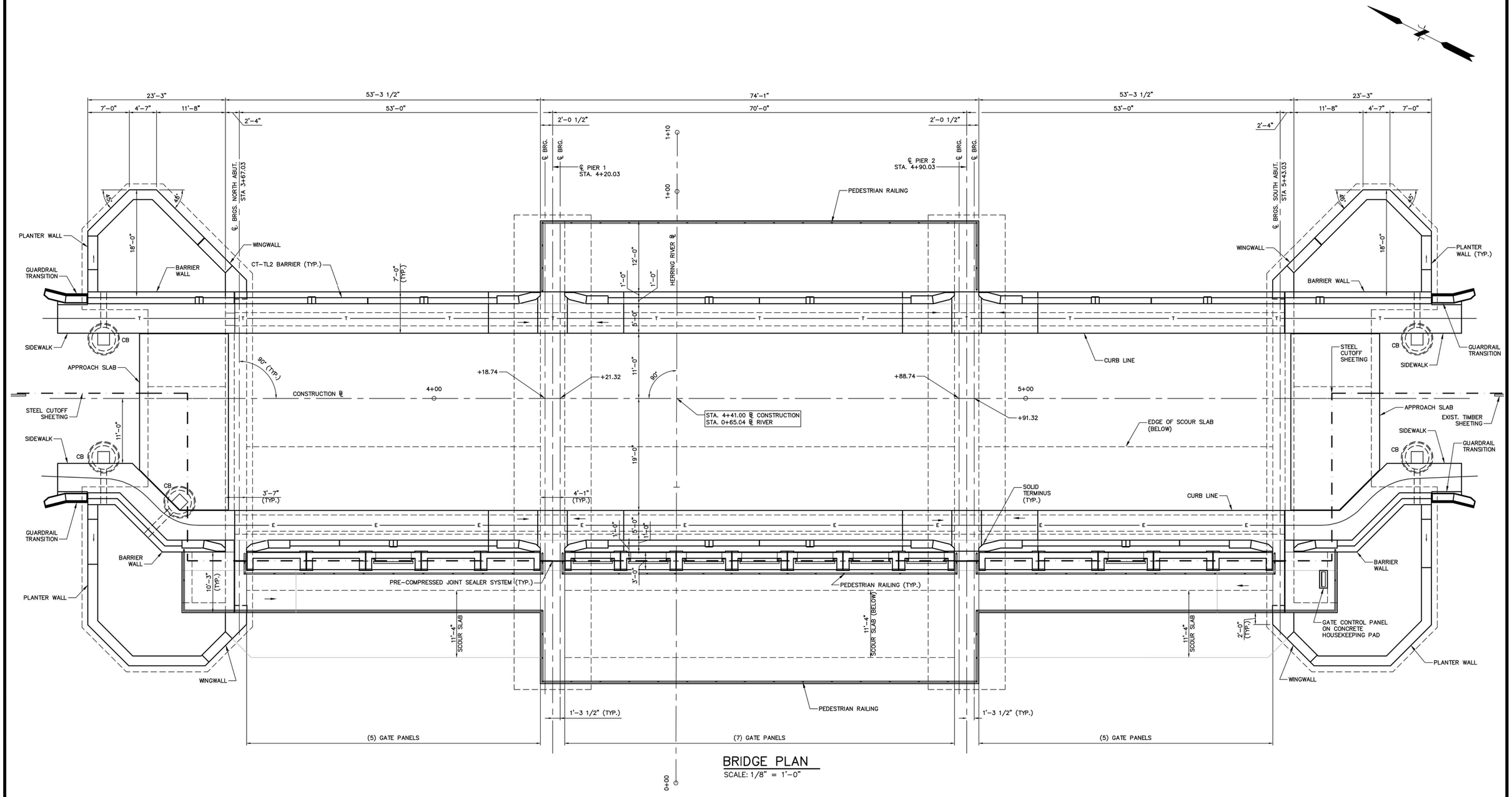

BRIDGE PLAN

SCALE: 1/8" = 1'-0"

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

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COMMONWEALTH OF MASSACHUSETTS
STUART H. HUTTS II
37523
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SCALE:
HORZ.: 1/8" 1'-0"
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1/8 0 1/8
GRAPHIC SCALE

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317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
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FRIENDS OF HERRING RIVER

BRIDGE PLAN

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS
FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-004

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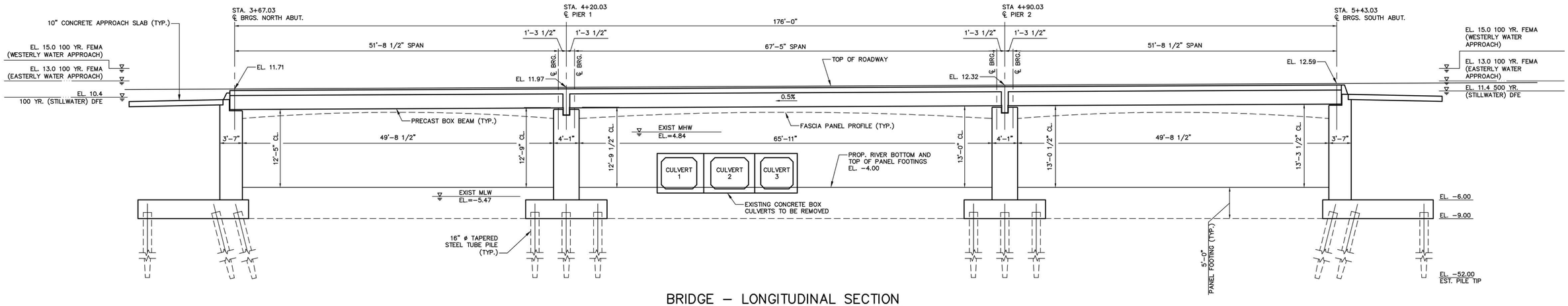
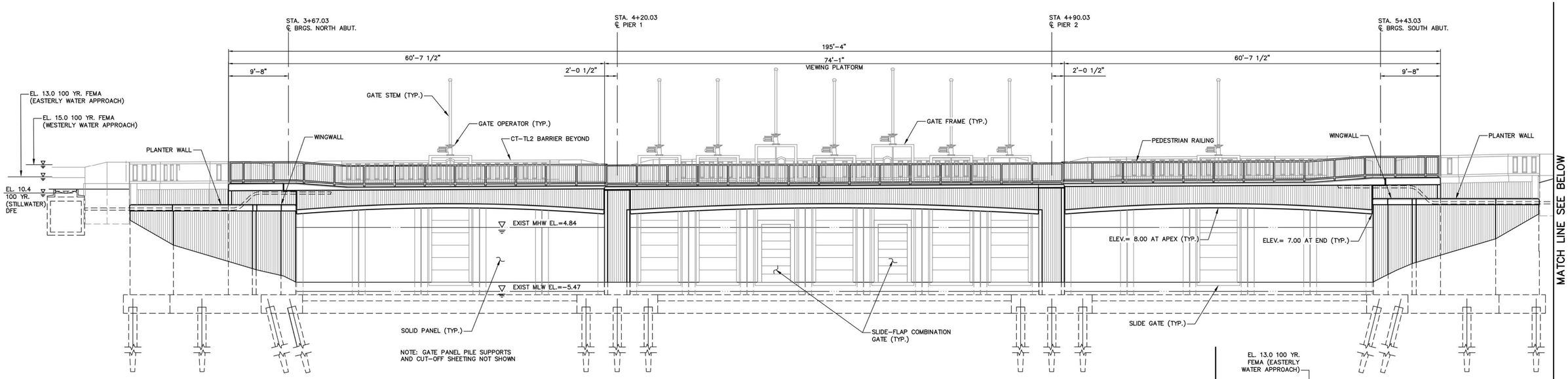


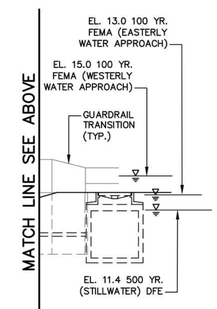
BRIDGE – LONGITUDINAL SECTION

SCALE: 1/8" = 1'-0"



BRIDGE – WEST ELEVATION

SCALE: 1/8" = 1'-0"



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
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SEAL

SEAL

COMMONWEALTH OF MASSACHUSETTS
STUART HARRIS
STRUCTURAL
39523
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SCALE:
HORZ.: 1/8"= 1'-0"
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1/8 0 1/8
GRAPHIC SCALE

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FRIENDS OF HERRING RIVER

LONGITUDINAL SECTION AND ELEVATION

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-005

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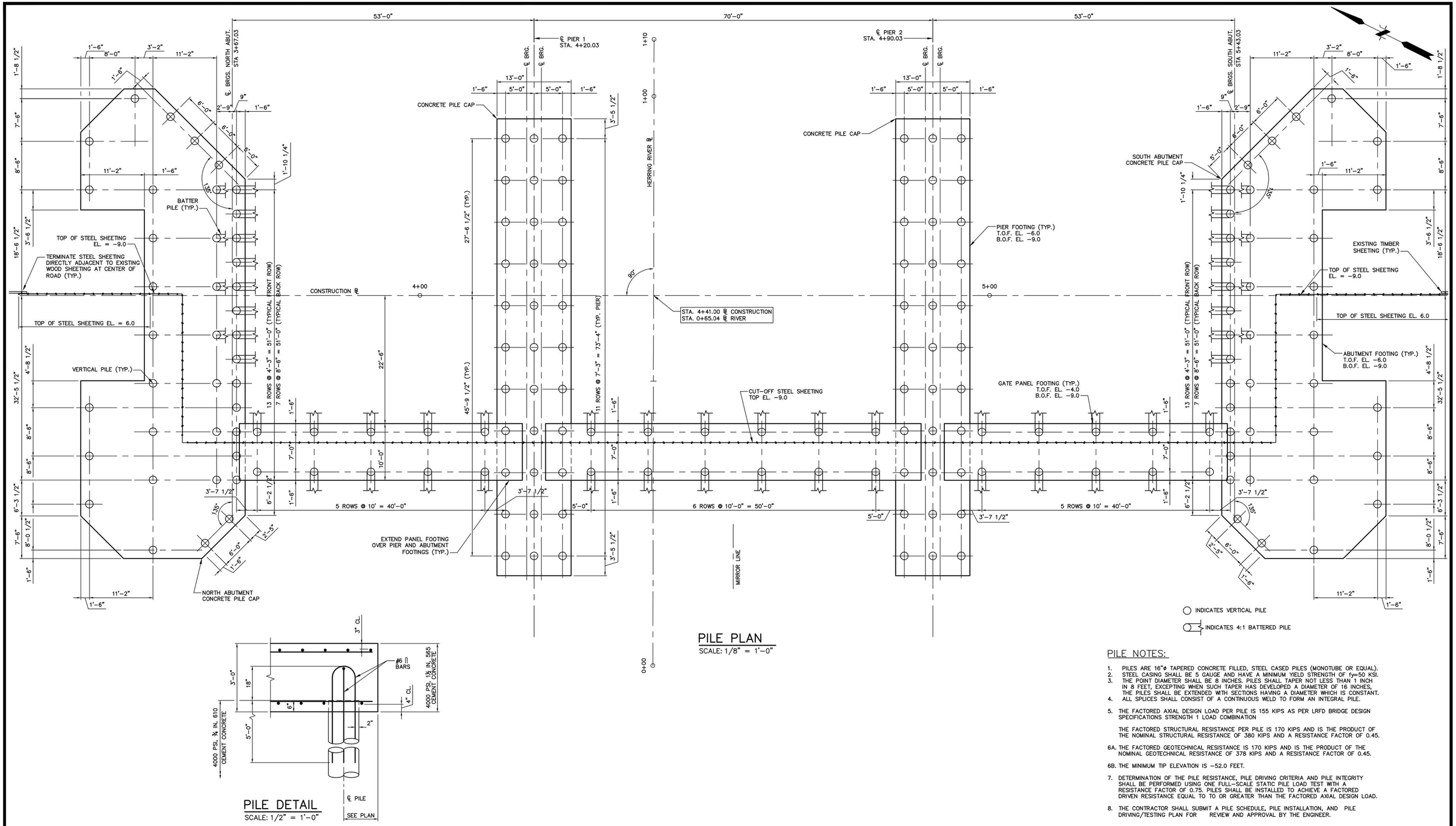

PILE PLAN
SCALE: 1/8" = 1'−0"

PILE DETAIL
SCALE: 1/2" = 1'−0"

PILE NOTES:

1. PILES ARE 16"ø TAPERED CONCRETE FILLED, STEEL CASED PILES (MONOTUBE OR EQUAL).
2. STEEL CASING SHALL BE 5 GAUGE AND HAVE A MINIMUM YIELD STRENGTH OF fy=50 KSI.
3. THE POINT DIAMETER SHALL BE 8 INCHES. PILES SHALL TAPER NOT LESS THAN 1 INCH IN 8 FEET, EXCEPTING WHEN SUCH TAPER HAS DEVELOPED A DIAMETER OF 16 INCHES, THE PILES SHALL BE EXTENDED WITH SECTIONS HAVING A DIAMETER WHICH IS CONSTANT.
4. ALL SPLICES SHALL CONSIST OF A CONTINUOUS WELD TO FORM AN INTEGRAL PILE.
5. THE FACTORED AXIAL DESIGN LOAD PER PILE IS 155 KIPS AS PER LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION

   THE FACTORED STRUCTURAL RESISTANCE PER PILE IS 170 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 380 KIPS AND A RESISTANCE FACTOR OF 0.45.

6A. THE FACTORED GEOTECHNICAL RESISTANCE IS 170 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 378 KIPS AND A RESISTANCE FACTOR OF 0.45.

6B. THE MINIMUM TIP ELEVATION IS −52.0 FEET.

7. DETERMINATION OF THE PILE RESISTANCE, PILE DRIVING CRITERIA AND PILE INTEGRITY SHALL BE PERFORMED USING ONE FULL−SCALE STATIC PILE LOAD TEST WITH A RESISTANCE FACTOR OF 0.75. PILES SHALL BE INSTALLED TO ACHIEVE A FACTORED DRIVEN RESISTANCE EQUAL TO TO OR GREATER THAN THE FACTORED AXIAL DESIGN LOAD.
8. THE CONTRACTOR SHALL SUBMIT A PILE SCHEDULE, PILE INSTALLATION, AND PILE DRIVING/TESTING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

SEAL

SEAL
COMMONWEALTH OF MASSACHUSETTS
STUART H. HURLBUT
STRUCTURAL
19323
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SCALE:
HORZ.: 1/8"= 1'-0"
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1/8 0 1/8
GRAPHIC SCALE

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317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
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FRIENDS OF HERRING RIVER

PILE PLAN AND DETAILS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-006
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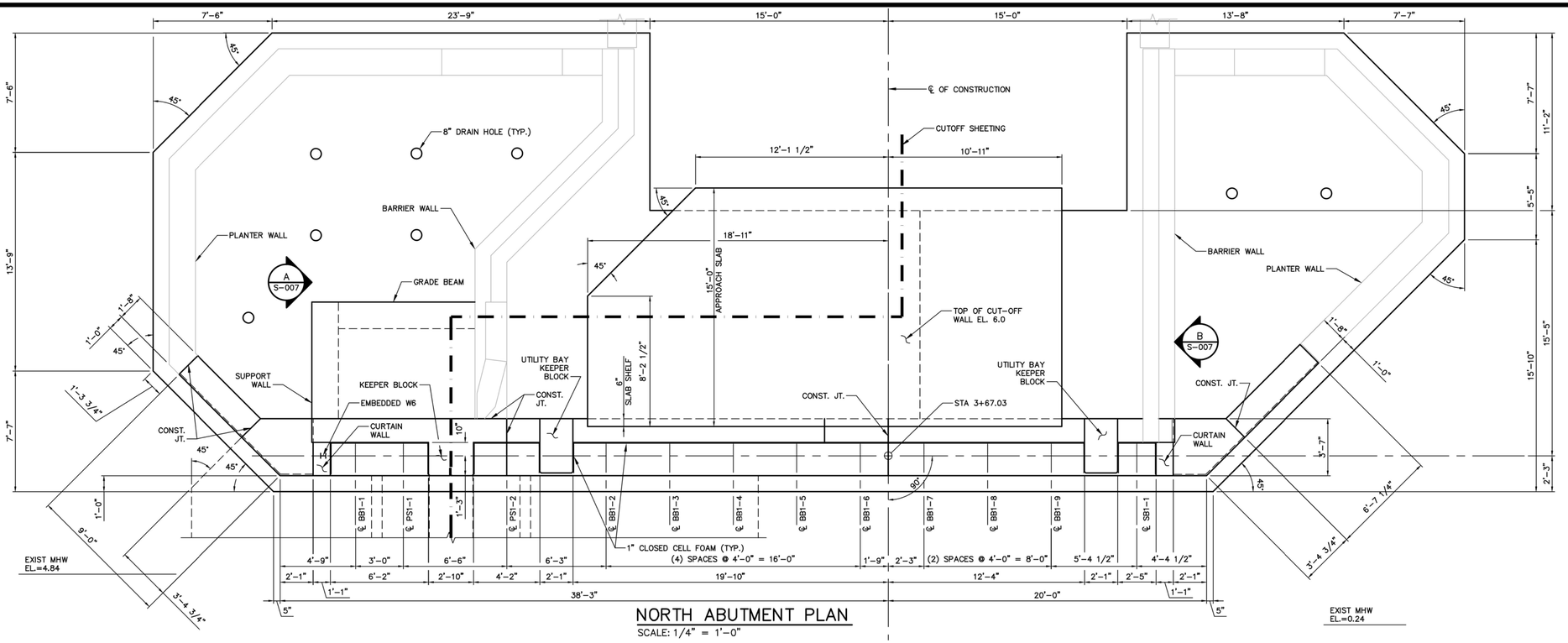
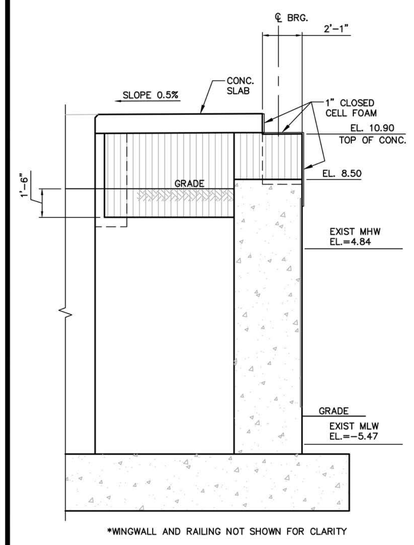
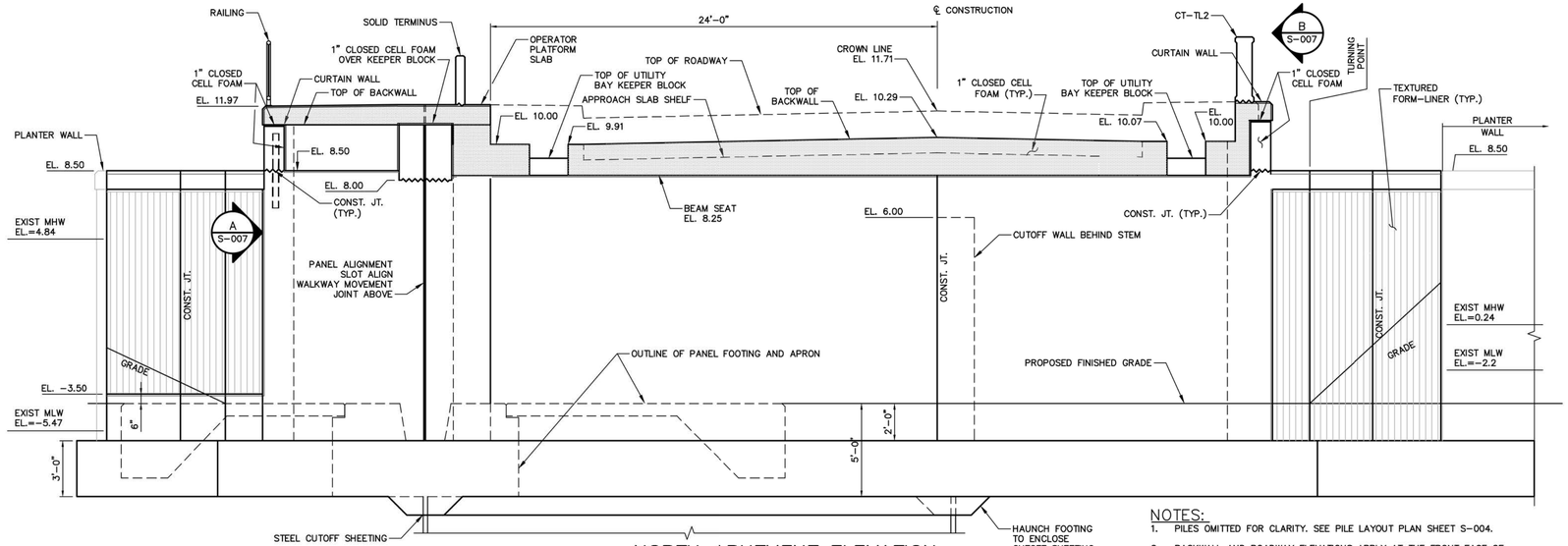


NORTH ABUTMENT PLAN
SCALE: 1/4" = 1'-0"



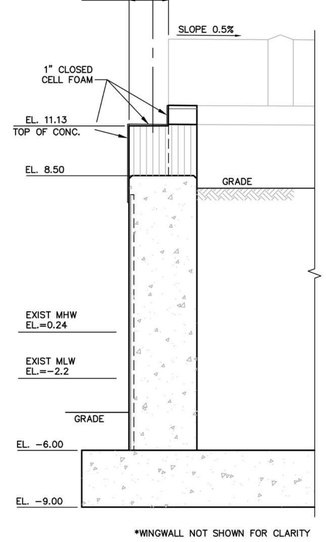
*WINGWALL AND RAILING NOT SHOWN FOR CLARITY

SECTION A
SCALE: 1/4" = 1'-0"



NORTH ABUTMENT ELEVATION
SCALE: 1/4" = 1'-0"

NOTES:
1. PILES OMITTED FOR CLARITY. SEE PILE LAYOUT PLAN SHEET S-004.
2. BACKWALL AND ROADWAY ELEVATIONS APPLY AT THE FRONT FACE OF BACKWALL.



*WINGWALL NOT SHOWN FOR CLARITY

SECTION B
SCALE: 1/4" = 1'-0"

File Path: j:\DWG\P2012\06636\A17\Structural\Plan\Permit Set\20120636 ABUTMENT AND PIER.dwg Layout: NORTH ABUTMENT Plotted: Wed, December 11, 2019 - 2:25 PM User: dnewhall
Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

SEAL

SEAL

COMMONWEALTH OF MASSACHUSETTS
STUART H. HARRIS
STRUCTURAL
19323
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SCALE:	
HORZ.:	1/4"= 1'-0"
VERT.:	
DATUM:	
HORZ.:	NAD83
VERT.:	NAVD88

1/4 0 1/4
GRAPHIC SCALE

FUSS & O'NEILL
317 IRON HORSE WAY, SUITE 204
PROVIDENCE, RI 02908
401.861.3070
www.fando.com

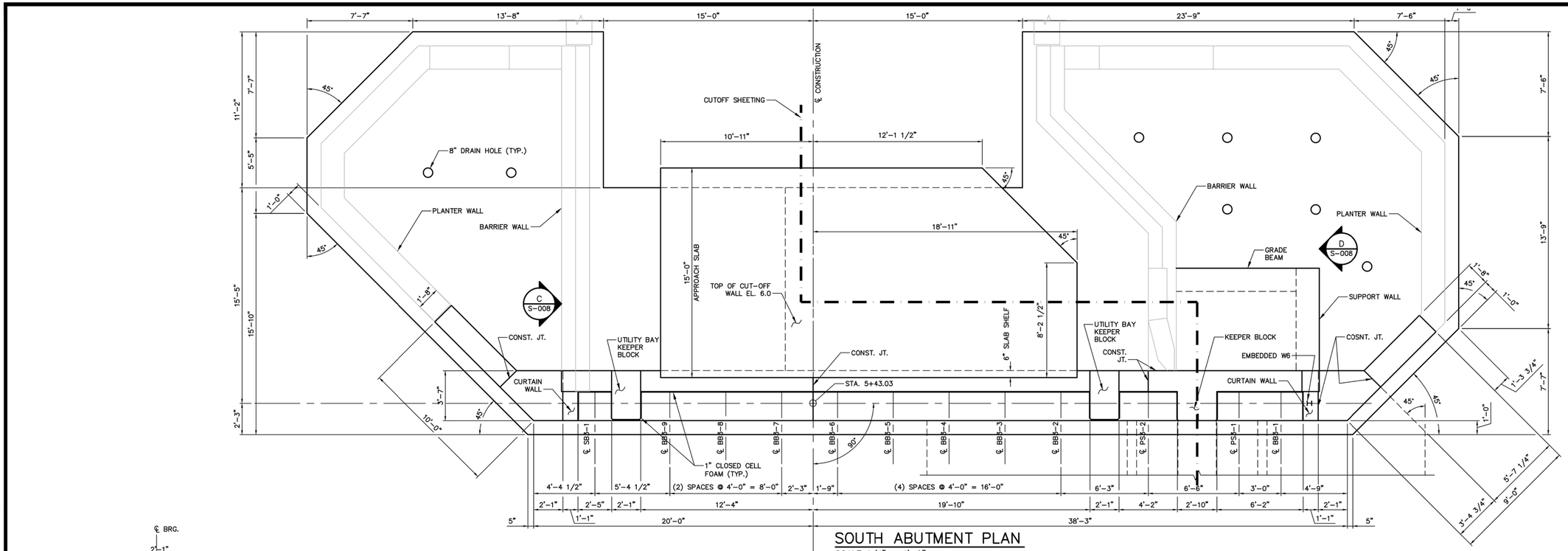
FRIENDS OF HERRING RIVER

NORTH ABUTMENT PLAN AND ELEVATIONS

HERRING RIVER RESTORATION PROJECT
CHEQUESSETT NECK ROAD BRIDGE AND WATER ACCESS FACILITY CONSTRUCTION
CHEQUESSETT NECK ROAD WELLFLEET, MASSACHUSETTS

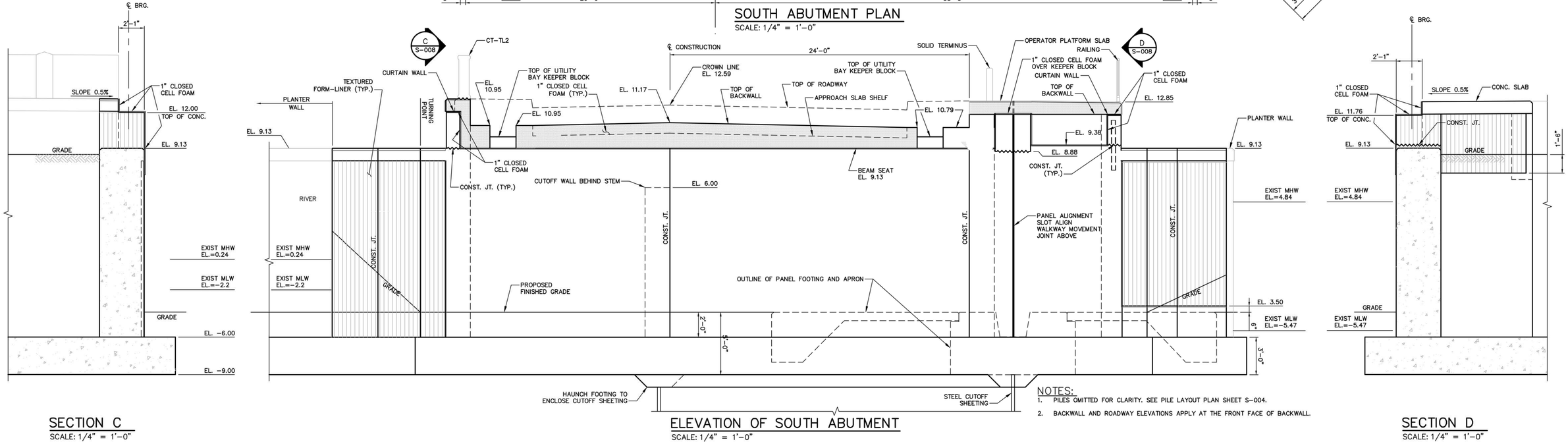
PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-007
52 OF 53



SOUTH ABUTMENT PLAN

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



SECTION C

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

ELEVATION OF SOUTH ABUTMENT

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

SECTION D

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

NOTES:

1. PILES OMITTED FOR CLARITY. SEE PILE LAYOUT PLAN SHEET S-004.
2. BACKWALL AND ROADWAY ELEVATIONS APPLY AT THE FRONT FACE OF BACKWALL.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
0.	11/12/2019	ISSUED		SHH

SEAL

SEAL

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19323
REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SCALE:
HORZ.: 1/4"= 1'-0"
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
1/4 0 1/4
GRAPHIC SCALE

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PROJ. No.: 20120636.A17
DATE: NOVEMBER 2019

S-008

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File Path: J:\DWG\P2012\0636\A17\Structural\Plan\Permit Set\20120636 ABUTMENT AND PIER.dwg Layout: SOUTH ABUTMENT Plotted: Wed, December 11, 2019 - 2:25 PM User: dnewhall
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LAYER STATE:
MS VIEW: