

TOWN OF WILTON
ADDENDUM NO. 2

RFP #2022-09

ISSUE DATE: December 15, 2022



**Request for Proposal to Replace Lovers
Lane Bridge - Bridge #04975**

This addendum is being issued to address plan revisions and clarify information associated with masonry facing, dimensions, stationing, elevations, notes and callouts. It also includes the Final Design Geotechnical Engineering Report for the project providing design recommendations for the temporary bridge foundations.

Addendum No. 2 is being issued to all potential bidders to provide the items and attachments set forth herein which shall act to qualify, clarify or otherwise modify the Documents previously issued regarding the above referenced project. These items, whether of omission, addition, substitution, or clarification, shall be incorporated into the proposals submitted by all proposers, and receipt of this document and its attachments must be acknowledged in the space provided on the Proposer's Schedule of Prices Form. Failure to do so may subject the Proposer to disqualification.

Frank Smeriglio, PE

Director of Public Works, Town Engineer

Town of Wilton

DECEMBER 15, 2022
REPLACEMENT OF BRIDGE NO. 04975
LOVERS LANE OVER COMSTOCK BROOK
STATE PROJECT NO. 0161-0142
TOWN PROJECT NO. RFP 2022-09
TOWN OF WILTON

ADDENDUM NO. 2

This addendum addresses plan revisions to clarify information associated with masonry facing, dimensions, stationing, elevations, notes and callouts. It also includes the Final Design Geotechnical Engineering Report for the project providing design recommendations for the temporary bridge foundations.

REPORTS

The following Report is hereby added to the contract.

- FINAL DESIGN GEOTECHNICAL ENGINEERING REPORT

SPECIAL PROVISIONS

NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added to the contract.

- ITEM #0406194A – JOINT AND CRACK SEALING OF BITUMINOUS CONCRETE PAVEMENT

REVISED SPECIAL PROVISIONS

The following Special Provisions are hereby revised.

- NOTICE TO CONTRACTOR – ADHESIVE BONDED ANCHOR AND DOWEL INSTALLATION, INSPECTION AND TESTING REQUIREMENTS
- ITEM #0603233A – GALVANIZING STRUCTURAL STEEL (SITE NO. 1)
- ITEM #0910090A – STEEL BACKED TIMBER GUIDERAIL – TYPE A
- ITEM #0910091A – STEEL-BACKED TIMBER GUIDERAIL – TERMINAL SECTION
- ITEM #0910092A STEEL-BACKED TIMBER GUIDERAIL – BRIDGE ATTACHMENT

CONTRACT ITEMS

NEW CONTRACT ITEMS

The following Contract Items are hereby added to the contract.

ITEM NO.	DESCRIPTION	QUANTITY
0406194A	JOINT AND CRACK SEALING OF BITUMINOUS CONCRETE PAVEMENT	85 LF

PLANS

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

- DRAWING NO. REV-01 (SHEET NO. 02.01.A2)
- DRAWING NO. S-02 (SHEET NO. 04.02.A2)
- DRAWING NO. S-03 (SHEET NO. 04.03.A2)
- DRAWING NO. S-09 (SHEET NO. 04.09.A2)
- DRAWING NO. S-10 (SHEET NO. 04.10.A2)
- DRAWING NO. S-11 (SHEET NO. 04.11.A2)
- DRAWING NO. S-12 (SHEET NO. 04.12.A2)
- DRAWING NO. S-13 (SHEET NO. 04.13.A2)
- DRAWING NO. S-14 (SHEET NO. 04.14.A2)
- DRAWING NO. S-15 (SHEET NO. 04.15.A2)
- DRAWING NO. S-16 (SHEET NO. 04.16.A2)
- DRAWING NO. S-18 (SHEET NO. 04.18.A2)
- DRAWING NO. S-19 (SHEET NO. 04.19.A2)
- DRAWING NO. S-21 (SHEET NO. 04.21.A2)
- DRAWING NO. S-23 (SHEET NO. 04.23.A2)
- DRAWING NO. S-24 (SHEET NO. 04.24.A2)

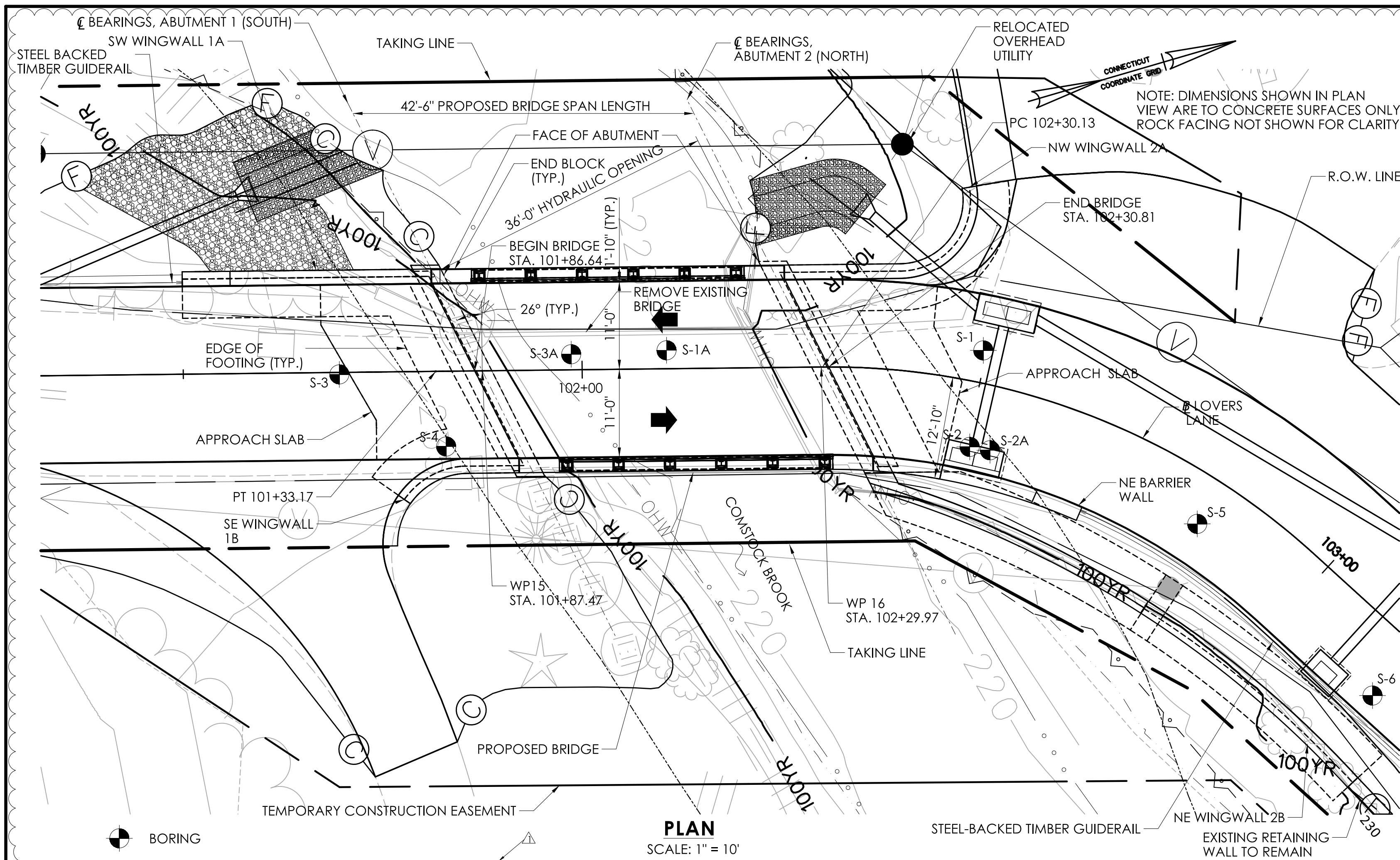
There is no change to the Bid Opening Date and Time.

The Schedule of Prices has been revised to reflect these changes.

The Detailed Estimate Sheets do not reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.



GENERAL NOTES:

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 818 (2020), SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 2022 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (9TH EDITION - 2020), AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL (2003) WITH REVISIONS DATED 2019.

MATERIAL STRENGTHS:

CONCRETE:
 CLASS PCC 03340 f_c = 3,000 PSI
 CLASS PCC 04462 f_c = 4,000 PSI
 PRC08062 (PRECAST CONCRETE) f_c = 8,000 PSI

THE SPECIFIED CONCRETE STRENGTH USED IN DESIGN, f_c, OF THE CONCRETE COMPONENTS IS NOTED ABOVE. THE MINIMUM COMPRESSIVE STRENGTH OF THE CONCRETE IN THE CONSTRUCTED COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 6.01 CONCRETE FOR STRUCTURES.

REINFORCEMENT (ASTM A615 GRADE 60) F_y = 60,000 PSI

LIVE LOAD: HL-93, LEGAL AND PERMIT VEHICLES

FUTURE PAVING ALLOWANCE: NONE

BITUMINOUS CONCRETE OVERLAY: THIS SHALL CONSIST OF TWO COURSES OF TRAFFIC LEVEL 2 MIXES. THE BOTTOM COURSE SHALL BE 1" HMA S0.25 AND THE TOP COURSE SHALL BE 2" HMA S0.5.

DIMENSIONS: WHEN DIMENSIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZEROS.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY. THEY HAVE BEEN TAKEN FROM THE ORIGINAL DESIGN DRAWINGS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR REVIEW, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

MASH TEST LEVEL: THE 3 TUBE CURB MOUNTED BRIDGE RAILS MEET THE TL-4 CRITERIA FOR MASH 2016.

CONCRETE NOTES:

FOUNDATION PRESSURE AND PILE LOADS: THE VARIOUS GROUP LOADINGS NOTED ON THE SUBSTRUCTURE PLAN SHEETS REFER TO THE GROUP LOADS AS GIVEN IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

REMAIN-IN-PLACE FORMS: THE USE OF REMAIN-IN-PLACE FORMS ON THIS STRUCTURE IS NOT ALLOWED.

PENETRATING SEALER: PENETRATING SEALER PROTECTIVE COMPOUND SHALL BE APPLIED TO ALL EXPOSED SURFACES, INCLUDING CURBS AND END BLOCKS. SEE SPECIAL PROVISIONS.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1" UNLESS DIMENSIONED OTHERWISE.

CONCRETE COVER: ALL REINFORCEMENT IN CAST-IN-PLACE AND PRECAST CONCRETE SHALL HAVE TWO INCHES COVER UNLESS DIMENSIONED OTHERWISE.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

GALVANIZED REINFORCING BARS: ALL REINFORCEMENT SHALL BE GALVANIZED AFTER FABRICATION UNLESS NOTED OTHERWISE. ALL REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A767, CLASS 1, INCLUDING SUPPLEMENTAL REQUIREMENTS. THE COST OF FURNISHING AND PLACING THIS REINFORCEMENT SHALL BE INCLUDED IN THE ITEM "DEFORMED STEEL BARS - GALVANIZED."

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

PREFORMED EXPANION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLER IS PAID FOR AS "1" PREFORMED JOINT FILLER FOR BRIDGES".

CLOSED CELL ELASTOMER: FURNISHING AND INSTALLING CLOSED CELL ELASTOMER SHALL BE INCLUDED IN THE ITEM "1" CLOSED CELL ELASTOMER".

PRECAST CONCRETE NOTES:

THE CONTRACTOR SHALL MANUFACTURE AND CONSTRUCT PRESTRESSED DECK UNITS TO THE INSIDE DIMENSIONS, LENGTH AND DETAILS SHOWN ON THESE PLANS.

ALL INSERTS OR HOLES CAST INTO THE DECK UNITS FOR THE SOLE PURPOSE OF HANDLING AND SETTING THE UNITS SHALL BE SEALED WITH GROUT TO A SMOOTH FINISH UPON COMPLETION OF THE WORK.

THE COST OF FURNISHING AND INSTALLING THE INSERTS SHALL BE INCLUDED IN THE ITEM "PRESTRESSED DECK UNIT" CORRESPONDING TO EACH SIZE. ALL INSERTS SHALL HAVE A CORROSIVE RESISTANT COATING.

NOTICE TO BRIDGE INSPECTORS

THE DEPARTMENT'S BRIDGE SAFETY PROCEDURES REQUIRE THE BRIDGE TO BE INSPECTED FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING FOR COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE). THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATION.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	N/A

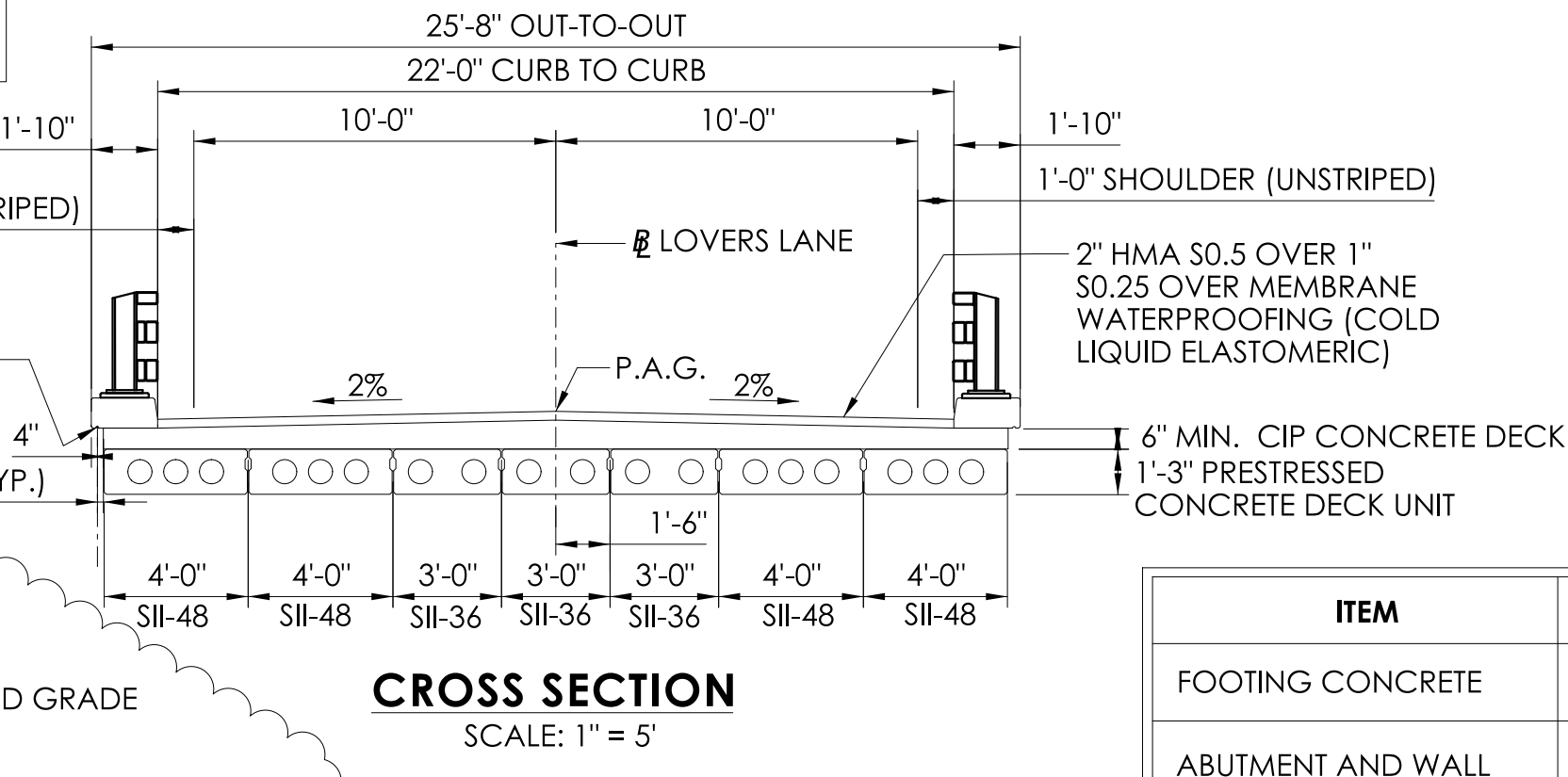
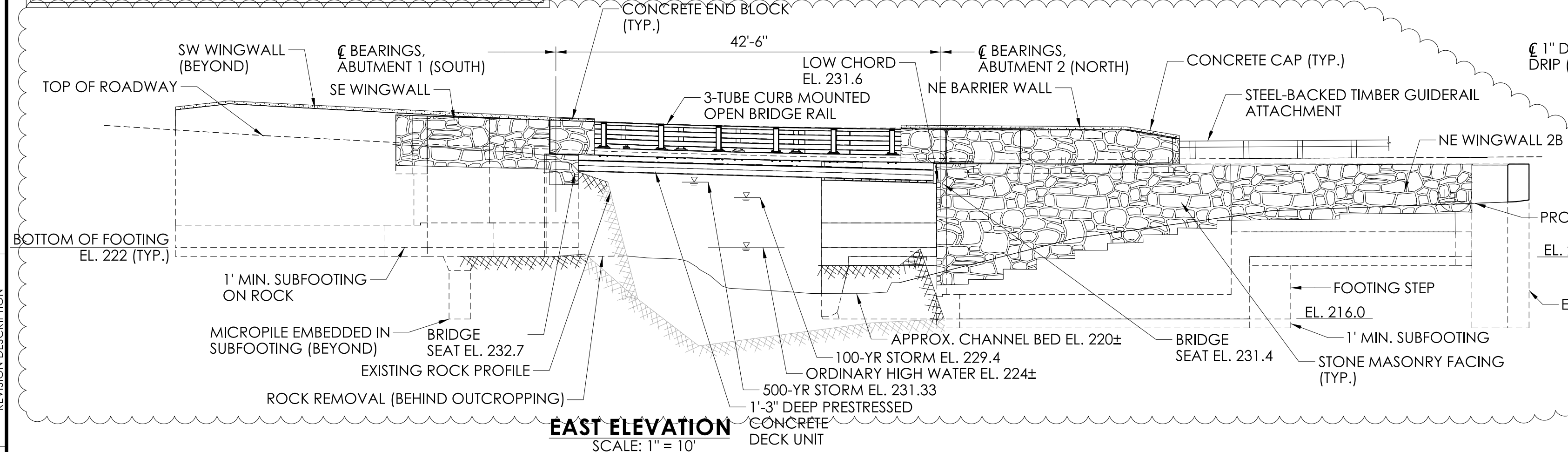
HYDRAULIC SUMMARY DATA

DRAINAGE AREA (MI ²)	7.36	
DESIGN FREQUENCY (YEAR)	100	
DESIGN DISCHARGE (CFS)	1865	
AVERAGE DAILY FLOW ELEVATION (FT)	221.9	
DESIGN WATER SURFACE ELEVATION (FT)	UPSTREAM	229.8
	DOWNSTREAM	229.4
MAXIMUM SCOUR ELEVATION (FT)	NOT CALCULATED*	
WORST CASE SCOUR SUBSTRUCTURE UNIT	ABUTMENT 2 (NORTH)	

*SHALLOW BEDROCK PRESENT AT SITE (WITHIN 7 FEET OF CHANNEL BED) WHICH IS THE LIMIT OF POTENTIAL SCOUR. BRIDGE FOUNDATIONS WILL BE DESIGNED TO BE STABLE TO MAXIMUM POTENTIAL SCOUR TO TOP OF BEDROCK.

CONCRETE DISTRIBUTION

SUPERSTRUCTURE	C.Y.	56
SUBSTRUCTURE	C.Y.	147
APPROACH SLAB	C.Y.	128
FOOTINGS	C.Y.	186
TOTAL	C.Y.	517



BRIDGE PLACARDS

BRIDGE NUMBER PLACARDS: THIS SIGN IS 4"x12" ALUMINUM SHEET METAL WITH WHITE REFLECTIVE LETTERS ON A GREEN REFLECTIVE BACKGROUND WITH 5 NUMERALS (04975). IT SHOULD BE LOCATED AT THE LEADING END OF EACH END BLOCK MOUNTED TO THE FRONT FACE OF THE END BLOCK WITH THE SIGN AND LEGEND READING HORIZONTALLY.

ITEM	BRIDGE COMPONENTS	PCC CLASS
FOOTING CONCRETE	ABUTMENT AND WINGWALL FOOTINGS	PCC03340
ABUTMENT AND WALL CONCRETE	ABUTMENT AND WINGWALL STEMS, BARRIER WALLS, CHEEKWALLS	PCC03340
BRIDGE DECK CONCRETE	BRIDGE DECK	PCC04462
PARAPET CONCRETE	END BLOCKS, CURBS, CAPS	PCC04462
APPROACH SLAB CONC.	APPROACH SLABS	PCC04462
FLOWABLE FILL	SUBFOOTING	PCC03340

ADDENDUM NO. 2

DESIGNER/DRAFTER: JT CHECKED BY: DW

12/15/22 CALLOUT ADJUSTMENTS REVISION DESCRIPTION

STATE OF CONNECTICUT
TOWN OF WILTON

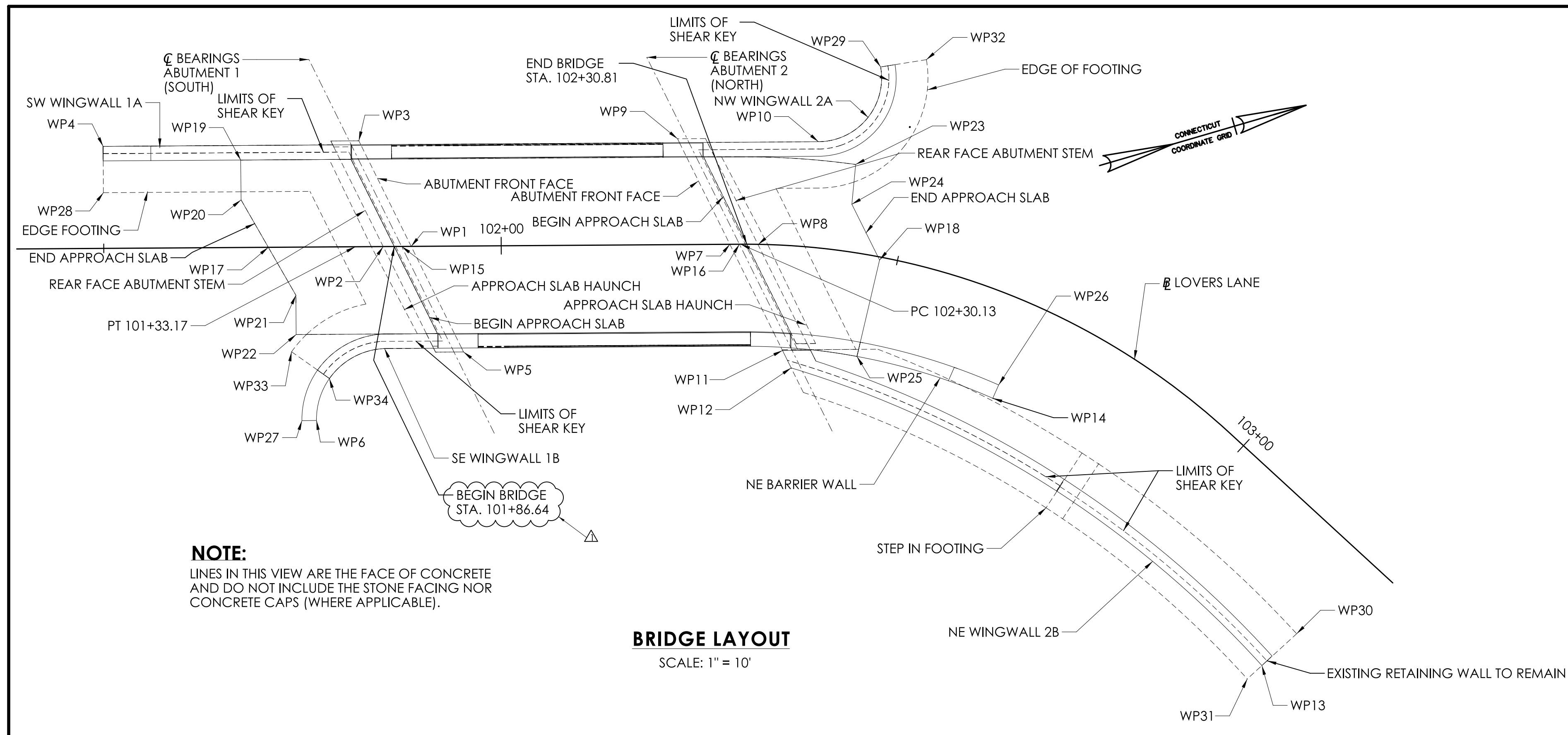
PROJECT NUMBER: 0161-0142
PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04975 LOVERS LANE OVER COMSTOCK BROOK
TOWN(S): WILTON
DRAWING TITLE: GENERAL PLAN AND ELEVATION

Stuart Harris
Fuss & O'Neill
2022.12.15
15:40:03-05'00"

SIGNATURE/BLOCK:

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PLOTTED DATE: 12/15/2022

DRAWING NO. S-02
SHEET NO. 04.02.A2

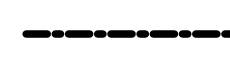
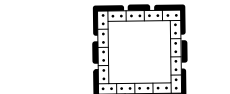


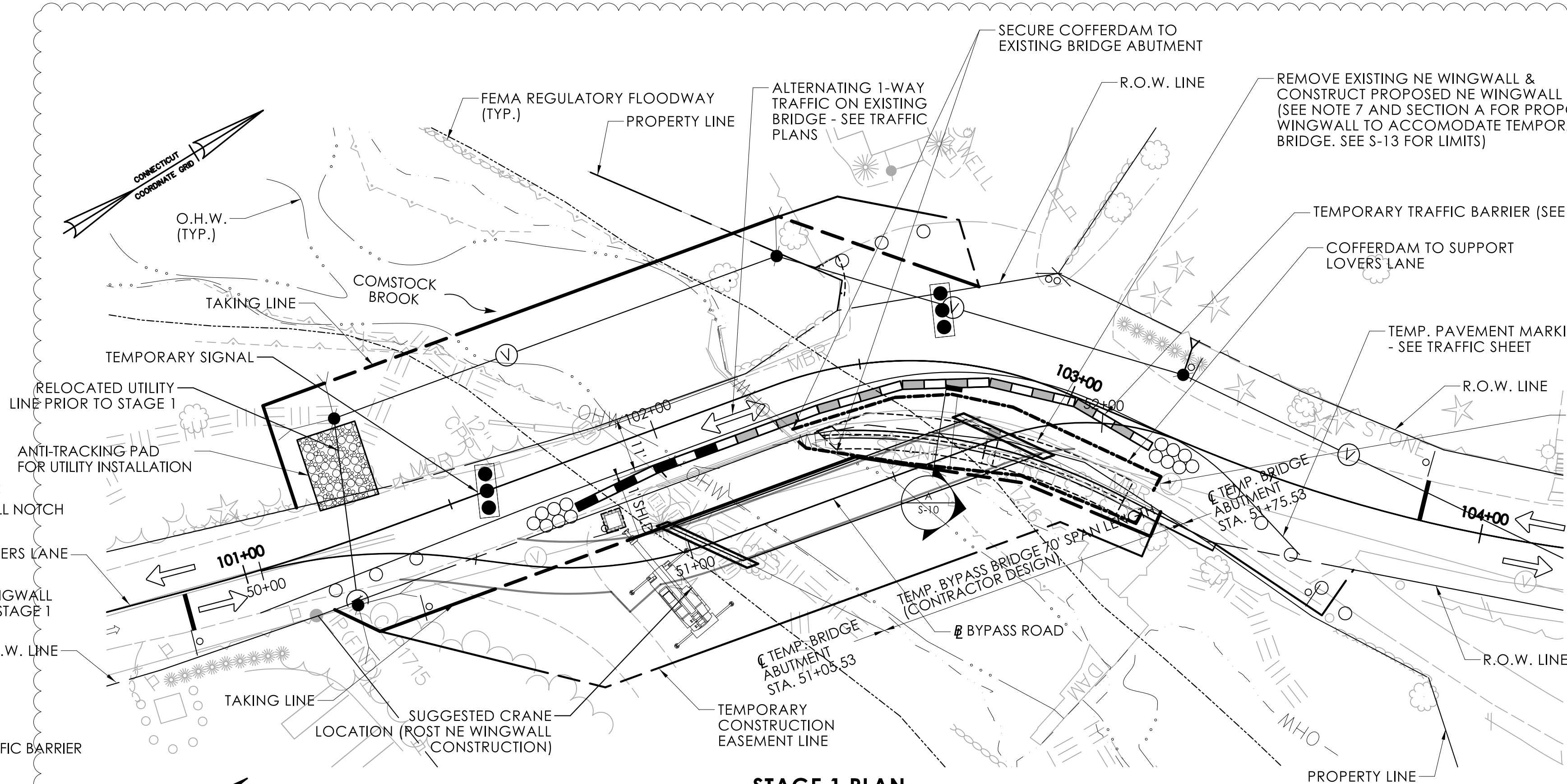
WP #	COORDINATES		STATION	OFFSET
	NORTHING	EASTING		
WP1	632850.615	810786.419	101+88.68	0.000
WP2	632847.222	810785.469	101+85.15	0.000
WP3	632847.948	810771.835	101+82.18	-13.325
WP4	632816.831	810763.632	101+50.00	-12.837
WP5	632853.282	810801.002	101+95.18	13.325
WP6	632833.122	810804.187	101+76.75	20.297
WP7	632889.222	810797.226	102+28.77	0.000
WP8	632892.620	810798.203	102+32.30	0.000
WP9	632886.555	810782.643	102+22.27	-13.323
WP10	632903.491	810787.892	102+38.74	-13.305
WP11	632891.904	810811.894	102+36.20	13.229
WP12	632892.345	810814.302	102+37.67	15.342
WP13	632938.938	810866.633	103+20.43	18.798
WP14	632915.671	810824.973	102+68.08	12.833
WP15	632849.455	810786.094	101+87.47	0.000
WP16	632890.382	810797.549	102+29.97	0.000
WP17	632833.310	810781.575	101+70.71	0.000
WP18	632906.782	810804.319	102+47.78	0.383
WP19	632832.992	810770.063	101+67.30	-11.000
WP20	632831.658	810774.895	101+67.31	-5.987
WP21	632834.978	810788.323	101+74.13	6.049
WP22	632833.641	810793.090	101+74.13	11.000
WP23	632907.208	810791.931	102+43.12	11.000
WP24	632905.364	810796.612	102+43.32	-5.970
WP25	632900.699	810815.198	102+47.18	12.835
WP26	632916.843	810823.563	102+68.08	11.000
WP27	632831.352	810803.709	101+74.79	21.843
WP28	632815.259	810769.247	101+50.00	-7.006
WP29	632913.607	810781.006	102+44.25	-23.585
WP30	632944.244	810863.997	103+20.94	12.819
WP31	632936.705	810867.743	103+20.21	21.281
WP32	632919.396	810781.713	102+48.58	-25.489
WP33	632832.486	810795.021	101+73.54	13.171
WP34	632836.142	810799.563	101+78.28	16.559
WP35	632892.965	810817.695	102+39.89	18.284

SHIPPING DATA FOR PRESTRESSED DECK UNITS				
MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
SII-48	46'-1"	1'-3"	4'-0"	25000 LBS
SII-36	46'-1"	1'-3"	3'-0"	19800 LBS

REV.	DATE	DESCRIPTION
1	12/15/22	UPDATED STA. LOCATION
2		REVISION DESCRIPTION

LEGEND

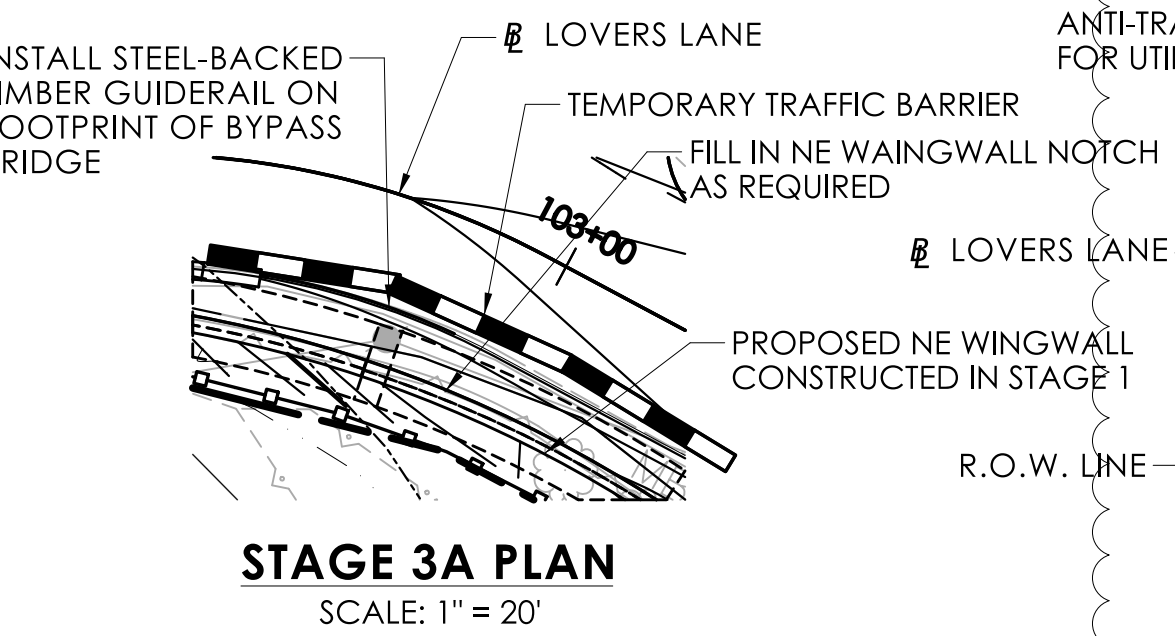
-  COFFERDAM
-  SUGGESTED DEWATERING BASIN LOCATION



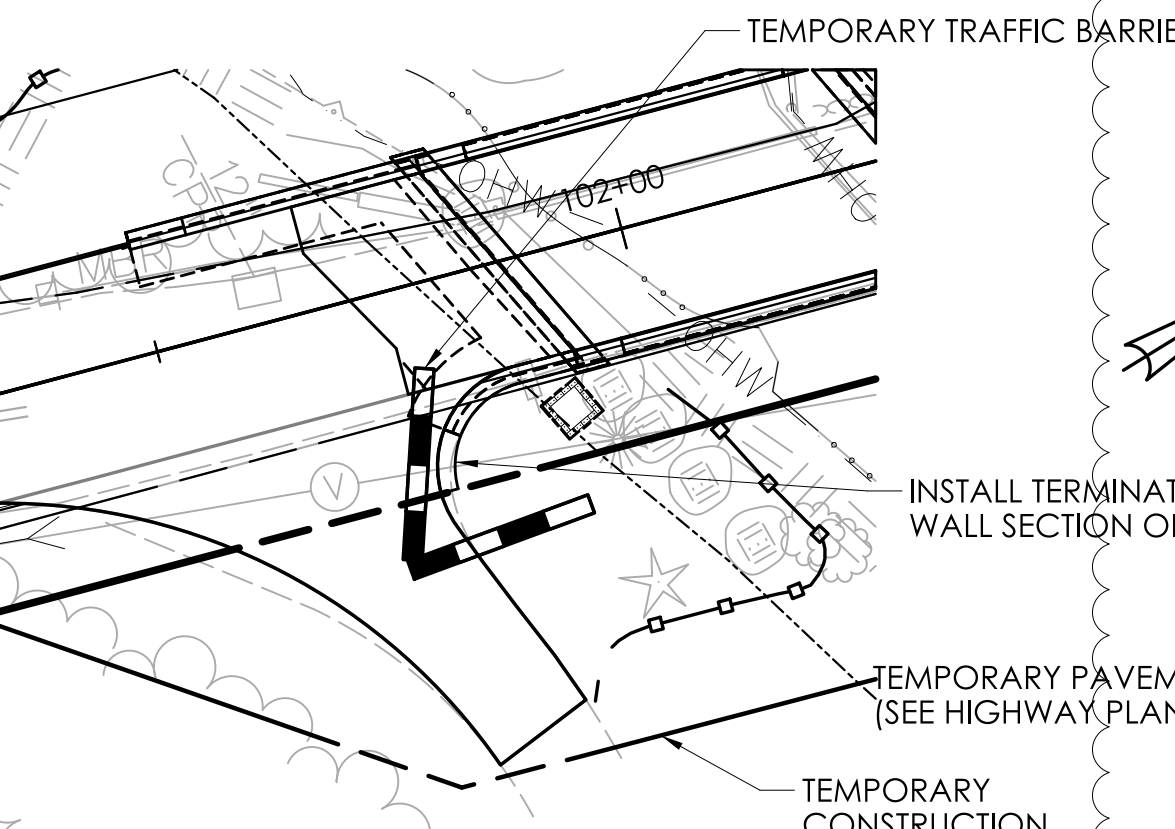
STAGE 1 PLAN
SCALE: 1" = 20'

SUGGESTED STAGE 1 CONSTRUCTION SEQUENCE

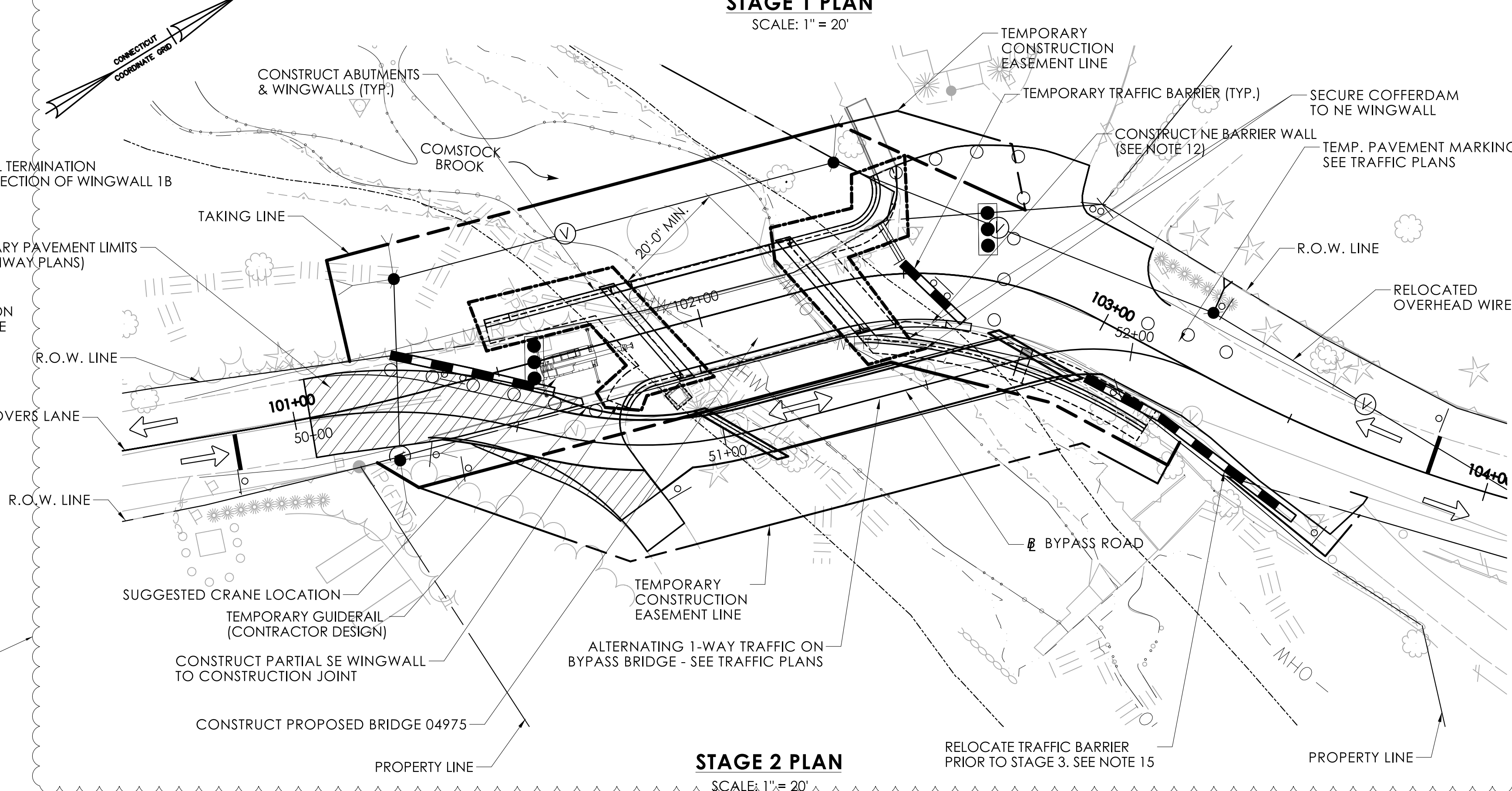
1. RELOCATE OVERHEAD UTILITY PRIOR TO STAGE 1.
2. PERFORM SITE CLEARING AND GRUBBING ACTIVITIES.
3. INSTALL SEDIMENTATION CONTROL SYSTEM.
4. IMPLEMENT STAGE 1 MPT PLAN AND SHIFT TRAFFIC TOWARD THE WEST CURB OF EXISTING BRIDGE.
5. INSTALL STAGE 1 TEMPORARY COFFERDAM.
6. DEMOLISH EXISTING NE WINGWALL (SEE DWG. S-10 FOR LIMITS AND SECTION)
7. CONSTRUCT PROPOSED NORTHEAST WINGWALL. (SEE DWG. S-14 FOR LIMITS AND SECTION). IF REQUIRED, ALLOW GAP IN NORTHEAST WINGWALL TO ACCOMMODATE TEMPORARY BRIDGE SUPERSTRUCTURE.
8. BACKFILL BEHIND PROPOSED NE WINGWALL AND REMOVE STAGE 1 TEMPORARY COFFERDAM.
9. CONSTRUCT TEMPORARY BYPASS BRIDGE ABUTMENTS IN FILL BEHIND PROPOSED NE WINGWALL.
10. INSTALL TEMPORARY BYPASS BRIDGE (CONTRACTOR DESIGN) & CONSTRUCT TEMPORARY ROAD.
11. REMOVE STAGE 1 TRAFFIC CONTROL FEATURES.



STAGE 3A PLAN
SCALE: 1" = 20'



STAGE 3B PLAN
SCALE: 1" = 20'



STAGE 2 PLAN
SCALE: 1" = 20'

SUGGESTED STAGE 2 CONSTRUCTION SEQUENCE

1. IMPLEMENT STAGE 2 MPT PLAN AND SHIFT TRAFFIC ONTO TEMPORARY ROAD AND BRIDGE.
2. INSTALL DEBRIS SHIELD ABOVE EL. 228 (MIN.) AND REMOVE EXISTING BRIDGE SUPERSTRUCTURE (SEE DWG. S-10 FOR DEMO LIMITS).
3. INSTALL STAGE 2 COFFERDAMS.
4. DEMOLISH EXISTING ABUTMENTS AND WINGWALLS, PERFORM STRUCTURE EXCAVATION.
5. PERFORM VERIFICATION TEST ON MICROPILES AND SUBMIT TEST RESULTS FOR APPROVAL
6. INSTALL MICROPILES AS SHOWN IN PLANS.
7. PERFORM PROOF TEST ON MICROPILE AS SHOWN IN PLANS ON 5% OF PILES/
8. CONSTRUCT PROPOSED FOOTINGS FOR ABUTMENTS AND WINGWALLS.
9. CONSTRUCT PROPOSED ABUTMENTS & WINGWALLS.
10. BACKFILL BEHIND ABUTMENTS UP TO APPROACH SLAB ELEVATION.
11. REMOVE STAGE 2 COFFERDAMS.
12. INSTALL BEARINGS AND DECK UNITS. THEN, CONSTRUCT APPROACH SLABS, AND DECK. INSTALL NE BARRIER WALL INCLUDING TERMINATION SECTION IN TRENCH BOX (SECTION S-19)
13. INSTALL BRIDGE RAILING AND END BLOCKS.
14. COMPLETE APPROACH ROADWAY AND DRAINAGE WORK AND INSTALL SW APPROACH GUIDERAIL.
15. REMOVE STAGE 2 TEMPORARY TRAFFIC FEATURES NOT NECESSARY FOR STAGE 3 CONSTRUCTION. RELOCATE TEMPORARY BARRIERS AT NE APPROACH TO PROTECT TRAFFIC. SHIFT 2-WAY TRAFFIC TO NEW BRIDGE.

SUGGESTED STAGE 3 CONSTRUCTION SEQUENCE

1. STAGE 3A: UTILIZING TEMPORARY TRAFFIC CONTROL PROCEDURES AND RELOCATED TEMPORARY BARRIERS INSTALLED AT NE APPROACH. REMOVE TEMPORARY BYPASS BRIDGE AND ABUTMENTS. CONSTRUCT NE WINGWALL TO FINAL ELEVATION AT NOTCH LOCATION AS REQUIRED.
2. INSTALL TIMBER BACKED GUARDRAIL AT NE APPROACH
3. STAGE 3B: INSTALL TERMINAL SECTION OF WINGWALL 1B UTILIZING TEMPORARY TRAFFIC CONTROL PROCEDURES, RELOCATED TRAFFIC BARRIERS AND TRENCHBOX.
4. FINAL: RESTORE DISTURBED AREA WITH TURF ESTABLISHMENT AND PLANTINGS.

REV.	DATE	REVISION DESCRIPTION
1	12/15/22	REVISED STAGING PLAN

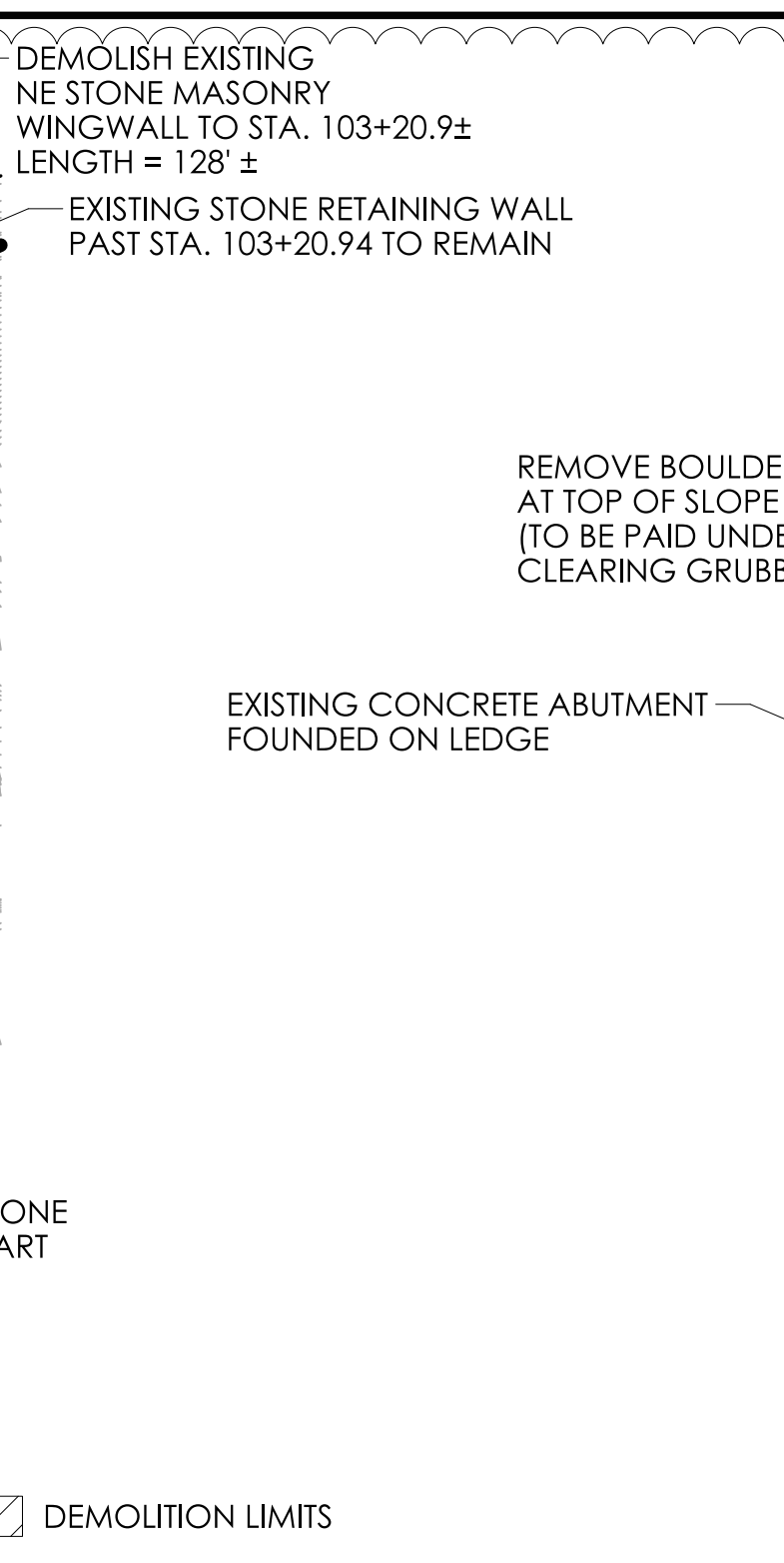
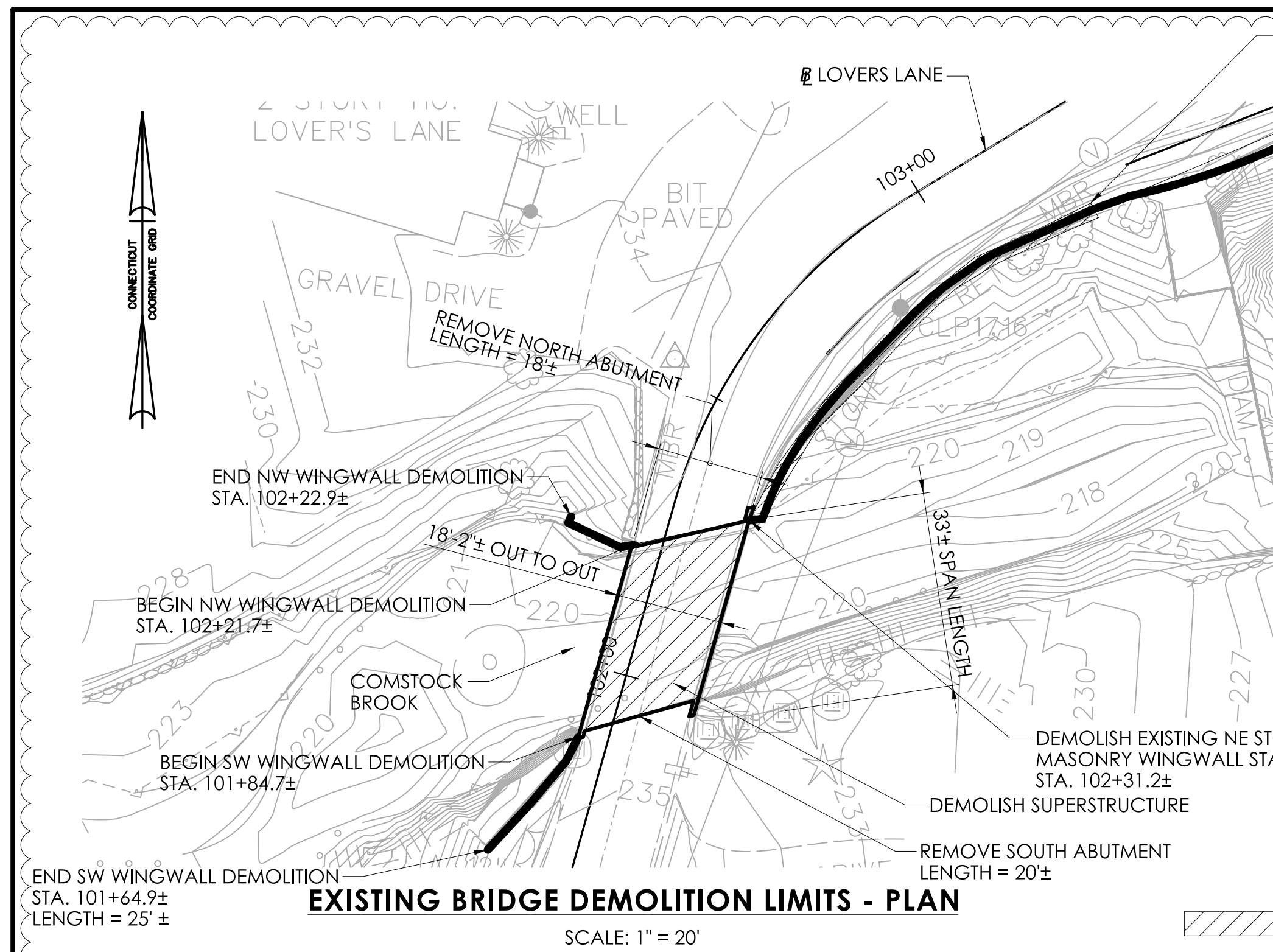
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 PLOTTED DATE: 12/15/2022

SIGNATURE/BLOCK:  JAMES S. O'NEILL
 465 Hartford Road
 Middletown, CT 06457
 (860)466-2800

STATE OF CONNECTICUT
 TOWN OF WILTON

PROJECT NUMBER: 0161-0142
 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04875 LOVERS LANE OVER COMSTOCK BROOK
 TOWN(S): WILTON
 DRAWING TITLE: STAGING PLAN 1

ADDENDUM NO. 2
 DRAWING NO. S-09
 SHEET NO. 04.09.A2



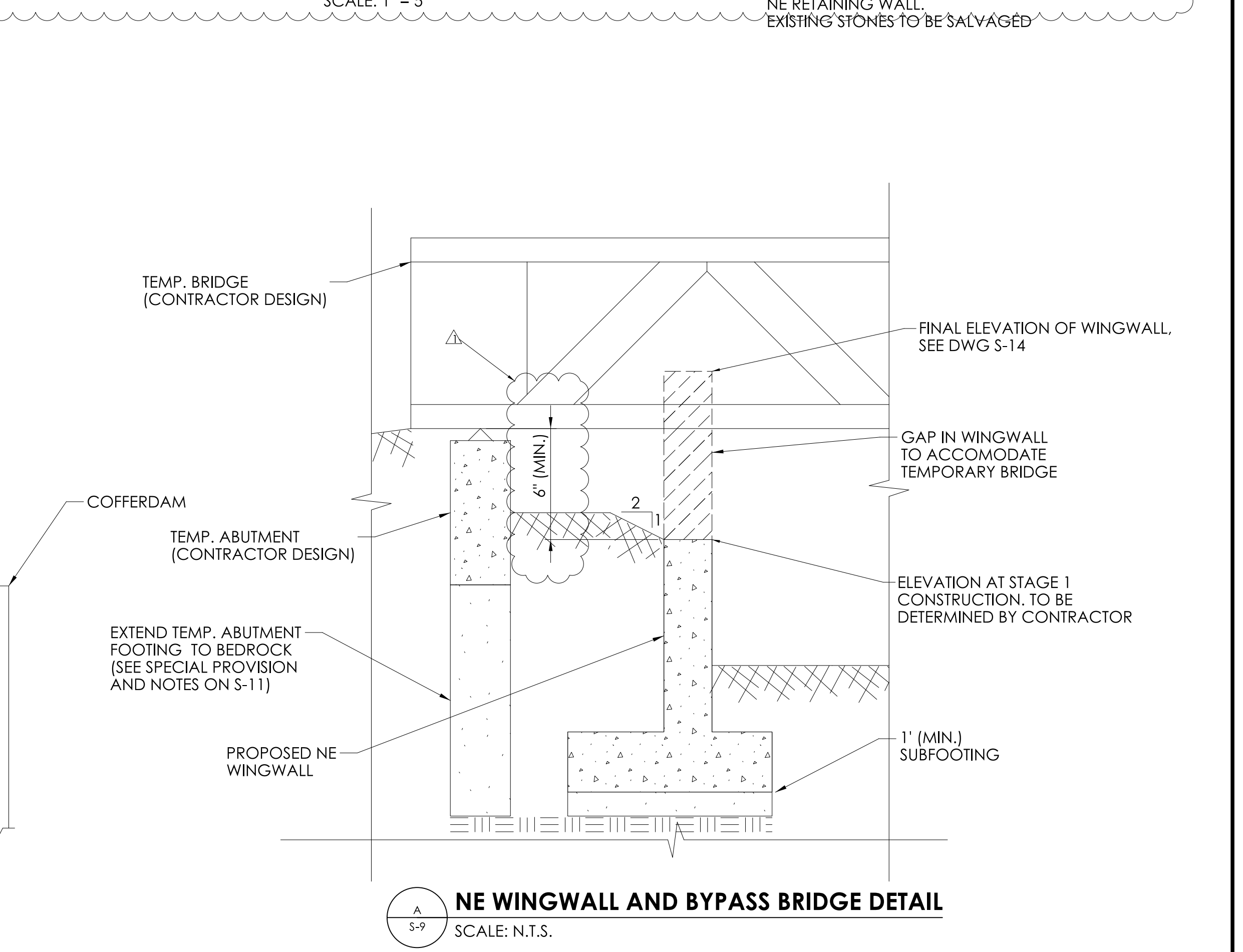
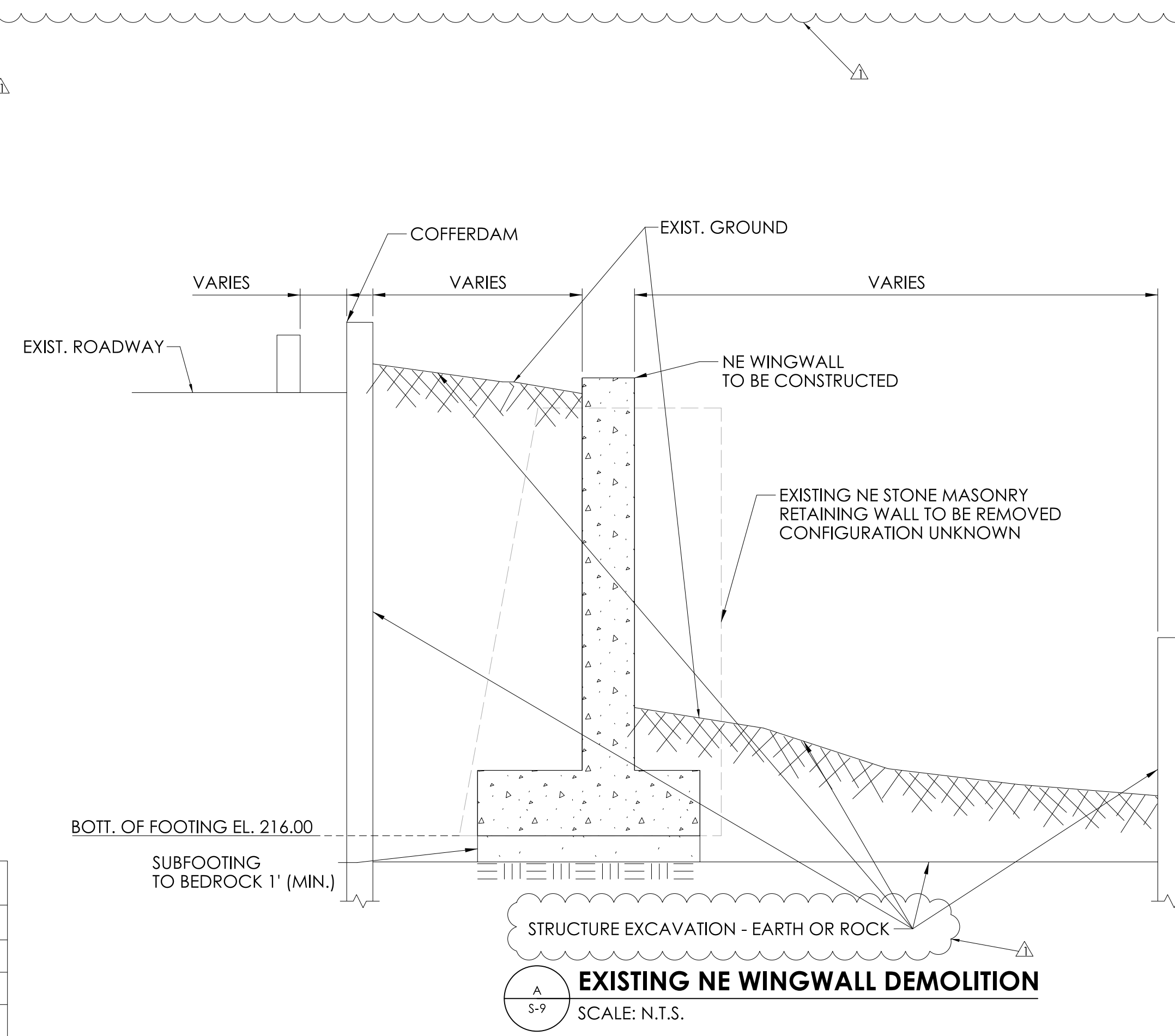
DEMOLITION NOTES

1. REMOVAL OF EXISTING SUPERSTRUCTURE IN ITS ENTIRETY INCLUDING OVERLAY, BRIDGE RAIL, DECK, STEEL BEAMS ENCASED IN CONCRETE SHALL BE PAID UNDER ITEM "REMOVAL OF SUPERSTRUCTURE".
2. A DEBRIS SHIELD SHALL BE INSTALLED AT EL. 228 MIN. PRIOR TO REMOVAL OF SUPERSTRUCTURE.
3. REMOVAL OF EXISTING SUBSTRUCTURE INCLUDING ABUTMENTS, RETAINING WALLS AND WINGWALLS TO BE PAID UNDER THE ITEM "REMOVAL OF MASONRY". THE EXISTING STONE MASONRY FROM NE RETAINING WALL SHALL BE SAVAGED AND DELIVERED TO TOWN. TO BE PAID UNDER ITEM "REMOVAL OF MASONRY". SEE SPECIAL PROVISIONS.
4. PLANS FOR THE EXISTING BRIDGE ARE NOT AVAILABLE. THE CONTRACTOR IS ENCOURAGED TO VISIT THE BRIDGE SITE TO VERIFY AND CONFIRM THE DEMOLITION LIMITS.

COFFERDAM AND DEWATERING NOTES

1. THE CONTRACTOR SHALL MAINTAIN WATER FLOW AND FISH PASSAGE THROUGH SITE DURING CONSTRUCTION OF THE NEW STRUCTURE.
2. EQUIPMENT SHALL NOT BE PERMITTED IN THE WATERCOURSE WHEN COFFERDAM IS NOT IN PLACE.
3. A PUMP DISCHARGE BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS AND WITHIN THE RIGHT OF WAY IF POSSIBLE. THE LOCATION OF THE DEWATERING BASIN SHOWN IN DWG. S-09 IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER. DEWATER WORK AREAS BY PUMPING TO DEWATERING BASIN.
4. COFFERDAM SHALL CONSIST OF A SUITABLE SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION, AND SHALL CONFORM TO PERMITS.
5. COFFERDAM AND DEWATERING SHALL BE PAID FOR UNDER THE ITEM "COFFERDAM AND DEWATERING".

TEMPORARY HYDRAULICS SUMMARY DATA	
AVERAGE DAILY FLOW (CFS)	13
AVERAGE SPRING FLOW (CFS)	26
2-YEAR FREQUENCY DISCHARGE (CFS)	500
TEMPORARY DESIGN DISCHARGE (CFS)	500
TEMPORARY DESIGN FREQUENCY	2 YEAR FLOW
TEMPORARY WATER SURFACE ELEVATION (FT)	225.7 UP STREAM, 225.3 DOWN STREAM



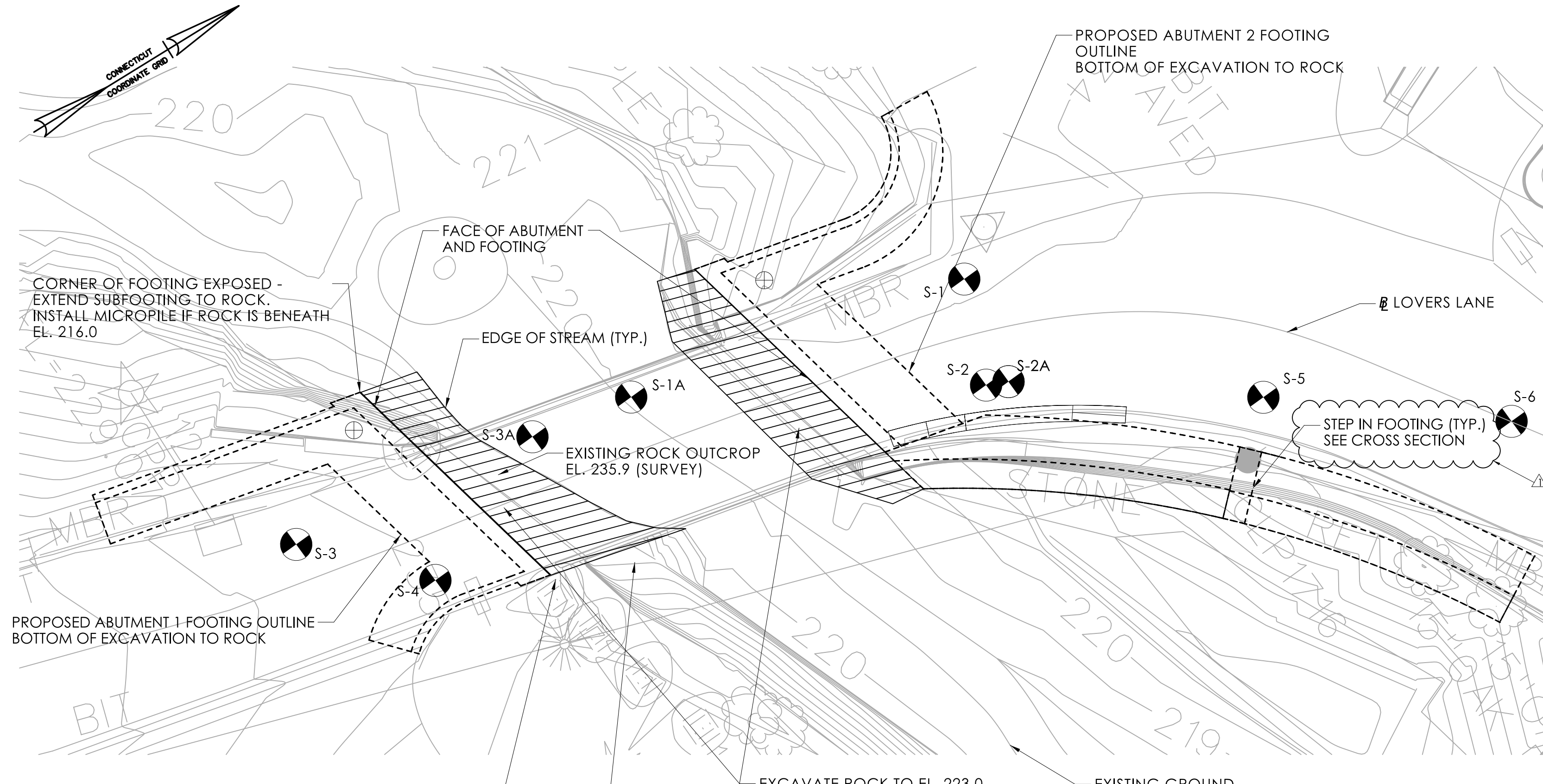
REV.	DATE	NOTE CHANGE & ADDED CALLOUTS	REVISION DESCRIPTION
1	12/15/22		

DESIGNER/DRAFTER: JT CHECKED BY: DW
 SIGNATURE/BLOCK: [Signature]

STATE OF CONNECTICUT
 TOWN OF WILTON

PROJECT NUMBER: 0161-0142
 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04875 LOVERS LANE OVER COMSTOCK BROOK
 TOWN(S): WILTON
 DRAWING TITLE: STAGING PLAN 2

ADDENDUM NO. 2
 DRAWING NO. S-10
 SHEET NO. 04.10.A3



BEDROCK ELEVATIONS

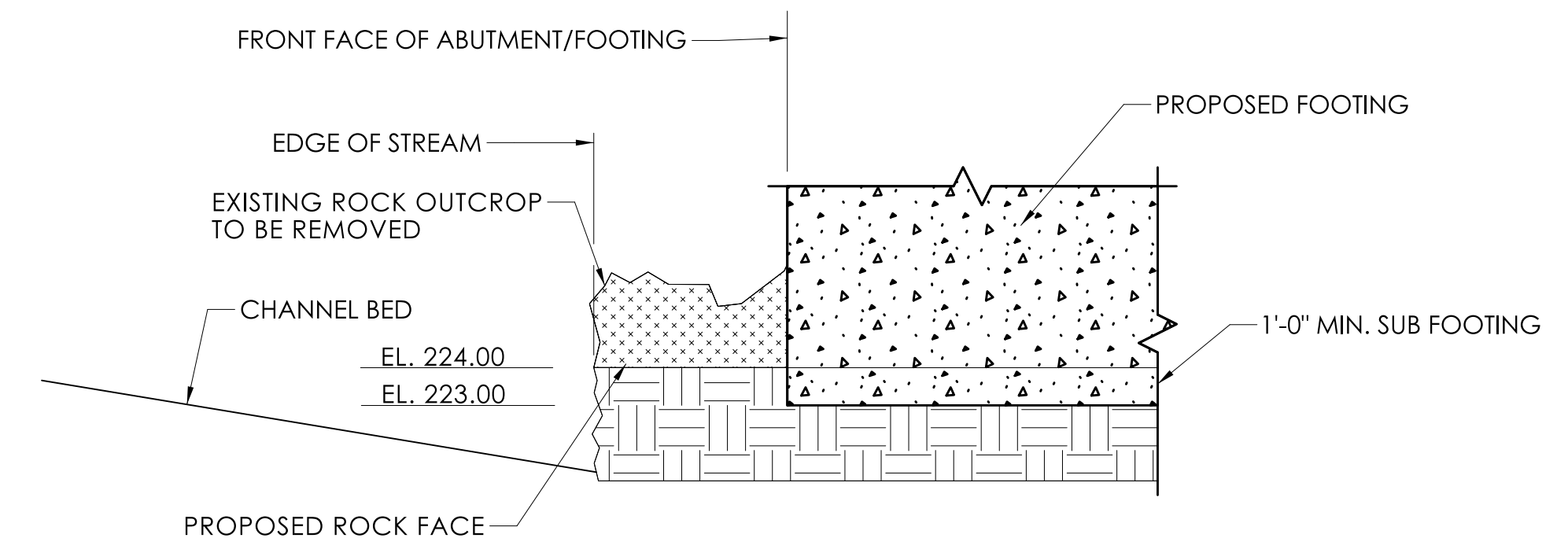
BORING	ELEVATION
S-1	224
S-1A	213.2
S-2	N/A
S-2A	223.5
S-3	224.5
S-3A	216.9
S-4	229
S-5	224
S-6	228

NOTE:
EXCAVATION, ROCK REMOVAL AND FOOTING PLACEMENT SHALL BE COMPLETED IN STAGE 2 (SEE S-09). STAGE 2 TRAFFIC CONTROL/BYPASS BRIDGE NOT SHOWN FOR CLARITY.

***BEDROCK PROFILE NOTES AND EXCAVATION**

- 1) WHERE THE ROCK OUTCROPPINGS WITHIN THE LIMITS OF THE PROPOSED ABUTMENT & WINGWALL FOOTINGS EXTEND ABOVE ELEVATION 223, ROCK SHALL BE EXCAVATED DOWN TO THIS ELEVATION.
- 2) FOR ROCK ENCOUNTERED BETWEEN ELEVATIONS 223 AND 216, THE CONTRACTOR SHALL EXCAVATE TO TOP OF BED ROCK. A CONCRETE SUBFOOTING SHALL BE CONSTRUCTED TO EL. 224.0 PRIOR TO THE CONSTRUCTION OF THE CONCRETE FOOTING. SEE DWG. S-12 FOR SUBFOOTING NOTE
- 3) FOR ROCK ELEVATIONS BELOW ELEVATION 216, THE CONTRACTOR SHALL EXCAVATE TO EL. 216 AND INSTALL MICROPILES AS DETAILED IN THE SUBSTRUCTURE PLANS. IT IS ANTICIPATED THAT MICROPILES WILL BE REQUIRED, AT THE NORTHWEST CORNER OF ABUTMENT 1 AND FOR ENTIRE LIMITS OF WINGWALL 2A.
- 4) ROCK OUTCROP ENCOUNTERED BETWEEN THE PROPOSED ABUTMENT FACE AND THE STREAM SHALL BE EXCAVATED TO EL. 224. (SEE ROCK OUTCROP DETAIL)
- 5) CONCRETE SUBFOOTINGS SHALL BE CONSTRUCTED AFTER THE ROCK IS EXCAVATED, EXPOSED, OR MICROPILES ARE INSTALLED. TOP OF SUBFOOTING SHALL BE INSTALLED TO ELEVATION 224.0. ALL AREAS OF THE CONCRETE FOOTINGS SHALL BE SUPPORTED ON AT LEAST 1' OF SUBFOOTING CONCRETE MATERIAL.
- 6) THE VOLUME OF ROCK EXCAVATION IS UNKNOWN AS PRECISE ROCK PROFILE IS UNKNOWN, IT IS ESTIMATED TO BE 95 CY.
- 7) ROCK EXCAVATION SHALL BE PAID UNDER THE ITEM STRUCTURE EXCAVATION - ROCK (EXCLUDING COFFERDAM AND DEWATERING). EARTH EXCAVATION SHALL BE PAID UNDER THE ITEM STRUCTURE EXCAVATION - EARTH (EXCLUDING COFFERDAM AND DEWATERING).

*BEDROCK NOTES AND EXCAVATION APPLY TO BOTH NEW AND TEMPORARY BRIDGE ABUTMENT FOOTINGS



ROCK OUTCROP REMOVAL DETAIL

N.T.S.

LEGEND

	SUGGESTED MICROPILE VERIFICATION TEST LOCATION
	BORING LOCATION

NOTE:
ONLY ONE VERIFICATION TEST NEEDS TO BE PERFORMED

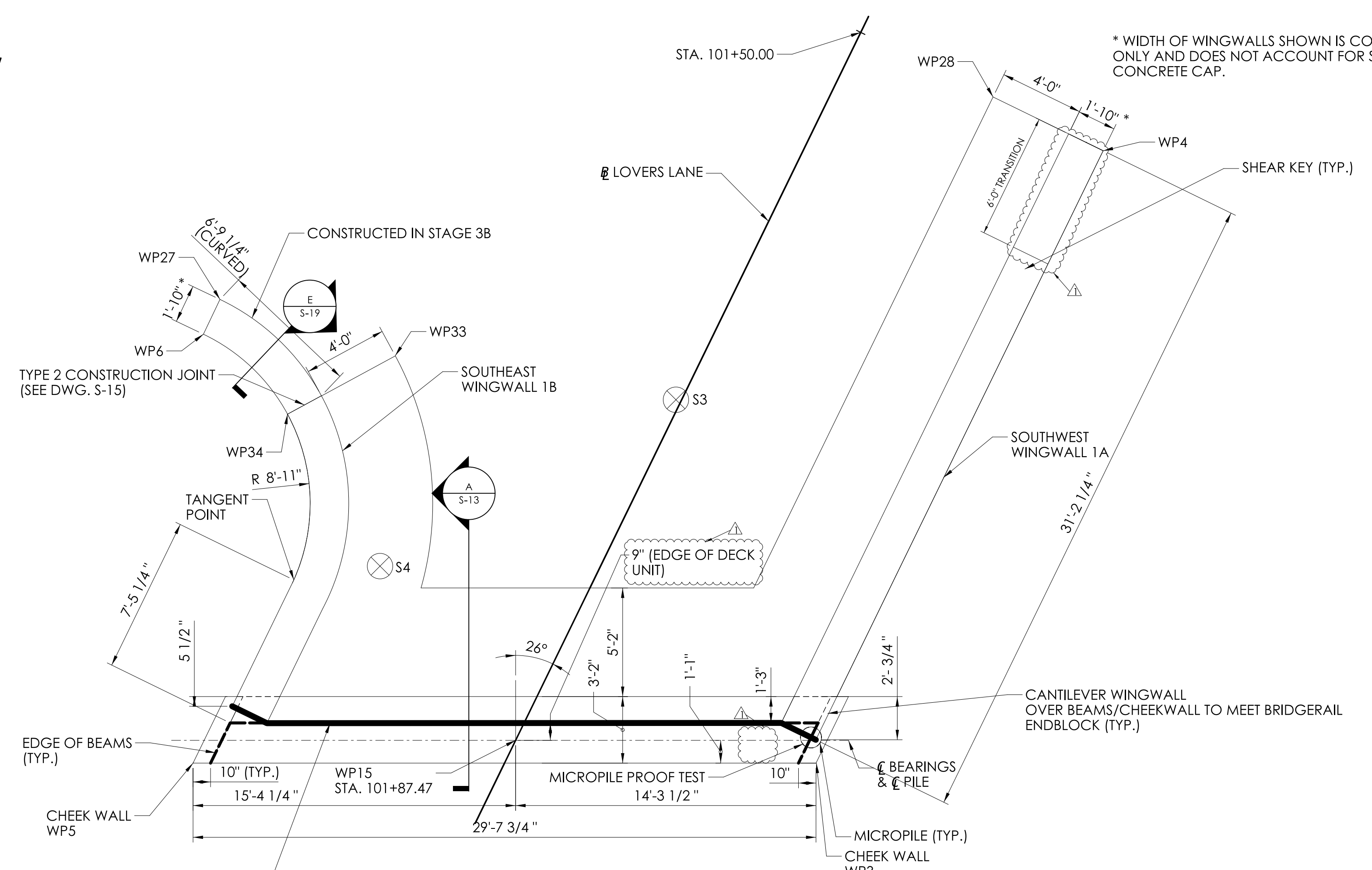
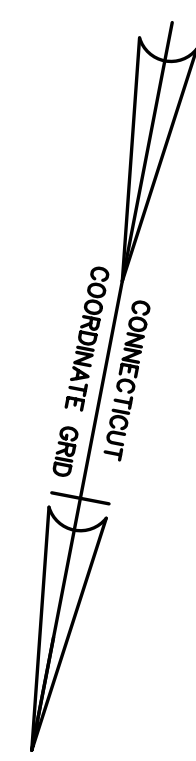
EXISTING BEDROCK PROFILE

SCALE: 1" = 10'

REV.	DATE	DESCRIPTION
1	12/15/22	MOVED CALLOUT

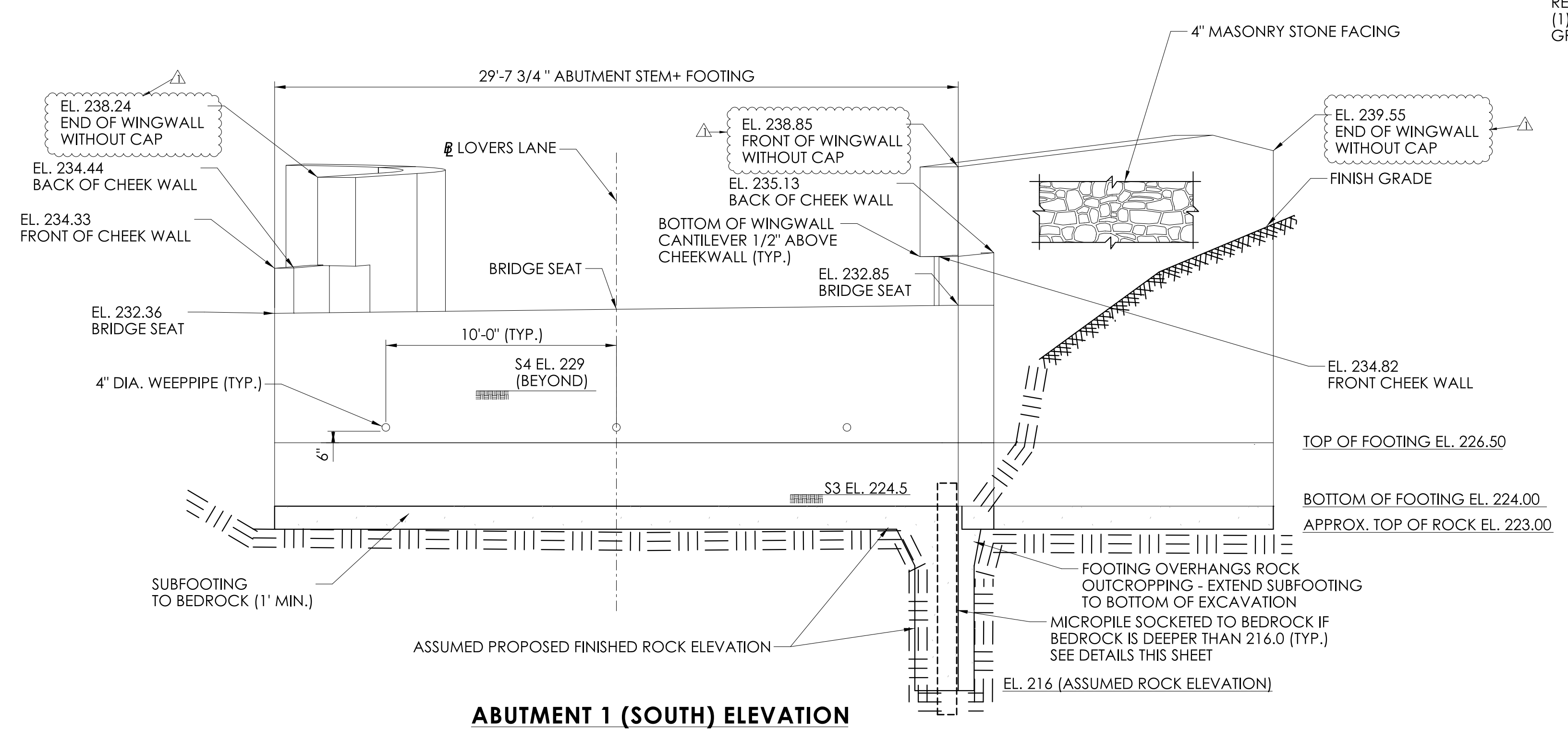
SIGNATURE/BLOCK:

STATE OF CONNECTICUT
TOWN OF WILTON



ABUTMENT 1 (SOUTH) PLAN

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

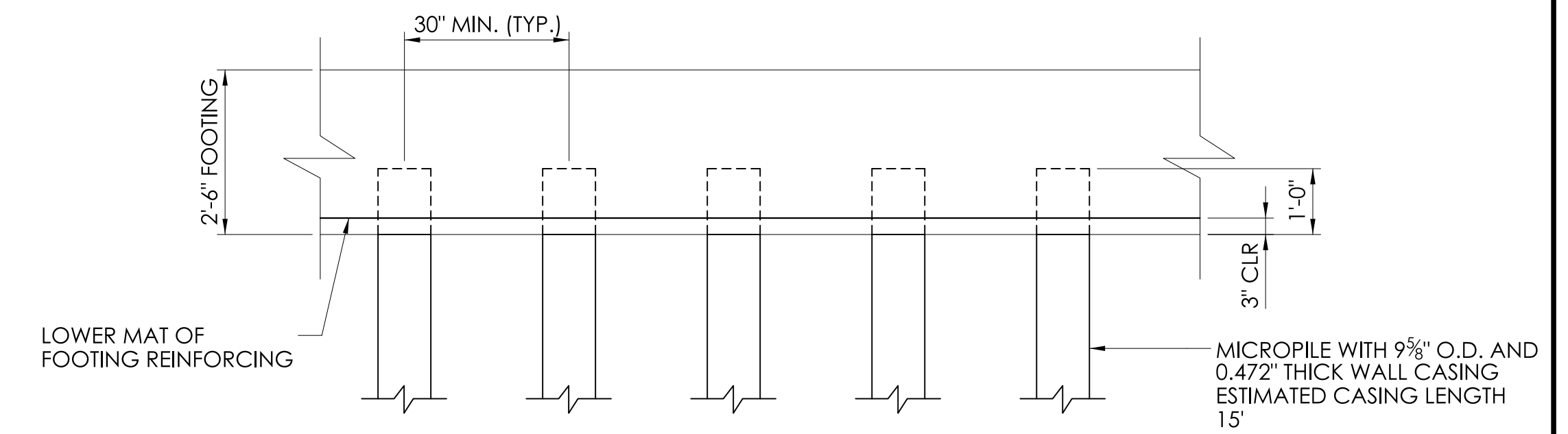


ABUTMENT 1 (SOUTH) ELEVATION

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

SUBFOOTING NOTES:

SUBFOOTING SHALL BE PAID UNDER THE ITEM "FLOWABLE FILL" - SEE SPECIAL PROVISIONS
SUBFOOTING SHALL BE PCC 03340 WITH MIN. 28-DAY STRENGTH OF 3,300 PSI



TYPICAL MICROPILE SPACING DETAIL

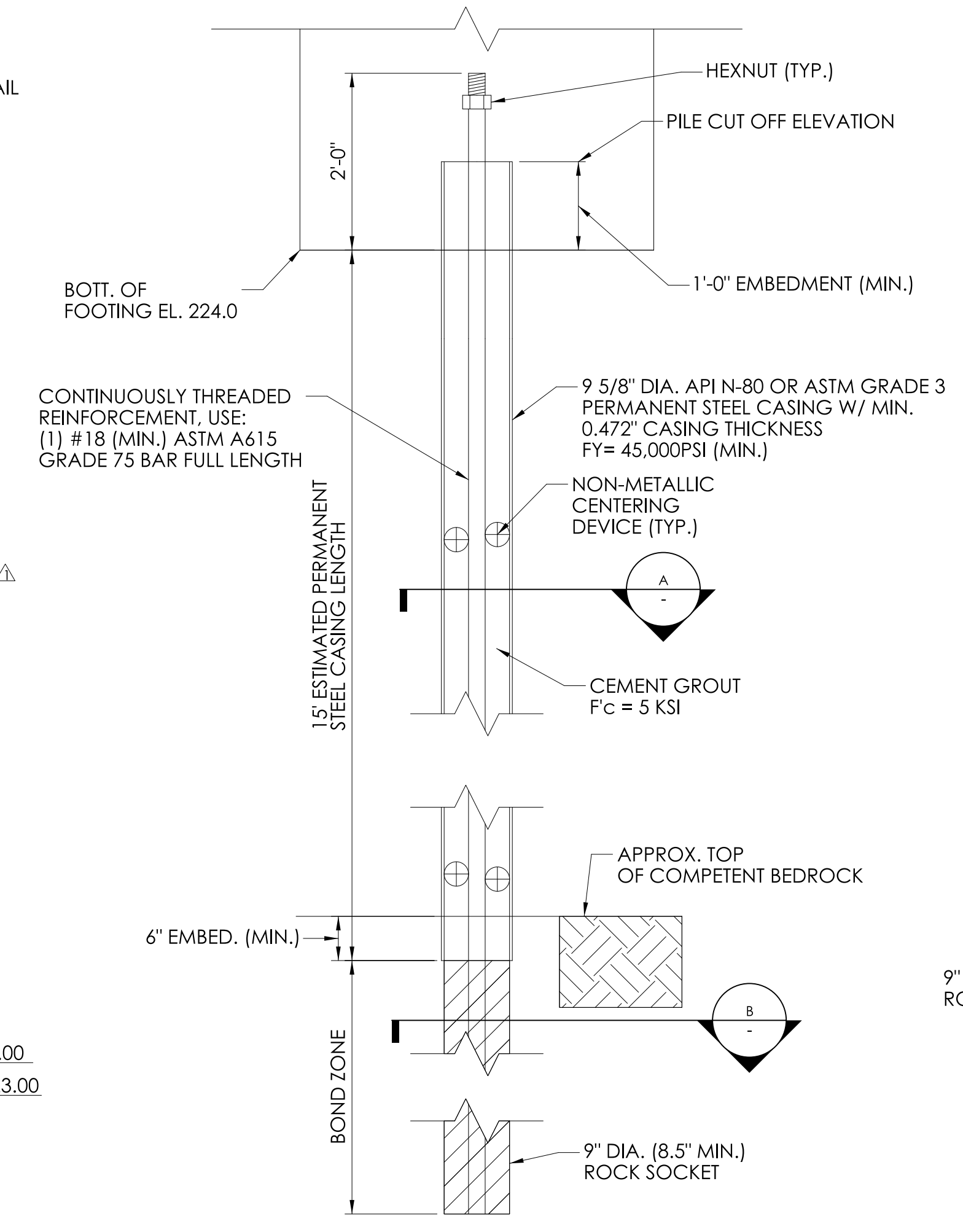
SCALE: 1/2" = 1'-0"

MICROPILE DESIGN TABLE

SERVICE LIMIT STATE - SRV-I	100 KIPS
STRENGTH LIMIT STATE - STR-I	140 KIPS (0.7 FACTOR)
ULTIMATE PILE CAPACITY	200 KIPS

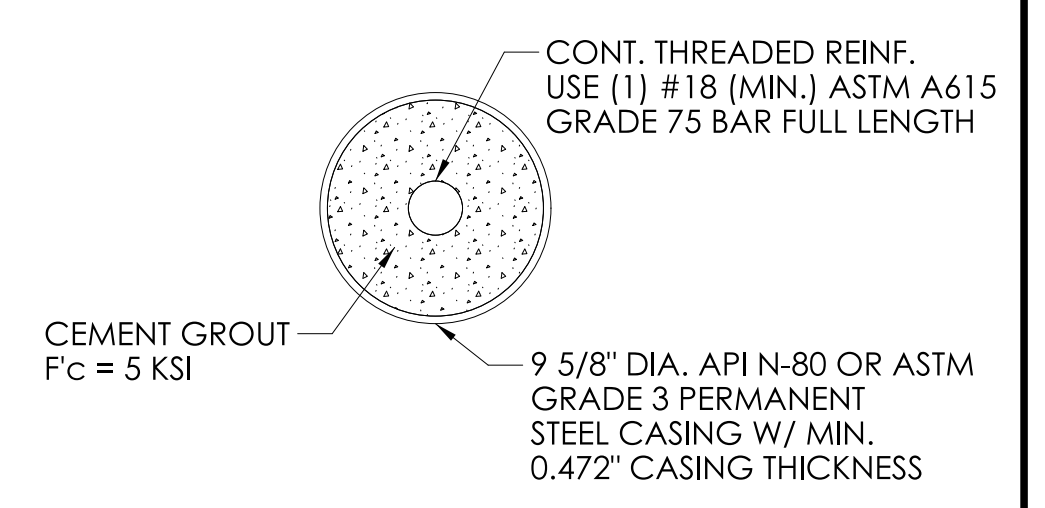
MICROPILE NOTES:

1. A MICROPILE SHALL BE INSTALLED AT ALL AREAS OF SUBSTRUCTURE WHERE BEDROCK IS BELOW ELEVATION 216.0.
2. THE MICROPILE DESIGN PROVIDED ON THESE DRAWINGS IS BASED ON THE LOADS AND RESISTANCES SHOWN IN THE TABLE ABOVE.
3. THE MICROPILES SHALL BE DESIGNED USING PERMANENT STEEL CASINGS. THE CASINGS SHALL EXTEND INTO BEDROCK.
4. THE 9 5/8" CASING SHALL BE INSTALLED WITH NO CASING JOINTS WITHIN 10 FEET BELOW THE BOTTOM OF THE SUBFOOTING.
5. MICROPILES SHALL BE DRILLED THRU ALL MATERIALS ENCOUNTERED.
6. THE CONTRACTOR IS ADVISED TO THE POSSIBLE PRESENCE OF BOULDERS, RUBBLE AND OTHER MISCELLANEOUS MATERIALS. REFER TO SOIL BORING LOGS SHOWN ON DWG. NO. S-3 THROUGH DWG. NO. S-7.
7. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL MATERIALS (CUTTING, ETC.) RECOVERED FROM THE DRILLING OPERATIONS.
8. MICROPILE DETAILS SHOWN ARE BASED ON ASSUMPTIONS THAT WERE USED DURING DESIGN. THE CONTRACTOR SHALL DESIGN THE MICROPILES IN ACCORDANCE WITH THE SPECIFICATIONS FOR ITEM "MICROPILES."



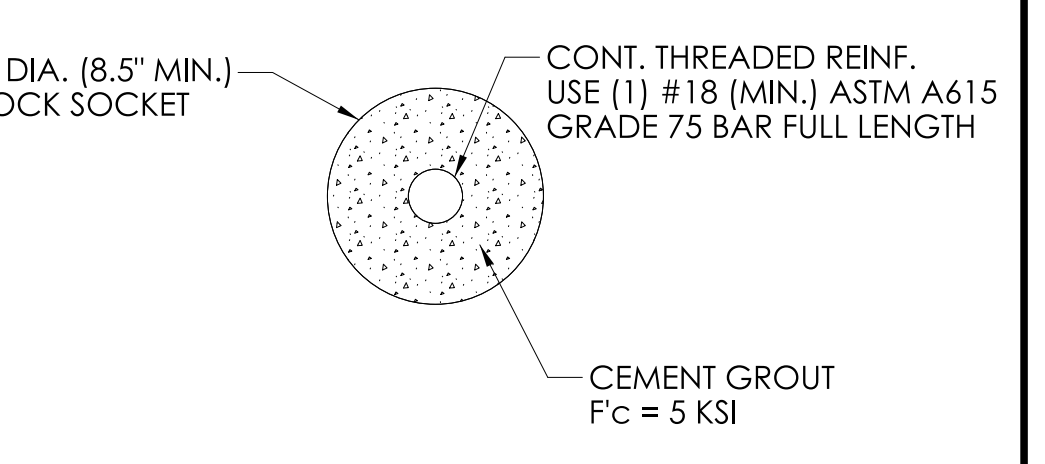
MICO-PILE ELEVATION

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



MICO-PILE SECTION A

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

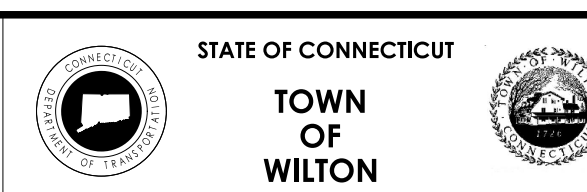


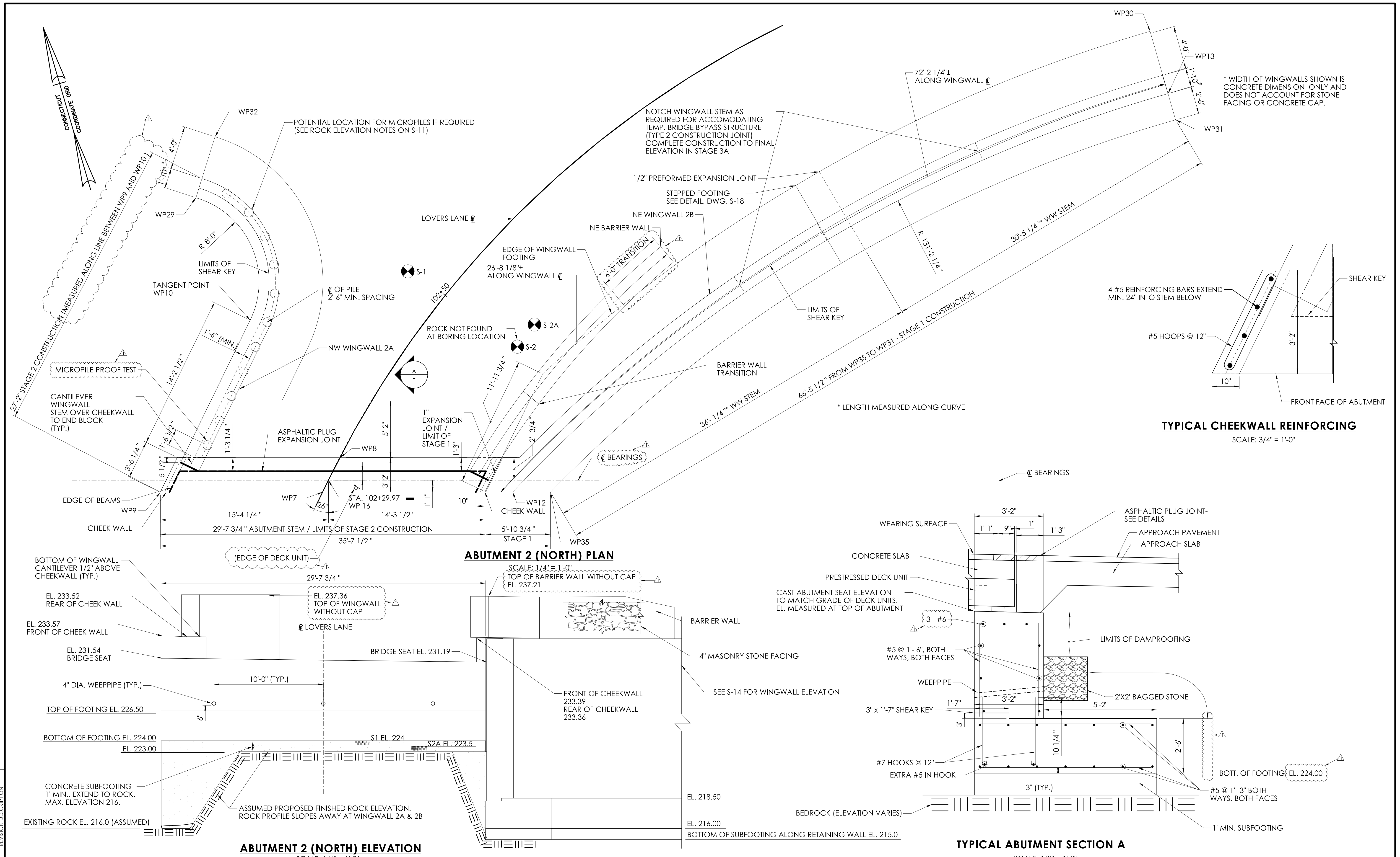
MICO-PILE SECTION B

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

REV.	DATE	DESCRIPTION
1	12/15/22	ABUTMENT REVISIONS

SIGNATURE/BLOCK: [Signature]





* WIDTH OF WINGWALLS SHOWN IS CONCRETE DIMENSION ONLY AND DOES NOT ACCOUNT FOR STONE FACING OR CONCRETE CAP.

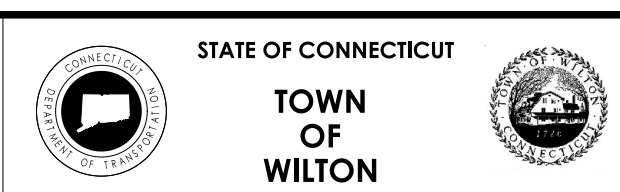
* LENGTH MEASURED ALONG CURVE

ADDENDUM NO. 2

REV.	DATE	REVISION DESCRIPTION
1	12/15/22	REVISE ABUTMENT

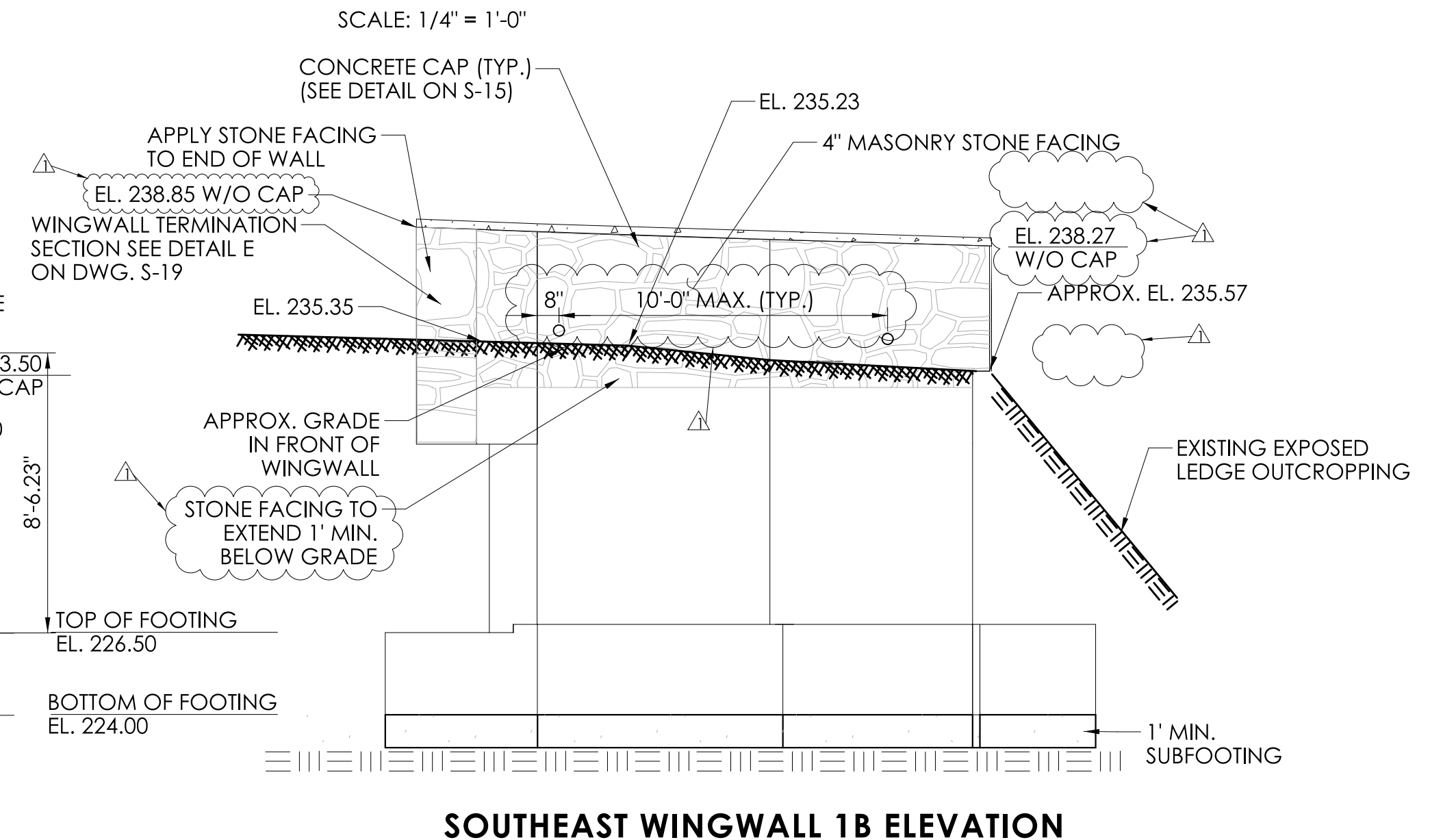
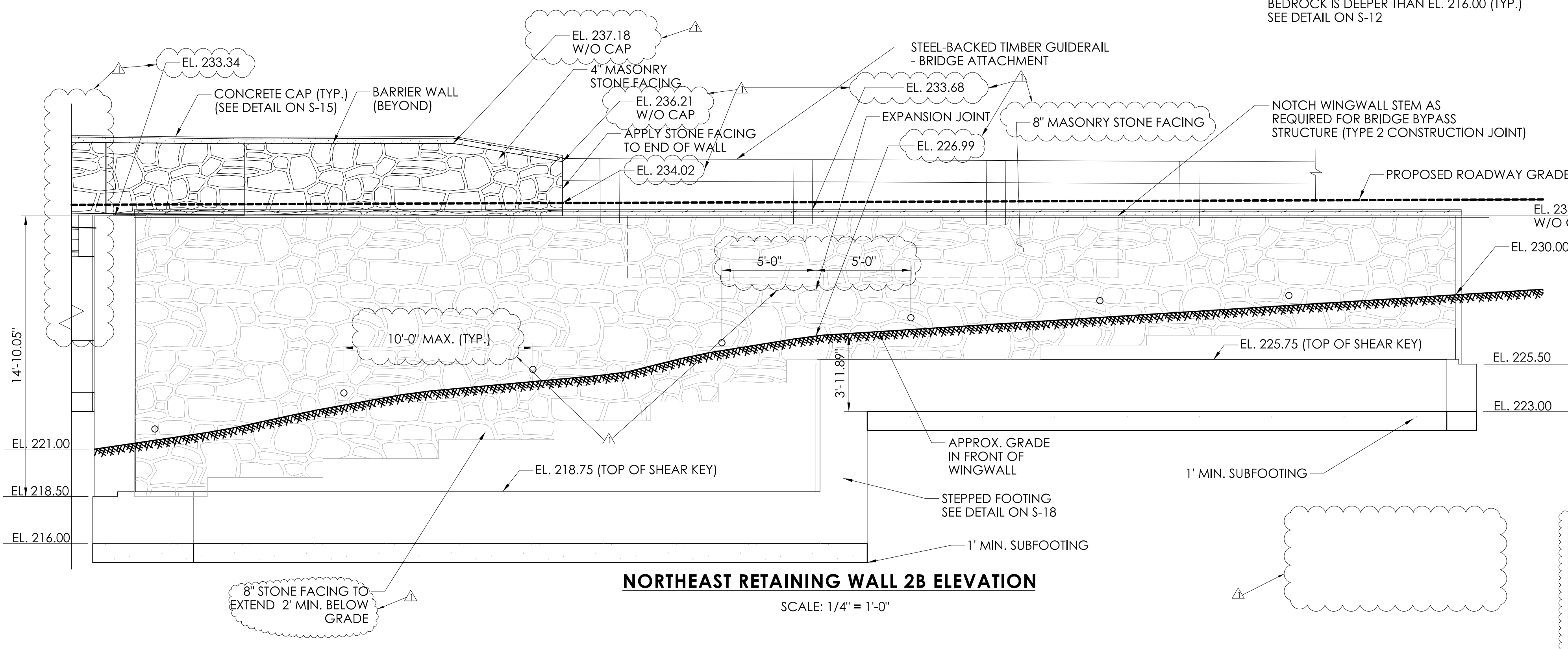
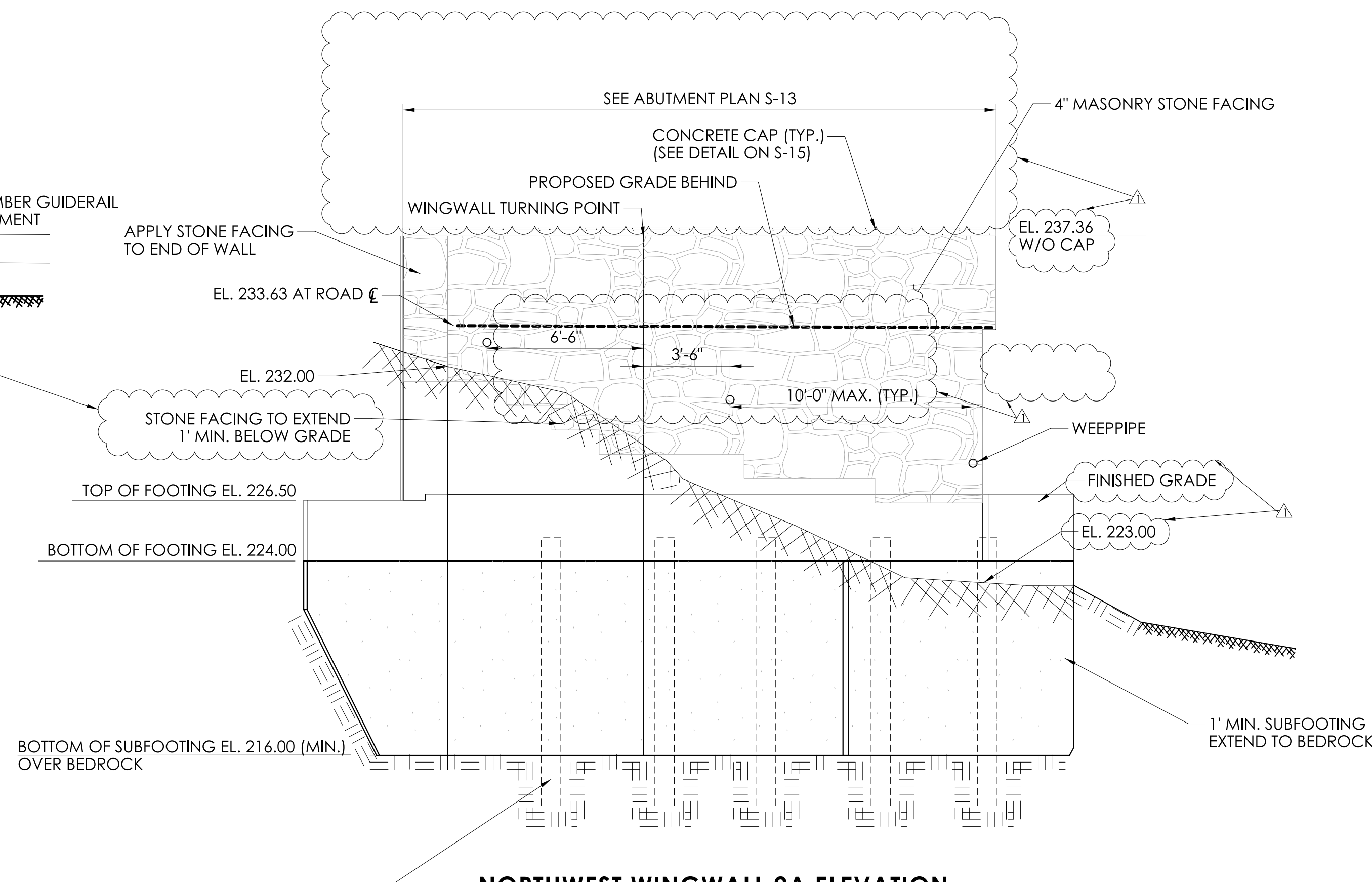
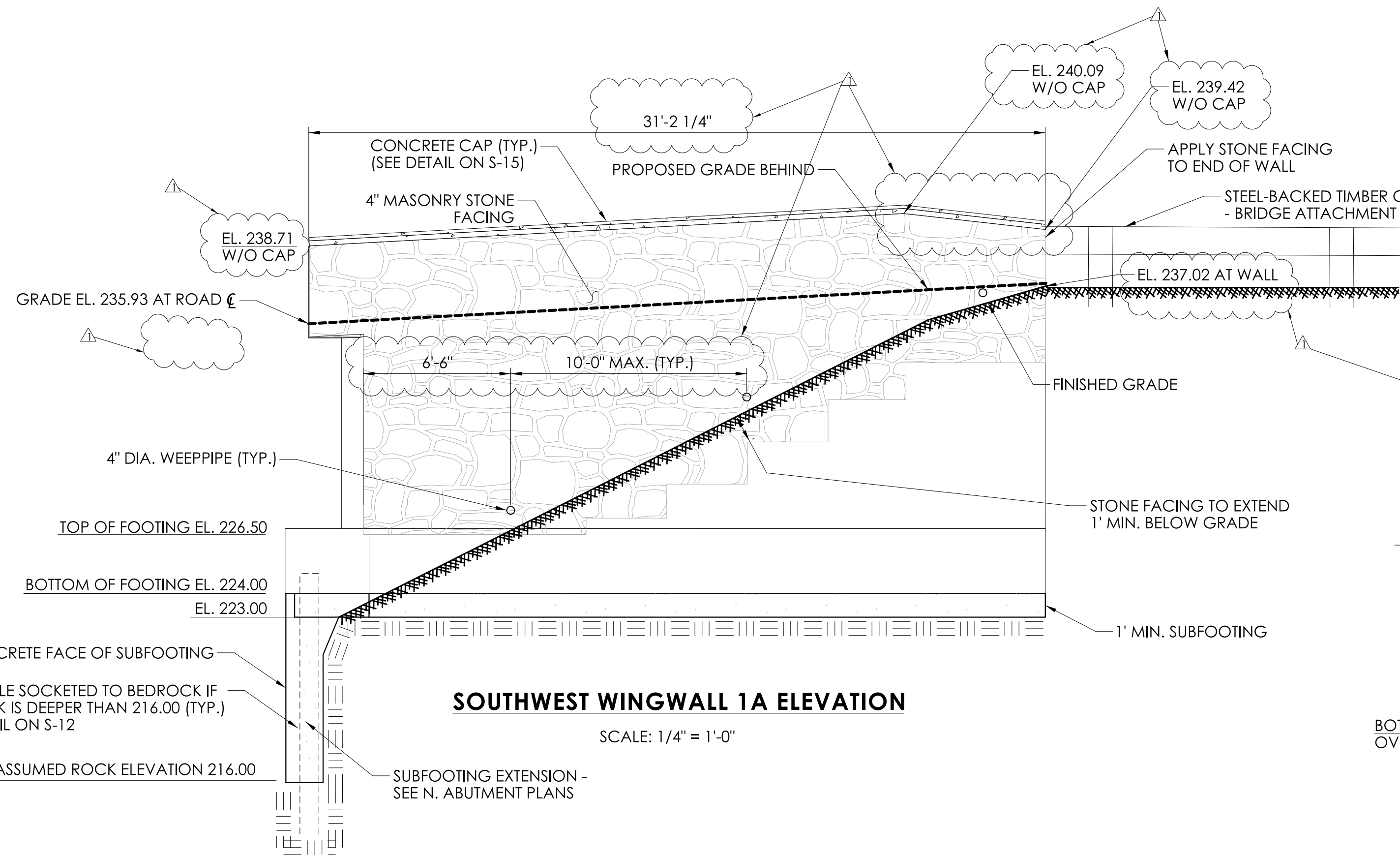
DESIGNER/DRAFTER: JT CHECKED BY: DW
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 PLOTTED DATE: 12/15/2022

SIGNATURE/BLOCK:



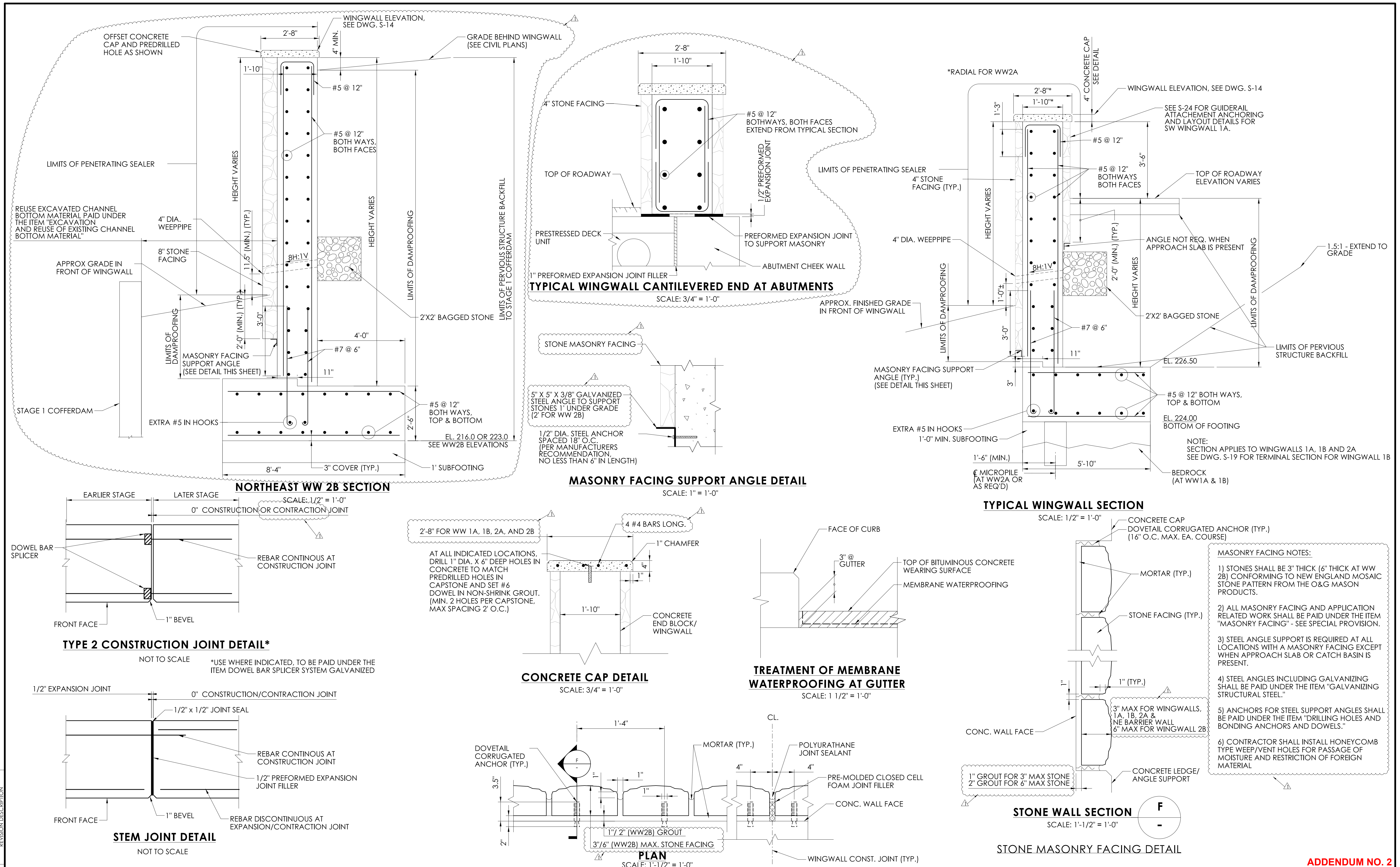
PROJECT NUMBER: 0161-0142
 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04975 LOVERS LANE OVER COMSTOCK BROOK
 TOWN(S): WILTON
 DRAWING TITLE: NORTH ABUTMENT 2

DRAWING NO. S-13
 SHEET NO. 04.13.A2



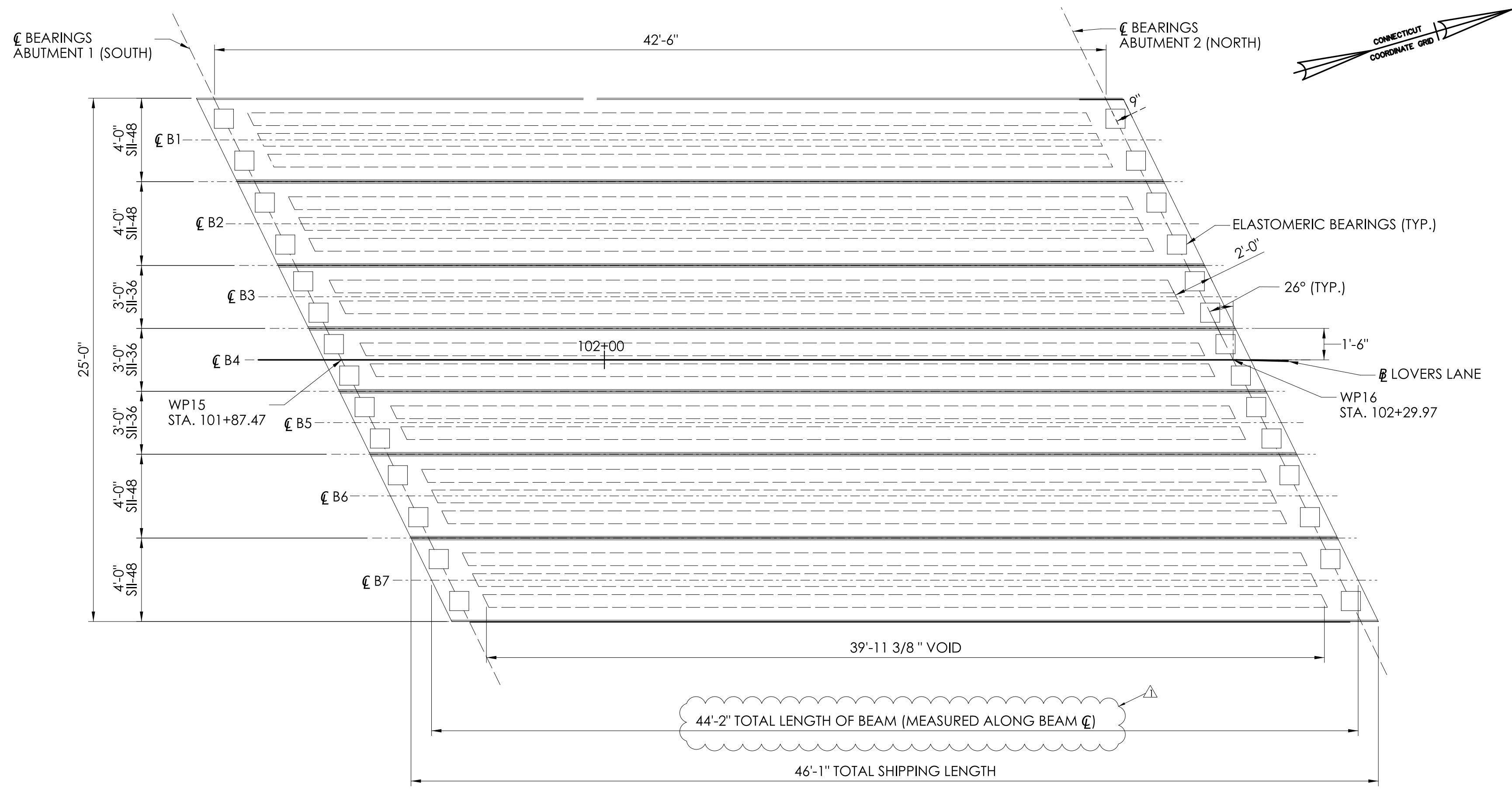
LIMIT STATE	ALLOWABLE BEARING PRESSURE		MAXIMUM APPLIED BEARING PRESSURE
	NOMINAL BEARING RESISTANCE	FACTORED BEARING RESISTANCE	
SERVICE	5 TSF	5 TSF	3.3 TSF SERVICE I
STRENGTH	13.5 TSF	7.425 TSF	4.35 TSF STRENGTH I

REV.	DATE	REVISION DESCRIPTION
1	12/15/22	REVISE WINGWALLS



- MASONRY FACING NOTES:**
- 1) STONES SHALL BE 3" THICK (6" THICK AT WW 2B) CONFORMING TO NEW ENGLAND MOSAIC STONE PATTERN FROM THE O&G MASON PRODUCTS.
 - 2) ALL MASONRY FACING AND APPLICATION RELATED WORK SHALL BE PAID UNDER THE ITEM "MASONRY FACING" - SEE SPECIAL PROVISION.
 - 3) STEEL ANGLE SUPPORT IS REQUIRED AT ALL LOCATIONS WITH A MASONRY FACING EXCEPT WHEN APPROACH SLAB OR CATCH BASIN IS PRESENT.
 - 4) STEEL ANGLES INCLUDING GALVANIZING SHALL BE PAID UNDER THE ITEM "GALVANIZING STRUCTURAL STEEL."
 - 5) ANCHORS FOR STEEL SUPPORT ANGLES SHALL BE PAID UNDER THE ITEM "DRILLING HOLES AND BONDING ANCHORS AND DOWELS."
 - 6) CONTRACTOR SHALL INSTALL HONEYCOMB TYPE WEEP/VENT HOLES FOR PASSAGE OF MOISTURE AND RESTRICTION OF FOREIGN MATERIAL

REV.	DATE	DESCRIPTION
1	12/15/22	WW 2B ROCK FACING THICKNESS



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

PRESTRESSED DECK UNIT NOTES:

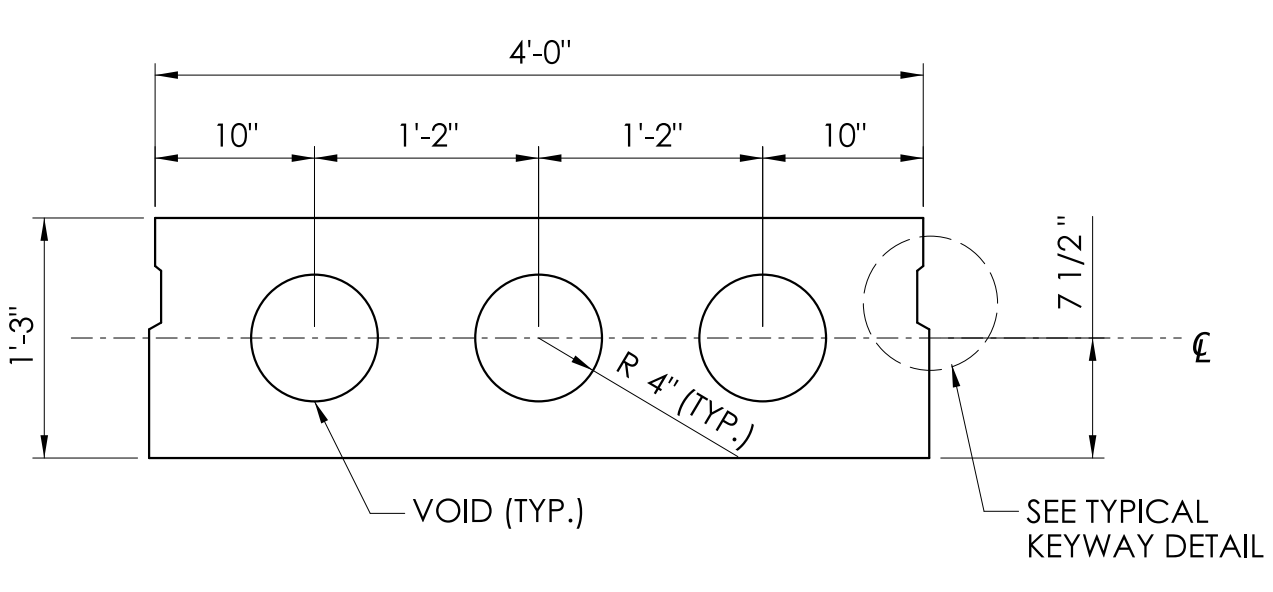
- PRESTRESSED DECK UNITS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 $f_{ci} = 6 \text{ KSI}$
 $f_c = 8 \text{ KSI}$
- PRESTRESSED STRANDS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS. 0.6" DIAMETER, UNLOCATED, 7 WIRE, LOW RELAXATION STRANDS CONFORMING TO THE REQUIREMENTS OF AASHTO M203, GRADE 270:
 ULTIMATE STRENGTH (f_s) = 270,000 PSI
 JACKING TENSION (f_j) = 43,940 LBS. PER STRAND
- PRESTRESSED STRANDS SHALL BE PLACED 2" MINIMUM ON CENTER AND SHALL HAVE A MINIMUM COVER OF 2".
- ENDS OF THE DECK UNITS SHALL BE VERTICAL AFTER APPLICATION OF FULL DEAD LOAD.
- THE DRILLING OF HOLES IN PRESTRESSED DECK UNITS, OR THE USE OF POWDER ACTUATED TOOLS ON PRESTRESSED DECK UNITS WILL NOT BE PERMITTED.
- NO ADDITIONAL DEAD LOADS OR LIVE LOADS SHALL BE APPLIED TO THE PRESTRESSED DECK UNITS UNTIL GROUT KEYWAYS ARE FULLY FILLED AND GROUT IN THE LONGITUDINAL SHEAR KEYS HAVE REACHED A SEVEN-DAY COMPRESSIVE STRENGTH OF 4500 PSI.
- THE DECK UNITS SHALL BE PLACED AT THE NOMINAL SPACING SHOWN ON THE PLANS WITH A 1/2" WIDE GAP BETWEEN THE BOTTOM OF THE UNITS. THE WIDTH OF THIS GAP CAN VARY DUE TO SWEEP OF THE BEAMS.
- SHEAR KEY SHALL BE OMITTED ON OUTSIDE FACE OF FASCIA BEAMS.
- MILD REINFORCING STEEL SHALL BE GALVANIZED ASTM A615 GRADE 60.
- THE CONTRACTOR SHALL MANUFACTURE AND CONSTRUCT DECK UNITS IN ACCORDANCE WITH SPECIFICATIONS FOR "PRESTRESSED DECK UNITS".
- ALL INSERTS OF HOLES CAST INTO THE DECK UNITS FOR THE PURPOSE OF HANDLING AND SETTING THE UNITS SHALL BE SEALED WITH GROUT TO A SMOOTH FINISH UPON COMPLETION OF THE WORK.
- THE COST OF FURNISHING INSERTS SHALL BE INCLUDED IN THE ITEMS #0514202, AND #0514222 "PRESTRESSED DECK UNITS".
- LIFTING HOOKS SHALL BE PLACED IN LINE WITH THE CENTER OF THE BEARINGS AND SHALL BE INSTALLED PER THE FABRICATOR'S STANDARD DETAILS. THE FABRICATOR IS FULLY RESPONSIBLE FOR THE DESIGN OF THE LIFTING DEVICES WHICH SHALL BE ADEQUATE FOR THE FACTOR OF SAFETY REQUIRED BY THE ERECTION PROCEDURE.

STRANDS SUMMARY			
DECK UNIT TYPE	STRAND NUMBER	STRAND CG AT ENDS *	STRAND CG AT MIDSPAN *
SII-48 (B1, B2, B6, B7)	17	3.41 IN	2.00 IN
SII-36 (B3, B4, B5)	13	3.23 IN	2.00 IN

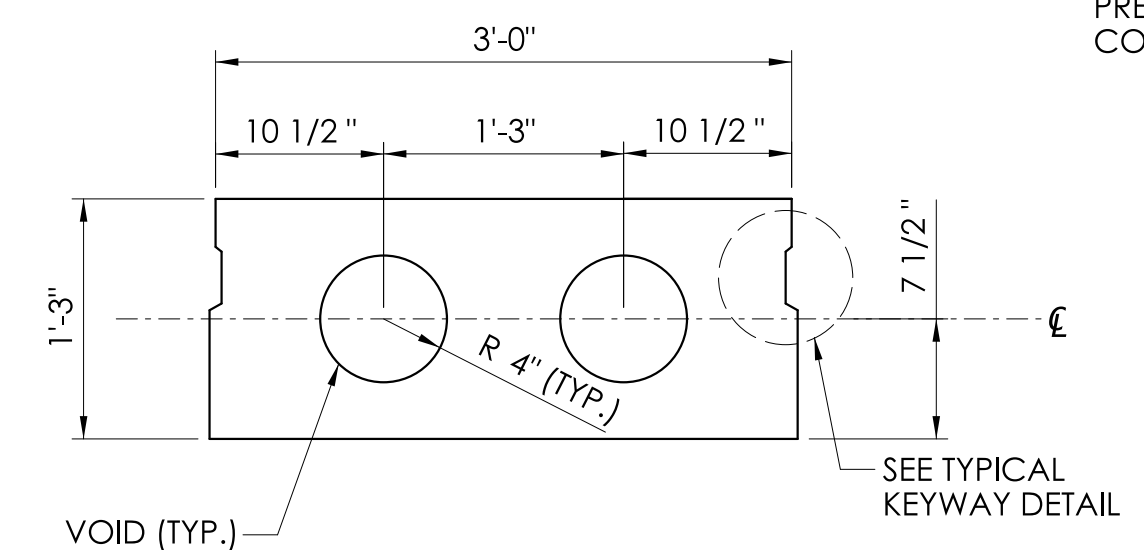
*CGS MEASURED FROM BOTTOM OF DECK UNIT AND BASED ON THE GROSS NON-COMPOSITE SECTION.

CAMBER TABLE			
MEMBER NUMBER	AT TRANSFER	AT ERECTION	FINAL
	CAMBER DUE TO PRETENSIONING FORCE AT TRANSFER MINUS THE DEFLECTION DUE TO THE DEAD LOAD OF THE MEMBER	CAMBER (DUE TO PRETENSIONING FORCE AT TRANSFER MINUS THE DEFLECTION DUE TO THE DEAD LOAD OF THE MEMBER) APPROXIMATELY 30 DAYS AFTER TRANSFER.	CAMBER AFTER ALL DEAD LOADS ARE APPLIED TO THE STRUCTURE.
SII-48 (B1, B2, B6, B7)	1.224 IN	1.636 IN	1.192 IN
SII-36 (B3, B4, B5)	1.249 IN	1.679 IN	1.236 IN

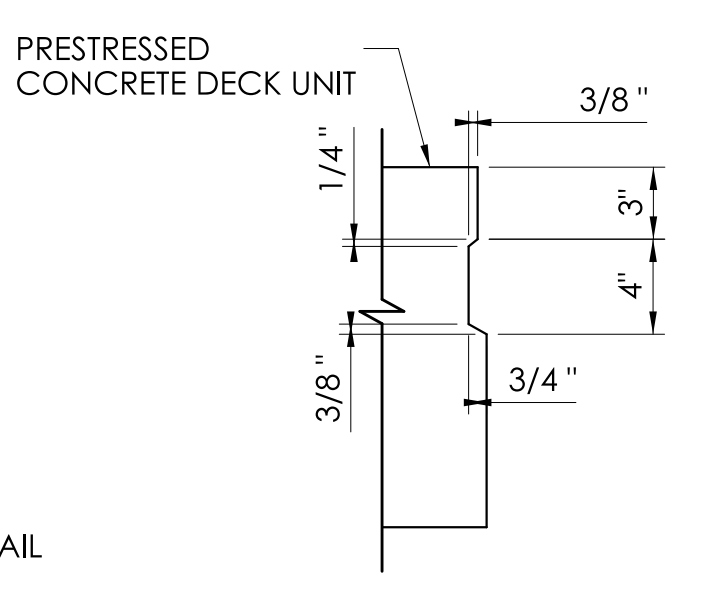
*POSITIVE VALUES IN THE CAMBER TABLE INDICATE UPWARD CAMBER.



SII-48
SCALE: 1" = 1'-0"



SII-36
SCALE: 1" = 1'-0"



TYPICAL KEYWAY DETAIL
SCALE: 1 1/2" = 1'-0"

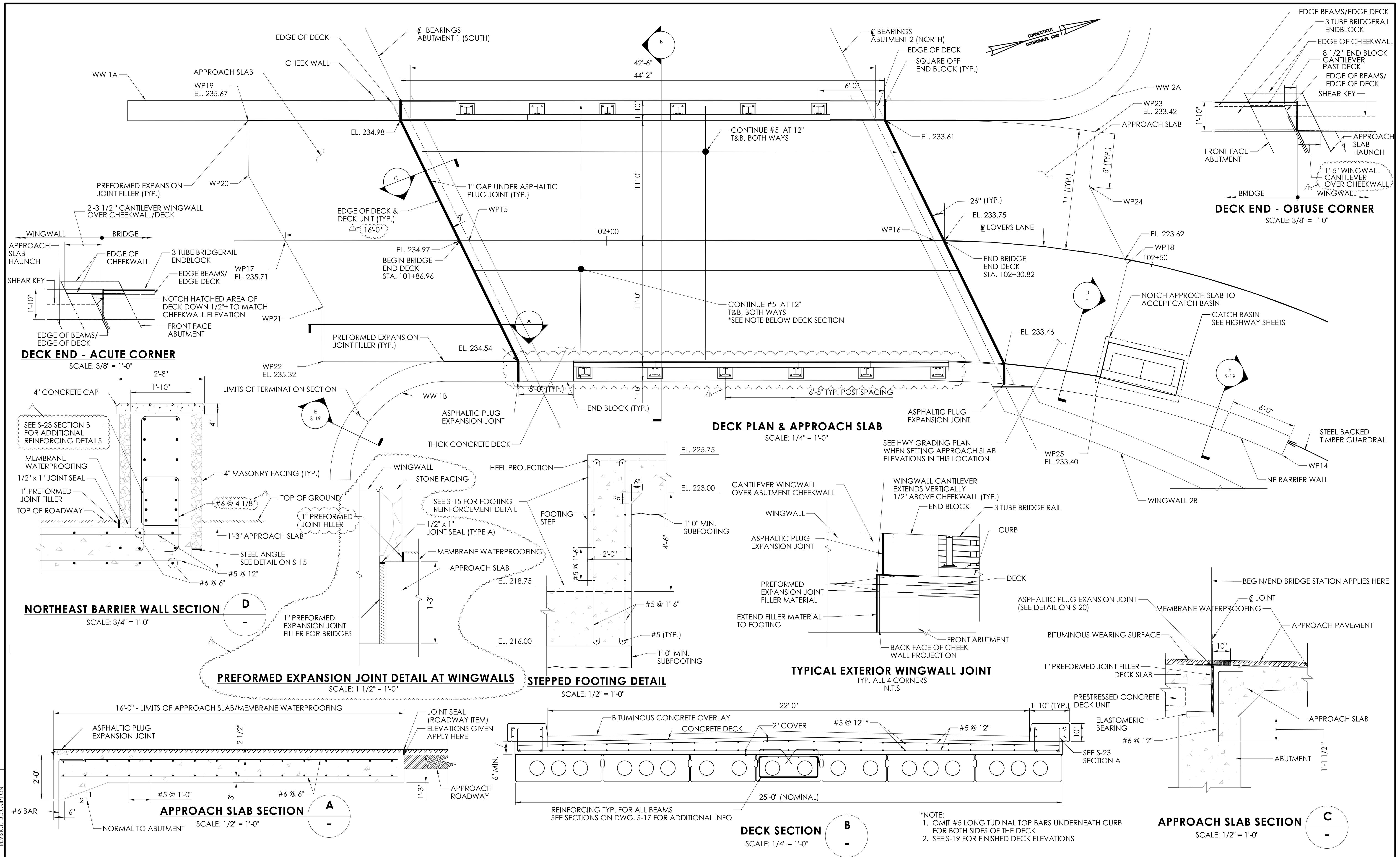
PRESTRESSED CONCRETE DECK UNITS

BEAM DEAD LOAD DEFLECTION TABLE NOTES:

BEAM NO.	DEAD LOAD DEFLECTIONS AT MIDSPAN (INCHES)		
	SELF	PDL	SDL
B1, B2, B6 & B7	1.56	0.44	0.09
B3, B4 & B5	1.60	0.45	0.08

"SELF" IS THE DEFLECTION DUE TO THE GIRDER SELF-WEIGHT.
 "PDL" IS PRE-COMPOSITE DEAD LOAD DEFLECTION DUE TO THE WEIGHT OF THE CONCRETE DECK.
 "SDL" IS THE DEFLECTION DUE TO THE SUPERIMPOSED DEAD LOAD (CONCRETE CURB, RAILING, AND ASPHALT OVERLAY).
 ALL DEFLECTIONS ARE IN INCHES AND ARE COMPUTED AT THE MIDSPAN OF THE GIRDER AT 30 DAYS.
 POSITIVE DEFLECTION VALUES INDICATE DOWNWARD DEFLECTION.

REV.	DATE	DESCRIPTION
1	12/15/22	UPDATE FRAMING PLAN



DECK END - OBTUSE CORNER
SCALE: 3/8" = 1'-0"

DECK END - ACUTE CORNER
SCALE: 3/8" = 1'-0"

DECK PLAN & APPROACH SLAB
SCALE: 1/4" = 1'-0"

NORTHEAST BARRIER WALL SECTION
SCALE: 3/4" = 1'-0"

PREFORMED EXPANSION JOINT DETAIL AT WINGWALLS
SCALE: 1 1/2" = 1'-0"

STEPPED FOOTING DETAIL
SCALE: 1/2" = 1'-0"

TYPICAL EXTERIOR WINGWALL JOINT
TYP. ALL 4 CORNERS
N.T.S.

APPROACH SLAB SECTION
SCALE: 1/2" = 1'-0"

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

APPROACH SLAB SECTION
SCALE: 1/2" = 1'-0"

- *NOTE:
1. OMIT #5 LONGITUDINAL TOP BARS UNDERNEATH CURB FOR BOTH SIDES OF THE DECK
2. SEE S-19 FOR FINISHED DECK ELEVATIONS

ADDENDUM NO. 2

REV.	DATE	DESCRIPTION
1	12/15/22	UPDATE DETAILS

DESIGNER/DRAFTER: JT CHECKED BY: DW
 LASTED SAVED BY: JI FOR FILE NAME: J:\DWG\2021\0182\10\0161-0142\Bridg\Contract_Plans\18_S8_MSH_BR04975_0161_0142_DCK.dgn
 PLOTTED DATE: 12/15/2022

SIGNATURE/ BLOCK:

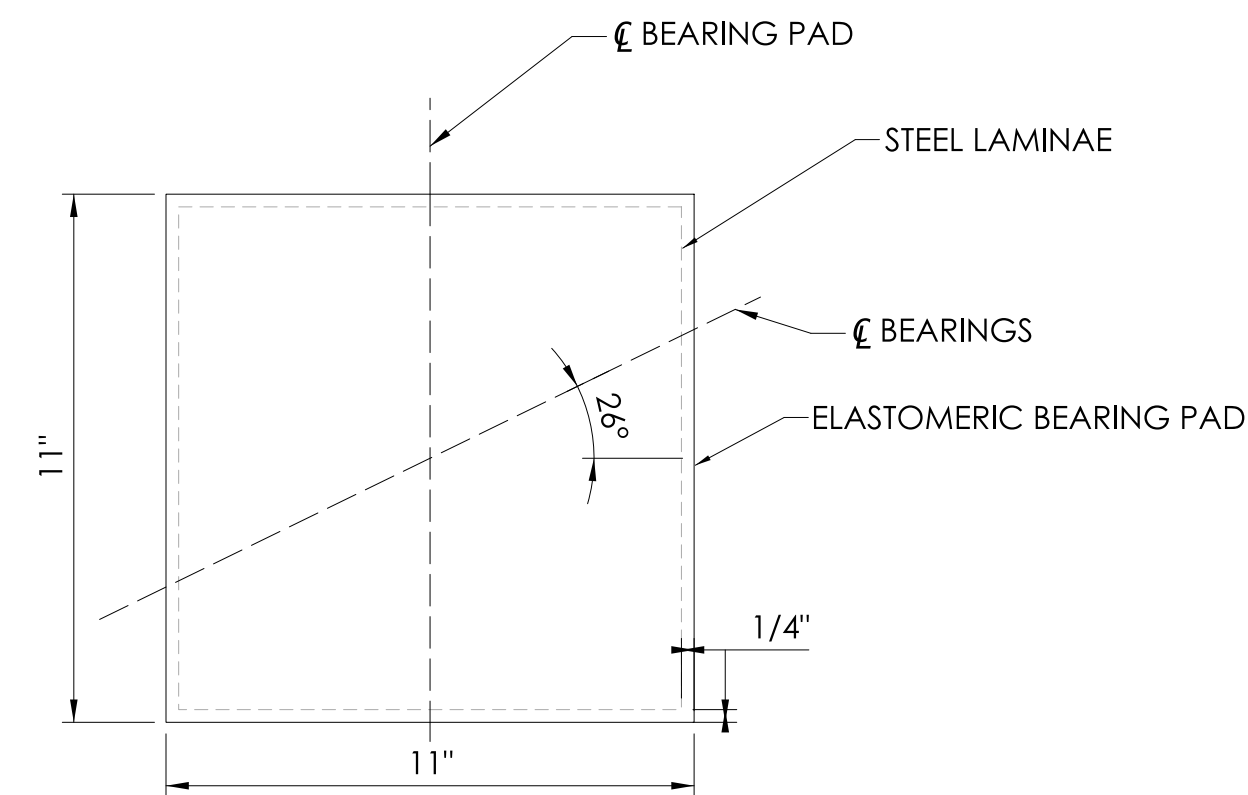
STATE OF CONNECTICUT
 TOWN OF WILTON

PROJECT NUMBER: 0161-0142
 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04975 LOVERS LANE OVER COMSTOCK BROOK
 TOWN(S): WILTON
 DRAWING TITLE: DECK AND MISCELLANEOUS SUBSTRUCTURE DETAILS

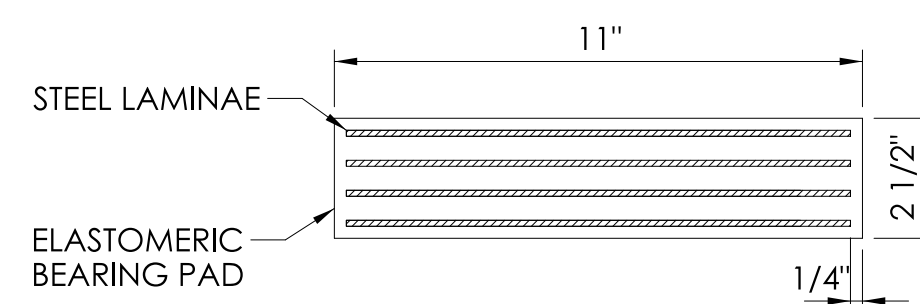
DRAWING NO. S-18
 SHEET NO. 04.18.A2

ELASTOMERIC BEARING NOTES:

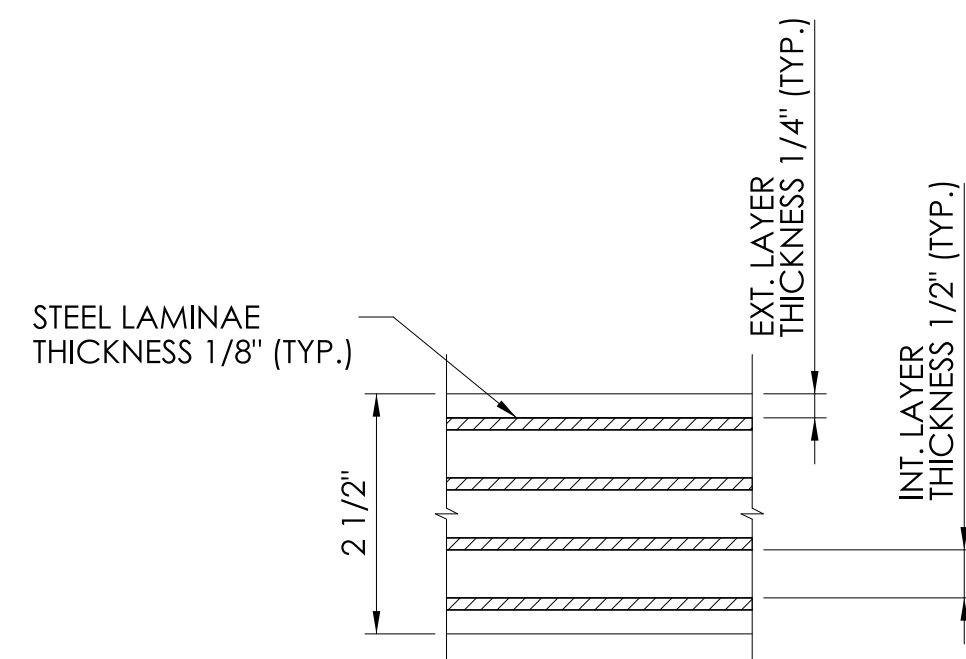
1. THE ELASTOMERIC BEARINGS ARE DESIGNED USING METHOD A OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
2. THE ELASTOMER SHALL BE TYPE CT, GRADE 3 AS DEFINED BY ASTM D4104 AND SHALL HAVE A SHORE S DUROMETER HARDNESS OF 50 +/- 5 POINTS AND A SHEAR MODULUS WITHIN LIMITS OF 200 TO 250 PSF. THE ELASTOMER SHALL CONTAIN ONLY VIRGIN POLYCHLOROPRENE (NEOPRENE) AS THE RAW POLYMER.
3. THE ELASTOMERIC BEARINGS SHALL BE INSTALLED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 40°F AND 77°F AND HAS BEEN WITHIN THIS RANGE FOR MORE THAN TWO HOURS.
4. THE CONCRETE ABUTMENT SEATS SHALL BE CAREFULLY FINISHED SMOOTH TO AN EVEN, LEVEL SURFACE AND SHALL SHOW NO VARIATIONS FROM A TRUE PLANE GREATER THAN 1/16".
5. THE INTERNAL STEEL LAMINAE SHALL CONFORM TO ASTM A570, GRADE 36.
6. ELASTOMERIC BEARING PADS SHALL BE PAID UNDER THE ITEM "ELASTOMERIC BEARING PADS".



BEARING PLAN
SCALE: 3" = 1'-0"



BEARING ELEVATION
SCALE: 3" = 1'-0"



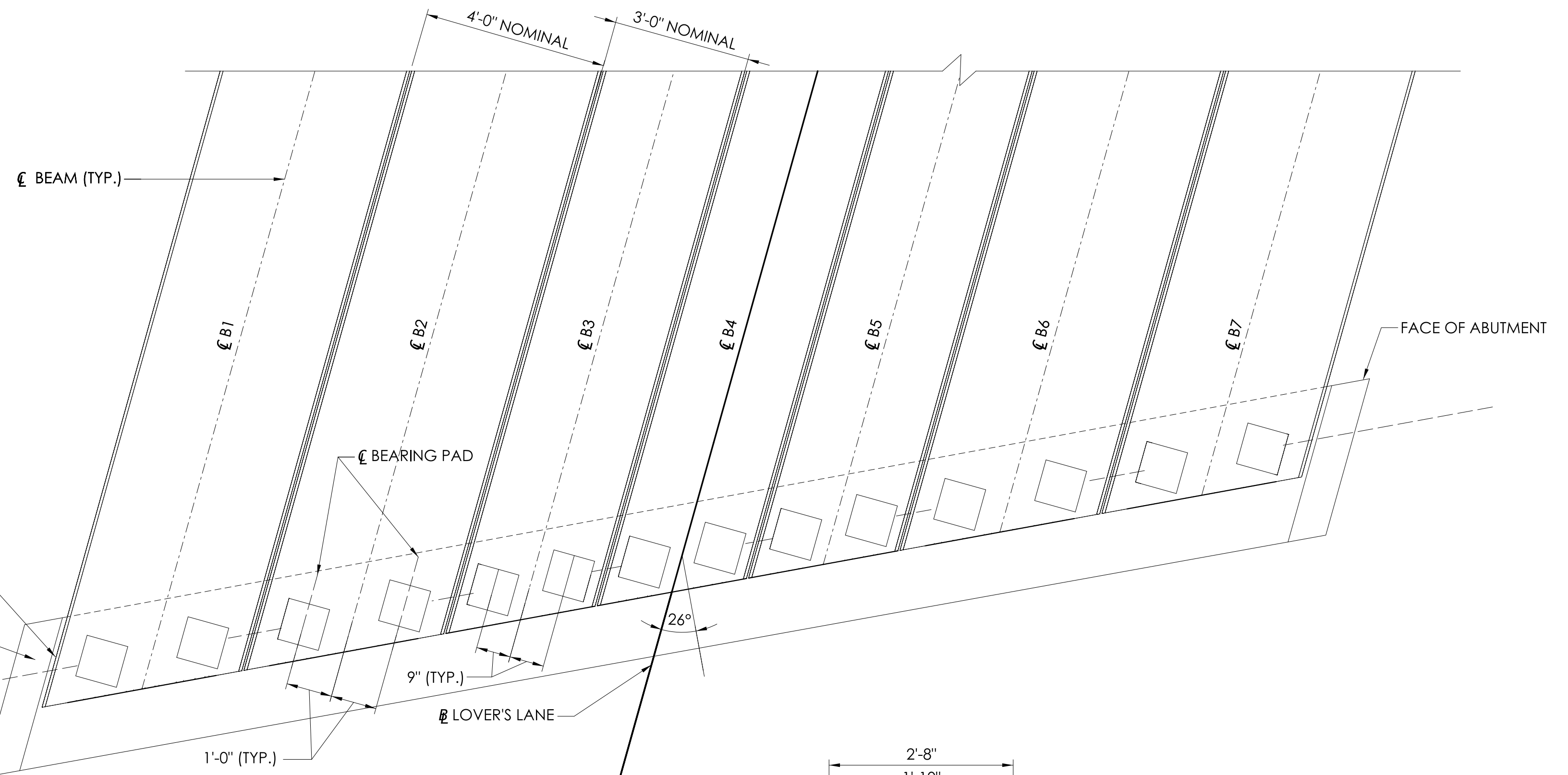
BEARING SECTION
SCALE: 6" = 1'-0"

ELASTOMERIC BEARING DETAIL

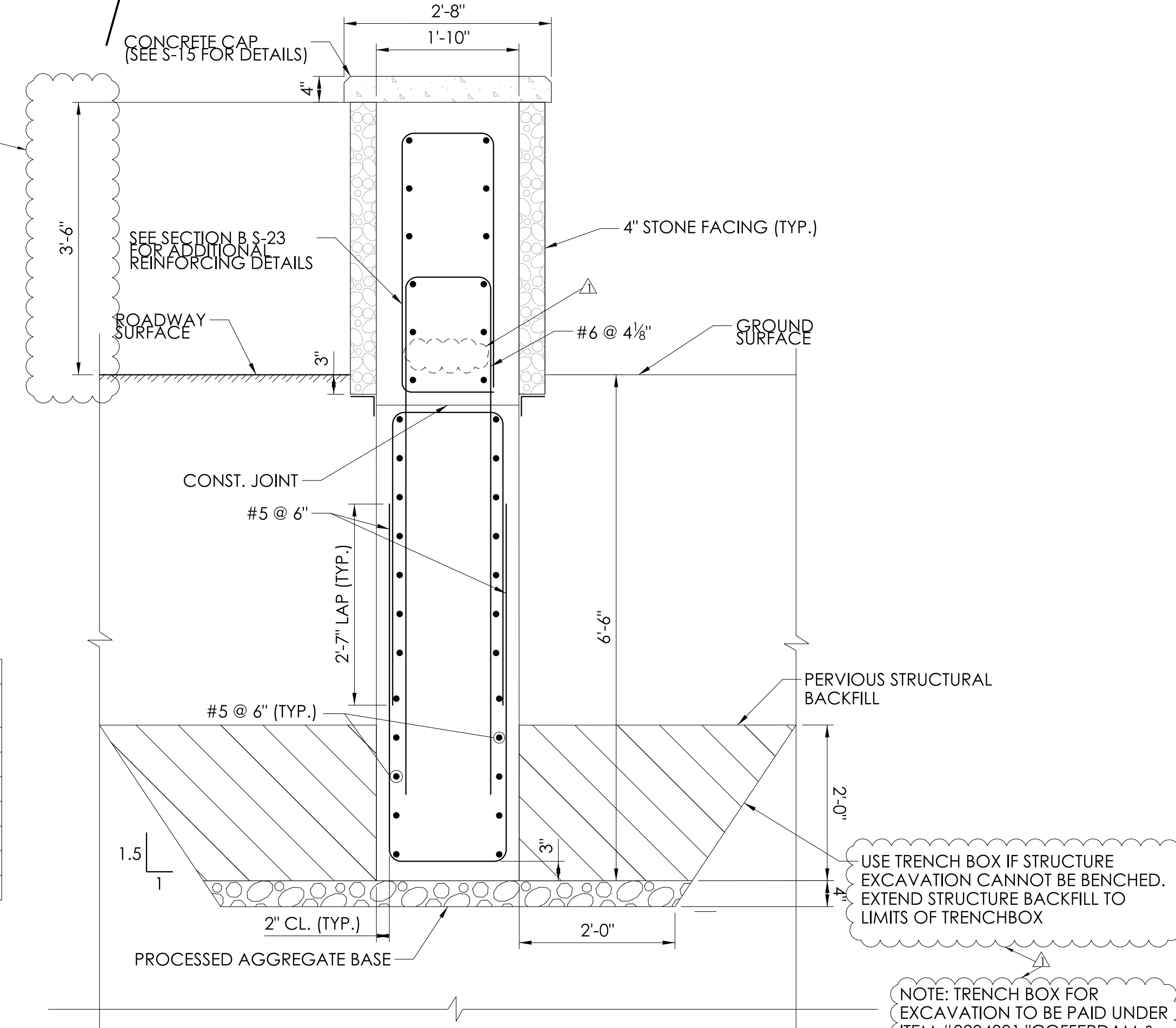
*BEARING DESIGN LOAD TABLE		
	SOUTH ABUTMENT 1	NORTH ABUTMENT 2
SERVICE DEAD LOADS (KIPS)	25.55	25.55
SERVICE LIVE LOADS (KIPS)	34.9	34.9

*LOADS ARE PER BEARING, 2 BEARINGS PER BEAM

€ OF BEAM	FINISHED DECK ELEVATIONS L=42'-6"				BEARINGS NORTH ABUTMENT 2
	BEARINGS SOUTH ABUTMENT 1	1/4L	2/4L	3/4L	
B7	234.504	234.143	233.854	233.637	233.487
B6	234.658	234.284	233.982	233.751	233.591
B5	234.795	234.409	234.096	233.853	233.683
B4	234.913	234.518	234.195	233.943	233.762
B3	234.913	234.508	234.175	233.913	233.723
B2	234.915	234.499	234.154	233.880	233.678
B1	234.919	234.490	234.132	233.845	233.630



BEARING LOCATION PLAN
SCALE: 1/2" = 1'-0"



NE BARRIER WALL/WINGWALL 1B TERMINATION DETAIL

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

E
S-18

USE TRENCH BOX IF STRUCTURE EXCAVATION CANNOT BE BENCHED. EXTEND STRUCTURE BACKFILL TO LIMITS OF TRENCHBOX

NOTE: TRENCH BOX FOR EXCAVATION TO BE PAID UNDER ITEM #0204001 "COFFERDAM & DEWATERING"

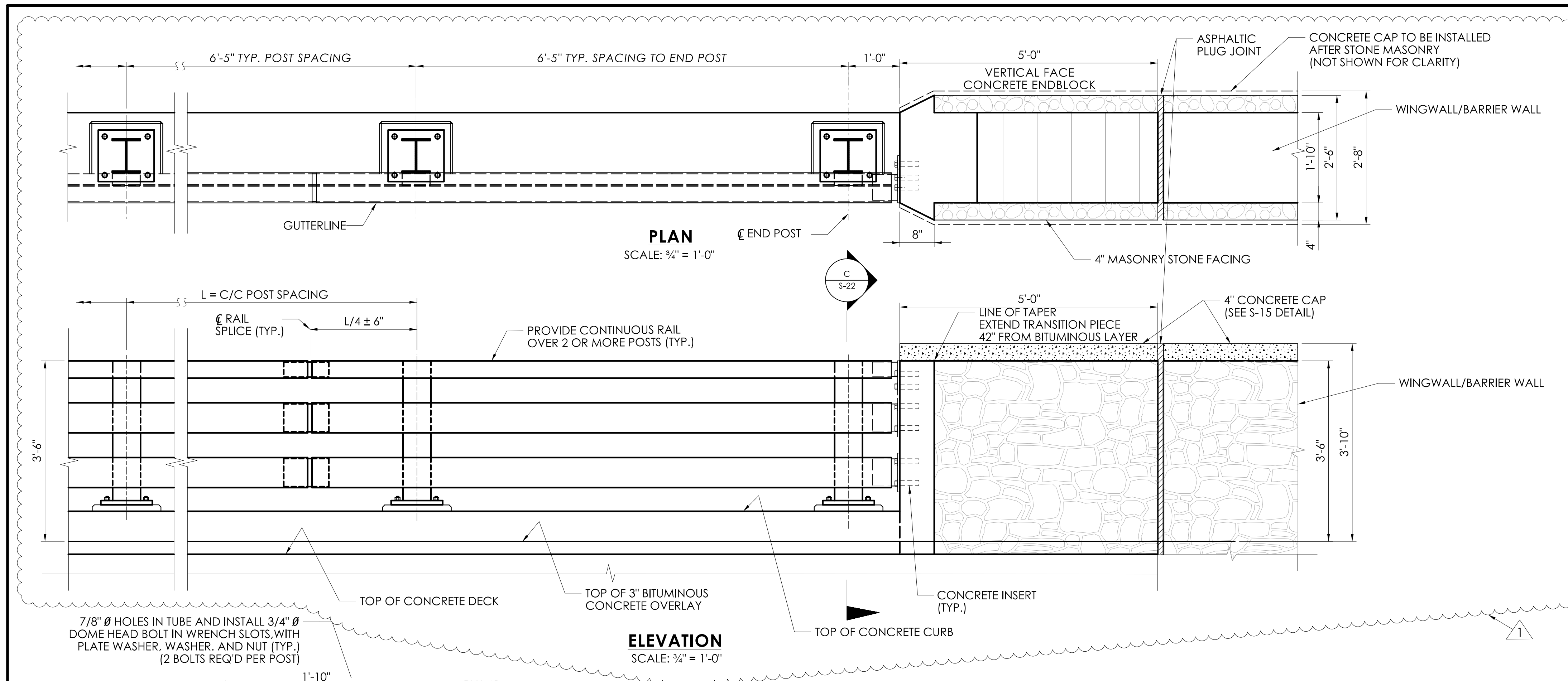
ADDENDUM NO. 2

REV.	DATE	DESCRIPTION
1	12/15/22	BARRIER WALL/WINGWALL REVISE

DESIGNER/DRAFTER: JT CHECKED BY: DW
 SIGNATURE/BLOCK: [Signature]
 STATE OF CONNECTICUT TOWN OF WILTON
 PROJECT NUMBER: 0161-0142
 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04975 LOVERS LANE OVER COMSTOCK BROOK
 TOWN(S): WILTON
 DRAWING TITLE: BEARING DETAILS

LASTED SAVED BY: Jfator FILE NAME: J:\DWG\2021\0182\10\0161-0142\Bridg\Contract_Plans\19_S8_MSH_BR04975_0161_0142_JTS.dgn
 PLOTTED DATE: 12/15/2022

DRAWING NO. S-19
 SHEET NO. 04.19.A2



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

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

BRIDGE RAIL NOTES

THE 3-TUBE CURB MOUNTED BRIDGE RAIL HAS BEEN EVALUATED AT TEST LEVEL 4 (TL-4) AND COMPLIES WITH MASH 2016.

CONCRETE FOR THE CURB AND ENDBLOCK SHALL BE CLASS PCC04462. THE COMPRESSIVE STRENGTH OF THE CONCRETE, BASED ON TEST CYLINDERS, SHALL BE NO LESS THAN 4,000 PSI PRIOR TO INSTALLING THE EPOXY GROUT BELOW THE BASEPLATES. PRIOR TO ALLOWING THE RAIL, CURB AND ENDBLOCK TO BE PLACED IN SERVICE FOR THE PROTECTION OF VEHICULAR TRAFFIC, THE COMPRESSIVE STRENGTH OF THE GROUT, BASED ON STRENGTH GAIN OVER TIME LISTED IN THE GROUT MANUFACTURER'S DATA SHEET, SHALL BE NO LESS THAN 5,000 PSI.

THE REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND BE HOT-DIP GALVANIZED.

HOLLOW STRUCTURAL SHAPES SHALL CONFORM TO ASTM A500 GRADE C OR ASTM A501, GRADE B.

ALL OTHER STEEL SHALL CONFORM TO ASTM A572, GRADE 50 UNLESS NOTED OTHERWISE.

THE SILICON CONTENT OF THE STEEL USED FOR THE EXPOSED MEMBERS AND PLATE COMPONENTS SHALL FALL WITHIN THE RANGE OF 0 TO 0.4% OR 0.15% TO 0.25%.

ALL STEEL SHAPES, PLATES AND HOLLOW STRUCTURAL SECTIONS SHALL BE SHOP METALLIZED IN ACCORDANCE WITH THE SPECIAL PROVISION "METALLIZING STRUCTURAL STEEL (SITE NO. 1)". THE COLOR OF THE TOP COAT MATERIAL ON THE STEEL SHALL CONFORM TO FEDERAL STANDARD NO. 17038.

THE ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 105. THE NUTS SHALL CONFORM TO ASTM A563, GRADE DH. THE WASHERS SHALL CONFORM TO ASTM F436. THE BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.

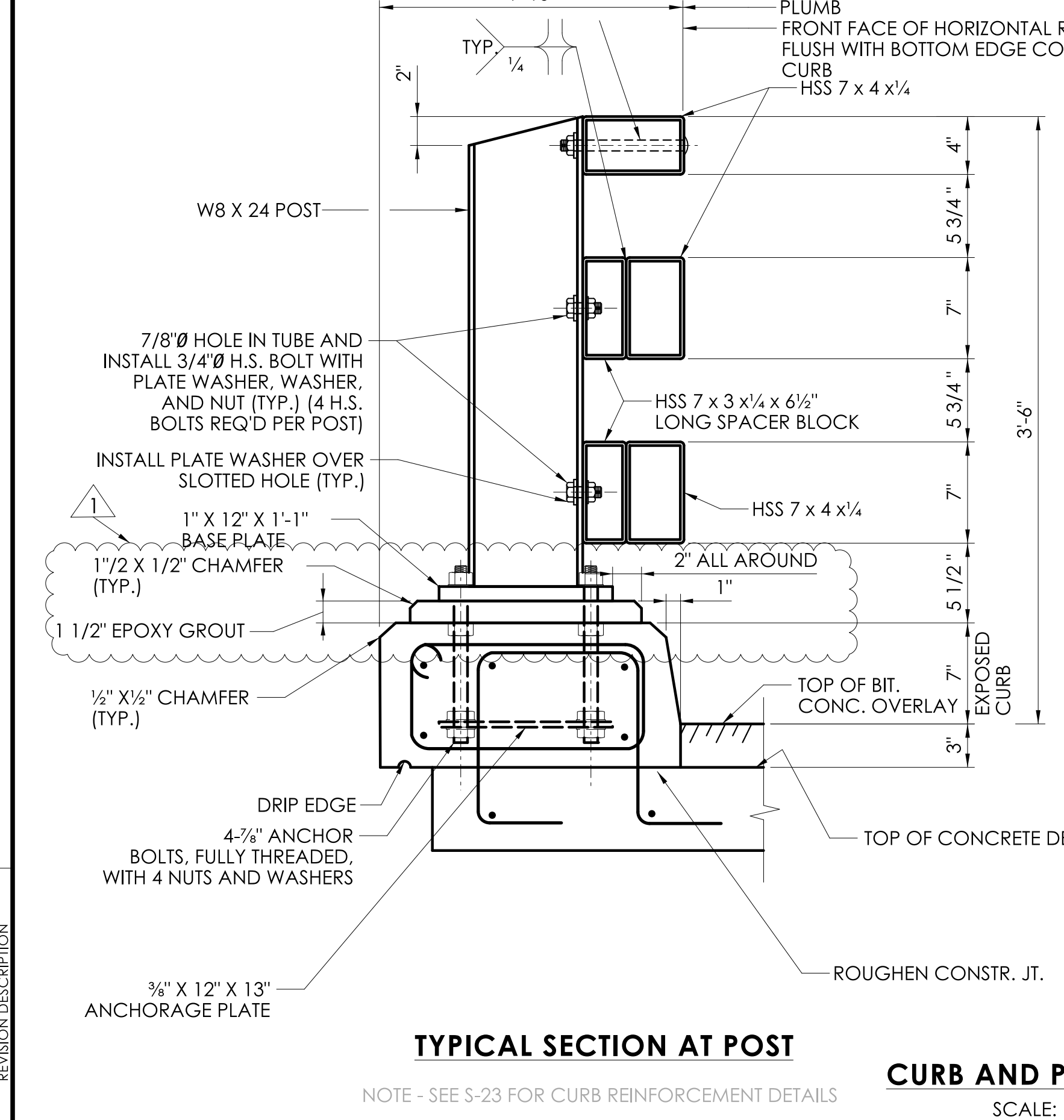
ALL HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM F3125 GRADE A325, TYPE 1. NUTS SHALL CONFORM TO ASTM A563, GRADE DH. CIRCULAR, FLAT, HARDENED STEEL WASHERS SHALL CONFORM TO ASTM F436. THE BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329 OR ASTM B695, CLASS 55.

DOME HEAD BOLTS WITH WRENCH SLOTS USED FOR THE TOP RAIL SHALL CONFORM TO ASTM F3125 GRADE A325, TYPE 1 OR ASTM A449, GRADE 1. SUBSTITUTION OF DOME HEAD BOLTS WITH BOLTS MEETING DIFFERENT MATERIAL REQUIREMENTS IS NOT PERMITTED. NUTS SHALL CONFORM TO ASTM A563, GRADE DH. CIRCULAR, FLAT, HARDENED STEEL WASHERS SHALL CONFORM TO ASTM F436. THE BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329 OR ASTM B695, CLASS 55.

RAIL ELEMENTS SHALL BE FABRICATED TO THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE STRUCTURE. POSTS SHALL BE INSTALLED NORMAL TO GRADE IN THE LONGITUDINAL DIRECTION AND VERTICAL IN THE TRANSVERSE DIRECTION.

ALL BRIDGE RAIL MATERIALS, INCLUDING ANCHOR PLATES, ANCHOR BOLTS, CONCRETE INSERTS, HARDWARE AND EPOXY GROUT, SHALL BE PAID FOR UNDER THE ITEM "3-TUBE CURB MOUNTED BRIDGE RAIL".

BOLTS, NUTS, AND WASHERS SHALL BE COATED AFTER INSTALLATION TO MATCH THE FINISH COLOR OF THE SURROUNDING ELEMENTS. PROPER SURFACE PREPARATION OF THE FASTENERS IS REQUIRED FOR ADHESION OF THE PAINT IN ACCORDANCE WITH THE PAINT MANUFACTURER'S WRITTEN INSTRUCTIONS.

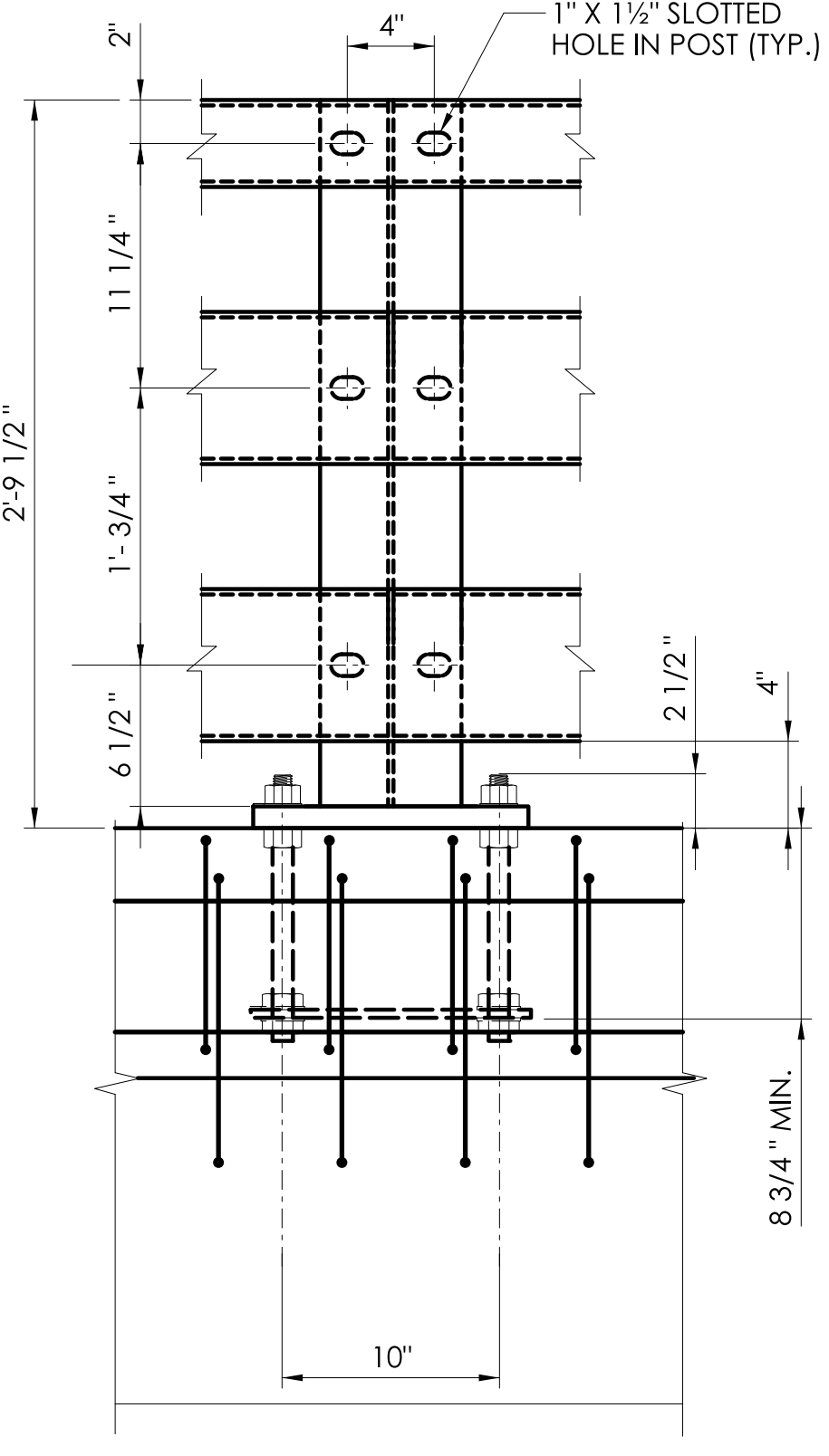


TYPICAL SECTION AT POST

CURB AND POST DETAILS

NOTE - SEE S-23 FOR CURB REINFORCEMENT DETAILS

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



ELEVATION AT POST

REV.	DATE	REVISION DESCRIPTION
1	12/15/22	CONCRETE CAP MODIFICATION

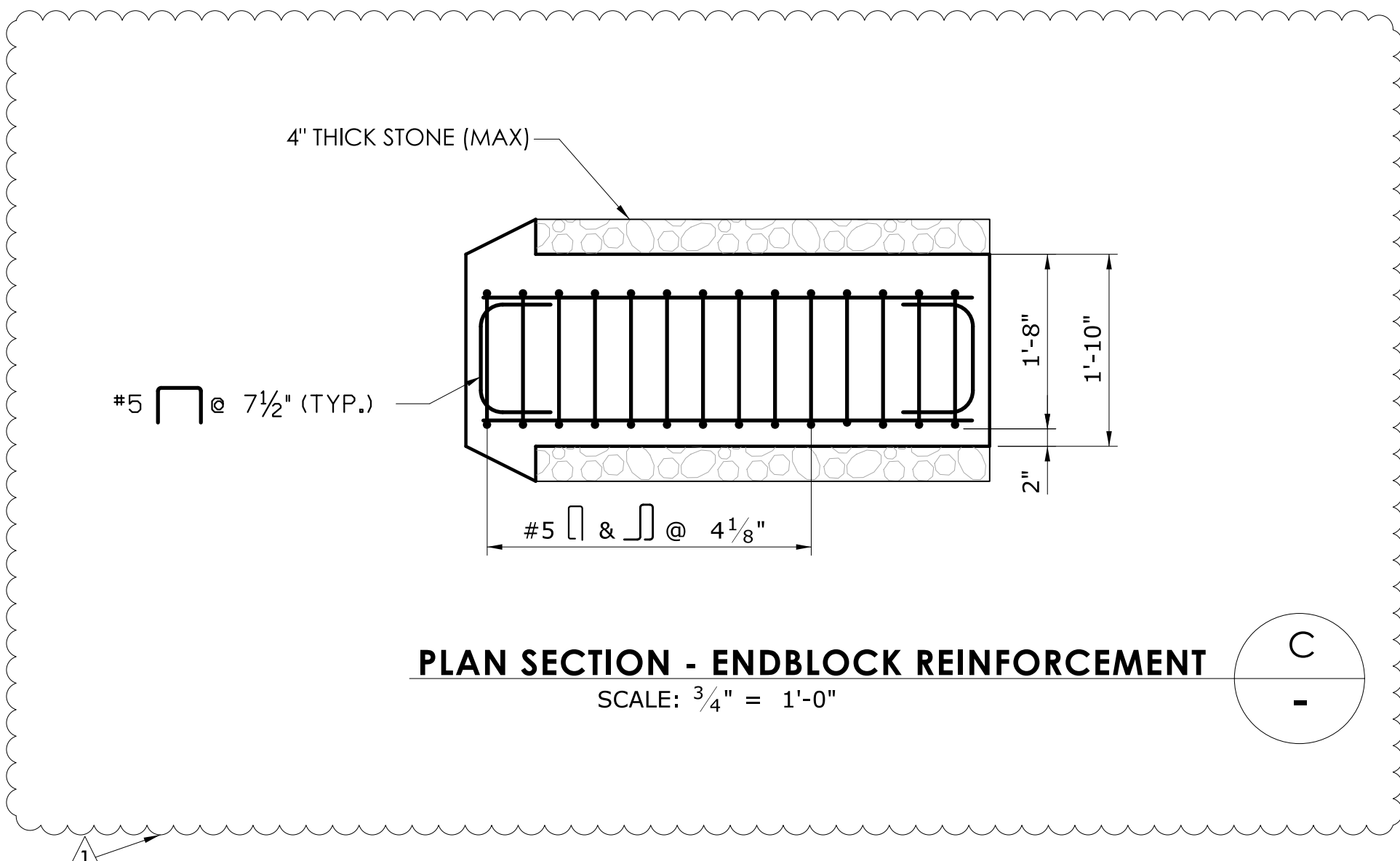
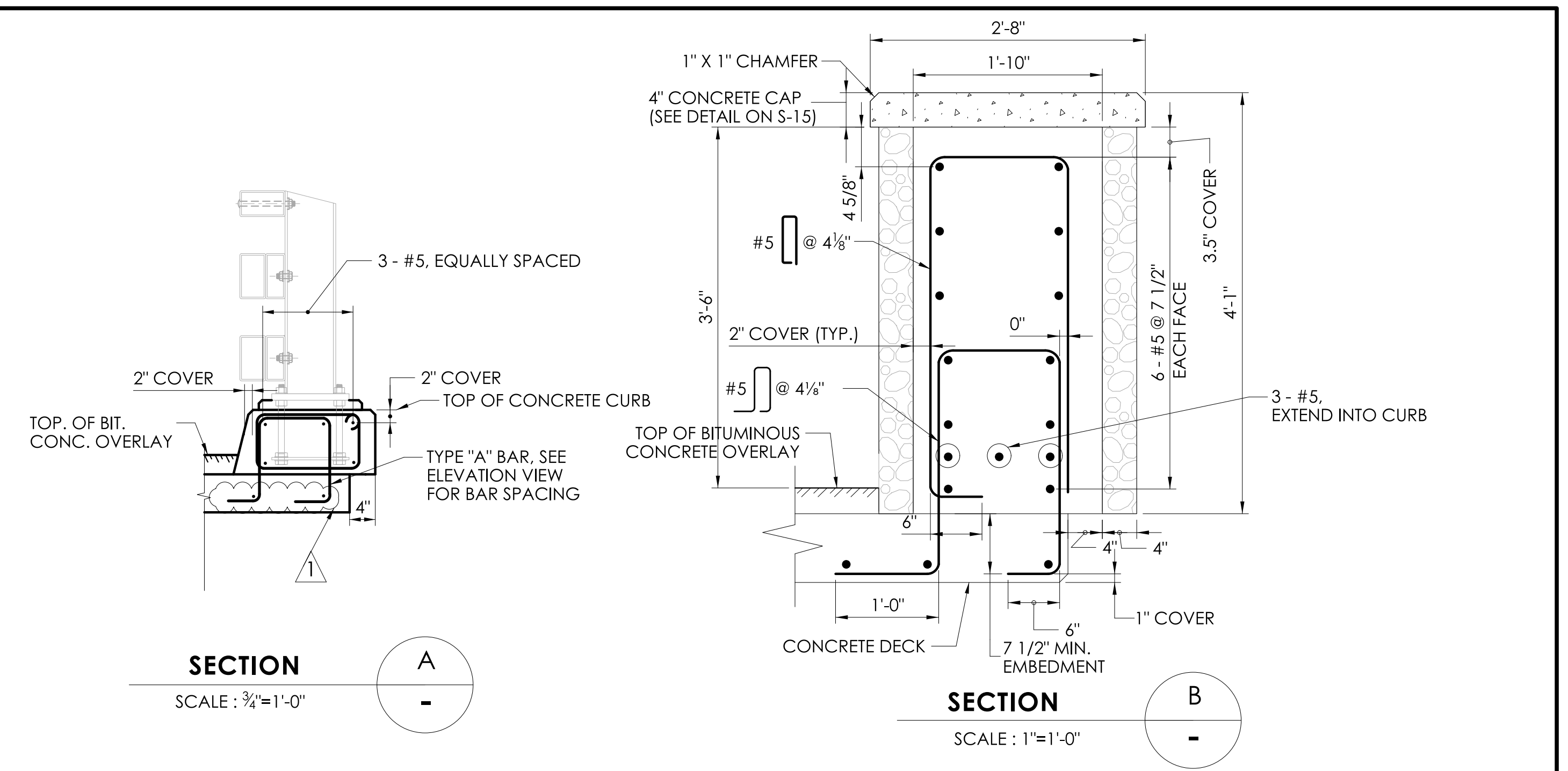
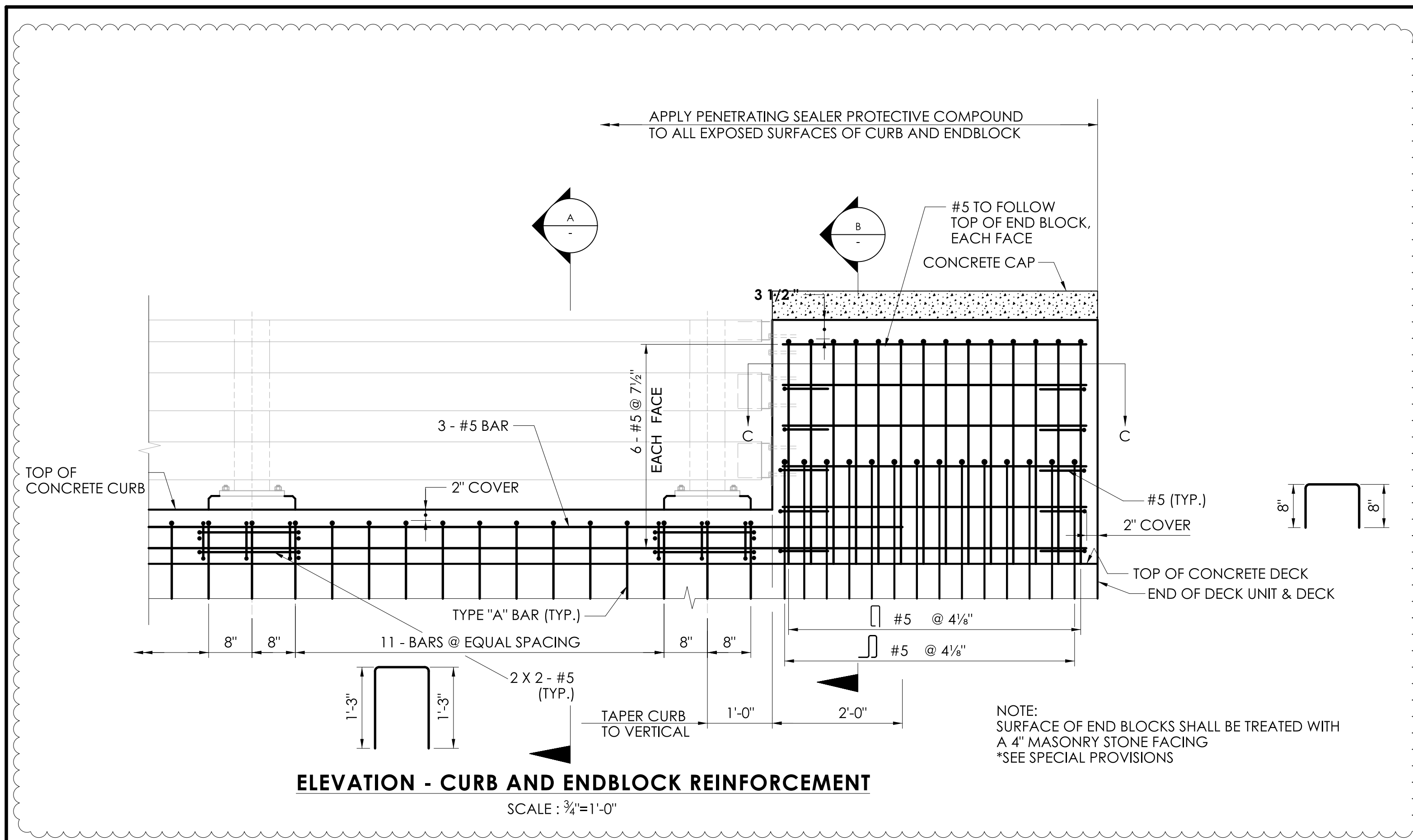
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 [Professional Seal]

STATE OF CONNECTICUT
 TOWN OF WILTON

PROJECT NUMBER: 0161-0142
 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04975 LOVERS LANE OVER COMSTOCK BROOK
 TOWN(S): WILTON
 DRAWING TITLE: 3-TUBE CURB MOUNTED BRIDGE RAIL DETAILS - 1

ADDENDUM NO. 2

DRAWING NO. S-21
 SHEET NO. 04.21.A2

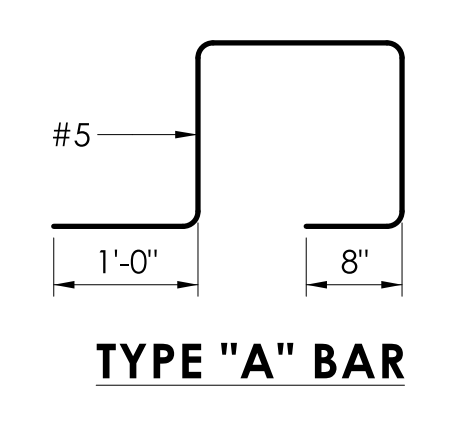


REINFORCEMENT SPLICE NOTES:

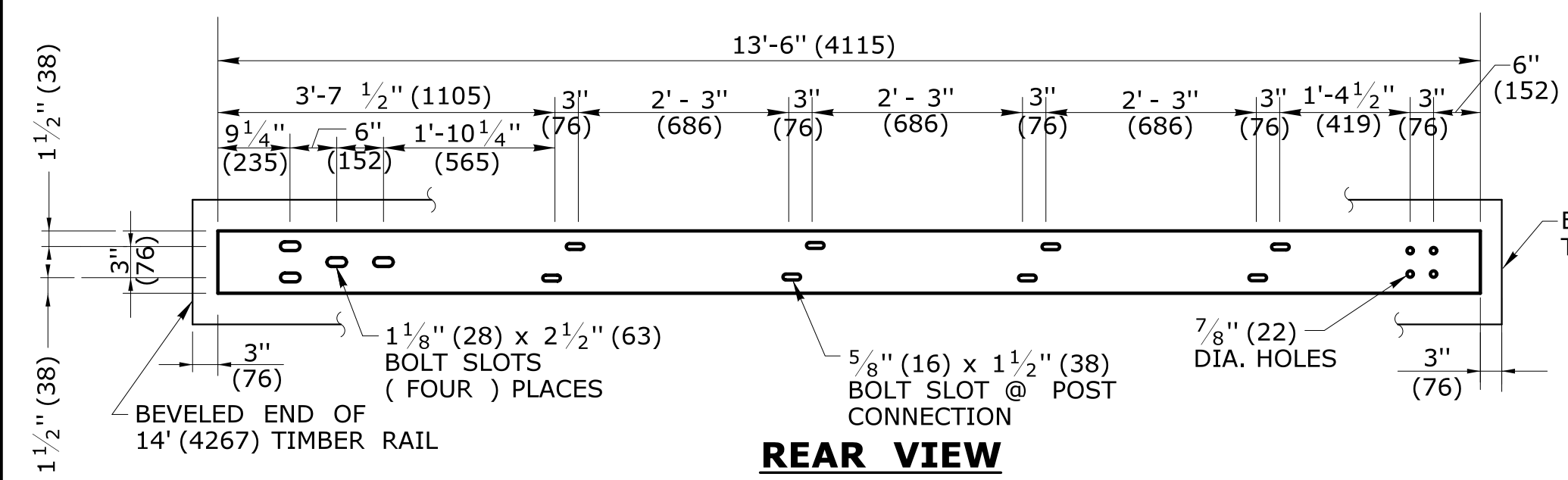
1. THE SPLICE LENGTH FOR THE LONGITUDINAL REINFORCEMENT IN THE CURB AND ENDBLOCK SHALL BE AS FOLLOWS UNLESS DIMENSIONED OTHERWISE:

BAR SIZE	SPLICE LENGTH
#5	2'-4"

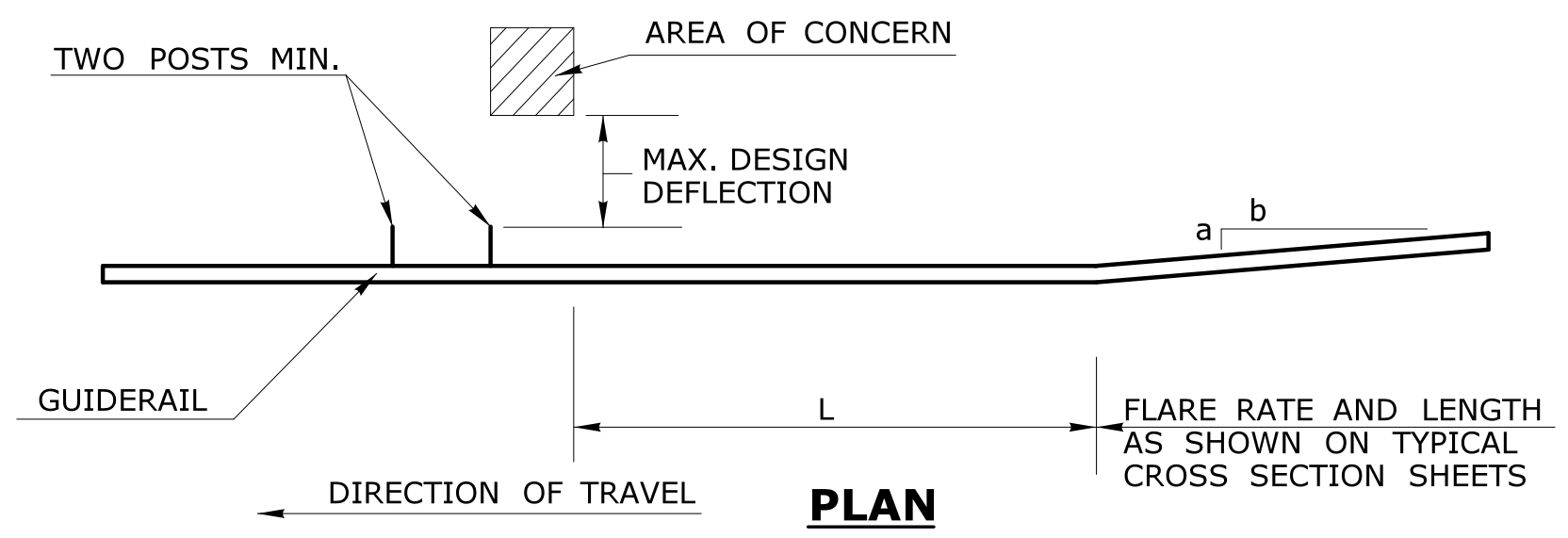
2. THE SPLICES SHALL BE ALTERNATED SO THAT 50% OR LESS OF THE LONGITUDINAL BARS ARE SPLICED AT THE SAME LOCATION.



REV.	DATE	DESCRIPTION
1	12/15/22	ENDBLOCK MODIFIED
		REVISION DESCRIPTION



STEEL TRANSITION RAIL
6" x 3/8" x 13'-6" (152x9x4115)
FOR LEADING END ATTACHMENT



APPROACH TO FIXED OBJECTS
SYSTEM 2 AND 3

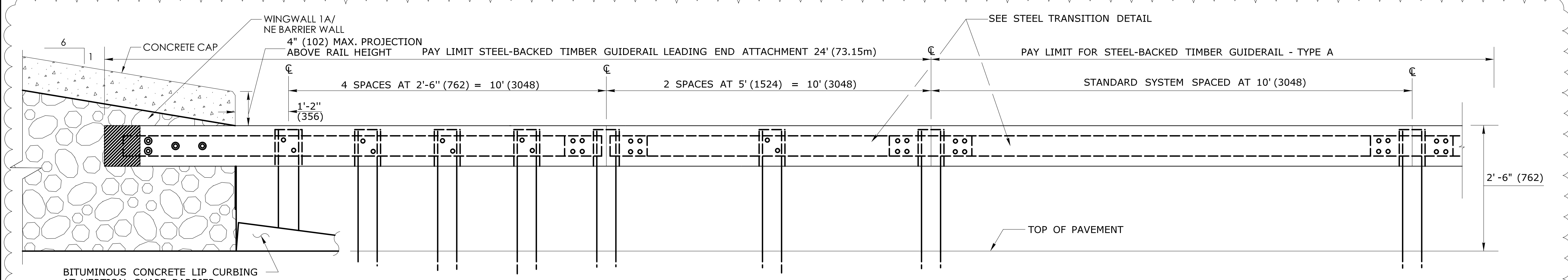
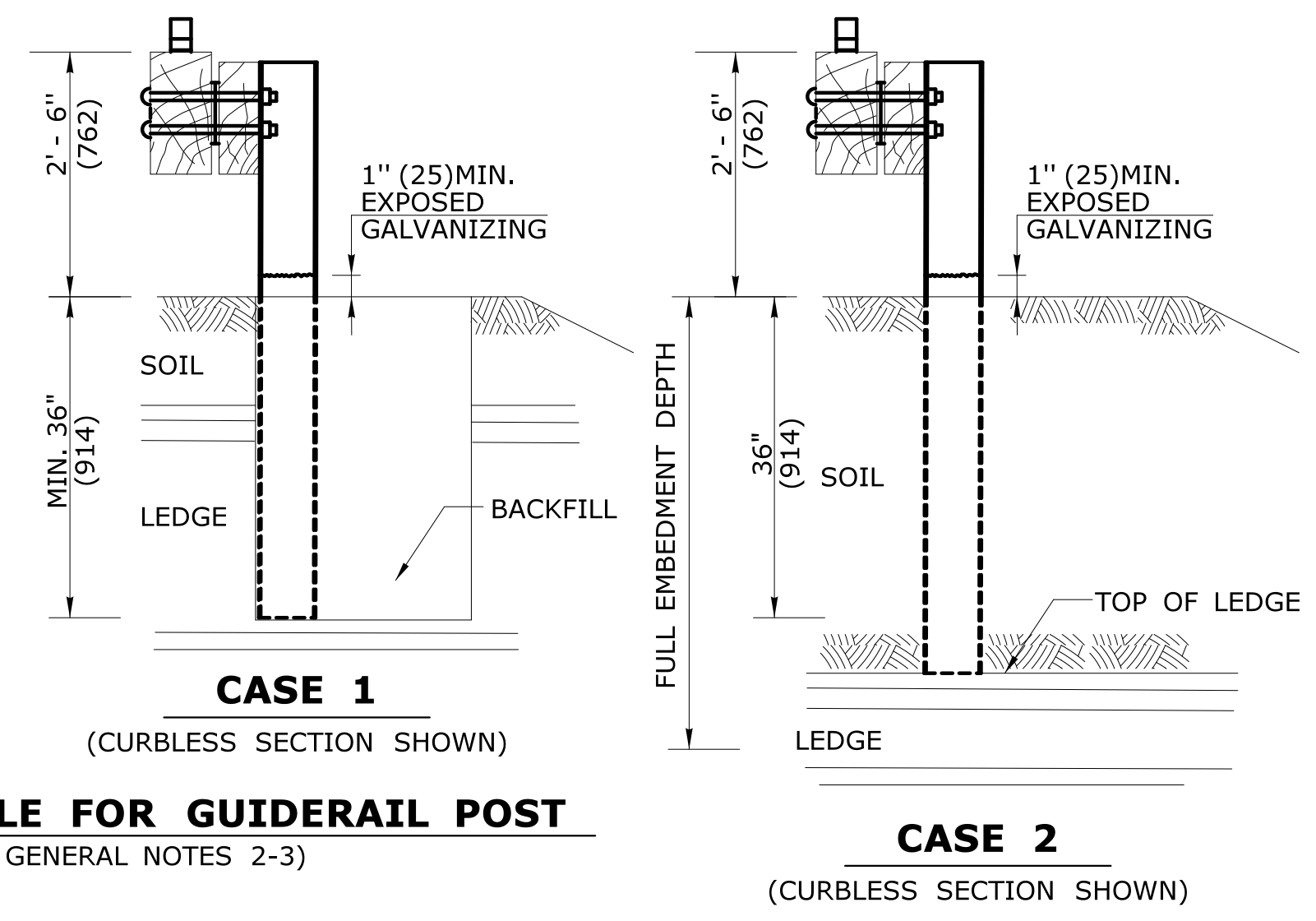
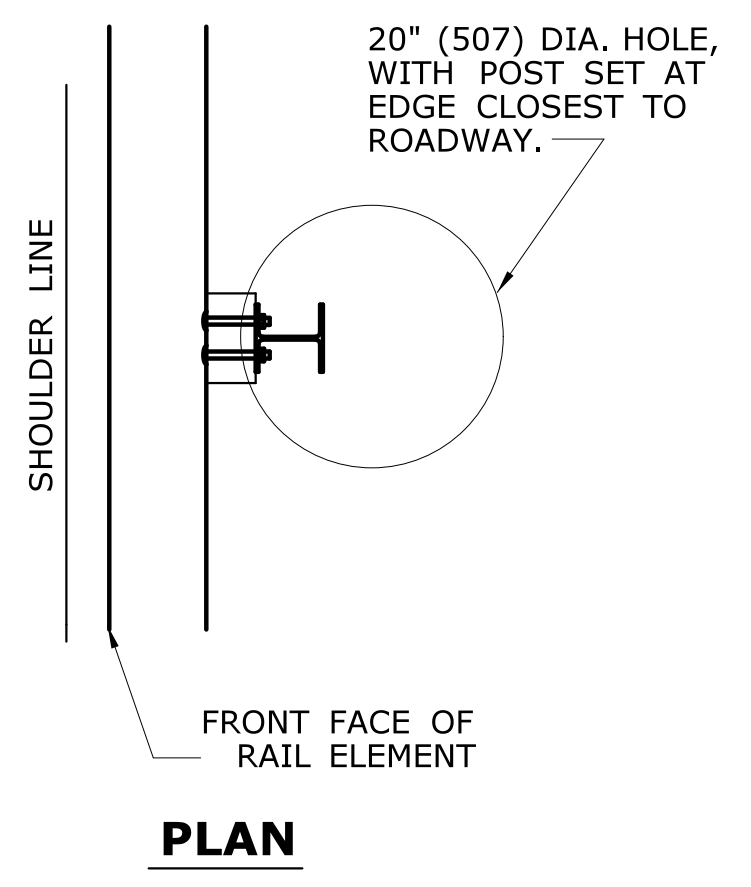
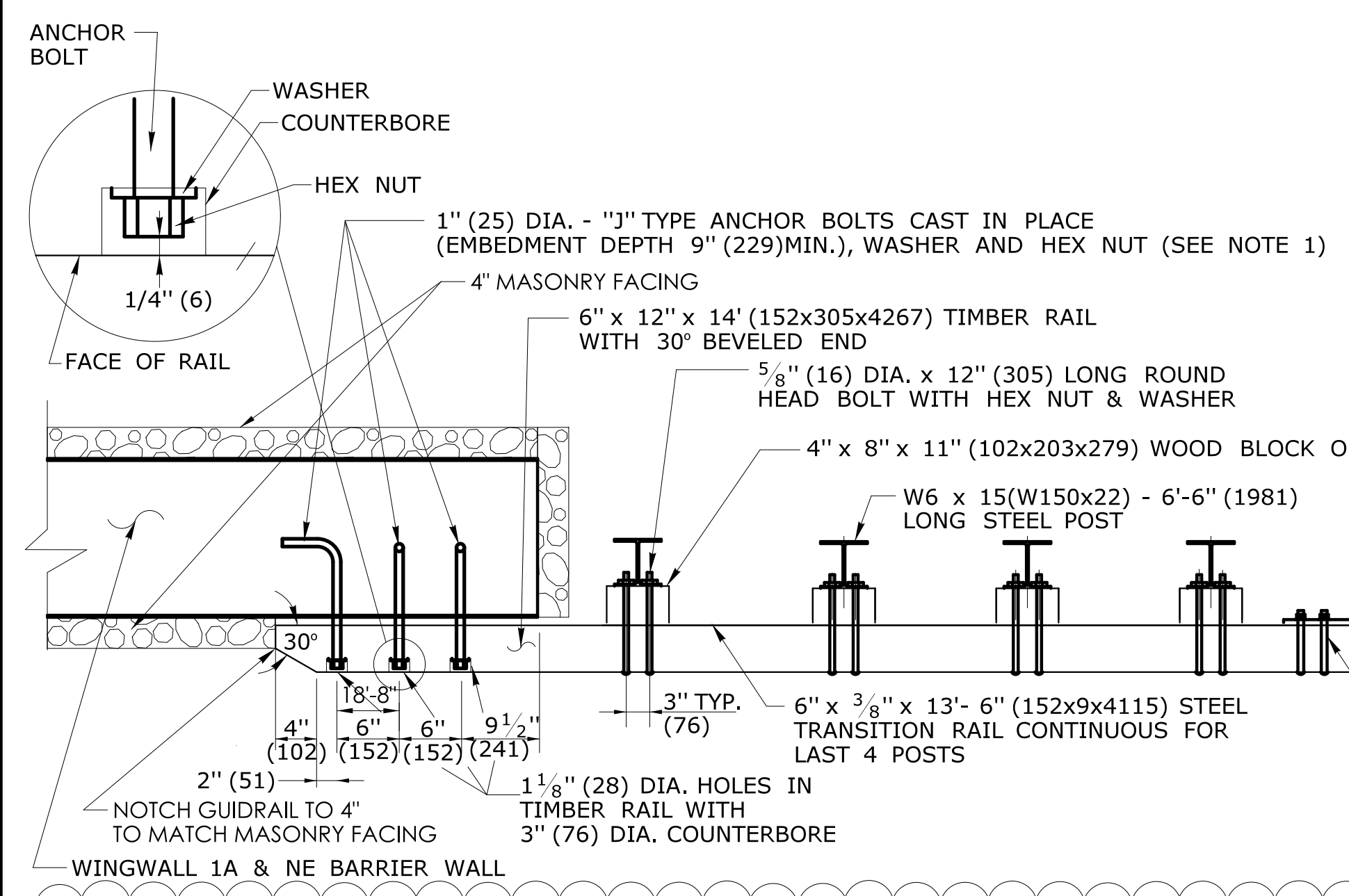
- GENERAL NOTES:**
- THIS DRAWING SHOWS LEADING END ATTACHMENT TO PROPOSED BARRIER/VERTICAL SHAPED WINGWALL PARAPET.
 - PRIOR TO GUIDERRAIL POST INSTALLATION THE CONTRACTOR SHALL INVESTIGATE POST LOCATIONS FOR THE PRESENCE AND DEPTH OF LEDGE AND UNDERGROUND UTILITIES/PIPES.
 - 20" (507) DIA. EXCAVATED HOLE SHALL BE BACKFILLED WITH SUITABLE MATERIAL, OR GRANULAR FILL COMPACTED IN 6" (150) LIFTS BEFORE DRIVING POST OR POSTS MAY BE SET IN EXCAVATED HOLE AND BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).

Maximum Design Deflection (ft) (mm)	Area Of Concern Plus 2 Posts (see sketch)	SYSTEM 3	SYSTEM 2	Standard System	L
		W6x15 (W150x22) Posts Spaced at 2'-6" (762)	W6x15 (W150x22) Posts Spaced at 5' (1524)	W6x15 (W150x22) Posts Spaced at 10' (3048)	Min. Length Needed
1' (305)	System 3	10' (3048)	10' (3048)	50' (16.40m)	70' (21.34m)
2'-6" (762)	System 2	-	10' (3048)	60' (19.68m)	70' (21.34m)
4' (1219)	Standard System	-	-	70' (21.34m)	70' (21.34m)

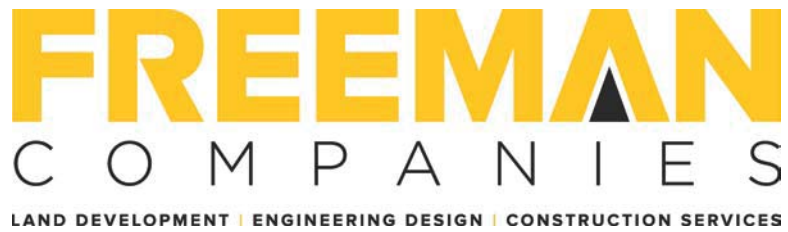
STEEL-BACKED TIMBER GUIDERRAIL
DESIGN DEFLECTION CHART

NOTE- THIS PROJECT SHALL UTILIZE STANDARD SYSTEM UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

- CASE 1:** IF LEDGE IS LOCATED WITHIN 36" (914) OF THE FINISHED GRADE AT THE POST LOCATION A 20" (507) DIAMETER HOLE SHALL BE DRILLED IN THE LEDGE TO THE MINIMUM EMBEDMENT DEPTH OF 36" (914) AND THE POST SHALL BE CUT AND DRIVEN TO ACHIEVE THIS DEPTH.
- CASE 2:** IF LEDGE IS LOCATED AT A DEPTH GREATER THAN 36" (914) BUT LESS THAN THE FULL EMBEDMENT DEPTH THE POST SHALL BE CUT AND DRIVEN TO ACHIEVE EMBEDMENT TO THE DEPTH OF THE TOP OF LEDGE.



REV.	DATE	CONCRETE CAP MODIFICATION	REVISION DESCRIPTION
1	12/15/22	CONCRETE CAP MODIFICATION	REVISION DESCRIPTION



Geotechnical Engineering Report
Replacement of Bridge 04975 - Lovers Lane over Comstock Brook
State Project No. 161-142
Wilton, Connecticut

August 2, 2022

Freeman Project No.: 2017-0802.8

Prepared for:

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Prepared by:

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36 John Street
Hartford, CT 06106



Nathan L. Whetten, D.G.E., P.E.
Vice President of Geotechnical Services

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Summary	1
1.2	Scope of Work	1
1.3	Authorization	1
1.4	Project Vertical Datum	1
2.0	SITE AND PROJECT DESCRIPTION	1
2.1	Site Description	1
2.2	Project Description	2
3.0	EXPLORATIONS.....	2
3.1	Subsurface Explorations.....	2
3.2	Laboratory Testing	2
4.0	SUBSURFACE CONDITIONS.....	3
4.1	Subsurface Conditions.....	3
5.0	GEOTECHNICAL ENGINEERING RECOMMENDATIONS	4
5.1	General.....	4
5.2	Spread Footing Design Criteria	5
5.3	Micropile Design	5
6.0	CONSTRUCTION CONSIDERATIONS.....	6
6.1	Excavation	6
6.2	Bearing Surface Preparation	6
6.3	Cofferdam and Dewatering.....	6
6.4	Temporary Earth Retaining Systems.....	6
6.5	Micropile Installation	6
6.6	Temporary Bridge	6
6.7	Preconstruction Survey and Monitoring	7
6.8	Reuse of Existing Soils	7
7.0	FUTURE SERVICES AND LIMITATIONS	7
7.1	Future Services	7
7.2	Limitations.....	7

ATTACHMENTS

Table

1. Subsurface Data

Figures

1. Site Location Map
2. Subsurface Exploration Location Plan
3. Subsurface Profile
4. Lateral Earth Pressures – Active Earth Pressures

Appendices

- A. Test Boring Logs
- B. Results of Laboratory Testing

1.0 INTRODUCTION

1.1 Summary

This report presents our evaluation of the subsurface conditions and geotechnical engineering recommendations for replacement of Bridge 04975, Lover's Lane over Comstock Brook, located in Wilton, Connecticut. This evaluation is based on recent subsurface explorations and laboratory test data.

Subsurface conditions generally consist of fill, silt, and glacial till overlying bedrock in abutment and retaining wall areas, and alluvium overlying bedrock within the brook. We recommend that the proposed abutments, wingwalls, and retaining wall be supported on spread footing foundations bearing on bedrock. At the westerly portions of the abutments and wingwalls a combination of spread footings and micropiles may be considered due to significant variations in the bedrock surface. Installing micropiles in areas where the bedrock surface is below brook level may be a practical alternative to excavating to bedrock below brook level and creating large steps in the footing subgrade.

1.2 Scope of Work

Freeman Companies, LLC performed the following tasks:

- Coordinated drilling of test borings at the site;
- Provided technical monitoring of the test borings, described soil and rock materials encountered, and prepared test boring logs;
- Arranged for a testing laboratory to conduct laboratory soil and rock tests; and
- Evaluated the subsurface conditions and prepared this report containing geotechnical design recommendations and construction considerations.

1.3 Authorization

The work was completed in accordance with our consultant-subconsultant agreement dated March 9, 2021.

1.4 Project Vertical Datum

Elevations in this report were taken from the topographic plan provided to Freeman Cos. and are referenced to NAVD-88.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

Bridge 04975 carrying Lover's Lane over Comstock Brook is located approximately 300 feet north of the Lover's Lane intersection with Route 33 in Wilton, Connecticut, as shown on Figure 1, Site Location Map. It is a 33-foot-long single-span bridge with a 16.5-foot-wide roadway and was originally constructed in 1930. The bridge consists of a concrete deck with a bituminous wearing surface and concrete-encased steel girders which are supported on concrete abutments. Abutment 1 (south abutment) is supported on a bedrock outcrop above the brook bottom. The Abutment 2 (north abutment) is below brook level and the foundation subgrade material is not visible.

2.2 Project Description

We understand that the bridge will be replaced. The new bridge will be a 25-foot 8-inch-wide and 43-foot long, single-span structure, and will have a 22-foot-wide roadway. The bridge will be widened to the west, keeping the east curb of the new bridge at its current location. We understand that construction will include installing a temporary one-lane bridge on the east side of the existing bridge to facilitate construction. The new bridge is shown in plan on Figure 2, Subsurface Exploration Location Plan.

Abutment 1 (south) - The existing Abutment 1 is positioned on the edge of a bedrock outcrop which slopes steeply downward to the brook. The new Abutment 1 will be positioned further from the brook (to the south) and lower in the profile than the existing abutment, and will extend beyond the existing abutment footprint to the west as shown on Figure 3, Subsurface Profile.

Abutment 2 (north) - The existing Abutment 2 appears to be supported on a bedrock outcrop that is a few feet below brook level. The new Abutment 2 will be positioned further from the brook (to the north) at approximately the same level in the profile, and will extend beyond the existing abutment footprint to the west.

Northeast Retaining Wall – A new retaining wall will be constructed adjacent to the northeast corner of Abutment 2, and will extend approximately 70 feet north between Lover's Lane and Comstock Brook, as shown on Figure 2. We understand that the retaining wall will be a cast-in-place reinforced concrete structure.

3.0 EXPLORATIONS

3.1 Subsurface Explorations

Nine test borings (designated S-1 through S-6, S-1A, S-2A, S-3A) were drilled by New England Boring Contractors, Inc., of Glastonbury, Connecticut, during the periods June 3 to 4 and August 11 to 13, 2020, and on January 2, 2022. Test boring S-2 encountered refusal at 10.5 feet with no water return, so the drill rig moved 3 ft north and drilled boring S-2A. Test borings were drilled with 4-inch diameter flush-joint casing to depths ranging from 10.5 to 25.7 feet below ground surface. Standard Penetration Tests were conducted and soil samples were recovered at maximum 5-foot intervals. Borings were terminated within bedrock following retrieval of bedrock cores using an NX-size core barrel. Surveyed exploration locations are shown on Figure 2, Subsurface Exploration Location Plan. A Freeman Companies engineer observed the drilling, described the soil samples, and prepared the test boring logs included in Appendix A.

Test borings S-1, S-2, S-2A, S-3, S-4, S-5 and S-6 were drilled from the surface of the roadway, behind the abutments and along the northeast retaining wall. Test borings S-1A and S-3A were drilled through the bridge deck to provide additional information on the elevation of the bedrock surface beneath the brook.

3.2 Laboratory Testing

Grain size analyses (ASTM D422) were performed on seven representative soil samples to aid in determining engineering properties. Two unconfined compression tests were performed on representative bedrock core samples.

Laboratory testing was conducted by Geotesting Express, Inc., of Acton, Massachusetts. Results of laboratory testing are provided in Appendix B.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Conditions

Subsurface conditions encountered in the explorations consist of fill, silt, and glacial till overlying bedrock in abutment and northeast retaining wall areas, and sand overlying bedrock within the brook, as described below. Subsurface soils are shown graphically on Figure 3, and data are summarized on Table I.

Generalized subsurface conditions are as follows:

THICKNESS (FT)	GENERALIZED DESCRIPTION
3.5 to 10.5	Fill – Descriptions range from brown to gray, coarse to fine SAND and medium to fine GRAVEL, trace to some silt, with cobbles, boulders, and concrete fragments; to brown coarse to fine SAND and SILT. SPT N-Values ranged from 17 to 61 blows per foot (bpf, medium dense to very dense), with refusals.
0.5 to 1.5	Silt (Subsoil) – A subsoil layer which likely reflects the former location of an original topsoil layer was encountered in borings S-3 and S-4 on the Abutment 1 (south) side of the bridge. Subsoil was described as yellow-brown SILT and fine SAND; or SILT, little fine sand.
1.8 to 5.0	Sand (Alluvium) – Gray coarse to fine SAND and coarse to fine GRAVEL, little silt, with cobbles. Alluvium was encountered in the two borings drilled within Comstock Brook
3.0 to 3.5	Glacial Till – Gray coarse to medium GRAVEL, little m-f sand. SPT N-Values were typically greater than 50 blows per 6 inches (very dense) with refusals, which reflects the probable presence of cobbles and boulders.

Bedrock - Bedrock encountered was GRANITE, gray, white and pink, medium grained, massive bedding, moderately fractured, fresh, very strong. Primary joints are low angle, planar, tight to open, slightly weathered, with sand filling. Several vertical joints were noted. Rock Quality Designation (RQD) ranged from 0 to 85 (very poor to good quality rock).

Results of two laboratory unconfined compression tests conducted on bedrock core samples recovered from the borings were 18,950 and 19,250 pounds per square inch.

Test boring S-6 was terminated at refusal which could represent bedrock, or it could represent a cobble or boulder in the glacial till stratum.

Weathered bedrock was encountered in test borings S-1A, S-3, S-3A, and S-4 in thicknesses ranging from 1 to 4.5-feet thick. Thicknesses of weathered bedrock encountered are listed in Table 1 and are shown on Figure 3. The depth to and elevation of bedrock, and the thickness of weathered rock encountered in the test borings varies; bedrock elevations are listed in Table 1 and are shown on Figure 3.

Groundwater – Groundwater was encountered about 12 to 13.5 feet below existing ground surface during drilling (corresponding to El. 221 to El. 223). However, these levels were measured during or immediately following drilling and may not represent stabilized groundwater. Water levels measured in the borings along with reported normal and flood stage water levels in the brook, are shown on Figure 3. Groundwater levels should be expected at or above

structure subgrade levels. Water levels are expected to be influenced primarily by water levels within Comstock Brook, but will vary with season, precipitation, temperature, construction activity in the area and other factors.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

The bedrock surface is variable at the site: the bedrock surface at Abutment 1 drops off steeply below water level in the brook on the left (west) side; the bedrock surface at Abutment 2 is unknown on the left side since borings could not be drilled from land due to tight site constraints. These variations in the bedrock surface complicate the selection and design of a foundation support system.

We recommend that the abutments and wingwalls be supported on a combination of spread footings and micropiles due to variations in the bedrock surface. Installing micropiles in areas where the bedrock surface is below brook level or where the bedrock surface is unknown allows for a more uniform bottom of footing/pile cap subgrade, and may be more practical than excavating to bedrock below brook and groundwater level and creating large steps in the footing.

Proposed bottom of structure abutment grades and recommended foundation systems are as follows:

Abutment 1

Easterly Side and SE Wingwall	Spread Footing	Bottom of Footing El. 224
Westerly Side (where bedrock drops off)	Micropiles	Bottom of Concrete Fill El. 216; Bottom of Pile Cap El. 224
SW Wingwall	Spread Footing	Bottom of Footing El. 224

Abutment 2

Easterly Side	Spread Footing	Bottom of Footing El. 224
NE Retaining Wall	Spread Footing	Bottom of Footing El. 216 and El. 223
Westerly Side and NW Wingwall	Micropiles	Bottom of Concrete Fill El. 216; Bottom of Pile Cap El. 224

On the west side of Abutment 1 where bedrock drops off, and along the west side of Abutment 2 and northwest wingwall, micropile support of foundations is envisioned. However, if bedrock is found in these areas to be at or higher than El. 216, the foundation may be changed to a spread footing over concrete fill.

Recommendations for spread footings and micropiles are provided below.

5.1 General

- **Seismic Design:** Soils are not susceptible to liquefaction. Seismic design is not required for simple-span bridges (AASHTO Article 4.7.4.2). Soil conditions at the site are defined as AASHTO Site Class C.
- **Backfill Material:** Place Pervious Structure Backfill (CTDOT Form 818 M.02.05) behind the abutments and abutment wingwalls above a line defined by a 1V:1.5H slope extending up from the heel of the footing to grade.
- **Weep Holes:** 4-inch-dia. weep holes at maximum 10-foot spacing, installed according to CTDOT specifications.
- **Lateral Earth Pressures:** Figure 4-Active Earth Pressures, which assumes abutments, wingwalls and the northeast retaining wall can deflect.

5.2 Spread Footing Design Criteria

- **Subgrade Preparation:** Design abutment and wingwall spread footing foundations to bear directly on a minimum 12-inch-thick layer of concrete fill (Form 818 M.03.02.1, nominal 3,000 lbs per square inch (psi) strength) placed over the sound bedrock surface after removal of weathered bedrock. The concrete fill layer is recommended to provide more uniform bearing due to the presence of fractured bedrock, and low RQD values near the bedrock surface.
- **Factored Bearing Resistance:**
Service Limit State: Nominal Bearing Resistance = 10,000 pounds per square foot (psf); apply Resistance Factor of 1.0 (AASHTO 10.5.5.1), Factored Bearing Resistance = 10,000 psf;
Strength Limit State: Nominal Bearing Resistance = 27,000 psf; apply Resistance Factor of 0.55; Factored Bearing Resistance = 14,850 psf (AASHTO Table 11.5.7-1).
- **Settlement at Recommended Bearing Pressure:** Estimated total settlement less than 1/2 inch; differential less than 3/4- inch.
- **Coefficient of Friction ($\tan \delta$) Along Bottom:** 0.7 (AASHTO Table C3.11.5.3-1); Resistance factor 1.0 (AASHTO Table 11.5.7-1).

5.3 Micropile Design

- **Subgrade Preparation:** Pile caps should bear on a layer of concrete fill to provide a uniform bearing surface. If rock is found to be at or higher than El. 216, the foundation may be changed to a spread footing.
- **Micropile Design:** Design micropiles as Type A with the following elements:
 - 9-5/8 inch O.D., 0.472-inch thick wall permanent casing that extends to bedrock. Casing should not be relied upon for uplift resistance.
 - A minimum 8.5-inch diameter bonded zone socketed into bedrock. The top of the rock socket should be within sound rock below the decomposed bedrock. Evaluation of the required length of the rock socket should be designed by the Contractor per CTDOT procedures for micropile design.
 - A No. 18 central rebar core that extends the full length of the micropile from the pile head to the bottom of the rock socket.
 - A grout strength of 5,000 pounds per square inch (psi).
- **Factored Bearing Resistance:**
 - Service Limit State: Nominal Bearing Resistance = 100 kips; apply Resistance Factor of 1.0 (AASHTO 10.5.5.1); Factored Bearing Resistance = 100 kips
 - Strength Limit State: Nominal Bearing Resistance = 200 kips; apply Resistance Factor of 0.7; Factored Bearing Resistance = 140 kips (AASHTO Table 10.5.5.2.5-1).
- **Ultimate Axial Compression:** We recommend an ultimate axial capacity of 200 kips be provided to the Contractor for purposes of their micropile design and verification test.
- **Spacing:** Minimum 30 inches or 3 times the pile diameter, whichever is greater (AASHTO 10.9.1.2)
- **Settlement:** Maximum total settlement of micropiles is estimated at less than 1 inch. This settlement will occur as loads are applied.
- **Load Tests:** We recommend that load tests include a minimum of one verification test on a sacrificial pile, and proof tests on five percent of the production piles.
- **Lateral Resistance:** Lateral pile load analyses will be conducted, if required.
- **Drilling:** Use casing through soil. Anticipate difficult drilling conditions (i.e., cobbles, boulders, hard rock).

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Conventional heavy excavation equipment should be suitable for excavation in existing soil materials. Excavation should conform to OSHA excavation regulations contained in 29 CFR Part 1926, latest edition.

Results of unconfined compression tests indicate that bedrock is hard. We anticipate that controlled blasting will be necessary for removal of both sound and weathered bedrock. Sound and weathered bedrock removal will be required at Abutment 1; sound bedrock removal will likely be required at Abutment 2 and the Northeast Retaining Wall.

6.2 Bearing Surface Preparation

Place concrete fill per Section 5.2 directly over the sound bedrock surface after removal of weathered bedrock.

6.3 Cofferdam and Dewatering

We estimate that excavations for shallow foundations and pile caps may penetrate below groundwater, depending on the water level in the brook during construction. Construction should be performed in-the-dry, and a fully-enclosed cofferdam and dewatering will be required. Steel sheeting will likely not be feasible due to the shallow bedrock. A water-handling-cofferdam such as sandbags and plastic might be feasible. A drilled cofferdam system such as tangent or secant piles may be capable of penetrating the boulders, could provide a groundwater cutoff, and may be feasible. Other means may also be feasible and potentially cost-effective. Dewatering from sumps located in the bottom of excavations appears feasible. Surface water should be diverted away from excavations.

6.4 Temporary Earth Retaining Systems

Temporary earth retaining systems (TERS) will likely be required in some areas to accommodate the proposed construction. Steel sheeting may not be feasible due to shallow bedrock. Soldier piles and lagging appears feasible, however, soldier piles will likely need to be placed in predrilled rock sockets drilled into the bedrock and filled with grout. Micropiles and lagging, and other TERS systems may also be considered. One or more levels of bracing will likely be required. Drilled tiebacks or internal bracing appear feasible.

6.5 Micropile Installation

Micropiles should be drilled with a permanent casing. Micropile pile drilling equipment must be capable of drilling through the overburden which is anticipated to contain variable sized boulders and also be capable of penetrating through fractured and intact bedrock. Therefore, it should be assumed that drilling activities may be difficult and time consuming if boulders are encountered. Drilling techniques should limit loss of ground. The bonded zone should be entirely with bedrock below any decomposed bedrock.

6.6 Temporary Bridge

We understand that a one lane temporary bridge will be constructed on the east side of the existing bridge to provide traffic flow during construction and facilitate construction. The temporary bridge will be approximately 80-feet long, will carry one lane of traffic, and will extend from near test boring S-4 to near test boring S-5 (refer to Figure 2). We recommend that the temporary bridge be designed to bear on sound bedrock at a maximum allowable bearing pressure of 10,000 psf. Where foundations for the temporary bridge are located near abutment or wingwall foundations, they

should be placed at the same elevation as the abutment or wingwall foundations, and step up or down away from the abutment or wingwall foundations as necessary.

6.7 Preconstruction Survey and Monitoring

Vibrations from bedrock excavation, pile installation, cofferdam installation, and demolition are not expected to affect the structural integrity of nearby structures. However, vibration and noise will likely be noticeable inside nearby buildings, and may be disturbing to residents. A preconstruction survey of structures within 250 feet should be conducted in advance of construction, and vibration monitoring should be conducted. There appear to be several structures within this distance.

6.8 Reuse of Existing Soils

The existing soils to be excavated will consist primarily of existing Fill. These soils are not expected to be suitable for reuse as Pervious Structure Backfill or Granular Fill. Excavated soils may be suitable for reuse as embankment fill. However, the siltier soils may be difficult to properly compact when wet, and may need to be dried to achieve compaction. Drying the soils can be difficult and at times impractical, particularly during periods of cold and wet weather.

7.0 FUTURE SERVICES AND LIMITATIONS

7.1 Future Services

We recommend that Freeman Companies be engaged during construction to observe:

- Verify that soil conditions exposed in excavations are in general conformance with the design assumptions, and that the geotechnical aspects of construction are consistent with the project specifications.
- Review contractor submittals related to micropiles, and observe installation in accordance with Form 818.
- Observe preparation of bearing surfaces.

7.2 Limitations

This report was prepared for the exclusive use of Fuss & O'Neill, CHA, and the project design team. The recommendations provided herein are based on the project information provided at the time of this report and may require modification if there are any changes in the nature, design, or location of the bridge.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

Bridge 04975
 Lover's Lane over Comstock Brook
 Wilton, Connecticut

Table 1
 Subsurface Data

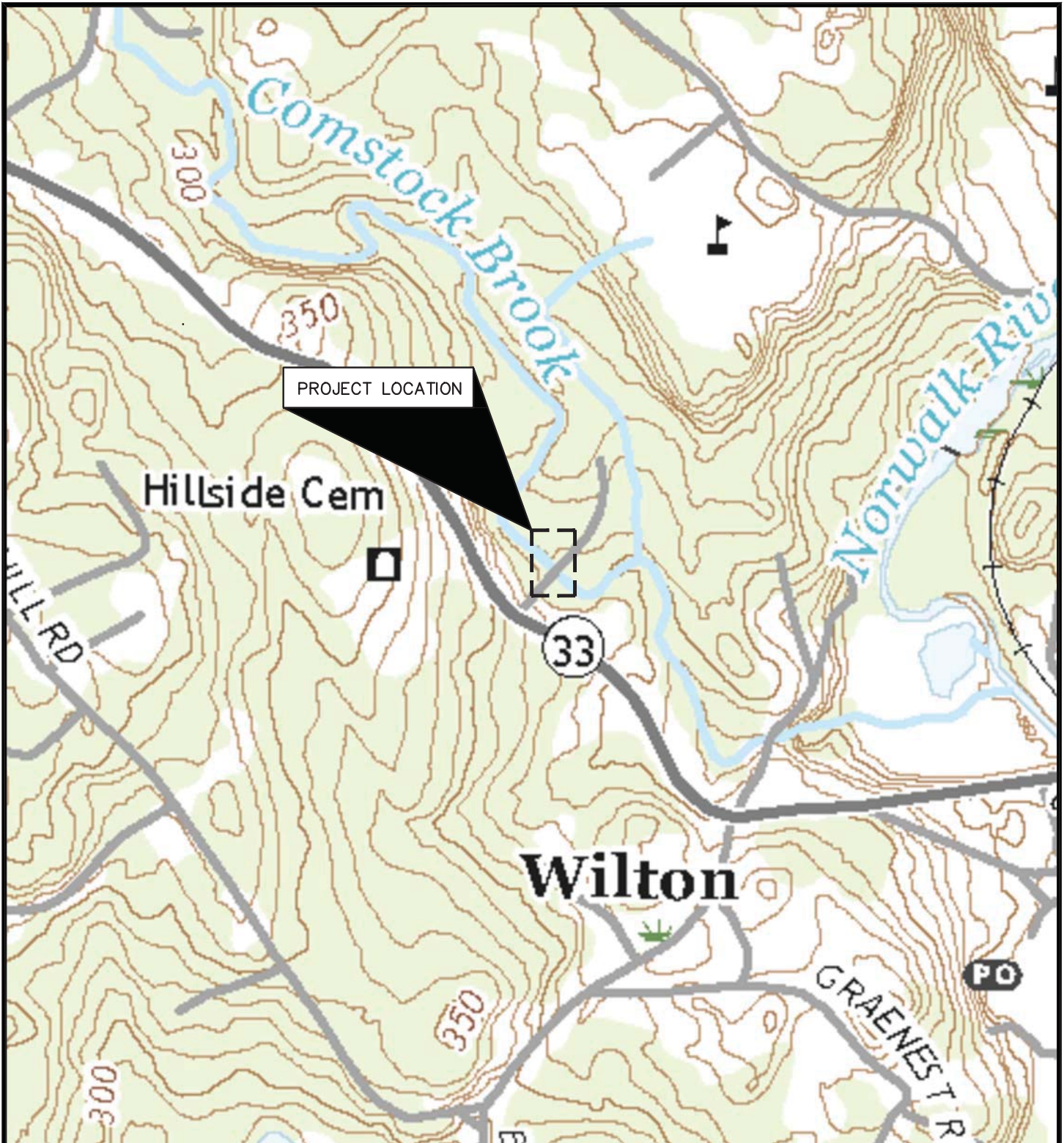
Boring No.	Ground Surface El. ¹	Depth (ft.)	Thickness (ft.)						Groundwater ²		Bedrock	
			Asphalt	Fill	Silt (Subsoil)	Sand (Alluvium)	Glacial Till	Weathered Bedrock	Depth (ft.)	Elevation	Depth (ft.)	Elevation
S-1	234	22.0 (C)	0.3	9.7	NE	NE	NE	NE	12.0	222	10.0	224
S-1A	234.2	25.7 (C)	NE	NE	NE	5.0	NE	1.0	13.5	220.7	21.0	213.2
S-2	234	10.5 (R)	0.3	10.2	NE	NE	NE	NE	NE	NE	NE	NE
S-2A	234	20.5 (C)	0.3	10.2	NE	NE	NE	NE	13.0	221	10.5	223.5
S-3	234.5	20.0 (C)	0.3	3.7	1.5	NE	NE	4.5	12.0	222.5	10.0	224.5
S-3A	234.4	23.0 (C)	NE	NE	NE	1.8	NE	1.7	13.5	220.9	17.5	216.9
S-4	235	16.0 (C)	0.3	3.2	0.5	NE	NE	2.0	12.0	223	6.0	229
S-5	234	21.0 (C)	0.4	6.1	NE	NE	3.5	NE	NE	NE	10.0	224
S-6	234	6.0 (R)	0.4	3.1	NE	NE	3.0	NE	NE	NE	Note 4	Note 4

Notes:

1. Ground surface elevations were estimated from topographic information shown on the site plan.
2. Groundwater levels were indicated on the test boring logs at time 0 hours.
3. ">" - Greater Than "≥" - Greater than or equal to "≤" - Less than or equal to "NE" - Stratum Not Encountered; "C" - Bedrock cored; "R" - Refusal encountered
4. Boring S-6 terminated at auger refusal at a depth of 6 feet, which could represent bedrock or a cobble or boulder in the glacial till stratum.
5. Refer to the text of the report for additional information.

FIGURES

Freeman Companies, LLC . R:\2017\2017-0802.8 Proj 161-142 Lovers Ln ov Comstock R Wilton_CME\DWG\Figure 1 - Lovers Lane_Wilton.dwg Jun 15, 2020-12:22pm Plotted By: tta



USGS QUADRANGLE MAP
 NORWALK, CONNECTICUT
 DATE 2018



FREEMAN
 COMPANIES

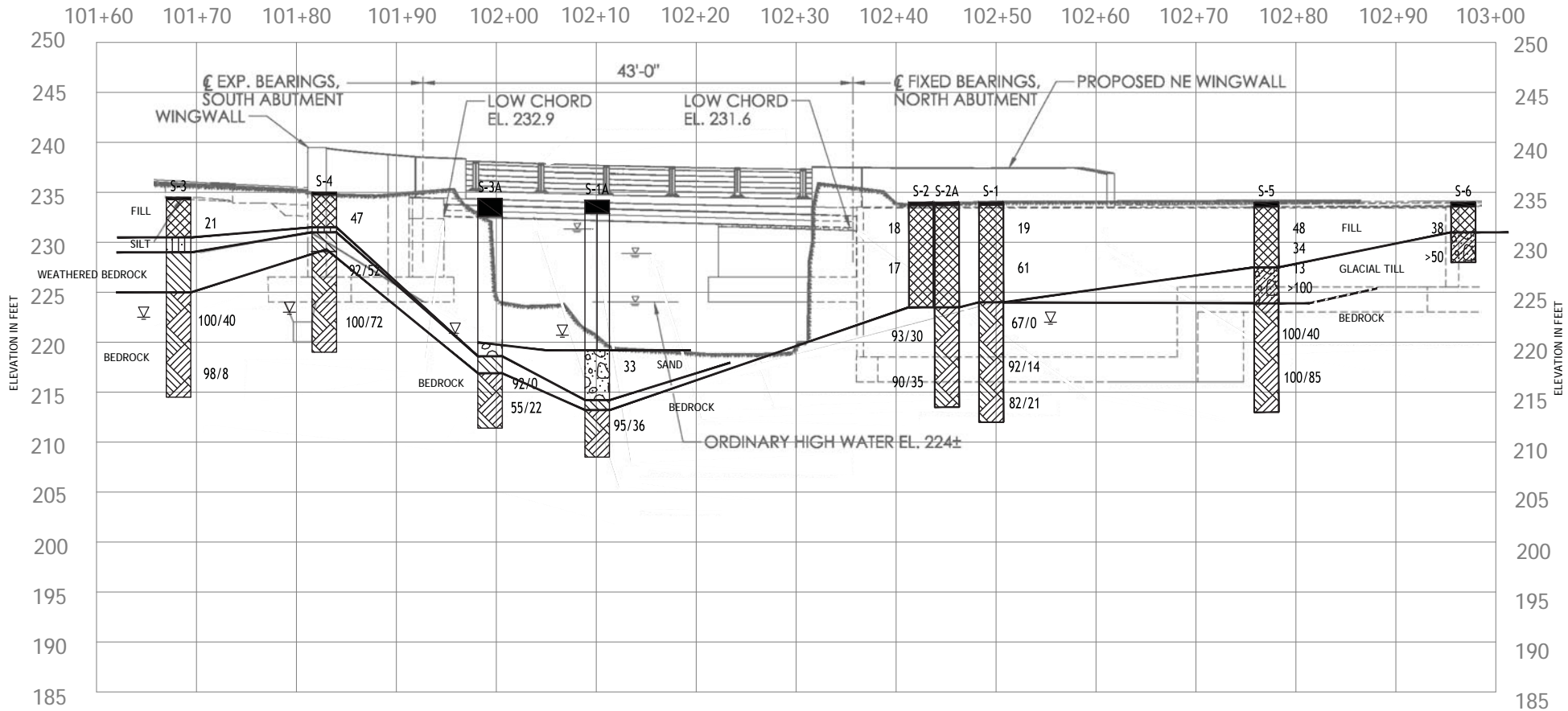
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
 36 JOHN STREET
 HARTFORD, CT 06106
 WWW.FREEMANCOS.COM
 TEL: (860) 251-9550
 FAX: (860) 986-7161
 ELEVATE YOUR EXPECTATIONS

SITE LOCATION MAP
 RECONSTRUCTION OF BRIDGE No. 04975
 LOVER'S LANE OVER COMSTOCK BROOK
 STATE PROJECT No. 161-142
 WILTON, CONNECTICUT

DRAFTED: T.T.
 CHECKED: N.W.
 APPROVED: N.W.
 SCALED: 1"=1000'
 PROJECT NO.: 2017-0802.8
 DATE: 06/15/2020
 SHEET NO.

FIGURE 1

Freeman Companies, LLC - R:\2017\2017-0802.8 Proj 161-142 Lovers Ln ov Comstock R. Wilton, CT\FMC\Figure 2 - Lovers Lane_wilton (R6).dwg Jan 18, 2022-12:08pm Plotted By: tta



LEGEND
 21 SPT N-VALUE
 100/40 RECOVERY% / RQD%

NOTE:
 THE INTERPRETED STRATA BOUNDARIES INDICATED ARE KNOWN ONLY AT THE BORING LOCATIONS AND WILL VARY BETWEEN LOCATIONS

SUBSURFACE PROFILE
 RECONSTRUCTION OF BRIDGE No. 04975
 LOVER'S LANE OVER COMSTOCK BROOK
 STATE PROJECT No. 161-142
 WILTON, CONNECTICUT

FREEMAN
 COMPANIES
LAND DEVELOPMENT ENGINEERING DESIGN CONSTRUCTION SERVICES
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 TEL: (860) 251-9550
 TOLL FREE: (800) 968-5141
 FAX: (860) 966-7161
ELEVATE YOUR EXPECTATIONS

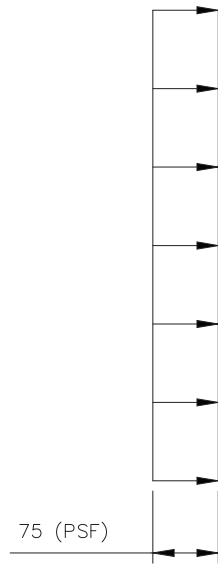
No.	Date	Description

DRAWN: T.T.
 CHECKED: N.W.
 APPROVED: N.W.
 SCALE: 1"=10'
 PROJECT NO.: 2017-0802.8-01
 DATE: 01/18/2022

SHEET NO.
FIGURE 3

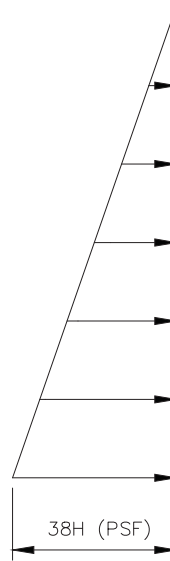
THESE DRAWINGS SHALL NOT BE UTILIZED BY ANY PERSON, FIRM OR CORPORATION WITHOUT THE SPECIFIC WRITTEN PERMISSION OF FREEMAN COMPANIES, LLC

SURCHARGE

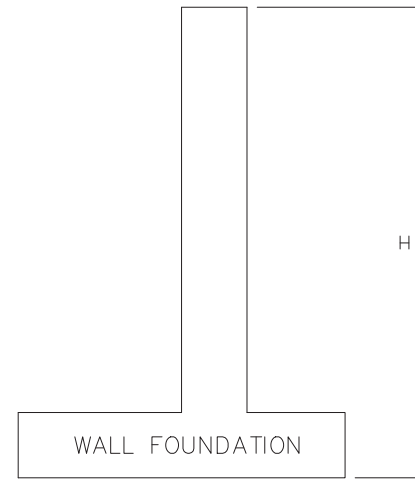


SURCHARGE LOAD

STATIC



ACTIVE EARTH PRESSURE



NOTES:

1. APPLIES TO WALLS THAT CAN DEFLECT AT THE TOP AND ASSUMES ACTIVE EARTH PRESSURES.
2. H IS MEASURED IN FEET
3. THE WALL SHOULD BE DRAINED BY PERVIOUS STRUCTURE BACKFILL (FORM 818 M.02.05) WITH A UNIT WEIGHT OF 125 PCF AND WEEPHOLES THROUGH THE WALL. THEREFORE, HYDROSTATIC PRESSURE IS NOT INCLUDED.
4. THESE PRESSURE DISTRIBUTIONS ASSUME HORIZONTAL BACKFILL BEHIND THE WALL.
5. SLIDING:
COEFFICIENT OF FRICTION BETWEEN FOOTING AND BASE= 0.7 (AASHTO TABLE 3.11.5.3-1) RESISTANCE FACTOR= 1.0 (AASHTO TABLE 11.5.7-1).
6. IGNORE PASSIVE RESISTANCE IN FRONT OF FOOTING.
7. SEISMIC LATERAL EARTH PRESSURES ARE NOT REQUIRED FOR SINGLE SPAN BRIDGES (AASHTO 4.7.4.2).

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ELEVATE YOUR EXPECTATIONS

LATERAL EARTH PRESSURES
ACTIVE EARTH PRESSURES

RECONSTRUCTION OF BRIDGE No. 04975
LOVER'S LANE OVER COMSTOCK BROOK
STATE PROJECT No. 161-142
WILTON, CONNECTICUT

DRAFTED:	T.T.
CHECKED:	N.W.
APPROVED:	N.W.
SCALED:	N.T.S.
PROJECT NO.:	2017-0802.8
DATE:	07/06/2020

FIG.

FIGURE 4

APPENDIX A
RECENT TEST BORING LOGS

Driller: M. St. John	Connecticut DOT Boring Report Format		Hole No.: S-1
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 102+20/1 ft L	
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632910.5	
Start Date: 6-3-20	Route No.: Lovers Lane	Easting: 810801.3	
Finish Date: 6-3-20	Bridge No.: 04975	Surface Elevation: 234	

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: 12 ft 0 hrs

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0							ASPHALT (3 in)		
	S-1	18	9	10	15	24	7	Brown to gray, c-f SAND and m-f GRAVEL, trace silt	230
5	S-2	25	41	20	50/5"	23	14	Brown to gray, c-f SAND, some m-f gravel, trace silt, with numerous concrete fragments	225
10	S-3	50/0"				0	0	Refusal, no recovery	
	C-1					60	40	Moderately strong, moderately weathered, moderately to extremely fractured, gray graphitic SCHIST, with indistinct foliation. Primary joints low angle, planar, tight to open, weathered; several high angle joints. Coring times: 4-4-5-5-5 min/ft.	220
15	C-2					36	33	Moderately strong to weak, moderately weathered, moderately to intensely fractured, gray to light gray GNEISS with layers of graphitic SCHIST Coring times: 5-5-5 min/ft.	
20	C-3					48	44	Moderately strong to weak, moderately weathered, moderately to intensely fractured, gray to light gray GNEISS with layers of graphitic SCHIST. Intensely fractured zone from 19 to 22 ft. Coring times: 5-5-5-5 min/ft.	215
								END OF BORING 22ft	210
25									

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 10ft Rock: 12ft	NOTES: Used solid augers to refusal at 10 feet, then drove 4-inch casing to 10 feet.	Sheet 1 of 1
No. of Soil Samples: 3	No. of Core Runs: 3	SM-001-M REV. 1/02

Driller: A. MacKernon	Connecticut DOT Boring Report Format	Hole No.: S-1A
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 102+10/1 ft R
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632872.4
Start Date: 8-11-20	Route No.: Lovers Lane	Easting: 810790.1
Finish Date: 8-12-20	Bridge No.: 04975	Surface Elevation: 234.2

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: 13.5 ft 0 hrs

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0						Pavement Structure Under Bridge	Bridge Deck (16")	
5								230
10								225
15	S-1	17 19 14 31 50/1"	25	10		Sand	Gray, c-f SAND and c-f GRAVEL, little silt (Alluvium)	220
20						Weathered Bedrock	Roller bit probable weathered bedrock 20' to 21'	215
25	C-1		56	53	36	Bedrock	Strong, slightly weathered, light gray, medium grained GNEISS. Several highangle joints, tight, slightly weathered planar to curved, smooth. Coring times: 16-12-13-15-12 min/ft.	210
30							END OF BORING 25.7ft	205

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 21ft Rock: 4.7ft	NOTES: Used solid augers through bridge deck. Left a rough opening which would not allow 4" drive shoe to pass. Lowered Split Spoon for S1, then lowered 3" casing, but would not seat, no consistent water return. Eventually spun 4" casing through deck, and roller bit and advanced 4" casing to 20'. Cored rock with slow hydraulic motor Roller bit probable cobbles 17.1' to 20'	Sheet 1 of 1 SM-001-M REV. 1/02
No. of Soil Samples: 1 No. of Core Runs: 1		

Driller: M. St. John	Connecticut DOT Boring Report Format	Hole No.: S-2
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 102+20/10 ft R
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632907.8
Start Date: 6-4-20	Route No.: Lovers Lane	Easting: 810813.5
Finish Date: 6-4-20	Bridge No.: 04975	Surface Elevation: 234

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: Not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0							ASPHALT (3 in)		
	S-1	20	12	6	4	24	12	Brown to gray, c-f SAND, some c-f gravel, little silt	230
5	S-2	6	3	14	3	24	14	Brown c-f GRAVEL, some c-f SAND, trace silt	
	S-3	50/3"				3	2	Brown c-f SAND and c-f GRAVEL, little silt	225
10									
								END OF BORING 10.5ft	220
15									
									215
20									
									210
25									

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 10.5ft Rock: 0ft	NOTES: Used solid augers to refusal at 8 feet, then drove 4-inch casing to 8 feet. Roller-bitted through boulders to 10.5 ft; no water return Offset 3 ft north of S-2, drilled S-2A Cobbles and boulders from 8 to 10.5 ft	Sheet 1 of 1
No. of Soil Samples: 3 No. of Core Runs: 0		SM-001-M REV. 1/02

Driller: M. St. John	Connecticut DOT Boring Report Format		Hole No.: S-2A
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 102+31/7 ft R	
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632905.5	
Start Date: 6-4-20	Route No.: Lovers Lane	Easting: 810812.3	
Finish Date: 6-4-20	Bridge No.: 04975	Surface Elevation: 234	

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: 13 ft 0 hrs

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0						ASPHALT FILL	ASPHALT (3 in) See boring S-2 for soil descriptions	230
5								
10								
15	C-1		60	56	30	BEDROCK	Moderately strong, moderately weathered, moderately to extremely fractured, gray medium grained GNEISS, with graphite schist layers. Foliation very thin, low angle. Primar joints shallow dipping, planar, tight to open, moderately to extremely weathered. Coring times: 4-4-4-4-4 min/ft.	220
20	C-2		60	54	35		Moderately strong, moderately weathered, moderately to extremely fractured, gray medium grained GNEISS, with graphite schist layers. Foliation very thin, low angle. Primar joints shallow dipping, planar, tight to open, moderately to extremely weathered. Coring times: 4-4-4-4-4 min/ft.	215
25							END OF BORING 20.5ft	210

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 10.5ft Rock: 10ft	NOTES: Offset 3 ft north of S-2, drilled S-2A Used solid augers to refusal at 9 feet, then drove 4-inch casing to 9 feet. Roller-bitted and drove casing through cobbles and boulders to 10.5 ft. Roller bit through cobbles and boulders from 9 to 10.5 ft	Sheet 1 of 1
No. of Soil Samples: 0 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: R. Posa	Connecticut DOT Boring Report Format		Hole No.: S-3
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 101+68/2 ft R	
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632832.1	
Start Date: 6-3-20	Route No.: Lovers Lane	Easting: 810781.5	
Finish Date: 6-3-20	Bridge No.: 04975	Surface Elevation: 234.5	

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: 12 ft 0 hrs

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0						Asphalt Fill	ASPHALT (3 in)		
	S-1	23	11	10	12		Brown to gray, c-f SAND, some silt		
5	S-2	100/5"				5	3	Silt	230
						Weathered Bedrock	Yellow-brown SILT, little f sand (Subsoil)		
10						Bedrock		225	
	C-1						Moderately strong, moderately weathered, moderately to extremely fractured, pink and dark gray medium grained GNEISS. Foliation very thin, shallow dipping. Primary joints low angle, planar, tight to open, moderately weathered, with sand filling		
15							Several vertical joints and cracks, some healed. Dark gray layer from 13.1 to 14 ft. Coring times: 7-7-7-7 min/ft.	220	
	C-2						Moderately strong, moderately weathered, moderately to extremely fractured, pink and dark gray medium grained GNEISS. Foliation very thin, shallow dipping. Primary joints low angle, planar, tight to open, moderately weathered, with sand filling		
20							Coring times: 7-7-7-7 min/ft.	215	
							END OF BORING 20ft		
25								210	

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 5.5ft Rock: 14.5ft	NOTES: Used solid augers to refusal at 9 feet, then drove 4-inch casing to 5.5 feet. Roller-bitted and drove casing through decomposed bedrock at 10 ft.	Sheet 1 of 1
No. of Soil Samples: 2 No. of Core Runs: 2	Roller bit through decomposed bedrock from 5.5 to 10 ft, cuttings light brown	SM-001-M REV. 1/02

Driller: A. MacKernon	Connecticut DOT Boring Report Format	Hole No.: S-3A
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 101+99/1 ft R
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632860.8
Start Date: 8-12-20	Route No.: Lovers Lane	Easting: 810787.2
Finish Date: 8-13-20	Bridge No.: 04975	Surface Elevation: 234.4

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: 13.5 ft 0 hrs

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0						Pavement Structure	Bridge Deck (22")	230
						Under Bridge		
5								
10								
15						Sand	Cuttings shows c-f SAND.	220
	C-1		12	1	0	Weathered Bedrock	[C1] Core barrel jammed at 16.8'. Coring times: 7 min/ft. [C2] Extremely fractured to 17.5', then: Strong, slightly weathered, pinkish gray, medium grained GNEISS. Primary joints high angle, planar, tight to open, weathered, rough to smooth. Coring times: 6-6 min/ft. [C3] Strong, slightly weathered, pinkish gray, medium grained GNEISS. Primary joints high angle, planar, tight to open, weathered, rough to smooth. Probably left core behind. Coring times: 6-7-7-8-5/4" min/ft.	215
	C-2		24	22	0	Bedrock		
20	C-3		51	28	22			
25							END OF BORING 23ft	210

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 15.8ft Rock: 7.2ft	NOTES: Augered to 1', then spun 4" casing through deck. Dropped casing to bottom of stream. Initially spun 4" casing 14' to 14.5', then incrementally roller bit and drove casing. Roller bit to 15.8'. Cored rock with high speed motor	Sheet 1 of 1
No. of Soil Samples: 0	No. of Core Runs: 3	SM-001-M REV. 1/02

Driller: R. Posa	Connecticut DOT Boring Report Format		Hole No.: S-4
Inspector: G. Jacobsen	Town: Wilton	Stat./Offset: 101+83/14 ft R	
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632842.5	
Start Date: 6-4-20	Route No.: Lovers Lane	Easting: 810793.9	
Finish Date: 6-4-20	Bridge No.: 04975	Surface Elevation: 235	

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: 12 ft 0 hrs

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0						Asphalt Fill	ASPHALT (3 in)	235
	S-1	16	24	23	10		Brown, c-f SAND and SILT, little gravel	
	S-2	9	10	50/3"			3 to 3.5 ft: Brown m-f GRAVEL, some c-f sand, little silt. 3.5 to 4.2 ft.: Yellow-brown SILT and f SAND	
5						Weathered Bedrock	Probable decomposed bedrock from 4.0 to 6.0 ft	230
						Bedrock		
	C-1						Strong, fresh, moderately fractured, pink and dark gray medium grained GNEISS. Foliation very thin, shallow dipping. Primary joints low angle, planar, tight, slightly weathered. Several vertical joints and cracks, some healed	
10							Coring times: 6-6-6-6 min/ft.	225
	C-2						Strong, fresh, moderately fractured, pink and dark gray medium grained GNEISS. Foliation very thin, shallow dipping. Primary joints low angle, planar, tight, slightly weathered. Several vertical joints and cracks, some healed	
15							Dark gray layer 14.1 to 14.9 ft. Coring times: 6-7-7-7 min/ft.	220
							END OF BORING 16ft	
20								215
25								210

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 4ft Rock: 12ft	NOTES: Used solid augers to 5 feet, then roller-bitted and drove casing to 6 ft.	Sheet 1 of 1
No. of Soil Samples: 2 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: R. Posa	Connecticut DOT Boring Report Format		Hole No.: S-5
Inspector: J. Herpich	Town: Wilton	Stat./Offset: 102+84/6.6 ft R	
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632935.1	
Start Date: 1-5-22	Route No.: Lovers Lane	Easting: 810826.3	
Finish Date: 1-5-22	Bridge No.: 04975	Surface Elevation: 234	

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: Not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0						Asphalt Fill	ASPHALT (5 in)		
	S-1	17	29	19	12		Top 9": Dark brown c-f SAND, some silt, trace f gravel; Bottom 9": Gray-brown c-f SAND and m-f GRAVEL, little silt		
	S-2	11	13	21	16		Brown c-f SAND, little SILT, little m-f gravel	230	
5	S-3	8	8	5	29		Top 6": Gray-brown clayey SILT, some m gravel, little c-f sand (moist); Bottom 6": Gray-brown c-m GRAVEL, some c-f sand, little silt		
	S-4	60 100/5"			11	8	Glacial Till	Grey c-m GRAVEL, little c-f sand	
								225	
10	S-5	50/1"			1	1	Bedrock	Gray pulverized rock	
	C-1				60	60	40	GRANITE, gray, white, and pink, medium grained, massive bedding, moderately fractured, fresh, very strong. Penetration rate (ft/min): 2,3,3,3,7	220
15									
	C-2				60	60	85	GRANITE, gray, white, and pink, medium grained, massive bedding, moderately fractured, fresh, very strong. Penetration rate (ft/min): 9,3,3,3,5	215
20									
								END OF BORING 21ft	
									210
25									

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 11ft Rock: 10ft	NOTES: Used solid augers to refusal at 11 feet, then drove 4-inch casing and cored. Auger grinding from 9 to 10 feet	Sheet 1 of 1
No. of Soil Samples: 5 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: R. Posa	Connecticut DOT Boring Report Format	Hole No.: S-6
Inspector: J. Herpich	Town: Wilton	Stat./Offset: 103+12.7/8.9 ft R
Engineer: Nathan Whetten	Project No.: 161-142	Northing: 632951
Start Date: 1-5-22	Route No.: Lovers Lane	Easting: 810850.2
Finish Date: 1-5-22	Bridge No.: 04975	Surface Elevation: 234.2

Project Description: Replacement of Lover's Lane over Comstock Brook

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type: NX
Hammer Wt.: 300lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: Not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)		
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)
0							Asphalt Fill	ASPHALT (5 in) Top 8": Brown c-f SAND, some silt, little m-f GRAVEL; Bottom 8": Brown c-f SAND, little f gravel, little silt	230	
	S-1	16	23	15	15	24	16			Glacial Till
5	S-2	50/1"				1	1		Gray pulverized rock	
								END OF BORING 6ft		
10										
15										
20										
25										

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
 Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

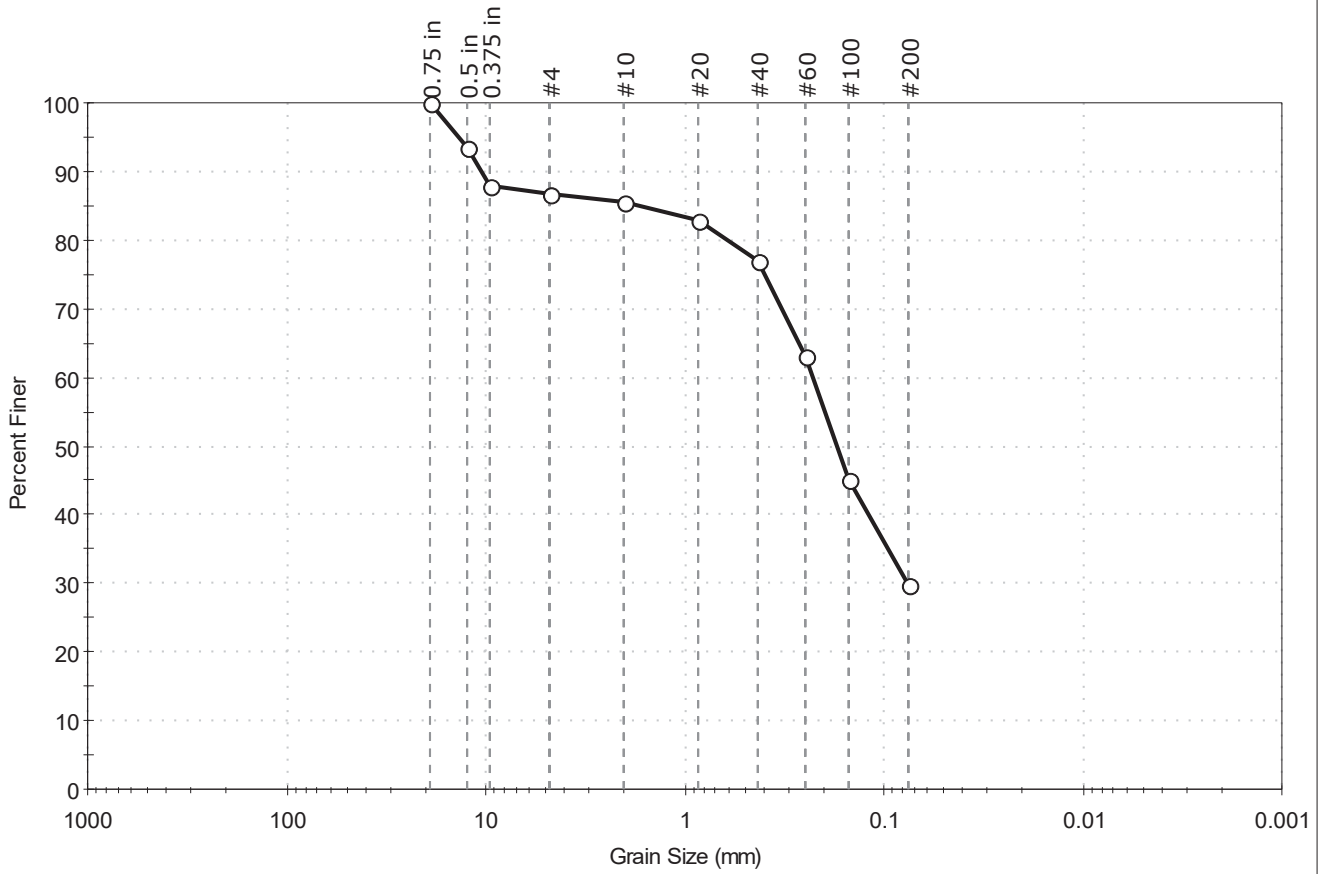
Total Penetration in Earth: 6ft Rock: 0ft	NOTES: Used solid augers to refusal at 6 feet Auger grinding from 3 to 6 feet	Sheet 1 of 1
No. of Soil Samples: 2 No. of Core Runs: 0		SM-001-M REV. 1/02

APPENDIX B
RESULTS OF LABORATORY TESTING



Client: Freeman Companies, LLC	Project No: GTX-311876
Project: Bridge 04975 Lover's Lane	
Location: Wilton, CT	
Boring ID: ---	Sample Type: bag
Sample ID: Grab-1	Test Date: 06/12/20
Depth: U/S left Bank	Test Id: 559759
Test Comment: ---	Tested By: ckg
Visual Description: Moist, dark gray silty sand	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	13.5	56.9	29.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	93		
0.375 in	9.50	88		
#4	4.75	87		
#10	2.00	86		
#20	0.85	83		
#40	0.42	77		
#60	0.25	63		
#100	0.15	45		
#200	0.075	30		

<u>Coefficients</u>	
D ₈₅ = 1.6599 mm	D ₃₀ = 0.0762 mm
D ₆₀ = 0.2286 mm	D ₁₅ = N/A
D ₅₀ = 0.1720 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

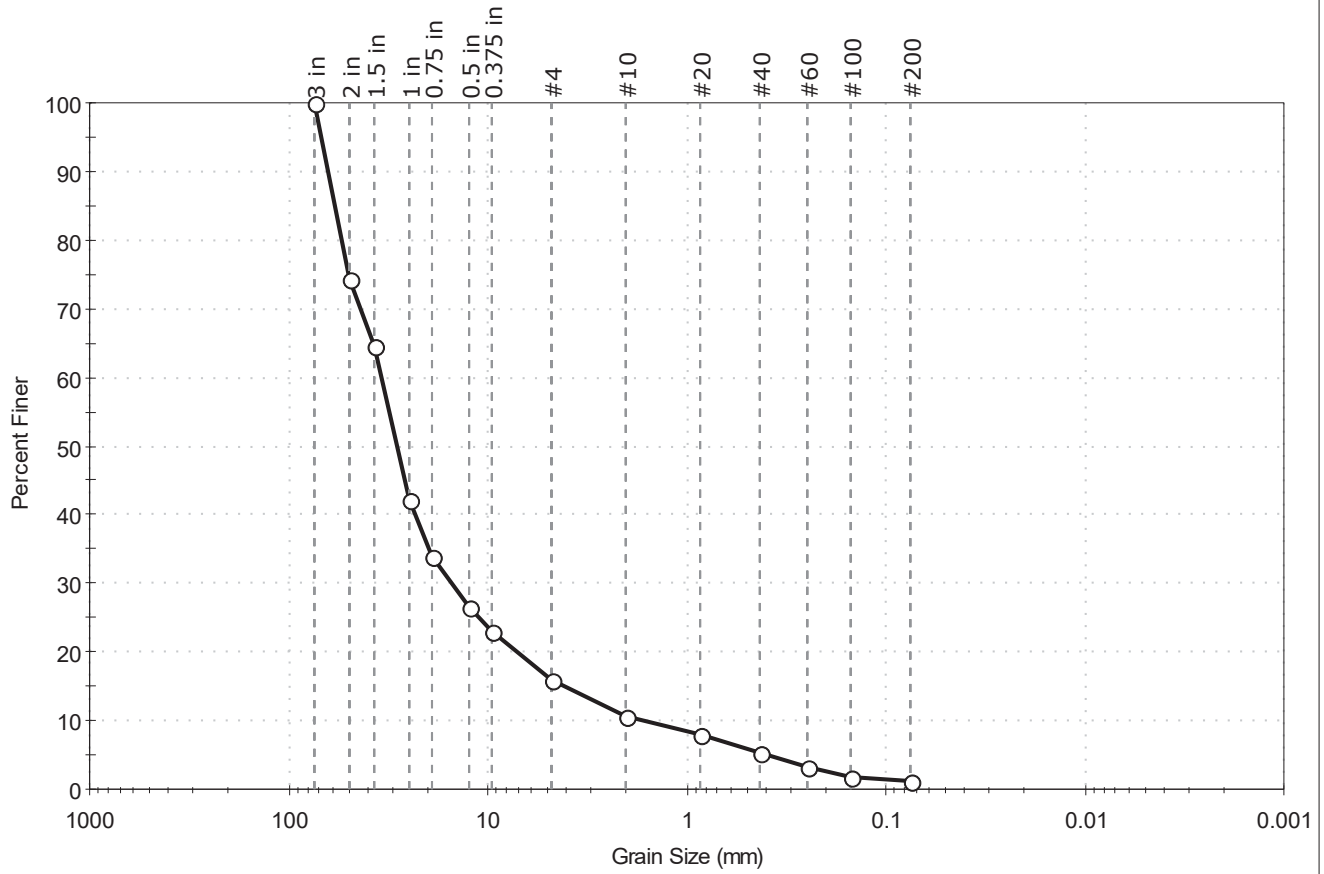
<u>Classification</u>	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client: Freeman Companies, LLC	Project No: GTX-311876
Project: Bridge 04975 Lover's Lane	
Location: Wilton, CT	
Boring ID: ---	Sample Type: bag
Sample ID: Grab-2	Test Date: 06/15/20
Depth: U/S Island	Test Id: 559760
Test Comment: ---	Tested By: ckg
Visual Description: Moist, very dark gray gravel	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	84.0	14.9	1.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3 in	75.00	100		
2 in	50.00	74		
1.5 in	37.50	65		
1 in	25.00	42		
0.75 in	19.00	34		
0.5 in	12.50	27		
0.375 in	9.50	23		
#4	4.75	16		
#10	2.00	10		
#20	0.85	8		
#40	0.42	5		
#60	0.25	3		
#100	0.15	2		
#200	0.075	1.1		

<u>Coefficients</u>	
D ₈₅ = 59.1150 mm	D ₃₀ = 15.1616 mm
D ₆₀ = 34.4878 mm	D ₁₅ = 4.0603 mm
D ₅₀ = 28.8127 mm	D ₁₀ = 1.7104 mm
C _u = 20.164	C _c = 3.897

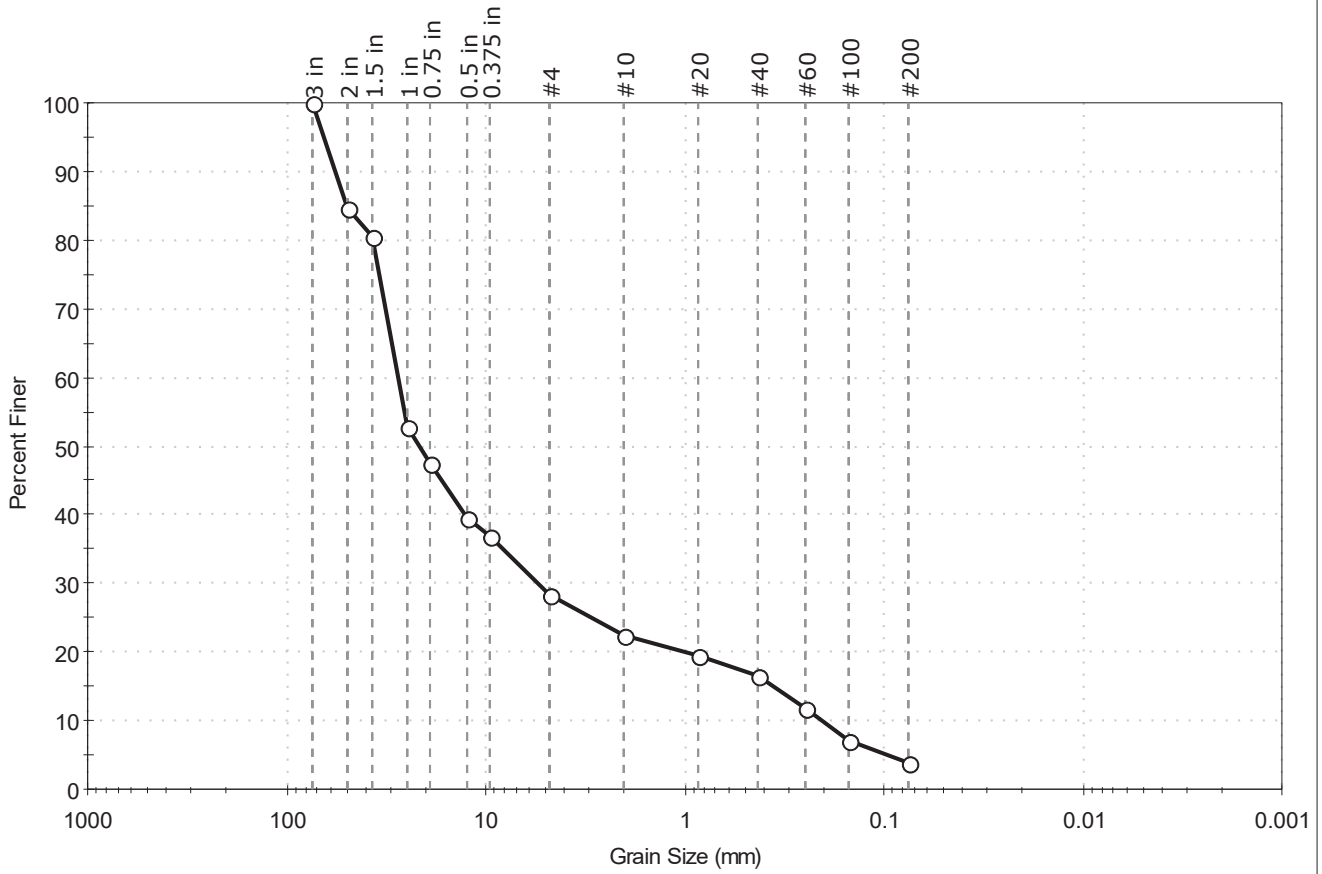
<u>Classification</u>	
<u>ASTM</u>	Poorly graded GRAVEL (GP)
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>	
Sand/Gravel Particle Shape : ANGULAR	
Sand/Gravel Hardness : HARD	



Client: Freeman Companies, LLC	Project No: GTX-311876
Project: Bridge 04975 Lover's Lane	
Location: Wilton, CT	
Boring ID: ---	Sample Type: bag
Sample ID: Grab-3	Test Date: 06/15/20
Depth: U/S Right Bank	Test Id: 559761
Test Comment: ---	Tested By: ckg
Visual Description: Moist, very dark gray gravel with sand	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	71.7	24.5	3.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3 in	75.00	100		
2 in	50.00	85		
1.5 in	37.50	81		
1 in	25.00	53		
0.75 in	19.00	48		
0.5 in	12.50	40		
0.375 in	9.50	37		
#4	4.75	28		
#10	2.00	22		
#20	0.85	20		
#40	0.42	16		
#60	0.25	12		
#100	0.15	7		
#200	0.075	3.8		

<u>Coefficients</u>	
D ₈₅ = 50.4791 mm	D ₃₀ = 5.4438 mm
D ₆₀ = 27.7591 mm	D ₁₅ = 0.3630 mm
D ₅₀ = 21.5972 mm	D ₁₀ = 0.2083 mm
C _u = 133.265	C _c = 5.125

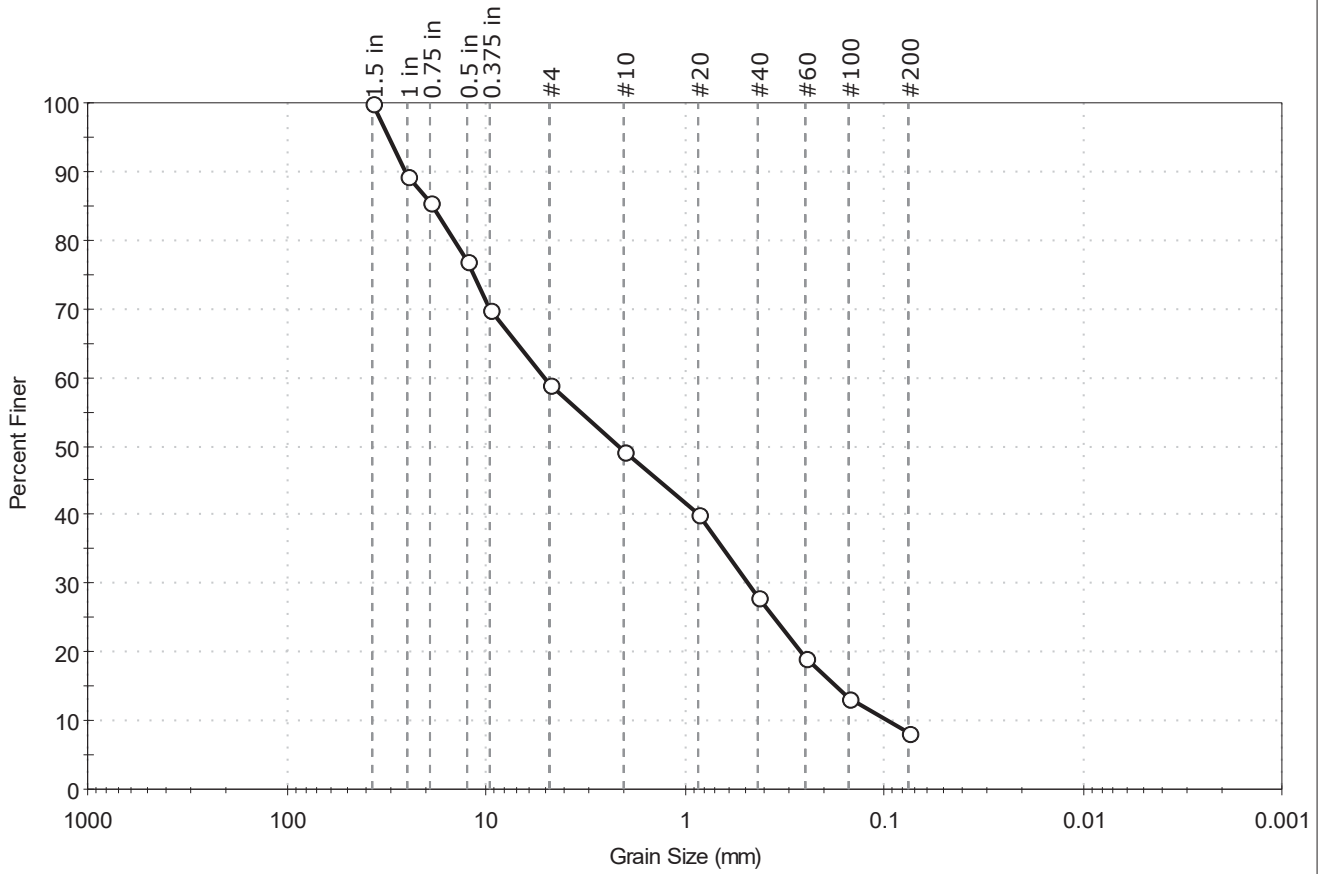
<u>Classification</u>	
<u>ASTM</u>	Poorly graded GRAVEL with Sand (GP)
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>	
Sand/Gravel Particle Shape : ANGULAR	
Sand/Gravel Hardness : HARD	



Client: Freeman Companies, LLC	Project No: GTX-311876
Project: Bridge 04975 Lover's Lane	
Location: Wilton, CT	
Boring ID: S-1	Sample Type: bag
Sample ID: S-1	Test Date: 06/12/20
Depth: 1-3	Test Id: 559755
Test Comment: ---	Tested By: ckg
Visual Description: Moist, dark olive brown sand with silt and gravel	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	40.9	50.8	8.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	89		
0.75 in	19.00	85		
0.5 in	12.50	77		
0.375 in	9.50	70		
#4	4.75	59		
#10	2.00	49		
#20	0.85	40		
#40	0.42	28		
#60	0.25	19		
#100	0.15	13		
#200	0.075	8.3		

<u>Coefficients</u>	
D ₈₅ = 18.5595 mm	D ₃₀ = 0.4777 mm
D ₆₀ = 5.0327 mm	D ₁₅ = 0.1726 mm
D ₅₀ = 2.1278 mm	D ₁₀ = 0.0944 mm
C _u = 53.312	C _c = 0.480

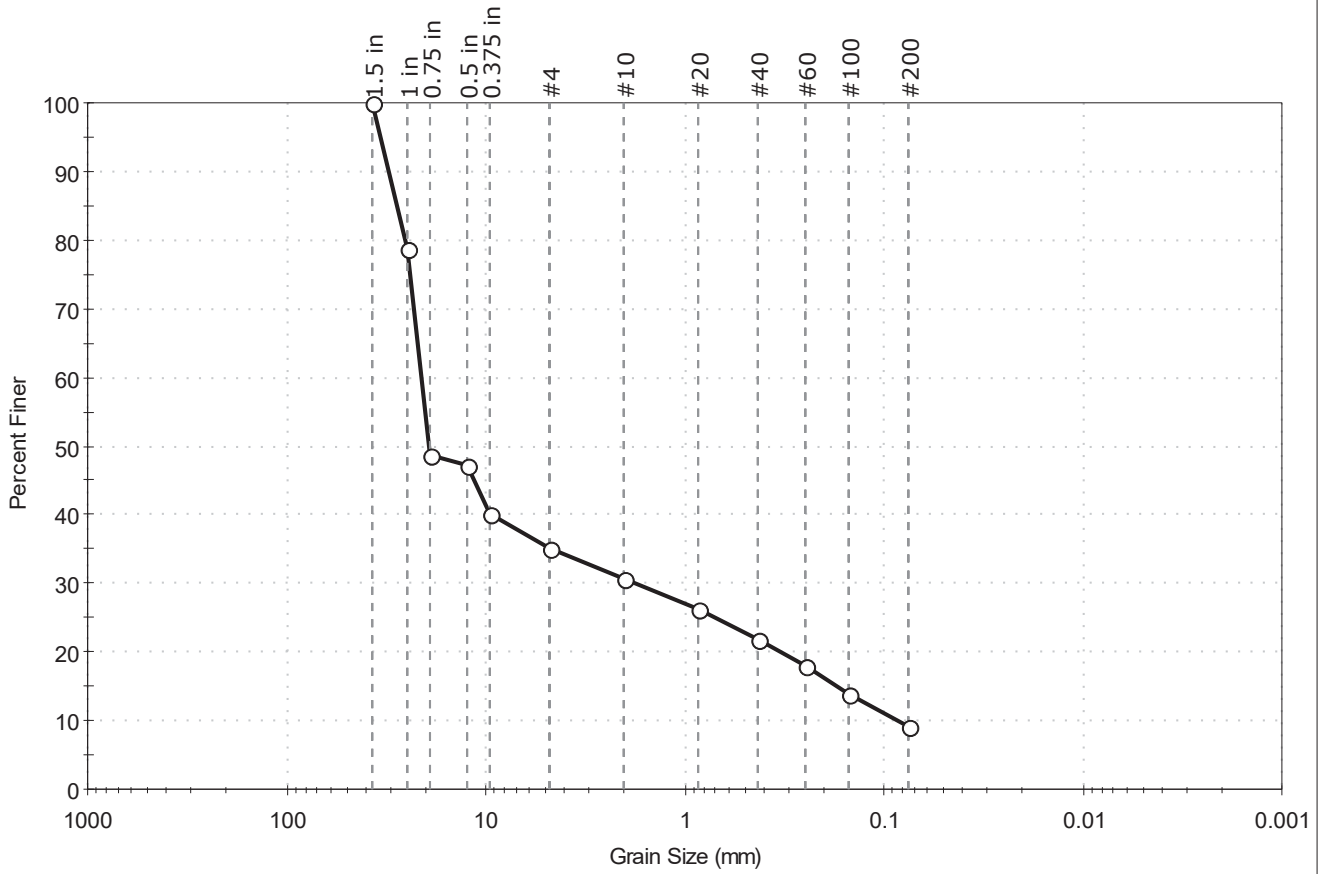
<u>Classification</u>	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Bridge 04975 Lover's Lane		
Location:	Wilton, CT	Project No:	GTX-311876
Boring ID:	S-2	Sample Type:	bag
Sample ID:	S-2	Test Date:	06/12/20
Depth :	5-7	Test Id:	559756
Test Comment:	---		
Visual Description:	Moist, dark gray gravel with silt and sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	65.0	25.8	9.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	79		
0.75 in	19.00	49		
0.5 in	12.50	47		
0.375 in	9.50	40		
#4	4.75	35		
#10	2.00	31		
#20	0.85	26		
#40	0.42	22		
#60	0.25	18		
#100	0.15	14		
#200	0.075	9.2		

<u>Coefficients</u>	
D ₈₅ = 28.1196 mm	D ₃₀ = 1.7259 mm
D ₆₀ = 21.0423 mm	D ₁₅ = 0.1708 mm
D ₅₀ = 19.2075 mm	D ₁₀ = 0.0843 mm
C _u = 249.612	C _c = 1.679

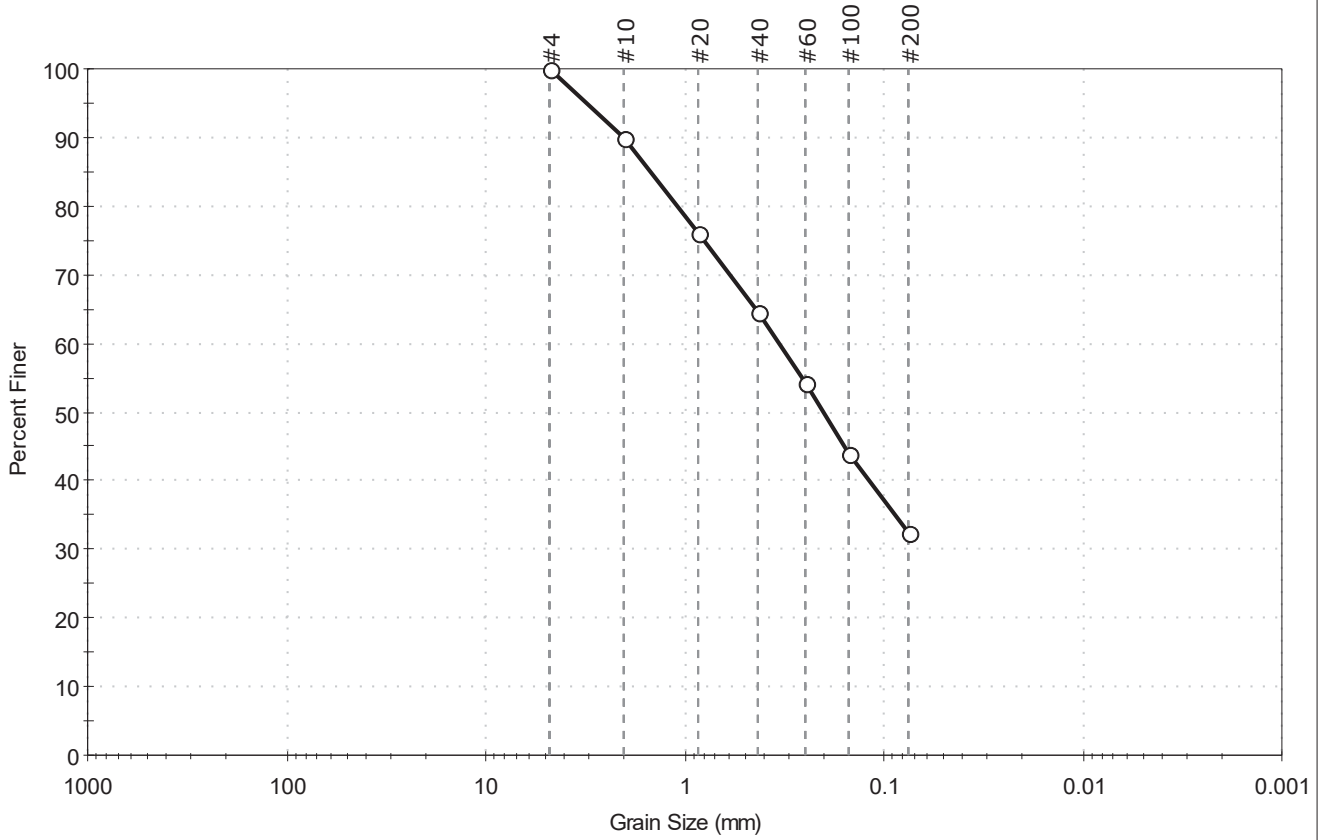
<u>Classification</u>	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client: Freeman Companies, LLC	Project No: GTX-311876
Project: Bridge 04975 Lover's Lane	
Location: Wilton, CT	
Boring ID: S-3	Sample Type: bag
Sample ID: S-1	Test Date: 06/12/20
Depth: 1-3	Test Id: 559757
Test Comment: ---	Tested By: ckg
Visual Description: Moist, dark yellowish brown silty sand	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	67.4	32.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	90		
#20	0.85	76		
#40	0.42	65		
#60	0.25	54		
#100	0.15	44		
#200	0.075	33		

<u>Coefficients</u>	
D ₈₅ = 1.4792 mm	D ₃₀ = N/A
D ₆₀ = 0.3349 mm	D ₁₅ = N/A
D ₅₀ = 0.2022 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

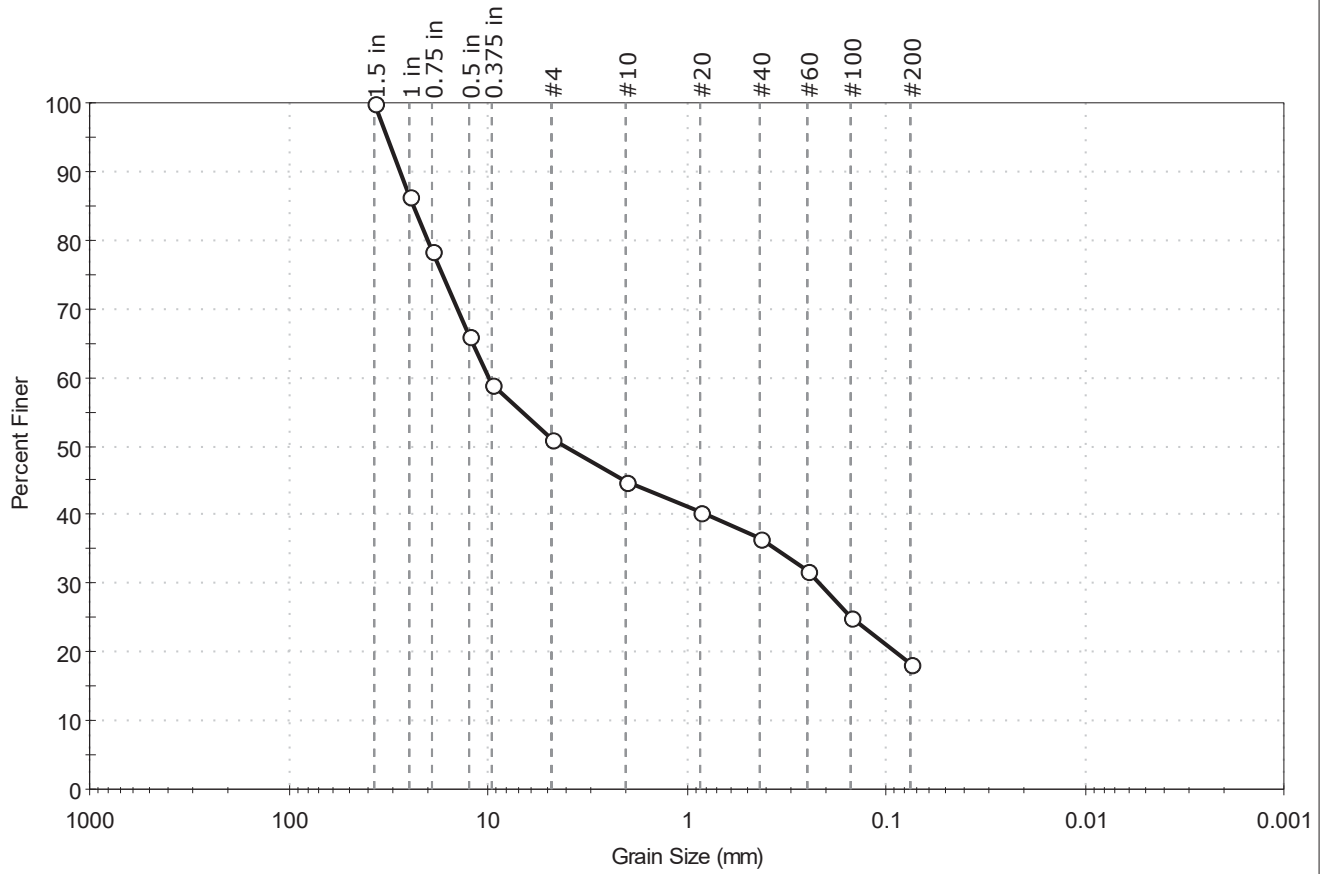
<u>Classification</u>	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client: Freeman Companies, LLC	Project No: GTX-311876
Project: Bridge 04975 Lover's Lane	
Location: Wilton, CT	
Boring ID: S-4	Sample Type: bag
Sample ID: S-2	Test Date: 06/12/20
Depth: 3-4.2	Test Id: 559758
Test Comment: ---	Tested By: ckg
Visual Description: Moist, brown silty gravel with sand	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	49.0	32.7	18.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	86		
0.75 in	19.00	79		
0.5 in	12.50	66		
0.375 in	9.50	59		
#4	4.75	51		
#10	2.00	45		
#20	0.85	41		
#40	0.42	37		
#60	0.25	32		
#100	0.15	25		
#200	0.075	18		

<u>Coefficients</u>	
D ₈₅ = 23.8266 mm	D ₃₀ = 0.2196 mm
D ₆₀ = 9.8738 mm	D ₁₅ = N/A
D ₅₀ = 4.1490 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

<u>Classification</u>	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Bridge 04975 Lover's Lane		
Location:	Wilton, CT	Project No:	GTX-311876
Boring ID:	---	Sample Type:	---
Sample ID:	---	Test Date:	06/12/20
Depth :	---	Tested By:	tlm
		Checked By:	smd
		Test Id:	559763

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

Boring ID	Sample Number	Depth	Bulk Density, pcf	Compressive strength, psi	Failure Type	Meets ASTM D4543	Note(s)
S-2	C-2	17.13-17.50 ft	163	19253	1	Yes	---
S-4	C-2	13.19-13.59 ft	166	18956	1	Yes	---

Notes: Density determined on core samples by measuring dimensions and weight and then calculating.
 All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.
 The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.
 Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure
 (See attached photographs)



Client:	Freeman Companies, LLC	Test Date:	6/12/2020
Project Name:	Bridge 04975 Lover's Lane	Tested By:	cmh
Project Location:	Wilton, CT	Checked By:	smd
GTX #:	311876		
Boring ID:	S-2		
Sample ID:	C-2		
Depth:	17.13-17.50 ft		
Visual Description:	See photographs		

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

BULK DENSITY				DEVIATION FROM STRAIGHTNESS (Procedure S1)			
	1	2	Average	Maximum gap between side of core and reference surface plate: Is the maximum gap \leq 0.02 in.? YES			
Specimen Length, in:	4.37	4.37	4.37	Maximum difference must be $<$ 0.020 in. Straightness Tolerance Met? YES			
Specimen Diameter, in:	1.99	1.99	1.99				
Specimen Mass, g:	581.7						
Bulk Density, lb/ft ³ :	163						
Length to Diameter Ratio:	2.2						
		Minimum Diameter Tolerance Met?	YES				
		Length to Diameter Ratio Tolerance Met?	YES				

END FLATNESS AND PARALLELISM (Procedure FP1)															
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00030	-0.00030	-0.00020	-0.00020	-0.00020	-0.00020	-0.00010	0.00000	0.00000	-0.00010	-0.00010	-0.00010	-0.00010	-0.00010	-0.00020
Diameter 2, in (rotated 90°)	0.00060	0.00060	0.00030	0.00030	0.00020	0.00010	0.00000	0.00000	-0.00020	-0.00030	-0.00040	-0.00050	-0.00070	-0.00080	-0.00090
	Difference between max and min readings, in: 0° = 0.00030 90° = 0.00150														
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00020	-0.00010	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00010
Diameter 2, in (rotated 90°)	0.00140	0.00060	0.00050	0.00050	0.00040	0.00030	0.00010	0.00000	0.00000	-0.00010	-0.00030	-0.00030	-0.00040	-0.00040	-0.00050
	Difference between max and min readings, in: 0° = 0.0002 90° = 0.0019 Maximum difference must be $<$ 0.0020 in. Difference = \pm 0.00095 Flatness Tolerance Met? YES														

	<p>DIAMETER 1</p> <p>End 1: Slope of Best Fit Line: 0.00010 Angle of Best Fit Line: 0.00557</p> <p>End 2: Slope of Best Fit Line: 0.00005 Angle of Best Fit Line: 0.00262</p> <p>Maximum Angular Difference: 0.00295</p> <p>Parallelism Tolerance Met? YES Spherically Seated</p> <hr/> <p>DIAMETER 2</p> <p>End 1: Slope of Best Fit Line: 0.00085 Angle of Best Fit Line: 0.04895</p> <p>End 2: Slope of Best Fit Line: 0.00086 Angle of Best Fit Line: 0.04911</p> <p>Maximum Angular Difference: 0.00016</p> <p>Parallelism Tolerance Met? YES Spherically Seated</p>
--	---

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)						<i>Maximum angle of departure must be \leq 0.25°</i>	
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?		
Diameter 1, in	0.00030	1.990	0.00015	0.009	YES		
Diameter 2, in (rotated 90°)	0.00150	1.990	0.00075	0.043	YES	Perpendicularity Tolerance Met? YES	
END 2							
Diameter 1, in	0.00020	1.990	0.00010	0.006	YES		
Diameter 2, in (rotated 90°)	0.00190	1.990	0.00095	0.055	YES		

Client:	Freeman Companies, LLC
Project Name:	Bridge 04975 Lover's Lane
Project Location:	Wilton, CT
GTX #:	311876
Test Date:	6/12/2020
Tested By:	cmh
Checked By:	smd
Boring ID:	S-2
Sample ID:	C-2
Depth, ft:	17.13-17.50



After cutting and grinding



After break



Client:	Freeman Companies, LLC
Project Name:	Bridge 04975 Lover's Lane
Project Location:	Wilton, CT
GTX #:	311876
Test Date:	6/12/2020
Tested By:	cmh
Checked By:	smd
Boring ID:	S-4
Sample ID:	C-2
Depth, ft:	13.19-13.59



After cutting and grinding



After break

NOTICE TO CONTRACTOR – ADHESIVE BONDED ANCHOR AND DOWEL INSTALLATION, INSPECTION AND TESTING REQUIREMENTS

The Contractor is hereby notified that all adhesive bonded anchors and dowels shall be installed by qualified installers. Personnel instructed and trained on the installation of the adhesive bonded anchors and dowels in accordance with the manufacturer's printed installation instructions (MPII) by the adhesive bonding material manufacturer shall be considered qualified installers.

Anchors and dowels that are installed in horizontally drilled holes subject to sustained tension shall be installed by personnel with current ACI Adhesive Anchor Installer Certification credentials.

The installation of all anchors and dowels with adhesive bonding material shall be inspected by a Contractor-hired inspector holding current ACI Post-Installed Anchor Inspector Certification credentials. The installation of any horizontally oriented anchors and dowels subject to sustained tension load shall be continuously inspected by a Contractor-hired inspector holding current ACI Post-Installed Anchor Inspector Certification credentials.

Anchors and dowels installed in this Contract shall be subject to field proof load testing by an independent third-party testing agency, as noted on the plans.

The characteristic bond strength of the adhesive bonding material shall meet or exceed the design characteristic bond stress value specified on the plans.

For complete requirements, see Section 6.10 "Drilling Holes and Bonding Anchors and Dowels" in Form 818.

ITEM #0406194A – JOINT AND CRACK SEALING OF BITUMINOUS CONCRETE PAVEMENT

Description: This work consists of furnishing and applying hot-applied asphalt crack sealer to bituminous concrete pavement joints and cracks. It shall be constructed in close conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer. Joint and Crack Sealing of Bituminous Concrete Pavement may be used in conjunction with other repair treatments including joint and crack filling or patching, in which case the sequence of treatments will be provided in the Plans or directed by the Engineer.

For the purposes of this document, the word “crack” includes all longitudinal (along the direction of travel) and transverse (perpendicular to the direction of travel) cracks and joints. All work specified for “crack(s)” herein shall apply to all types of cracks and joints unless otherwise specified.

Materials:

1. Crack Seal: The crack seal material shall be composed of a hot-applied asphalt meeting ASTM D6690 Type II requirements. The Contractor must submit to the Engineer all Material Safety Data Sheet documents from the material manufacturer prior to the commencement of work. During work progress, the Contractor must submit to the Engineer the manufacturer’s Material Certificate for compliance to ASTM D6690 Type II requirements for each batch or lot of material utilized on the Contract.
2. Optional Barrier Material – Backer Rod: The backer rod shall be a heat resistant material compatible with the crack sealant and acceptable to the manufacturer of the sealant. No bond or reaction shall occur between the sealant and the rod. It shall be of a non-water absorbent material and shall not melt or shrink when hot sealant is poured on it.

The backer rod shall have a maximum of 5% absorption when immersed in water for 24 hours with the ends sealed. The backer rod shall be of such a size that compression is required for installation in the crack, so that it maintains its position during the sealing operation. Backer rod shall be dry.

3. Optional Barrier Material – Hot Mix Asphalt (HMA): Any HMA placed in the bottom of a crack between 1.5 and 2 inches wide shall be HMA S0.25 Traffic Level 2 and shall meet all requirements of Section 4.06 - Bituminous Concrete.

The Contractor must submit to the Engineer all Material Safety Data Sheet documents from the material manufacturer(s) prior to the commencement of work. During work progress, the Contractor must submit to the Engineer the manufacturer’s Material Certificate for compliance to applicable specifications for each batch or lot of material utilized on the Contract.

Construction Methods: The crack sealing operation shall proceed in accordance with the requirements of the “Maintenance and Protection of Traffic” and “Prosecution and Progress” specifications.

1. Equipment: The equipment used by the Contractor shall include, but not be limited to, the following:
 - a. **Melter Applicator:** The unit shall consist of a boiler kettle equipped with pressure pump, hose, and applicator wand; the boiler kettle may be a combination melter and pressurized applicator of a double-boiler type with space between the inner and outer shells filled with heat transfer oil. Heat transfer oil shall have a flash point of not less than 600°F. The kettle shall include a temperature control indicator. The kettle shall be capable of maintaining the crack seal material at the manufacturer’s specified application temperature range. The kettle shall include an insulated applicator hose and application wand. The hose shall be equipped with a shutoff control. The kettle shall include a mechanical full sweep agitator to provide continuous blending. The unit shall be equipped with thermometers to monitor the material temperature and the heating oil temperature. The unit shall be equipped with thermostatic controls that allow the operator to regulate material temperature up to at least 425°F.
 - b. **Application Wand and Squeegee Applicator:** The material shall be applied with a wand followed by a squeegee applicator. The squeegee applicator shall be of commercial/industrial quality designed with a “U” shaped configuration. It shall be of a size adequate to strike off, flush with the surrounding pavement surface and without overflow around the sides, all crack seal material placed. This tool shall be either attached to the applicator wand or used separately as its own long handled tool.
 - c. **Hot Air Lance:** The unit shall be designed for cleaning and drying the pavement surface cracks. Minimum compressed air capacity shall be 100 psi. The compressed air emitted from the tip of the lance shall be capable of achieving a temperature of at least 1500°F.
 - d. **Vertically Mounted Power Driven Wire Brush:** This tool shall be used to remove any dirt, debris, or vegetation to the depths specified that cannot be removed by the hot air lance. It shall be of adequate size and power to remove all material from cracks as specified.
2. Weather Requirements: Work shall not be performed unless the pavement is dry. No frost, snow, ice, or standing water may be present on the roadway surface or within the cracks. The ambient temperature must be 40°F and rising during the field application operations for work to proceed.
3. Material Mixing Procedure: The prepackaged material shall be added to the melter applicator in the presence of the Engineer. It shall then be mixed and heated to the recommended application temperature. The crack seal material shall never exceed 400°F.

4. Determination of Cracks to be Sealed: The width and depth requirements for cracks to be sealed are as follows:

All crack width determinations shall be made by measuring the crack width flush at the surface of the pavement prior to being sealed. A straightedge shall be used whenever necessary to establish the location or limits of the flush surface of the pavement.

All cracks from $\frac{1}{8}$ inch up to 1.5 inches wide shall be prepared and sealed as stated below. Cracks that are between $\frac{1}{8}$ inch and 1.5 inches wide, but eventually taper in width below the minimum $\frac{1}{8}$ inch, shall also be prepared and sealed as stated below. Only cracks that are less than $\frac{1}{8}$ inch wide throughout their entire length shall be excluded.

Transverse cracks, where a portion of the crack (50% or less) exceeds a width of 1.5 inches, up to 2 inches, shall also be prepared and sealed as stated below.

All joints to be sealed that are raveled (loss of the pavement surface material) shall be at least $\frac{1}{2}$ inch in depth at the joint's deepest point. The minimum width of a raveled joint must be $\frac{1}{2}$ inch. The maximum width of a raveled joint to be sealed is 3 inches.

Any cracks exceeding the width and depth requirements specified above shall be repaired using separate items.

5. Crack Preparation: Cracks to be sealed shall be treated with a hot air lance prior to application of the crack seal material. Two (2) passes minimum shall be made with the hot air lance. The hot air lance operation shall proceed at a rate no greater than 120 feet per minute. There shall be no more than 10 minutes between the second hot air lance treatment and the material application.

The use of the hot air lance is not intended to heat the crack. It is to be used to blow all debris from the crack to the depths specified below and to remove any latent moisture from the crack until the inside of the crack is completely dry as determined by the Engineer. "Moisture" does not include standing water. The hot air lance is not to be used to boil off or blow standing water from the bottom of a crack. If standing water is present in the bottom of any crack, the sealing operation shall be postponed until such time that the standing water evaporates naturally. The Contractor may use compressed, oil-free air (not heated) to blow standing water from a crack to help accelerate the natural evaporation process. If standing water remains after using compressed air, the crack shall be allowed to dry naturally until remaining standing water evaporates. The hot air lance shall be used after visible water has evaporated. If a crack is already completely dry as determined by the Engineer, the hot air lance shall be operated at its lowest temperature possible.

The hot air lance is to be used to blow all debris from cracks (not including raveled joints) to a depth of at least $\frac{3}{4}$ inch for cracks between $\frac{1}{8}$ inch and $\frac{3}{4}$ inch wide, and to a depth of 1.25 inches for cracks between $\frac{3}{4}$ inch and 2 inches wide. The hot air lance shall be used to blow

all debris from raveled joints to a depth of 1 inch or the full depth of the joint, whichever is smaller.

In the event that cracks are packed tightly with debris, dirt, vegetation, or other material, except previously placed sealant or filler, the Contractor shall use a vertically mounted power driven wire brush to remove all material and burnish the sides of the crack to the depths specified above. Cracks treated with the power driven wire brush shall subsequently be treated with a hot air lance as described in this section. The use of both the power driven wire brush and the hot air lance shall result in the complete removal of all material in the crack (except previously placed sealant or filler) to the depths specified above such that the sides of the crack are completely free and clean of any debris and moisture.

In the event that cracks have depths greater than 2 inches below the pavement surface, the Contractor may place a barrier composed of backer rod as specified herein. The backer rod shall be placed in a manner leaving 1.25 inches below the elevation of the pavement surface for crack seal material. Use of backer rod will not be allowed for cracks wider than 1.5 inches or less than ½ inch wide. For cracks between 1.5 and 2 inches wide, HMA S0.25 Traffic Level 2 may be placed in the bottom of the prepared crack. HMA shall be placed and compacted with a steel T-bar approved by the Engineer in a manner leaving 1.25 inches below the elevation of the pavement surface for crack seal material.

6. Crack Sealing: As soon as cracks have been prepared, they shall be filled to refusal along their entire length with the crack sealant material. The treatment material shall be maintained at the manufacturer's specified/recommended application temperature range at all times. The sealing operation shall be suspended if the temperature of the crack seal material falls outside the specified temperature range and shall remain suspended until the crack seal material is brought within the specified temperature range. Sealed cracks are to be squeegeed immediately following application of the crack seal material, striking excess sealer flat to the adjacent pavement surface. There shall be no build-up of treatment material above or adjacent to the crack at any time. If the initial application of crack sealant material fails to fill the crack or shrinks upon cooling such that there is a depression formed of at least ¼ inch or greater, a second application of sealant shall be placed over the first application.
7. Protection of Sealed Cracks: Traffic shall not be permitted on the pavement until the crack seal material is set so that the material does not track and is not deformed or pulled out by tires. If the work under this item is being performed prior to placing a hot mix overlay or other surface treatment, a detackifier or blotting agent will not be allowed. If work under this item is not followed by placement of an overlay of any kind, a detackifier or blotting agent may be used. If a detackifier or blotting agent is used, it shall be one recommended by the supplier of the crack seal material and shall be used as recommended by the supplier, except that no paper, cotton, or other organic materials shall be allowed. Information on the type and usage of a detackifier or blotting agent shall be presented to the Engineer for their written acceptance prior to use.

8. Removal and Disposal of Material: All debris generated from the operations described above shall be removed from the roadway by the Contractor.

Treatment material remaining in the Contractor's kettle at the close of the daily work session shall be discarded. At no time shall treatment material be re-heated for use in subsequent crack sealing applications unless permitted by the Engineer following a review of specific circumstances.

All debris and surplus treatment material shall be properly disposed in accordance with Article 1.10.03 and State of Connecticut law.

9. Acceptance of Work: When work is complete, an inspection shall be scheduled with the Engineer. The Engineer will note all deficiencies including, but not limited to, areas exhibiting adhesion failure, cohesion failure, tracking of sealant material, and missed cracks. Work identified by the Engineer as not acceptable shall be repaired at the Contractor's expense. The Contractor shall notify the Engineer upon completion of any corrective work performed.

Method of Measurement: This work will be measured by the total number of linear feet of cracks sealed as indicated in the Contract plans and as measured, verified, and accepted by the Engineer.

Basis of Payment: This work will be paid for at the Contract unit price per linear foot for "Joint and Crack Sealing of Bituminous Concrete Pavement" complete and accepted in place. The price shall include all submittals, materials, equipment, tools, and labor incidental thereto. No payment will be made to the Contractor prior to submittal of required documents.

Pay Item	Pay Unit
Joint and Crack Sealing of Bituminous Concrete Pavement	l.f.

ITEM #0603233A - GALVANIZING STRUCTURAL STEEL (SITE NO. 1)

Description: Work under this item shall consist of structural steel, the surface preparation, galvanizing, shipping and storage, and installation of structural steel members and components to support masonry facing as shown on the plans, as directed by the Engineer and in accordance with these specifications.

Materials: All new structural steel shall conform to M.06.02 and M.06.03 prior to galvanizing.

Certified Test Report and Materials Certificate: Submit a Certified Test Report for the molten zinc material composition used and a Materials Certificate to confirm that the hot-dip galvanized coating meets or exceeds the specified requirements of ASTM A123.

Construction Methods:

Submittals: A Quality Control Plan shall be submitted no later than 30 days prior to the start of work and shall outline procedures to assure compliance with ASTM A123.

Notification: Contact the Division of Materials Testing at DOT.Steel@ct.gov a minimum of 72 hours prior to the start of work. The notification shall include the name and location of the facility where galvanizing will be performed. No materials shall be galvanized prior to this notification, and any work performed prior to this notification will not be accepted.

Fabricator Responsibilities:

1. Where construction requires matching specific pieces, piece marks with metal tags shall be used to ensure identification of members after galvanizing.
2. The Contractor shall consult with the Galvanizer to ensure proper removal of grease, paint, and other deleterious materials prior to galvanizing.
3. Bolt holes for field splices shall be drilled full size or sub-drilled and reamed to size. Full sized punched bolt holes are not allowed.
4. When required, the Fabricator shall provide venting and drainage for galvanizing. The number, size and location of vent and drain holes shall be coordinated with the Galvanizer prior to the submission of the Structural Steel shop drawings. Edges of holes shall be deburred and uniform and all sharp edges shall be broken. Torch cutting of holes shall be strictly prohibited.

Structural Steel Preparation:

1. Prior to galvanizing, all holes shall be deburred and all fins, scabs, or other surface/edge anomalies shall be ground or repaired as specified in ASTM A6.
2. If rust, dirt, oil, grease, or other foreign substances have accumulated prior to galvanizing, steel surfaces shall be cleaned.
3. Special attention shall be given to the cleaning of corners and reentrant angles.
4. Any surfaces that will receive field-installed stud shear connectors shall not be galvanized.
5. The following surfaces of bearings shall not be galvanized: stainless steel surfaces, surfaces that will be machined, and surfaces that have PTFE, elastomer, or stainless steel bonded to

them.

Application of Hot Dip Galvanized Coating:

1. Before hot dip galvanizing, the galvanizing tanks shall be cleaned to remove surface and bottom contamination.
2. Steel members, fabrications, and assemblies shall be galvanized by the hot dip process in the shop in accordance with ASTM A123.
3. The structural steel members and components shall be single dip hot dip galvanized by completely submerging them in the galvanizing tank.
4. Double dipping of members or components shall not be permitted without approval from the Engineer.
5. All steel shall be safeguarded against embrittlement in accordance with ASTM A143.
6. All galvanized steel work shall be handled in such manner as to avoid any mechanical damage to minimize distortion in accordance with ASTM A384.
7. All bolt holes shall be reamed or drilled to their specific diameters after galvanizing. All bolts shall be installed after galvanizing.

Hot Dip Galvanizing Coating Requirements:

1. Coating weight, surface finish, appearance, and adhesion shall conform to the requirements of ASTM A385 and ASTM A123.
2. Any high spots of zinc coating left in the galvanizing process in areas that are to be field connected, such as metal drip lines or rough edges, shall be removed by cleaning as specified in SSPC-SP2 (Hand Tool Cleaning) or SSPC-SP3 (Power Tool Cleaning). The zinc shall be removed until it is level with the surrounding area, leaving at least the minimum required zinc thickness.
3. Any connection designated slip critical Class C, unless otherwise directed by the Engineer, shall have a maximum thickness of 15 mils per surface of each element incorporated into the faying surface area. If thickness readings above 15 mils are found in these areas, a written repair procedure shall be submitted and approved by the Engineer prior to any repair work being performed.
4. Galvanizing shall be free from uncoated areas, blisters, flux deposits, acid and black spots, and dross inclusions. Lumps, projections, globules, or heavy deposits of zinc will not be permitted. All holes shall be clean and free of excess zinc.
5. Galvanizing shall be uniform in thickness and appearance.

Testing and Inspection of Galvanized Coating:

1. Tests for coating thickness of the galvanized coating shall be performed by the methods in ASTM A123-8. The coating thickness shall meet the requirements outlined in ASTM A123-6 in the tables provided.
2. The material shall be inspected in accordance with ASTM A123-9.
3. The final acceptance of the galvanized coating shall be in accordance with the Connecticut Department of Transportation *Standard Specifications*.
4. The Department reserves the right to reject material based on aesthetics.

Repair of Hot Dip Galvanized Coating:

1. Surfaces with inadequate zinc thickness shall be repaired in the shop according to ASTM

A780 and ASTM A123, with the exception that only brush applied flat, light grey zinc rich coating shall be permitted. No aerosol products shall be permitted for use.

2. Surfaces of galvanized steel that are damaged after the galvanizing operation shall be repaired in accordance with ASTM A780 whenever damage exceeds 0.1875 inch in width and/or 4 inches in length.
3. Damage that occurs in the shop shall be repaired in the shop.
4. Damage that occurs during transport or in the field shall be submitted and reviewed by the Engineer to determine the repair requirements.

Construction Requirements: If white rust is visible on the contact surfaces for any field connection, the steel surface shall be hand wire brush or cleaned per SSPC-SP7 (Brush-Off Blast Cleaning). Power wire brushing is not allowed.

Shipping and Storage:

1. The members and components shall be handled so that after galvanizing they will not freeze together on cooling.
2. The galvanized members and components shall be stored, at the Fabricator, Galvanizer and at the construction Site, off the ground, with adequate spacers to promote ventilation between pieces and at a slight inclination to promote drainage to prevent wet storage stains. It shall be kept free from dirt, grease and other contaminants and shall be reasonably protected from corrosion.

Method of Measurement: This item, being paid for on a lump sum basis, will not be measured for payment.

Basis of Payment: This work will be paid for at the Contract lump sum price for "Galvanizing Structural Steel (Site No. 1)," complete and accepted, which price shall include structural steel, all materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
Galvanizing Structural Steel (Site No. 1)	l.s.

ITEM #0910090A - STEEL-BACKED TIMBER GUIDERAIL – TYPE A

ITEM #0910091A – STEEL-BACKED TIMBER GUIDERAIL – TERMINAL SECTION

ITEM #0910092A – STEEL-BACKED TIMBER GUIDERAIL – BRIDGE ATTACHMENT

Description: Work under this item shall consist of a single steel-backed timber rail element fastened to steel posts and the appropriate attachment at bridge parapets, barrier walls, and terminal ends as shown on the plans. It shall be erected in the locations sited and fabricated in conformity with the designations, dimensions and details shown on the plans or as ordered by the engineer.

Materials:

1. **Steel:** All steel posts, back-up rails, splice plates and channel rub rails which are to be used as “Weathering Steel”, shall meet the requirements of ASTM A588. The fabricator shall notify the manufacturer that it is “Weathering Steel” (structural steel for use in bare, unpainted applications) and that the steel shall not be marked with paint or steel die stamped, but identification shall be stenciled with permanent ink. The dimensions of each component shall conform to the plans and ASTM A6. All steel posts shall be galvanized after fabrication to meet the requirements of ASTM A123 and conform to the galvanizing limits and tolerances shown on the plans. A single ¾” diameter hole may be drilled 2” from the top of each post, in the center of the web, to facilitate the galvanizing process on the bottom of all posts. Any back-up rails, splice plates or structural tees that will come into contact with the ground shall be hot-dipped galvanized after fabrication in accordance with ASTM A123.
2. **Timber:** All timber rail and block-out components shall conform with the following:
 - a) Commercial lumber grade No. 1 or better after treatment;
 - b) AASHTO M 168;
 - c) Minimum stress rating of 1350 psi
 - d) Rough sawn (non-planed) or S4S (surface four side) Southern Yellow Pine or Douglas Fir- Larch with nominal dimensions as indicated on the plans. Variations in the size of any dimension shall not be more than $\pm \frac{1}{4}$ ”
 - e) All timber components shall be pressure treated with CCA or ACZA depending on species supplied conforming to AWWA Standard P5 to a minimum net retention of 0.60lb/cubic foot in the assay zone in accordance with AWWA Standard C14.
 - f) All timber components shall be fabricated (including but not necessarily limited to cutting, drilling, dapping and chamfering) prior to treatment.
 - g) All timber components shall be free of excess preservative and solvent at the conclusion of the treating process. Post treatment cleaning shall be by expansion bath or steaming in accordance with AWWA Standard C2;

- h) Kiln or air dried to a maximum moisture content of 25% after treatment (KDAT - 25);
- i) Grade-marked after treatment by an agency certified by the American Lumber Standard Committee (ALSC).

3. Fasteners:

Guiderail Type A and Bridge Attachment:

Round head bolts shall be manufactured in accordance with the sizes designated on the plans, the geometric specifications included in ANSI B18.5.1.2.2 and the material specifications for ASTM A588 steel. All round head bolts shall be marked with the manufactures symbol and A588. Hex Lag Screws shall be manufactured in accordance with ASTM A307 Grade A specifications. All Hex Lag Screws shall be hot-dipped galvanized in accordance with ASTM A153 Class C.

Terminal Section:

Anchor bolts shall conform to ASTM A449. The nuts and washers for anchor bolts shall conform to ASTM A563, Grade B. Round head bolts shall be manufactured in accordance with the sizes designated on the plans, the geometric specifications included in ANSI B18.5.1.2.2 and the material specifications for ASTM A307 steel. All round head bolts shall be marked with the manufactures symbol and A307. Rock anchors shall be manufactured in accordance with the sizes designated on the plans and the specifications for ASTM A307 steel. Hex lag screws shall be manufactured in accordance with the sizes designated on the plans and the specifications for ASTM A307, Grade-A steel. All anchor bolts, round head bolts, rock anchors and hex lag screws shall be hot-dipped galvanized in accordance with ASTM A 153 Class C. Unless otherwise noted on the plans, all other fasteners shall conform to the requirements of M.10.02.9.

- 4. Concrete for the concrete anchors shall be Class PCC03360 and shall conform to the requirements of Article M.03.01.

Construction Methods: The steel posts shall be driven. The Contractor shall use suitable caps and equipment to prevent damage to the posts during driving. Where rock or boulders are encountered in driving the posts, the material shall be removed so as to make a hole of sufficient size to permit the setting of the post. The hole shall then be backfilled and thoroughly compacted before the driving of the posts.

The Contractor is cautioned that buried underground utilities, which may be energized, may be present within the Project limits.

The posts shall be located as shown on the plans, set plumb and in alignment with the rail or rail treatments. Where required, the back-up rails, block-outs, and rail elements shall then be erected to produce a smooth, continuous rail as shown on the plans.

Whenever steel-backed timber guiderail or rail treatments are being constructed adjacent to areas open to traffic, the Contractor shall complete the installation to and including the designed terminal treatment at the close of each day's work.

On long runs or other locations when it is not practical to complete the installation up to and including the designed terminal treatment by the end of the workday, the Contractor shall use temporary methods for terminating the steel-backed timber so as to minimize any hazard caused by leaving the end of the beam rail exposed to traffic. Temporary methods for terminating the beam rail shall include lowering the rail end to the ground and providing adequate anchorage of the rail end by bolting, securing, burying, etc.

The Contractor shall submit to the Engineer for approval details of his proposed methods for the temporary terminal treatment of the end section. No work shall be performed adjacent to the areas open to traffic until approval is given.

The Contractor shall be required to furnish extra length posts at transition areas or where field conditions warrant. These posts shall be of such length that the minimum depth in the ground, as shown on the plans, is maintained.

Before final erection, all galvanized elements which have been cut or worked so as to destroy the zinc coating and cause the base metal to be exposed shall have the exposed base metal thoroughly cleaned and brush coated with zinc rich touch up material.

Method of Measurement:

1. Steel-Backed Timber Guiderail – Type A: The length of steel-backed timber guiderail measured for payment will be the number of linear feet of accepted rail installed, measured along the top of rail between centers of end posts in each continuous section.

2. Steel-Backed Timber Guiderail – Terminal Section: Terminal section will be measured for payment by the number of each Terminal Section installed and accepted in accordance with the “Pay Limit” shown on the plans.

3. Steel-Backed Timber Guiderail – Bridge Attachment: Bridge attachment will be measured for payment by the number of each installed and accepted in accordance with the “Pay Limit” shown on the plans.

Basis of Payment:

1. Steel-Backed Timber Guiderail – Type A: This work will be paid for at the Contract unit price per linear foot for “Steel-Backed Timber Guiderail – Type A”, complete in place. Prices shall include all materials, posts of all lengths, fittings, back-up rail, posts, delineators, equipment, tools, removal and disposal of surplus material, and labor incidental to the installation of the rail.

2. Steel-Backed Timber Guiderail – Terminal Section: This work will be paid for at the Contract unit price for each “Steel-Backed Timber Guiderail – Terminal Section”, complete in place including all materials equipment, fittings, back-up rails, posts, anchor bolts, attachment brackets, drilling and grouting, chemical anchoring material, delineators, equipment, removal

and disposal of surplus material, tools, incidental thereto.

3. Steel-Backed Timber Guiderail – Bridge Attachment: This work will be paid for at the Contract unit price for each bridge attachment furnished and installed. The prices shall include all materials, drilling for attachment to concrete, either preset anchor bolts, pipe sleeves and through bolts, or anchor bolts to be bonded into drilled holes, removal and disposal of surplus material, equipment, tools, and labor incidental to the installation of the bridge attachment.

4. General: Drilling or removal of rock or boulders and backfilling with suitable material when required for the installation of posts, and approved by the Engineer, will be paid for in accordance with Article 1.04.05, unless an item for the removal of rock appears in the contract.

Payment for temporary terminations for timber guiderail will not be made but will be included in the general cost of the work.

Pay Item:

Pay Unit:

Steel-Backed Timber Guiderail – Type A	l.f
Steel-Backed Timber Guiderail – Terminal Section	ea.
Steel-Backed Timber Guiderail – Bridge Attachment	ea.

**TOWN OF WILTON, CT
SCHEDULE OF PRICES
FOR THE CONSTRUCTION OF**

**STATE PROJECT NO. 0161-0142, FAP # 6161(008)CN
REPLACEMENT OF BRIDGE NO. 04975
LOVERS LANE OVER COMSTOCK BROOK
IN THE TOWN OF WILTON**

DATE OF
BID OPENING **December 21, 2022**

TIME: **10:00 A.M. NO BIDS WILL BE ACCEPTED AFTER 10:00 A.M. "NO EXCEPTIONS"**

Note: The bidder shall fill in, under the column "Unit Prices Bid," the unit prices, written in words and in numbers, for which he proposes to perform the various items of work called for, and under the column headed "Amount," the amount of each of the items at the unit price bid. After the proposal is opened and read, the quantities will be extended and totaled in accordance with the written bid prices and the bid will be verified or corrected.

Item Number	Items	Unit	Approximate Quantities	Unit Prices Bid		Amount (Figures)
				Figures	Writing	
0020903A	LEAD COMPLIANCE FOR MISCELLANEOUS EXTERIOR TASKS	L.S.	1			
0202216A	EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL	C.Y.	58			
0201001A	CLEARING AND GRUBBING	L.S.	1			
0201501A	RESET MAILBOX	EA.	2			
0202000	EARTH EXCAVATION	C.Y.	300			
0202100	ROCK EXCAVATION	C.Y.	14			
0202529	CUT BITUMINOUS CONCRETE PAVEMENT	L.F.	70			
0203202	STRUCTURE EXCAVATION - EARTH (EXCLUDING COFFERDAM AND DEWATERING)	C.Y.	496			
0203304	STRUCTURE EXCAVATION - ROCK (EXCLUDING COFFERDAM AND DEWATERING)	C.Y.	95			
0204001	COFFERDAM AND DEWATERING	L.F.	507			
0209001	FORMATION OF SUBGRADE	S.Y.	630			
0211000	ANTI-TRACKING PAD	S.Y.	25			
0213100	GRANULAR FILL	C.Y.	16			
0216000	PERVIOUS STRUCTURE BACKFILL	C.Y.	567			
0216011A	FLOWABLE FILL	C.Y.	109			
0219001	SEDIMENTATION CONTROL SYSTEM	L.F.	380			
0219011A	SEDIMENT CONTROL SYSTEM AT CATCH BASIN	EA.	8			
0286001.10	ROCK IN DRAINAGE TRENCH EXCAVATION 0'-10' DEEP	C.Y.	23			
0304002	PROCESSED AGGREGATE BASE	C.Y.	160			
0305001	PROCESSED AGGREGATE	C.Y.	25			
0406171	HMA S0.5	TON	102			
0406172	HMA S0.375	TON	110			
0406173	HMA S0.25	TON	7			
0406194A	JOINT AND CRACK SEALING OF BITUMINOUS CONCRETE PAVEMENT	L.F.	85			
0406236	MATERIAL FOR TACK COAT	GAL	85			
0406999A	ASPHALT ADJUSTMENT COST (ESTIMATED COST)	EST	1	\$5,000.00	Five Thousand Dollars and Zero Cents	\$5,000
0502195A	TEMPORARY BRIDGE	L.S.	1			
0503001	REMOVAL OF SUPERSTRUCTURE	L.S.	1			
0514202	PRESTRESSED DECK UNITS (3'-0" X 1'-3")	L.F.	134			
0514222	PRESTRESSED DECK UNITS (4'-0" X 1'-3")	L.F.	179			
0520036A	ASPHALTIC PLUG EXPANSION JOINT SYSTEM	C.F.	45			
0520041A	PREFORMED JOINT SEAL	L.F.	142			
0521021A	STEEL-LAMINATED ELASTOMERIC BEARINGS	C.I.	8,463			
0586002.10	TYPE 'C' CATCH BASIN (4' SUMP) - 0' - 10' DEEP	EA.	4			
0586041.10	TYPE 'C-L' CATCH BASIN (4' SUMP) - 0' - 10' DEEP	EA.	1			
0586041.10	TYPE 'C-L' CATCH BASIN (4' SUMP) - 0' - 10' DEEP	EA.	1			
0586051.10A	SPECIAL TYPE 'C-L' CATCH BASIN DOUBLE GRATE TYPE 2 (4' SUMP) - 0' - 10' DEEP	EA.	1			
0586790.10	REMOVE DRAINAGE STRUCTURE - 0' - 10' DEEP	EA.	1			
0601062	FOOTING CONCRETE	C.Y.	141			
0601064	ABUTMENT AND WALL CONCRETE	C.Y.	155			

Kindly insert here the total amount of your Bid \$ _____
It is understood that the unit prices shall govern in case of discrepancy between the unit-prices and this amount.
This bid includes addenda no.: 2

TOWN OF WILTON, CT
STATE PROJECT NO. 0161-0142, FAP # 6161(008)CN
FOR THE CONSTRUCTION OF

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 BID OPENING **December 21, 2022**

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Note: The bidder shall fill in, under the column "Unit Prices Bid," the unit prices, written in words and in numbers, for which he proposes to perform the various items of work called for, and under the column headed "Amount," the amount of each of the items at the unit price bid. After the proposal is opened and read, the quantities will be extended and totaled in accordance with the written bid prices and the bid will be verified or corrected.

Item Number	Items	Unit	Approximate Quantities	Unit Prices Bid		Amount (Figures)
				Figures	Writing	
0601118	BRIDGE DECK CONCRETE	C.Y.	33			
0601121	PARAPET CONCRETE	L.F.	88			
0601123	APPROACH SLAB CONCRETE	C.Y.	37			
0601640	1" CLOSED CELL ELASTOMER	C.I.	1,300			
0610001	DRILLING HOLES AND BONDING ANCHORS	EA.	185			
0602030	DEFORMED STEEL BARS - GALVANIZED	LB	79,639			
0602889	DOWEL BAR SPLICER SYSTEM GALVANIZED	EA.	88			
0603233A	GALVANIZING STRUCTURAL STEEL (SITE NO. 1)	L.S.	1			
0603474A	METALLIZING STRUCTURAL STEEL (SITE NO. 1)	L.S.	1			
0605003A	MASONRY FACING	S.F.	1,900			
0686000.15	15" R.C. PIPE - 0' - 10' DEEP	L.F.	160			
0686230.15	15" HIGH DENSITY POLYETHYLENE PIPE - 0' - 10' DEEP	L.F.	56			
0686715.15	15" HIGH DENSITY POLYETHYLENE PIPE END	EA.	2			
0686950.10	REMOVE EXISTING PIPE - 0' - 10' DEEP	L.F.	20			
0702026	MICROPILES	EA.	12			
0702027	VERIFICATION TEST FOR MICROPILES	EA.	1			
0702028	PROOF TEST FOR MICROPILES	EA.	2			
0702029	MICROPILE LENGTH ADJUSTMENT	L.F.	20			
0703012	MODIFIED RIPRAP	C.Y.	12			
0707009A	MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	S.Y.	187			
0708001	DAMPPROOFING	S.Y.	427			
0714999A	MONITORING STRUCTURES	L.S.	1			
0728001	CRUSHED STONE FOR SLOPE PROTECTION	TON	11			
0755014	GEOTEXTILE (SEPARATION - HIGH SURVIVABILITY)	S.Y.	30			
0815001	BITUMINOUS CONCRETE LIP CURBING	L.F.	260			
0819002A	PENETRATING SEALER PROTECTIVE COMPOUND	S.Y.	110			
0822100.01	TEMPORARY TRAFFIC BARRIER	L.F.	120			
0822100.02	TEMPORARY TRAFFIC BARRIER (PINNED)	L.F.	100			
0822101.01	RELOCATED TEMPORARY TRAFFIC BARRIER	L.F.	40			
0904051A	3 TUBE CURB MOUNTED BRIDGE RAIL	L.F.	69			
0910090A	STEEL-BACKED TIMBER GUIDERAIL - TYPE A	L.F.	80			
0910091A	STEEL-BACKED TIMBER GUIDERAIL - TERMINAL SECTION	EA.	2			
0910092A	STEEL-BACKED TIMBER GUIDERAIL - BRIDGE ATTACHMENT	EA.	2			
0912503	REMOVE METAL BEAM RAIL	L.F.	215			
0922501	BITUMINOUS CONCRETE DRIVEWAY	S.Y.	256			
0922503A	GRAVEL DRIVEWAY	S.Y.	11			
0939001	SWEEPING FOR DUST CONTROL	HR.	10			
0943001	WATER FOR DUST CONTROL	M.GA	65			

Kindly insert here the total amount of your Bid \$ _____
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 This bid includes addenda no.: 2

**TOWN OF WILTON, CT
SCHEDULE OF PRICES
FOR THE CONSTRUCTION OF**

**STATE PROJECT NO. 0161-0142, FAP # 6161(008)CN
REPLACEMENT OF BRIDGE NO. 04975
LOVERS LANE OVER COMSTOCK BROOK
IN THE TOWN OF WILTON**

DATE OF
BID OPENING **December 21, 2022**

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Item Number	Items	Unit	Approximate Quantities	Unit Prices Bid		Amount (Figures)
				Figures	Writing	
0944000	FURNISHING AND PLACING TOPSOIL	S.Y.	400			
0949087	CLETHRA ALNIFOLIA SUMMERSWEET 3'-4' HT. B.B.	EA.	10			
0949099	CORNUS AMOMUM, SILKY DOGWOOD 18"-24" HT. CONTAINER	EA.	10			
0949226	ILEX VERTICILLATA COMMON WINTERBERRY 18"- 24" HT. B.B.	EA.	8			
0949831	ACER RUBRUM RED MAPLE 1 3/4" - 2" CAL. B.B.	EA.	8			
0950019A	TURF ESTABLISHMENT- LAWN	S.Y.	225			
0950039	EROSION CONTROL MATTING TYPE D	S.Y.	130			
0950040A	CONSERVATION SEEDING FOR SLOPES	S.Y.	180			
0950043A	WETLAND GRASS ESTABLISHMENT	S.F.	100			
0952001	SELECTIVE CLEARING AND THINNING CONTROL AND REMOVAL OF INVASIVE VEGETATION	L.S.	1			
0952051A		S.Y.	470			
0969060A	CONSTRUCTION FIELD OFFICE, SMALL	MO.	16			
0970006	TRAFFICPERSON (MUNICIPAL POLICE OFFICER) (ESTIMATED COST)	EST.	1	\$72,000.00	Seventy Two Thousand Dollars and Zero Cents	\$72,000
0970007	TRAFFICPERSON (UNIFORMED FLAGGER)	HR.	240			
0971001A	MAINTENANCE AND PROTECTION OF TRAFFIC	L.S.	1			
0974001A	REMOVAL OF EXISTING MASONRY	C.Y.	121			
0975004	MOBILIZATION AND PROJECT CLOSEOUT BARRICADE WARNING LIGHTS - HIGH INTENSITY	L.S.	1			
0976002		DAY	7,300			
0978002	TRAFFIC DRUM	EA.	17			
0979003	CONSTRUCTION BARRICADE TYPE III	EA.	2			
0980020	CONSTRUCTION SURVEYING	L.S.	1			
1020030A	TEMPORARY ILLUMINATION UNIT	EA.	6			
1106001	1 WAY PEDESTRIAN SIGNAL POLE MOUNTED	EA.	2			
1107007	PEDESTRIAN PUSH BUTTON AND SIGN (PIEZO)	EA.	2			
1118101A	TEMPORARY SIGNALIZATION (SITE NO. 1)	L.S.	1			
1205217	TYPE DE-7D DELINEATOR	EA.	8			
1206023A	REMOVAL AND RELOCATION OF EXISTING SIGNS	L.S.	1			
1209124	HOT-APPLIED PAINTED PAVEMENT MARKINGS 4" WHITE	L.F.	355			
1209131	HOT-APPLIED PAINTED LEGEND, ARROWS AND MARKINGS	S.F.	20			
1211001	REMOVAL OF PAVEMENT MARKINGS	S.F.	120			
1220027	CONSTRUCTION SIGNS	S.F.	280			
1802210.07	TEMPORARY SAND BARREL (700 lb.)	EA.	2			
1802210.14	TEMPORARY SAND BARREL (1400 lb.)	EA.	8			
1802210.21	TEMPORARY SAND BARREL (2100 lb.)	EA.	4			

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CONTRACT TIME AND LIQUIDATED DAMAGES

1. For this contract, an assessment per day for liquidated damages, at a rate of One Thousand Two Hundred Dollars (\$1,200) per day shall be applied to each calendar day the work runs in excess of the Three Hundred Sixty Eight (368) allowed calendar days for the contract.

Note: PRIME CONTRACTOR'S REQUIREMENTS:

- A. Proposal Guaranty (Bid Bond): Except when otherwise specified, no proposal will be considered unless accompanied by a proposal guaranty in the form of a bond furnished by a surety company, satisfactory to the Engineer, in an amount equal to at least 30% of the amount of the bid, or unless the bidder has on file in the Town, an annual bid bond in the proper amount.
- The surety must be a corporate surety licensed to sign surety bonds in the State of Connecticut.
- B. Not less than 7% of the total Contract value shall be subcontracted to, performed by, and paid to Disadvantaged Business Enterprise(s) DBE.
- C. If the Contractor is unable to fulfill the DBE's percentage requirement, he may request an exception of the above percentage, by completing and submitting to the Town, the "Application for Review of Pre-award Good Faith Efforts", as contained in the General Provisions.
- D. Contractors must make sure that at the time of bidding, their Firms have an approved Affirmative Action Plan with the State of Connecticut, Department of Transportation.
- E. The low bidder is required to submit to the Town, both a Certificate of Insurance and a Workers' Compensation Certificate on or before the signing of the Contract.
- F. Statement of Bidder's Qualifications: Each bidder is required to submit to the Town a recent sworn statement of the bidder's qualifications the form furnished by the Town for this purpose.
- G. Contracts will not be awarded until the above requirements have been submitted and approved.
- H. Please be aware that the Town, prior to the awarding of the Contract, may require further financial and other information from any applicant who becomes the low bidder for that Contract.
- I. The apparent two lowest bidders, as determined by the Town of Wilton immediately after the bid opening, shall submit the Pre-award DBE Commitment Approval request form(s) to the Town of Wilton no later than five days after the bid opening. This is a requirement of Title 49, Code of Federal Regulations (CFR) Part 26, Participation of DBE's. Failure to comply with this requirement may be cause for rejection of the bid.