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DATE: 07/24/2018		
	DESIGNER/DRAFTER: ARW	CHECKED BY: WES



PROJECT NUMBER: 0001-0106
PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER
TOWN(S): ANDOVER
DRAWING TITLE: INDEX OF DRAWINGS

SHEET NO. 04.01

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 818 (2020), SUPPLEMENTAL SPECIFICATION DATED JULY 2023 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (NINTH EDITION, 2020), WITH THE INTERIM SPECIFICATIONS UP TO AND INCLUDING (2023), AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL (2003), INCLUDING REVISIONS TO 2022.

MATERIAL STRENGTHS:

CAST-IN-PLACE CONCRETE:
CLASS PCC03340 BASED ON f'c = 3,000 P.S.I.
CLASS PCC04460 AND PCC04462 BASED ON f'c = 4,000 P.S.I.

PRESTRESSED DECK UNITS BASED ON f'c = 8,000 P.S.I.

THE CONCRETE STRENGTH, f'c, USED IN DESIGN OF THE CONCRETE COMPONENTS IS NOTED ABOVE. THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THE CONSTRUCTED COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF 6.01 - CONCRETE FOR STRUCTURES, AND M.03 - PORTLAND CEMENT CONCRETE.

REINFORCEMENT (ASTM A615 GRADE 60) fy = 60,000 P.S.I.
FOR MICROPILE MINIMUM DESIGN REQUIREMENTS, REFER TO DRAWING NO. S-09.

LIVE LOAD: HL-93, LEGAL AND PERMIT VEHICLES.

FUTURE PAVING ALLOWANCE: NONE

BITUMINOUS CONCRETE OVERLAY: SHALL CONSIST OF 2" HMA S0.5 (TRAFFIC LEVEL 2) PLACED ON 1" HMA S0.25 (TRAFFIC LEVEL 2).

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

UTILITIES: THERE ARE OVERHEAD ELECTRIC (OWNED BY EVERSOURCE ENERGY) UTILITIES WITHIN THE PROJECT LIMITS. THESE UTILITIES WILL BE TEMPORARILY RELOCATED DURING CONSTRUCTION BY THE UTILITY COMPANIES FOR SAFE USE OF CONSTRUCTION EQUIPMENT. THE CONTRACTOR SHALL COORDINATE AS NEEDED WITH THE RESPECTIVE UTILITY COMPANIES. IN ADDITION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND SUPPORT THE UTILITIES AT ALL TIMES DURING CONSTRUCTION AND FOR ANY DAMAGE TO EXISTING UTILITIES DURING CONSTRUCTION.

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

BRIDGE IDENTIFICATION PLACARDS: THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW BRIDGE IDENTIFICATION SIGNS AT THE LEADING END OF THE BRIDGE ON THE TRAFFIC SIDE. THE SIGNS SHALL BE FABRICATED WITH 40 GAUGE ALUMINUM SHEET METAL. THE SIGNS SHALL BE 4" x 12" WITH 3" REFLECTIVE BLOCK LETTERS ON GREEN REFLECTIVE SHEETING. EACH SIGN SHALL READ: (BRIDGE 04583). ALL COSTS ASSOCIATED WITH PROVIDING AND INSTALLING THE BRIDGE SIGNS SHALL BE COVERED UNDER THE ITEM 1208931 SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING). THE FINAL LOCATION AND ATTACHMENT METHOD FOR THE SIGNS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

TEMPORARY EARTH RETAINING SYSTEM: THE CONTRACTOR SHALL DESIGN AND INSTALL A TEMPORARY EARTH RETAINING SYSTEM WHERE SHOWN ON THE PLANS (SEE DRAWING NOS. S-06 AND S-07) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 7.16.

HYDRAULIC DATA: FOR TABLE WITH HYDRAULIC DATA, SEE DRAWING NO. S-03.

CONCRETE NOTES

COMPOSITE CONSTRUCTION: NO TEMPORARY INTERMEDIATE SUPPORTS SHALL BE USED PRIOR TO AND DURING THE PLACING AND SETTING OF THE CONCRETE DECK SLAB. CONSTRUCTION LOADS AND DEAD LOADS WILL BE PERMITTED WHEN DIRECTED BY THE ENGINEER BUT ONLY WHEN THE CONCRETE HAS REACHED A STRENGTH OF f'c = 3,500 P.S.I. LIVE LOADS (TRAFFIC) WILL BE PERMITTED ON THE STRUCTURE AFTER THE CONCRETE HAS REACHED A STRENGTH OF f'c = 4,000 P.S.I.

JOINT SEAL: SEE SPECIAL PROVISIONS.

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

REINFORCEMENT: 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."

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLER IS PAID FOR AS "1/2" PREFORMED EXPANSION JOINT FILLER FOR BRIDGES."

CLOSED CELL ELASTOMER: FURNISHING AND INSTALLING CLOSED CELL ELASTOMER SHALL BE INCLUDED IN THE ITEM " 1/2" CLOSED CELL ELASTOMER."

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

FOUNDATION NOTES

FOUNDATION PRESSURES AND PILE LOADS: THE VARIOUS LIMIT STATE LOADINGS AND DESIGN REQUIREMENTS NOTED ON THE "FOUNDATION PLAN" (DRAWING NO. S-08) AND "MICROPILE DETAILS" (DRAWING NO. S-09) REFER TO THE LIMIT STATE LOADS AS GIVEN IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

PILE FOUNDATION INSTALLATION: INSTALLATION OF MICROPILES SHALL CONFORM TO THE REQUIREMENTS OF SECTION 7.06 "MICROPILES" OF FORM 818 (2020). SEE DRAWING NO. S-09 "MICROPILE DETAILS".
INSTALLATION OF MICROPILES SHALL BE INSPECTED AND APPROVED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CONNECTICUT PRIOR TO INSTALATION OF THE CAST IN PLACE INTEGRAL ABUTMENT.
DETERMINATION OF MICROPILE LENGTH ADJUSTMENT SHALL BE THE RESPONSIBILITY OF THE PROJECT RESIDENT ENGINEER REGISTERED IN THE STATE OF CONNECTICUT.

CONCRETE QUANTITIES

THE FOLLOWING PAY ITEMS AND CONCRETE CLASSES ARE REQUIRED FOR CAST-IN-PLACE BRIDGE COMPONENTS:				
ITEM	COMPONENT	PCC CLASS	UNIT	QUANTITY
FOOTING CONCRETE	WINGWALL FOOTINGS	PCC03340	C.Y.	23
ABUTMENT AND WALL CONCRETE	ABUTMENTS AND WINGWALL STEMS	PCC03340	C.Y.	116
BRIDGE DECK CONCRETE	SHEAR SLAB, CURBS, BACKWALLS AND CHEEKWALLS	PCC04462	C.Y.	96
PARAPET CONCRETE	ENDBLOCKS	PCC04462	L.F.	37
APPROACH SLAB CONCRETE	APPROACH SLABS	PCC04460	C.Y.	49

TRANSPORTATION DATA

MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT *
PRESTRESSED DECK UNIT #1	86'-0"	2'-9"	3'-11 1/2"	89,040 LB
PRESTRESSED DECK UNIT #2	86'-0"	2'-9"	3'-11 1/2"	73,858 LB
PRESTRESSED DECK UNIT #3	86'-0"	2'-9"	3'-11 1/2"	73,858 LB
PRESTRESSED DECK UNIT #4	86'-0"	2'-9"	2'-11 1/2"	59,716 LB
PRESTRESSED DECK UNIT #5	86'-0"	2'-9"	3'-11 1/2"	73,858 LB
PRESTRESSED DECK UNIT #6	86'-0"	2'-9"	2'-11 1/2"	59,716 LB
PRESTRESSED DECK UNIT #7	86'-0"	2'-9"	3'-11 1/2"	73,858 LB
PRESTRESSED DECK UNIT #8	86'-0"	2'-9"	3'-11 1/2"	73,858 LB
PRESTRESSED DECK UNIT #9	86'-0"	2'-9"	3'-11 1/2"	89,040 LB

* THE SHIPPING WEIGHT PROVIDED REPRESENTS THE APPROXIMATE WEIGHT FOR A PRESTRESSED BOX BEAM. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE WEIGHT OF EACH UNIT AND ENSURE THE STABILITY OF EACH MEMBER AT LIFT AND ERECTION.

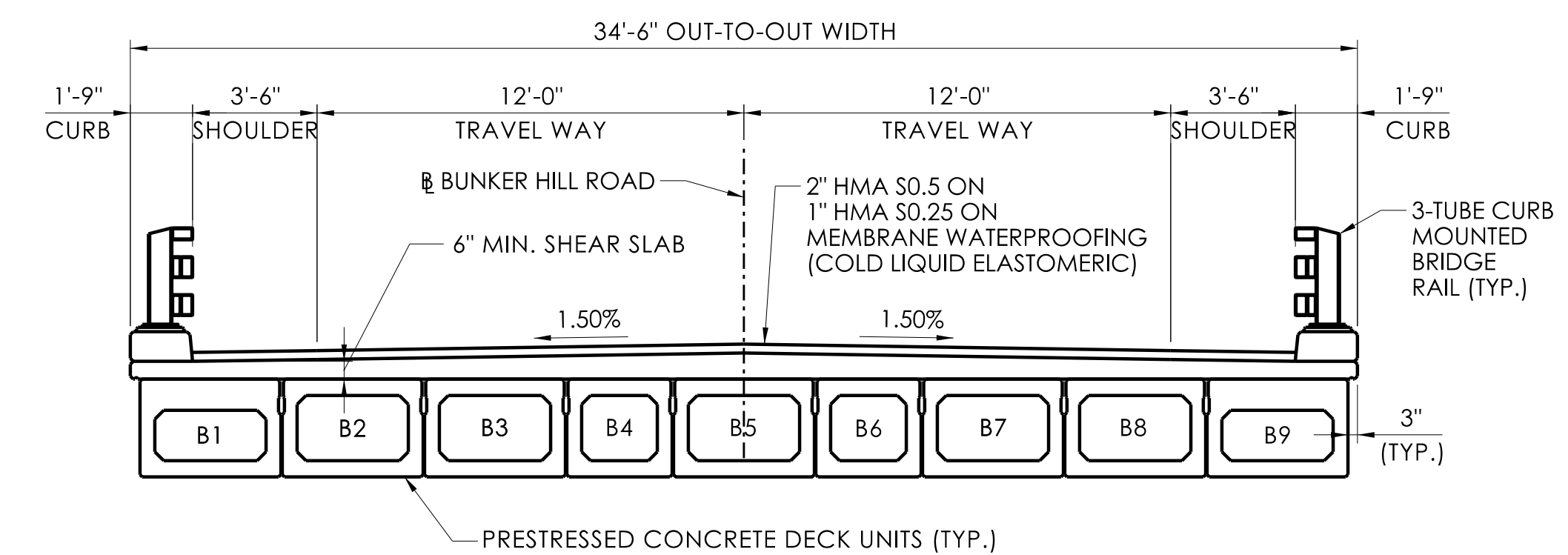
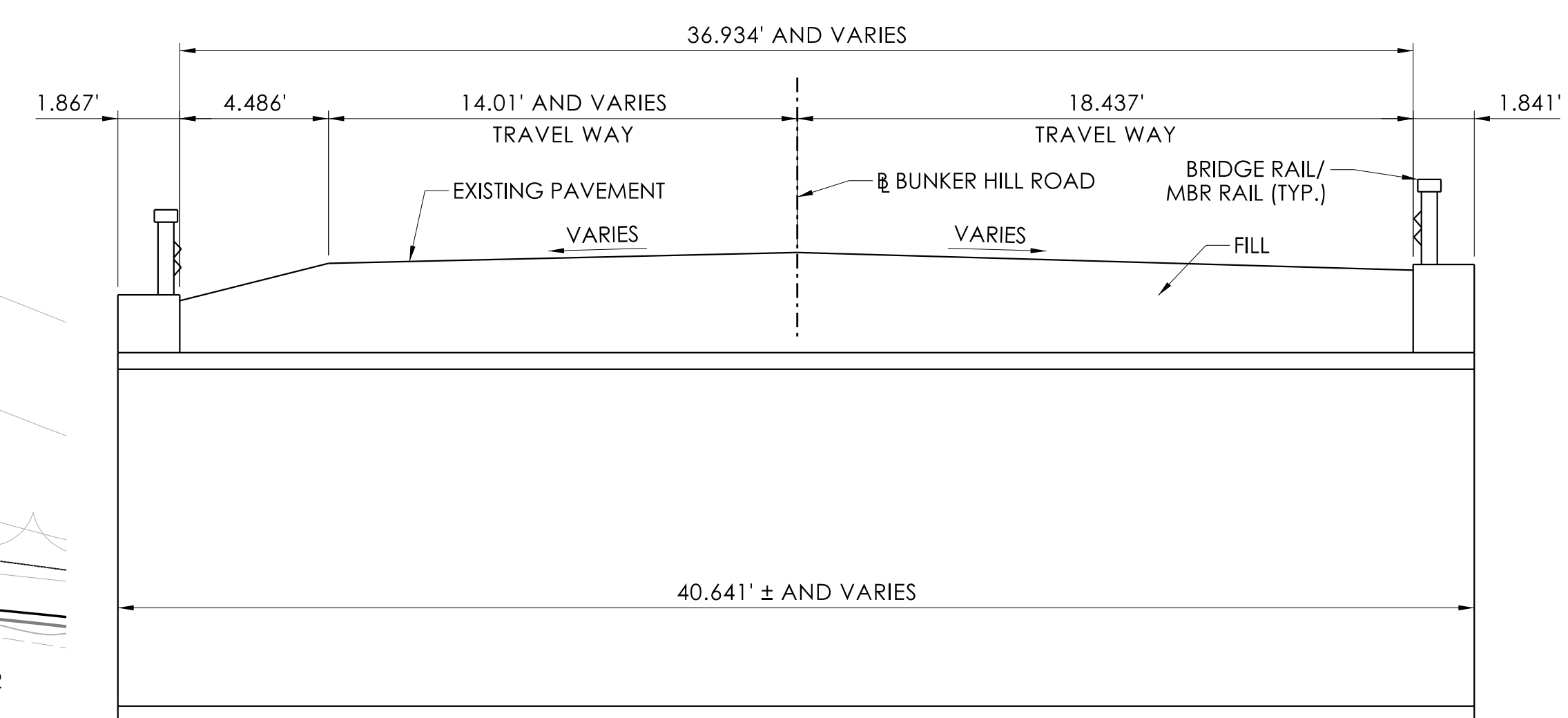
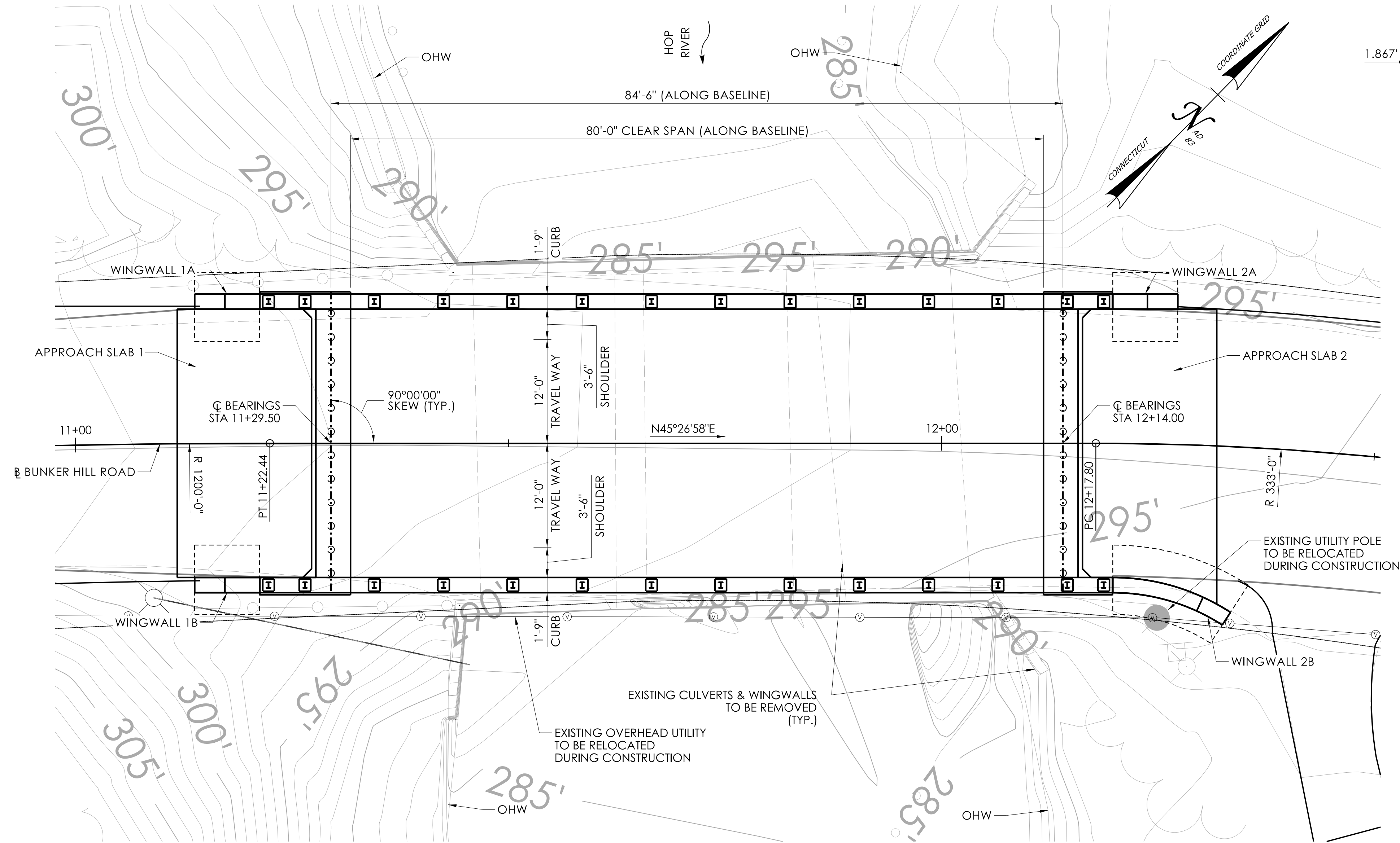
NOTICE TO BRIDGE INSPECTORS

THE DEPARTMENT'S BRIDGE SAFETY PROCEDURES REQUIRE THIS 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
FOLLOW NORMAL INSPECTION PROCEDURES	-

REV.	DATE	REVISION DESCRIPTION

		SIGNATURE/ BLOCK:	 TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER TOWN(S): ANDOVER DRAWING TITLE: GENERAL NOTES	DRAWING NO. S-02
DESIGNER/DRAFTER: ARW CHECKED BY: WES/RTE					SHEET NO. 04.02



LEGEND

 PROPOSED MINOR CONTOURS
 PROPOSED MAJOR CONTOURS
 EXISTING OVERHEAD POWER LINE

HYDRAULIC DATA

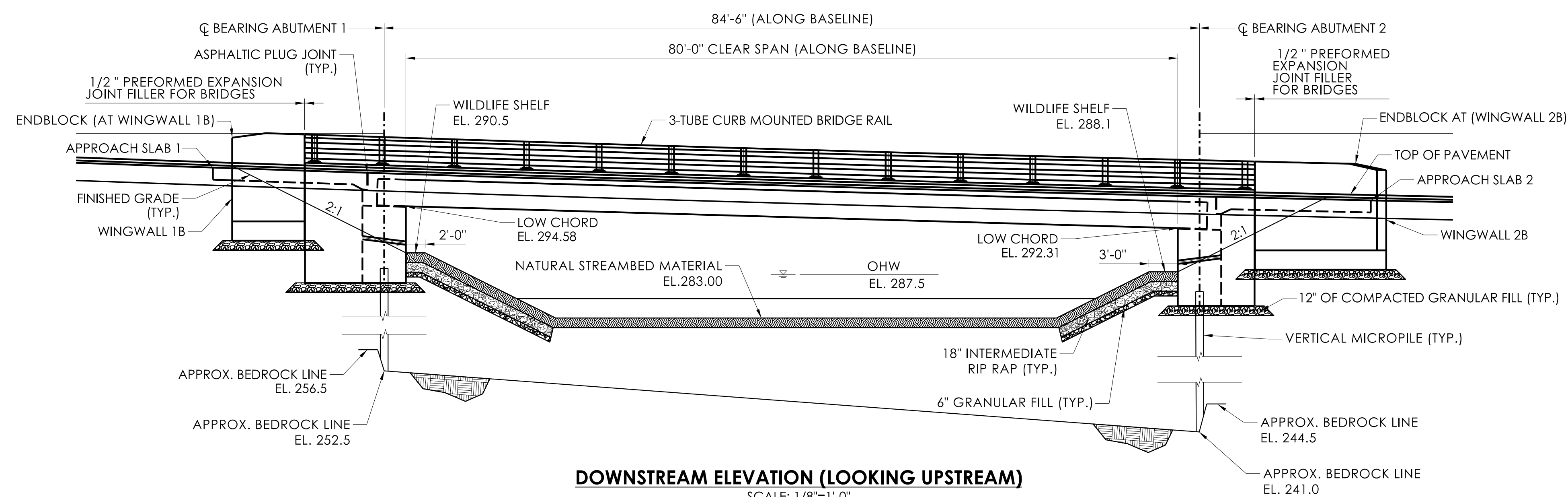
DRAINAGE AREA	58.4 SQ. MILES
DESIGN FREQUENCY	100-YEAR
DESIGN DISCHARGE	7261 C.F.S.
AVERAGE DAILY FLOW ELEVATION	285.2 C.F.S.
UPSTREAM DESIGN WATER SURFACE ELEVATION	295.6 FT.
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	292.8 FT.
MAXIMUM SCOUR ELEVATION	284.8 FT.
FREQUENCY	500-YEAR
DISCHARGE	10,904 C.F.S.
WORST CASE SCOUR SUB-STRUCTURE UNIT	ABUTMENTS
AVERAGE DAILY FLOW DISCHARGE	101 C.F.S.
AVERAGE DAILY FLOW ELEVATION	285.4 FT.
AVERAGE SPRING FLOW DISCHARGE	201 C.F.S.
AVERAGE SPRING FLOW ELEVATION	285.9 FT.

NOTES:

1. FOR GENERAL NOTES, SEE DRAWING NO. S-02.

BORING LOGS				
NUMBER	STATION	OFFSET	NORTHING	EASTING
B-1	11+31.86	6.90' LT	829939.32	1105968.27
B-2	12+17.16	6.30' LT	839999.11	1106028.13
B-3	12+16.42	7.80' RT	829967.46	1106038.34
B-4	11+32.19	7.80' RT	829927.99	1105978.43

SEE SHEET S-04 AND S-05 FOR BORING LOCATION PLANS



REV	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: ARW CHECKED BY: WES

LASTED SAVED BY: Andrew.Westpy **FILE NAME:** P:\PROJECTS\CT_Projects\0001-0106\Bridge\Contract_Plans\SB_CP_0001-0106_S-03 GENERAL PLAN, SECTION, AND ELEVATION.dgn

PLOTTED DATE: 10/19/2023



TOWN OF ANDOVER

PROJECT NUMBER: 0001-0106
PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER
TOWN(S): ANDOVER
DRAWING TITLE: GENERAL PLAN, SECTION, AND ELEVATION

DRAWING NO.
S-03

SHEET NO.
04.03

Driller: Anthony McKernan		Connecticut DOT Boring Report				Hole No.: B-3					
Inspector: CJM		Town: Andover		Stat./Offset: 12+16.42/R7.8							
Engineer:		Project No.: C14131		Northing: 829967.46							
Start Date: 6-9-21		Route No.:		Easting: 1106038.34							
Finish Date: 6-9-21		Bridge No.:		Surface Elevation: 295.18							
Project Description: Bunker Hill Rd. over Hop River											
Casing Size/Type:				Sampler Type/Size:		Core Barrel Type:					
Hammer Wt.: Fall:		Hammer Wt.: Fall:									
Groundwater Observations: @9.5											
SAMPLES											
Depth (ft)	Sample Type/No.	Blows on Sampler per 6 inches				Pen. (in.)	Rec. (in.)	RQD %	Generalized Soil Description	Material Description and Notes	Elevation (ft)
0	S-1	13	12	17		10				6'-2" light brown / brown fine to medium sand, little coarse sand, fine gravel, trace silt.	
5	S-2	11	16	6	6		15			5'-7" light brown, fine to medium sand, little fine gravel, trace coarse sand, and silt.	
10	S-3	14	12	13	7		7			10'-12" brown, fine to medium sand, some coarse sand, little fine gravel, trace silt.	
15	S-4	8	7	10	9		14			15'-17" Brown, fine to medium sand, little coarse sand.	
20	S-5	5	6	3	3		17			20'-22" Brown, medium to fine sand, trace coarse sand and fine gravel.	
25	S-6	4	8	7	7		16			25'-27" Brown medium to fine sand, trace fine gravel	
30	S-7	4	50/0"				0			30'8"-32'6" small boulder	
35	S-8	4	3	4	7		5			35'-37" light brown, fine sand, trace medium to coarse sand and fine gravel.	
40	S-9	6	8	8	9		15			40'-42" Light brown / brown, fine sand, trace medium to coarse sand, fine gravel, and silt.	
45	S-10	34	30	45	54		15			45'-47" Brown / light brown fine to medium sand, some coarse sand, little fine gravel and silt, trace weathered rock (possible boulder)	
50										50'-50'10" Brown / light gray fine to medium	
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						NOTES:			Sheet 1 of 2		
Earth: Rock:											
No. of Soil Samples: 11 No. of Core Runs: 2									SM-001-M REV. 1/02		

BORING HOLE NO. B-3

Driller:	Anthony McKernan	Connecticut DOT Boring Report				Hole No.:	B-3
Inspector:	CJM	Town:	Andover	Stat./Offset:			
Engineer:		Project No.:	C14131	Northing:			
Start Date:	6-9-21	Route No.:		Easting:			
Finish Date:	6-9-21	Bridge No.:		Surface Elevation:			
Project Description: Bunker Hill Rd. over Hop River							
Casing Size/Type:		Sampler Type/Size:			Core Barrel Type:		
Hammer Wt.:		Fall:					
Groundwater Observations: @9.5							
Depth (ft)	SAMPLES				Generalized Soil Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)			
50	S-11	25 50/4"		5		sand, some silt, coarse sand, fine gravel, trace weathered rock in tip (possible boulder)	
55	C-1					54' possible rock, cased to 54' 55'-60' REC=56/60 RQD=30/56 4:00, 4:30, 4:25, 4:40, 4:00	
60	C-2					60'-65' REC= RQD=35/56 4:30, 4:30, 4:55, 6:00, 6:00	
65						END OF BORING 65ft	
70							
75							
80							
85							
90							
95							
100							
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		NOTES:					Sheet 2 of 2
Earth: Rock:							
No. of Soil Samples: 11 No. of Core Runs: 2							
SM-001-M REV. 1/02							

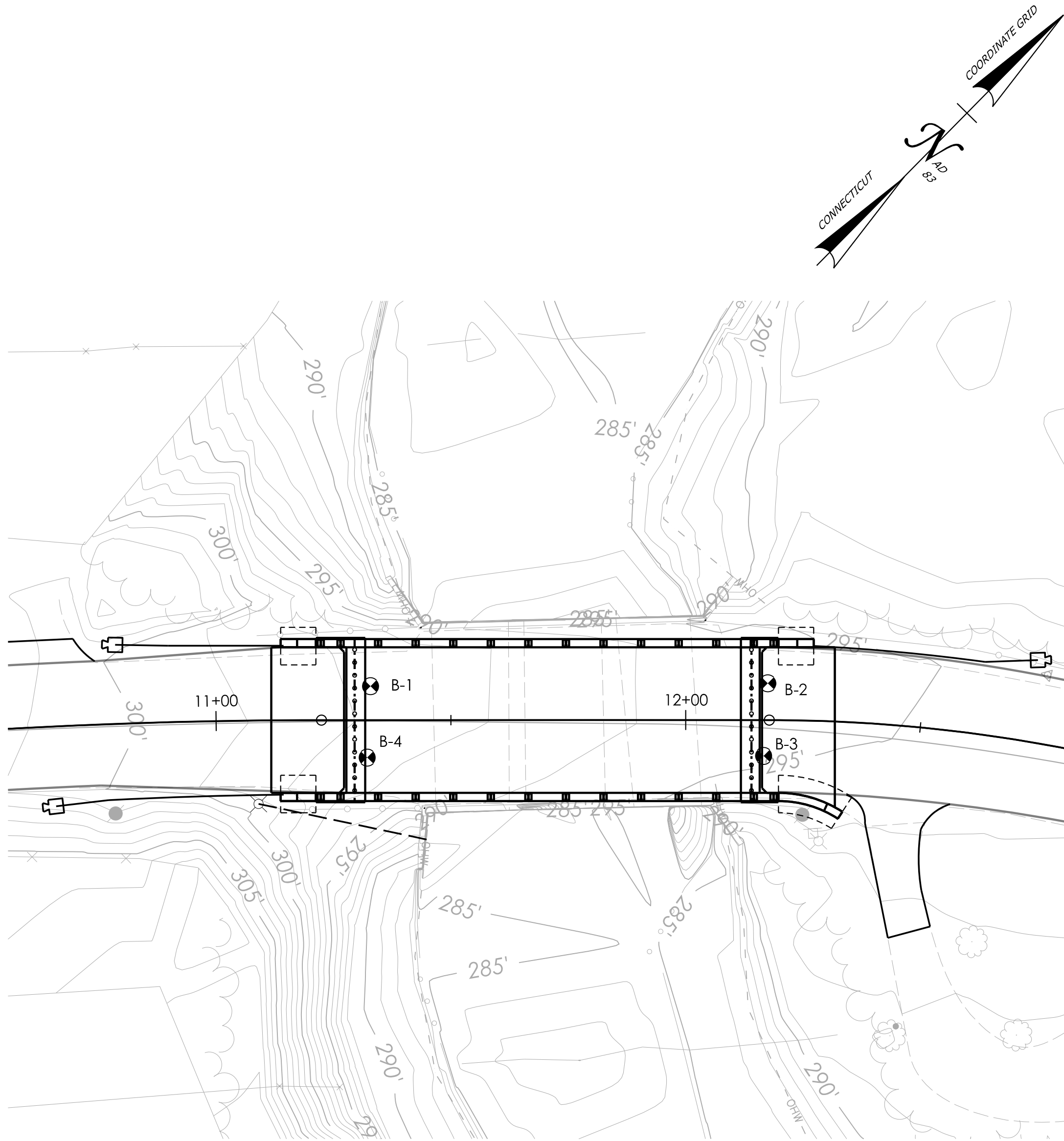
BORING HOLE NO. B-3 (CONT.)

Driller: Anthony McKernan	Connecticut DOT Boring Report				Hole No.: B-4			
Inspector: CJM	Town: Andover		Stat./Offset:					
Engineer:	Project No.: C14131		Northing:					
Start Date: 6-15-21	Route No.:		Easting:					
Finish Date: 6-15-21	Bridge No.:		Surface Elevation:					
Project Description: Bunker Hill Rd. over Hop River								
Casing Size/Type:		Sampler Type/Size:		Core Barrel Type:				
Hammer Wt.: Fall:		Hammer Wt.: Fall:						
Groundwater Observations: @9.5								
SAMPLES								
Depth (ft)	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Description	Material Description and Notes	Elevation (ft)
0	S-1	21 12 12	11			6'-2" Brown, fine to coarse sand, some fine gravel, trace silt and cobble.		
5	S-2	7 7 8 6	16			5'-7" Brown / light brown, fine to medium sand, little, coarse sand and fine gravel, trace silt and asphalt		
10	S-3	2 17 14 11				10' Dark brown/ gray layer, fine to medium sand and silt (very loose) 10'4" brown, fine to coarse sand, some fine gravel, trace silt		
15	S-4	9 7 6 6	14			15'-17" Brown, fine to medium sand, little coarse sand.		
20	S-5	6 4 2 2	18			20'-22" Brown, fine to medium sand, trace coarse sand and fine gravel, (very loose)		
25	S-6	8 12 10 8	15			25' Brown, fine to medium sand, trace coarse sand and fine gravel, (very loose) 28' Light brown fine to coarse sand, some fine to coarse gravel, trace silt.		
30	S-7	10 14 11 6	15			30'-32" Light brown, fine to coarse sand, some fine to coarse gravel, trace silt.		
35	S-8	8 6 6 6	14			35'-37" Brown / light brown fine to medium sand, some coarse sand, little fine gravel. 38' light brown / brown, fine to medium sand, trace silt.		
40	S-9	5 14 8 7	15			40'-42" Brown, fine sand, little medium to coarse sand, trace silt.		
45	S-10	23 13 13 14	11			45'-47" Brown, fine to medium sand and coarse sand, some fine gravel, trace silt.		
50						50'-51'3" Brown, fine to medium sand, some		
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			NOTES:			Sheet 1 of 2		
Earth: Rock:								
No. of Soil Samples: 11			No. of Core Runs: 2			SM-001-M REV. 1/02		

BORING HOLE NO. B-4

Driller: Anthony McKernan		Connecticut DOT Boring Report				Hole No.: B-4	
Inspector: CJM		Town: Andover		Stat./Offset: 11+32.19/R7.8			
Engineer:		Project No.: C14131		Northing: 829927.99			
Start Date: 6-15-21		Route No.:		Easting: 1105978.43			
Finish Date: 6-15-21		Bridge No.:		Surface Elevation: 297.52			
Project Description: Bunker Hill Rd. over Hop River							
Casing Size/Type:		Sampler Type/Size:		Core Barrel Type:			
Hammer Wt.: Fall:		Hammer Wt.: Fall:					
Groundwater Observations: @9.5							
Depth (ft)	SAMPLES				Generalized Soil Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)			
				RQD %			
50	S-11	24 47 50/3"		10		coarse sand and silt, little fine gravel, trace weathered rock (51' possible bedrock)	
55	C-1					53' Start of weathered Bedrock. 55'-60' REC=60/60 RQD=50/60 4:40, 2:05, 2:19, 3:05, 1:09	
60	C-2					60'-65' REC=50/0" RQD=50/2" 2:45, 3:20, 3:05, 3:00, 2:32	
65						END OF BORING 65ft	
70							
75							
80							
85							
90							
95							
100							
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		NOTES:					Sheet 2 of 2
Earth:	Rock:						
No. of Soil Samples: 11	No. of Core Runs: 2						SM-001-M REV. 1/02

BORING HOLE NO. B-4 (CONT.)



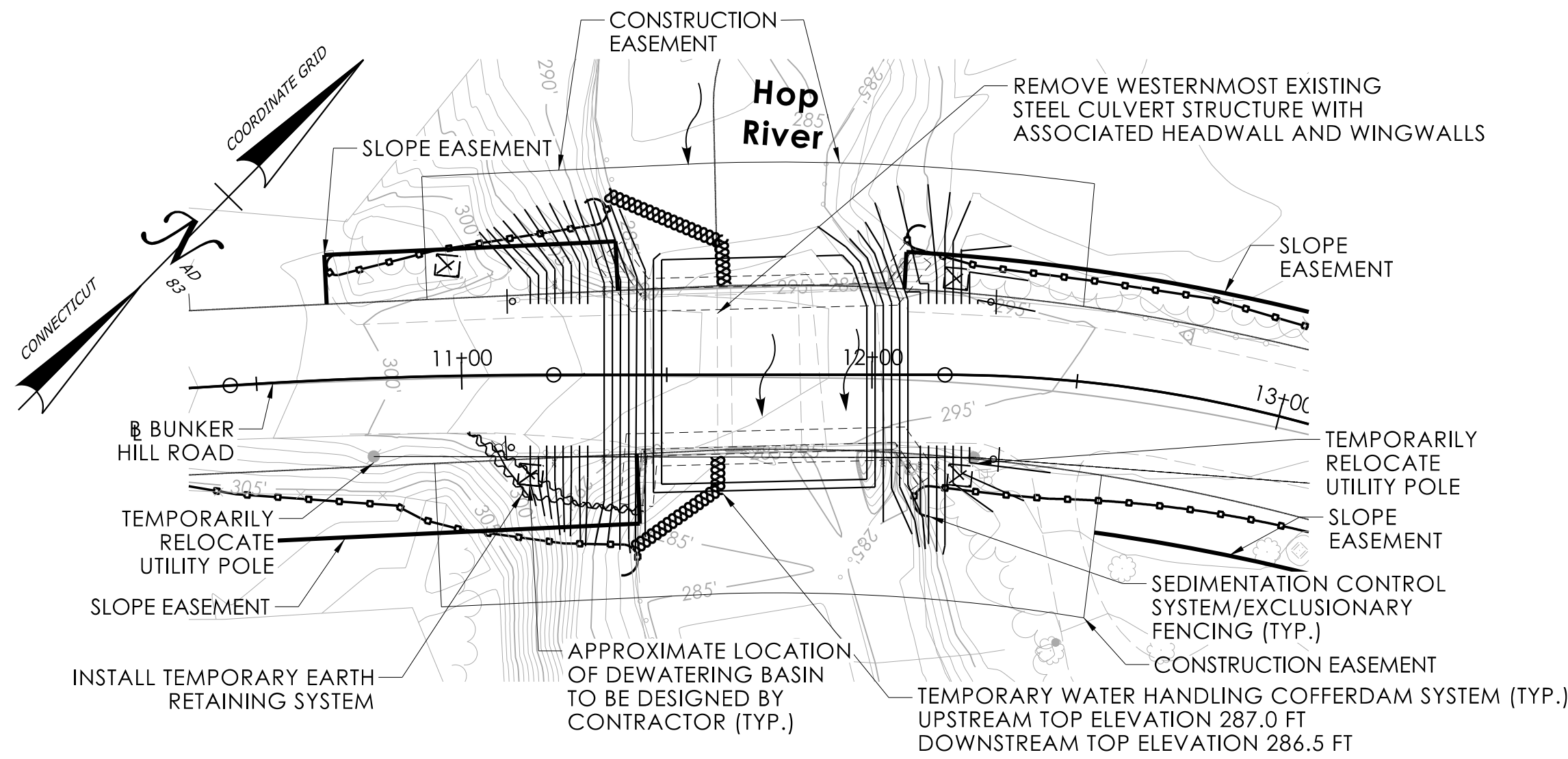
LEGEND

⊗ BORING LOCATION

NOTES:

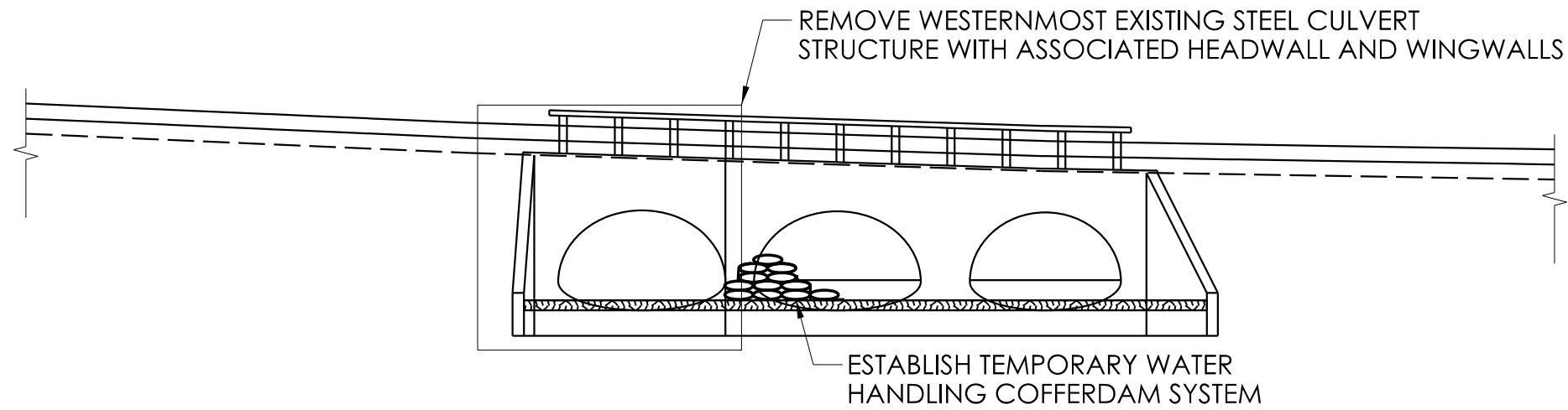
- GROUNDWATER LEVELS WERE NOT MEASURED DURING DRILLING. IT IS ANTICIPATED THAT GROUNDWATER LEVELS WILL BE CLOSE TO THE RIVER LEVEL. WATER LEVELS ARE EXPECTED TO BE INFLUENCED PRIMARILY BY WATER LEVELS WITHIN THE HOP RIVER, BUT WILL VARY WITH SEASON, PRECIPITATION, CONSTRUCTION ACTIVITY IN THE AREA, AND OTHER FACTORS.
- FOR ADDITIONAL GEOTECHNICAL INFORMATION, REFER TO THE GEOTECHNICAL REPORT DATED JUNE 28, 2023 INCLUDED WITH THE BID DOCUMENTS.

REV.	DATE	REVISION DESCRIPTION



STAGE 1 DEMOLITION PLAN

SCALE: 1/32"=1'-0"



STAGE 1 DEMOLITION ELEVATION

SCALE: 1/16"=1'-0"

SUGGESTED SEQUENCE OF CONSTRUCTION

STAGE 1 DEMOLITION

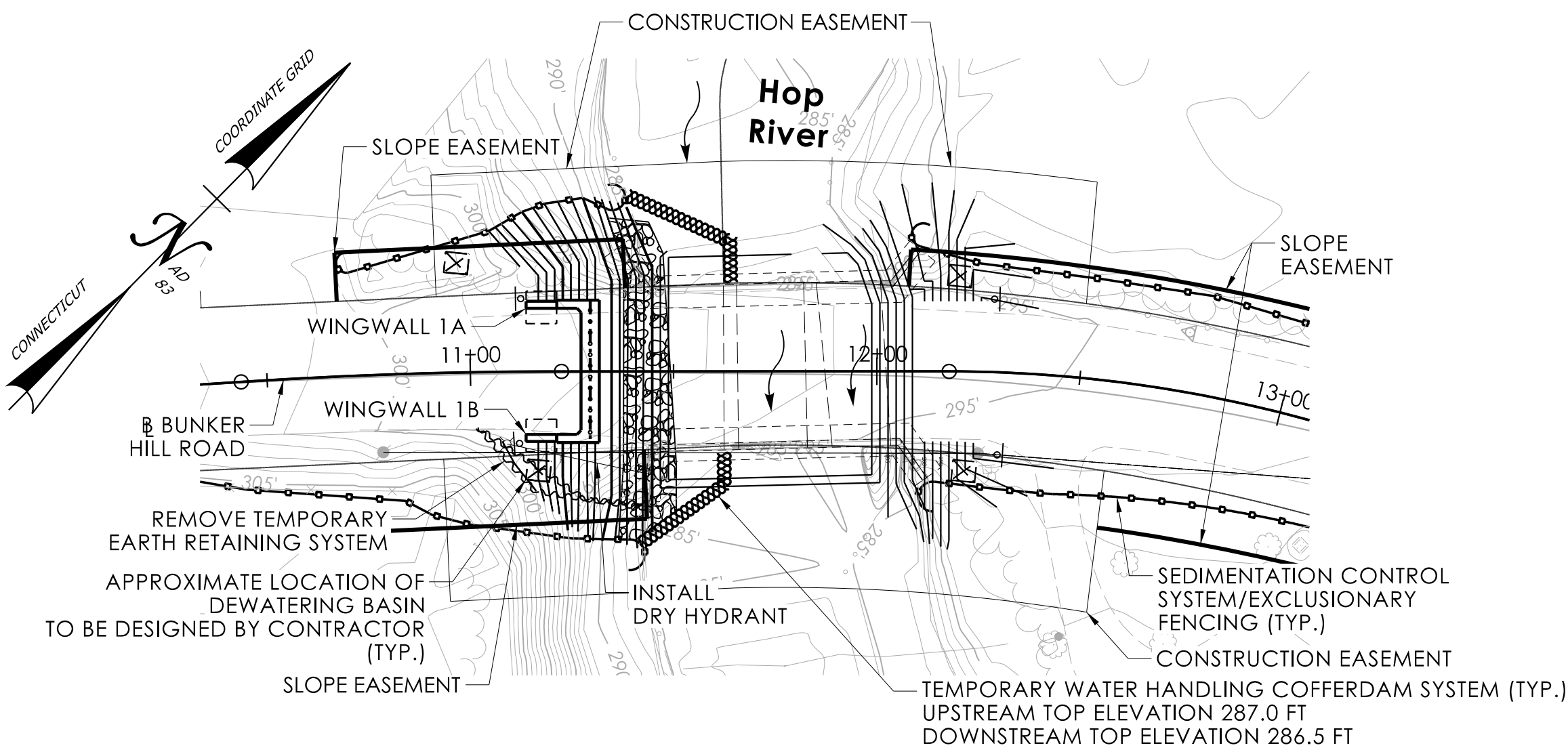
1. ESTABLISH DETOUR AND ROAD CLOSURE.
2. INSTALL SEDIMENTATION CONTROL/EXCLUSIONARY FENCING.
3. CONDUCT SWEEP OF SITE BY HERPETOLOGIST.
4. CLEAR AND GRUB.
5. RELOCATE OVERHEAD UTILITIES.
6. INSTALL WATER HANDLING BASINS FOR STAGE 1
7. ESTABLISH TEMPORARY WATER HANDLING COFFERDAM SYSTEM AS SHOWN IN STAGE 1 TO PROVIDE WORK AREA FOR WESTERN ABUTMENT AND WINGWALLS.
8. INSTALL TEMPORARY EARTH RETAINING SYSTEM AT WINGWALL 1B.
9. REMOVE WESTERNMOST EXISTING STEEL CULVERT STRUCTURE WITH ASSOCIATED HEADWALLS AND WINGWALLS.

STAGE 1 CONSTRUCTION

1. INSTALL ABUTMENT 1 MICROPILES, COMPACTED GRANULAR FILL AND CONSTRUCT CAST-IN-PLACE ABUTMENT 1 AND WINGWALLS 1A AND 1B IN-THE-DRY.
2. INSTALL BANK STABILIZATION AND STREAMBED MATERIAL ON WESTERN SIDE OF STREAMBED.
3. INSTALL DRY HYDRANT.
4. PLACE PERVIOUS STRUCTURE BACKFILL AND GRADE AROUND OUTSIDE OF WINGWALLS.
5. REMOVE TEMPORARY EARTH RETAINING SYSTEM.

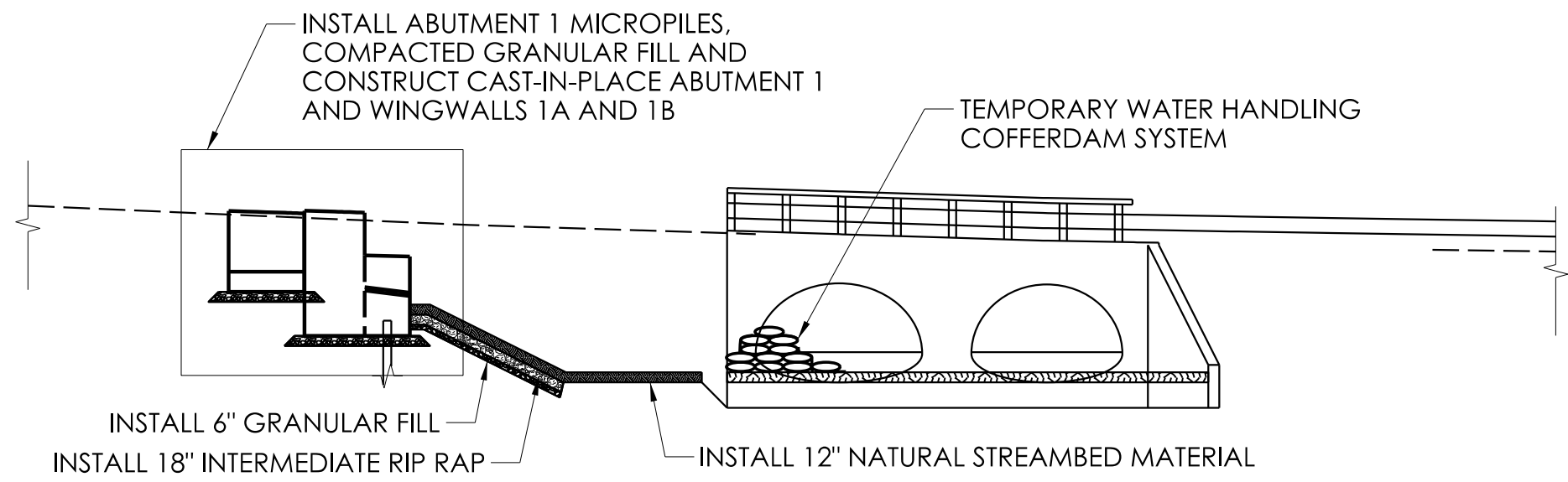
NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND ERECTION OF THE PRESTRESSED DECK UNITS.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEBRIS CAUSED BY REMOVAL OF THE EXISTING STRUCTURE. THE CONTRACTOR SHALL RETRIEVE ANYTHING THAT FALLS INTO THE RIVER DURING REMOVAL OPERATIONS.
3. REFER TO DRAWING NO. S-03 FOR PLAN AND ADDITIONAL INFORMATION.
4. REFER TO SPECIAL PROVISIONS FOR TRAFFIC RESTRICTIONS DURING CONSTRUCTION.
5. TEMPORARY DEWATERING BASINS ARE PAID UNDER THE ITEM "HANDLING WATER."



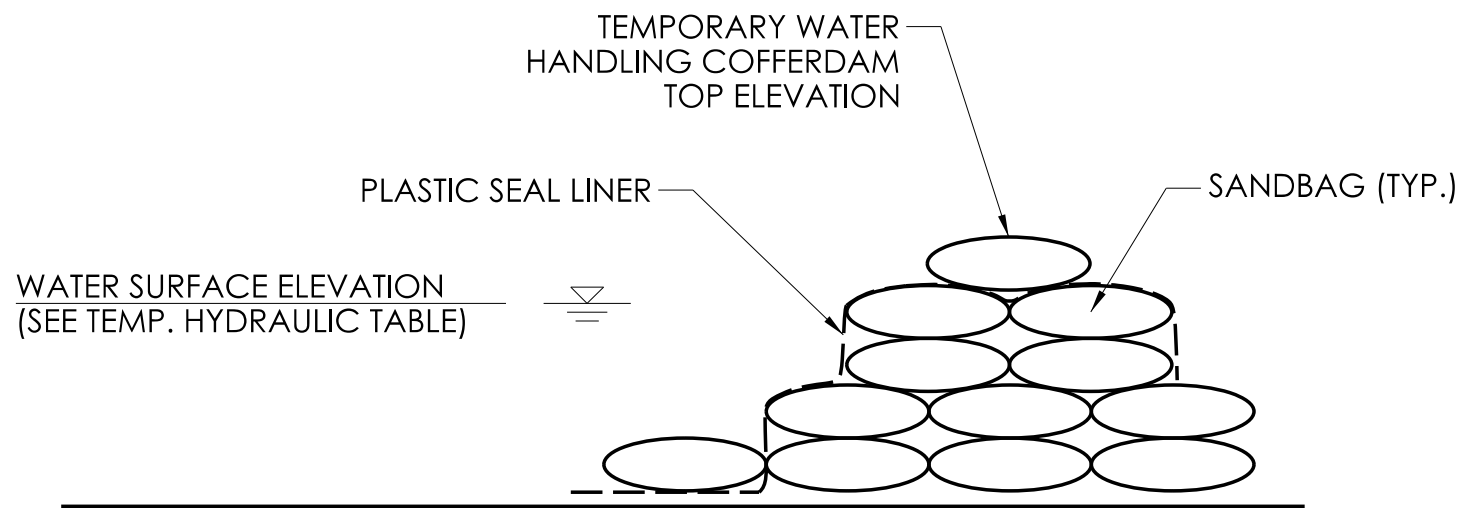
STAGE 1 CONSTRUCTION PLAN

SCALE: 1/32"=1'-0"



STAGE 1 CONSTRUCTION ELEVATION

SCALE: 1/16"=1'-0"



NOTE: WATER HANDLING COFFERDAM TO BE PAID UNDER ITEM "HANDLING WATER"

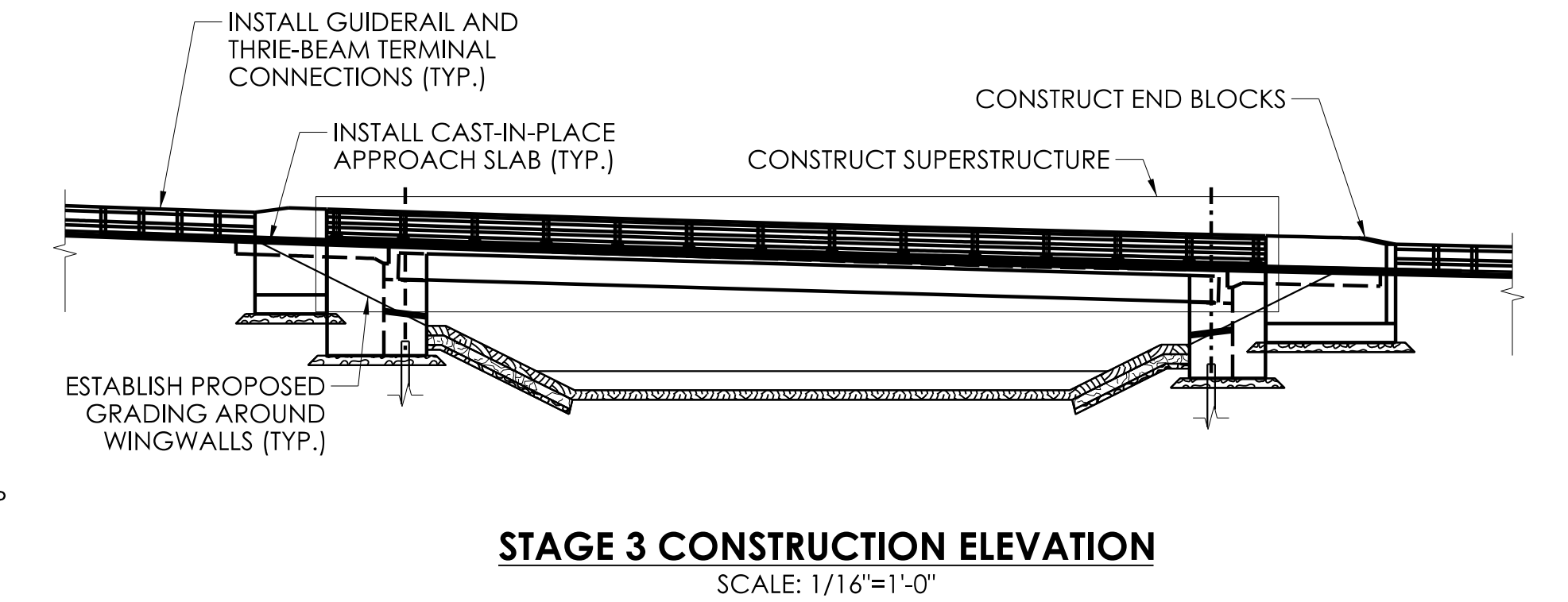
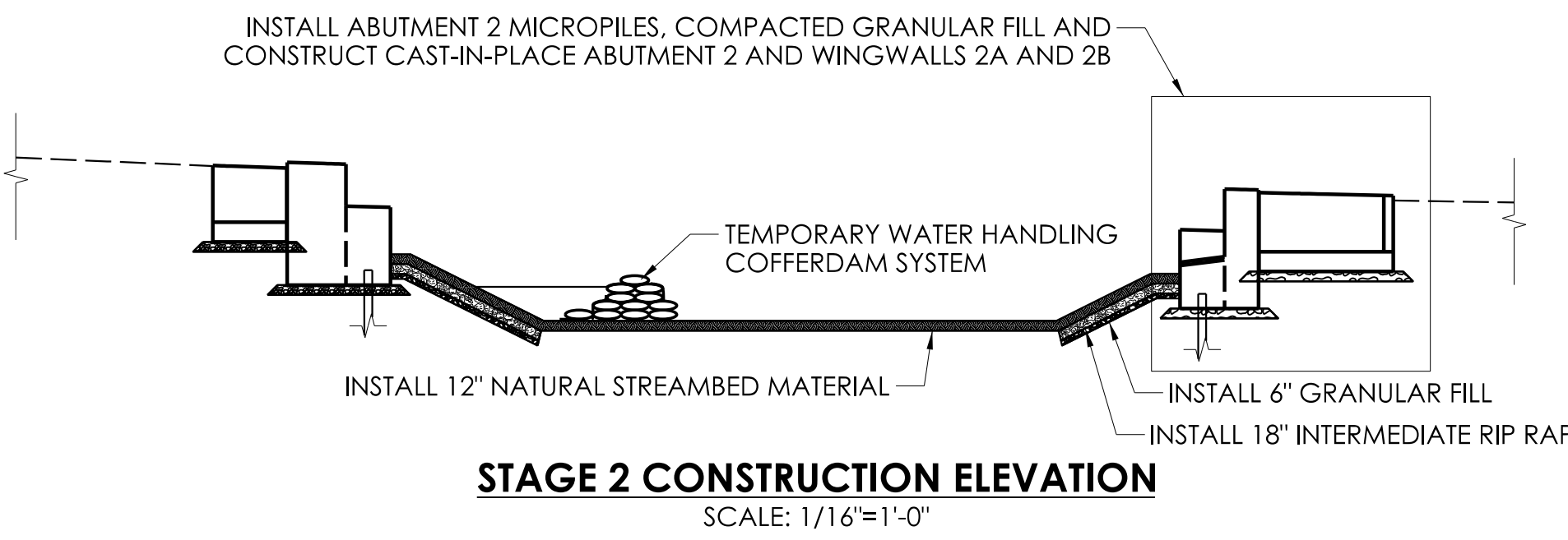
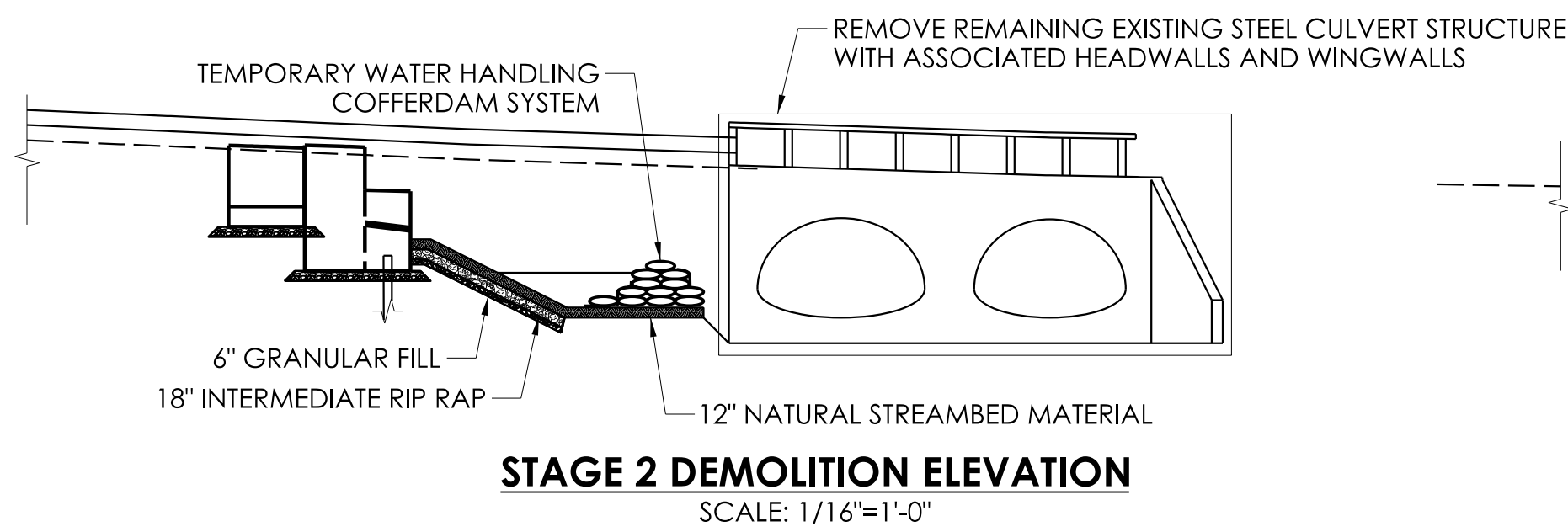
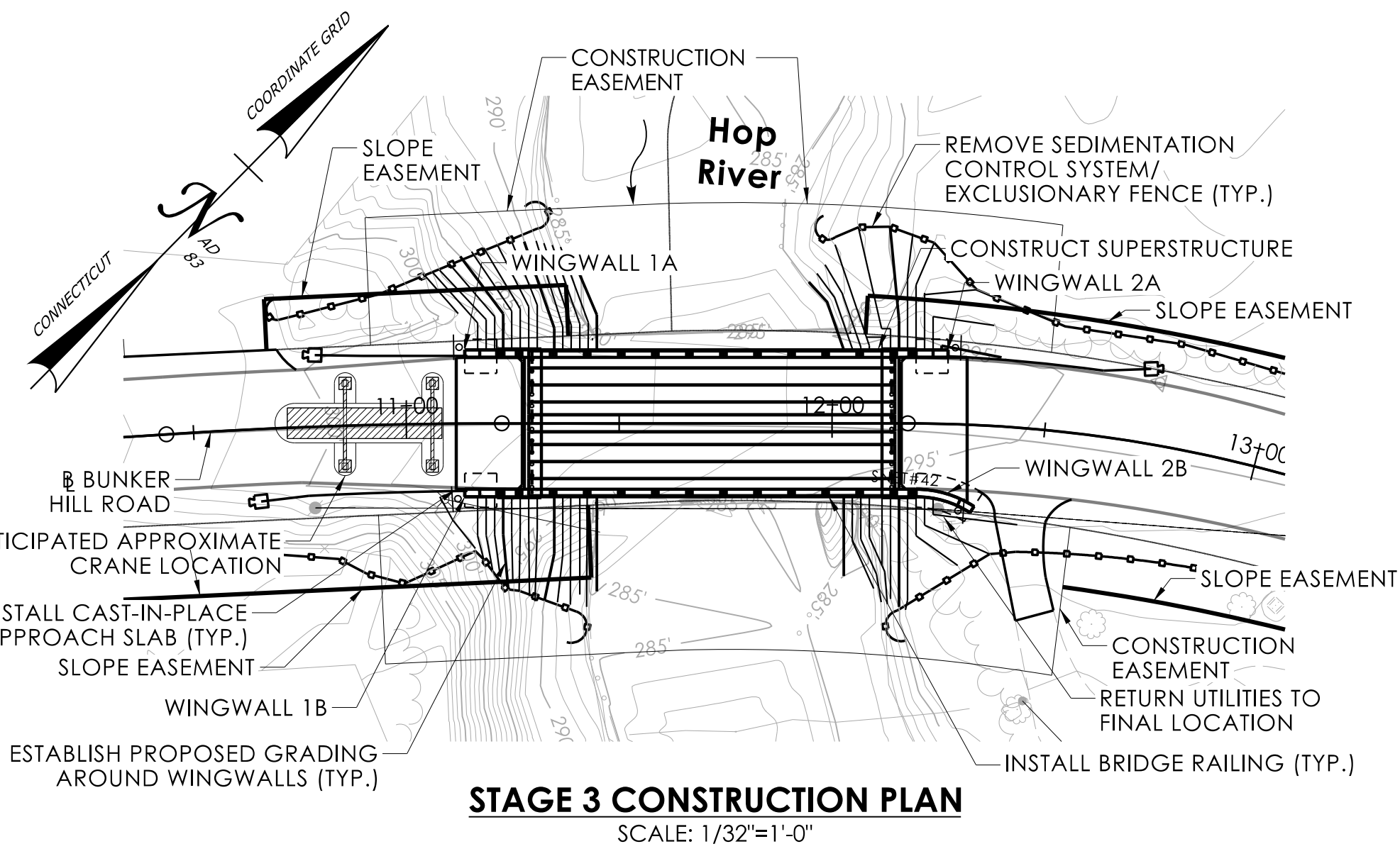
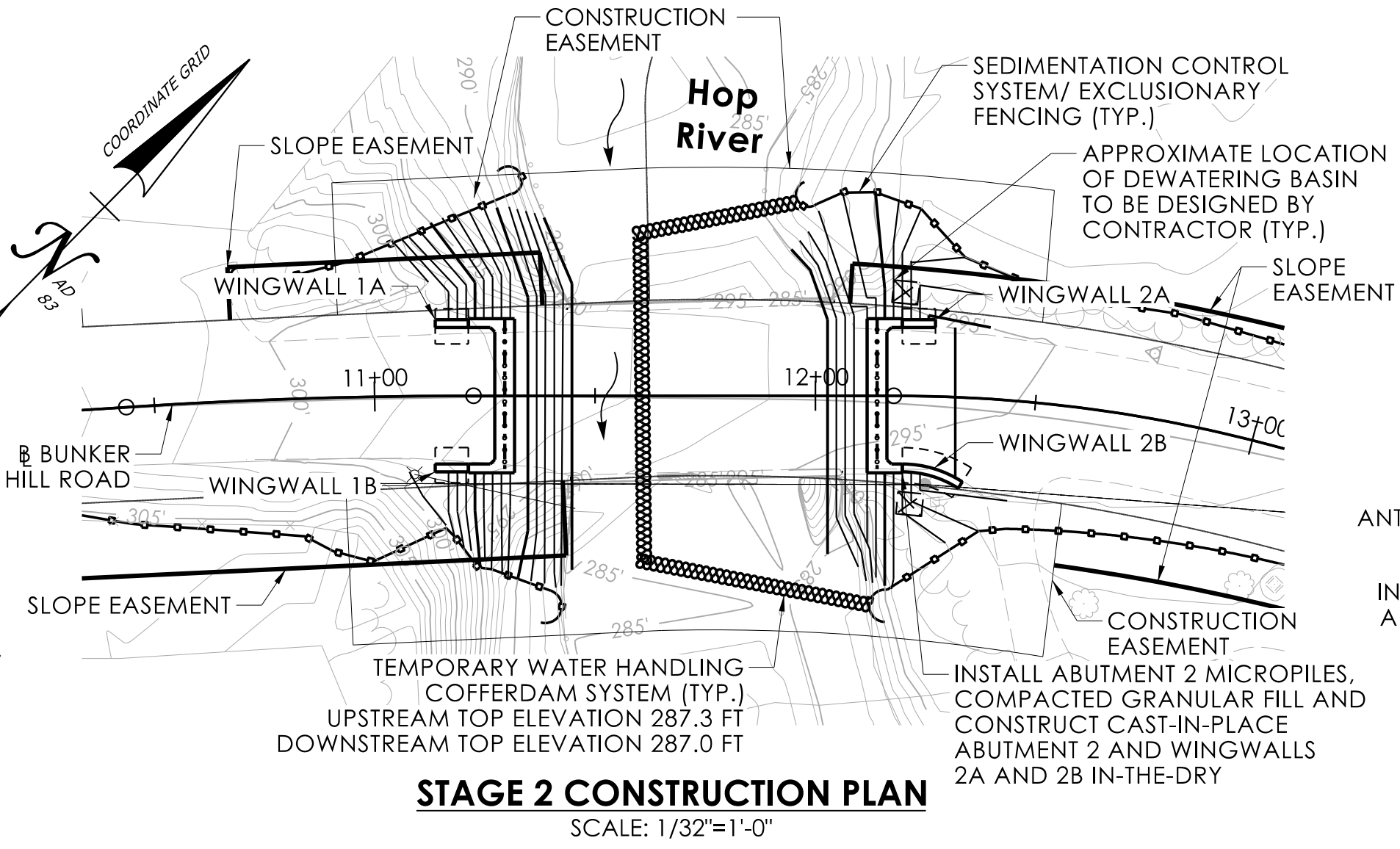
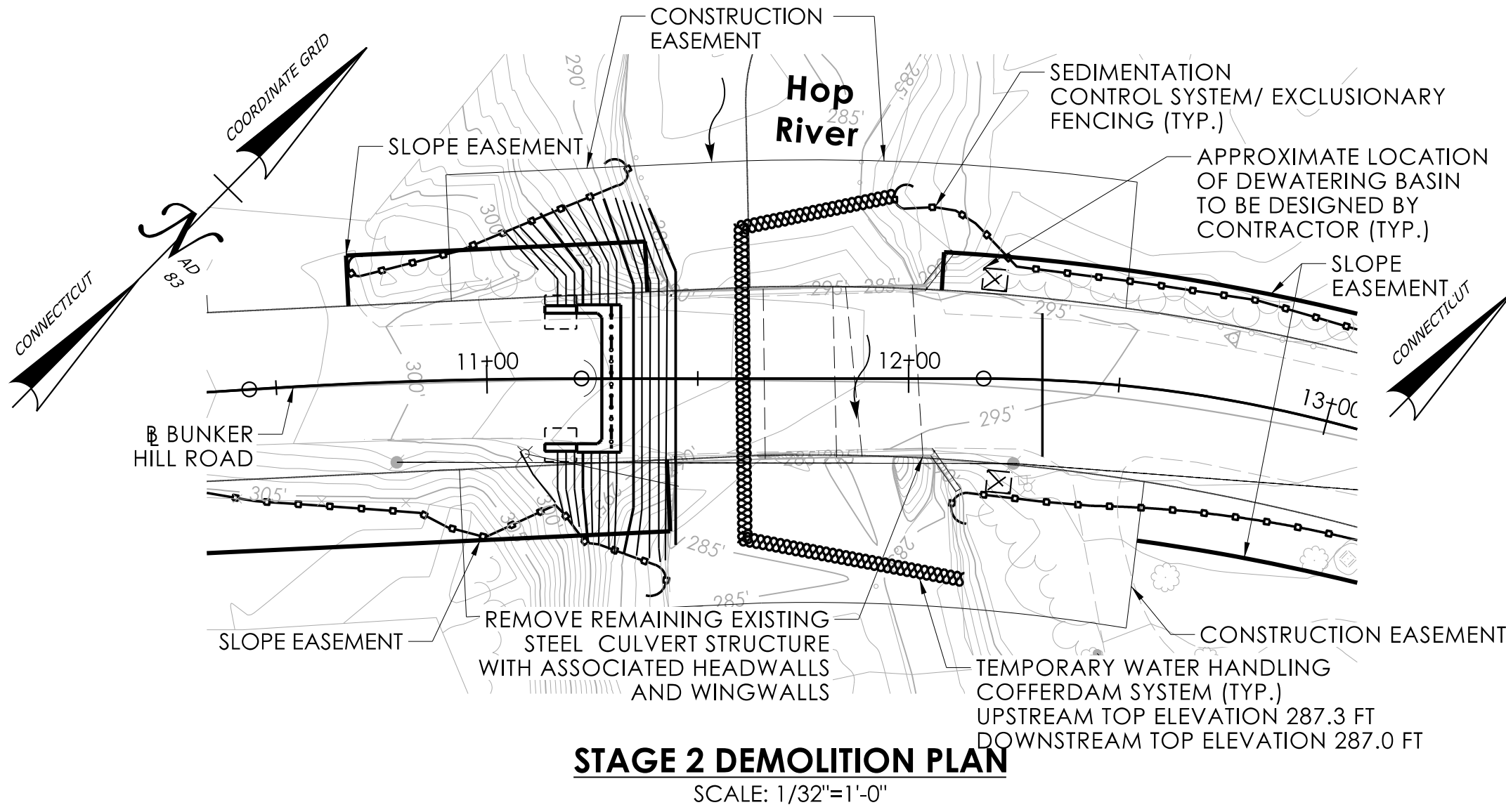
TEMPORARY WATER HANDLING COFFERDAM DETAIL (SECTION VIEW)

SCALE: NOT TO SCALE

TEMPORARY HYDRAULIC DATA

	STAGE 1	STAGE 2
AVERAGE DAILY FLOW	101-CFS	101-CFS
AVERAGE SPRING FLOW	201-CFS	201-CFS
2-YR FREQUENCY DISCHARGE	1,722-CFS	1,722-CFS
TEMPORARY DESIGN DISCHARGE	408-CFS	408-CFS
TEMPORARY DESIGN FREQUENCY	2xASF	2xASF
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	286.9	287.2
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	286.4	286.9

REV.	DATE	REVISION DESCRIPTION



SUGGESTED SEQUENCE OF CONSTRUCTION

STAGE 2 DEMOLITION

1. REMOVE STAGE 1 TEMPORARY WATER HANDLING COFFERDAM SYSTEM.
2. INSTALL DEWATERING BASINS FOR STAGE 2.
3. ESTABLISH TEMPORARY WATER HANDLING COFFERDAM SYSTEM AS SHOWN IN STAGE 2 TO PROVIDE WORK AREA FOR EASTERN ABUTMENT AND WINGWALLS.
4. REMOVE REMAINING EXISTING STEEL CULVERT STRUCTURE WITH ASSOCIATE HEADWALLS AND WINGWALLS.
5. REMOVE EXISTING DRY HYDRANT.

STAGE 2 CONSTRUCTION

1. INSTALL ABUTMENT 2 MICROPILES, COMPACTED GRANULAR FILL AND CONSTRUCT CAST-IN-PLACE ABUTMENT 2 AND WINGWALLS 2A AND 2B IN-THE-DRY.
2. INSTALL BANK STABILIZATION AND STREAMBED MATERIAL ON EASTERN SIDE OF STREAMBED.
3. REMOVE STAGE 2 TEMPORARY WATER HANDLING COFFERDAM SYSTEM.

STAGE 3 CONSTRUCTION

1. CONSTRUCT SUPERSTRUCTURE AND END BLOCK TRANSITIONS ON WINGWALLS.
2. BACKFILL BEHIND INTEGRAL ABUTMENTS AND WINGWALLS WITH PERVIOUS STRUCTURE BACKFILL.
3. INSTALL CAST-IN-PLACE APPROACH SLABS.
4. INSTALL MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC) AND 1" HMA \$0.25 ON BRIDGE DECK AND APPROACH SLABS.
5. ESTABLISH PROPOSED GRADING AROUND WINGWALLS.
6. COMPLETE FULL DEPTH RECONSTRUCTION AND PLACEMENT OF PAVEMENT THROUGHOUT THE PROJECT, INSTALL ASPHALTIC PLUG JOINTS AND COMPLETE FINAL PAVEMENT MARKINGS.
7. INSTALL BRIDGE RAILING.
8. RETURN UTILITIES TO FINAL LOCATION.
9. REMOVE SEDIMENTATION CONTROL SYSTEM/EXCLUSIONARY FENCE.
10. REMOVE DETOUR AND OPEN THE BRIDGE TO TRAFFIC.

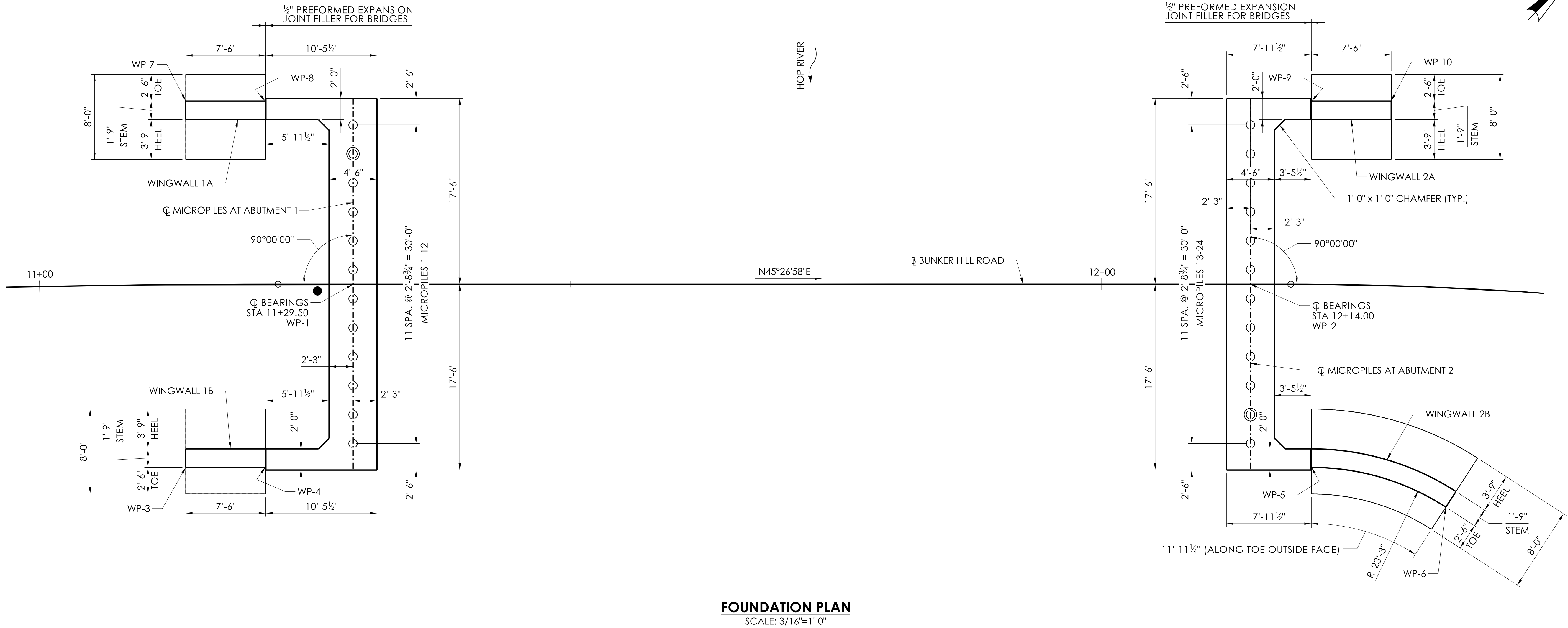
NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND ERECTION OF THE PRESTRESSED DECK UNITS.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEBRIS CAUSED BY REMOVAL OF THE EXISTING STRUCTURE. THE CONTRACTOR SHALL RETRIEVE ANYTHING THAT FALLS INTO THE RIVER DURING REMOVAL OPERATIONS.
3. REFER TO DRAWING NO. S-03 FOR PLAN AND ADDITIONAL INFORMATION.
4. REFER TO SPECIAL PROVISIONS FOR TRAFFIC RESTRICTIONS DURING CONSTRUCTION.
5. TEMPORARY DEWATERING BASINS ARE PAID UNDER THE ITEM "HANDLING WATER."

REV.	DATE	REVISION DESCRIPTION

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: ARW	CHECKED BY: WES/RTG	SIGNATURE/ BLOCK:	 TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106	DRAWING NO. S-08
LASTED SAVED BY: Andrew.Westpy FILE NAME: P:\PROJECTS\CT_Projects\0001-0106\Bridge\Contract_Plans\SB_CP_0001-0106_S-07 FOUNDATION PLAN.dgn PLOTTED DATE: 10/19/2023				PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER	SHEET NO. 04.08



MINIMUM DESIGN REQUIREMENTS:

TYPE A MICROPILE
MINIMUM PILE DIAMETER = 9 5/8" O.D.
MINIMUM PILE WALL THICKNESS = 0.472"
MINIMUM PERMANENT CASING YIELD STRENGTH = 80 KSI
MINIMUM BOND ZONE DIAMETER = 8 1/2"
MINIMUM GROUT STRENGTH = 5,000 PSI

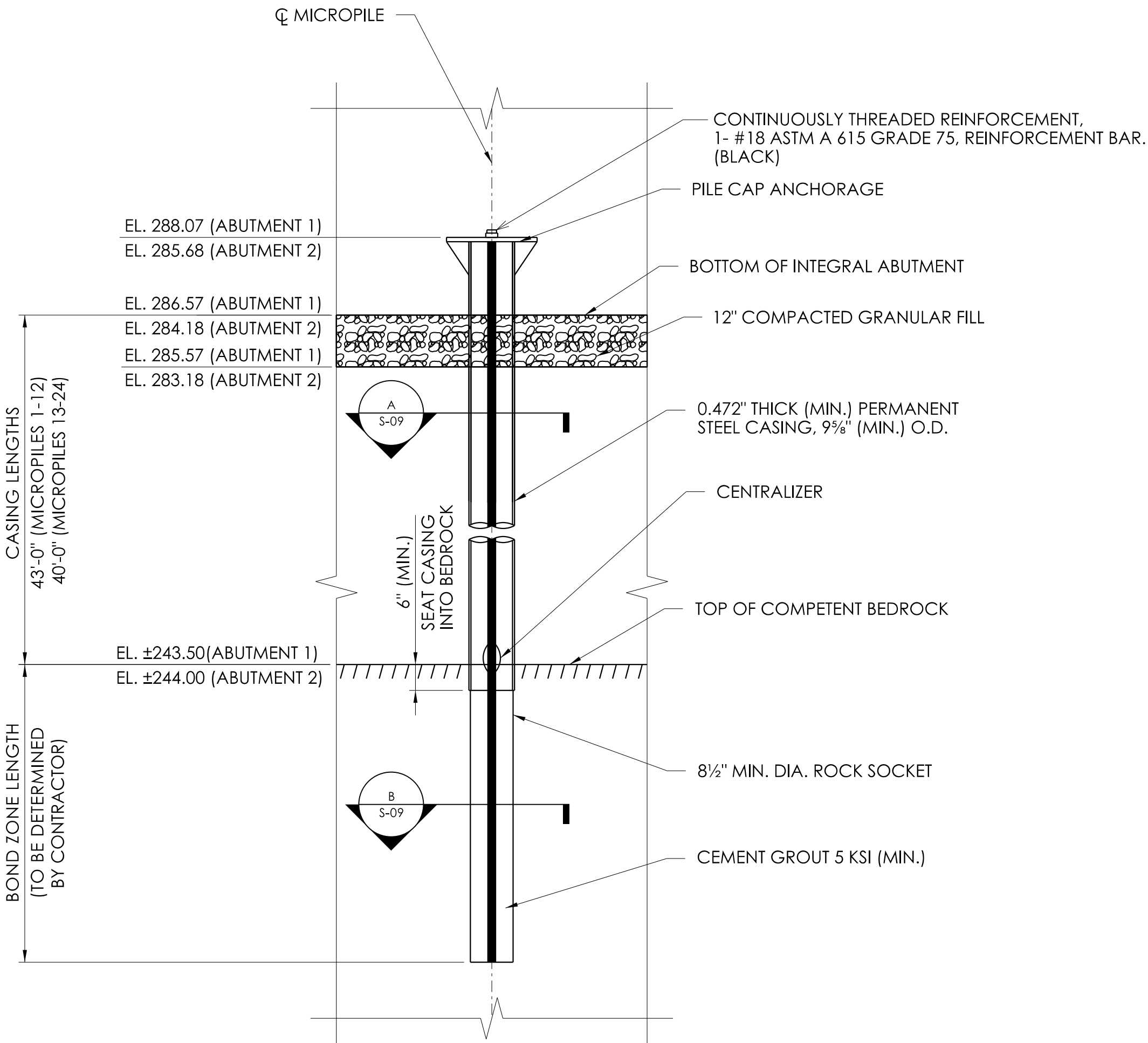
A RESISTANCE FACTOR OF 1.0 WAS USED FOR SERVICE LIMIT STATE.
A RESISTANCE FACTOR OF 0.7 WAS USED FOR STRENGTH LIMIT STATE.

	COMPRESSION
SVL	50 TONS
STL	70 TONS
UPC	100 TONS

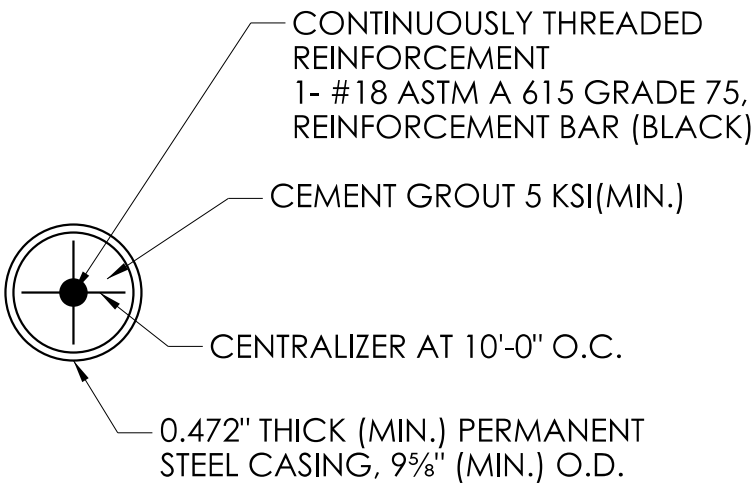
SVL = MAXIMUM SERVICE LIMIT PILE LOAD
STL = MAXIMUM STRENGTH LIMIT PILE LOAD
UPC = ULTIMATE PILE CAPACITY

MICROPILE NOTES:

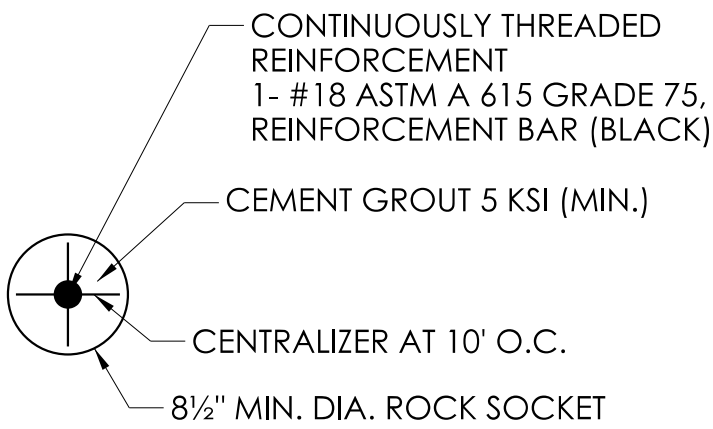
- THE MICROPILE SHALL BE DESIGNED BY THE CONTRACTOR ACCORDING TO THE PROJECT SPECIFICATIONS, THE LATEST VERSION OF AASHTO LRFD BRIDGE DESIGN SPECIFICATION INCLUDING CURRENT INTERIM SPECIFICATIONS, AND THE LATEST VERSION OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL.
- THE CONTRACTOR SHALL SELECT AND DESIGN THE MICROPILE TYPE, SIZE, PILE TOP ATTACHMENT, INSTALLATION MEANS AND METHODS, ESTIMATE THE GROUND-GROUT BOND VALUE AND DETERMINE THE REQUIRED GROUT BOND LENGTH AND FINAL MICROPILE DIAMETER, TAKING INTO CONSIDERATION THE MINIMUM DESIGN REQUIREMENTS INDICATED ON THIS DRAWING.
- THE MICROPILE LOAD CAPACITIES SHALL BE CONFIRMED AND VERIFIED BY VERIFICATION AND PROOF LOAD TESTING AS REQUIRED AND MUST MEET THE ACCEPTANCE CRITERIA SPECIFIED IN CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 818 (2020), AND SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 2023.
- NO SPLICING WILL BE ALLOWED WITHIN THE FIRST 15 FEET OF THE MICROPILE.
- MECHANICAL SPLICE COUPLERS SHALL DEVELOP 125%, IN TENSION AND COMPRESSION, OF THE SPECIFIED YIELD STRENGTH OF THE BAR BEING SPLICED.
- CASING JOINTS ARE NOT PERMITTED IN THE UPPER 15 FEET OF THE MICROPILE.
- THE MICROPILE CONNECTION / ANCHORAGE OF THE PILE TO THE FOOTING SHALL BE DESIGNED BY THE CONTRACTOR AND SHALL EFFECTIVELY DISTRIBUTE THE DESIGN FORCE TO THE CAST-IN-PLACE CONCRETE INTEGRAL ABUTMENT. THE CONNECTION SHALL BE DESIGNED FOR 100% OF THE ULTIMATE CAPACITY OF THE PILE.
- PROPOSED CENTRAL BAR SHALL EXTEND TO THE FULL LENGTH OF THE MICROPILE FROM THE PILE HEAD TO THE BOTTOM OF THE ROCK SOCKET. IF MULTIPLE REINFORCEMENT BARS ARE USED, INCLUDE SPACERS TO ASSURE BOND STRENGTH IS MAINTAINED.
- THE TOP OF THE ROCK SOCKET SHOULD BE WITHIN THE SOUND ROCK BELOW THE DECOMPOSED ROCK.
- PRIOR TO THE INSTALLATION OF THE MICROPILES, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL HIS METHOD AND SEQUENCE OF MICROPILE INSTALLATION.
- REFER TO GEOTECHNICAL ENGINEERING REPORT FOR BRIDGE 04583, DATED JUNE 28, 2023, FOR ADDITIONAL INFORMATION AND DETAILS.



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



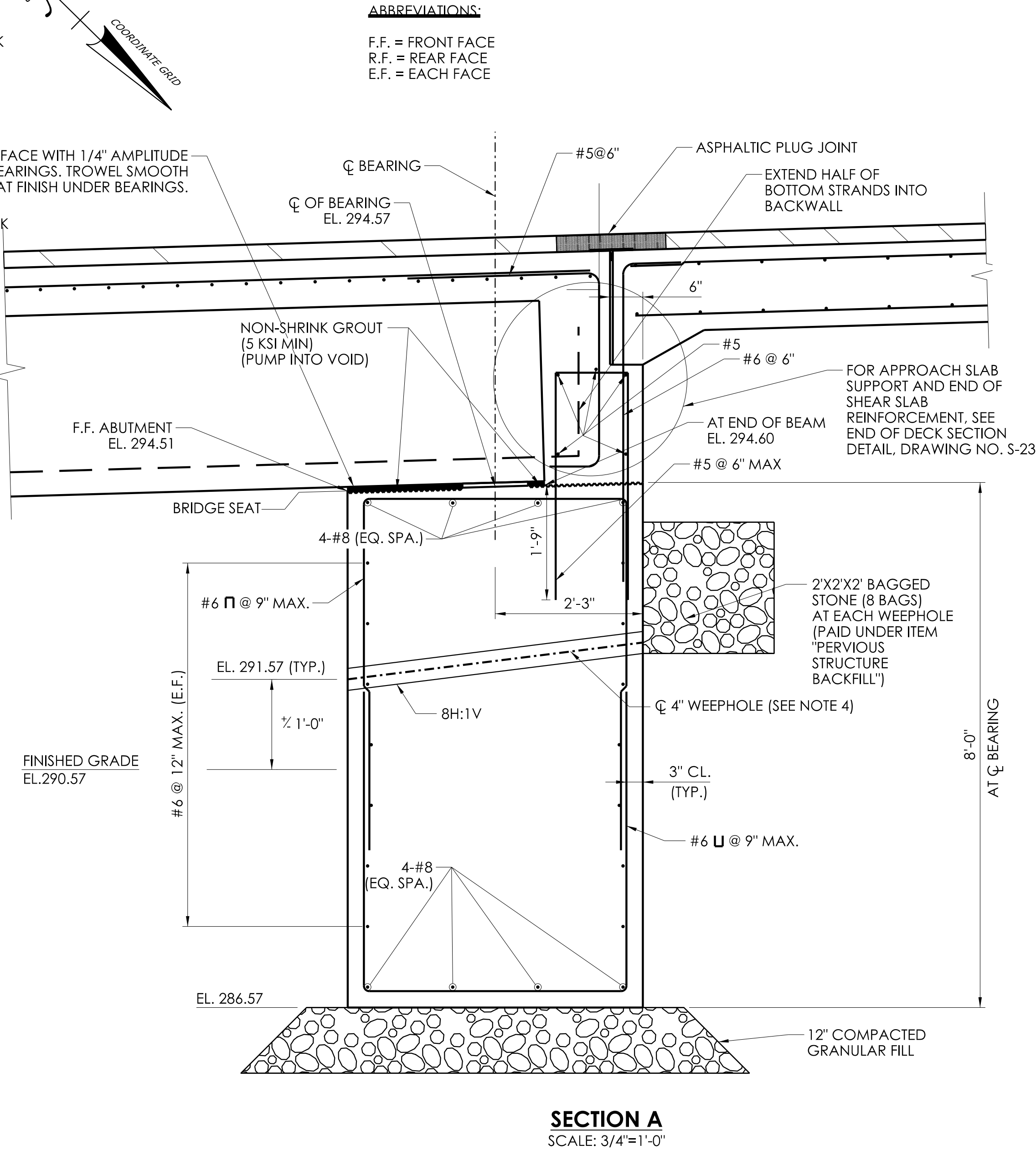
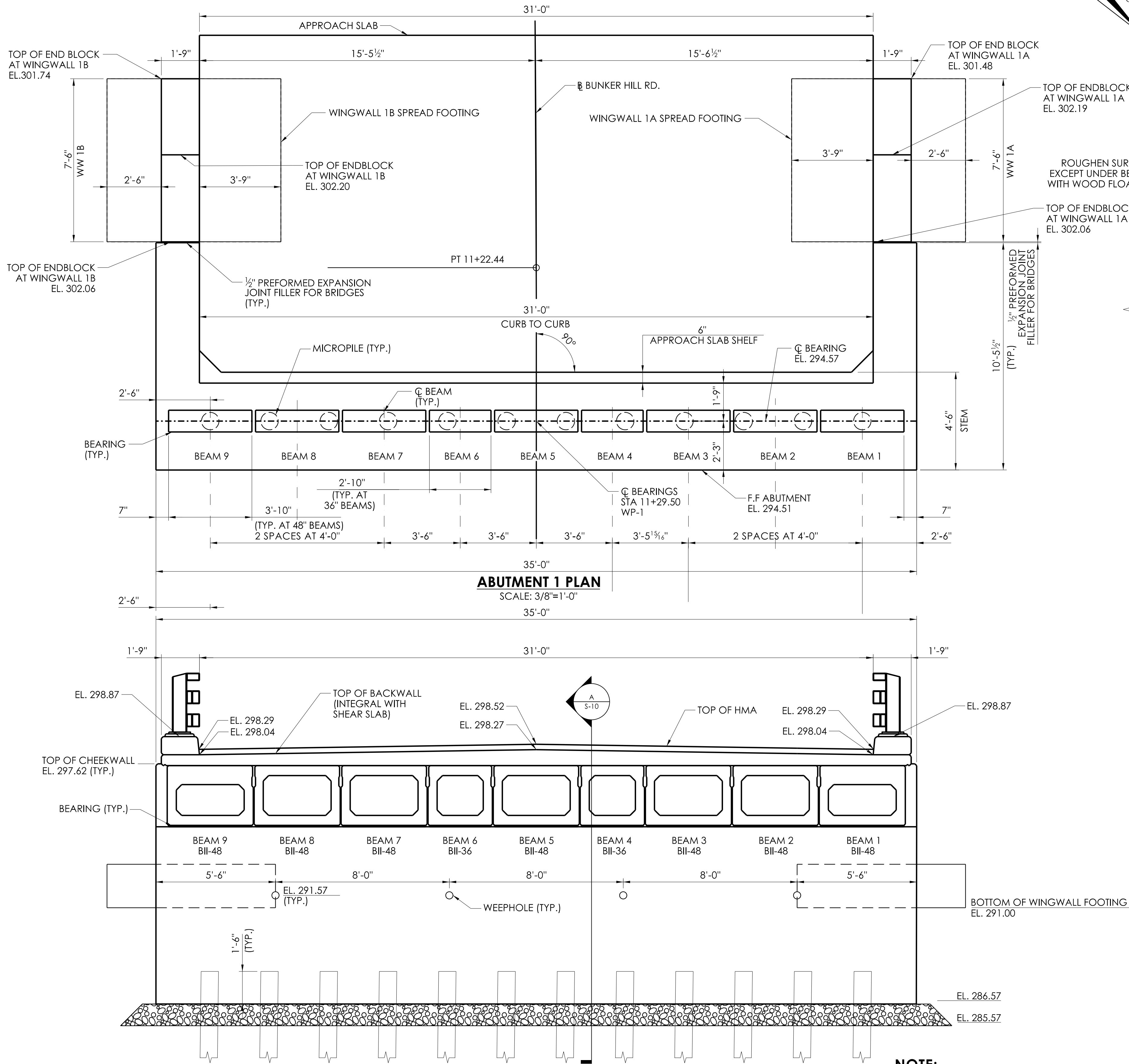
SECTION A (CASED MICROPILE)
SCALE: N.T.S.



SECTION B (UNCASED MICROPILE)
SCALE: N.T.S.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: ARW	CHECKED BY: RTE	SIGNATURE/ BLOCK:	 TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106	DRAWING NO. S-09
LASTED SAVED BY: Andrew Westpy FILE NAME: P:\PROJECTS\CT_Projects\0001-0106\Bridge\Contract_Plans\S8_CP_0001-0106_S-08 MICROPILE DETAILS.dgn PLOTTED DATE: 10/19/2023				PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER	SHEET NO. 04.09



- NOTES:**
- FOR ABUTMENT 1 DETAILS, SEE DRAWING NO. S-12
 - FOR LOCATION OF MICROPILES, SEE DRAWING NO. S-08 FOUNDATION PLAN
 - FOR PAY LIMITS, SEE DRAWING NO. S-14
 - THERE WILL BE NO DIRECT PAYMENT FOR FORMING WEEPHOLES THROUGH THE WINGWALLS OR ABUTMENTS OR FOR THE PVC PIPE NECESSARY FOR THE PURPOSE. THE COST OF FURNISHING AND INSTALLING WEEPHOLES IS INCLUDED IN THE COST OF "ABUTMENT AND WALL CONCRETE".
 - NON-SHRINK GROUT SHALL BE PAID FOR UNDER THE ITEM "PRESTRESSED DECK UNITS"

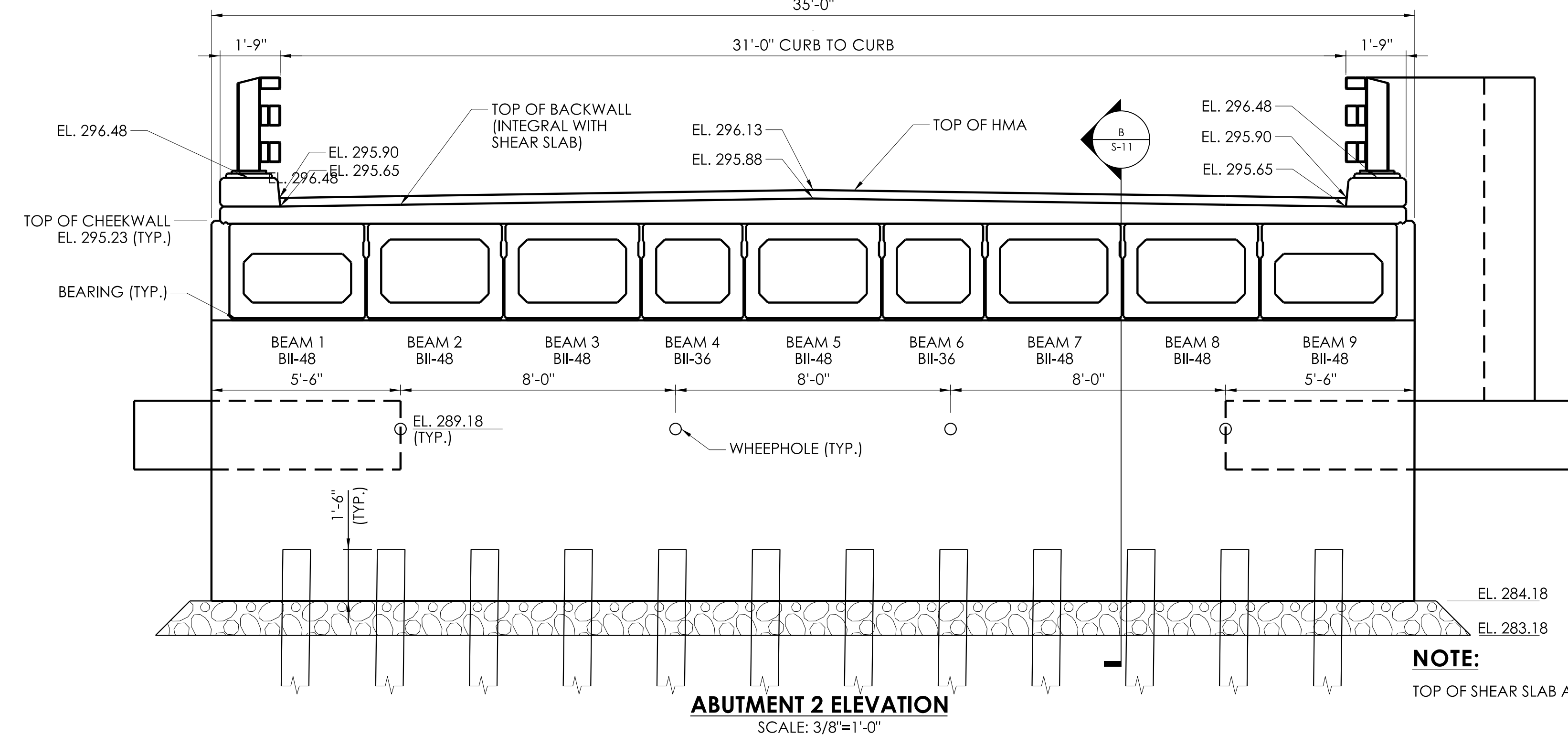
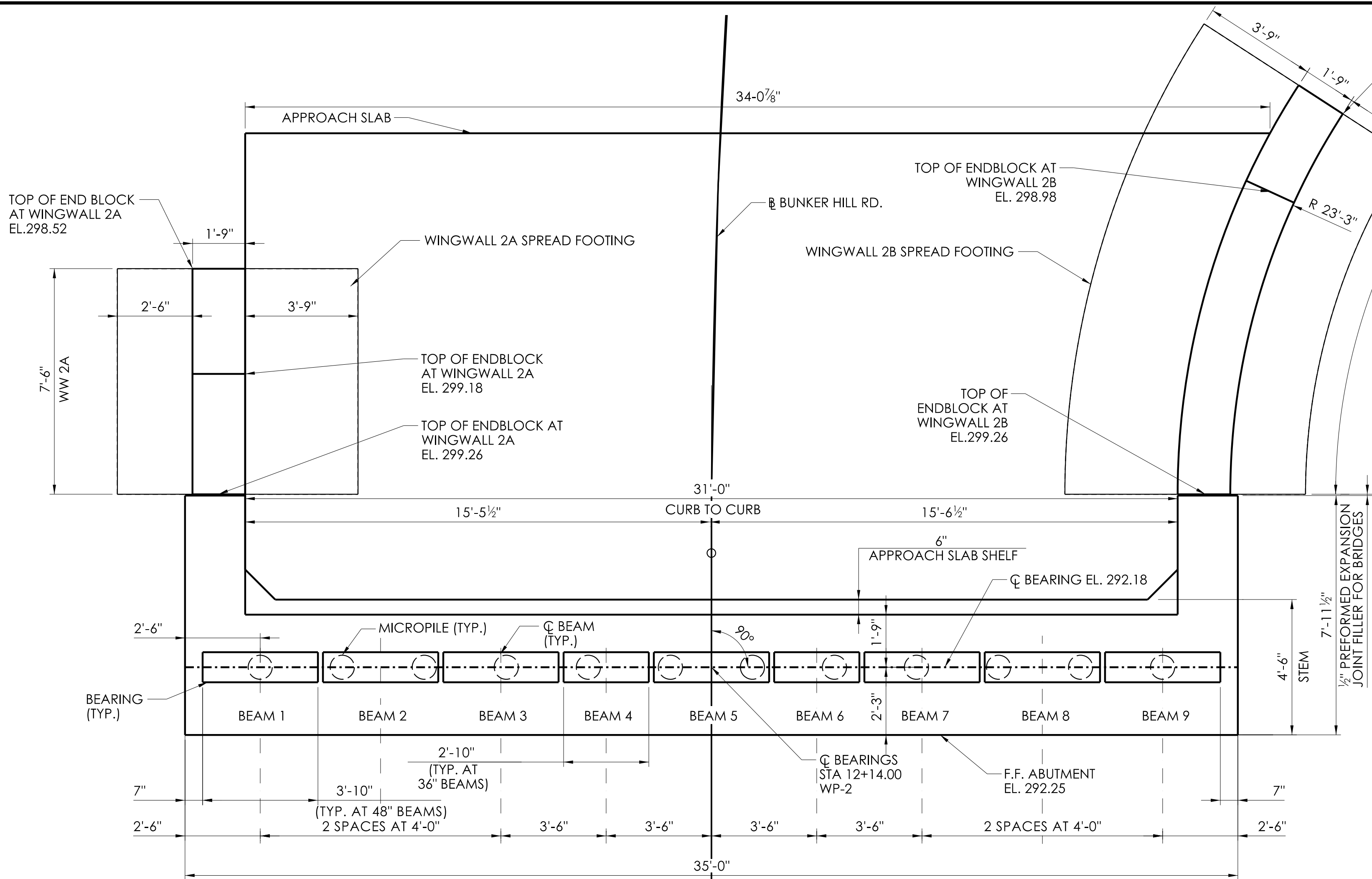
NOTE:
TOP OF SHEAR SLAB AND TOP OF HMA ELEVATION ARE TAKEN AT $\bar{C}$ BEARING

REV.	DATE	REVISION DESCRIPTION

SIGNATURE/
BLOCK:

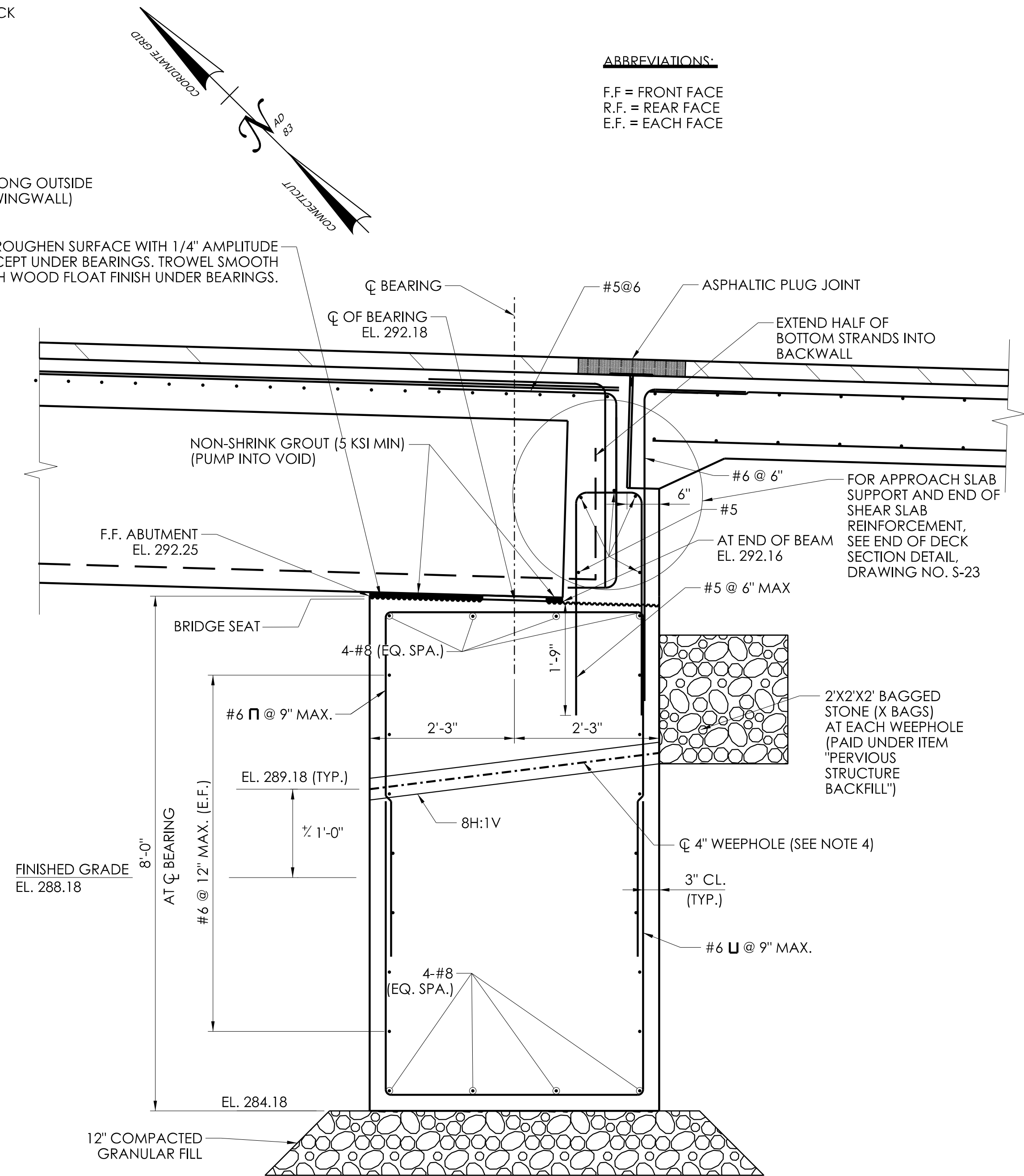


TOWN OF ANDOVER



NOTE:

TOP OF SHEAR SLAB AND TOP OF HMA ELEVATION ARE TAKEN AT C BEARING

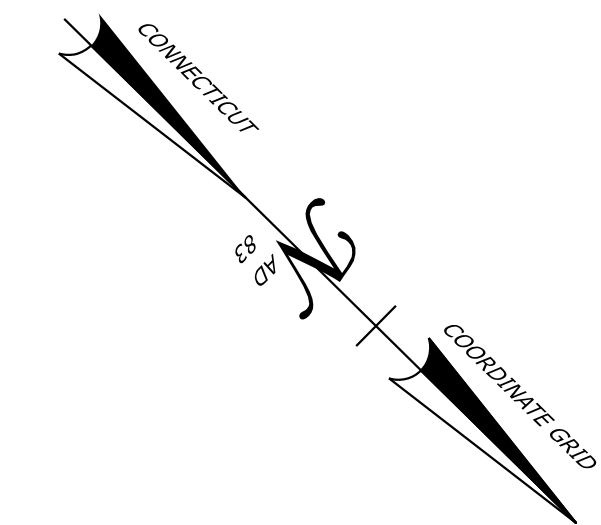
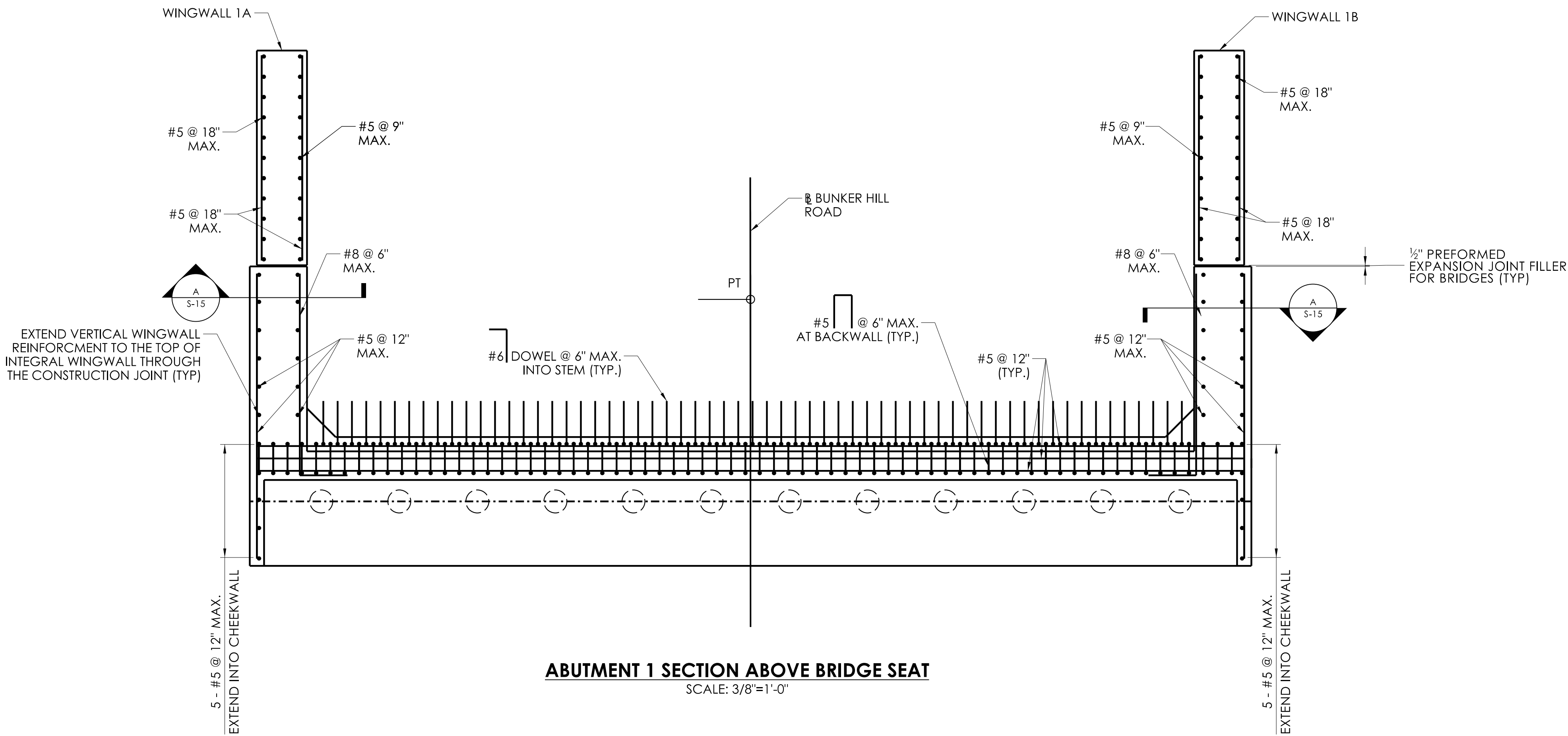
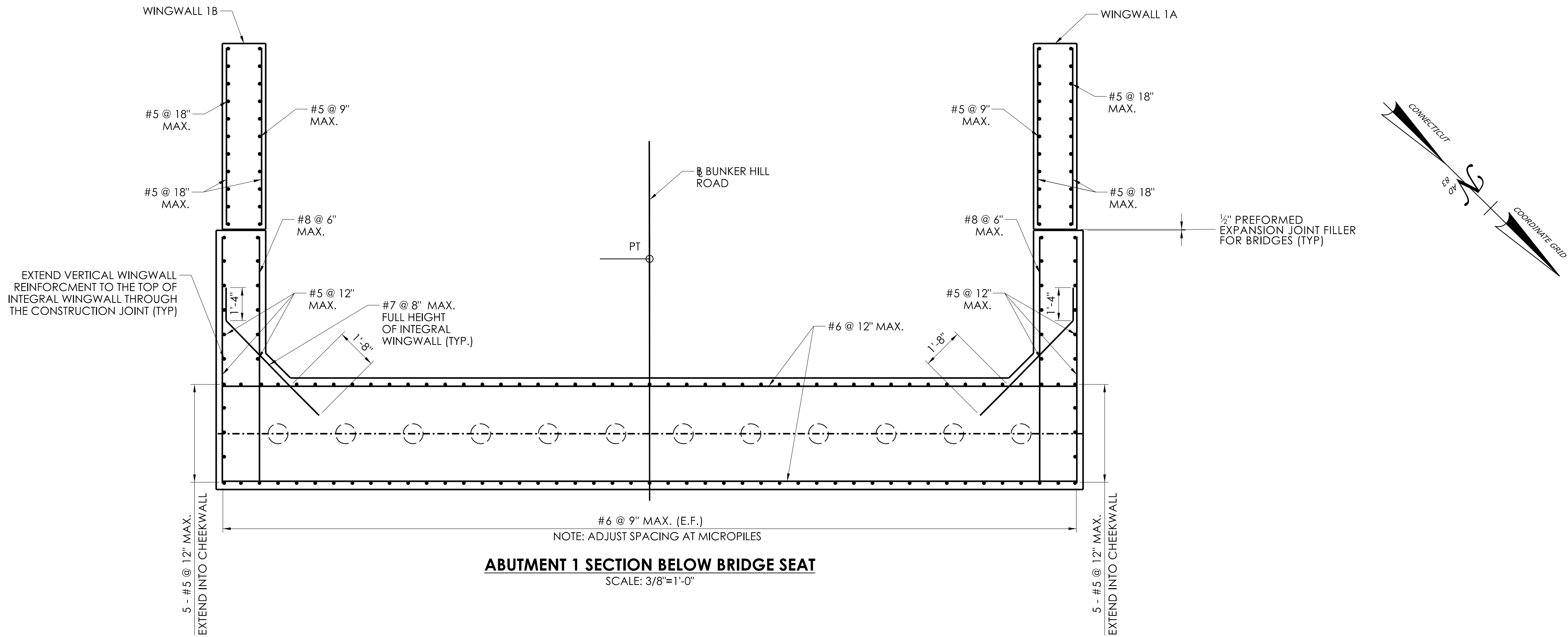


NOTES:

- FOR ABUTMENT 2 DETAILS, SEE DRAWING NO. S-13.
- FOR LOCATION OF MICROPILES, SEE DRAWING NO. S-08 FOUNDATION PLAN.
- FOR PAY LIMITS, SEE DRAWING NO. S-14.
- THERE WILL BE NO DIRECT PAYMENT FOR FORMING WEEPHOLES THROUGH THE WINGWALLS OR ABUTMENTS OR FOR THE PVC PIPE NECESSARY FOR THE PURPOSE. THE COST OF FURNISHING AND INSTALLING WEEPHOLES IS INCLUDED IN THE COST OF "ABUTMENT AND WALL CONCRETE".
- NON-SHRINK GROUT SHALL BE PAID FOR UNDER THE ITEM "PRESTRESSED DECK UNITS."

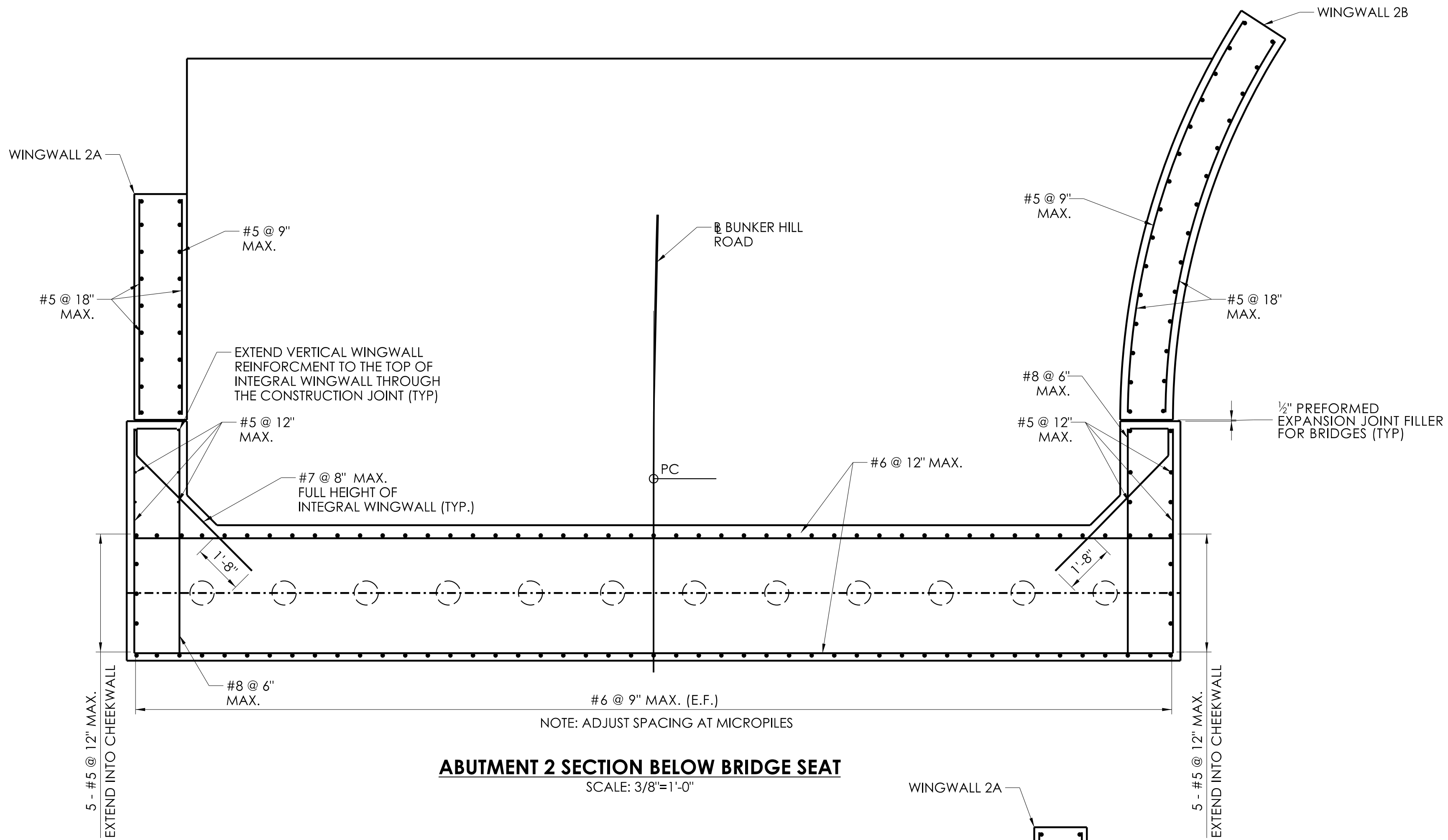
REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: SJL	CHECKED BY: RTE	SIGNATURE/ BLOCK:	TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER TOWN(S): ANDOVER DRAWING TITLE: ABUTMENT 2 PLAN, ELEVATION, AND SECTION	DRAWING NO. S-11 SHEET NO. 04.11
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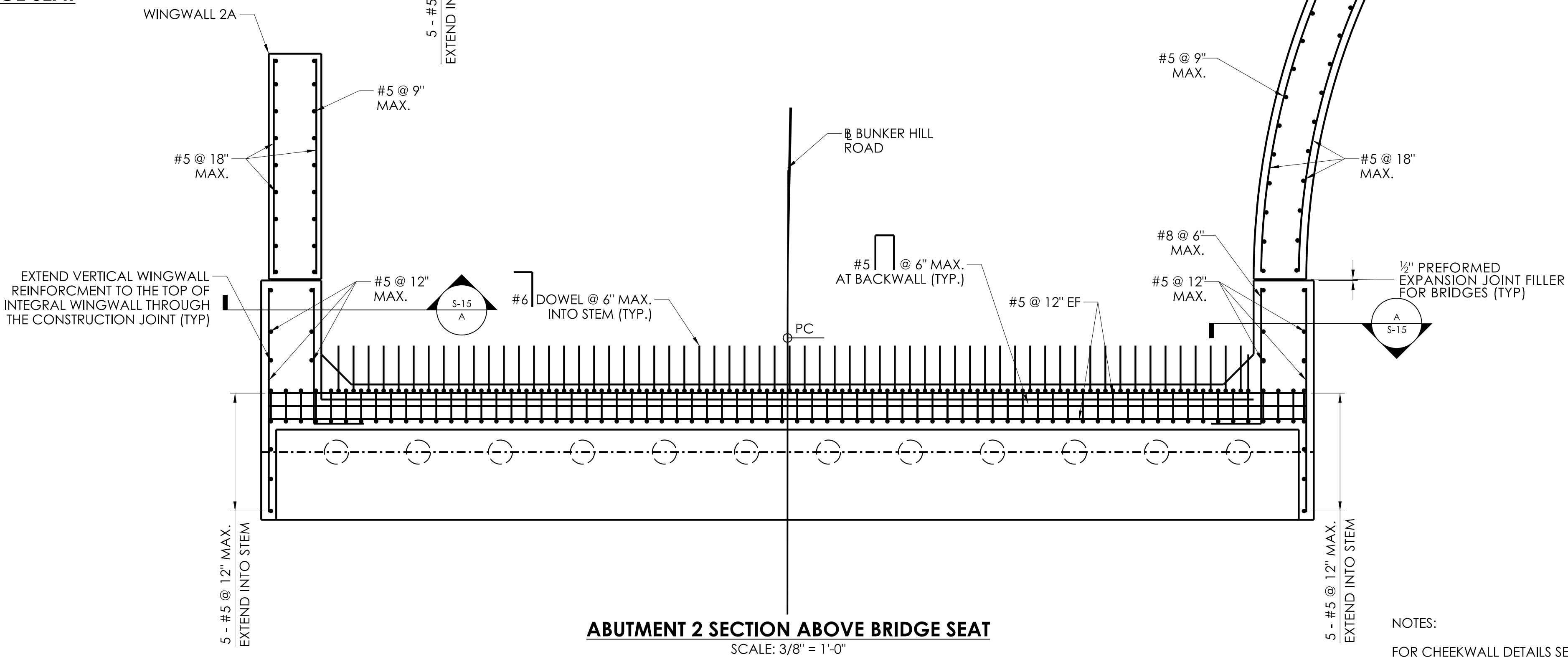


NOTES:
1. FOR CHEEKWALL DETAIL, SEE DRAWING NO. S-14.

REV.	DATE	REVISION DESCRIPTION



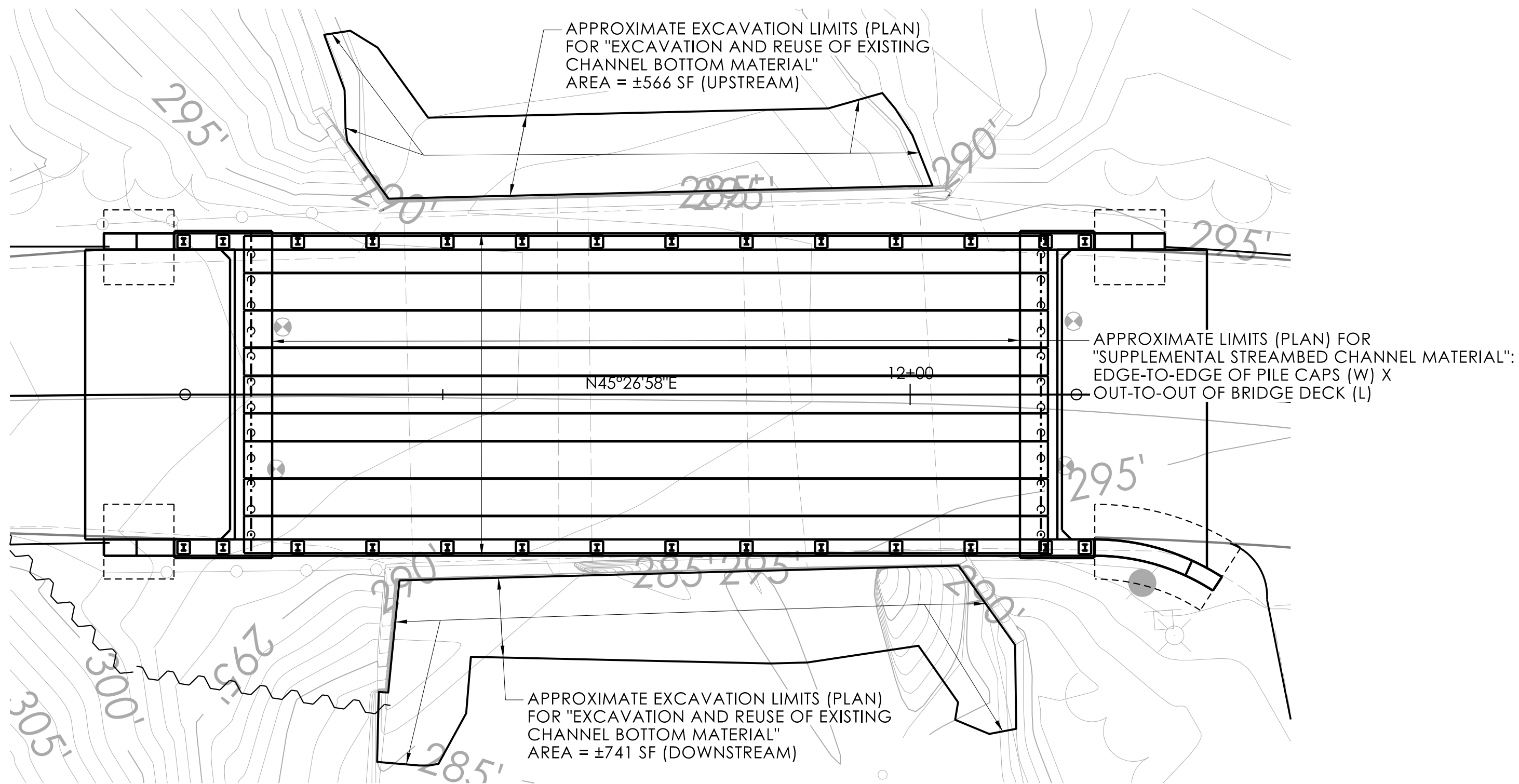
ABUTMENT 2 SECTION BELOW BRIDGE SEAT
SCALE: 3/8"=1'-0"



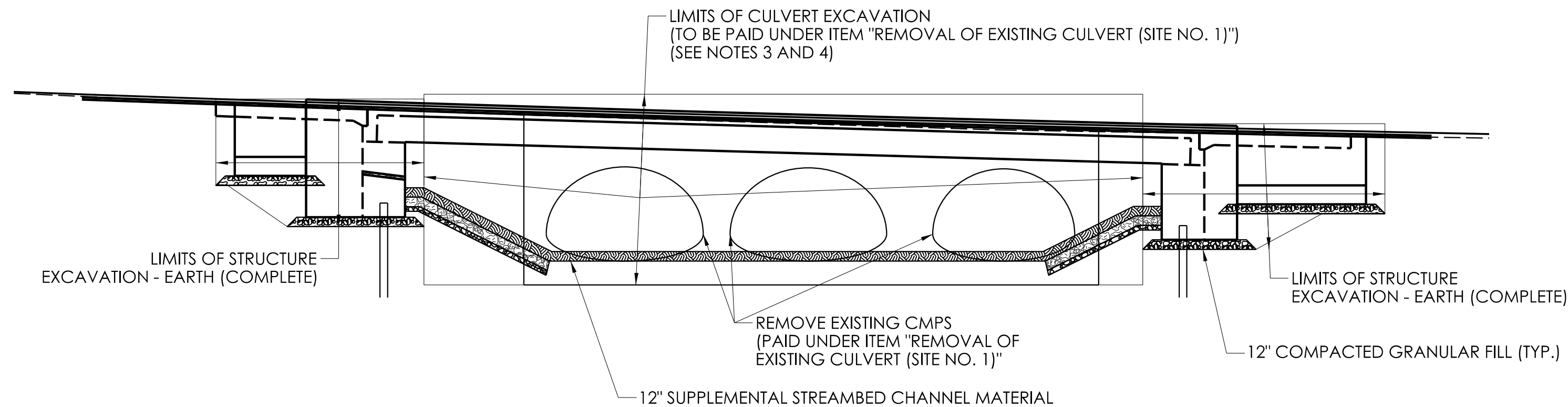
ABUTMENT 2 SECTION ABOVE BRIDGE SEAT
SCALE: 3/8" = 1'-0"

NOTES:
FOR CHEEKWALL DETAILS SEE DRAWING NO. S-14

REV.	DATE	REVISION DESCRIPTION



PLAN - EXCAVATION LIMITS FOR CHANNEL BOTTOM MATERIAL
SCALE: 3/32"=1'-0"



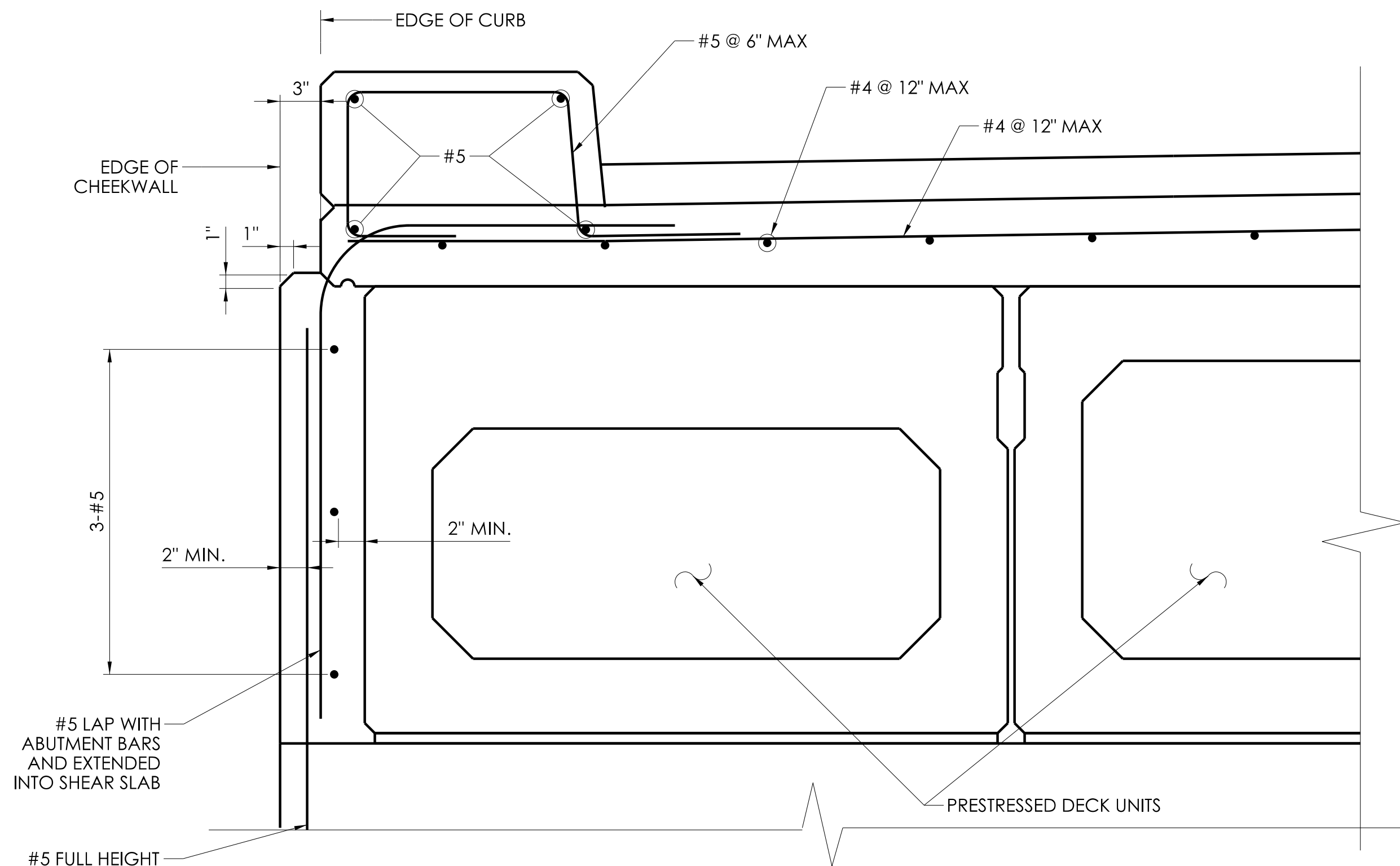
ELEVATION - EXISTING STRUCTURE EXCAVATION LIMITS
SCALE: 3/32"=1'-0"

EXISTING STRUCTURE EXCAVATION LIMITS NOTES:

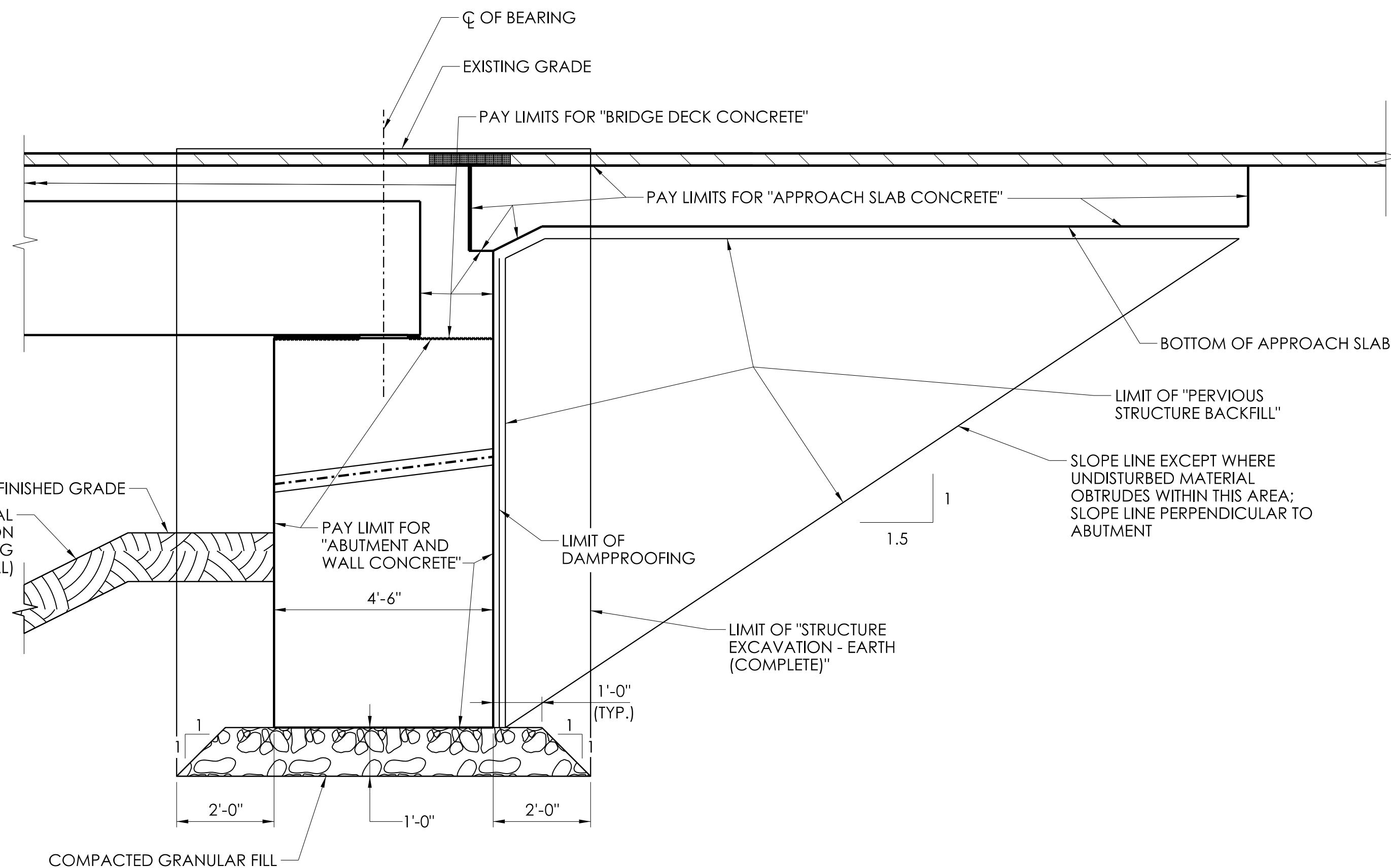
- EXISTING WINGWALLS NOT SHOWN FOR CLARITY PURPOSES.
- FOR EXCAVATION BEYOND STRUCTURE EXCAVATION - EARTH (COMPLETE) LIMITS, REFER TO HIGHWAY ITEM "EARTH EXCAVATION."
- EXCAVATION BETWEEN THE VERTICAL LINES OF STRUCTURE EXCAVATION - EARTH (COMPLETE) IS INCLUDED IN THE "REMOVAL OF EXISTING CULVERT (SITE NO. 1)."
- "REMOVAL OF EXISTING CULVERT (SITE NO. 1)" INCLUDES EXCAVATION FROM TOP OF EXISTING GROUND SURFACE (INCLUDING ROADWAY PAVEMENT AND SUBBASE) DOWN TO THE BOTTOM OF THE SUPPLEMENTAL STREAMBED CHANNEL MATERIAL OR TO THE BOTTOM OF EXISTING FOUNDATION, WHICHEVER IS DEEPER.

PAY LIMIT NOTES:

- REMOVAL OF EXISTING CULVERT INCLUDING HEADWALLS, WINGWALLS, AND FOOTINGS, SHALL BE PAID FOR UNDER THE ITEM "REMOVAL OF EXISTING CULVERT (SITE NO. 1)".
- FOR EACH MICROPILE, THE COST OF FURNISHING, DELIVERY, STORAGE, HANDLING, INSTALLATION AND ALL INCIDENTAL MATERIALS, EQUIPMENT TOOLS AND LABOR SHALL BE INCLUDED IN THE COST OF "MICROPILES".

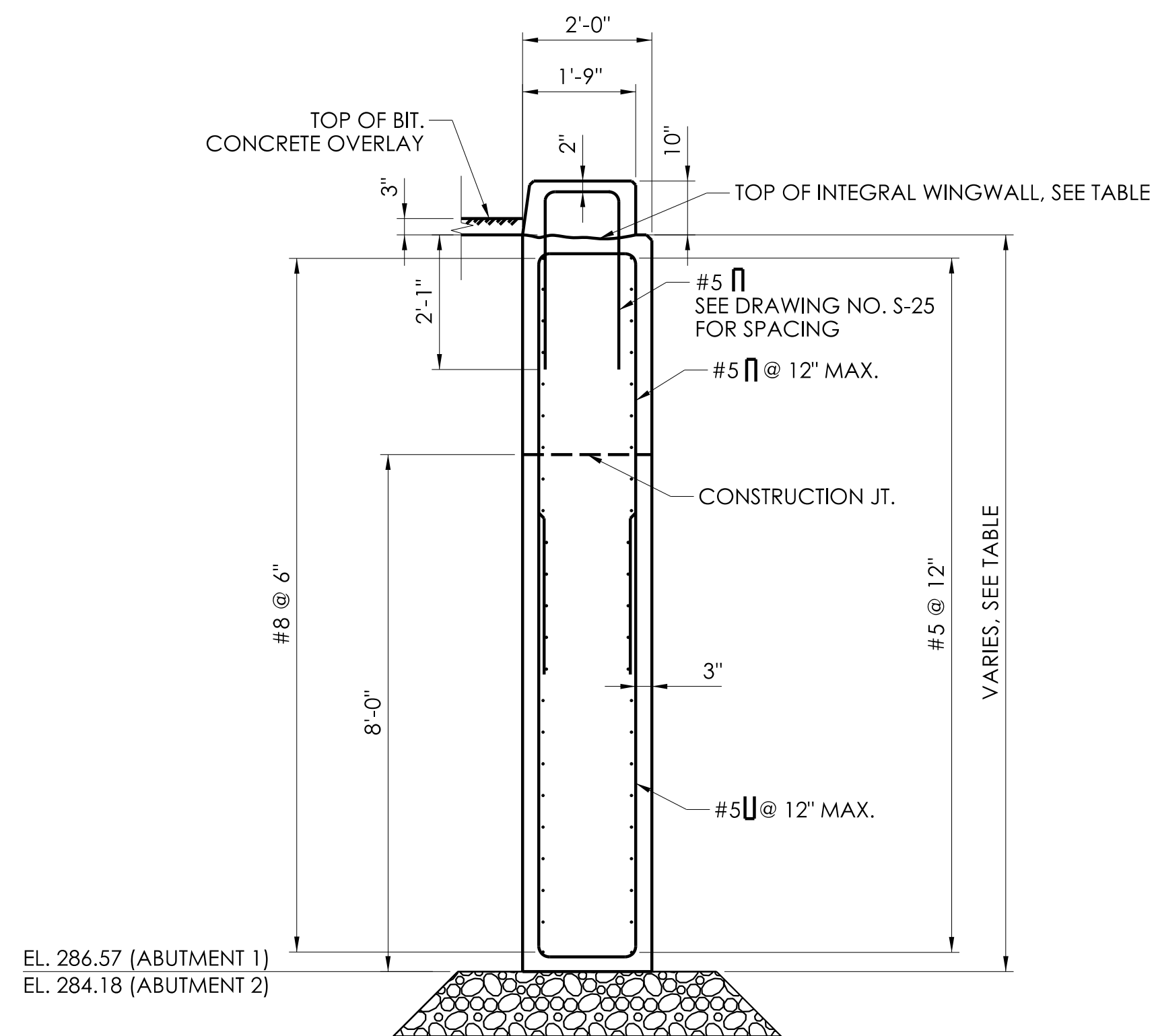


CHEEKWALL DETAIL
SCALE: 1 1/2"=1'-0"



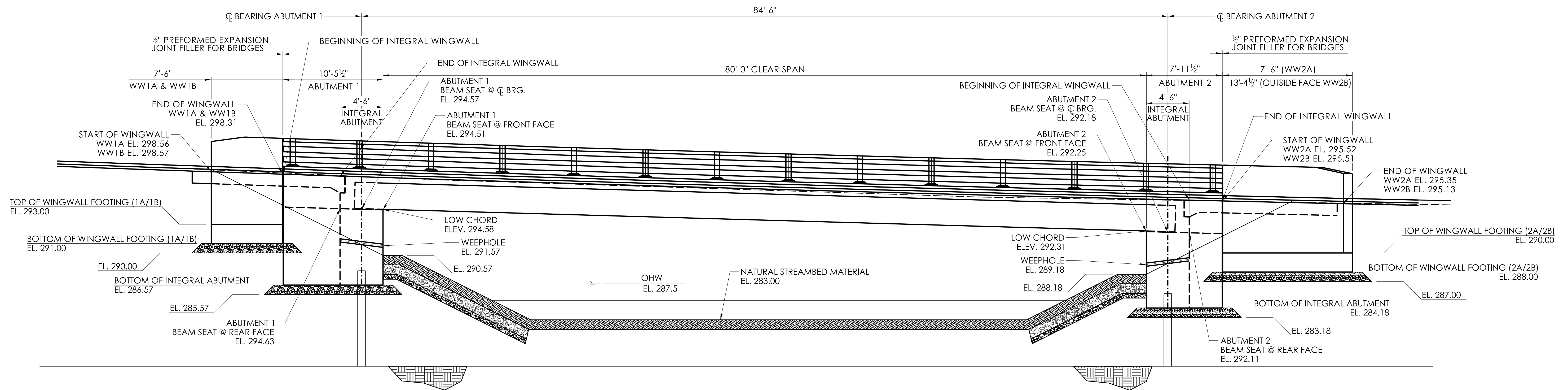
PAY LIMITS AT ABUTMENT
SCALE: 1/2"=1'-0"

REV.	DATE	REVISION DESCRIPTION



FOR ELEVATIONS ALONG TOP OF WINGWALLS 1A AND 1B, SEE DRAWING S-10.
FOR ELEVATIONS ALONG TOP OF WINGWALLS 2A AND 2B, SEE DRAWING S-11.

TYPICAL INTEGRAL WINGWALL SECTION A



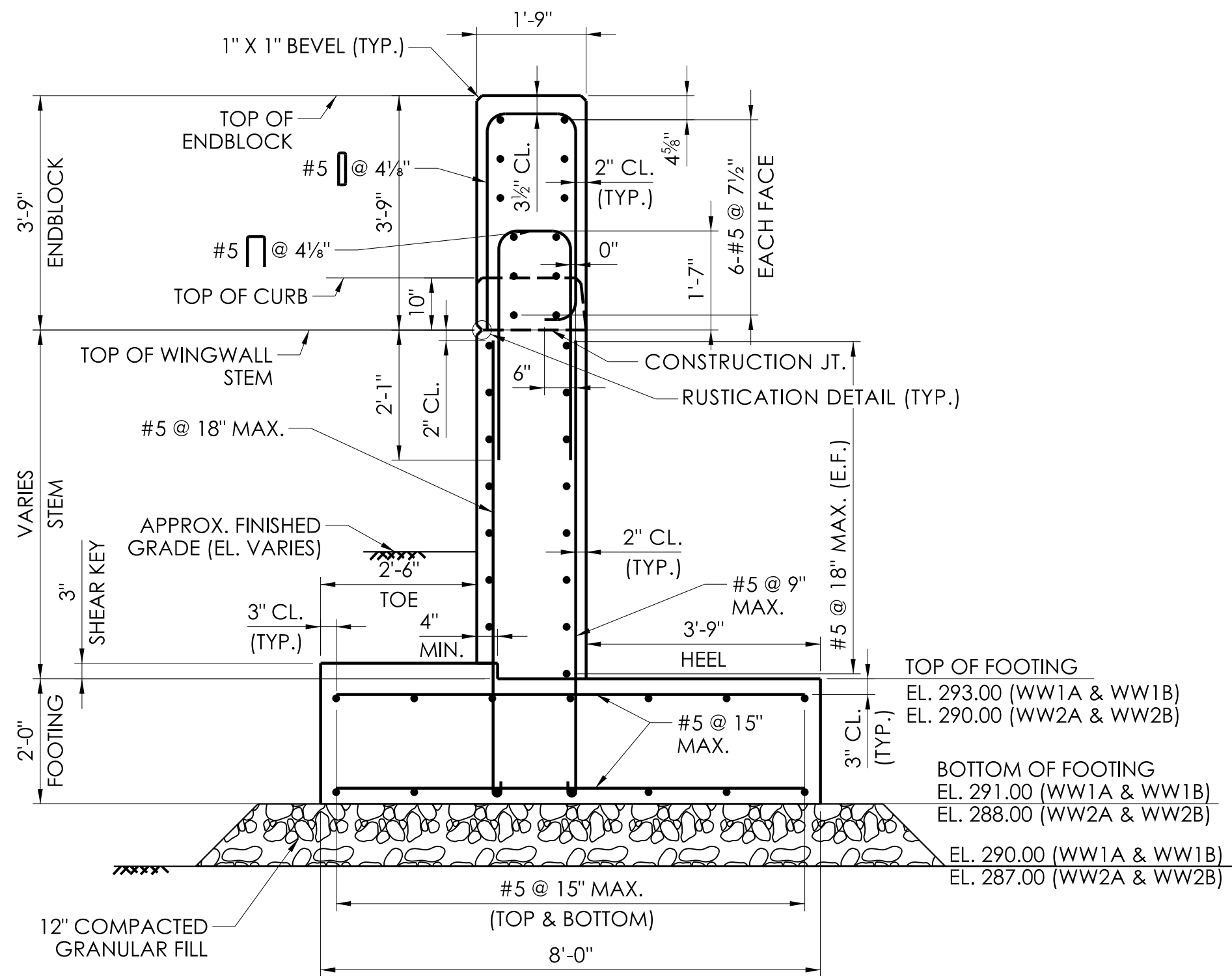
DOWNSTREAM ELEVATION (LOOKING UPSTREAM)
SCALE: 3/16"=1'-0"

NOTES:

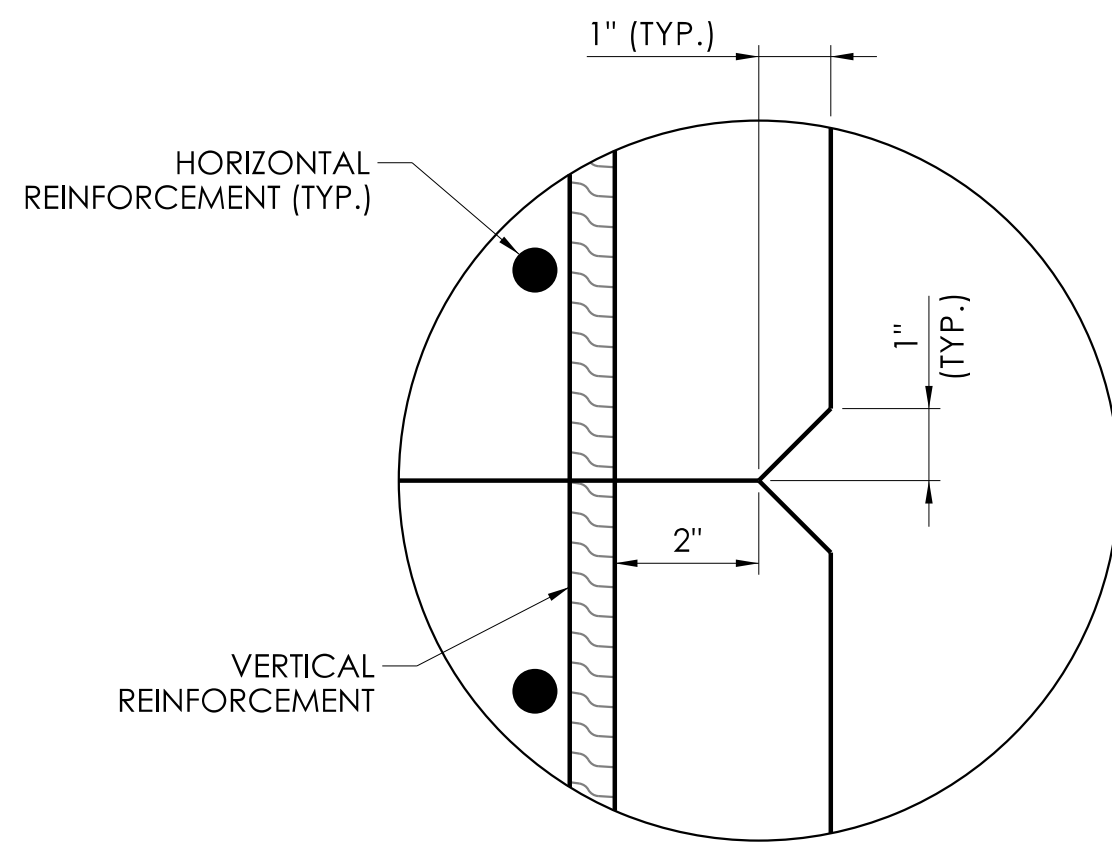
1. DOWNSTREAM ELEVATION SHOWN. UPSTREAM ELEVATION SIMILAR EXCEPT WHERE NOTED.

[illegible]

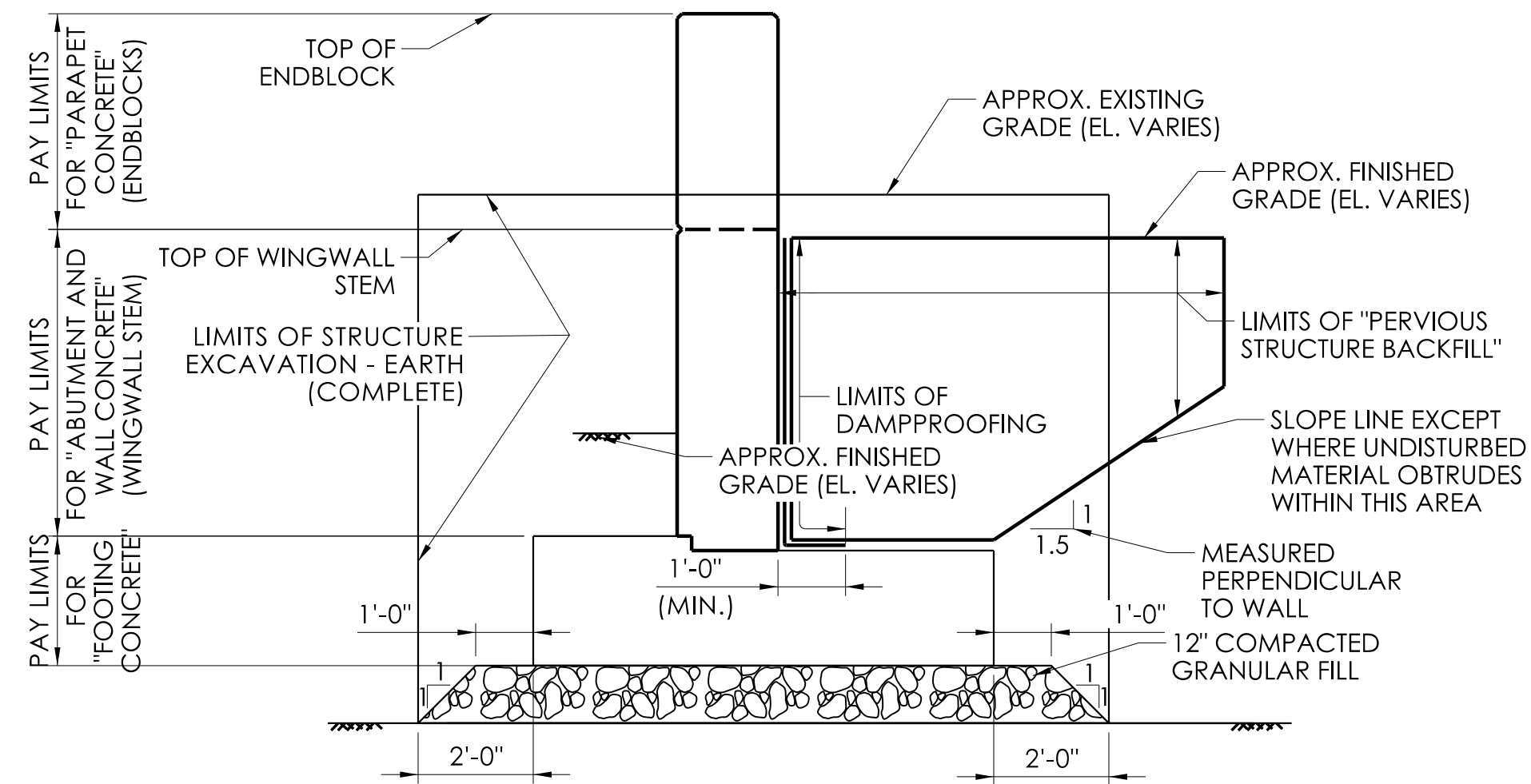
DESIGNER/DRAFTER: ARW CHECKED BY: RTE	SIGNATURE/ BLOCK:	 TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER TOWN(S): ANDOVER DRAWING TITLE: ABUTMENT DETAILS - 4	DRAWING NO. S-15
				SHEET NO. 04.15



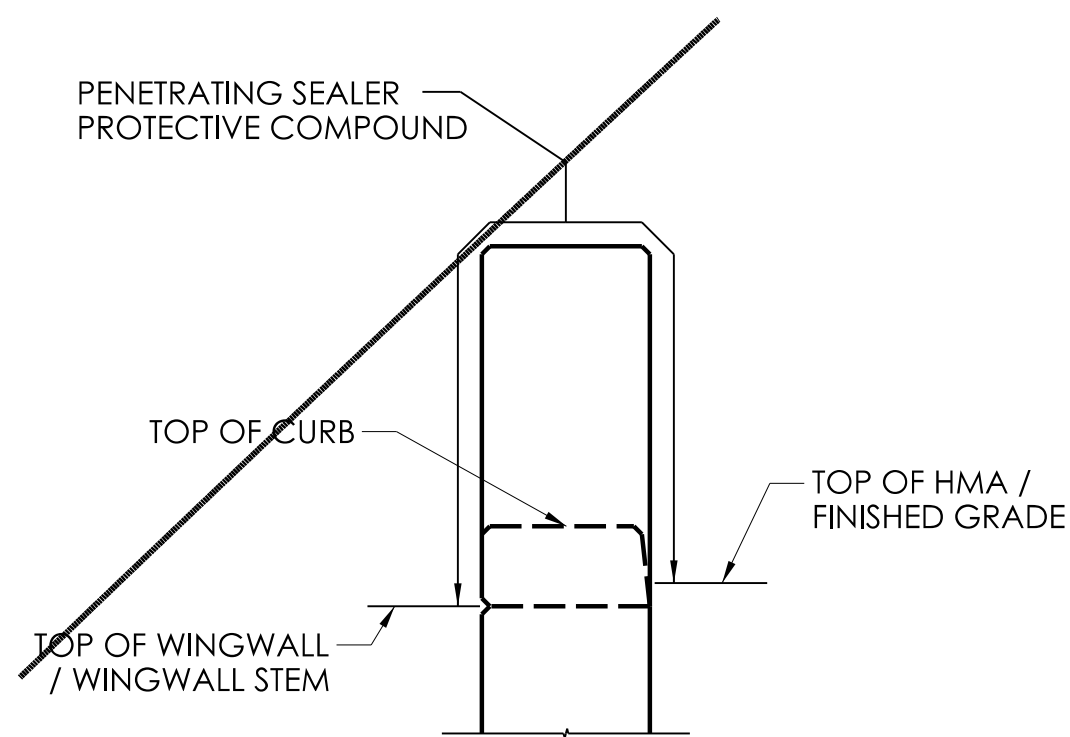
WINGWALL TYPICAL SECTION
SCALE: 1/2" = 1'-0"



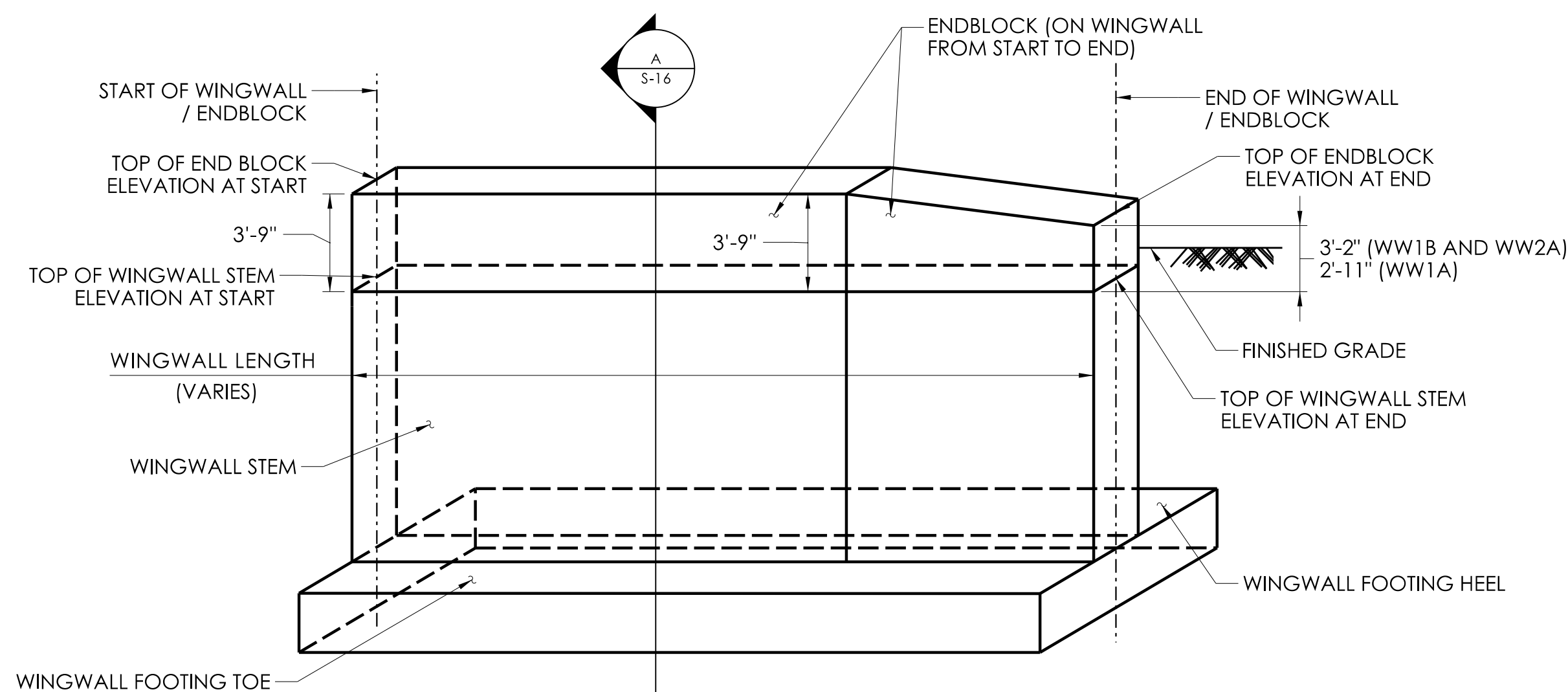
TYPICAL RUSTICATION DETAIL
SCALE: NOT TO SCALE



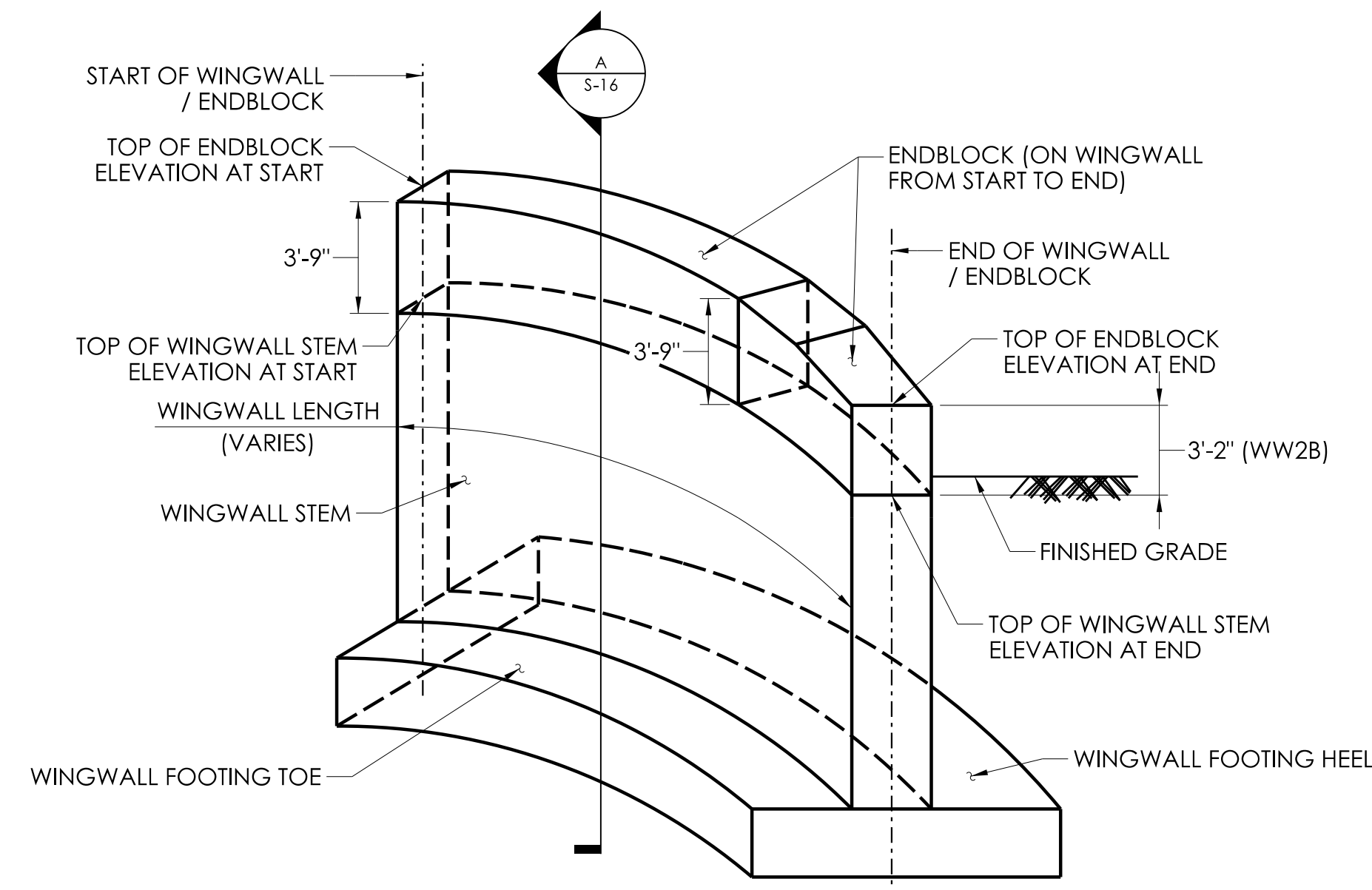
TYPICAL PAY LIMITS AT WINGWALL
SCALE: 3/8"=1'-0"



PENETRATING SEALER PROTECTIVE COMPOUND DETAIL AT WINGWALL (TYP.)
SCALE: 1/2"=1'-0"



DETAIL FOR TYP. STRAIGHT WINGWALL
SCALE: NOT TO SCALE

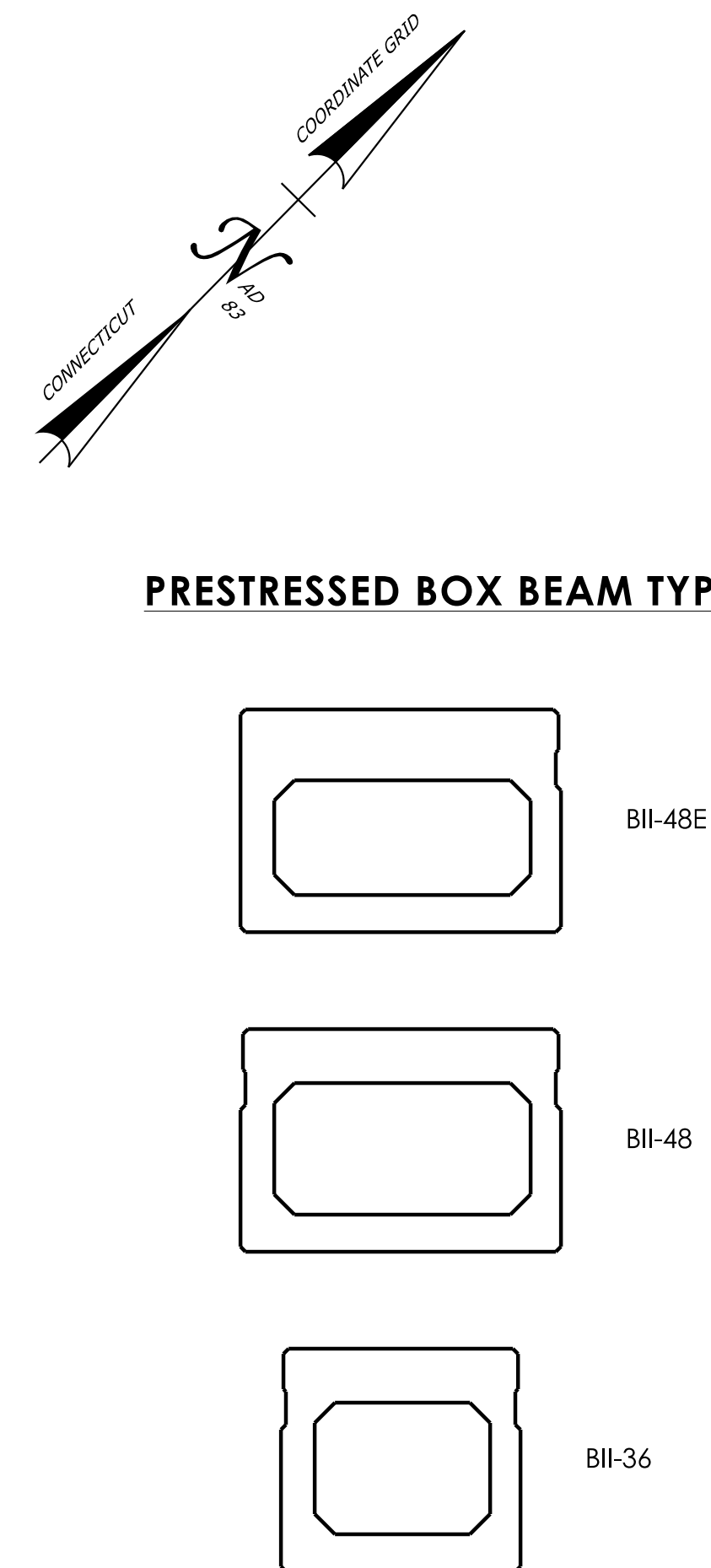


DETAIL FOR TYP. CURVED WINGWALL
SCALE: NOT TO SCALE

NOTES:

- FOR ADDITIONAL END BLOCK TRANSITION REINFORCEMENT AND DETAILS, SEE DRAWING NOS. S-25 AND S-26.

REV.	DATE	REVISION DESCRIPTION



PRESTRESSED CONCRETE NOTES:

1. PRESTRESSED CONCRETE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

MINIMUM COMPRESSIVE STRENGTH AT TRANSFER (f'_{ci}) = 6,400 P.S.I.
MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'_c) = 8,000 P.S.I.
2. PRESTRESSING STRANDS SHALL BE 0.6" Ø 7-WIRE, UNCOATED, LOW-RELAXATION STRANDS CONFORMING TO THE REQUIREMENTS OF AASHTO 203 (ASTM A416), GRADE 270, AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

ULTIMATE JACKING STRENGTH (f_s) = 270 K.S.I.
INITIAL JACKING TENSION = 43.94 KIPS
3. PRESTRESSING STRANDS SHALL BE PLACED AT 2" ON CENTER MINIMUM, SHALL HAVE A MINIMUM COVER OF 1½", SHALL BE DISTRIBUTED OVER THE BEAM WIDTH AS EVENLY AS POSSIBLE, AND SHALL HAVE STRAND PATTERNS THAT ARE SYMMETRICAL ABOUT THE CENTERLINE OF BEAM.
4. ALL NON-PRESTRESSED REINFORCEMENT SHALL CONFORM TO ASTM A615 GRADE 60 AND SHALL HAVE A MINIMUM COVER OF 2" UNLESS OTHERWISE NOTED.
5. ALL NON-PRESTRESSED REINFORCEMENT IN THE PRESTRESSED BEAMS INCLUDING STIRRUPS, BAR TIES AND CHAIRS, SHALL BE GALVANIZED AND SHALL BE INCLUDED IN THE ITEMS "PRESTRESSED DECK UNITS (4'-0" X 2'-9")" AND "PRESTRESSED DECK UNITS (3'-0" X 2'-9")".
6. ENDS OF THE PRESTRESSED DECK UNITS SHALL BE VERTICAL UPON APPLICATION OF FULL DEAD LOADS.
7. IT IS NOT INTENDED THAT THE BEAMS BE INSTALLED IN CONTACT WITH EACH OTHER, BUT RATHER THAT THE CENTERLINE DISTANCE BETWEEN ADJACENT BII-48/BII-48E BEAMS BE 4'-0", AND THE CENTERLINE DISTANCE BETWEEN ADJACENT BII-48 AND BII-36 BEAMS BE 3'-6".
8. NO ADDITIONAL DEAD LOADS OR LIVE LOADS SHALL BE APPLIED TO THE BEAMS UNTIL THE TRANSVERSE TIES HAVE BEEN FULLY TENSIONED AND THE GROUT IN THE LONGITUDINAL SHEAR KEYS HAS REACHED A SEVEN-DAY COMPRESSIVE STRENGTH OF 4,500 P.S.I.
9. POCKETS FOR TRANSVERSE TIE ANCHORAGE SHALL BE DRY PACKED WITH NON-SHRINK GROUT FLUSH WITH THE EXTERIOR SURFACE OF THE FASCIA BEAM AFTER TRANSFER OF TENSIONING HAS BEEN COMPLETED.
10. THE CONTRACTOR MAY SUBMIT FOR REVIEW AN ALTERNATE PRESTRESSED BEAM DESIGN AND LOAD RATING ANALYSIS USING DEBONDED AND/OR DRAPED STRANDS. THE SUBMITTAL SHALL ALSO INCLUDE PLANS FOR REVIEW. THE MAXIMUM NUMBER OF DEBONDED STRANDS SHALL BE 25% OF THE TOTAL NUMBER OF STRANDS. ALL DEBONDING SHALL BE LOCATED WITHIN A DISTANCE OF 15% OF THE SPAN LENGTH FROM THE END OF THE MEMBER. IF DRAPED STRANDS ARE USED, THE TOTAL HOLD DOWN FORCE OF ALL THE DRAPED STRANDS SHALL NOT EXCEED 75% OF THE TOTAL WEIGHT OF THE MEMBER.
11. THE DRILLING OF HOLES IN (OR THE USE OF POWER ACTUATED TOOLS ON) PRESTRESSED MEMBERS WILL NOT BE PERMITTED.



1. 'AT TRANSFER' INDICATES CAMBER DUE TO PRESTRESSING FORCE AT TRANSFER MINUS DEFLECTION DUE TO BEAM SELF-WEIGHT.
2. 'AT ERECTION' INDICATES CAMBER DUE TO PRESTRESSING FORCE MINUS DEFLECTION DUE TO BEAM SELF-WEIGHT APPROXIMATELY 30 DAYS AFTER TRANSFER.
3. 'FINAL' INDICATES LONG-TERM CAMBER PRESENT AFTER ALL DEAD LOADS ARE APPLIED TO THE STRUCTURE.
4. POSITIVE CAMBER INDICATES UPWARD DEFLECTION.

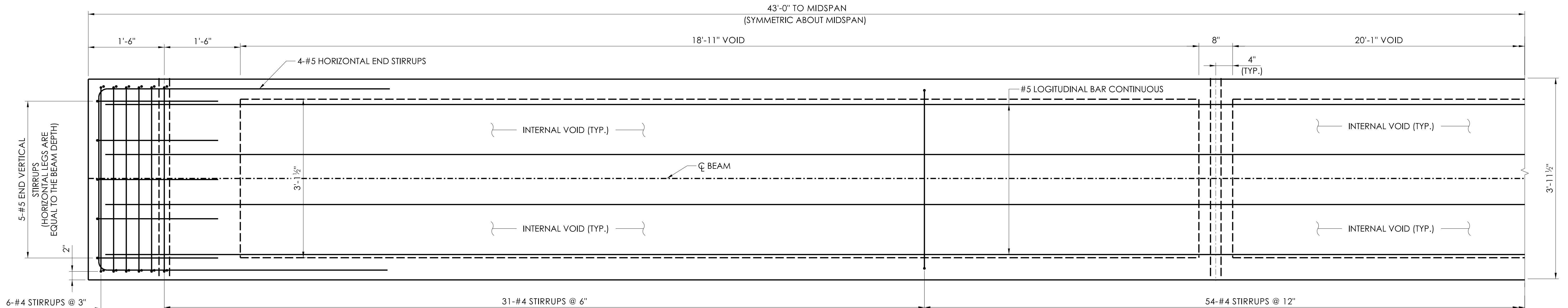
DEFLECTION NOTES:

1. 'BEAM DL' INDICATES DEFLECTION DUE TO BEAM SELF WEIGHT.
2. 'ADD'L DL' INDICATES DEFLECTION DUE TO THE DECK SLAB CONCRETE.
3. 'COMPOSITE DL' INDICATES DEFLECTION DUE TO THE PARAPETS AND BITUMINOUS OVERLAY.
4. POSITIVE DEFLECTION INDICATES DOWNWARD DEFLECTION.



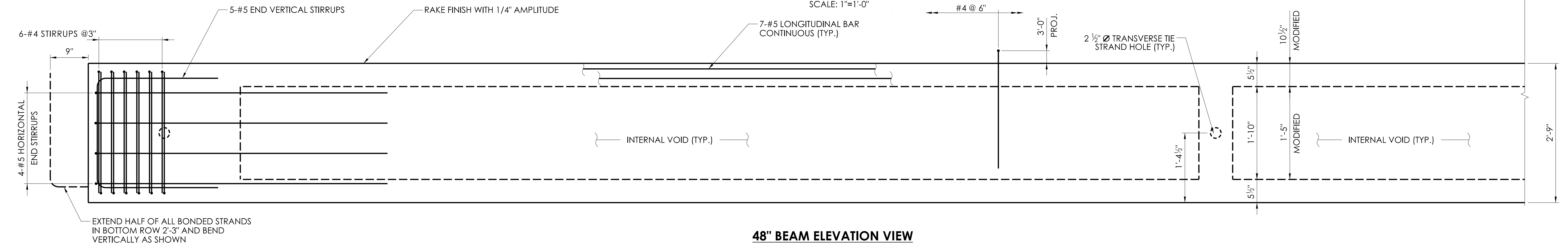
TOWN OF ANDOVER

DRAWING NO.	S-17
SHEET NO.	04.17



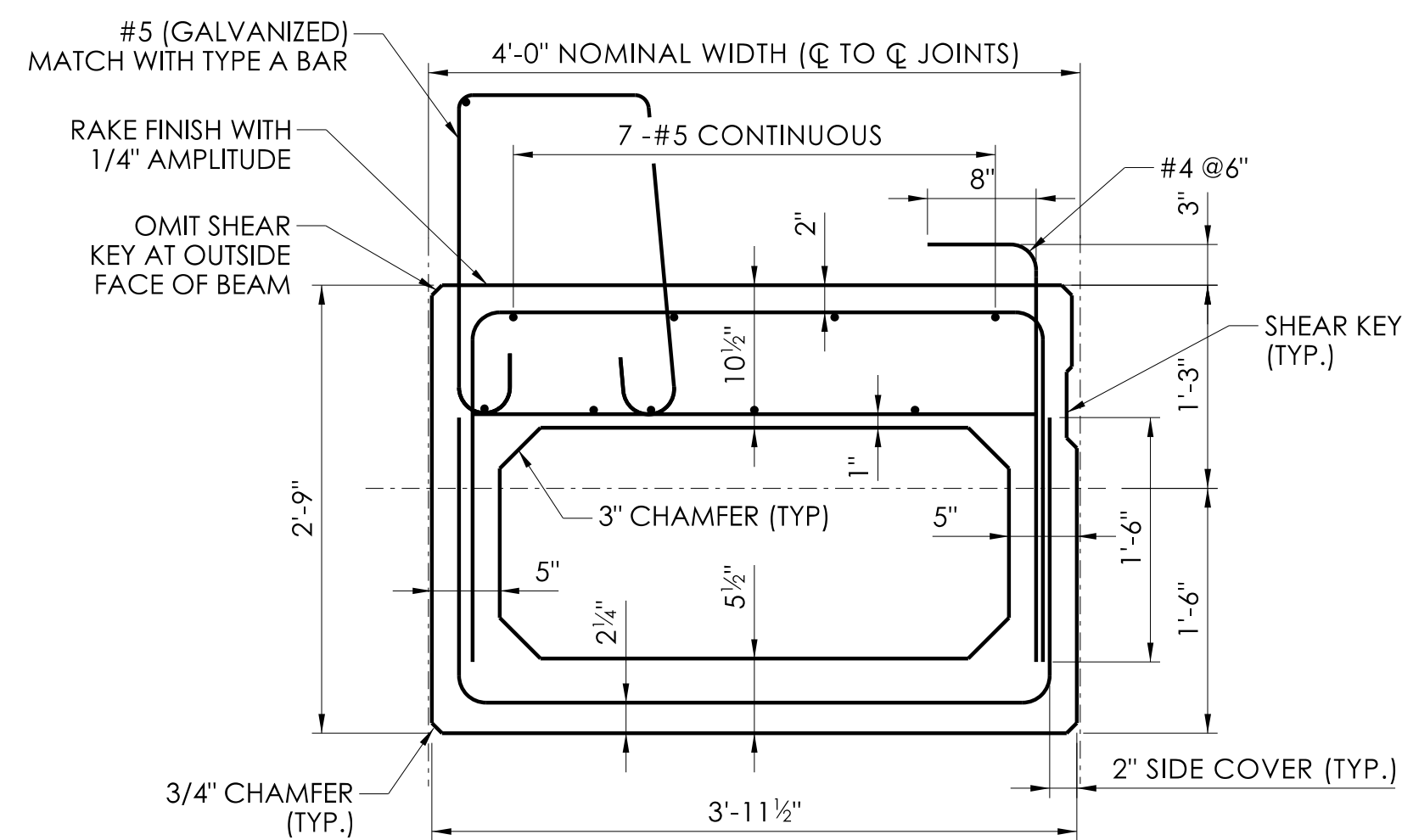
48" BEAM PLAN VIEW

SCALE: 1"=1'-0"



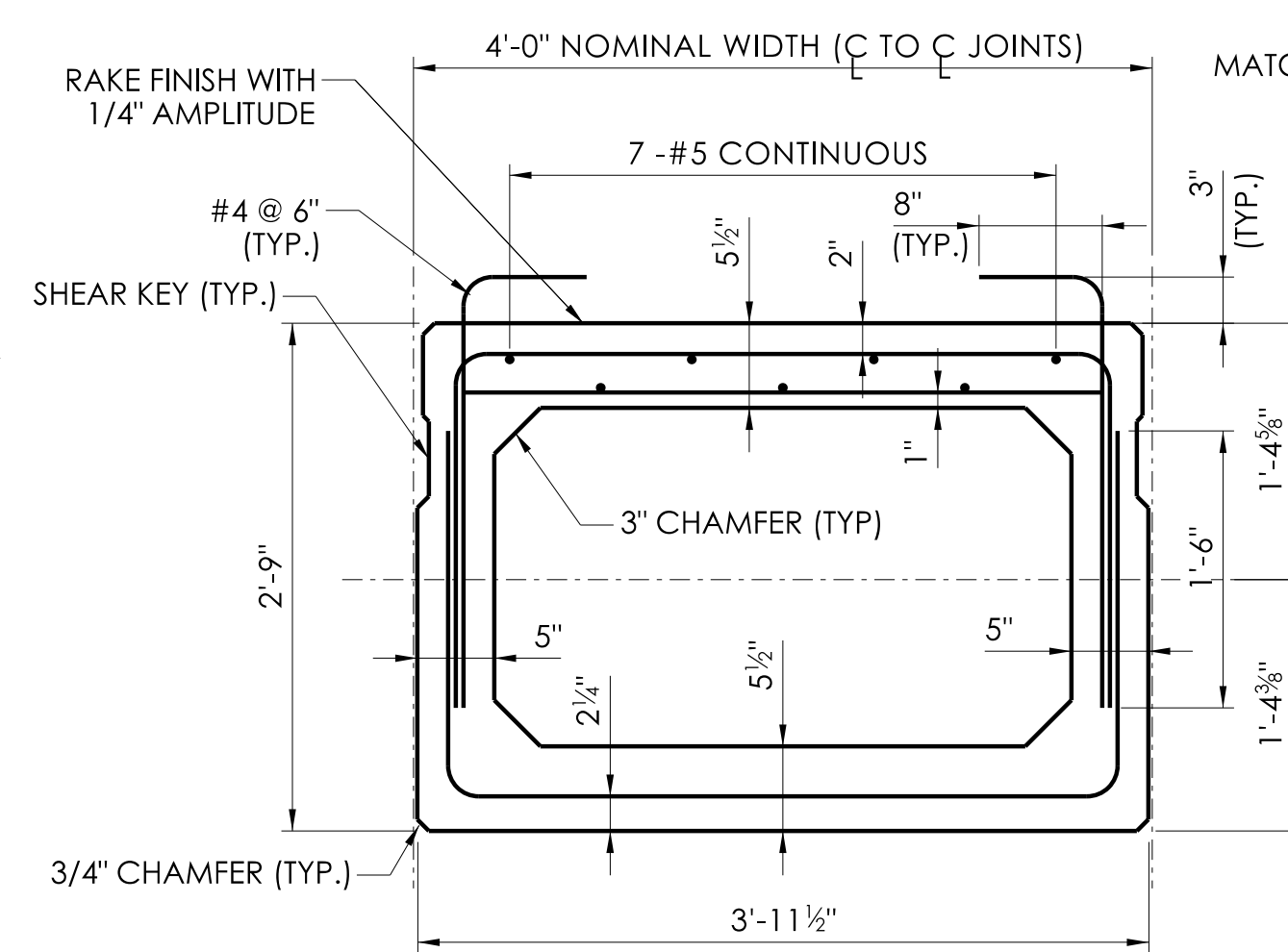
48" BEAM ELEVATION VIEW

SCALE: 1"=1'-0"



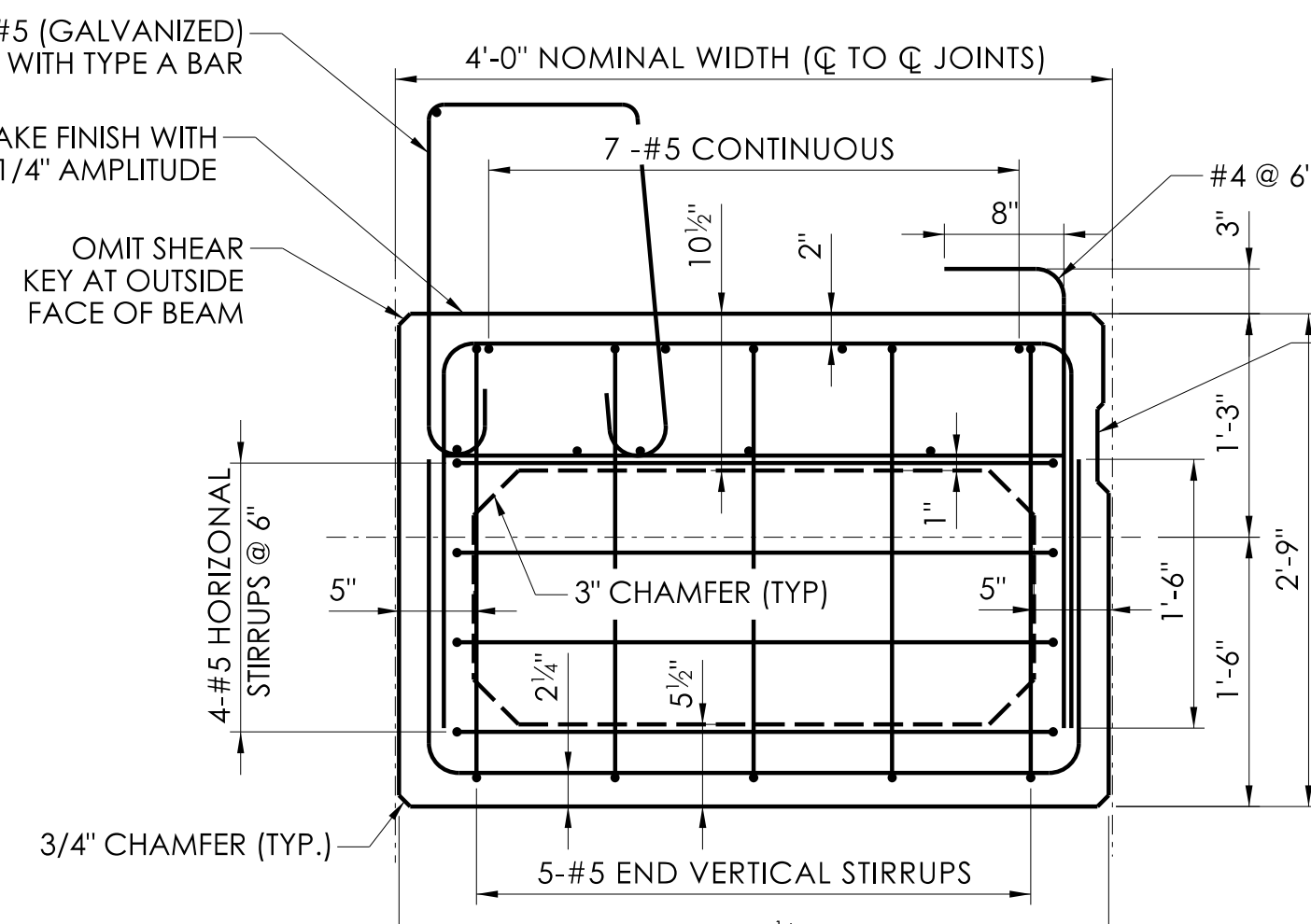
48" MODIFIED SECTION AT VOID

SCALE: 1"=1'-0"



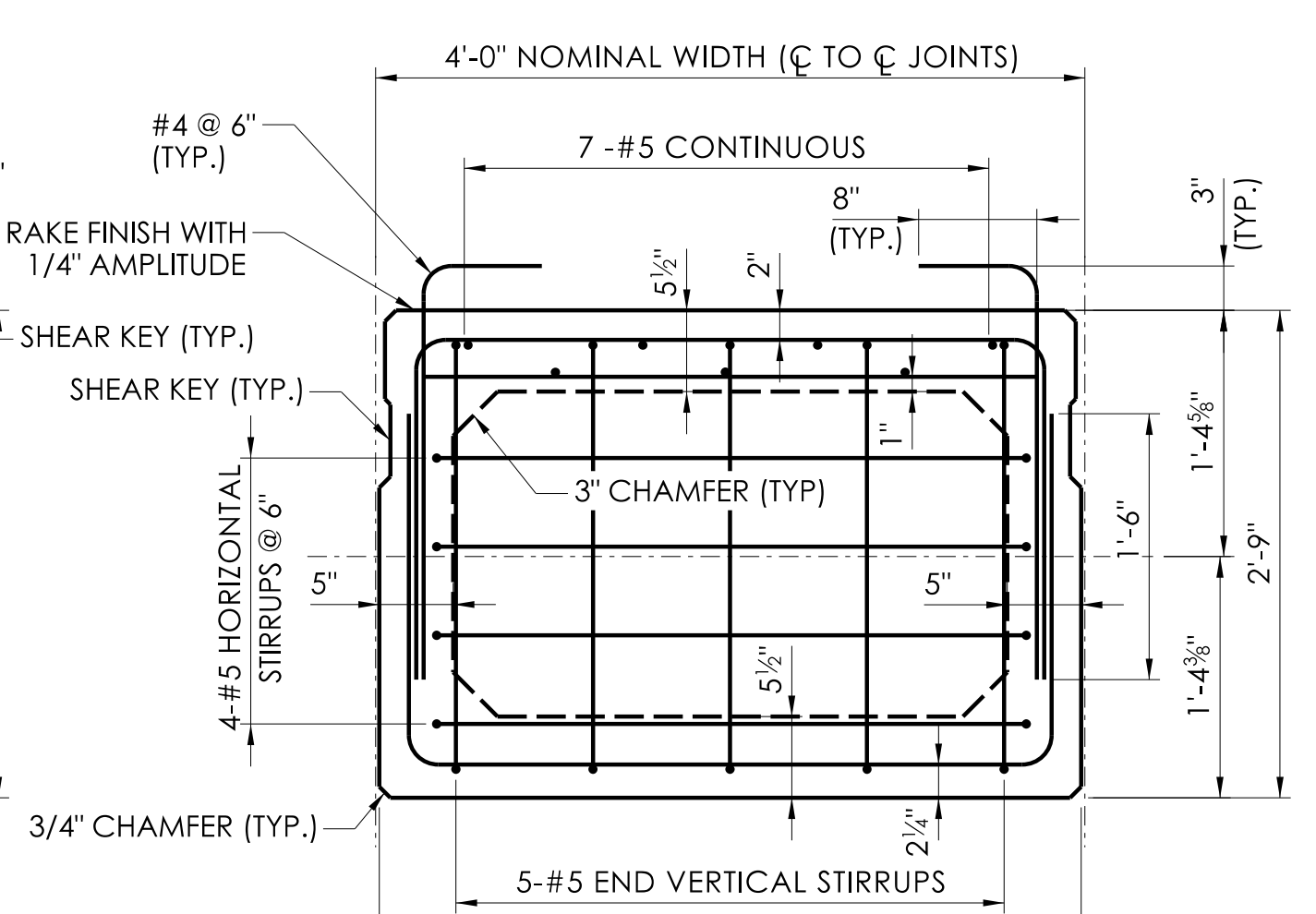
48" SECTION AT VOID

SCALE: 1"=1'-0"



48" MODIFIED SECTION AT END BLOCK

SCALE: 1"=1'-0"



48" SECTION AT END BLOCK

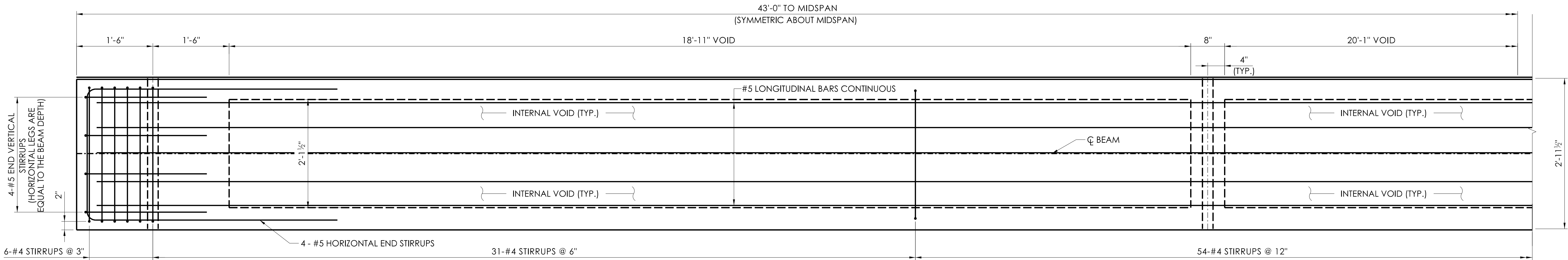
SCALE: 1"=1'-0"

NOTES:

- FOR BEAM NOTES SEE DRAWING NO. S-19.
- FOR TYPE A BAR SEE DRAWING NO. S-26.

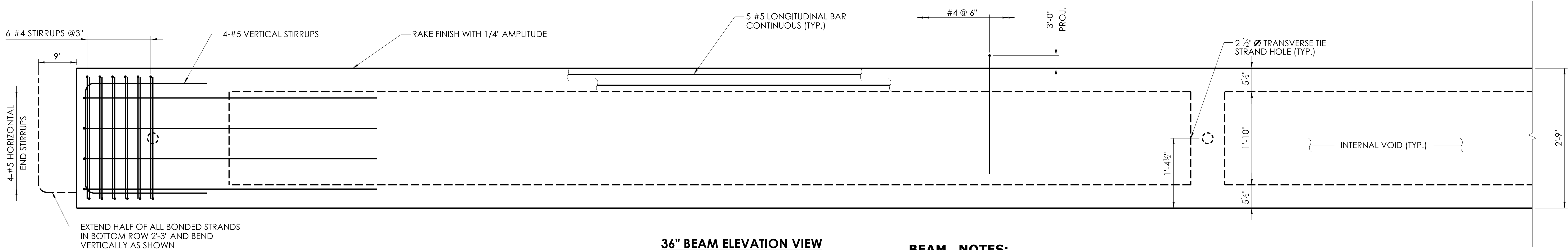
REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: SJL	CHECKED BY: WES	SIGNATURE/ BLOCK:		TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106 PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER TOWN(S): ANDOVER DRAWING TITLE: BEAM DETAILS - 1	DRAWING NO. S-18 SHEET NO. 04.18
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36" BEAM PLAN VIEW

SCALE: 1"=1'-0"



36" BEAM ELEVATION VIEW

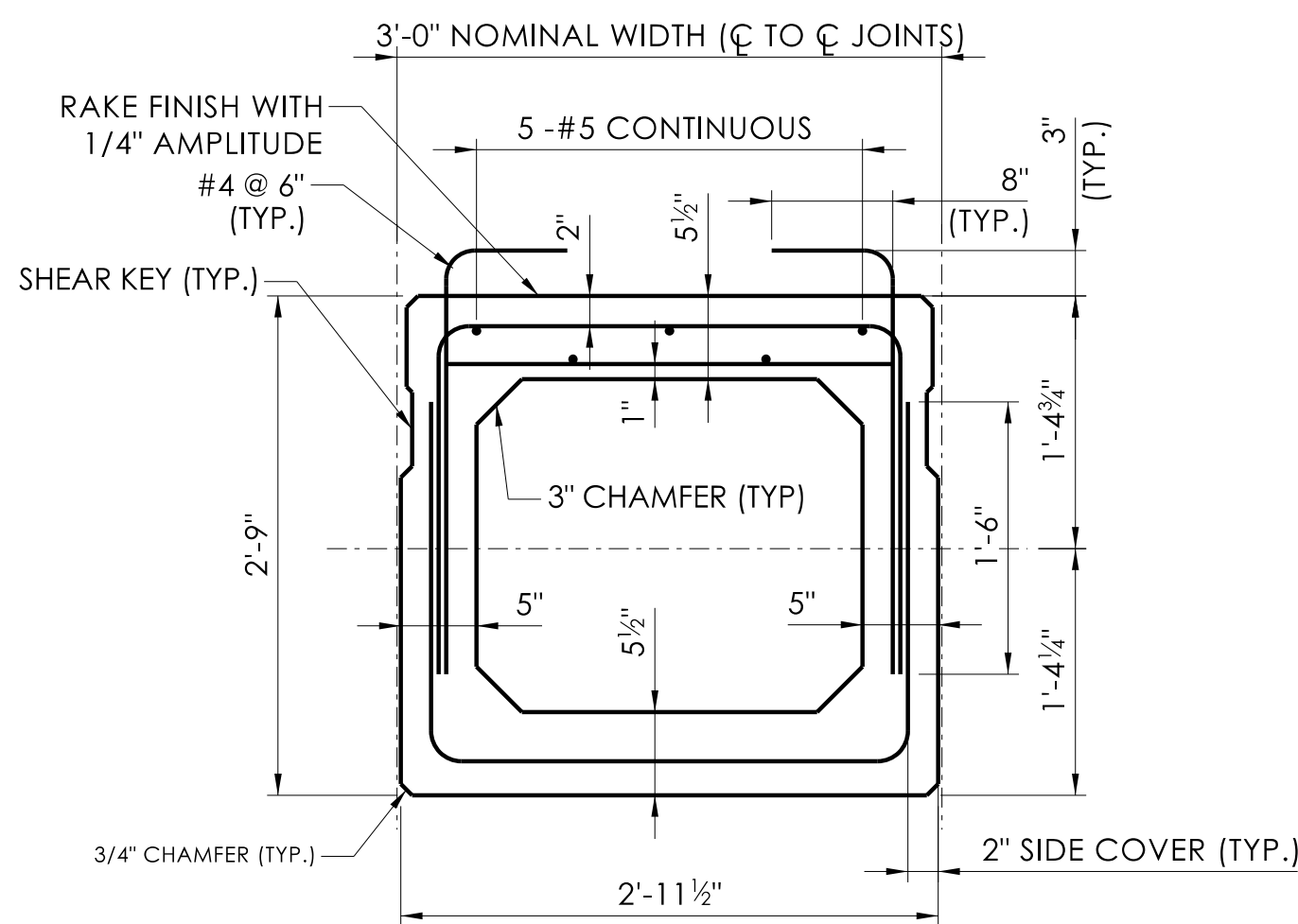
SCALE: 1"=1'-0"

BEAM NOTES:

- 2½" COVER SHOWN IS REQUIRED TO FACILITATE THE PLACEMENT OF THE BOTTOM ROW OF PRESTRESSING STRANDS. THE FABRICATOR MAY MODIFY COVER TO A MINIMUM OF 1½" IF NO CONFLICTS EXIST WITH THE PRESTRESSING STRANDS.
- EXTEND LONGITUDINAL LEGS TO A MINIMUM DISTANCE EQUAL TO THE DEPTH OF THE BEAM OR 12" INTO THE WEB OF THE VOIDED SECTION, WHICHEVER IS LARGER.
- THE VERTICAL LOCATION OF THE TRANSVERSE TIE STRANDS MUST BE COORDINATED WITH THE LOCATION OF THE PRESTRESSED STRANDS AND ADJUSTED AS NECESSARY BY THE FABRICATOR.
- THE DECK UNITS SHALL BE PLACED AT THE NOMINAL SPACING SHOWN ON THE PLAN WITH A GAP BETWEEN UNITS. THE WIDTH OF THE GAPS WILL VARY DUE TO THE SWEEP OF THE UNITS.
- GROUT FOR THE SHEAR KEYS SHALL BE RODDED OR VIBRATED TO ENSURE THAT ALL VOIDS IN THE SHEAR KEYS ARE FILLED.
- TRANSVERSE TIES SHALL BE COVERED BY A SEAMLESS POLYPROPYLENE SHEATH, WITH CORROSION INHIBITING GREASE BETWEEN THE STRAND AND SHEATH, FOR THE FULL LENGTH OF THE STRAND EXCEPT AT THE ANCHORAGE LOCATION.
- OTHER TRANSVERSE ANCHORAGE SYSTEMS MAY BE SUBMITTED WITH THE APPROVAL OF THE ENGINEER. ALTERNATE ANCHORAGE SYSTEMS SHALL BE WATERTIGHT AND CORROSION PROOF.
- THE DRILLING OF HOLES IN (OR THE USE OF POWER ACTUATED TOOLS ON PRESTRESSED MEMBERS WILL NOT BE PERMITTED.
- HORIZONTAL LEGS OF VERTICAL STIRRUPS ARE EQUAL TO THE DEPTH OF BEAM.

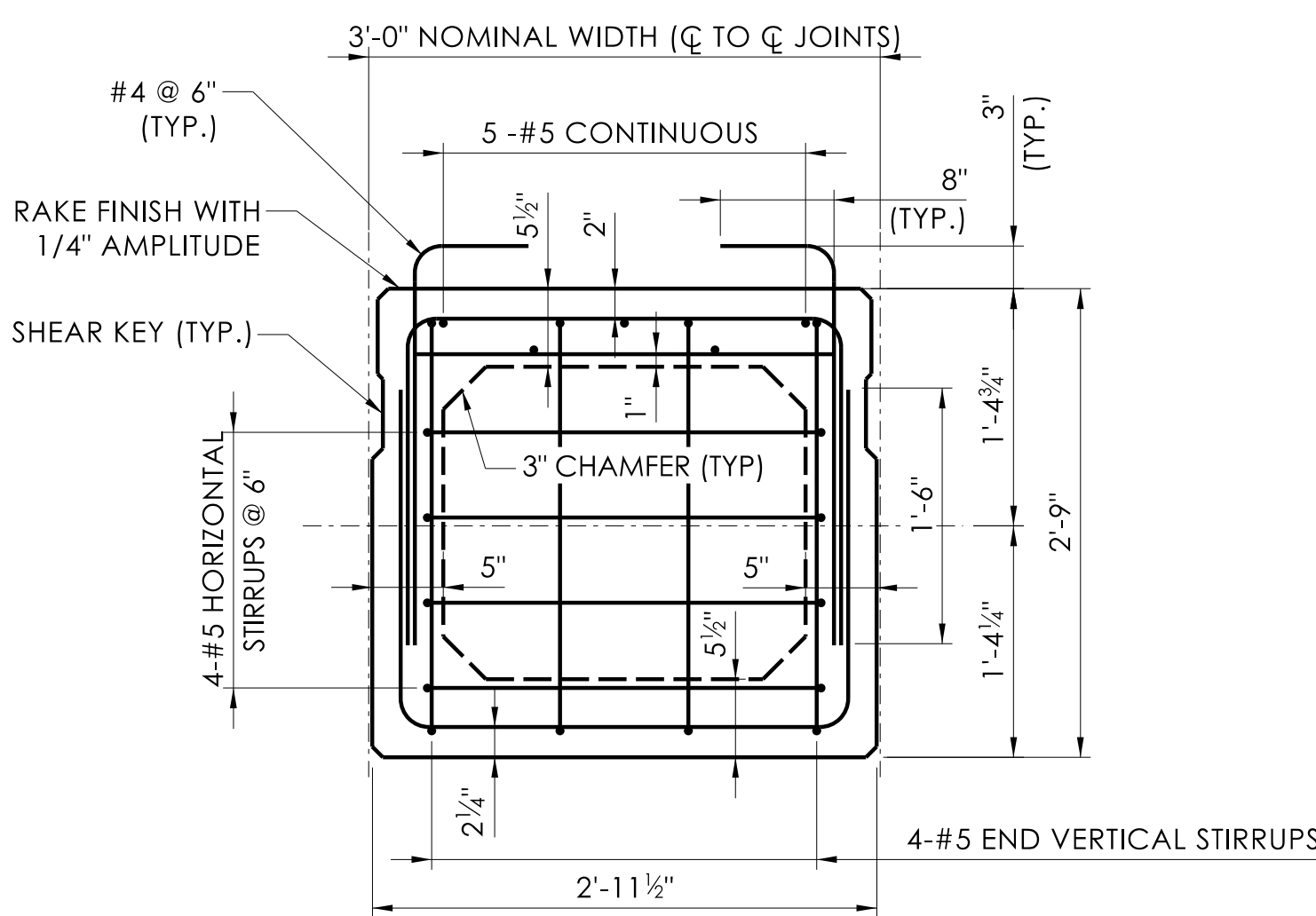
TRANSVERSE STRAND POST-TENSIONING PROCEDURE:

- AFTER ERECTING THE PRESTRESSED CONCRETE BOX BEAMS FOR THE CONSTRUCTION STAGE, INSTALL THE TRANSVERSE TIES.
- TENSION EACH TRANSVERSE TIE TO 5 KIPS.
- SEAL THE BOTTOM OF THE LONGITUDINAL SHEAR KEYS WITH CLOSED CELL POLYETHYLENE FOAM BACK ROD AND PLACE NON-SHRINK GROUT IN THE LONGITUDINAL SHEAR KEYS AND INTERNAL DIAPHRAGMS. THE GROUT SHALL BE RODDED OR VIBRATED TO ENSURE THAT ALL THE VOIDS IN THE SHEAR KEYS ARE FILLED.
- WHEN THE GROUT HAS ATTAINED A COMPRESSIVE STRENGTH OF 1500 PSI, AT EACH TRANSVERSE TIE LOCATION, TENSION THE TIE TO 30 KIPS. REPEAT THIS TENSIONING SEQUENCE ONCE MORE SO THAT EACH TIE IS TENSIONED TO 30 KIPS.
- NO DEAD LOADS OR LIVE LOADS SHALL BE APPLIED TO THE CONCRETE BOX BEAMS UNTIL THE TRANSVERSE TIES HAVE BEEN FULLY TENSIONED.



36" SECTION AT VOID

SCALE: 1"=1'-0"



36" SECTION AT END BLOCK

SCALE: 1"=1'-0"

REV.	DATE	REVISION DESCRIPTION

SIGNATURE/
BLOCK:



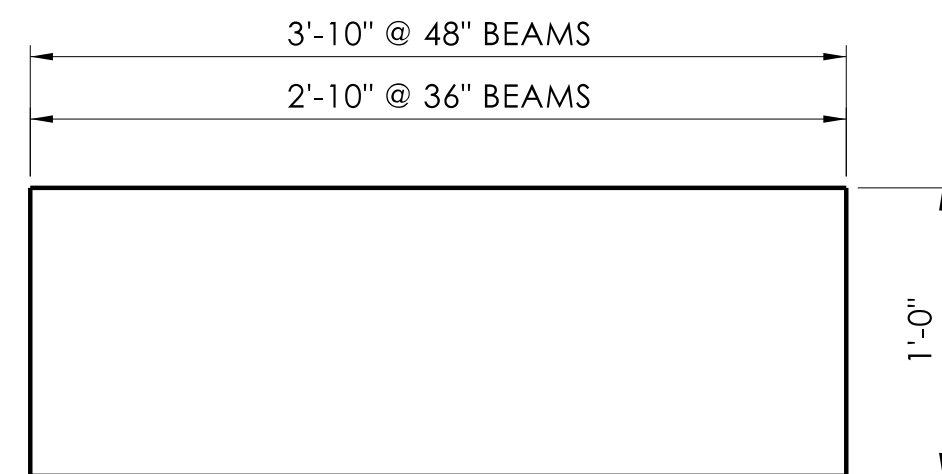
TOWN OF ANDOVER



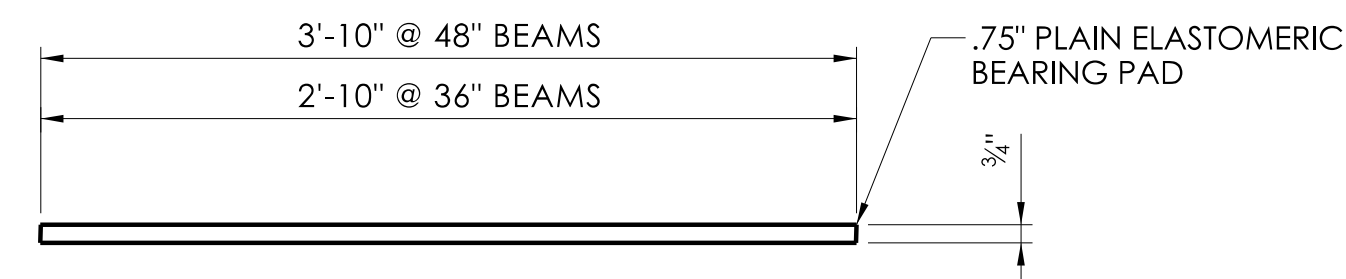
1. THE ELASTOMER MAY CONTAIN ONLY VIRGIN POLYCHLOROPRENE (NEOPRENE) AS THE RAW POLYMER AND HAVE A SPECIFIED SHEAR MODULUS BETWEEN 0.08 KSI AND 0.175 KSI.
2. THE ELASTOMER BEARINGS SHALL BE INSTALLED WHEN THE AMBIENT AIR AND BEARING TEMPERATURES ARE BETWEEN 40 °F AND 85 °F AND HAVE BEEN WITHIN THIS RANGE FOR AT LEAST TWO HOURS.
3. THE COST OF FURNISHING AND INSTALLING THE ELASTOMER BEARINGS, SHALL BE PAID UNDER THE ITEM "ELASTOMERIC BEARING PADS."
4. THE MAXIMUM UNFACTORED DESIGN LOAD (DL + LL WITHOUT IMPACT) FOR EACH BEARING PAD IS 11.5 KIPS. THIS INFORMATION IS PROVIDED FOR THE PROOF LOAD TEST DESCRIBED IN THE SPECIFICATIONS. PADS ARE TO BE TESTED IN ACCORDANCE WITH CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 818 (2020) SECTION M.17.

(*) NOTE: THE ALLOWABLE DIFFERENTIAL CAMBER IS 1/4" PER 10'-0" (3/4" MAX.). THIS VARIATION IS INDICATED DUE TO FABRICATION TOLERANCES FOR SWEEP AND CHAMBER OF THE DECK UNITS.

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



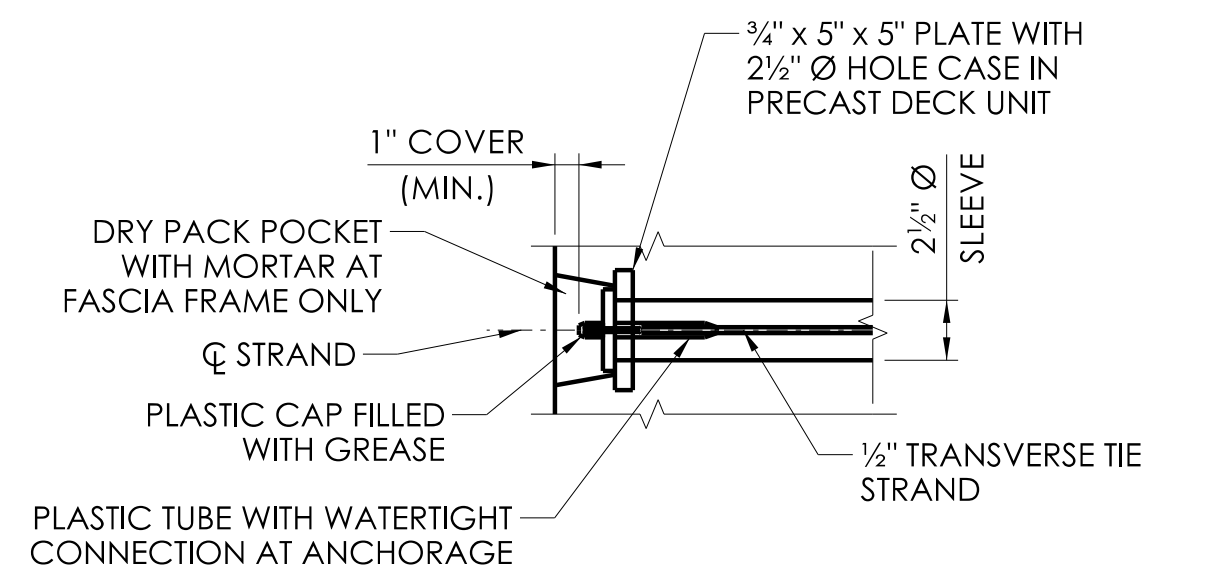
SCALE: 1 1/2"=1'-0"



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

(*) NOTE: THE ALLOWABLE DIFFERENTIAL CAMBER IS 1/4" PER 10'-0" (3/4" MAX.). THIS VARIATION IS INDICATED DUE TO FABRICATION TOLERANCES FOR SWEEP AND CHAMBER OF THE DECK UNITS.

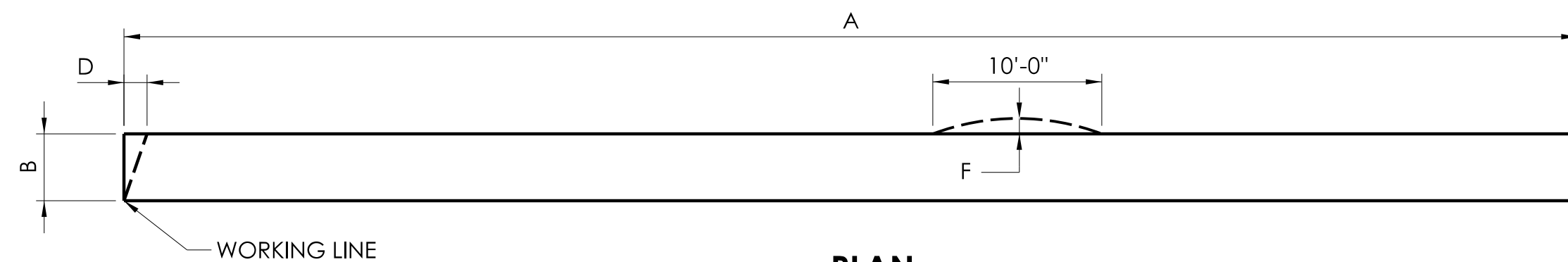
SCALE: 1 1/2"=1'-0"



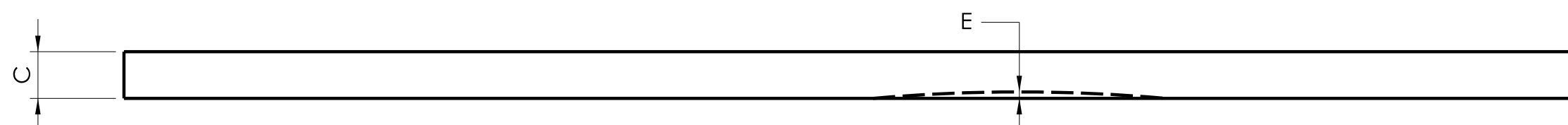
NOTE: TRANSVERSE TIES SHALL BE COVERED BY A SEAMLESS POLYPROPYLENE SHEATH, WITH CORROSION INHIBITING GREASE BETWEEN THE STRAND AND SHEATH, FOR THE FULL LENGTH OF THE STRAND EXCEPT AT THE ANCHORAGE LOCATION.

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

A	LENGTH (OVERALL)	$\pm \frac{1}{4}"$
B	WIDTH (OVERALL)	$\pm \frac{1}{8}"$
C	DEPTH (OVERALL)	$\pm \frac{1}{4}"$
D	VARIATION FROM SPECIFIED PLAN END SQUARENESS OR SKEW	$\pm \frac{1}{8}"$
E	SWEEP OVER MEMBER LENGTH	$\pm \frac{1}{8}"$
F	LOCAL SMOOTHNESS OF ANY SURFACE	$\pm \frac{1}{4}"$ IN 10 FEET

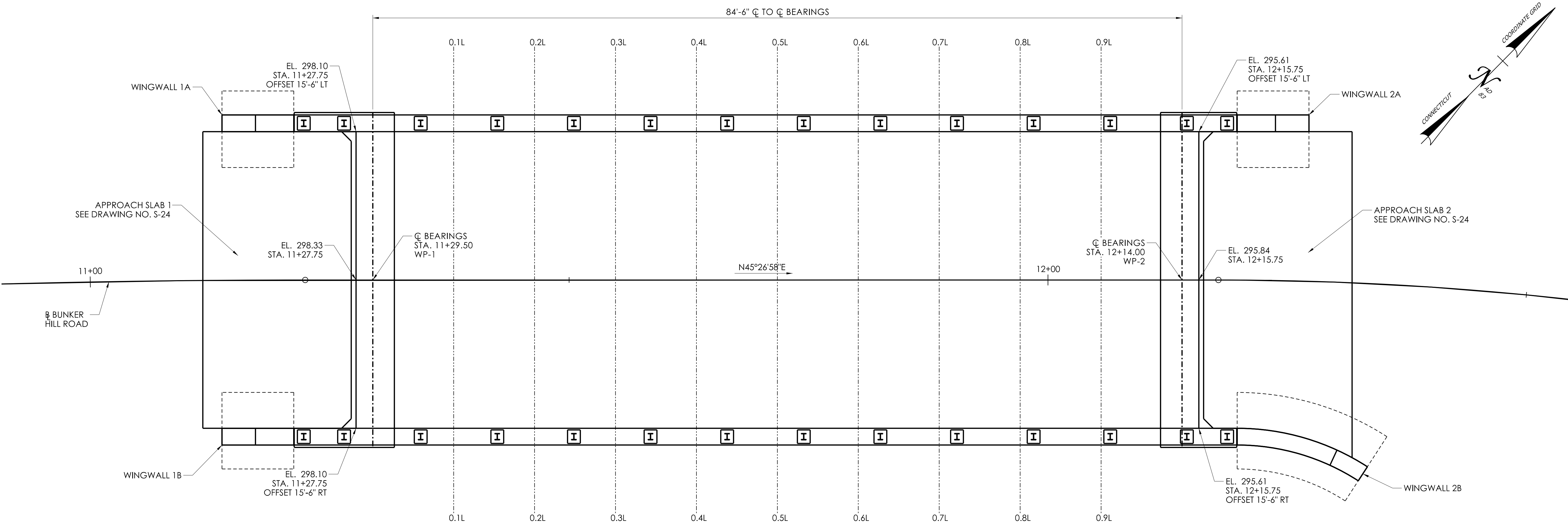


SCALE: 1/8"=1'-0"



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

[illegible]



NOTE: ELEVATIONS ARE GIVEN TO THE TOP OF SHEAR SLAB

DECK PLAN
SCALE: 3/16"=1'-0"

TOP OF SHEAR SLAB ELEVATIONS

	TOP OF SHEAR SLAB ELEVATIONS																					
	C BRG ABUTMENT 1		0.1L		0.2L		0.3L		0.4L		0.5L		0.6L		0.7L		0.8L		0.9L		C BRG ABUTMENT 2	
OFFSET	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION
15'-6" LT	11+29.50	298.04	11+37.95	297.77	11+46.40	297.50	11+54.85	297.25	11+63.30	297.00	11+71.75	296.75	11+80.20	296.52	11+88.65	296.29	11+97.10	296.07	12+05.55	295.86	12+14.00	295.65
0	11+29.50	298.27	11+37.95	298.00	11+46.40	297.74	11+54.85	297.48	11+63.30	297.23	11+71.75	296.99	11+80.20	296.75	11+88.65	296.52	11+97.10	296.30	12+05.55	296.09	12+14.00	295.88
15'-6" RT	11+29.50	298.04	11+37.95	297.77	11+46.40	297.50	11+54.85	297.25	11+63.30	297.00	11+71.75	296.75	11+80.20	296.52	11+88.65	296.29	11+97.10	296.07	12+05.55	295.86	12+14.00	295.65

REV

DATE

REVISION DESCRIPTION

DESIGNER/DRAFTER: ARW/JWR

CHECKED BY: WES

SIGNATURE/
BLOCK:

TOWN OF ANDOVER

PROJECT NUMBER: 0001-0106

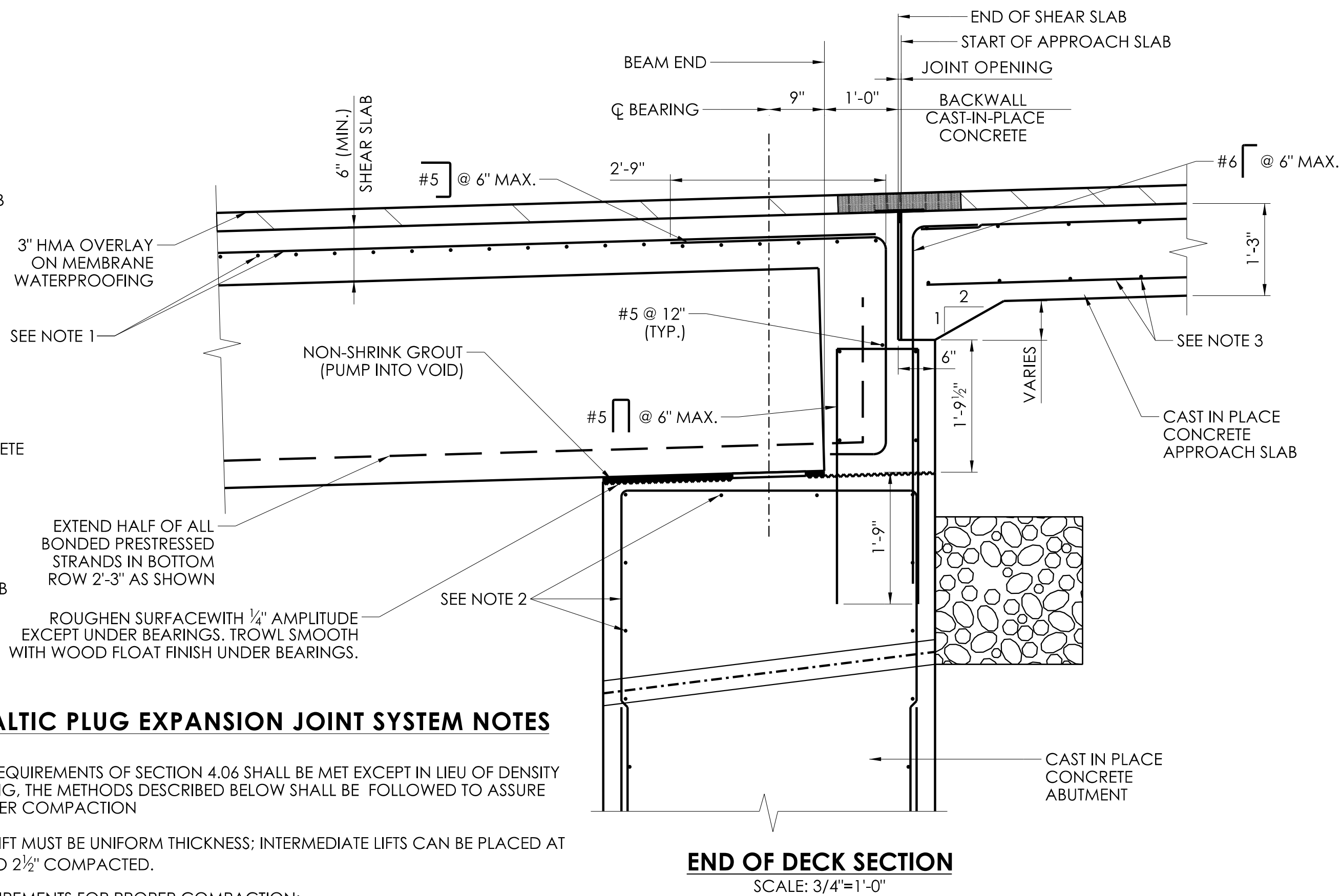
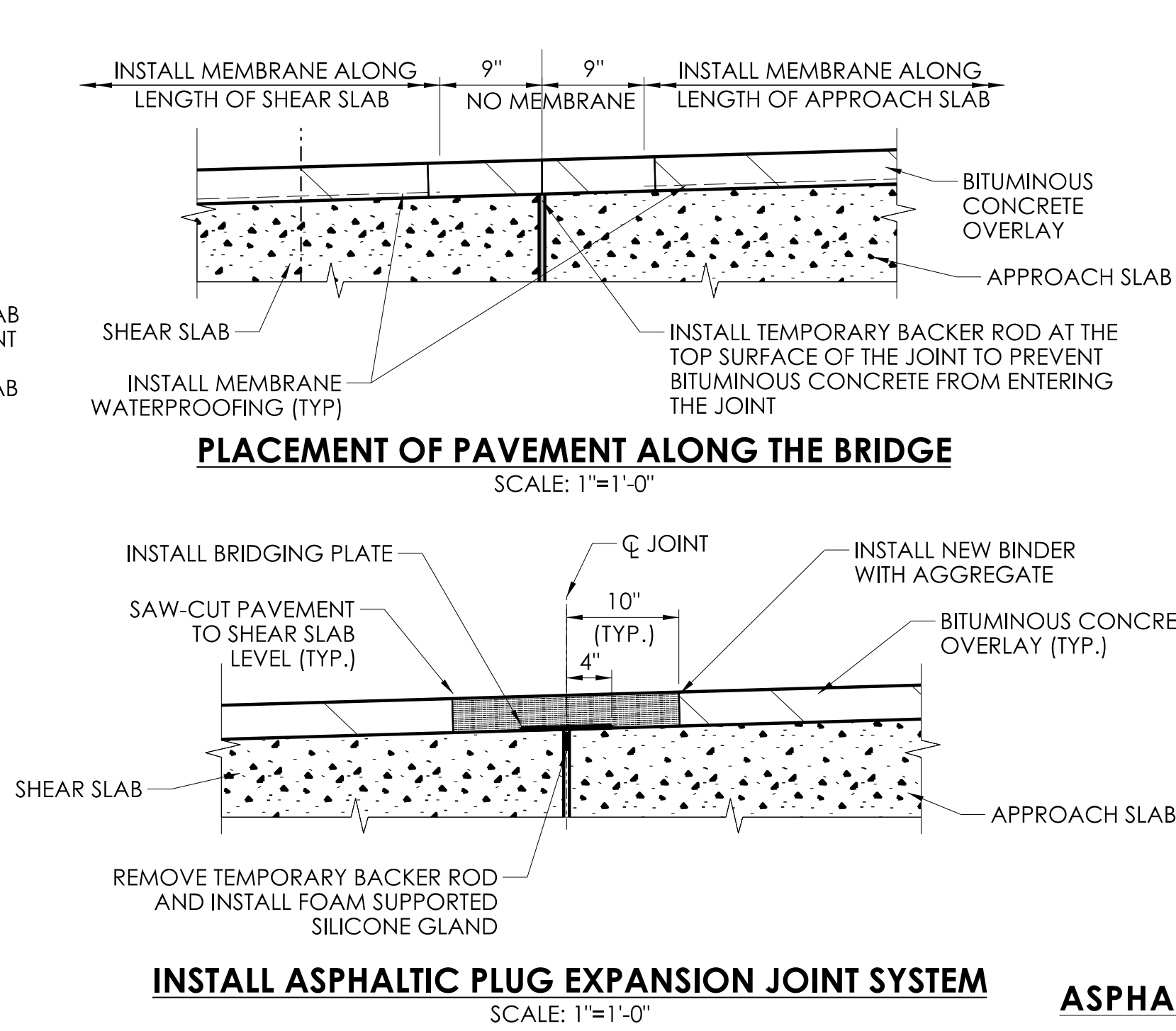
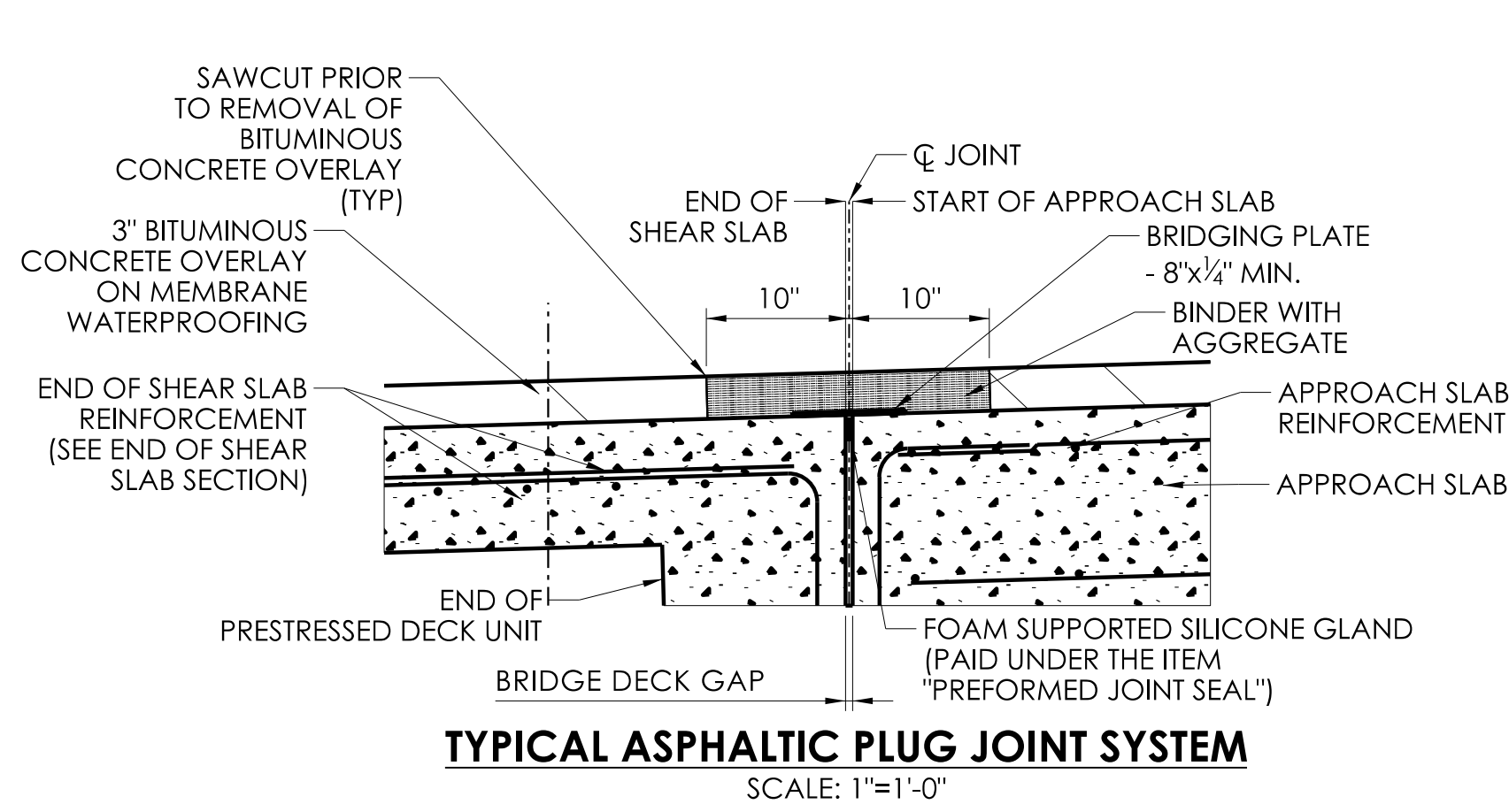
PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER

TOWN(S): ANDOVER

DRAWING TITLE: DECK ELEVATIONS

DRAWING NO. S-22

SHEET NO. 04.22



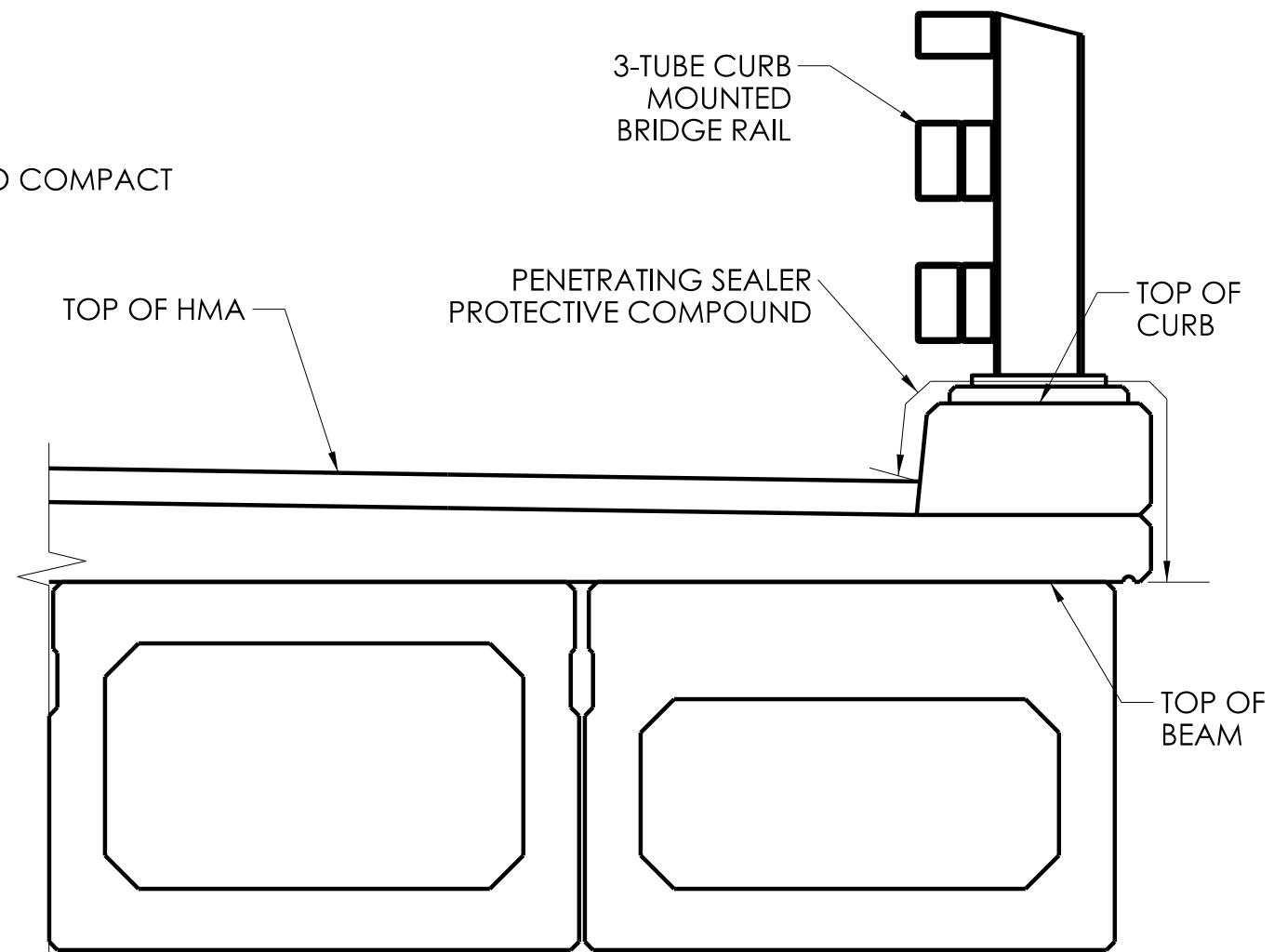
ASPHALTIC PLUG EXPANSION JOINT SYSTEM NOTES

1. A BRIDGING PLATE SHALL BE USED TO SPAN THE JOINT BETWEEN A SHEAR SLAB END & THE CONCRETE APPROACH SLAB.
2. NEW STEEL BRIDGING PLATES SHALL BE A MINIMUM OF $\frac{1}{4}$ " THICK BY 8" WIDE. FOR JOINT OPENINGS WHICH EXCEED 3', A $\frac{3}{8}$ " THICK BY 12" PLATE WILL BE REQUIRED.
3. TEMPORARY CLOSED CELL BACKER ROD DIAMETER SHALL BE DETERMINED AFTER MEASURING THE JOINT OPENING, SHALL BE 25% LARGER THAN THE JOINT OPENING.
4. INSTALLATION OF MEMBRANE WITHIN THE LIMITS SHOWN TO BE PAID UNDER THE ITEM, "MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)".
5. THE FURNISHING & PLACING OF HMA TO BE INCLUDED FOR PAYMENT UNDER THE ITEMS "HMA \$0.25" AND "HMA \$0.50".
6. SAW-CUTTING & REMOVAL OF PAVEMENT FOR JOINT INSTALLATION TO BE INCLUDED FOR PAYMENT UNDER THE ITEM "ASPHALTIC PLUG EXPANSION JOINT SYSTEM".
7. INSTALLATION OF FOAM SUPPORTED SILICONE GLAND TO BE PAID UNDER THE ITEM "PREFORMED JOINT SEAL".
8. ASPHALTIC PLUG EXPANSION JOINT SYSTEMS MAY BE INSTALLED ONLY WITHIN THE TEMPERATURE RANGE SPECIFIED IN THE SPECIAL PROVISION "ASPHALTIC PLUG EXPANSION JOINT SYSTEM".
9. INSTALL CRACK SEAL AT CURB LINE ALONG THE LENGTH OF THE BRIDGE, BOTH SIDES. CRACK SEALING SHALL BE INCLUDED FOR PAYMENT UNDER THE ITEM "GUTTER LINE SEALING FOR BRIDGES".

ASPHALTIC PLUG EXPANSION JOINT SYSTEM NOTES

1. THE REQUIREMENTS OF SECTION 4.06 SHALL BE MET EXCEPT IN LIEU OF DENSITY TESTING, THE METHODS DESCRIBED BELOW SHALL BE FOLLOWED TO ASSURE PROPER COMPACTION.
2. TOP LIFT MUST BE UNIFORM THICKNESS; INTERMEDIATE LIFTS CAN BE PLACED AT $1\frac{1}{4}$ " TO $2\frac{1}{2}$ " COMPACTED.
3. REQUIREMENTS FOR PROPER COMPACTION:
 - a. MINIMUM 265°F DELIVERY TEMPERATURE OF MATERIAL. PLACE AND SPREAD MATERIAL BEFORE IT COOLS TO 260°F. MATERIAL BELOW TEMPERATURE REQUIREMENT WILL BE REJECTED.
 - b. COMPACT NON-SURFACE LIFTS WITH VIBRATORY PLATE COMPACTOR MEETING THE FOLLOWING REQUIREMENTS:
 - i. DESIGNED TO COMPACT ASPHALT
 - ii. EQUIPPED WITH A WATER TANK
 - iii. CENTRIFUGAL FORCE 3200 LBS TO 6000 LBS
 - iv. WEIGHS MINIMUM 160 LBS (WITHOUT WATER)
 - v. MINIMUM 4400 VIBRATIONS PER MINUTE
 - c. COMPACT TOP LIFT WITH 3 1/2 TO 4 1/2 TON DOUBLE DRUM ROLLER, DESIGNED TO COMPACT BITUMINOUS CONCRETE.
 - d. PROVIDE NUMBER OF PASSES BASED ON LIFT THICKNESS AS FOLLOWS:

LIFT THICKNESS (INCHES)	NUMBER OF PASSES
$1\frac{1}{4}$ TO $1\frac{1}{2}$	8
$1\frac{1}{2}$ TO 2	10
2 TO $2\frac{1}{2}$	12
 - e. ADDITIONAL COMPACTING EQUIPMENT MAY BE REQUIRED TO COMPLETE LIFT COMPACTION BEFORE MATERIAL COOLS TO 180°F.
 - f. AT CORNERS OR OTHER AREAS INACCESSIBLE TO PLATE TAMPER, HAND TAMP 20 TIMES MINIMUM BEFORE MATERIAL COOLS TO 180°F.
4. ALTERNATE EQUIPMENT MAY BE REQUESTED AS A SUPPLEMENT TO CONTRACTOR'S QC PLAN. THE EQUIPMENT AND PROCEDURES MUST BE APPROVED BY THE ENGINEER PRIOR TO USE.
5. IF THESE METHODS ARE NOT PERFORMED TO THE SATISFACTION OF THE ENGINEER, DENSITY VERIFICATION MAY BE REQUIRED WHEREIN THE CONTRACTOR SHALL PROVIDE DENSITY TESTING WITH A QC NUCLEAR DENSITY GAUGE OR COLLECT CORE SAMPLES AS SPECIFIED IN SECTION 4.06



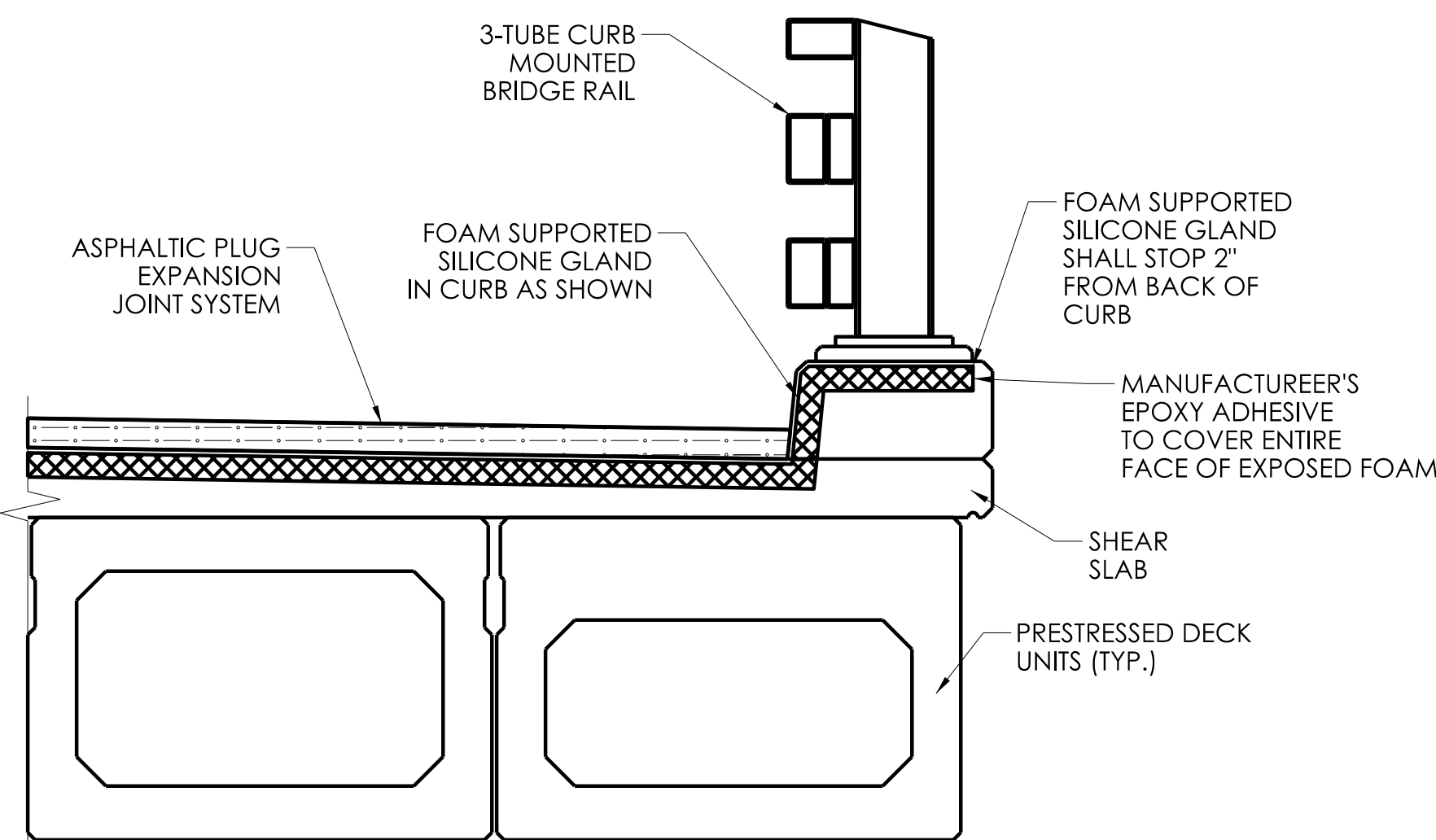
NOTES:
1) REINFORCEMENT NOT SHOWN FOR CLARITY PURPOSES.
2) RIGHT SIDE SHOWN, LEFT SIDE SIMILAR.

PENETRATING SEALER PROTECTIVE COMPOUND AT CURB

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

NOTES:

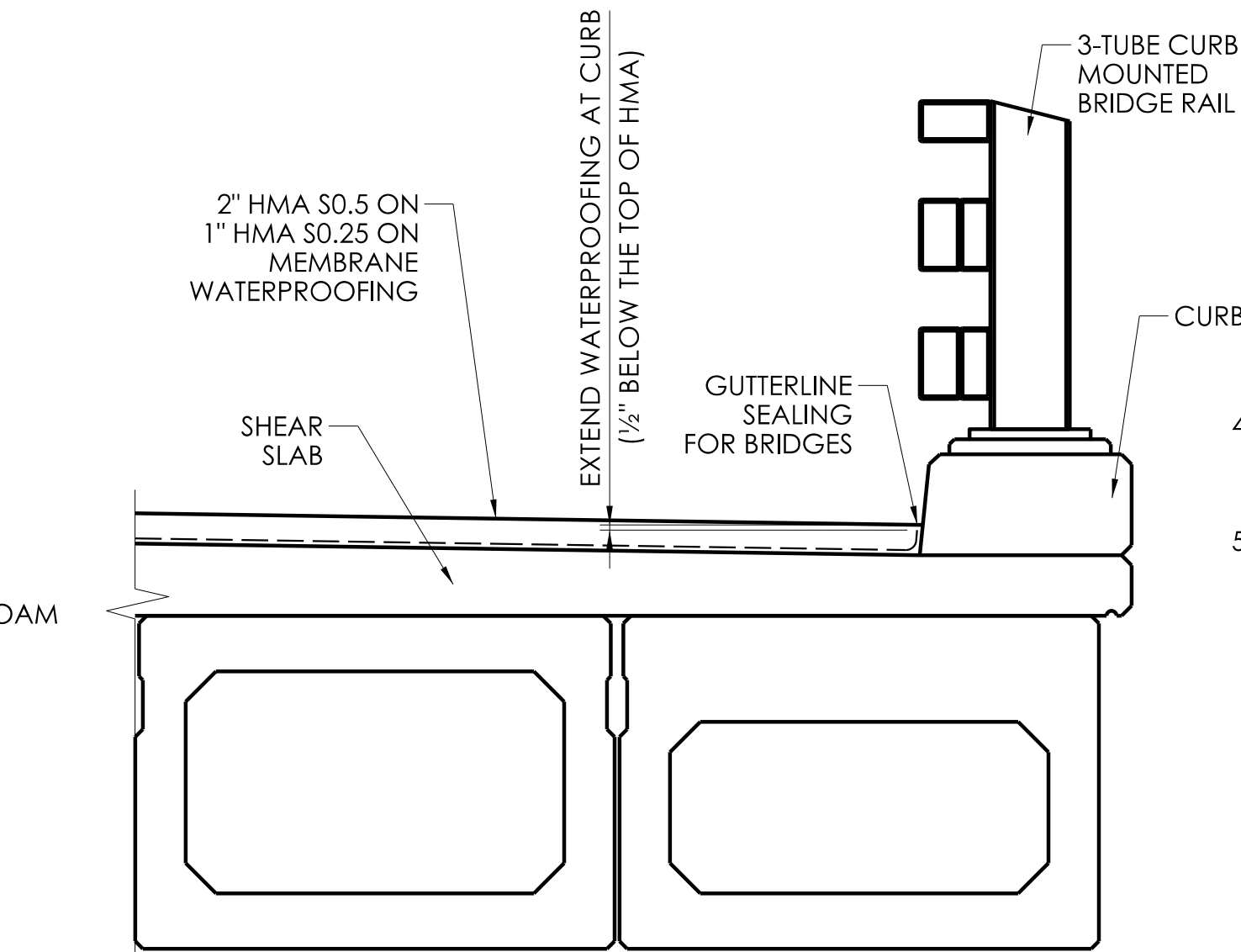
1. FOR SHEAR SLAB REINFORCEMENT SEE DRAWING NO. S-21
2. FOR ABUTMENT REINFORCEMENT TYPICAL SECTION SEE DRAWING NOS. S-10 & S-11
3. FOR APPROACH SLAB REINFORCEMENT SEE DRAWING NO S-24
4. LEFT & RIGHT ARE REFERENCED LOOKING STATION AHEAD.



NOTES:
1) REINFORCEMENT NOT SHOWN FOR CLARITY PURPOSES.
2) RIGHT SIDE SHOWN, LEFT SIDE SIMILAR.

SCHEMATIC OF ASPHALTIC PLUG JOINT AT CURB WITH 3-TUBE BRIDGE RAIL

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



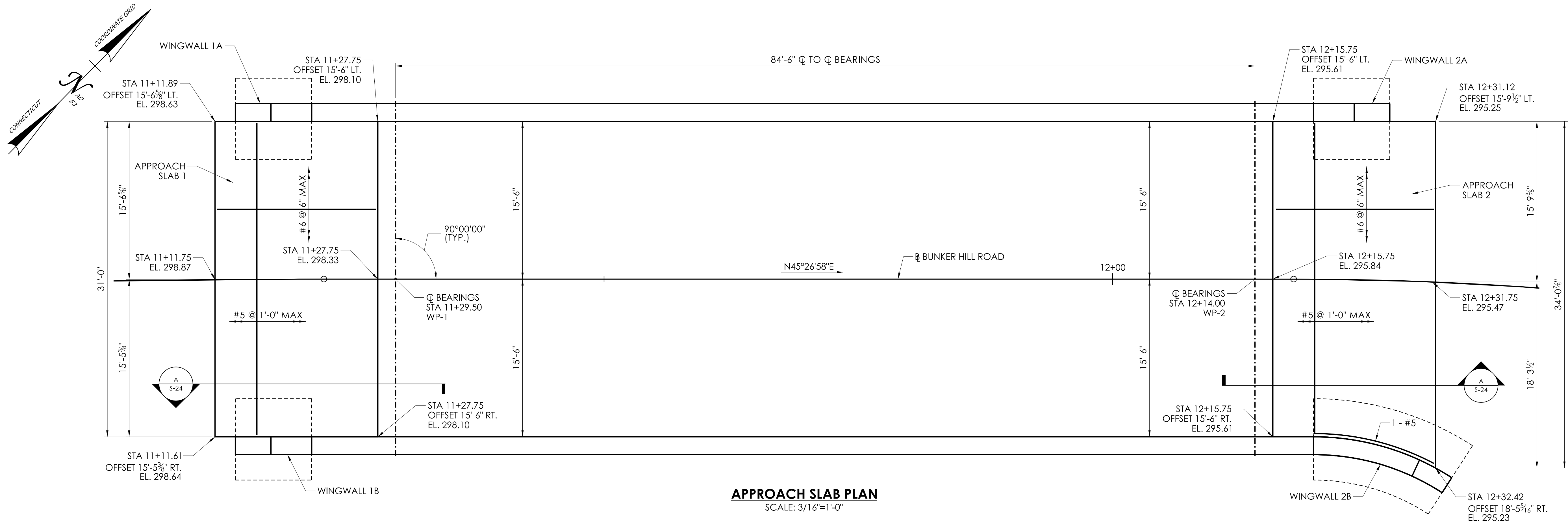
NOTES:
1) REINFORCEMENT NOT SHOWN FOR CLARITY PURPOSES.
2) RIGHT SIDE SHOWN, LEFT SIDE SIMILAR.

MEMBRANE WATERPROOFING AT GUTTERLINE

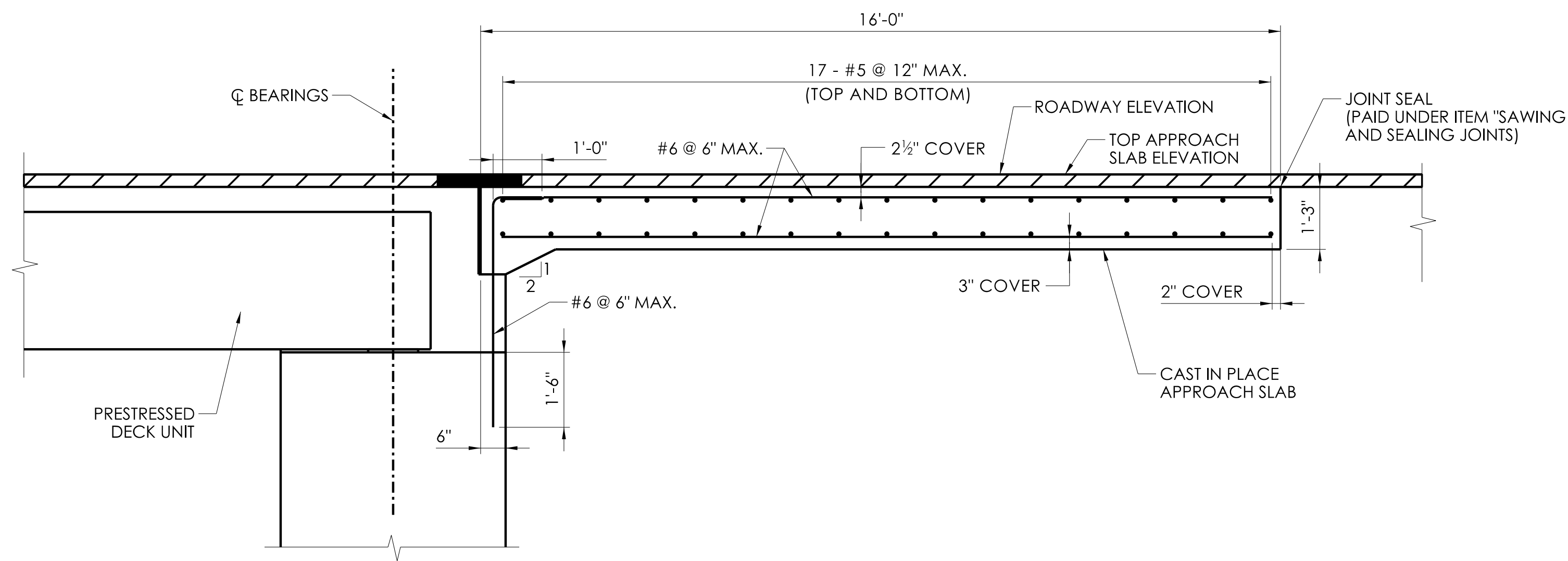
SCALE: 3/4"=1'-0"

REV	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: ARW/JWR	CHECKED BY: WES/RTE	SIGNATURE/BLOCK:		TOWN OF ANDOVER	PROJECT NUMBER: 0001-0106	DRAWING NO. S-23
LASTED SAVED BY: Andrew Westpy FILE NAME: P:\PROJECTS\CT_Projects\0001-0106\Bridge\Contract_Plans\S8_CP_0001-0106_S-21 DECK & JOINT DETAILS.dgn					PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER	SHEET NO. 04.23
PLOTTED DATE: 10/19/2023					TOWN(S): ANDOVER	
					DRAWING TITLE: DECK AND JOINT DETAILS	



APPROACH SLAB PLAN
SCALE: 3/16"=1'-0"



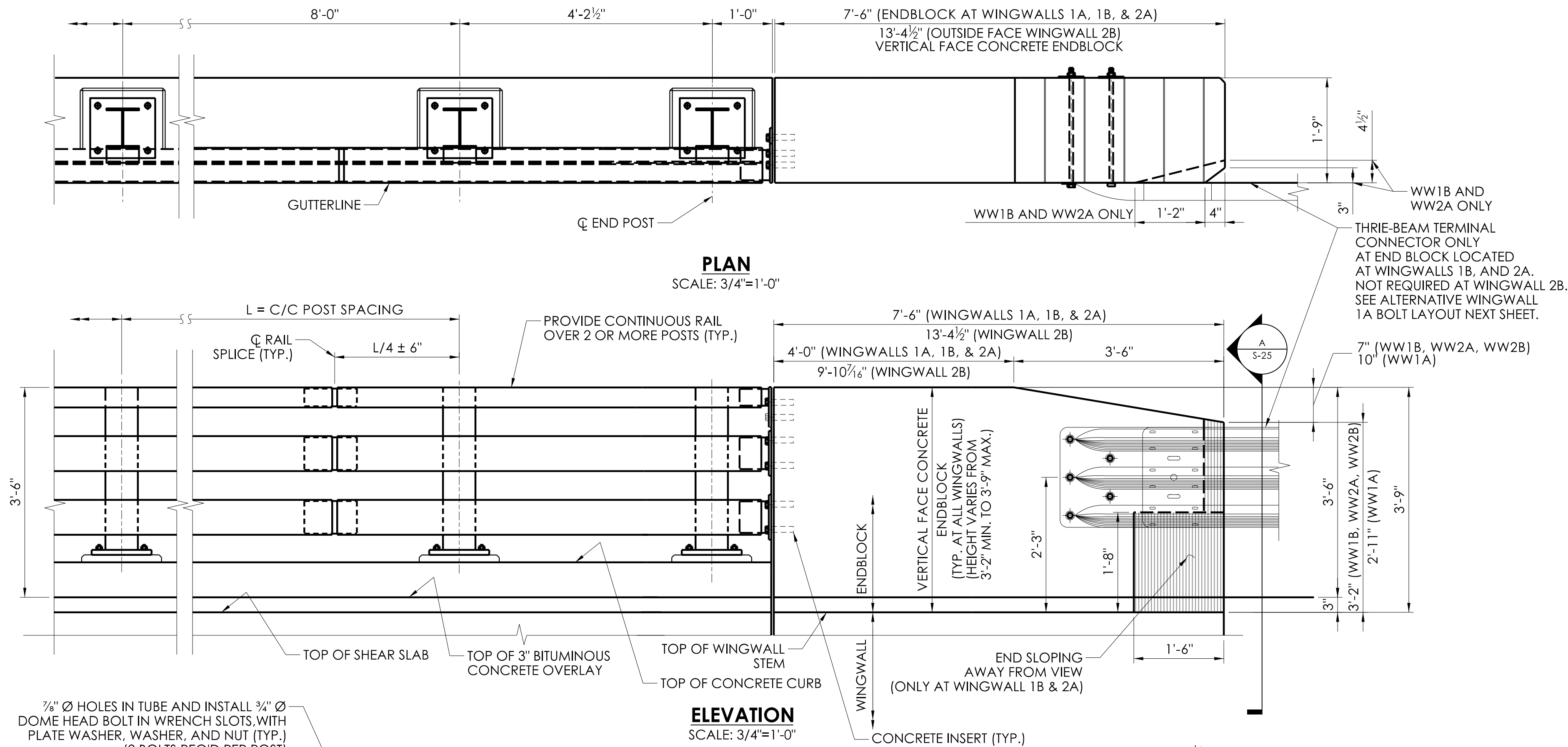
SECTION A
SCALE: 1/2"=1'-0"

APPROACH SLAB ELEVATION TABLES

APPROACH SLAB 1							
BEGIN				END			
STATION	OFFSET	ROADWAY ELEVATION	TOP APP. SLAB ELEVATION	STATION	OFFSET	ROADWAY ELEVATION	TOP APP. SLAB ELEVATION
11+11.89	15'-6" LT	298.88	298.63	11+27.75	15'-6" LT	298.35	298.10
11+11.75	0	299.12	298.87	11+27.75	0	298.58	298.33
11+11.61	15'-6" RT	298.89	298.64	11+27.75	15'-6" RT	298.35	298.10

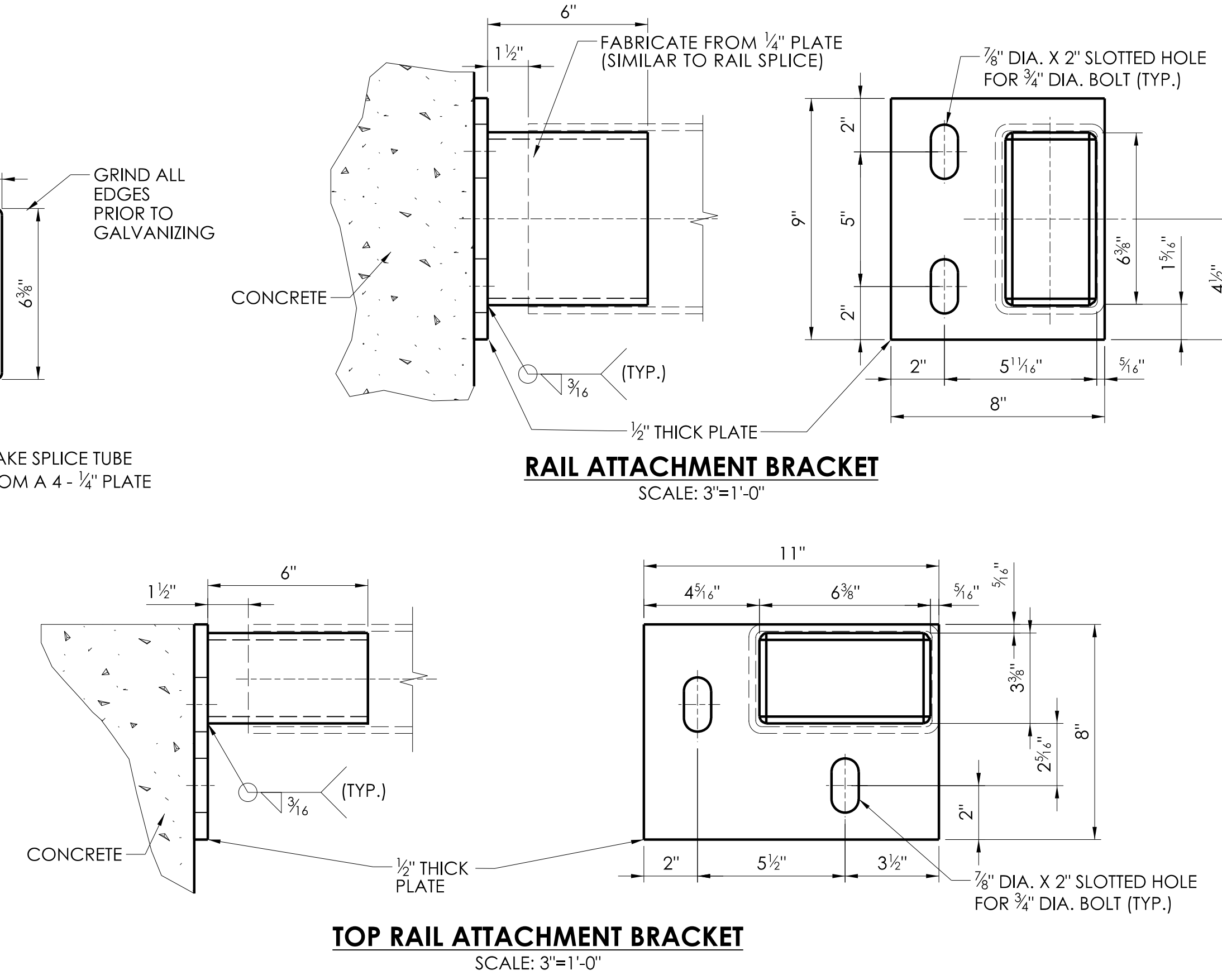
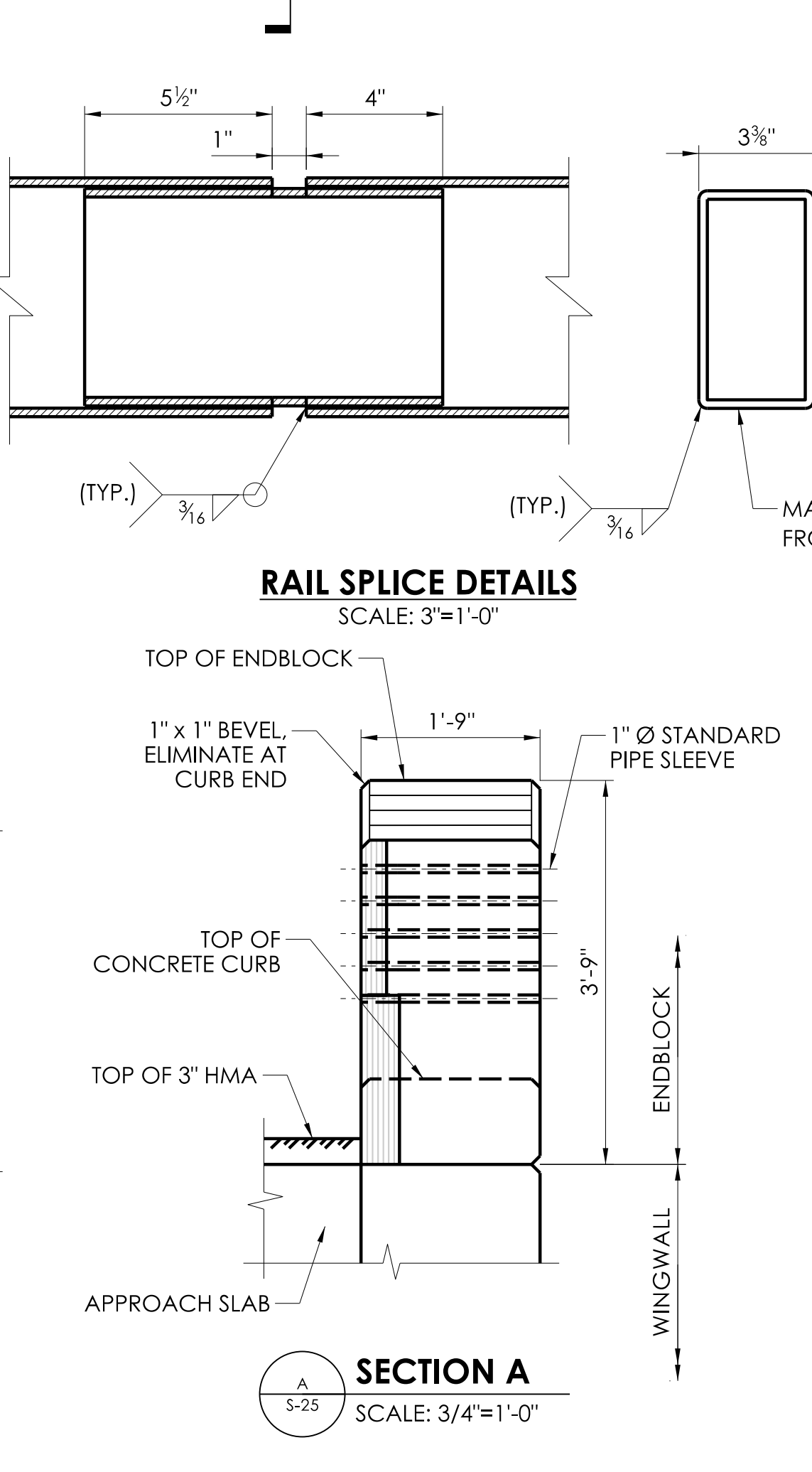
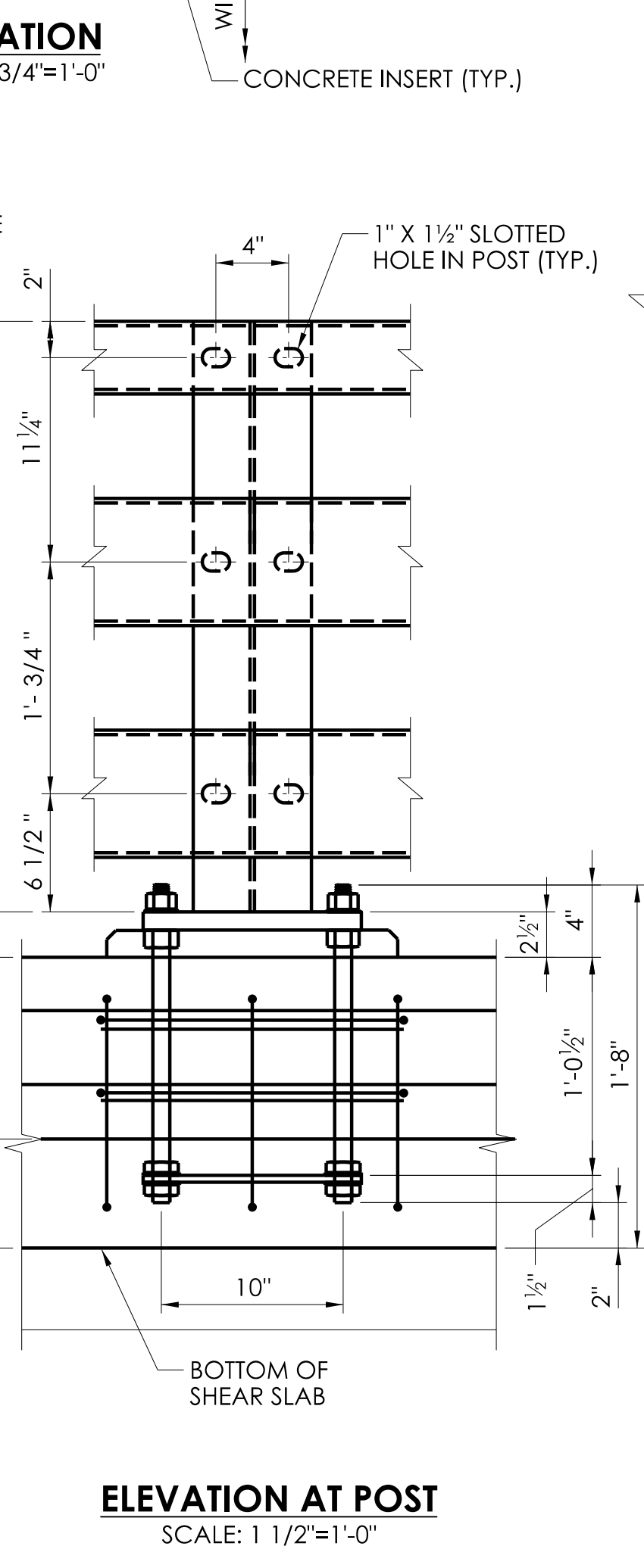
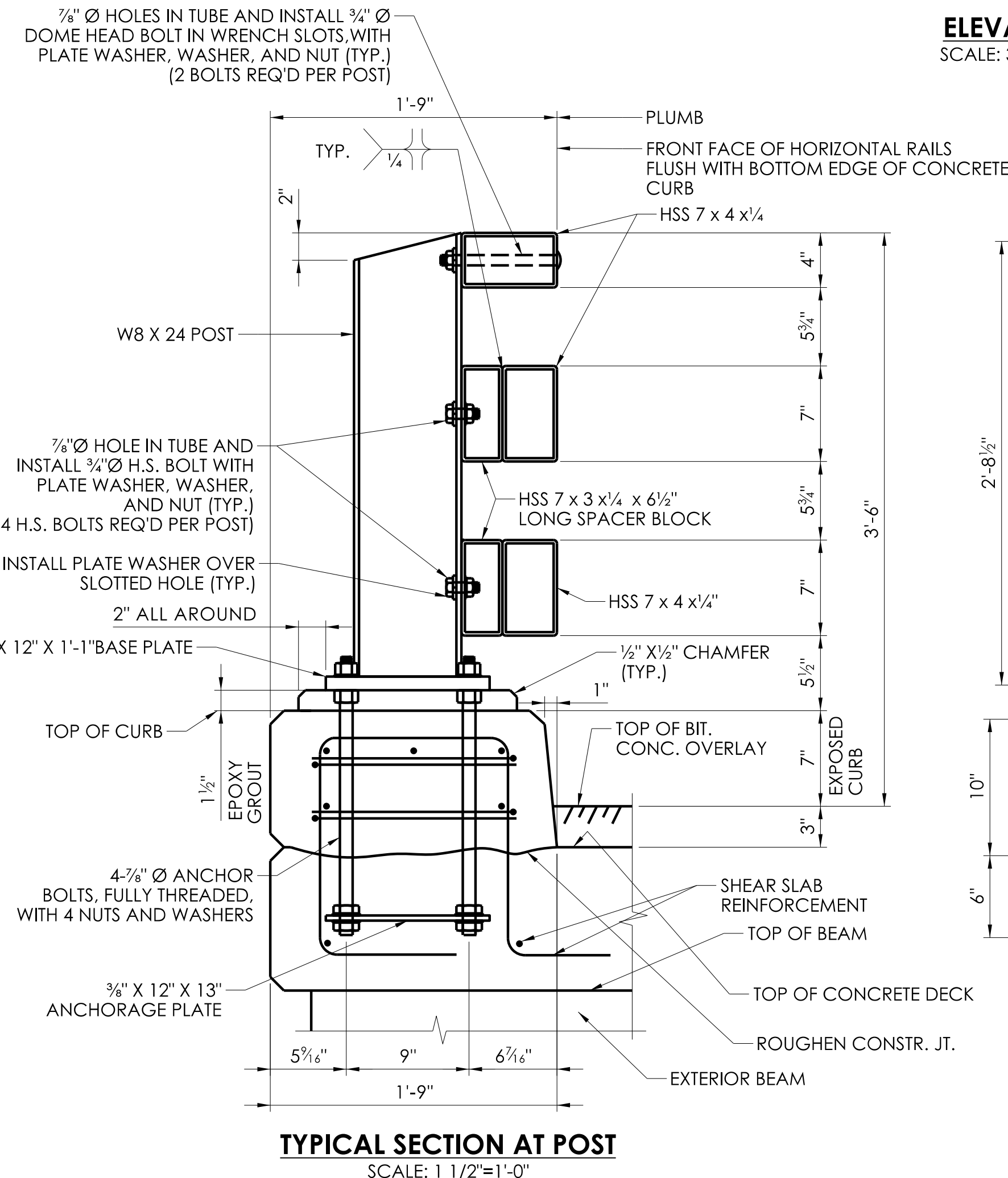
APPROACH SLAB 2							
BEGIN				END			
STATION	OFFSET	ROADWAY ELEVATION	TOP APP. SLAB ELEVATION	STATION	OFFSET	ROADWAY ELEVATION	TOP APP. SLAB ELEVATION
12+15.75	15'-6" LT	295.86	295.61	12+31.12	15'-6" LT	295.50	295.25
12+15.75	0	296.09	295.84	12+31.75	0	295.72	295.47
12+15.75	15'-6" RT	295.86	295.61	12+32.42	15'-6" RT	295.48	295.23

REV.	DATE	REVISION DESCRIPTION



BRIDGE RAIL NOTES:

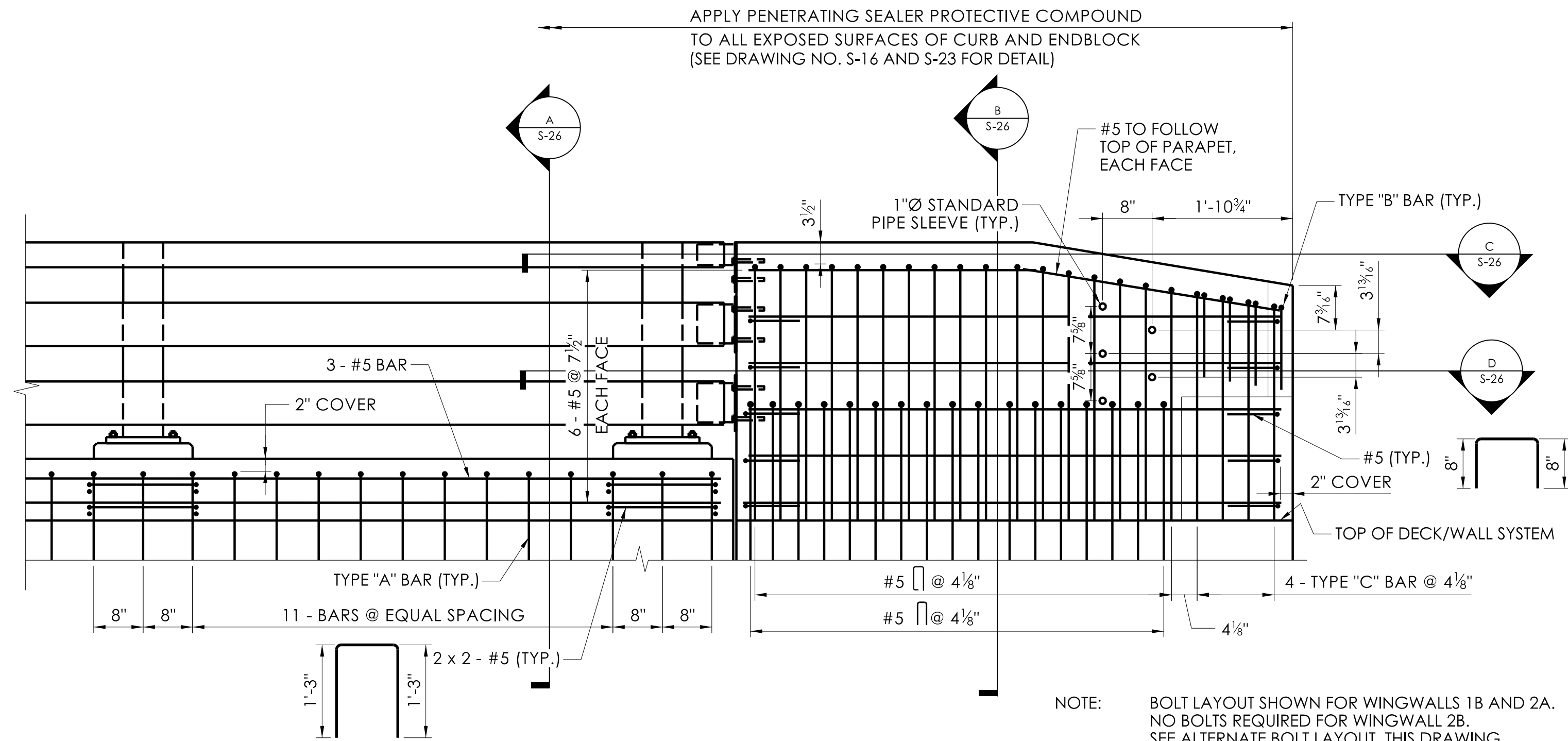
1. THE 3-TUBE CURB MOUNTED BRIDGE RAIL HAS BEEN EVALUATED AT TEST LEVEL 4 (TL-4) AND COMPLIES WITH MASH 2016.
2. CONCRETE FOR THE CURB AND ENDBLOCK SHALL BE CLASS PCC04462. THE COMPRESSIVE STRENGTH OF THE CONCRETE, BASED ON TEST CYLINDERS, SHALL BE NO LESS THAN 4,000 PSI PRIOR INSTALLING THE EPOXY GROUT 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.
3. THE REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND BE HOT-DIP GALVANIZED.
4. THE 1 IN. DIAMETER PIPE SHALL CONFORM TO ASTM A53, GRADE B OR ASTM A501 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.
5. HOLLOW STRUCTURAL SHAPES SHALL CONFORM TO ASTM A500 GRADE C OR ASTM A501, GRADE B.
6. ALL OTHER STEEL SHALL CONFORM TO ASTM A572, GRADE 50 UNLESS NOTED OTHERWISE.
7. THE SILICON CONTENT OF THE STEEL USED FOR THE EXPOSED MEMBERS AND PLATE COMPONENTS SHALL FALL WITHIN THE RANGE OF 0 TO 0.04% OR 0.15% TO 0.25%.
8. ALL STEEL SHAPES, PLATES AND HOLLOW STRUCTURAL SECTIONS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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".
14. FOR ADDITIONAL INFORMATION, SEE STANDARD SHEET NO. HW-910_27 (WW1B AND WW2A) AND HW-910_07 (WW1A).



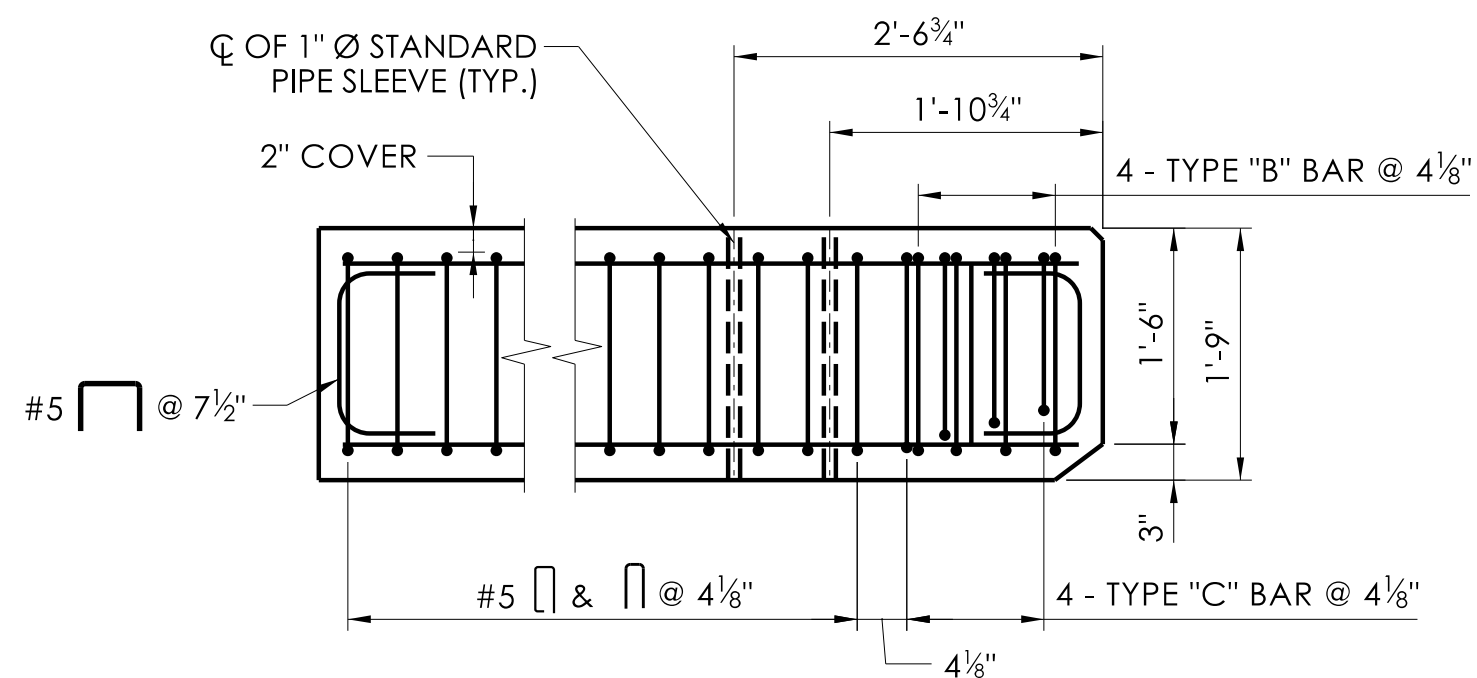
NOTES:

1. FOR SHEAR SLAB REINFORCING, SEE DRAWING NO. S-21.

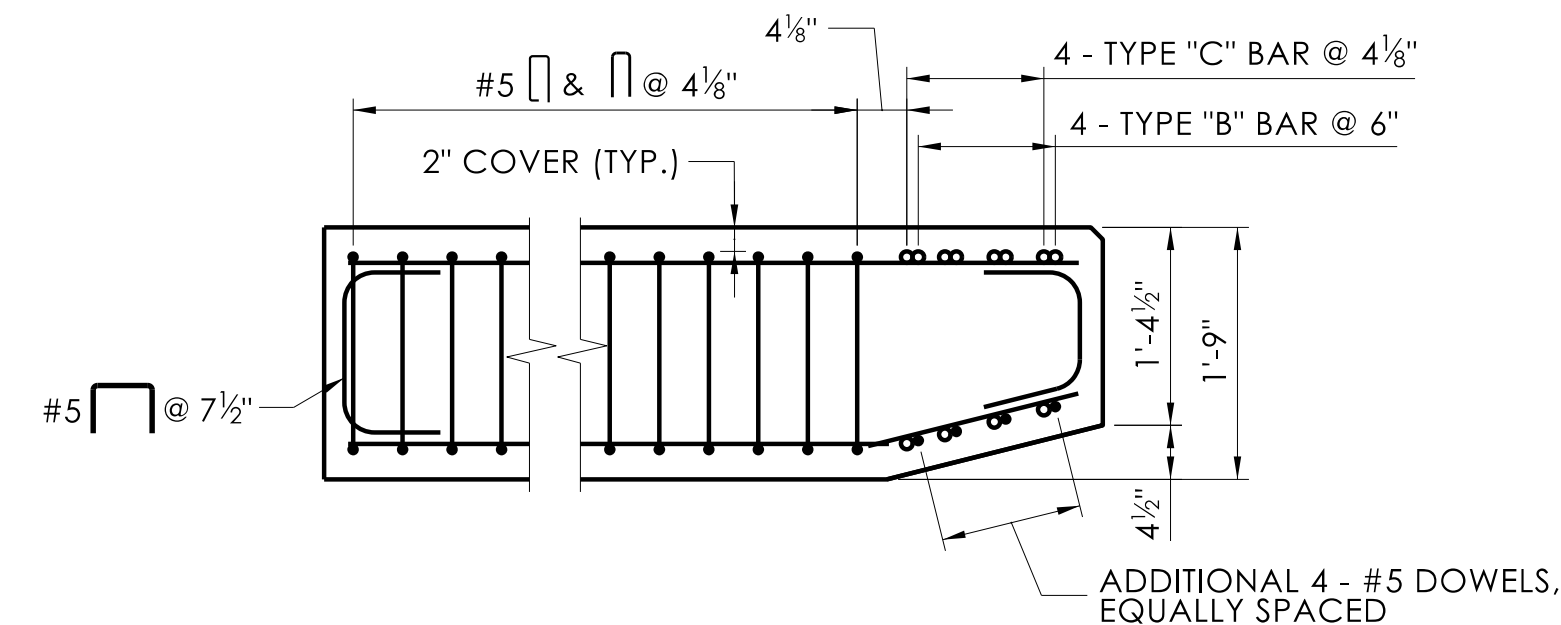
REVISION DESCRIPTION		SIGNATURE/ BLOCK:		PROJECT NUMBER: 0001-0106		DRAWING NO. S-25	
REV.	DATE	DESIGNER/DRAFTER: ARW	CHECKED BY: WES/RTE	PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 04583 BUNKER HILL OVER HOP RIVER		SHEET NO. 04.25	
				TOWN(S): ANDOVER			
				DRAWING TITLE: 3-TUBE CURB MOUNTED BRIDGE RAIL - 1			



ELEVATION - CURB AND ENDBLOCK REINFORCEMENT
SCALE: 3/4"=1'-0"



PLAN SECTION - ENDBLOCK REINFORCEMENT (SECTION C)
SCALE: 3/4"=1'-0"
WW1B AND WW2A ONLY



PLAN SECTION - ENDBLOCK REINFORCEMENT (SECTION D)
SCALE: 3/4"=1'-0"
WW1B AND WW2A ONLY

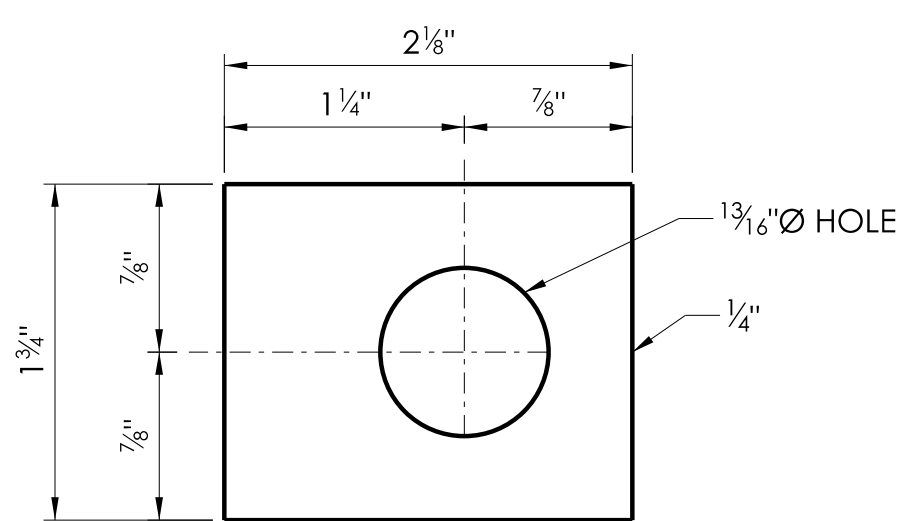
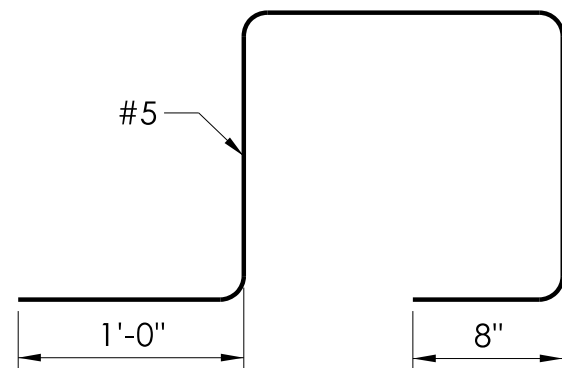
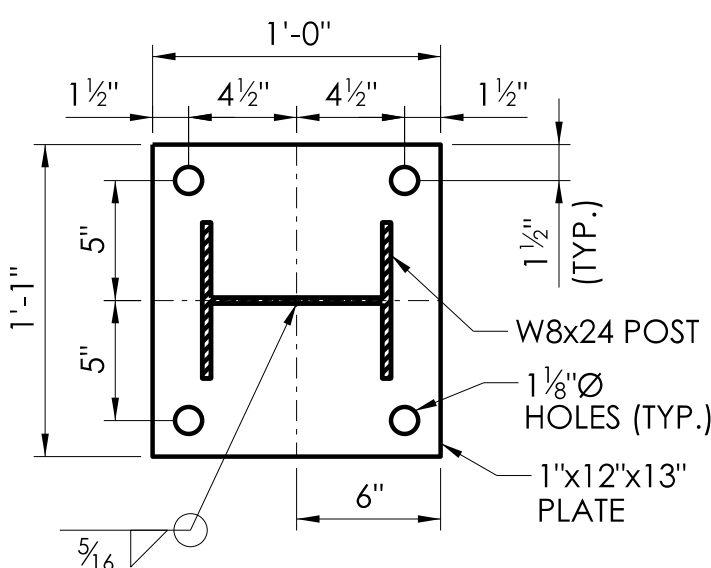


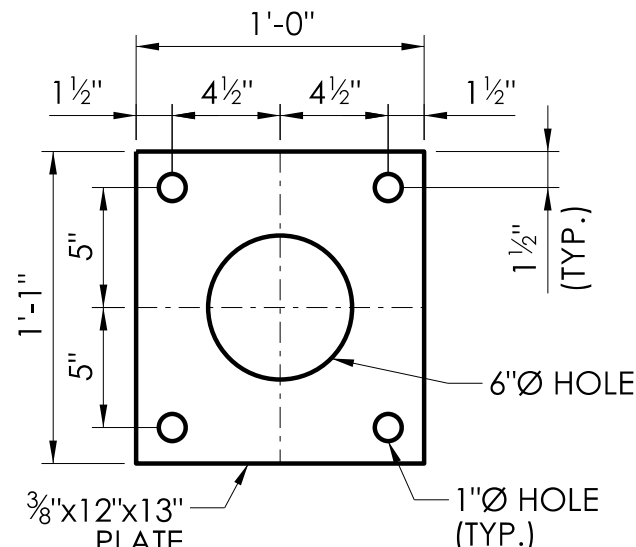
PLATE WASHER "C"
SCALE: Full Size 1 = 1



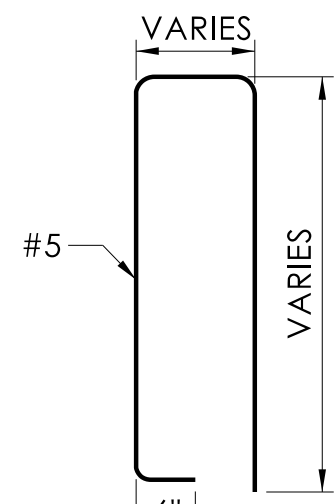
TYPE "A" BAR
SCALE: N.T.S.



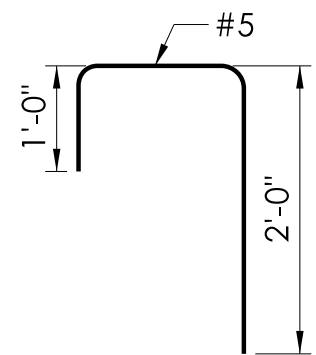
BASE PLATE DETAIL
SCALE: 1 1/2"=1'-0"



ANCHOR PLATE DETAIL
SCALE: 1 1/2"=1'-0"



TYPE "C" BAR
SCALE: N.T.S.

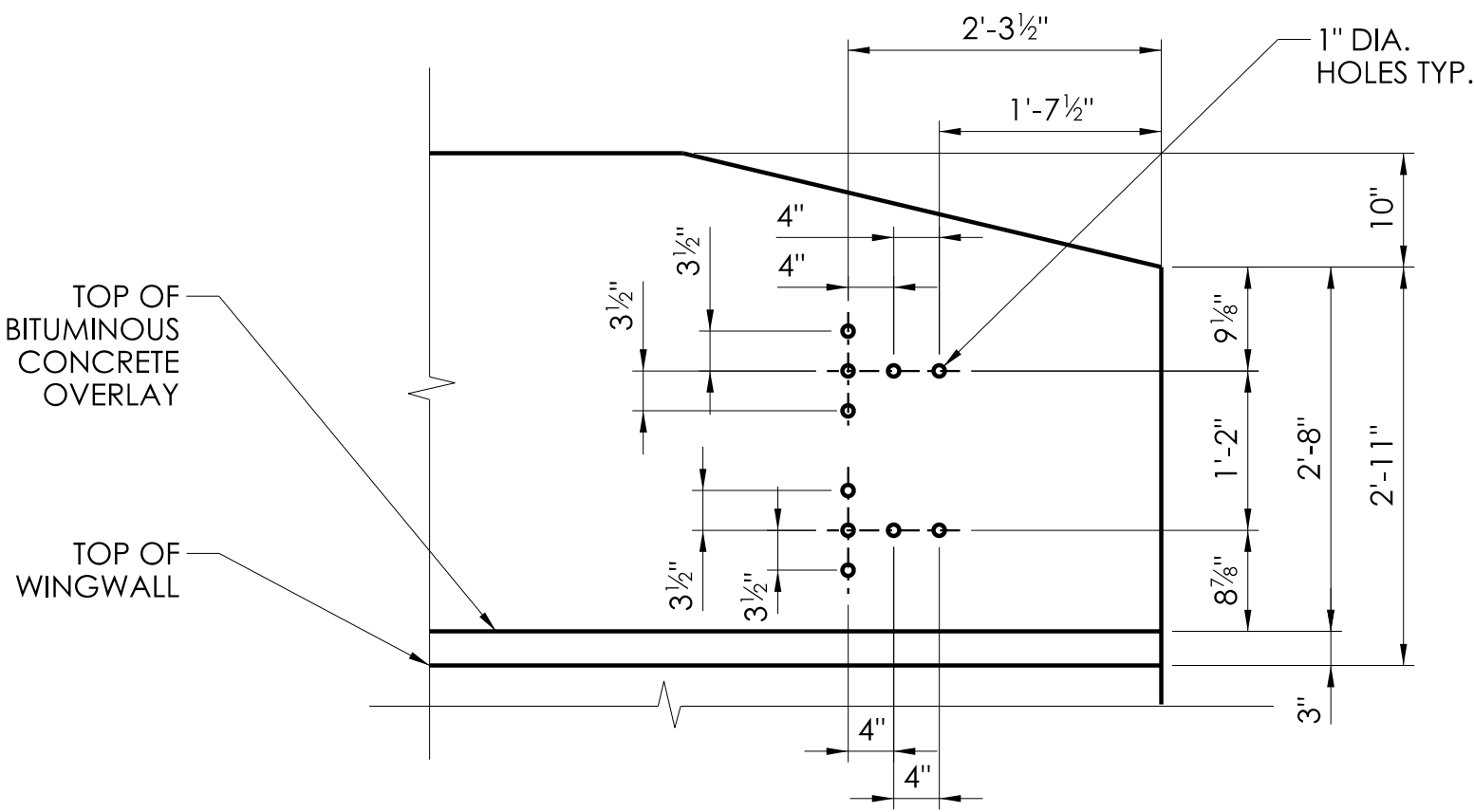


TYPE "B" BAR
SCALE: N.T.S.

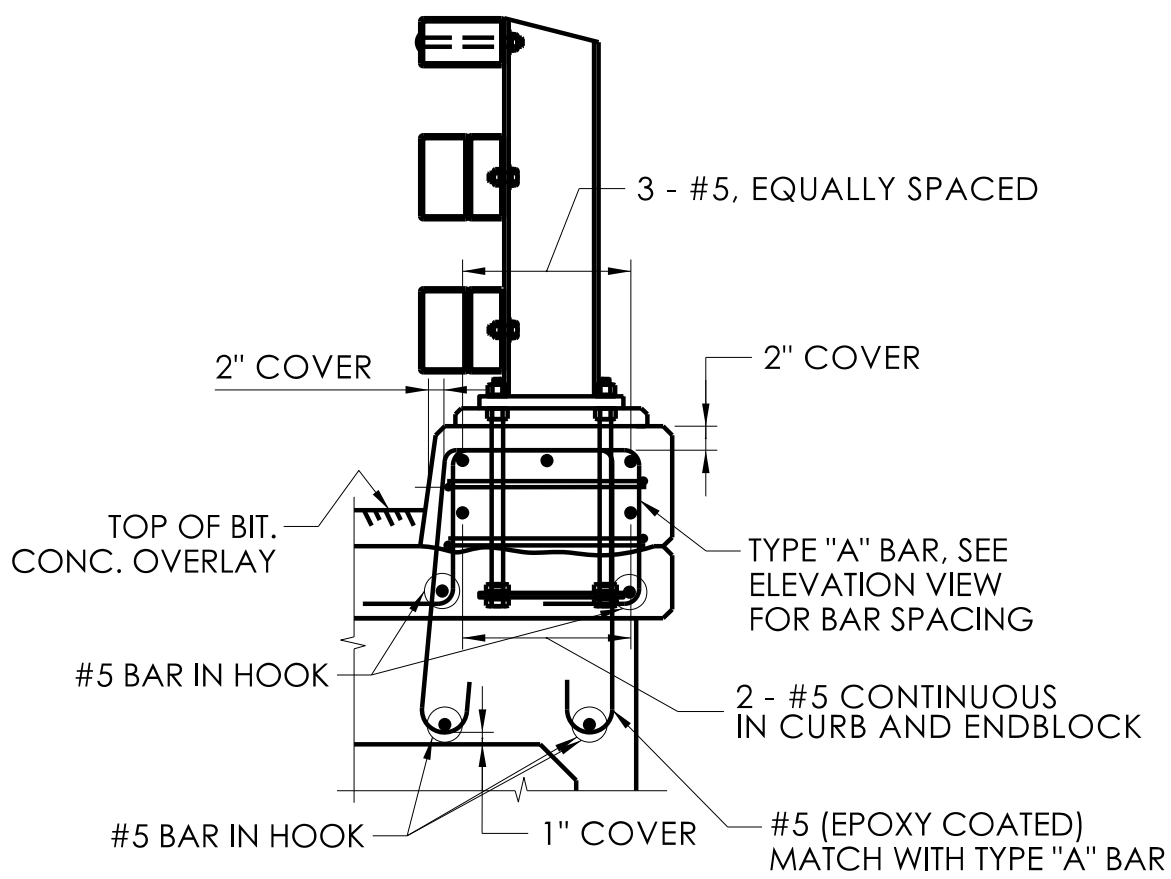
REINFORCEMENT SPLICE NOTES:

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

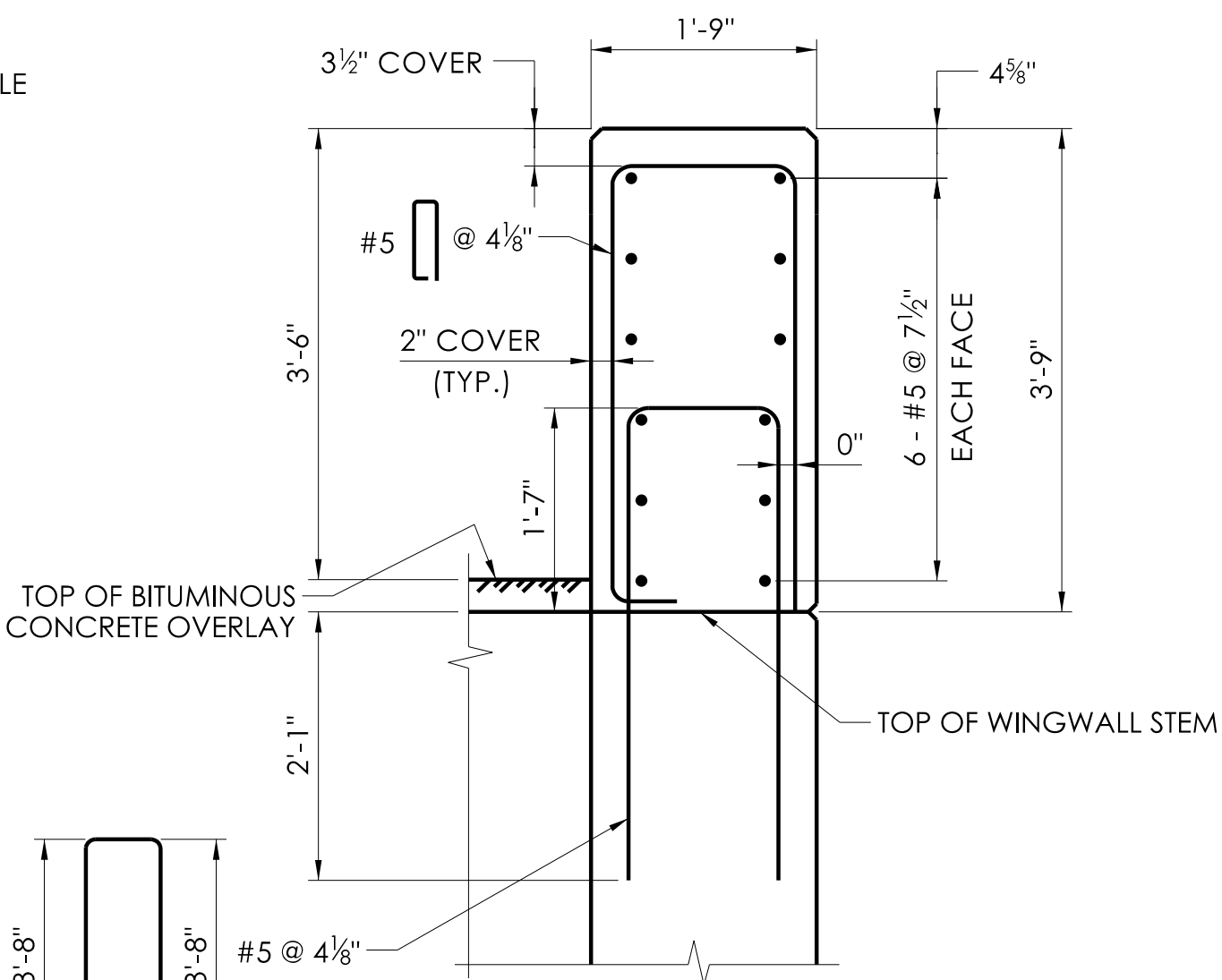
BAR SIZE	SPLICE LENGTH
#5	2'-4"
- THE SPLICES SHALL BE ALTERNATED SO THAT 50% OR LESS OF THE LONGITUDINAL BARS ARE SPLICED AT THE SAME LOCATION.



ALTERNATIVE WINGWALL 1A BOLT LAYOUT
SCALE: 3/4"=1'-0"



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



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

REV.	DATE	REVISION DESCRIPTION

