

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION 2019 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

STRUCTURE EXCAVATION SHALL BE AS SHOWN ON M-206-2. STRUCTURE BACKFILL SHALL BE AS SHOWN ON THE PLANS.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.

ALL EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS I FINAL FINISH TO ONE FOOT BELOW THE GROUND LINE.

THE FOLLOWING STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36 (ASTM A-36): EXPANSION DEVICES, REMOVABLE COVER PLATES, PIPE RAILING BASE PLATES.

THE FOLLOWING STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50 (ASTM A-572): PILING.

ALL STRUCTURAL CONCRETE SHALL CONFORM TO CEMENTITIOUS MATERIALS REQUIREMENTS CORRESPONDING TO SULFATE EXPOSURE CLASS 0.

FIELD WELDING OF ANY KIND SHALL NOT BE PERMITTED ON THE STEEL GIRDERS UNLESS SPECIFICALLY CALLED FOR IN THE PLANS.

GRADE 60 REINFORCING STEEL IS REQUIRED

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED

(N) DENOTES NON COATED REINFORCING STEEL

ALL THE PROVISIONS FOR BRIDGE DECK CONCRETE SHALL ALSO APPLY TO APPROACH SLAB CONCRETE

CLEARANCE FROM THE SURFACE OF CONCRETE TO THE FACE OF REINFORCEMENT SHALL BE 2 INCHES UNLESS NOTED OTHERWISE.

SPLICE LOCATIONS ARE BASED ON AN ASSUMED 60' STOCK LENGTH. SPLICES SHALL BE ALTERNATELY STAGGERED UNLESS NOTED OTHERWISE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE BASED ON THE "FOREST LAKES FILING NO. 6 PUBLIC STREET IMPROVEMENT PLAN" BY CLASSIC CONSULTING. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD PRIOR TO ORDERING OR FABRICATING ANY MATERIAL.

THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS.

ALL LONGITUDINAL AND TRANSVERSE DIMENSIONS ARE MEASURED HORIZONTALLY AND INCLUDE NO CORRECTION FOR GRADE

THE INFORMATION SHOWN IN THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 (1-800-422-1487) AT LEAST 3 DAYS (2 DAYS NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

THE SUPERSTRUCTURE DESIGN WAS PERFORMED BY CONTECH ENGINEERED SOLUTIONS LLC. THE INFORMATION PERTAINING TO THE SUPERSTRUCTURE IS CONTAINED IN CONTRACT DRAWINGS DATED 12/15/2020 (JOB NO. 621715).

THE SOILS AND FOUNDATION INVESTIGATION FOR THIS PROJECT WAS PERFORMED BY ENTECH ENGINEERING, INC. THE SUBSURFACE CONDITIONS AND RECOMMENDATIONS FOR THE STRUCTURE PROJECT ARE CONTAINED IN A REPORT DATED 04/04/2020 (JOB NO. 200150).

THE END 6' OF THE GIRDER AT EACH ABUTMENT AND PIER SHALL BE PAINTED, EQUIVALENT TO FEDERAL STANDARD 545B COLOR NO. 30045 (WEATHERED STEEL COLOR).

DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, EIGHTH EDITION WITH CURRENT INTERIMS.  
DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD).

LIVE LOAD: HL-93 (DESIGN TRUCK OR TANDEM, AND DESIGN LANE LOAD)  
DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR BRIDGE DECK OVERLAY  
EARTH LOAD:  $\gamma$  = 135 PCF.

STRUCTURAL BACKFILL CLASS I:  
AT-REST WINGWALL: EFW = 57 pcf  
ACTIVE ABUTMENT: EFW = 45 pcf

REINFORCED CONCRETE:  
CLASS D CONCRETE:  $f'c$  = 4,500 psi  
REINFORCING STEEL:  $f_y$  = 60,000 psi

CAISSON CONCRETE:  
CLASS BZ CONCRETE:  $f'c$  = 4,000 psi  
REINFORCING STEEL:  $f_s$  = 60,000 psi

STRUCTURAL STEEL, AASHTO M270 (ASTM A-572):  
GRADE 50  $f_y$  = 50,000 psi

SEISMIC DESIGN CRITERIA

SEISMIC ZONE = 1  
NO SEISMIC DESIGN IS REQUIRED

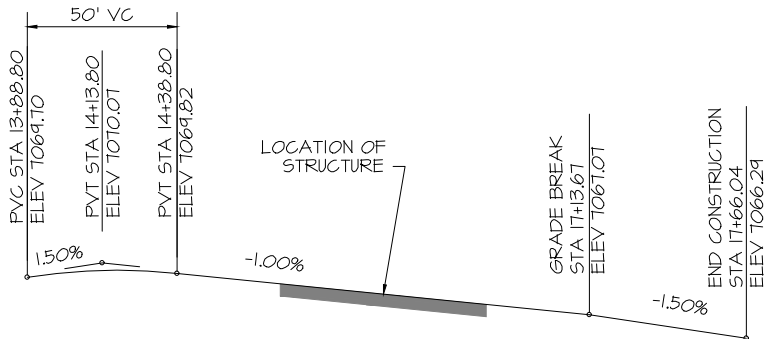
PEAK GROUND ACCELERATION  $PGA$  = 0.058 g  
SHORT-PERIOD SPECTRAL ACCELERATION  $S_s$  = 0.185 g (PER GEOTECH REPORT)  
LONG-PERIOD SPECTRAL ACCELERATION  $S_l$  = 0.059 g (PER GEOTECH REPORT)  
SITE CLASS D  
SITE FACTOR  $F_{pga}$  = 1.6  
SITE FACTOR  $F_a$  = 1.6  
SITE FACTOR  $F_v$  = 2.4  
PEAK DESIGN SPECTRAL ACCELERATION  $A_s$  = 0.0928 g  
SHORT-PERIOD DESIGN SPECTRAL ACCELERATION  $S_{ds}$  = 0.246 g  
LONG-PERIOD DESIGN SPECTRAL ACCELERATION  $S_{dl}$  = 0.142 g  
 $T_o$  = 0.096 sec  
 $T_s$  = 0.478 sec

BRIDGE DESCRIPTION

2 SPAN (99'-7 $\frac{1}{8}$ ", 99'-7 $\frac{1}{8}$ ") TWIN BRIDGES  
PREFABRICATED CONTECH BRIDGES WITH STEEL WIDE FLANGE GIRDERS  
MESA TOP DRIVE SOUTH OVER NORTH BEAVER CREEK  
24'-0" ROADWAY CURB TO CURB  
45°00'00" SKEW  
5'-6" SIDEWALK, THRIE BEAM RAIL WITH SAFETY RAIL ABOVE SIDEWALK  
6" CURB, THRIE BEAM

HYDRAULIC DATA

100YR WSE = 1058.46 AT NORTH BRIDGE HCL  
100YR SCOUR AT PIER = 1046.16  
NO 100YR SCOUR AT ABUTMENTS  
100YR VELOCITY = 5.67 FT/S

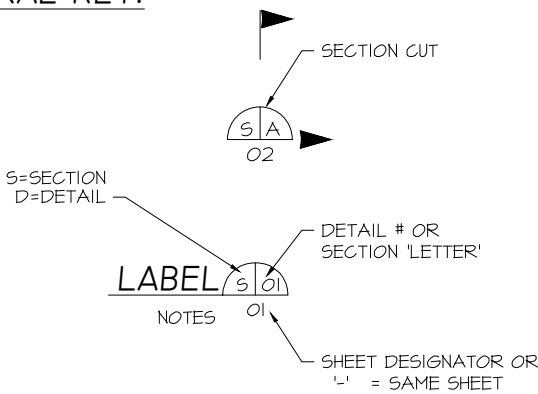



PROFILE GRADE

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GENERAL KEY:






FOR BURIED UTILITY INFORMATION  
THREE (3) BUSINESS DAYS  
BEFORE YOU DIG  
CALL 811  
(or 1-800-922-1987)  
UTILITY NOTIFICATION  
CENTER OF COLORADO (UNCC)  
www.uncc.org





07-09-21

ISSUED FOR  
CONSTRUCTION

REVISIONS		DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	5-19-21	HMR	
2	REVISED 100YR WATER	06-11-21	HMR	
3	REVISED HYDRAULIC DATA	07-04-21	HMR	
4				
5				
6				
7				



DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

PROJECT LOCATION  
MONUMENT, CO

GENERAL INFORMATION

STRUCT./JOB:

SHEET NO.

B01

SUMMARY OF QUANTITIES (TWO BRIDGES, EASTBOUND AND WESTBOUND BRIDGES)

ITEM NO.	DESCRIPTION	UNIT	SUPERSTRUCTURE	ABUTMENT 1	PIER 2	ABUTMENT 3	TOTAL
206	STRUCTURE EXCAVATION	CY	-	545	45	65	655
206	STRUCTURE BACKFILL (CLASS 1)	CY	-	1,595	25	1,275	2,895
206	MECHANICAL REINFORCEMENT OF SOIL	CY	-	1,595	-	1,275	2,870
502	STEEL PILING (HP 12x53)	LF	-	827	-	958	1,785
503	DRILLED CAISSON (42 INCH)	LF	-	-	182	-	182
506	RIPRAP	CY	-	1317	-	982	2,299
514	PIPE RAILING	LF	108	-	-	-	108
518	BRIDGE COMPRESSION SEAL	LF	85	-	-	-	85
518	BRIDGE EXPANSION DEVICE (0-4 INCH)	LF	170	-	-	-	170
601	CONCRETE CLASS D (BRIDGE)	CY	503	210	68	182	963
602	REINFORCING STEEL (EPOXY)	LB	77,965	23,725	16,885	20,815	139,390
628	BRIDGE GIRDER AND DECK UNIT (BY OTHERS)	EACH	1	-	-	-	1

1.

RIPRAP QUANTITY PROVIDED FOR INFORMATION ONLY. REFER TO CIVIL PLANS AND BRIDGE HYDRAULIC INFORMATION SHEET FOR RIPRAP LIMITS. QUANTITY ASSUMES 4' DEEP RIPRAP.
2.



INCLUDES 377 CY OF CONCRETE WITHIN THE DECK, CURB AND SIDEWALK WHICH IS TO BE INCLUDED IN THE CONTECH PLANS. THE VALUE IS INCLUDED FOR OVERALL QUANTITY CALCULATIONS INFORMATION ONLY.
3.

INCLUDES 59,465 LB OF REINFORCING STEEL WITHIN THE DECK, CURB AND SIDEWALK WHICH IS TO BE INCLUDED IN THE CONTECH PLANS. THE VALUE IS INCLUDED FOR OVERALL QUANTITY CALCULATIONS INFORMATION ONLY.

ISSUED FOR  
CONSTRUCTION



07-09-21

REVISIONS		DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR	<div></div>
2	REVISED QUANTITY	06-11-21	HMR	
3	REVISED QUANTITY	07-04-21	HMR	
4				
5				
6				
7				



DESIGNED BY:  
HMR  
DRAWN BY:  
AJM  
PROJECT MANAGER:  
HMR  
DATE:  
7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

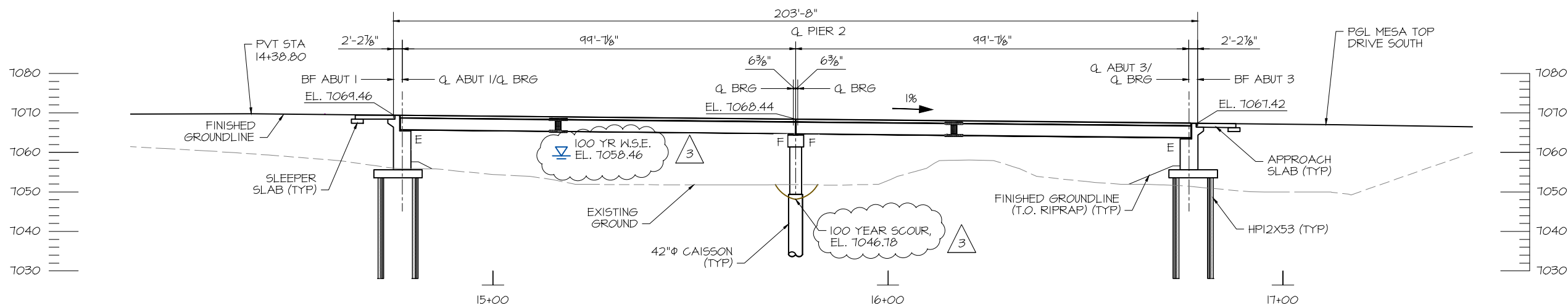
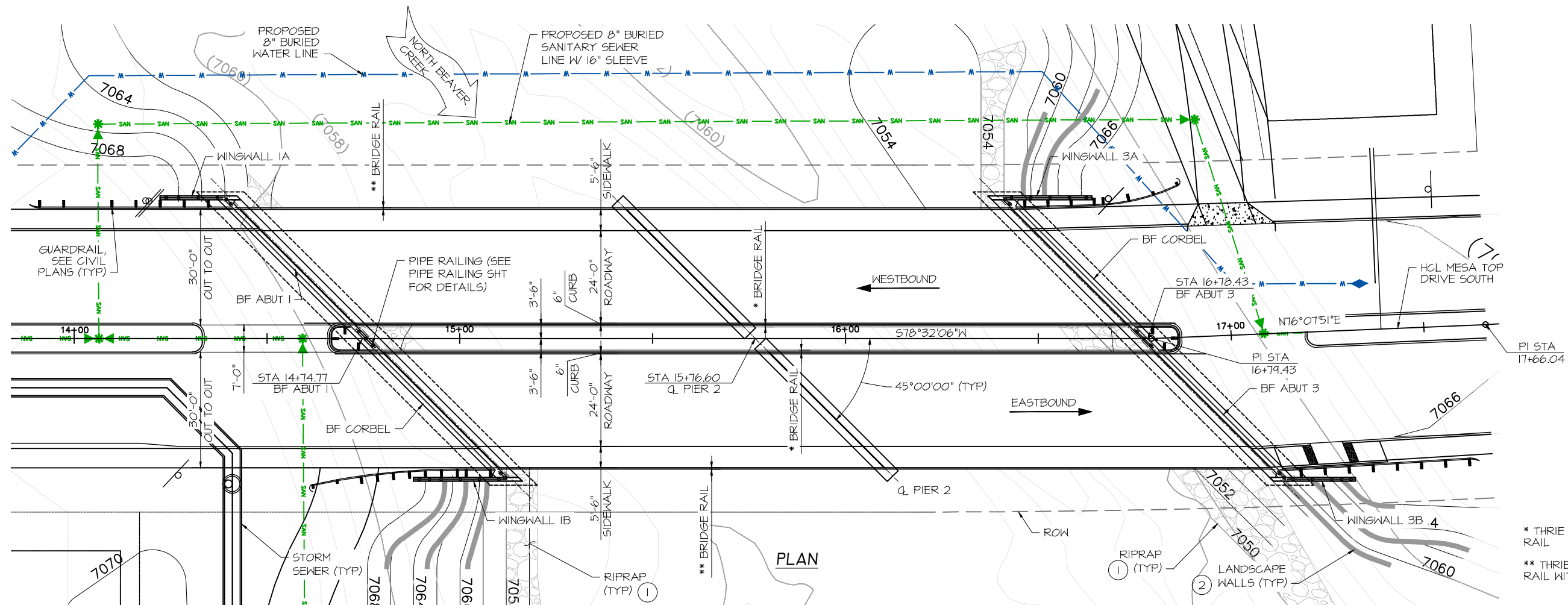
PROJECT LOCATION  
MONUMENT, CO

SUMMARY OF QUANTITIES

STRUCT./JOB:

SHEET NO.

B02



ELEVATION  
ELEVATIONS ARE AT FINISHED GRADE AT HCL  
(WINGWALLS NOT SHOWN FOR CLARITY)

NOTES:

1. REFER TO CIVIL PLANS FOR RIPRAP LIMITS AND INFORMATION.
2. REFER TO CIVIL PLANS FOR LANDSCAPE WALL INFORMATION.
3. DIMENSIONS AND ELEVATIONS ARE BASED ON CIVIL STREET PLANS. CONTRACTOR TO VERIFY.
4. REFER TO CIVIL PLANS FOR GUARDRAIL AND MEDIAN GUARDRAIL LOCATION, LENGTHS AND DIMENSIONS.

ISSUED FOR  
CONSTRUCTION



07-09-21

REVISIONS	DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR
2	REVISED 100YR WATER	06-11-21	HMR
3	REVISED HYDRAULIC DATA	07-09-21	HMR
4			
5			
6			
7			



DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

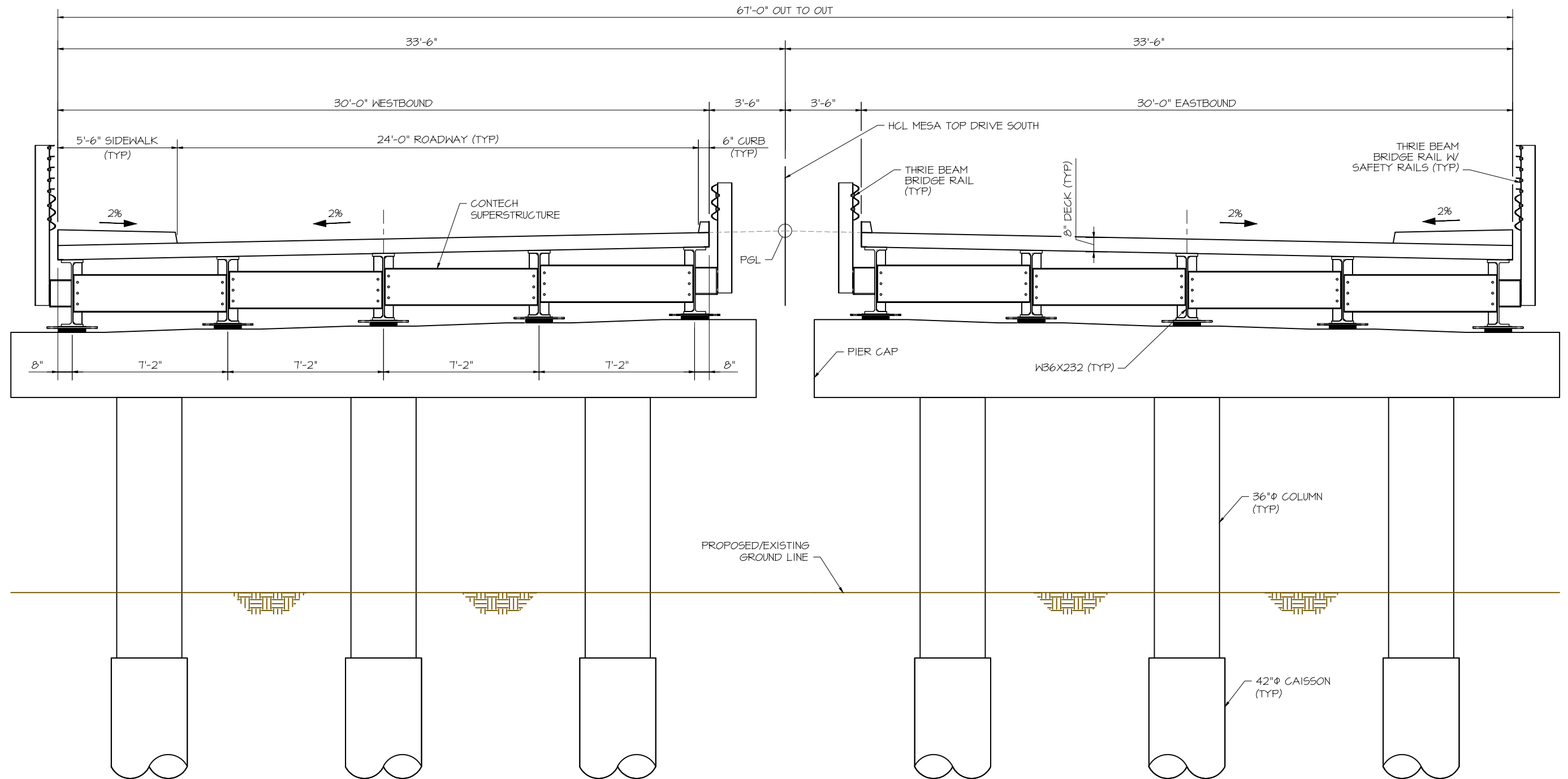
PROJECT LOCATION  
MONUMENT, CO

GENERAL LAYOUT

STRUCT/JOB:

SHEET NO.

B03



TYPICAL SECTION  
(LOOKING AHEAD STATION  
(NORMAL TO HCL)

NOTES:

1. REFER TO CONTECH'S PLANS FOR INFORMATION REGARDING SUPERSTRUCTURE.



07-09-21

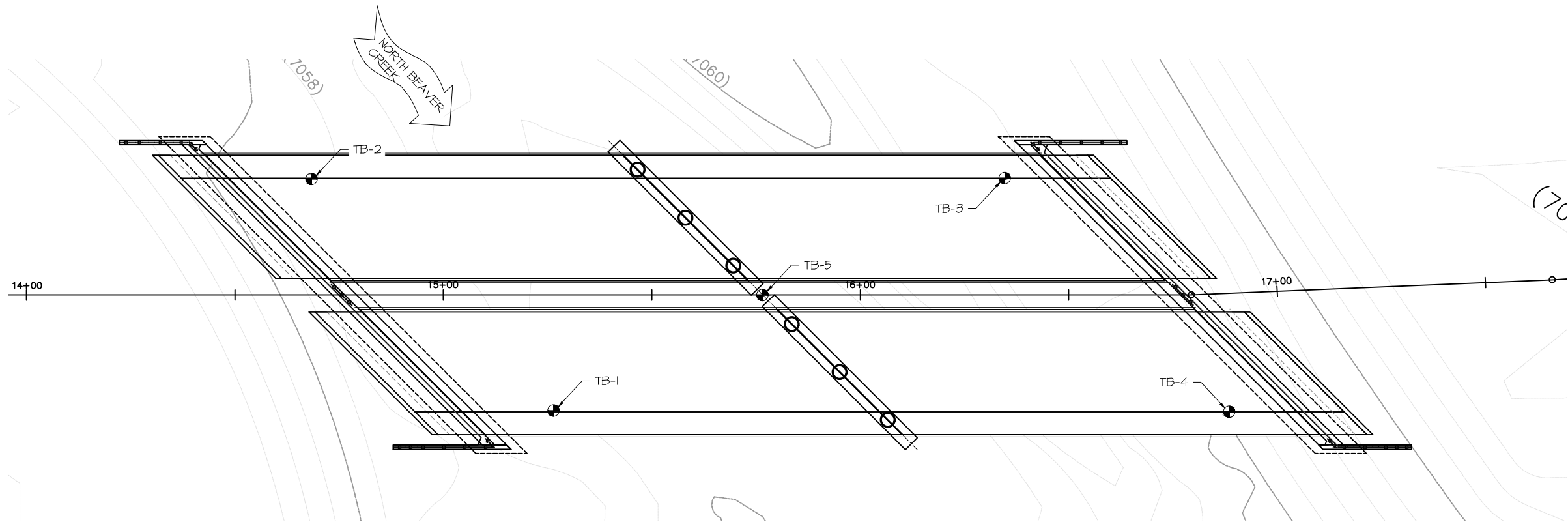
ISSUED FOR  
CONSTRUCTION

REVISIONS		DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR	
2				
3				
4				
5				
6				
7				



DESIGNED BY: HMR	PROJECT TITLE FOREST LAKES BRIDGES	PROJECT LOCATION MONUMENT, CO	
DRAWN BY: AJM		STRUCT./JOB:	
PROJECT MANAGER: HMR	TYPICAL SECTION		
DATE: 7/9/21		SHEET NO. B04	





PLAN

TEST BORING NO. 1				TEST BORING NO. 2			
DATE DRILLED 1/22/2020				DATE DRILLED 1/22/2020			
JOB # 200150				JOB # 200150			
CLIENT FLRD				CLIENT FLRD			
LOCATION N. BEAVER CREEK BRIDGE				LOCATION N. BEAVER CREEK BRIDGE			
REMARKS				REMARKS			
WATER @ 10', 1/28/20 SAND, GRAVELLY, SLIGHTLY SILTY, FINE TO COARSE GRAINED, BROWN TO RED BROWN, VERY DENSE TO MEDIUM DENSE, DRY TO WET	Depth (ft)	Symbol	Soil Type	WATER @ 13', 1/27/20 SAND, VERY SILTY TO SILTY, FINE TO COARSE GRAINED, BROWN TO RED BROWN, MEDIUM DENSE, MOIST	Depth (ft)	Symbol	Soil Type
	10	1	1		10	1	1
	15	1	1		15	1	1
	20	1	1		20	1	1
	25	1	1		25	1	1
SANDSTONE, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE, MOIST	30	1	1	SANDSTONE, VERY SILTY TO SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE, MOIST	30	1	1
	35	1	1		35	1	1
	40	1	1		40	1	1
	45	1	1		45	1	1
	50	1	1		50	1	1
* - HIGH BLOW COUNTS TO GRAVEL				* - BULK SAMPLE TAKEN			
* - BULK SAMPLE TAKEN				* - BULK SAMPLE TAKEN			
B - BOUNCE				B - BOUNCE			

TEST BORING NO. 3				TEST BORING NO. 4			
DATE DRILLED 1/22/2020				DATE DRILLED 1/22/2020			
JOB # 200150				JOB # 200150			
CLIENT FLRD				CLIENT FLRD			
LOCATION N. BEAVER CREEK BRIDGE				LOCATION N. BEAVER CREEK BRIDGE			
REMARKS				REMARKS			
WATER @ 19.5', 1/28/20 SAND, GRAVELLY, SILTY, FINE TO COARSE GRAINED, BROWN TO RED BROWN, LOOSE TO MEDIUM DENSE, DRY TO WET	Depth (ft)	Symbol	Soil Type	WATER @ 19', 1/29/20 SAND, GRAVELLY, SILTY TO COARSE GRAINED, BROWN, MEDIUM DENSE, MOIST TO DRY	Depth (ft)	Symbol	Soil Type
	10	1	1		10	1	1
	15	1	1		15	1	1
	20	1	1		20	1	1
	25	1	1		25	1	1
COBBLES	30	1	1	COBBLES	30	1	1
	35	1	1		35	1	1
	40	1	1		40	1	1
	45	1	1		45	1	1
	50	1	1		50	1	1
SANDSTONE, SILTY TO CLAYEY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE, MOIST	55	1	1	WEATHERED TO FORMATION SANDSTONE, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO VERY DENSE, MOIST	55	1	1
	60	1	1		60	1	1
	65	1	1		65	1	1
	70	1	1		70	1	1
	75	1	1		75	1	1
* - BULK SAMPLE TAKEN				* - BULK SAMPLE TAKEN			
* - BULK SAMPLE TAKEN				* - BULK SAMPLE TAKEN			

TEST BORING NO. 5				TEST BORING NO. 6			
DATE DRILLED 7/22/2020				DATE DRILLED 7/22/2020			
JOB # 200150				JOB # 200150			
CLIENT FLRD				CLIENT FLRD			
LOCATION N. BEAVER CREEK BRIDGE				LOCATION N. BEAVER CREEK BRIDGE			
REMARKS				REMARKS			
WATER @ 18', 7/28/20 SAND, SILTY WITH COBBLES, FINE TO COARSE GRAINED, BROWN, VERY DENSE TO DENSE, DRY	Depth (ft)	Symbol	Soil Type	COBBLES	Depth (ft)	Symbol	Soil Type
	10	1	1		10	1	1
	15	1	1		15	1	1
	20	1	1		20	1	1
	25	1	1		25	1	1
HEAVILY WEATHERED TO FORMATIONAL SANDSTONE, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO VERY DENSE, MOIST TO WET	30	1	1	HEAVILY WEATHERED TO FORMATIONAL SANDSTONE, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO VERY DENSE, MOIST TO WET	30	1	1
	35	1	1		35	1	1
	40	1	1		40	1	1
	45	1	1		45	1	1
	50	1	1		50	1	1
* - BULK SAMPLE TAKEN				* - BULK SAMPLE TAKEN			
* - BULK SAMPLE TAKEN				* - BULK SAMPLE TAKEN			

THE GEOTECHNICAL DATA SHOWN IS PROVIDED FOR INFORMATION ONLY AND WAS PERFORMED BY ENTECH ENGINEERING, INC. ENTECH JOB NO. 200150. REFER TO THE FULL GEOTECHNICAL REPORT FOR ALL INFORMATION PERTAINING TO BRIDGE GEOTECHNICAL DATA.

REVISIONS		DATE	BY	PREPARED FOR:
1				
2				
3				
4				
5				
6				
7				



DESIGNED BY:	ENTECH
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	1/21/21

PROJECT TITLE  
FOREST LAKES BRIDGES

ENGINEERING GEOLOGY

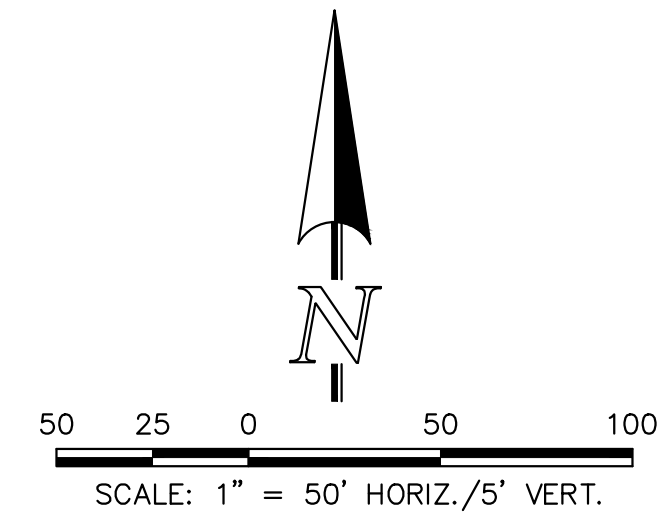
PROJECT LOCATION  
MONUMENT, CO

STRUCT/JOB:

SHEET NO.

B05





BOTTOM MATERIAL - COHESIVE ☐ NON COHESIVE ☒  
 BOTTOM MATERIAL SIZE - CLAY ☐ SILT ☒ SAND ☒ GRAVEL ☐  
 COBBLES ☐ OTHER \_\_\_\_\_

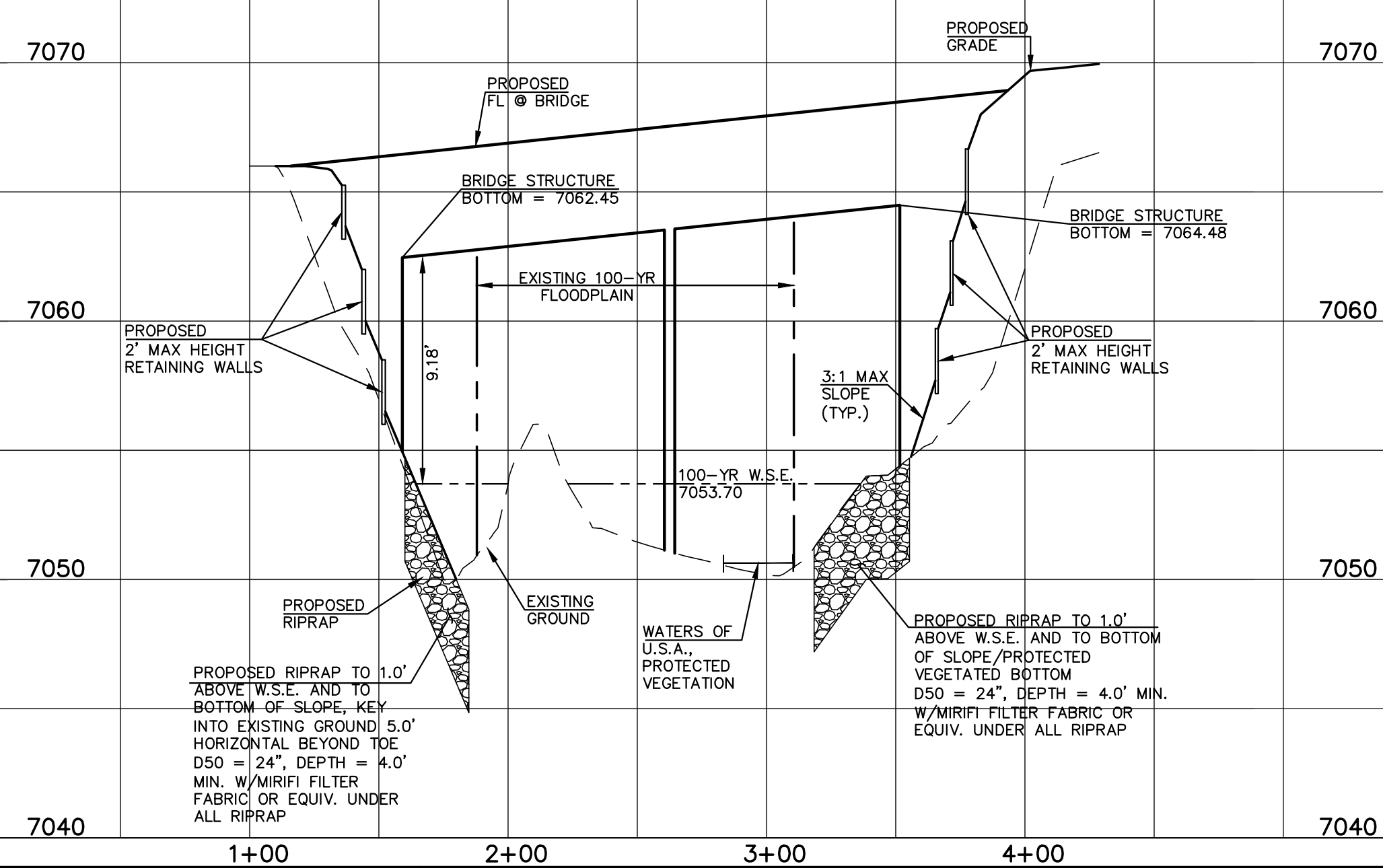
STREAM FORM - STRAIGHT ☒ MEANDERING ☐ BRAIDED ☐  
MANNINGS "n" FOR DESIGN - CHANNEL 0.04 OVERBANK 0.10  
DEBRIS - BRUSH ☒ TREES/LOGS ☐ ICE ☐ OTHER \_\_\_\_\_

FOR DESIGN DISCHARGE (100 YR Q= 3,123 CFS)

	<u>VELOCITY</u>	<u>FREEBOARD</u>	<u>BRIDGE LOSS</u>
NATURAL CHANNEL	8.8 ft/s	N/A	N/A
PROPOSED CHANNEL	5.7 ft/s	4.58 ft*	1.66 ft

\*MEASURED AT 25' UPSTREAM OF BRIDGE FACE  
MINIMUM FREEBOARD REQUIRED FOR LOW-DEBRIS STREAM = 2.26'

MESA TOP DRIVE BRIDGE (NORTH BRIDGE HCL)  
(LOOKING DOWNSTREAM)



UTILITY NOTIFICATION CENTER OF COLORADO  
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

DATE \_\_\_\_\_

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF  
CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

KYLE R. CAMPBELL, COLORADO P.E. #29794 DATE

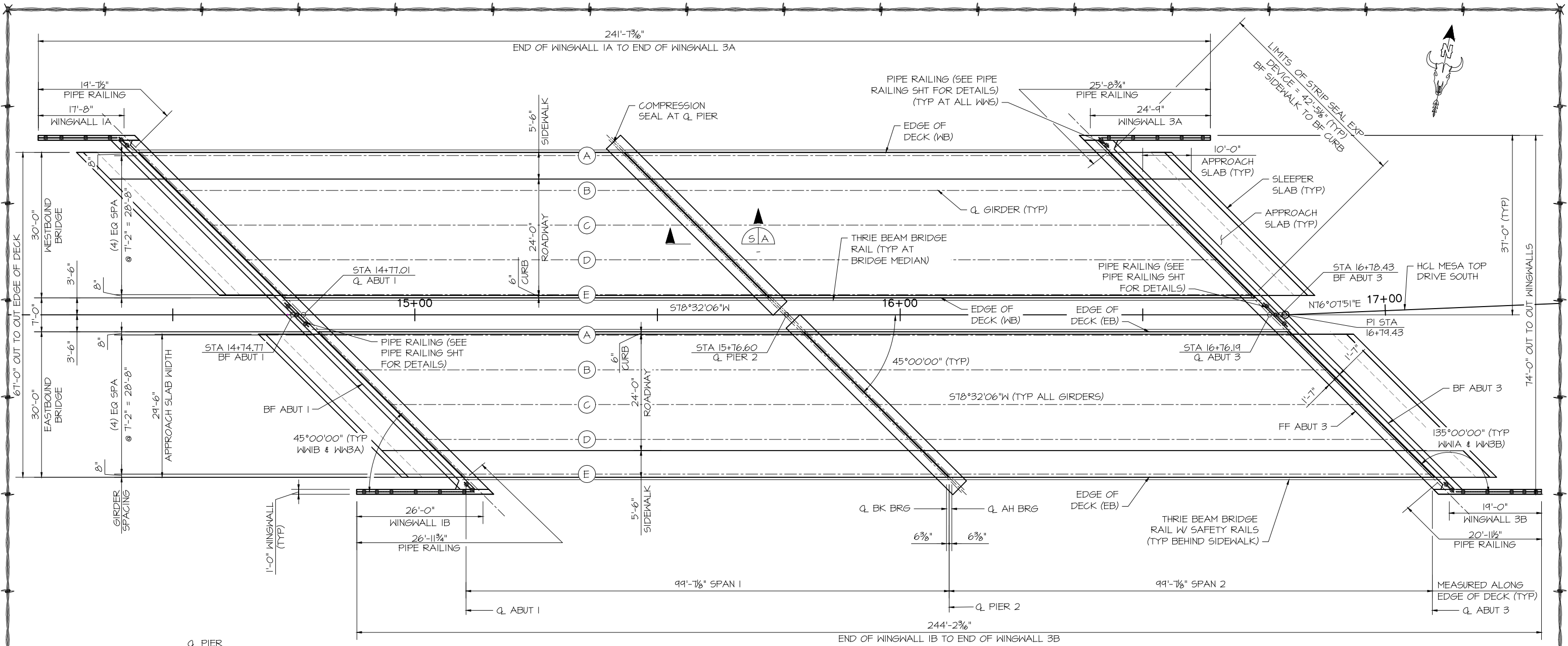


FOREST LAKES FILING NO. 6  
BRIDGE HYDRAULIC INFORMATION  
MESA TOP DRIVE OVER NORTH BEAVER CREEK

DESIGNED BY	MAL	SCALE	DATE	12/22/20
DRAWN BY	MES	(H) 1"= 50'	SHEET	1 OF 1
CHECKED BY		(V) 1"= 5'	JOB NO.	1175.60

**CLASSIC<sup>SM</sup>**  
**CONSULTING**

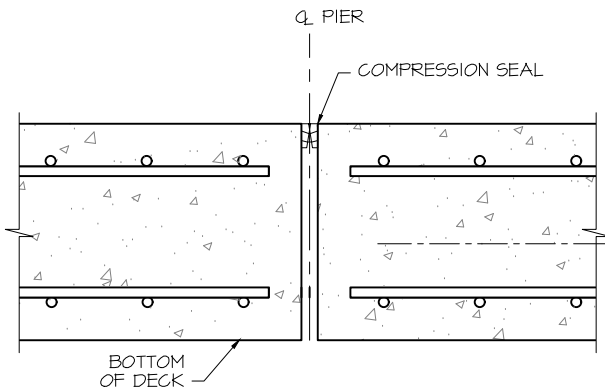




CONSTRUCTION LAYOUT

NOTES:

- 1. REFER TO CONTECH PLANS FOR INFORMATION REGARDING ALL DIMENSIONS, BEARINGS, DIAPHRAGMS, ANCHOR BOLTS, AND BRIDGE RAIL DETAILS.
- 2. REFER TO CIVIL PLANS FOR GUARDRAIL INFORMATION AT ALL 4 OUTSIDE CORNERS & MEDIAN.



DECK JOINT SECTION



07-09-21

REVISIONS	DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR
2			
3			
4			
5			
6			
7			



DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

PROJECT LOCATION  
MONUMENT, CO

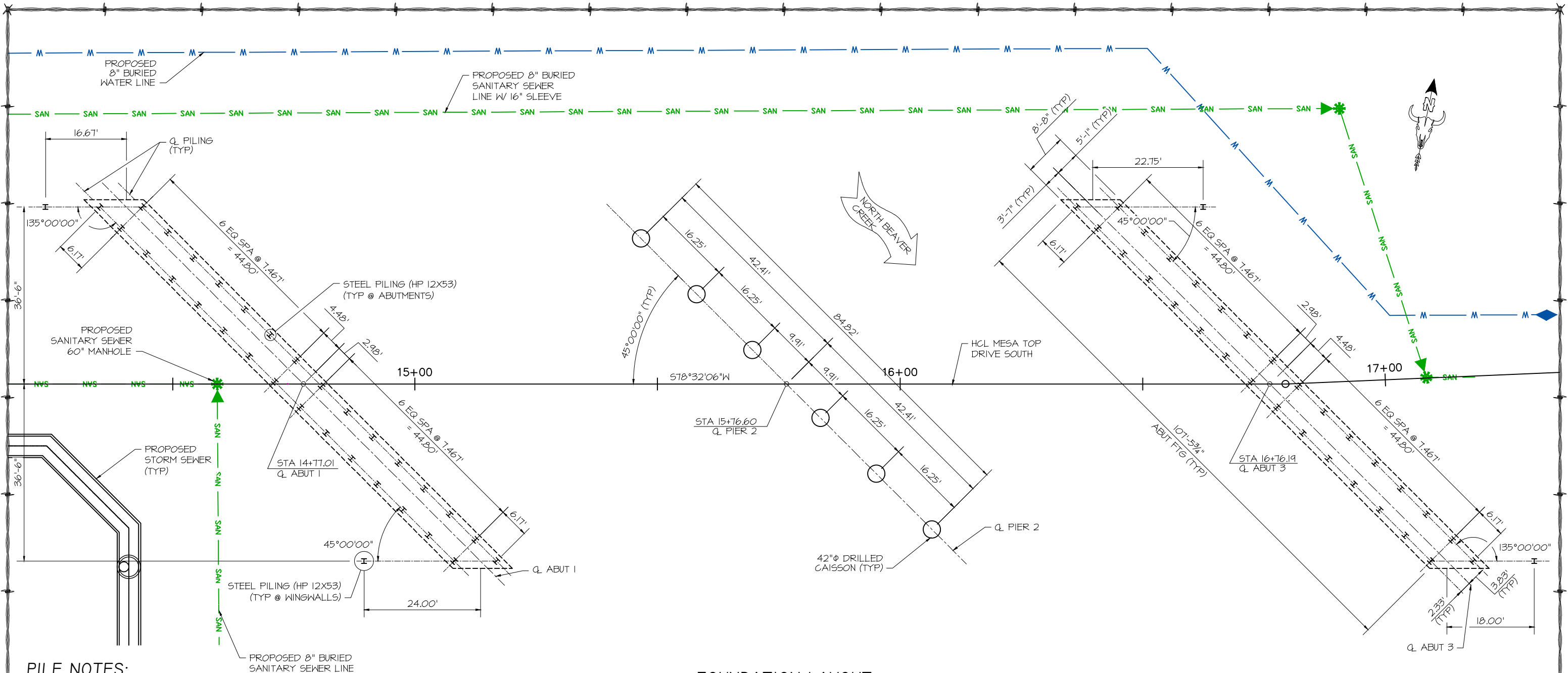
CONSTRUCTION LAYOUT

STRUCT./JOB:

SHEET NO.

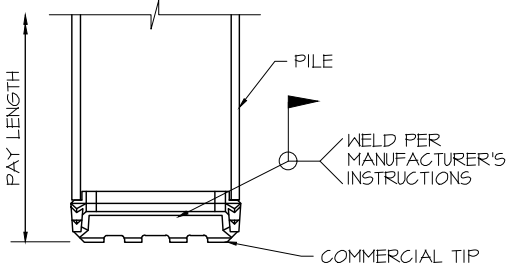
B07

ISSUED FOR  
CONSTRUCTION



PILE NOTES:

- 1. PILES ARE ORIENTED SUCH THAT THE STRONG AXIS IS PARALLEL TO THE CENTERLINE OF THE ABUTMENT OR WINGWALL AS SHOWN.
- 2. PILE FIELD SPLICES, IF REQUIRED, SHALL BE MADE WITH COMPLETE JOINT PENETRATION (CJP) WELDS IN ACCORDANCE WITH CDOT STANDARD PROVISION OF SECTION 502 - EXTENSIONS AND SPLICES.
- 3. ONLY COMPLETE JOINT PENETRATION (CJP) WELDS SHALL BE USED FOR PILE SPLICES.
- 4. PILE TIP TO BE INCLUDED IN THE COST OF THE PILE.
- 5. ALL PILES ARE END BEARING AND SHALL BE DRIVEN VERTICAL.
- 6. PILE DRIVING ANALYZER (PDA) IS REQUIRED FOR THIS PROJECT. THE PDA MONITORING SHALL BE PERFORMED ON ONE PILE AT EACH ABUTMENT IN ACCORDANCE WITH SECTION 502 OF THE STANDARD SPECIFICATIONS.
- 7. ALL STEEL PILES SHALL BE AASHTO M270 GRADE 50 AND PROTECTED WITH AN APPROVED COMMERCIAL PILE TIP.
- 8. ELEVATIONS SHOWN SHALL BE VERIFIED AT TIME OF CONSTRUCTION BY THE GEOTECHNICAL ENGINEER.
- 9. AXIAL GEOTECHNICAL RESISTANCE FACTOR = 0.85.



REINFORCING TIP LAYOUT

FOUNDATION LAYOUT

PILE SUMMARY								
	PILE SIZE	MAX LOAD (FACTORED) (KIPS)	MAX LOAD (SERVICE) (KIPS)	CUTOFF ELEVATION	ESTIMATED BEDROCK ELEV	ESTIMATED TIP ELEV	MINIMUM REQ'D TIP ELEV	AS-BUILT TIP ELEV
WINGWALL 1A	HP 12x53	28	22	7055	7045	7035	7035	
WINGWALL 1B	HP 12x53	40	32	7055	7038	7028	7028	
ABUTMENT 1	HP 12x53	215	158	7054	7038-7045	7028-7035	7028-7035	
WINGWALL 3A	HP 12x53	38	30	7055	7034	7024	7024	
WINGWALL 3B	HP 12x53	29	23	7055	7038	7028	7028	
ABUTMENT 3	HP 12x53	200	150	7054	7034-7038	7024-7028	7024-7028	



07-09-21

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REVISIONS		DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR	
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DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

PROJECT LOCATION  
MONUMENT, CO

FOUNDATION LAYOUT

STRUCTURE:

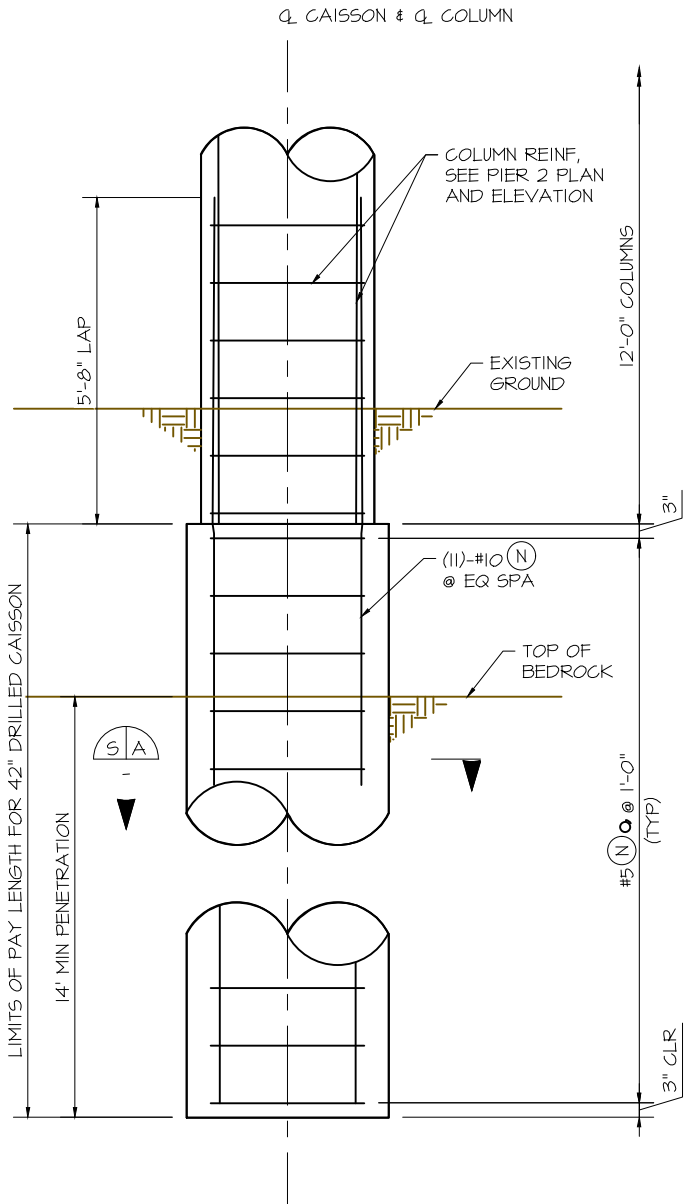
SHEET NO.

B08



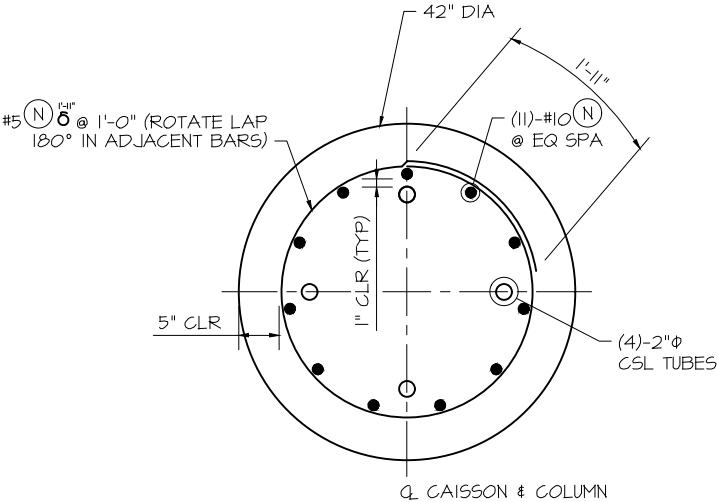
CAISSON NOTES:

- 1. MINIMUM EMBEDMENT TO BE PROVIDED. BEDROCK ELEVATIONS MAY VARY.
- 2. 2" DIA CSL TUBES SHALL BE SCHEDULE 40 STEEL PIPE WITH TIGHT END CAPS. CSL TUBES SHALL BE SECURED TO REINFORCEMENT AND FILLED WITH WATER AND CAPPED PRIOR TO CONCRETE PLACEMENT.
- 3. CSL TESTING SHALL BE PERFORMED ON 100% OF PIER 2 CAISSONS.
- 4. CONTRACTOR SHALL VERIFY THAT FOUNDATION LOCATIONS DO NOT INTERFERE WITH ANY EXISTING OR PROPOSED UTILITIES.
- 5. ALL TIES AND VERTICAL REINFORCEMENT IN CAISSONS ARE NON-EPOXY COATED.
- 6. CAISSON REINFORCING SHALL EXTEND TO FULL DEPTH OF DRILLED HOLE.
- 7. DRILLED CAISSON CONCRETE IS CLASS BZ.
- 8. MINIMUM LENGTH OF CAISSON SHALL BE 29.91' FOR EB BRIDGE, 30.56' FOR WB BRIDGE.
- 9. CONCRETE SHOULD BE PLACED IN THE CAISSON IMMEDIATELY AFTER DRILLING AND MUST BE PLACED THE SAME DAY THE HOLES ARE DRILLED.
- 10. THE MAXIMUM PERMISSIBLE VARIATION OF THE CENTER AXIS OF ANY DRILLED CAISSON AT THE TOP FROM IT'S PLANNED LOCATION SHALL BE 3 INCHES.
- 11. REFER TO THE GEOTECHNICAL REPORT FOR GROUND WATER AND POTENTIAL CAVING SOIL CONDITIONS. THE CONTRACTOR SHOULD BE PREPARED TO DE-WATER DRILLED CAISSONS AND TO CONSTRUCT CAISSONS WITH TEMPORARY CASINGS TO CONTROL GROUNDWATER AND MAINTAIN A STABLE OPEN EXCAVATION.
- 12. REFER TO THE GEOTECHNICAL REPORT FOR SHEAR RING INFORMATION AND REQUIREMENTS.
- 13. END BEARING & SIDE RESISTANCE FACTOR = 0.60



CAISSON ELEVATION

DRILLED CAISSON SUMMARY		
	WESTBOUND PIER CAISSONS	EASTBOUND PIER CAISSONS
MAX FACTORED AXIAL	740	740
MAX SERVICE AXIAL	502	502
TOP OF CAISSON	7049.06	7048.41
ESTIMATED BEDROCK ELEV	7032.50	7032.50
MIN BEDROCK PENETRATION	14.0'	14.0'
ESTIMATED TIP ELEV	7018.50	7018.50
SCOUR ELEV	7047.76	7047.76
AS-BUILT BEDROCK ELEV		
AS-BUILT TIP ELEV		



CAISSON SECTION



07-09-21

ISSUED FOR  
CONSTRUCTION

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DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

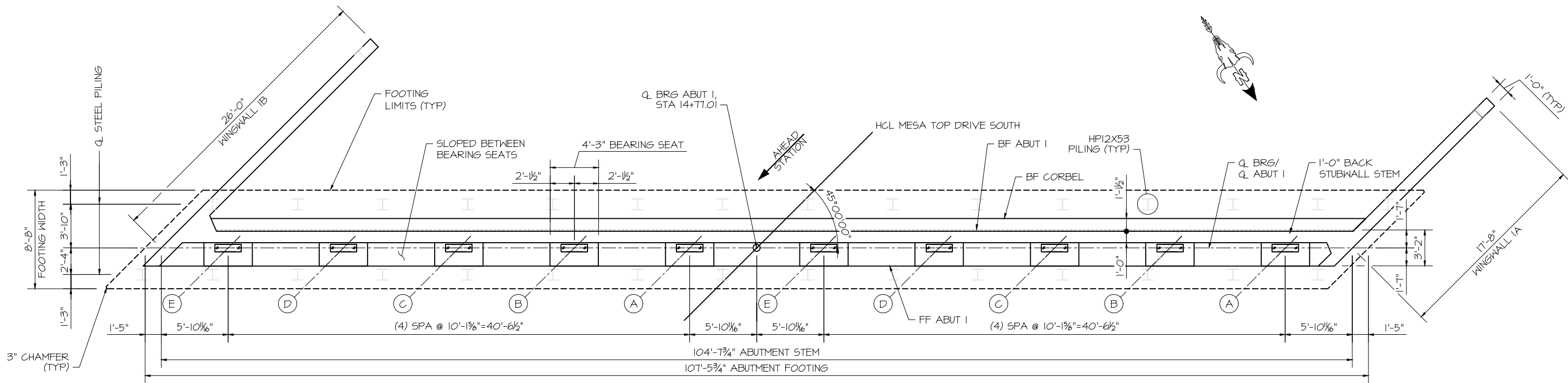
PROJECT LOCATION  
MONUMENT, CO

CAISSON DETAILS

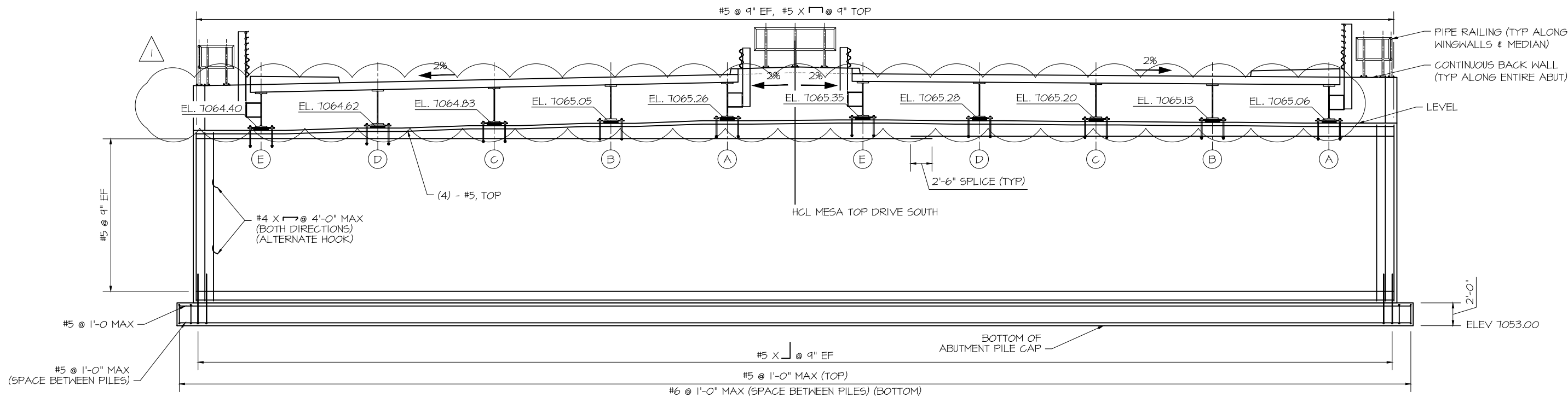
STRUCT/JOB:

SHEET NO.

B09



PLAN



ELEVATION

(H-PILES NOT SHOWN FOR CLARITY)  
(LOOKING BACK STATION)

NOTES:

1. REFER TO CONTECH'S PLANS FOR SUPERSTRUCTURE DIMENSIONS AND DETAILS. SUPERSTRUCTURE SHOWN FOR INFORMATION ONLY.
2. ABUTMENT SHALL BE CONCRETE CLASS D (BRIDGE).
3. SEAT ELEVATIONS ARE PROVIDED ON THE CONTECH PLANS. SEAT ELEVATIONS ARE AT CENTERLINE OF BEARING AND CENTERLINE OF GIRDER AT TOP OF CONCRETE.
4. THERE ARE 2 ANCHOR BOLTS PER GIRDER BEARING PLATE. TOTAL 20 ANCHOR BOLTS FOR ABUTMENT 1.

ISSUED FOR  
CONSTRUCTION



07-09-21

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DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

PROJECT LOCATION  
MONUMENT, CO

ABUTMENT 1 PLAN AND ELEVATION

STRUCT./JOB:

SHEET NO.

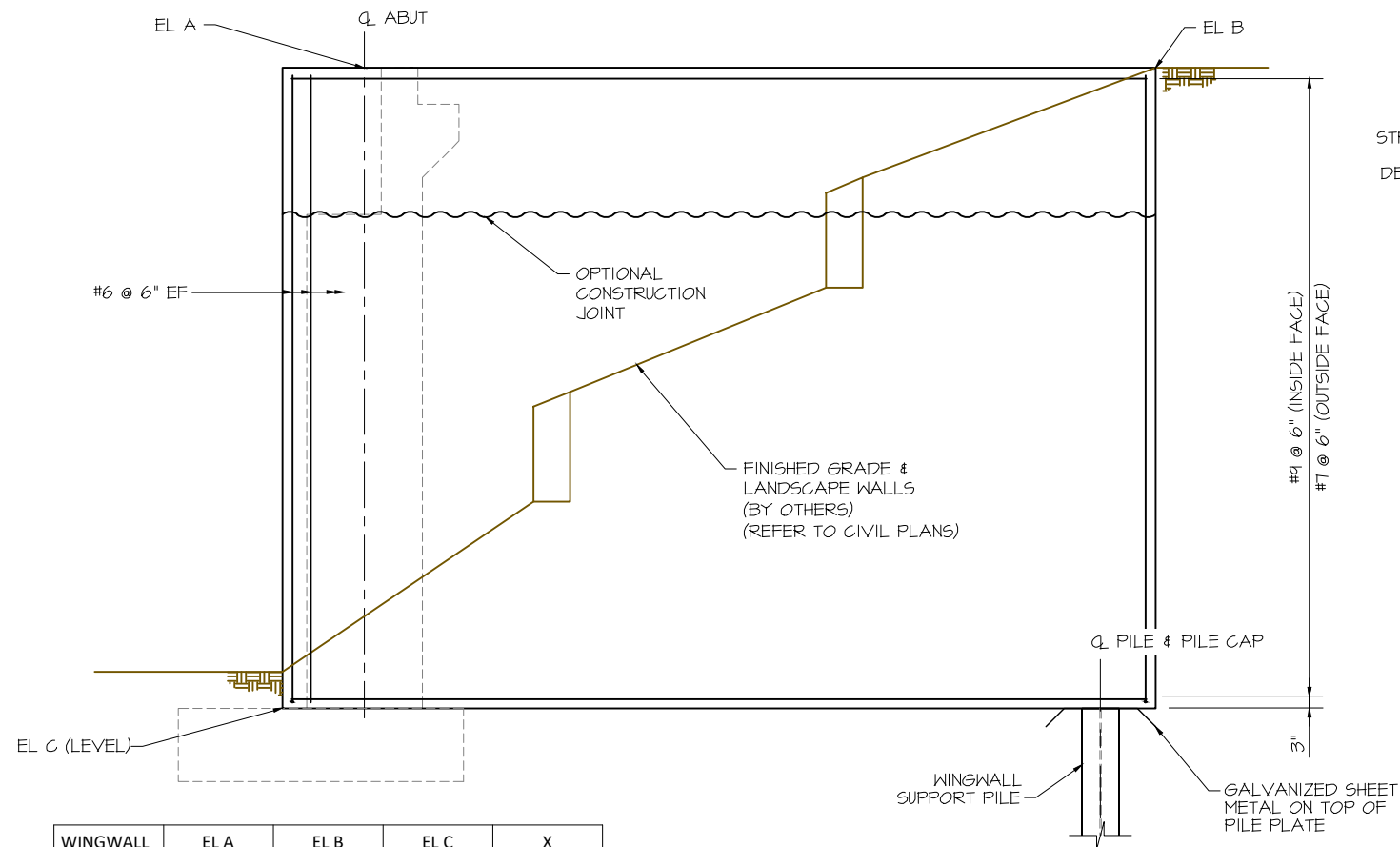
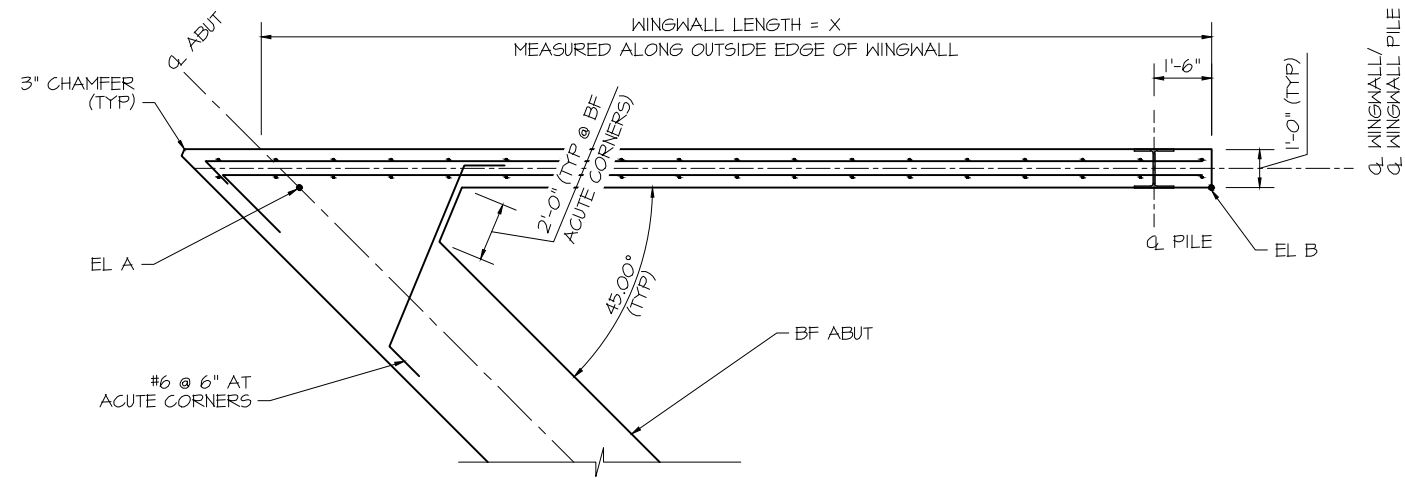
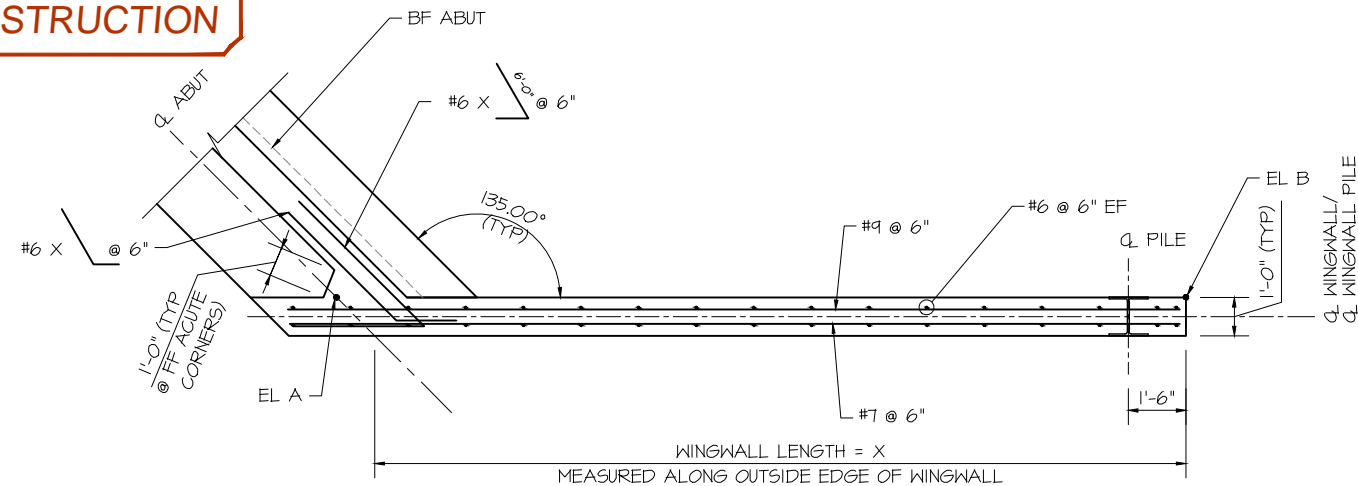
B10



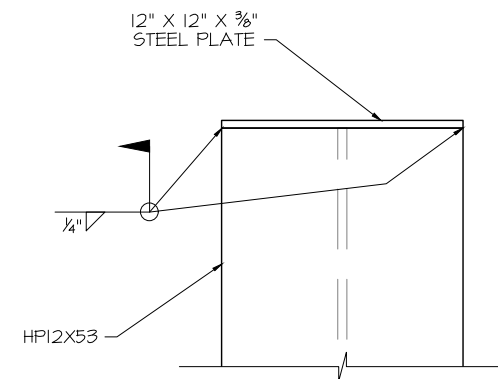
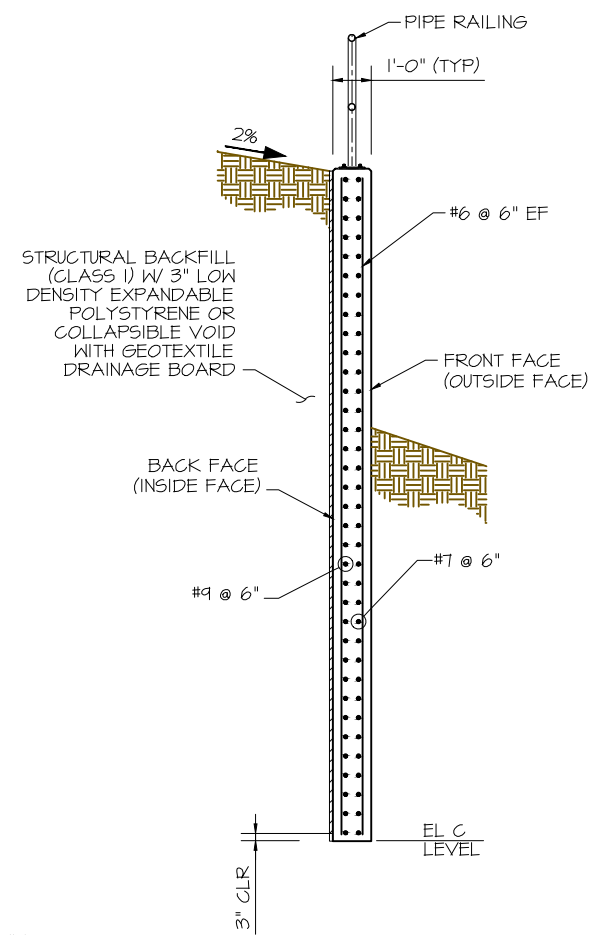




ISSUED FOR  
CONSTRUCTION



WINGWALL	EL A	EL B	EL C	X
1A	7069.08	7069.20	7055.00	17'-8"
1B	7068.36	7068.61	7055.00	26'-0"
3A	7067.09	7066.85	7055.00	24'-9"
3B	7066.36	7066.05	7055.00	19'-0"



NOTE: STEEL PLATE WILL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE PILES. FOR WINGWALL SUPPORT PILE ONLY (4 PILES TOTAL).

- NOTES:
- CHAMFER 1'-0" AT FF OF ACUTE CORNERS.
  - CHAMFER 2'-0" AT BF OF ACUTE CORNERS WITHIN STEM & STUBWALL. DO NOT CHAMFER CORBEL.

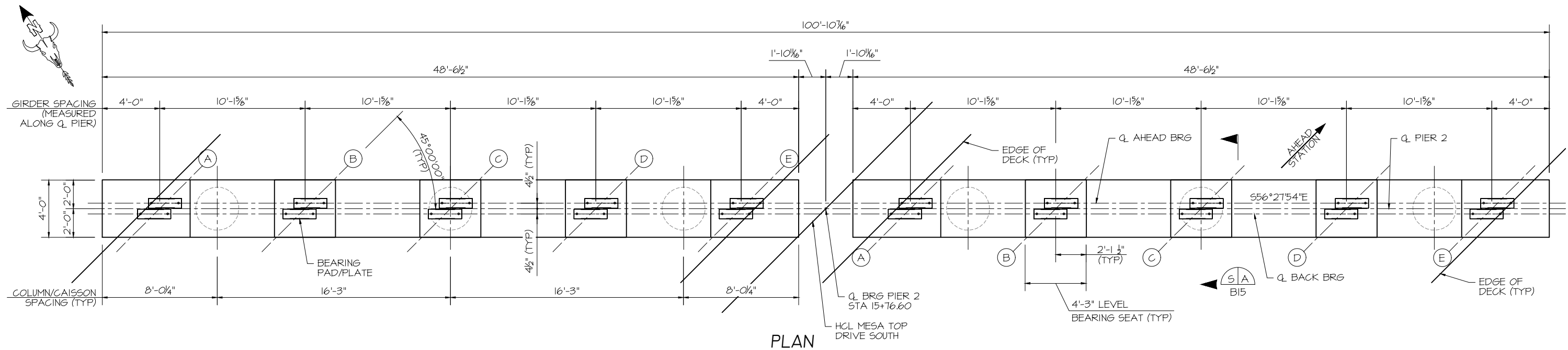


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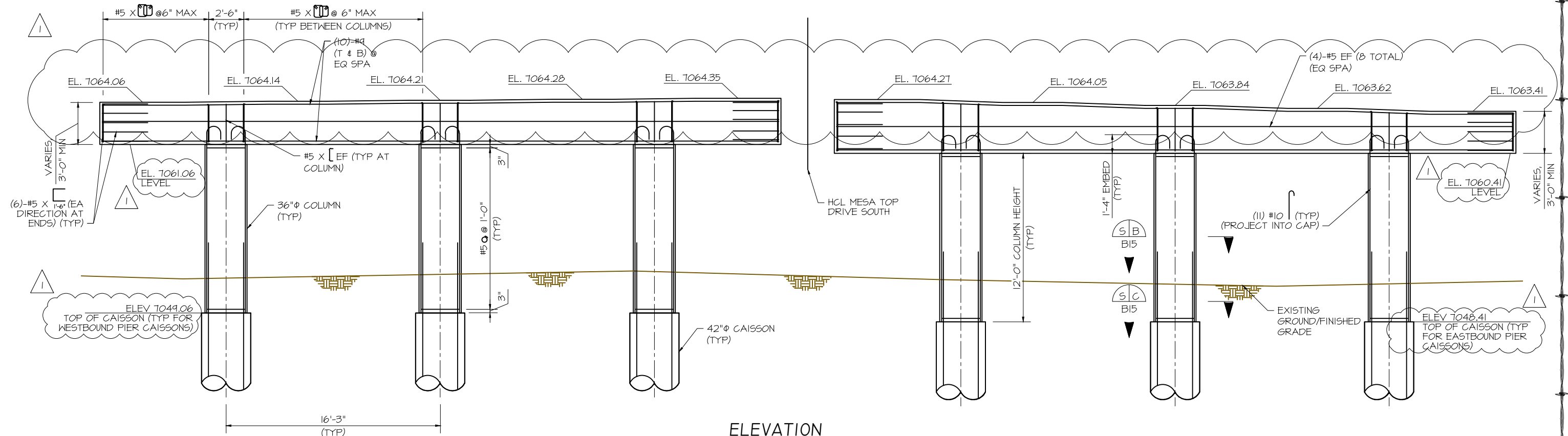
REVISIONS	DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR
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DESIGNED BY: HMR	PROJECT TITLE FOREST LAKES BRIDGES	PROJECT LOCATION MONUMENT, CO
DRAWN BY: AJM	WINGWALL DETAILS	STRUCT/JOB:
PROJECT MANAGER: HMR		SHEET NO. B13
DATE: 7/9/21		



PLAN



ELEVATION  
(LOOKING AHEAD STATION)

NOTES:

1. REFER TO CONTECH'S PLANS FOR BEARING PLATE/PAD INFORMATION.
2. THERE ARE 2 ANCHOR BOLTS PER GIRDER BEARING PLATE. 20 ANCHOR BOLTS PER PIER, 40 TOTAL FOR PIER 2.

ISSUED FOR  
CONSTRUCTION

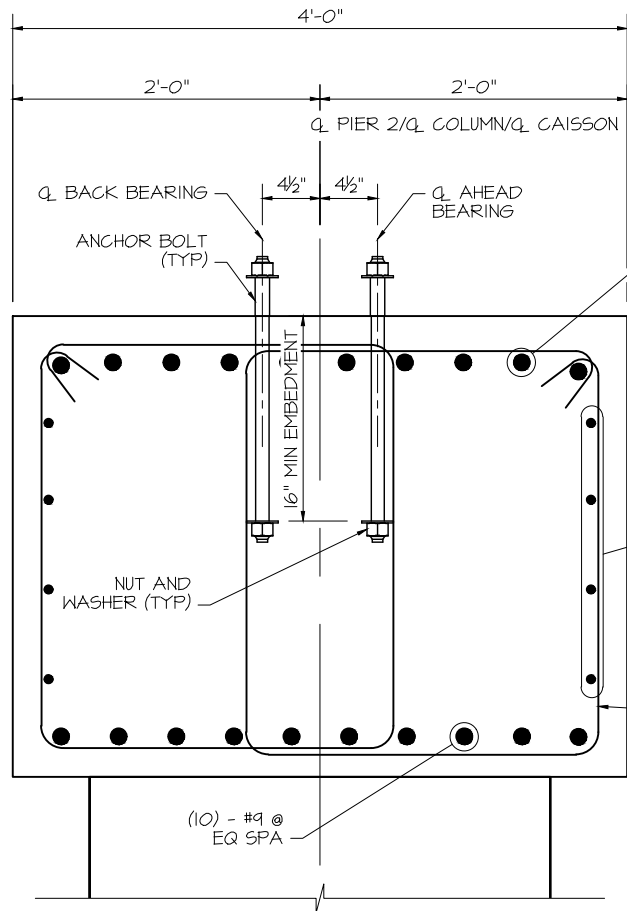


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1	REVISED BEARING PAD DEPTH	05-19-21	HMR	
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DESIGNED BY: HMR	PROJECT TITLE FOREST LAKES BRIDGES	PROJECT LOCATION MONUMENT, CO
DRAWN BY: AJM		
PROJECT MANAGER: HMR	PIER 2 PLAN AND ELEVATION	STRUCT./JOB:
DATE: 7/9/21		SHEET NO. B14





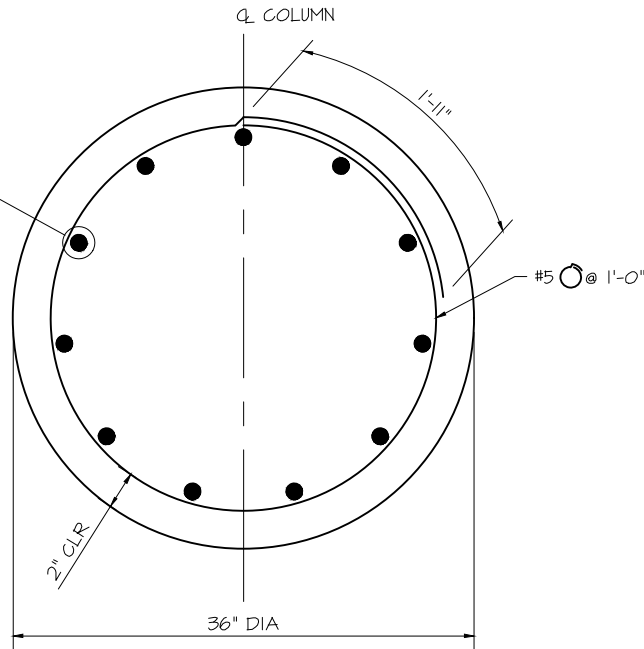
TYPICAL PIER CAP SECTION S A  
BI4

(11) - #10, SPLICE W/  
CAISSON REINF,  
PROJECT MIN 1'-4" INTO  
CAP W 180° HOOK

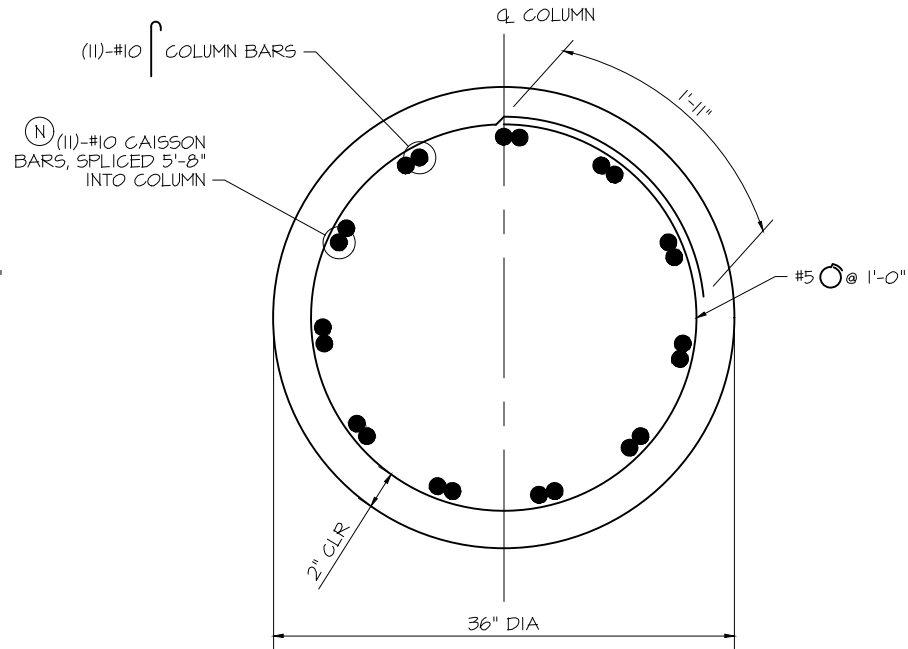
(4) - #5 EF (8 TOTAL)  
(EQ SPA)

#5 x @ 6" MAX (SEE PIER  
2 PLAN AND ELEVATION FOR  
LOCATIONS)

(10) - #9 @  
EQ SPA



COLUMN SECTION S B  
BI4



SPLICE SECTION S C  
BI4


NOTES:

1. REFER TO CONTECH'S PLANS FOR ANCHOR BOLT LOCATIONS & INFORMATION.



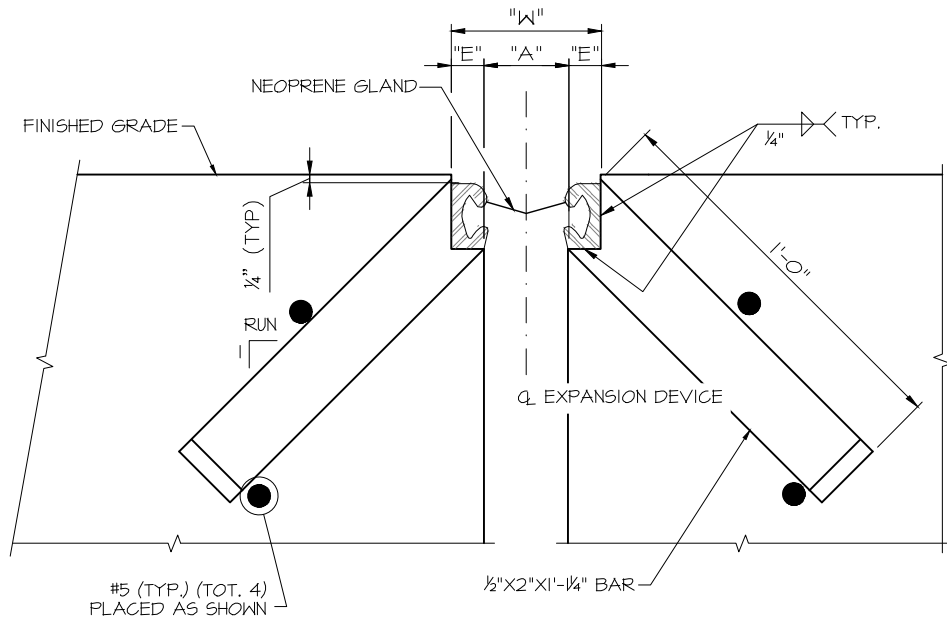
07-09-21

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CONSTRUCTION

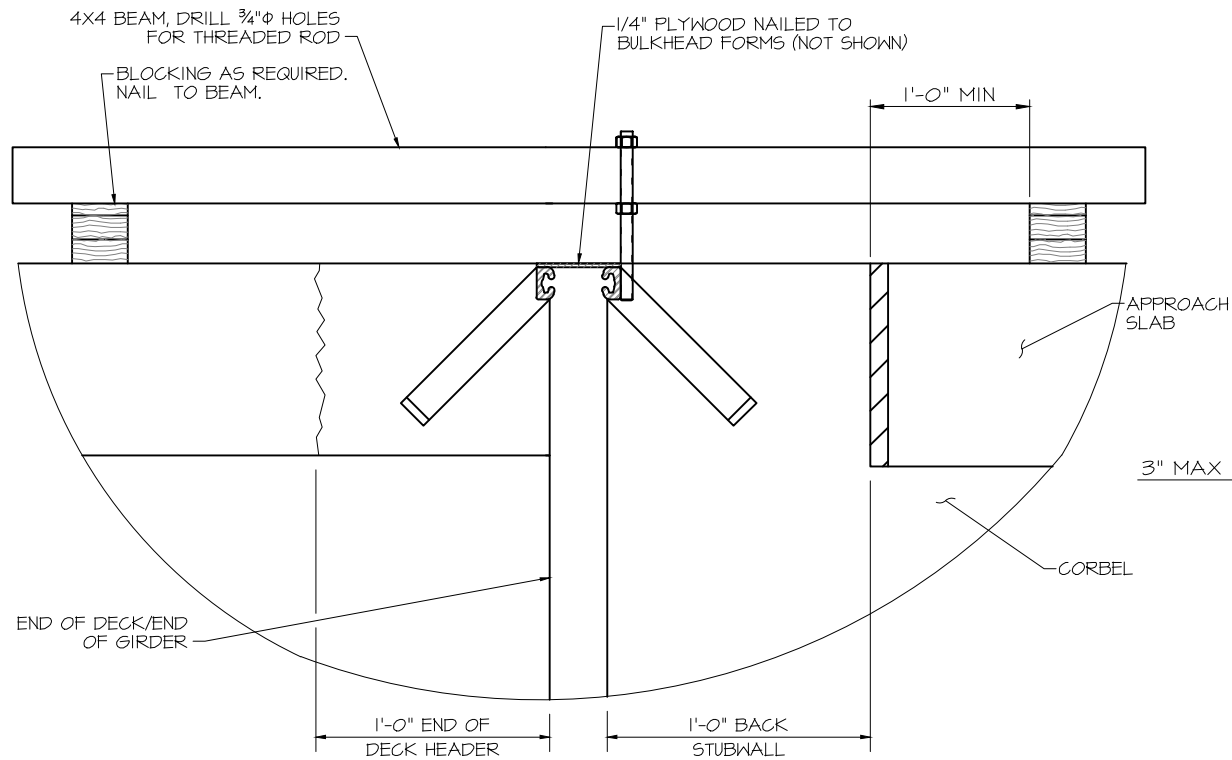
REVISIONS		DATE	BY	PREPARED FOR:
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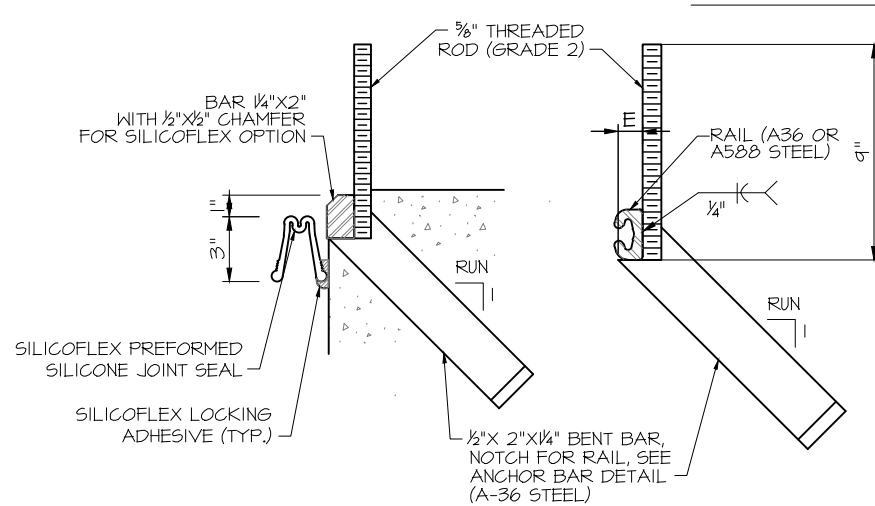
DESIGNED BY: HMR	PROJECT TITLE FOREST LAKES BRIDGES	PROJECT LOCATION MONUMENT, CO	
DRAWN BY: AJM		STRUCT./JOB:	
PROJECT MANAGER: HMR	PIER DETAILS		SHEET NO. B15
DATE: 7/9/21			



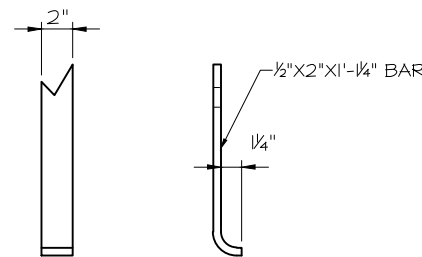
**SECTION THRU STRIP SEAL BRIDGE EXPANSION**  
SECTION TAKEN PERPENDICULAR TO Q EXPN DEVICE



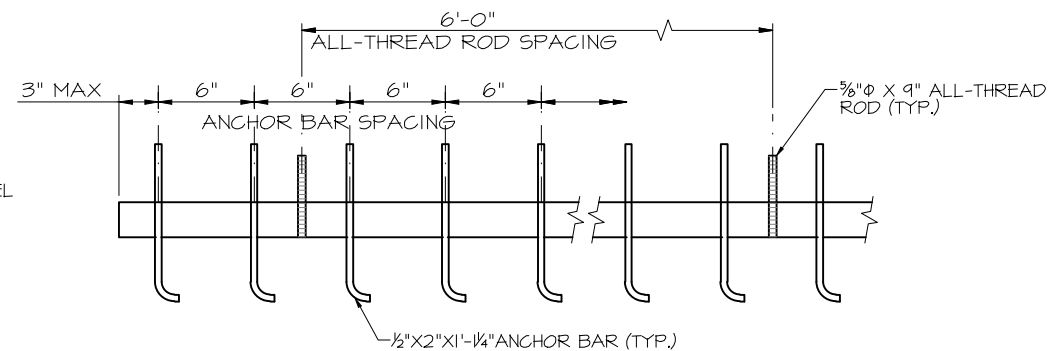
**MINIMUM SUPPORT BRACKET REQUIREMENTS**



**ANCHORAGE DETAIL**



**TYPICAL ANCHOR BAR DETAIL**



**ANCHOR BAR SPACING**



**RAIL FIELD SPLICE DETAIL**

## NOTES:

THE EXPANSION DEVICE SHALL BE INSTALLED ON GRADE, PARALLEL TO THE SLOPE AND GRADE OF THE DECK.

THE EXPANSION DEVICE SHALL NOT BE SET BEFORE THE DECK ELEVATIONS HAVE BEEN APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE SHOTS OF THE EXPANSION DEVICE TO ACHIEVE THE REQUIRED ELEVATIONS FOR SMOOTHER RIDEABILITY ON BRIDGE APPROACHES.

AFTER THE CONCRETE HAS ATTAINED INITIAL SET, THE ATTACHMENTS USED TO HOLD THE EXPANSION DEVICE ASSEMBLY IN ITS PROPER POSITION SHALL BE REMOVED.

"W" AND "E" DIMENSIONS ARE DEPENDENT UPON THE PARTICULAR EXPANSION DEVICE SUPPLIED, AND SHALL BE SHOWN ON THE WORKING DRAWINGS.

SEE TABLE FOR DIMENSIONS "A" AND "W"; INTERPOLATE AS NEEDED. DO NOT INSTALL THE GLAND UNTIL DIMENSION "A" HAS OPENED UP TO AT LEAST 1/2" (2 1/2" FOR SILICOFLEX).

THE NEOPRENE GLAND SHALL BE INSTALLED IN ONE PIECE IN ACCORDANCE WITH SECTION 518 OF THE STANDARD SPECIFICATIONS.

SEE SECTION 518.09 IN THE STANDARD SPECIFICATIONS FOR WATER TIGHT INTEGRITY TESTING REQUIREMENTS.

SET ELEVATIONS AT TOP OF END OF DECK AND BACK STUBWALL WITH THE GRADE PROJECTION SCHEME.

ALL STEEL ELEMENTS (WHETHER GRADE A36 OR A588) OF THE BRIDGE EXPANSION DEVICE, INCLUDING COVER PLATES, SHALL BE HOT DIP GALVANIZED AFTER FABRICATION AS PER SECTION 509.11 OF THE STANDARD SPECIFICATIONS.

USE A RUN OF 1 FOR NEW CONSTRUCTION.

PROVIDE EXPANSION DEVICE SUPPORT AS SHOWN AT 6'-0" INTERVALS.

FOR REINFORCING NOT SHOWN HEREON, SEE ABUTMENT DETAILS AND CONTECH PLANS.

CUT THREADED ROD FLUSH TO CONCRETE FOR FINISHED JOINT.

CONCRETE SHALL BE PLACED AFTER EXPANSION DEVICE HAS BEEN ADJUSTED TO PROPER GRADE AND APPROVED BY THE ENGINEER.

## ACCEPTABLE EXPANSION DEVICE ALTERNATES

D.S. BROWN A2R400-55A2WABO SE400 TYPE AEPOXY INDUSTRIES 5400-A  
R. J. WATSON SILICOFLEX 5F 400

AIR TEMP (°F)	"A"	"W"*
-30	2.75	5.25
0	2.55	5.05
30	2.35	4.85
60	2.15	4.65
90	1.95	4.45
120	1.75	4.25

\* FOR E = 1/4" (MIN.)

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DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
**FOREST LAKES BRIDGES**

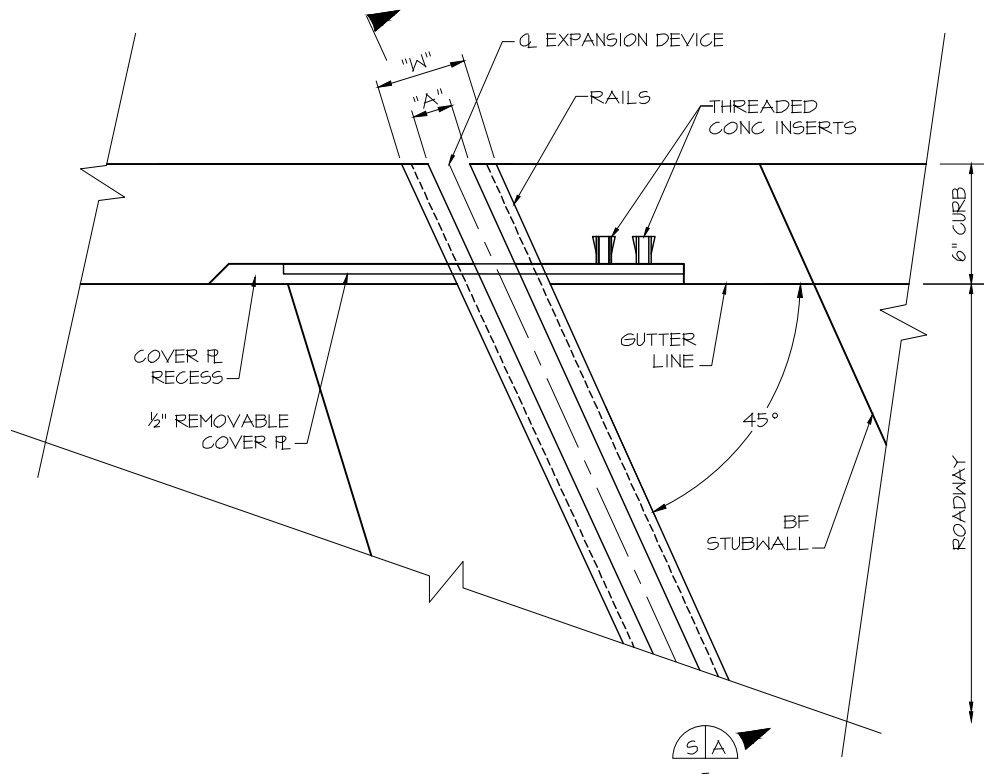
BRIDGE EXPANSION DEVICE (1 OF 2)

PROJECT LOCATION  
**MONUMENT, CO**

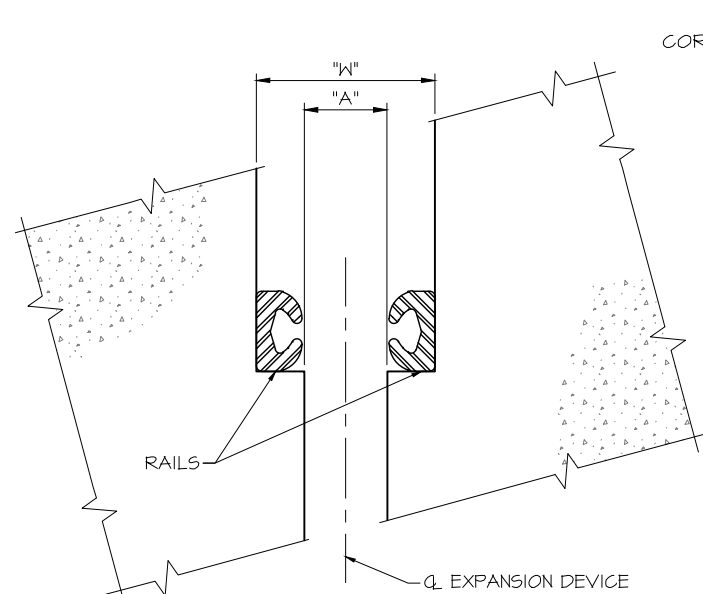
STRUCT/JOB:

SHEET NO.

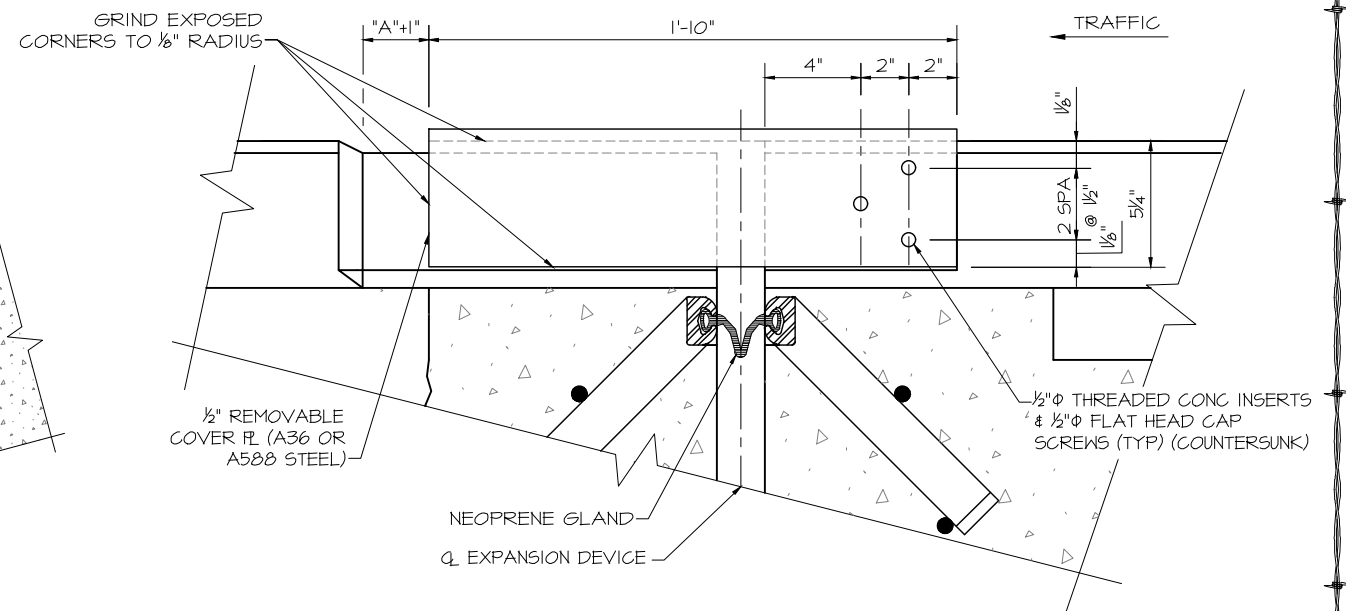
B16



**CURB - PLAN**  
SIMILAR AT SIDEWALK



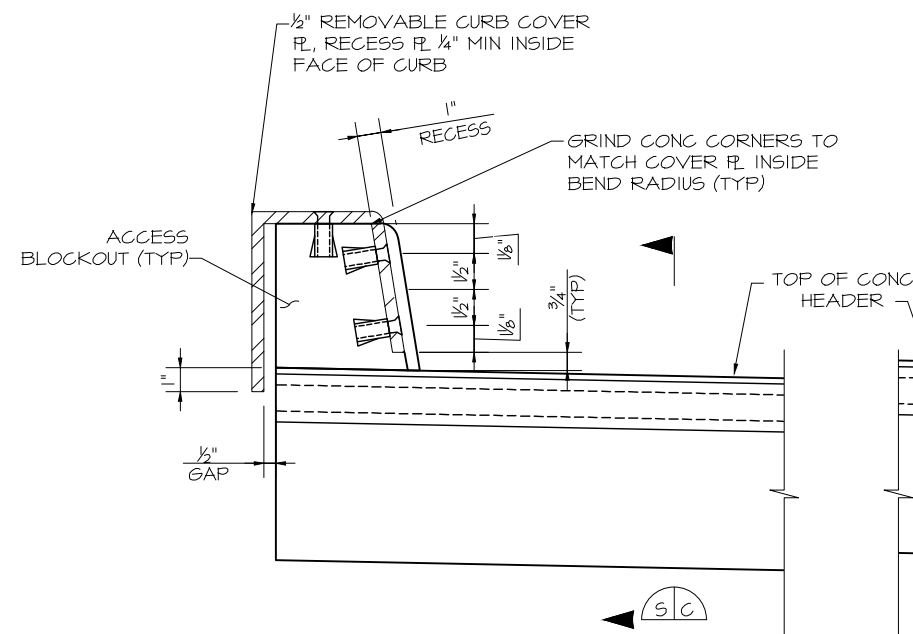
**SECTION S/B**



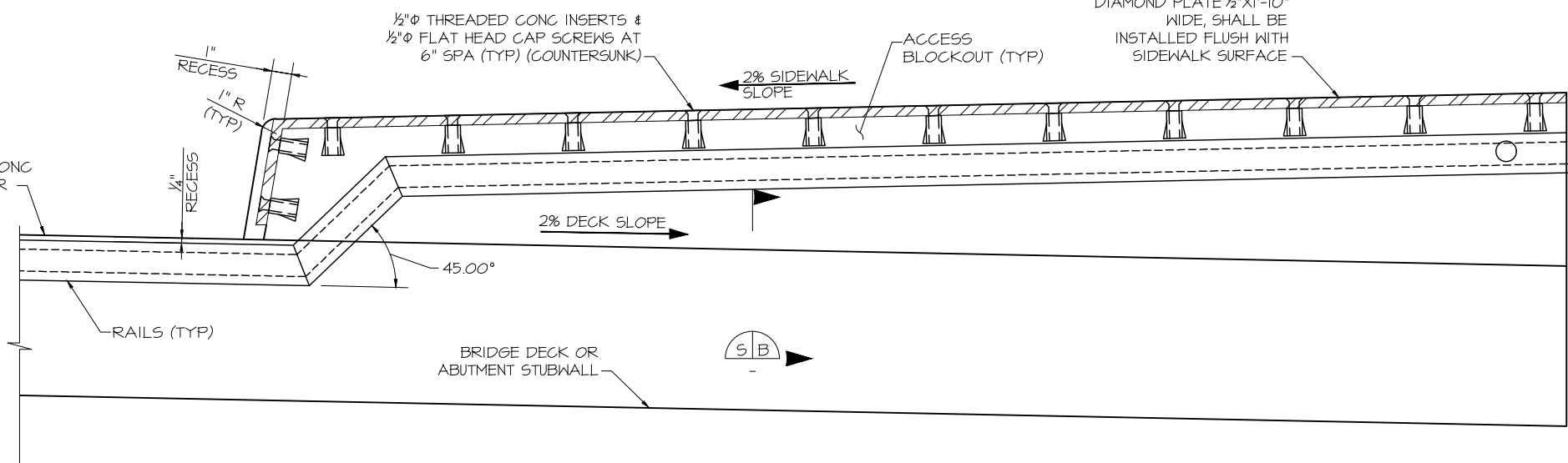
**SECTION S/C**

**NOTE:**

THREADED CONG INSERTS & FLAT HEAD CAP SCREWS SHALL BE ASTM A307 STAINLESS STEEL OR EQUIVALENT.



**SECTION S/A**  
AT CURB



**SECTION S/B**  
AT SIDEWALK

NOTE:  
PROVIDE 2" MINIMUM COVER BETWEEN ANCHORS AND ALL CONCRETE SURFACES.

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PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
**FOREST LAKES BRIDGES**

**BRIDGE EXPANSION DEVICE (2 OF 2)**

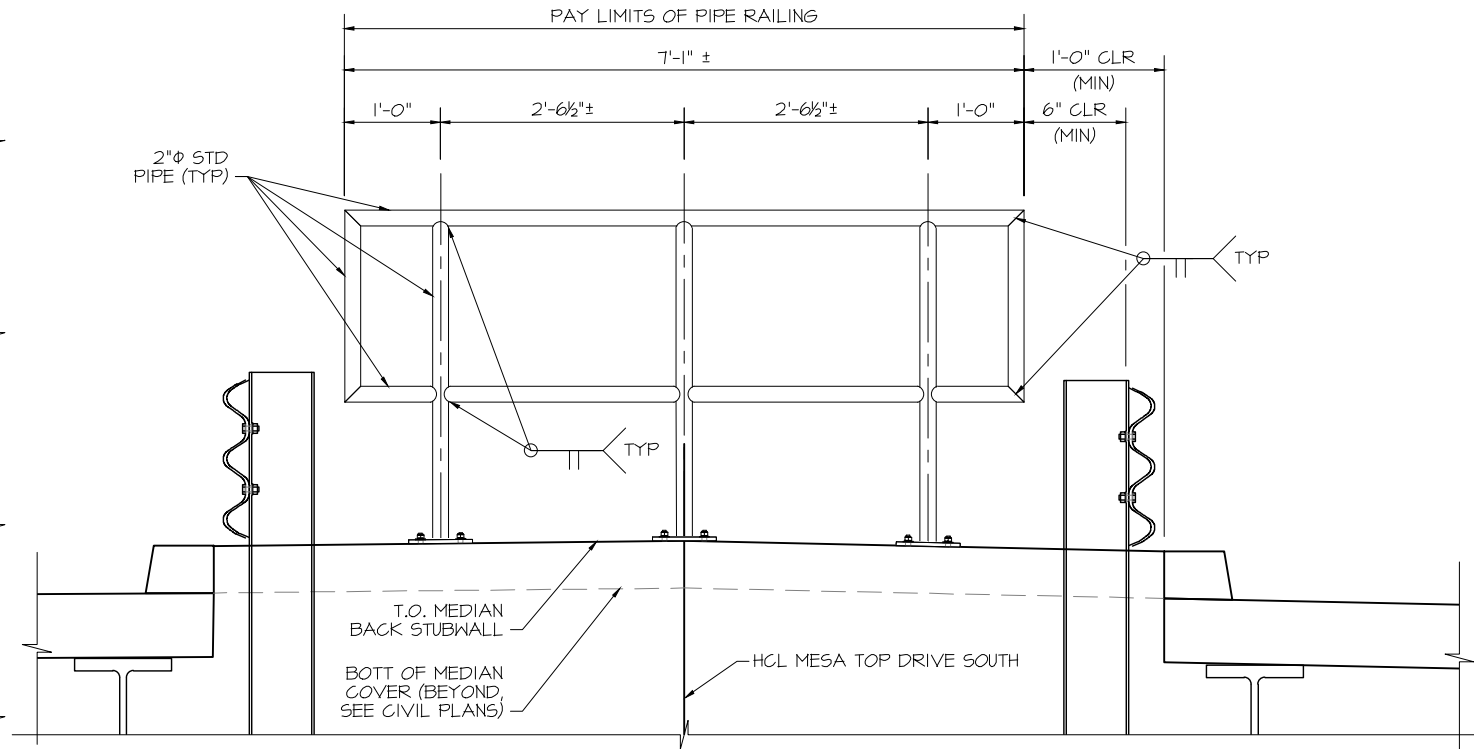
PROJECT LOCATION  
**MONUMENT, CO**

STRUCT/JOB:

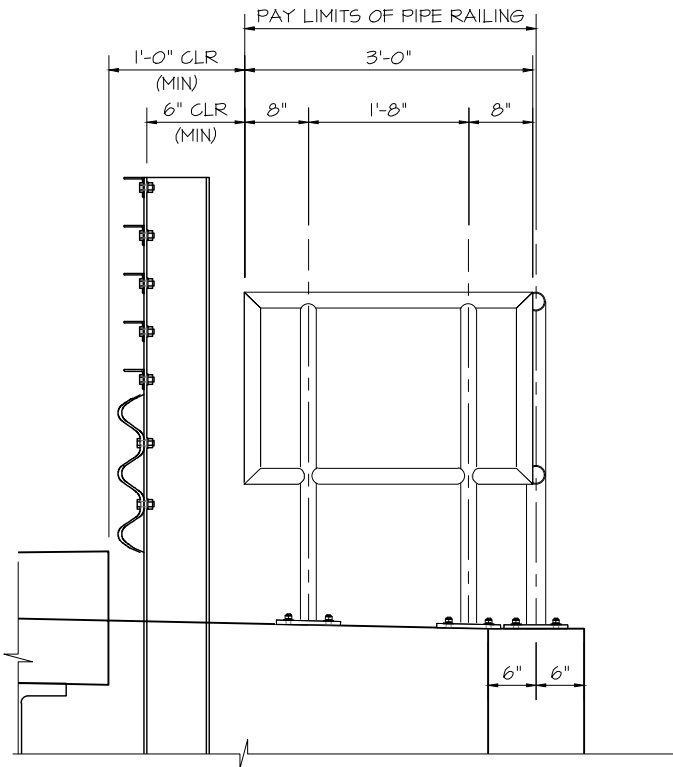
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**B17**

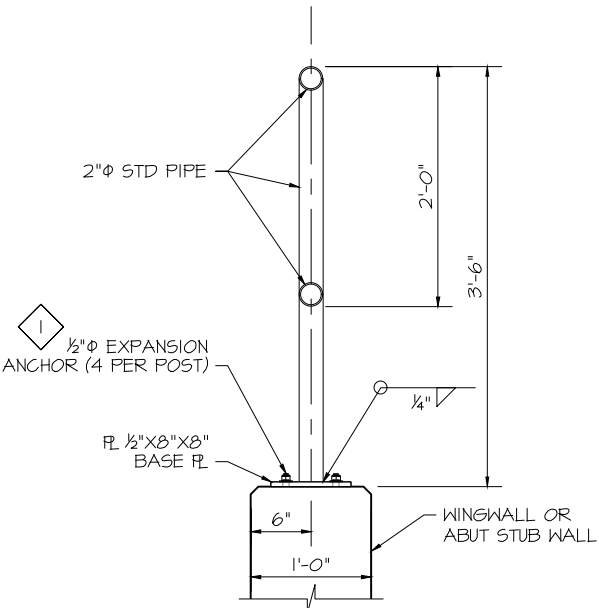




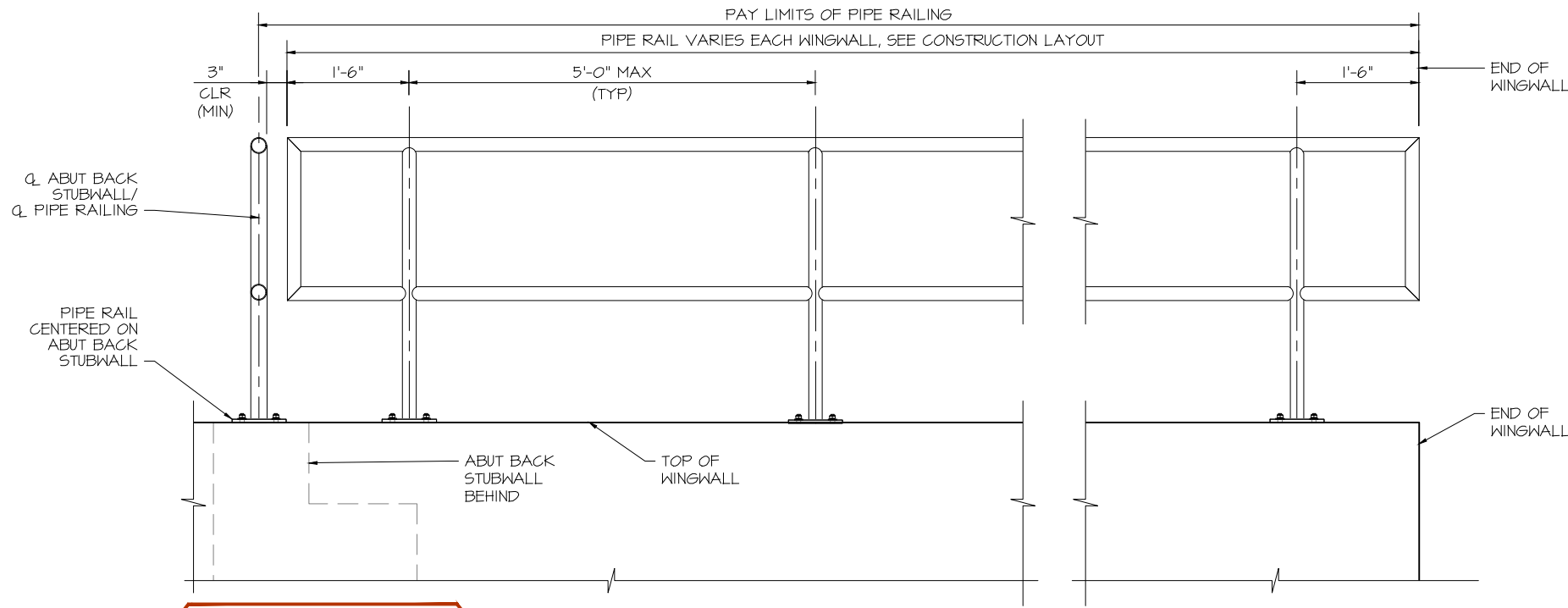
MEDIAN PIPE RAILING - ELEVATION  
(TYPICAL AT ABUTMENT MEDIAN)



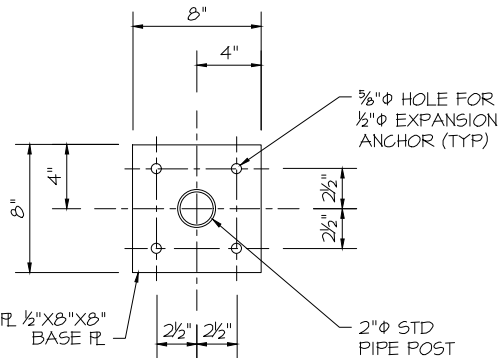
END PIPE RAILING - ELEVATION  
(TYPICAL ALL ABUTMENT CORNERS)



TYPICAL SECTION



WINGWALL PIPE RAILING - ELEVATION



BASE PLATE DETAIL

1 EXPANSION ANCHOR SHALL HAVE A MINIMUM ALLOWABLE TENSION CAPACITY OF 3000 LBS AND A MINIMUM ALLOWABLE SHEAR CAPACITY OF 3000 LBS. THE CONTRACTOR MAY SUBMIT AN ALTERNATE ANCHOR SYSTEM, WHICH MEETS THE MINIMUM ALLOWABLE CAPACITY REQUIREMENTS, FOR ENGINEER APPROVAL. FIELD DRILL AND INSTALL PER ANCHOR MANUFACTURER'S RECOMMENDATION.

NOTES:

1. BASE PLATE SHALL BE ASTM A36.
2. ALL RAILING STEEL SHALL BE GALVANIZED.
3. STEEL PIPE SHALL BE ASTM A53 GRADE B.
4. RAILING SHALL BE FABRICATED AND INSTALLED SUCH THAT POSTS ARE PLUMB AND HORIZONTAL MEMBERS ARE LEVEL.
5. SEE ABUTMENT DETAILS SHEET AND WINGWALL DETAILS SHEET FOR ADDITIONAL INFORMATION CONCERNING CLOSURE WALL.



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DESIGNED BY:  
HMR  
DRAWN BY:  
AJM  
PROJECT MANAGER:  
HMR  
DATE:  
7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

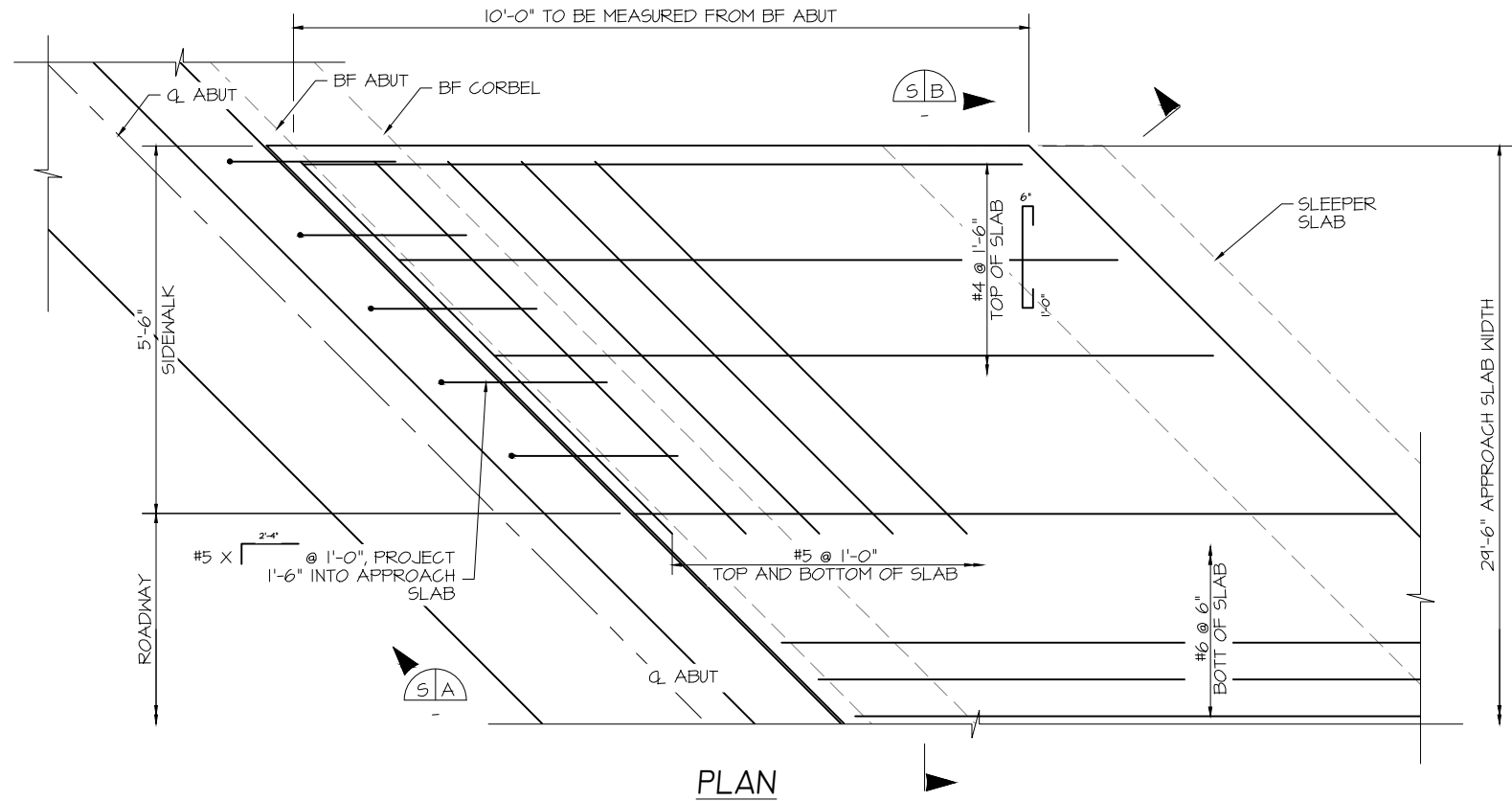
PROJECT LOCATION  
MONUMENT, CO

PIPE RAILING

STRUCT/JOB:

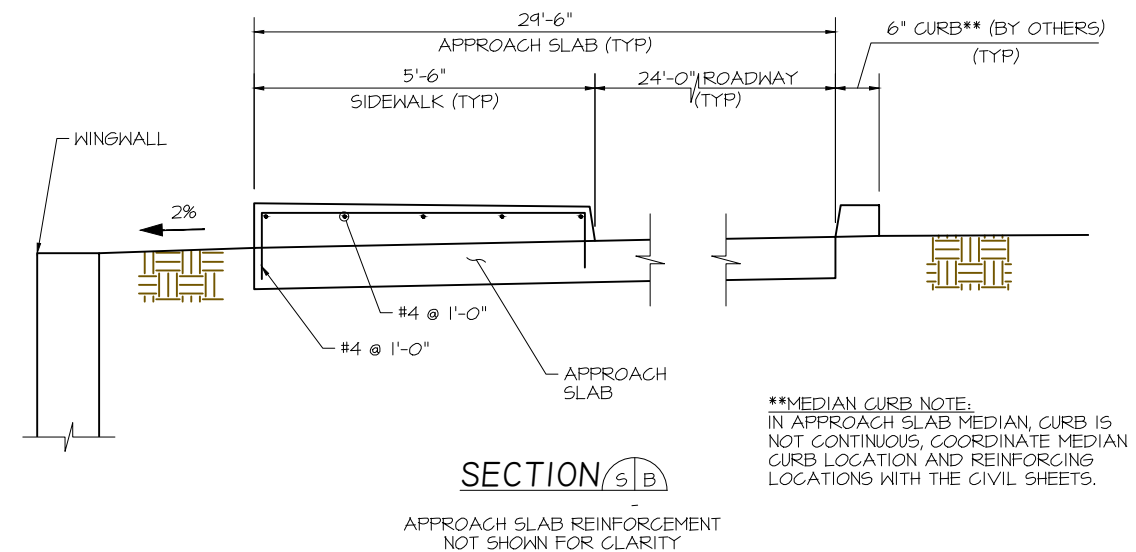
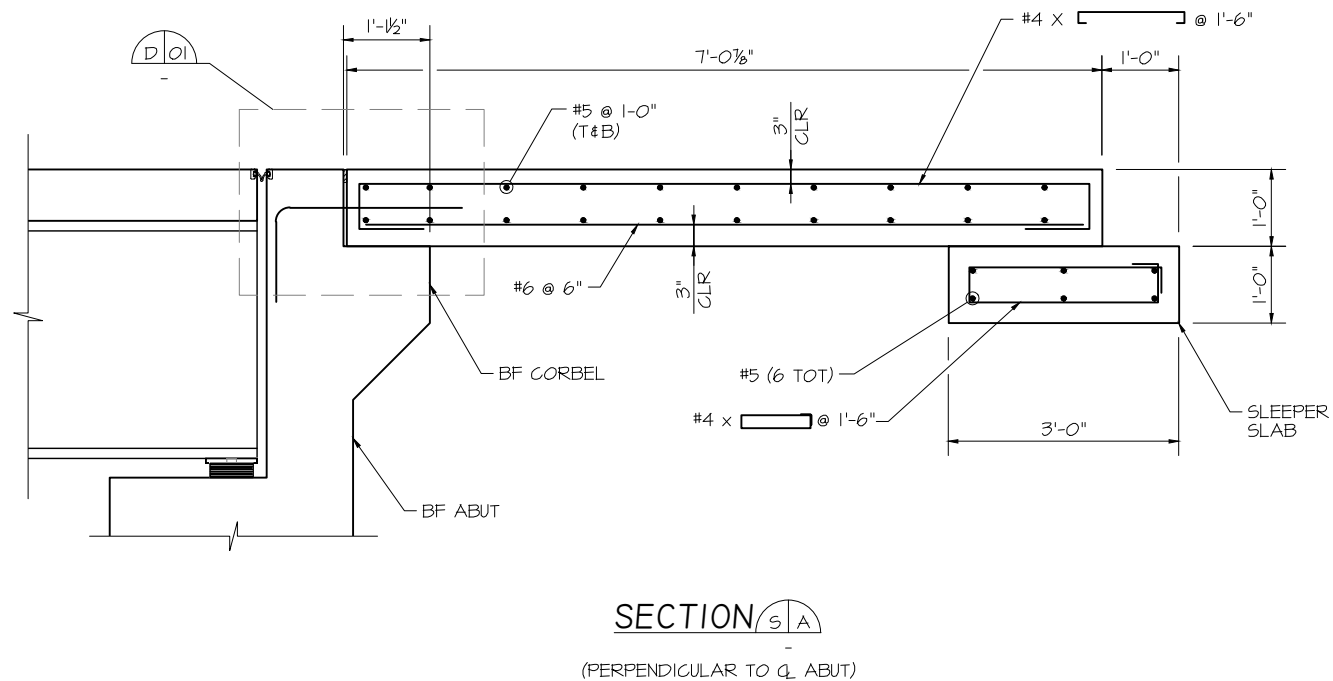
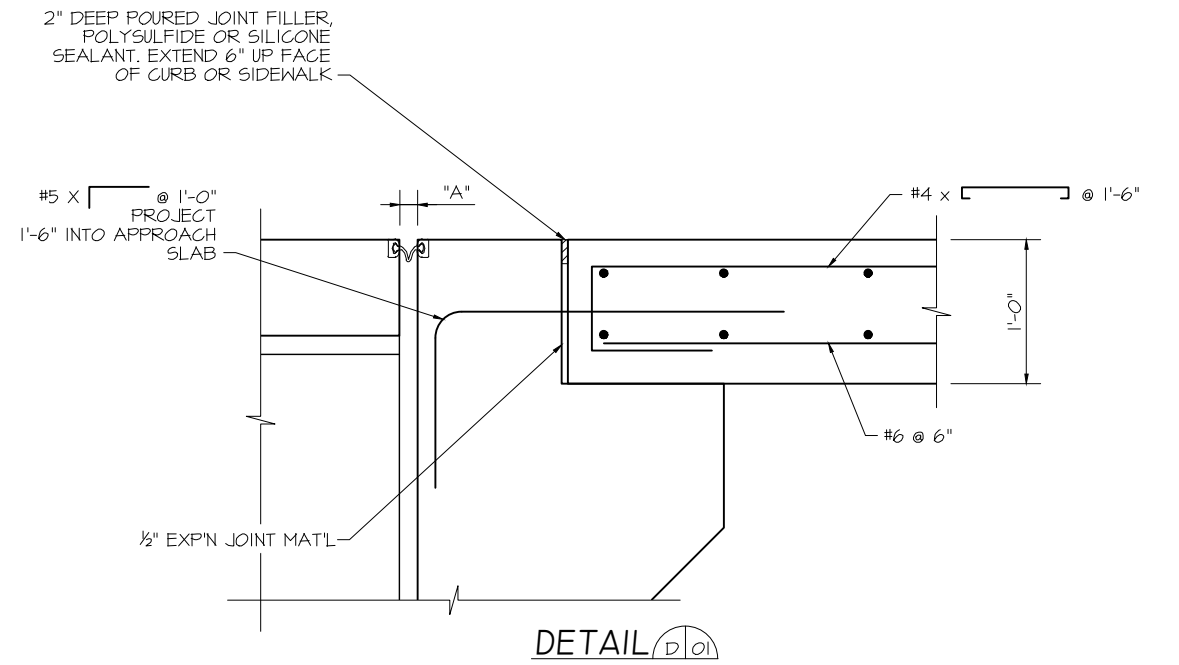
SHEET NO.

B18



# NOTES:

1. CONCRETE CLASS D (BRIDGE) SHALL BE USED FOR APPROACH SLABS.
2. APPROACH SLAB CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE SPECIFICATIONS FOR BRIDGE DECK CONCRETE IN SUBSECTION 601.
3. 1/2" EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPEC M213.
4. FOR EXPANSION DEVICE DETAILS, SEE BRIDGE EXPANSION DEVICE SHEETS.
5. FOR CURB & SIDEWALK DETAILS, SEE CIVIL PLANS.



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PROJECT TITLE  
FOREST LAKES BRIDGES

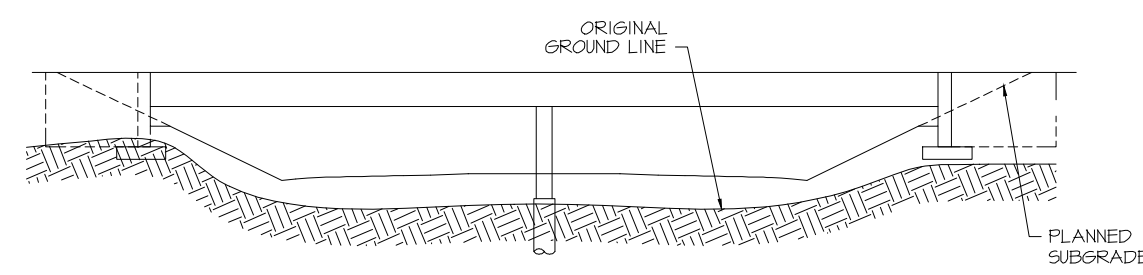
APPROACH SLAB

PROJECT LOCATION  
MONUMENT, CO

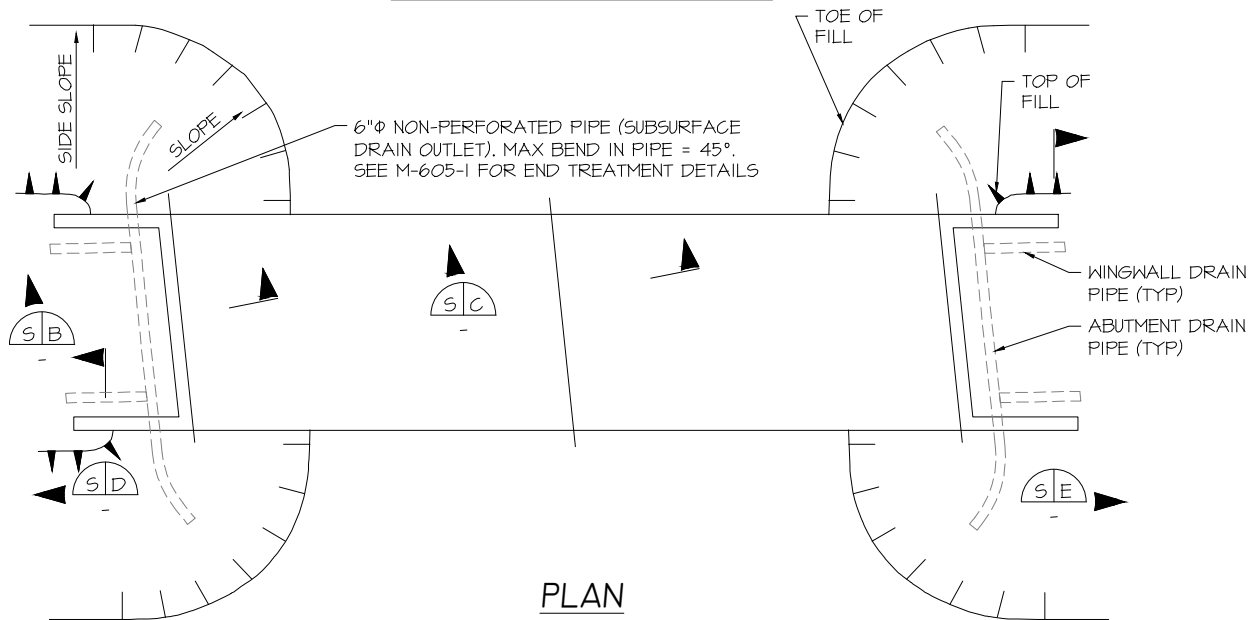
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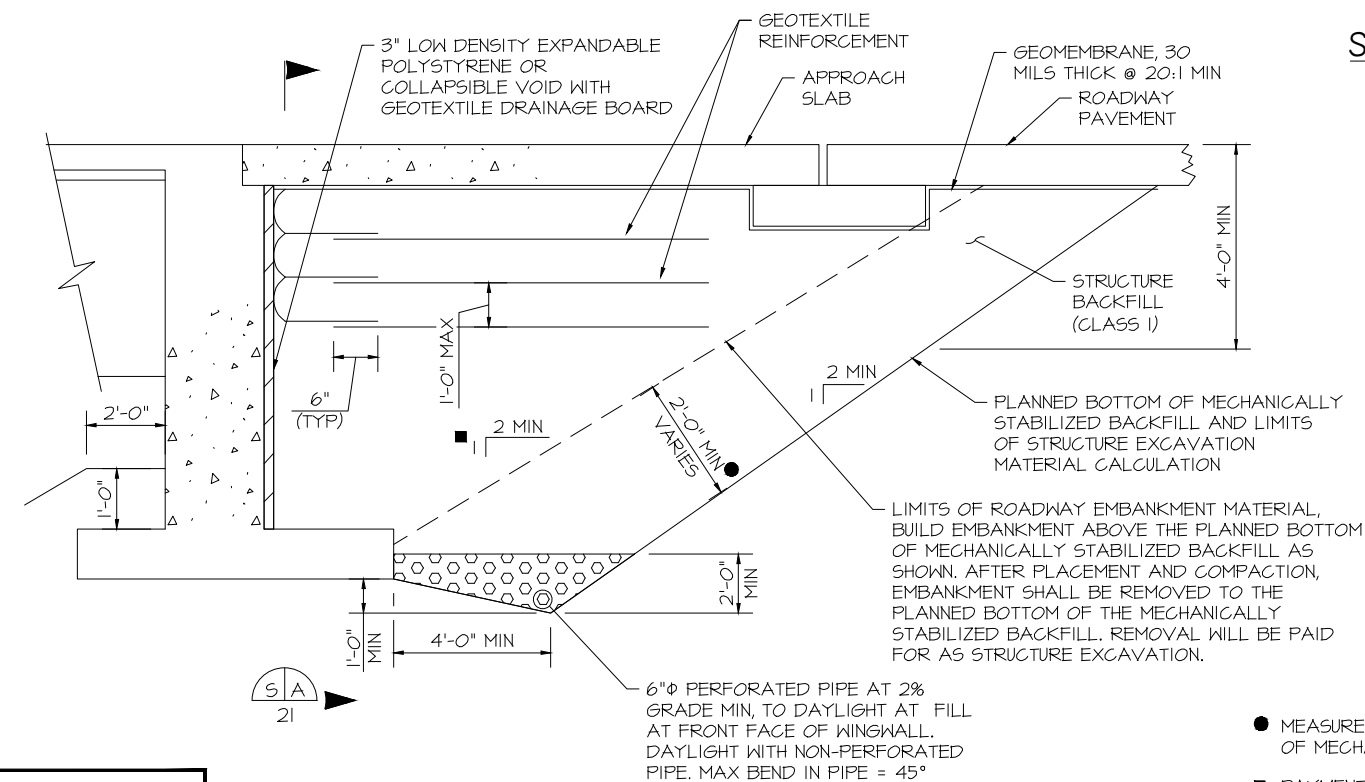
B19



ELEVATION SCHEMATIC



PLAN



SECTION PERPENDICULAR TO ABUTMENT

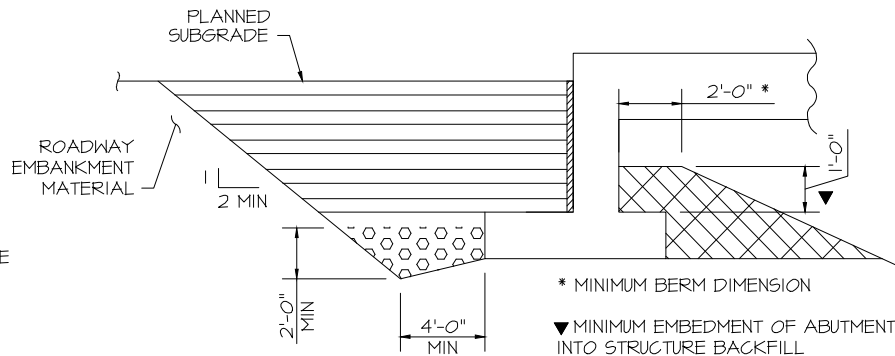


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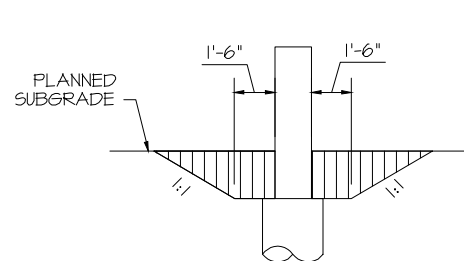
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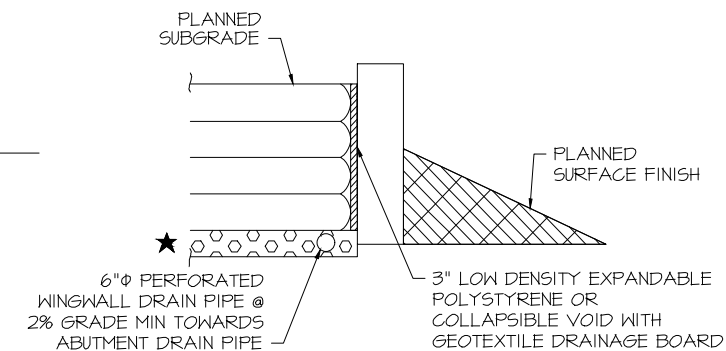
- MEASURED PERPENDICULAR TO PLANNED BOTTOM OF MECHANICALLY STABILIZED BACKFILL
- PAYMENT BASED ON 2:1 SLOPE. ADDITIONAL QUANTITIES SHALL BE INCLUDED IN THE WORK.



SECTION (BACKFILL) S B

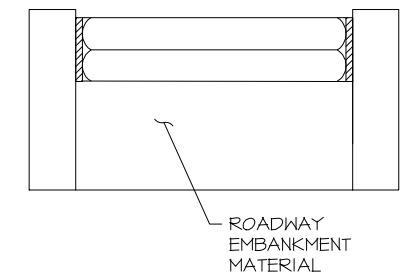


SECTION (BACKFILL) S C



SECTION (BACKFILL) S D

- ★ FILTER MATERIAL IS ONLY USED IN AREA NEAR THE ABUTMENT AND NOT AT THE END OF THE WINGWALL



SECTION (BACKFILL) S E

LEGEND

- STRUCTURE BACKFILL (CLASS I) WITH MECHANICAL REINFORCEMENT AS SHOWN ON THE PLANS
- REFER TO CIVIL PLANS FOR GRADING IN FRONT OF ABUTMENTS AND WINGWALLS
- FILTER MATERIAL
- STRUCTURE BACKFILL (CLASS I)

NOTES:

- REFER TO M-206-2 FOR EXCAVATION LIMITS.
- GEOTEXTILE REINFORCEMENT SHALL BE WOVEN FABRIC WITH A MINIMUM AVERAGE ROLL VALUE OF 4800 LB/FT FOR INSTALLATIONS WITH A GAP AND 2400 LB/FT FOR INSTALLATIONS WITHOUT A GAP BASED ON ASTM D4595.
- GEOTEXTILE REINFORCEMENT SHALL BE PLACED BY ALTERNATING MACHINE DIRECTION (MD) WITH CROSS MACHINE DIRECTION (XD) FROM LAYER TO LAYER.
- THE GEOTEXTILE REINFORCEMENT WRAP AT BACK FACE OF ABUTMENT SHALL BE PULLED BACK SLACK FREE WITH ITS END ANCHORED TO SOIL UNDERNEATH WITH STAPLES OR PINS.
- MINIMUM SPLICE OF ALL GEOTEXTILE SHALL CONSIST OF 6" OF OVERLAP.
- PAYMENT FOR ALL WORK ITEMS SHOWN WILL BE MADE UNDER ITEM 206 MECHANICAL REINFORCEMENT OF SOIL (CY) AND ITEM 206 STRUCTURE BACKFILL (CLASS I) (CY) AND SHALL INCLUDE THE COST FOR 6 INCH  $\phi$  PERFORATED PIPE UNDERDRAIN AND SUBSURFACE DRAIN OUTLET (6 INCH  $\phi$  NON-PERFORATED PIPE) AND FILTER MATERIAL (CLASS B) QUANTITIES.
- INSTALLATION OF PIPE UNDERDRAIN, SUBSURFACE DRAIN OUTLET, AND GEOCOMPOSITE DRAIN WILL CONFORM TO THE CONSTRUCTION REQUIREMENTS OF SECTION 605.03, 605.06 AND 605.04, RESPECTIVELY.
- GEOCOMPOSITE DRAINAGE BOARD SHALL BE PLACED ON THE SOIL SIDE OF WALLS AND ABUTMENTS.

ISSUED FOR CONSTRUCTION

DESIGNED BY:	HMR	PROJECT TITLE	FOREST LAKES BRIDGES	PROJECT LOCATION	MONUMENT, CO
DRAWN BY:	AJM				
PROJECT MANAGER:	HMR				
DATE:	7/9/21				

BACKFILL DETAILS (1 OF 2)

STRUCTURE:

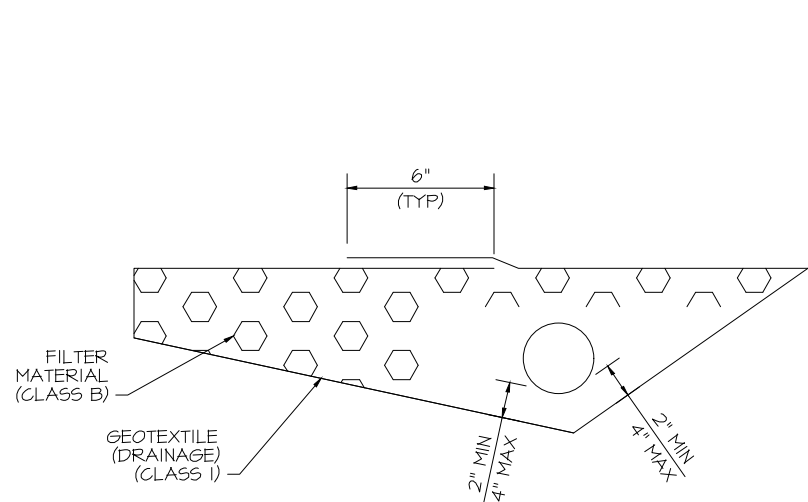
SHEET NO.

B20

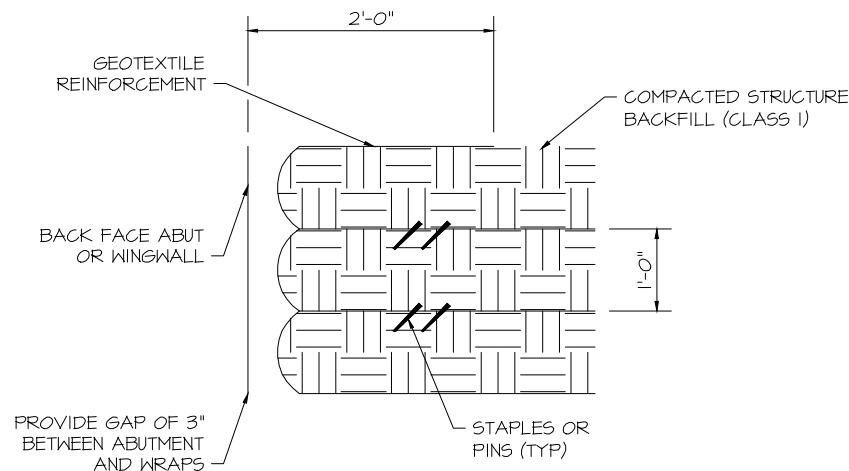


LEGEND

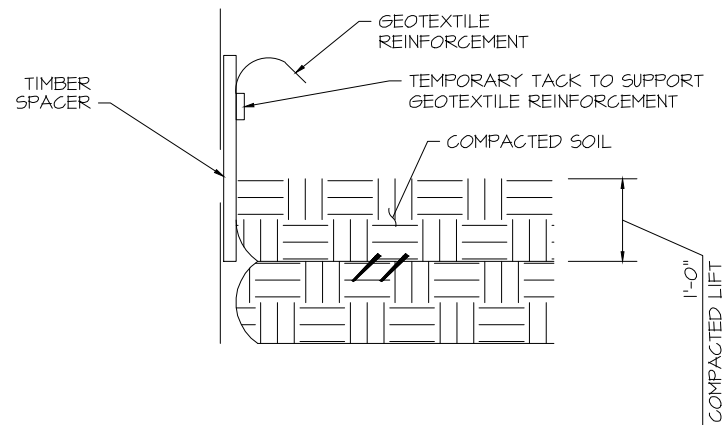
- STRUCTURE BACKFILL (CLASS I) WITH MECHANICAL REINFORCEMENT AS SHOWN ON THE PLANS
- FILTER MATERIAL



6 INCH PERFORATED PIPE UNDERDRAIN

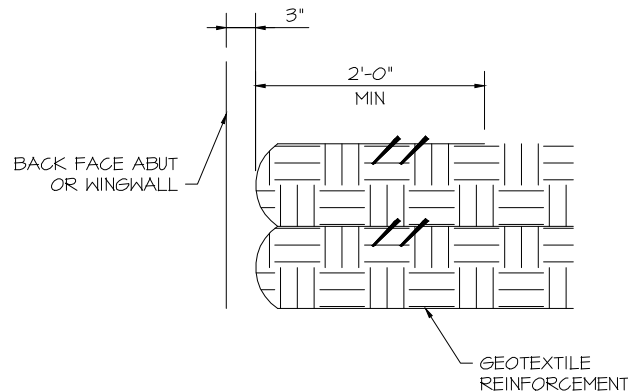


WRAP DETAIL

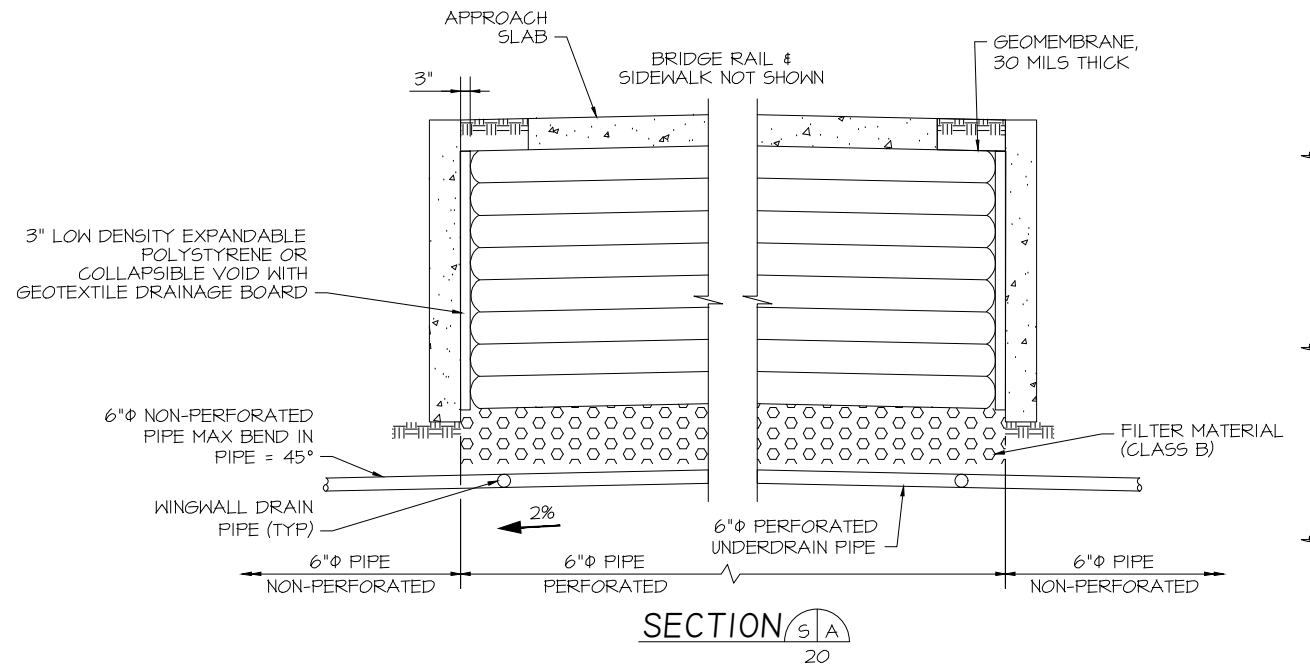


GAP DETAIL STEP 1

WHEN REQUIRED, THE GEOTEXTILE REINFORCEMENT WRAP AT BACK FACE OF ABUTMENT OR WINGWALL SHALL BE TEMPORARILY HUNG WITH A SPACER BOARD AND TACK STRIP. AFTER REACHING TOTAL OF 1'-0" COMPACTED LIFT, THE TACK STRIP SHALL BE REMOVED AND TEXTILE REINFORCEMENT SHALL BE PULLED BACK SLACK FREE WITH ITS END ANCHORED TO SOIL UNDERNEATH WITH STAPLE OR PINS BEFORE THE SPACER BOARD IS PULLED. ANY ALTERNATE METHOD TO MAINTAIN THE MINIMUM GAP BETWEEN ABUTMENT CONCRETE AND REINFORCED SOIL MAY BE PROPOSED TO THE ENGINEER FOR APPROVAL



GAP DETAIL STEP 2



NOTES:

- REFER TO M-206-2 FOR EXCAVATION LIMITS.
- GEOTEXTILE REINFORCEMENT SHALL BE WOVEN FABRIC WITH A MINIMUM AVERAGE ROLL VALUE OF 4800 LB/FT FOR INSTALLATIONS WITH A GAP AND 2400 LB/FT FOR INSTALLATIONS WITHOUT A GAP BASED ON ASTM D4595.
- GEOTEXTILE REINFORCEMENT SHALL BE PLACED BY ALTERNATING MACHINE DIRECTION (MD) WITH CROSS MACHINE DIRECTION (XD) FROM LAYER TO LAYER.
- THE GEOTEXTILE REINFORCEMENT WRAP AT BACK FACE OF ABUTMENT SHALL BE PULLED BACK SLACK FREE WITH ITS END ANCHORED TO SOIL UNDERNEATH WITH STAPLES OR PINS.
- MINIMUM SPLICE OF ALL GEOFABRIC SHALL CONSIST OF 6" OF OVERLAP.
- PAYMENT FOR ALL WORK ITEMS SHOWN WILL BE MADE UNDER ITEM 206 MECHANICAL REINFORCEMENT OF SOIL (CY) AND ITEM 206 STRUCTURE BACKFILL (CLASS I) (CY) AND SHALL INCLUDE THE COST FOR 6 INCH  $\phi$  PERFORATED PIPE UNDERDRAIN AND SUBSURFACE DRAIN OUTLET (6 INCH  $\phi$  NON-PERFORATED PIPE) AND FILTER MATERIAL (CLASS B) QUANTITIES.
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- GEOCOMPOSITE DRAINAGE BOARD SHALL BE PLACED ON THE SOIL SIDE OF WALLS AND ABUTMENTS.

ISSUED FOR CONSTRUCTION



07-09-21

REVISIONS		DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-19-21	HMR	
2				
3				
4				
5				
6				
7				

DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/9/21

PROJECT TITLE  
FOREST LAKES BRIDGES

PROJECT LOCATION  
MONUMENT, CO

BACKFILL DETAILS (2 OF 2)

STRUCT/JOB:  
SHEET NO.  
B21