

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 1 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 CEVENTITIOUS MATERIALS REQUIREMENTS CORRESPONDING TO SULFATE EXPOSURE CLASS O.

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 (1-800-422-1981) 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).

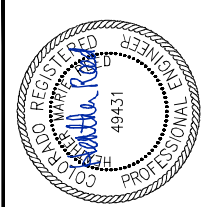
DESIGN ENGINEER'S STATEMENT:
THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR BRIDGE PLANS AND SPECIFICATIONS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR BRIDGES ARE DESIGNED, FOR AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY DIRECTLY CAUSED BY THE NEGLECT, ACTS, ERRORS, OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

Heather Reed
Heather Reed, P.E. #49431
STEAMBOAT STRUCTURES LLC

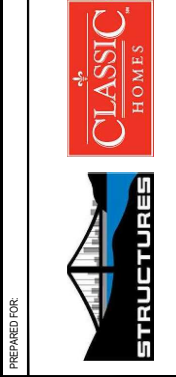
07/12/2022

DATE

AS-BUILT/
CONSTRUCTED



07-12-22



PREPARED FOR:

REVISIONS		DATE	BY
1	REVISED BEARING PAD DEPTH	5-14-21	HMR
2	REVISED 100YR WATER	06-11-21	HMR
3	REVISED HYDRAULIC DATA	07-04-21	HMR
4			
5			
6			
7			

DESIGN DATA

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

LIVE LOAD: HL-43 (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 1:
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 $S_l = 0.054$ g (PER GEOTECH REPORT)

SITE CLASS D
SITE FACTOR $Fpga = 1.6$
SITE FACTOR $Fa = 1.6$
SITE FACTOR $Fv = 2.4$

PEAK DESIGN SPECTRAL ACCELERATION $As = 0.0428$ g
SHORT-PERIOD DESIGN SPECTRAL ACCELERATION $Sds = 0.296$ g
LONG-PERIOD DESIGN SPECTRAL ACCELERATION $Sdl = 0.142$ g

$To = 0.046$ sec
 $Ts = 0.418$ sec

BRIDGE DESCRIPTION

2 SPAN (91'-7 1/8" 91'-7 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, THREE BEAM RAIL WITH SAFETY RAIL ABOVE SIDEWALK
6' CURB, THREE BEAM

HYDRAULIC DATA

100YR MBE = 7058.46 AT NORTH BRIDGE HCL
100YR SCOUR AT PIER = 7046.76
NO 100YR SCOUR AT ABUTMENTS
100YR VELOCITY = 5.67 FT/S

EL PASO COUNTY:
COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL VOLUMES 1 AND 2 AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH THE EGM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

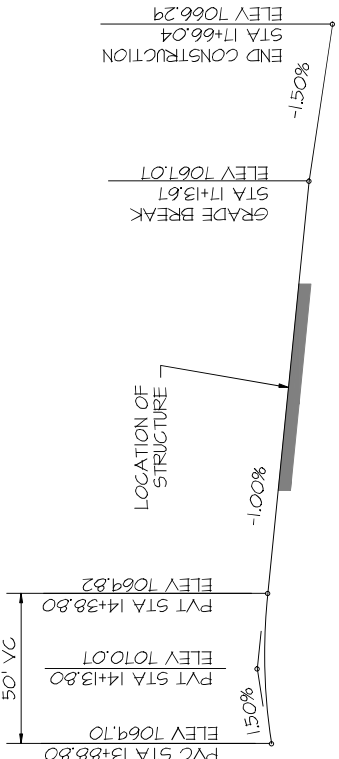
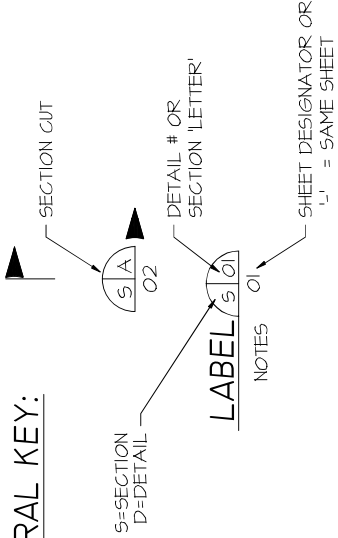
JENNIFER IRVINE, P.E.
COUNTY ENGINEER/ECM ADMINISTRATOR

DATE

INDEX OF SHEETS:

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GENERAL KEY:



PROFILE GRADE

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

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 371 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.

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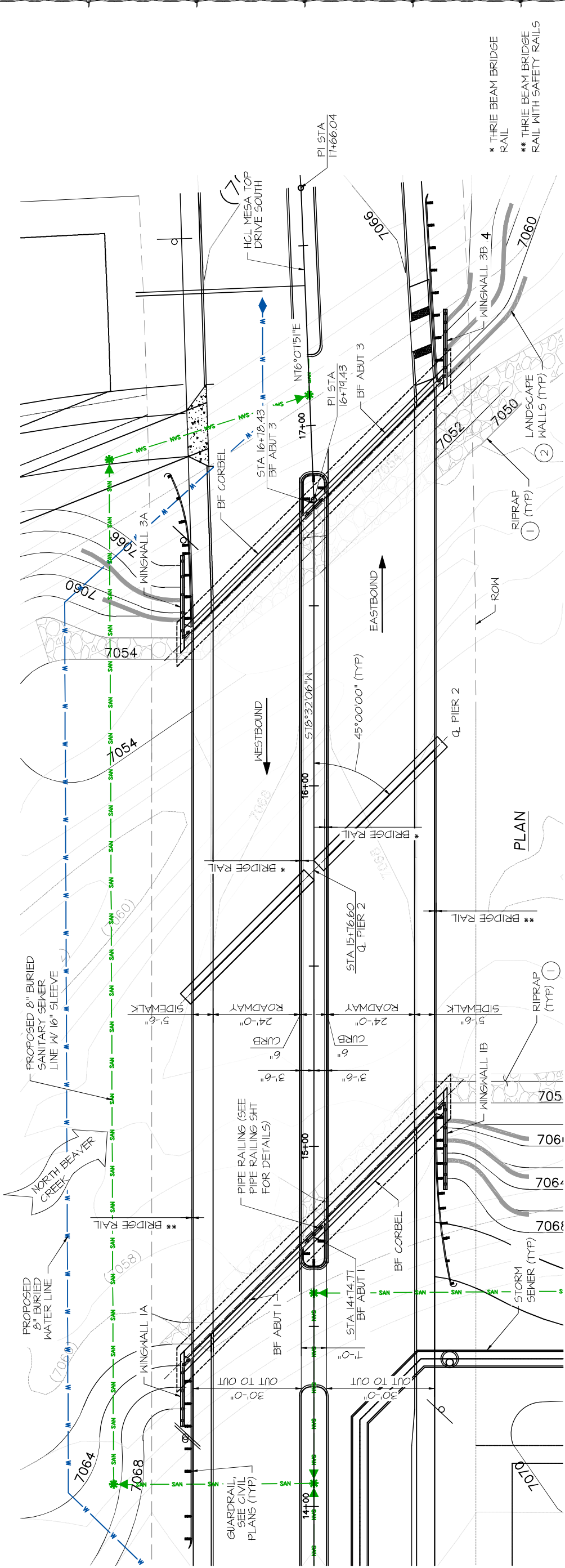


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THIS DOCUMENT AND ANY INFORMATION CONTAINED HEREIN ARE UNCLASSIFIED, IN WHOLE OR IN PART, AND IS/ARE BEING RELEASED TO YOU BY THE NATIONAL ARCHIVES. IT IS YOUR RESPONSIBILITY TO PROTECT THIS INFORMATION FROM UNAUTHORIZED DISCLOSURE. IT IS YOUR RESPONSIBILITY TO RETURN THIS INFORMATION TO THE NATIONAL ARCHIVES WHEN IT IS NO LONGER NEEDED FOR YOUR OFFICIAL USE. IT IS YOUR RESPONSIBILITY TO OBTAIN THE NECESSARY PERMISSIONS FROM THE NATIONAL ARCHIVES TO REPRODUCE OR TRANSMIT THIS INFORMATION IN ANY MANNER THAT MAY BE A VIOLATION OF ANY APPLICABLE LAWS OR REGULATIONS. THE NATIONAL ARCHIVES DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN, AND IT IS YOUR RESPONSIBILITY TO VERIFY THE INFORMATION CONTAINED HEREIN. THE NATIONAL ARCHIVES DOES NOT ASSUME ANY LIABILITY FOR THE USE OR MISUSE OF THE INFORMATION CONTAINED HEREIN. THE NATIONAL ARCHIVES DOES NOT ASSUME ANY LIABILITY FOR THE USE OR MISUSE OF THE INFORMATION CONTAINED HEREIN. THE NATIONAL ARCHIVES DOES NOT ASSUME ANY LIABILITY FOR THE USE OR MISUSE OF THE INFORMATION CONTAINED HEREIN.

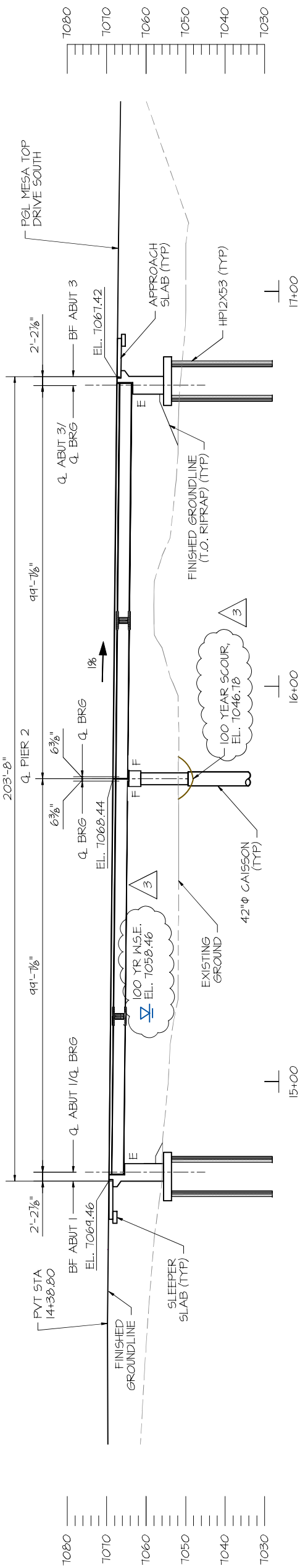
DESIGNED BY: HMR	PROJECT TITLE FOREST LAKES BRIDGES	PROJECT LOCATION MONUMENT, CO
DRAWN BY: AJM		
PROJECT MANAGER: HMR	SUMMARY OF QUANTITIES	STRUCTURE JOB:
DATE: 7/12/22		SHEET NO. B02





* THREE BEAM BRIDGE
RAIL
** THREE BEAM BRIDGE
RAIL WITH SAFETY RAILS

PLAN



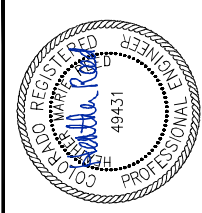
NOTES:

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.

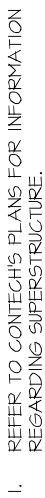
ELEVATION

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

AS-BUILT/
CONSTRUCTED



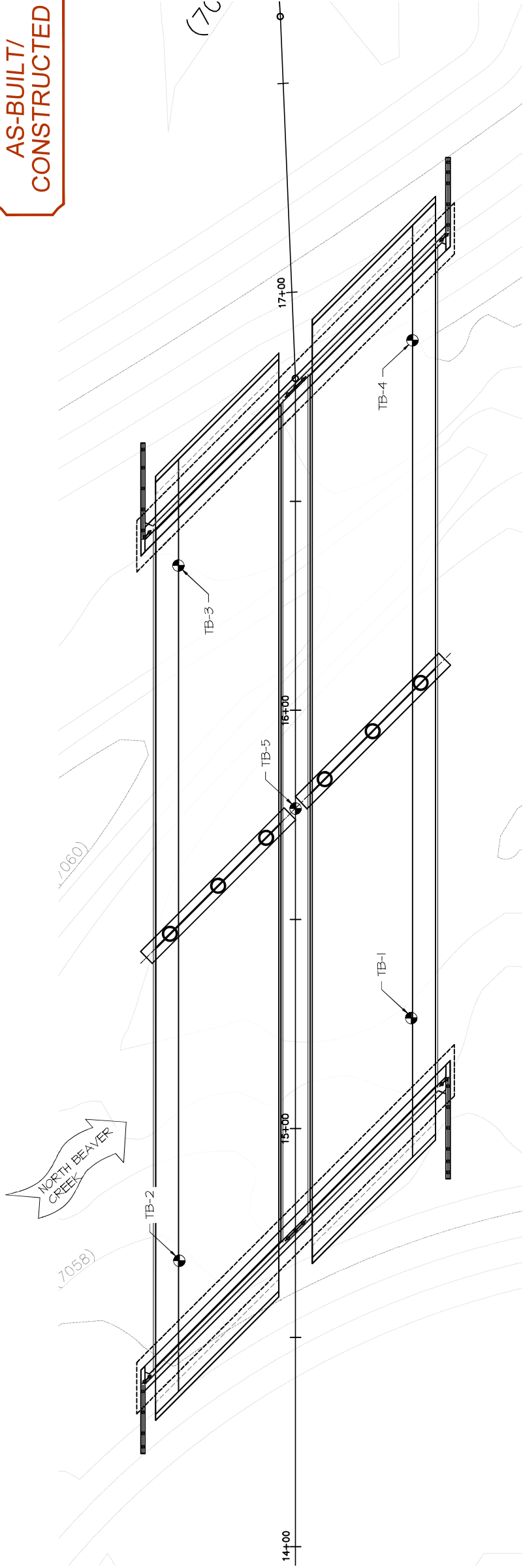
PROJECT TITLE FOREST LAKES BRIDGES		PROJECT LOCATION MONUMENT, CO	
STRUCTURE JOB:			
GENERAL LAYOUT			
SHEET NO.		B03	



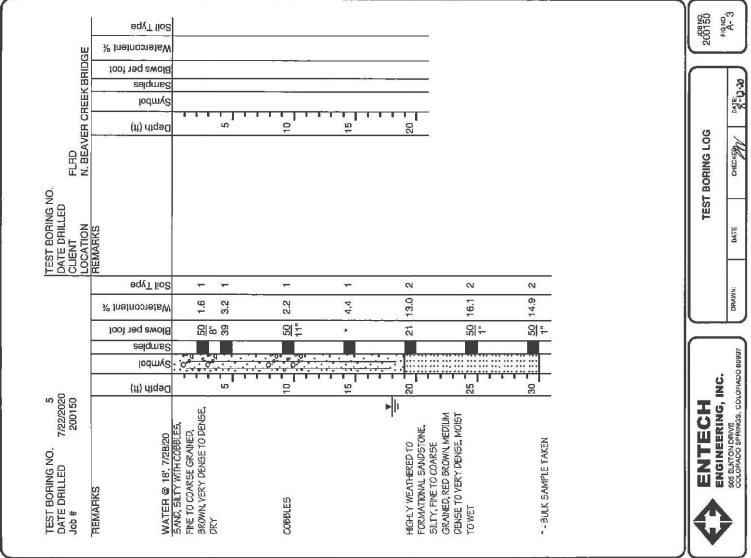
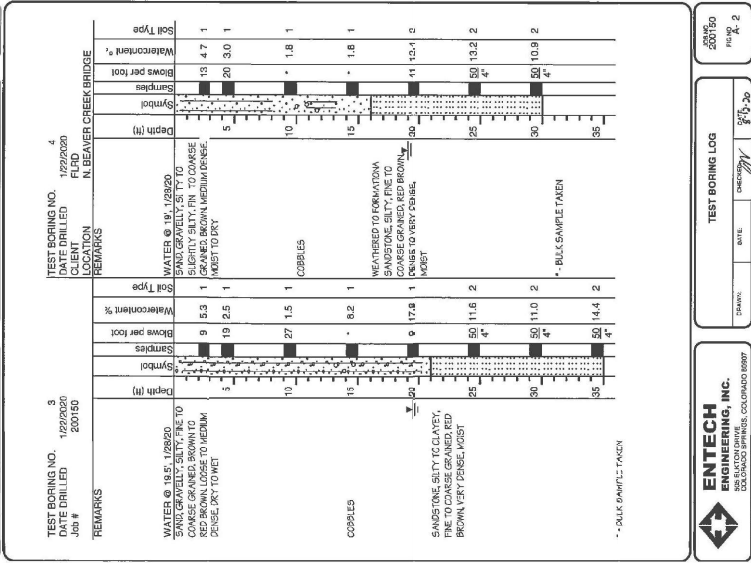
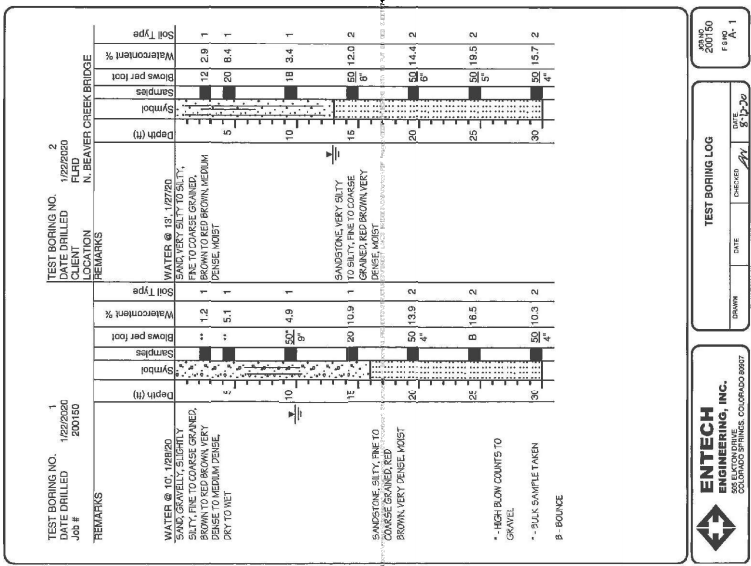
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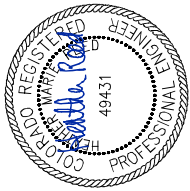


PLAN



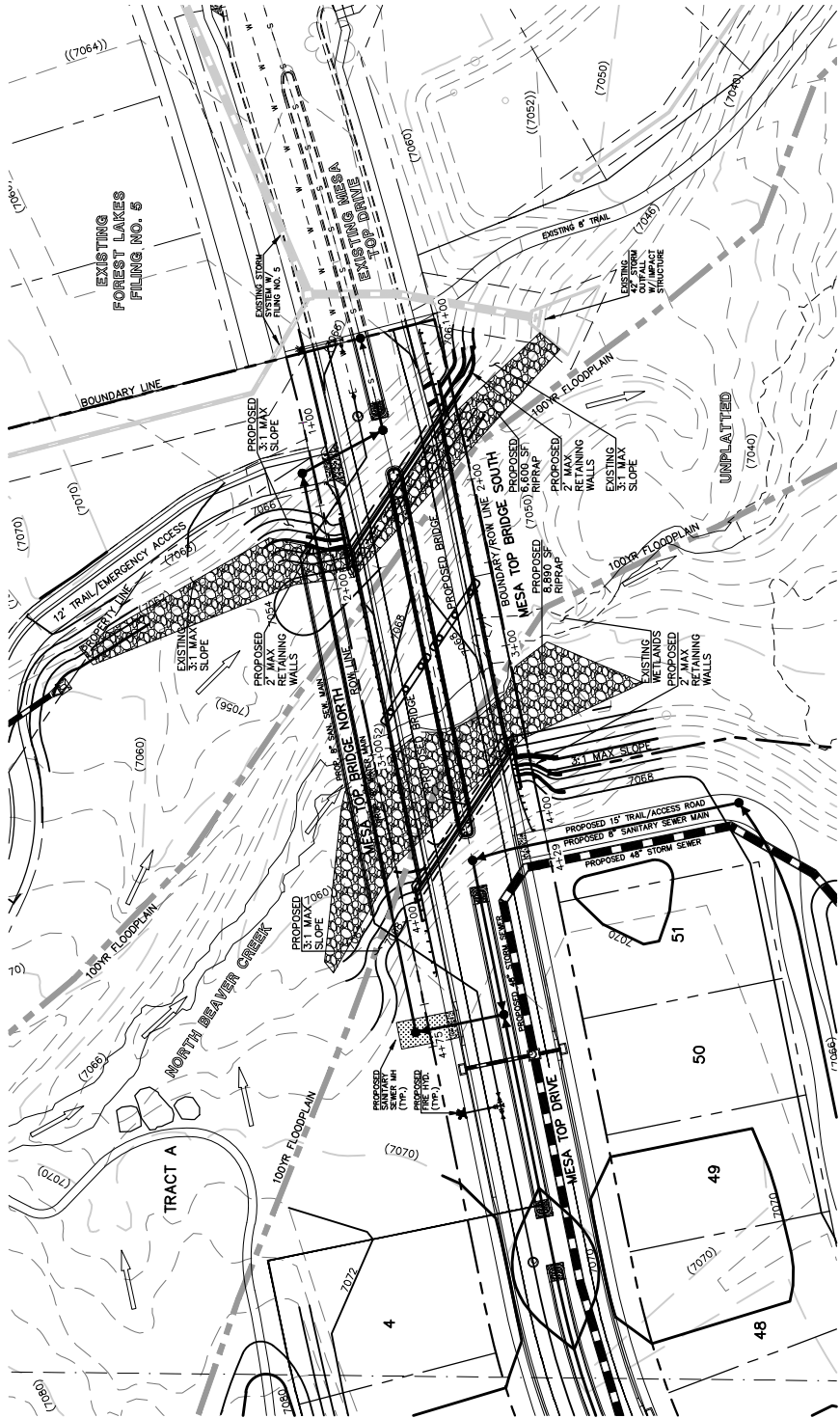
THE GEOTECHNICAL DATA SHOWN IS PROVIDED FOR INFORMATION ONLY AND WAS PERFORMED BY ENTECH ENGINEERING, INC. ENTECH JOB NO. 200150. REFER TO THE FULL GEOTECHNICAL REPORT FOR ALL INFORMATION PERTAINING TO BRIDGE GEOTECHNICAL DATA.

	REVISIONS		DATE	BY	PREPARED FOR:	 	DESIGNED BY: ENTECH DRAWN BY: AJM PROJECT MANAGER: HMR DATE: 7/12/22	PROJECT TITLE FOREST LAKES BRIDGES	PROJECT LOCATION MONUMENT, CO	STRUCTURE JOB: ENGINEERING GEOLOGY	SHEET NO. B05
	1										
	2										
	3										
	4										
	5										
	6										
7											



07-12-22

THIS DRAWING AND/OR ANY OTHER ELECTRONIC FILE, INCLUDING THE PRINCIPLES OF DESIGN, IS THE PROPERTY OF THE ORIGINATOR OF THIS DOCUMENT AND IS LOANED WITH THE AGREEMENT THAT IT IS NOT TO BE ALTERED, REPRODUCED, COPIED OR LOANED IN WHOLE OR IN PART OR IN ANY MANNER THAT MAY BE A DETRIMENT TO THE ORIGINATOR. USE THIS ELECTRONIC FILE AT YOUR OWN RISK WITH NO LIABILITY TO THE ORIGINATOR FOR ANY INACCURACIES OR INCOMPLETENESS. SEE THE LATEST EDITION OF THE ORIGINATOR'S INSTRUCTIONS FOR MORE INFORMATION.



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

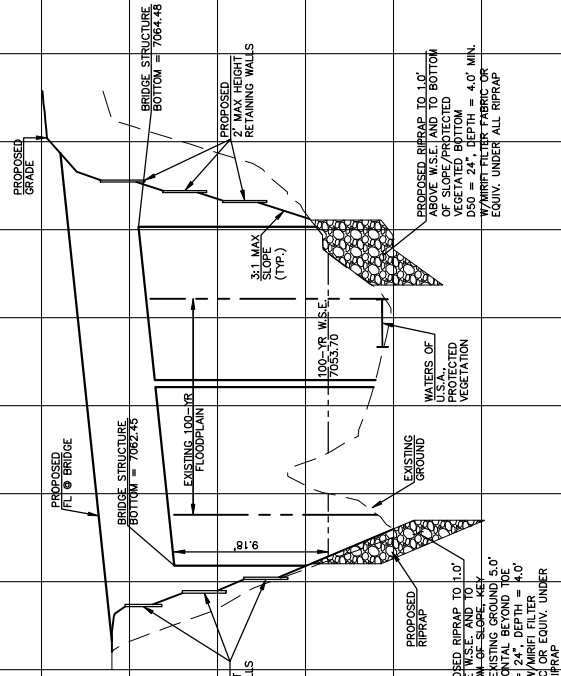
STREAM FORM - STRAIGHT ☒ MEANDERING ☐ BRAIDED ☐
 MANNINGS "n" FOR DESIGN - CHANNEL 0.04 OVERBANK 0.10
 DEBRIS - BRUSH ☐ TREES/LOGS ☐ ICE ☐ OTHER _____


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

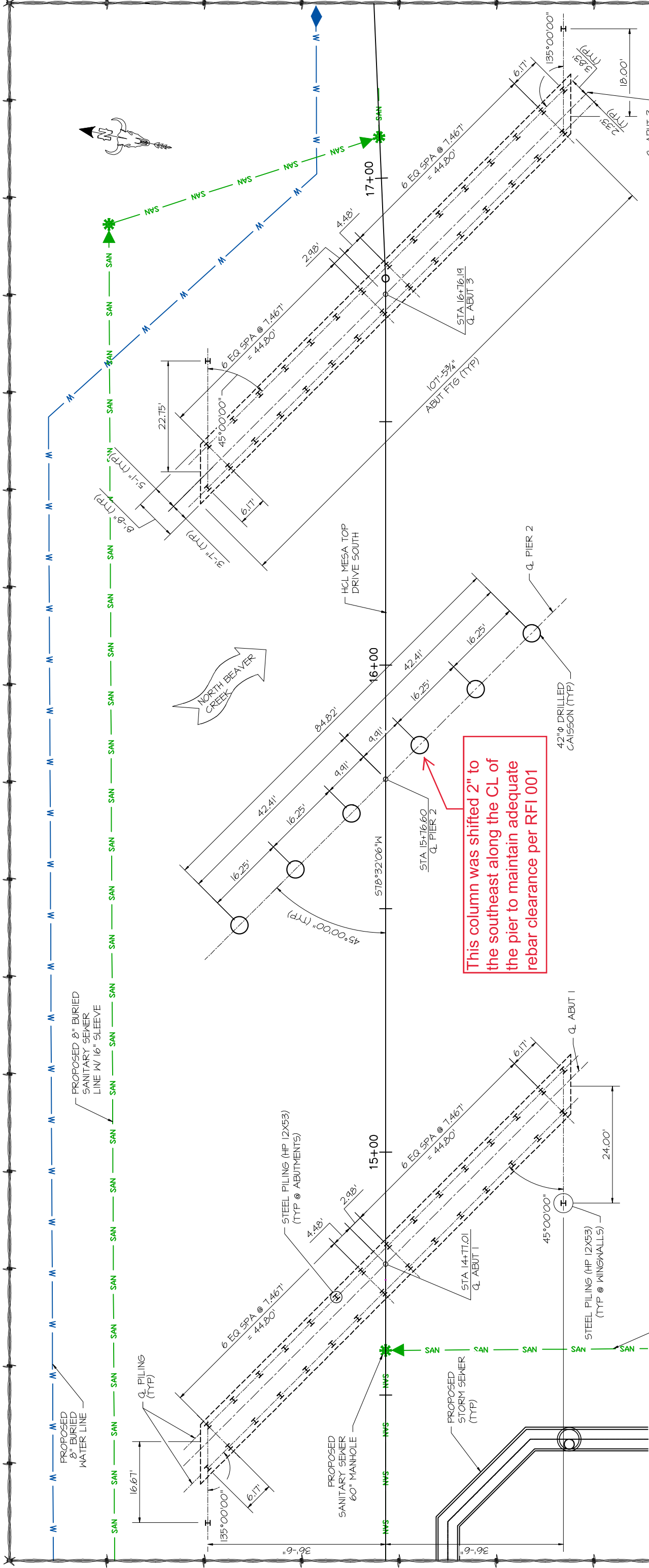
	VELOCITY	FREEBOARD	BRIDGE LOSS
NATURAL CHANNEL	8.8 ft/s	N/A	N/A
PROPOSED CHANNEL	5.7 ft/s	4.58 ft*	1.66 ft

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

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



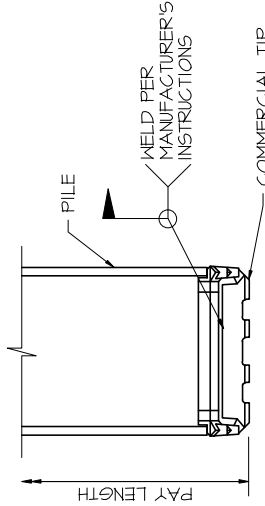
<p>48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS</p> <p>811</p> <p>UTILITY NOTIFICATION CENTER OF COLORADO IT'S THE LAW</p> <p>THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR 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.</p>	NO. REVISION	DATE	<p>REVIEW:</p> <p>PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC</p> <p>KYLE R. CAMPBELL, COLORADO P.E. #29794</p> <p>DATE</p>	<div><p>CLASSIC CONSULTING</p></div> <p>619 N. Cascade Avenue, Suite 200 (719) 885-0790 Colorado Springs, Colorado 80903 (719) 885-0799(Fax)</p>	FOREST LAKES FLING NO. 6 BRIDGE HYDRAULIC INFORMATION MESA TOP DRIVE OVER NORTH BEAVER CREEK			
					DESIGNED BY	MAL	SCALE	DATE
					DRAWN BY	MES	(H) 1"= 50'	SHEET 1 OF 1
					CHECKED BY	(V) 1"= 5'	JOB NO.	1175.60



FOUNDATION LAYOUT

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. PILE TIP TO BE INCLUDED IN THE COST OF THE PILE.
- 4. ALL PILES ARE END BEARING AND SHALL BE DRIVEN VERTICAL.
- 5. 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.
- 6. ALL STEEL PILES SHALL BE AASHTO M270 GRADE 50 AND PROTECTED WITH AN APPROVED COMMERCIAL PILE TIP.
- 7. ELEVATIONS SHOWN SHALL BE VERIFIED AT TIME OF CONSTRUCTION BY THE GEOTECHNICAL ENGINEER.
- 8. AXIAL GEOTECHNICAL RESISTANCE FACTOR = 0.65.

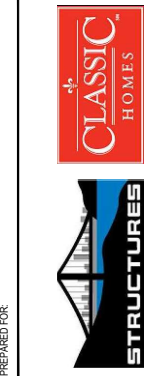
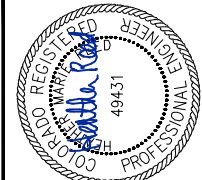


REINFORCING TIP LAYOUT

PILE SUMMARY									
	PILE SIZE	MAX LOAD (FACTORED) (KIPS)	MAX LOAD (SERVICE) (KIPS)	CUTOFF ELEVATION	ESTIMATED BEDROCK ELEV	ESTIMATED TIP ELEV	MINIMUM REQD TIP ELEV	AS-BUILT TIP ELEV*	
WINGWALL 1A	HP 12x53	28	22	7055	7045	7035	7035	7035.55	
WINGWALL 1B	HP 12x53	40	32	7055	7038	7028	7028	7032.53	
ABUTMENT 1	HP 12x53	215	158	7054	7038-7045	7028-7035	7028-7035	7031.94 - 7039.31	
WINGWALL 3A	HP 12x53	38	30	7055	7034	7024	7024	7029.29	
WINGWALL 3B	HP 12x53	29	23	7055	7038	7028	7028	7022.4	
ABUTMENT 3	HP 12x53	200	150	7054	7034-7038	7024-7028	7024-7028	7026.38 - 7030.92	

Per the pile driller, piles were embedded +/- 3' into bedrock. Piles were driven until the N count = 120 blows.

AS-BUILT/
CONSTRUCTED



DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER	HMR
DATE:	7/12/22

PROJECT TITLE
FOREST LAKES BRIDGES

PROJECT LOCATION
MONUMENT, CO

FOUNDATION LAYOUT

STRUCTURE:

SHEET NO.

B08

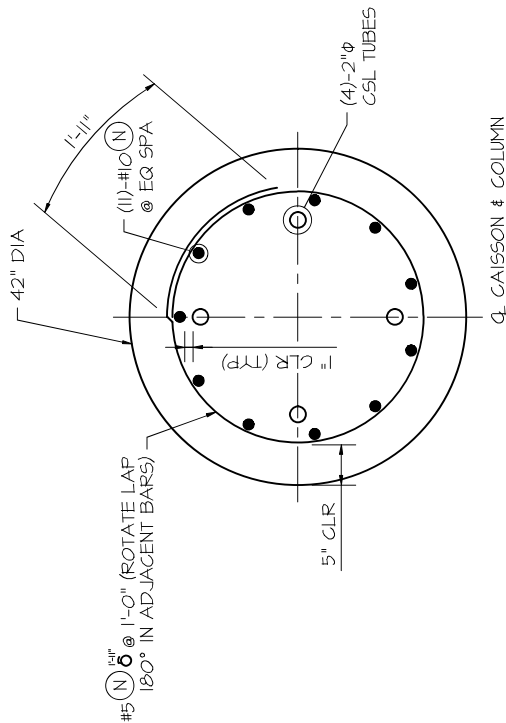
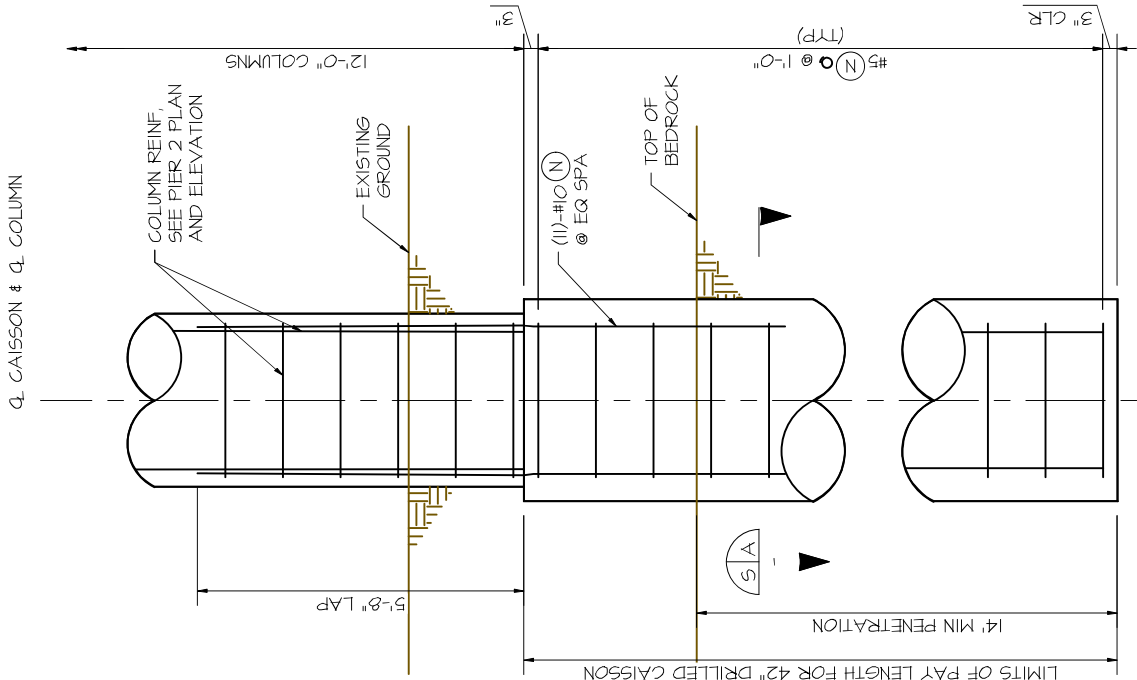



CAISSON NOTES:

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 GAPPED 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 24.41' 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 ITS 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.
- END BEARING & SIDE RESISTANCE FACTOR = 0.60

DRILLED CAISSON SUMMARY

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	7031.7-7032.4	7032.3-7032.8
AS-BUILT TIP ELEV	7017-7017.5	7018.1-7018.4

CAISSON SECTION 

CAISSON ELEVATION

AS-BUILT/
CONSTRUCTED

REVISIONS		DATE	BY
1	REVISED BEARING PAD DEPTH	02-14-21	HMS
2			
3			
4			
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07-12-22

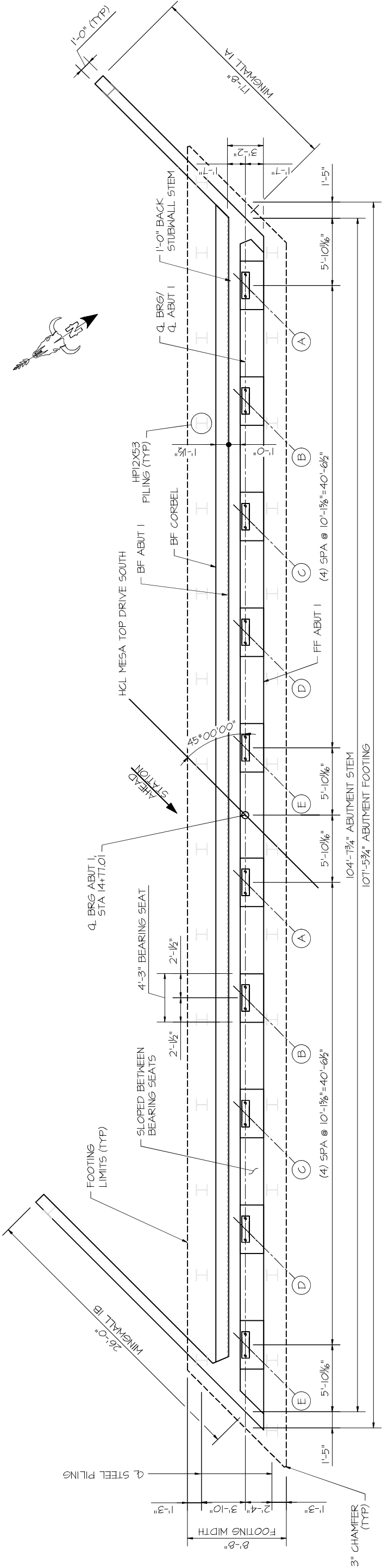
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DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/12/22

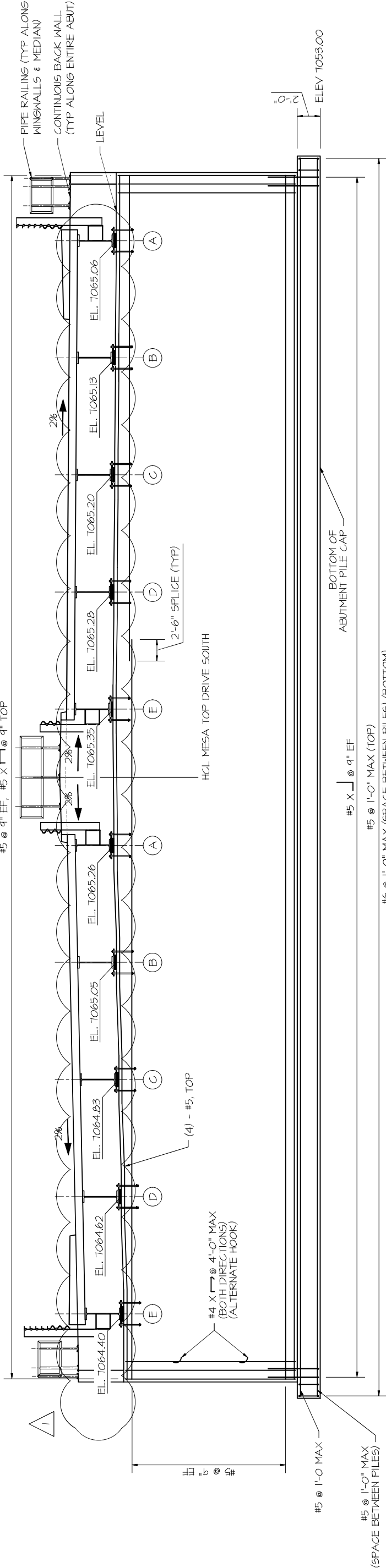


STRUCTURES

PROJECT TITLE		PROJECT LOCATION	
FOREST LAKES BRIDGES		MONUMENT, CO	
CAISSON DETAILS			
		STRUCTURE	
		SHEET NO.	
		B09	



PLAN

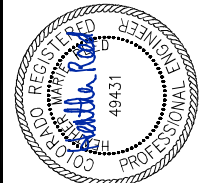


NOTES:

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. THERE ARE 2 ANCHOR BOLTS PER GIRDER BEARING PLATE. TOTAL 20 ANCHOR BOLTS FOR ABUTMENT 1.

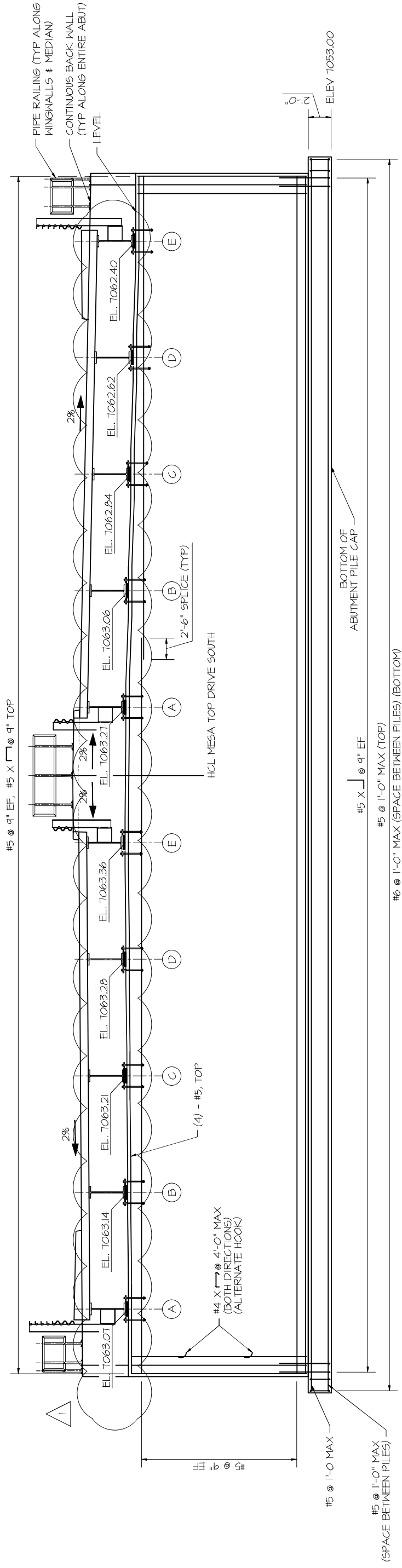
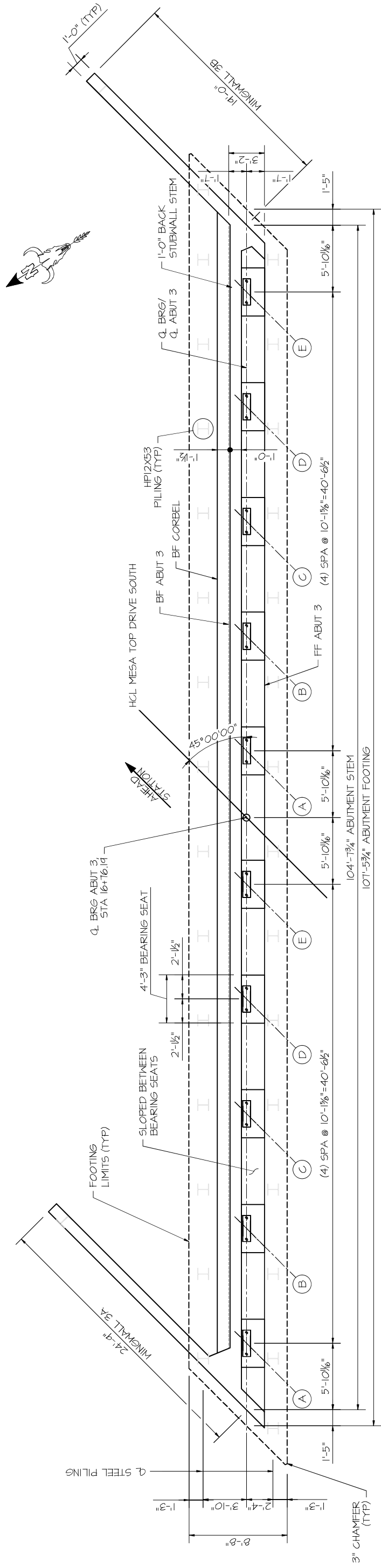
AS-BUILT/
CONSTRUCTED

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



REVISIONS		DATE	BY	PREPARED FOR
1	REVISED BEARING PAD DEPTH	05-19-21	HMR	
2				
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7				

DESIGNED BY: HMR		PROJECT TITLE: FOREST LAKES BRIDGES		PROJECT LOCATION: MONUMENT, CO	
DRAWN BY: AJM		ABUTMENT 1 PLAN AND ELEVATION			
PROJECT MANAGER: HMR					
DATE: 7/12/22		STRUCTURE: B10			



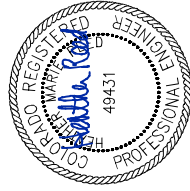
NOTES:

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. THERE ARE 2 ANCHOR BOLTS PER GIRDER BEARING PLATE. TOTAL 20 ANCHOR BOLTS FOR ABUTMENT 3.
- 4.

ELEVATION


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

AS-BUILT/
CONSTRUCTED




07-12-22


REVISIONS		DATE	BY
1	REVISED BEARING PAID DEPTH	05-19-21	JHR
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3			
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5			
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Matthew R. Kopp
49431
PROFESSIONAL ENGINEER
STATE OF NORTH CAROLINA



STRUCTURES



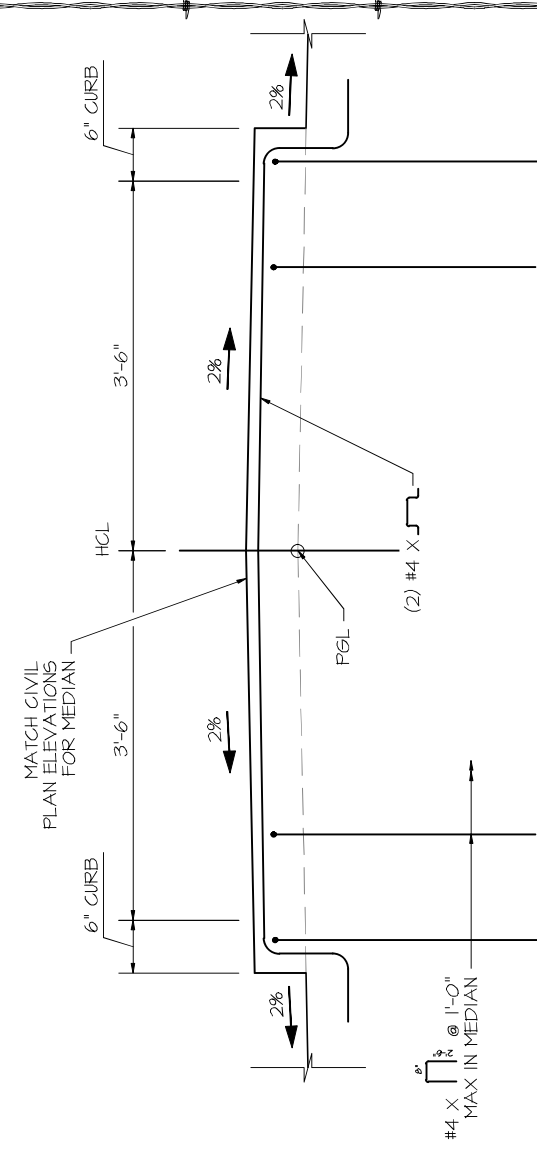
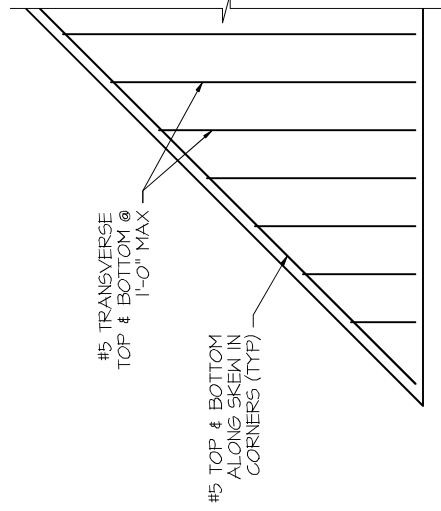
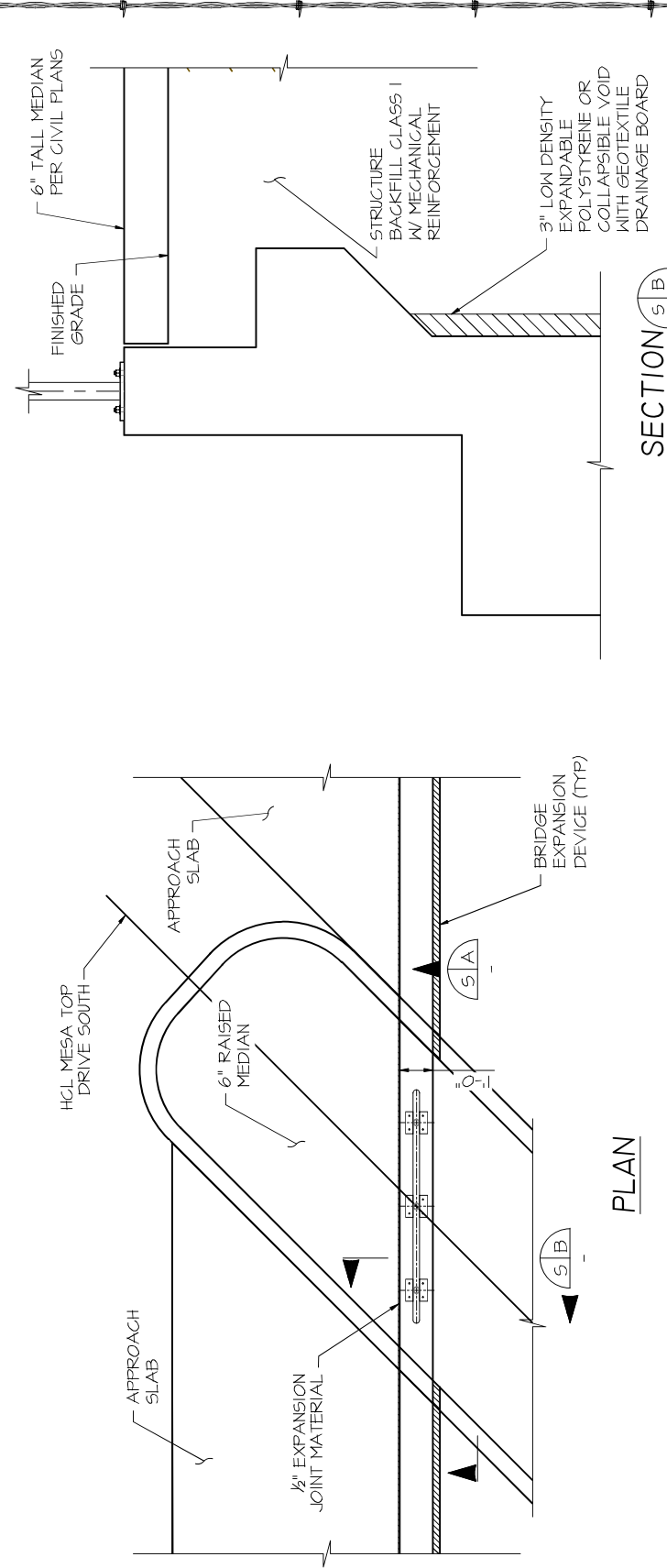
CLASSIC
HOMES

07-12-22



DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/12/22

PROJECT TITLE	PROJECT LOCATION
FOREST LAKES BRIDGES	MONUMENT, CO
STRUCTURE JOB:	
ABUTMENT 3 PLAN AND ELEVATION	
SHEET NO.	
B11	



FOOTING ACUTE CORNER PLAN

MEDIAN BACK STUBWALL ELEVATION

TYPICAL ABUTMENT SECTION

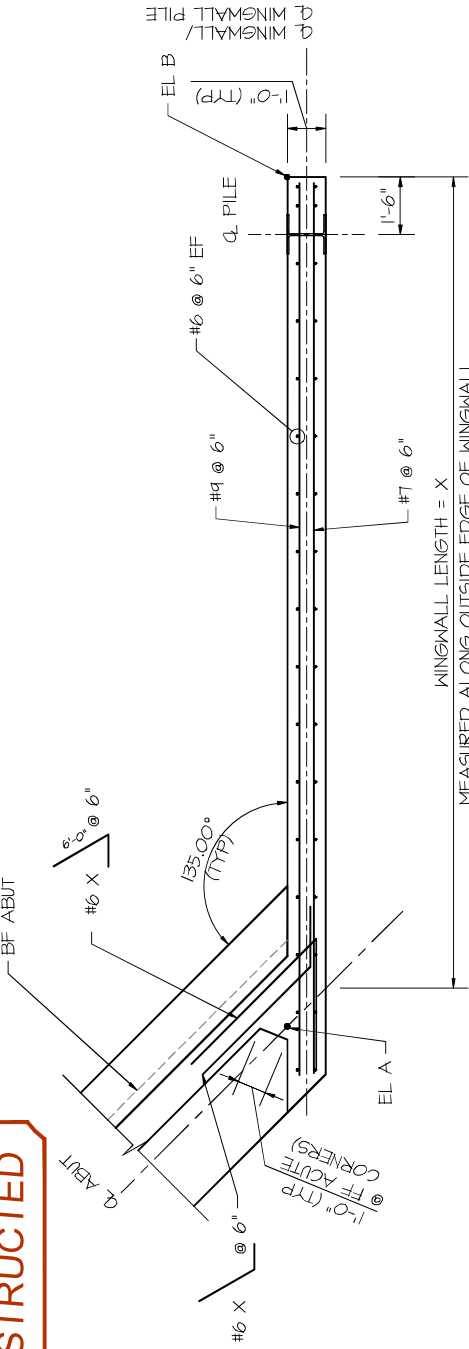
NOTES:

- I. SLOPE TOP OF BEARING SEAT TOWARDS FRONT FACE AT 2% BETWEEN BEARING SEATS.

[illegible]

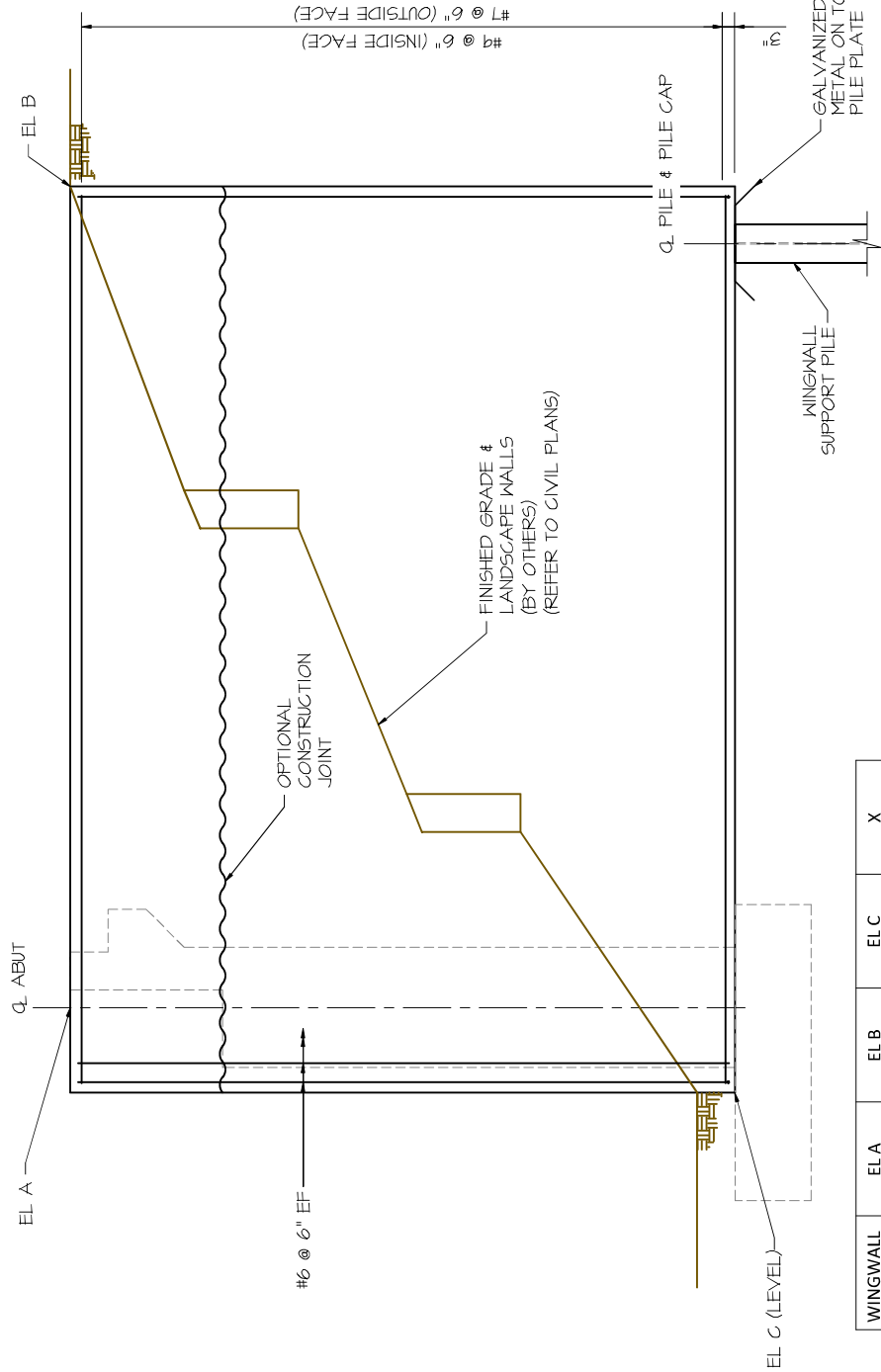
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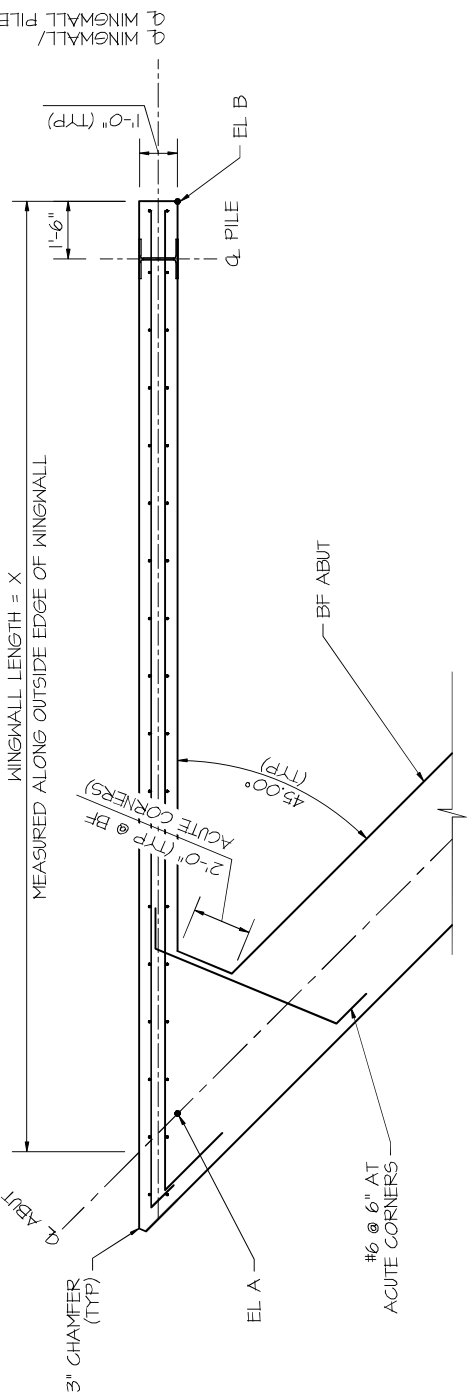
SECTION THRU BACK STUBWALL

WINGWALL 3B SHOWN
(WINGWALL 1A OPPOSITE HAND)



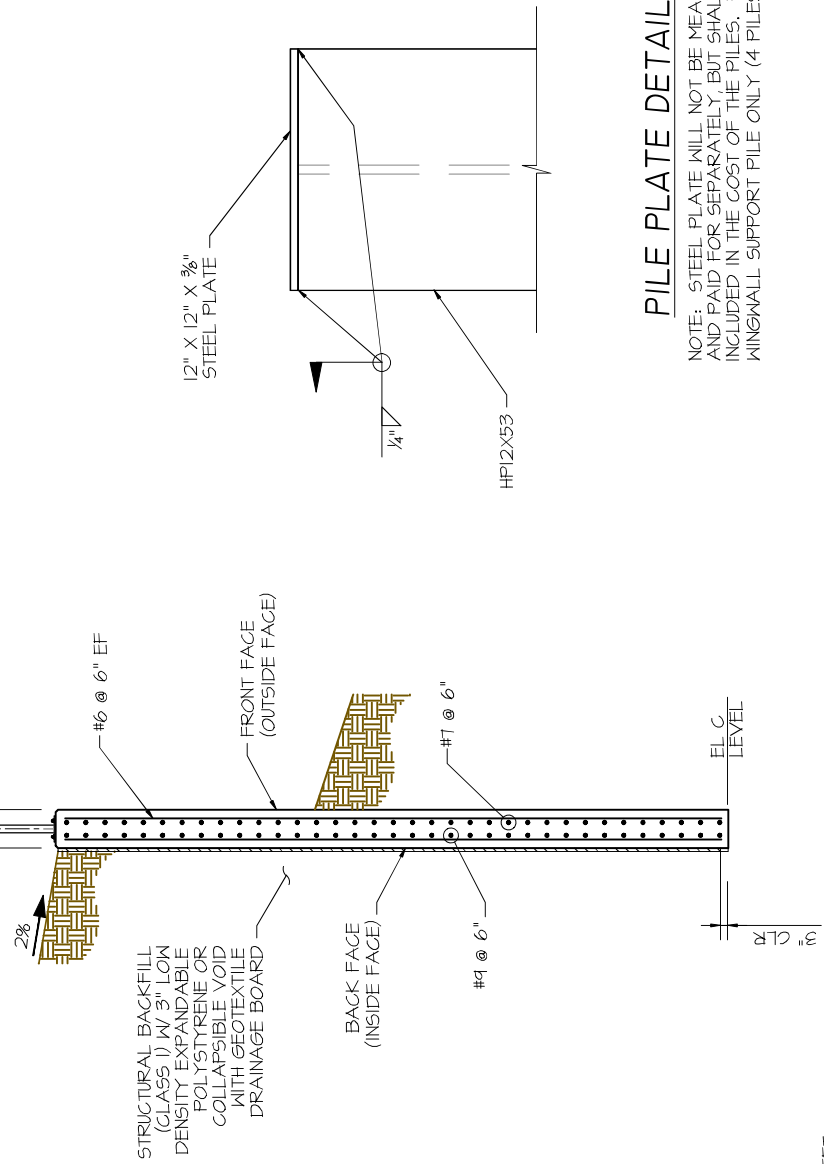
ELEVATION

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"



SECTION THRU ABUTMENT STEM

WINGWALL 3A SHOWN
(WINGWALL 1B OPPOSITE HAND)



PILE PLATE DETAIL

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:

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





REVISIONS		DATE	BY	PREPARED FOR:
1	REVISED BEARING PAD DEPTH	05-10-21	IN-R	
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07-12-22

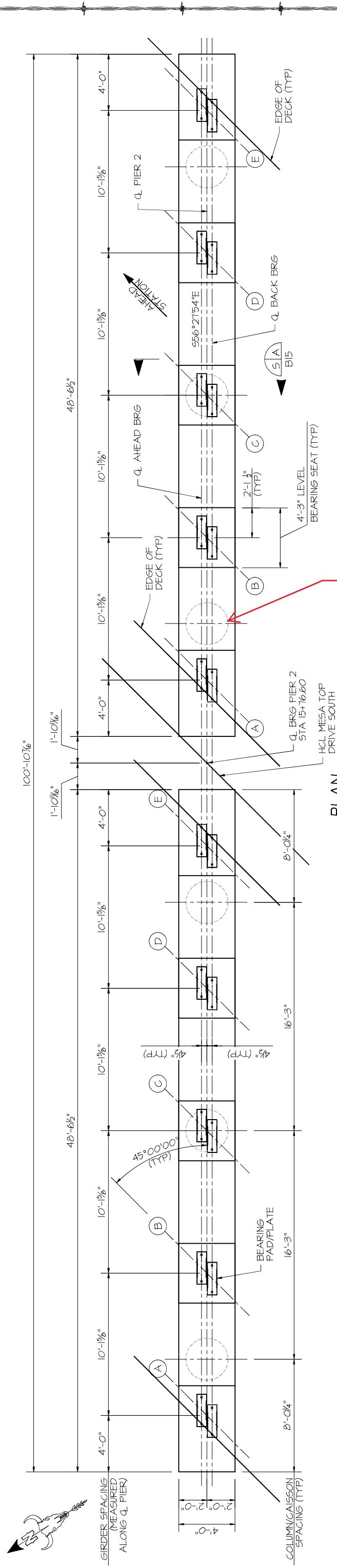
DESIGNED BY:	HMR
DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/12/22



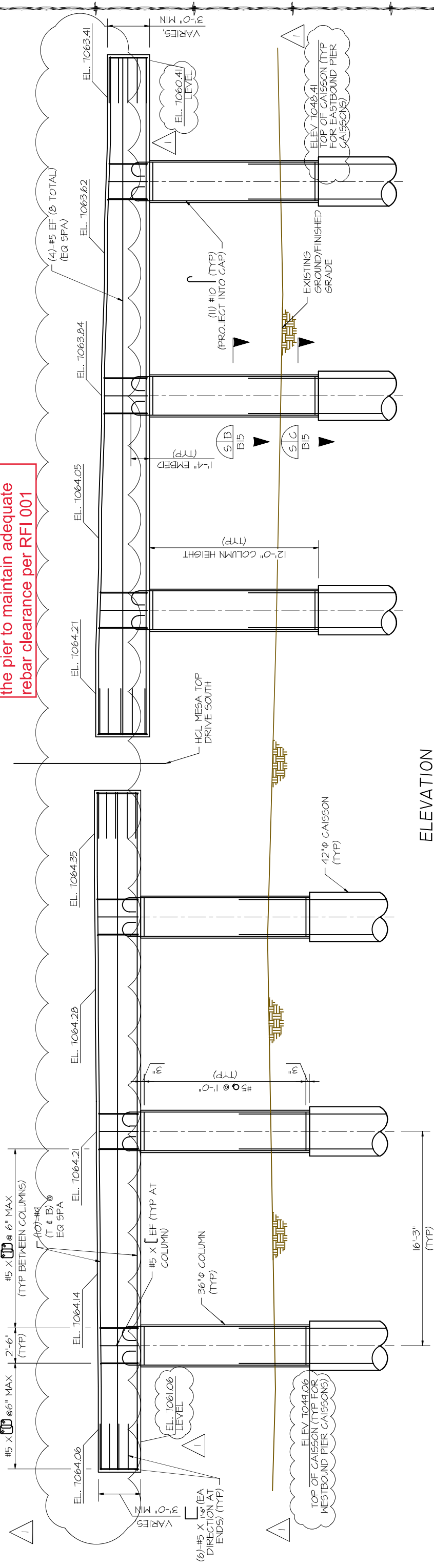



PROJECT LOCATION MONUMENT, CO	STRUCTURE:
	SHEET NO. B13

[illegible]



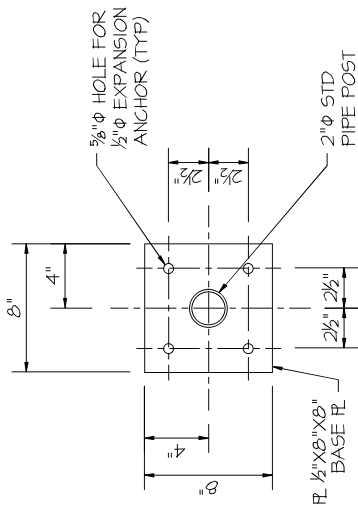
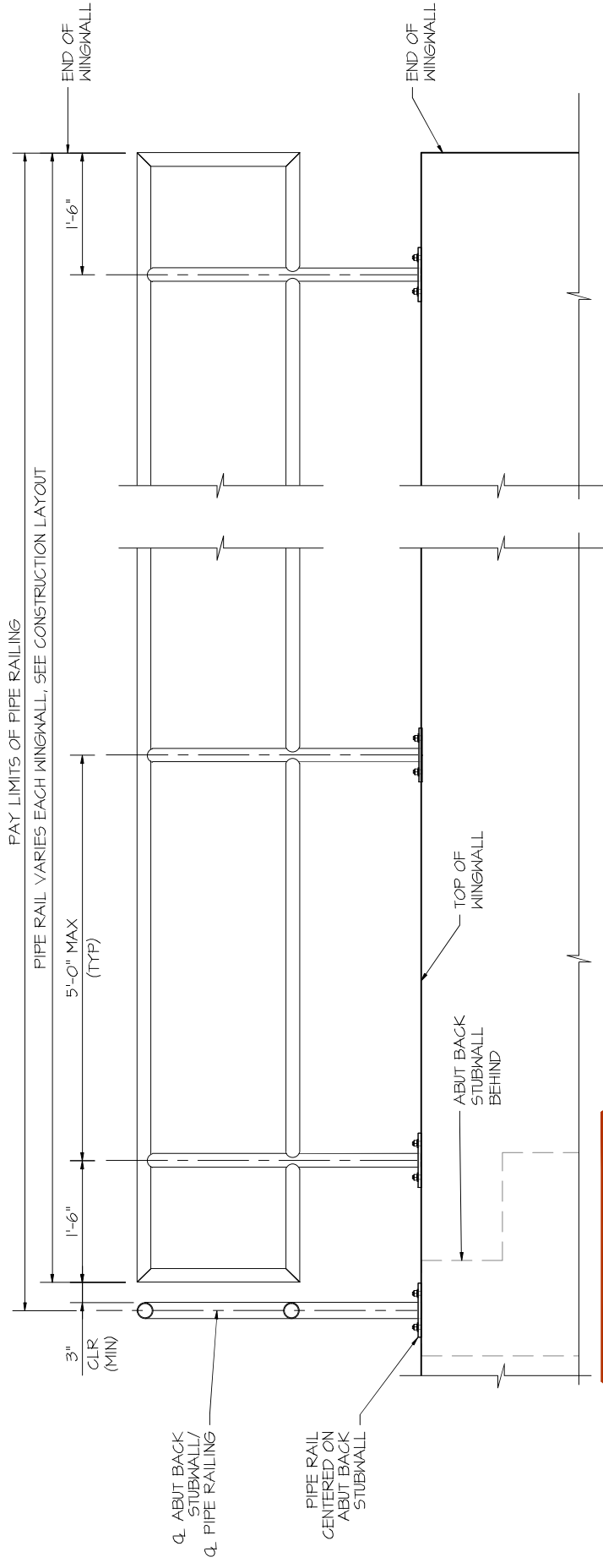
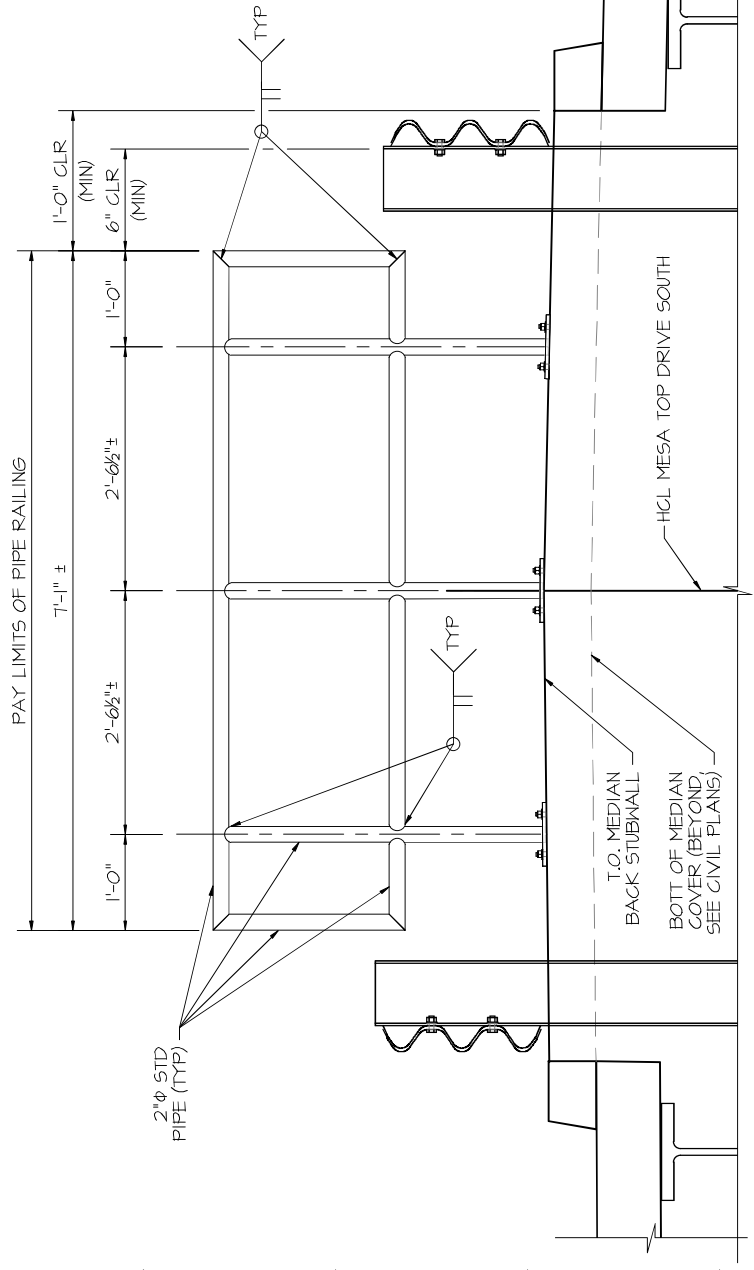
This column was shifted 2" to the southeast along the CL of the pier to maintain adequate rebar clearance per RFI 001



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.

[illegible]



- 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.

REVISIONS		DATE	BY
1	REVISED BEARING PAD DEPTH	05-18-21	JHR
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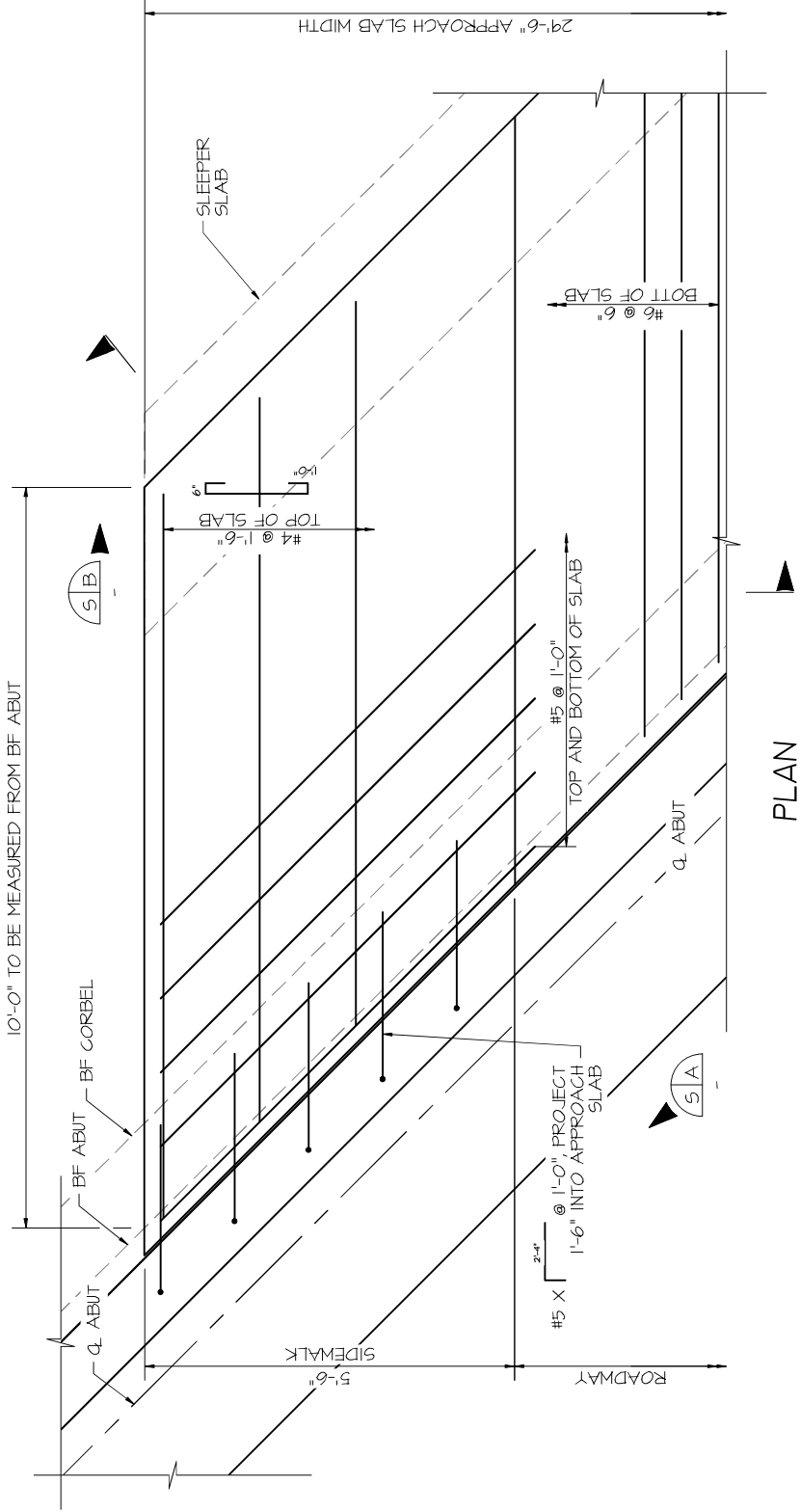


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DRAWN BY:	AJM
PROJECT MANAGER:	HMR
DATE:	7/12/22

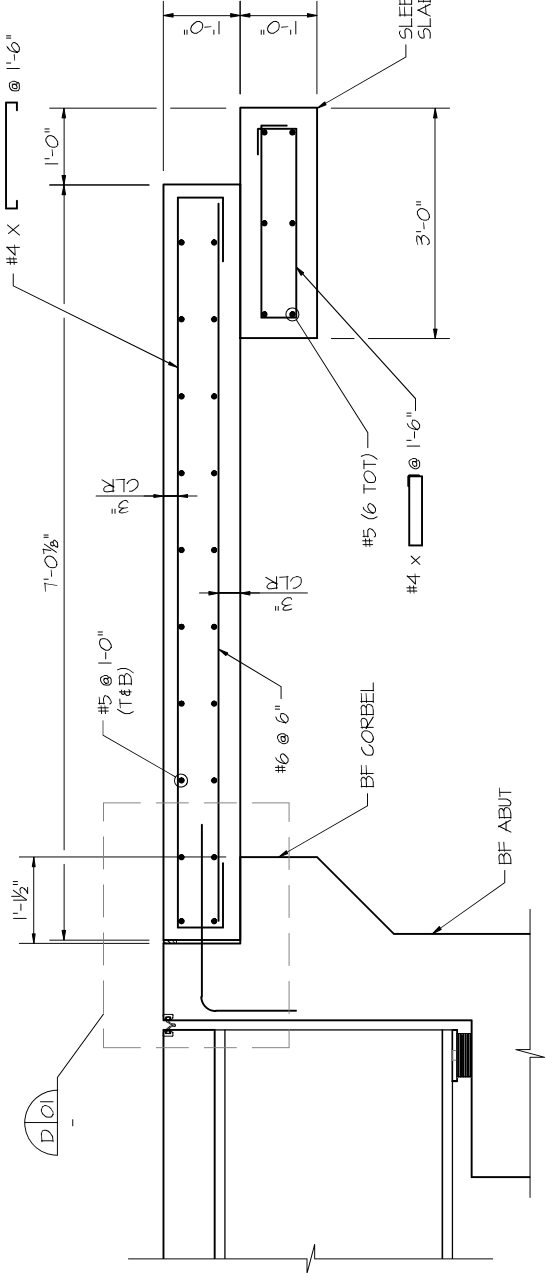
PROJECT TITLE	PROJECT LOCATION
FOREST LAKES BRIDGES	MONUMENT, CO
STRUCTURE:	
PIPE RAILING	
SHEET NO.	
B18	

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.



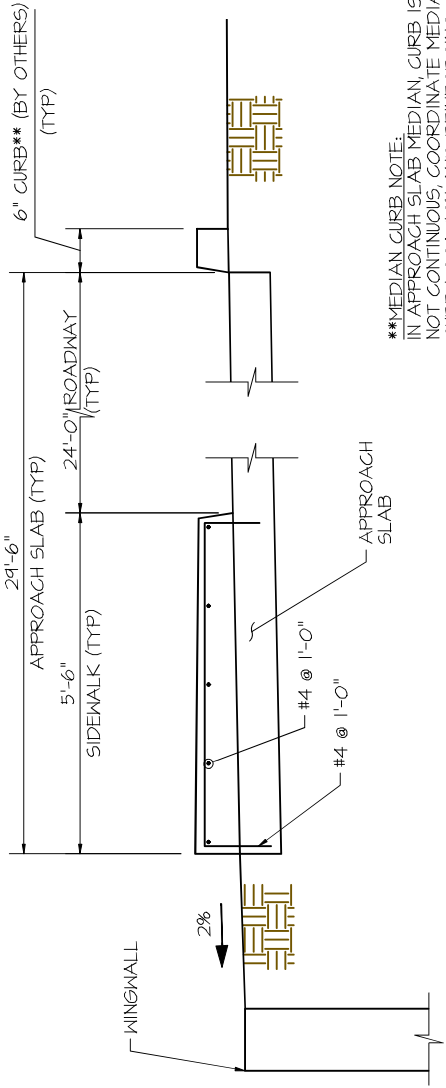
PLAN



SECTION S A

(PERPENDICULAR TO Q. ABUT)

DETAIL D O I

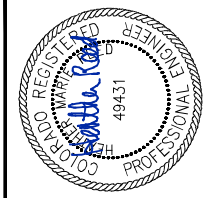


SECTION S B

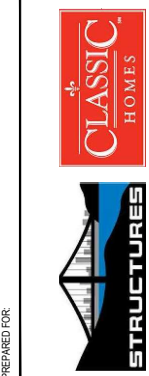
APPROACH SLAB REINFORCEMENT NOT SHOWN FOR CLARITY

**MEDIAN CURB NOTE:
IN APPROACH SLAB MEDIAN, CURB IS NOT CONTINUOUS. COORDINATE MEDIAN CURB LOCATION AND REINFORCING LOCATIONS WITH THE CIVIL SHEETS.

AS-BUILT/
CONSTRUCTED



07-12-22



PREPARED FOR:

BY:

DATE:

REVISED BEARING PAD DEPTH

1

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DESIGNED BY:

DRAWN BY:

PROJECT MANAGER:

DATE:

HMR

AJM

HMR

7/12/22

PROJECT TITLE

FOREST LAKES BRIDGES

PROJECT LOCATION

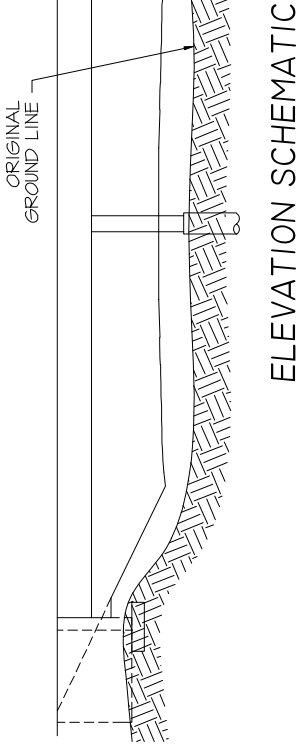
MONUMENT, CO

STRUCTURE:

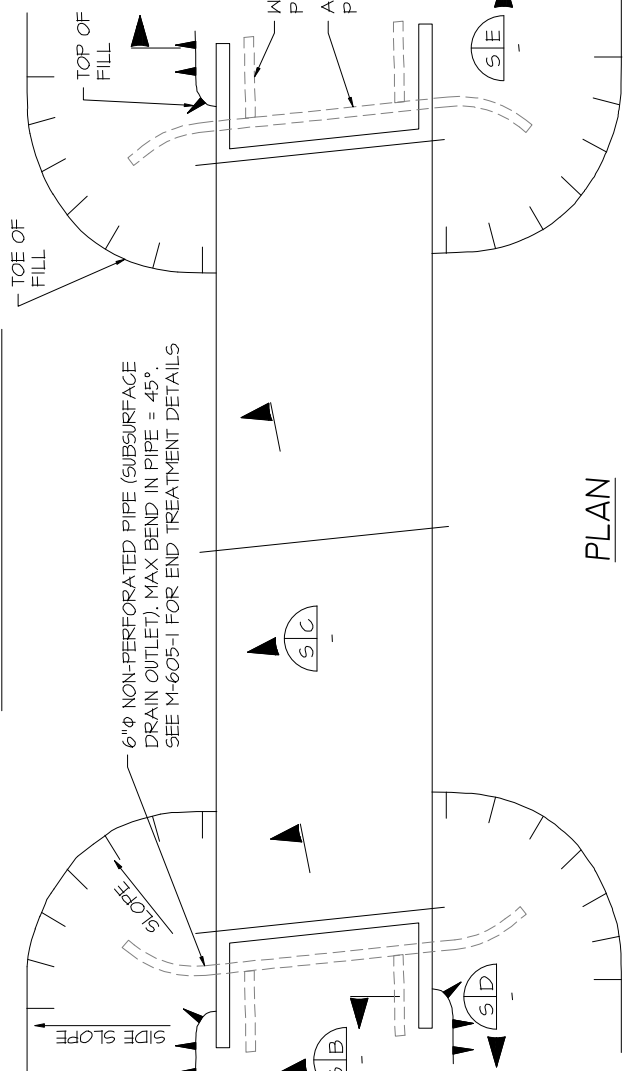
SHEET NO.

B19

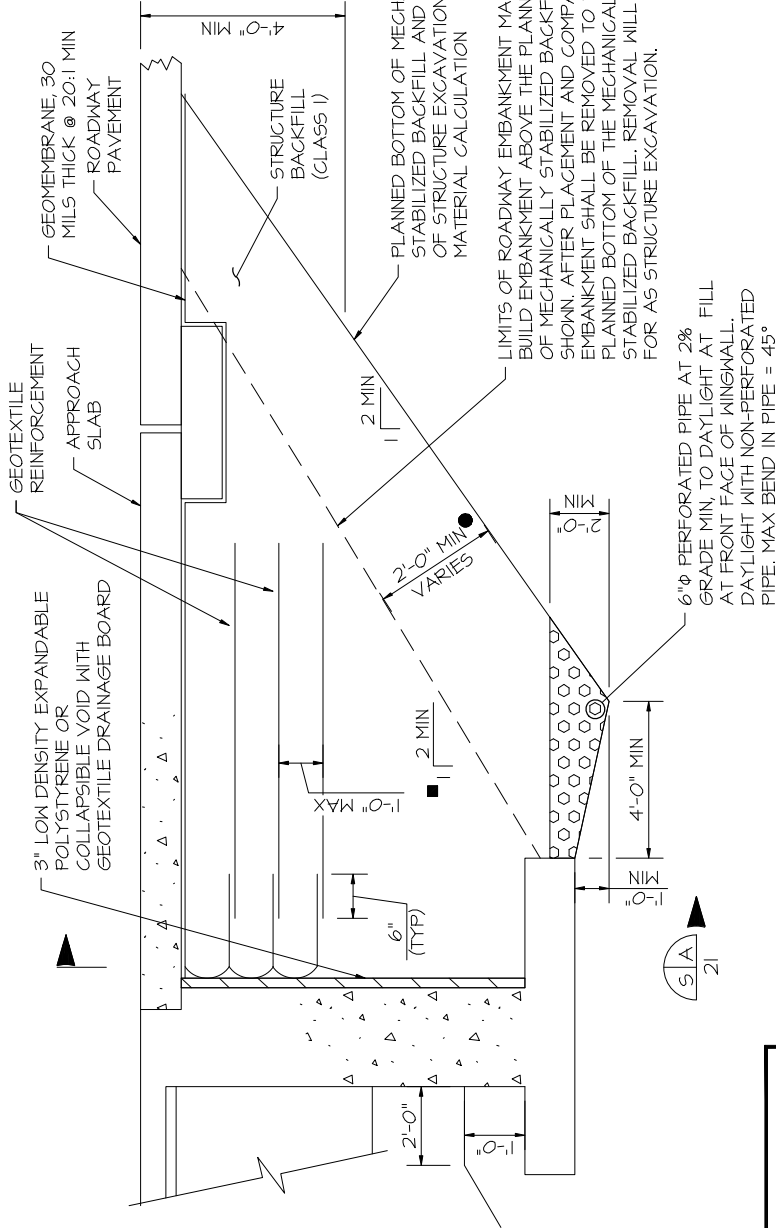
APPROACH SLAB



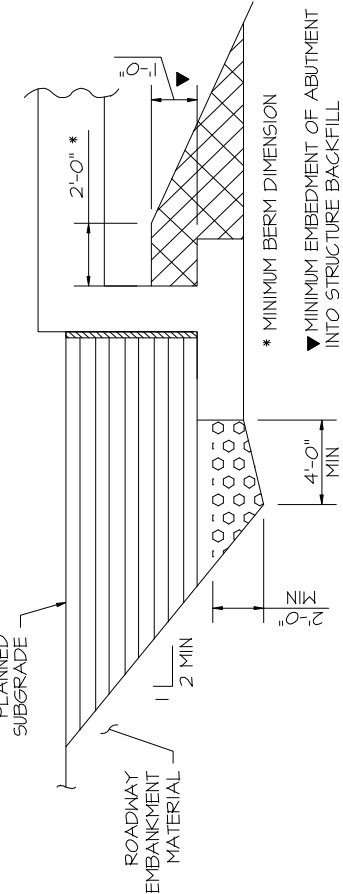
ELEVATION SCHEMATIC



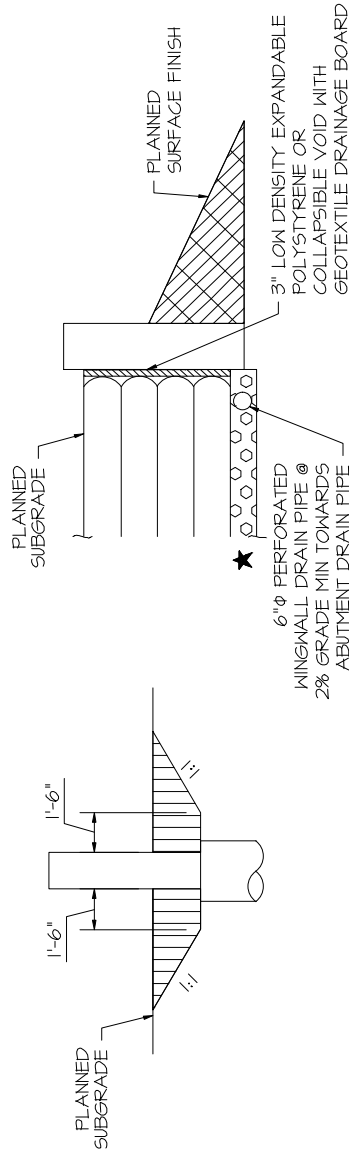
PLAN



SECTION PERPENDICULAR TO ABUTMENT



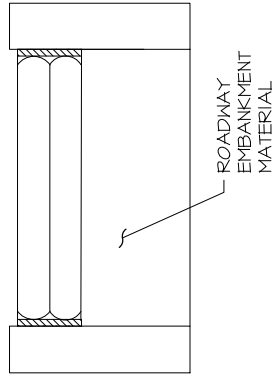
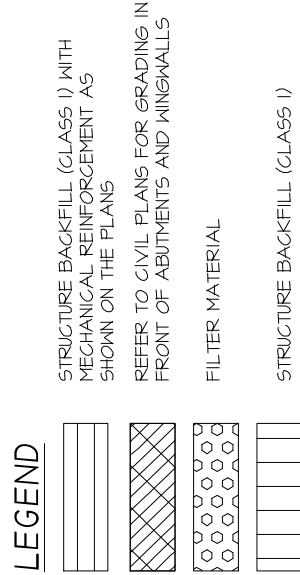
SECTION (BACKFILL) (S) (B)



SECTION (BACKFILL) (S) (C)

SECTION (BACKFILL) (S) (D)

SECTION (BACKFILL) (S) (E)



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 D4545.
- GEOTEXTILE REINFORCEMENT SHALL BE PLACED BY ALTERNATING MACHINE DIRECTION (MD) WITH GROSS 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 ϕ PERFORATED PIPE UNDERDRAIN AND SUBSURFACE DRAIN OUTLET (6 INCH ϕ 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.

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

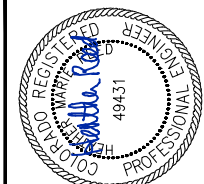
AS-BUILT/
CONSTRUCTED



PROJECT TITLE
FOREST LAKES BRIDGES

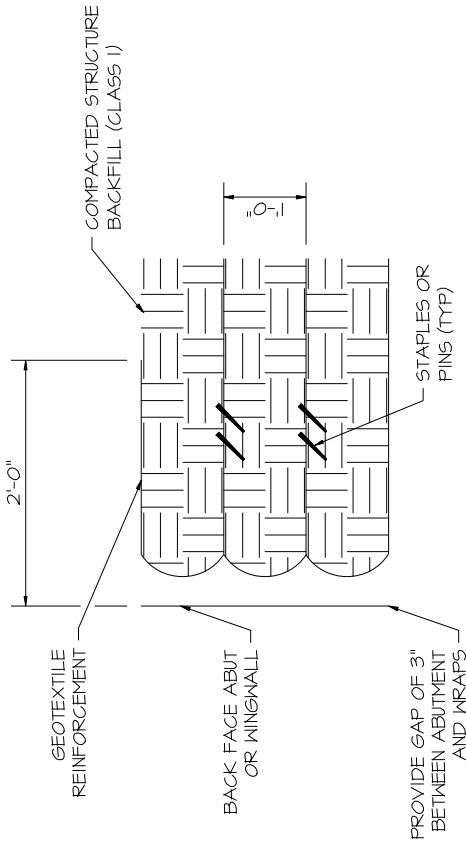
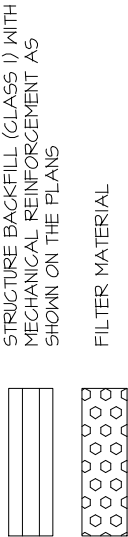
PROJECT LOCATION
MONUMENT, CO

BACKFILL DETAILS (1 OF 2)

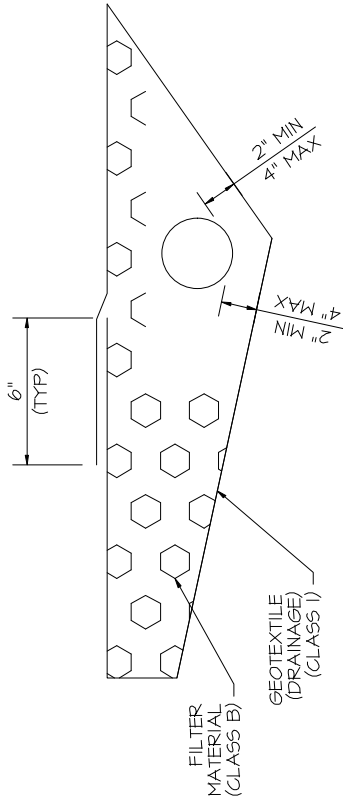


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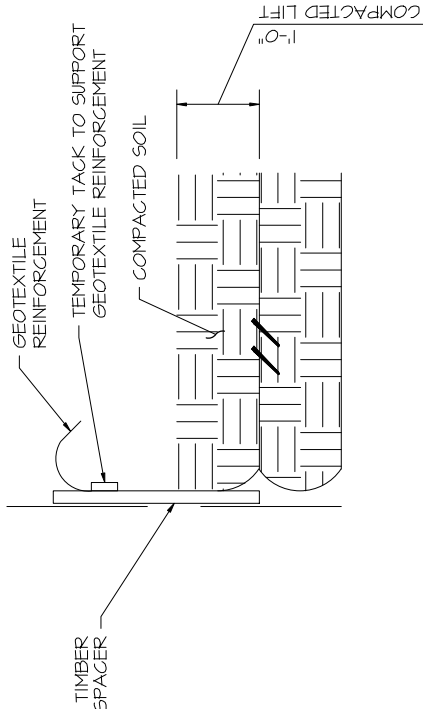
LEGEND



WRAP DETAIL



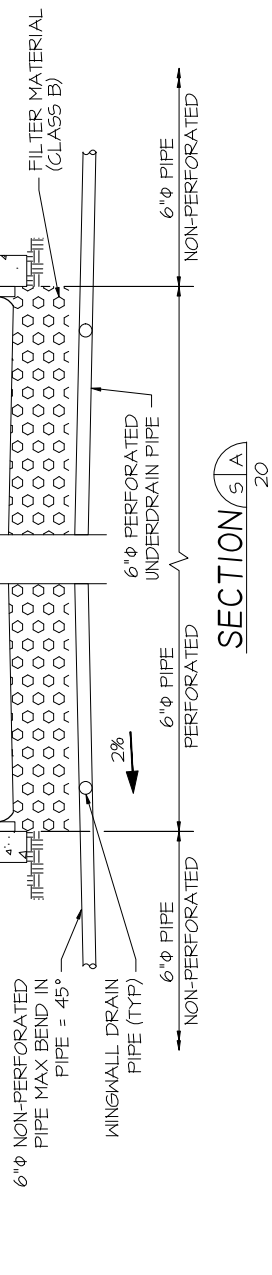
6 INCH PERFORATED PIPE UNDERDRAIN



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 D4545.
- GEOTEXTILE REINFORCEMENT SHALL BE PLACED BY ALTERNATING MACHINE DIRECTION (MD) WITH GROSS MACHINE DIRECTION (XD) FROM LAYER TO LAYER.
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- GEOCOMPOSITE DRAINAGE BOARD SHALL BE PLACED ON THE SOIL SIDE OF WALLS AND ABUTMENTS.

AS-BUILT/
CONSTRUCTED



07-12-22

REVISIONS		DATE	BY	PREPARED FOR:	DESIGNED BY:		PROJECT TITLE		PROJECT LOCATION	
1	REVISED BEARING PAD DEPTH	05-19-21	HMR		HMR		FOREST LAKES BRIDGES		MONUMENT, CO	
2						AJM	BACKFILL DETAILS (2 OF 2)		STRUCTJOB:	
3										
4						HMR				
5										
6									SHEET NO.	
7						7/12/22			B21	

