



MESA TOP DRIVE SOUTH BRIDGE  
ELITE PROPERTIES of AMERICA, INC

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CONTECH  
**CONTRACT**  
DRAWING



<div style="display: flex; justify-content: space-between;"> <div>  <p><b>NTECH<sup>®</sup></b> ENGINEERED SOLUTIONS LLC <a href="http://www.ContechES.com">www.ContechES.com</a> 19952 C-14 Drive, CO 80821</p> </div> <div> <p>USA-020-2047    303-342-9130    220-566-7144 FAX</p>  </div> </div>						<h1>100'-0" x 30'-0"</h1> <h2>MESA TOP DRIVE SOUTH BRIDGE</h2> <h3>ELITE PROPERTIES OF AMERICA, INC.</h3> <h3>FOUNTAIN, CO</h3>											
DATE:						7/24/2020											
DESIGNED: NBE						DRAWN: RDH											
CHECKED: NBE						APPROVED: NBE											
PROJECT No.: 621715						SEQUENCE No.: 030											
SHEET:						1 OF 11											

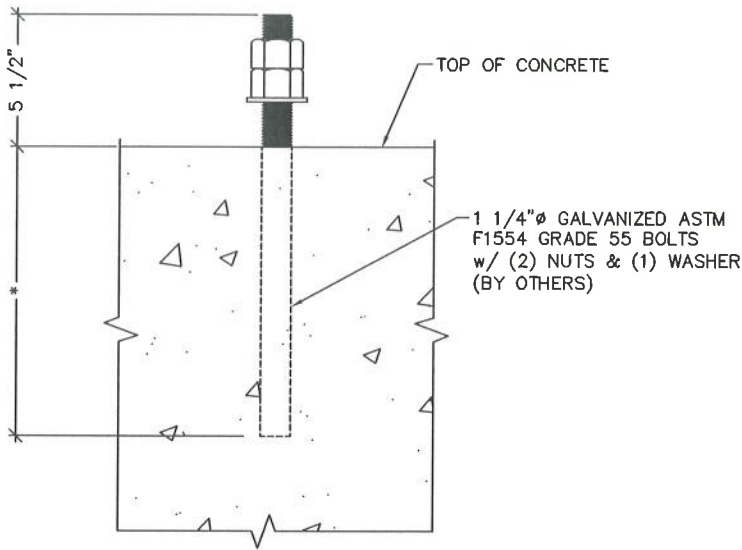


GENERAL NOTES:

1. CONTECH ENGINEERED SOLUTIONS HAS AISC QUALITY CERTIFIED BRIDGE FABRICATION - ADVANCED (MAJOR) WITH A FRACTURE CRITICAL AND SOPHISTICATED PAINT ENDORSEMENT AND CWB CERTIFIED TO CSA STANDARD W47.1 DIVISION 2.
2. DESIGN IS IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8th EDITION 2017.
3. MATERIALS (UNLESS NOTED OTHERWISE):
- a. STRUCTURAL STEEL: ASTM A588 WEATHERING STEEL
  - b. ELASTOMERIC PADS: GRADE 4, 60 DUROMETER
  - c. SHEET PILING: ASTM A929 (GALV)
  - STRUCTURAL BOLTS: ASTM F3125 GRADE A325 (TYPE 1)
  - d. GUARDRAIL BOLTS: ASTM A307 (GALV)
4. DESIGN LOADINGS:
- a. BRIDGE DEAD LOAD PLUS 37.5 FUTURE WEARING SURFACE.
  - b. VEHICLE LIVE LOAD: HL-93, MAX ADTT = 160
  - c. WIND LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.8:  
WIND SPEED = 115 MPH  
WIND EXPOSURE CATEGORY = C  
MAX HEIGHT OF STRUCTURE = 33 FT.
  - d. BRIDGE RAIL DESIGNED FOR TL-1 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS APPENDIX A13.2 (RAIL HAS NOT BEEN CRASH TESTED)
  - e. SEISMIC LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.10:  
SITE CLASS: D  
PGA = 0.058  
S<sub>s</sub> = 0.125  
S<sub>i</sub> = 0.035  
PERIOD OF BRIDGE = T<sub>m</sub> = 0.076 SEC
5. BRIDGE TO BE BUILT TO THE REQUIREMENTS OF AWS D1.5.
6. ALL SHOP WELDING SHALL USE THE GAS METAL ARC WELDING OR FLUX CORED ARC WELDING PROCESS.
7. FINISH:
- ALL EXPOSED SURFACES OF STEEL TO BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS NO. 1, SSPC-SP1 SOLVENT CLEANING. EXPOSED SURFACES OF STEEL SHALL BE DEFINED AS THOSE SURFACES SEEN FROM THE DECK OR FROM THE OUTSIDE (AND BOTTOM) OF THE STRUCTURE. ALL OTHER SURFACES TO HAVE STANDARD MILL FINISH.
8. ALL BOLTED CONNECTIONS ARE CONSIDERED TO BE PRETENSIONED OR SLIP-CRITICAL CONNECTIONS. ALL BOLTS ARE TO BE PRETENSIONED PER THE REQUIREMENTS OF SECTION 8.2 OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS BY RCSC.
9. ALL BOLTS, NUTS AND WASHERS SHALL BE FURNISHED IN THE AMOUNT OF 5% IN EXCESS OF THE NUMBER REQUIRED FOR EACH SIZE AND LENGTH.
10. IF BOLTS DO NOT SMOOTHLY ENGAGE UP TO SNUG-TIGHT, THERE MAY BE AN OBSTRUCTION WITHIN THE THREADS. THE BOLTS SHOULD BE REMOVED, THE THREADS ON THE BOLT AND NUT CLEANED AND RETAPPED IF NECESSARY TO ALLOW SMOOTH INSTALLATION OF THE BOLT. (IF APPLICABLE)
11. MAINTENANCE NOTE: CONTECH RECOMMENDS NOT APPLYING DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS TO ANY PART OF THE BRIDGE STRUCTURE. IF DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS ARE APPLIED TO ANY PART OF THE BRIDGE STRUCTURE, CONTECH WILL NOT BE RESPONSIBLE FOR ANY RESULTANT ACCELERATED CORROSION.

CONCRETE NOTES

1. BIG R BRIDGE IS RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE CONCRETE DECK. ALL ISSUES RELATED TO MATERIAL SUPPLY, TESTING AND INSTALLATION ARE OUTSIDE OF BIG R BRIDGE'S RESPONSIBILITY.
2. CONCRETE MIX DESIGN, MATERIALS, MIXING, PLACEMENT, FINISHING AND TESTING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 601 OF CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2017 EDITION.
3. MINIMUM MATERIAL REQUIREMENTS:
- a. CONCRETE: CLASS D OR H: f<sub>c</sub> = 4500 psi AT 28 DAY  
AIR CONTENT OF 5.5% +/- 1%  
UNIT WEIGHT OF 145 PCF MAX
  - b. REINFORCING: ASTM A615 GRADE 60 OR ASTM A775 FOR EPOXY COATING
4. THE USE OF EPOXY COATED REBAR, GALVANIZED REBAR, DECK SEALERS OR ANY OTHER FORM OF PROTECTION OF THE REBAR SHALL BE DONE AS NEEDED FOR LOCAL CONDITIONS OR AS REQUIRED PER THE PROJECT CONTRACT DOCUMENTS AND IS NOT THE RESPONSIBILITY OF BIG R BRIDGE.
5. THE CONTRACTOR MUST EXERCISE CARE TO CONTROL TRAFFIC AND STORAGE OF MATERIALS ON THE FORM DECK BEFORE CONCRETE IS PLACED.
6. LONGITUDINAL BARS MAY BE SPLICED IF REQUIRED. SPLICES SHALL BE STAGGERED EVERY OTHER LONGITUDINAL BAR. SPLICES SHALL BE LOCATED AT OR NEAR THE ONE-THIRD POINT OF THE BAY SPANS FROM FLOOR BEAM TO FLOOR BEAM. REQUIRED SPLICE LENGTHS ARE AS FOLLOWS:
- | BAR SIZE | NORMAL WEIGHT CONCRETE (145 PCF) | LIGHT WEIGHT CONCRETE (120 PCF) |
|----------|----------------------------------|---------------------------------|
| #4       | 29"                              | 35"                             |
| #5       | 36"                              | 43"                             |
| #6       | 43"                              | 52"                             |
| #7       | 50"                              | 60"                             |
| #8       | 57"                              | 69"                             |
| #9       | 70"                              | 85"                             |
7. STAY IN PLACE GALVANIZED FORM DECK SHALL BE USED ON THE BRIDGE. FORM DECK SHALL BE SHOP ATTACHED TO FLOOR BEAMS VIA SELF-DRILLING FASTENERS, WELDING OR POWER ACTUATED FASTENERS. LONGITUDINAL SHEET LAPS SHALL BE ATTACHED WITH SELF-DRILLING FASTENERS AT 36" MAXIMUM SPACING. THE ATTACHMENT OF THE FORM DECK TO THE FLOOR BEAMS IS ONLY NECESSARY TO KEEP THE FORM DECK IN PLACE DURING TRANSPORTATION AND DURING THE CONCRETE PLACEMENT. THE FORM DECK IS NOT REQUIRED FOR DIAPHRAGM ACTION OR COMPOSITE ACTION AND PROVIDES NO STRUCTURAL BENEFIT TO THE TRUSS OR THE DECK AFTER THE CONCRETE IS SET.
8. CONCRETE TO BE FINISHED WITH A TRANSVERSE BROOM FINISH.
9. THE USE OF GROOVED CONTRACTION JOINTS SHALL BE PUT IN PER THE PROJECT CONTRACT DOCUMENTS OR AT THE DISCRETION OF THE ENGINEER AND OWNER. IF CONTRACTION JOINTS ARE USED, THEY SHALL BE PLACED OVER THE CENTERLINE OF THE FLOOR BEAMS AS NEEDED.



ANCHOR BOLT DETAIL

**\*NOTE:**  
ANCHOR BOLTS ARE DESIGNED BY CONTECH FOR STEEL STRENGTH IN SHEAR AND TENSION OF THE ANCHOR BOLT ONLY. ALL DESIGN CONSIDERATIONS REGARDING CONCRETE BREAKOUT STRENGTH IN SHEAR AND TENSION, PULLOUT STRENGTH, CONCRETE SIDE-FACE BLOWOUT STRENGTH, CONCRETE PRYOUT STRENGTH, EMBEDMENT DEPTH, TYPE OF ANCHORAGE OR ANY OTHER CONCRETE FAILURE MODES ARE NOT CONSIDERED AND ARE NOT THE RESPONSIBILITY OF CONTECH. IF LARGER DIAMETER BOLTS ARE REQUIRED TO MEET ANY OF THESE REQUIREMENTS, THAT INFORMATION MUST BE PROVIDED TO CONTECH PRIOR TO BEGINNING ANY FABRICATION ON THE BRIDGE.

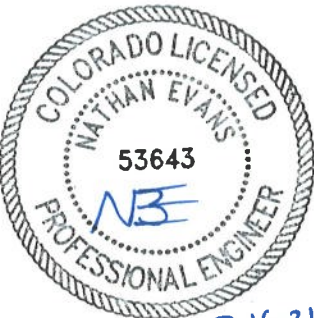
LIFTING WEIGHTS			
ITEM	QTY	UNIT WEIGHT (LBS)	TOTAL WEIGHT (LBS)
BRIDGE SECTION 1A	1	21,710	21,710
BRIDGE SECTION 1B	1	32,311	32,311
BRIDGE SECTION 2A	1	31,920	31,920
BRIDGE SECTION 2B	1	47,349	47,349
LOOSE ITEMS	-	-	18,000
TOTAL BRIDGE WEIGHT:			151,290

	BEARING REACTION IN KIPS	MAX AT INTERIOR STRINGER			MAX AT EXTERIOR STRINGER			TOTAL AT ABUTMENT		
		P	H	L	P	H	L	P	H	L
HL-93	DEAD LOAD (DC)	53.78			39.77			240.89		
	WEARING SURFACE LOAD (DW)	13.44			34.42			109.14		
	VEHICLE LOAD (LL)	90.43			68.83			193.83		
	VEHICLE LOAD + DYNAMIC LOAD ALLOWANCE (LL+IM)	104.99			79.91			236.87		
	WIND LOAD (WS)	-30.00*	3.00			3.00		-30.00*	15.00	
	THERMAL LOAD (TU)			13.32			13.32			66.59
	BREAKING FORCE (BR)			7.20			7.20			36.00
	SEISMIC LOAD (EQ)		13.36	26.72		13.36	26.72		66.79	133.59

"P": VERTICAL LOAD  
"H": HORIZONTAL LOAD TRANSVERSE TO THE STRUCTURE  
"L": HORIZONTAL LOAD LONGITUDINAL TO THE STRUCTURE  
\* WIND LOAD UPLIFT ASSUMES FULL 20 PSF TO DECK  
AREA IS APPLIED TO ONE STRINGER LINE

CONTECH  
CONTRACT  
DRAWING

EPC 11/28/21



7-16-21



100'-0" x 30'-0"

MESA TOP DRIVE SOUTH BRIDGE

ELITE PROPERTIES OF AMERICA, INC

FOUNTAIN, CO

CONTECH

ENGINEERED SOLUTIONS LLC

www.ContechES.com

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800-326-2047 320-345-9120 320-566-3148 FAX

DATE:

7/24/2020

DESIGNED:

NBE

DRAWN:

RDH

CHECKED:

NBE

APPROVED:

NBE

PROJECT No:

621715

SEQUENCE No:

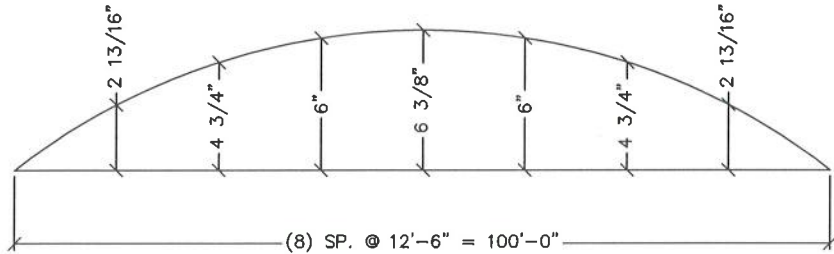
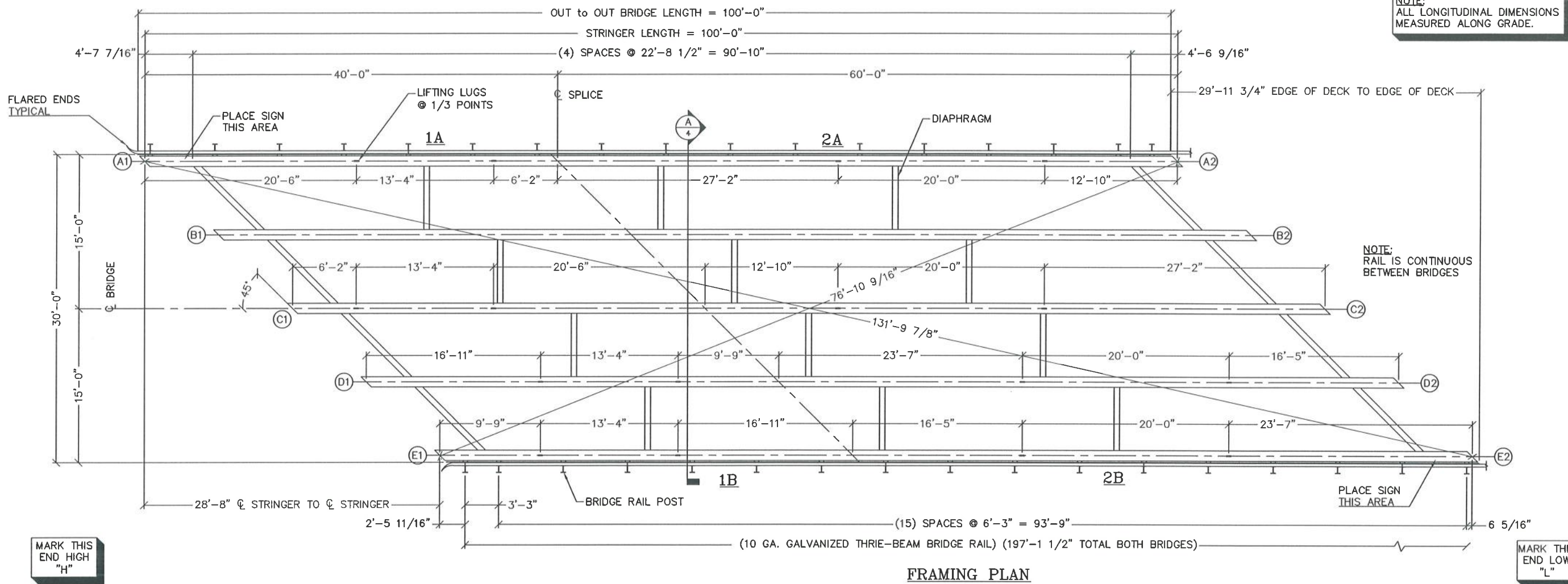
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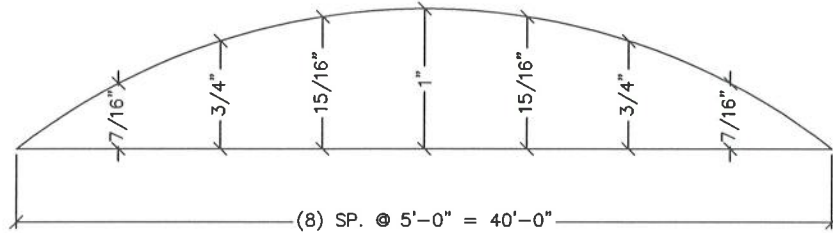
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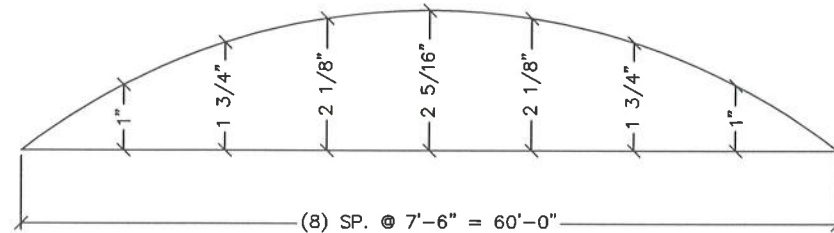
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CAMBER DETAIL  
(FULL BRIDGE)



CAMBER DETAIL  
(STRINGER SECTION 1)



CAMBER DETAIL  
(STRINGER SECTION 2)

MEMBERS	DESCRIPTION
GIRDER	W 36x232
DIAPHRAGM	W 21x44
POST BLOCK	W 14x22
SIDE DAM	PL 1/4"

BUILD 4 AS SHOWN  
621715-30  
621715-40  
621715-50  
621715-60

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100'-0" x 30'-0"  
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BIG R  
BRIDGE

DATE:		7/24/2020	
DESIGNED:		DRAWN:	
NBE		RDH	
CHECKED:		APPROVED:	
NBE		NBE	
PROJECT No.:		SEQUENCE No.:	
621715		030	
SHEET:			

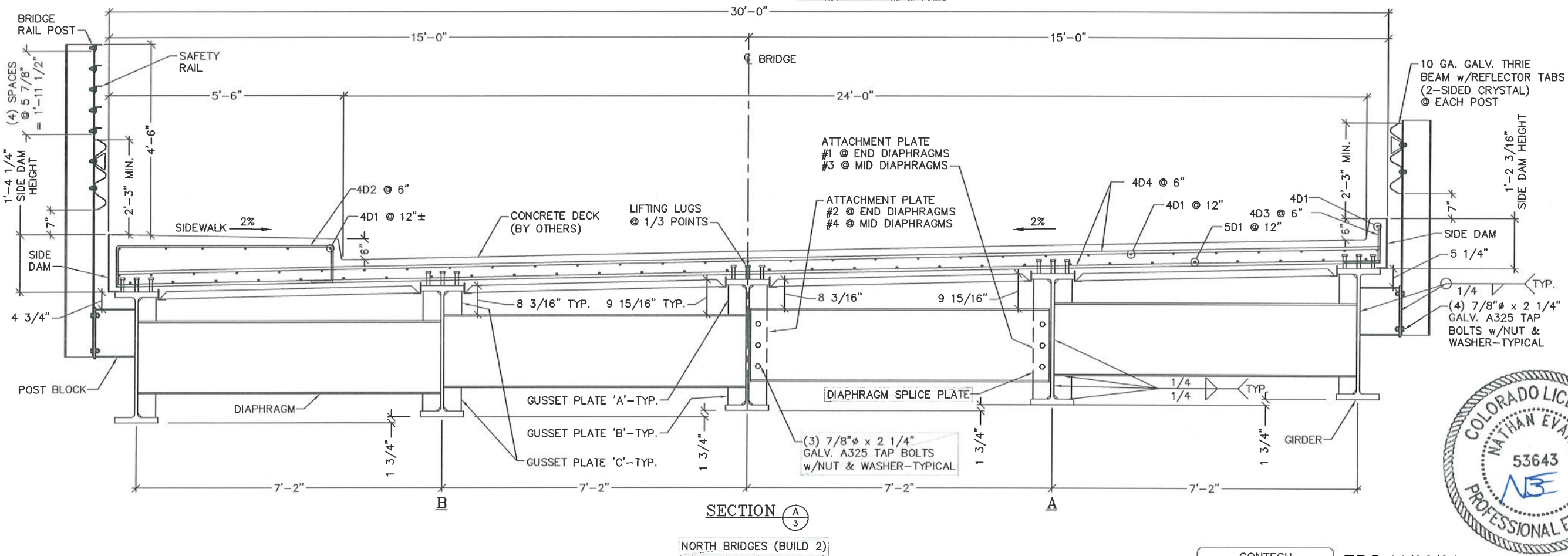
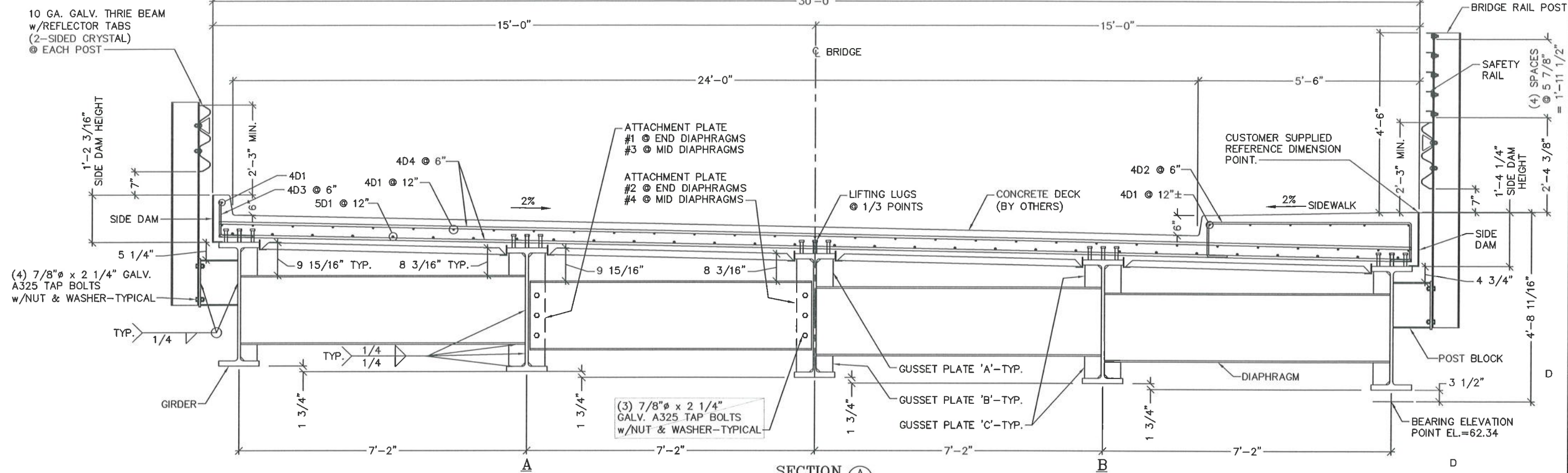
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APPROVED: NBE  
PROJECT No: 621715  
SEQUENCE No: 030  
SHEET: 4 OF 11

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21

7-16-2

ASCE CERTIFIED FABRICATOR



**BIGGER**  
BIGGER

SHEET: 5 OF 11

100'-0" x 30'-0"  
MESA TOP DRIVE SOUTH BRIDGE  
LITE PROPERTIES of AMERICA, INC  
FOUNTAIN, CO

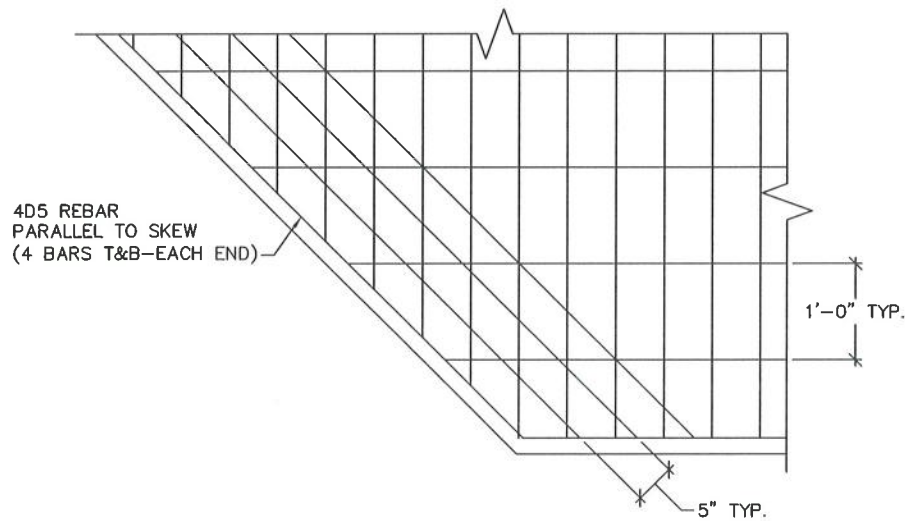
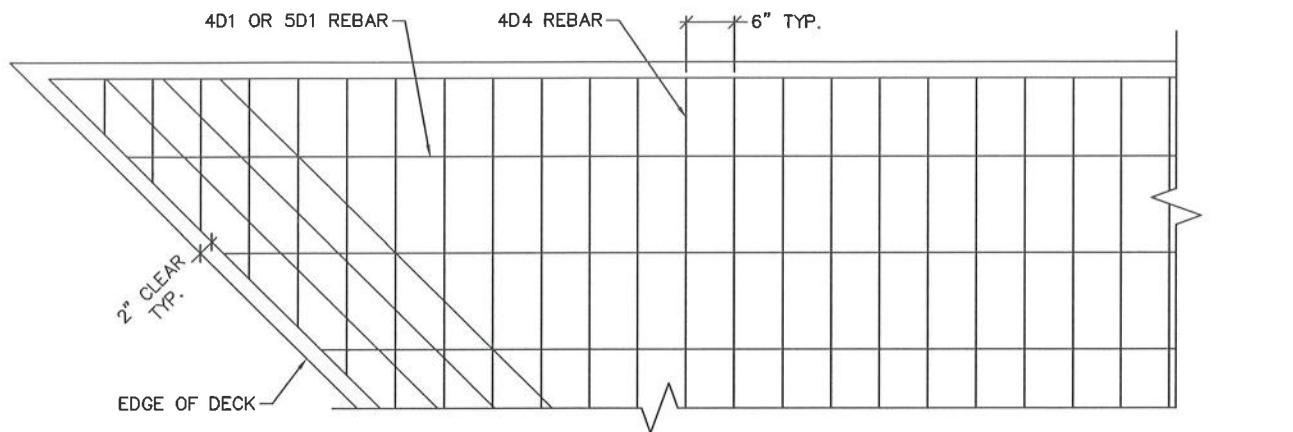
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MARK	DATE	REVISION DESCRIPTION	BY				

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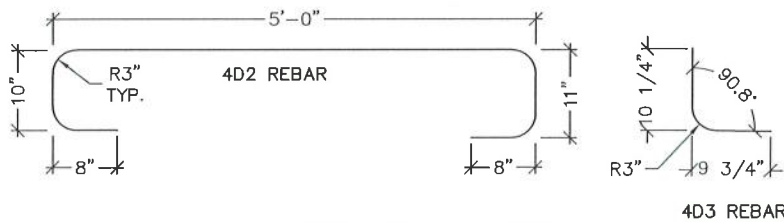




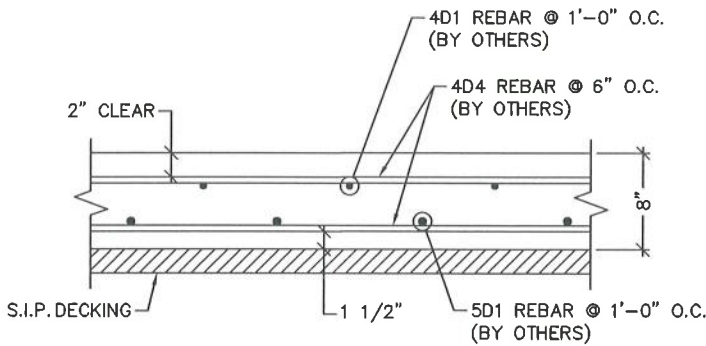
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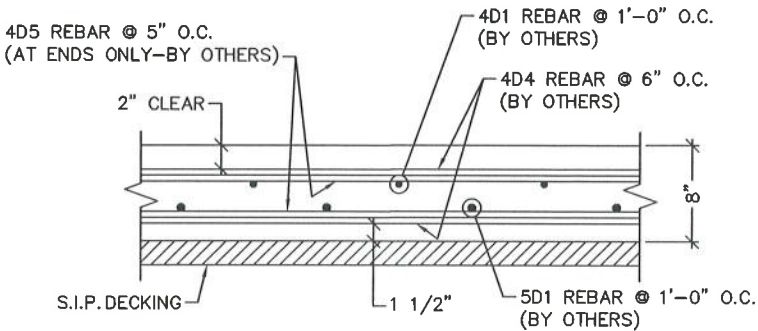
END REBAR LAYOUT



BENT REBAR DETAILS



TYPICAL DECK SECTION



TYPICAL DECK SECTION AT ENDS

- NOTES:  
1. ALL CONCRETE & REBAR BY OTHERS  
2. ALL QUANTITIES ARE FOR ONE BRIDGE

REBAR SCHEDULE				
MARK	TYPE	QUANTITY	LENGTH	REMARKS
4D1	STRAIGHT	38	99'-6"	EPOXY*
4D2	BENT	202	8'-1"	EPOXY
4D3	BENT	202	1'-8"	EPOXY
4D4	STRAIGHT	405	29'-7"	EPOXY
4D5	STRAIGHT	16	41'-11"	EPOXY
5D1	STRAIGHT	31	99'-6"	EPOXY*

\* SEE CONCRETE NOTE 6 ON PG. 2 FOR SPLICING

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7-16-21



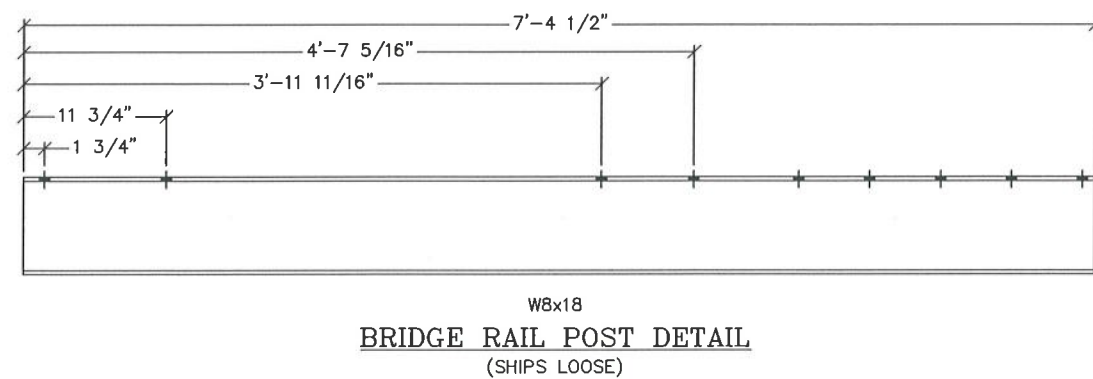
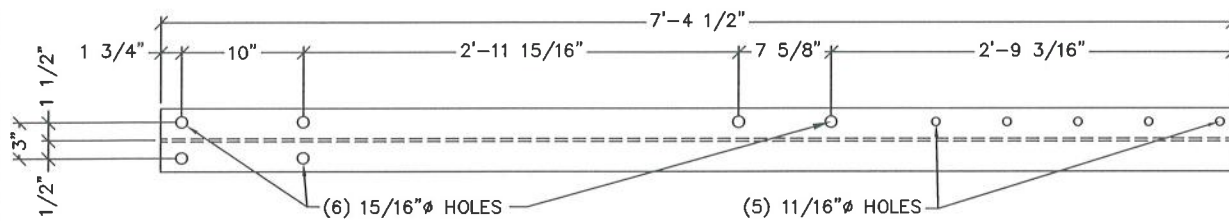
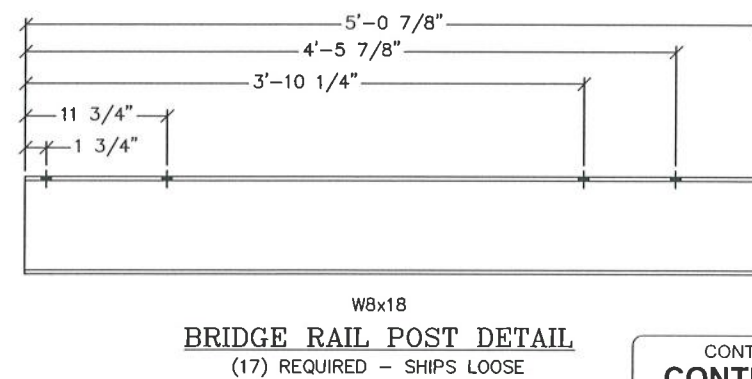
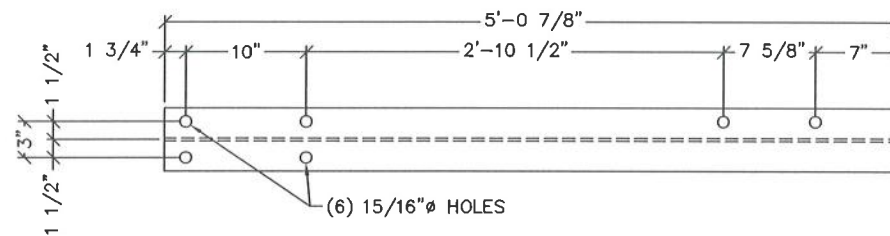
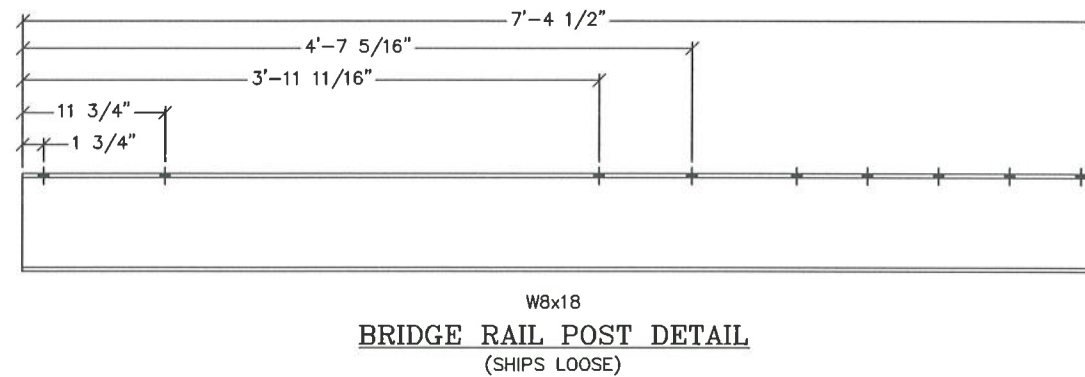
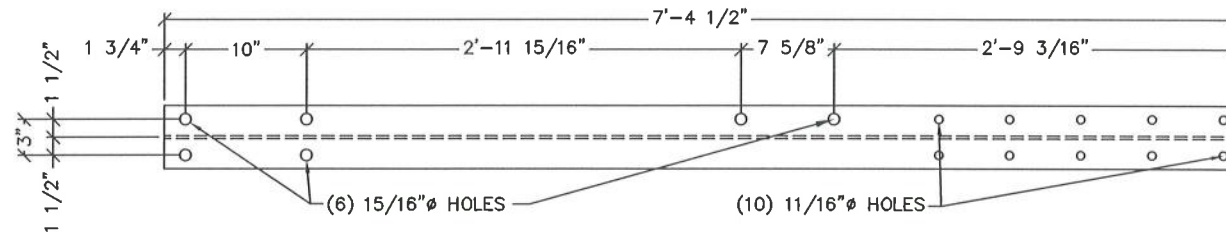
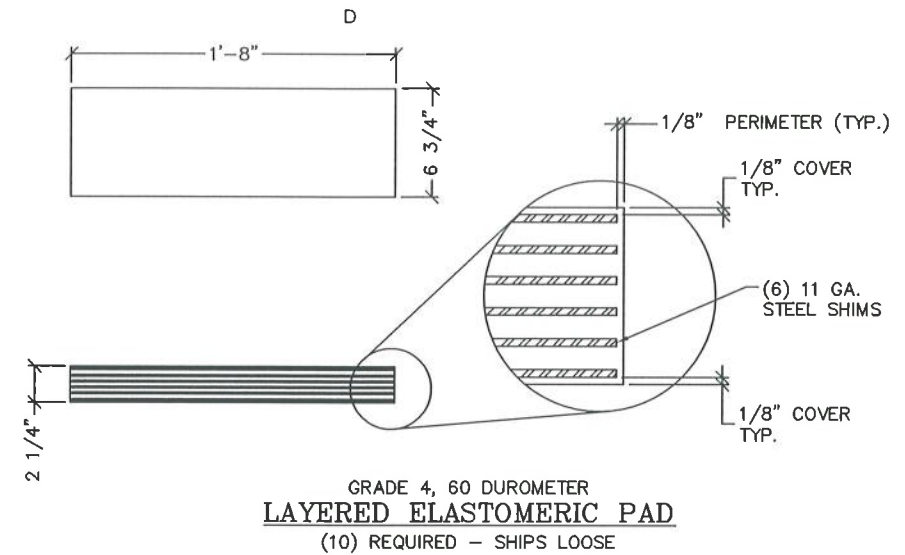
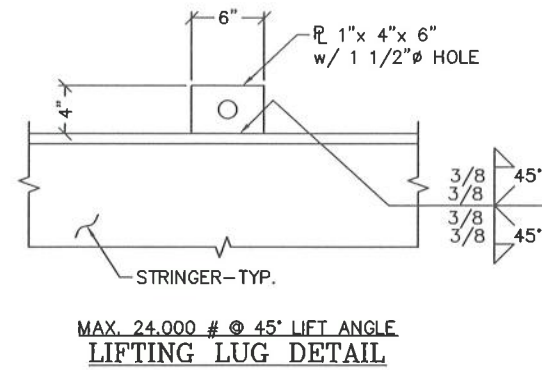
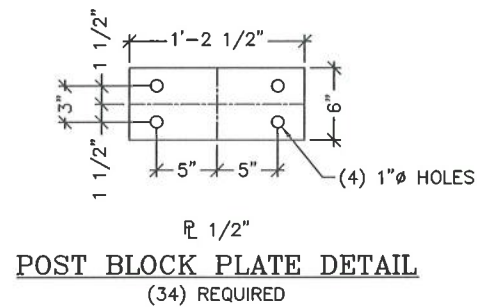
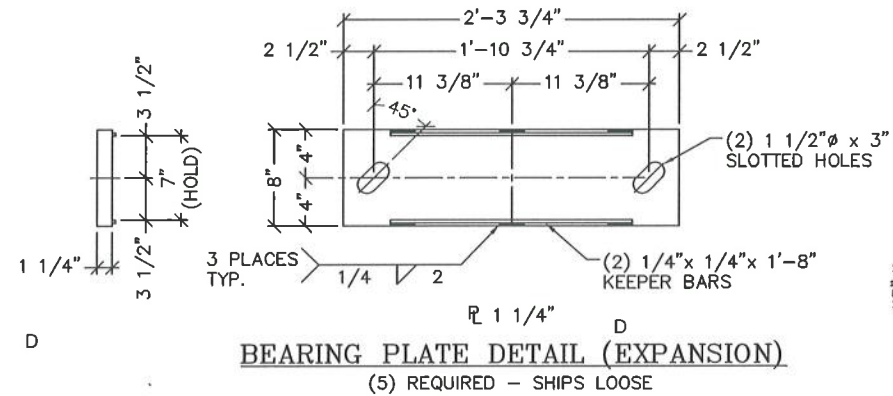
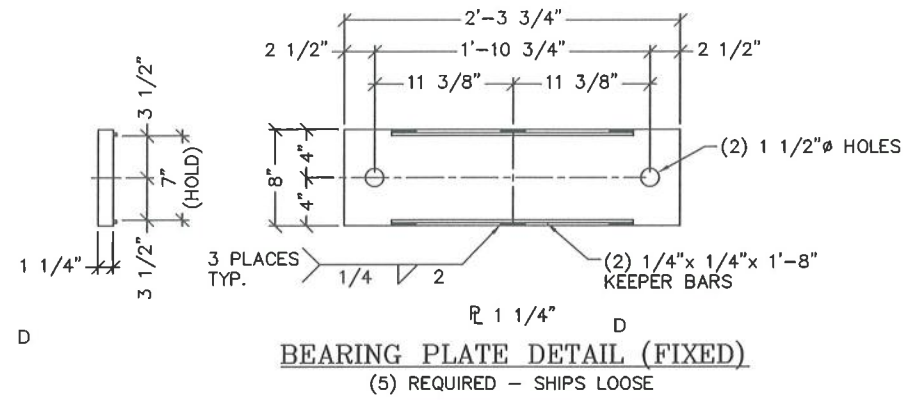
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FOUNTAIN, CO



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SHEET: 7	OF 11


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7/16/2021	DATE
E0	MARK





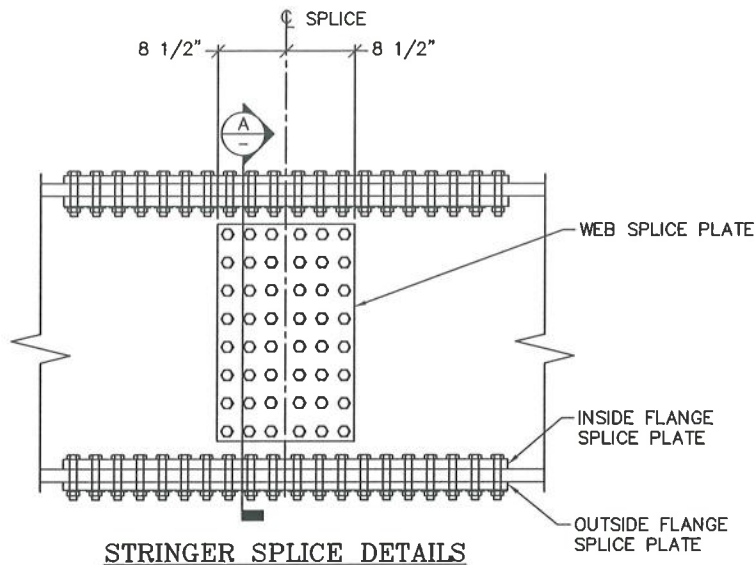
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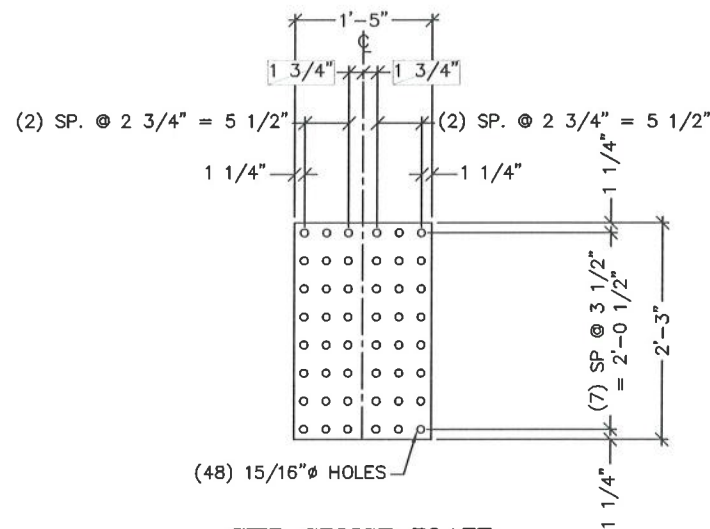
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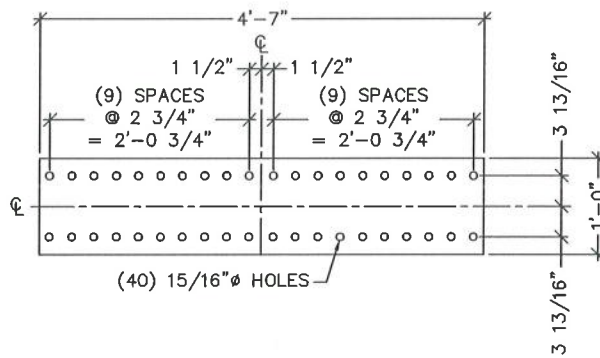
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STRINGER SPLICE DETAILS

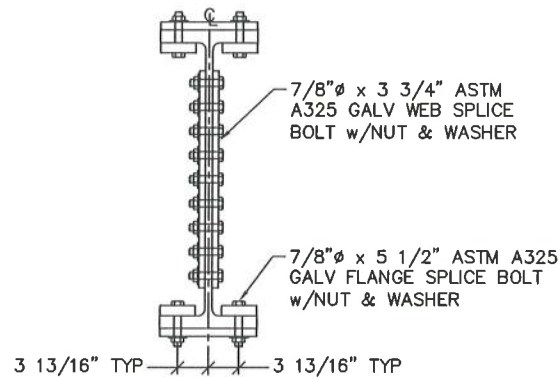


WEB SPLICE PLATE



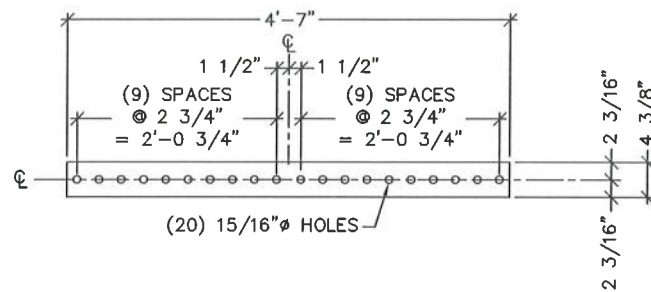
OUTSIDE TOP & BTM FLANGE SPLICE PLATE

SHOP NOTE:  
15/16"Ø HOLES IN STRINGER  
FLANGE AND WEB



SECTION A

CONTRACTOR NOTE:  
FIELD WELDING TO BE  
PERFORMED BY A WELDER  
CERTIFIED PER AWS D1.5  
BRIDGE WELDING CODE.



INSIDE TOP & BTM FLANGE SPLICE PLATE

MEMBERS	QTY	THICKNESS	SIZE	HOLES	BOLTS w/NUT & WASHER	BOLT QTY
WEB SPLICE PLATE	10	3/4"	1'-5" x 2'-3"	15/16"	7/8"Ø x 3 3/4" A325 GALV	240
INSIDE BTM FLANGE SPLICE PLATE	10	1 1/4"	4 3/8" x 4'-7"	15/16"	-	-
OUTSIDE BTM FLANGE SPLICE PLATE	5	1"	1'-0" x 4'-7"	15/16"	7/8"Ø x 5 1/2" A325 GALV	200
INSIDE TOP FLANGE SPLICE PLATE	10	1 1/4"	4 3/8" x 4'-7"	15/16"	-	-
OUTSIDE TOP FLANGE SPLICE PLATE	5	1"	1'-0" x 4'-7"	15/16"	7/8"Ø x 5 1/2" A325 GALV	200



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CONTRACT  
DRAWING

EPC  
11/28/21



100'-0" x 30'-0"

MESA TOP DRIVE SOUTH BRIDGE

ELITE PROPERTIES of AMERICA, INC

FOUNTAIN, CO

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ENGINEERED SOLUTIONS LLC  
www.ContechES.com  
1990 C & E Dr., Greeley, CO 80631  
800-326-3047 320-345-1126 320-564-3148 FAX

**BIG R**  
BRIDGE

DATE: 7/24/2020

DESIGNED: NBE DRAWN: RDH

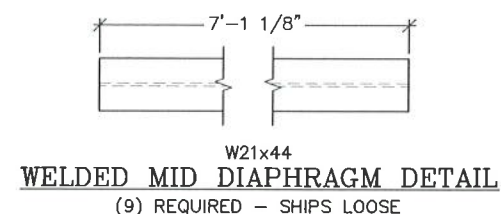
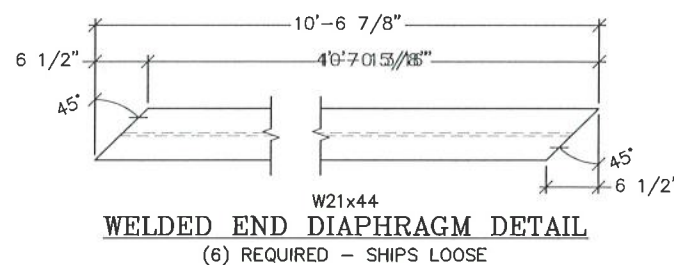
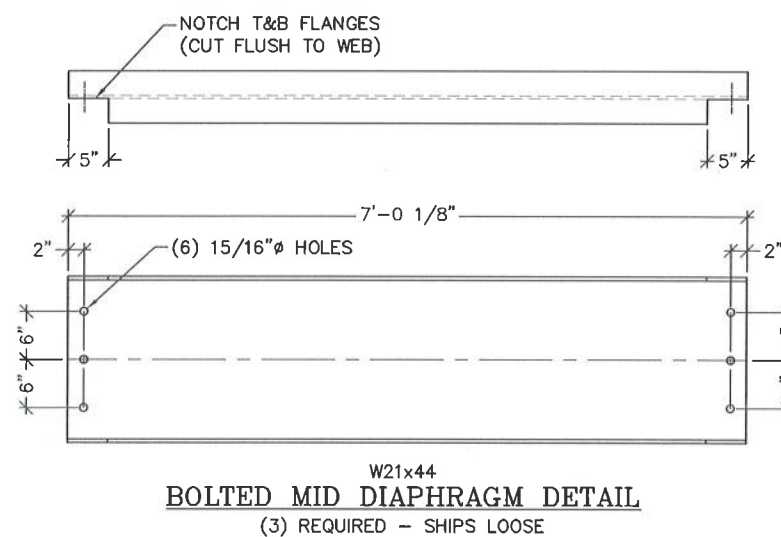
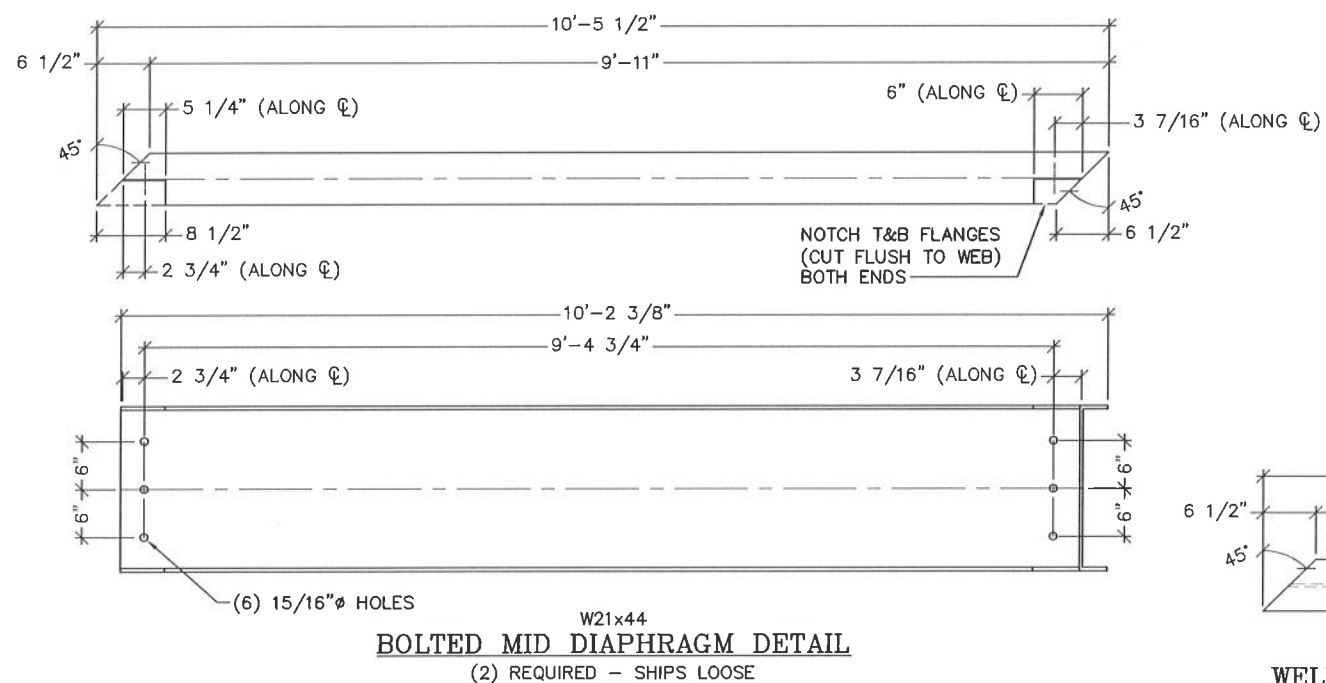
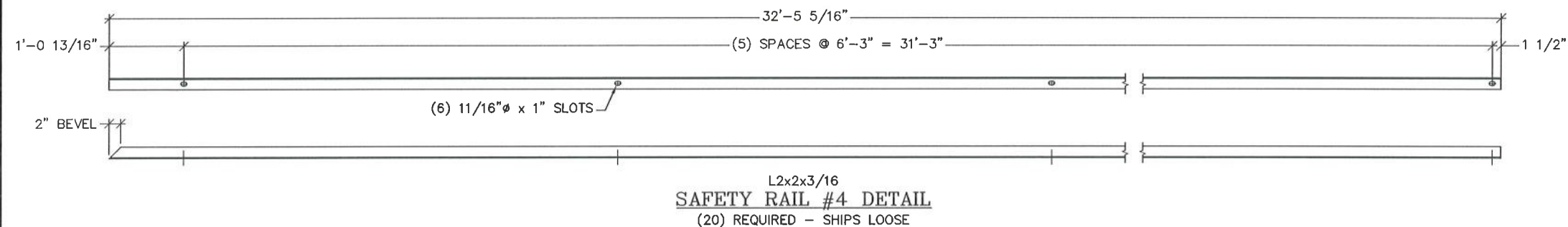
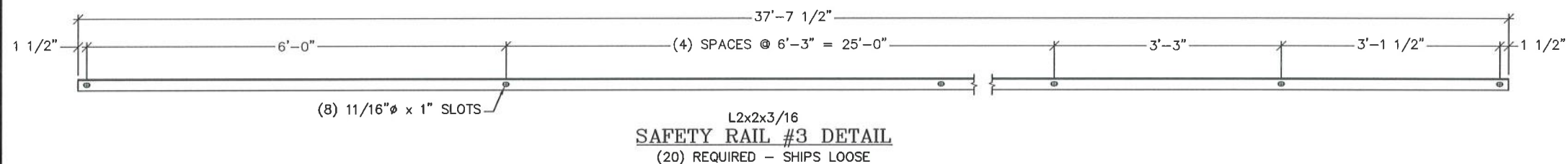
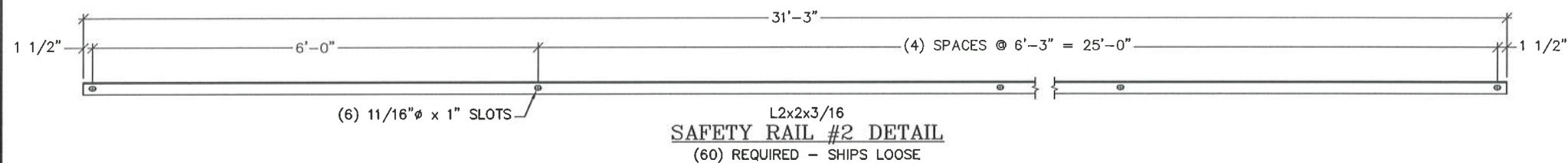
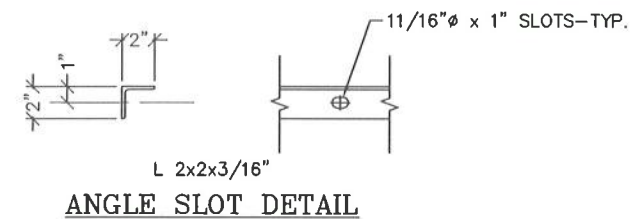
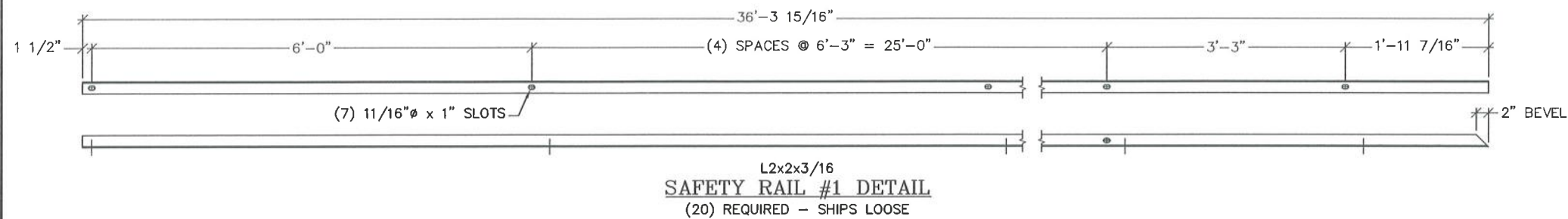
CHECKED: NBE APPROVED: NBE

PROJECT No.: 621715 SEQUENCE No.: 030

SHEET: 9 OF 11

CONTECH ENGINEERED SOLUTIONS LLC

7-16-21



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100'-0" x 30'-0"  
MESA TOP DRIVE SOUTH BRIDGE  
ELITE PROPERTIES OF AMERICA, INC  
FOUNTAIN, CO

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**BIG R**  
B I C

DATE:		7/24/2020	
DESIGNED:		DRAWN:	
NBE		R	
CHECKED:		APPROVED:	
NBE		M	
PROJECT No.:		SEQUENCE:	
621715		C	
SHEET:			

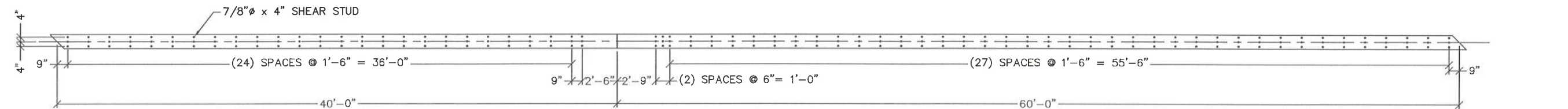
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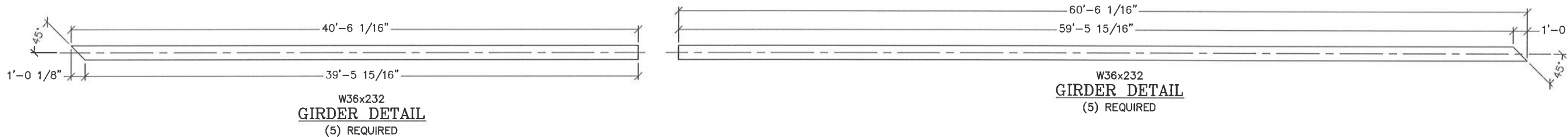
Conquest Engineering Solutions LLC  
10000 Highway 100, Suite 100  
Houston, Texas 77055  
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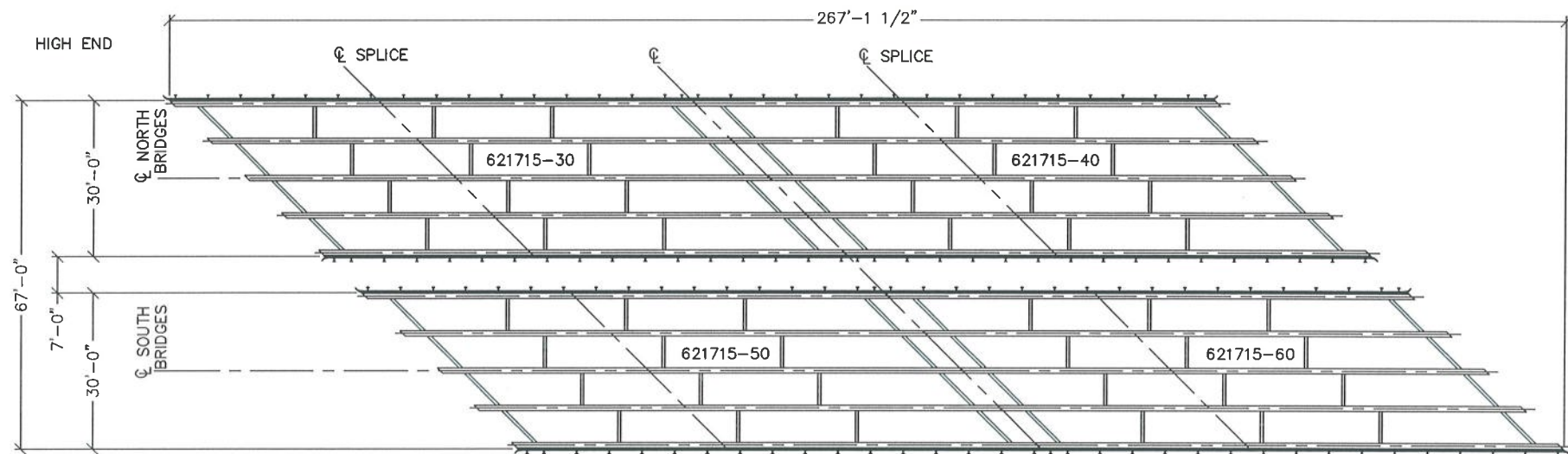


SHEAR STUD DETAIL



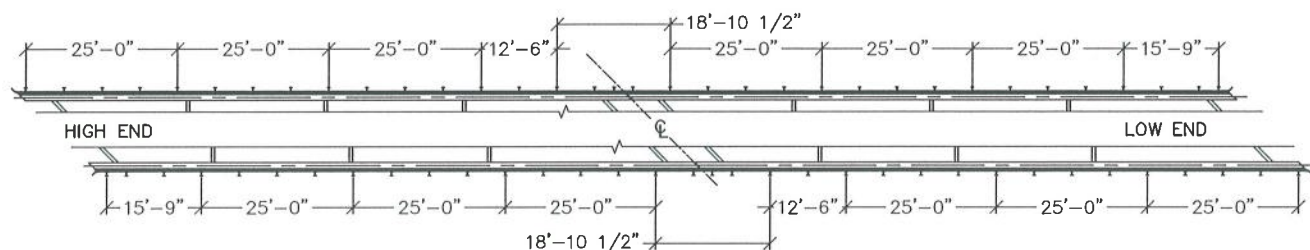
W36x232  
GIRDER DETAIL  
(5) REQUIRED

W36x232  
GIRDER DETAIL  
(5) REQUIRED

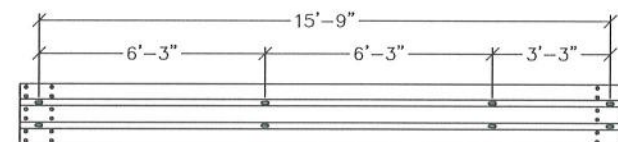


PROJECT LAYOUT

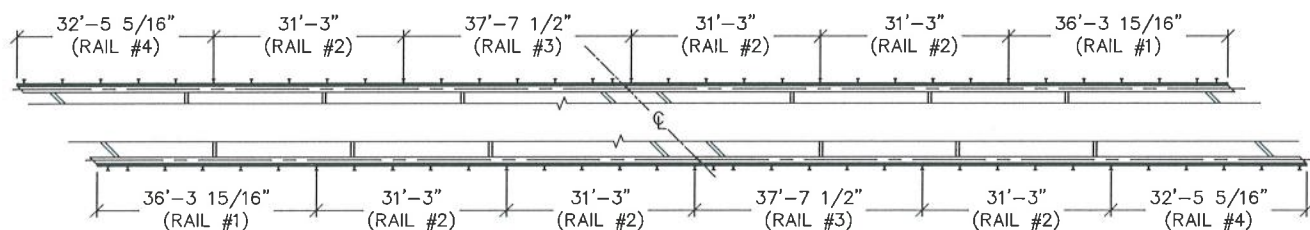
LOW END



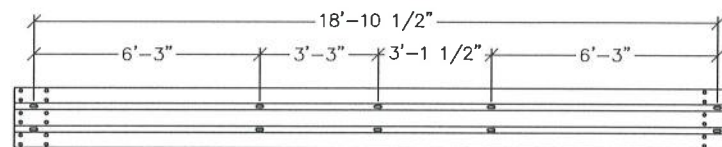
THRIE-BEAM BRIDGE RAIL LAYOUT  
TYPICAL 621715-30 & 621715-40  
TYPICAL 621715-50 & 621715-60



END THRIE-BEAM RAIL LAYOUT  
(TYPICAL AT SHORT CORNER OF EACH BRIDGE)  
(4) REQUIRED



ANGLE SAFETY RAIL LAYOUT  
TYPICAL 621715-30 & 621715-40  
TYPICAL 621715-50 & 621715-60



THRIE-BEAM RAIL  
AT BRIDGE GAP LAYOUT  
(TYPICAL BETWEEN 621715-30 & 621715-40)  
(TYPICAL BETWEEN 621715-50 & 621715-60)  
(4) REQUIRED

NOTE: ALL RAIL SECTIONS NOT SHOWN  
ARE STANDARD MILL PUNCH.

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7-16-21

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upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Contech immediately. Contech shall not be responsible for any incomplete or inaccurate information supplied by the owner.				REVISION DESCRIPTION	
				APPROVED FOR CONSTRUCTION	
				DATE	
				MARK	
				E0	
				7/16/2021	
				TIF	
				BY	

100'-0" x 30'-0"  
MESA TOP DRIVE SOUTH BRIDGE  
ELITE PROPERTIES of AMERICA, INC  
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www.conteches.com  
1990 S 66 Green, CO 80521  
800-228-2027 323-345-7125 320-555-148 FAX

BIG R  
BRIDGE

DATE: 7/24/2020	
DESIGNED: NBE	DRAWN: RDH
CHECKED: NBE	APPROVED: NBE
PROJECT No.: 621715	SEQUENCE No.: 030
SHEET: 11 OF 11	