

RECEIPT OF ADDENDUM

I received addendum No. # 01 for April 15, 2021
Barton Co Bridge #03000091 BRO-B006(21)
Project Job # 4152

This addendum involves 11 pages including this sheet.

Vendor's Name

Vendor's Address

Signature / Date

**Return completed acknowledgment to
Great River Engineering ASAP**

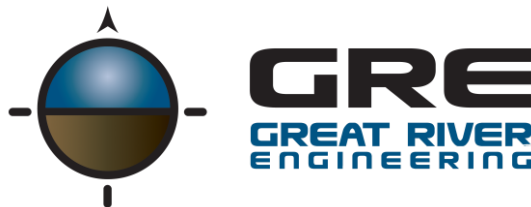
Email Back to:

Secretary@greatriv.com

or

Fax # 417-886-7591

Attention: Karissa Ostroski



Addendum NO 1

ISSUED BY: *Great River Engineering
2826 S. Ingram Mill Rd.
Springfield, Missouri 65804
(417) 886-7171
(417) 886-7591 --- FAX*

DATE: April 15, 2021

FOR: **Barton County BRO-B006(21)**

The attached revisions hereby supersede any and all data with which they may conflict as indicated on the Drawings, Specifications and related documents issued in the original set. Each trade is responsible for changes in its work caused by changes in the work of other trades. This addendum is a part of and shall be attached to the original set of plans and specifications for the work.

Notification: There have been no changes or addendums prior to this addendum.

Changes to:

Construction Drawings

Sheet C3- Water gap details have been updated on this sheet.

Sheet S2- Reinforcing Steel quantities have been updated and a note was removed.

Sheet S3- Reinforcing Steel (Bridges) quantity has been updated.

Sheet S5- A leader has been added to Section B-B showing location of H103 steel.

Sheet S6- Reinforcing Steel (Bridges) quantity has been updated.

Sheet S8- A leader has been added to Section B-B showing location of H103 steel.

Sheet S15- Bill of Reinforcing has been updated to reflect black steel in substructure and exclude slab steel from REINFORCING STEEL (BRIDGES) quantity.

Contract Documents and Specifications

Bid Form

Bid Item 24 on the Bid Form has been revised to read "CLASS B CONCRETE (SUBSTRUCTURE)"

Bid Item 27 on the Bid Form, "Reinforcing Steel (Bridges)", has an updated quantity

Clarifications:

Question: Is it the responsibility of the contractor to install the 10x42 HP as shown and is that work subsidiary to the Bid Item new 6-Strand Barbed Wire Fence?

Answer: See updated Sheet C3 for details. Contractor to install water gap posts (6" diameter steel posts) and property owner is to install final cable and panels. 6" steel posts and installation are considered subsidiary to Bid Item 8, "6-Strand Barbed Wire Fence".

Question: What is the required hammer energy for steel piles?

Answer: MoDOT guides that minimum hammer energy is no longer provided on plans; from structural calculations, Minimum Hammer Energy is 11,200 ft-lb. This is to be used for guidance purposes only and final required hammer energy should be confirmed by the contractor.

There are no other clarifications or changes included with this Addendum.





Barton County
 Bridge #03000091
 BRO-B006(21)

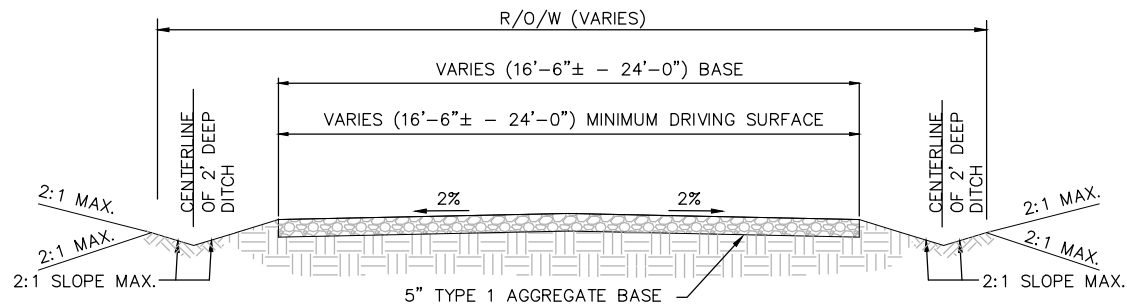
CONTRACTOR NAME: _____
 ADDRESS LINE 1: _____
 ADDRESS LINE 2: _____
 PHONE NUMBER: _____
 EMAIL: _____
 DATE: _____

ITEMIZED BID FORM

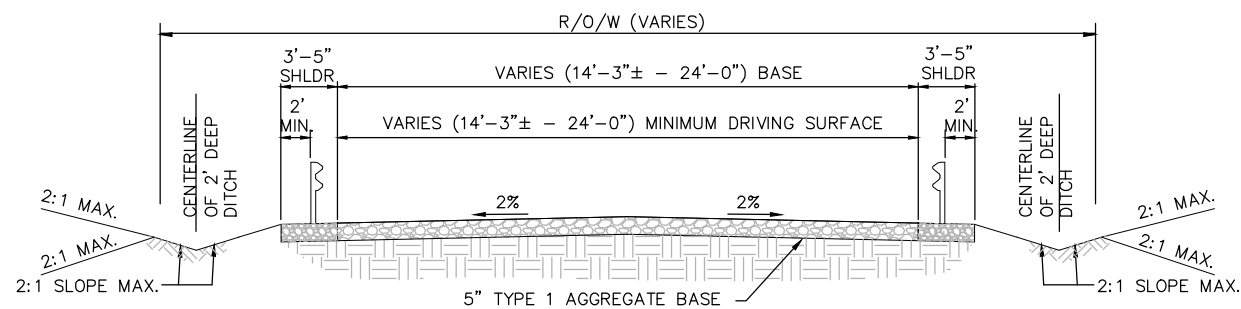
LINE	ITEM	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS						
1	201	CLEARING AND GRUBBING	ACRE	0.8	_____	_____
2	203	UNCLASSIFIED EXCAVATION (ROADWAY)	C.Y.	213	_____	_____
3	203	EMBANKMENT IN PLACE W/COMPACTION	C.Y.	529	_____	_____
4	304	TYPE 1 AGGREGATE FOR BASE (5 IN. THICK)	S.Y.	933	_____	_____
5	606	ASYMETRICAL TRANSITION SECTION	EACH	4	_____	_____
6	606	TYPE A CRASHWORTHY END TERMINAL	EACH	4	_____	_____
7	606	GUARDRAIL TYPE A	L.F.	87.5	_____	_____
8	607	6-STRAND BARBED WIRE FENCE	L.F.	158	_____	_____
9	607	TEMPORARY 4-STRAND BARBED WIRE FENCE	L.F.	257	_____	_____
10	611	TYPE 2 ROCK BLANKET	C.Y.	574	_____	_____
11	616	CONSTRUCTION SIGNS	S.F.	83	_____	_____
12	616	NEW ROADWAY SIGNS	EACH	1	_____	_____
13	616	TYPE III MOVEABLE BARRICADE WITH LIGHT	EACH	5	_____	_____
14	618	MOBILIZATION	L.S.	1	_____	_____
15	725	12 IN. CORRUGATED METALLIC-COATED STEEL PIPE	L.F.	60	_____	_____
16	805	SEEDING	ACRE	0.4	_____	_____
17	806	SILT FENCE	L.F.	167	_____	_____
18	806	ROCK DITCH CHECK	EACH	11	_____	_____
ROADWAY ITEMS SUBTOTAL					_____	_____
BRIDGE ITEMS						
19	203	CLASS 1 EXCAVATION	C.Y.	55	_____	_____
20	216	REMOVAL OF BRIDGES	L.S.	1	_____	_____
21	702	GALVANIZED STRUCTURAL STEEL PILES (12 IN)	L.F.	112	_____	_____
22	702	PILE POINT REINFORCEMENT	EACH	8	_____	_____
23	702	PRE-BORE FOR PILING	L.F.	40	_____	_____
24	703	CLASS B CONCRETE (SUBSTRUCTURE)	C.Y.	22.6	_____	_____
25	703	SLAB ON CONCRETE BEAM	S.Y.	190	_____	_____
26	705	27 IN., PRESTRESSED CONCRETE SPREAD BOX BE	L.F.	201	_____	_____
27	706	REINFORCING STEEL (BRIDGES)	LBS	3,164	_____	_____
28	713	BRIDGE GUARD RAIL (THRIE BEAM)	L.F.	150	_____	_____
29	716	PLAIN NEOPRENE BEARING PAD	EACH	6	_____	_____
BRIDGE ITEMS SUBTOTAL					_____	_____
TOTAL CONTRACT					_____	_____

Addenda Signature

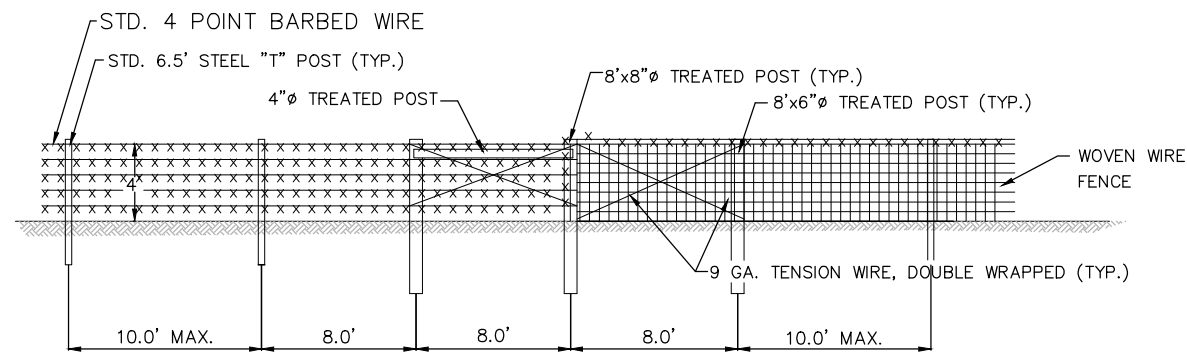
1 _____
 2 _____
 3 _____



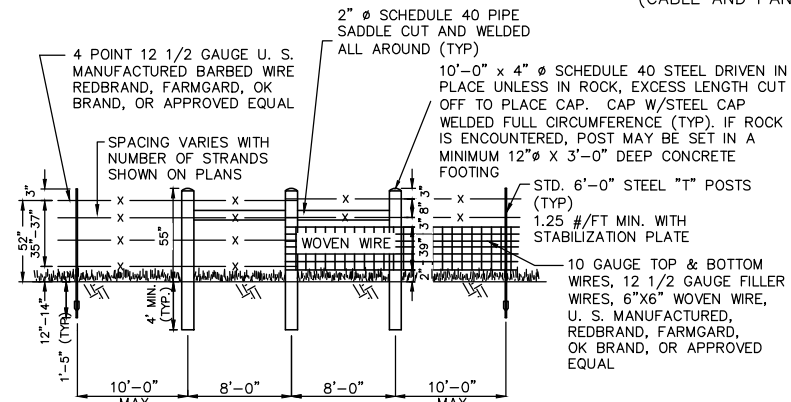
TYPICAL AGGREGATE ROADWAY SECTION



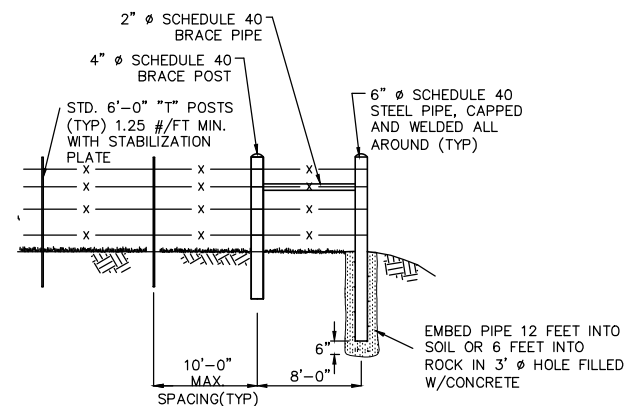
TYPICAL AGGREGATE ROADWAY SECTION
WITH GUARDRAIL



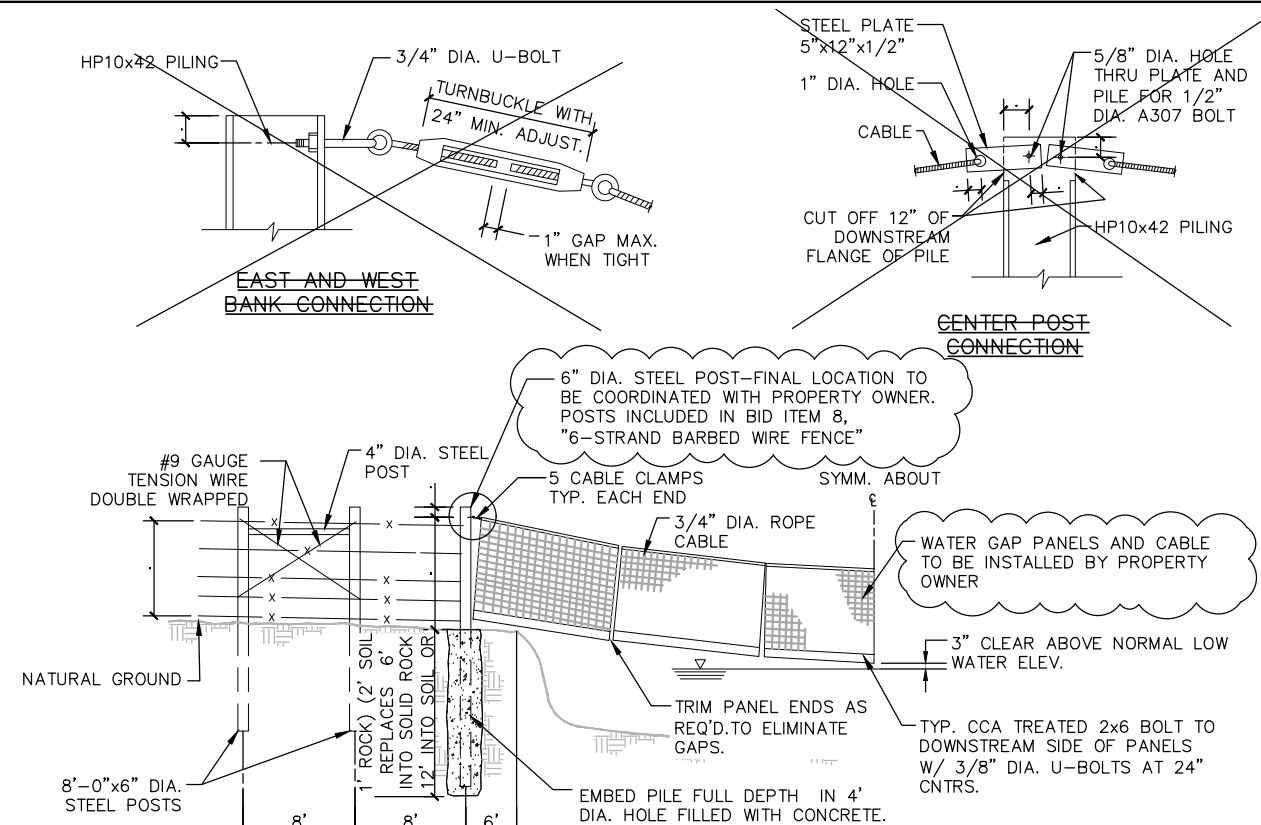
TYPICAL CORNER AND BRACING
(FOR BARBED WIRE & WOVEN WIRE FENCING)



TYPICAL CORNER POST SYSTEM
TYPICAL PULL POST SYSTEM SIMILAR
WITH TWO POSTS



(BARBED WIRE SHOWN, WOVEN WIRE SIMILAR)
TYPICAL TERMINAL POST SYSTEM



WATER GAP DETAIL

(CABLE AND PANEL INSTALLATION BY PROPERTY OWNER)

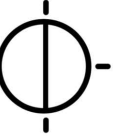
NOTES:

1. ALL STEEL FENCING MATERIALS MUST BE AMERICAN MADE.
2. REFER TO FENCING PLAN FOR LOCATIONS AND TYPES OF FENCING TO CONSTRUCT.
3. TAPER FENCES TO EXISTING FENCE IN LAST 50 FEET OF PROJECT. PROVIDE TEMPORARY FENCING AS SHOWN ON PLANS.
4. CONSTRUCT NEW FENCE ALONG NEW RIGHT OF WAY, EXCEPT AS NOTED OTHERWISE.
5. CORNER POSTS TO BE INSTALLED AT ALL HORIZONTAL ANGLES OF 15° OR GREATER.
6. PULL POSTS ARE TO BE INSTALLED AT ALL VERTICAL ANGLES OF 15° OR GREATER, AT CONNECTIONS TO EXISTING FENCES AND AT 330 FOOT INTERVALS ON STRAIGHT FENCES.
7. IF GALVANIZED STEEL PIPE IS USED, 4" DIAMETER INDUSTRIAL SCHEDULE 40 LINE AND CORNER POSTS AND 2" DIAMETER HEAVY RESIDENTIAL BRACE PIPE SHALL BE USED. ALL WELDS AND CUT ENDS OF GALVANIZED PIPE SHALL BE REPAIRED WITH HIGH SOLIDS INORGANIC ZINC SILICATE COATING. ALL STEEL PIPE SIZES & THICKNESSES TO BE ASI STANDARD SIZES.
8. TERMINUS ENDS OF BARBED WIRE SHALL BE DOUBLE-WRAPPED AROUND PULL POST WITH A WIRE LOOM CLIP WELDED TO POST. ALL OTHER PIPE POSTS SHALL HAVE WIRE LOOM CLIPS WELDED TO POST TO HOLD WIRE IN PLACE.
9. IF POSTS CANNOT BE DRIVEN TO THE DEPTHS SHOWN, THEY SHALL BE REMOVED AND PLACED IN CONCRETE FOOTINGS IN A DRILLED HOLE AT LEAST 4" LARGER DIAMETER THAN THE MAXIMUM DIMENSION OF THE POST.
10. ALL FENCE MATERIAL REMOVED IS TO BE DISPOSED OF OFF-SITE UNLESS NOTED OTHERWISE.
11. CONTRACTOR SHALL MATCH EXISTING FENCE TYPE.
12. TIES TO EXISTING FENCE REQUIRE THE SAME LAYOUT AS FENCE CORNERS (I.E. CORNER POSTS WITH BRACING.)

ANSI & ANSI SCHEDULE 40 PIPE DIMENSIONS

NOMINAL DIAMETER	INTERNAL DIAMETER	EXTERNAL DIAMETER
2"	2"	2 1/2"
4"	4"	4 3/8"
6"	6"	6 5/8"

GRE
GREAT RIVER
ENGINEERING



Date	4-14-2021
Revision/Issue	
ADDENDUM #1	
No.	

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



JEFFREY A. BANDERET, JR. - ENGINEER
MO# PE-2017030568

BRO-B006(21) NW 45th LANE BRIDGE #03000091
BARTON COUNTY, MISSOURI
TYPICAL SECTIONS & DETAILS

Copyright © 2020 by Great River Engineering
CHECKED BY: JAB
DRAWN BY: KFB
JOB NUMBER: 4152
FILE NAME: 4152_CIVIL
SCALE: N/A
ISSUE DATE: FEBRUARY, 2021
SHEET NUMBER:

C3

2014 A.A.S.H.T.O. LRFD Bridge Design Specifications (7th Ed.)
Seismic Performance Category A

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf (Min.)
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf
Superstructure: Continuous Non-Composite for dead load.
Continuous composite for live load.

Class B Concrete (substructure)	$f'_c = 3,000$ psi
Class B-2 Concrete (Superstructure)	$f'_c = 4,000$ psi
Reinforcing Steel (grade 60)	$f_y = 60,000$ psi
Steel Pile (ASTM A709 Grade 50)	$f_y = 50,000$ psi

For precast prestressed panel stresses, see Sheet No. S11.

For Prestressed Girder stresses, see Sheet No. S9.

Neoprene bearing pads shall be 60 durometer and shall be in accordance with sec 716.

All joint filler shall be in accordance with sec. 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Minimum clearance to reinforcing steel shall be 1 1/2". unless otherwise shown.

Structure to be closed during construction. Traffic to be maintained on other routes. See roadway plans for traffic control.

Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:

- ☐ Constant Joint filler
 - ☐ Variable Joint Filler

Hydrologic Data		
Drainage Area	=	11 mi ²
Design Flood Frequency	=	100 years
Design Flood Discharge	=	4,200 cfs
Design Flood (D.F.) Elevation	=	848.6 ft
Base Flood (100–Year)		
Design Flood Elevation	=	848.6 ft
Base Flood Discharge	=	4,200 cfs
Estimated Backwater	=	0 ft
Average Velocity Thru Opening	=	8.5 ft/s
Freeboard (50–Year)		
Freeboard	=	1.6 ft
Roadway Overtopping		
Overtopping Flood Discharge	=	6,170 cfs
Overtopping Flood Frequency	=	500 years
Overtopping Flood Elevation	=	852.1 ft

Estimated Quantities for Slab on Concrete Beam	
Item	Total
Class B-2 Concrete	62 cu. yard
Reinforcing Steel (Epoxy)	9,916 pound

The table of Estimated Quantities for Slab on Concrete Beam represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversally from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for prestressed panels, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be shown on the plans and in accordance with Section 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type i, ii or iii.

The Estimated Quantities for Slab on Concrete Beam are based on skewed precast prestressed end panels.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete Beam

Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.

Estimated Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	55		55
Removal of Bridges	lump sum			1
Galvanized Structural Steel Piles (12 in.)	linear foot	112		112
Pile Point Reinforcement	each	8		8
Pre-Bore for Piling	linear foot	40		40
Class B Concrete (Substructure)	cu. yard	22.6		22.6
Slab on Concrete Beam	sq. yard		190	190
27 inch Prestressed Concrete Spread Box Beam	linear foot		201	201
Reinforcing Steel (Bridges)	pound	3,164		3,164
Bridge Guardrail (Thrie Beam)	linear foot		150	150
Plain Neoprene Bearing Pad	each		6	6

All concrete above the construction joint in the end bents is included in the estimated quantities for Slab on Concrete Beam.

~~All reinforcement in the end bents is included in the estimated quantities for Slab on Concrete Beam.~~

Foundation Data			
Type	Design Data	Bent No. 1	Bent No. 2
Load Bearing Pile	Pile Type & Size	HP12X53	HP12X53
	Number	ea	4
	Approximate Length Per Each	ft	16
	Pile Point Reinforcement	ea	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length
	Pile Driving Verification Method	DF	DF
	Resistance Factor	0.4	0.4
	Minimum Nominal Axial Compressive Resistance	kip	415

DF = FHWA-modified Gates Dynamic Formula

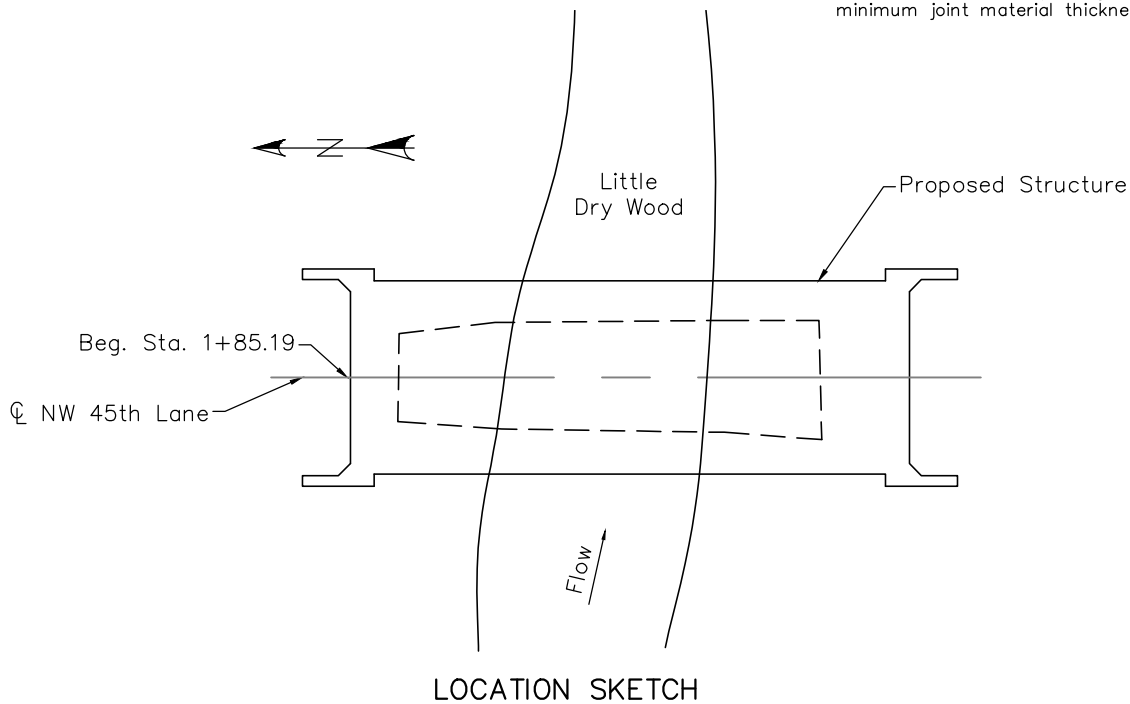
$$\text{Minimum Nominal Axial Compressive Resistance} = \text{Maximum Factored Loads/Resistance Factor}$$

Prebore for piles at Bent No. 2 to elevation 835.6.

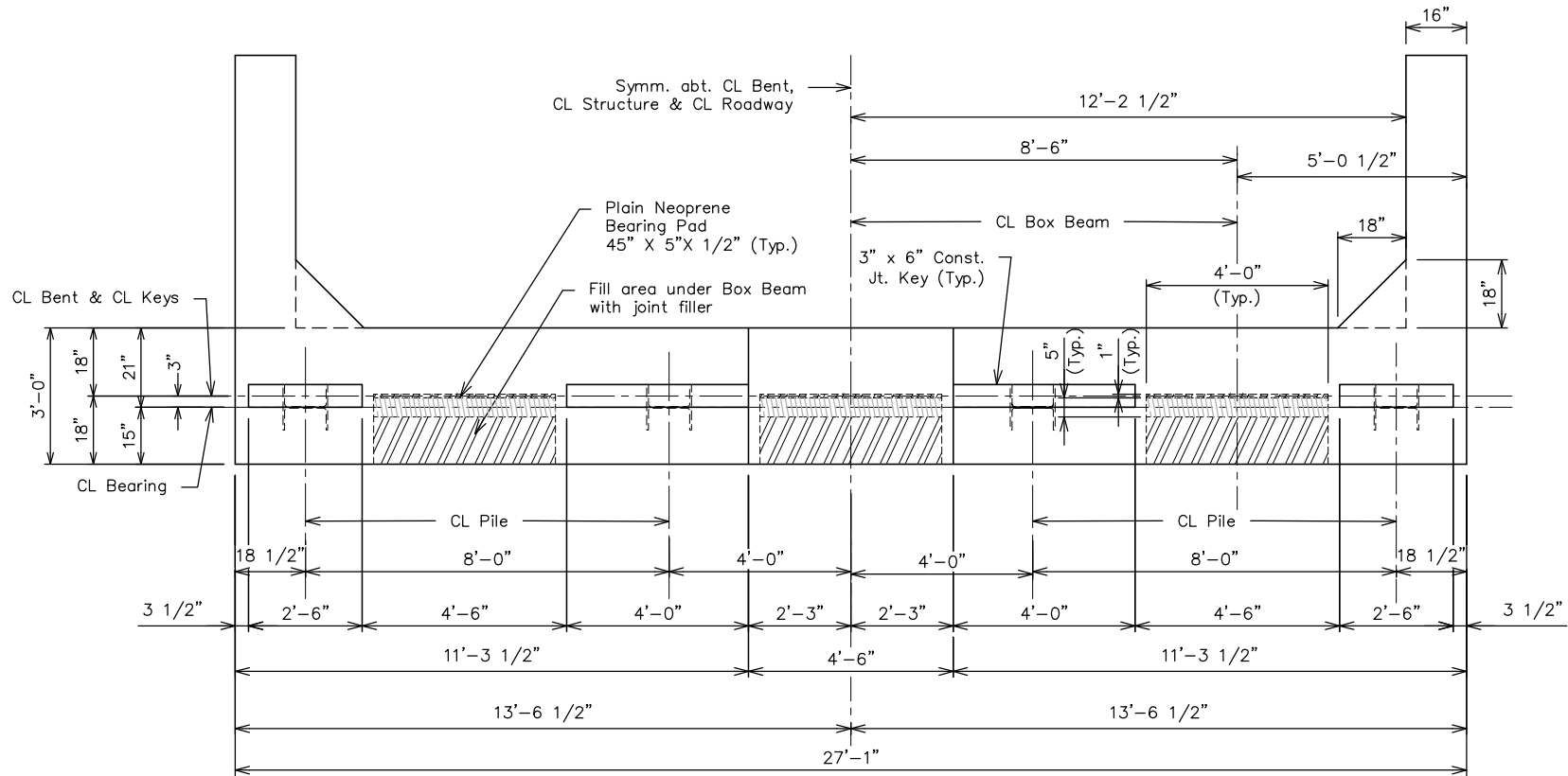
All piles shall be galvanized down to the minimum galvanized penetration (elevation.)

Pile point reinforcement need not be galvanized. Shop drawings will not be required for pile point reinforcement.

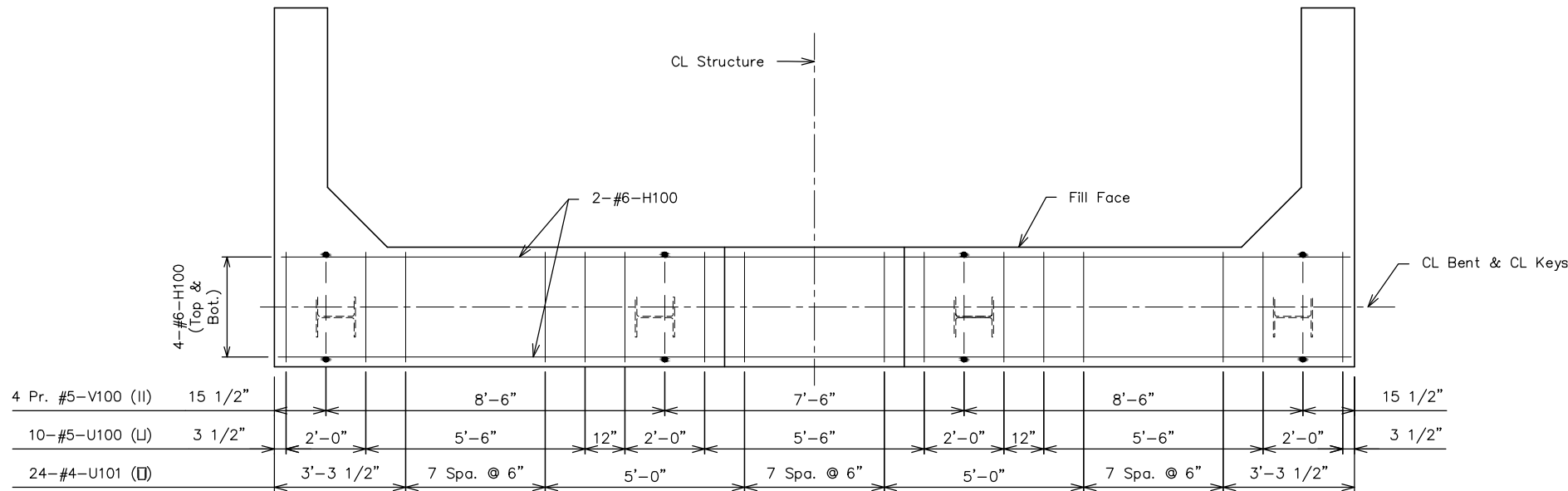
HP piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702.



Note: Drawing not to scale. Follow dimensions.

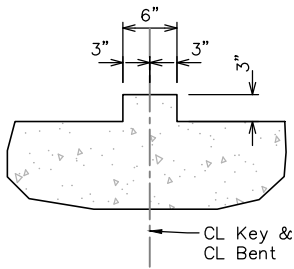


PLAN OF BEAM

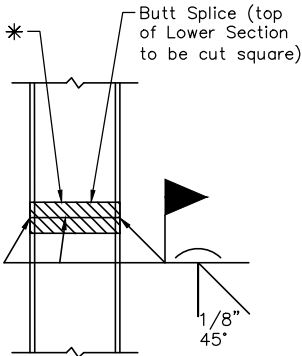


PLAN OF BEAM SHOWING REINFORCEMENT

(Note: Keys not shown for clarity)



TYPICAL SECTION THRU KEY



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed 1 inch clear of weld location. see special provisions.

General Notes:

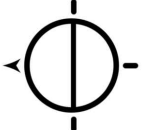
Work this sheet with Sheets No. S4 & S5.

Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

Substructure Quantity Table for Bent No. 1			
Item			Quantity
Class 1 Excavation	cu. yard	25	
Galvanized Structural Steel Piles (12 in.)	linear foot	64	
Pile Point Reinforcement	each	4	
Reinforcing Steel (Bridges)	pound	1,582	
Class B Concrete (Substructure)	cu. yard	11.3	

These quantities are included in the estimated quantities table on Sheet No. S2.

GRE
GREAT RIVER
ENGINEERING



Great River Engineering - Missouri State Certificate of Authority Numbers:
Engineering: 2000156885, Land Surveying: 2001011716,
Landscape Architecture: 2007015873

Date	4-14-2021
Revision/Issue	
ADDENDUM #1	
No.	

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



JEFFREY A. BANDERET, JR., ENGINEER
MO# PE-2017030568

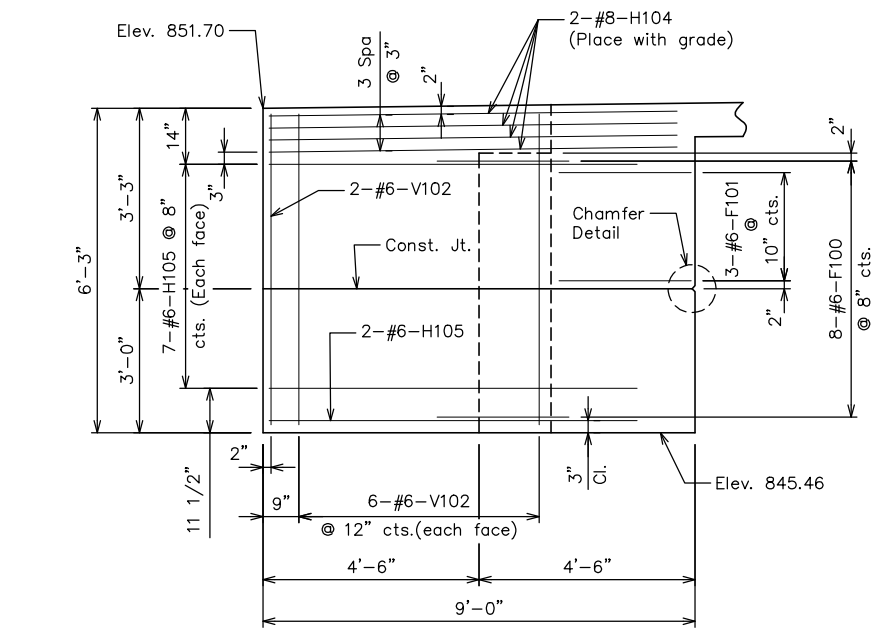
BRO-B006(21) NW 45th LANE BRIDGE #03000091

BARTON COUNTY, MISSOURI

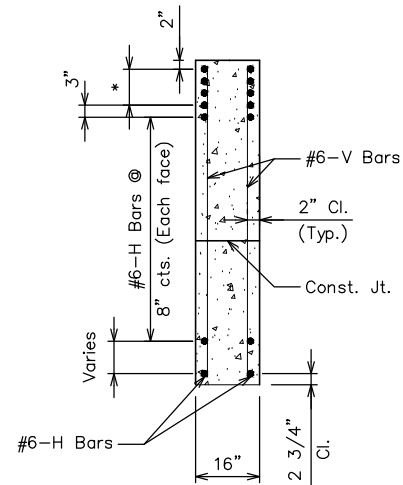
DETAILS OF END BENT NO.1

Copyright © 2020 by Great River Engineering	
CHECKED BY: JAB	
DRAWN BY: KFB	
JOB NUMBER: 4152	
FILE NAME: 4152_STRUCTURAL	
SCALE: NO SCALE	
ISSUE DATE: FEBRUARY, 2021	
SHEET NUMBER:	

S3

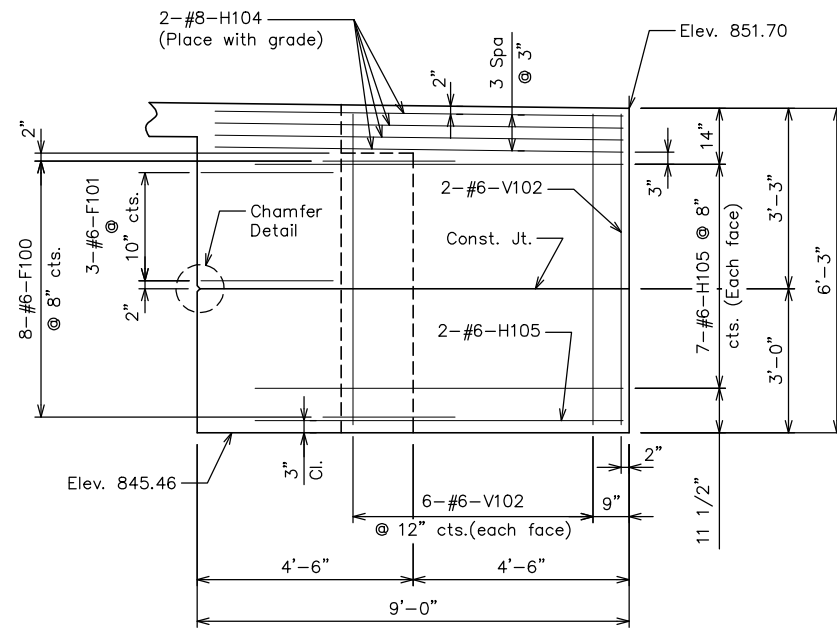


ELEVATION D-D

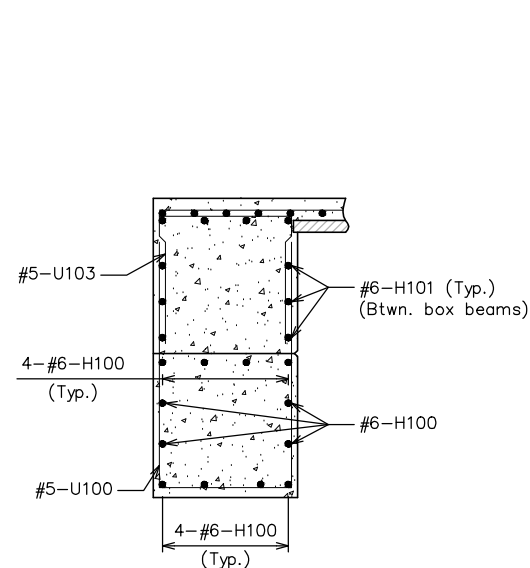


TYPICAL SECTION THRU WING

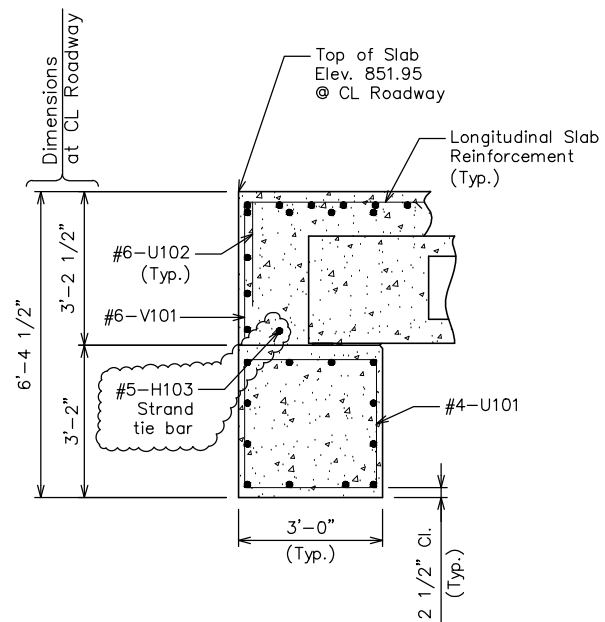
* #8-H Bars at 3" cts.
(Each face)(Place with grade)



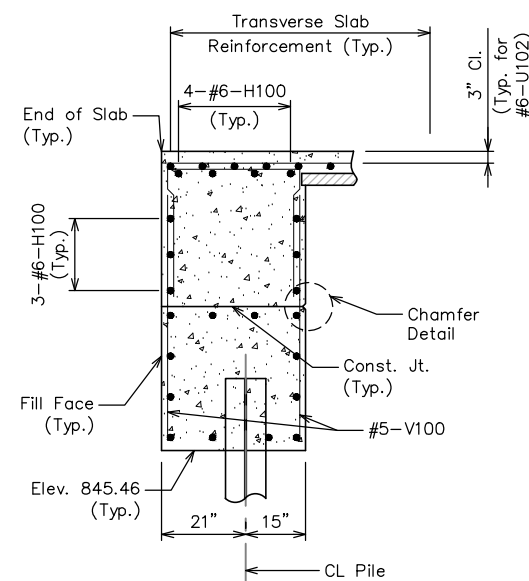
ELEVATION E-E



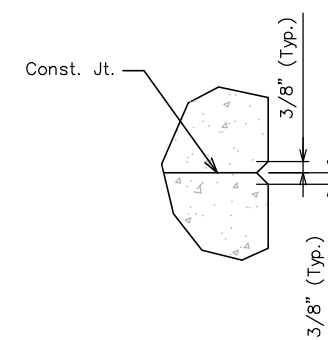
SECTION A-A



SECTION B-B



SECTION C-C



CHAMFER DETAIL

General Notes:

Work this sheet with Sheets No. S3 & S4.

For Sections A-A, B-B & C-C and Elevations D-D & E-E, see Sheet No. S4.

Note: Drawing not to scale. Follow dimensions.

No.	Revision/Issue	Date
1	ADDENDUM #1	4-14-2021
2		
3		
4		
5		

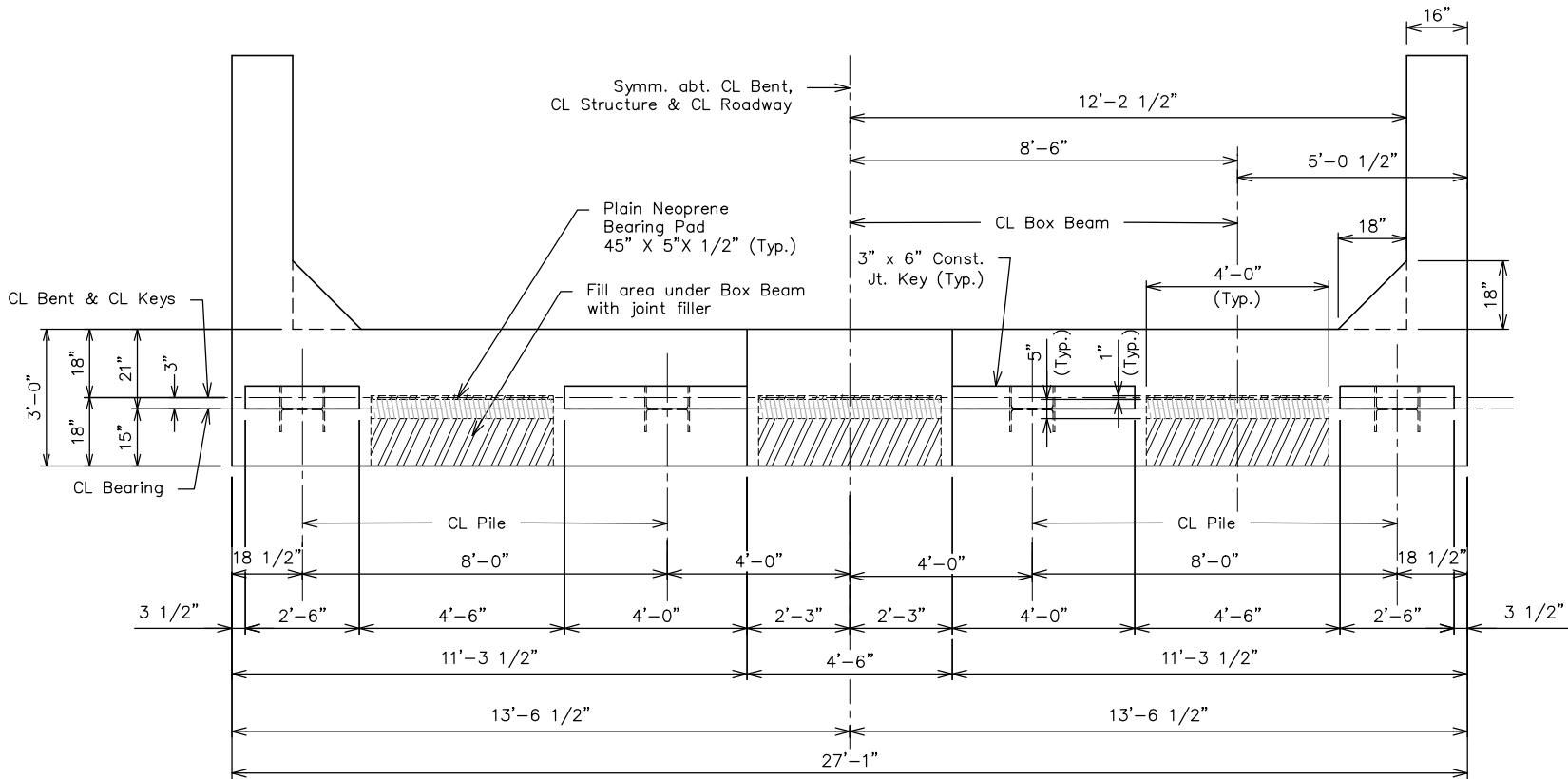
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



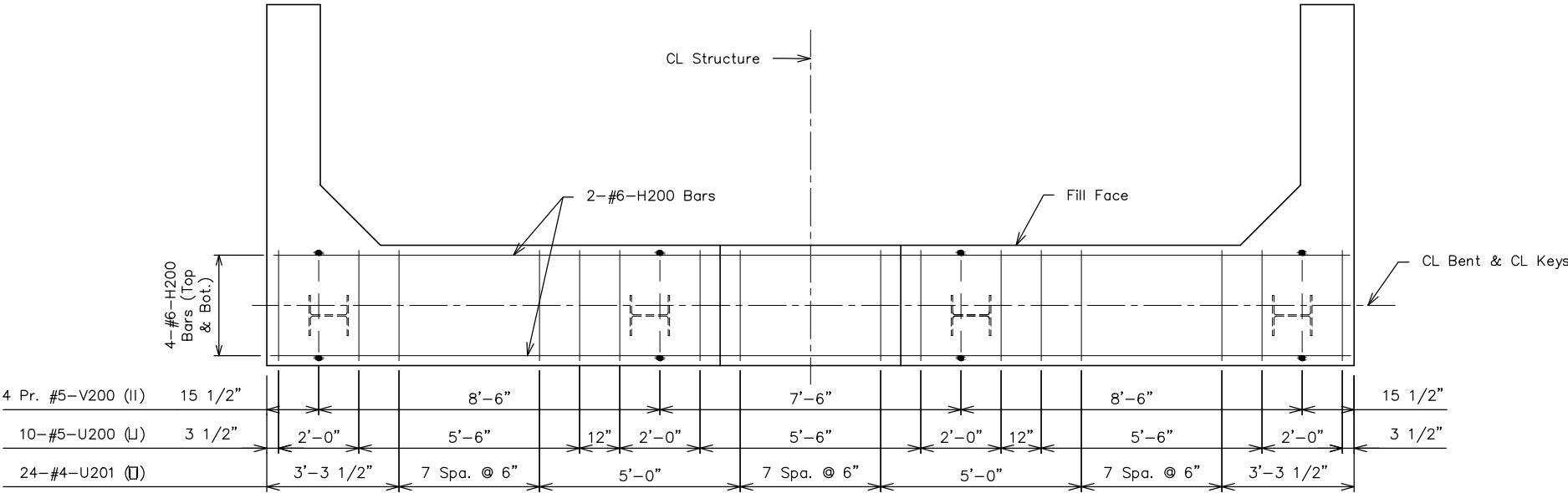
JEFFREY A. BANDERET, JR. - ENGINEER
MO# PE-2017030568

BRO-B006(21) NW 45th LANE BRIDGE #03000091
BARTON COUNTY, MISSOURI
DETAILS OF END BENT NO. 1

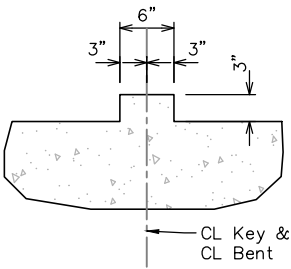
CHECKED BY: JAB
DRAWN BY: KFB
JOB NUMBER: 4152
FILE NAME: 4152_STRUCTURAL
SCALE: NO SCALE
ISSUE DATE: FEBRUARY, 2021
SHEET NUMBER:



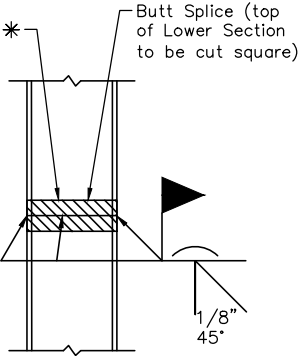
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT
(Note: Keys not shown for clarity)



TYPICAL SECTION THRU KEY



STEEL PILE SPLICE
(If required)

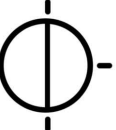
* Galvanizing material shall be omitted or removed 1 inch clear of weld location. see special provisions.

General Notes:
Work this sheet with Sheets No. S7 & S8.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	30
Galvanized Structural Steel Piles (12 in.)	linear foot	48
Pre-Bore for Piling	linear foot	40
Pile Point Reinforcement	each	4
Reinforcing Steel (Bridges)	pound	1,582
Class B Concrete (Substructure)	cu. yard	11.3

These quantities are included in the estimated quantities table on Sheet No. S2.

Note: Drawing not to scale. Follow dimensions.



Date	4-14-2021
Revision/Issue	
ADDENDUM #1	
No.	1 2 3 4 5

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



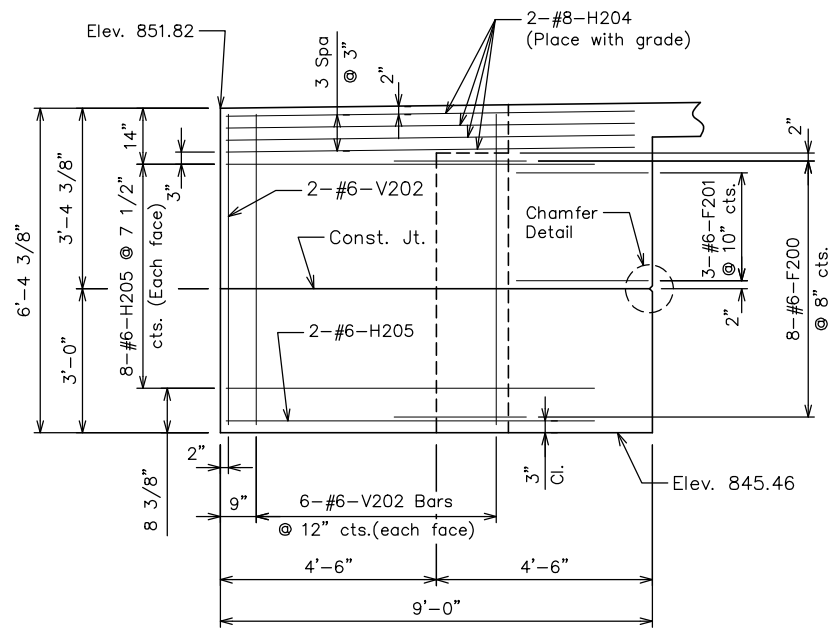
JEFFREY A. BANDERET, JR. - ENGINEER
MO# PE-2017030568

BRO-B006(21) NW 45th LANE BRIDGE #03000091

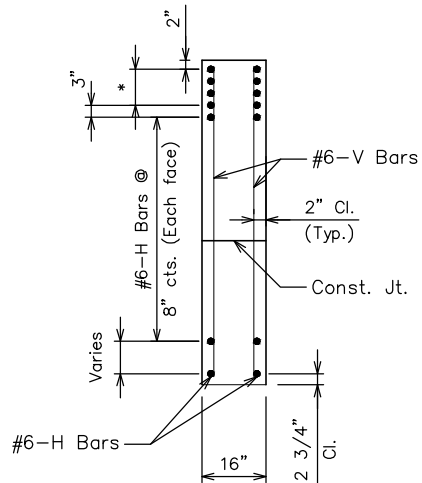
BARTON COUNTY, MISSOURI

DETAILS OF END BENT NO. 2

Copyright © 2020 by Great River Engineering	
CHECKED BY: JAB	
DRAWN BY: KFB	
JOB NUMBER: 4152	
FILE NAME: 4152_STRUCTURAL	
SCALE: NO SCALE	
ISSUE DATE: FEBRUARY, 2021	
SHEET NUMBER:	

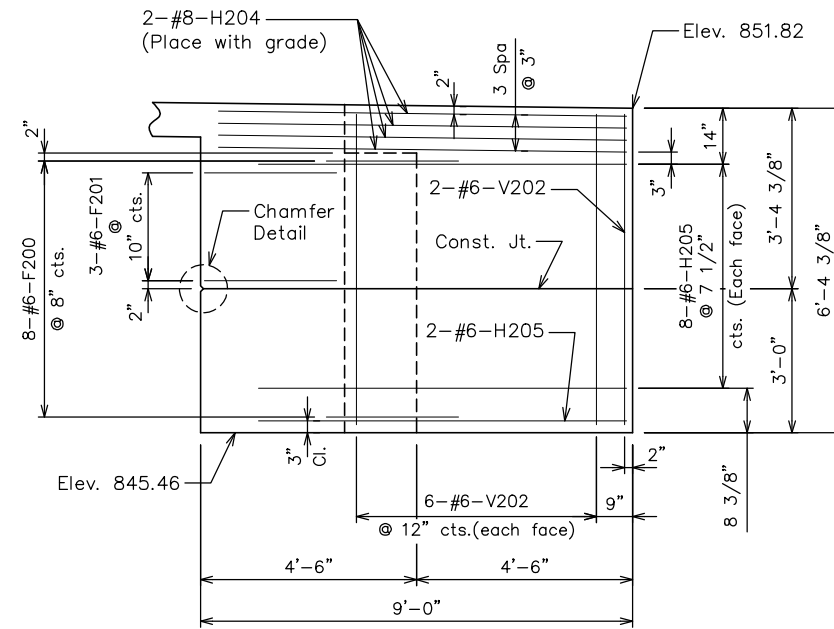


ELEVATION D-D

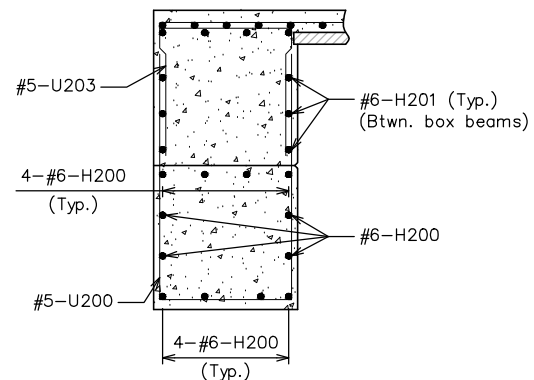


TYPICAL SECTION THRU WING

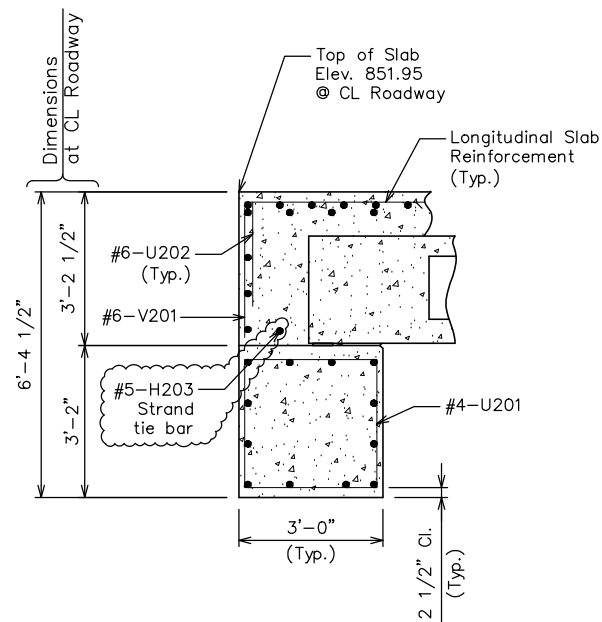
* #8-H Bars at 3" cts.
(Each face)(Place with grade)



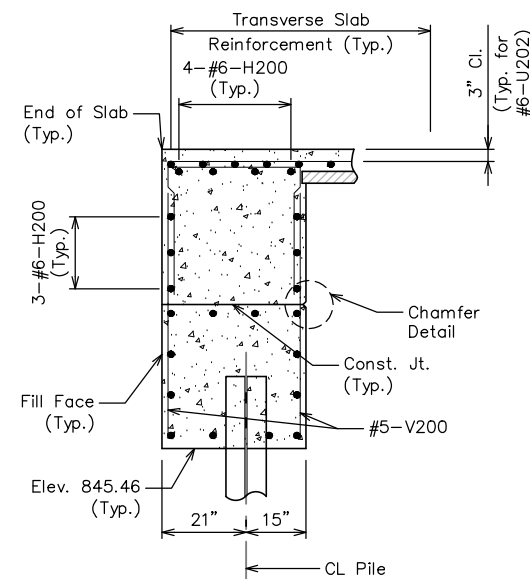
ELEVATION E-E



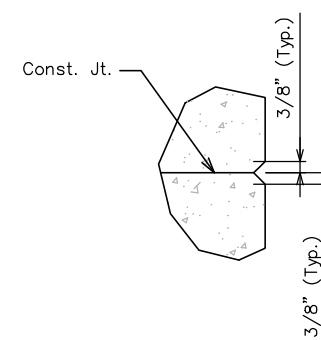
SECTION A-A



SECTION B-B



SECTION C-C



CHAMFER DETAIL

General Notes:

Work this sheet with Sheets No. S6 & S7.

For Sections A-A, B-B & C-C and Elevations D-D & E-E, see Sheet No. S7.

Note: Drawing not to scale. Follow dimensions.

No.	Revision/Issue	Date
1	ADDENDUM #1	4-14-2021
2		
3		
4		
5		

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



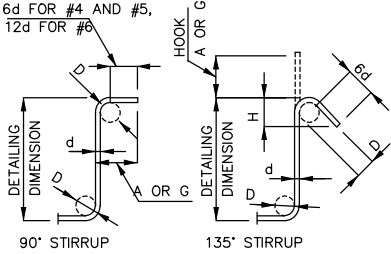
JEFFREY A. BANDERET, JR., ENGINEER
MO# PE-2017030568

BRO-B006(21) NW 45th LANE BRIDGE #03000091
BARTON COUNTY, MISSOURI
DETAILS OF END BENT NO. 2

CHECKED BY: JAB
DRAWN BY: KFB
JOB NUMBER: 4152
FILE NAME: 4152_STRUCTURAL
SCALE: NO SCALE
ISSUE DATE: FEBRUARY, 2021
SHEET NUMBER:

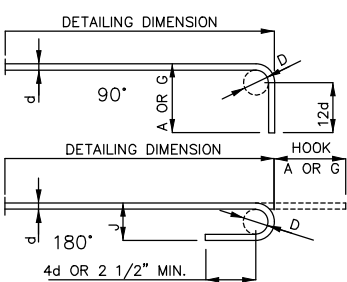
BILL OF REINFORCING STEEL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
NO.	REQ'D.	MARK NO.		LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH		ACTUAL LENGTH		WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		SIZE	MARK								B		C		D		E		F		H		K		FT.	IN.	FT.	IN.	LBS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
											FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
				SUPERSTRUCTURE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

Note: Drawing not to scale. Follow dimensions.



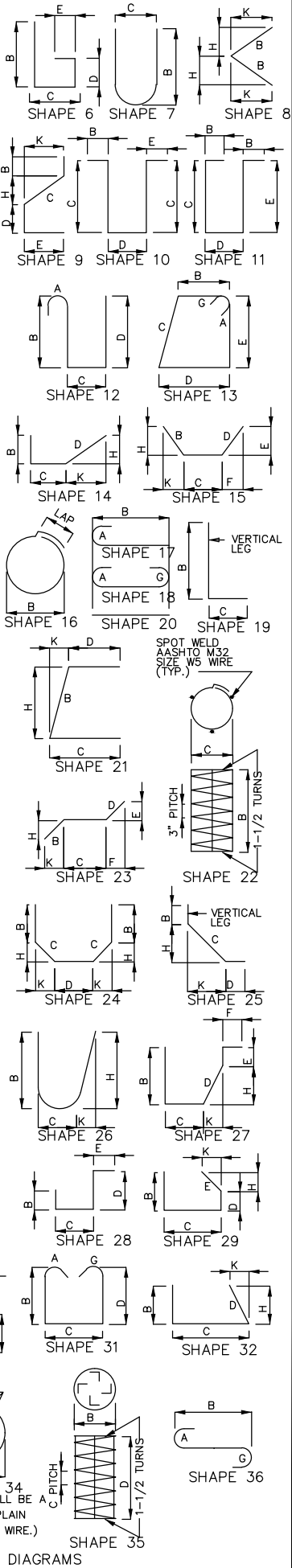
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS A OR G	J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
VS = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING VL LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
PAYWEIGHTS ARE BASED ON NOMINAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) F_y = 60,000 PSI.



GREAT RIVER
ENGINEERING

Great River Engineering - Missouri State Certificate of Authority Numbers:
Engineering: 2000156985, Land Surveying: 2001011716,
Landscape Architecture: 2007015973

Date
4-14-2021

Revision/Issue
ADDENDUM #1

No.
1 2 3 4 5

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI STATE OF MISSOURI
JEFFREY A. BANDERET, JR.
NUMBER
E-2017030568
PROFESSIONAL ENGINEER

JEFFREY A. BANDERET, JR., ENGINEER
MO# PE-2017030568

BRO-B006(21) NW 45th LANE BRIDGE #03000091
BARTON COUNTY, MISSOURI

BILL OF REINFORCING

Copyright © 2020 by Great River Engineering

CHECKED BY: JAB
DRAWN BY: KFB
JOB NUMBER: 4152
FILE NAME: 4152_STRUCTURAL
SCALE: NO SCALE
ISSUE DATE: FEBRUARY, 2021
SHEET NUMBER:

S15