Addendum No. 1

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

DATE: December 20, 2022

FOR: **Pike County BRO-B082(32) Bridge County Road 409 Bridge #17600061 Replacement**

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 addenda prior to this addendum.

Clarifications:

Question 1: Any prebore or drilled shafts on this project?

Answer 1: There are no prebore or drilled shafts on this project.

No Changes made to Drawings, Specifications, or related documents issued on the original set

Question 2: Does this project detail steel shell pipe piles? If so, can you please provide the specifications and quantities?

Answer 2: No, project includes HP 12x53 piles, 0.4 Resistance Factor, and 501 kips Minimal Nominal Axial Compressive Resistance, and per Missouri Standard Specifications for Highway Construction Section 702. Quantity is 10 total piles, each 12 feet in length.

No Changes made to Drawings, Specifications, or related documents issued on the original set

Question 3: Are you wanting a 25-feet Crashworthy or 50-feet Crashworthy for this project?

Answer 3: The Type A Crashworthy End Terminals for this project are 25 feet in length.

Change made to Drawings Sheet C-2, Roadway Quantities, Type A Crashworthy End Terminal, issued on the original set

Question 4: Is there any way to add more bridge rail to get the transition and crashworthy off the bridge rail? The first post of the Crashworthy will be really close to the wing wall.

Answer 4: Yes, one each 8 feet-4 inch section of guard rail is added to all four corners of the bridge which prevents installing the transition section posts on the edge of the wingwalls at these locations as originally designed.

Changes made to Itemized Bid Form and to Drawings Sheet S-2, Estimated Quantities, Bridge Guardrail (Thrie Beam), and to Sheet S-13, Railing Details, issued on the original set

Question 5: The quantity is incorrect on the bid form for pile point reinforcement. I believe it should be 10 each instead of 8 each.

Answer 5: Quantity of Pile Point Reinforcement is changed from 8 to 10 on the Bid Form and Drawings Sheet S2, Estimated Quantities.

Change made to Itemized Bid Form and to Drawings Sheet S-2, Estimated Quantities, Pile Point Reinforcement quantity, issued on the original set

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

GRE
GREAT RIVER ENGINEERING

CONTRACTOR NAME: _____

ADDRESS LINE 1: _____

ADDRESS LINE 2: _____

PHONE NUMBER: _____

EMAIL: _____

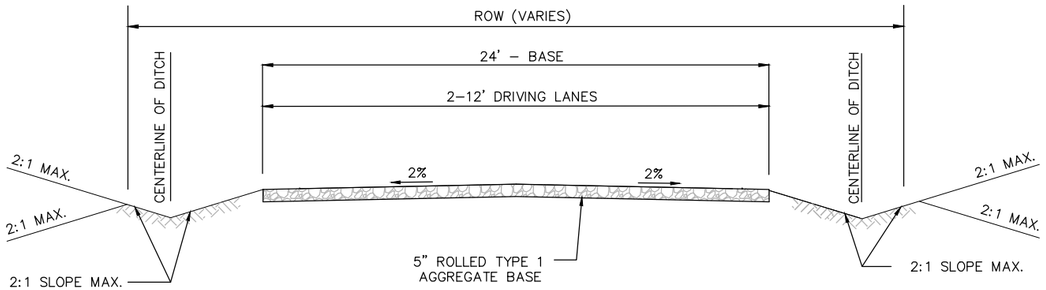
Pike County
CR 409
BRO-B082(32)

DATE: _____

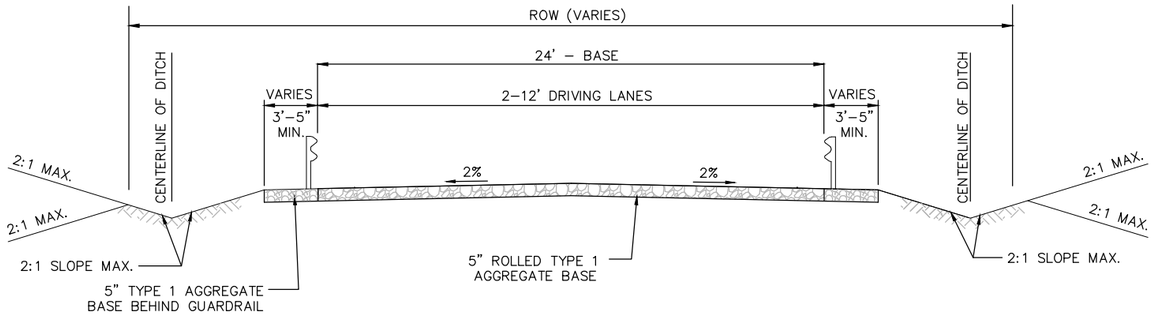
ITEMIZED BID FORM

LINE	ITEM	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS						
1	201	CLEARING AND GRUBBING	ACRE	0.1		
2	203	UNCLASSIFIED EXCAVATION (ROADWAY)	C.Y.	19		
3	203	EMBANKMENT IN PLACE W/COMPACTION	C.Y.	489		
4	304	TYPE 1 AGGREGATE FOR BASE (5 IN. THICK)	S.Y.	583		
5	606	ASYMETRICAL TRANSITION SECTION, 6.5 FT. POSTS	EACH	4		
6	606	TYPE A CRASHWORTHY END TERMINAL	EACH	4		
7	607	WOVEN WIRE FENCE	L.F.	109		
8	611	TYPE 2 ROCK BLANKET	C.Y.	323		
9	616	CONSTRUCTION SIGNS	S.F.	63		
10	616	TYPE III MOVEABLE BARRICADE	EACH	10		
11	616	WARNING LIGHT, TYPE B	EACH	4		
12	618	MOBILIZATION	L.S.	1		
13	805	SEEDING	ACRE	0.1		
14	806	SILT FENCE	L.F.	248		
15	806	DITCH CHECK	EACH	3		
					ROADWAY ITEMS SUBTOTAL	
BRIDGE ITEMS						
16	206	CLASS 1 EXCAVATION	C.Y.	150		
17	216	REMOVAL OF BRIDGES	L.S.	1		
18	702	STRUCTURAL STEEL PILES (12 IN.)	L.F.	121		
19	702	PILE POINT REINFORCEMENT	EACH	10		
20	703	CLASS B CONCRETE (SUBSTRUCTURE)	C.Y.	34.1		
21	703	SLAB ON CONCRETE NU-GIRDER	S.Y.	246		
22	705	NU 35 (900), PRESTRESSED CONCRETE NU-GIRDER	L.F.	230		
23	713	BRIDGE GUARD RAIL (THRIE BEAM)	L.F.	183.33		
24	716	PLAIN NEOPRENE BEARING PAD	EACH	6		
					BRIDGE ITEMS SUBTOTAL	
					TOTAL CONTRACT	

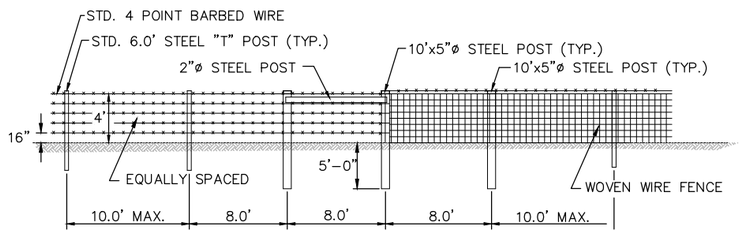
Addenda	Signature
1	_____
2	_____
3	_____



TYPICAL SECTION



TYPICAL SECTION W/ GUARDRAIL



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

* CONTRACTOR SHALL MATCH EXISTING FENCE TYPE (I.E. 5 STRAND BARBED WIRE OR WOVEN WIRE FENCE)

NOTES:
1. FENCING SHOWN IN THIS DETAIL IS THE MINIMUM REQUIRED BY THE ENGINEER.
2. TIES TO EXISTING FENCE REQUIRE THE SAME LAYOUT AS FENCE CORNERS (I.E. CORNER POSTS WITH BRACING.)
3. CORNER AND BRACING POST SHALL BE BURIED A MINIMUM OF 5 FEET.
4. ALL 10' x 5" ø STEEL PIPE MUST HAVE WELD ON DOME CAP. PLASTIC CAP WILL NOT BE ACCEPTED.

ROADWAY QUANTITIES

ITEM	TOTAL	UNITS
CLEARING AND GRUBBING	0.1	ACRE
UNCLASSIFIED EXCAVATION (ROADWAY)	19	CU. YARD
EMBANKMENT IN PLACE WITH COMPACTION	489	CU. YARD
TYPE 1 AGGREGATE FOR BASE (5 IN. THICK) (5 IN. THICK SHOULDERS)	583	SQ. YARD
TRANSITION SECTION, 6.5 FT. POSTS	4	EACH
TYPE A CRASHWORTHY END TERMINAL (25'–0")	4	EACH
FENCE	109	LIN. FOOT
TYPE 2 ROCK BLANKET	323	CU. YARD
CONSTRUCTION SIGNS	63	SQ. FOOT
TYPE III MOVEABLE BARRICADE	10	EACH
WARNING LIGHT, TYPE B	4	EACH
MOBILIZATION	1	LUMP SUM
SEEDING	0.1	ACRE
SILT FENCE	248	LIN. FOOT
DITCH CHECKS	3	EACH

Survey Control Point Table				
Point #	Northing	Easting	Elevation	Description
1	1248094.3179	600607.6654	684.76	CP1 60D
2	1248251.6720	600612.8207	694.11	CP2 60D
3	1247182.7095	600622.5827	663.05	CP3 60D
4	1246791.2926	600567.8424	681.51	CP4 60D

BENCHMARK DATA

BM – RR SPIKE SET IN 1ST POWER POLE SOUTH OF THE CREEK ON EAST FACE OF POLE. POWER POLE IS WEST OF ROAD & SOUTH OF GRAVEL ACCESS DRIVE WITH CATTLE GUARD.

ELEVATION = 663.11

(VERTICAL DATUM : NAVD88)

GRE GREAT RIVER ENGINEERING
Great River Engineering • Missouri State Certificate of Authority Numbers: Engineering: 2000156985, Land Surveying: 2001011476, Landscape Architecture: 2007013873

No.	Revision/Issue	Date
1	ADDENDUM 1	12/20/2022

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

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

BRO–B082(32) CR 409 BRIDGE
BRIDGE #17600061 OVER LICK CREEK
PIKE COUNTY, MISSOURI

TYPICAL SECTIONS & QUANTITIES

CHECKED BY: JAB
DRAWN BY: KFB
JOB NUMBER: 4225
FILE NAME: 4225_CIVIL
SCALE: NA
ISSUE DATE: JANUARY, 2022
SHEET NUMBER: C2

GENERAL NOTES:

Design Specifications:

2014 A.A.S.H.T.O. LRFD Bridge Design Specifications (7TH ED.)
Seismic Design Category 'A'.

The contractor shall follow the job special provisions for this project. For items not directly covered in the job special provisions the contractor shall follow the specifications as stated in the "Missouri Standard Specifications for Highway Construction," 2021 edition, and current supplemental specification revisions.

Design Loading:

Vehicular = HL-93
Future Wearing Surface = 35 PSF
Earth = 120 PCF,
Equivalent Fluid Pressure = 45 PCF
Superstructure: Simply-Supported, Non-composite for dead load. Simply Supported Composite for live load.

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders)	f'c = 4,000 psi
Reinforceing Steel (Grade 60)	fy = 60,000 psi
Steel Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For precast panel stresses, see Sheet No. S10.
For prestressed girder stresses, see Sheet No. S9.

Neoprene Pads:

Plain Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec 716.

Joint Filler:

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

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1½".

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	82
Reinforcing Steel (Epoxy Coated)	pound	18,853

The table of Estimated Quantities for represents the quantities used 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 transversely 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 as shown on the plans and in accordance with Sec 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 NU-Girder are based on skewed precast prestressed and panels.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete NU-Girder.

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

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	150		150
Removal of Bridge (17600061)	lump sum			1
Structural Steel Pile (12 in.)	linear foot	121		121
Pile Point Reinforcement	each	10		10
Class B Concrete (Substructure)	cu. yard	34.1		34.1
Slab on Concrete NU-Girder	sq. yard		246	246
NU 35, Prestressed Concrete NU-Girder	linear foot		230	230
Bridge Guardrail (Thrie Beam)	linear foot		183.33	183.33
Plain Neoprene Bearing Pad	each		6	6

All concrete above the construction joint in the end bents is included in the Estimated Quatities for Slab on Concrete NU-Girder.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

Foundation Data

Type	Design Data		Bent Number 1	Bent Number 2
Load Bearing Pile	Pile Type and Size		HP 12x53	HP 12x53
	Number	ea	5	5
	Approximate Length Per Each	ft	12	12
	Pile Point Reinforcement	ea	All	All
	Min. Galvanized Penetration (Elev.)	ft	Full length	Full length
	Pile Driving Verification Method		DF	DF
	Resistance Factor		0.4	0.4
	Minimum Nominal Axial Compressive Resistance	kip	501	501

DF = FHWA-modified Gates Dynamic Pile Formula

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

Manufactured pile point reinforcement shall be used on all piles in this structure.

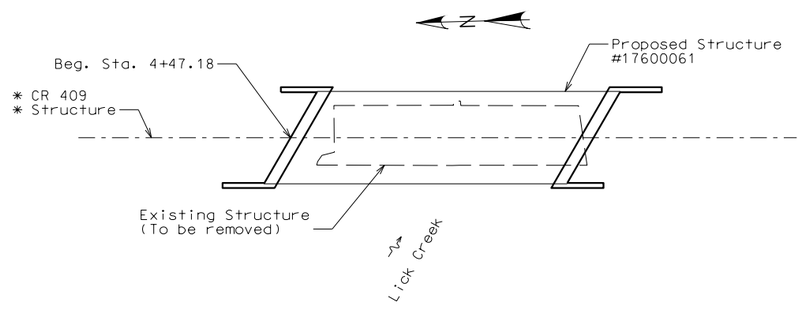
All piles shall be galvanized down to the minimum galvanized penetration (elevation).

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

The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) shown on the plans for all piles. Deviations in penetration less than 5 feet of the minimum will be considered acceptable provided the contractor make the necessary corrections to ensure the minimum penetration is achieved on subsequent piles.

Hydrologic Data

Drainage Area = 12 mi*
Design Flood Frequency = 200 years
Design Flood Discharge = 5,000 cfs
Design Flood (D.F.) Elevation = 664.9
Base Flood (100-year)
Base Flood Elevation = 664.4
Base Flood Discharge = 4,400 cfs
Estimated Backwater = 0.1 ft
Average Velocity thru Opening = 6.2 ft/s
Freeboard (50-year)
Freeboard = 0 ft
Roadway Overtopping
Overtopping Flood Discharge = 3800 cfs
Overtopping Flood Frequency = 50 years
50 Year Flood Elevation = 663.8



LOCATION SKETCH

GREAT RIVER ENGINEERING
Great River Engineering - Missouri State Certificate of Authority Numbers: Engineering: 2007001468; Land Surveying: 2007011476; Landscape Architecture: 2007013673

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NUMBER PE-2017030568
REGISTERED PROFESSIONAL ENGINEER
12/20/2022

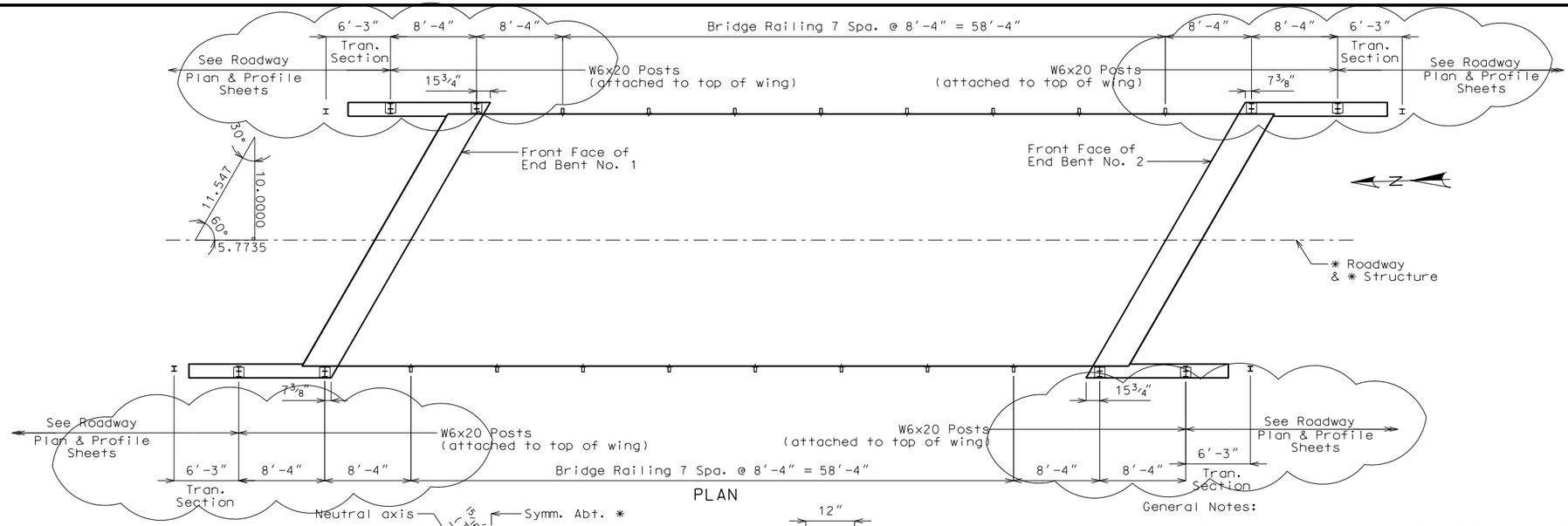
JEFFREY A. BANDERET, JR. - ENGINEER
MO# PE-2017030568

BRO-B082(32) CR 409 BRIDGE
BRIDGE #17600061 OVER LICK CREEK
PIKE COUNTY, MISSOURI

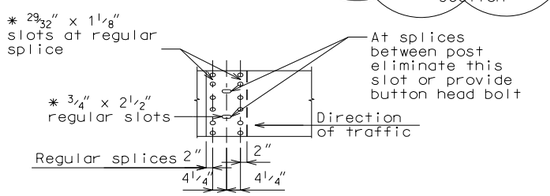
GENERAL NOTES AND QUANTITIES

CHECKED BY: JAB
DRAWN BY: QJS
JOB NUMBER: 4225
SHEET NUMBER:

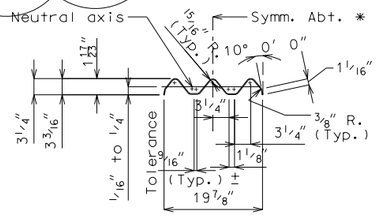
S2



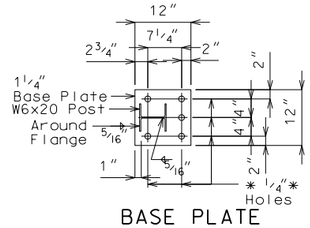
PLAN



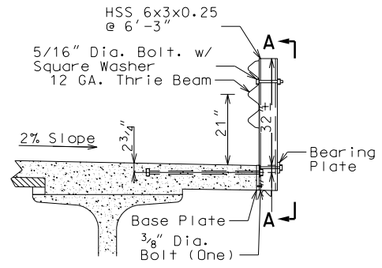
THRIE BEAM RAIL SPLICE DETAILS



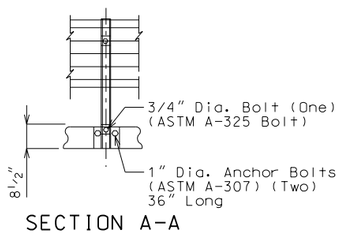
SECTION THRU THRIE BEAM RAIL



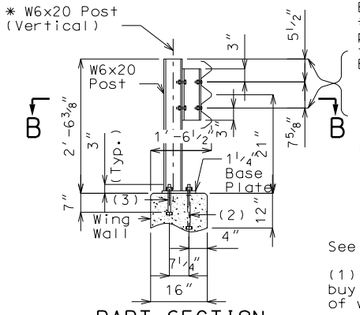
BASE PLATE (at wing)



PART SECTION MID-SPAN (SL-1 Bridge Railing)



SECTION A-A



PART SECTION AT WING

BLOCKOUT-TO-POST CONN.
* Two 13/16" * Holes in W6x20 post flange and W6x15 blockout flange and * Two 5/8" * Hex Head Bolt with two washers and hex nut

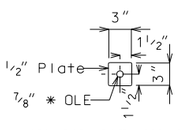
THRIE BEAM-TO-BLOCKOUT CONN.
*13/16" x 2 1/2" Vertical Slotted Hole in W6x15 blockout flange (1) and * 5/8" * Carriage Bolt with one flat washer and hex nut

See this sheet for rail post spacing.

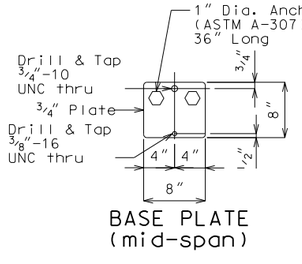
(1) Required on one side of web only, buy may be provided on both sides of web at the contractor's option.

(2) Three 1-inch diameter A307 bolts with hex nuts and washers.

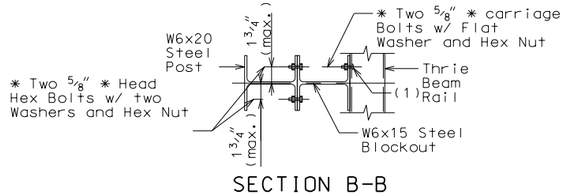
(3) Two 1-inch diameter A307 bolts with hex nuts and washers.



BEARING PLATE



BASE PLATE (mid-span)



SECTION B-B

General Notes:

Design Specifications: 2002 AASHTO LFD (17th Ed.) Standard Specifications.

Guardrail delineators shall be attached to the top of the guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

All bolts, nuts, washers, plates, reinforcement, and elastomeric material will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

All steel connecting bolts and fasteners for posts and railing shall be galvanized after fabrication. Protective coating and material requirement of steel railing shall be in accordance with Sec. 1040.

Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section.

Rail posts at wings shall be seated on 1/16" elastomeric pads having the same dimensions as the post base plate. Such pads may be any elastomeric material, plain or fibered, having a hardness (durometer) of 50 or above, as certified by the manufacturer. Additional pads or half pads may be used in shimming for alignment. Post heights shown will increase by the thickness of the pad.

At the thrie beam connection to blockout on wings, the bolts shall be tightened and backed off one-half turn and the threads shall be burred.

Minimum length of thrie beam sections is equal to one post space.

A 5/8" diameter button-head, oval shoulder bolt with a minimum 3/8" thick hex nut shall be used at all slots.

Thrie beam guardrail on the bridge shall be 12-gauge steel.

Posts and base plates shall be fabricated from ASTM A709 Grade 36 steel and galvanized.

Flat washers 3" x 1 3/4" x 3/16" minimum shall be used at all post bolts between the bolt head and beam. The washers shall be rectangular in shape with an 11/16 x 1-inch slot, or when necessary of such design as to fit the contour of the beam. Rectangular washers 3" x 1 3/4" x 5/8" shall be used between the blockout and the thrie beam rail.

Special drilling of the thrie beam may be required at the splices. All drilling details shall be shown on the shop drawings.

Fabrication of structural steel shall be in accordance with Sec 1080.

See Missouri Standard Plan 606.00 for details not shown.

THRIE BEAM DETAILS

Detailed MARCH 2022
Checked MARCH 2022

Note: This drawing is not to scale. Follow dimensions.

GREAT RIVER ENGINEERING
Great River Engineering - Missouri State Certificate of Authority Numbers: Engineering: 2007001476, Land Surveying: 2007001476, Landscape Architecture: 2007013672

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JEFFREY A. BANDERET, JR.
NUMBER PE-2017030568
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12/20/2022

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MO# PE-2017030568

BRO-B082(32) CR 409 BRIDGE
BRIDGE #17600061 OVER LICK CREEK
PIKE COUNTY, MISSOURI

RAILING DETAILS

CHECKED BY: JAB
DRAWN BY: QJS
JOB NUMBER: 4225
SHEET NUMBER: S13