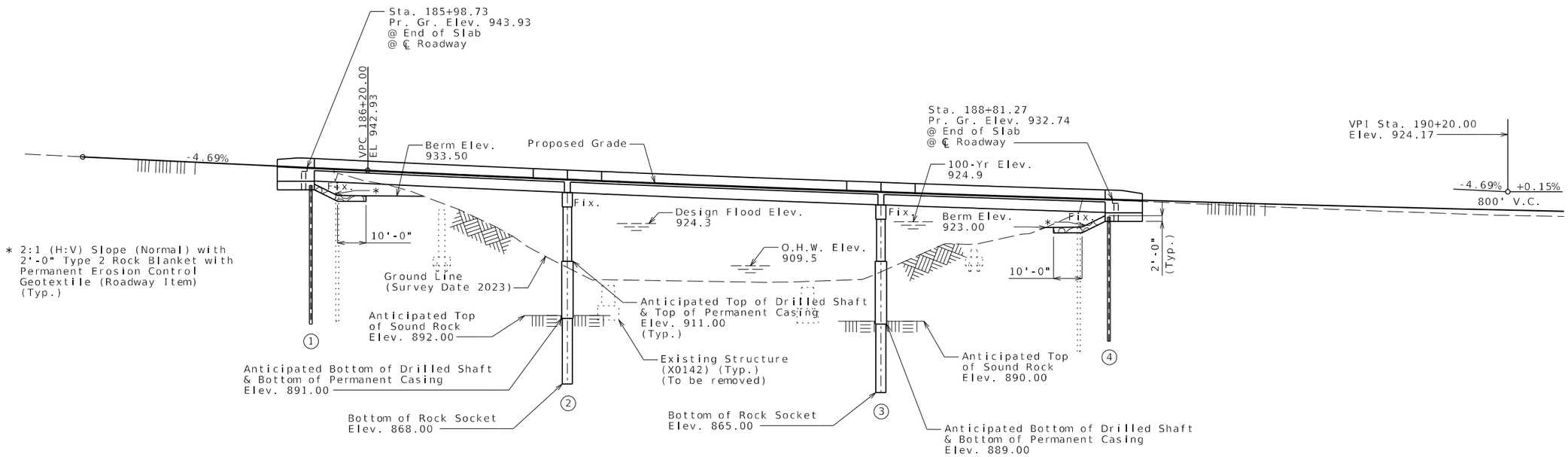
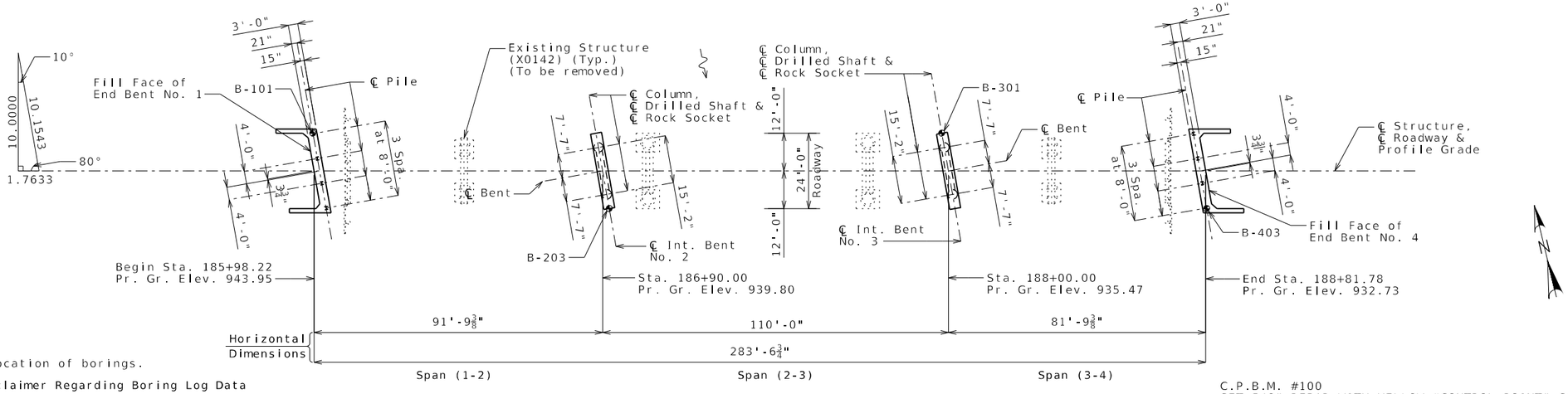
SEC/SUR	24	TWP	65N	RGE	33W

(90'-110'-80') PRESTRESSED CONCRETE NU-GIRDER SPANS



GENERAL ELEVATION



PLAN

Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet(s) No. 32-36 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

Detailed Oct. 2024
Checked Nov. 2024

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

C.P.B.M. #100
SET 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ALONG THE WEST SIDE OF COUNTY ROAD #87,
APPROXIMATELY 450' FEET SOUTH OF THE CENTERLINE OF
HIGHWAY W, AND APPROXIMATELY 5'
WEST OF THE WESTERN EDGE OF GRAVEL RD.
N: 1,549,090.82, E: 2,774,527.89, EL: 930.34
B.M. #905
SET BENCHTIE WITH YELLOW HAND TAG ON THE S. SIDE OF A POWER
POLE, APPROXIMATELY 35' SOUTH OF THE CENTERLINE OF HIGHWAY W,
AND APPROXIMATELY 90' EAST OF THE EAST END OF
THE BRIDGE #X0142 OVER THE WEST FORK OF THE GRAND RIVER
N: 1,549,308.31, E: 2,773,036.79, EL: 923.90

BRIDGE: ROUTE W OVER WEST FORK GRAND RIVER

ROUTE W FROM ROUTE B TO ROUTE U
ABOUT 0.4 MILES EAST OF ROUTE B
STATION 185+98.22

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
05/22/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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Tel (816) 874-4655
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Missouri Cert. of
Authority 2002010300
TREK DESIGN GROUP, LLC

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	80	-	80
Removal of Bridges (X0142)	lump sum	-	-	1
Bridge Approach Slab (Minor)	sq. yard	-	109	109
Drilled Shaft (4ft. 0in. Dia.)	linear foot	80.0	-	80.0
Rock Sockets (3ft. 6in. Dia.)	linear foot	98.0	-	98.0
Video Camera Inspection	each	4	-	4
Foundation Inspection Holes	linear foot	138.0	-	138.0
Sonic Logging Test	each	4	-	4
Galvanized Structural Steel Piles (12 in.)	linear foot	372	-	372
Dynamic Pile Testing	each	2	-	2
Pre-Bore for Piling	linear foot	190	-	190
Pile Point Reinforcement	each	8	-	8
Class B Concrete (Substructure)	cu. yard	102.6	-	102.6
Type D Barrier	linear foot	-	607	607
Slab on Concrete NU-Girder	sq. yard	-	837	837
NU-43 Prestressed Concrete NU-Girder	linear foot	-	840	840
Reinforcing Steel (Bridges)	pound	33,250	-	33,250
Vertical Drain at End Bent	each	-	-	2
Laminated Neoprene Bearing Pad	each	-	12	12
Laminated Neoprene Bearing Pad (Tapered)	each	-	6	6

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

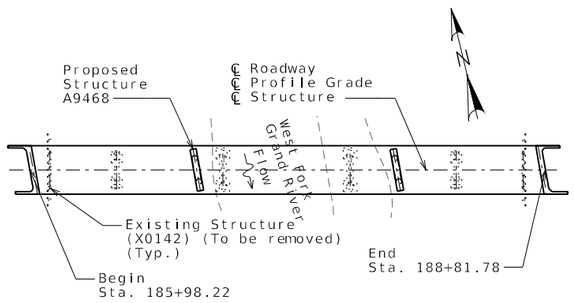
All reinforcement in the end bents is included in the Estimated Quantitites for Slab on Concrete NU-Girder.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

Hydrologic Data

Drainage Area = 249 sq. mi.
Design Flood Frequency = 50 yr.
Design Flood Discharge = 18,500 cfs
Design Flood (D.F.) Elevation = 924.3 ft.
Base Flood (100-Year)
Base Flood Elevation = 924.9
Base Flood Discharge = 21,300 cfs.
Estimated Backwater = 0.2 ft.
Average Velocity thru Opening = 4.1 ft./p
Freeboard (50-year)
Freeboard = 5.7 ft.
Roadway Overtopping
Overtopping Flood Discharge = 12,800 cfs.
Overtopping Flood Frequency = 12-yr
Overtopping Flood Elevation = 922.7 ft.



LOCATION SKETCH

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specification (9th Ed)
Seismic Design Category = A (Nonseismic)
Design earthquake response spectral acceleration coefficient at 1.0 second period, SD1 = 0.104g
Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.066g

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Superstructure: Simply-Supported, Non-Composite for dead load.
Continuous Composite for live load.

Design Unit Stresses:

Class B Concrete (Substructure, except Drilled Shaft & Rock Sockets)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For NU-Girders, see Sheets No. 14 thru 19.

Neoprene Pads:
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 as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 11/2", unless otherwise shown.

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

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 12x53	-	-	HP 12x53
	Number	ea	4	-	-	4
	Approximate Length Per Each	ft	49	-	-	44
	Pile Point Reinforcement	ea	All	-	-	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length	-	-	Full Length
	Pile Driving Verification Method		DT	-	-	DT
	Resistance Factor		0.65	-	-	0.65
	Minimum Nominal Axial Compressive Resistance	kip	358	-	-	341
Rock Socket	Number	ea	-	2	2	-
	Layer 1 Foundation Material		-	Weak Rock	Weak Rock	-
	Layer 1 Elevation Range	ft	-	888-878	886-874	-
	Layer 1 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	4.0	4.0	-
	Layer 2 Foundation Material		-	Strong Rock	Strong Rock	-
	Layer 2 Elevation Range	ft	-	878-855	874-861	-
	Layer 2 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	12.9	12.9	-
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	-	34.0	39.2	-

Load Bearing Pile:
DT = Dynamic Testing
Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factors}}$

Rock Socket:
Minimum Nominal Axial Compressive Resistance (Side Resistance + Top Resistance) = Maximum Factured Loads/Resistance Factors.

Prebore for piles at Bent No. 1 to elevation 889.00.

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

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.

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.

Thickness of permanent steel casing shall be in accordance with Sec 701.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	262
Reinforcing Steel (Epoxy Coated)	pound	97,070

The table of Estimated Quantities for NU-Girder 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 transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for stay-in-place corrugated steel forms, 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.

Slab shall be cast-in-place with conventional forms or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

GENERAL NOTES AND QUANTITIES

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
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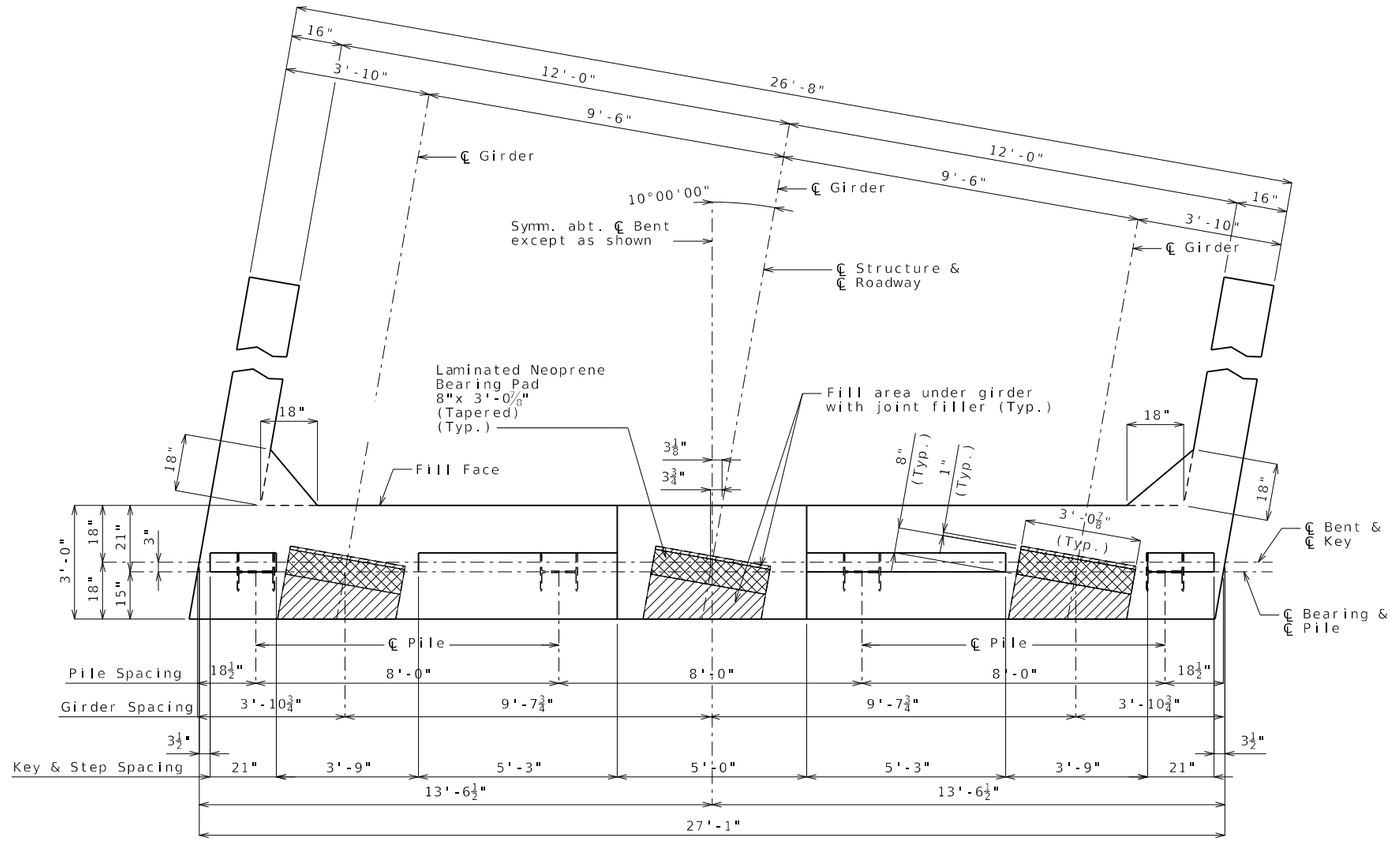
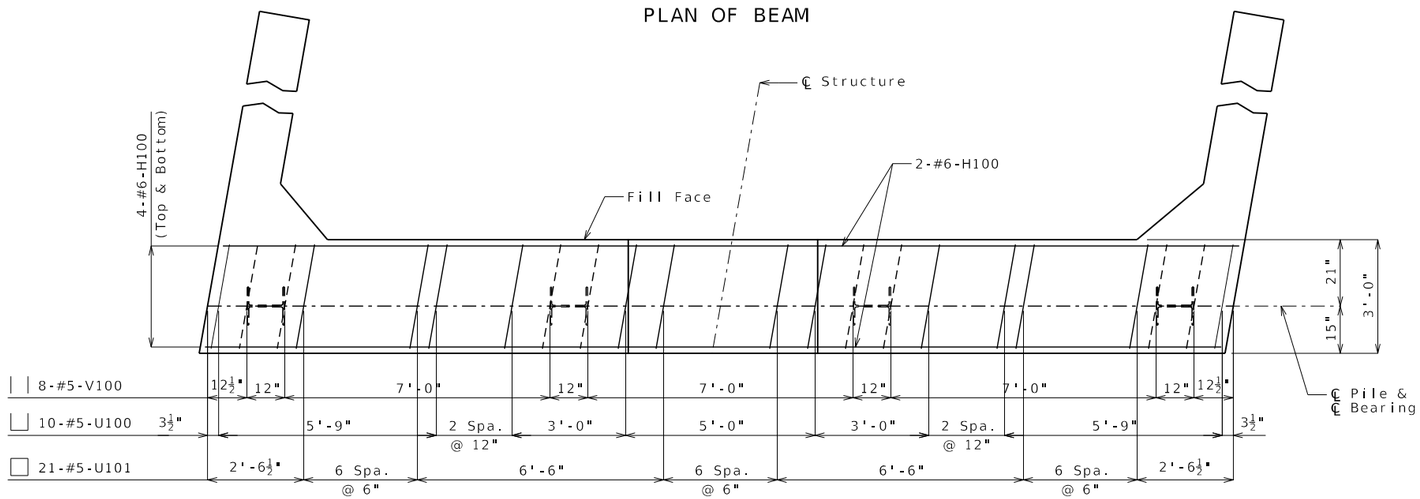
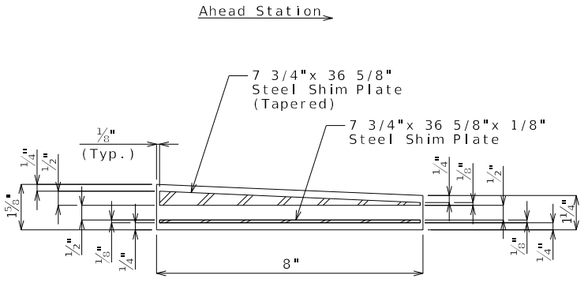
www.trekdesigngroup.com
Missouri Cert. of Authority 2002015000
TREK DESIGN GROUP, LLC



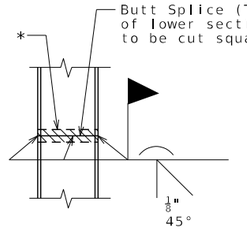
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT
Keys not shown for clarity

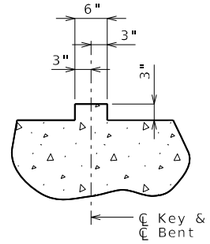


SECTION THRU
LAMINATED NEOPRENE
BEARING PAD



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



SECTION THRU KEY

General Notes:

Work this sheet with Sheets No. 4 & 5.

All U bars and pairs of V bars shall be placed parallel to centerline of roadway.

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

DETAILS OF END BENT NO. 1

Detailed Oct. 2024
Checked Nov. 2024

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JEFF A. GARDNER
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DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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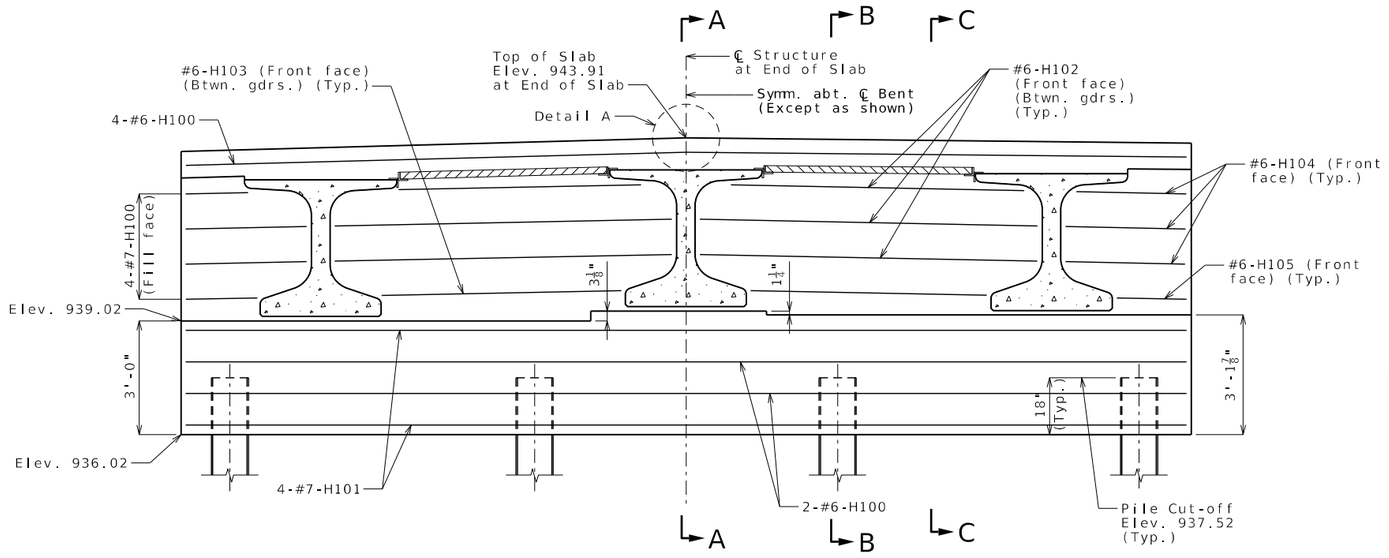
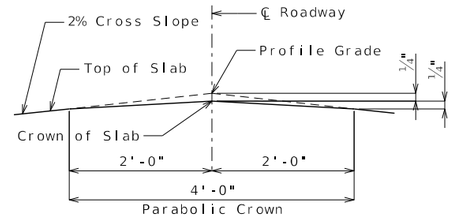


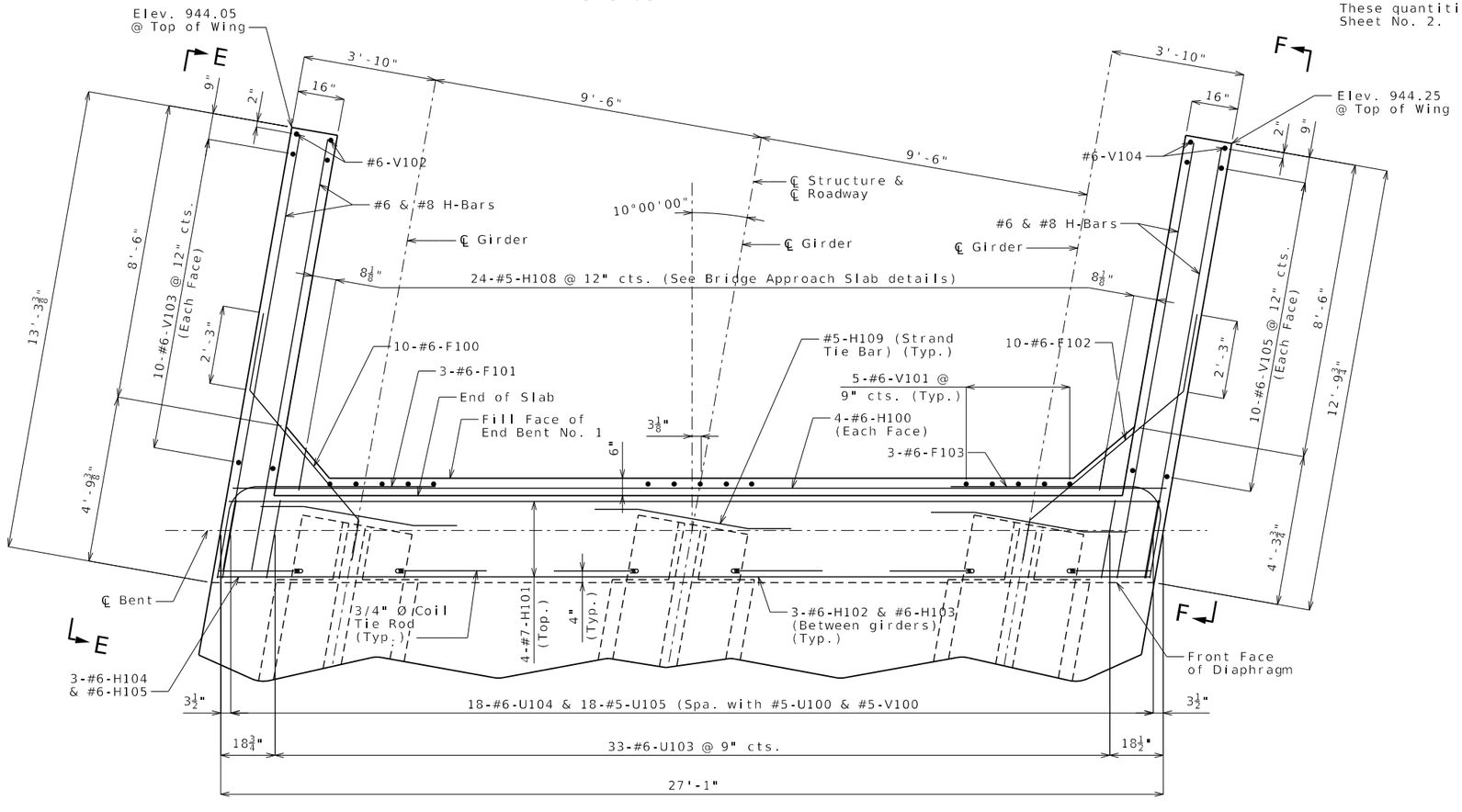
SECTION NEAR END BENT



DETAIL A

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	40
Galvanized Structural Steel Piles (12 in.)	linear foot	196
Dynamic Pile Testing	each	1
Pre-Bore for Piling	linear foot	190
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	12.7

These quantities are included in the Estimated Quantities table on Sheet No. 2.



PART PLAN

DETAILS OF END BENT NO. 1

General Notes:

Work this sheet with Sheets No. 3 & 5.

For Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 5.

The #6-F100 and #6-F102 bars shall be bent in the field to clear girders.

The U bars shall be placed parallel to centerline of roadway.

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

Strands at end of girder shall be field bent or, if necessary, cut in field to maintain 1 1/2 inch minimum clearance to fill face of end bent.

For location of coil tie rods and #5-H109 (strand tie bar), see Sheets No. 14 thru 19.

For details of vertical drain at end bents, see Sheet No. 6.

For details of bridge approach slab, see Sheet No. 27.

Detailed Oct. 2024
Checked Nov. 2024

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JEFF A. GARDNER
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PROFESSIONAL ENGINEER
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DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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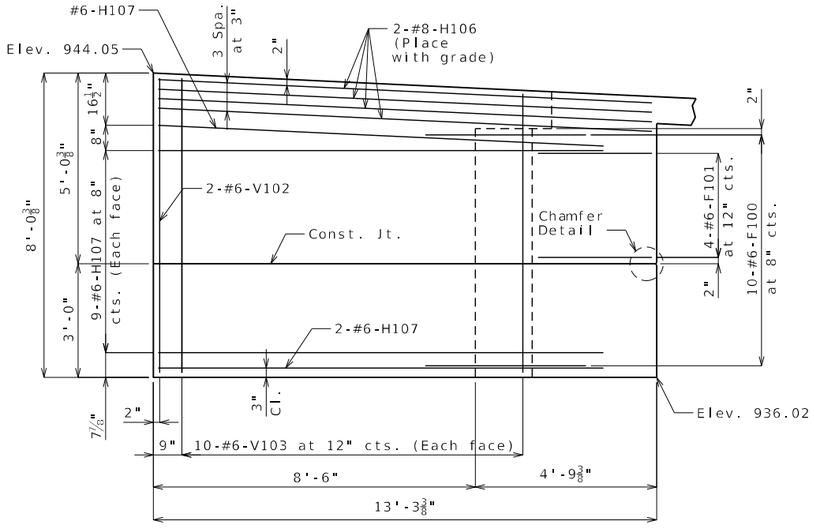
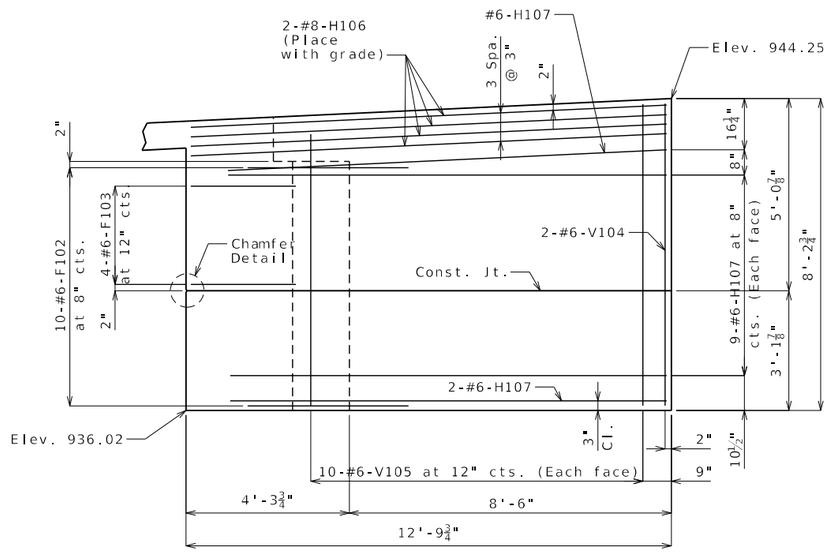
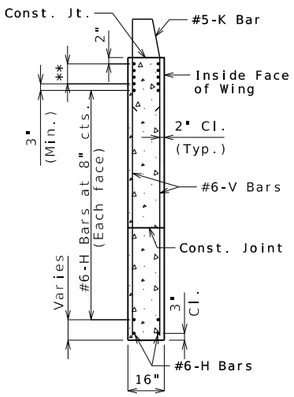


ELEVATION E-E

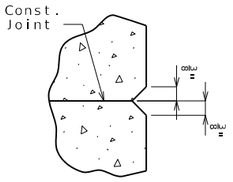


ELEVATION F-F

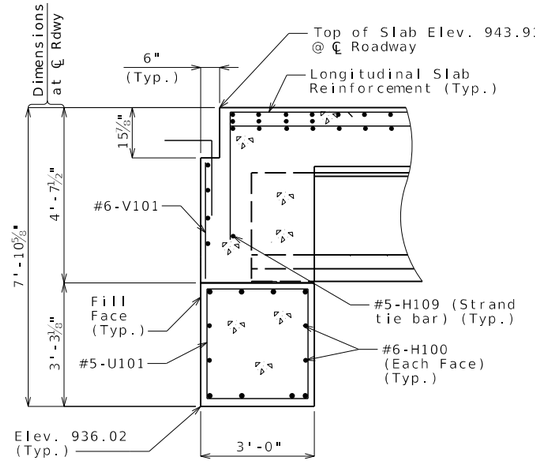


TYPICAL SECTION
THRU WING

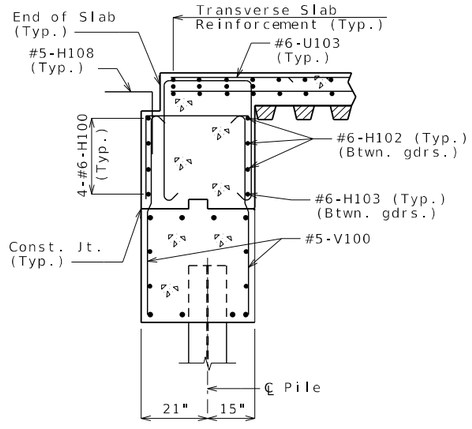
** #8-H Bars at 3" cts. (Each face)(Place with grade)



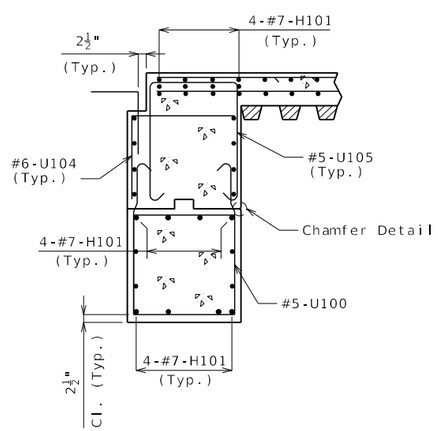
CHAMFER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

General Notes:

Work this sheet with Sheets No. 3 & 4.

For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 4.

For details and reinforcement of the Type D Barrier, see Sheets No. 25 & 26.

DETAILS OF END BENT NO. 1

Detailed Oct. 2024
Checked Nov. 2024

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DATE PREPARED	
11/26/2024	
ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	5
COUNTY	
WORTH	
JOB NO.	
JNW0020	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9468	

DESCRIPTION	DATE

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TREKK DESIGN GROUP, LLC

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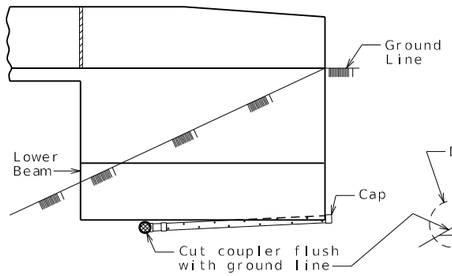
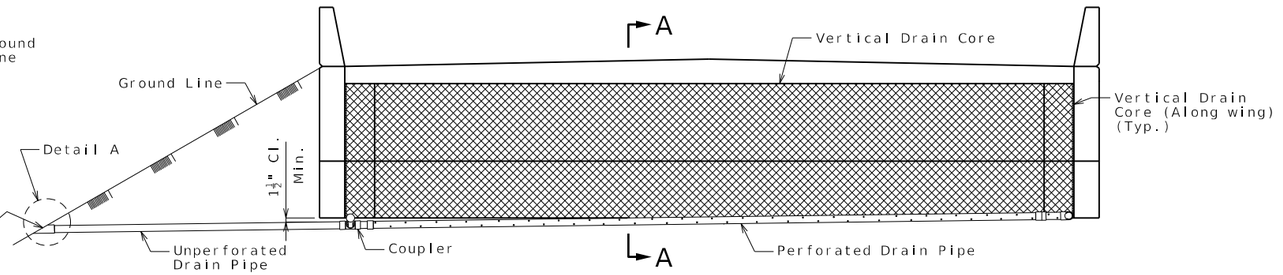
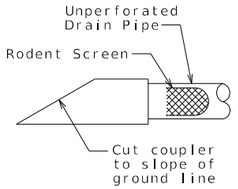


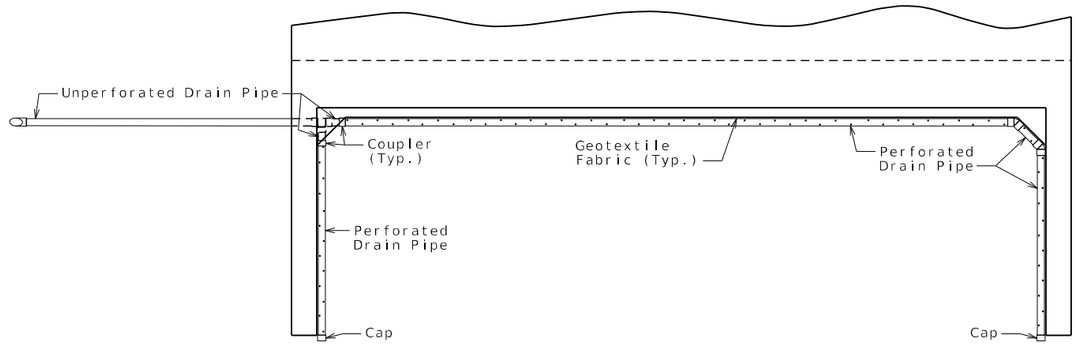
ELEVATION OF WING



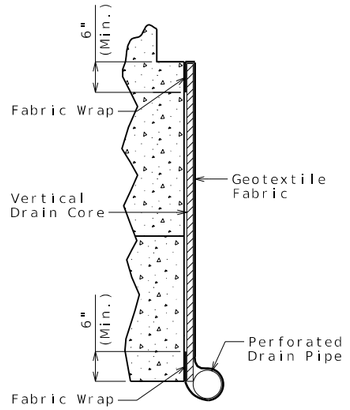
ELEVATION OF END BENT



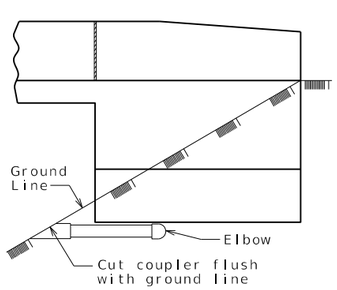
DETAIL A



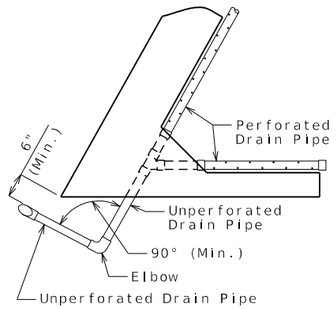
PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING



PART PLAN

OPTIONAL TURNED DRAIN
(Use only when straight drain is not practical.)

General Notes:

All drain pipe shall be sloped 1 to 2 percent.

Drain pipe may be either 6-inch diameter corrugated metallic-coated steel pipe underdrain, 4-inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch diameter corrugated polyethylene (PE) drain pipe.

Drain pipe shall be placed at fill face of end bent and inside face of wings. The pipe shall slope to lowest grade of ground line, also missing the lower beam of end bent by a minimum of 1 1/2 inches.

Perforated pipe shall be placed at fill face side and inside face of wings at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

VERTICAL DRAIN AT END BENTS

(Squared end bent shown, skewed end bent similar)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	6

COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

1411 East 104th St.
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Tel (816) 874-4655
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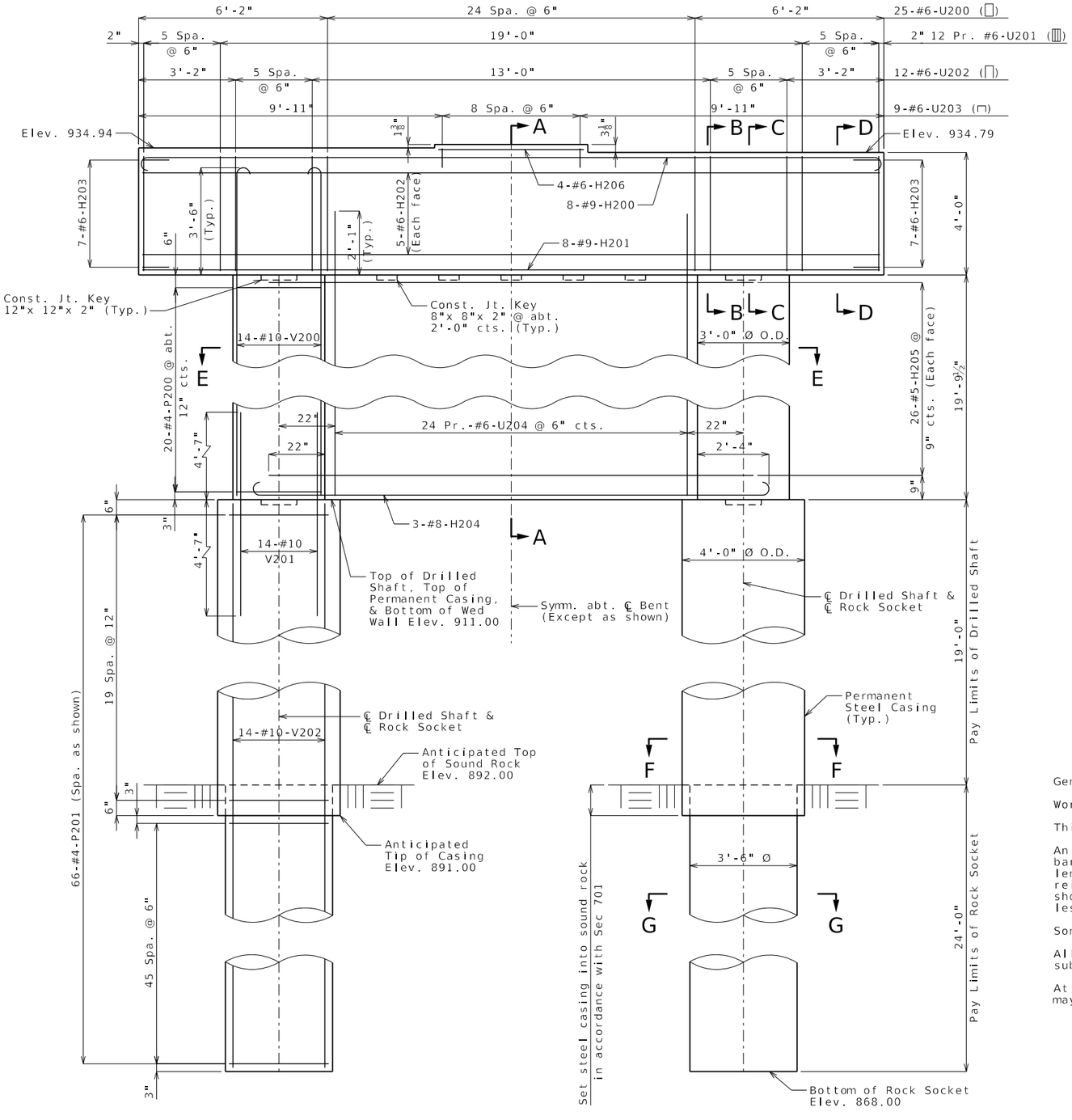
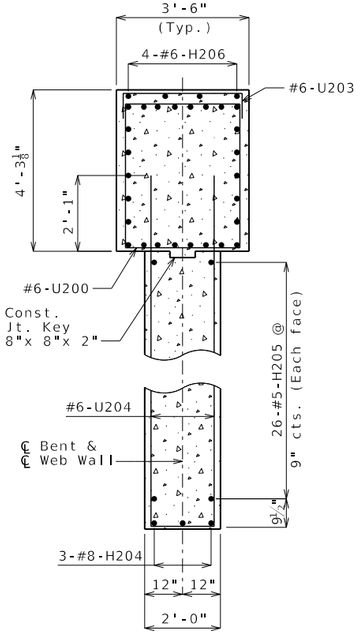
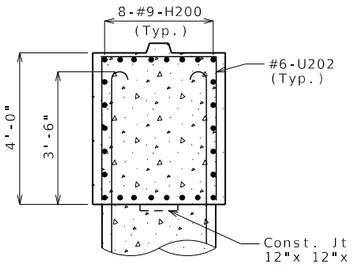


ELEVATION

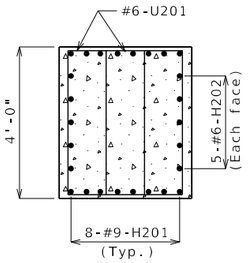
Beam keys not shown for clarity.



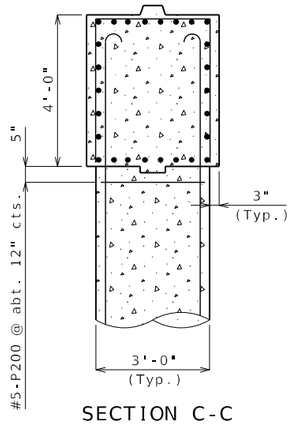
SECTION A-A



SECTION B-B



SECTION D-D



SECTION C-C

General Notes:

Work this sheet with Sheet No. 8.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 18-#4-P201 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

At the contractor's option, the hooks of vertical bars embedded in the beam cap may be oriented inward or outward.

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Drilled Shaft (4ft. 0in. Dia.)	linear foot	38
Rock Sockets (3ft. 6in. Dia.)	linear foot	48
Video Camera Inspection	each	2
Foundation Inspection Holes	linear foot	68
Sonic Logging Test	each	2
Class B Concrete (Substructure)	cu. yard	41.8
Reinforcing Steel (Bridges)	pound	16,940

These quantities are included in the Estimated Quantities table on Sheet No. 2.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	7

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREKK DESIGN GROUP, LLC
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Kansas City, MO 64131
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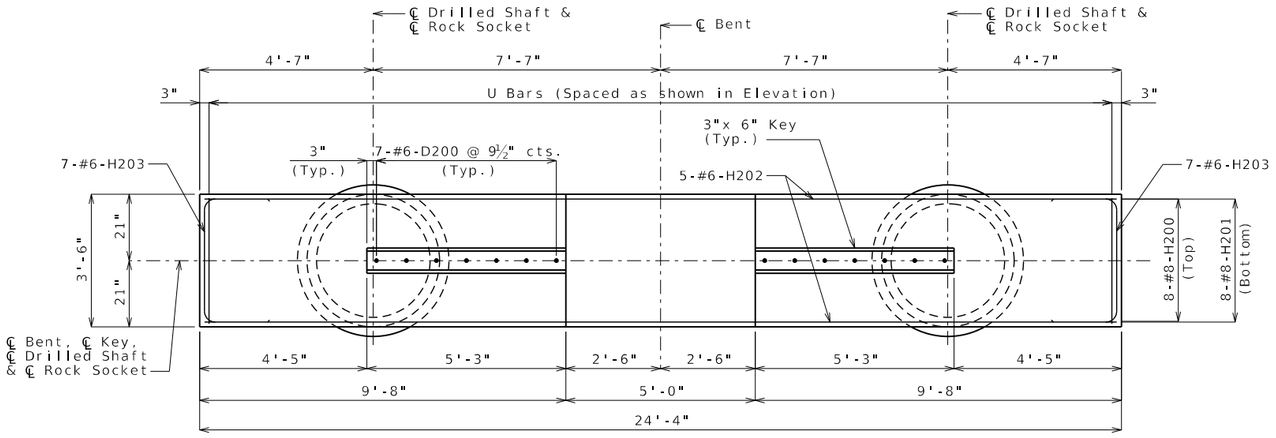
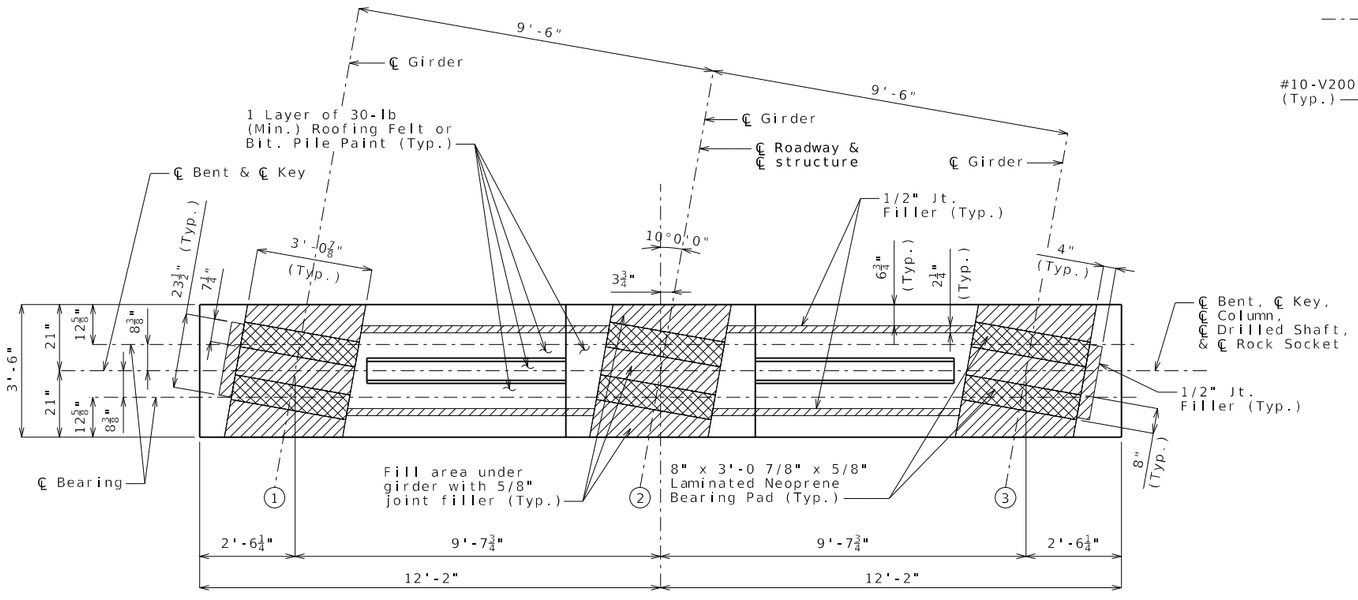
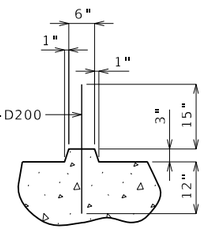


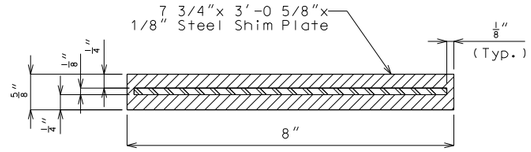
PLAN OF BEAM SHOWING REINFORCEMENT



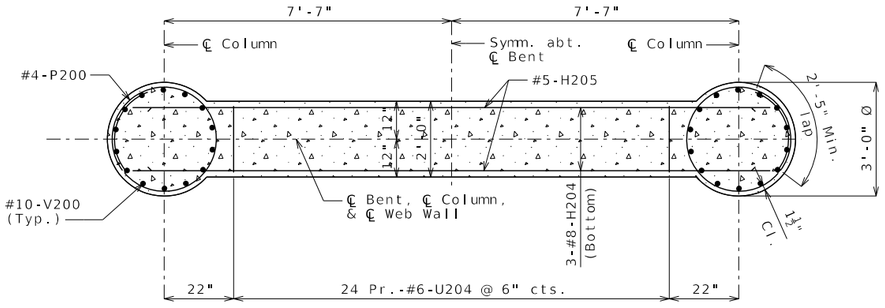
PLAN OF BEAM



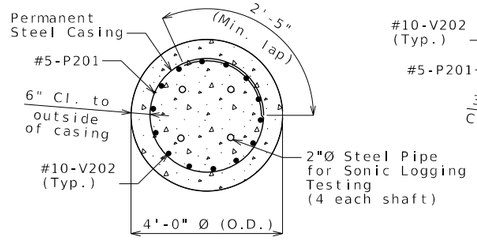
SECTION THRU KEY



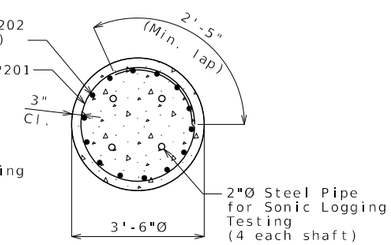
TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD



SECTION E-E



SECTION F-F
(DRILLED SHAFT)



SECTION G-G
(ROCK SOCKET)

General Notes:

Work this sheet with Sheet No. 7.

For steps 2 inches or more, use 2 1/4 x 1/2-inch joint filler up vertical face.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	8

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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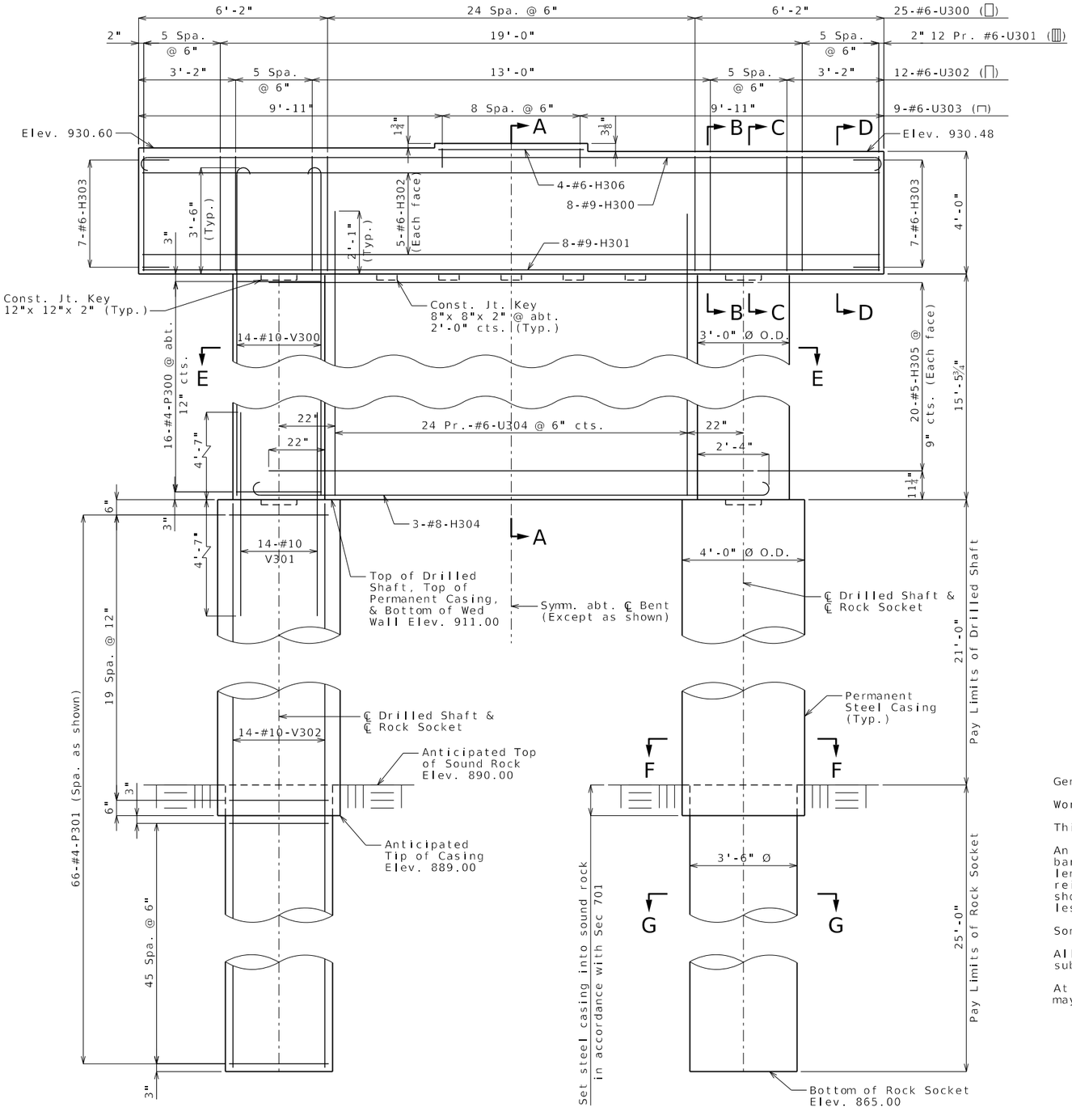
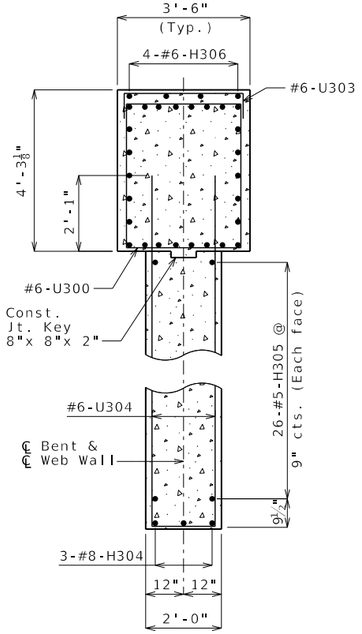
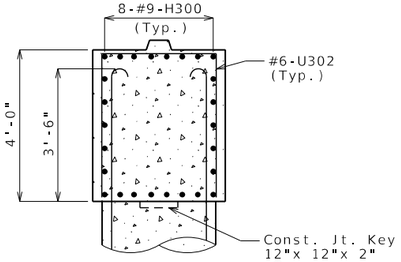


ELEVATION

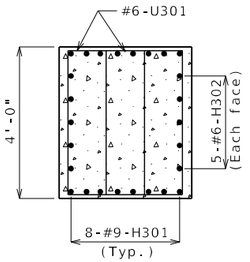
Beam keys not shown for clarity.



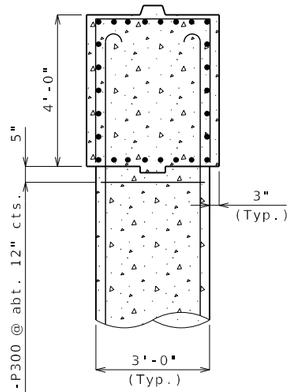
SECTION A-A



SECTION B-B



SECTION D-D



SECTION C-C

General Notes:

Work this sheet with Sheet No. 10.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 18-#4-P301 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

At the contractor's option, the hooks of vertical bars embedded in the beam cap may be oriented inward or outward.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Drilled Shaft (4ft. 0in. Dia.)	linear foot	42
Rock Sockets (3ft. 6in. Dia.)	linear foot	50
Video Camera Inspection	each	2
Foundation Inspection Holes	linear foot	70
Sonic Logging Test	each	2
Class B Concrete (Substructure)	cu. yard	35.5
Reinforcing Steel (Bridges)	pound	16,310

These quantities are included in the Estimated Quantities table on Sheet No. 2.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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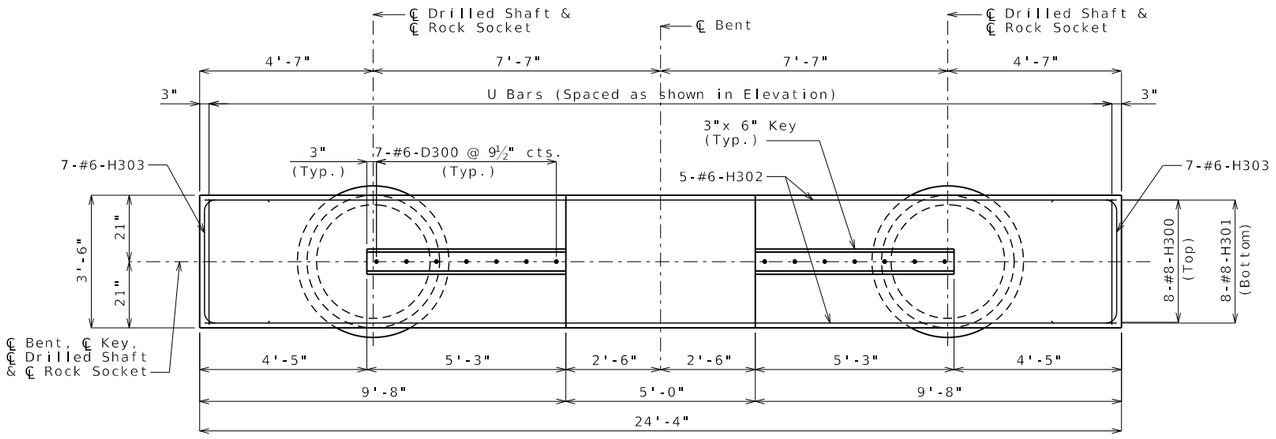
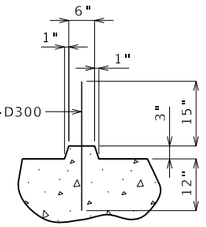
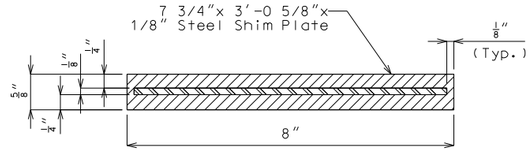


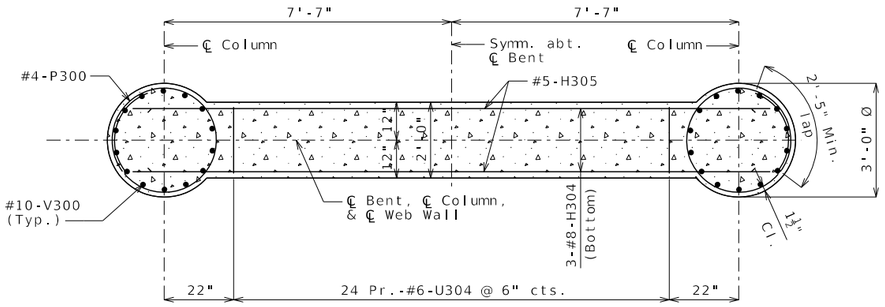
PLAN OF BEAM SHOWING REINFORCEMENT



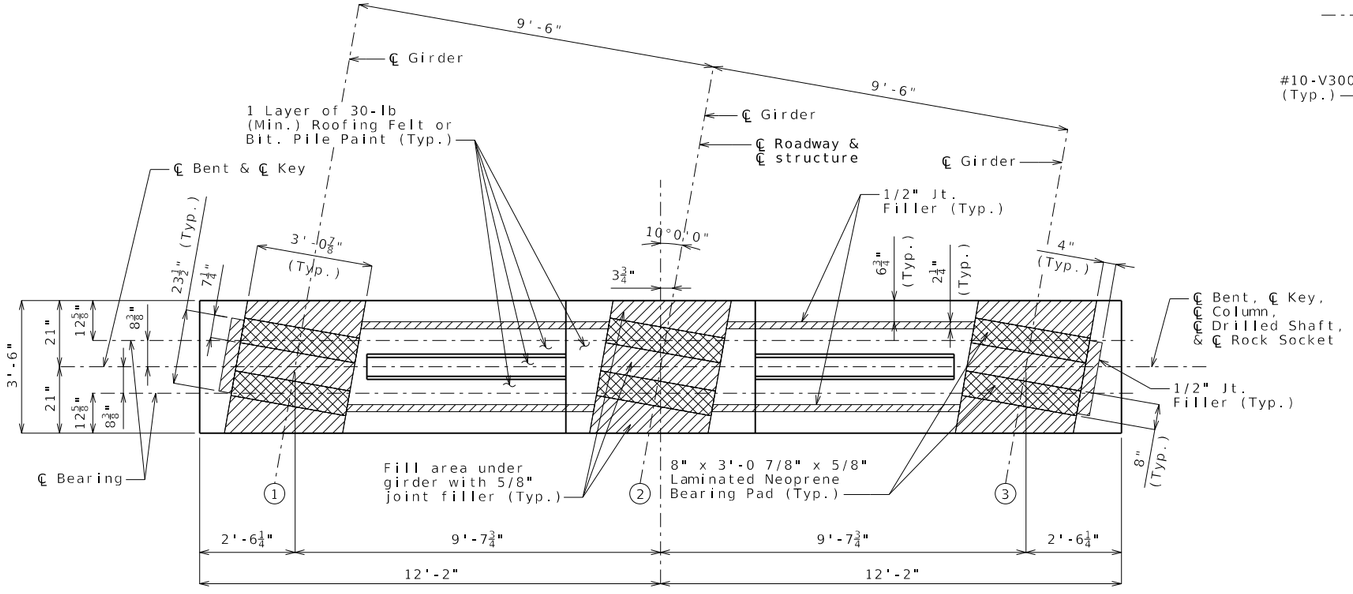
SECTION THRU KEY



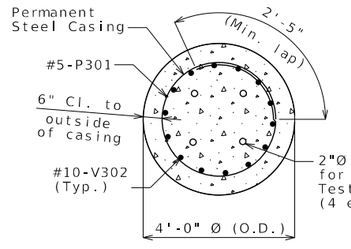
TYPICAL SECTION THRU
LAMINATED NEOPRENE BEARING PAD



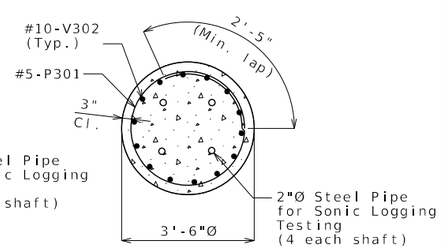
SECTION E-E



PLAN OF BEAM



SECTION F-F
(DRILLED SHAFT)



SECTION G-G
(ROCK SOCKET)

General Notes:

Work this sheet with Sheet No. 9.

For steps 2 inches or more, use 2 1/4 x 1/2-inch joint filler up vertical face.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	10

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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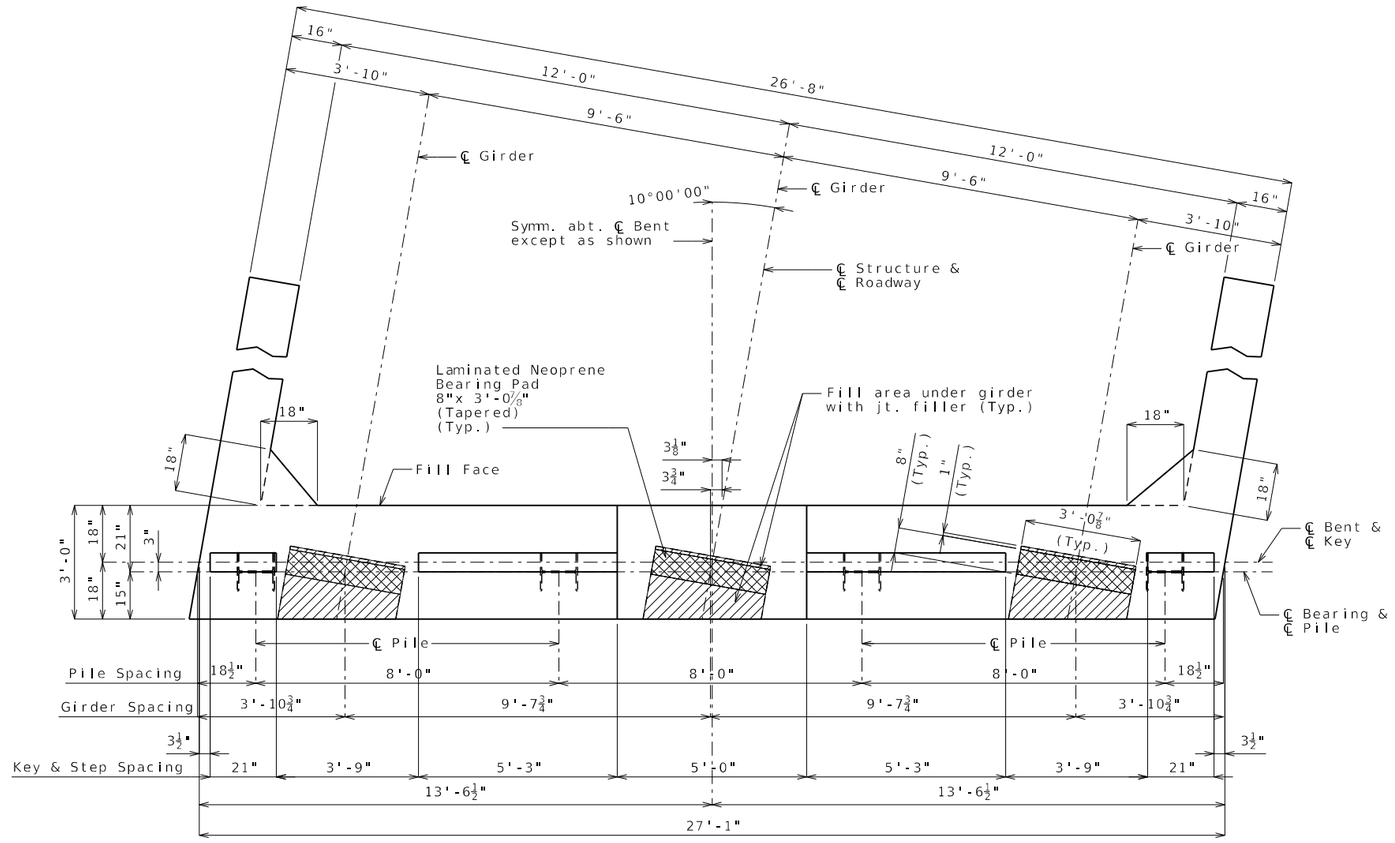
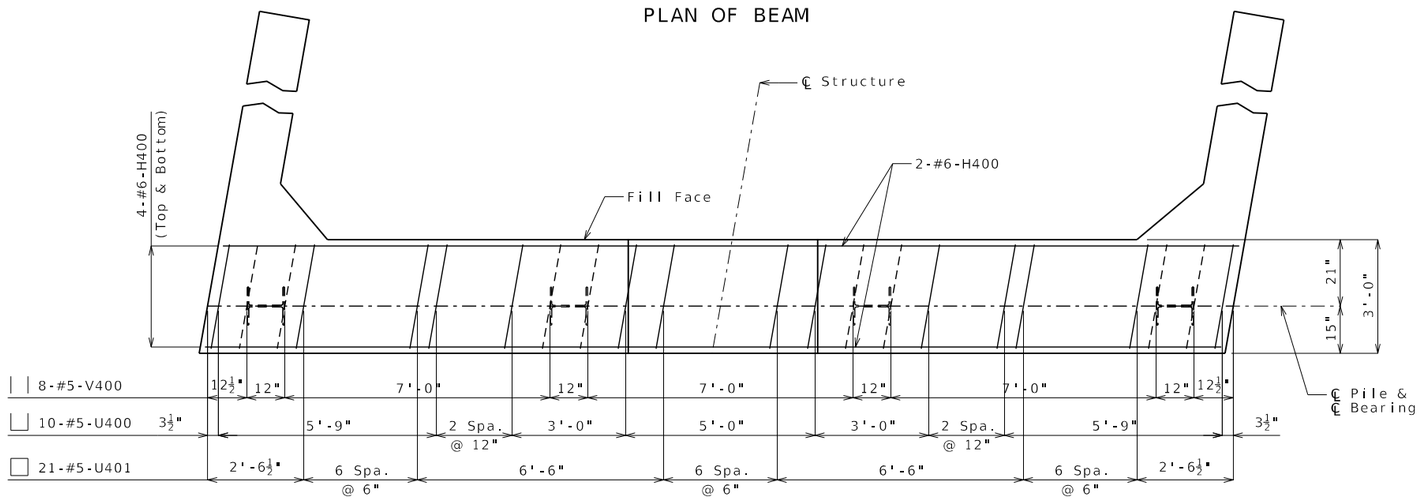
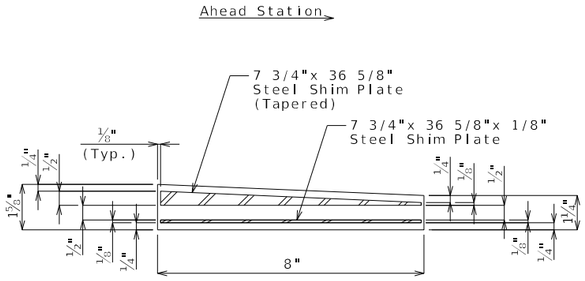


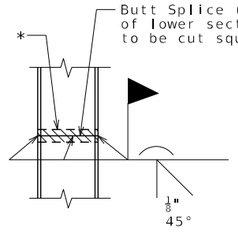
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT
Keys not shown for clarity

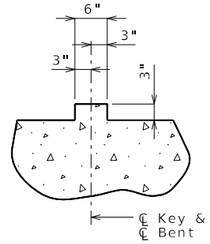


SECTION THRU
LAMINATED NEOPRENE
BEARING PAD



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



SECTION THRU KEY

General Notes:

Work this sheet with Sheets No. 12 & 13.

All U bars and pairs of V bars shall be placed parallel to centerline of roadway.

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

DETAILS OF END BENT NO. 4

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
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DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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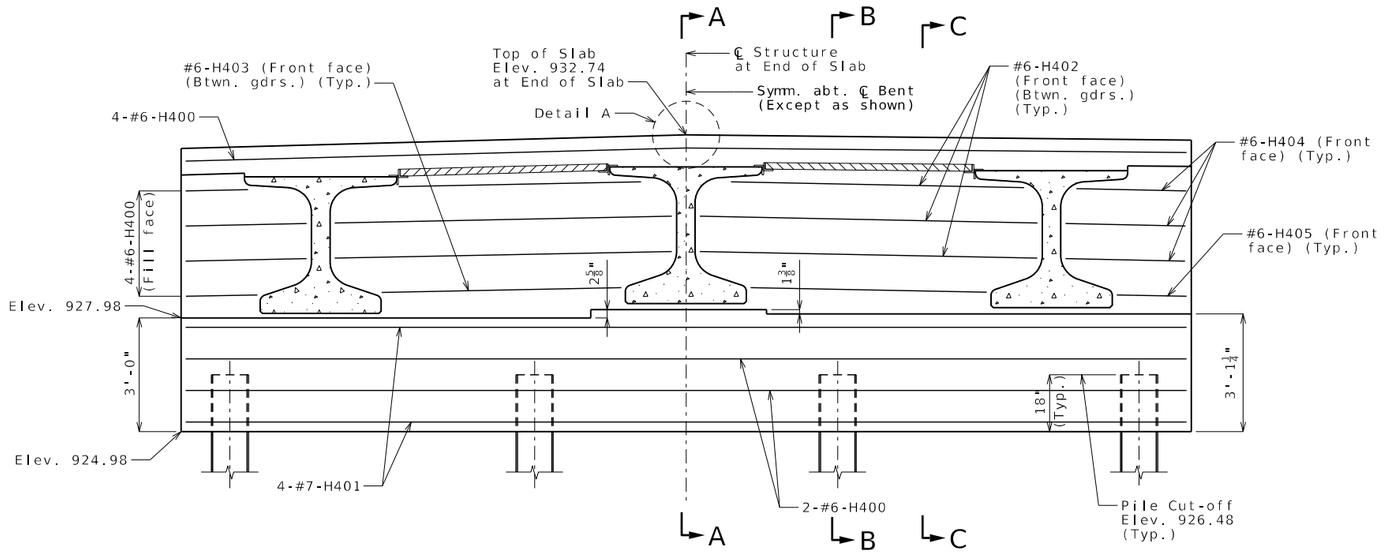
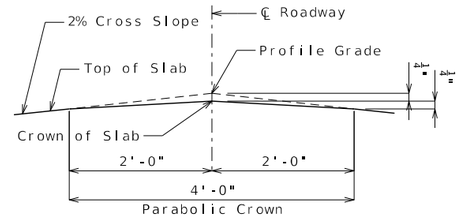


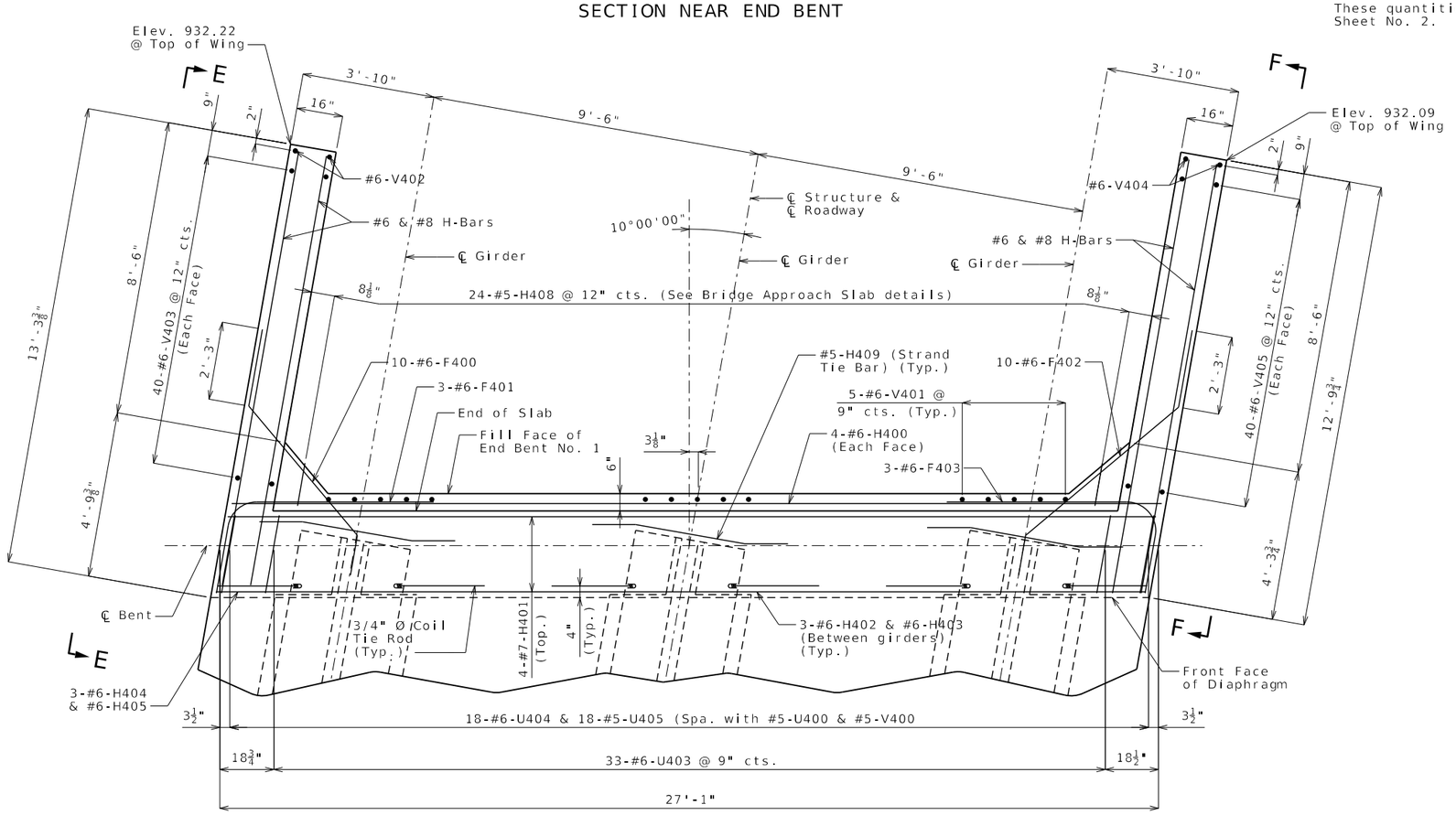
SECTION NEAR END BENT



DETAIL A

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	40
Galvanized Structural Steel Piles (12 in.)	linear foot	176
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	12.6

These quantities are included in the Estimated Quantities table on Sheet No. 2.



PART PLAN

DETAILS OF END BENT NO. 4

General Notes:

Work this sheet with Sheets No. 11 & 13.

For Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 13.

The #6-F400 and #6-F402 bars shall be bent in the field to clear girders.

The U bars shall be placed parallel to centerline of roadway.

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

Strands at end of girder shall be field bent or, if necessary, cut in field to maintain 1 1/2 inch minimum clearance to fill face of end bent.

For location of coil tie rods and #5-H409 (strand tie bar), see Sheets No. 14 thru 19.

For details of vertical drain at end bents, see Sheet No. 6.

For details of bridge approach slab, see Sheet No. 27.

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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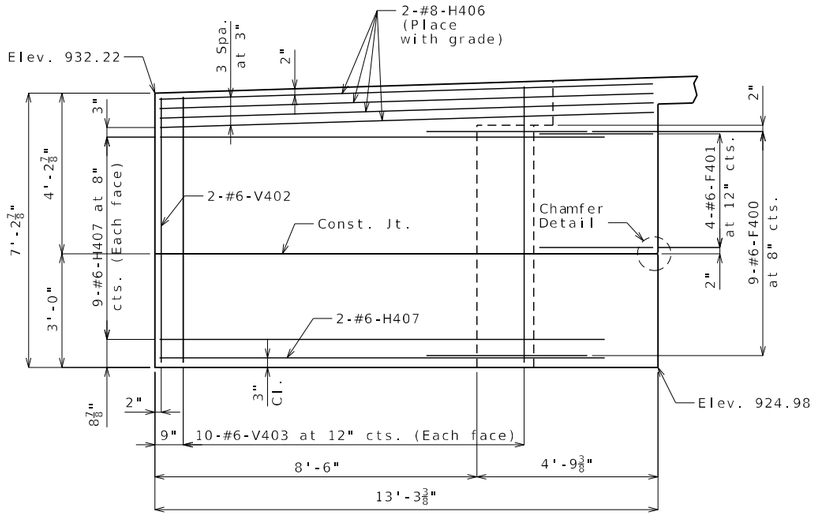
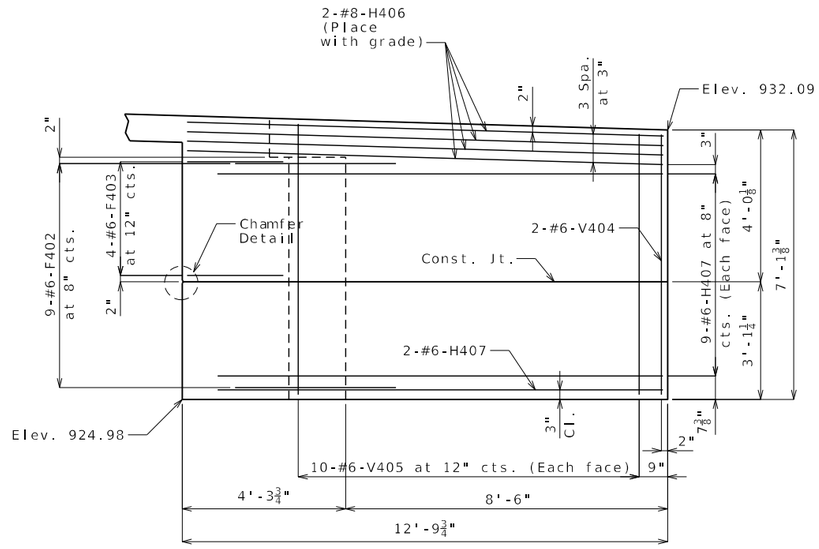
MoDOT

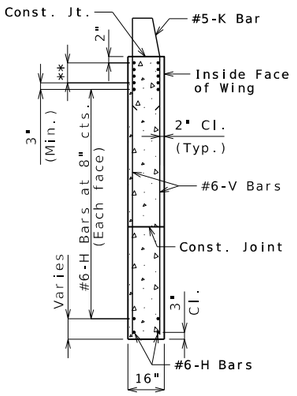
TREKK DESIGN GROUP, LLC
1411 East 136th St.
Kansas City, MO 64145
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300



ELEVATION E-E

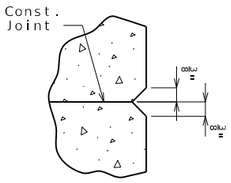


ELEVATION F-F

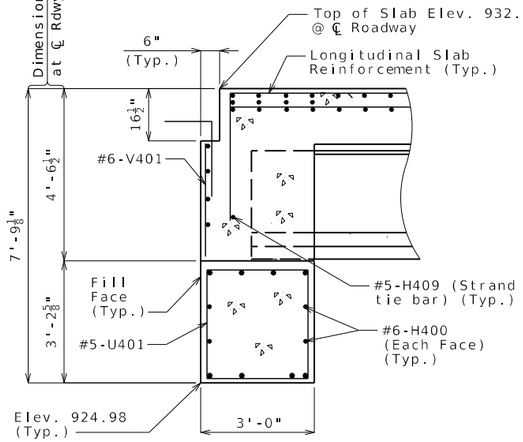


TYPICAL SECTION THRU WING

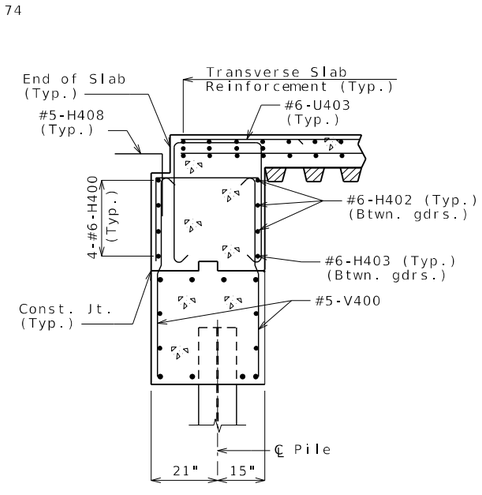
** #8-H Bars at 3" cts. (Each face)(Place with grade)



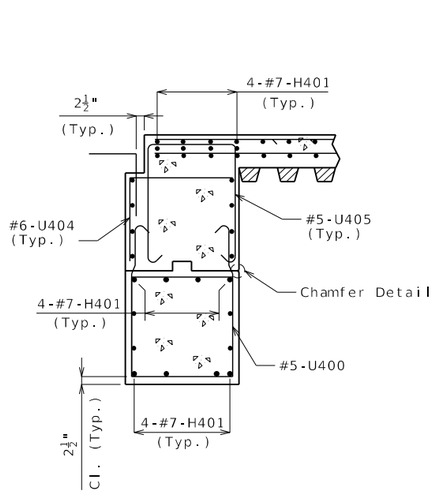
CHAMFER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

General Notes:

Work this sheet with Sheets No. 11 & 12.

For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 12.

For details and reinforcement of the Type D Barrier, see Sheets No. 25 & 26.

DETAILS OF END BENT NO. 4

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
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PROFESSIONAL ENGINEER
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DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	13

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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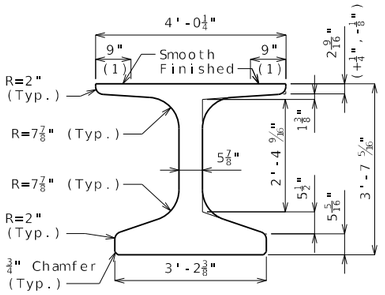
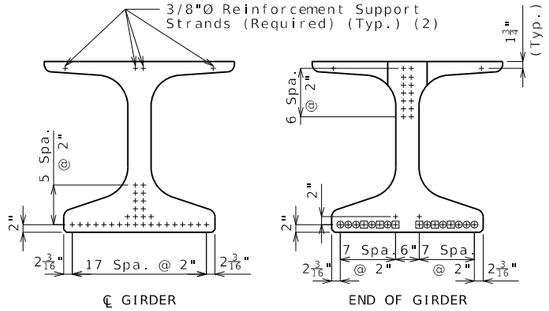
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



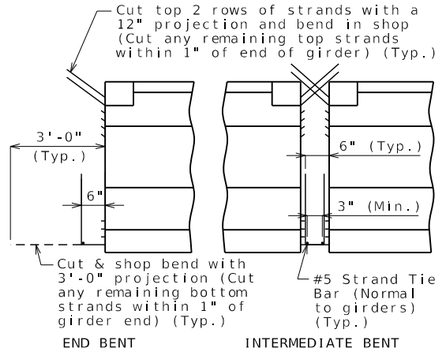
℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

□ Indicates debonded for 6'-0" from end of girder



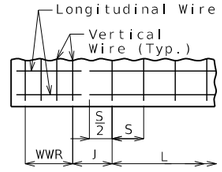
END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS

(3): Bent 1: 16 5/8"
Bent 2: 12 1/4"

(4): Bent 2: 12 1/4"

(5): Bent 2: 9 1/2"



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

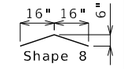
Bars Each Girder

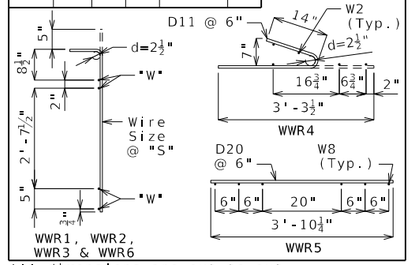
No.	Size/Mark	Length	Shape
112	3 G1	2'-10"	8
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D22	4"	W9	12'-4"	4"
WWR2	D22	8"	W9	16'-0"	8"
WWR3	D22	16"	W9	28'-0"	--
WWR6	D31	2"	W12	16"	3 5/16"

Bending Diagrams





All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 30 strands, 0.6"Ø Grade 270, with an initial prestress force of 1318 kips.

Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

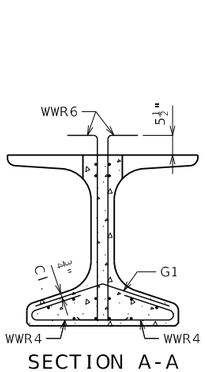
Exterior and interior girders are the same except: coil ties, top flange blockout.

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 20.

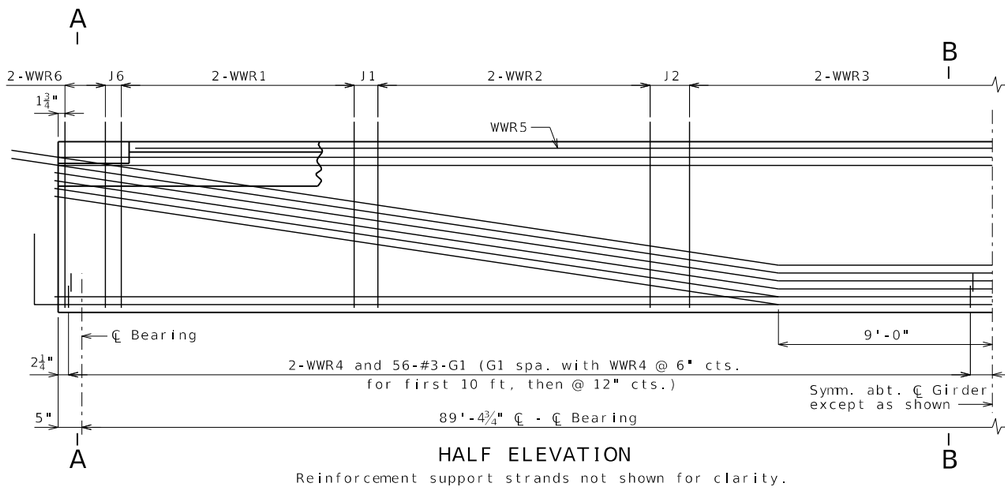
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



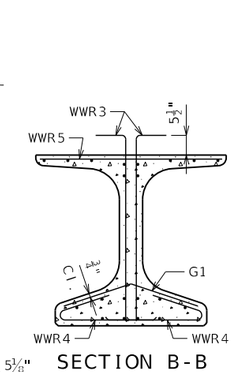
SECTION A-A

Strands not shown for clarity.



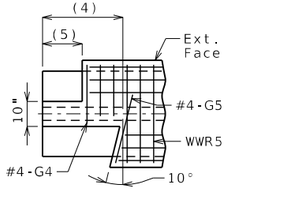
HALF ELEVATION

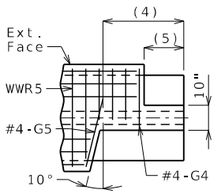
Reinforcement support strands not shown for clarity.



SECTION B-B

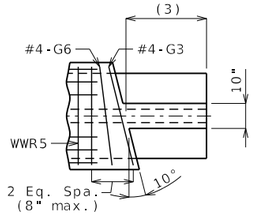
Strands not shown for clarity.





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

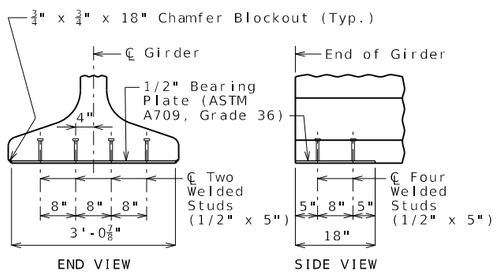
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

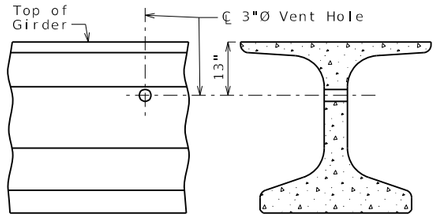
TOP FLANGE BLOCKOUT

Right advanced



END VIEW SIDE VIEW

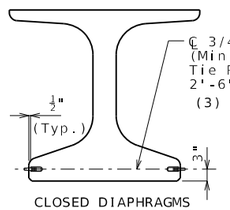
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS - SPAN (1-2)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY
DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	14

COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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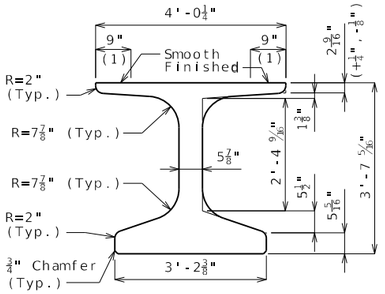
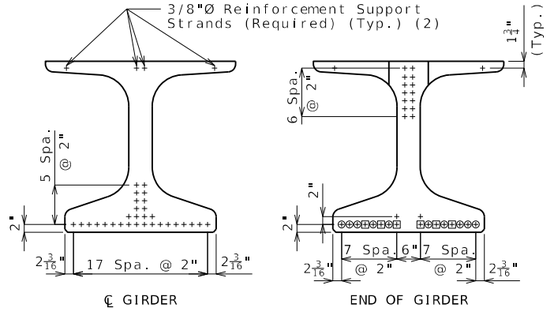
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

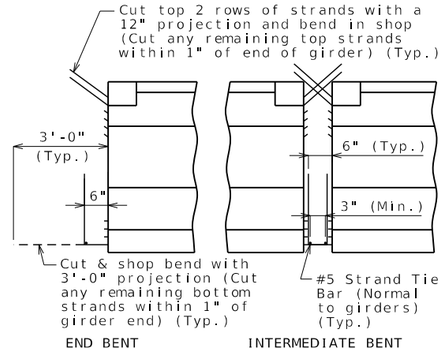


STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

□ Indicates debonded for 6'-0" from end of girder

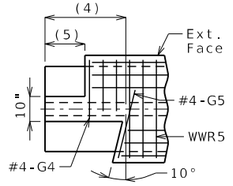


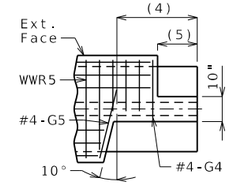
STRANDS AT GIRDER ENDS

(3): Bent 1: 16 5/8"
Bent 2: 12 1/4"

(4): Bent 2: 12 1/4"

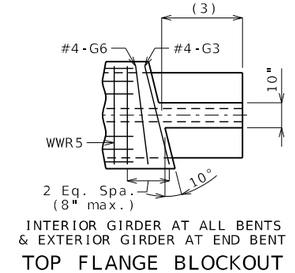
(5): Bent 2: 9 1/2"





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.



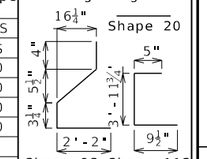
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

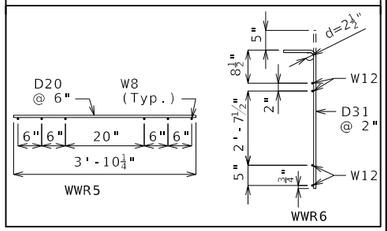
Right advanced

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
104	5 B1	5'-0"	11S
114	4 D1	4'-0"	9S
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 30 strands, 0.6"Ø Grade 270, with an initial prestress force of 1318 kips.

Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

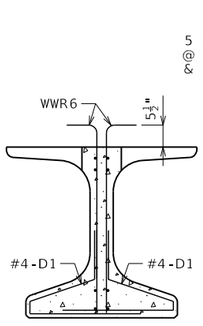
Exterior and interior girders are the same except: coil ties, top flange blockout.

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 20.

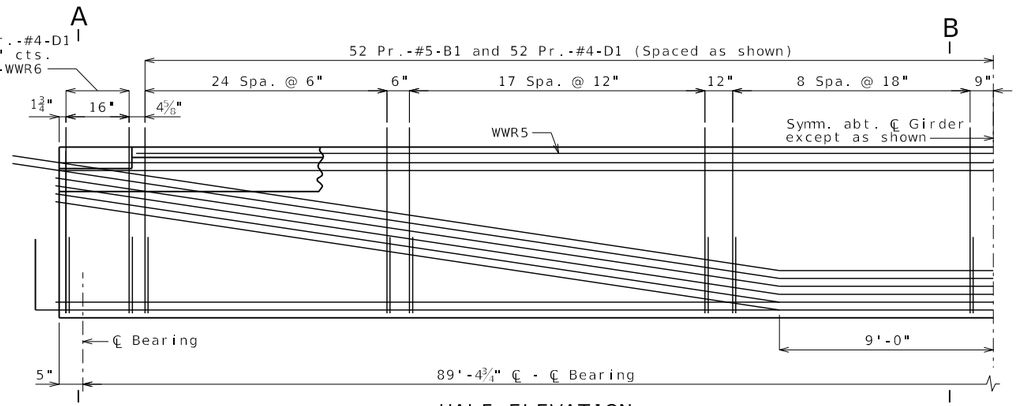
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



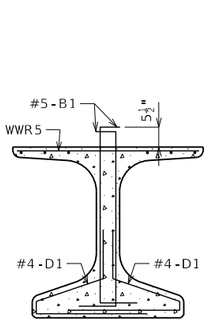
SECTION A-A

Strands not shown for clarity.



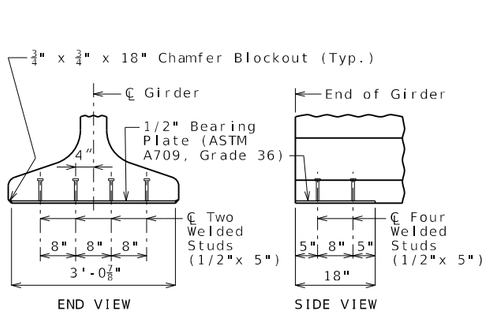
HALF ELEVATION

Reinforcement support strands not shown for clarity.

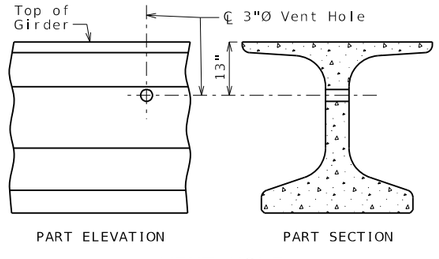


SECTION B-B

Strands not shown for clarity.

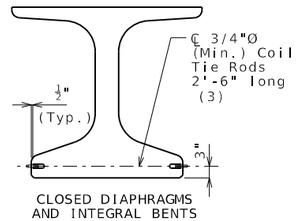


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2".



COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPAN (1-2)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	15

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

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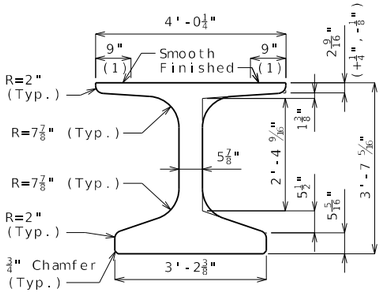
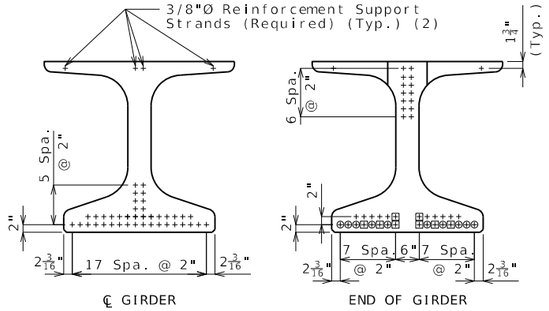
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

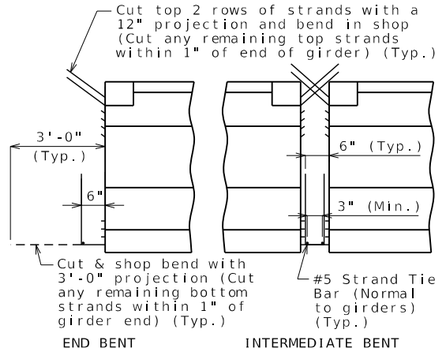


STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

□ Indicates debonded for 6'-0" from end of girder

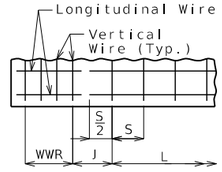


STRANDS AT GIRDER ENDS

(3): Bent 2: 8 1/2"
Bent 3: 11 7/8"

(4): Bent 2: 8 1/2"
Bent 3: 11 7/8"

(5): Bent 2: 5 3/4"
Bent 3: 9 1/4"



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

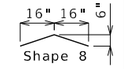
Bars Each Girder

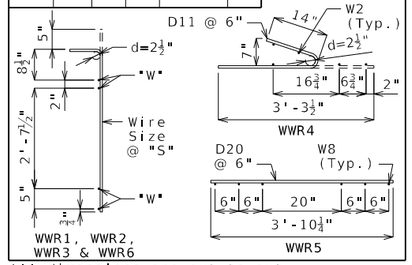
No.	Size/Mark	Length	Shape
130	3 G1	2'-10"	8
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D22	4"	W9	15'-4"	4"
WWR2	D22	8"	W9	20'-0"	8"
WWR3	D22	16"	W9	33'-4"	--
WWR6	D31	2"	W12	16"	3¼"

Bending Diagrams





All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 40 strands, 0.6"Ø Grade 270, with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

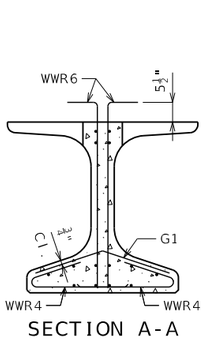
Exterior and interior girders are the same except: coil ties, top flange blockout.

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 20.

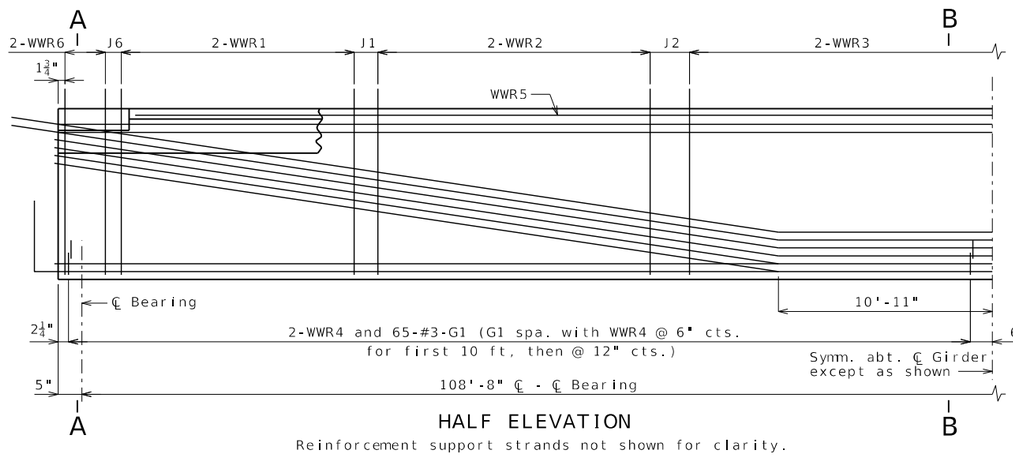
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



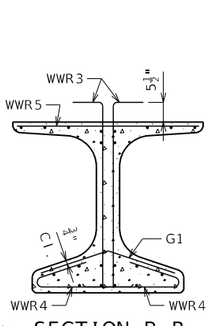
SECTION A-A

Strands not shown for clarity.



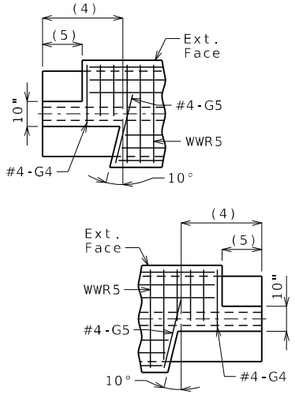
HALF ELEVATION

Reinforcement support strands not shown for clarity.



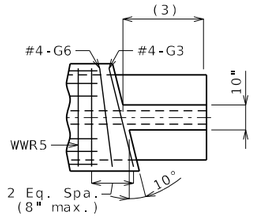
SECTION B-B

Strands not shown for clarity.



LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

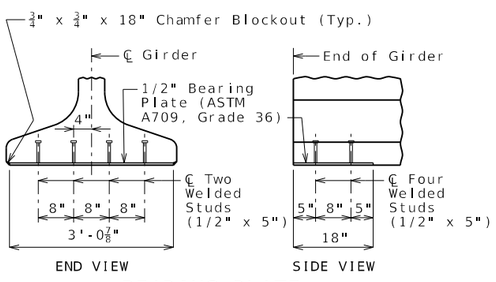
Rotate 180° for right ext.



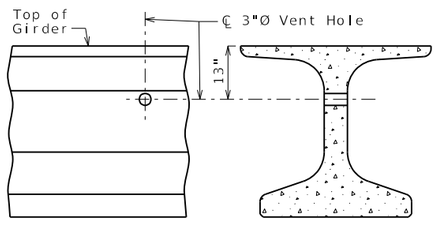
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced

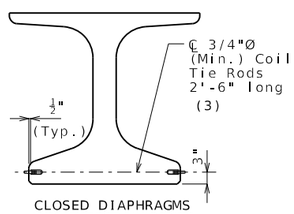


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 2'-0" at exterior face of exterior girders at end bents

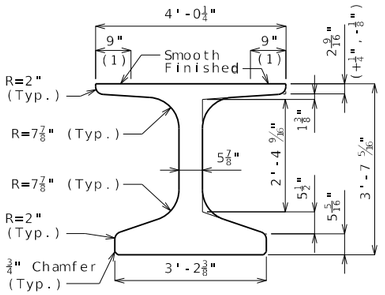
NU-GIRDERS - SPAN (2-3)

Detailed Oct. 2024
Checked Nov. 2024

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

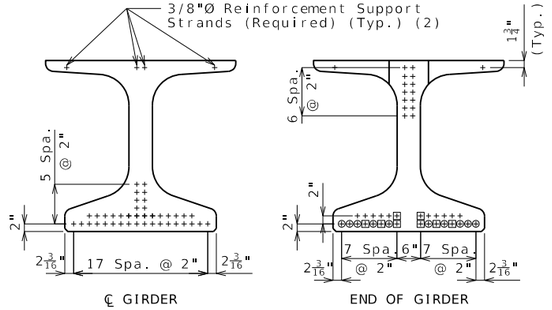
STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY
DATE PREPARED 11/26/2024
ROUTE W
STATE MO
DISTRICT BR
SHEET NO. 16
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468
DESCRIPTION
DATE
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



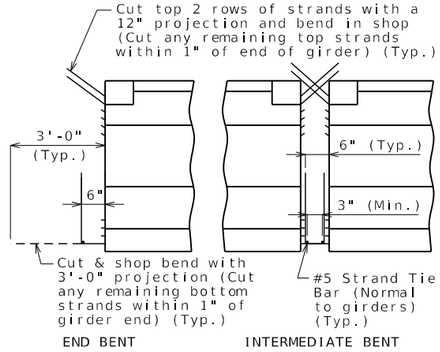
℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

□ Indicates debonded for 6'-0" from end of girder



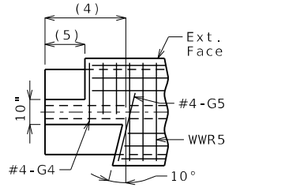
END BENT INTERMEDIATE BENT

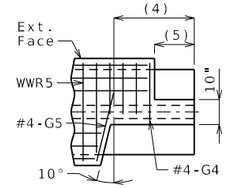
STRANDS AT GIRDER ENDS

(3): Bent 2: 8 1/2"
Bent 3: 11 7/8"

(4): Bent 2: 8 1/2"
Bent 3: 11 7/8"

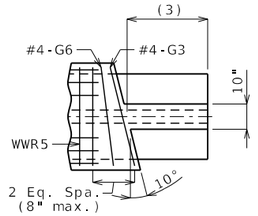
(5): Bent 2: 5 3/4"
Bent 3: 9 1/4"





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.



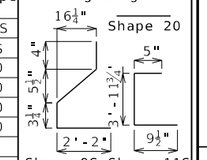
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

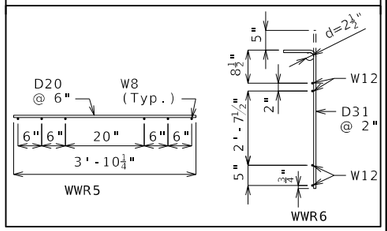
Right advanced

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
127	5 B1	5'-0"	11S
137	4 D1	4'-0"	9S
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 40 strands, 0.6"Ø Grade 270, with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

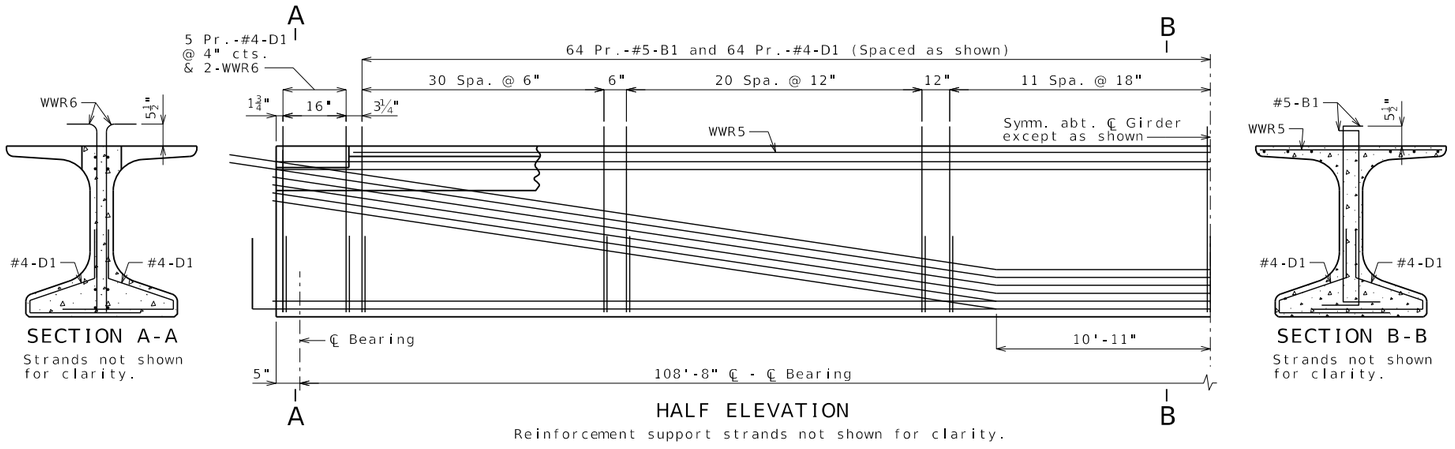
Exterior and interior girders are the same except: coil ties, top flange blockout.

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 ,12 and 21.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



SECTION A-A

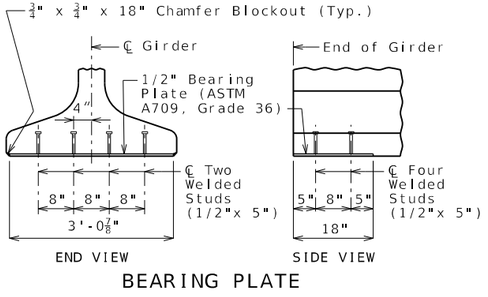
Strands not shown for clarity.

HALF ELEVATION

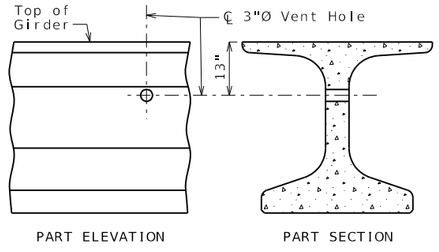
Reinforcement support strands not shown for clarity.

SECTION B-B

Strands not shown for clarity.



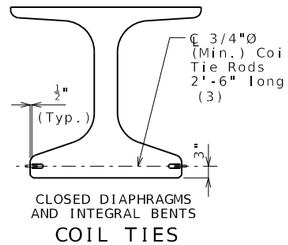
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2".



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPAN (2-3)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W
STATE MO
DISTRICT BR
SHEET NO. 17
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

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

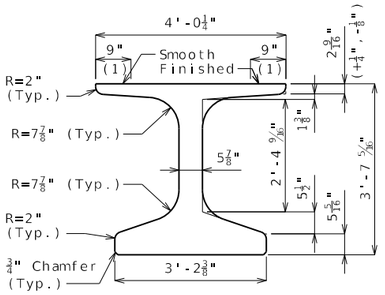
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

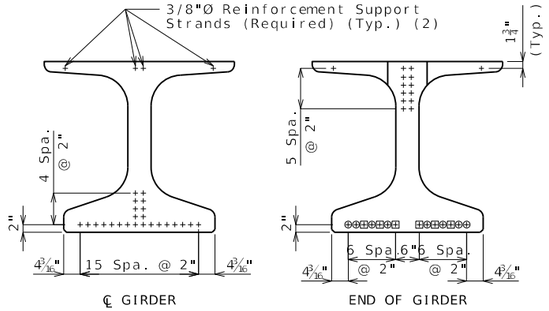
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

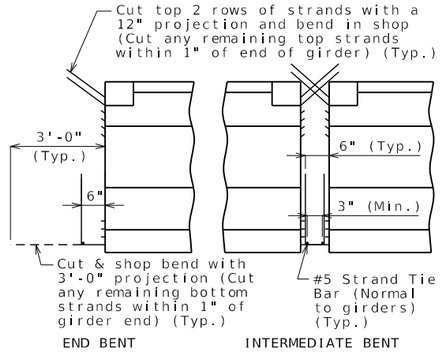


STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

□ Indicates debonded for 6'-0" from end of girder

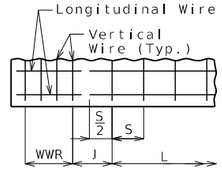


STRANDS AT GIRDER ENDS

(3): Bent 3: 8 7/8"
Bent 4: 20 1/8"

(4): Bent 3: 8 7/8"

(5): Bent 3: 6 1/8"



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

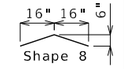
Bars Each Girder

No.	Size/Mark	Length	Shape
104	3 G1	2'-10"	8
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

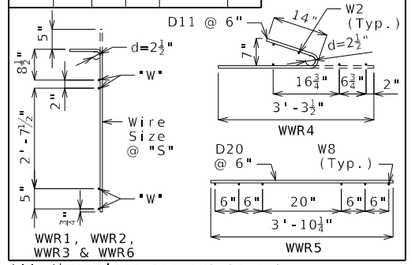
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D22	4"	W9	10'-8"	4"
WWR2	D22	8"	W9	14'-0"	8"
WWR3	D22	16"	W9	25'-4"	--
WWR6	D31	2"	W12	16"	3 3/4"

Bending Diagrams



Shape 20



All dimensions are out to out.

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Actual bar lengths are measured along centerline of bar to the nearest inch.

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All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

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For Girder Camber Diagram, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

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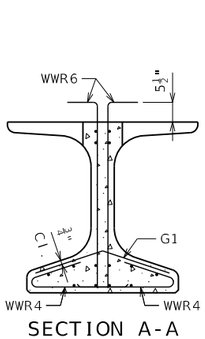
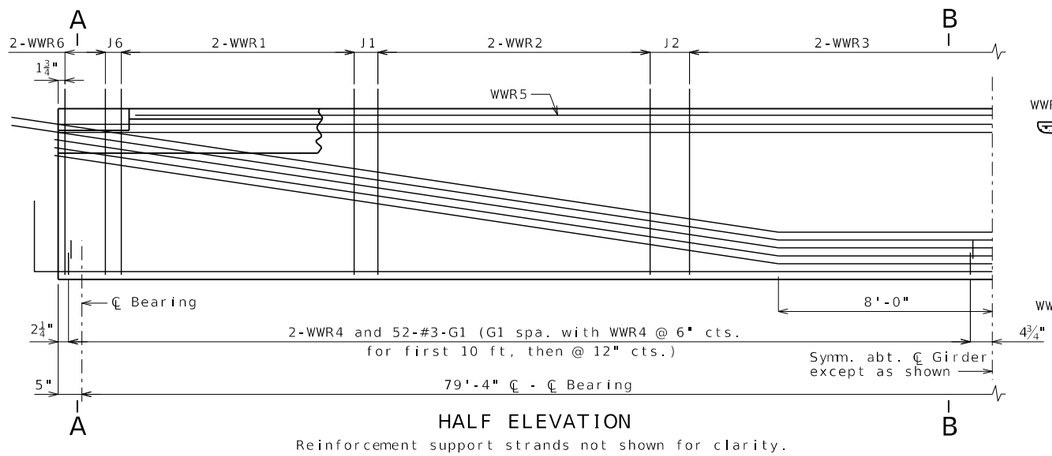


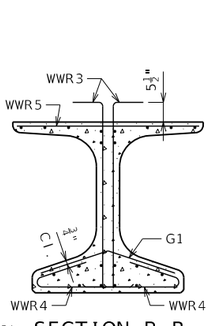
SECTION A-A

Strands not shown for clarity.



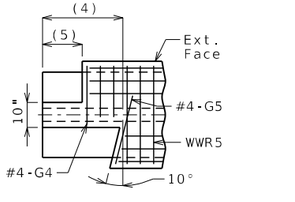
HALF ELEVATION

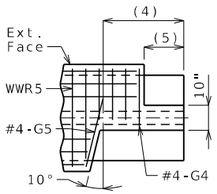
Reinforcement support strands not shown for clarity.



SECTION B-B

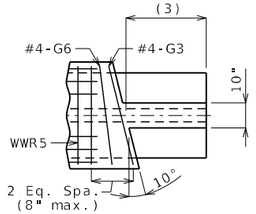
Strands not shown for clarity.





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

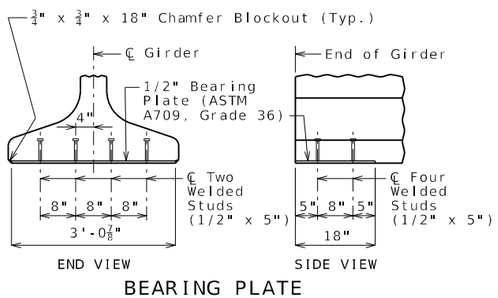
Rotate 180° for right ext.



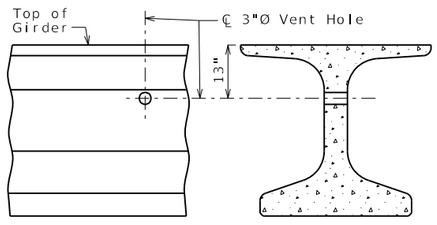
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced

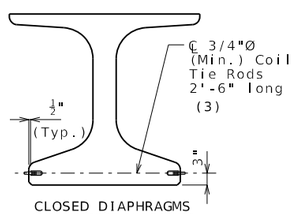


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS - SPAN (3-4)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
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DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 18

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DESCRIPTION | DATE

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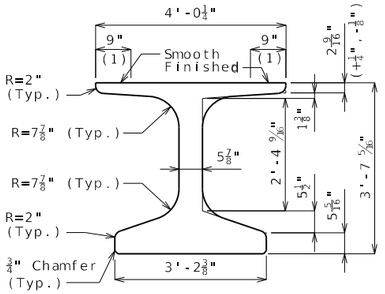
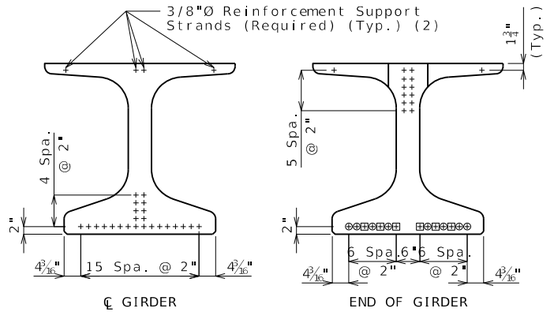
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

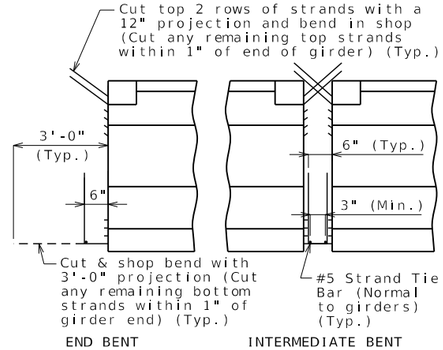


STRAND ARRANGEMENT

\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3'-0" projection.

□ Indicates debonded for 6'-0" from end of girder

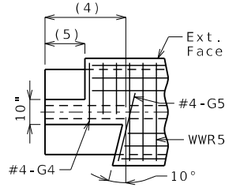


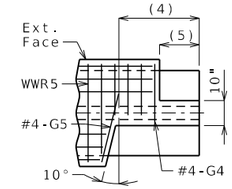
STRANDS AT GIRDER ENDS

(3): Bent 3: 8 7/8"
Bent 4: 20 1/8"

(4): Bent 3: 8 7/8"

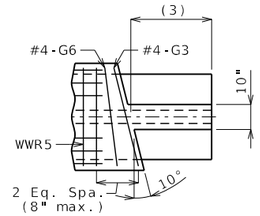
(5): Bent 3: 6 1/8"





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

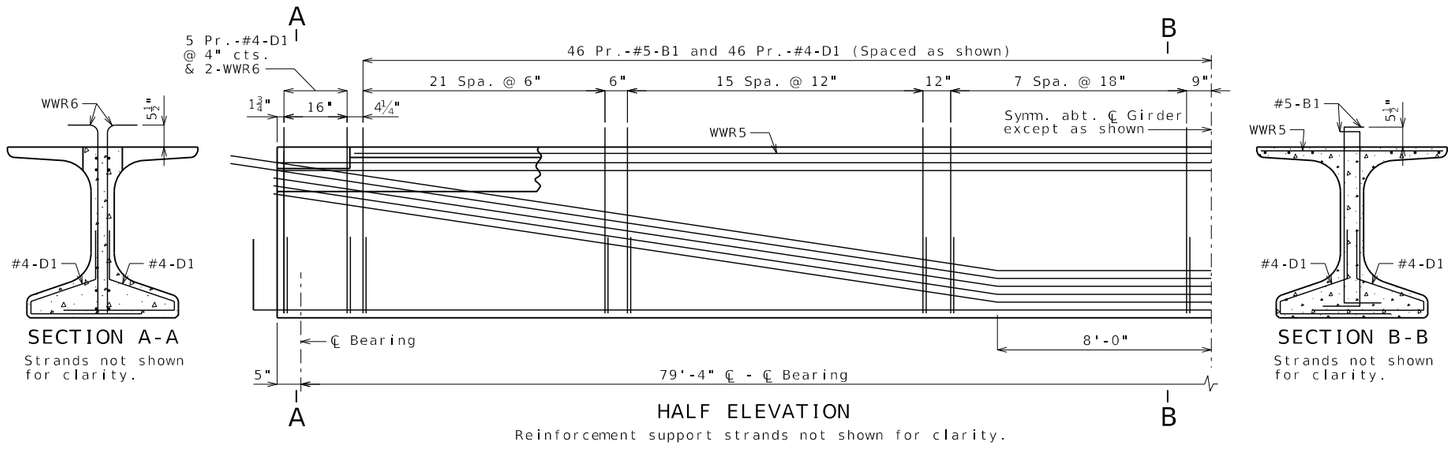
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced



SECTION A-A

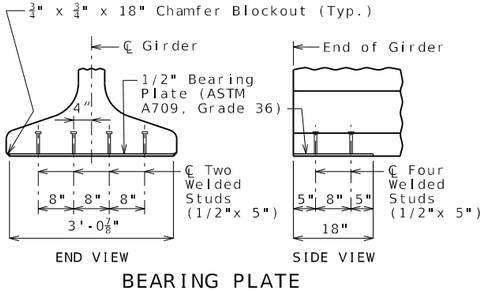
Strands not shown for clarity.

HALF ELEVATION

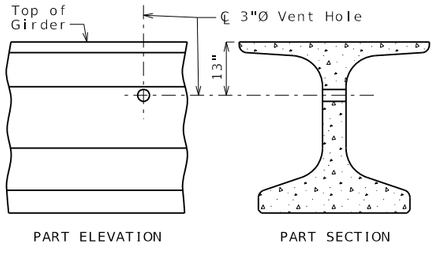
Reinforcement support strands not shown for clarity.

SECTION B-B

Strands not shown for clarity.

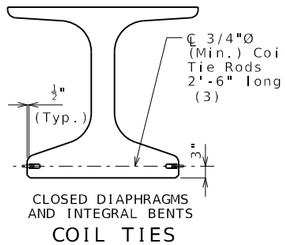


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2".



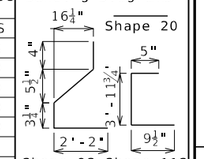
COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

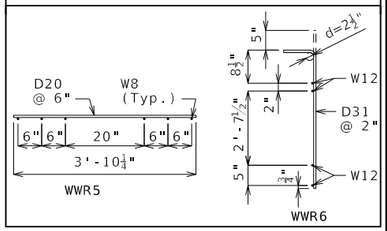
(3) 2'-0" at exterior face of exterior girders at end bents

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
92	5 B1	5'-0"	11S
100	4 D1	4'-0"	9S
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 24 strands, 0.6"Ø Grade 270, with an initial prestress force of 1055 kips.

Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

Exterior and interior girders are the same except: coil ties, top flange blockout.

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 ,12 and 21.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 19

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

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

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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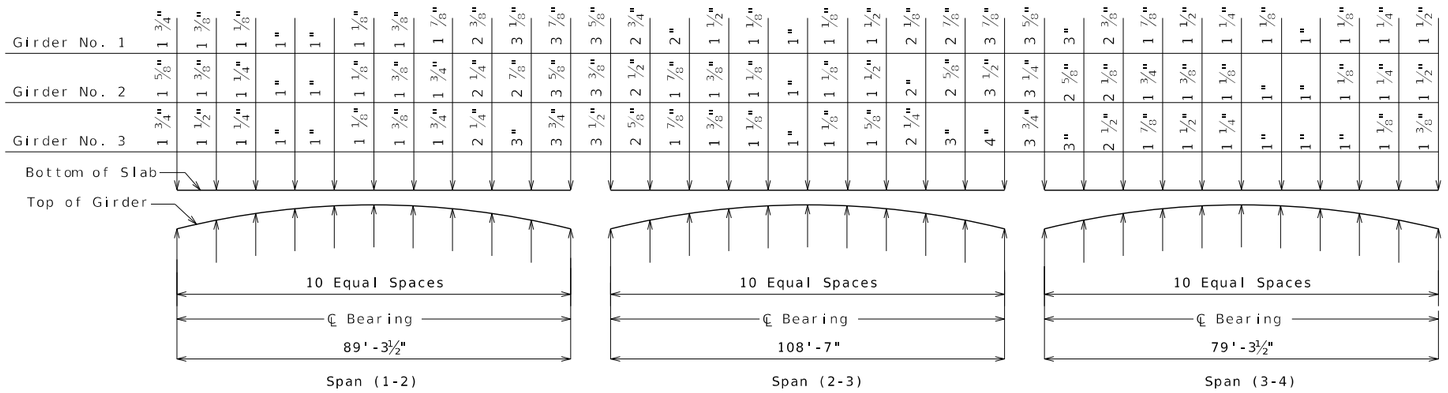
Checked Nov. 2024

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPAN (3-4)

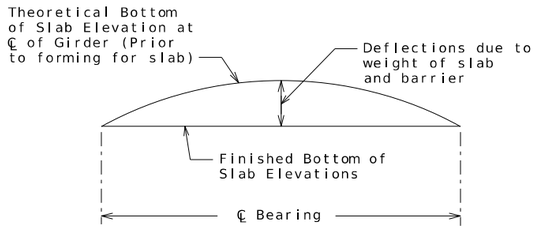
Note: This drawing is not to scale. Follow dimensions.



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU-Girder.

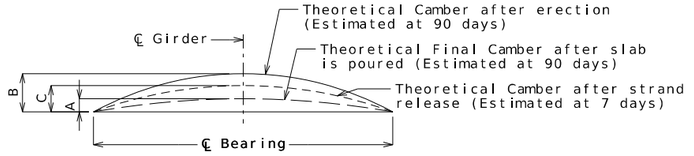


TYPICAL SLAB ELEVATIONS DIAGRAM

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

Girder Number	Span (1-2) (89'-3½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	942.89	942.47	942.05	941.63	941.22	940.81	940.40	940.00	939.61	939.22	938.84
2	943.14	942.72	942.30	941.88	941.46	941.05	940.65	940.25	939.85	939.46	939.08
3	943.05	942.63	942.21	941.79	941.37	940.96	940.55	940.15	939.76	939.37	938.98
Girder Number	Span (2-3) (108'-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	938.81	938.35	937.90	937.45	937.01	936.58	936.15	935.73	935.32	934.92	934.52
2	939.06	938.59	938.14	937.69	937.25	936.81	936.38	935.96	935.55	935.15	934.75
3	938.96	938.49	938.04	937.59	937.14	936.71	936.28	935.86	935.44	935.04	934.64
Girder Number	Span (3-4) (79'-3½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	934.50	934.22	933.94	933.66	933.39	933.12	932.85	932.59	932.33	932.08	931.83
2	934.73	934.45	934.16	933.89	933.61	933.34	933.08	932.82	932.56	932.30	932.05
3	934.62	934.34	934.05	933.77	933.50	933.23	932.96	932.70	932.44	932.19	931.93

Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier.



Girder	Span (1-2)			Span (2-3)			Span (3-4)		
	A	B	C	A	B	C	A	B	C
Exterior	1"	2½"	1⅜"	1⅝"	4¾"	1¾"	¾"	1⅝"	1"
Interior	⅞"			1¼"			⅝"		

GIRDER CAMBER DIAGRAM

Conversion Factors for Girder Camber (Estimated at 90 days):

0.1 pt. = 0.314 x 0.5 pt.
0.2 pt. = 0.593 x 0.5 pt.
0.3 pt. = 0.813 x 0.5 pt.
0.4 pt. = 0.952 x 0.5 pt.

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
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DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

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

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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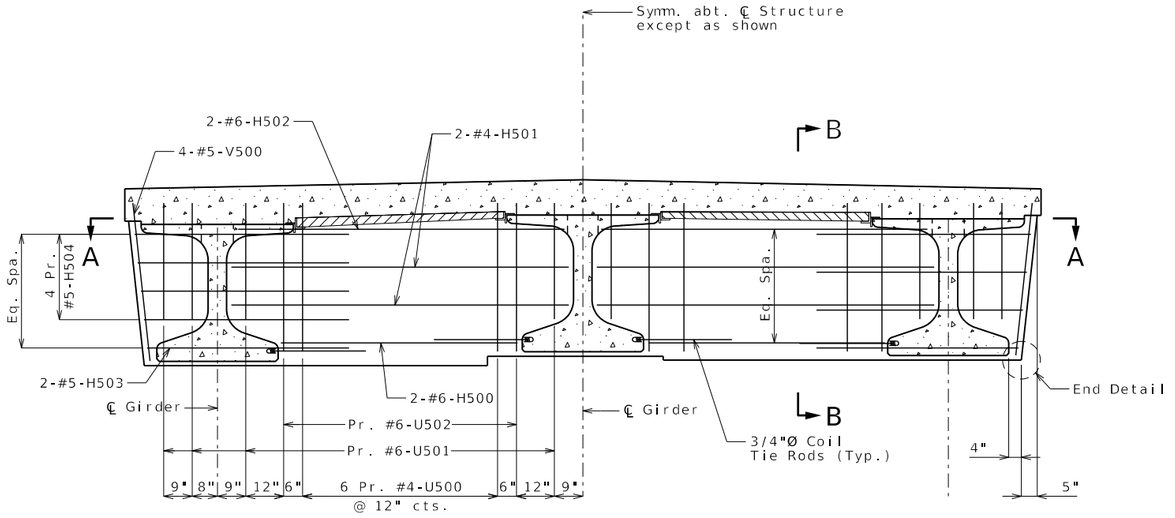
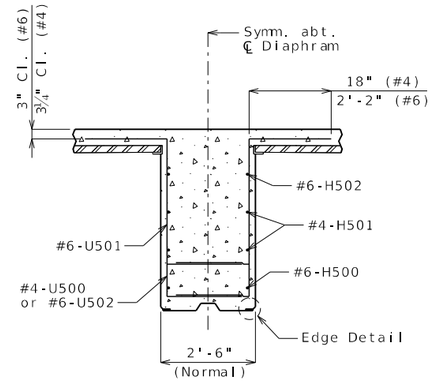
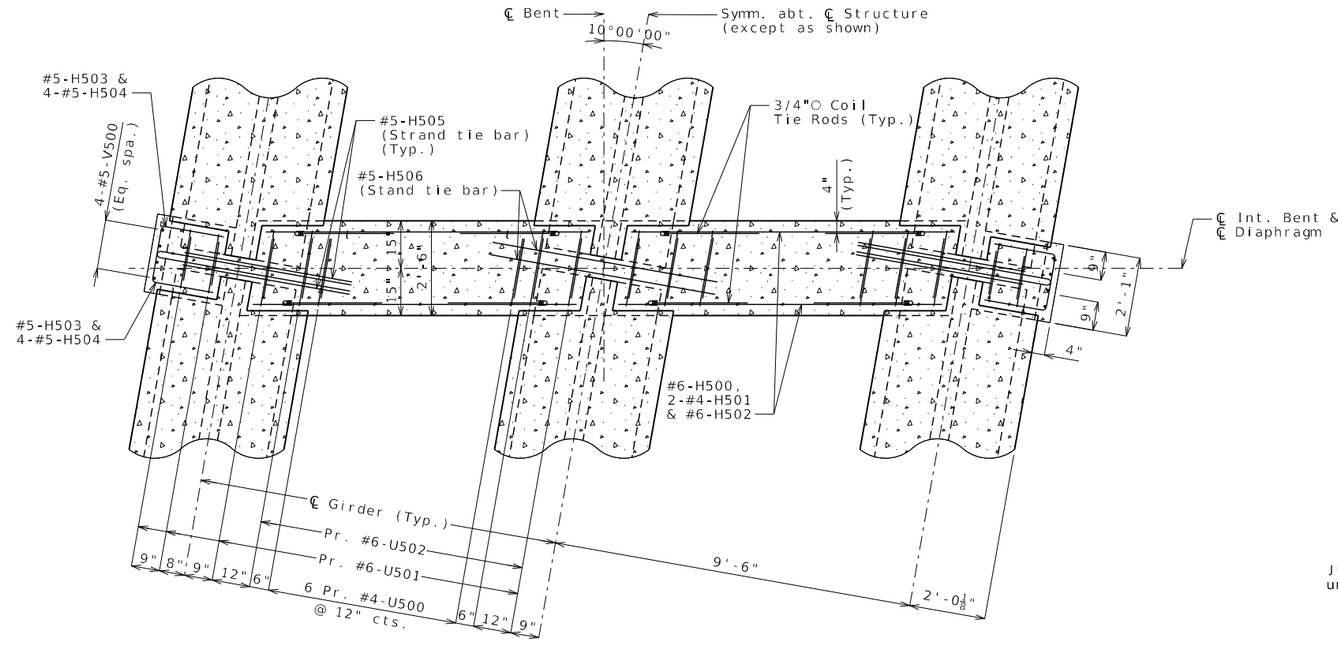


SECTION NEAR INTERMEDIATE BENT

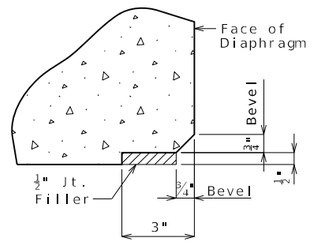
Normal to ℄ Structure



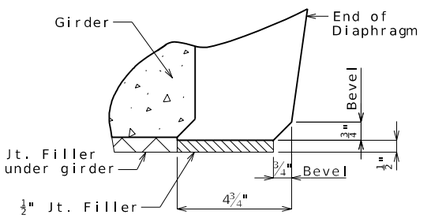
SECTION B-B



SECTION A-A



EDGE DETAIL



END DETAIL

CONCRETE DIAPHRAGMS AT INTERMEDIATE BENT NO. 2 & 3

Detailed Oct. 2024
Checked Nov. 2024

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JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
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DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

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JEFFERSON CITY, MO 65102
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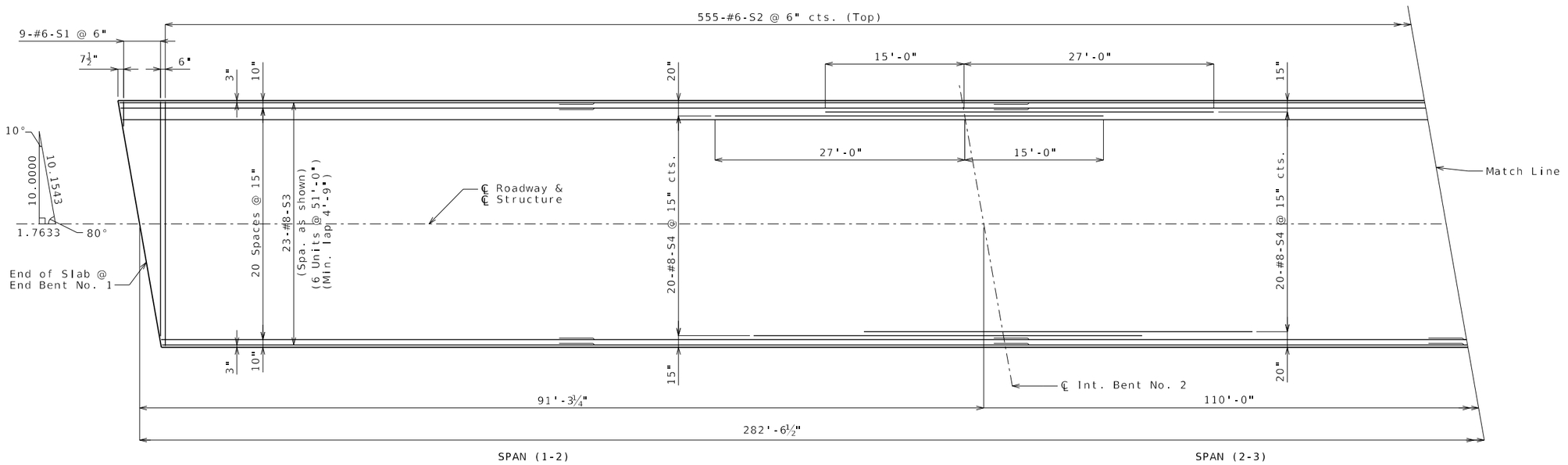

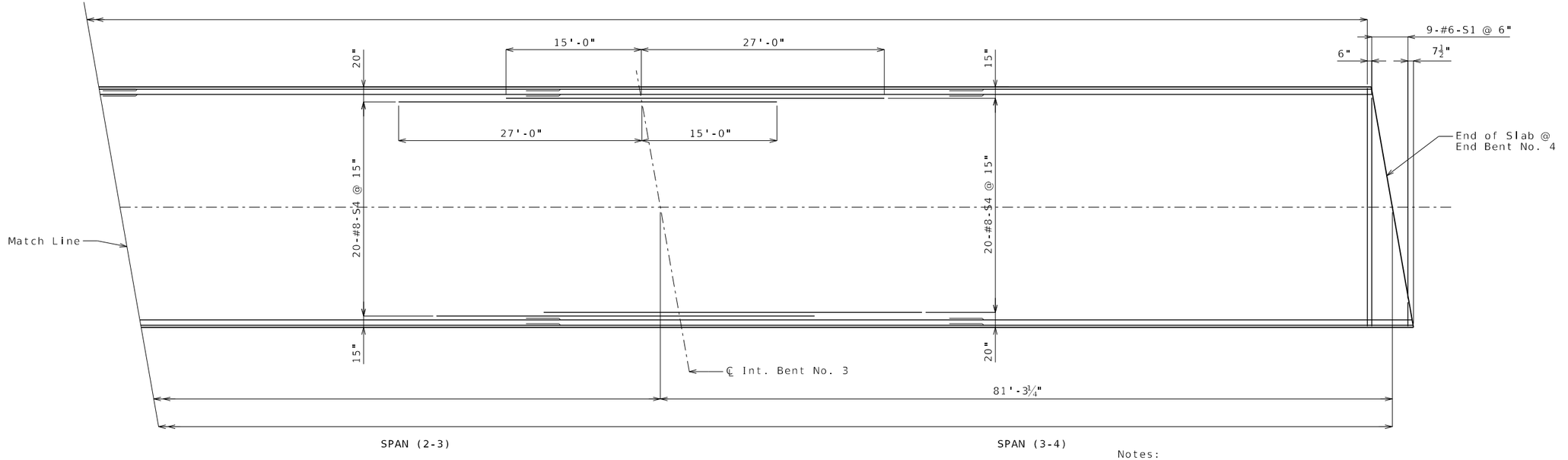

Notes:

Longitudinal dimensions shown are horizontal.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 24.

For Details and Reinforcement of Type D Barrier not shown, see Sheets No. 25 and 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 23.

PLAN OF SLAB SHOWING TOP REINFORCEMENT

Detailed Oct. 2024
Checked Nov. 2024

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JEFF A. GARDNER
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DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	22

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

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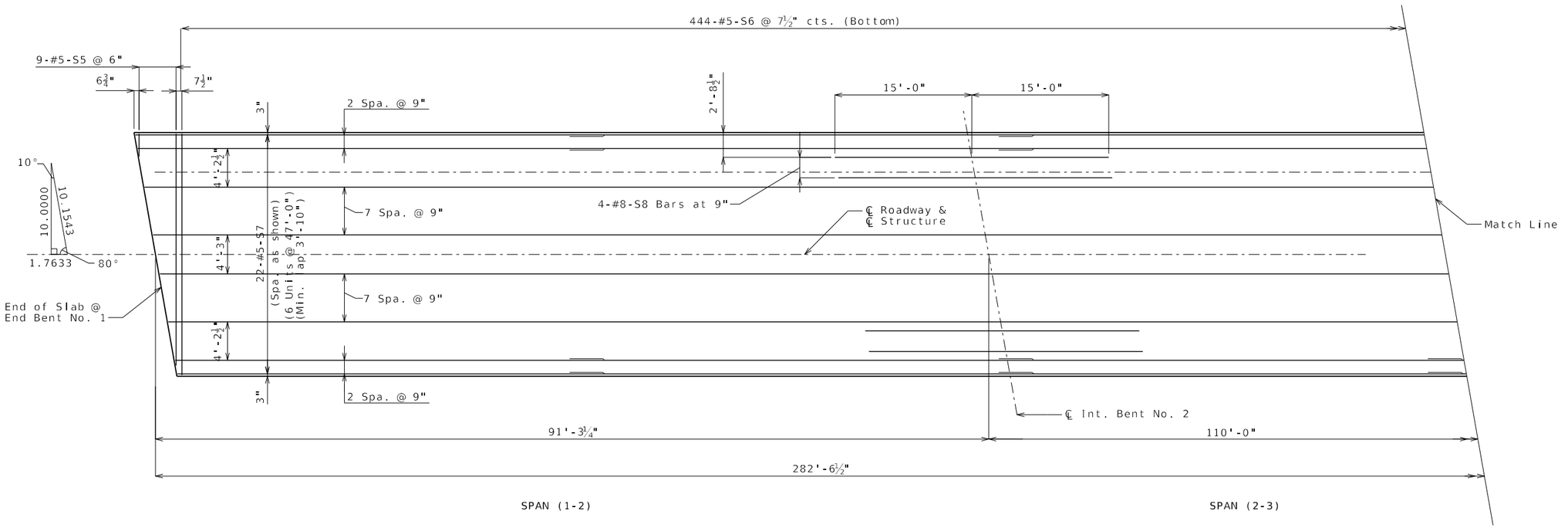

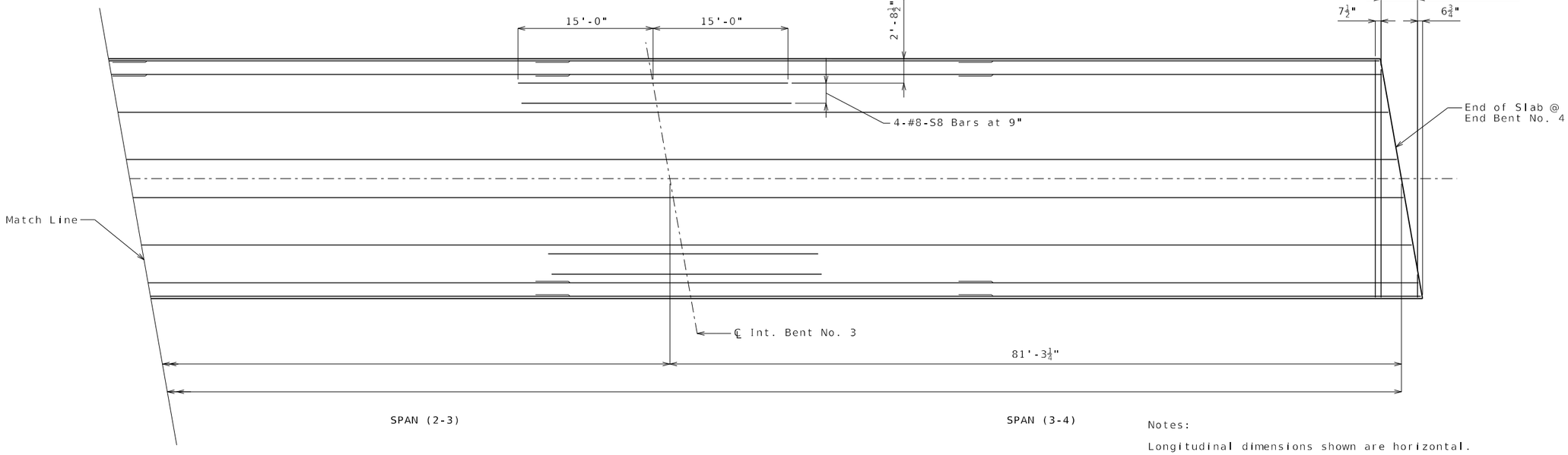

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For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20

For Plan of Slab Showing Top Reinforcement, see Sheet No. 22.

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

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

Sheet No. 23 of 36

Detailed Oct. 2024
Checked Nov. 2024

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	23

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

1411 East 104th St.
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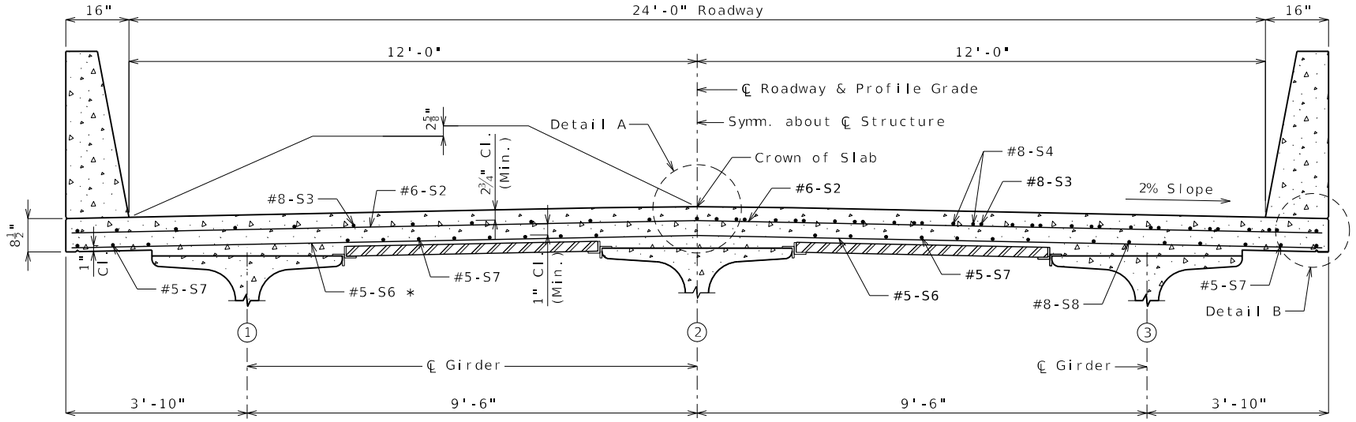
Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

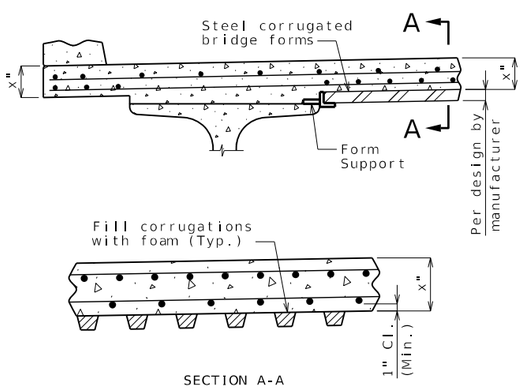
B_A9468_023_JNW0020_Slab Plan Bottom.dgn 1:18:31 PM 11/26/2024



HALF SECTION NEAR MIDSPAN — HALF SECTION NEAR INTERMEDIATE BENT

SECTION THRU SLAB

* Alternate bar shape available, see barrier sheet.



SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

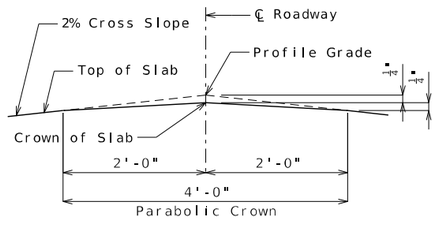
Stay-In-Place Forms:

Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.

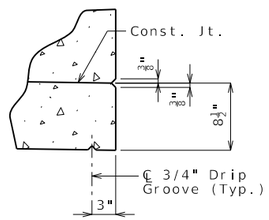
Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

Form sheets shall not rest directly on the top of girder flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Drilling holes in the girder flanges will not be permitted. All steel fabrication and construction shall be in accordance with Sec 1080 and 712. Certified field welders will not be required for welding of the form supports.

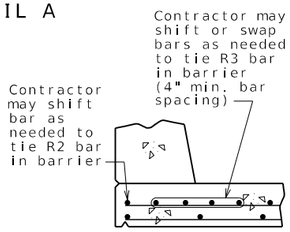
The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.



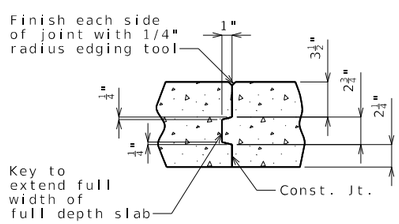
DETAIL A



DETAIL B

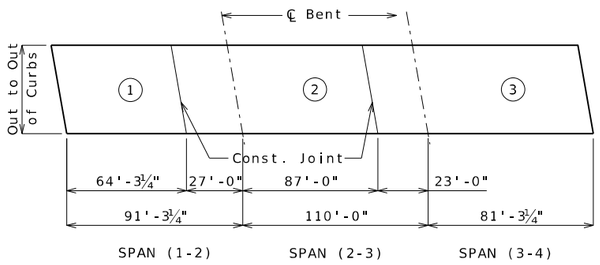


OPTIONAL SHIFTING TOP BARS AT BARRIER



FULL DEPTH SLAB

SLAB CONSTRUCTION JOINT



	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			With Retarder
Basic Sequence	1	2	3	25
	Either Direction			
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate A Pours	1 + 2		3	37
	End to 3		2 to End	
Alternate B Pours	1 + 2 + 3			59
	End to End			

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE

Notes:

For reinforcement of barrier not shown, see Sheets No. 25 & 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20.

For Plan of Slab Showing Reinforcement, see Sheets No. 22 & 23.

SLAB DETAILS

STATE OF MISSOURI — JEFF A. GARDNER — NUMBER PE-2016019369 — PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/22/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 24
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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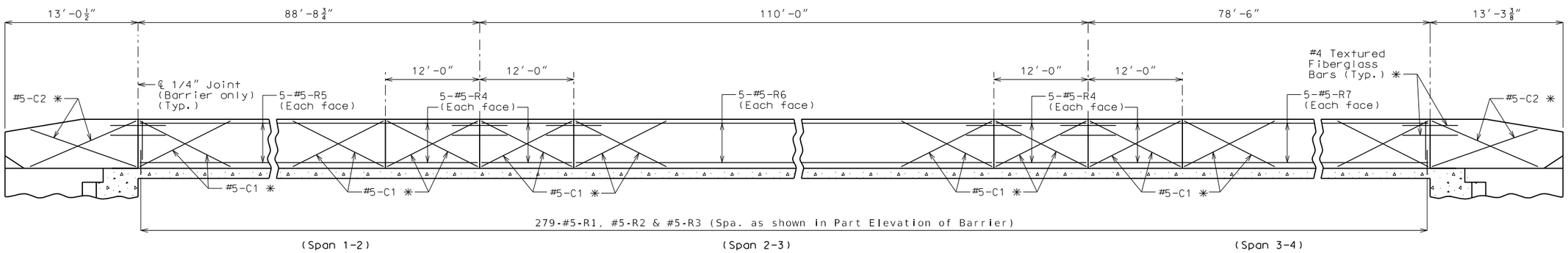
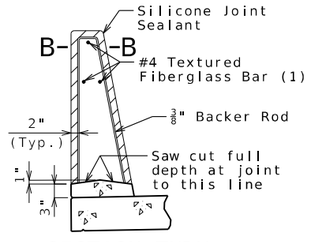


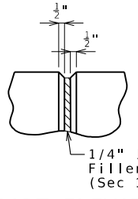
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

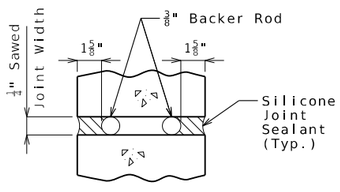
Longitudinal dimensions are horizontal.



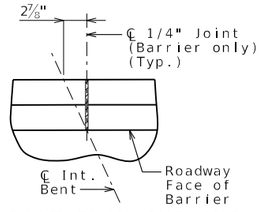
SECTION THRU SAW CUT JOINT



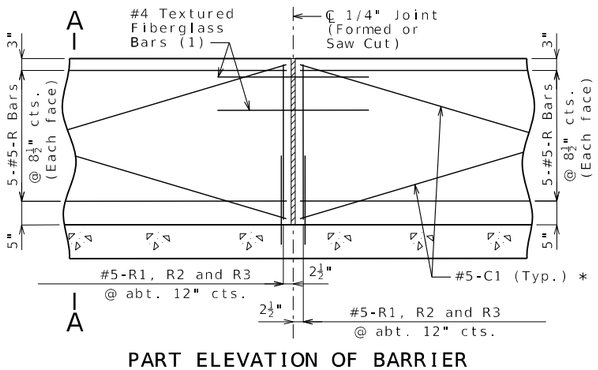
PART ELEVATION AT FORMED JOINT



SECTION B-B

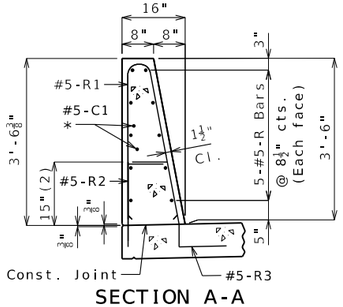


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

(1) Four feet long, centered on joint, slip-formed option only

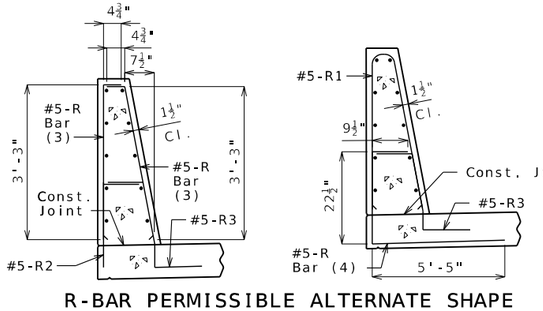


SECTION A-A

Use a minimum lap of 3'-1" for #5 horizontal barrier bars.

The cross-sectional area above the slab is 3.52 square feet.

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

(3) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

(4) The R2 bar and #5 bottom transverse slab bar in cantilever (prestressed panels only) combination may be furnished as one bar as shown, at the contractor's option.

General Notes:

✳ Slip-formed option only.

Conventional forming or slip forming may be used. Saw cut joints may be used with conventional forming.

Top of barrier shall be built parallel to grade and barrier joints (except at end bents) normal to grade.

All exposed edges of barrier shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

Plastic waterstop shall not be used with saw cut joints.

TYPE D BARRIER

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	25

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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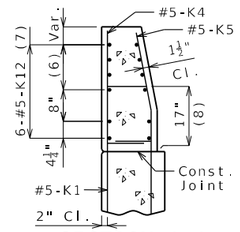
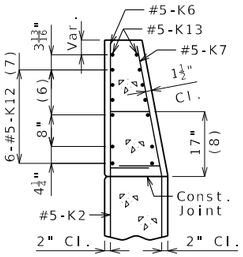
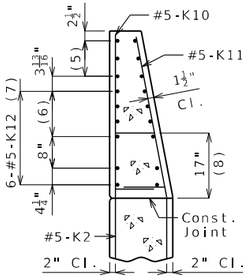


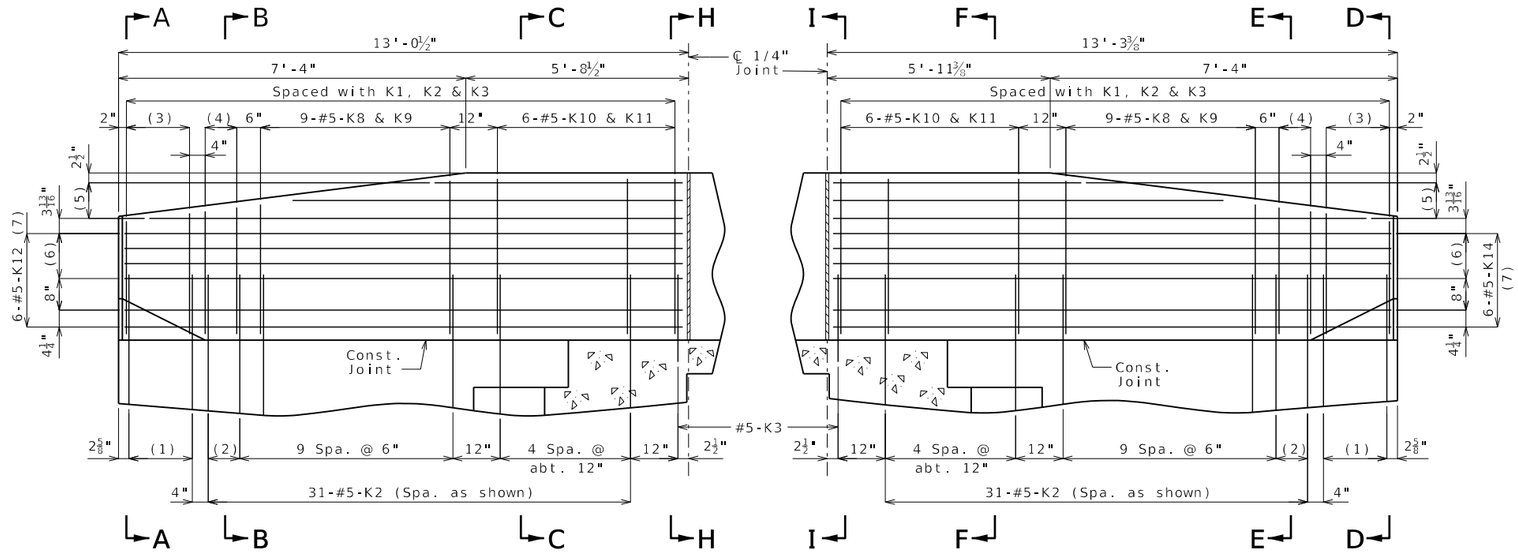
SECTION A-A



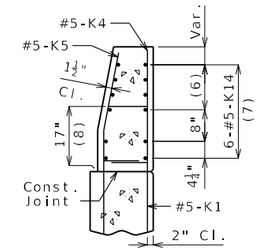
SECTION B-B



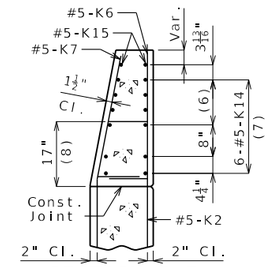
SECTION C-C



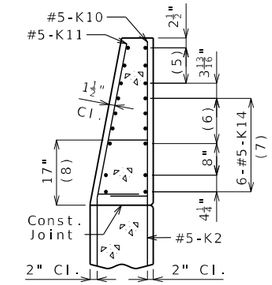
PART ELEVATION



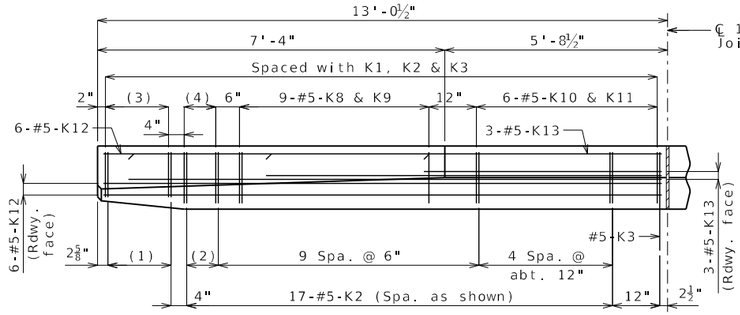
SECTION D-D



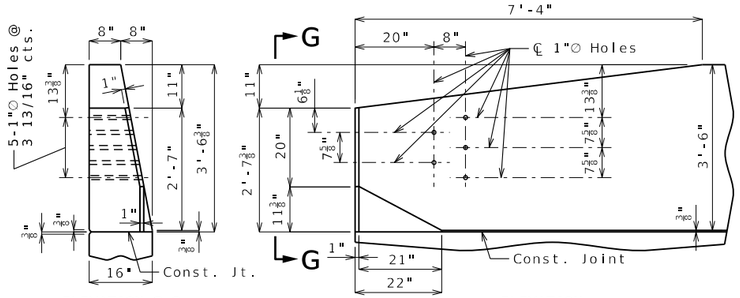
SECTION E-E



SECTION F-F

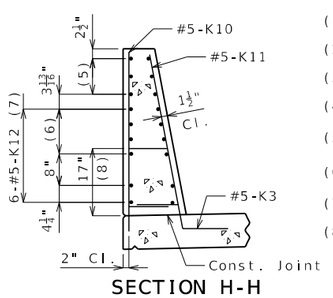


PART PLAN



ELEVATION G-G

ELEVATION



SECTION H-H

(1) 5-#5-K1 @ 4" cts.

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

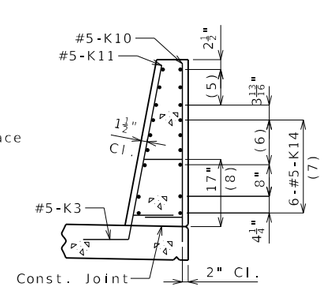
(4) 3-#5-K6 & K7

(5) 3-#5-K13 or K15 @ 4½" cts., each face

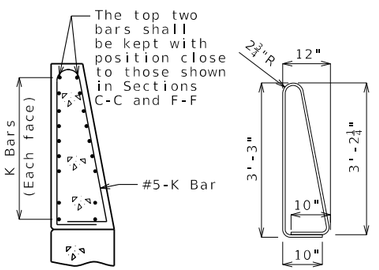
(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar



SECTION I-I



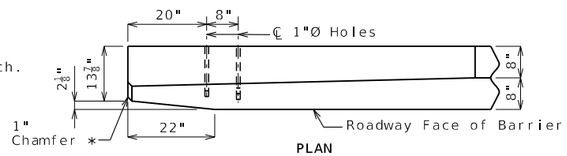
K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

The K10-K11 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

* Transition to zero at Type A curb for gutter lines to match.



PLAN

DETAILS OF GUARD RAIL ATTACHMENT

General Notes:

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed Oct. 2024
Checked Nov. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
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DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	26

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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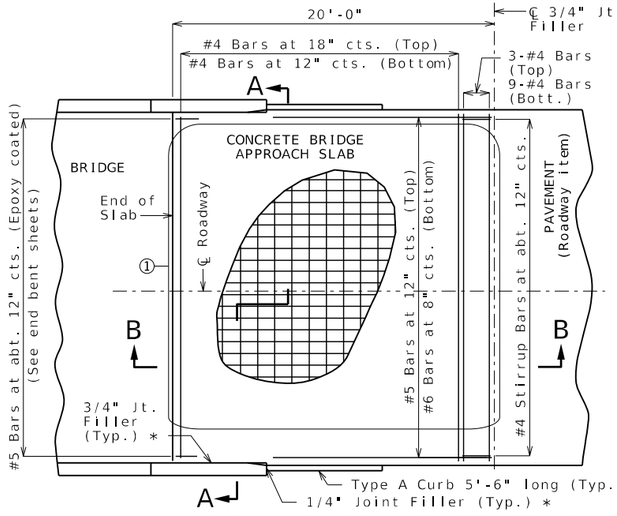
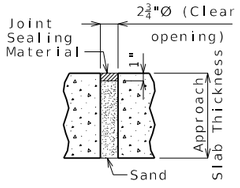
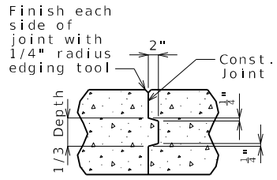


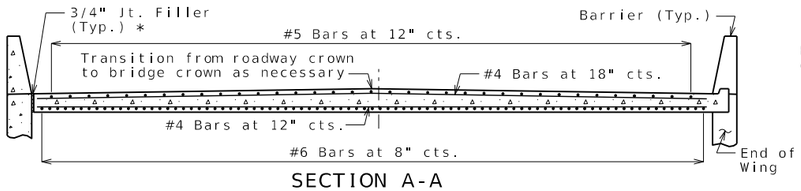
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



UNDERSEAL ACCESS HOLE DETAIL
(If required)

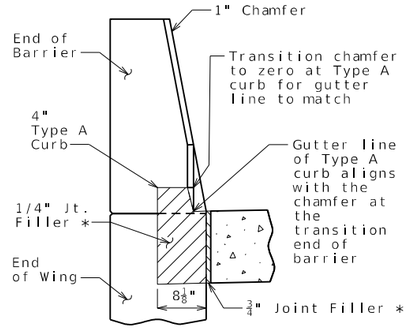


CONSTRUCTION JOINT DETAIL



SECTION A-A

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION BETWEEN CURB AND BARRIER

Notes For Concrete Slab Only:

All concrete for the bridge approach slab shall be in accordance with Sec 503 (f'c = 4,000 psi).

The reinforcing steel in the bridge approach slab shall be epoxy coated Grade 60 with fy = 60,000 psi.

Longitudinal construction joints in bridge approach slab shall be aligned with longitudinal construction joints in bridge slab.

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 23 inches for #4 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, underdrain, Type 5 aggregate base, joint filler, and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor) per square yard.

See Missouri Standard Plan 609.00 for details of Type A curb.

Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

* Seal joint between vertical face of approach slab and wing with sealant in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

General Notes:

Contractor shall have the option to construct either slab except as noted.

The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.

MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

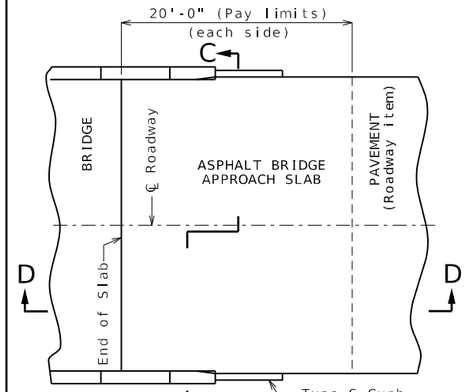
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

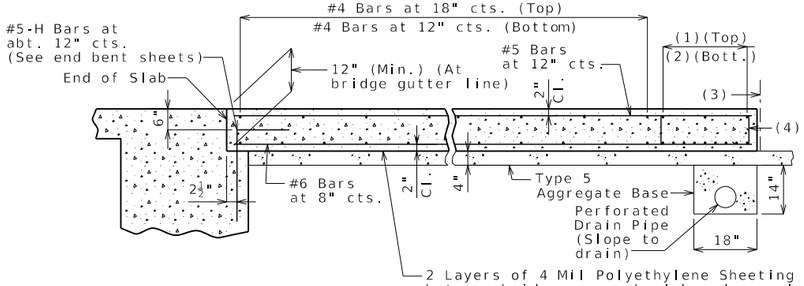
Notes For Asphalt Slab Only:

Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor) per square yard.

Application of tack is required between lifts per Sec 403.



PART PLAN
(Squared structure shown, skewed structure similar)



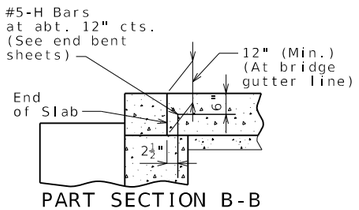
(1) 3-#4 Bars

(2) 9-#4 Bars

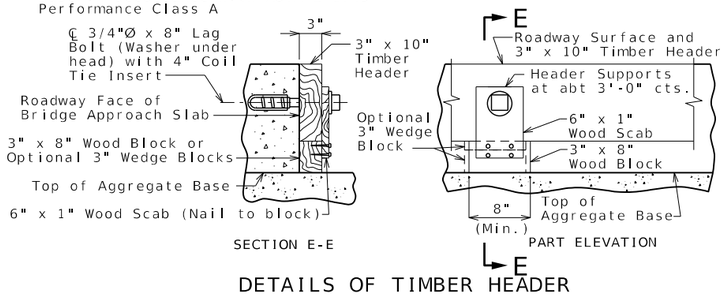
(3) ℄ 3/4" Jt. Filler

(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.

SECTION B-B
(Integral end bent)



PART SECTION B-B
(Non-integral end bent)

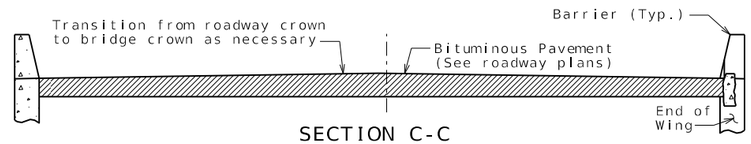


SECTION E-E

PART ELEVATION

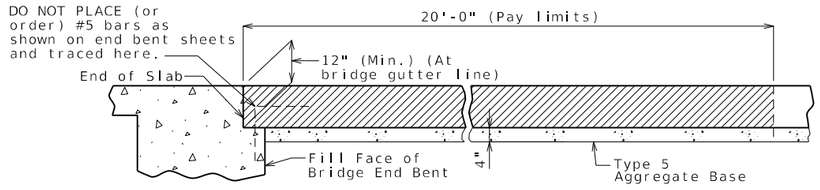
DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

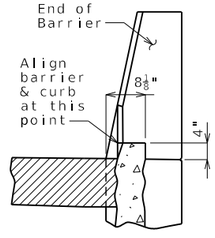


SECTION C-C

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION D-D



4" TYPE S CURB
See Missouri Standard Plan 609.00 for details of Type S curb.

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

Integral end bents shown, non-integral end bent similar.

Detailed Oct. 2024
Checked Nov. 2024

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

Sheet No. 27 of 36

JEFF A. GARDNER NUMBER PE-2016019369 — STATE OF MISSOURI — PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY DATED, SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
11/26/2024	
ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	27
COUNTY	
WORTH	
JOB NO.	
JNW0020	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9468	

DESCRIPTION | DATE

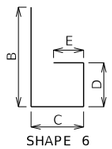
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

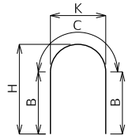
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREK DESIGN GROUP, LLC
1441 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

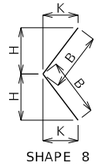
B_A9468_027_JNW0020_Approach Slab.dgn 1:18:36 PM 11/26/2024



SHAPE 6 or 6S



SHAPE 7



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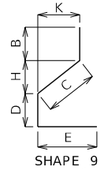

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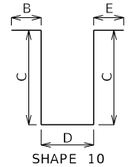

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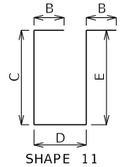

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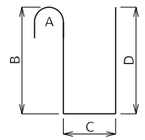
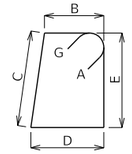
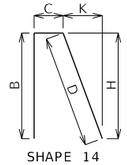


SHAPE 12



SHAPE 13S



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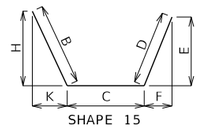

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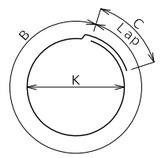
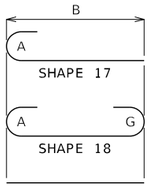
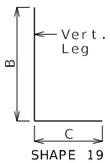


SHAPE 16



SHAPE 17
SHAPE 18
SHAPE 20



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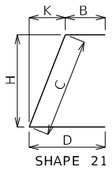

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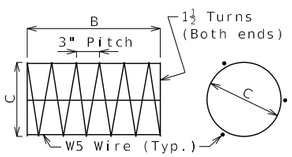
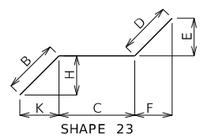


SHAPE 22



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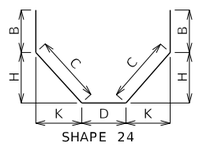
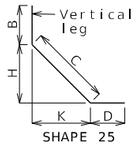
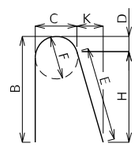


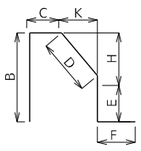
SHAPE 24 or 24S



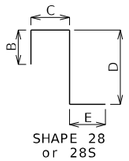
SHAPE 25 or 25S



SHAPE 26



SHAPE 27S



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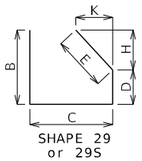

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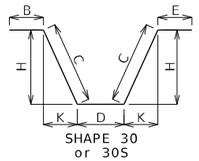

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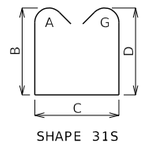

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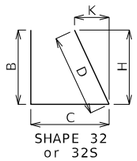

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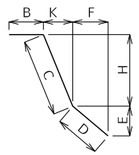
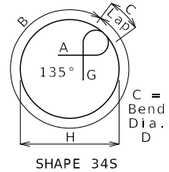
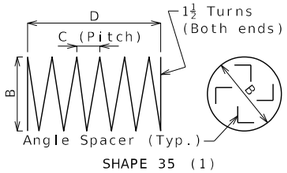


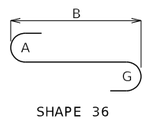
SHAPE 33 or 33S



SHAPE 34S



SHAPE 35 (1)

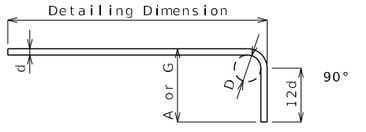


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4½"	12"	8¼"	6"
#7	2	5¼"	14"	9⅞"	7"
	3	7"	15"	11½"	8¾"
#8	2	6"	16"	11"	8"
	3	8"	17"	13¼"	10"
#9	1	9½"	19½"	15½"	11¾"
#10	1	10¾"	22"	17½"	13¼"
#11	1	12"	24½"	19½"	14⅞"
#14	1	18¼"	31¼"	27½"	21⅝"
#18	1	24"	41½"	36¾"	28½"

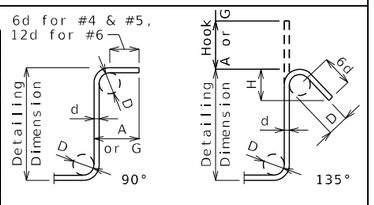


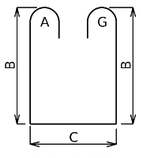
Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G			H	J
			90°	135°	180°	135°	180°
#4	2	2"	4½"	4½"	5"	2⅝"	3"
	3	3"	5"	5¼"	6"	3"	4"
#5	2	2½"	5¾"	5¾"	5¾"	3⅝"	3¾"
	3	3¾"	6¼"	6½"	7"	3⅞"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅝"	6"

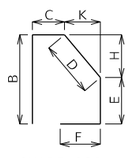
Applicable for all grades of steel.

Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.





SHAPE 37S



SHAPE 38S

BENDING DIAGRAMS

All dimensions are out to out.

Shapes ending with an S shall be bent in accordance with stirrup pin bend shapes.

Unless otherwise noted, finished bending diameter D is the same for all bends of a shape.

(1) Shall be a deformed or plain spiral bar or wire.

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 Totals (Pounds)

	Size	Substructure		Superstructure				Entire Bridge	
				Slab					
		Plain	Epoxy	Plain	Epoxy	Barrier	Slip Form	Plain	Epoxy
By Size	4	2,872	0	0	318	0	0	2,872	318
	5	1,560	0	0	21,246	15,451	589	1,560	37,286
	6	6,493	0	0	27,870	0	0	6,493	27,870
	7	0	0	0	1,316	0	0	0	1,316
	8	312	0	0	30,282	0	0	312	30,282
	9	2,760	0	0	0	0	0	2,760	0
	10	19,257	0	0	0	0	0	19,257	0
By Type		33,254	0	0	81,032	15,451	589	33,254	97,072

All superstructure reinforcing steel shall be epoxy coated unless otherwise specified.

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 28
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DATE	DESCRIPTION

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002031000

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft	B in.	C ft	C in.	D ft	D in.	E ft	E in.	F ft	F in.	H ft	H in.	K ft	K in.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
		SUBSTRUCTURE																						
		INT. BENT NO. 2																						
14	6 D200	BEAM KEY		20		2	6.000													2	6	2	6	53
8	9 H200	BEAM		18		24	1.000													26	8	26	8	725
8	9 H201	BEAM		20		24	1.000													24	1	24	1	655
10	6 H202	BEAM		20		24	1.000													24	1	24	1	362
14	6 H203	BEAM		10				12.000	3	1.500										5	2	4	10	102
3	8 H204	WEB WALL		18		16	10.000													19	5	19	5	156
52	5 H205	WEB WALL		20		15	10.000													15	10	15	10	859
4	5 H206	BEAM		20		4	9.000													4	9	4	9	20
28	10 V200	COLUMN		17		23	2.000													24	8	24	8	2972
28	10 V201	SHAFT		20		9	2.000													9	2	9	2	1104
28	10 V202	SOCKET/SHAFT		20		46	9.000													46	9	46	9	5633
25	6 U200	BEAM		13		3	3.000	3	9.000	3	3.000	3	9.000							15	3	14	9	554
24	6 U201	BEAM		13		2	2.000	3	9.000	2	2.000	3	9.000							13	1	12	7	454
12	6 U202	BEAM		10				3	9.000	3	3.000									10	9	10	5	188
9	6 U203	BEAM		10					12.000	3	3.000									5	3	4	11	66
24	6 U204	WEB WALL		10				21	9.000		21.000									45	3	45	0	1622
20	4 P200	COLUMN		16		8	7.750	2	5.000									2	9.000	11	1	11	1	148
150	4 P201	SOCKET/SHAFT		16		10	2.500	2	5.000									2	9.000	12	8	12	8	1269
		INT. BENT NO. 3																						
14	6 D300	BEAM KEY		20		2	6.000													2	6	2	6	53
8	9 H300	BEAM		18		24	1.000													26	8	26	8	725
8	9 H301	BEAM		20		24	1.000													24	1	24	1	655
10	6 H302	BEAM		20		24	1.000													24	1	24	1	362
14	6 H303	BEAM		10				12.000	3	1.500										5	2	4	10	102
3	8 H304	WEB WALL		18		16	10.000													19	5	19	5	156
40	5 H305	WEB WALL		20		15	10.000													15	10	15	10	661
4	5 H306	BEAM		20		4	9.000													4	9	4	9	20
28	10 V300	COLUMN		17		18	10.000													20	4	20	4	2450
28	10 V301	SHAFT		20		9	2.000													9	2	9	2	1104
28	10 V302	SOCKET/SHAFT		20		49	9.000													49	9	49	9	5994
25	6 U300	BEAM		13		3	3.000	3	9.000	3	3.000	3	9.000							15	3	14	9	554
24	6 U301	BEAM		13		2	2.000	3	9.000	2	2.000	3	9.000							13	1	12	7	454
12	6 U302	BEAM		10				3	9.000	3	3.000									10	9	10	5	188
9	6 U303	BEAM		10					12.000	3	3.000									5	3	4	11	66
24	6 U304	WEB WALL		10				17	6.000		21.000									36	9	36	5	1313
16	4 P300	COLUMN		16		8	7.750	2	5.000									2	9.000	11	1	11	1	118
158	4 P301	SOCKET/SHAFT		16		10	2.500	2	5.000									2	9.000	12	8	12	8	1337
		SUPERSTRUCTURE																						
		END BENT 1																						
10	6 F100	WING BRACE	E	23		2	3.000	4	10.500	1	2.000		10.750		9.000	1	8.750	1	5.250	8	3	8	2	123
4	6 F101	DIAPHRAGM	E	6		2	8.750	5	5.750							2	8.250		5.750	8	3	8	1	49
10	6 F102	WING BRACE	E	23		2	3.000	5	9.000	1	2.000		10.750		9.000	1	8.750	1	5.250	9	2	9	1	136
4	6 F103	DIAPHRAGM	E	6		2	8.750	5	5.750							2	8.250		5.750	8	3	8	0	48

Bill of Reinforcing Steel

No. Req.	Size/ Mark	LOCATION	Codes C	SH	V	Dimensions B ft	B in.	C ft	C in.	D ft	D in.	E ft	E in.	F ft	F in.	H ft	H in.	K ft	K in.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
4	6 H100	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	161
12	7 H101	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	658
6	6 H102	DIAPHRAGM	E	20		8	10.500													8	10	8	10	80
2	6 H103	DIAPHRAGM	E	20		6	1.500													6	1	6	1	18
6	6 H104	DIAPHRAGM	E	20		3	4.500													3	4	3	4	30
16	8 H105	DIAPHRAGM	E	20		2	0.000													2	0	2	0	85
16	8 H106	WING	E	20		12	6.750													12	6	12	6	534
40	6 H107	WING	E	20		11	9.500													11	10	11	10	711
24	5 H108	DIAPHRAGM	E	19		2	0.000	1	3.000											3	3	3	2	79
3	5 H109	STRAND TIE	E	23		1	3.000	3	2.500	1	3.000		2.500	1	2.750		2.500	1	2.750	5	9	5	8	18
10	5 U100	BEAM	E	31		4	6.125	2	9.500	4	6.125									12	9	12	7	131
21	5 U101	BEAM	E	13		2	9.500	2	8.000	2	9.500	2	8.000							11	10	11	6	252
33	6 U103	DIAPHRAGM	E	19		3	2.875	4	7.000											7	10	7	8	380
18	6 U104	DIAPHRAGM	E	19		3	1.625	2	9.500											5	11	5	9	155
18	5 U105	DIAPHRAGM	E	31		3	11.000	2	3.375	3	11.000									11	1	10	10	203
16	5 V100	BEAM & DIAPHRAGM	E	17		4	6.125													5	1	5	1	85
15	6 V101	DIAPHRAGM	E	20		3	0.625													3	0	3	0	68
2	6 V102	WING	E	20		7	9.375													7	9	7	9	23
20	6 V103	WING	E	20	V	7	3.750													7	3	7	3	224
		INC = 0.500 INCH				7	8.750													7	8	7	8	
2	6 V104	WING	E	20		7	11.750													7	11	7	11	24
20	6 V105	WING	E	20	V	7	6.250													7	6	7	6	232
		INC = 0.500 INCH				7	11.250													7	11	7	11	
		DIAPHRAGM AT INT. BENTS 2 & 3																						
8	6 H500	DIAPHRAGM	E	20		6	1.750													6	1	6	1	73
16	4 H501	DIAPHRAGM	E	20		8	6.500													8	6	8	6	91
8	6 H502	DIAPHRAGM	E	20		8	6.500													8	6	8	6	102
8	5 H503	DIAPHRAGM	E	6		4	5.000		10.500											5	3	5	2	43
32	5 H504	DIAPHRAGM	E	6		4	10.000		10.500											7	0	6	9	225
8	5 H505	STRAND TIE	E	20		4	5.500													4	6	4	6	38
4	5 H506	STRAND TIE	E	20		5	8.500													5	9	5	9	24
48	4 U500	DIAPHRAGM	E	28				1	11.000	3	9.500	1	6.000							7	3	7	1	227
32	6 U501	DIAPHRAGM	E	28				1	11.000	3	0.500	2	1.750							7	2	6	10	328
16	6 U502	DIAPHRAGM	E	28				1	11.000	3	9.500	2	1.750							7	11	7	7	182
16	5 V500	DIAPHRAGM	E	20		4	1.000													4	1	4	1	68
		END BENT 4																						
9	6 F400	WING BRACE	E	23		2	3.000	4	10.500	1	2.000		10.750		9.000	1	8.750	1	5.250	8	3	8	2	110
4	6 F401	DIAPHRAGM	E	6		2	8.750	5	5.750							2	8.250		5.750	8	3	8	1	49
9	6 F402	WING BRACE	E	23		2	3.000	5	9.000	1	2.000		10.750		9.000	1	8.750	1	5.250	9	2	9	1	123
4	6 F403	DIAPHRAGM	E	6		2	8.750	5	5.750							2	8.250		5.750	8	3	8	0	48
4	6 H400	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	161
12	7 H401	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	658
6	6 H402	DIAPHRAGM	E	20		8	10.500													8	10	8	10	80
2	6 H403	DIAPHRAGM	E	20		6	1.500													6	1	6	1	18
6	6 H404	DIAPHRAGM	E	20		3	4.500													3	4	3	4	30
16	8 H405	DIAPHRAGM	E	20		2	0.000													2	0	2	0	85
16	8 H406	WING	E	20		12	6.750													12	6	12	6	534
36	6 H407	WING	E	20		11	9.500													11	10	11	10	640
24	5 H408	DIAPHRAGM	E	19		2	0.000	1	3.000											3	3	3	2	79
3	5 H409	STRAND TIE	E	23		1	3.000	3	2.500	1	3.000		2.500	1	2.750		2.500	1	2.750	5	9	5	8	18

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

For bending diagrams and steel reinforcing totals, see Sheet No. _.

Detailed Oct. 2024
Checked Nov. 2024

All bars shall be Grade 60.

BILL OF REINFORCING STEEL

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

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	29

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight lb
10	5 U400	BEAM	E	31		4 5.625	2 9.500	4 5.625					12 8	12 6	130
21	5 U401	BEAM	E	13		2 9.500	2 8.000	2 9.500	2 8.000				11 10	11 6	252
33	6 U403	DIAPHRAGM	E	19		3 3.500	4 7.000						7 10	7 9	384
18	6 U404	DIAPHRAGM	E	19		2 11.000	2 9.500						5 8	5 6	149
18	5 U405	DIAPHRAGM	E	31		3 10.000	2 3.375	3 10.000					10 11	10 8	200
16	5 V400	BEAM & DIAPHRAGM	E	17		4 5.625							5 1	5 1	85
15	6 V401	DIAPHRAGM	E	20		2 11.000							2 11	2 11	66
2	6 V402	WING	E	20		6 11.875							6 11	6 11	21
20	6 V403	WING	E	20	V	7 0.125							7 0	7 0	214
		INC = 0.375 INCH				7 3.375							7 3	7 3	
2	6 V404	WING	E	20		7 1.375							7 1	7 1	21
20	6 V405	WING	E	20	V	6 10.625							6 10	6 10	209
		INC = 0.375 INCH				7 1.875							7 1	7 1	
		SLAB													
18	6 S1	SLAB	E	20	V	2 8.000							2 8	2 8	379
		INC = 34.000 INCH				25 4.250							25 4	25 4	
555	6 S2	SLAB	E	20		26 5.000							26 5	26 5	22021
138	8 S3	SLAB	E	20		51 0.000							51 0	51 0	18791
80	8 S4	SLAB	E	20		42 0.000							42 0	42 0	8971
18	5 S5	SLAB	E	20	V	2 4.000							2 4	2 4	257
		INC = 34.000 INCH				25 0.000							25 0	25 0	
444	5 S6	SLAB	E	20		26 5.000							26 5	26 5	12233
132	5 S7	SLAB	E	20		49 6.500							49 7	49 7	6826
16	8 S8	SLAB	E	20		30 0.000							30 0	30 0	1282
		TYPE D BARRIER													
558	5 R1	BARRIER	E	26		3 3.000	5.500	3 3.625			3 3.000	6.750	6 10	6 9	3928
558	5 R2	BARRIER	E	19		20.500	9.500						2 6	2 5	1406
558	5 R3	BARRIER	E	27			9.500	15.500	5.000	12.000	15.000	3.000	3 6	3 4	1940
80	5 R4	BARRIER	E	20		11 9.000							11 9	11 9	980
40	5 R5	BARRIER	E	20		39 11.000							39 11	39 11	1665
40	5 R6	BARRIER	E	20		44 7.000							44 7	44 7	1860
40	5 R7	BARRIER	E	20		34 10.000							34 10	34 10	1453
20	5 K1	BARRIER	E	27		3 8.000	9.250	5.375	3 2.750		5.250	1.000	8 0	7 11	165
68	5 K2	BARRIER	E	27		3 8.000	9.250	14.500	2 5.750		14.250	2.750	8 2	7 11	561
4	5 K3	BARRIER	E	27		3 8.000	9.250	14.375	8.000	12.000	14.125	2.750	5 6	5 2	22
20	5 K4	BARRIER	E	19	V	2 4.250	10.000						3 2	3 1	66
		INC. = 0.500 INCH				2 6.250	10.000						3 4	3 3	
20	5 K5	BARRIER	E	14	V	8.250	9.500	18.500			4.000	18.000	3 0	2 11	63
		INC. = 0.500 INCH				8.250	9.500	20.500			4.500	20.000	3 2	3 1	
12	5 K6	BARRIER	E	19	V	2 6.750	10.000						3 5	3 4	42
		INC. = 0.500 INCH				2 7.750	10.000						3 6	3 5	
12	5 K7	BARRIER	E	21	V	2 6.625	10.000				2 6.000	6.250	3 5	3 3	41
		INC. = 0.500 INCH				2 7.625	10.000				2 7.000	6.500	3 6	3 4	
36	5 K8	BARRIER	E	19	V	2 8.500	10.000						3 7	3 5	138
		INC. = 0.750 INCH				3 2.500	10.000						4 1	3 11	
12	5 K9	BARRIER	E	21	V	2 8.500	10.000				2 7.750	6.750	3 7	3 5	46
		INC. = 0.750 INCH				3 2.500	10.000				3 1.750	7.750	4 1	3 11	
24	5 K10	BARRIER	E	19		3 3.000	10.000						4 1	4 0	100
24	5 K11	BARRIER	E	21		3 3.000	10.000				3 2.250	7.750	4 1	3 11	98
24	5 K12	BARRIER	E	20		12 9.500							12 9	12 9	319
12	5 K13	BARRIER	E	20	V	6 2.000							6 2	6 2	115
		INC. = 36.000 INCH				12 2.000							12 2	12 2	
24	5 K14	BARRIER	E	20		13 0.375							13 0	13 0	325
12	5 K15	BARRIER	E	20	V	6 5.750							6 5	6 5	118
		INC. = 36.000 INCH				12 5.750							12 5	12 5	

Bill of Reinforcing Steel

No. Req.	Size/ Mark	LOCATION	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight lb
		SLIP FORM OPTION													
40	5 C1	BARRIER	E	20		12 0.000							12 0	12 0	501
8	5 C2	BARRIER	E	20		10 6.000							10 6	10 6	88

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 30

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

For bending diagrams and steel reinforcing totals, see Sheet No. _.

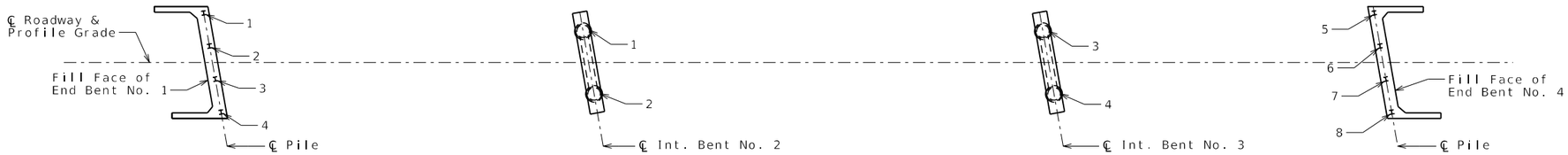
All bars shall be Grade 60.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.
SH = Required shape, see bending diagrams.
V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

BILL OF REINFORCING STEEL

Detailed Oct. 2024
Checked Nov. 2024

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



PART PLAN SHOWING PILE & DRILLED SHAFT NUMBERING FOR
RECORDING AS-BUILT PILE DATA & AS-BUILT DRILLED SHAFT DATA

As-Built Pile Data

Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 1
1					
2					
3					
4					
					End Bent No. 4
5					
6					
7					
8					

As-Built Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Intermediate Bent No. 2
1				
2				
				Intermediate Bent No. 3
3				
4				

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal
D. PDA test pile
E. Minimum tip elevation controlled
(Use when actual blow count is less than PDA blow count due to minimum tip elevation requirement. A plus sign (+) shall be placed after the PDA nominal axial compressive resistance value indicating actual value is higher than PDA value.)

This sheet to be completed by MoDOT construction personnel.

AS-BUILT PILE AND DRILLED SHAFT DATA

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 31
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

Missouri Department of Transportation
Construction and Materials

BORING NO. B-101
Page 1 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 1 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549438.9 **Date of Work:** 05/29/24-05/29/24
Offset: **Easting:** 2772694.5 **Depth to Water:** 40.1
Elevation: 943.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-4.1' Brown, LEAN CLAY, medium stiff, moist	940						
5		4.1-6.0' Brown and gray, LEAN CLAY with sand, stiff, moist		X	93	2-3-6 (12)		PP = 1.75 tsf	MC = 17.4% γ_{sat} = 134 pcf[1] LL = 37 PL = 16
		6.0-8.8' Dark brown, LEAN CLAY, stiff, moist	935						
10		8.8-13.6' Light brown, LEAN CLAY trace fine gravel, moist		X	87	2-3-5 (10)		PP = 1.50 tsf	MC = 22.8% γ_{sat} = 127 pcf[1] LL = 41 PL = 19
			930						
15		13.6-20.0' Gray and tan, SAND, medium dense, moist 14.9-20.0' scattered Iron Manganese concretions		X	67	4-4-6 (13)			Sieve Analysis Sieve # % Passing 3/4" 100.0 3/8" 96.8 #4 94.0 #10 90.0 #16 87.0 #40 73.6 #50 48.7 #100 7.9 #200 4.6
			925						
20		20.0-27.6' Dark gray, LEAN CLAY trace fine gravel, stiff, moist, (Glacial Till)		X	0	6-6-9 (20)			
			920						
25				X	73	3-5-8 (17)		PP = 3.25 tsf	MC = 23.3% γ_{sat} = 127 pcf[1] LL = 49 PL = 21
		27.6-30.8' COBBLES, dense, Limestone Cobbles and Boulders	915						
30				X	33	30-15-23 (49)			
		30.8-53.2' Dark gray, LEAN CLAY trace fine gravel, very stiff, moist, (Glacial Till)	910						
35				X	93	9-6-7 (17)		PP = 2.75 tsf	MC = 20.5% γ_{sat} = 130 pcf[1]

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-101
Page 2 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 1 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549438.9 **Date of Work:** 05/29/24-05/29/24
Offset: **Easting:** 2772694.5 **Depth to Water:** 40.1
Elevation: 943.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		30.8-53.2' Dark gray, LEAN CLAY trace fine gravel, very stiff, moist, (Glacial Till) *(continued)*							
40			905	X	93	4-5-7 (16)		PP = 2.50 tsf	MC = 22.1% γ_{sat} = 128 pcf[1]
45			900	X	100	4-6-11 (22)		PP = 2.50 tsf	MC = 21.1% γ_{sat} = 129 pcf[1]
50			895	X	100	5-8-5 (17)		PP = 2.25 tsf	MC = 20.7% γ_{sat} = 130 pcf[1]
55		53.2-54.8' Shale, dark gray, highly weathered	890	X	88	48-50/0.3'		PP = 9.00 tsf	
		54.8-67.4' Shale, dark gray, very weak rock, moderately weathered			100	(0)	Qu Test Results UCS = 15.0 ksf MC = 10.8% γ_{moist} = 142.3 pcf	PP = 5.00 tsf	
60			885		100	(48)	Qu Test Results UCS = 15.6 ksf MC = 11.1% γ_{moist} = 133.9 pcf		
65		62.8-67.8' water used to extrude core.	880		100	(36)	Qu Test Results UCS = 4.37 ksf MC = 18.2% γ_{moist} = 133.1 pcf		
		67.4-67.8' Fossiliferous Limestone, light gray slightly weathered Bottom of borehole at 67.8 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 32
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREK DESIGN GROUP, LLC
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Missouri Cert. of Authority 2002010300

Missouri Department of Transportation
Construction and Materials

BORING NO. B-203
Page 1 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 2 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 1549396.6 **Date of Work:** 06/04/24-06/04/24
Offset: **Easting:** 2772780.7 **Depth to Water:** 30.0
Elevation: 940.1 **Requested Northing:** 1549393.6 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772780.5 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.1' ASPHALT 0.1-0.6' CONCRETE 0.6-30.0' Air	940						
5			935						
10			930						
15			925						
20			920						
25			915						
30		30.0-31.0' Light tan black, SAND, very loose, wet 31.0-34.1' BOULDERS	910						
35		34.1-40.1' Gray, SAND, very loose, wet							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-203
Page 2 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 2 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 1549396.6 **Date of Work:** 06/04/24-06/04/24
Offset: **Easting:** 2772780.7 **Depth to Water:** 30.0
Elevation: 940.1 **Requested Northing:** 1549393.6 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772780.5 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		34.1-40.1' Gray, SAND, very loose, wet *(continued)*	905		73	5-1-1 (3)			
40		40.1-45.7' Gray, LEAN CLAY scattered gravel, very stiff, moist	900		73	3-7-8 (20)		PP = 2.25 tsf	MC = 21.4% γ_{wet} = 129 pcf(1) LL = 36 PL = 19
45		45.7-55.1' Shale, gray, very weak rock, highly weathered	895		73	5-8-13 (28)		PP = 7.50 tsf	MC = 16.4% γ_{wet} = 135 pcf(1)
50			890		100 13 (0)	37/0.1', 10/0'		PP = 7.50 tsf	
55		55.1-60.1' Shale, gray, very weak rock, moderately weathered	885		100 0 (0)	37/0.1', 10/0'	Qu Test Results UCS = 2.54 ksf MC = 12.9% γ_{moist} = 124 pcf	PP = 7.50 tsf	
60		60.1-85.1' Calcareous Shale, gray, medium strong rock, moderately weathered to slightly weathered	880		100 66 (12)				
65			875		100 64 (32)		Qu Test Results UCS = 226 ksf MC = 7.3% γ_{moist} = 151.1 pcf Qu Test Results UCS = 122 ksf MC = 7.3% γ_{moist} = 151.1 pcf		
70					100 (60)		Qu Test Results UCS = 193 ksf MC = 6.1% γ_{moist} = 154.4		

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 33
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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Missouri Department of Transportation
Construction and Materials

BORING NO. B-203
Page 3 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 2 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 1549396.6 **Date of Work:** 06/04/24-06/04/24
Offset: **Easting:** 2772780.7 **Depth to Water:** 30.0
Elevation: 940.1 **Requested Northing:** 1549393.6 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772780.5 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		60.1-85.1' Calcarecus Shale, gray, medium strong rock, moderately weathered to slightly weathered *(continued)*	870						
75			865		100 (88)		pcf Qu Test Results UCS = 334 ksf MC = 4.8% γ_{moist} = 156.3 pcf		
80			860		100 (70)		Qu Test Results UCS = 346 ksf MC = 6.3% γ_{moist} = 157.1 pcf Qu Test Results UCS = 455 ksf MC = 5.5% γ_{moist} = 156.7 pcf		
85		Bottom of borehole at 85.1 feet.	855		100 (90)		Qu Test Results UCS = 163 ksf MC = 7.3% γ_{moist} = 151.4 pcf Qu Test Results UCS = 153 ksf MC = 8.1% γ_{moist} = 149.7 pcf Qu Test Results UCS = 113 ksf MC = 8.9% γ_{moist} = 148.8 pcf Qu Test Results UCS = 143 ksf MC = 9.1% γ_{moist} = 147.7 pcf		

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. B-301
Page 1 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 3 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549388.2 **Date of Work:** 06/11/24-06/11/24
Offset: **Easting:** 2772888.8 **Depth to Water:** 31.2
Elevation: 935.8 **Requested Northing:** 1549392.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772889.0 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55LC ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: Rig #360485 **Hammer Efficiency:** 84.7% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.1' ASPHALT 0.1-0.6' CONCRETE 0.6-28.0' Air	935						
5			930						
10			925						
15			920						
20			915						
25			910						
30		28.0-31.2' Dark brownish gray, LEAN CLAY, soft to medium stiff, moist 30.5' switched to mud rotary after spt	905						
35		31.2-42.0' Dark gray, SAND, very loose, wet, fine grained, poorly graded			20	2-0-0 (0)			
					40	2-1-1			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

STATE OF MISSOURI — JEFF A. GARDNER — NUMBER PE-2016019369 — PROFESSIONAL ENGINEER
THIS SHEET WAS BEING DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 34
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREK DESIGN GROUP, LLC
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www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Oct. 2024
Checked Nov. 2024

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

Missouri Department of Transportation
Construction and Materials

BORING NO. B-301
Page 2 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 3 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549388.2 **Date of Work:** 06/11/24-06/11/24
Offset: **Easting:** 2772888.8 **Depth to Water:** 31.2
Elevation: 935.8 **Requested Northing:** 1549392.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772889.0 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55LC ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: Rig #360485 **Hammer Efficiency:** 84.7% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		31.2-42.0' Dark gray, SAND, very loose, wet, fine grained, poorly graded *(continued)*	900			(3)			
40			895		20	3-2-1 (4)			
		42.0-44.5' Dark gray, LEAN CLAY, stiff, (completely weathered shale)							
45		44.5-44.8' Shale, dark gray, thinly laminated, moderately weathered	890		93	31-37/0.3'		PP = 9.00 tsf	
		44.8-59.4' Shale, dark gray, very weak rock, slightly weathered			100 (94)		Qu Test Results UCS = 8.89 ksf MC = 13% γ_{moist} = 140 pcf		
50			885				Qu Test Results UCS = 15.1 ksf MC = 11.1% γ_{moist} = 140.2 pcf		
					100 (46)		Qu Test Results UCS = 4.46 ksf MC = 12.2% γ_{moist} = 138.6 pcf		
55			880						
					100 (52)		Qu Test Results UCS = 4.09 ksf MC = 17.9% γ_{moist} = 133.1 pcf		
60		59.4-60.1' Limestone, light gray, thin bedded, slightly weathered	875						
		60.1-61.9' Shale, dark gray, very weak rock, slightly weathered			100 (76)		Qu Test Results UCS = 50.8 ksf MC = 9.9% γ_{moist} = 145.7 pcf		
65		61.9-74.8' Calcareous Shale, light gray, medium bedded, weak rock to medium strong rock	870				Qu Test Results UCS = 71.7 ksf MC = 7.6% γ_{moist} = 148.3 pcf		
					100 (96)		Qu Test Results UCS = 185 ksf MC = 6.6% γ_{moist} = 153 pcf		
70									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B-301
Page 3 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 3 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549388.2 **Date of Work:** 06/11/24-06/11/24
Offset: **Easting:** 2772888.8 **Depth to Water:** 31.2
Elevation: 935.8 **Requested Northing:** 1549392.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772889.0 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55LC ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: Rig #360485 **Hammer Efficiency:** 84.7% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		61.9-74.8' Calcareous Shale, light gray, medium bedded, weak rock to medium strong rock *(continued)*	865		100 (96)		Qu Test Results UCS = 125 ksf MC = 6.8% γ_{moist} = 151.1 pcf		
		Bottom of borehole at 74.8 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
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LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 35
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Oct. 2024
Checked Nov. 2024

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

Missouri Department of Transportation
Construction and Materials

BORING NO. B-403
Page 1 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 4 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549351.2 **Date of Work:** 05/30/24-06/04/24
Offset: **Easting:** 2772965.4 **Depth to Water:** 24.2
Elevation: 932.3 **Requested Northing:** 1549349.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772965.3 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake (offset by surveyor just north of requested location)
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-2.2' Light brown, LEAN CLAY, medium stiff, dry	930						
		2.2-9.7' Dark brown mottled dark gray, LEAN CLAY, soft, moist							
5					20	2-1-2 (4)		PP = 0.25 tsf	MC = 24.1% γ_{dd} = 126 pcf[1]
			925						
10		9.7-14.3' Dark gray, SILTY LEAN CLAY scattered wood fragments, medium stiff, moist			80	2-3-4 (9)		PP = 1.75 tsf	MC = 28.2% γ_{dd} = 122 pcf[1] LL = 28 PL = 21
			920						
15		14.3-24.0' Grayish brown to light tan, SAND scattered lean clay, loose, moist			80	2-2-3 (7)			
			915						
20					80	2-2-2 (5)			
			910						
25		24.0-29.5' Gray to tan, trace fine gravel, loose, wet			73	1-2-2 (5)			
			905						
30		29.5-46.0' Dark gray, SAND with lean clay, medium dense to loose, wet			60	3-3-3 (8)			
			900						
35						0-1-2			Sieve Analysis Sieve # % Passing 3/4" 100.0 3/8" 99.8 #4 99.4

$N_{60} = (Em/60)Nm$ N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-403
Page 2 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 4 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549351.2 **Date of Work:** 05/30/24-06/04/24
Offset: **Easting:** 2772965.4 **Depth to Water:** 24.2
Elevation: 932.3 **Requested Northing:** 1549349.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772965.3 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake (offset by surveyor just north of requested location)
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		29.5-46.0' Dark gray, SAND with lean clay, medium dense to loose, wet *(continued)*	895		93	(4)			#10 96.9 #16 94.7 #40 57.2 #50 28.6 #100 10.9 #200 9.0
40		39.2' sand heaved before SPT could be performed 40.0' switch to mud rotary	890						
45					13	4-3-4 (9)			
		46.0-48.9' Shale, dark gray, completely weathered to highly weathered	885		93	24-36/0.3', 10/0'		PP = 9.00 tsf	
50		48.9-54.0' Shale, dark gray, very weak rock, moderately weathered to slightly weathered			100 (65)		Qu Test Results UCS = 6.42 ksf MC = 12.8% γ_{moist} = 140 pcf	PP = 9.00 tsf	
			880		94 (42)		Qu Test Results UCS = 6.30 ksf MC = 14.4% γ_{moist} = 137.5 pcf		
55		54.0-55.1' Fossiliferous Limestone, light gray, thin bedded, slightly weathered							
		55.1-60.1' Shale, dark gray, weak rock, slightly weathered	875		100 (90)		Qu Test Results UCS = 65.4 ksf MC = 10.6% γ_{moist} = 145.6 pcf		
60		Bottom of borehole at 60.1 feet.							

$N_{60} = (Em/60)Nm$ N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SGG\INT\PROJECT FILES\NW0020-A9468_WORTH_RTW_W FORK GRAND RIVER.GPJ

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED, DATED AND SEALED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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