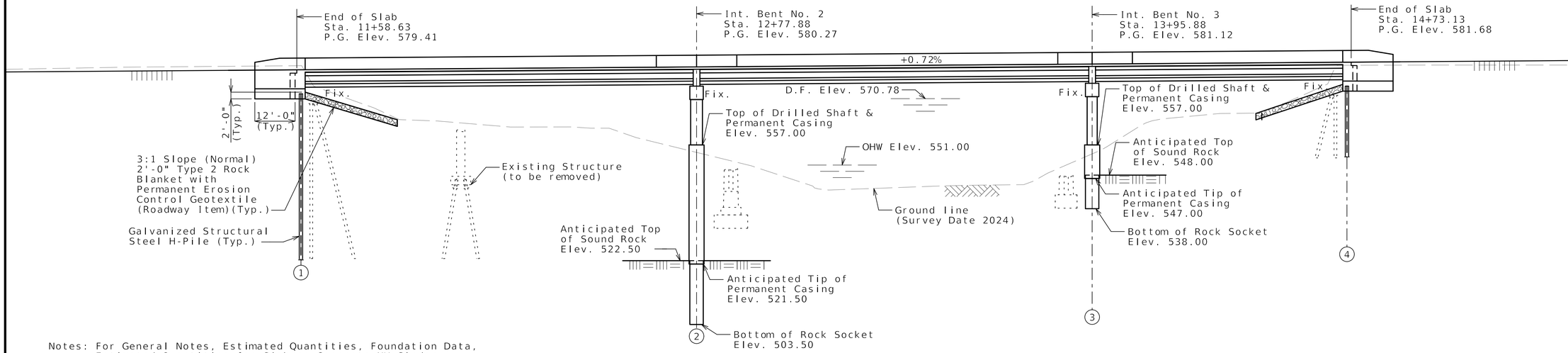
SEC/SUR 25 TWP 44N RGE 12W

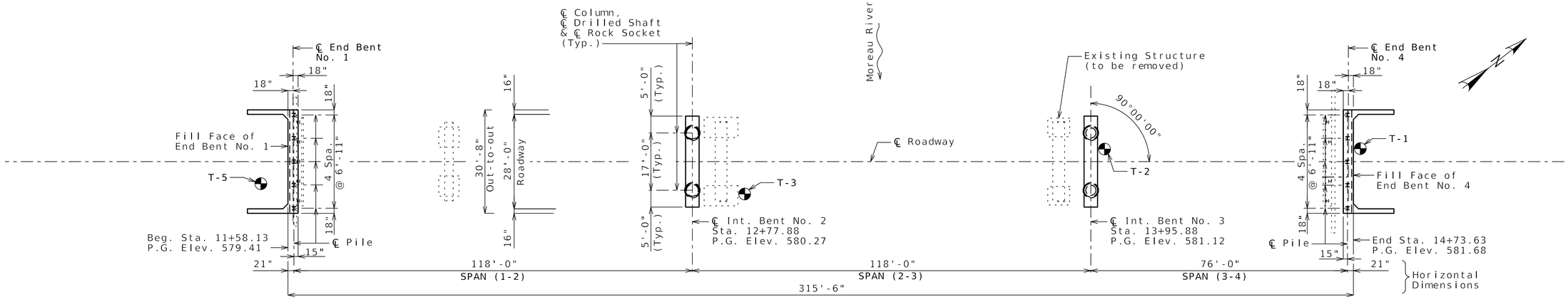
(118'-118'-76') PRESTRESSED CONCRETE NU-GIRDER SPANS
NO SKEW



GENERAL ELEVATION

Notes: For General Notes, Estimated Quantities, Foundation Data, Estimated Quantities for Slab on Concrete NU-Girder, Hydrologic Data and Location Sketch, see Sheet No. 2.

Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.



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 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 No. 26 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 county or elsewhere.

The County 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 County.

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

B.M. #300 "+" Cut on NW Side of Concrete Abutment
at North end of Tanner Bridge
N: 981858.2495, E: 1728691.516
Elev. 581.409

B.M. #301 "+" Cut on SE Side of Concrete Abutment
at South end of Tanner Bridge
N: 981586.4318, E: 1728547.114
Elev. 581.344

BRIDGE: TANNER BRIDGE RD. OVER MOREAU RIVER

TANNER BRIDGE RD. FROM ROUTE B TO FRIENDSHIP ROAD
ABOUT 0.5 MILES SOUTH OF ROUTE B
BEGINNING STATION 11+58.13

#	DESCRIPTION	DATE	BY

Bartlett & West
601 MONROE STREET, SUITE 201 - JEFFERSON CITY, MO 65101
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
WWW.BARTWEST.COM

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FRONT SHEET

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	1 of 26

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	60		60
Removal of Bridges	lump sum			1
Bridge Approach Slab (Minor)	sq. yard		125	125
Drilled Shafts (4 ft. 6 in. Dia.)	linear foot	87		87
Rock Sockets (4 ft. 0 in. Dia.)	linear foot	60		60
Video Camera Inspection	each	4		4
Foundation Inspection Holes	linear foot	195		195
Sonic Logging Testing	each	4		4
Galvanized Structural Steel Piles (12 in.)	linear foot	325		325
Pile Point Reinforcement	each	10		10
Class B Concrete (Substructure)	cu. yard	79.6		79.6
Type D Barrier	linear foot		679	679
Slab on Concrete NU-Girder	sq. yard		1079	1079
NU 53, Prestressed Concrete NU-Girder	linear foot		935	935
Reinforcing Steel (Bridges)	pound	28,460		28,460
Steel Intermediate Diaphragm for P/S Concrete Girders	each		10	10
Slab Drain	each		36	36
Vertical Drain at End Bents	each			2
Laminated Neoprene Bearing Pad	each		18	18

Notes:

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 Quantities 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 Quanitites 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 = 563 mi^2
Design Flood Frequency = 100 years
Design Flood Discharge = 37,000 cfs
Design Flood (D.F.) Elevation = 570.78
Base Flood (100-year)
Base Flood Elevation = 571 ft
Base Flood Discharge = 37,000 cfs
Estimated Backwater = 0.07 ft
Average Velocity thru Opening = 7.5 ft/s
Freeboard (100-year)
Freeboard = 2.2 ft
Roadway Overtopping
Overtopping Flood Discharge = >55,000 cfs
Overtopping Flood Frequency = >500 years

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	289
Reinforcing Steel (Epoxy Coated)	pound	95,090

The table of Estimated Quantities for Slab on Concrete NU-Girder represents the quantities used by the County 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 precast prestressed panels, 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.

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 12x53	-	-	HP 12x53
	Number	ea	5	-	-	5
	Approximate Length Per Each	ft	50	-	-	15
	Pile Point Reinforcement	ea	All	-	-	All
	Min. Galvanized Penetration	ft	Full Length	-	-	Full Length
	Pile Driving Verification Method		DF	-	-	DF
	Resistance Factor		0.40	-	-	0.40
	Minimum Nominal Axial Compressive Resistance	kip	609	-	-	559.60
Rock Socket	Number	ea	-	2	2	-
	Layer 1: Foundation Material		-	Strong Rock	Strong Rock	-
	Layer 1: Elevation Range	ft	-	522.5-516.5	548-531	-
	Layer 1: Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	7	13.4	-
	Layer 1: Resistance Factor (Side Resistance)		-	0.5	0.45	-
	Layer 2: Foundation Material		-	Strong Rock	Stong Rock	-
	Layer 2: Elevation Range	ft	-	516.5-497.5	531-523.5	-
	Layer 2: Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	6.3	13	-
	Layer 2: Resistance Factor (Side Resistance)		-	0.4	0.46	-
	Layer 2: Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	-	0	0	-
	Layer 2: Resistance Factor (Tip Resistance)	ksf	-	0.2	0.3	-

Note: The table of Rock Socket values represent the design values used in preparing the plan details for the rock socket foundations. Foundation Inspection Holes cored and logged by the contractor will be utilized by the engineer to confirm or update the design values. See Bridge Job Special Provision "Foundation Inspection Holes" for additional information.

DF = FHWA-modified Gates Dynamic Pile Formula

Load Bearing Pile:
Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads/Resistance Factor

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

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

HP piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702. When pile refusal on rock occurs, as approved by the engineer, the minimum nominal axial compressive resistance is verified and no additional pile driving verification method is required.

Rock Socket (Drilled Shafts):
Minimum Nominal Axial Compressive Resistance (Side Resistance + Tip Resistance) = Maximum Factored Loads/Resistance Factors

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)
Seismic Design Category = A (Nonseismic)
Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{D1} = 0.100g

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

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 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
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For prestressed girder stresses, see Sheets No. 9 thru 12.

For prestressed panels, see Sheet No. 14.

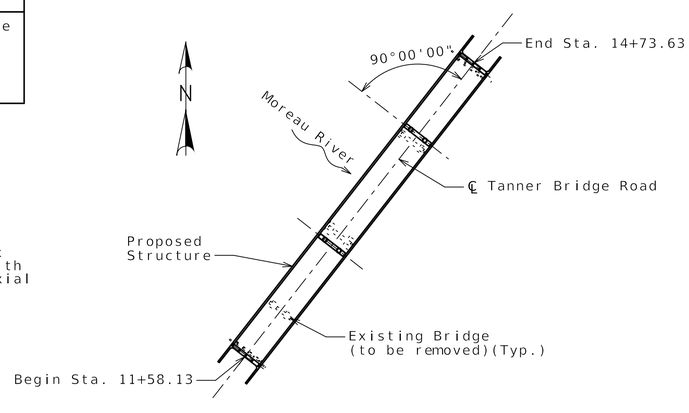
Neoprene Pads:
Neoprene bearing pads shall be 60 durometer and shall be in accordance with Sec 716.

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 1 1/2", unless otherwise shown.

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

Miscellaneous:
Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:
☐ Constant Joint Filler
☐ Variable Joint Filler



LOCATION SKETCH

#	DATE	DESCRIPTION	BY

Bartlett & West
601 MONROE STREET, SUITE 201 - JEFFERSON CITY, MO 65101
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
WWW.BARTWEST.COM

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GENERAL NOTES AND QUANTITIES

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER

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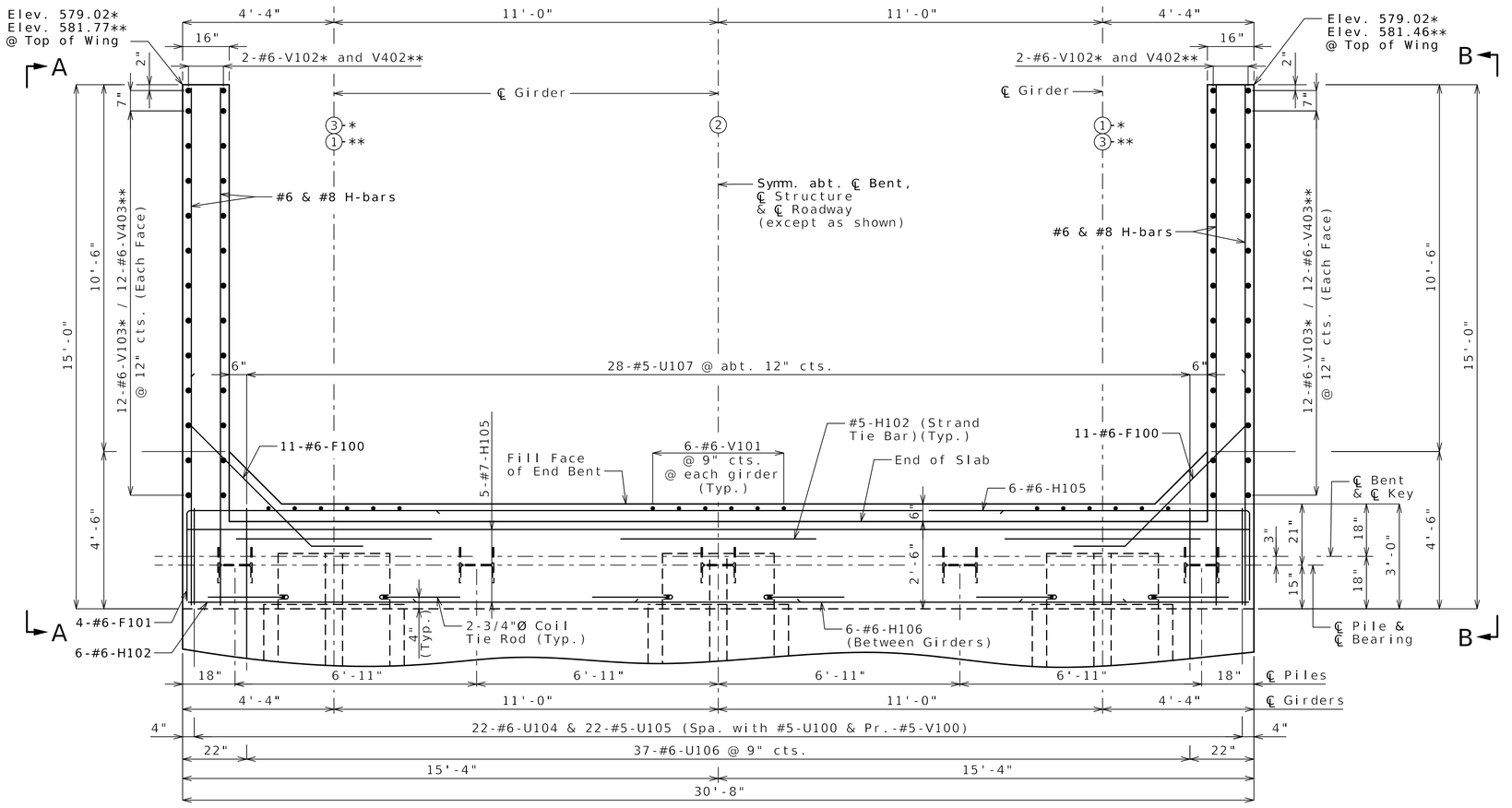
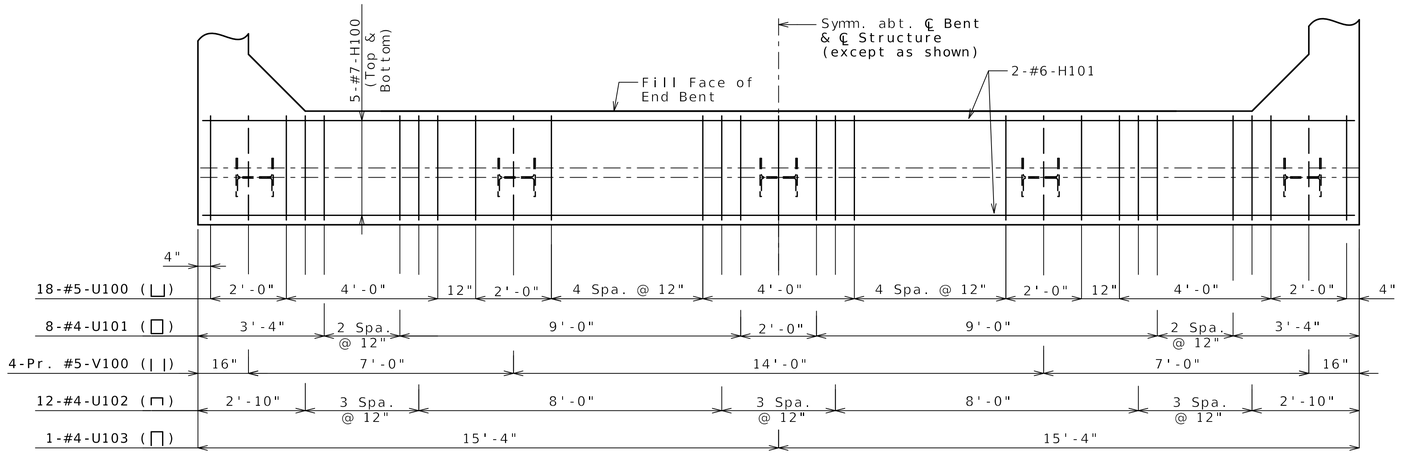
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	2 of 26



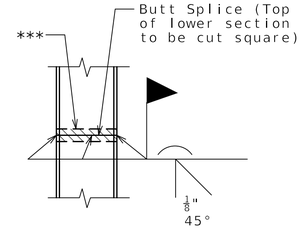
PLAN



PART PLAN SHOWING REINFORCEMENT

Note: Steps and keys not shown for clarity.

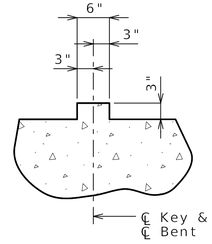
Note: This drawing is not to scale. Follow dimensions.



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

Notes:

For details of End Bents not shown, see Sheets No. 4 and 5.

For Elevations A-A and B-B, see Sheet No. 5.

For location of #5-H102 and #5-H402 (Strand Tie Bar) and Coil Tie Rods, see Sheet No. 9 and 12.

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

U bars and Pr.-V bars shall be placed parallel to ℄ Structure.

Bend #6-F100 in field to clear beams.

* End Bent No. 1
** End Bent No. 4

Substructure Quantity Table for Bents No. 1 & No. 4

Item		Bt. No. 1 Quantity	Bt. No. 4 Quantity
Class 1 Excavation	cu. yard	30	30
Galvanized Structural Steel Piles (12 in.)	linear foot	250	75
Pile Point Reinforcement	each	5	5
Class B Concrete (Substructure)	cu. yard	14.2	14.2

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

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DETAILS OF END BENTS NO. 1 AND NO. 4

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
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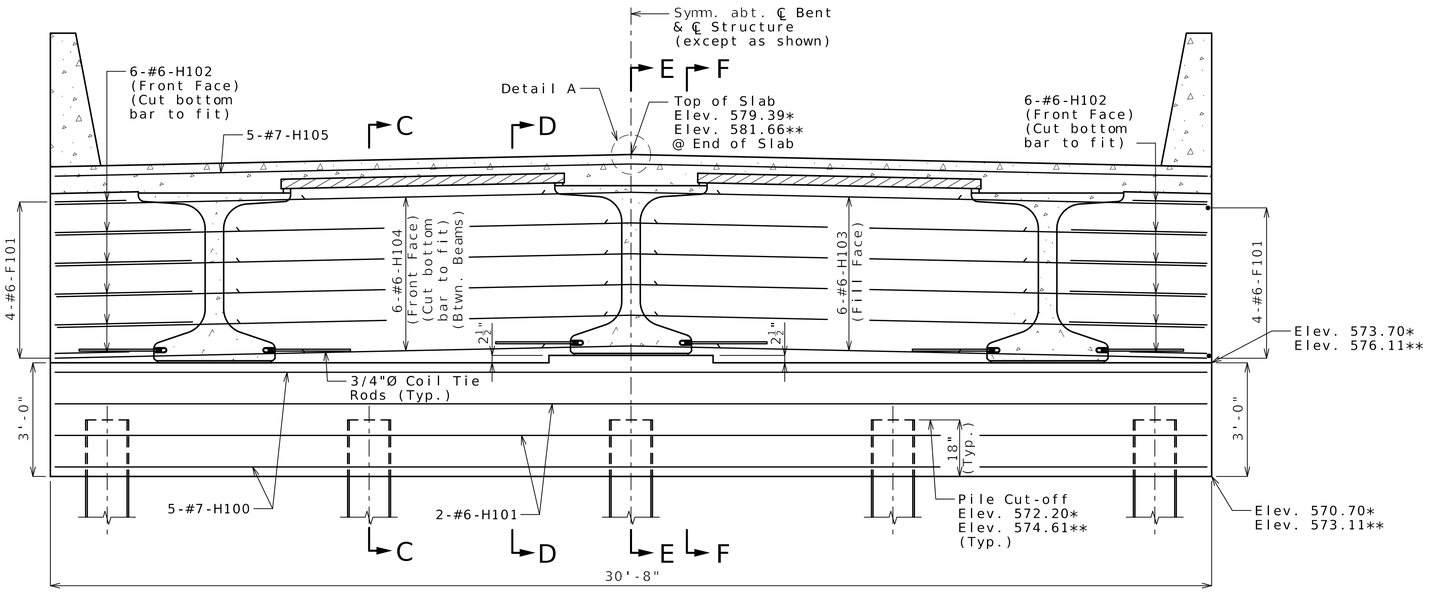
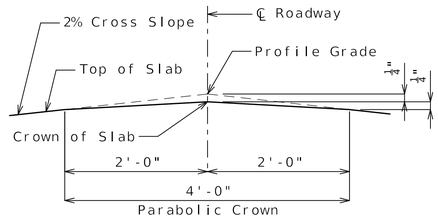
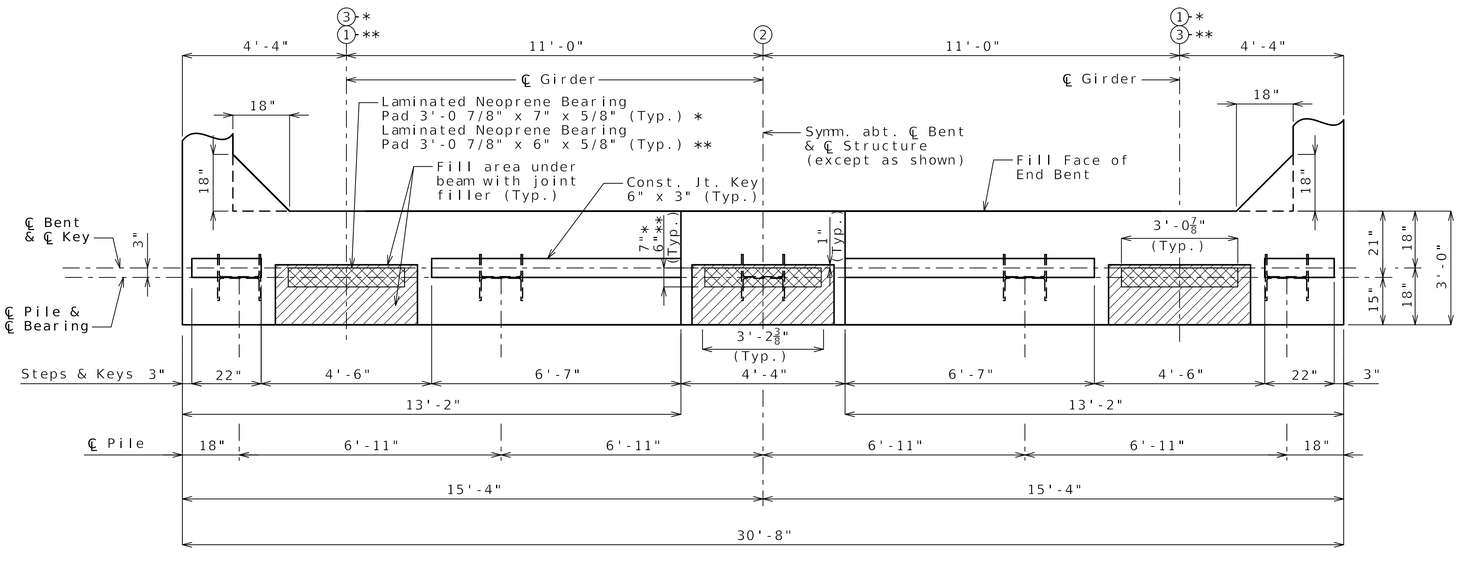


SECTION NEAR END BENT

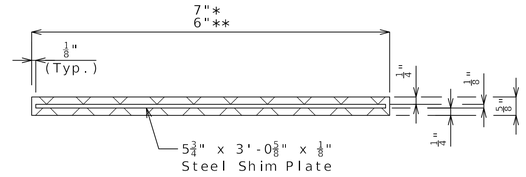
Note: Keys not shown for clarity.



DETAIL A



PLAN OF BEAM SHOWING DIMENSIONS



SECTION THROUGH 3'-0 7/8" x 6" x 5/8" LAMINATED NEOPRENE BEARING PAD AT END BENTS

Notes:

For details of End Bents not shown, see Sheets No. 3 and 5.

For details of barriers not shown, see Sheet No. 21.

For details of Vertical Drain at End Bents, see Sheet No. 6.

For Sections C-C, D-D and E-E, see Sheet No. 5.

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

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

* End Bent No. 1
** End Bent No. 4

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

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DETAILS OF END BENTS NO. 1 AND NO. 4

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER

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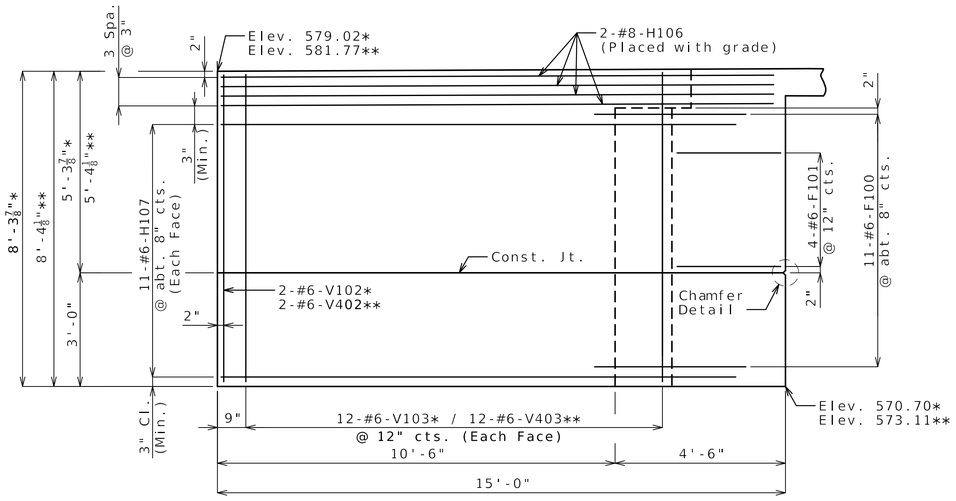
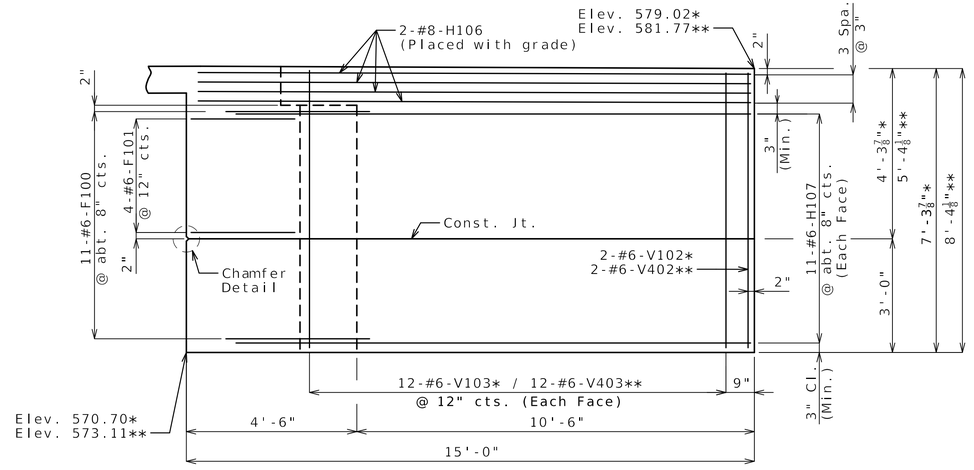
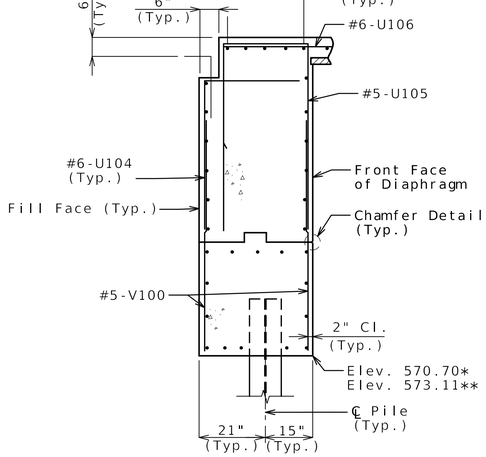
SHEET NO:	4 of 26



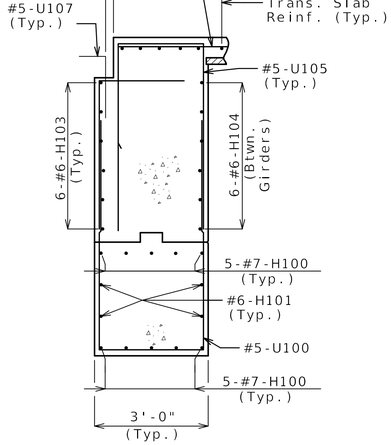
ELEVATION A-A



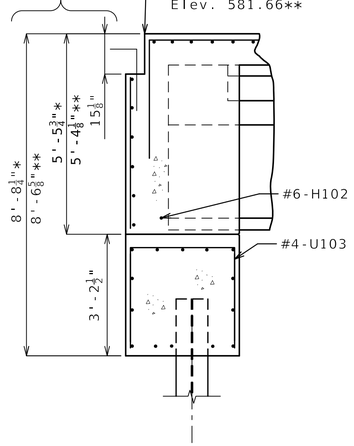
ELEVATION B-B



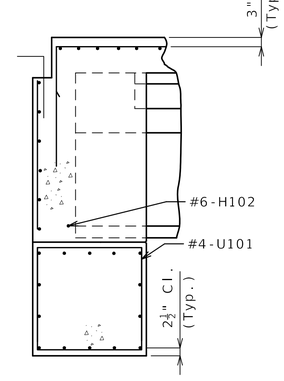
SECTION C-C



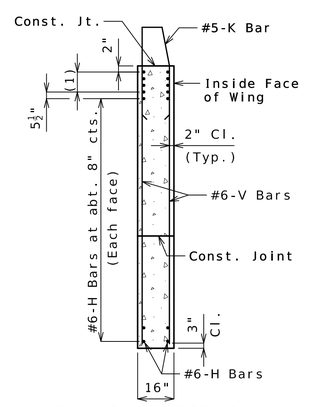
SECTION D-D



SECTION E-E

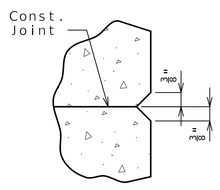


SECTION F-F



TYPICAL SECTION
THRU WING

(1) #8-H Bars at 3" cts.
(Each face)(Place with grade)



CHAMFER DETAIL

Notes:

For reinforcement of the Type D Barrier not shown, see Sheet 21.

For details of End Bents not shown, see Sheets No. 3 and 4.

For details of Bridge Approach Slab, see Sheet No. 22.

* - End Bent No. 1
** - End Bent No. 4

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

DETAILS OF END BENTS NO. 1 AND NO. 4

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

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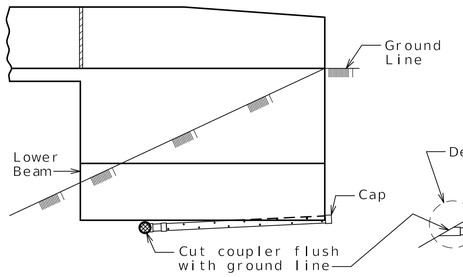
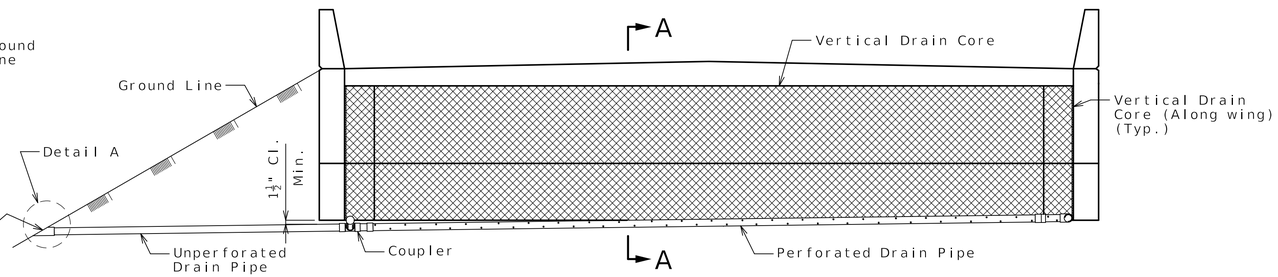
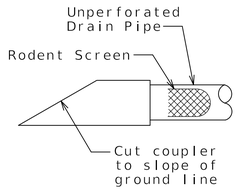


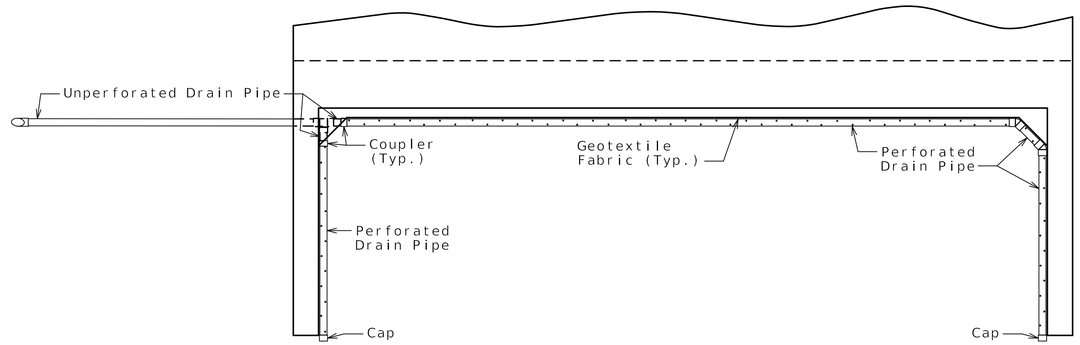
ELEVATION OF WING



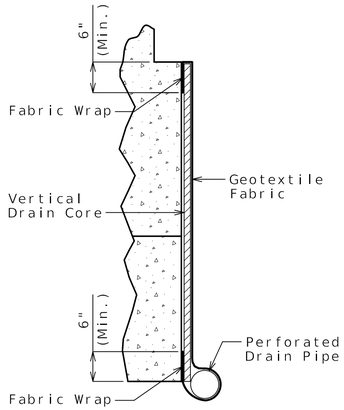
ELEVATION OF END BENT



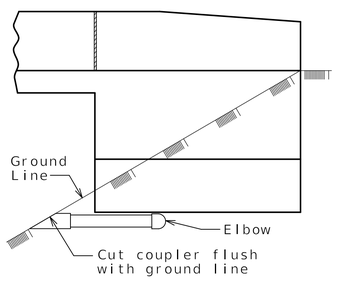
DETAIL A



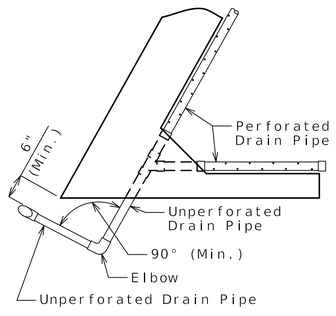
PLAN OF END BENT



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.

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

#	DATE	DESCRIPTION	BY

VDRA1

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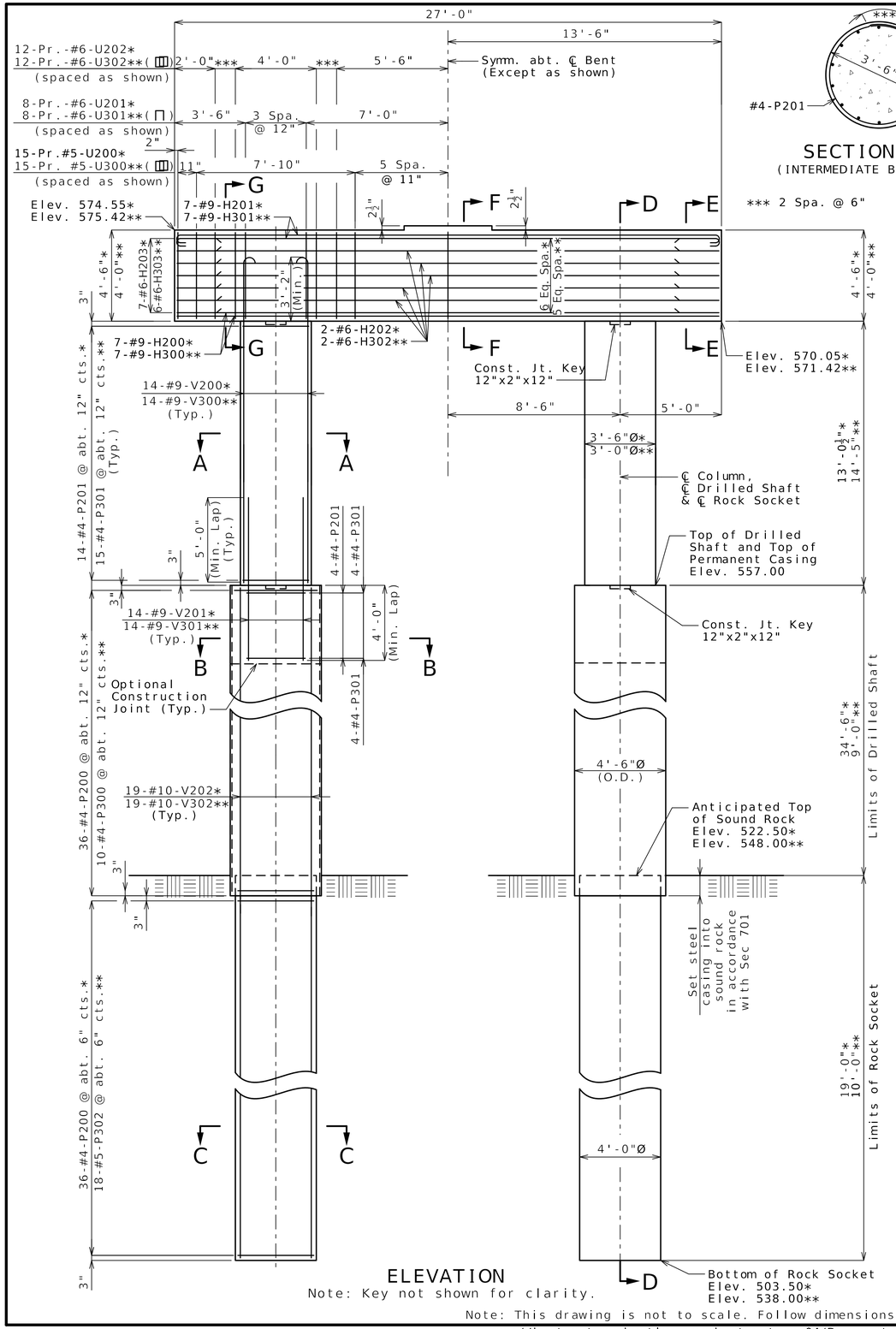
VERTICAL DRAIN AT END BENTS

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

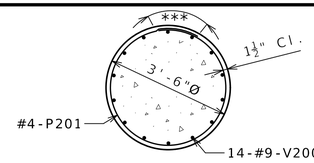
STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	6 of 26



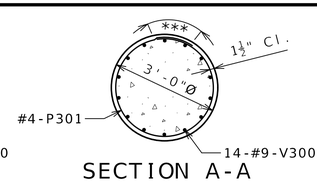
ELEVATION

Note: Key not shown for clarity.



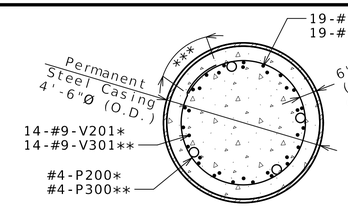
SECTION A-A

(INTERMEDIATE BENT NO. 2)

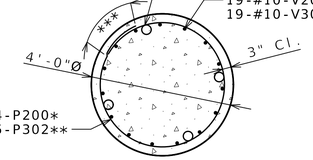


SECTION A-A

(INTERMEDIATE BENT NO. 3)

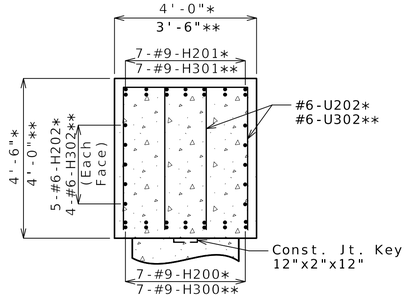


SECTION B-B

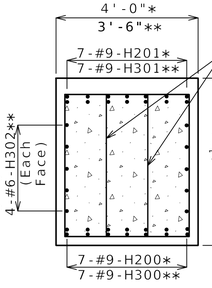


SECTION C-C

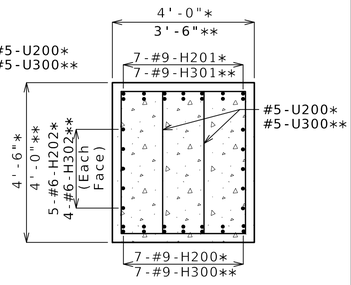
*** 2'-1" Min. Lap (#4-P200)
2'-8" Min. Lap (#5-P302)
(Stagger Adjacent ba splices)



PART SECTION G-G



SECTION F-F



SECTION E-E

Notes:

Work this sheet with Sheet No. 8.

An additional 4 feet has been added to the V202 and V302 bar length and four additional #4-P200 and #5-P302 bars have been added per shaft in the quantities, if required, 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 additional P bars shall be spaced similarly to that shown in elevation, if required, or to a lesser spacing if not required, but not less than 6" cts.

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

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

Column or dowel reinforcement shall be placed prior to pouring drilled shaft concrete in the area of the lap. Dowel bar or column reinforcement shall not be inserted after drilled shaft pour is complete.

Remove sediment laitance and weak concrete to sound concrete prior to setting column reinforcement if optional construction joint is used.

* - Intermediate Bent No. 2
** - Intermediate Bent No. 3

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

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DETAILS OF INTERMEDIATE BENTS NO. 2 AND NO. 3

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

SEALED DATE:	10/17/2025
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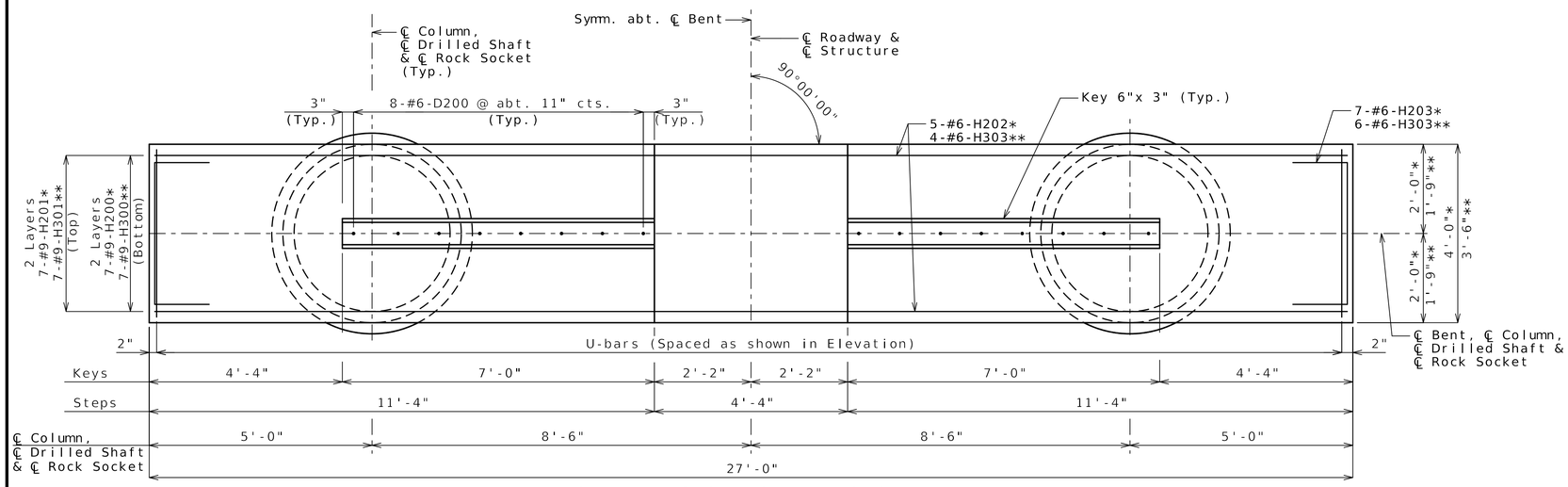
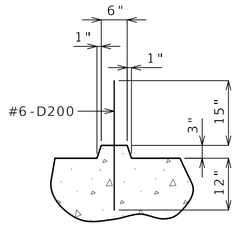
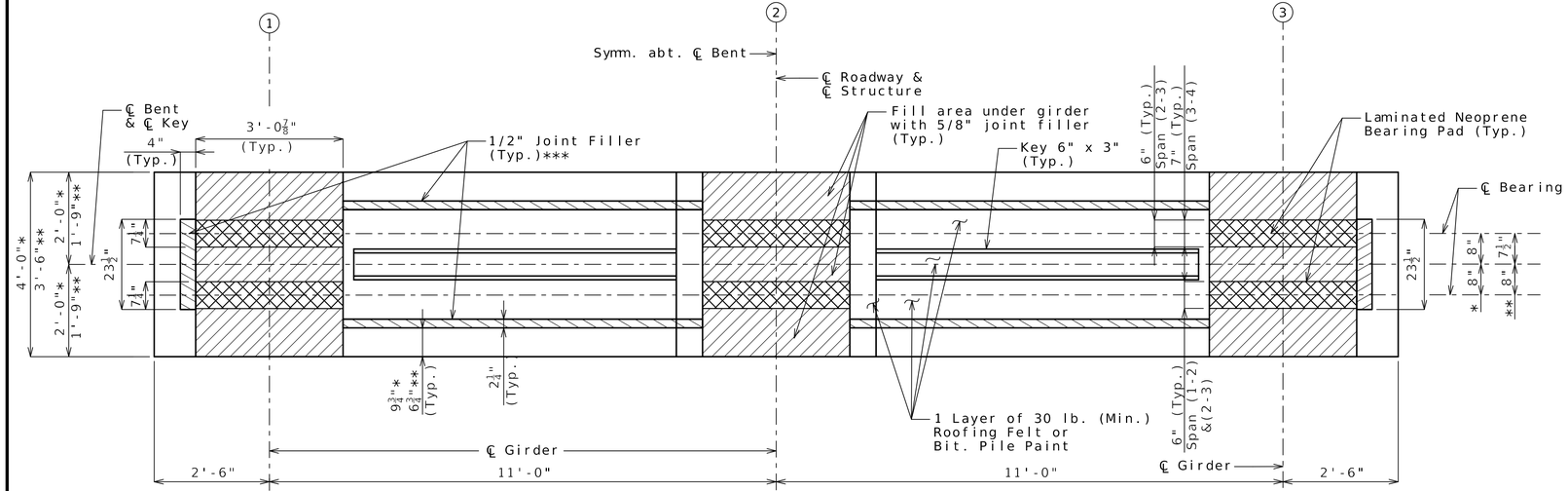
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	7 of 26



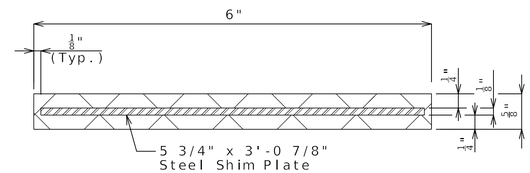
PLAN OF BEAM SHOWING REINFORCEMENT



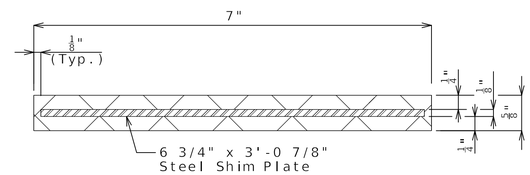
SECTION THRU KEY



PLAN OF BEAM



DETAILS OF 6" x 3'-0 7/8" LAMINATED NEOPRENE BEARING PADS Spans (3-4)



DETAILS OF 7" x 3'-0 7/8" LAMINATED NEOPRENE BEARING PADS Spans (1-2) and (2-3)

Notes:

Work this sheet with Sheet No. 7.

* Intermediate Bent No. 2

** Intermediate Bent No. 3

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

Substructure Quantity Table for Bents No. 2 & 3			
Item		Int. Bt. No. 2 Quantity	Int. Bt. No. 3 Quantity
Drilled Shafts (4 ft. 6 in. Dia.)	linear foot	69.0	18.0
Rock Sockets (4 ft. 0 in. Dia.)	linear foot	38.0	22.0
Video Camera Inspection	each	2	2
Foundation Inspection Holes	linear foot	131.0	64.0
Class B Concrete (Substructure)	cu. yard	27.5	23.8
Reinforcing Steel (Bridges)	pound	17,660	10,800

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

The cost of any required excavation to the top of the drilled shafts will be considered completely covered by the contract unit price for other items.

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DETAILS OF INTERMEDIATE BENTS NO. 2 AND NO. 3

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
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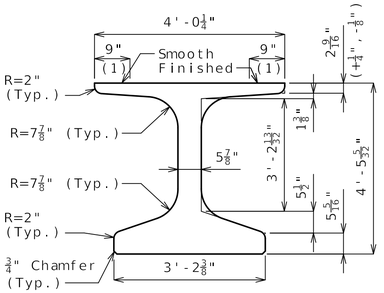
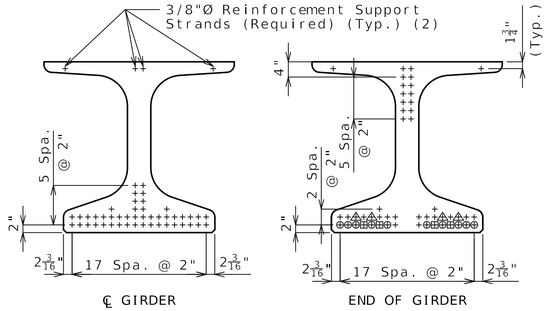
DRAWING NO:	
SHEET NO:	8 of 26

(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.



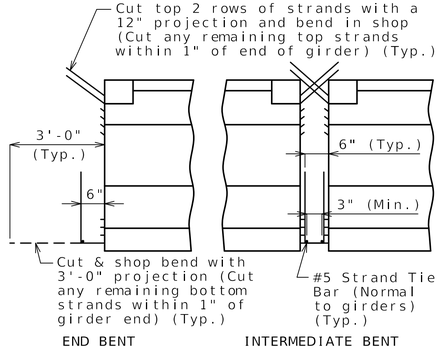
STRAND ARRANGEMENT

+ Indicates prestressing strand.

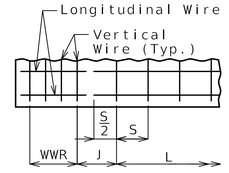
○ Indicates cut & shop bend with 3'-0" projection.

△ 6'-0" Debond

□ 12'-0" Debond



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

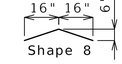
Bars Each Girder

No.	Size/Mark	Length	Shape
140	3 G1	2'-10"	8
2	4 G3	3'-10¼"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8⅛"	20

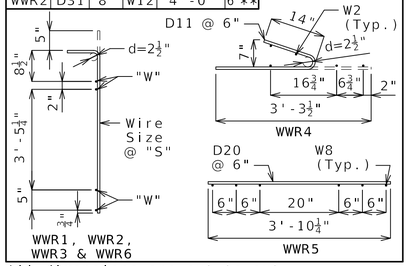
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	5'-0"	4¾"
WWR2	D31	8"	W12	4'-0"	10"∗
WWR3	D31	12"	W12	94'-0"	--
WWR6	D31	2"	W12	16"	4"
WWR2	D31	8"	W12	4'-0"	6"∗∗

Bending Diagrams



Shape 20



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 = 9000 psi and f'ci = 7000 psi.

Use 46 strands, 0.6"Ø Grade 270, with an initial prestress force of 2021 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, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

For Girder Camber Diagram, see Sheet No. 17.

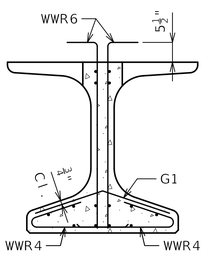
The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 13.

For location of coil inserts at slab drains, see Sheet No. 16.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 15 and 3.

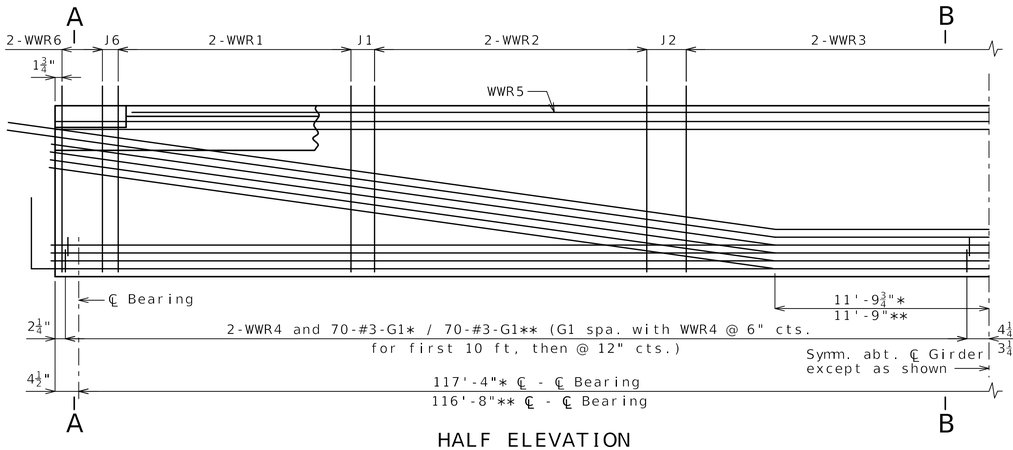
Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

∗ Span (1-2)
∗∗ Span (2-3)



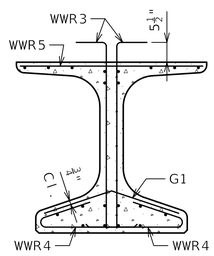
SECTION A-A

Strands not shown for clarity.



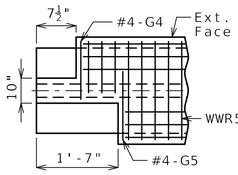
HALF ELEVATION

Reinforcement support strands not shown for clarity.



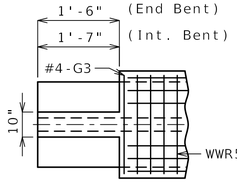
SECTION B-B

Strands not shown for clarity.



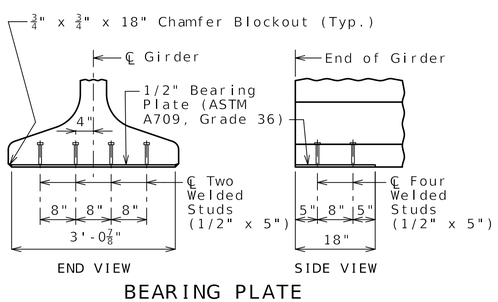
LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.

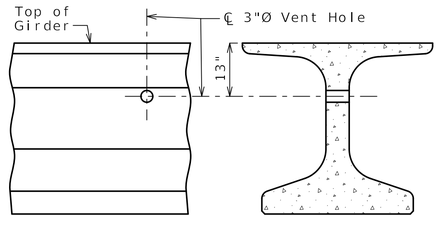


INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

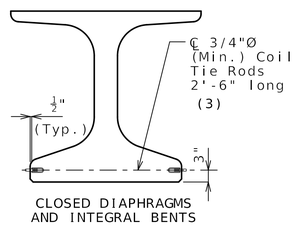


BEARING PLATE



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 and steel intermediate diaphragm bolt connections by 6" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-6" at exterior face of exterior girders at end bents

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

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#	DATE	DESCRIPTION	BY

NU-GIRDERS - SPANS (1-2) AND (2-3)

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
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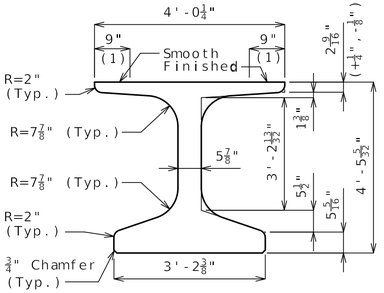
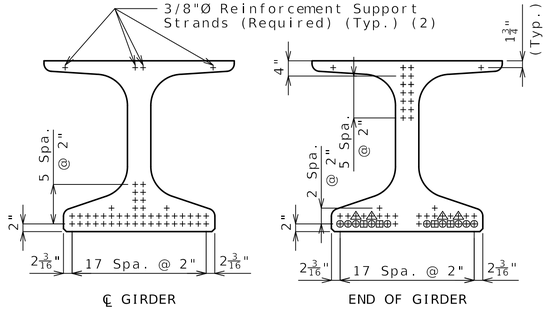
SHEET NO:	9 of 26

(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.



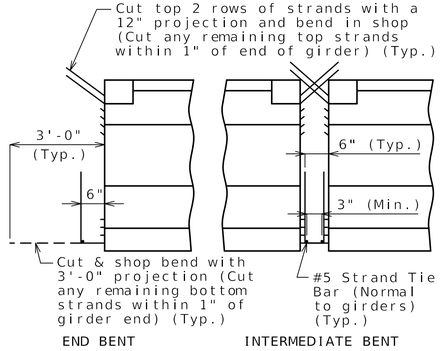
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

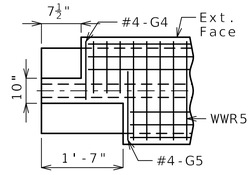
○ Indicates cut & shop bend with 3'-0" projection.

△ 6'-0" Debond

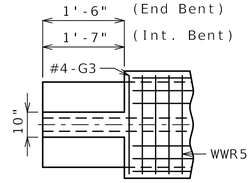
□ 12'-0" Debond



STRANDS AT GIRDER ENDS

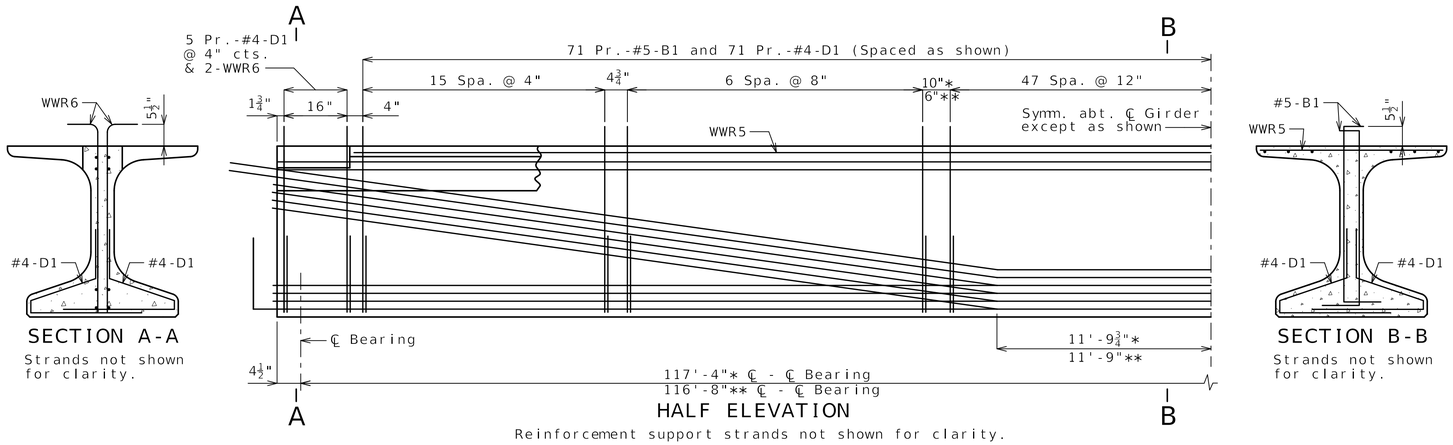


LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

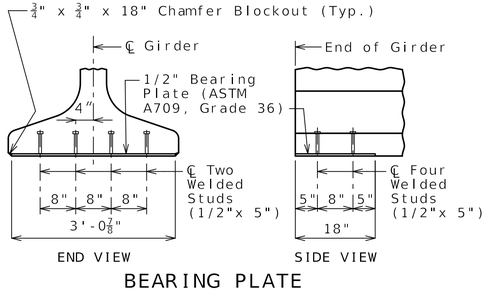
TOP FLANGE BLOCKOUT



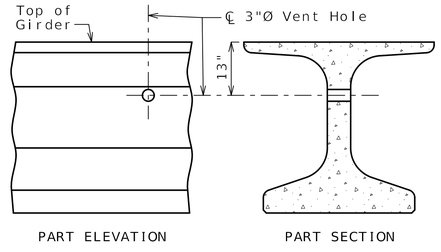
SECTION A-A
Strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

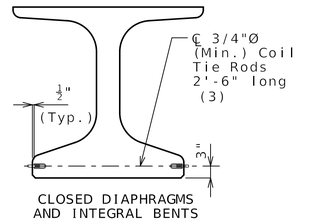


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

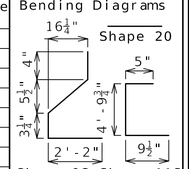
COIL TIES

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

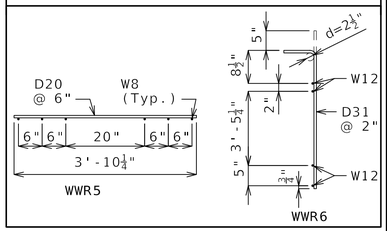
(3) 2'-6" at exterior face of exterior girders at end bents

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
282	5 B1	5'-10"	11S
302	4 D1	4'-0"	9S
2	4 G3	3'-10¼"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8⅛"	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 is not required for exterior girders of intermediate spans. Half no. of G3, G4 and G5 are not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 9000 psi and f'ci = 7000 psi.

Use 46 strands, 0.6"Ø Grade 270, with an initial prestress force of 2021 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, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

For Girder Camber Diagram, see Sheet No. 17.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 13.

For location of coil inserts at slab drains, see Sheet No. 16.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 15 and 3.

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.

* Span (1-2)
** Span (2-3)

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

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#	DATE	DESCRIPTION	BY

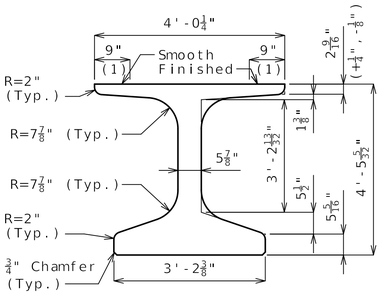
NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (1-2) AND (2-3)

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE ARCUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

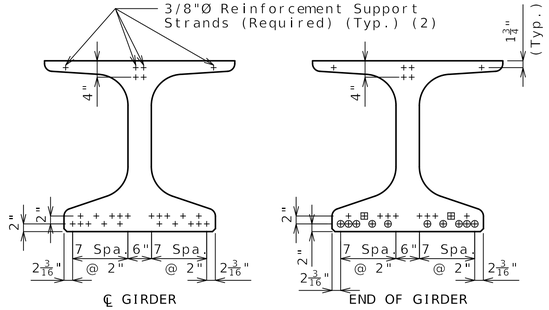
SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	10 of 26

(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

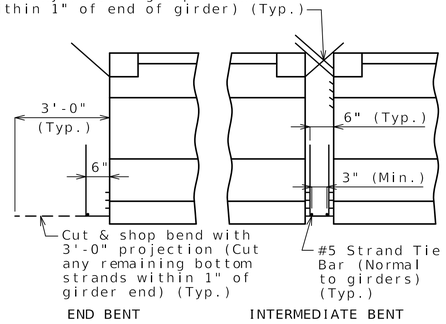
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

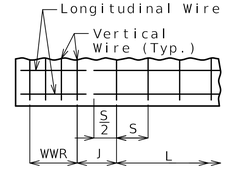
□ 12'-0" Debond

Cut top 2 rows of strands with a 12" projection and bend in shop (Cut any remaining top strands within 1" of end of girder) (Typ.)



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

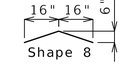
Bars Each Girder

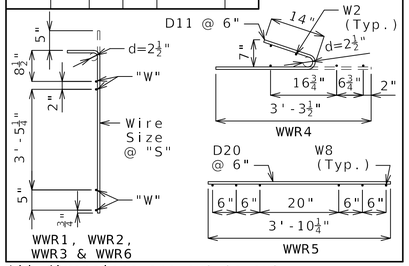
No.	Size/Mark	Length	Shape
98	3 G1	2'-10"	8
2	4 G3	3'-10¼"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8⅛"	20

Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	8"	W12	8'-0"	10¼"
WWR2	D31	12"	W12	5'-0"	12"
WWR3	D31	16"	W12	42'-8"	--
WWR6	D31	2"	W12	16"	4"

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 = 9000 psi and f'ci = 7000 psi.

Use 22 strands, 0.6"Ø Grade 270, with an initial prestress force of 976 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, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

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.

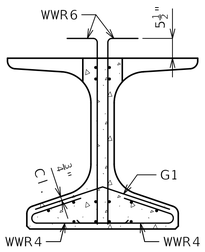
For Girder Camber Diagram, see Sheet No. 17.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 13.

For location of coil inserts at slab drains, see Sheet No. 16.

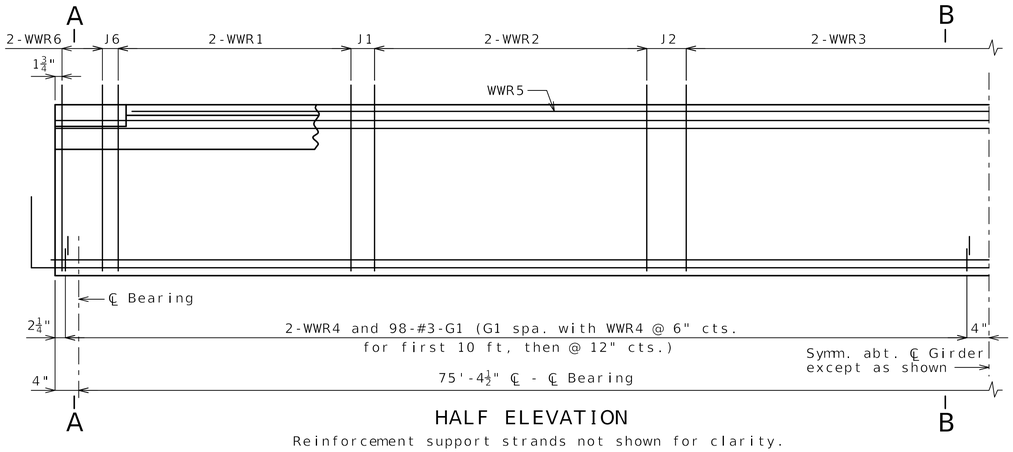
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 15 and 3.

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.



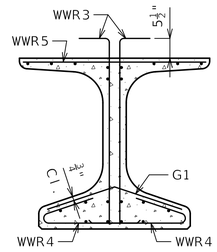
SECTION A-A

Strands not shown for clarity.



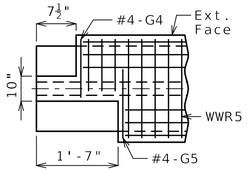
HALF ELEVATION

Reinforcement support strands not shown for clarity.



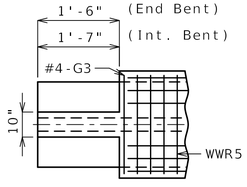
SECTION B-B

Strands not shown for clarity.



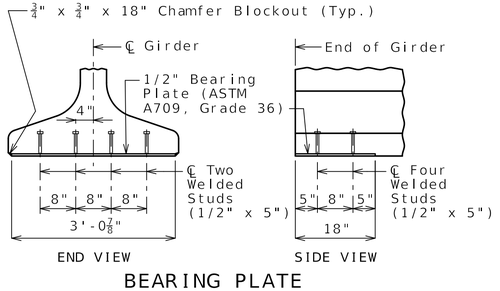
LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.



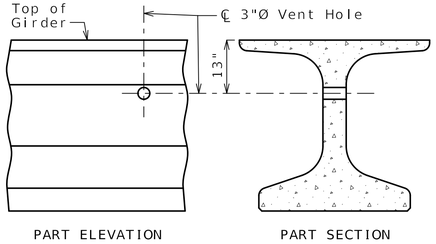
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT



END VIEW SIDE VIEW

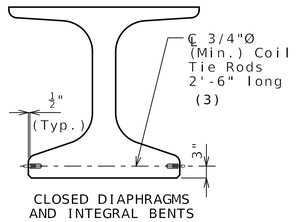
BEARING PLATE



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 and steel intermediate diaphragm bolt connections by 6" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-6" at exterior face of exterior girders at end bents

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

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CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
WWW.BARTWEST.COM

#	DATE	DESCRIPTION	BY

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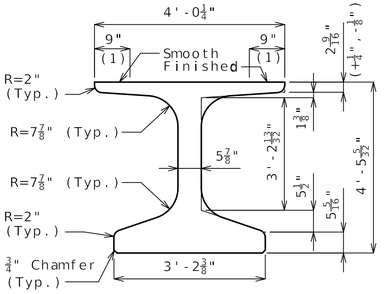
NU-GIRDERS - SPAN (3-4)

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-2917
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

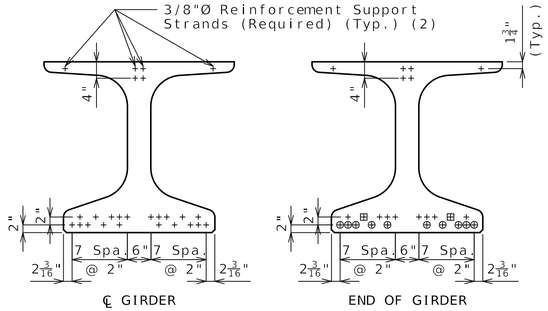
SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	11 of 26

(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.



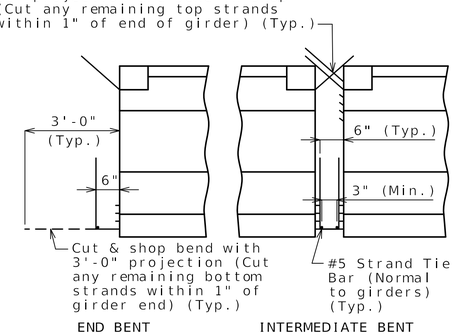
STRAND ARRANGEMENT

+ Indicates prestressing strand.

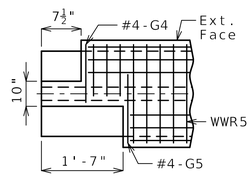
○ Indicates cut & shop bend with 3'-0" projection.

□ 12'-0" Debond

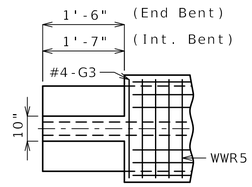
Cut top 2 rows of strands with a 12" projection and bend in shop (Cut any remaining top strands within 1" of end of girder) (Typ.)



STRANDS AT GIRDER ENDS

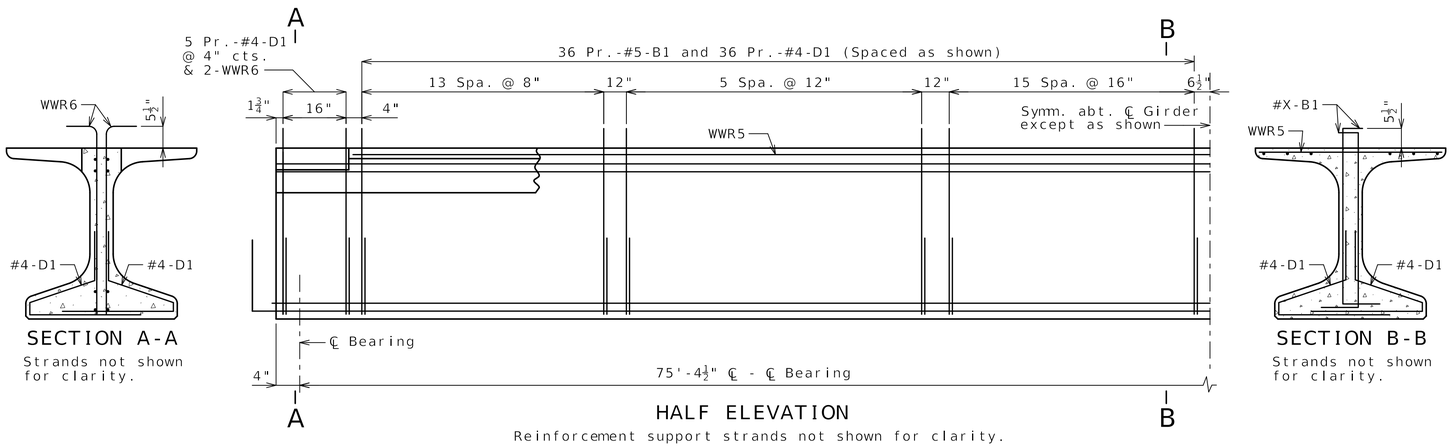


LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

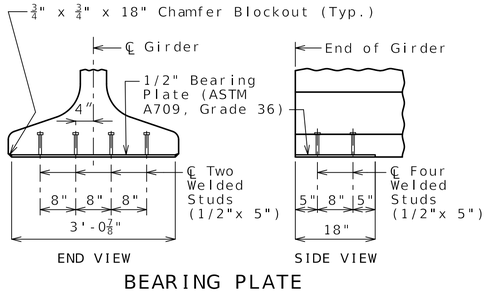
TOP FLANGE BLOCKOUT



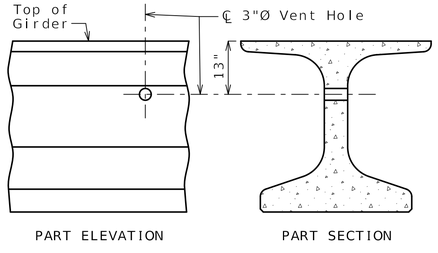
SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

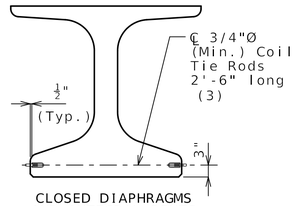


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

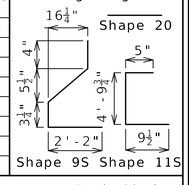
COIL TIES

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

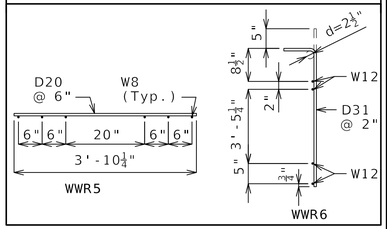
(3) 2'-6" at exterior face of exterior girders at end bents

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
144	5 B1	5'-10"	11S
164	4 D1	4'-0"	9S
2	4 G3	3'-10¼"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8⅛"	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 is not required for exterior girders of intermediate spans. Half no. of G3, G4 and G5 are not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 9000 psi and f'ci = 7000 psi.

Use 22 strands, 0.6"Ø Grade 270, with an initial prestress force of 967 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, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

For Girder Camber Diagram, see Sheet No. 17.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 13.

For location of coil inserts at slab drains, see Sheet No. 16.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 15 and 3.

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.

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

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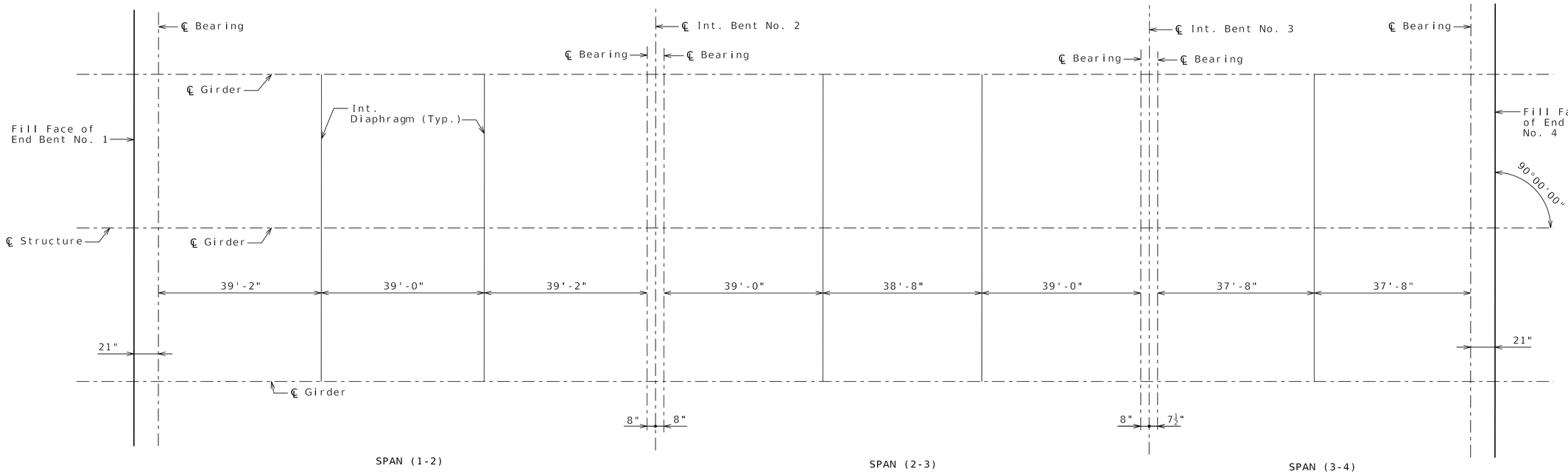
#	DATE	DESCRIPTION	BY

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

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

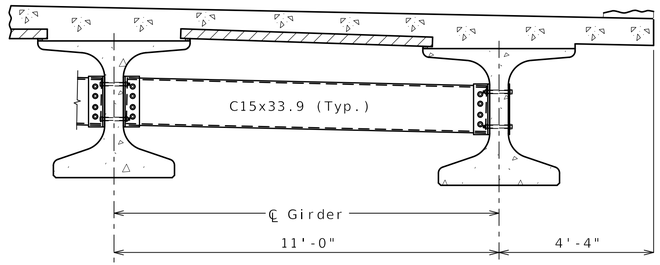
STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	12 of 26

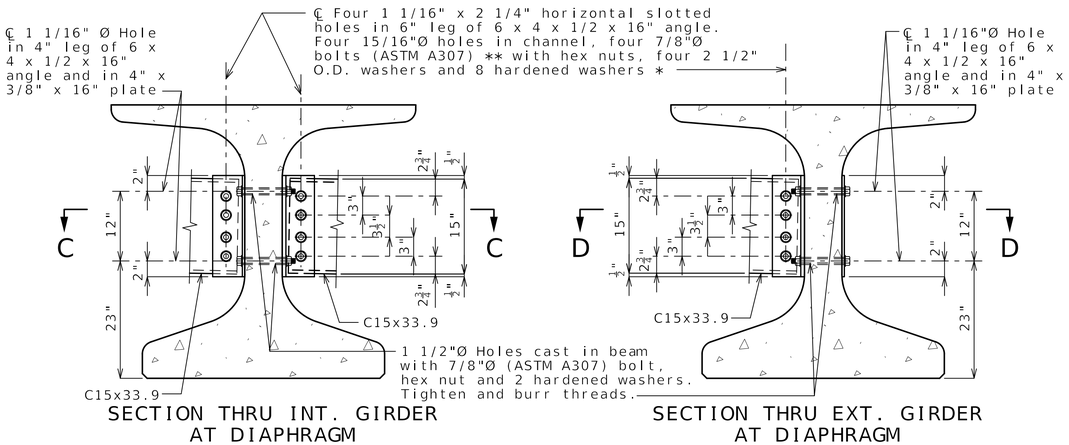


PLAN SHOWING LOCATION OF STEEL INTERMEDIATE DIAPHRAGMS

Note: Longitudinal dimensions shown are horizontal.

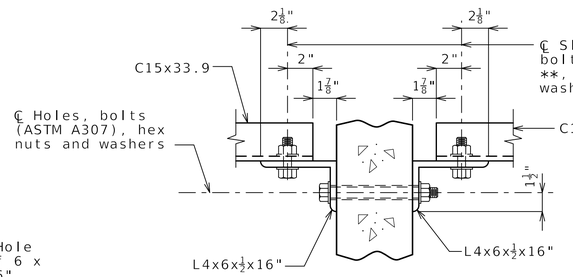


PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS

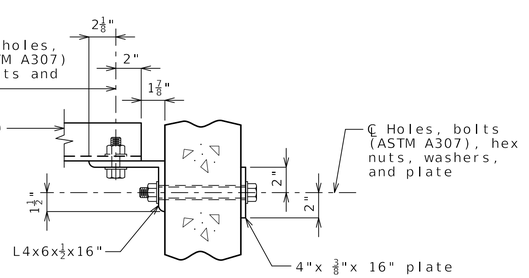


SECTION THRU INT. GIRDER AT DIAPHRAGM

SECTION THRU EXT. GIRDER AT DIAPHRAGM



SECTION C-C



SECTION D-D

STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.

For location of intermediate diaphragms, see Sheet No. 15.

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

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STEEL INTERMEDIATE DIAPHRAGMS

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BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER

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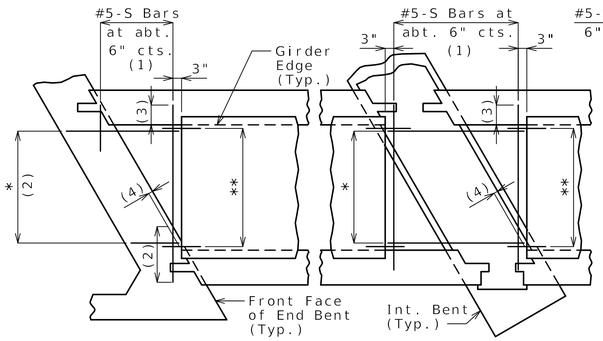
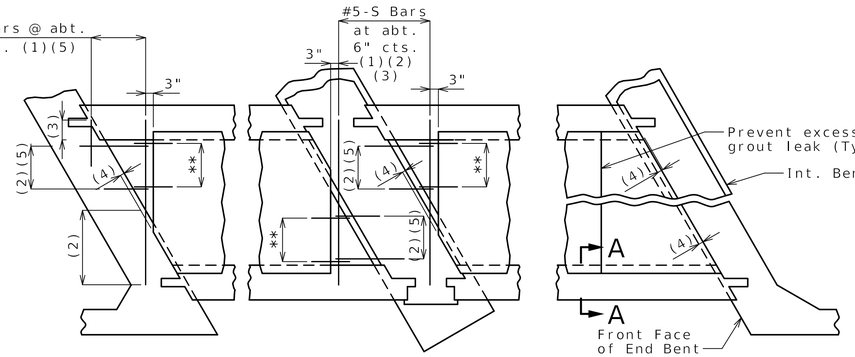
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	13 of 26

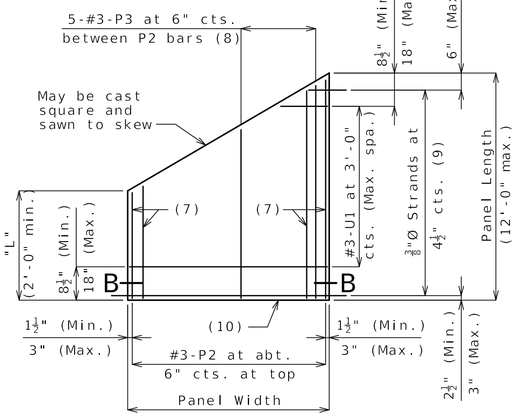




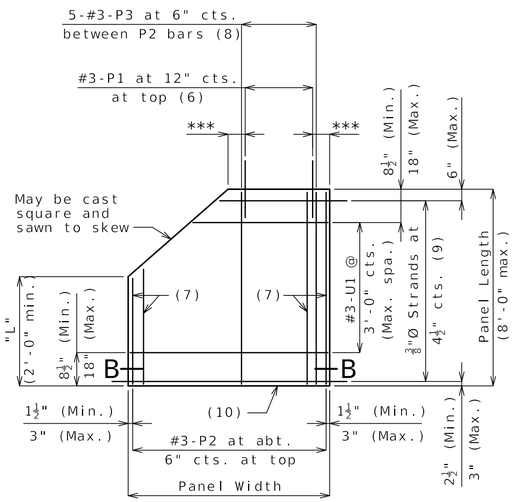
SQUARED END PANELS OR TRUNCATED END PANELS

PLAN SHOWING PANEL PLACEMENT

* #5-S Bars at abt. 9" cts. (1)
** #3-P1 at 12" cts. (End panels only)

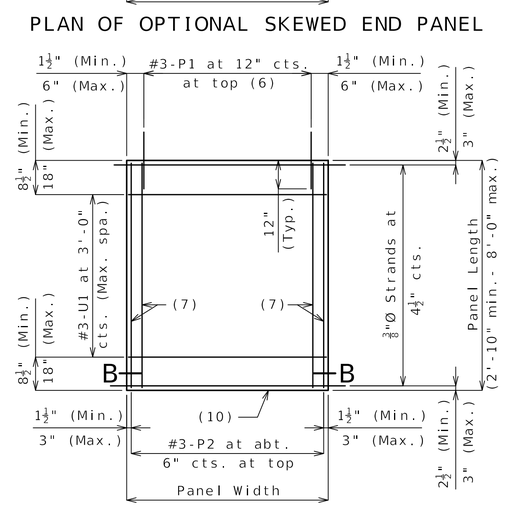


PLAN OF OPTIONAL SKEWED END PANEL



PLAN OF OPTIONAL TRUNCATED END PANEL

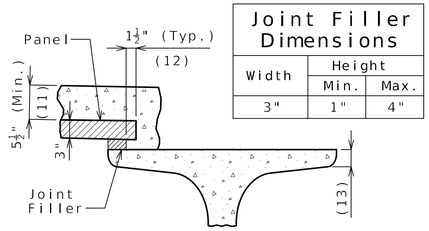
*** 3" (Min.), 6" (Max.)



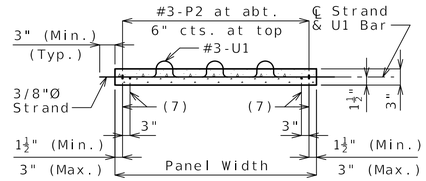
PLAN OF SQUARED PANEL

SKEWED END PANELS

Joint Filler Dimensions		
Width	Height	
	Min.	Max.
3"	1"	4"



SECTION A-A



SECTION B-B

Reference Notes:

Plan of Panel Placement:
(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:
(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:
(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

General Notes:

Prestressed Panels:
Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 4,000 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

Reinforcing Steel:
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.

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

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:
Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. 17 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/2 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the girder. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

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

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PRESTRESSED PANELS

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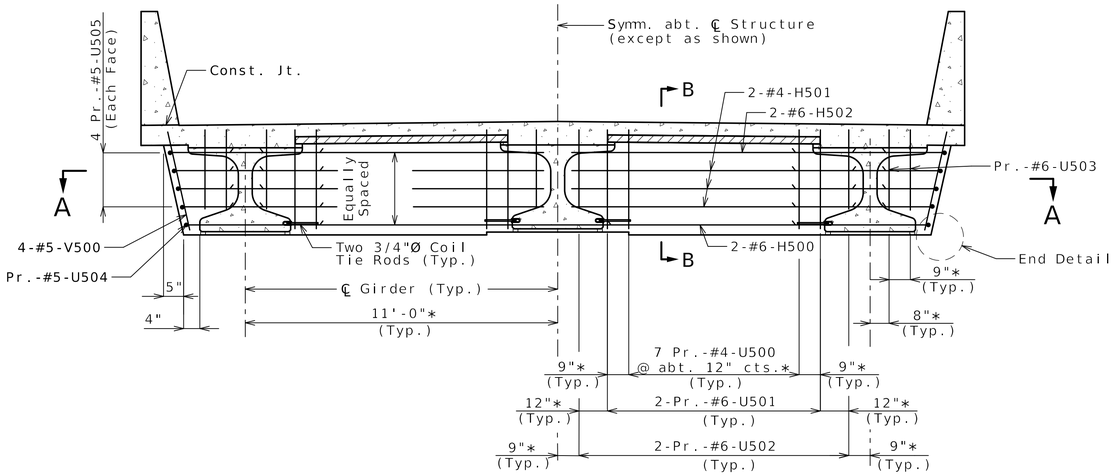


SECTION NEAR INTERMEDIATE BENT

* Normal to centerline of girders.
Note: Keys not shown for clarity.

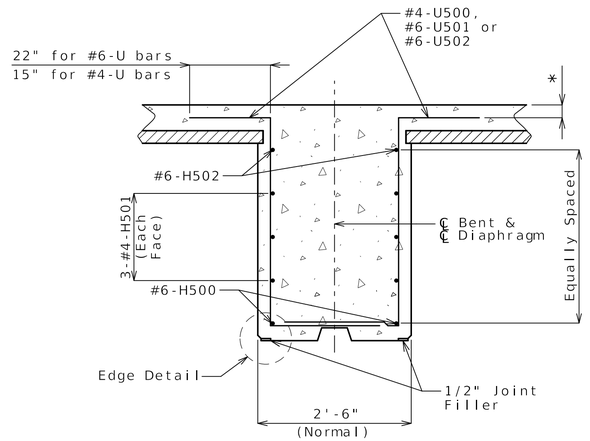
Notes:

For location of Strand Tie Bars, see Sheets No. 9 thru 12.

For location and details of Coil Tie Rods, see Sheets No. 9 thru 12.

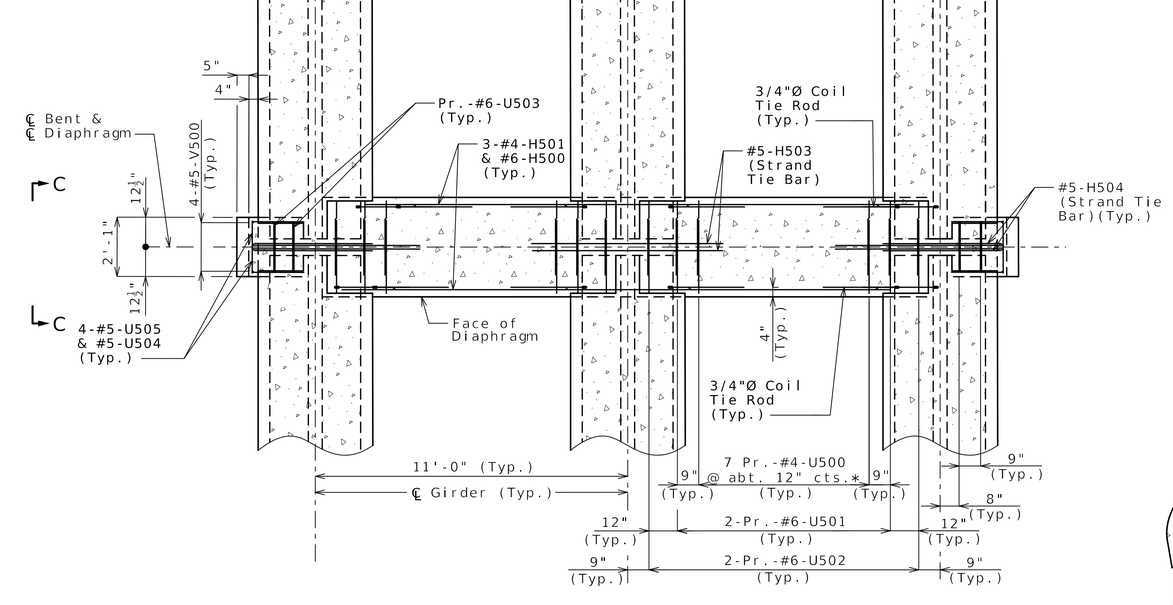
Diaphragms at intermediate bents shall be built vertical.

All U-bars in diaphragms are to be placed parallel to ℄ Girders.

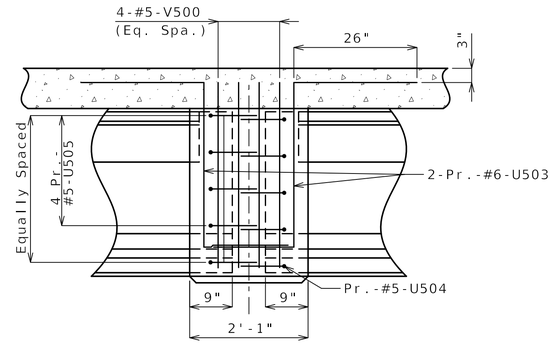


(*) 3" cl. for #6-U bars
3¼" cl. for #4-U bars

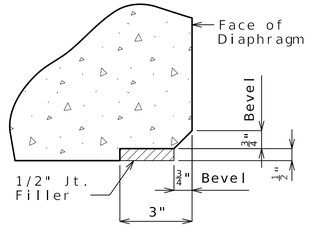
SECTION B-B



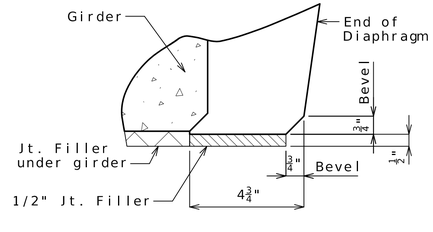
SECTION A-A



ELEVATION C-C



EDGE DETAIL



END DETAIL

DETAILS OF CONCRETE DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 3

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

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DETAILS OF CONCRETE DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 3

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COLE COUNTY, MISSOURI

STATE OF MISSOURI
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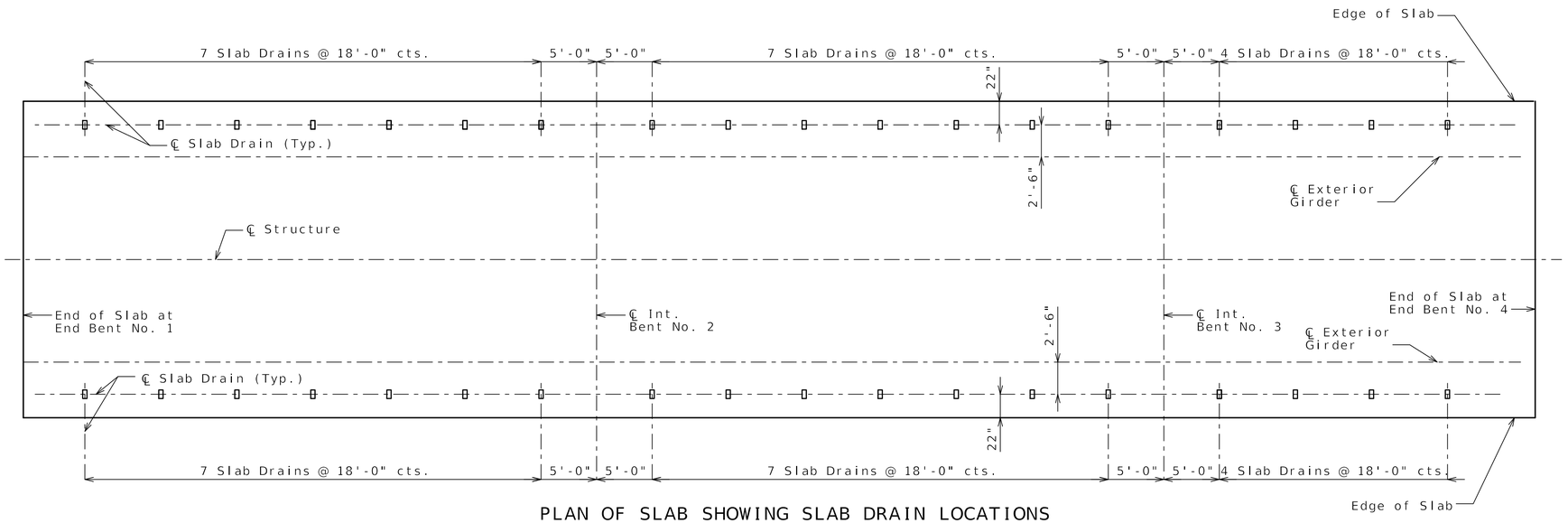
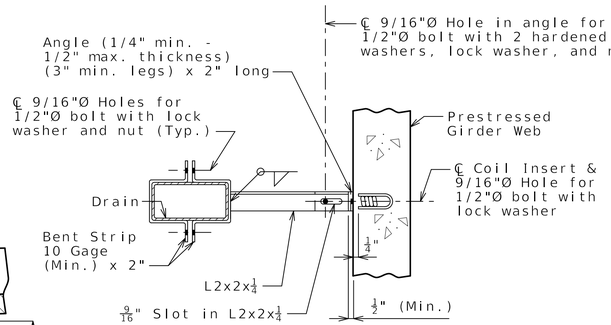
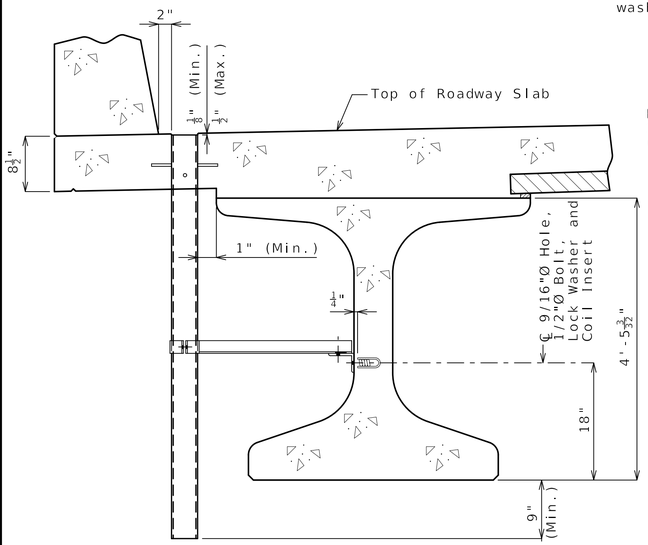


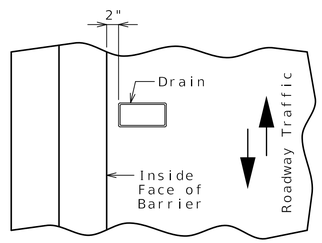
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



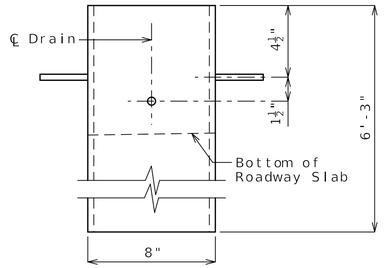
PART SECTION SHOWING BRACKET ASSEMBLY



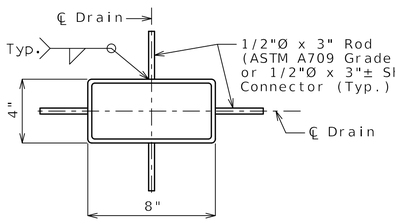
PART SECTION NEAR DRAIN



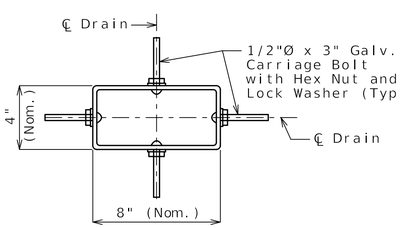
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by dimensions shown in Part Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

The coil inserts and bracket assembly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

All 1/2"Ø bolts shall be ASTM A307.

Shop drawings will not be required for the slab drains and the bracket assembly.

The coil insert required for the bracket assembly attachment shall be located on the prestressed girder shop drawings.

Coil inserts shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolt required to attach the slab drain bracket assembly to the prestressed girder web shall be supplied by the prestressed girder fabricator.

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

The color of the slab drain shall be gray (Federal Standard #26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be as recommended by the manufacturer to ensure a smooth, chip free cut.

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

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SLAB DRAINS

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COLE COUNTY, MISSOURI

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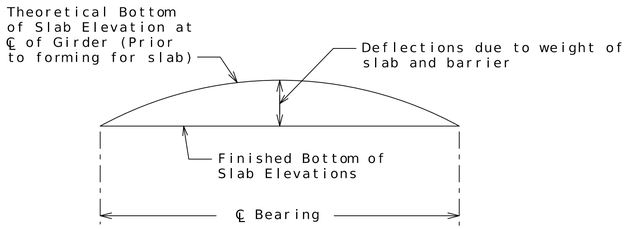
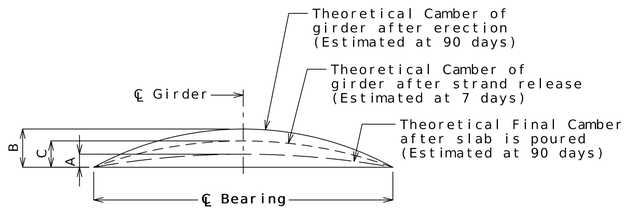
Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)*

Girder Number	Span (1-2) (117'-4" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	578.49	578.65	578.80	578.93	579.05	579.14	579.22	579.27	579.30	579.32	579.34
2	578.69	578.86	579.01	579.15	579.27	579.37	579.44	579.49	579.52	579.53	579.54
3	578.49	578.65	578.80	578.93	579.05	579.14	579.22	579.27	579.30	579.32	579.34
Girder Number	Span (2-3) (116'-8" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	579.35	579.50	579.65	579.78	579.90	579.99	580.06	580.12	580.15	580.17	580.19
2	579.55	579.71	579.86	580.00	580.12	580.21	580.29	580.34	580.37	580.38	580.39
3	579.35	579.50	579.65	579.78	579.90	579.99	580.06	580.12	580.15	580.17	580.19
Girder Number	Span (3-4) (75'-4½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	580.20	580.26	580.33	580.39	580.45	580.51	580.56	580.61	580.66	580.70	580.74
2	580.40	580.46	580.53	580.59	580.66	580.71	580.76	580.81	580.86	580.90	580.94
3	580.20	580.26	580.33	580.39	580.45	580.51	580.56	580.61	580.66	580.70	580.74

* 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 and barrier.



TYPICAL SLAB ELEVATIONS DIAGRAM



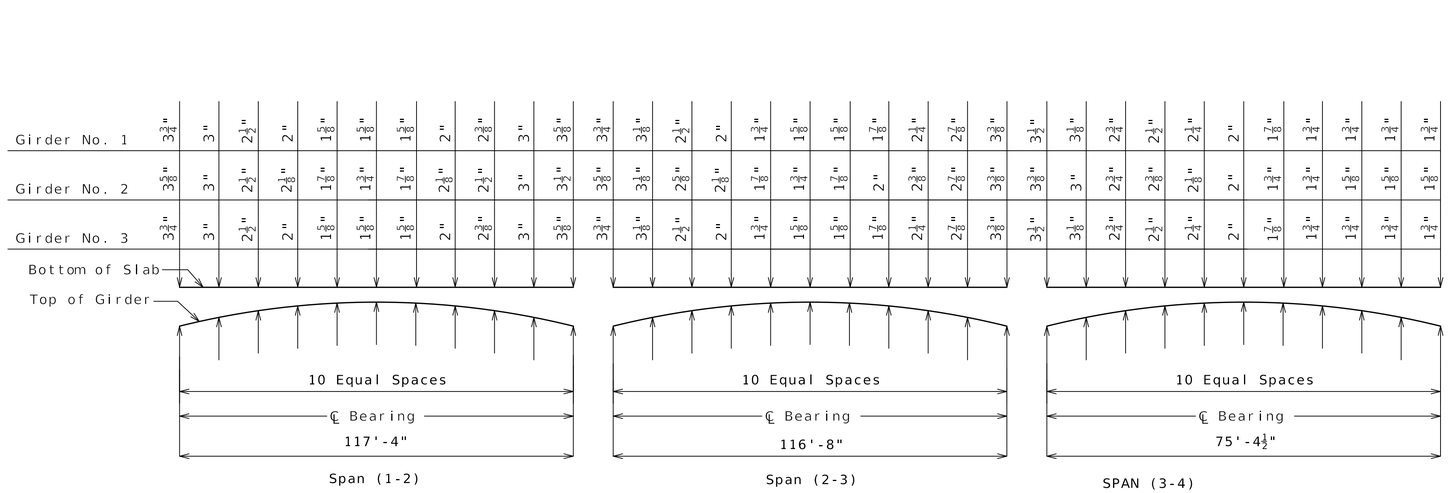
Girder	Span (1-2) & (2-3)			Span (3-4)		
	A	B	C	A	B	C
Exterior	$2\frac{1}{8}$"	$4\frac{3}{4}$"	$3\frac{3}{8}$"	$\frac{5}{8}$"	$1\frac{1}{8}$"	$\frac{3}{4}$"
Interior	$1\frac{3}{4}$"			$\frac{5}{8}$"		

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.

0.25 pt. = 0.7125 x 0.5 pt.

GIRDER CAMBER DIAGRAM



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

Notes:

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. The haunch shall be limited to ensure the projecting girder reinforcement is embedded into the slab at least 2 inches. 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.

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

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HAUNCHING DIAGRAM, CAMBER DIAGRAM AND SLAB ELEVATION DETAILS

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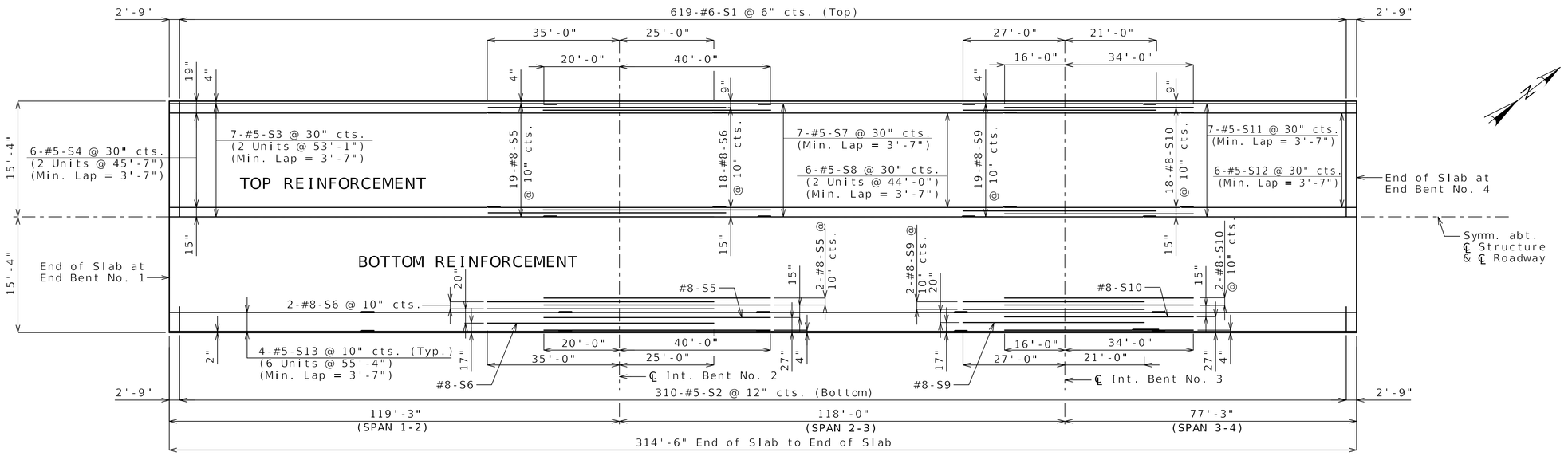
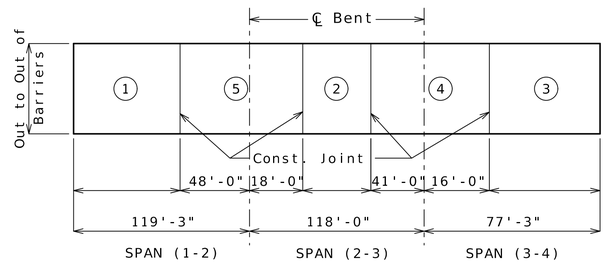
STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	17 of 26



PLAN OF SLAB SHOWING REINFORCEMENT



	Sequence of Pours					Min. Rate of Pour Cu. Yds./Hr.
	Direction					With Retarder
Basic Sequence	1	2	3	4	5	25
	Either Direction					
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.						
Alternate "A" Pours	1	5 + 2		4 + 3		29
	End to 5	1 to 4		2 to End		
Alternate "B" Pours	1 + 5 + 2			4 + 3		29
	End to 4			2 to End		
Alternate "C" Pours	1 + 5 + 2 + 4 + 3					29
	End to End					

The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

The concrete diaphragm at the intermediate bents and integral end bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

SLAB POURING SEQUENCE

Notes:

Longitudinal slab dimensions are measured horizontally.

For Section Thru Slab and Slab Construction Joint Details, see Sheet No. 19.

For Theoretical Bottom of Slab Elevations, Theoretical Slab Haunching Diagram and Girder Camber Diagram, see Sheet No. 17.

For details and reinforcement of Type D Barrier not shown, see Sheets No. 20 and 21.

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

#	DATE	DESCRIPTION	BY

Bartlett & West
601 MONROE STREET, SUITE 201 - JEFFERSON CITY, MO 65101
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
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SLAB PLAN

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
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NUMBER PE-29317
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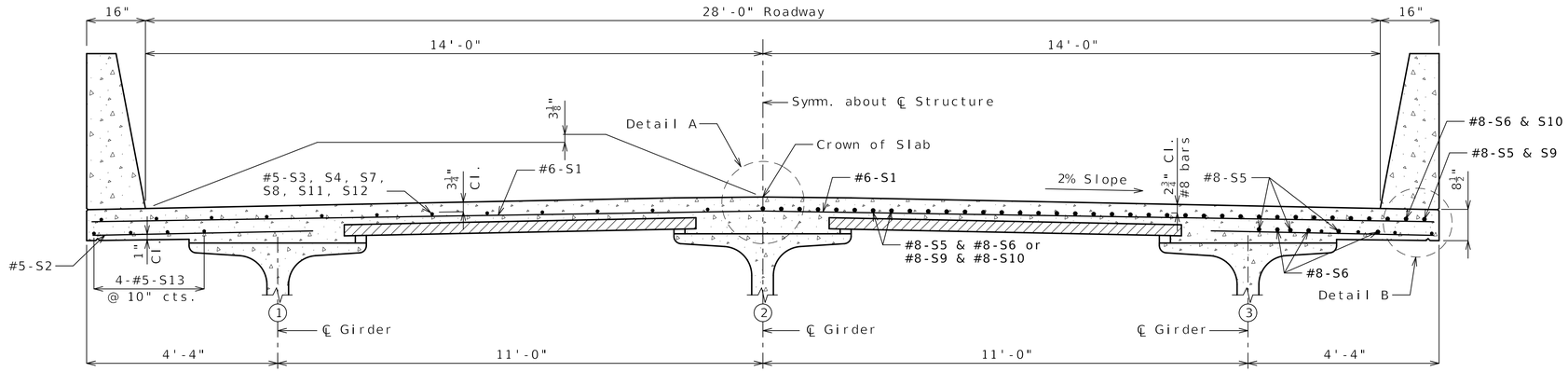
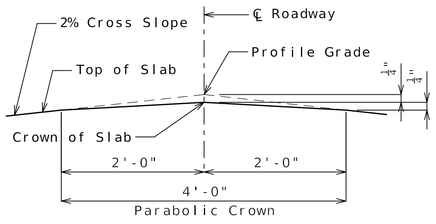
SHEET NO:	18 of 26

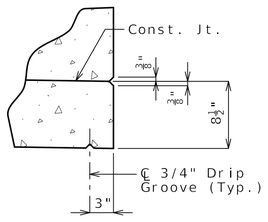


HALF SECTION NEAR MIDSPAN HALF SECTION NEAR INTERMEDIATE BENTS

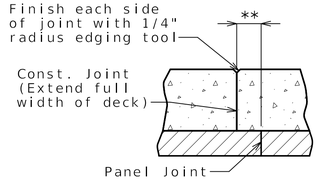
SECTION THRU SLAB



DETAIL A



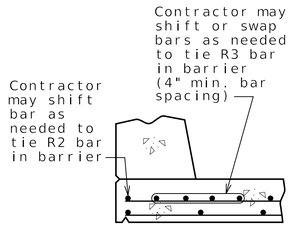
DETAIL B



** Adjust the construction joint to a clearance of 6 inches minimum from the panel joint.

SLAB ON PANELS

SLAB CONSTRUCTION JOINT



OPTIONAL SHIFTING TOP BARS AT BARRIER

Notes:

For reinforcement of barrier not shown, see Sheet No. 20.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 17.

For Plan of Slab Showing Reinforcement, see Sheet No. 18.

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

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SLAB DETAILS

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
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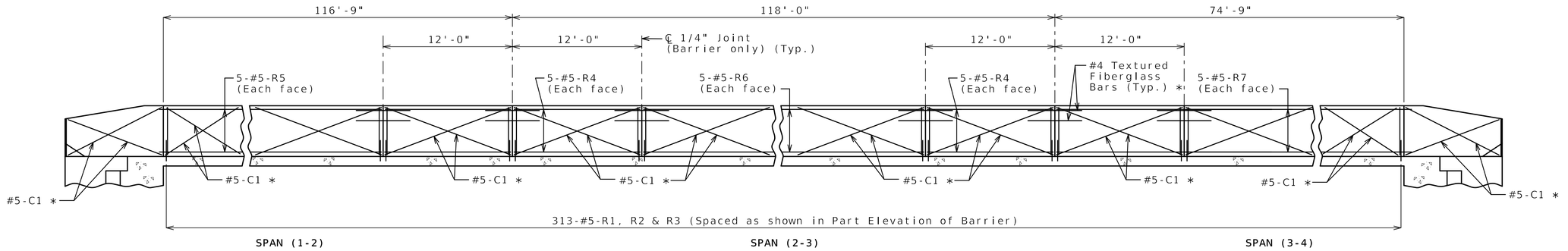
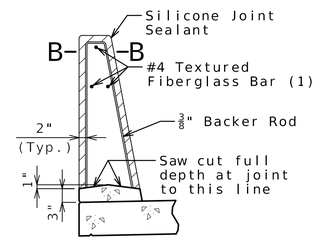
SHEET NO:	19 of 26



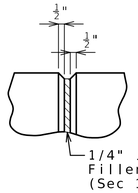
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

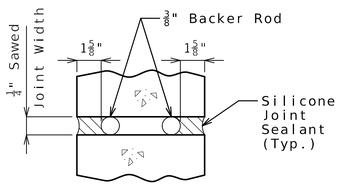
Longitudinal dimensions are horizontal.



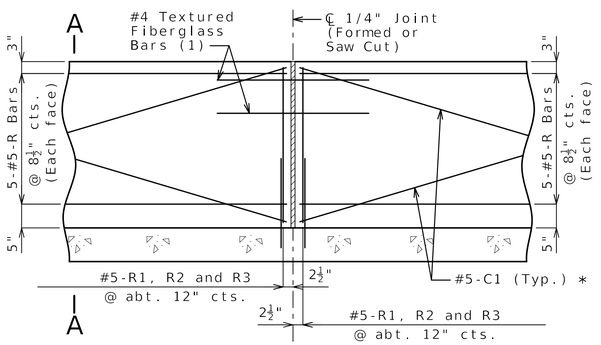
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

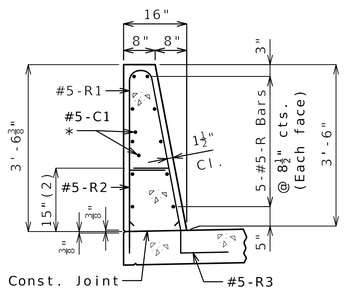


SECTION B-B



PART ELEVATION OF BARRIER

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

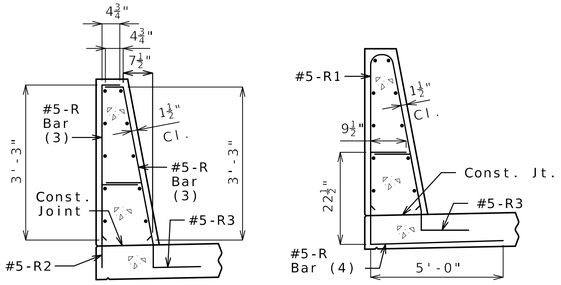


SECTION A-A

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.

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

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TYPE D BARRIER

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
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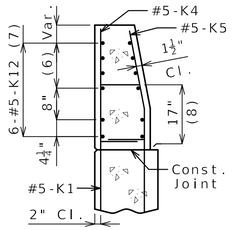
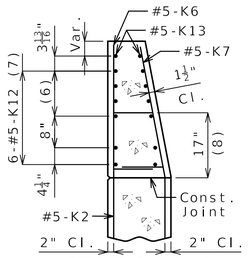
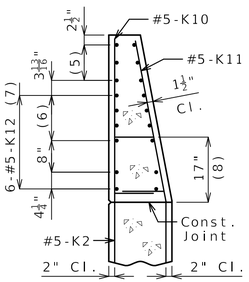
SHEET NO:	20 of 26



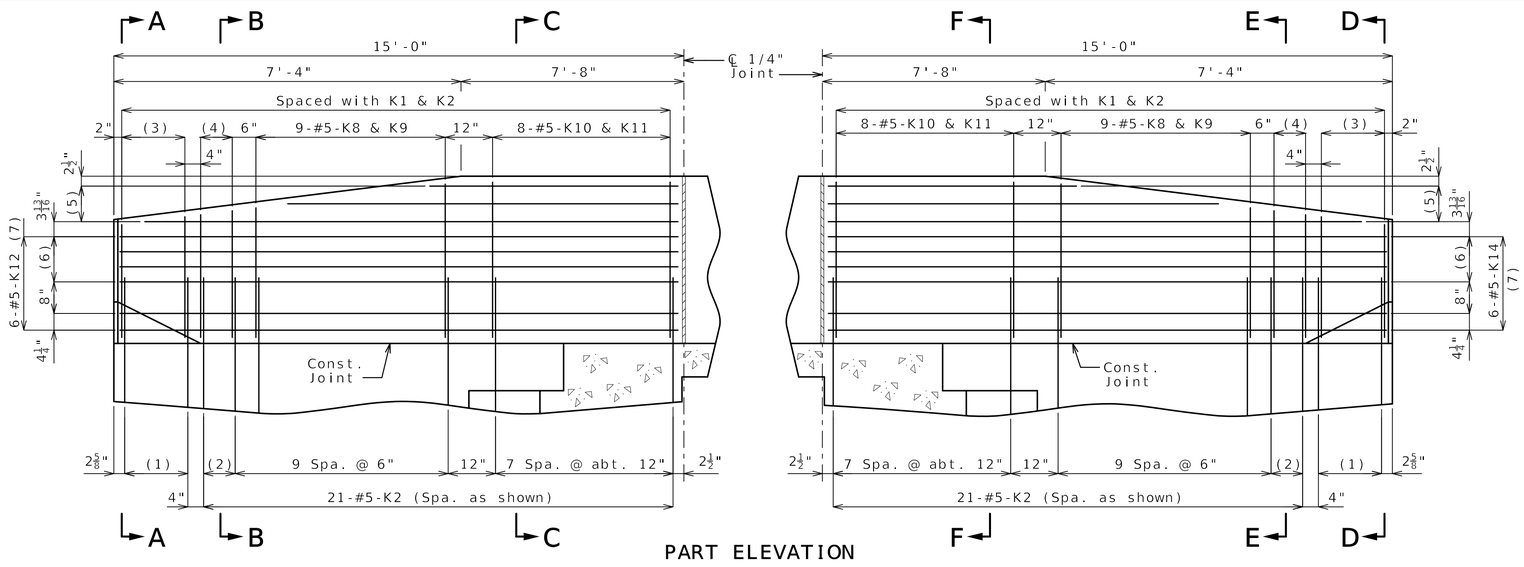
SECTION A-A



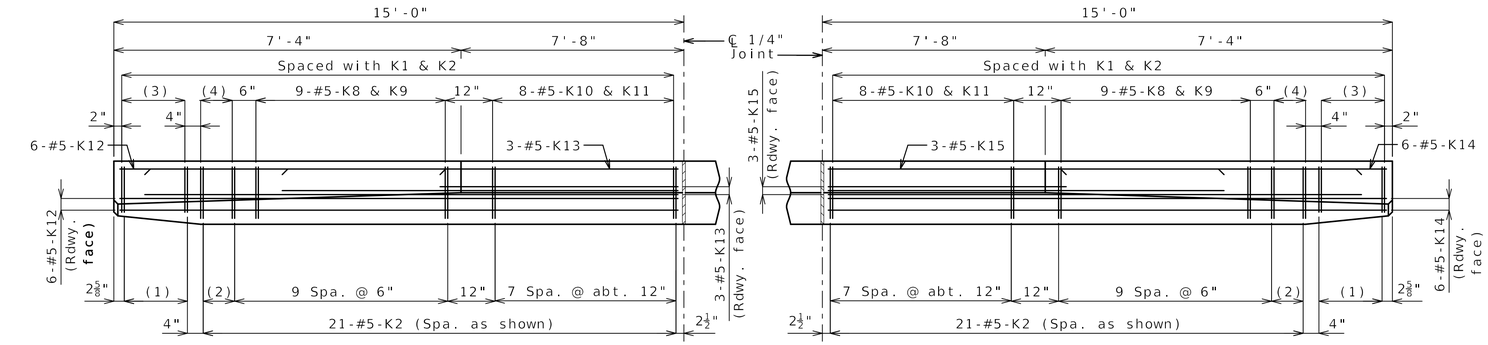
SECTION B-B



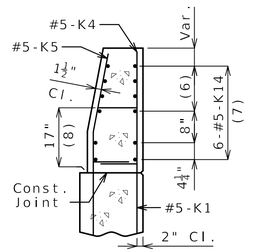
SECTION C-C



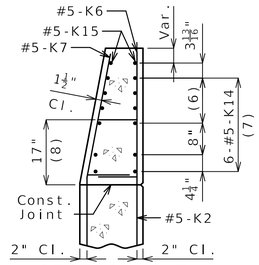
PART ELEVATION



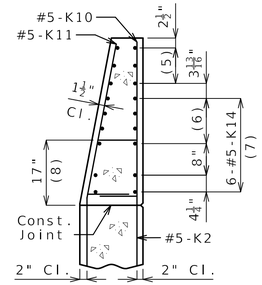
PART PLAN



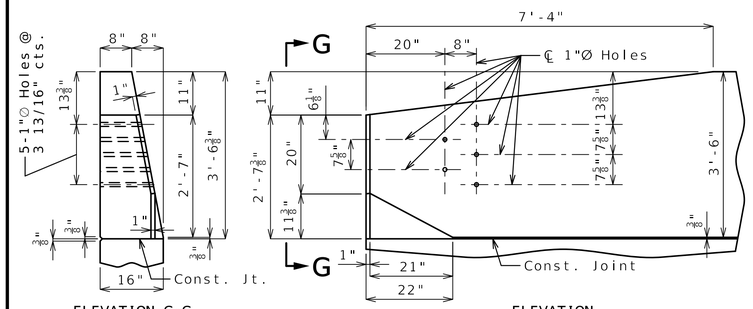
SECTION D-D



SECTION E-E

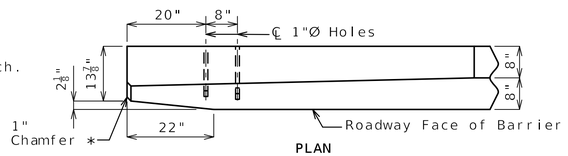


SECTION F-F



ELEVATION G-G

ELEVATION



PLAN

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

DETAILS OF GUARD RAIL ATTACHMENT

(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

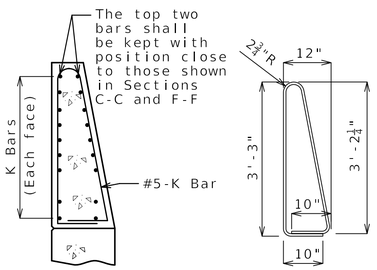
(8) To top of bar

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.

(Left barrier shown, right barrier similar)



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.

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

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TYPE D BARRIER AT END BENTS

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
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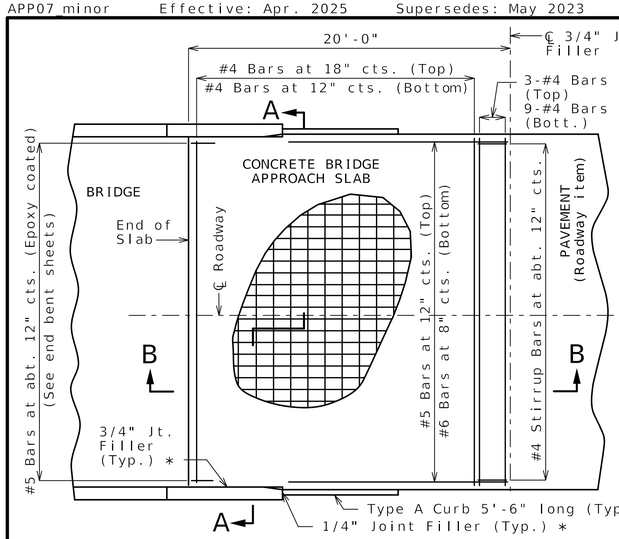
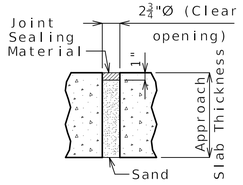


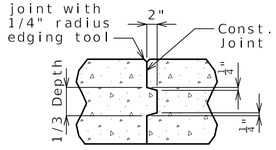
PART PLAN OF SQUARED STRUCTURE

(Skewed structure similar)

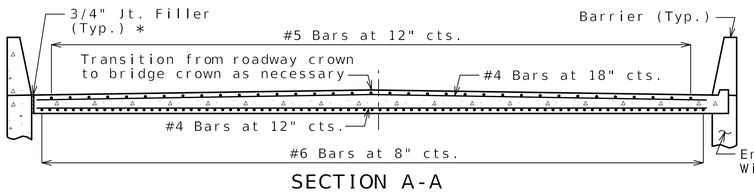


UNDERSEAL ACCESS HOLE DETAIL

(If required)

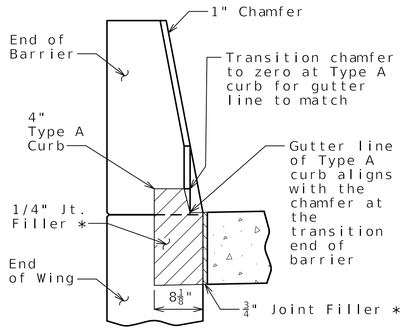


CONSTRUCTION JOINT DETAIL

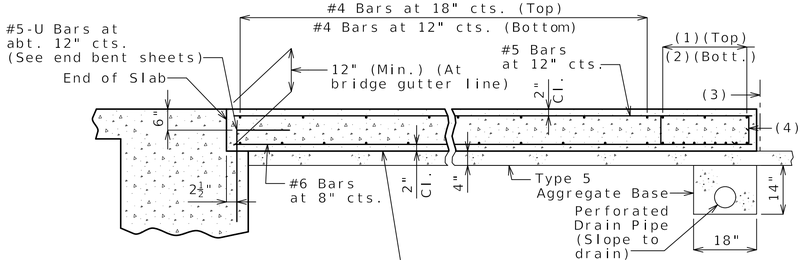


SECTION A-A

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



SECTION B-B

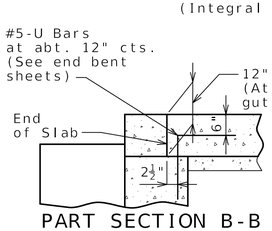
(Integral end bent)

(1) 3-#4 Bars

(2) 9-#4 Bars

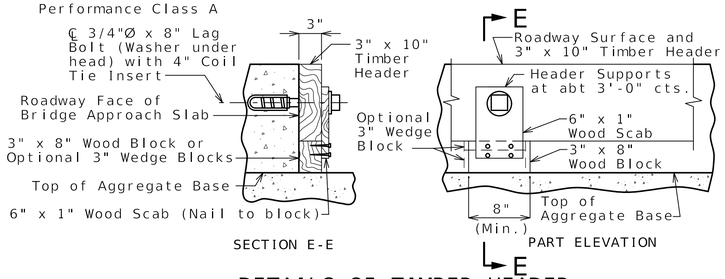
(3) ℄ 3/4" Jt. Filler

(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.



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

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 26 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.

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

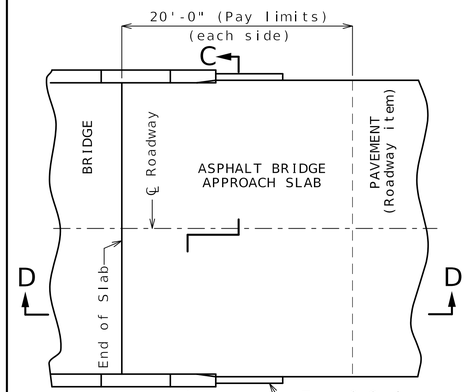
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

Notes For Asphalt Slab Only:

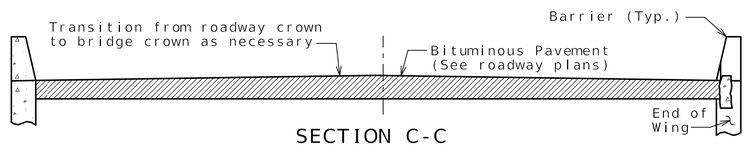
Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab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

Application of tack is required between lifts per Sec 403.



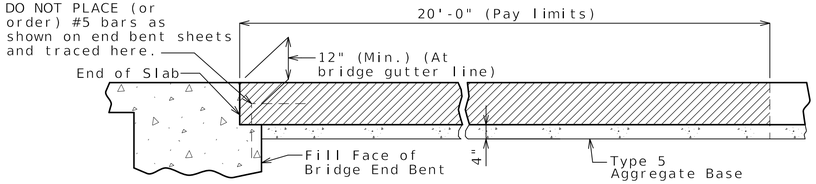
PART PLAN

(Squared structure shown, skewed structure similar)

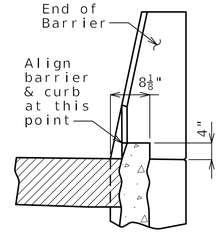


SECTION C-C

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)

Bartlett & West
601 MONROE STREET, SUITE 201 - JEFFERSON CITY, MO 65101
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
WWW.BARTWEST.COM

#	DATE	DESCRIPTION	BY

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

BRIDGE APPROACH SLAB (MINOR)

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE ARCUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER

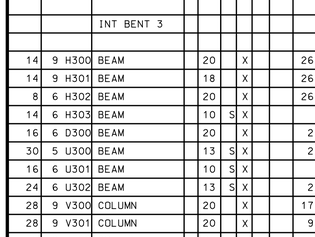
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	22 of 26

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

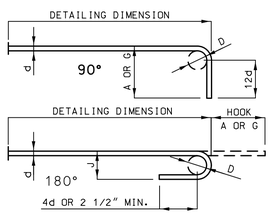
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			SUBSTRUCTURE																
			INT BENT 2																
14	9	H200	BEAM		20		X			26 9.000							26 9	26 9	1273
14	9	H201	BEAM		18		X			26 9.000							29 3	29 3	1392
10	6	H202	BEAM		20		X			26 9.000							26 9	26 9	402
14	6	H203	BEAM		10	S	X				12.000	3 9.000					5 9	5 5	114
16	6	D200	BEAM		20		X			2 6.000							2 6	2 6	60
30	5	U200	BEAM		13	S	X			2 6.000	4 3.000	2 6.000	4 3.000				14 5	14 1	441
16	6	U201	BEAM		10	S	X				4 3.000	2 6.000					11 0	10 8	256
24	6	U202	BEAM		13	S	X			2 6.000	4 3.000	2 6.000	4 3.000				14 10	14 4	517
28	9	V200	COLUMN		20		X			16 2.000							16 2	16 2	1539
28	9	V201	COLUMN		20		X			9 0.000							9 0	9 0	857
38	10	V202	COLUMN		20		X			57 1.000							57 1	57 1	9334
152	4	P200	COLUMN		16		X			3 6.000	2 1.000						11 10	11 10	1202
36	4	P201	COLUMN		16		X			3 3.000	2 1.000						11 1	11 1	267
			INT BENT 3																
14	9	H300	BEAM		20		X			26 9.000							26 9	26 9	1273
14	9	H301	BEAM		18		X			26 9.000							29 3	29 3	1392
8	6	H302	BEAM		20		X			26 9.000							26 9	26 9	321
14	6	H303	BEAM		10	S	X				12.000	3 3.000					5 3	4 11	103
16	6	D300	BEAM		20		X			2 6.000							2 6	2 6	60
30	5	U300	BEAM		13	S	X			2 2.000	3 9.000	2 2.000	3 9.000				12 9	12 5	389
16	6	U301	BEAM		10	S	X				3 9.000	2 2.000					9 8	9 4	224
24	6	U302	BEAM		13	S	X			2 2.000	3 9.000	2 2.000	3 9.000				13 2	12 8	457
28	9	V300	COLUMN		20		X			17 7.000							17 7	17 7	1674
28	9	V301	COLUMN		20		X			9 0.000							9 0	9 0	857
38	10	V302	COLUMN		20		X			18 7.000							18 7	18 7	3039
20	4	P300	COLUMN		16		X			3 6.000	2 1.000						11 10	11 10	158
30	4	P301	COLUMN		16		X			2 9.000	2 1.000						9 6	9 6	190
44	5	P302	COLUMN		16		X			3 6.000	2 8.000						12 1	12 1	555
			SUPER-																
			STRUCTURE																
			END BENT 1																
22	6	F100	WING	E	15	S				20.000	4 7.500	20.000	14.125	14.125	14.125	14.125	8 0	7 11	262
8	6	F101	WING	E	19	S				5 7.000	2 8.000						8 3	8 1	97
10	7	H100	BEAM	E	20					30 4.000							30 4	30 4	620
4	6	H101	BEAM	E	20					30 4.000							30 4	30 4	182
12	6	H102	DIAPHRAGM	E	20					3 8.000							3 8	3 8	66
6	6	H103	DIAPHRAGM	E	20					30 4.000							30 4	30 4	273
12	6	H104	DIAPHRAGM	E	20					10 0.000							10 0	10 0	180
5	7	H105	SLAB	E	20					30 4.000							30 4	30 4	310
16	8	H106	WING	E	20					16 2.000							16 2	16 2	691
44	6	H107	WING	E	20					13 0.000							13 0	13 0	859
18	5	U100	BEAM	E	10	S					5 6.000	2 8.000					13 8	13 6	253
8	4	U101	BEAM	E	13	S				2 8.000	2 8.500	2 8.000	2 8.500				11 6	11 3	60
12	4	U102	BEAM	E	10	S					12.000	2 8.000					4 8	4 6	36
1	4	U103	BEAM	E	10	S					2 9.000	2 8.000					8 2	8 0	5
22	6	U104	DIAPHRAGM	E	19	S				3 11.000	2 8.000						6 7	6 5	212
22	5	U105	DIAPHRAGM	E	10	S					4 11.000	2 8.000					12 6	12 4	283
37	6	U106	DIAPHRAGM	E	19	S				3 0.000	4 3.000						7 3	7 1	394
28	5	U107	DIAPHRAGM	E	19	S				2 0.000	15.000						3 3	3 2	92
8	5	V100	BEAM	E	20					6 3.000							6 3	6 3	52
18	6	V101	DIAPHRAGM	E	20					3 9.000							3 9	3 9	101
4	6	V102	WING	E	20					8 0.500							8 1	8 1	49
48	6	V103	WING	E	20					8 1.000							8 1	8 1	583
			INT DIAPH																
			AT BENT 2																
4	6	H500	DIAPHRAGM	E	20					7 6.000							7 6	7 6	45
12	4	H501	DIAPHRAGM	E	20					10 2.000							10 2	10 2	81
4	6	H502	DIAPHRAGM	E	20					10 0.000							10 0	10 0	61
4	5	H503	STRAND TIE		20					5 9.000							5 9	5 9	24
8	5	H504	STRAND TIE		20					4 6.000							4 6	4 6	38
28	4	U500	DIAPHRAGM	E	28	S					23.000	5 2.000	15.000				8 4	8 2	153
8	6	U501	DIAPHRAGM	E	28	S					2 2.000	5 0.000	22.000				9 0	8 8	104
8	6	U502	DIAPHRAGM	E	28	S					2 2.000	4 2.000	22.000				8 2	7 10	94
8	6	U503	DIAPHRAGM	E	28	S					21.000	4 1.000	2 2.000				8 0	7 8	92
4	5	U504	DIAPHRAGM	E	19	S				4 4.000	12.000						5 4	5 3	22
16	5	U505	DIAPHRAGM	E	6	S		V	4	4 9.000	12.000	21.000					7 6	7 4	
			INCREMENT =							4 6.000	12.000	18.000					7 0	6 10	118
			2.000 INCH																
8	5	V500	DIAPHRAGM	E	20					5 1.000							5 1	5 1	42
			END BENT 4																



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

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

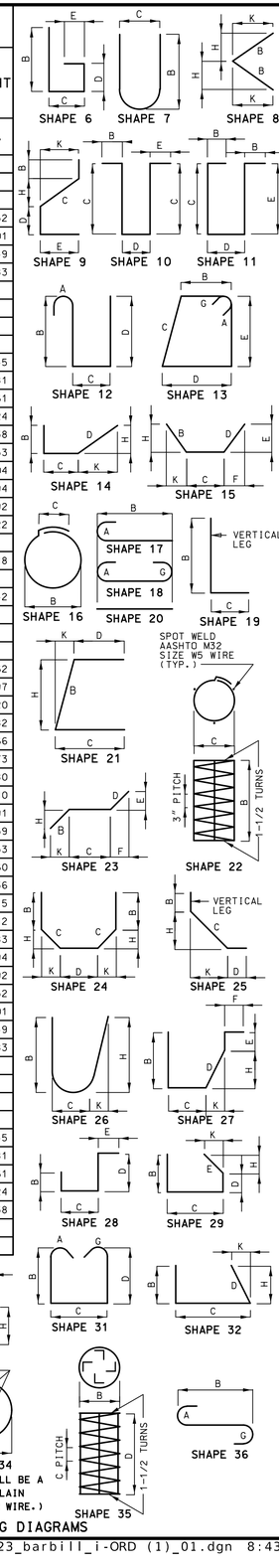


END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"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

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.

Cole COUNTY
Tanner

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



BENDING DIAGRAMS

#	DESCRIPTION	DATE	BY

Bartlett & West
601 MONROE STREET, SUITE 201 - JEFFERSON CITY, MO 65101
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
WWW.BARTWEST.COM

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

BRIDGE APPROACH SLAB (MINOR)

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

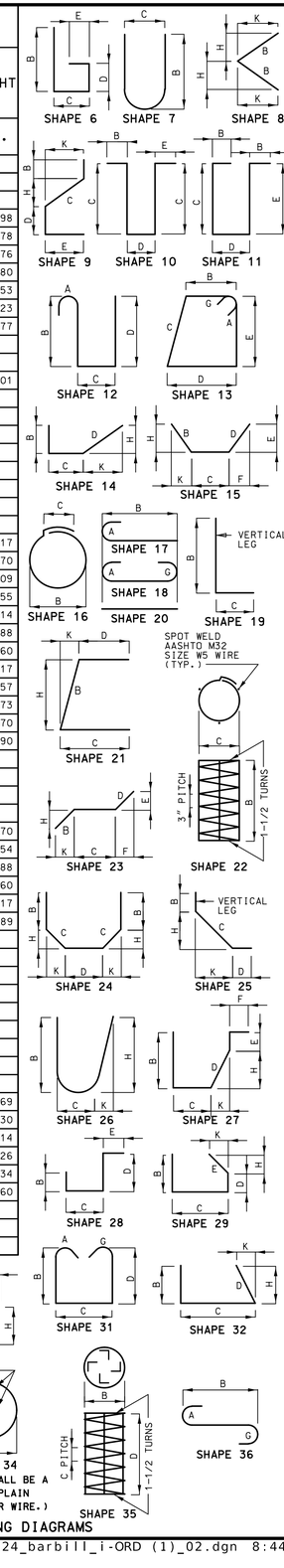
STATE OF MISSOURI
ANOUSONE ARDUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	23 of 26

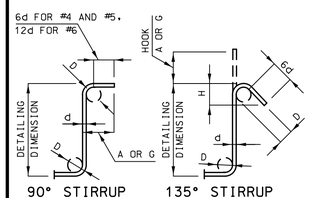
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
28	4 U500	DIAPHRAGM	E	28	S					23.000	5 2.000	15.000				8 4	8 2	153
8	6 U501	DIAPHRAGM	E	28	S					2 2.000	5 0.000	22.000				9 0	8 8	104
8	6 U502	DIAPHRAGM	E	28	S					2 2.000	4 2.000	22.000				8 2	7 10	94
8	6 U503	DIAPHRAGM	E	28	S					21.000	4 1.000	2 2.000				8 0	7 8	92
4	5 U504	DIAPHRAGM	E	19	S				4 4.000	12.000						5 4	5 3	22
16	5 U505	DIAPHRAGM	E	6	S		V	4	4 9.000	12.000	21.000					7 6	7 4	2023
		INCREMENT =							4 6.000	12.000	18.000					7 0	6 10	118
		2.000 INCH																
8	5 V500	DIAPHRAGM	E	20					5 1.000							5 1	5 1	42
																		601
		SLAB																
619	6 S1	SLAB	E	20					30 5.000							30 5	30 5	28280
620	5 S2	SLAB	E	20					5 0.000							5 0	5 0	3233
26	5 S3	SLAB	E	20					53 1.000							53 1	53 1	1440
24	5 S4	SLAB	E	20					45 7.000							45 7	45 7	1141
43	8 S5	SLAB	E	20					60 0.000							60 0	60 0	6889
42	8 S6	SLAB	E	20					60 0.000							60 0	60 0	6728
13	5 S7	SLAB	E	20					58 3.000							58 3	58 3	790
24	5 S8	SLAB	E	20					44 0.000							44 0	44 0	1101
43	8 S9	SLAB	E	20					48 0.000							48 0	48 0	5511
42	8 S10	SLAB	E	20					50 0.000							50 0	50 0	5607
13	5 S11	SLAB	E	20					60 0.000							60 0	60 0	814
12	5 S12	SLAB	E	20					46 8.000							46 8	46 8	584
48	5 S13	SLAB	E	20					55 4.000							55 4	55 4	2770
																		26117
																		10257
																		12373
		BARRIER																28470
																		95690
20	5 K1	BARRIER	E	27	S				3 5.000	9.250	5.375	2 11.750		5.250	1.000	7 7	7 5	155
84	5 K2	BARRIER	E	27	S				3 5.000	9.250	14.500	2 2.750		14.250	2.750	7 8	7 5	650
20	5 K4	BARRIER	E	19	S		V	4	2 6.250	10.000						3 4	3 3	
		INCREMENT =							2 4.250	10.000						3 2	3 1	66
		0.500 INCH																
20	5 K5	BARRIER	E	14	S		V	4	8.250	9.500	20.500			4.500	20.000	3 2	3 1	
		INCREMENT =							8.250	9.500	18.500			4.000	18.000	3 0	2 11	63
		0.500 INCH																
12	5 K6	BARRIER	E	19	S				2 6.750	10.000						3 5	3 4	42
12	5 K7	BARRIER	E	21	S				2 6.625	10.000				2 6.000	6.250	3 5	3 3	41
36	5 K8	BARRIER	E	19	S		V	4	3 2.500	10.000						4 1	3 11	
		INCREMENT =							2 8.500	10.000						3 7	3 5	138
		0.750 INCH																
36	5 K9	BARRIER	E	21	S		V	4	3 2.500	10.000				3 1.750	7.750	4 1	3 11	
		INCREMENT =							2 8.500	10.000				2 7.750	6.750	3 7	3 5	138
		0.750 INCH																
32	5 K10	BARRIER	E	19	S				3 3.000	10.000						4 1	4 0	134
32	5 K11	BARRIER	E	21	S				3 3.000	10.000				3 2.250	7.750	4 1	3 11	131
24	5 K12	BARRIER	E	20					14 9.000							14 9	14 9	369
12	5 K13	BARRIER	E	20			V	4	14 0.000							14 0	14 0	
		INCREMENT =							8 0.000							8 0	8 0	138
		36.000 INCH																
24	5 K14	BARRIER	E	20					14 9.000							14 9	14 9	369
12	5 K15	BARRIER	E	20			V	4	14 0.000							14 0	14 0	
		INCREMENT =							8 0.000							8 0	8 0	138
		36.000 INCH																

NO. REQ'D.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
626	5 R1	BARRIER	E	26					3 3.000	5.500	3 1.375			3 0.750	6.750	6 7	6 7	4298
626	5 R2	BARRIER	E	19	S				20.500	9.500						2 6	2 5	1578
626	5 R3	BARRIER	E	27	S					9.500	15.250	5.000	12.000	15.000	3.000	3 6	3 4	2176
80	5 R4	BARRIER	E	20					11 9.000							11 9	11 9	980
40	5 R5	BARRIER	E	20					54 0.000							54 0	54 0	2253
40	5 R6	BARRIER	E	20					48 6.000							48 6	48 6	2023
40	5 R7	BARRIER	E	20					33 0.000							33 0	33 0	1377
		SLIP FORM																
48	5 C1	SLIP FORM	E	20					12 0.000							12 0	12 0	601
		TOTALS																
	4																	1817
	4		E															670
	5																	1509
	5		E															31455
	6																	2514
	6		E															35588
	7		E															1860
	8		E															26117
	9																	10257
	10																	12373
		TOTAL																28470
		TOTAL	E															95690
		Slab on																
	4	Girder	E															670
	5		E															30854
	6		E															35588
	7		E															1860
	8		E															26117
		TOTAL																95089
		Reinforcing																
		Steel																
		(Bridges)																
	4																	1469
	5																	830
	6																	2514
	9																	7726
	10																	9334
		TOTAL																28460



BENDING DIAGRAMS

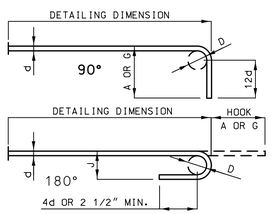


STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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



END HOOK DIMENSIONS

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

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.

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

Cole COUNTY
Tanner

Bartlett & West
601 MONROE STREET, SUITE 201 - JEFFERSON CITY, MO 65101
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
WWW.BARTWEST.COM

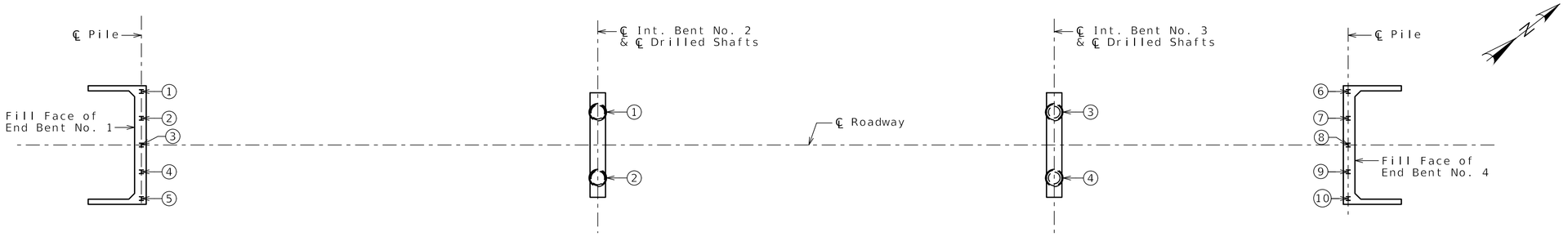
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

BRIDGE APPROACH SLAB (MINOR)

TANNER BRIDGE ROAD - ROAD AND BRIDGE REPLACEMENT
BRO R026 (025)
COLE COUNTY, MISSOURI

STATE OF MISSOURI
ANOUSONE AROUNPRADITH
NUMBER PE-29317
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEALED DATE:	10/17/2025
DESIGNED BY:	CP
DRAWN BY:	TAA
APPROVED BY:	AA
DESIGN PROJ:	15937.410
DATE:	JULY 2025
DRAWING NO:	
SHEET NO:	24 of 26



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

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
5			
			End Bent No. 4
6			
7			
8			
9			
10			

As-Built Drilled Shaft Data				
Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Int. Bent No. 2
1				
2				
				Int. Bent No. 3
3				
4				

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal

This sheet to be completed by County construction personnel.

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

#	DATE	DESCRIPTION	BY

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AS-BUILT PILE DATA

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SHEET NO:	25 of 26

SUBSURFACE DIAGRAM

Millennia Professional Services

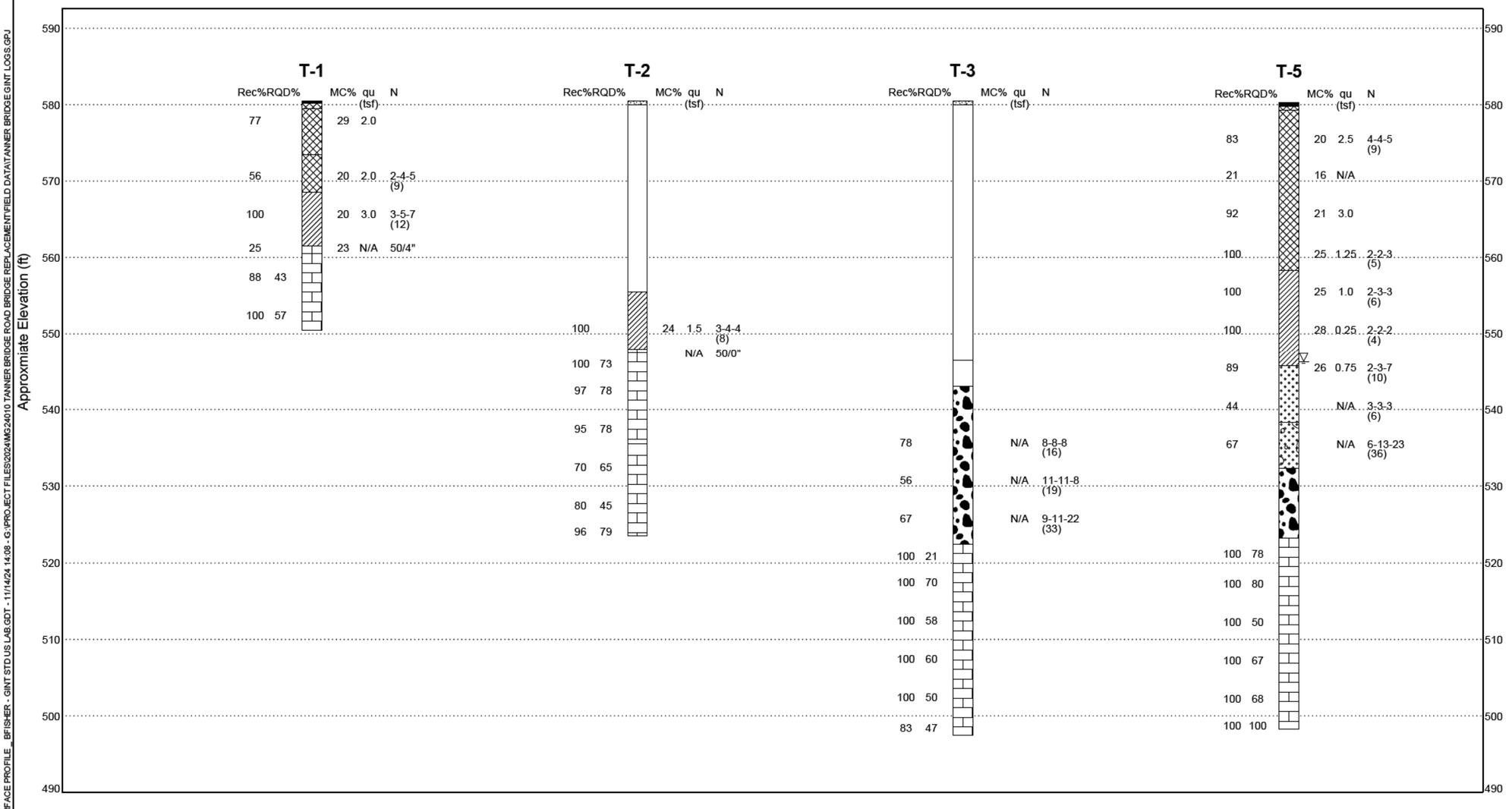
CLIENT Bartlett and West

PROJECT NUMBER MG24010

PROJECT NAME Tanner Bridge Road Bridge Replacement

PROJECT LOCATION Cole County, Missouri

Asphalt
Limestone
USCS Well-graded Sand
Fill (made ground)
Concrete
USCS Well-graded Gravelly Sand
USCS Low Plasticity Clay
USCS Well-graded Gravel



Horizontal Scale for Reference Only. Conditions Between and Below Borings is Unknown and Subject to Change.

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

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

SUBSURFACE PROFILE_BFISHER - GINT STD US LAB.GDT - 11/14/24 14:08 - G:\PROJECT FILES\2024\MG24010 TANNER BRIDGE ROAD BRIDGE REPLACEMENT\FIELD DATA\TANNER BRIDGE GINT LOGS.GPJ

#	DATE	DESCRIPTION	BY
1			

Bartlett & West
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BORING DATA

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SHEET NO:	26 of 26