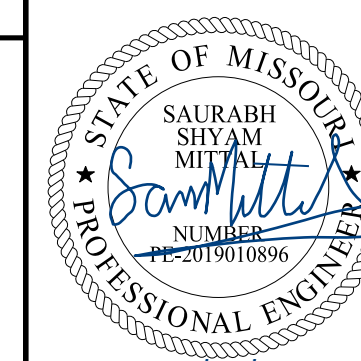


(69'-69') PRESTRESSED CONCRETE NU-GIRDER SPANS

SEC/SUR 114 TWP 47N RGE 7E



DATE PREPARED
3/14/2022
ROUTE I-270 STATE MO
DISTRICT BR SHEET NO. 1
COUNTY ST. LOUIS CITY
JOB NO. J613020C
CONTRACT ID.

PROJECT NO.
BRIDGE NO. A8998

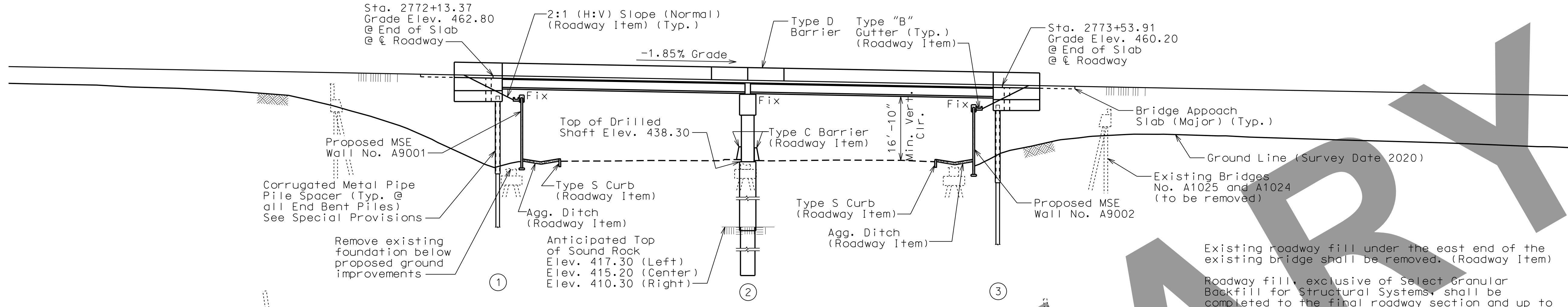
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



HORNER SHIFRIN
401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103
314-451-4321 FAX 314-551-8586
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DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE GENERAL PLAN AND ELEVATION



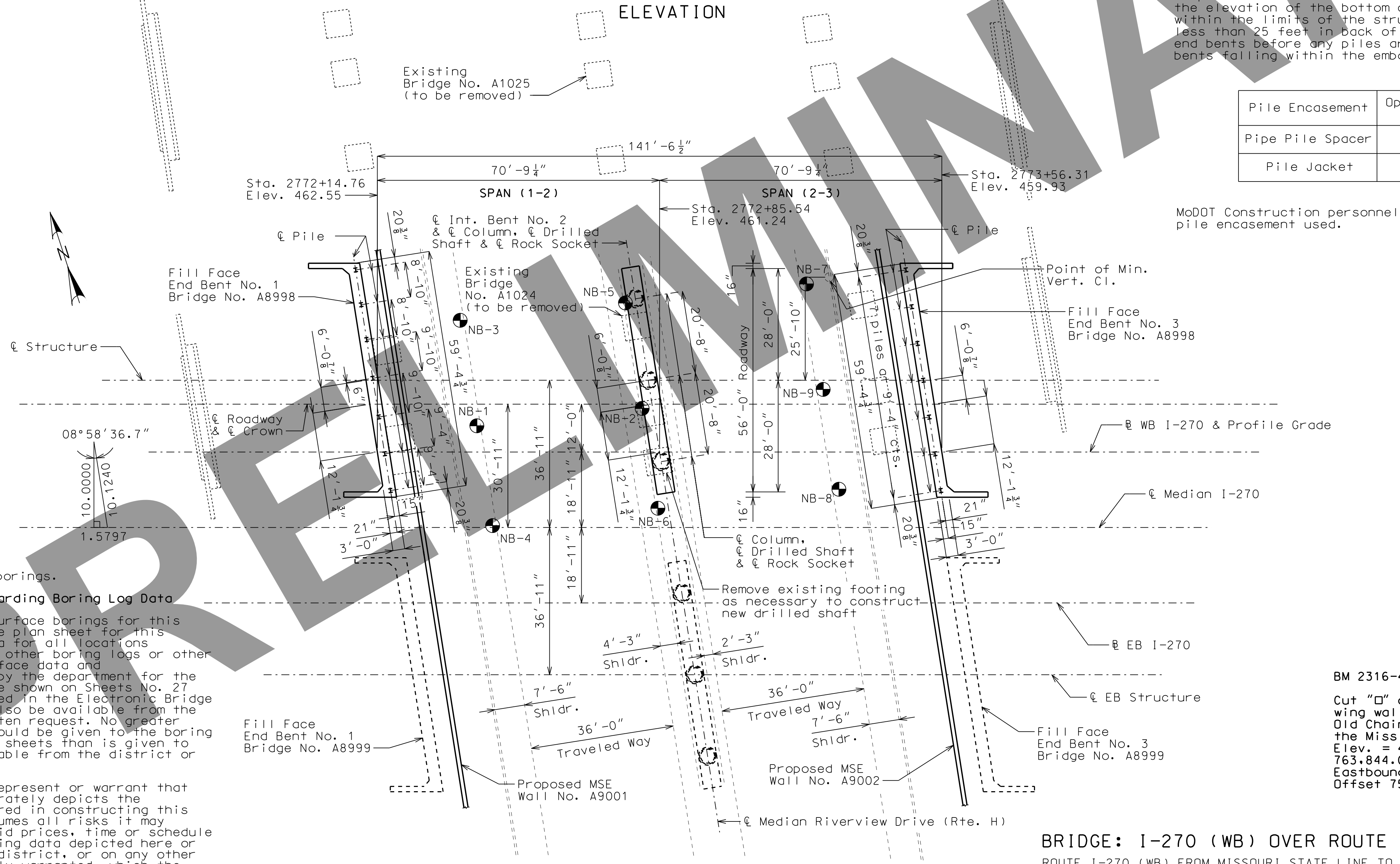
ELEVATION

Existing roadway fill under the east end of the existing bridge shall be removed. (Roadway Item)

Roadway fill, exclusive of Select Granular Backfill for Structural Systems, 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.

Pile Encasement	Option Used (✓)
Pipe Pile Spacer	
Pile Jacket	

MoDOT Construction personnel will indicate the pile encasement used.



PLAN

BRIDGE: I-270 (WB) OVER ROUTE H (RIVERVIEW DRIVE)
ROUTE I-270 (WB) FROM MISSOURI STATE LINE TO ROUTE 367 ABOUT 0.6 MILES WEST OF MISSOURI STATE LINE BEGINNING STATION 2772+14.76 ALONG E WB I-270

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 Sheets No. 27 thru 34 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

Estimated Quantities				
Item		Substr.	Superstr.	Total
Removal of Bridges (A1024)	lump sum	1		1
Removal of Bridges (A1025)	lump sum	1		1
Bridge Approach Slab (Major)	sq. yard		252	252
Drilled Shafts (4 ft. 6 in. Dia.)	linear foot	73.6		73.6
Rock Sockets (4 ft. 0 in. Dia.)	linear foot	54.0		54.0
Video Camera Inspection	each	3		3
Foundation Inspection Hole	linear foot	84.0		84.0
Sonic Logging Testing	each	3		3
Galvanized Structural Steel Piles (12 in.)	linear foot	686		686
Pile Point Reinforcement	each	14		14
Class B Concrete (Substructure)	cu. yard	119.8		119.8
Type D Barrier	linear foot		323	323
Slab on Concrete NU-Girder	sq. yard		916	916
NU 35. Prestressed Concrete NU-Girder	linear foot		830	830
Reinforcing Steel (Bridges)	pound	21,910		21,910
Reinforcing Steel (Epoxy Coated)	pound	17,870		17,870
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum		1	1
Fabricated Sign Support Brackets	lump sum		1	1
Vertical Drain at End Bents	each			2
Laminated Neoprene Bearing Pad (Tapered)	each		24	24
Pipe Pile Spacer	each		14	14

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 Quantities for Slab on Concrete NU-Girder.

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

Cost of L4x4 ASTM A709 Grade 36 HP pile anchors and 3/4-inch diameter ASTM F3125 Grade A325 Type 1 Plain bolts, complete in place, will be considered completely covered by the contract unit price for Galvanized Structural Steel Piles (12 in.).

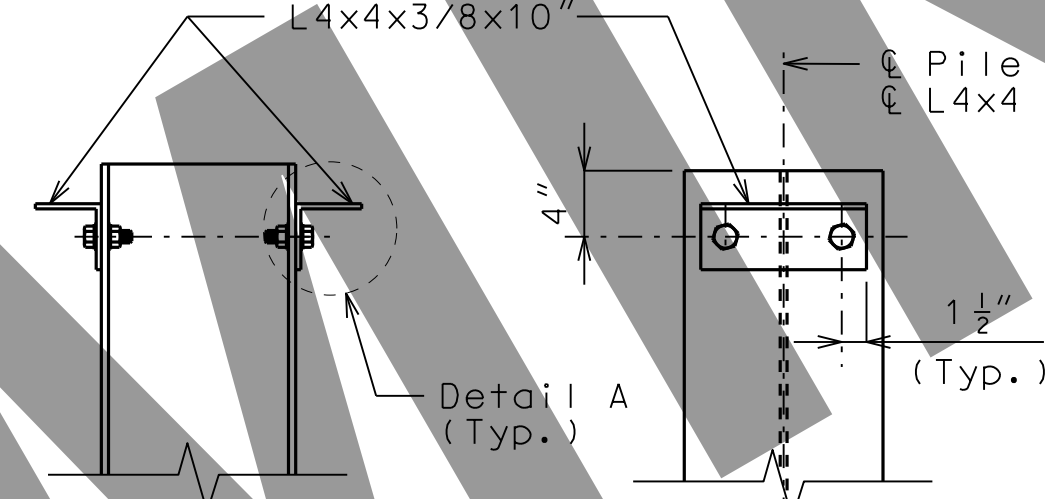
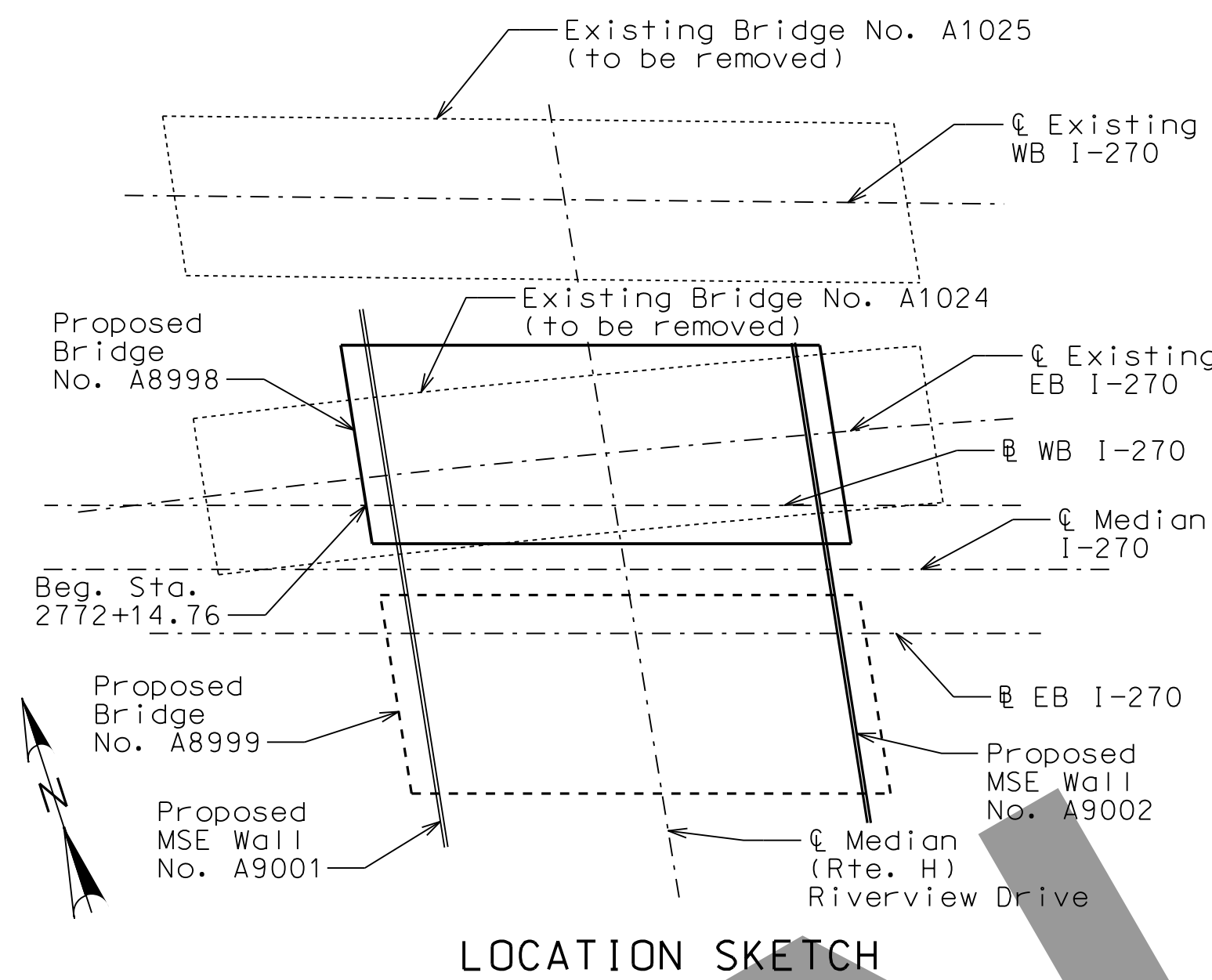
Foundation Data				
Type	Design Data	Bent Number		
		1	2	3
Load Bearing Pile	Pile Type and Size	HP12x53		HP12x53
	Number	7		7
	Approximate Length Per Each	48		50
	Pile Point Reinforcement	All		All
	Min. Galvanized Penetration (Elev.)	Full Length		Full Length
	Minimum Tip Penetration (Elev.)	-		-
	Criteria for Min. Tip Penetration	-		-
	Pile Driving Verification Method	DF		DF
	Resistance Factor	0.4		0.4
	Minimum Nominal Axial Compressive Resistance	kip	580	
Rock Socket	Number		3	
	Foundation Material		Shale/Limestone	
	Elevation Range	ft	Top of Rock to Elev. 396	
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	23.5	
	Foundation Material		Weaker Shale	
	Elevation Range	ft	396-392	
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	15.1	
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	-	

DF = FHWA-modified Gates Dynamic Pile Formula
 Load Bearing Pile:
 Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$

Rock Socket (Drilled Shafts):
 Minimum Nominal Axial Compressive Resistance (Side Resistance) = $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$

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

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



Estimated Quantities for Slab on Concrete NU Girder		
Item		Total
Class B-2 Concrete	cu. yard	245.0
Reinforcing Steel (Epoxy Coated)	pound	66,240

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

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

The Estimated Quantities for Slab on Concrete NU-Girder are based on skewed precast prestressed end panels.

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

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

General Notes:

Design Specifications:
 2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
 2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic)
 Seismic Design Category = B
 Design earthquake response spectral acceleration coefficient at 1.0 second period, $S_{D1} = 0.222$
 Acceleration Coefficient (effective peak ground acceleration coefficient), $A_s = 0.225$
 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition with 2020 Interim Revisions

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-2 Concrete (Drilled Shafts, Rock Sockets, Superstructure, except Prestressed Girders and Barrier) $f'_c = 4,000$ psi
 Class B-1 Concrete (Barrier) $f'_c = 4,000$ psi
 Reinforcing Steel (Grade 60) $f_y = 60,000$ psi
 Structural Steel (ASTM A709 Grade 50) $f_y = 50,000$ psi
 Structural Steel HP Pile (ASTM A709 Grade 50S) $f_y = 50,000$ psi

For precast prestressed panel stresses, see Sheet No. 16.
 For prestressed girder stresses, see Sheets No. 13 & 14.

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

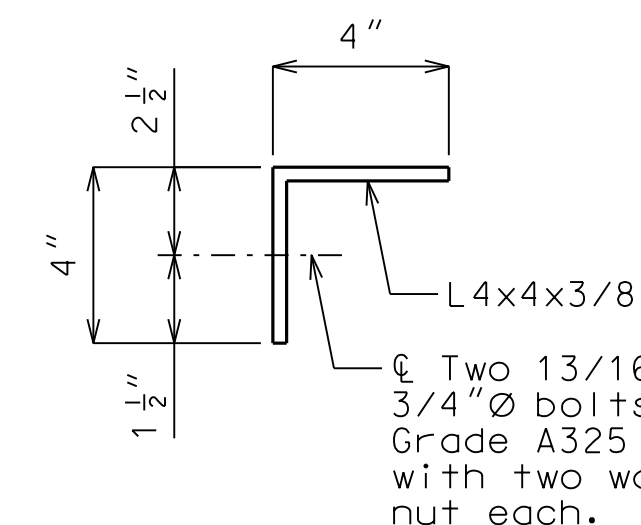
Joint Filler:
 All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

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

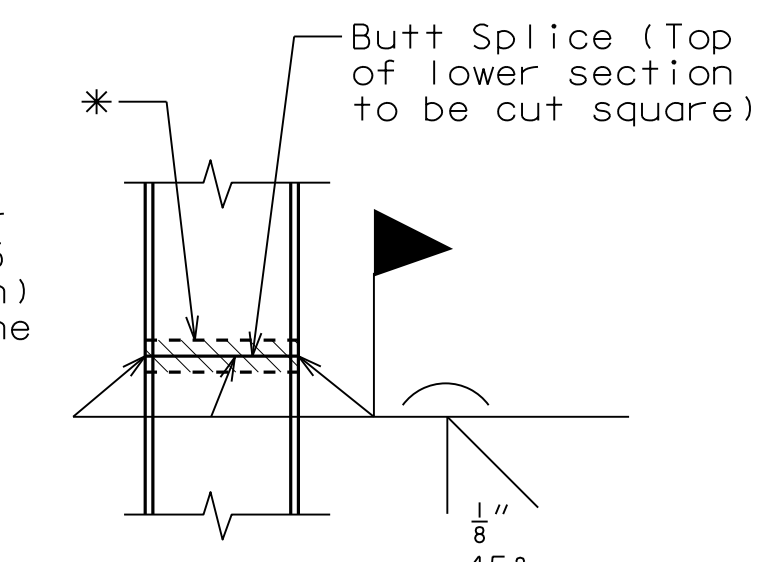
Traffic Handling:
 A minimum vertical clearance of 15'-6" for Route H traffic in each direction shall be maintained during construction. One lane of traffic in each direction shall be maintained on Route H in accordance with the Traffic Control Plans during construction.

Concrete Protective Coatings:
 Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

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



Galvanizing angles, bolts, washers and nuts will not be required.



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



DATE PREPARED
 3/16/2022
 ROUTE I-270 STATE MO
 DISTRICT BR SHEET NO. 2
 COUNTY ST. LOUIS CITY
 JOB NO. J613020C
 CONTRACT ID.

PROJECT NO.
 BRIDGE NO. A8998

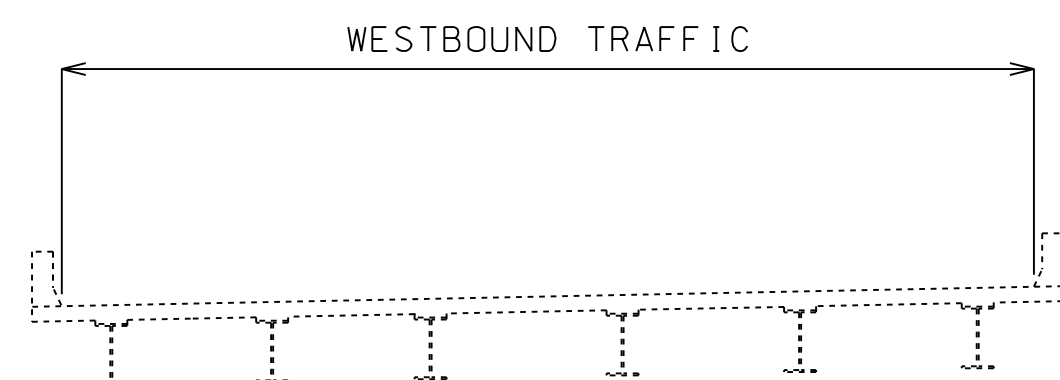
DESCRIPTION	DATE

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

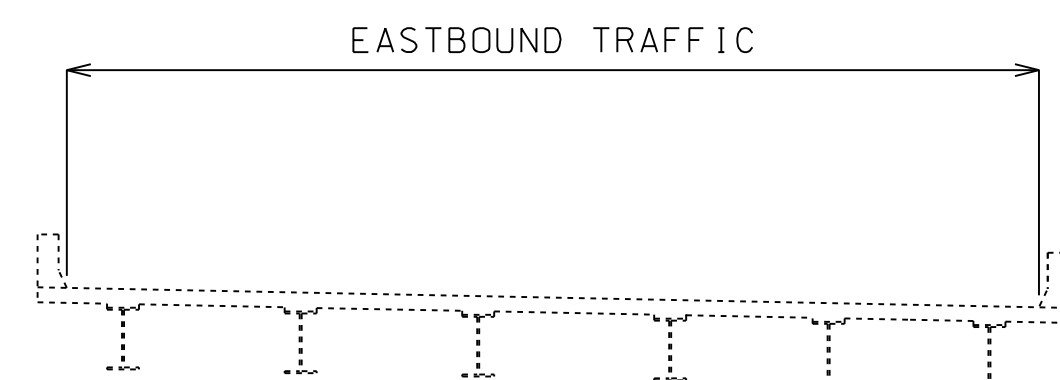
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 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW
 WB BRIDGE
 GENERAL NOTES

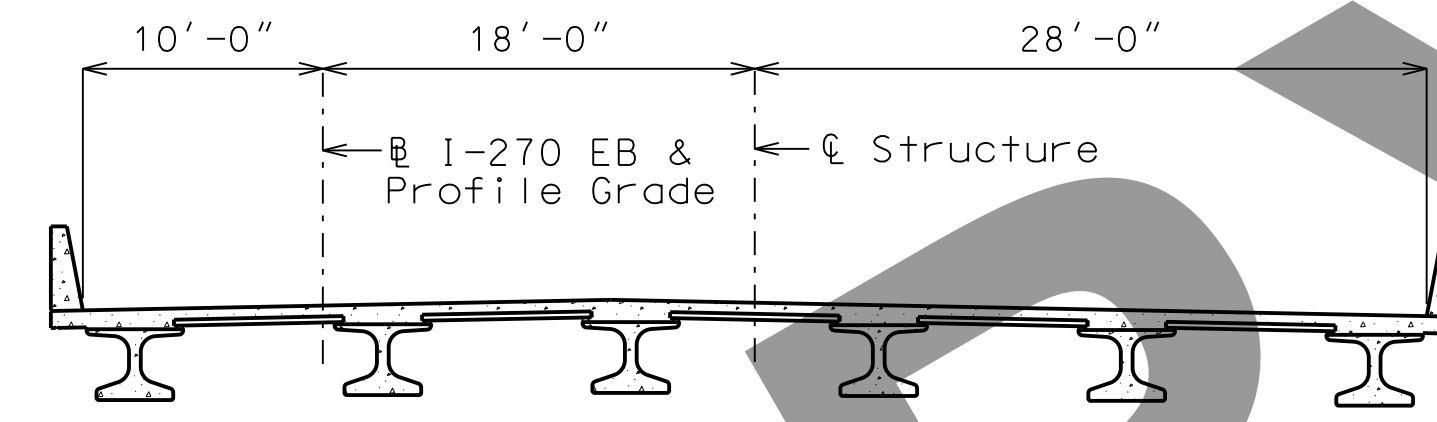
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 Detailed: CAB
 Checked: TPL



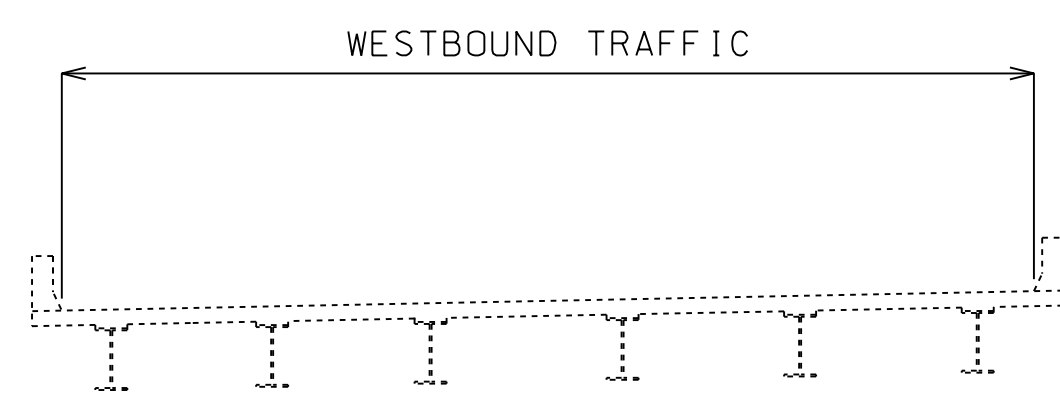
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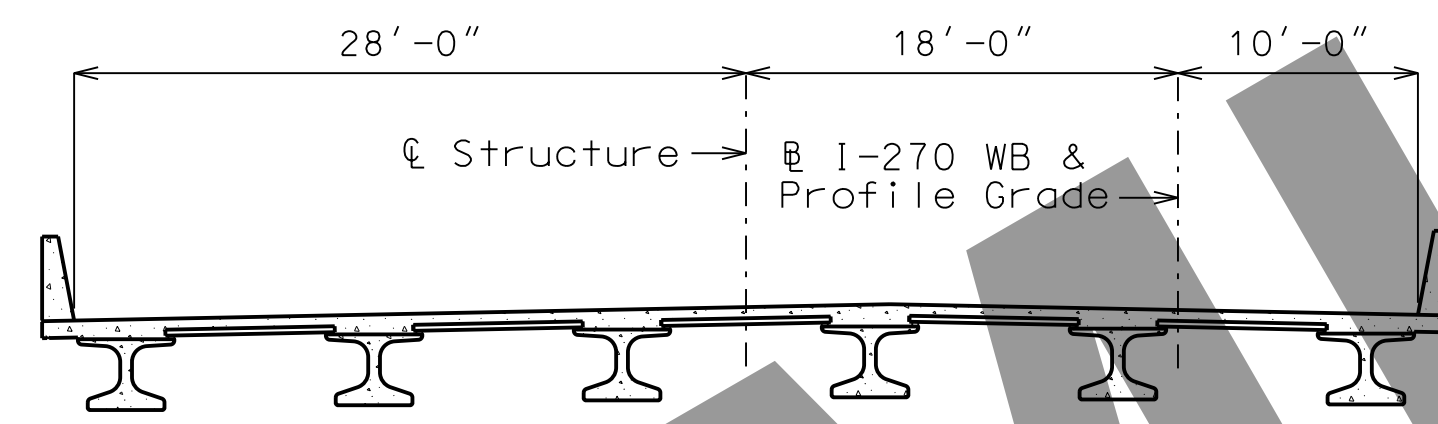
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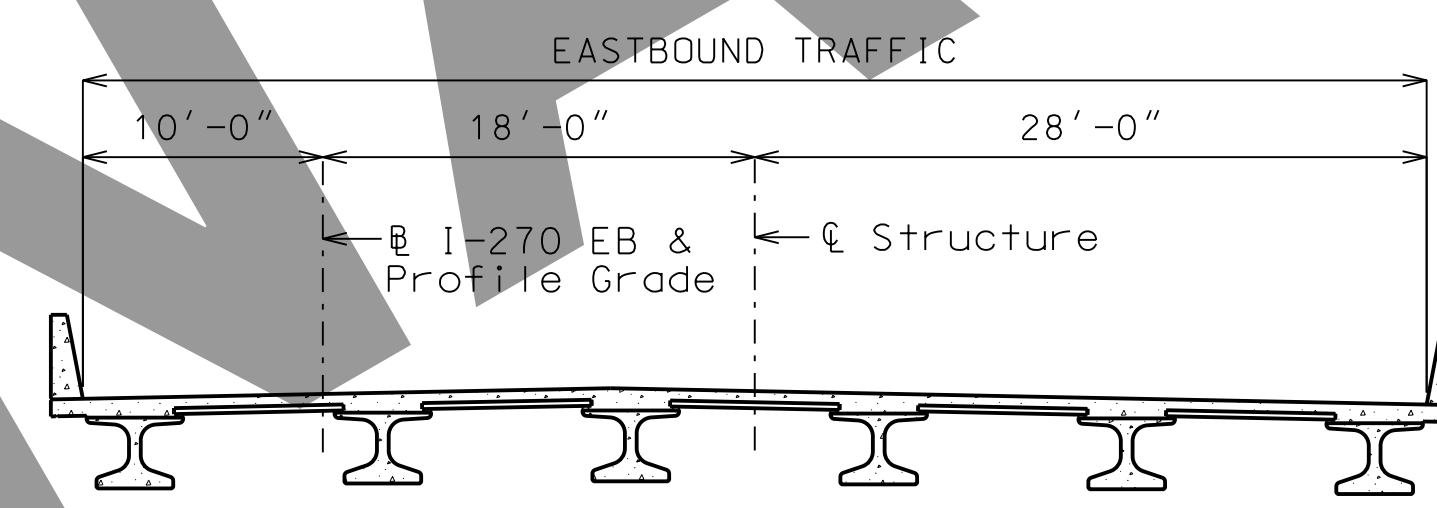
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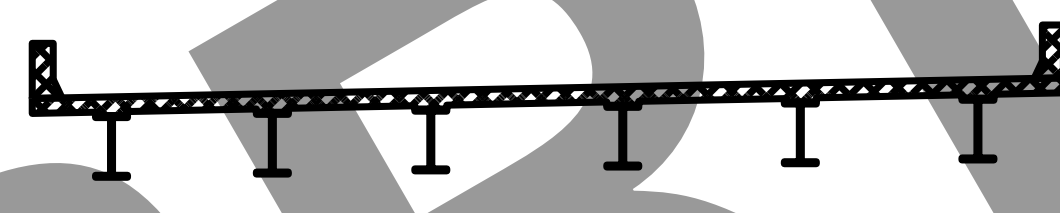
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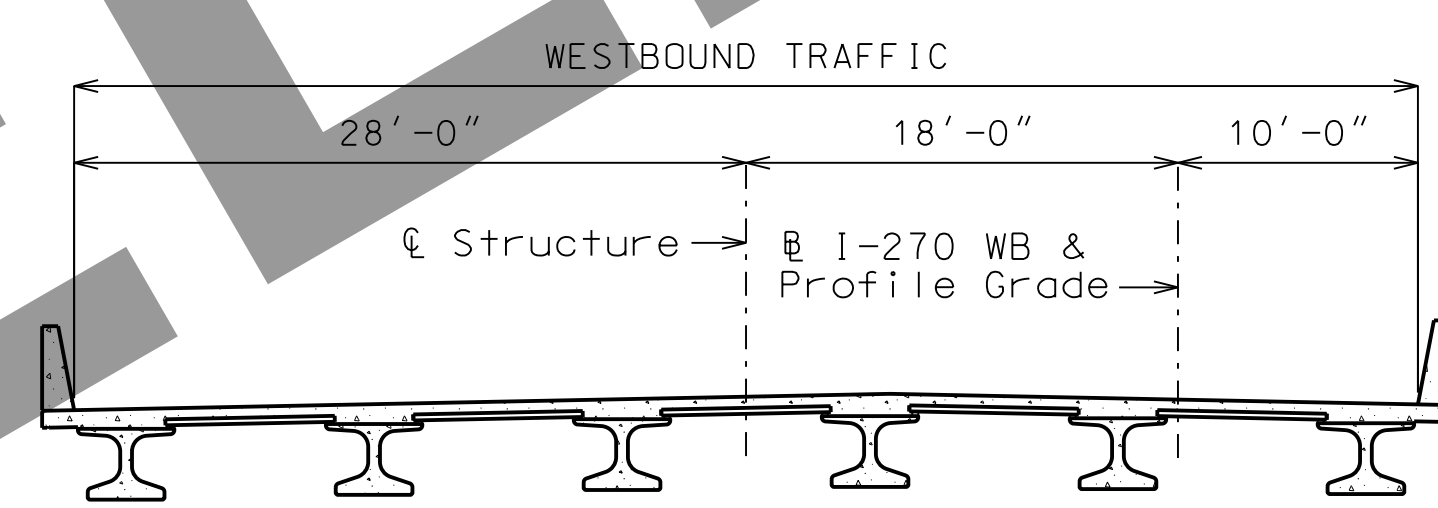
NEW WESTBOUND BRIDGE NO. A8998 AND REMOVE EXISTING EASTBOUND BRIDGE



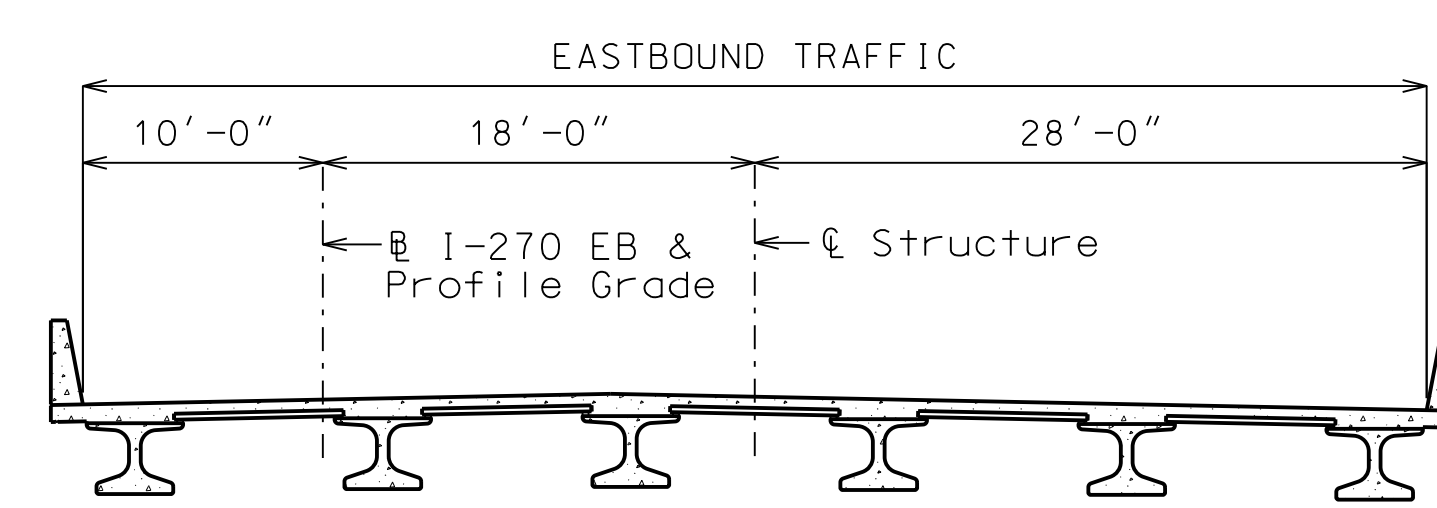
NEW EASTBOUND BRIDGE NO. A8999



REMOVE EXISTING WESTBOUND BRIDGE



NEW WESTBOUND BRIDGE NO. A8998

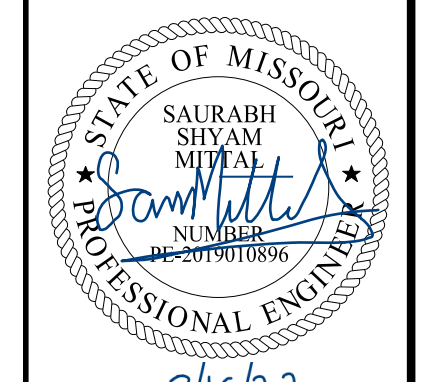


NEW EASTBOUND BRIDGE NO. A8999

STAGED CONSTRUCTION DETAILS

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

Sheet No. 3 of 35



DATE PREPARED 3/14/2022	
ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

HORNER SHIFRIN

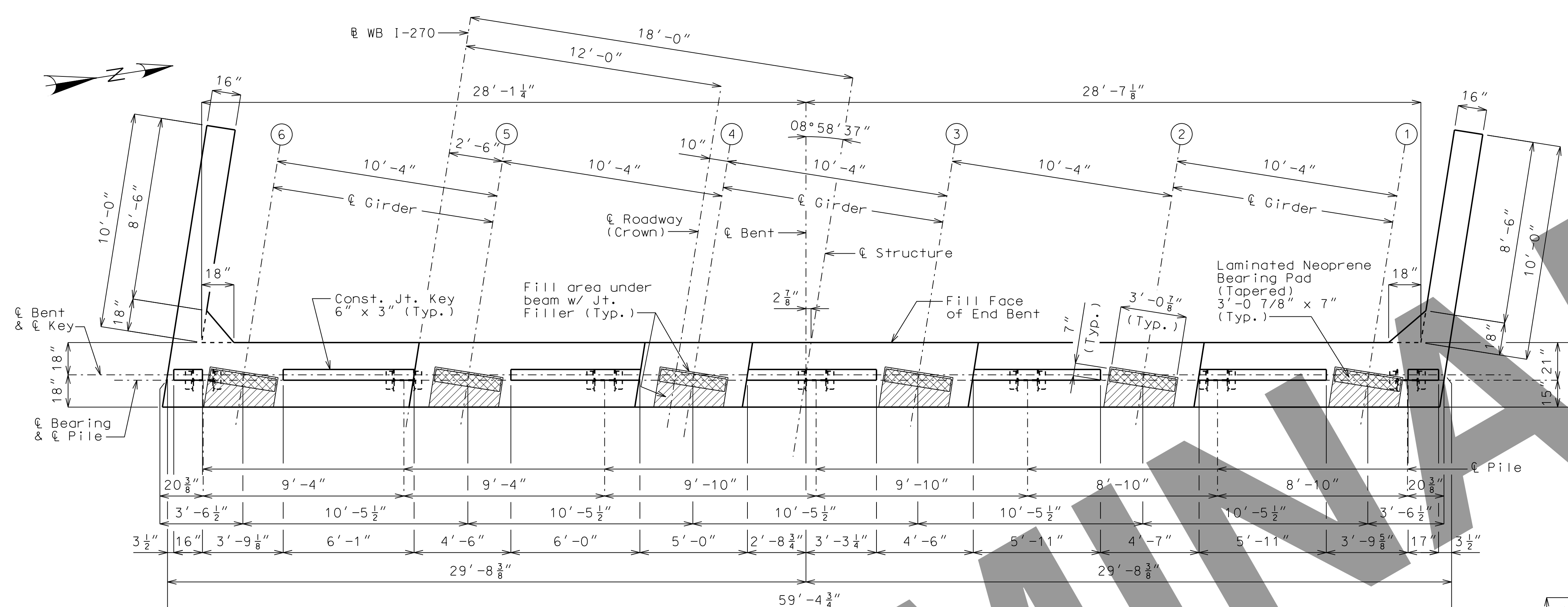
401 S. 18TH ST., STE. 400, ST. LOUIS, MO 63103
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I-270 AND RIVERVIEW WB BRIDGE STAGED CONSTRUCTION DETAILS

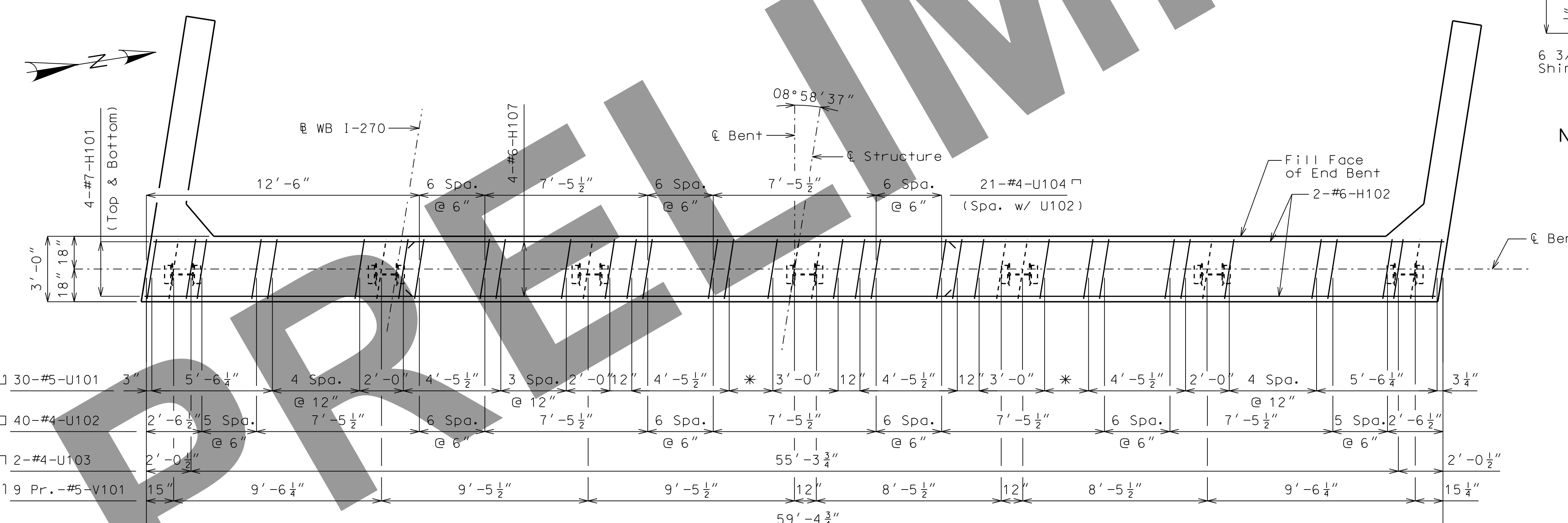
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Detailed: CAB
Checked: TPL



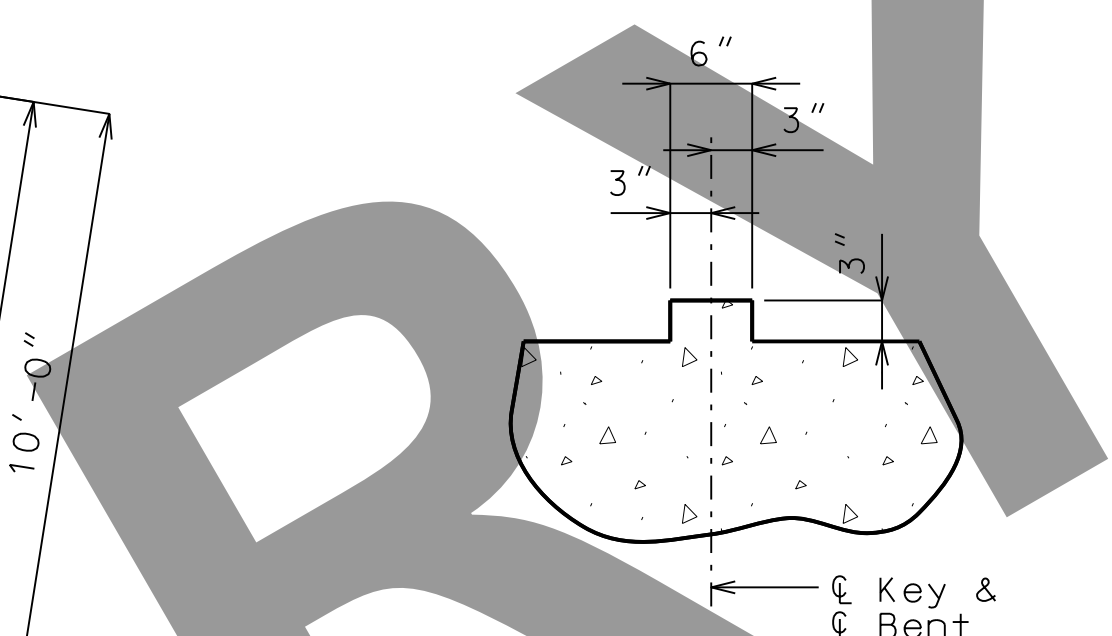
DATE PREPARED 3/14/2022	
ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 4
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	



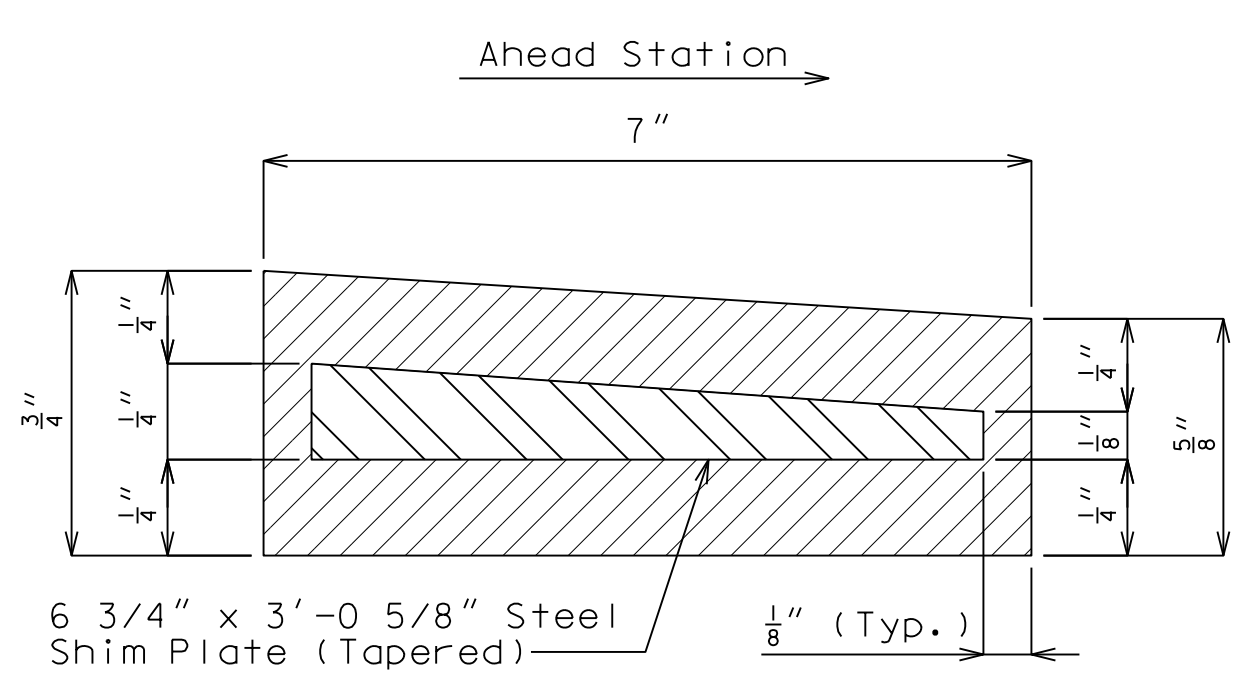
PLAN OF BEAM SHOWING DIMENSIONS



PLAN OF BEAM SHOWING REINFORCEMENT



SECTION THRU KEY



TYPICAL SECTION THRU
7" x 3'-0 7/8" LAMINATED
NEOPRENE BEARING PAD (TAPERED)
(6 Required)

DESCRIPTION	DATE

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

Designed: SSM
Detailed: CAB
Checked: MAB

DETAILS OF END BENT NO. 1

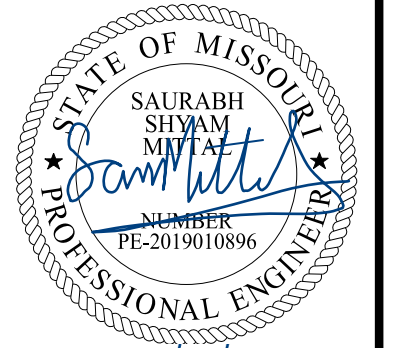
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 35

Notes:
Work this sheet with Sheets No. 5 & 6.
For details of Vertical Drain at End Bents, see Sheet No. 7.
Reinforcing steel shall be shifted to clear piles; U bars shall clear piles by at least 1 1/2".
All U bars, Pr.-V bars, and #5-H109 bars shall be placed parallel to ϵ Roadway.
All bars shall be epoxy coated.
For details of HP pile splices and anchors, see Sheet No. 2.

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CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND
RIVERVIEW
WB BRIDGE
DETAILS OF
END BENT NO. 1



03/16/22

DATE PREPARED
3/14/2022

ROUTE STATE
I-270 MO

DISTRICT SHEET NO.
BR 5

COUNTY
ST. LOUIS CITY

JOB NO.
J613020C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8998

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

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DISCIPLINE: PROFESSIONAL ENGINEERING

CERTIFICATE OF AUTHORITY: 000159

EXPIRATION DATE: DECEMBER 31, 2022

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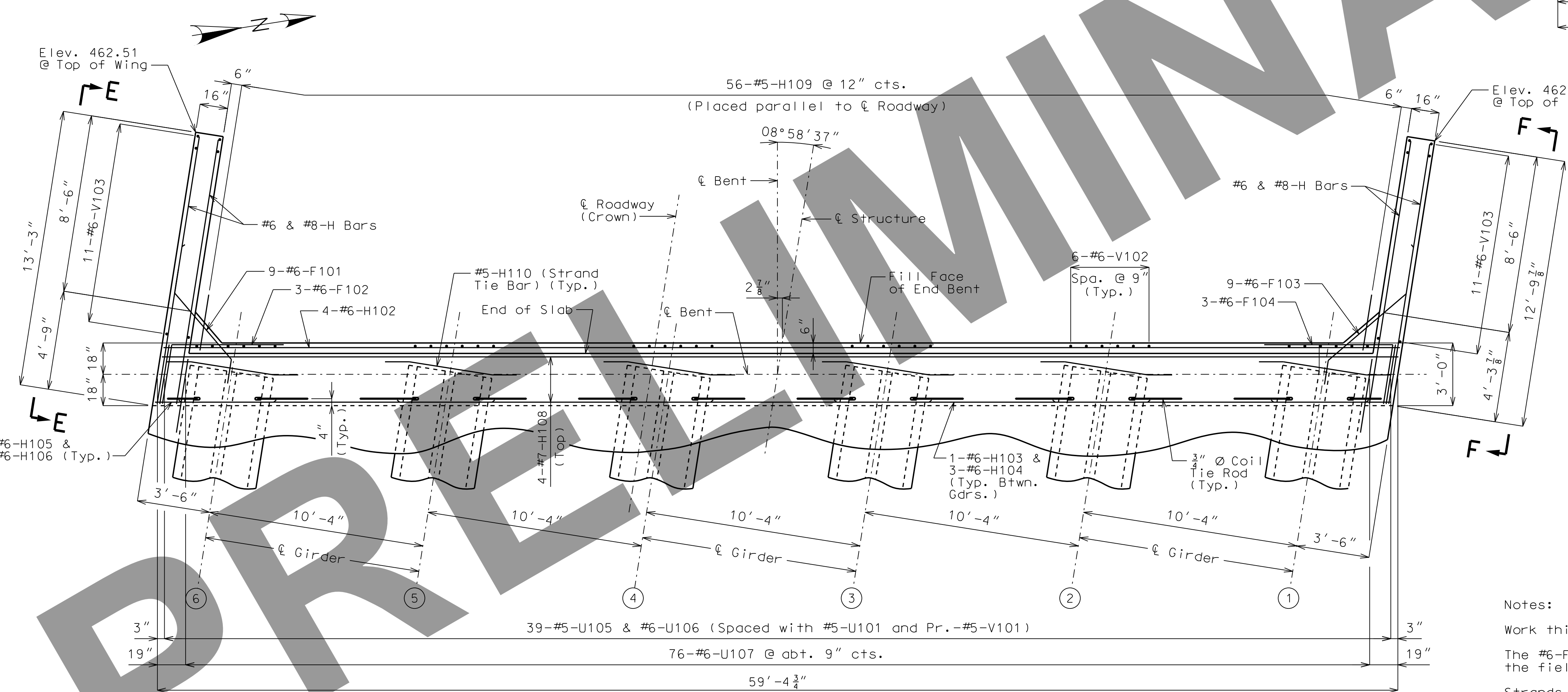
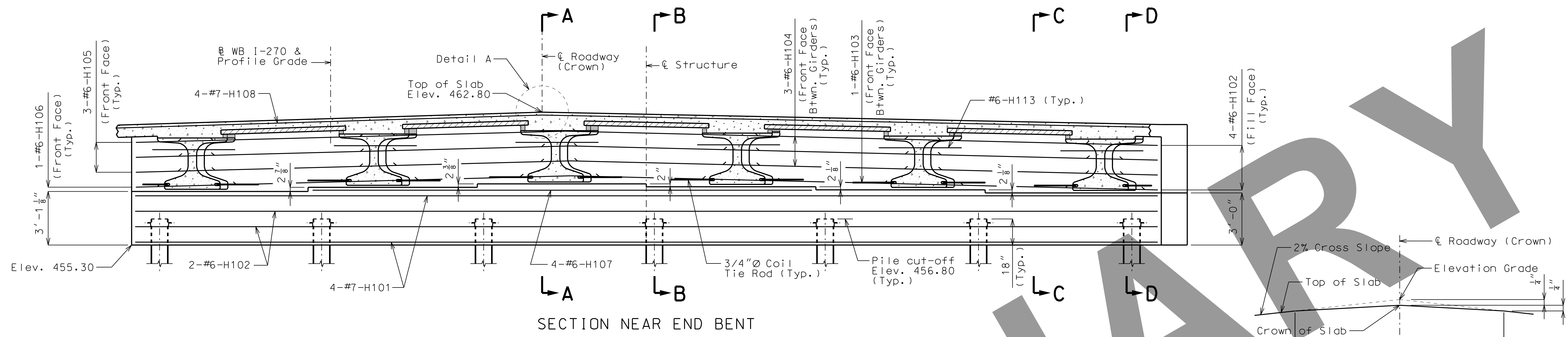
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1-270 AND RIVERVIEW

WB BRIDGE

DETAILS OF

END BENT NO. 1

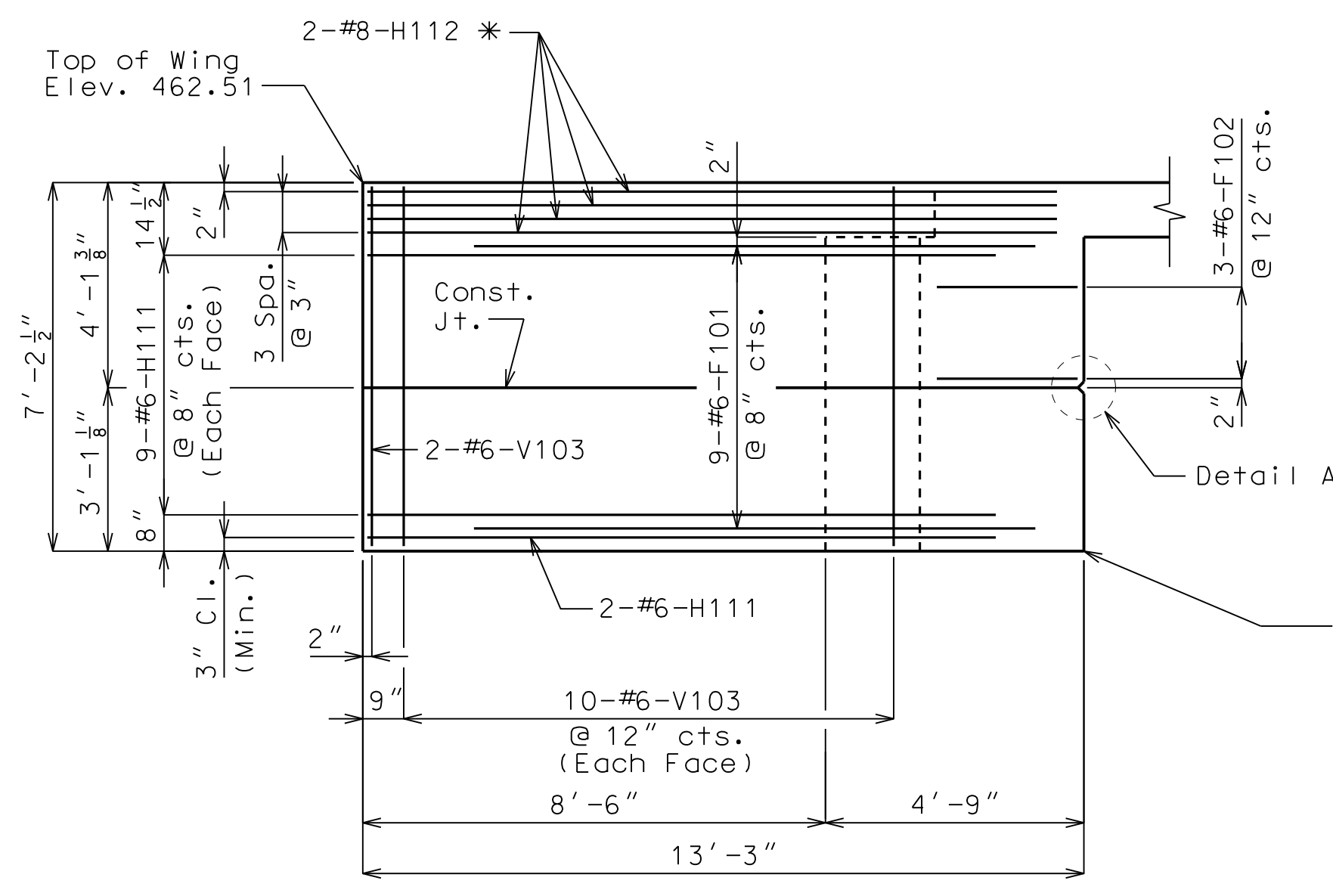


PART PLAN

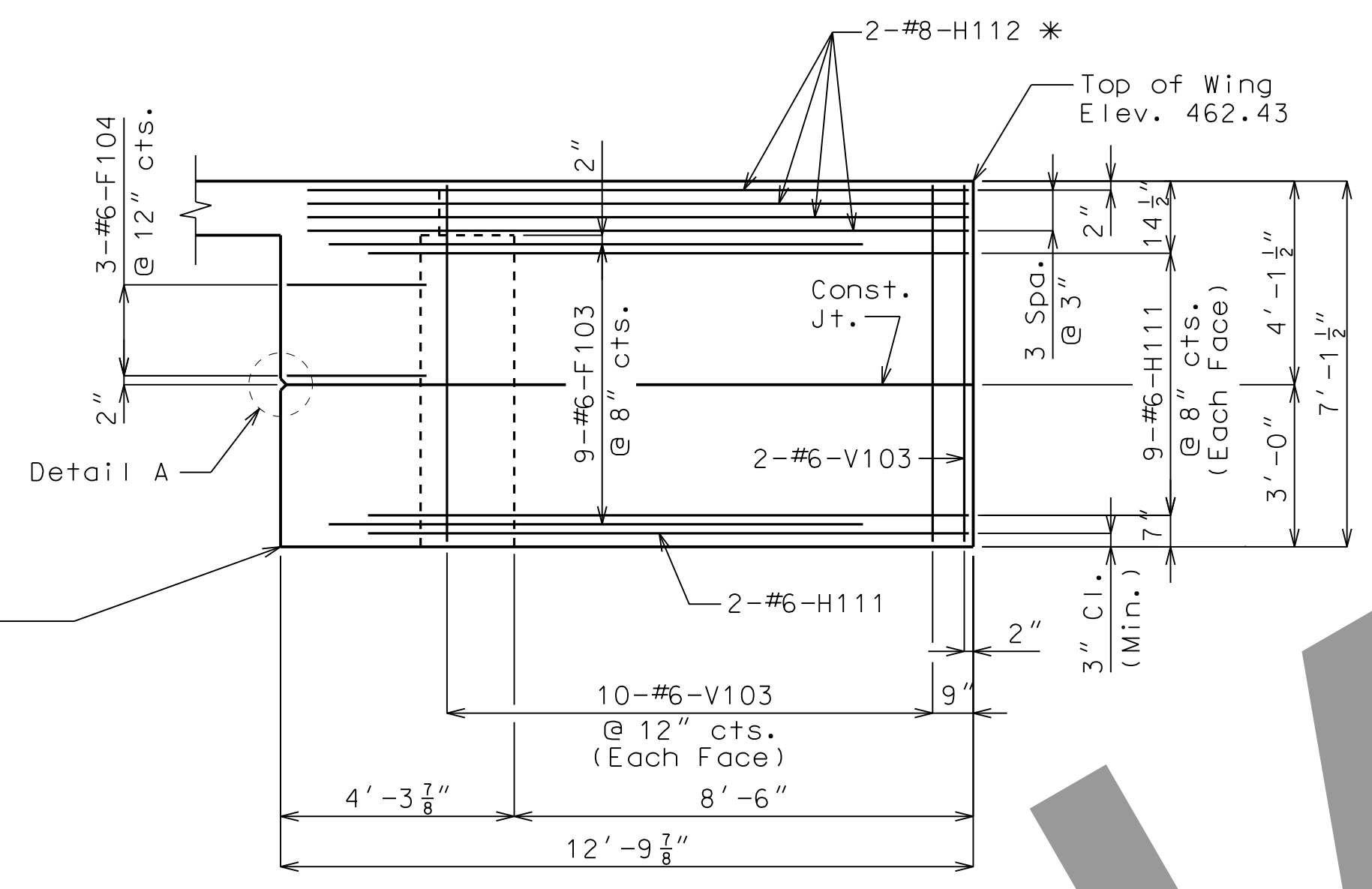
DETAILS OF END BENT NO. 1

Notes:
Work this sheet with Sheets No. 4 & 6.
The #6-F101 & F103 bars shall be bent in the field to clear beams.
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.
For location of Coil Tie Rods and #5-H110 (Strand Tie Bars), see Sheets No. 13 & 14.
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
All bars shall be epoxy coated.

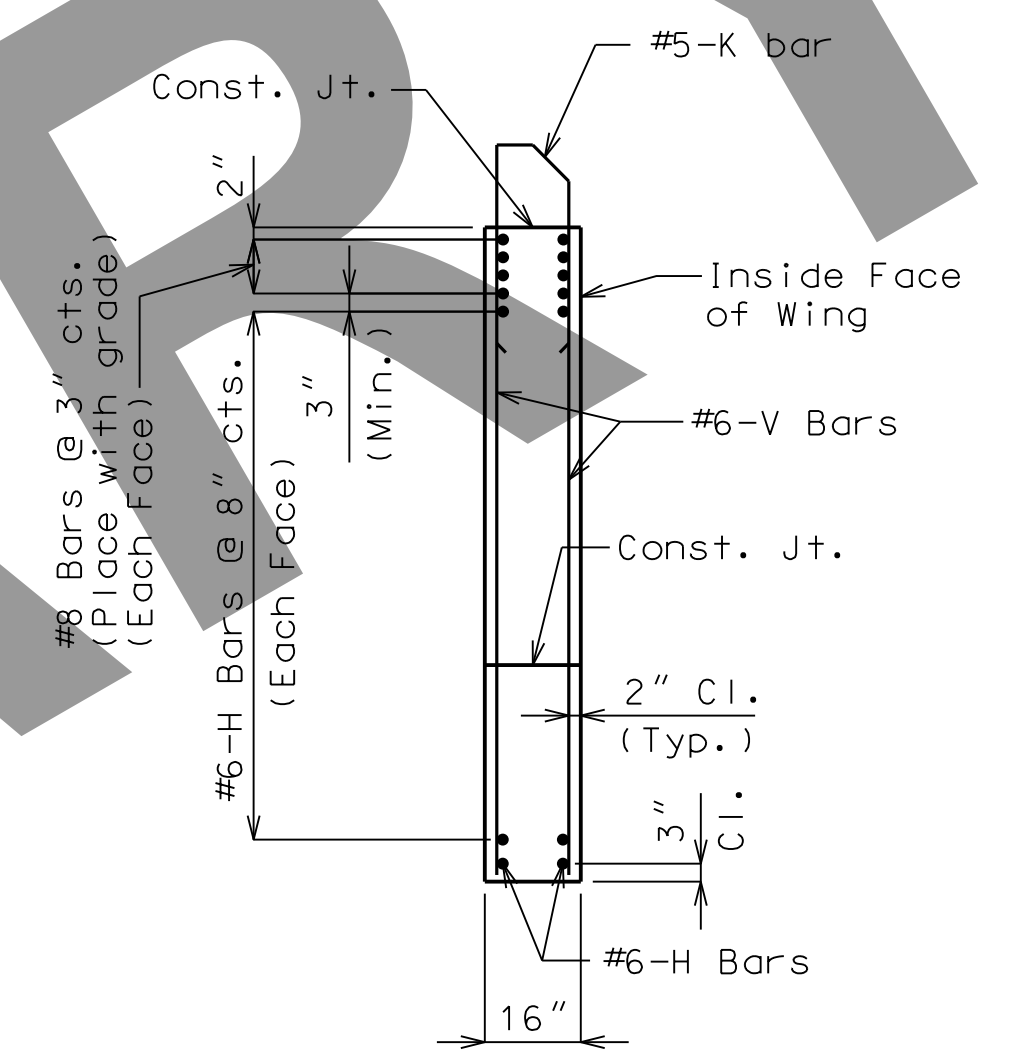
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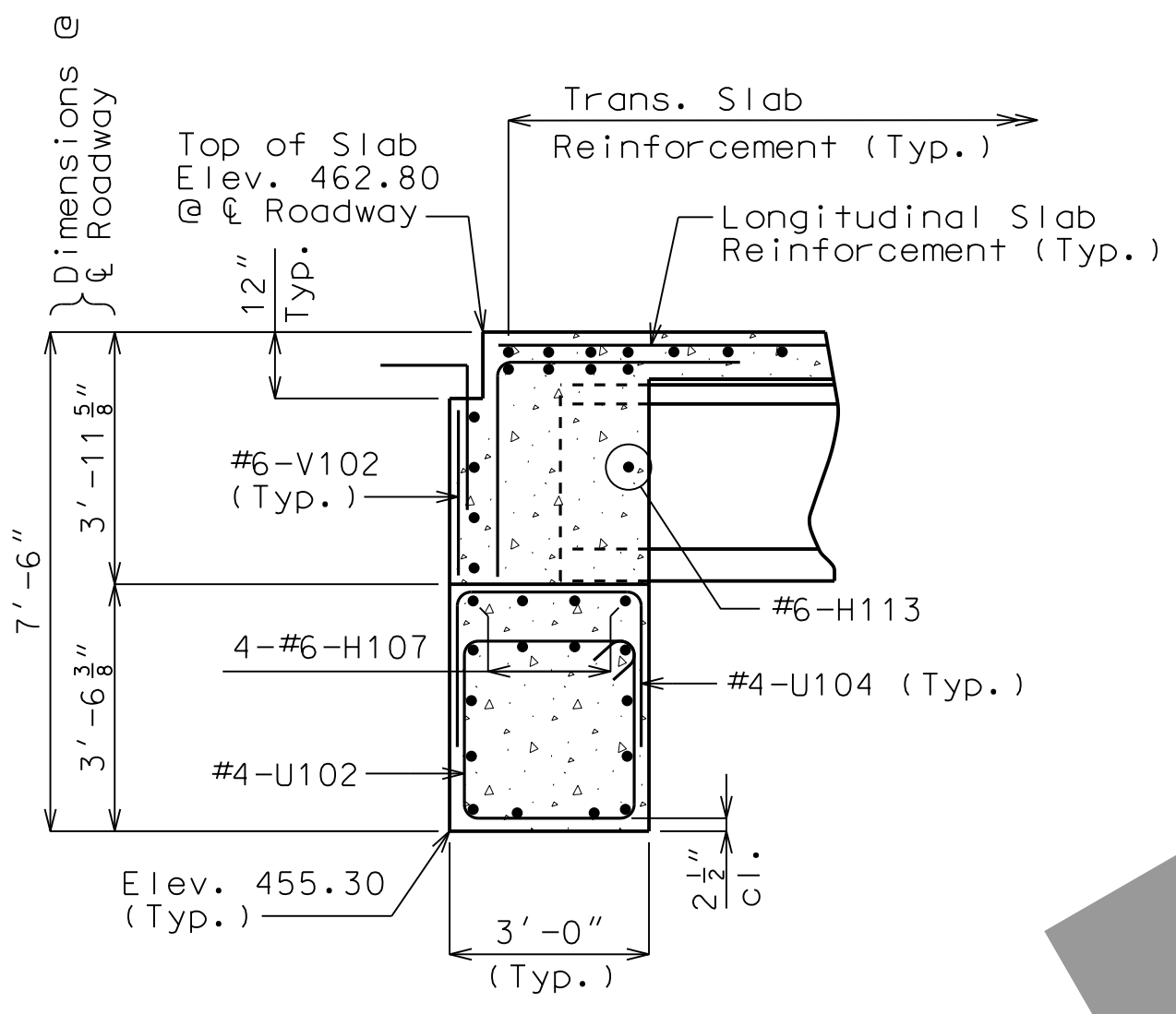
ELEVATION E-E



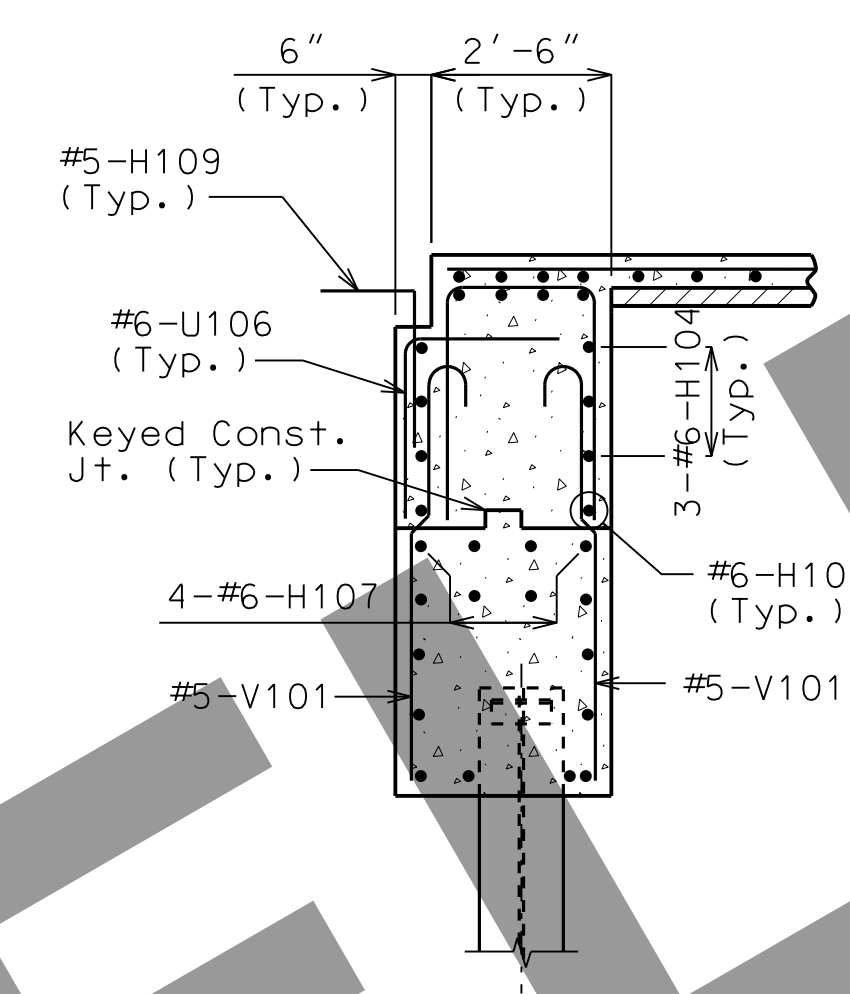
ELEVATION F-F



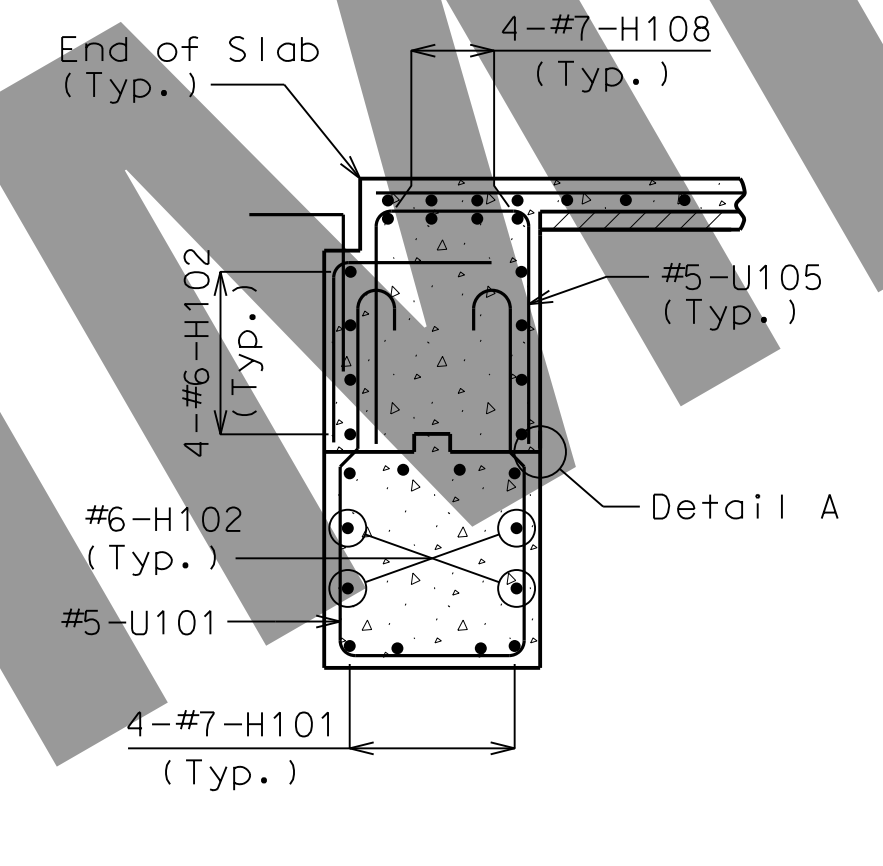
PART SECTION THRU WING



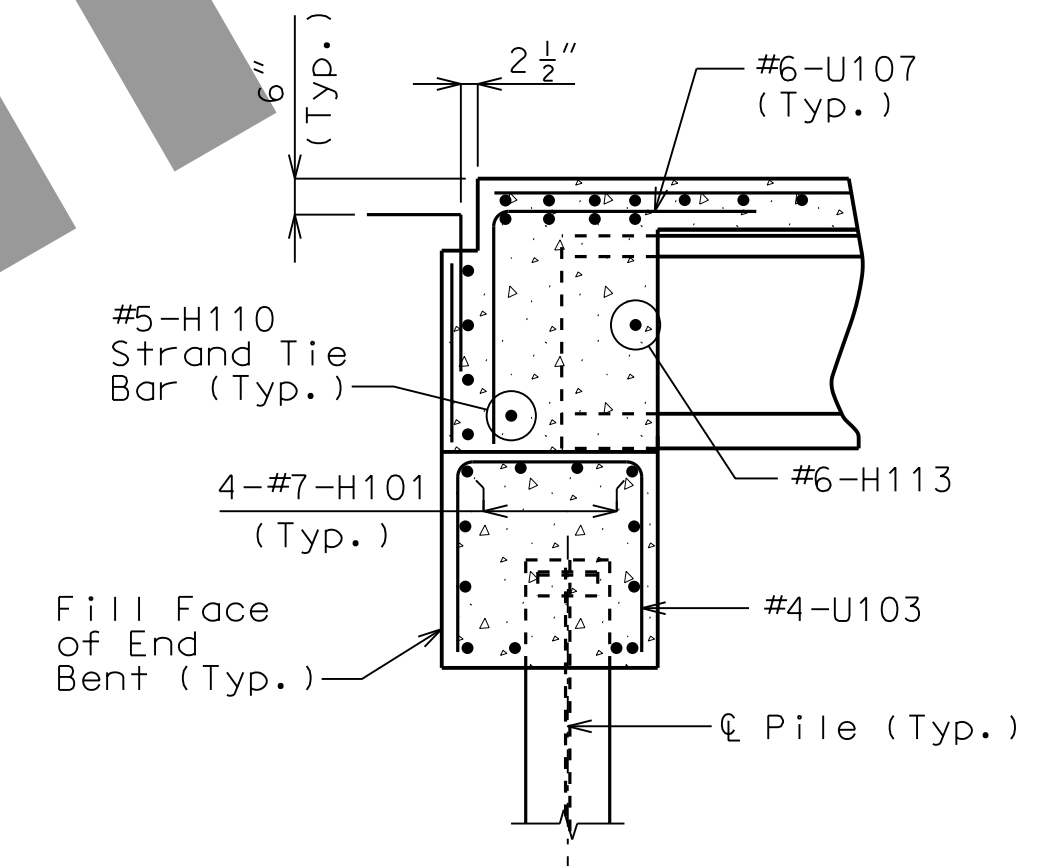
SECTION A-A



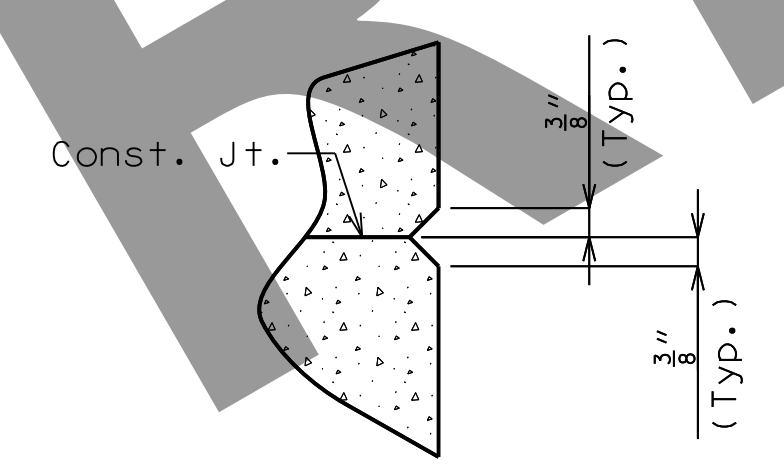
SECTION B-B



SECTION C-C



SECTION D-D



DETAIL A

* Place with grade

Notes:
 Work this sheet with Sheets No. 4 and 5.
 For reinforcement of Barrier Curb at End Bents, see Sheet No. 22.
 For details of Approach Slab, see Sheet No. 23.

Substructure Quantity Table for Bent No. 1		
Item	Unit	Quantity
Galvanized Structural Steel Pile (12 in.)	linear foot	336
Pile Point Reinforcement	each	7
Class B Concrete (Substructure)	cu. yard	24.7
Pipe Pile Spacers	each	7

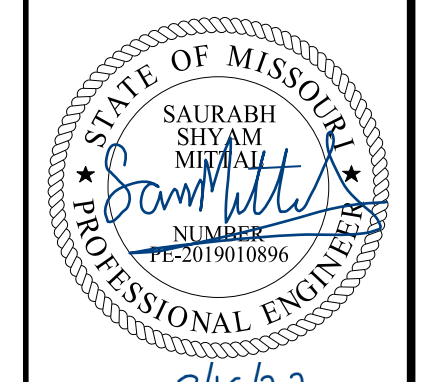
Note: These quantities are included in the estimated quantities table on Sheet No. 2.

DETAILS OF END BENT NO. 1

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

Sheet No. 6 of 35

Designed: SSM
 Detailed: CAB
 Checked: MAB



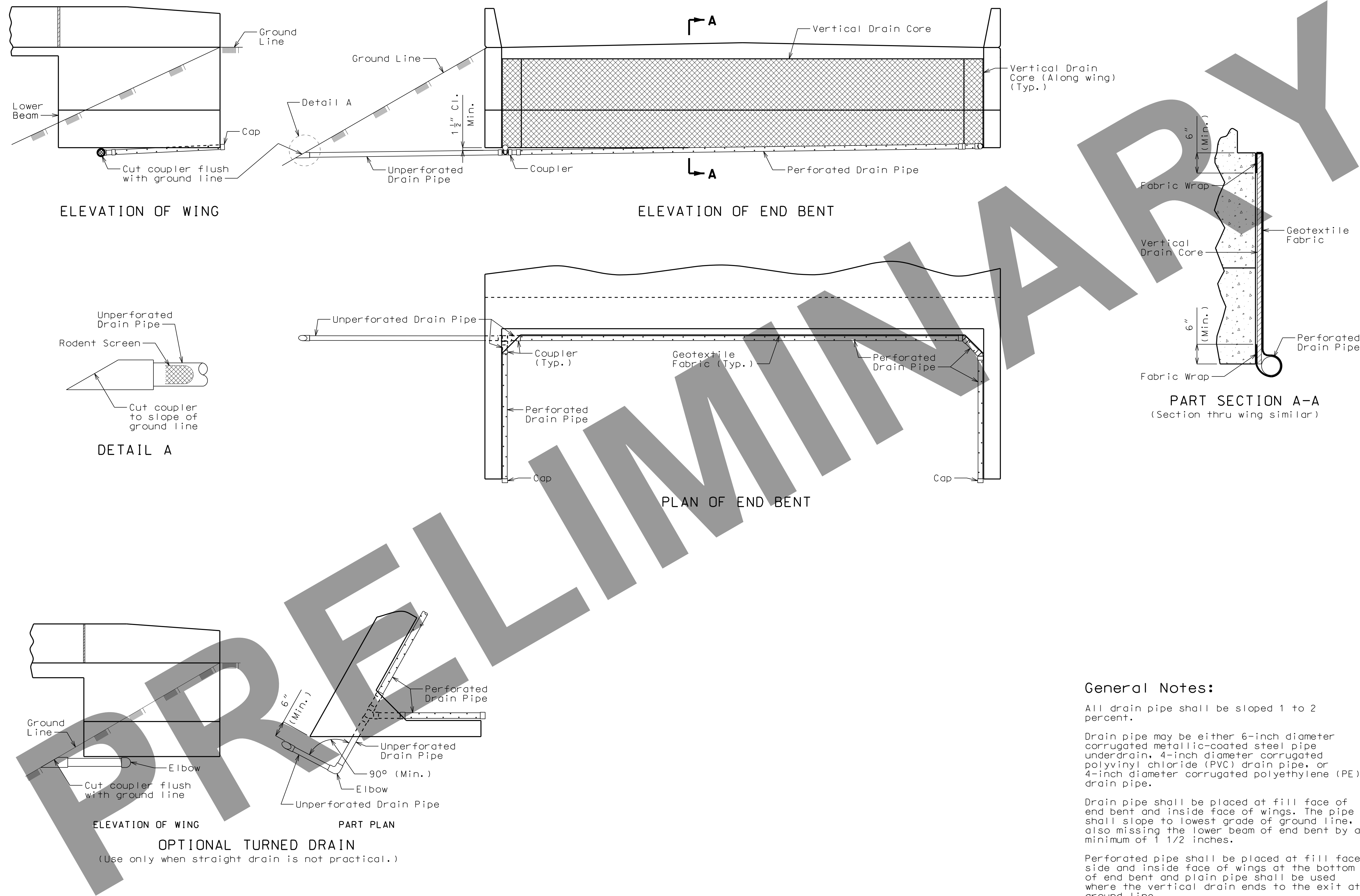
DATE PREPARED: 3/14/2022
 ROUTE: I-270 STATE: MO
 DISTRICT: BR SHEET NO.: 6
 COUNTY: ST. LOUIS CITY
 JOB NO.: J613020C
 CONTRACT ID.:
 PROJECT NO.:
 BRIDGE NO.: A8998

DESCRIPTION	DATE

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

HORNER SHIFFRIN
 401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103
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 DISCIPLINE: PROFESSIONAL ENGINEERING
 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE DETAILS OF END BENT NO. 1



VERTICAL DRAIN AT END BENTS

(Squared end bent shown, skewed end bent similar)

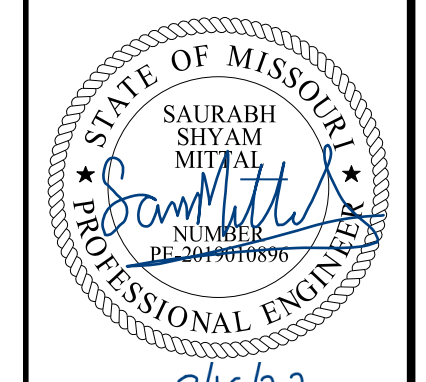
General Notes:

- 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.

Designed: SSM
 Detailed: CAB
 Checked: TPL

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

Sheet No. 7 of 35



DATE PREPARED 3/14/2022	
ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 7
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	
DESCRIPTION	
DATE	

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

 105 WEST CAPITOL
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 1-888-ASK-MODOT (1-888-275-6636)

HORNER SHIFFRIN

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 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE VERTICAL DRAIN AT END BENTS



03/16/22
 DATE PREPARED
 3/14/2022
 ROUTE I-270 STATE MO
 DISTRICT BR SHEET NO. 8
 COUNTY ST. LOUIS CITY
 JOB NO. J613020C
 CONTRACT ID.
 PROJECT NO.
 BRIDGE NO. A8998

DATE	DESCRIPTION

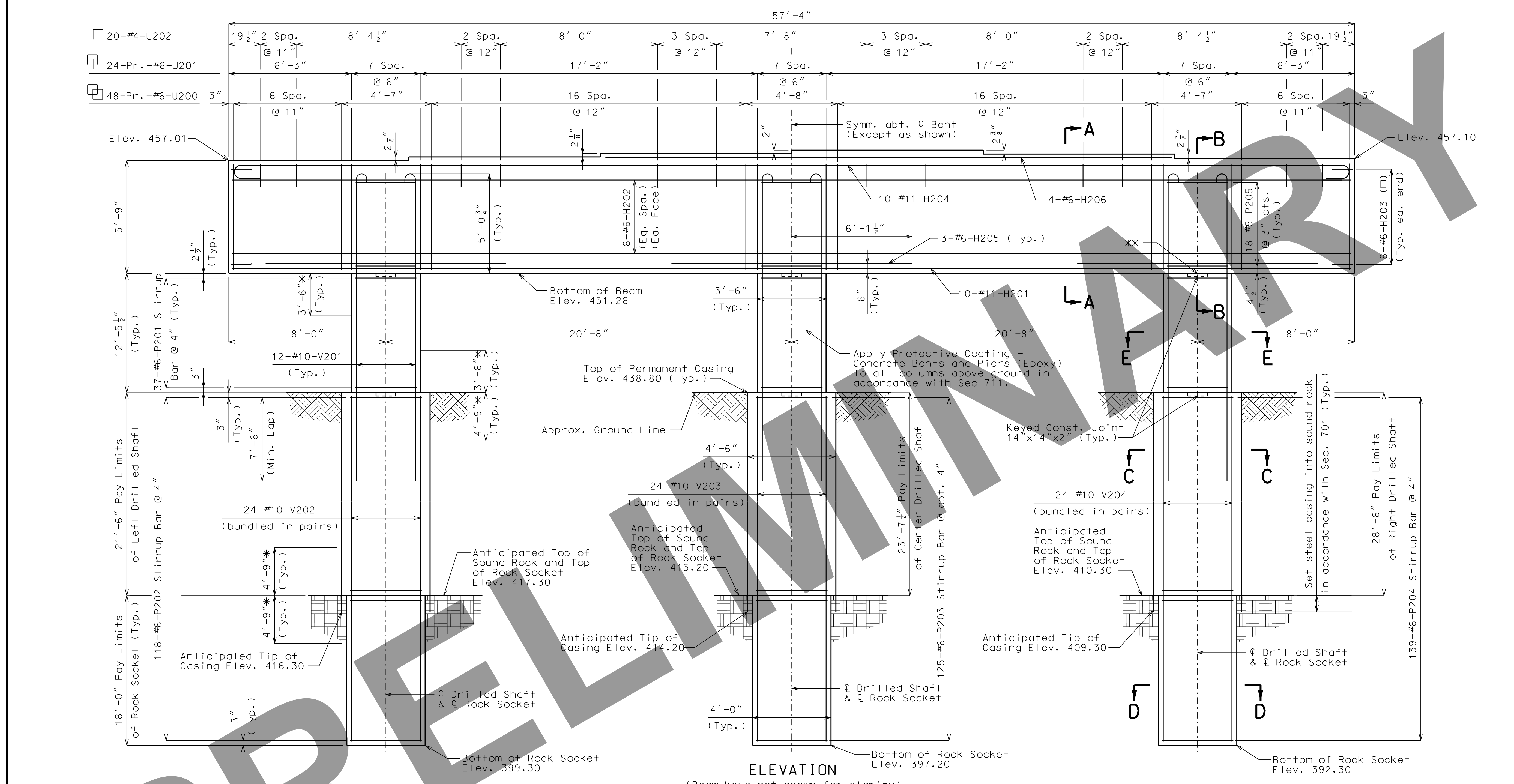
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

 105 WEST CAPITOL
 JEFFERSON CITY, MO 65102
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HORNER SHIFFRIN

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 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE
 DETAILS OF INT. BENT NO. 2



ELEVATION

(Beam keys not shown for clarity)

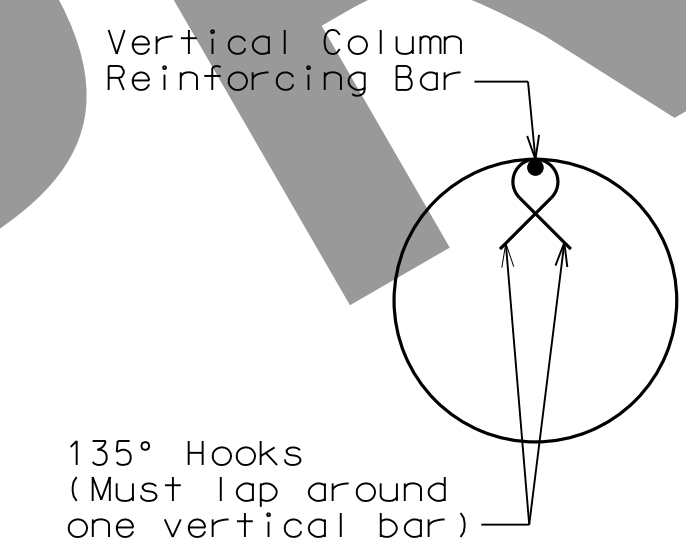
* No splicing of V-bars permitted in this region.

Notes:
 Work this sheet with Sheet No. 9.
 Sonic logging testing shall be performed on all drilled shafts and rock sockets.
 Turning V-bar hooks outward, away from the column core, will not be allowed.
 Contractor may cut-off three of the V201 hook bars per shaft, in order to install P205 Seismic stirrups in the cap.
 The hooks for adjacent stirrup bars shall be rotated by 120 degrees and shall not be lined up at one location.

An additional 4 feet has been added to V-bar lengths and additional #6-P202, #6-P203 and #6-P204 bars have been added 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-inch centers.

Thickness of permanent steel casing shall be in accordance with Sec 701.
 All steel above ground shall be epoxy coated.
 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.

DETAIL OF SEISMIC STIRRUP BAR (P201, P202, P203, P204, and P205)

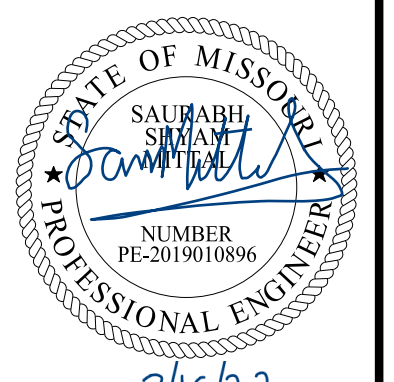


DETAILS OF INTERMEDIATE BENT NO. 2

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

Sheet No. 8 of 35

Designed: UVK
 Detailed: GLC
 Checked: TPL



DATE PREPARED
3/14/2022
ROUTE I-270 STATE MO
DISTRICT BR SHEET NO. 9

COUNTY ST. LOUIS CITY
JOB NO. J613020C
CONTRACT ID.

PROJECT NO.

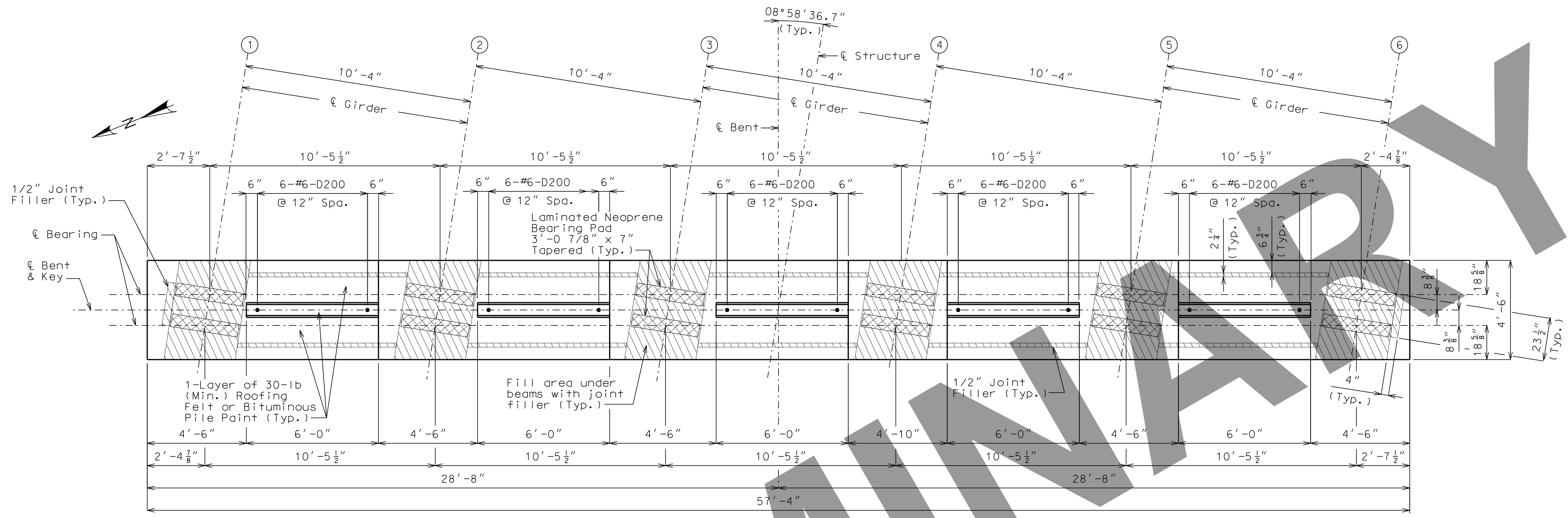
BRIDGE NO. A8998

DATE	DESCRIPTION

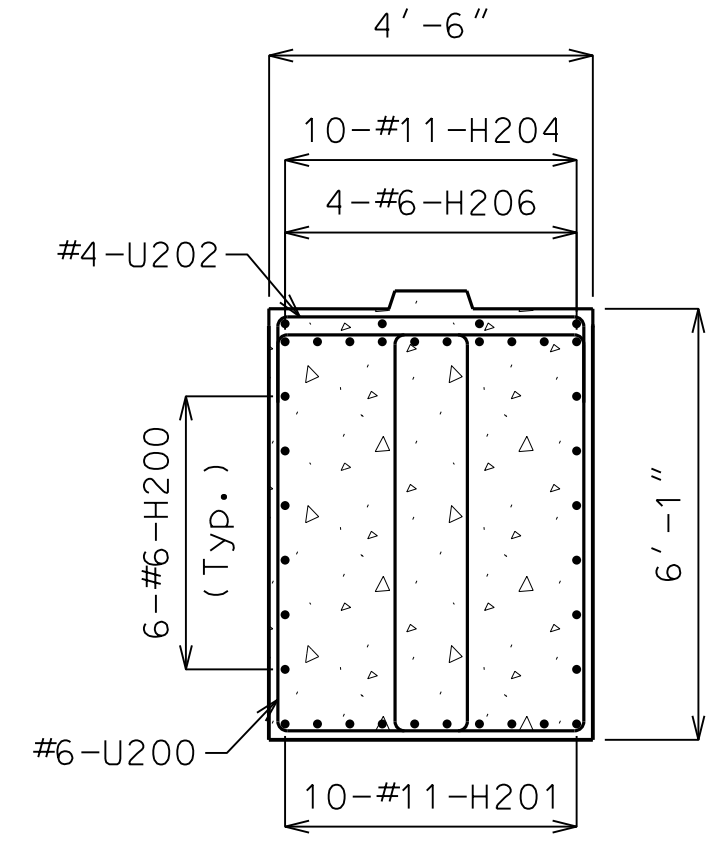
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
 1-888-ASK-MODOT (1-888-275-6636)

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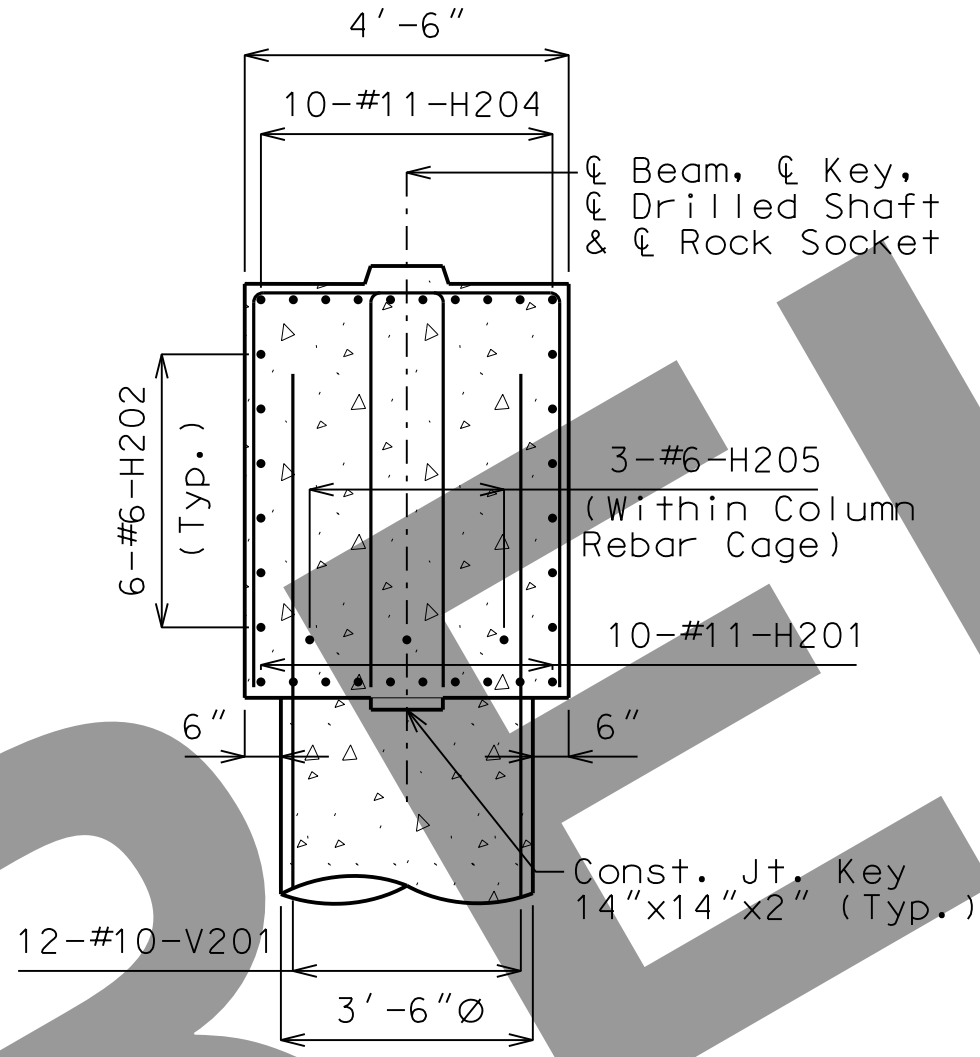
I-270 AND RIVERVIEW WB BRIDGE DETAILS OF INT. BENT NO. 2



PLAN OF BEAM

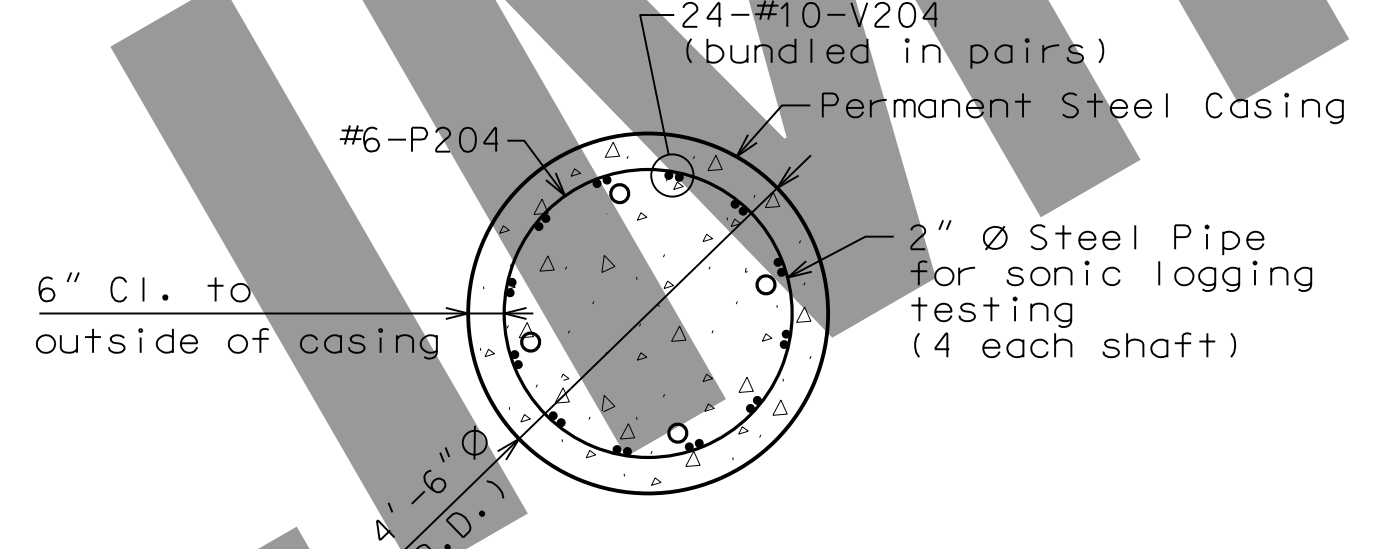


SECTION A-A

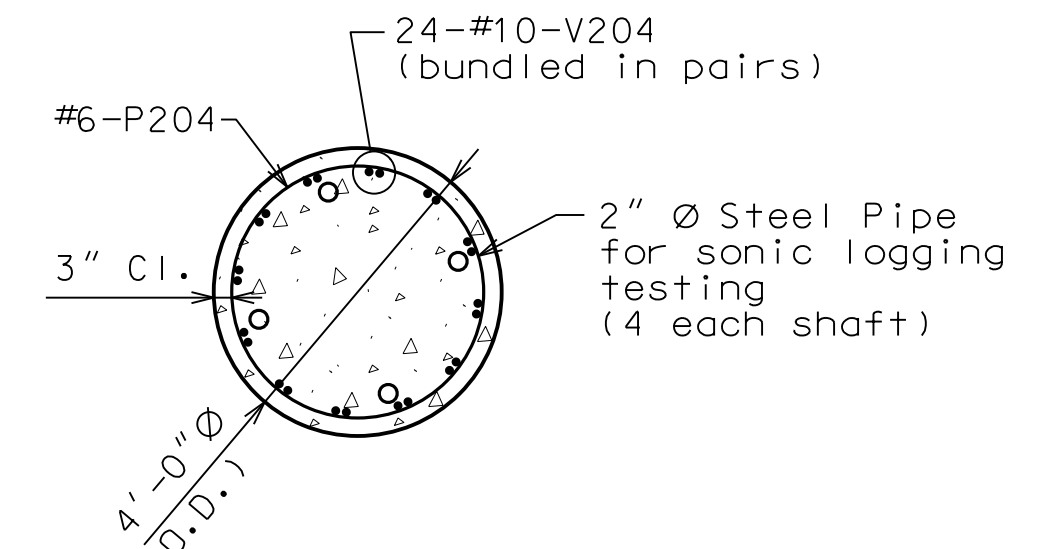


PART SECTION B-B

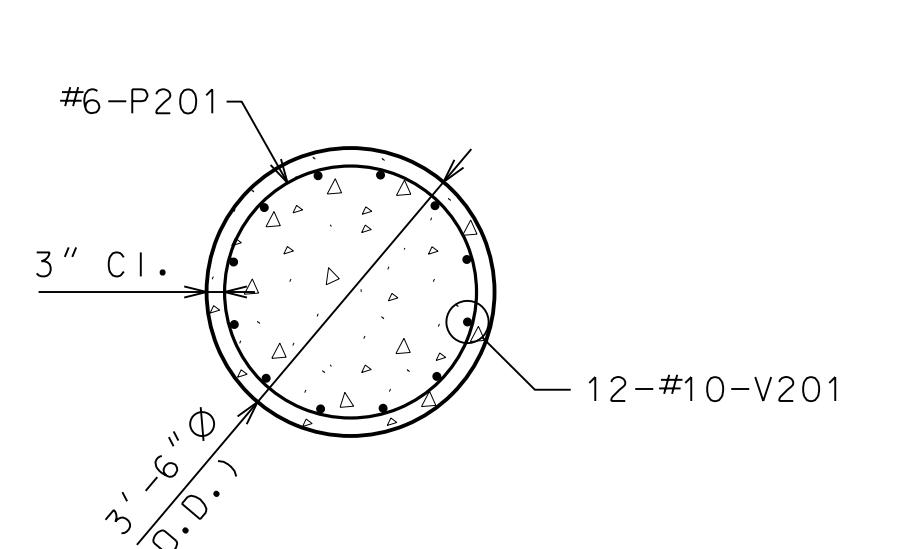
Note: #5-P205 stirrup bars not shown for clarity.



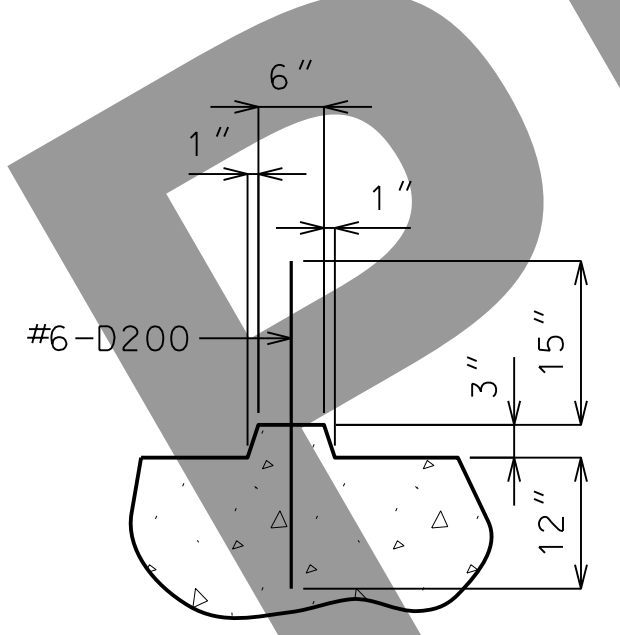
SECTION C-C (DRILLED SHAFT)



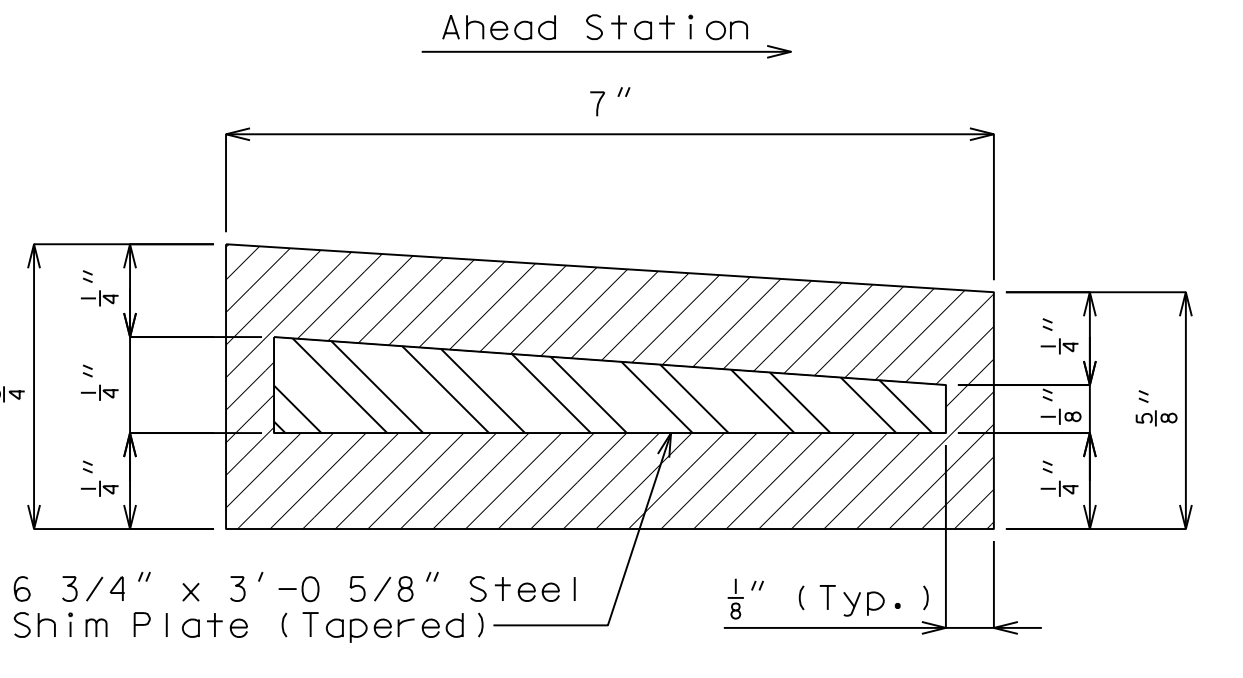
SECTION D-D (ROCK SOCKET)



SECTION E-E (COLUMN)



SECTION THRU KEY



TYPICAL SECTION THRU 7" x 3'-0 7/8" LAMINATED NEOPRENE BEARING PAD (TAPERED) (12 Required)

Item	Unit	Quantity
Drilled Shafts (4 ft. 6 in. Dia.)	linear foot	73.6
Rock Sockets (4 ft. 0 in. Dia.)	linear foot	54
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	84
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	70.5
Reinforcing Steel (Bridges)	pound	21,910
Reinforcing Steel (Epoxy Coated)	pound	17,870
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1

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

Note: Work this sheet with Sheet No. 8.

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

DETAILS OF INTERMEDIATE BENT NO. 2

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

Sheet No. 9 of 35

Designed: UVK
 Detailed: GLC
 Checked: TPL



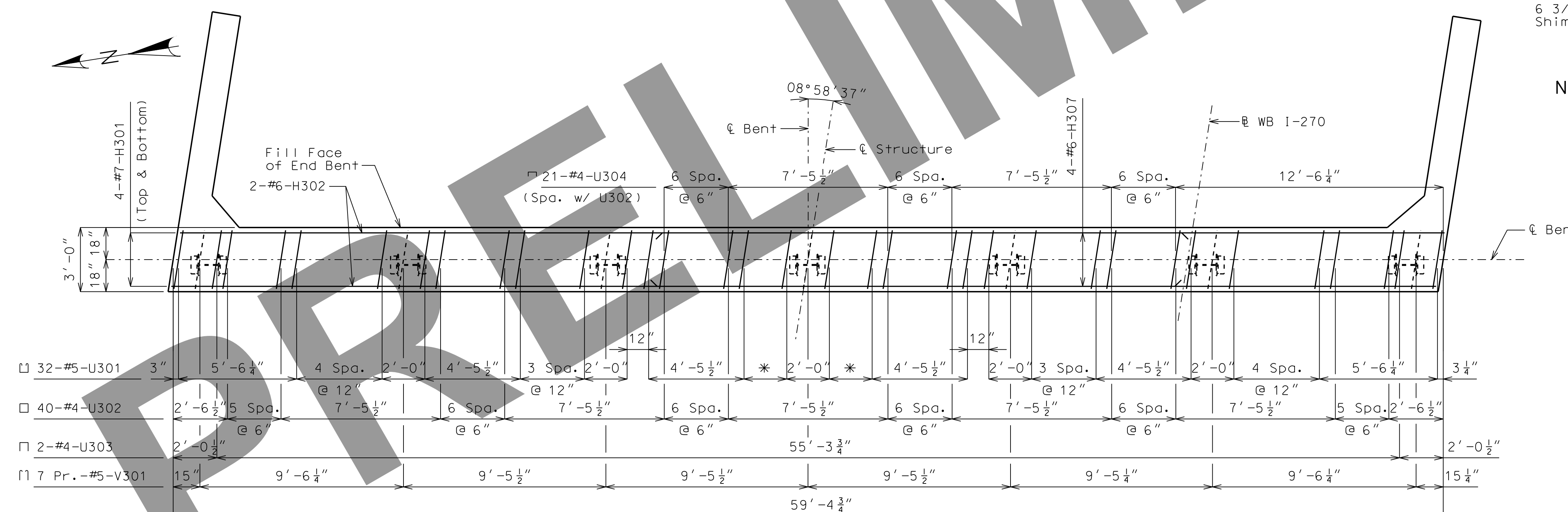
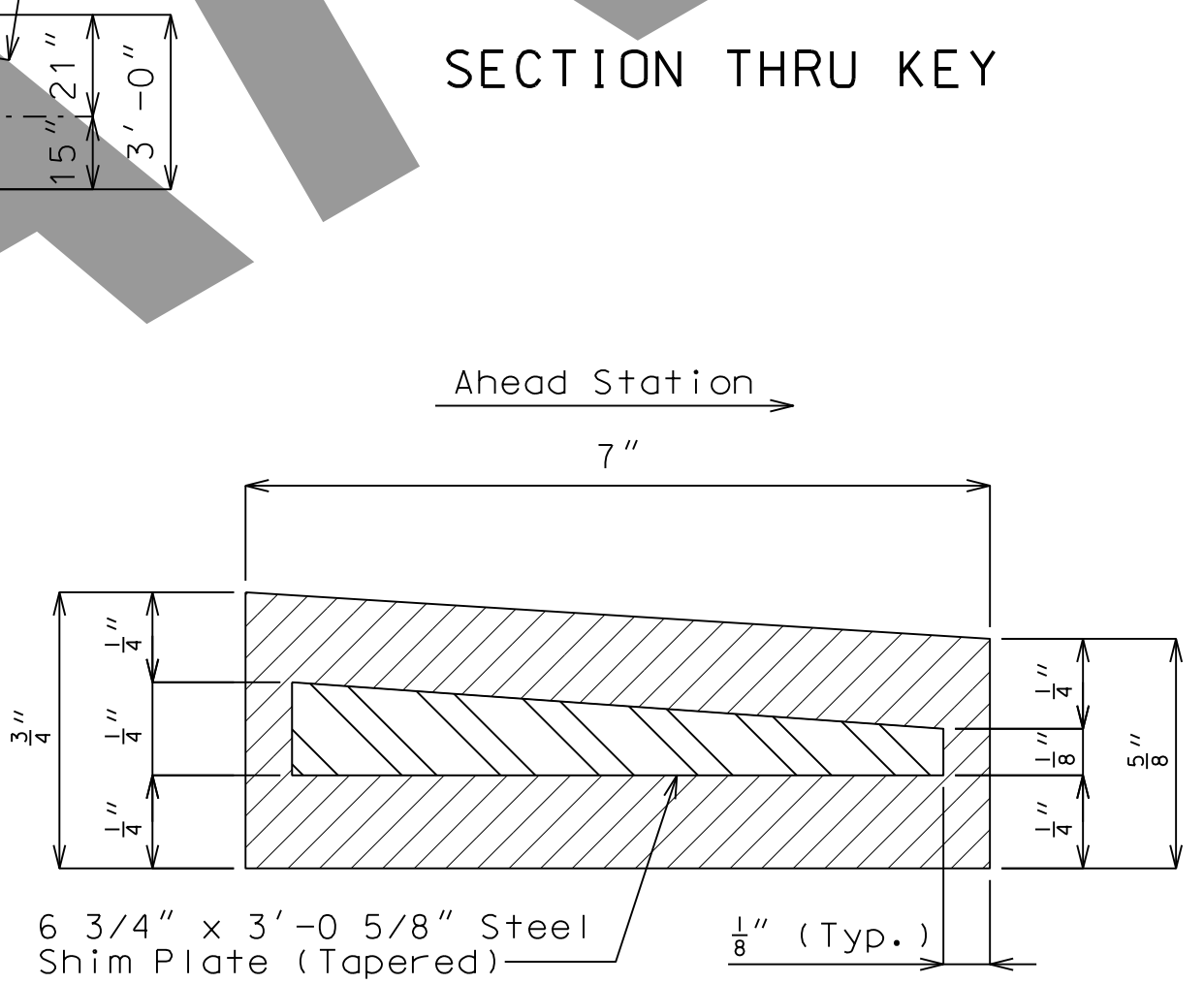
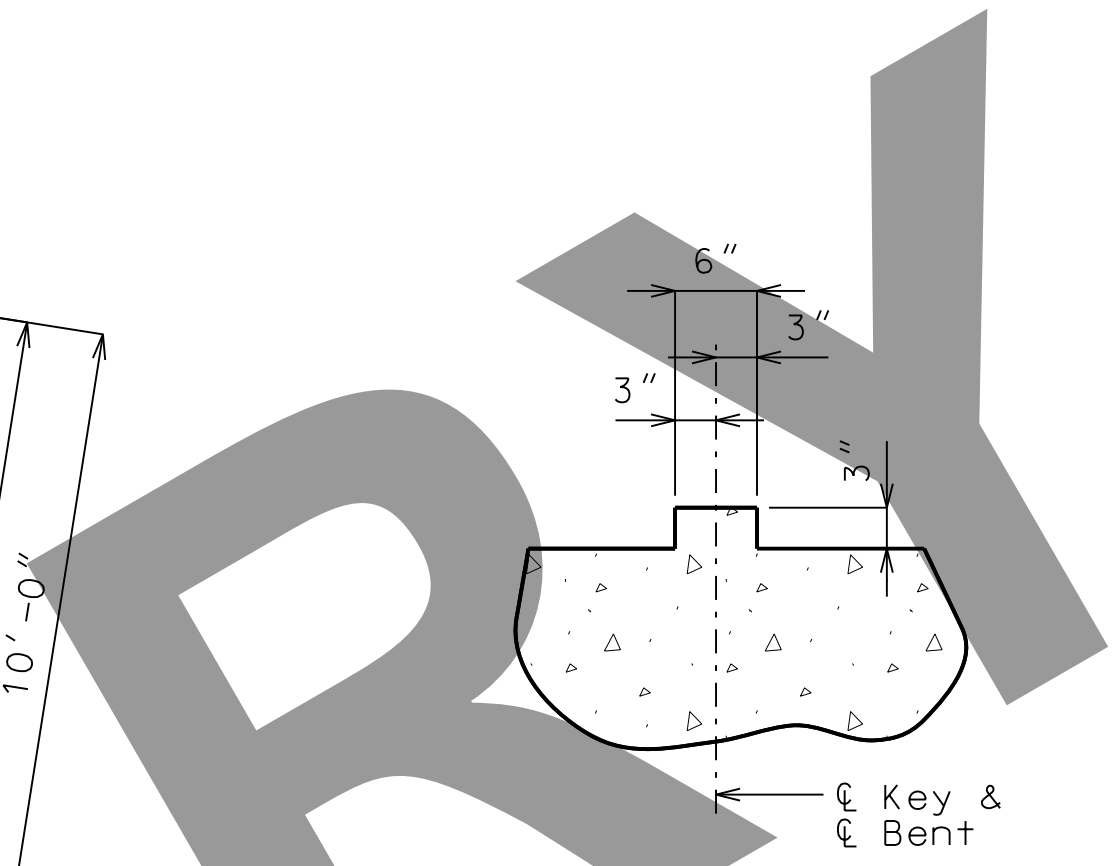
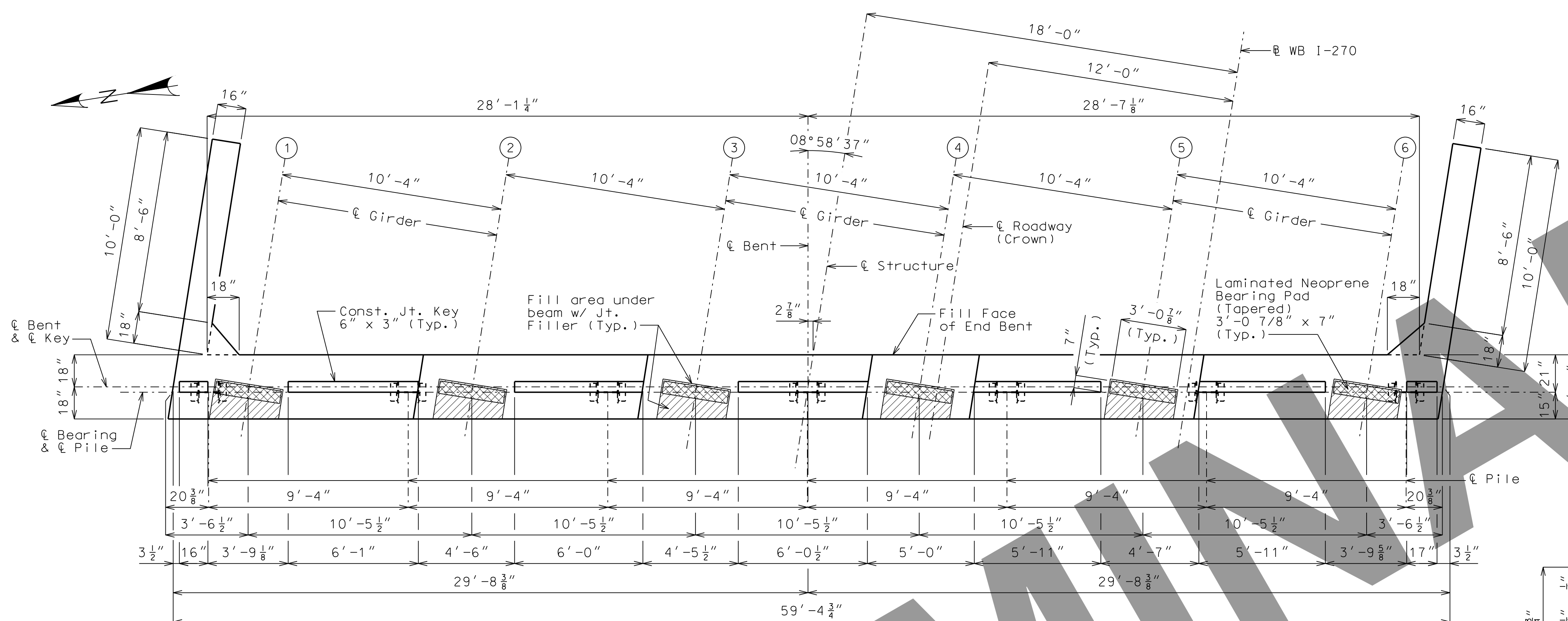
DATE PREPARED
3/14/2022
ROUTE STATE
I-270 MO
DISTRICT SHEET NO.
BR 10
COUNTY
ST. LOUIS CITY
JOB NO.
J613020C
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A8998

DESCRIPTION

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

HORNER SHIFFRIN
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CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW
WB BRIDGE
DETAILS OF END BENT NO. 3



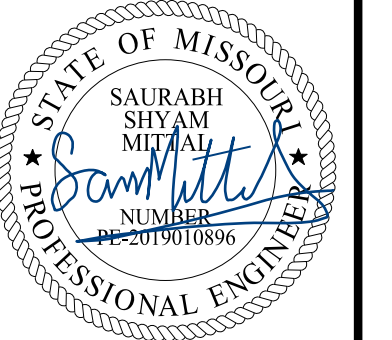
Notes:
Work this sheet with Sheets No. 11 & 12.
For details of Vertical Drain at End Bents, see Sheet No. 7.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2".
All U bars, Pr.-V bars, and #5-H309 bars shall be placed parallel to ϵ Roadway.
All bars shall be epoxy coated.
For details of HP pile splices and anchors, see Sheet No. 2.

DETAILS OF END BENT NO. 3

Designed: SSM
Detailed: CAB
Checked: TPL

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

Sheet No. 10 of 35



DATE PREPARED
3/14/2022

ROUTE	STATE
I-270	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
ST. LOUIS CITY

JOB NO.
J613020C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8998

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

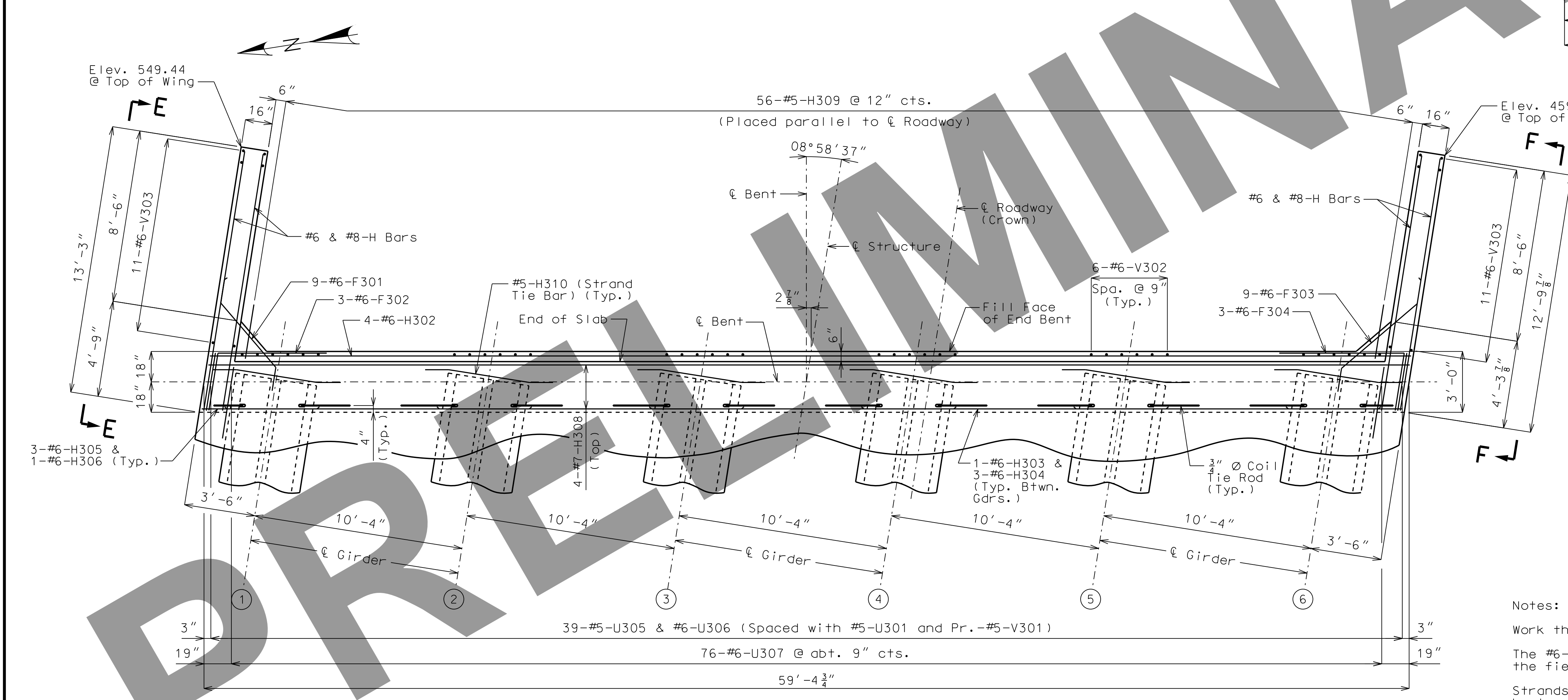
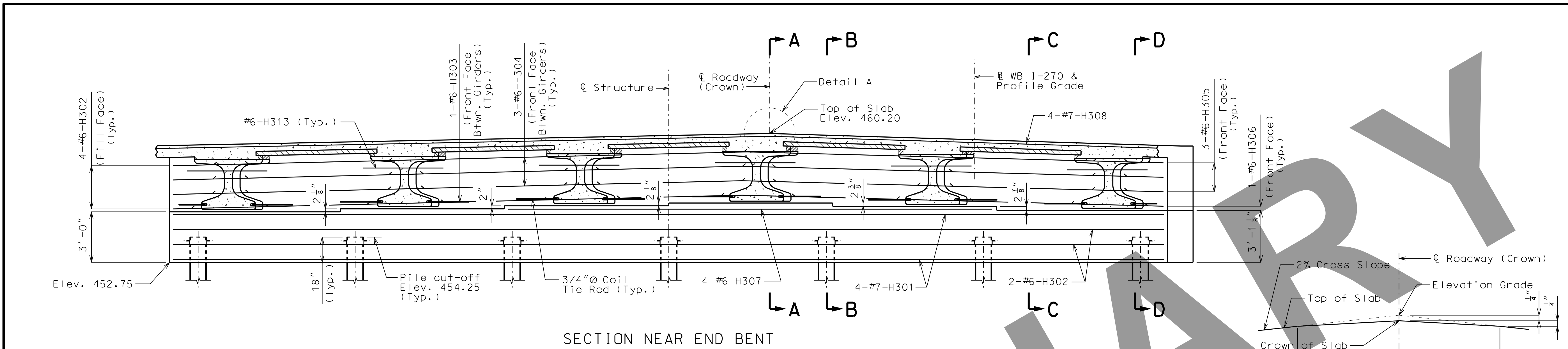
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I-270 AND RIVERVIEW
WB BRIDGE
DETAILS OF
END BENT NO. 3



DETAILS OF END BENT NO. 3

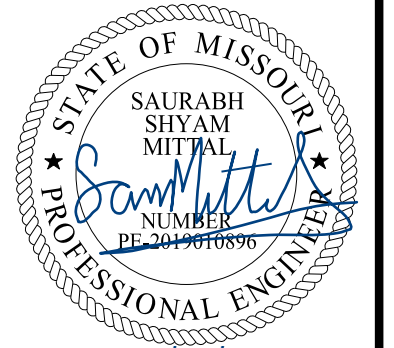
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 11 of 35

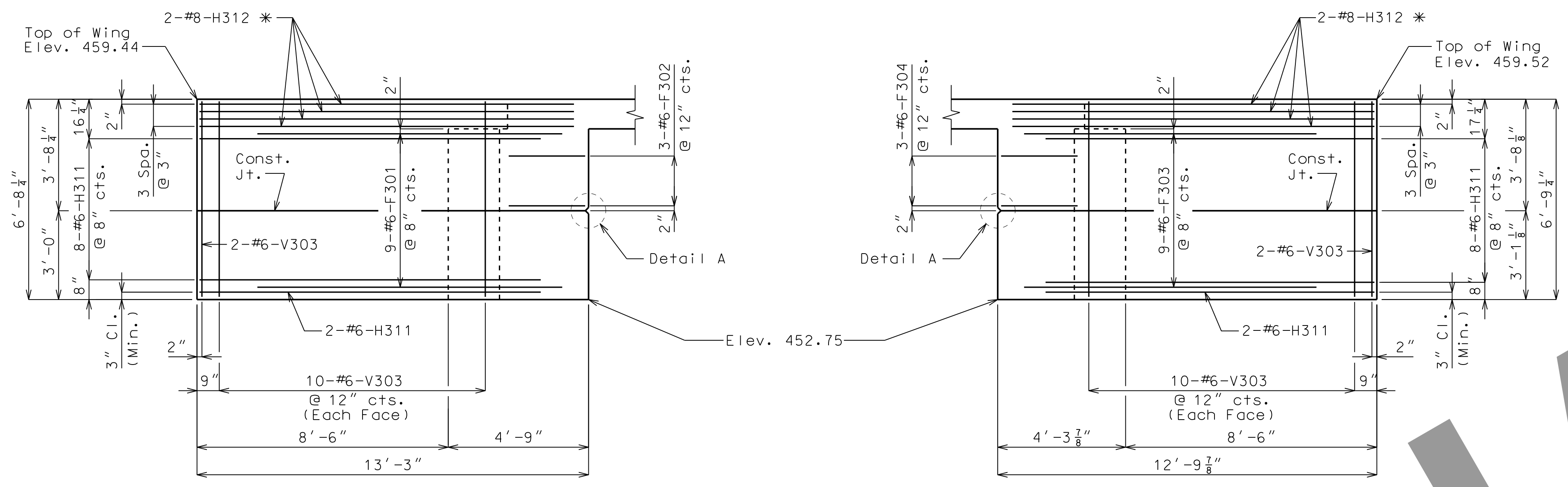
Designed: SSM
Detailed: CAB
Checked: TPL

Notes:

- Work this sheet with Sheets No. 10 & 12.
- The #6-F301 & F303 bars shall be bent in the field to clear beams.
- 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.
- For location of Coil Tie Rods and #5-H310 (Strand Tie Bars), see Sheets No. 13 & 14.
- All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
- All bars shall be epoxy coated.

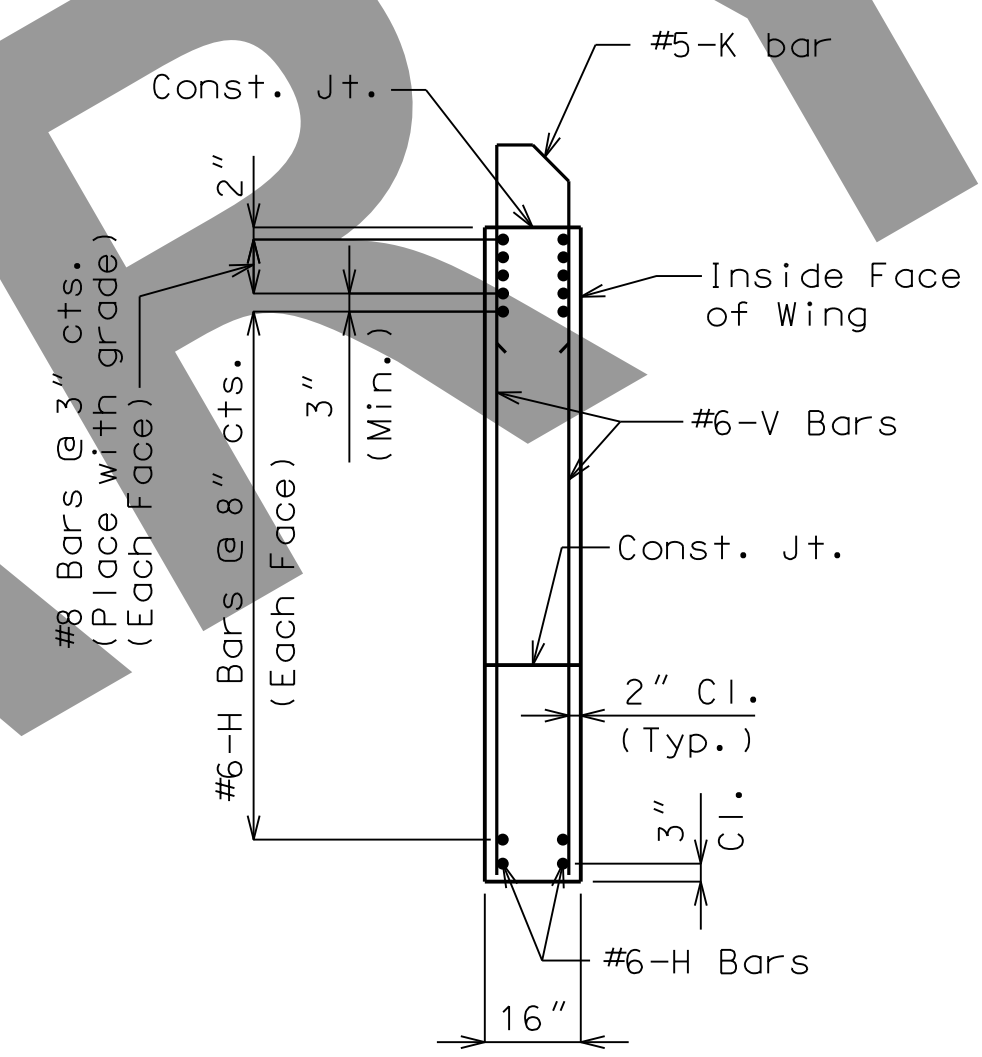


DATE PREPARED 3/14/2022	
ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 12
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	

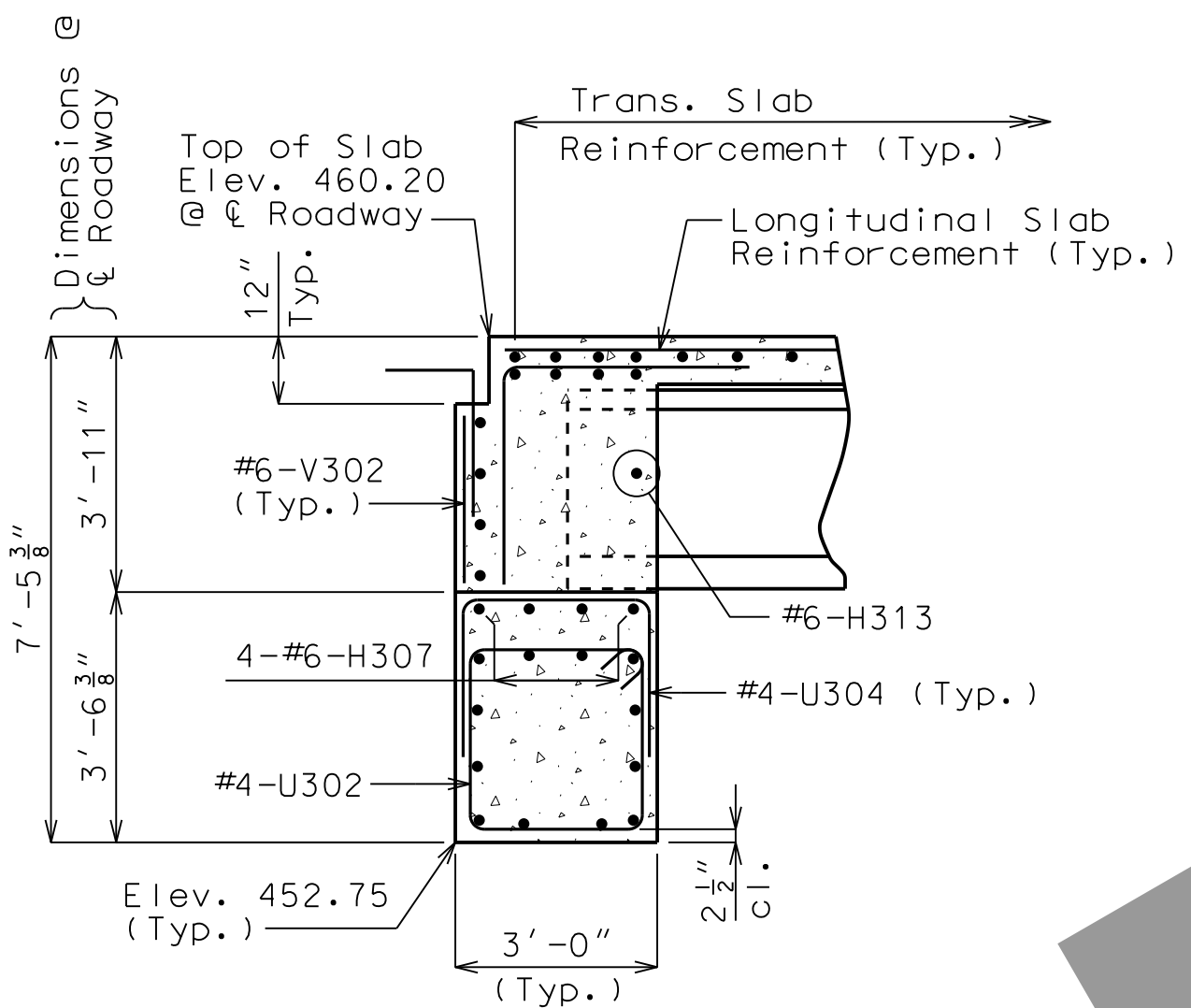


ELEVATION E-E

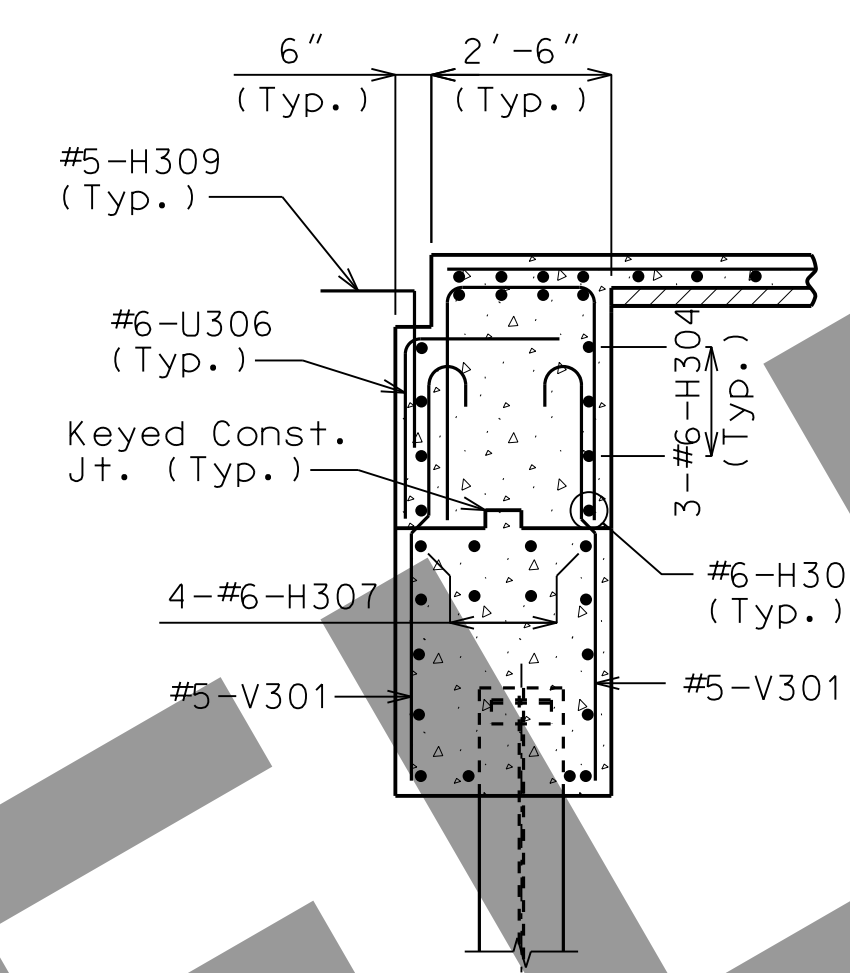
ELEVATION F-F



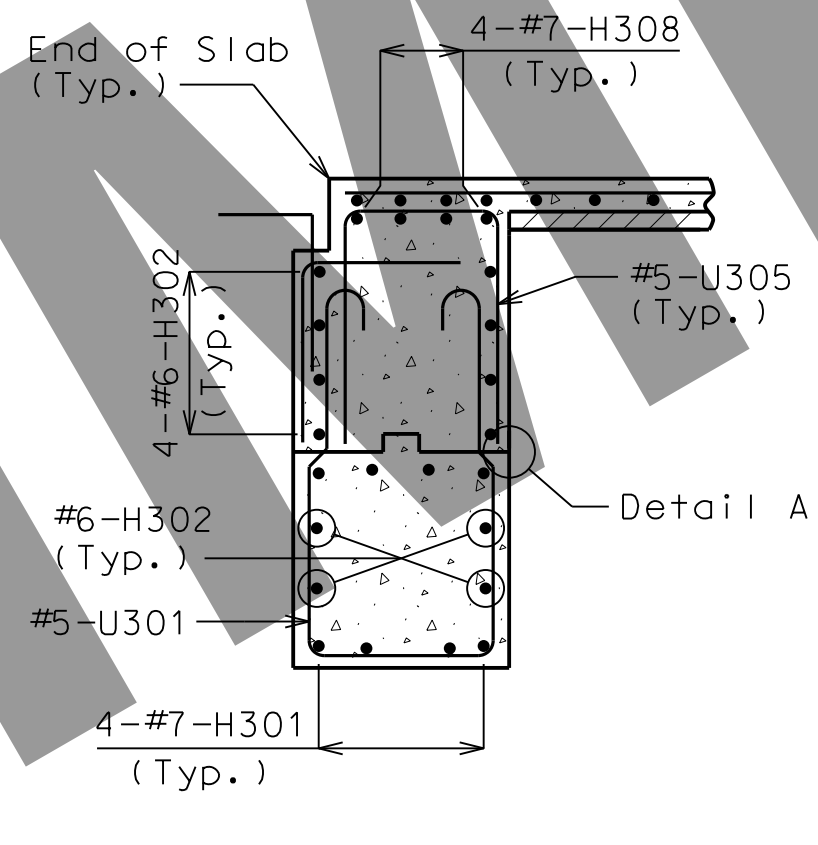
PART SECTION THRU WING



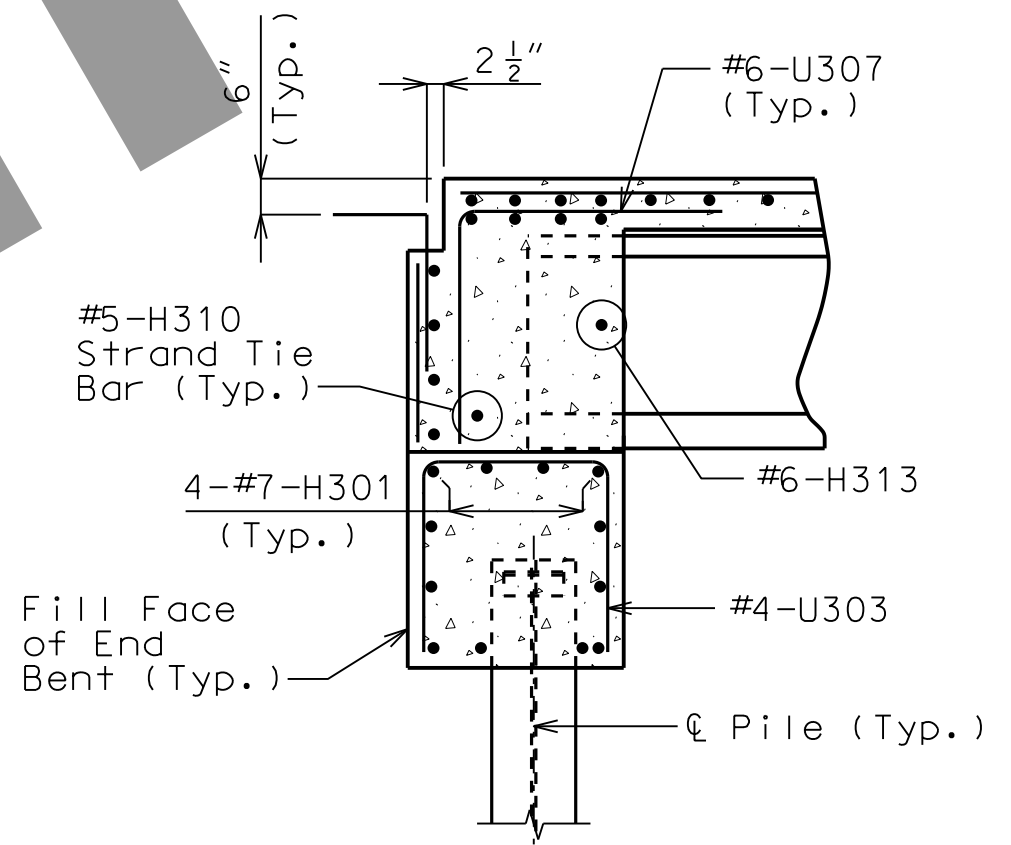
SECTION A-A



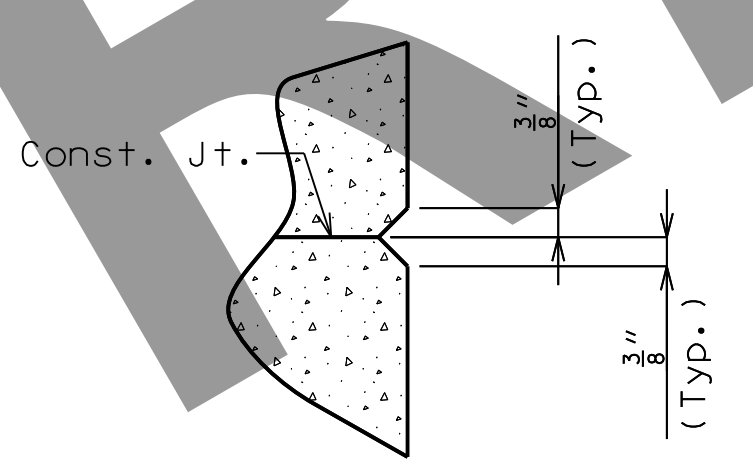
SECTION B-B



SECTION C-C



SECTION D-D



DETAIL A

Notes:
 Work this sheet with Sheets No. 10 and 11.
 For reinforcement of Barrier Curb at End Bents, see Sheet No. 22.
 For details of Approach Slab, see Sheet No. 23.

Item	Quantity
Galvanized Structural Steel Pile (12 in.)	linear foot 350
Pile Point Reinforcement	each 7
Class B Concrete (Substructure)	cu. yard 24.6
Pipe Pile Spacers	each 7

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

DETAILS OF END BENT NO. 3

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

Sheet No. 12 of 35

Designed: SSM
 Detailed: CAB
 Checked: TPL

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITAL
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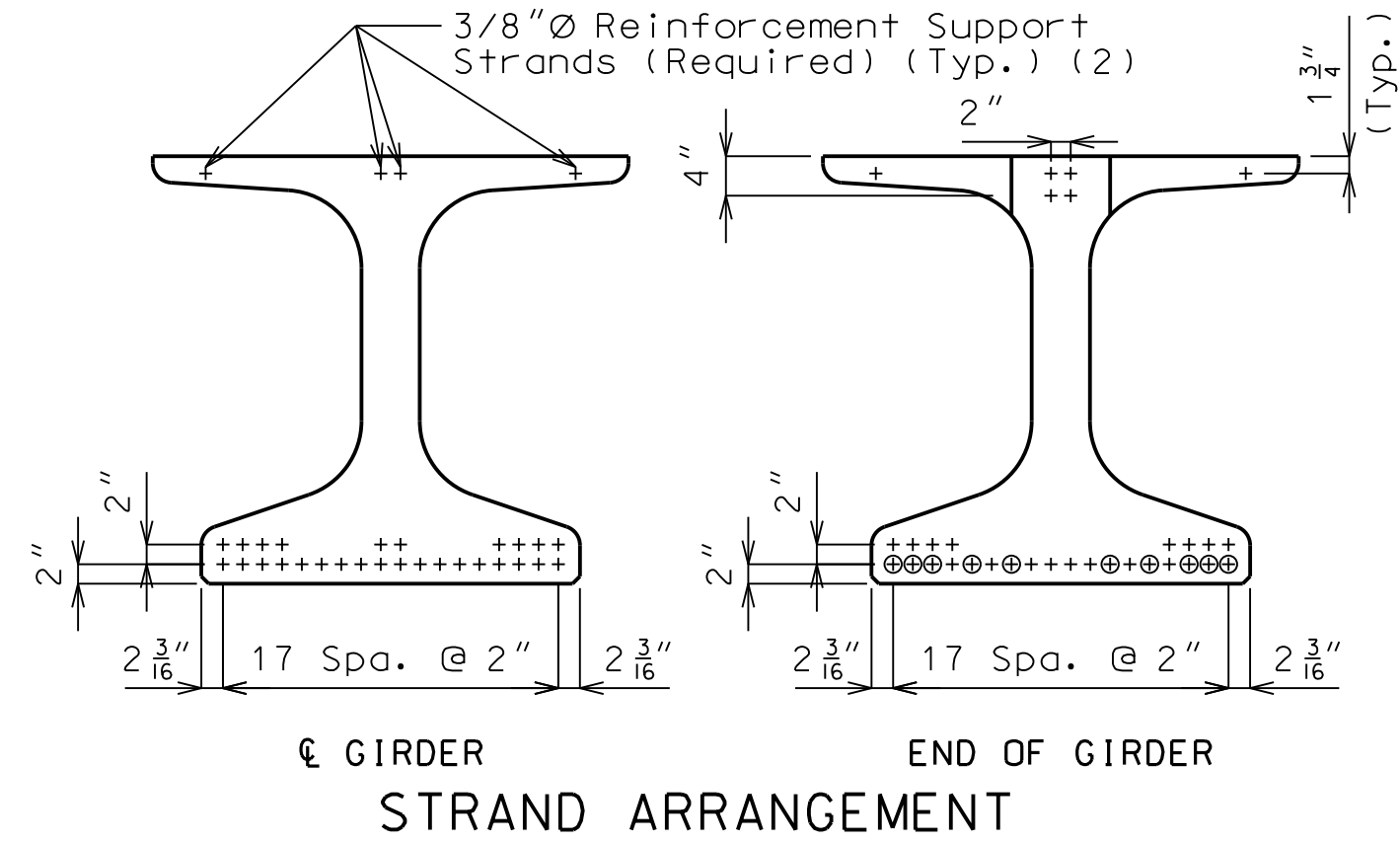
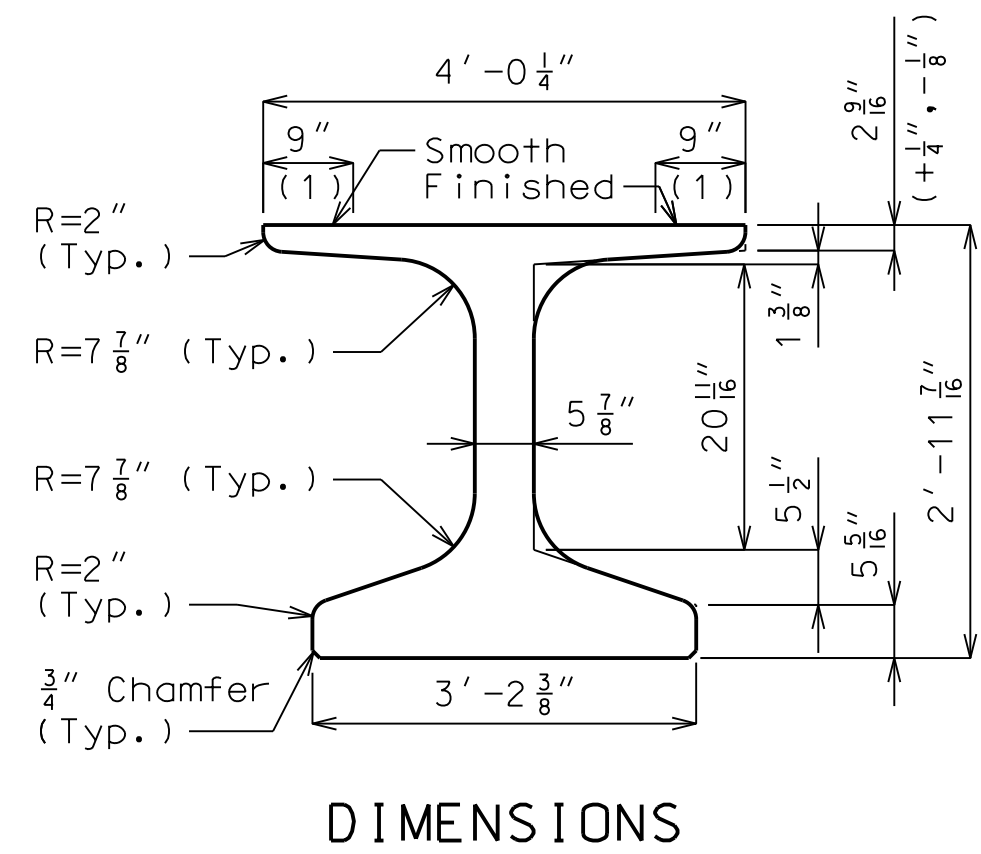
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 EXPIRATION DATE: DECEMBER 31, 2022

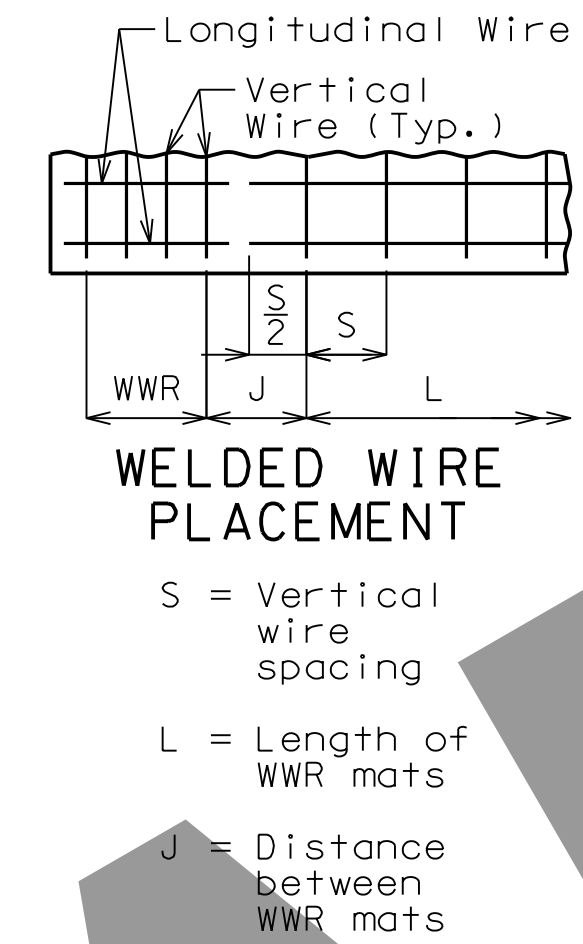
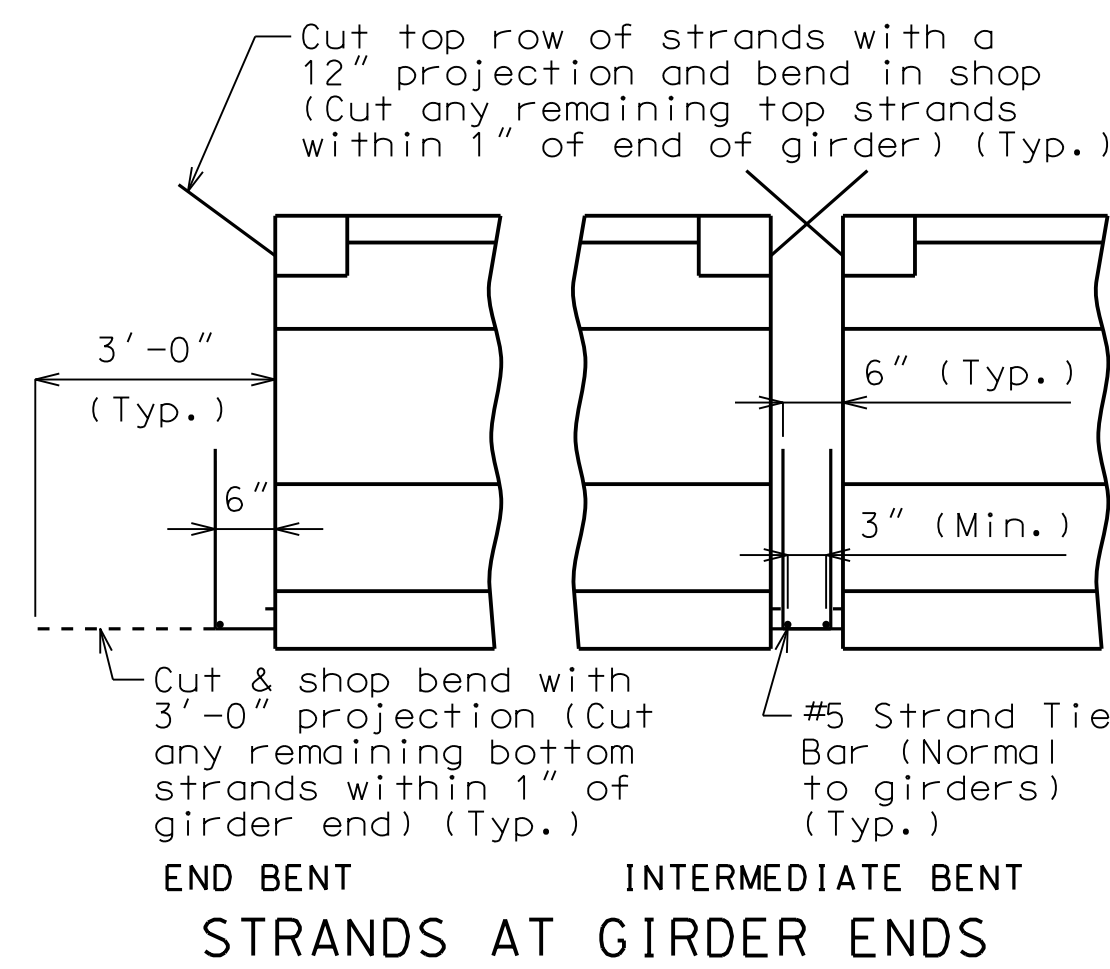
I-270 AND RIVERVIEW
 WB BRIDGE
 DETAILS OF END BENT NO. 3

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

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



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



Bill of Reinforcing Steel

Bars Each Girder						Bending Diagrams
No.	Size/Mark	Length	Shape			
90	3 G1	2'-10"	8			Shape 8 16" 16" 6"
2	4 G3	3'-10 1/2"	20			
2	4 G4	2'-3"	20			
2	4 G5	2'-8 1/2"	20			
2	4 G6	3'-10 1/2"	20			Shape 20 16" 16" 6"

Welded Wire Each Girder					
Mark Size	S	W	L	J	
WWR1	D31	4"	W12	5'-4"	5"
WWR2	D31	8"	W12	12'-0"	12"
WWR3	D31	12"	W12	14'-0"	--
WWR6	D31	2"	W12	16"	4"

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRS1 Manual of Standard Practice for Detailing Reinforced Concrete Structures. Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch. Minimum clearance to reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be Grade 60. WWR shall not be epoxy coated.

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

General Notes:

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

Use 28 1/2" ϕ Grade 270 strands with an initial prestress force of 867 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, holes for #6 bar, top flange blockout, application of bond breaker.

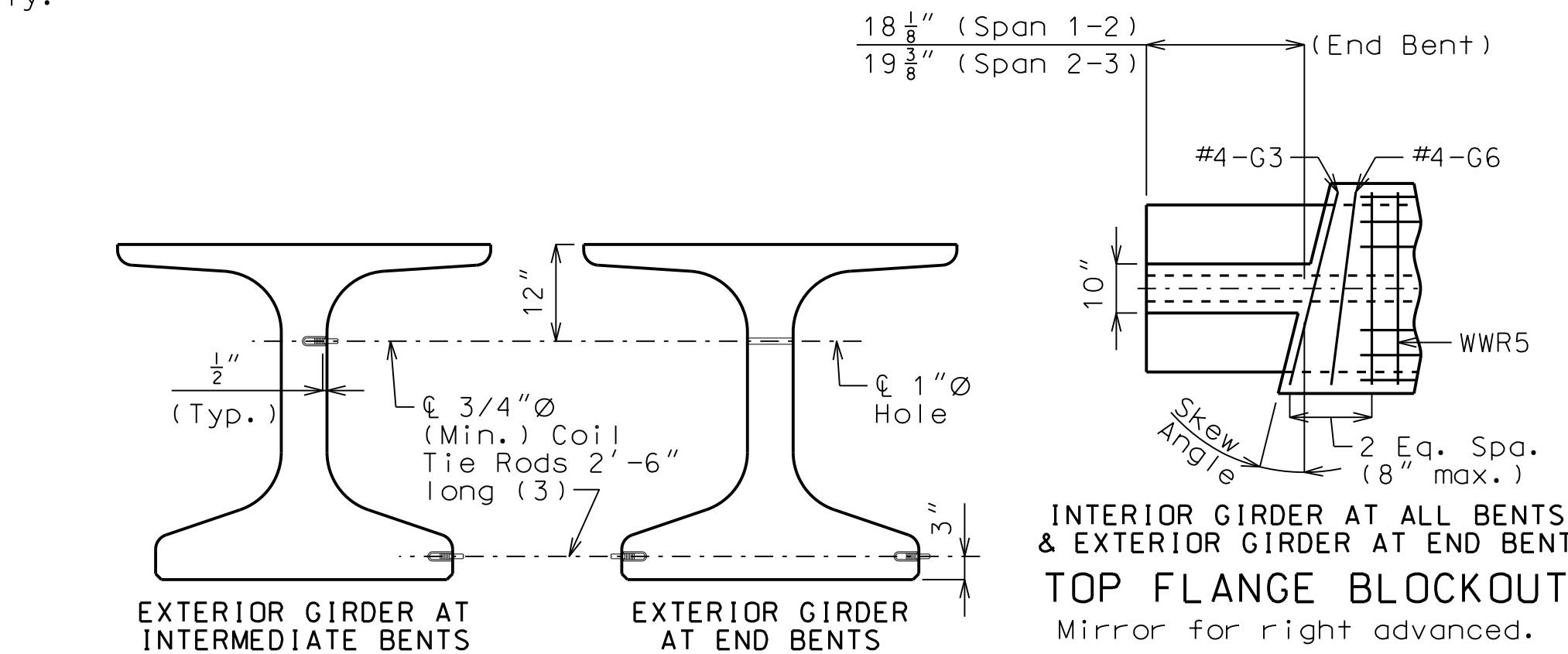
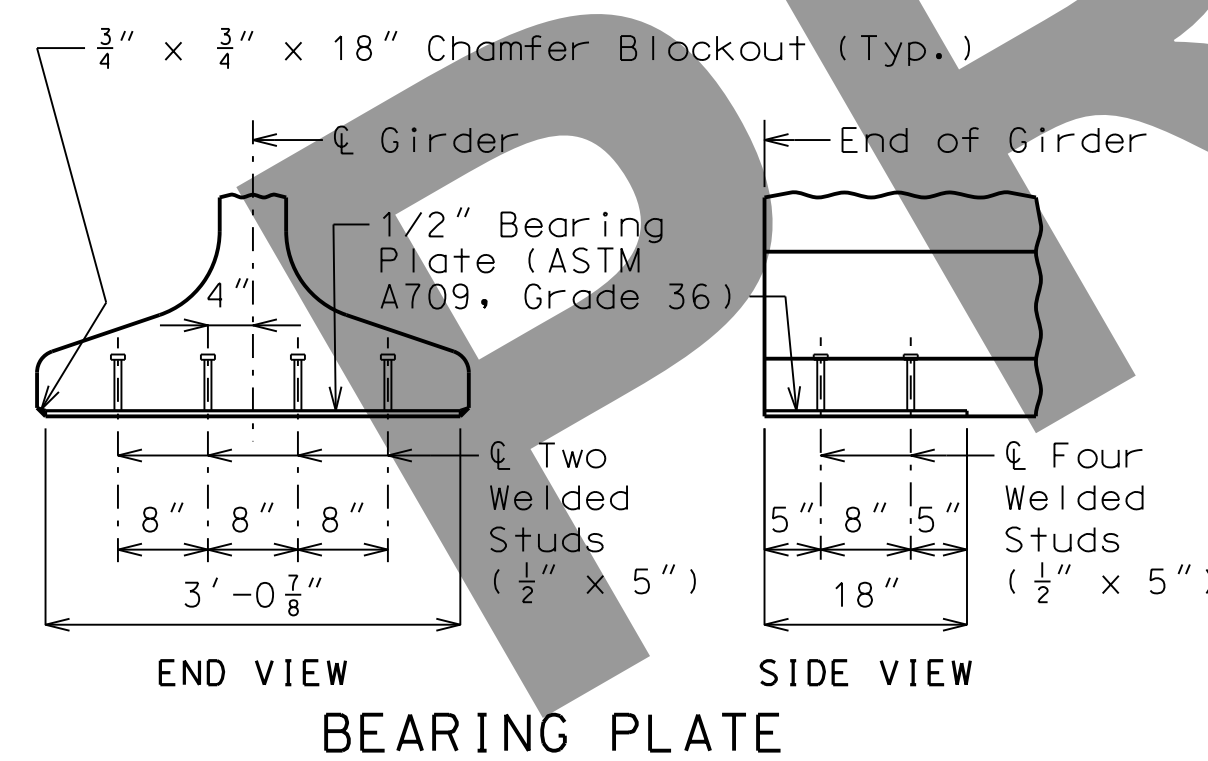
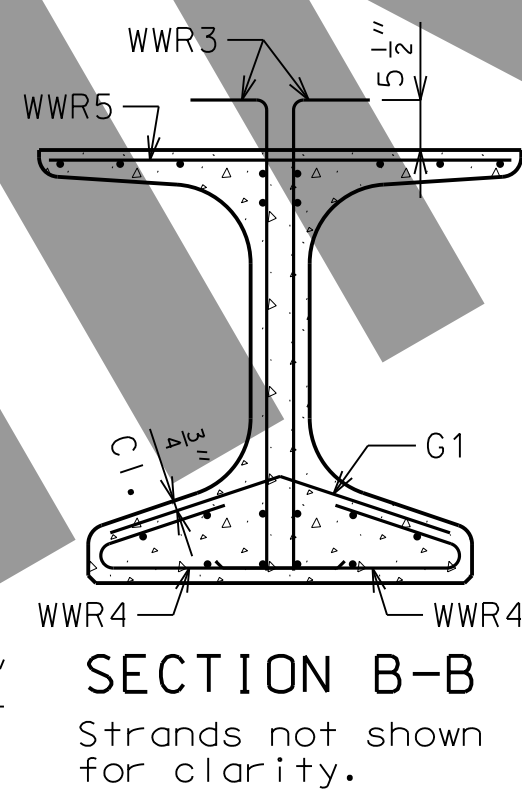
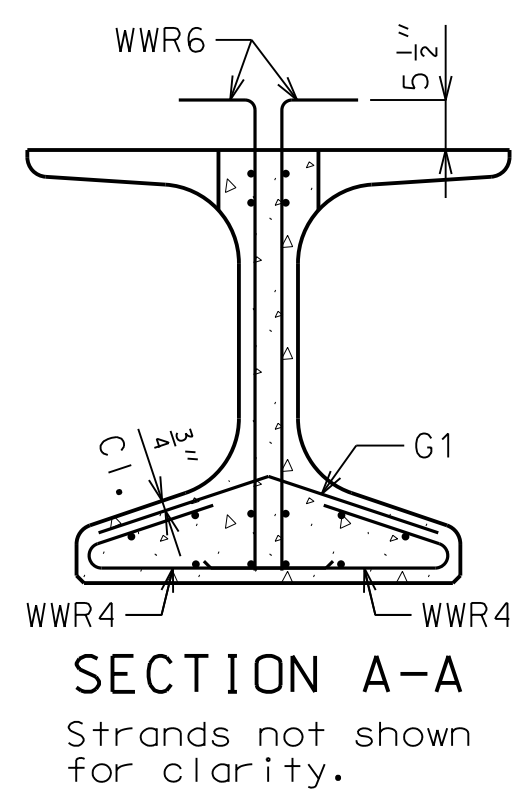
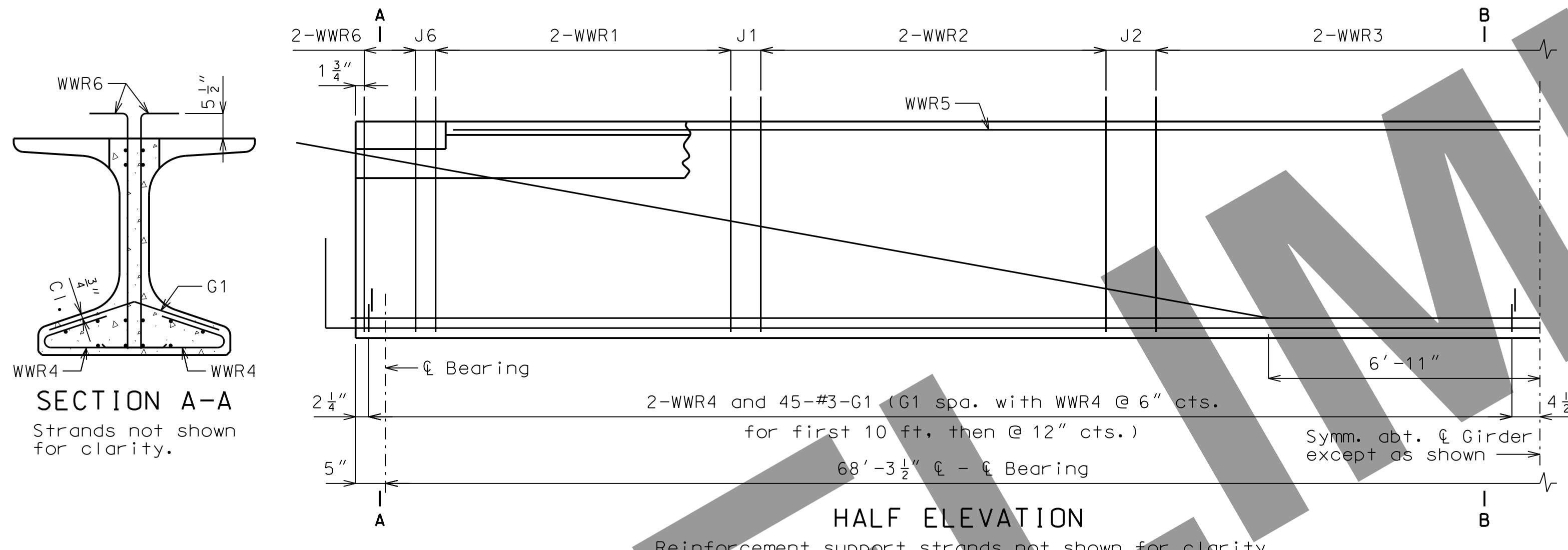
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 17.

For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. 5 & 11.

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.

For location of sign support bracket attachment holes, see Sheet No. 35.



(3) 23" at exterior face of exterior girders at end bents

Cast 1" ϕ hole horizontally in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.

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

DATE PREPARED: 3/14/2022
ROUTE: I-270 STATE: MO
DISTRICT: BR SHEET NO.: 13
COUNTY: ST. LOUIS CITY
JOB NO.: J613020C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8998

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

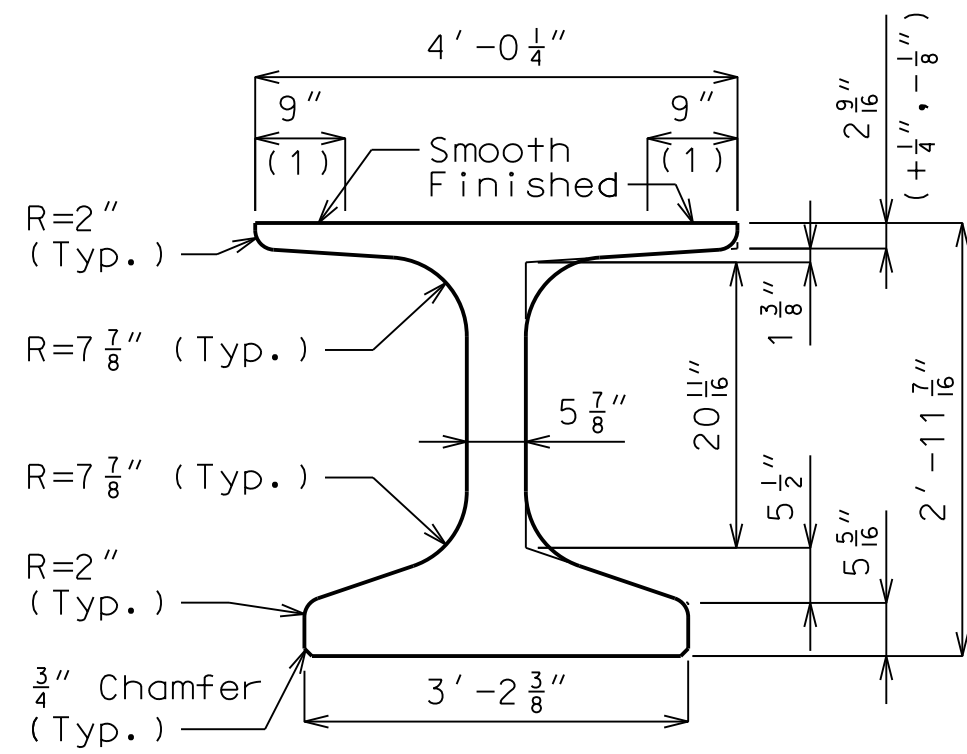
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 CERTIFICATE OF AUTHORITY: 000159
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I-270 AND RIVERVIEW WB BRIDGE NU-GIRDERS SPANS (1-2) AND (2-3)

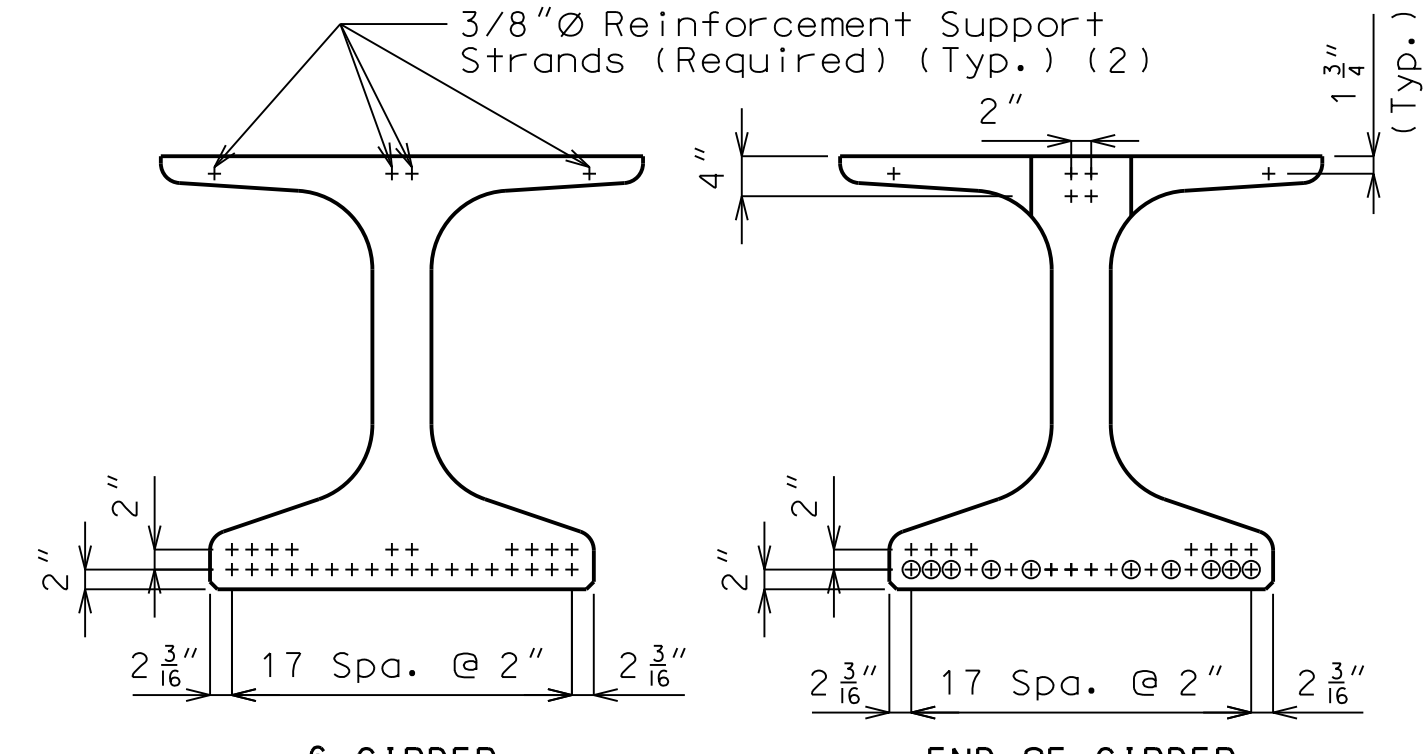
Designed: UVK
Detailed: CAB
Checked: MAB

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

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

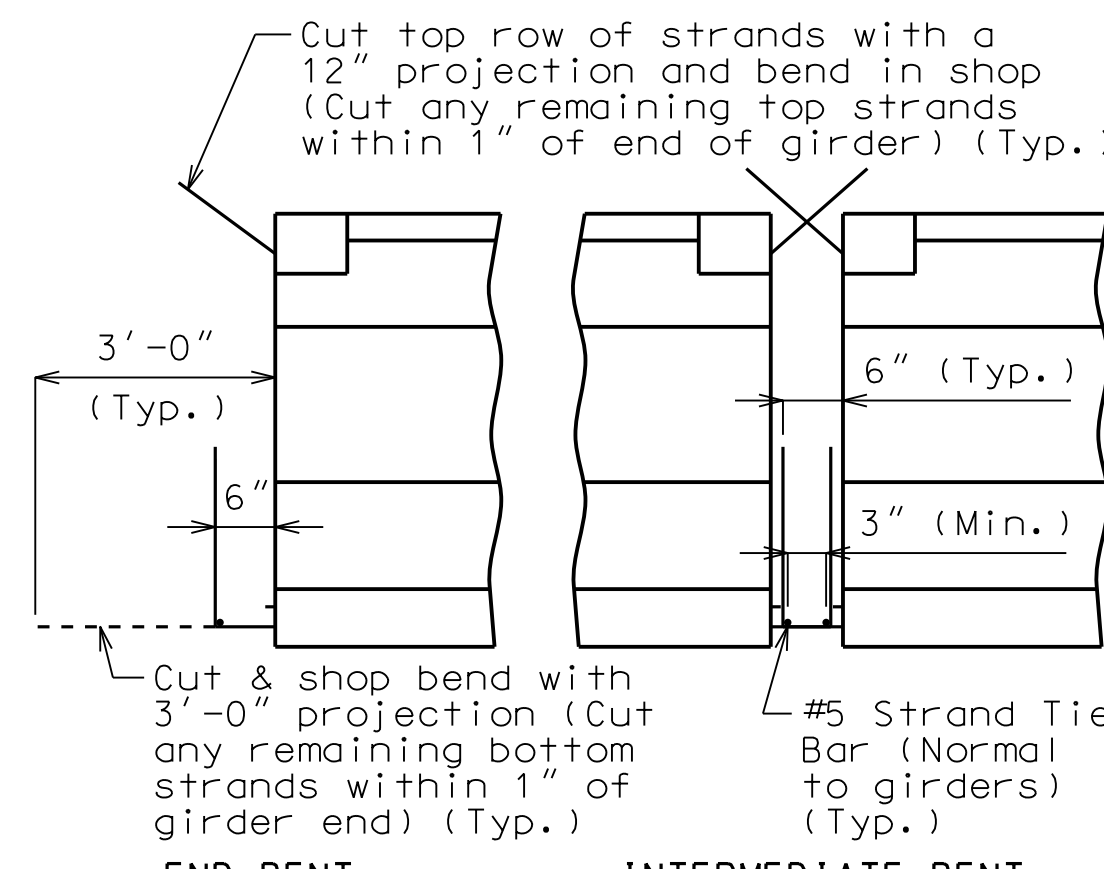


DIMENSIONS

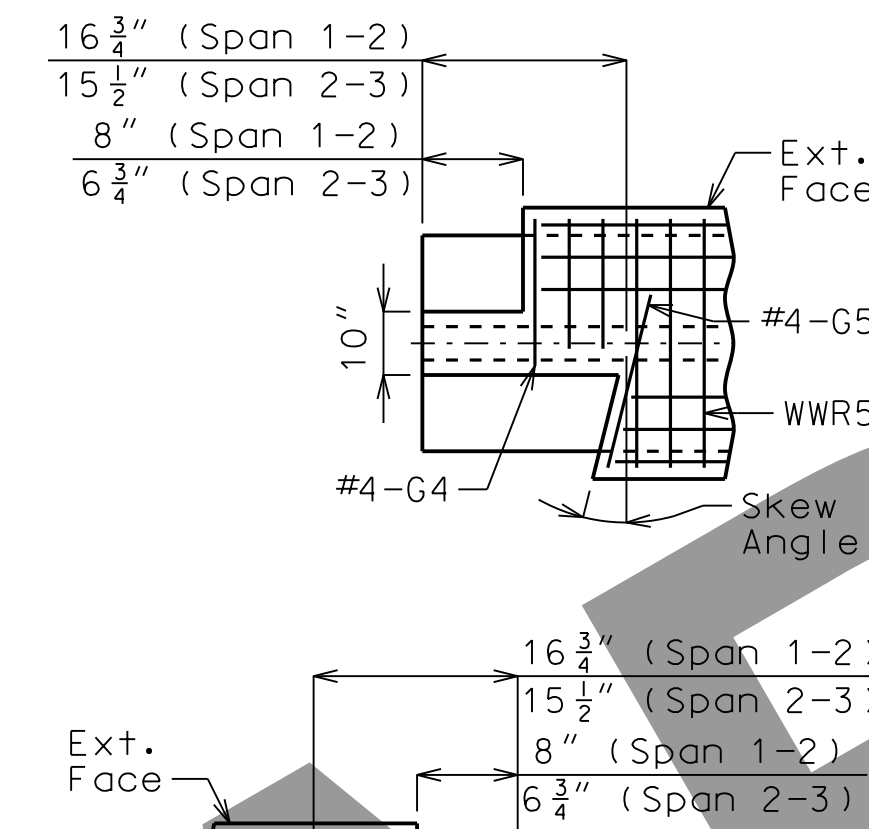


STRAND ARRANGEMENT

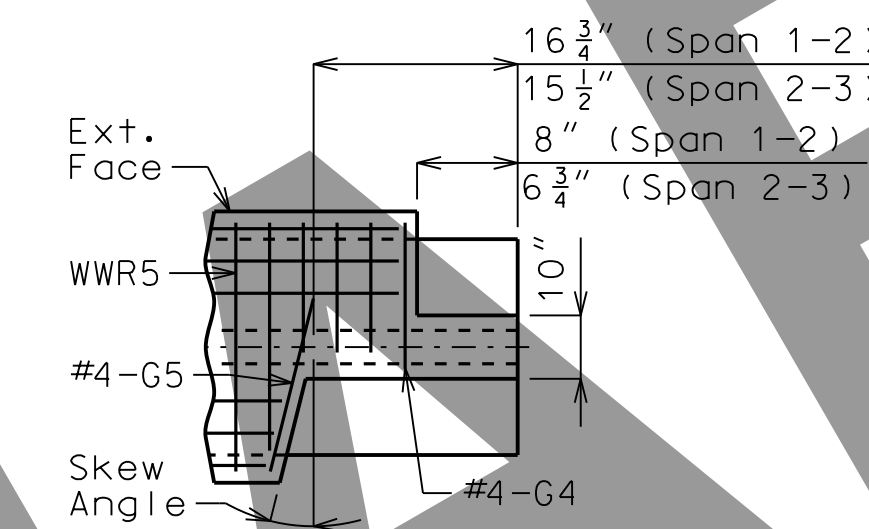
+ Indicates prestressing strand. o Indicates cut & shop bend with 3'-0" projection.



STRANDS AT GIRDER ENDS



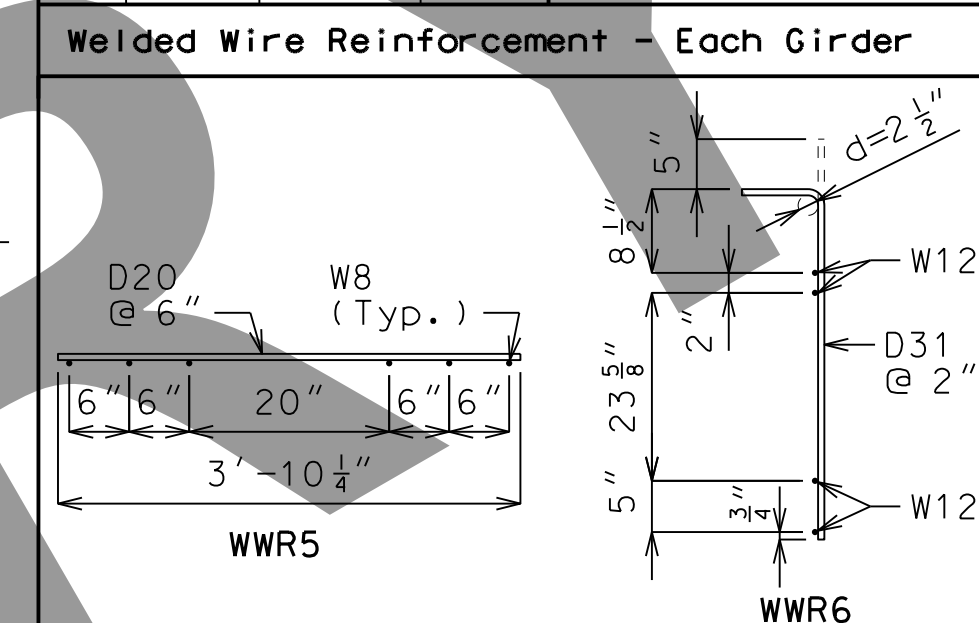
LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT
TOP FLANGE BLOCKOUT
Mirror for right advanced.

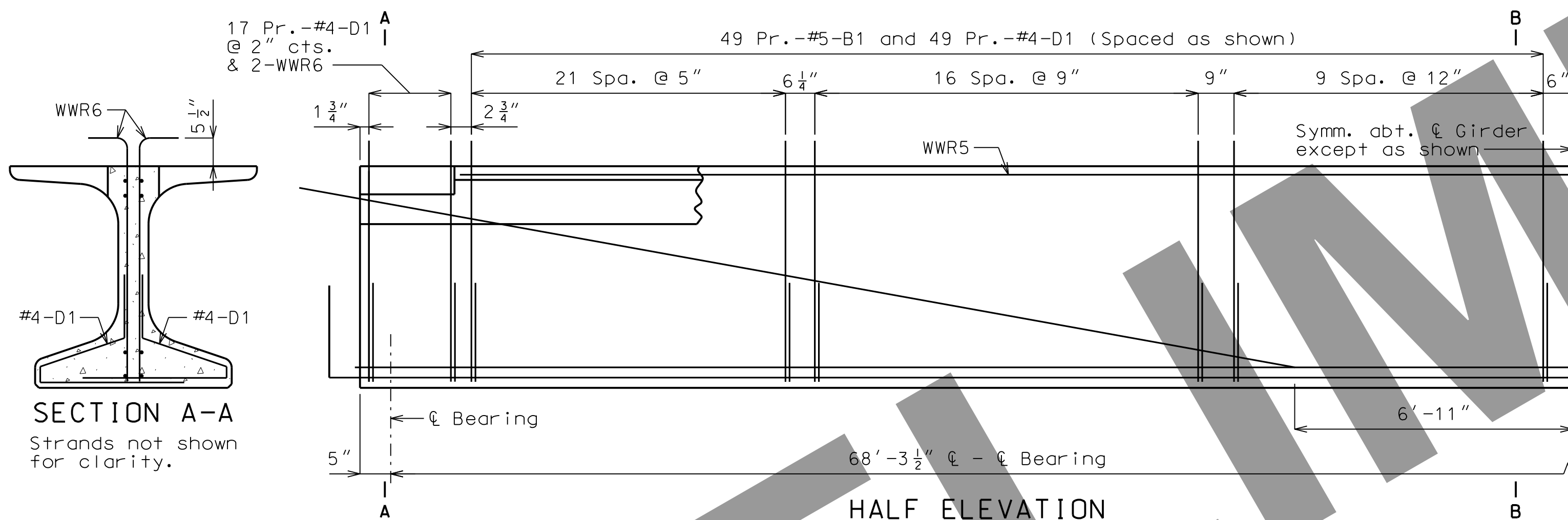
Bill of Reinforcing Steel - Each Girder

No.	Size/Mark	Length	Shape	Bending Diagrams
196	5 B1	4'-4"	11	Shape 20 Shape 9 Shape 11
264	4 D1	4'-0"	9	
2	4 G3	3'-10 7/8"	20	
2	4 G4	2'-3"	20	
2	4 G5	2'-8 1/2"	20	
2	4 G6	3'-10 1/2"	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".
All bar reinforcement shall be Grade 60.
The two D1 bars may be furnished as one bar at the fabricator's option.
All B1 bars shall be epoxy coated.
G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:
Concrete for prestressed girders shall be Class A-1 with $f'c = 8000$ psi and $f'ci = 6500$ psi.
Use 28 1/2" \bar{c} Grade 270 strands with an initial prestress force of 867 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, holes for #6 bar, top flange blockout, application of bond breaker.
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.
For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. 5 & 11.
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.
For location of sign support bracket attachment holes see Sheet No. 35.

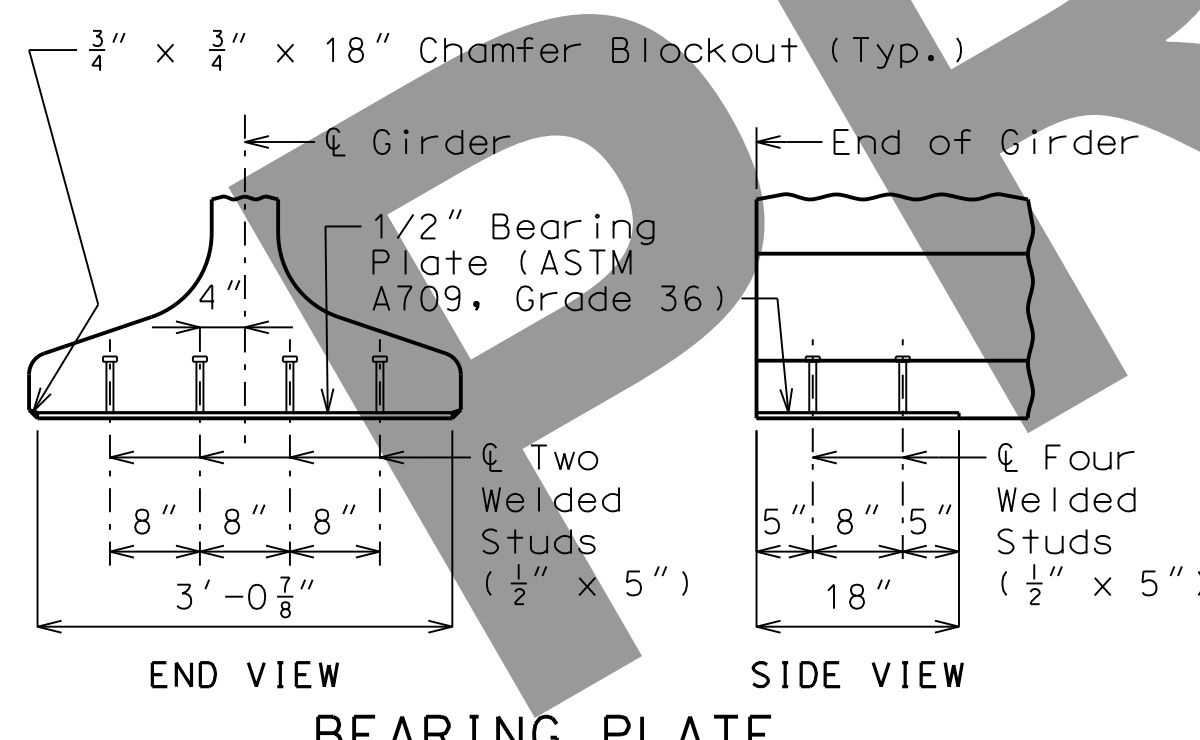


HALF ELEVATION

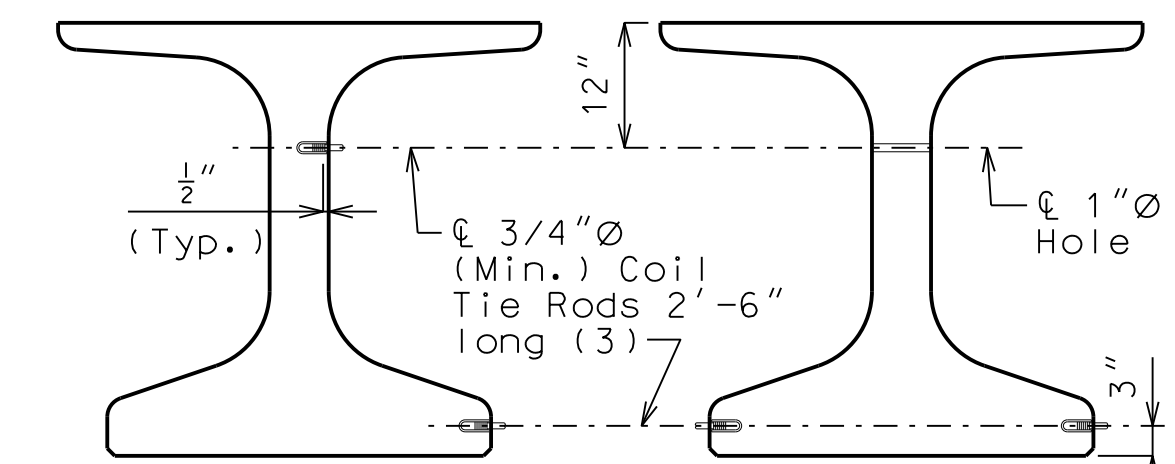
Reinforcement support strands not shown for clarity.

SECTION A-A
Strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.



BEARING PLATE



COIL TIES

(3) 23" at exterior face of exterior girders at end bents
Cast 1" \bar{c} hole horizontally in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.

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

Note: This drawing is not to scale. Follow dimensions. Sheet No. 14 of 35

Designed: UVK
Detailed: CAB
Checked: MAB

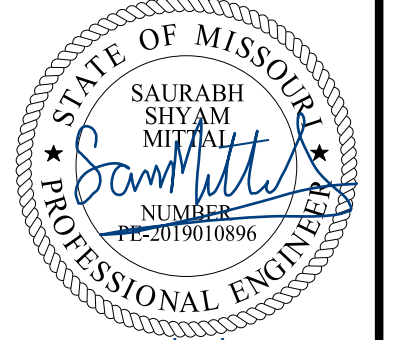
STATE OF MISSOURI
SAURABH SHYAM MITTAL
Professional Engineer
03/16/22
DATE PREPARED
3/14/2022

ROUTE I-270 STATE MO
DISTRICT BR SHEET NO. 14
COUNTY ST. LOUIS CITY
JOB NO. J613020C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8998

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

HORNER SHIFFRIN
401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103
314-591-4324 FAX 314-591-8986
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CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE NU-GIRDERS (ALT. REINF.) SPANS (1-2) AND (2-3)



03/16/22

DATE PREPARED
3/14/2022
ROUTE I-270 STATE MO
DISTRICT BR SHEET NO. 15
COUNTY ST. LOUIS CITY
JOB NO. J613020C
CONTRACT ID.

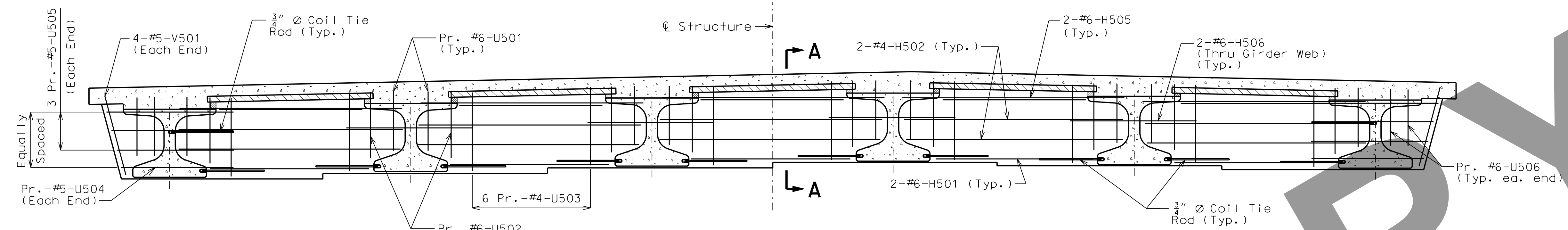
PROJECT NO.
BRIDGE NO. A8998

DATE	DESCRIPTION

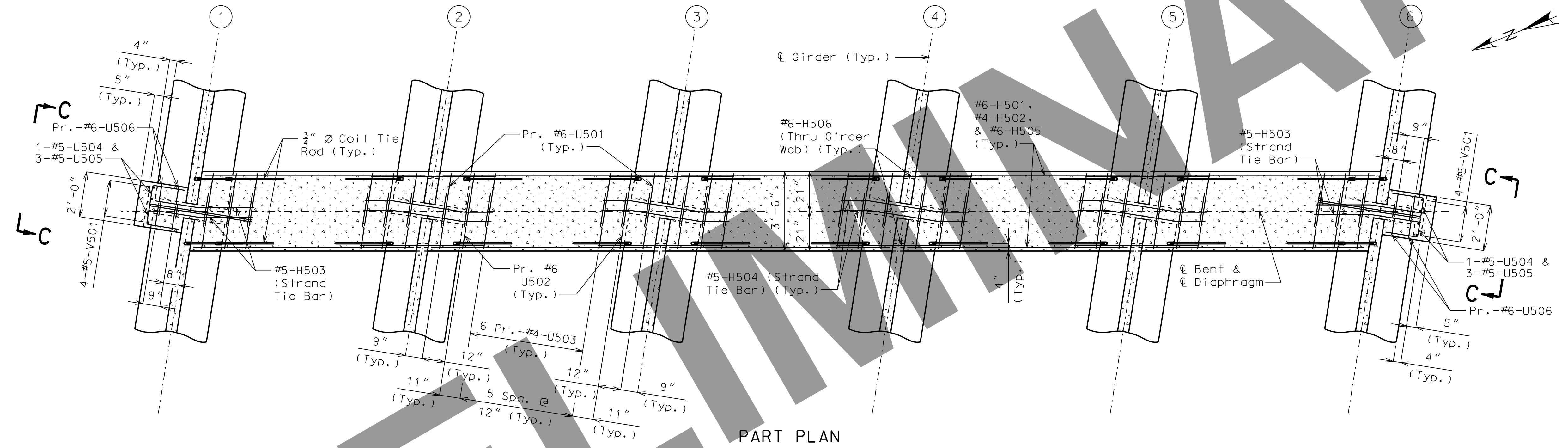
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
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 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

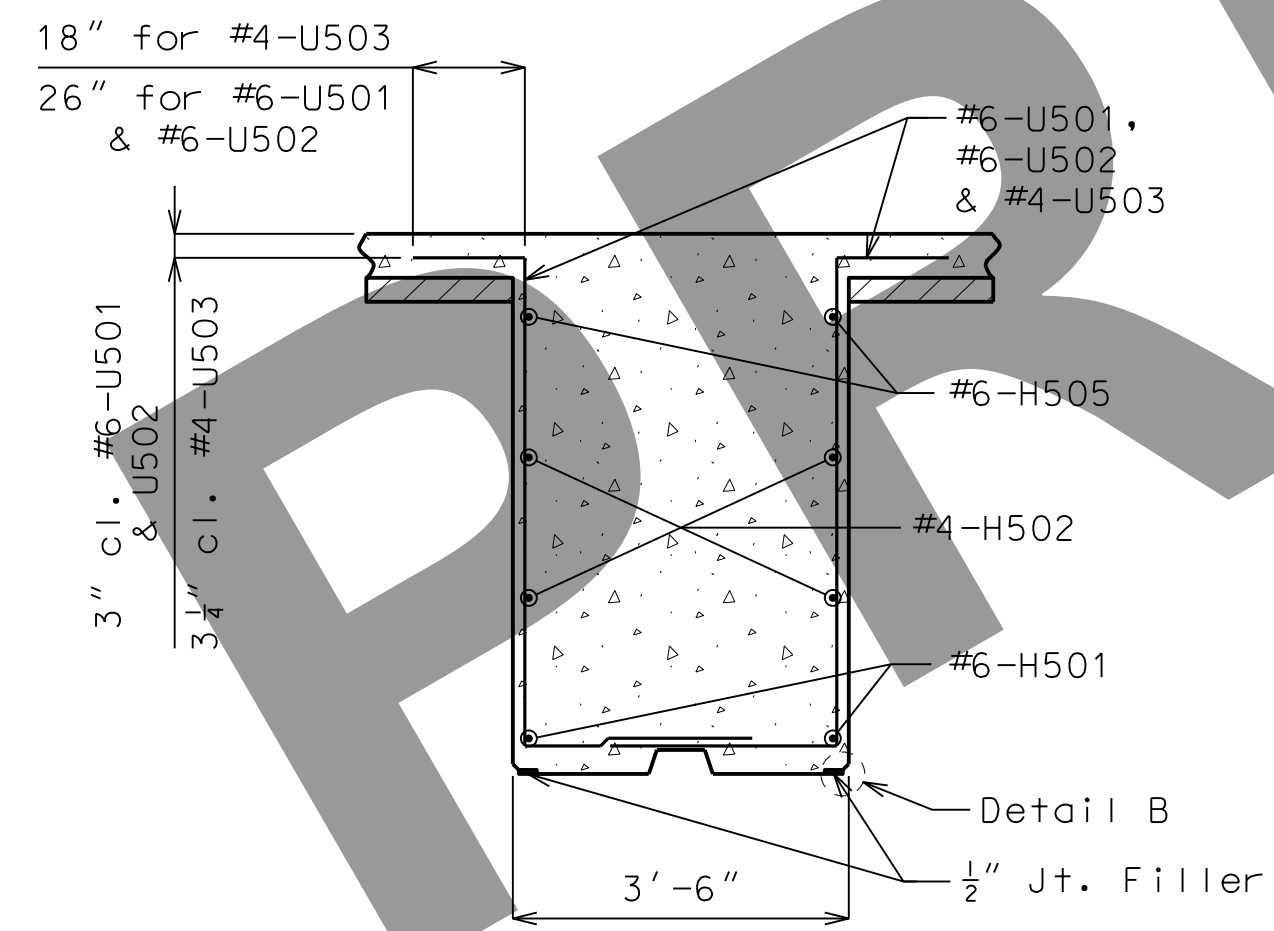
I-270 AND RIVERVIEW WB BRIDGE DETAILS OF DIAPHRAGM AT INT. BENT NO. 2



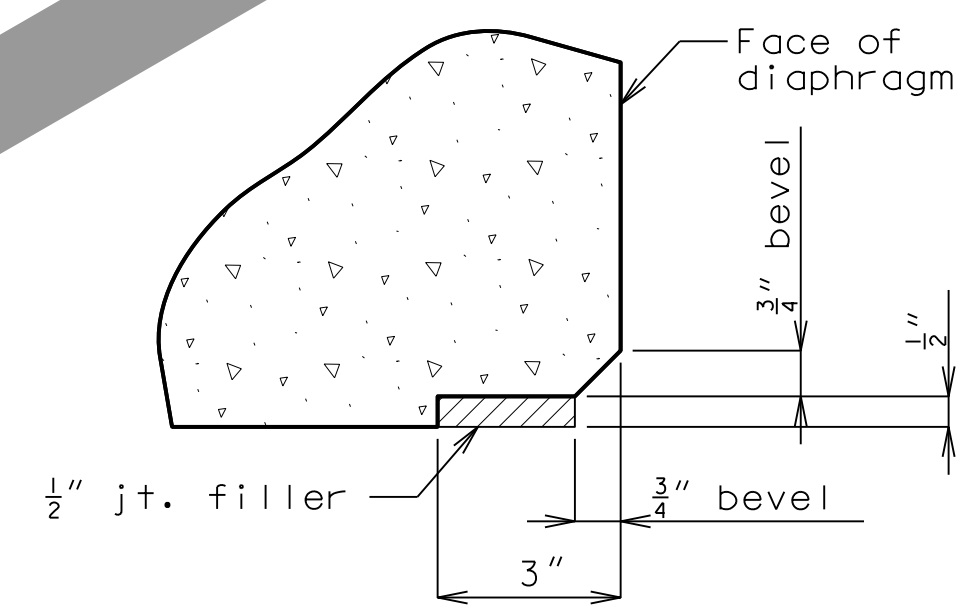
SECTION NEAR INTERMEDIATE BENT
(Normal to Girders)



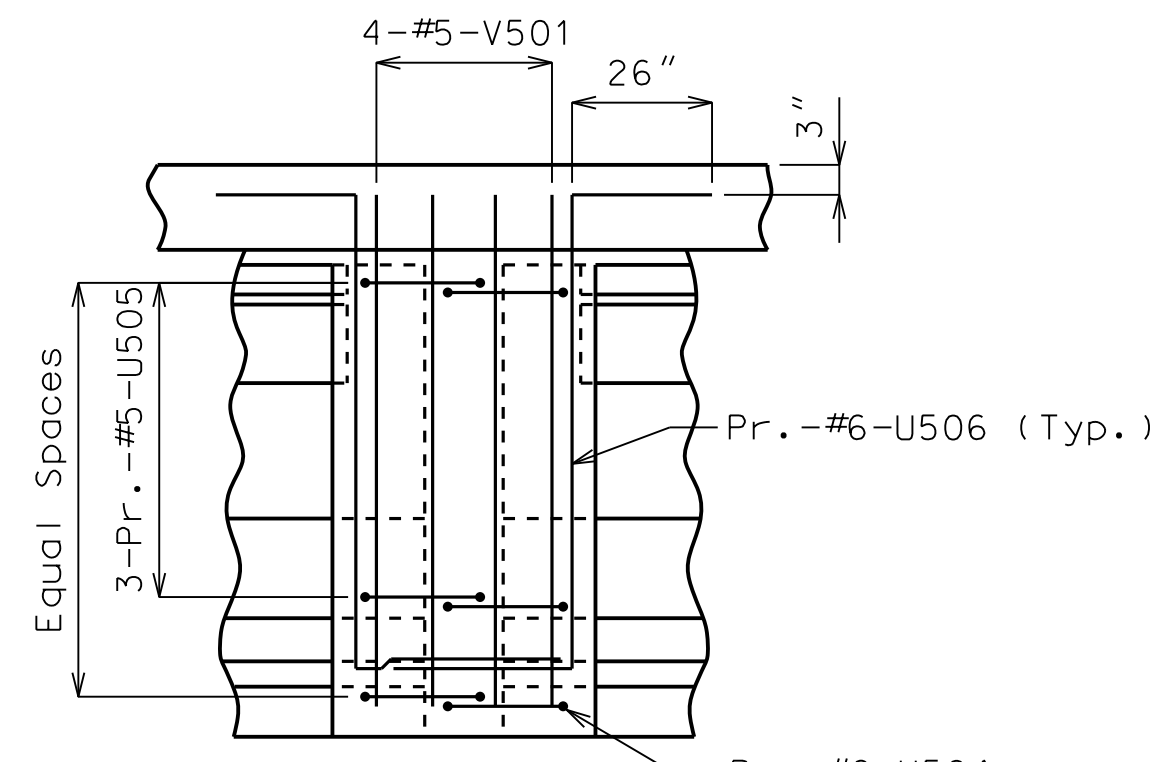
PART PLAN



SECTION A-A



DETAIL B



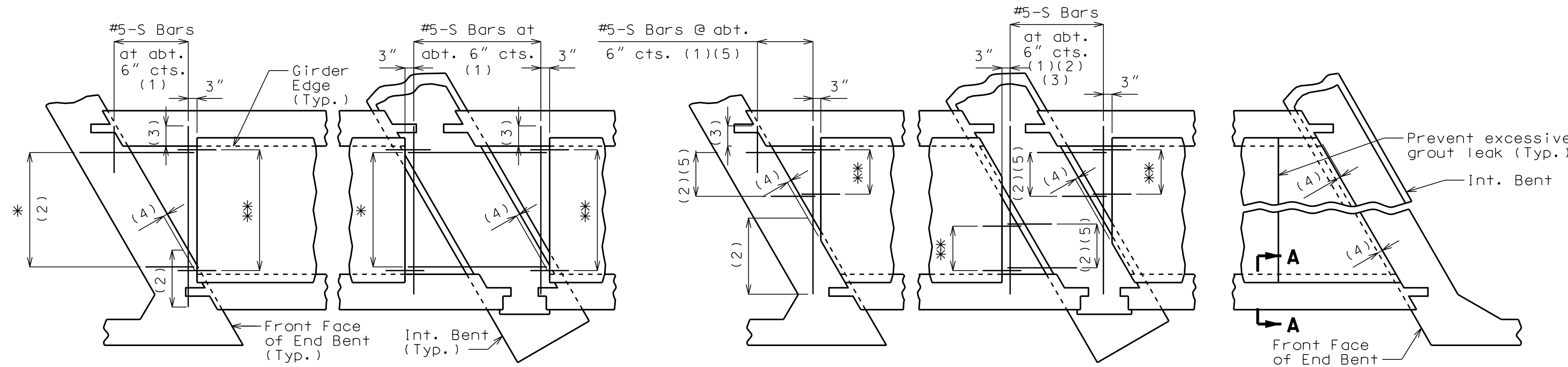
SECTION C-C

Notes:
 Diaphragms at Intermediate Bents shall be built vertical.
 For locations of strand tie bars and coil tie bars, see Sheets No. 13 & 14.
 All U-bars in diaphragms are to be placed parallel to Girders.
 All reinforcing bars in Intermediate Bent Diaphragm shall be epoxy coated.

DETAILS OF DIAPHRAGM AT INT. BENT NO. 2

Note: This drawing is not to scale. Follow dimensions. Sheet No. 15 of 35

Designed: UVK
 Detailed: CAB
 Checked: TPL



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.

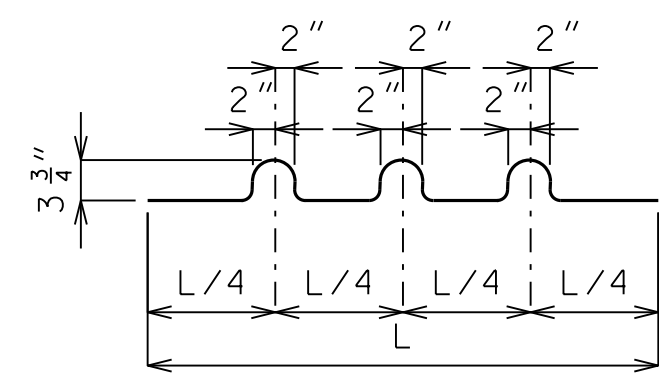
The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition 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.

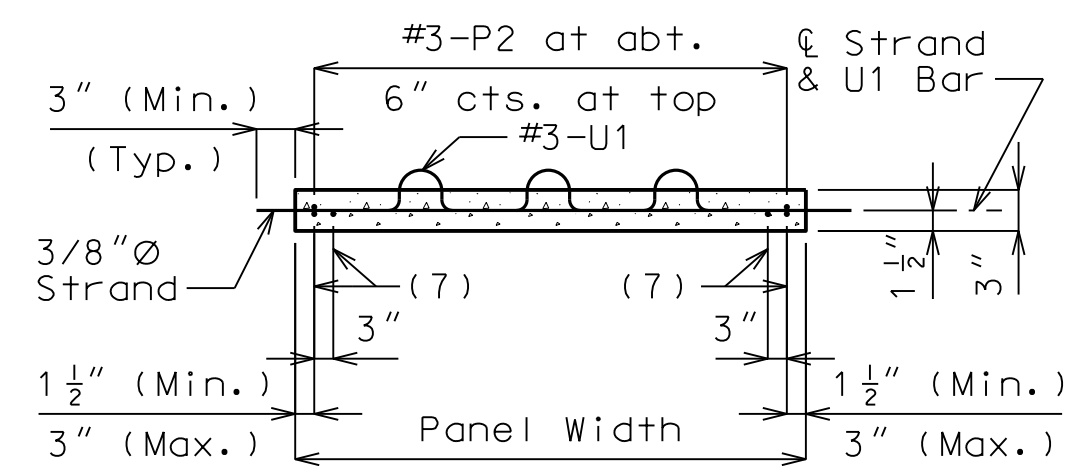
Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

**SQUARED END PANELS OR TRUNCATED END PANELS
PLAN SHOWING PANELS PLACEMENT**

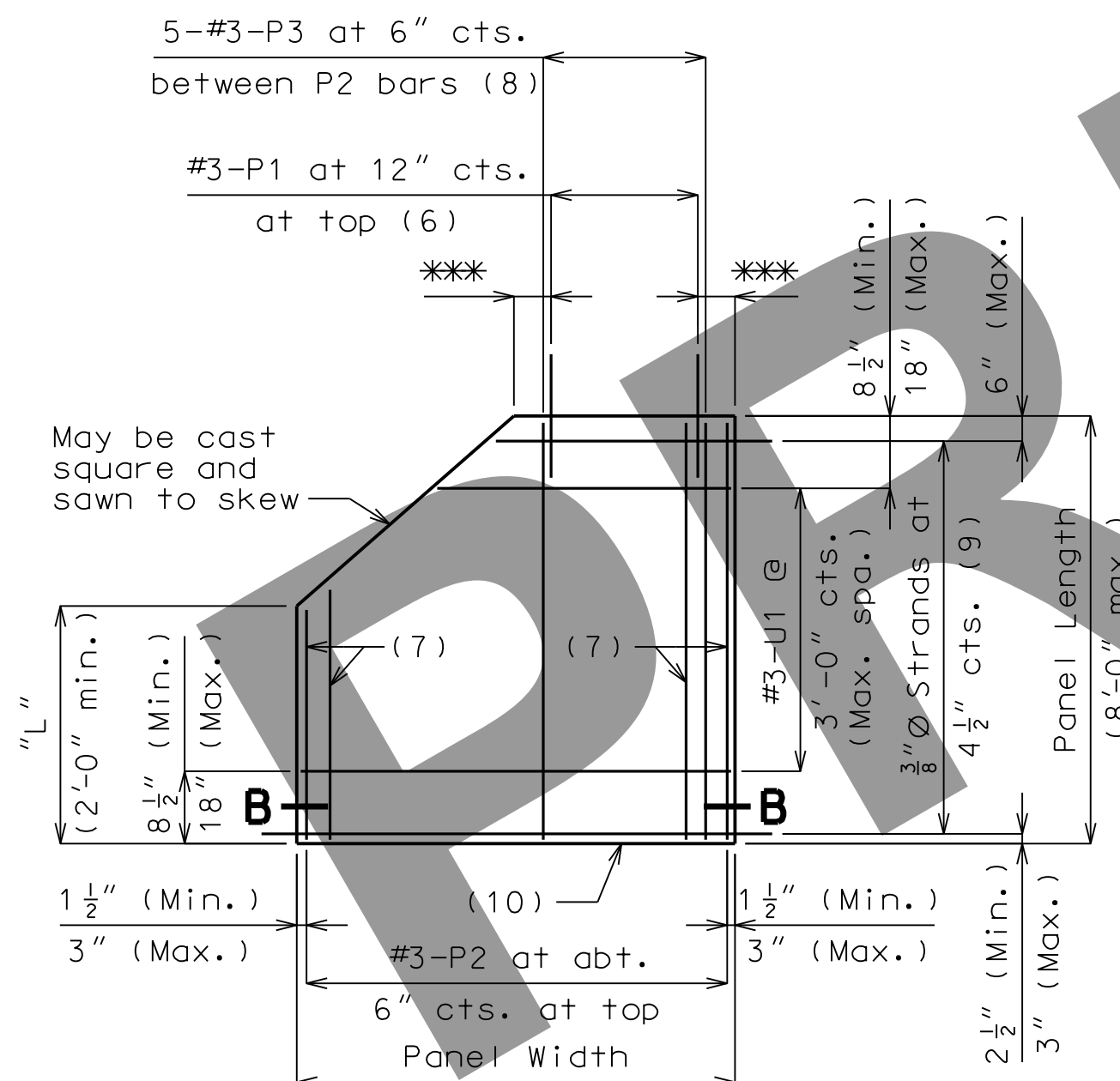
* #5-S Bars at abt. 9" cts. (1)
** #3-P1 at 12" cts. (End panels only)



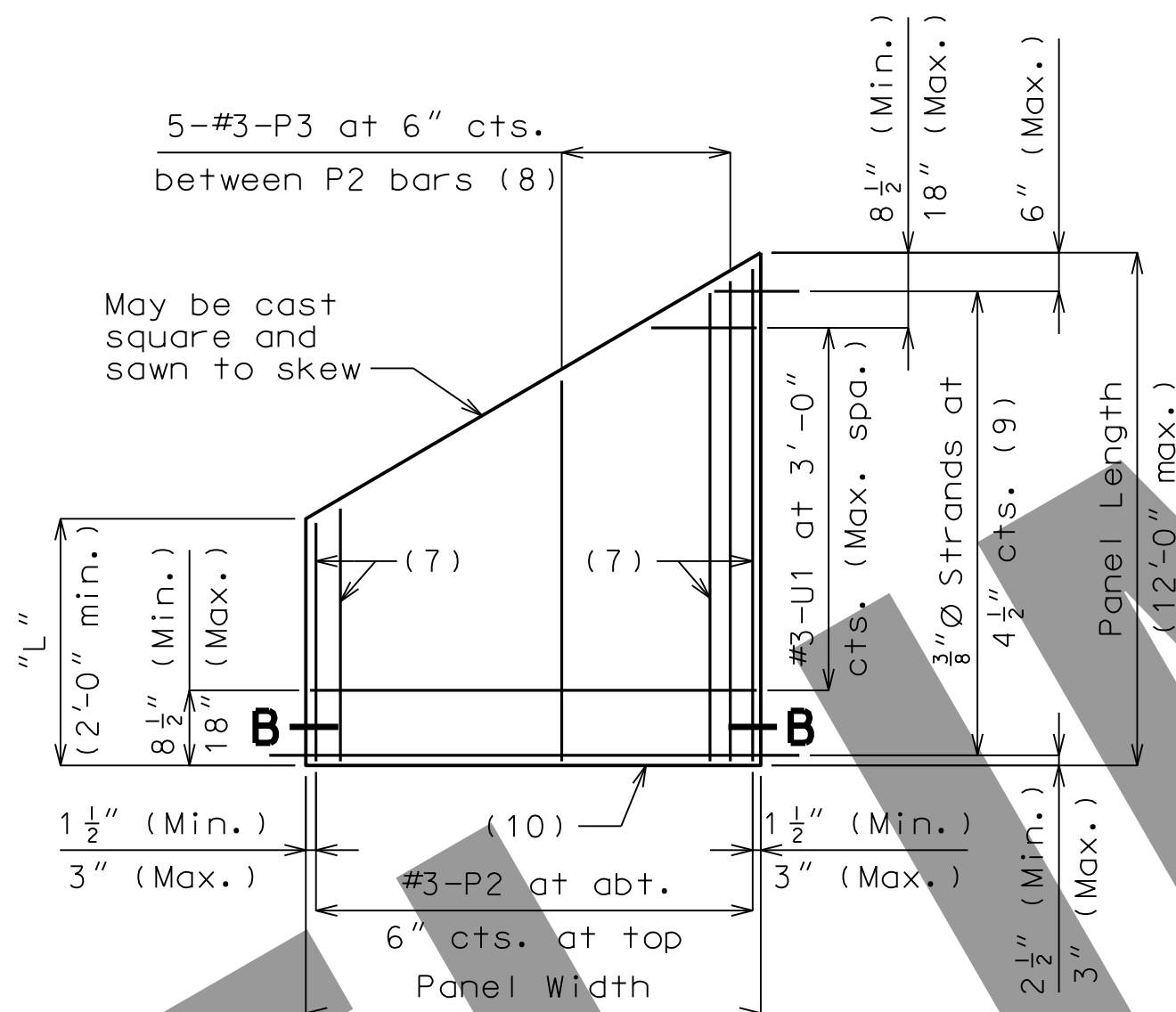
BENDING DIAGRAM FOR U1 BAR
U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars.



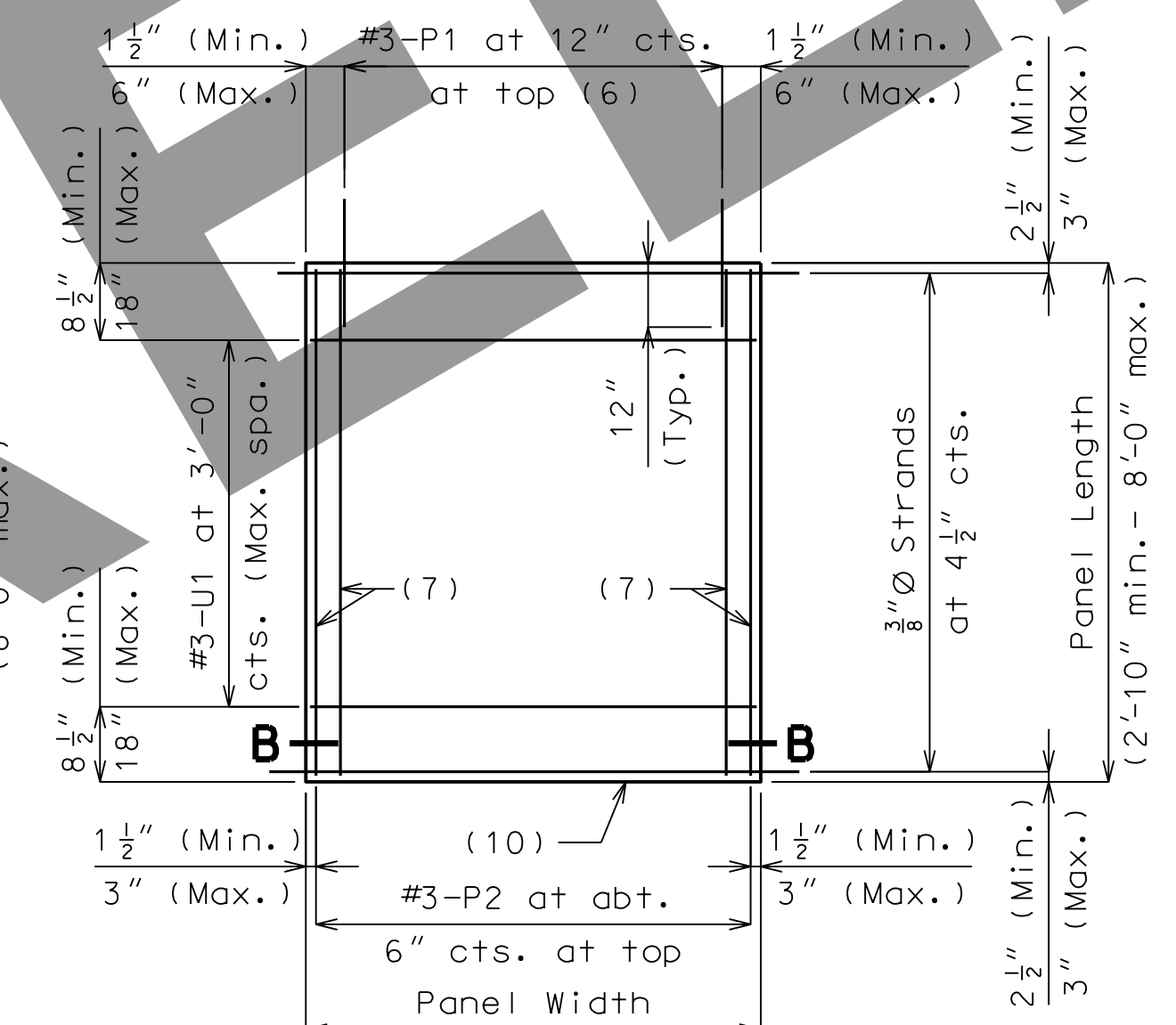
SECTION B-B



PLAN OF OPTIONAL TRUNCATED END PANEL
*** 3" (Min.), 6" (Max.)

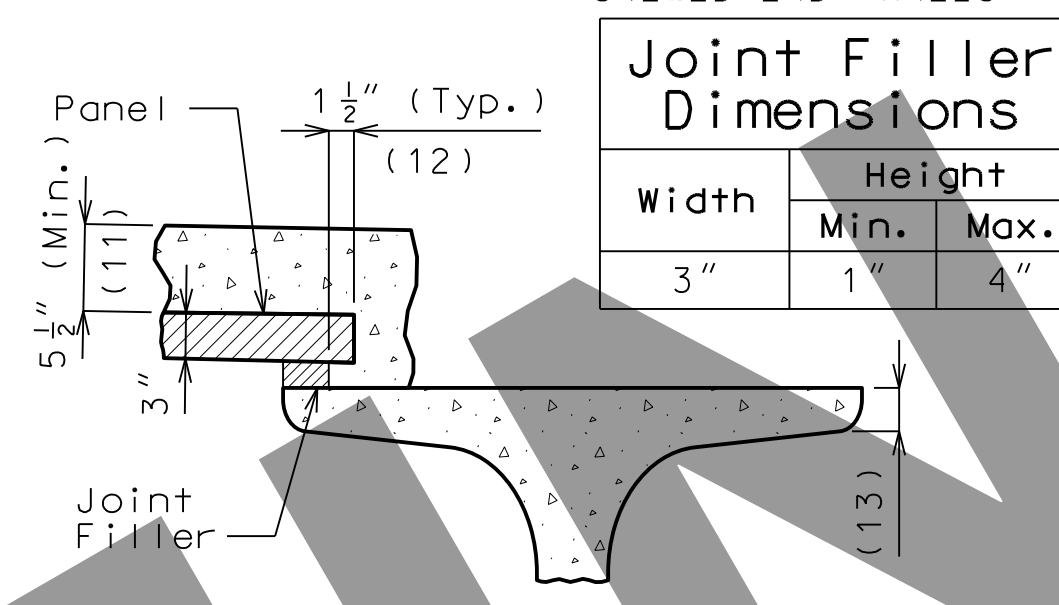


PLAN OF OPTIONAL SKEWED END PANEL



PLAN OF SQUARED PANEL

SKEWED END PANELS



Joint Filler Dimensions

Width	Height	
	Min.	Max.
3"	1"	4"

SECTION A-A

Reference Notes:

- Plan of Panels Placement:**
- S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.
 - Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.
 - Extend S-bars 9 inches beyond edge of girder (Typ.).
 - End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.
 - For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.
 - 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.
 - #3-P2 bars near edge of panel at bottom (under strands).
 - Use #3-P3 bars if panel is skewed 45° or greater.
 - 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.
 - Optional 1/2" x 45° Chamfer one or both sides at bottom.

- Plans of Panels:**
- 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.
 - Contractor shall ensure proper consolidation under and between panels.
 - 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.

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

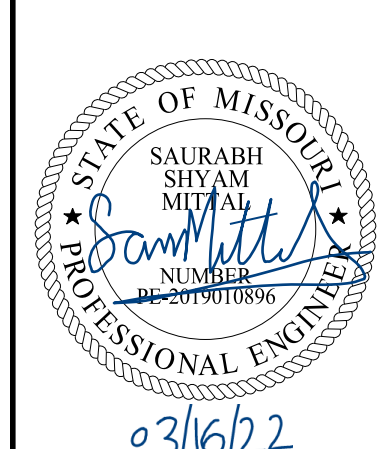
(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

DETAILS OF PRESTRESSED PANELS

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

Sheet No. 16 of 35

Designed: SSM
Detailed: CAB
Checked: TPL



03/16/22

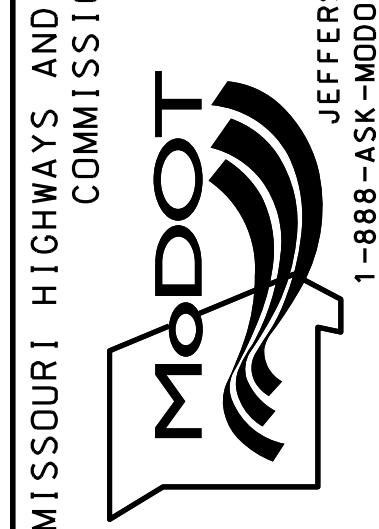
DATE PREPARED	3/14/2022
ROUTE	I-270
STATE	MO
DISTRICT	BR
SHEET NO.	16
COUNTY	ST. LOUIS CITY
JOB NO.	J613020C
CONTRACT ID.	

PROJECT NO.	
BRIDGE NO.	A8998

DESCRIPTION	DATE

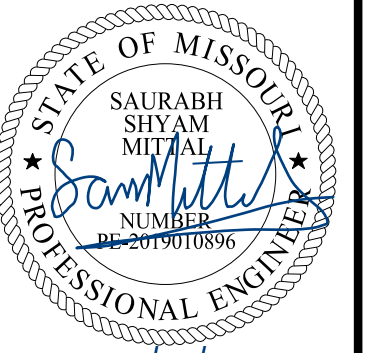
DESCRIPTION	DATE
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL JEFFERSON CITY, MO 65102
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CERTIFICATE OF AUTHORITY: 000169
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE DETAILS OF PRESTRESSED PANELS



03/16/22

DATE PREPARED
3/14/2022

ROUTE STATE
I-270 MO

DISTRICT SHEET NO.
BR 18

COUNTY
ST. LOUIS CITY

JOB NO.
J613020C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8998

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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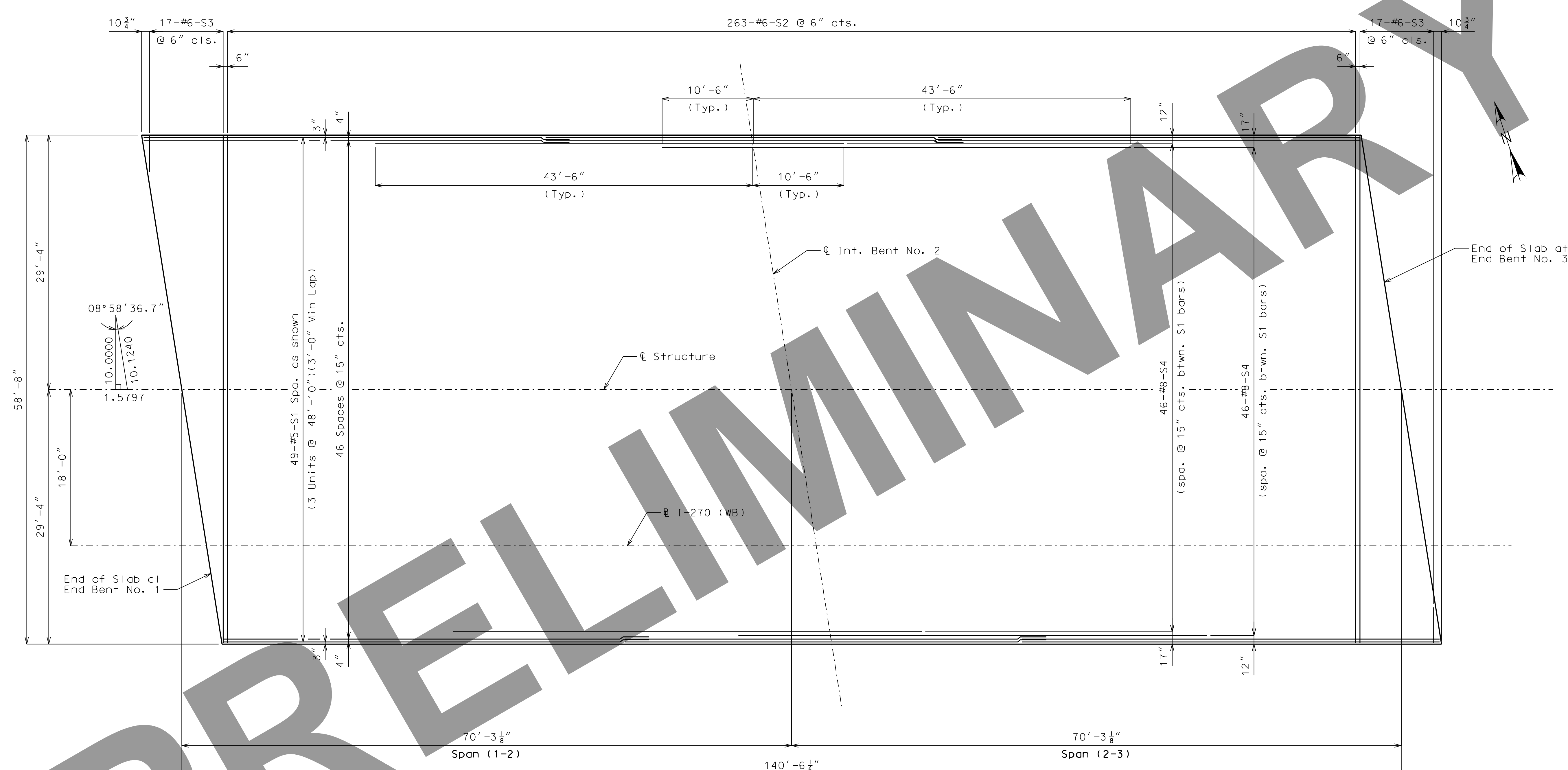
DISCIPLINE: PROFESSIONAL ENGINEERING

CERTIFICATE OF AUTHORITY: 000159

EXPIRATION DATE: DECEMBER 31, 2022

HORNER SHIFRIN

I-270 AND RIVERVIEW WB BRIDGE SLAB PLAN SHOWING REINFORCEMENT (TOP)

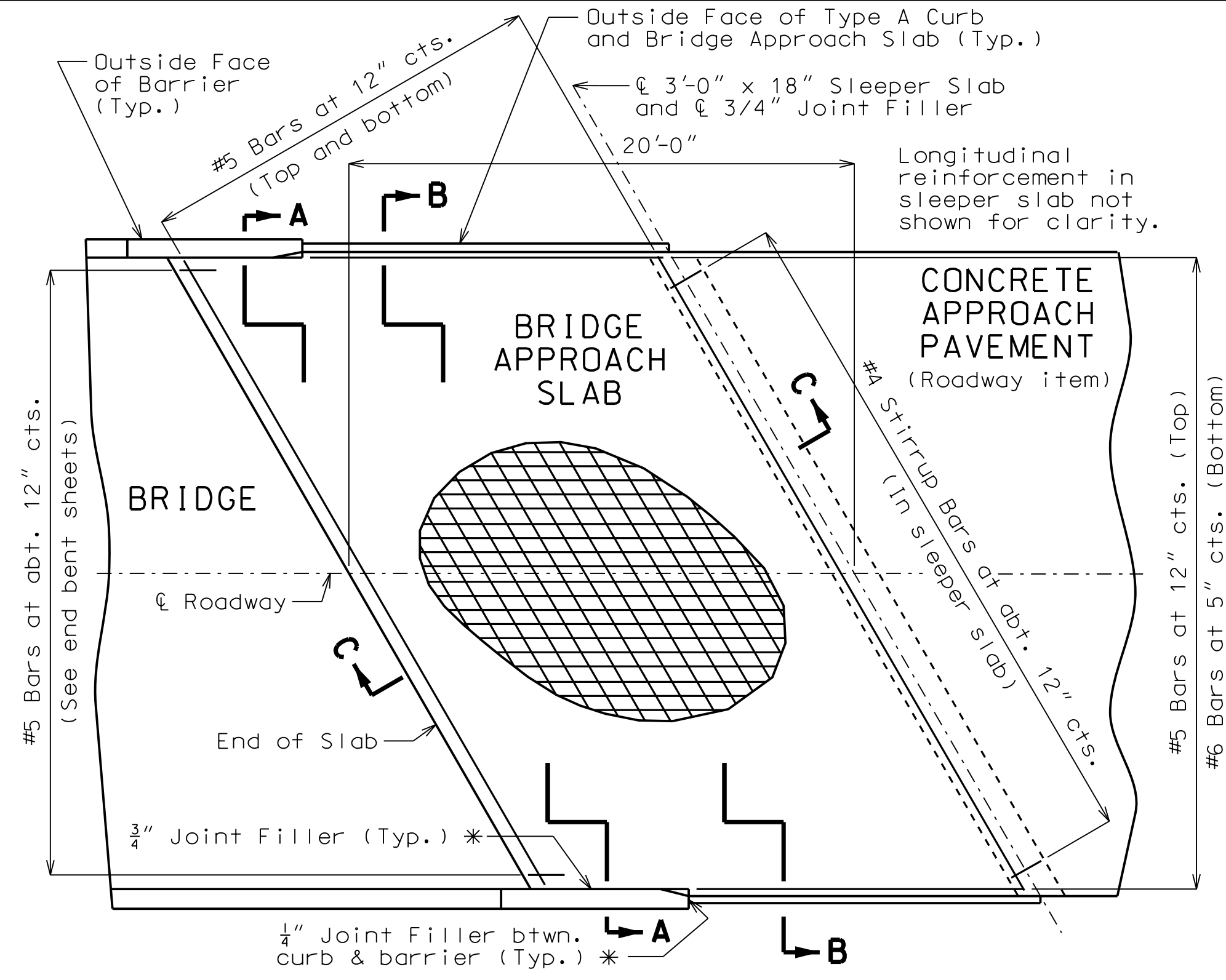


SLAB PLAN SHOWING REINFORCEMENT (TOP)

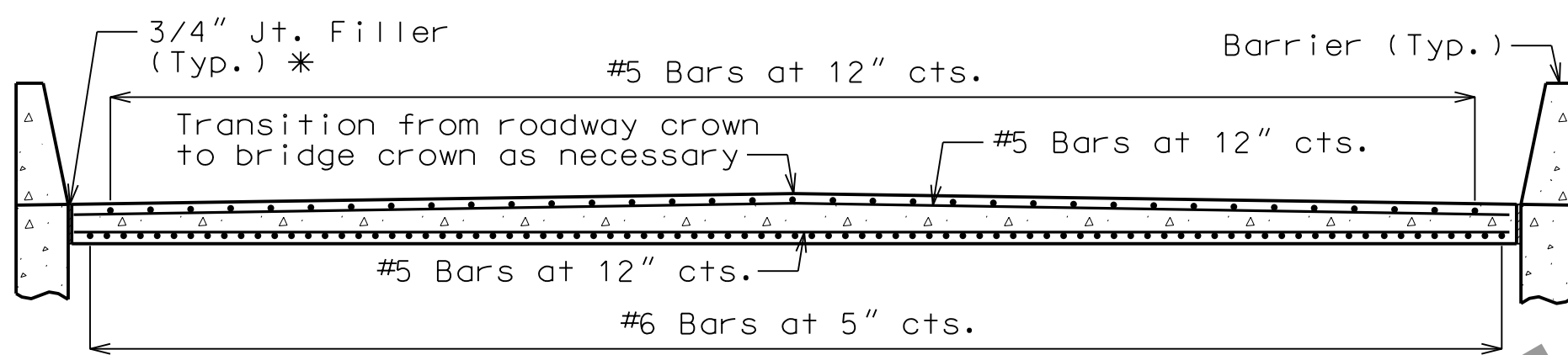
Note: This drawing is not to scale. Follow dimensions. Sheet No. 18 of 35

- Notes:
- Longitudinal slab dimensions are measured horizontally.
 - For Section thru Slab, see Sheet No. 20.
 - For Slab Pouring Sequence, see Sheet No. 20.
 - For Theoretical Bottom of Slab Elevations, Beam Camber Diagram, and Theoretical Slab Haunching Diagram, see Sheet No. 17.
 - For Details of Safety Barrier Curb, see Sheets No. 21 & 22.

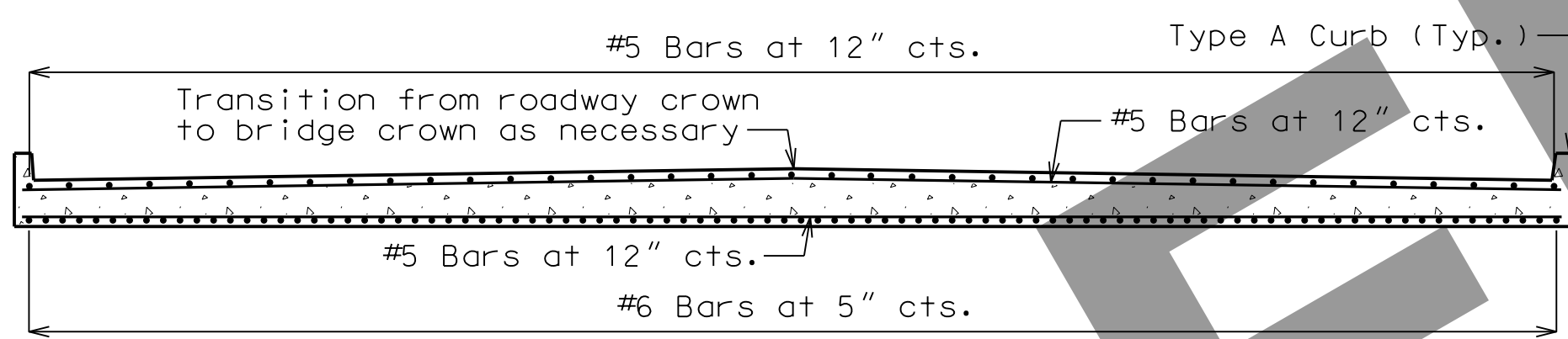
Designed: UVK
Detailed: CAB
Checked: TPL



PART PLAN SHOWING REINFORCEMENT

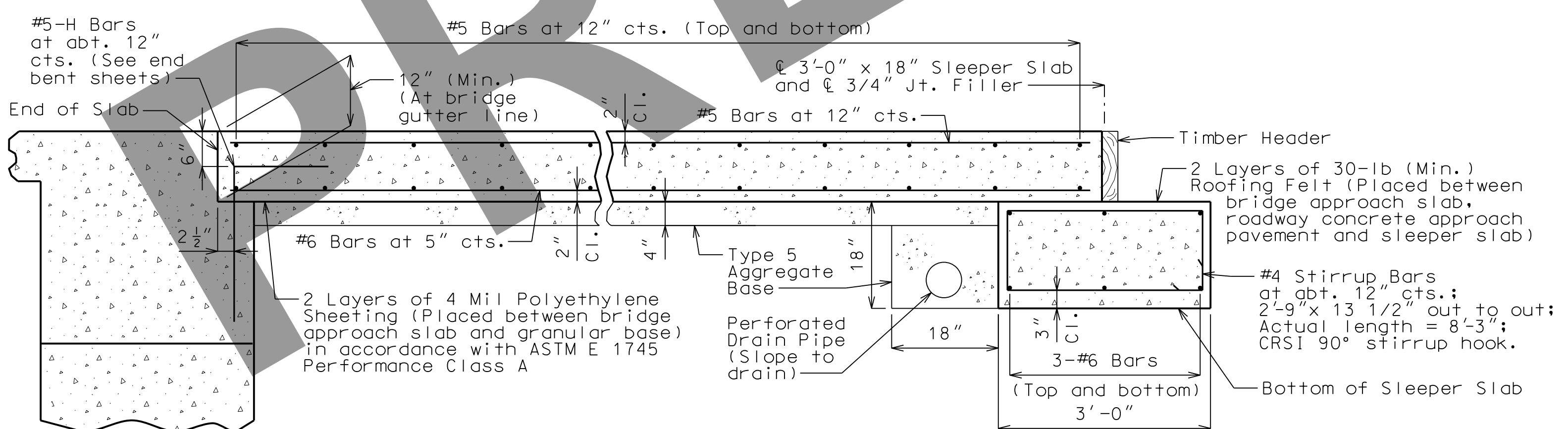


SECTION A-A

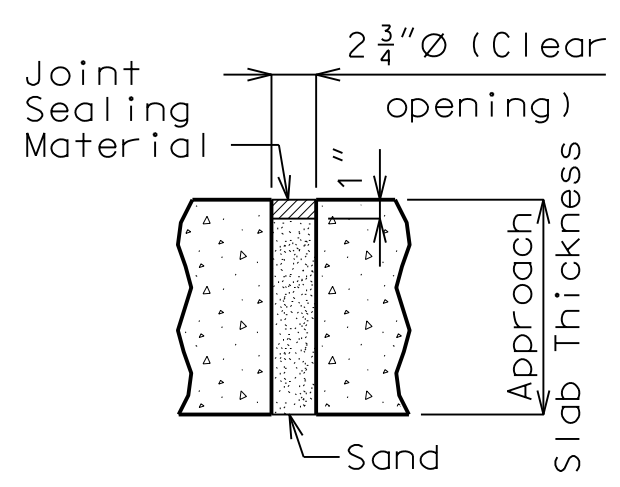


SECTION B-B

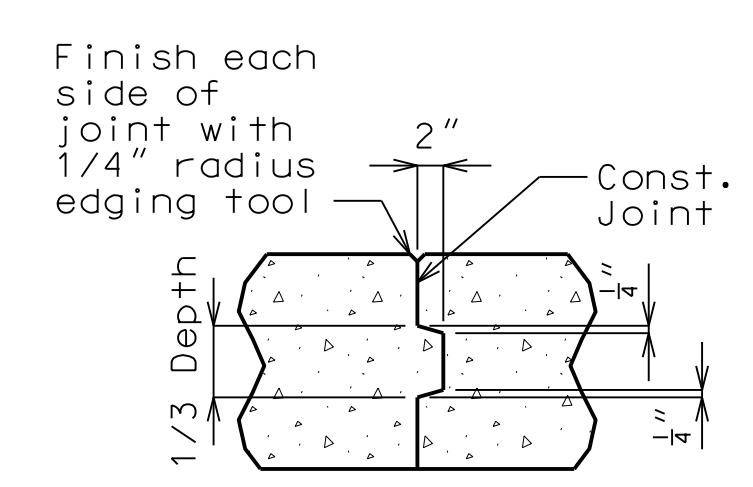
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



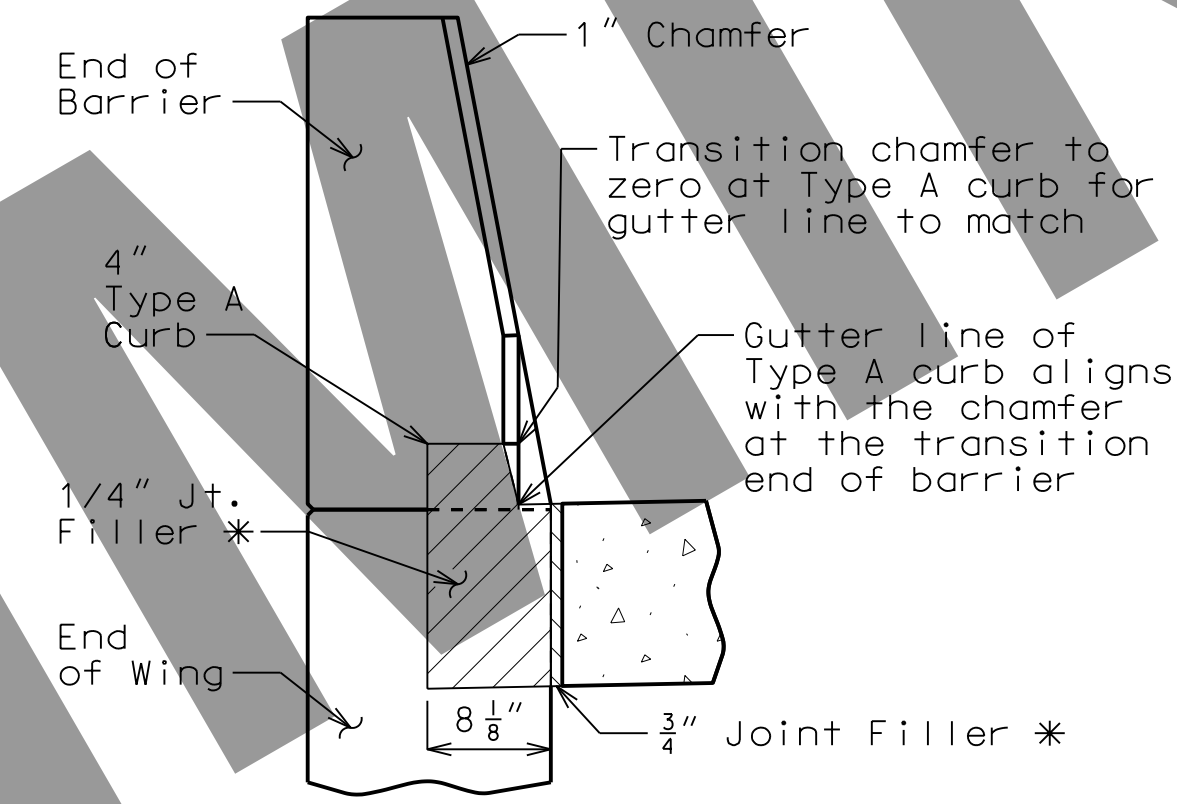
SECTION C-C



UNDERSEAL ACCESS HOLE DETAIL (If required)



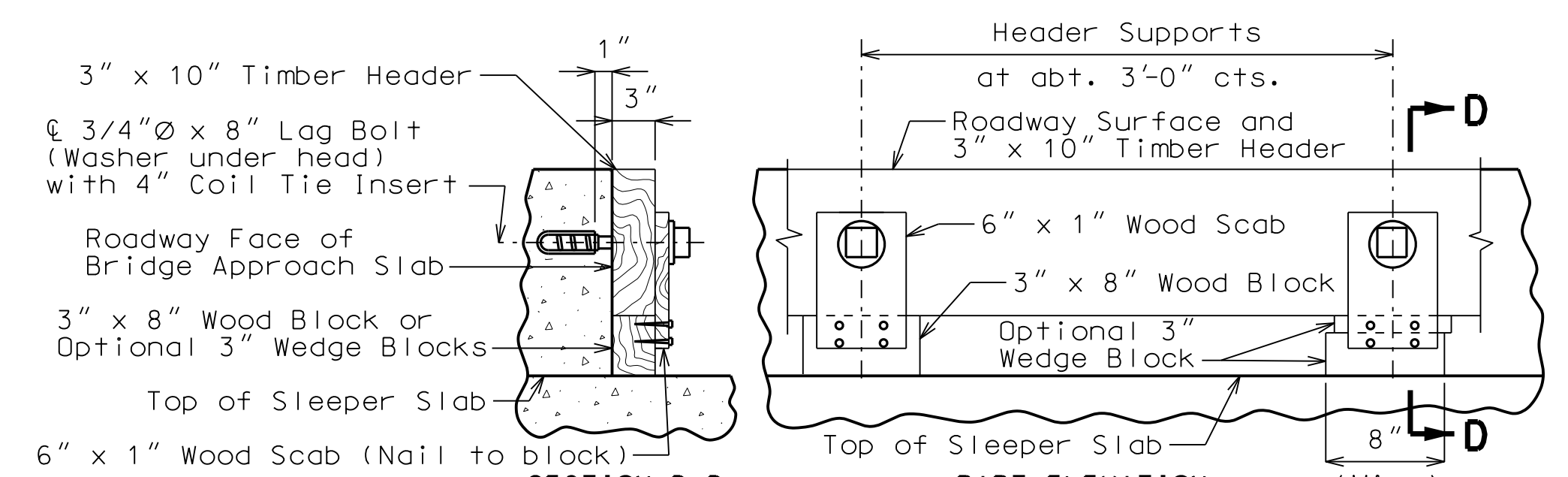
CONSTRUCTION JOINT DETAIL



SECTION BETWEEN CURB AND BARRIER

General Notes:

- All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 ($f'c = 4,000$ psi).
- The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with $f_y = 60,000$ psi.
- Drain pipe may be either 6" diameter corrugated metallic-coated pipe under drain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.
- Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.
- The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #5 bars 29" 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.
- The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.
- Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.
- For concrete approach pavement details, see roadway plans.
- See Missouri Standard Plan 609.00 for details of Type A curb.
- Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, 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 (Major) per square yard.
- * 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.

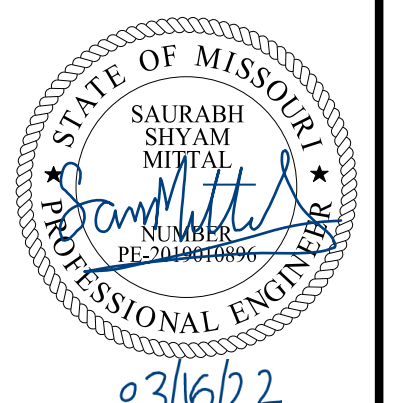


SECTION D-D PART ELEVATION DETAILS OF TIMBER HEADER Remove timber header when concrete pavement is placed.

Designed: SSM
Detailed: CAB
Checked: TPL

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

Sheet No. 23 of 35



DATE PREPARED 3/14/2022	
ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 23
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	

DESCRIPTION	DATE

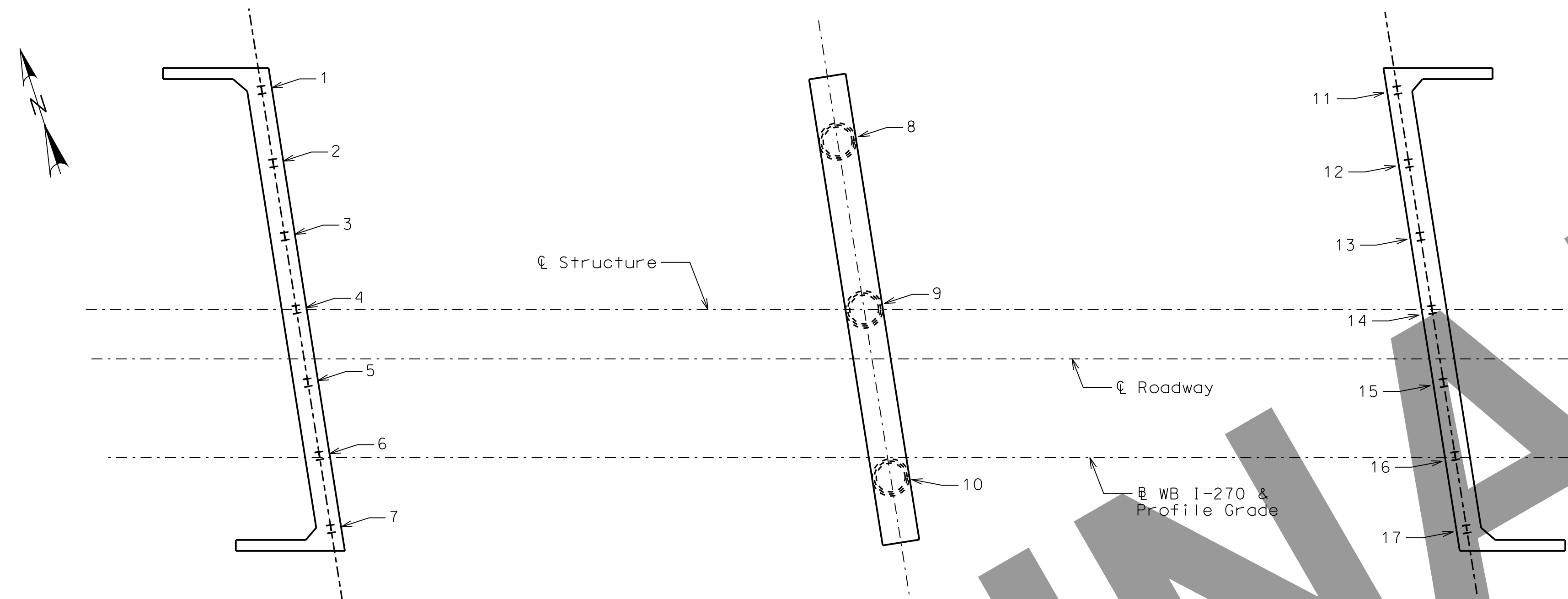
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102
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CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE BRIDGE APPROACH SLAB (MAJOR)



PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA AND AS-BUILT 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			
6			
7			
			End Bent No. 3
11			
12			
13			
14			
15			
16			
17			

As-Built Drilled Shaft Data				
Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Intermediate Bent No. 2
8				
9				
10				

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

This sheet to be completed by MoDOT construction personnel.

AS BUILT PILE AND DRILLED SHAFT DATA

Designed: UVK
 Detailed: CAB
 Checked: TPL



03/16/22
 DATE PREPARED
 3/14/2022

ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 26
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	


DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE AS BUILT PILE AND DRILLED SHAFT DATA



BORING NUMBER NB-3
PAGE 1 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements

PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DATE STARTED 2/28/20 COMPLETED 2/28/20 GROUND ELEVATION 439.1 ft HOLE SIZE inches

DRILLING CONTRACTOR Bulldog, CME550X, Efficiency: 95% GROUND WATER LEVELS:


DRILLING METHOD Hollow Stem Auger, NQ Rock Core AT TIME OF DRILLING --- not encountered

LOGGED BY B. Fisher CHECKED BY J. Schaeffer AT END OF DRILLING --- not measured

NOTES 3.0 ft west of design due to location of marked utilities AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")										
		Crushed limestone (2.0")										
		Brown, lean CLAY (CL), trace sand										
5			SS 1	72	4-5-6 (11)	2.0		22				
		- undrained shear strength at 8.0 ft = 1.40 TSF										
10			ST 2	67		3.75	106	21				
		Blue-grey, lean to fat CLAY (CL-CH)										
15			SS 3	89	3-3-4 (7)	2.5		24				
		SHALE: Blue-grey to brown, clayey, trace limestone fragments										
20			SS 4	83	2-4-10 (14)	2.0		16				
		LIMESTONE: Grey to blue-grey, slightly to moderately weathered, moderately hard to hard, banded to thin bedded, finely-crystalline										
25			SS 5	100	50/2"			3				
			RC 1	91 (27)								
			RC 2	100 (83)								
		SHALE: Grey, soft to moderately hard, calcareous										
			RC 3	0 (0)								

(Continued Next Page)



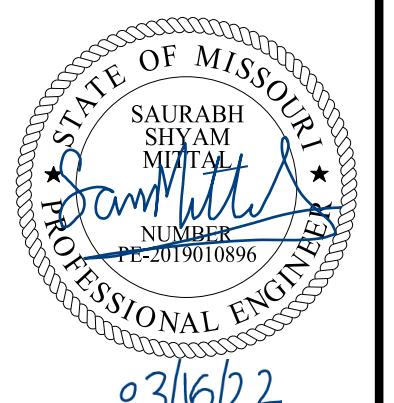
BORING NUMBER NB-3
PAGE 2 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements

PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
30		SHALE: Grey, soft to moderately hard, calcareous (continued)										
		- rock core qu at 30.7 ft = 5,060 psi - thick clay seams from 28.5-33.5 ft	RC 4	100 (75)								
35												
		Refusal at 23.5 feet. Bottom of borehole at 38.5 feet.										
400.6												
			RC 5	100 (100)		1.213						



DATE PREPARED: 3/14/2022

ROUTE: I-270 STATE: MO

DISTRICT: BR SHEET NO.: 28

COUNTY: ST. LOUIS CITY

JOB NO.: J613020C

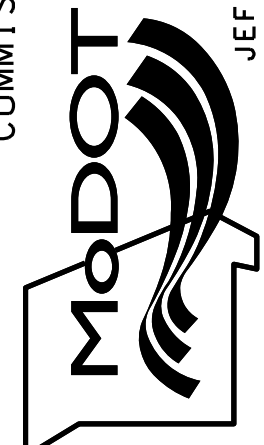
CONTRACT ID.

PROJECT NO.

BRIDGE NO.: A8998

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

HORNER & SHIFRIN

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DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE BORING DATA

Designed: SSM
Detailed: CAB
Checked: TPL

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

BORING NUMBER NB-4
PAGE 1 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements
 PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri
 DATE STARTED 3/2/20 COMPLETED 3/2/20 GROUND ELEVATION 438.4 ft HOLE SIZE inches
 DRILLING CONTRACTOR Bulldog, CME550X, Efficiency: 95% GROUND WATER LEVELS:
 DRILLING METHOD Hollow Stem Auger, NQ Rock Core ∇ AT TIME OF DRILLING 8.00 ft / Elev 430.40 ft
 LOGGED BY B.Fisher CHECKED BY J.Schaeffer AT END OF DRILLING --- not measured
 NOTES 5.0 ft west of design due to location of marked utilities AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")										
		FILL: Brown lean CLAY and GRAVEL										
5		POSSIBLE FILL: Tan, clayey SAND (SC)	SS 1	67	3-7-8 (15)			7				
10		Light brown, sandy SILT (ML), trace clay	SS 2	67	4-4-4 (8)	1.5		19				
		Grey, clayey SILT (ML)										
15		- 3.0" rocky seam at 13.8 ft	SS 3	78	7-7-8 (15)	>4.5		21				
20		Brown to grey, lean CLAY (CL)	SS 4	100	2-3-5 (8)	2.0		23				
25		SHALE: Brown, grey, purple, and blue-grey, weathered, clayey	SS 5	89	11-12-15 (27)			15				
410.4												

(Continued Next Page)

BORING NUMBER NB-4
PAGE 2 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements
 PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

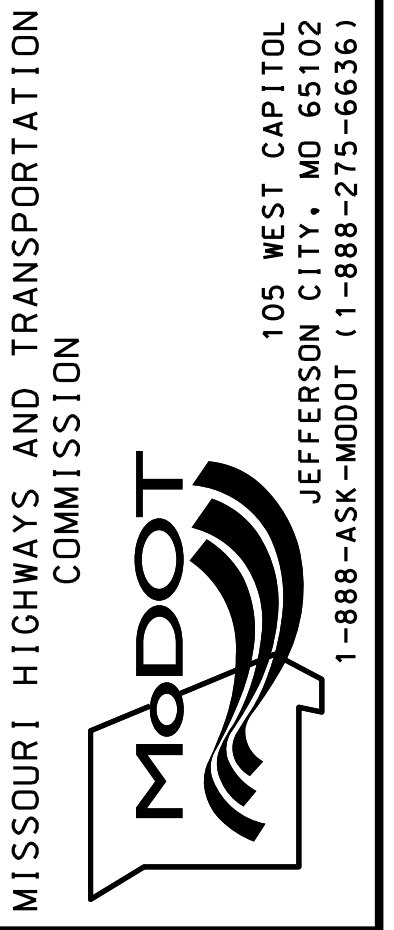
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
30		SHALE: Bluegrey, soft, calcareous - vertical fracture from 28.6-28.8 ft - 6.0" limestone layer at 28.8 ft - 3.0" near vertical fracture at 30.5 ft - rock core qu at 32.3 ft = 2,540 psi - core loss from 32.7-32.9 ft	SS 6	100	50/1"			8				
35		- 5.5" weathered clayey shale seam at 34.5 ft - very soft from 38.0-38.3 ft	RC 1	97 (89)								
40		- 4.0" weathered clay seam at 42.5 ft	RC 2	100 (92)								
			RC 3	100 (98)								

Refusal at 28.0 feet.
Bottom of borehole at 43.0 feet.



DATE PREPARED 3/14/2022

ROUTE I-270 STATE MO
 DISTRICT BR SHEET NO. 29
 COUNTY ST. LOUIS CITY
 JOB NO. J613020C
 CONTRACT ID. _____
 PROJECT NO. _____
 BRIDGE NO. A8998



HORNER & SHIFRIN
 401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103
 314-531-4321 FAX 314-531-4386
 WWW.HORNERSHIFRIN.COM
 DISCIPLINE: PROFESSIONAL ENGINEERING
 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE BORING DATA

BORING DATA

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

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

Sheet No. 29 of 35

Designed: SSM
 Detailed: CAB
 Checked: TPL

BORING NUMBER NB-6
PAGE 1 OF 2

MILLENNIA Millennium Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements

PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DATE STARTED 3/5/20 COMPLETED 3/5/20 GROUND ELEVATION 438.8 ft HOLE SIZE inches

DRILLING CONTRACTOR Bulldog, CME550X, Efficiency: 95% GROUND WATER LEVELS:
 AT TIME OF DRILLING 18.00 ft / Elev 420.80 ft

DRILLING METHOD Hollow Stem Auger, NQ Rock Core AT END OF DRILLING --- not measured

LOGGED BY B.Fisher CHECKED BY J. Schaeffer AFTER DRILLING ---

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")										
		Dark grey, lean CLAY (CL), with silt, trace organics										
5		Blue-grey, fat CLAY (CH), with silt	SS 1	67	4-2-2 (4)	0.5		20				
		- 1.0" sand seam at 9.0 ft	SS 2	89	4-3-4 (7)	1.0		21				
		- brown to orange below 13.5 ft, trace coarse-grained sand	SS 3	100	2-3-4 (7)	2.0		20				
15		Brown, clayey GRAVEL (GC)										
		Blue-grey, lean CLAY (CL) - undrained shear strength at 18.5 ft = 0.91 TSF	ST 4	100		1.0	103	23				
25		- with sand below 23.5 ft - 4.0" dark grey lean clay seam at 24.0 ft	SS 5	89	4-7-22 (29)			16				

(Continued Next Page)

BORING NUMBER NB-6
PAGE 2 OF 2

MILLENNIA Millennium Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements

PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
30		SHALE: Blue-grey to grey, calcareous, soft to moderately hard, argillaceous, slightly to moderately weathered - rock core qu at 29.7 ft = 5,930 psi	SS 6	100	50/3"			5				
		LIMESTONE: Blue-grey to grey, shaly, soft, thin to thick bedded, moderately weathered, with shale inclusions	RC 1	93 (93)								
35		- rock core qu at 37.5 ft = 1,780 psi	RC 2	100 (100)								
		- interbedded with shale and clay seams below 41.5 ft	RC 3	98 (88)								
40		SHALE: Grey to blue-grey, very soft to soft, slightly weathered	RC 4	100 (75)								
		- interbedded with limestone below 46.0 ft	RC 5	90 (67)								
45		LIMESTONE: Grey to white, moderately hard to hard, thin to thick bedded, medium to coarsely-crystalline, slightly weathered	RC 6	100 (83)								
		- with fractures from 48.5-51.0 ft	RC 7	100 (100)								
50		- slightly pitted below 51.0 ft										
		- rock core qu at 51.0 ft = 9,030 psi										
55		- stylolite at 54.0 ft										
		Refusal at 28.5 feet. Bottom of borehole at 58.5 feet.										

BORING DATA

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

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

Sheet No. 31 of 35

Designed: SSM
Detailed: CAB
Checked: TPL



DATE PREPARED: 3/14/2022
ROUTE: I-270 STATE: MO
DISTRICT: BR SHEET NO.: 31

COUNTY: ST. LOUIS CITY
JOB NO.: J613020C
CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A8998

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

HORNER & SHIFRIN

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314-531-4321 • FAX 314-531-4386
WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW
WB BRIDGE
BORING DATA

BORING NUMBER NB-7
PAGE 1 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements
 PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri
 DATE STARTED 3/13/20 COMPLETED 3/13/20 GROUND ELEVATION 439.3 ft HOLE SIZE inches
 DRILLING CONTRACTOR Bulldog, CME550X, Efficiency: 95% GROUND WATER LEVELS:
 DRILLING METHOD Hollow Stem Auger, NQ Rock Core ∇ AT TIME OF DRILLING 18.50 ft / Elev 420.80 ft
 LOGGED BY F. Khan CHECKED BY J. Schaeffer AT END OF DRILLING --- not measured
 NOTES AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")										
		FILL: Black to grey, lean CLAY, with cinders, sand, and gravel										
5		- undrained shear strength at 6.0 ft = 1.03 TSF	SS 1	67	8-8-7 (15)	3.0		20				
			ST 2	83			99	18				
10		Brown, lean CLAY (CL), trace sand	SS 3	100	3-2-4 (6)	1.75		18				
15		- grey, with sand below 13.5 ft	SS 4	100	2-4-5 (9)	1.0		25				
		- undrained shear strength at 16.0 ft = 0.24 TSF	ST 5	100		1.0	98	26				
20		- orange-brown, with sand, trace gravel below 19.8 ft	SS 6	100	2-4-6 (10)	0.5		24				
25		SHALE: Grey, highly weathered	SS 7	100	18-18-50/5"			48				
		LIMESTONE: Grey, moderately hard, thin-bedded, slightly weathered - near vertical fracture at 26.0 ft	RC 1	100 (88)								
		SHALE: Grey, very soft to soft, moderately to highly weathered - harder below 28.0 ft - fractured from 28.0-29.0 ft										
30		- soft, highly weathered from 29.5-30.0 ft										

(Continued Next Page)

BORING NUMBER NB-7
PAGE 2 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements
 PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
30		SHALE: Grey, very soft to soft, moderately to highly weathered (continued) - rock core qu at 30.3 ft = 3,890 psi - calcareous from 30.0-33.0 ft	RC 2	100 (100)								
35		LIMESTONE: Argillaceous, greenish grey, soft to moderately hard, banded to medium-bedded, slightly weathered	RC 3	100 (57)								
40		Refusal at 25.0 feet. Bottom of borehole at 40.0 feet.										

GEO TECH BH COLUMNS - GINT STD US LAB.GDT - 12/17/20 11:22 - G:\PROJECT FILES\2020\MG20007 I-270 RIVERVIEW DRIVE INTERCHANGE\FIELD DATA\I270 AT RIVERVIEW DRIVE INTERCHANGE GINT.GP1



DATE PREPARED 3/14/2022

ROUTE I-270 STATE MO
 DISTRICT BR SHEET NO. 32
 COUNTY ST. LOUIS CITY
 JOB NO. J613020C
 CONTRACT ID. _____
 PROJECT NO. _____
 BRIDGE NO. A8998

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

HORNER & SHIFRIN

401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103
 314-531-4321 FAX 314-531-4386
 WWW.HORNERSHIFRIN.COM
 DISCIPLINE: PROFESSIONAL ENGINEERING
 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE BORING DATA

BORING DATA

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

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

Sheet No. 32 of 35

Designed: SSM
 Detailed: CAB
 Checked: TPL

BORING NUMBER NB-8
PAGE 1 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements
 PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri
 DATE STARTED 3/12/20 COMPLETED 3/12/20 GROUND ELEVATION 438.9 ft HOLE SIZE inches
 DRILLING CONTRACTOR Bulldog, CME550X, Efficiency: 95% GROUND WATER LEVELS:
 DRILLING METHOD Hollow Stem Auger ∇ AT TIME OF DRILLING 18.50 ft / Elev 420.40 ft
 LOGGED BY F. Khan CHECKED BY J. Schaeffer AT END OF DRILLING --- not measured
 NOTES 4.0 ft west of design due to location of marked utilities AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")	438.1									
		FILL: Brown to grey, lean CLAY (CL), with sand, trace slag										
5		Black to brown, hard, lean to fat CLAY (CL-CH)	SS 1	67	5-7-11 (18)	3.0		15				
		- undrained shear strength at 8.0 ft = 0.93 TSF										
10		Grey to brown, lean CLAY (CL), trace sand and pockets of fat clay	ST 2	58		2.25	104	20				
		- trace organics below 13.5 ft										
15		Grey to black below 18.0 ft - brown, with sand below 18.5 ft	SS 3	100	3-3-3 (6)	1.75		25				
20		Brown to orange, clayey SAND (SC), trace gravel	SS 4	89	4-5-6 (11)			21				
25			SS 5	72	3-3-5 (8)			34				
30		SHALE: Light grey, highly weathered	SS 6	100	20-23-18 (41)			18				

(Continued Next Page)

BORING NUMBER NB-8
PAGE 2 OF 2

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements
 PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
30		SHALE: Light grey, highly weathered (continued)										
405.15		Refusal at 33.5 feet. Bottom of borehole at 33.8 feet.	SS 7	100	50/2"			10				

GEO TECH BH COLUMNS - GINT STD US LAB.GDT - 12/17/20 11:22 - G:\PROJECT FILES\2020\MG20007 I-270 RIVERVIEW DRIVE INTERCHANGE\FIELD DATA\I270 AT RIVERVIEW DRIVE INTERCHANGE GINT.GPJ



DATE PREPARED 3/14/2022
 ROUTE I-270 STATE MO
 DISTRICT BR SHEET NO. 33
 COUNTY ST. LOUIS CITY
 JOB NO. J613020C
 CONTRACT ID. _____
 PROJECT NO. _____
 BRIDGE NO. A8998

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

HORNER & SHIFRIN

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 314-531-4321 FAX 314-531-4386
 WWW.HORNERSHIFRIN.COM
 DISCIPLINE: PROFESSIONAL ENGINEERING
 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE BORING DATA

BORING DATA

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

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

Sheet No. 33 of 35

Designed: SSM
 Detailed: CAB
 Checked: TPL

BORING NUMBER NB-9
PAGE 1 OF 1

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements

PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DATE STARTED 3/23/20 COMPLETED 3/23/20 GROUND ELEVATION 439 ft HOLE SIZE inches

DRILLING CONTRACTOR Bulldog, CME75LC, Efficiency: 94% GROUND WATER LEVELS:
 AT TIME OF DRILLING 19.00 ft / Elev 420.00 ft

DRILLING METHOD Hollow Stem Auger AT END OF DRILLING --- not measured

LOGGED BY B.Fisher CHECKED BY J. Schaeffer AFTER DRILLING 15.50 ft / Elev 423.50 ft

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")										
0		Brown to grey, lean CLAY (CL), with silt										
		- undrained shear strength at 3.0 ft = 0.67 TSF	ST 1	92		>4.5	98	25	42	20	22	
5												
		- undrained shear strength at 8.0 ft = 1.02 TSF	ST 2	92		3.5	102	19				
10		- dark grey below 9.0 ft										
15		Brown to grey, clayey SILT (ML), trace sand	ST 3	83		2.0	102	22				
		- undrained shear strength at 13.0 ft = 0.67 TSF										
20		Orange, fat CLAY (CH), with silt and sand										
		Orange clayey SAND (SC), with silt and gravel	SS 4	100	5-4-6 (10)			25				
		Orange to grey, shaly, fat CLAY (CH)										
25		SHALE: Dark grey, weathered	SS 5	33	14-25-31 (56)			13				
		- dark grey to light grey below 28.0 ft	SS 6	91	13-50/5"							
		Refusal at 29.4 feet. Bottom of borehole at 29.4 feet.										

BORING NUMBER SB-2
PAGE 1 OF 1

Millennia Professional Services

CLIENT Horner & Shifrin, Inc. PROJECT NAME Interstate 270 at Riverview Drive Improvements

PROJECT NUMBER MG20007 PROJECT LOCATION St. Louis, Missouri

DATE STARTED 3/2/20 COMPLETED 3/2/20 GROUND ELEVATION 438.3 ft HOLE SIZE inches

DRILLING CONTRACTOR Bulldog, CME550X, Efficiency: 95% GROUND WATER LEVELS:
 AT TIME OF DRILLING 7.00 ft / Elev 431.30 ft

DRILLING METHOD Hollow Stem Auger AT END OF DRILLING --- not measured

LOGGED BY B.Fisher CHECKED BY J. Schaeffer AFTER DRILLING ---

NOTES 5.0 ft west of design due to location of marked utilities

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Concrete (10.0")										
0		POSSIBLE FILL: Grey to brown, lean CLAY (CL), with sand, trace gravel										
5		POSSIBLE FILL: Tan, clayey SAND (SC)	SS 1	61	3-2-5 (7)	0.25		10				
		- approx. 12.0" layer of lean clay at 6.0 ft	ST 2	100			111	17				
10			SS 3	100	4-6-7 (13)			22				
15		Tan to grey, lean CLAY (CL), with sand	SS 4	100	1-3-3 (6)	2.0		19				
		- blue-grey, more plastic below 18.0 ft	SS 5	100	2-3-5 (8)	1.5		25				
20			SS 6	100	5-14-17 (31)	>4.5		15				
25		SHALE: Blue-grey to brown, weathered										
		Refusal at 27.0 feet. Bottom of borehole at 27.0 feet.	SS 7		50/0"							

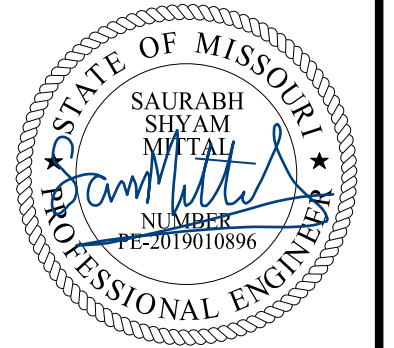
BORING DATA

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

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

Sheet No. 34 of 35

Designed: SSM
Detailed: CAB
Checked: TPL



DATE PREPARED 3/14/2022

ROUTE I-270 STATE MO

DISTRICT BR SHEET NO. 34

COUNTY ST. LOUIS CITY

JOB NO. J613020C

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8998

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

HORNER & SHIFRIN

401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103

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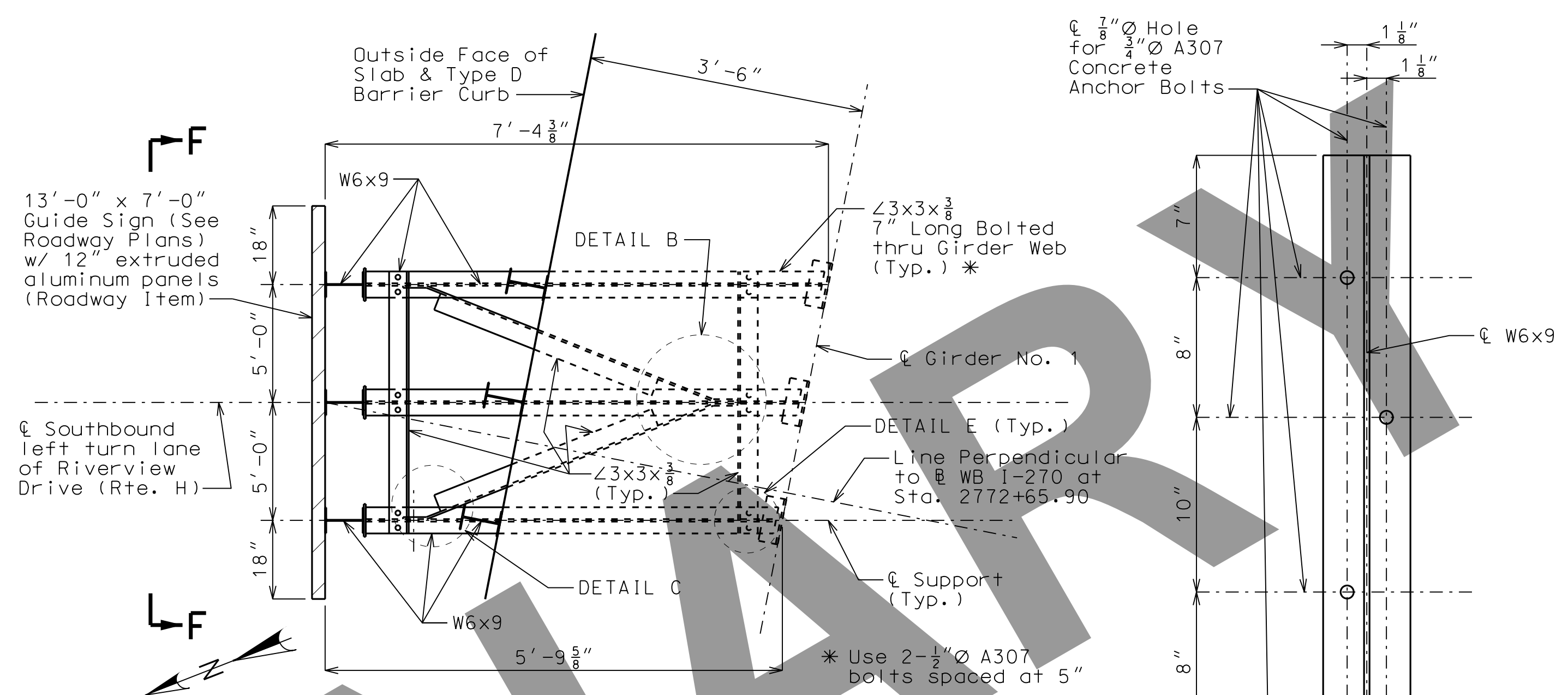
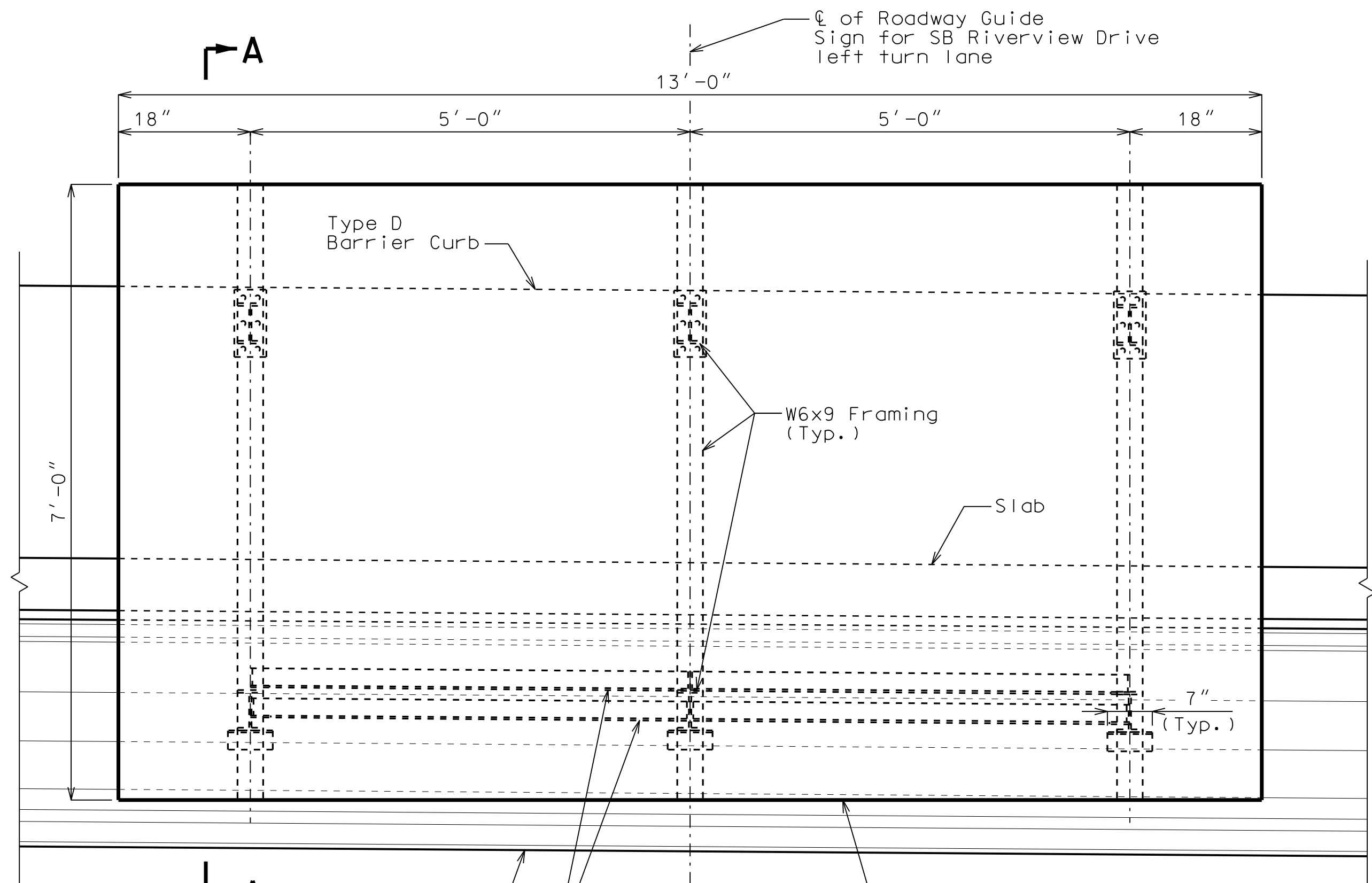
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CERTIFICATE OF AUTHORITY: 000159

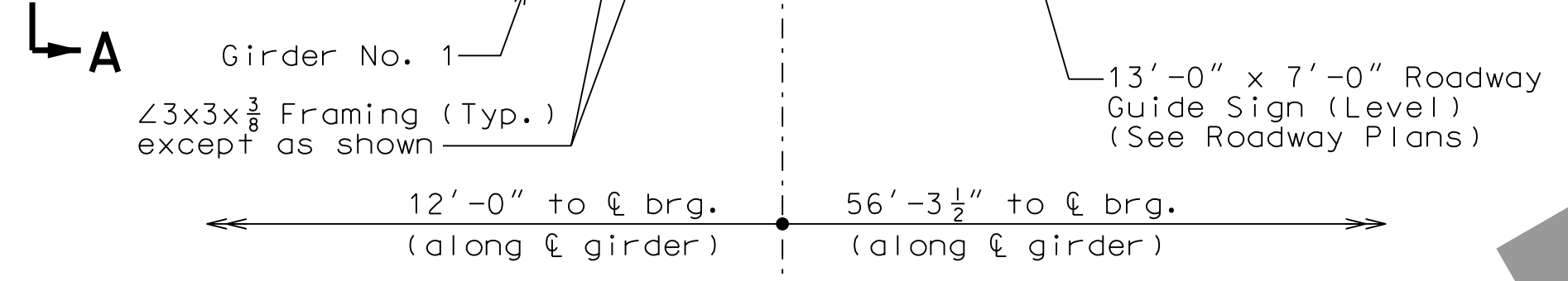
EXPIRATION DATE: DECEMBER 31, 2022

I-270 AND RIVERVIEW WB BRIDGE BORING DATA

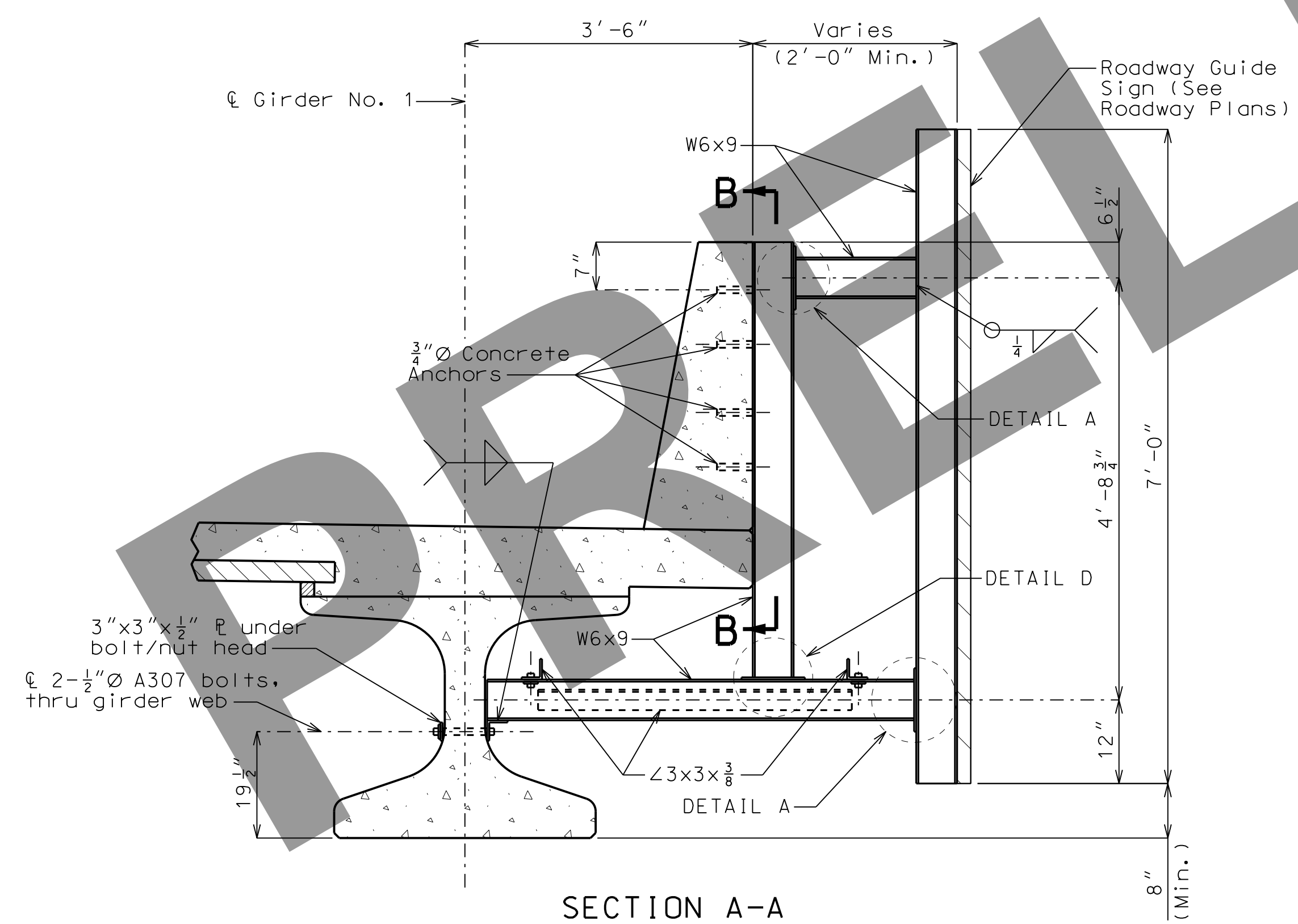


PART PLAN SHOWING DIMENSIONS FOR SIGN SUPPORT BRACKET

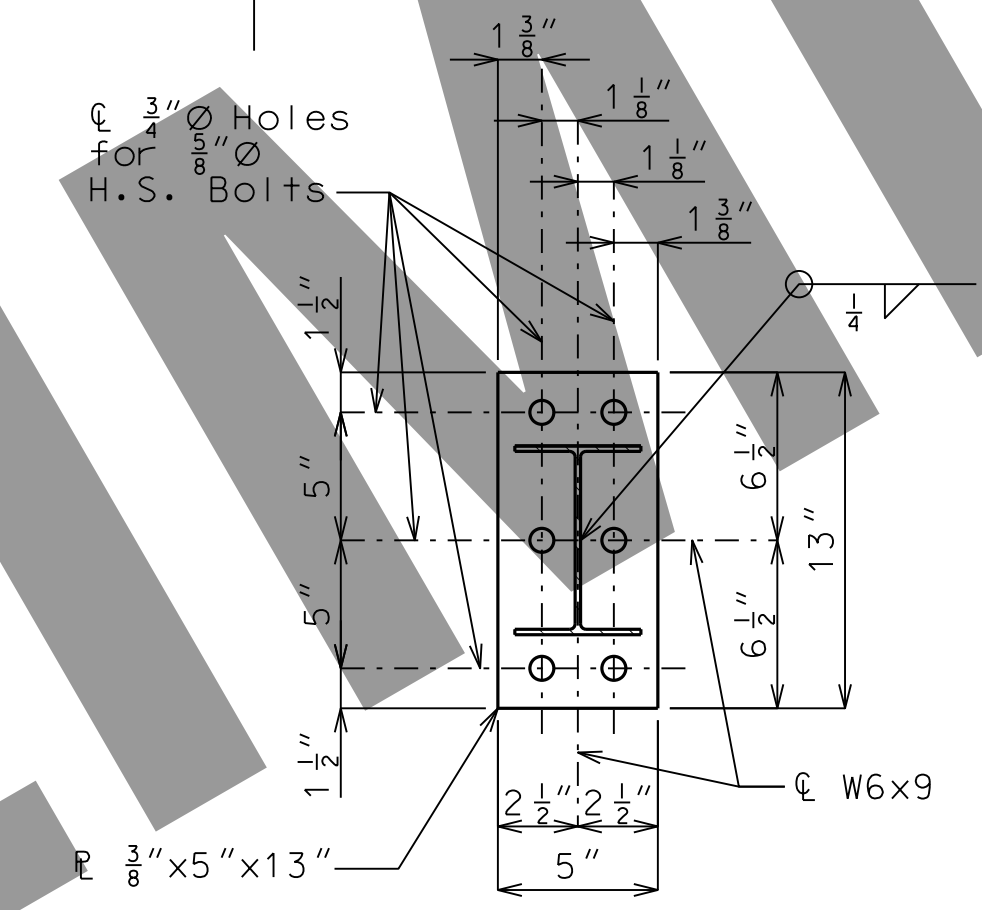
For details of attaching sign to support angles (posts), see standard plan 903.03.
Holes shall be 9/16"Ø for 1/2"Ø bolts in 7" long L's.



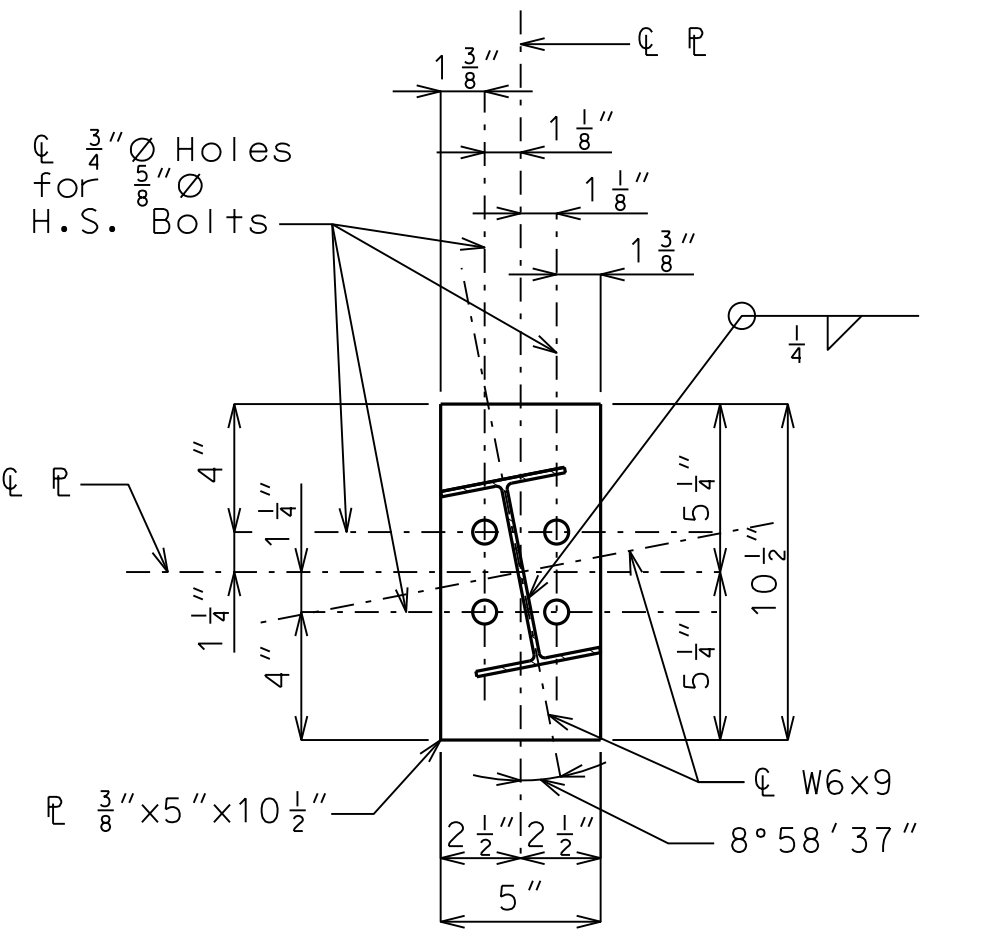
ELEVATION F-F



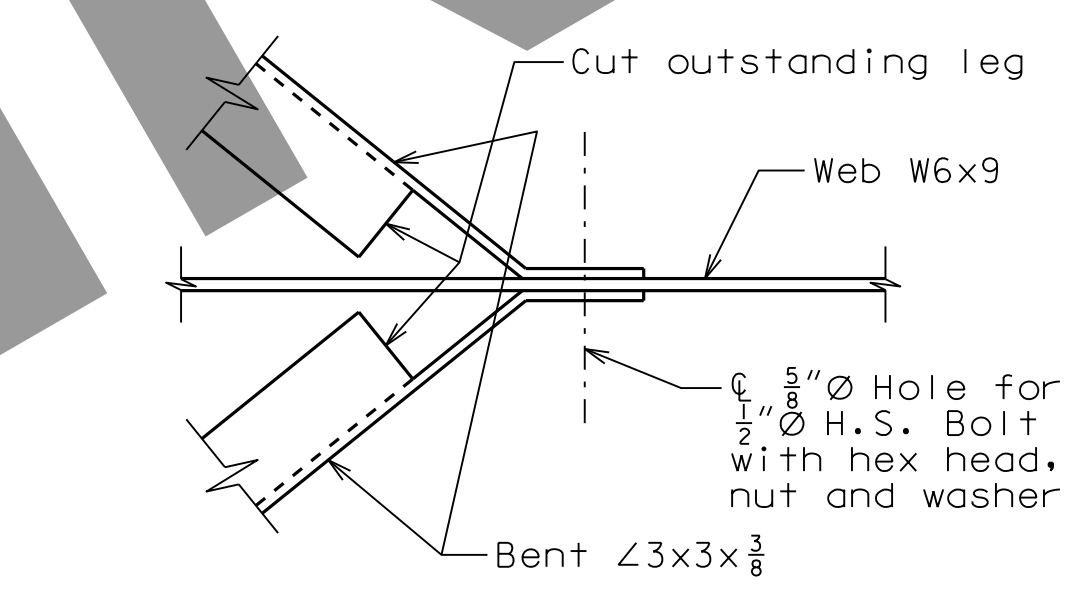
SECTION A-A



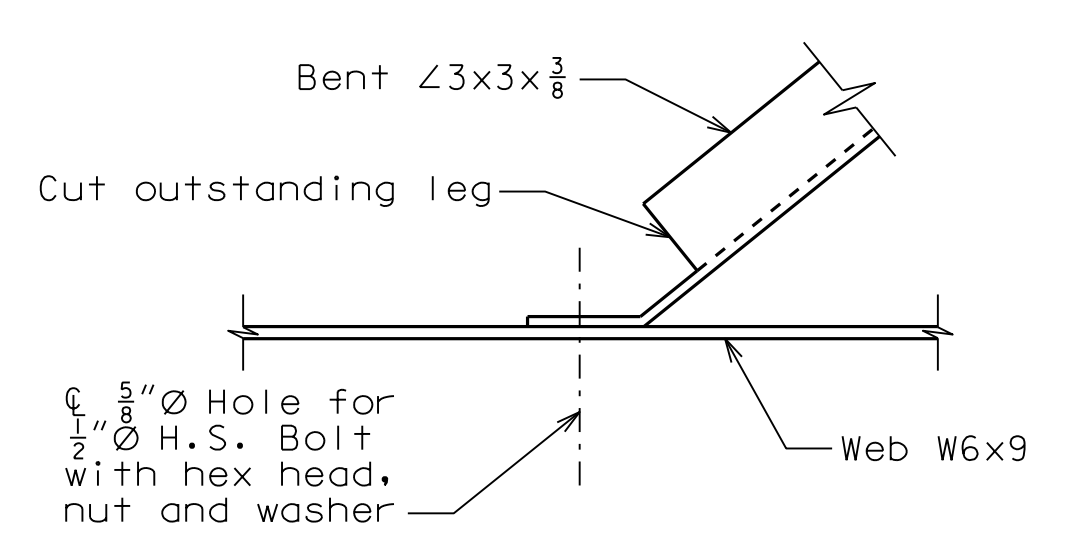
DETAIL A



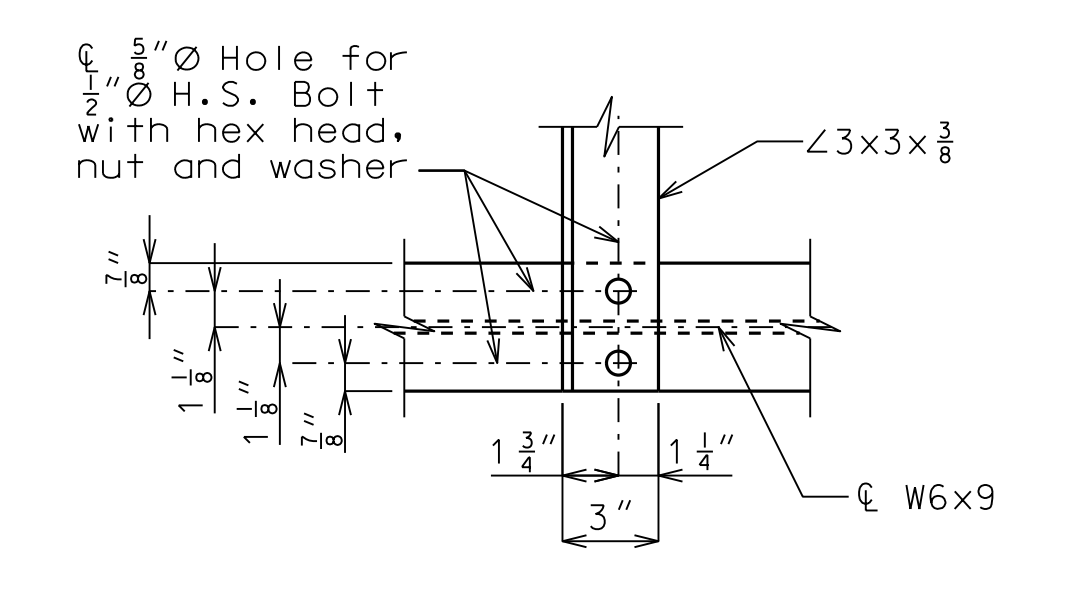
DETAIL D



DETAIL B



DETAIL C



DETAIL E

Notes:

Center and level signs on supports.

Shift sign support brackets the minimum amount necessary to allow for installation of bolts through existing girder web and to clear existing stiffeners.

All bolts, nuts and washers shall be galvanized.

All structural steel shall be ASTM A709, Grade 50, galvanized.

The cost of furnishing and erecting the sign supports, including the concrete anchors, complete-in-place, will be considered completely covered by the contract lump sum price for Fabricated Sign Support Brackets.

The cost of furnishing and erecting the sign boards, including attaching hardware, complete in place, will be paid for as Roadway Item.

Bolt threads shall be burred after sign has been erected.

Concrete anchors shall be the non-drilling expansion type and shall have a certified concrete pullout strength (Ultimate Load) of 12,100 pounds (Min.) in 4,000 psi concrete. The hole shall be pre-drilled with a conventional carbide masonry bit.

FABRICATED SIGN SUPPORT BRACKET DETAILS

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

Sheet No. 35 of 35

Designed: SSM
Detailed: CAB
Checked: MAB



DATE PREPARED 3/14/2022	
ROUTE I-270	STATE MO
DISTRICT BR	SHEET NO. 35
COUNTY ST. LOUIS CITY	
JOB NO. J613020C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8998	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

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I-270 AND RIVERVIEW WB BRIDGE FABRICATED SIGN SUPPORT BRACKET DETAILS