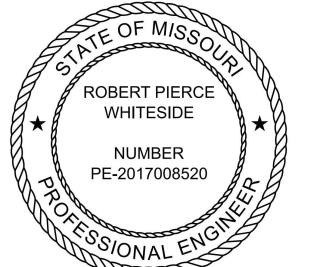


U.I.P. AND WIDEN EXISTING STRUCTURE WITH (65.9' - 66.7' - 69.4' - 67.4') PRESTRESSED CONCRETE NU GIRDER SPANS (37°41'46" RA)

SEC/SUR 8 TWP 48N RGE 12W



Robert Whiteside
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE STATE
1 - 70 MO

DISTRICT SHEET NO.
BR 1

COUNTY
BOONE

JOB NO.
JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DESCRIPTION

REV. A - PRELIMINARY REVIEW
REV. B - FINAL REVIEW
REV. 0 - RELEASED FOR CONSTRUCTION

DATE

03/10/25
06/23/25
07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

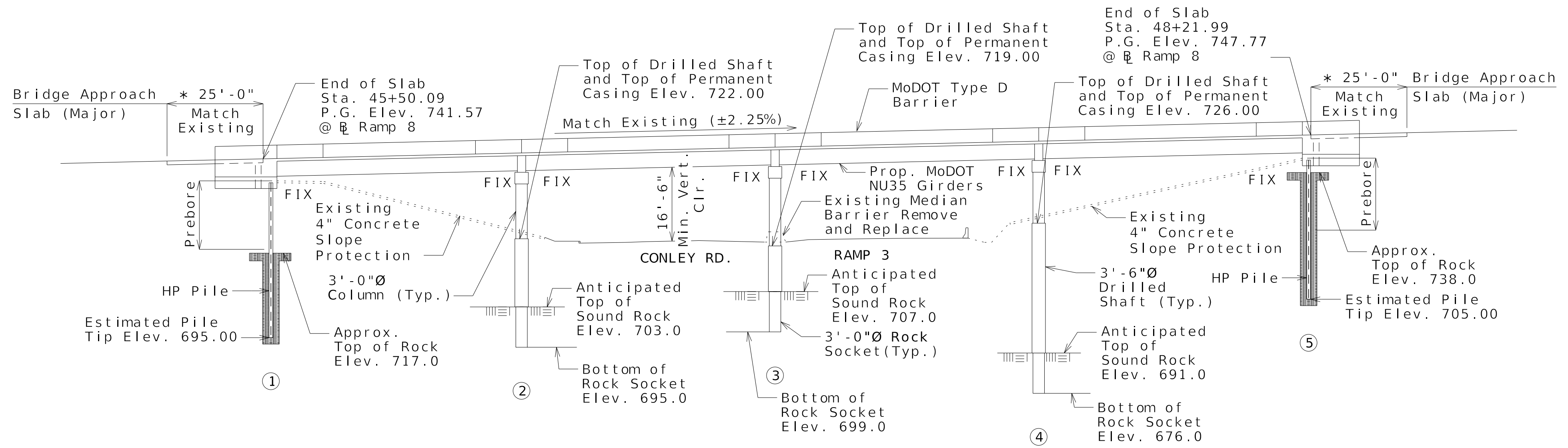
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MILLSTONE WEBER

ENGINEERING, INC.
709 OLIVE STREET
SUITE 100
JEFFERSON CITY, MO 65101
(314) 338-4431

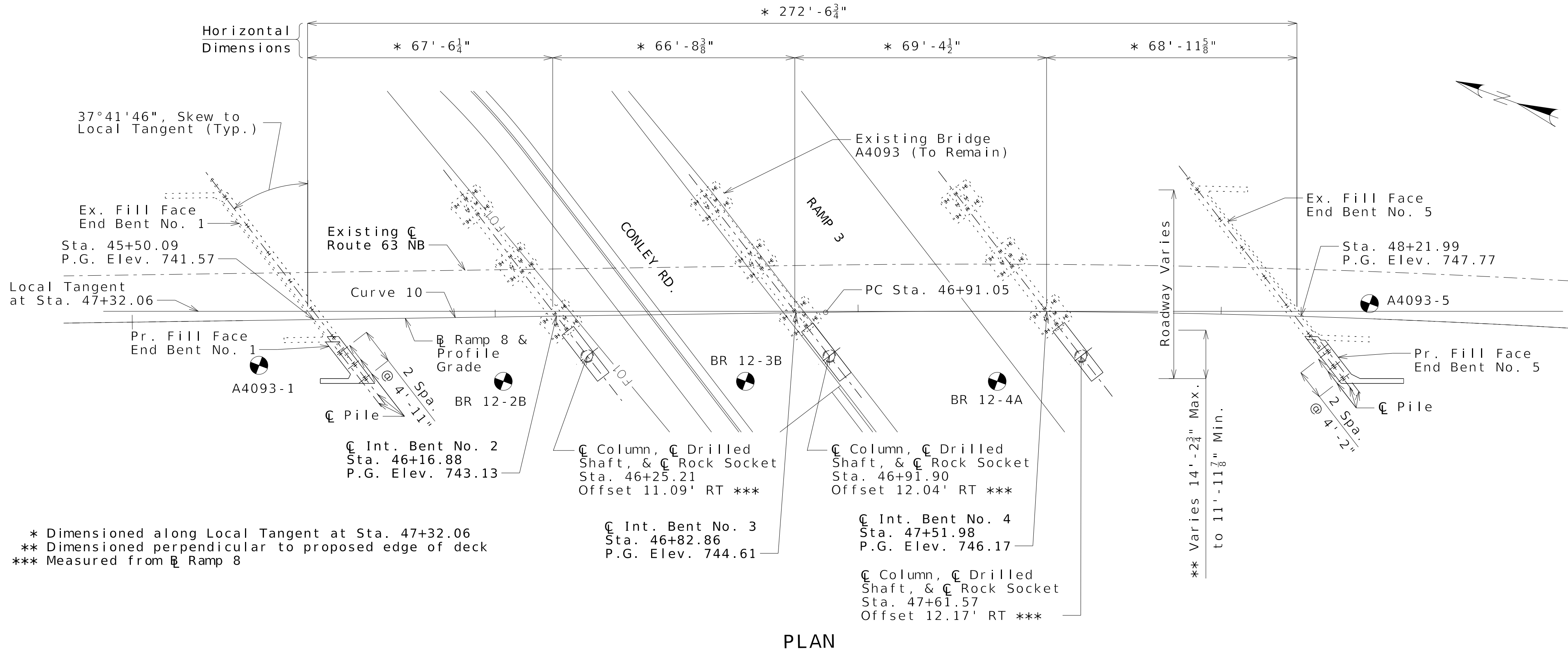
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

REV.



BLP RAMP 8 CURVE 10

PI	49+78.53
PC	46+91.05
PT	52+64.13
Δ	11°20'48.5" (RT)
D	1°58'47.8"
L	573.08' (ARC)
T	287.48'
R	2,893.79'
SE	= EXISTING



* Dimensioned along Local Tangent at Sta. 47+32.06
** Dimensioned perpendicular to proposed edge of deck
*** Measured from R Ramp 8

B.M. 70 - ELEVATION = 715.81
STATE PLANE (1983 CENTRAL ZONE)
NORTHING 1138803.0504
EASTING 1700592.2071
LATITUDE 38.96086552 DEGREES
LONGITUDE -92.28837098 DEGREES
POINT DESCRIPTION 74/1R
**BRIDGE: RTE. 63 NB, RAMP 8
OVER RAMP 3 AND CONLEY RD.**
ROUTE 63 NB FROM ROUTE 740 TO I-70
ABOUT 0.3 MILES SOUTH OF I-70
BEG. STATION 45+49.46

Designed JAN. 2025
Detailed JAN. 2025
Checked MAY 2025

Note: This drawing is not to scale. Follow dimensions. Sheet No. 1 of 36

GENERAL NOTES:

Design Specifications:

2002 AASHTO LFD (17th Ed.) Standard Specifications
 Seismic Performance Category = A
 Acceleration Coefficient = 0.061g

Design Loading:

HS20-44
 35 lb/sf Future Wearing Surface
 Military 24,000lb Tandem Axle
 Earth 120 lb/cf
 Equivalent Fluid Pressure 45 lb/cf
 Superstructure: Simply-Supported, Non-Composite for dead load.
 Continuous Composite for live load.

Design Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Barrier)	f'c = 4,000 psi
Class B-2 Concrete (Drilled Shaft and Rock Socket)	f'c = 4,000 psi
Reinforcing Steel (Grade 60), all epoxy coated	fy = 60,000 psi
Structural Steel H-Pile (ASTM A709 Grade 50)	fy = 50,000 psi
Permanent Steel Casings for Drilled Shafts (ASTM A252 Grade 2)	
For prestressed girder stresses, see Sheets No. 16, 17, and 18.	

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:

Traffic to be maintained on existing structure during construction. See roadway plans for traffic control and Sheet No. 3 for staged construction details.

Miscellaneous:

Contractor shall verify all dimensions in the field before ordering new material.

Foundation Data

Type	Design Data	Bent Number				
		1	2	3	4	5
Load Bearing Pile	Pile Type and Size	HP 12x53	-	-	-	HP 12x53
	Number	ea 3	-	-	-	3
	Approximate Length Per Each	ft 42	-	-	-	37
	Pile Point Reinforcement	ea All	-	-	-	All
	Min. Galvanized Penetration (Elev.)	ft Full Length	-	-	-	Full Length
	Minimum Tip Penetration (Elev.)	ft 703.0	-	-	-	715.0
	Criteria for Min. Tip Penetration	Min. Embed.	-	-	-	Min. Embed.
	Approximate Prebore Depth per Each	ft 19	-	-	-	19
	Approximate Prebore Length in Rock per Each	ft -	-	-	-	15
	Pile Driving Verification Method	DF	-	-	-	DF
	Factor of Safety	3.0	-	-	-	3.0
	Design Bearing	kip 128	-	-	-	128
Minimum Ultimate Axial Compressive Resistance	kip 384	-	-	-	384	
Rock Socket	Number	ea -	1	1	1	-
	Foundation Material	-	Limestone	Limestone	Limestone	-
	Elevation Range	ft -	Below 703.0	Below 707.0	Below 691.0	-
	Design Side Friction	ksf -	8.96	8.96	8.96	-
Design End Bearing	ksf -	N/A	N/A	N/A	-	

DF = FHWA-modified Gates Dynamic Pile Formula

Load Bearing Piles:

Design Bearing = Maximum Service Load

Minimum Ultimate Axial Compressive Resistance = Design Bearing x Factor of Safety

Rock Socket (Drilled Shafts):

Design Side Friction = $\frac{\text{Maximum Service Load}}{\text{Surface Area of Socket}}$

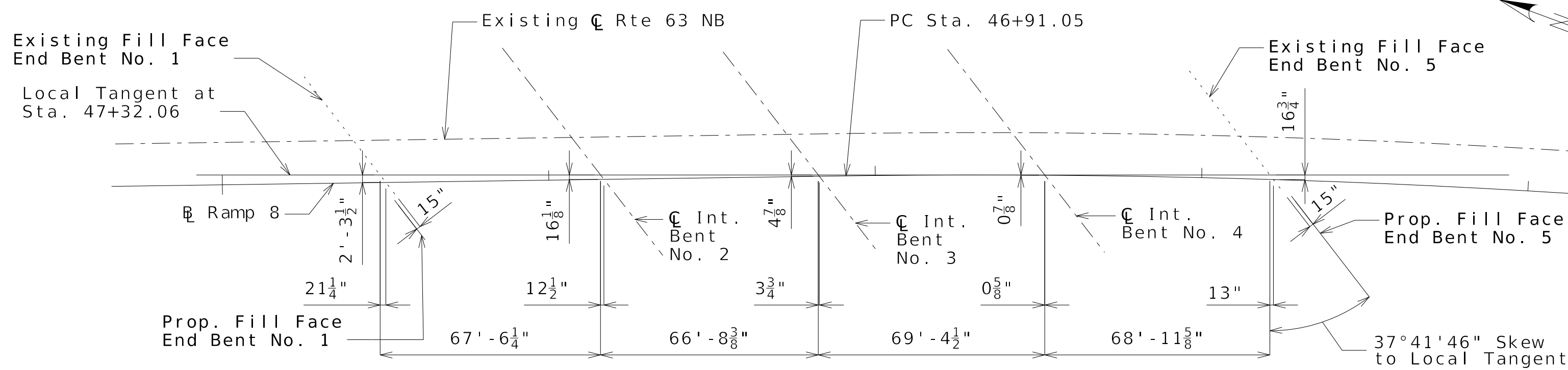
Sonic logging testing shall be performed on all drilled shafts and rock sockets.

GENERAL DATA

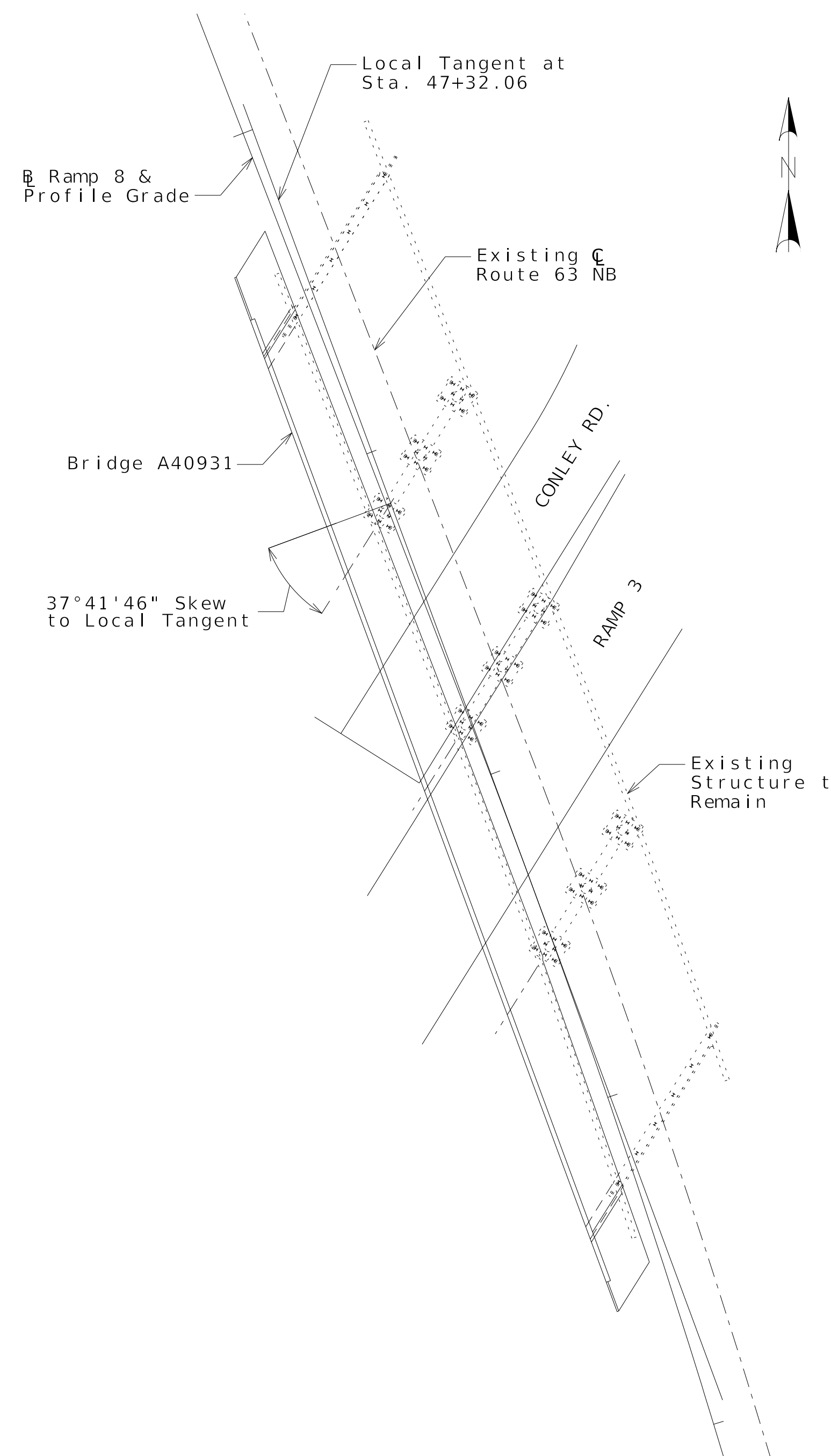
Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 2 of 36



OFFSET SKETCH



LOCATION SKETCH



Robert P. Whiteside
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 MO PE-2017008520

07/29/2025 3:20:49 PM
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DATE PREPARED
 7/29/2025

ROUTE
 1 - 70

STATE
 MO

DISTRICT
 BR

SHEET NO.
 2

COUNTY
 BOONE

JOB NO.
 JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
 A40931

REVISIONS

DATE DESCRIPTION

06/23/25 REV. A - FINAL REVIEW

07/18/25 REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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MILLSTONE WEBER

ENGINEERING INC.

200 OLIVE STREET SUITE 1000 ST. LOUIS, MO 63101

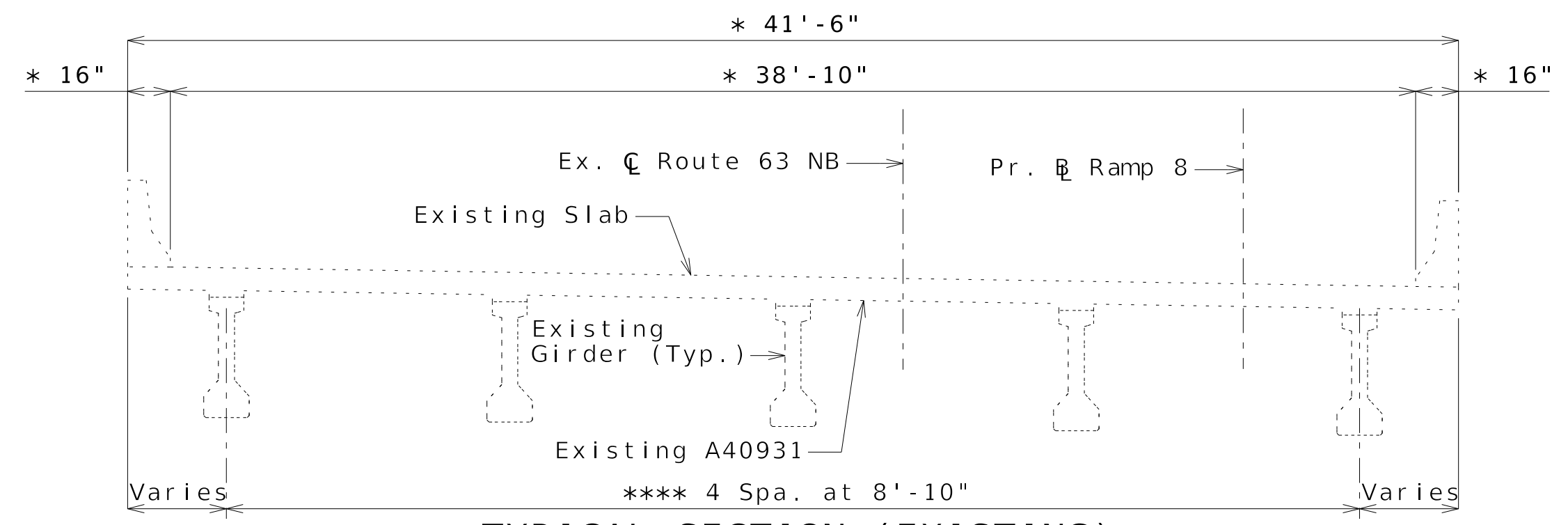
PH: 314.384.4331

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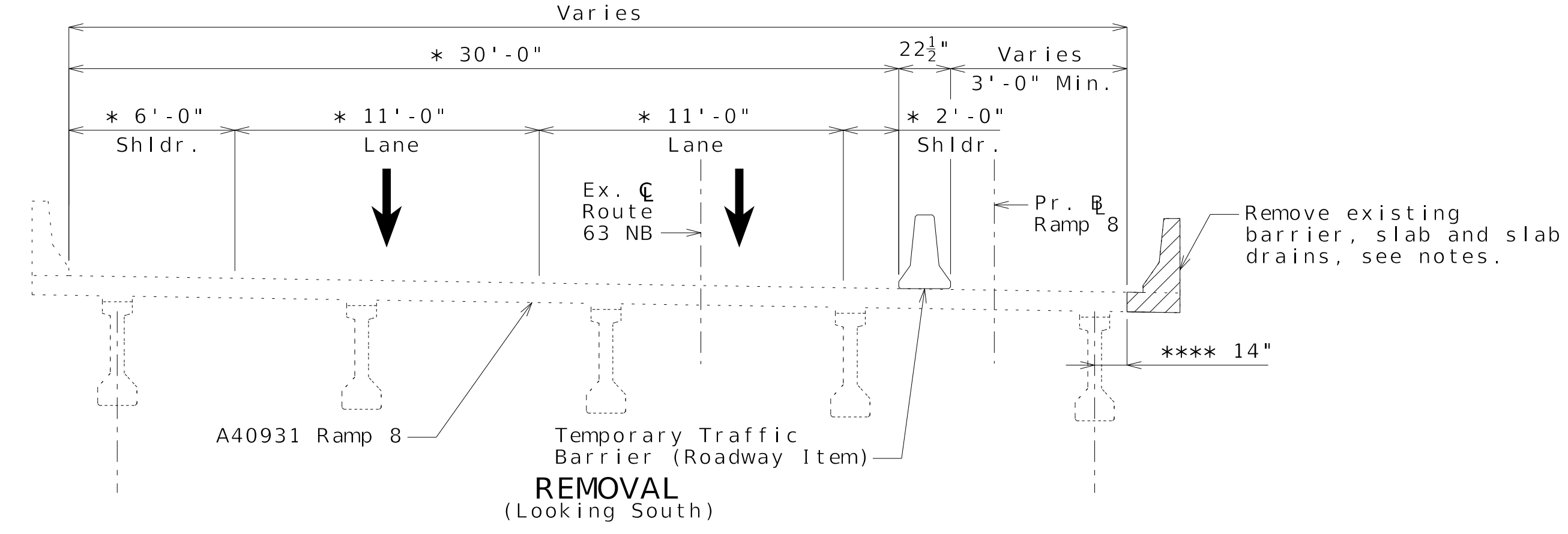
PROJECT 1

MODOT IMPROVE I-70 DB

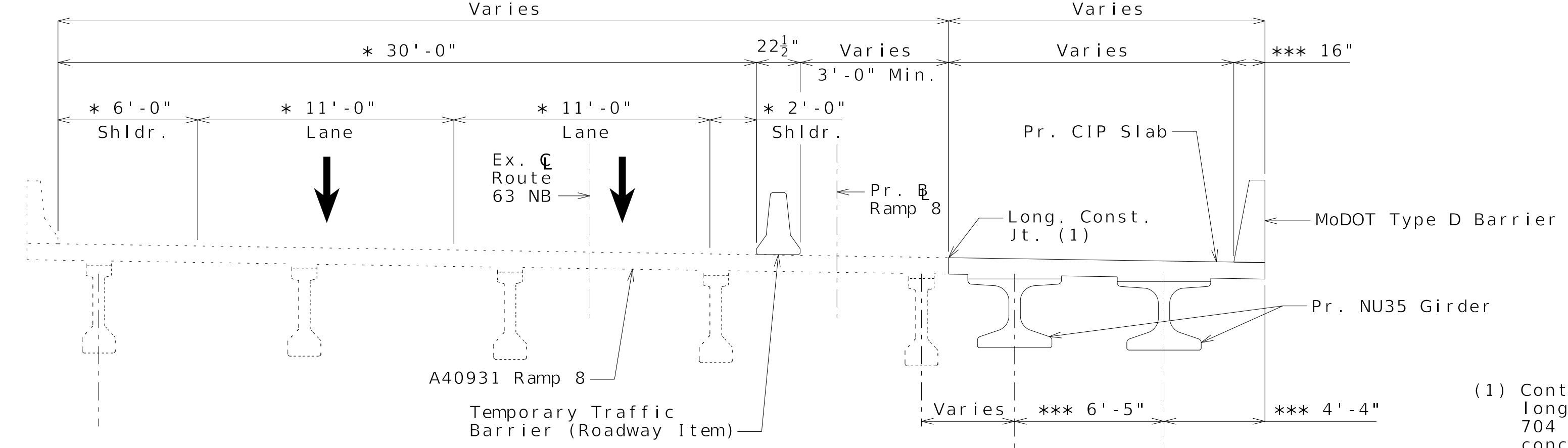
REV.



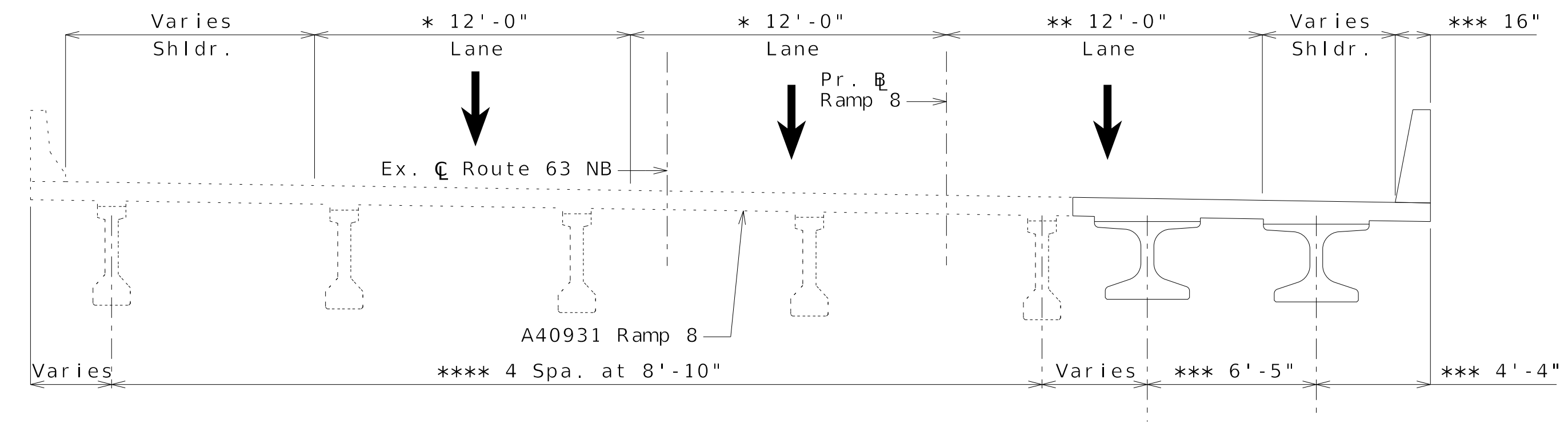
TYPICAL SECTION (EXISTING)
(Looking South)



REMOVAL
(Looking South)



CONSTRUCTION
(Looking South)



FINAL
(Looking South)

STAGE CONSTRUCTION DETAILS

Notes:
The existing slab shall be neatly saw cut along the cut line, top and bottom, to such a depth as will clear the existing top and bottom reinforcement.

Existing concrete cover as shown in the as-built plans is 3" to top bars and 1" to bottom bars.

The existing transverse and longitudinal slab reinforcement that remains embedded in solid concrete from existing deck shall be cleanly stripped of concrete and straightened for incorporation into new construction.

Any reinforcement bars that are to remain that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system.

(1) Contractor shall saturate the longitudinal cold joint with SEC 704 crack filler after the concrete has matured 28 days.

* Dimensioned perpendicular to existing \bar{C} Roadway
** Dimensioned perpendicular to proposed \bar{R} Ramp 8
*** Dimensioned perpendicular to proposed edge of deck
**** Dimensioned perpendicular to \bar{C} girder



Robert Whiteside

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MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. 3

COUNTY BOONE

JOB NO. JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A40931

DATE	DESCRIPTION
03/10/25	REV. A - PRELIMINARY REVIEW
06/23/25	REV. B - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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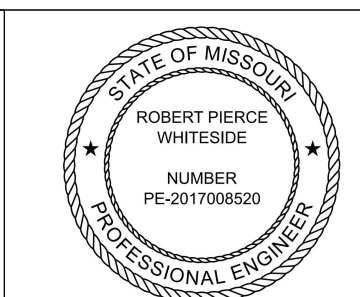
MODOT IMPROVE I-70 DB PROJECT 1

MILLSTONE WEBER

CHINA ENGINEERING, INC.
709 OLIVE STREET
SUITE 100
ST. LOUIS, MO 63101
(314) 338-4431

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Robert P. Whiteside
 Robert P. Whiteside - Civil
 MO PE-2017008520

DATE PREPARED
 7/29/2025

ROUTE STATE
 I - 70 MO

DISTRICT SHEET NO.
 BR 4

COUNTY
 BOONE

JOB NO.
 JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
 A40931

DESCRIPTION
 REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

DATE

06/23/25

07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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PROJECT 1

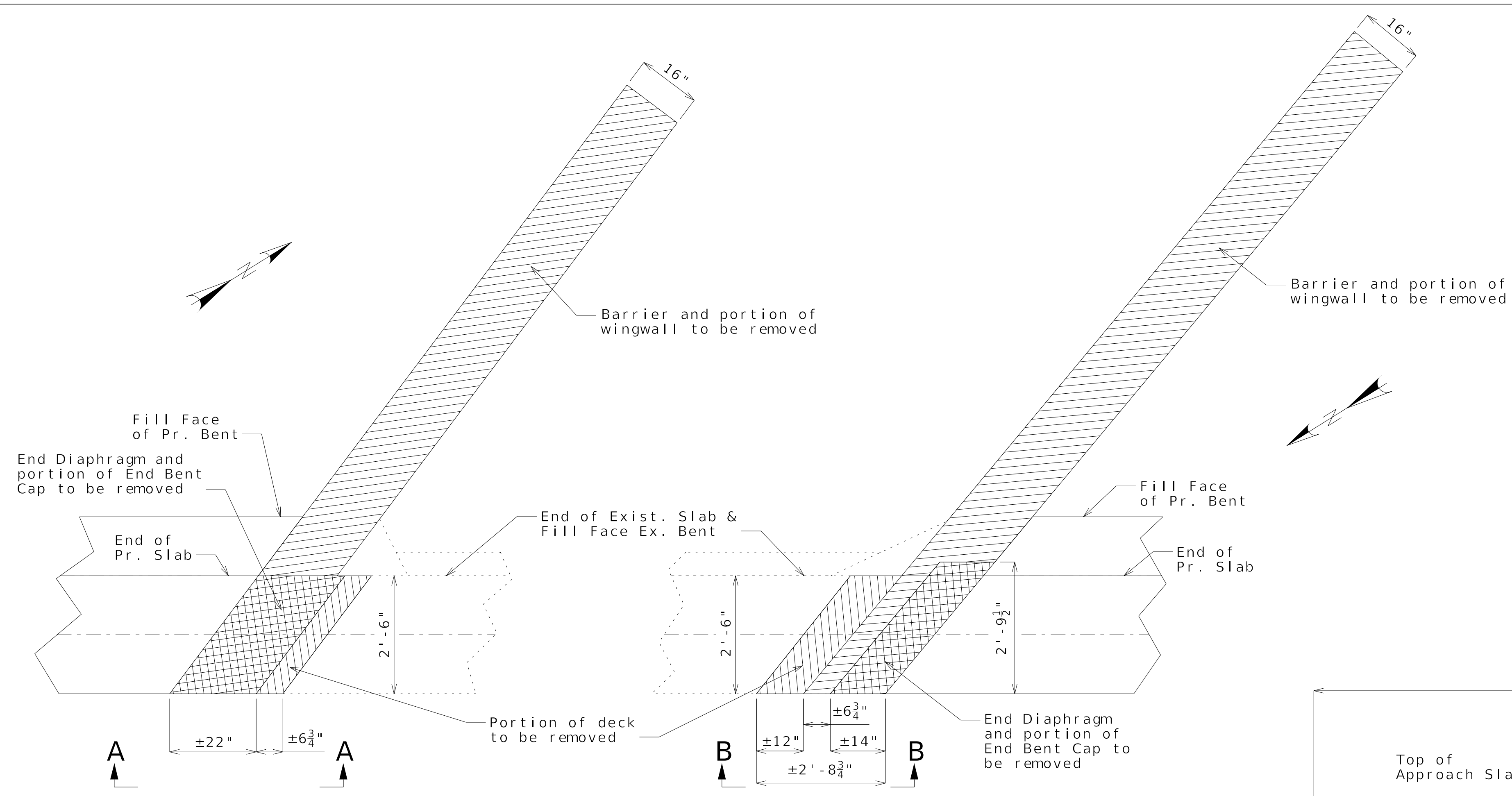
MILLSTONE WEBER

ENGINEERING, INC.

200 OLIVE STREET SUITE 1000 JEFFERSON CITY, MO 65101 (314) 338-4431

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REV.

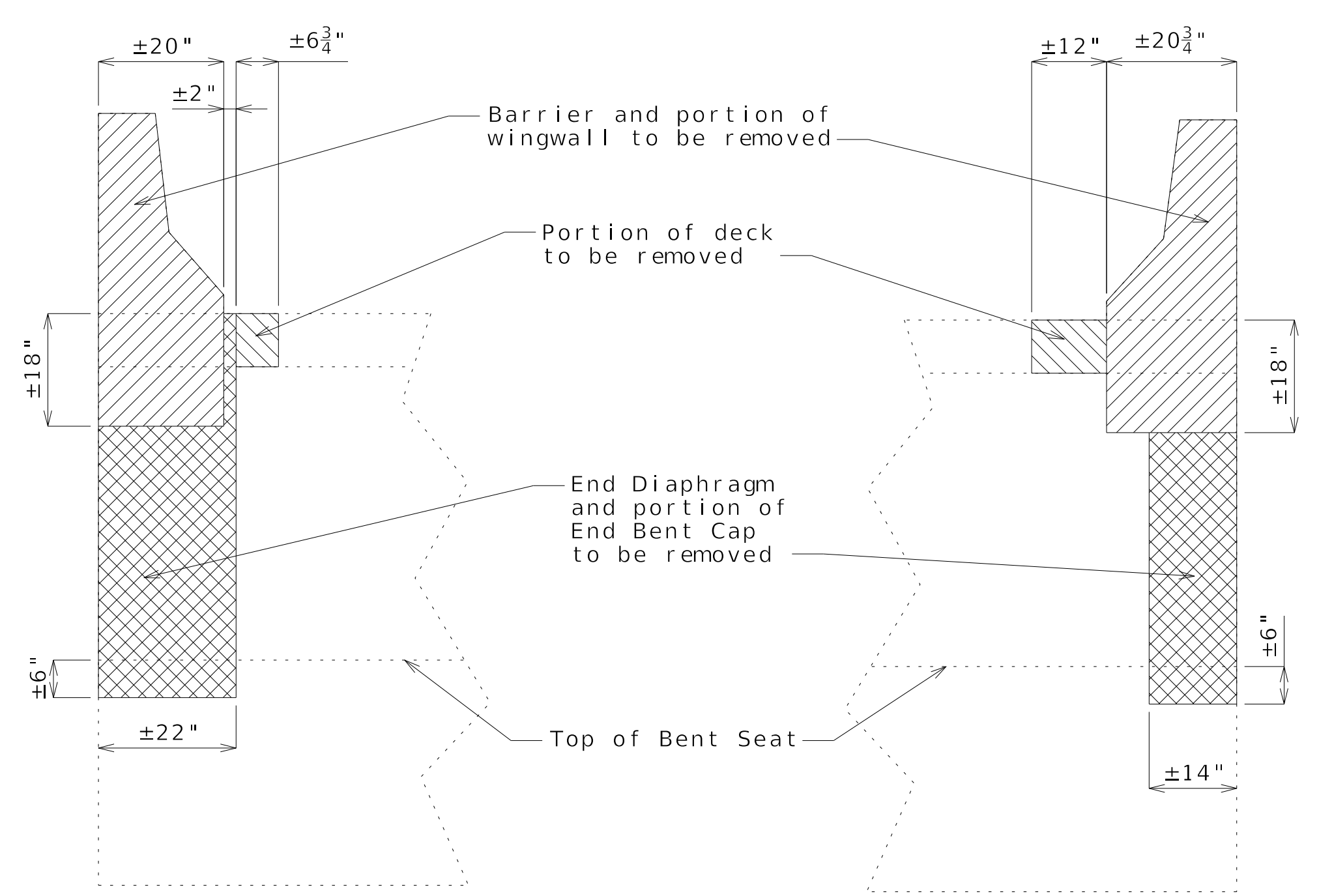


PART-PLAN DEMOLITION AT END BENT NO. 1

PART-PLAN DEMOLITION AT END BENT NO. 5

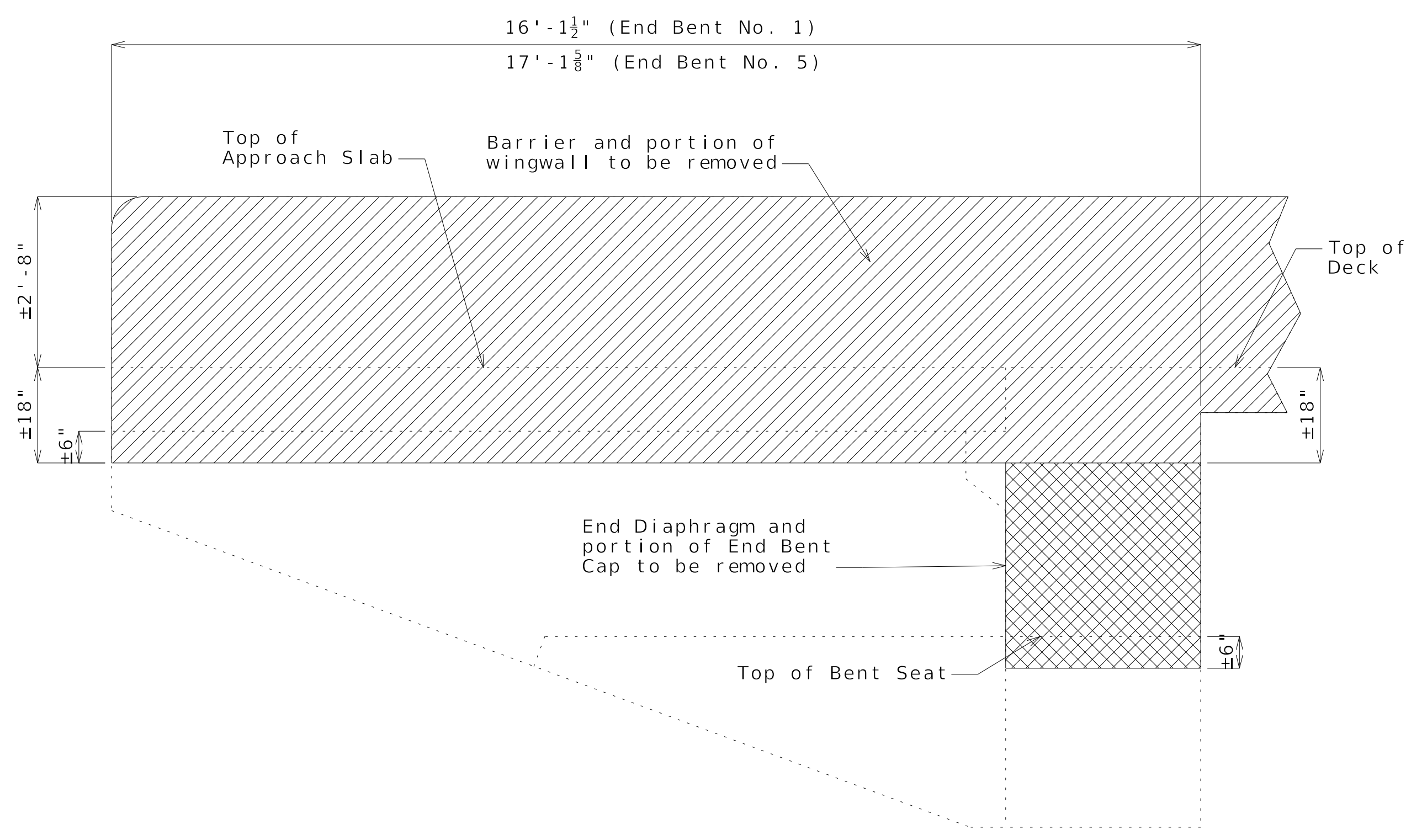
(Ex. and Pr. Approach Slab not shown for clarity)

(Ex. and Pr. Approach Slab not shown for clarity)



VIEW A-A

VIEW B-B



ELEVATION OF DEMOLITION AT END BENTS

Note: End Bent No. 1 shown, End Bent No. 5 opposite hand

Note: For staged construction of Bridge Approach Slab, see Sheet No. 27.

END BENT DEMOLITION AND REPLACEMENT AT END BENTS NO. 1 & 5

Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 4 of 36



Robert Whiteside

01/26/2026 10:32:53 AM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
1/26/2026

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
5

COUNTY
BOONE

JOB NO.
JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

REV. 1 - NDC 052 REVISED REINFORCING

DATE

06/23/25

07/18/25

01/26/26

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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MILLSTONE WEBER

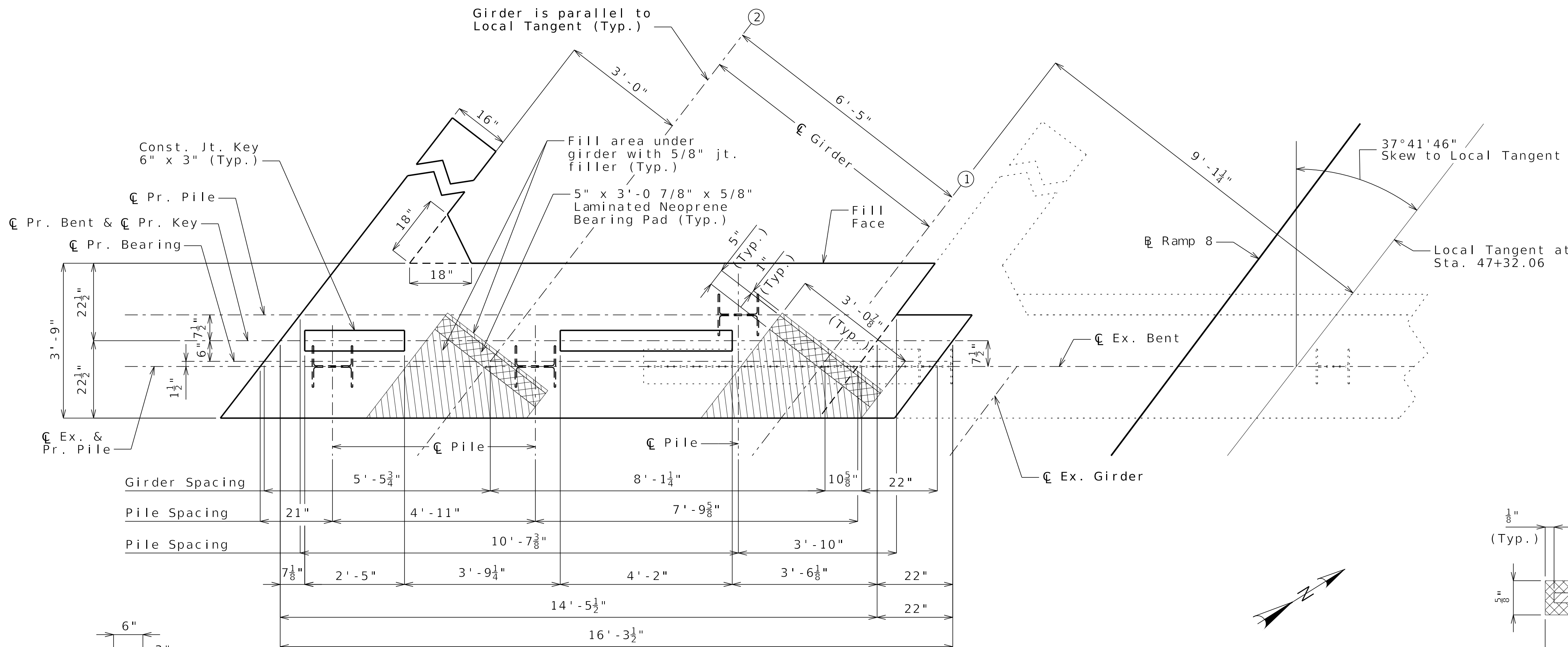
ENGINEERING INC. 720 OLIVE STREET SUITE 100 MO 63101 (314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

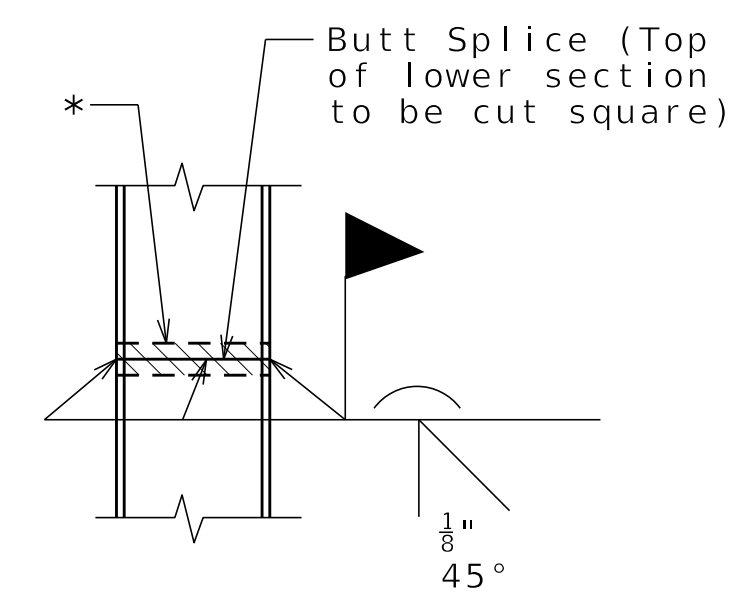
PROJECT 1

MODOT IMPROVE I-70 DB

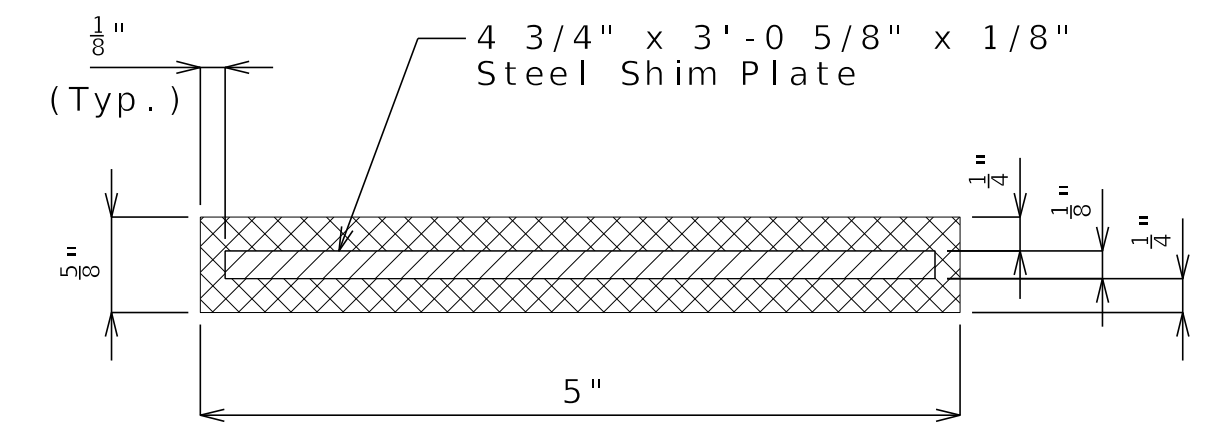
REVISIONS



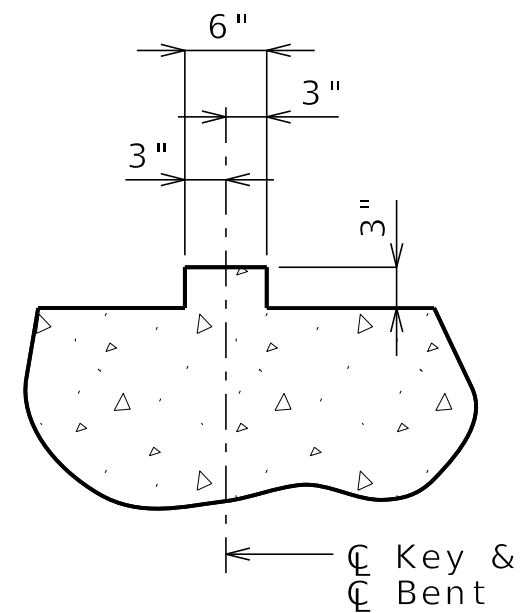
PLAN OF BEAM SHOWING DIMENSIONS & BEARING



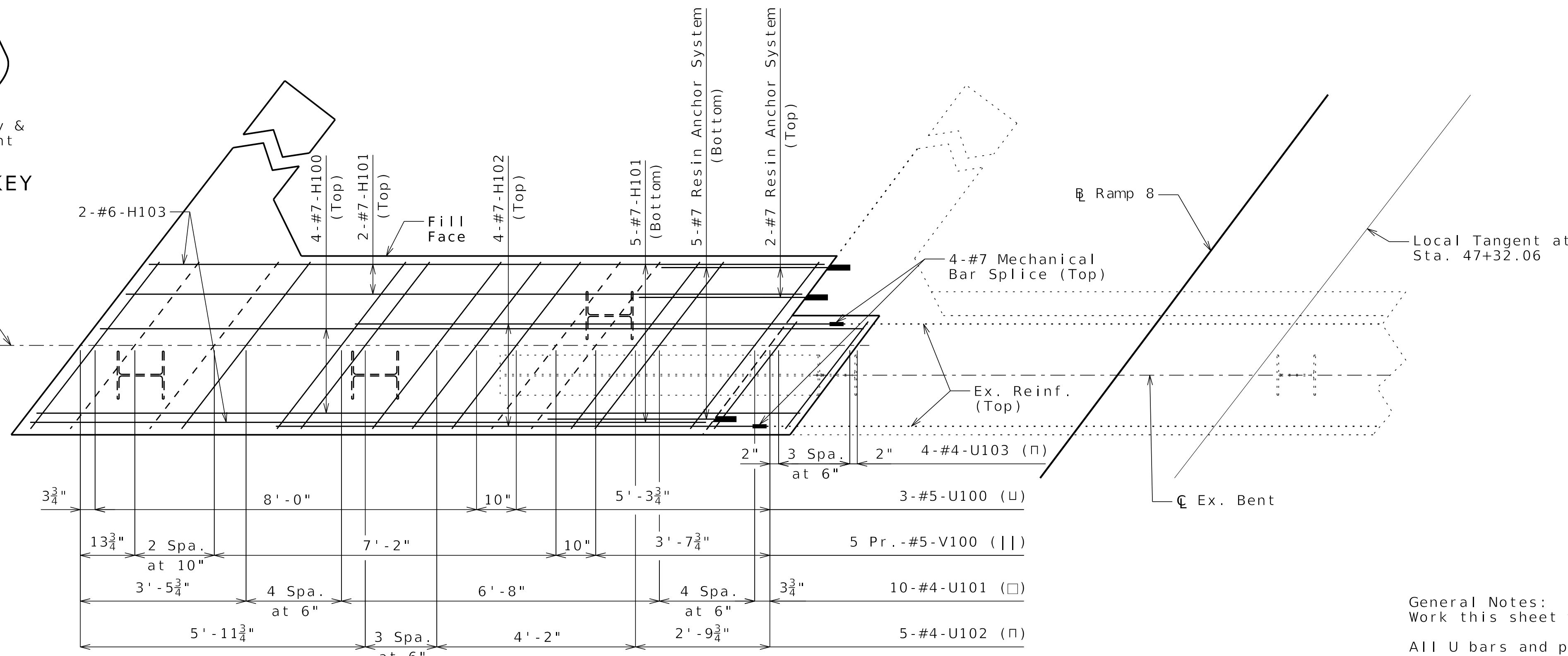
STEEL PILE SPLICE (If required)



SECTION THRU LAMINATED NEOPRENE BEARING PAD AT END BENT NO. 1



SECTION THRU KEY



PLAN OF BEAM SHOWING REINFORCEMENT

DETAILS OF END BENT NO. 1

DETAILS OF RESIN ANCHOR SYSTEMS

** Manufacturer's recommended embedment length (5" Min.)

General Notes:
Work this sheet with Sheets No. 6 and 7.

All U bars and pairs of V bars shall be placed parallel to local tangent.

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

#4-U103 bars shall be drilled and grouted into existing bent cap to a depth of at least 5 inches.



Robert Whiteside
Robert P. Whiteside - Civil
MO PE-2017008520

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ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
6

COUNTY
BOONE

JOB NO.
JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

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DATE

06/23/25

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105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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MISSOURI HIGHWAYS AND TRANSPORTATION

COMMISSION

MODOT

MILLSTONE

WEBER

ENGINEERING, INC.

200 OLIVE STREET

SUITE 100

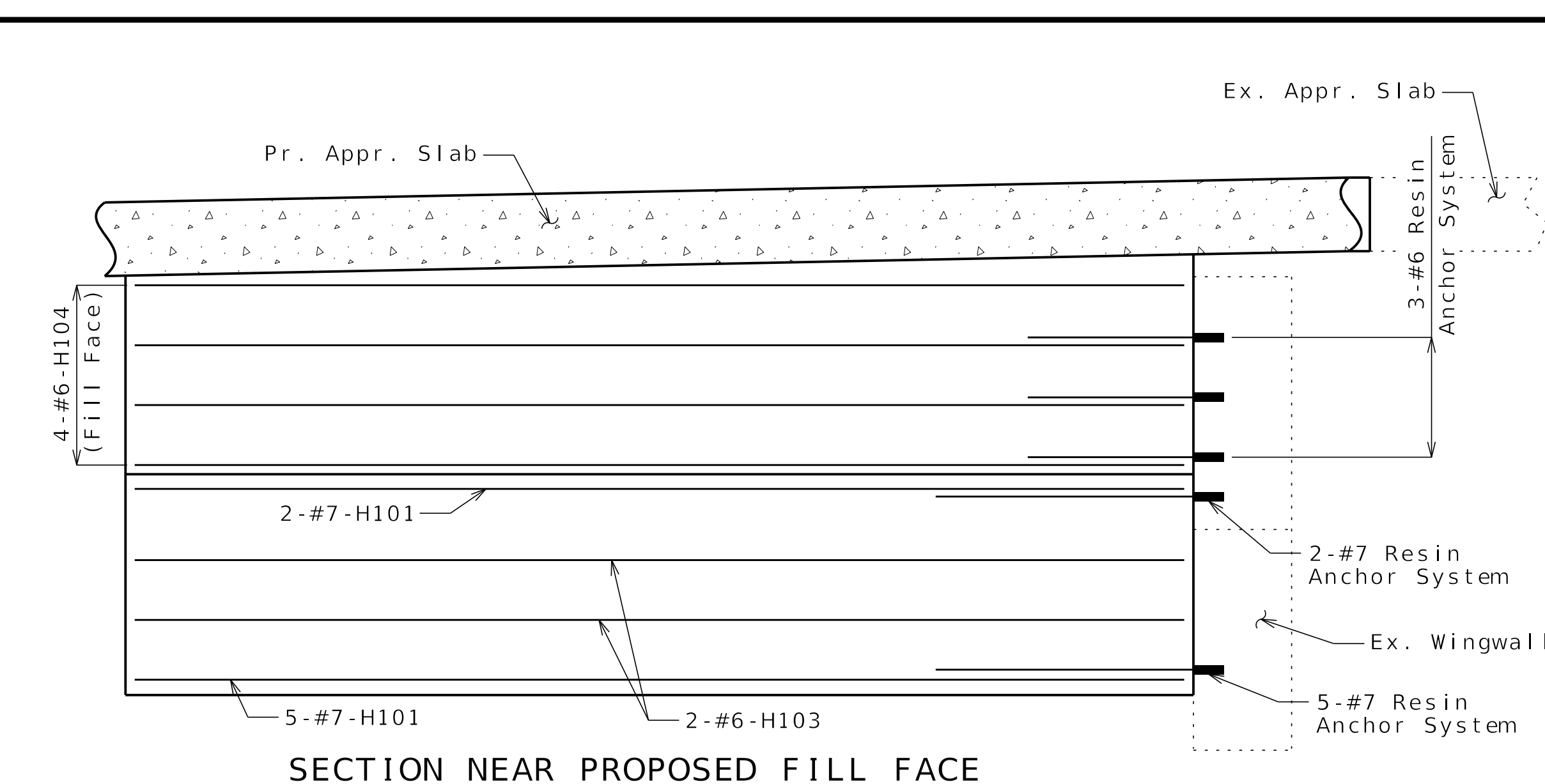
JEFFERSON CITY, MO 65101

314.338.4431

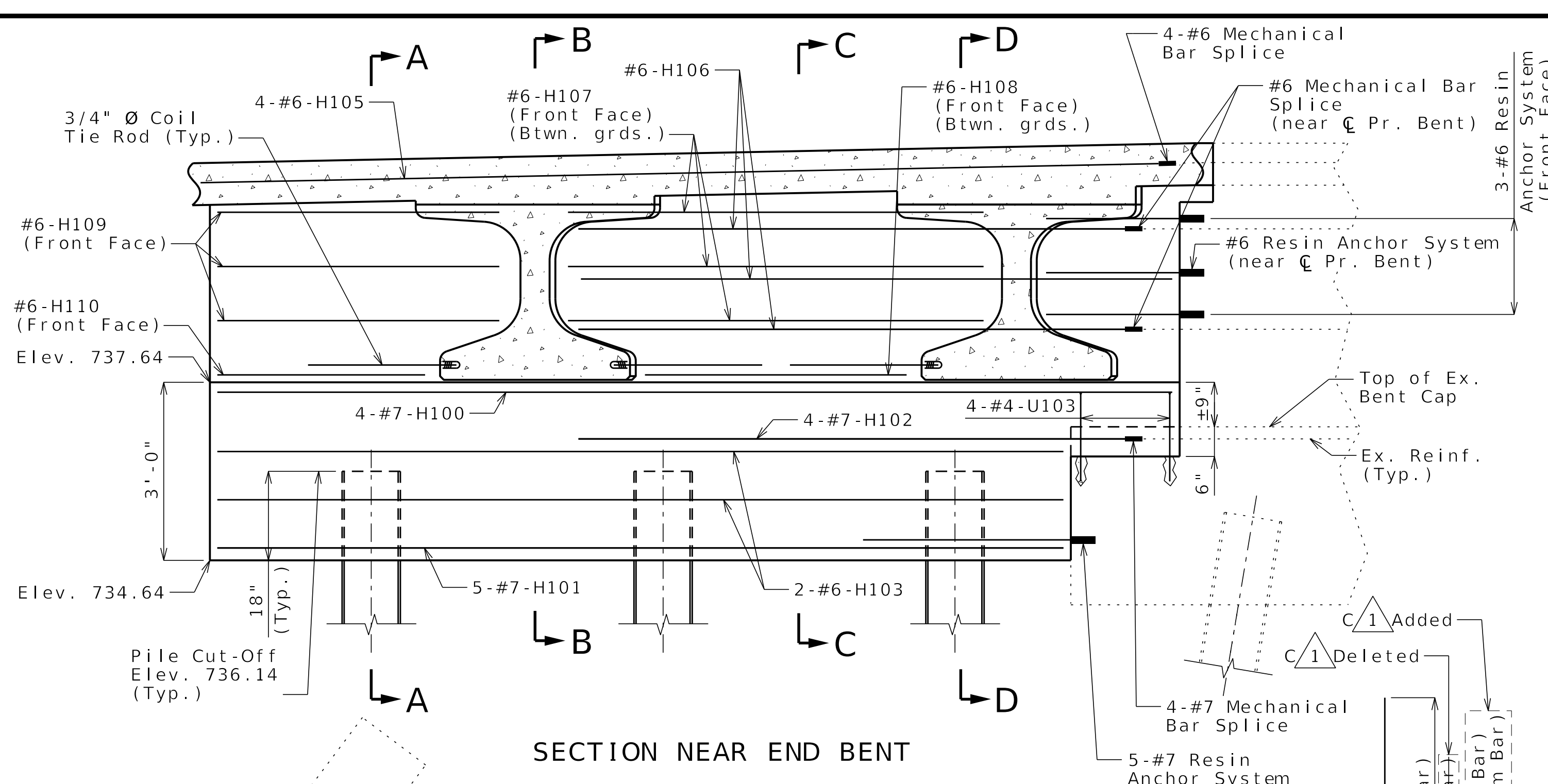
MO STATE CERTIFICATE OF AUTHORITY #025261

ENGINEERING

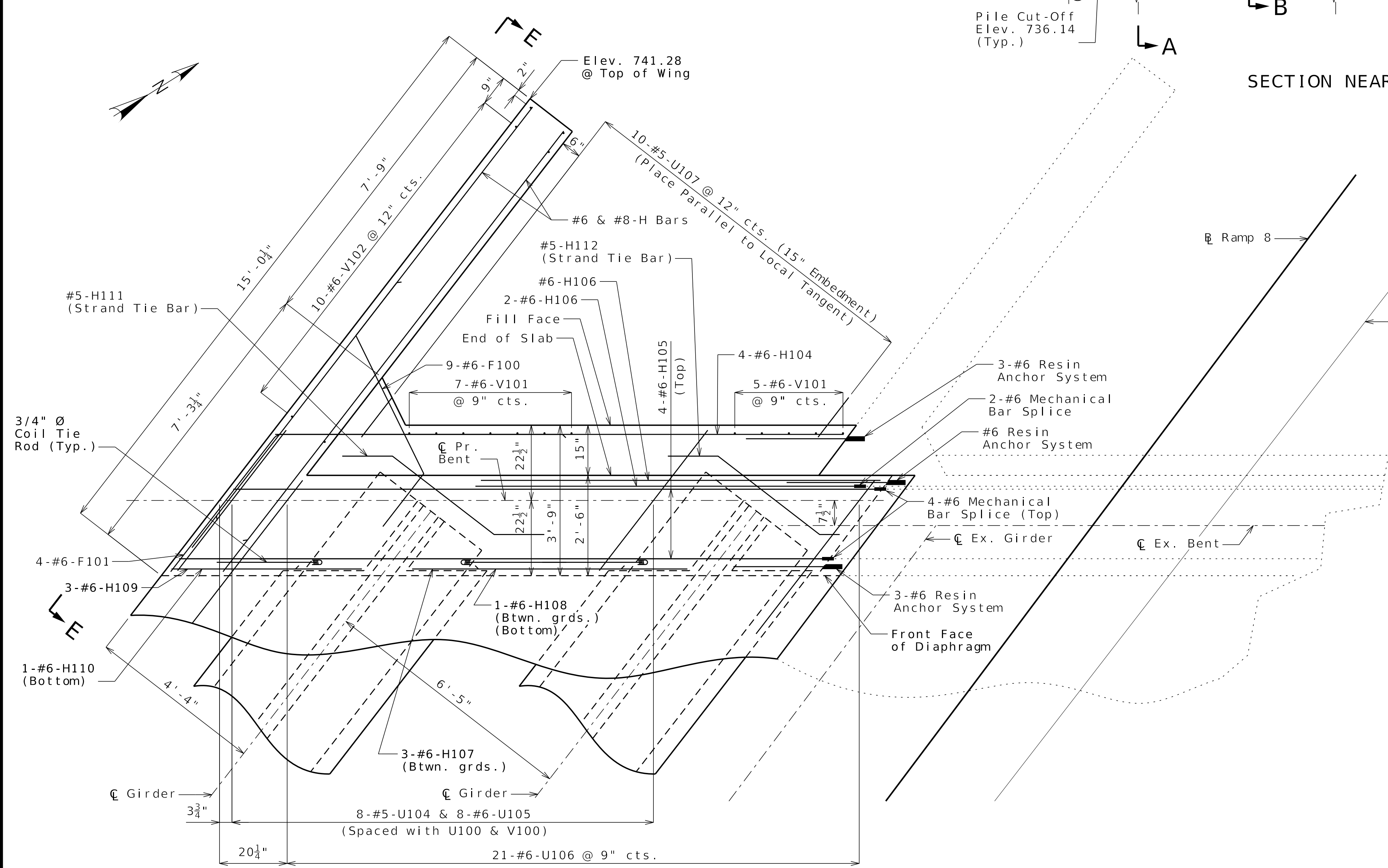
REV.



SECTION NEAR PROPOSED FILL FACE



SECTION NEAR END BENT

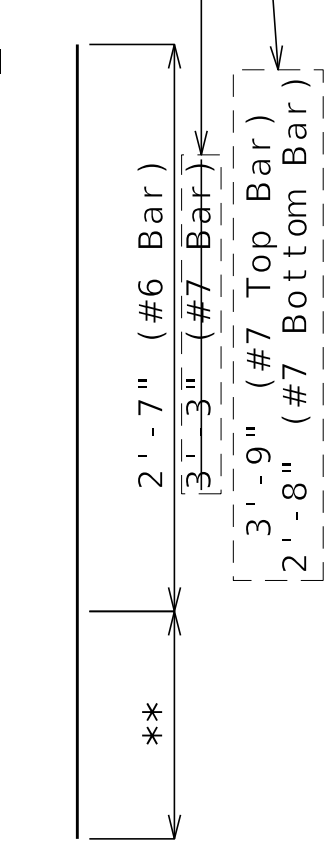


PART PLAN

DETAILS OF END BENT NO. 1

General Notes:
Work this sheet with Sheets No. 5 and 7.
For Sections A-A, B-B, C-C, and D-D and Elevation E-E, see Sheet No. 7.
The #6-F100 and #6-F101 bars shall be bent in the field to clear girders.
The U bars shall be placed parallel to local tangent.
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
Strands at the end of girders shall be field bent or, if necessary, cut in field to maintain 1 1/2-inch minimum clearance to fill face of end bent.
For location of coil tie rods, #5-H111 (strand tie bar), and #5-H112 (strand tie bar), see Sheet No. 16.
For details of vertical drain at end bents, see Sheet No. 8.
For details of bridge approach slab, see Sheet No. 27.
For details of existing wingwall removal, see Sheet No. 4.
The contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039.
The minimum embedment depth in concrete with f'c=3,000 psi for the resin anchor systems shall be that required to meet minimum ultimate pullout strength in accordance with Sec. 1039 but shall not be less than 5 inches.
#4-U103 bars shall be drilled and grouted into existing bent cap to a depth of at least 5 inches.

DETAILS OF RESIN ANCHOR SYSTEMS
** Manufacturer's recommended embedment length (5" Min.)

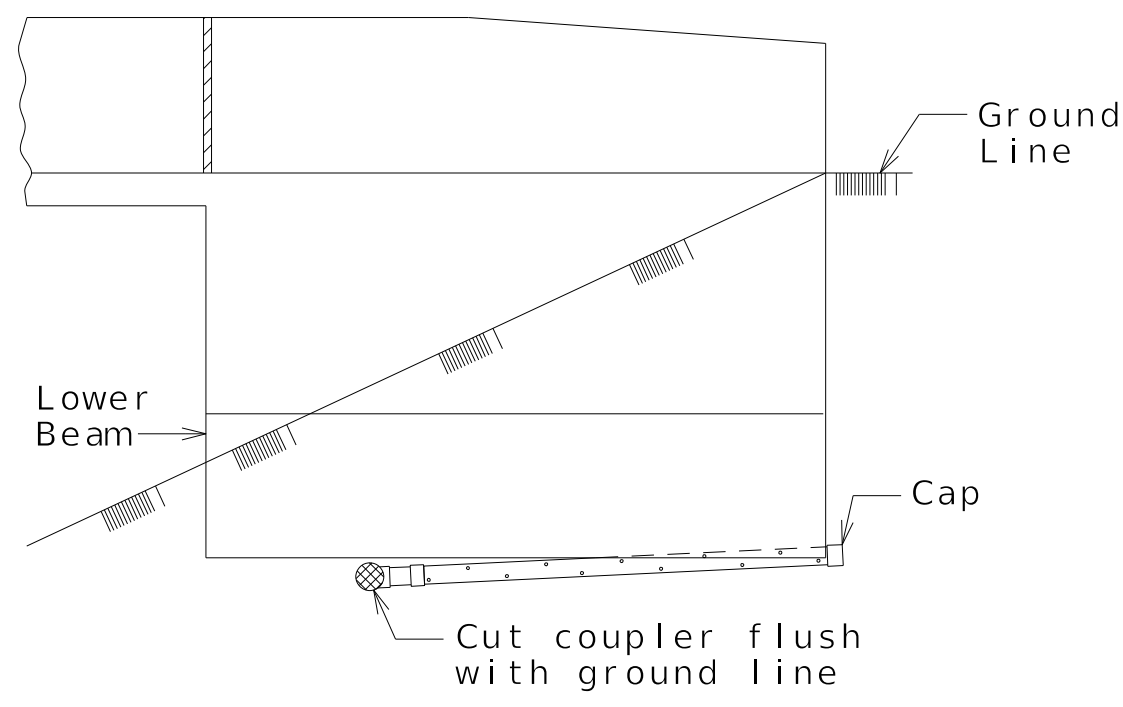


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Checked MAY 2025

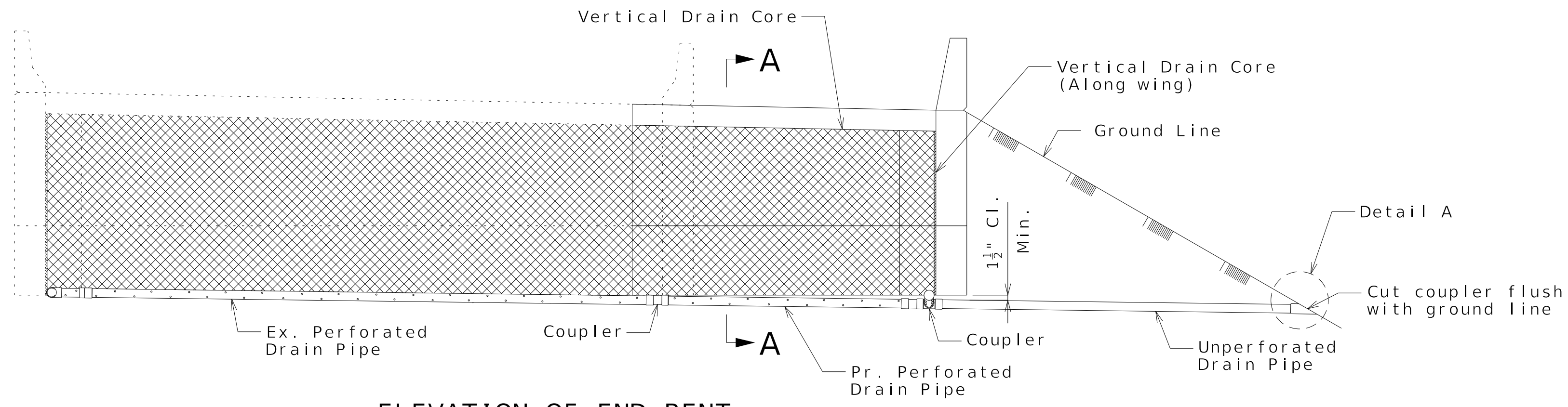
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 36

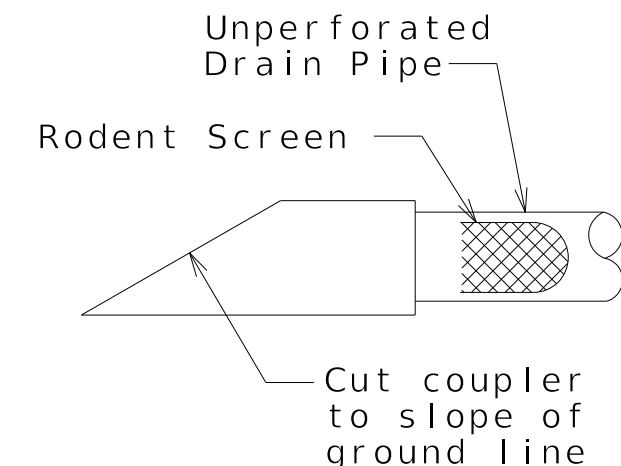
REVISED 01-26-2026



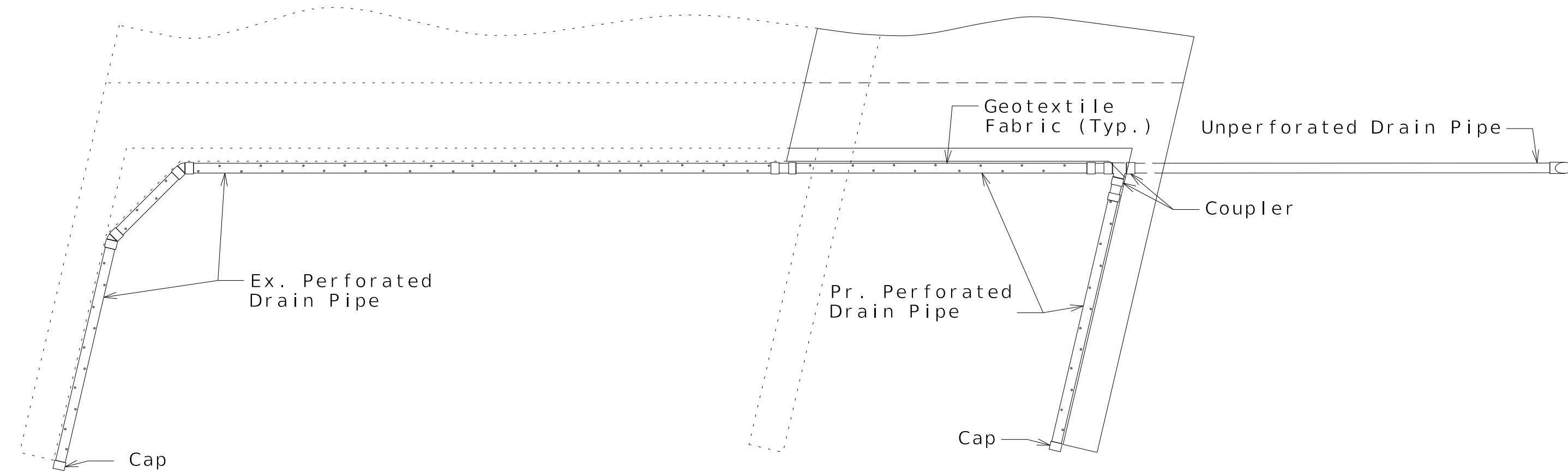
ELEVATION OF WING



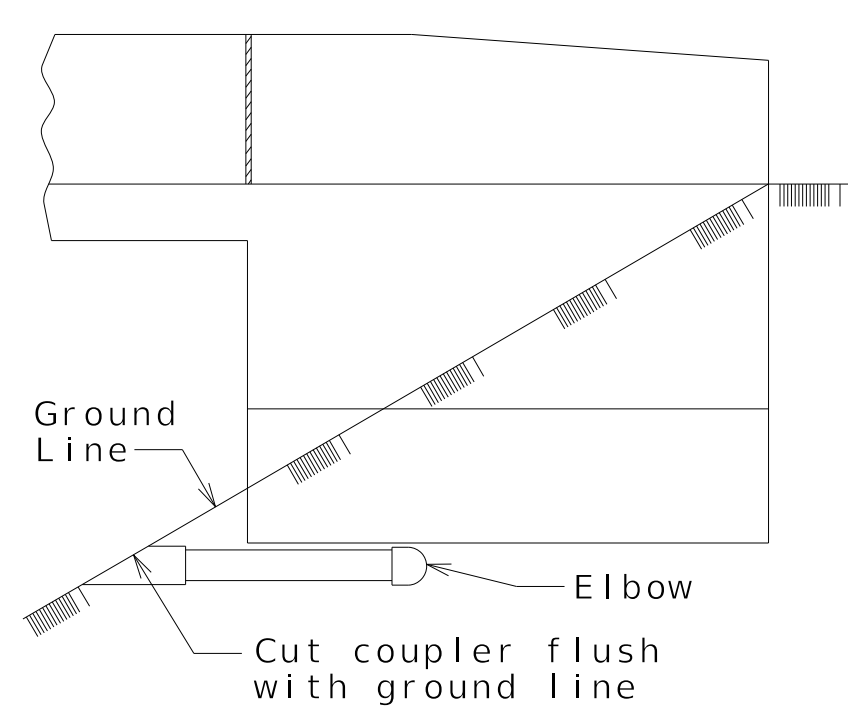
ELEVATION OF END BENT



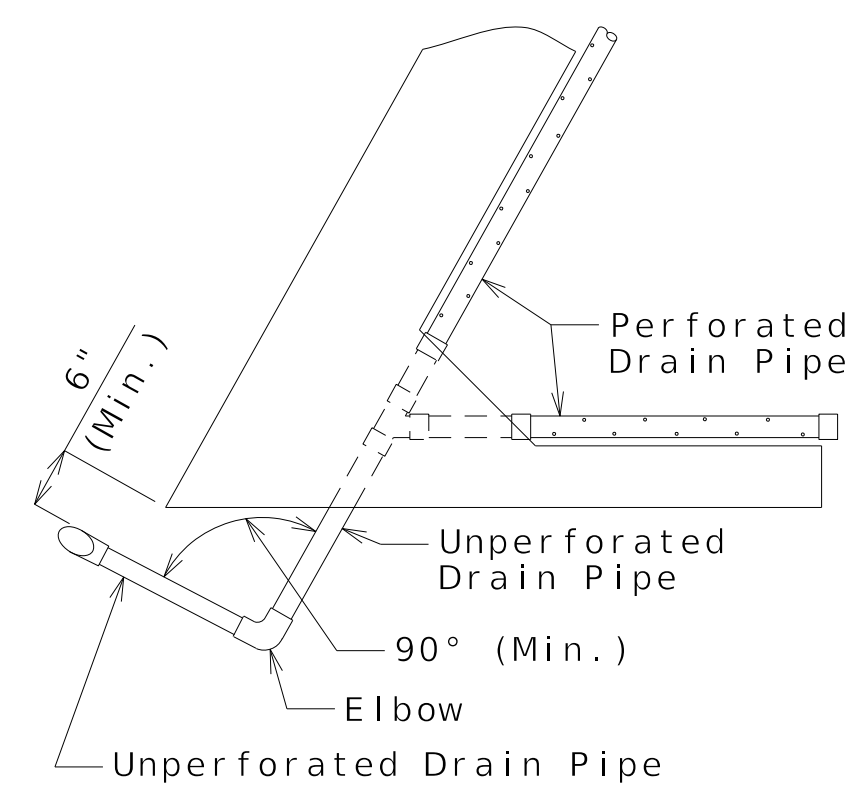
DETAIL A



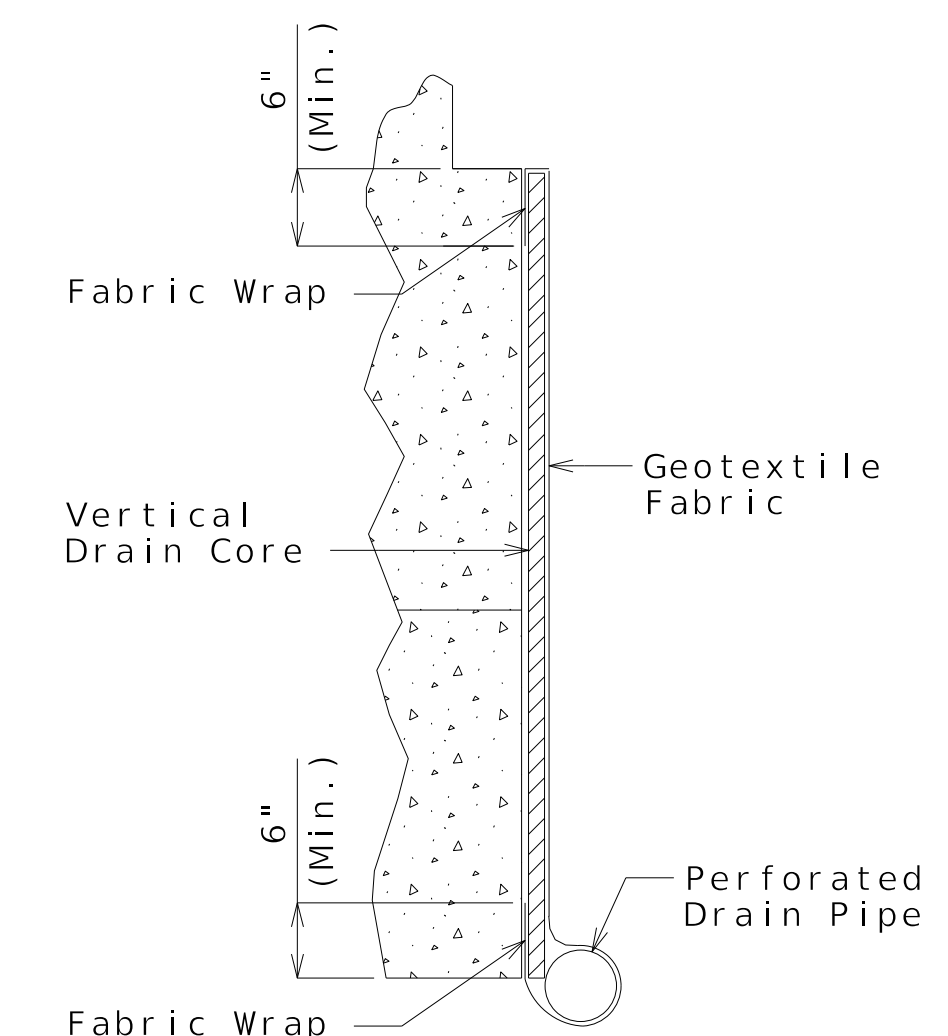
PLAN OF END BENT



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



PART PLAN



PART SECTION A-A
(Section thru wing 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.
- Contractor shall tie into existing drain pipes and extend past new construction.

VERTICAL DRAIN AT END BENTS

(Drain at end bent no. 1 shown, drain at end bent no. 5 similar)

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 8 of 36



Robert P. Whiteside
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE STATE
1 - 70 MO
DISTRICT SHEET NO.
BR 8

COUNTY
BOONE
JOB NO.
JST0021
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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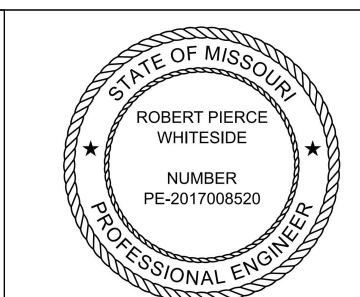
MoDOT IMPROVE I-70 DB PROJECT 1

MILLSTONE WEBER

CONVE ENGINEERING, INC.
200 OLIVE STREET
SUITE 100
JEFFERSON CITY, MO 65101
(314) 338-4431

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Robert P. Whiteside
 Robert P. Whiteside - Civil
 MO PE-2017008520

DATE PREPARED
 7/29/2025

ROUTE STATE
 1-70 MO

DISTRICT SHEET NO.
 BR 9

COUNTY
 BOONE

JOB NO.
 JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
 A40931

DATE	DESCRIPTION
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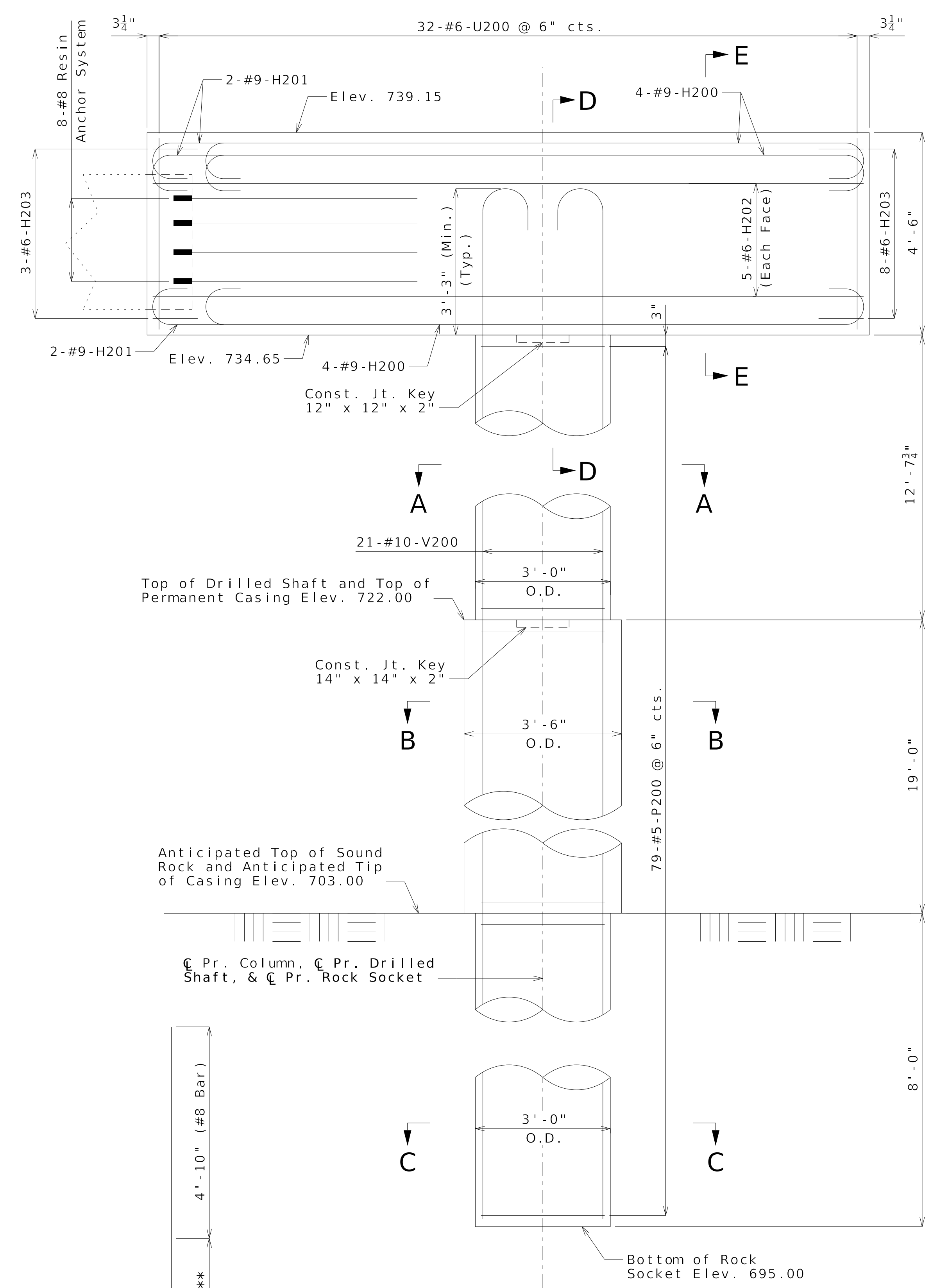
105 WEST CAPITOL
 JEFFERSON CITY, MO 65102
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MODOT IMPROVE I-70 DB PROJECT 1

MILLSTONE WEBER

CHUCK ENGINEERING, INC.
 709 OLIVE STREET
 SUITE 100
 ST. LOUIS, MO 63101
 (314) 338-4431

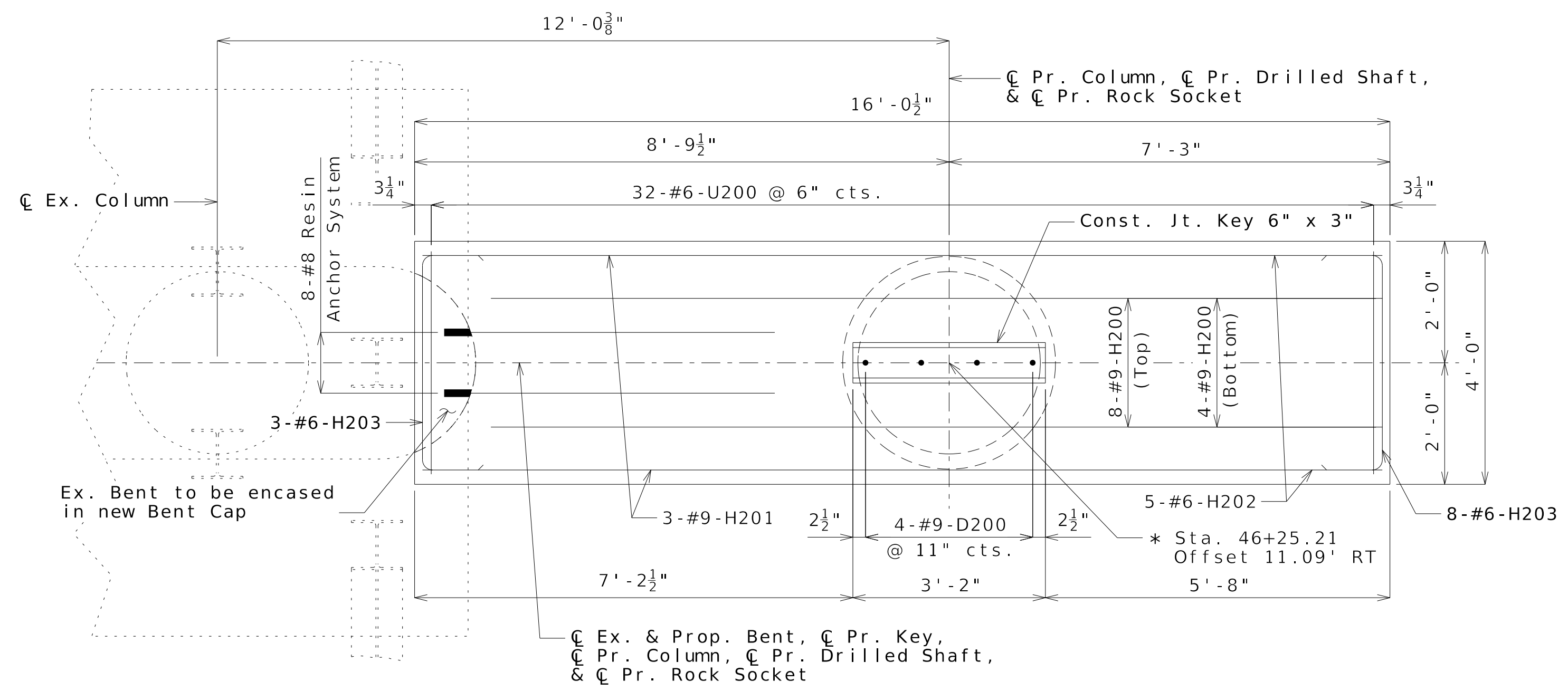
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



ELEVATION
 (Looking South)

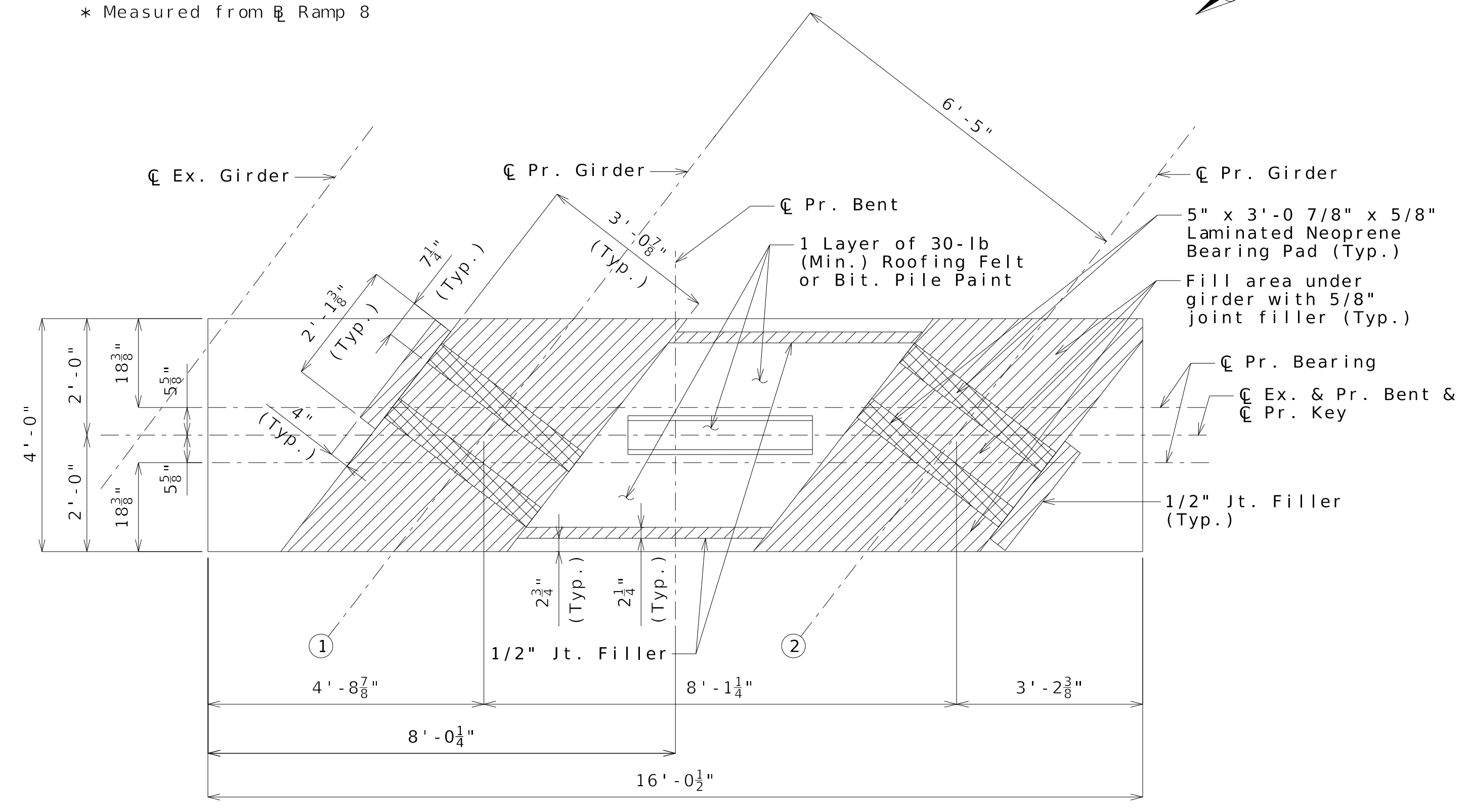
DETAILS OF RESIN ANCHOR SYSTEMS

** Manufacturer's recommended embedment length (5" Min.)



PLAN SHOWING REINFORCEMENT

* Measured from B Ramp 8



PLAN OF BEAM

General Notes:
 Work this sheet with Sheet No. 12.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039.

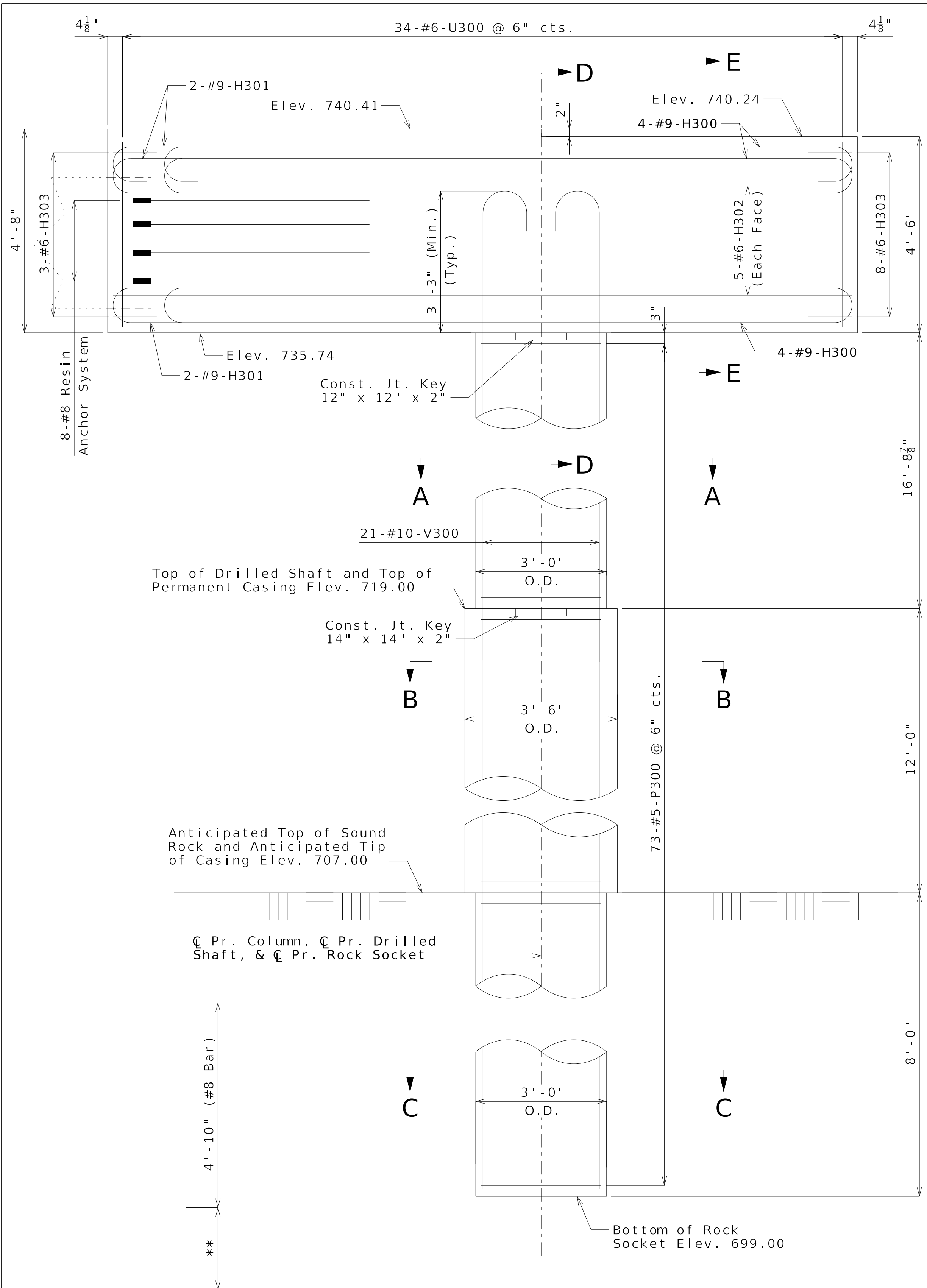
The minimum embedment depth in concrete with $f'c=3,000$ psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec. 1039 but shall not be less than 5".

INTERMEDIATE BENT NO. 2

Detailed JAN. 2025
 Checked MAY 2025

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

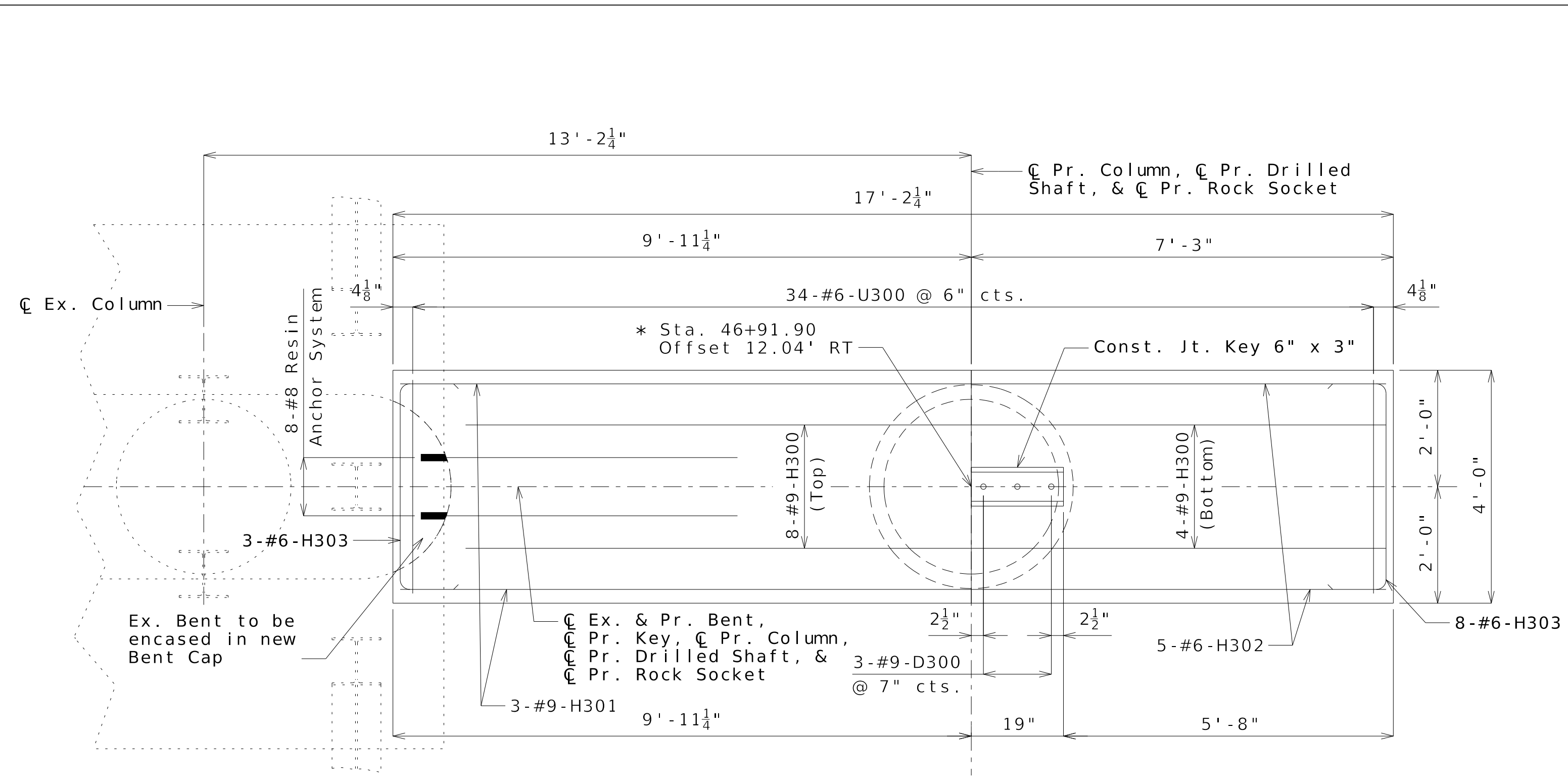
Sheet No. 9 of 36



ELEVATION
(Looking South)

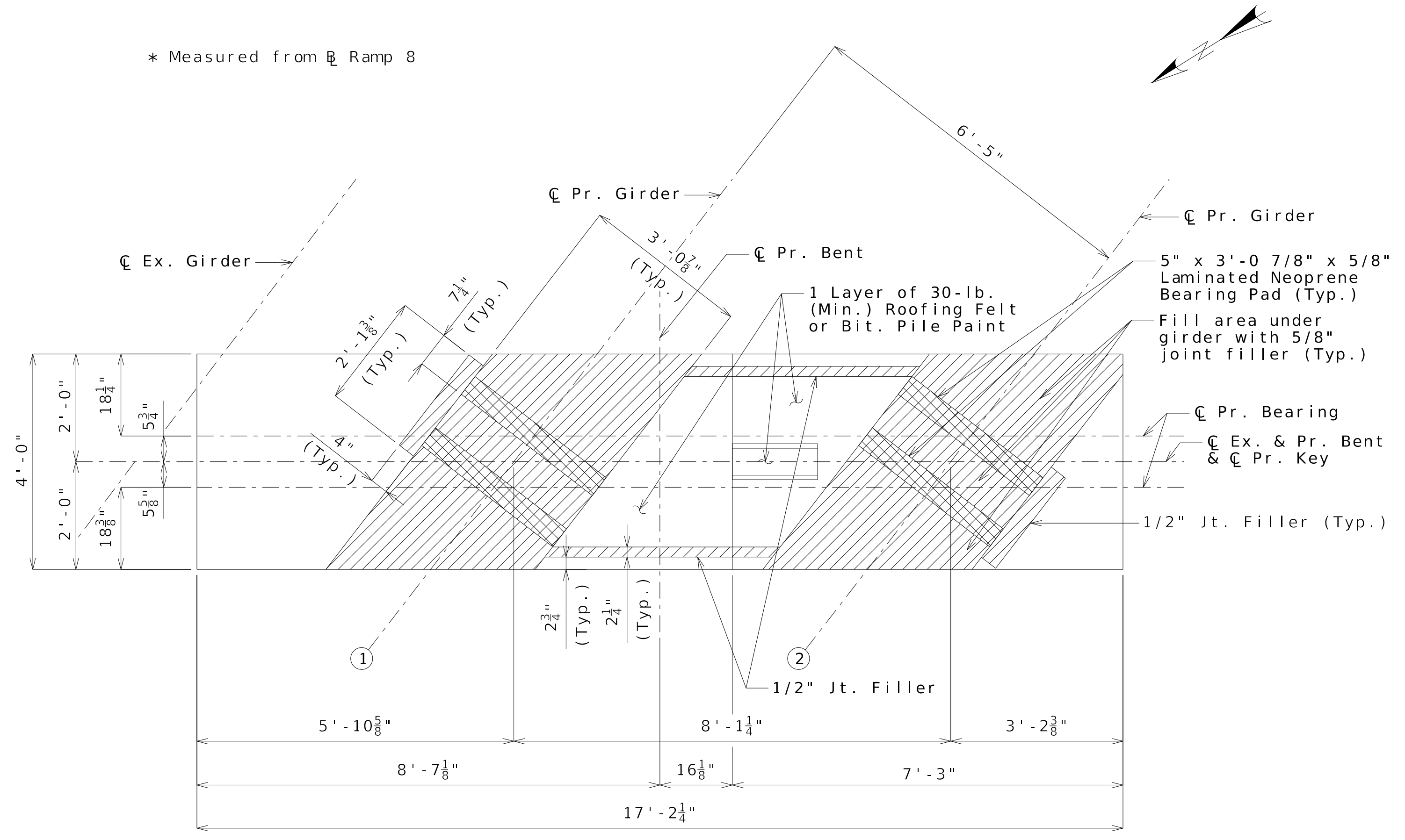
DETAILS OF RESIN ANCHOR SYSTEMS

** Manufacturer's recommended embedment length (5" Min.)



PLAN SHOWING REINFORCEMENT

* Measured from \bar{C} Ramp 8



PLAN OF BEAM

General Notes:
Work this sheet with Sheet No. 12.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039.

The minimum embedment depth in concrete with $f'c=3,000$ psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec. 1039 but shall not be less than 5".



Robert Whiteside
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE 1-70 STATE MO
DISTRICT BR SHEET NO. 10

COUNTY BOONE
JOB NO. JST0021
CONTRACT ID.

PROJECT NO.
BRIDGE NO. A40931

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

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

MODOT IMPROVE I-70 DB PROJECT 1
MILLSTONE WEBER
CHUCK ENGINEERING, INC.
709 OLIVE STREET
SUITE 100
ST. LOUIS, MO 63101
314.338.4431
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



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101/26/2026 10:32:53 AM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
1/26/2026

ROUTE 1-70 STATE MO
DISTRICT BR SHEET NO. 11

COUNTY BOONE
JOB NO. JST0021
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A40931

DESCRIPTION
REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

REV. 1 - NDC 052 REVISED REINFORCING

DATE 06/23/25

07/18/25

01/26/26

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

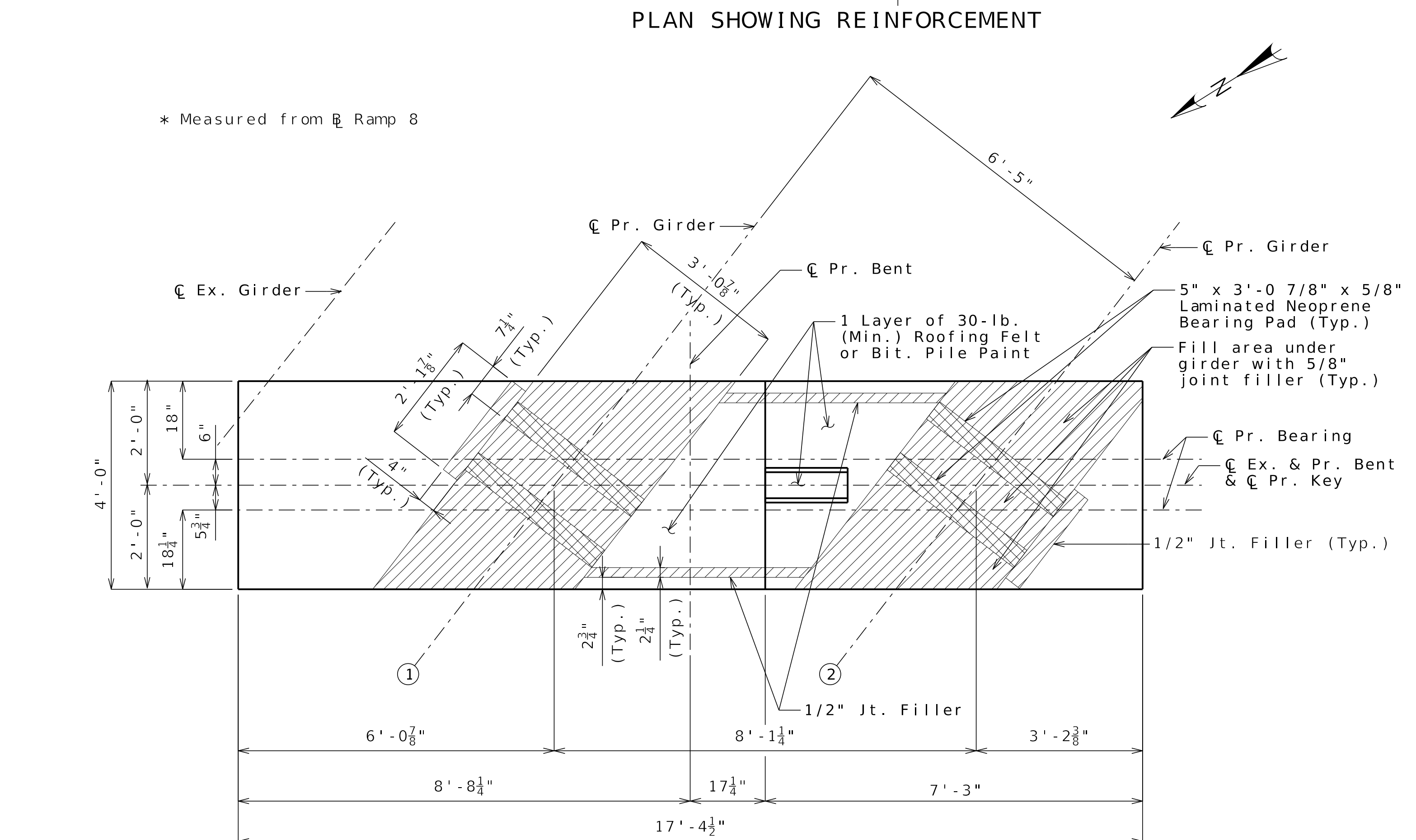
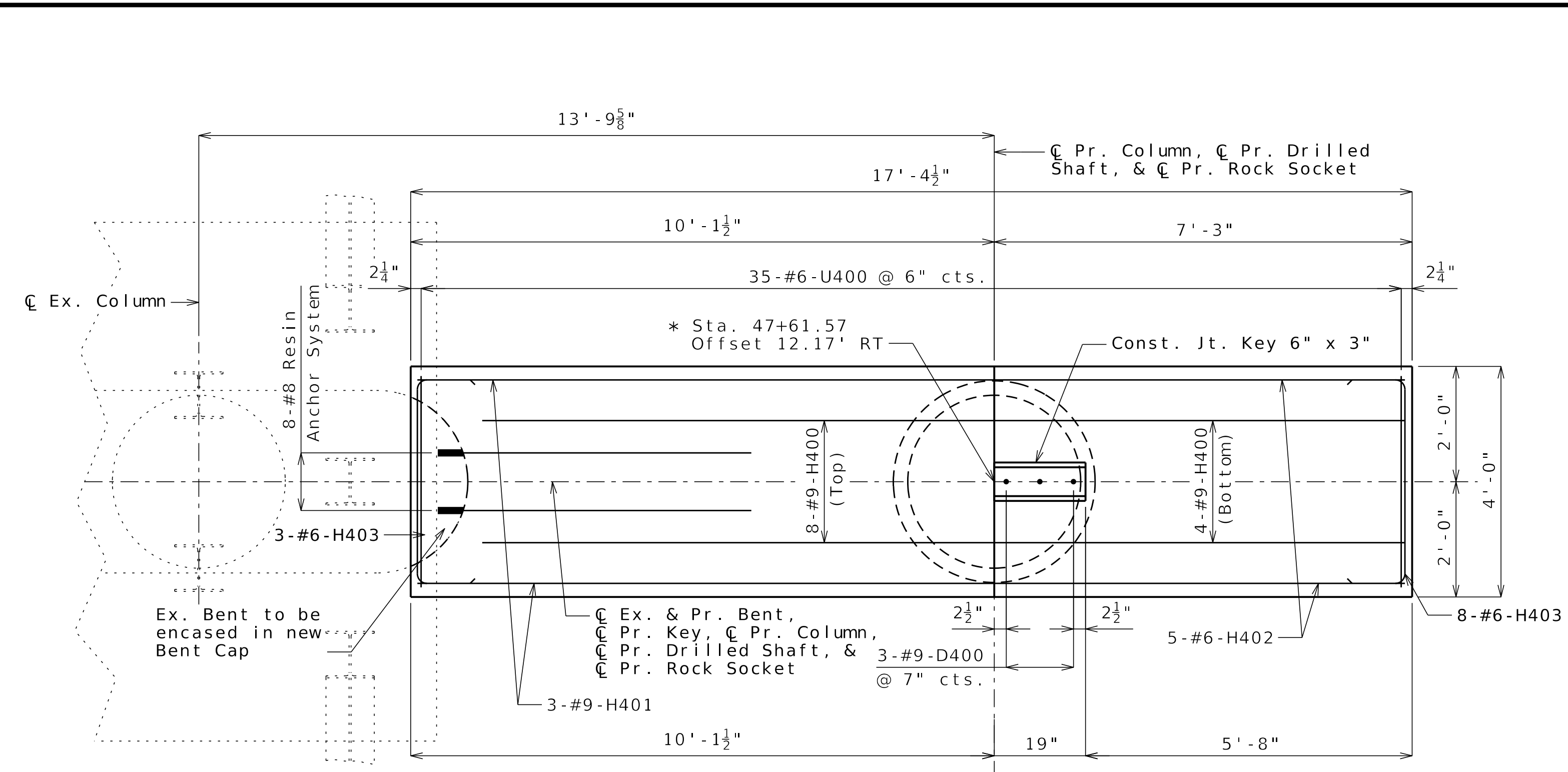
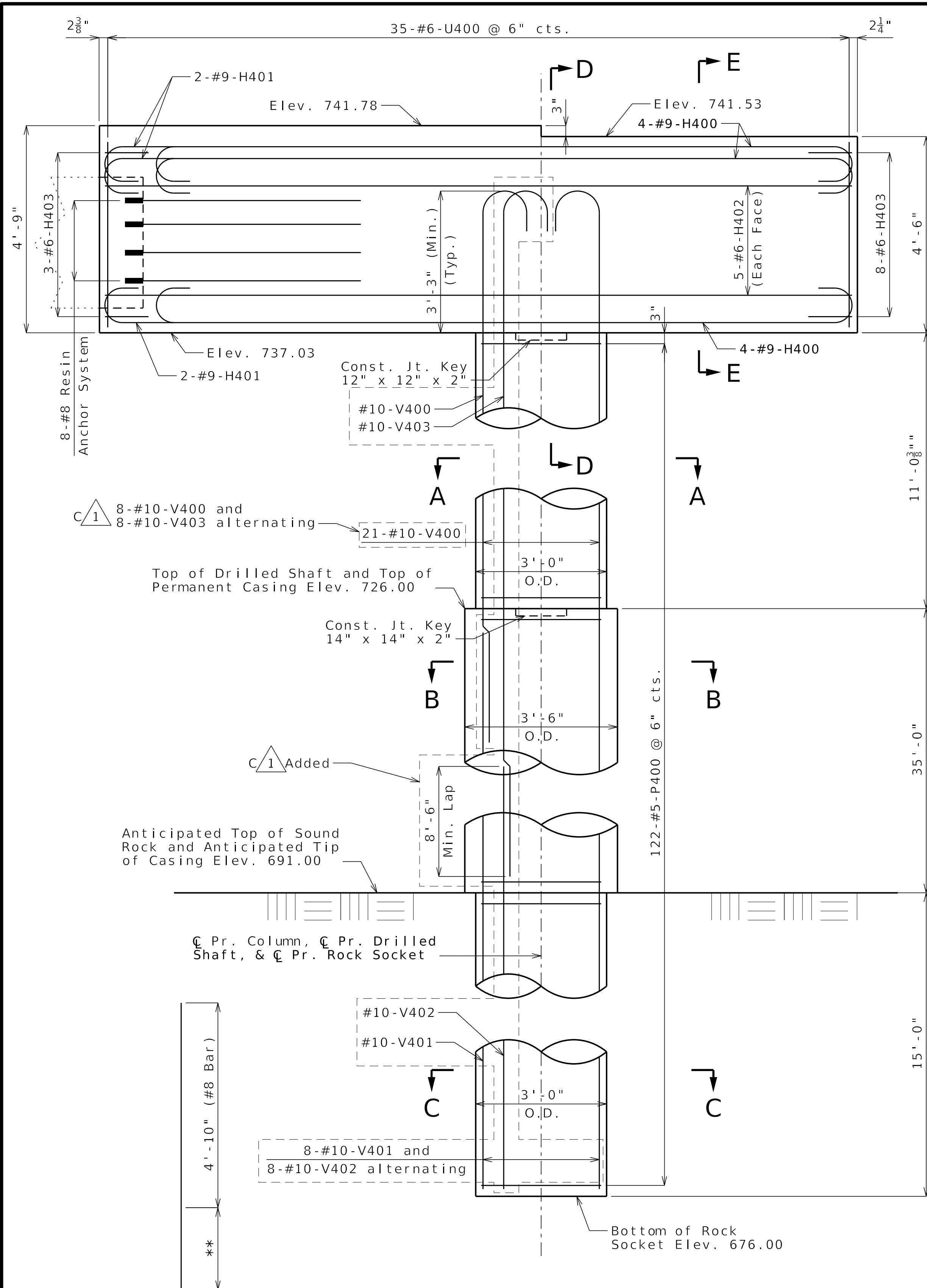
105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MILLSTONE WEBER

ENGINEERING INC. 709 OLIVE STREET SUITE 100 JEFFERSON CITY, MO 65101 (314) 338-8431

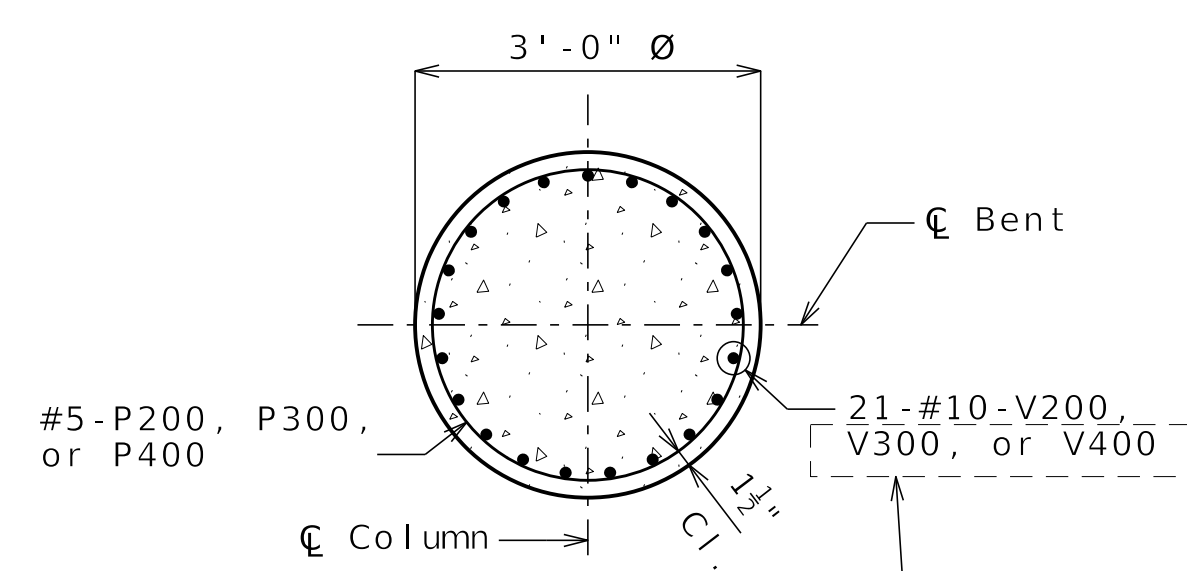
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



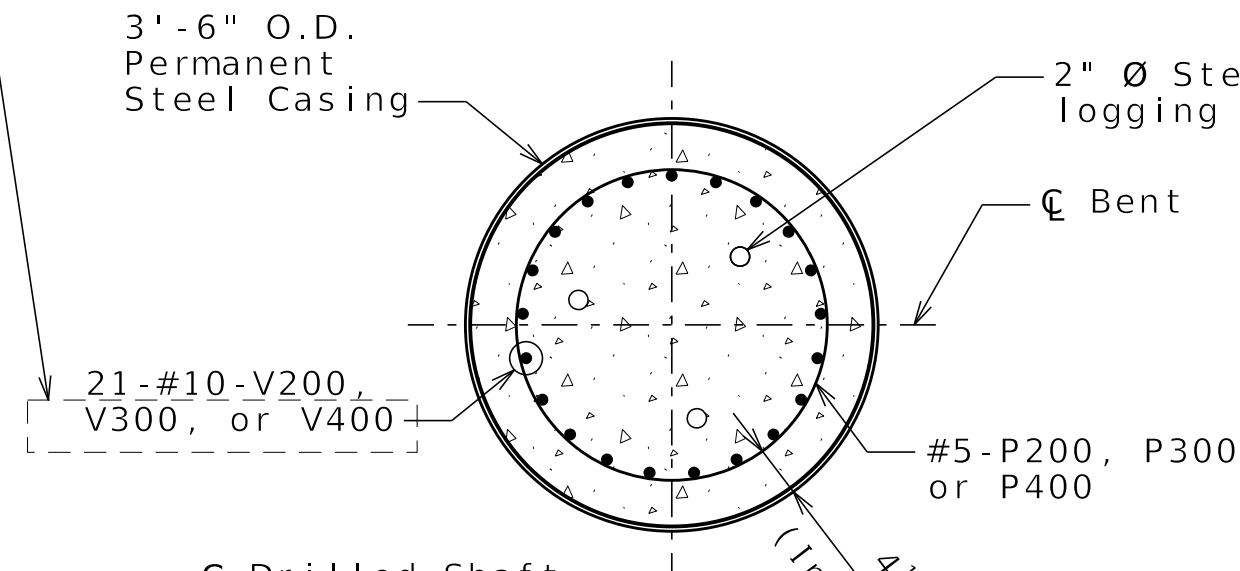
DETAILS OF RESIN ANCHOR SYSTEMS
** Manufacturer's recommended embedment length (5" Min.)
Note: V400, V401, V402, and V403 are ASTM A615 80 ksi

PLAN SHOWING REINFORCEMENT
PLAN OF BEAM
General Notes:
Work this sheet with Sheet No. 12.
The contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039.
The minimum embedment depth in concrete with f'c=3,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec. 1039 but shall not be less than 5".

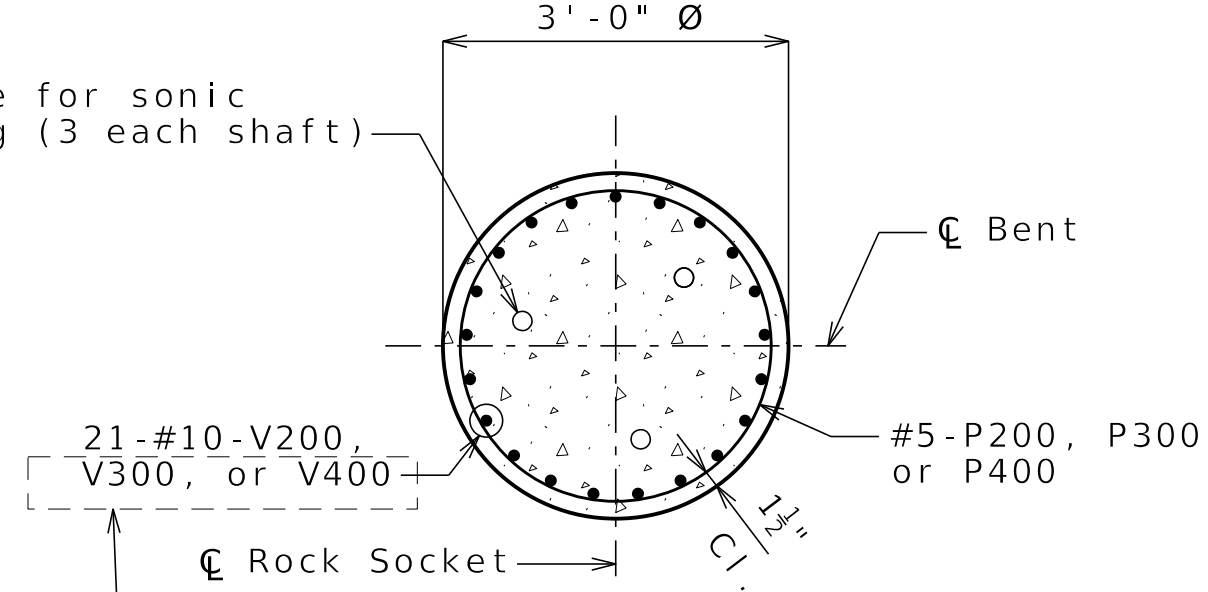
C1 21-#10-V300, or 8-#10-V400 lapped with 8-#10-V401 and 8-#10-V403 lapped with 8-#10-V402 alternating



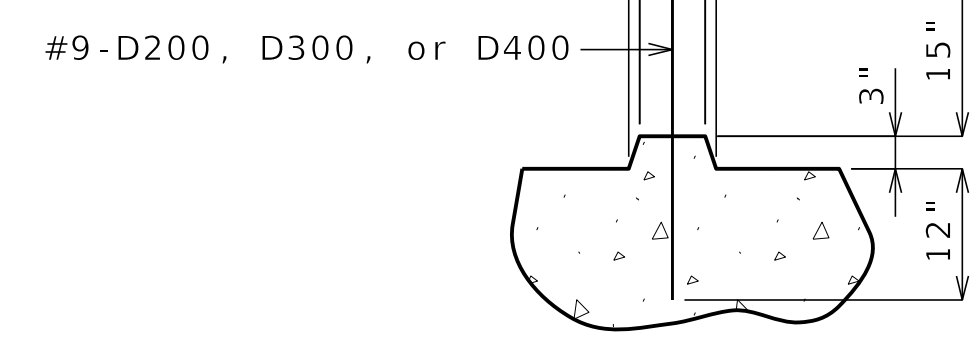
SECTION A-A (COLUMN)



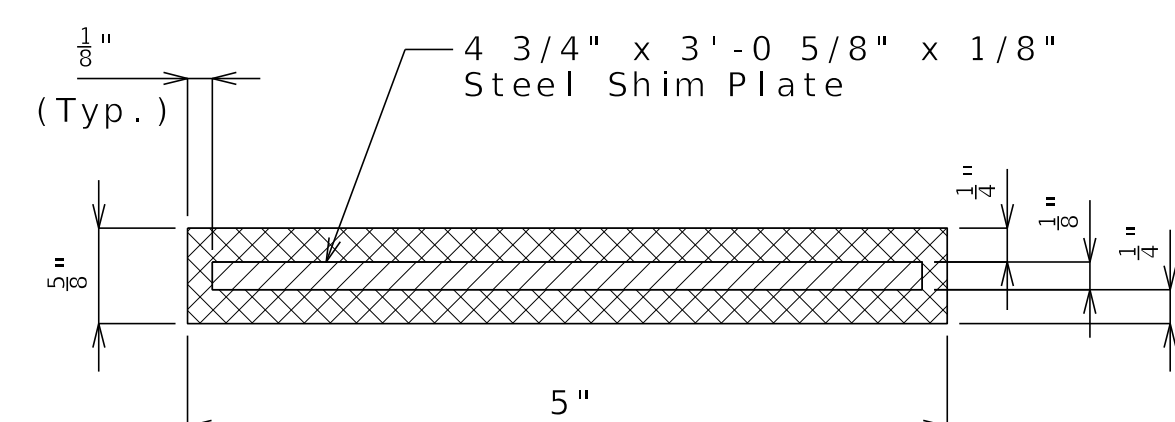
SECTION B-B (DRILLED SHAFT)



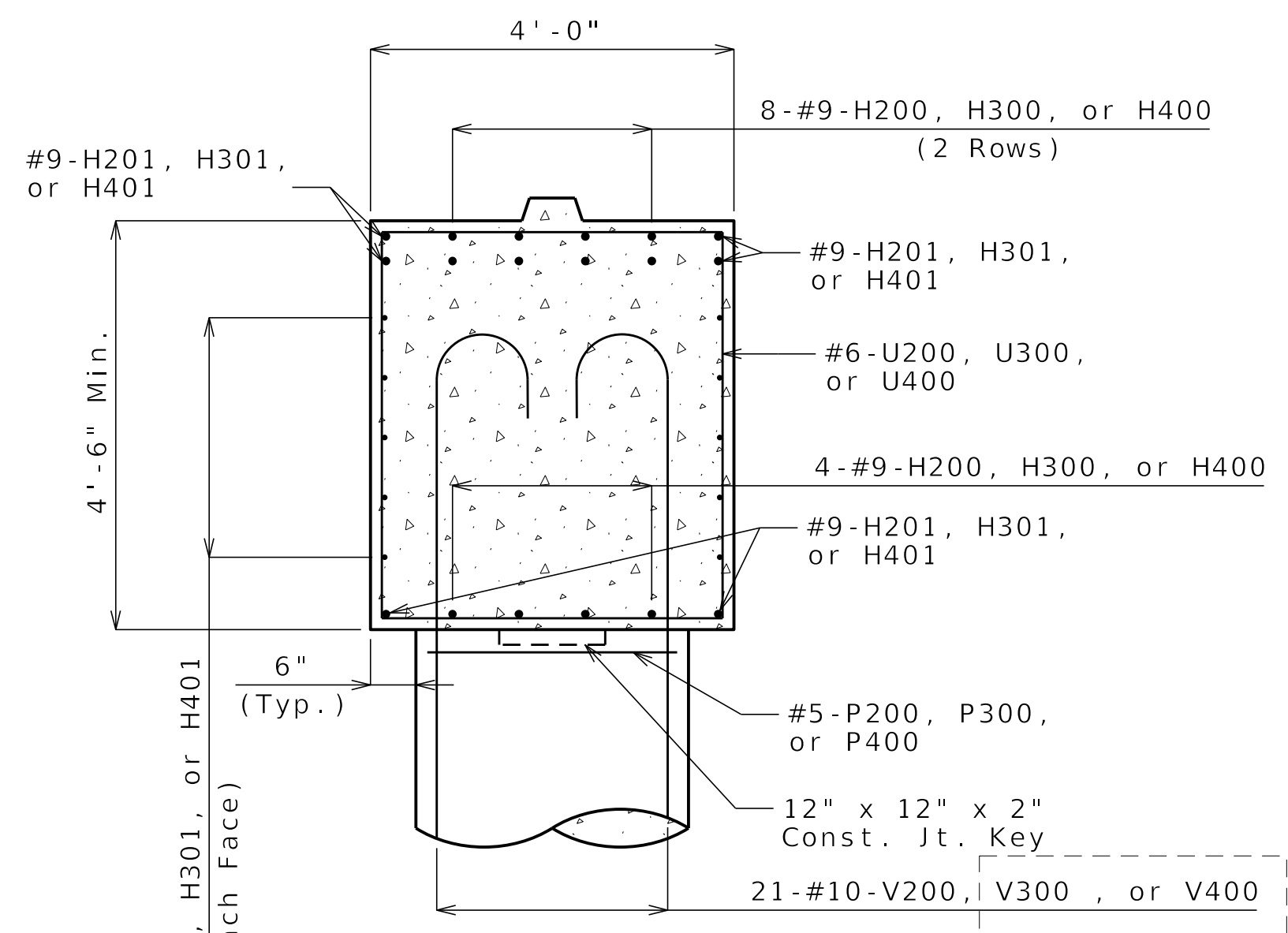
SECTION C-C (ROCK SOCKET)



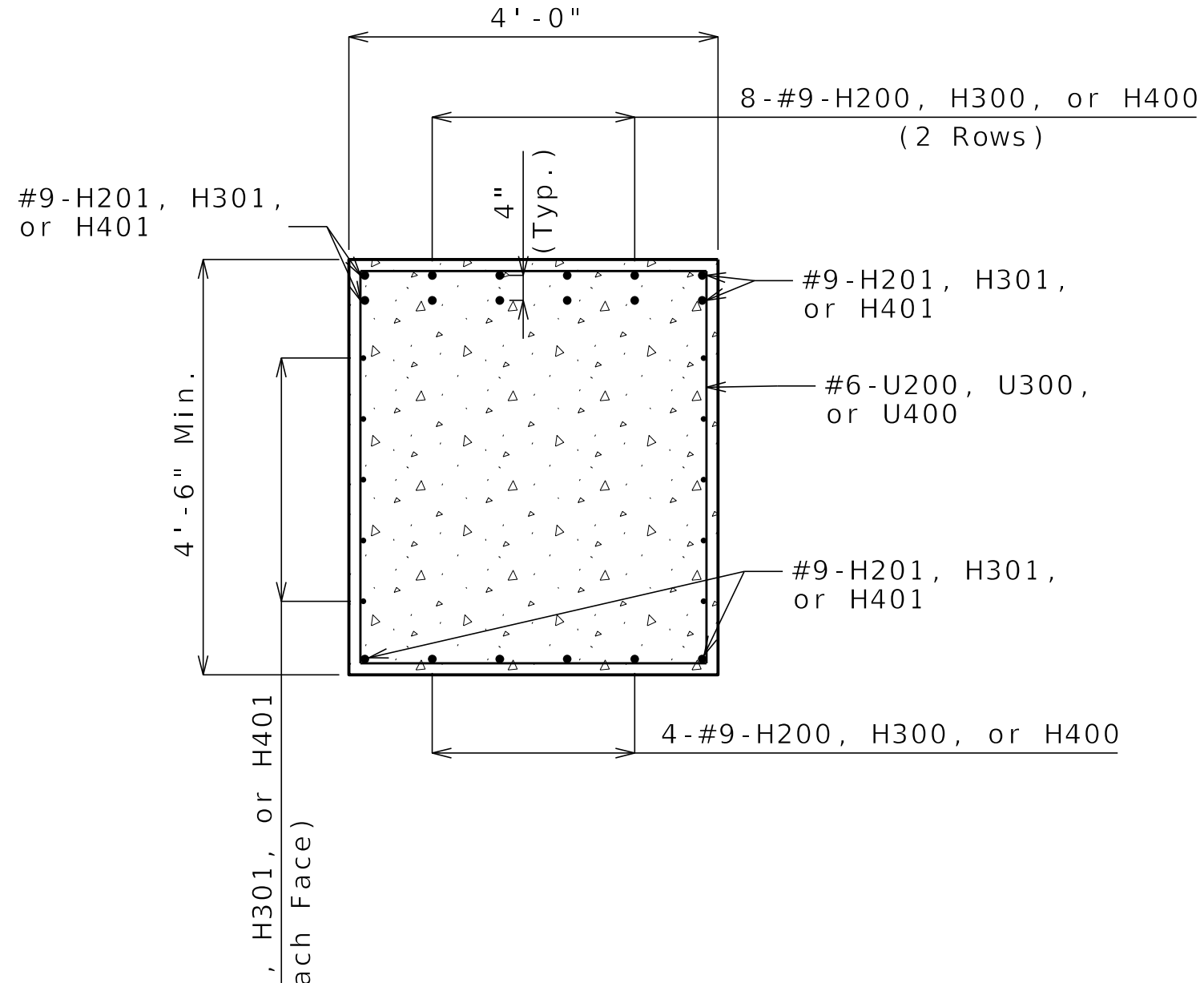
SECTION THRU KEY



SECTION THRU LAMINATED NEOPRENE BEARING PAD AT INT. BENT NO. 2, 3, & 4



SECTION D-D



SECTION E-E

General Notes:
Work this sheet with Sheets No. 9, 10, and 11.

Bar marks shown (200 series) are for Intermediate Bent No. 2. Bar marks for Intermediate Bent No. 3 & 4 are 300 and 400 series, respectively.

Drilled Shaft Notes:
An additional 4 feet has been added to V200, V300, & V400 bar lengths and an additional 8-#5-P200, P300, & P400 bars have been added in the quantities, if required, for possible change in drilled shaft or rock socket lengths. 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.

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

Permanent steel casing shall be 3/8 inch (minimum) and in accordance with Sec. 701.

Installation and inspection of all drilled shafts and rock sockets shall be performed in accordance with Sec. 701.

8'-0" minimum rock socket length in slightly weathered to fresh limestone with full shaft section area.

All shafts shall satisfy the minimum rock socket length requirements and seated on limestone or fresh shale. Shafts seated on coal or weathered shale are not acceptable.

C1 Added V403 &

DETAILS OF INTERMEDIATE BENTS NO. 2, 3, & 4

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 12 of 36

C1 REVISED 01-26-2026



Robert Whiteside

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Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
1/26/2026

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
12

COUNTY
BOONE

JOB NO.
JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION
01/26/26	REV. 1 - NDC 052 REVISED REINFORCING

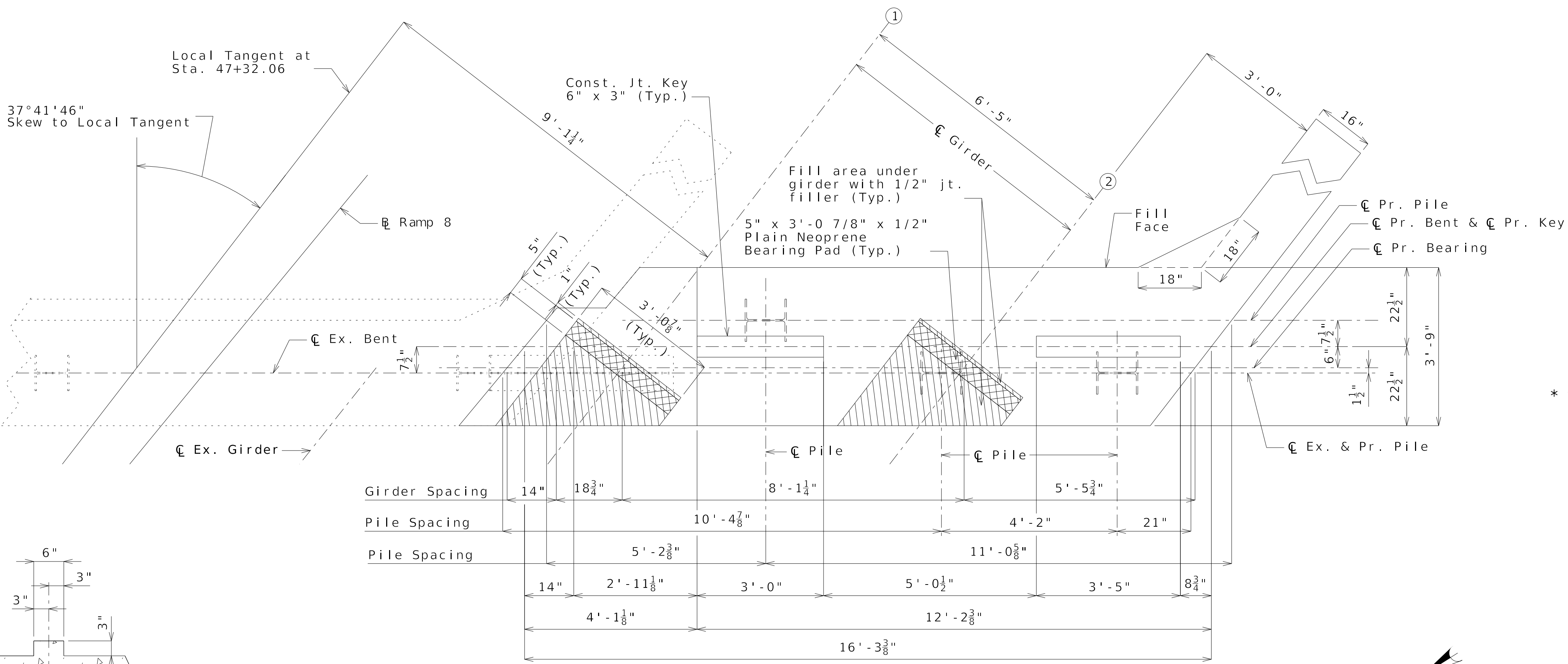
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

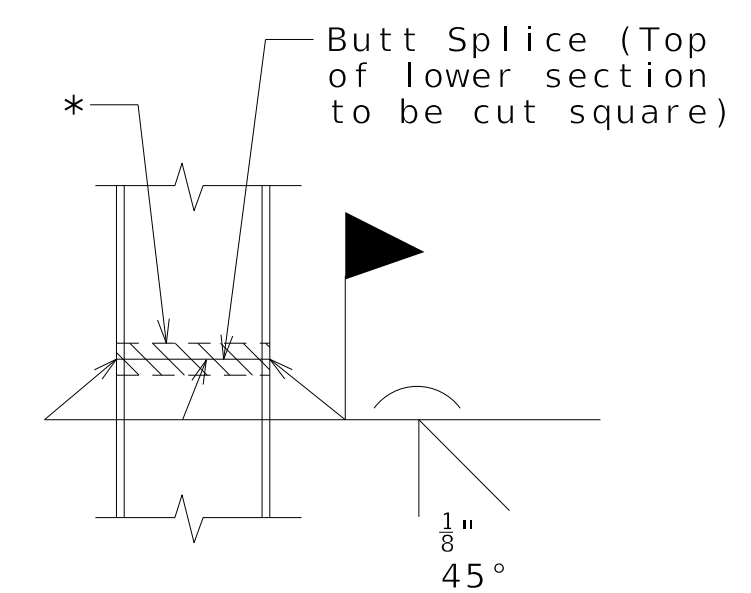
MODOT IMPROVE I-70 DB PROJECT 1

MILLSTONE WEBER

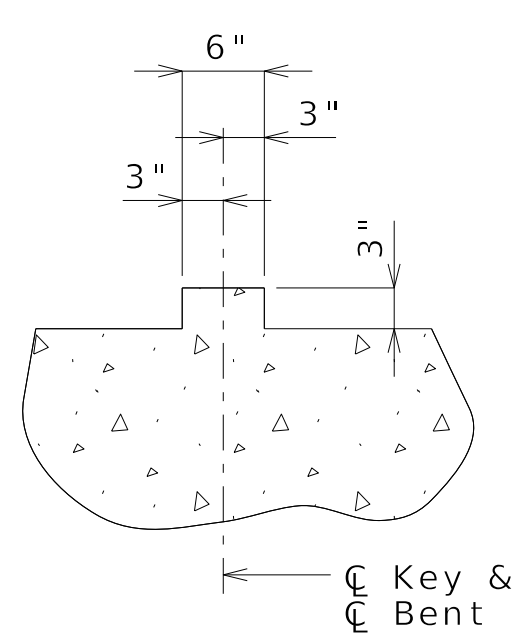
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



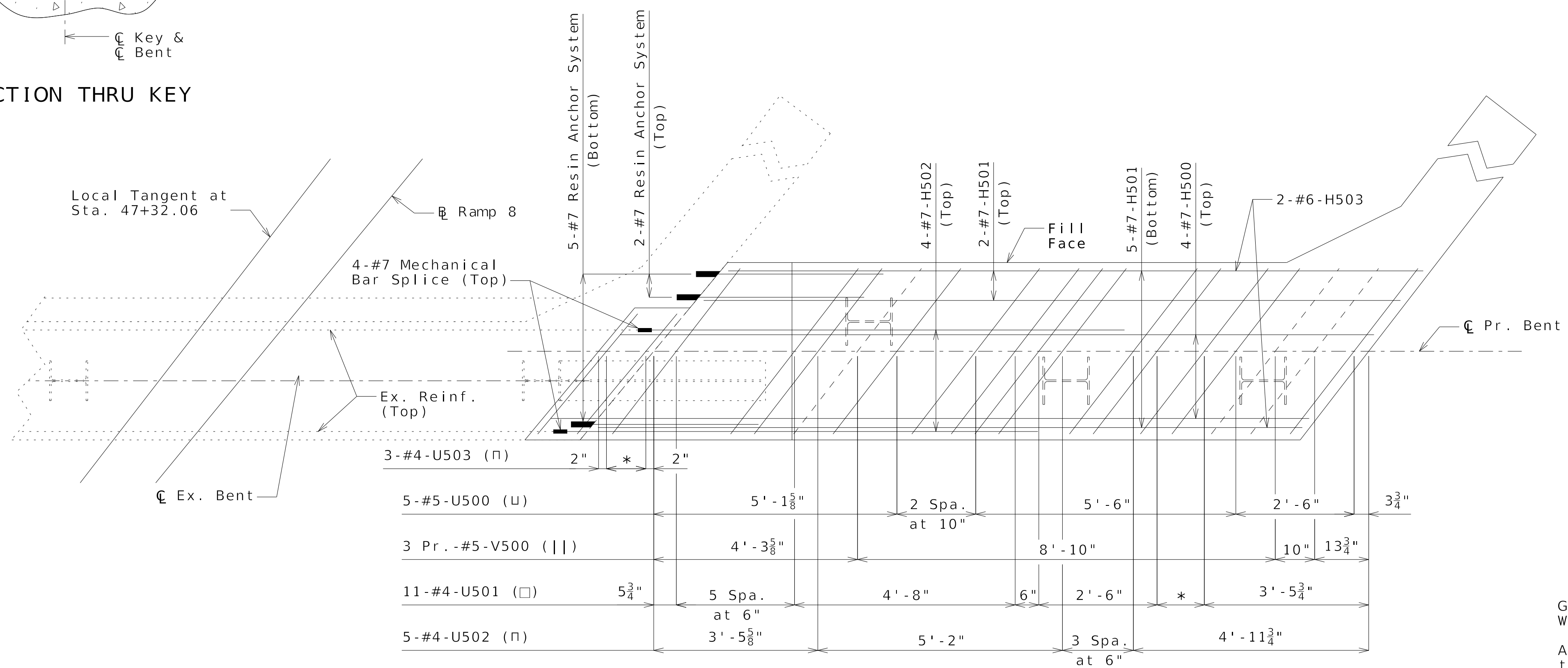
PLAN OF BEAM SHOWING DIMENSIONS & BEARING



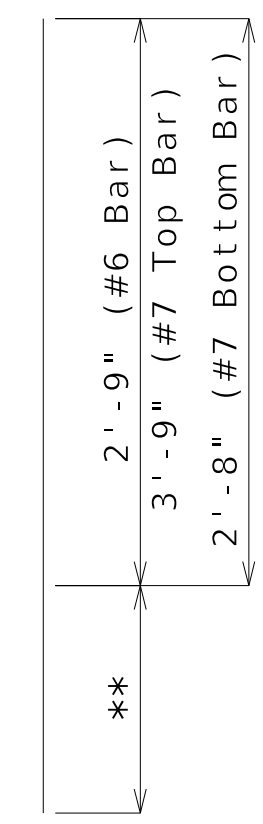
STEEL PILE SPLICE
(If required)
* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



SECTION THRU KEY



PLAN OF BEAM SHOWING REINFORCEMENT
DETAILS OF END BENT NO. 5



DETAILS OF RESIN ANCHOR SYSTEMS
** Manufacturer's recommended embedment length (5" Min.)

General Notes:
Work this sheet with Sheets No. 14 and 15.
All U bars and pairs of V bars shall be placed parallel to local tangent.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.
#4-U503 bars shall be drilled and grouted into existing bent cap to a depth of at least 5 inches.

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 13 of 36



Robert Whiteside
07/29/2025 3:20:50 PM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE STATE
1 - 70 MO
DISTRICT SHEET NO.
BR 13

COUNTY
BOONE
JOB NO.
JST0021
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

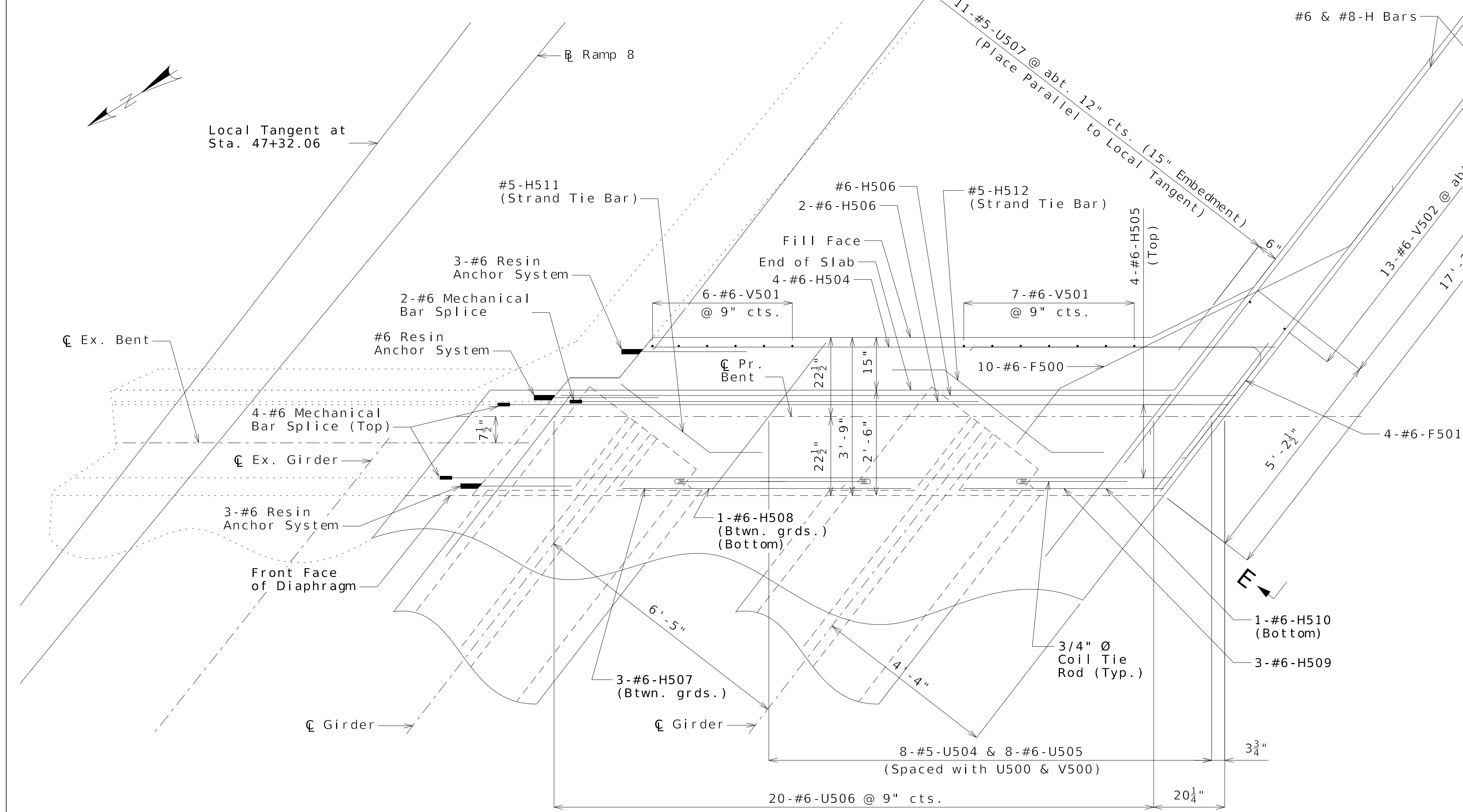
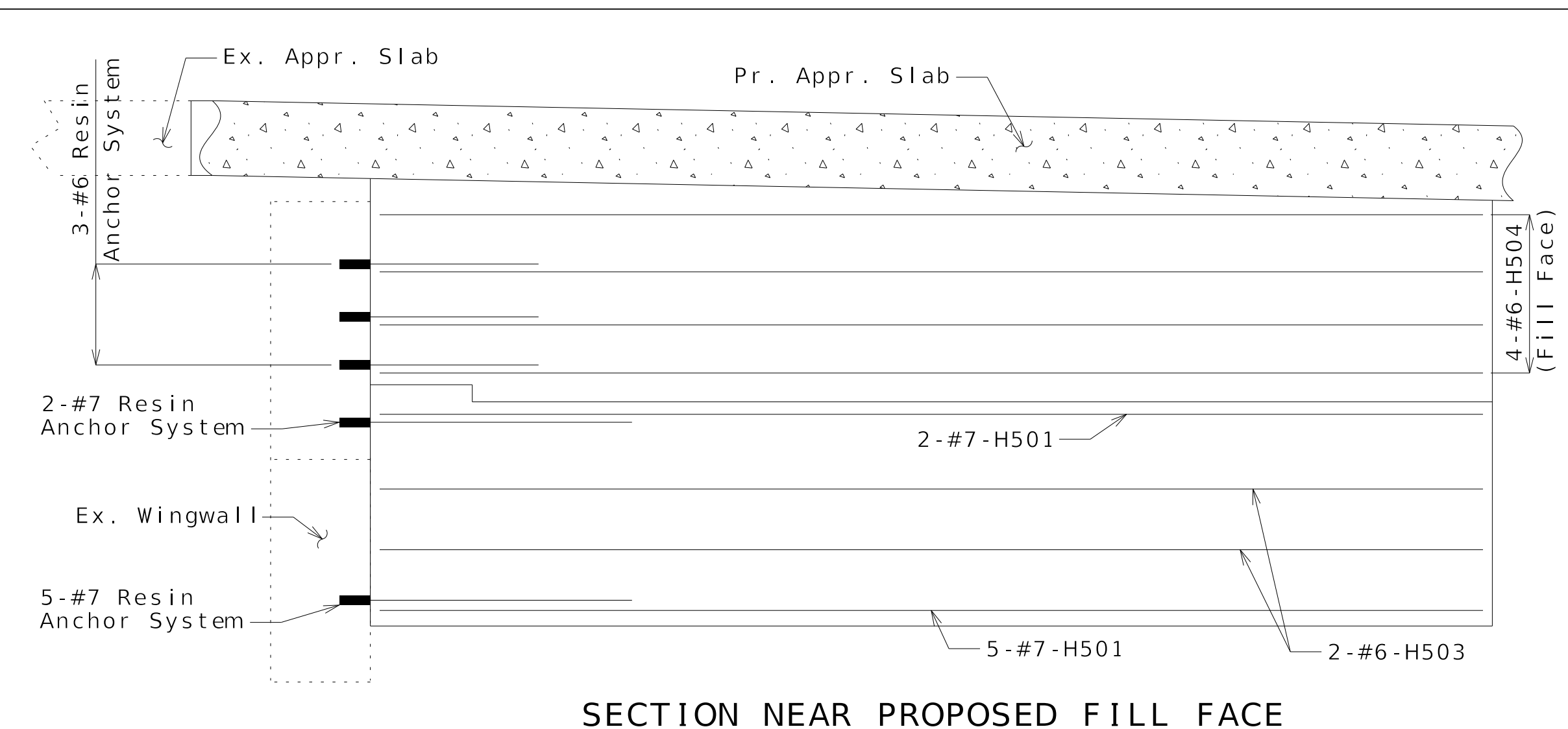
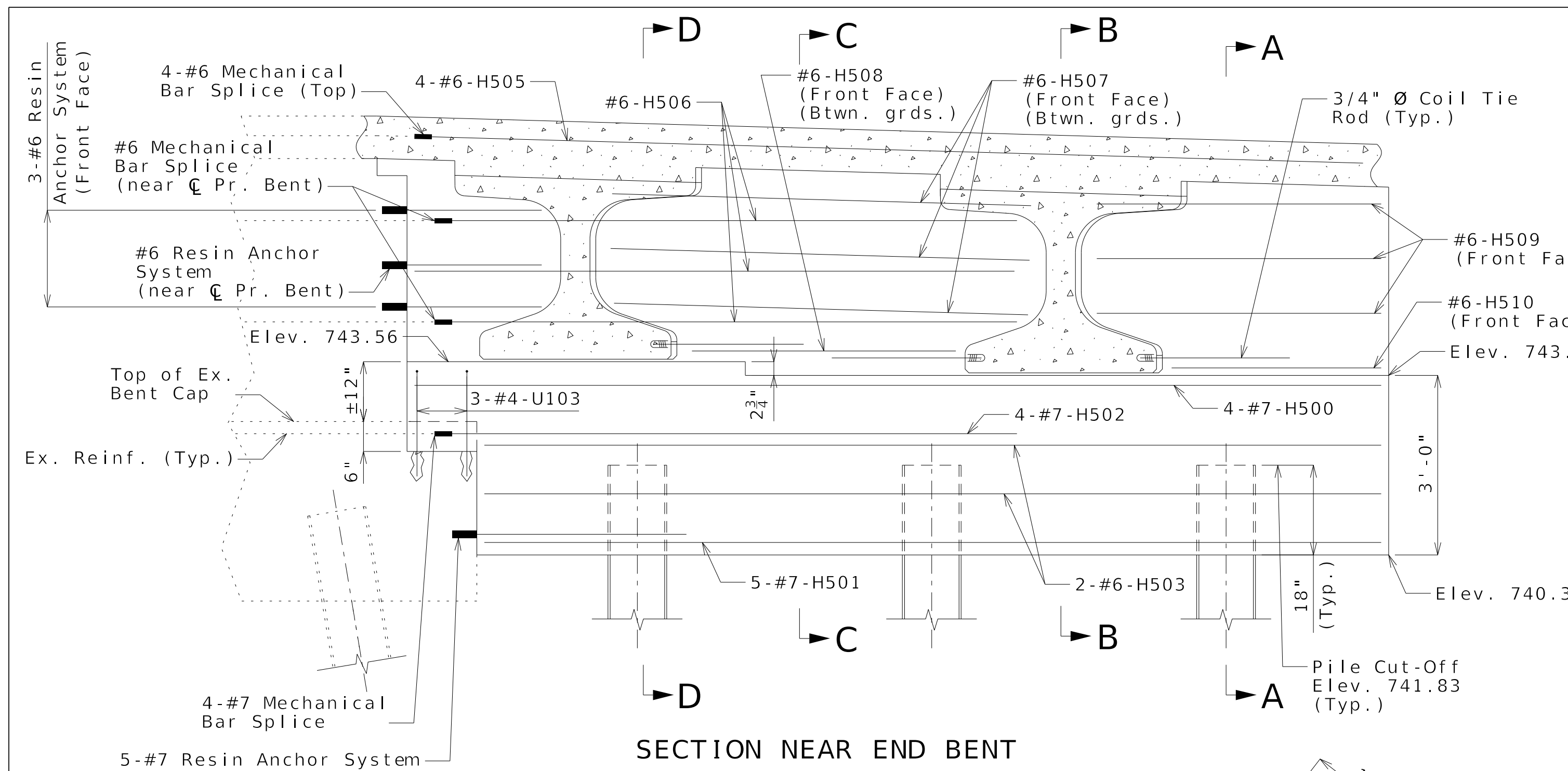
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MODOT IMPROVE I-70 DB PROJECT 1

MILLSTONE WEBER
CIVIL ENGINEERING, INC.
720 OLIVE STREET
SUITE 100
JEFFERSON CITY, MO 65101
(314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



SECTION NEAR PROPOSED FILL FACE

SECTION NEAR END BENT

PART PLAN DETAILS OF END BENT NO. 5

DETAILS OF RESIN ANCHOR SYSTEMS
 ** Manufacturer's recommended embedment length (5" Min.)

General Notes:
 Work this sheet with Sheets No. 13 and 15.
 For Sections A-A, B-B, C-C, and D-D and Elevation E-E, see Sheet No. 15.
 The #6-F500 and #6-F501 bars shall be bent in the field to clear girders.
 The U bars shall be placed parallel to local tangent.
 All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
 Strands at the end of girders shall be field bent or, if necessary, cut in field to maintain 1 1/2-inch minimum clearance to fill face of end bent.
 For location of coil tie rods, #5-H511 (strand tie bar), and #5-H512 (strand tie bar), see Sheet No. 18.
 For details of vertical drain at end bents, see Sheet No. 8.
 For details of bridge approach slab, see Sheet No. 27.
 For details of existing wingwall removal, see Sheet No. 4.
 The contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039.
 The minimum embedment depth in concrete with f'c=3,000 psi for the resin anchor systems shall be that requires to meet the minimum ultimate pull out strength in accordance with Sec. 1039 but shall not be less than 5 inches.

Robert Whiteside
 07/29/2025 3:20:50 PM
 Robert P. Whiteside - Civil
 MO PE-2017008520
 DATE PREPARED
7/29/2025

ROUTE	STATE
1-70	MO
DISTRICT	SHEET NO.
BR	14
COUNTY	
BOONE	
JOB NO.	
JST0021	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A40931	

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MODOT IMPROVE I-70 DB PROJECT 1

CIVIL ENGINEERING, INC.
 210 OLIVE STREET
 SUITE 100
 ST. LOUIS, MO 63101
 (314) 336-4431

O.E.I. ENGINEERING, INC.
 MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 14 of 36

General Notes:
Work this sheet with Sheets No. 13 and 14.

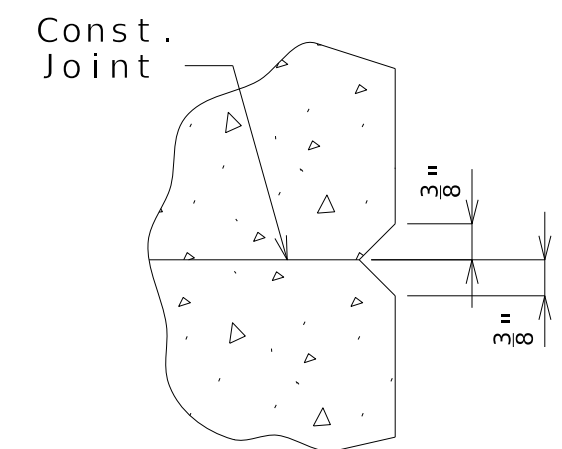
For reinforcement of the barrier, see Sheet No. 26.

For locations of Sections A-A, B-B, C-C, and D-D and Elevation E-E, see Sheet No. 14.

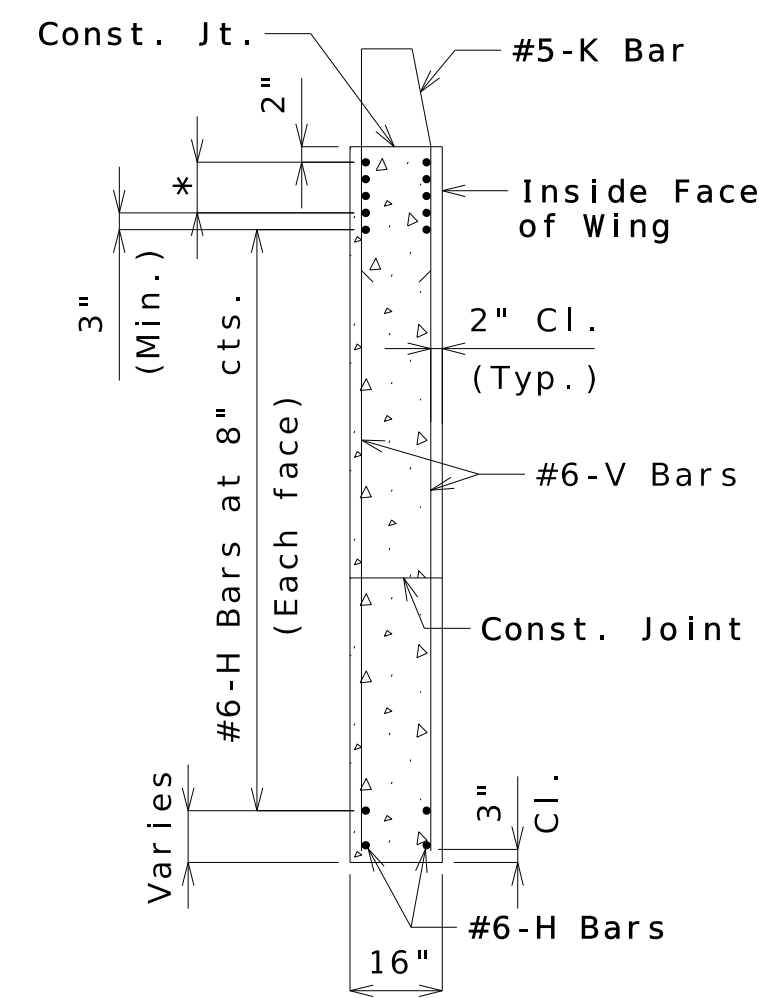
The existing end bent vertical reinforcement shall be saw cut at the top of the existing end bent cap.

The existing end bent longitudinal cap and diaphragm reinforcement shall be cleanly stripped or concrete and straightened for incorporation into the new construction. It shall then be cut off at 6 inches minimum past the concrete removal line. Sufficient length must be left to engage a mechanical bar splicer.

Any reinforcement bars that are to remain that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system.

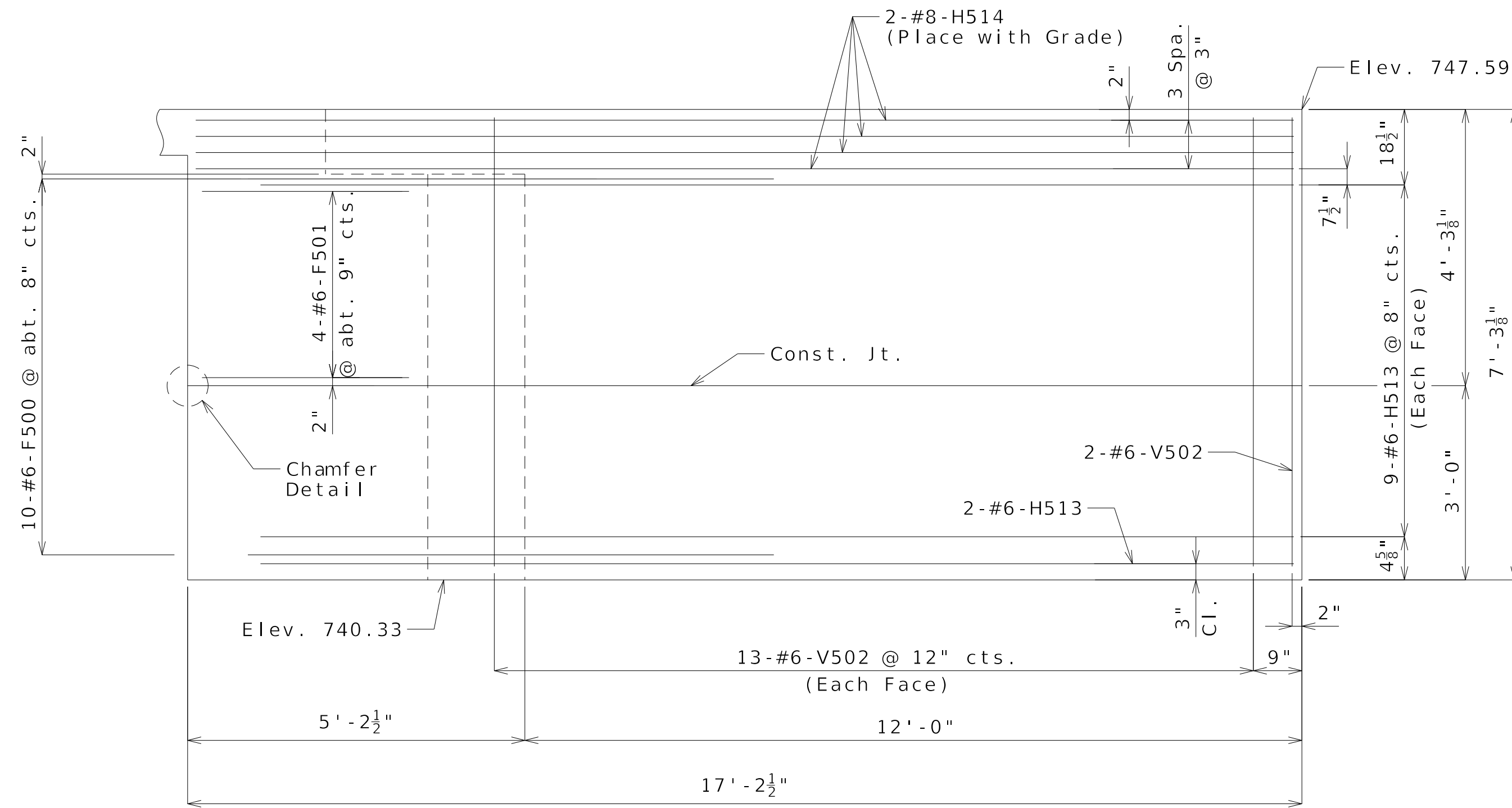


CHAMFER DETAIL

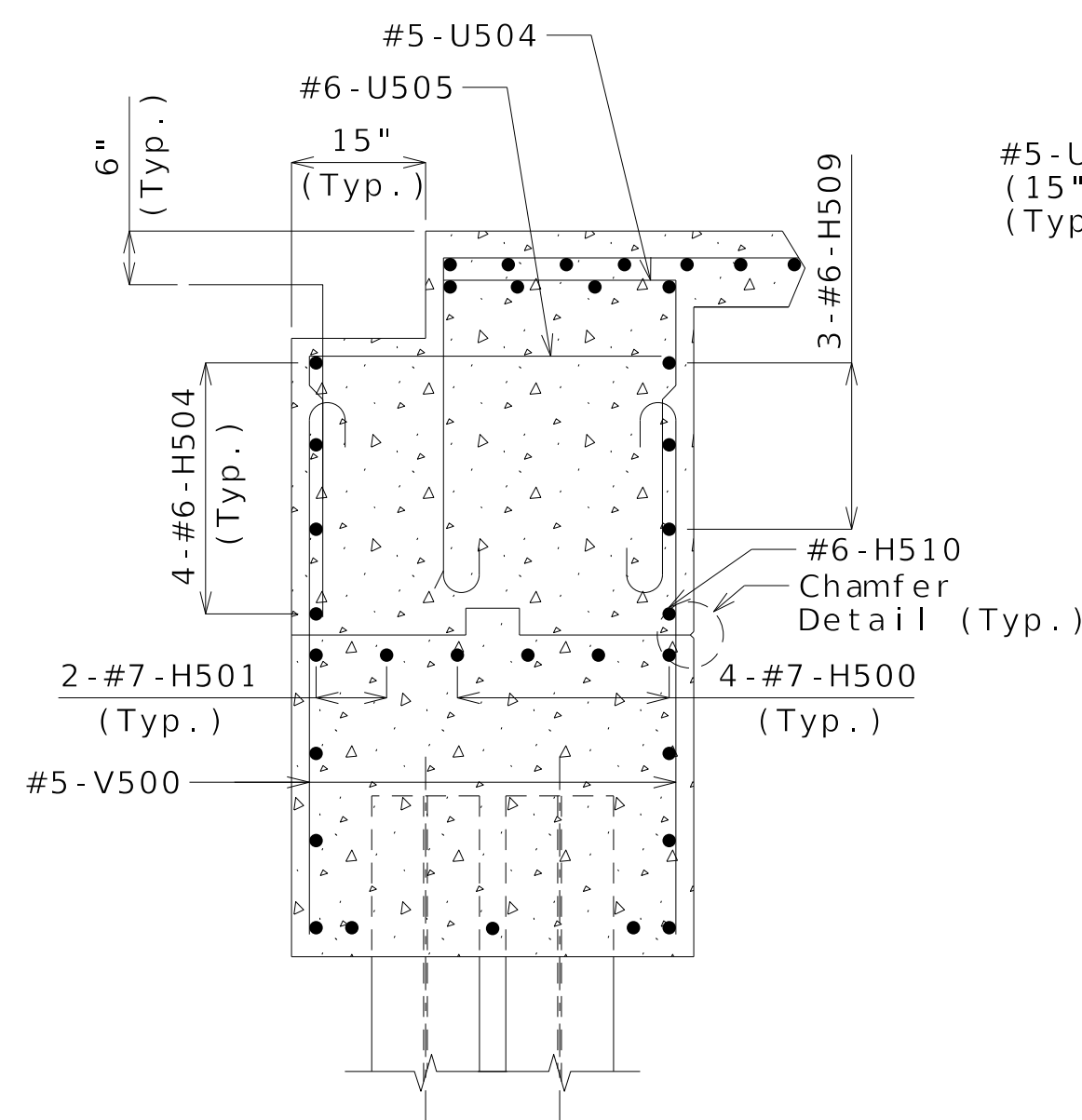


TYPICAL SECTION THRU WING

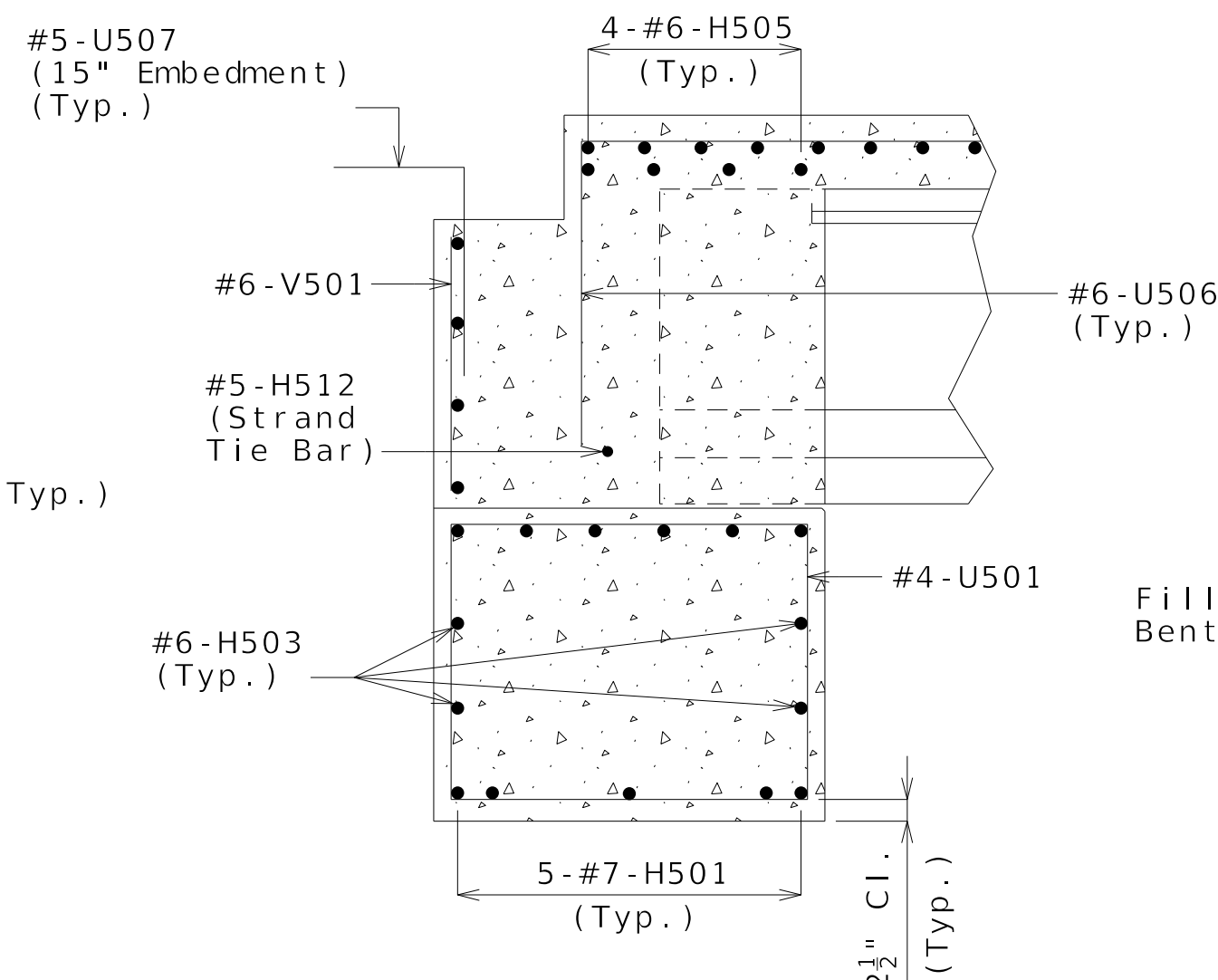
* #8-H Bars at 3" cts. (Each face) (Place with grade)



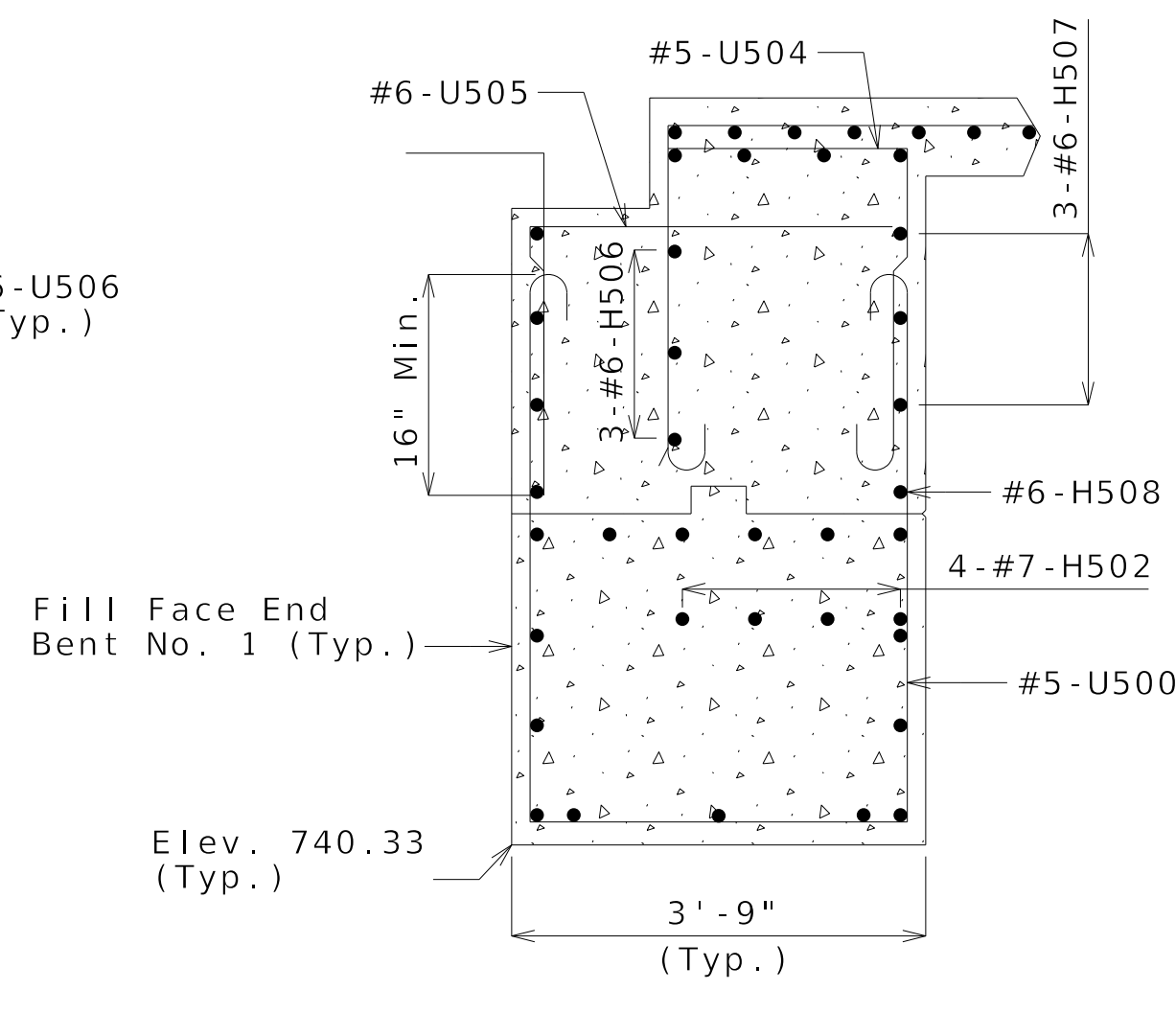
ELEVATION E-E



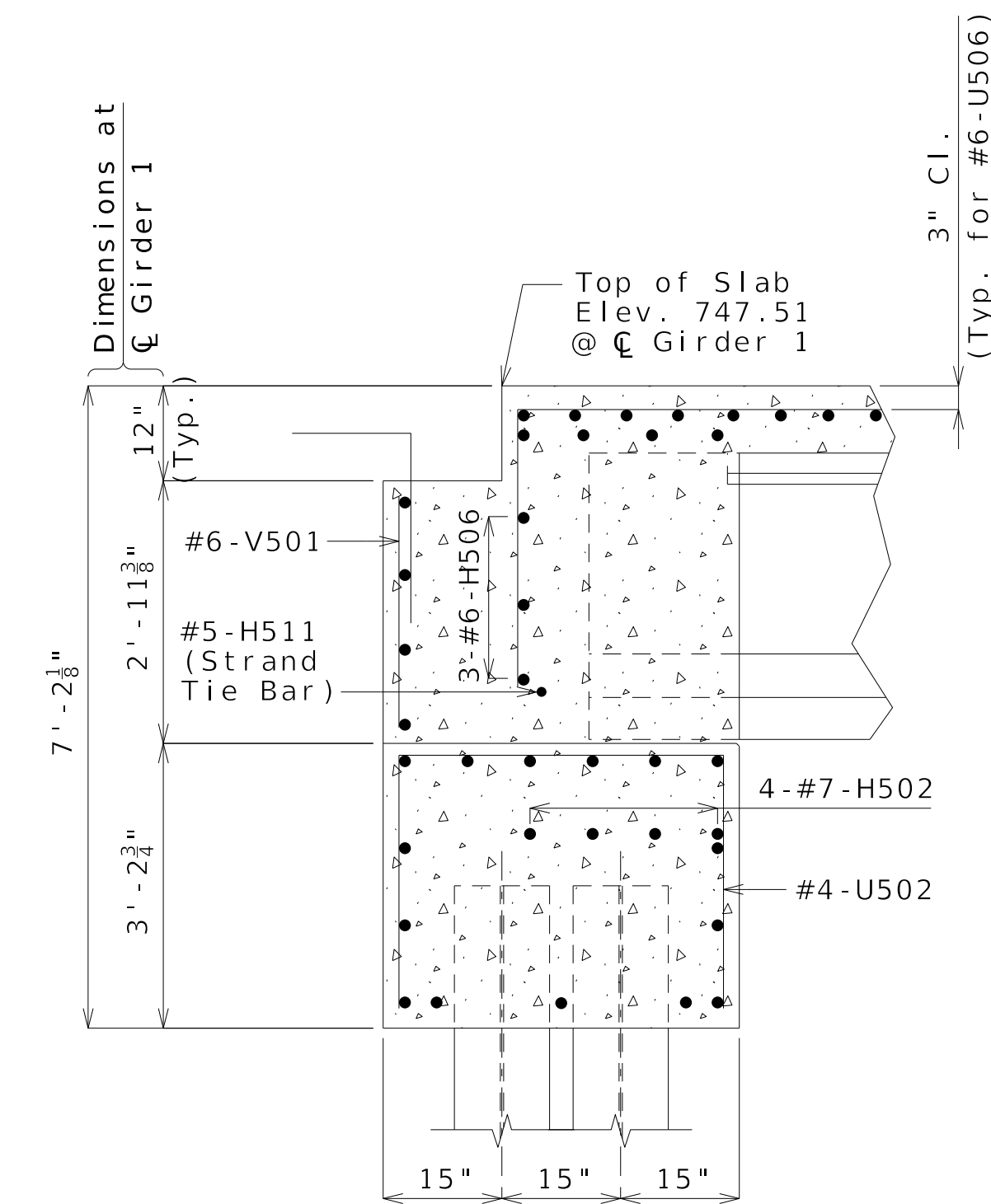
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

DETAILS OF END BENT NO. 5

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 15 of 36



Robert Whiteside

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MO PE-2017008520

DATE PREPARED 7/29/2025	
ROUTE 1-70	STATE MO
DISTRICT BR	SHEET NO. 15

COUNTY BOONE
JOB NO. JST0021
CONTRACT ID.

PROJECT NO.
BRIDGE NO. A40931

DATE	DESCRIPTION
06/23/25 <td>REV. A - FINAL REVIEW</td>	REV. A - FINAL REVIEW
07/18/25 <td>REV. 0 - RELEASED FOR CONSTRUCTION</td>	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MODOT IMPROVE I-70 DB PROJECT 1

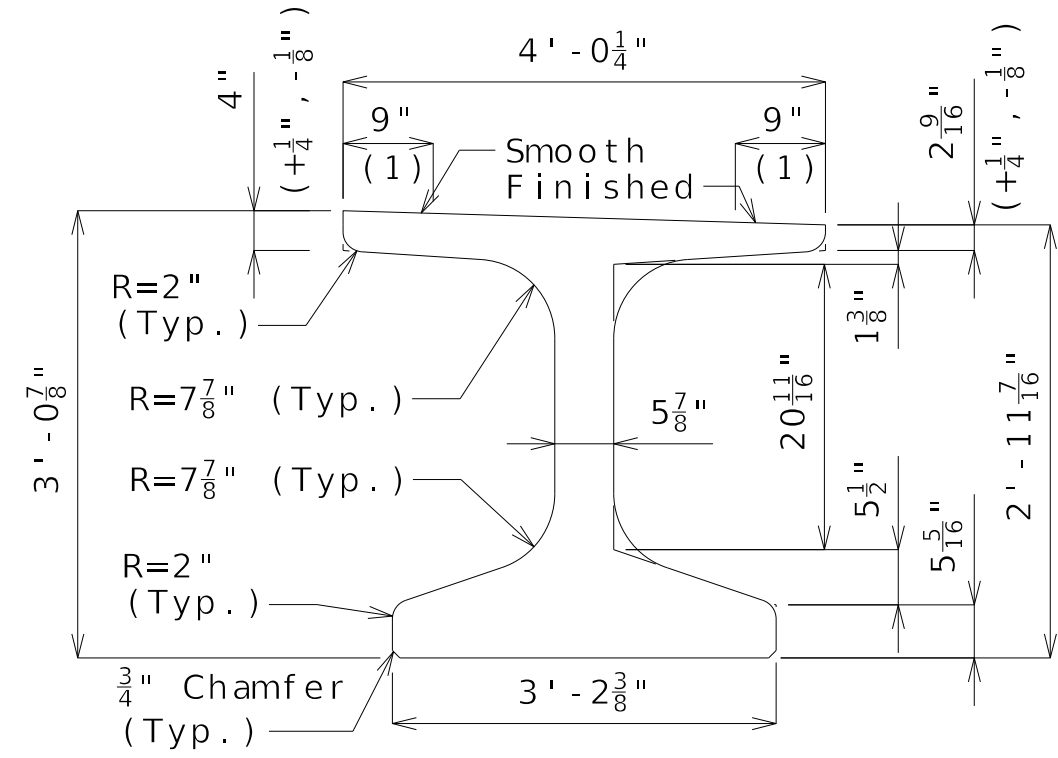
MILLSTONE WEBER

ENGINEERING INC.
720 OLIVE STREET
SUITE 100
JEFFERSON CITY, MO 65101
(314) 338-4431

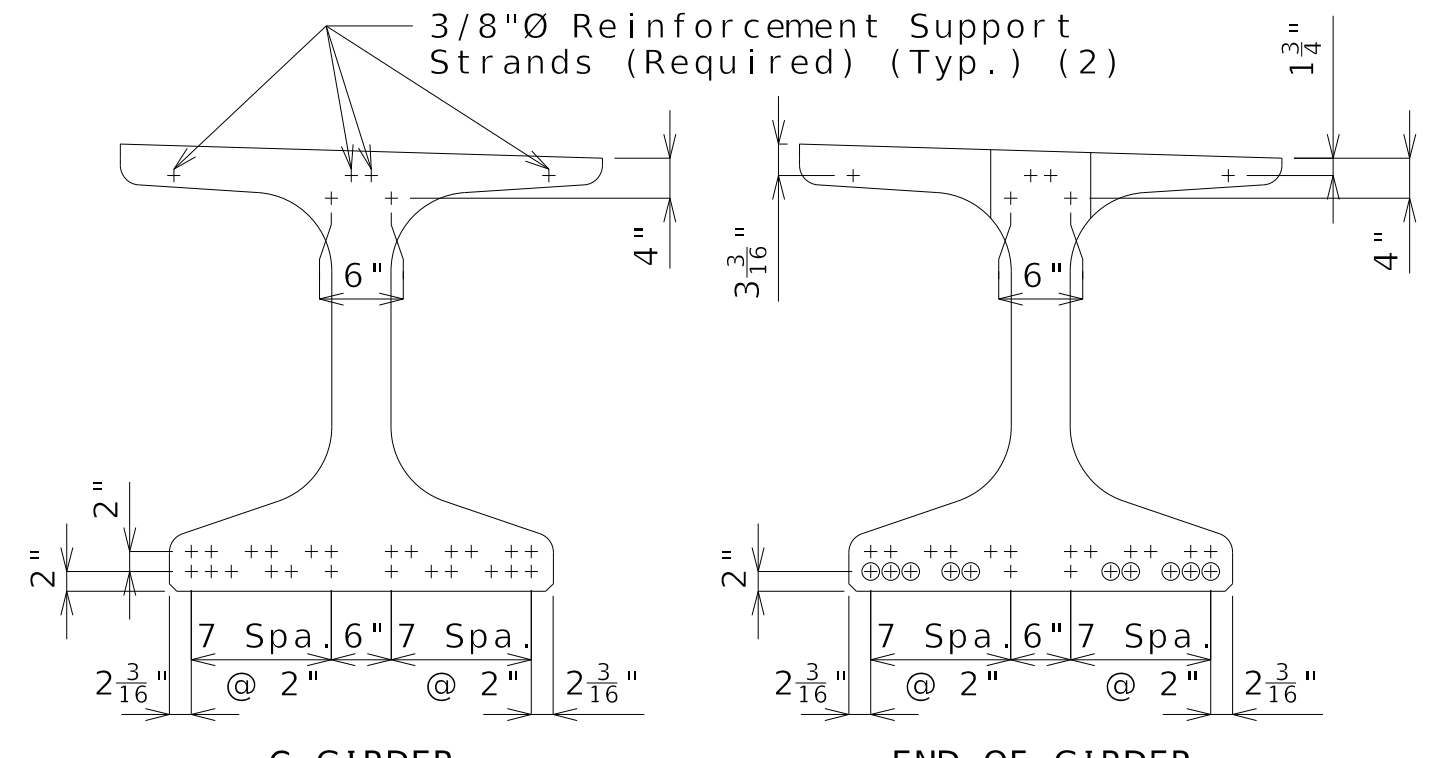
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

(1) Fabricator shall apply a bond breaker to this region.

(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.

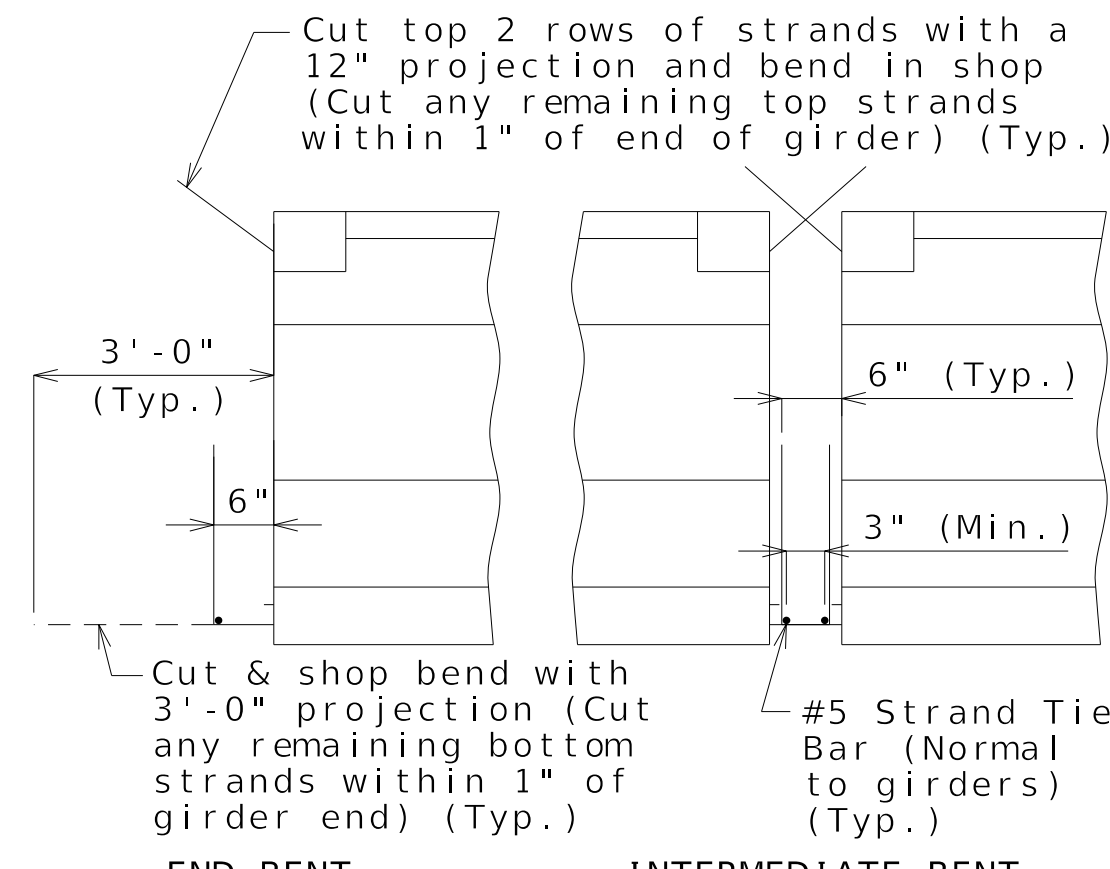


DIMENSIONS

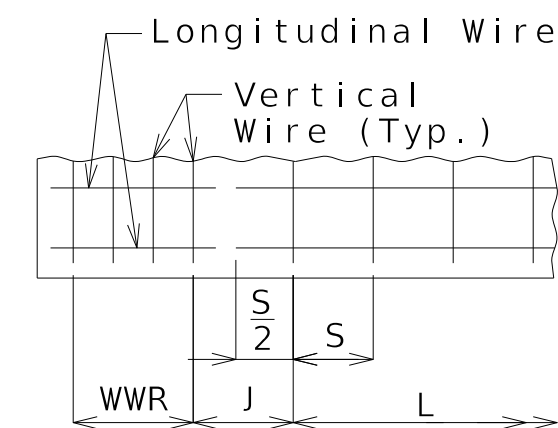


STRAND ARRANGEMENT

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

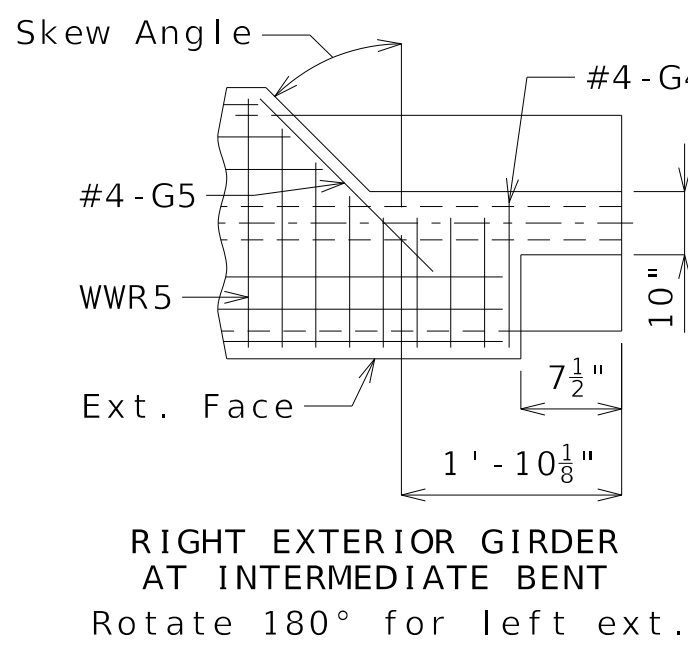
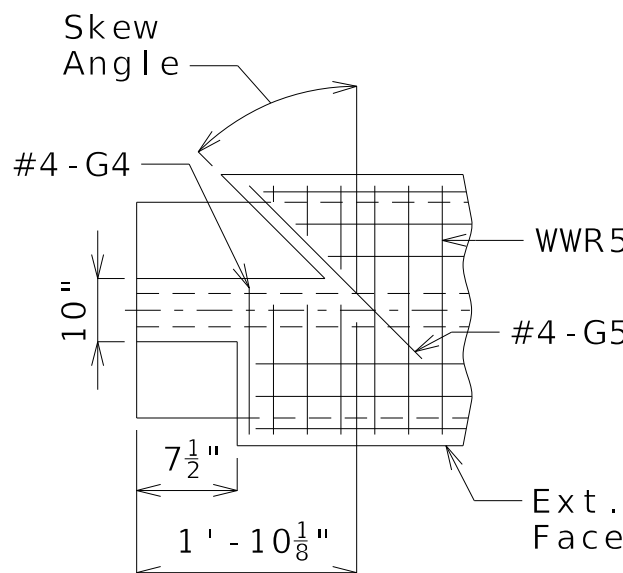


STRANDS AT GIRDER ENDS



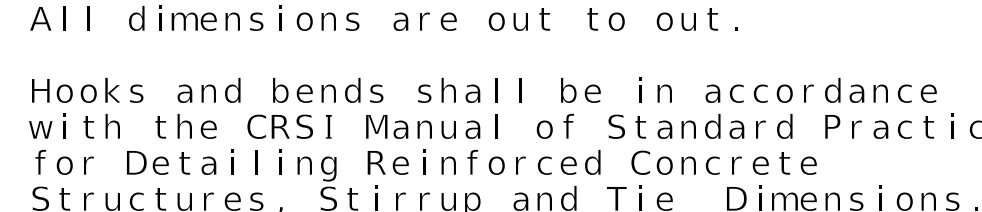
WELDED WIRE PLACEMENT

S = Vertical wire spacing
 L = Length of WWR mats
 J = Distance between WWR mats



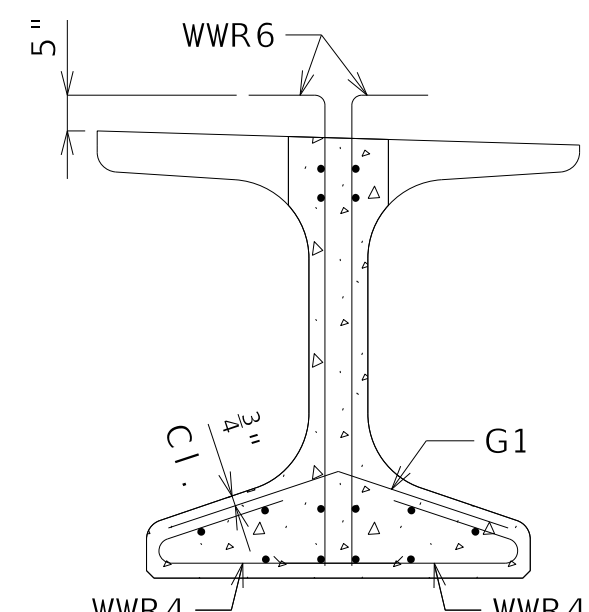
TOP FLANGE BLOCKOUT

Bill of Reinforcing Steel					
Bars Each Girder				Bending Diagrams	
No.	Size/Mark	Length	Shape		
91	3 G1	2'-10"	8		
2	4 G3	4'-10"	20		
2	4 G4	2'-3"	20		
2	4 G5	3'-4"	20		
6	4 G6	Varies	20		
					16" 16" 6"
				Shape 8	
Welded Wire Each Girder				Shape 20	
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	11'-8"	12"
WWR2	D31	12"	W12	7'-0"	14 3/4"
WWR3	D31	20"	W12	23'-4"	--
WWR6	D31	2"	W12	16"	4"

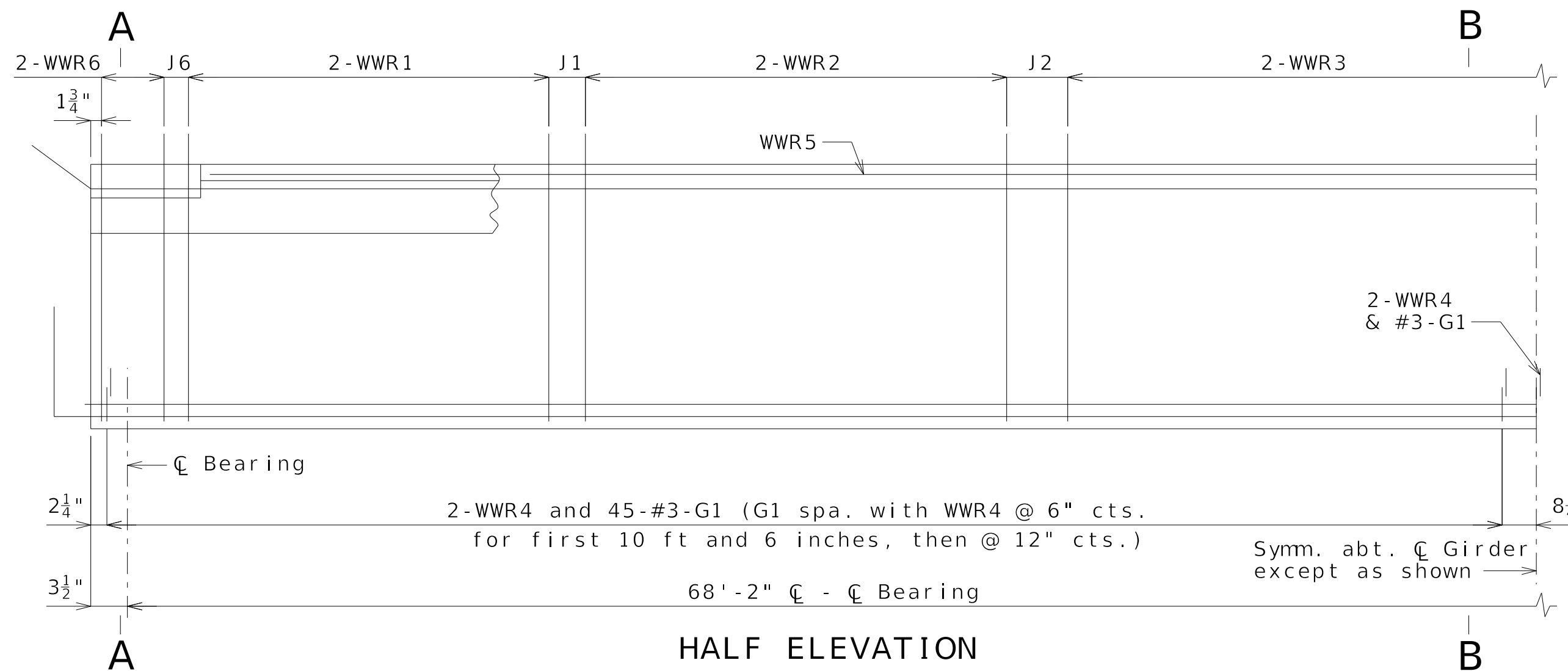


All dimensions are out to out.
 Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.
 Actual bar lengths are measured along centerline of bar to the nearest inch.
 Minimum clearance to reinforcing shall be 1", unless otherwise shown.
 All bar reinforcement shall be Grade 60.
 WWR shall not be epoxy coated.
 G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:
 Concrete for prestressed beams shall be Class A-1 with $f'c = 8000$ psi and $f'ci = 6500$ psi.
 Use 26 strands, 0.6"Ø Grade 270, with an initial prestress force of 1143 kips.
 Pretensioned members shall be in accordance with Sec 1029.
 Fabricator shall be responsible for location and design of lifting devices.
 Exterior and interior girders are the same except: coil ties, top flange breakout, application of bond breaker, and coil inserts for slab drains.
 The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.
 For Girder Camber Diagram, see Sheet No. 20.
 For location of coil inserts at slab drains, see Sheet No. 24.
 For location of coil ties at concrete diaphragms and integral bents, see Sheet No. 19.

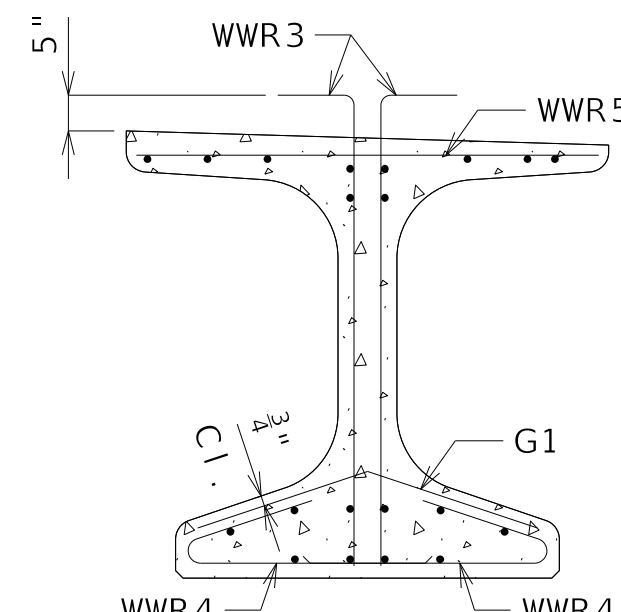


SECTION A-A
 Strands not shown for clarity.

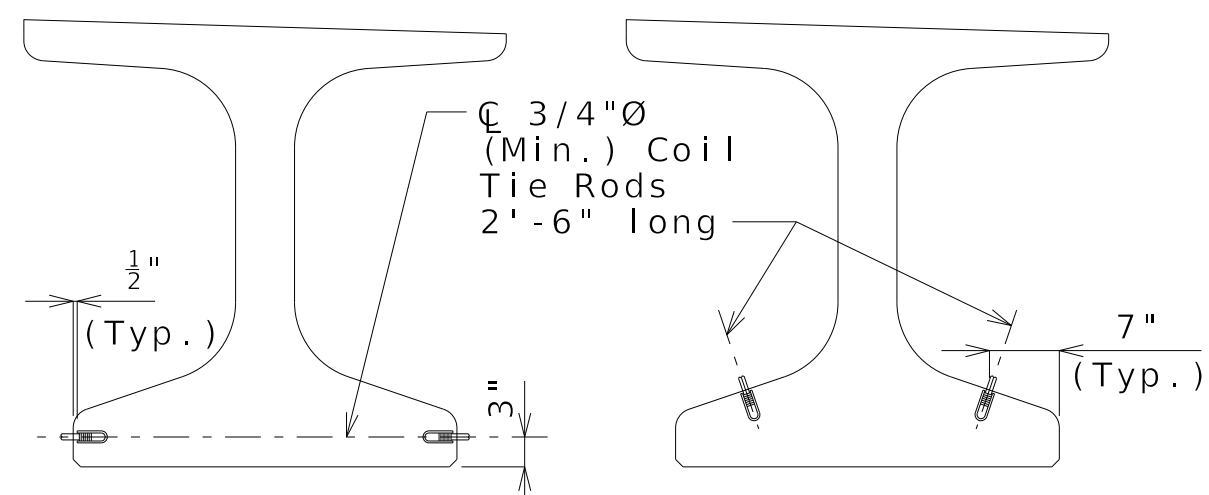


HALF ELEVATION

Reinforcement support strands not shown for clarity.

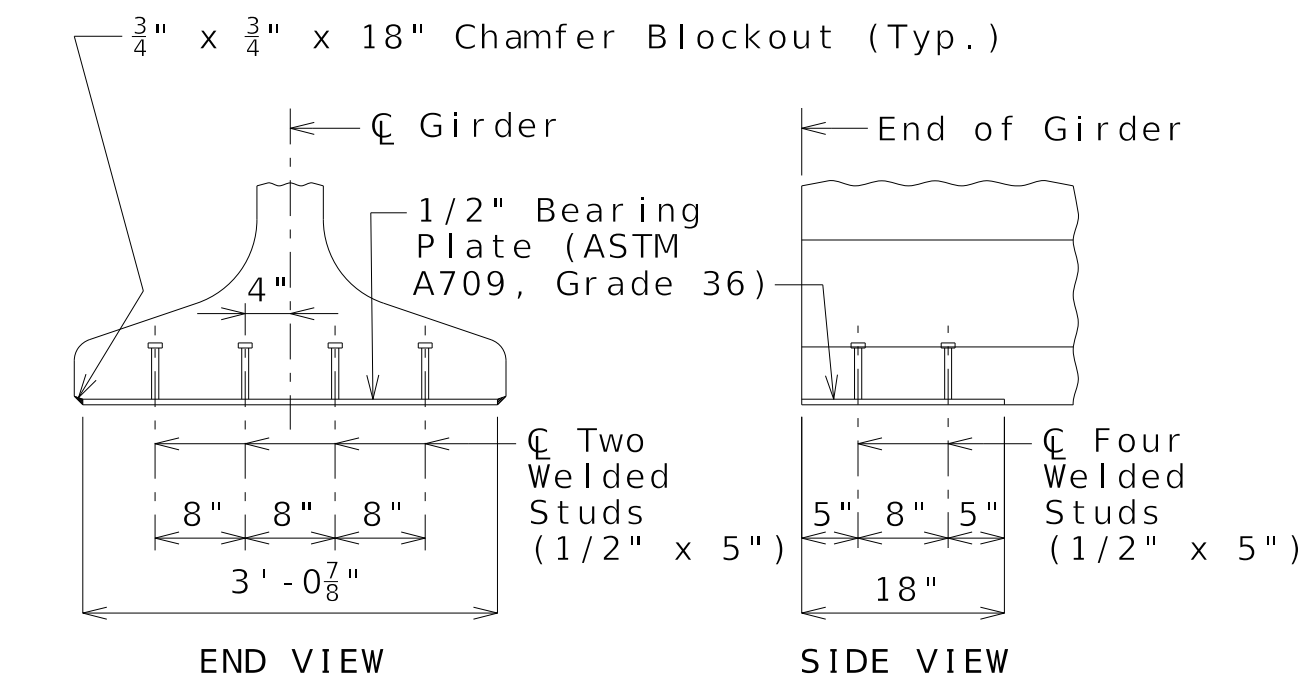


SECTION B-B
 Strands not shown for clarity.



COIL TIES

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



BEARING PLATE

NU-GIRDERS - SPAN (3-4)

Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 17 of 36

Robert P. Whiteside
Professional Engineer

07/29/2025 3:20:51 PM
Robert P. Whiteside - Civil
MO-PE-2017008520

DATE PREPARED
7/29/2025

ROUTE	STATE
1-70	MO
DISTRICT	SHEET NO.
BR	17

COUNTY
BOONE

JOB NO.
JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

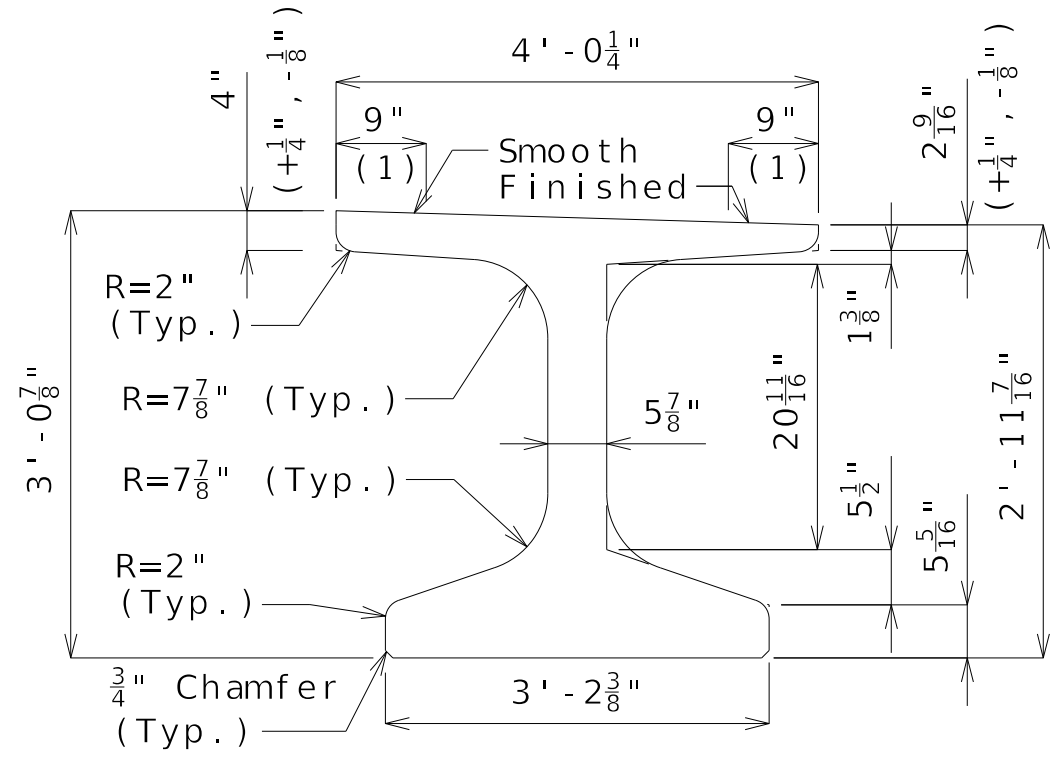
MILLSTONE WEBER

ENGINEERING, INC.
200 OLIVE STREET
SUITE 100
JEFFERSON CITY, MO 65101
(314) 338-4431

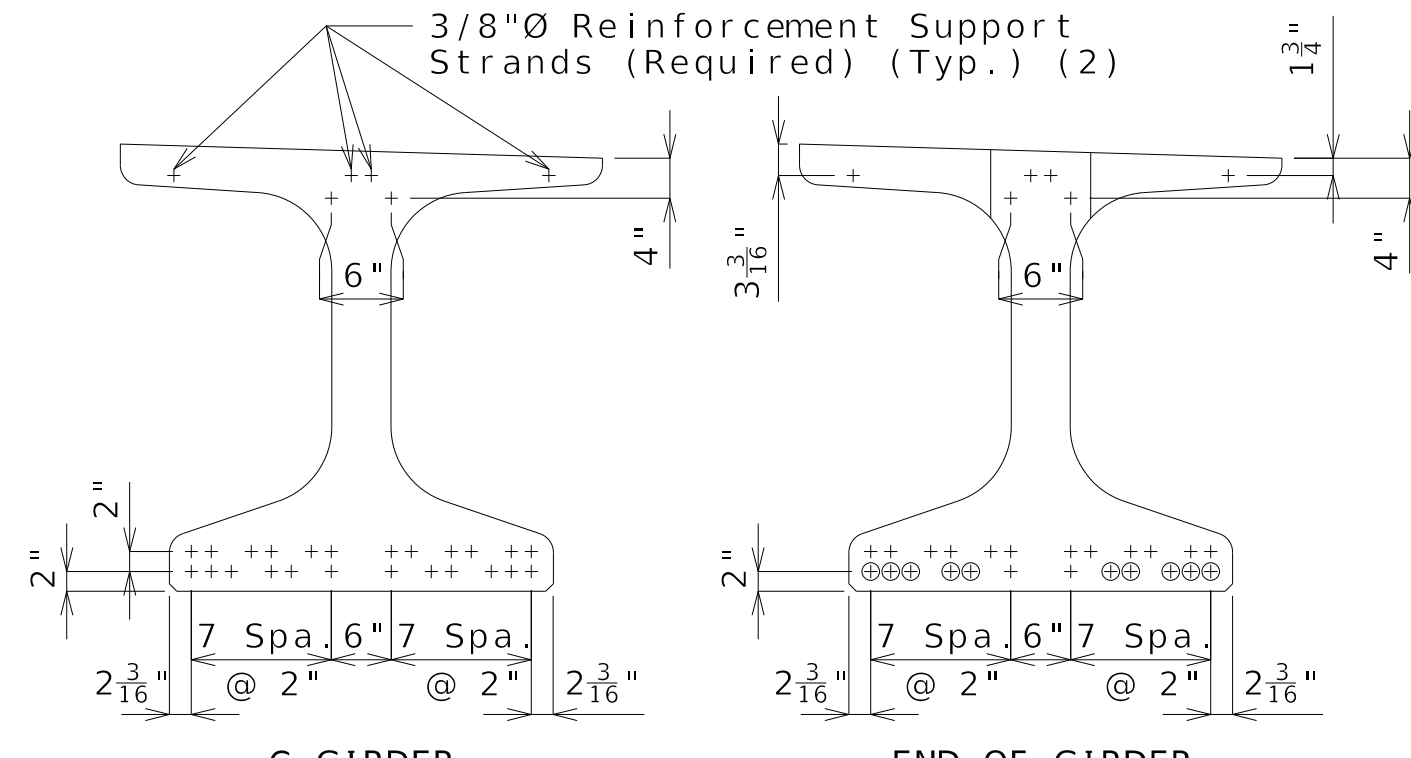
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

(1) Fabricator shall apply a bond breaker to this region.

(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.

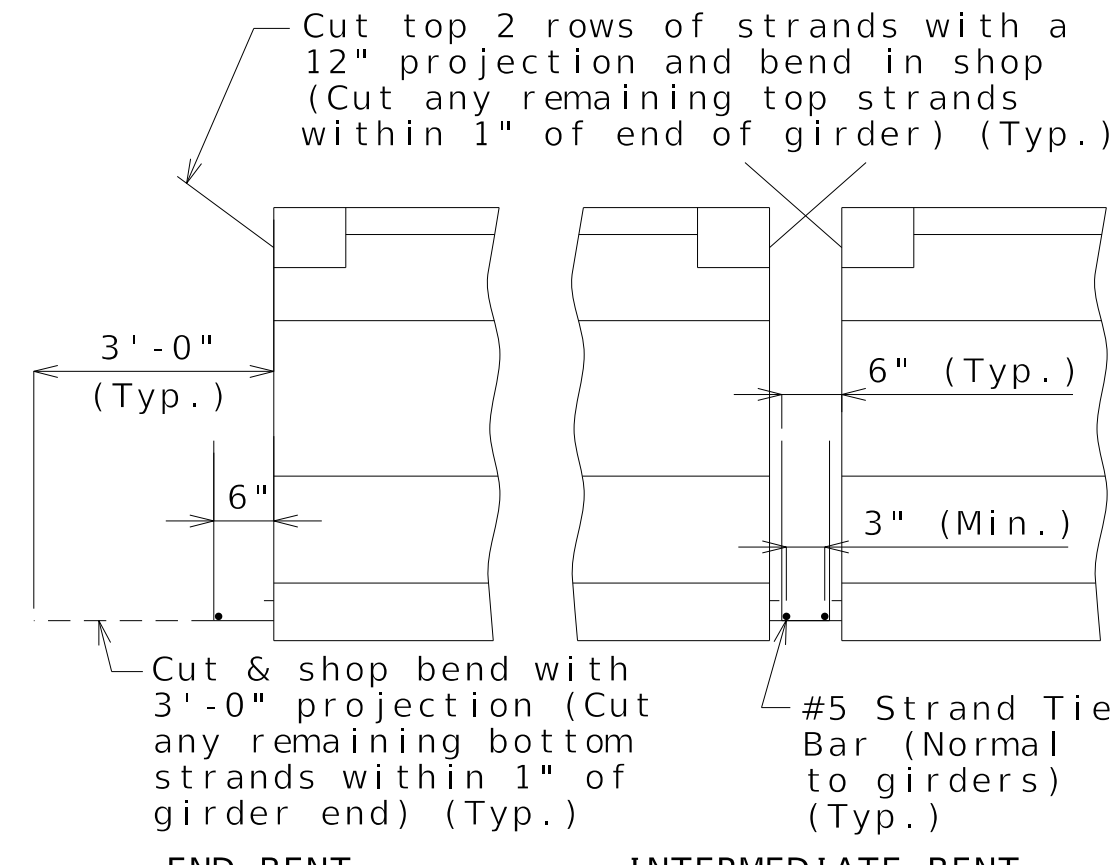


DIMENSIONS

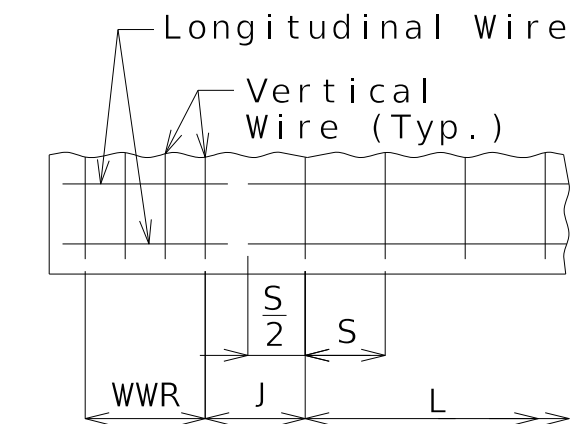


STRAND ARRANGEMENT

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



STRANDS AT GIRDER ENDS



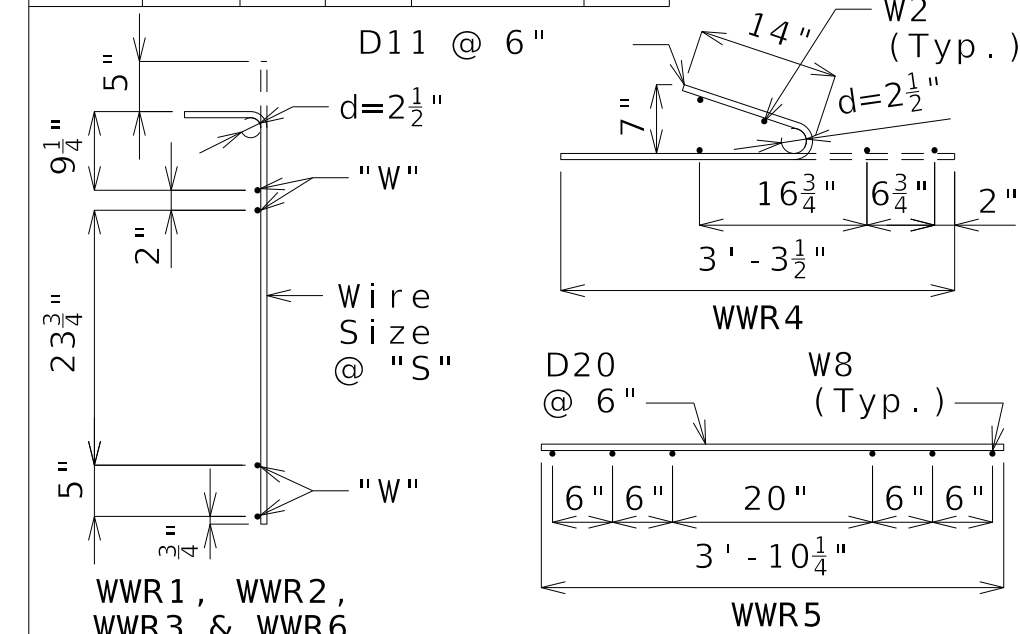
WELDED WIRE PLACEMENT

S = Vertical wire spacing
 L = Length of WWR mats
 J = Distance between WWR mats

Bill of Reinforcing Steel

Bars Each Girder					Bending Diagrams
No.	Size/Mark	Length	Shape		
89	3 G1	2'-10"	8		
2	4 G3	4'-10"	20		
2	4 G4	2'-3"	20		
2	4 G5	3'-4"	20		
6	4 G6	Varies	20		

Welded Wire Each Girder					
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	11'-8"	12"
WWR2	D31	12"	W12	7'-0"	17 1/4"
WWR3	D31	20"	W12	21'-8"	--
WWR6	D31	2"	W12	16"	4"



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

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

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

Use 26 strands, 0.6"Ø Grade 270, with an initial prestress force of 1143 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

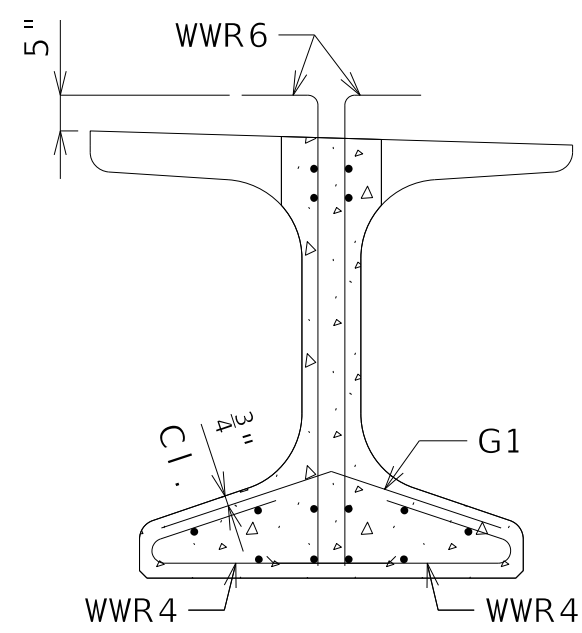
Exterior and interior girders are the same except: coil ties, top flange blackout, application of bond breaker, and coil inserts for slab drains.

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

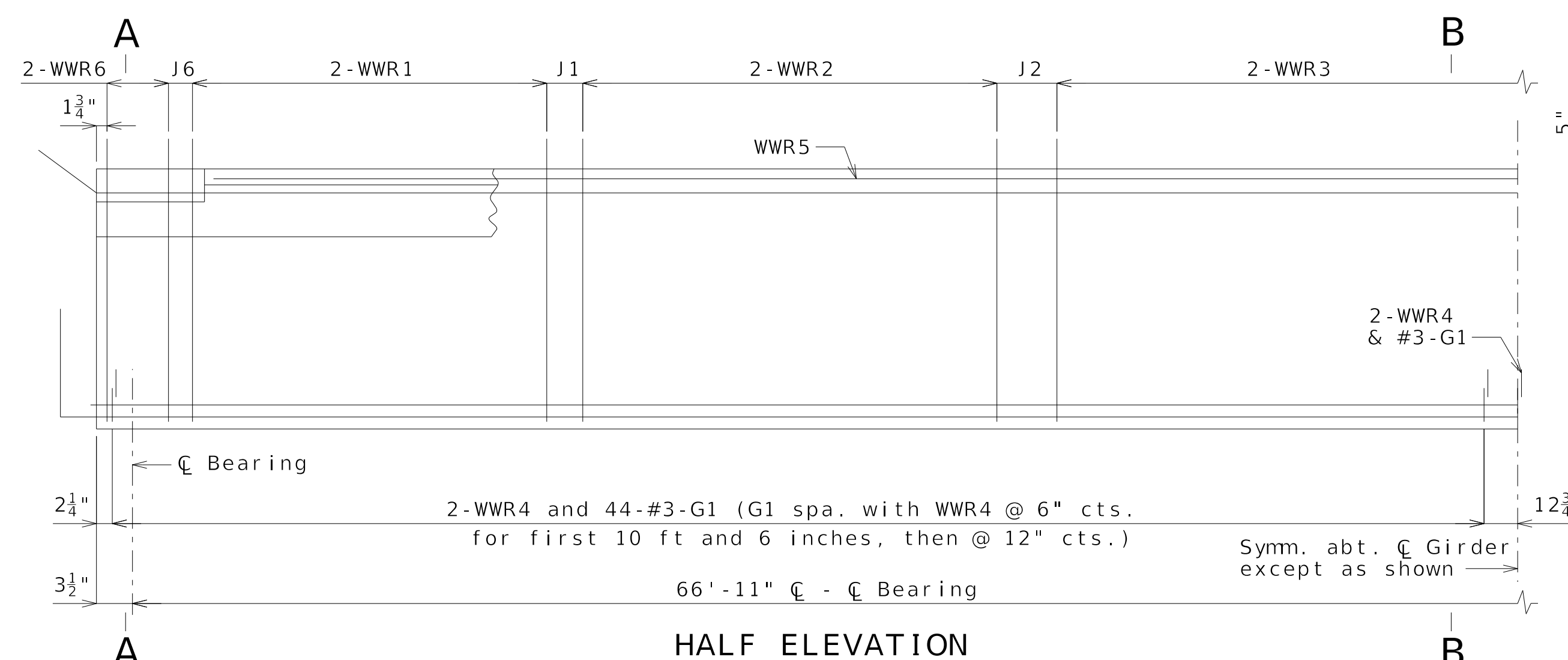
For Girder Camber Diagram, see Sheet No. 20.

For location of coil inserts at slab drains, see Sheet No. 24.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 14 and 19.

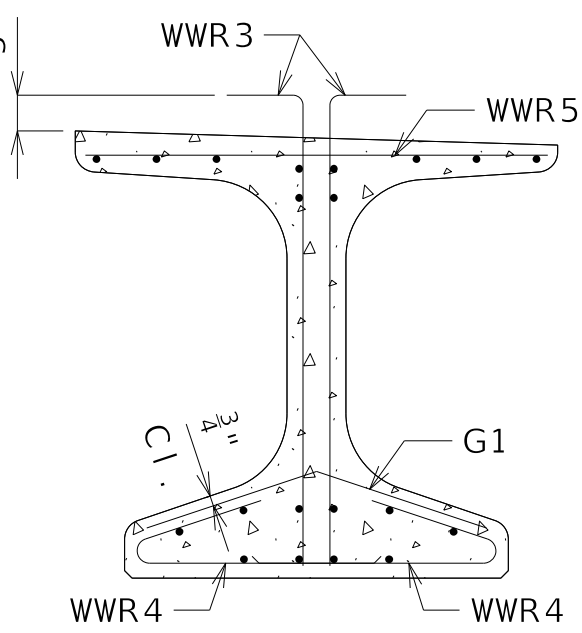


SECTION A-A
 Strands not shown for clarity.

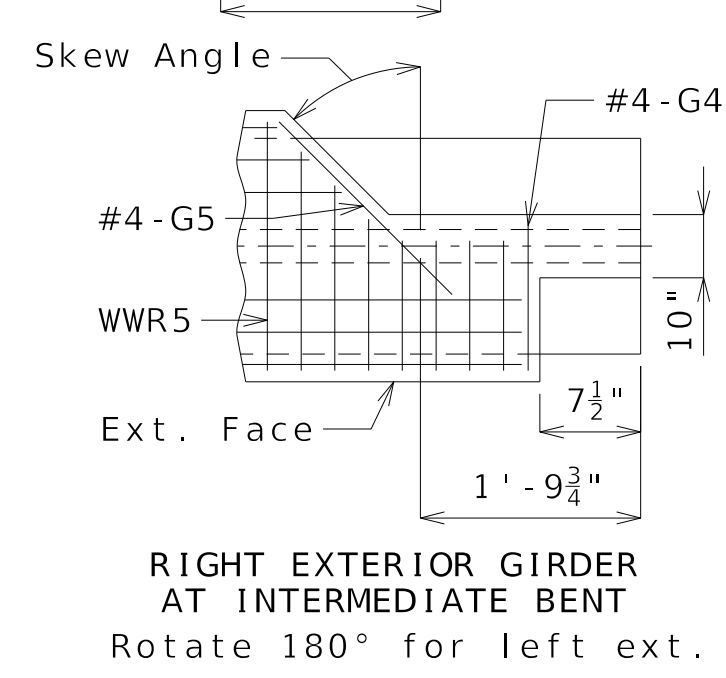
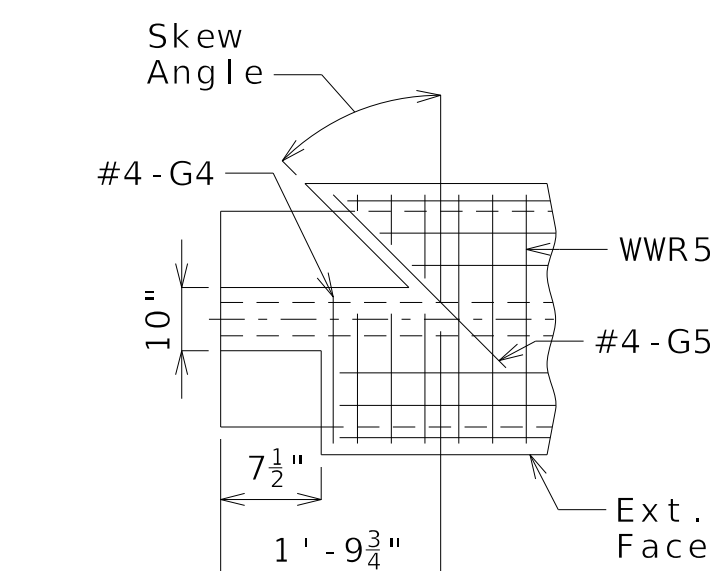


HALF ELEVATION

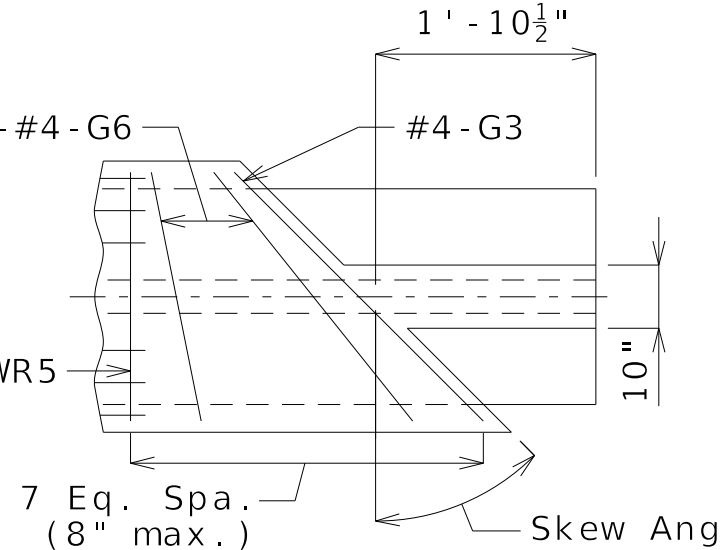
Reinforcement support strands not shown for clarity.



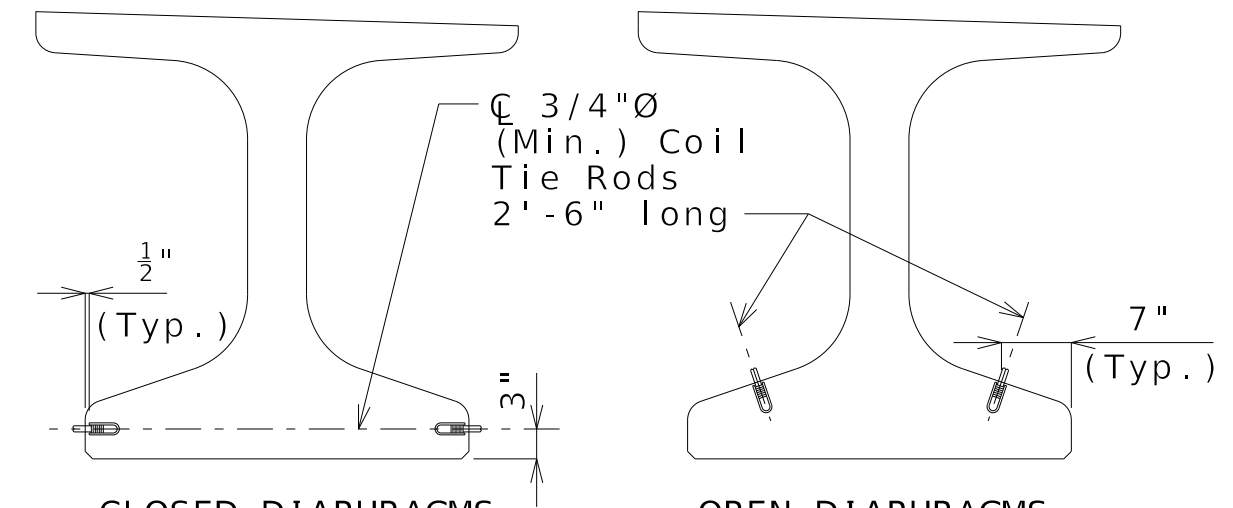
SECTION B-B
 Strands not shown for clarity.



RIGHT EXTERIOR GIRDER AT INTERMEDIATE BENT
 Rotate 180° for left ext.

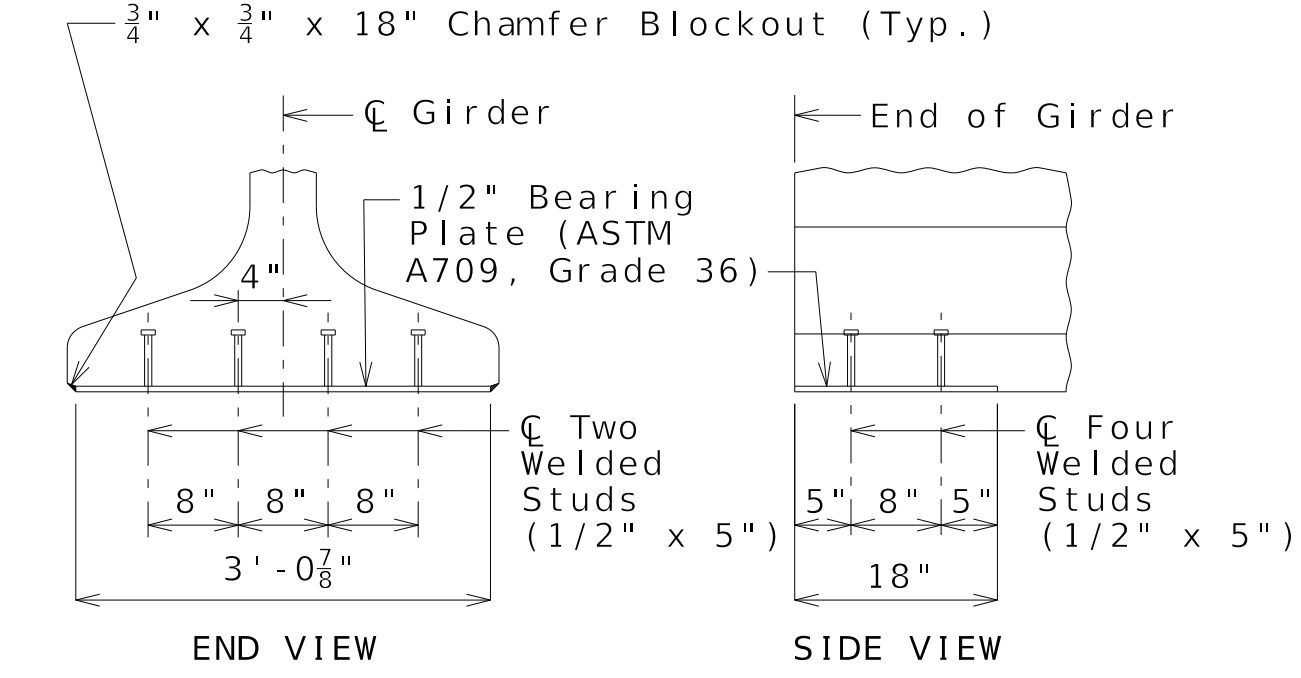


GIRDERS AT END BENT
 TOP FLANGE BLOCKOUT



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

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



BEARING PLATE

NU-GIRDERS - SPAN (4-5)

Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 18 of 36



Robert Whiteside

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 Robert P. Whiteside - Civil
 MO PE-2017008520

DATE PREPARED
 7/29/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. 18

COUNTY BOONE

JOB NO. JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

DATE 06/23/25 07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MILLSTONE WEBER

ENGINEERING INC. 200 OLIVE STREET SUITE 100 ST. LOUIS, MO 63101 (314) 336-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

PROJECT 1

MODOT IMPROVE I-70 DB



Robert P. Whiteside
 Robert P. Whiteside - Civil
 MO PE-2017008520

DATE PREPARED
 7/29/2025

ROUTE 1-70 STATE MO
 DISTRICT BR SHEET NO. 20

COUNTY BOONE
 JOB NO. JST0021
 CONTRACT ID.

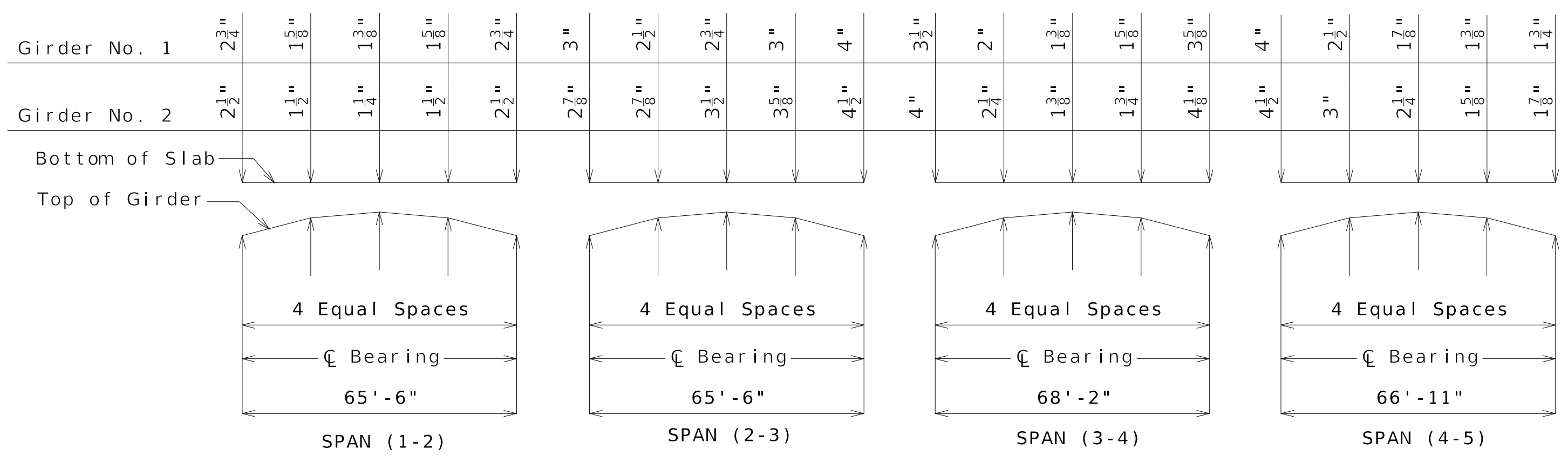
PROJECT NO.

BRIDGE NO. A40931

DATE	DESCRIPTION
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07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

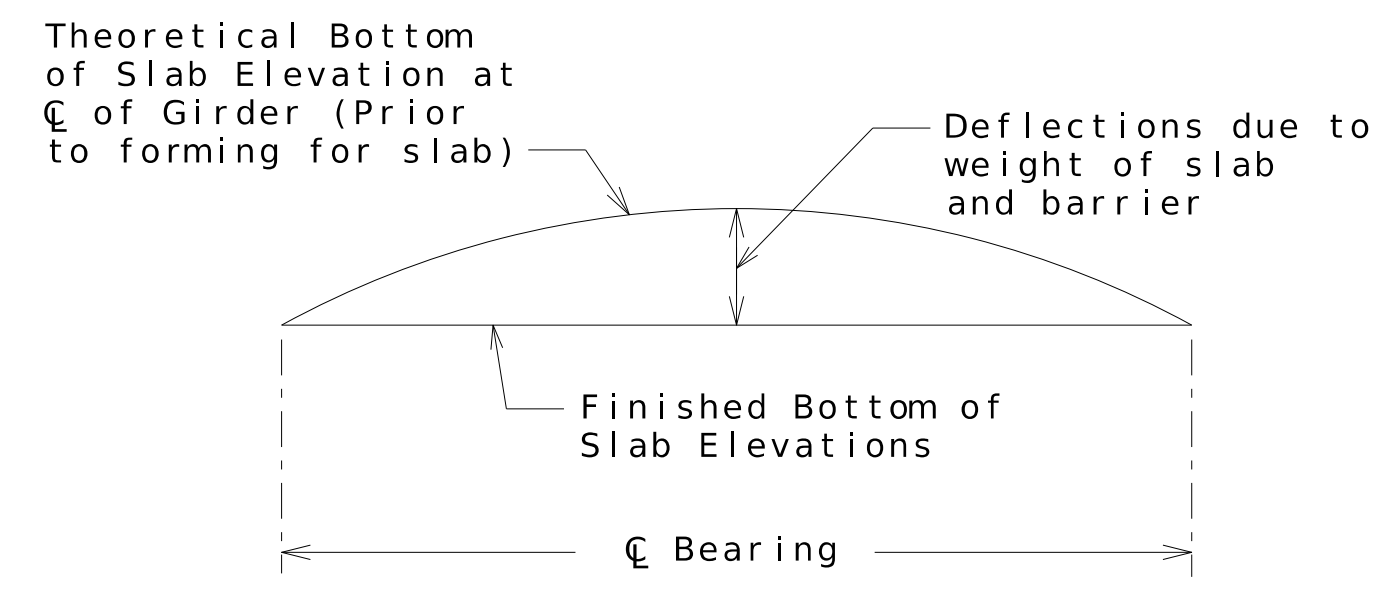
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
 1-888-ASK-MODOT (1-888-275-6636)

MODOT IMPROVE I-70 DB PROJECT 1
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 CIVIL ENGINEERING, INC.
 200 OLIVE STREET
 SUITE 100
 ST. LOUIS, MO 63101
 (314) 338-4431
 MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

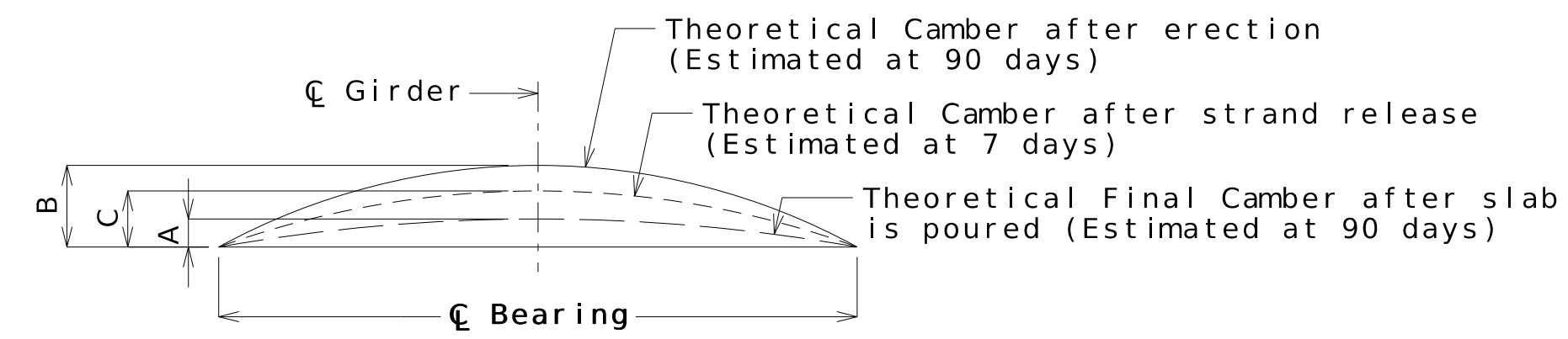


THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. The haunch shall be limited to ensure the projecting girder reinforcement or hairpin bar is embedded into slab at least 2 inches.



TYPICAL SLAB ELEVATIONS DIAGRAM



Girder	Span (1-2)			Span (2-3)			Span (3-4)			Span (4-5)		
	A	B	C	A	B	C	A	B	C	A	B	C
Girder 1	1"			1 1/8"			1"			1"		
Girder 2	4 3/8"	2 3/8"	1 1/8"	7/8"	2 1/8"	1 1/8"	5/8"	2 1/8"	1 1/4"	4 3/8"	2 3/8"	1 1/4"

GIRDER CAMBER DIAGRAM

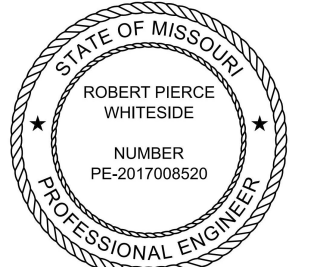
Conversion Factors for Girder Camber (Estimated at 90 days):

0.25 pt. = 0.7125 x 0.5 pt.

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

Girder Number	Span (1-2) (65'-6" C Brg. - C Brg.)				Span (2-3) (65'-6" C Brg. - C Brg.)				Span (3-4) (68'-2" C Brg. - C Brg.)				Span (4-5) (66'-11" C Brg. - C Brg.)							
	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.
1	740.88	741.29	741.69	742.05	742.39	742.41	742.82	743.19	743.49	743.75	743.78	744.12	744.46	744.78	745.15	745.18	745.63	746.06	746.43	746.77
2	740.86	741.29	741.68	742.04	742.37	742.40	742.81	743.17	743.41	743.62	743.64	743.95	744.25	744.56	744.94	744.97	745.43	745.86	746.22	746.55

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



Robert P. Whiteside

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ROUTE STATE

1 - 70 MO

DISTRICT SHEET NO.

BR 21

COUNTY

BOONE

JOB NO.

JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

DATE

06/23/25

07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MoDOT

MILLSTONE WEBER

ENGINEERING INC.

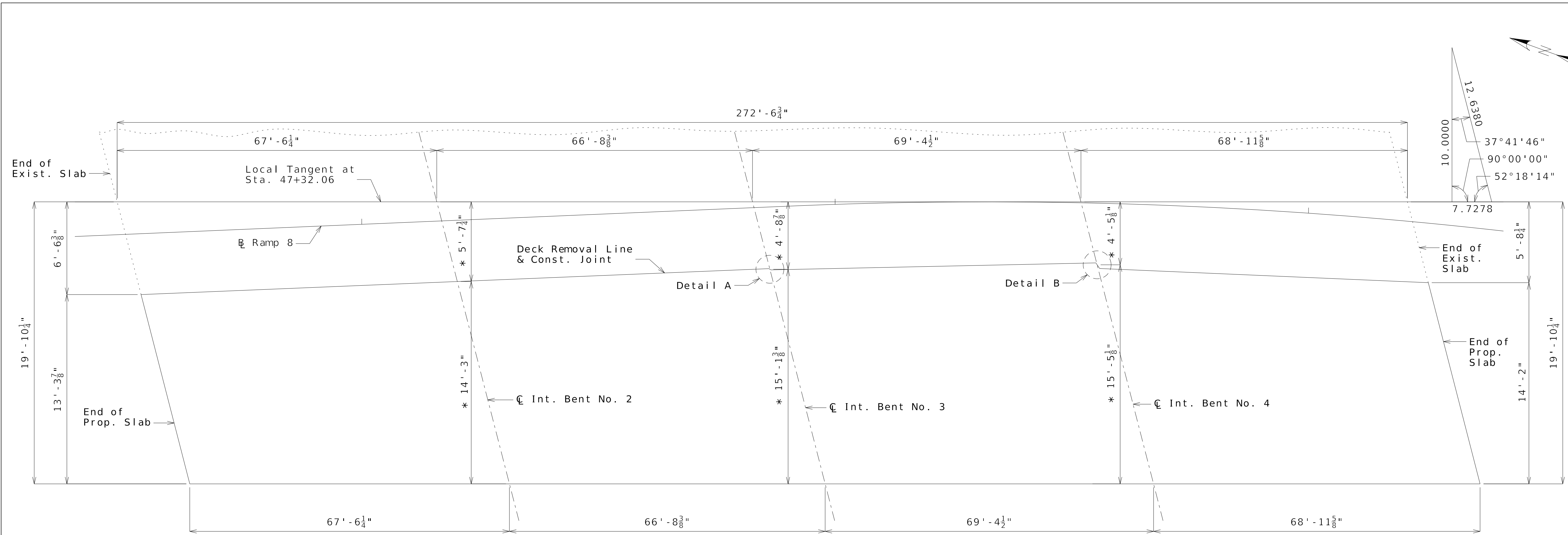
200 OLIVE STREET SUITE 1000 ST. LOUIS, MO 63101 (314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

PROJECT 1

MODOT IMPROVE I-70 DB

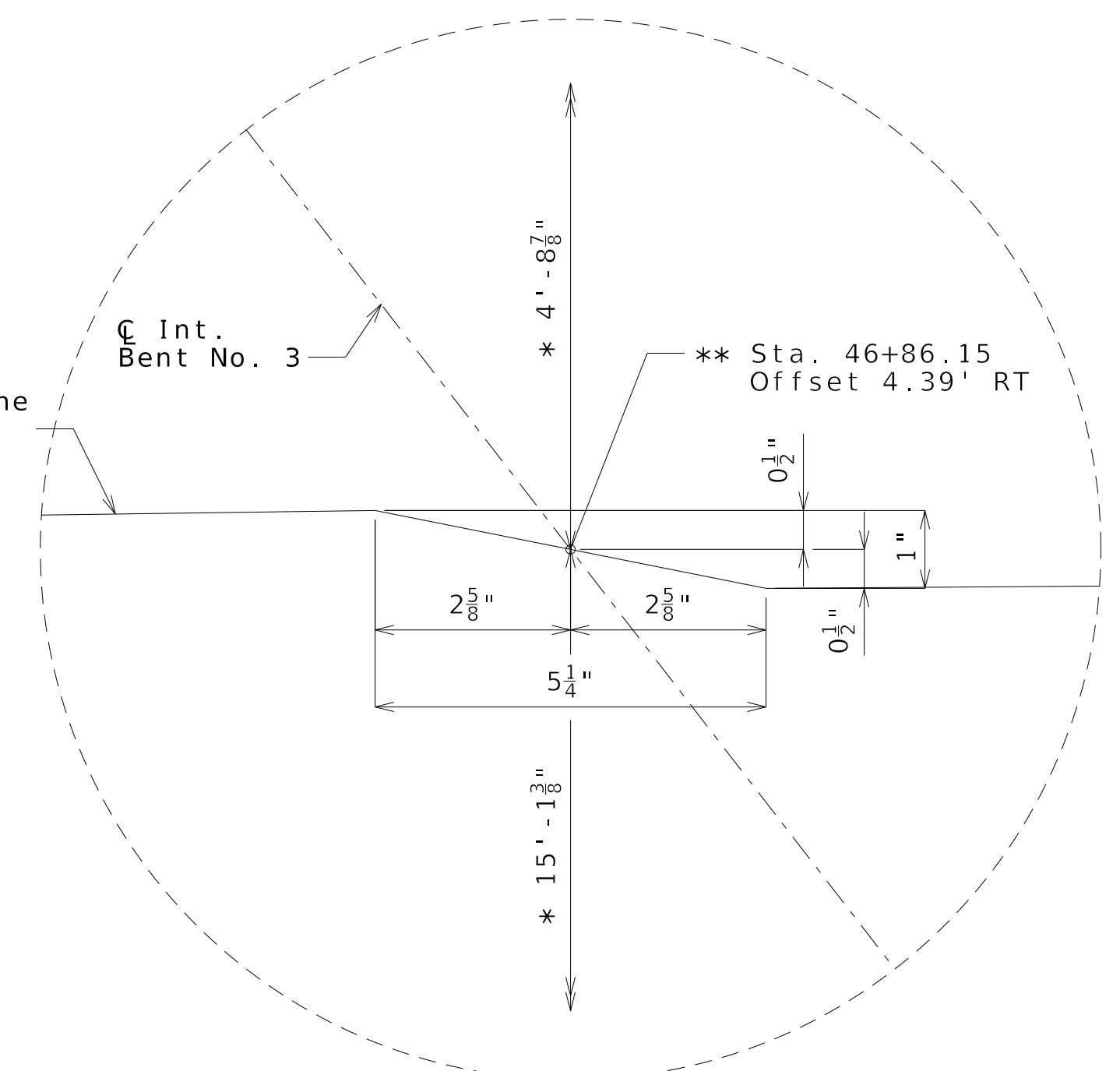
REV.



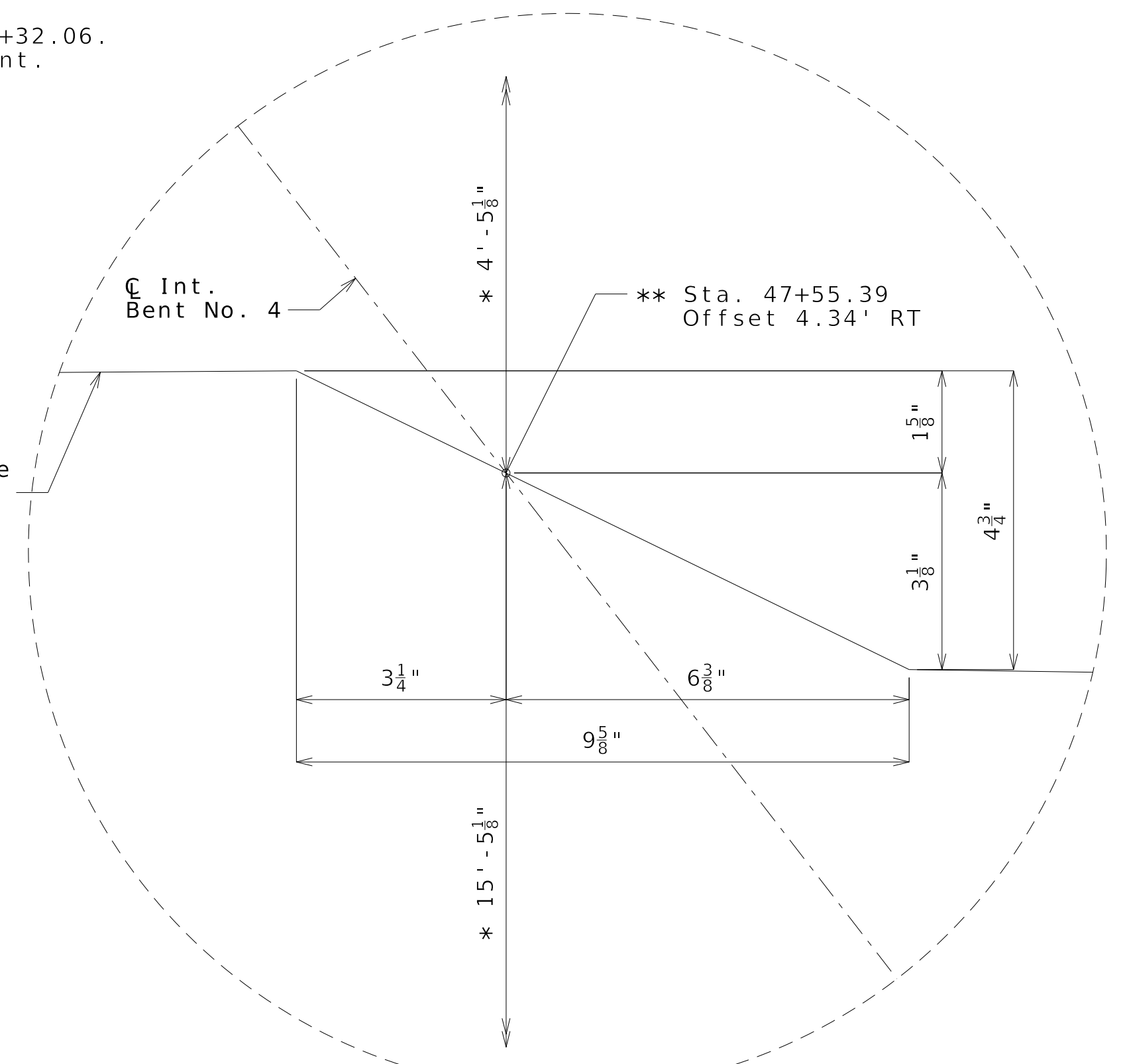
PLAN OF SLAB

Longitudinal dimensions are measured along Local Tangent at Sta. 47+32.06.
Transverse dimensions are measured perpendicular to Local Tangent.

* Measured at intersection of centerline of intermediate bent and construction joint, perpendicular to local tangent.
** Measured from Ramp 8



DETAIL A



DETAIL B

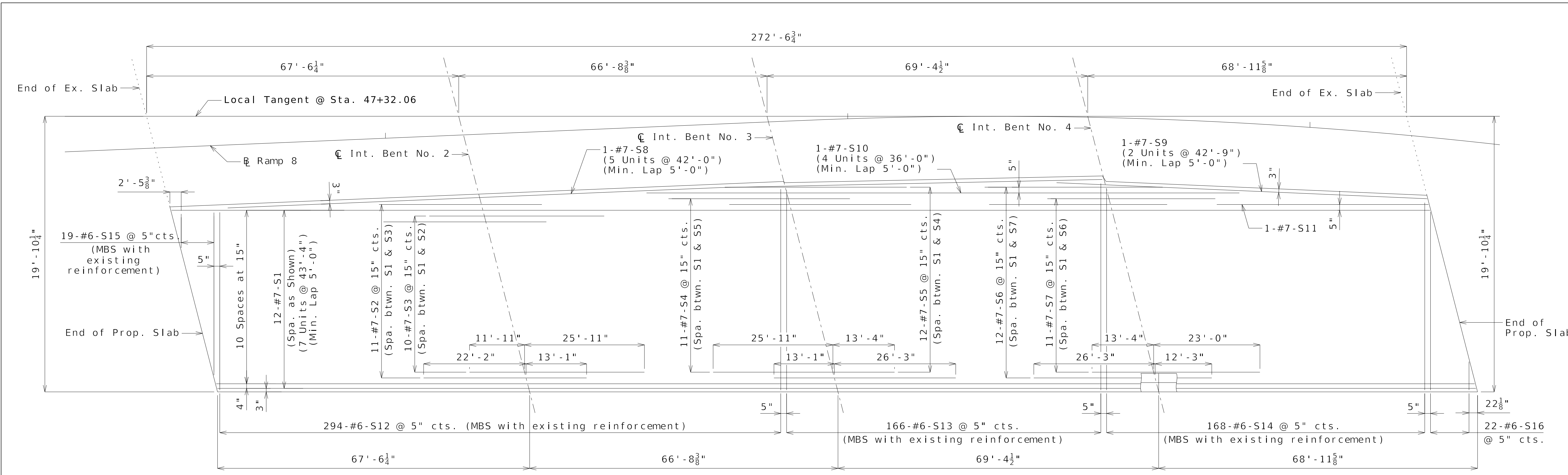
PLAN OF SLAB

Notes:
For Theoretical Bottom of Slab Elevations, Girder Camber Diagrams, and Theoretical Slab Haunching Diagram, see Sheet No. 20.
For Plan of Slab Showing Reinforcement, see Sheet No. 22.
Remove existing slab drains and fill with Class B-2 concrete.
For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 23.

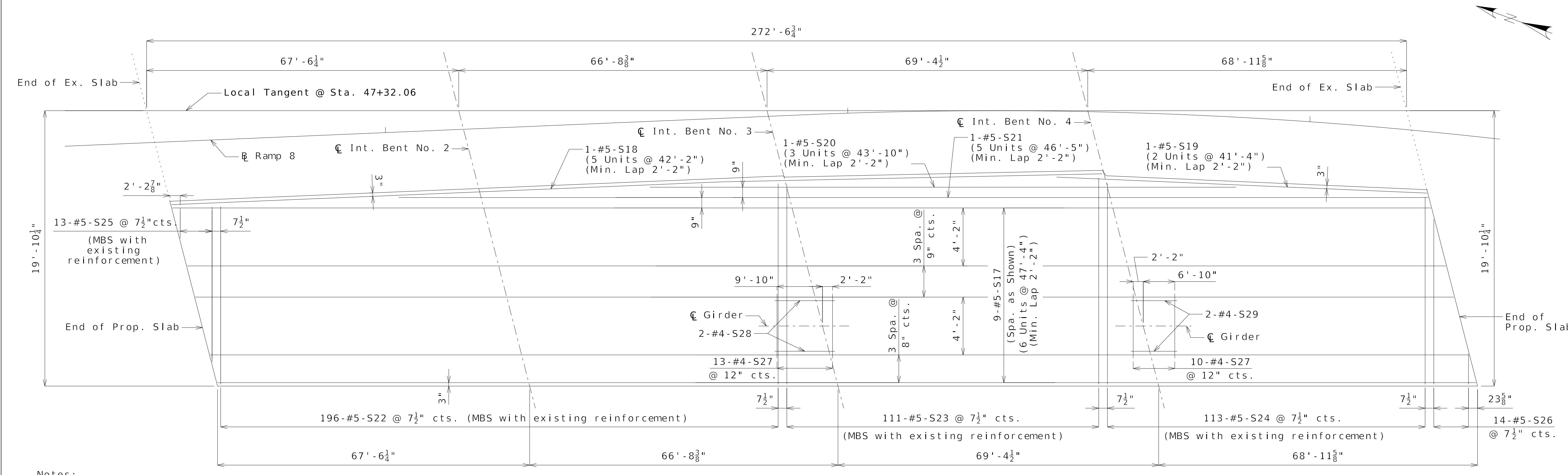
Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 21 of 36



TOP REINFORCEMENT PLAN



BOTTOM REINFORCEMENT PLAN

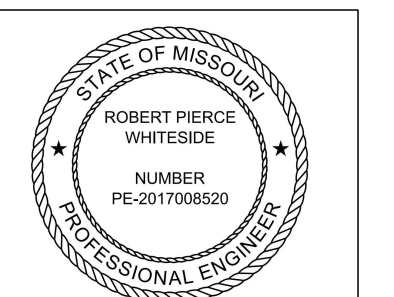
PLAN OF SLAB SHOWING REINFORCEMENT

Notes:
 MBS = Mechanical Bar Splice
 For additional notes and details, see Sheets No. 21 and 23.
 For Details of Reinforcement of Safety Barrier Curb not shown, see Sheets No. 25 and 26.

Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 22 of 36



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 MO PE-2017008520

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 7/29/2025

ROUTE STATE
 1-70 MO
 DISTRICT SHEET NO.
 BR 22

COUNTY
 BOONE
 JOB NO.
 JST0021
 CONTRACT ID.

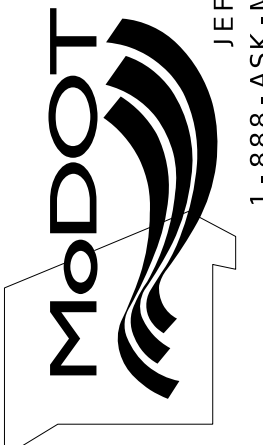
PROJECT NO.

BRIDGE NO.
 A40931

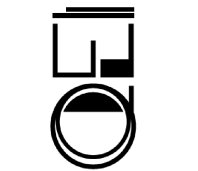
DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

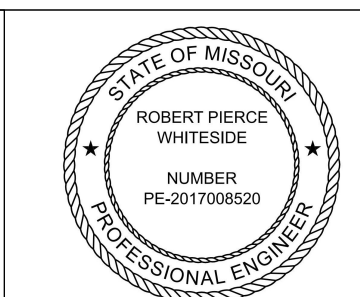
105 WEST CAPITOL JEFFERSON CITY, MO 65102
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ENGINEERING, INC.
 200 OLIVE STREET
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 ST. LOUIS, MO 63101
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 MO PE-2017008520

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ROUTE STATE
 I - 70 MO

DISTRICT SHEET NO.
 BR 23

COUNTY
 BOONE

JOB NO.
 JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
 A40931

DESCRIPTION
 REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

DATE
 06/23/25

07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

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MoDOT logo

MILLSTONE WEBER

ENGINEERING INC.

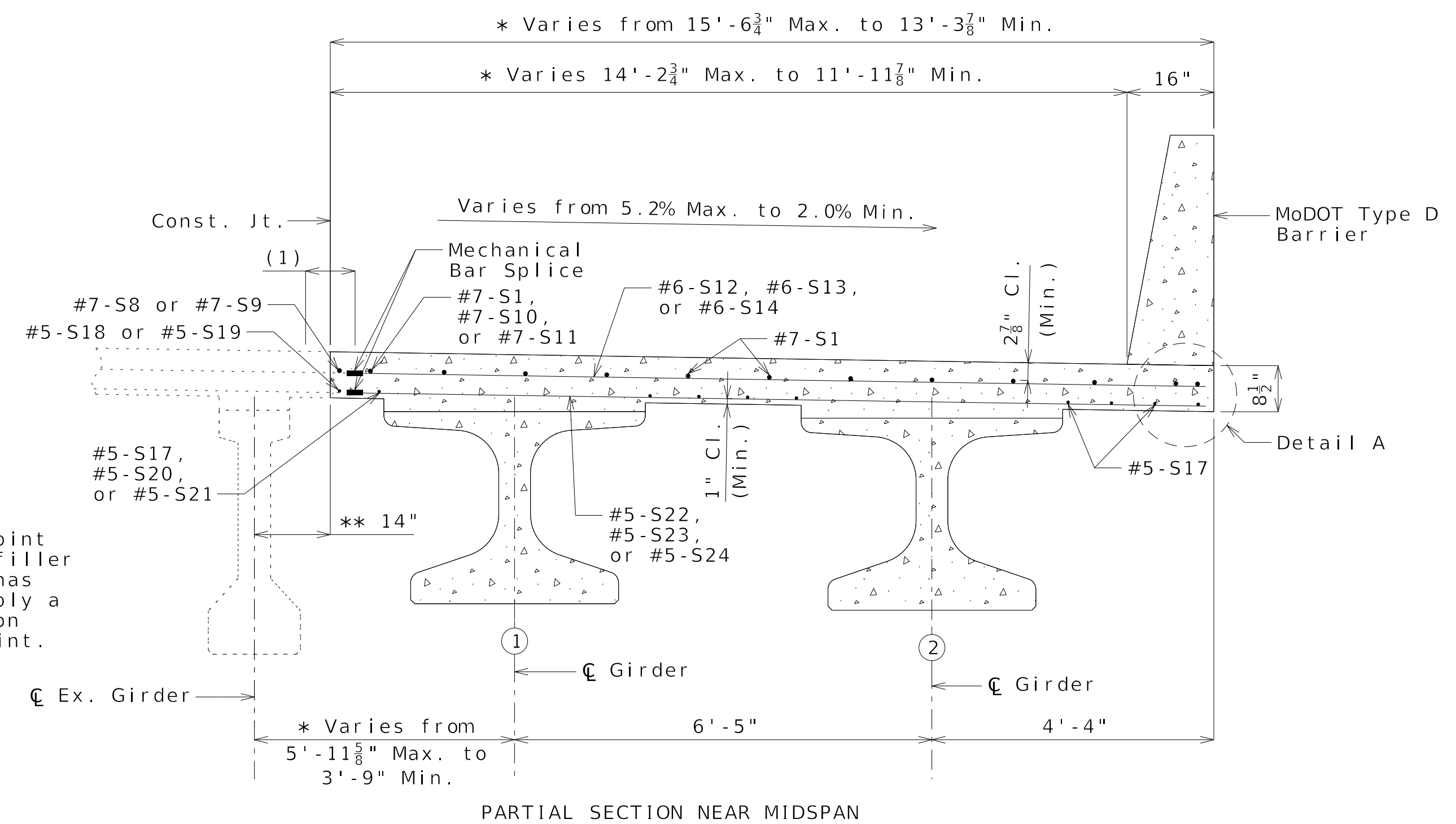
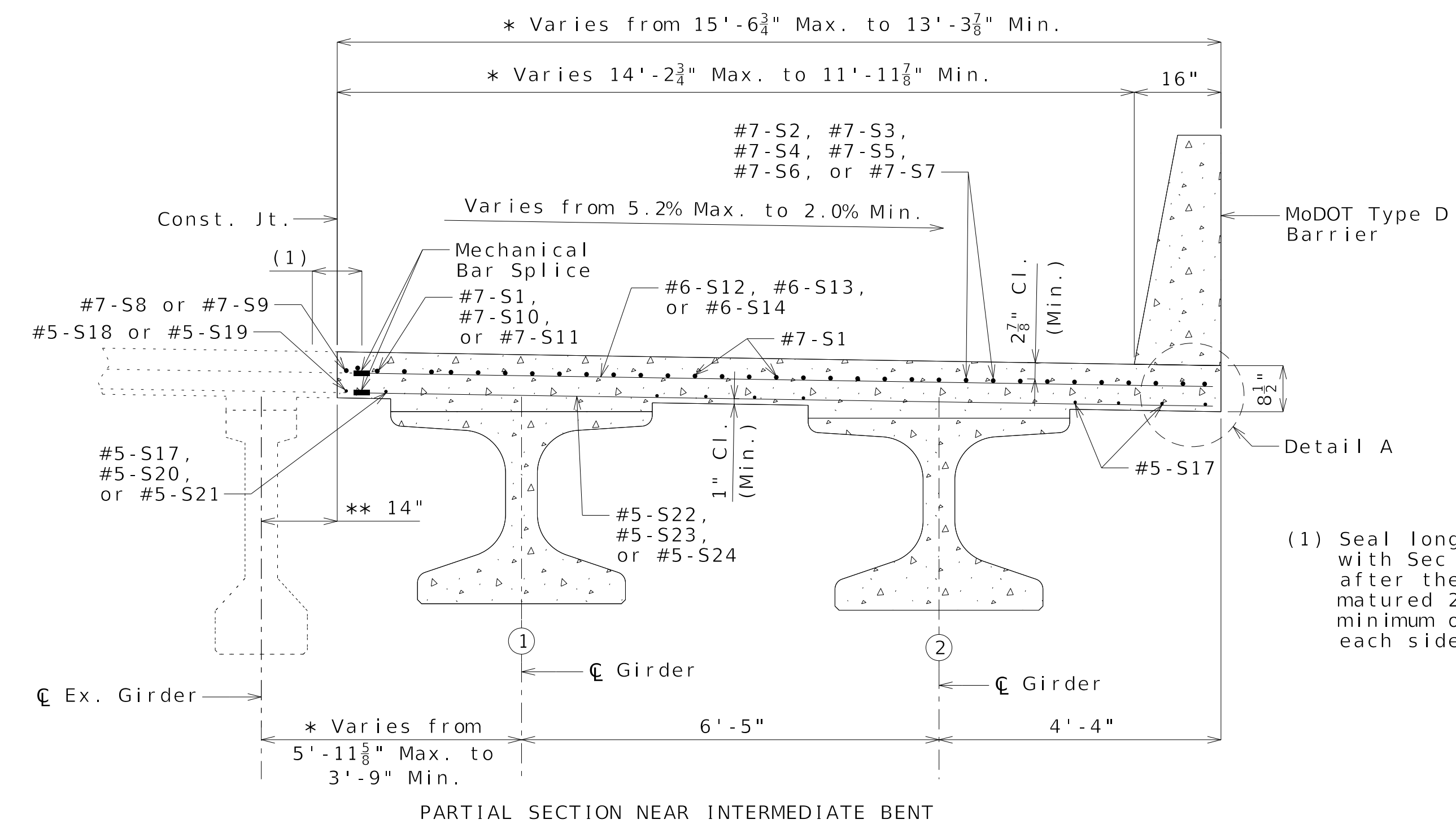
270 OLIVE STREET SUITE 100 ST. LOUIS, MO 63101 (314) 336-4431

MoDOT IMPROVE I-70 DB PROJECT 1

ENGINEERING

MO STATE CERTIFICATE OF AUTHORITY #025261

7/29/2025



SECTION THRU SLAB
 (Looking South)

* Dimensioned perpendicular to proposed edge of deck.
 ** Dimensioned perpendicular to centerline of existing girder.

Notes:

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

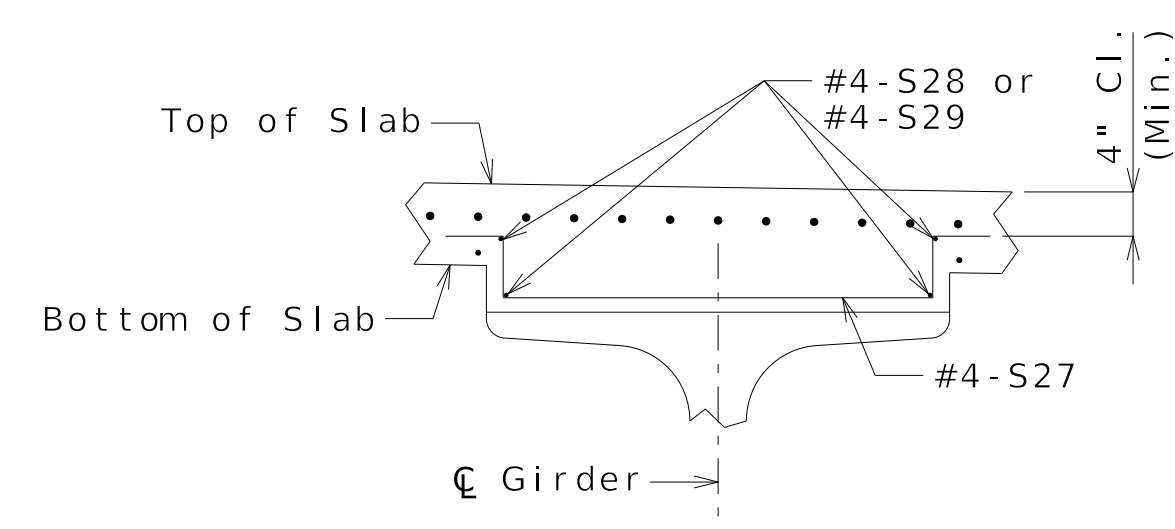
For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20.

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

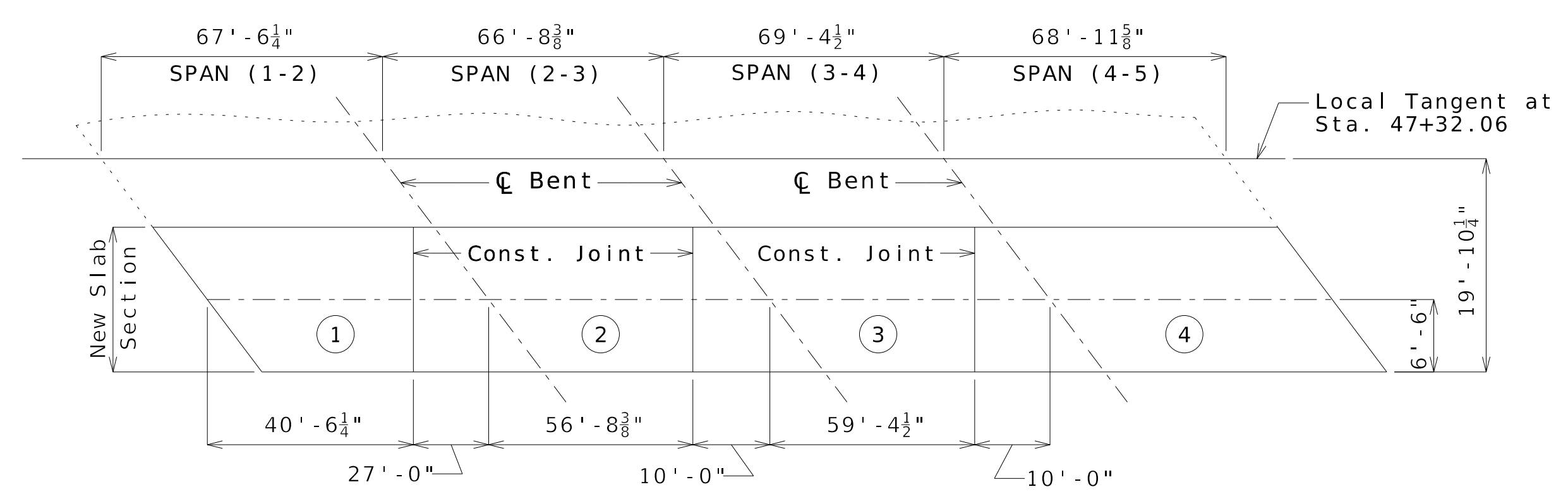
The existing transverse slab reinforcement shall be cleanly stripped of concrete and straightened for incorporation into the new construction. It shall then be cut off at 6-inch minimum past the concrete deck cut line. Sufficient length must be left to engage a mechanical bar splicer.

The existing longitudinal slab reinforcement that remains embedded in solid concrete from existing deck shall be cleanly stripped of concrete and straightened for incorporation into the new construction.

Any reinforcement bars that are to remain that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system.



PARTIAL SECTION SHOWING HAIRPINS

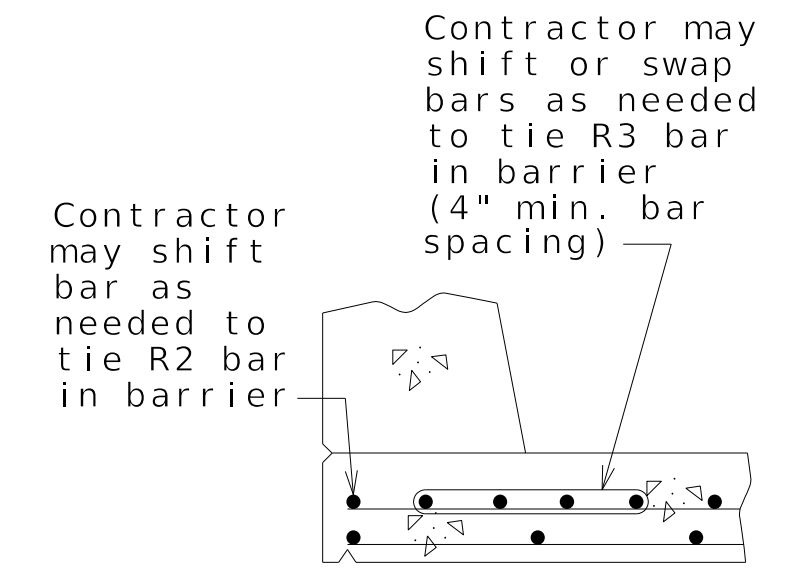


	Sequence of Pours				Min. Rate of Pour Cu. Yds./Hr.
	Direction				
Basic Sequence	1 End to 2	2 1 to 3	3 2 to 4	4 3 to End	25
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.					
Alternate A Pours	1 + 2 End to 3	3 2 to 4	4 3 to End		25
Alternate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

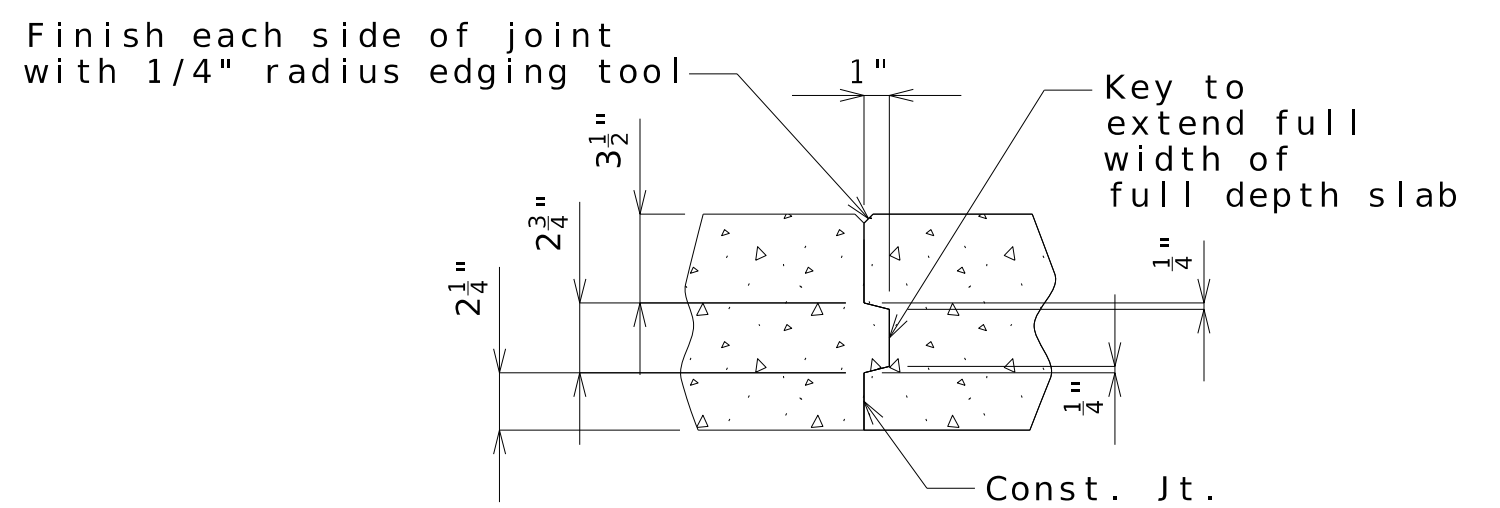
The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

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

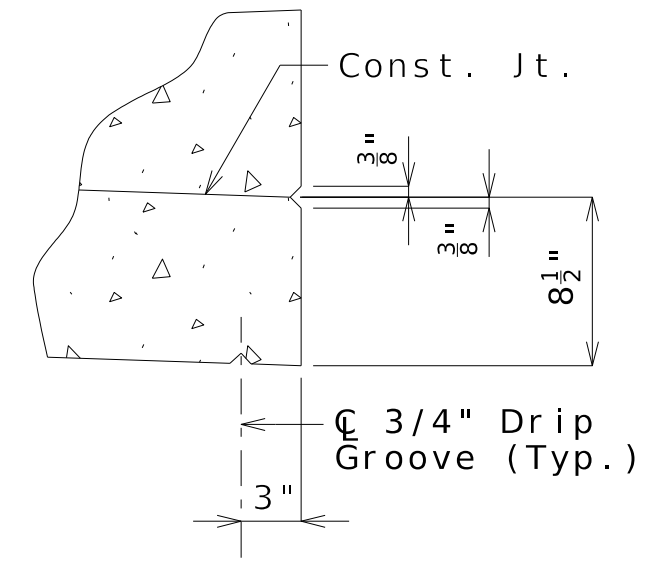
SLAB POURING SEQUENCE



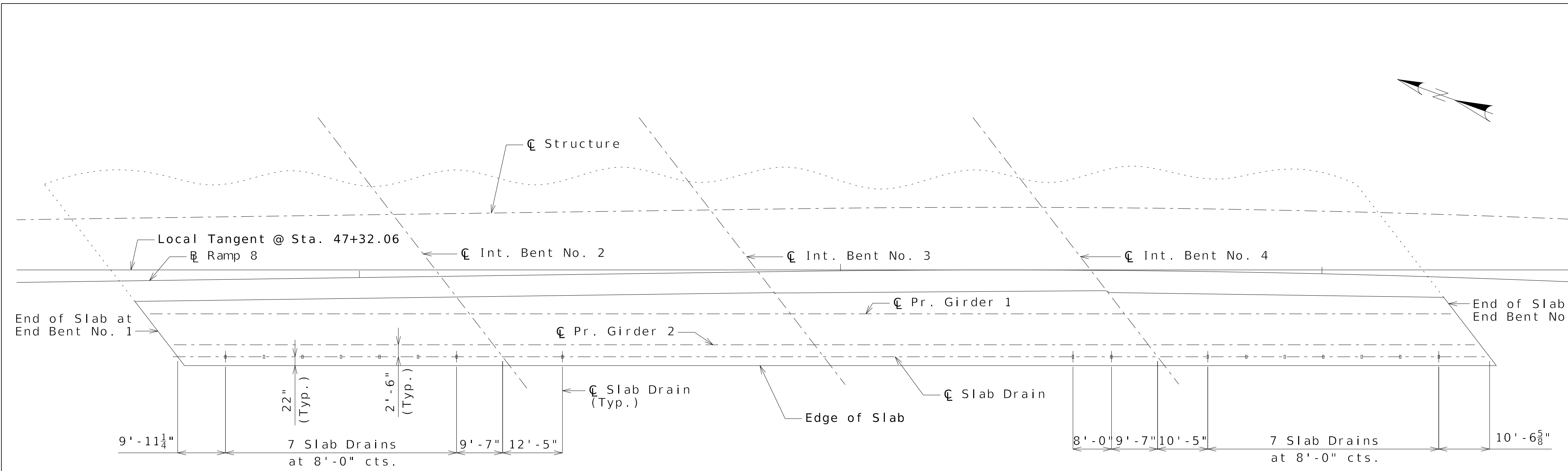
OPTIONAL SHIFTING TOP BARS AT BARRIER



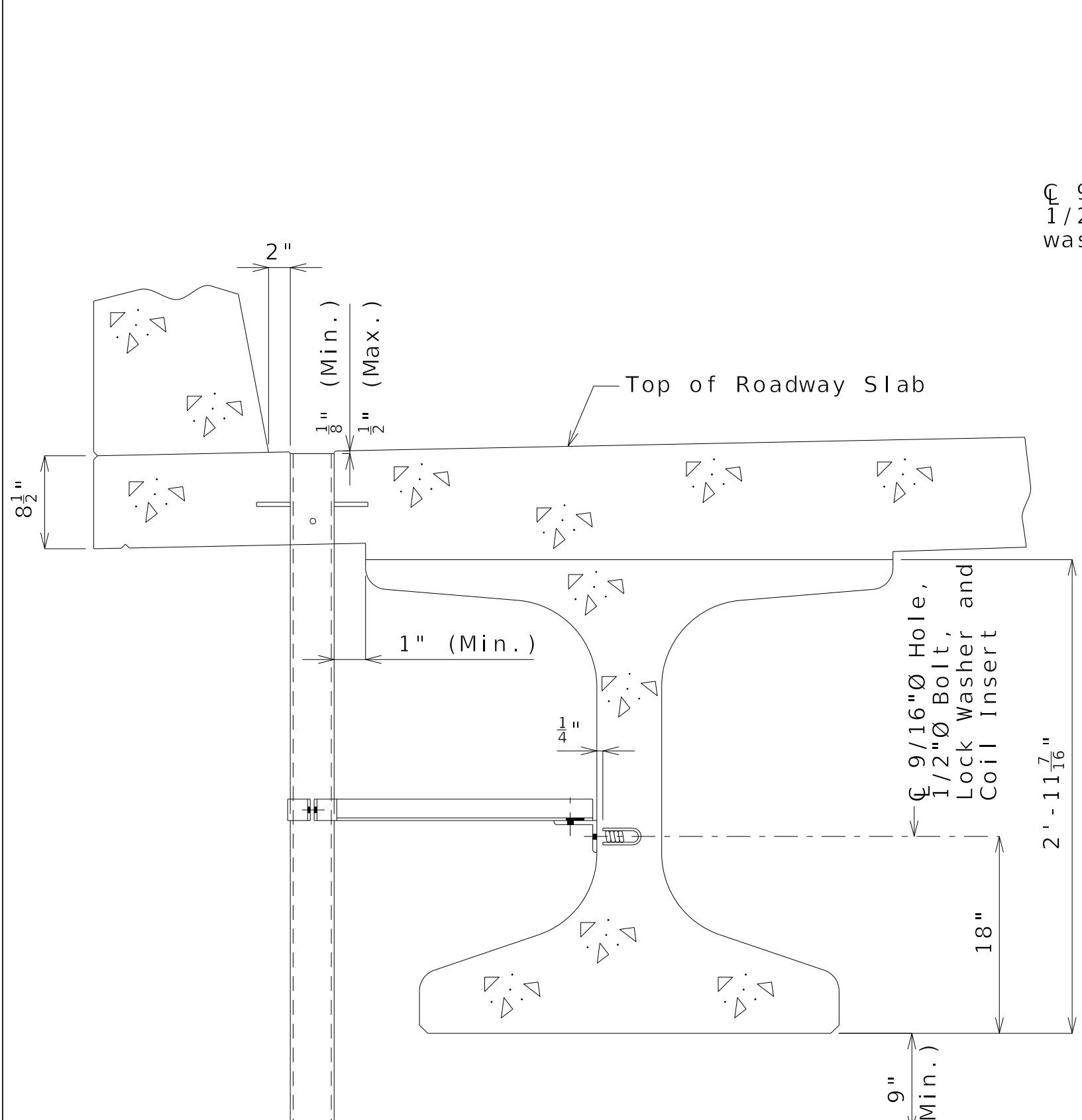
SLAB CONSTRUCTION JOINT



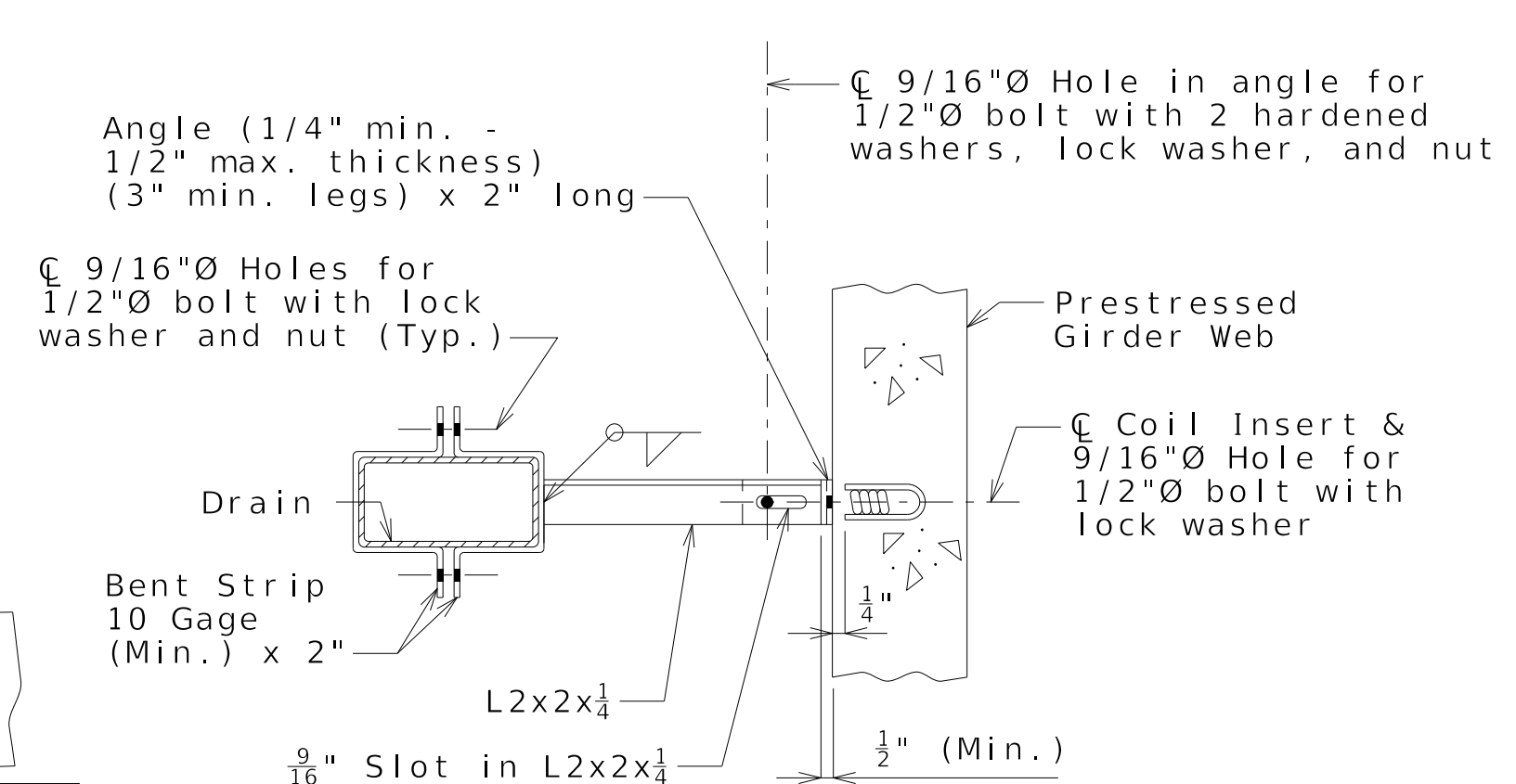
DETAIL A



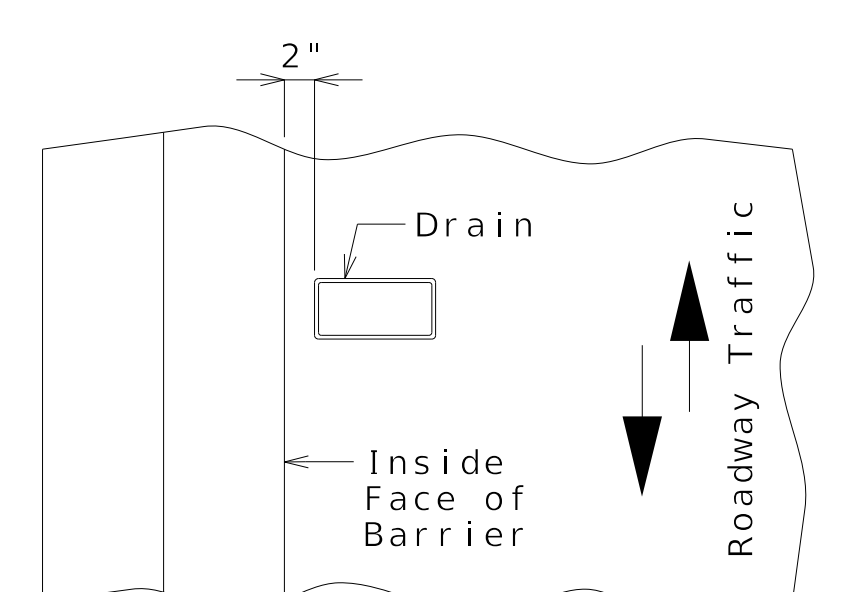
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



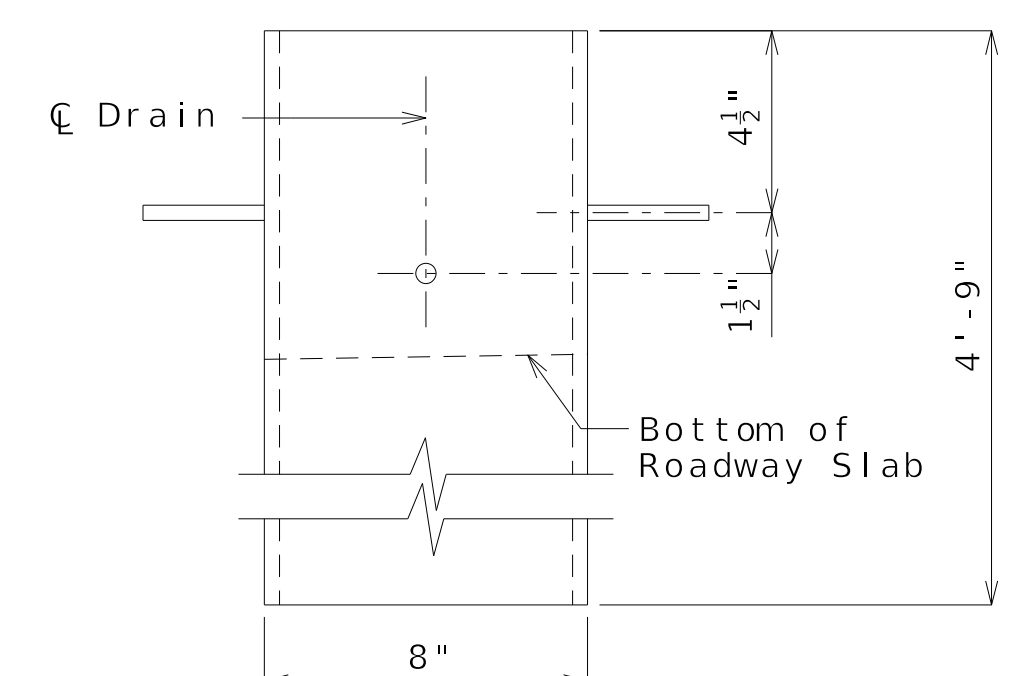
PART SECTION NEAR DRAIN



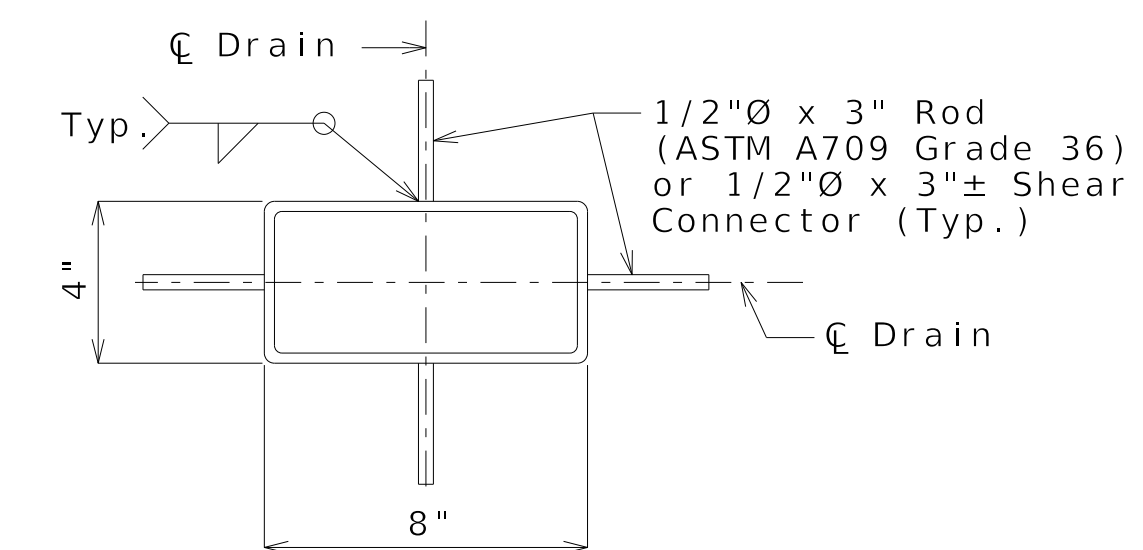
PART SECTION SHOWING BRACKET ASSEMBLY



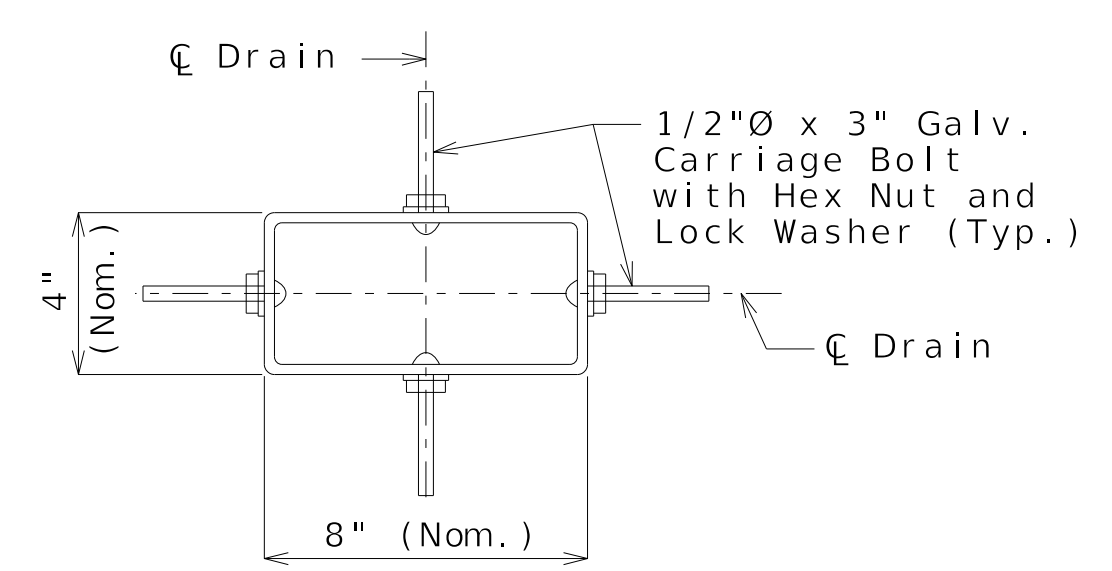
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

SLAB DRAINS

General Notes:

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

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

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

Reinforcing steel shall be shifted to clear drains.

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

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

All 1/2"Ø bolts shall be ASTM A307.

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

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

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

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

Notes for Steel Drain:

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

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

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

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

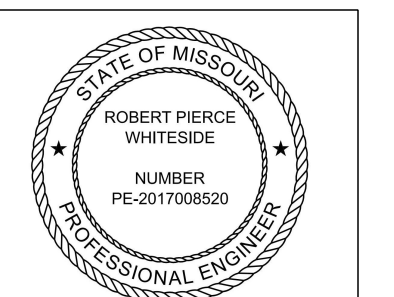
Minimum reinforced wall thickness shall be 1/4 inch.

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

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

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

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



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MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. 24

COUNTY BOONE

JOB NO. JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

DATE 06/23/25

07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MoDOT

MILLSTONE WEBER

ENGINEERING, INC.

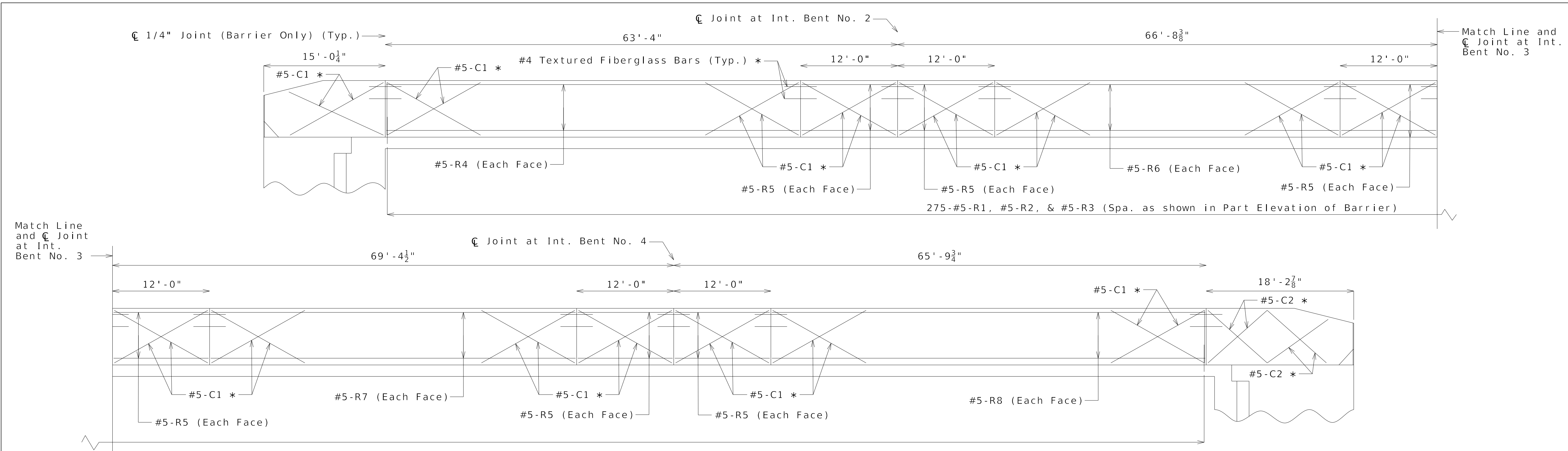
200 OLIVE STREET SUITE 1000 ST. LOUIS, MO 63101 (314) 335-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

PROJECT 1

MODOT IMPROVE I-70 DB

REV.

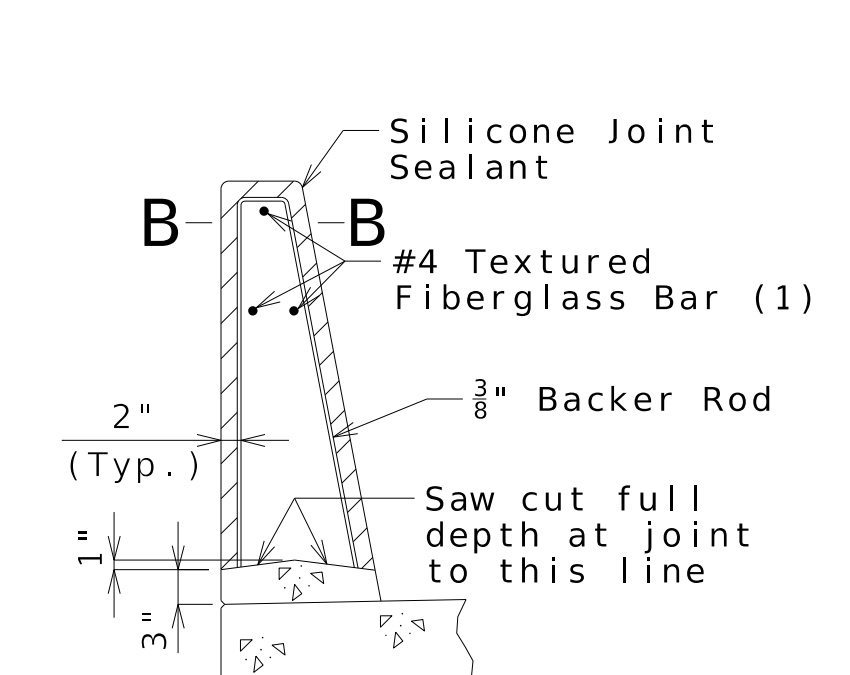


Match Line and C Joint at Int. Bent No. 3

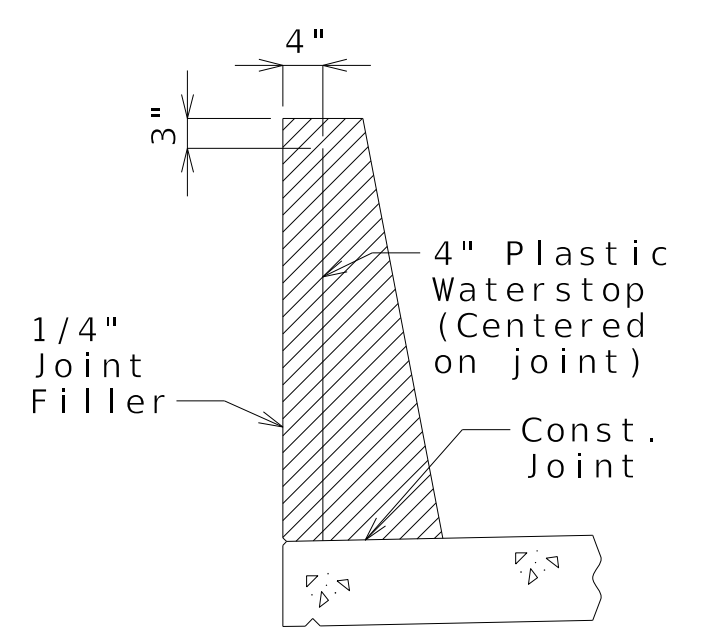
Match Line and C Joint at Int. Bent No. 3

ELEVATION OF BARRIER

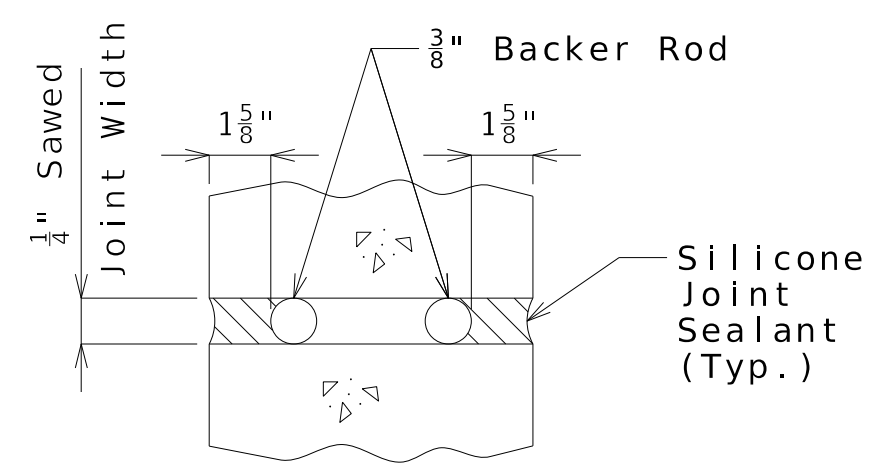
Longitudinal dimensions are horizontal.



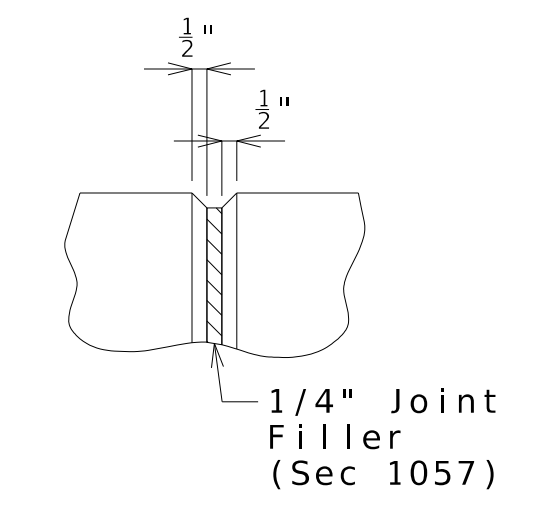
SECTION THRU SAW CUT JOINT



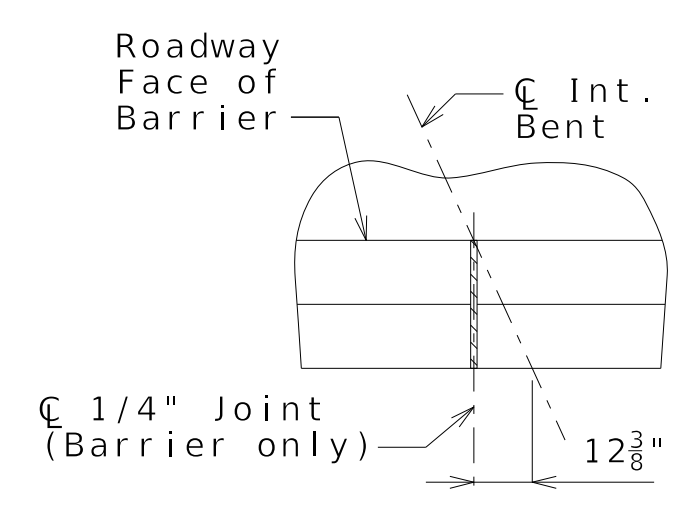
WATERSTOP DETAIL
Plastic waterstop shall be placed in all formed joints, except structures with superelevation, use on lower joints only.



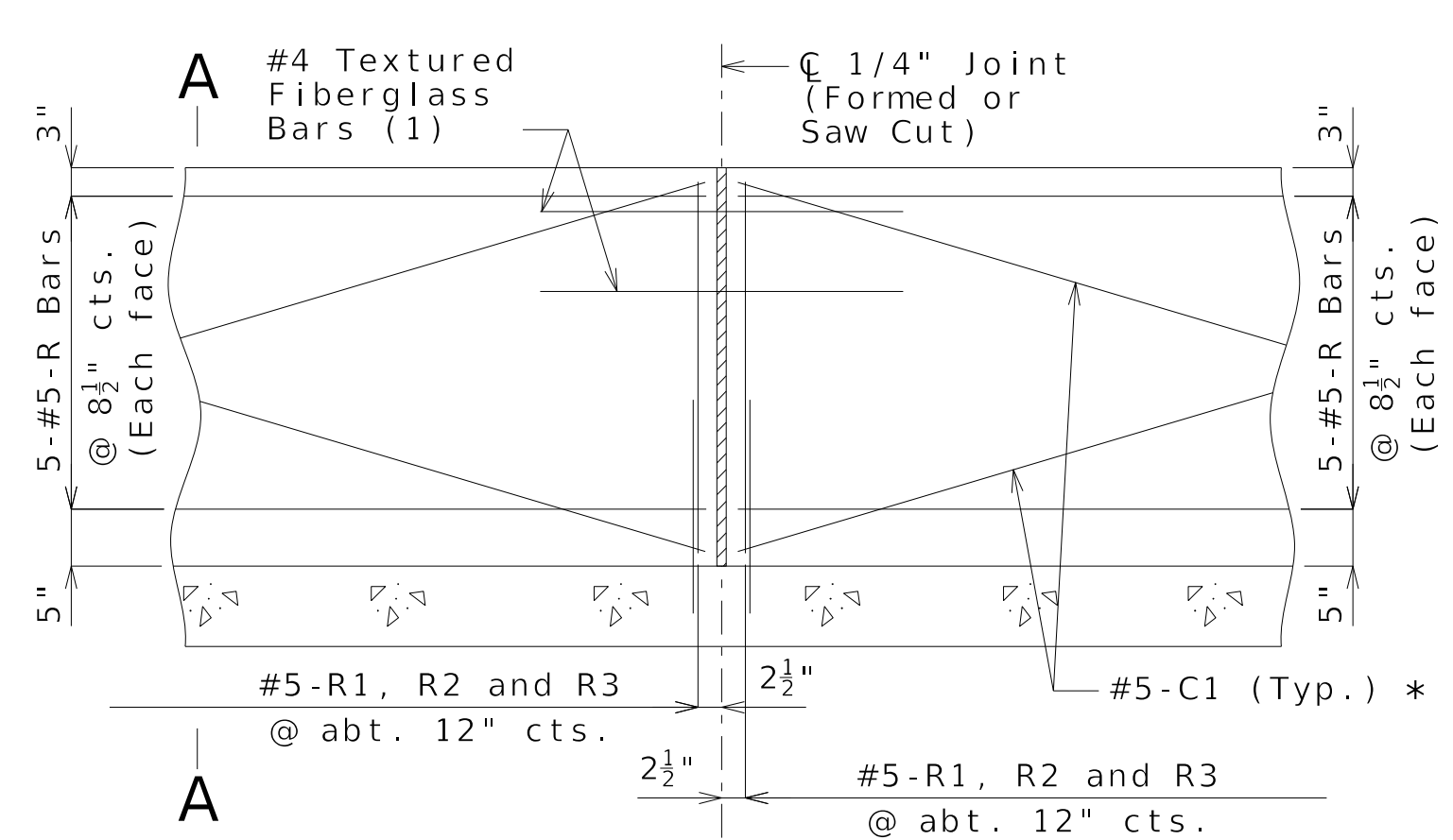
SECTION B-B



PART ELEVATION AT FORMED JOINT

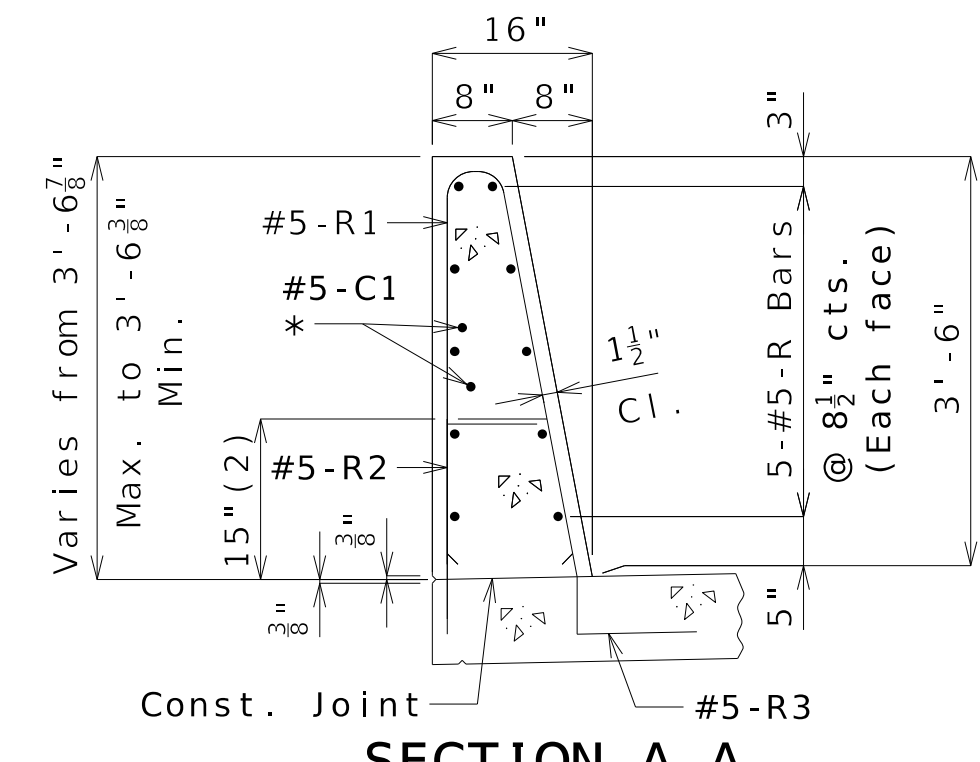


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

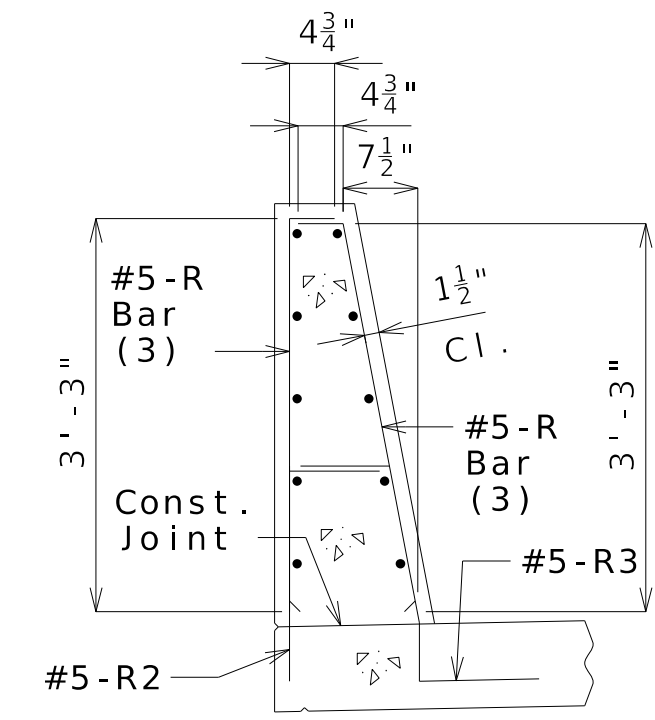


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

Concrete in barrier shall be Class B-1.

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617.

Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides.

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

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

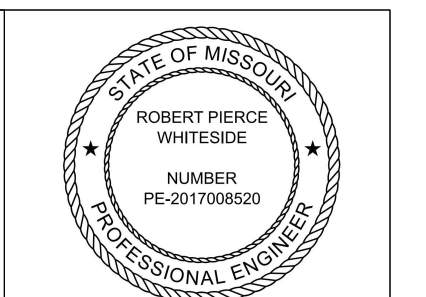
Plastic waterstop shall not be used with saw cut joints.

Detailed JAN. 2025
Checked MAY 2025

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

TYPE D BARRIER

Sheet No. 25 of 36



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MO PE-2017008520

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7/29/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. 25

COUNTY BOONE

JOB NO. JST0021

CONTRACT ID.

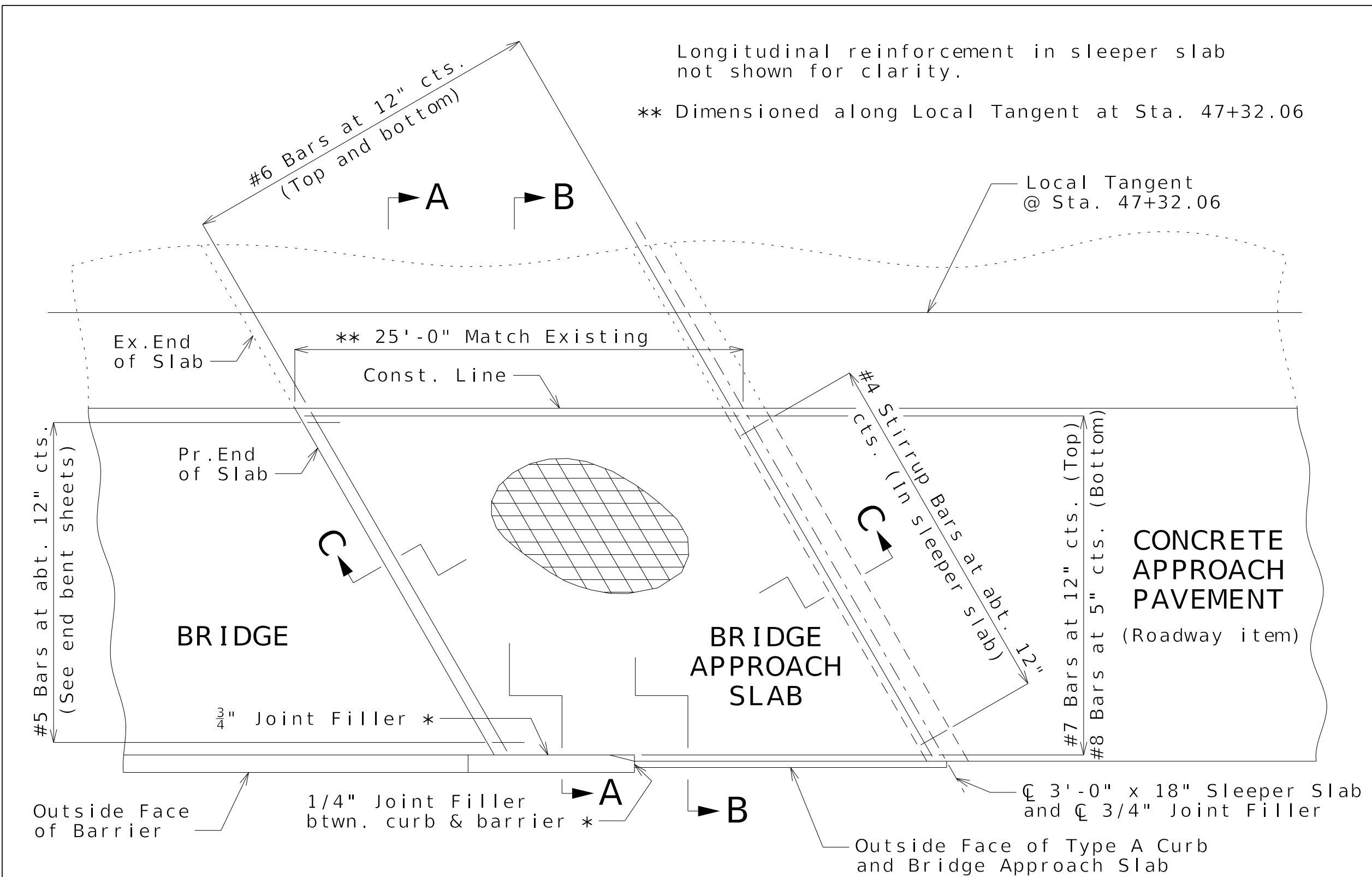
PROJECT NO.

BRIDGE NO. A40931

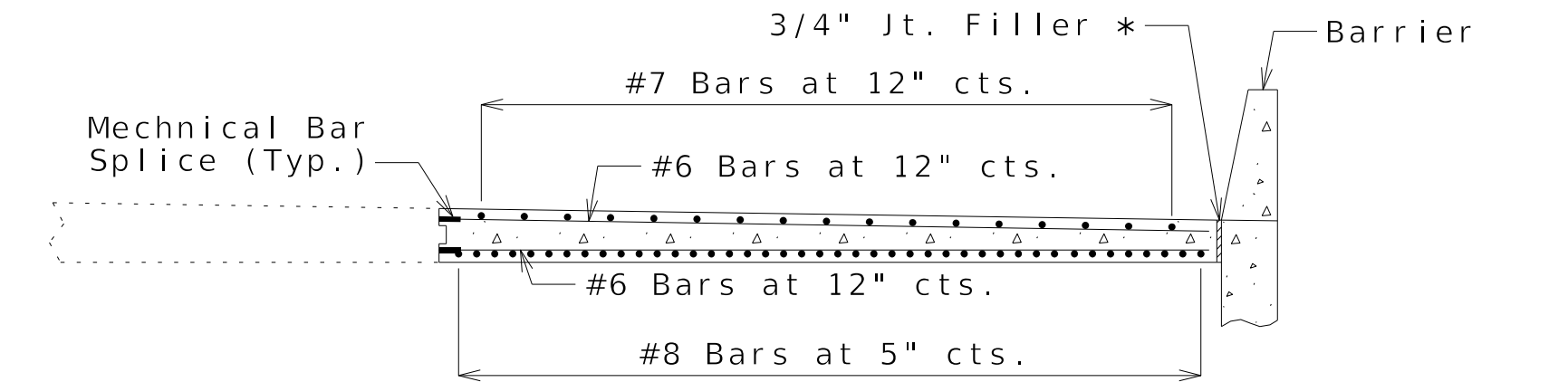
DATE	DESCRIPTION
06/23/25 <td>REV. A - FINAL REVIEW</td>	REV. A - FINAL REVIEW
07/18/25 <td>REV. 0 - RELEASED FOR CONSTRUCTION</td>	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL JEFFERSON CITY, MO 65102
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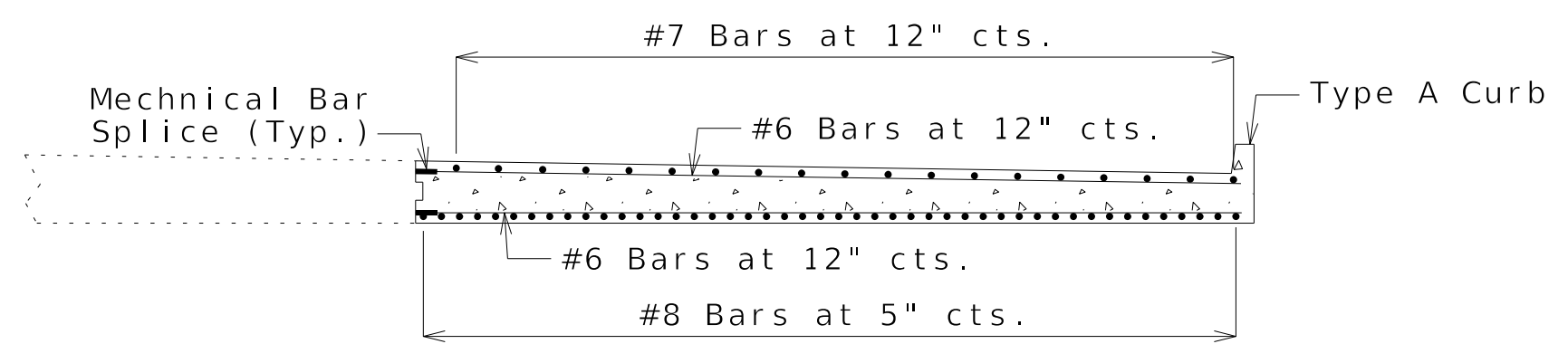
MODOT IMPROVE I-70 DB PROJECT 1
MILLSTONE WEBER
ENGINEERING INC.
270 OLIVE STREET
SUITE 100
ST. LOUIS, MO 63101
314.338.4431
MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



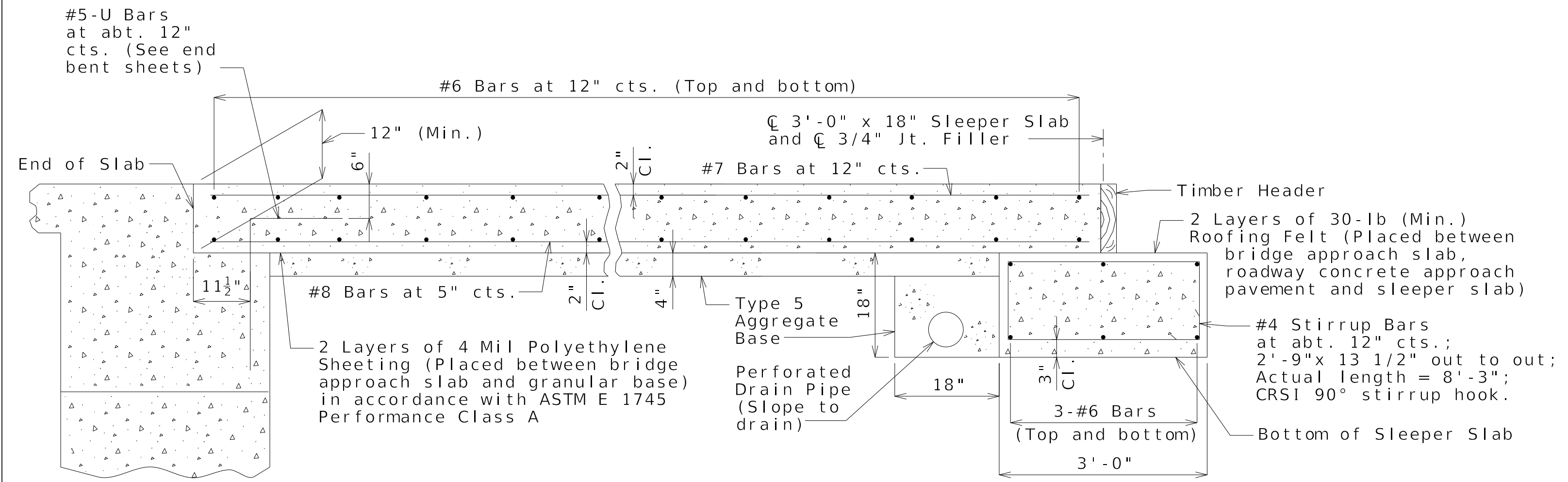
PART PLAN SHOWING REINFORCEMENT



SECTION A-A

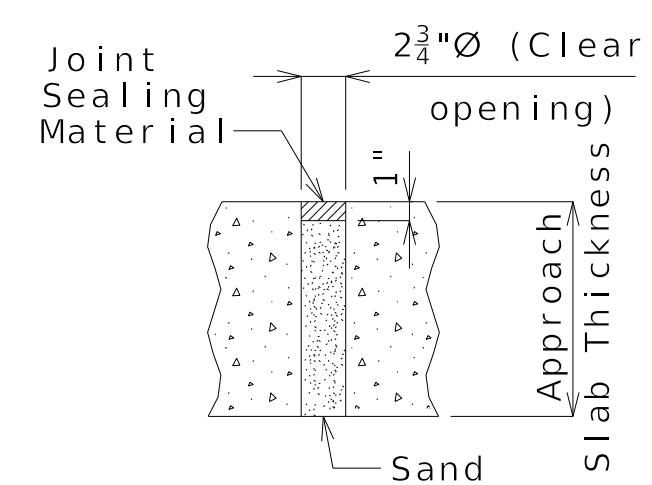


SECTION B-B

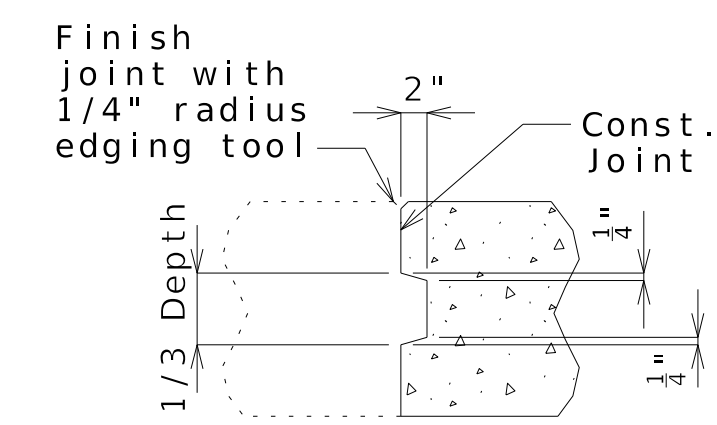


SECTION C-C

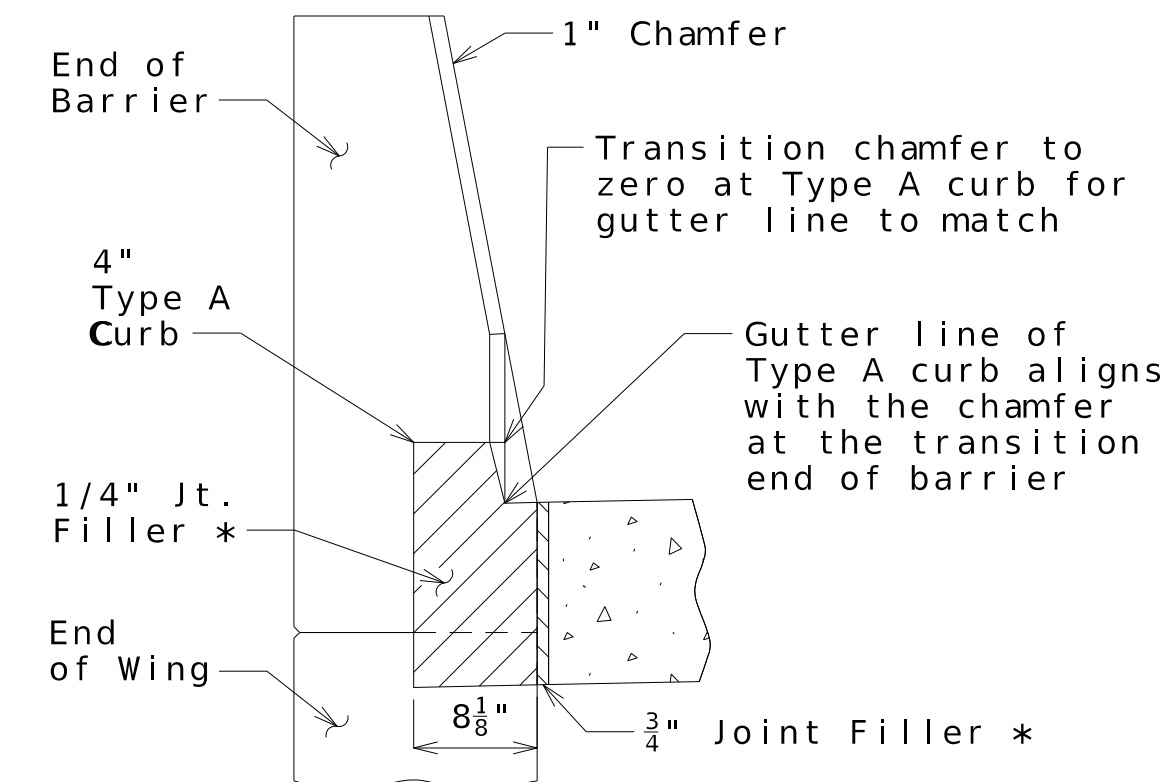
BRIDGE APPROACH SLAB (MAJOR)



UNDERSEAL ACCESS HOLE DETAIL



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 underdrain, 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 providing a minimum lap splice of 29 inches for #5 bars and 44 inches for #6 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

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

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.

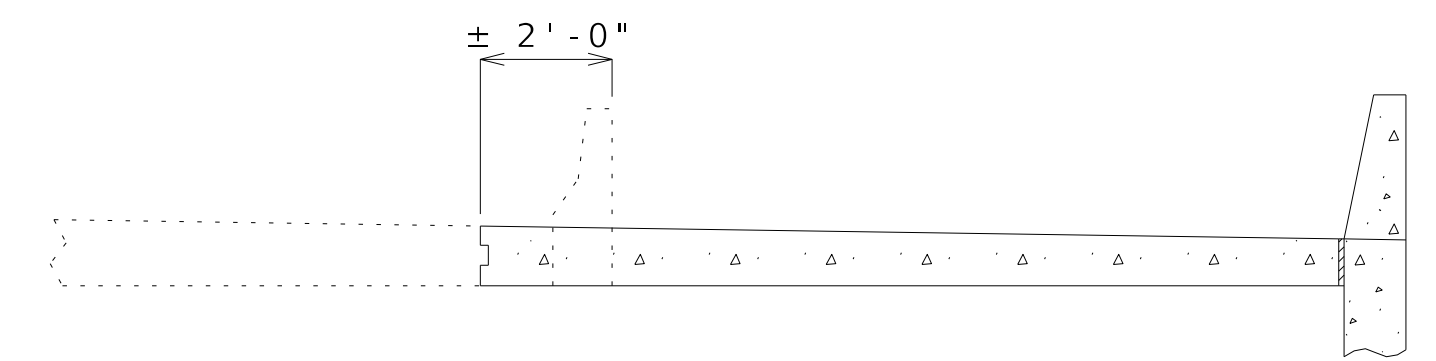
For concrete approach pavement details, see roadway plans.

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

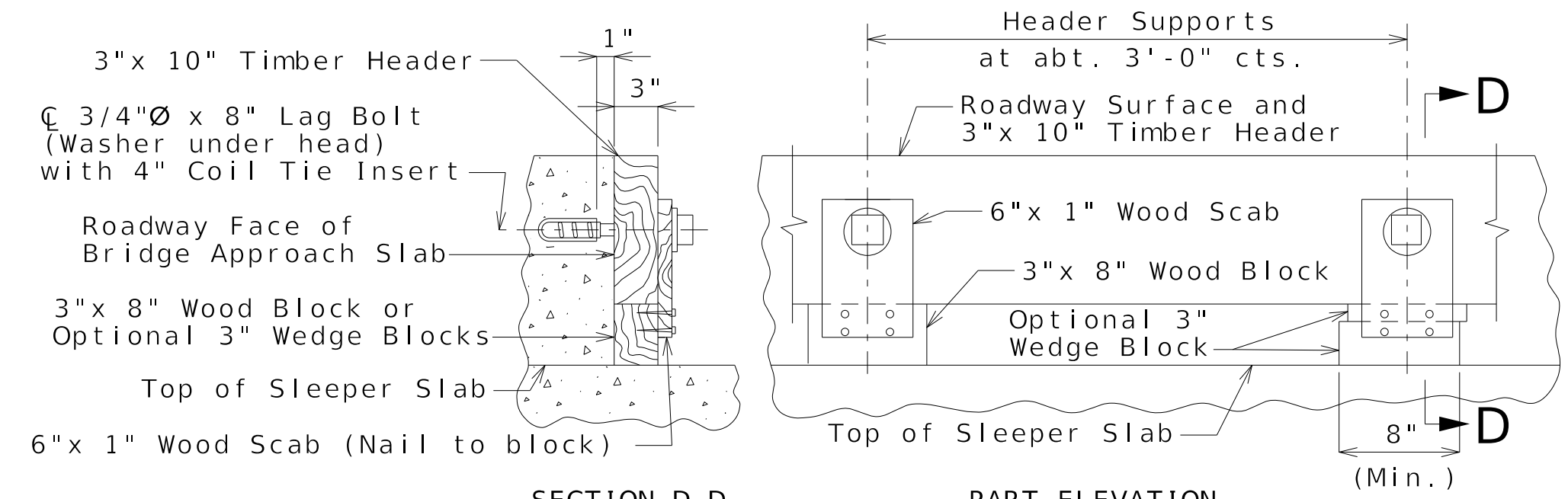
The existing transverse slab reinforcement shall be cleanly stripped of concrete and straightened for incorporation into new construction. It shall then be cut off at 6-inches minimum past the concrete slab cut line. Sufficient length must be left to engage a mechanical bar splicer.

The existing approach slab shall be removed along a straight line measured 2 feet from the back face of the existing approach barrier.

* 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 SHOWING REMOVAL OF EXISTING SLAB



SECTION D-D PART ELEVATION

DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 27 of 36



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7/29/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. 27

COUNTY BOONE

JST0021

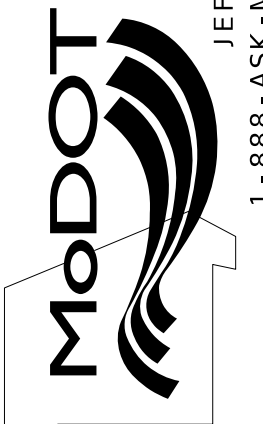
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A40931

DATE	DESCRIPTION
06/23/25 <td>REV. A - FINAL REVIEW</td>	REV. A - FINAL REVIEW
07/18/25 <td>REV. 0 - RELEASED FOR CONSTRUCTION</td>	REV. 0 - RELEASED FOR CONSTRUCTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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MILLSTONE WEBER
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SUITE 100
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314.338.4431



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 MO PE-2017008520

DATE PREPARED
 1/26/2026

ROUTE STATE
 I - 70 MO

DISTRICT SHEET NO.
 BR 28

COUNTY
 BOONE

JOB NO.
 JST0021

CONTRACT ID.

PROJECT NO.

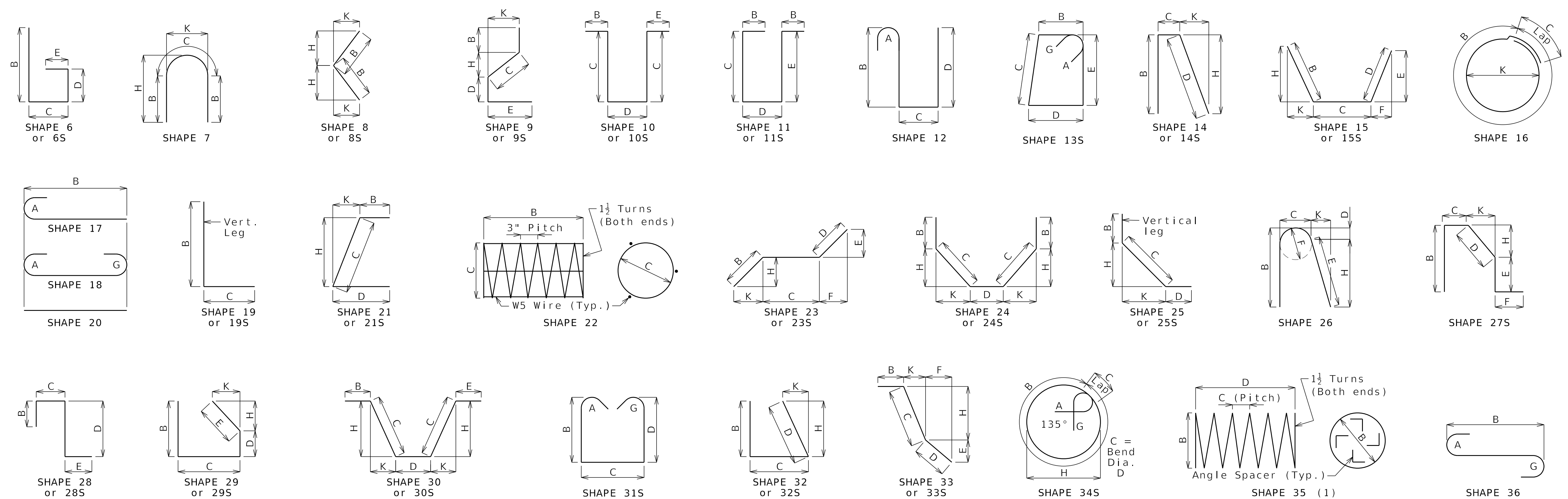
BRIDGE NO.
 A40931

DATE	DESCRIPTION
06/23/25 <td>REV. A - FINAL REVIEW</td>	REV. A - FINAL REVIEW
07/18/25 <td>REV. 0 - RELEASED FOR CONSTRUCTION</td>	REV. 0 - RELEASED FOR CONSTRUCTION
01/26/26 <td>REV. 1 - NDC 052 REVISED REINFORCING</td>	REV. 1 - NDC 052 REVISED REINFORCING

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
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 SUITE 100
 ST. LOUIS, MO 63101
 (314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



Finished Bend Diameters D and Hook Dimensions

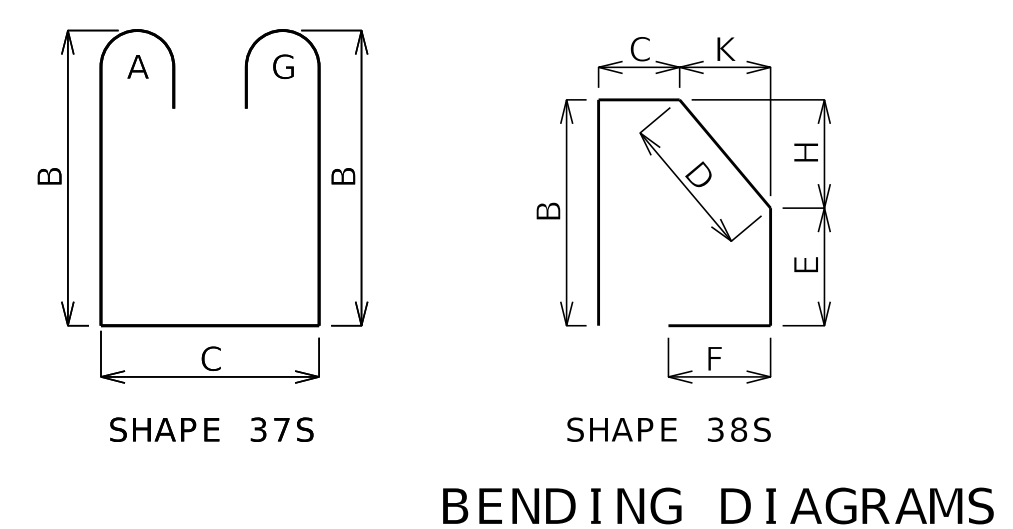
Standard Pin Bend Shapes

Size	Case	D	A or G			J
			90°	180°	180°	
#4	1	3"	8"	6"	4"	
#5	1	3 3/4"	10"	7"	5"	
#6	1	4 1/2"	12"	8 1/4"	6"	
	2	5 1/4"	14"	9 3/4"	7"	
#7	2	6"	15"	11 1/2"	8 3/4"	
	3	7"	17"	13 1/4"	10"	
#8	2	8"	16"	11"	8"	
	3	8"	17"	13 1/4"	10"	
#9	1	9 1/2"	19 1/2"	15 1/2"	11 3/4"	
#10	1	10 3/4"	22"	17 1/2"	13 1/4"	
#11	1	12"	24 1/2"	19 1/2"	14 7/8"	
#14	1	18 1/4"	31 1/4"	27 1/2"	21 5/8"	
#18	1	24"	41 1/2"	36 1/4"	28 1/2"	

Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G			H	J
			90°	135°	180°		
#4	2	2"	4 1/2"	4 1/2"	5"	2 7/8"	3"
	3	3"	5"	5 1/4"	6"	3"	4"
#5	2	2 1/2"	5 3/4"	5 3/4"	5 3/4"	3 3/8"	3 3/4"
	3	3 3/4"	6 1/4"	6 1/4"	7"	3 3/8"	5"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 7/8"	6"

Applicable for all grades of steel.
 Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.



BENDING DIAGRAMS

All dimensions are out to out. (1) Shall be a deformed or plain spiral bar or wire.

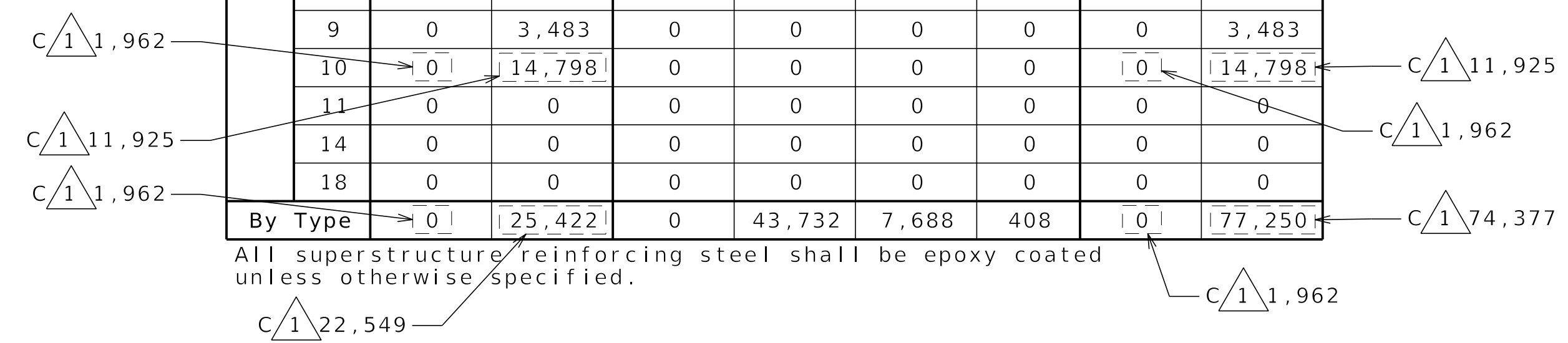
Shapes ending with an S shall be bent in accordance with stirrup pin bend shapes.

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

Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.

Reinforcing Steel Totals (Pounds)

Size	Substructure		Superstructure				Entire Bridge	
	Plain	Epoxy	Slab		Barrier	Slip Form	Plain	Epoxy
			Plain	Epoxy				
W5	0	0	0	0	0	0	0	0
4	0	0	0	567	0	0	0	567
5	0	3,575	0	10,530	7,688	408	0	22,201
6	0	3,566	0	17,533	0	0	0	21,099
7	0	0	0	14,447	0	0	0	14,447
8	0	0	0	655	0	0	0	655
9	0	3,483	0	0	0	0	0	3,483
10	0	14,798	0	0	0	0	0	14,798
11	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0
By Type	0	25,422	0	43,732	7,688	408	0	77,250



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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

REVIS 01-26-2026

Bill of Reinforcing Steel																
No. Req.	Size/Mark	Location	Codes			Dimensions							Nom. Length ft in.	Actual Length ft in.	Weight lb	
			C	SH	V	B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.				
		Substructure														
		Int Bent 2														
4	9 D200	BEAM	E	20		2 6.00							2 6	2 6	34	
12	9 H200	BEAM	E	18		14 9.00							17 4	17 4	707	
6	9 H201	BEAM	E	18		15 9.00							18 4	18 4	374	
10	6 H202	BEAM	E	20		15 9.00							15 9	15 9	237	
11	6 H203	BEAM	E	10S			12.00	3 8.00					5 8	5 4	88	
87	5 P200	COLUMN	E	16S		8 7.75	2 10.00					2 9.00	11 6	11 6	1,044	
32	6 U200	BEAM	E	13S		3 9.00	4 3.00	3 9.00	4 3.00				17 4	16 10	809	
21	10 V200	COLUMN	E	17		47 0.00							48 6	48 6	4,383	
		Int Bent 3														
3	9 D300	BEAM	E	20		2 6.00							2 6	2 6	26	
12	9 H300	BEAM	E	18		15 11.00							18 6	18 6	755	
6	9 H301	BEAM	E	18		16 11.00							19 6	19 6	398	
10	6 H302	BEAM	E	20		16 11.00							16 11	16 11	254	
11	6 H303	BEAM	E	10S			12.00	3 8.00					5 8	5 4	88	
81	5 P300	COLUMN	E	16S		8 7.75	2 10.00					2 9.00	11 6	11 6	972	
34	6 U300	BEAM	E	13S		3 9.00	4 3.00	3 9.00	4 3.00				17 4	16 10	860	
21	10 V300	COLUMN	E	17		44 0.00							45 6	45 6	4,112	
		Int Bent 4														
3	9 D400	BEAM	E	20		2 6.00							2 6	2 6	26	
12	9 H400	BEAM	E	18		16 1.00							18 8	18 8	762	
6	9 H401	BEAM	E	18		17 1.00							19 8	19 8	401	
10	6 H402	BEAM	E	20		17 1.00							17 1	17 1	257	
11	6 H403	BEAM	E	10S			12.00	3 8.00					5 8	5 4	88	
130	5 P400	COLUMN	E	16S		8 7.75	2 10.00					2 9.00	11 6	11 6	1,559	
35	6 U400	BEAM	E	13S		3 9.00	4 3.00	3 9.00	4 3.00				17 4	16 10	885	
21	10 V400	COLUMN	E	17		68 3.00							69 9	69 9	6,303	
8						43 10.00							45 3	45 3	1,560	
		Superstructure														
		End Bent 1														
9	6 F100	WING BRACE	E	23S		20.00	3 10.00	20.00	18.00	8.75	18.00	8.75	7 2	7 0	95	
4	6 F101	DIAPHRAGM	E	21S		7 1.50	4 3.75					3 5.00	2 7.75	11 5	11 5	69
4	7 H100	BEAM	E	20		16 0.00							16 0	16 0	131	
7	7 H101	BEAM	E	20		14 2.00							14 2	14 2	203	
4	7 H102	BEAM-MBS	E	20		10 0.00							10 0	10 0	82	
4	6 H103	BEAM	E	20		14 2.00							14 2	14 2	85	
4	6 H104	DIAPHRAGM	E	20		14 2.00							14 2	14 2	85	
4	6 H105	DIAPHRAGM-MBS	E	20		16 3.00							16 3	16 3	98	
2	6 H106	DIAPHRAGM-MBS	E	20		10 0.00							10 0	10 0	30	
1	6 H106	DIAPHRAGM	E	20		10 0.00							10 0	10 0	15	
3	6 H107	DIAPHRAGM	E	20		6 9.00							6 9	6 9	30	
1	6 H108	DIAPHRAGM	E	20		3 9.00							3 9	3 9	6	
3	6 H109	DIAPHRAGM	E	20		4 8.00							4 8	4 8	21	
1	6 H110	DIAPHRAGM	E	20		3 1.00							3 1	3 1	5	
1	5 H111	STRAND TIE	E	23		15.00	3 2.50	15.00	9.25	11.75	9.25	11.75	5 9	5 8	6	
1	5 H112	STRAND TIE	E	23		15.00	3 2.50	6.00	3.75	4.75	9.25	11.75	5 0	4 11	5	
18	6 H113	WING	E	20		12 9.00							12 9	12 9	345	
8	8 H114	WING	E	20		13 9.00							13 9	13 9	294	
3	5 U100	BEAM	E	37S		4 7.75	4 5.00						10 0	9 10	31	
10	4 U101	BEAM	E	13S		4 5.00	2 8.00	4 5.00	2 8.00				14 11	14 8	98	
5	4 U102	BEAM	E	10S			2 8.00	4 5.00					9 9	9 7	32	
4	4 U103	BEAM	E	10S			19.00	2 6.00					5 8	5 6	15	
8	5 U104	DIAPHRAGM	E	37S		3 5.00	2 10.00						7 3	7 0	58	
8	6 U105	DIAPHRAGM	E	19S		2 7.00	4 5.00						7 0	6 10	82	
21	6 U106	DIAPHRAGM	E	19S		3 5.00	5 5.00						8 10	8 8	273	
10	5 U107	DIAPHRAGM	E	19S		2 0.00	15.00						3 3	3 2	33	

Bill of Reinforcing Steel																	
No. Req.	Size/Mark	Location	Codes			Dimensions							Nom. Length ft in.	Actual Length ft in.	Weight lb		
			C	SH	V	B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.					
10	5 V100	BEAM	E	17S		5 0.00									5 6	5 6	57
12	6 V101	DIAPHRAGM	E	20		2 7.00									2 7	2 7	47
22	6 V102	WING	E	20	2	6 3.00									6 3	6 3	
		INCREMENT =				6 5.00									6 5	6 5	209
		0.25 INCH															
		End Bent 5															
10	6 F500	WING BRACE	E	23S		20.00	7 8.00	20.00	8.75	18.00	8.75	18.00	11 0	11 0	165		
4	6 F501	DIAPHRAGM	E	21S			4 3.75	7 0.75					3 5.00	2 7.75	11 5	10 10	65
4	7 H500	BEAM	E	20		16 0.00									16 0	16 0	131
7	7 H501	BEAM	E	20		14 10.00									14 10	14 10	212
4	7 H502	BEAM-MBS	E	20		10 0.00									10 0	10 0	82
4	6 H503	BEAM	E	20		14 10.00									14 10	14 10	89
4	6 H504	DIAPHRAGM	E	20		14 10.00									14 10	14 10	89
4	6 H505	DIAPHRAGM-MBS	E	20		17 4.00									17 4	17 4	104
2	6 H506	DIAPHRAGM-MBS	E	20		10 0.00									10 0	10 0	30
1	6 H506	DIAPHRAGM	E	20		10 0.00									10 0	10 0	15
3	6 H507	DIAPHRAGM	E	20		6 9.00									6 9	6 9	30
1	6 H508	DIAPHRAGM	E	20		3 9.00									3 9	3 9	6
3	6 H509	DIAPHRAGM	E	20		4 8.00									4 8	4 8	21
1	6 H510	DIAPHRAGM	E	20		3 1.00									3 1	3 1	5
1	5 H511	STRAND TIE	E	23		15.00	3 2.50	15.00	9.25	11.75	9.25	11.75	3 11	3 11	4		
1	5 H512	STRAND TIE	E	23		15.00	3 2.50	6.00	3.75	4.75	9.25	11.75	5 9	5 8	6		
20	6 H513	WING	E	20		15 11.00									15 11	15 11	478
8	8 H514	WING	E	20		16 11.00									16 11	16 11	361
5	5 U500	BEAM	E	37S		5 2.25	4 5.00								10 7	10 4	54
11	4 U501	BEAM	E	13S		4 5.00	2 8.00	4 5.00	2 8.00						14 11	14 8	108
5	4 U502	BEAM	E	10S			2 8.00	4 5.00							9 9	9 7	32
3	4 U503	BEAM	E	10S			22.00	3 1.00							6 9	6 7	13
8	5 U504	DIAPHRAGM	E	37S		3 5.00	2 10.00								7 3	7 0	58
8	6 U505	DIAPHRAGM	E	19S		2 7.00	4 5.00								7 0	6 10	82
20	6 U506	DIAPHRAGM	E	19S		3 5.00	5 5.00								8 10	8 8	260
11	5 U507	DIAPHRAGM	E	19S		2 0.00	15.00								3 3	3 2	36
6	5 V500	BEAM	E	17S		5 0.00									5 6	5 6	34
13	6 V501	DIAPHRAGM	E	20		2 7.00									2 7	2 7	50
28	6 V																

Bill of Reinforcing Steel																				
No. Req.	Size/Mark	Location	Codes		Dimensions							Nom. Length	Actual Length	Weight						
			C	SH	V	B	C	D	E	F	H				K					
			ft	in.	ft	in.	ft	in.	ft	in.	ft	in.	ft	in.	lb					
168	6 S14	SLAB-MBS	E	20	1	13	6.00						13	6	13	6				
		INCREMENT = 0.00 INCH				14	6.00						14	6	14	6	3,533			
19	6 S15	SLAB-MBS	E	20	1	2	5.00						2	5	2	5				
		INCREMENT = 6.50 INCH				12	3.00						12	3	12	3	209			
22	6 S16	SLAB	E	20	1	2	0.00						?	24	2	0				
		INCREMENT = 6.50 INCH				13	4.00						13	4	13	4	253			
54	5 S17	SLAB	E	20		47	4.00						47	4	47	4	2,666			
5	5 S18	SLAB	E	20		42	2.00						42	2	42	2	220			
2	5 S19	SLAB	E	20		41	4.00						41	4	41	4	86			
3	5 S20	SLAB	E	20		43	10.00						43	10	43	10	137			
5	5 S21	SLAB	E	20		46	5.00						46	5	46	5	242			
196	5 S22	SLAB-MBS	E	20	1	12	9.00						12	9	12	9				
		INCREMENT = 0.00 INCH				14	5.00						14	5	14	5	2,777			
111	5 S23	SLAB-MBS	E	20	1	14	4.00						14	4	14	4				
		INCREMENT = 0.00 INCH				14	10.00						14	10	14	10	1,688			
113	5 S24	SLAB-MBS	E	20	1	13	6.00						13	6	13	6				
		INCREMENT = 0.00 INCH				14	6.00						14	6	14	6	1,650			
13	5 S25	SLAB-MBS	E	20	1	2	2.00						2	2	2	2				
		INCREMENT = 9.75 INCH				11	11.00						11	11	11	11	95			
14	5 S26	SLAB	E	20	1	2	2.00						2	2	2	2				
		INCREMENT = 9.75 INCH				12	8.00						12	8	12	8	108			
23	4 S27	SLAB	E	10S		6.00	6.50	3	8.00	6.00			5	9	5	5	83			
4	4 S28	SLAB	E	20		13	0.00						13	0	13	0	35			
4	4 S29	SLAB	E	20		10	0.00						10	0	10	0	27			
		Barrier																		
10	5 K1	BARRIER	E	27S	3	5.00	9.25	5.25	2	11.75	5.25	1.00	7	7	7	5	77			
41	5 K2	BARRIER	E	27S	3	5.00	9.25	14.50	2	2.75	14.25	2.75	7	8	7	5	317			
2	5 K3	BARRIER	E	27S		22.50	9.25	14.50	7.75	12.00	14.25	2.75	5	6	5	3	11			
10	5 K4	BARRIER	E	19S	2	2	4.25	10.00					3	2	3	1				
		INCREMENT = 0.50 INCH				2	6.25	10.00					3	4	3	3	33			
10	5 K5	BARRIER	E	38S	2			18.50	9.50	8.25	18.00	4.00	3	0	2	9				
		INCREMENT = 0.50 INCH						20.50	9.50	8.25	20.00	4.50	3	2	2	11	30			
6	5 K6	BARRIER	E	19S		2	6.75	10.00					3	5	3	4	21			
6	5 K7	BARRIER	E	21S		2	6.75	10.00			2	6.00	6.25	3	5	3	3	20		
18	5 K8	BARRIER	E	19S	2	2	8.50	10.00					3	7	3	5				
		INCREMENT = 0.75 INCH				3	2.50	10.00					4	1	3	11	69			
18	5 K9	BARRIER	E	21S	2		2	8.50	10.00		2	7.75	6.75	3	7	3	5			
		INCREMENT = 0.75 INCH				3	2.50	10.00			3	1.75	7.75	4	1	3	11	69		
19	5 K10	BARRIER	E	19S		3	3.00	10.00					4	1	4	0	79			
19	5 K11	BARRIER	E	21S		3	3.00	10.00			3	2.25	7.75	4	1	3	11	78		
12	5 K12	BARRIER	E	20		17	11.00						17	11	17	11	224			
6	5 K13	BARRIER	E	20	2	11	2.00						11	2	11	2				
		INCREMENT = 36.00 INCH				17	2.00						17	2	17	2	89			
12	5 K14	BARRIER	E	20		14	9.00						14	9	14	9	185			
6	5 K15	BARRIER	E	20	2	8	0.00						8	0	8	0				
		INCREMENT = 36.00 INCH				14	0.00						14	0	14	0	69			
275	5 R1	BARRIER	E	26		3	3.00	5.50	2.25	3	1.25	5.50	3	0.75	6.75	6	10	6	9	1,936
275	5 R2	BARRIER	E	19S			20.50	9.50					2	6	2	5	693			
275	5 R3	BARRIER	E	27S			9.50	15.25	5.00	12.00	15.00	3.00	3	6	3	4	956			
10	5 R4	BARRIER	E	20		51	0.00						51	0	51	0	532			
60	5 R5	BARRIER	E	20		11	8.00						11	8	11	8	730			
10	5 R6	BARRIER	E	20		42	5.00						42	5	42	5	442			
10	5 R7	BARRIER	E	20		45	1.00						45	1	45	1	470			
10	5 R8	BARRIER	E	20		53	6.00						53	6	53	6	558			
		Slip Form																		
30	5 C1	SLIP FORM	E	20		12	0.00						12	0	12	0	375			
4	5 C2	SLIP FORM	E	20		8	0.00						8	0	8	0	33			

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

For bending diagrams and steel reinforcing totals, see Sheet No. 28.

Detailed JAN. 2025
Checked MAY 2025

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

All bars shall be Grade 60.
Except bars V400, V401, V402, and V403 shall be Grade 80.

BILL OF REINFORCING STEEL

Sheet No. 30 of 36

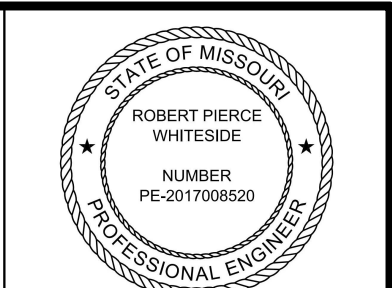
Bill of Reinforcing Steel																			
No. Req.	Size/Mark	Location	Codes		Dimensions							Nom. Length	Actual Length	Weight					
			C	SH	V	B	C	D	E	F	H				K				
			ft	in.	ft	in.	ft	in.	ft	in.	ft	in.	ft	in.	lb				
		Int. Bent 4																	
8	10 V401	DRILLED SHAFT											33	0.00					
8	10 V402	DRILLED SHAFT											24	0.00					
8	10 V403	DRILLED SHAFT	E	17									52	10.00					
		C/1 Added																	

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

MBS = Mechanical Bar Splicer connection

SH = Required shape, see bending diagrams.

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



Robert P. Whiteside

01/26/2026 10:32:53 AM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED

1/26/2026

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. 30

COUNTY BOONE

JOB NO. JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

REV. 1 - NDC 052 REVISED REINFORCING

DATE

06/23/25

07/18/25

01/26/26

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MILLSTONE WEBER

ENGINEERING INC.

700 OLIVE STREET SUITE 100 JEFFERSON CITY, MO 65101

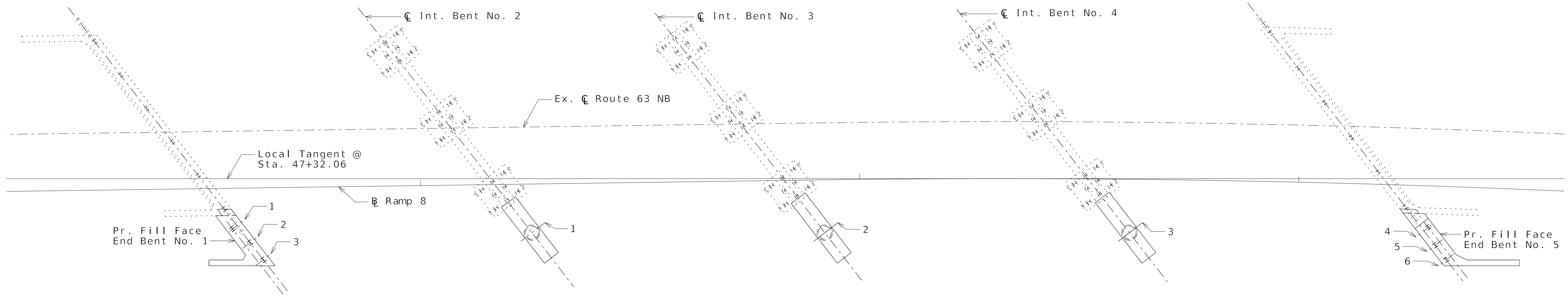
PH: 314-384-4311

MISSOURI STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

PROJECT 1

MODOT IMPROVE I-70 DB PROJECT 1

REV.



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

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

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

Note:
 Indicate in remarks column:
 A. Pile type and grade
 B. Batter
 C. Driven to practical refusal
 Indicate remarks in the remarks column.
 This sheet to be completed by MoDOT construction personnel.

AS-BUILT PILE & DRILLED SHAFT DATA

Detailed JAN. 2025
 Checked MAY 2025

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

Sheet No. 31 of 36



Robert P. Whiteside
 07/29/2025 3:20:53 PM
 Robert P. Whiteside - Civil
 MO PE-2017008520

DATE PREPARED
 7/29/2025
 ROUTE 1-70 STATE MO
 DISTRICT BR SHEET NO. 31

COUNTY BOONE
 JOB NO. JST0021
 CONTRACT ID.

PROJECT NO.
 BRIDGE NO. A40931

DATE	DESCRIPTION
06/23/25	REV. A - FINAL REVIEW
07/18/25	REV. 0 - RELEASED FOR CONSTRUCTION

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

MoDOT IMPROVE I-70 DB PROJECT 1

ENGINEERING INC.
 200 OLIVE STREET
 SUITE 100
 ST. LOUIS, MO 63101
 (314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING



Missouri Department of Transportation Construction and Materials

BORING NO. A4093-1 Page 1 of 1

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: Operator:
Station: Northing: 1680000.7154 Date of Work: 01/01/91
Offset: Easting: 757545.7849 Depth to Water:
Elevation: 715.6 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: Drill Rig
Requested Elevation: Location Note: Bridge over ramp 3 and Conley Rd. connection
Drill No.: 1990 Hammer Efficiency: 70% Drilling Method:

Table with 8 columns: Depth (ft), Graphical, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Rows include 0.0-7.9' Brown, silty CLAY; 7.9-15.0' SHALE; 15.0-18.1' Shaley LIMESTONE; 18.1-23.2' ROCK, moderately hard to hard; Bottom of borehole at 23.2 feet.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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

BORING DATA

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

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

Sheet No. 32 of 36



Missouri Department of Transportation Construction and Materials

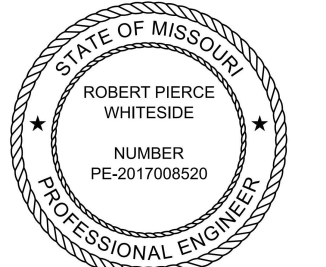
BORING NO. BR 12-2B Page 1 of 2

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 05/30/24-05/30/24
Offset: Easting: Depth to Water:
Elevation: 728.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X Split-Spoon Sampler, Shelby Tube
Requested Elevation: Location Note: (38.9578062, -92.2934185)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphical, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Rows include 0.0-0.8' Asphaltic concrete (10"); 0.8-2.7' (CH) Gray and brown, fat CLAY, trace coal; 2.7-16.0' Gray, SHALE; 3.0' -completely weathered from 3.0 to 4.5 ft.; 7.9-15.0' SHALE; 15.0-18.1' Shaley LIMESTONE; 18.1-23.2' ROCK, moderately hard to hard; Bottom of borehole at 23.2 feet.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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



Robert P. Whiteside

07/29/2025 3:20:53 PM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED

7/29/2025

ROUTE STATE

I - 70 MO

DISTRICT SHEET NO.

BR 32

COUNTY

BOONE

JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A40931

DESCRIPTION

REV. A - FINAL REVIEW

REV. 0 - RELEASED FOR CONSTRUCTION

DATE

06/23/25

07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MoDOT logo

MILLSTONE WEBER logo

ENGINEERING INC. 700 OLIVE STREET SUITE 100 MO 63101 (314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

REV.

Detailed JAN. 2025
Checked MAY 2025



Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-2B Page 2 of 2

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 05/30/24-05/30/24
Offset: Easting: Depth to Water:
Elevation: 728.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler, Shelby Tube
Requested Elevation: Location Note: (38.9578062, -92.2934185)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphic, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Includes data for limestone, shale, and chert layers.

Refusal at 19.0 feet
Bottom of borehole at 50.0 feet
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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



Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-3B Page 1 of 3

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 05/29/24-05/29/24
Offset: Easting: Depth to Water:
Elevation: 728.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler, Shelby Tube
Requested Elevation: Location Note: (38.9577228, -92.2933769)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphic, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Includes data for concrete, clay, shale, and limestone layers.

Refusal at 19.0 feet
Bottom of borehole at 50.0 feet
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

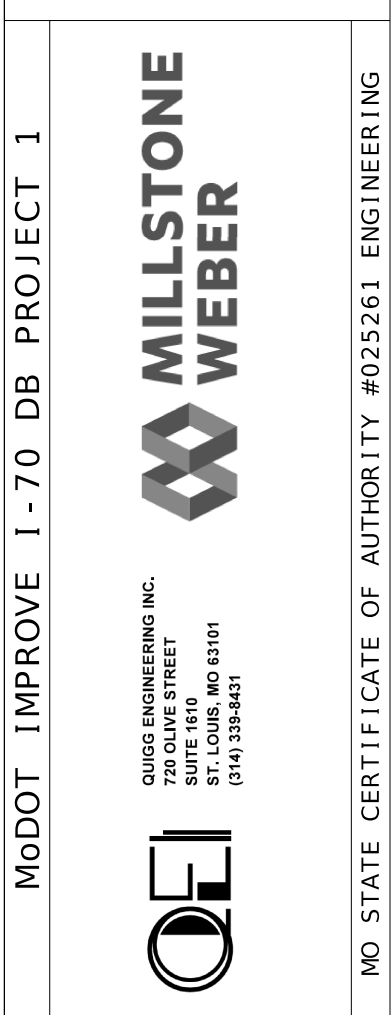
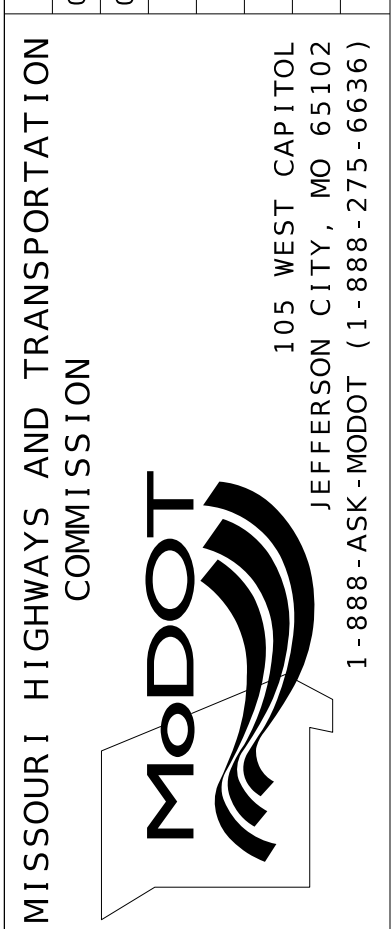
* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.



Robert P. Whiteside
07/29/2025 3:20:53 PM
Robert P. Whiteside - Civil
MO PE-2017008520
DATE PREPARED
7/29/2025
ROUTE STATE
I-70 MO
DISTRICT SHEET NO.
BR 33
COUNTY
BOONE
JOB NO.
JST0021
CONTRACT ID.

PROJECT NO.
BRIDGE NO.
A40931

Table with 2 columns: DATE, DESCRIPTION. Includes revision dates and descriptions like 'FINAL REVIEW' and 'RELEASED FOR CONSTRUCTION'.



BORING DATA

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



Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-3B Page 2 of 3

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 05/29/24-05/29/24
Offset: Easting: Depth to Water:
Elevation: 728.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler, Shelby Tube
Requested Elevation: Location Note: (38.9577228, -92.2933769)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphical, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Includes data for limestone and chert seams.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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

BORING DATA

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

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 34 of 36



Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-3B Page 3 of 3

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 05/29/24-05/29/24
Offset: Easting: Depth to Water:
Elevation: 728.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler, Shelby Tube
Requested Elevation: Location Note: (38.9577228, -92.2933769)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphical, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Includes data for limestone and refusal at 18.6 feet.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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



Robert P. Whiteside

07/29/2025 3:20:53 PM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED
7/29/2025

ROUTE STATE
I - 70 MO

DISTRICT SHEET NO.
BR 34

COUNTY
BOONE

JST0021

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A40931

DESCRIPTION
REV. A - FINAL REVIEW
REV. 0 - RELEASED FOR CONSTRUCTION

DATE
06/23/25
07/18/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

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ENGINEERING INC. 270 OLIVE STREET SUITE 100 MO 63101 (314) 338-4431

MO STATE CERTIFICATE OF AUTHORITY #025261 ENGINEERING

REV.



Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-4A Page 1 of 3

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 06/03/24-06/04/24
Offset: Easting: Depth to Water:
Elevation: 729.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler
Requested Elevation: Location Note: (38.9575903, -92.2933159)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphical, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Rows include asphaltic concrete, portland cement concrete, clay with gravel, limestone, and shale layers with associated test data.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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

BORING DATA

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

Detailed JAN. 2025
Checked MAY 2025

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

Sheet No. 35 of 36



Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-4A Page 2 of 3

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 06/03/24-06/04/24
Offset: Easting: Depth to Water:
Elevation: 729.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler
Requested Elevation: Location Note: (38.9575903, -92.2933159)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphical, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Rows include shale, limestone, and calcareous shale layers with associated test data.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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



Robert P. Whiteside

07/29/2025 3:20:53 PM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED: 7/29/2025
ROUTE: I-70 STATE: MO
DISTRICT: BR SHEET NO.: 35

COUNTY: BOONE
JOB NO.: JST0021
CONTRACT ID.:

PROJECT NO.:
BRIDGE NO.: A40931

Table with 3 columns: DATE, DESCRIPTION, REV. A - FINAL REVIEW. Rows include dates 06/23/25 and 07/18/25.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Missouri Department of Transportation Construction and Materials

BORING NO. BR 12-4A Page 3 of 3

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: SO Operator: LRK
Station: Northing: Date of Work: 06/03/24-06/04/24
Offset: Easting: Depth to Water:
Elevation: 729.0 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: CME 550X, Split-Spoon Sampler
Requested Elevation: Location Note: (38.9575903, -92.2933159)
Drill No.: Hammer Efficiency: 90% Drilling Method: HSA

Table with 8 columns: Depth (ft), Graphic, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Row 1: 50, [diagram], 50.0-51.5' LIMESTONE, gray, moderately hard, slightly weathered, fine to medium crystalline, thin to medium bedded, dense to pitted. Refusal at 19.5 feet. Bottom of borehole at 51.5 feet. 100 (83)

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value (1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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



Missouri Department of Transportation Construction and Materials

BORING NO. A4093-5 Page 1 of 1

Job No.: 20241040.00 County: Boone Route: I-70
Design: Skew: Location: Columbia, Missouri
Bent: Logged By: Operator:
Station: Northing: Date of Work: 01/01/91
Offset: Easting: Depth to Water:
Elevation: 743.9 Requested Northing: Depth Hole Open:
Requested Station: Requested Easting: Time Change:
Requested Offset: Equipment: Drill Rig
Requested Elevation: Location Note: Bridge over ramp 3 and Conley Rd. connection
Drill No.: 1990 Hammer Efficiency: 70% Drilling Method:

Table with 8 columns: Depth (ft), Graphic, Description, Elevation (ft), Sample Type, REC % (RQD %), Blow Counts (N60), Shear Data, Field Tests, Index Tests. Row 1: 0, [diagram], 0.0-8.0' Brown and gray, CLAY. 740. Row 2: 5, [diagram], 6.5' -boulders below 6.5 ft. Row 3: 8.0-9.5' BOULDERS. 735. Row 4: 10, [diagram], 9.5-13.4' Shaley CLAY. Row 5: 13.4-13.6' LIMESTONE. Bottom of borehole at 13.6 feet.

N60 = (Em/60)Nm N60 - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value (1) = Assumed, (2) = Actual
Coordinate System: Coordinate Zone: Coordinate Proj. Factor:
Coordinate Datum: Coordinate Units: U.S. Survey Feet

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

BORING DATA

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

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

Sheet No. 36 of 36

Detailed JAN. 2025
Checked MAY 2025



Robert P. Whiteside
07/29/2025 3:20:53 PM
Robert P. Whiteside - Civil
MO PE-2017008520

DATE PREPARED: 7/29/2025
ROUTE: I-70 STATE: MO
DISTRICT: BR SHEET NO.: 36
COUNTY: BOONE
JOB NO.: JST0021
CONTRACT ID:

PROJECT NO.:
BRIDGE NO.: A40931

Table with 2 columns: DATE, DESCRIPTION. Row 1: 06/23/25, REV. A - FINAL REVIEW. Row 2: 07/18/25, REV. 0 - RELEASED FOR CONSTRUCTION.

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