

(58' - 113' - 55') PRESTRESSED CONCRETE NU-GIRDER SPANS

SEC/SUR 30 TWP 47N RGE 2E

STATE OF MISSOURI

David J. Glasstetter

NUMBER
PE-2000150018

PROFESSIONAL ENGINEER

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1 - 70

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JOB NO.
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BRIDGE NO.
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DESCRIPTION

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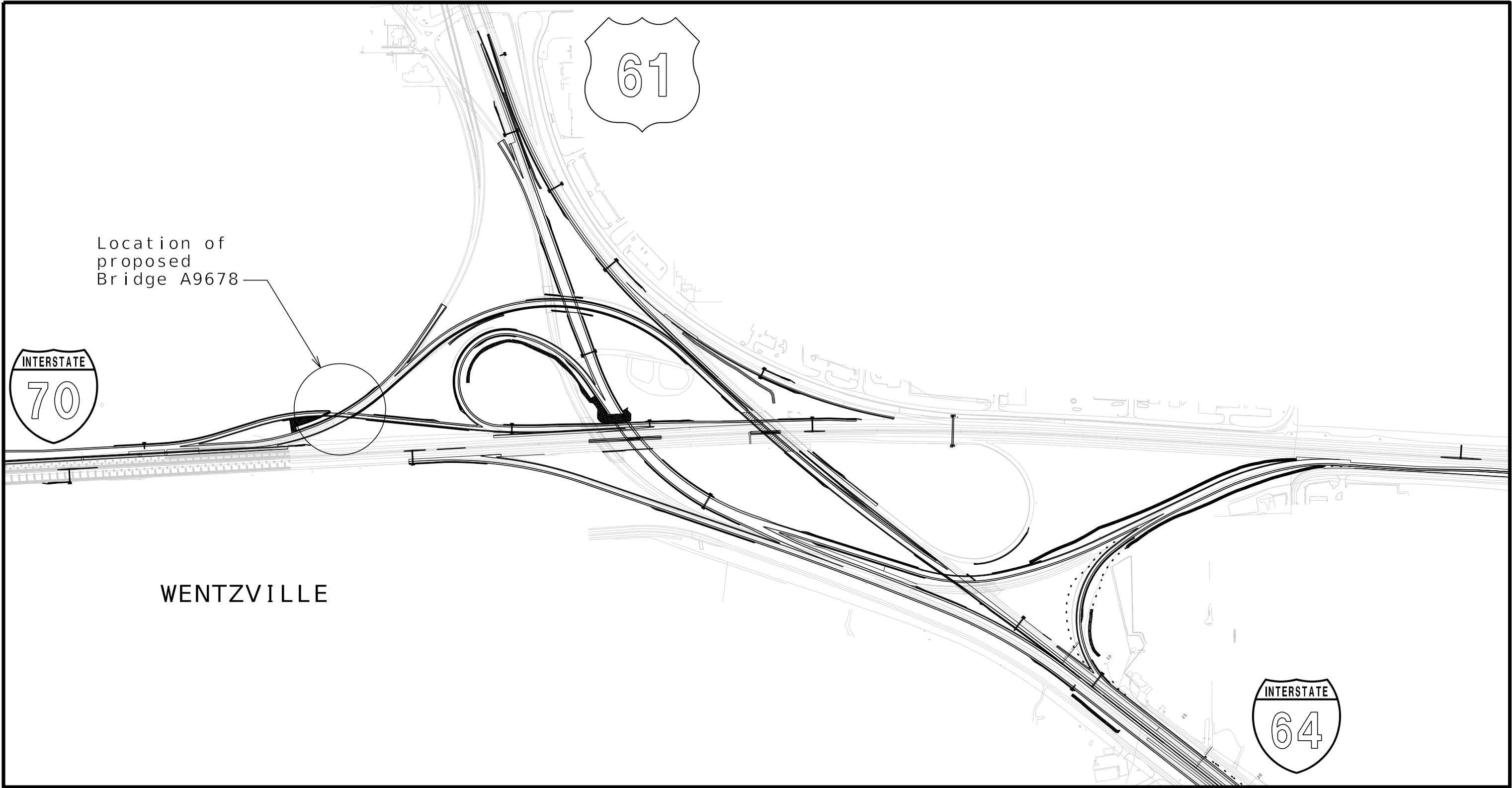
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LOCATION MAP

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BRIDGE: RAMP 70W-Z OVER RAMP 64W-70W

ABOUT 1.5 MILES SOUTHEAST OF WENTZVILLE
BEGINNING STATION 1264+13.12

Designed Oct. 2025
Detailed Oct. 2025
Checked Oct. 2025

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

Sheet 1 of 45

Foundation Data					
Type	Design Data	Bent Number			
		1	2	3	4
Load Bearing Pile	Pile Type and Size	HP12x53	--	--	HP12x53
	Number	ea 6	--	--	6
	Approximate Length Per Each	ft 38	--	--	37
	Pile Point Reinforcement	ea ALL	--	--	ALL
	Min. Galvanized Penetration (Elev.)	ft Full Length	--	--	Full Length
	Pile Driving Verification Method	WEAP	--	--	WEAP
	Resistance Factor	0.5	--	--	0.5
	Minimum Nominal Axial Compressive Resistance	kip 358	--	--	358
Rock Socket	Number	ea --	3	3	
	Foundation Material	--	Limestone	Limestone	
	Elevation Range	ft --	589.0-587.0	592.5-587.0	
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf --	27.9	27.9	
	Foundation Material	--	Limestone	Limestone	
	Elevation Range	ft --	587.0-568.0	587.0-568.0	
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf --	35.0	35.0	
	Foundation Material	--	Limestone	Limestone	
	Elevation Range	ft --	568.0-559.0	568.0-562.5	
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf --	27.9	27.9	
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf --	400	400	

WEAP = Wave Equation Analysis of Piles

Load Bearing Piles:

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

Rock Socket (Drilled Shafts):

Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factors (Side Resistance + Tip Resistance)}}$

Driven Piles:

Prebore for piles at End Bent No. 1 to 5' below MSE wall leveling pad elevation.

All piles shall be galvanized full length.

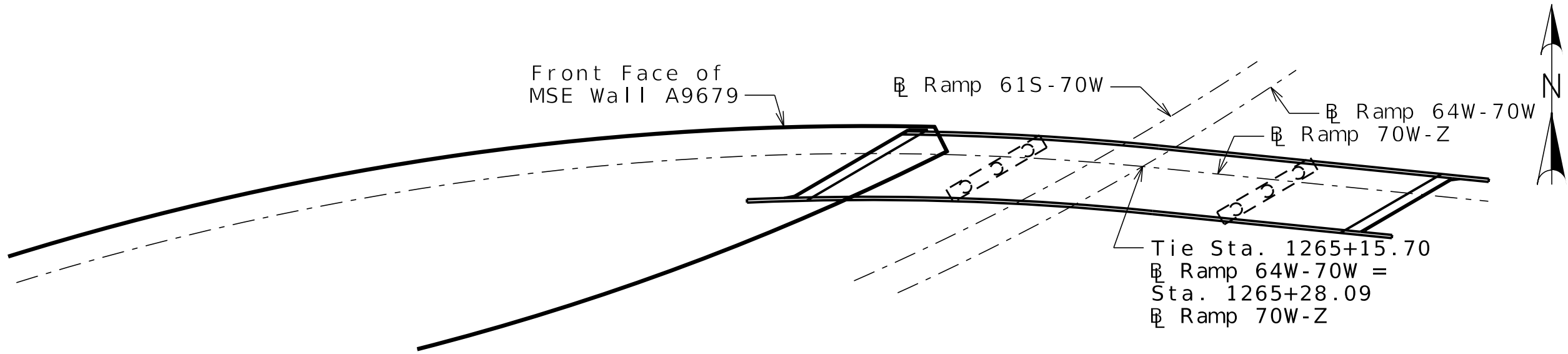
Manufactured pile point reinforcement shall be used on all piles in this structure.

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

Pile spacers and/or prebore holes shall be backfilled with sand (or other approved material), in accordance with Sec 702, before piles are driven to bearing.

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

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



LOCATION SKETCH

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

Sheet 3 of 45

General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
Seismic Design Category = A (Seismic Details plus Abutment Seismic Design)

Design Loading:

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

Design Unit Stresses:

Class B Concrete (Substructure) f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets) f'c = 4,000 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
Reinforcing Steel (Grade 60) fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50) fy = 50,000 psi
Structural Steel Girder Chairs (ASTM A709 Grade 36) fy= 36,000 psi
For prestressed girder stresses, see Sheets No. 19 thru 21.

Neoprene Pads:

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

Pile Protective Coatings:

Piles shall be galvanized in accordance with Sec 702 and Sec. 1081.

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.

All exposed substructure elements will contain epoxy coated reinforcing.

Traffic Handling:

Vertical Clearance for Ramp 64W-70W & Ramp 61S-70W traffic during construction shall be 15 ft. minimum over all lanes of live traffic as shown in each phase of the Maintenance of Traffic Plans.

Traffic to be maintained on other structures during construction. See Maintenance of Traffic Plans for traffic control.

Structural Steel Coating:

Structural steel for the girder chairs shall be coated with not less than 2 mils of organic zinc primer. Scratched or damaged surfaces are to be touched up in the field before concrete is poured. In lieu of coating, the girder chairs may be galvanized in accordance with ASTM A123.

Concrete Protective Coatings:

Protective coating for concrete bents and piers (Epoxy) shall be applied to all exposed substructure surfaces and in accordance with Sec 711.

Miscellaneous:

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106.

Stay-In-Place Forms:

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

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

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

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

Standard Plans:

609.00R
617.10N
706.35H

GENERAL NOTES

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JOB NO.
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PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

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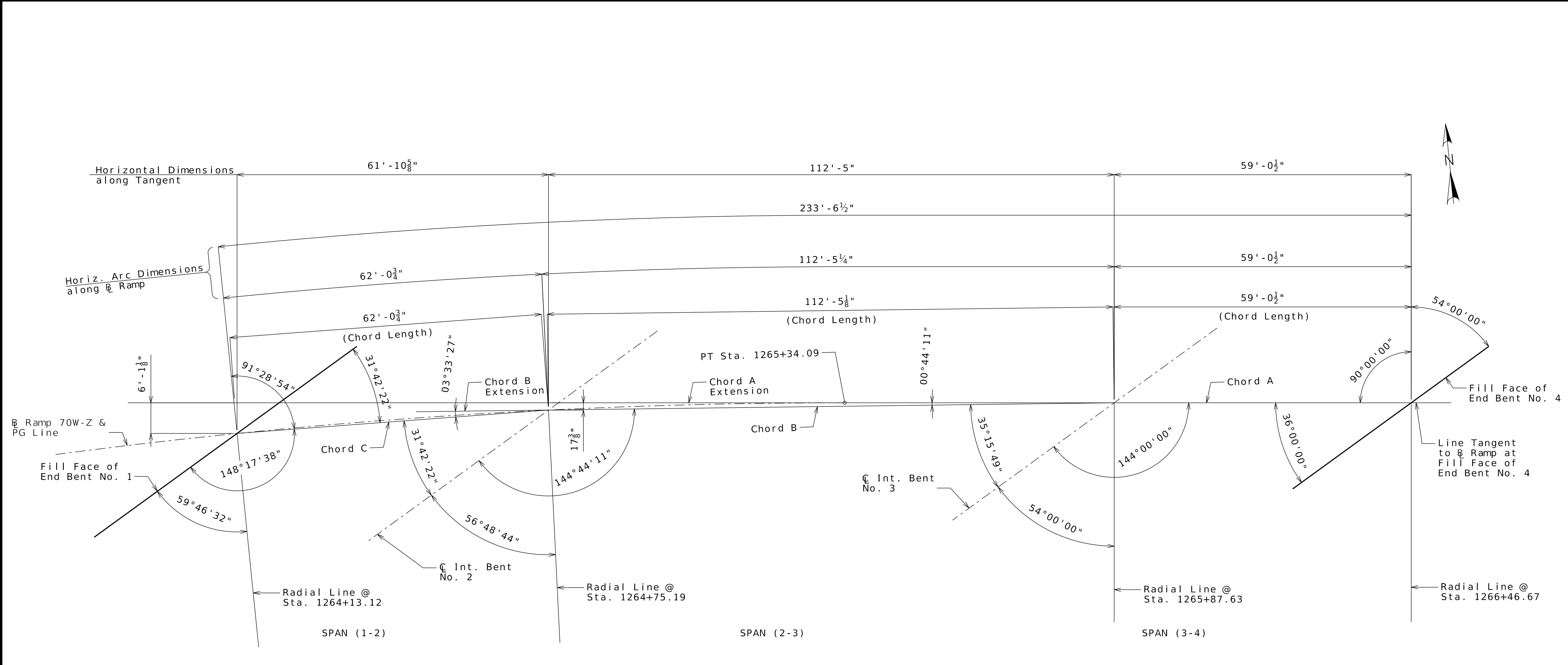
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PLAN

Notes:
All bents are parallel.
All dimensions are horizontal.

SUBSTRUCTURE LAYOUT

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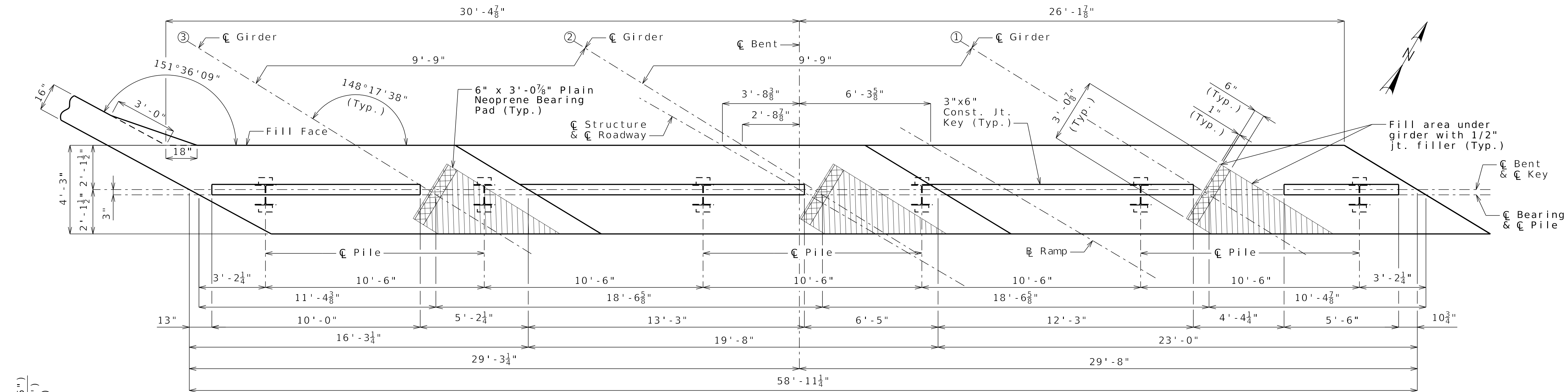
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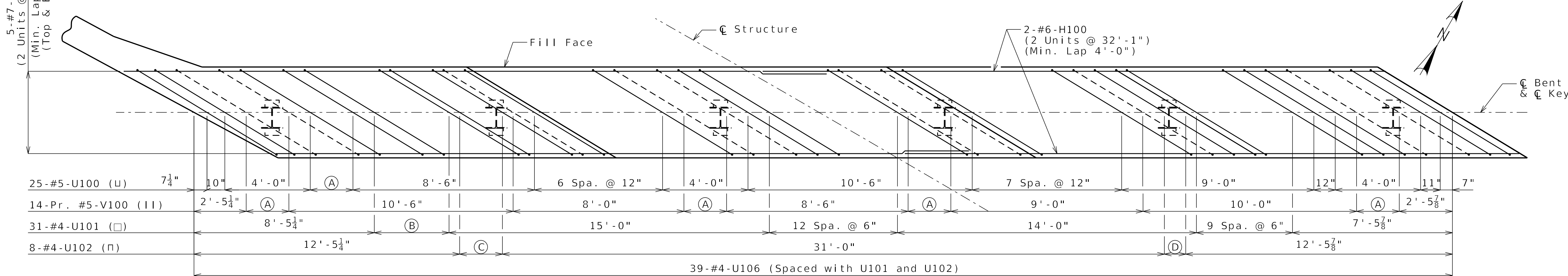
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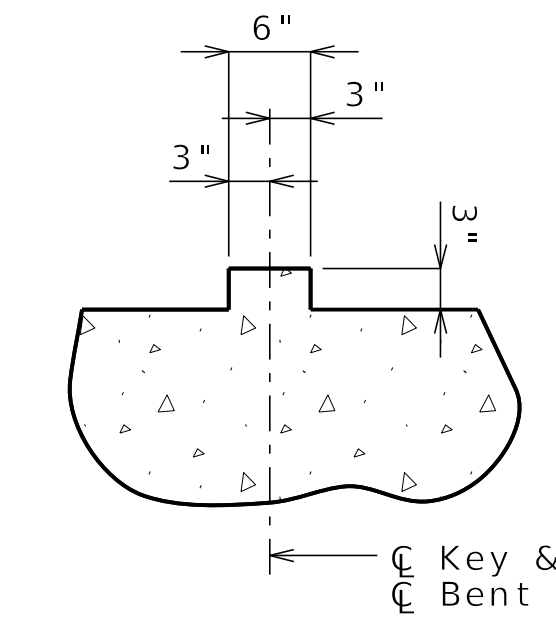


PLAN OF BEAM

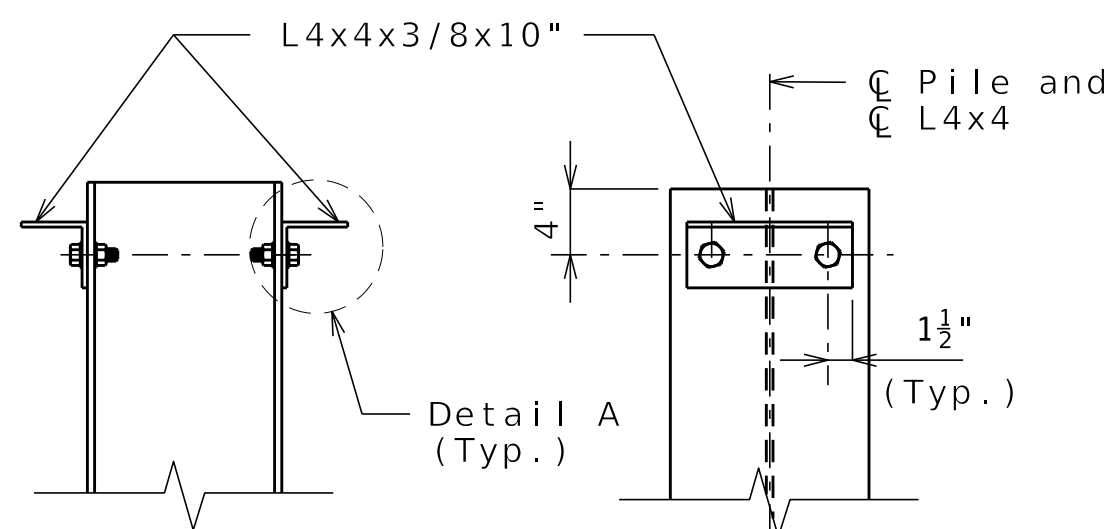


PLAN OF BEAM SHOWING REINFORCEMENT

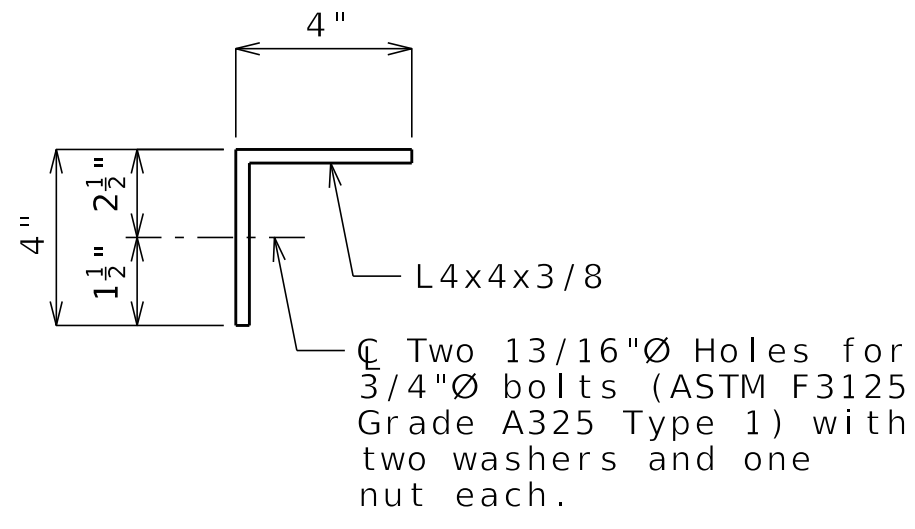
- A = 2 Spa. @ 12"
- B = 7 Spa. @ 6"
- C = 4 Spa. @ 6"
- D = 2 Spa. @ 6"



SECTION THRU KEY

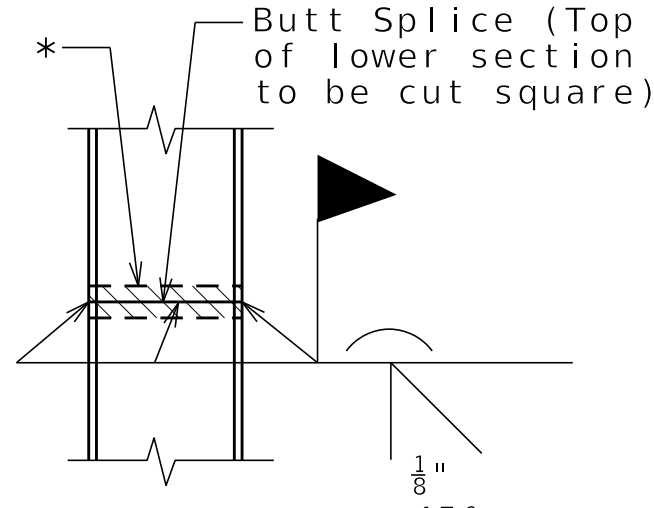


DETAILS OF HP PILE ANCHORS



DETAIL A

Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.



STEEL PILE SPLICE
(If required)

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

General Notes:
Work this sheet with Sheets No. 6 & 7.
All U bars and pairs of V bars shall be placed parallel to skewed steps.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

DETAILS OF END BENT NO. 1



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715 KIRK DRIVE

KANSAS CITY, MO 64105-1310

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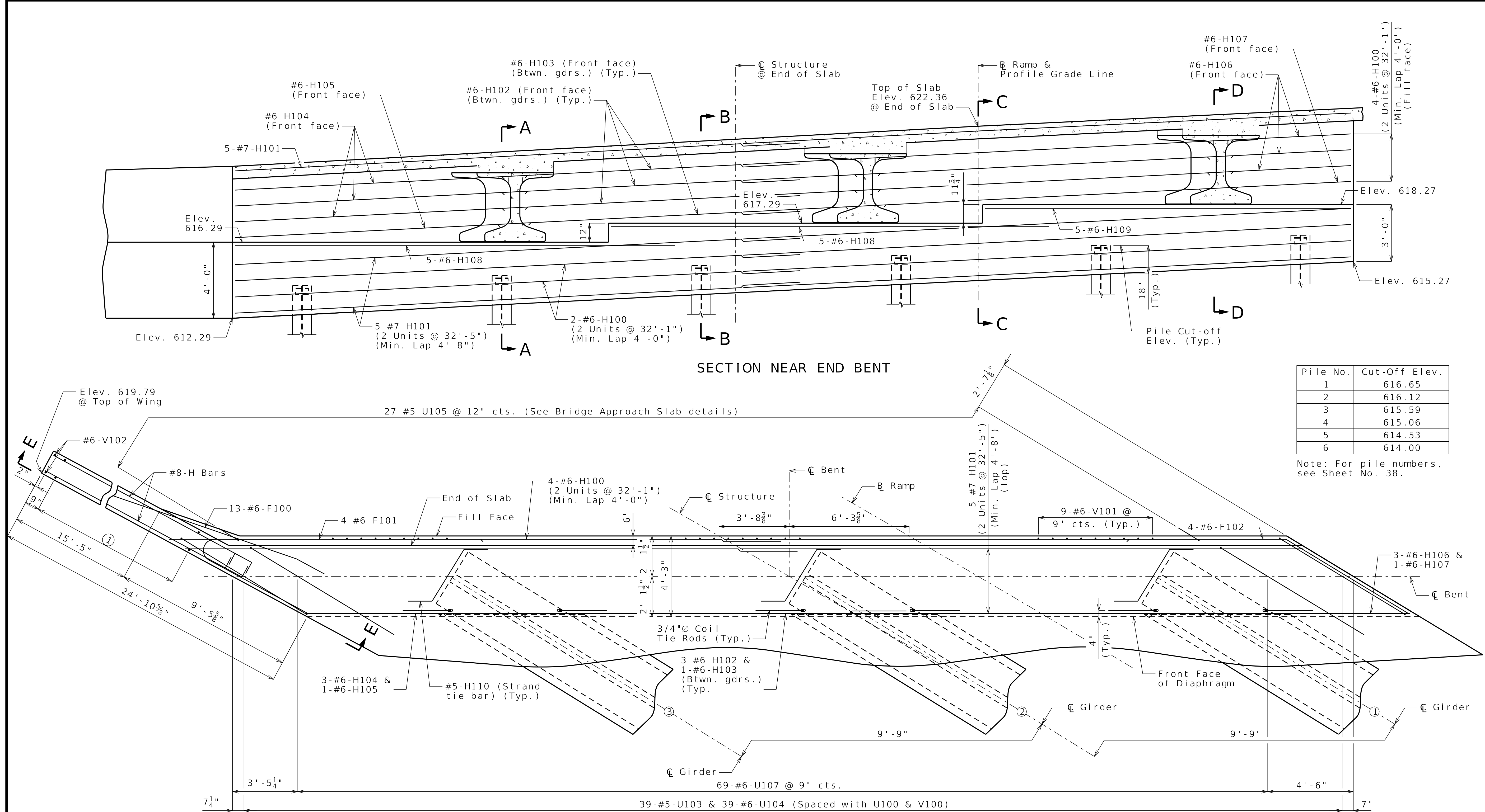
Phone 314-294-3100

3123 Barrett Parkway Dr

Suite 200 MO 63021

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REV.



SECTION NEAR END BENT

PART PLAN

① 18-#6-V103 @ 12" cts. (Each face)

Notes:
Work this sheet with Sheets No. 5 & 7.

For Section A-A, B-B, C-C & D-D and Elevation E-E, see Sheet No. 7.

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

The U bars shall be placed parallel to skewed steps.

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

Strands at 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 and #5-H110 (strand tie bars), see Sheet No. 19.

For details of vertical drain at end bents, see Sheet No. 8.

For details of bridge approach slab, see Sheet No. 34.

DETAILS OF END BENT NO. 1

Detailed Oct. 2025
Checked Oct. 2025

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

Sheet 6 of 45

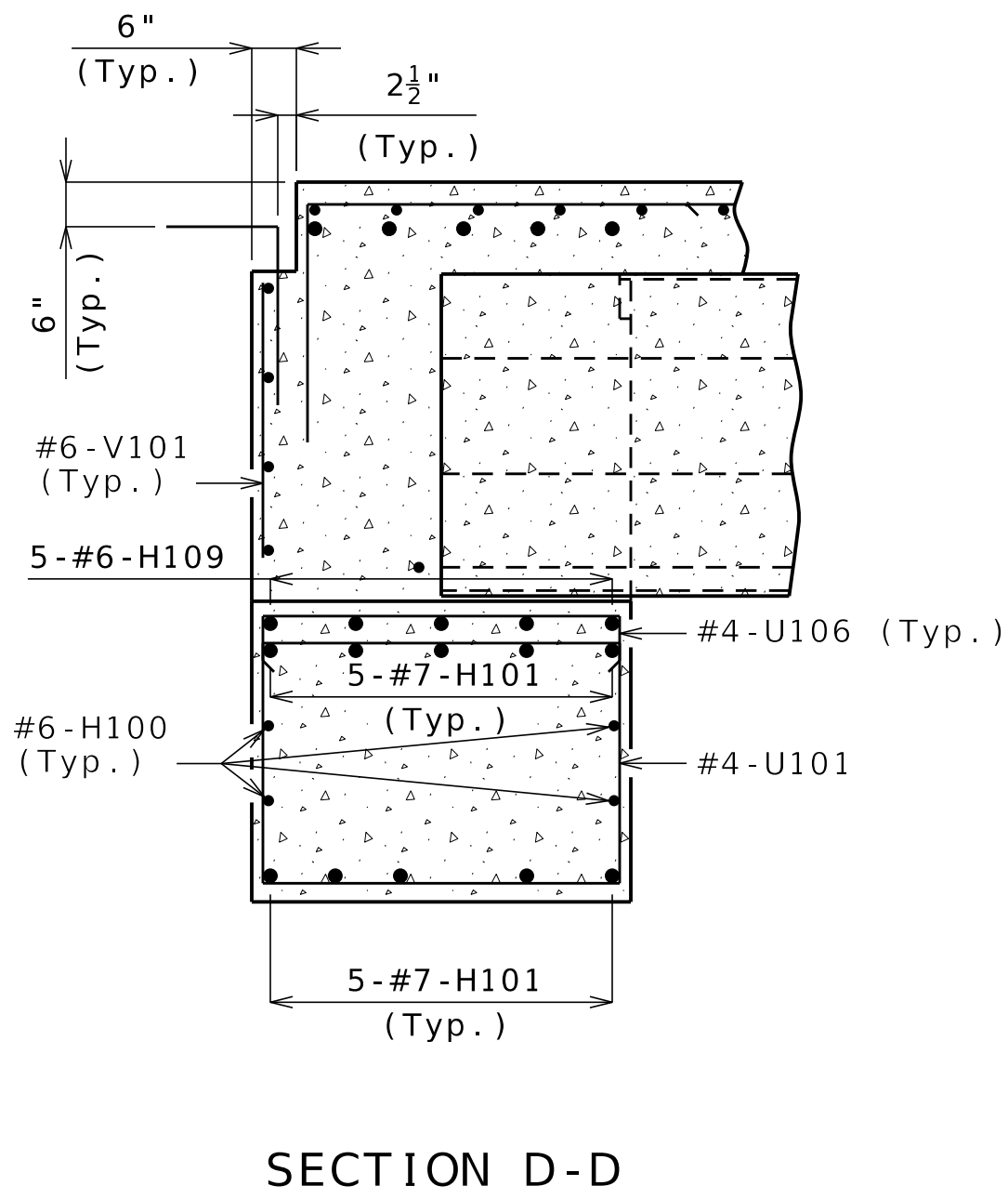
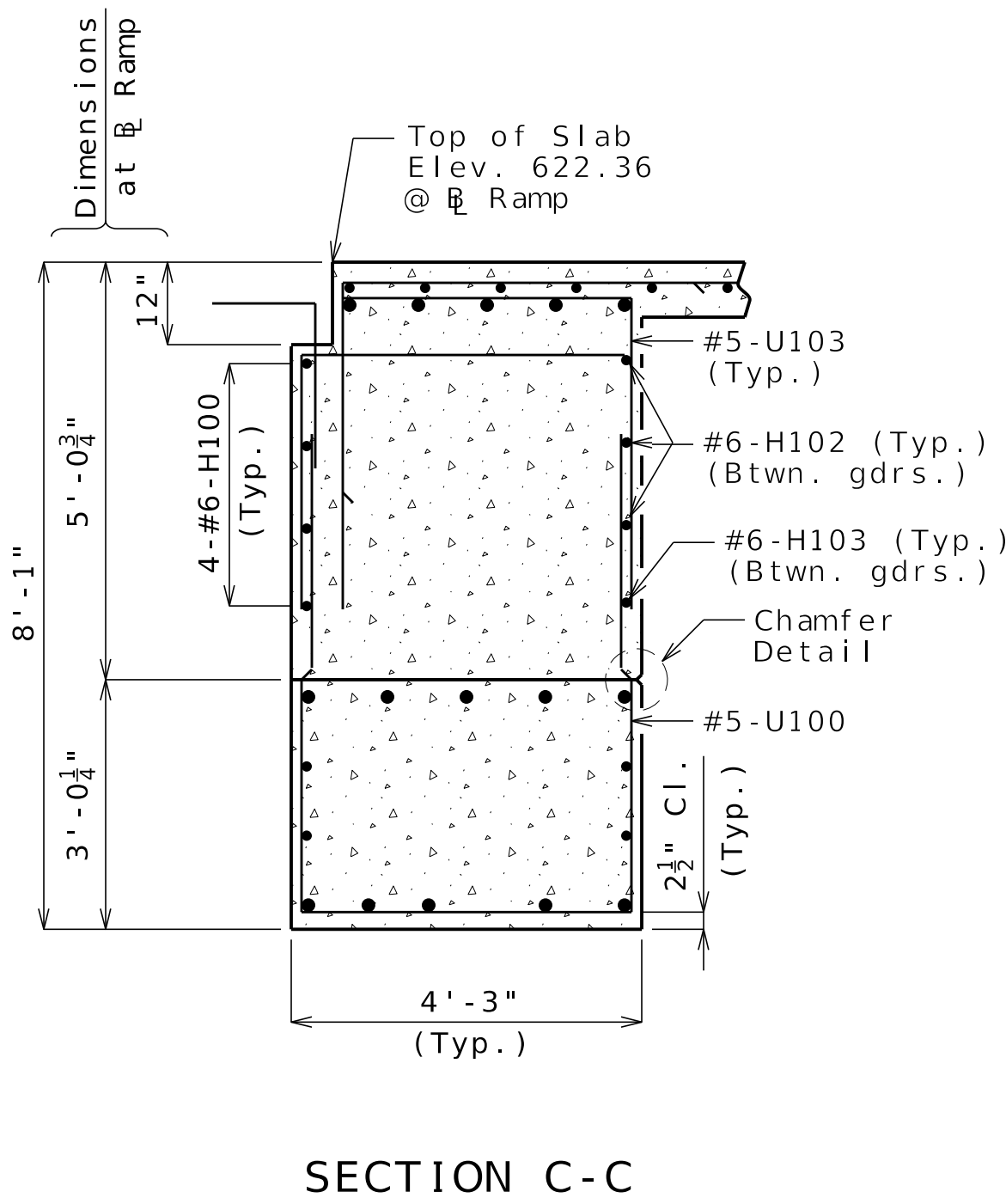
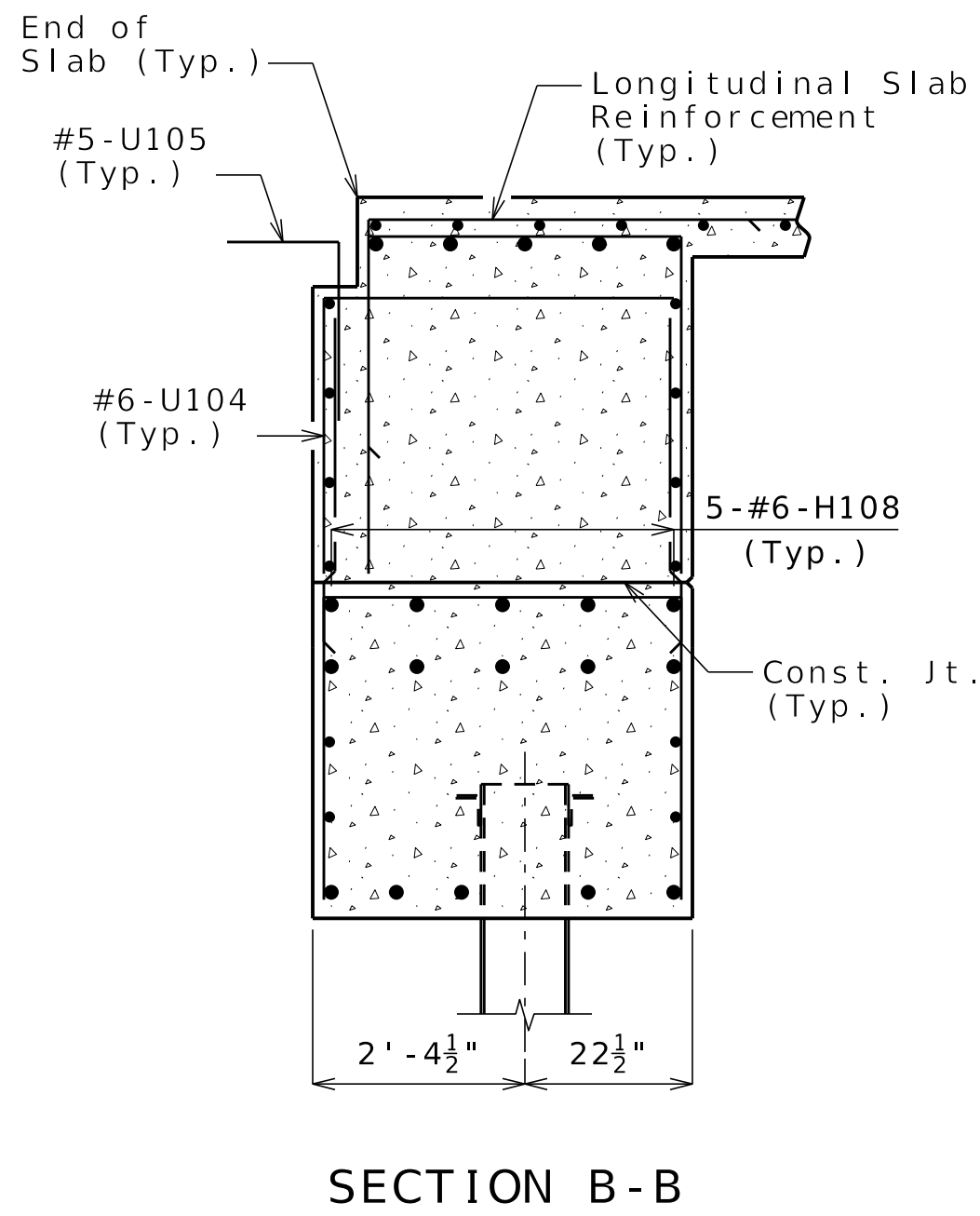
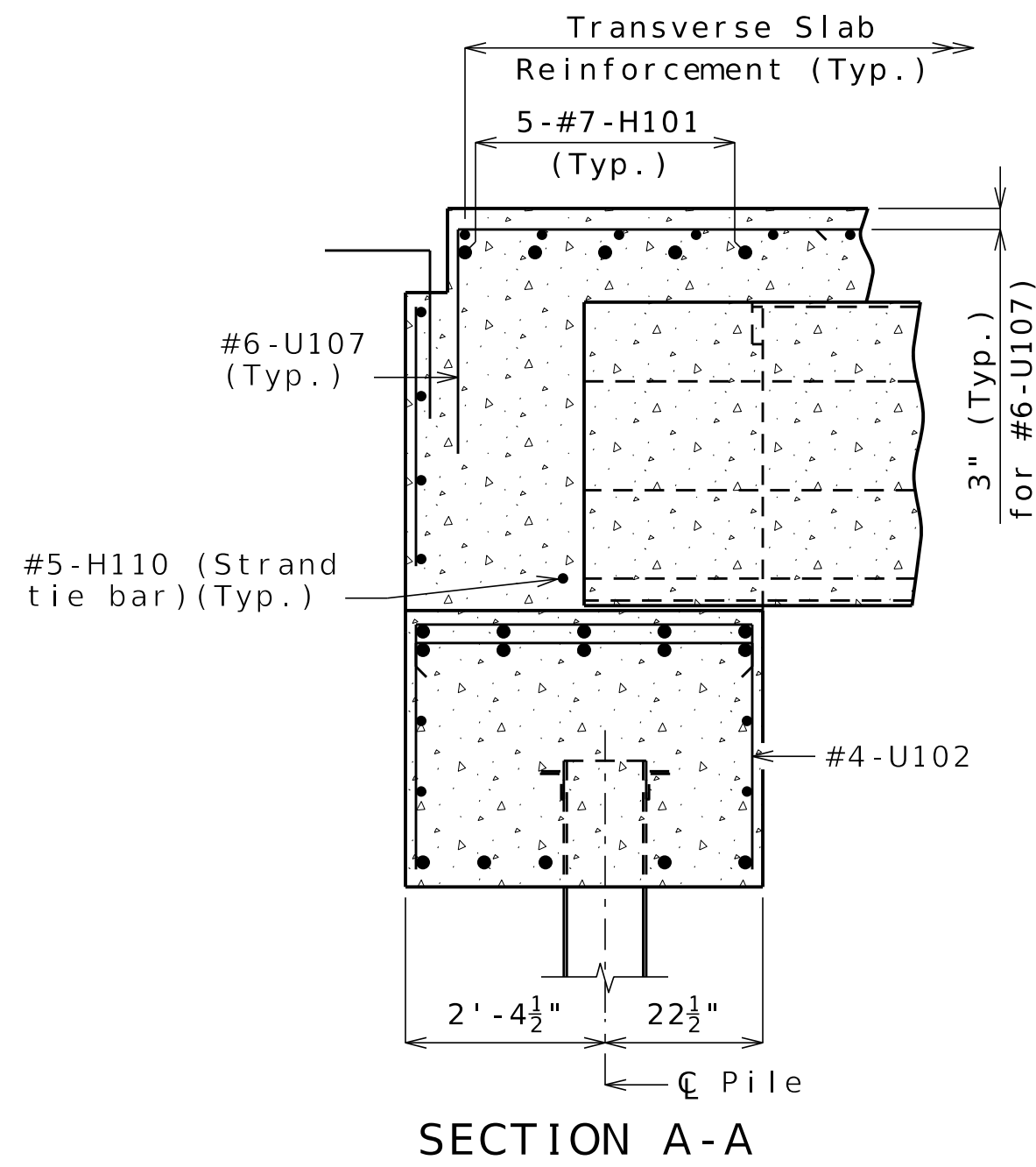
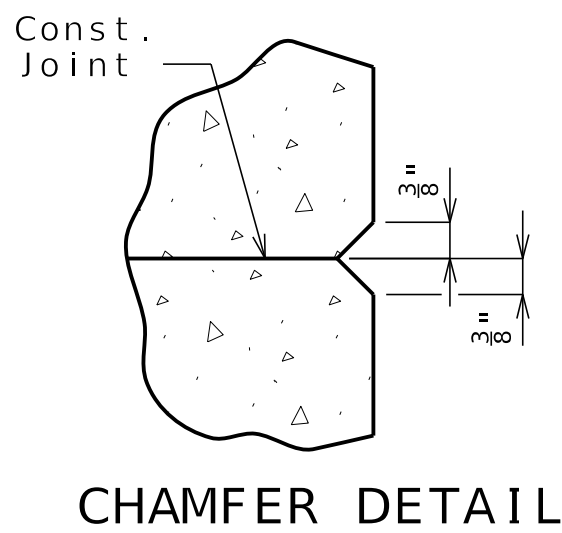
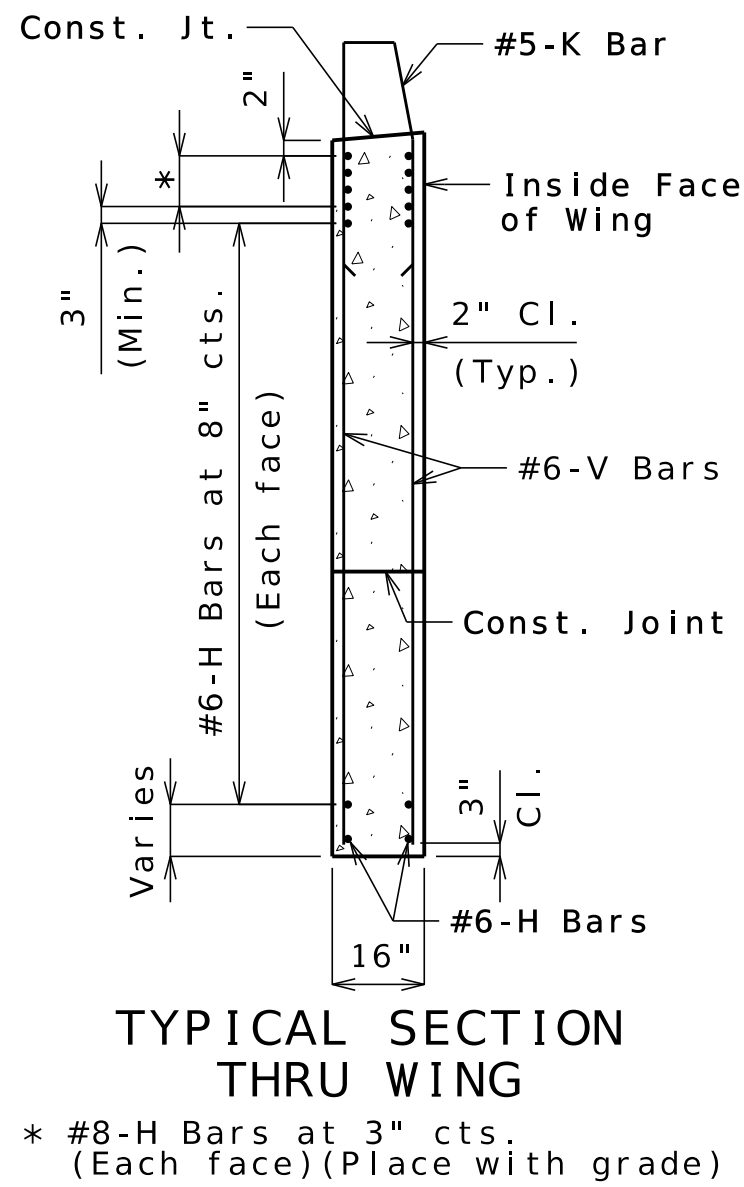
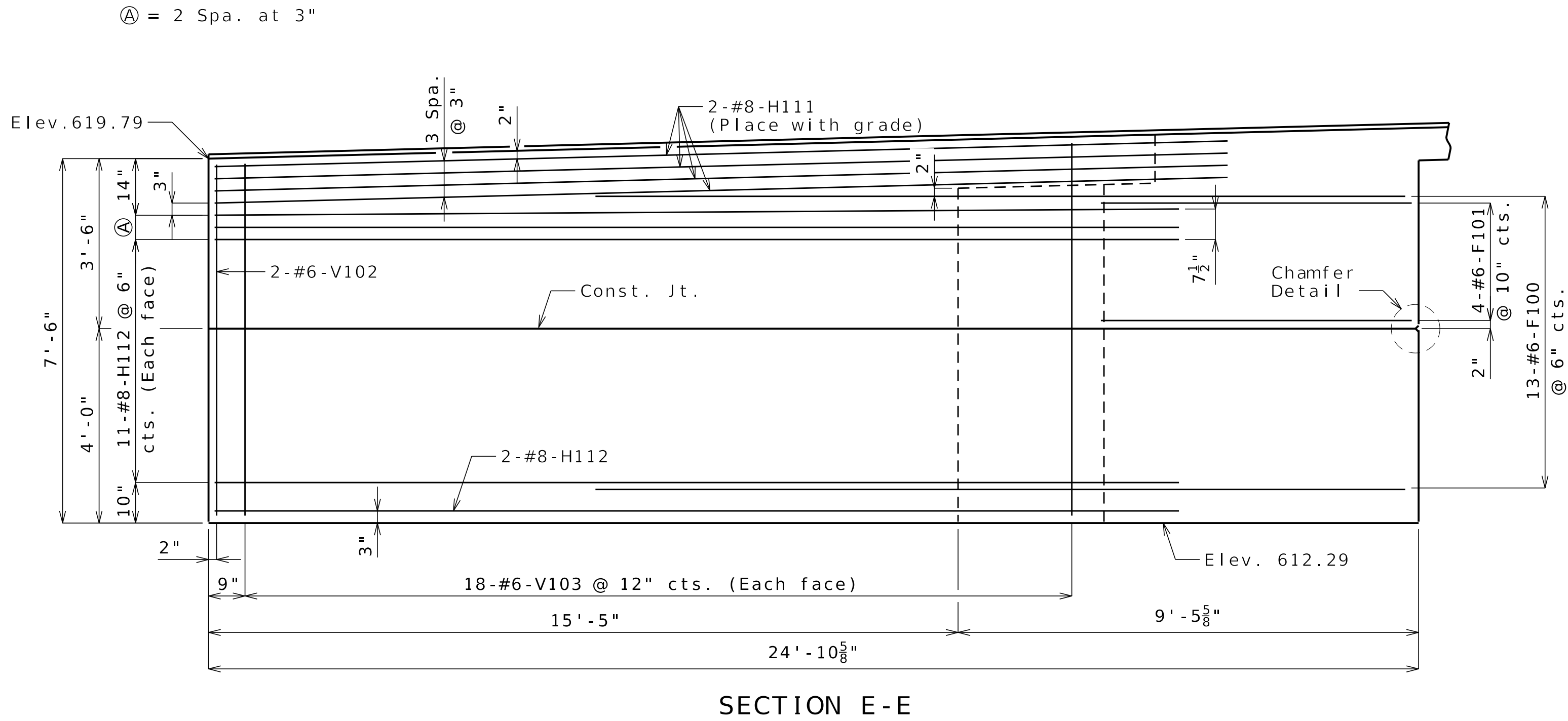
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General Notes:

Work this sheet with Sheets No. 5 & 6.

For reinforcement of the barrier, see Sheet No. 32.

DETAILS OF END BENT NO. 1

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1-70

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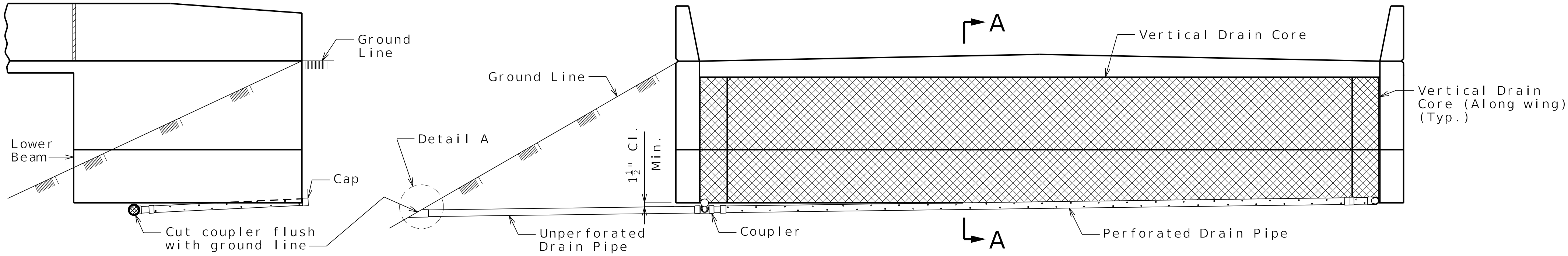
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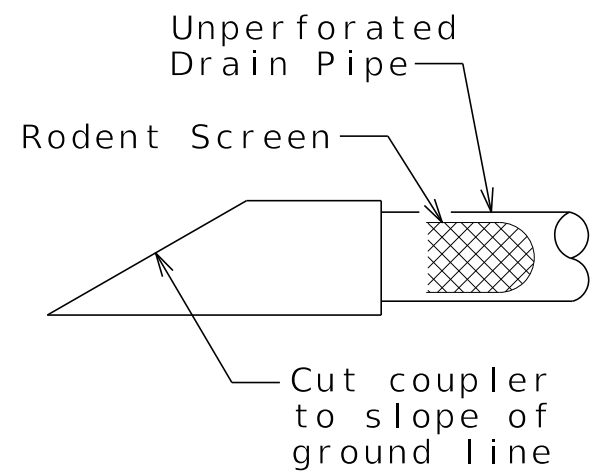
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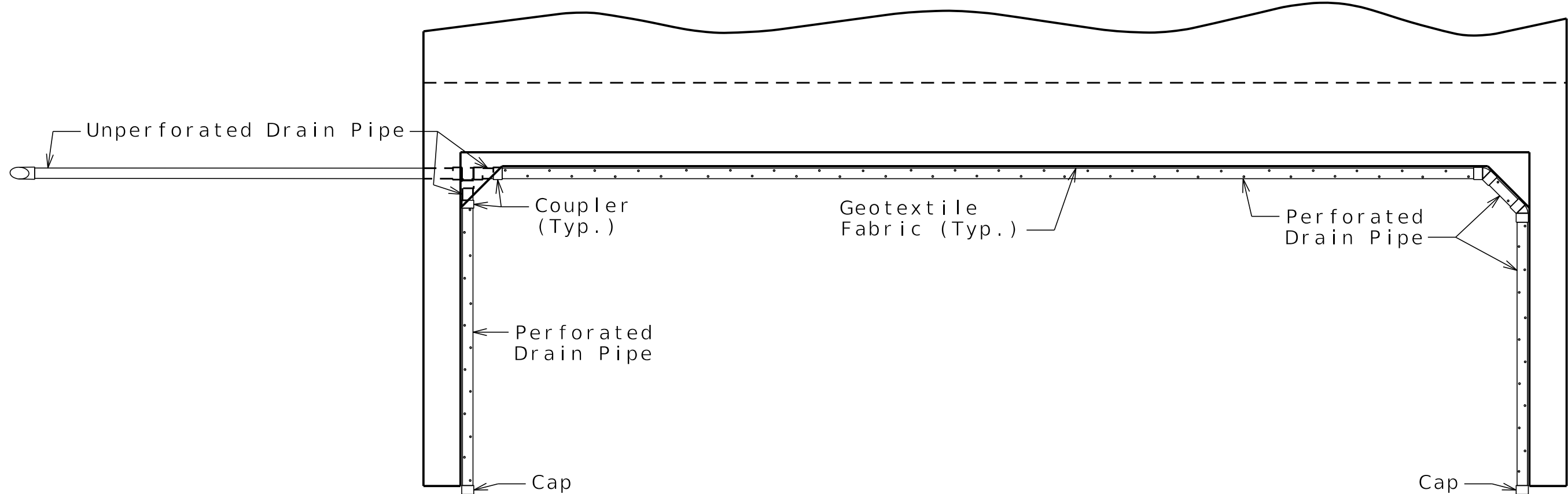


ELEVATION OF WING

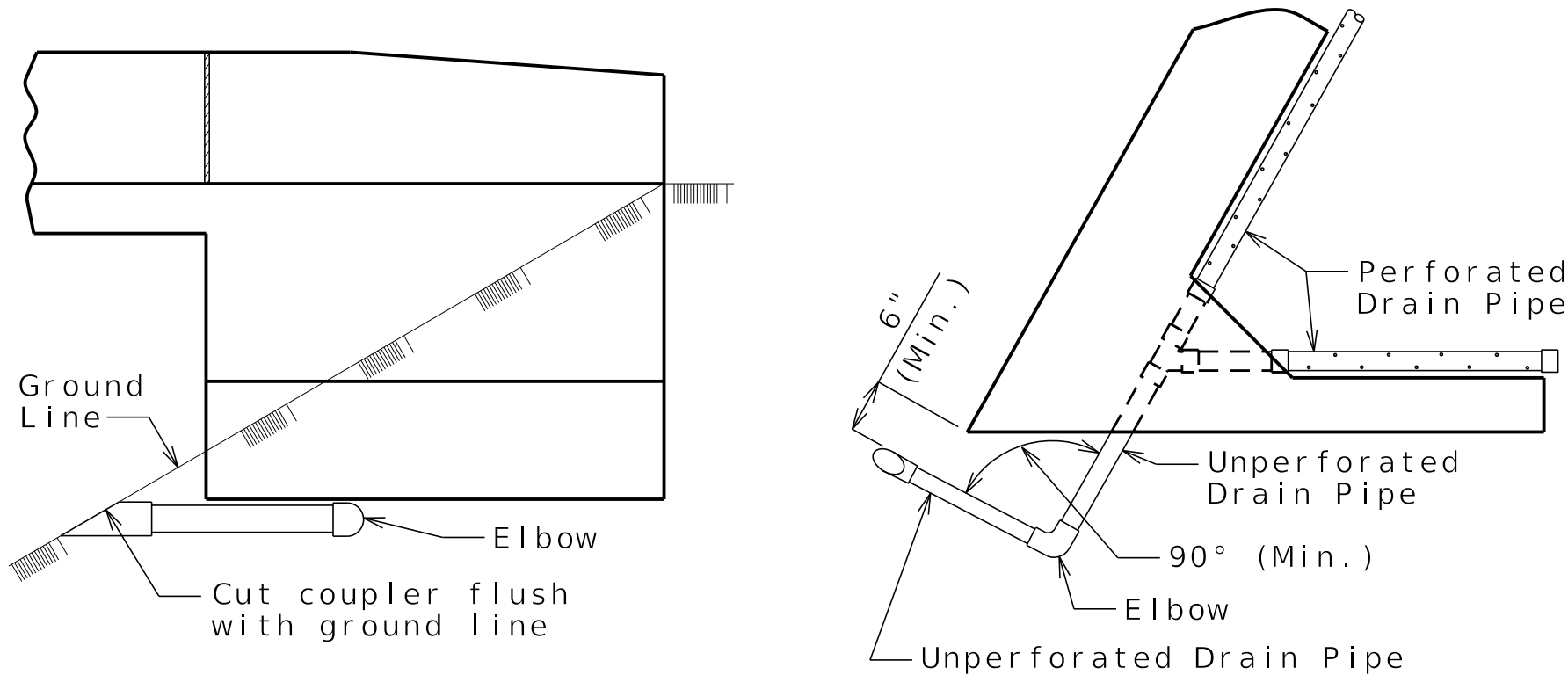
ELEVATION OF END BENT



DETAIL A



PLAN OF END BENT



ELEVATION OF WING

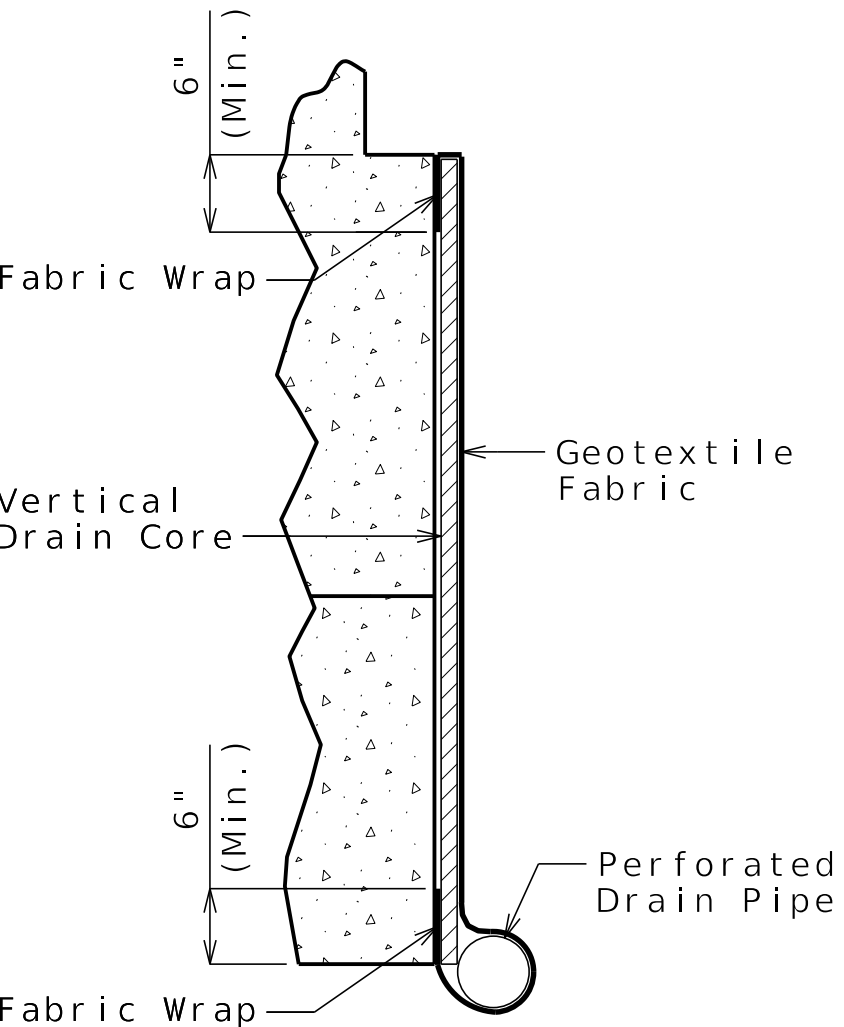
PART PLAN

OPTIONAL TURNED DRAIN

(Use only when straight drain is not practical.)

VERTICAL DRAINS AT END BENTS

(Squared end bent shown, skewed end bent similar)



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.



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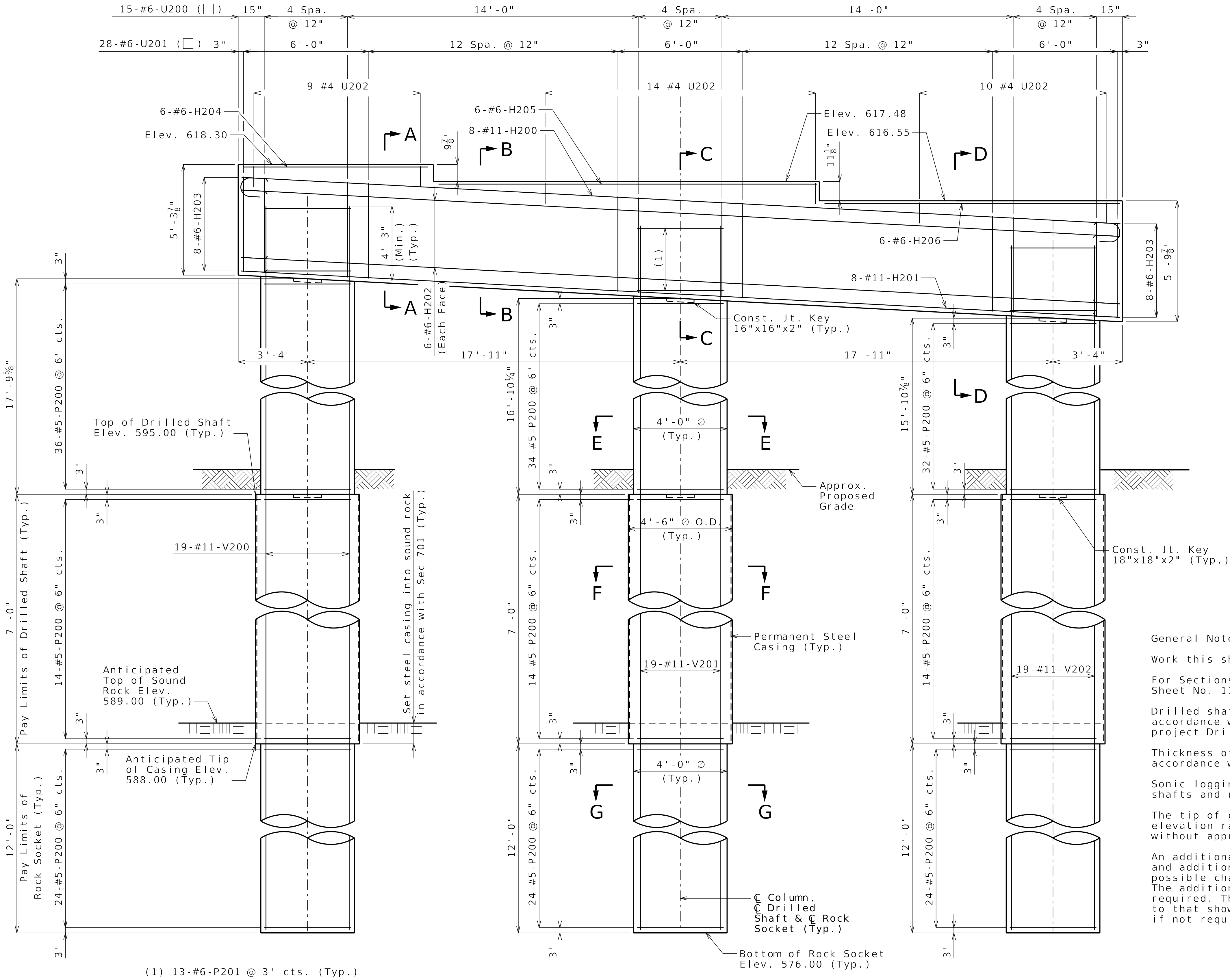


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ELEVATION
(Girder chairs and beam keys not shown for clarity)

General Notes:

Work this sheet with Sheets No. 10 and 11.

For Sections A-A, B-B, C-C, D-D, E-E, F-F and G-G, see Sheet No. 11.

Drilled shafts shall be constructed and inspected in accordance with the Bridge Geotechnical Memo and the project Drilled Shaft Construction AAS.

Thickness of permanent steel casing shall be in accordance with Drilled Shaft Construction AAS.

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

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

An additional 4 feet has been added to the V-Bar lengths and additional 24-#5-P200 bars have been added for possible change in drilled shaft or rock socket lengths. The additional V-bar length shall be cut off if not required. The additional P-bars shall be spaced similarly to that shown in Elevation, if required, or not used if not required.



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DATE PREPARED 12/19/2025	
ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. A9678-09
COUNTY ST. CHARLES	
JOB NO. JST0020	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO. A9678

DATE	DESCRIPTION

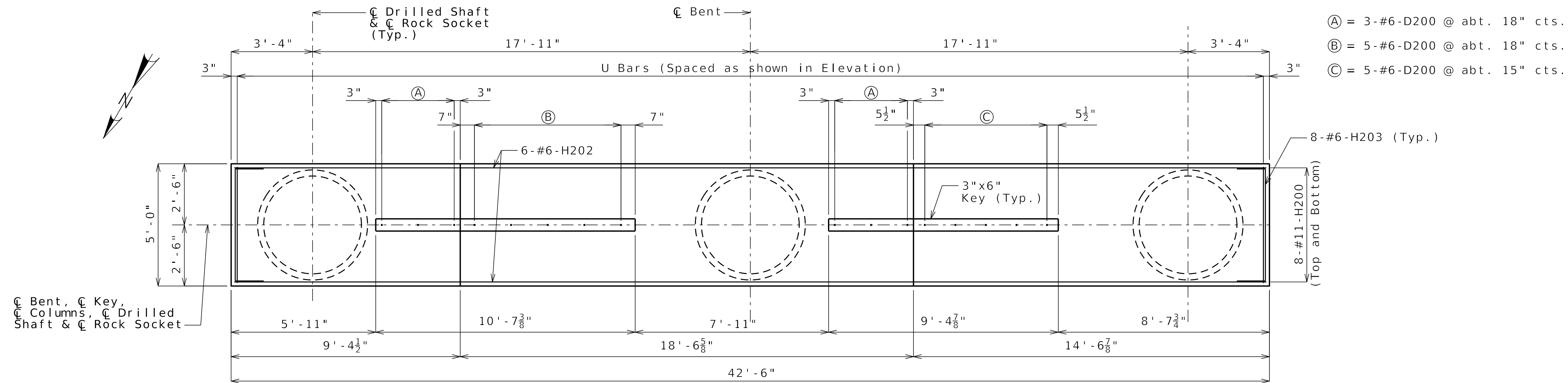
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

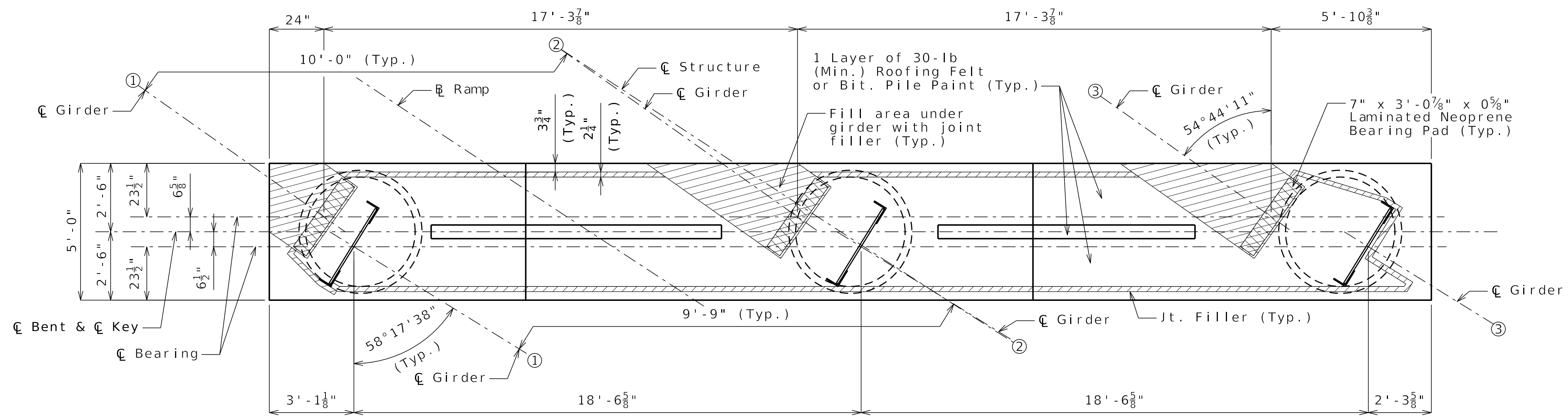


715 WIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

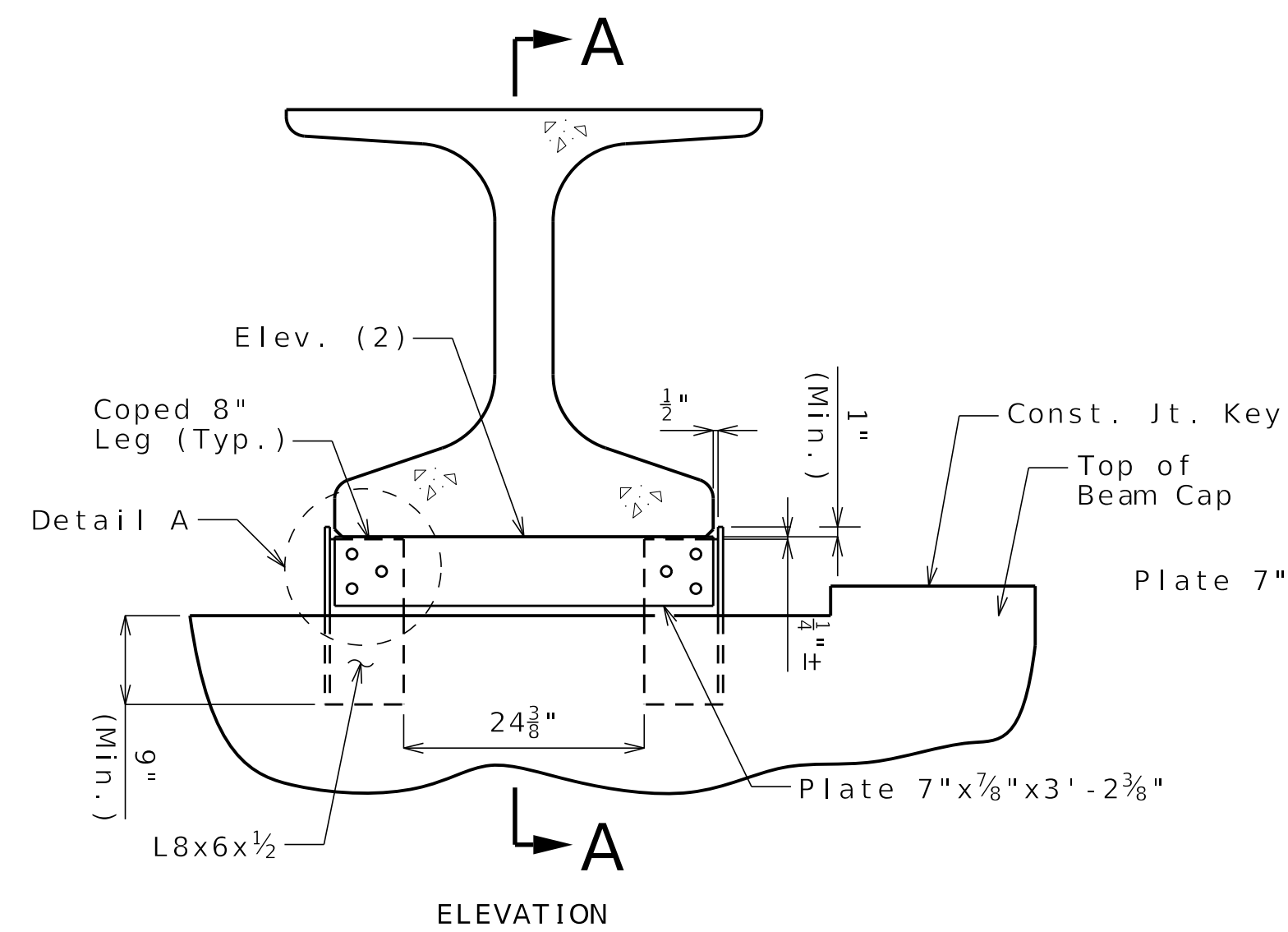
Civil Engineering Design
1923 Barrett Parkway Dr
Suite 200
St. Louis, MO 63104
Phone: 314-344-3100
Fax: 314-344-3105
Missouri Certificate of Authority: 001578



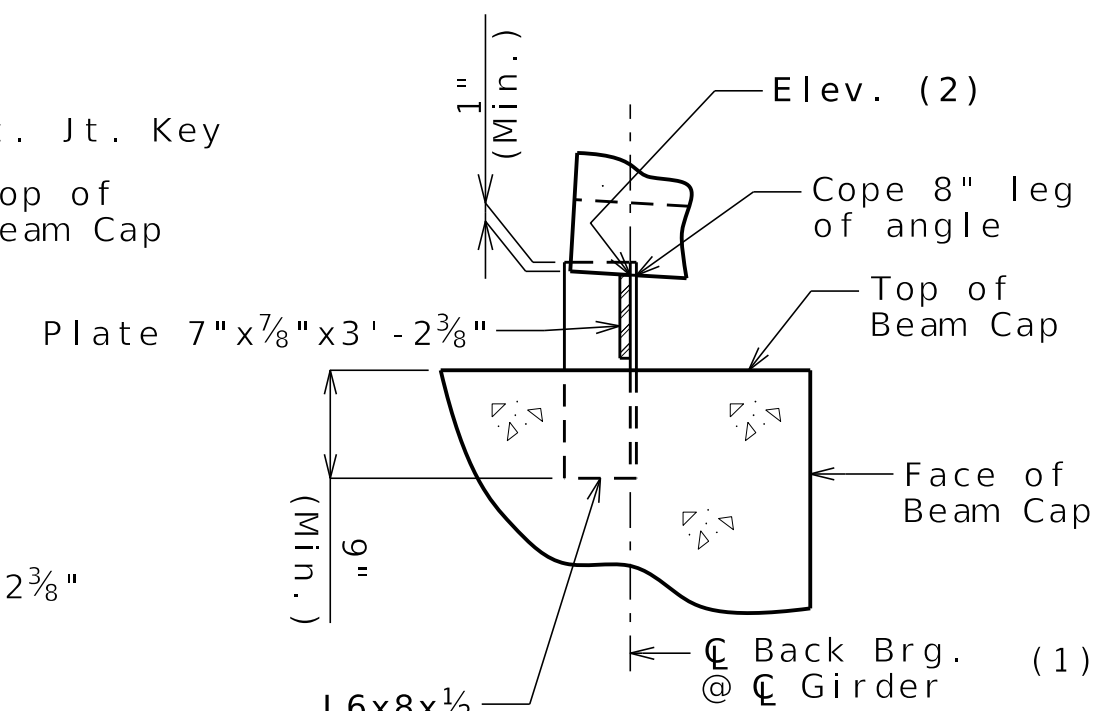
PLAN SHOWING REINFORCEMENT



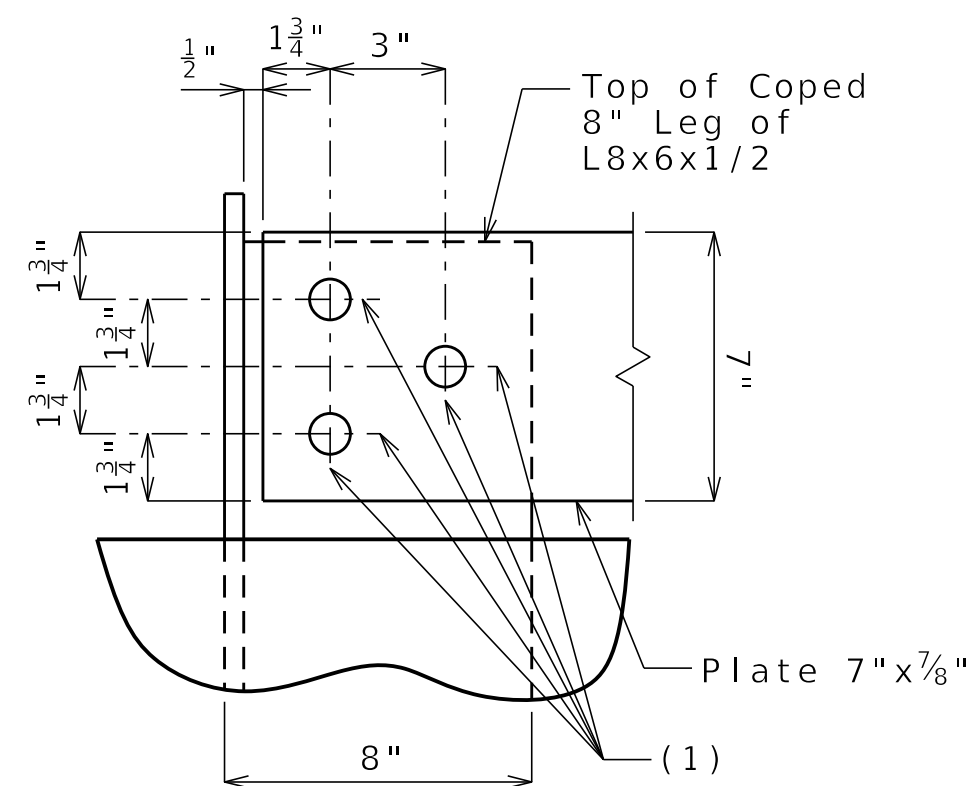
PLAN OF BEAM



ELEVATION



SECTION A-A



DETAIL A

TOP OF GIRDER CHAIR ELEV.			
	G1	G2	G3
(2)	619.20	618.31	617.37

General Notes:

Work this sheet with Sheets No. 9 and 11.

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

Structural steel for the girder chairs shall be coated with not less than 2 mils of inorganic zinc primer. Scratched or damaged surfaces are to be touched up in the field before concrete is poured. In lieu of coating, the girder chairs may be galvanized in accordance with ASTM A123.

Steel for chairs shall be ASTM A709 Grade 36.

Reinforcing steel shall be shifted to clear chairs.



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
 11/11/2011

12/19/2025

ROUTE	STATE
1-1-1	MO

I - 70	MO
--------	----

DISTRICT	SHEET NO.
DD	AGC70-10

BR	A9678-10
COUNTY	

COUNTY
ST CHARLES

ST. CHARLES
JOB NO.

JOB NO.
IST0020

5310020
CONTRACT ID.

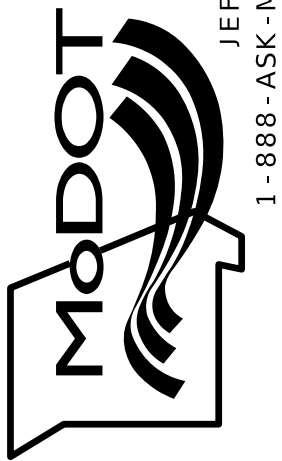
CONCLUSIONS

PROJECT NO.

1000

BRIDGE NO.

A9678

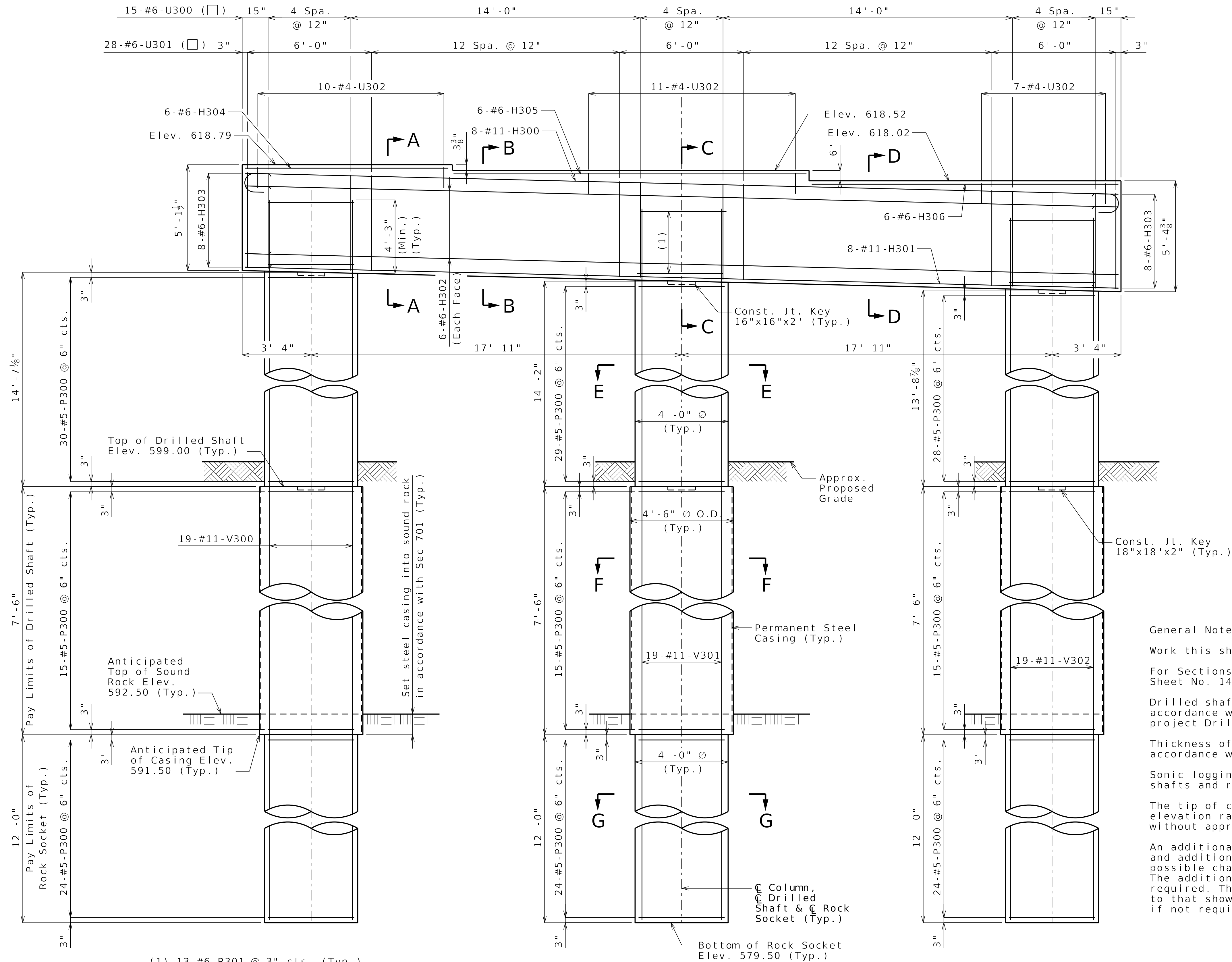
[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

EPC♦Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314
Fax 314
Missouri Certificate of Authority: 00157878



ELEVATION

(Girder chairs and beam keys not shown for clarity)

General Notes:

Work this sheet with Sheets No. 13 and 14.

For Sections A-A, B-B, C-C, D-D, E-E, F-F and G-G, see
Sheet No. 14.

Drilled shafts shall be constructed and inspected in accordance with the Bridge Geotechnical Memo and the project Drilled Shaft Construction AAS.

Thickness of permanent steel casing shall be in accordance with Drilled Shaft Construction AAS.

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

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

An additional 4 feet has been added to the V-Bar lengths and additional 24-#5-P300 bars have been added for possible change in drilled shaft or rock socket lengths. The additional V-bar length shall be cut off if not required. The additional P-bars shall be spaced similarly to that shown in Elevation, if required, or not used if not required.



THIS SHEET HAS BEEN
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DATE PREPARED
12/19/2025

ROUTE I - 70	STATE MO
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DISTRICT BR	SHEET NO. A9678-12
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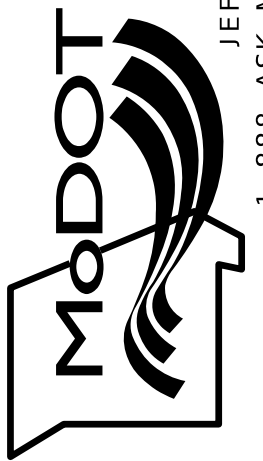
COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.	A9678
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[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

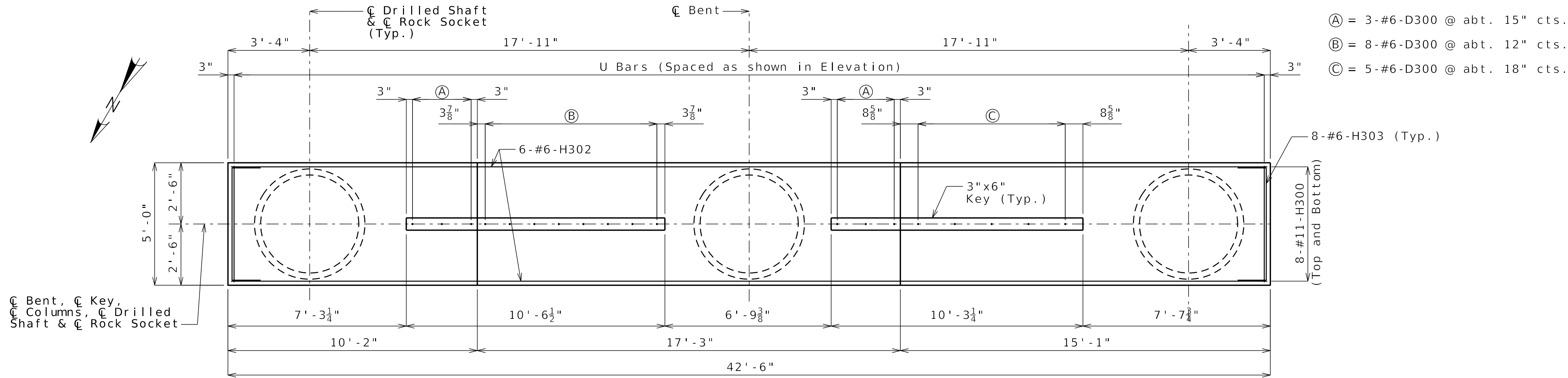


715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

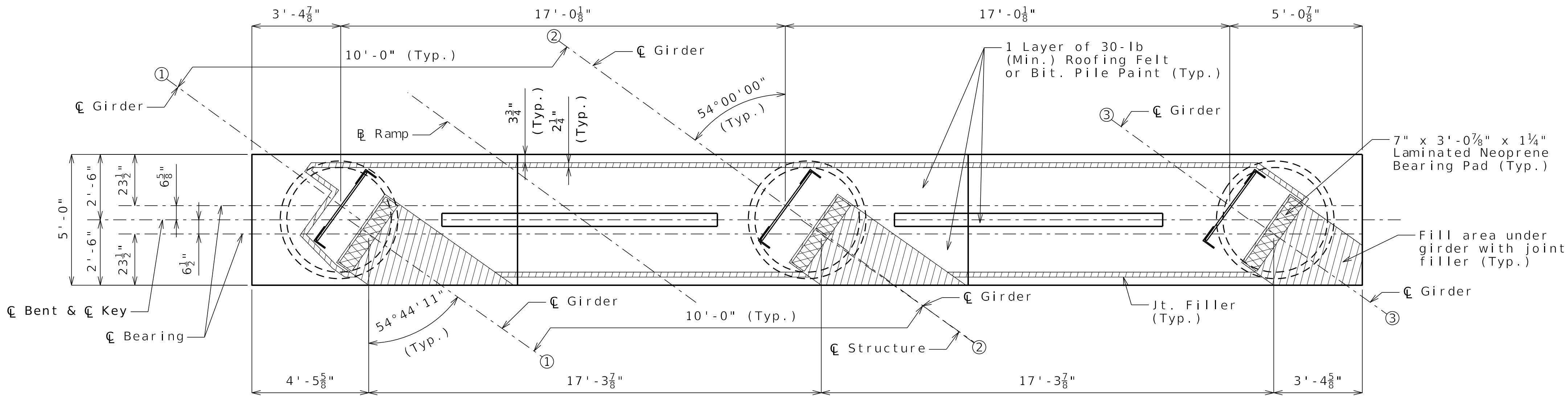


EFK♦Moen
Civil Engineering Design
13523 Barrett Parkway Dr

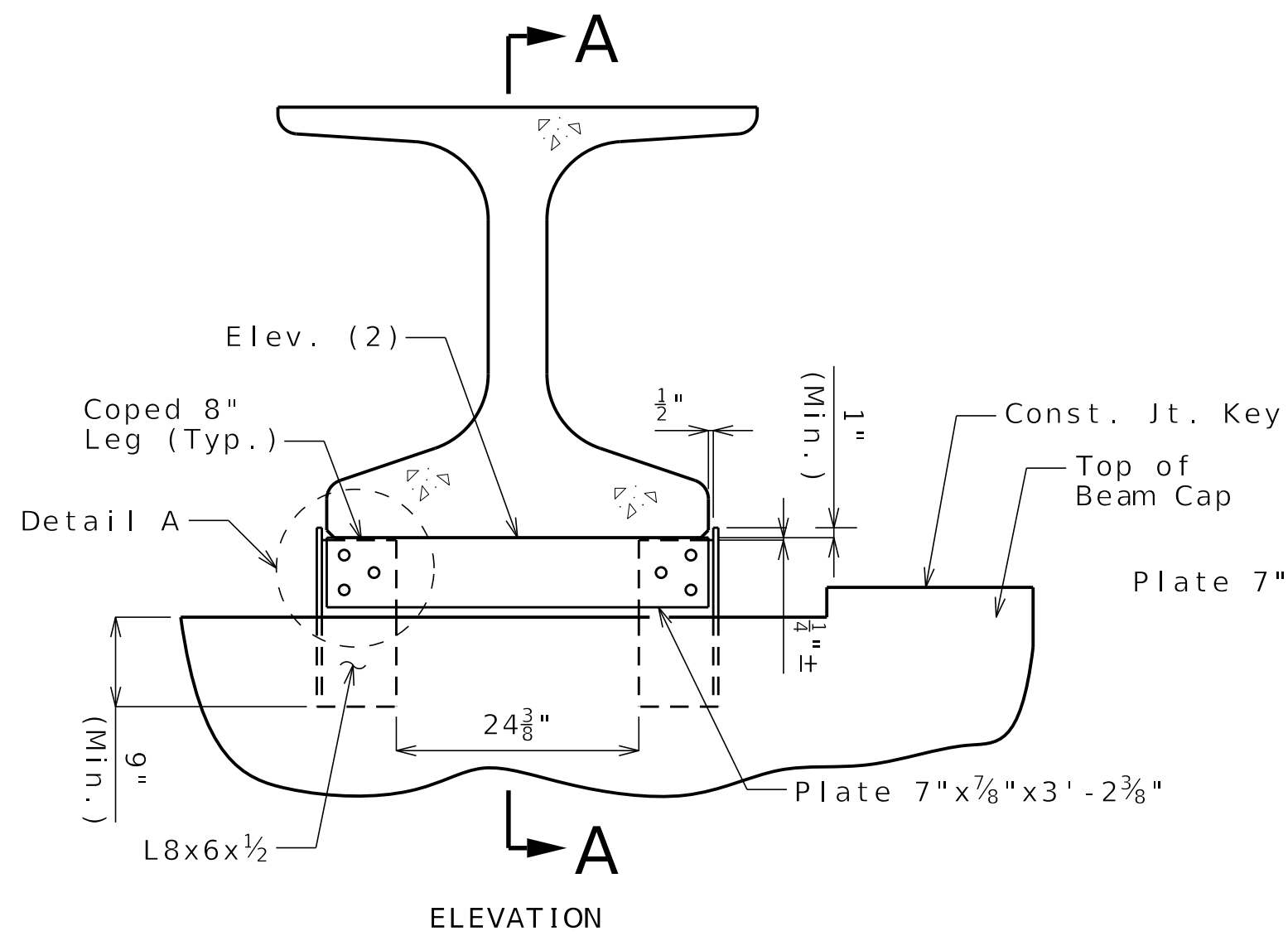
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578



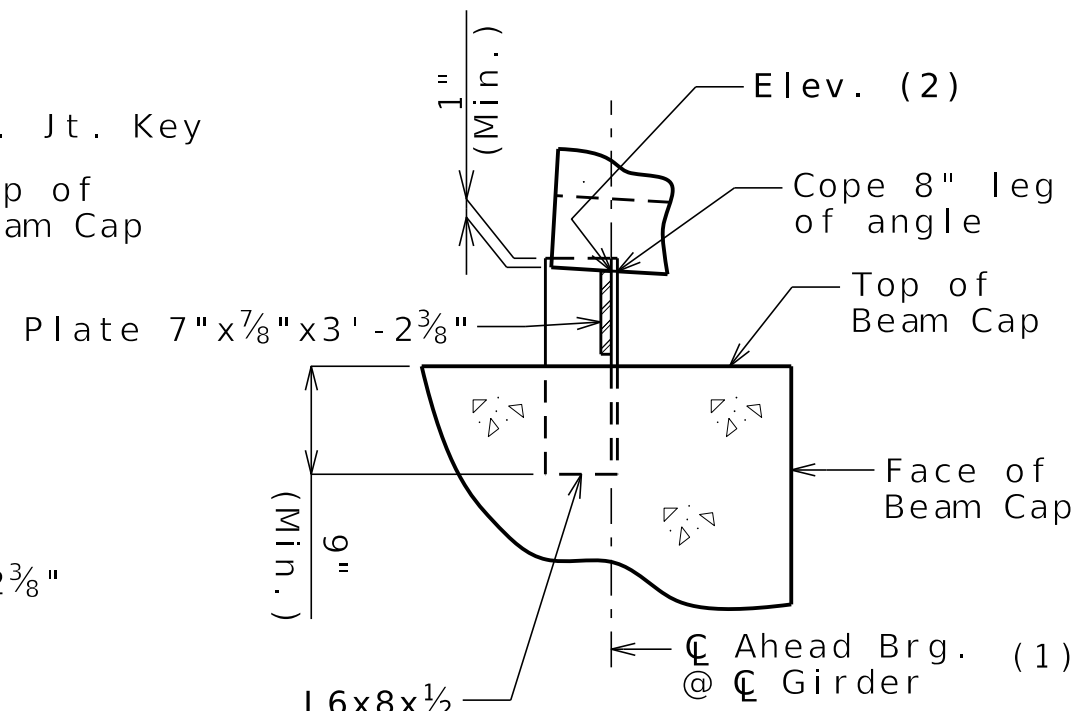
PLAN SHOWING REINFORCEMENT



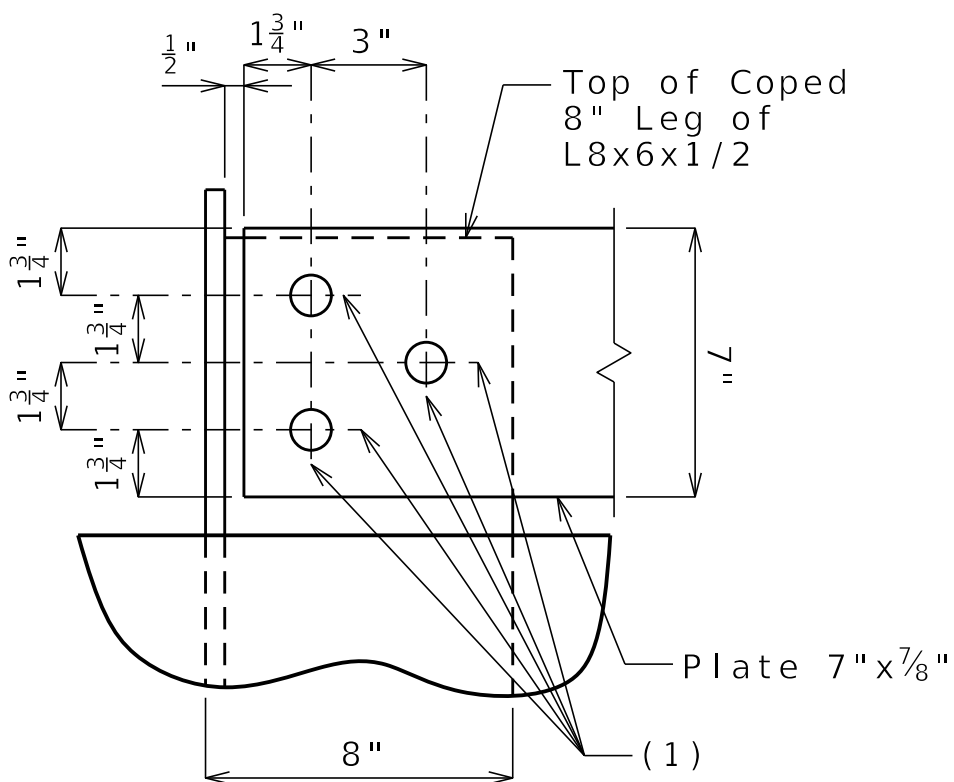
PLAN OF BEAM



ELEVATION



SECTION A-A



DETAIL A

GIRDER CHAIR DETAILS

General Notes:

Work this sheet with Sheets No. 12 and 14.

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

Structural steel for the girder chairs shall be coated with not less than 2 mils of inorganic zinc primer. Scratched or damaged surfaces are to be touched up in the field before concrete is poured. In lieu of coating, the girder chairs may be galvanized in accordance with ASTM A123.

Steel for chairs shall be ASTM A709 Grade 36.

Reinforcing steel shall be shifted to clear chairs.

TOP OF GIRDER CHAIR ELEV.			
	G1	G2	G3
(2)	619.71	619.44	619.05

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN
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DATE PREPARED
12/19/2025

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
A9678-13

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

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

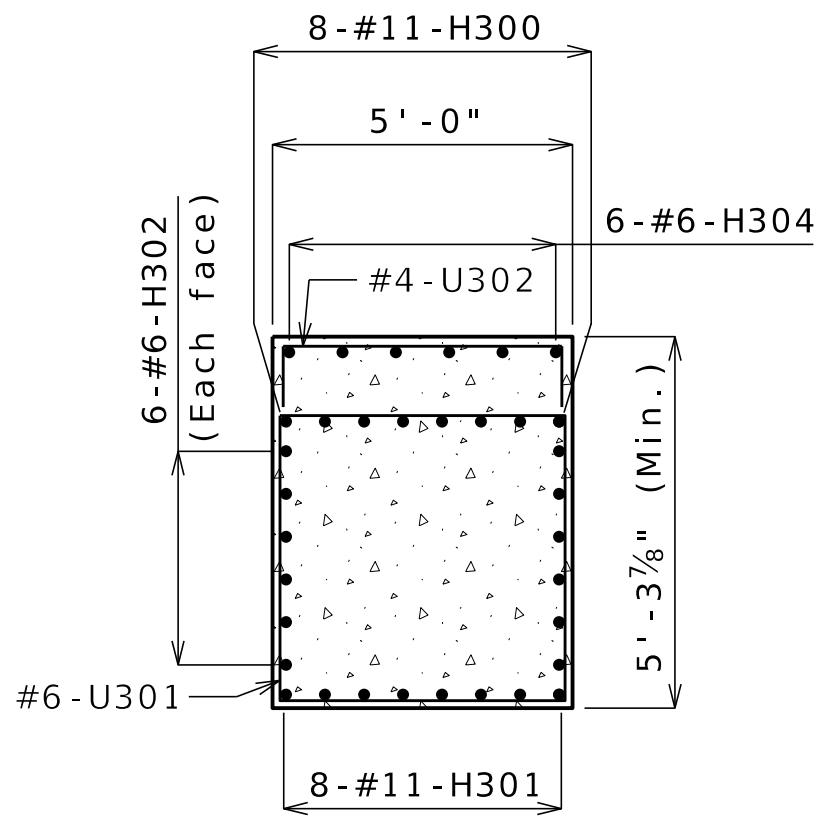
IMPROVE 70
ALLIANCE

HNTB

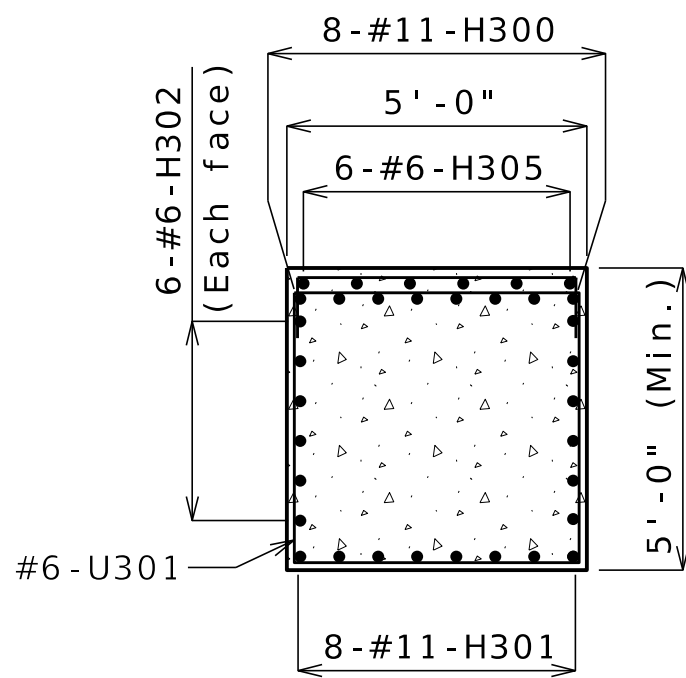
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
1323 Barrett Parkway Dr
Suite 200 MO 64105
Missouri Certificate of Authority 001578

EFK Moen

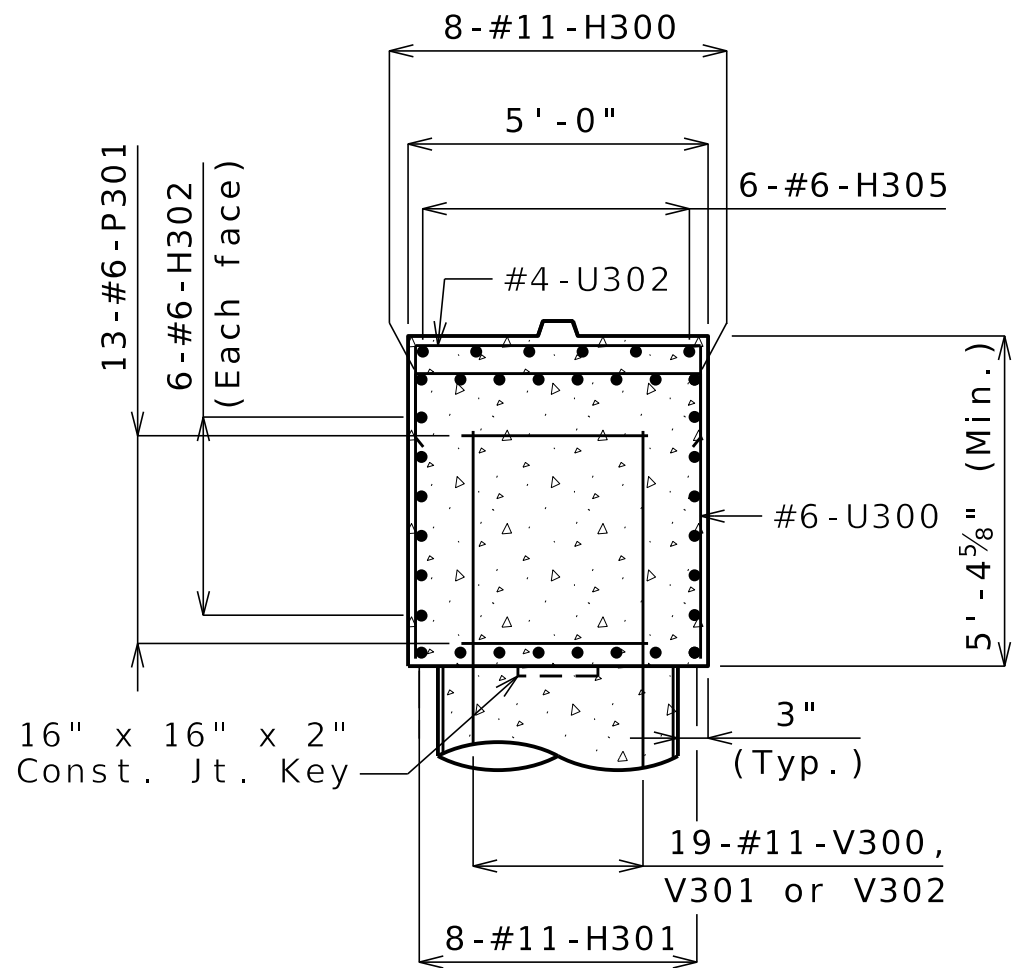
Civil Engineering Design
314-394-3100
State of Missouri
Missouri Certificate of Authority 001578



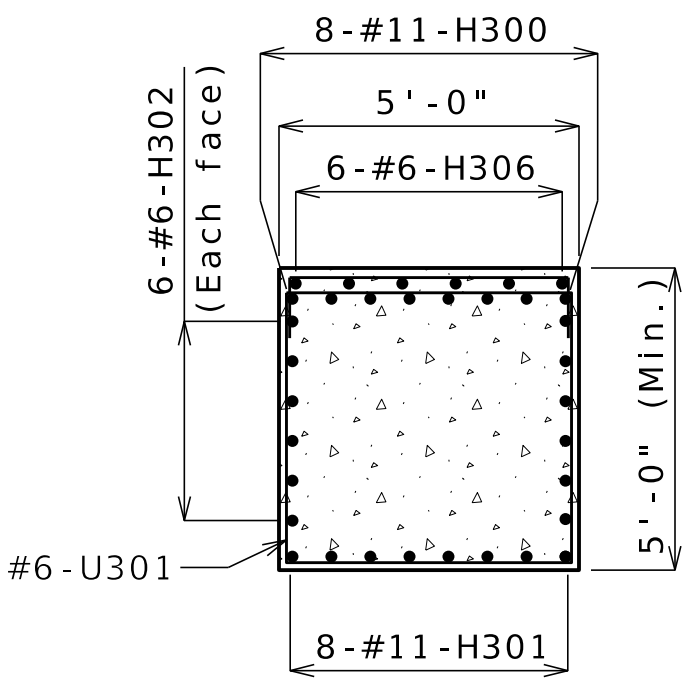
SECTION A-A



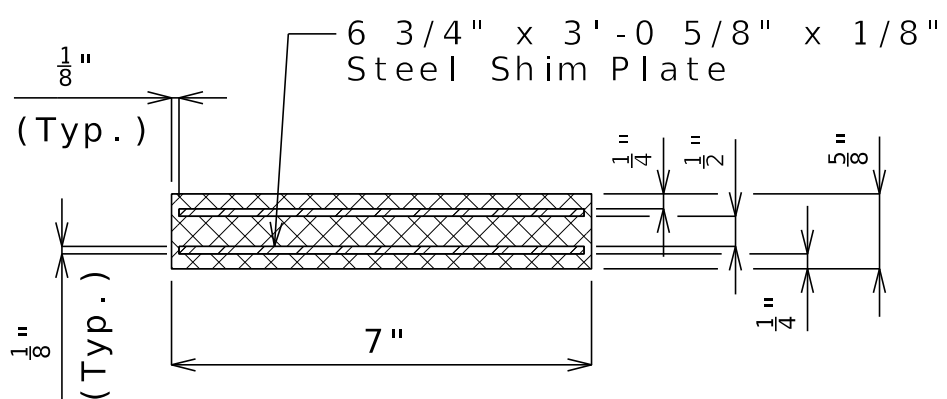
SECTION B-B



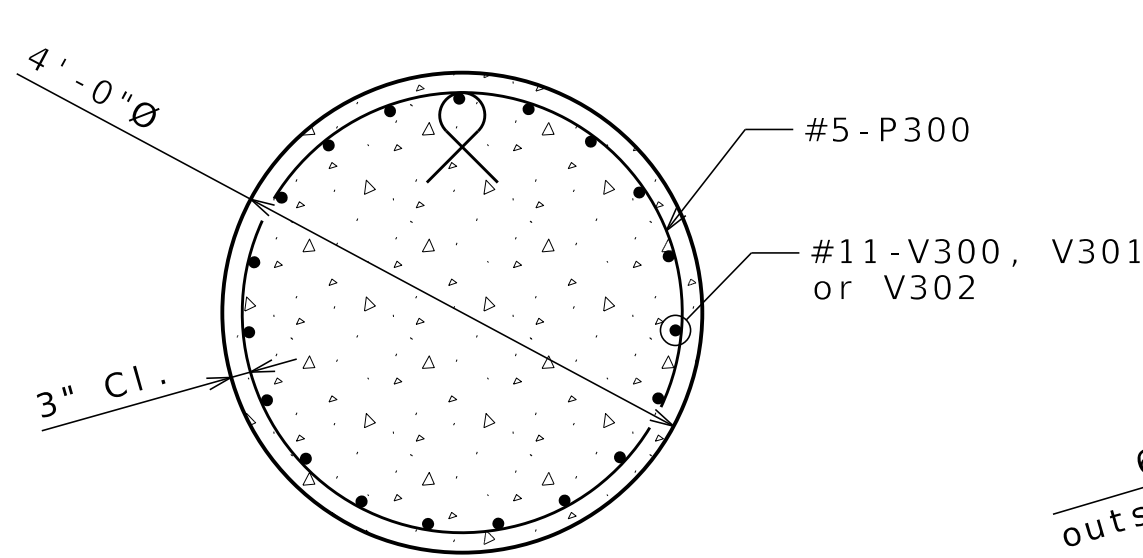
SECTION C-C



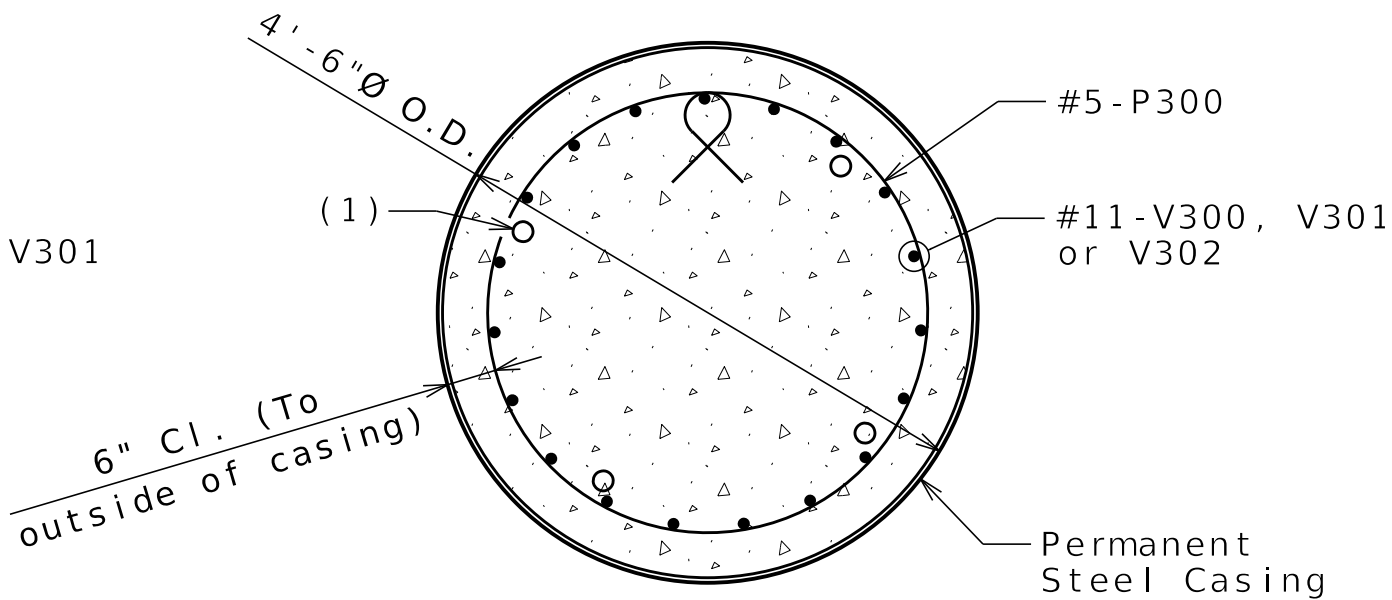
SECTION D-D



SECTION THRU LAMINATED NEOPRENE BEARING PAD

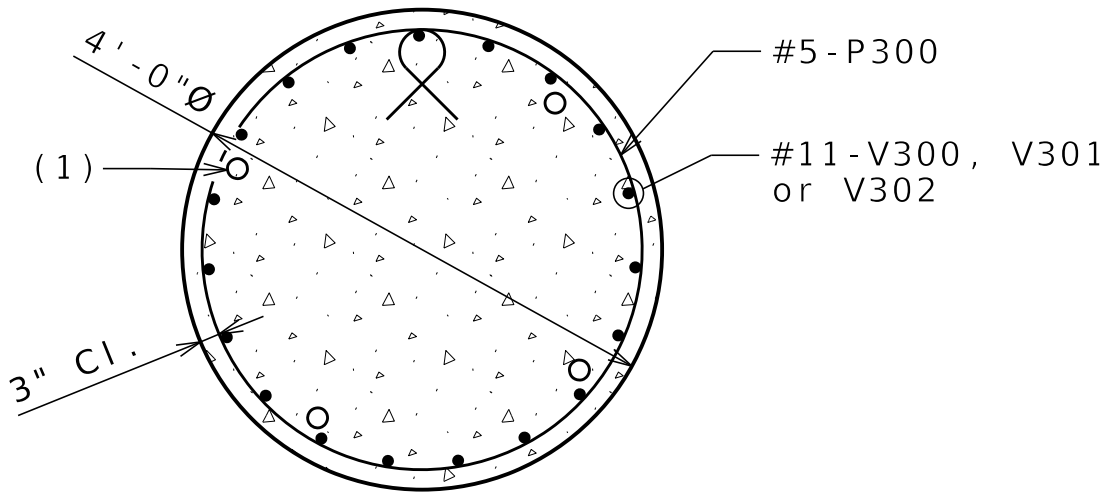


SECTION E-E

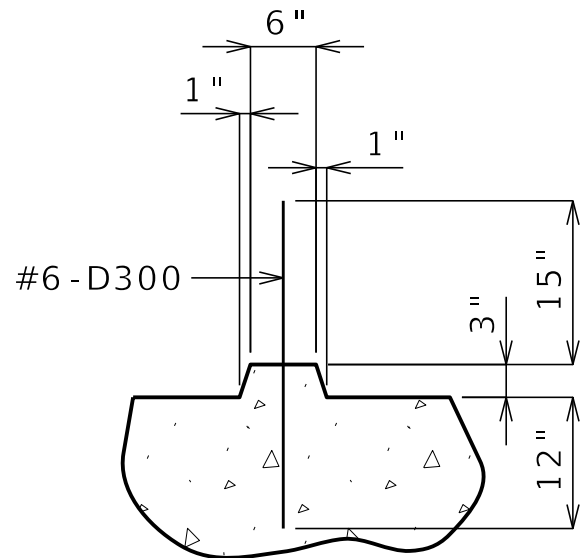


SECTION F_F

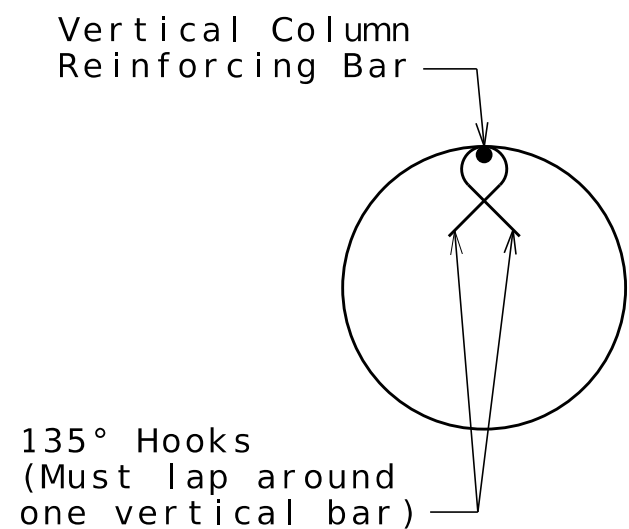
(1) 2"Ø Steel Pipe for sonic logging testing (4 each shaft)



SECTION G-G



SECTION THRU KEY



SEISMIC STIRRUP BAR (#5-P300)

Note: Seismic stirrups hooks shall be staggered around the column at about one-third of the hoop circumference.

General Notes:
Work this sheet with Sheets No. 12 and 13.

DETAILS OF INT BENT NO. 3

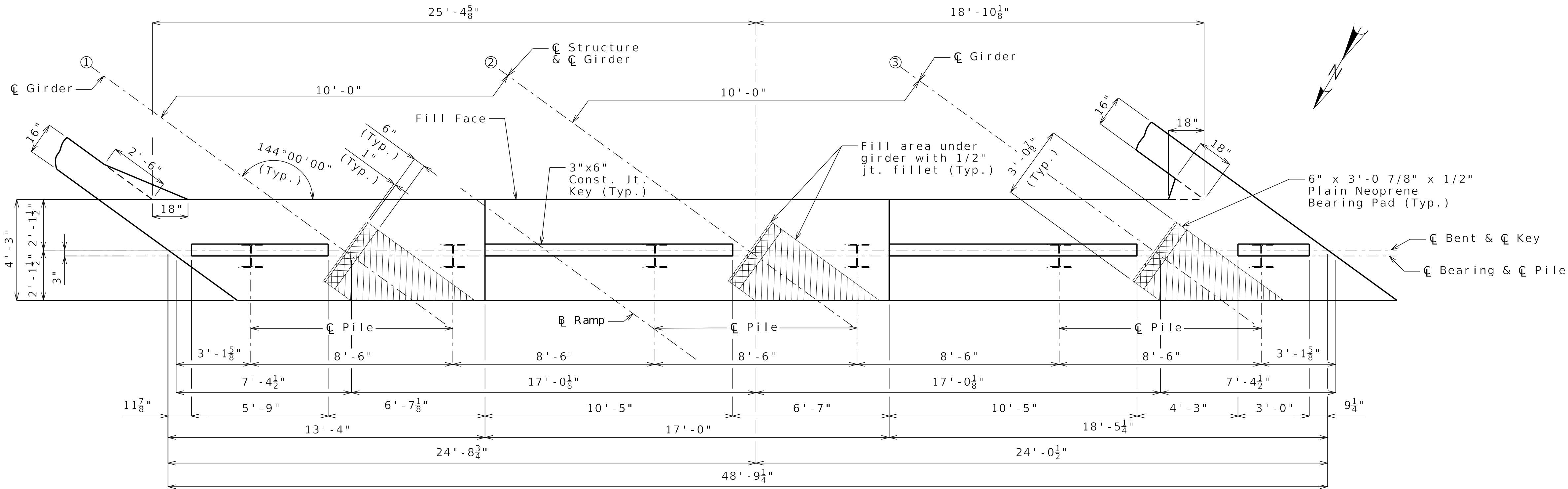
STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.
DATE PREPARED
12/19/2025
ROUTE
1-70
STATE
MO
DISTRICT
BR
SHEET NO.
A9678-14
COUNTY
ST. CHARLES
JOB NO.
JST0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A9678

DESCRIPTION
DATE

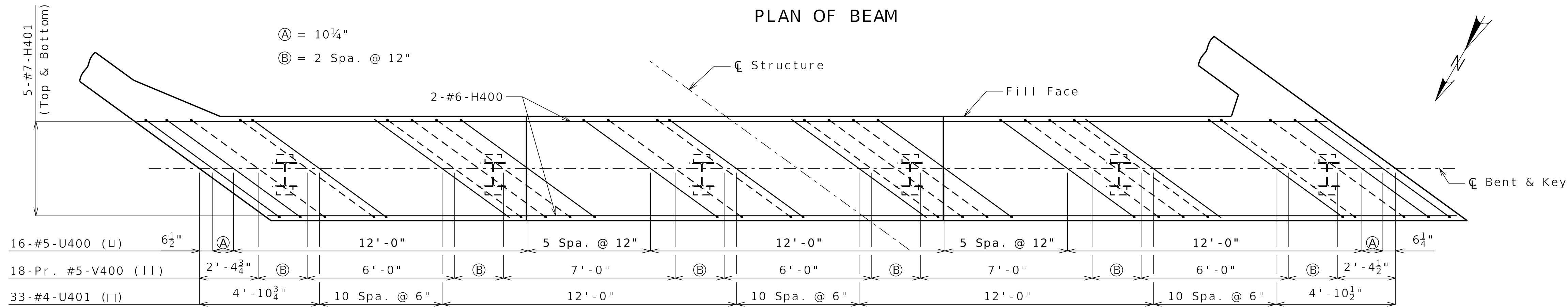
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IMPROVE 70 ALLIANCE

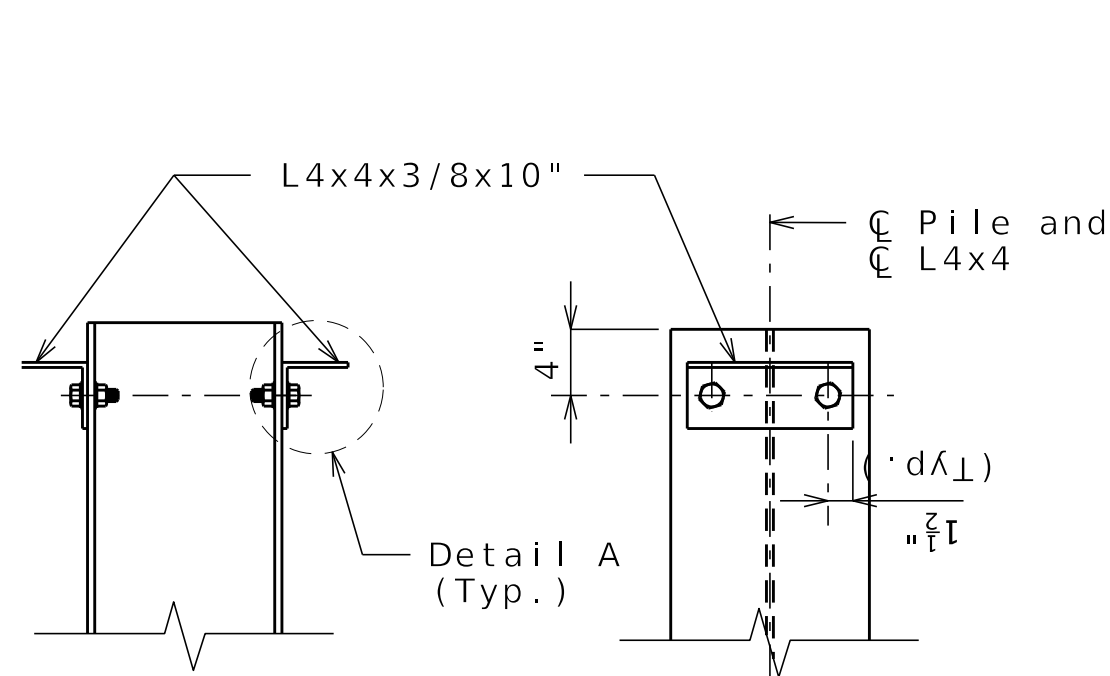
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270
HNTB
1923 Barnes Parkway Dr.
Suite 200
St. Louis, MO 63103
Phone 314-394-3100
Fax 314-394-3101
Missouri Certificate of Authority 001578
EFK Moen
Civil Engineering Design
1923 Barnes Parkway Dr.
Suite 200
St. Louis, MO 63103
Phone 314-394-3100
Fax 314-394-3101
Missouri Certificate of Authority 001578



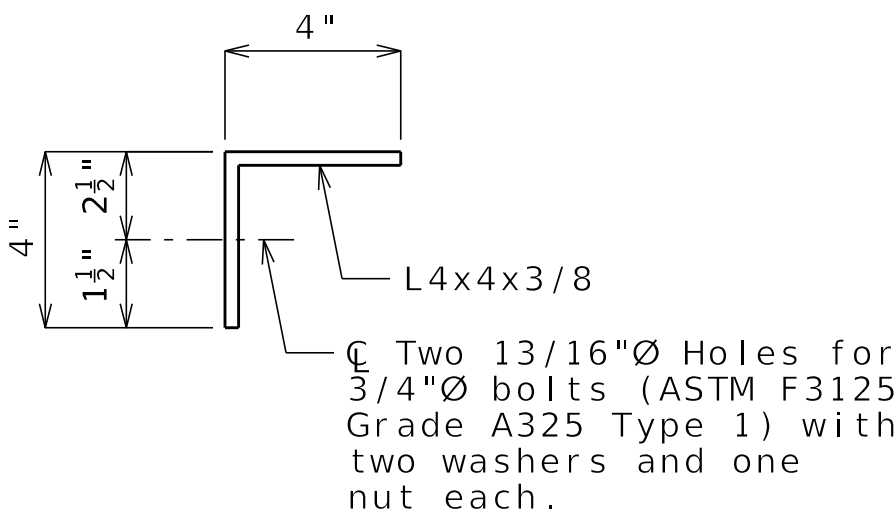
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT

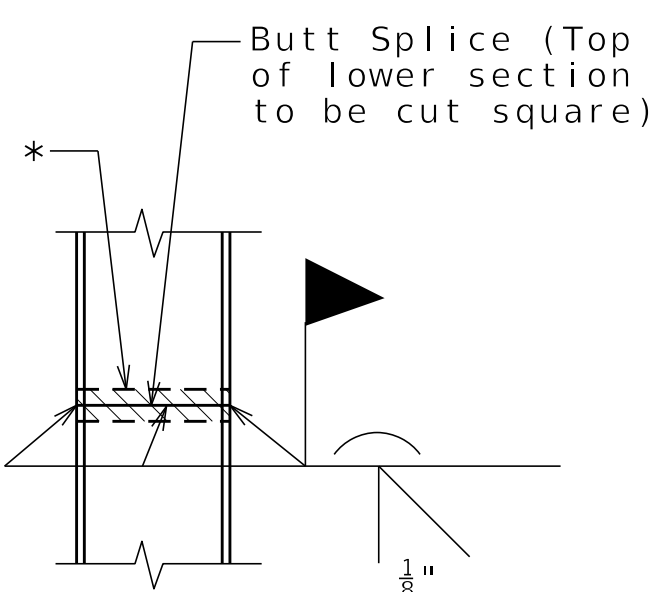


DETAILS OF HP PILE ANCHORS



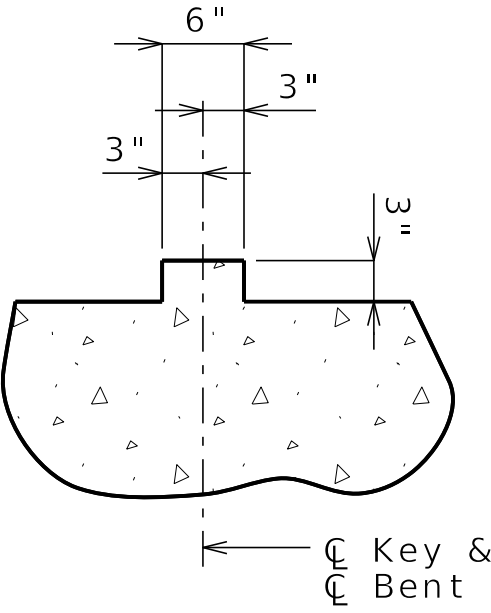
DETAIL A

Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.



STEEL PILE SPLICE
(If required)

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



SECTION THRU KEY

General Notes:
Work this sheet with Sheets No. 16 & 17.
All U bars and pairs of V bars shall be placed parallel to skewed steps.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

DETAILS OF END BENT NO. 4

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN
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DATE PREPARED
12/19/2025
ROUTE
1-70
STATE
MO
DISTRICT
BR
SHEET NO.
A9678-15
COUNTY
ST. CHARLES
JOB NO.
JST0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A9678

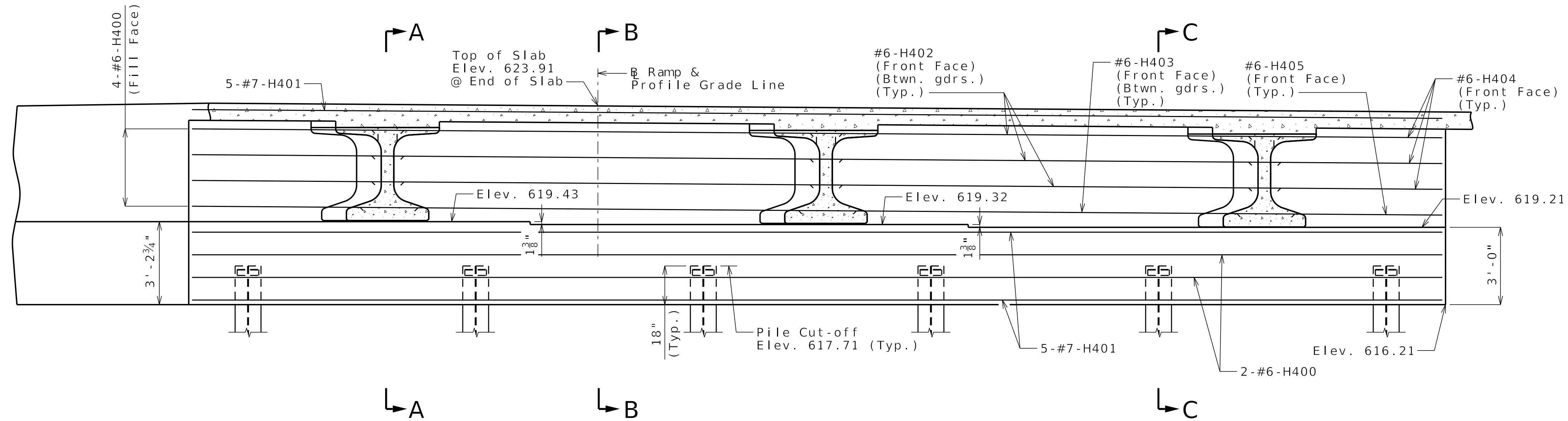
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DATE

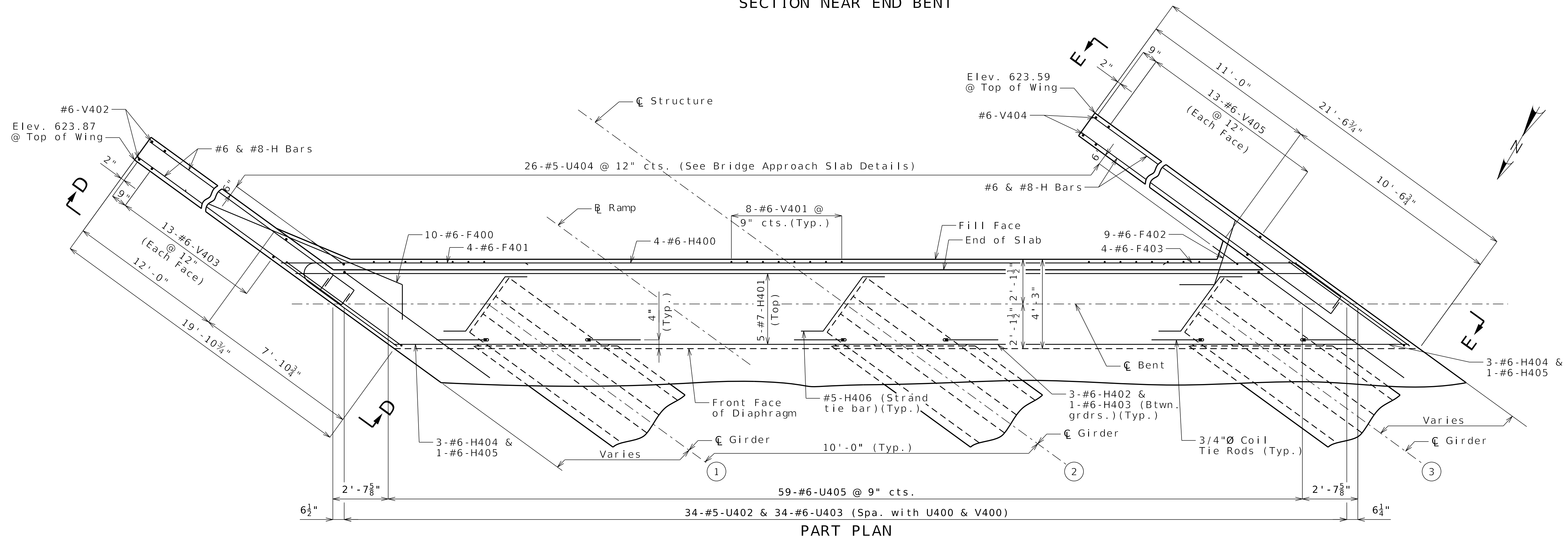
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT

IMPROVE 70
ALLIANCE

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
1923 Barrett Parkway Dr
Suite 202
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3105
Missouri Certificate of Authority 001578
HNTB
EKK Moen
Civil Engineering Design
Missouri Certificate of Authority 001578



SECTION NEAR END BENT



PART PLAN

General Notes:

Work this sheet with Sheets No. 15 and 17.

For Sections A-A, B-B & C-C and Elevations D-D & E-E see Sheet No. 17.

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

The U bars shall be placed parallel to skewed steps.

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

Strands at 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 and #5-H406 (strand tie bar), see Sheet No. 21.

For details of vertical drain at end bents, see Sheet No. 8.

For details of bridge approach slab, see Sheet No. 34.



THIS SHEET HAS BEEN
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DATE PREPARED
12/19/2025

ROUTE I - 70	STATE MO
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DISTRICT BR	SHEET NO. A9678-16
----------------	-----------------------

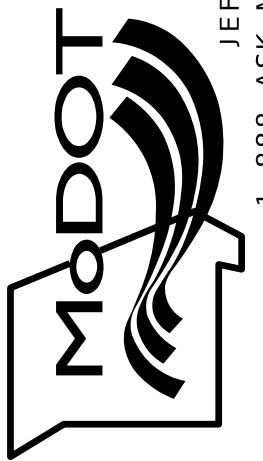
COUNTY
ST. CHARLES

JOB NO.
JST0020

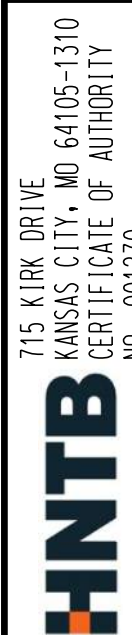
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY



EFC♦Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578



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ELECTRONICALLY.

DATE PREPARED
12/19/2025

ROUTE I - 70	STATE MO
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DISTRICT BR	SHEET NO. A9678-17
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COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

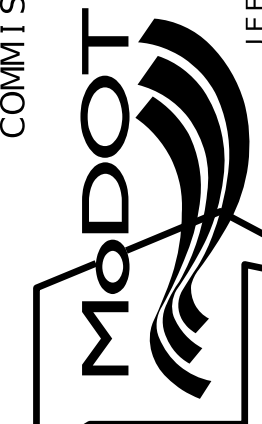
PROJECT NO.

BRIDGE NO.
A9678

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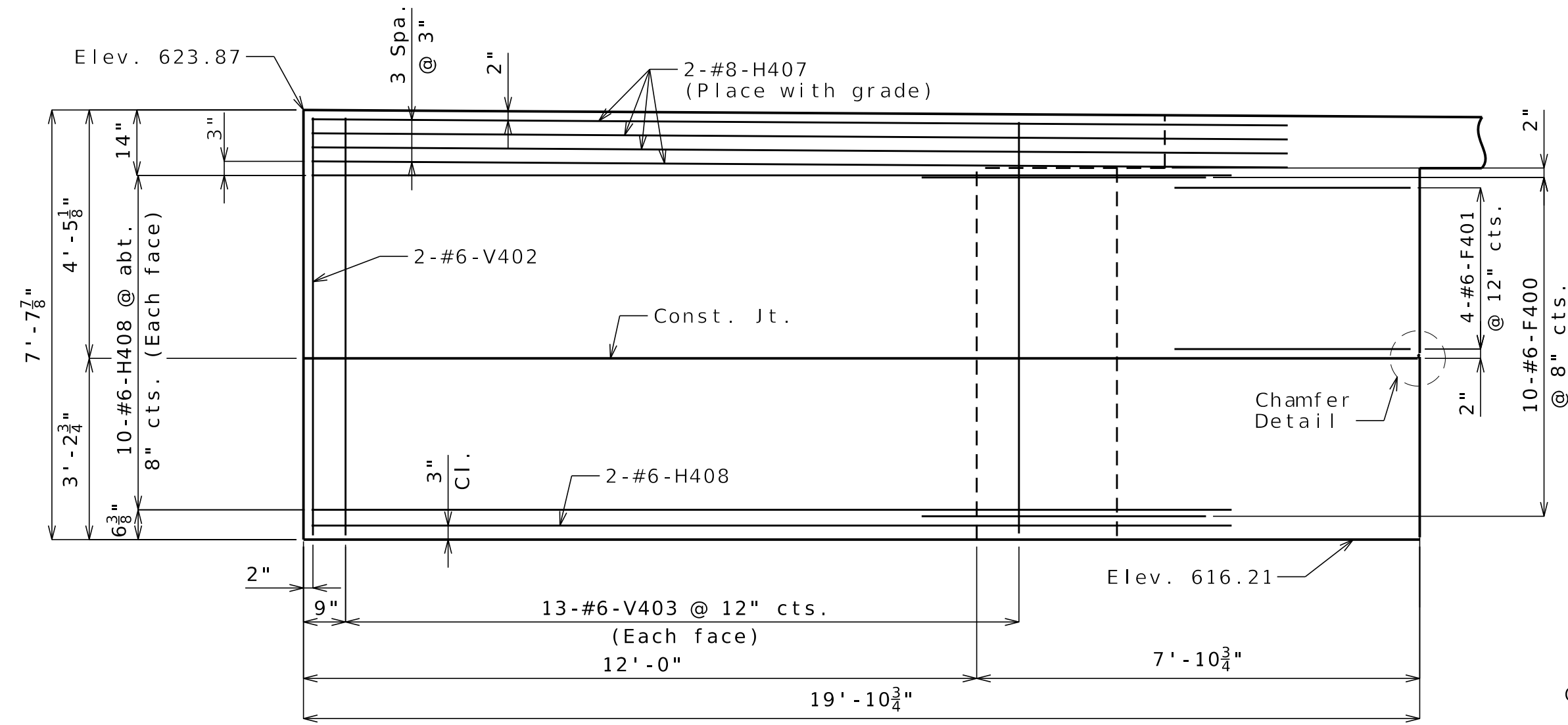
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

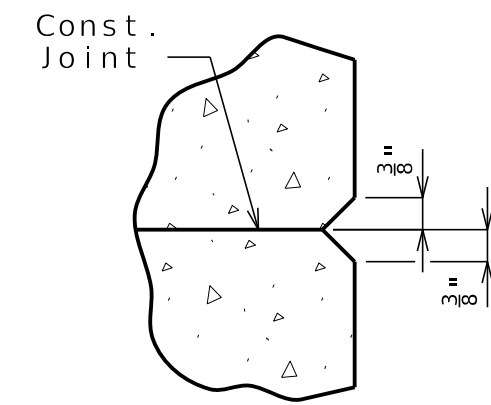


HNTB 715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

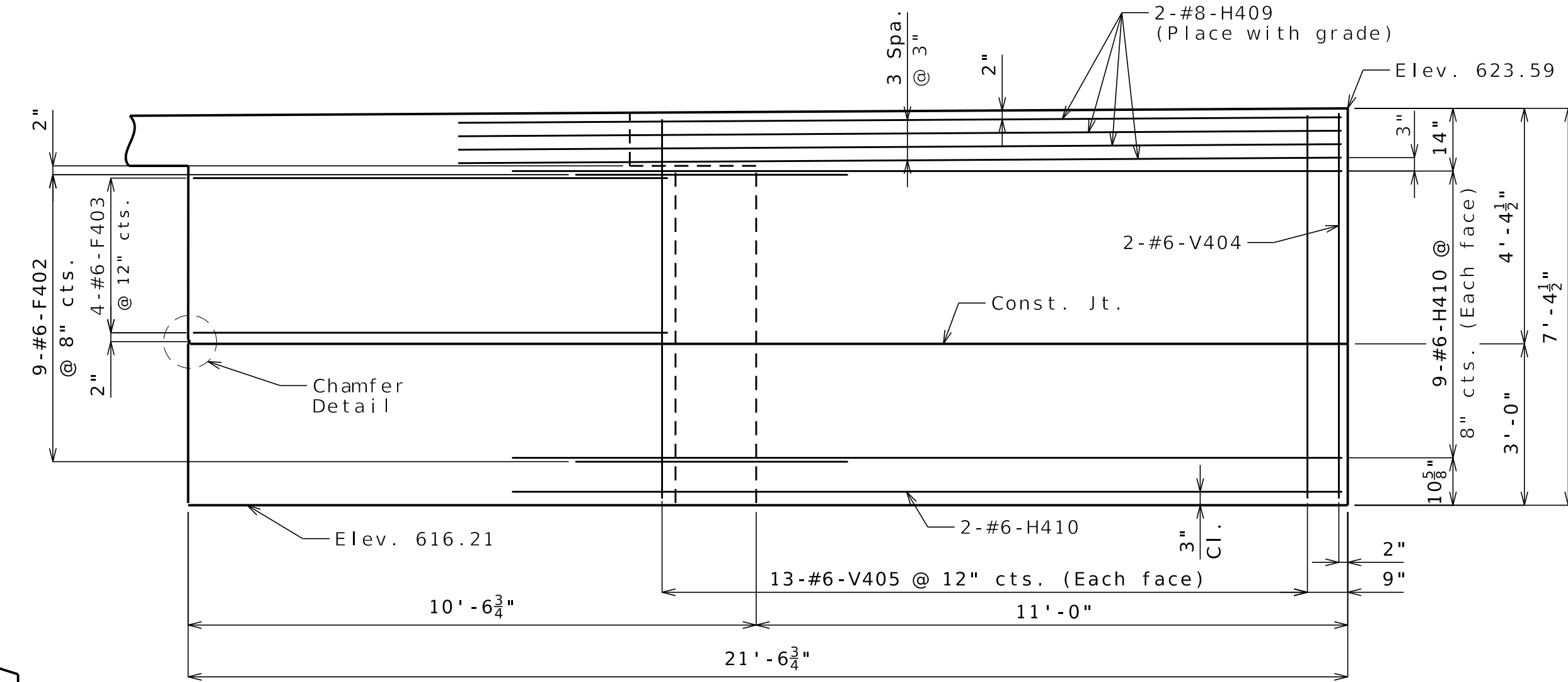
BE&K Moen
Civil Engineering Design
15923 Barrett Parkway Dr Phone 314-394-3100
St. Louis, MO 63021 Fax 314-394-3189
Missouri Certificate of Authority: 001578



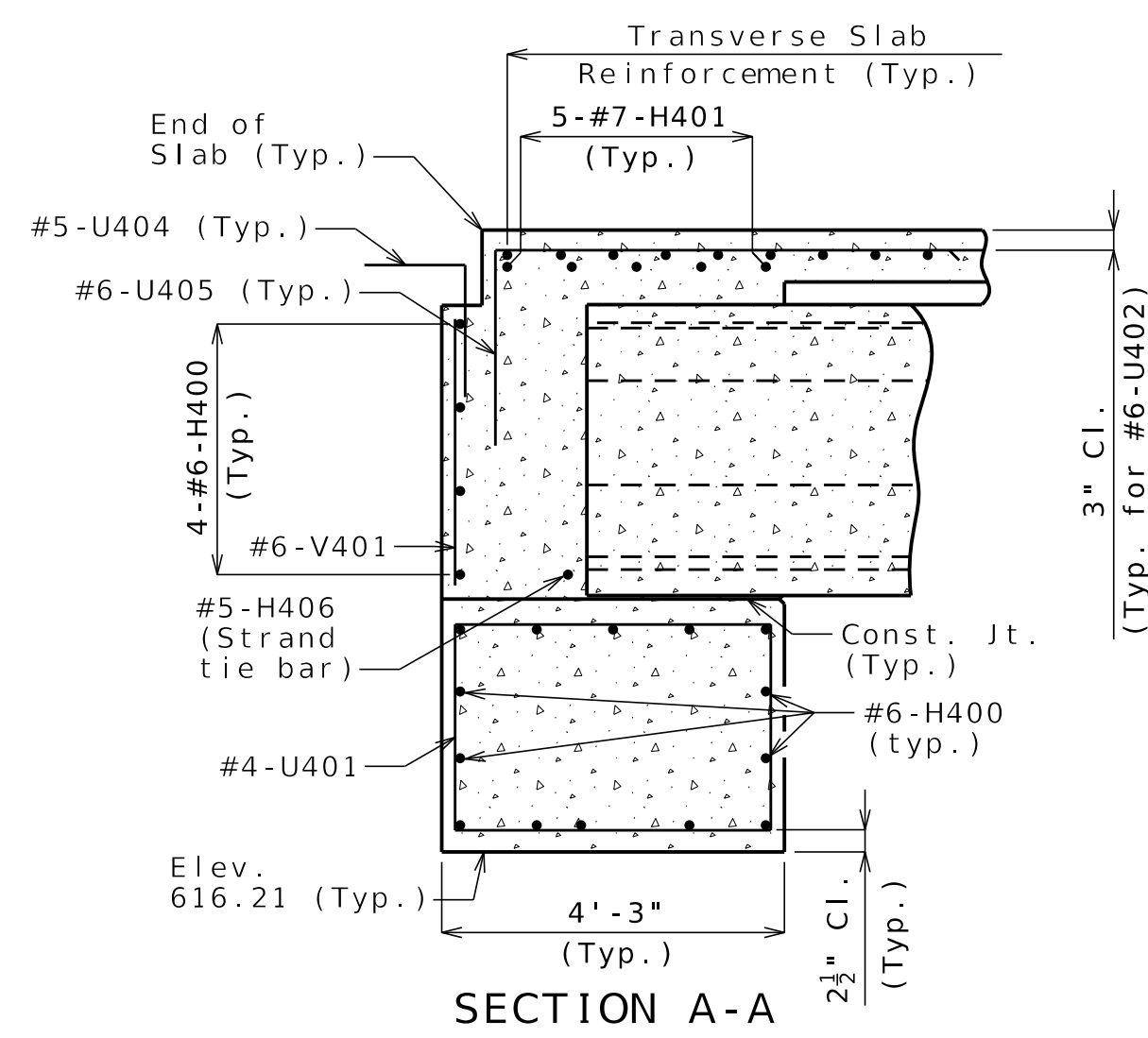
ELEVATION D-D



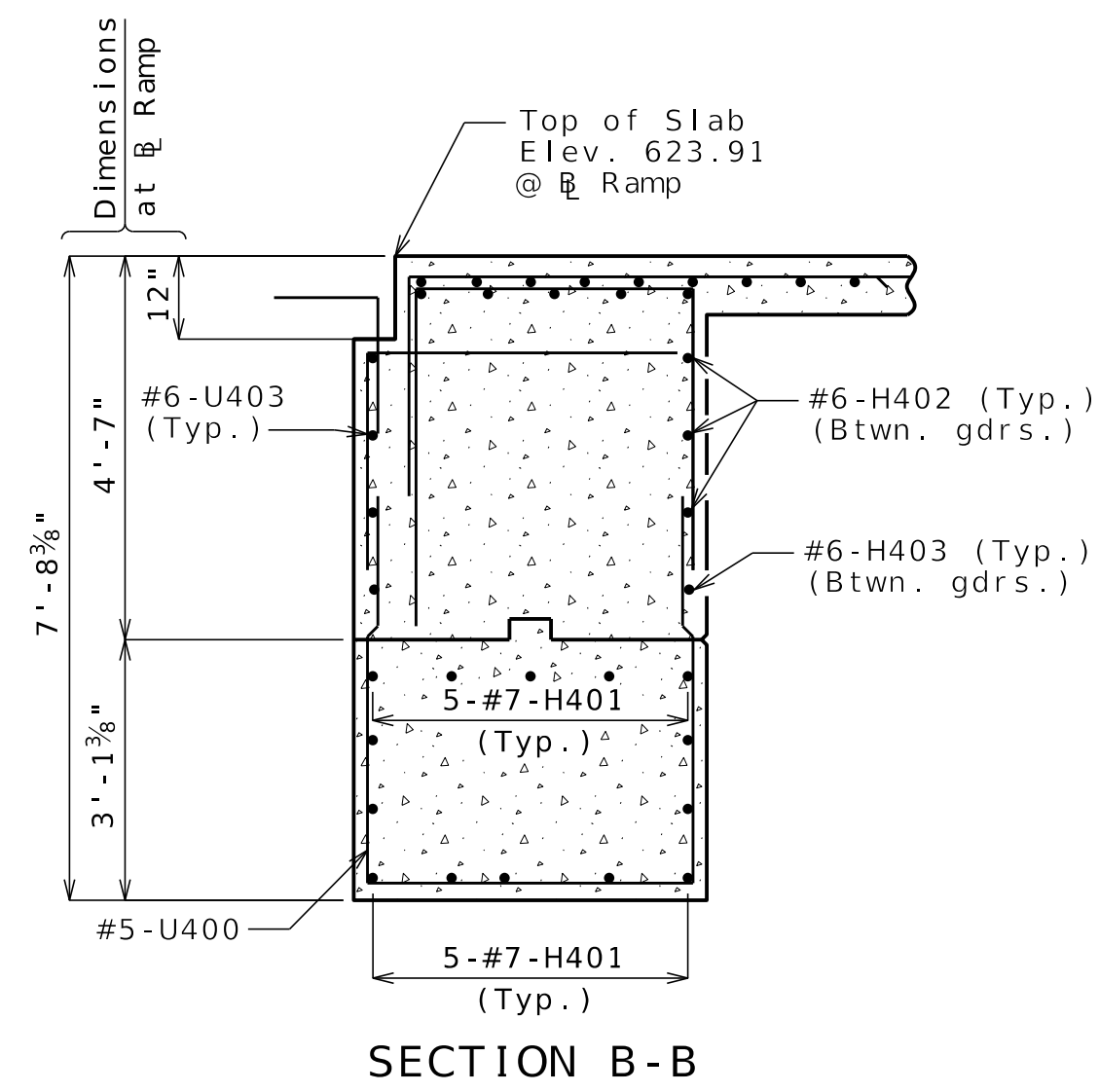
CHAMFER DETAIL



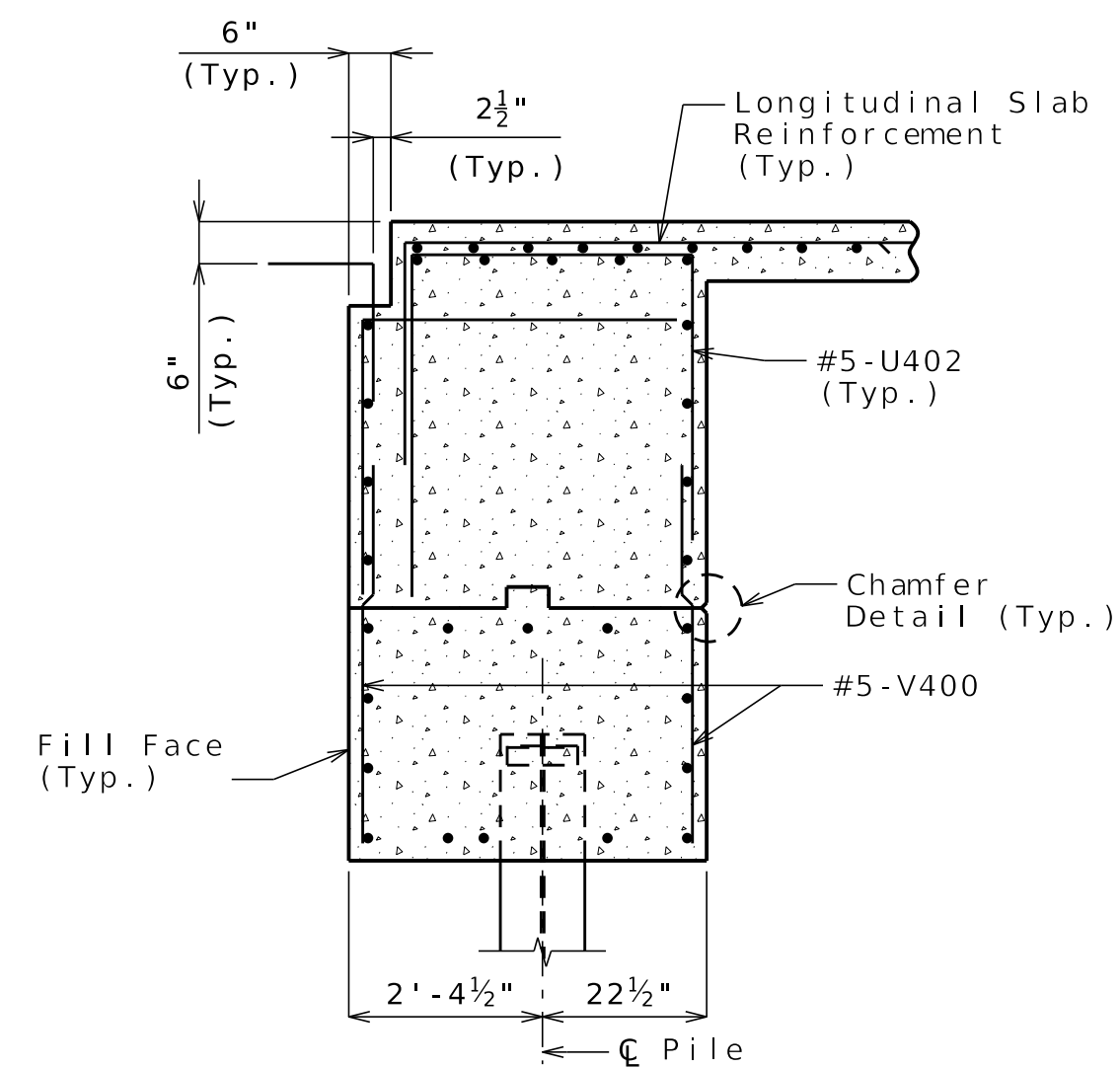
ELEVATION E-E



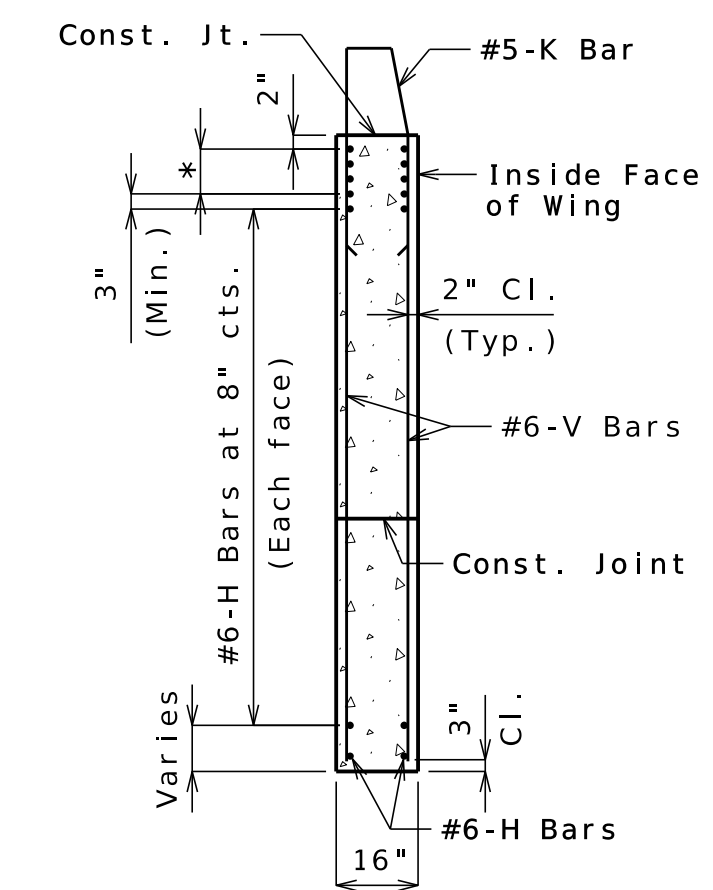
SECTION A-A



SECTION B-B



SECTION C-C



TYPICAL SECTION
THRU WING

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

General Notes:

Work this sheet with Sheets No. 15 & 16.

For reinforcement of the barrier, see
Sheet No. 32 & 33.

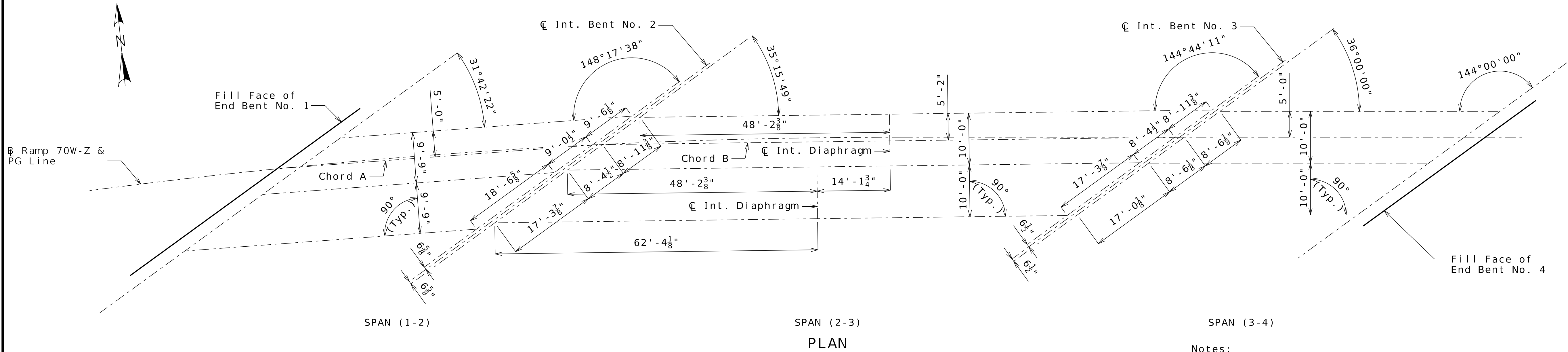
DETAILS OF END BENT NO. 4

Detailed Oct. 2025
Checked Oct. 2025

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

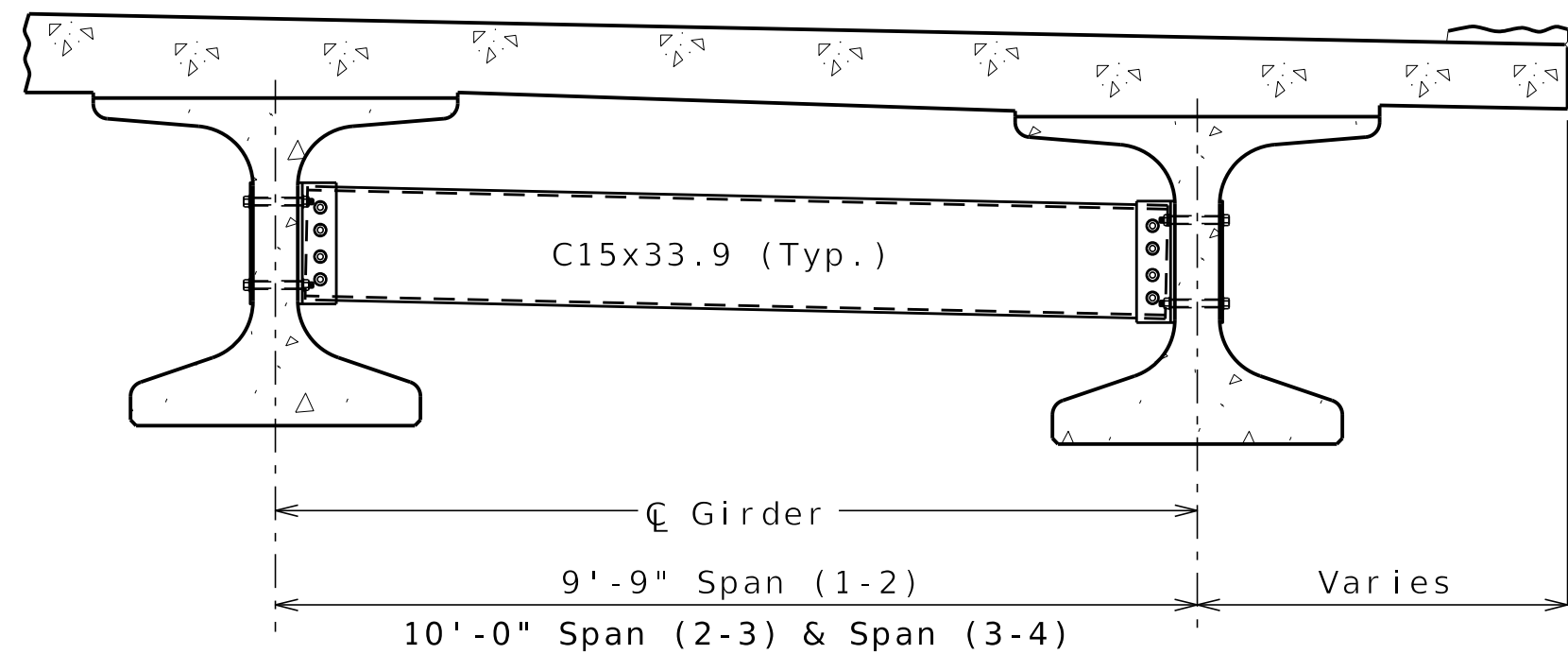
Sheet 17 of 45

B A9678 017 JST0020 End-Bent-4 3.dgn 4:47:32 PM 12/19/2025

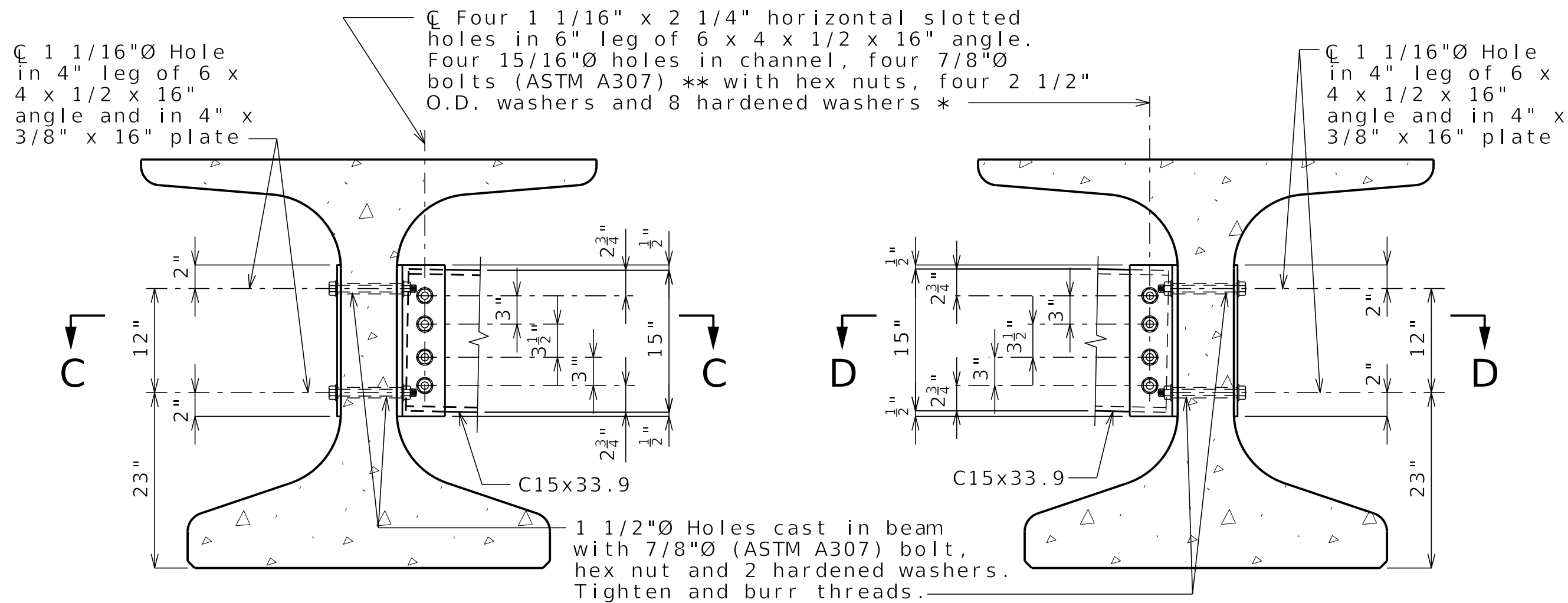


PLAN

Notes:
All bents are parallel.
All dimensions are horizontal.
Girders within a span are parallel to chords.
* Dimensions along centerline of bearings are to Chords A and B.

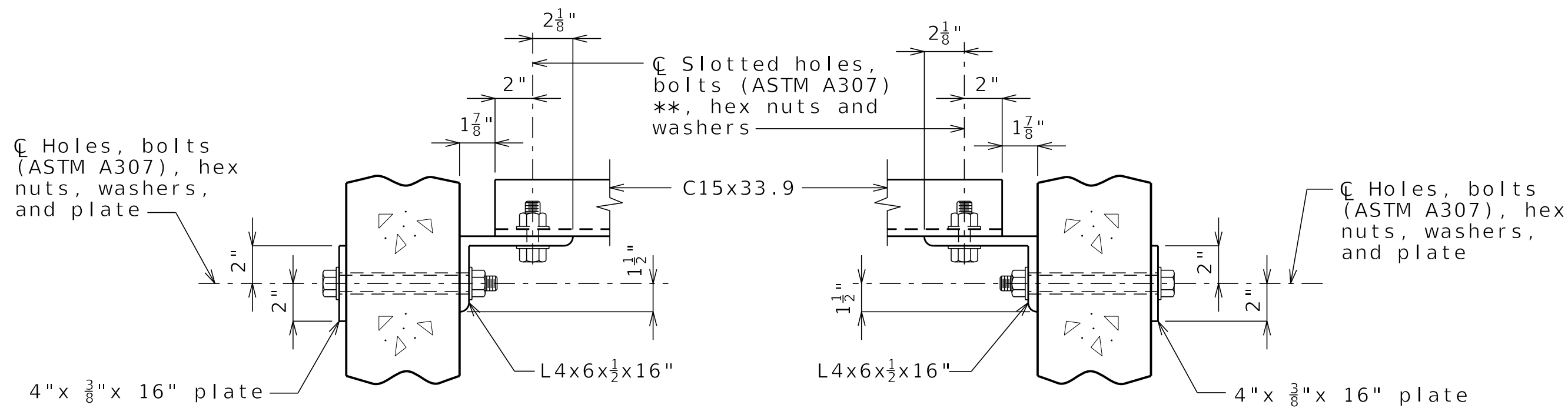


PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS



SECTION THRU INT. GIRDER AT DIAPHRAGM

SECTION THRU EXT. GIRDER AT DIAPHRAGM



SECTION C-C

SECTION D-D

STEEL DIAPHRAGM NOTES:

- * In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.
- ** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.
- All diaphragm materials including bolts, nuts, and washers shall be galvanized.
- Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.
- Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.
- Shop drawings will not be required for steel intermediate diaphragms and angle connections.

GIRDER LAYOUT

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.
DATE PREPARED
12/19/2025
ROUTE
1-70
STATE
MO
DISTRICT
BR
SHEET NO.
A9678-18
COUNTY
ST. CHARLES
JOB NO.
JST0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A9678

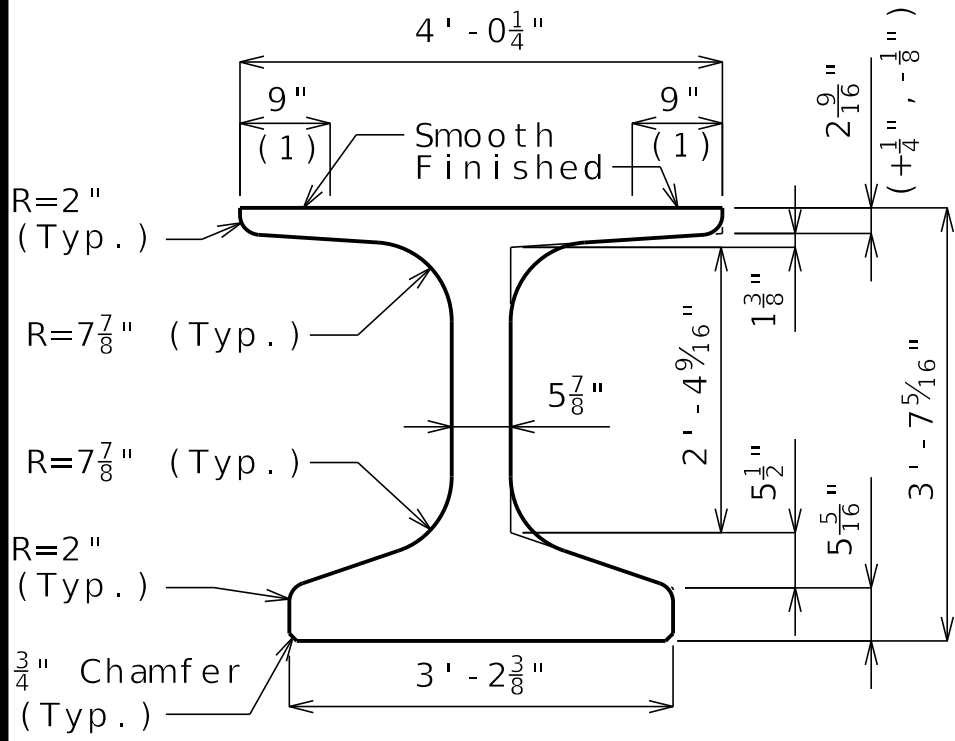
DESCRIPTION
DATE

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

IMPROVE 70 ALLIANCE

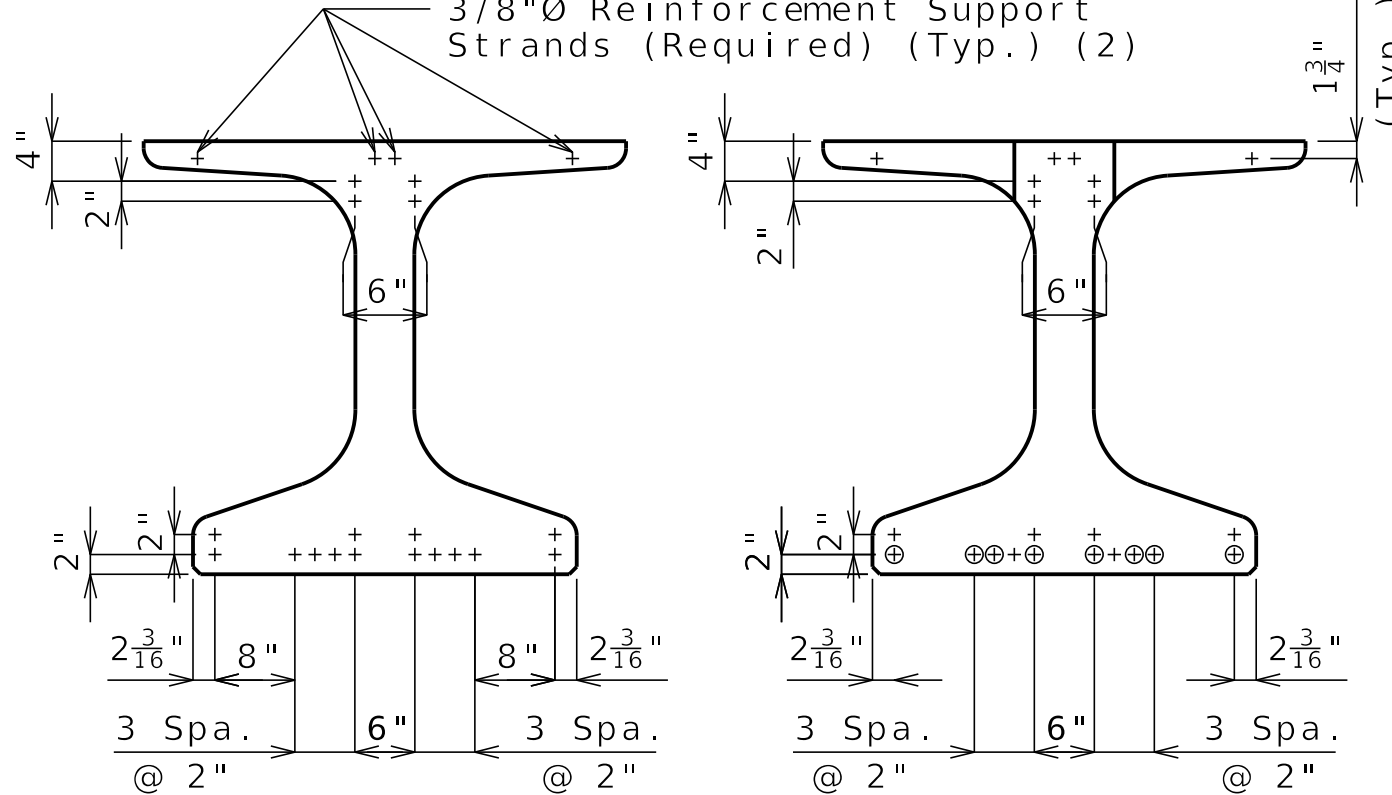
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270
HNTB
1923 Barrett Parkway Dr
Suite 200
St. Louis, MO 63105
Phone 314-394-3100
Fax 314-394-3101
Missouri Certificate of Authority 001578
EFK Moen
Civil Engineering Design
Missouri Certificate of Authority 001578

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



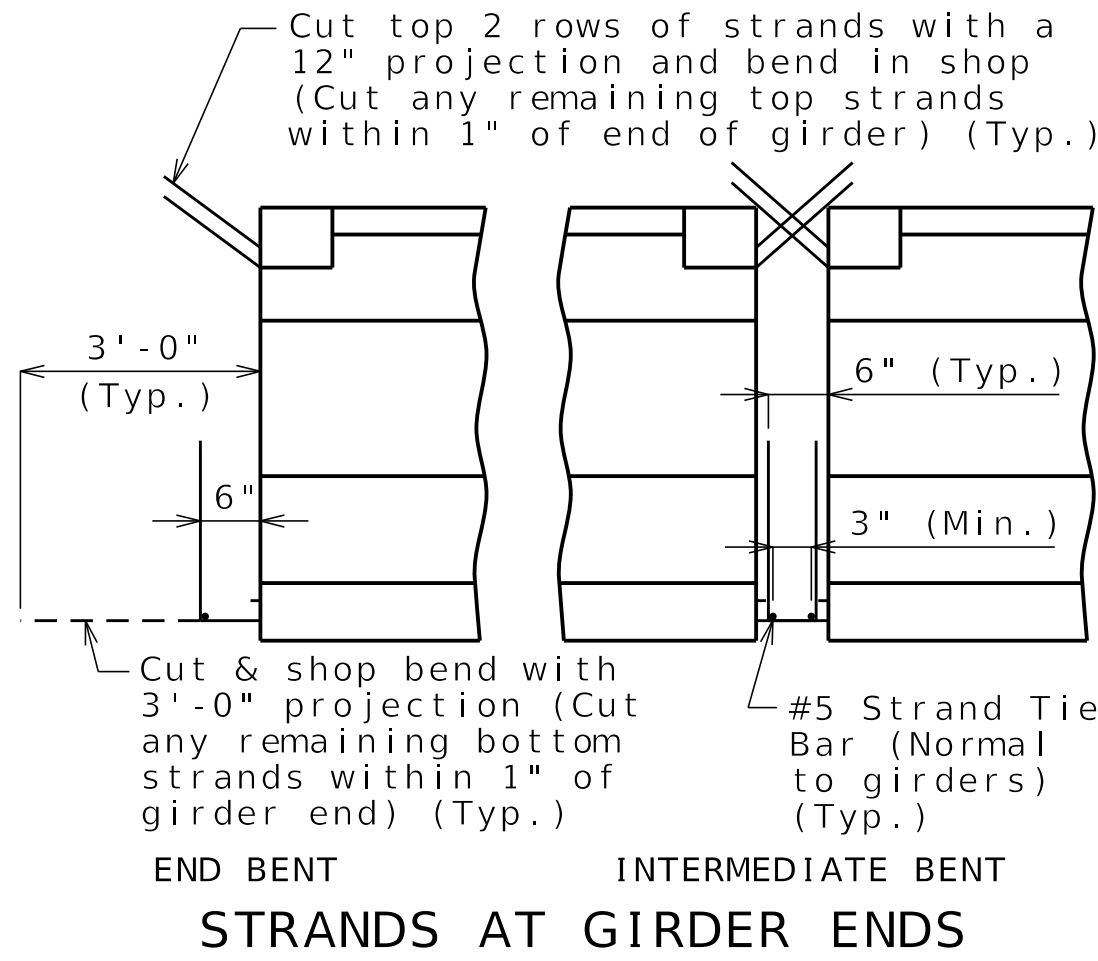
DIMENSIONS

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

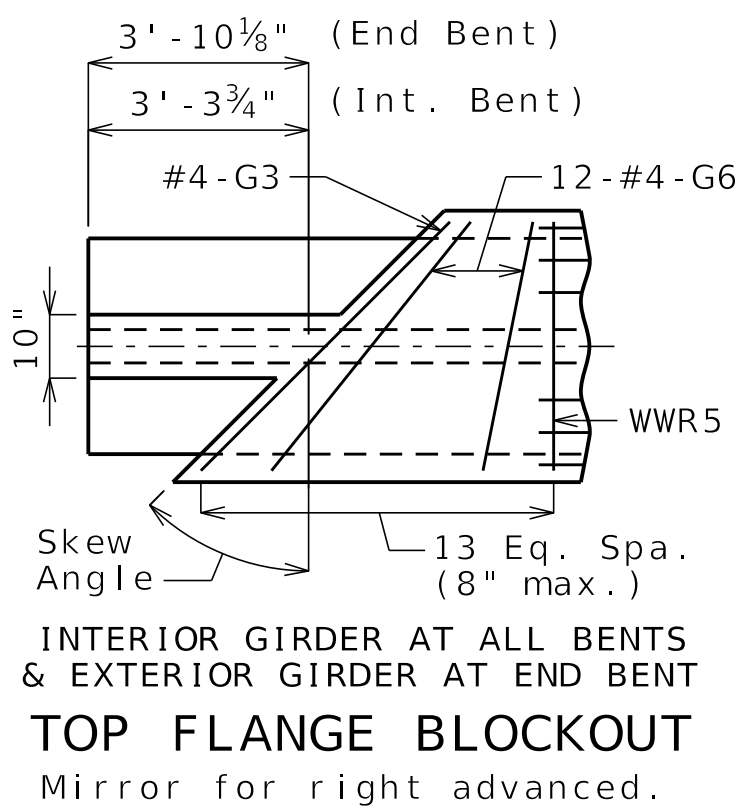
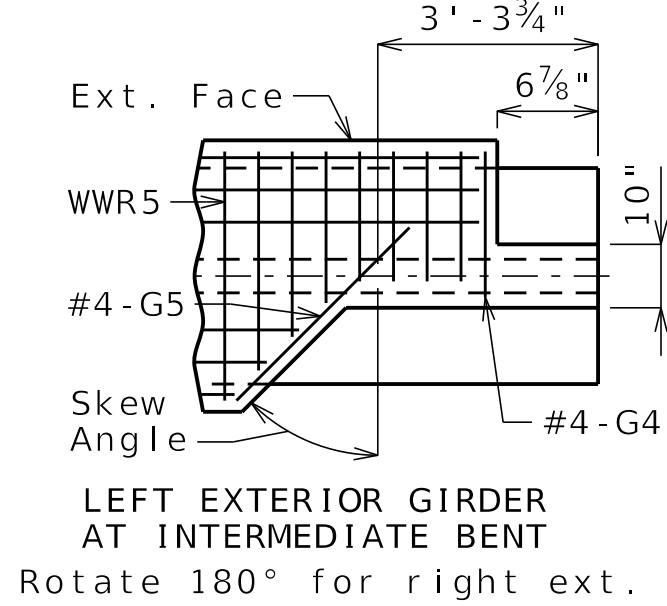
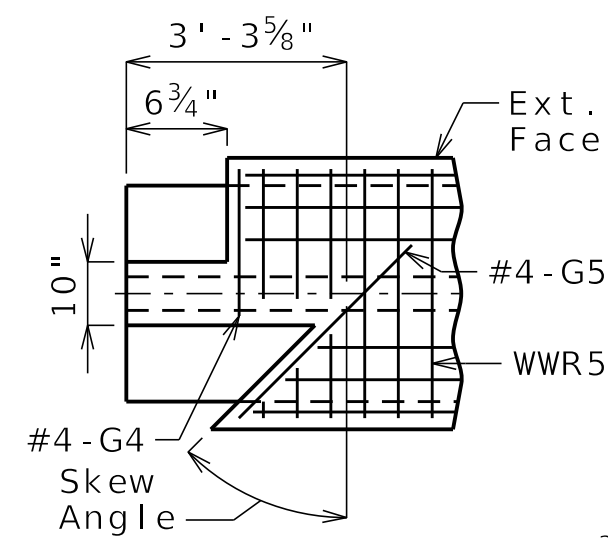


STRAND ARRANGEMENT

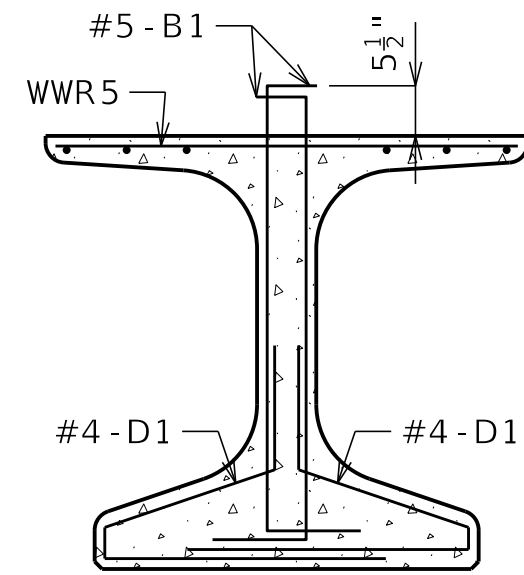
+ Indicates prestressing strand. o Indicates cut & shop bend with 3'-0" projection.



STRANDS AT GIRDER ENDS

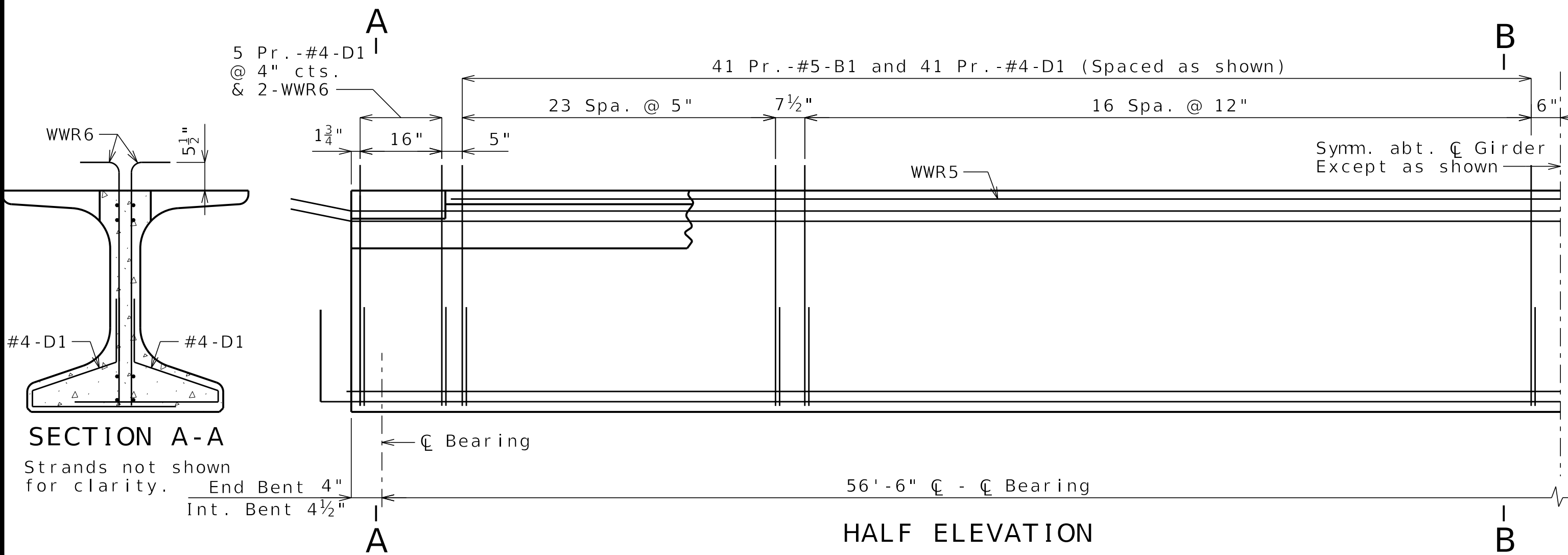


TOP FLANGE BLOCKOUT



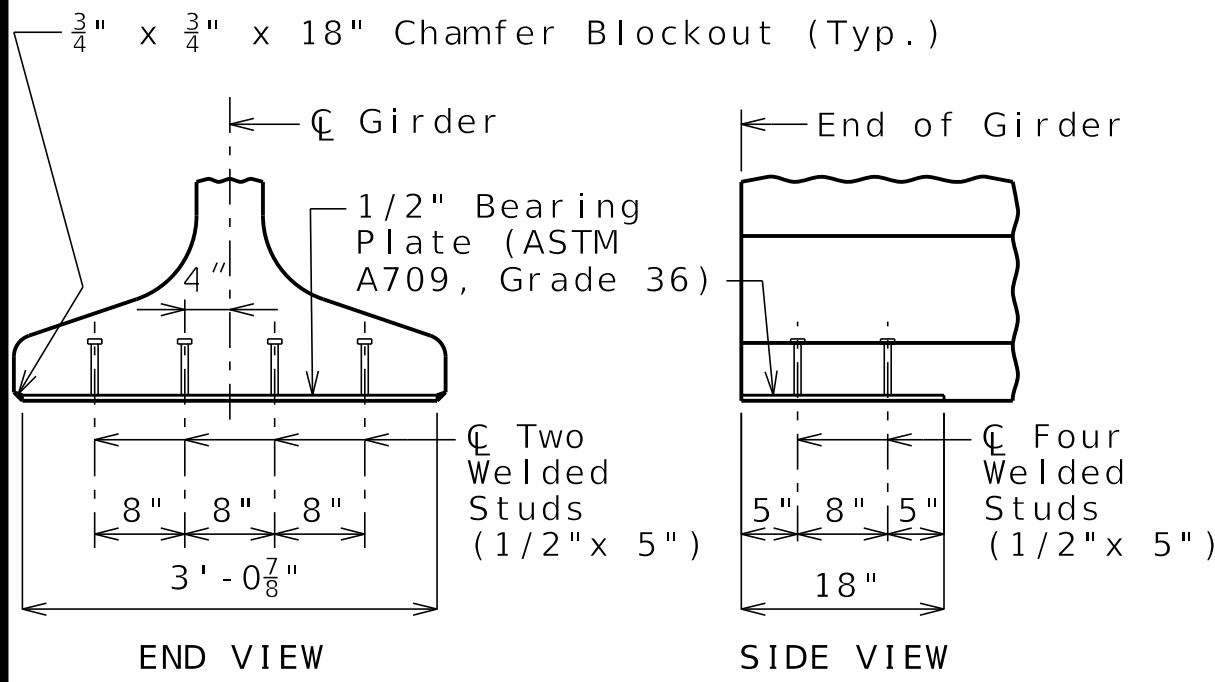
SECTION B-B

Strands not shown for clarity.

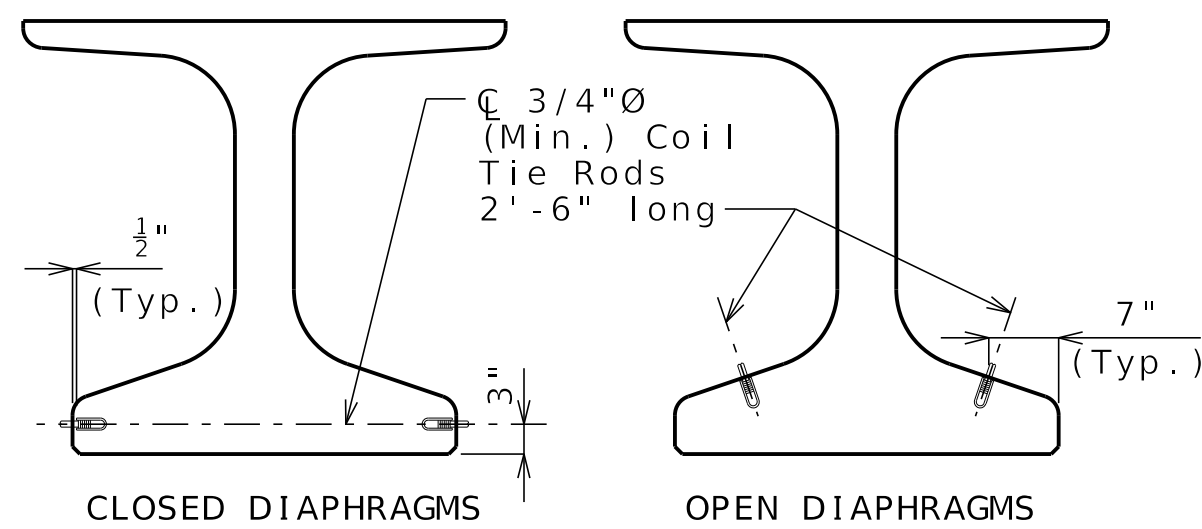


HALF ELEVATION

Reinforcement support strands not shown for clarity.



BEARING PLATE

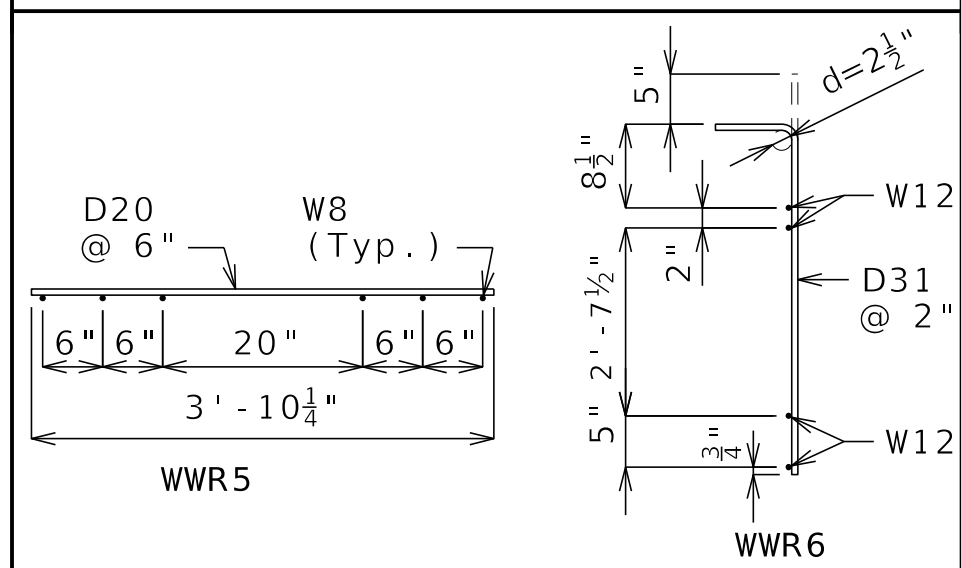


COIL TIES

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

Bill of Reinforcing Steel - Each Girder					Bending Diagrams	
No.	Size/Mark	Length	Shape			
164	5 B1	5'-0"	11S		Shape 20	
184	4 D1	4'-0"	9S		Shape 95	
2	4 G3	7'-1 3/8"	20			
2	4 G4	2'-3"	20			
2	4 G5	4'-11 1/4"	20			
24	4 G6	Varies	20			

Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

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

General Notes:

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

Use 18 strands, 0.6"Ø Grade 270, with an initial prestress force of 791 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

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

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. 25.

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. 6, 16, 22 & 23.



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DATE PREPARED
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ROUTE
1-70

STATE
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SHEET NO.
A9678-19

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

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IMPROVE 70 ALLIANCE

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715 KIRK DRIVE

KANSAS CITY, MO 64105-1310

CERTIFICATE OF AUTHORITY

NO. 001270

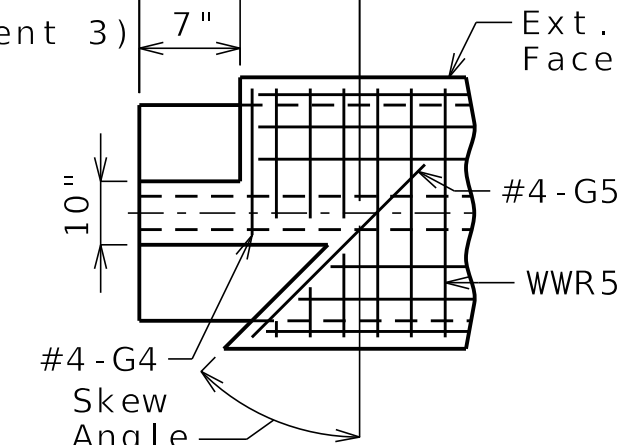
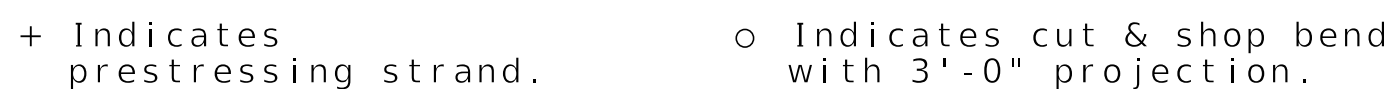
Phone 314-334-3100

314-334-3100

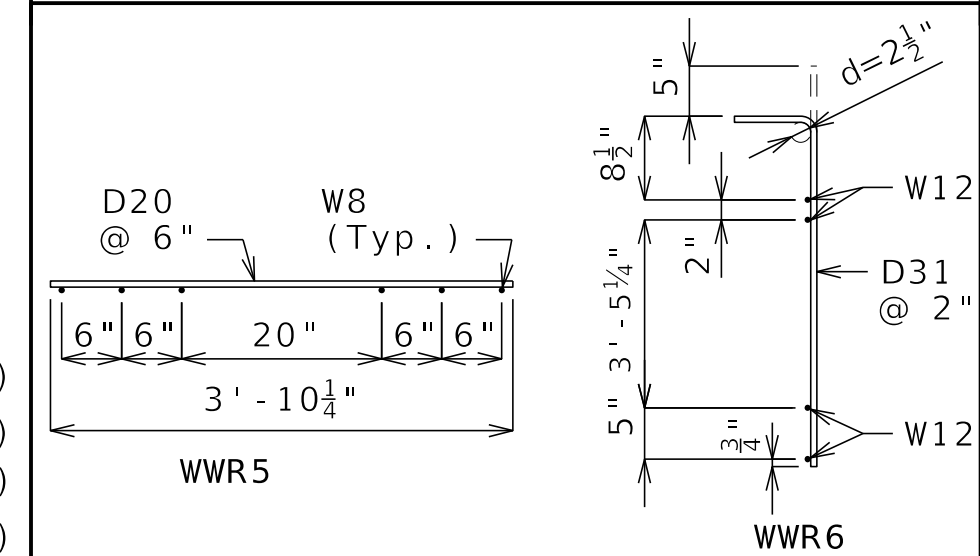
Missouri Certificate of Authority 001578

REV.

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



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders.

G3 and G6 not required for exterior girders of intermediate spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with $f'_c = 8000$ psi and $f'_{ci} = 6500$ psi.

Use 36 strands, 0.6"Ø Grade 270, with an initial prestress force of 1582 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

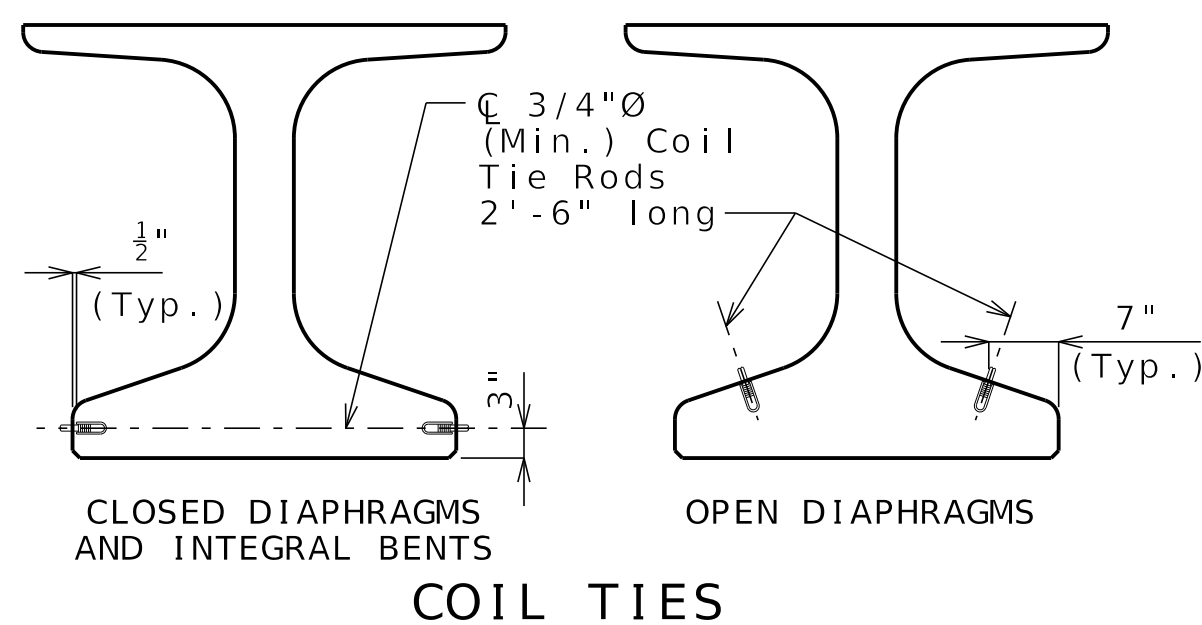
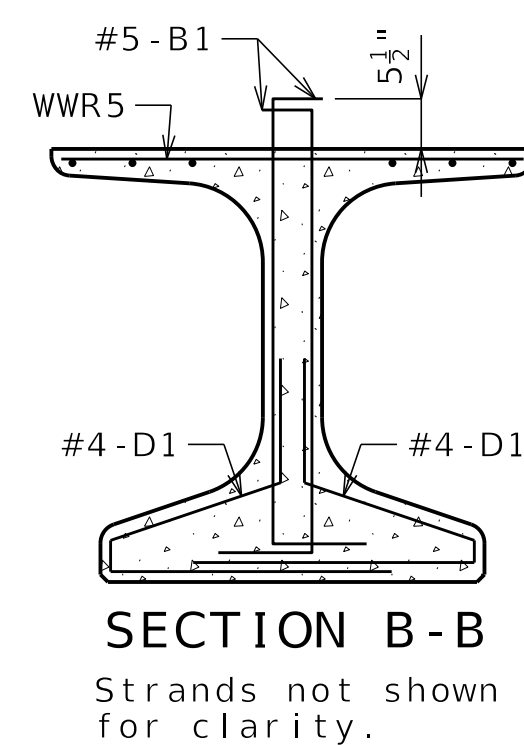
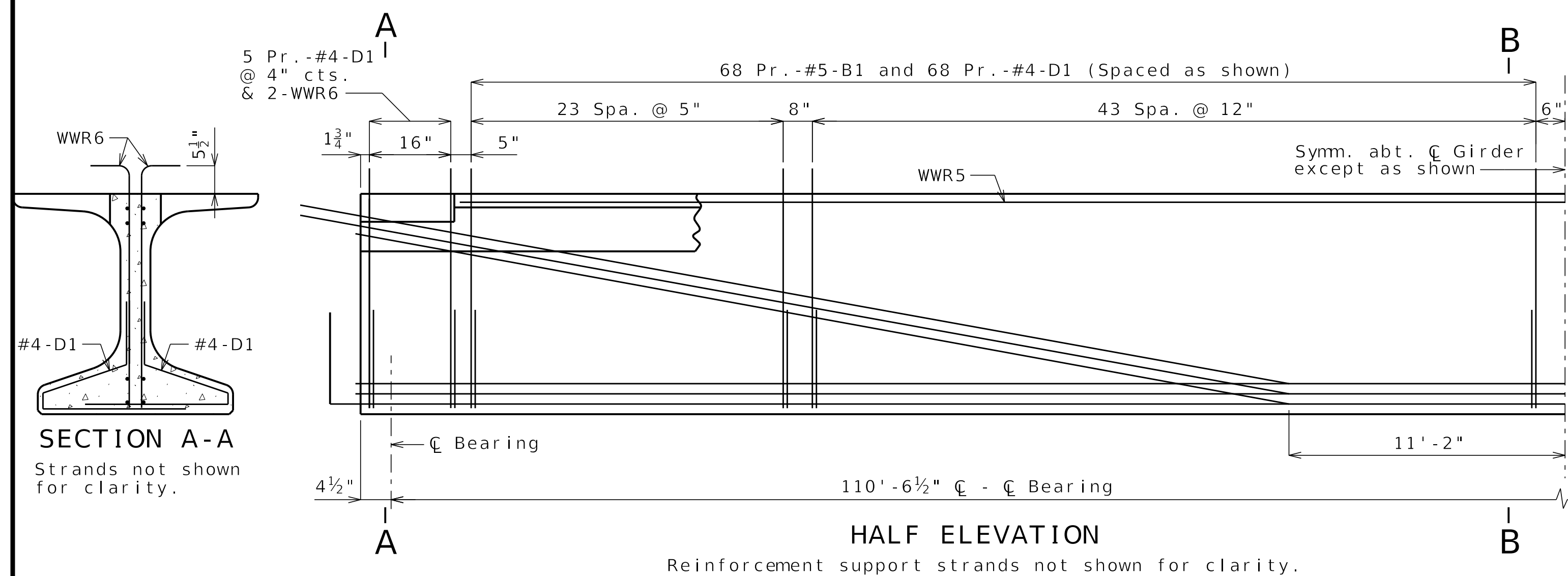
Exterior and interior girders are the same except: coil ties, top flange blackout, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

For Girder Camber Diagram, see Sheet
No. 25.

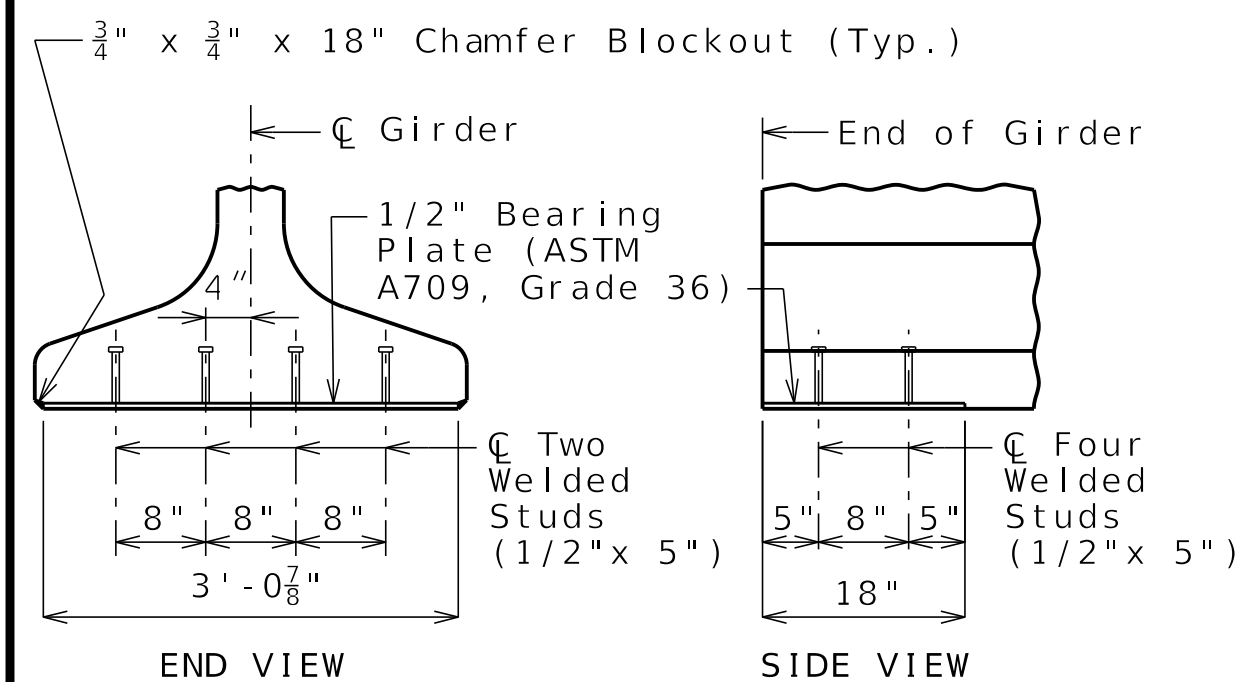
The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 18.

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

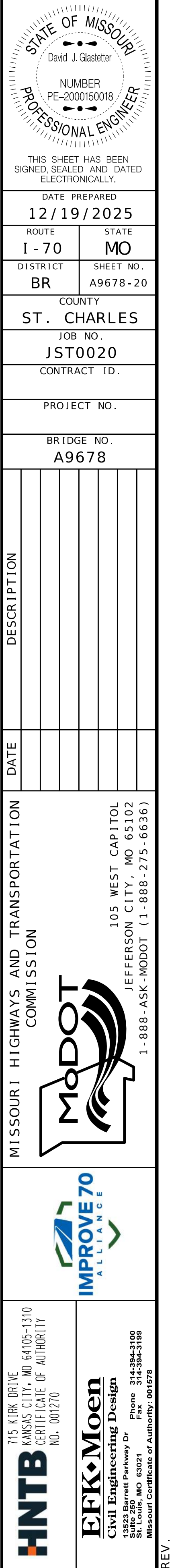
For location of coil ties at integral bents, see Sheets No. 22 & 23.

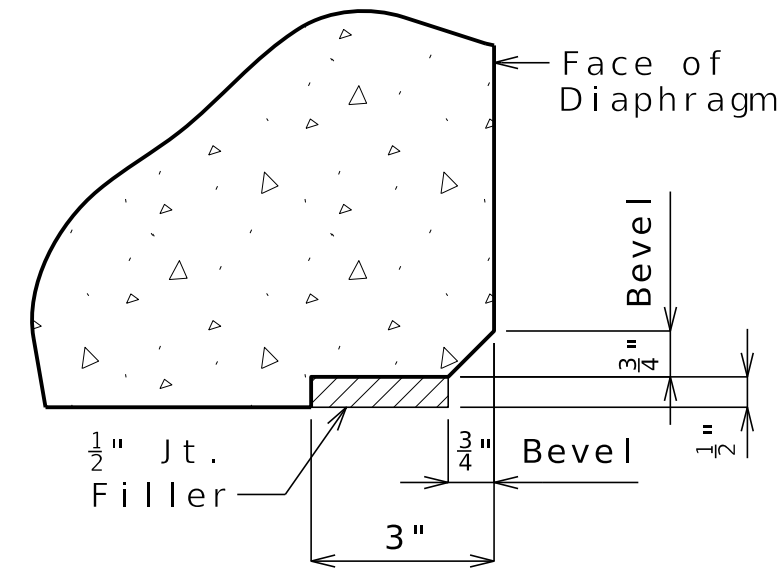


Exclude coil tie at exterior face of exterior girders except at integral end bents.

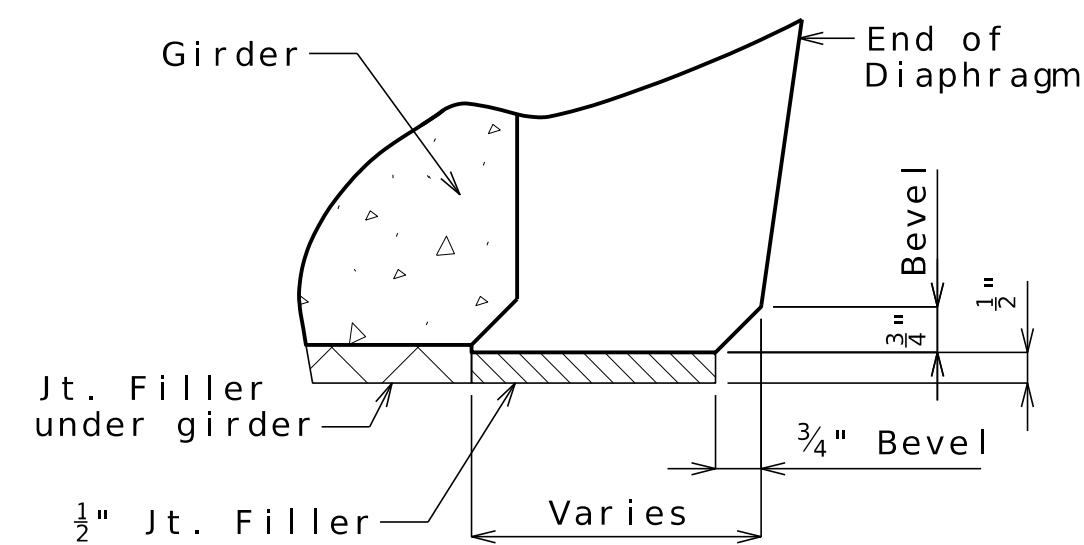


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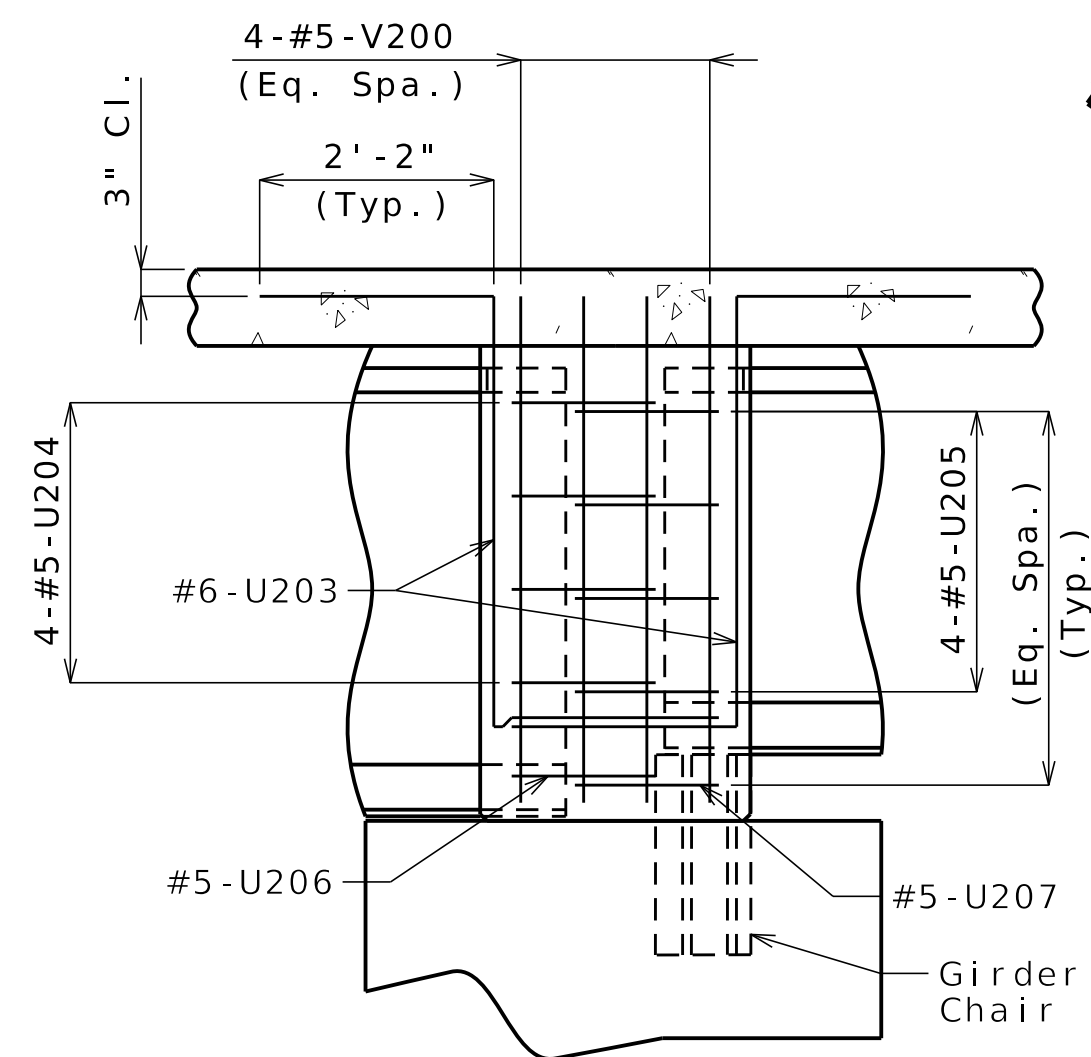




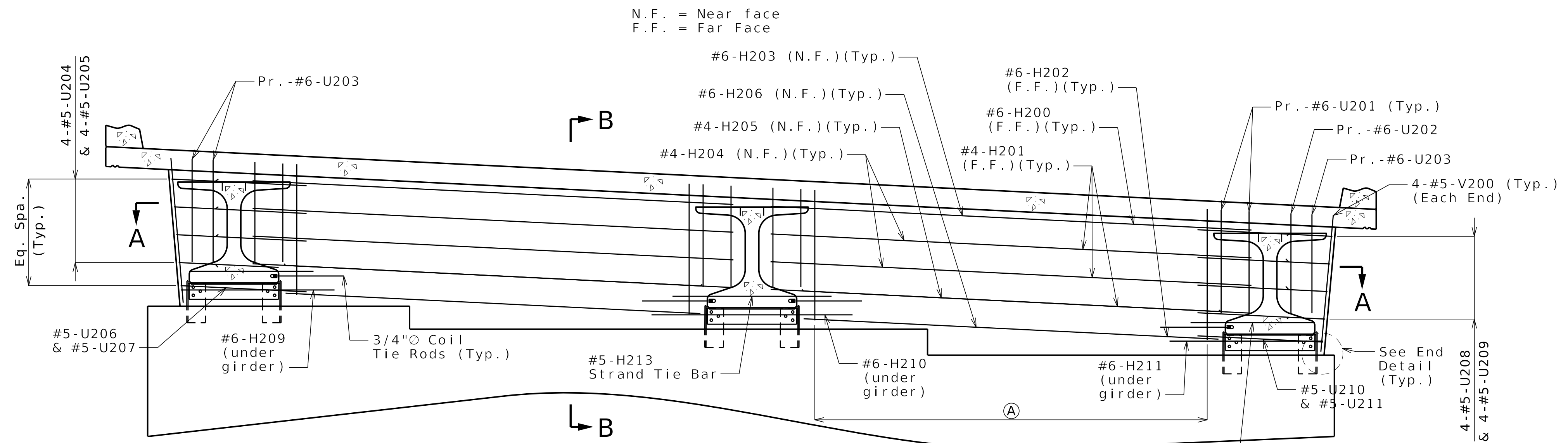
EDGE DETAIL



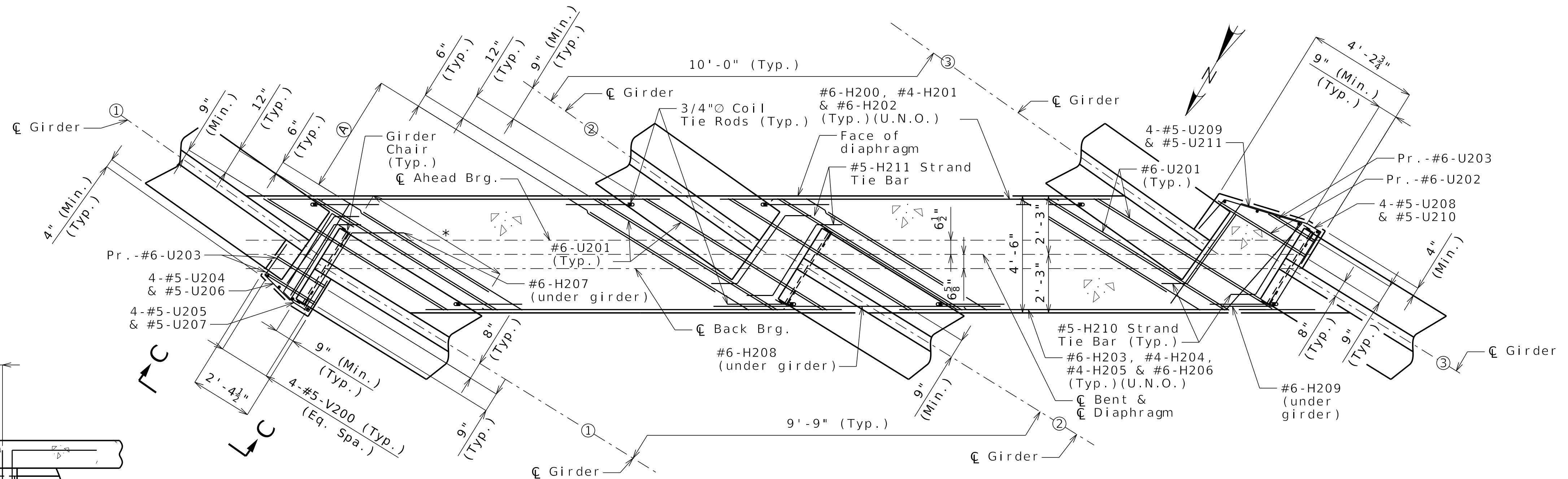
END DETAIL



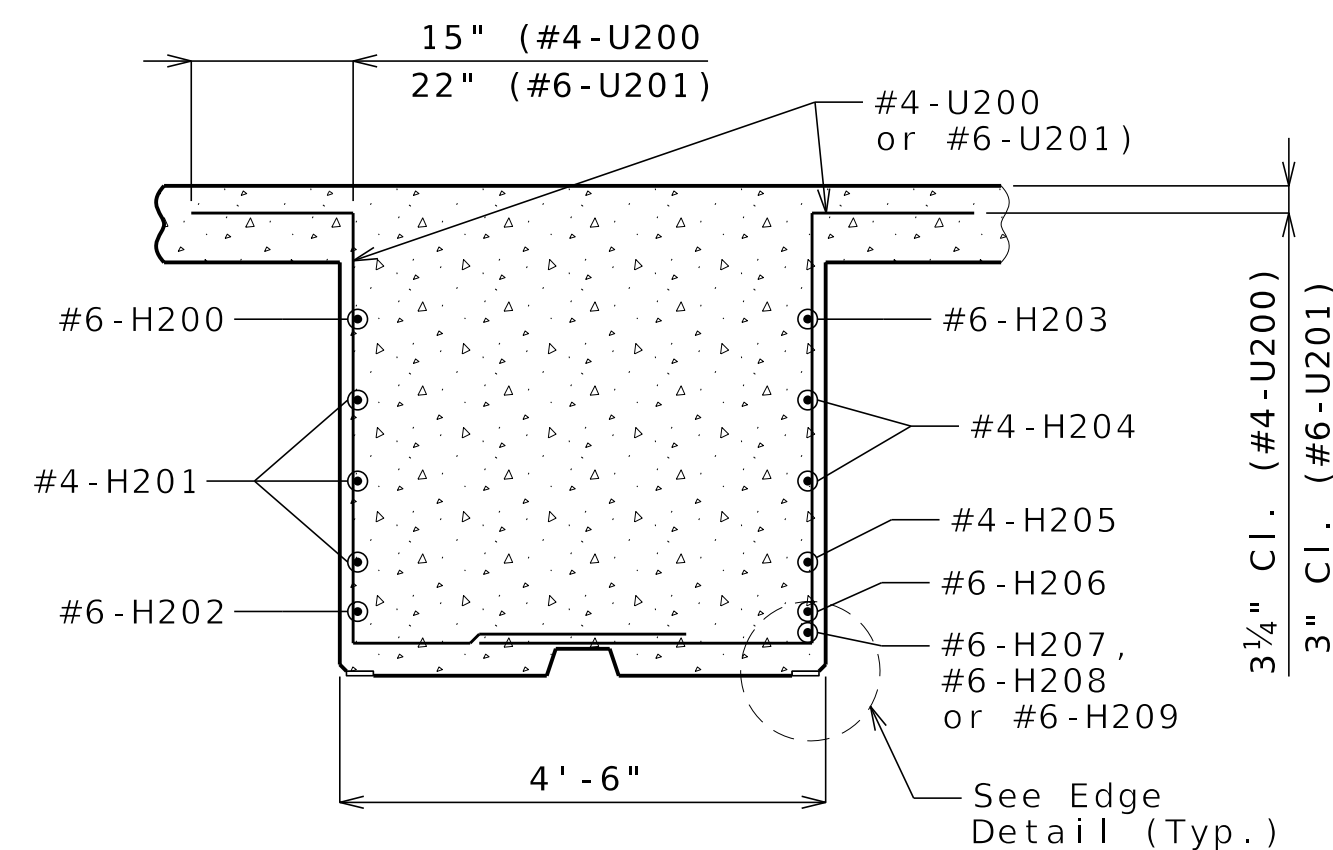
ELEVATION C-C



SECTION NEAR INTERMEDIATE BENT NO. 2
(Looking Ahead Station)



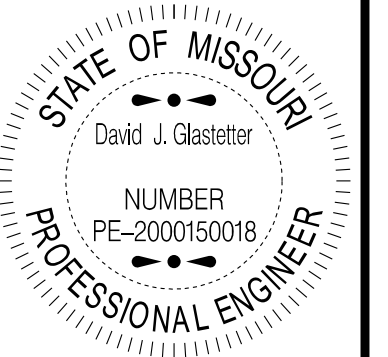
SECTION A-A



SECTION B - B

Ⓐ 6 Pr.-#4-U200 @ abt. 12" cts. (Typ.)

* Minimum Lap Lengths
#4 Bar = 19"
#6 Bar = Full Width of Diaph.



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12/19/2025

ROUTE	STATE
I 70	MO

1 - 70	MO
DISTRICT	SHEET NO.

DISTRICT	SHEET NO.
BR	A9678-22

COUNTY

ST. CHARLES

JOB NO.
1570000

JST0020
CONTRACT ID

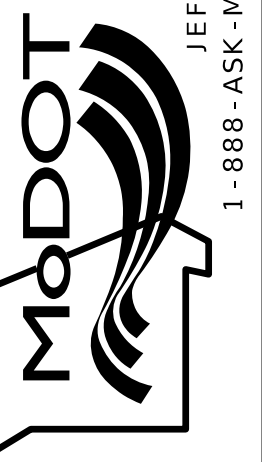
CONTRACT ID.

PROJECT NO.

1000

BRIDGE NO.

A9678

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

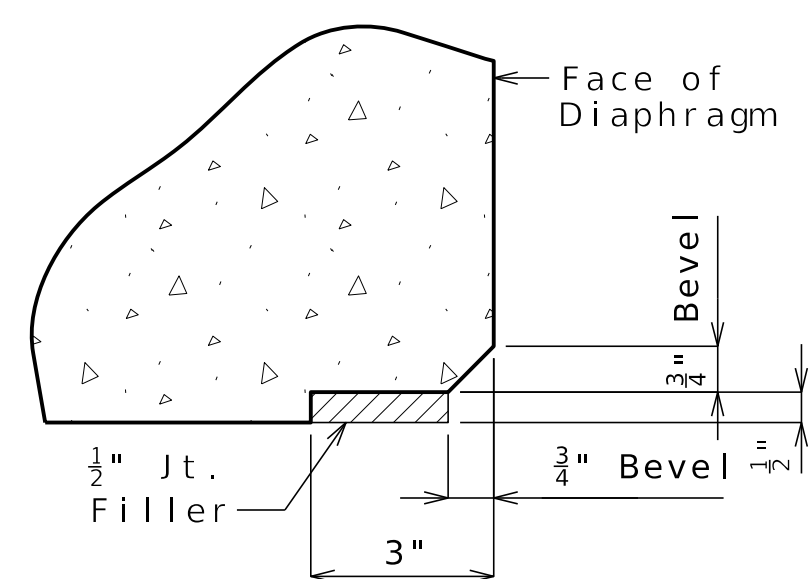


715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

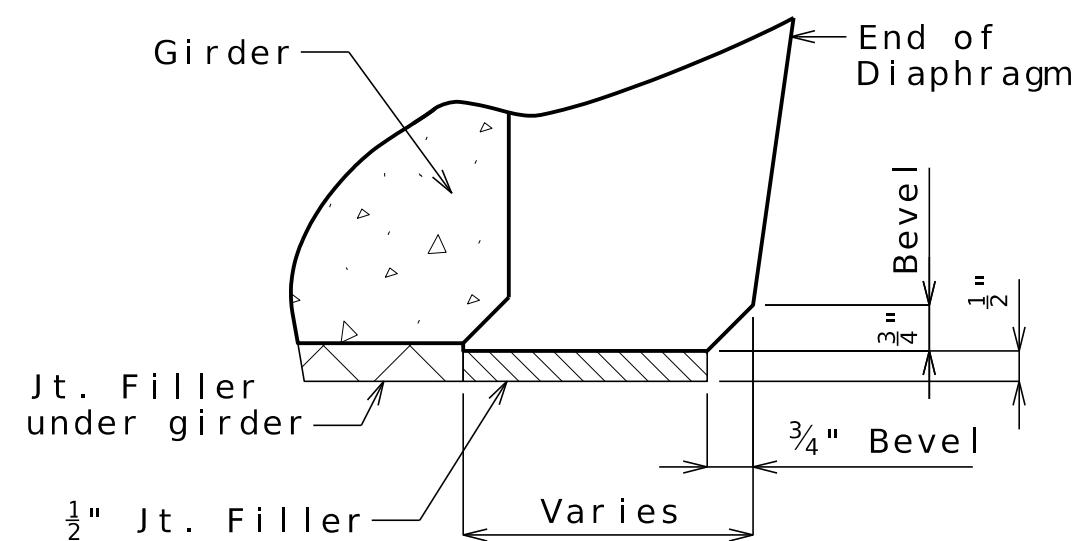


EPA • MOEN
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314
Fax 314

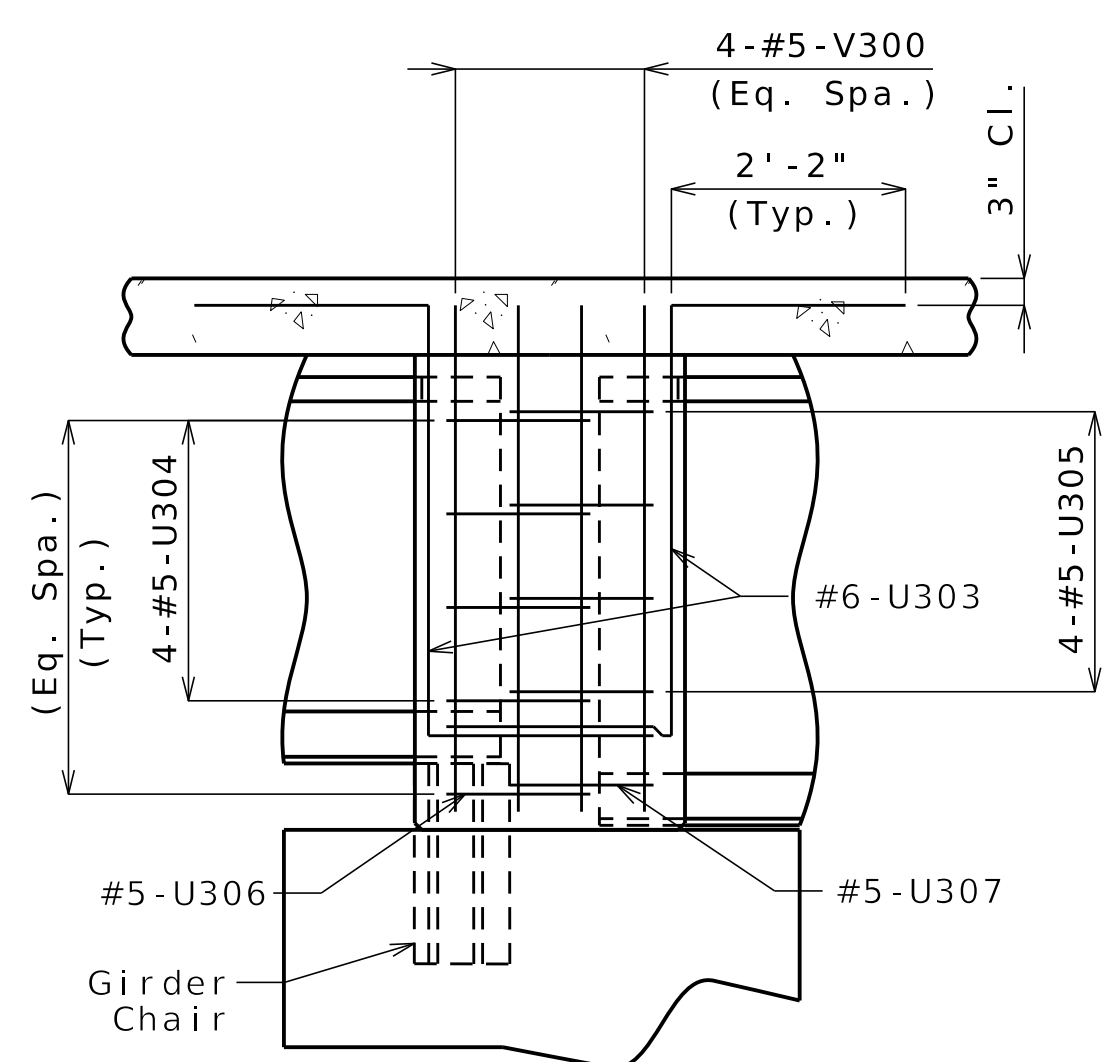
Missouri Certificate of Authority: 001578



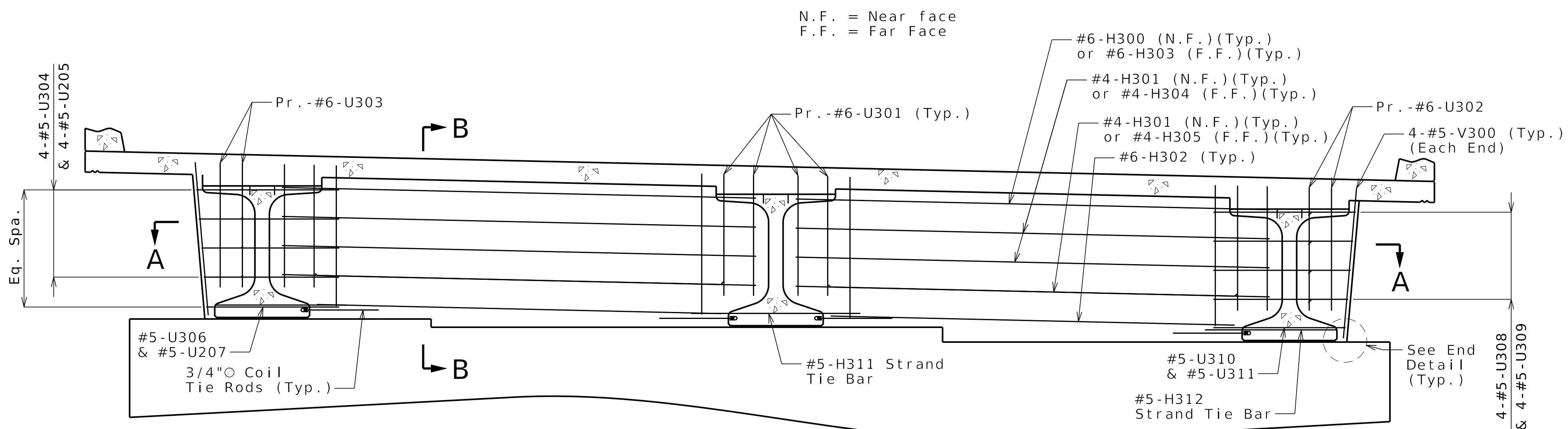
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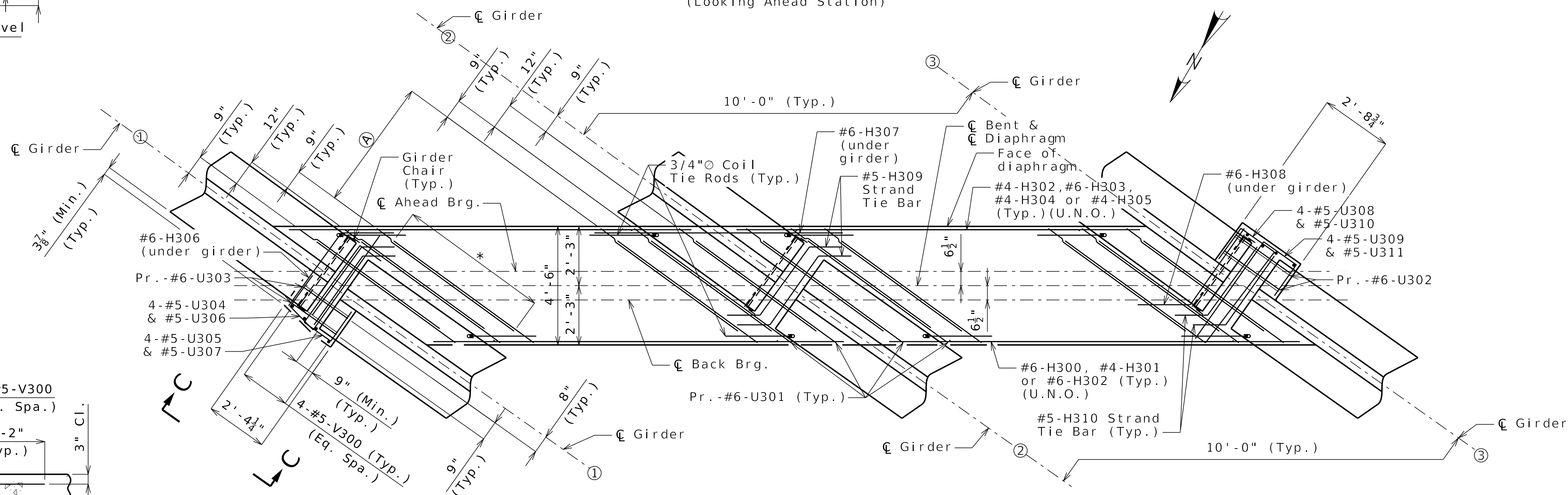
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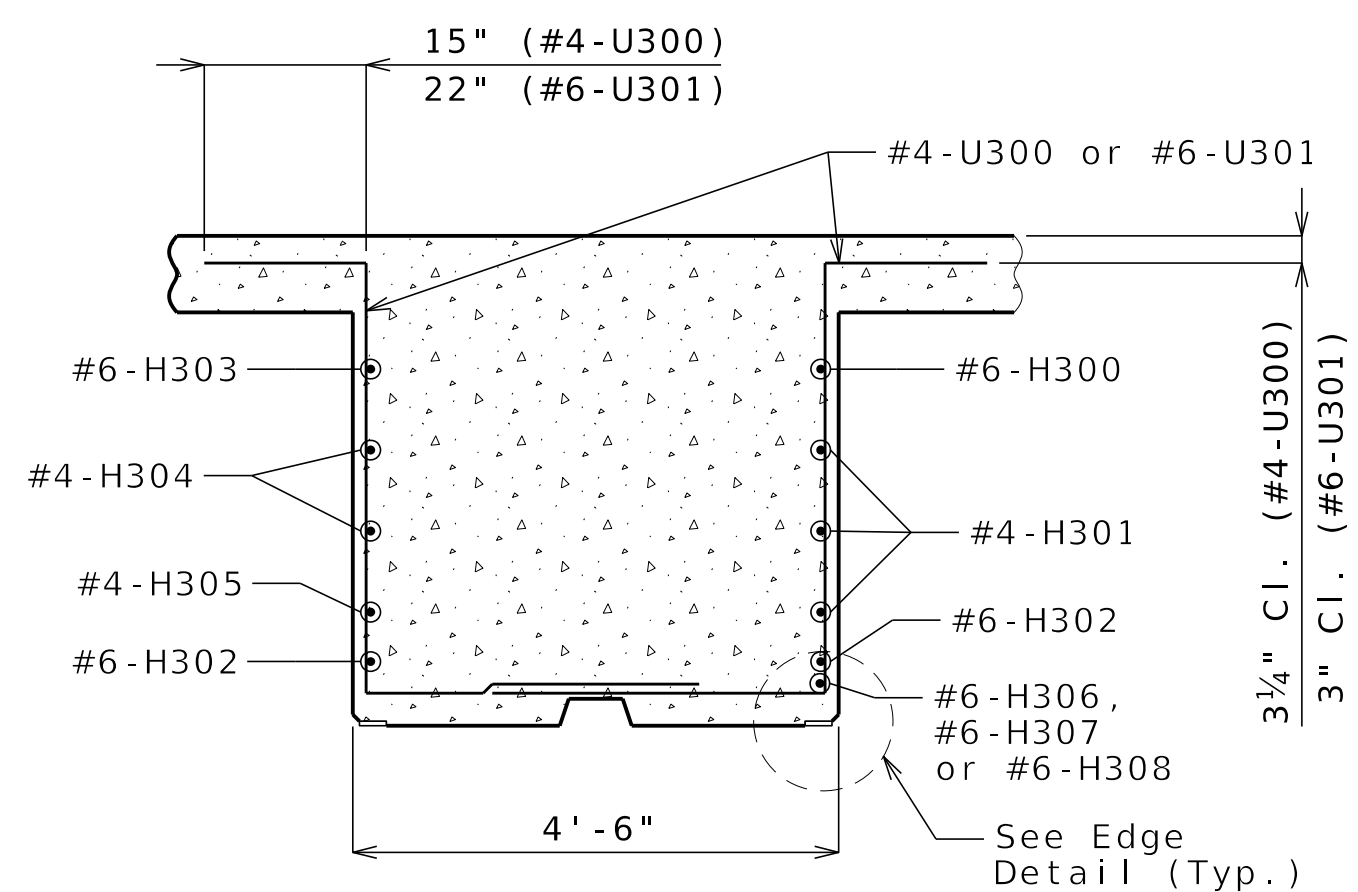
ELEVATION C-C



SECTION NEAR INTERMEDIATE BENT NO. 3
(Looking Ahead Station)



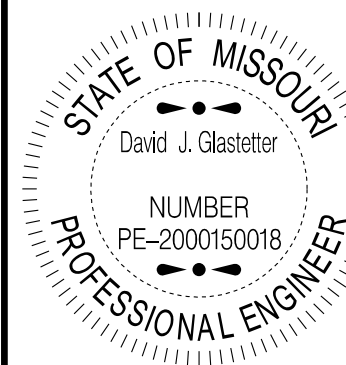
SECTION A-A



SECTION B - B

① 6 Pr. -#4-U300 @ abt. 12" cts. (Typ.)

* Minimum Lap Lengths
#4 Bar = 19"
#6 Bar = Full Width of Diaph.



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ROUTE	STATE
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I - 70	MO
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DISTRICT	SHEET NO
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BR	A9678-2
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COUNTY
CT CHARLESC

ST. CHARLES

JOB NO.
15T0030

J510020
CONTRACT ID

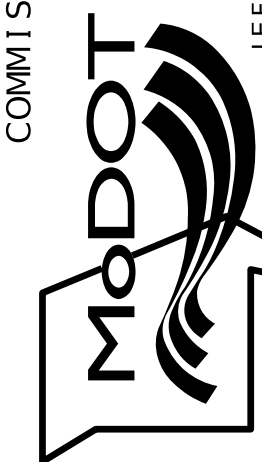
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PROJECT NO.

TABLE 1

BRIDGE NO.

A9678

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

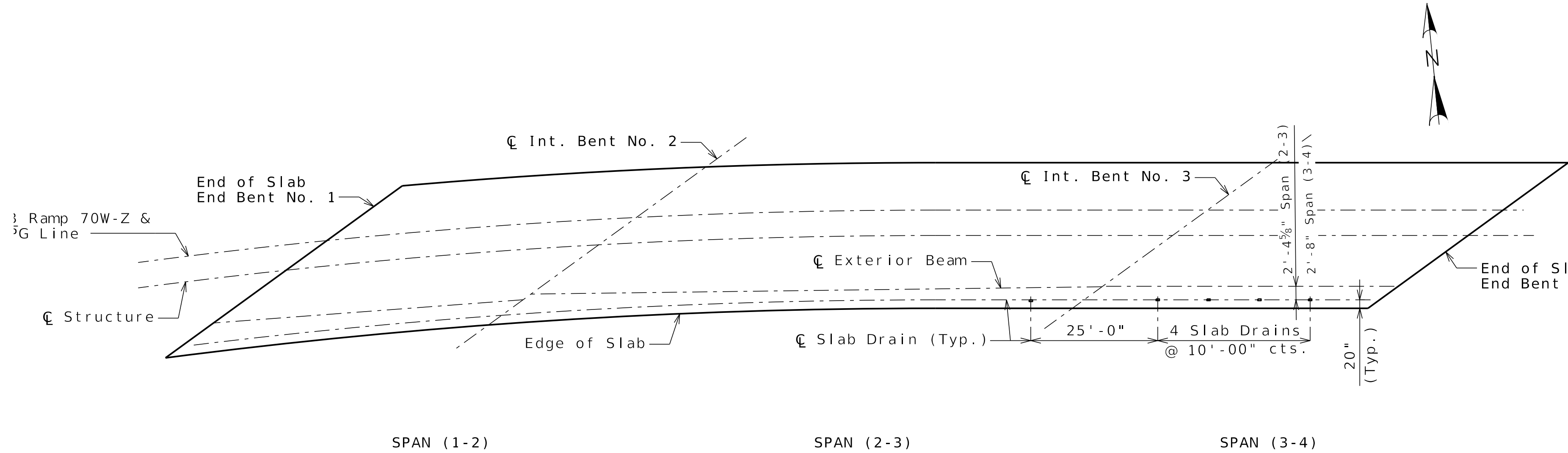
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



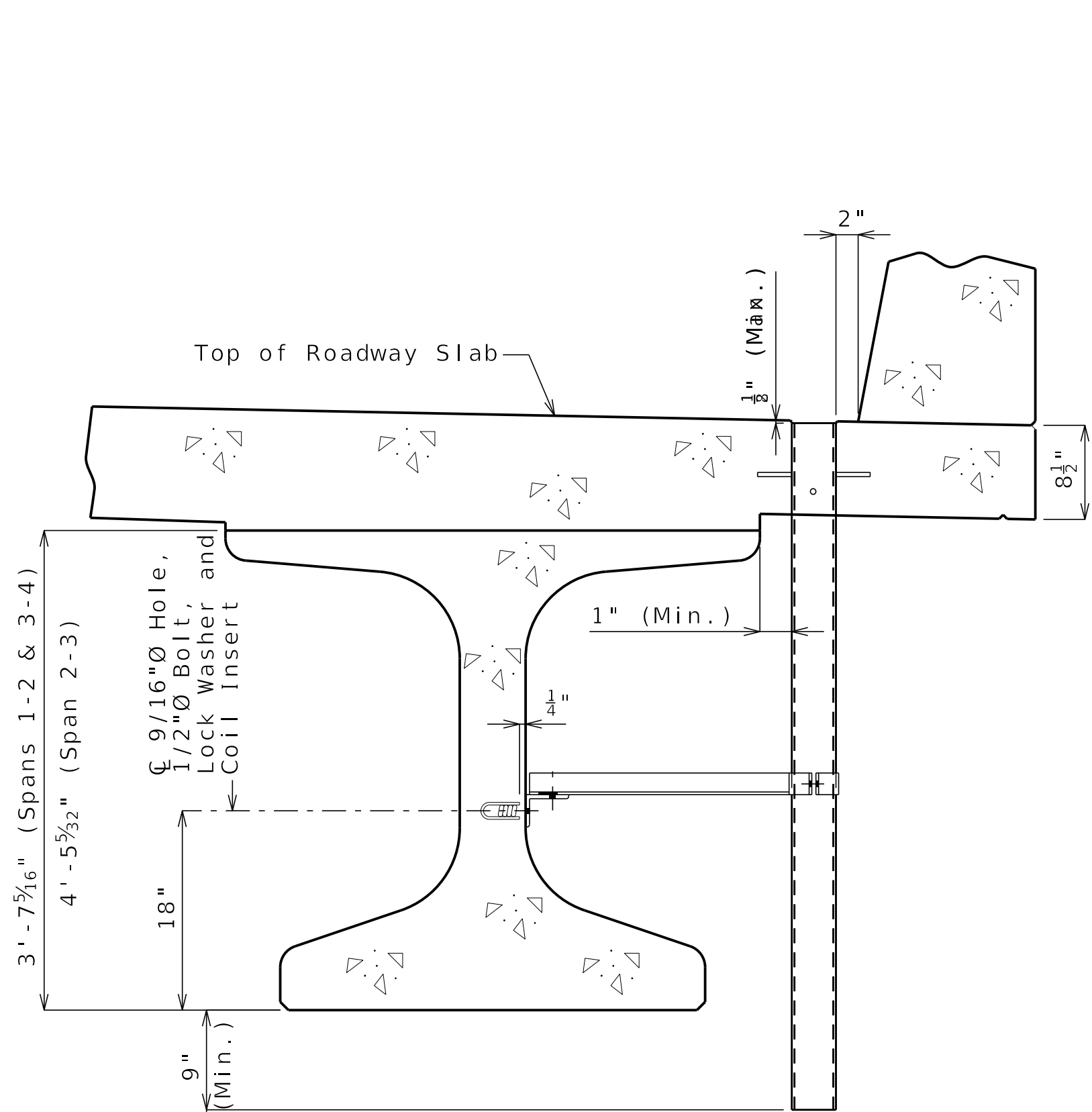
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

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Civil Engineering Design

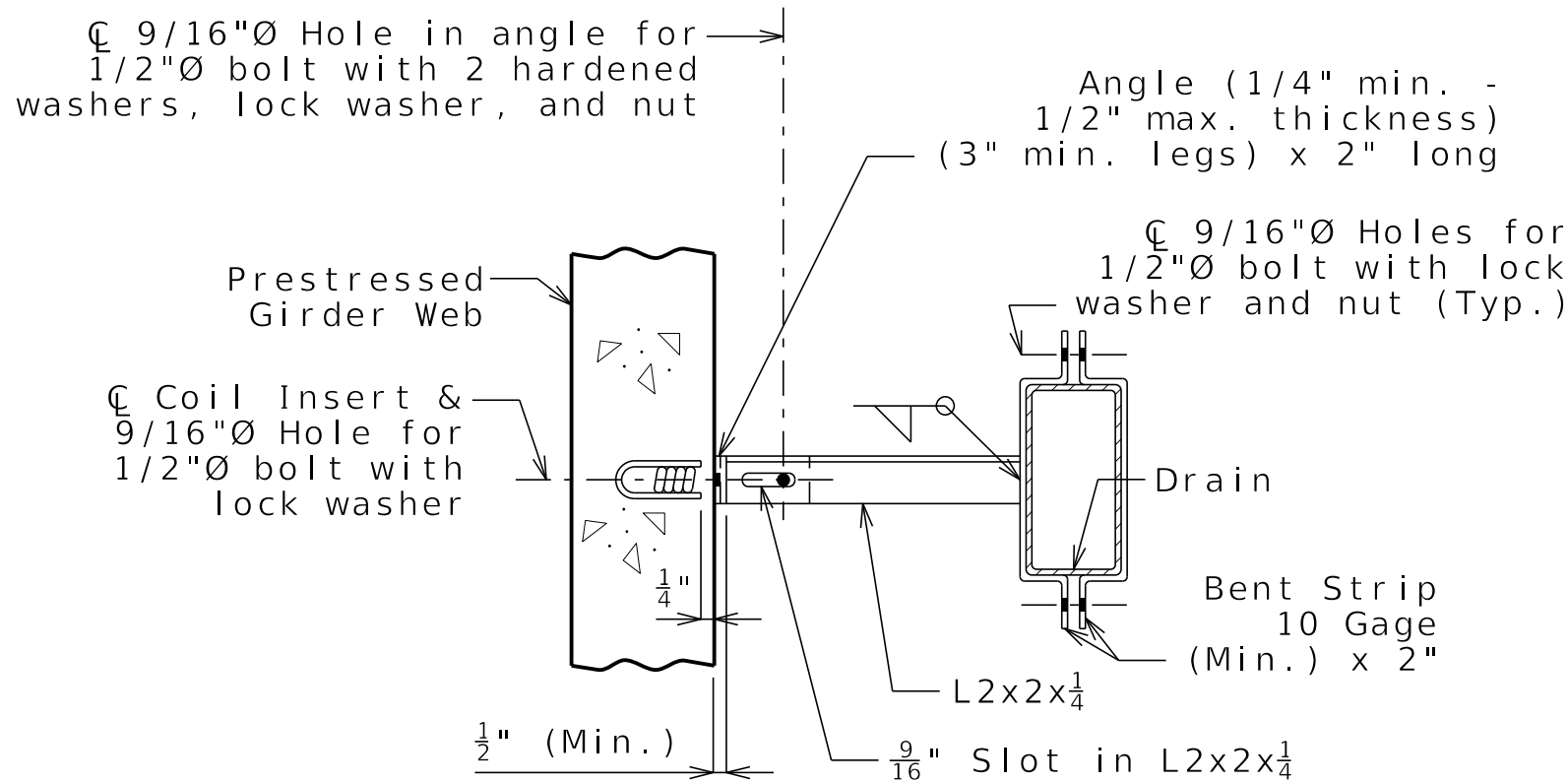
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199



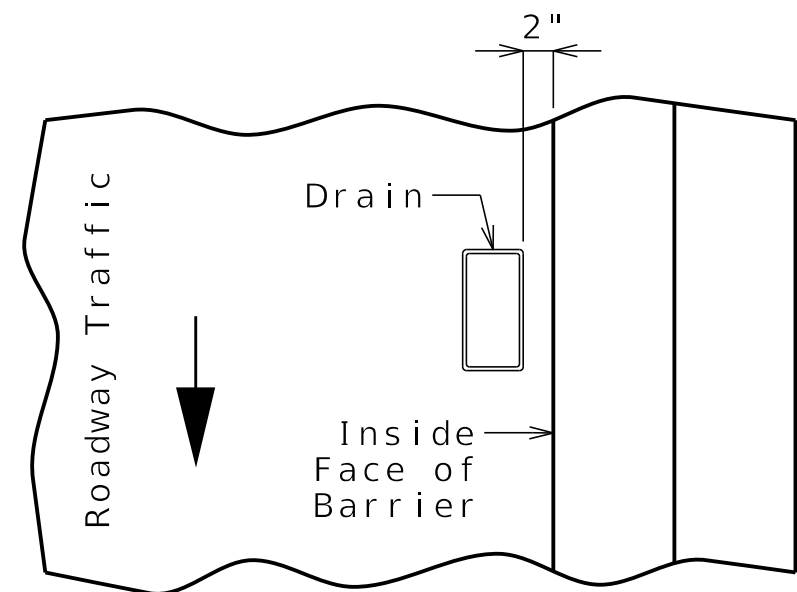
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



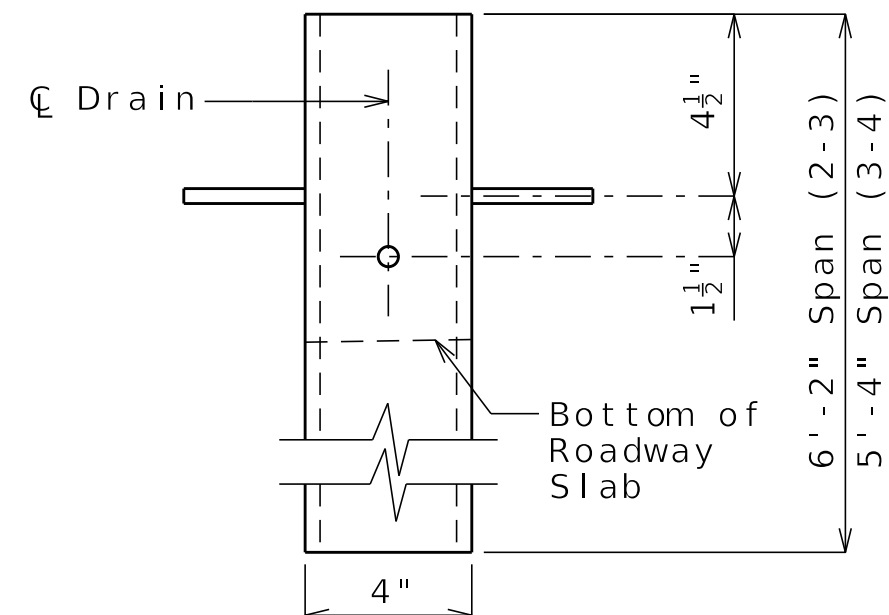
PART SECTION NEAR DRAIN



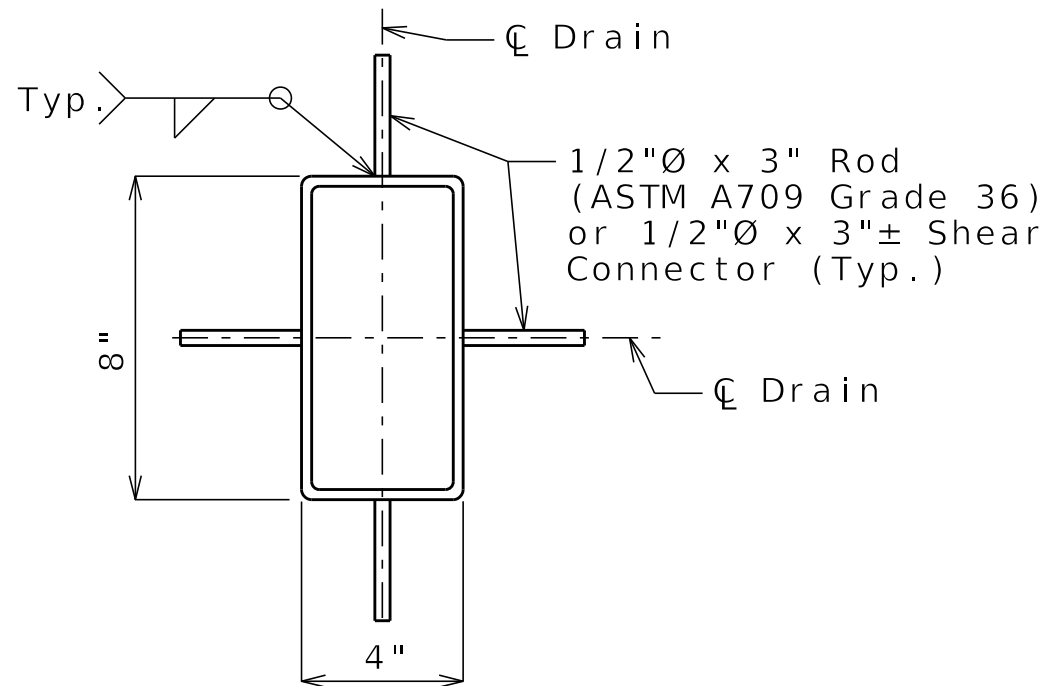
PART SECTION SHOWING BRACKET ASSEMBLY



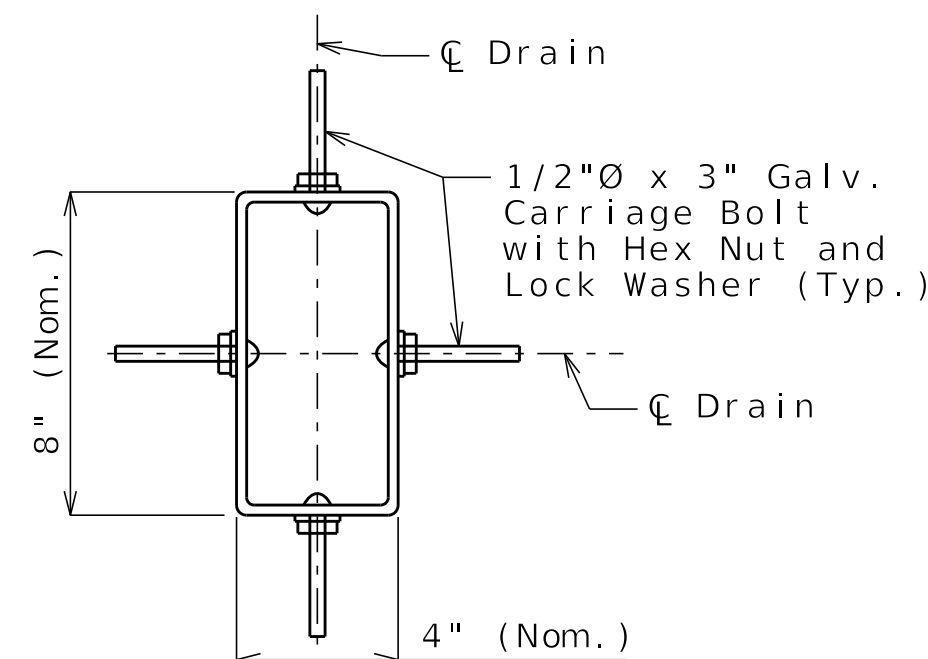
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

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.

SLAB DRAINS

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER

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12/19/2025

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SHEET NO.
A9678-24

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

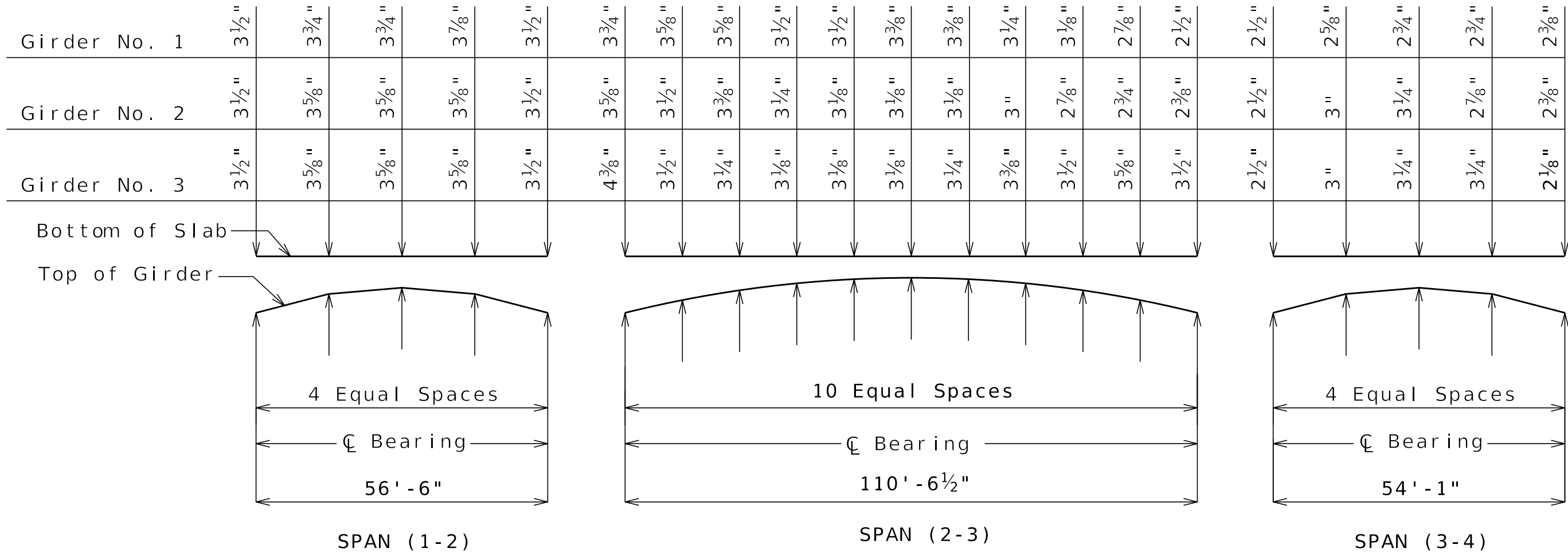
105 WEST CAPITOL
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IMPROVE 70
ALLIANCE

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
1323 Barrett Parkway Dr
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St. Louis, MO 63101
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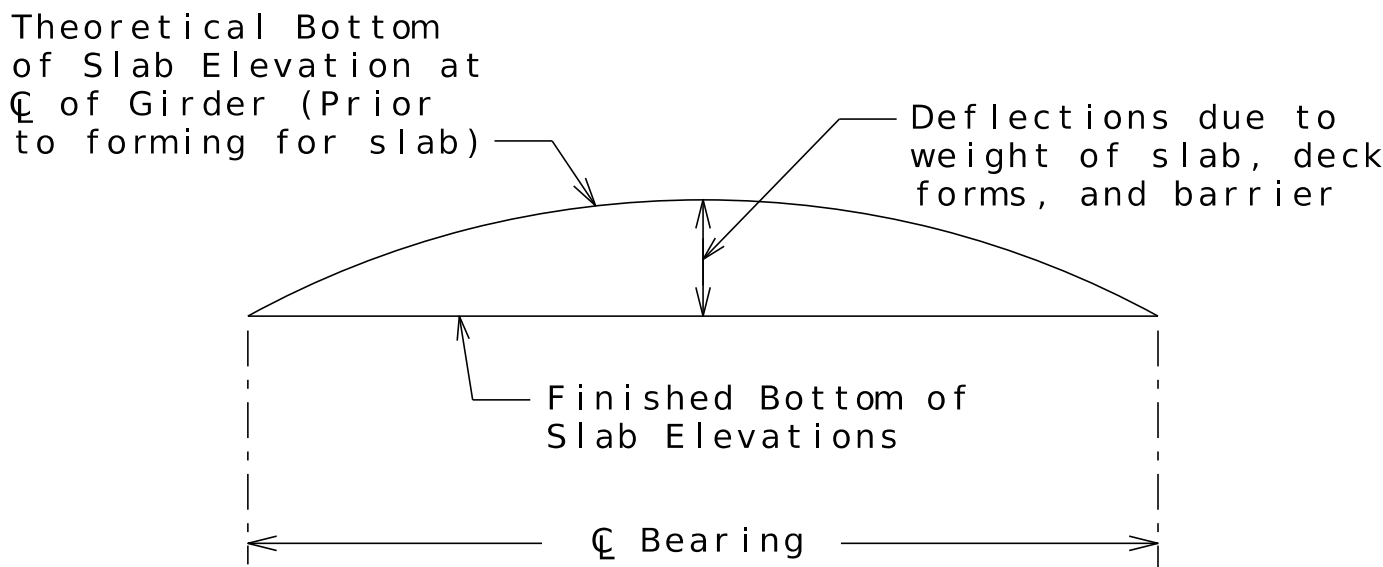
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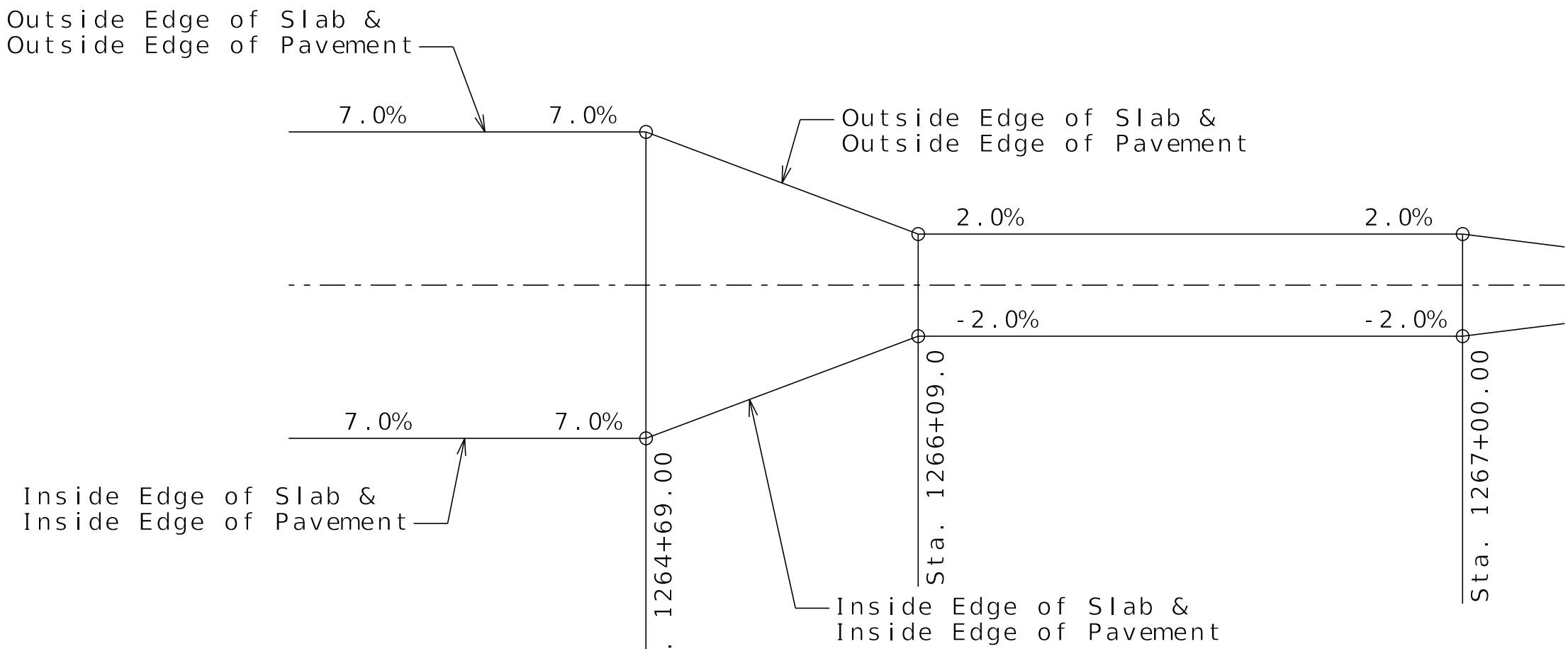
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)												
Girder Number	Span (1-2) (56'-6" C Brg. - C Brg.)											
	C Brg.	0.25	0.50	0.75	C Brg.							
1	622.21	622.47	622.71	622.93	623.10							
2	621.23	621.51	621.77	622.00	622.21							
3	620.24	620.53	620.80	621.05	621.27							
Girder Number	Span (2-3) (110'-6 1/2" C Brg. - C Brg.)											
	C Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	C Brg.	
1	623.09	623.25	623.40	623.52	623.62	623.69	623.72	623.72	623.68	623.62	623.54	
2	622.27	622.47	622.67	622.84	622.99	623.12	623.21	623.26	623.29	623.28	623.25	
3	621.40	621.59	621.81	622.03	622.23	622.40	622.55	622.66	622.75	622.81	622.85	
Girder Number	Span (3-4) (54'-1" C Brg. - C Brg.)											
	C Brg.	0.25	0.50	0.75	C Brg.							
1	623.53	623.49	623.45	623.38	623.27							
2	623.26	623.29	623.30	623.25	623.17							
3	622.86	622.97	623.05	623.09	623.03							

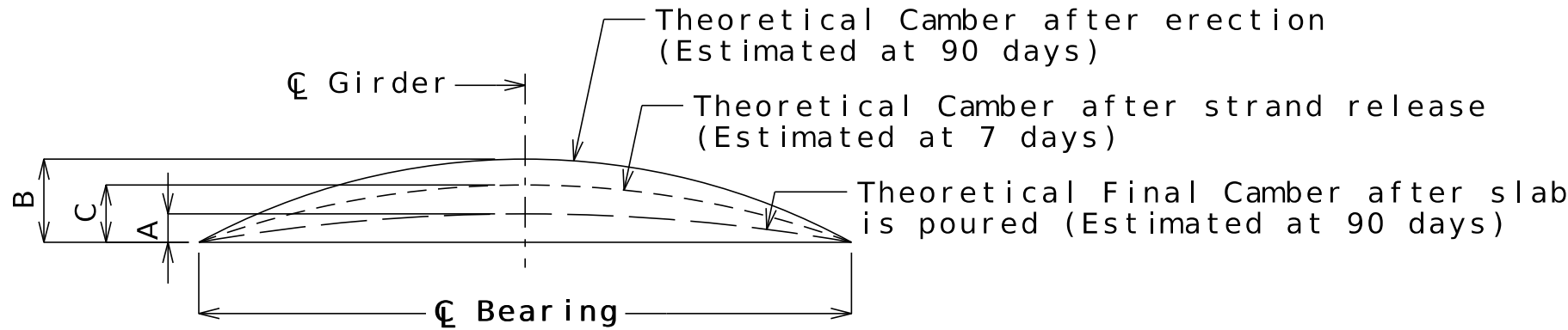
Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier.



TYPICAL SLAB ELEVATIONS DIAGRAM



SUPERELEVATION TABLE



Girder	Span (1-2)			Span (2-3)			Span (3-4)		
	A	B	C	A	B	C	A	B	C
Exterior	1/8"	3/8"	1/4"	1 5/8"	4"	2 1/4"	0"	1/4"	1/8"
Interior	1/8"			1 1/2"			0"		

GIRDER CAMBER DIAGRAM

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

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

0.25 pt. = 0.7125 x 0.5 pt.

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

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN
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DATE PREPARED
12/19/2025
ROUTE
1-70
STATE
MO
DISTRICT
BR
SHEET NO.
A9678-25
COUNTY
ST. CHARLES
JOB NO.
JST0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A9678

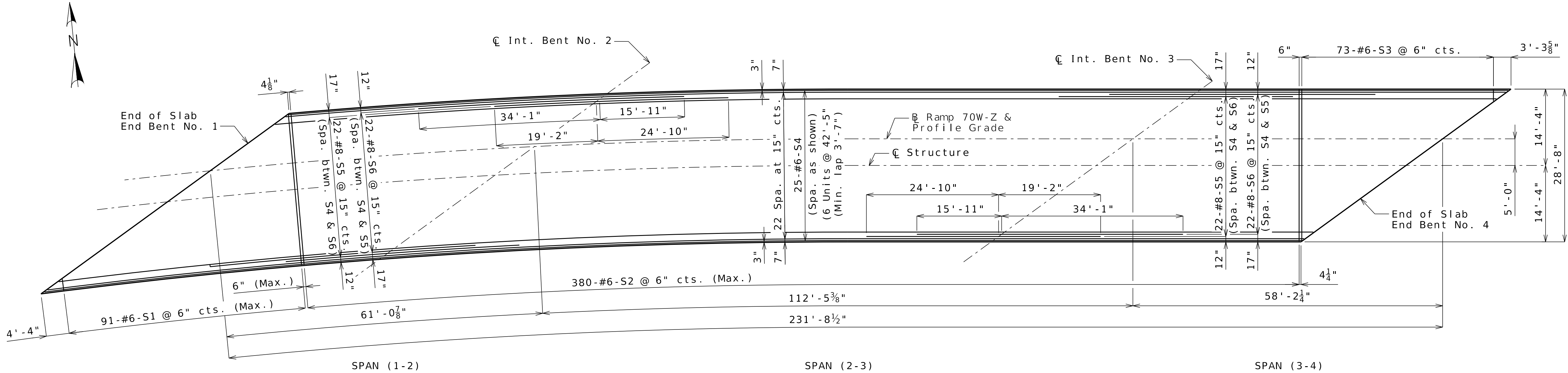
DESCRIPTION
DATE

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

IMPROVE 70
ALLIANCE

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

EFK Moen
Civil Engineering Design
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Missouri Certificate of Authority 001578



PLAN OF SLAB SHOWING TOP REINFORCEMENT

Notes:

All bents are parallel.

Longitudinal slab dimensions are measured horizontally.

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 27.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 28.

For Details and Reinforcement of barrier not shown, see Sheets No. 30 thru 33.

For Theoretical Slab Haunching Diagram, see Sheet. No. 25.

For Thoretical Bottom of Slab Elevations, see Sheet No. 25.

For details and locations of slab drains, see Sheet No. 24.

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-200050018
PROFESSIONAL ENGINEER

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12/19/2025

ROUTE
1 - 70

STATE
MO

DISTRICT
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SHEET NO.
A9678-26

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

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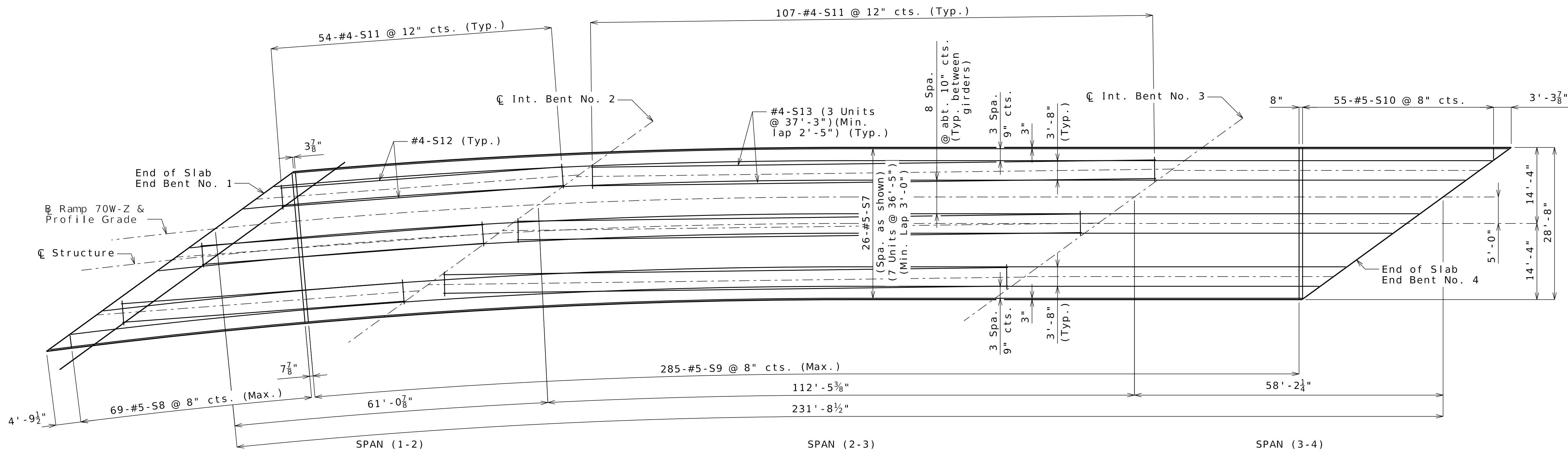
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ALLIANCE

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715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
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PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

- Notes:
- All bents are parallel.
 - Longitudinal slab dimensions are measured horizontally.
 - For Plan of Slab Showing Top Reinforcement, see Sheet No. 26.
 - For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 28.
 - For Details and Reinforcement of barrier not shown, see Sheets No. 30 thru 33.
 - For Theoretical Slab Haunching Diagram, see Sheet No. 25.
 - For Theoretical Bottom of Slab Elevations, see Sheet No. 25.
 - For details and locations of slab drains, see Sheet No. 24.

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER

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ROUTE
1 - 70

STATE
MO

DISTRICT
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SHEET NO.
A9678-27

COUNTY
ST. CHARLES

JOB NO.
JST0020

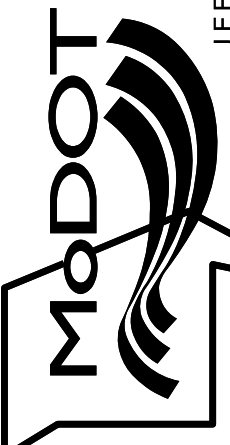
CONTRACT ID.

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BRIDGE NO.
A9678

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COMMISSION



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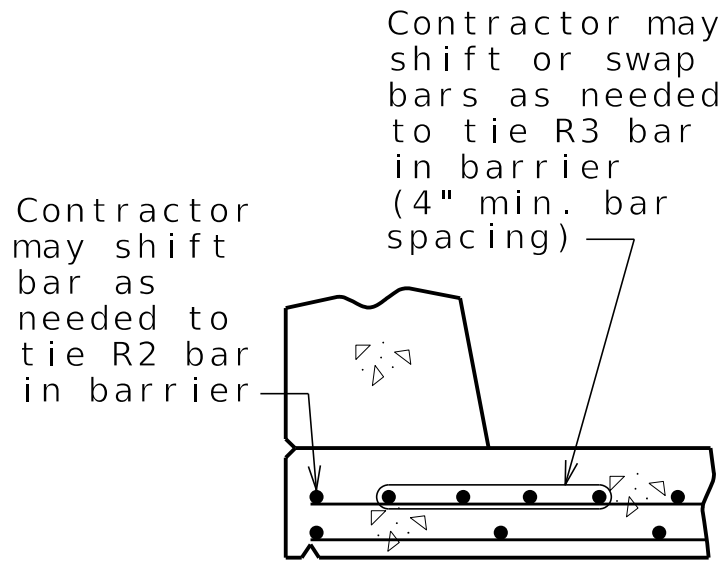


715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
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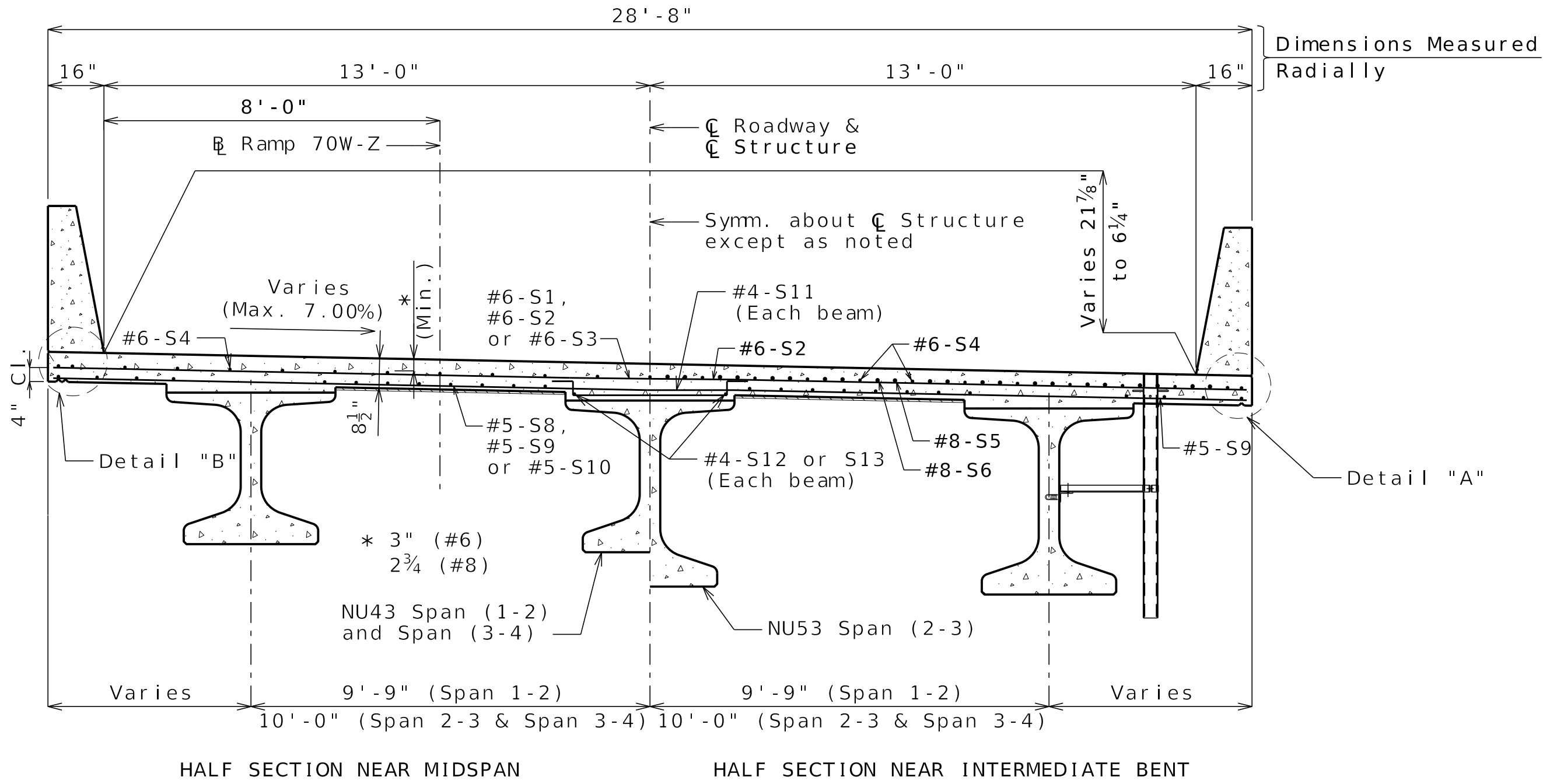


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Fax 314-394-3105
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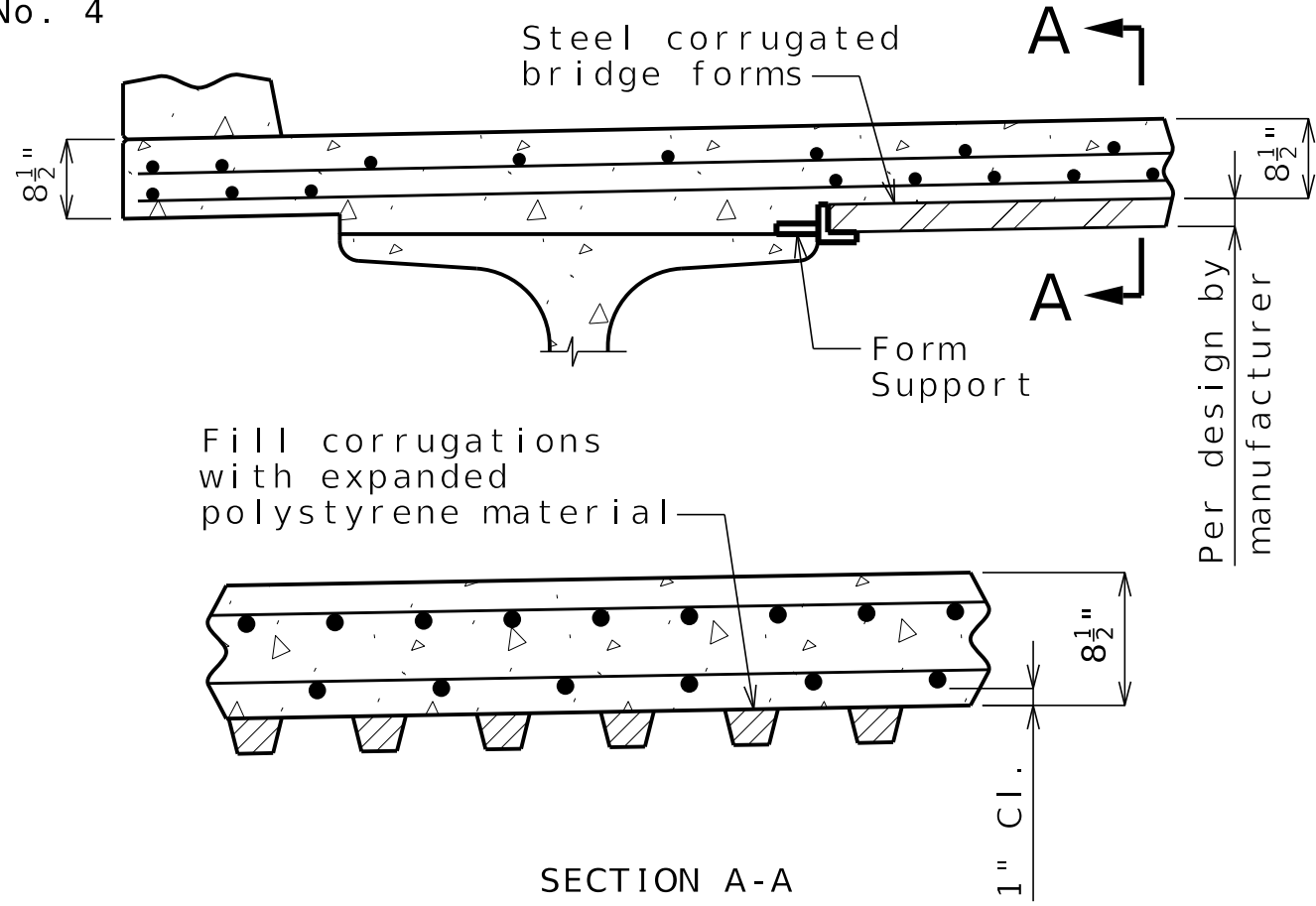
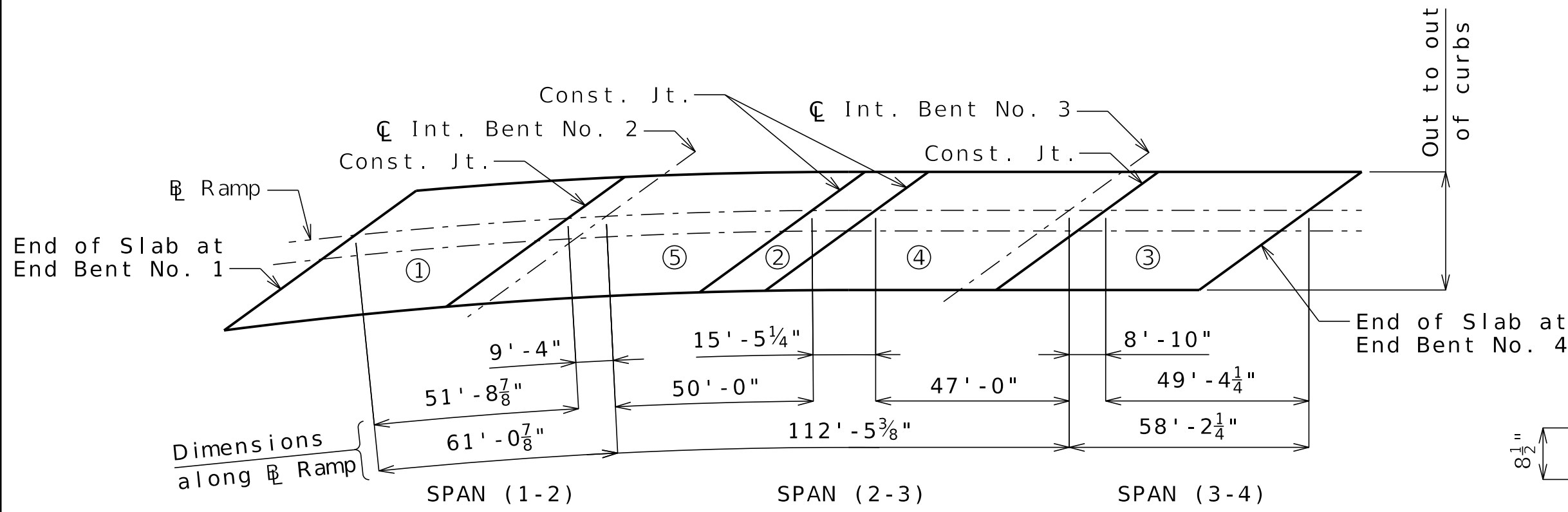
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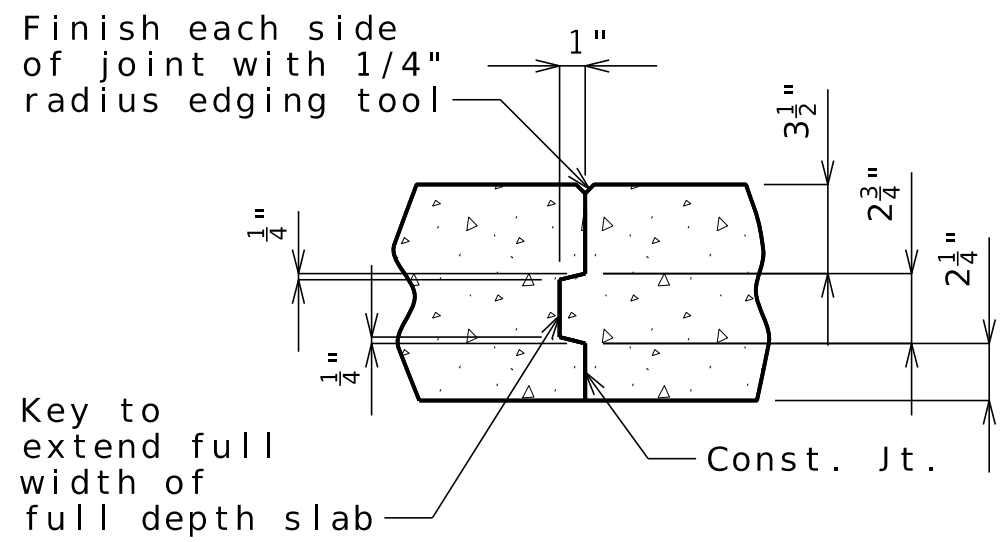
OPTIONAL SHIFTING
TOP BARS AT BARRIER



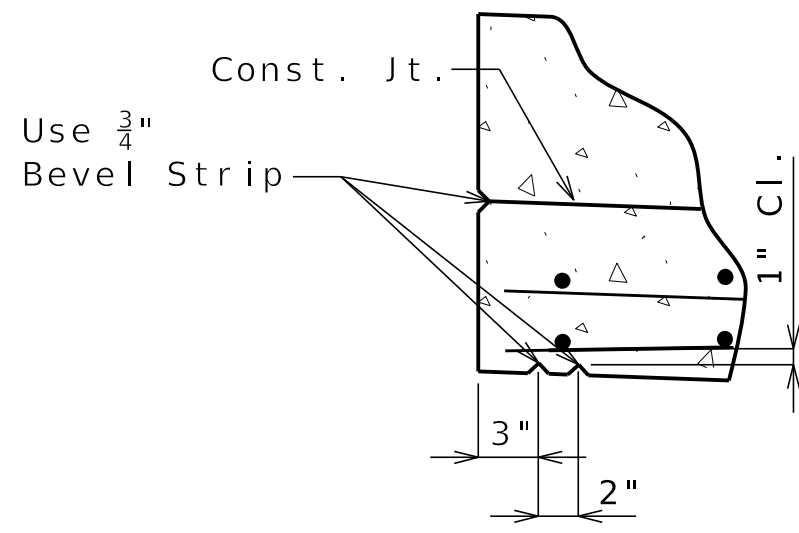
TYPICAL SECTION THRU SLAB
(Shown normal to R Ramp)



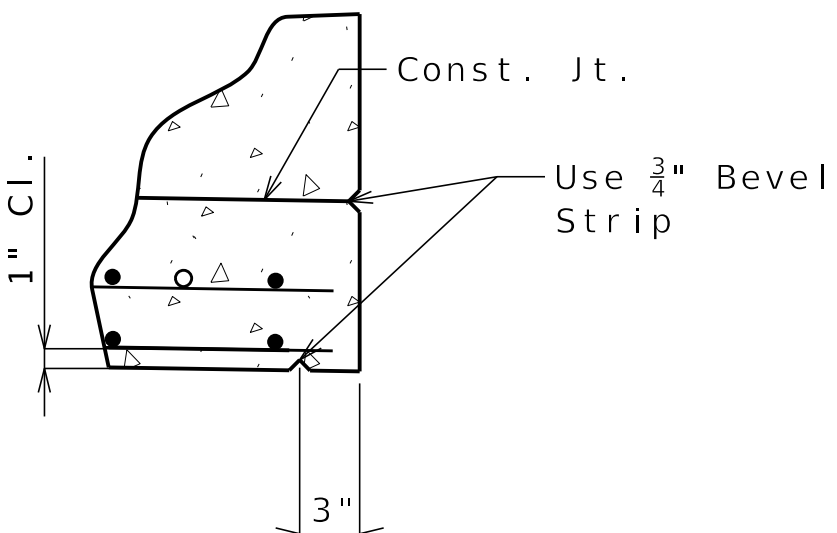
SECTION A-A
STAY-IN-PLACE
FORM DETAILS



FULL DEPTH SLAB
SLAB CONSTRUCTION JOINT



DETAIL "B"



DETAIL "A"

Notes:
Barrier reinforcement not shown for clarity.
For Plan of Slab Showing Reinforcement and additional notes, see Sheet No. 32.
For metal deck form notes, see General Notes.
For stay-in-place form notes, see Sheet No. 3.
Contractor may shift bars as necessary to tie in barrier bars.

SLAB DETAILS

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

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

SLAB POURING SEQUENCE

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-200050018
PROFESSIONAL ENGINEER

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ROUTE
1-70

STATE
MO

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SHEET NO.
A9678-28

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

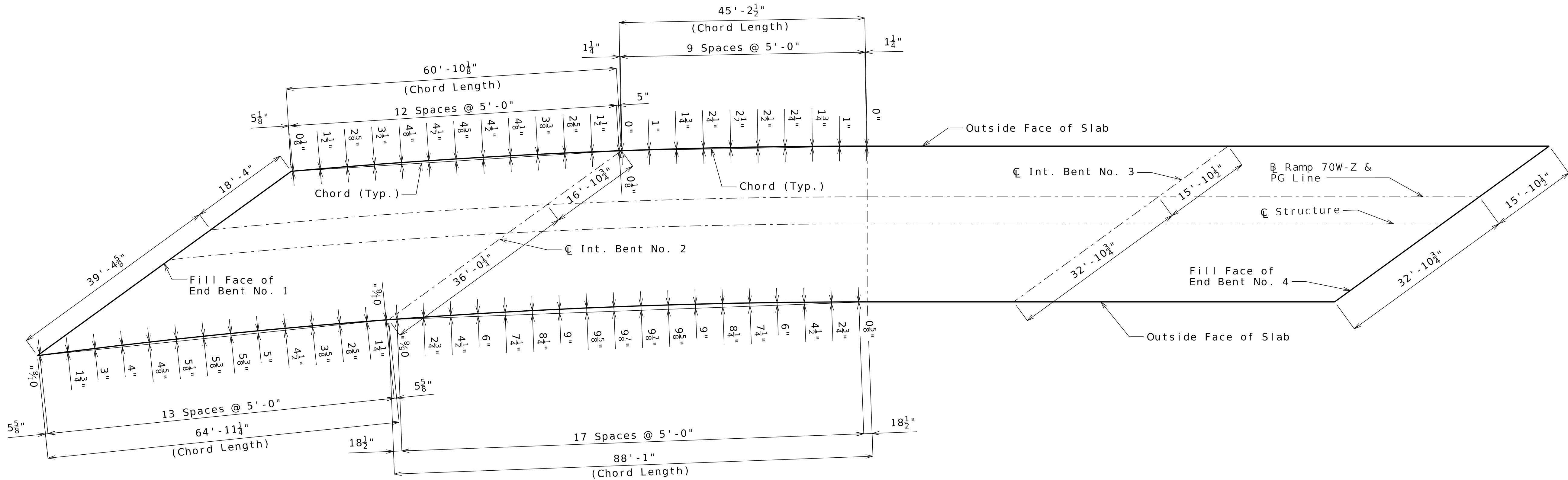
105 WEST CAPITOL
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1-888-ASK-MODOT (1-888-275-6636)

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KANSAS CITY, MO 64105-1310
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Fax 314-394-3101
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Civil Engineering Design

EFFK Moen
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PLAN

Notes:
All bents are parallel.
Longitudinal dimensions are horizontal.

SLAB CURVE ORDINATES

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER

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ROUTE
1 - 70

DISTRICT
BR

STATE
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A9678 - 29

COUNTY
ST. CHARLES

JOB NO.
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CONTRACT ID.

PROJECT NO.

BRIDGE NO.
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DESCRIPTION	DATE

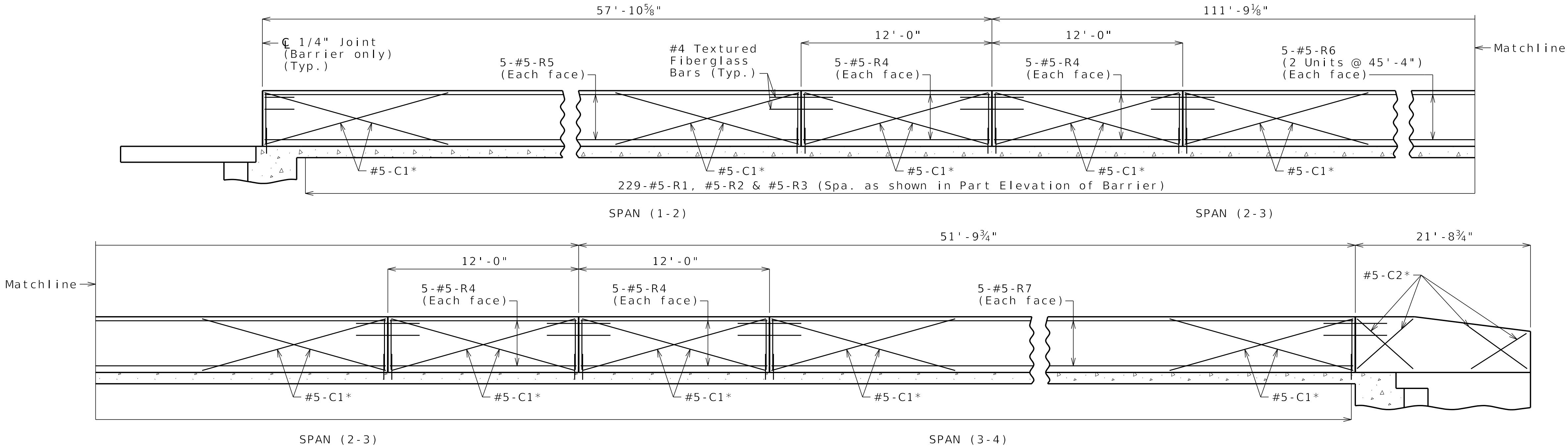
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

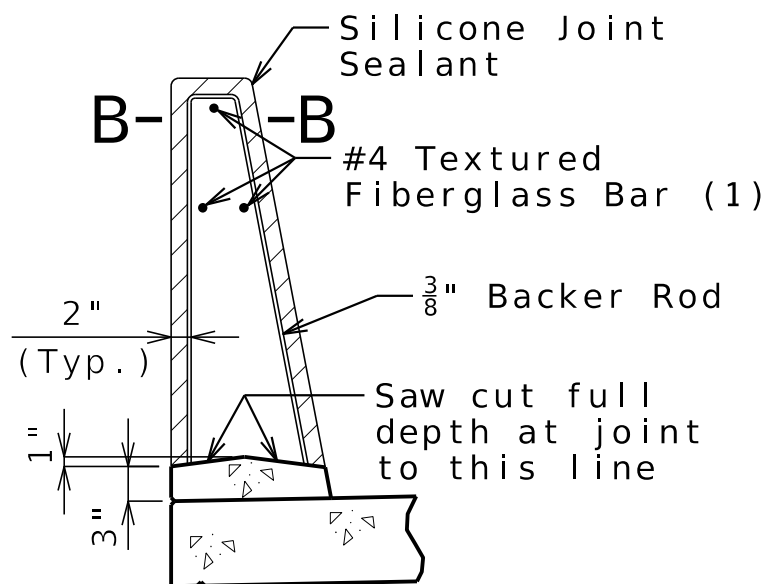
Civil Engineering Design
13623 Barrett Parkway Dr
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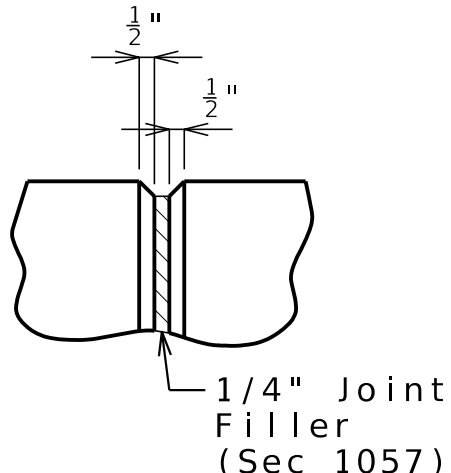


ELEVATION OF BARRIER

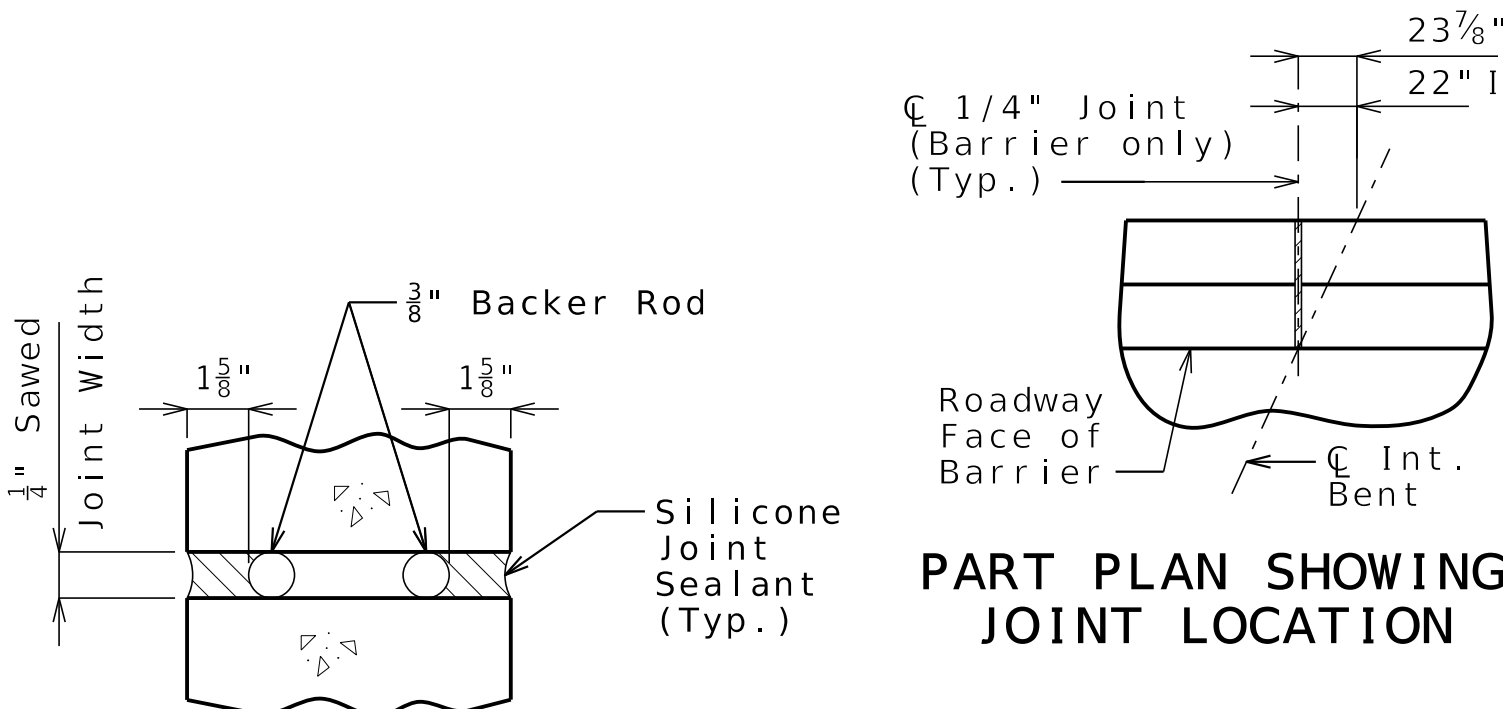
Longitudinal dimensions are horizontal.



SECTION THRU
SAW CUT JOINT



PART ELEVATION
AT FORMED JOINT



PART PLAN SHOWING
JOINT LOCATION

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.

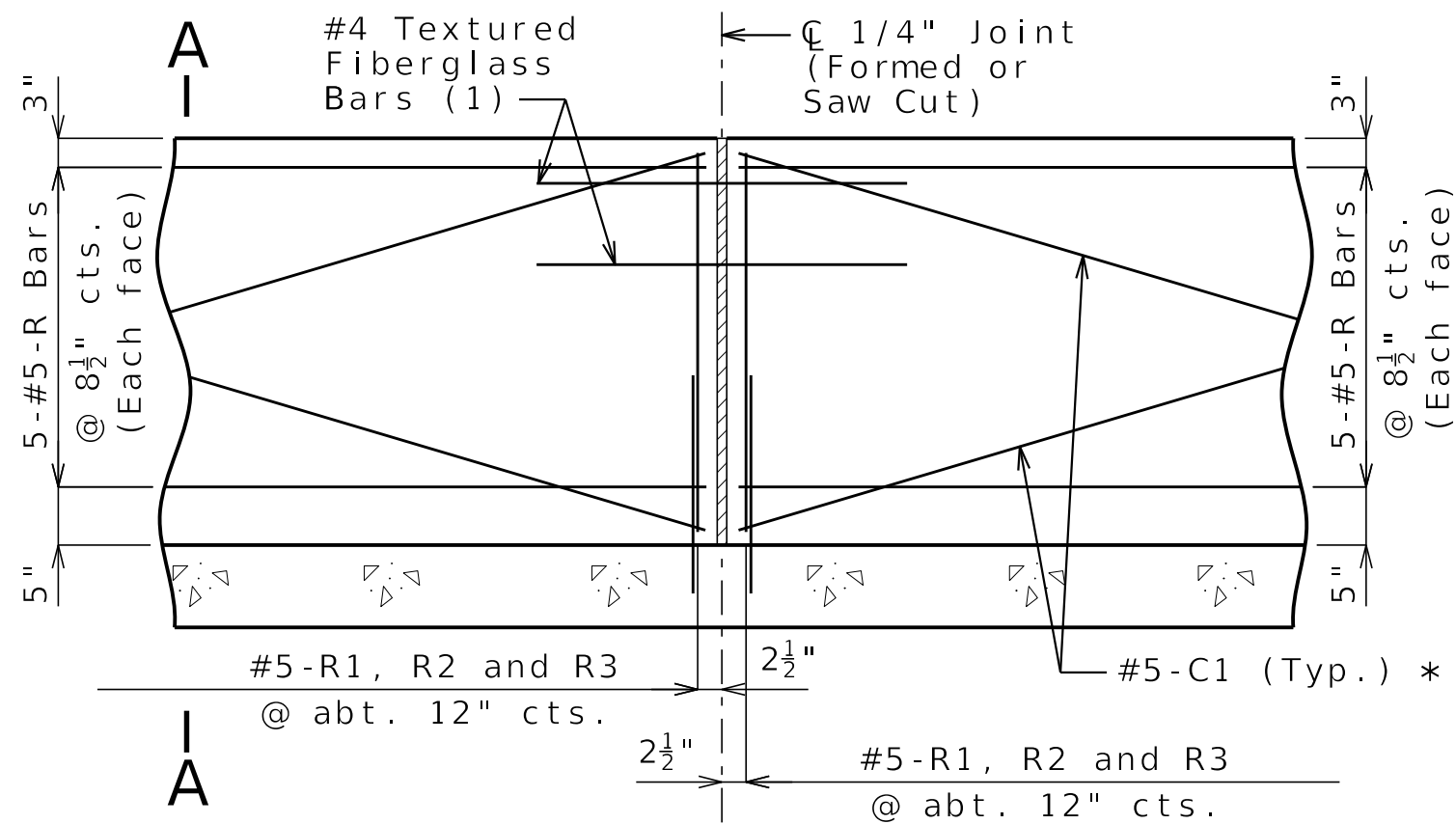
Concrete in barrier shall be Class B-1.

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.

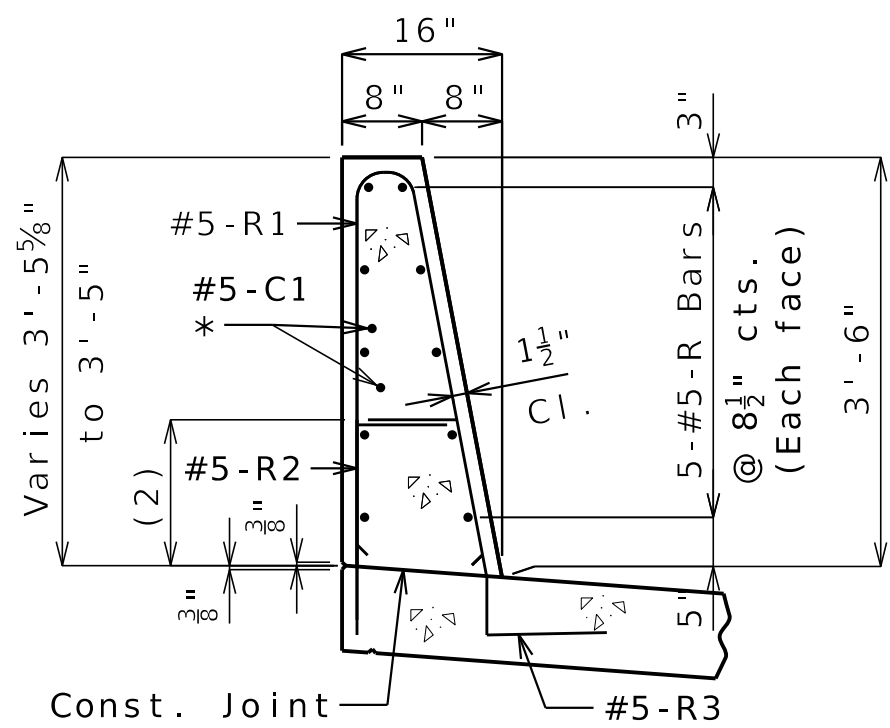
For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

Plastic waterstop shall not be used with saw cut joints.



PART ELEVATION OF BARRIER

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

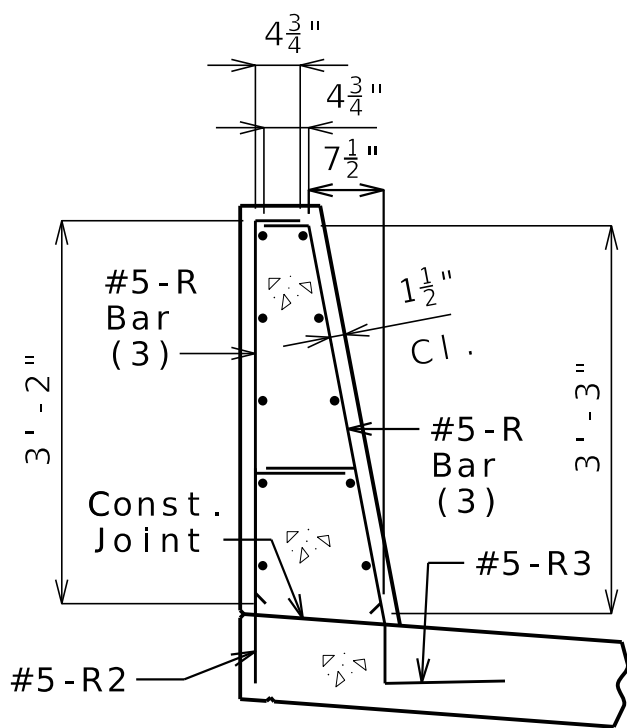


SECTION A-A

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

The cross-sectional area above the slab varies from 3.50 square feet to 3.47 square feet.

(2) Varies 14 3/8" to 13 3/4" 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.)



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12/19/2025

ROUTE STATE

I - 70 MO

DISTRICT SHEET NO.

BR A9678-30

COUNTY

ST. CHARLES

JOB NO.

JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

MoDOT

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715 KIRK DRIVE

KANSAS CITY, MO 64105-1310

CERTIFICATE OF AUTHORITY

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EFFK Moen

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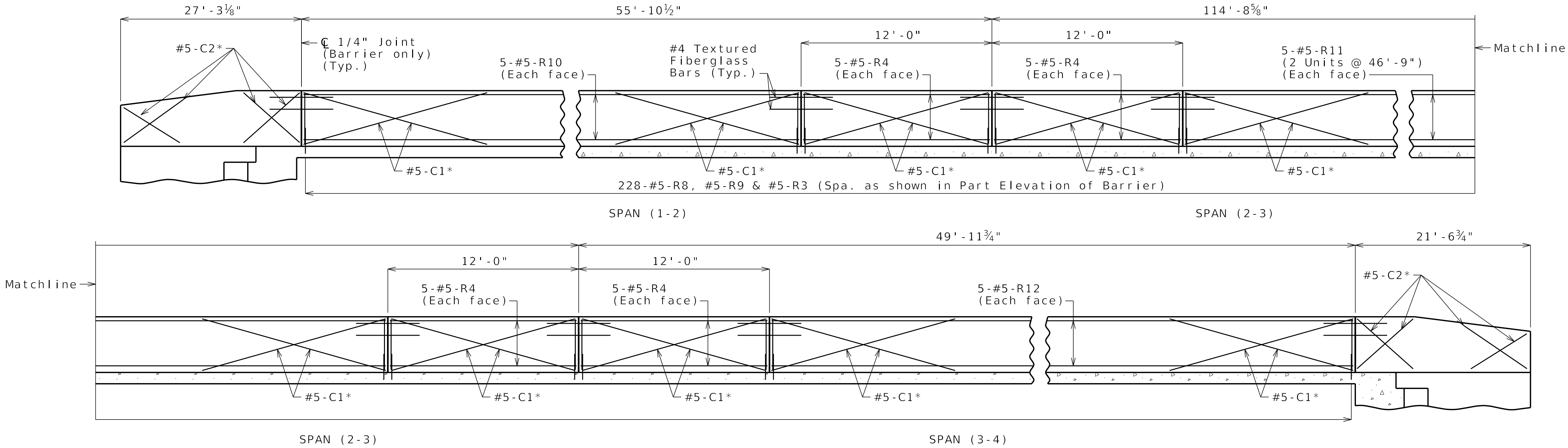
1923 Barrett Parkway Dr

State 202 MO 63021

Phone 314-334-3100

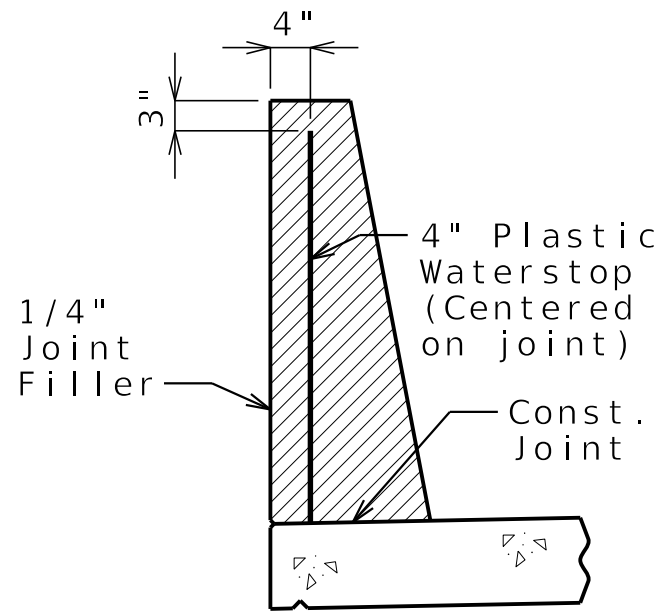
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ELEVATION OF BARRIER

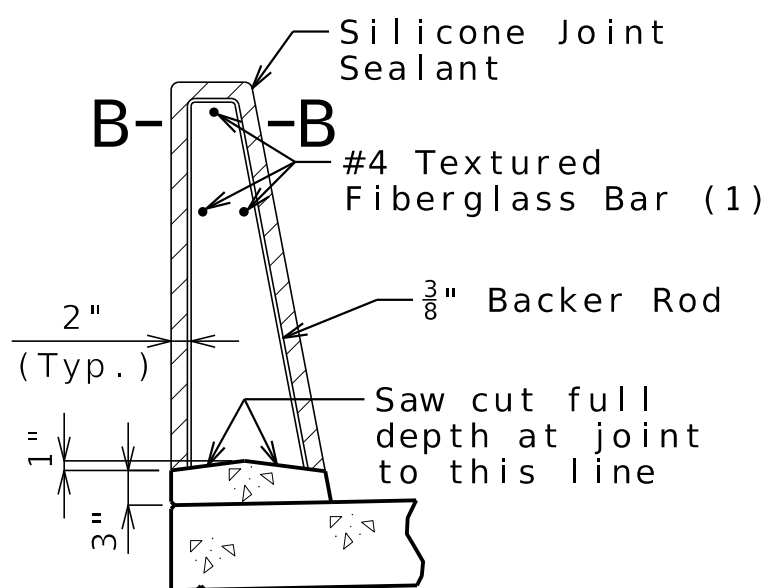
Longitudinal dimensions are horizontal.



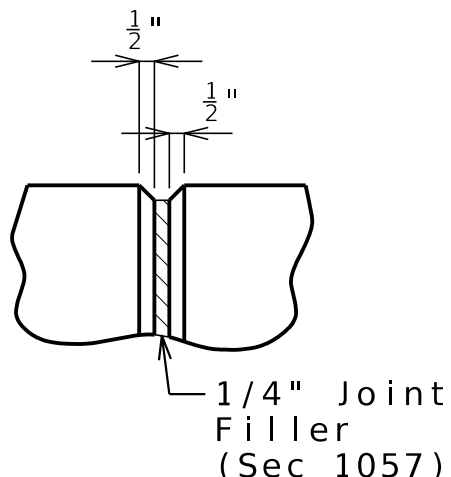
WATERSTOP DETAIL

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

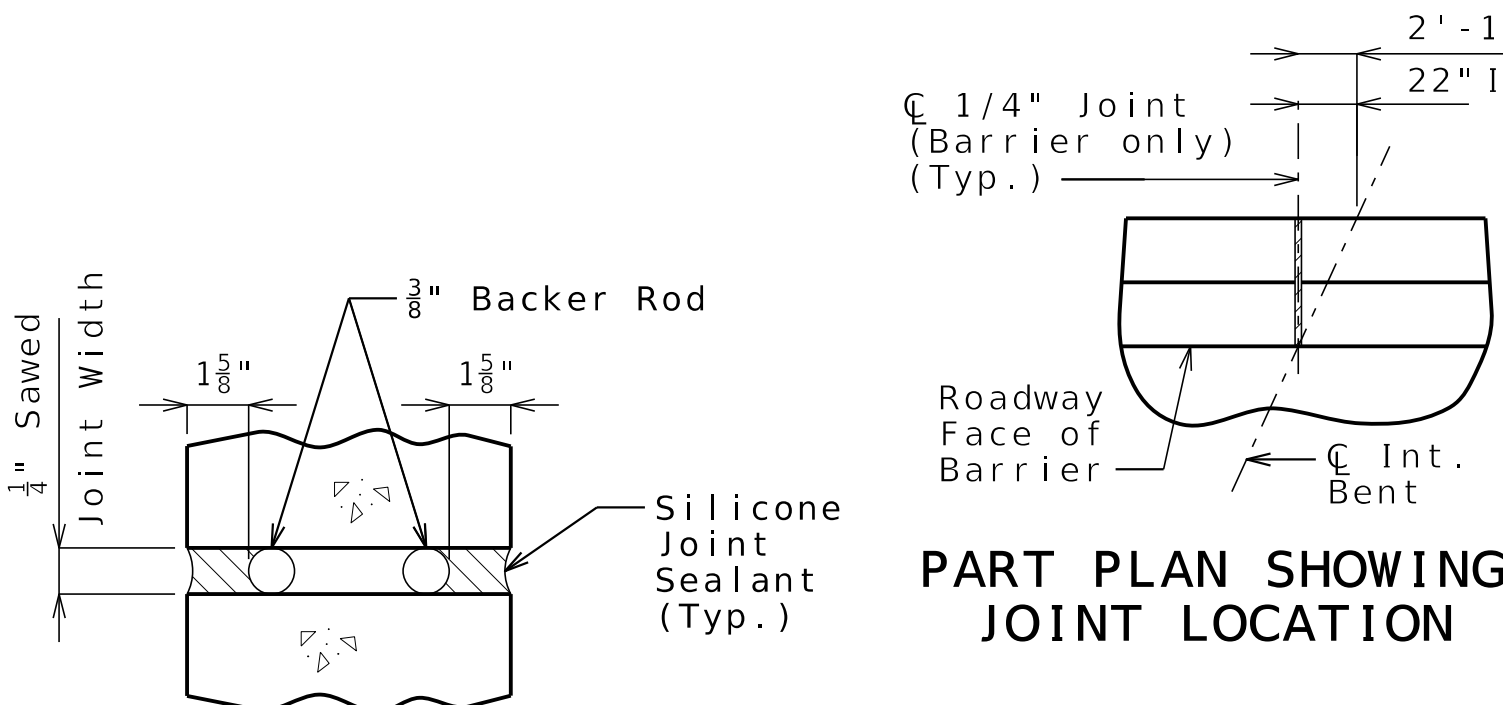
Cost of plastic waterstop, complete in place, will be considered completely covered by the contract unit price for Type D Barrier.



SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT



SECTION B-B

PART PLAN SHOWING JOINT LOCATION

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.

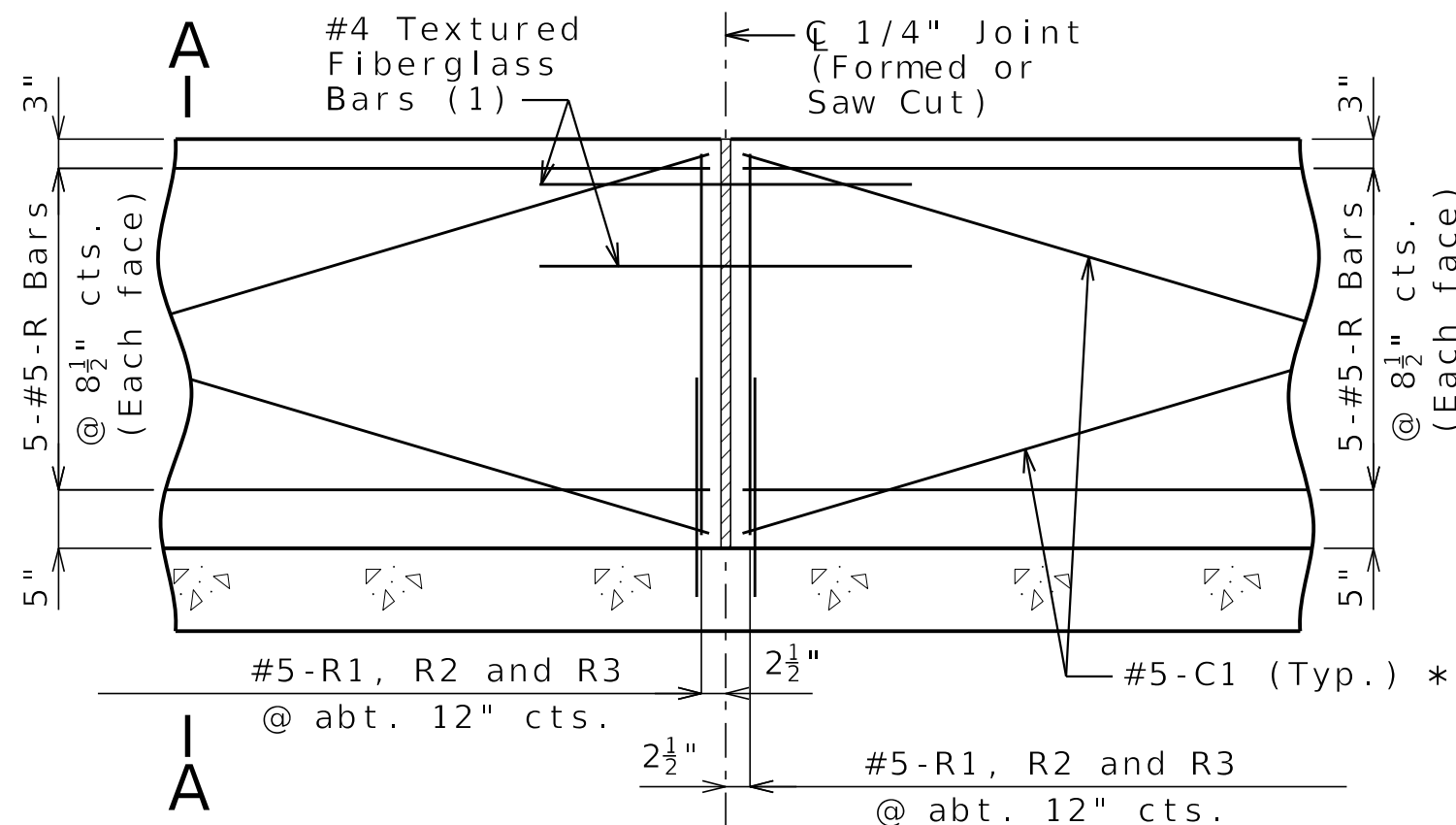
Concrete in barrier shall be Class B-1.

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.

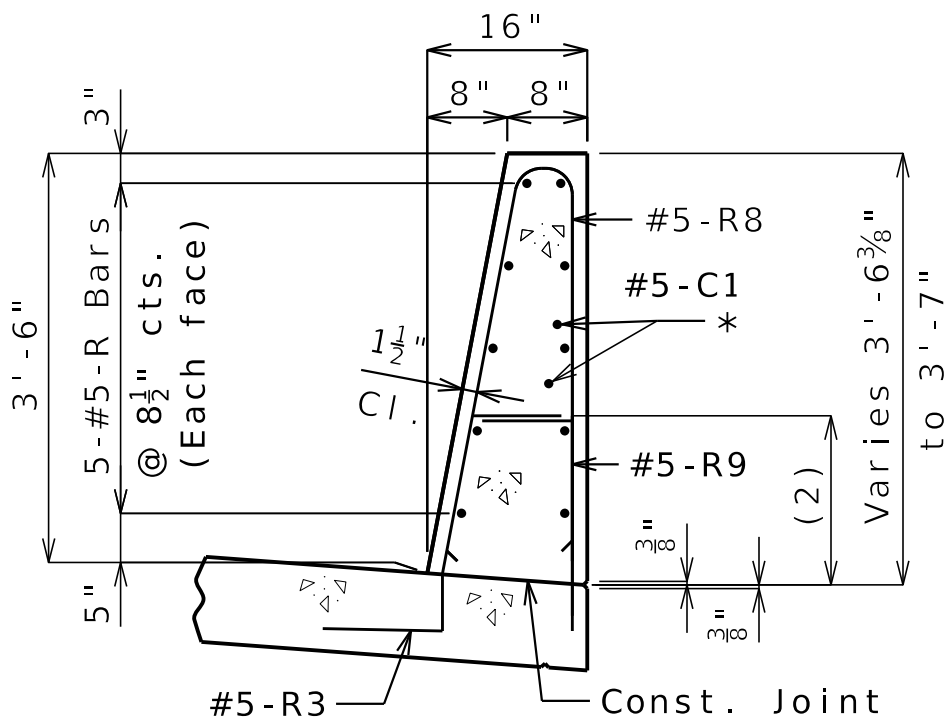
For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

Plastic waterstop shall not be used with saw cut joints.



PART ELEVATION OF BARRIER

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

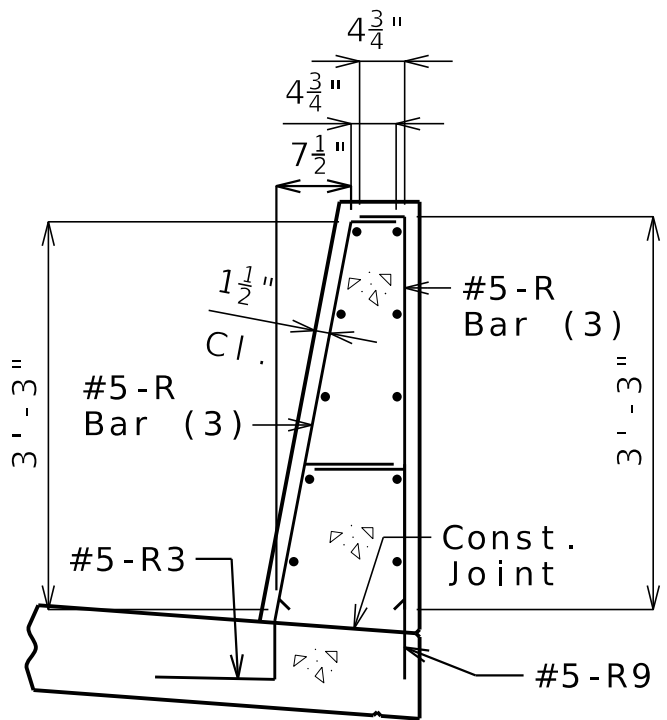


SECTION A-A

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

The cross-sectional area above the slab varies from 3.55 square feet to 3.57 square feet.

(2) Varies 15" to 15 5/8" 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.)

STATE OF MISSOURI

David J. Glasstetter

NUMBER

PE-2000150018

PROFESSIONAL ENGINEER

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ROUTE

I - 70

STATE

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DISTRICT

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SHEET NO.

A9678-31

COUNTY

ST. CHARLES

JOB NO.

JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

IMPROVE 70 ALLIANCE

HNTB

715 KIRK DRIVE

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CERTIFICATE OF AUTHORITY

NO. 001270

EFK Moen

Civil Engineering Design

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State 202 MO 63021

Phone 314-334-3100

314-334-3100

Missouri Certificate of Authority 001578

PART ELEVATION

PART PLAN

ELEVATION E-E

PLAN

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

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

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

SECTION D-D

K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

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

Detailed Oct. 2025
Checked Oct. 2025

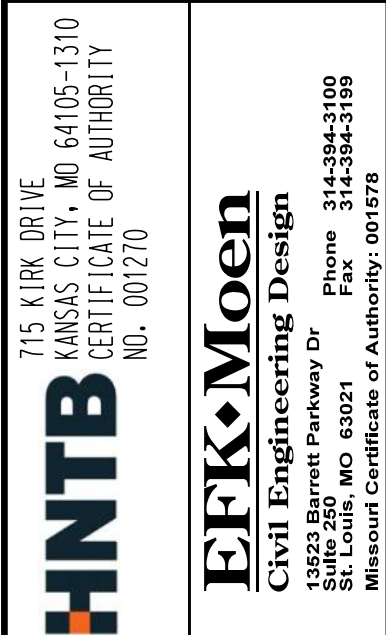
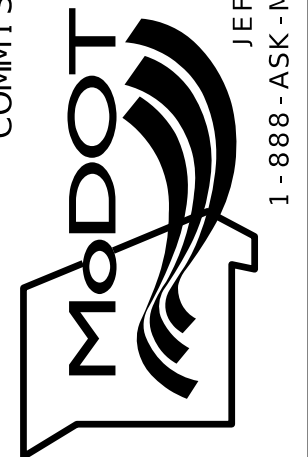
Note: This drawing is not to scale. Follow dimensions.

Sheet 32 of 45

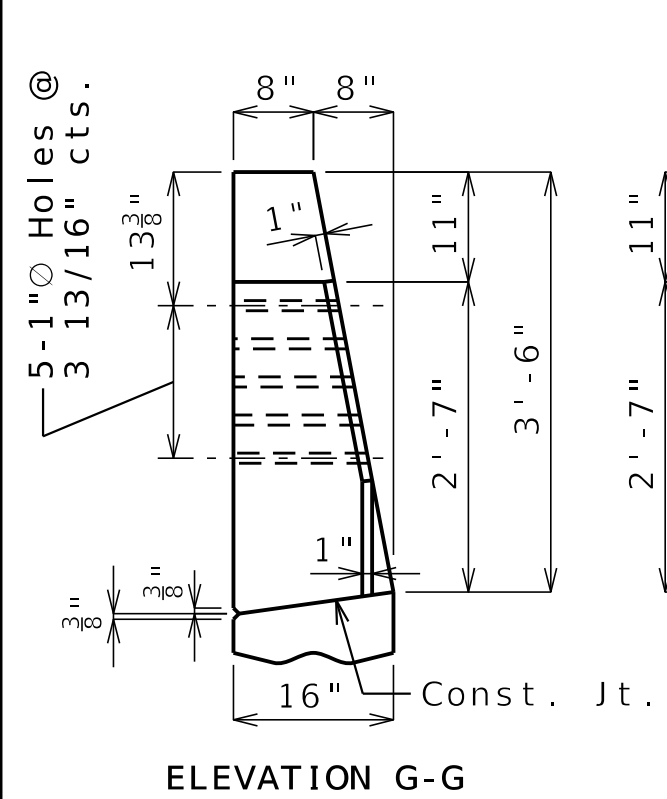
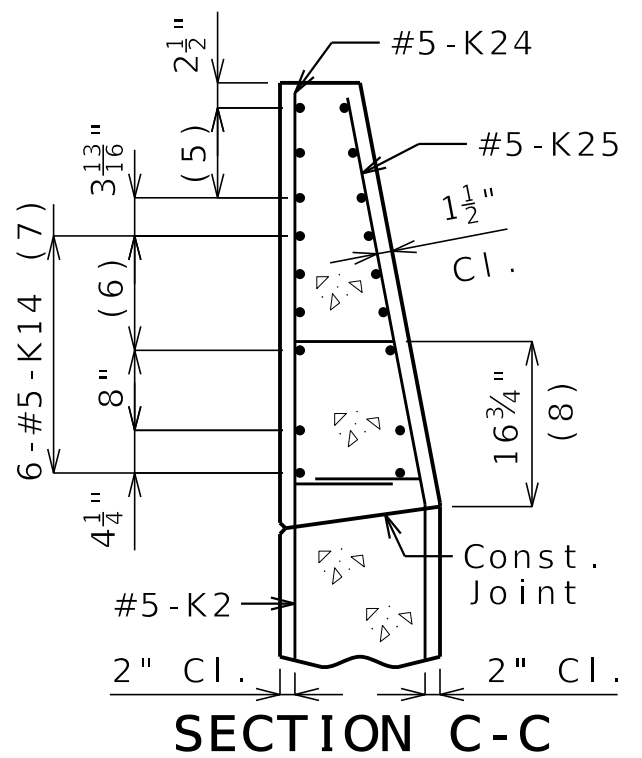
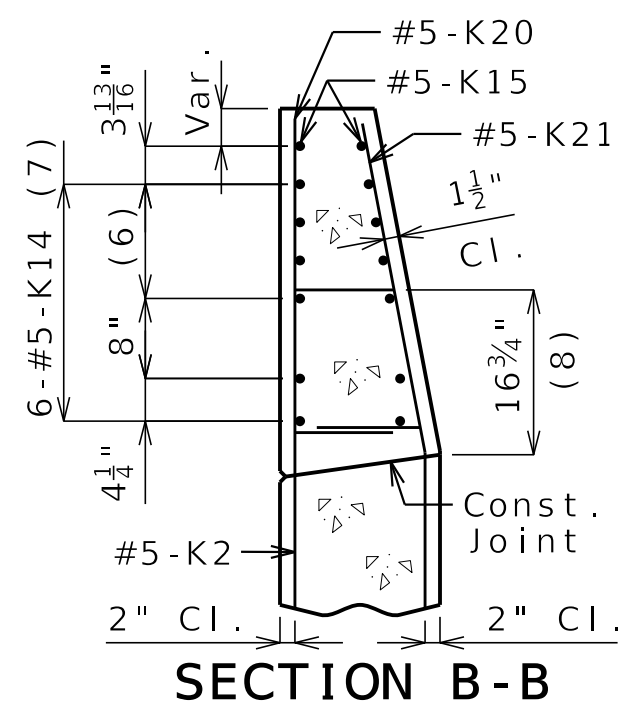
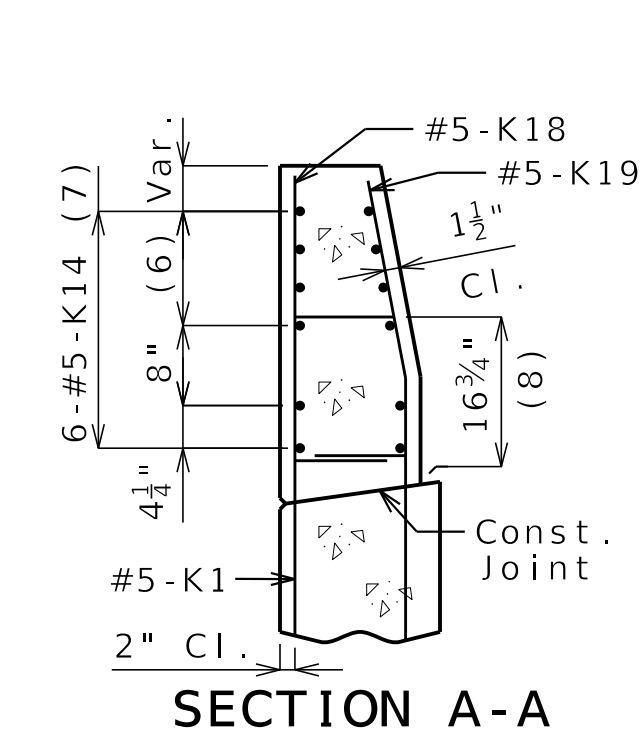
SECTION A-A

SECTION B-B

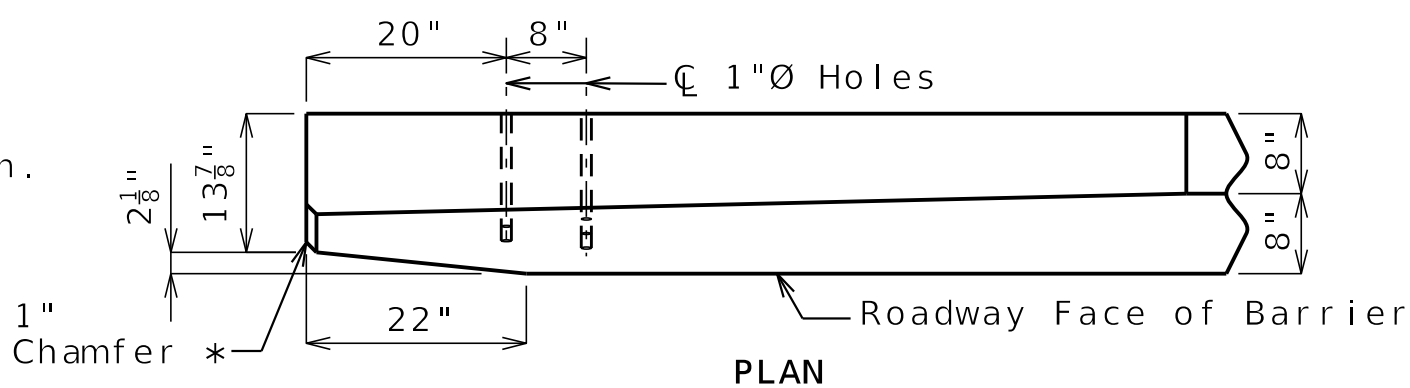
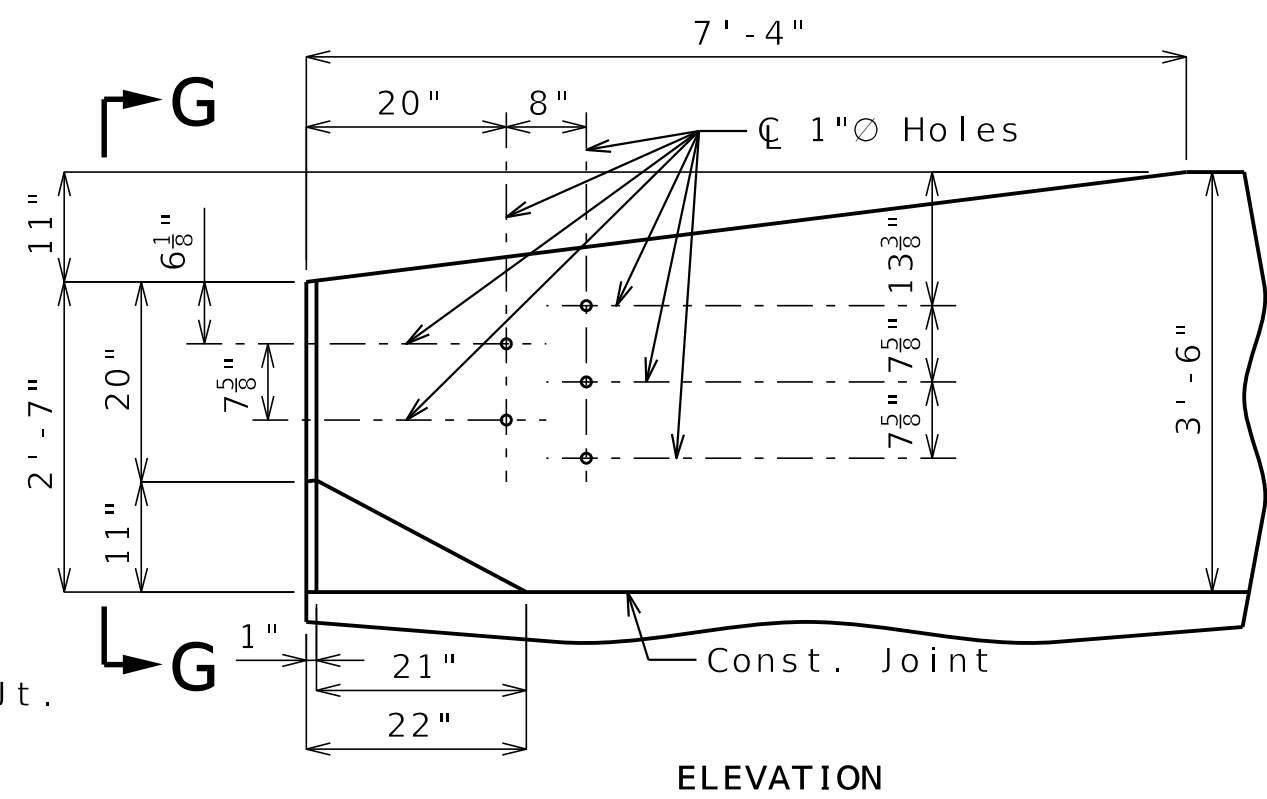
SECTION C-C



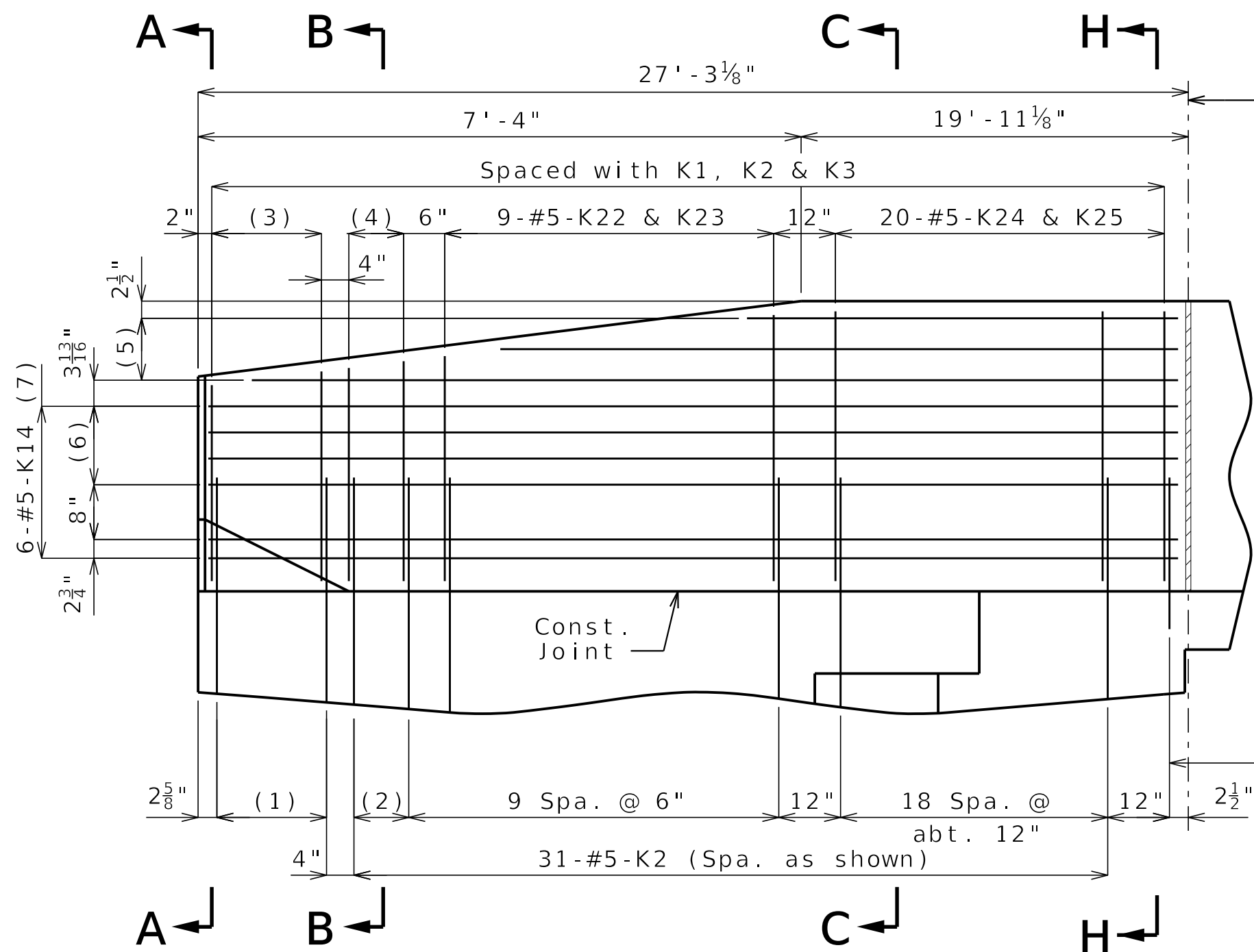
12/29/2025
Released for Construction



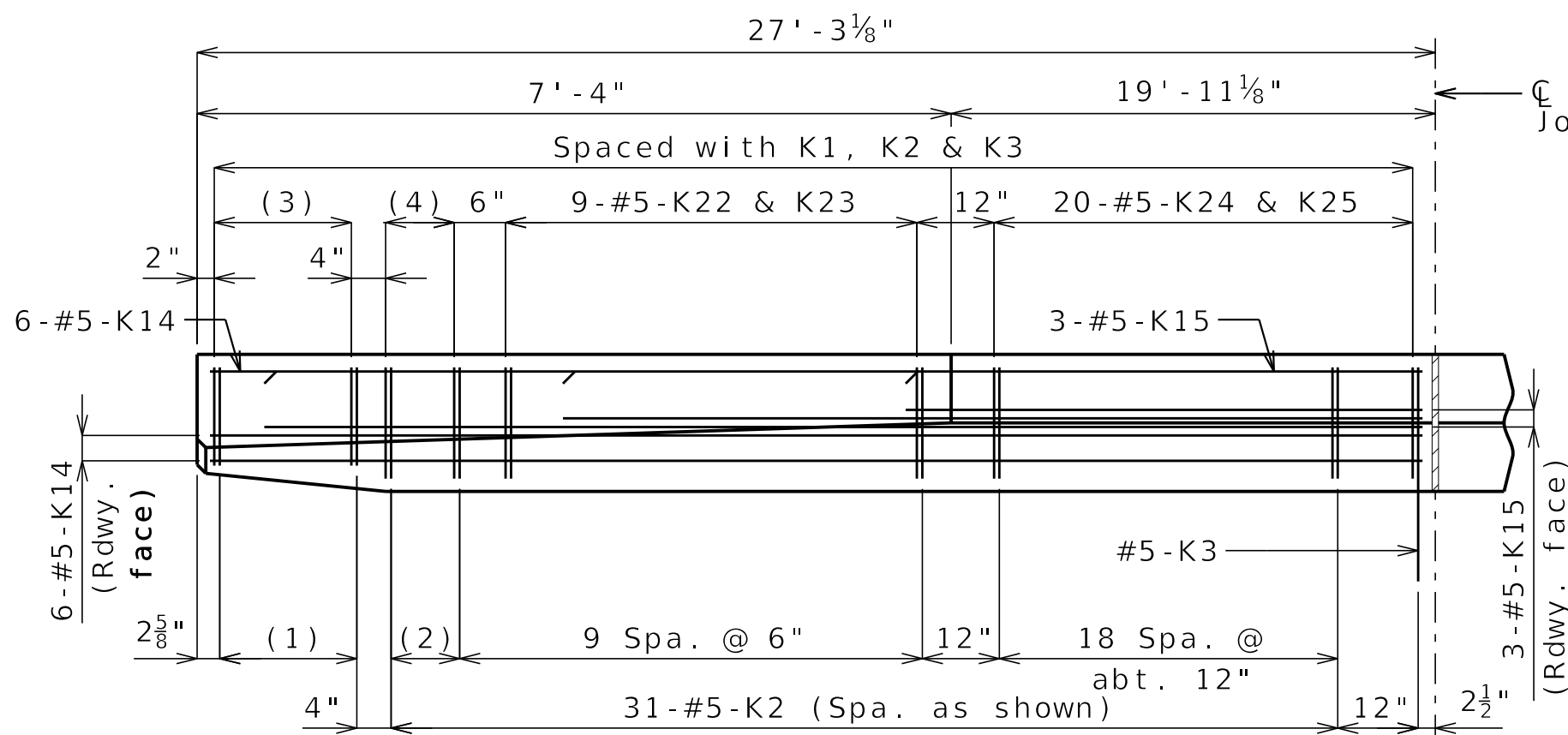
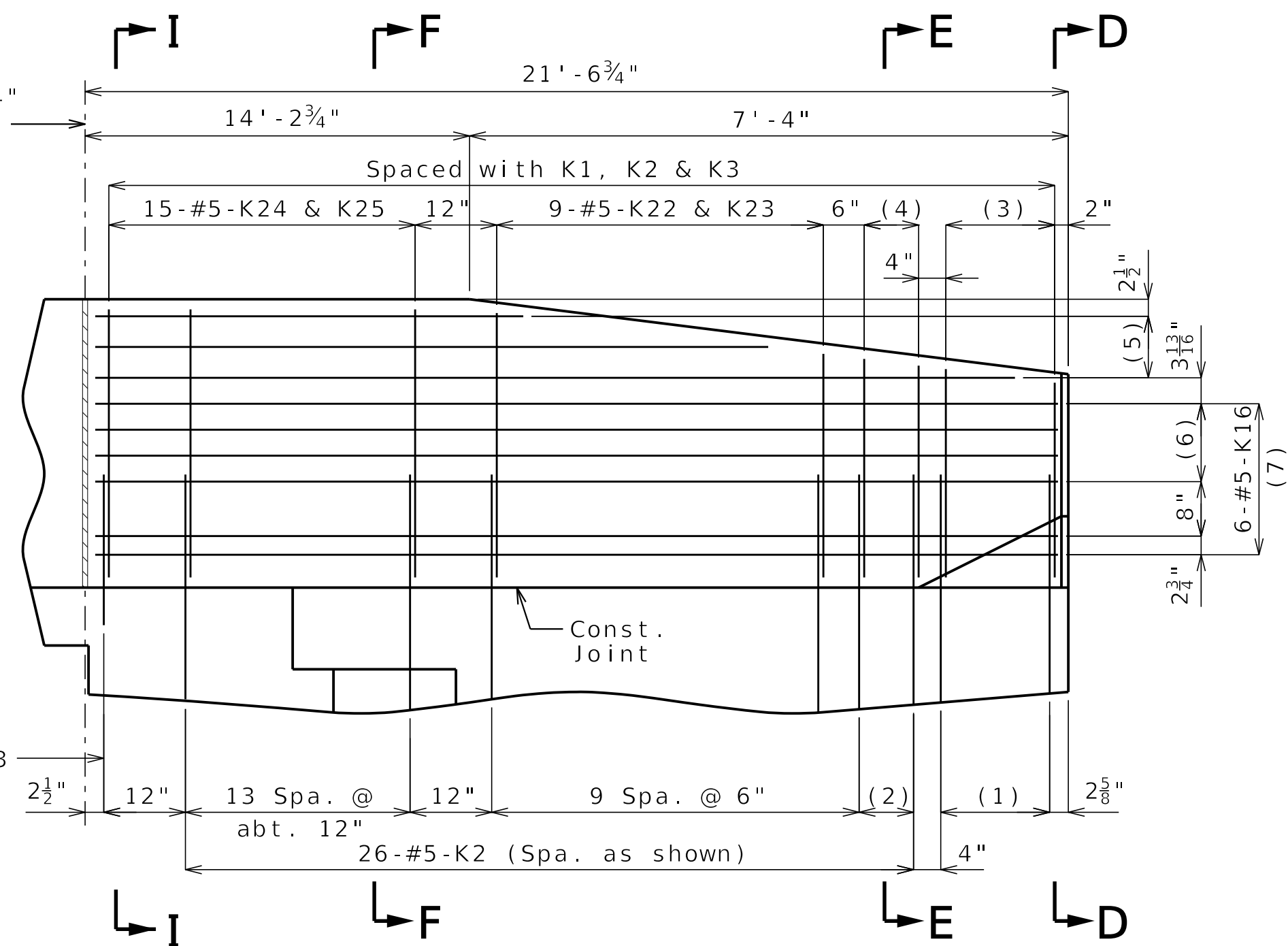
* Transition to zero at Type A curb for gutter lines to match.



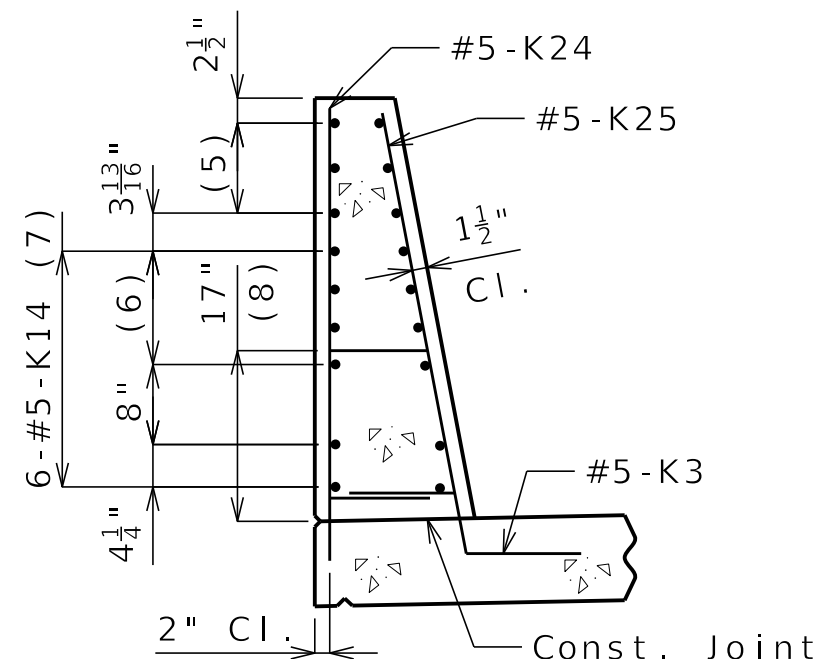
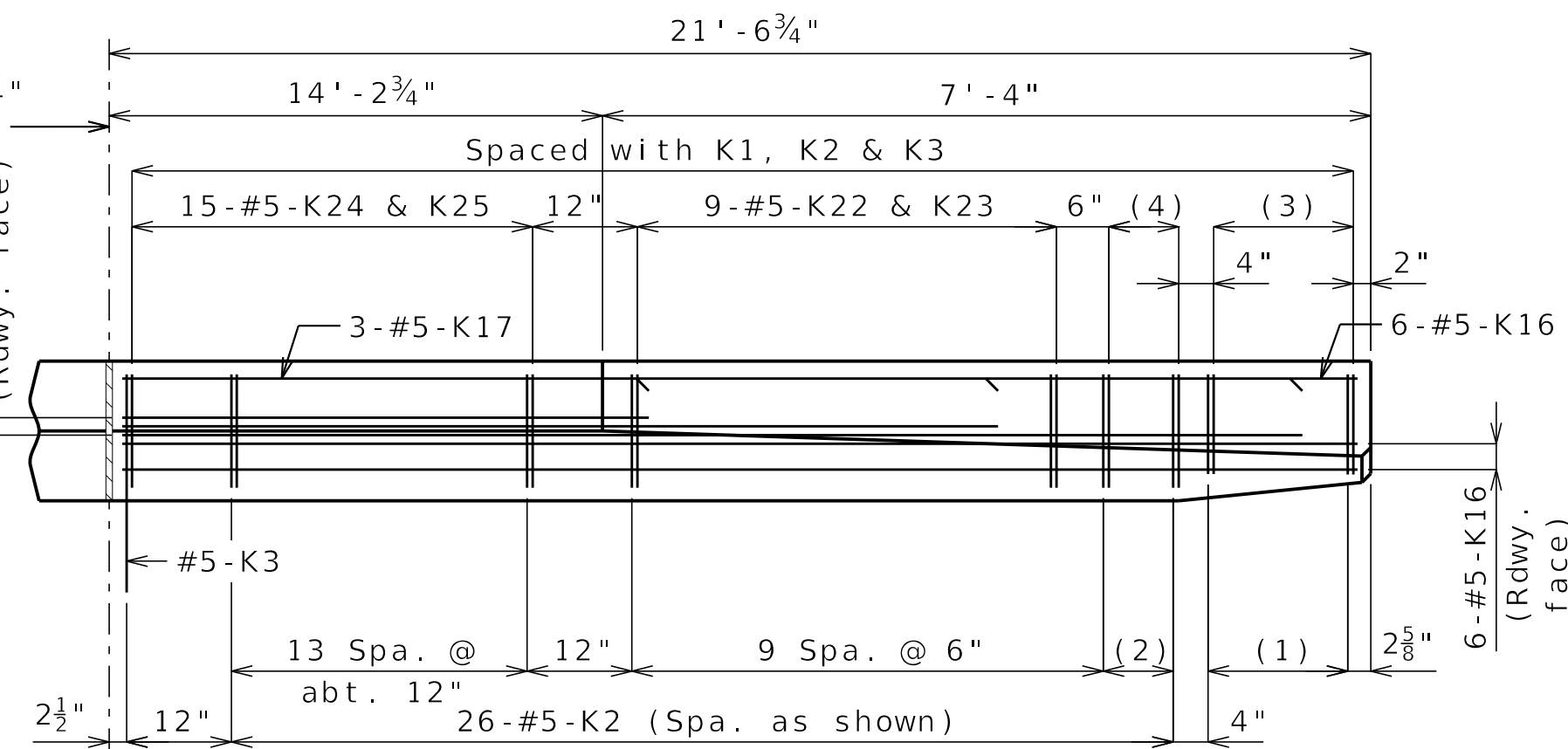
DETAILS OF GUARD RAIL ATTACHMENT



PART ELEVATION



PART PLAN



SECTION H-H

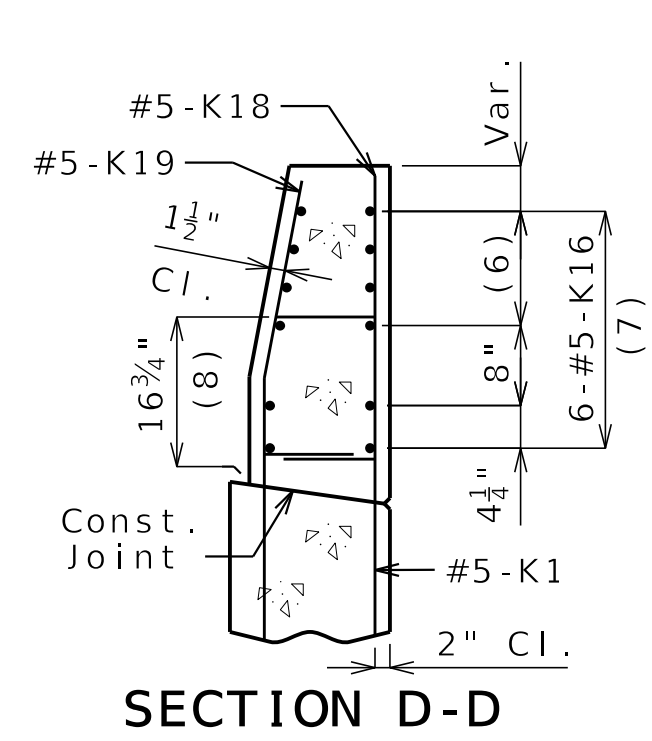
- (1) 5-#5-K1 @ 4" cts.
- (2) 2 spaces @ 4"
- (3) 5-#5-K18 & K19
- (4) 3-#5-K20 & K21
- (5) 3-#5-K15 or K17 @ 4 1/2" cts., each face
- (6) 3 spaces @ 3 13/16"
- (7) Spaced as shown, each face
- (8) To top of bar

General Notes:

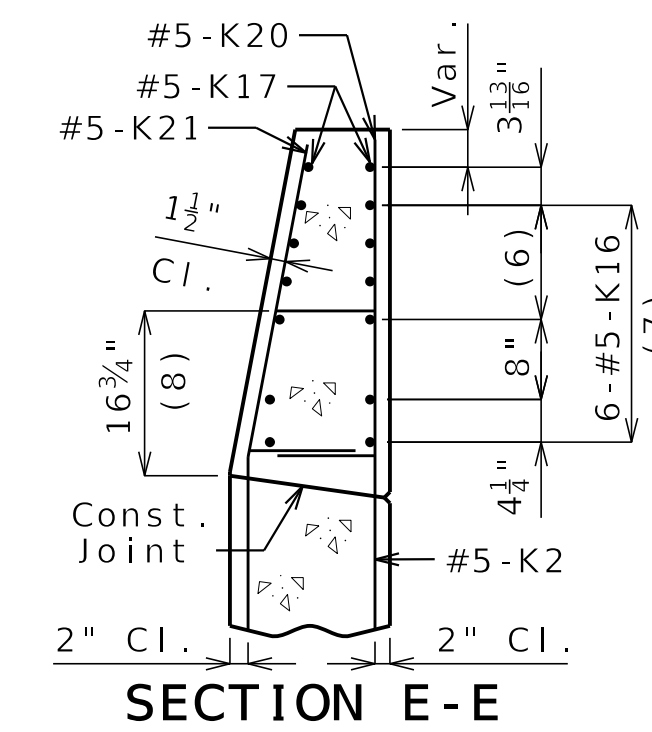
Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered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

Reinforcing Steel:

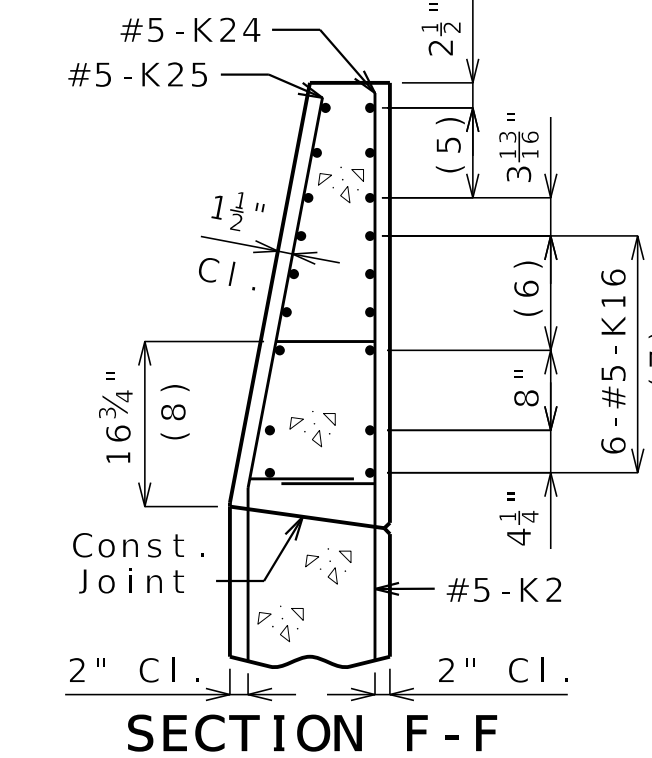
Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.



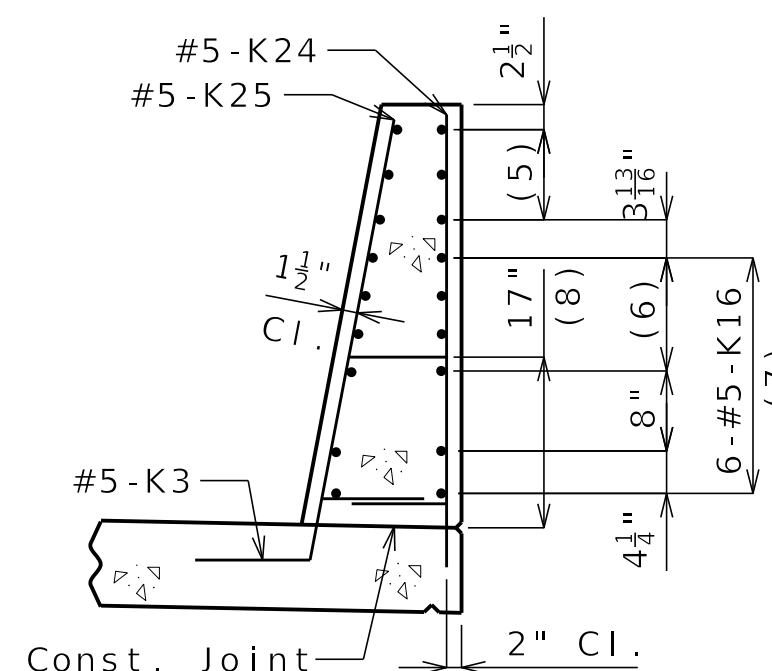
SECTION D-D



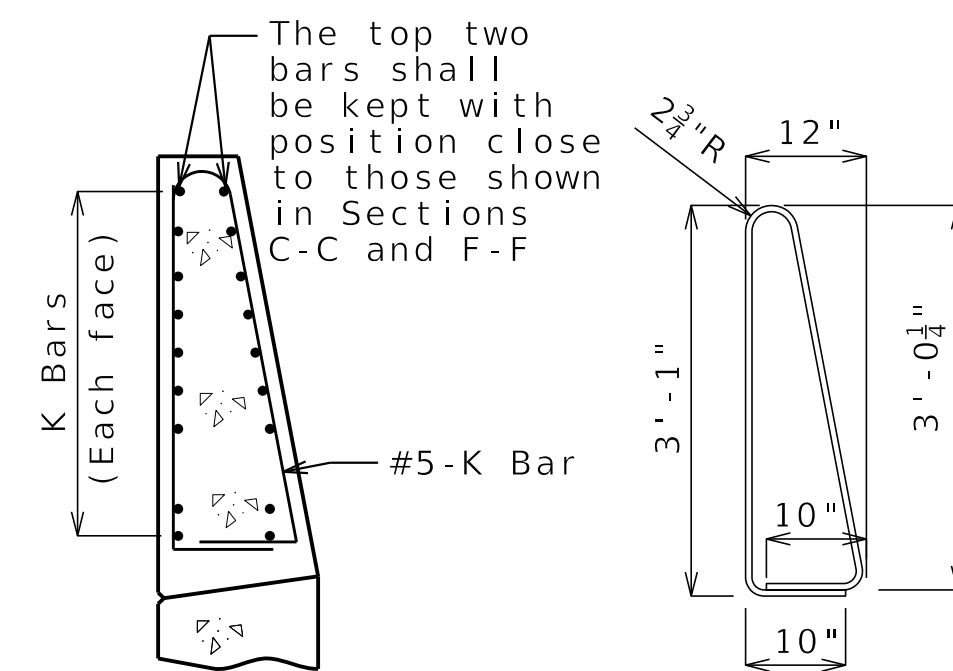
SECTION E-E



SECTION F-F



SECTION I-I



K24-K25 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

The K24-K25 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

RIGHT TYPE D BARRIER AT END BENTS

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.
DATE PREPARED
12/19/2025
ROUTE
1-70
STATE
MO
DISTRICT
BR
SHEET NO.
A9678-33
COUNTY
ST. CHARLES
JOB NO.
JST0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A9678

DESCRIPTION
DATE

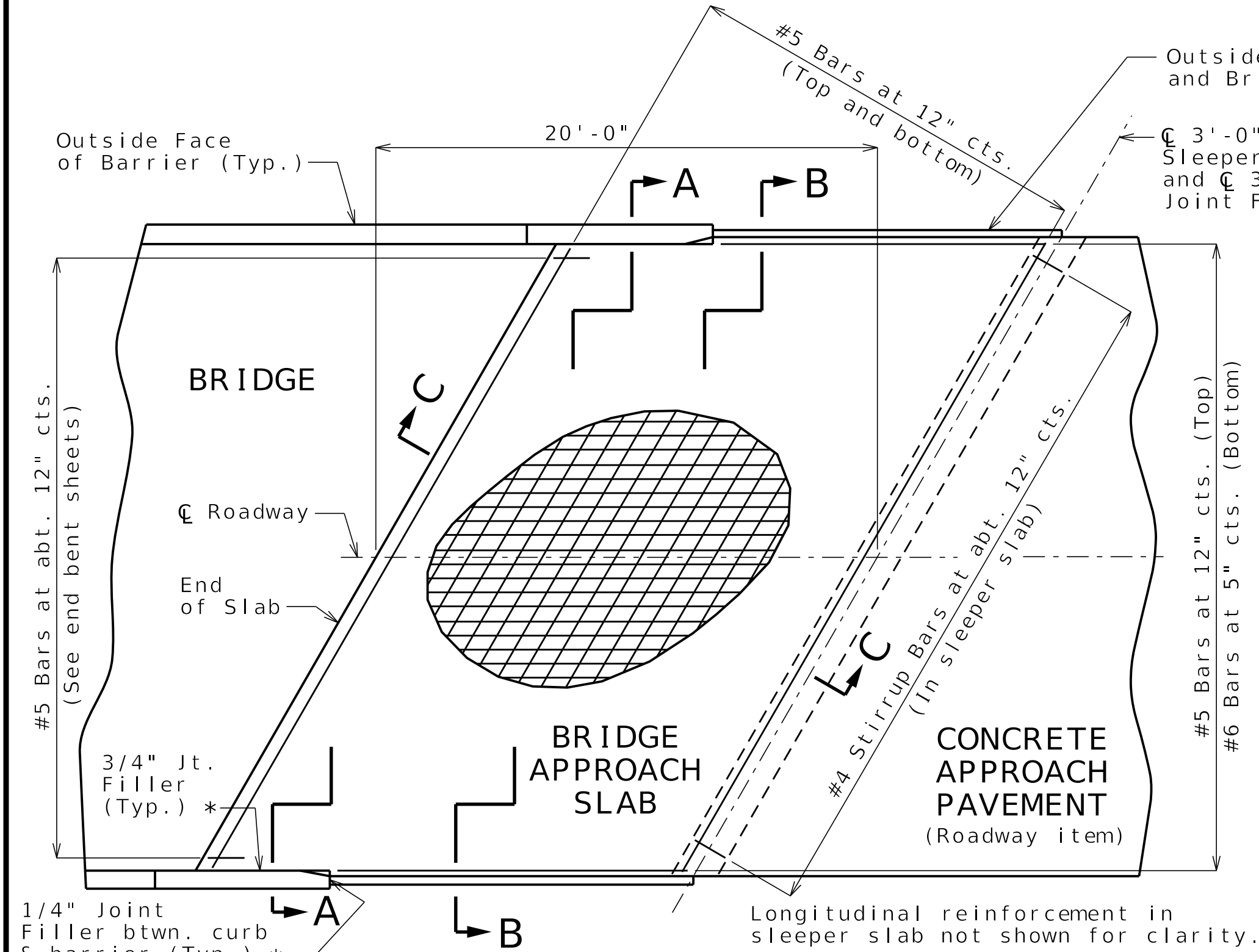
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IMPROVE 70
ALLIANCE

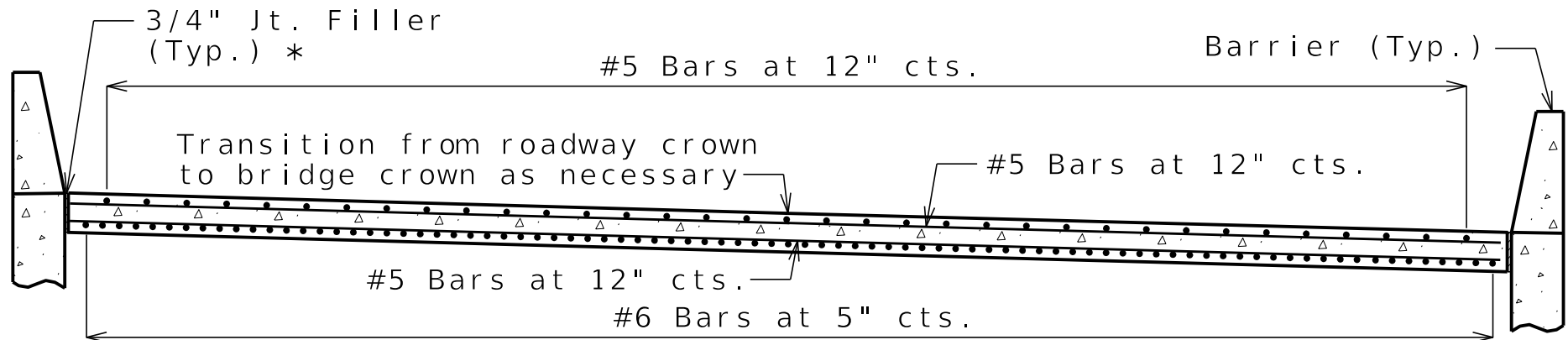
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
1923 Barrett Parkway Dr
Suite 202 MO 64021
Phone 314-334-3100
Fax 314-334-3105
Missouri Certificate of Authority 001578

EFK Moen
Civil Engineering Design
1923 Barrett Parkway Dr
Suite 202 MO 64021
Phone 314-334-3100
Fax 314-334-3105
Missouri Certificate of Authority 001578

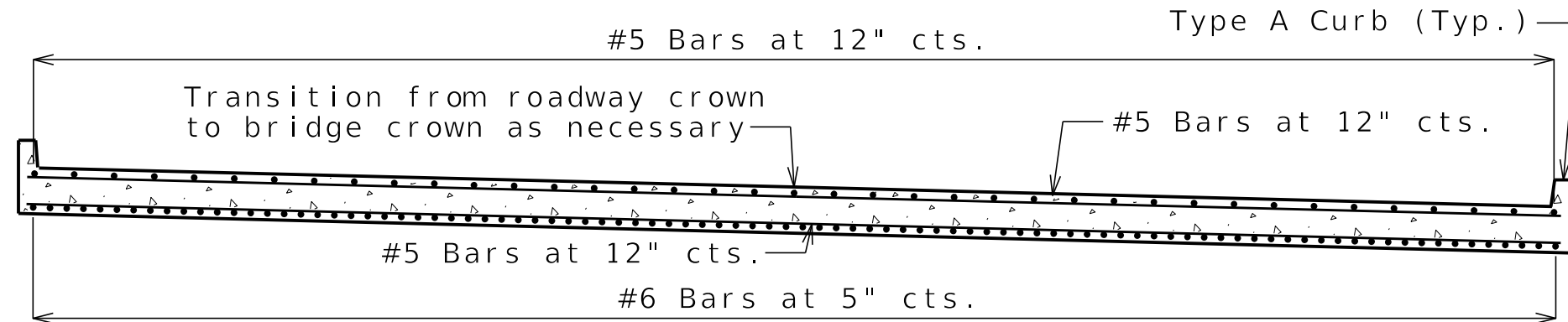
12/29/2025
Released for Construction



PART PLAN SHOWING REINFORCEMENT

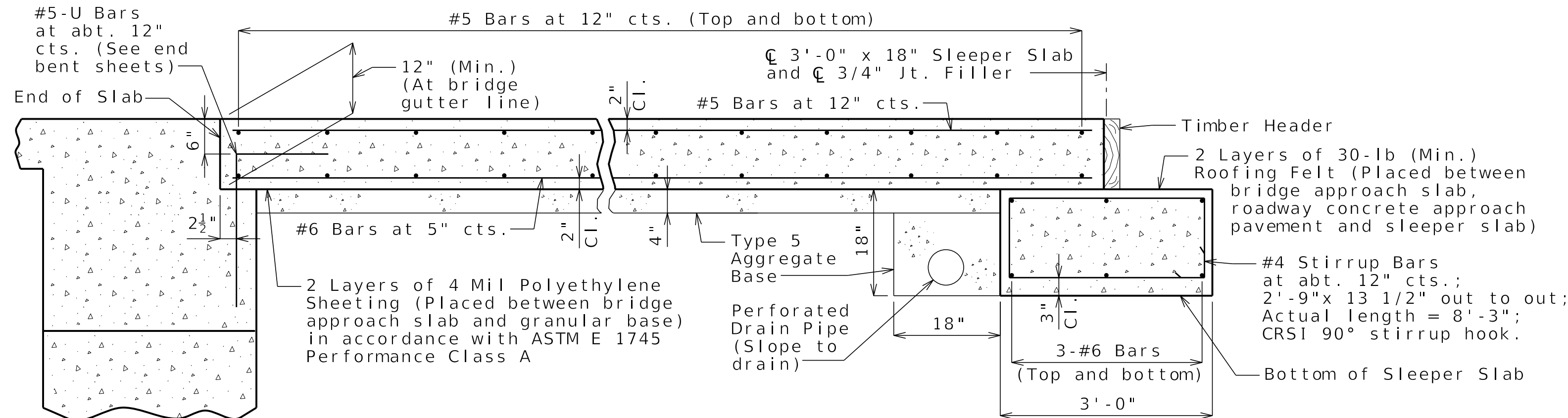


SECTION A-A

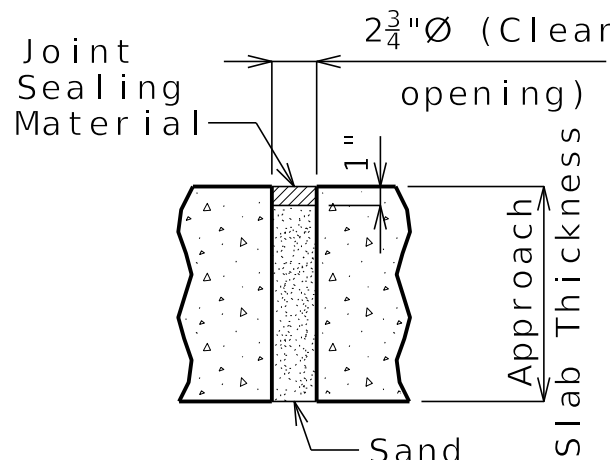


SECTION B-B

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

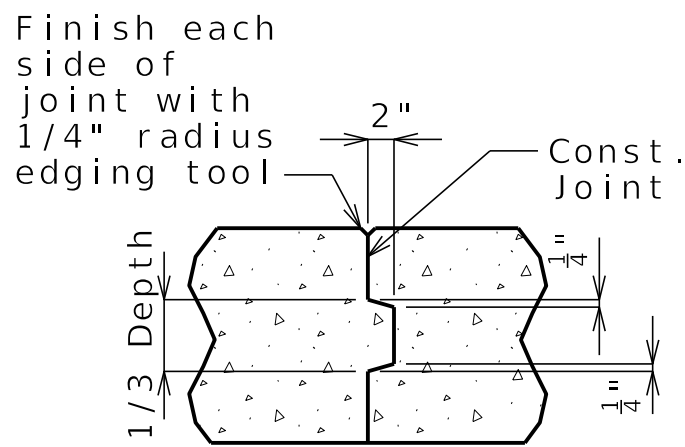


SECTION C-C

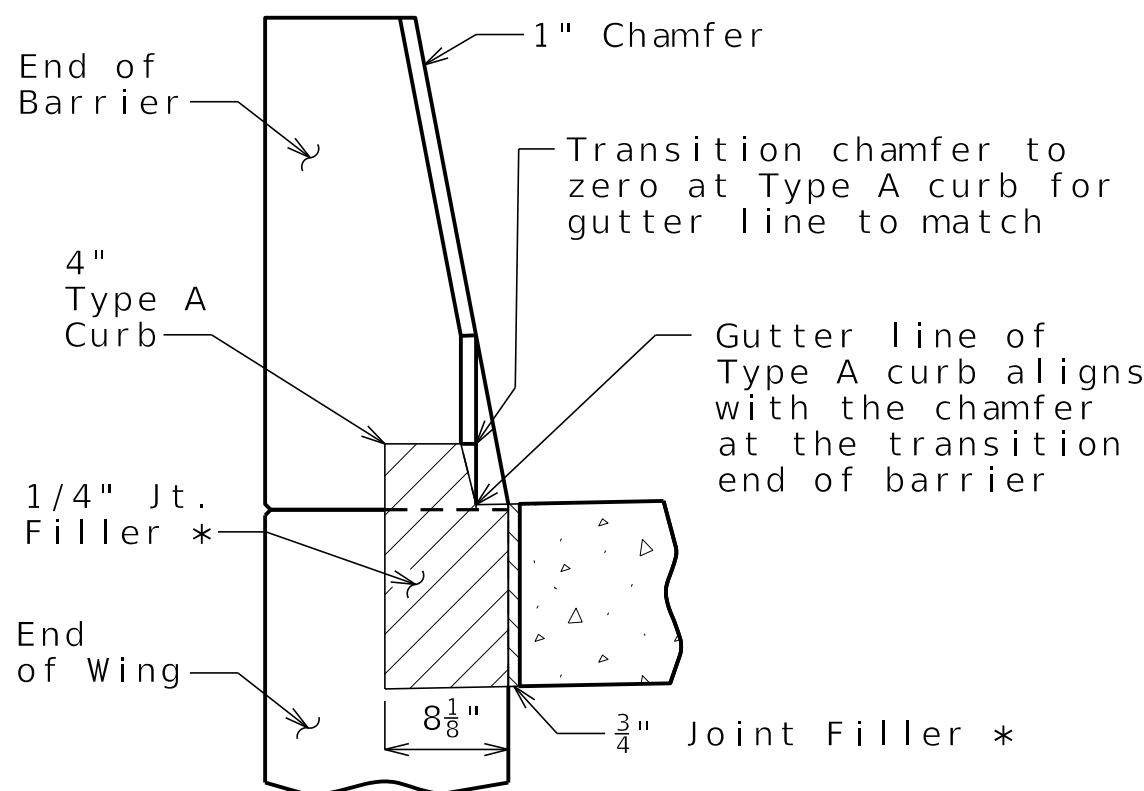


UNDERSEAL ACCESS HOLE DETAIL

(If required)



CONSTRUCTION JOINT DETAIL



SECTION BETWEEN CURB AND BARRIER

General Notes:

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with fy = 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 24 inches for #5 bars and 40 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.

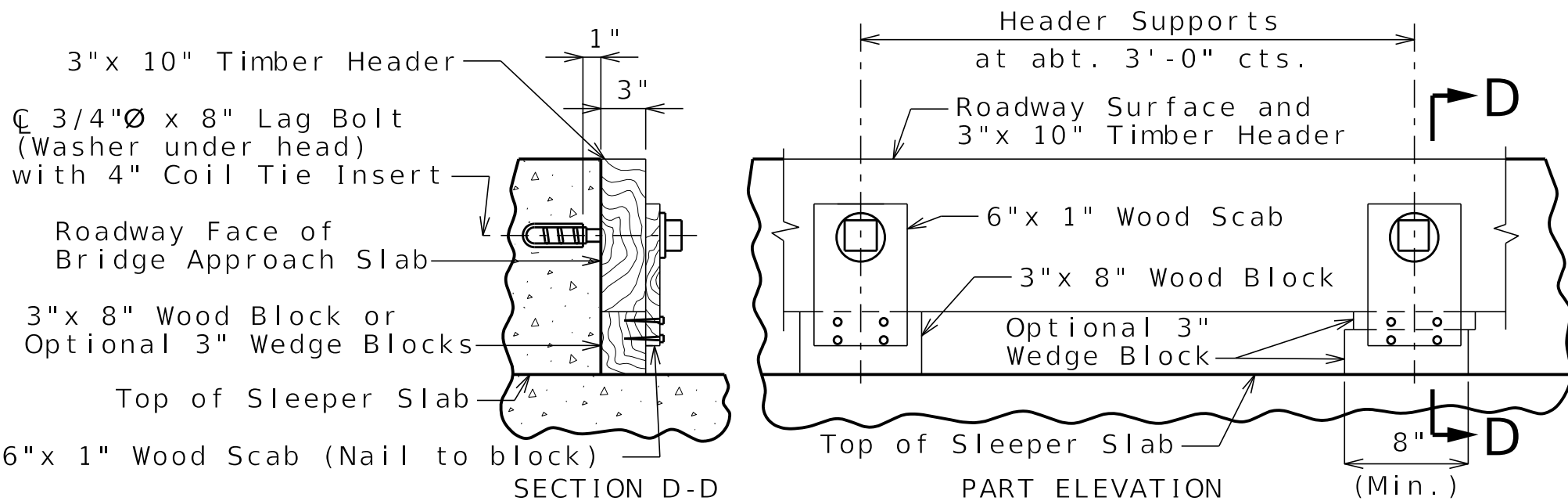
The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.

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.

* 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.



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

BRIDGE APPROACH SLAB (MAJOR)

Detailed Oct. 2025
Checked Oct. 2025

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

Sheet 34 of 45



THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.

DATE PREPARED
12/19/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. A9678-34

COUNTY ST. CHARLES

JOB NO. JST0020

CONTRACT ID.

PROJECT NO.

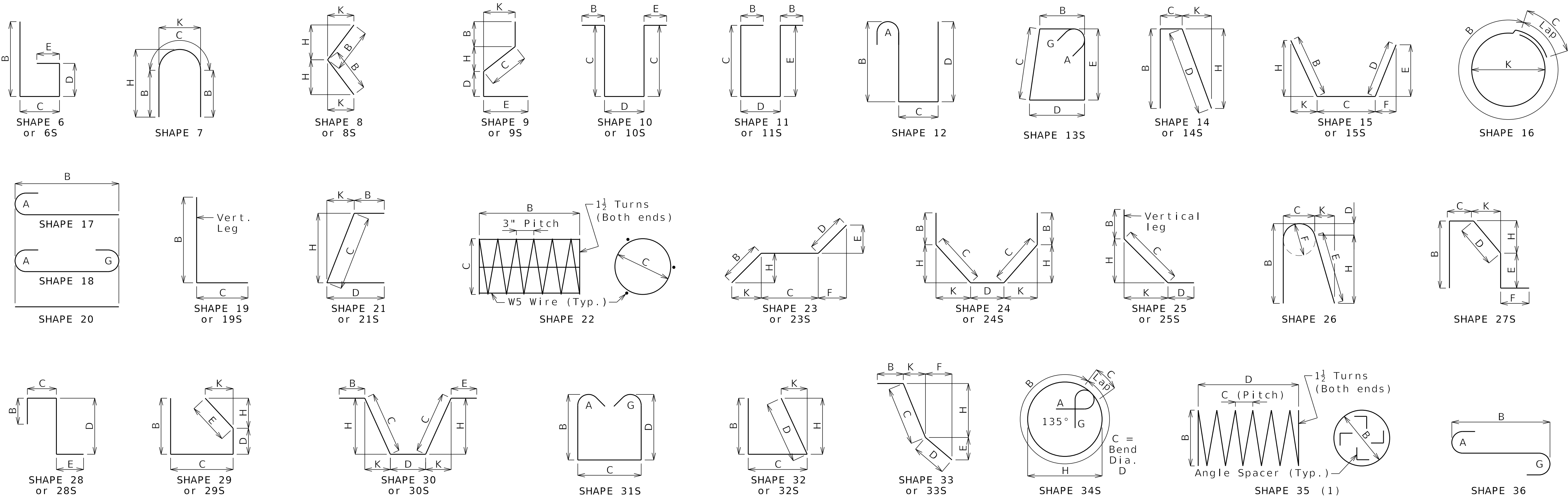
BRIDGE NO. A9678

DESCRIPTION	DATE

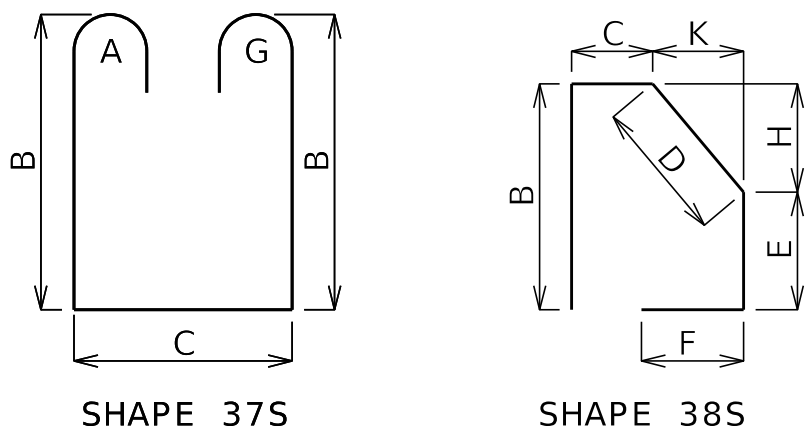
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270
HNTB
EKK-Moen
Civil Engineering Design
1923 Barrett Parkway Dr.
Suite 200
St. Louis, MO 63021
Phone 314-334-3100
Fax 314-334-3108
Missouri Certificate of Authority 001578



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"	
#7	2	5 1/4"	14"	9 3/4"	7"	
	3	7"	15"	11 1/2"	8 3/4"	
#8	2	6"	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			J
			90°	135°	180°	
#4	2	2"	4 1/2"	4 1/2"	5"	2 7/8"
	3	3"	5"	5 1/4"	6"	3"
#5	2	2 1/2"	5 3/4"	5 3/4"	5 3/4"	3 3/8"
	3	3 3/4"	6 1/4"	6 1/2"	7"	3 5/8"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 5/8"
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				
By Size	W5	0	0	0	0	0	0	0	0
	4	402	0	0	3,996	0	0	402	3,996
	5	6,036	0	0	20,364	13,233	601	6,036	34,198
	6	6,497	0	0	39,538	0	0	6,497	39,578
	7	0	0	0	3,475	0	0	0	3,475
	8	0	0	0	13,750	0	0	0	13,750
	9	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0
	11	33,547	0	0	0	0	0	33,547	0
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type	46,482	0	0	81,123	13,233	601	46,482	81,123	

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

BAR BENDING DIAGRAMS

STATE OF MISSOURI

David J. Glasstetter

NUMBER
PE-2000150018

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.

DATE PREPARED
12/19/2025

ROUTE
I - 70

DISTRICT
BR

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

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

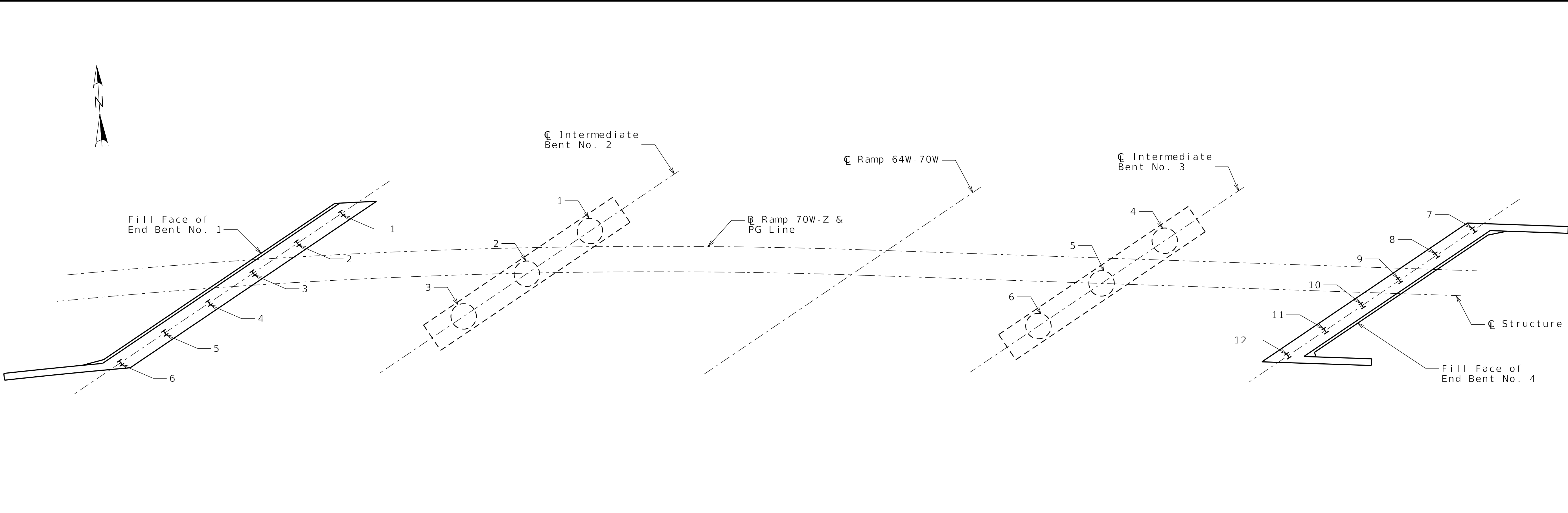
IMPROVE 70
ALLIANCE

HNTB

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

EFK Moen

Civil Engineering Design
1323 Barrett Parkway Dr
Suite 202 MO 63021
Phone 314-934-3100
Fax 314-934-3108
Missouri Certificate of Authority 001578



PLAN

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			
4			
5			
6			
End Bent No. 4			
7			
8			
9			
10			
11			
12			

As-Built Drilled Shaft Data				
Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
Int. Bent No. 2				
1				
2				
3				
Int. Bent No. 3				
4				
5				
6				

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

This sheet to be completed by the Design-Builder.

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER

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ELECTRONICALLY.

DATE PREPARED
12/19/2025

ROUTE
I-70

STATE
MO

DISTRICT
BR

SHEET NO.
A9678-38

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

IMPROVE 70 ALLIANCE

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

EFK Moen
Civil Engineering Design
1923 Barrett Parkway Dr
Suite 200
St. Louis, MO 63021
Phone 314-394-3100
Missouri Certificate of Authority 001578

Detailed Oct. 2025
Checked Oct. 2025

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

HNTB										LOG OF BORING										BORING NO. BR-26					
																				PAGE 1 OF 1					
PROJECT I-70 Program: Warrenton to Wentzville										STATION / NORTHING / 1082870.4															
LOCATION St. Charles County										OFFSET / EASTING / 722171.2															
DATE STARTED 02/04/2025 DATE COMPLETED 02/04/2025										SURFACE ELEVATION 593.0 ft															
EXPLORATION CONTRACTOR Palmerton & Parrish Inc.										DATUM NAVD88															
DRILLER David Allen DRILL RIG CME 55										GROUND WATER LEVELS:															
HAMMER TYPE Auto HAMMER EFFICIENCY 78.0										▽ AT TIME OF DRILLING NATD															
LOGGED BY Pradip Adhikari CHECKED BY JMR 03/25/2025										▼ AFTER N/A															
														MATERIAL DESCRIPTION										ELEVATION (ft)	
														Unified (Visual) Classification System											
0																								593.0	
SSA 4.5"														Brown, stiff, FAT CLAY, moist											
CORE BARREL NQ														4.0										590	
SPT J-1 50/5" 2.0 32.5																									
NQ C-1 100% (38%)														15434 psi 165.7 0.3											
NQ C-2 100% (68%)														5552 psi 154.0 0.4										7.5' - change to medium to thick bedded 585	
NQ C-3 100% (88%)														11653 psi 150.4 0.4										12.5' - change to fresh, thick bedded, no closed joints 580	
NQ C-4 100% (70%)														18360 psi 162.6 0.2										17.5' - change to medium bedded, slightly weathered 575	
NQ C-5 100% (85%)														6764 psi 162.8 0.1											
NQ C-6 100% (70%)																								verticle fracture from 28.5' to 29' 565	
NQ C-7 100% (83%)														9172 psi 144.9 0.6										34.0 560	
Bottom of borehole at 34.0 feet.																									

BORING LOG W/ LAB DATA COLUMNS - HNTB OFC001_TEMPLATE.GDT - 5/16/25 12:07 - R\JOBS\71886 I-70_DB_PROJECT_2\DESIGN\GEOTECH\DIST\GINT\PROJ_2_STCHARLES_CO_HNTBLIB.GPJ

Sheet 39 of 45

BORING DATA

STATE OF MISSOURI

David J. Glasstetter

NUMBER PE-2000150018

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

DATE PREPARED 12/19/2025

ROUTE 1 - 70 STATE MO

DISTRICT BR SHEET NO. A9678 - 39

COUNTY ST. CHARLES

JOB NO. JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

IMPROVE 70 ALLIANCE

HNTB

715 KIRK DRIVE KANSAS CITY, MO 64105-1310 CERTIFICATE OF AUTHORITY NO. 001270

EFK Moen

Civil Engineering Design 1923 Barrett Parkway Dr Suite 200 MO 63021 Phone 314-394-3100 Statewide Missouri License No. 001578 Missouri Certificate of Authority 001578

B_A9678_039_JST0020_Boring-Data.dgn 4:47:56 PM 12/19/2025

HNTB

LOG OF BORING

BORING NO.

BR-27

PAGE

1

OF

1

PROJECT

I-70 Program: Warrenton to Wentzville

STATION / NORTHING

/ 1082882.7

LOCATION

St. Charles County

OFFSET / EASTING

/ 722198.7

DATE STARTED

02/04/2025

DATE COMPLETED

02/05/2025

SURFACE ELEVATION

593.9 ft

EXPLORATION CONTRACTOR

Palmerton & Parrish Inc.

DATUM

NAVD88

DRILLER

David Allen

DRILL RIG

CME 55

GROUND WATER LEVELS:

HAMMER TYPE

Auto

HAMMER EFFICIENCY

78.0

AT TIME OF DRILLING

NATD

LOGGED BY

Pradip Adhikari

CHECKED BY

JMR 03/25/2025

AFTER

N/A

DRILLING METHOD

DEPTH (ft)

SAMPLE TYPE NUMBER

SAMPLE RECOVERY (in)

CORE REC % (RQD %)

BLOW COUNTS (N VALUE)

POCKET PEN. (tsf)

UNCONFINED (tsf)

DRY DENSITY (pcf)

WATER CONTENT (%)

LIQUID LIMIT (%)

PLASTIC LIMIT (%)

PASSING #200 (%)

GRAPHIC LOG

ELEVATION (ft)

SSA 4.5"

CORE BARREL NQ

0

3

5

7.5

10

12.5

15

17.5

20

22.5

25

28

30

33.0

SPT J-1

0

50/0"

100% (40%)

17977 psi

162.5

0.2

100% (68%)

16660 psi

166.2

0.2

16789 psi

166.6

0.1

17010 psi

164.9

0.1

17286 psi

150.0

0.4

10580 psi

152.0

0.2

Brown, stiff, FAT CLAY, moist

LIMESTONE, light gray, fine grained, thin to thick bedded, moderately weathered, hard highly weathered between 4' and 4.8'

shaley limestone between 10.5' to 11' with thin shale seam

12.0' - change to slightly weathered

13.0' - change to medium to thick bedded

23.0' - few chert nodules

Bottom of borehole at 33.0 feet.

HNTB

LOG OF BORING

BORING NO.

BR-28

PAGE

1

OF

1

PROJECT

I-70 Program: Warrenton to Wentzville

STATION / NORTHING

/ 1082855.4

LOCATION

St. Charles County

OFFSET / EASTING

/ 722287.8

DATE STARTED

02/24/2025

DATE COMPLETED

02/24/2025

SURFACE ELEVATION

599.1 ft

EXPLORATION CONTRACTOR

Palmerton & Parrish Inc.

DATUM

NAVD88

DRILLER

Josh Starkey

DRILL RIG

CME 55 LC

GROUND WATER LEVELS:

HAMMER TYPE

Auto

HAMMER EFFICIENCY

84.7

AT TIME OF DRILLING

NATD

LOGGED BY

Bikosh Nepal

CHECKED BY

JMR 03/25/2025

AFTER

N/A

DRILLING METHOD

DEPTH (ft)

SAMPLE TYPE NUMBER

SAMPLE RECOVERY (in)

CORE REC % (RQD %)

BLOW COUNTS (N VALUE)

POCKET PEN. (tsf)

UNCONFINED (tsf)

DRY DENSITY (pcf)

WATER CONTENT (%)

LIQUID LIMIT (%)

PLASTIC LIMIT (%)

PASSING #200 (%)

GRAPHIC LOG

ELEVATION (ft)

SSA 4.5"

CORE BARREL NQ

0

5

6.2

10

10.2

15

15.2

20

20.2

25

25.2

30

30.2

35

35.2

36.2

SPT J-1

14

4-8-12 (20)

>4.0

SPT J-2

0

50/0"

100% (60%)

7719 psi

158.7

1.1

100% (72%)

7280 psi

161.8

1.0

17189 psi

165.6

0.3

12617 psi

162.4

0.9

18244 psi

166.4

0.3

9241 psi

148.1

2.1

100% (71%)

Reddish brown, hard, LEAN CLAY, little chert, moist

LIMESTONE, highly weathered

LIMESTONE, gray and brown, fine-medium grained, thin bedded, slightly weathered, hard

Bottom of borehole at 36.2 feet.

STATE OF MISSOURI

David J. Glasstetter

NUMBER

PE-2000150018

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

DATE PREPARED

12/19/2025

ROUTE

1 - 70

STATE

MO

DISTRICT

BR

SHEET NO.

A9678 - 40

COUNTY

ST. CHARLES

JOB NO.

JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A9678

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

IMPROVE 70 ALLIANCE

HNTB

715 KIRK DRIVE KANSAS CITY, MO 64105-1310

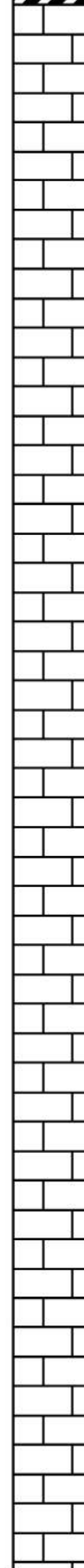
CERTIFICATE OF AUTHORITY NO. 001270

EFK•Moen

Civil Engineering Design

1923 Barrett Parkway Dr. Suite 200 St. Louis, MO 63021

Phone 314-394-3100 Fax 314-394-3188 Missouri Certificate of Authority 001578

HNTB										LOG OF BORING				BORING NO. BR-29	
										PAGE 1		OF 1			
PROJECT I-70 Program: Warrenton to Wentzville										STATION / NORTHING / 1082873.9					
LOCATION St. Charles County										OFFSET / EASTING / 722313.8					
DATE STARTED 02/14/2025 DATE COMPLETED 02/14/2025										SURFACE ELEVATION 599.4 ft					
EXPLORATION CONTRACTOR Palmerton & Parrish Inc.										DATUM NAVD88					
DRILLER Josh Starkey DRILL RIG CME 55 LC										GROUND WATER LEVELS:					
HAMMER TYPE Auto HAMMER EFFICIENCY 84.7										▽ AT TIME OF DRILLING NATD					
LOGGED BY Bikash Nepal CHECKED BY JMR 03/25/2025										▼ AFTER N/A					
DRILLING METHOD	DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in) CORE REC % (RQD %)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	UNCONFINED (tsf)	DRY DENSITY (pcf)	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PASSING #200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION Unified (Visual) Classification System	ELEVATION (ft)	
SSA 4.5"	0												Brown, very stiff, FAT CLAY, little sand and crushed limestone	599.4	
	5	SPT J-1	15		3-6-9 (15)	3.0		27.8	65	23				595	
CORE BARREL NQ	6.9	SPT J-2 NQ C-1	0	93% (36%)	50/0"	4492 psi	155.2	1.4					LIMESTONE, gray and brown, fine grained, thin bedded, slightly weathered, hard, some clay seams and chert nodules	590	
	10	NQ C-2		98% (48%)		1658 psi	159.0	1.2						585	
	10.4	NQ C-3		100% (73%)		16077 psi	164.9	0.2						580	
	15	NQ C-4		100% (92%)		15056 psi	157.8	0.7						575	
	15.4	NQ C-5		100% (73%)		15284 psi	162.4	0.3					28.4' - change to coarse grained	570	
	20	NQ C-6		100% (97%)		5381 psi	139.2	2.7					32.4' - change to cherty	565	
	20.4	NQ C-7		100% (24%)										560	
	25												555		
	25.4												550		
	30												545		
	30.4												540		
	35												535		
	35.4												530		
	36.9												Bottom of borehole at 36.9 feet.	525	

Detailed Oct. 2025
Checked Oct. 2025

Note: For locations of borings, see Sheet No. 2.
Note: This drawing is not to scale. Follow dimensions.

HNTB				LOG OF BORING				BORING NO. BR-30							
				PAGE 1 OF 1											
PROJECT I-70 Program: Warrenton to Wentzville				STATION / NORTHING / 1082868											
LOCATION St. Charles County				OFFSET / EASTING / 722375.1											
DATE STARTED 02/13/2025 DATE COMPLETED 02/13/2025				SURFACE ELEVATION 596.4 ft											
EXPLORATION CONTRACTOR Palmerton & Parrish Inc.				DATUM NAVD88											
DRILLER Josh Starkey DRILL RIG CME 55 LC				GROUND WATER LEVELS:											
HAMMER TYPE Auto HAMMER EFFICIENCY 84.7				▽ AT TIME OF DRILLING NATD											
LOGGED BY Bikash Nepal CHECKED BY JMR 03/25/2025				▼ AFTER N/A											
DRILLING METHOD		DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in) CORE REC % (RQD %)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	UNCONFINED (tsf)	DRY DENSITY (pcf)	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PASSING #200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION Unified (Visual) Classification System	ELEVATION (ft)
SSA 4.5" CORE BARREL NQ		0													596.4
		3.5	SPT J-1 NQ C-1	0	79% (71%)	50/0"								GRAVEL	595
		5	NQ C-2		100% (83%)		6370 psi	151.9	1.4						3.5
		5.5	NQ C-3		100% (86%)		15729 psi	163.9	0.2					LIMESTONE, gray, fine grained, thin bedded, slightly weathered, hard, with chert	590
		10	NQ C-4		100% (82%)		15505 psi	163.6	0.3					13.5' - change to coarse grained	585
		10.5	NQ C-5		100% (74%)		17102 psi	162.0	0.3						580
		15													
		15.5													
		20													
		20.5													575
	23.5													23.5	
Bottom of borehole at 23.5 feet.															

BORING LOG W/ LAB DATA COLUMNS - HNTB OFC001_TEMPLATE.GDT - 5/14/25 07:53 - R\JOBS\Y1886 I-70_DB_PROJECT_2\DESIGN\GEO\TECH\GINT\PROJ_2_STCHARLES_CO_HNTBLIB.GPJ

Sheet 41 of 45

BORING DATA

STATE OF MISSOURI

David J. Glasstetter

NUMBER PE-2000150018

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

DATE PREPARED 12/19/2025

ROUTE 1 - 70 STATE MO

DISTRICT BR SHEET NO. A9678 - 41

COUNTY ST. CHARLES

JOB NO. JST0020

CONTRACT ID.

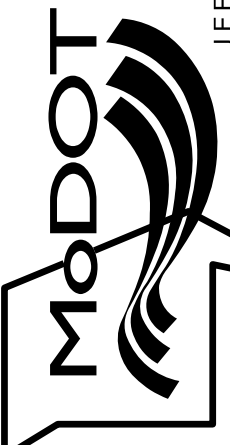
PROJECT NO.

BRIDGE NO. A9678

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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



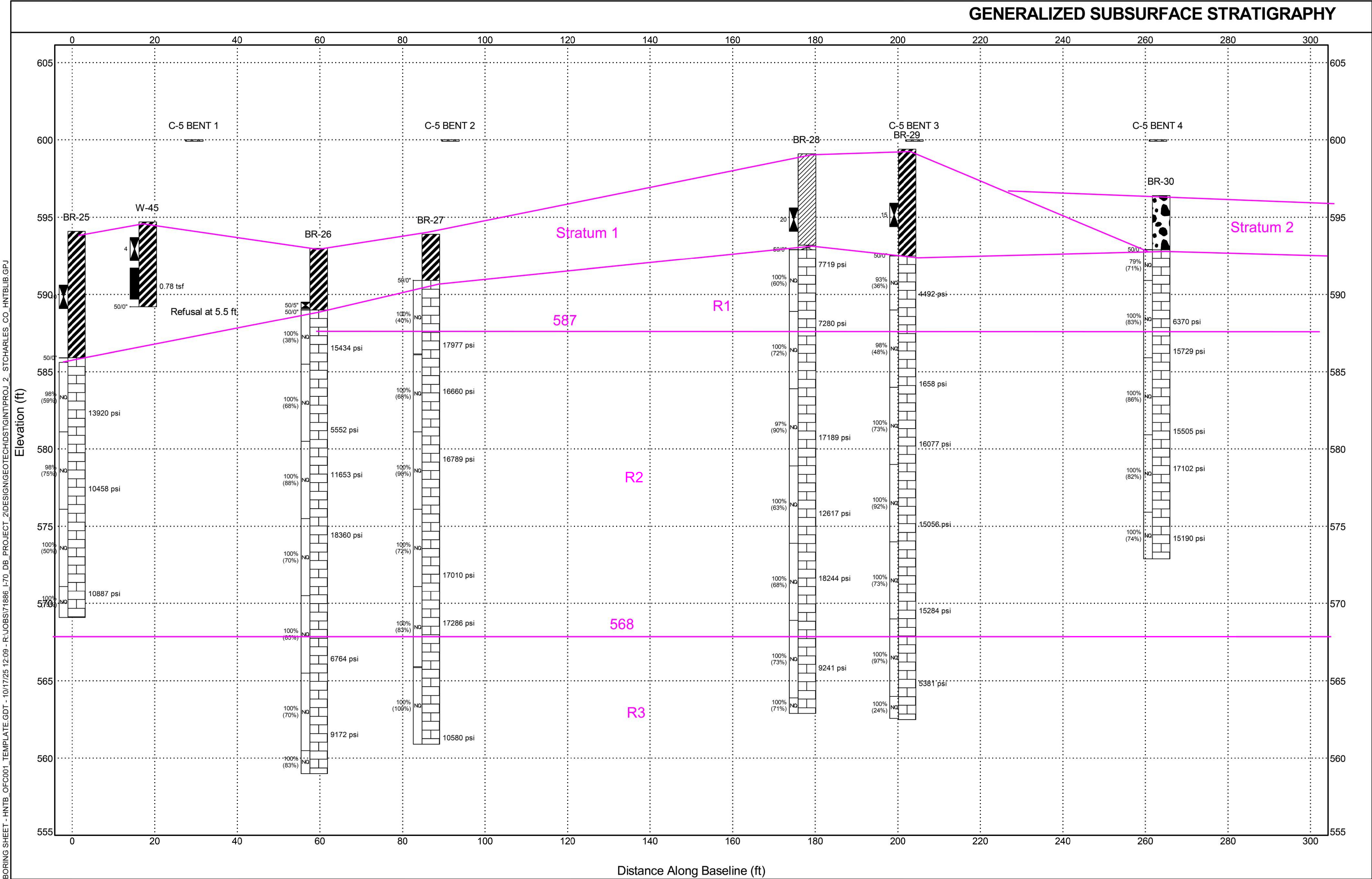


715 KIRK DRIVE KANSAS CITY, MO 64105-1310
1923 Barrett Parkway Dr Suite 200 St. Louis, MO 63021
Missouri Certificate of Authority: 001578



Civil Engineering Design
Phone: 314-394-3100
314-394-3100
Missouri Certificate of Authority: 001578

B_A9678_041_JST0020_Boring-Data.dgn 4:48:21 PM 12/19/2025



Detailed Oct. 2025
Checked Oct. 2025

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

Sheet 43 of 45

BORING DATA

STATE OF MISSOURI
David J. Glasstetter
NUMBER
PE-2000150018
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.

DATE PREPARED
12/19/2025

ROUTE
I-70

STATE
MO

DISTRICT
BR

SHEET NO.
A9678-43

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9678

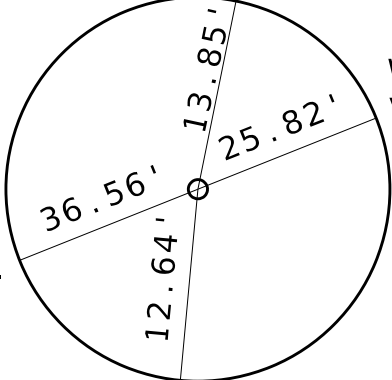
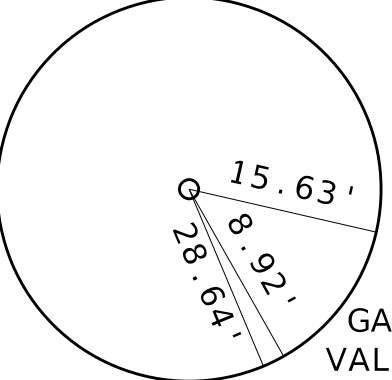
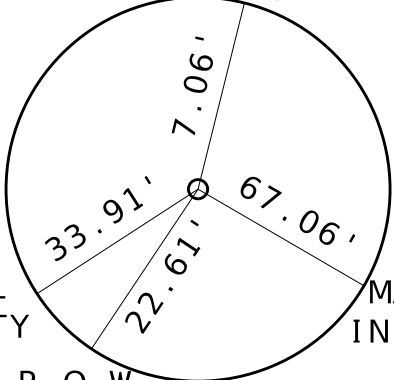
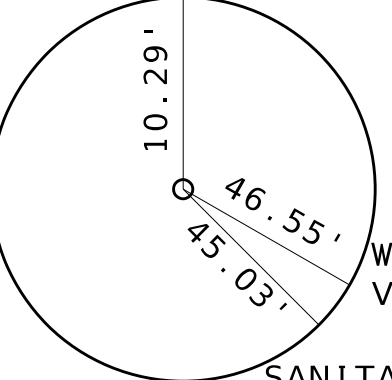
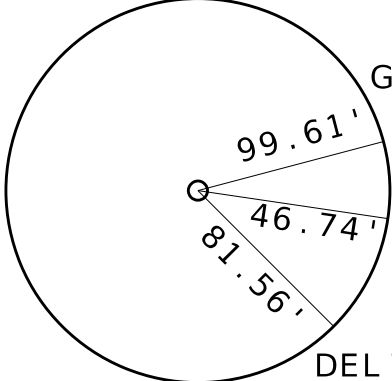
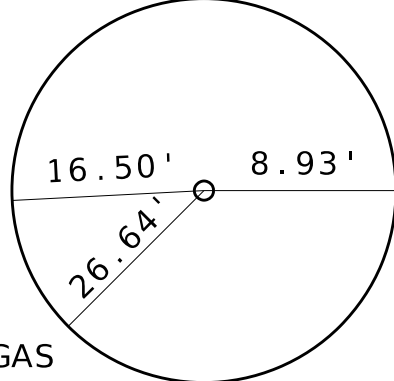
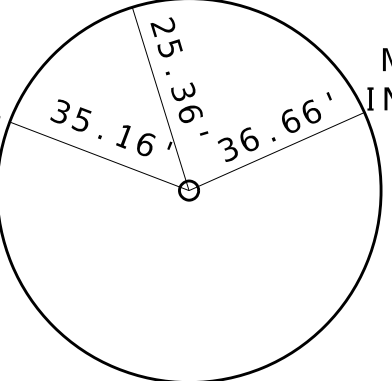
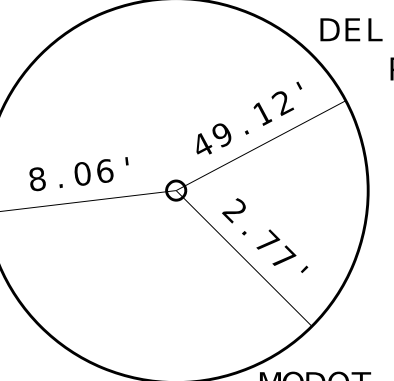
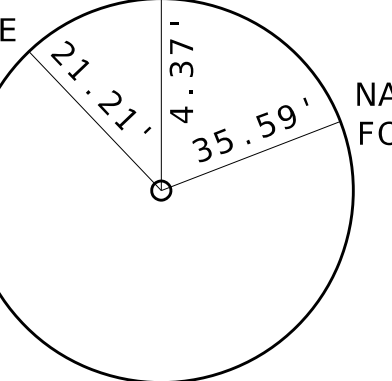
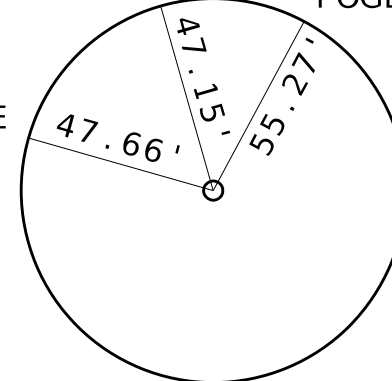
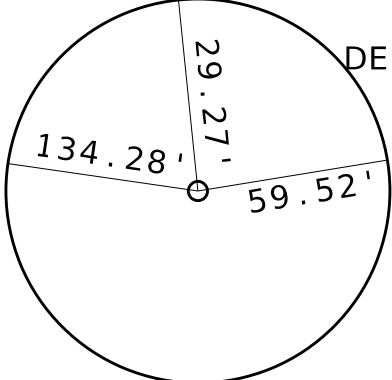
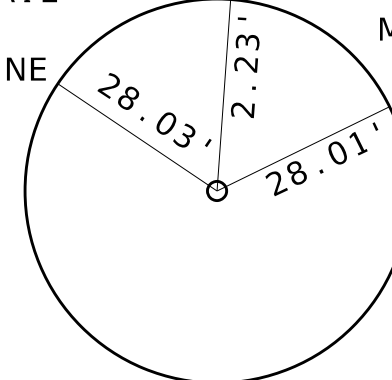
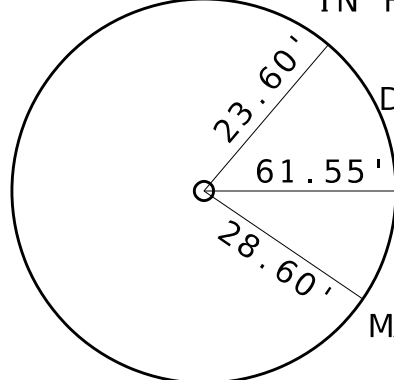
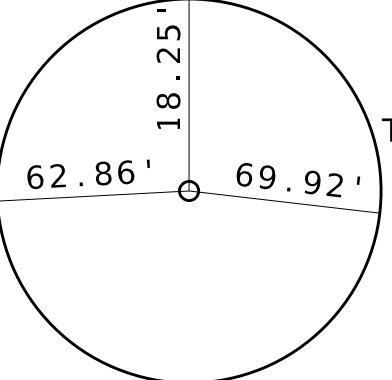
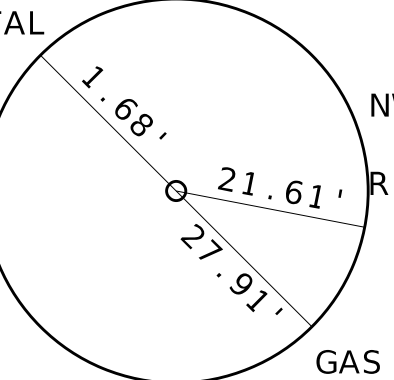
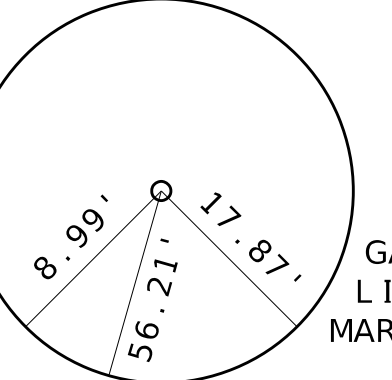
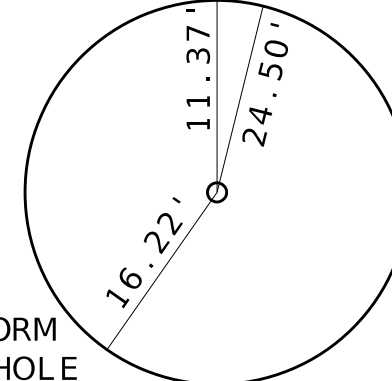
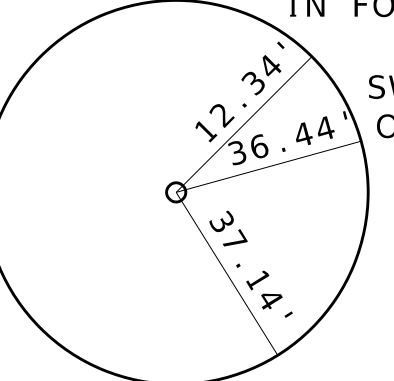
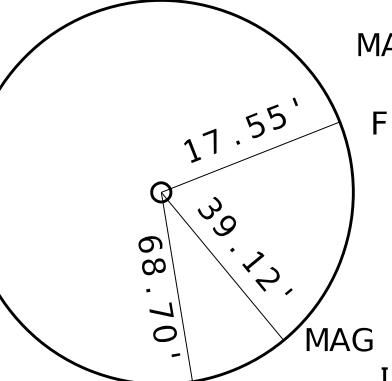
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

IMPROVE 70 ALLIANCE

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270

EFK Moen
Civil Engineering Design
1923 Barrett Parkway Dr
Suite 200
St. Louis, MO 63105
Phone 314-394-3100
Missouri Certificate of Authority 001578

BENCHMARK 100 74 /5/8x24_ROD_W/CAP SIGN POST  NORTH = 1081423.367 EAST = 723104.330 ELEV.= 599.597			BENCHMARK 113 74 /5/8x24_ROD_W/CAP  NORTH = 1078977.686 EAST= 728186.747 ELEV.= 623.007	BENCHMARK 114 74 /5/8x24_ROD_W/CAP SOUTH EDGE OF ASPHALT ROAD  NORTH = 1082531.641 EAST= 727818.620 ELEV.= 633.117	BENCHMARK 115 74 /5/8x24_ROD_W/CAP SOUTH EDGE OF ASPHALT ROAD  NORTH = 1082444.293 EAST= 729392.876 ELEV.= 619.994	
BENCHMARK 116 74 /5/8x24_ROD_W/CAP  NORTH = 1082653.370 EAST = 723222.089 ELEV.= 605.972	BENCHMARK 200 75 -BM 2IN SQ CUT  NORTH = 1078971 EAST= 728573 ELEV.= 613.97	BENCHMARK 208 75 BM 2IN SQ CUT  NORTH = 1082525 EAST= 721080 ELEV.= 597.57	BENCHMARK 209 75 -BM 2IN SQ CUT  NORTH = 1082558 EAST= 721763 ELEV.= 599.72	BENCHMARK 210 74 /5/8x24_ROD_W/CAP  NORTH = 1082628.386 EAST= 722867.362 ELEV.= 604.348	BENCHMARK 211 75 -BM 2IN SQ CUT  NORTH = 1082667 EAST= 723955 ELEV.= 602.59	
BENCHMARK 212 75 -BM 2IN SQ CUT  NORTH = 1082716 EAST = 724964 ELEV.= 610.96	BENCHMARK 213 75 -BM 2IN SQ CUT  NORTH = 1082709 EAST= 726010 ELEV.= 622.86	BENCHMARK 214 75 -BM 2IN SQ CUT  NORTH = 1082643 EAST= 727148 ELEV.= 631.52	BENCHMARK 215 74 /5/8x24_ROD_W/CAP  NORTH = 1082500.421 EAST= 728168.824 ELEV.= 626.184	BENCHMARK 216 75 -BM 2IN SQ CUT  NORTH = 1082415 EAST= 729223 ELEV.= 616.20	BENCHMARK 217 75 -BM 2IN SQ CUT  NORTH = 1082396 EAST= 730135 ELEV.= 612.21	
	BENCHMARK 220 75 -BM 2IN SQ CUT  NORTH = 1080588 EAST= 726887 ELEV.= 602.07			BENCHMARK 228 75 -BM 2IN SQ CUT  NORTH = 1084862 EAST= 722908 ELEV.= 656.76	BENCHMARK 229 74 /5/8x24_ROD_W/CAP  NORTH = 1083775.980 EAST= 723240.823 ELEV.= 619.275	



STATE OF MISSOURI
David J. Glasstetter
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DATE PREPARED
12/19/2025

ROUTE
I - 70

STATE
MO

DISTRICT
BR

SHEET NO.
A9678-44

COUNTY
ST. CHARLES

JOB NO.
JST0020

CONTRACT ID.

PROJECT NO.

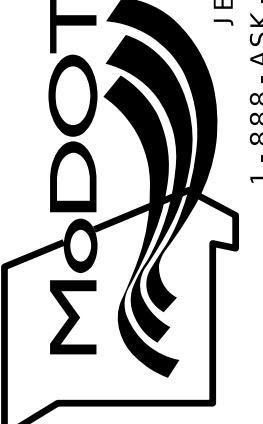
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Missouri Certificate of Authority 001578

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