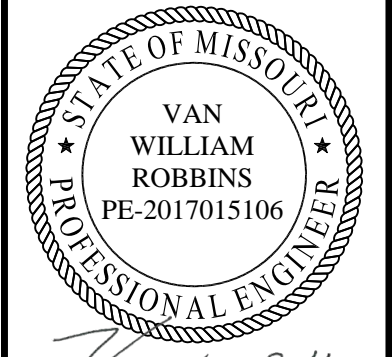


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Note:
See Civil Package 2: Early Grading for project reference points and project coordinate points.



Van W. Robbins
06-27-25

DATE PREPARED
06/25/2025

ROUTE	STATE
I - 70	MO
DISTRICT	SHEET NO.
BR	B12-01

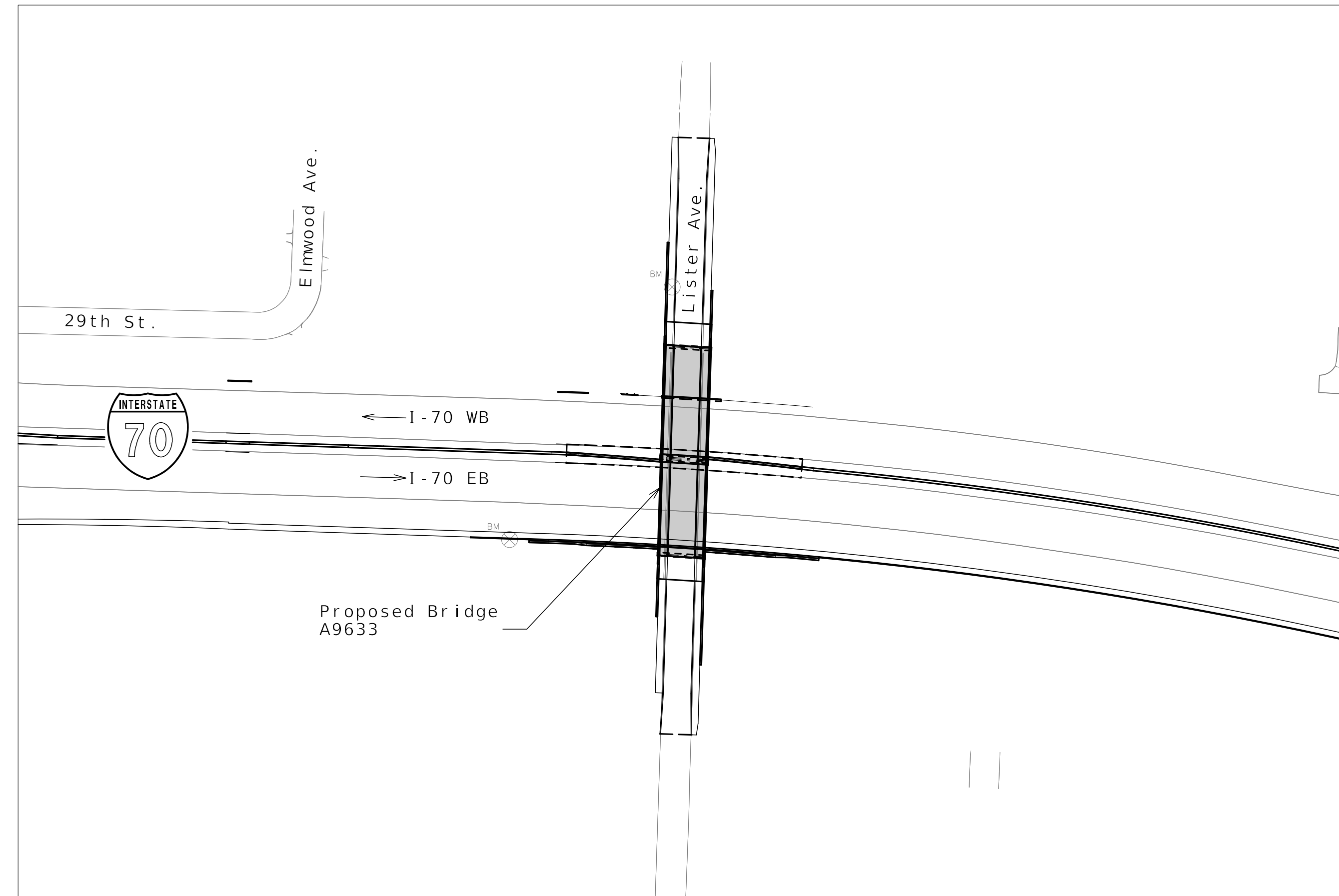
COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9633



LOCATION SKETCH

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B12-03	General Notes
B12-04	Substructure Layout
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B12-06	Details of End Bent No. 1
B12-07	Details of End Bent No. 1
B12-08	Vertical Drain at End Bents
B12-09	Details of Intermediate Bent No. 2
B12-10	Details of Intermediate Bent No. 2
B12-11	Details of Intermediate Bent No. 2
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B12-13	Details of End Bent No. 3
B12-14	Details of End Bent No. 3
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B12-34	Boring Logs
B12-35	Boring Logs

DATE	DESCRIPTION
06/25/25 <td>REV 0 - RFC SUBMITTAL</td>	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER JOINT VENTURE

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

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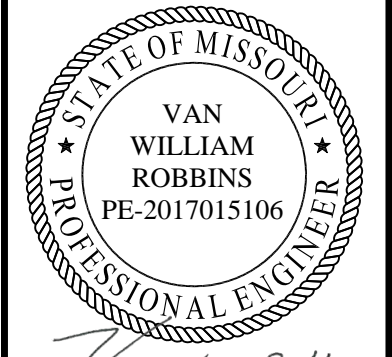
BRIDGE: LISTER OVER ROUTE I-70

ROUTE I-70 FROM ROUTE I-670 TO ROUTE 70
ABOUT 3.4 MILES EAST OF ROUTE I-670
TIE STATION 239+87.22 (C I-70)

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-01 of B12-35



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06-27-25

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-02
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

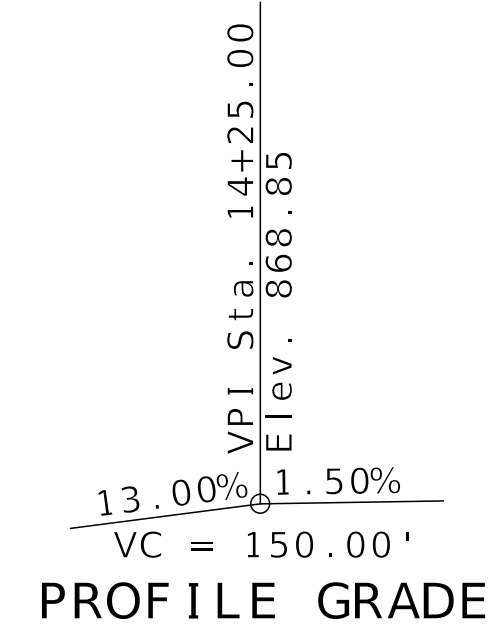
BRIDGE NO.
A9633

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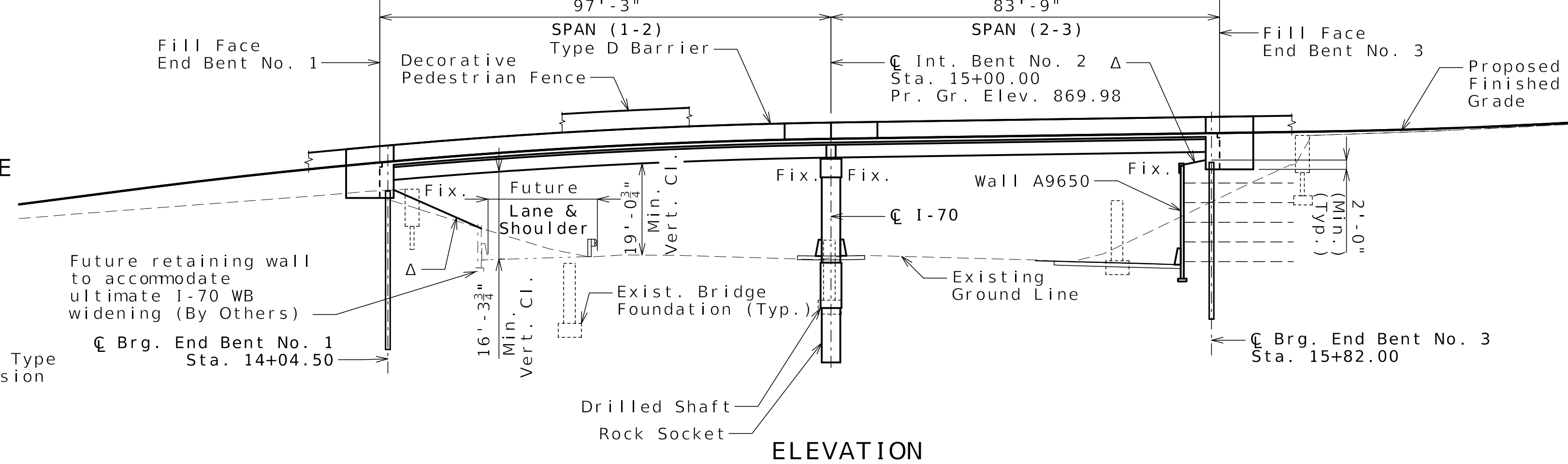
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(97.3' - 83.8') Prestressed Concrete Adjacent Box Beam Spans



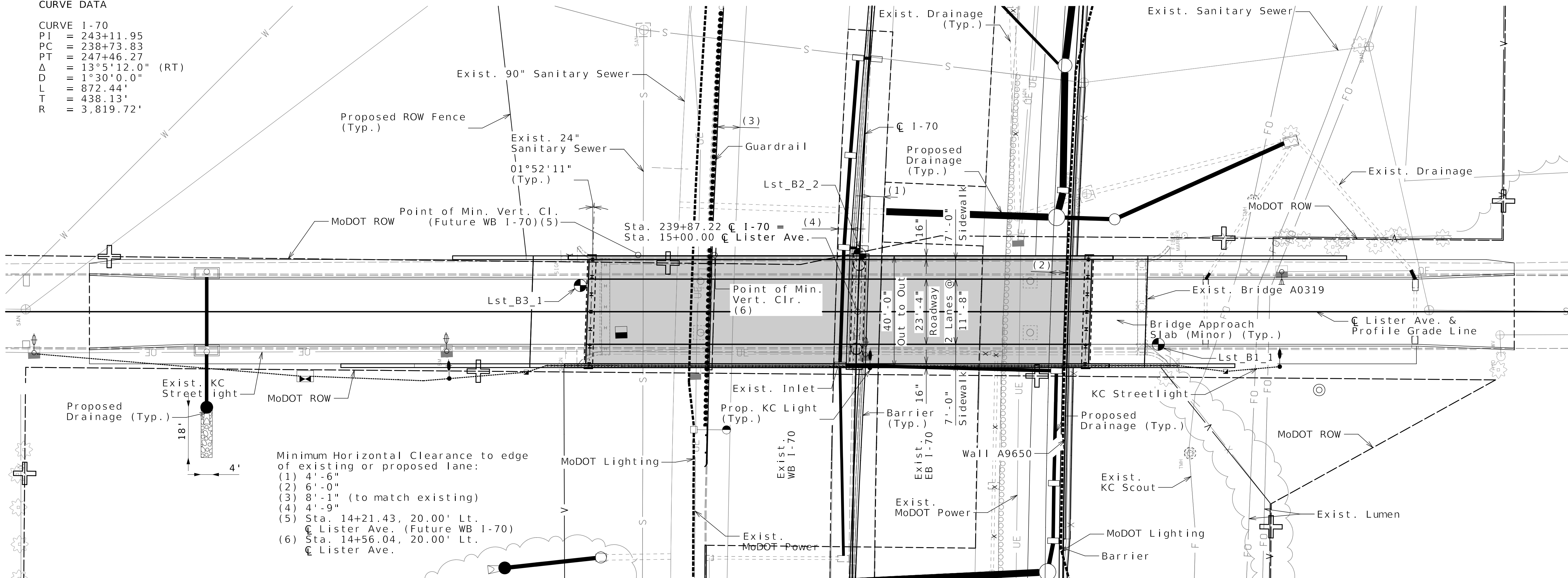
Beg. Sta. 14+02.75 Pr. Gr. Elev. 864.89
181'-0" (Measured along C Lister Ave.)
Sta. 15+83.75 Pr. Gr. Elev. 871.23



Δ 2:1 Max Slope (Normal) with 2'-0" Type 2 Rock Blanket with Permanent Erosion Control Geotextile

CURVE DATA

- CURVE I-70
- PI = 243+11.95
- PC = 238+73.83
- PT = 247+46.27
- Δ = 13°5'12.0" (RT)
- D = 1°30'0.0"
- L = 872.44'
- T = 438.13'
- R = 3,819.72'



- Minimum Horizontal Clearance to edge of existing or proposed lane:
- 4'-6"
 - 6'-0"
 - 8'-1" (to match existing)
 - 4'-9"
 - Sta. 14+21.43, 20.00' Lt. C Lister Ave. (Future WB I-70)
 - Sta. 14+56.04, 20.00' Lt. C Lister Ave.

Indicate location of borings.
Notice and Disclaimer Regarding Boring Log Data
The locations of all subsurface borings performed by the design-build team for this structure are shown on the plan sheets for this structure. The logs for all locations indicated are provided on Sheets No. B12-33 thru B12-35. Laboratory test results, rock core photographs and other information obtained at these boring are available in the corresponding Foundation Recommendations Memo prepared by HNTB. By the nature of the exploration process, the information gathered at these borings represents only a small fraction of the total volume of material at the Site. Interpolation between data samples may not be indicative of the nature and extent of the variations that actually exist between sampling locations.

Notes:
All Elevations are based on NAVD88 datum unless otherwise noted.
All dimensions are horizontal.
All Bents are parallel.
Existing Bridge A0319 to be removed in accordance with Sec. 216.
Existing structures & foundations shown may not represent what is left in place after removal.
For elevations of drilled shafts and rock sockets, see Sheet No. B12-09.
See Civil Package 6: I-70 Mainline for I-70 typical section details.
See Civil Package 6: I-70 Mainline for proposed I-70 drainage details.
Existing I-70 drainage systems to remain in service during construction of Bridge A9633.

PLAN

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Package: BRD-12-Lister-Ave

GENERAL PLAN AND ELEVATION

Design Specifications:
 2020 AASHTO LRFD Bridge Design Specifications (9th Ed.) and 2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Edition)
 Seismic Design Category = A (Nonseismic)
 Design earthquake response spectral acceleration coefficient at 1.0 second period, $S_{D1} = 0.15$
 Acceleration Coefficient (effective peak ground acceleration coefficient), $A_s = N/A$

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 (End Bents below Const. Jt.) $f'_c = 3,000$ psi
 Class B-1 Concrete (Intermediate Bent except Drilled Shafts and Rock Sockets) $f'_c = 4,000$ psi
 Class B-2 Concrete (Drilled Shafts and Rock Sockets) $f'_c = 4,000$ psi
 Class B-2 Concrete (Superstructure, except Prestressed Beams, and Type D Barrier) $f'_c = 4,000$ psi
 Class B-1 Concrete (Type D Barrier) $f'_c = 4,000$ psi
 Reinforcing Steel (ASTM A615 Grade 60) $f_y = 60,000$ psi
 Structural HP Steel Pile (ASTM A709 Grade 50) $f_y = 50,000$ psi
 For prestressed beam stresses, see Sheets No. B12-16 thru B12-17.

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

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

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

All reinforcing in the Type D Barrier, raised sidewalks, light blisters, slab, concrete diaphragms, End Bents No. 1 and 3 and Intermediate Bent No. 2 shall be epoxy coated. Reinforcing in the rock sockets and drilled shaft shall be uncoated.

Concrete Protective Coatings:
 Concrete and masonry protective coating shall be applied on all exposed concrete and stone areas as noted in the plans in accordance with Sec 711. See Sheet No. B12-29.

Sacrificial graffiti protective coating shall be applied on all exposed concrete and stone areas as noted in the plans in accordance with Sec 711. See Sheet No. B12-29.

Miscellaneous:
 Outline of old work is indicated by light dashed lines. Heavy lines indicate new work U.N.O.

Abbreviations:
 E.F. denotes Each Face
 N.F. denotes Near Face
 F.F. denotes Far face
 U.N.O. denotes Unless Noted Otherwise

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

End Bent No. 1 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.

Prebore for piles at Bent No. 3 to elevation 830. If optional pile spacers are used at End Bent No. 3, set at least 5 feet below bottom of MSE wall leveling pad.

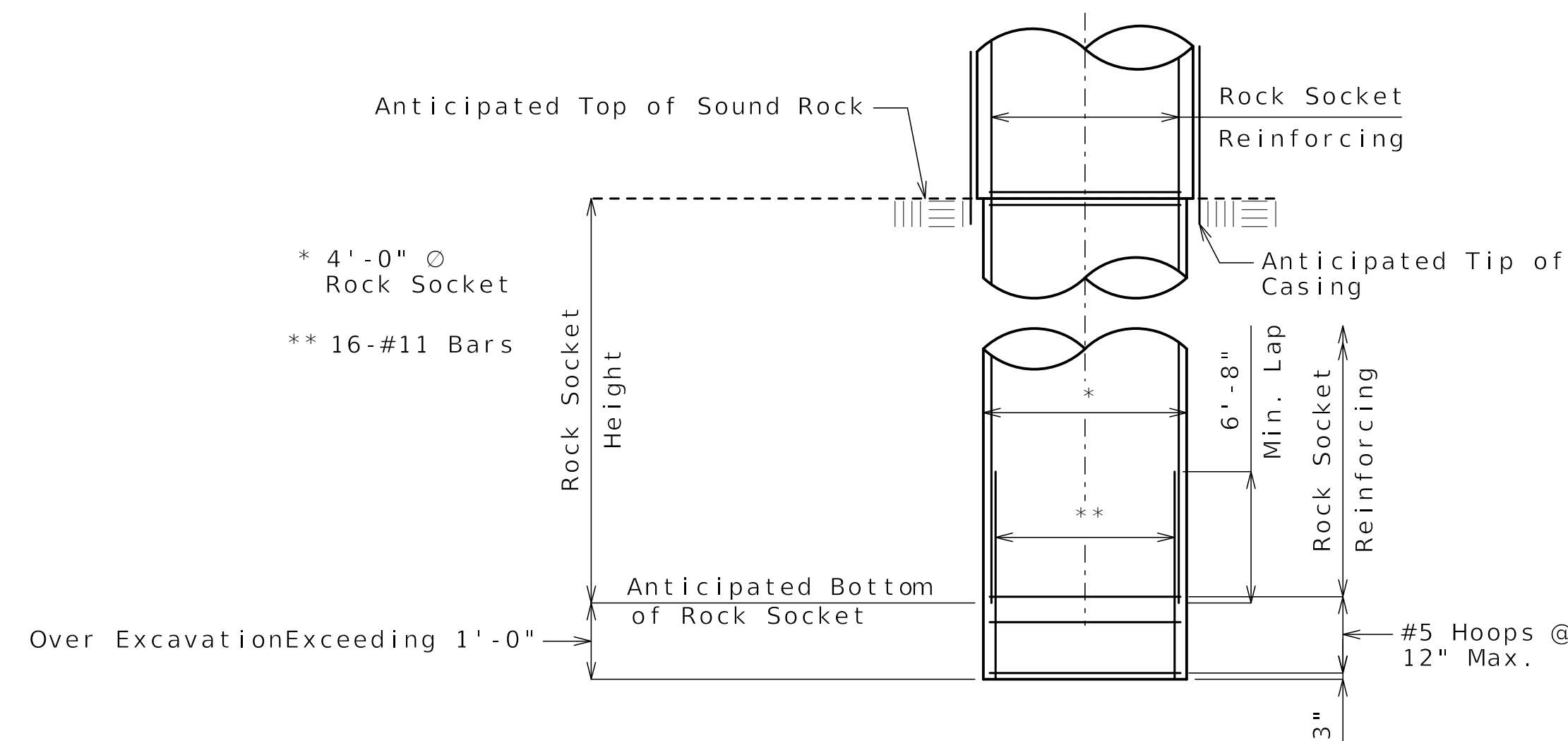
At End Bent No. 3, verify bottom of the prebore is clean and contains no loose rubble. Set pile and seat with tap of backhoe bucket or equivalent method. Prebore shall be backfilled with Class B concrete to elevation 835. Backfill remaining length of prebore per Sec 702.

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

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

The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) shown on the plans for all piles. Deviations in penetration less than 5 feet of minimum will be considered acceptable provided the contractor makes the necessary corrections to ensure the minimum penetration is achieved on subsequent piles.
 DF = FHWA-modified Gates Dynamic Pile Formula

Rock Socket (Drilled Shafts):
 Minimum Nominal Axial Compressive Resistance (Side Resistance + Tip Resistance) = Maximum Factored Loads/Resistance Factors
 Thickness of permanent steel casing shall be in accordance with Project AAS.
 Sonic logging testing shall be performed on all drilled shafts and rock sockets.
 Drilled shafts shall be constructed in accordance with project Drilled Shaft AAS.



ROCK SOCKET OVER EXCAVATION DETAIL

For Rock Socket Details see Intermediate Bent Details

Foundation Data				
Type	Design Data	Bent Number		
		1	2	3
Load Bearing Pile	Pile Type and Size	H12x74	---	H12x53
	Number	ea 7	---	7
	Approximate Length Per Each	ft 33	---	36
	Pile Point Reinforcement	ea All	---	---
	Min. Galvanized Penetration (Elev.)	ft Full Length	---	Full Length
	Minimum Tip Penetration (Elev.)	ft 843	---	830
	Criteria for Min. Tip Penetration	Min. Embed	---	Min. Embed
	Pile Driving Verification Method	DF	---	N/A
	Resistance Factor	0.40	---	0.50
	Minimum Nominal Axial Compressive Resistance	kip 643	---	515
Rock Socket	Number	ea ---	2	---
	Foundation Material	---	Limestone	---
	Elevation Range	ft ---	835-805	---
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf ---	32.7	---
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf ---	400	---

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GENERAL NOTES



Van W. Robbins
 06-27-25

DATE PREPARED
 06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-03

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

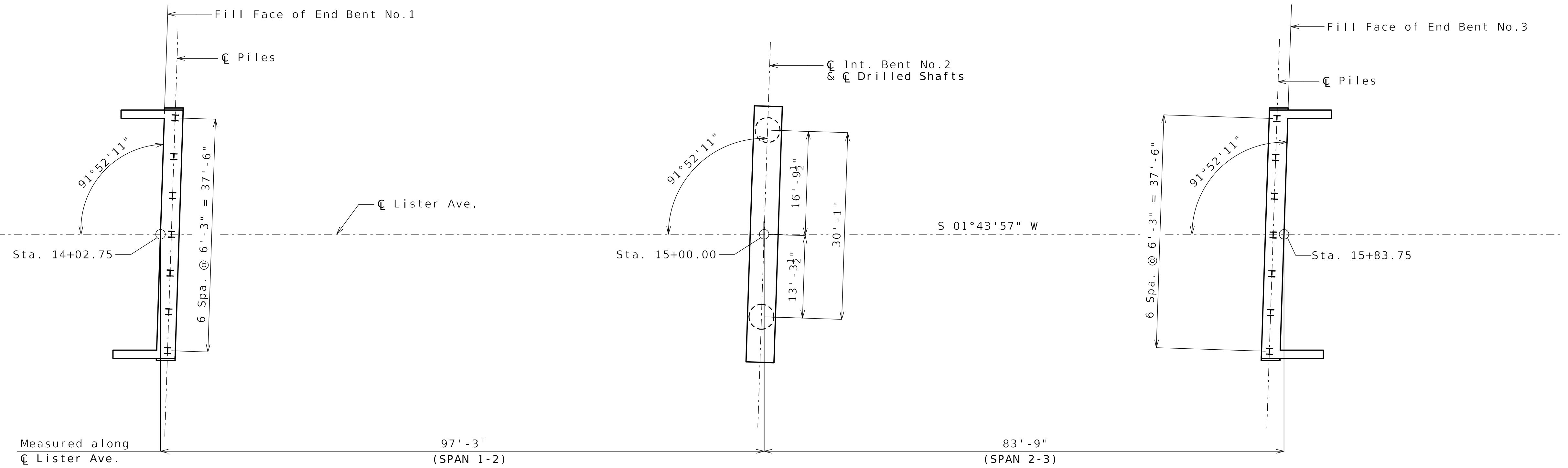
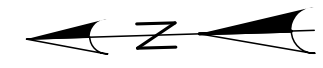
PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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CLARKSON RADMACHER JOINT VENTURE
 715 KIRK DRIVE KANSAS CITY, MO 64105-1310
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SUBSTRUCTURE LAYOUT

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Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave

Notes:
All dimensions are horizontal

SUBSTRUCTURE LAYOUT

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-04 of B12-35



Gina D. Horner
06/27/25

DATE PREPARED
06/25/2025

ROUTE STATE
1-70 MO

DISTRICT SHEET NO.
BR B12-04

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9633

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JEFFERSON CITY, MO 65102
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CLARKSON RADMACHER
JOINT VENTURE

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
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06/27/25

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-05
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9633

DATE	DESCRIPTION
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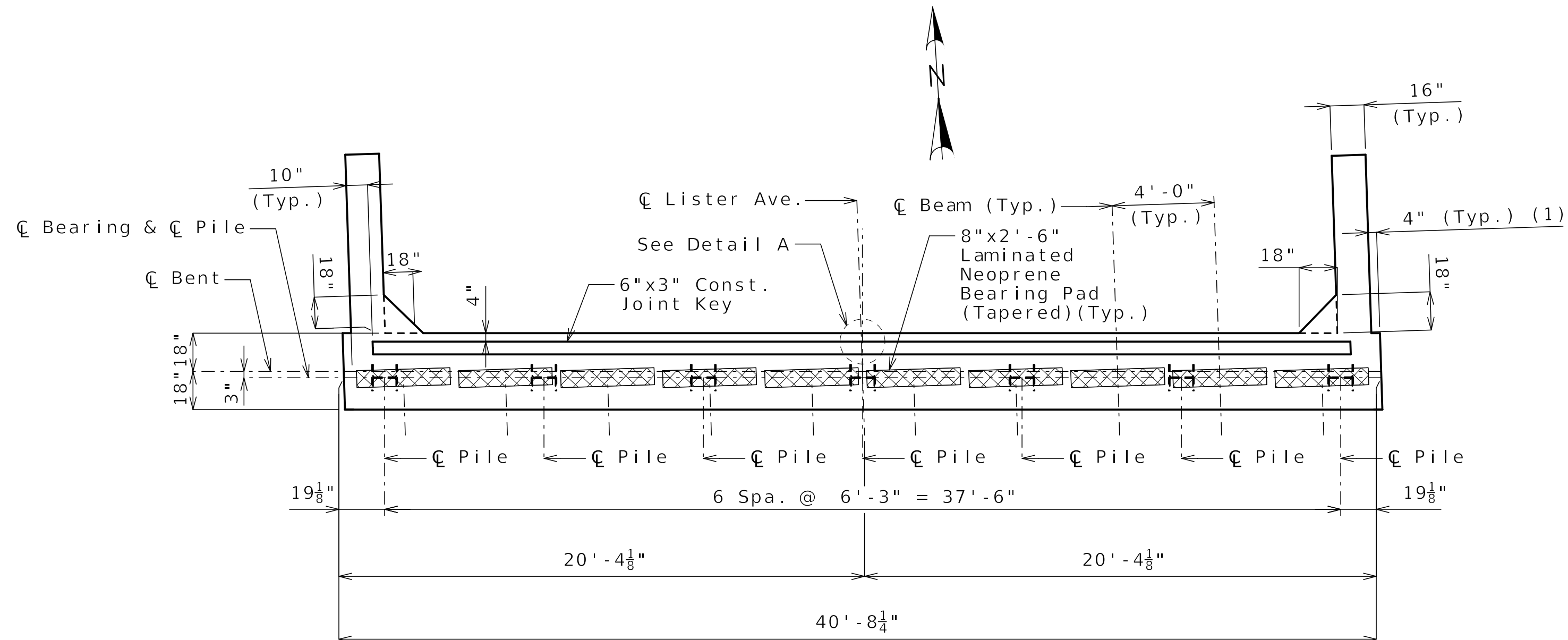
105 WEST CAPITOL
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CLARKSON RADMACHER JOINT VENTURE

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

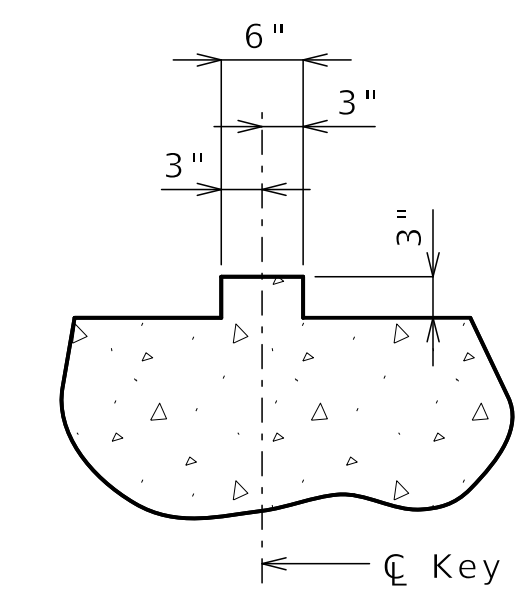
HNTB

6/23/2025

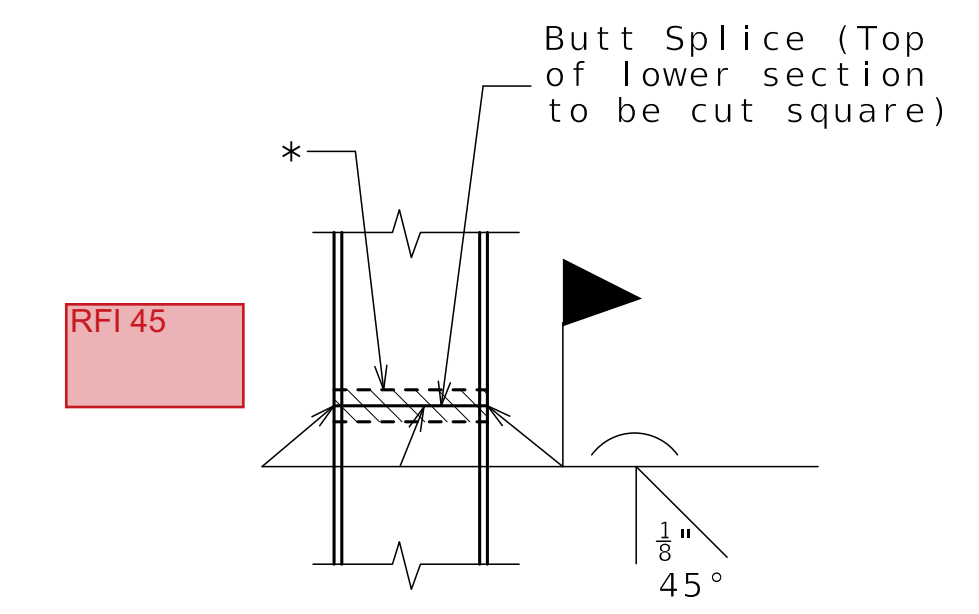


PLAN OF BEAM

(1) Slope normal to bridge fascia to drain

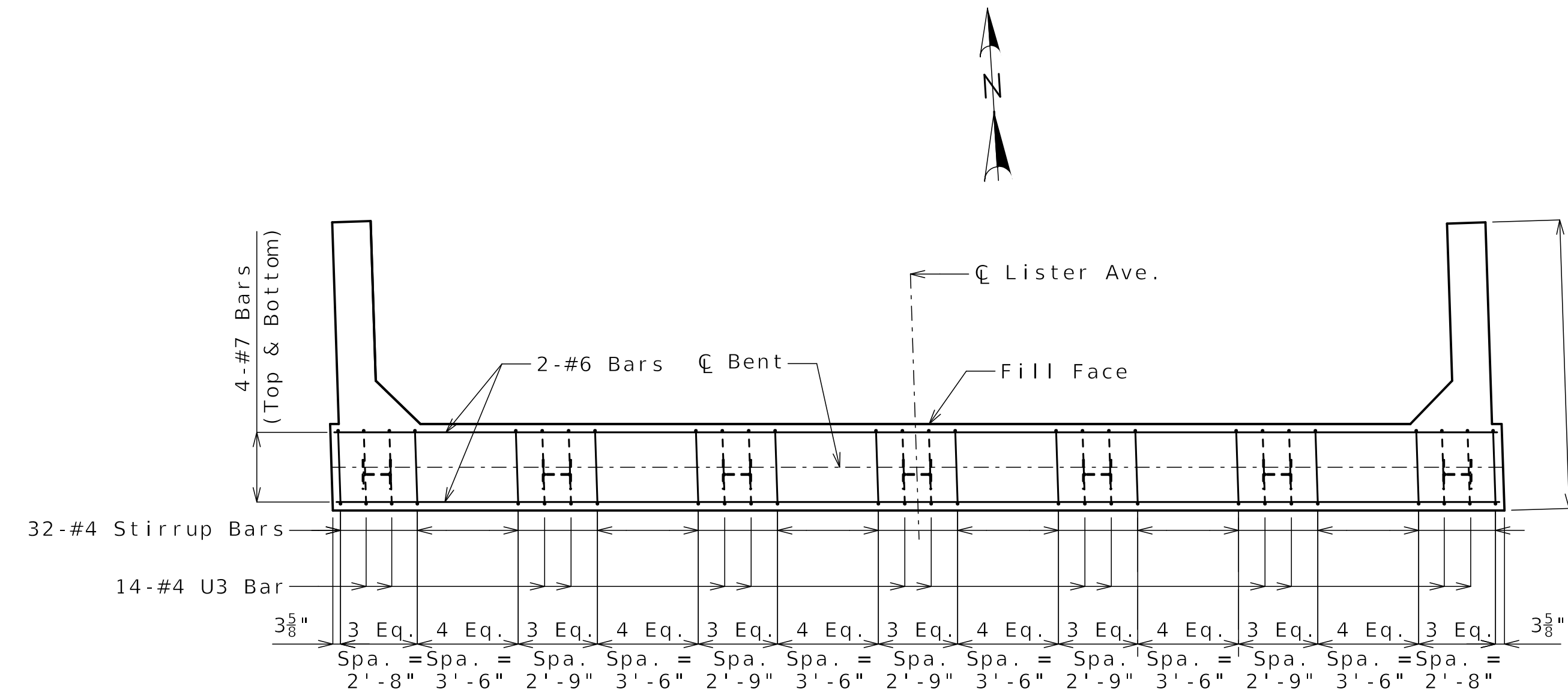


SECTION THRU KEY

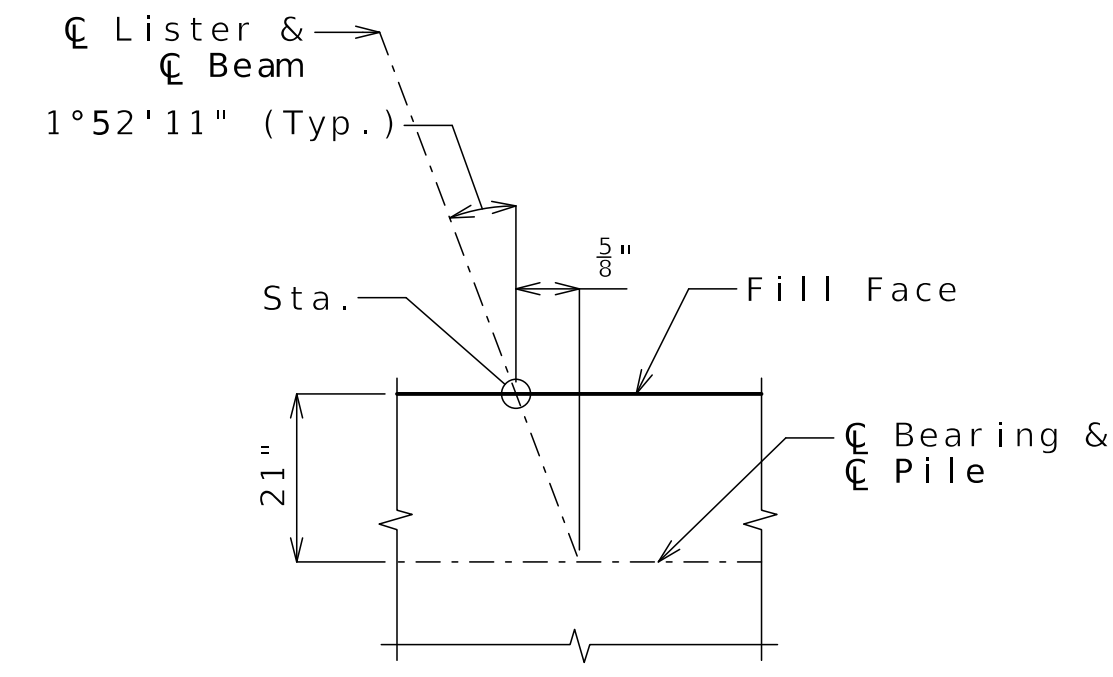


STEEL PILE SPLICE
(If required)

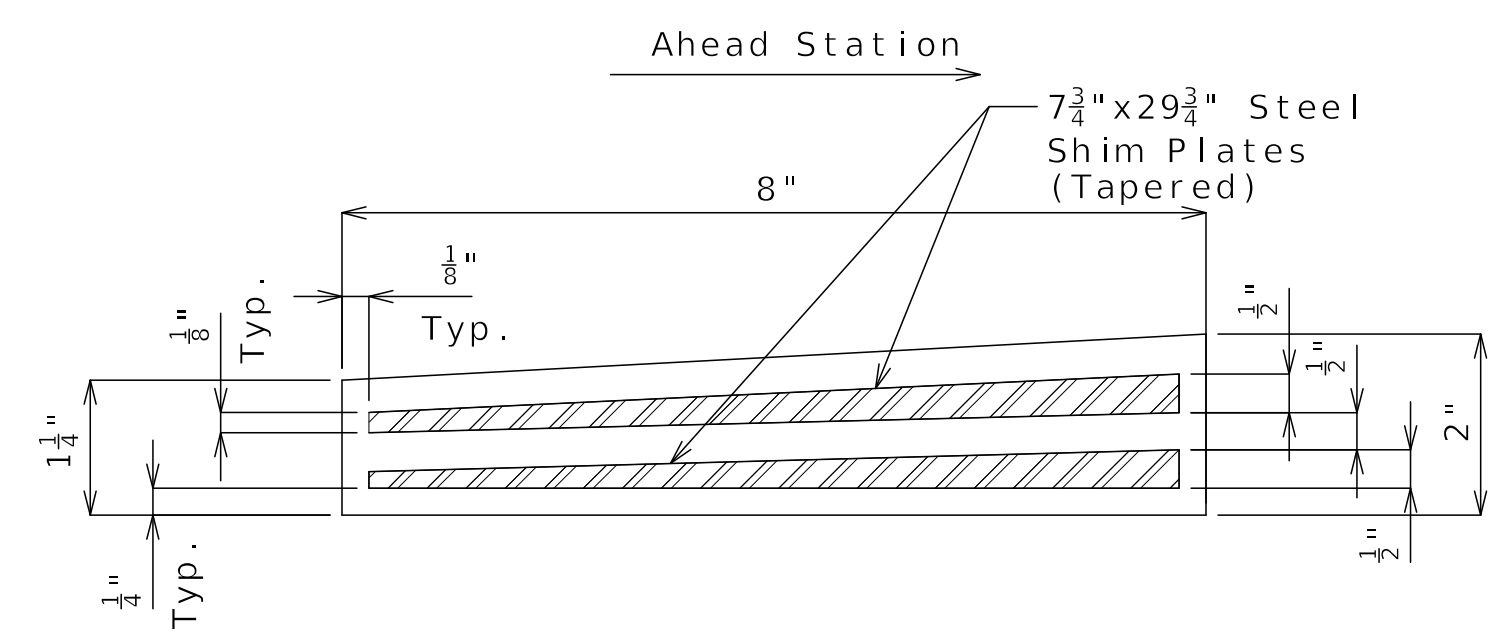
* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



PLAN OF BEAM SHOWING REINFORCING
(Key and steps not shown for clarity.)



DETAIL A
(Skew exaggerated for clarity)



LAMINATED NEOPRENE BEARING PAD (TAPERED)
(10 Required for End Bent 1)

Notes:
Work this sheet with Sheets No. B12-06 and B12-07.
All U bars and pairs of vertical bars shall be placed along skew.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.
For details of bridge approach slab, see Sheet No. B12-31.

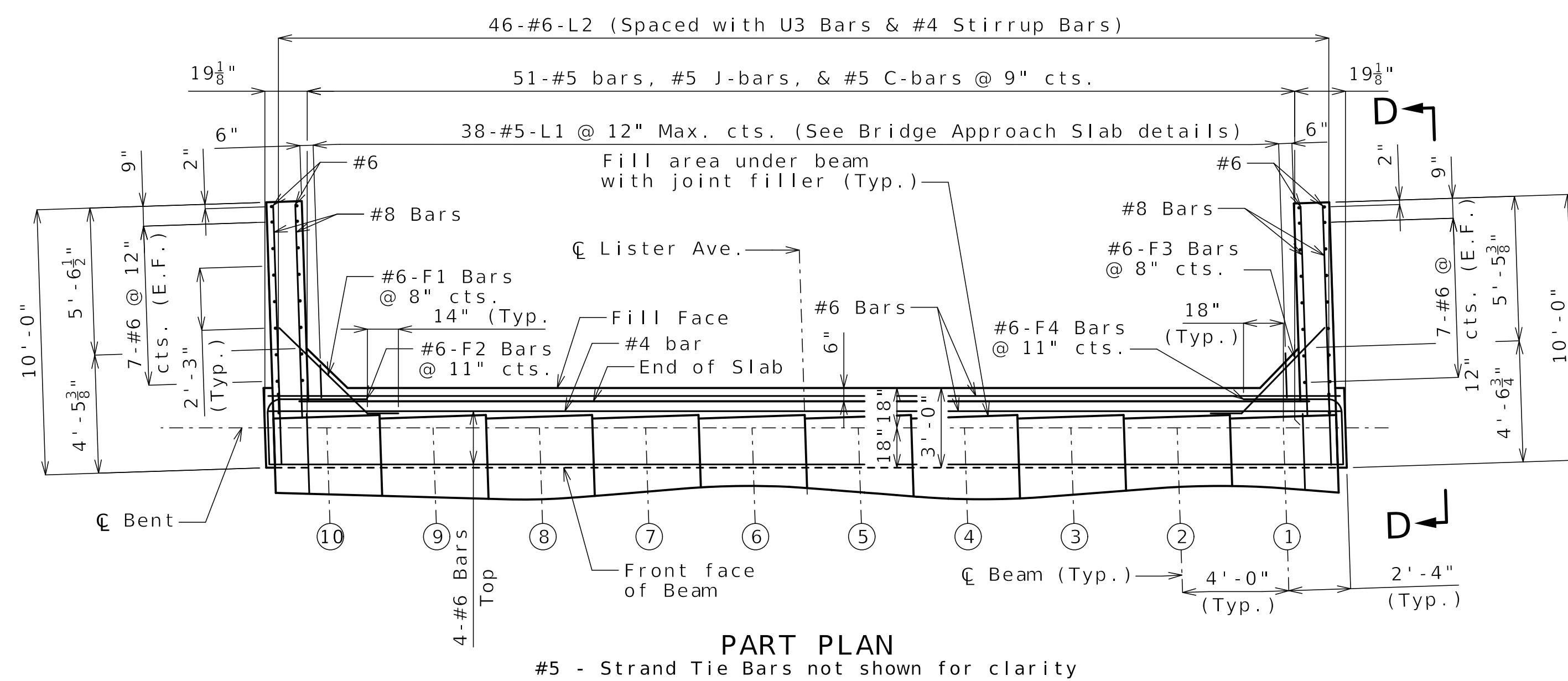
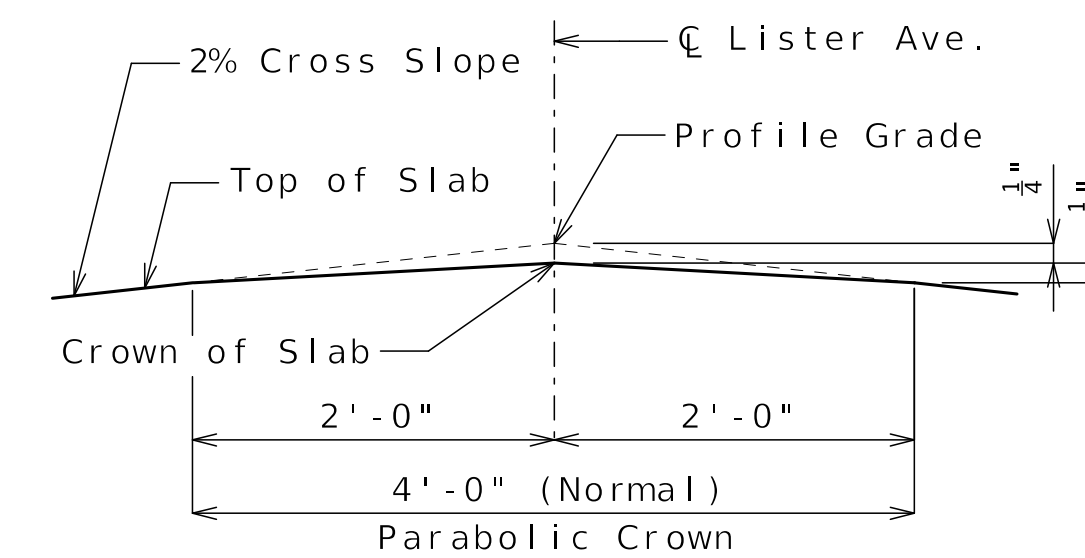
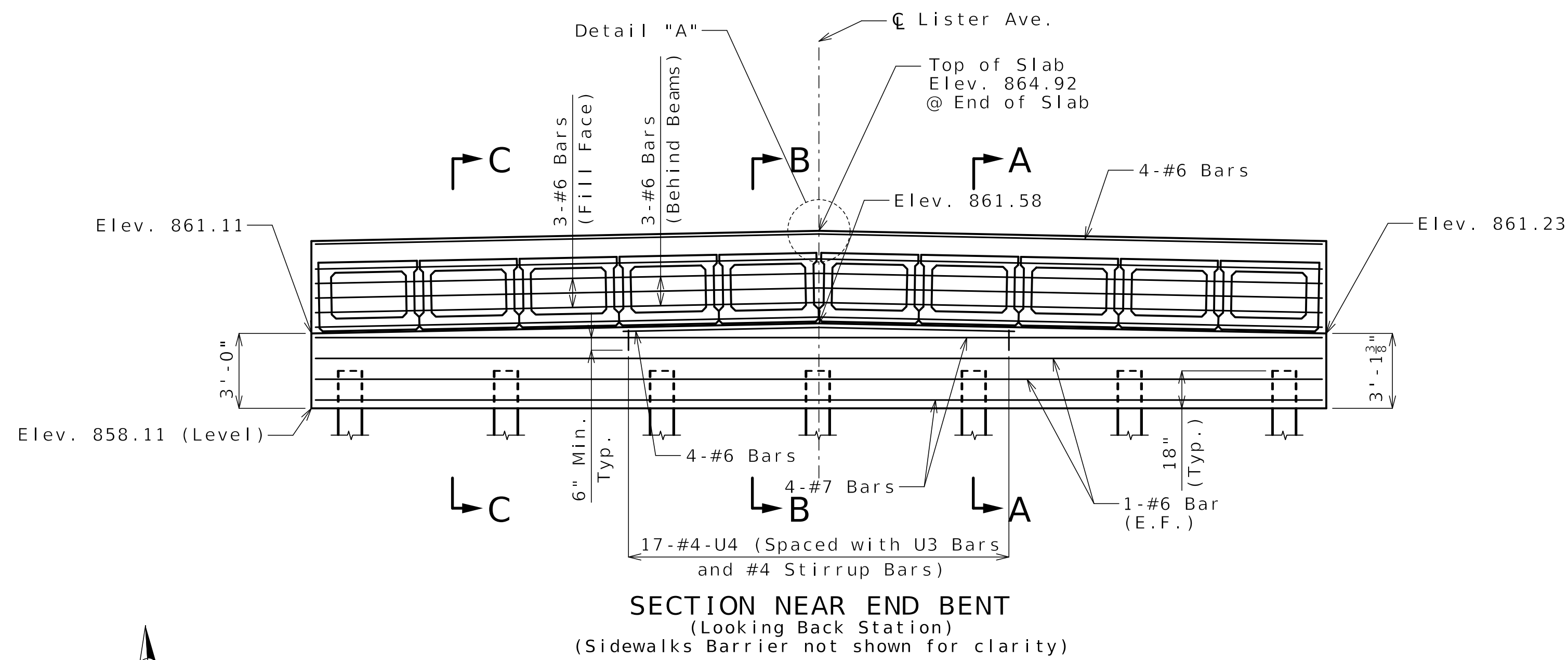
DETAILS OF END BENT NO. 1

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Revision: 0.0
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Package: BRD-12-Lister-Ave

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

Sheet No. B12-05 of B12-35

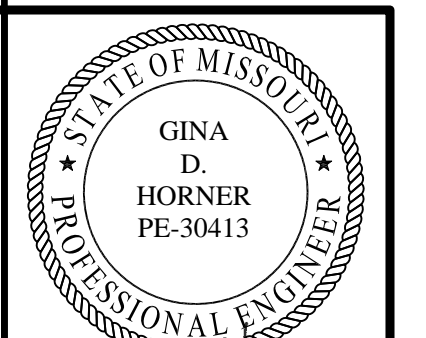


General Notes:
 Work this sheet with Sheets No. B12-05 and B12-07.
 For Sections A-A, B-B and C-C, and Elevation D-D, see Sheet No. B12-07.
 Strands at end of the girders shall be field bent or, if necessary, cut in field to maintain 11/2-inch minimum clearance to fill face of end bent.
 The #6-F bars shall be bent in the field to clear girders.

(X) Denotes beam number.

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DETAILS OF END BENT NO. 1



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 06/27/25

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-06
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9633

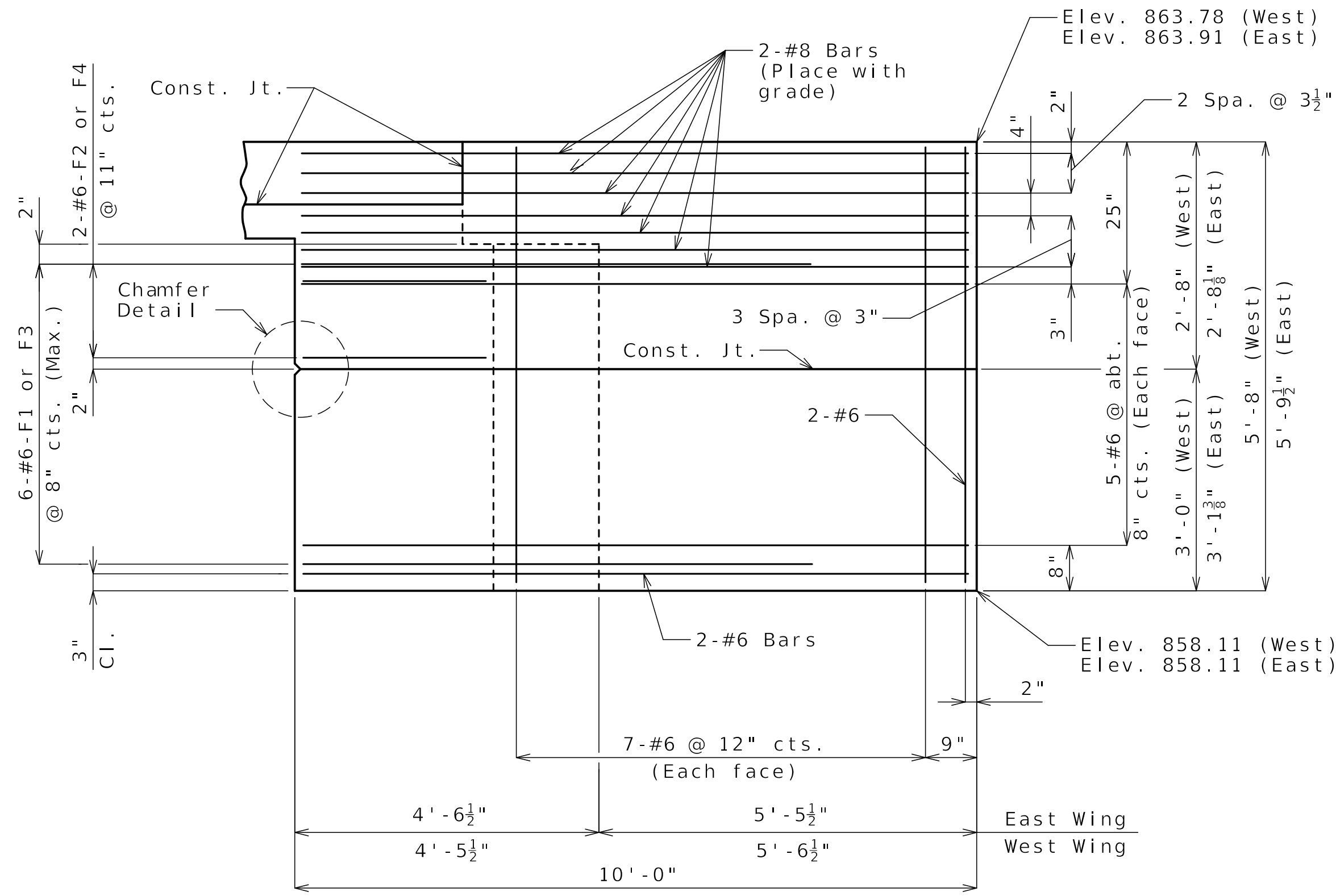
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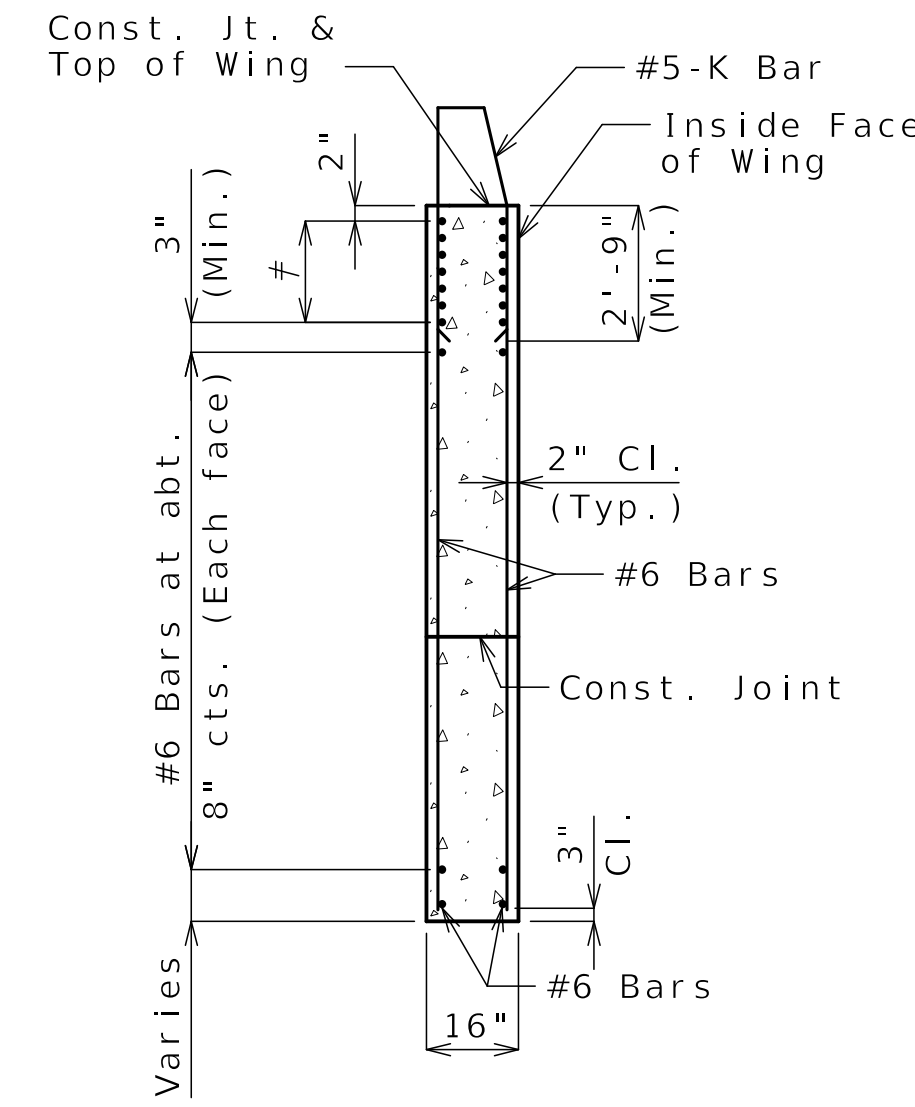
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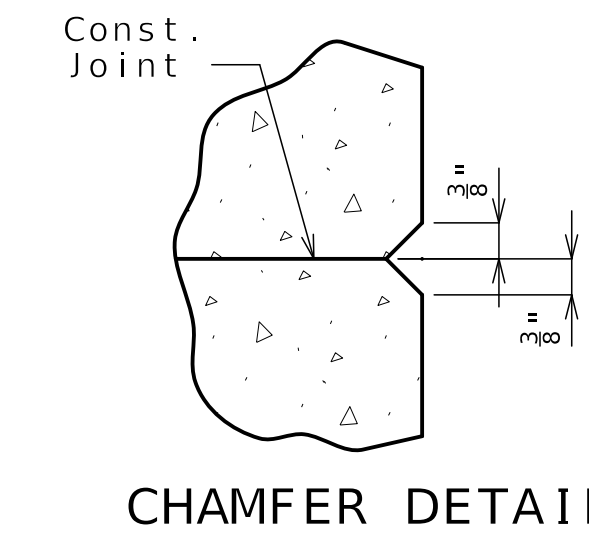


ELEVATION D-D
(East wingwall shown, West wingwall similar except opposite hand)

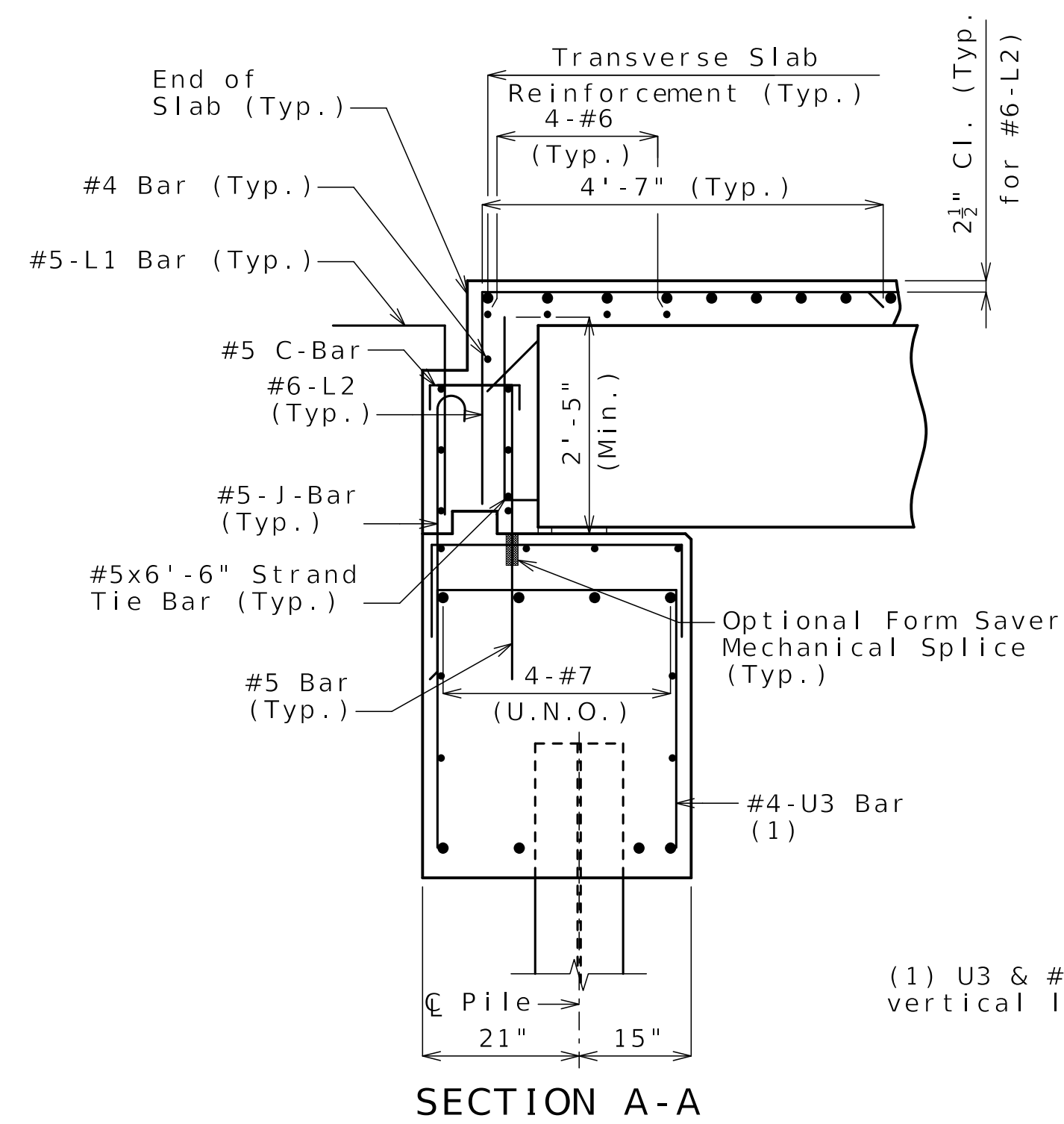


TYPICAL SECTION THRU WING

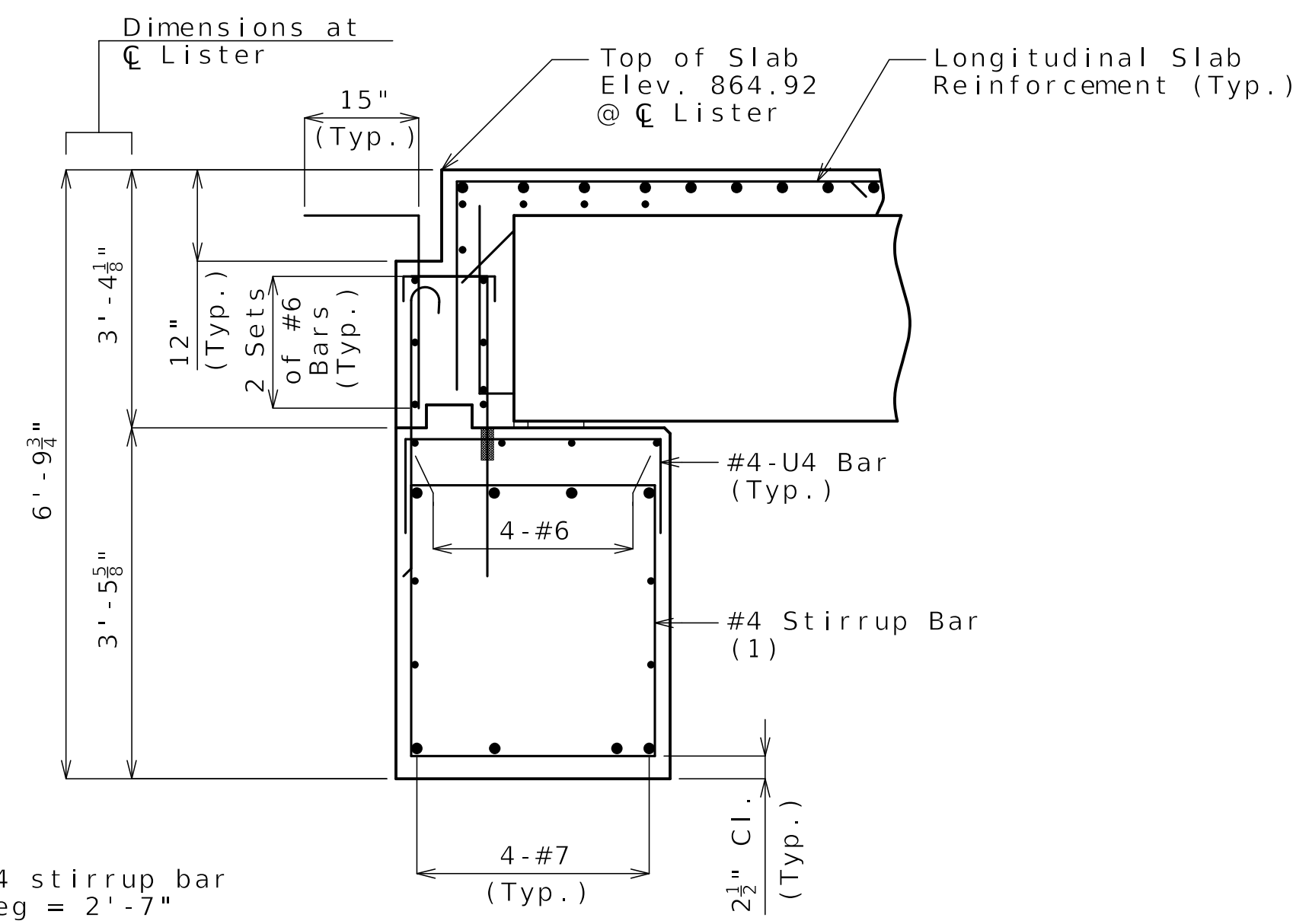
#8 Bars at 3" cts. (Each face) (Place with grade)
See Elevation D-D for number of bars



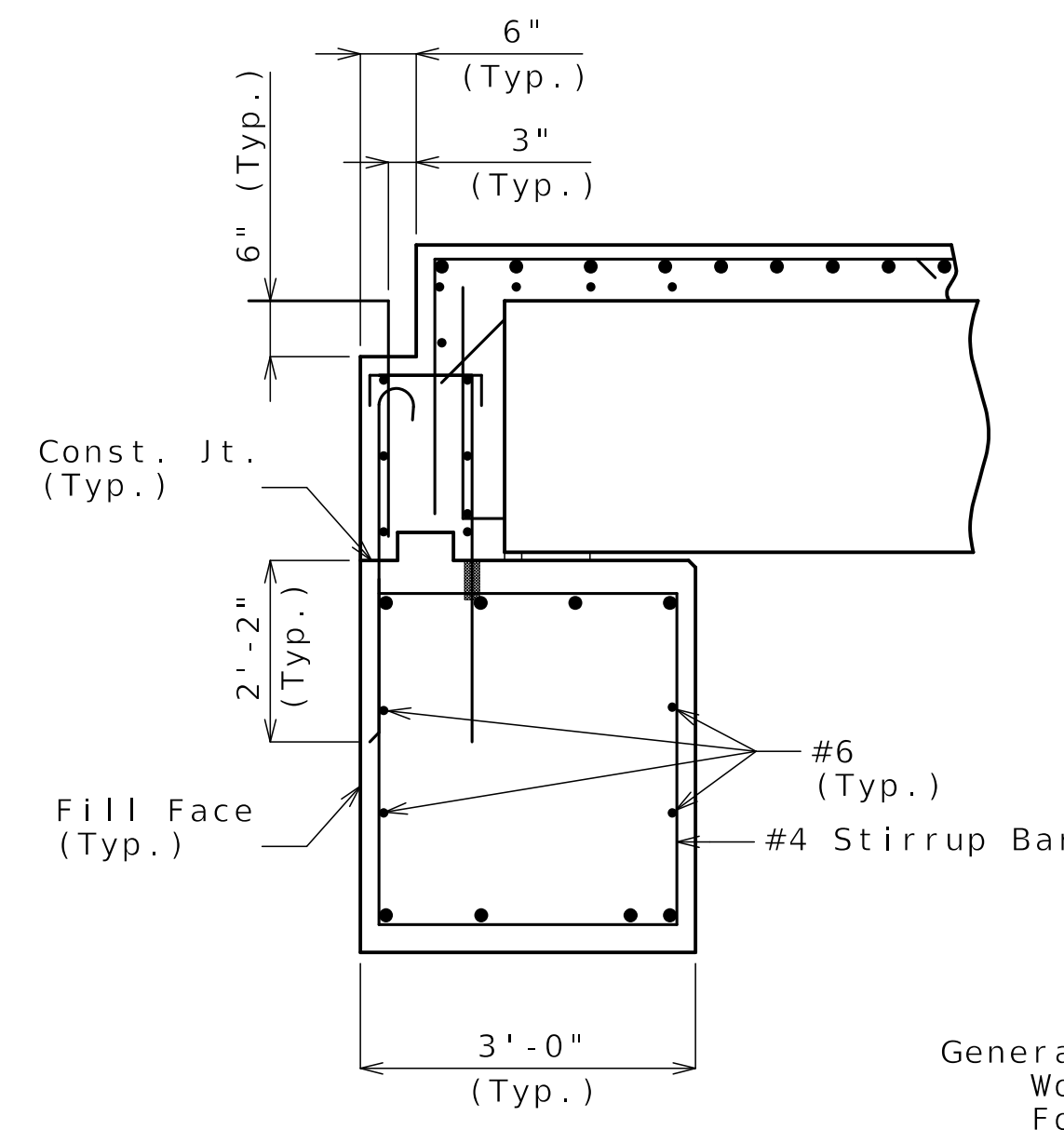
CHAMFER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

(1) U3 & #4 stirrup bar vertical leg = 2'-7"

General Notes:
Work this sheet with Sheets No. B12-05 and B12-06.
For location of Sections A-A, B-B and C-C and Elevation D-D, see Sheet No. B12-06.
For reinforcement of the Barrier, see Sheet No. B12-26.

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DETAILS OF END BENT NO. 1

Detailed MAR 2025
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Sheet No. B12-07 of B12-35



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06/27/25

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO
DISTRICT BR SHEET NO. B12-07

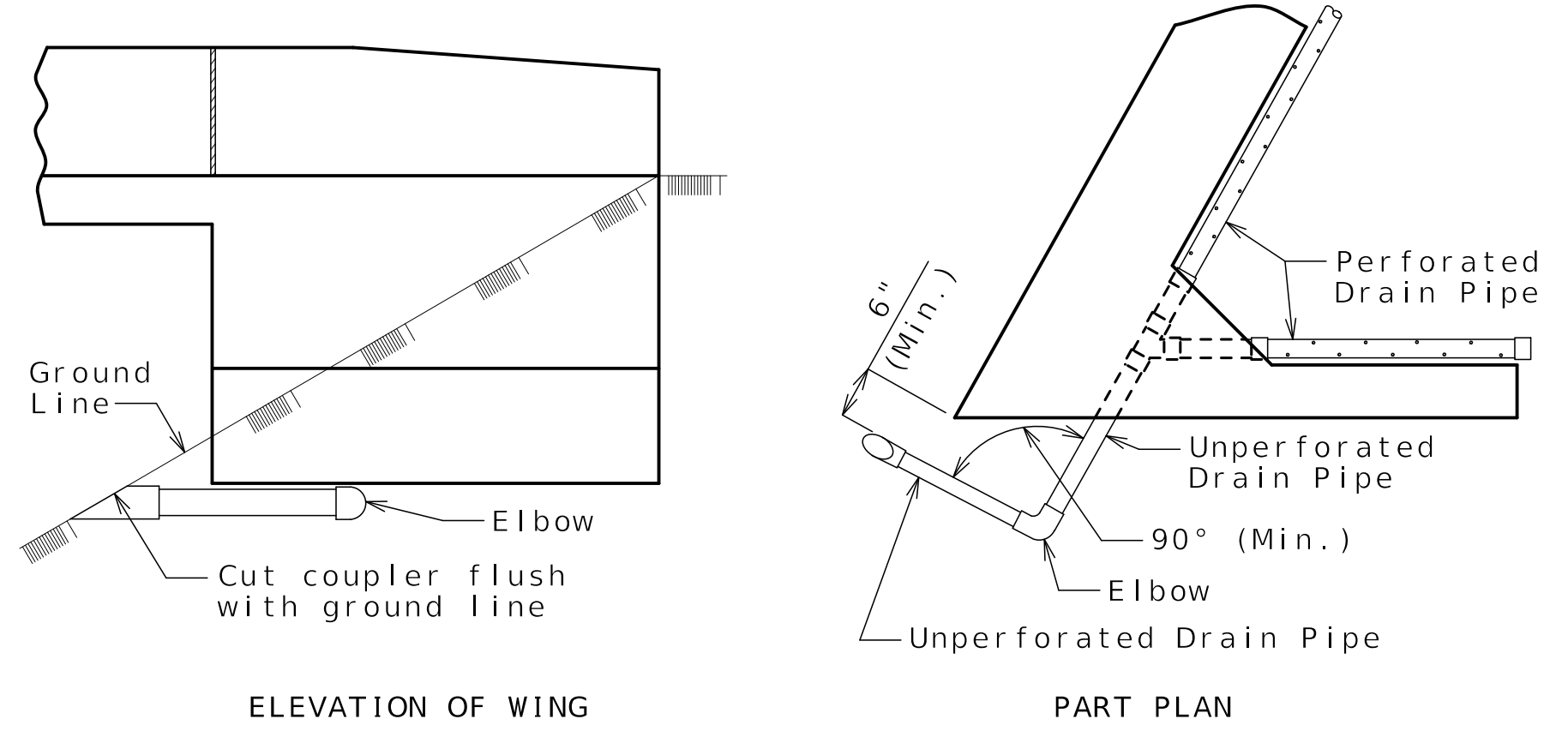
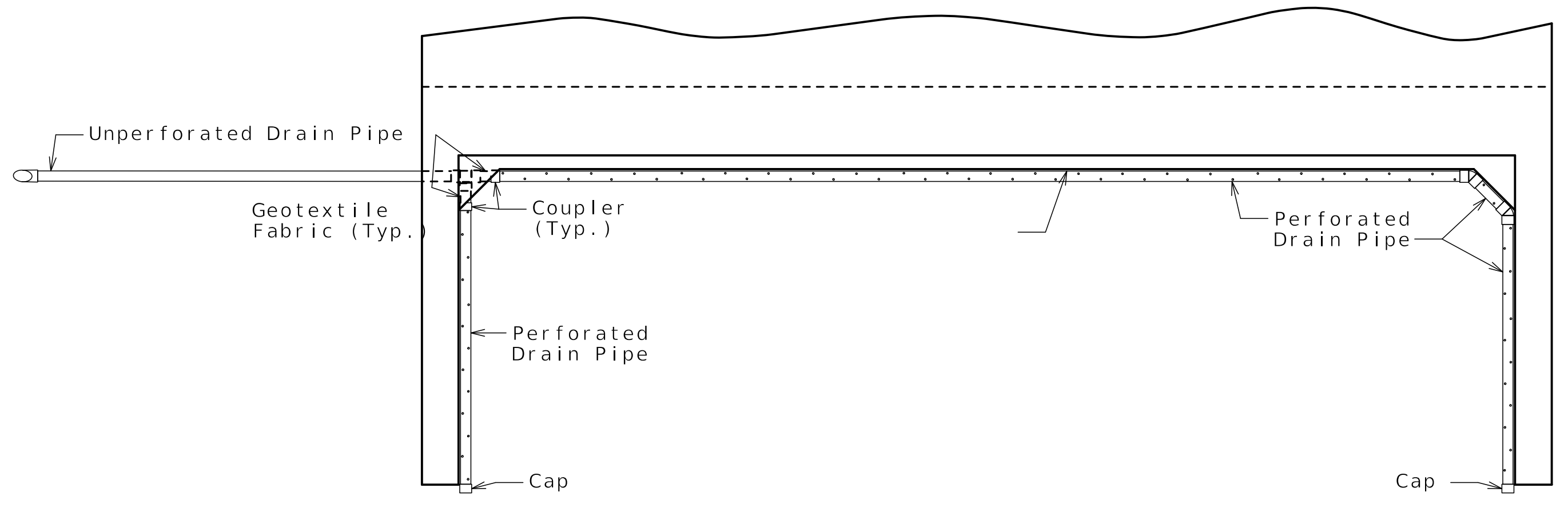
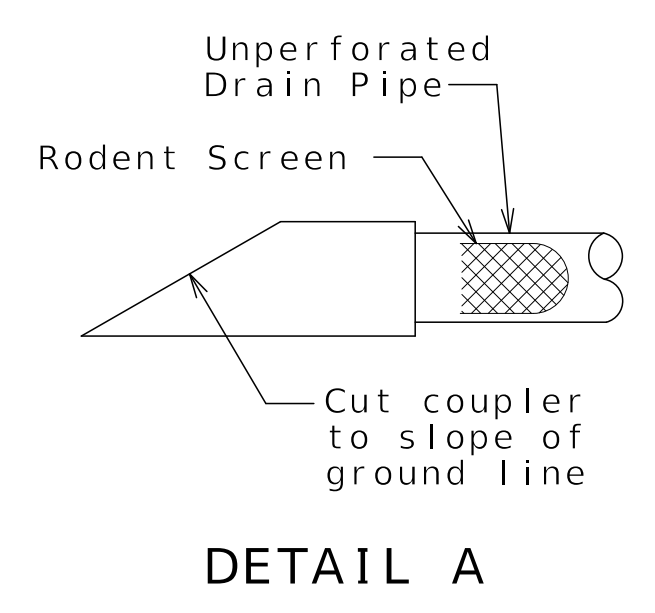
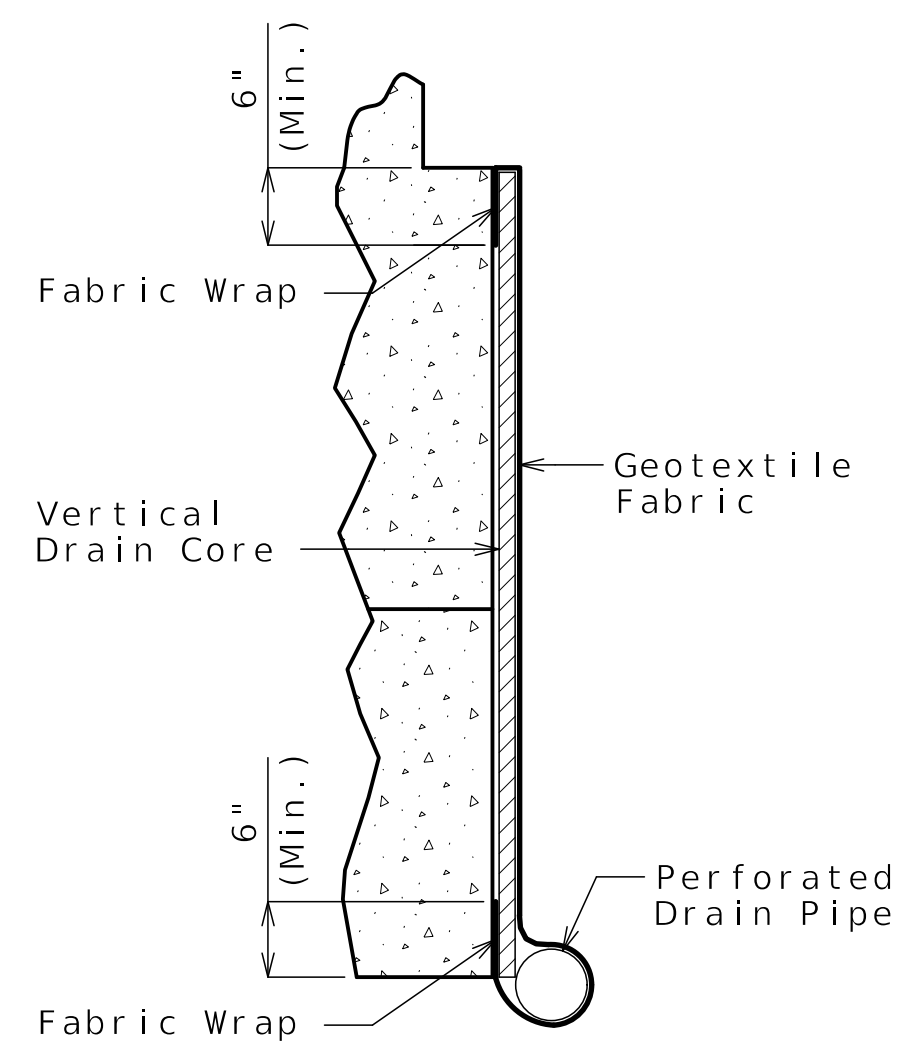
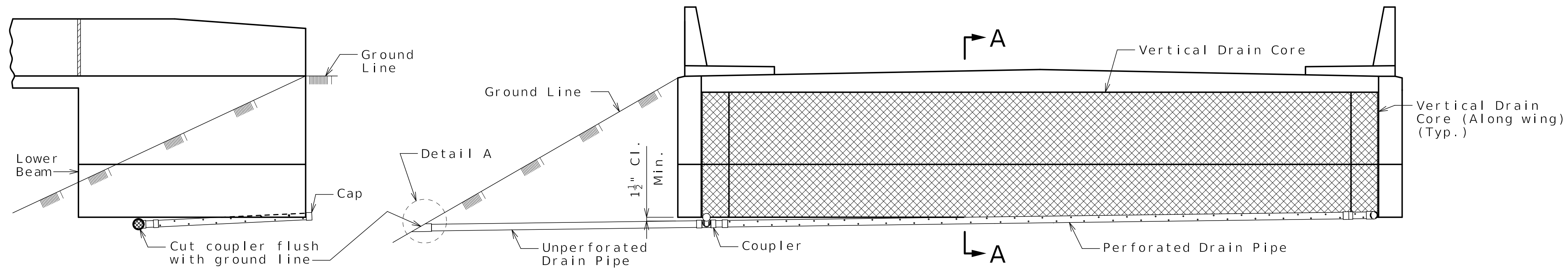
COUNTY JACKSON
JOB NO. J411486D
CONTRACT ID. 240807-C01
PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
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HNTB



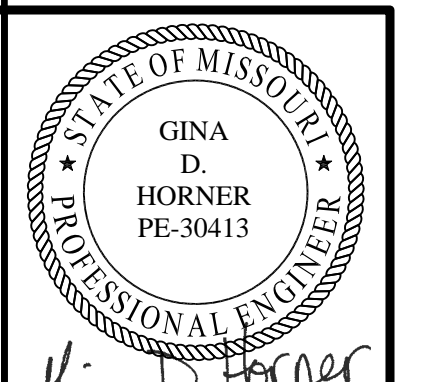
OPTIONAL TURNED DRAIN
(Use only when straight drain is not practical.)

General Notes:

- Squared end bent shown, skewed end bent similar.
- 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.
- If free draining granular fill material is used behind End Bent No. 3 and wingwalls, and if water can freely gravity drain to lower select granular backfill for structural system of MSE wall, then drain pipes are not required and internal drainage system of MSE wall can be used to collect water from Vertical Strip Drain.

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Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave

VERTICAL DRAIN AT END BENTS



Gina D. Horner
06/27/25

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-08
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9633

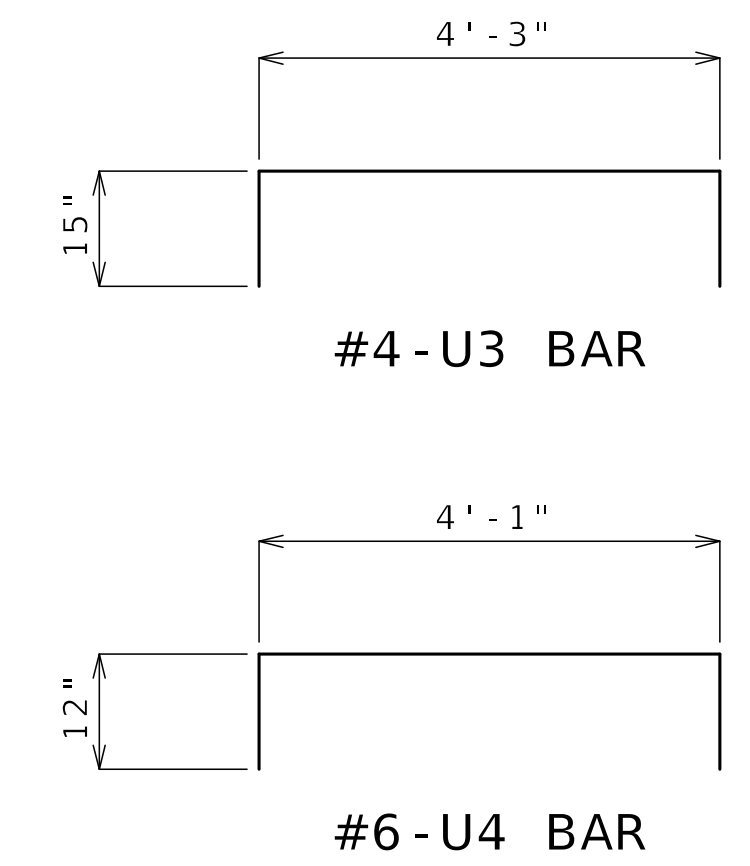
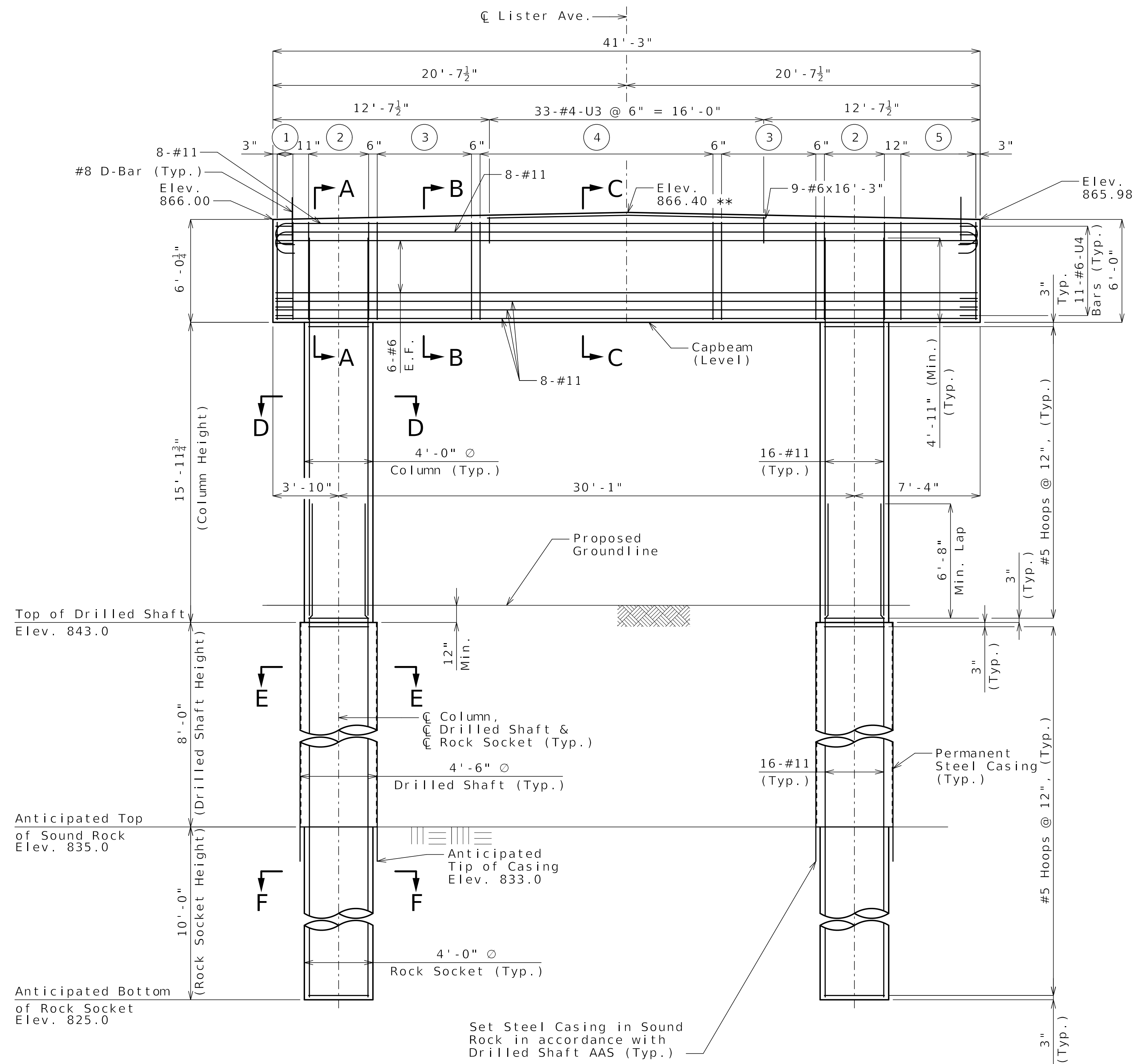
DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER
JOINT VENTURE

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



- ① 2-#6-U2 & 2-#6 Cap Bars @ 11" cts.
- ② 4-#6-U1 @ 14" cts.
- ③ 12 Sets of 2-#6 U5 Bars & 2-#6 Cap Bars @ 6" cts.
- ④ 15-#6-U2 & 2-#6 Cap Bars @ 12" Max. cts. = 13'-7"
- ⑤ 6-#6-U2 & 2-#6 Cap Bars @ 12" Max. cts. = 4'-4"

ELEVATION
(Beam key not shown for clarity)

Notes:
 Work this sheet with Sheets No. B12-10 and B12-11.
 ** See Plan of Capbeam on Sheet No. B12-10 for plan view of skewed geometry.
 Prior to placing concrete for columns, position of vertical reinforcement shall be verified so as to provide clearance for capbeam reinforcement as applicable.
 For location of drilled shafts, see Sheet No. B12-04.
 For Sections A-A thru F-F, see Sheet No. B12-11.

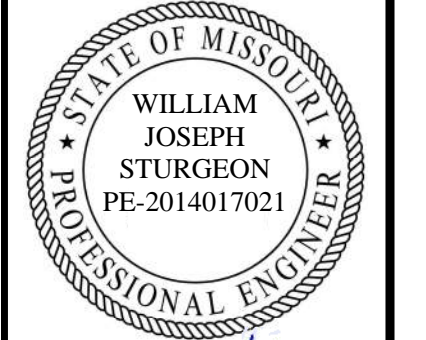
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Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-09 of B12-35



W. Joseph Sturgeon
6/30/2025

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO
DISTRICT BR SHEET NO. B12-09

COUNTY JACKSON
JOB NO. J411486D
CONTRACT ID. 240807-C01
PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER JOINT VENTURE

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



6/30/2025

DATE PREPARED
06/25/2025

ROUTE STATE
I-70 MO

DISTRICT SHEET NO.
BR B12-10

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

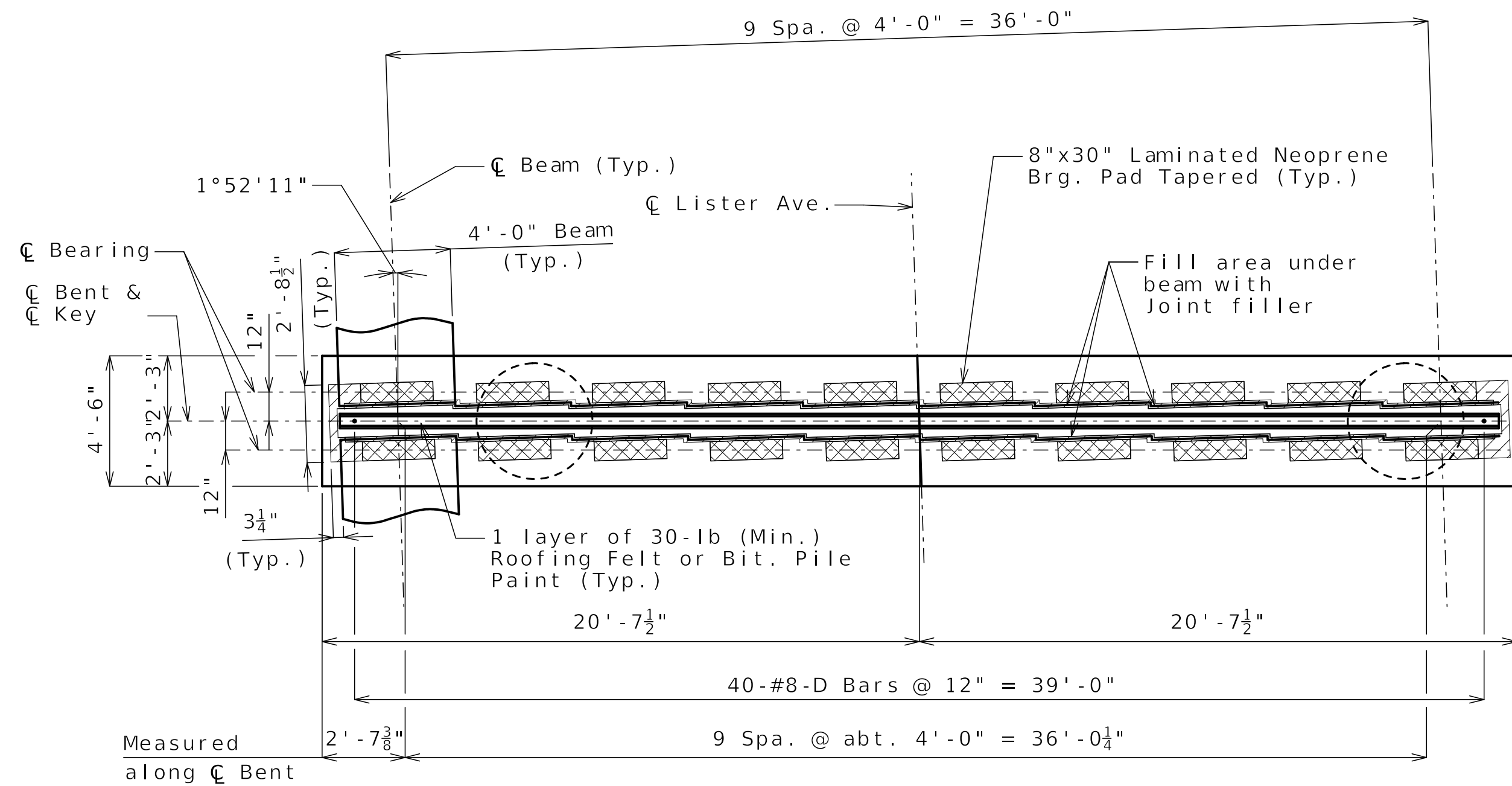
BRIDGE NO.
A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

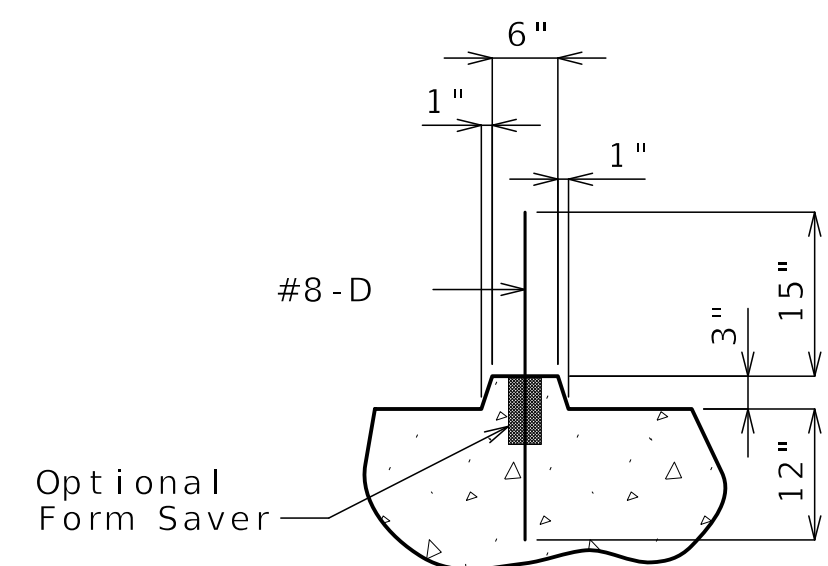
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

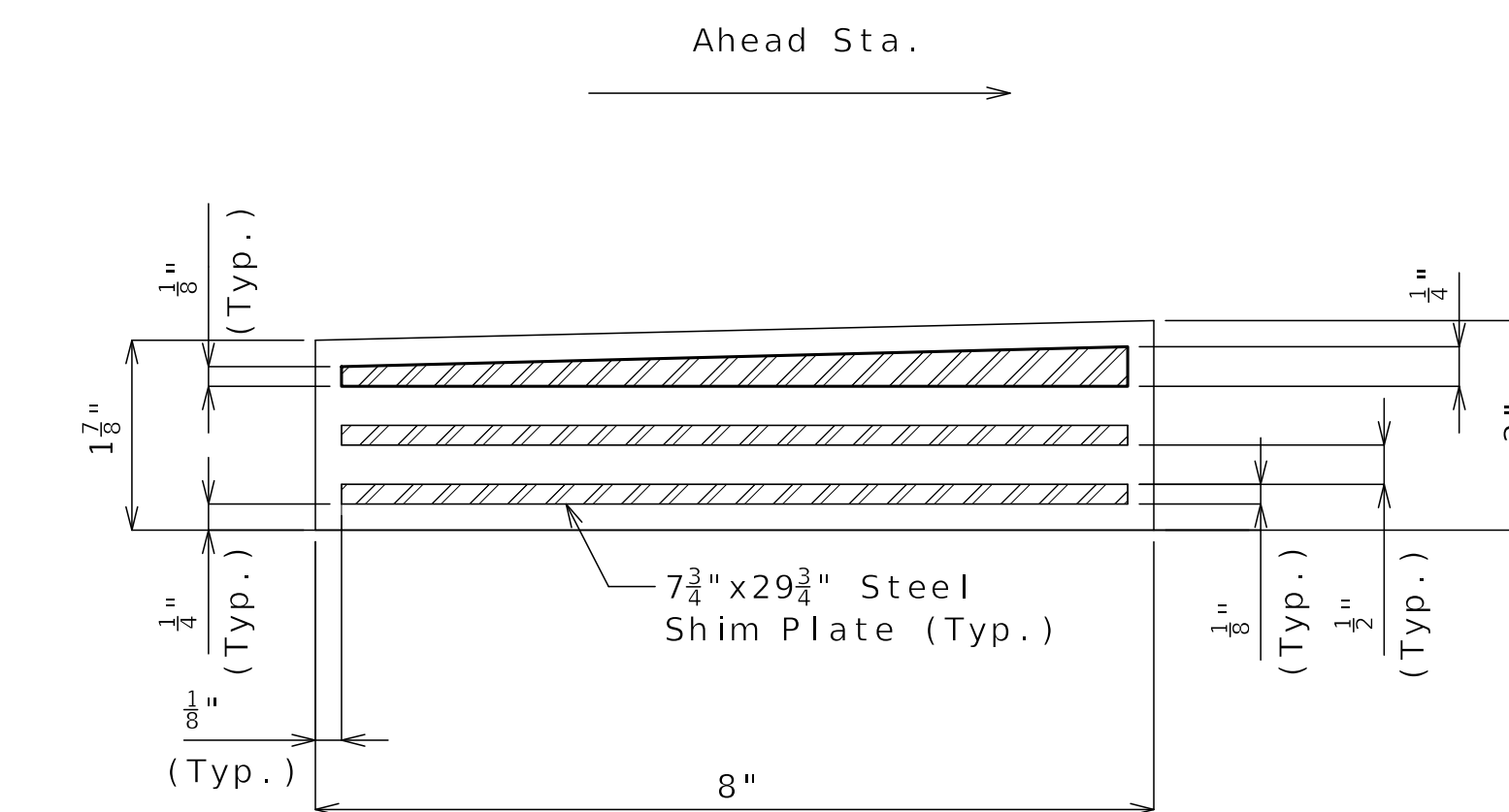
CLARKSON RADMACHER
 JOINT VENTURE
 715 KIRK DRIVE
 KANSAS CITY, MO 64105-1310
 CERTIFICATE OF AUTHORITY
 NO. 001270



PLAN OF CAPBEAM



SECTION THRU KEY



TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)
20 Required

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 Not to Scale
 Revision: 0.0
 Date: 07/02/2025
 Package: BRD-12-Lister-Ave

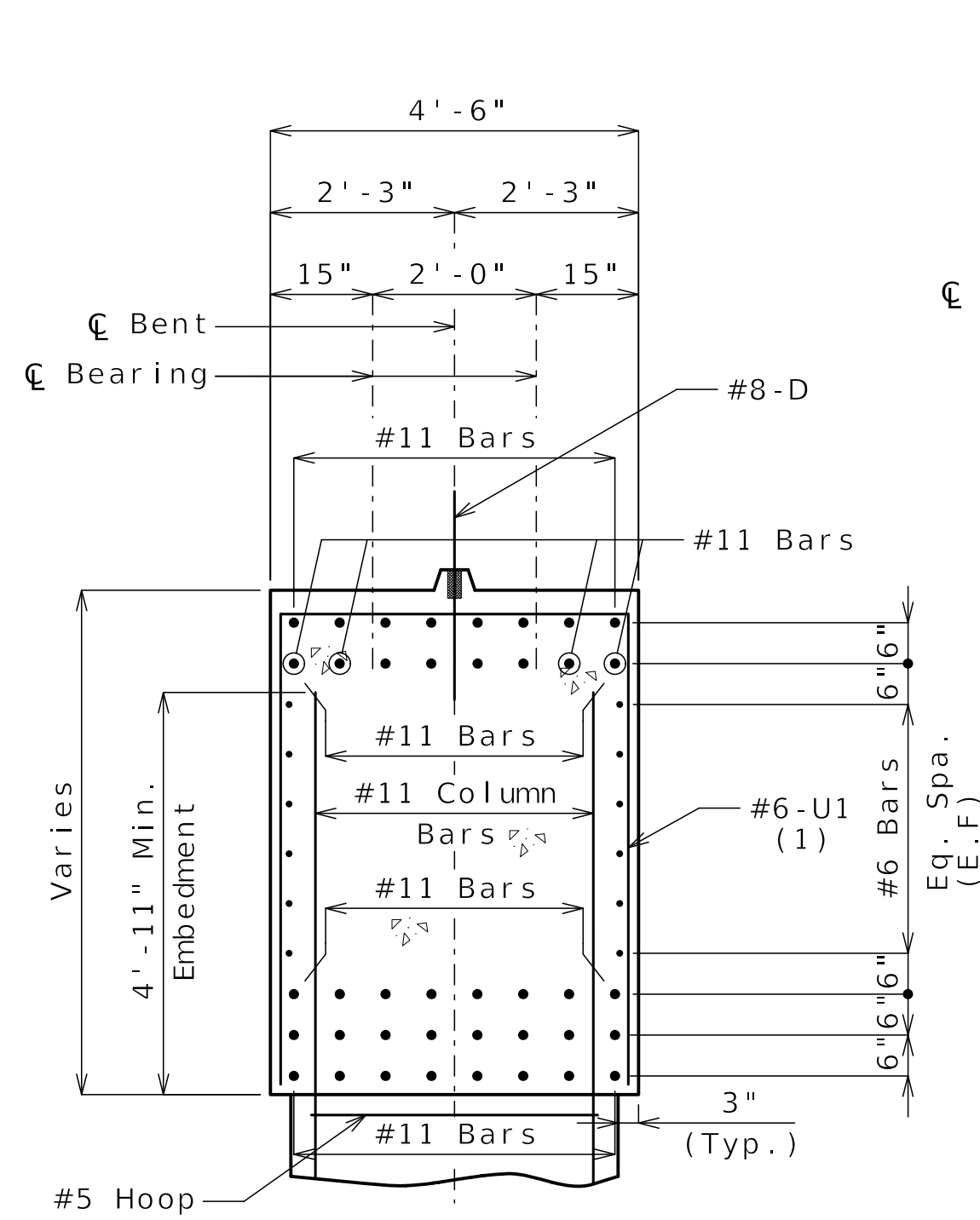
Notes:
 Work this sheet with Sheets No. B12-09 and B12-11.
 For additional details of joint filler, see Sheet No. B12-20.

DETAILS OF INTERMEDIATE BENT NO. 2

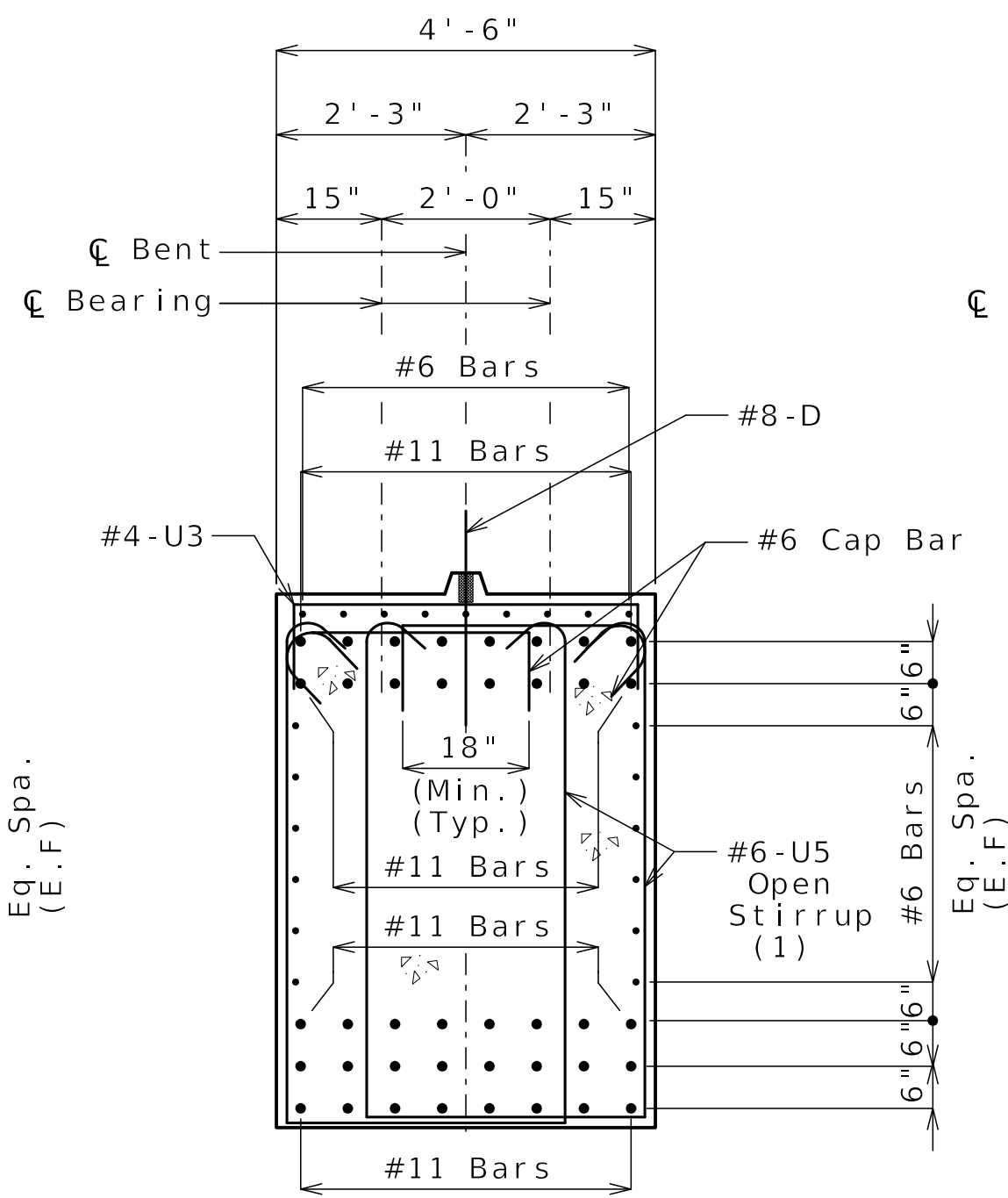
Detailed MAR 2025
 Checked APR 2025

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

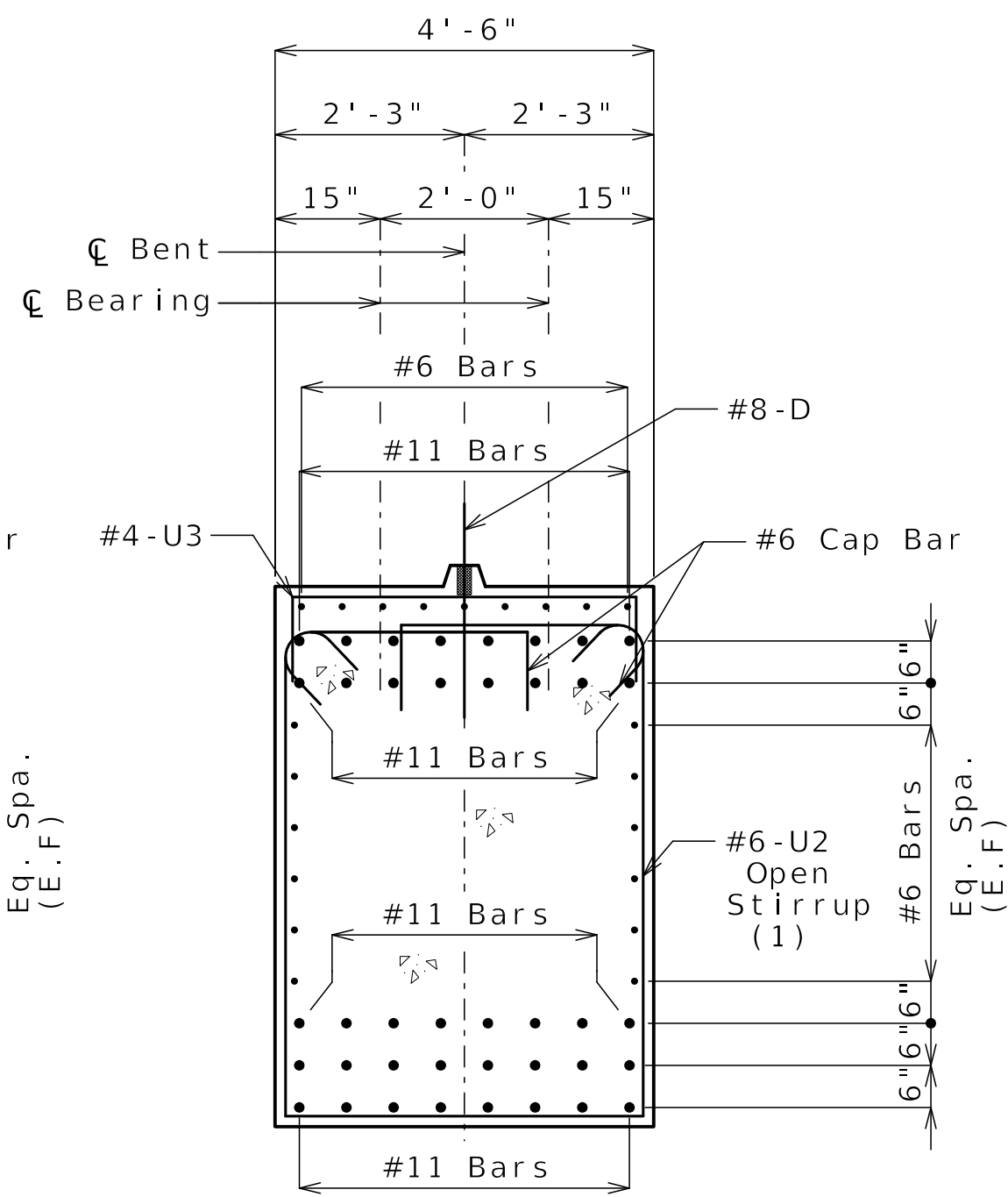
Sheet No. B12-10 of B12-35



SECTION A-A

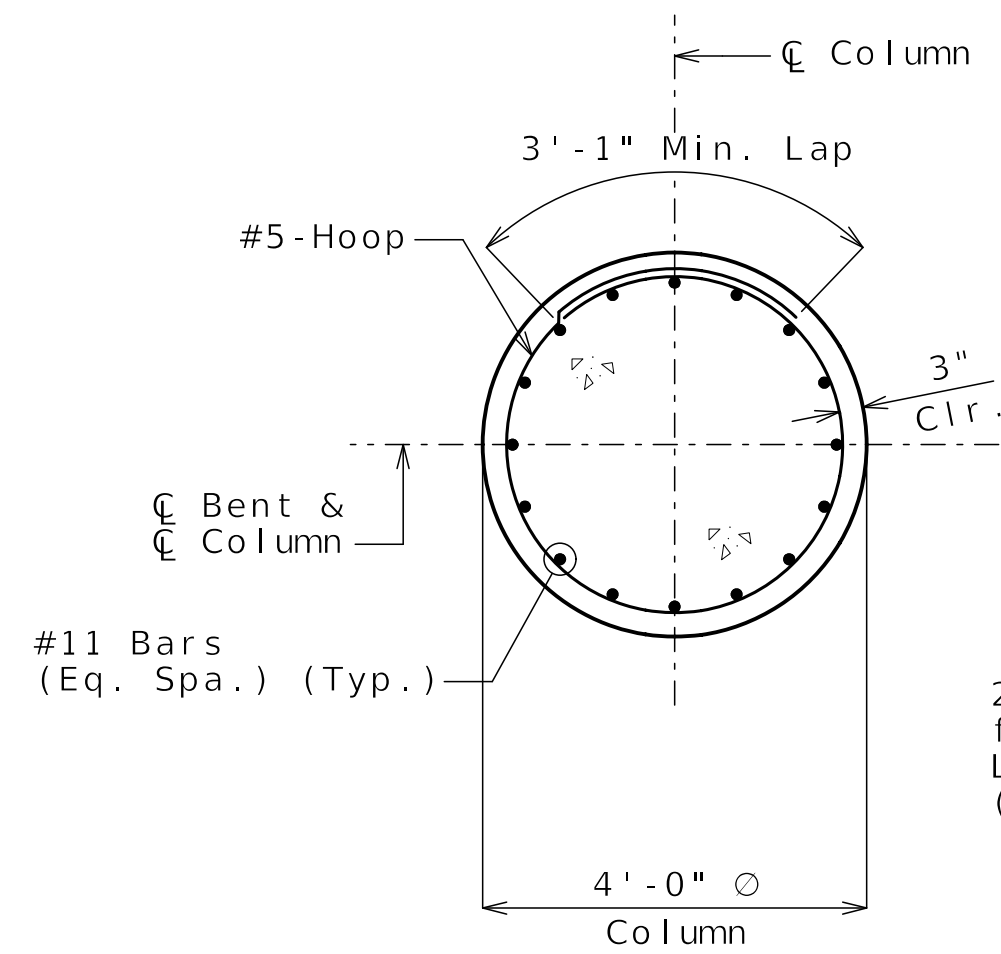


SECTION B-B

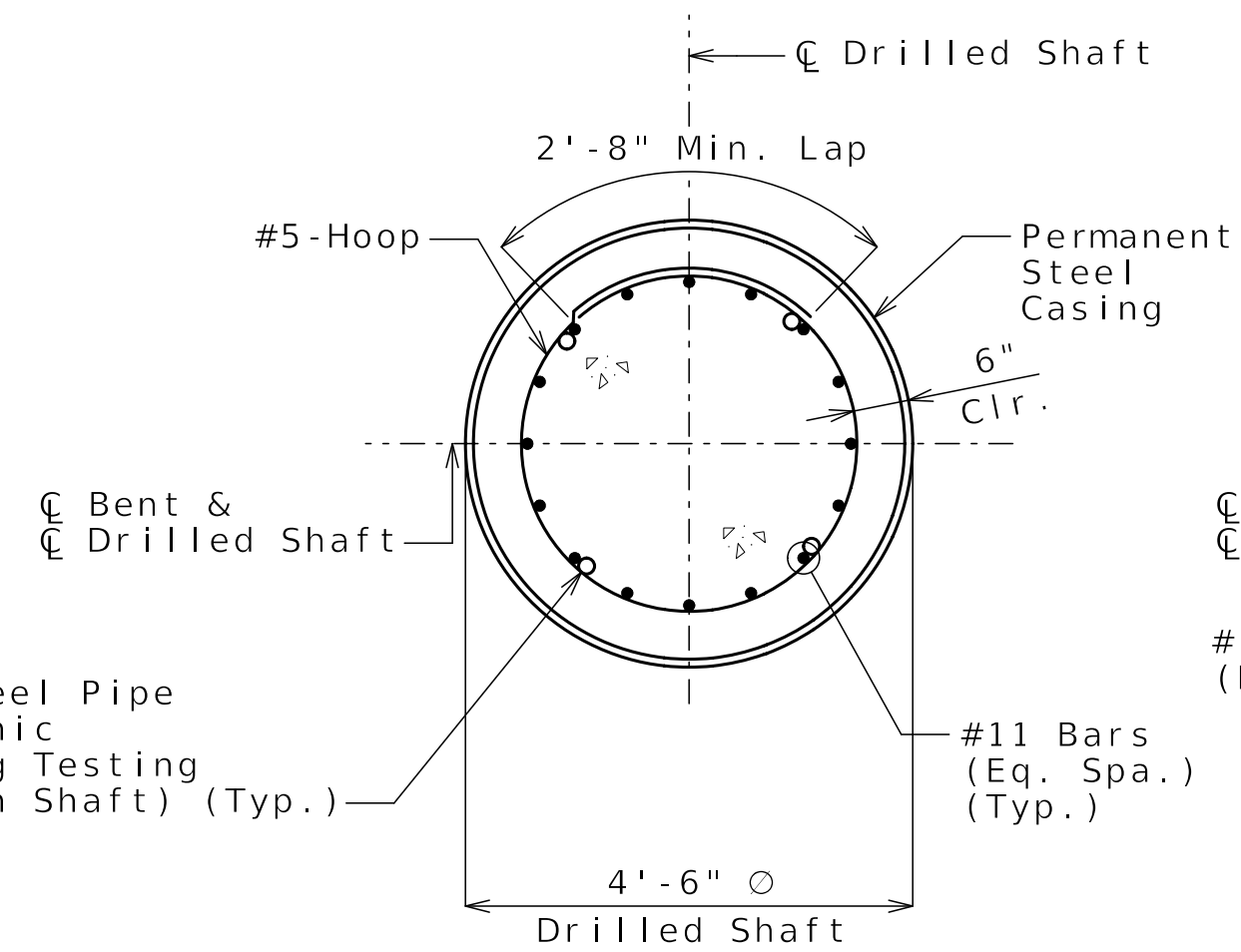


SECTION C-C

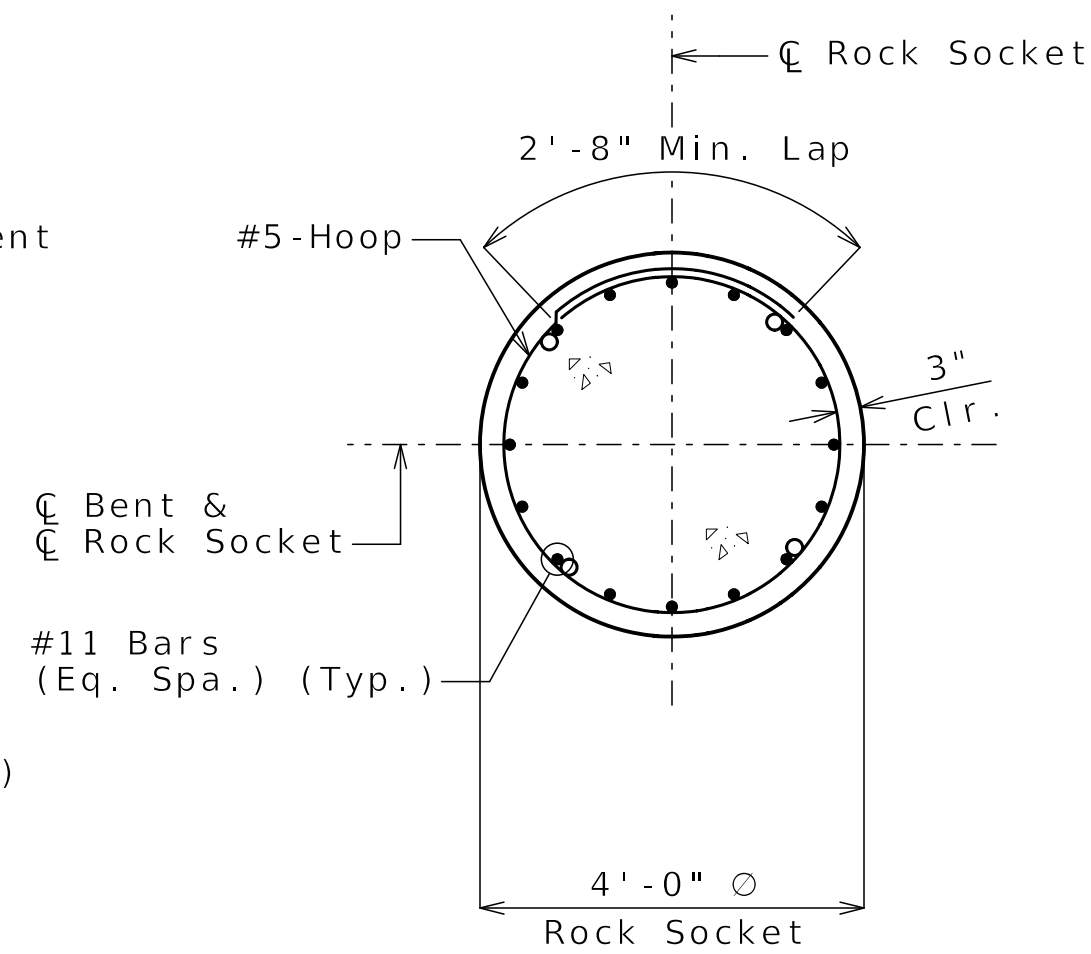
(1) U1, U2, & U5 vertical leg = 5'-9"



SECTION D-D



SECTION E-E



SECTION F-F

Released For Construction
Not to Scale
Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave

Notes:
Work this sheet with Sheets No. B12-09 and B12-10.
Hoop splices shall be staggered around the drilled shaft and rock socket at 90 degree intervals.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-11 of B12-35



6/30/2025

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-11

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

BRIDGE NO. A9633

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER JOINT VENTURE

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



Gina D. Horner
06/27/25

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-12
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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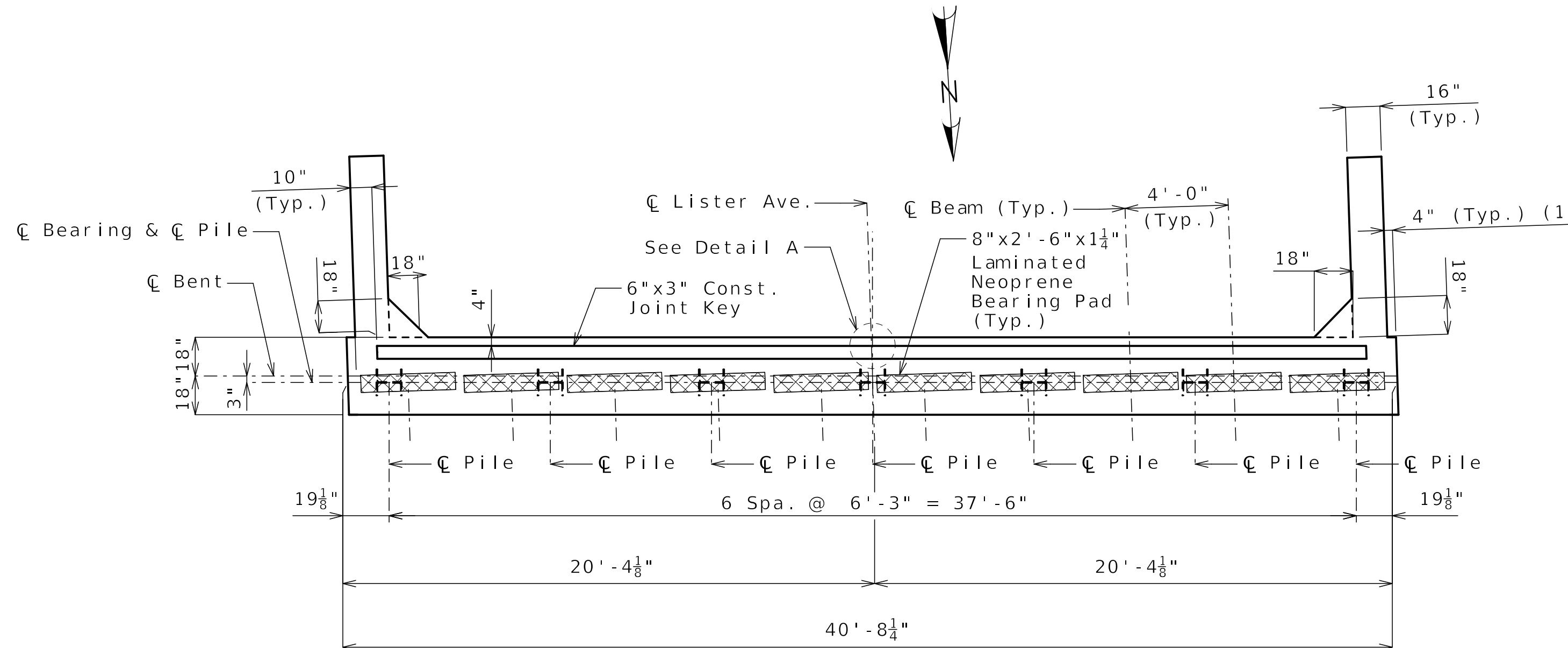
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CLARKSON RADMACHER JOINT VENTURE

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

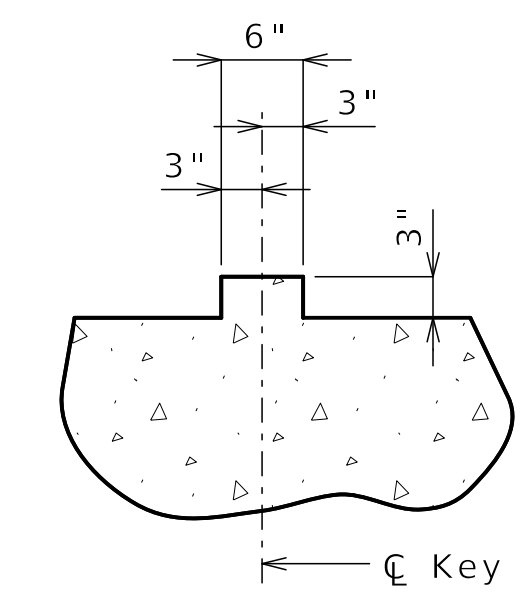
HNTB

6/23/2025

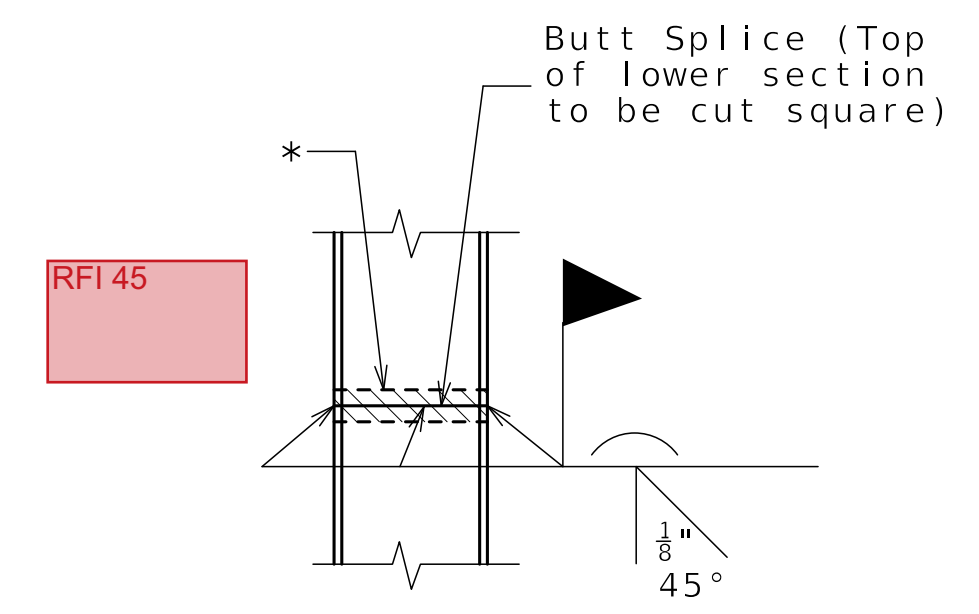


PLAN OF BEAM

(1) Slope normal to bridge fascia to drain.

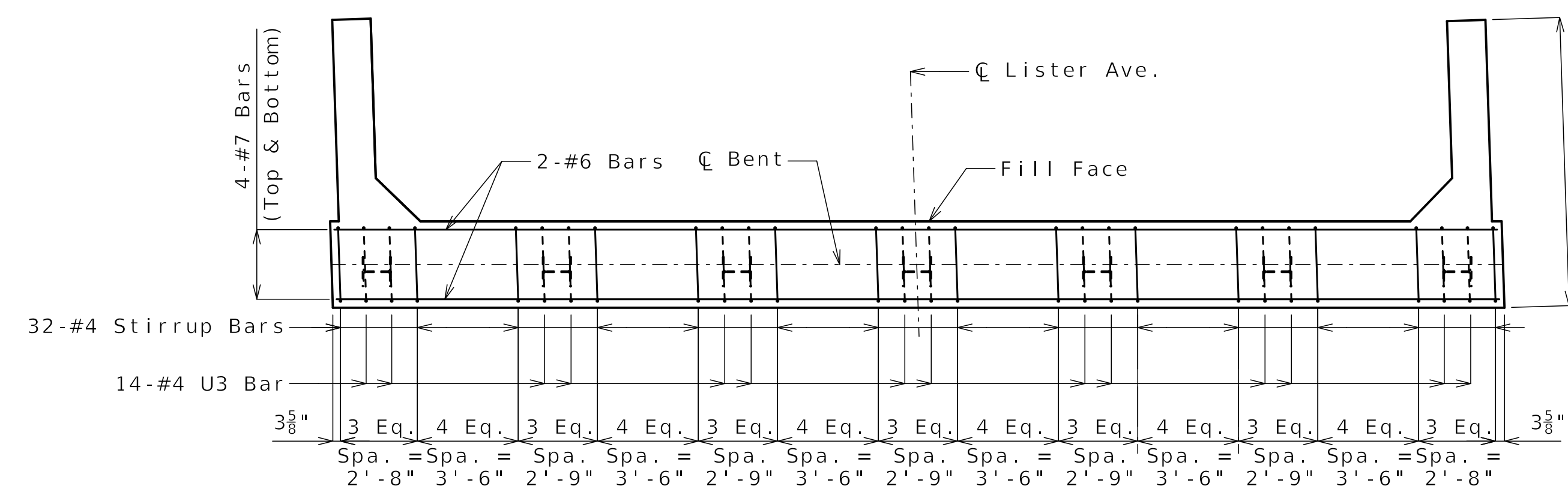


SECTION THRU KEY

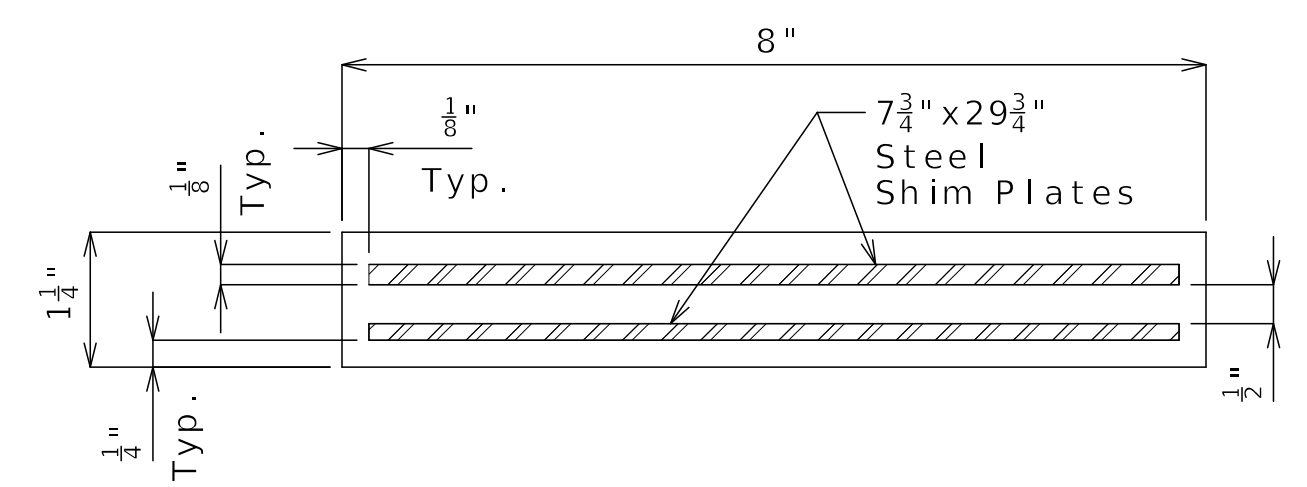


STEEL PILE SPLICE
(If required)

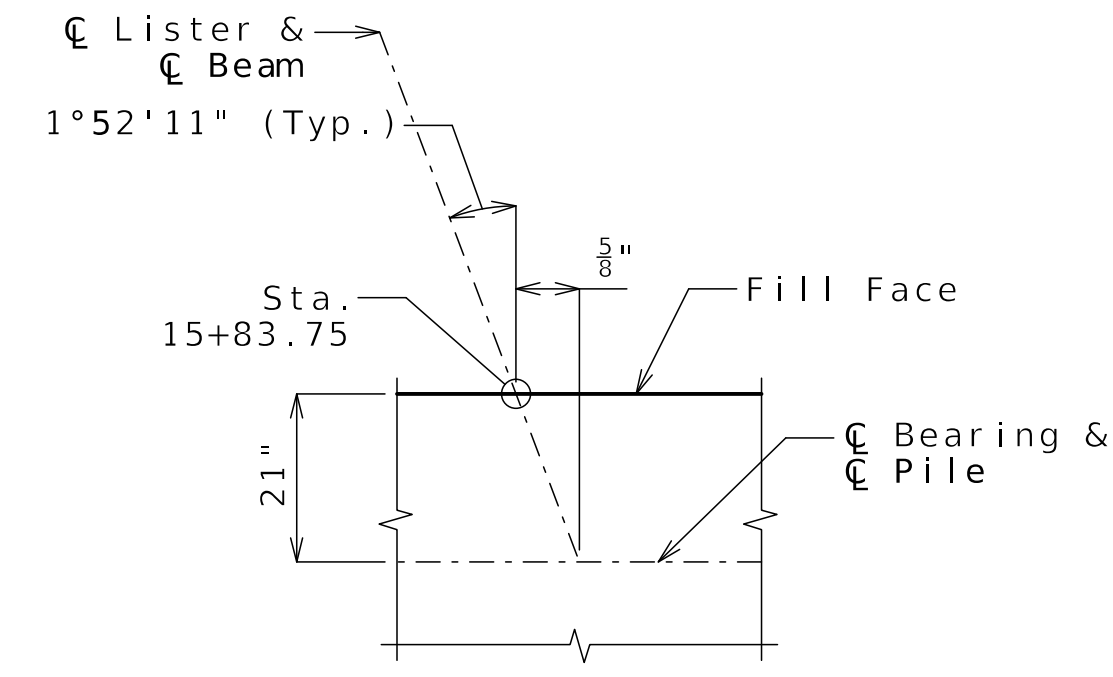
* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



PLAN OF BEAM SHOWING REINFORCING
(Key and steps not shown for clarity.)



LAMINATED NEOPRENE BEARING PAD
(10 Required for End Bent 3)



DETAIL A
(Skew exaggerated for clarity)

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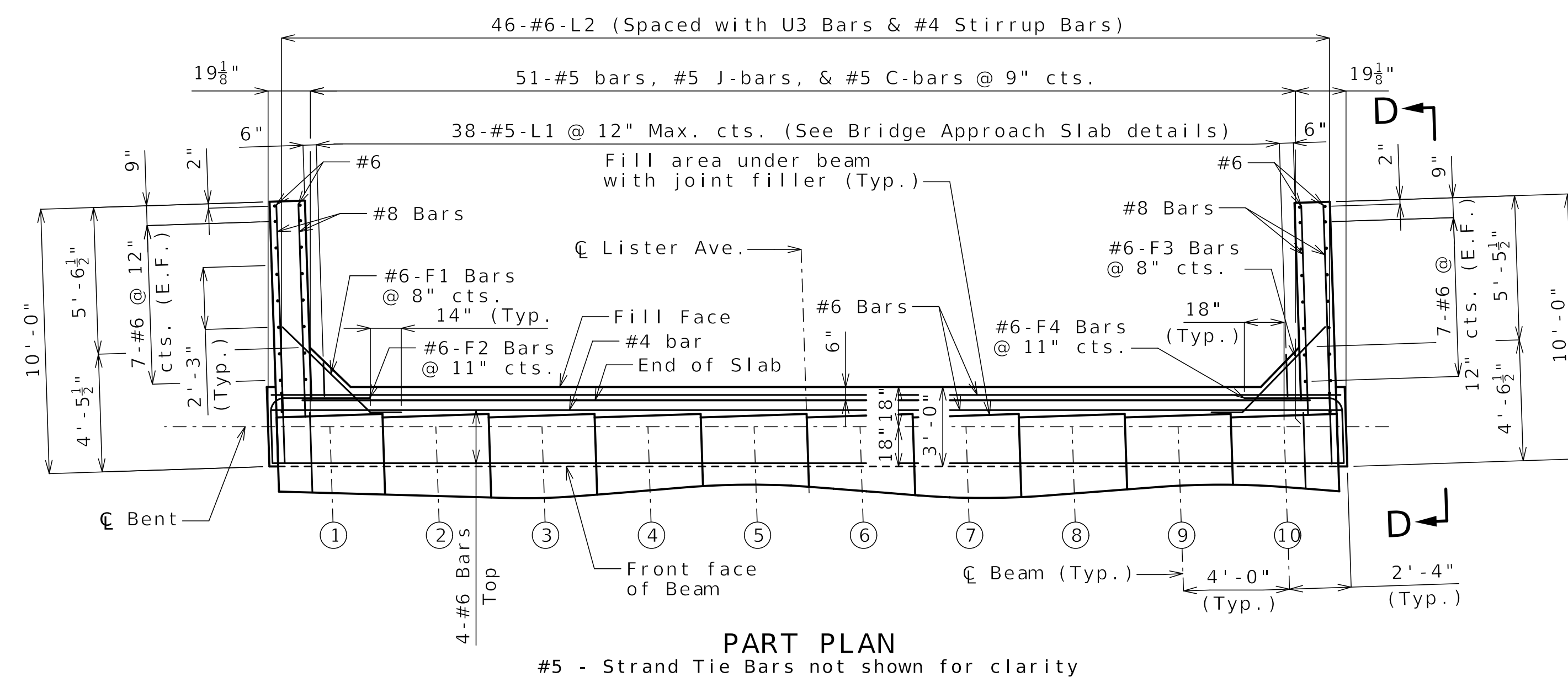
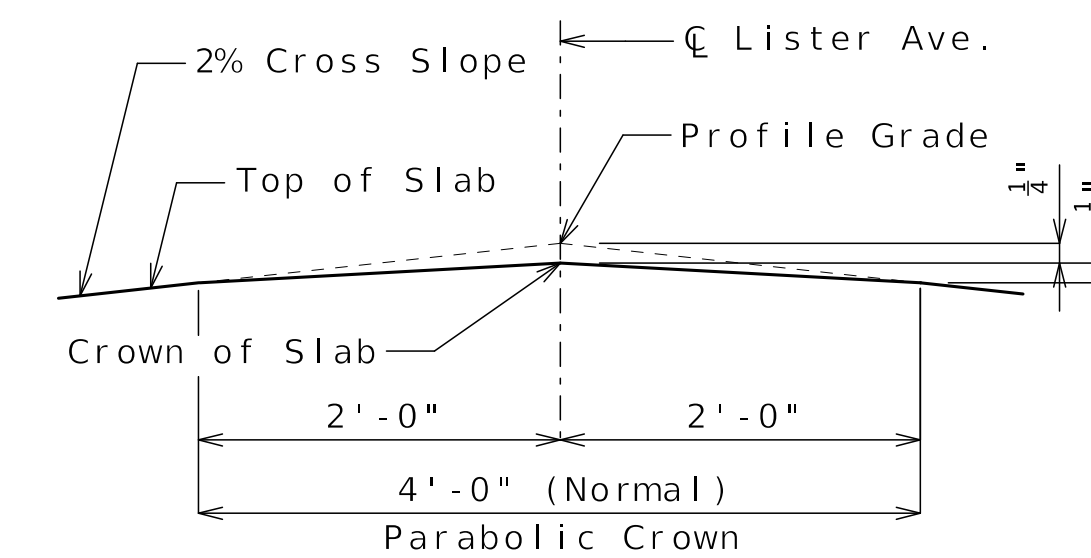
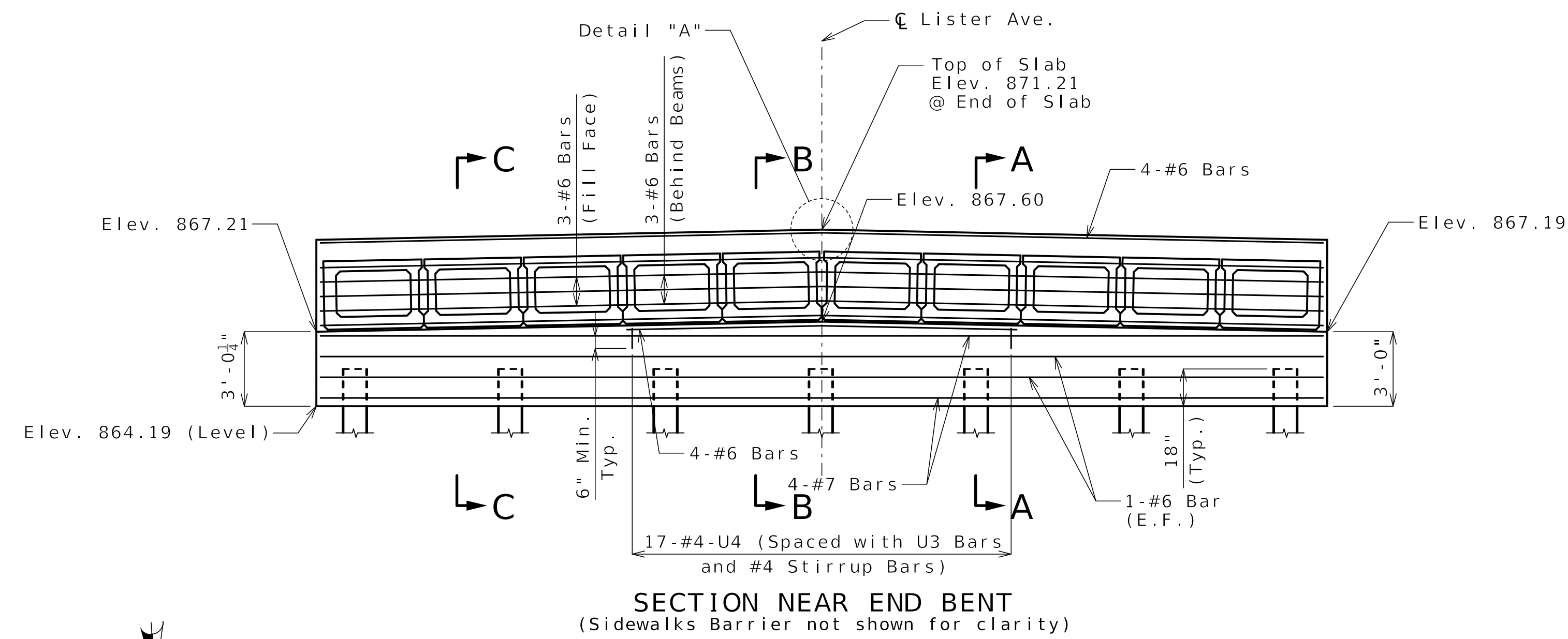
Notes:
Work this sheet with Sheets No. B12-13 and B12-14.
All U bars and pairs of vertical bars shall be placed along skew.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.
For details of bridge approach slab, see Sheet No. B12-31.

DETAILS OF END BENT NO. 3

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-12 of B12-35



PART PLAN
#5 - Strand Tie Bars not shown for clarity

General Notes:
 Work this sheet with Sheets No. B12-12 and B12-14.
 For Sections A-A, B-B and C-C, and Elevation D-D, see Sheet No. B12-14.
 Strands at end of the 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.
 The #6-F bars shall be bent in the field to clear beams.

(X) Denotes beam number.

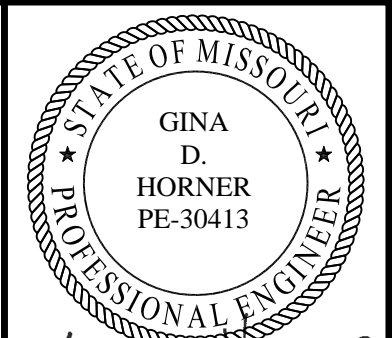
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 Date: 07/02/2025
 Package: BRD-12-Lister-Ave

DETAILS OF END BENT NO. 3

Detailed MAR 2025
 Checked APR 2025

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

Sheet No. B12-13 of B12-35



GINA D. HORNER
 06/27/25

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-13
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO. A9633

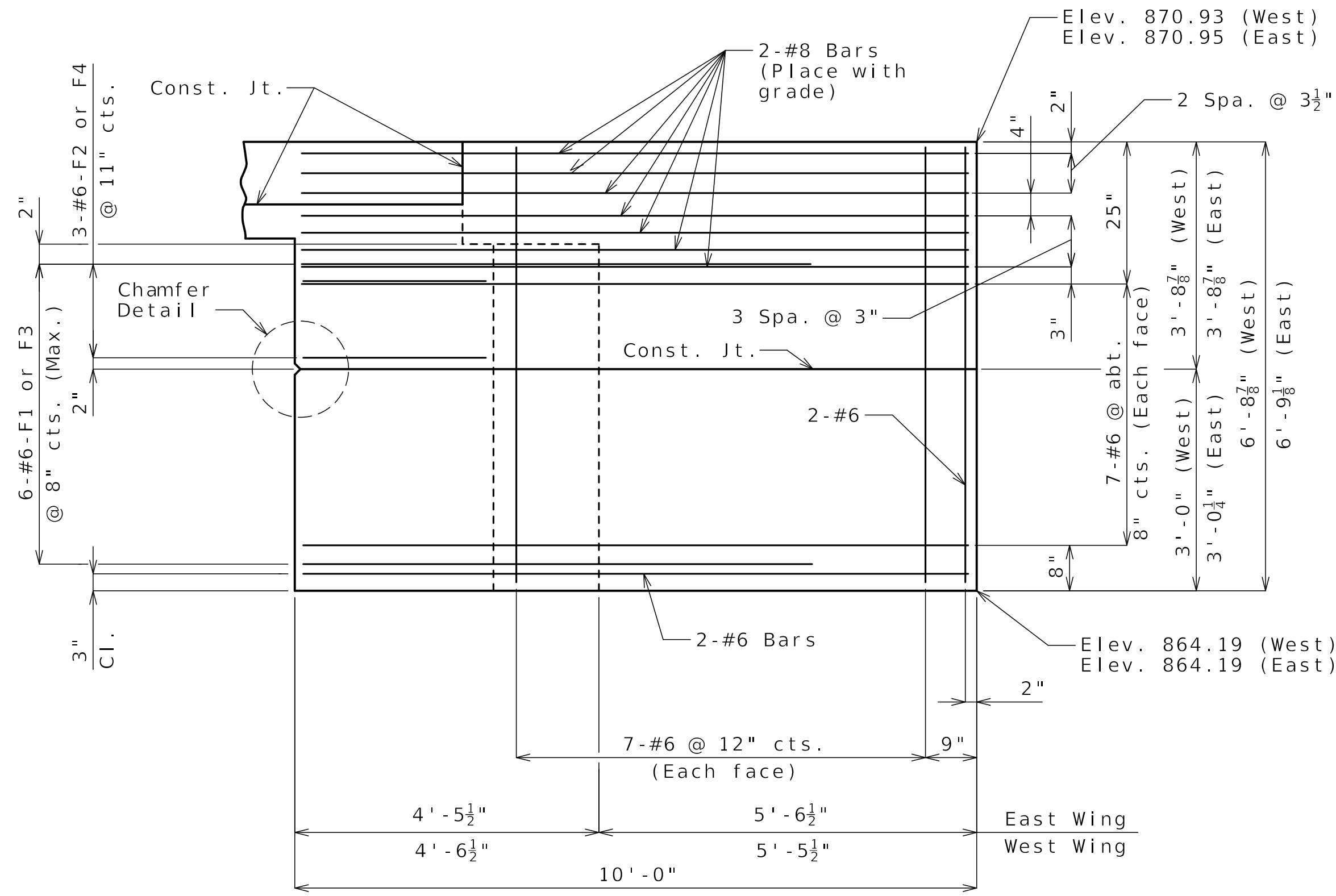
DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

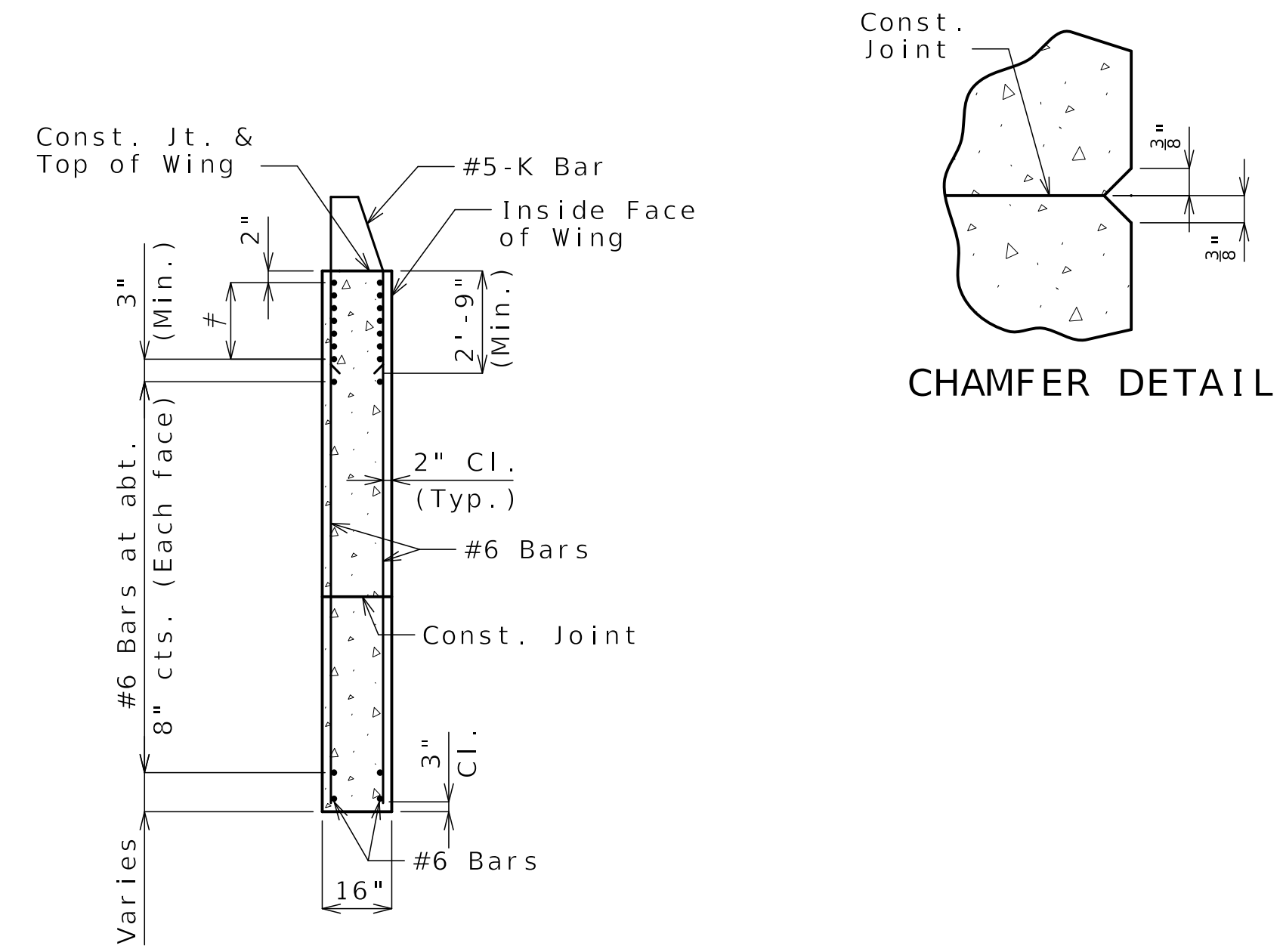
105 WEST CAPITOL
 JEFFERSON CITY, MO 65102
 1-888-ASK-MODOT (1-888-275-6636)

CLARKSON RADMACHER JOINT VENTURE

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

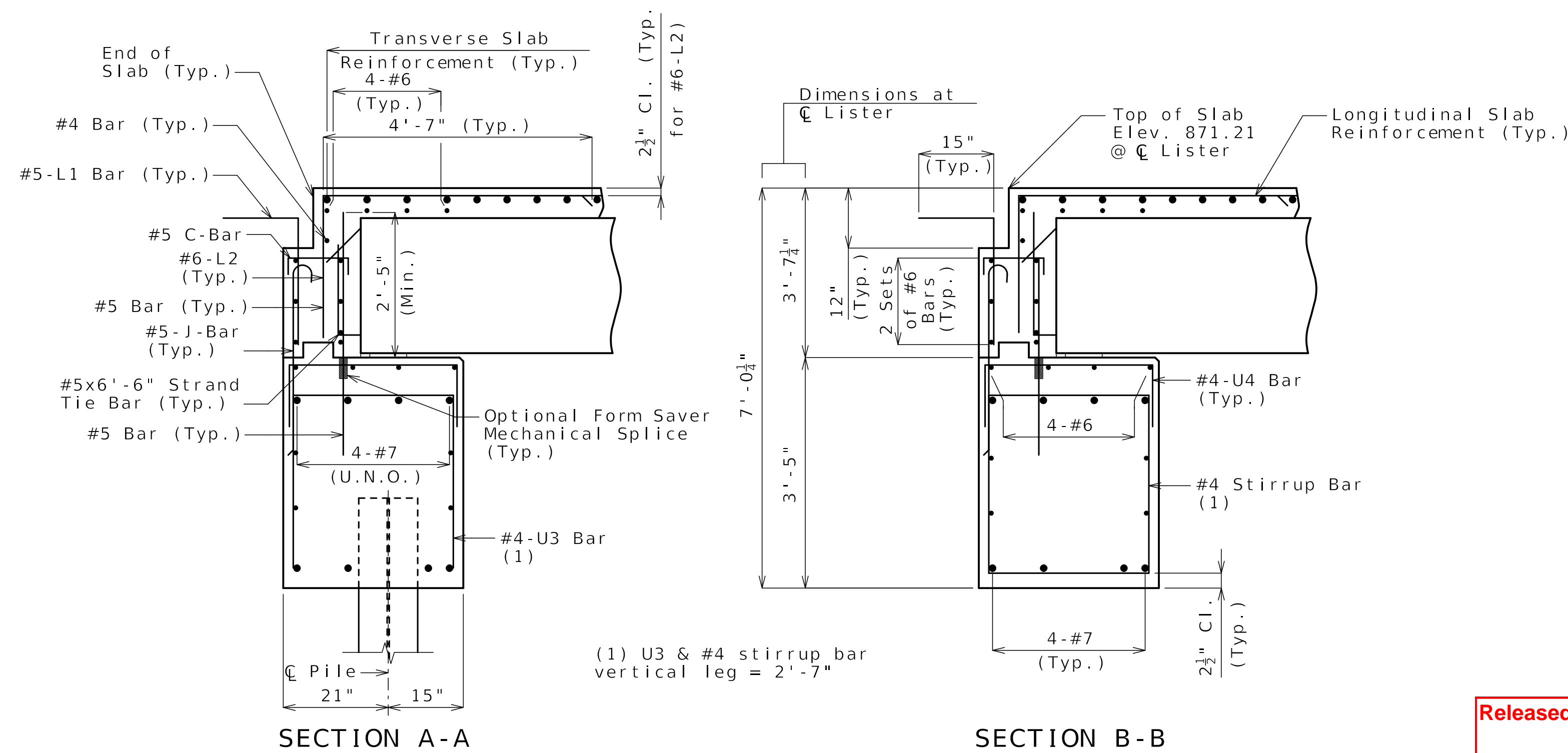
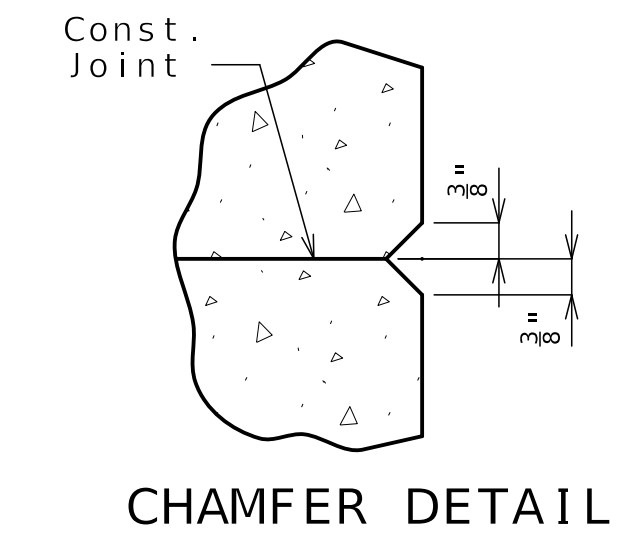


ELEVATION D-D
(West wingwall shown, East wingwall similar except opposite hand)



TYPICAL SECTION THRU WING

#8 Bars at 3" cts. (Each face) (Place with grade)
See Elevation D-D for number of bars



(1) U3 & #4 stirrup bar vertical leg = 2'-7"

General Notes:
Work this sheet with Sheets No. B12-12 and B12-13.
For location of Sections A-A, B-B and C-C and Elevation D-D, see Sheet No. B12-13.
For reinforcement of the Barrier, see Sheet No. B12-26.

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Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave

DETAILS OF END BENT NO. 3

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-14 of B12-35



Gina D. Horner
06/27/25

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO
DISTRICT BR SHEET NO. B12-14

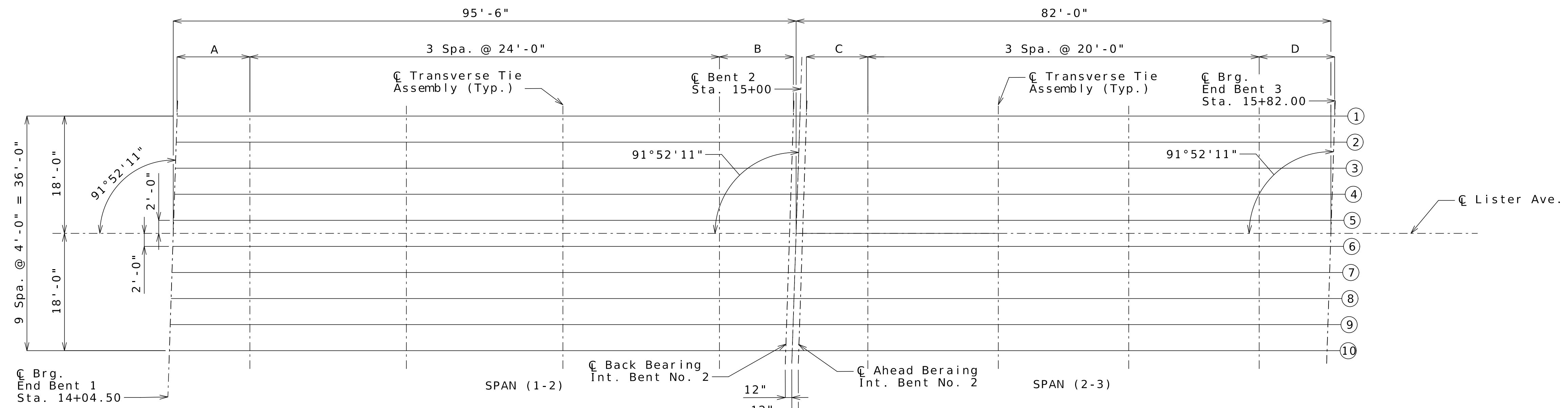
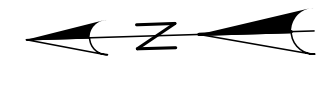
COUNTY JACKSON
JOB NO. J411486D
CONTRACT ID. 240807-C01
PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

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

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



FRAMING PLAN

Beam Number	"A"	"B"	"C"	"D"
1	10' - 8"	11' - 10"	9' - 11"	11' - 1"
2	10' - 9 1/2"	11' - 8 1/2"	10' - 0 1/2"	10' - 11 1/2"
3	10' - 11 1/8"	11' - 6 7/8"	10' - 2 1/8"	10' - 9 7/8"
4	11' - 0 3/8"	11' - 5 3/8"	10' - 3 3/8"	10' - 8 3/8"
5	11' - 2 1/4"	11' - 3 3/4"	10' - 5 1/4"	10' - 6 3/4"
6	11' - 3 3/4"	11' - 2 1/4"	10' - 6 3/4"	10' - 5 1/4"
7	11' - 5 3/8"	11' - 0 3/8"	10' - 8 3/8"	10' - 3 3/8"
8	11' - 6 7/8"	10' - 11 1/8"	10' - 9 7/8"	10' - 2 7/8"
9	11' - 8 1/2"	10' - 9 1/2"	10' - 11 1/2"	10' - 0 1/2"
10	11' - 10"	10' - 8"	11' - 1"	9' - 11"

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 Not to Scale
 Revision: 0.0
 Date: 07/02/2025
 Package: BRD-12-Lister-Ave

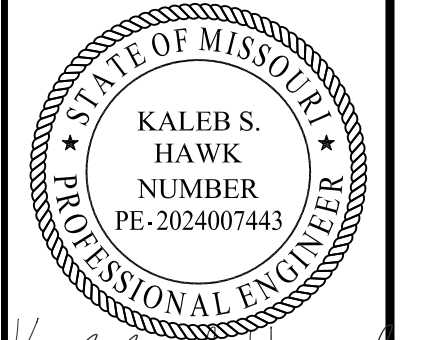
Notes:
 Longitudinal dimensions are measured horizontally.
 All bents are parallel.
 (X) Denotes beam number.

FRAMING PLAN

Detailed MAR 2025
 Checked APR 2025

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

Sheet No. B12-15 of B12-35



Kaleb S. Hawk
 6-30-2025

DATE PREPARED
06/25/2025
 ROUTE STATE
1-70 MO
 DISTRICT SHEET NO.
BR B12-15
 COUNTY
JACKSON
 JOB NO.
J411486D
 CONTRACT ID.
240807-C01
 PROJECT NO.

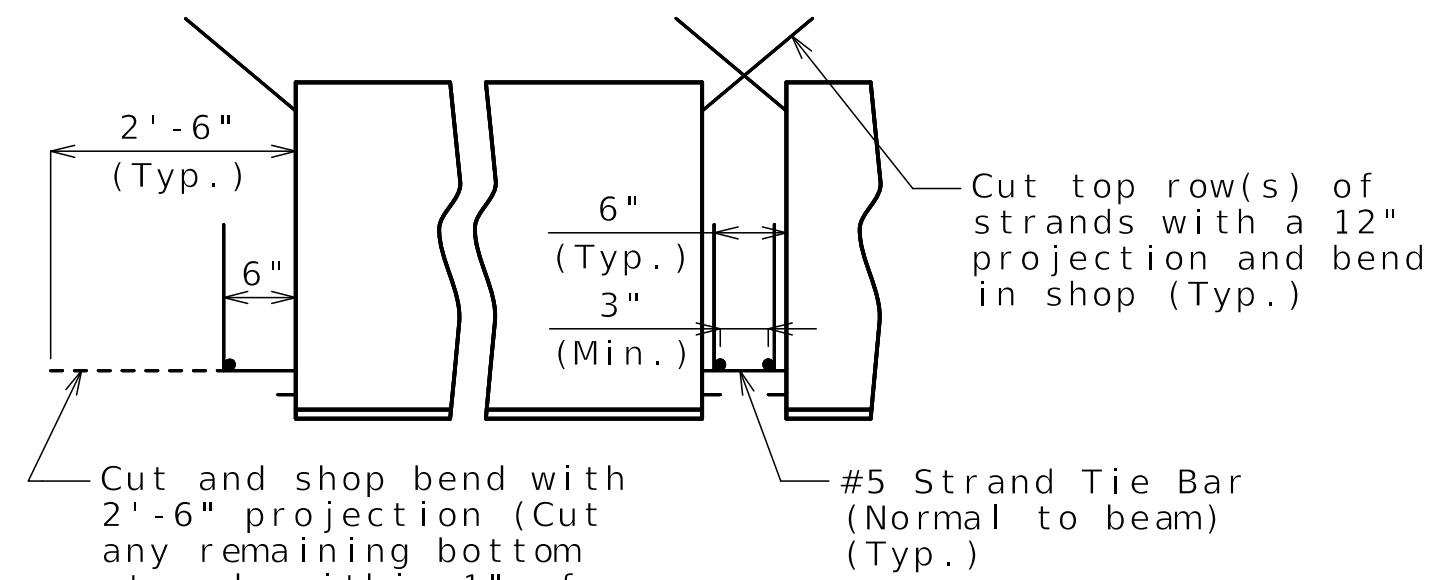
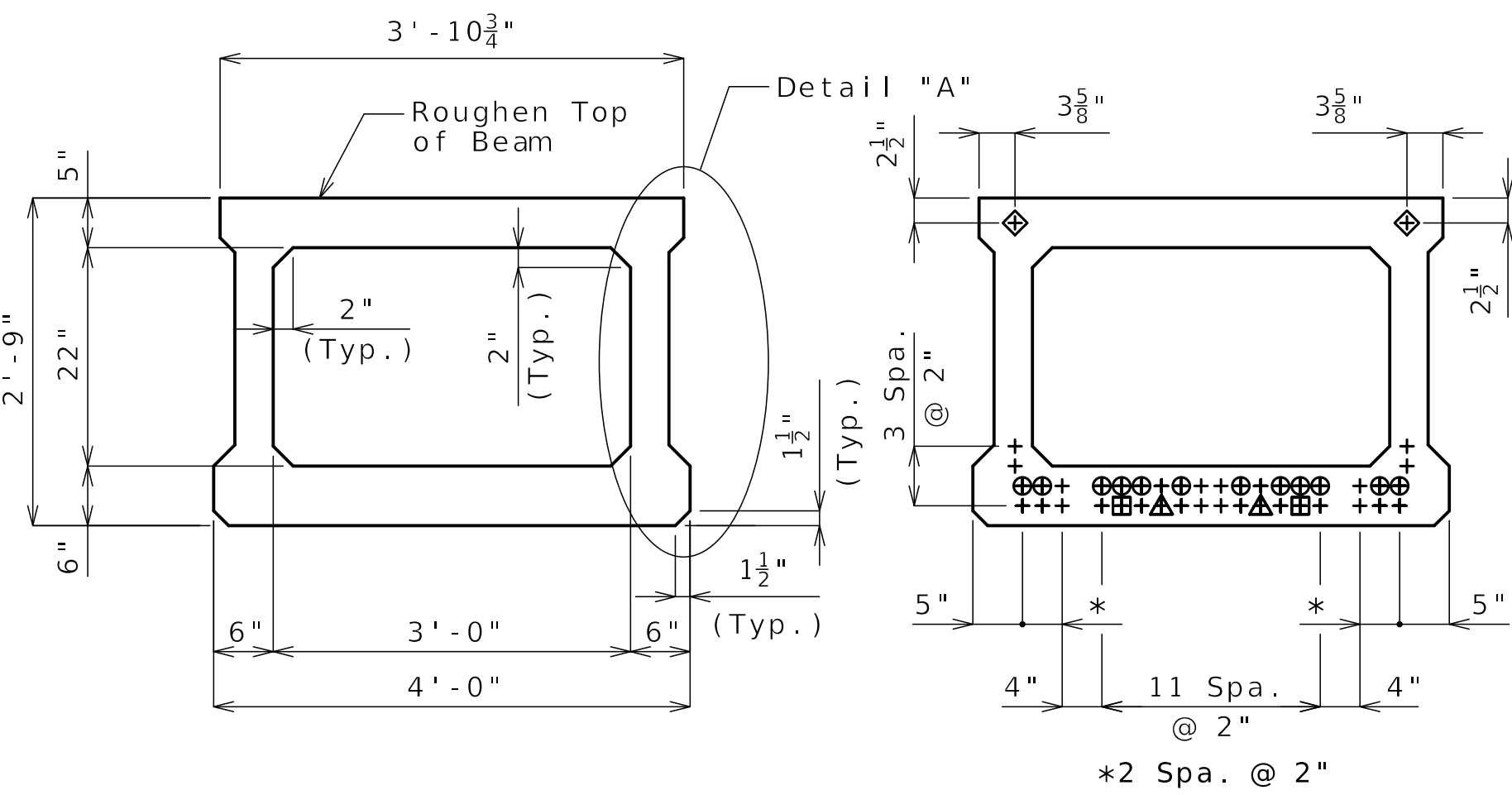
BRIDGE NO.
A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



All strands are fully bonded unless otherwise noted.
 + Indicates prestressing strand.
 O Indicates cut and shop bend with 2'-6" projection.
 □ Indicates debonded for 3'-0" from end of beam.
 △ Indicates debonded for 6'-0" from end of beam.
 ◇ Indicates debonded for 30'-0" at center of beams.

STRAND ARRANGEMENT

STRAND DETAILS AT BEAM ENDS
 (Shear keys and chamfers not shown for clarity)

General Notes:

Concrete for prestressed beams shall be Class A-1 with $f'c = 10,000$ psi and $f'ci = 7,500$ psi.

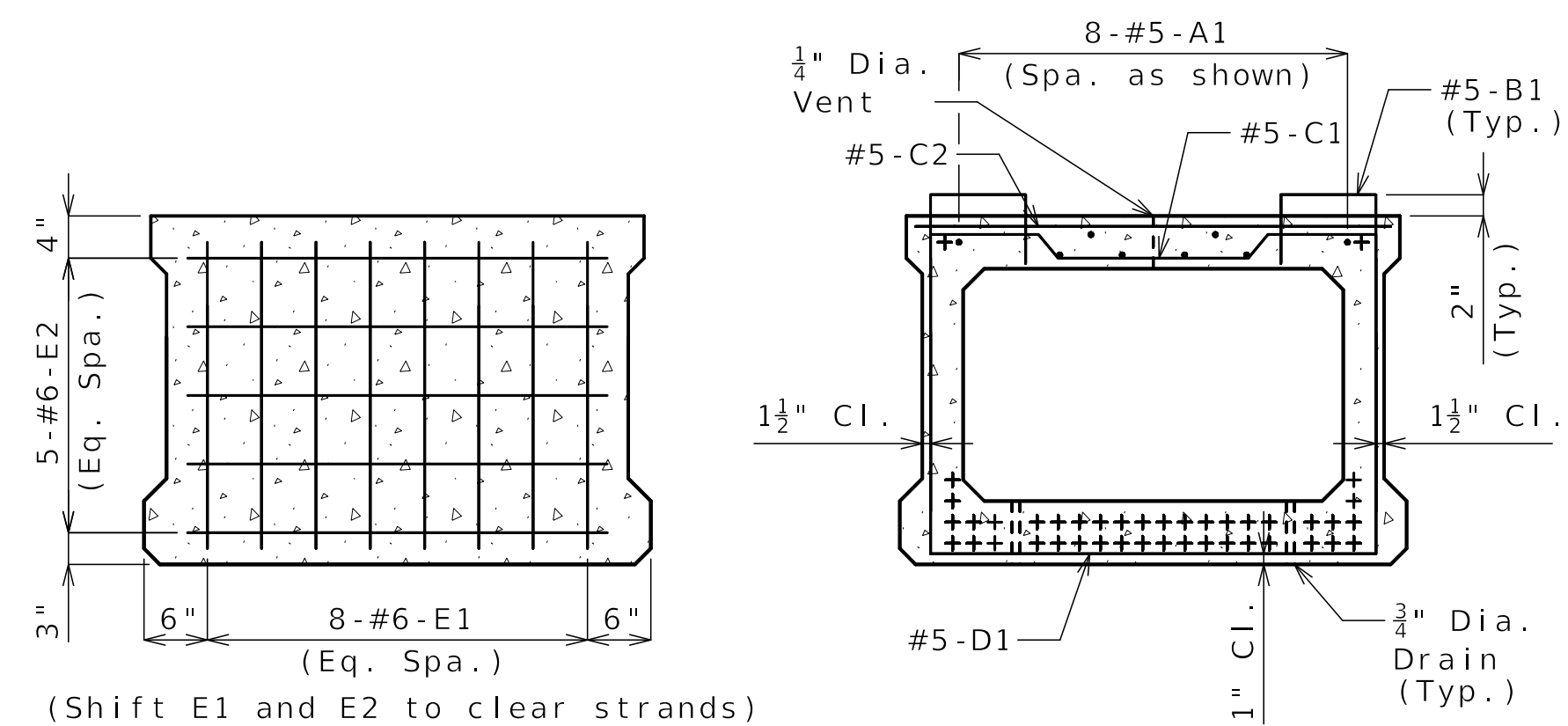
Use 42 strands, 0.6"Ø Grade 270, with an initial prestress force of 1846 kips.

Pretensioned members shall be in accordance with Sec 1029. Fabricator shall be responsible for location and design of lifting devices.

For Detail "A" & Additional Beam Details, see Sheets No. B12-18 and B12-19.

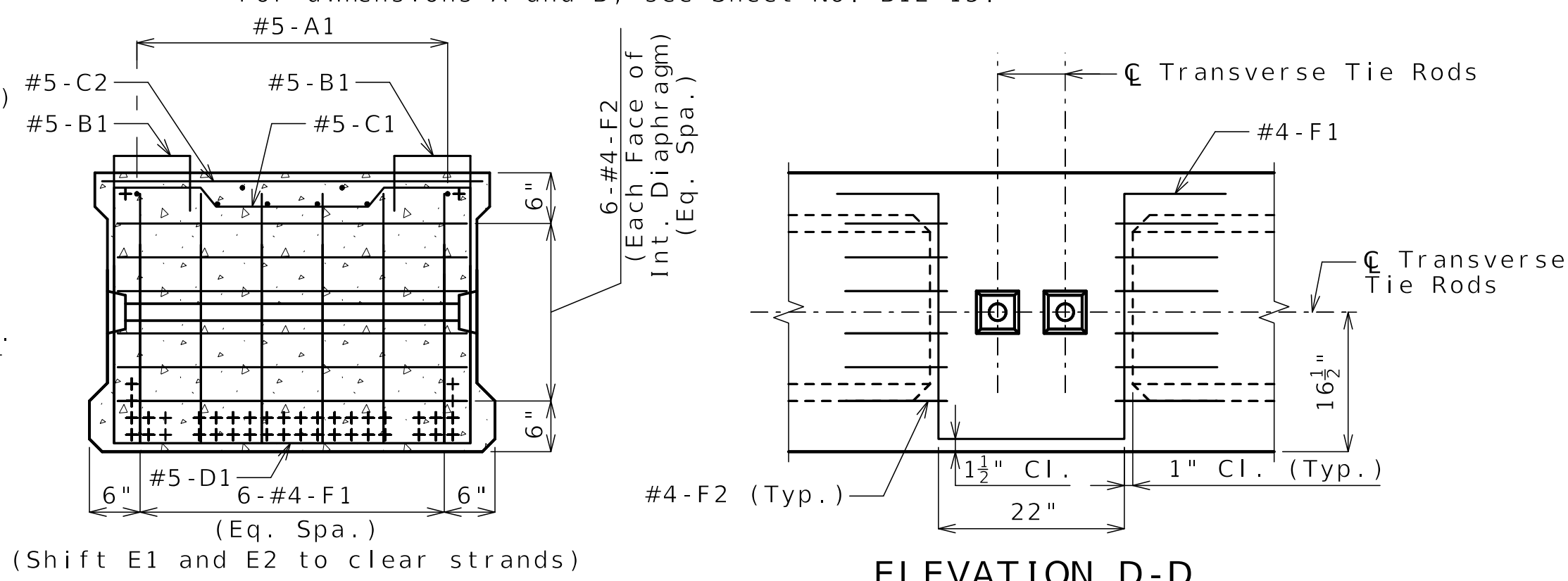
For Beam Camber Diagram, see Sheet No. B12-21.

For dimensions A and B, see Sheet No. B12-15.



ELEVATION A-A

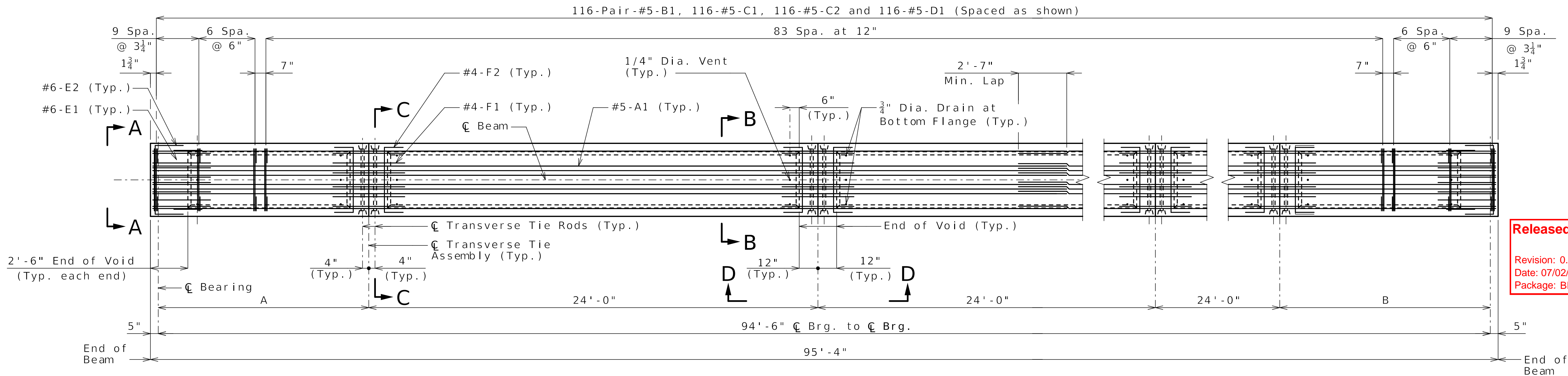
SECTION B-B



SECTION C-C

ELEVATION D-D

(A1, B1, C1, C2 and D1 bars, shear keys and chamfers not shown for clarity)



PLAN

BILL OF REINFORCING STEEL EACH BEAM		
NO.	SIZE & MARK	ACTUAL LENGTH
16	5 A1	49'-0"
232	5 B1	3'-0"
116	5 C1	8'-1"
116	5 C2	3'-8"
116	5 D1	8'-0"
16	6 E1	8'-2"
10	6 E2	7'-0"
24	4 F1	8'-3"
48	4 F2	5'-3"

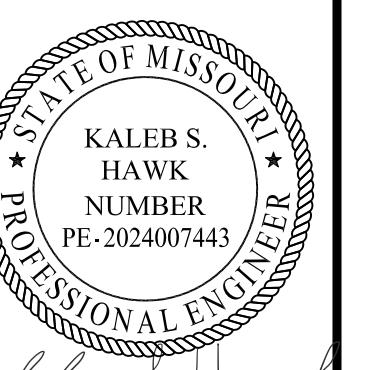
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

Minimum clearance to reinforcing shall be to one inch, unless otherwise shown.

All reinforcement shall be Grade 60.

All B1 bars shall be epoxy coated.



KALEB S. HAWK
 NUMBER PE-2024007443
 6-30-2025

DATE PREPARED
06/25/2025

ROUTE **1-70** STATE **MO**

DISTRICT **BR** SHEET NO. **B12-16**

COUNTY **JACKSON**

JOB NO. **J411486D**

CONTRACT ID. **240807-C01**

PROJECT NO.

BRIDGE NO. **A9633**

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE 06/25/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

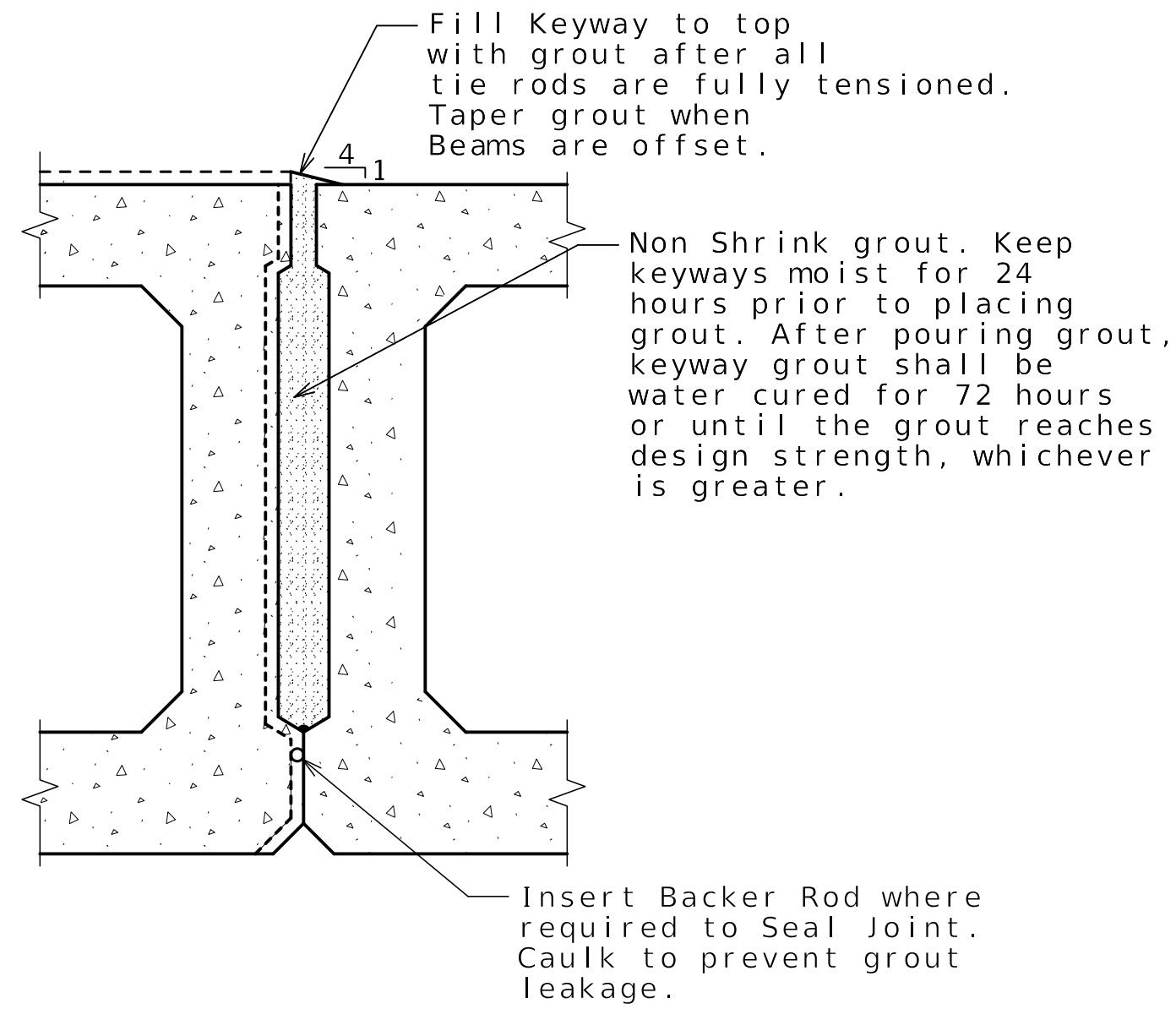
CLARKSON RADMACHER JOINT VENTURE

715 KIRK DRIVE KANSAS CITY, MO 64105-1310

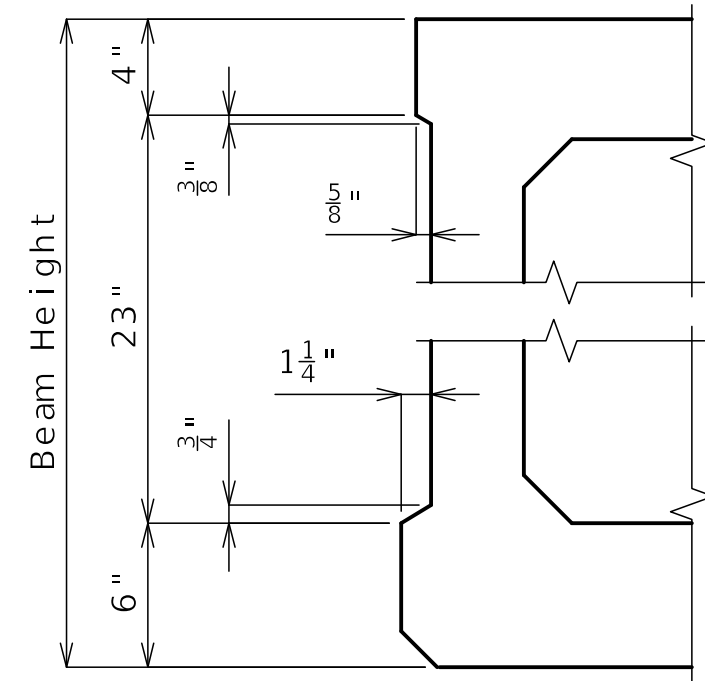
CERTIFICATE OF AUTHORITY NO. 001270

HNTB

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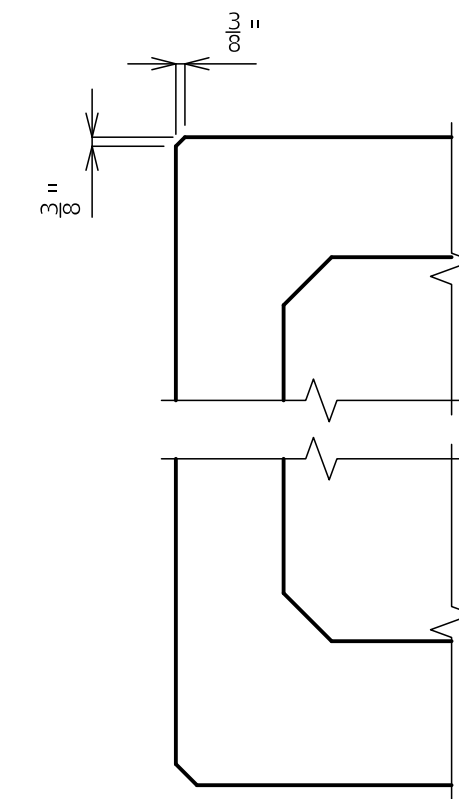


KEYWAY GROUT DETAIL

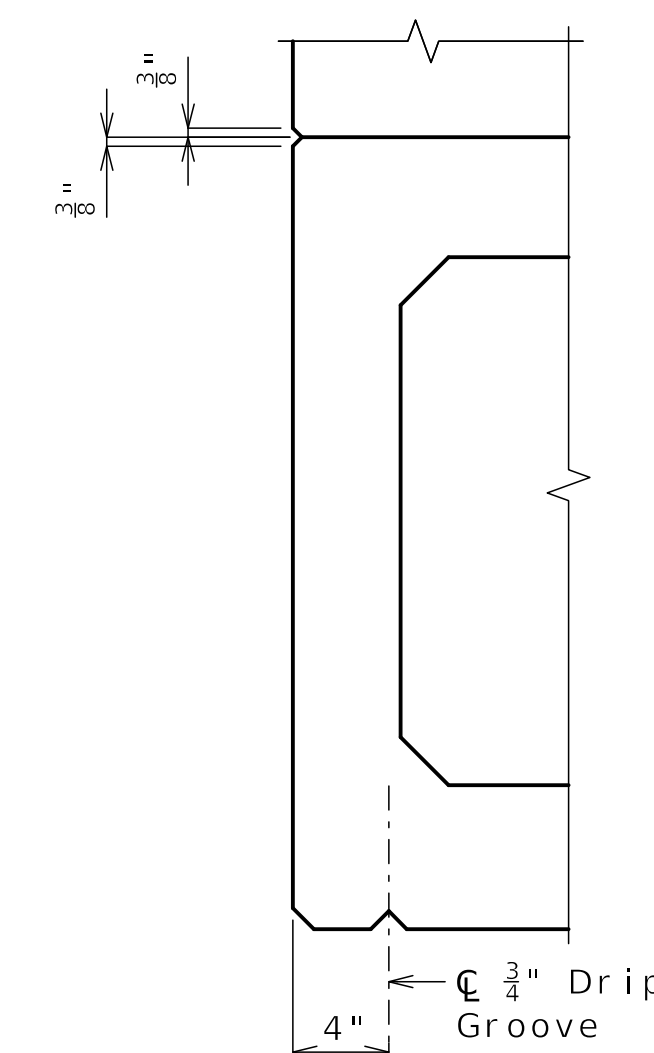


(Interior face of exterior beams & both faces of interior beams)

DETAIL A



(Exterior face of exterior beams)



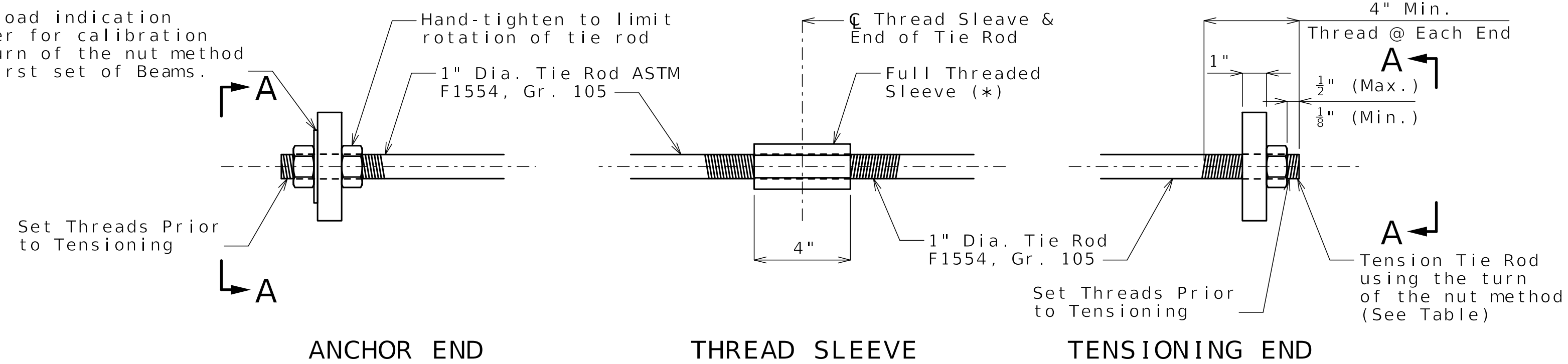
CHAMFER & DRIP BEVEL AT EXTERIOR FACE OF EXTERIOR BEAM

TURN OF THE NUT REQUIREMENTS

Beam No. 1 thru 10 - 2.25 Turn

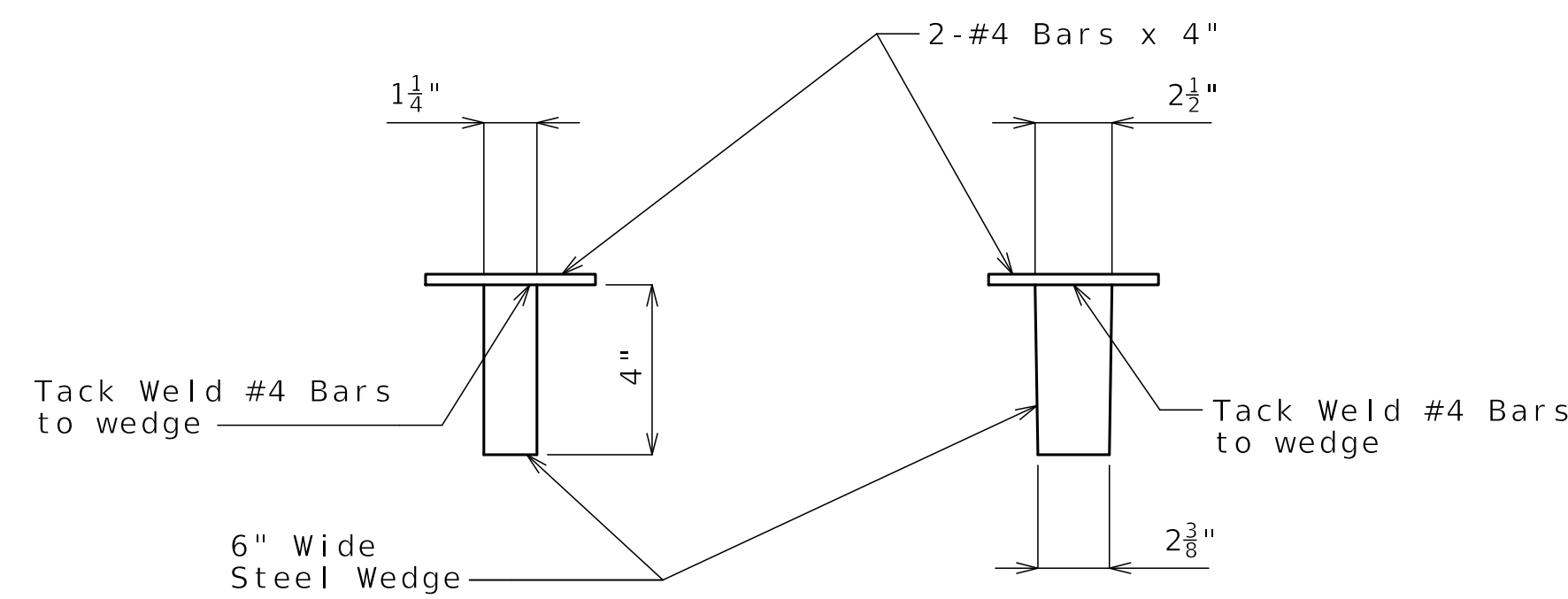
Notes: From snug tight condition. 1" Dia. bolt threaded at 8 threads per inch. Pretension = 55 Kips

Use load indication washer for calibration of turn of the nut method of first set of Beams.



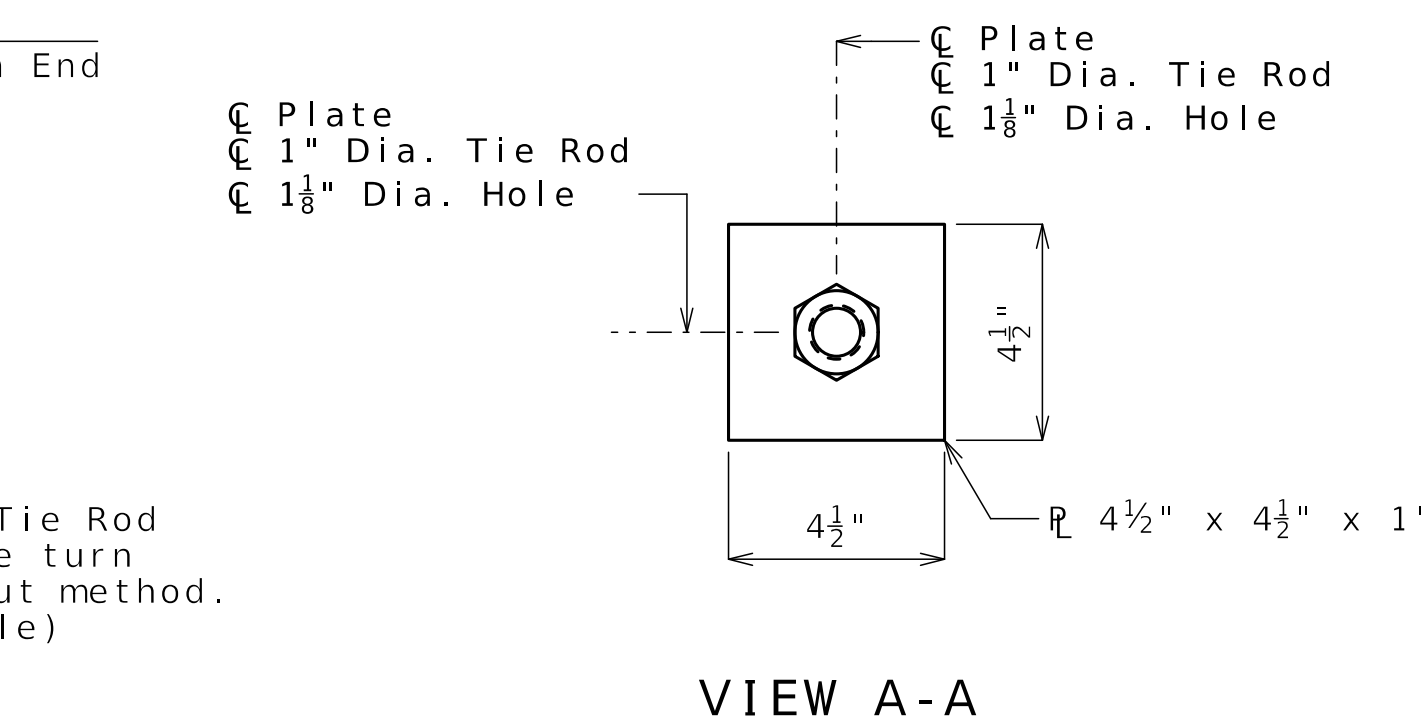
TIE ROD & BEARING PLATE DETAILS

* Full Threaded Sleeve axial capacity shall exceed capacity of tie rod.

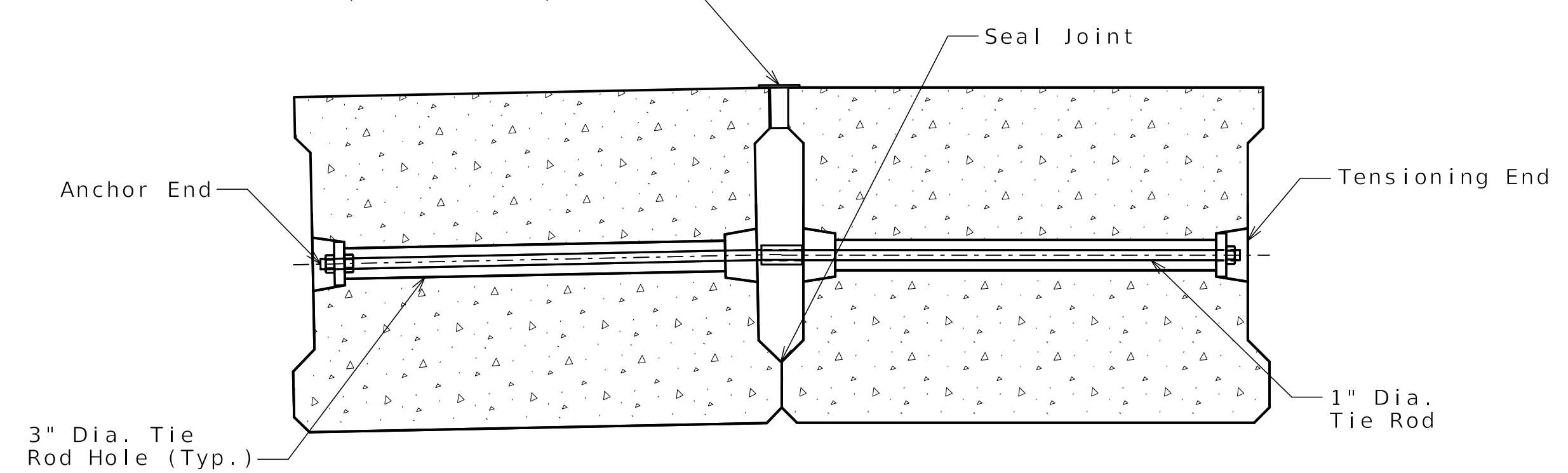


TYPICAL WEDGE BEVELED WEDGE**
DETAIL B

**Beveled wedge required between beams at substructure slope breaks (Beam No. 5 and 6)



VIEW A-A

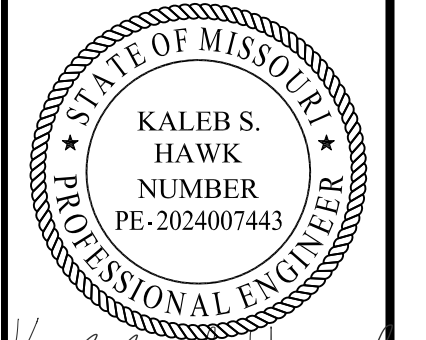


TYPICAL DETAIL FOR INSTALLING WEDGE

Note: Tighten tie rods until the bottom corners of the boxes are in contact. Loosen the tie rod and install the wedges per detail.

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MISCELLANEOUS ADJACENT BOX BEAM DETAILS



Kaleb S. Hawk
6-30-2025

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-18

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

BRIDGE NO. A9633

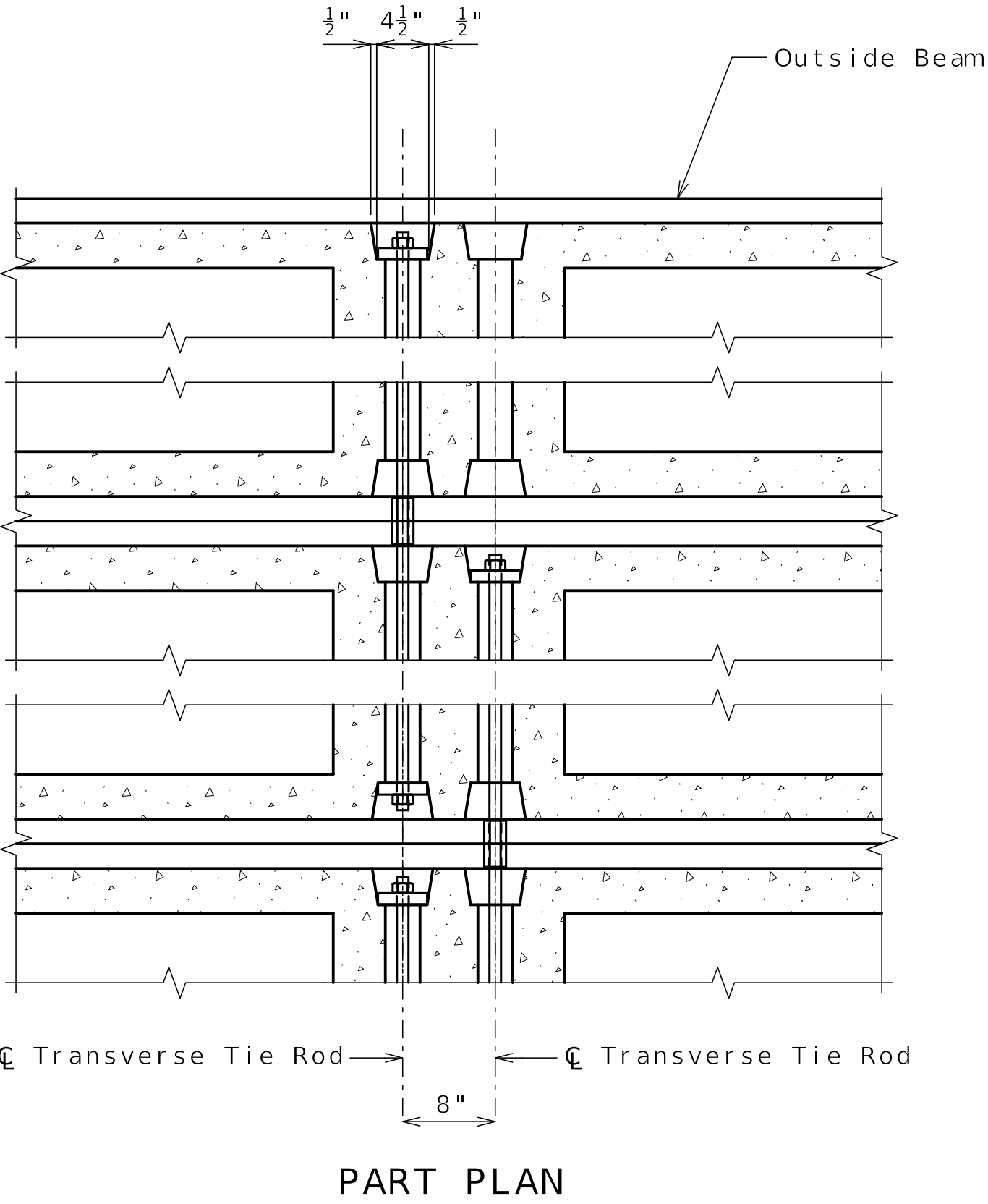
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06/25/25 <td>REV 0 - RFC SUBMITTAL</td>	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

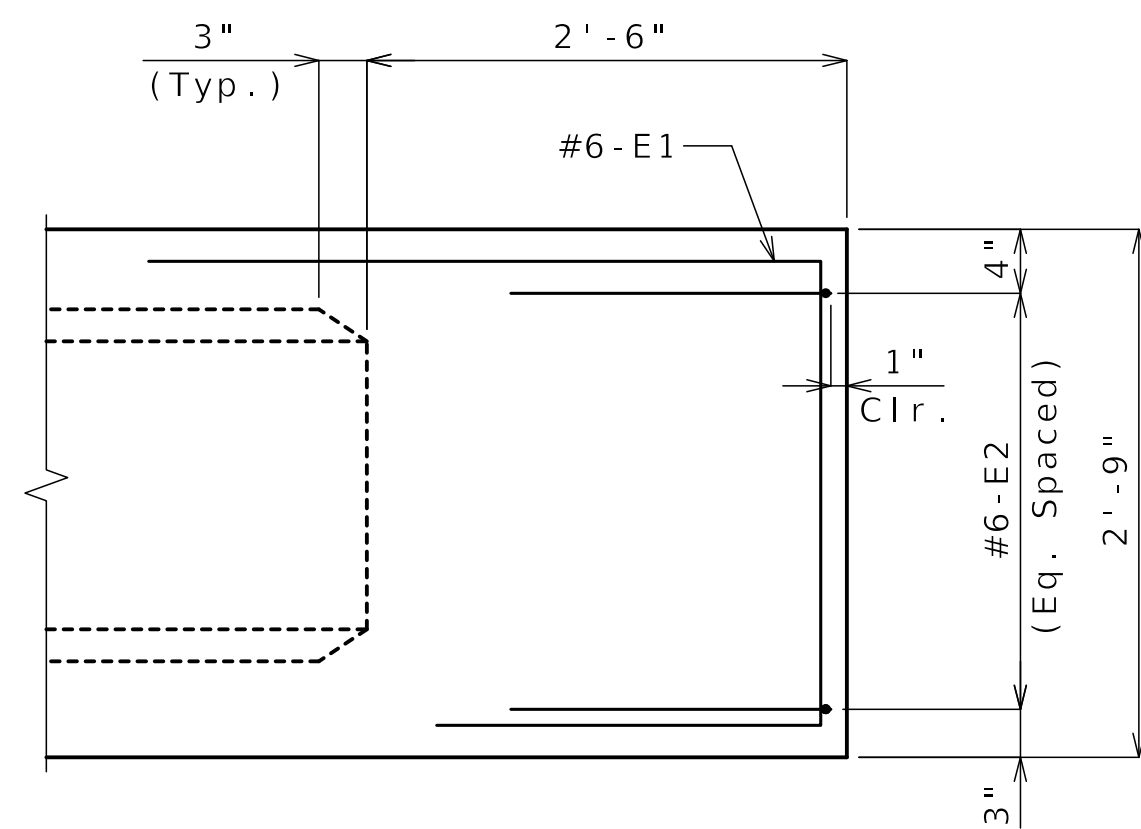
105 WEST CAPITOL JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CLARKSON RADMACHER JOINT VENTURE

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

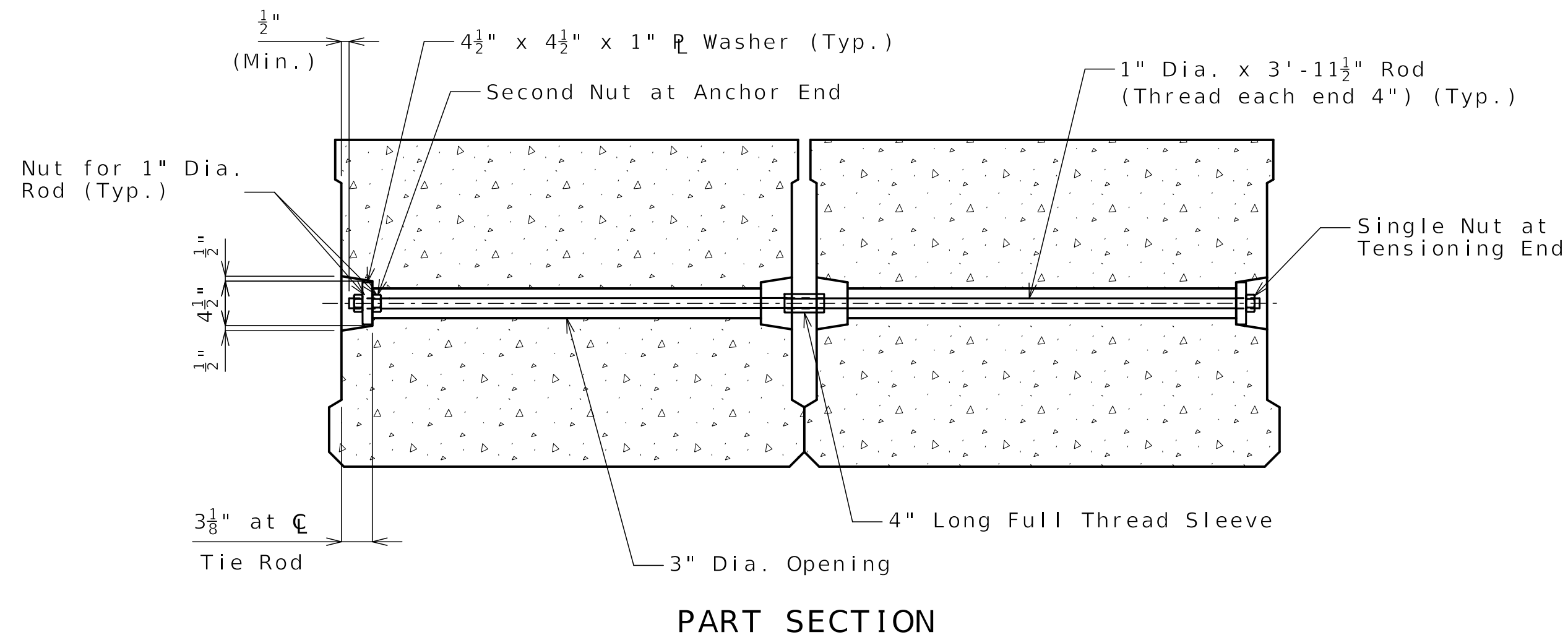


PART PLAN



TYPICAL END ELEVATION

(Stirrups, long. reinforcement, strands, chamfers & shear keys not shown for clarity)



PART SECTION

Notes:
The 1" Dia. rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place.

Keyway surface shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between top of the beam and the bottom edge of the key.

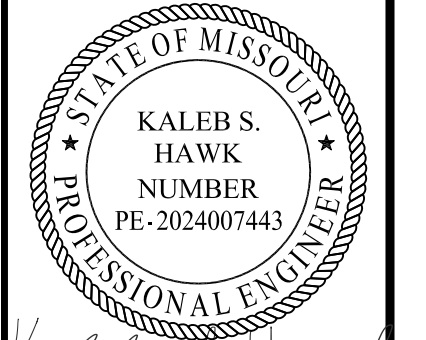
Use high strength tie rods that conform to ASTM F1554 Grade 105. Use heavy hexagon nuts that conform to ASTM A563. Hot-dip galvanize tie rods, plates, nuts and washers after fabrication. Tighten tie rods to a minimum tension of 30 kips using turn of the nut method.

Use mechanically galvanized load indication washers conforming to ASTM F959 when tensioning the tie rods on the first pair (5 & 6) of Beams to calibrate the turn of the nut method. The load indication washers shall be placed on the anchor end, not the tensioning end.

Tighten all tie rods (per box) to about one half of the specified tension before proceeding with the final tensioning.

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MISCELLANEOUS ADJACENT BOX BEAM DETAILS



Kaleb S. Hawk
6-30-2025

DATE PREPARED
06/25/2025

ROUTE STATE
1-70 MO

DISTRICT SHEET NO.
BR B12-19

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9633

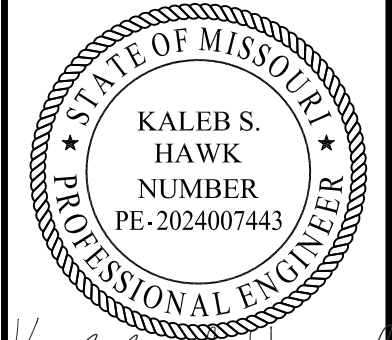
DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER JOINT VENTURE

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



Kaleb S. Hawk
6-30-2025

DATE PREPARED
06/25/2025

ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-20

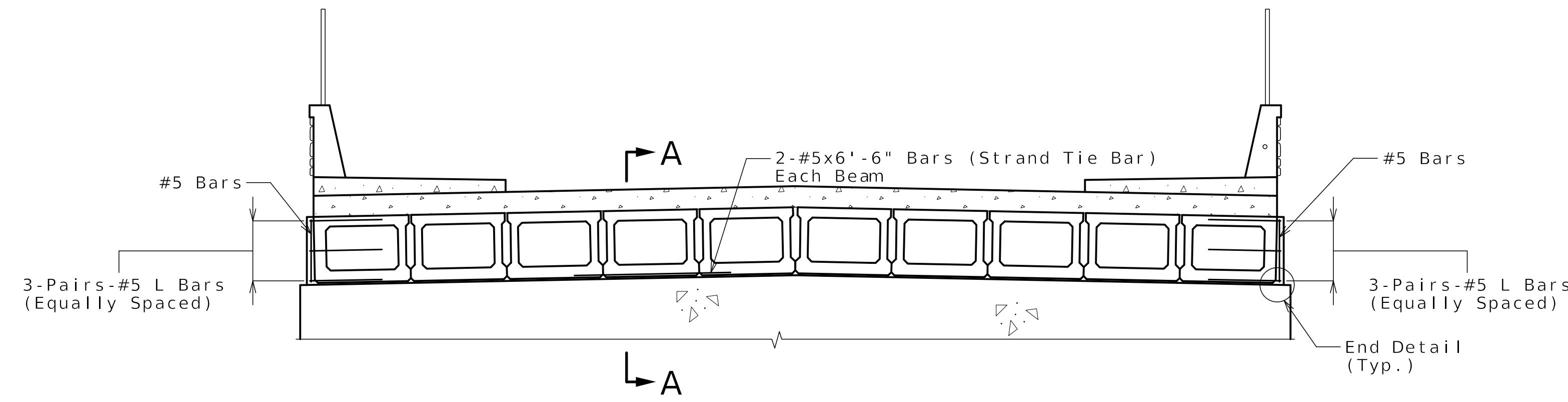
COUNTY
JACKSON

JOB NO.
J411486D

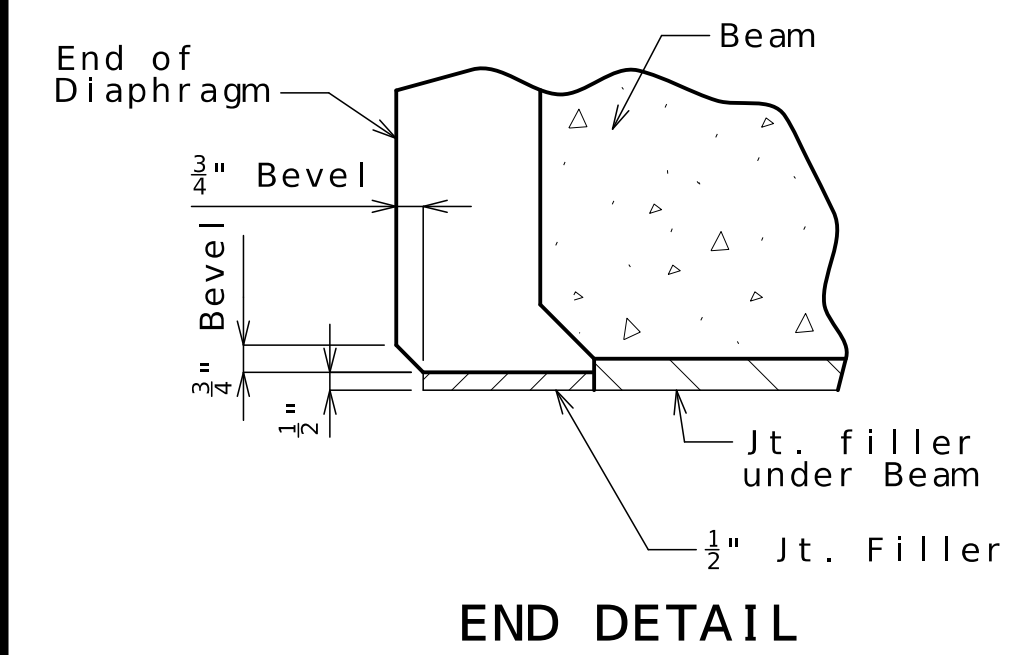
CONTRACT ID.
240807-C01

PROJECT NO.

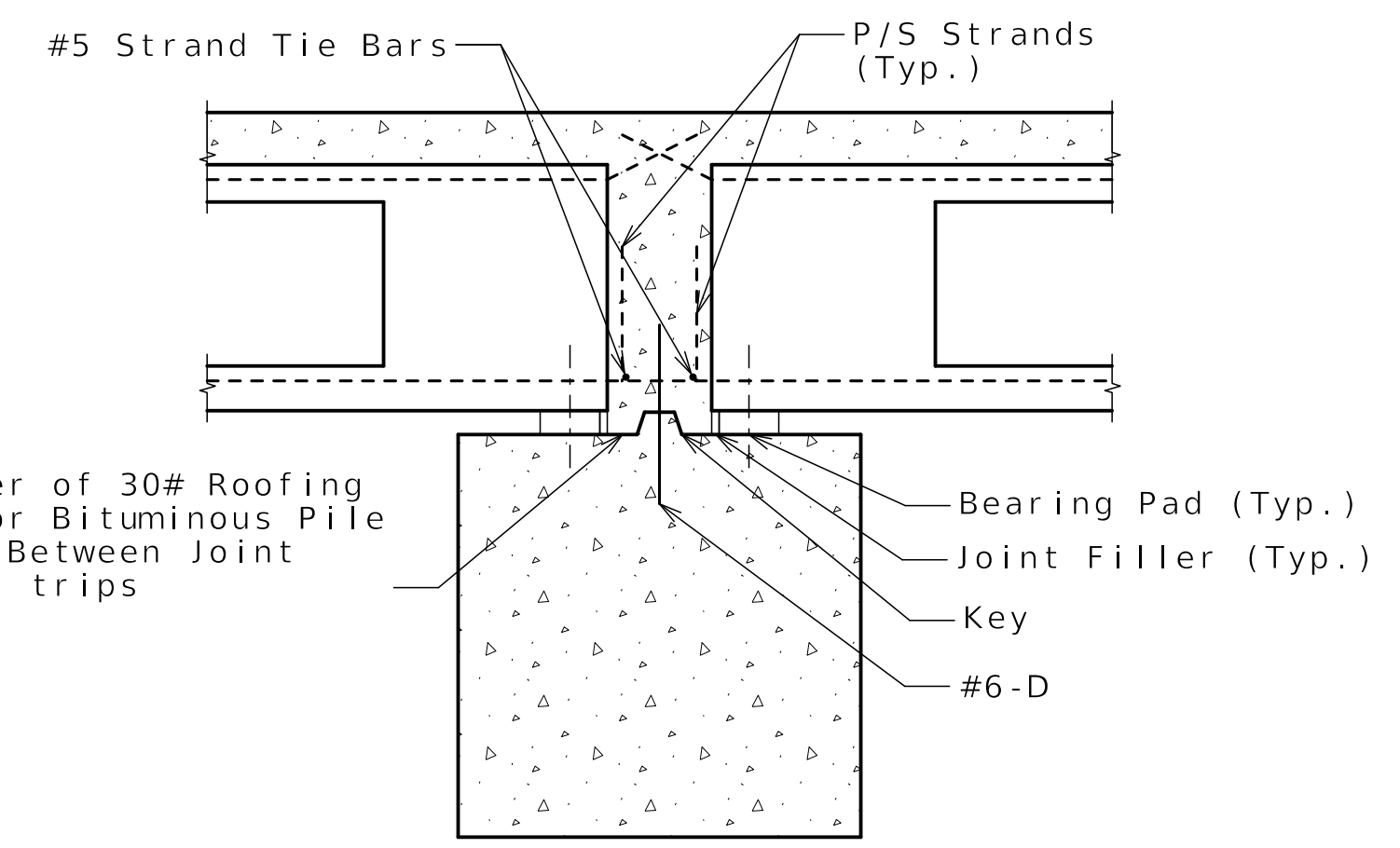
BRIDGE NO.
A9633



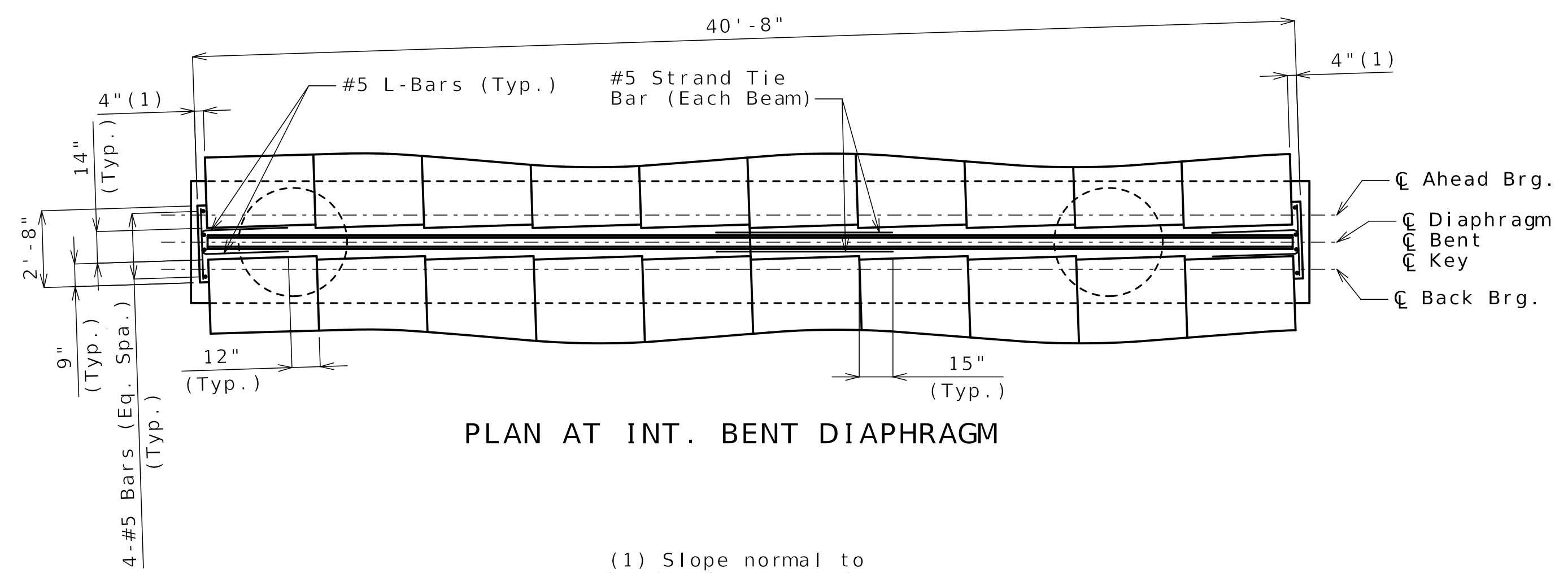
ELEVATION THRU INT. BENT DIAPHRAGM
(Reinforcement in Bent Cap & Columns not shown for clarity)



END DETAIL

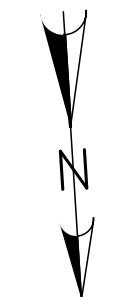


SECTION A-A



PLAN AT INT. BENT DIAPHRAGM

(1) Slope normal to bridge fascia to drain.



Notes:
Diaphragms shall be built vertical.
For location of #5 Strand Tie Bars, see Sheets No. B12-16 and B12-17.
For Bearing Details, see Sheet No. B12-10.
For Cap beam, bearing location, dowel placement, shear key details, roofing felt details, joint filler details see Sheets No. B12-09 thru B12-11.

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Date: 07/02/2025
Package: BRD-12-Lister-Ave

CONCRETE DIAPHRAGM AT INTERMEDIATE BENT NO. 2

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-20 of B12-35

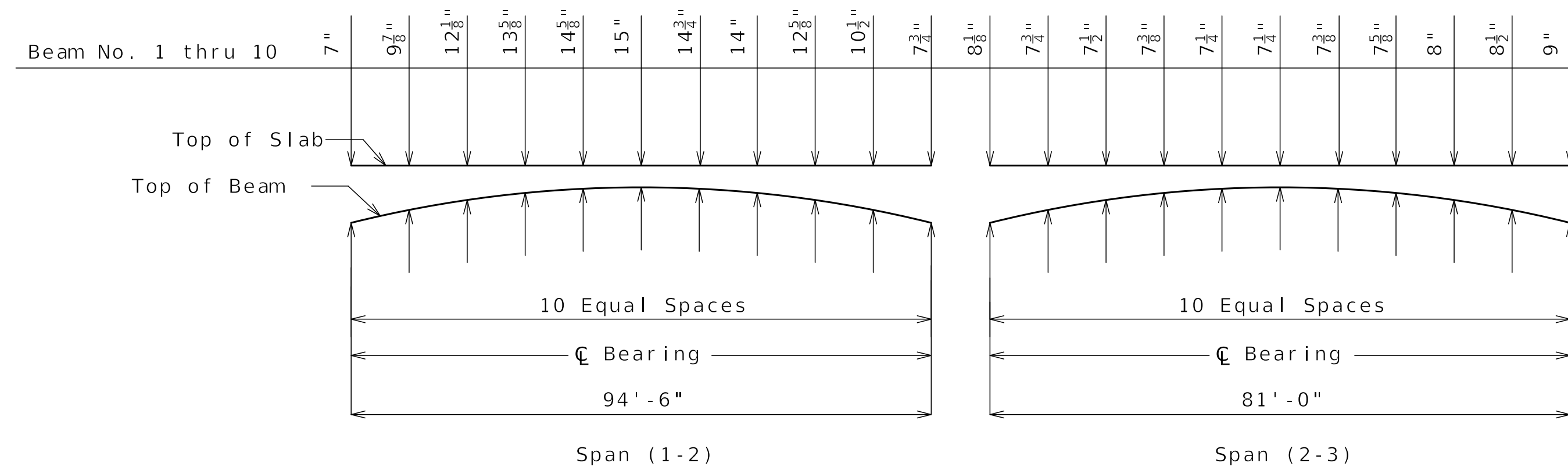
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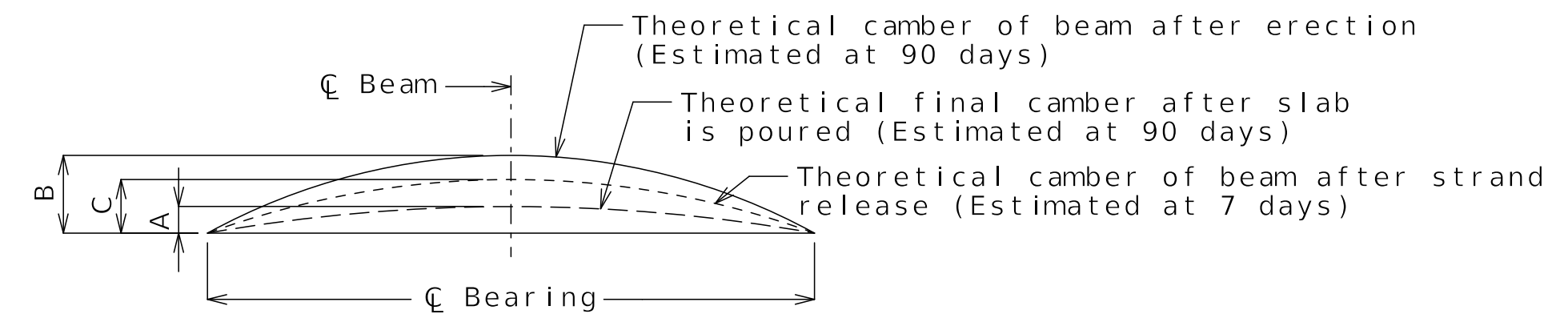
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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CLARKSON RADMACHER
JOINT VENTURE

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



THEORETICAL CAST IN PLACE SLAB DIAGRAM
(Assumed Erection @ 90 Day Maturity)

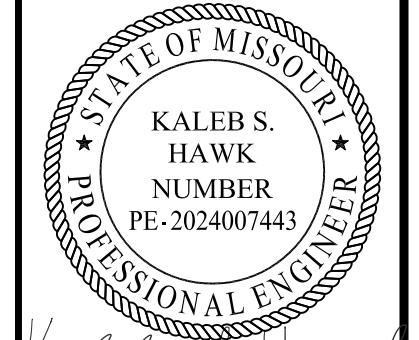


Beam	Span (1-2)			Span (2-3)		
	A	B	C	A	B	C
1 thru 10	2 7/8"	5 3/8"	3 3/4"	1 3/8"	2 3/8"	1 5/8"

BEAM CAMBER DIAGRAM

Conversion Factors for Beam 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.



Kaleb S. Hawk
6-30-2025

DATE PREPARED
06/25/2025

ROUTE **1-70** STATE **MO**

DISTRICT **BR** SHEET NO. **B12-21**

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
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PROJECT NO.

BRIDGE NO.
A9633

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER
JOINT VENTURE

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

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Note:
If beam camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, adjustment of the slab haunches, or a raise in grade uniformly throughout the structure shall be necessary.

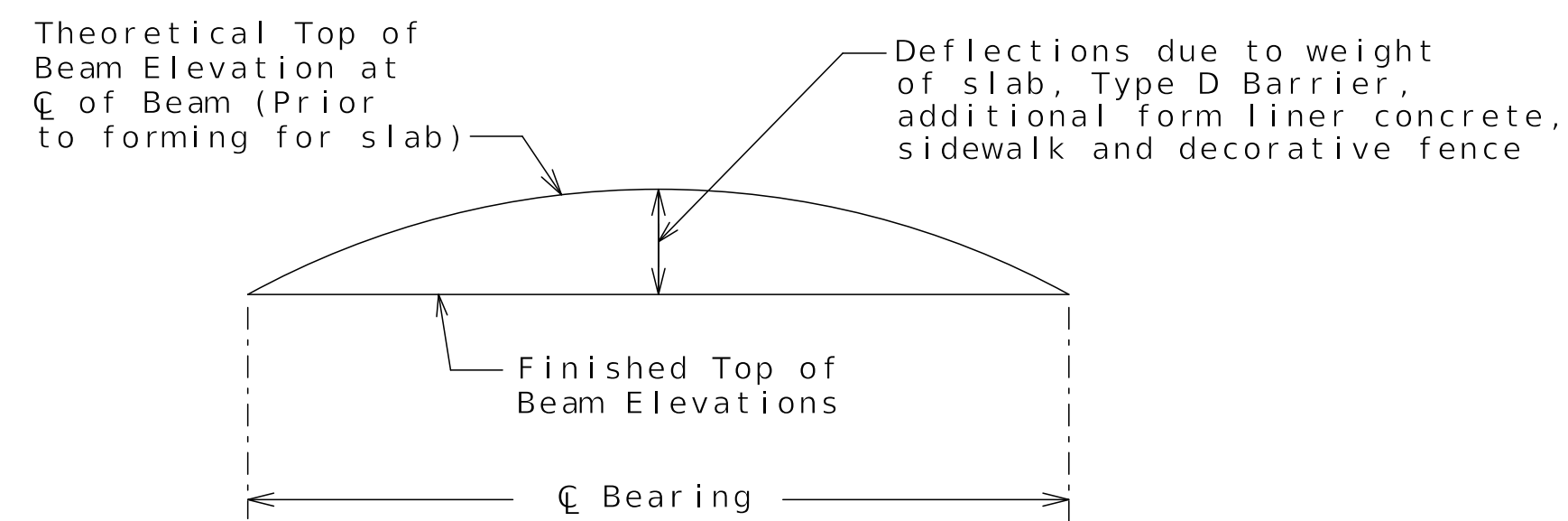
CAMBER DIAGRAM & THEORETICAL CAST IN PLACE SLAB DIAGRAM

Theoretical Top of Beam Elevations at Centerline of Beam
(Prior to forming for slab)(Estimated at 90 days)**

Beam Number	Span (1-2) (94'-6" @ Brg. - @ Brg.)										
	@ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	@ Brg.
1	864.16	864.78	865.39	865.98	866.52	867.02	867.48	867.90	868.28	868.63	868.96
2	864.22	864.85	865.46	866.05	866.59	867.10	867.56	867.97	868.35	868.71	869.04
3	864.29	864.92	865.53	866.12	866.67	867.17	867.63	868.05	868.43	868.78	869.12
4	864.36	864.99	865.61	866.19	866.74	867.24	867.71	868.13	868.51	868.86	869.20
5	864.43	865.06	865.68	866.26	866.81	867.32	867.78	868.20	868.58	868.94	869.28
6	864.42	865.05	865.67	866.25	866.80	867.31	867.77	868.20	868.58	868.93	869.27
7	864.33	864.96	865.58	866.16	866.72	867.22	867.69	868.11	868.50	868.85	869.19
8	864.24	864.87	865.49	866.08	866.63	867.14	867.60	868.03	868.41	868.77	869.11
9	864.14	864.78	865.40	865.99	866.54	867.05	867.52	867.94	868.33	868.69	869.03
10	864.05	864.69	865.31	865.90	866.45	866.96	867.43	867.86	868.24	868.60	868.95

Beam Number	Span (2-3) (81'-0" @ Brg. - @ Brg.)										
	@ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	@ Brg.
1	868.96	869.14	869.31	869.47	869.61	869.73	869.84	869.92	869.99	870.05	870.11
2	869.04	869.22	869.39	869.54	869.69	869.81	869.91	870.00	870.07	870.13	870.18
3	869.12	869.30	869.46	869.62	869.76	869.89	869.99	870.08	870.15	870.21	870.26
4	869.20	869.37	869.54	869.70	869.84	869.97	870.07	870.16	870.23	870.29	870.34
5	869.28	869.45	869.62	869.78	869.92	870.04	870.15	870.23	870.31	870.36	870.42
6	869.27	869.45	869.62	869.78	869.92	870.04	870.15	870.23	870.30	870.36	870.42
7	869.19	869.37	869.54	869.69	869.84	869.96	870.06	870.15	870.22	870.28	870.33
8	869.11	869.29	869.45	869.61	869.75	869.88	869.98	870.07	870.14	870.20	870.25
9	869.03	869.20	869.37	869.53	869.67	869.80	869.90	869.99	870.06	870.12	870.17
10	868.95	869.12	869.29	869.45	869.59	869.71	869.82	869.91	869.98	870.04	870.09

**Elevations are based on theoretical cast-in-place slab thickness and include allowance for theoretical dead load deflections due to weight of slab (including Type D Barrier, additional form liner concrete, sidewalk and decorative pedestrian fence).



TYPICAL SLAB ELEVATIONS DIAGRAM

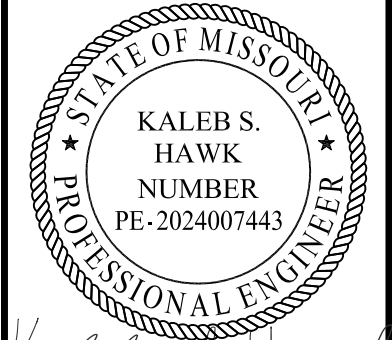
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Date: 07/02/2025
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THEORETICAL TOP OF BEAM ELEVATIONS

Detailed MAR 2025
Checked APR 2025

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

Sheet No. B12-22 of B12-35



Kaleb S. Hawk
6-30-2025

DATE PREPARED
06/25/2025

ROUTE STATE
I-70 MO

DISTRICT SHEET NO.
BR B12-22

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9633

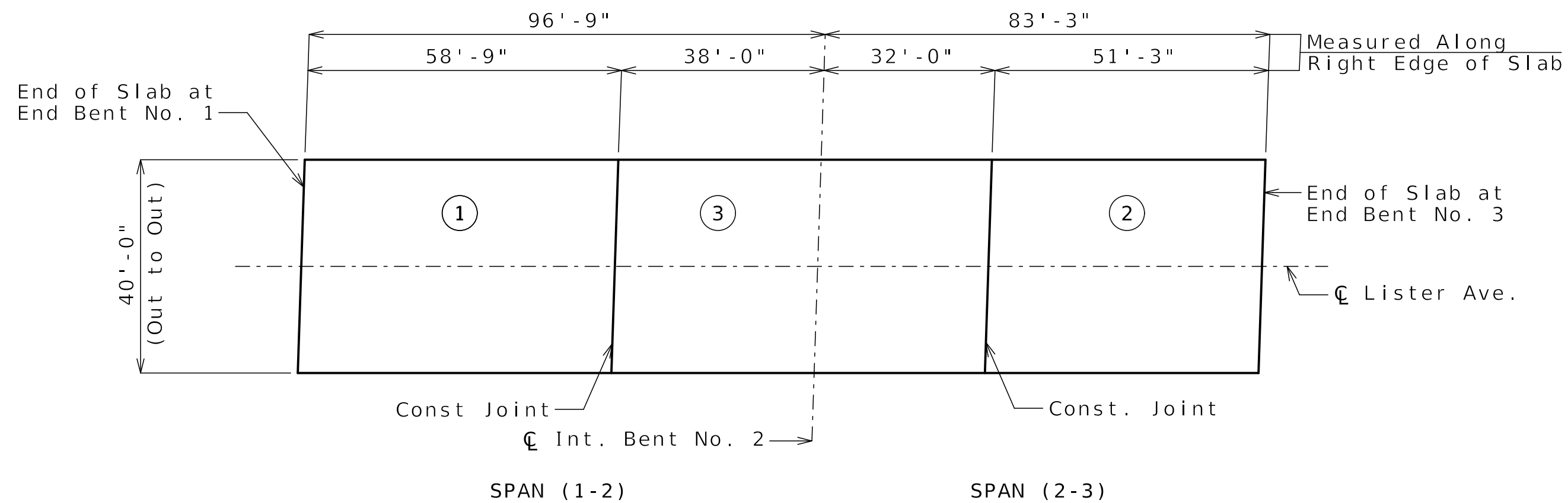
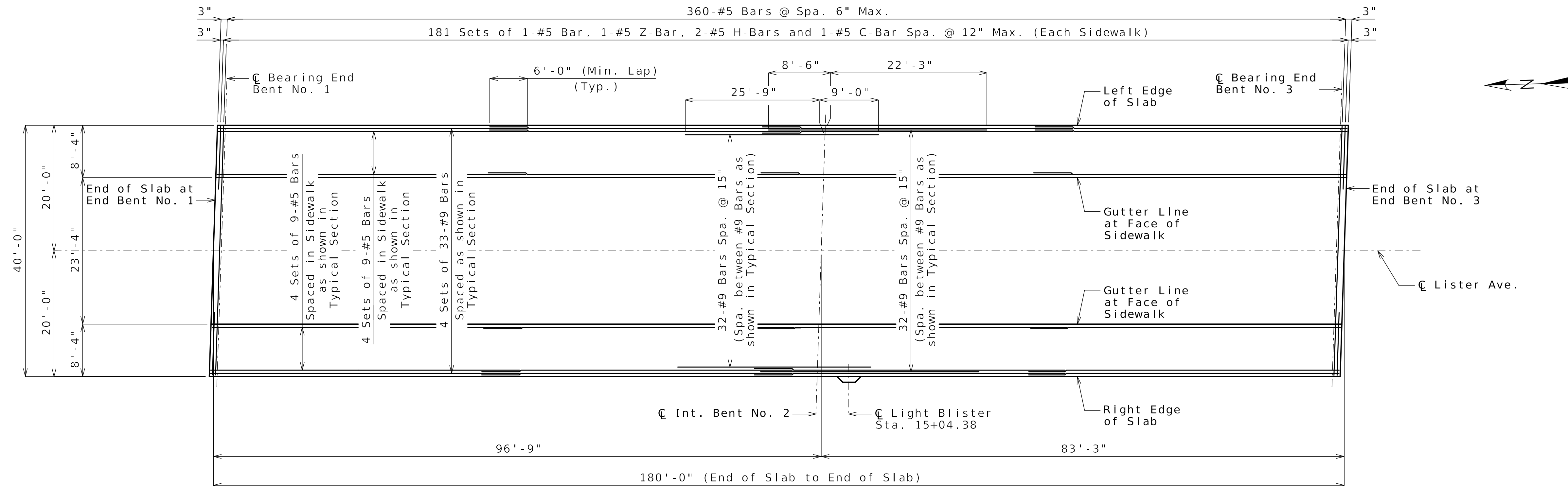
DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CLARKSON RADMACHER
JOINT VENTURE

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



	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			
Basic Sequence	1	3	2	25
	End to 3	1 to 2	3 to End	
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate A Pours	1	3 + 2		27
	End to 3	1 to End		
Alternate B Pours	1 + 3 + 2			27
	End to End			

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

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

SLAB POURING SEQUENCE

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

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Notes:

- For Typical Section, see Sheet No. B12-24.
- For Details and Reinforcement of Type D Barrier, see Sheet No. B12-25.
- For Theoretical Cast in Place Slab Diagram and Beam Camber Diagram, see Sheet No. B12-21.
- For Theoretical Top of Beam Elevations at Centerline of Beam, see Sheet No. B12-22.
- Longitudinal slab dimensions are measured horizontally.
- For Light Blister Reinforcing and details, see Sheet No. B12-27.

SLAB PLAN SHOWING REINFORCEMENT

Detailed MAR 2025
Checked APR 2025

Sheet No. B12-23 of B12-35



Benjamin Lichty
06-27-2025

DATE PREPARED 06/25/2025	
ROUTE 1-70	STATE MO
DISTRICT BR	SHEET NO. B12-23
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9633

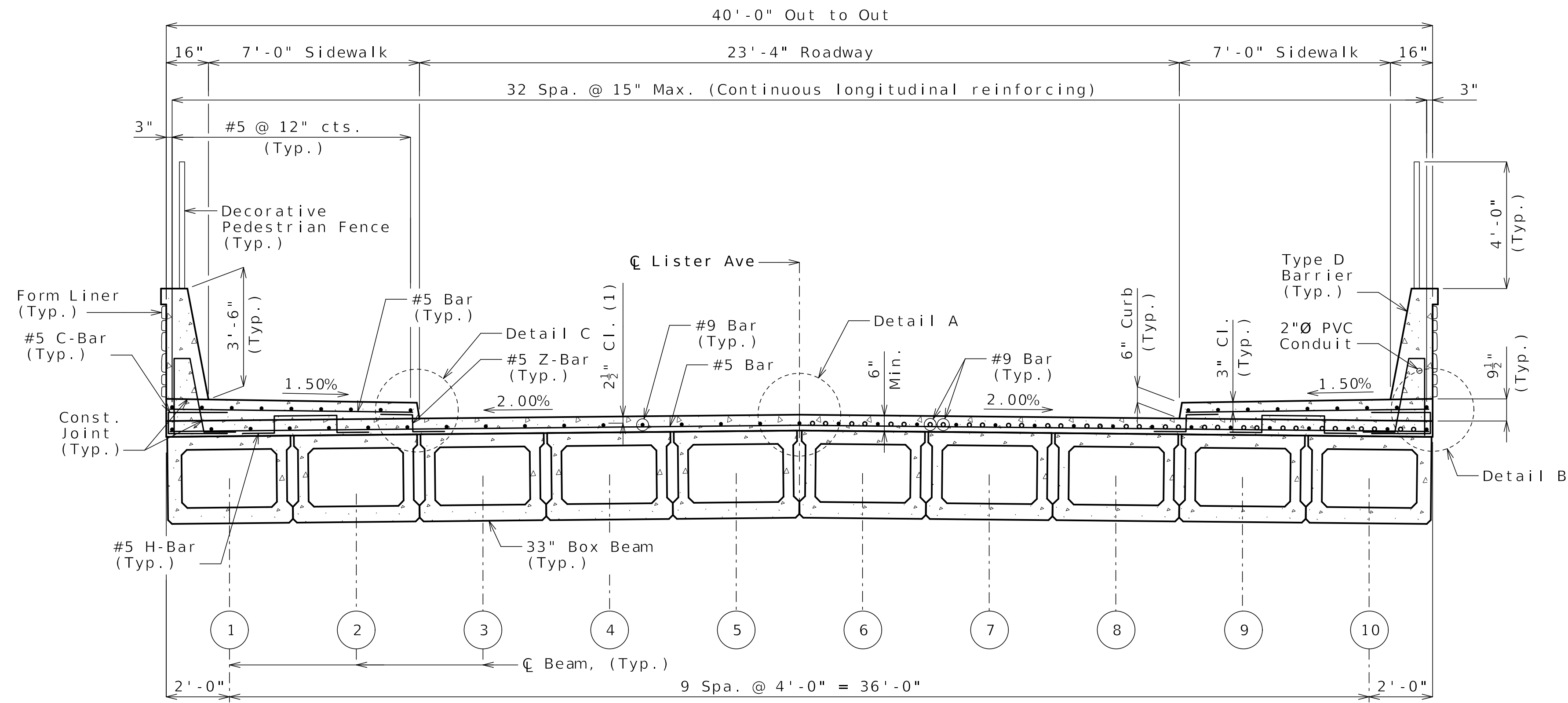
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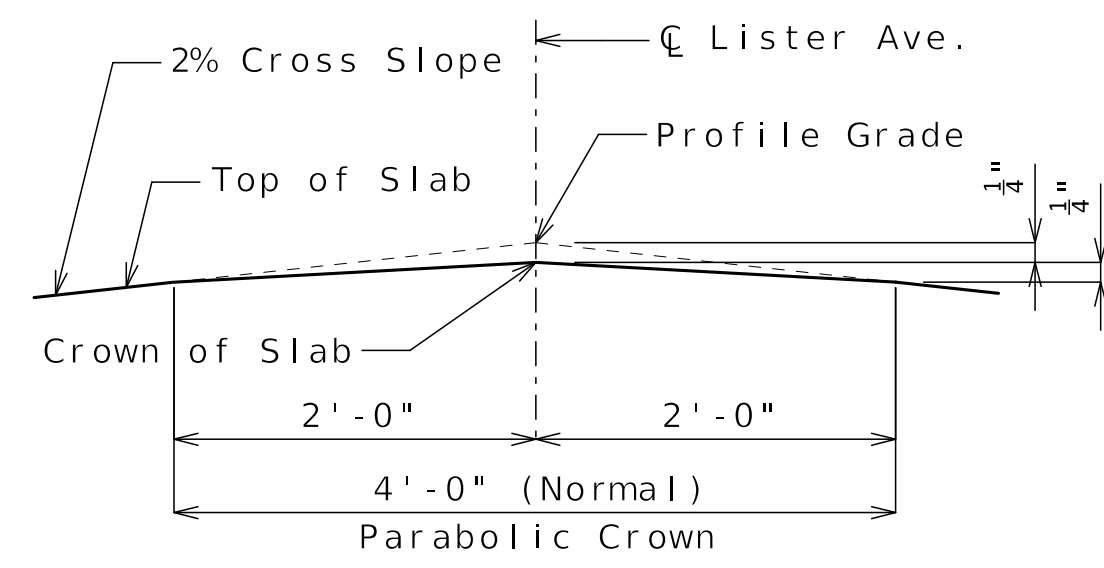
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270



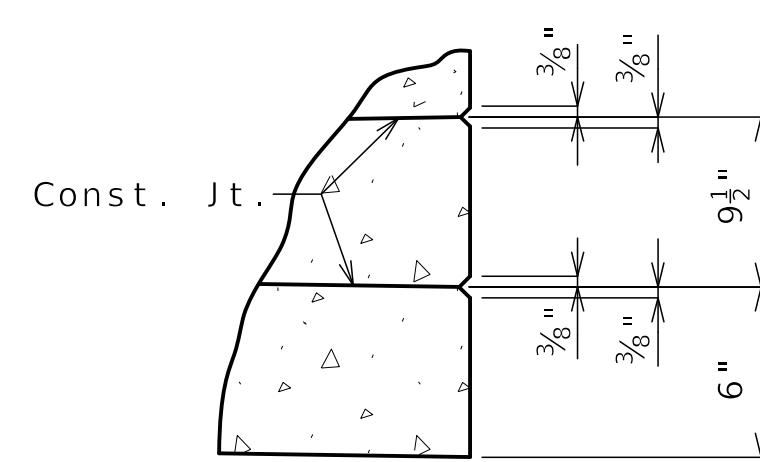
HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INTERMEDIATE BENT

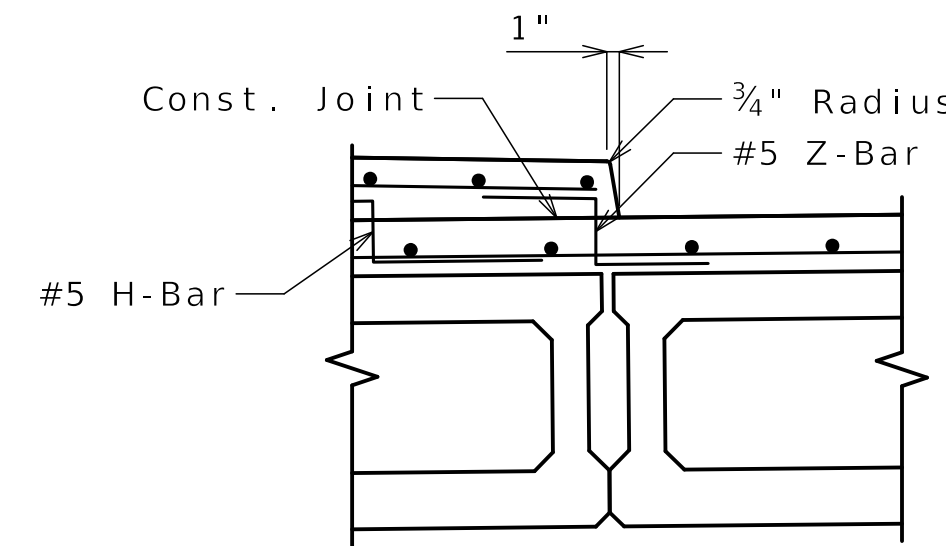
TYPICAL SECTION
(Looking Ahead Sta.)



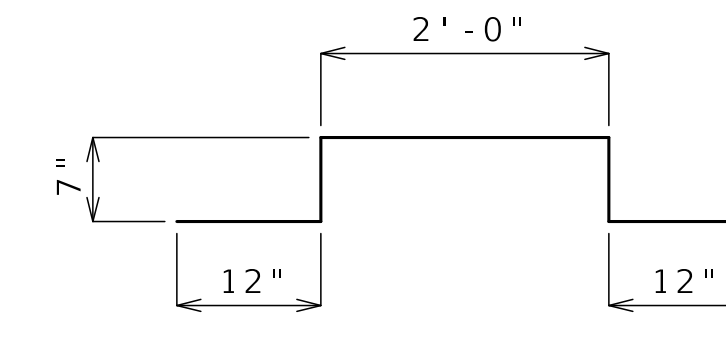
DETAIL A



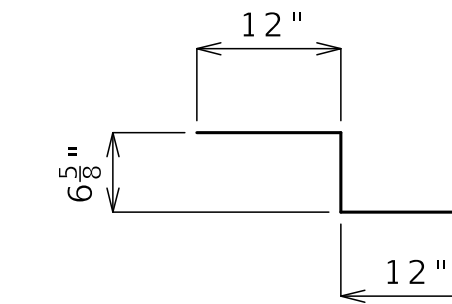
DETAIL B



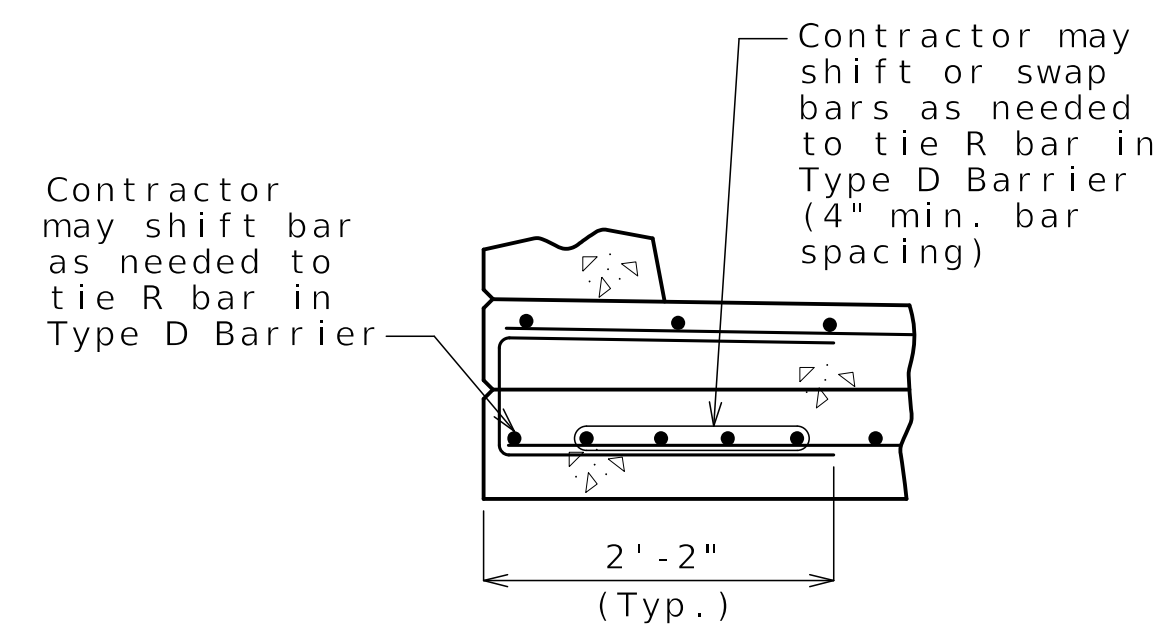
DETAIL C



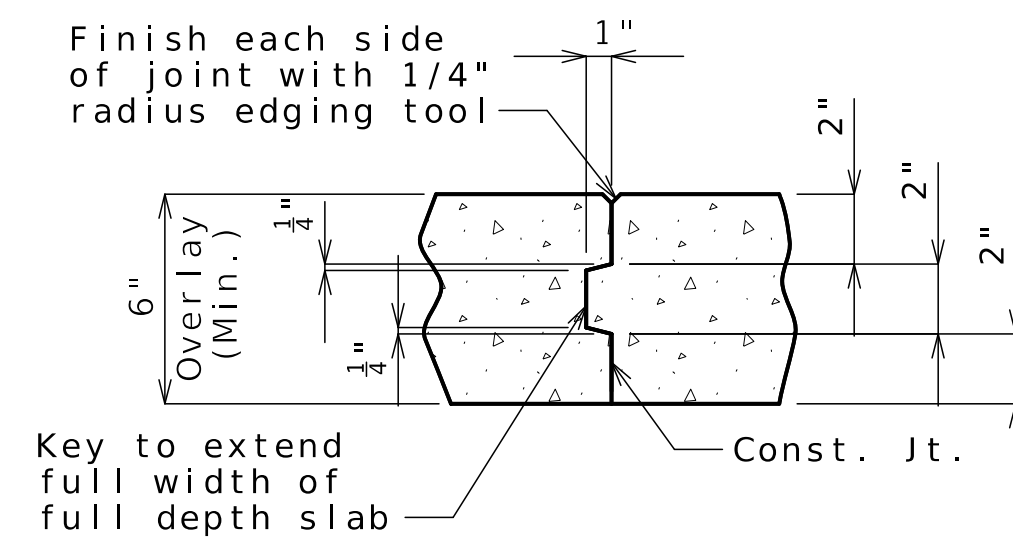
#5 H-Bar



#5 Z-Bar



OPTIONAL SHIFTING TOP BARS AT BARRIER



SLAB CONSTRUCTION JOINT

(1) Maintain top cover of 2 1/2". In Span (1-2) an additional top layer of epoxy coated #4 bars at 6" (or equivalent) shall be added in both the bridge longitudinal and transverse directions. Equivalent welded wire reinforcement in accordance with Sec 1036 may also be used.

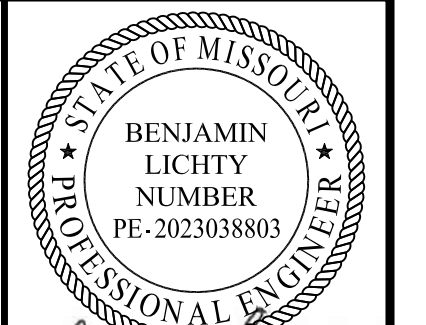
Notes:

- For Slab Plan showing Reinforcement, see Sheet No. B12-23.
- For reinforcement of Type D Barrier not shown, see Sheet No. B12-25.
- For Details of Conduit System on Structure, see Sheet No. B12-30.
- For Decorative Pedestrian Fence Details, see Sheet No. B12-28.
- For Form Liner and Aesthetic Stain Details not shown, see Sheet No. B12-29.

(X) Denotes Beam Number.

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 Revision: 0.0
 Date: 07/02/2025
 Package: BRD-12-Lister-Ave

SLAB DETAILS



Benjamin Lichty
 06-27-2025

DATE PREPARED
 06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-24

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

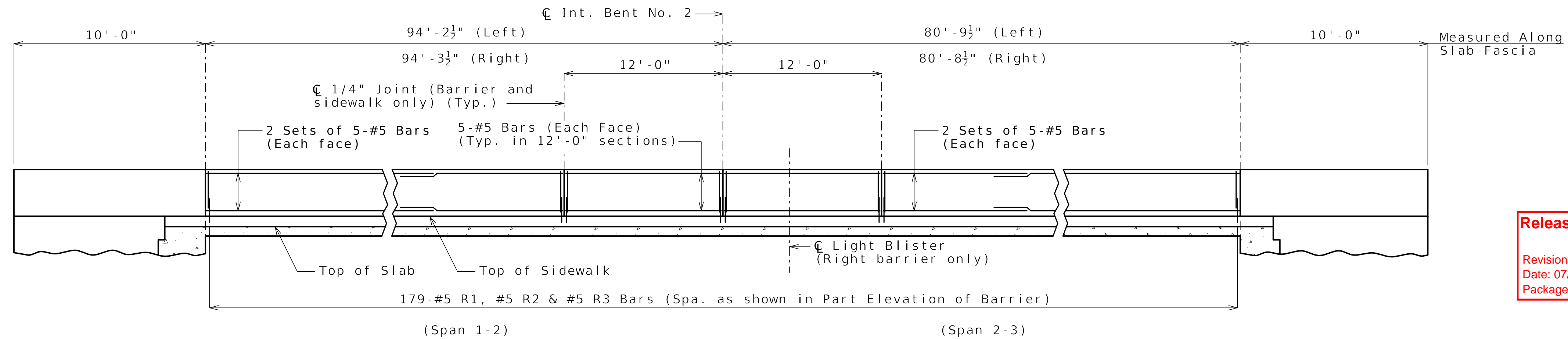
PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

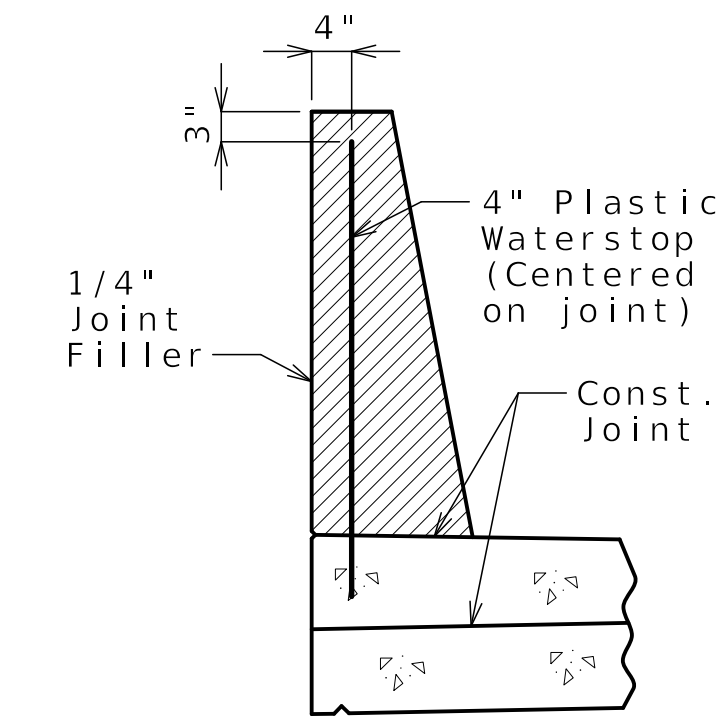
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
 MoDOT
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
 1-888-ASK-MODOT (1-888-275-6636)

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



ELEVATION OF BARRIER
 (Left barrier shown, right barrier similar except as noted.)
 Longitudinal dimensions are horizontal.

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 Date: 07/02/2025
 Package: BRD-12-Lister-Ave



WATERSTOP DETAIL

Plastic waterstop shall be placed in all formed joints.

General Notes:

** 2" Ø PVC Conduit (Right barrier only) For Details of Conduit System on Structure, see Sheet No. B12-30.

Conventional forming shall 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.

Plastic waterstop shall not be used with saw cut joints.

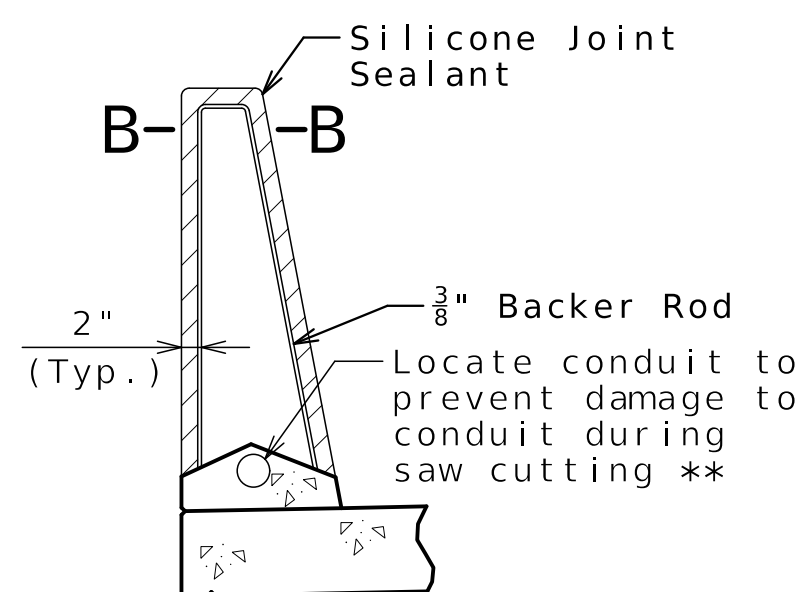
For Form Liner and Aesthetic Stain details of barrier not shown, see Sheet No. B12-29.

For Decorative Pedestrian Fence Details, see Sheet No. B12-28

Reinforcing steel shall be shifted in the field to clear resin anchors for decorative fence.

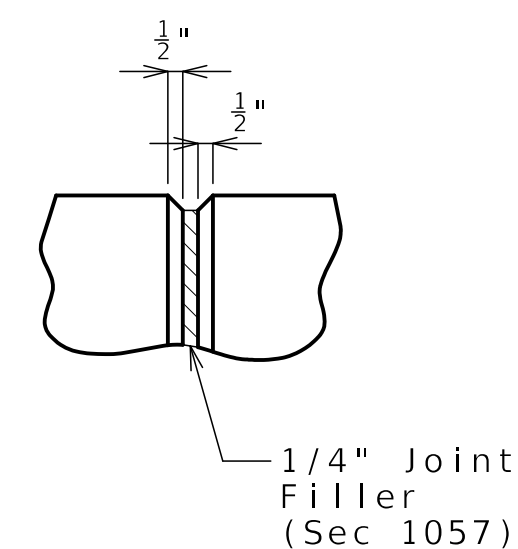
For Light Blister details, see Sheet No. B12-27.

TYPE D BARRIER

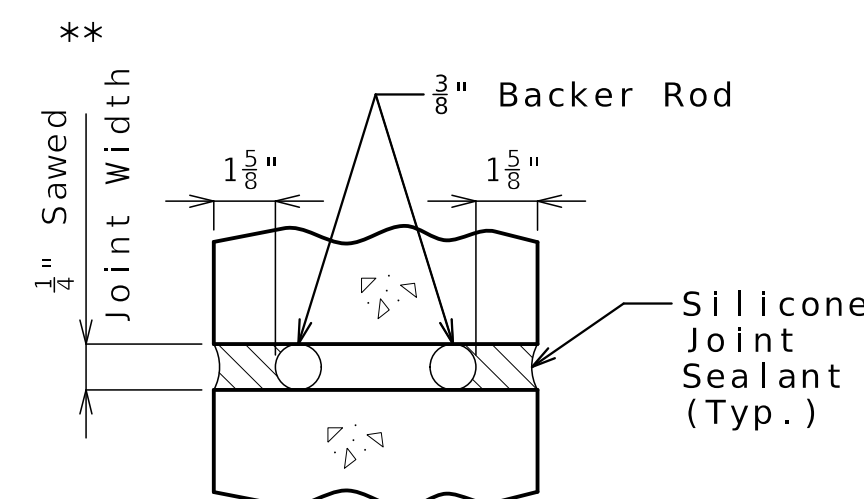


SECTION THRU SAW CUT JOINT

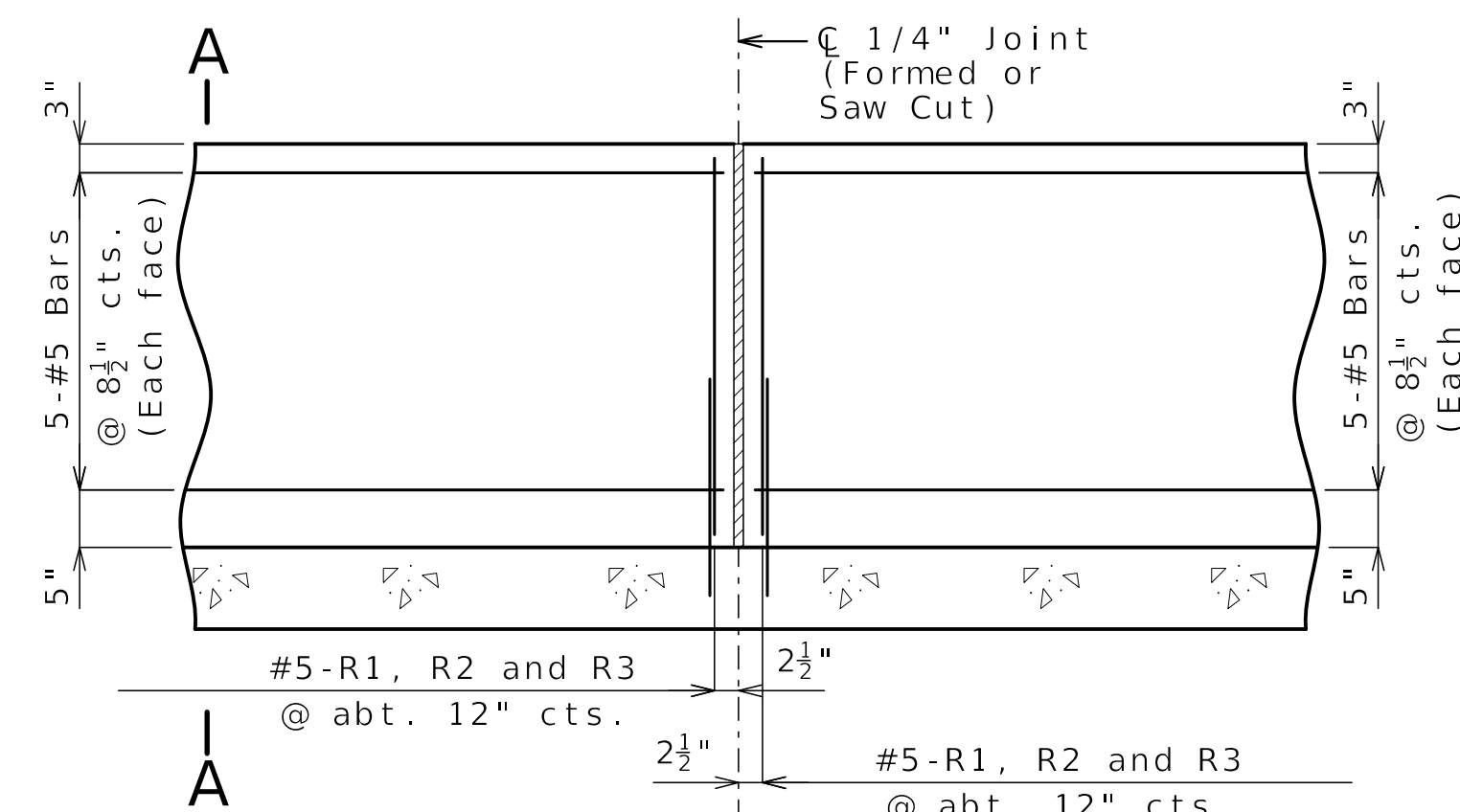
(Form liner and aesthetic details not shown.)



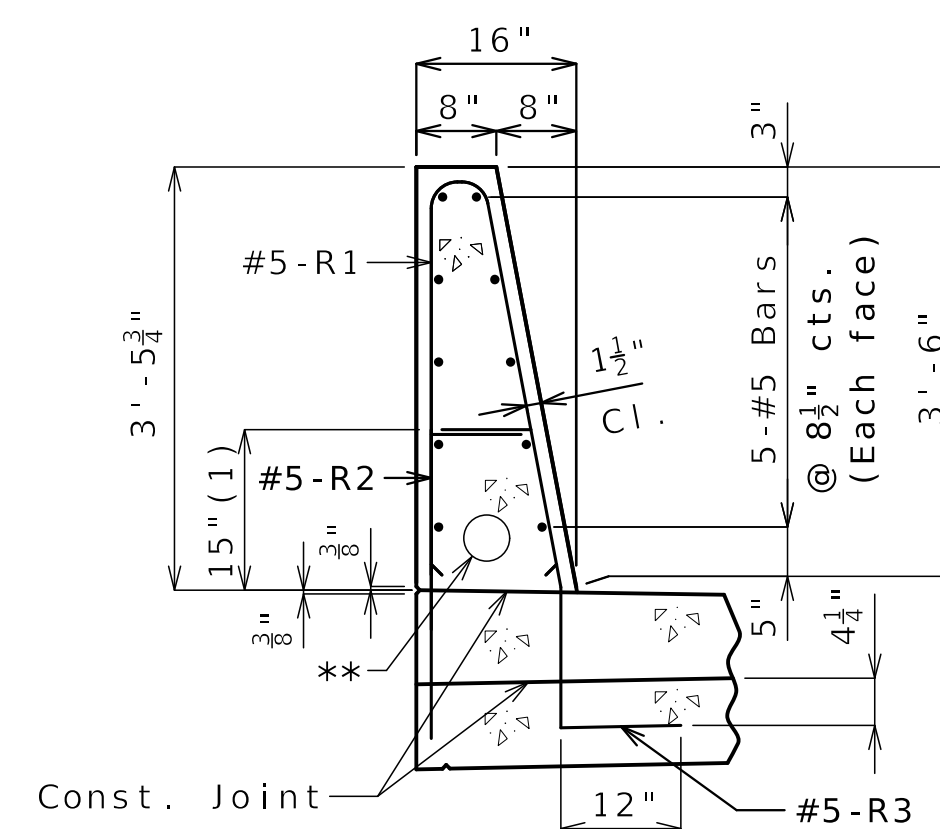
PART ELEVATION AT FORMED JOINT



SECTION B-B



PART ELEVATION OF BARRIER

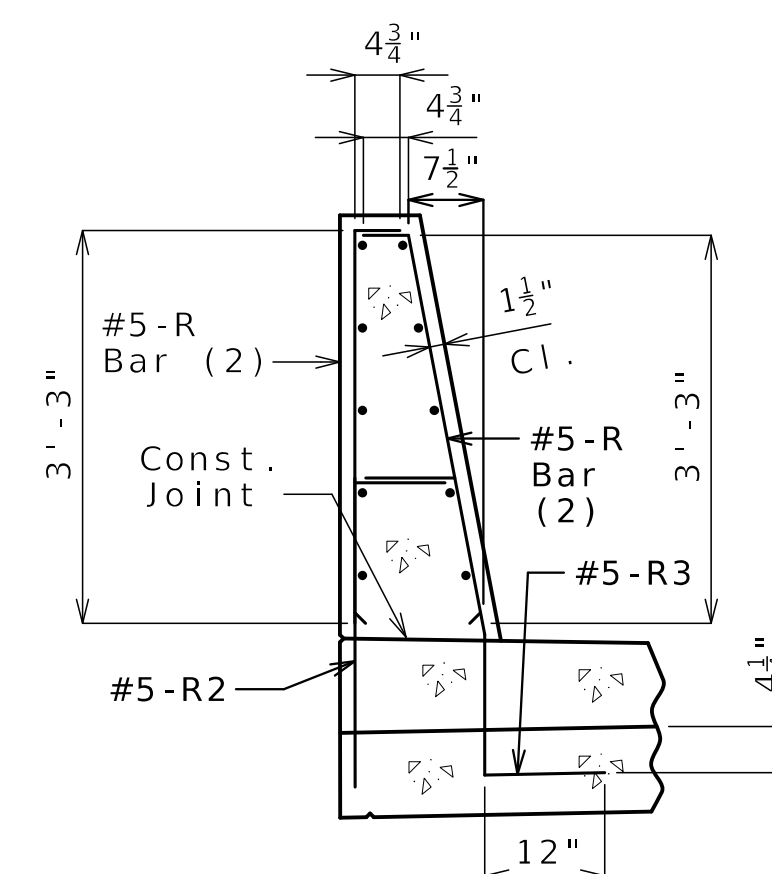


SECTION A-A

(Form liner aesthetic details not shown.)

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

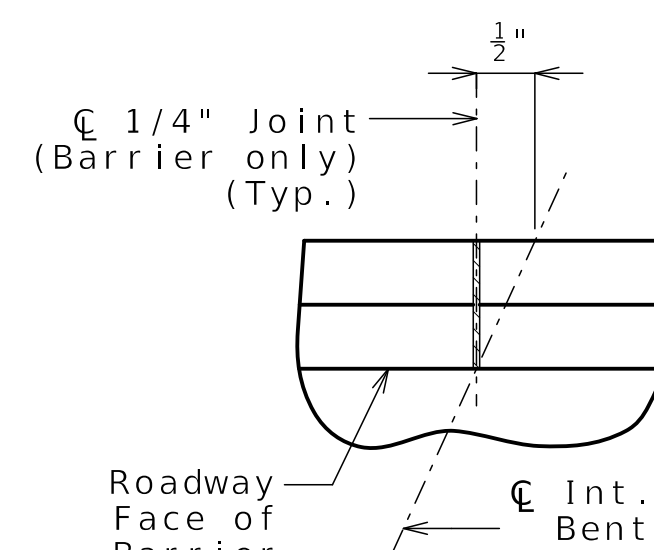
(1) To top of bar



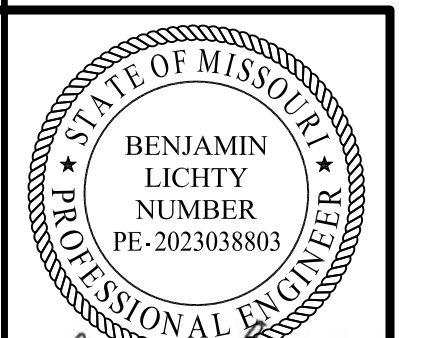
R-BAR PERMISSIBLE ALTERNATE SHAPE

(Form liner aesthetic details not shown.)

(2) 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.)



PART PLAN SHOWING JOINT LOCATION



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 06-27-2025

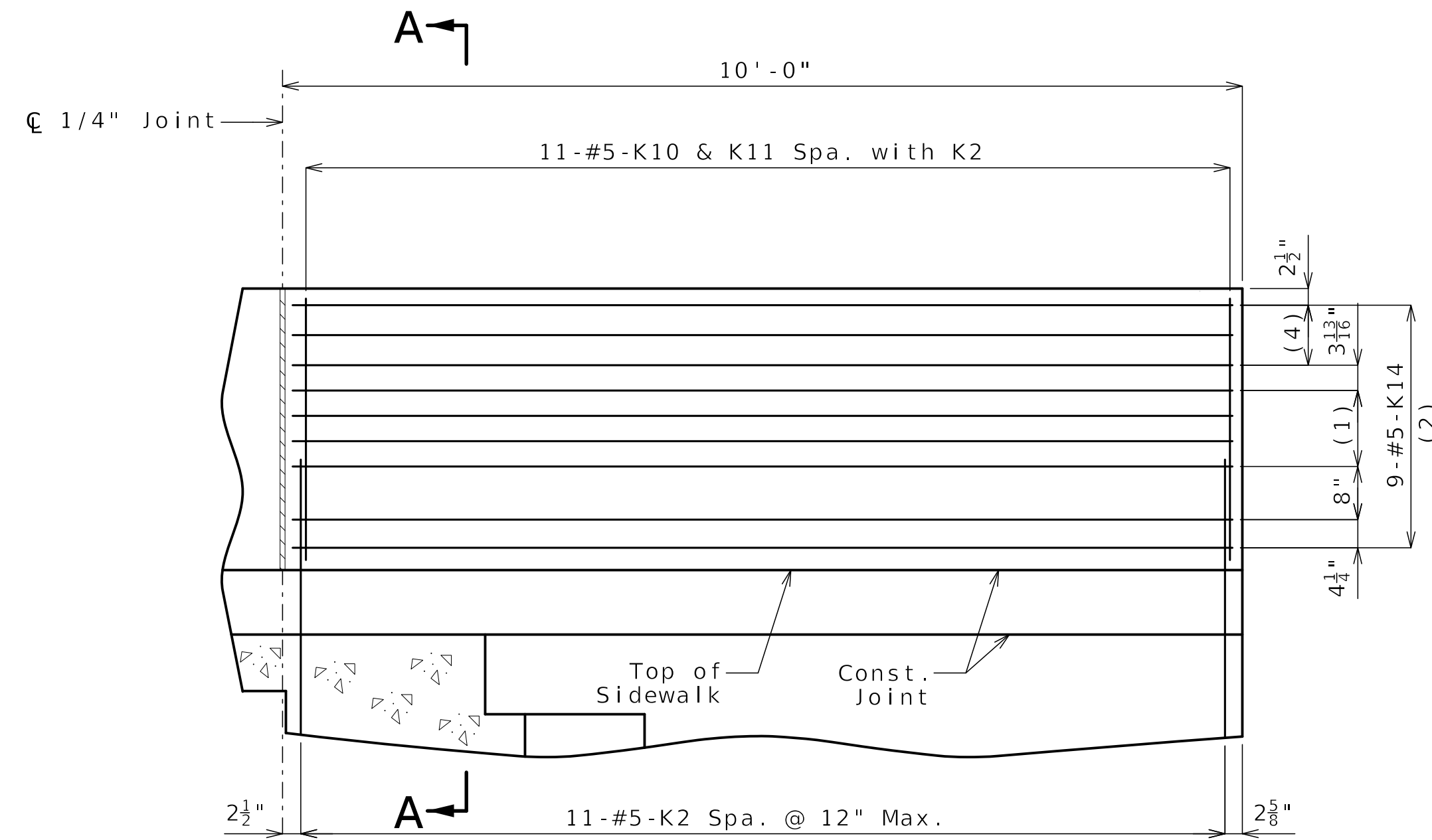
DATE PREPARED: 06/25/2025
 ROUTE: I-70 STATE: MO
 DISTRICT: BR SHEET NO.: B12-25
 COUNTY: JACKSON
 JOB NO.: J411486D
 CONTRACT ID: 240807-C01
 PROJECT NO.:

BRIDGE NO. A9633

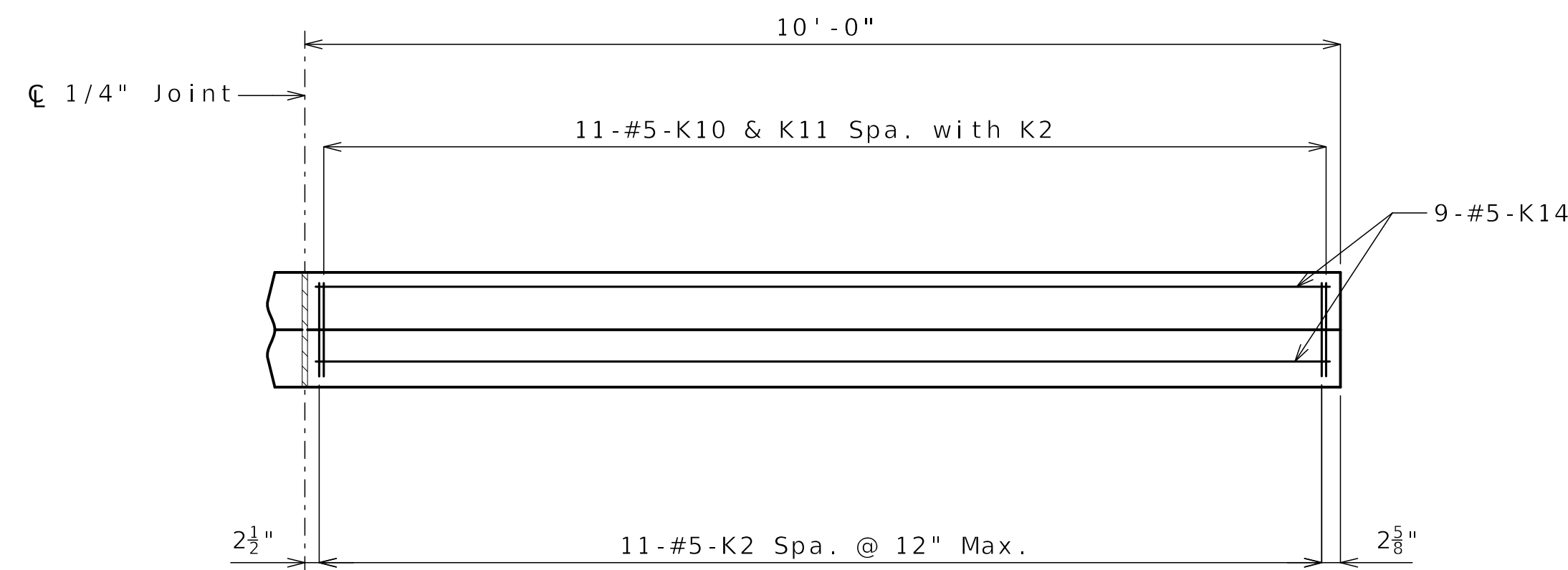
DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

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 MoDOT
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
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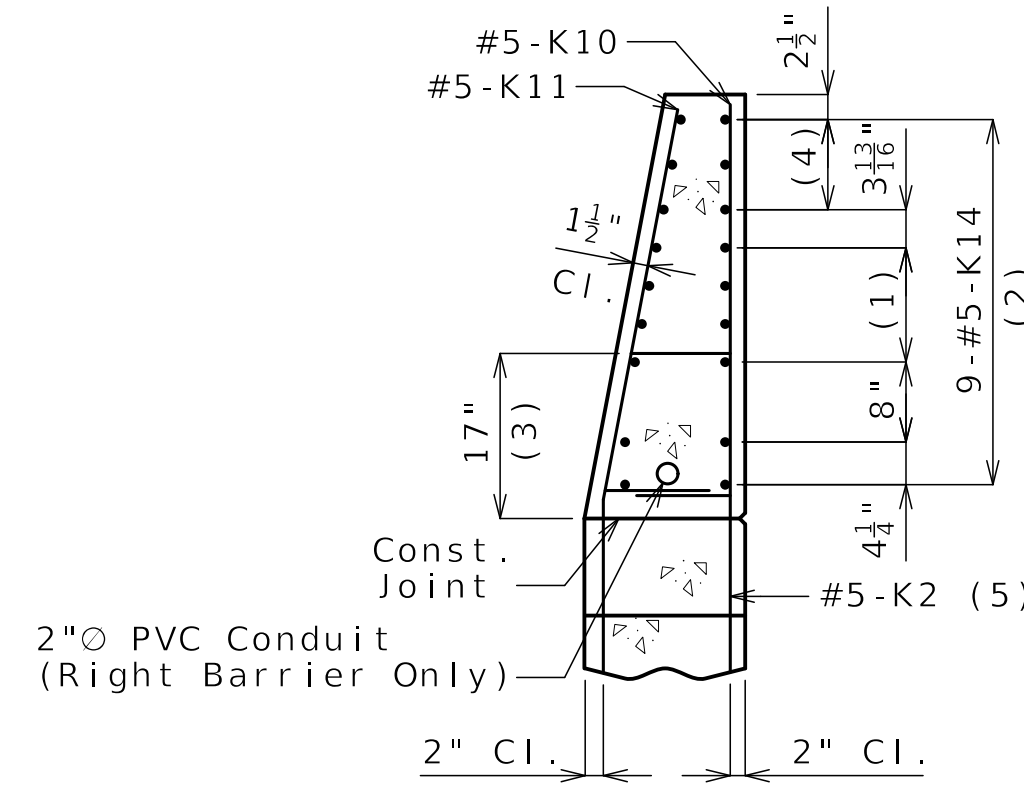
CLARKSON RADMACHER JOINT VENTURE
 715 KIRK DRIVE KANSAS CITY, MO 64105-1310
 CERTIFICATE OF AUTHORITY NO. 001270
HNTB



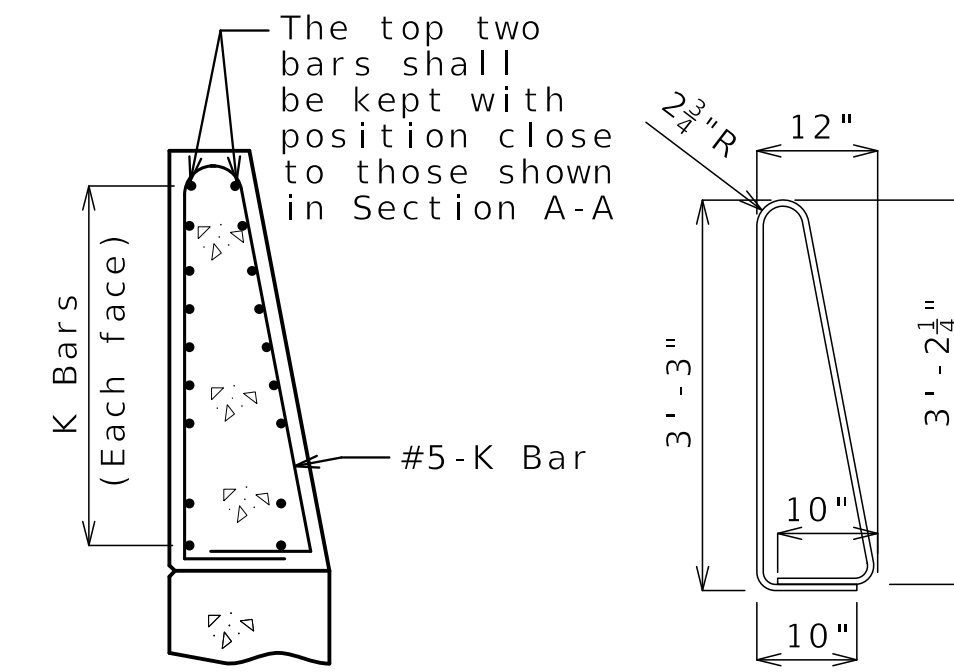
PART ELEVATION



PART PLAN



SECTION A-A



K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

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

All dimensions are out to out.

PVC conduit in right barrier not shown.

- (1) 3 spaces @ 3 1/8"
- (2) Spaced as shown, each face
- (3) To top of bar
- (4) 2 spaces @ 4 1/2"
- (5) See Sheets No. B12-07 and B12-14 minimum embedment into wingwall.

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.

All dimensions are out to out.

EB 1 denotes End Bent No. 1

EB 3 denotes End Bent No. 3

Reinforcing Steel:

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

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Date: 07/02/2025
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TYPE D BARRIER AT END BENTS



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06-27-2025

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-26

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

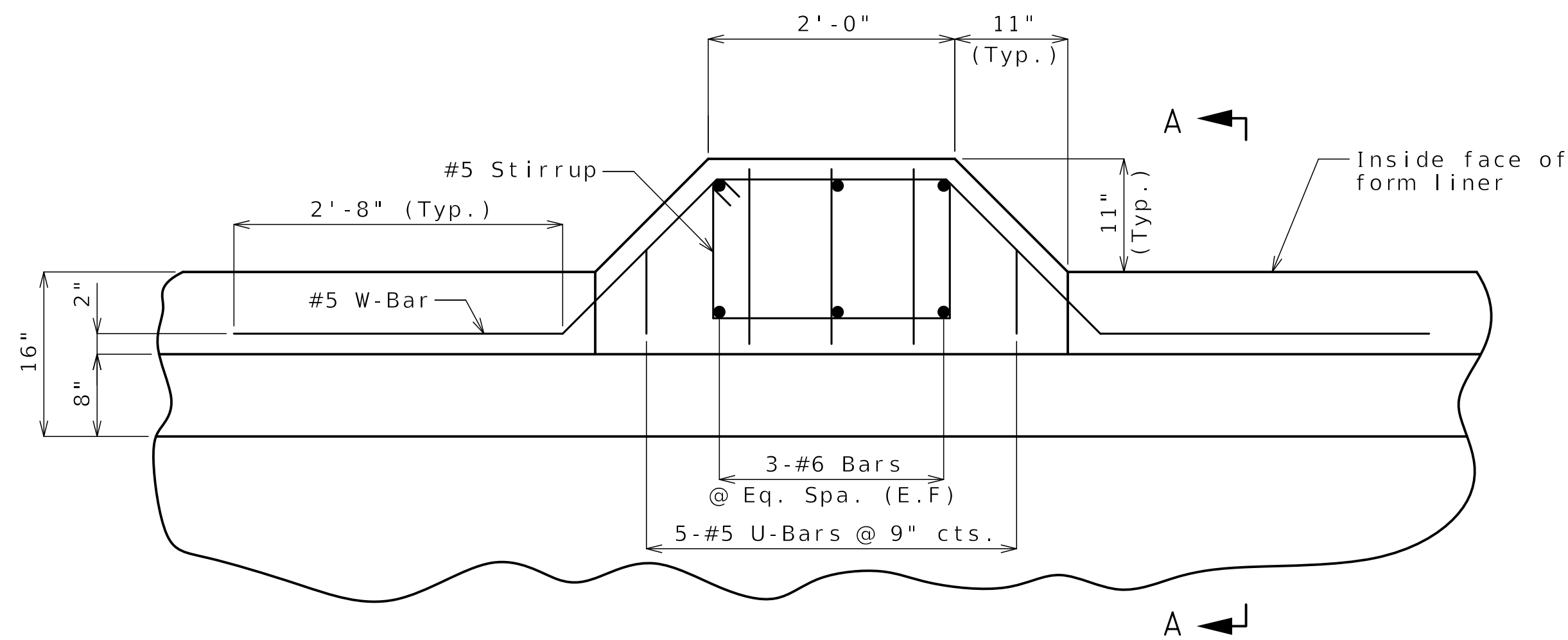
BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

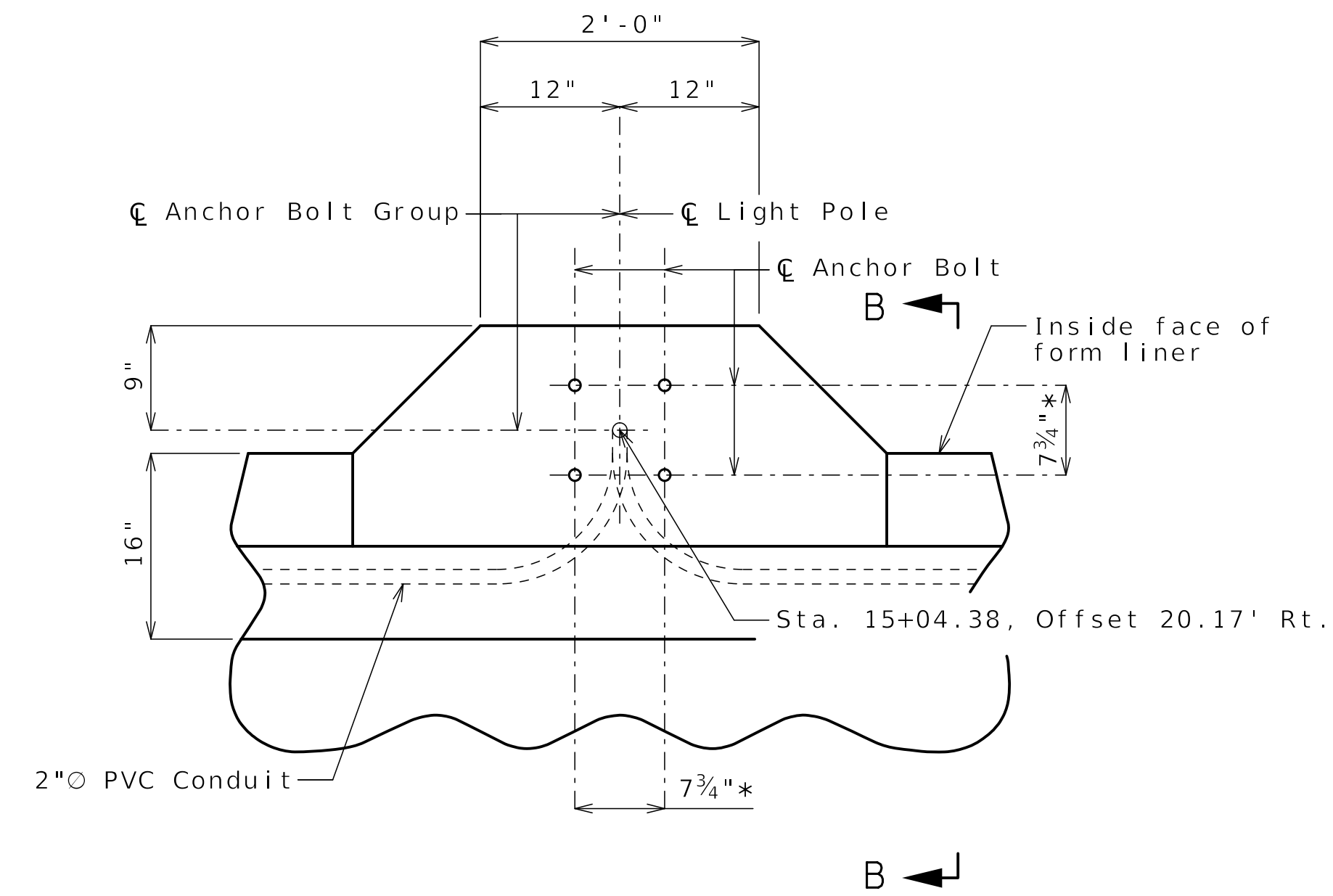
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102
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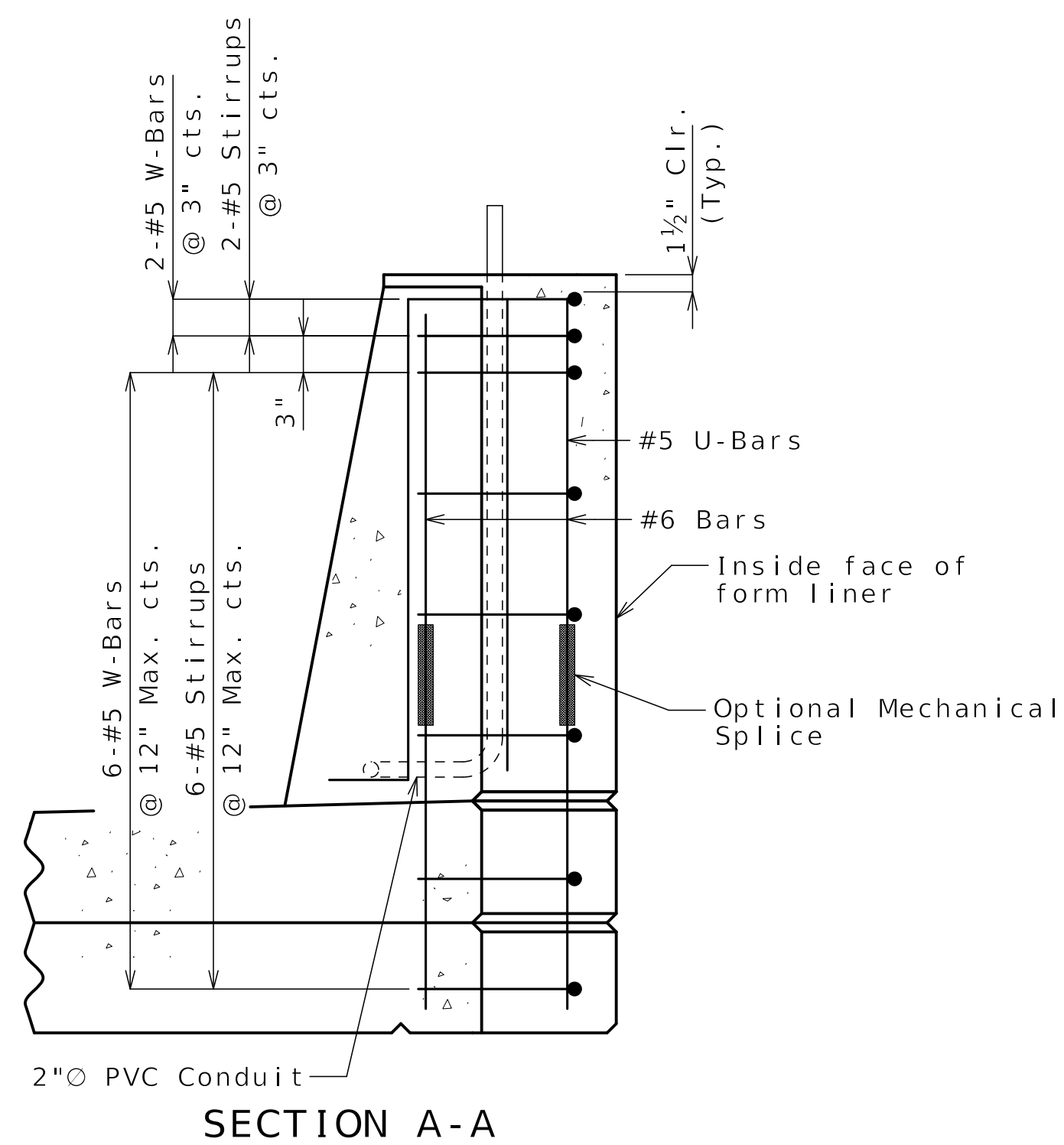
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270



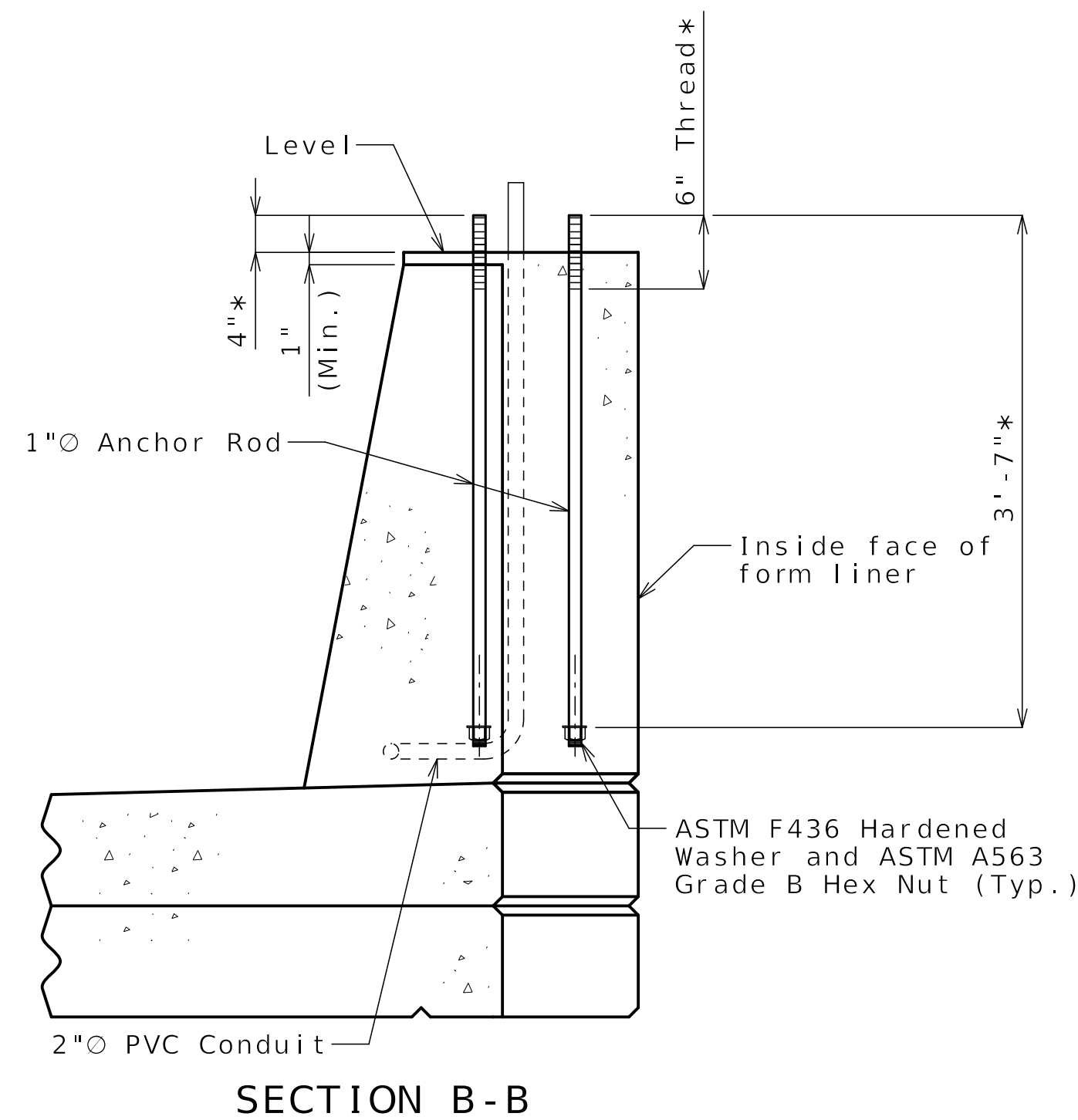
LIGHT POLE MOUNTING PLAN SHOWING REINFORCEMENT



LIGHT POLE MOUNTING PLAN



SECTION A-A



SECTION B-B

Notes:
 * Contractor shall confirm dimension with light pole manufacturer before setting anchor bolts.
 Anchor bolts and nuts shall be ASTM F1554 Grade 55. Anchor bolts, nuts and washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C or ASTM B695, Class 55.
 Top of light standard supports shall be made horizontal; anchor rods shall be placed vertically. Contractor has the option to splice vertical bars with mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 710.
 For locations of light blister, see Sheet No. B12-23. For Form Liner and Aesthetic Stain Details not shown, see Sheet No. B12-29.

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LIGHT BLISTER DETAILS



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 06-27-2025

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ROUTE 1-70 STATE MO
 DISTRICT BR SHEET NO. B12-27

COUNTY JACKSON
 JOB NO. J411486D
 CONTRACT ID. 240807-C01
 PROJECT NO.

BRIDGE NO. A9633

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CLARKSON RADMACHER JOINT VENTURE
 715 KIRK DRIVE KANSAS CITY, MO 64105-1310
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Notes:

These details are a general representation of a Decorative Pedestrian Fence. The actual fence components and component positions may be different than what is shown.

Fence shall have a gloss back finish (Federal Standard #17038). See special provisions.

Base plate shall be ASTM A709, Grade 50.

All base plates, resin anchors, hex nuts and washers shall be galvanized in accordance with ASTM A123 and Sec 1081.

All fence posts shall be vertical.

Grout shall be placed under the post base plates in accordance with Sec 1066.

Decorative pedestrian fencing shall be in accordance with 2020-AASHTO LRFD Bridge Design Specifications (9th Ed.), except that a uniform load of 50 lb/ft and a concentrated load of 200 lb need not be applied simultaneously.

Shop drawings and structural calculations will not be required for the decorative pedestrian fences on the Bridge Pre-qualified Products List.

All materials used in fabrication and construction of the decorative pedestrian fencing shall be in accordance with the manufacturer's specifications, except as modified in the contract documents.

Decorative pedestrian fencing system shall be supplied by only one manufacturer. Decorative pedestrian fencing system shall include all components except resin anchors and hardware. The assembly of the pickets to the rails and the rails to the posts shall be the same as the style mentioned for the manufacturer.

See Bridge Pre-qualified Products List (BPPL) for a list of approved manufacturers.

For details of Type D Barrier, see Sheet No. B12-25.

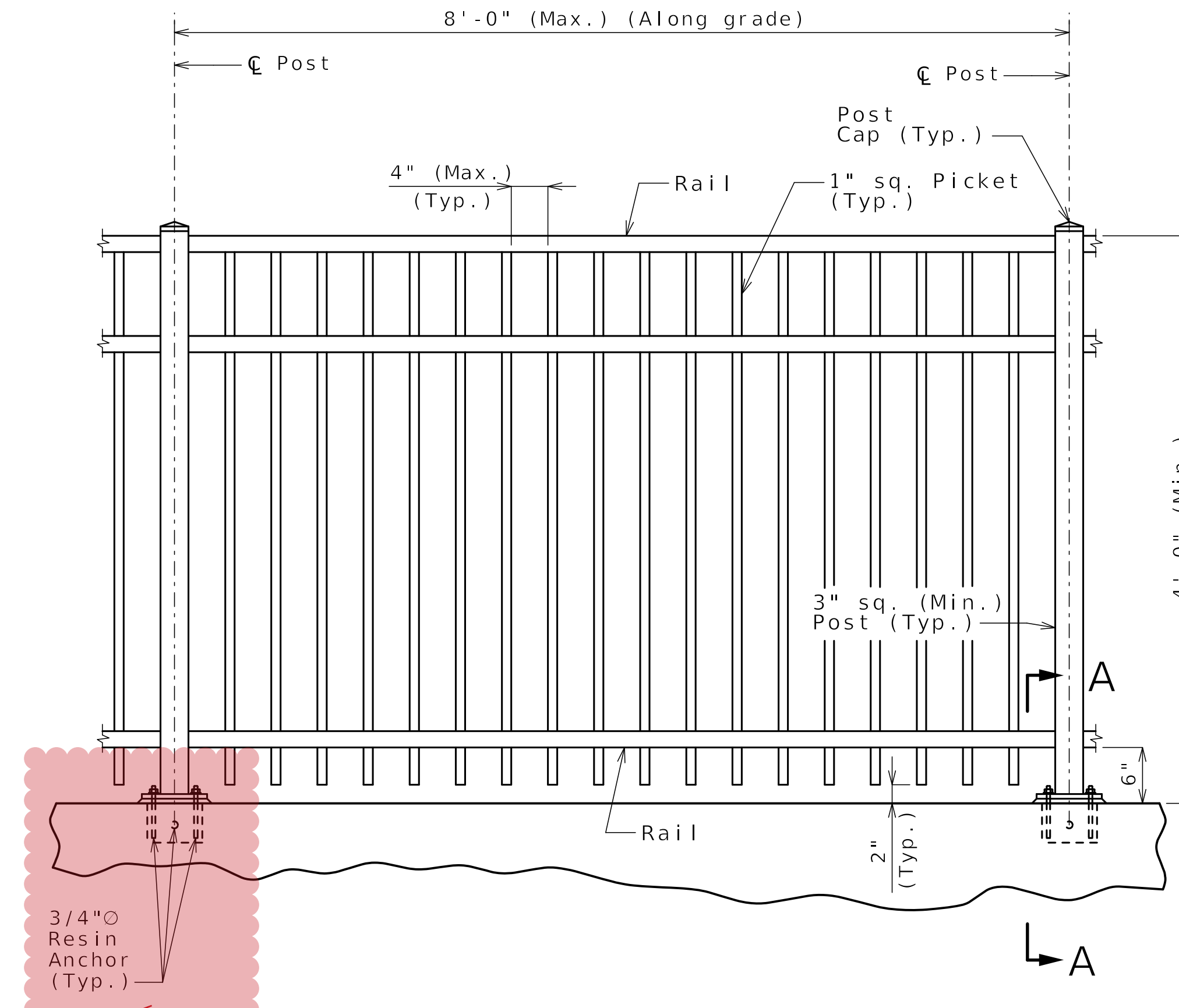
Longitudinal dimensions of fence are horizontal.

Resin Anchor Notes:

Resin anchors shall be ASTM F1554 Grade 36.

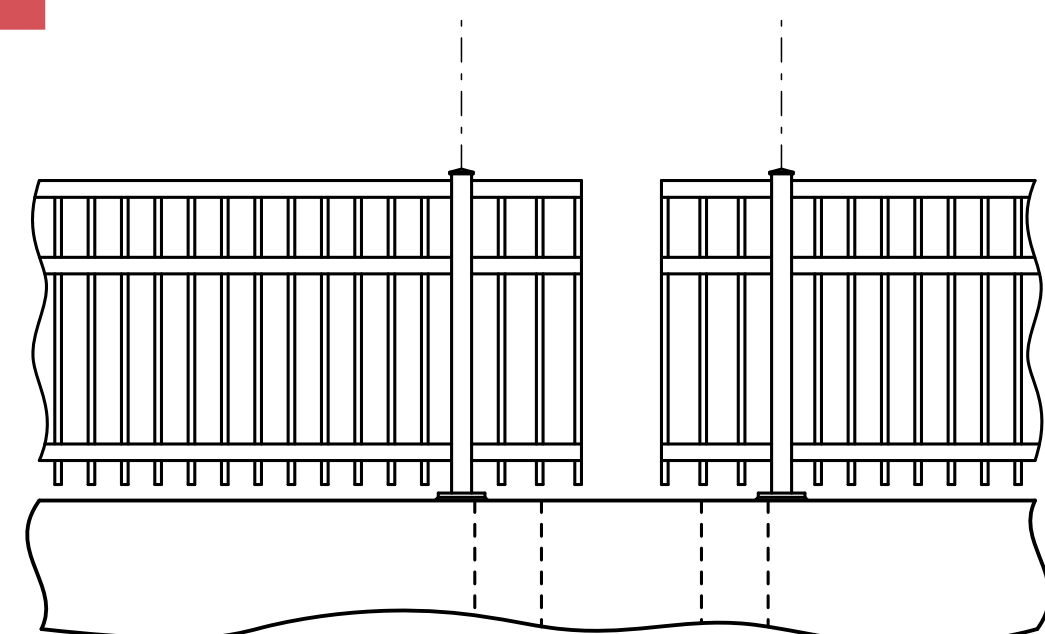
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

The minimum embedment depth in concrete with $f'c = 4,000$ psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5 7/8 inches.

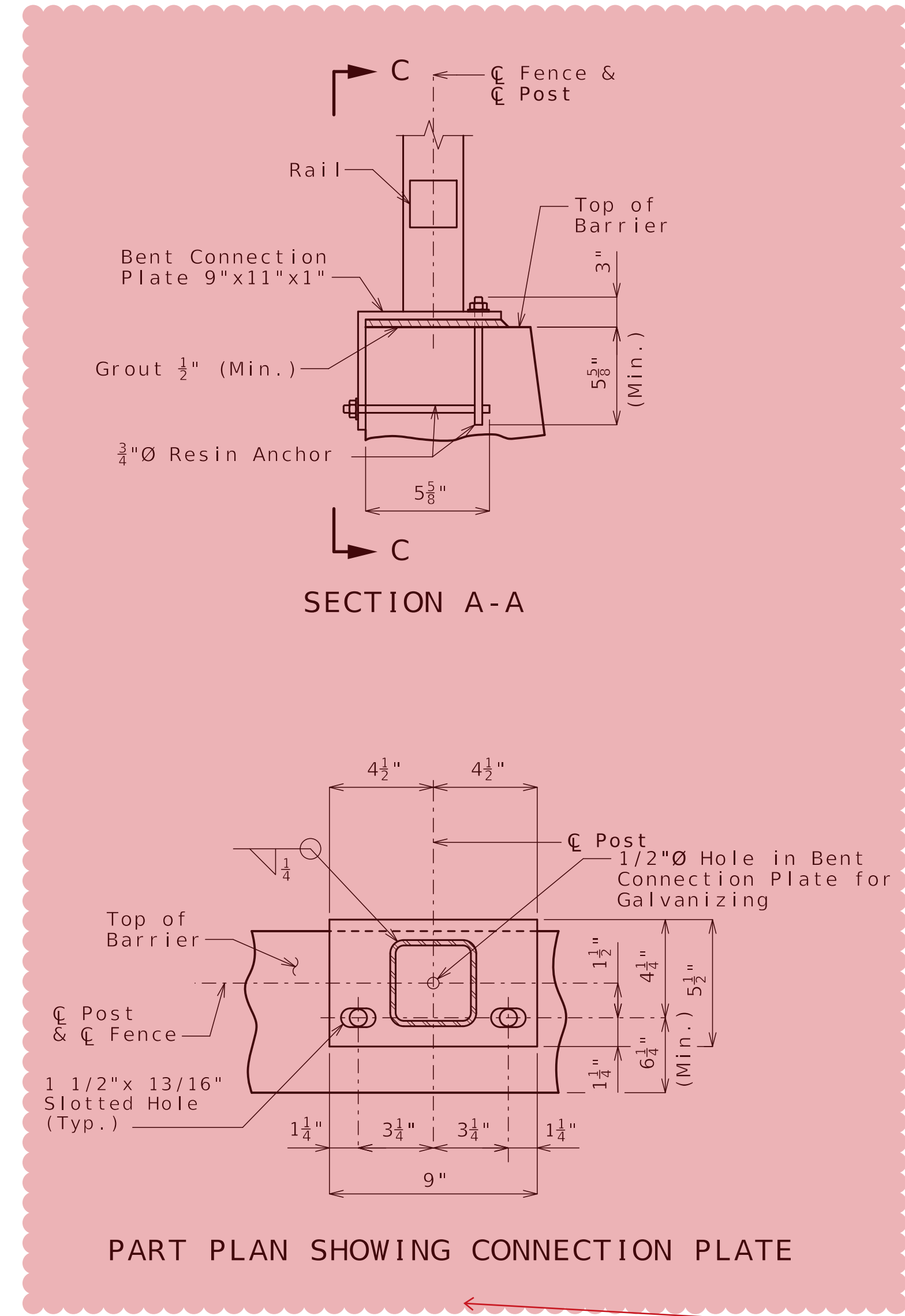


RFI 024

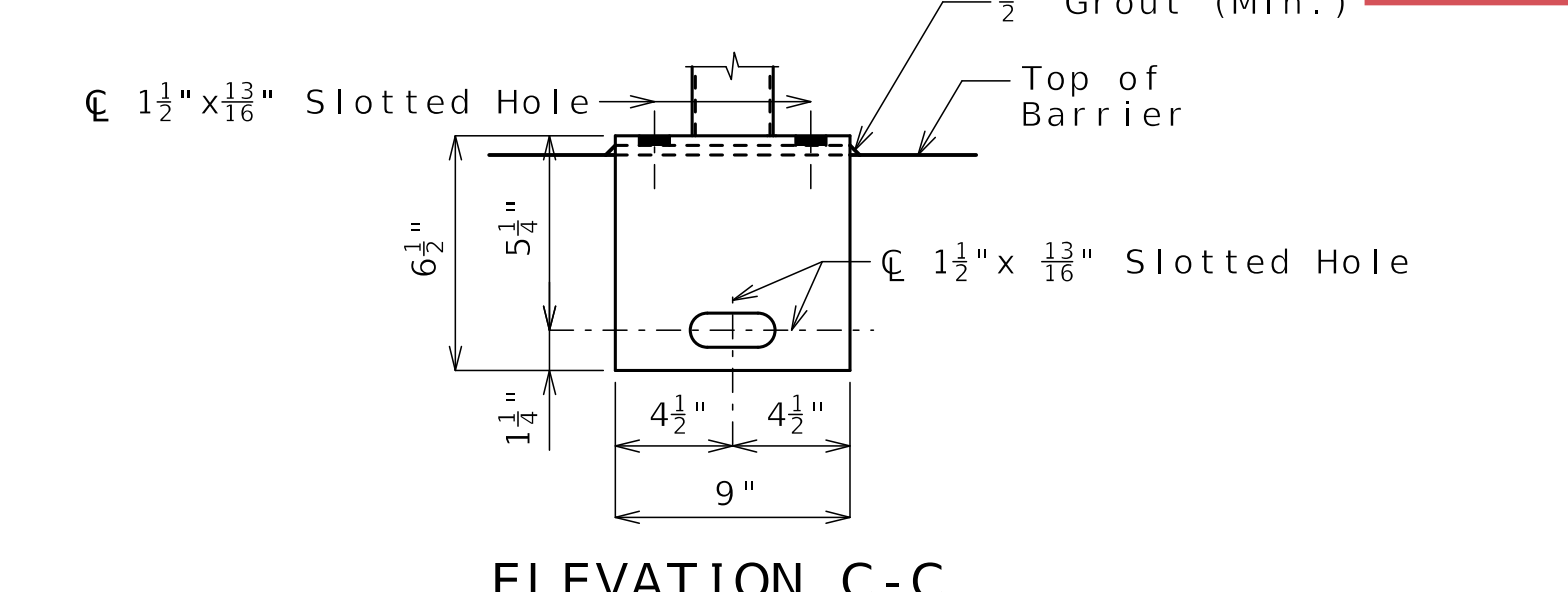
RFI 39 FOR U-BOLT CONFLICT WITH BARRIER STEEL SOLUTION



TYPICAL DETAIL OF FENCE AT LIGHT STANDARDS



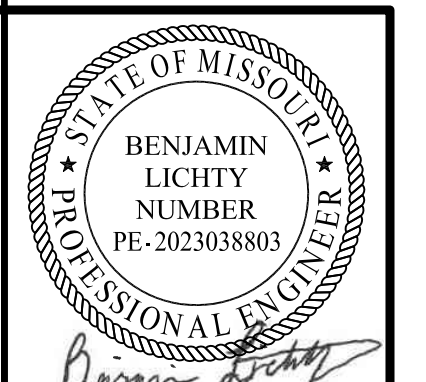
RFI 024



ELEVATION C-C

1/2-inch diameter hole in bent connection plate not shown for clarity.

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Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave



Benjamin Lichty
06-27-2025

DATE PREPARED 06/25/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B12-28
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9633

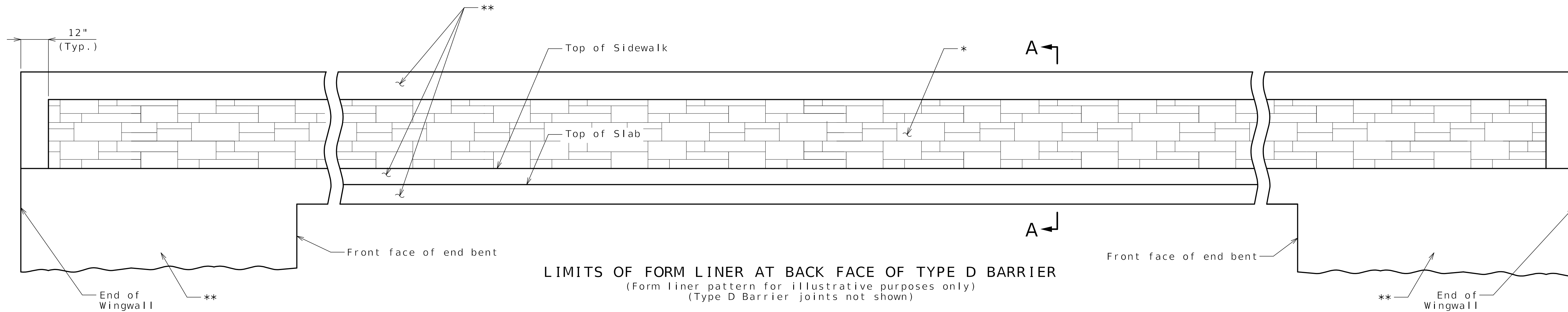
DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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CLARKSON RADMACHER JOINT VENTURE

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



LIMITS OF FORM LINER AT BACK FACE OF TYPE D BARRIER
 (Form liner pattern for illustrative purposes only)
 (Type D Barrier joints not shown)

Form Liner and Aesthetic Concrete Stain for bridges are not a part of the base contract and are not yet contracted for this Project with MoDOT.

General Notes:

**Concrete and masonry protective coating and sacrificial graffiti protective coating shall be applied in accordance with Sec 711 to surfaces to receive form liner treatment and as noted in details on this sheet.

Protective coatings shall be compatible with Aesthetic Concrete Stain.

Concrete Form Liner Notes:

Form liner shall be constructed in accordance with Special Provisions.

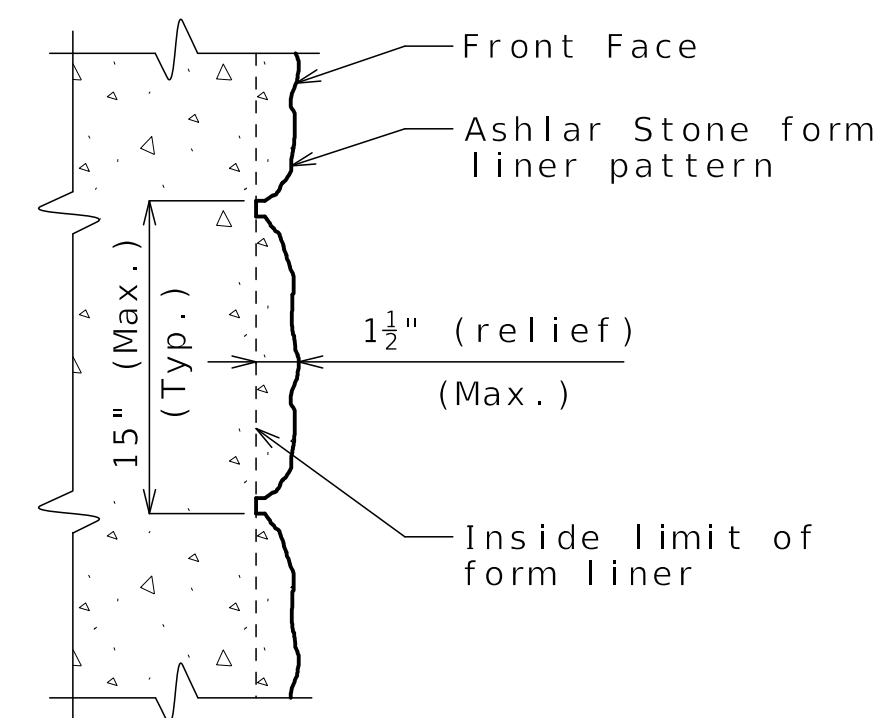
The following is a list of form liner manufacturers and types which may be used. Depth of relief for all form liner patterns shall vary up to 1 1/2". The height of any single "stone" shall be 15" maximum.

- Scott System, Inc.: Form liner pattern #167 "Ashlar Stone"
- Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone"
- Greenstreak: Form liner pattern #330 "Ashlar Stone"
- Spec Formliners: Form liner pattern #1515 "Ashlar Stone"
- Customrock: Form liner pattern #12020 "Tollway Ashlar"
- An approved equal

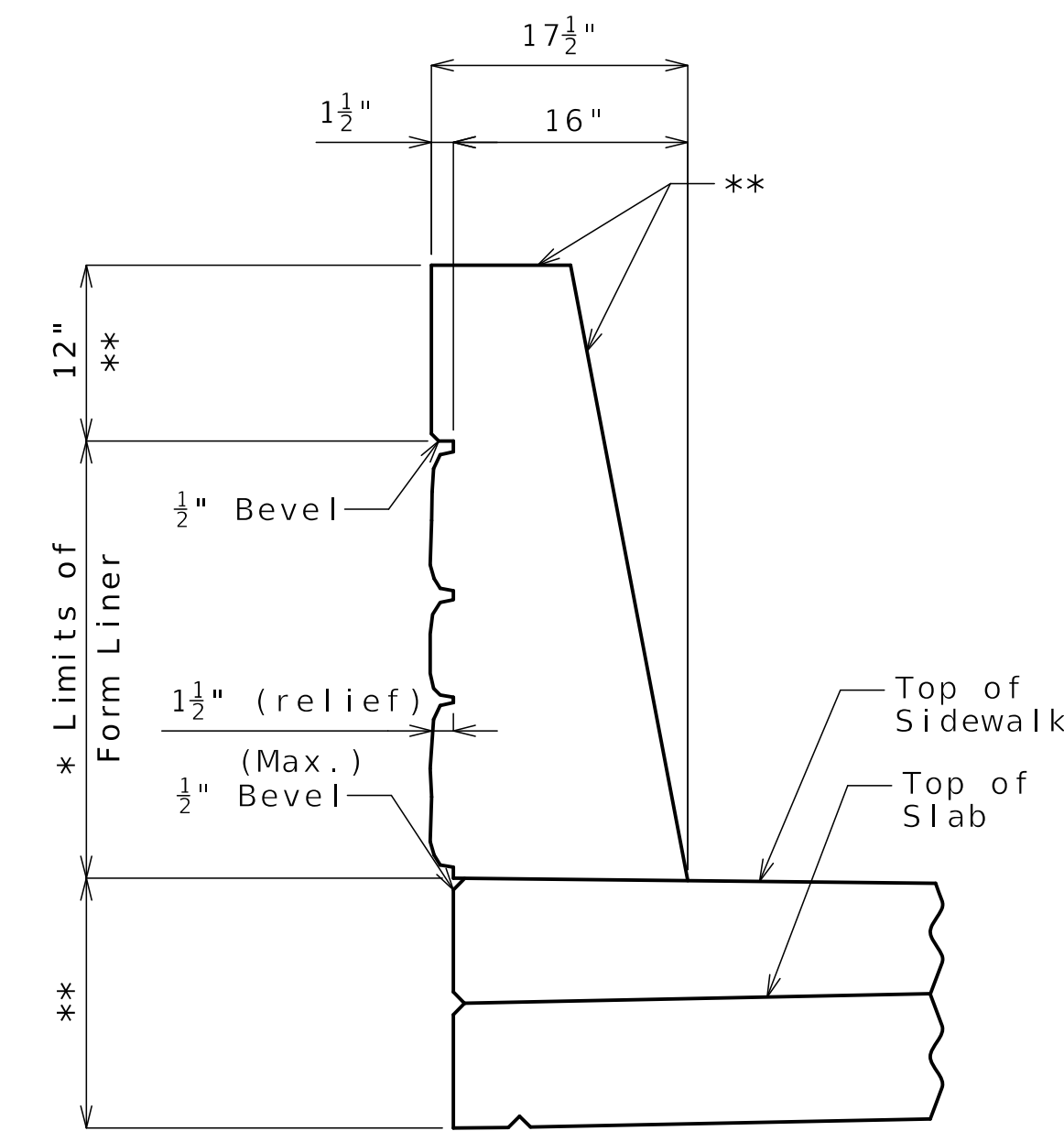
Aesthetic Concrete Stain Notes:

* Surface to receive Aesthetic Concrete Stain. The color shall be Federal Standard #37150.

Aesthetic Concrete Stain shall be applied in accordance with Sec 711 as shown in the plans.



FORM LINER DETAIL



SECTION A-A

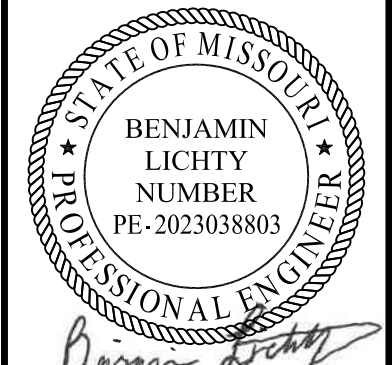
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 Package: BRD-12-Lister-Ave

FORM LINER AND AESTHETIC STAIN DETAILS

Detailed MAR 2025
 Checked APR 2025

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

Sheet No. B12-29 of B12-35



Benjamin Lichty
 06-27-2025

DATE PREPARED
 06/25/2025

ROUTE 1-70	STATE MO
DISTRICT BR	SHEET NO. B12-29

COUNTY
JACKSON
 JOB NO.
J411486D
 CONTRACT ID.
240807-C01
 PROJECT NO.

BRIDGE NO.
A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
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CLARKSON RADMACHER
 JOINT VENTURE

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 KANSAS CITY, MO 64105-1310
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Benjamin Lichty
06-27-2025

DATE PREPARED
06/25/2025

ROUTE STATE
I-70 MO

DISTRICT SHEET NO.
BR B12-30

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9633

DESCRIPTION
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DATE
06/25/25

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102

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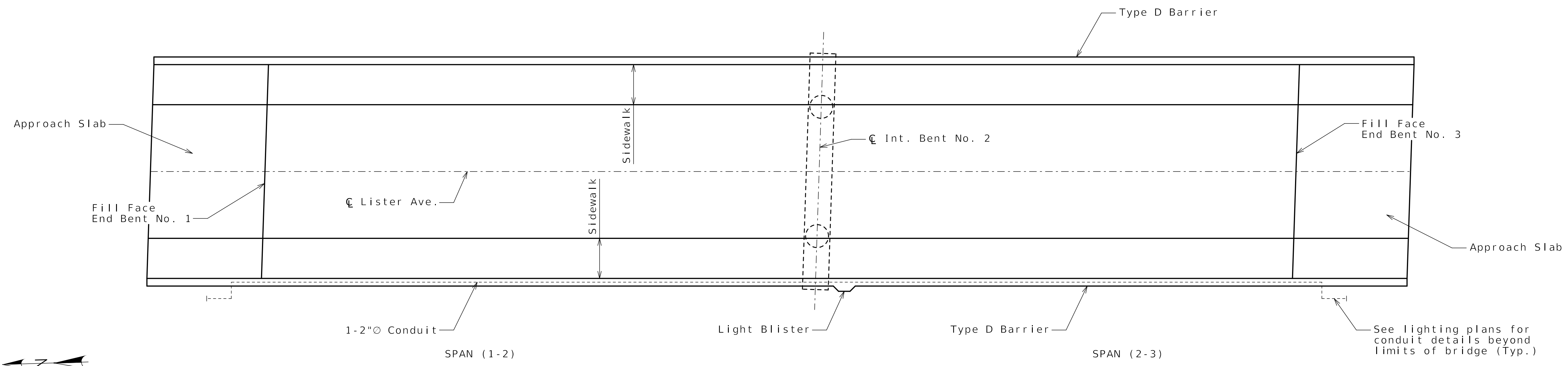
MoDOT

CLARKSON
RADMACHER
JOINT VENTURE

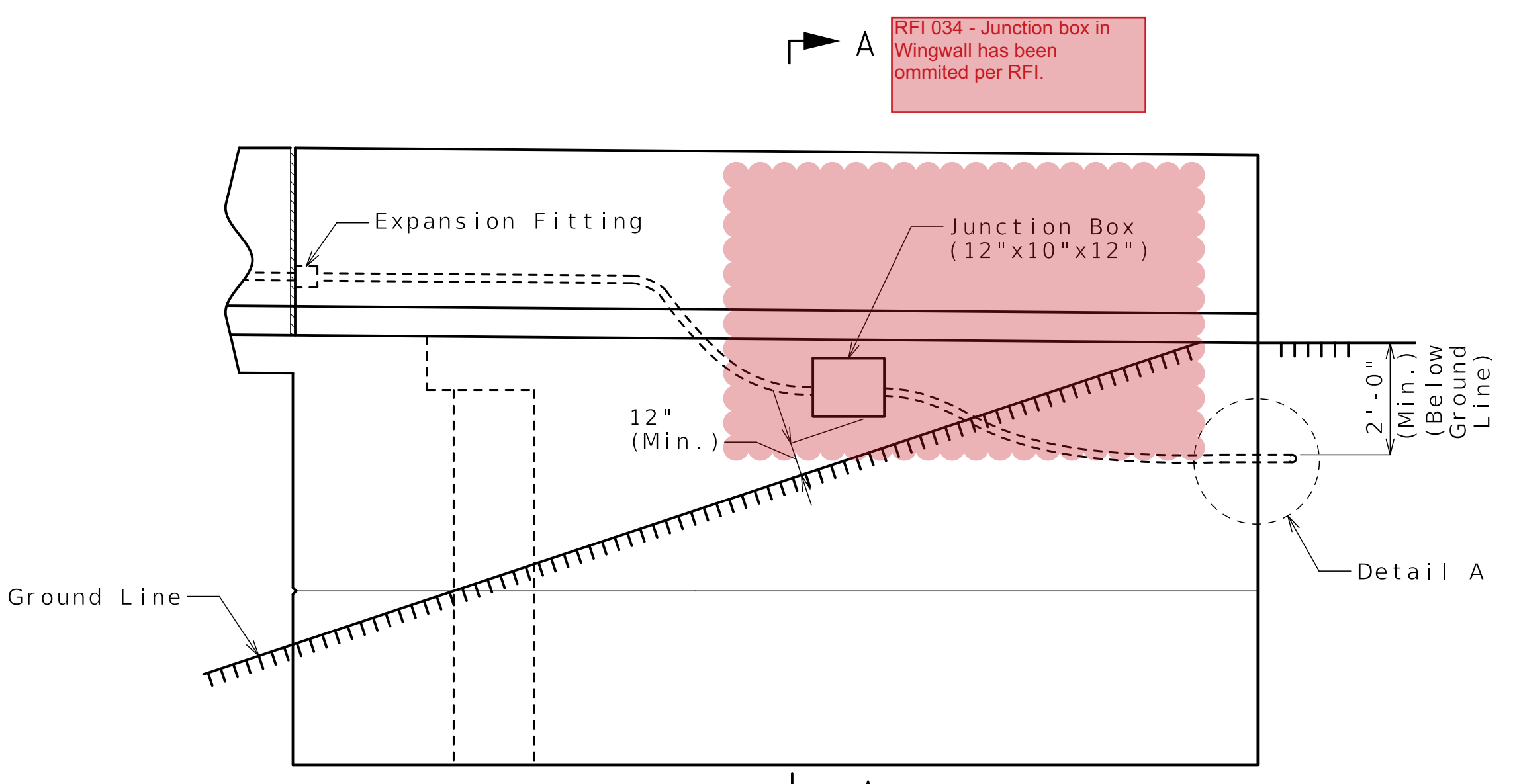
715 KIRK DRIVE
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NO. 001270

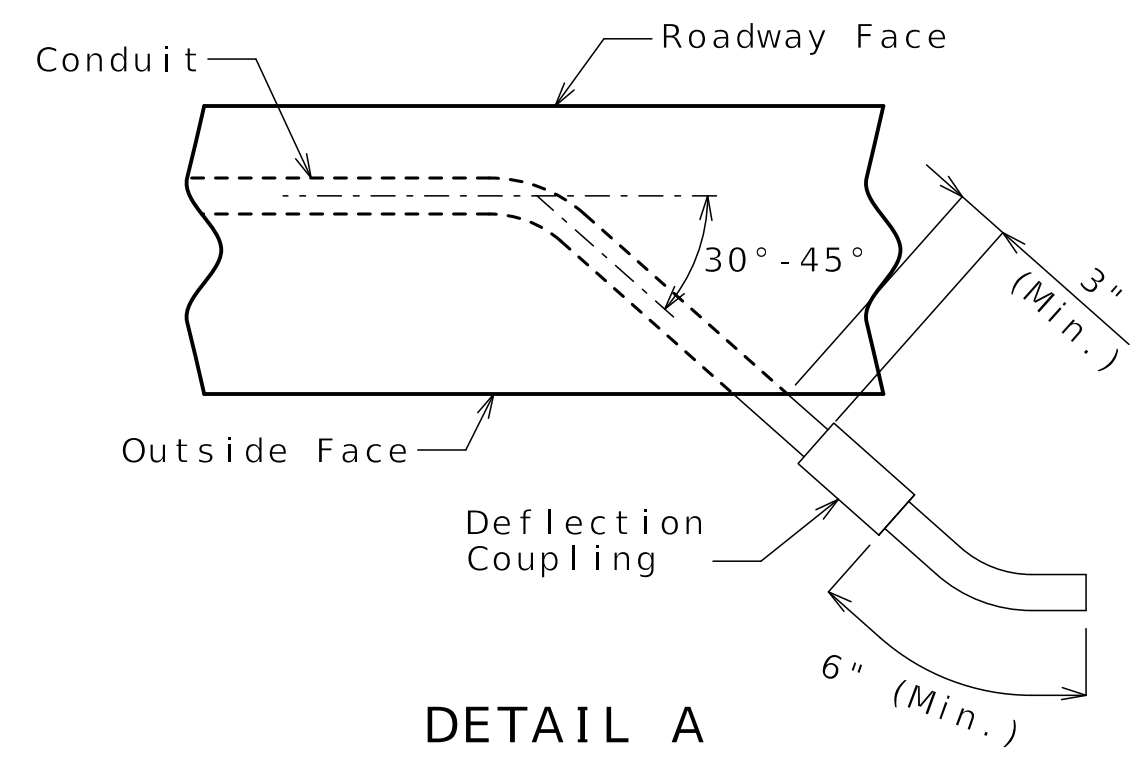
HNTB



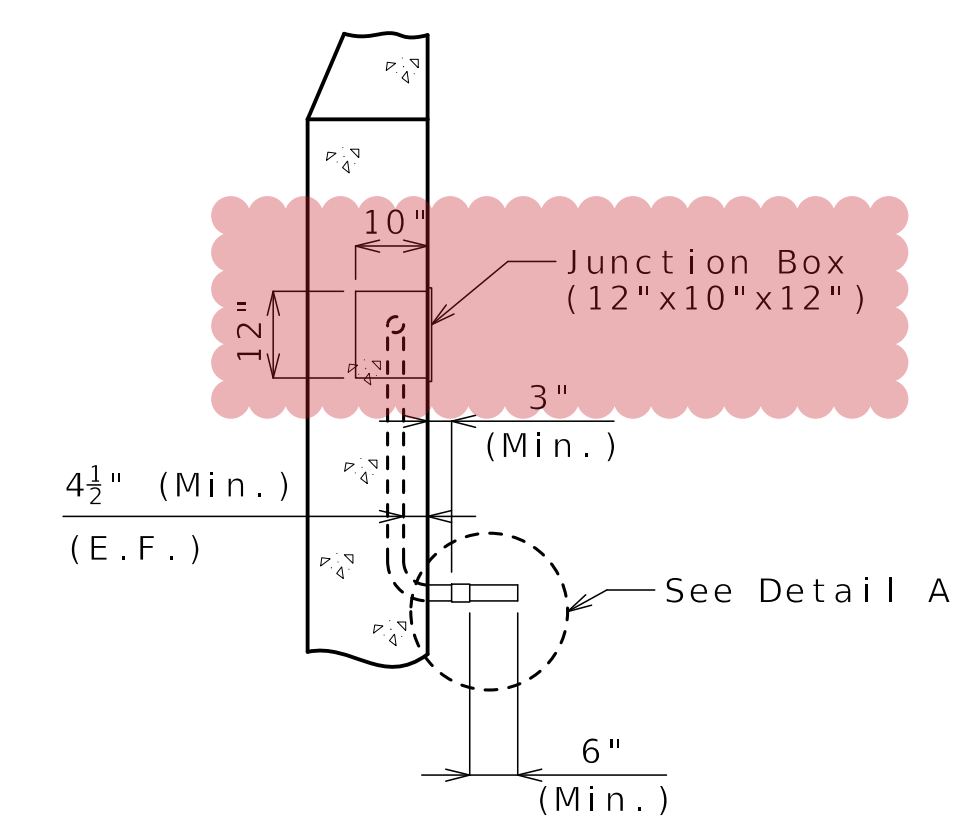
PLAN OF CONDUIT SYSTEM



PART WINGWALL ELEVATION



DETAIL A



PART SECTION A-A

Notes:

All conduit shall be rigid non-metallic schedule 40 heavy wall PVC (polyvinyl chloride plastic) with 3 1/2" minimum cover in barrier and 4 1/2" minimum cover in wingwall. Each section of conduit shall bear the Underwriters Laboratories (UL) label.

Shift reinforcing steel in field where necessary to clear conduit and junction boxes.

Expansion fittings shall be placed as shown and set in accordance with the manufacturer's requirements and based on the air temperature at the time of setting given an estimated total movement of 1 inch at filled joints using a maximum temperature range of 120°F and a maximum temperature of 110°F.

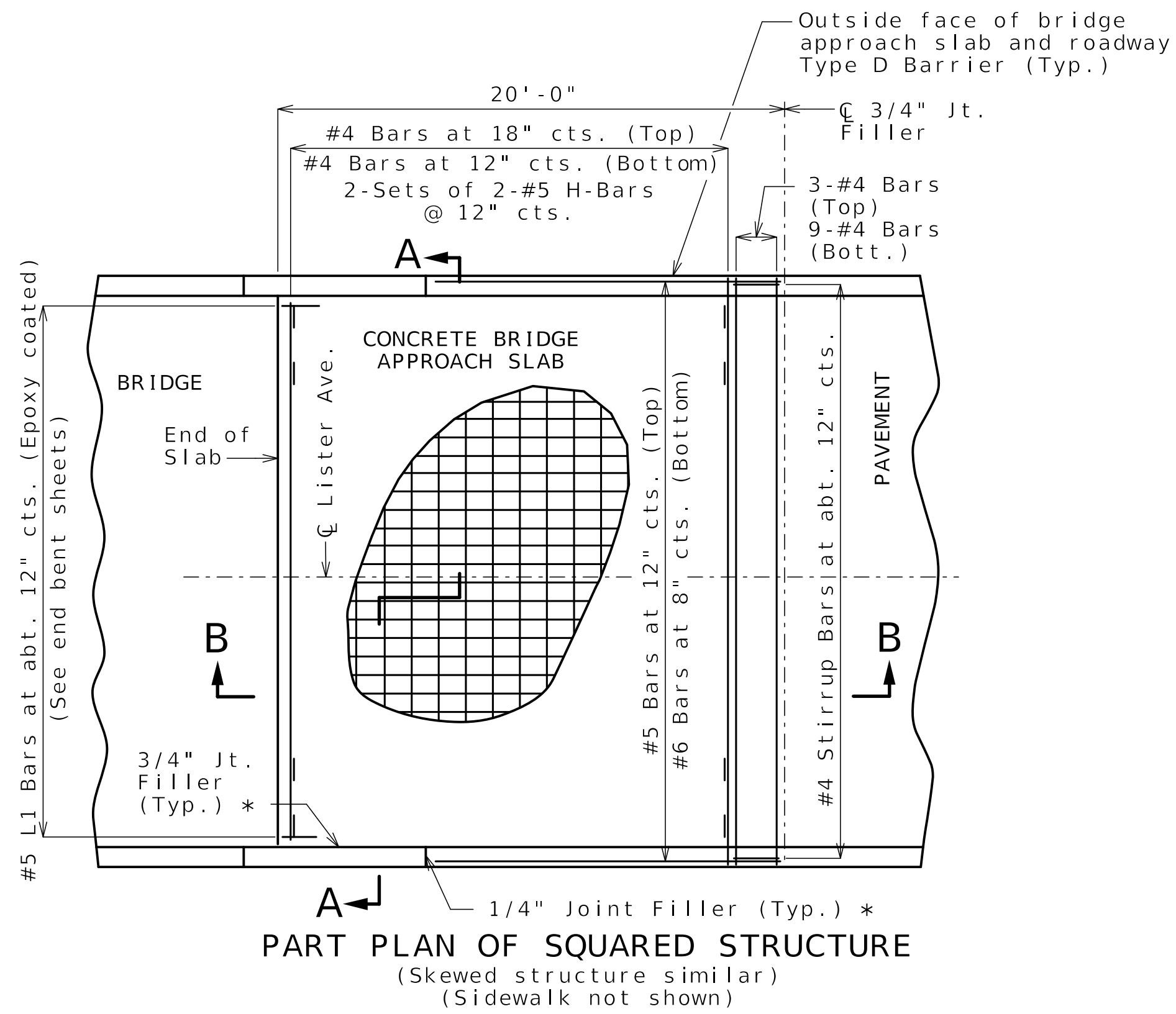
All end bent junction boxes shall be PVC molded in accordance with Sec. 1062 and designed for flush mounting. The conduit terminations shall be permanent or separable. The terminations and covers shall be of watertight construction and shall meet requirements for NEMA 4X enclosure.

Drainage shall be provided at low points or other critical locations of all conduits and all junction boxes in accordance with Sec 707. All conduits shall be sloped to drain where possible.

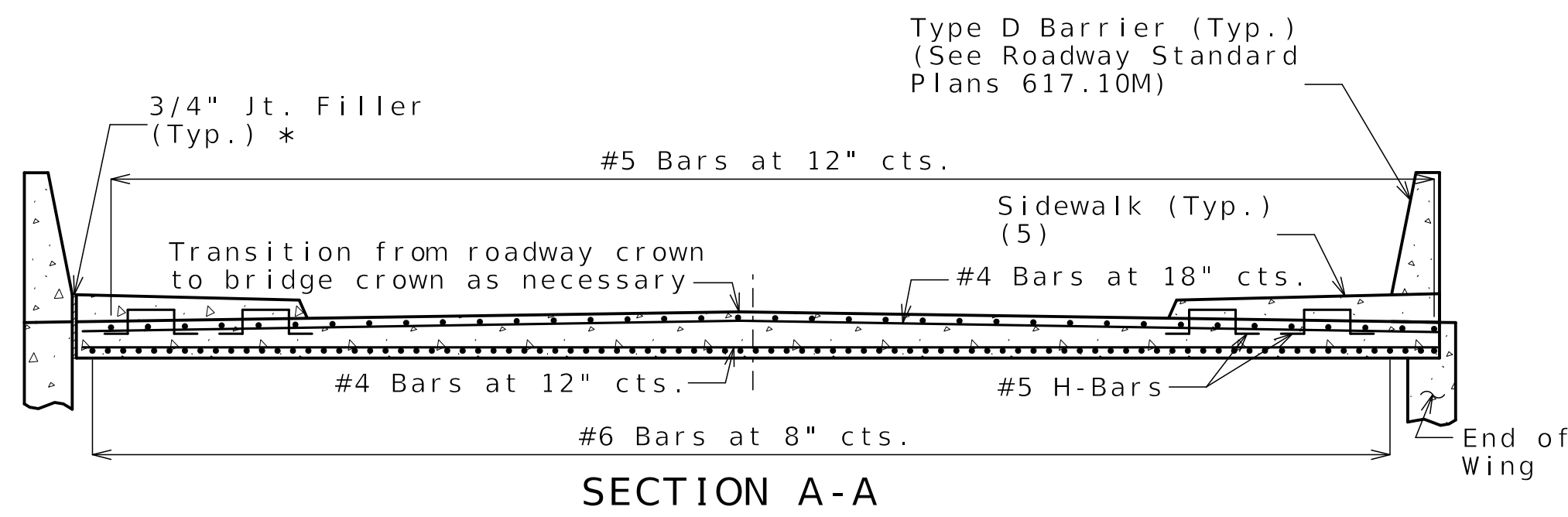
For additional form liner details not shown, see Sheet No. B12-29.

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Date: 07/02/2025
Package: BRD-12-Lister-Ave

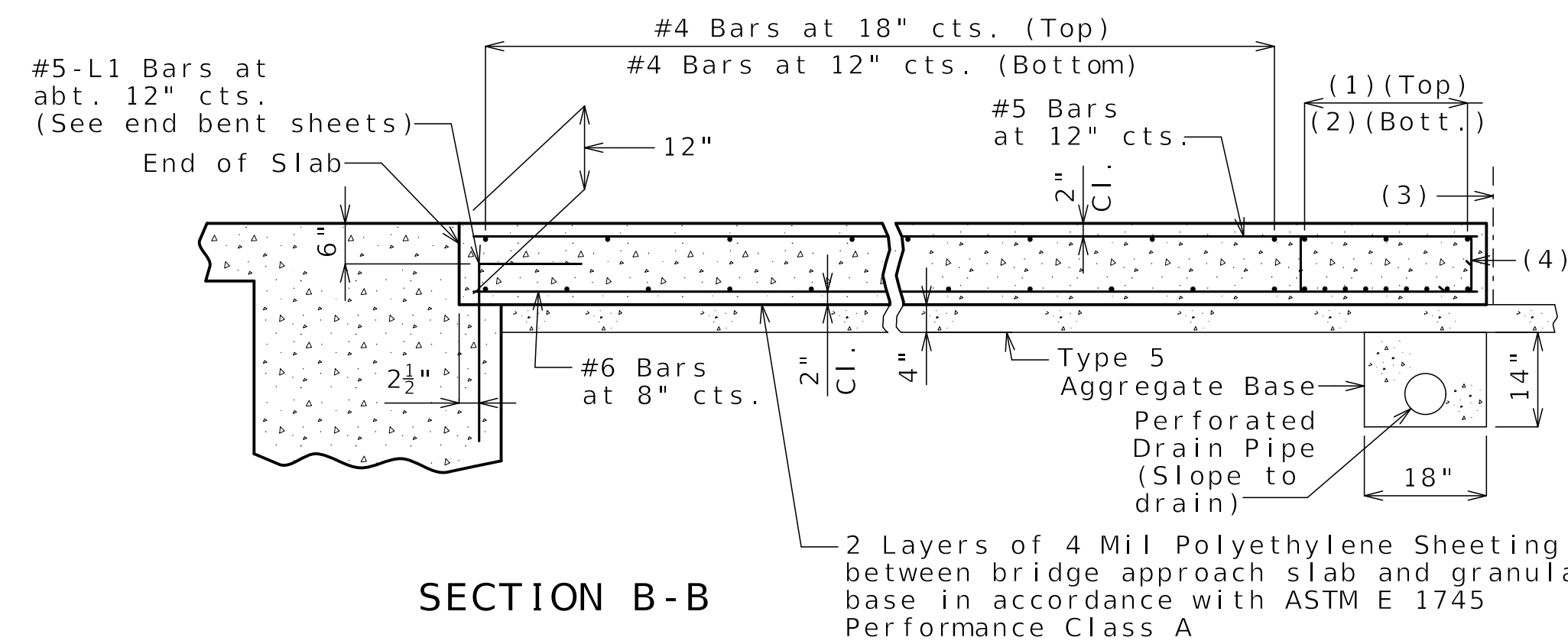
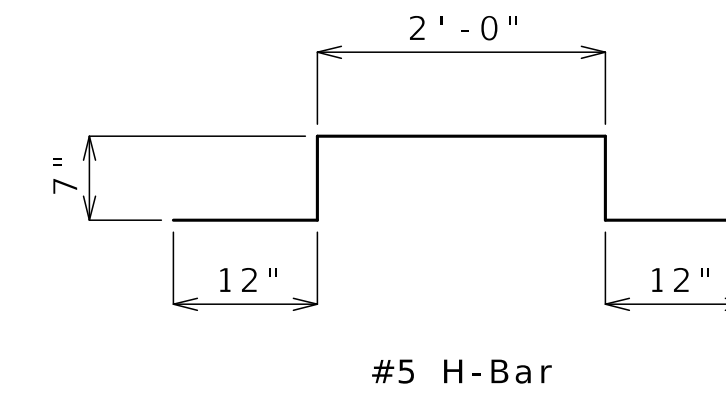
DETAILS OF CONDUIT SYSTEM ON STRUCTURE



PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)
(Sidewalk not shown)

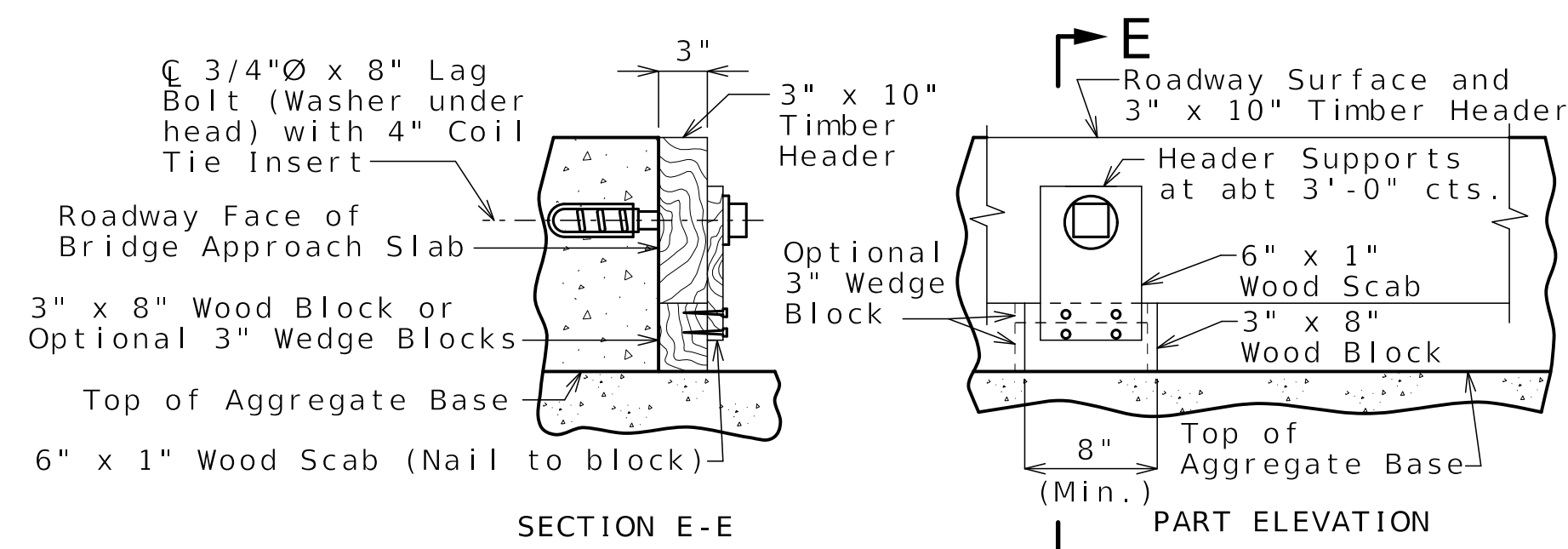


SECTION A-A



SECTION B-B

- (1) 3-#4 Bars
- (2) 9-#4 Bars
- (3) 3/4" Jt. Filler
- (4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.
- (5) See Civil Package 5: Local Streets 2 for sidewalk details.



SECTION E-E

PART ELEVATION

DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

Notes:

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

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

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

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

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

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

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

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Revision: 0.0
Date: 07/02/2025
Package: BRD-12-Lister-Ave

BRIDGE APPROACH SLAB (MINOR)



Benjamin Lichty
06-27-2025

DATE PREPARED
06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-31

COUNTY JACKSON

JOB NO. J411486D

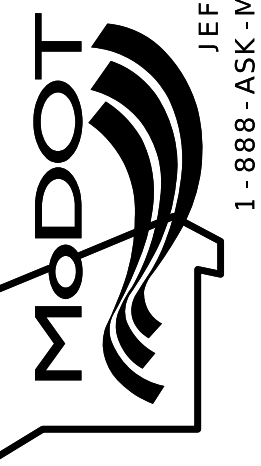
CONTRACT ID. 240807-C01

PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25 <td>REV 0 - RFC SUBMITTAL</td>	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

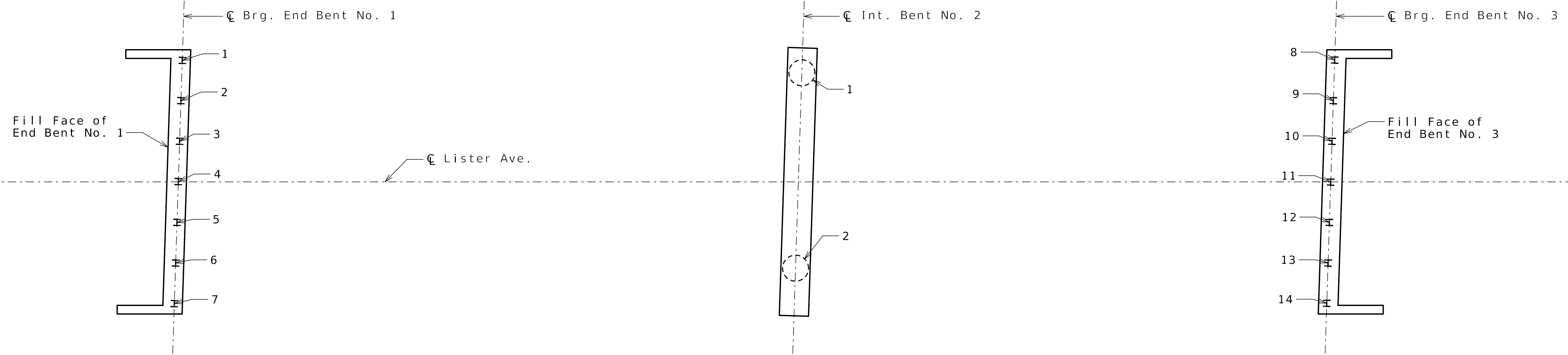
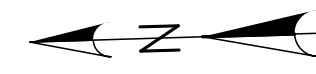


105 WEST CAPITOL
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CLARKSON RADMACHER
JOINT VENTURE

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





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

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
5			
6			
7			
			End Bent No. 3
8			
9			
10			
11			
12			
13			
14			

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

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

Note:
 This sheet to be completed by Design Builder.

Released For Construction
 Not to Scale
 Revision: 0.0
 Date: 07/02/2025
 Package: BRD-12-Lister-Ave

AS-BUILT PILE AND DRILLED SHAFT DATA



Gina D. Horner
 06/27/25

DATE PREPARED
 06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-32

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

BRIDGE NO. A9633

DATE	DESCRIPTION
06/25/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



SOIL BORING NUMBER: Lst_B1_1

Page 1 of 2

PROJECT Improve I 70 KC Design Build **NORTHING/EASTING** 1058135.6 / 2780868.2
DRILLING FIRM PPI **DRILLER** Eric P. **DATE STARTED** 01/29/2025
LOGGED BY Zachary Boyd **DATE COMPLETED** 01/29/2025
SURFACE ELEVATION 861* **RIG TYPE** CME-550X
METHOD Auger, Mud Rotary, NQ Core **TOOLING** 3-3/4" Rotary Drill, 3-3/4" Hollow Stem Auger

Depth (ft)	Depth of Sample	Sample Type	Sample ID	Recovery Length (in)	Blow Counts (N-Value)	% Recovery	RQD (%)	Pocket Pen (tsf)	Graphic Log	Groundwater Data		Lab			
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
										Visual Classification and Remarks					
										CONCRETE					
										FILL, brown/tan, loose, coarse grained, WELL-GRADED SAND (SW)					
3.5	3.5 ft	J-1	J-1	12	2-2-2 (4)	67		0.5		4.5	856.5				
5										Dark gray to brown, soft, moist, LEAN CLAY with SAND (CL)					
8.5	8.5 ft	J-2	J-2	4	1-2-1 (3)	22		0.5				22.0			
10															
13.5	13.5 ft	J-3	J-3	8	2-3-4 (7)	44		<0.5		13.5	847.5				
15										Dark gray to brown, loose, fine to coarse grained, WELL-GRADED SAND (SW)					
18.5	18.5 ft	J-4	J-4	12	9-11-30 (41)	67		>4.5		18.5	842.5				
20										Shale, thinly bedded, highly weathered, dark gray, soft		15.3			
21.3	21.3 ft	C-1	C-1	50		100	94			- becomes moderately hard at 21.3'		13.6	130.8	9	
25	25.5 ft	C-2	C-2	60		100	70								
28.0										Limestone, weathered, dark gray, moderately hard, fossils		9.2	136.0	27	
29.6										Interbedded shale and limestone, weathered, light to dark gray, moderately hard					
30.5	30.5 ft	C-3	C-3	57		95	83								
32.1										Limestone, slightly weathered, light to dark gray, moderately hard, calcium nodules		0.3	166.6	1078	
35	35.5 ft	C-4	C-4	60		100	98					0.8	150.8	782	

* Survey not possible due to boring location. Coordinates estimated from visual inspection. Elevation estimated from contour map.



SOIL BORING NUMBER: Lst_B1_1

Page 2 of 2

PROJECT Improve I 70 KC Design Build **NORTHING/EASTING** 1058135.6 / 2780868.2
DRILLING FIRM PPI **DRILLER** Eric P. **DATE STARTED** 01/29/2025
LOGGED BY Zachary Boyd **DATE COMPLETED** 01/29/2025
SURFACE ELEVATION 861* **RIG TYPE** CME-550X
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Depth (ft)	Depth of Sample	Sample Type	Sample ID	Recovery Length (in)	Blow Counts (N-Value)	% Recovery	RQD (%)	Pocket Pen (tsf)	Graphic Log	Groundwater Data		Lab			
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
										Visual Classification and Remarks					
37.5	37.5 ft	C-4	C-4	60		100				Limestone, slightly weathered, light to dark gray, moderately hard, calcium nodules					
40	40.5 ft	C-5	C-5	60		100	97					0.3	162.0	1483	
45	45.5 ft	C-6	C-6	60		100	93					0.2	163.2	1609	
50										50.5	810.5				
55										Bottom of Boring at 50.5'					
55										Boring backfilled with concrete and cuttings 1/29/2025					
60															
65															
70															

* Survey not possible due to boring location. Coordinates estimated from visual inspection. Elevation estimated from contour map.

Released For Construction
 Not to Scale
 Revision: 0.0
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Notes:
 For locations of borings, see Sheet No. B12-02 and Geotechnical Report.

BORING LOGS

Detailed MAR 2025
 Checked APR 2025

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

Sheet No. B12-33 of B12-35



6/30/2025

DATE PREPARED
 06/25/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B12-33

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

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06/25/25 <td>REV 0 - RFC SUBMITTAL</td>	REV 0 - RFC SUBMITTAL

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