



DATE PREPARED
11/13/2025

DISTRICT	SHEET NO.
BR	B19-0

JOB NO.
J4I1486D

PROJECT NO.

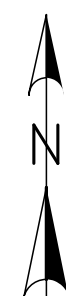
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LOCATION SKETCH

BRIDGE: ROUTE I-70 EB OVER BENTON BLVD.

ROUTE 1-70 EB FROM ROUTE 1-670 TO ROUTE 40
ABOUT 1.4 MILES EAST OF ROUTE 1-670
BEGINNING STATION 431+77.70

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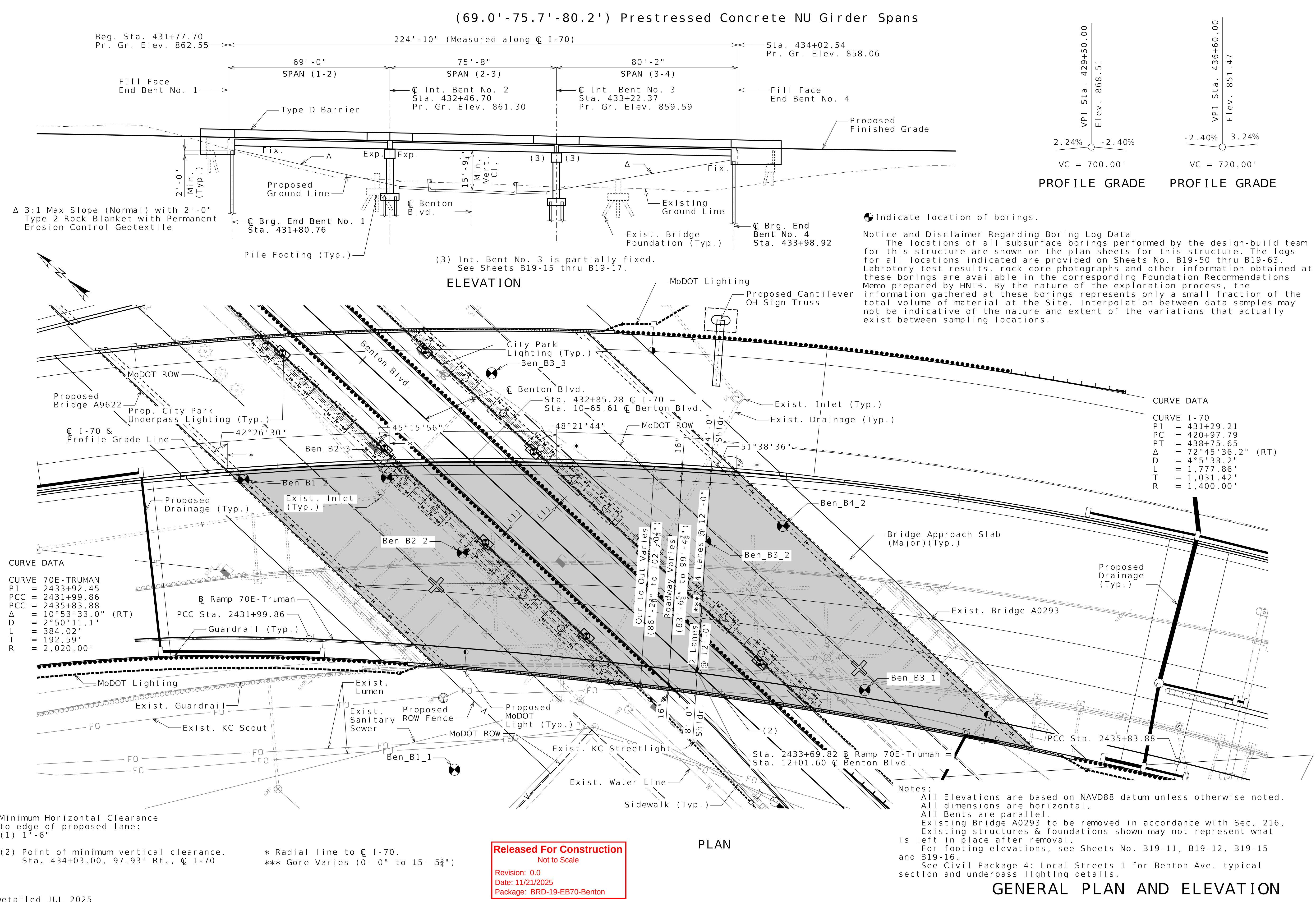
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Sheet No. B19-02 of B19-63

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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, $S_{D1} \leq 0.15$
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.)
Class B-1 Concrete (Intermediate Bents)
Class B-2 Concrete (Superstructure, except Prestressed Girders and Type D Barrier)
Class B-1 Concrete (Type D Barrier)
Reinforcing Steel (ASTM A615 Grade 60)
Structural HP Steel Pile (ASTM A709 Grade 50)
For prestressed girder stresses, see Sheets No. B19-24 thru B19-26.

$f'_c = 3,000 \text{ psi}$
 $f'_c = 4,000 \text{ psi}$
 $f'_c = 4,000 \text{ psi}$
 $f_y = 60,000 \text{ psi}$
 $f'_c = 4,000 \text{ psi}$
 $f_y = 50,000 \text{ psi}$

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 barriers, light blisters, slab, concrete diaphragms, End Bents No. 1 and 4 and Intermediate Bents No. 2 & 3 shall be epoxy coated. Reinforcing in the Intermediate Bents No. 2 & 3 pile cap footings shall be uncoated.

Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be 1½". Nylon, PVC, or polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

Concrete Protective Coatings:
Concrete and masonry protective coating shall be applied to concrete columns and on all exposed concrete and stone areas as noted in the plans in accordance with Sec 711. See Sheet No. B19-45.

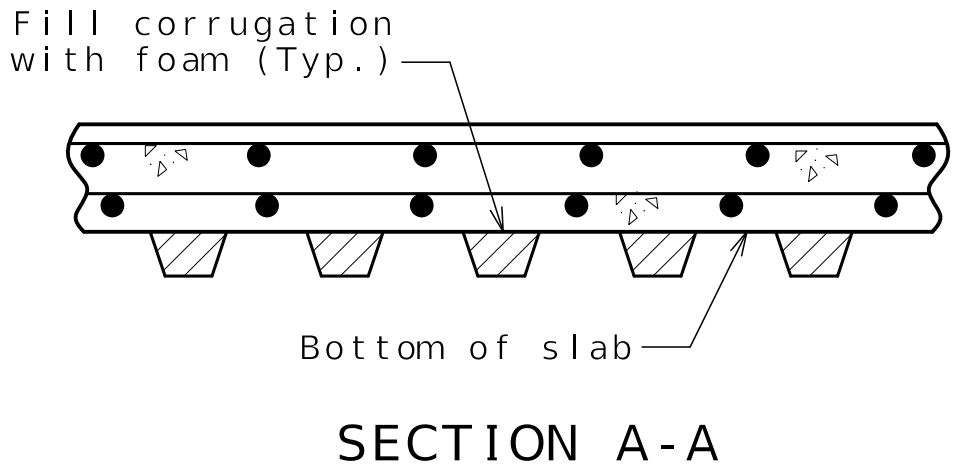
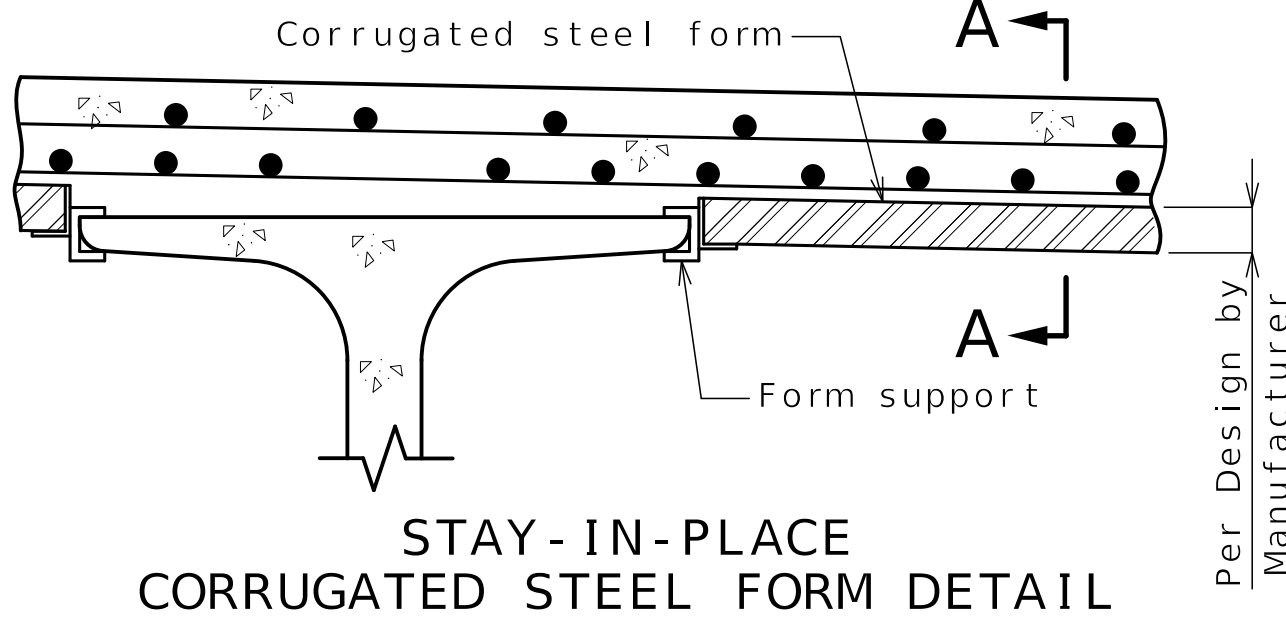
Sacrificial graffiti protective coating shall be applied to concrete columns and on all exposed concrete and stone areas as noted in the plans in accordance with Sec 711. See Sheet No. B19-45.

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

Foundation Data					
Type	Design Data	Bent Number			
		1	2	3	4
Load Bearing Pile	Pile Type and Size	HP 12x53	HP 12x74	HP 12x74	HP 12x53
	Number	ea 14	36	42	18
	Approximate Length Per Each (1)	ft 104	83	80	96
	Pile Point Reinforcement	ea All	All	All	All
	Min. Galvanized Penetration (Elev.)	ft 817	817	817	817
	Minimum Tip Penetration (Elev.)	ft ---	---	---	---
	Criteria for Min. Tip Penetration	---	---	---	---
	Pile Driving Verification Method	DF	DT	DT	DF
	Resistance Factor	0.40	0.65	0.65	0.40
	Minimum Nominal Axial Compressive Resistance	kip 561	536	402	542

(1) Pile length is maximum estimated for bent and includes embedment into concrete. Adjust as needed for bottom of concrete variations at each bent.



Stay-In-Place Corrugated Steel Form Notes:

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

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

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

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

Load Bearing Piles:
Minimum Nominal Axial Compressive Resistance =
Maximum Factored Loads/Resistance Factor
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.
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
DT=Dynamic Testing

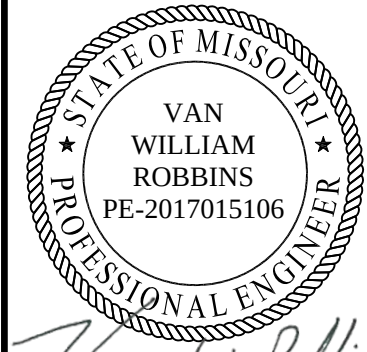
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GENERAL NOTES

Detailed JUL 2025
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Sheet No. B19-03 of B19-63



Van W. Robbins
11-13-25

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ROUTE
1-70

STATE
MO

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B19-03

COUNTY
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JOB NO.
J411486D

CONTRACT ID.
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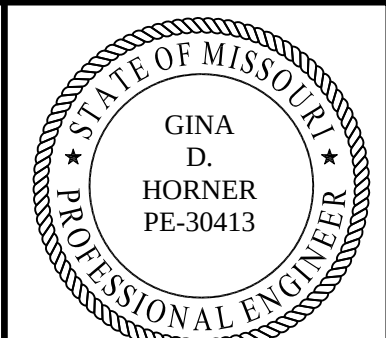
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GINA D. HORNER
PE-30413
11/13/2025

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11/13/2025

ROUTE
I-70

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COUNTY
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J411486D

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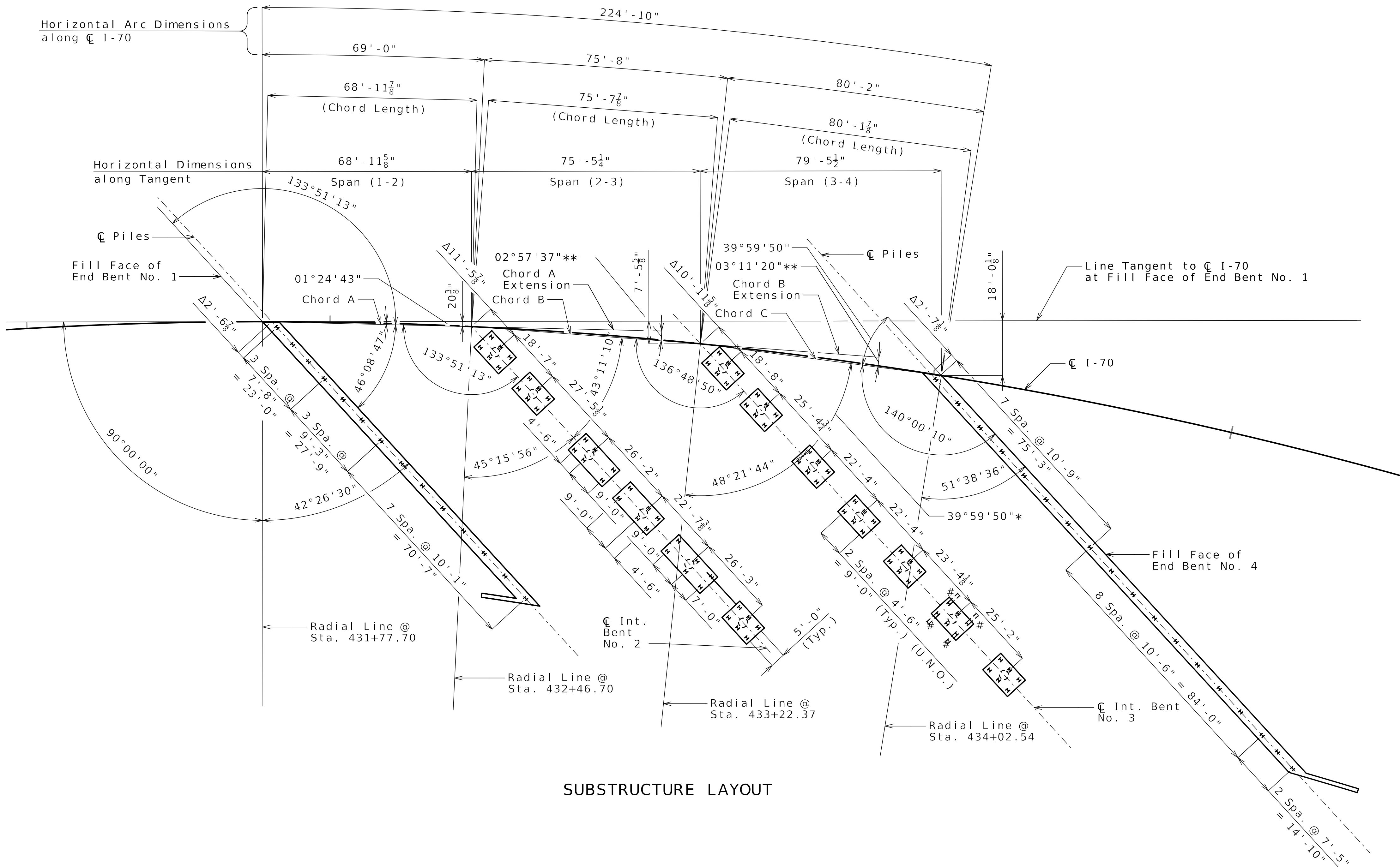
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CLARKSON
RADMACHER
JOINT VENTURE

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

HNTB



Notes:
All stations are given along C I-70.
All dimensions are horizontal.
* Angle between C Bent and chord.
** Angle between extended chord and chord.
Δ Measured to C I-70
Noted Piles are battered 0.5(H):12(V) in the direction shown.

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SUBSTRUCTURE LAYOUT

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Sheet No. B19-04 of B19-63

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DISTRICT	SHEET NO.
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**MISSOURI HIGHWAYS AND TRANSPORTATION
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The logo for the Missouri Department of Transportation (MoDOT) features the word "MoDOT" in a bold, sans-serif font. Below the text is a stylized graphic of the state of Missouri, with a series of curved lines representing a road or a river flowing through it.

105 WEST CAPITOL
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Notes:
 Work this sheet with Sheets No. B19-06 thru B19-09.
 All U bars and pairs of vertical bars shall be placed along
 skew. (U.N.O.)
 Reinforcing steel shall be shifted to clear piles. U-bars
 shall clear piles by at least 1½".
 For details of bridge approach slab, see Sheet No. B19-47.
 For angle of girders relative to C Bent, see Sheet No. B19-23.

DETAILS OF END BENT NO. 1

DATE PREPARED
11/13/2025

DISTRICT	SHEET NO.
BR	B19-06

JOB NO.
1411486D

PROJECT NO.	240007 001
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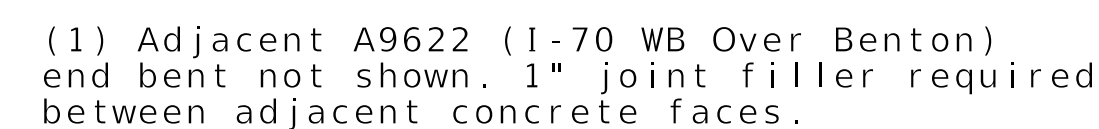


Diagram illustrating the cross-section of a pile cap with reinforcement details. The cap is shown with a "Fill Face" on the left, a "Match Line" on the right, and a "Top & Bottom" section. The cap is supported by "Bearing & Piles". Reinforcement includes "2-#6 Bars" and "4-#10 Bars". Dimensions are given in feet and inches: 8 Spacing @ 6 inches, 11 Equal Spacing = 10 feet - 11 3/4 inches, and 3 Spacing @ 10 inches. A 4-inch dimension is also shown.

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

Notes:
Work this sheet with Sheets No. B19-05 thru B19-09.

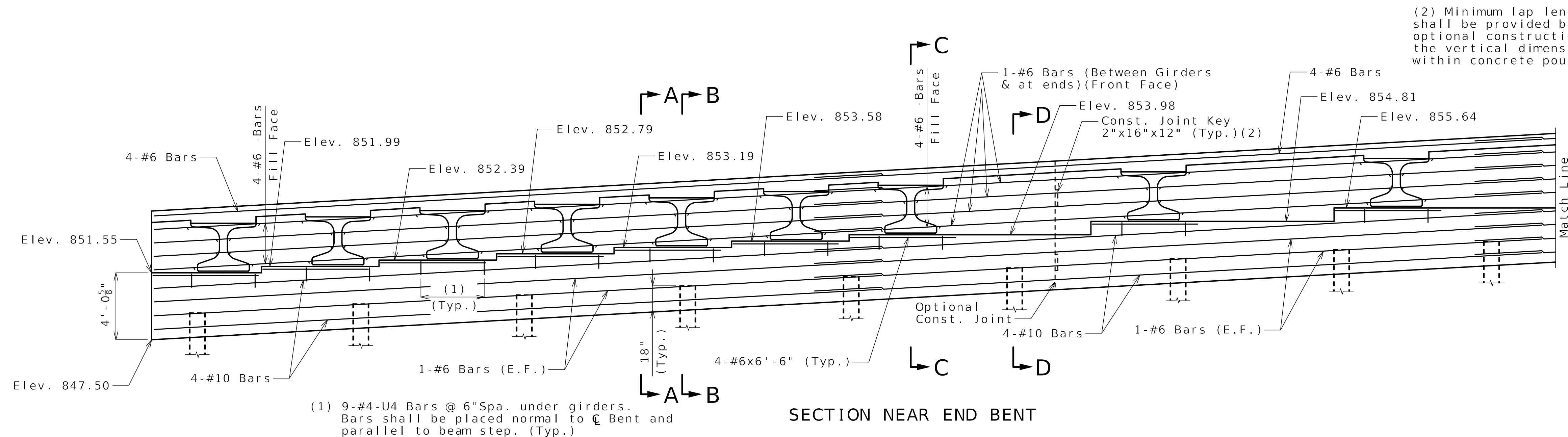
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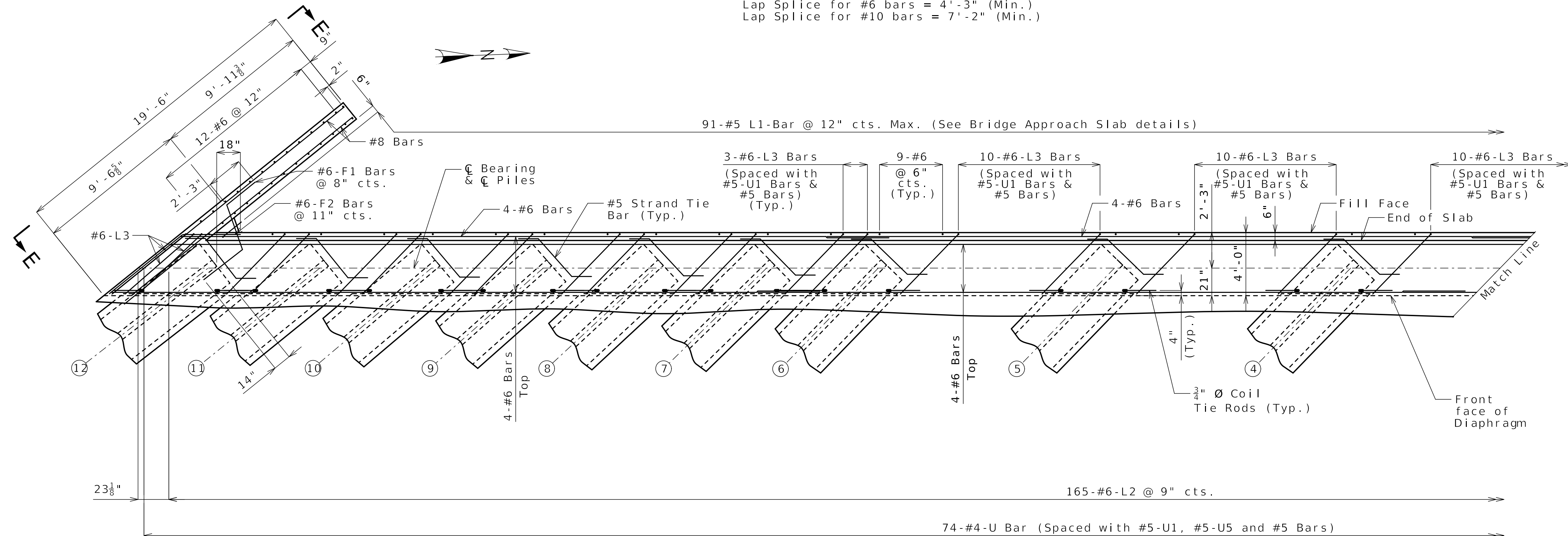
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Sheet No. B19-06 of B19-63

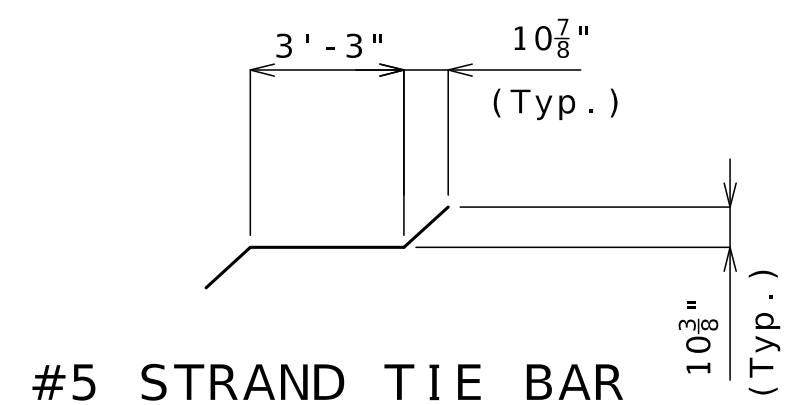
DETAILS OF END BENT NO. 1



Notes:
Lap Splice for #6 bars = 4'-3" (Min.)
Lap Splice for #10 bars = 7'-2" (Min.)



PART PLAN
(Optional construction joint not shown.)



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General Notes:

Work this sheet with Sheets No. B19-05 thru B19-09.
For Sections A-A, B-B, C-C and D-D and Elevation E-E,
see Sheet No. B19-09.
For location of coil tie rods, see Sheet No. B19-24.
Strands at end of the girders shall be field bent or,
if necessary, cut in field to maintain $1\frac{1}{2}$ "-inch minimum
clearance to fill face of end bent.
The #6-F bars shall be bent in the field to clear
girders.

(X) Denotes girder number



Lina D Horner
11/13/2025

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JACKSON

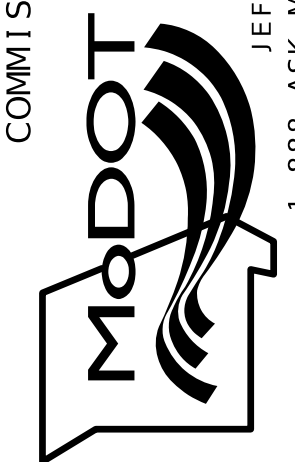
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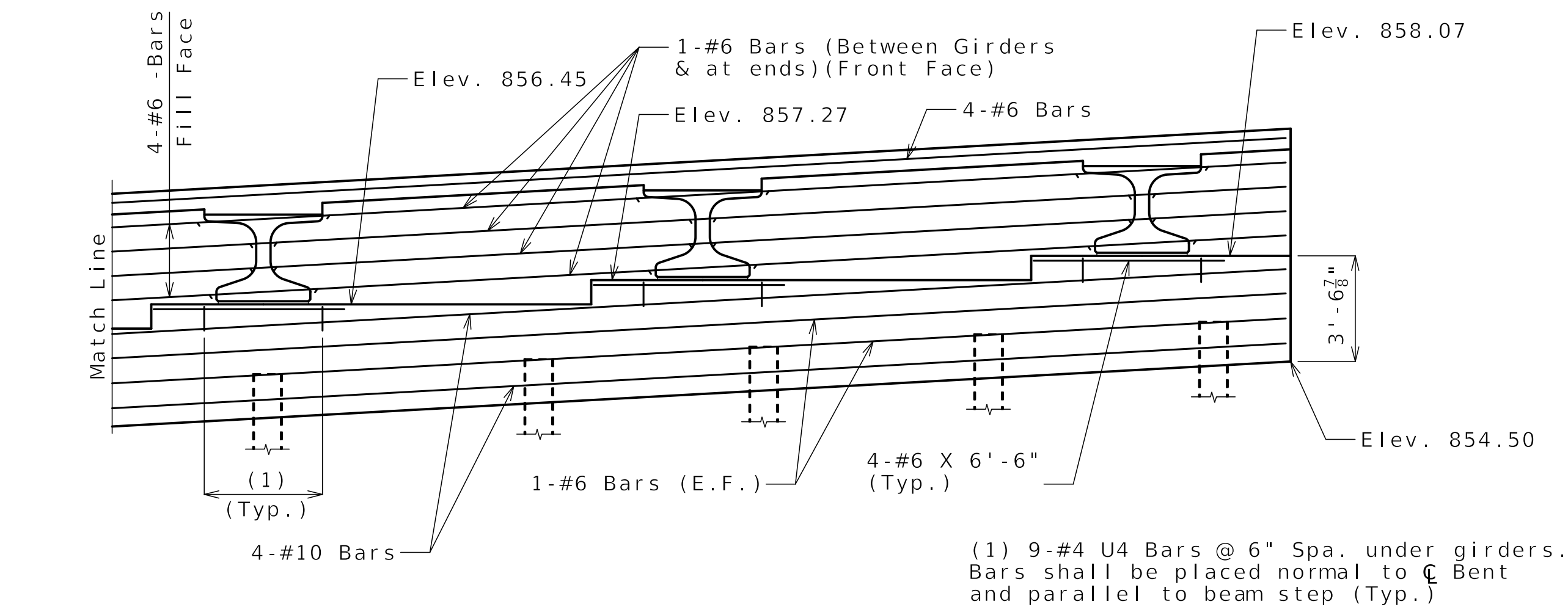
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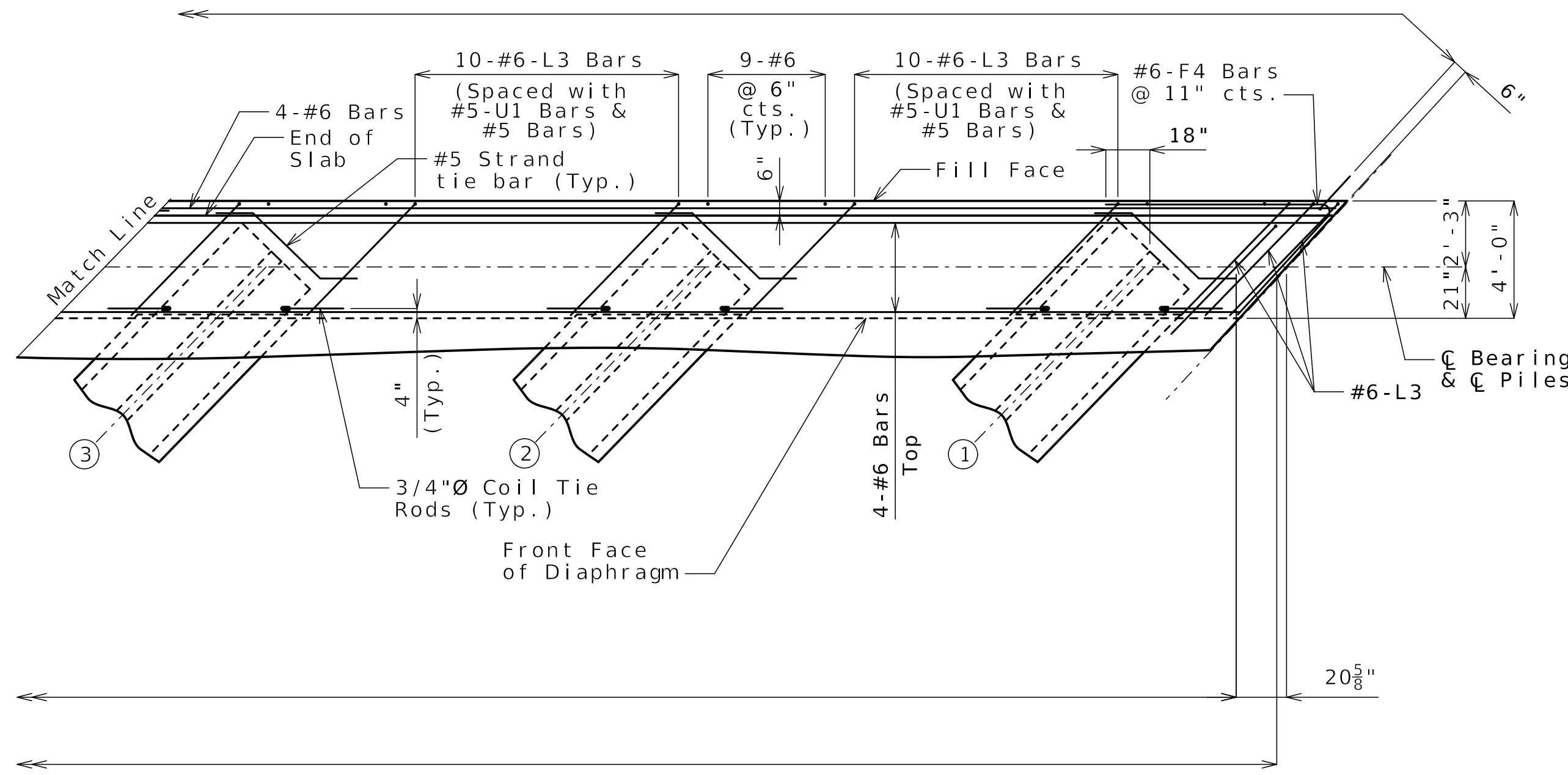
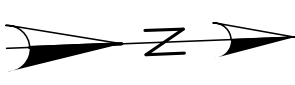
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SECTION NEAR END BENT



PART PLAN

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General Notes:
Work this sheet with Sheets No. B19-05 thru B19-09.

DETAILS OF END BENT NO. 1

GINA D. HORNER
PE-30413

11/13/2025

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11/13/2025

ROUTE
1-70

DISTRICT
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SHEET NO.
B19-08

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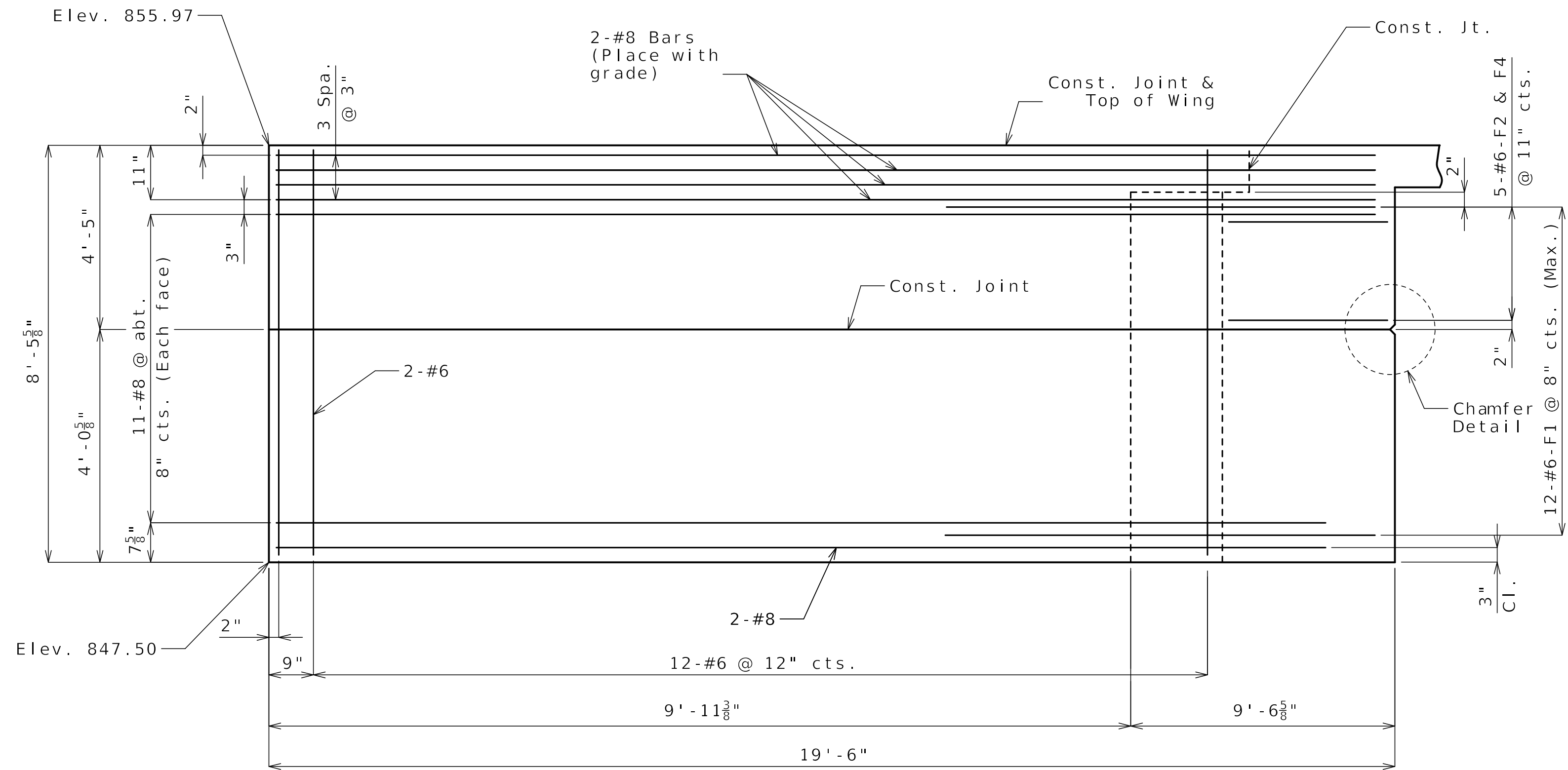
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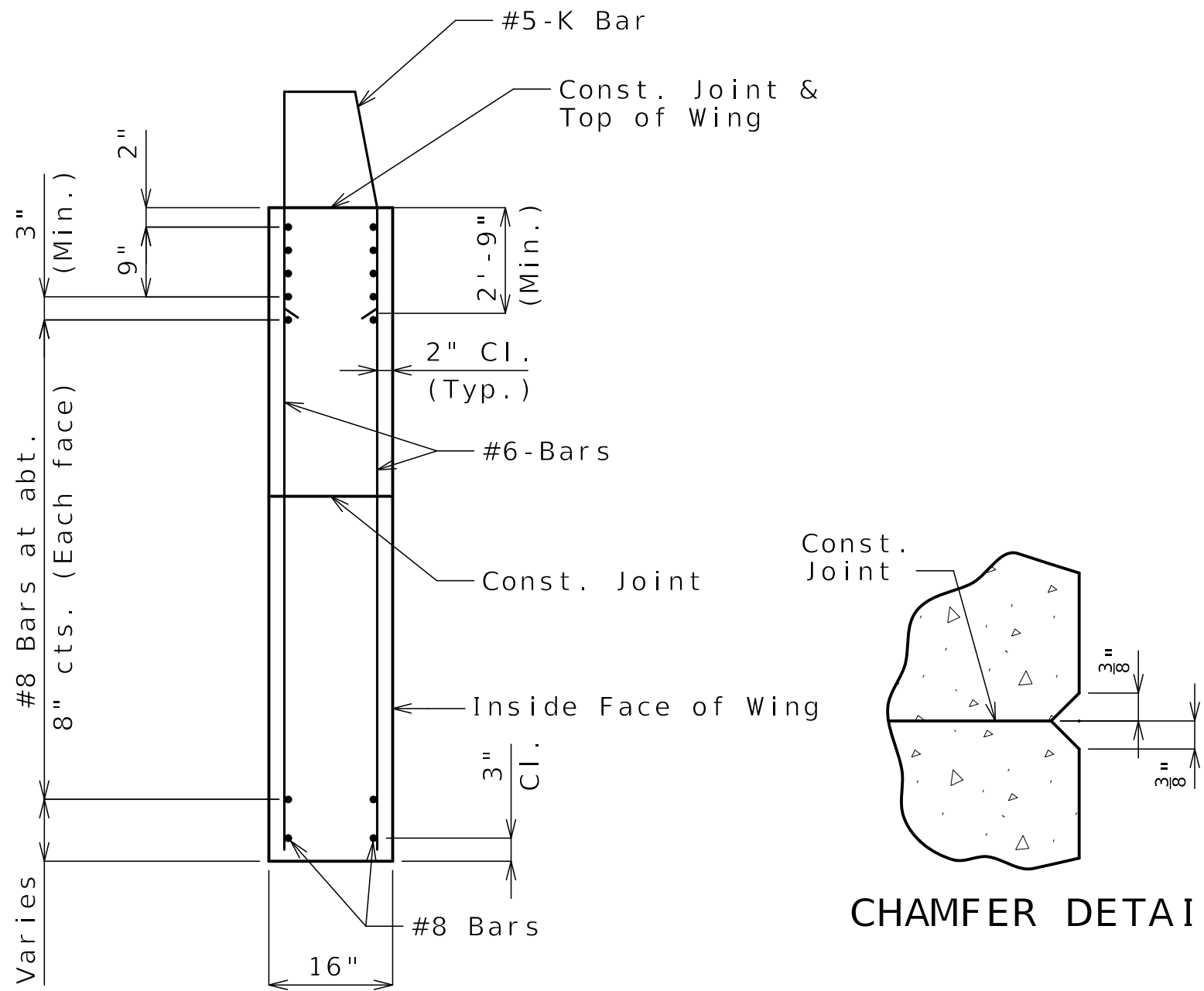
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Sheet No. B19-08 of B19-63

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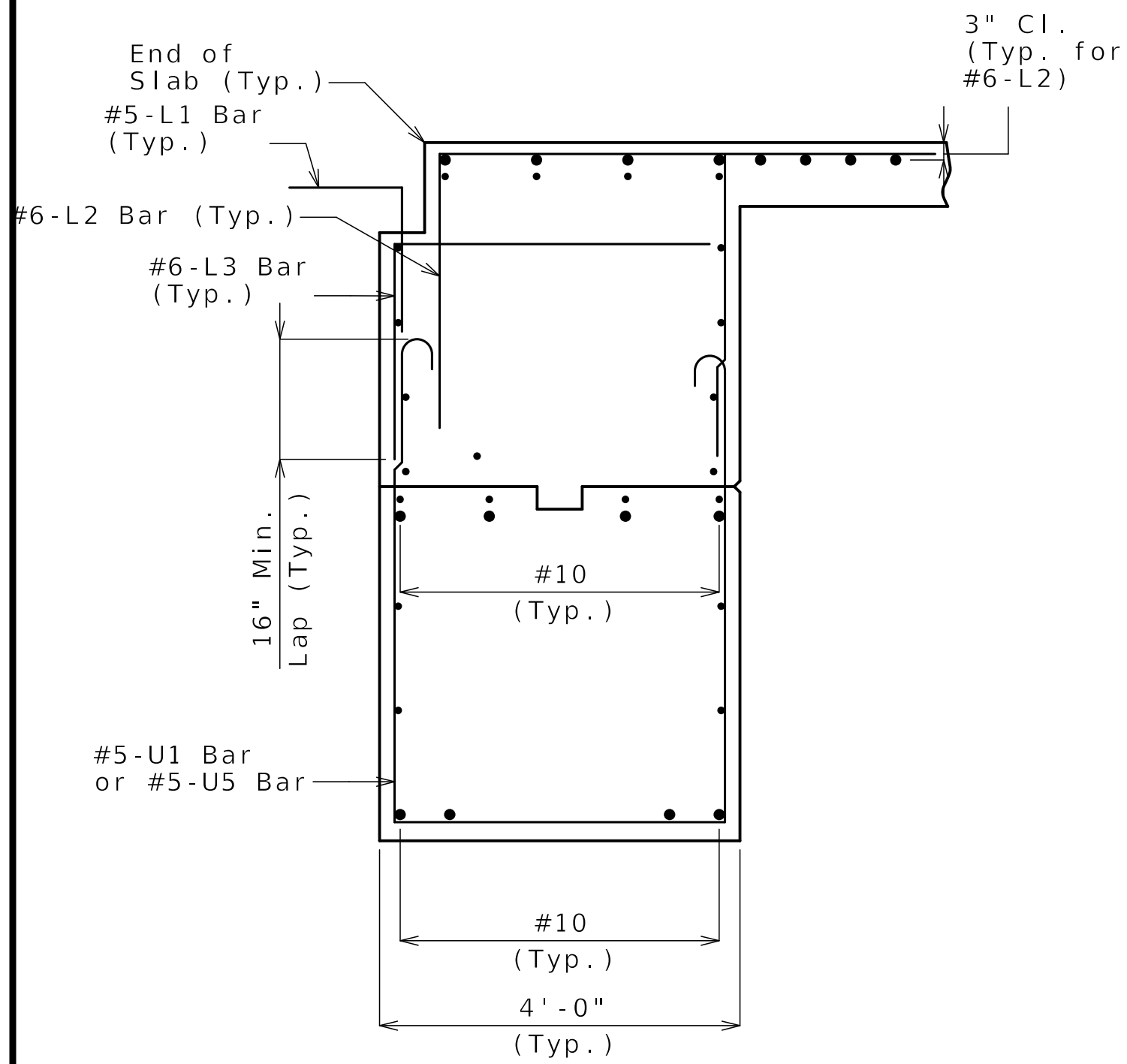
ELEVATION E-E



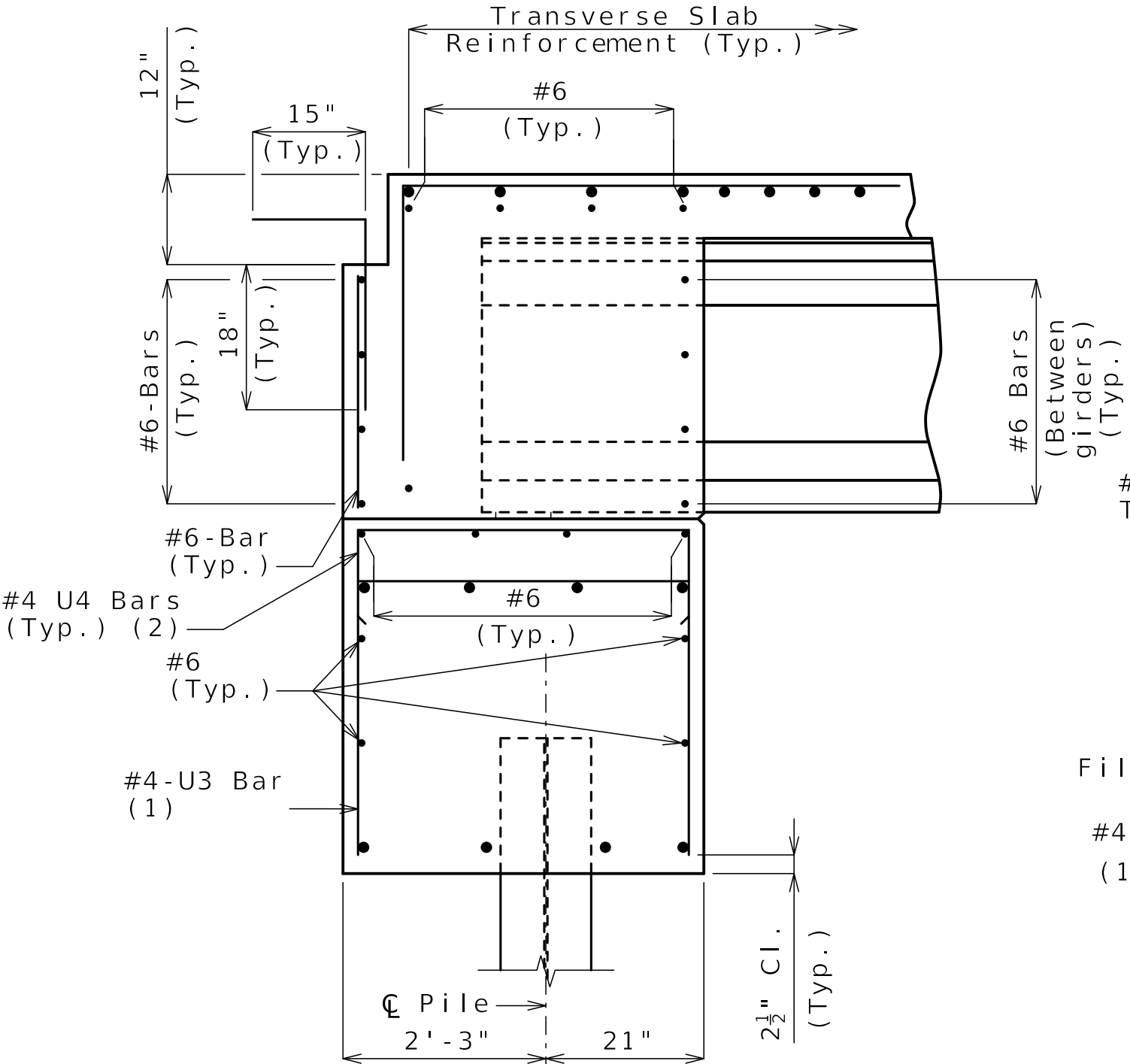
TYPICAL SECTION THRU WING

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

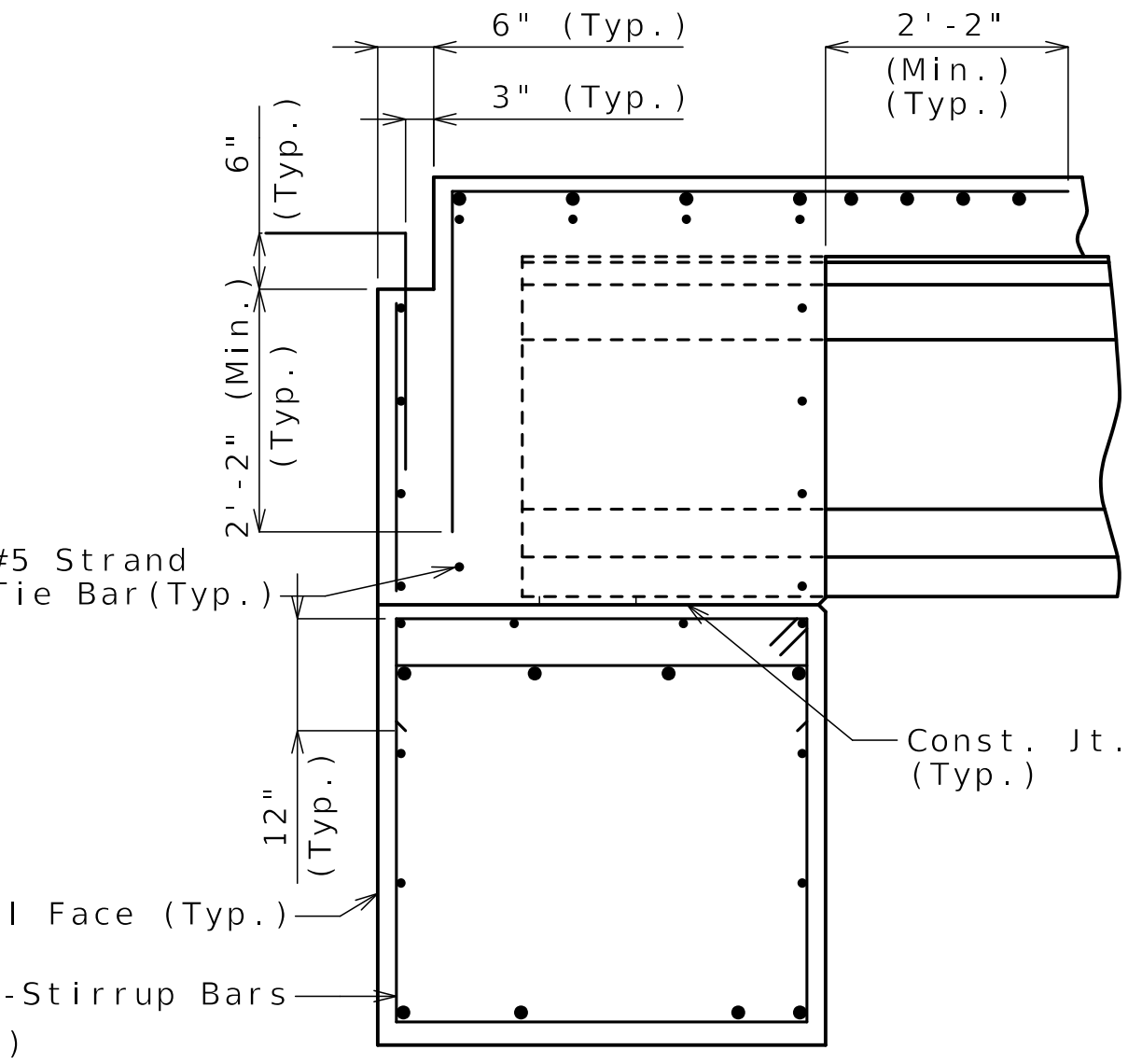
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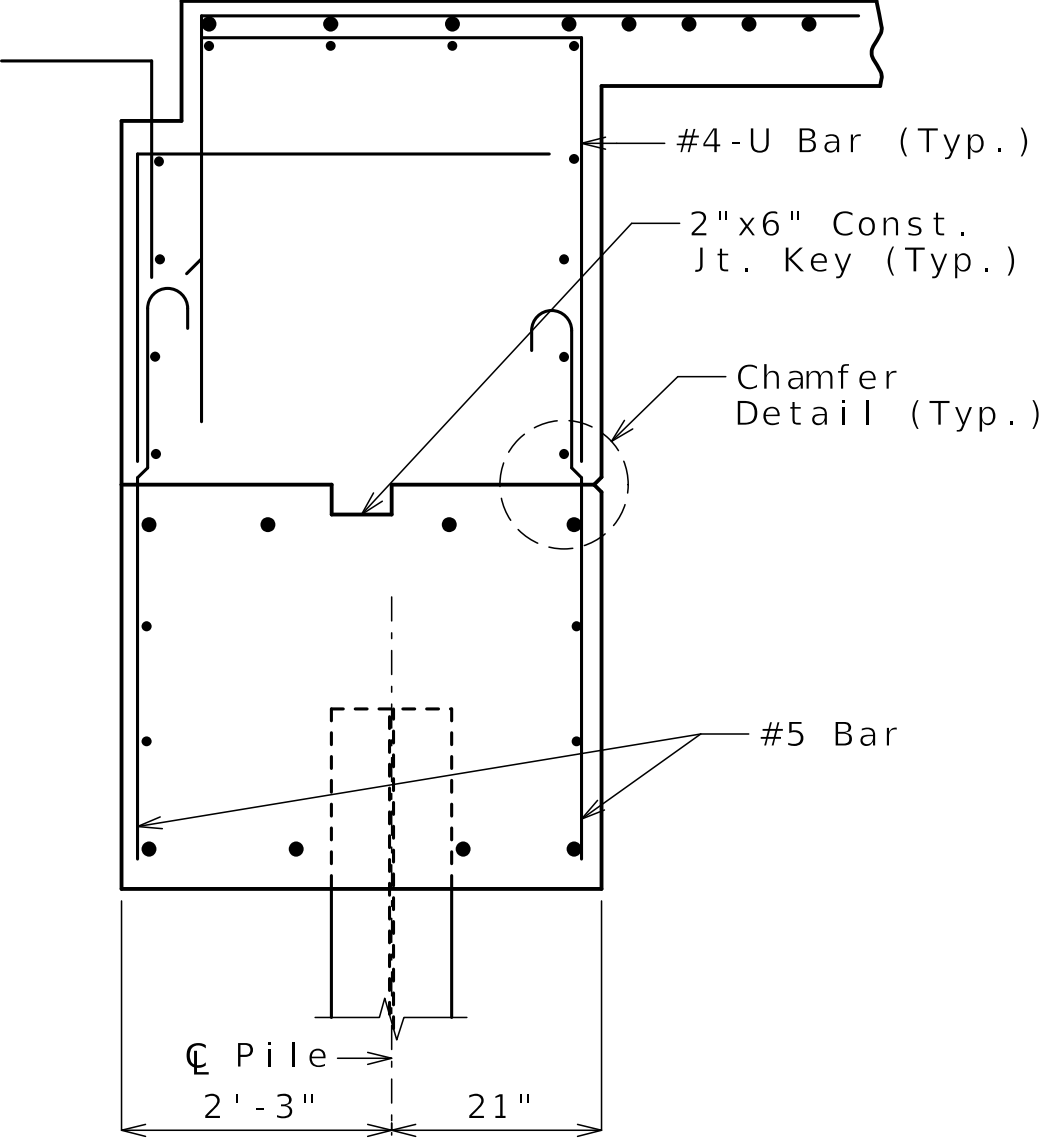
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

- (1) U3 & #4 stirrup bar vertical leg = 2'-10"
- (2) Bars shall be placed normal to ϕ Bent and parallel to beam step.

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General Notes:
Work this sheet with Sheets No. B19-05 thru B19-08.
For location of Sections A-A, B-B, C-C, D-D and Elevation E-E, see Sheet No. B19-07.
For reinforcement of the Type D Barrier, see Sheet No. B19-43.

DETAILS OF END BENT NO. 1



GINA D. HORNER
PE-30413
11/13/2025

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11/13/2025

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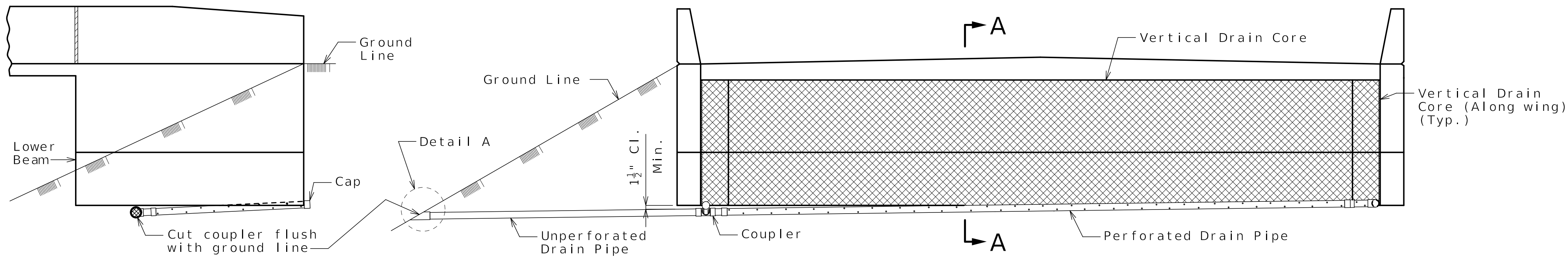
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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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CLARKSON RADMACHER JOINT VENTURE

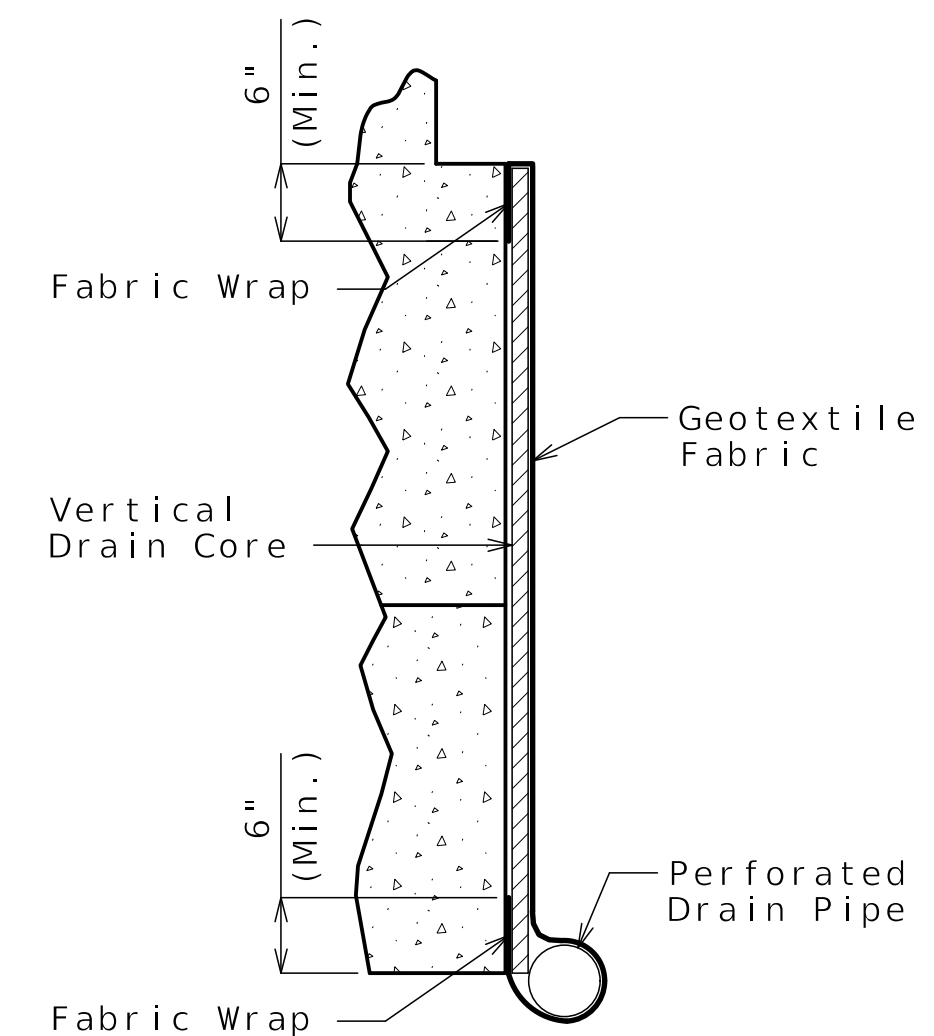
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NO. 001270

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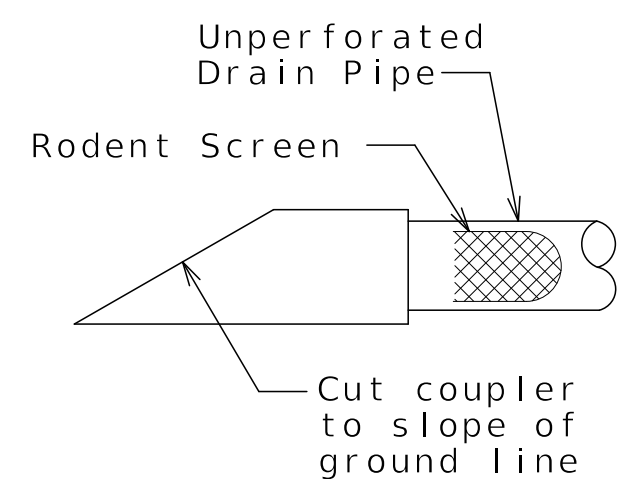


ELEVATION OF WING

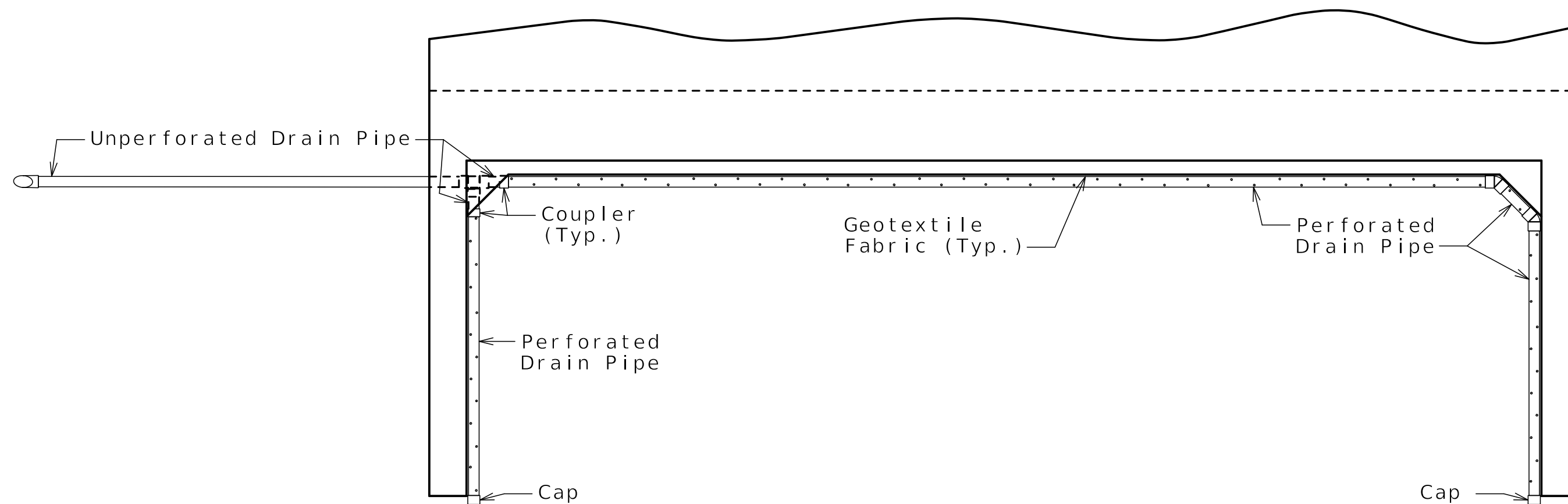
ELEVATION OF END BENT



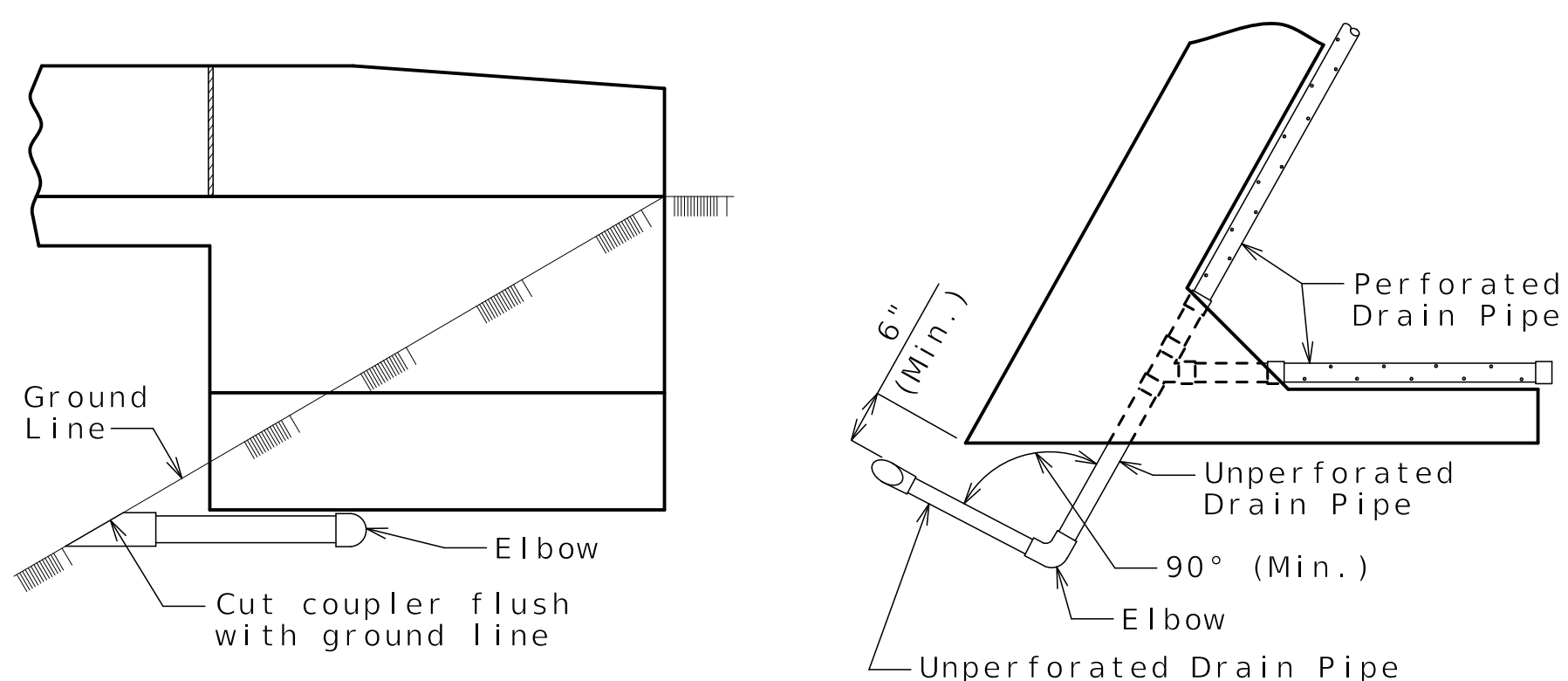
PART SECTION A-A
(Section thru wing similar)



DETAIL A



PLAN OF END BENT



ELEVATION OF WING

PART PLAN

OPTIONAL TURNED DRAIN

(Use only when straight drain is not practical.)

General Notes:

Details shown are illustrative and not necessarily representative of one or both end bents on this bridge. Construction phasing and bridge geometry will require utilizing a combination of the details shown to construct a vertical drain system that maintains positive flow out and away from the end bents.

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.

VERTICAL DRAIN AT END BENTS

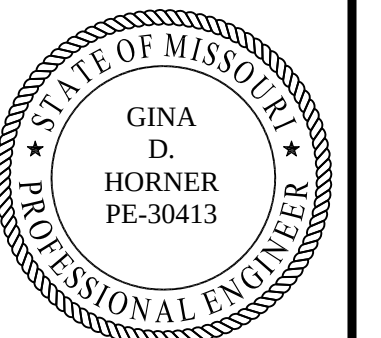
Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-10 of B19-63

B_A9621_B19-10_J4I1486D.dgn 1:42:16 PM 11/12/2025



Gina D. Horner

11/13/2025

DATE PREPARED

11/13/2025

ROUTE STATE

I-70 MO

DISTRICT SHEET NO.

BR B19-10

COUNTY

JACKSON

JOB NO.

J4I1486D

CONTRACT ID.

240807-C01

PROJECT NO.

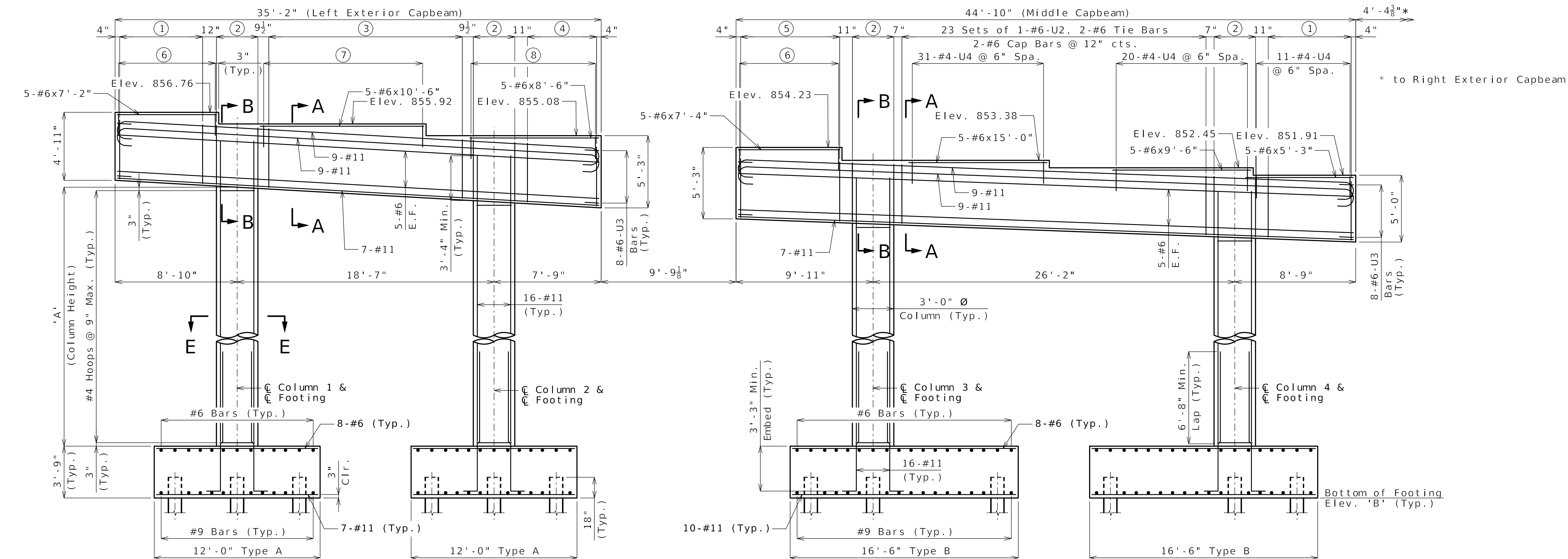
BRIDGE NO.

A9621

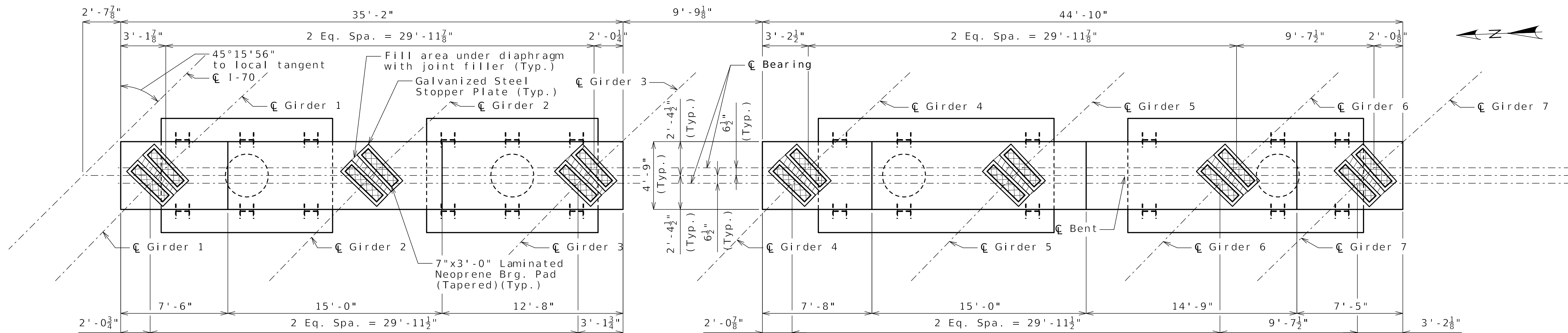
DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

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
HNTB



ELEVATION



PLAN OF CAPBEAM

- 1 7 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 12" cts.
- 2 4-#6-U1 @ 12" cts.
- 3 15 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 12" cts.
- 4 6 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 12" cts.
- 5 9 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ eq. spa. = 7'-2"
- 6 15-#4-U4 @ 6" cts.
- 7 22-#4-U4 @ 6" cts.
- 8 18-#4-U4 @ 6" cts.

Table of Variables

Column Number	"A"	"B"
1	13'-8 ⁵ / ₈ "	833.87
2	13'-7"	832.94
3	13'-5 ¹ / ₈ "	831.35
4	13'-2 ³ / ₄ "	830.33

Released For Construction
Not to Scale

Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Notes:

Prior to placing concrete for columns, position of vertical reinforcement shall be verified so as to provide clearance for capbeam reinforcement as applicable.
Work this sheet with Sheets No. B19-12 thru B19-14.
For location of footings, see Sheet No. B19-04.
For Sections A-A, B-B and E-E, see Sheet No. B19-14.
For Steel Pile Splice detail, see Sheet No. B19-05.
For angle of girders relative to ∇ Bent, see Sheet No. B19-23.

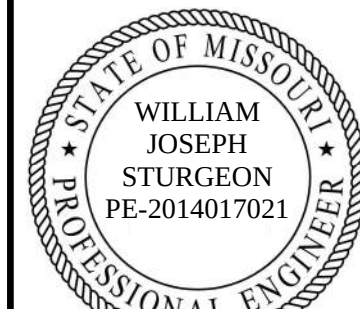
DETAILS OF INTERMEDIATE BENT NO. 2

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-11 of B19-63

B_A9621_B19-11_J411486D.dgn 1:42:22 PM 11/12/2025



11/13/2025

DATE PREPARED

11/13/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B19-11

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

BRIDGE NO. A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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



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





105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-273-6636)

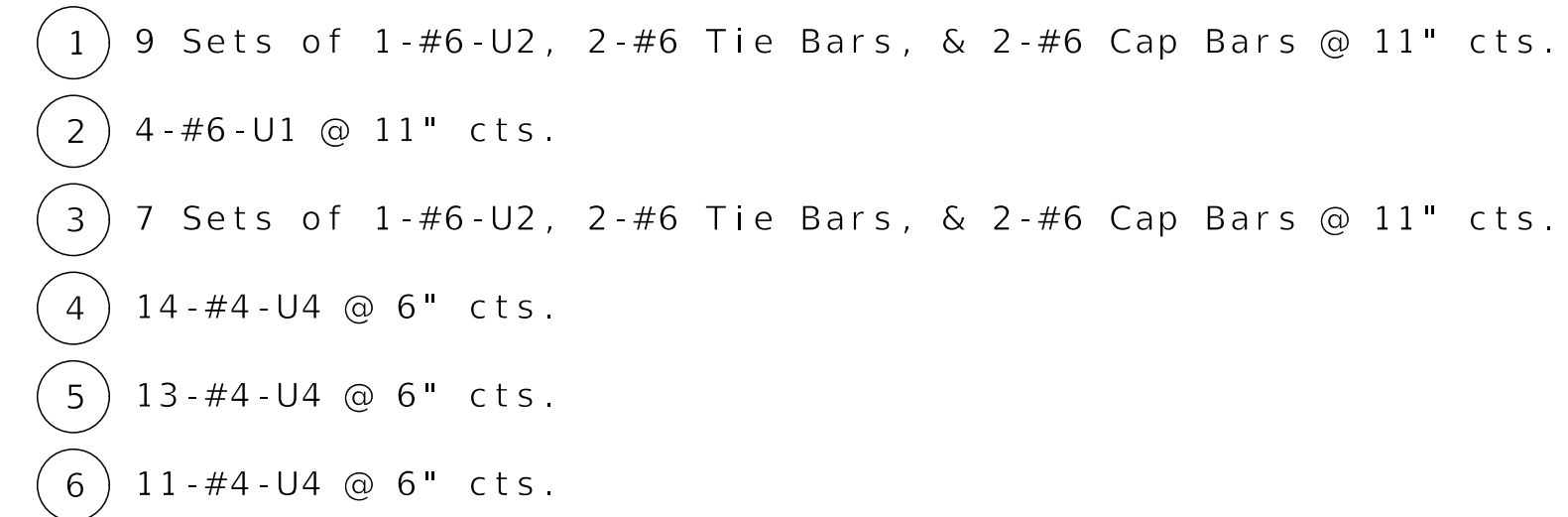
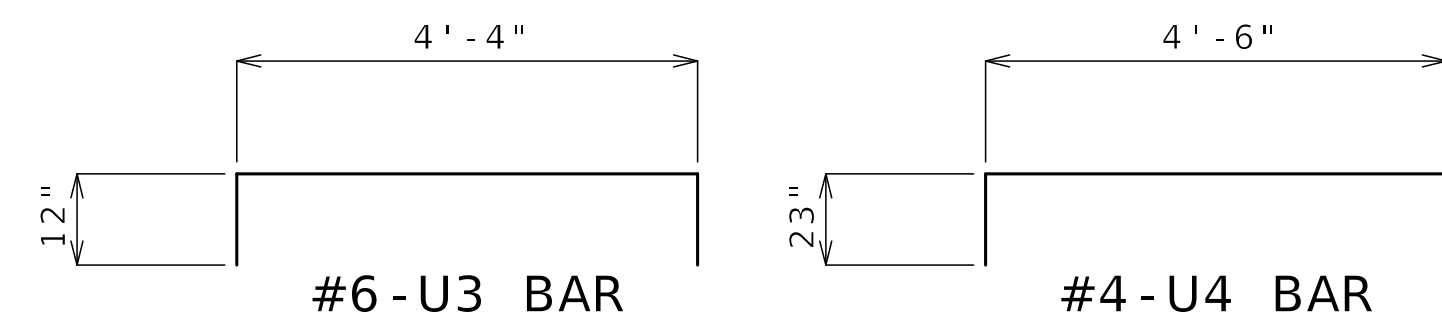


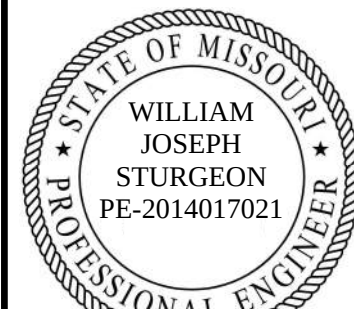
Table of Variables		
Column Number	"A"	"B"
5	$13' - 1\frac{1}{2}"$	829.24
6	$12' - 6\frac{3}{4}"$	828.40



Notes:
Work this sheet with Sheets No. B19-11 thru B19-14.
For Sections C-C thru E-E, see Sheet No. B19-14.

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

DETAILS OF INTERMEDIATE BENT NO. 2



11/13/2025

DATE PREPARED
11/13/2025

ROUTE
I - 70

DISTRICT
BR

COUNTY
JACKSON

JOB NO.
J411486D

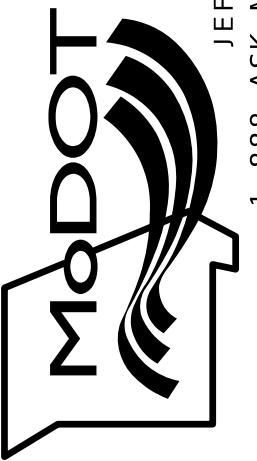
CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

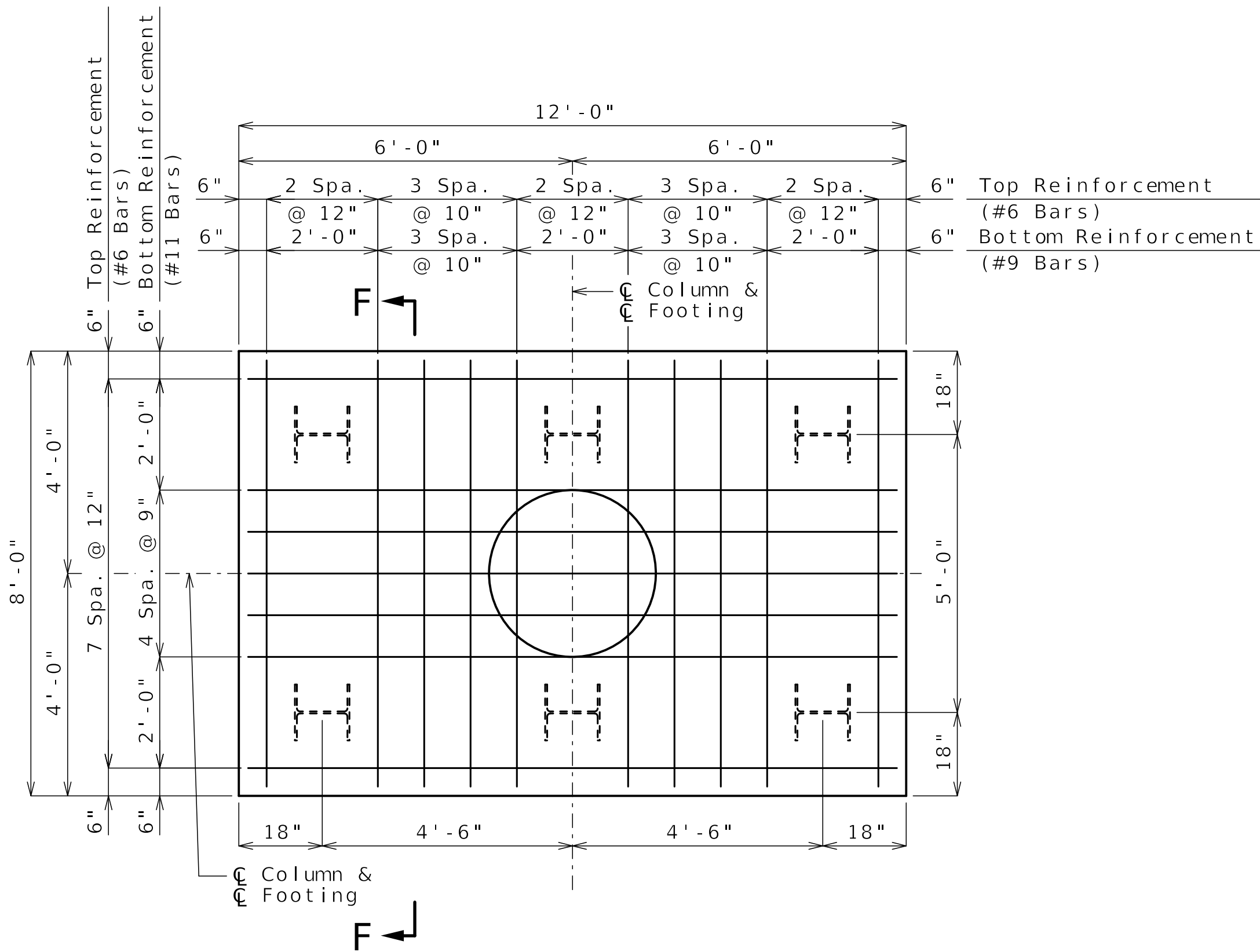
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION



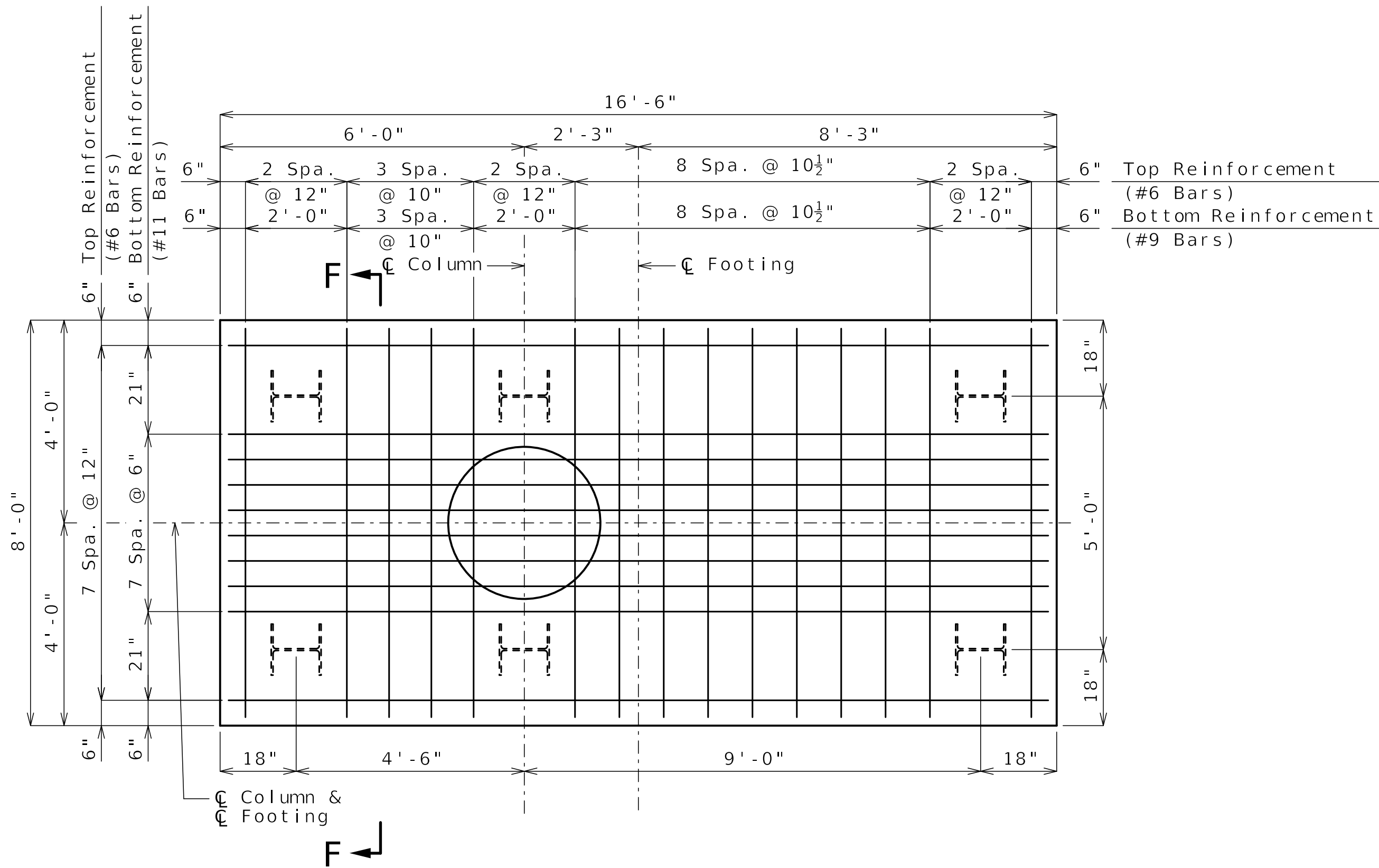
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



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

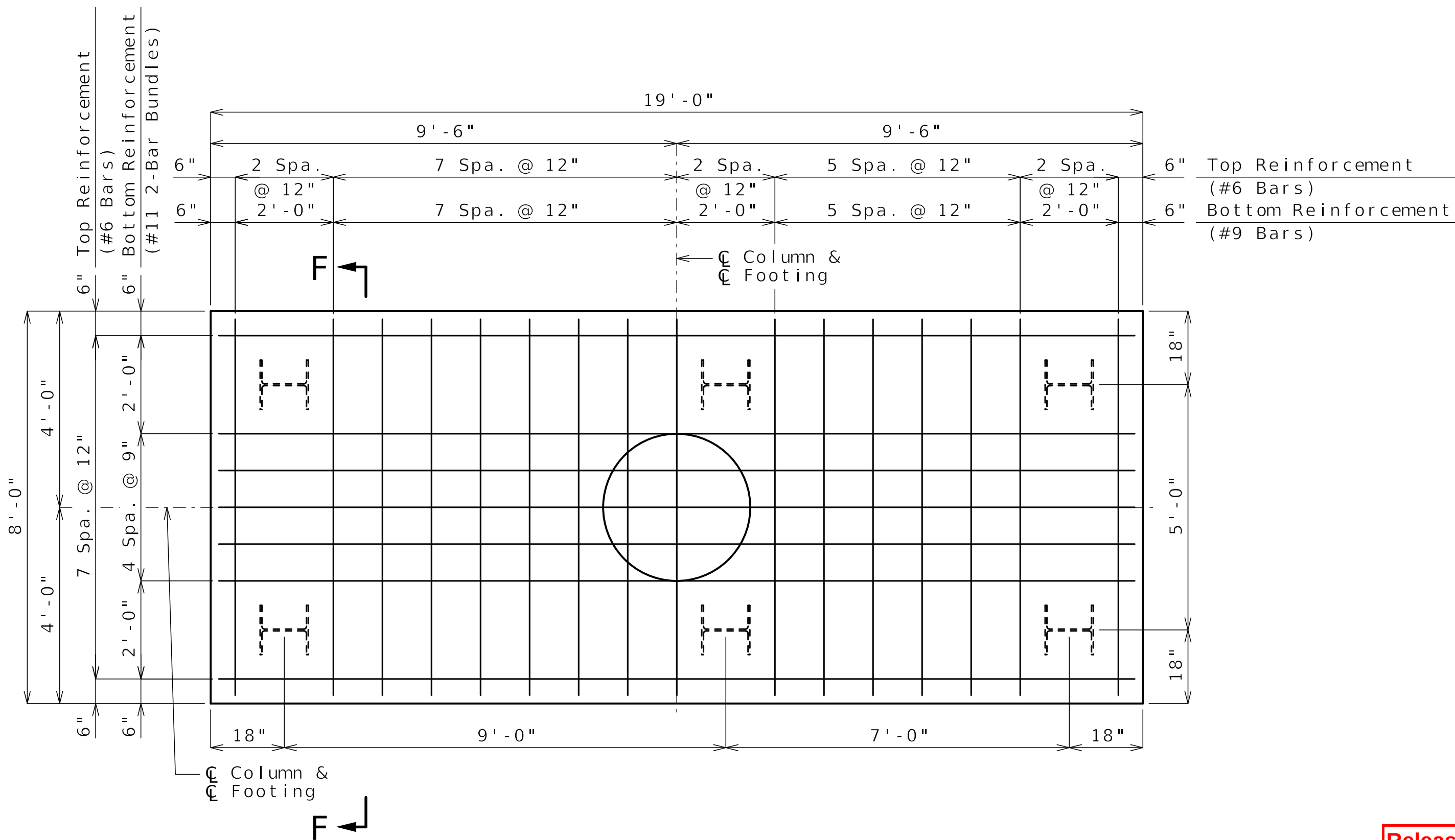


FOOTING PLAN - TYPE A

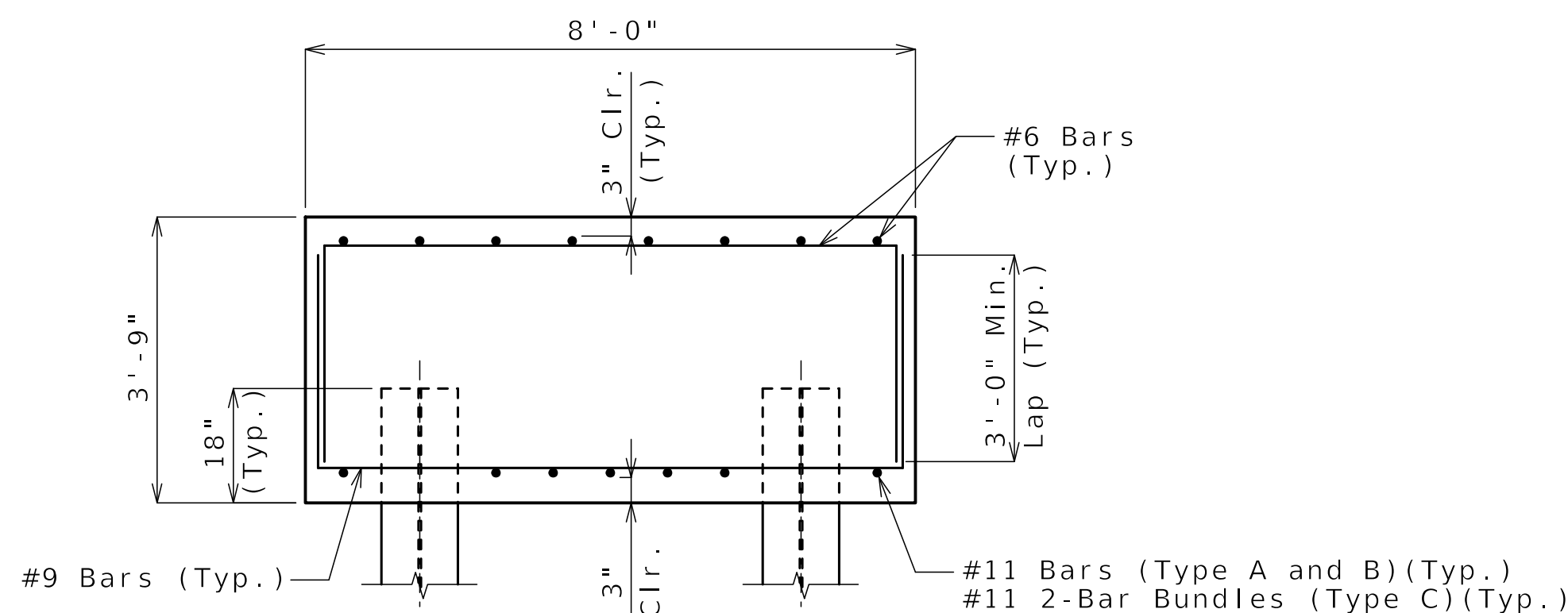


FOOTING PLAN - TYPE B

(Column 3 footing shown, Column 4 footing opposite hand)



FOOTING PLAN - TYPE C



SECTION F-F

Footing Type A Shown
Footing Type B and C Similar
except as noted

Note:
Work this sheet with Sheets No. B19-11 thru B19-14.

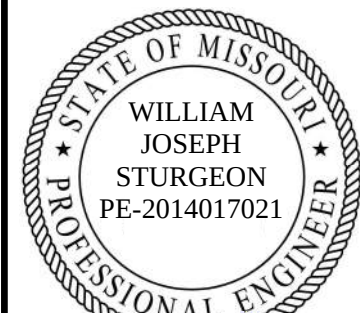
Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-13 of B19-63



11/13/2025

DATE PREPARED
11/13/2025

ROUTE
I-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-14

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

11/13/25

11/13/25

11/13/25

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

MoDOT

CLARKSON RADMACHER JOINT VENTURE

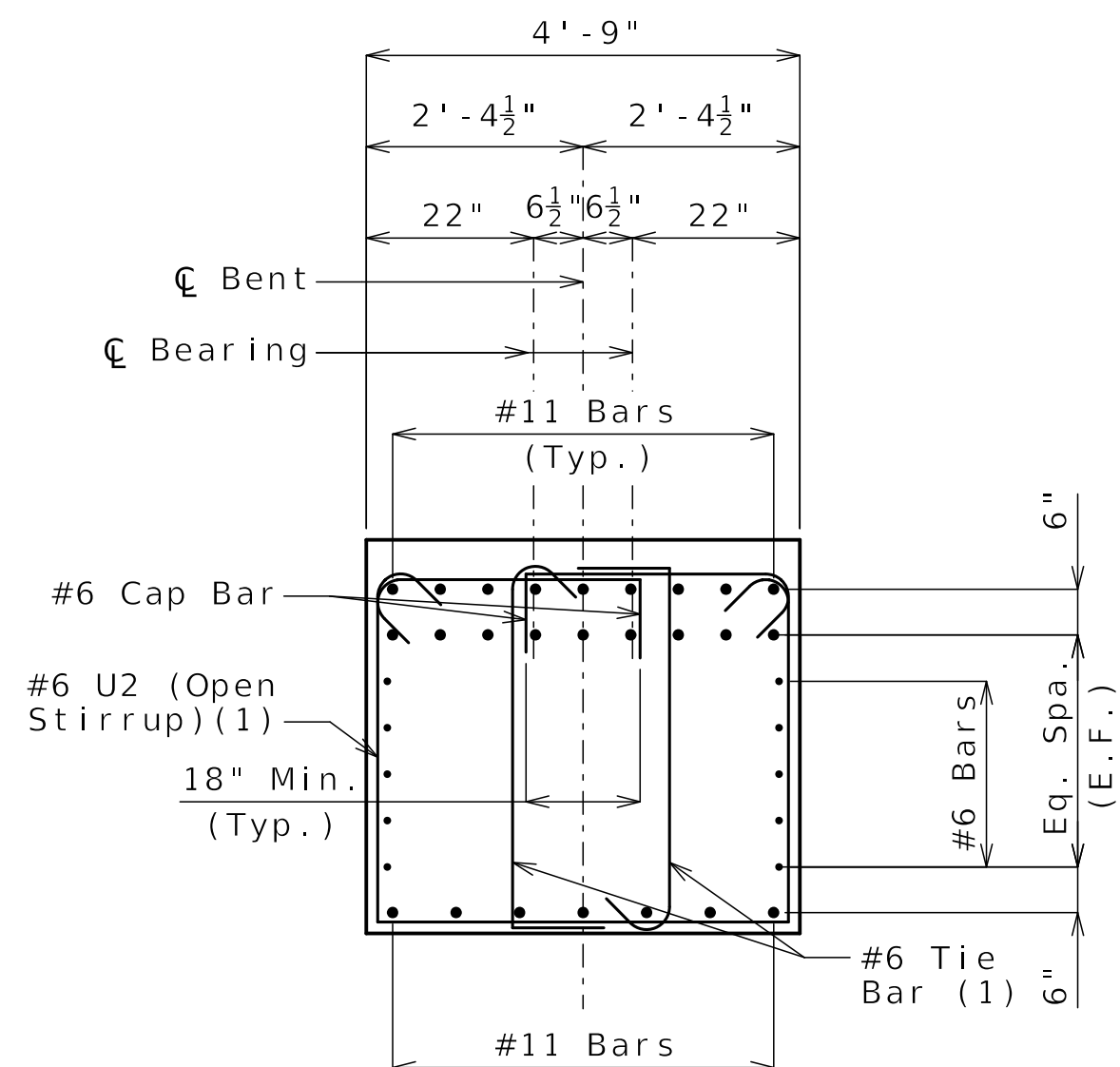
715 KIRK DRIVE

KANSAS CITY, MO 64105-1310

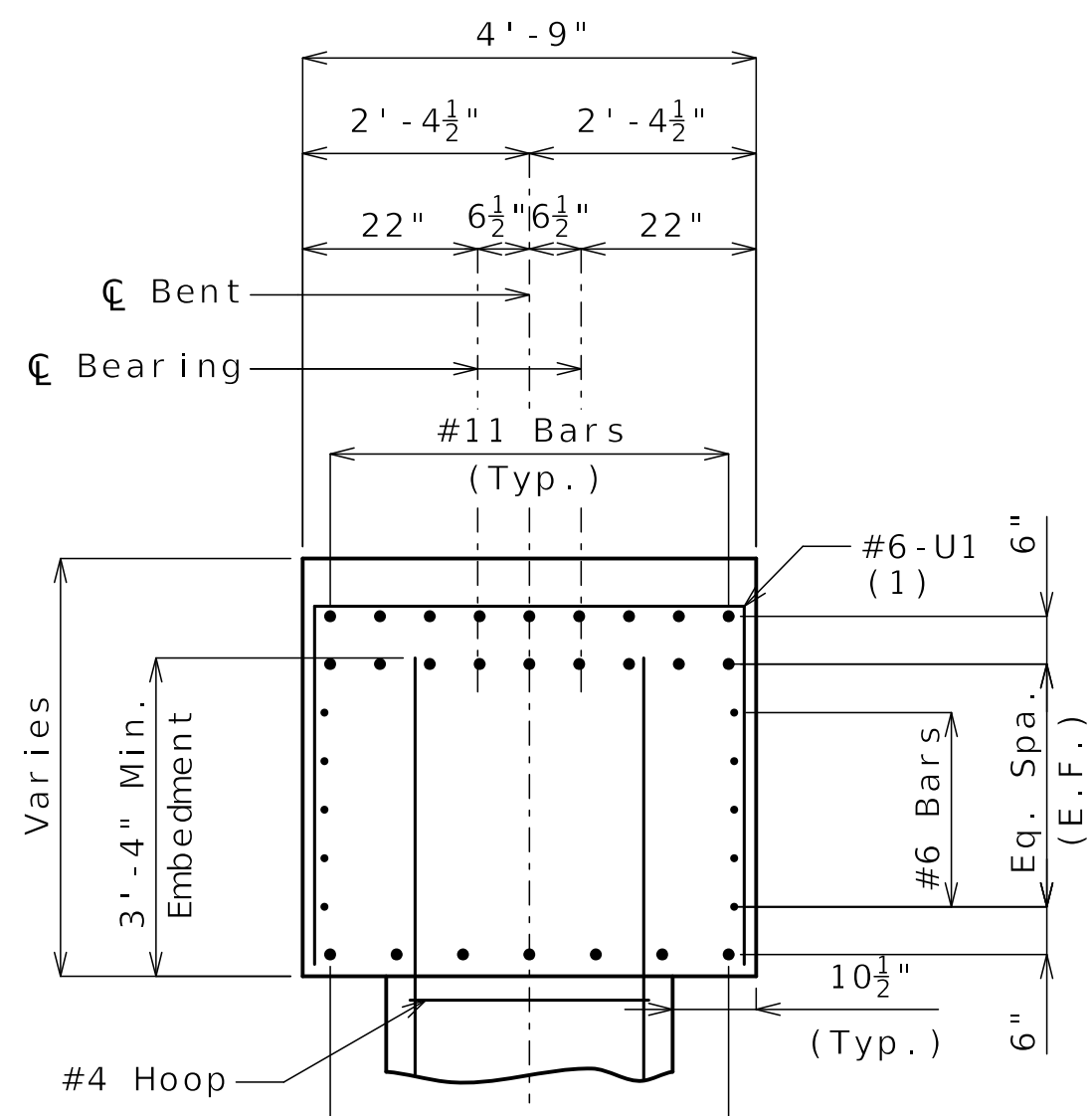
CERTIFICATE OF AUTHORITY

NO. 001270

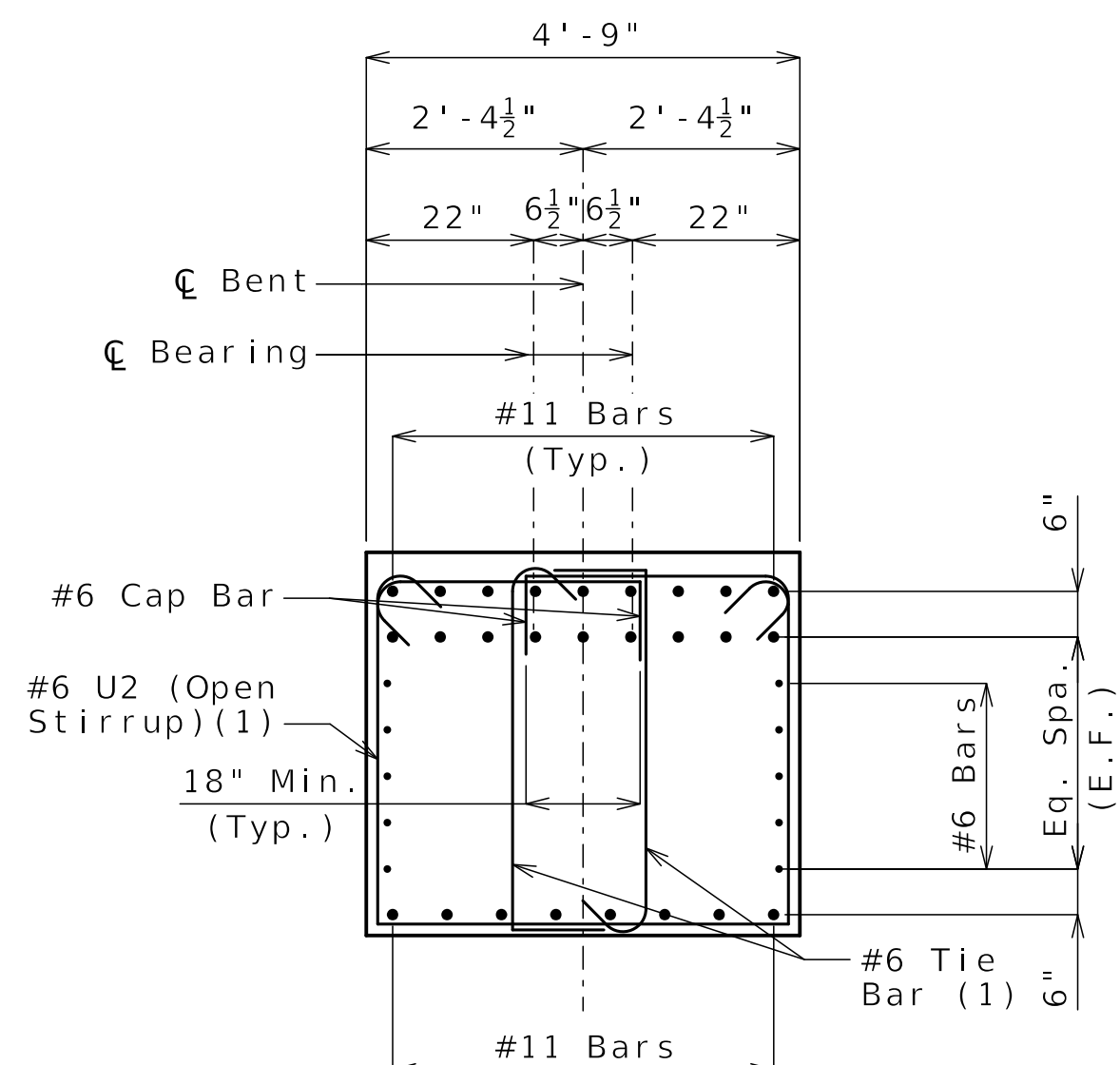
HNTB



SECTION A-A

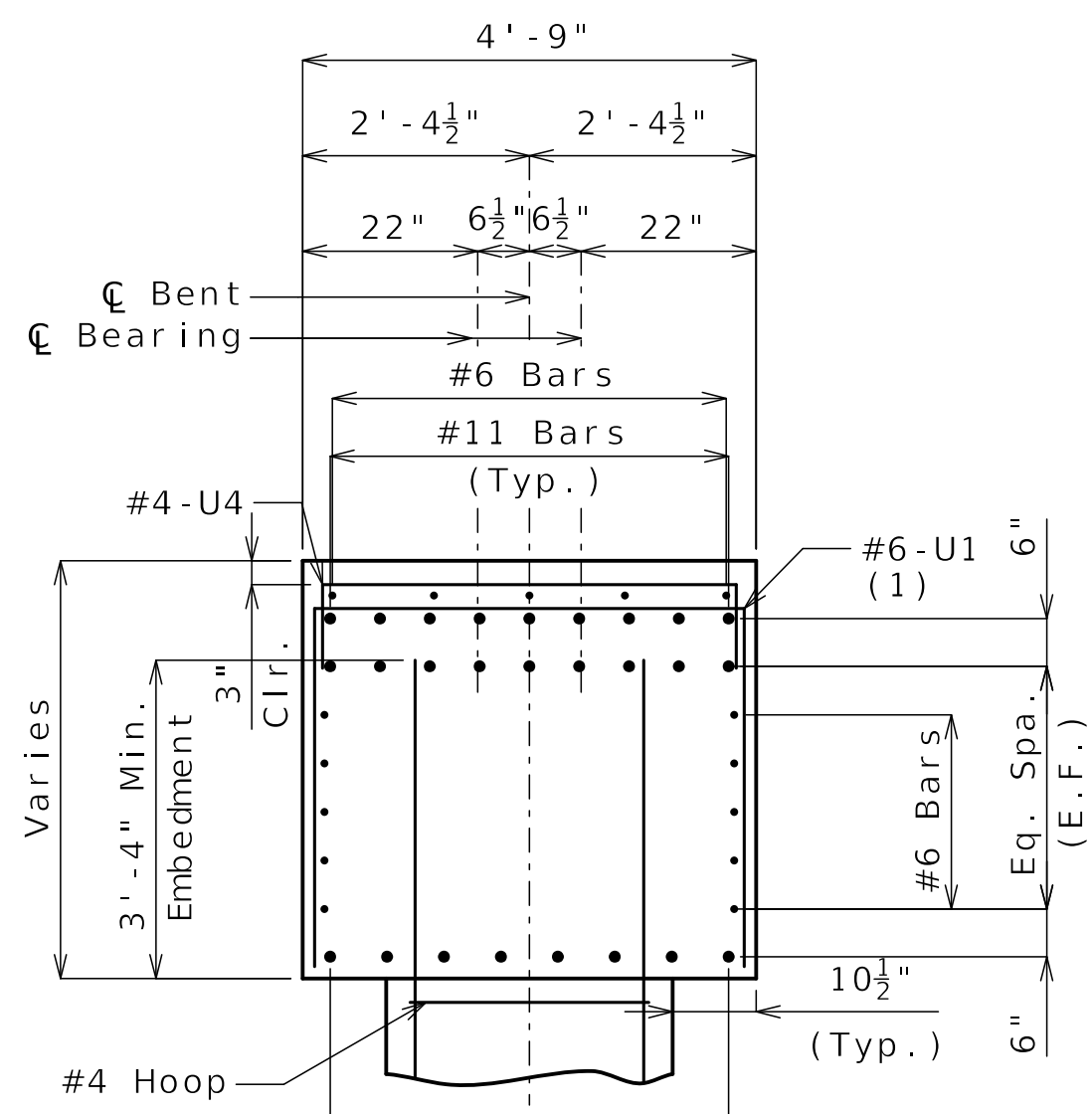


SECTION B-B

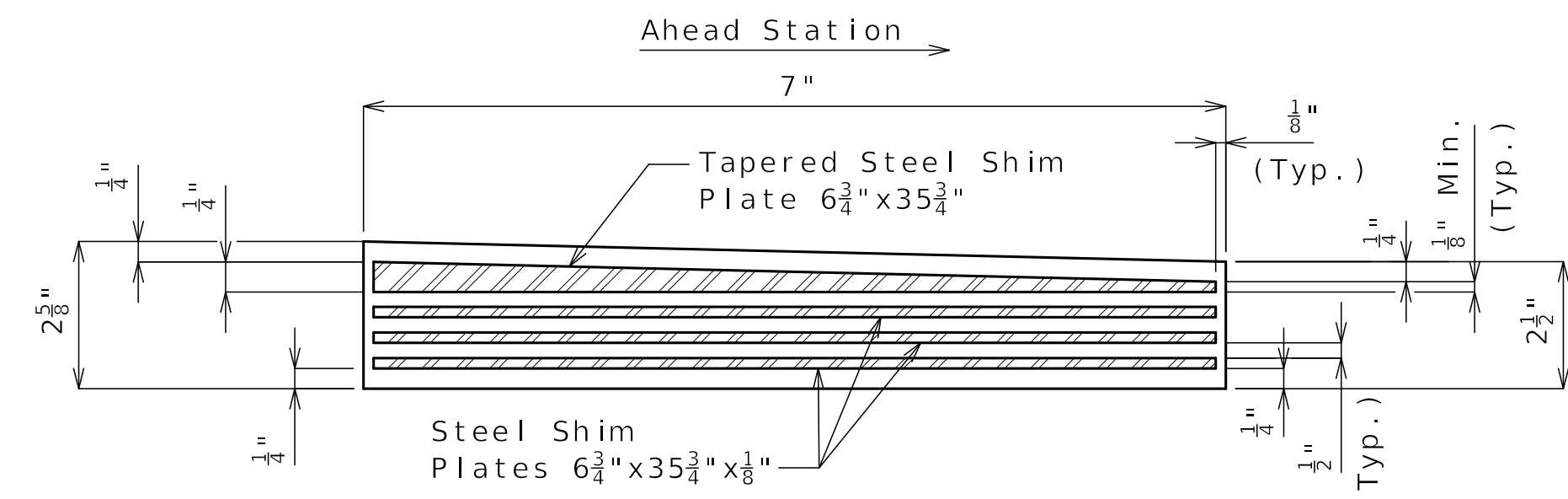


SECTION C-C

(1) U1, U2, and #6 Tie Bar vertical leg = 4'-1 1/2"

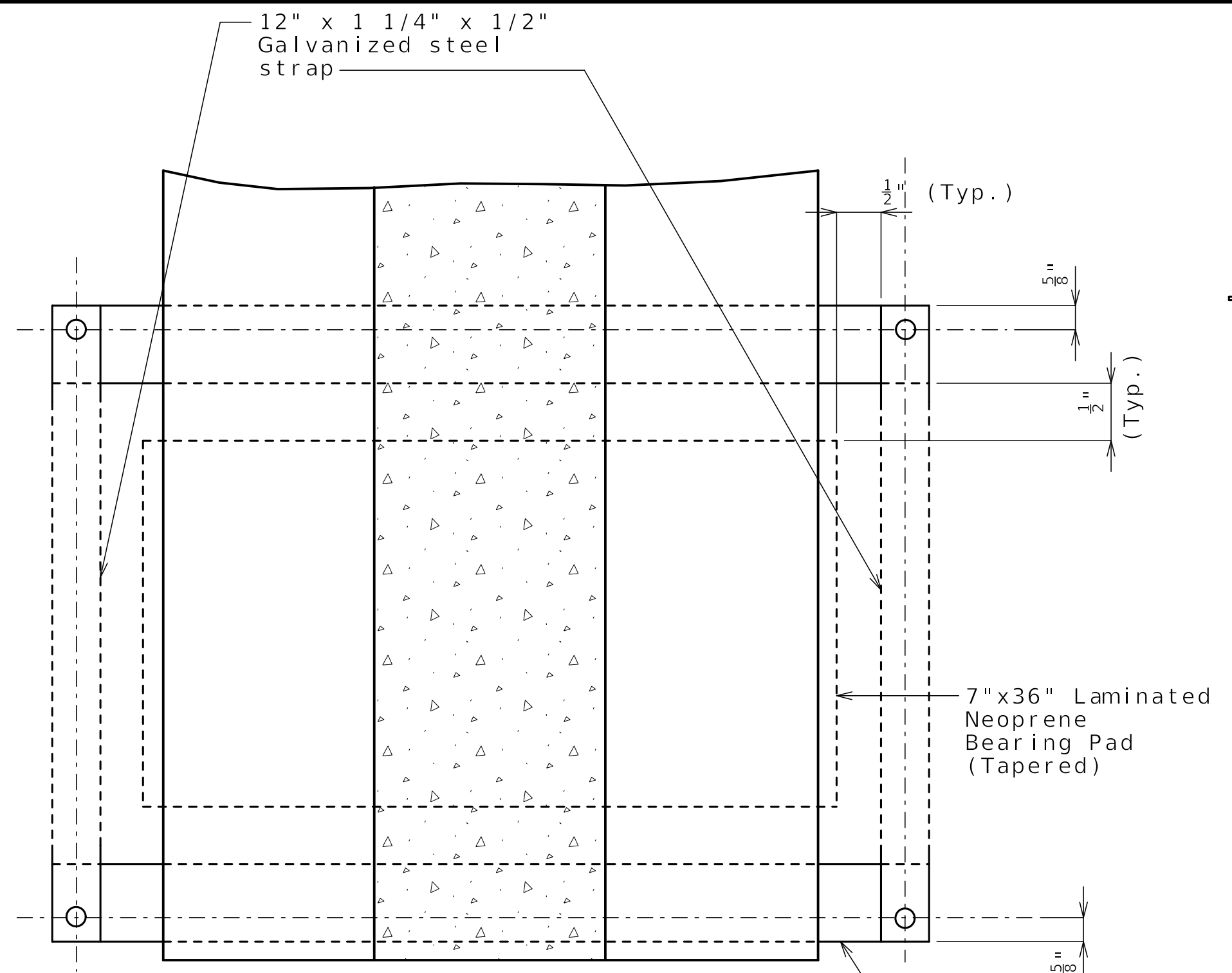


SECTION D-D



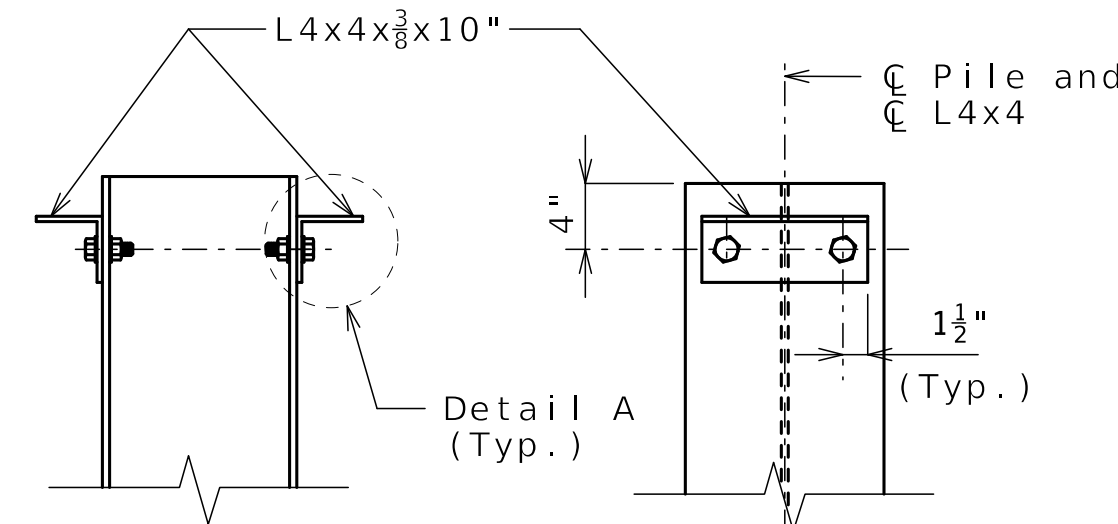
TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)

Bent 2 Ahead-12 Required
Bent 2 Back-12 Required

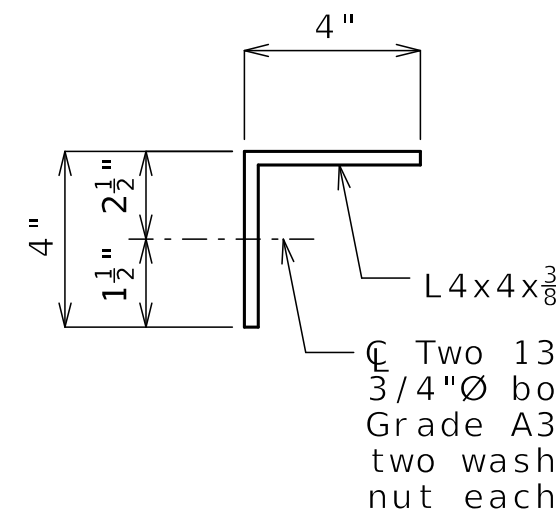


PART PLAN SHOWING STOPPER PLATE

(Required for all girder ahead and back bearings)

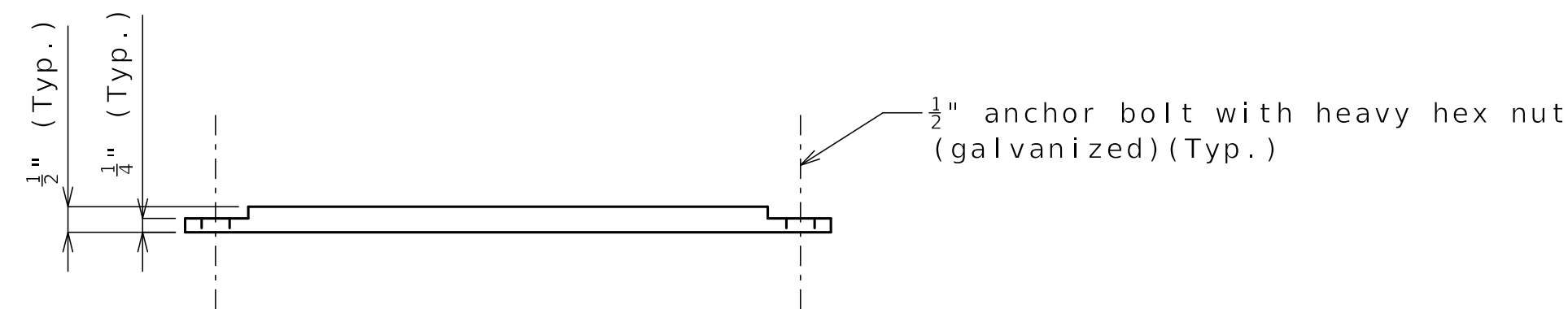


DETAILS OF HP PILE ANCHORS

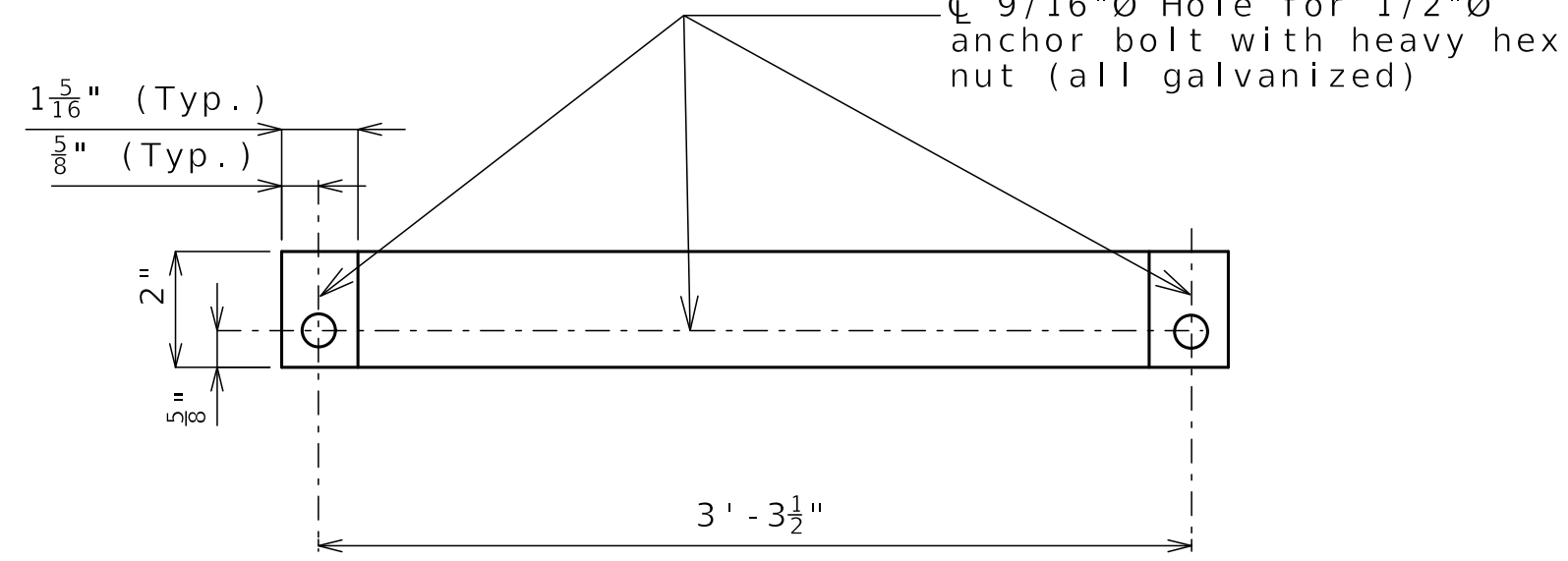


DETAIL A

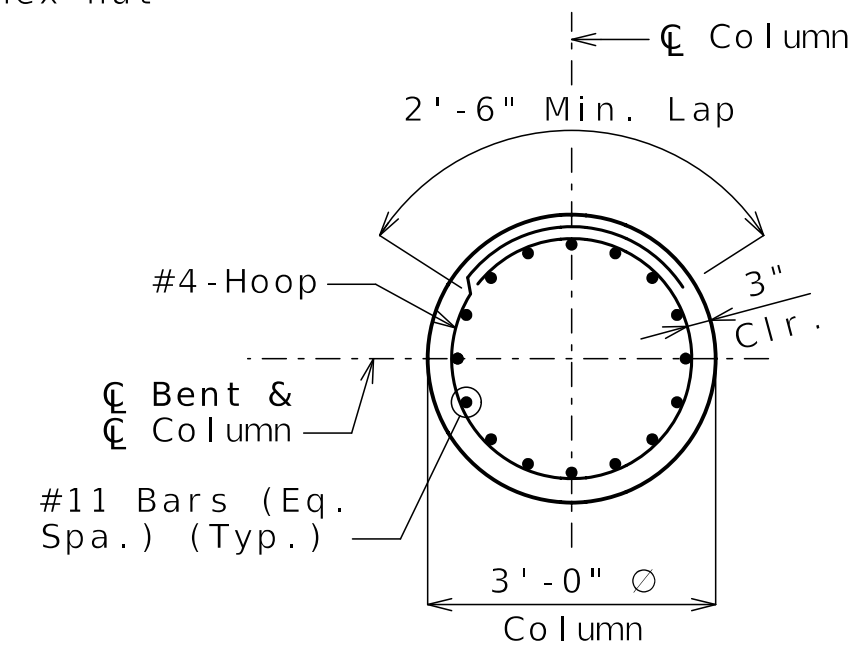
Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.



ELEVATION OF GALVANIZED STEEL STOPPER PLATE



PLAN OF GALVANIZED STEEL STOPPER PLATE



SECTION E-E

Notes:
Work this sheet with Sheets No. B19-11 thru B19-13.
For locations of Section A-A thru E-E, see Sheets No. B19-11 and B19-12.

DETAILS OF INTERMEDIATE BENT NO. 2

Released For Construction
Not to Scale

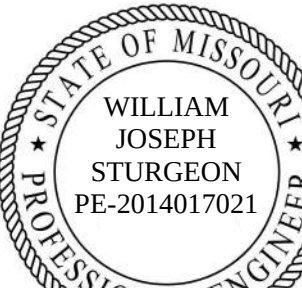
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Sheet No. B19-14 of B19-63

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

Detailed JUL 2025
Checked AUG 2025

I - 70 EB OVER BENTON



11/13/2025

DATE PREPARED
11/13/2025

ROUTE	STATE
I - 70	MO

DISTRICT
BR

COUNTY
JACKSON

JOB NO.
J4I1486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION
1/13/25	REV 0 - RFC SUBMITTAL

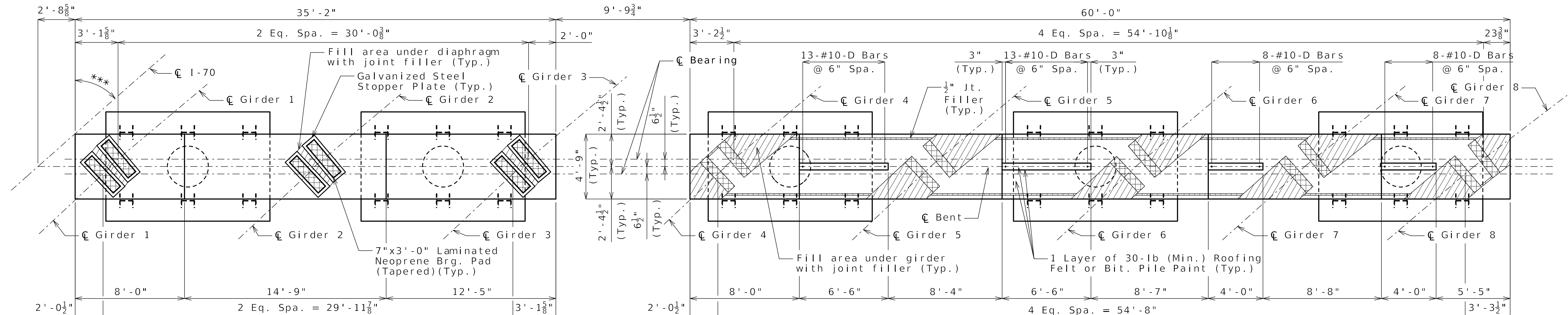
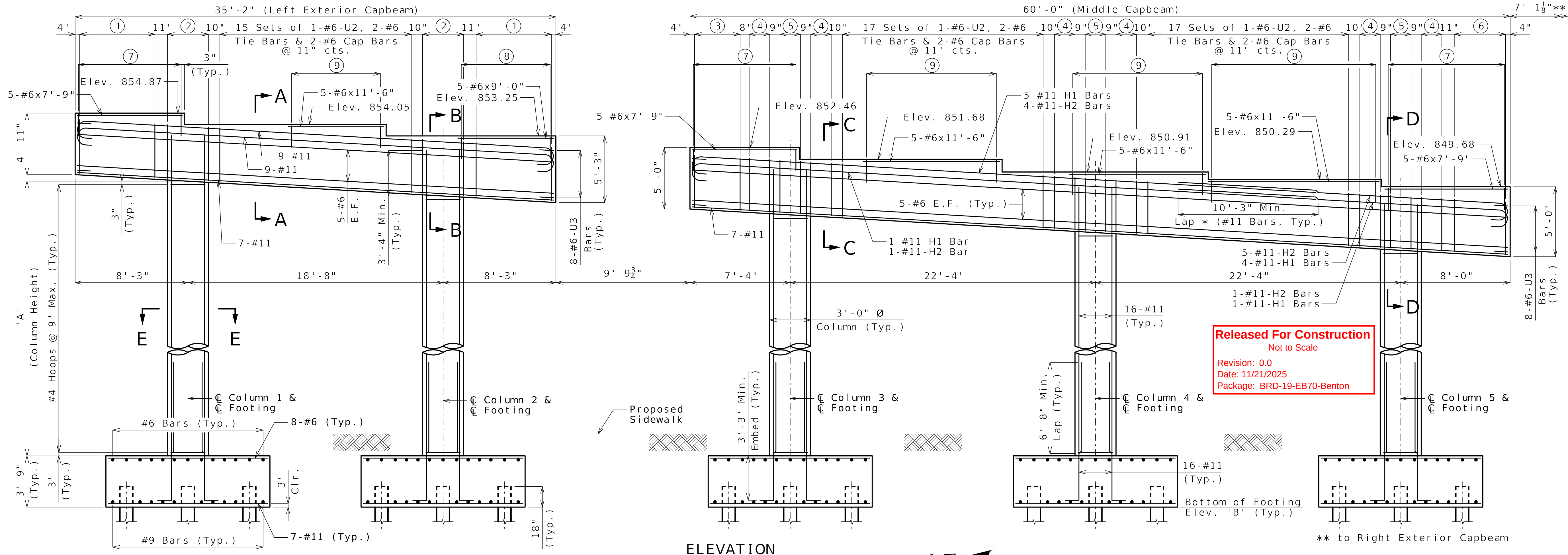
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

WAYS AND THE COMMISSION



105 WEST CAPITAL
JEFFERSON CITY, MO 65102

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
MO 001270



```
*** 48°21'44" to local tangent
```

- 1 7 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 11" cts.
- 2 4-#6-U1 @ 12" cts.
- 3 5 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 10" cts.
- 4 3 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 9" cts.
- 5 3-#6-U1 @ 9" cts.
- 6 6 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 9" cts.
- 7 16-#4-U4 @ 6" cts.

- 8 19-#4-U4 @ 6" cts.
- 9 24-#4-U4 @ 6" cts.

45' - 10" (#11-H1)
24' - 2" (#11-H2)

#11-H1 & #11-H2

Table of Variables		
Column Number	"A"	"B"
1	$14' - 7\frac{1}{2}"$	831.13
2	$14' - 5\frac{3}{8}"$	830.27
3	$14' - 2"$	829.21
4	$13' - 1\frac{1}{2}"$	828.38
5	$13' - 7\frac{3}{8}"$	827.66

Notes:

* Alternate location of lap splices between adjacent bars about centerline of bent. Alternate lap splice location not shown.

Prior to placing concrete for columns, position of vertical reinforcement shall be verified so as to provide clearance for capbeam reinforcement as applicable.

Work this sheet with Sheets No. B19-16 and B19-17.

For location of footings, see Sheet No. B19-04.

For Sections A-A thru E-E see Sheet No. B19-17

For Steel Pile Splice detail see Sheet No. B19-17

For steps of 2 inches or more use 2 1/4" x 1/2" joint filler

For steps of 2 inches or more, use 2 1/4" x 1 1/2" joint filler
on vertical face.

For additional joint filler layout details, see Sheets No.

For additional joint filler layout details, see sheets No. B10, 38, thru B10, 39.

B19-28 thru B19-30.

For angle of girders relative to ϕ Bent, see Sheet No. B19-23

DETAILS OF INTERMEDIATE RENT NO.

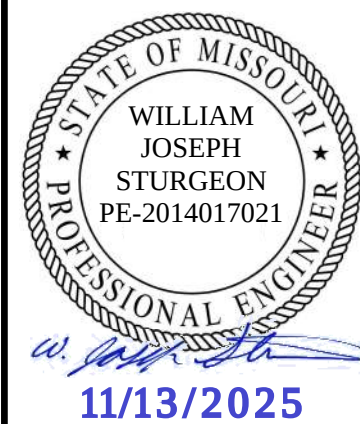
DETAILS OF INTERMEDIATE BENT NO.

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-15 of B19-63

B A9621 B19-16 J4I1486D.dqn 1:42:46 PM 11/12/2025



DATE PREPARED 11/13/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B19-16
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

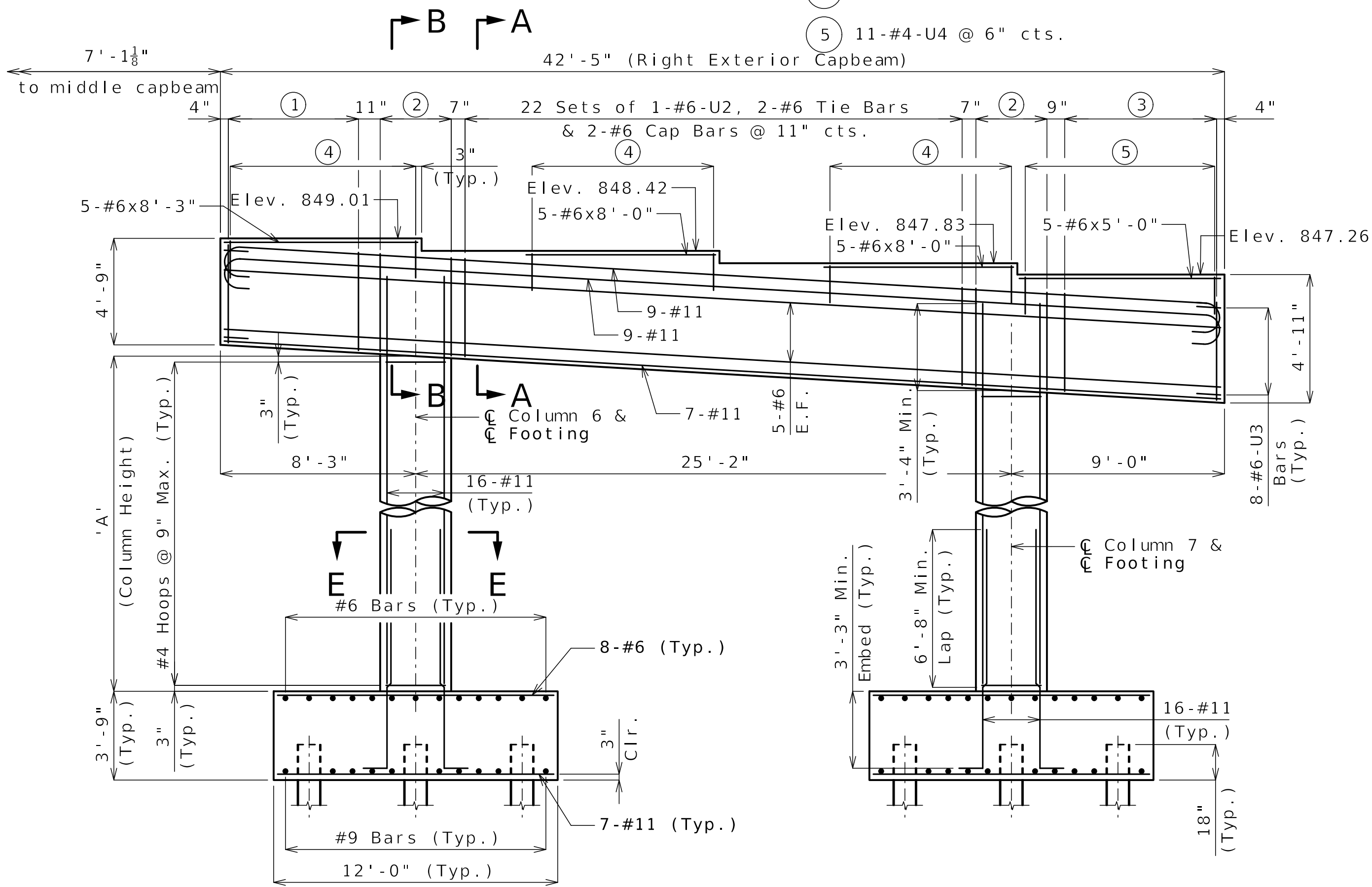
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

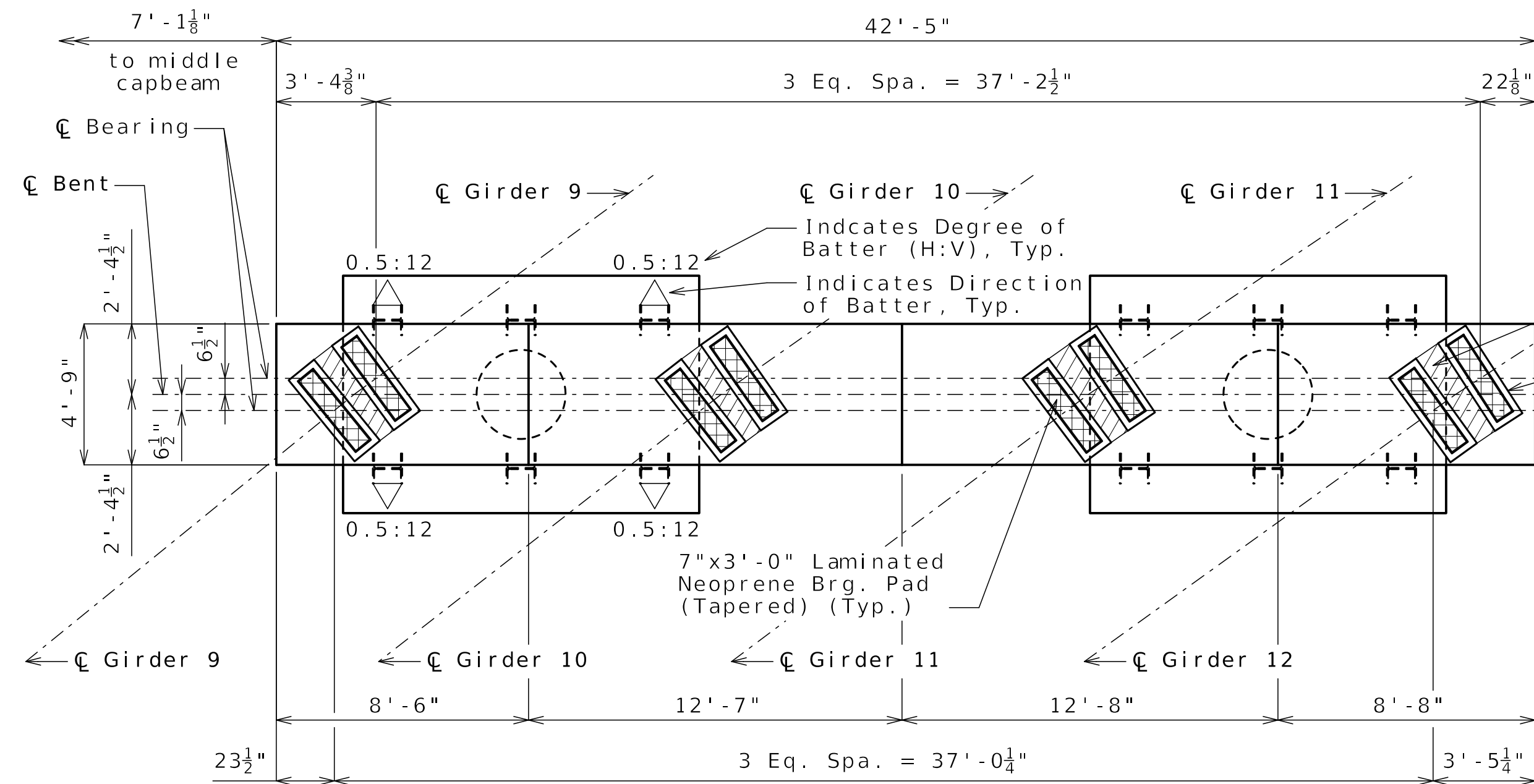
CLARKSON RADMACHER JOINT VENTURE

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

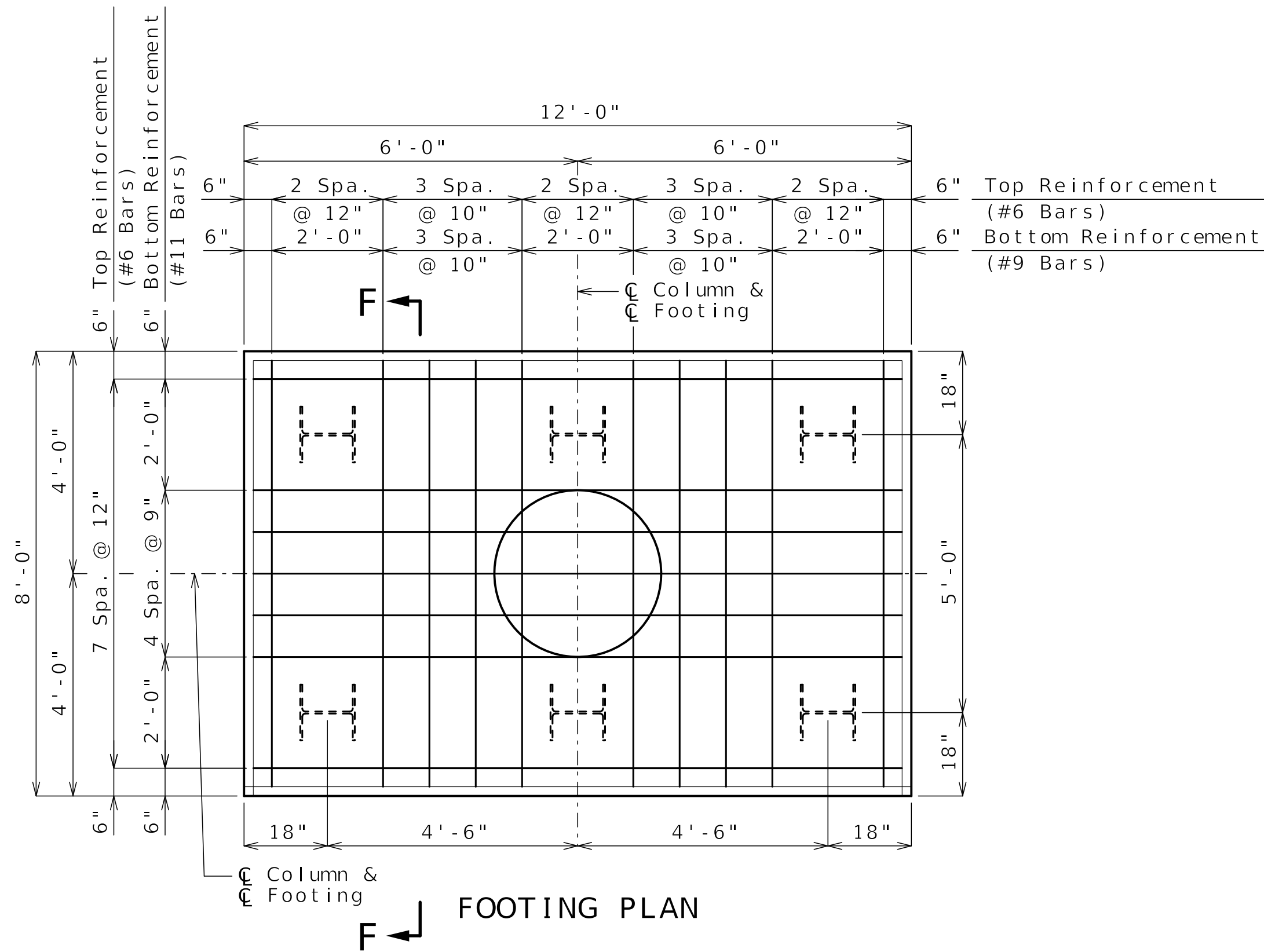
- 1 7 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars @ 11" cts.
- 2 4-#6-U1 @ 12" cts.
- 3 8 Sets of 1-#6-U2, 2-#6 Tie Bars, & 2-#6 Cap Bars 11" cts.
- 4 17-#4-U4 @ 6" cts.
- 5 11-#4-U4 @ 6" cts.



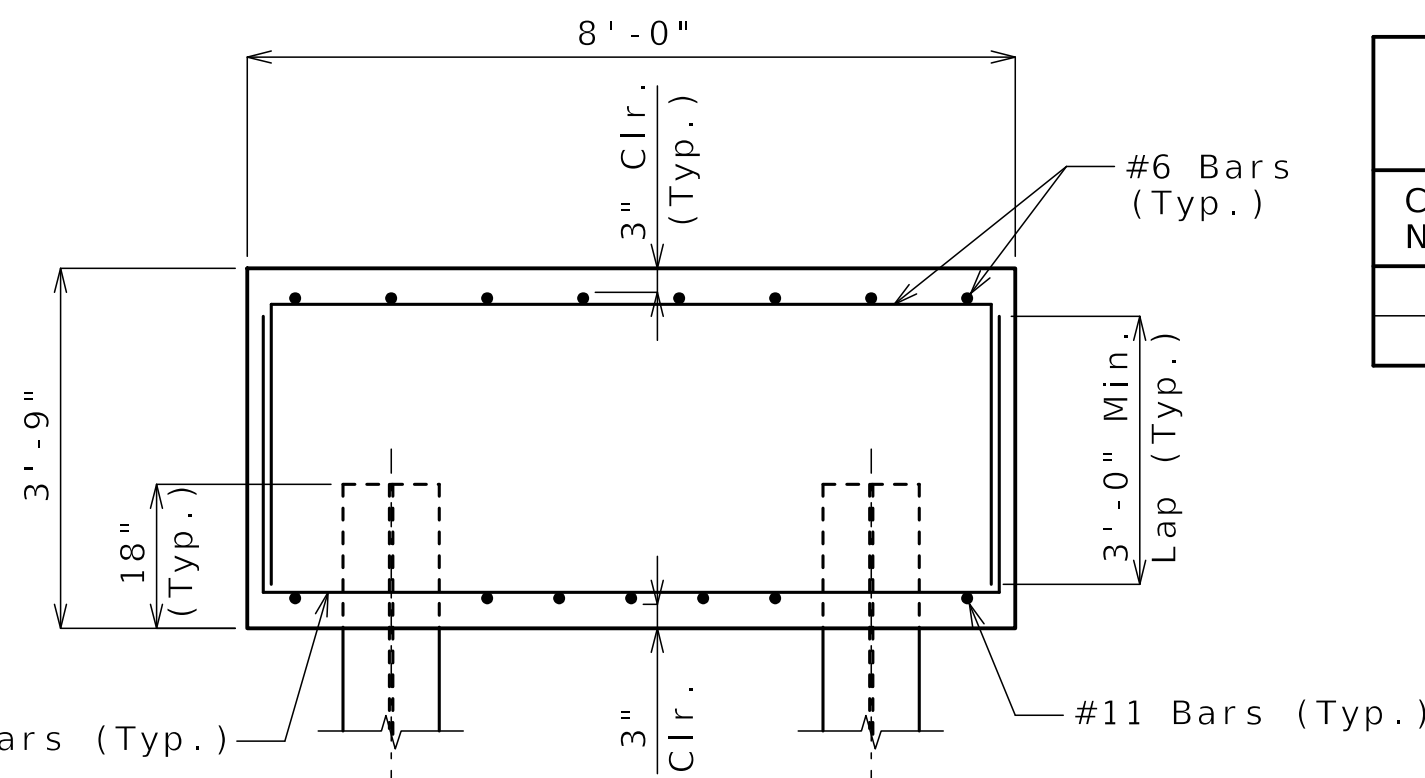
ELEVATION



PLAN OF CAPBEAM

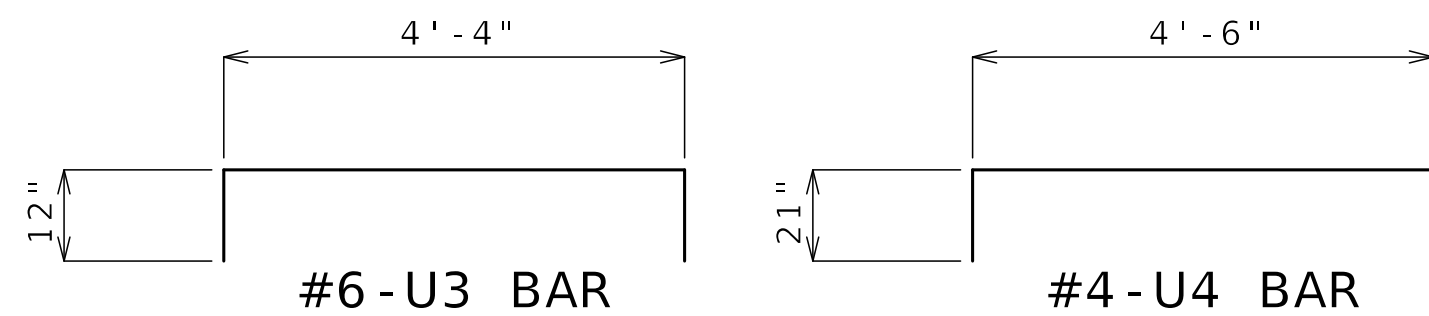


FOOTING PLAN



SECTION F-F

Table of Variables		
Column Number	"A"	"B"
6	13'-1 1/8"	827.00
7	12'-6 7/8"	826.42



Notes:
Work this sheet with Sheets No. B19-15 and B19-17.
For Sections A-A, B-B, and E-E, see Sheet No. B19-17.

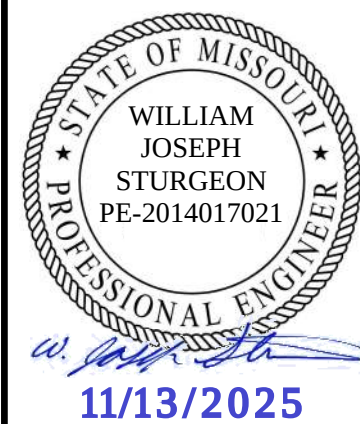
Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-16 of B19-63



DATE PREPARED 11/13/2025	
ROUTE I-70	STATE MO
DISTRICT BR	SHEET NO. B19-17
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO. A9621

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

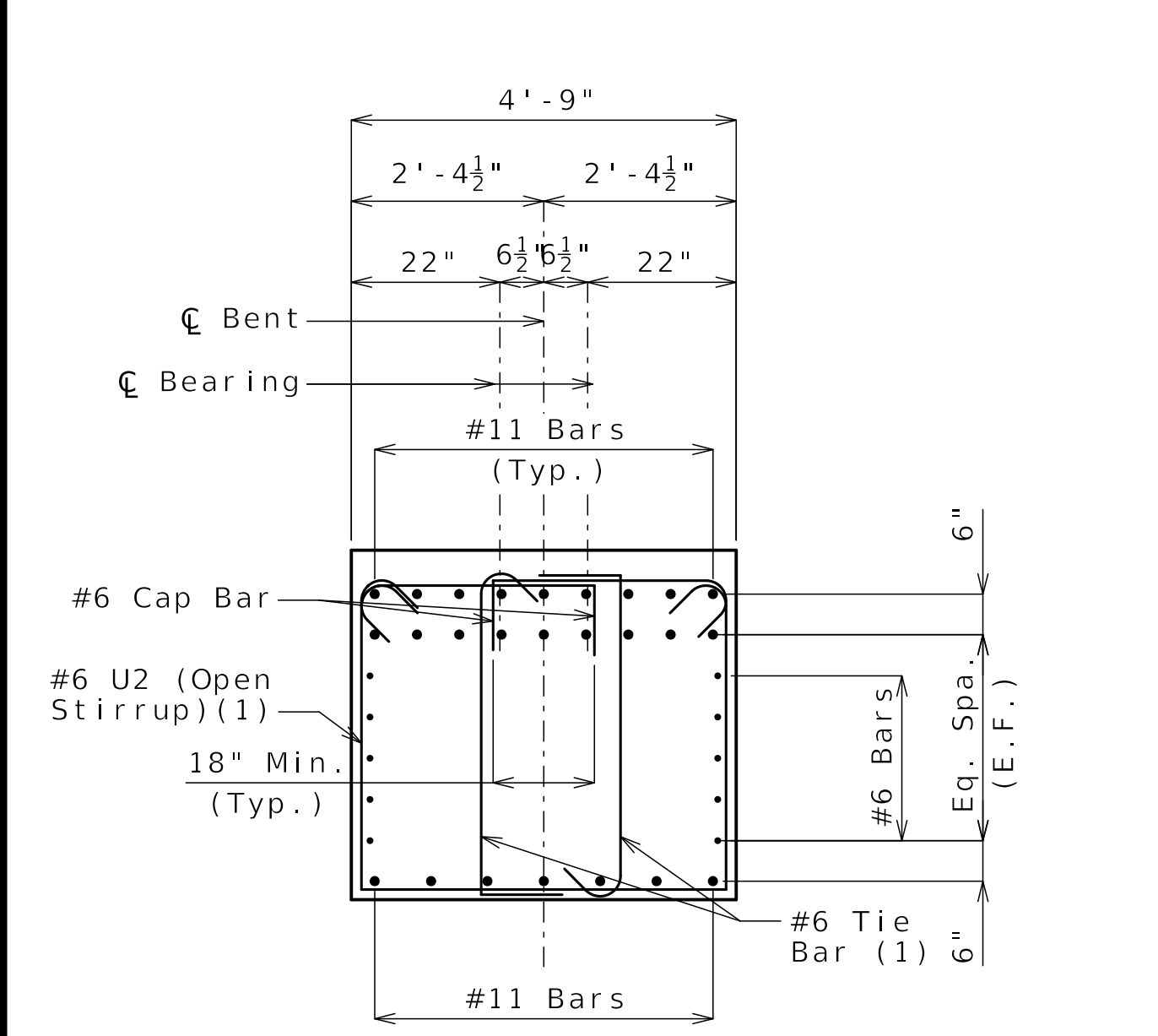
105 WEST CAPITOL
JEFFERSON CITY, MO 65102

MoDOT

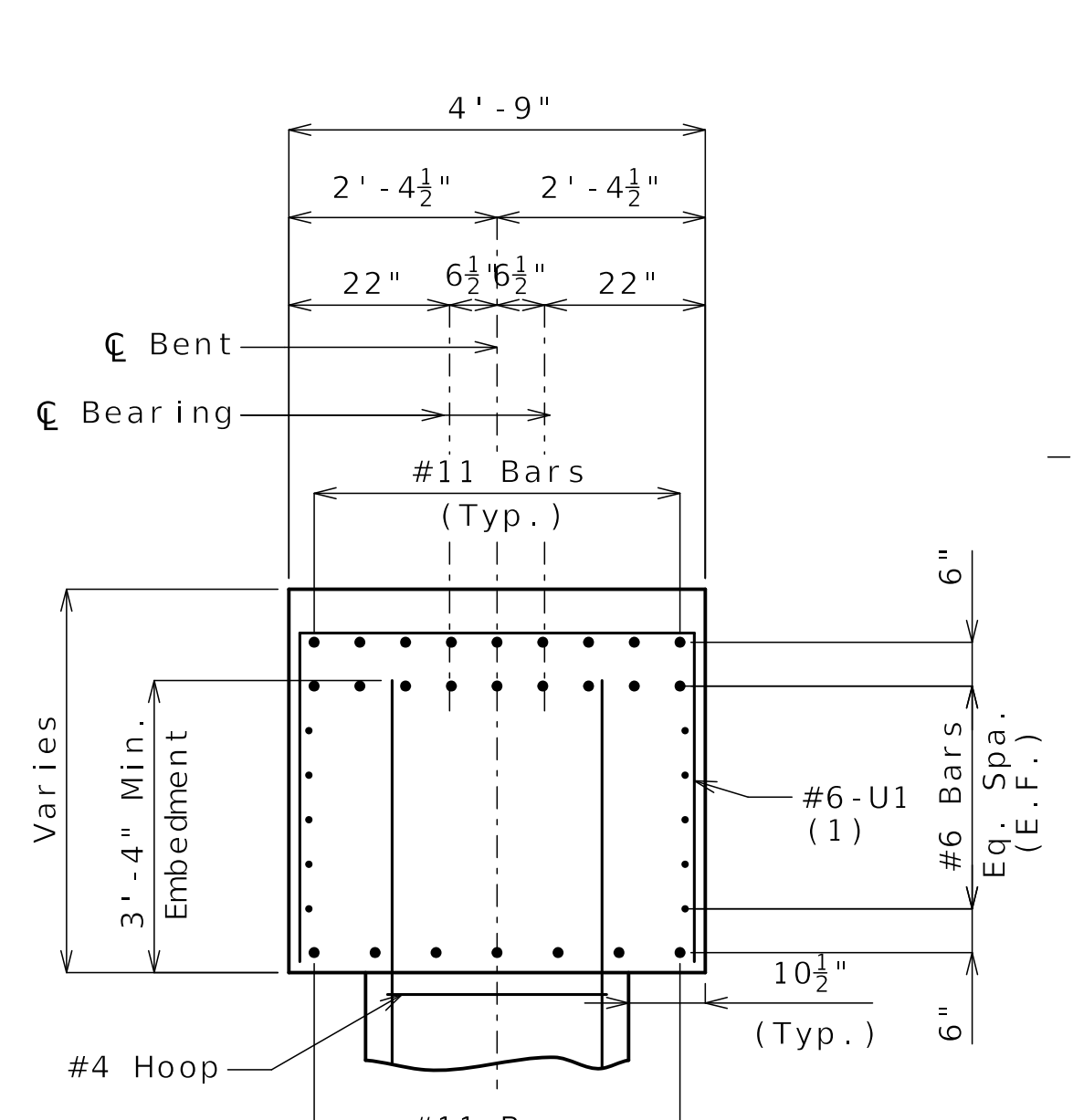
CLARKSON RADMACHER JOINT VENTURE

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

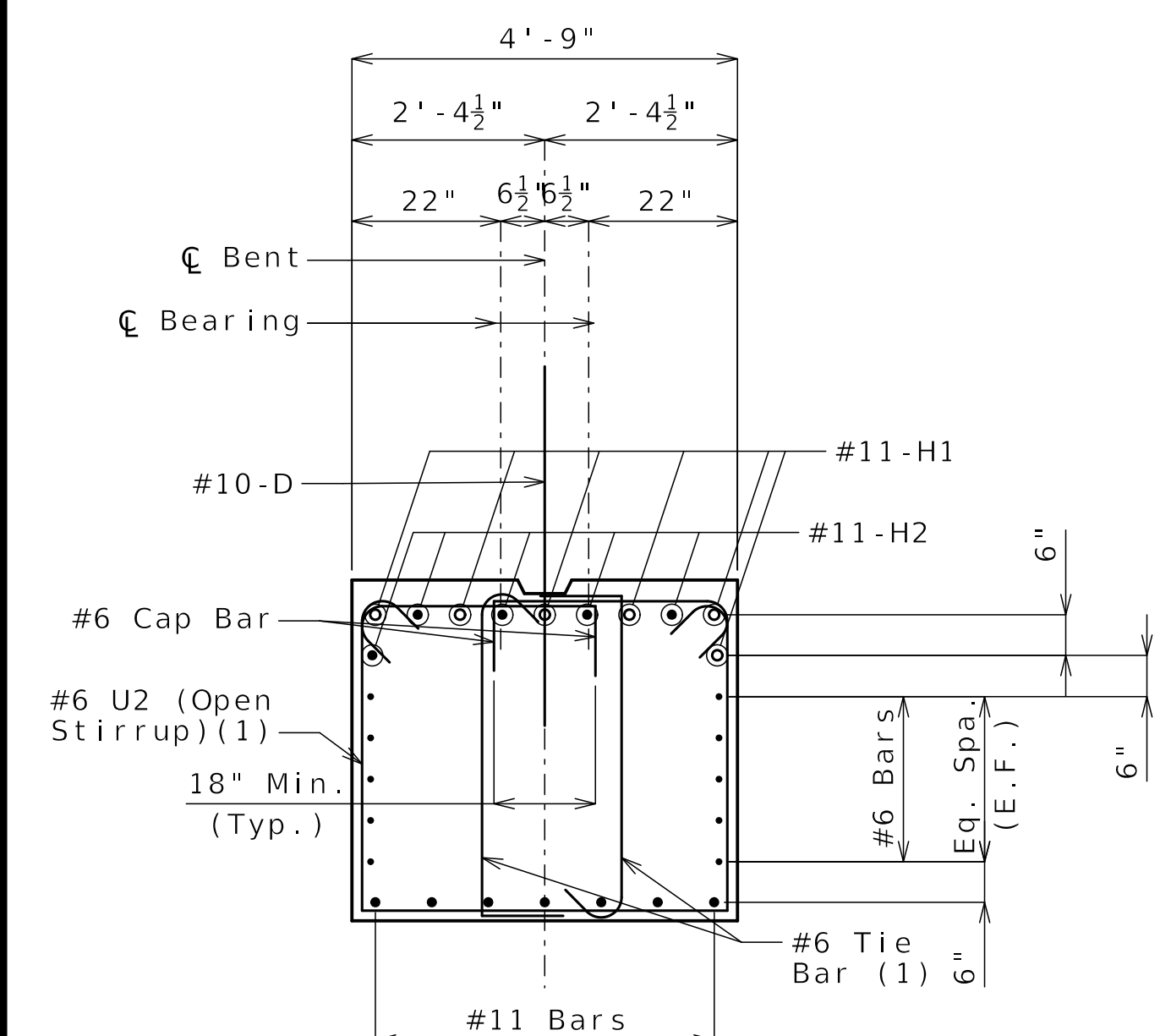
HNTB



SECTION A-A

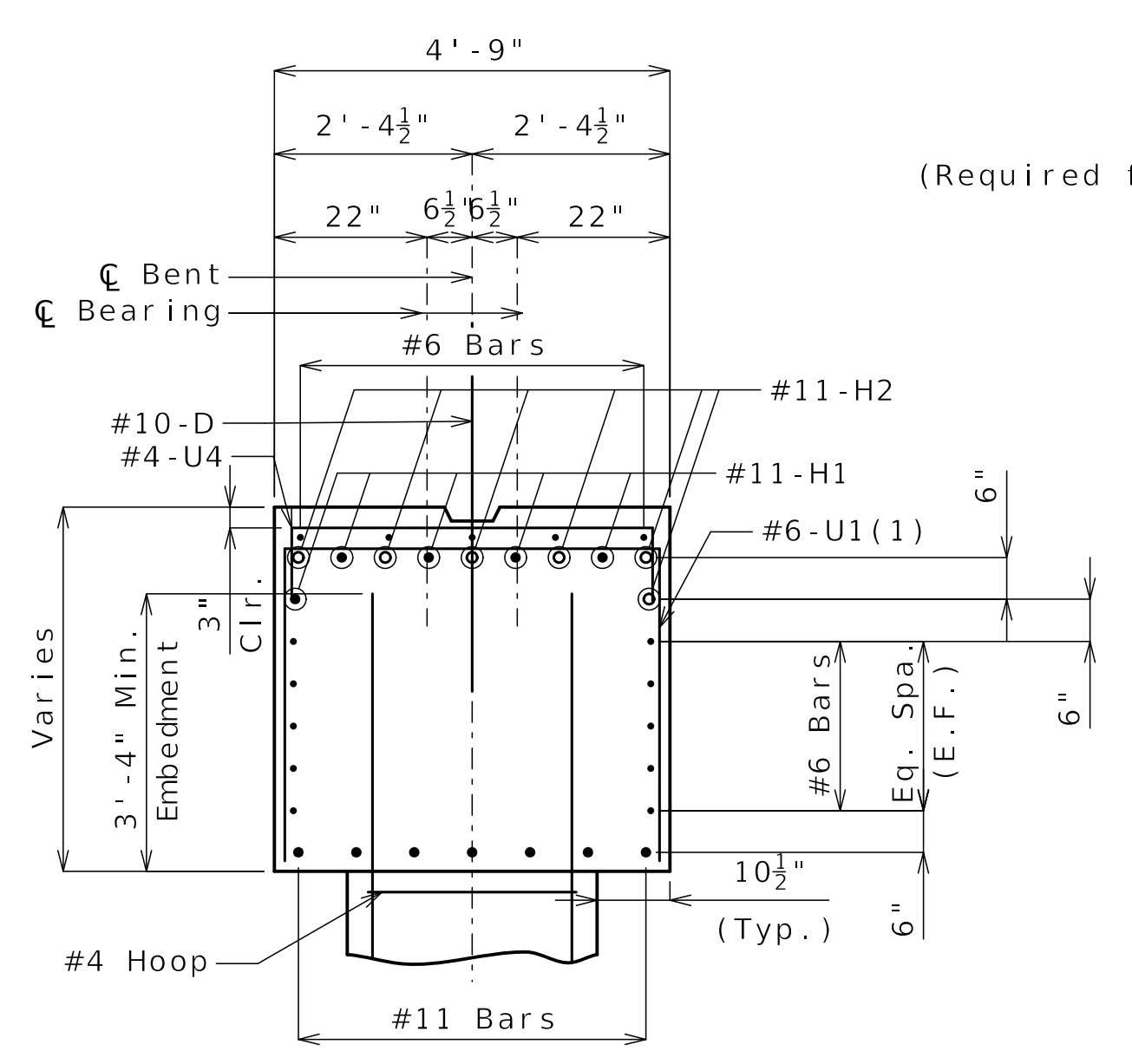


SECTION B-B

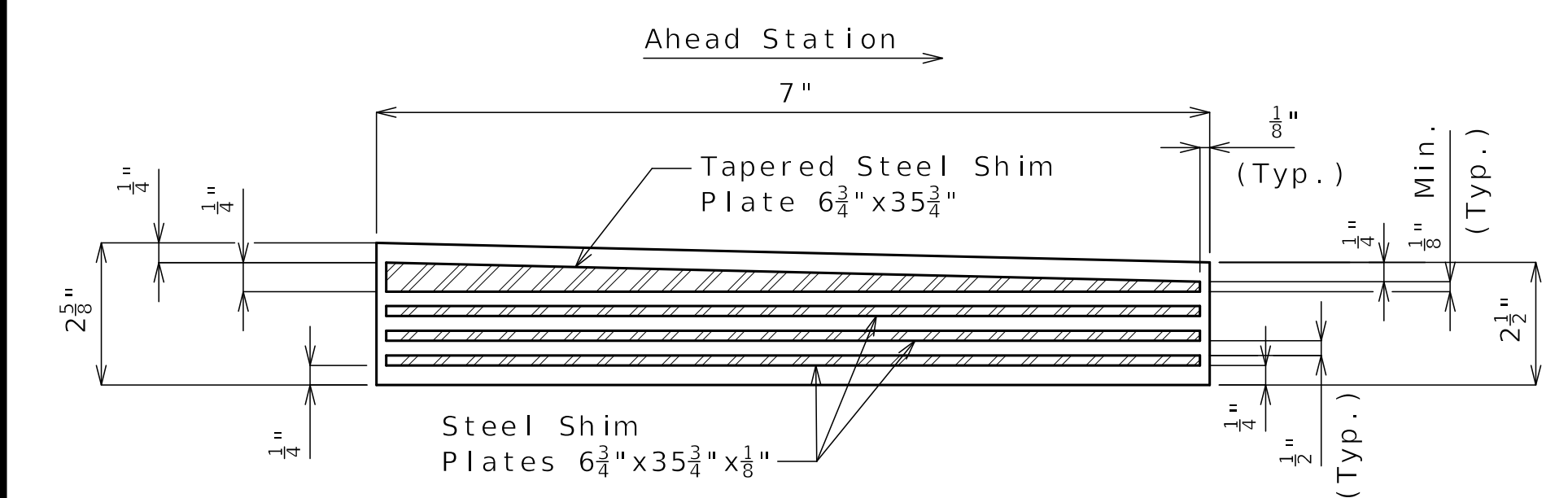


SECTION C-C

(1) U1, U2, and #6 Tie Bar vertical leg = 4'-1 1/2"

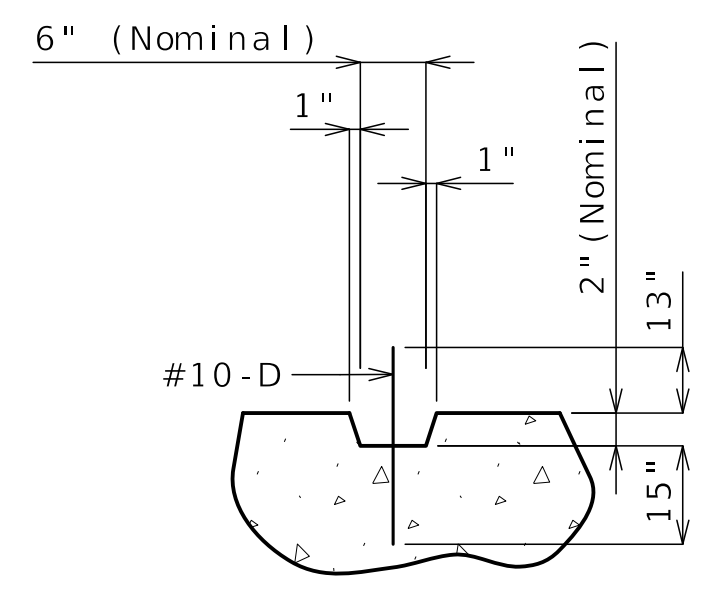


SECTION D-D

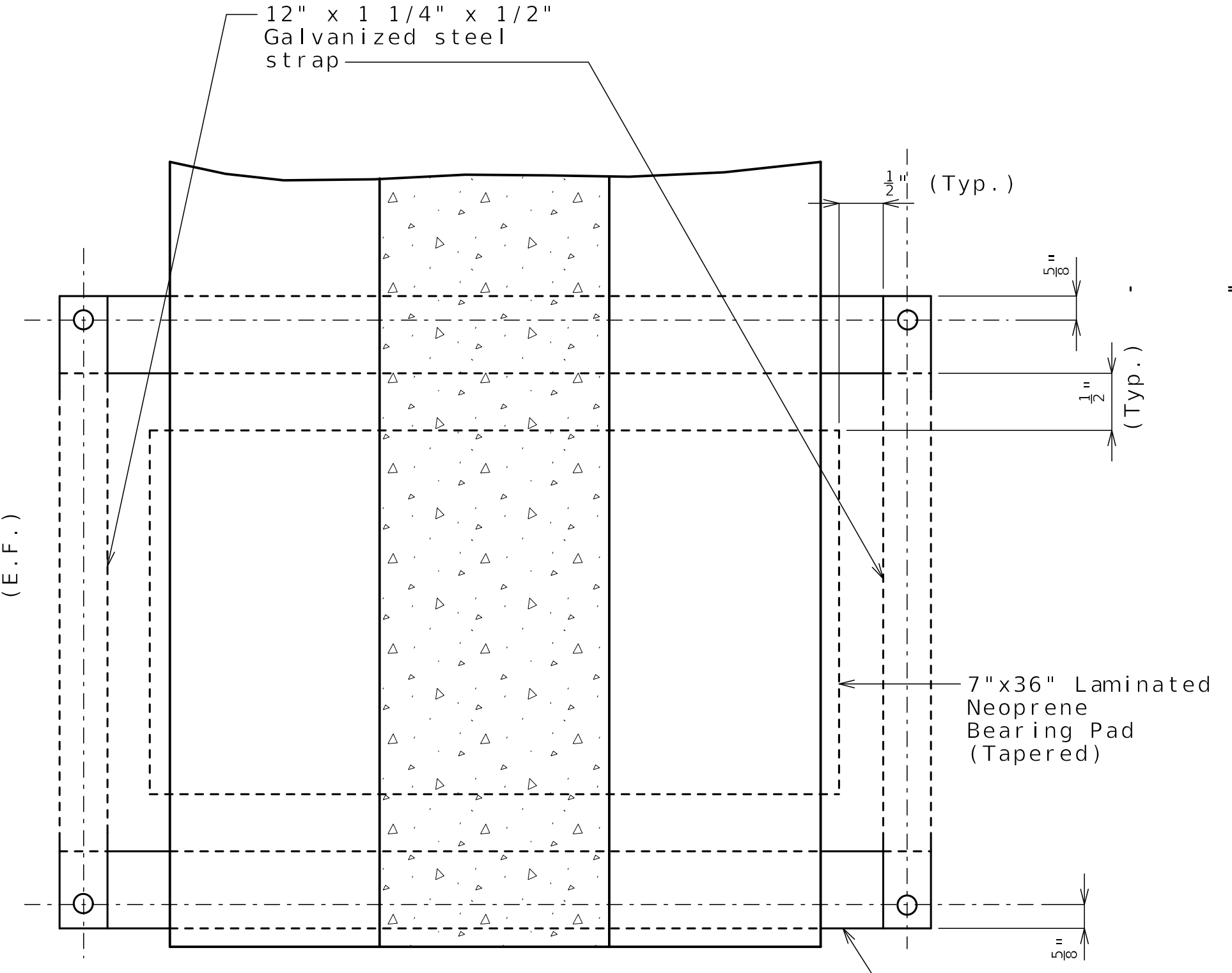


TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)

Bent 3 Ahead-12 Required
Bent 3 Back-12 Required

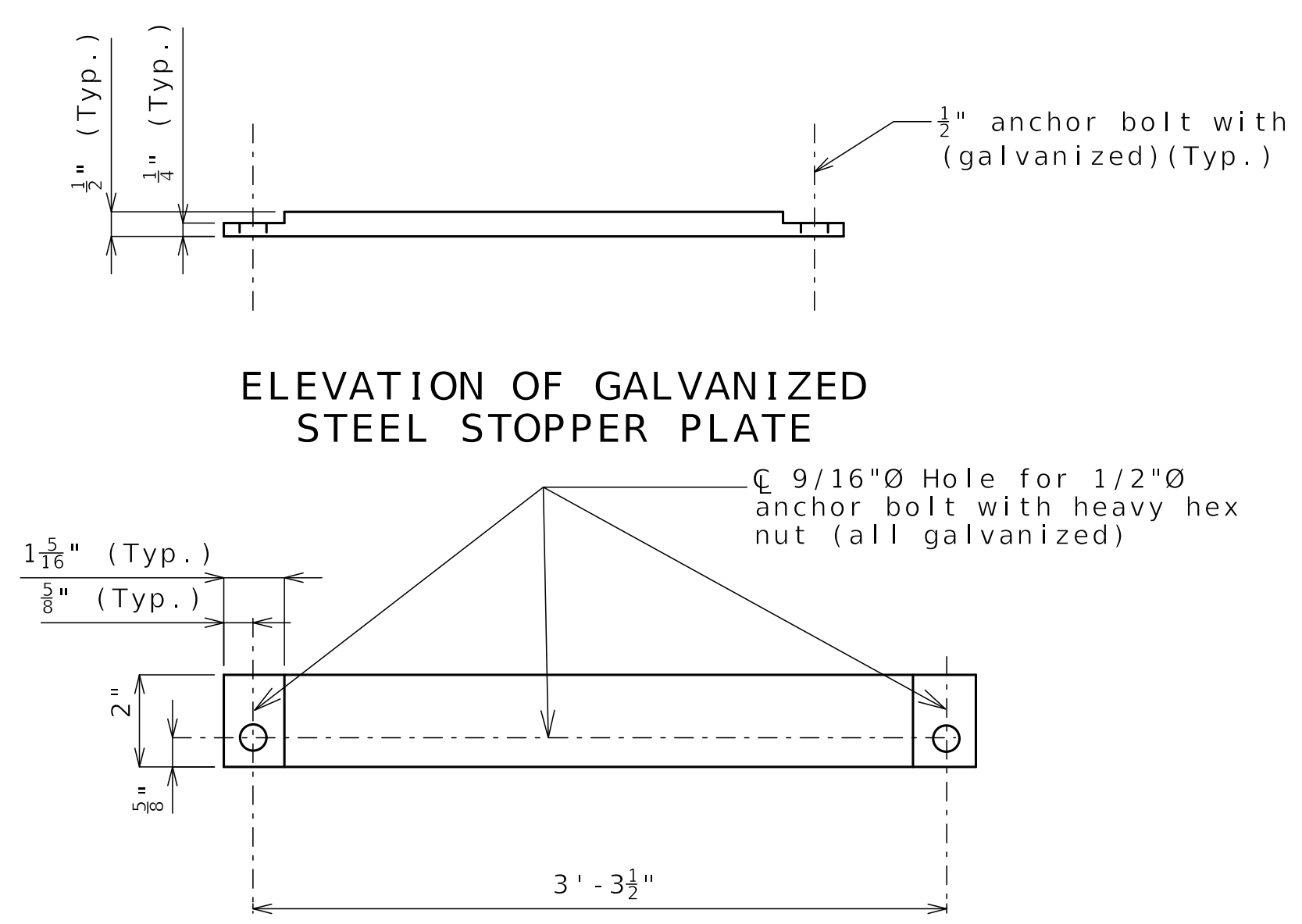


SECTION THRU KEY

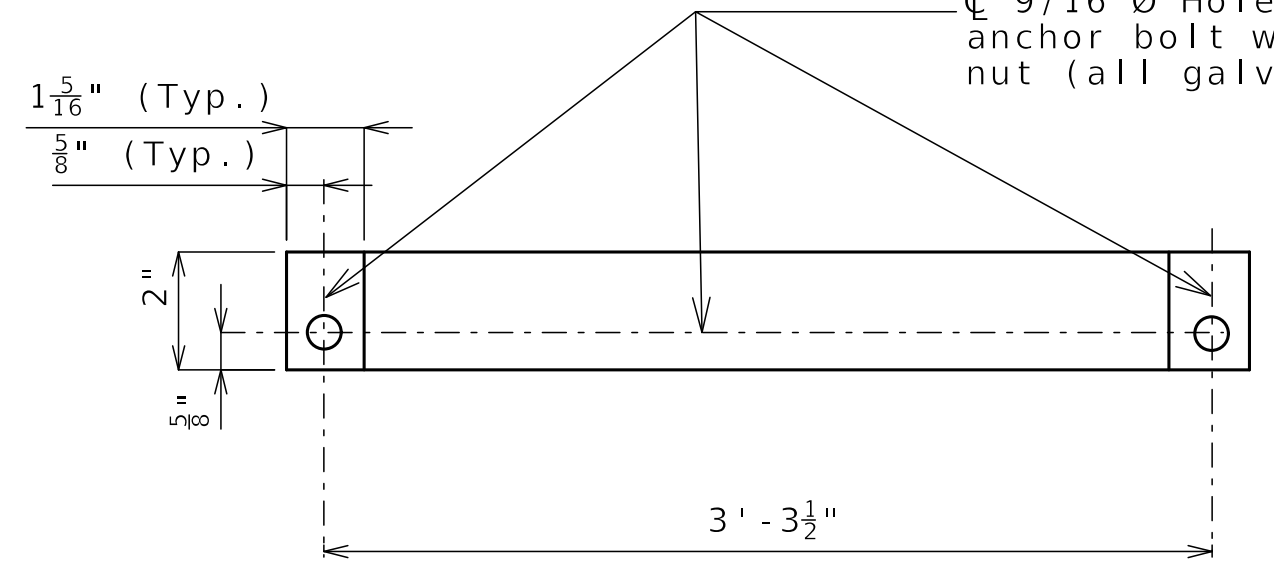


PART PLAN SHOWING STOPPER PLATE

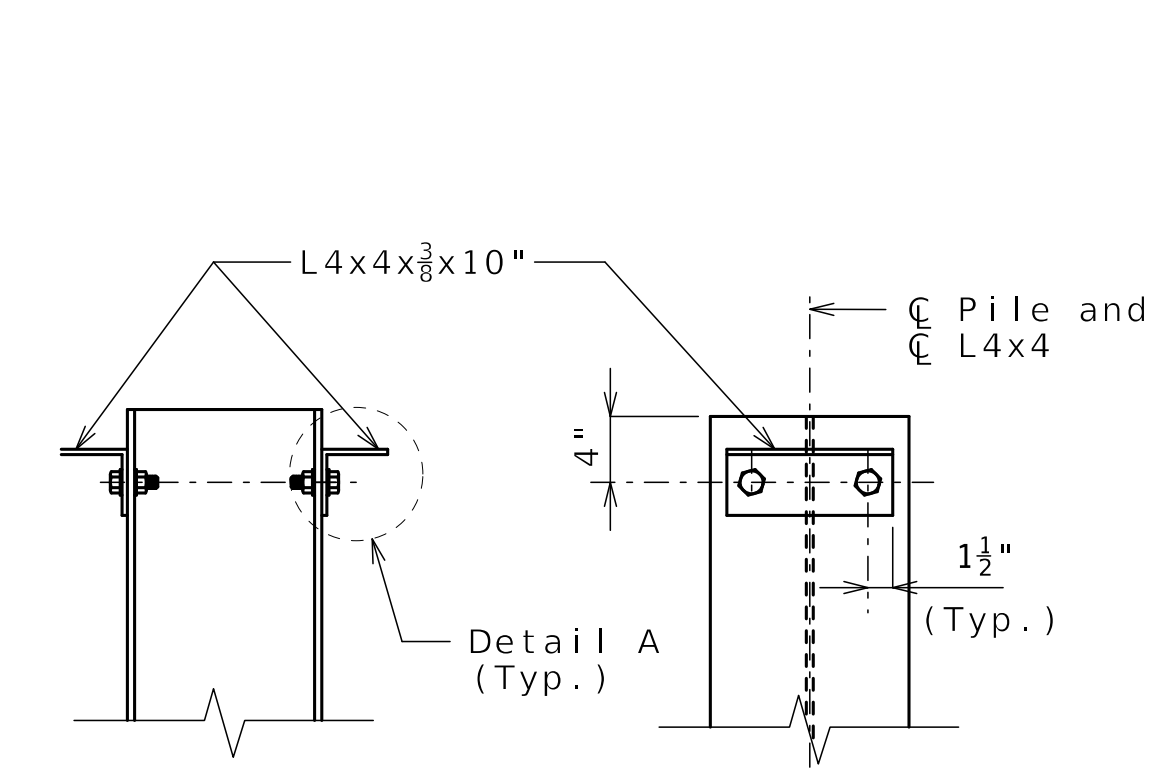
(Required for Girders 1 thru 3 and 9 thru 12 ahead and back bearings)



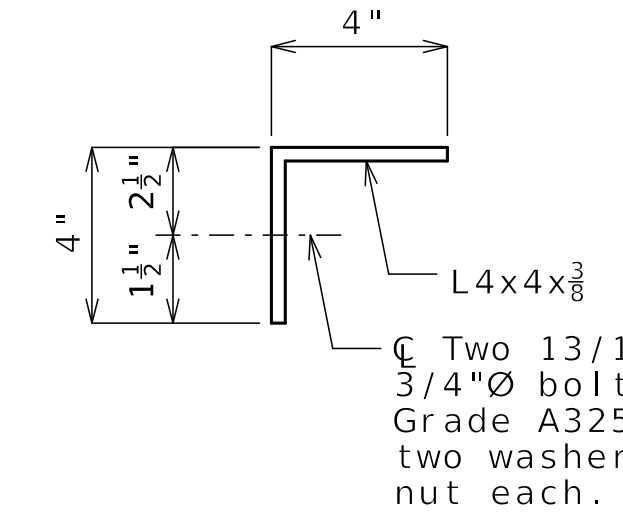
ELEVATION OF GALVANIZED STEEL STOPPER PLATE



PLAN OF GALVANIZED STEEL STOPPER PLATE

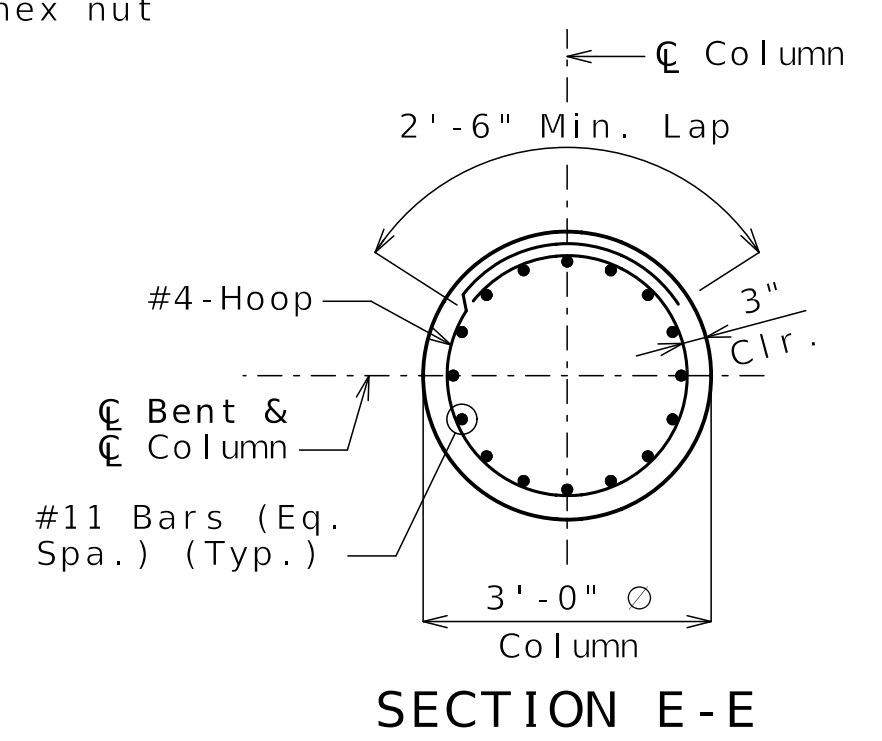


DETAILS OF HP PILE ANCHORS



DETAIL A

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



SECTION E-E

Notes:
Work this sheet with Sheets No. B19-15 and B19-16.
For locations of Section A-A thru E-E, see Sheets No. B19-15 and B19-16.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed JUL 2025
Checked AUG 2025

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

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Sheet No. B19-17 of B19-63



Gina D. Horner
11/13/2025

DATE PREPARED
11/13/2025

ROUTE 1-70 STATE MO

DISTRICT BR SHEET NO. B19-18

COUNTY JACKSON

JOB NO. J411486D

CONTRACT ID. 240807-C01

PROJECT NO.

BRIDGE NO. A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

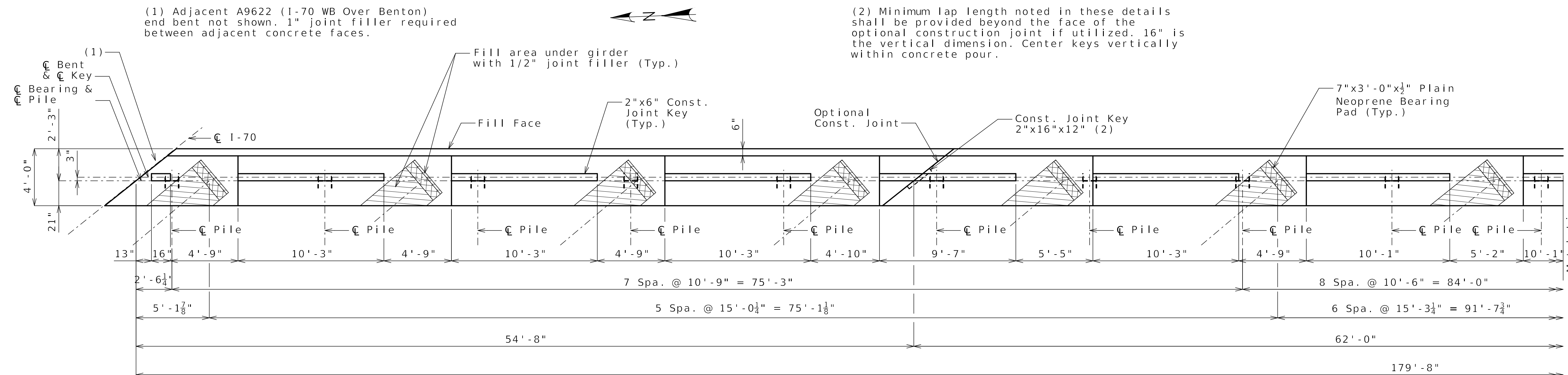
MoDOT

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

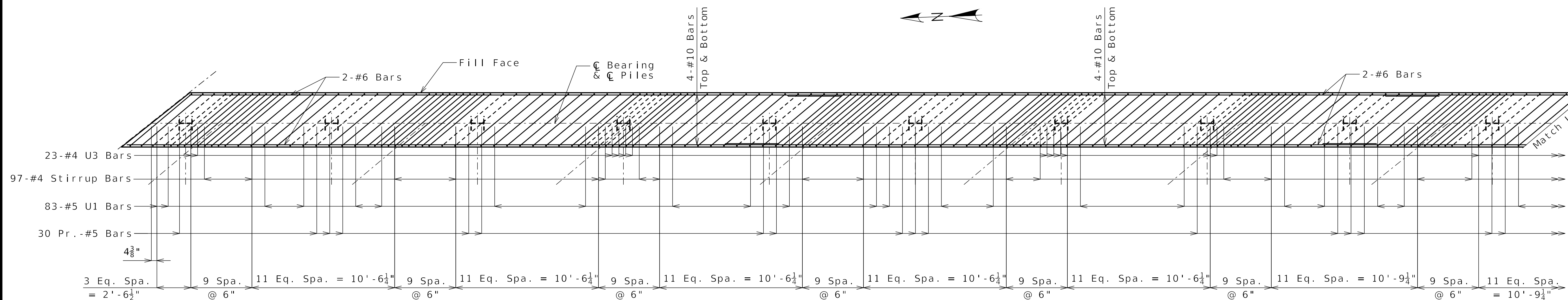
CLARKSON RADMACHER
JOINT VENTURE

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

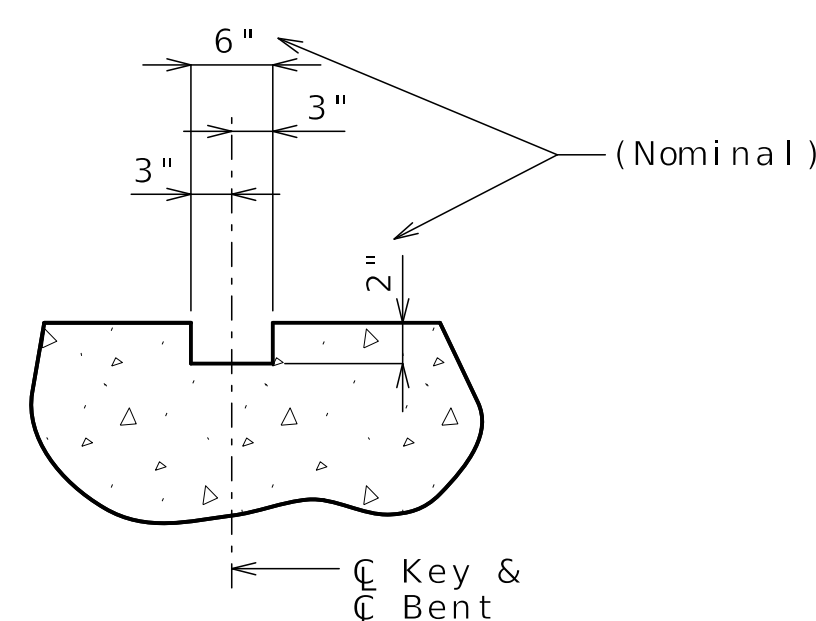
HNTB



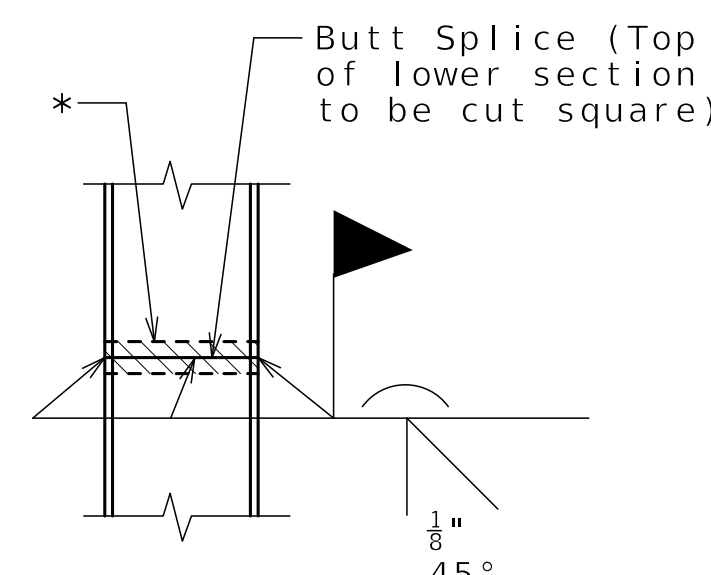
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCING
(Key, optional construction joint and steps not shown for clarity.)



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.

Notes:
Work this sheet with Sheets No. B19-19 thru B19-22.
All U bars and pairs of vertical bars shall be placed along skew. (U.N.O.)
Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1 1/2".
For details of bridge approach slab, see Sheet No. B19-47.
For angle of girders relative to C Bent, see Sheet No. B19-23.

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DETAILS OF END BENT NO. 4

Detailed JUL 2025
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Note: This drawing is not to scale. Follow dimensions.

Sheet No. B19-18 of B19-63

DATE PREPARED
11/13/2025

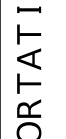
DISTRICT BR	SHEET NO. B19 - 19
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JOB NO.
J4I1486D

PROJECT NO.

BRIDGE NO.
A9621[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

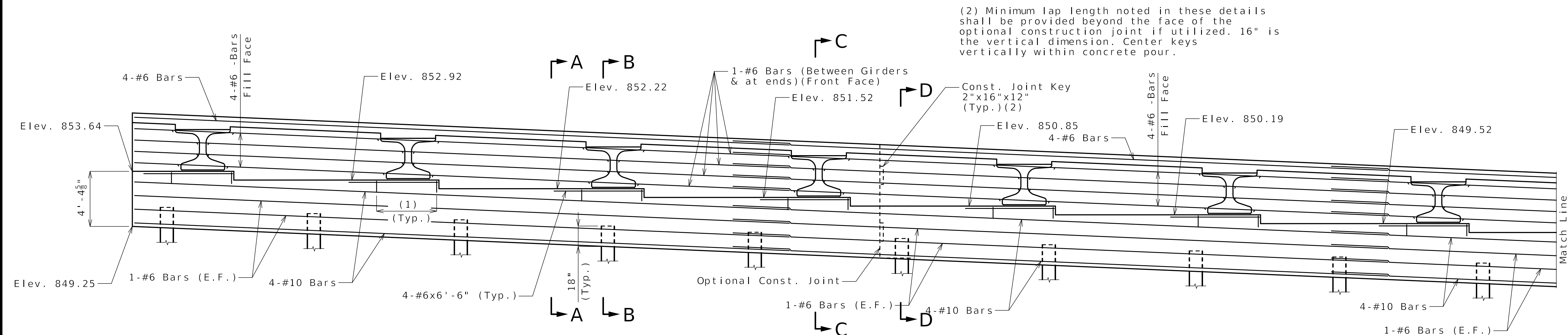
 105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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



Notes:
Work this sheet with Sheets No. B19-18 thru B19-22.

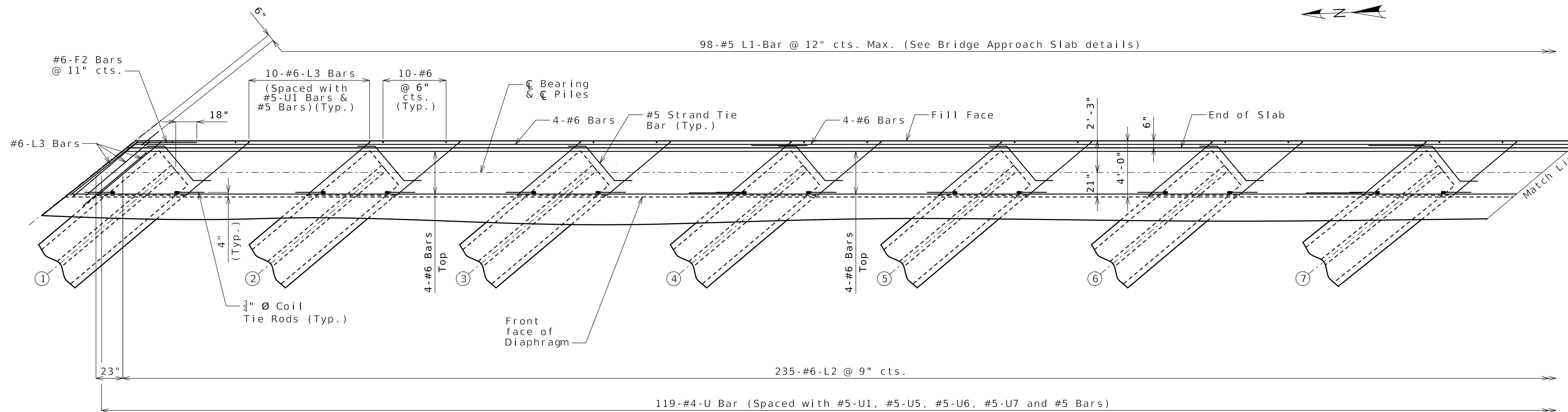
DETAILS OF END BENT NO. 4



SECTION NEAR END BENT

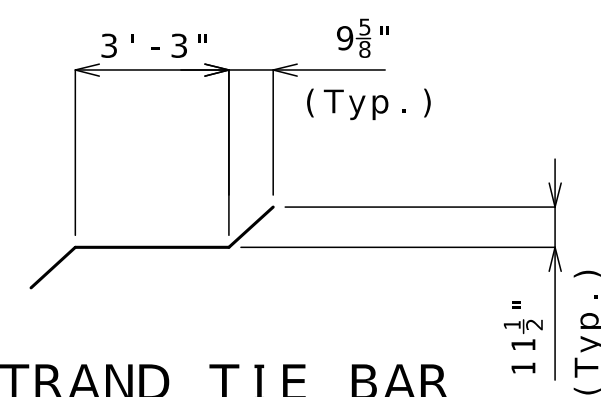
Notes:
Lap Splice for #6 bars = 4'-3" (Min.)
Lap Splice for #10 bars = 7'-2" (Min.)

(1) 10-#4-U4 Bars @ 6" Spa. under girders.
Bars shall be placed normal to $\bar{C}$ Bent and parallel to beam step (Typ.).



PART PLAN
(Optional construction joint not shown)

#5 STRAND TIE BAR



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Package: BRD-19-EB70-Benton

General Notes:
Work this sheet with Sheets No. B19-18 thru B19-22.
For Sections A-A, B-B, C-C and D-D, see Sheet No. B19-22.

For location of coil tie rods, see Sheet B19-26.
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 girders.

(X) Denotes girder number

DETAILS OF END BENT NO. 4

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-20 of B19-63

B_A9621_B19-23_J411486D.dgn 1:43:20 PM 11/12/2025



Gina D. Horner
11/13/2025

DATE PREPARED
11/13/2025

ROUTE
I-70

DISTRICT
BR

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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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

DATE PREPARED
11/13/2025

ROUTE	STATE
I - 70	MO

DISTRICT	SHEET NO.
BR	B19-21

COUNTY
JACKSON

JOB NO.
1411486D

CONTRACT ID.
240807-C01

PROJECT NO.	240007 001
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BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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 NO. 001270



(1) 10-#4-U4 Bars @ 6" Spa. under girders
Bars shall be placed normal to C Bent
and parallel to beam step. (Typ.)



General Notes:
Work this sheet with Sheets No. B19-18 thru B19-22.
For Elevation E-E, see Sheet No. B19-22.

DETAILS OF END BENT NO. 4

DATE PREPARED
11/13/2025

DISTRICT	SHEET NO.
BR	B19-22

JOB NO.
J4I1486D

PROJECT NO.

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DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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ARKSON
ADMACHER
JOINT VENTURE

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



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



(2) Bars shall be placed normal to C Bent and parallel to beam step.

(1) U3 & #4 stirrup bar
vertical leg = 3'-4"



General Notes:
 Work this sheet with Sheets No. B19-18
 thru B19-21.
 For location of Sections A-A, B-B, C-C and D-D,
 see Sheet No. B19-20.
 For location of Elevaion E-E, see Sheet No. B19-21.
 For reinforcement of the Type D Barrier, see
 Sheet No. B19-43.

DETAILS OF END BENT NO. 4

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Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Detailed JUL 2025
Checked AUG 2025

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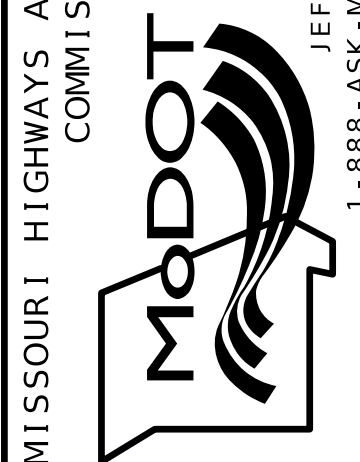
Sheet No. B19-22 of B19-63

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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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ARKSON
ADMACHER
JOINT VENTURE



Girder Number	A	B	C
1	65' - 5 $\frac{1}{8}$ "	74' - 1 $\frac{7}{8}$ "	75' - 8 $\frac{1}{2}$ "
2	65' - 5 $\frac{1}{8}$ "	74' - 1 $\frac{7}{8}$ "	75' - 8 $\frac{1}{2}$ "
3	65' - 5 $\frac{1}{8}$ "	74' - 1 $\frac{7}{8}$ "	75' - 8 $\frac{1}{2}$ "
4	65' - 5 $\frac{1}{8}$ "	74' - 1 $\frac{7}{8}$ "	75' - 8 $\frac{1}{2}$ "
5	65' - 5 $\frac{1}{8}$ "	74' - 1 $\frac{7}{8}$ "	75' - 8 $\frac{1}{2}$ "
6	65' - 5 $\frac{1}{8}$ "	74' - 1 $\frac{7}{8}$ "	75' - 8 $\frac{1}{2}$ "
7	67' - 2 $\frac{3}{8}$ "	76' - 2"	77' - 11 $\frac{1}{8}$ "
8	69' - 0 $\frac{1}{4}$ "	78' - 2 $\frac{1}{2}$ "	80' - 2 $\frac{1}{4}$ "
9	70' - 10 $\frac{1}{4}$ "	80' - 3 $\frac{5}{8}$ "	82' - 5 $\frac{1}{4}$ "
10	72' - 8 $\frac{3}{4}$ "	82' - 5 $\frac{1}{4}$ "	84' - 9 $\frac{3}{4}$ "
11	74' - 7 $\frac{3}{4}$ "	84' - 7 $\frac{1}{8}$ "	87' - 2 $\frac{1}{4}$ "
12	76' - 7"	86' - 9 $\frac{3}{8}$ "	89' - 7"

Girder Number	D	E	F	G	H	J
1	134°08'02"	45°51'58"	136°52'14"	43°07'46"	139°56'01"	40°03'59"
2	134°08'02"	45°51'58"	136°52'14"	43°07'46"	139°56'01"	40°03'59"
3	134°08'02"	45°51'58"	136°52'14"	43°07'46"	139°56'01"	40°03'59"
4	134°08'02"	45°51'58"	136°52'14"	43°07'46"	139°56'01"	40°03'59"
5	134°08'02"	45°51'58"	136°52'14"	43°07'46"	139°56'01"	40°03'59"
6	134°08'02"	45°51'58"	136°52'14"	43°07'46"	139°56'01"	40°03'59"
7	135°41'16"	44°18'44"	138°16'13"	41°43'47"	141°17'34"	38°42'26"
8	137°07'33"	42°52'57"	139°35'51"	40°24'09"	142°34'34"	37°25'26"
9	138°29'25"	41°30'35"	140°51'22"	39°08'38"	143°47'18"	36°12'42"
10	139°47'05"	40°12'55"	142°03'00"	37°57'00"	144°56'04"	35°03'56"
11	141°00'50"	38°59'10"	143°11'01"	36°48'59"	146°01'08"	33°58'52"
12	142°10'51"	37°49'09"	144°15'37"	35°44'23"	147°02'45"	32°57'15"

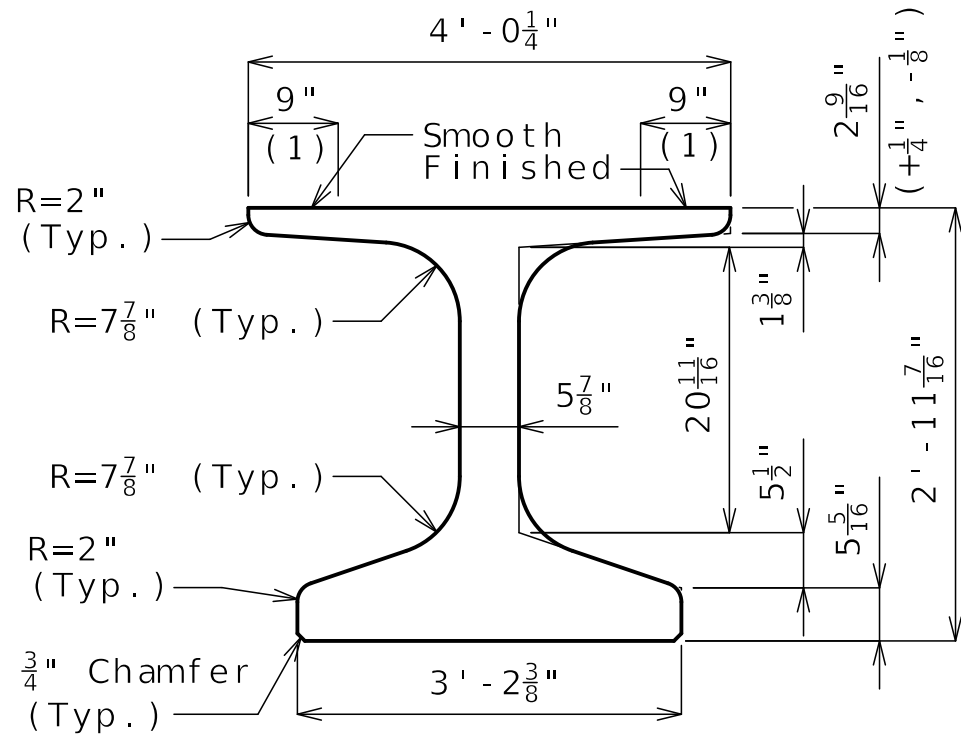
- (5) For girder spacing, see Sheet No. B19-40.

Notes:
 All dimensions are horizontal.
 All bents are parallel.
 Table dimensions are measured along girder
 centerline.

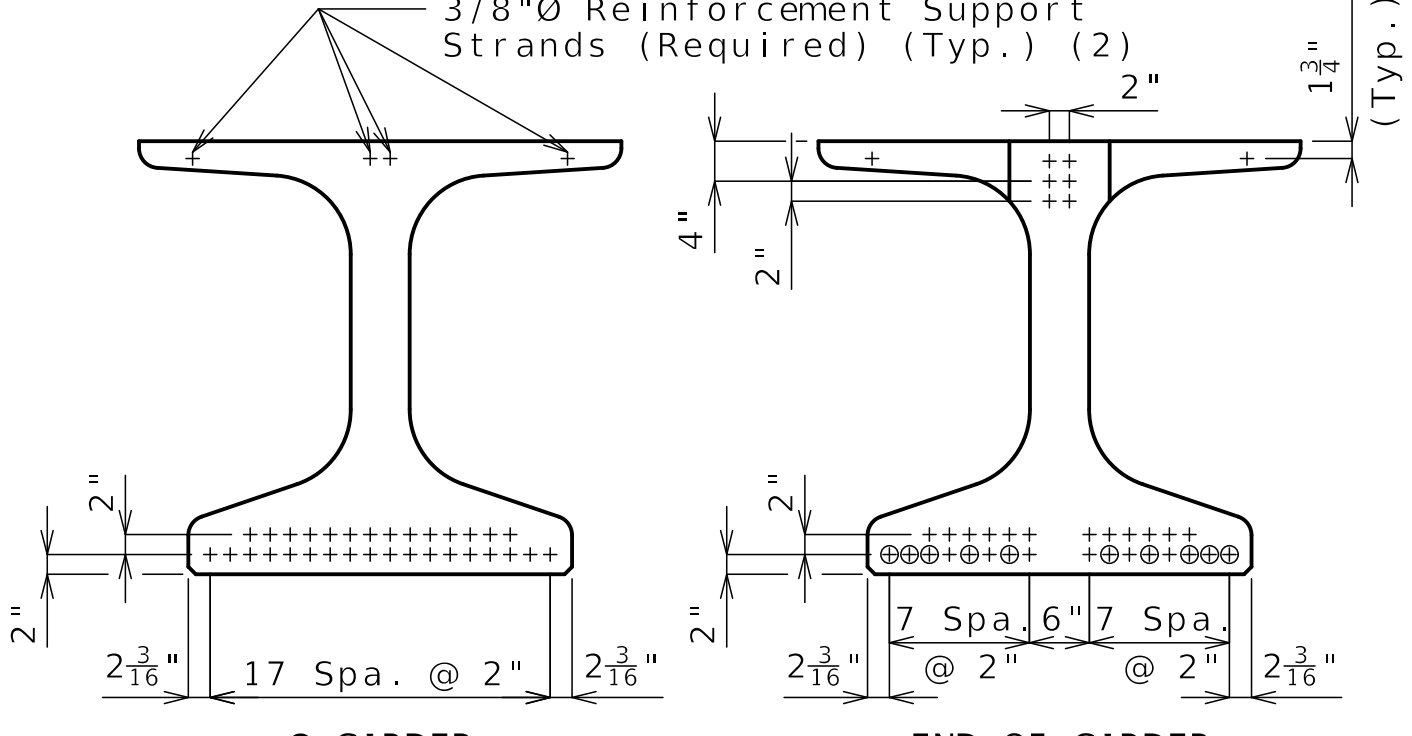
FRAMING PLAN

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

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

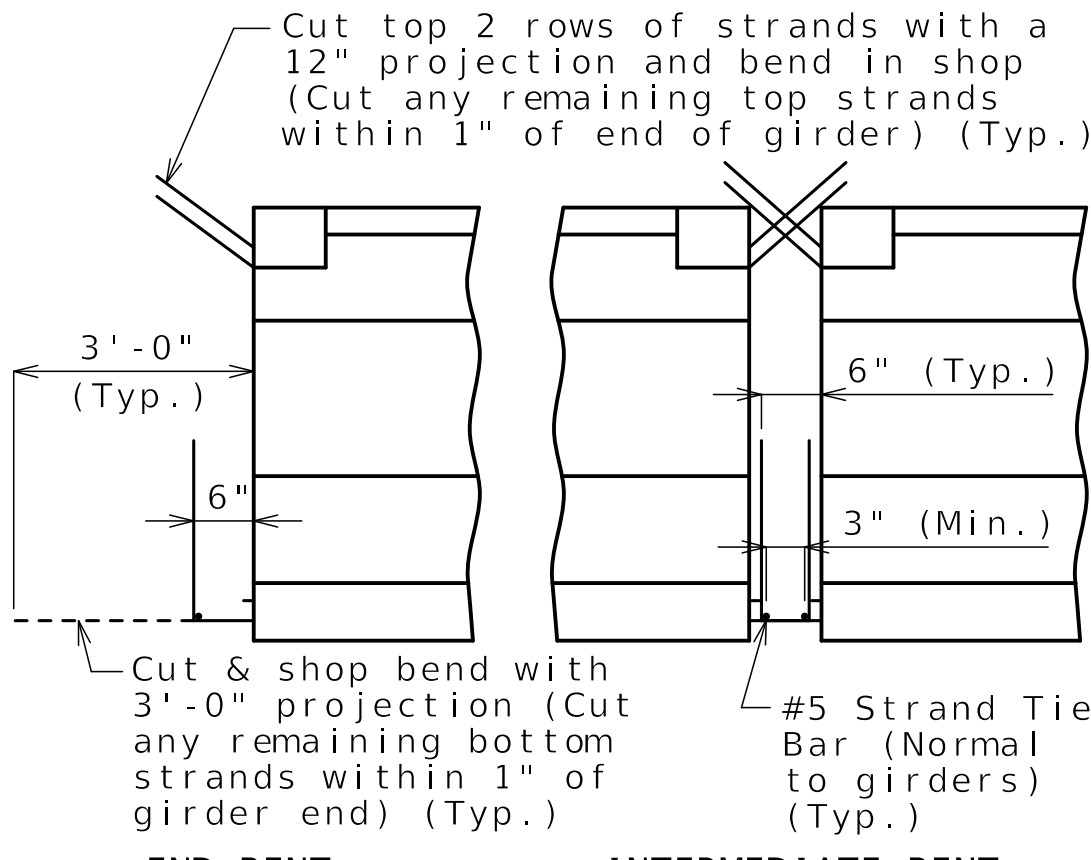


DIMENSIONS

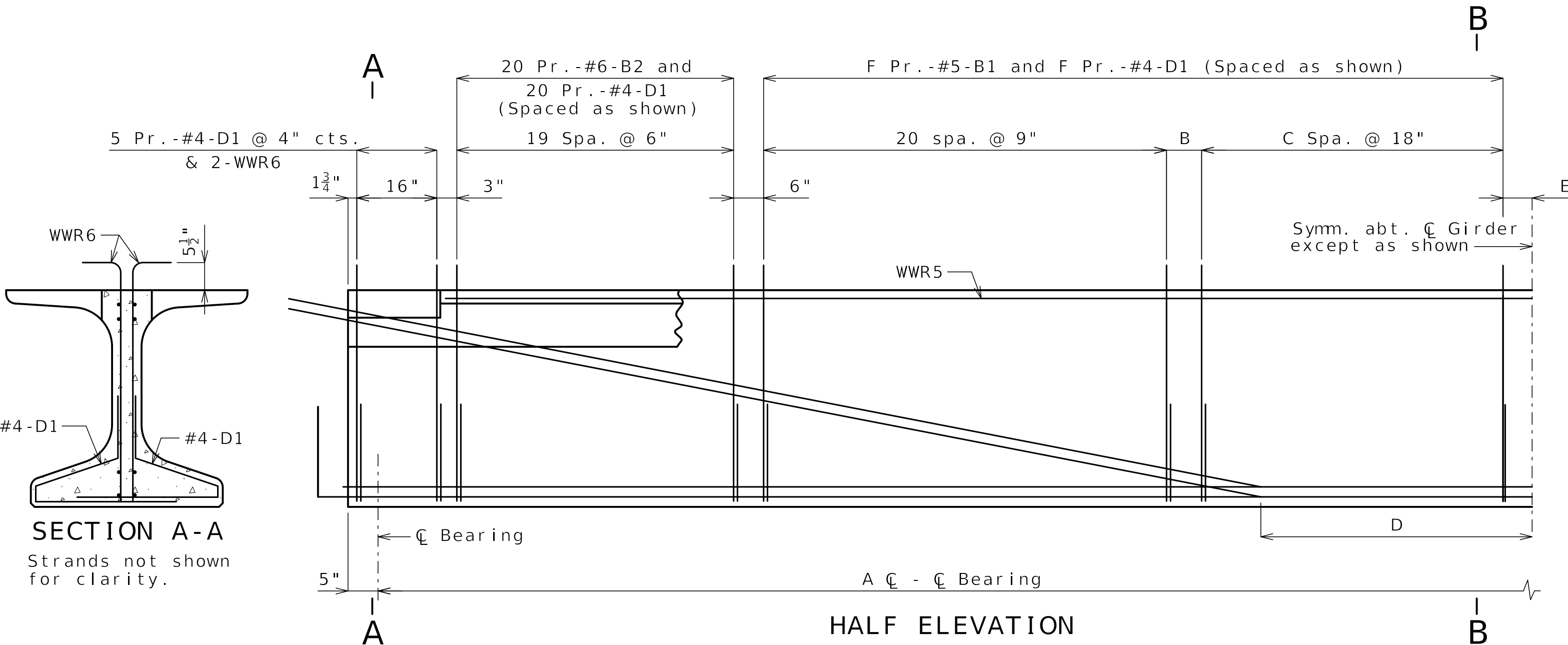


STRAND ARRANGEMENT

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

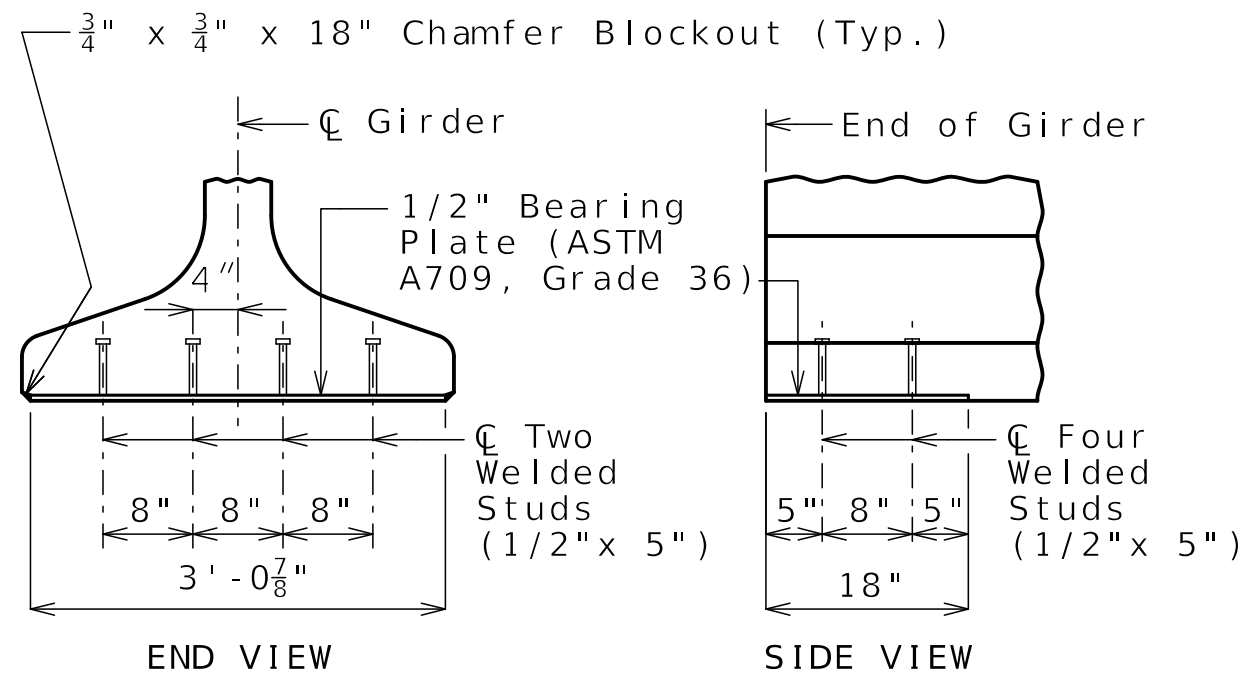


STRANDS AT GIRDER ENDS

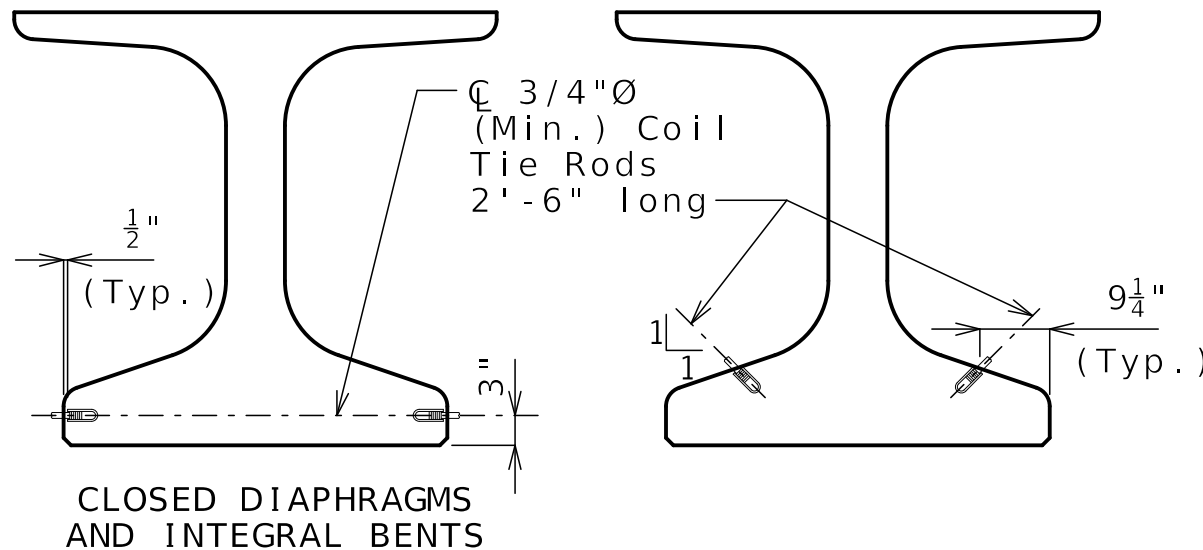


HALF ELEVATION

Reinforcement support strands not shown for clarity.



BEARING PLATE



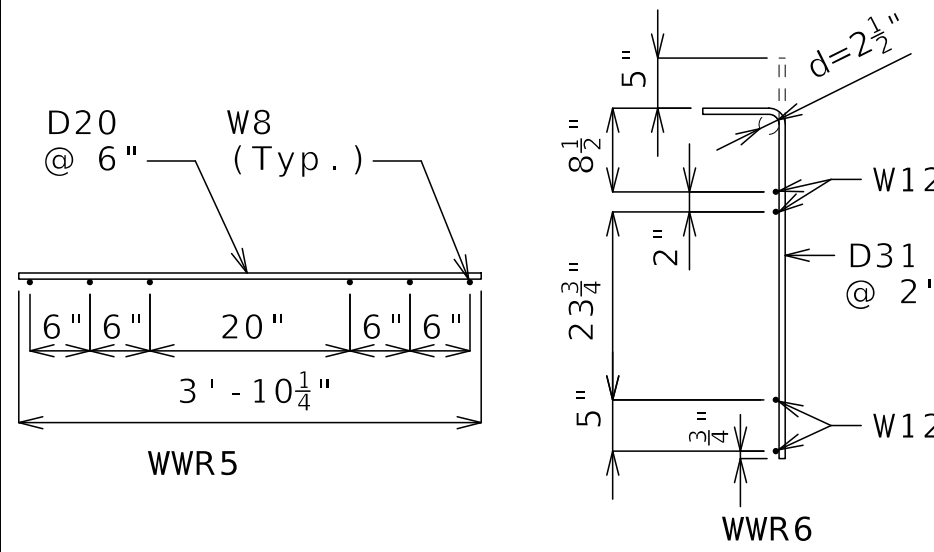
COIL TIES

Exclude coil tie at exterior face of exterior girders.

TABLE OF VARIABLES								
Girder No.	A	B	C	D	E	F	G	H
1-6	74'-17 7/8"	12 3/8"	6	7'-6"	9"	28	112	212
7	76'-2"	15 1/4"	7	7'-8"	0"	29	114	214
8	78'-2 1/2"	9 1/2"	8	7'-11"	0"	30	118	218
9	80'-3 5/8"	13 3/8"	8	8'-1"	9"	30	120	220
10	82'-5 1/4"	16 7/8"	9	8'-4"	0"	31	122	222
11	84'-7 1/8"	11 7/8"	10	8'-7"	0"	32	126	226
12	86'-9 1/2"	16"	10	8'-9"	9"	32	128	228

Bill of Reinforcing Steel - Each Girder				Bending Diagrams	
No.	Size/Mark	Length	Shape		
G	5 B1	4'-4"	11S		
80	6 B2	4'-3"	11S		
H	4 D1	4'-0"	9S		
				Shape 95 Shape 11S	

Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 and B2 bars shall be epoxy coated.

General Notes:

Concrete for prestressed girders shall be Class A-1 with $f'c = 10000$ psi and $f'ci = 7500$ psi.

Use 32 strands, 0.6"Ø Grade 270, with an initial prestress force of 1407 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

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

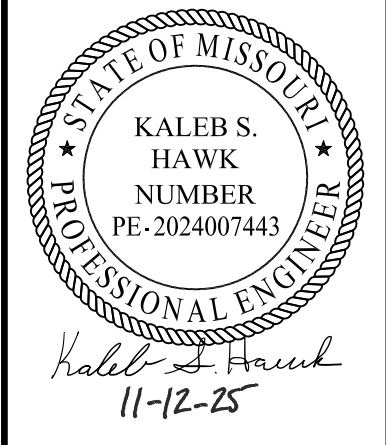
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. B19-33.

For location of coil ties at concrete diaphragms, see Sheets No. B19-28 thru B19-30.

For additional NU Girder Details, see Sheet No. B19-27.

All dimensions are horizontal.



DATE PREPARED
11/13/2025

ROUTE
1-70

DISTRICT
BR

COUNTY
JACKSON

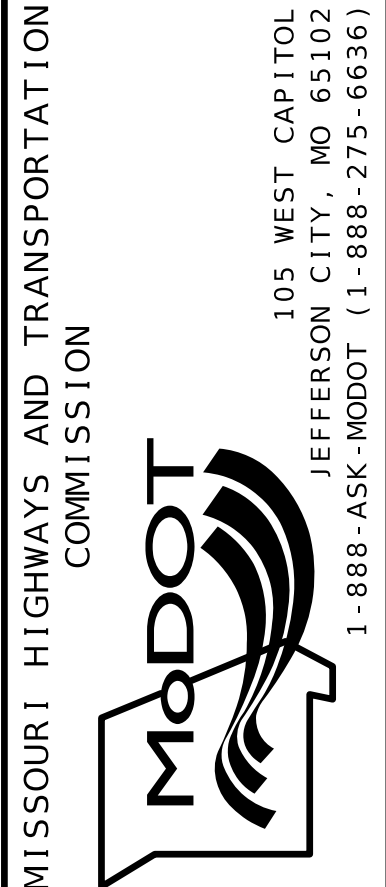
JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL



BILL OF REINFORCING STEEL - EACH GIRDER			
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE
2	4 G3	D	20
2	4 G4	2' - 3"	20
2	4 G5	E	20
*	4 G6	F	20

Diagram illustrating the reinforcement of a 10 inch diameter pipe with a 4 inch diameter hole. The reinforcement plate has a thickness A and is welded with #4-G3 bars. The plate width is 1 Spacing (Max. 8 inch). The skew angle is indicated.

Technical drawing of a 10-inch diameter pipe joint. The drawing shows a cross-section of the pipe and flange assembly. Key dimensions and labels include:

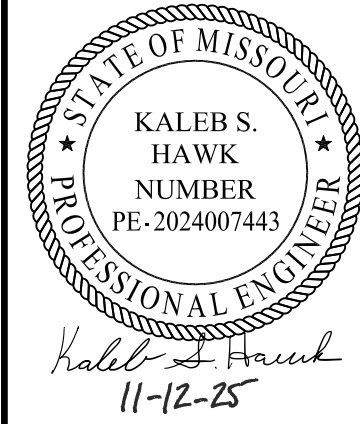
- 10"**: Overall diameter of the pipe.
- A**: Diameter of the flange face.
- #4-G3**: Label for the pipe.
- C-#4-G6**: Label for the flange.
- W**: Thickness of the flange.
- 2 Eq. Spa (Max. 8")**: Dimension indicating the spacing of the flange bolts.
- Skew Angle**: Angle of the flange face relative to the pipe axis.

Diagram illustrating the staggered joint between two plates:

- Top plate: #4-G3
- Bottom plate: C-#4-G6
- Stagger distance: ** Eq. Spa. (Max. 8")
- Plate width: A
- Plate width: WWR5
- Skew Angle

Figure 1 is a cross-sectional diagram of the exterior face of a beam-column joint. It shows a beam of width B and height $10''$ connected to a column of width A . The joint is reinforced with #4-G4 bars. The exterior face is shown with a grid of #4-G bars and WWR5 bars. A skew angle is indicated at the bottom left.

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ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19-28
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9621

DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

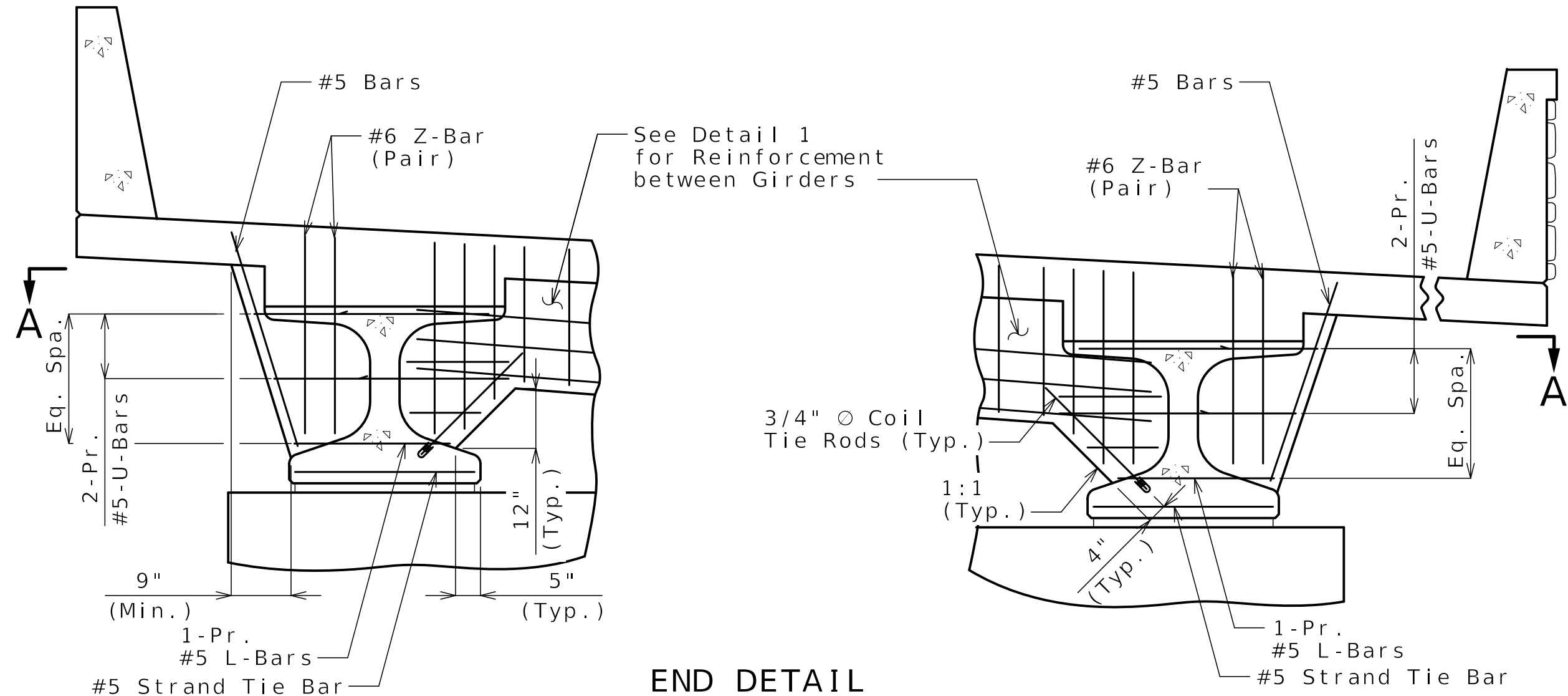
MoDOT

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JEFFERSON CITY, MO 65102
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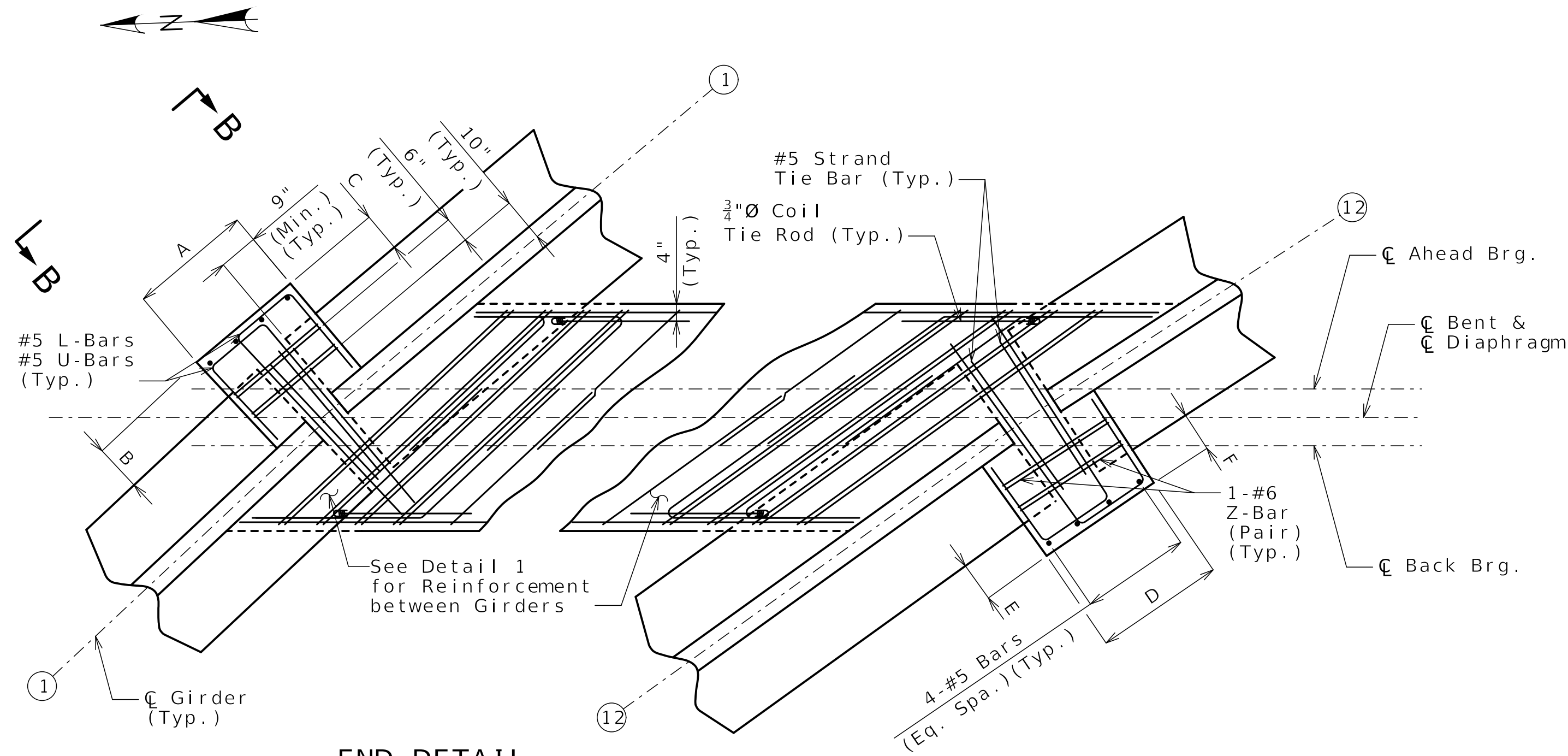
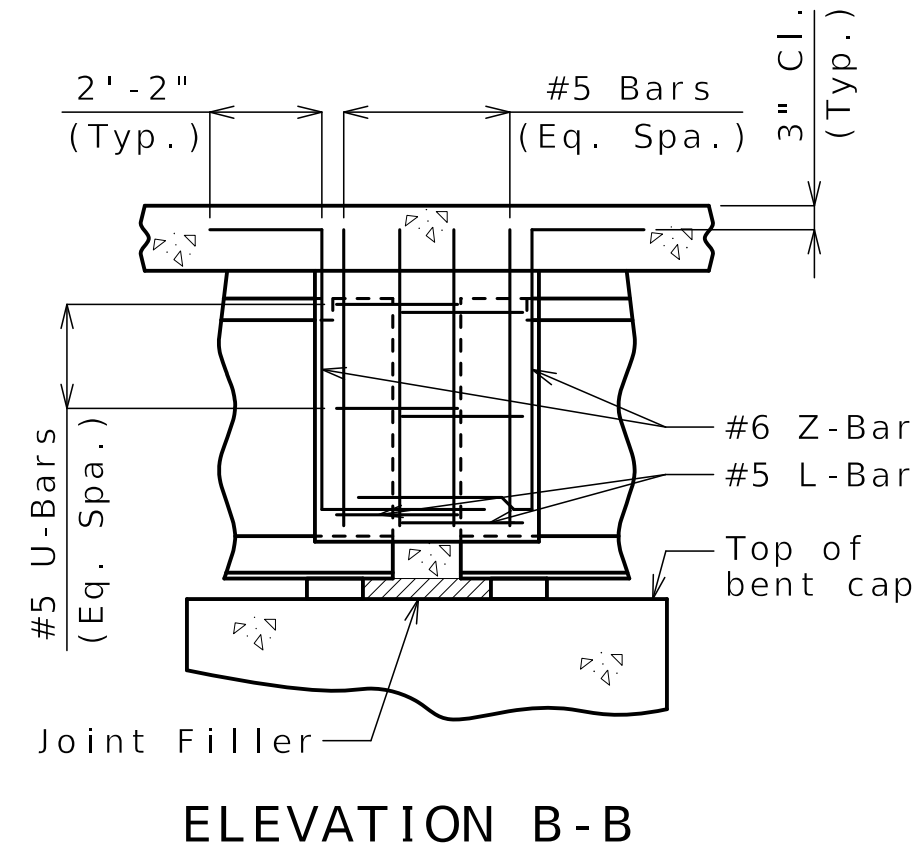
CLARKSON RADMACHER
JOINT VENTURE

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

HNTB



END DETAIL
TYPICAL PART ELEVATION
(Looking Ahead Station)
(Bent No. 3 Shown, Bent No. 2 Similar)



END DETAIL
PART SECTION A-A

TABLE OF VARIABLES						
Bent No.	A	B	C	D	E	F
2	2' - 3 3/4"	9 3/4"	9"	2' - 4 3/4"	9"	9"
3	2' - 4"	10 3/4"	9"	2' - 5 3/4"	9"	9"

Notes:
Work this sheet with Sheets No. B19-29 and B19-30.
For cap beam step geometry, bearing location, bearing details, roofing felt details, joint filler details, and notes not shown here see Sheets No. B19-11 thru B19-17.
For location of #5 Strand Tie Bars, see Sheets No. B19-24 thru B19-26.
For location of coil ties, see Sheets No. B19-24 thru B19-26.
If optional slab longitudinal construction joint is utilized, concrete may be fully placed in girder bay where longitudinal joint is located up to bottom of slab.
Diaphragms shall be built vertical.

(X) Denotes Girder number

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Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

CONCRETE DIAPHRAGM AT INTERMEDIATE BENTS

DATE PREPARED
11/13/2025

ROUTE	STATE
I 70	MO

DISTRICT	SHEET NO.
BB	B10 30

BR	D19-23
COUNTY	
LACKSON	

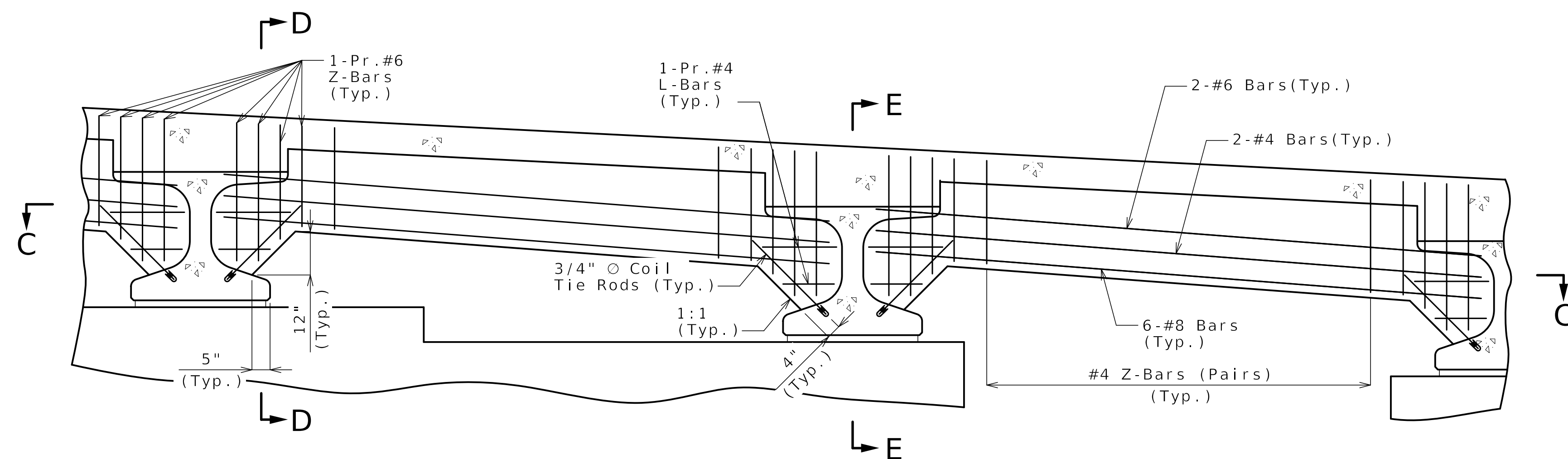
JACKSON
JOB NO.
141148CD

CONTRACT ID.
340007 601

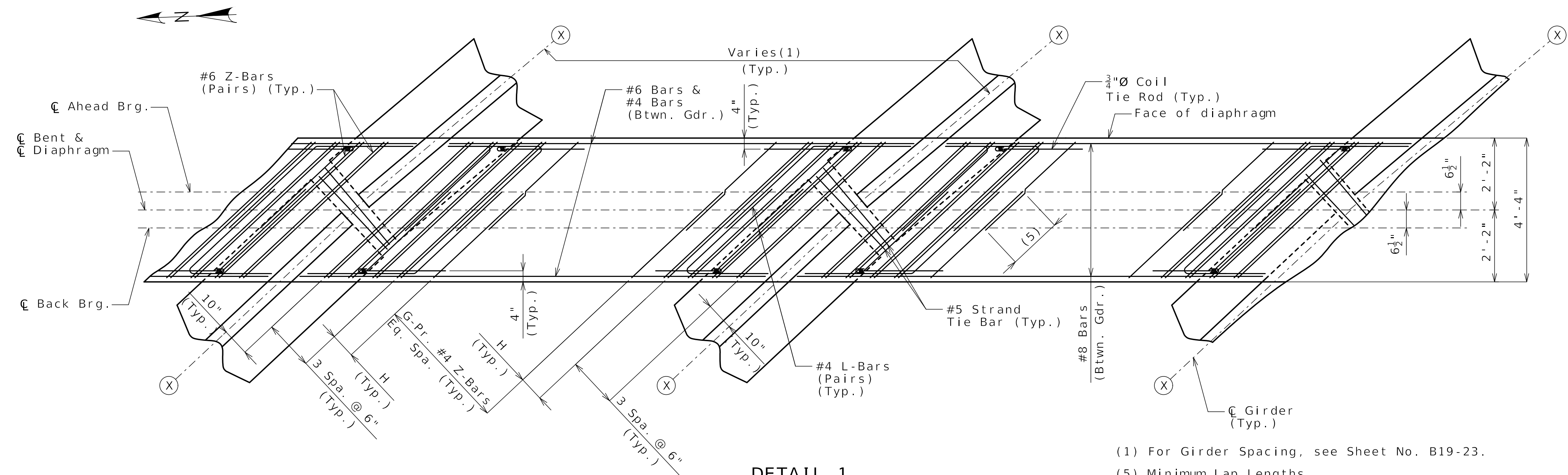
240807-C01
PROJECT NO.

BRIDGE NO.
10001

TABLE OF VARIABLES				
Bent No.	Girder Bay	Detail	G	H
2	1-2	1	7	9"
	2-3	1	7	9"
	3-4	1	7	9"
	4-5	1	7	9"
	5-6	1	7	9"
	6-7	1	2	8"
	7-8	1	2	6"
	8-9	1	2	6"
	9-10	1	2	6"
3	10-11	1	2	5"
	11-12	1	2	5"
	1-2	1	7	6"
	2-3	1	7	6"
	3-4	1	7	6"
	4-5	2	6	12"
	5-6	2	6	12"
	6-7	2	4	12"
	7-8	2	4	9"
	8-9	1	4	6"
	9-10	1	4	6"
	10-11	1	4	5"
	11-12	1	3	5"

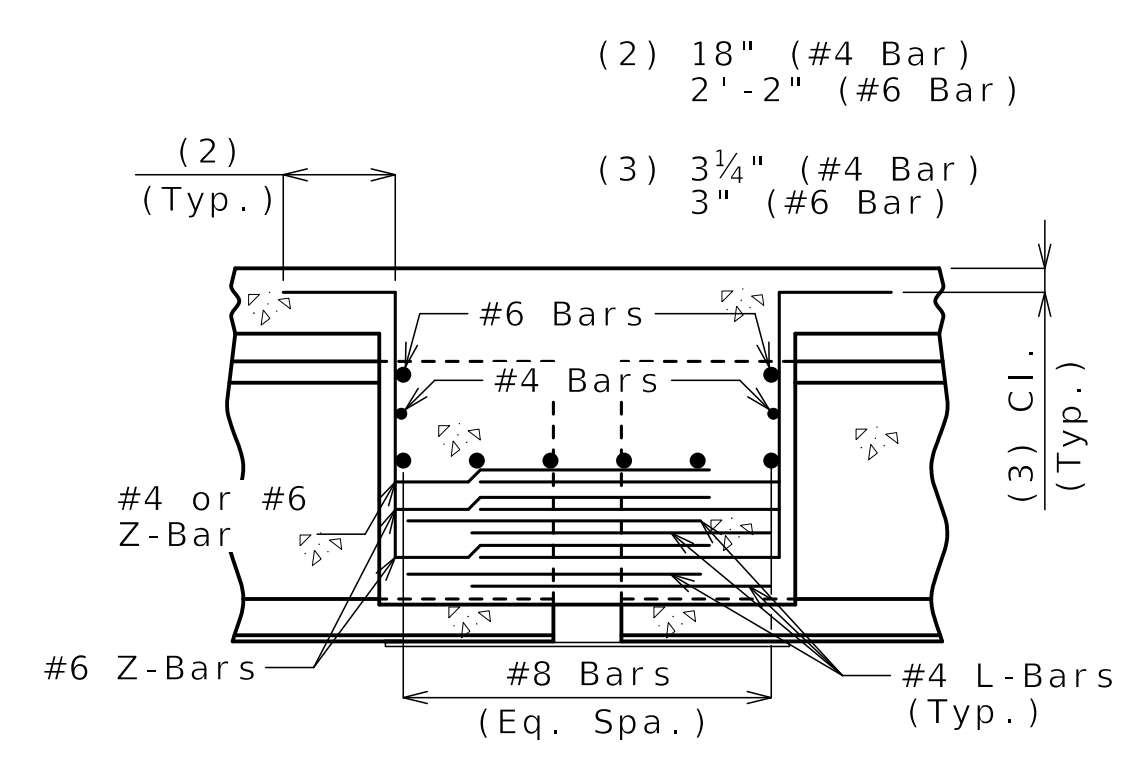


DETAIL 1
TYPICAL PART ELEVATION
(Looking Ahead Station)
(Bent No. 3 Shown, Bent No. 2 Similar)

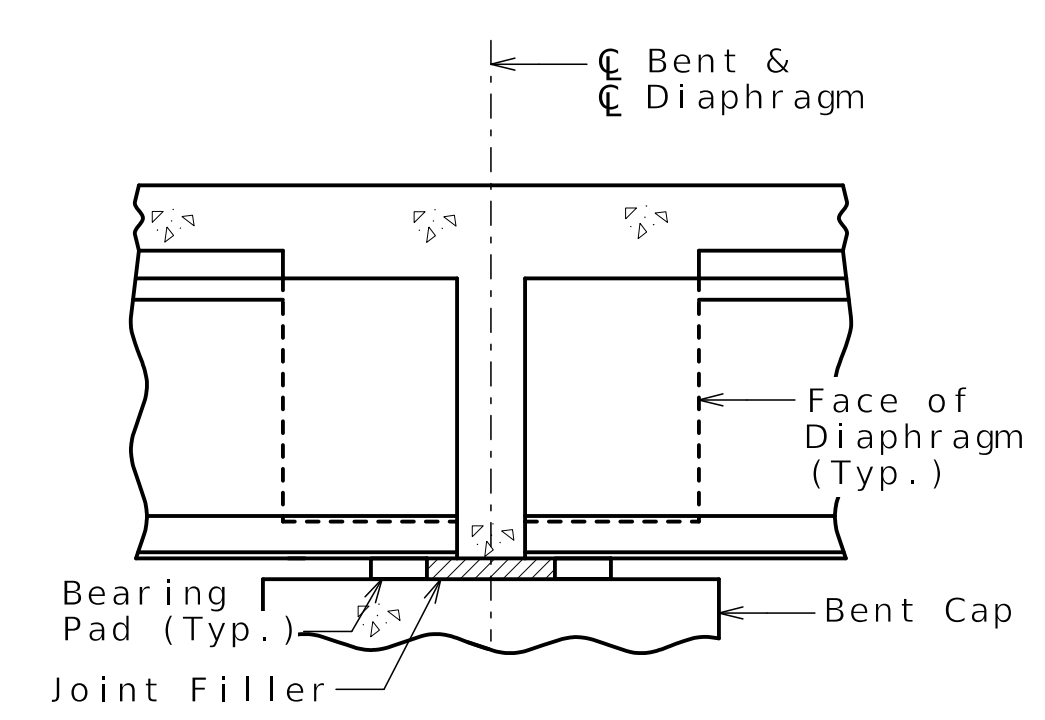


DETAIL 1
PART SECTION C-C

- (1) For Girder Spacing, see Sheet No. B19-23.
(5) Minimum Lap Lengths
#4 Bar = 19"
#6 Bar = Full Width of Diaph.



SECTION D-D



Joint Filler —

SECTION E-E
(Reinforcement not shown for clarity)

Notes:
Work this sheet with Sheets No. B19-28 and B19-30.

(x) Denotes Girder number

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Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

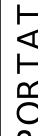
CONCRETE DIAPHRAGM AT INTERMEDIATE BENTS

Detailed	JUL	2025
Checked	AUG	2025

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

Sheet No. B19-29 of B19-63

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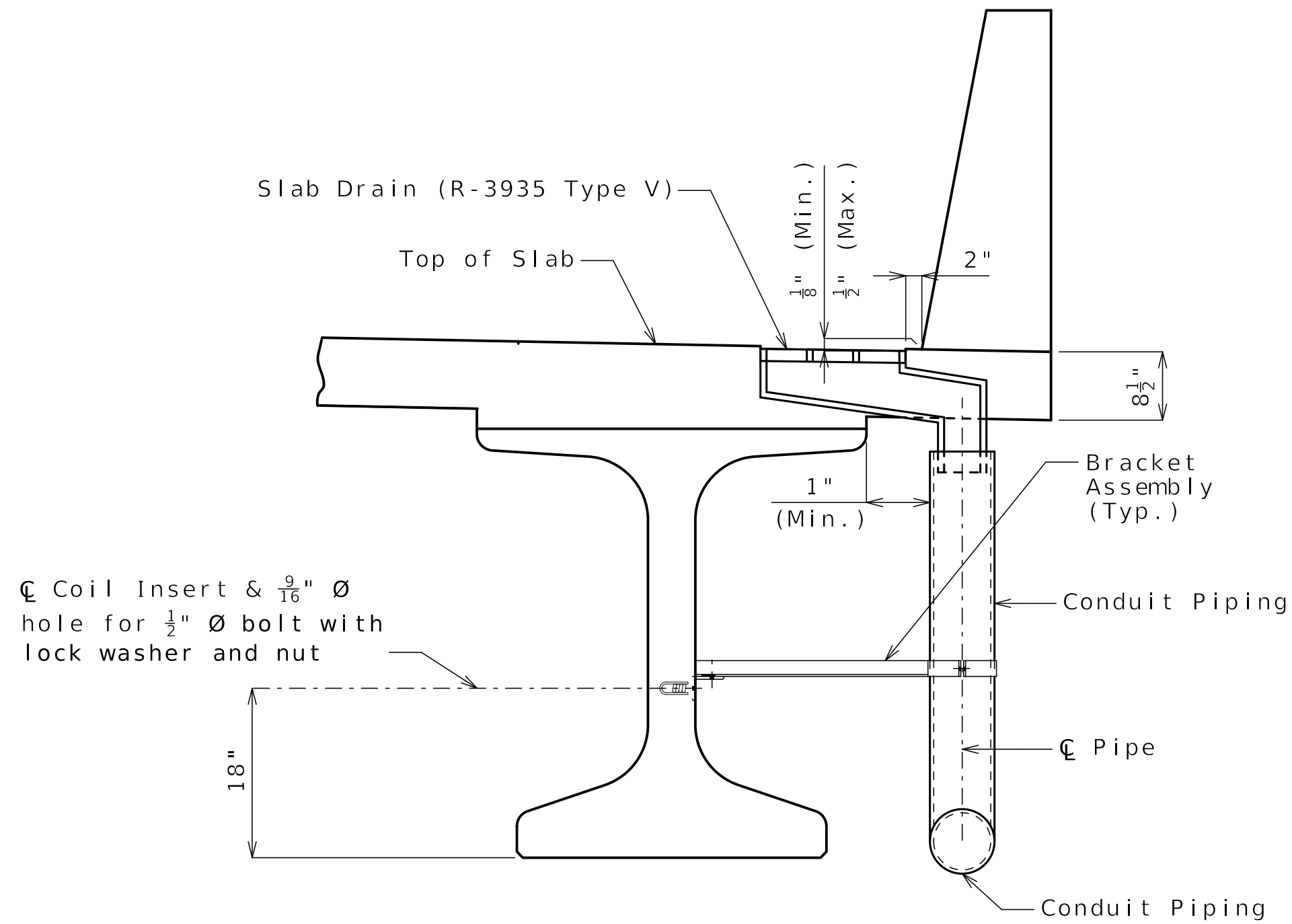
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-273-6636)

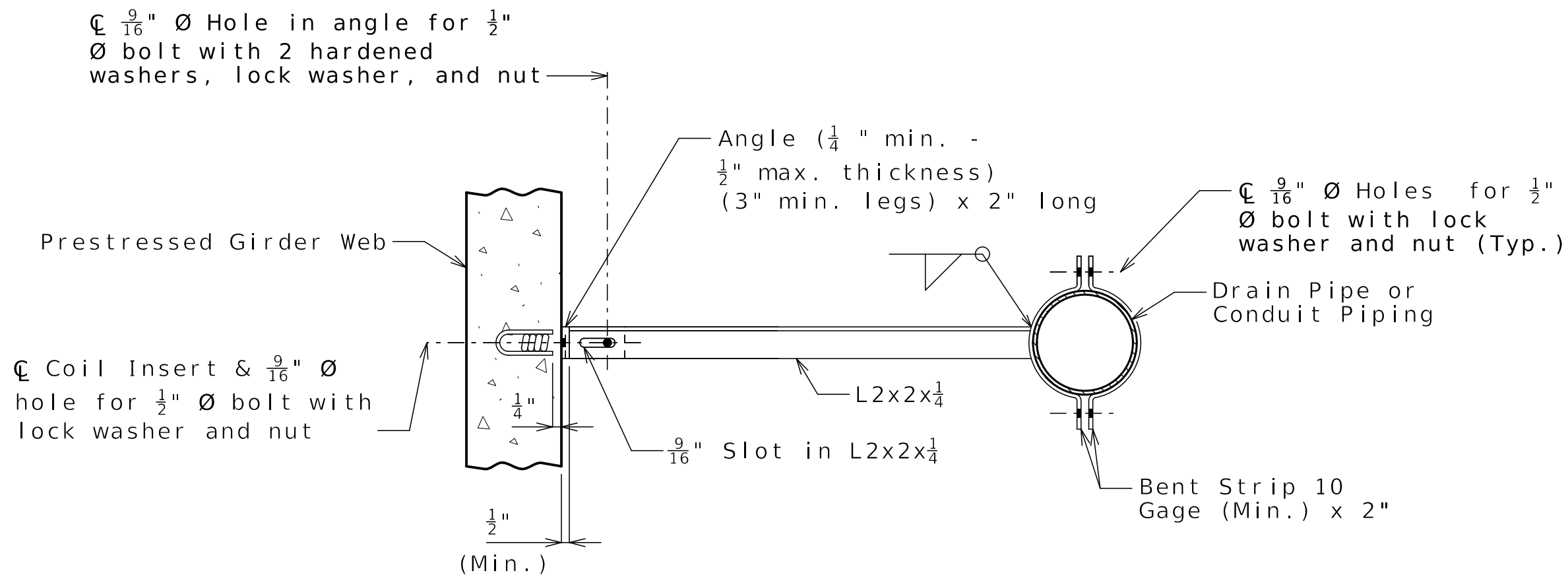
HNTB

**CLARKSON
RADMACHER**
JOINT VENTURE

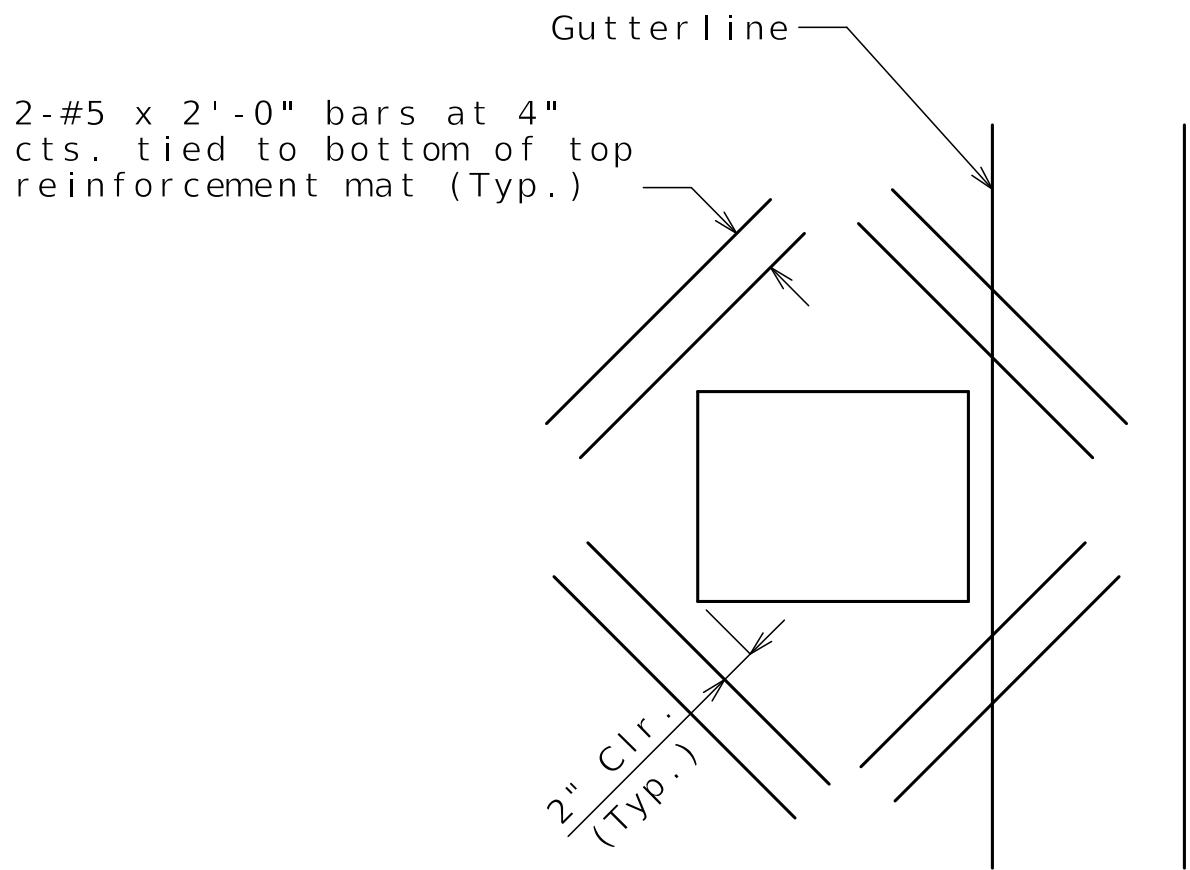
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270



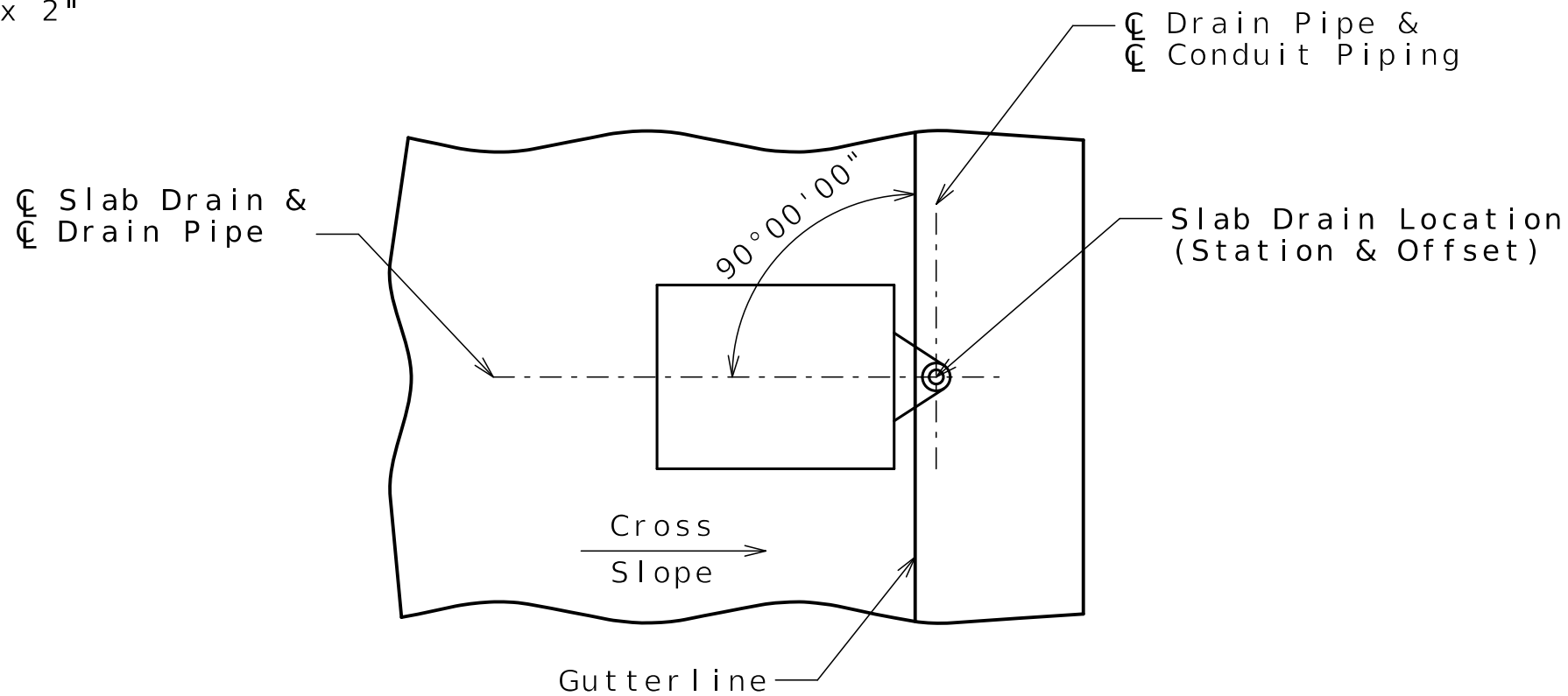
PART SECTION WITH CONDUIT PIPING



PART SECTION SHOWING BRACKET ASSEMBLY



REINFORCEMENT DETAIL AT SLAB DRAIN



SLAB DRAIN ORIENTATION DETAIL

Notes:

Work this sheet with Sheet No. B19-32.

For slab drain locations, see Sheet No. B19-38.

Slab drains shall be Neenah R-3935 Type V or approved equal. Pipe shall be FRP.

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

Transverse reinforcing steel shall be shifted to clear drains. Adjust or sawcut longitudinal reinforcement to clear drains. Coat exposed ends with epoxy paint.

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

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

All 1/2 inch bolts shall be ASTM A307, except as shown.

Shop drawings shall be required for all drainage components other than slab drains, drain pipes and bracket assemblies. Shop drawings shall show all conduit piping, catchpans, reducers, clevis hangers, and pipe straps.

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

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

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

Coil insert locations in prestressed girders shall be modified by fabricator to provide 1 1/2 inch clear between the prestressing strand and the edge of the coil insert.

Coil insert location for bottom bracket assembly at slab drain locations with conduit piping runs shall be coordinated with drainage system contractor to ensure minimum required conduit slope is achieved.

Notes for FRP Pipe and Conduit Piping:

Drain pipe and conduit piping inner diameter shall meet or exceed Slab Drain outlet.

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

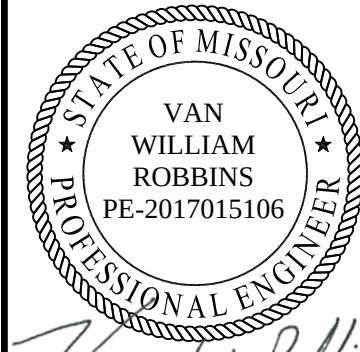
The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Pipe may have an exterior coating for additional UV resistance.

The color of the pipe shall be Gray (Federal Standard #26373) when used adjacent to prestressed girders. The color shall be uniform throughout the resin and any coating used.

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

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

CONDUITS SHOWN ON THIS SHEET REFERS TO CONDUITS CONVEYING WATER FROM SLAB DRAINS AND DO NOT REFER TO ELECTRICAL CONDUITS.



Van W. Robbins
11-13-25

DATE PREPARED
11/13/2025

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-31

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102

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

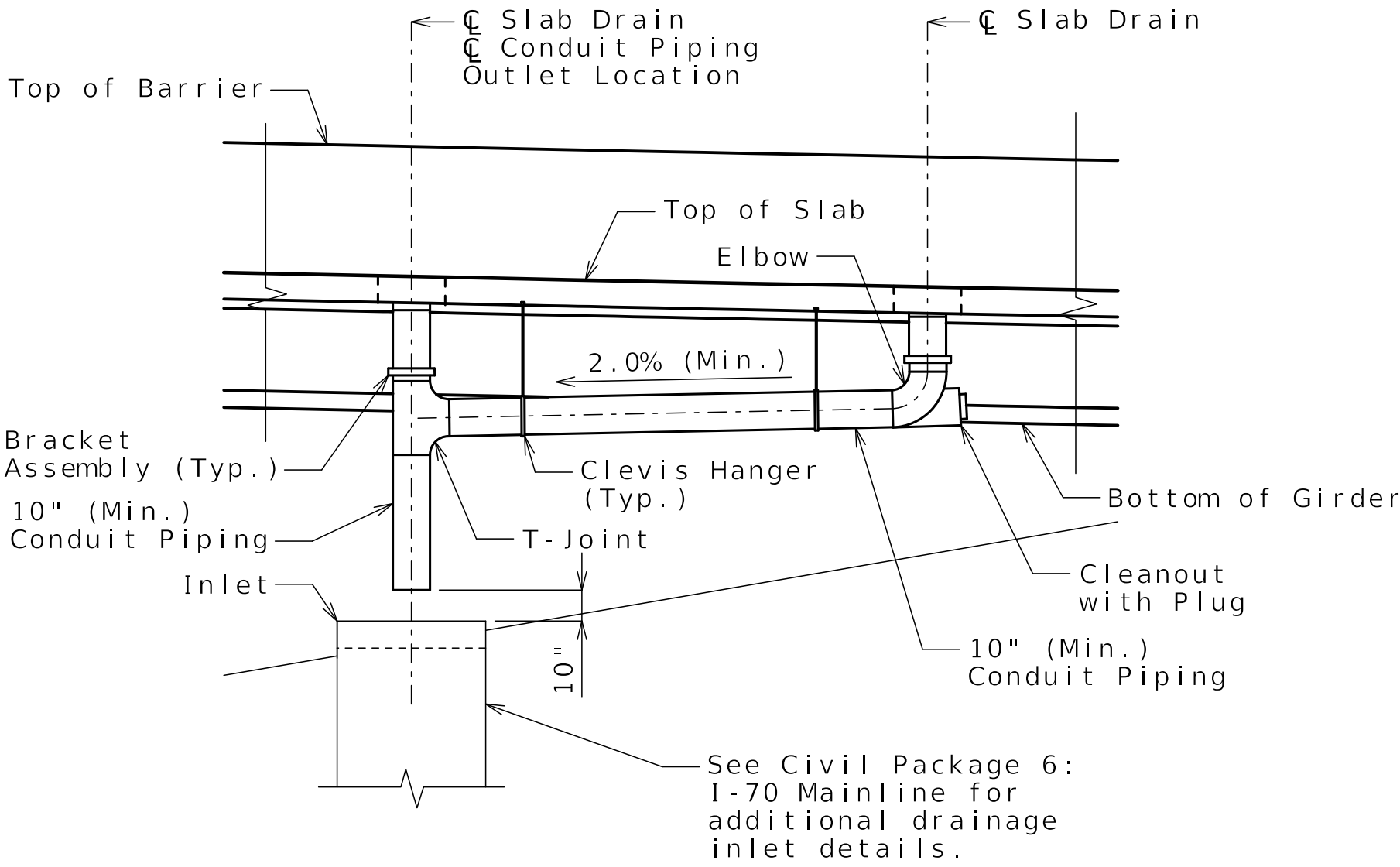
MoDOT

CLARKSON RADMACHER JOINT VENTURE

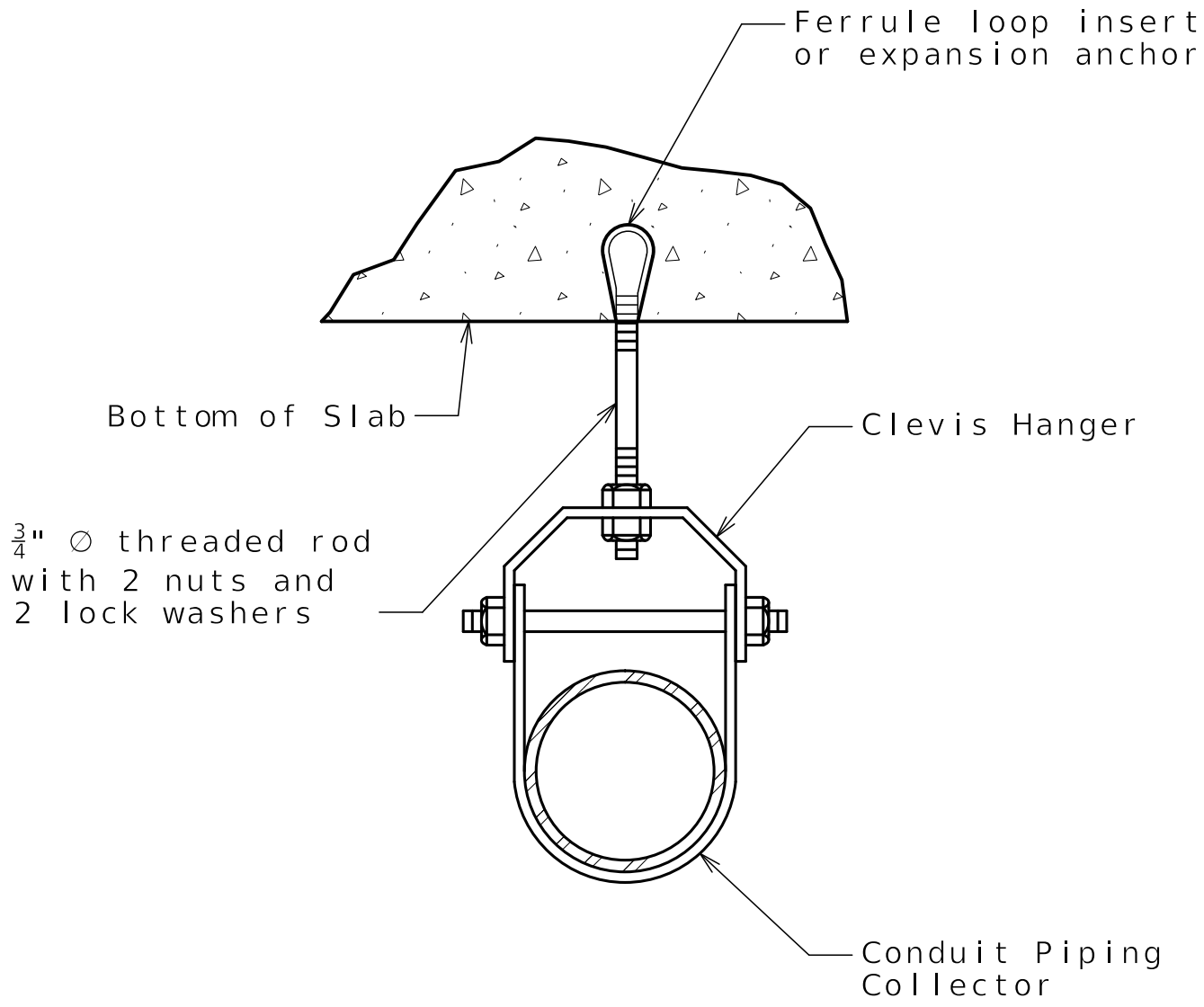
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310

CERTIFICATE OF AUTHORITY
NO. 001270

HNTB



BRIDGE PART ELEVATION
(Right gutter line of Span (3-4)
(Looking North)



CLEVIS HANGER DETAIL

CONDUITS SHOWN ON THIS SHEET REFERS TO
CONDUITS CONVEYING WATER FROM SLAB DRAINS
AND DO NOT REFER TO ELECTRICAL CONDUITS.

Note:
Work this sheet with Sheet No. B19-31.
Maximize pipe slope to the extent possible during
installation.
The Contractor shall be responsible for design of the
clevis hanger and loop type concrete inserts placed in the
slab. The design shall be in accordance with the ASHTO LRFD
Bridge Design Standard Specifications, 9th Edition, 2020.
All bolts, straps, anchors and clevis hangers shall
be galvanized in accordance with ASTM A123.

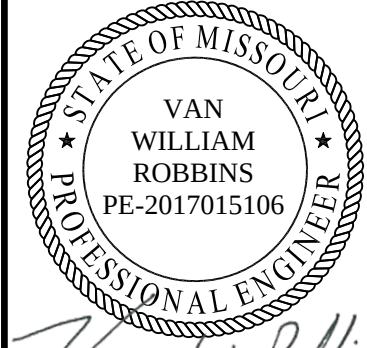
DRAINAGE SYSTEM ON STRUCTURE

Detailed JUL 2025
Checked AUG 2025

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

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Sheet No. B19-32 of B19-63



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ROUTE 1-70	STATE MO
DISTRICT BR	SHEET NO. B19-32

COUNTY
JACKSON

JOB NO.
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CONTRACT ID.
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PROJECT NO.

BRIDGE NO.
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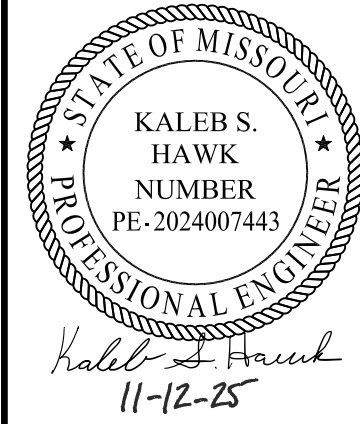
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REV 0 - RFC SUBMITTAL	11/13/25

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CLARKSON
RADMACHER
JOINT VENTURE

715 KIRK DRIVE
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DISTRICT BR	SHEET NO. B19-33
COUNTY JACKSON	
JOB NO. J4I1486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

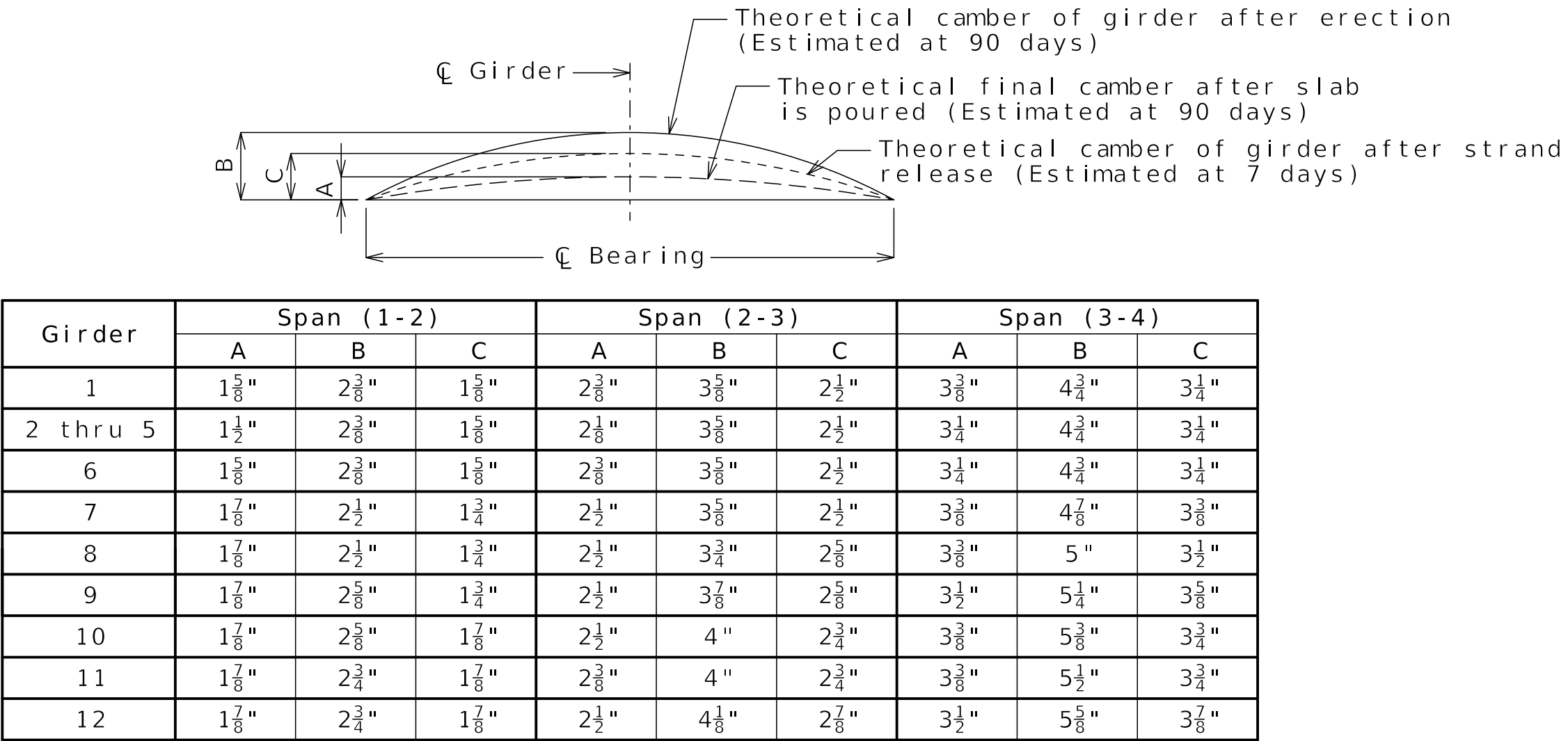
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KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270



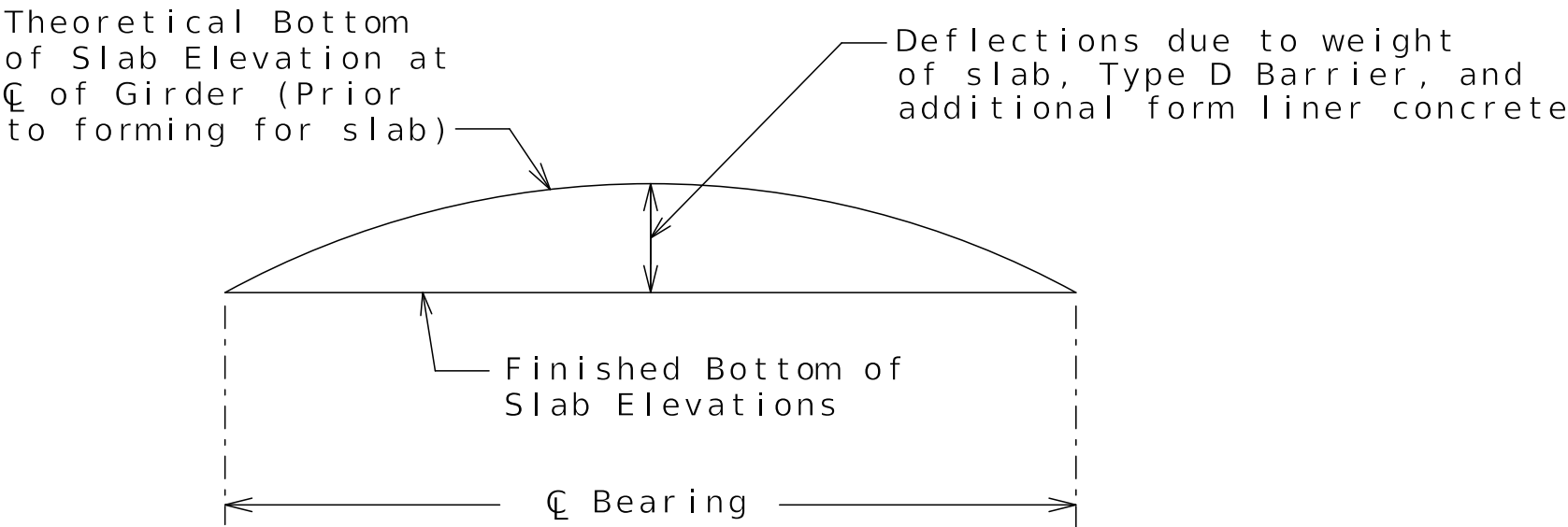
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Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Notes:
If girder 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.
For Bearing lengths, see Sheets No. B19-24 thru B19-26.

CAMBER DIAGRAM & THEORETICAL SLAB HAUNCHING DIAGRAM

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab)(Estimated at 90 days)**												
Girder Number	Span (1-2) (Varies @ Brg. - @ Brg.)											
	@ Brg.	.25	.50	.75	@ Brg.							
	1	861.53	861.28	861.00	860.67	860.31						
	2	860.72	860.48	860.19	859.85	859.48						
	3	859.91	859.66	859.36	859.02	858.64						
	4	859.09	858.83	858.53	858.18	857.79						
	5	858.27	858.00	857.69	857.33	856.94						
	6	857.44	857.15	856.83	856.47	856.08						
	7	857.04	856.71	856.35	855.95	855.53						
	8	856.65	856.28	855.88	855.43	854.99						
	9	856.25	855.84	855.40	854.92	854.45						
	10	855.85	855.41	854.93	854.42	853.92						
	11	855.45	854.97	854.45	853.92	853.40						
	12	855.04	854.53	853.98	853.42	852.88						
Girder Number	Span (2-3) (Varies @ Brg. - @ Brg.)											
	@ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	@ Brg.	
	1	860.28	860.15	860.01	859.86	859.71	859.54	859.36	859.18	858.99	858.80	858.61
	2	859.45	859.31	859.18	859.03	858.87	858.70	858.53	858.34	858.16	857.97	857.79
	3	858.60	858.47	858.33	858.18	858.02	857.85	857.68	857.51	857.33	857.16	856.99
	4	857.75	857.62	857.47	857.32	857.17	857.01	856.85	856.69	856.52	856.36	856.19
	5	856.90	856.76	856.62	856.48	856.33	856.19	856.03	855.88	855.72	855.57	855.41
	6	856.04	855.90	855.76	855.63	855.49	855.36	855.22	855.07	854.93	854.79	854.65
	7	855.49	855.34	855.20	855.05	854.91	854.76	854.61	854.47	854.32	854.17	854.03
	8	854.95	854.79	854.64	854.49	854.34	854.19	854.03	853.88	853.72	853.57	853.42
	9	854.41	854.25	854.09	853.94	853.78	853.62	853.46	853.30	853.13	852.97	852.82
	10	853.88	853.71	853.55	853.39	853.23	853.06	852.90	852.73	852.56	852.39	852.23
	11	853.36	853.18	853.02	852.85	852.69	852.52	852.35	852.17	851.99	851.82	851.65
	12	852.84	852.66	852.49	852.32	852.15	851.97	851.79	851.62	851.43	851.26	851.08
Girder Number	Span (3-4) (Varies @ Brg. - @ Brg.)											
	@ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	@ Brg.	
	1	858.58	858.44	858.31	858.17	858.03	857.89	857.75	857.60	857.45	857.30	857.16
	2	857.76	857.64	857.52	857.39	857.27	857.14	857.00	856.86	856.72	856.58	856.44
	3	856.96	856.84	856.73	856.62	856.50	856.38	856.25	856.13	855.99	855.86	855.73
	4	856.16	856.06	855.96	855.85	855.75	855.64	855.52	855.40	855.28	855.16	855.04
	5	855.39	855.29	855.20	855.10	855.01	854.91	854.80	854.70	854.58	854.47	854.36
	6	854.62	854.53	854.45	854.37	854.28	854.19	854.10	854.00	853.90	853.80	853.71
	7	854.00	853.91	853.82	853.74	853.65	853.56	853.46	853.36	853.25	853.15	853.05
	8	853.39	853.30	853.21	853.12	853.03	852.94	852.84	852.73	852.63	852.52	852.42
	9	852.79	852.70	852.61	852.52	852.43	852.34	852.23	852.13	852.02	851.91	851.80
	10	852.20	852.11	852.02	851.93	851.84	851.75	851.65	851.54	851.43	851.31	851.21
	11	851.62	851.53	851.45	851.36	851.27	851.18	851.08	850.97	850.85	850.74	850.63
	12	851.05	850.96	850.88	850.80	850.71	850.61	850.51	850.41	850.29	850.18	850.07

**Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of slab (including Type D Barrier, and additional form liner concrete).



TYPICAL SLAB ELEVATIONS DIAGRAM

Notes:
For @ Bearing Lengths, see Sheets No. B19-24 thru B19-26.

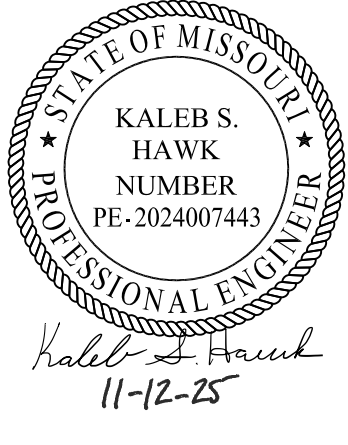
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Date: 11/21/2025
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THEORETICAL BOTTOM OF SLAB ELEVATIONS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-34 of B19-63



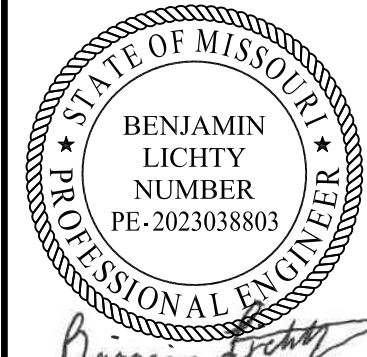
DATE PREPARED 11/13/2025	
ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 34
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807 - C01	
PROJECT NO.	

BRIDGE NO. A9621	
DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



Benjamin Lichty

11-13-2025

DATE PREPARED

11/13/2025

ROUTE STATE

I-70 MO

DISTRICT SHEET NO.

BR B19-35

COUNTY

JACKSON

JOB NO.

J411486D

CONTRACT ID.

240807-C01

PROJECT NO.

BRIDGE NO.

A9621

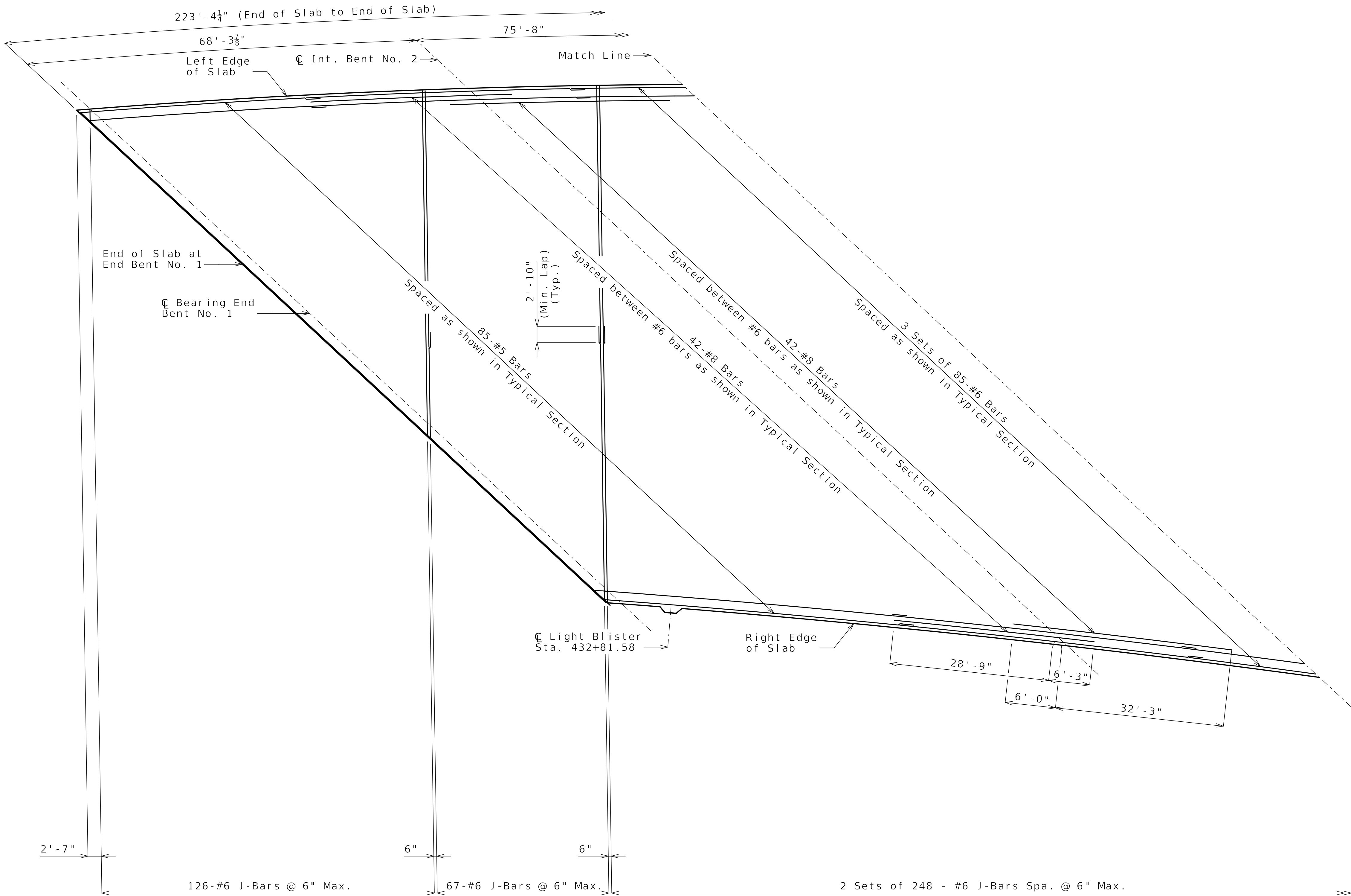
DATE	DESCRIPTION	REV	0	-	REF	SUBMITTAL
11/13/25						

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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CLARKSON RADMACHER JOINT VENTURE

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



TOP REINFORCEMENT

Minimum Lap Splices:
Longitudinal
#5 = 2'-5"
#6 = 3'-7"

Notes:
Work this sheet with Sheets No. B19-36 thru B19-38.
For Typical Section, see Sheet No. B19-40.
For Slab Pouring Sequence, see Sheet No. B19-39.
For details and reinforcement of Type D Barrier, see Sheet No. B19-42.
For Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. B19-33.
For Theoretical Bottom of Slab Elevations, see Sheet No. B19-34.
Longitudinal slab dimensions are measured horizontally.
For Light Blister Reinforcing and Details, see Sheet No. B19-44.

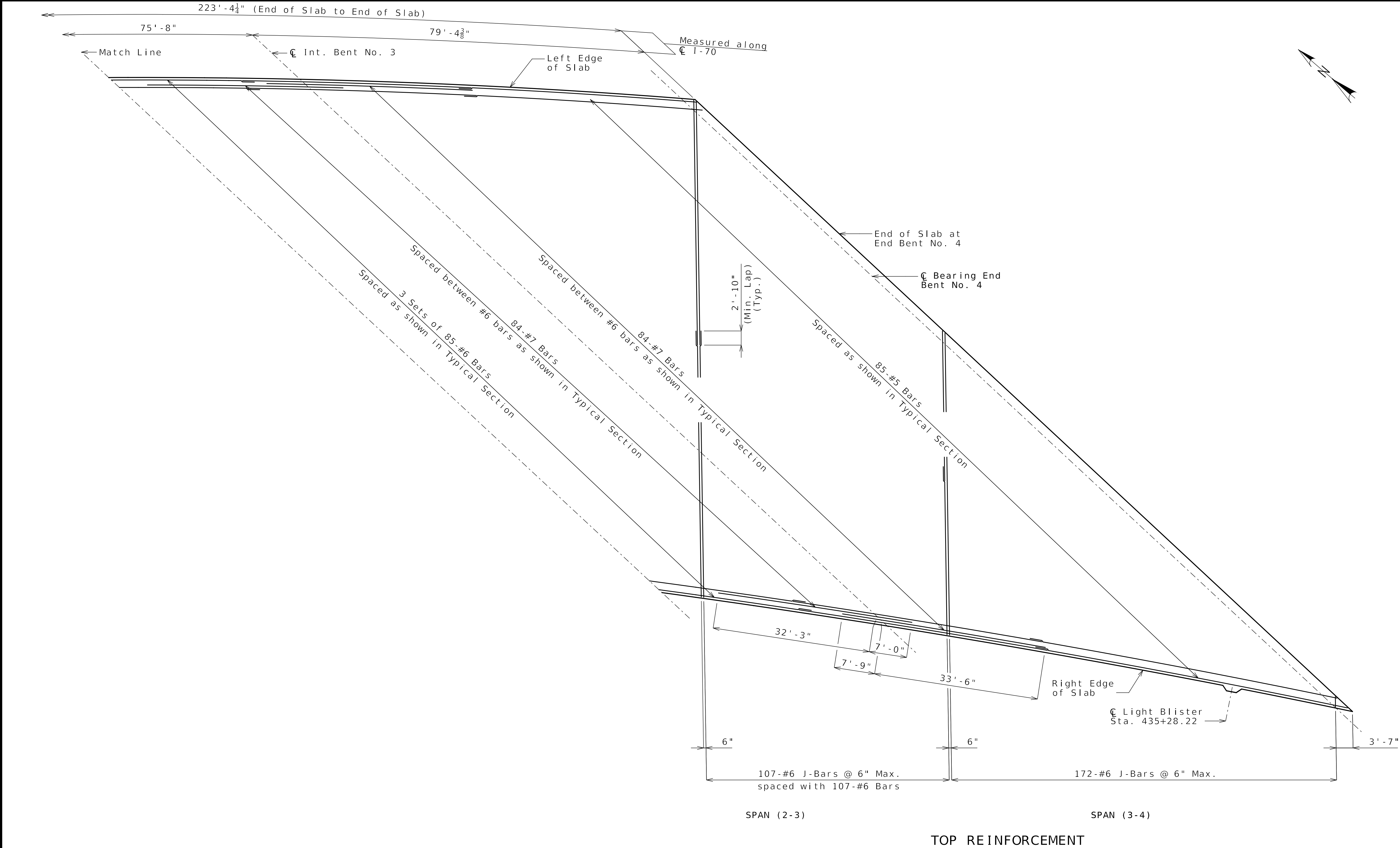
Released For Construction
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Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

SLAB PLAN SHOWING TOP REINFORCEMENT

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-35 of B19-63



Minimum Lap Splices:
Longitudinal
#5 = 2'-5"
#6 = 3'-7"

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

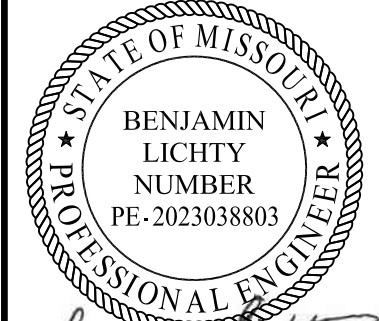
Notes:
Work this sheet with Sheets No. B19-35 thru B19-38.

SLAB PLAN SHOWING TOP REINFORCEMENT

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-36 of B19-63



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ROUTE STATE

I-70 MO

DISTRICT SHEET NO.

BR B19-36

COUNTY

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JOB NO.

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CONTRACT ID.

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PROJECT NO.

BRIDGE NO.

A9621

DATE	DESCRIPTION
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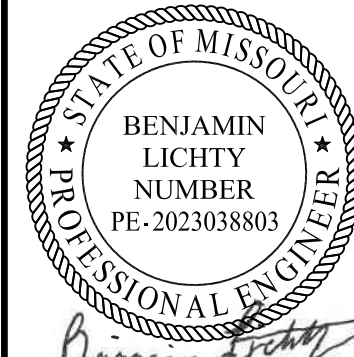
MoDOT

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



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11-13-2025

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ROUTE STATE

I - 70 MO

DISTRICT SHEET NO.

BR B19-37

COUNTY

JACKSON

JOB NO.

J411486D

CONTRACT ID.

240807-C01

PROJECT NO.

BRIDGE NO.

A9621

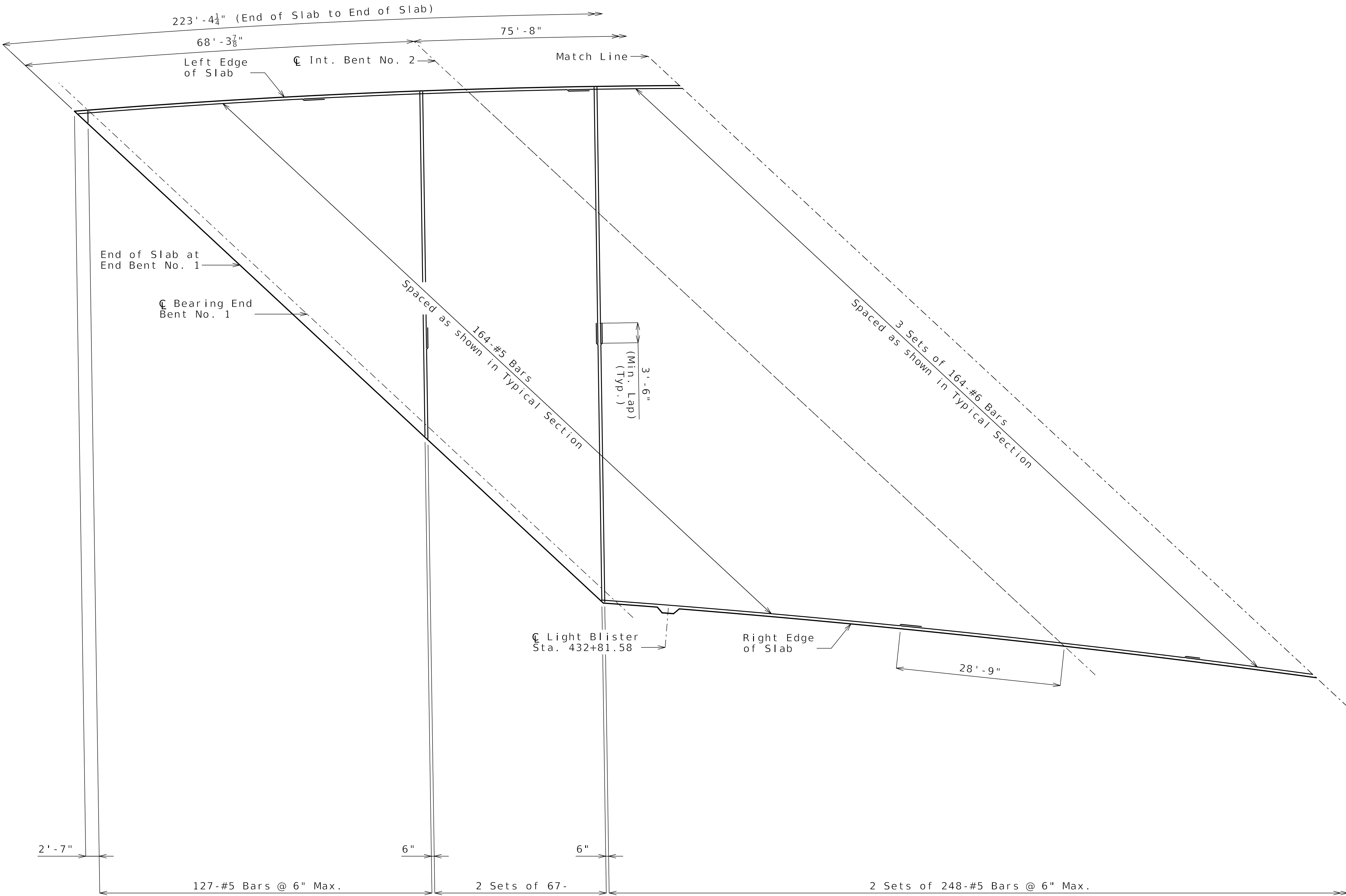
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JOINT VENTURE

715 KIRK DRIVE
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NO. 001270



BOTTOM REINFORCEMENT

Minimum Lap Splices:
Longitudinal
#6 = 3'-7"
#5 = 3'-0"

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

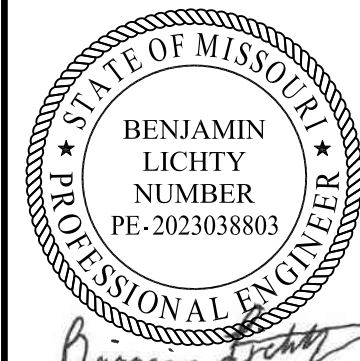
Notes:
Work this sheet with Sheets No. B19-35 thru B19-38.

SLAB PLAN SHOWING BOTTOM REINFORCEMENT

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-37 of B19-63



Benjamin Lichty

11-13-2025

DATE PREPARED

11/13/2025

ROUTE STATE

I - 70 MO

DISTRICT SHEET NO.

BR B19-38

COUNTY

JACKSON

JOB NO.

J411486D

CONTRACT ID.

240807-C01

PROJECT NO.

BRIDGE NO.

A9621

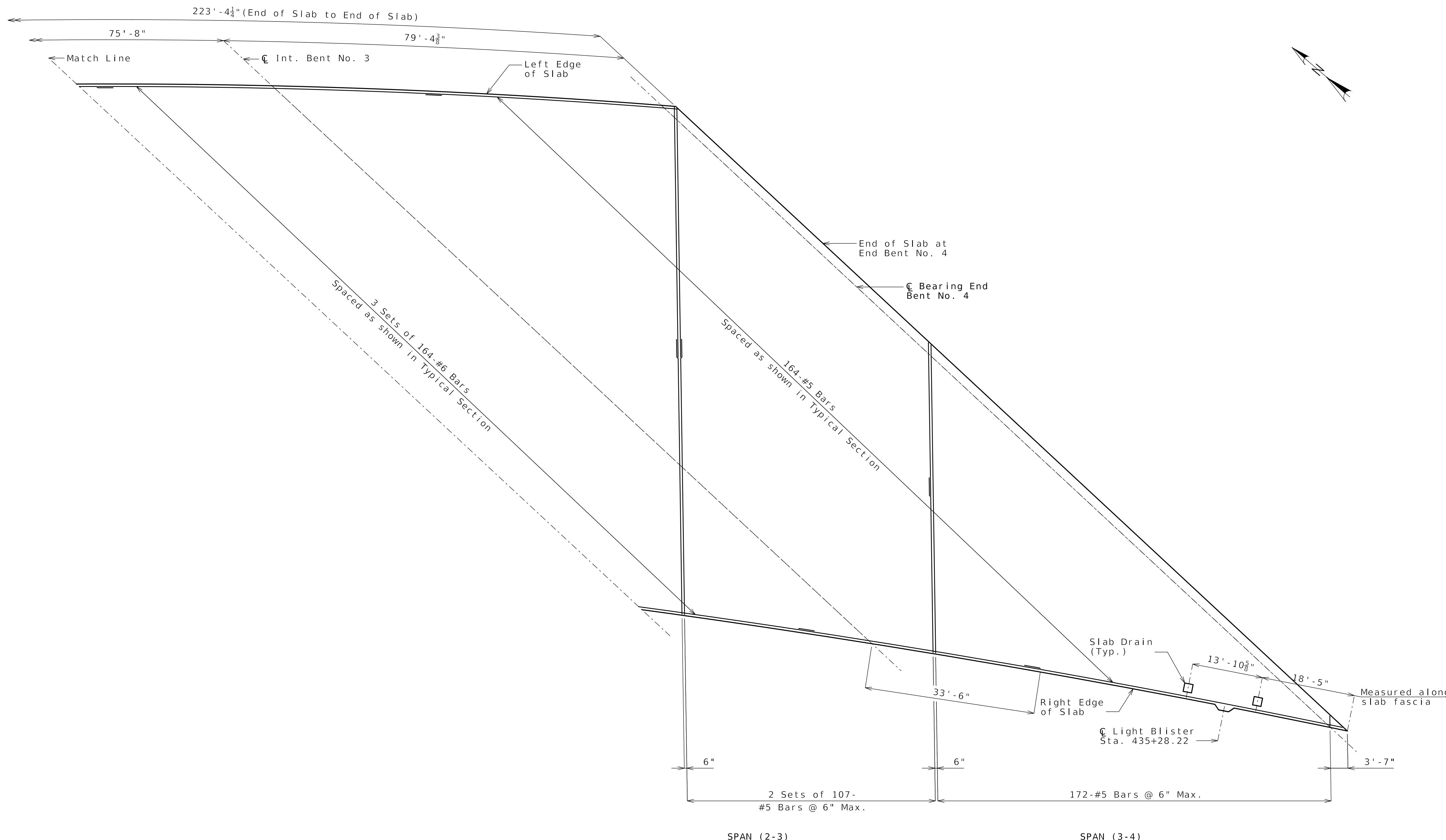
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105 WEST CAPITOL
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CLARKSON RADMACHER
JOINT VENTURE

715 KIRK DRIVE
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CERTIFICATE OF AUTHORITY
NO. 001270



Minimum Lap Splices:
Longitudinal
#6 = 3'-7"
#5 = 3'-0"

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

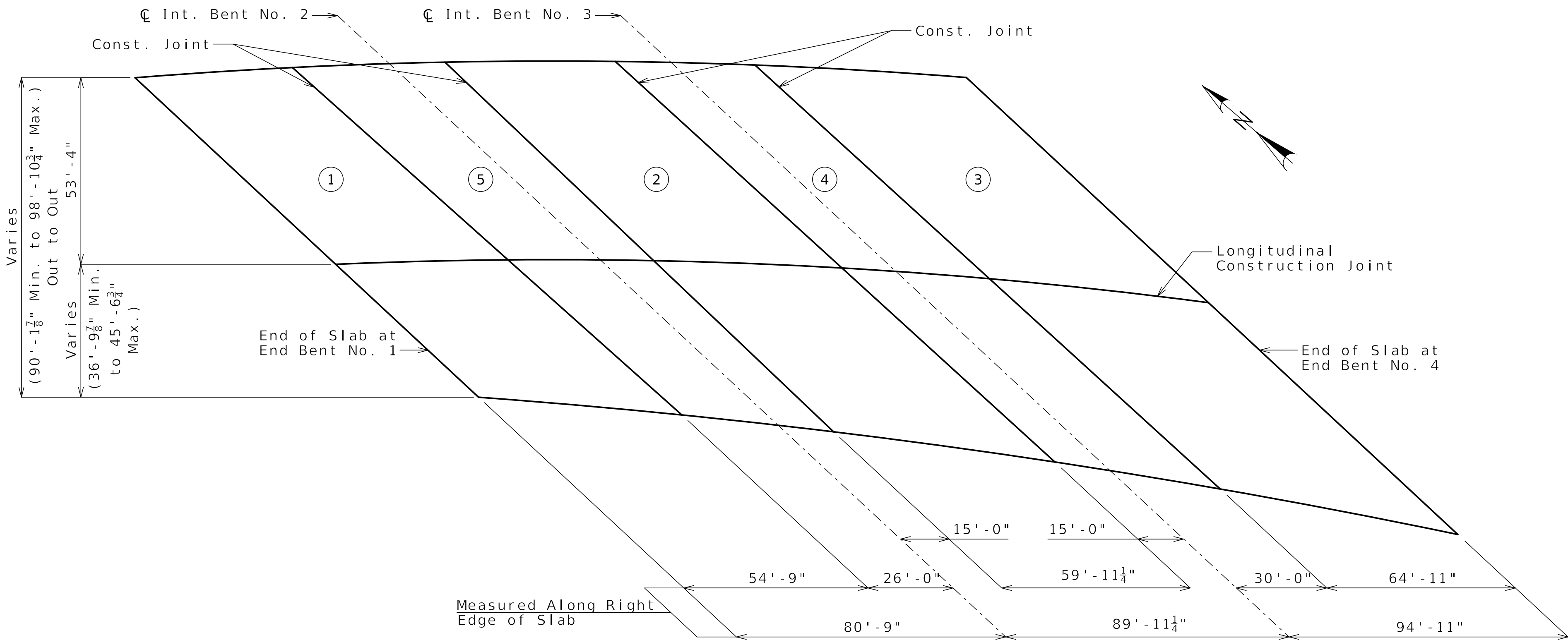
Notes:
Work this sheet with Sheets No. B19-35 thru B19-37.
For slab drain details, see Sheets No. B19-31 and B19-32.

SLAB PLAN SHOWING BOTTOM REINFORCEMENT

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-38 of B19-63



SLAB POURING SEQUENCE

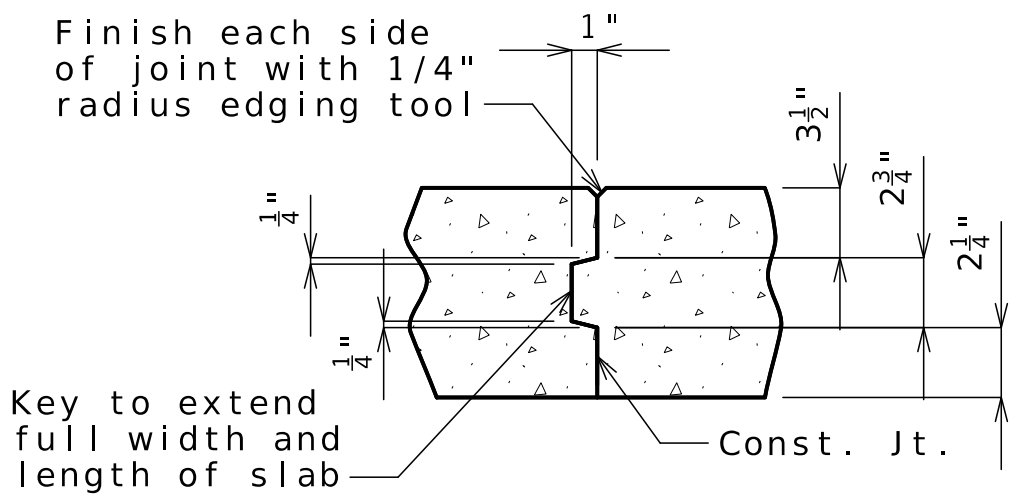
	Sequence of Pours					Min. Rate of Pour Cu. Yds./Hr.
	Direction					With Retarder
Basic Sequence	3	4	2	5	1	28*
	End to 4	3 to 2	4 to 5	2 to 1	5 to End	
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.						
Alternate A Pours	3	4 + 2		5 + 1		37
	End to 4	3 to 5		2 to End		
Alternate B Pours	3 + 4 + 2		5 + 1			37
	End to 5		2 to End			
Alternate C Pours	3 + 4 + 2 + 5 + 1					37
	End to End					

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

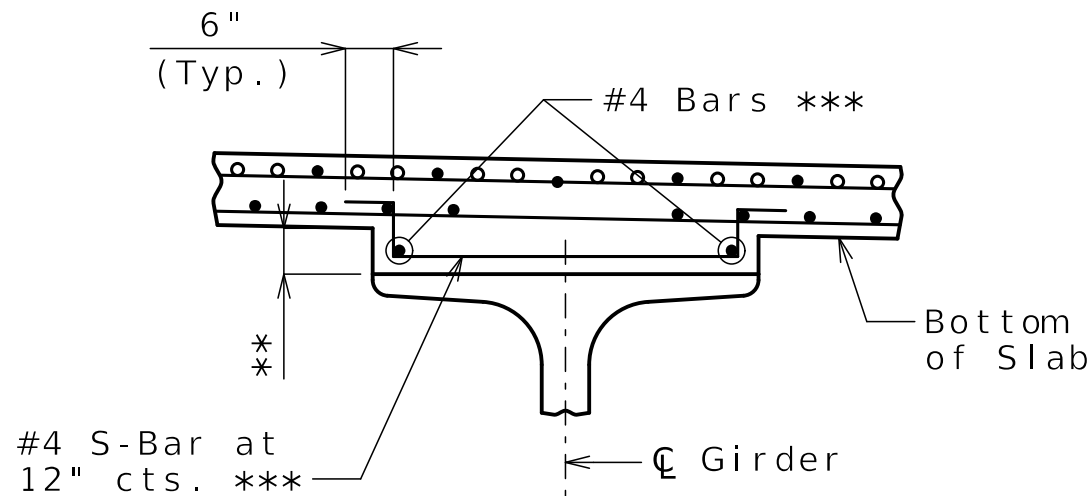
The concrete diaphragm at the intermediate bents and integral end bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

* A minimum finishing rate of 20 LF/HR shall be maintained.

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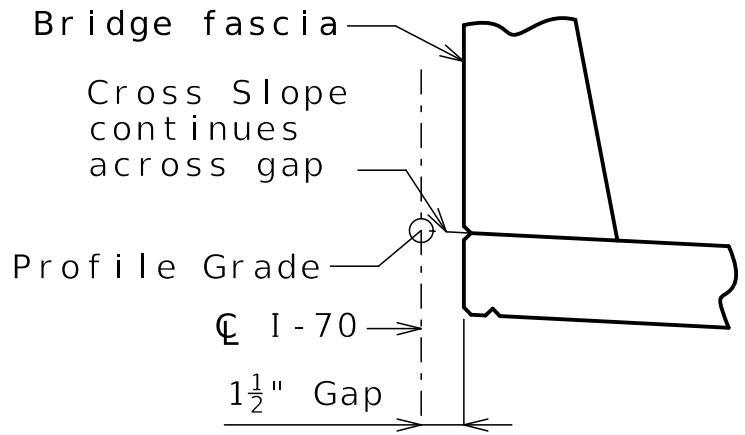
SLAB CONSTRUCTION JOINT



HAUNCH REINFORCING DETAIL
(Prestressed Girders)

** When dimension is greater than or equal to 5" and the typical haunch reinforcing is not used, a single Z-bar with 6" tail dimensions and a single #4 longitudinal bar are required.

*** Contractor shall provide #4 Bars and #4 S-Bars as necessary where the haunch exceeds 4 inches measured at centerline of girder. See Theoretical Slab Haunching Diagram on Sheet No. B19-33 for haunch thickness.



PROFILE GRADE DETAIL

Note: Bridge cross slope is set radial to I-70.

Notes:
For additional slab details and notes, see Sheet No. B19-40.

SLAB DETAILS



11-13-2025

DATE PREPARED
11/13/2025

ROUTE
I - 70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-39

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

CERTIFICATE OF AUTHORITY

NO. 001270

CLARKSON RADMACHER JOINT VENTURE

715 KIRK DRIVE

KANSAS CITY, MO 64105-1310

HNTB



11-13-2025

DATE PREPARED

11/13/2025

ROUTE STATE

I-70 MO

DISTRICT SHEET NO.

BR B19-41

COUNTY

JACKSON

JOB NO.

J411486D

CONTRACT ID.

240807-C01

PROJECT NO.

BRIDGE NO.

A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

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

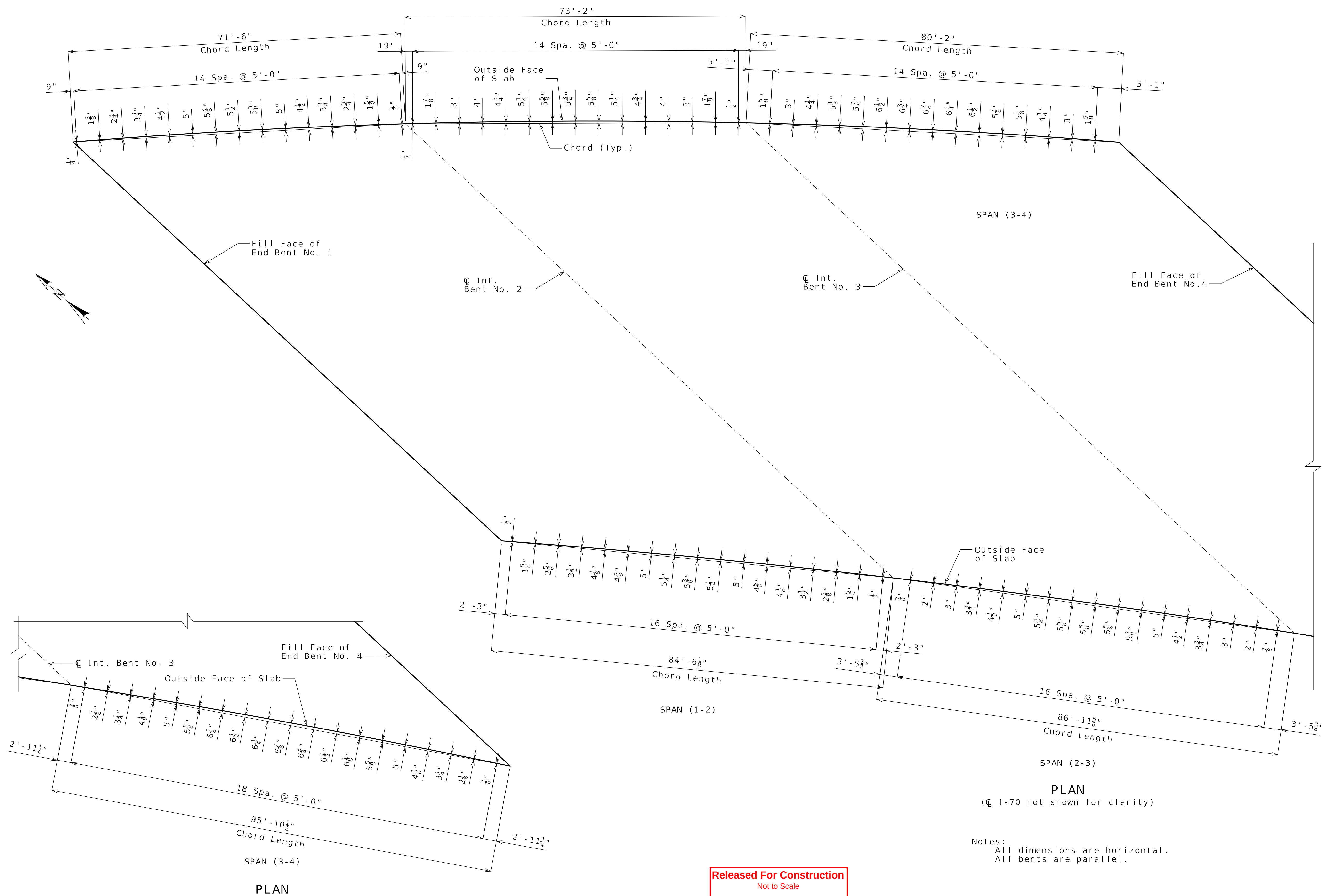
715 KIRK DRIVE

KANSAS CITY, MO 64105-1310

CERTIFICATE OF AUTHORITY

NO. 001270

HNTB



PLAN
(I-70 not shown for clarity)

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

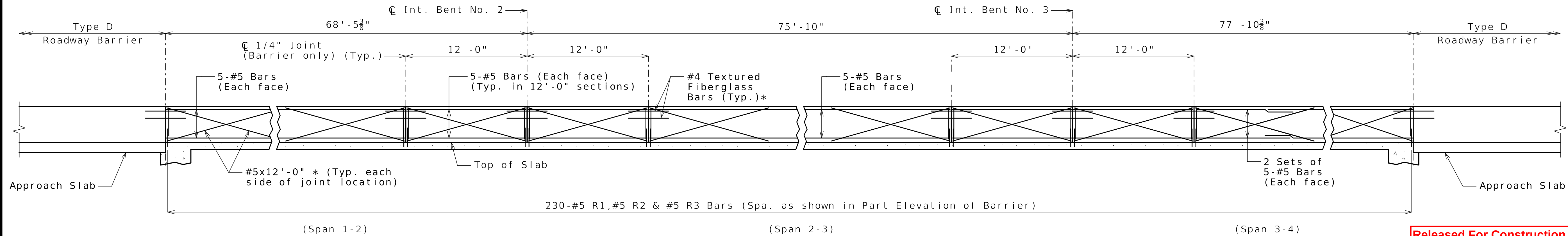
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Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

SLAB CURVE ORDINATES

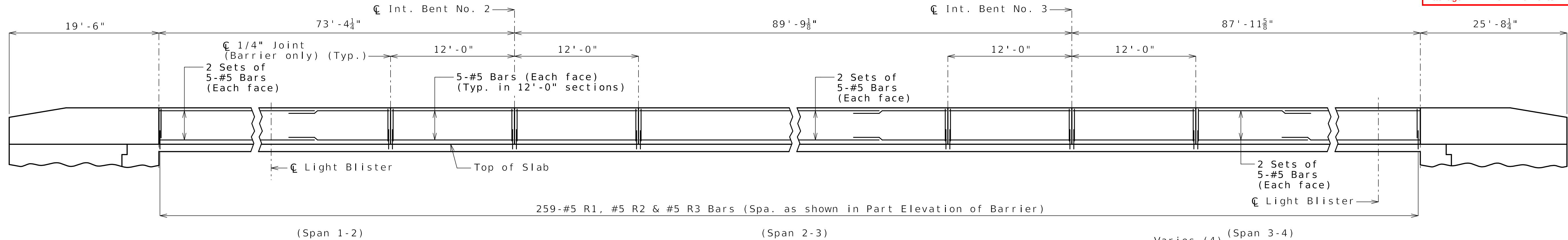
Detailed JUL 2025
Checked AUG 2025

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

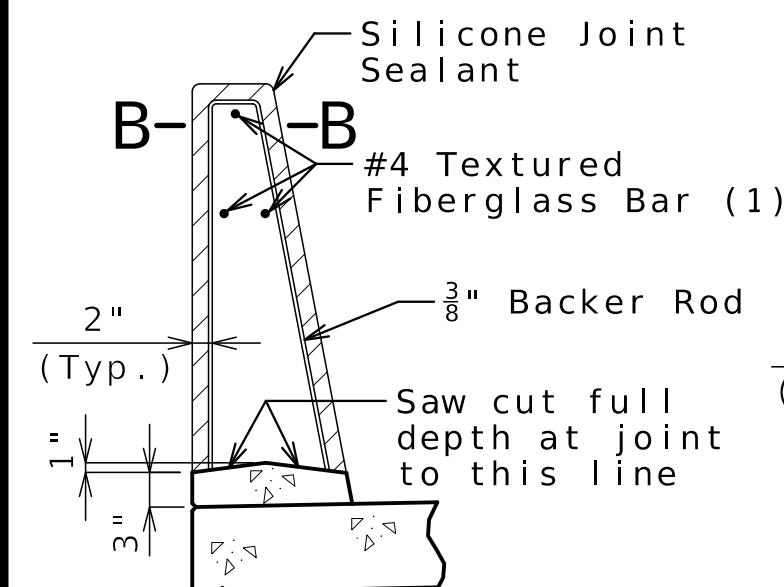
Sheet No. B19-41 of B19-63



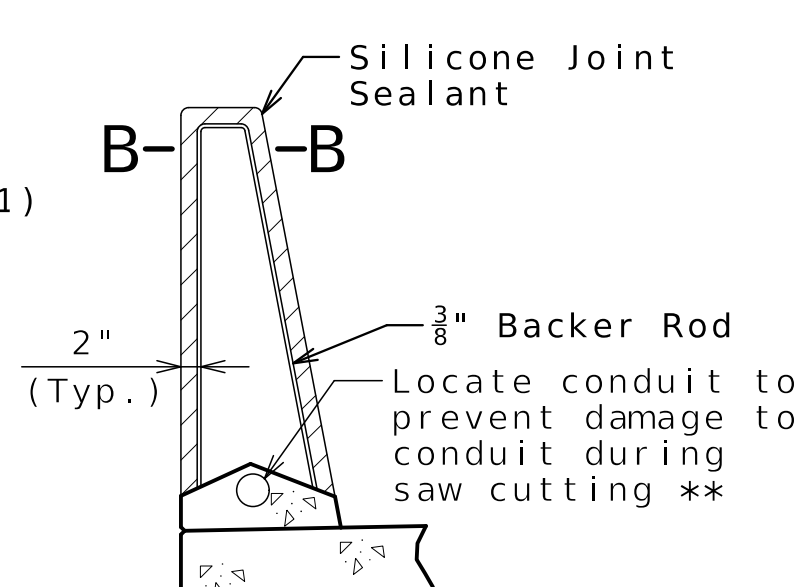
ELEVATION OF LEFT BARRIER
Longitudinal dimensions are horizontal and measured along the outside of slab.



ELEVATION OF RIGHT BARRIER
Longitudinal dimensions are horizontal and measured along the outside of slab.

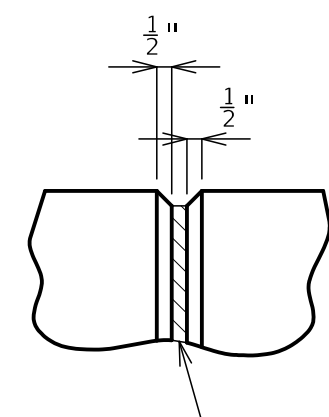


SECTION THRU SAW CUT JOINT
(Left Barrier)

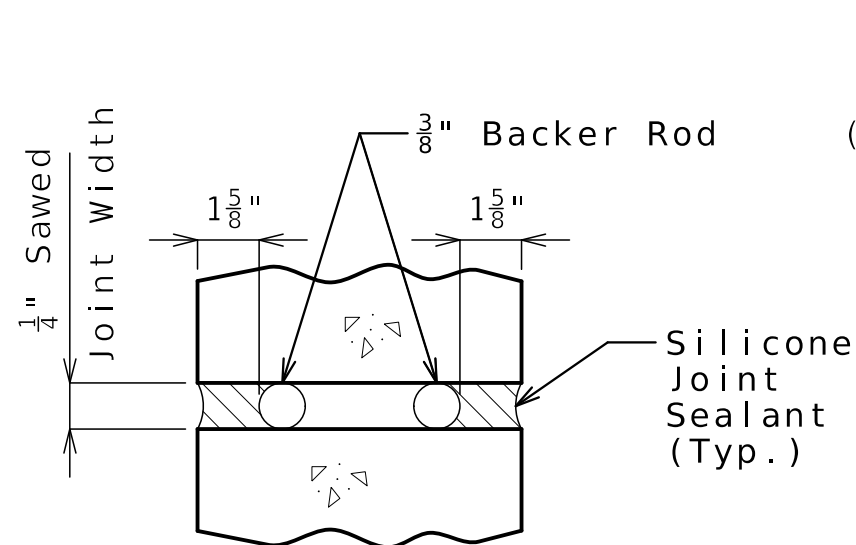


SECTION THRU SAW CUT JOINT
(Right Barrier)

(Form liner and aesthetic details not shown.)

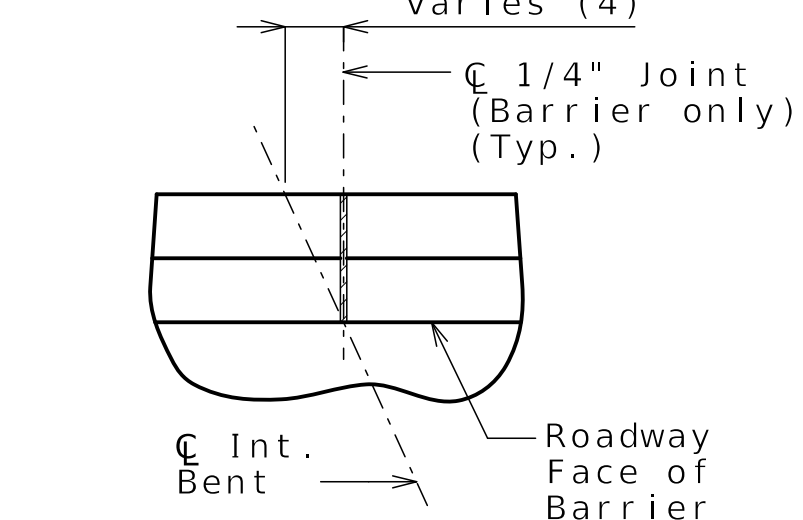


PART ELEVATION AT FORMED JOINT

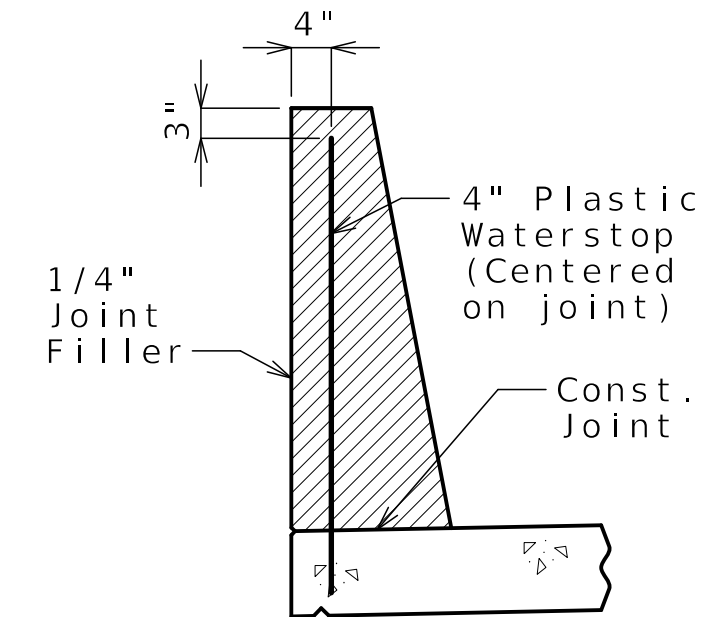


SECTION B-B

(4) Int. Bent No. 2 Left=16 $\frac{1}{8}$ "
Int. Bent No. 2 Right=21 $\frac{1}{8}$ "
Int. Bent No. 3 Left=18"
Int. Bent No. 3 Right=23 $\frac{3}{4}$ "



PART PLAN SHOWING JOINT LOCATION



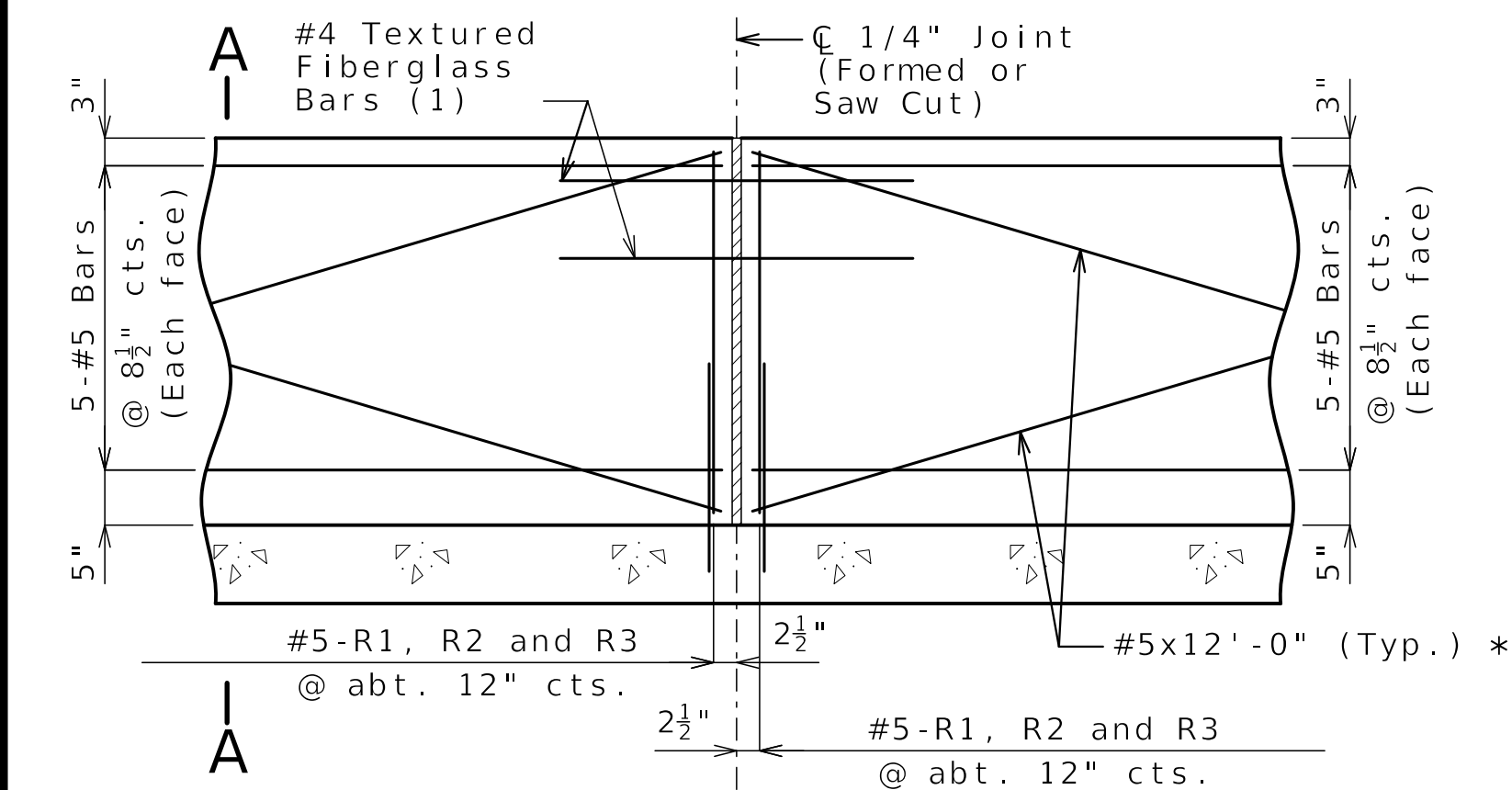
WATERSTOP DETAIL

Plastic waterstop shall be placed in formed joints on lower side of superelevation.

R-BAR PERMISSIBLE ALTERNATE SHAPE

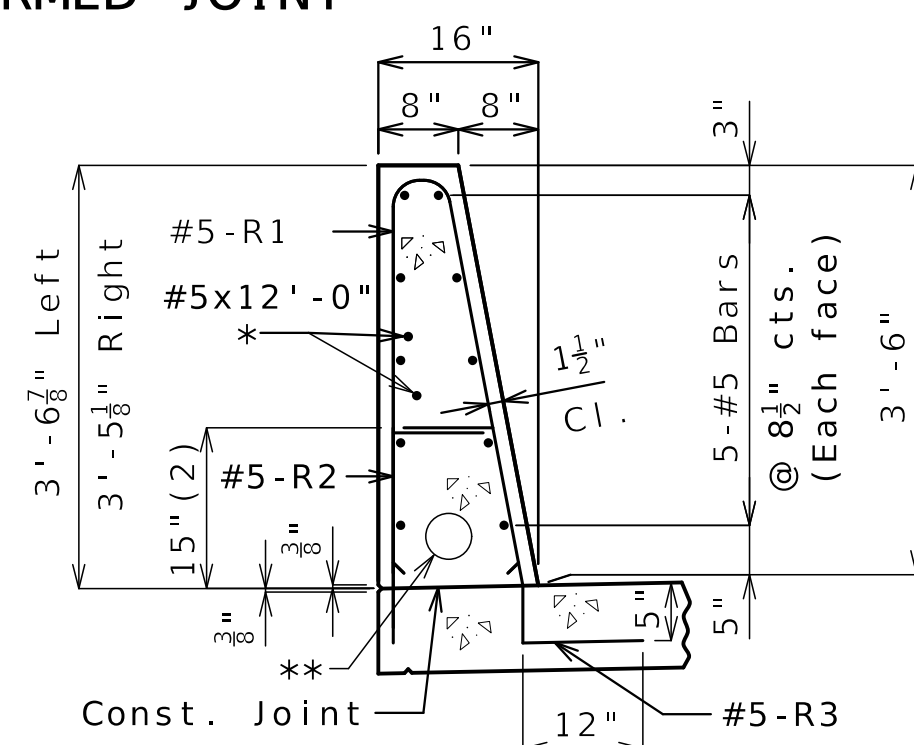
(Form liner aesthetic details on right barrier not shown.)

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



PART ELEVATION OF BARRIER

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



SECTION A-A

(Form liner aesthetic details on right barrier not shown.)

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

(2) To top of bar

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Date: 11/21/2025
Package: BRD-19-EB70-Benton

General Notes:

* Left Barrier Slip-formed option only.

** 2" Ø PVC Conduit (Right barrier only) For Details of Conduit System on Structure, see Sheet No. B19-46.

Conventional forming or slip forming may be used with left barrier. Conventional forming shall be used with right barrier. 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.

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

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

Plastic waterstop shall not be used with saw cut joints.

For Form Liner and Aesthetic Stain details of right barrier not shown, see Sheet No. B19-45.

For Light Blister details, see Sheet No. B19-44.

TYPE D BARRIER

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-42 of B19-63



Benjamin Lichty

11-13-2025

DATE PREPARED
11/13/2025

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-42

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

CERTIFICATE OF AUTHORITY

NO. 001270

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11-13-2025

DATE PREPARED
11/13/2025

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-43

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

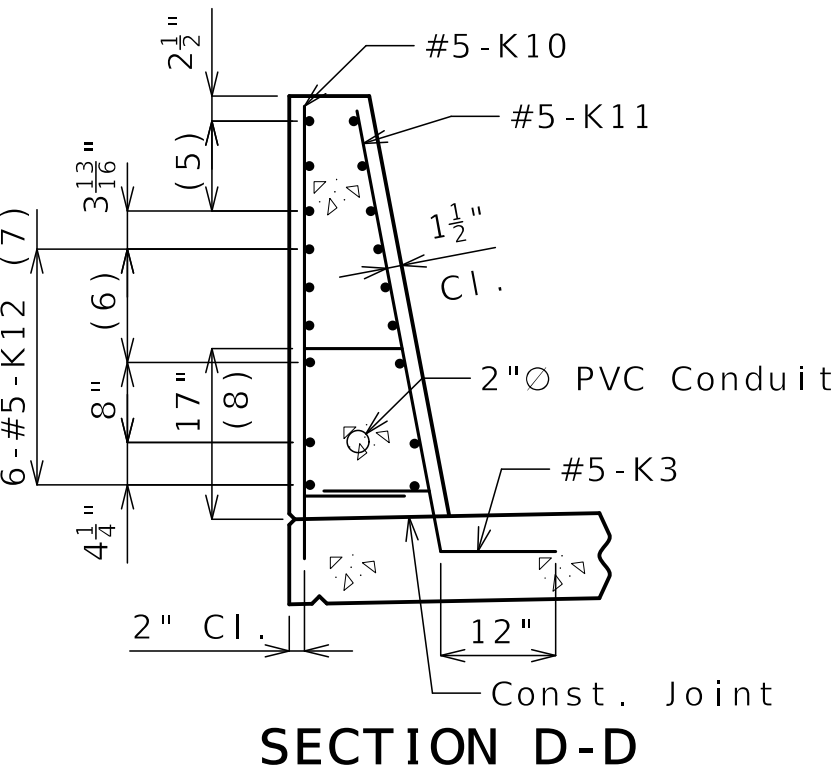
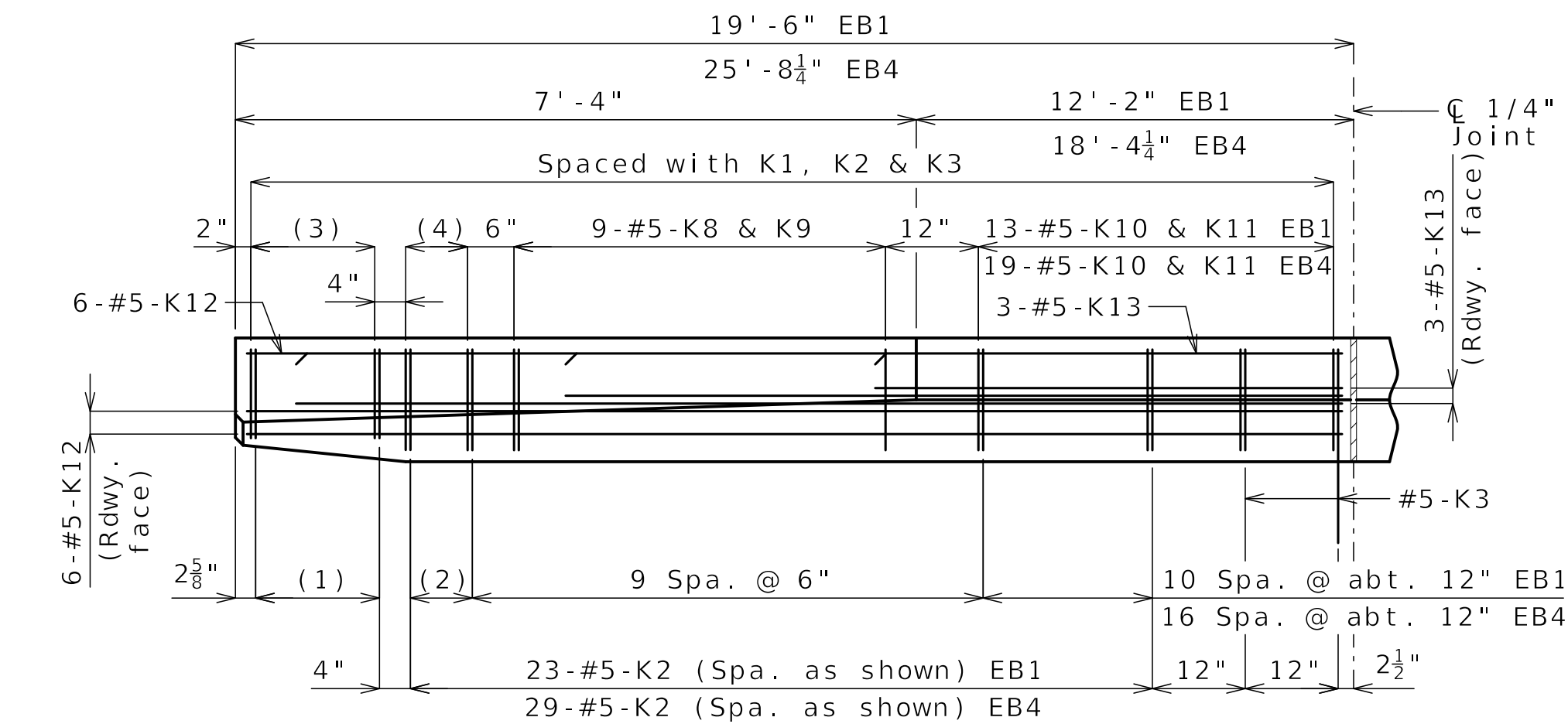
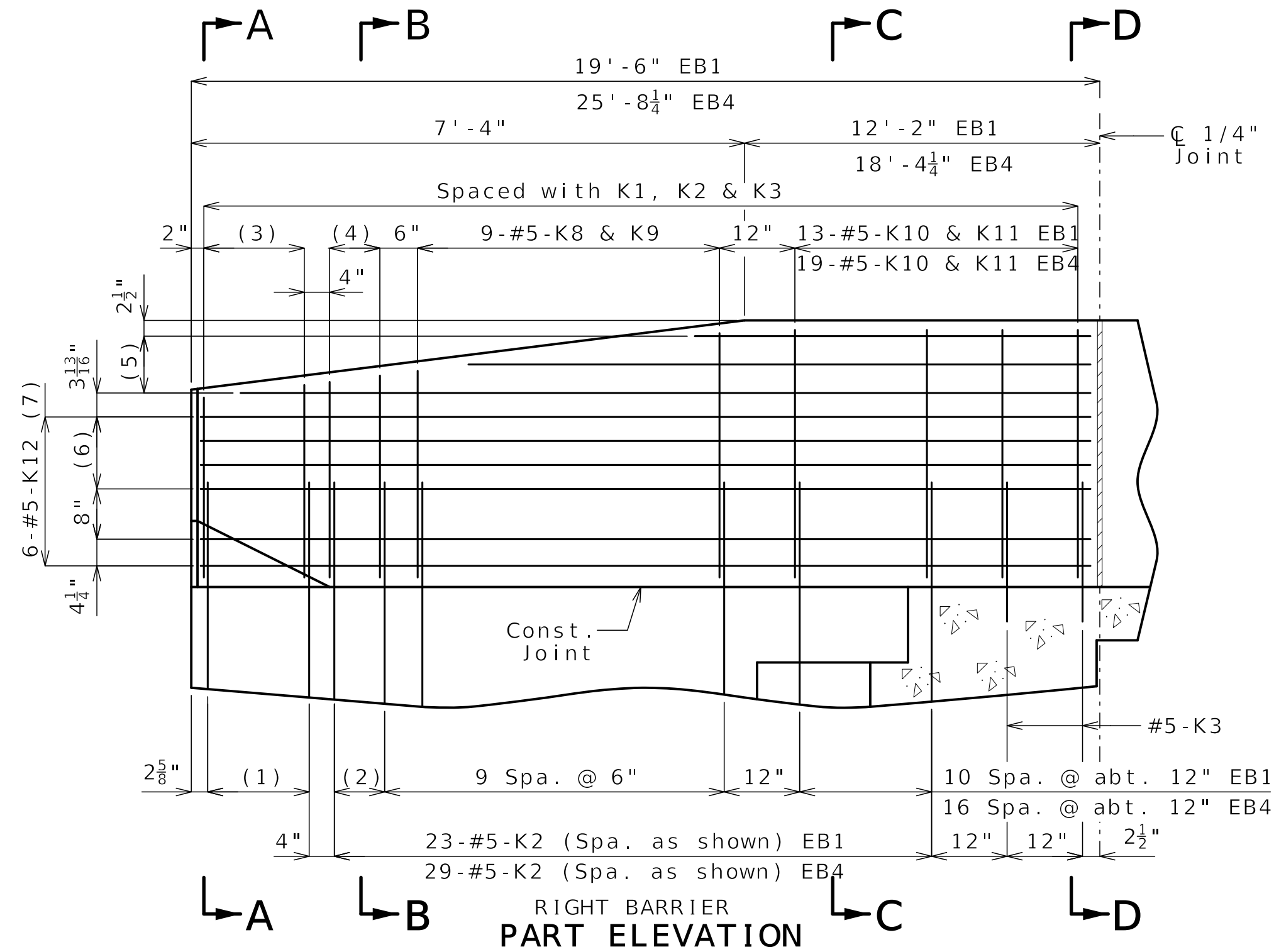
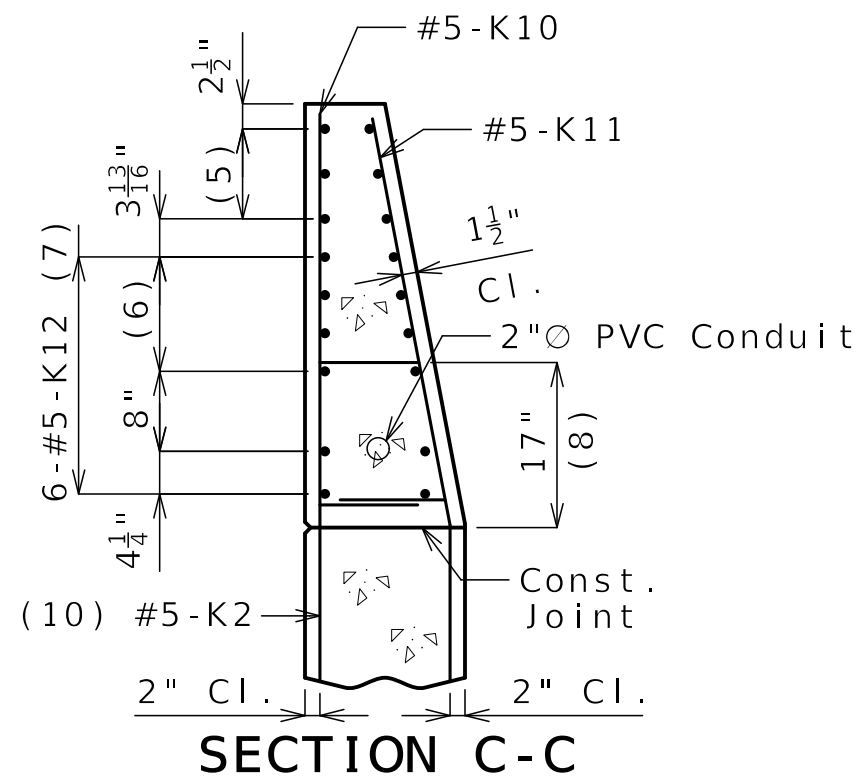
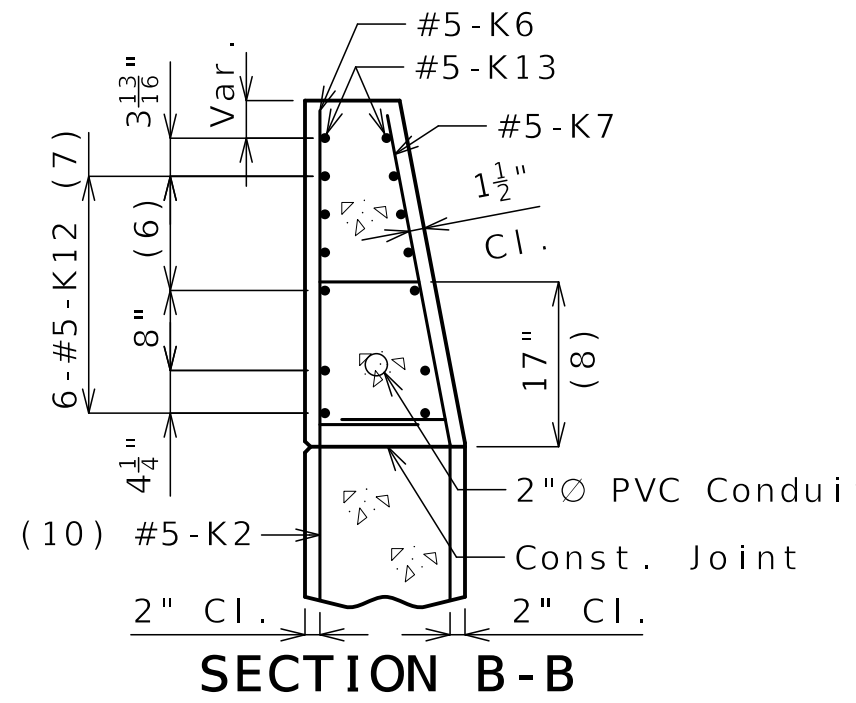
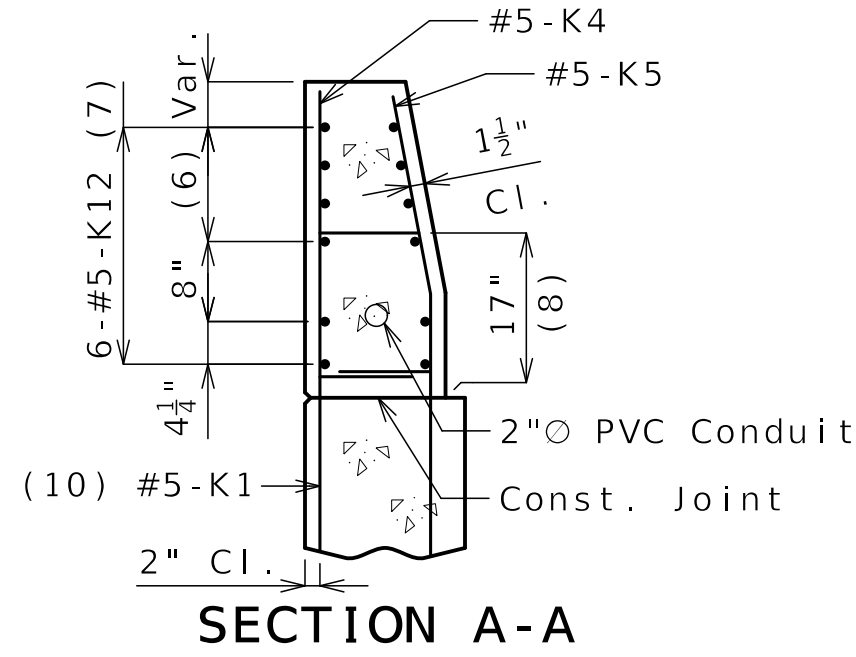
JEFFERSON CITY, MO 65102

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RIGHT BARRIER
PART PLAN

SECTION D-D

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.

For Form Liner and Aesthetic Stain details of right barrier not shown, see Sheet No. B19-45.

EB1 denotes End Bent No. 1

EB4 denotes End Bent No. 4

Reinforcing Steel:

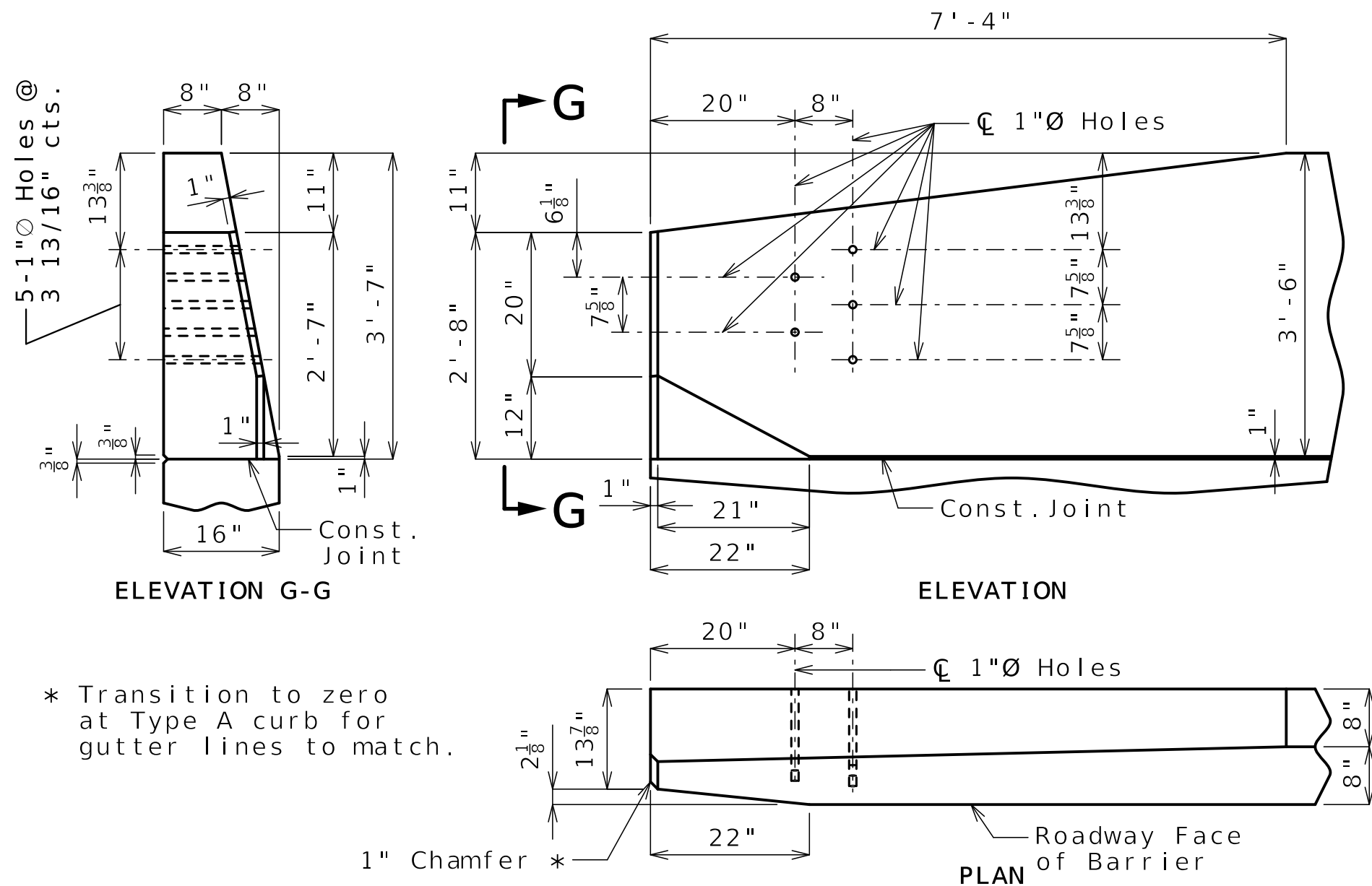
Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

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Sheet No. B19-43 of B19-63

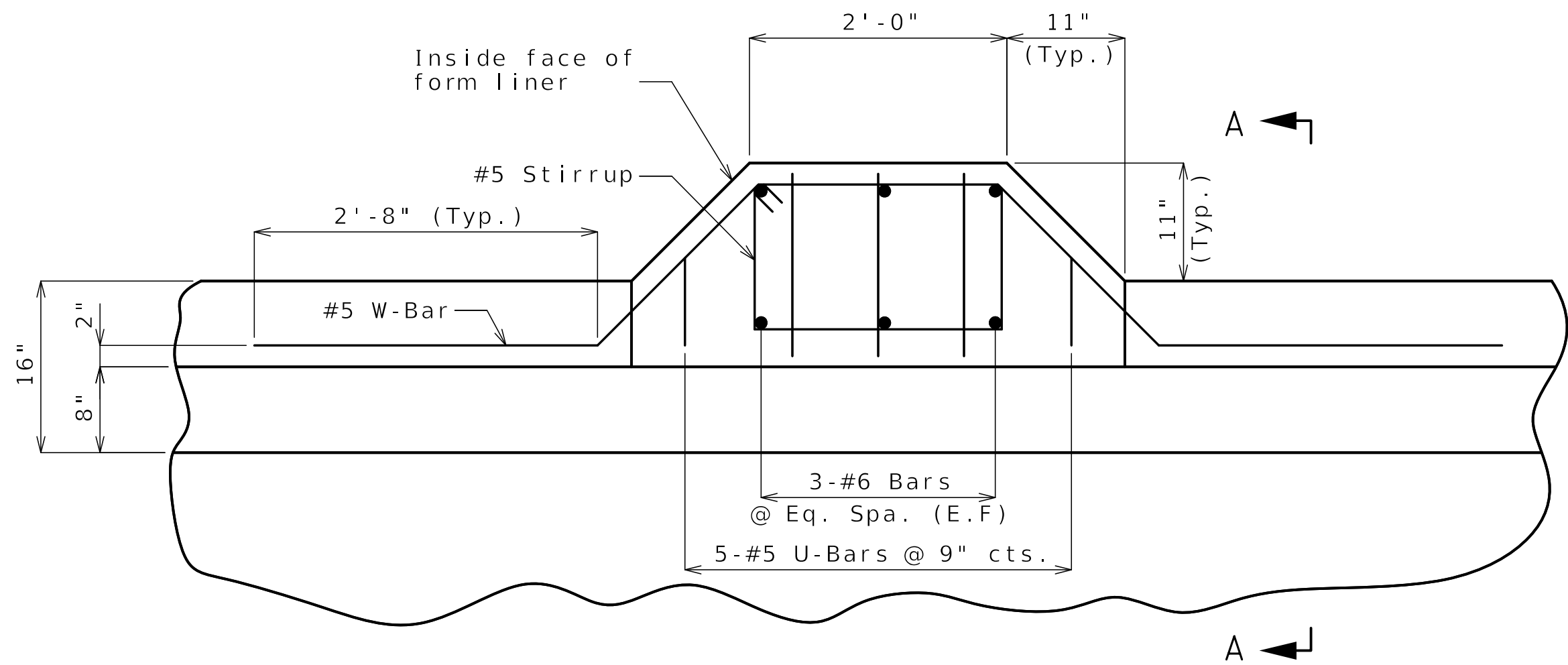
TYPE D BARRIER AT END BENTS



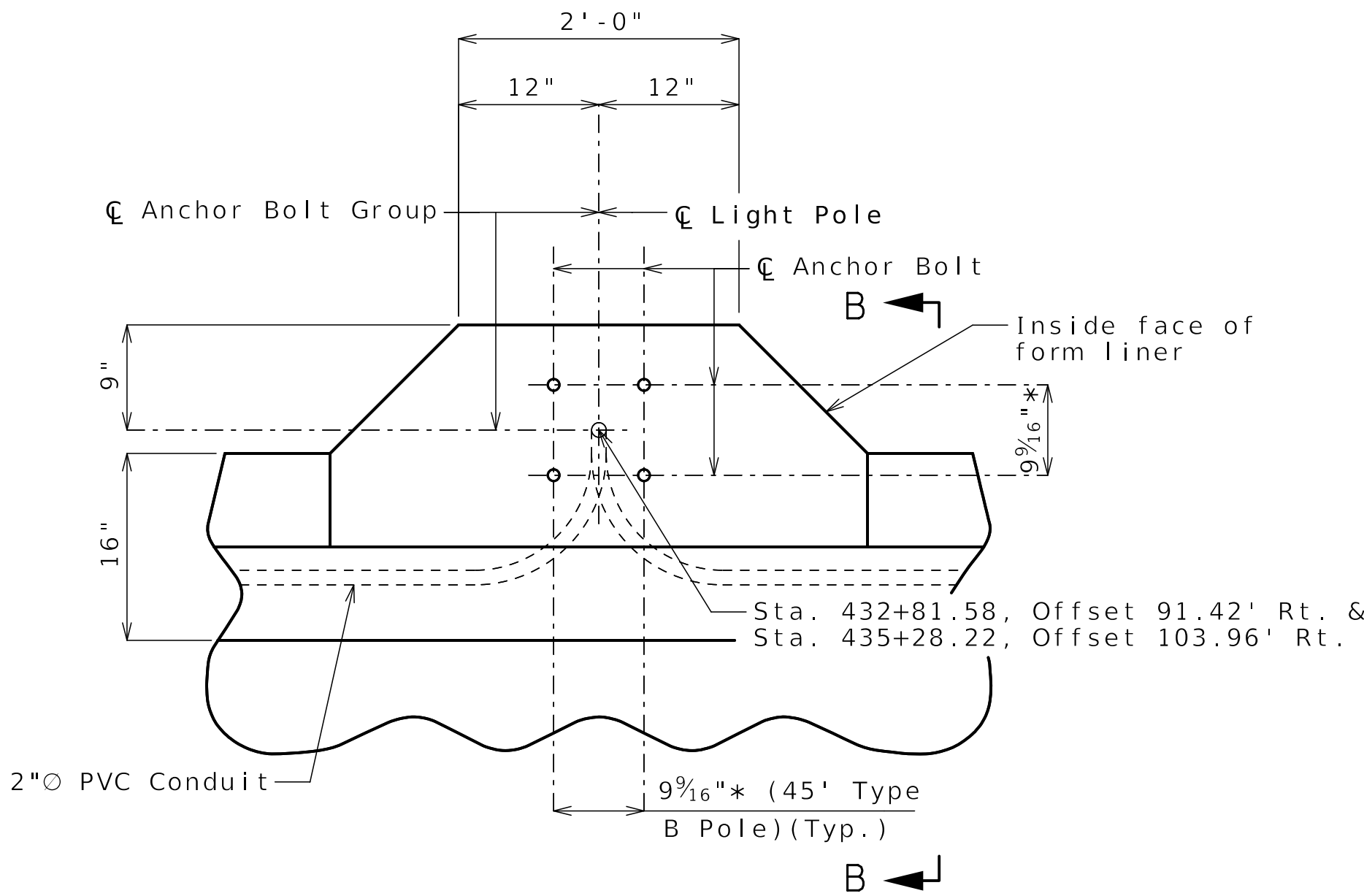
DETAILS OF GUARD RAIL ATTACHMENT

Detailed JUL 2025
Checked AUG 2025

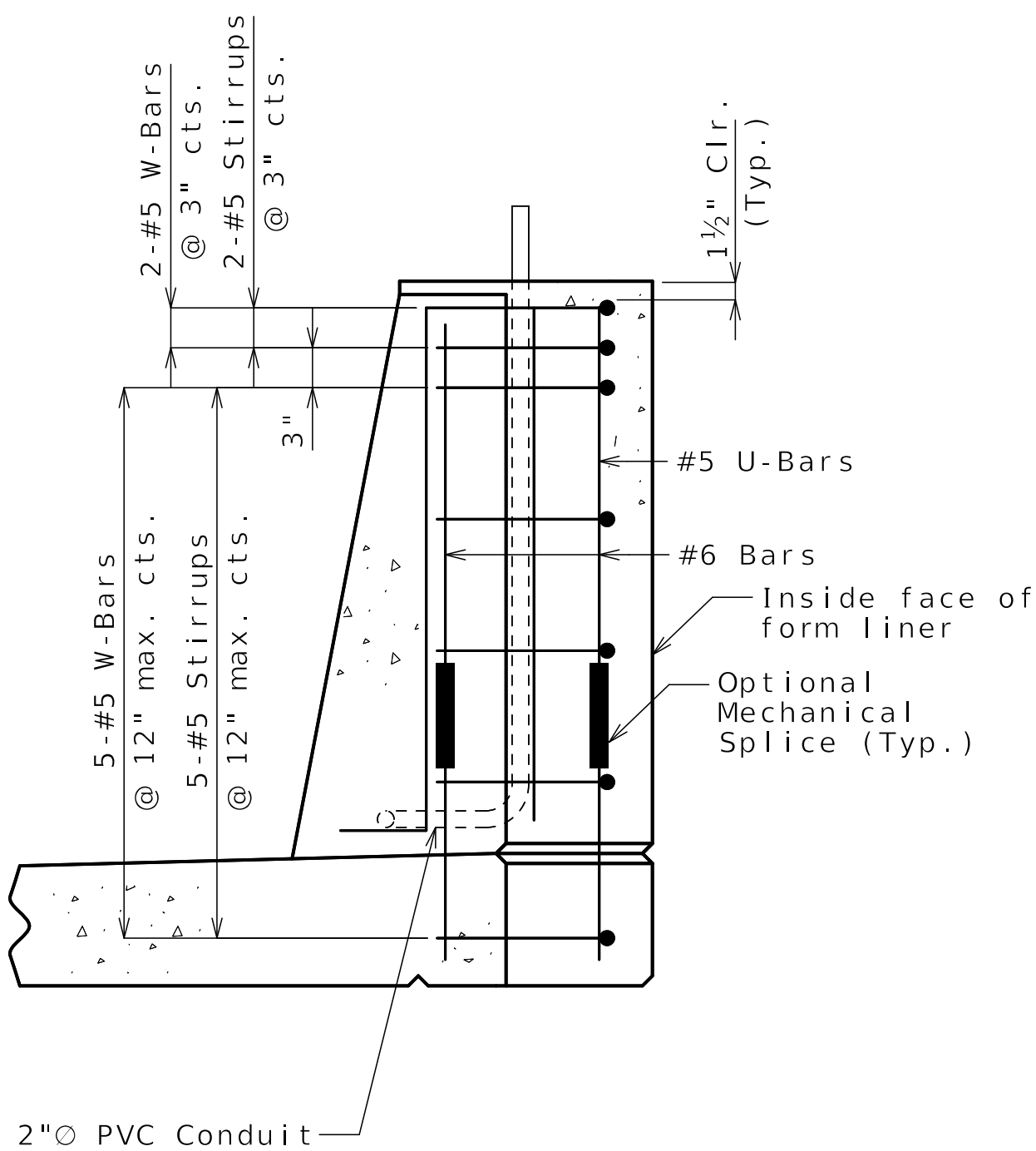
Note: This drawing is not to scale. Follow dimensions.



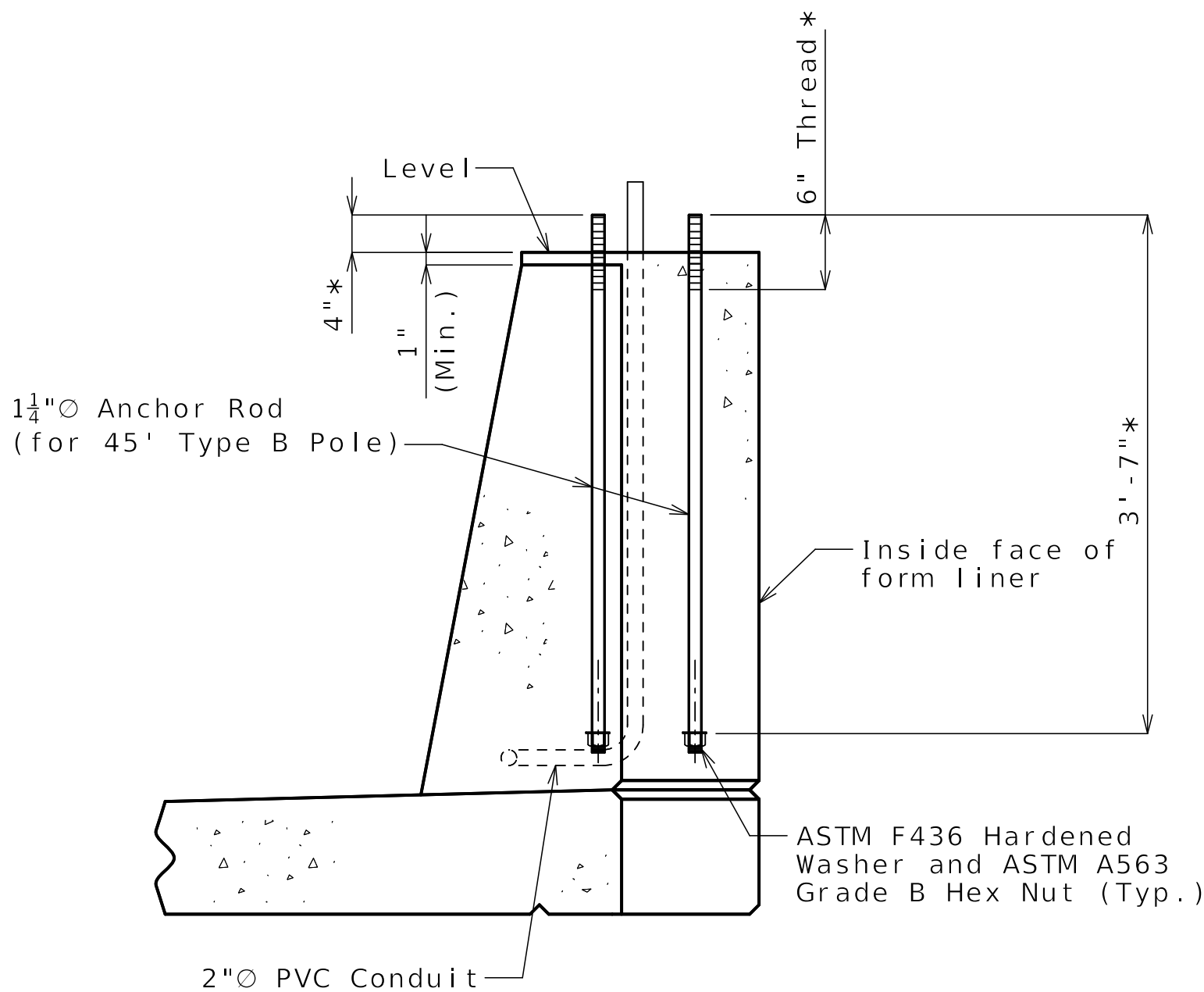
LIGHT POLE MOUNTING PLAN SHOWING REINFORCEMENT



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 Sheets No. B19-35 thru B19-38.
For Form Liner and Aesthetic Stain Details not shown, see Sheet No. B19-45.

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Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

LIGHT BLISTER DETAILS



11-13-2025

DATE PREPARED
11/13/2025

ROUTE
1-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-44

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102

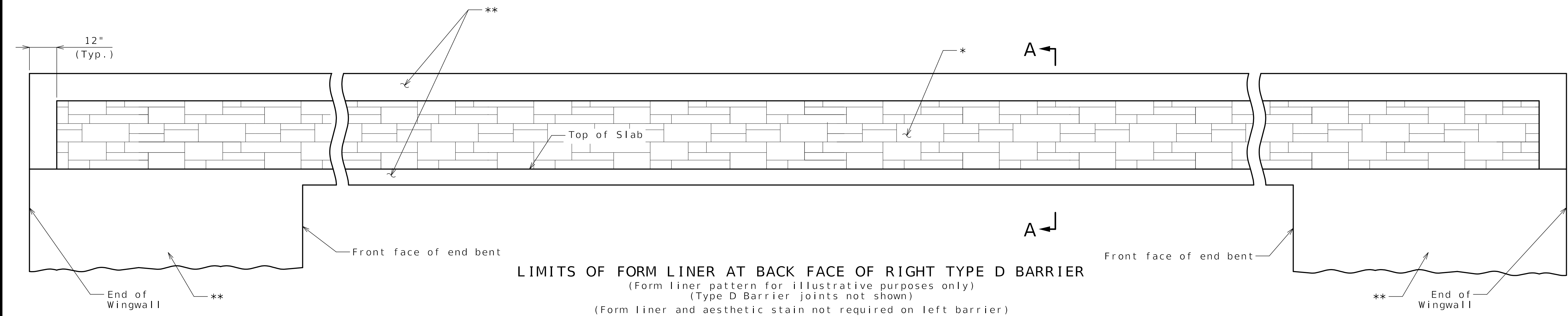
1-888-ASK-MODOT (1-888-275-6636)

CLARKSON RADMACHER JOINT VENTURE

715 KIRK DRIVE
KANSAS CITY, MO 64105-1310

CERTIFICATE OF AUTHORITY
NO. 001270

HNTB



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.

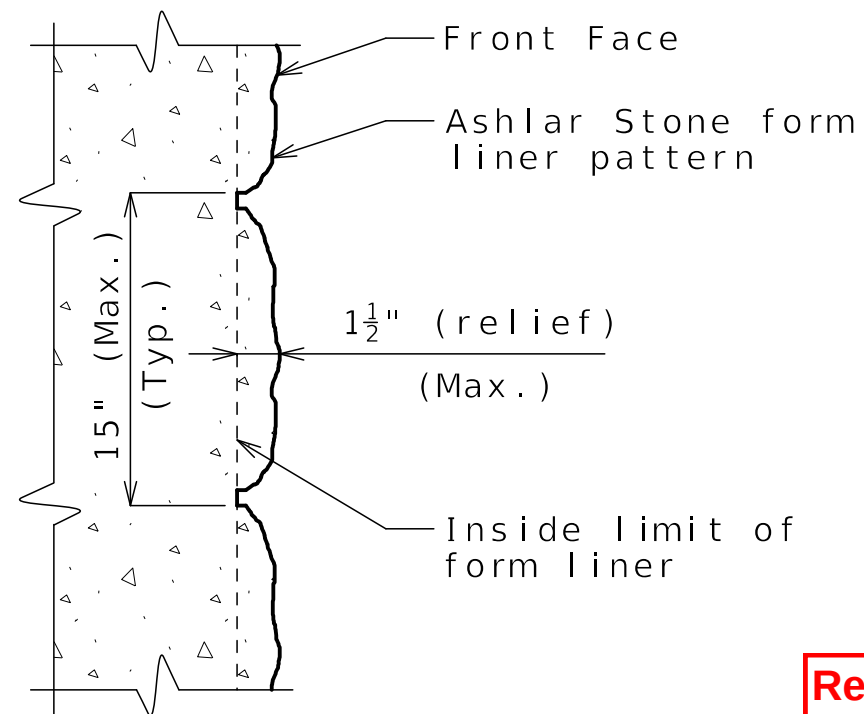
The following is a list of form liner manufacturers and types which may be used. Depth of relief for all form liner pattern's shall vary up to 1 1/2". The height of any single "stone" shall be 15" maximum.

- 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

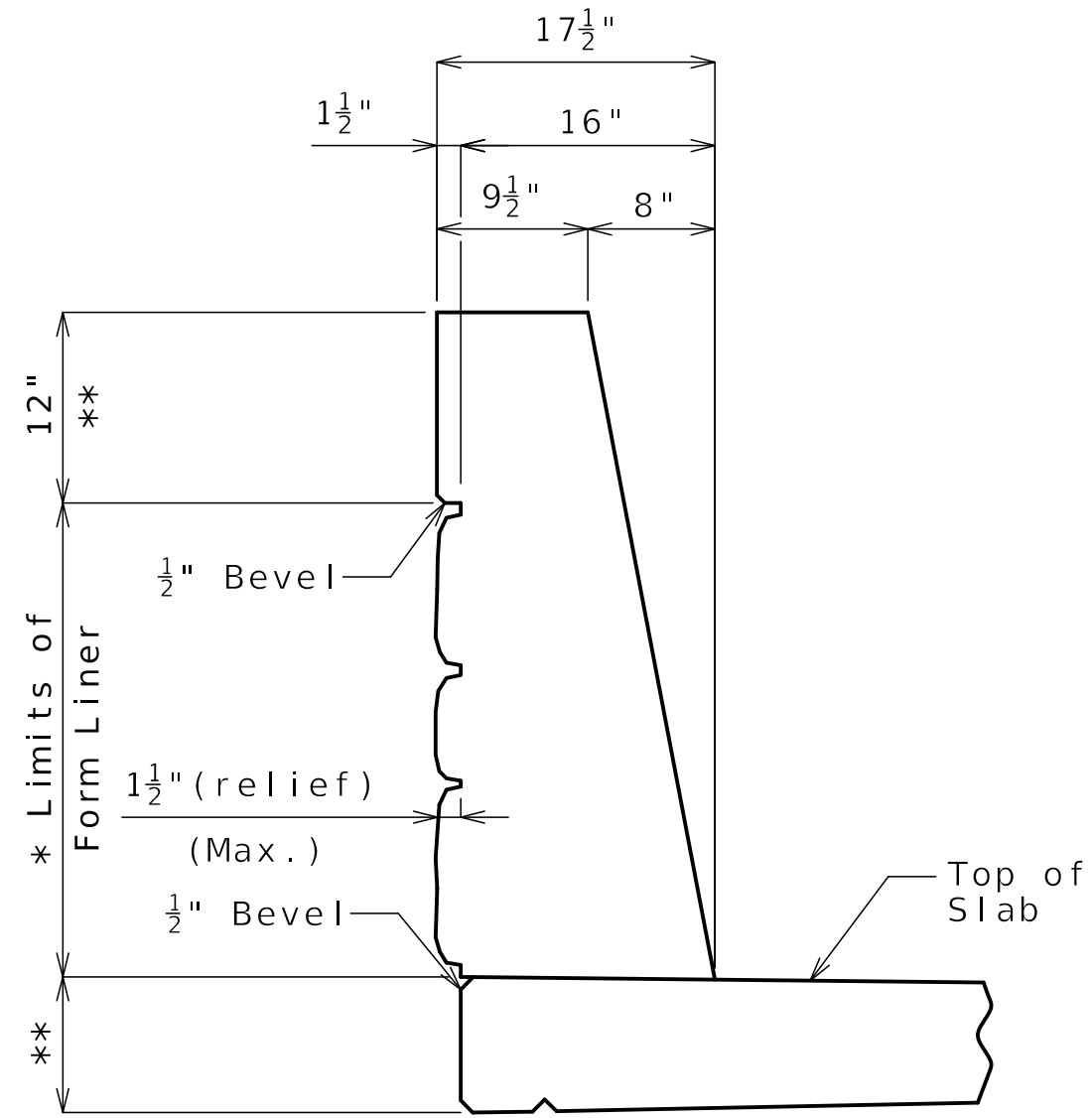
Aesthetic Concrete Stain Notes:

* 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

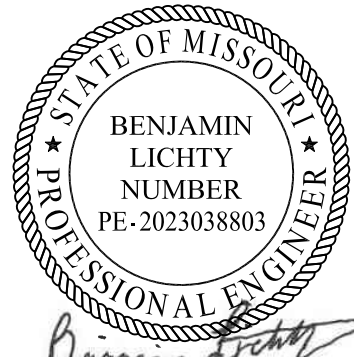
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Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

FORM LINER AND AESTHETIC STAIN DETAILS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-45 of B19-63



11-13-2025

DATE PREPARED

11/13/2025

ROUTE STATE

I-70 MO

DISTRICT SHEET NO.

BR B19-45

COUNTY

JACKSON

JOB NO.

J411486D

CONTRACT ID.

240807-C01

PROJECT NO.

BRIDGE NO.

A9621

DESCRIPTION

REV 0 - RFC SUBMITTAL

DATE

11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

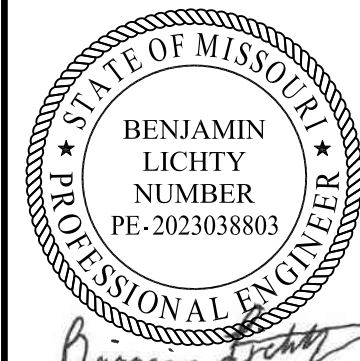
JEFFERSON CITY, MO 65102

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

CERTIFICATE OF AUTHORITY

NO. 001270

HNTB



11-13-2025

DATE PREPARED
11/13/2025

ROUTE
I-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-46

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	11/13/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

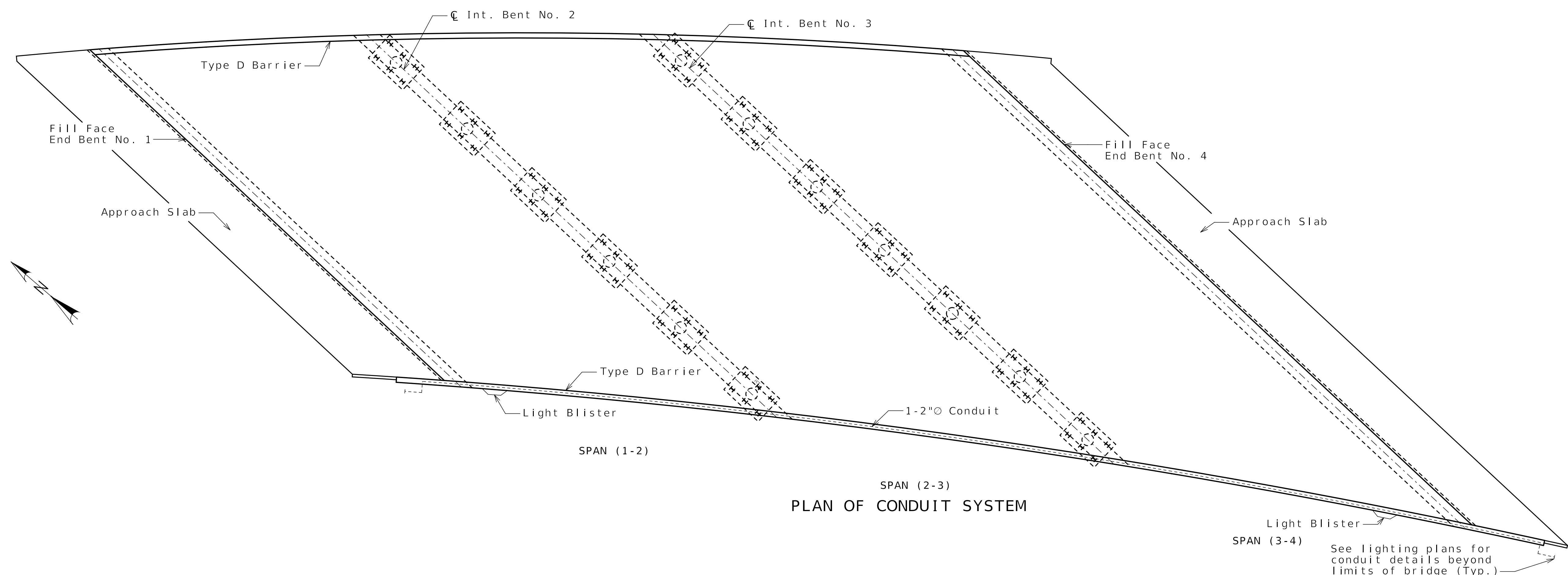
MoDOT

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

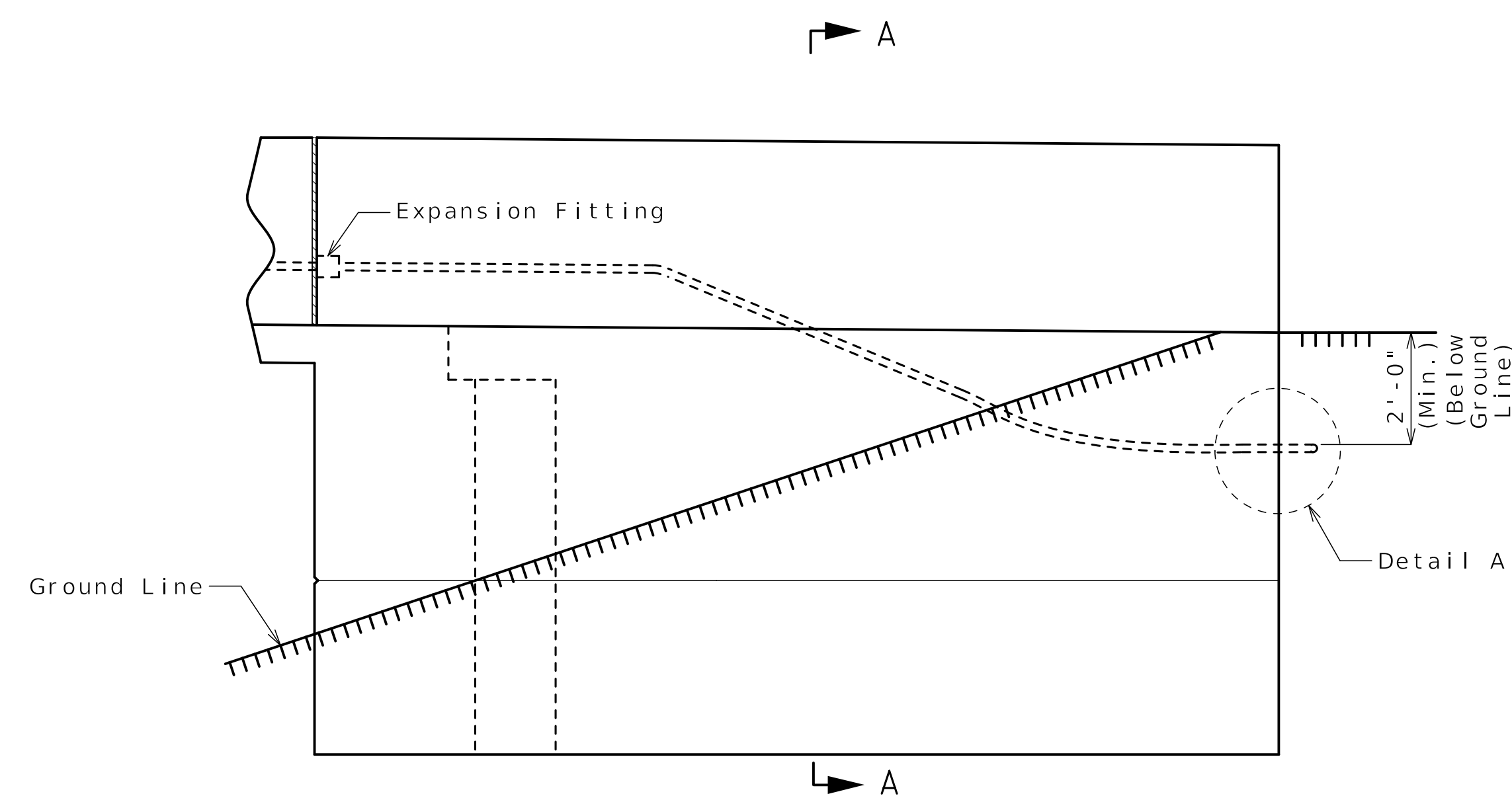
CLARKSON RADMACHER
JOINT VENTURE

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

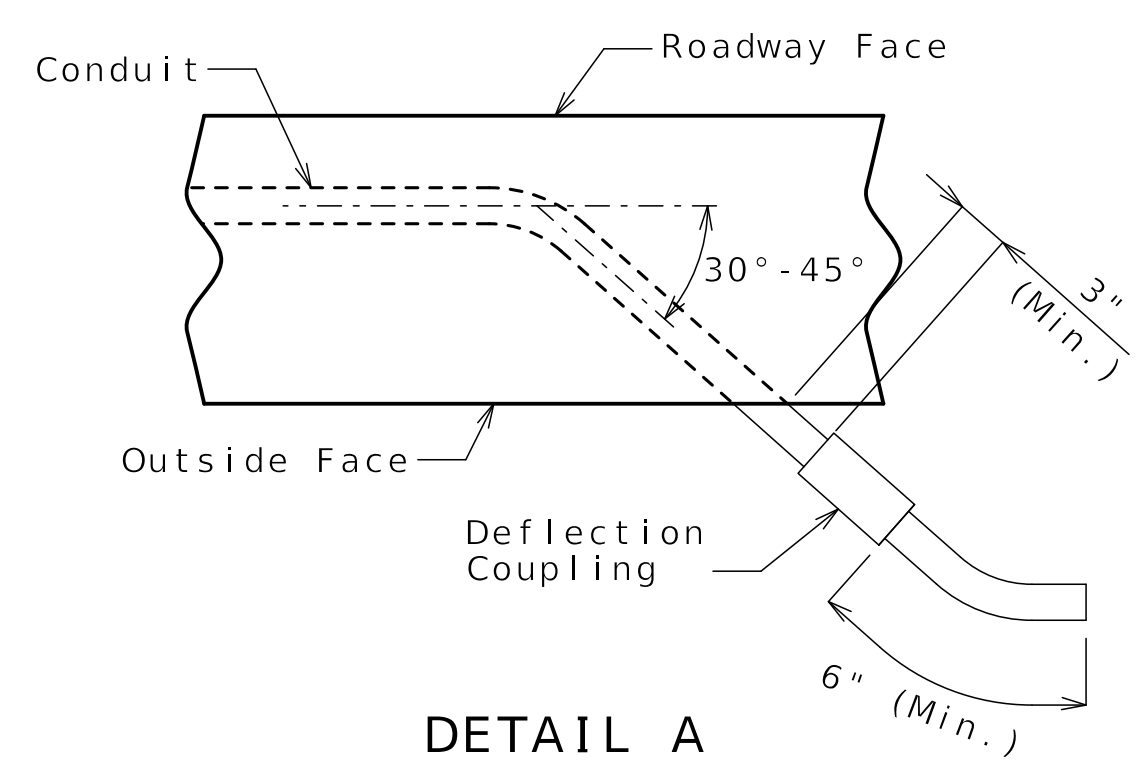
HNTB



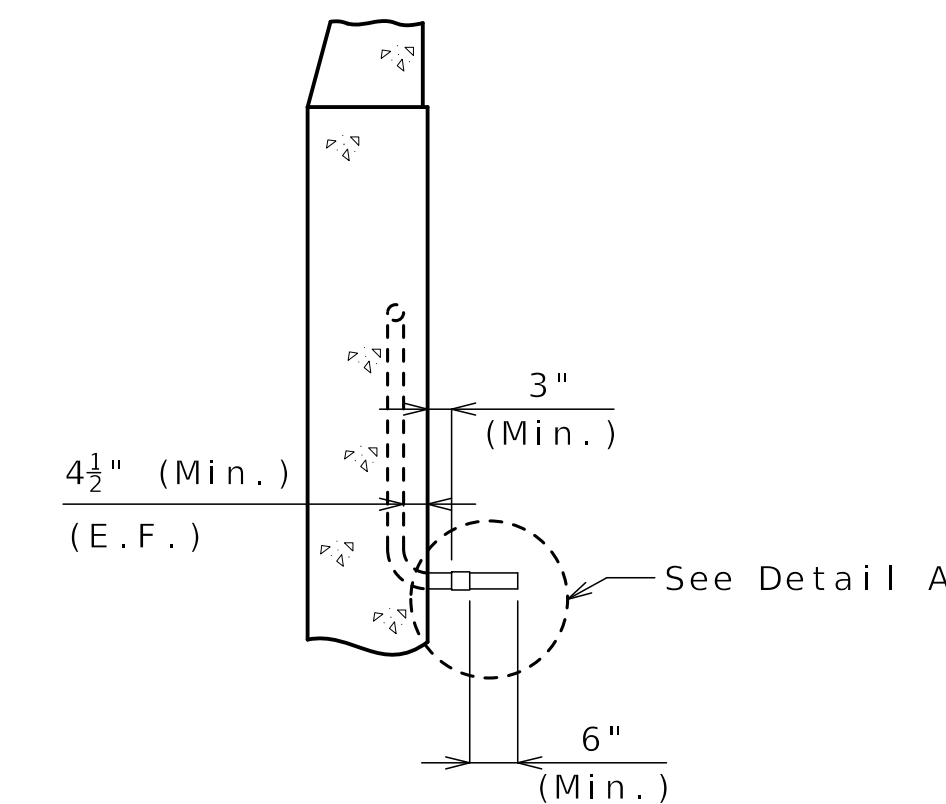
PLAN OF CONDUIT SYSTEM



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.

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.

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 in accordance with Sec 707. All conduits shall be sloped to drain where possible.

For additional form liner details not shown see Sheet No. B19-45.

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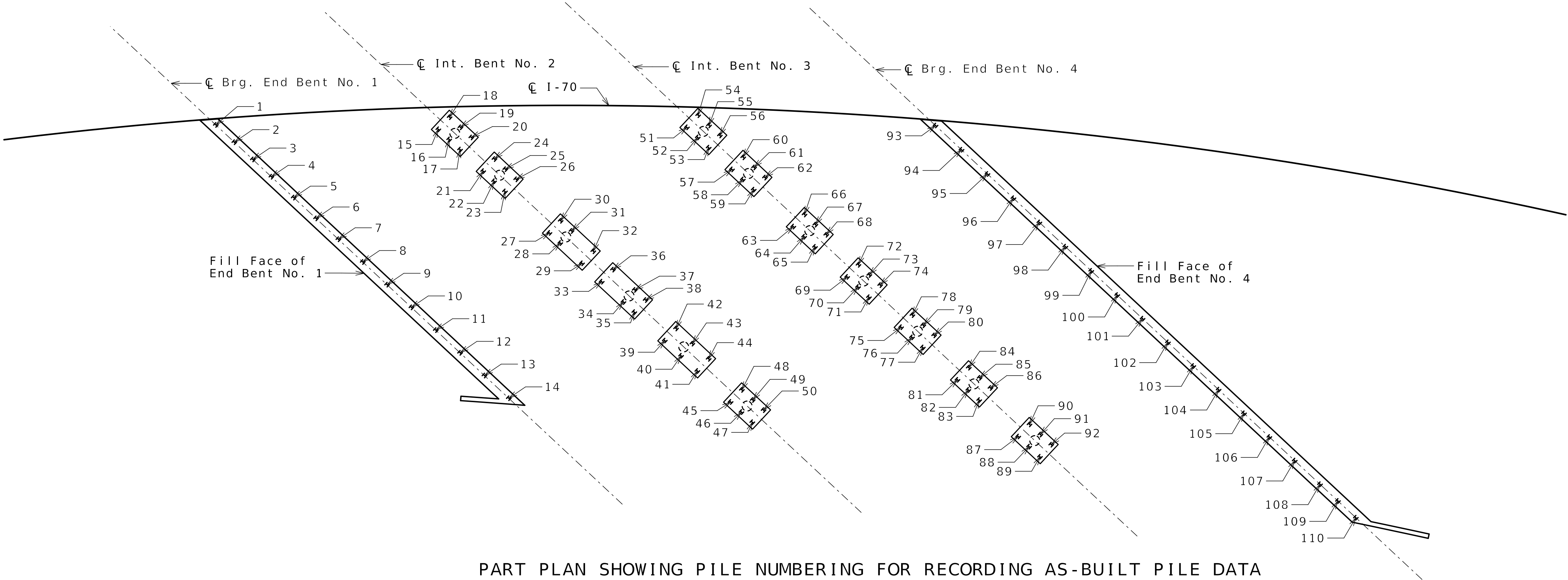
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

DETAILS OF CONDUIT SYSTEM ON STRUCTURE

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-46 of B19-63



PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA

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

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

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
93			End Bent No. 4
94			
95			
96			
97			
98			
99			
100			
101			
102			
103			
104			
105			
106			
107			
108			
109			
110			

Note:
This sheet to be completed by design-builder.
For additional As-Built Pile Data tables for
Int. Bents No. 2 & 3, see Sheet B19-49,

AS-BUILT PILE DATA

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Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton



Gina D. Horner
11/13/2025

DATE PREPARED
11/13/2025

ROUTE
I-70

STATE
MO

DISTRICT
BR

SHEET NO.
B19-48

COUNTY
JACKSON

JOB NO.
J411486D

CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	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

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					Int. Bent No. 2
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
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34					
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39					
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41					
42					
43					
44					
45					
46					
47					
48					
49					
50					

Note:

Indicate in remarks column:
A. Pile type and grade.
B. Batter
C. Driven to practical refusal
D. PDA test pile
E. Minimum tip elevation controlled
(Use when actual blow count is less than PDA blow count due to minimum tip elevation requirement. A plus sign (+) shall be placed after the PDA nominal axial compressive resistance value indicating actual value is higher than PDA value.)

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					
66					
67					
68					
69					
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71					
72					
73					
74					
75					
76					
77					
78					
79					
80					
81					
82					
83					
84					
85					
86					
87					
88					
89					
90					
91					
92					

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Note:
This sheet to be completed by MoDOT design-builder.
For Part Plan showing Pile Numbering, see Sheet B19-48.

AS-BUILT PILE DATA



Gina D. Horner
11/13/2025

DATE PREPARED
11/13/2025

ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19-49

COUNTY
JACKSON

JOB NO.
J411486D

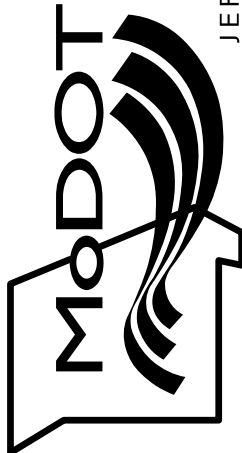
CONTRACT ID.
240807-C01

PROJECT NO.

BRIDGE NO.
A9621

DESCRIPTION	REV 0 - RFC SUBMITTAL				
DATE	11/13/25				

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: Ben_B1_1

Page 1 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066539.7 / 2776200.1
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 11/21/2024
LOGGED BY Trent Shepherd DATE COMPLETED 11/21/2024
SURFACE ELEVATION 845.3' RIG TYPE CME-55
METHOD Mud Rotary/NQ Core TOOLING 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
																FILL, brown, very stiff, moist, LEAN CLAY (CL), with organics
5	5 ft		J-1	14	4-5-6 (11)	78		4.0				48-22-26	18.7			
10	9.5 ft		J-2	18	2-3-2 (5)	100	1.0			9.5	835.8					Brown, firm, moist, LEAN CLAY with SILT (CL-ML), with organics
	13 ft		U-1	24		100	1.5			13.0	832.3					Brown to gray, firm, moist, LEAN CLAY (CL)
15												41-23-18	26.2	99.6	1.56	
20	18 ft		J-3	18	2-2-4 (6)	100	0.75			18.0	827.3					Brown, soft, wet, FAT CLAY (CH)
25	23 ft		U-2	24		100	0.75					36-17-19	22.9	102.8	1.44	
30	28 ft		J-4	18	2-3-3 (6)	100	0.75			28.0	817.3					Brown, firm, moist, LEAN CLAY (CL)
35	33 ft		U-3	24		100	3.0			33.0	812.3					Tan, very stiff, moist, LEAN CLAY with SILT (CL-ML)
												32-17-15	20.6			



SOIL BORING NUMBER: Ben_B1_1

Page 2 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066539.7 / 2776200.1
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 11/21/2024
LOGGED BY Trent Shepherd DATE COMPLETED 11/21/2024
SURFACE ELEVATION 845.3' RIG TYPE CME-55
METHOD Mud Rotary/NQ Core TOOLING 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
38			J-5	18	3-3-5 (8)	100		2.5								Tan, very stiff, moist, LEAN CLAY with SILT (CL-ML)
40																
43			J-6	18	4-9-8 (17)	100		3.0		43.0	802.3					Reddish brown, very stiff, moist, LEAN TO FAT CLAY (CL-CH)
45																
48			U-4	24		100		1.5		- becomes stiff at 48'		42-16-26	21.0	106.5	2.61	
50																
53			J-7	18	2-5-5 (10)	100		2.5		53.0	792.3					Brown, very stiff, moist, LEAN CLAY (CL), with shaley structure
55																
58			J-8	18	3-4-4 (8)	100		1.5		- becomes stiff at 58'		36-19-17	24.2			
60																
65																
68			J-9	18	4-4-6 (10)	100		2.5		68.0	777.3					Brown, very stiff, moist, LEAN CLAY with SILT (CL-ML), with trace sand
70												36-19-17	23.8			

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

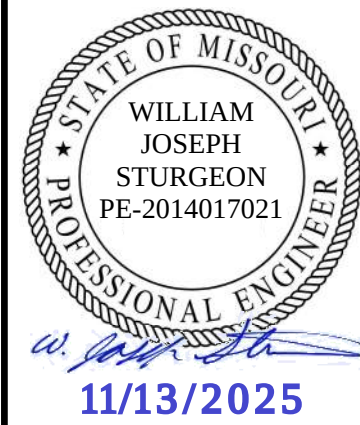
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-50 of B19-63



DATE PREPARED 11/13/2025	
ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 50
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807 - C01	
PROJECT NO.	
BRIDGE NO. A9621	

DATE	DESCRIPTION
11/13/25	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: Ben_B1_1

Page 3 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066539.7 / 2776200.1
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 11/21/2024
LOGGED BY Trent Shepherd DATE COMPLETED 11/21/2024
SURFACE ELEVATION 845.3' RIG TYPE CME-55
METHOD Mud Rotary/NQ Core TOOLING 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-PI)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
78 ft																Brown, very stiff, moist, LEAN CLAY with SILT (CL-ML), with trace sand
80			J-10	18	2-5-10 (15)	100		1.5								Brown, stiff, moist, SANDY LEAN CLAY (SC), fine grained sand
85																Brown, loose, moist, fine to coarse grained, WELL-GRADED SAND (SW)
88 ft			J-11	11	3-3-3 (6)	61										
92.3 ft			C-1	30		100	100									Limestone, weathered, light gray, moderately hard
94.8 ft			C-2	60		100	97					0.2	164.6	1112		
99.8																Bottom of Boring at 99.8'
																Boring backfilled with cuttings 11/21/2024



SOIL BORING NUMBER: Ben_B1_2

Page 1 of 4

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066693.0 / 2776236.1
DRILLING FIRM PPI DRILLER Josh Starkey DATE STARTED 12/02/2024
LOGGED BY Cameron Dupont DATE COMPLETED 12/04/2024
SURFACE ELEVATION 857.5' RIG TYPE CME-55LC
METHOD Auger, Mud Rotary, NQ Core TOOLING 4-1/2" Continuous Flight Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-PI)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
3.5 ft			J-1	9	3-10-9 (19)	50		3.5								FILL, brown, very stiff, LEAN CLAY (CL), little rubble/red brick, trace organics
5																- Mud rotary started at 4.5'
8 ft			J-2	12	5-5-8 (13)	67		4.0				44-23-21	25.5			
13 ft			J-3	10	3-4-5 (9)	56		2.0		13.0	844.5					FILL, dark brown, stiff, moist, LEAN CLAY with SILT (CL-ML), some red brick rubble
18 ft			J-4	13	1-22-6 (28)	72		1.0		18.5	839	36-20-16	25.5			FILL, fine to medium grained, red brick rubble with sand
23 ft			J-5	16	9-5-1 (6)	69		0.5		19.0	838.5					FILL, dark brown-gray, firm, moist, LEAN CLAY (CL), mottled
28 ft			U-1	24		100		0.5		23.8	833.7					FILL, red brick rubble
33 ft			J-6	18	3-3-5 (8)	100		0.5		24.2	833.3					FILL, dark gray-brown, soft to firm, moist, LEAN CLAY (CL), mottled
										33.0	824.5					Brown to gray, soft to firm, moist, LEAN CLAY with SILT (CL-ML), some orange iron nodules

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

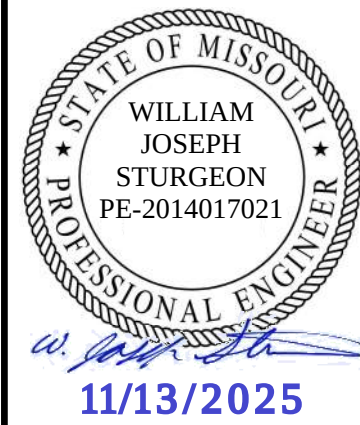
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-51 of B19-63



DATE PREPARED 11/13/2025	
ROUTE 1 - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 51
COUNTY JACKSON	
JOB NO. J4I1486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9621

DATE	DESCRIPTION			
	REV	0	-	REF. SUBMITTAL
11/13/25				

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: Ben_B1_2

Page 2 of 4

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066693.0 / 2776236.1
DRILLING FIRM PPI
DRILLER Josh Starkey
DATE STARTED 12/02/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 12/04/2024
SURFACE ELEVATION 857.5'
RIG TYPE CME-55LC
METHOD Auger, Mud Rotary, NQ Core
TOOLING 4-1/2" Continuous Flight Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
	38 ft		J-7	18	3-5-6 (11)	100		1.0								Brown to gray, soft to firm, moist, LEAN CLAY with SILT (CL-ML), some orange iron nodules
40												40-19-21	26.2			
	42.5 ft		J-8	18	3-4-6 (10)	100		2.5								
45																
	47.5 ft		J-9	18	2-4-5 (9)	100		1.5				45-18-27	31.4			
50																
	52.5 ft		J-10	18	5-6-8 (14)	100		3.0		52.5	805					Orangish brown, stiff, moist, LEAN CLAY with SILT (CL-ML), mottled, trace iron nodules
55																
	57.5 ft		J-11	18	4-5-9 (14)	100		2.5				38-20-18	39.8			
60																
65										66.1	791.4					Orangish brown, moist, fine to medium grained, POORLY GRADED SAND with CLAY (SP)
	67.5 ft		J-12	18	13-16-22 (38)	100		3.0		68.5	789					Orangish brown, moist, FAT CLAY with SILT (CH), mottled, trace sand
70										71.0	786.5					Brown, moist, fine to medium grained, WELL-GRADED SAND with CLAY (SW-SC), some gravel (rounded)



SOIL BORING NUMBER: Ben_B1_2

Page 3 of 4

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066693.0 / 2776236.1
DRILLING FIRM PPI
DRILLER Josh Starkey
DATE STARTED 12/02/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 12/04/2024
SURFACE ELEVATION 857.5'
RIG TYPE CME-55LC
METHOD Auger, Mud Rotary, NQ Core
TOOLING 4-1/2" Continuous Flight Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
	77.5 ft		J-13	17	11-13-14 (27)	94		1.0								Brown, moist, fine to medium grained, WELL-GRADED SAND with CLAY (SW-SC), some gravel (rounded)
80													18.2			
										82.8	774.7					Tan-brown, moist, medium to coarse grained, WELL-GRADED SAND with CLAY (SW-SC), some gravel (rounded)
85																
	86 ft		J-14	12	25-14-12 (26)	67		0.5								
90																
95																
	96 ft		J-15	13	9-10-11 (21)	72				96.0	761.5					Brown-tan, moist, fine to medium grained, POORLY GRADED SAND (SP)
100																
	103.5 ft		C-1		14.5	97	97			103.0	754.5					Limestone, slightly weathered, gray, hard
105			C-2		60	100	100									
	109.75 ft		C-3		60	100	93									
110																

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

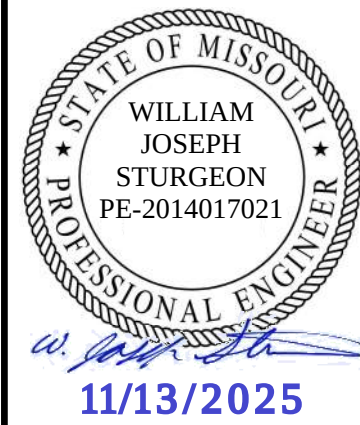
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-52 of B19-63



DATE PREPARED 11/13/2025	
ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 52
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	
BRIDGE NO. A9621	

DATE	DESCRIPTION	REV	0	- RFC	SUBMITTAL
11/13/25					

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: Ben_B1_2

Page 4 of 4

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066693.0 / 2776236.1
DRILLING FIRM PPI
DRILLER Josh Starkey
DATE STARTED 12/02/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 12/04/2024
SURFACE ELEVATION 857.5'
RIG TYPE CME-55LC
METHOD Auger, Mud Rotary, NQ Core
TOOLING 4-1/2" Continuous Flight Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
115			C-3	60		100										Limestone, slightly weathered, gray, hard
										114.8	742.8					Bottom of Boring at 114.75'
																Boring backfilled with cuttings 12/4/2024



SOIL BORING NUMBER: Ben_B2_2

Page 1 of 3

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066599.4 / 2776274.6
DRILLING FIRM PPI
DRILLER Ray A.
DATE STARTED 11/15/2024
LOGGED BY Alex Wen
DATE COMPLETED 11/19/2024
SURFACE ELEVATION 841.4'
RIG TYPE CME-55
METHOD Auger/Mud Rotary/NQ Core
TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
																FILL, brown, moist, LEAN CLAY (CL), cobbles at surface
3.5			J-1	2	3-3-2 (5)	11										
8.5			J-2	10	3-2-3 (5)	56		1.5				34-20-14	23.7			Brown minor gray-brown, orange-brown mottling, firm, moist, LEAN CLAY (CL) - Mud Rotary started at 8.5'
12.5			U-1	21		88		0.25				32-22-10	29.9	94.3	0.947	12.5 828.9 Gray to dark gray, firm, moist, LEAN CLAY with SILT (CL-ML), faint organic odor
17.5			J-3	17	x-2-3 (5)	94		0.5								- becomes gray at 18'
22.5			J-4	18	x-2-3 (5)	100		0.25								21.0 820.4 Light brown, minor orange-brown mottling, firm, moist, LEAN CLAY with SILT (CL-ML)
27.5			U-2	15		63		3.5				37-16-21	22.0	97.7	0.57	26.5 814.9 Brown, firm, moist, LEAN CLAY with SILT (CL-ML)
32.5			J-5	18	3-3-4 (7)	100		0.25								

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Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

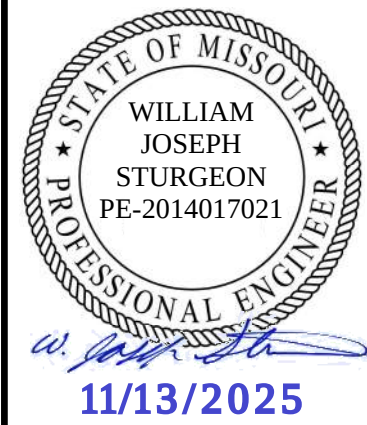
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-53 of B19-63



DATE PREPARED 11/13/2025	
ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 53
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	
BRIDGE NO. A9621	

DATE	DESCRIPTION
11/13/25	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: Ben_B2_2

Page 2 of 3

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066599.4 / 2776274.6
DRILLING FIRM PPI
DRILLER Ray A.
DATE STARTED 11/15/2024
LOGGED BY Alex Wen
DATE COMPLETED 11/19/2024
SURFACE ELEVATION 841.4'
RIG TYPE CME-55
METHOD Auger/Mud Rotary/NQ Core
TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-PI)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
37.5		X	J-6	14	x-x-4 (4)	78		0.25								Brown, firm, moist, LEAN CLAY with SILT (CL-ML)
40										38.5	802.9					Brown mottled, orange-brown mottling, stiff, moist, FAT CLAY (CH)
42.5		I	U-3	21		88		1.5				39-14-25	20.9	1071	2.01	
45																- becomes orange-brown at 46'
47.5		X	J-7	18	3-5-6 (11)	100		1.5								
52.5		X	J-8	18	3-4-5 (9)	100		1.0								
57.5		X	J-9	11	4-5-6 (11)	61						37-22-15	30.5			- becomes brown, few fine to coarse subangular gravel at 57.5'
67.5		X	J-10	18	6-8-11 (19)	100		2.25								- loss of gravel inclusions at 67.5'
71.4											770					Brown, medium dense, wet, fine to coarse grained, SANDY SILT (ML), trace clay, fine to coarse subrounded gravel, possible cobbles



SOIL BORING NUMBER: Ben_B2_2

Page 3 of 3

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066599.4 / 2776274.6
DRILLING FIRM PPI
DRILLER Ray A.
DATE STARTED 11/15/2024
LOGGED BY Alex Wen
DATE COMPLETED 11/19/2024
SURFACE ELEVATION 841.4'
RIG TYPE CME-55
METHOD Auger/Mud Rotary/NQ Core
TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-PI)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
77.5		X	J-11	12	4-6-7 (13)	67										Brown, medium dense, wet, fine to coarse grained, SANDY SILT (ML), trace clay, fine to coarse subrounded gravel, possible cobbles
85.8		I	C-1	46		100	83				755.6					Limestone, slightly weathered, gray, hard, with healed joints and dark gray shaley laminations that are often lenticular
89.67			C-2	57		95	95					0.1	168.4	1433		
94.67			C-3	0		0	0				746.4					Bottom of Boring at 95'
																Boring backfilled with cuttings 11/19/2024



11/13/2025

DATE PREPARED 11/13/2025
ROUTE 1 - 70
STATE MO
DISTRICT BR
SHEET NO. B19 - 54
COUNTY JACKSON
JOB NO. J411486D
CONTRACT ID. 240807 - C01
PROJECT NO.

BRIDGE NO. A9621

DATE	DESCRIPTION	REV	0	REF	SUBMITTAL
11/13/25					

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
HNTB

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-54 of B19-63



Depth (ft)	Depth of Sample	Sample Type	Sample ID	Recovery Length (in)	Blow Counts (N-Value)	% Recovery	ROD (%)	Pocket Pen (tsf)	Graphic Log	Groundwater Data		Lab			
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-P _I)	Moisture Content (%)	Dry Density (pcf)	UCS (tsf)
										Visual Classification and Remarks					
5	5 ft	X	J-1	13	3-4-3 (7)	72		2.5	FILL, brown, stiff, moist, LEAN CLAY (CL), with grass at surface						
10	10 ft	X	J-2	18	3-4-4 (8)	100		3.5	- Mud Rotary started at 10' Brown to grayish brown, very stiff, moist, LEAN CLAY (CL), with organics	833.9					
15	13 ft	U-1		24		100		0.5	Gray to dark gray, soft, moist, LEAN CLAY with SILT (CL-ML), organic odor	830.9	34-22-12	33.1	87.2	0.505	
20	18 ft	X	J-3	18	WOH-WOH-WOH	100		<0.5	- becomes wet at 18'		33-20-13	32.2			
25	23 ft	X	J-4	18	2-2-3 (5)	100		<0.5					31.3		
30	28 ft	U-2		24		100		4.5	Brown to gray, very stiff, moist, LEAN CLAY with SILT (CL-ML)	815.9	30-21-9	22.9	98.4	1.25	
35	33 ft	X	J-5	18	3-3-4 (7)	100		3.0							



Depth (ft)	Depth of Sample	Sample Type	Sample ID	Recovery Length (in)	Blow Counts (N-Value)	% Recovery	RQD (%)	Pocket Pen (tsf)	Graphic Log	<table border="1"> <thead> <tr> <th colspan="2">Groundwater Data</th> </tr> <tr> <th>During Drilling (ft):</th> <th>N/A</th> </tr> <tr> <th>After Drilling (ft):</th> <th>N/A</th> </tr> <tr> <th>After __ Hours (ft):</th> <th>N/A</th> </tr> </thead></table>	Groundwater Data		During Drilling (ft):	N/A	After Drilling (ft):	N/A	After __ Hours (ft):	N/A	Lab			
											Groundwater Data											
During Drilling (ft):	N/A																					
After Drilling (ft):	N/A																					
After __ Hours (ft):	N/A																					
Visual Classification and Remarks											Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)								
38 ft		X	J-6	18	3-5-8 (13)	100		4.5		Brown to gray, very stiff, moist, LEAN CLAY with SILT (CL-ML)	42-23-19	22.4										
40								38.0		805.9												
43 ft			U-3	24		100	3.0	44.0		799.9	35-15-20	18.9										
45																						
48 ft		X	J-7	18	3-3-6 (9)	100	2.5	48.0		795.9												
50																						
53 ft		X	J-8	18	3-5-6 (11)	100	2.0					23.1										
55																						
58 ft		X	J-9	18	2-4-5 (9)	100	2.0				36-23-13	23.7										
60																						
65																						
68 ft		X	J-10	18	10-7-9 (16)	100			67.3	776.7												
70										Brown, medium dense, wet, fine to coarse grained, WELL-GRADED SAND with CLAY (SW-SC)		24.7										

Notes:
For locations of borings, see Sheet No. B19-02
and Geotechnical Report.

BORING LOGS



SOIL BORING NUMBER: Ben_B2_3

Page 3 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066646.0 / 2776277.8
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 11/20/2024
LOGGED BY Trent Shepherd DATE COMPLETED 11/20/2024
SURFACE ELEVATION 843.9' RIG TYPE CME-55
METHOD Auger/Mud Rotary/NQ Core TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
78 ft																
80			J-11	12	8-9-8 (16)	67							16.9			Brown, medium dense, wet, fine to coarse grained, WELL-GRADED SAND with CLAY (SW-SC)
																Brown, medium dense, wet, fine to coarse grained, WELL-GRADED SAND (SW), with trace clay
85																
88 ft																
88.75 ft			J-12	9	9-50/3" (50/3")	100										88.0 755.9
90			C-1	17		100	88									Brown, medium dense, wet, coarse grained with some fine grained, WELL-GRADED SAND (SW)
			C-2	60		100	97									88.8 755.2
																Limestone, slightly weathered, light gray, hard, with healed joints
95			C-3	43		98	75									90.2' with shaley laminations that are often lenticular
100																98.8 745.2
																Bottom of Boring at 98.75'
																Boring backfilled with cuttings 11/20/2024
105																
110																



SOIL BORING NUMBER: Ben_B3_1

Page 1 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066426.1 / 2776344.2
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 12/05/2024
LOGGED BY Trent Shepherd DATE COMPLETED 12/06/2024
SURFACE ELEVATION 834.7' RIG TYPE CME-55
METHOD Auger/Water Rotary/NQ Core TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	18	Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
5	4.5 ft		J-1	11	3-3-4 (7)	61	0.75						34-21-13	20.4		FILL, dark brown, firm, dry, LEAN CLAY with SILT (CL-ML), with organics
10	9.5 ft		U-1	24		100	0.5									
																10.0 824.7
																Brown, soft, dry, LEAN CLAY with SILT (CL-ML)
13 ft			J-2	18	WOH-WOH-WOH	100	<0.5									- becomes moist at 13'
18 ft			U-2	24		100	<0.5									- becomes wet at 18'
20																
23 ft			J-3	18	1-2-3 (5)	100	0.5									23.0 811.7
																Gray, soft, moist, FAT CLAY (CH)
28 ft			U-3	24		100	<0.5									28.0 806.7
																Brown, soft, moist, LEAN CLAY with SILT (CL-ML)
33 ft			J-4	18	1-2-2 (4)	100	0.75									
35																

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

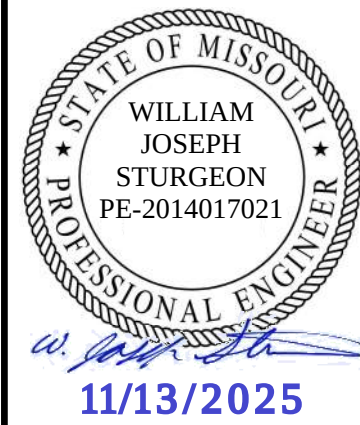
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

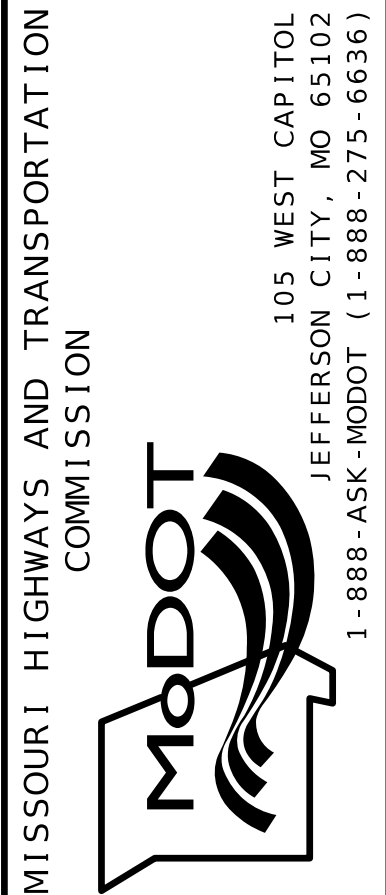
Sheet No. B19-56 of B19-63



DATE PREPARED 11/13/2025	
ROUTE 1 - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 56
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807-C01	
PROJECT NO.	

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL





SOIL BORING NUMBER: Ben_B3_1

Page 2 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066426.1 / 2776344.2
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 12/05/2024
LOGGED BY Trent Shepherd DATE COMPLETED 12/06/2024
SURFACE ELEVATION 834.7' RIG TYPE CME-55
METHOD Auger/Water Rotary/NQ Core TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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):		Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
										After Drilling (ft):					
										After __ Hours (ft):	N/A				
Visual Classification and Remarks															
	38 ft		U-4	24		100		2.0		Brown, soft, moist, LEAN CLAY with SILT (CL-ML) 38.0 796.7					
40										Tan to brown, stiff, moist, SANDY LEAN CLAY (CL)					
	43 ft		J-5	18	1-3-4 (7)	100		1.0		43.0 791.7					
45										Brown, firm, moist, LEAN CLAY with SILT (CL-ML)					
	48 ft		U-5	24		100		1.5							
50															
	53 ft		J-6	18	x-3-4 (7)	100		1.25							
55															
	58 ft		J-7	18	4-4-4 (8)	100		1.75		58.0 776.7					
60										Brown to tan, stiff, moist, LEAN CLAY with SILT (CL-ML), with fine sand from 58' to 58.5'					
65															
	68 ft		J-8	18	4-4-4 (8)	100		2.5		68.0 766.7					
70										Bluish-dark gray, very stiff, moist, CLAYEY SILT (ML)					



SOIL BORING NUMBER: Ben_B3_1

Page 3 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066426.1 / 2776344.2
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 12/05/2024
LOGGED BY Trent Shepherd DATE COMPLETED 12/06/2024
SURFACE ELEVATION 834.7' RIG TYPE CME-55
METHOD Auger/Water Rotary/NQ Core TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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):	18		Atterberg Limits (LL-PL-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
										After Drilling (ft):	14.3					
										After __ Hours (ft):	N/A					
Visual Classification and Remarks																
										Bluish-dark gray, very stiff, moist, CLAYEY SILT (ML)						
	78 ft		J-9	15	7-10-14 (24)	83				77.8	756.9					
80										Tan, medium dense, moist, coarse grained, SANDY GRAVEL (GW), with clay seam from 78' to 78.3', with SPT refusal at 81'						
	81 ft		J-10	0	50/0"					81.0	753.7					
	81.8 ft		C-1	39		100	100			Limestone, weathered, light gray, moderately hard, with healed joints and trace lenticular shale, 81' tested with HCl, loss of water noted by driller						
	85 ft		C-2	60		100	97									
90	90 ft		C-3	21		100	100			91.8	742.9					
										Bottom of Boring at 91.8'						
										Piezometer installed in boring on 12/09/2024						
95																
100																
105																
110																

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

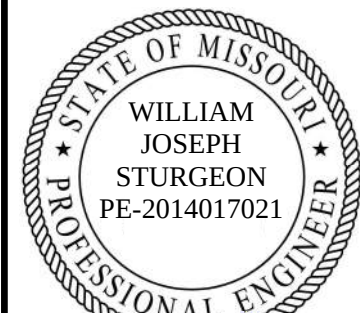
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-57 of B19-63



11/13/2025

DATE PREPARED
11/13/2025
ROUTE
1 - 70
STATE
MO
DISTRICT
BR
SHEET NO.
B19 - 57
COUNTY
JACKSON
JOB NO.
J411486D
CONTRACT ID.
240807-C01
PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION	REV	0	- RFC	SUBMITTAL
11/13/25					

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



SOIL BORING NUMBER: Ben_B3_2

Page 1 of 3

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066521.5 / 2776348.0
DRILLING FIRM PPI
DRILLER Josh Starkey
DATE STARTED 11/14/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 11/15/2024
SURFACE ELEVATION 837.9'
RIG TYPE CME-55LC
METHOD Auger, Water Rotary, NQ Core
TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
										Visual Classification and Remarks					
										0.5	837.4				
										FILL, brown, stiff, moist, LEAN CLAY (CL)					
5	3.5 ft	X	J-1	10	4-5-4 (9)	56		1.0				35-19-16	23.6		
10	8.5 ft	X	J-2	18	1-2-3 (5)	100	<0.25			8.5	829.4				
										Dark brown to brown, firm, moist, LEAN CLAY (CL)					
15	13.5 ft		U-1	24		100						35-21-14	29.1	94.3	0.74
20	18.5 ft	X	J-3	18	2-2-4 (6)	100	0.5					37-16-21	29.6		
25	23.5 ft	X	J-4	18	1-3-3 (6)	100	0.75								
30	28 ft		U-2	24		100	1.5					64-20-44	32.4	91.4	0.826
35	33.5 ft	X	J-5	18	3-4-5 (9)	100	2.25								



SOIL BORING NUMBER: Ben_B3_2

Page 2 of 3

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1066521.5 / 2776348.0
DRILLING FIRM PPI
DRILLER Josh Starkey
DATE STARTED 11/14/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 11/15/2024
SURFACE ELEVATION 837.9'
RIG TYPE CME-55LC
METHOD Auger, Water Rotary, NQ Core
TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
										Visual Classification and Remarks					
	38.5 ft														
40		X	J-6	18	4-7-8 (15)	100		3.25		Brownish gray, stiff, FAT CLAY (CH), iron concretions	38.5	799.4			
										Orangish brown, stiff, LEAN CLAY with SILT (CL-ML), trace organics, iron concretions					
45	43.5 ft	X	J-7	18	3-4-5 (9)	100		1.75							
50	48.5 ft	X	J-8	18	3-4-6 (10)	100		1.5							
55	53.5 ft		U-3	24		100		2.0				46-15-31	24.7	102.7	1.84
60	58.5 ft	X	J-9	18	3-5-5 (10)	100		2.0		58.5	779.4				
										Gray, stiff, moist, LEAN CLAY (CL)		47-14-33	24.6		
65															
70	68.5 ft	X	J-10	18	3-4-9 (13)	100		3.25		69.5	768.4				
										Tan-brown, medium dense, fine to medium grained, POORLY GRADED SAND with SILT (SP-SM), trace gravel					

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

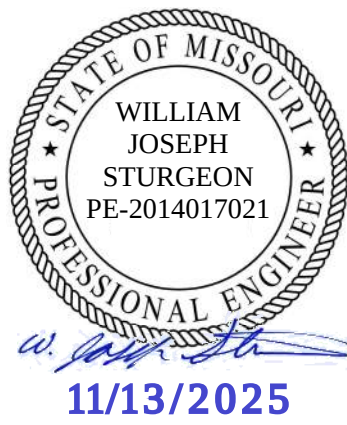
Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-58 of B19-63



DATE PREPARED 11/13/2025	
ROUTE 1 - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 58
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807 - C01	
PROJECT NO.	
BRIDGE NO. A9621	

DATE	DESCRIPTION	REV	0	- RFC	SUBMITTAL
11/13/25					

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



										Lab							
Depth (ft)	Depth of Sample	Sample Type	Sample ID	Recovery Length (in)	Blow Counts (N-Value)	% Recovery	RQD (%)	Pocket Pen (tsf)	Graphic Log	Visual Classification and Remarks				Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (pcf)	UCS (tsf)
										Groundwater Data							
										During Drilling (ft):				N/A			
										After Drilling (ft):				N/A			
										After __ Hours (ft):				N/A			
										Visual Classification and Remarks							
										Tan-brown, medium dense, fine to medium grained, POORLY GRADED SAND with SILT (SP-SM), trace gravel							
										- becomes orangish brown at 79.2'							
										83.3 754.6							
										Limestone, slightly weathered to weathered, gray to dark gray, hard							
										- thin black shale seams at 90.6'							
										93.3 744.6							
										Bottom of Boring at 93.3'							
										Boring backfilled with cuttings 11/15/2024							



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-P)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)
Visual Classification and Remarks															
										FILL, dark brown, stiff, moist, LEAN CLAY (CL)					
4 ft		X	J-1	8.5	4-4-4 (8)	47		4.0		- black mottling at 4'					
8.5 ft			U-1	21		88		1.0							
13.5 ft		X	J-2	18	x-1-3 (4)	100		0.5		13.5 829.7					
18.5 ft		X	J-3	17	x-3-2 (5)	94		1.0		Brownish gray, soft to firm, moist, LEAN CLAY with SILT (CL-ML), trace organics	39-18-21	29.7			
23.5 ft										- no recovery at 23.5'					
25.4 ft		X	J-4	18	2-2-3 (5)	100		0.5			35-17-18	29.0			
28.5 ft		X	J-5	18	x-3-2 (5)	100		0.5							
32.5 ft										32.5 810.7					
33.5 ft		X	J-6	18	3-4-5 (9)	100		2.0		Brownish gray, stiff, moist, LEAN CLAY with SILT (CL-ML), with trace gravel	59-19-40	26.5			

Notes:
For locations of borings, see Sheet No. B19-02
and Geotechnical Report.

BORING LOGS



SOIL BORING NUMBER: Ben_B3_3

Page 2 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066641.0 / 2776342.6
DRILLING FIRM PPI DRILLER Josh Starkey DATE STARTED 11/12/2024
LOGGED BY Cameron Dupont DATE COMPLETED 11/13/2024
SURFACE ELEVATION 843.2' RIG TYPE CME-55LC
METHOD Hollow Stem Auger TOOLING 4-1/4" 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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
	38 ft		U-2	24		100		3.0								Brownish gray, stiff, moist, LEAN CLAY with SILT (CL-ML), with trace gravel
40																38.0 805.2
																Orangish brown, stiff to very stiff, moist, LEAN CLAY with SILT (CL-ML), iron concretions
45	43.5 ft	X	J-7	18	4-4-6 (10)	100		2.5								
50	48.5 ft	X	J-8	18	3-5-6 (11)	100		2.5								
55	53.5 ft	X	J-9	18	3-5-6 (11)	100		3.0								
60	58.5 ft	X	J-10	18	3-5-6 (11)	100		2.5								
65																
70	68.5 ft	X	J-11	18	6-9-17 (26)	100										68.5 774.7
																Brown-tan, moist, WELL-GRADED SAND with CLAY (SW-SC), some gravel

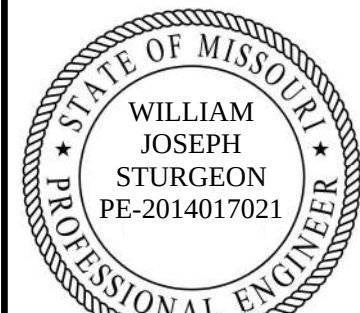


SOIL BORING NUMBER: Ben_B3_3

Page 3 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066641.0 / 2776342.6
DRILLING FIRM PPI DRILLER Josh Starkey DATE STARTED 11/12/2024
LOGGED BY Cameron Dupont DATE COMPLETED 11/13/2024
SURFACE ELEVATION 843.2' RIG TYPE CME-55LC
METHOD Hollow Stem Auger TOOLING 4-1/4" 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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
	78.3 ft	X	J-12	18	5-3-4 (7)	100										Brown-tan, moist, WELL-GRADED SAND with CLAY (SW-SC), some gravel
80																
85																
90	87.9 ft		C-1	31		97	88									87.8 755.4
	90.5 ft		C-2	60		100	100									Limestone, slightly weathered to weathered, gray to blue, hard
95	95.5 ft		C-3	28		100	79									
100																97.9 745.3
																Bottom of Boring at 97.9'
105																Boring backfilled with cuttings 11/13/2024
110																



11/13/2025

DATE PREPARED
11 / 13 / 2025
ROUTE
1 - 70
STATE
MO
DISTRICT
BR
SHEET NO.
B19 - 60
COUNTY
JACKSON
JOB NO.
J411486D
CONTRACT ID.
240807 - C01
PROJECT NO.

BRIDGE NO.
A9621

DATE	DESCRIPTION
11/13/25	REV 0 - RFC SUBMITTAL

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

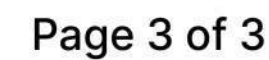
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY
NO. 001270
HNTB

Released For Construction
Not to Scale
Revision: 0.0
Date: 11/21/2025
Package: BRD-19-EB70-Benton

Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS





Borehole Log										Lab					
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		Atterberg Limits (LL-PL-Pi)	Moisture Content (%)	Dry Density (pcf)	UCS (tsf)
										During Drilling (ft):	N/A				
										After Drilling (ft):	N/A				
										After __ Hours (ft):	N/A				
										Visual Classification and Remarks					
78 ft		J-10	18		3-6-9 (15)	100		1.0		Dark gray to brown, stiff, moist, FAT CLAY (CH), iron stained					
80										- with sand, well-graded at 78'					
85															
87.5 ft		C-1	36			92	41			87.5	755.4				
90		C-2	60			100	83			Limestone, weathered, light gray, hard, fractured, slightly vuggy, joint fractures					
90.8 ft															
95		C-3	60			100	82								
95.8 ft															
100										- 1.5" clay seam at 99.8'					
										100.8	742.1				
										Bottom of Boring at 100.8'					
										Boring backfilled with grout 11/7/2024					
105															
110															



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					
5	4.5 ft	X	J-1	15	2-2-3 (5)	83			[Pattern]	FILL, brown, medium plasticity, moist, LEAN CLAY (CL), little concrete rubble (coarse gravel to cobble size), medium plasticity, little rootlets at surface					
								1.5	[Pattern]	3.5 837.1 Brown, firm, moist, LEAN CLAY with SILT (CL-ML)					
10	9.5 ft	X	J-2	14	2-3-7 (10)	78			[Pattern]	10.0 830.6	45-15-30	21.3			
								2.0	[Pattern]	Brown mottled gray, stiff, moist, FAT CLAY (CH), trace iron nodules					
15	13 ft		U-1	19		79			[Pattern]	13.0 827.6					
	15 ft	X	J-3	18	2-3-2 (5)	100			[Pattern]	Orangish brown, firm, moist, LEAN CLAY (CL)	46-17-29	26.3	98.7	0.83	
20	18 ft	X	J-4	18	x-1-2 (3)	100			[Pattern]			25.2			
								0.5	[Pattern]						
25	23 ft	X	J-5	14	3-5-6 (11)	78			[Pattern]	- tube attempted at 23', no recovery 23.5 817.1					
								2.75	[Pattern]	Mottled orangish brown, stiff, moist, FAT CLAY (CH), trace dark gray					
30	28 ft	X	J-6	18	x-1-2 (3)	100			[Pattern]	- tube attempted at 28', no recovery	48-15-33	29.2			
								<0.25	[Pattern]						
35	33 ft	X	J-7	14	WOH-WOH+ WOH	78			[Pattern]	- tube attempted at 33', no recovery					
								<0.25	[Pattern]						

Notes:
For locations of borings, see Sheet No. B19-02
and Geotechnical Report.

BORING LOGS



SOIL BORING NUMBER: Ben_B4_3

Page 2 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066619.7 / 2776379.5
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 11/11/2024
LOGGED BY Alex Wen DATE COMPLETED 11/12/2024
SURFACE ELEVATION 840.6' RIG TYPE CME-55
METHOD Auger/Mud Rotary/NQ Core TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-PI)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
38 ft			U-2	14		58										Mottled orangish brown, stiff, moist, FAT CLAY (CH), trace dark gray
40												53-17-36	39.8	81.2	0.068	41.0 799.6
43 ft			J-8	18	2-4-6 (10)	100		2.0								Orangish brown, stiff, moist, FAT CLAY (CH), minor gray mottling
45																
48 ft			U-3	24		100		2.25				48-16-32	23.8			
50																
53 ft			J-9	18	2-3-4 (7)	100		2.25								- becomes light brown mottled orangish brown at 51.5'
55																56.5 784.1
58 ft			J-10	18	2-4-5 (9)	100		1.0								Light gray, stiff, moist, LEAN CLAY (CL), little fine sand
60																
65																
68 ft			J-11	14	2-2-3 (5)	78		1.0				43-16-27	39.5			68.5 772.1
70																Orangish brown, gray, dark brown, firm, moist, LEAN CLAY (CL), little fine to medium grained sand
																73.0 767.6
																Brown, medium dense, wet, fine to medium grained, WELL-GRADED SAND (SW)
																75.0 765.6

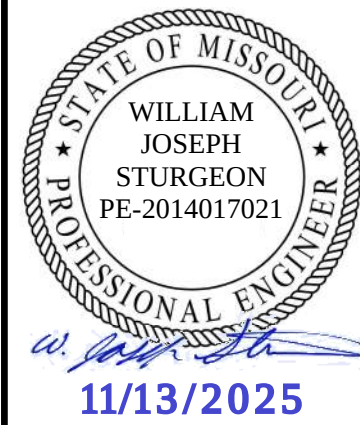


SOIL BORING NUMBER: Ben_B4_3

Page 3 of 3

PROJECT Improve I 70 KC Design Build NORTHING/EASTING 1066619.7 / 2776379.5
DRILLING FIRM PPI DRILLER Ray A. DATE STARTED 11/11/2024
LOGGED BY Alex Wen DATE COMPLETED 11/12/2024
SURFACE ELEVATION 840.6' RIG TYPE CME-55
METHOD Auger/Mud Rotary/NQ Core TOOLING 4-1/4" Hollow Stem Auger, 3-3/4" Rotary Drill

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				Visual Classification and Remarks
										During Drilling (ft):	N/A	Atterberg Limits (LL-PL-PI)	Moisture Content (%)	Dry Density (PCF)	UCS (tsf)	
78 ft			J-12	12	7-8-10 (18)	67										Brown, medium dense, wet, fine to medium grained, WELL-GRADED SAND (SW)
80																
85	85 ft		C-1	56		93	75									84.8 755.9
																Limestone, slightly weathered, gray, hard, trace healed joints and open iron-stained joints
90	90 ft		C-2	60		100	75						0.5	164.2	1137	
95																95.0 745.6
																Bottom of Boring at 95'
																Boring backfilled with cuttings 10/12/2024
100																
105																
110																



DATE PREPARED 11/13/2025	
ROUTE I - 70	STATE MO
DISTRICT BR	SHEET NO. B19 - 63
COUNTY JACKSON	
JOB NO. J411486D	
CONTRACT ID. 240807 - C01	
PROJECT NO.	

BRIDGE NO.
A9621

DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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Notes:
For locations of borings, see Sheet No. B19-02 and Geotechnical Report.

BORING LOGS

Detailed JUL 2025
Checked AUG 2025

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

Sheet No. B19-63 of B19-63