MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

LOCATION SKETCH

INDEX OF DRAWINGS

VAN WILLIAM ROBBINS
PE-2017015106
PROFESSIONAL ENGINEER
STATE OF MISSOURI
Van W. Robbins
04-11-25

DATE PREPARED: 04/11/2025
ROUTE: I-70 | STATE: MO
DISTRICT: BR | SHEET NO.: B02-01
COUNTY: JACKSON
JOB NO.: J4I1486D
CONTRACT ID.: 240807-C01
PROJECT NO.:
BRIDGE NO.: A9628

DATE	DESCRIPTION
04/11/25	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: 04/11/2025
Package: BRD-02-23rd_ST

BRIDGE: 23RD STREET OVER ROUTE I-70

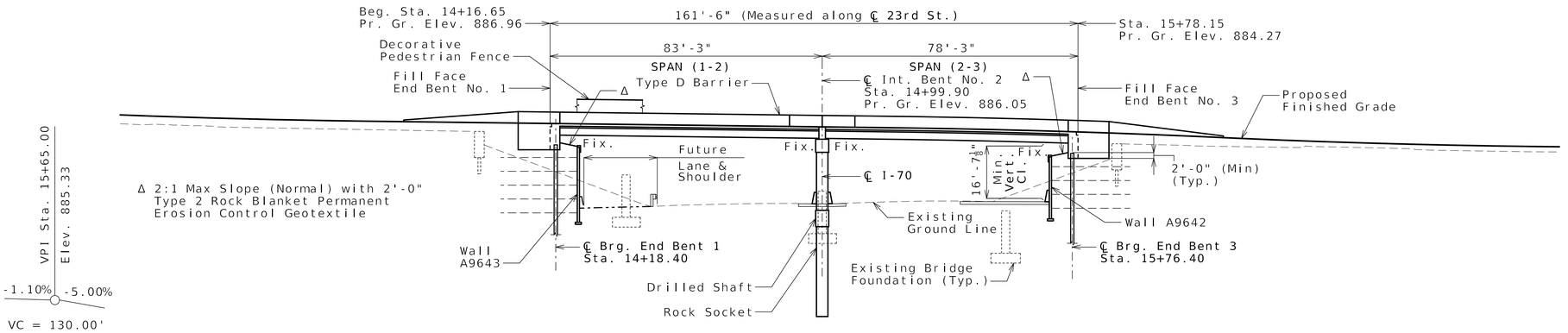
ROUTE I-70 FROM ROUTE I-670 TO ROUTE 40
ABOUT 2.2 MILES EAST OF ROUTE I-670
TIE STATION 177+36.18 (℄ I-70)

Detailed DEC 2024
Checked JAN 2025

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

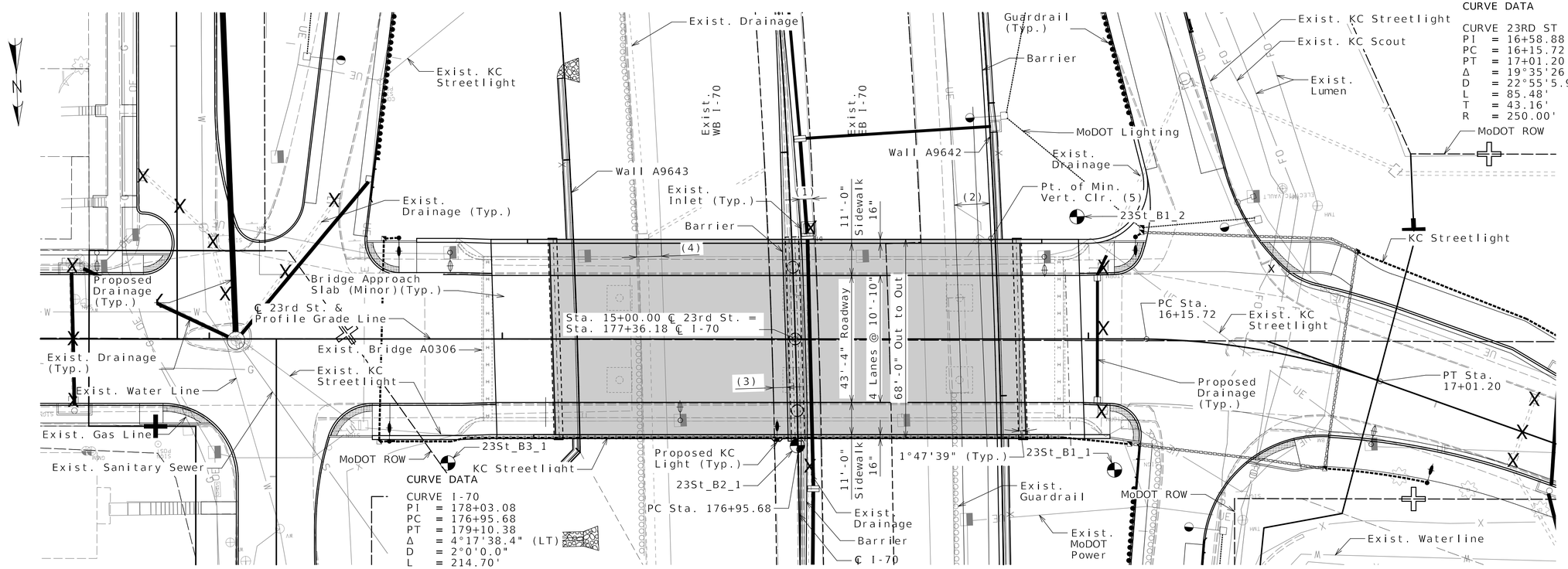
B_A9628_B02-01_J4I1486D.dgn 1:35:48 PM 4/10/2025

(83.3'-78.3') Prestressed Concrete Adjacent Box Beam Spans



PROFILE GRADE

ELEVATION



CURVE DATA

CURVE	23RD ST
PI	= 16+58.88
PC	= 16+15.72
PT	= 17+01.20
Δ	= 19°35'26.1" (RT)
D	= 22°55'5.9"
L	= 85.48'
T	= 43.16'
R	= 250.00'

CURVE DATA

CURVE	I-70
PI	= 178+03.08
PC	= 176+95.68
PT	= 179+10.38
Δ	= 4°17'38.4" (LT)
D	= 2°0'0.0"
L	= 214.70'
T	= 107.40'
R	= 2,864.79'

PLAN

Minimum Horizontal Clearance to edge of existing or proposed lane:
(1) 4'-3"
(2) 12'-0"
(3) 4'-7"
(4) 8'-7" (to match existing)

(5) Sta. 15+66.80, 34.00' Lt. ℄ 23rd St.

Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data
The locations of all subsurface borings performed by the design-build team for this structure are shown on the plan sheets for this structure. The logs for all locations indicated are provided on Sheets No. B02-33 thru B02-36. Labrotory test results, rock core photographs and other information obtained at these borings are available in the corresponding Foundation Reccommendations Memo prepared by HNTB. By the nature of the exploration process, the information gathered at these borings represents only a small fraction of the total volume of material at the Site. Interpolation between data samples may not be indicative of the nature and extent of the variations that actually exist between sampling locations.

Notes:
All Elevations are based on NAVD88 datum unless otherwise noted.
All dimensions are horizontal.
All Bents are parallel.
Existing Bridge A0306 to be removed in accordance with Sec. 216.
For elevations of drilled shafts and rock sockets, see Sheet No. B02-09.
See Civil Package 4: Local Streets 1 for I-70 typical section details.

GENERAL PLAN AND ELEVATION

Detailed DEC 2024
Checked JAN 2025

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

VAN WILLIAM ROBBINS
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STATE OF MISSOURI
PROFESSIONAL ENGINEER
04-11-25

DATE PREPARED 04/11/2025
ROUTE I-70
STATE MO
DISTRICT BR
SHEET NO. B02-02
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

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Date: 04/11/2025
Package: BRD-02-23rd_ST

DATE	DESCRIPTION
04/11/25	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

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.)	f'c = 3,000 psi
Class B-1 Concrete (Intermediate Bents except Drilled Shafts and Rock Sockets)	f'c = 4,000 psi
Class B-2 Concrete (Drilled Shafts and Rock Sockets)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Beams, and Type D Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Type D Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural HP Steel Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For prestressed beam stresses, see Sheets No. B02-16 thru B02-17.

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

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

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

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

Concrete Protective Coatings:
Concrete and masonry protective coating shall be applied on all exposed concrete and stone areas as noted in the plans in accordance with Sec 711. See Sheet No. B02-29.

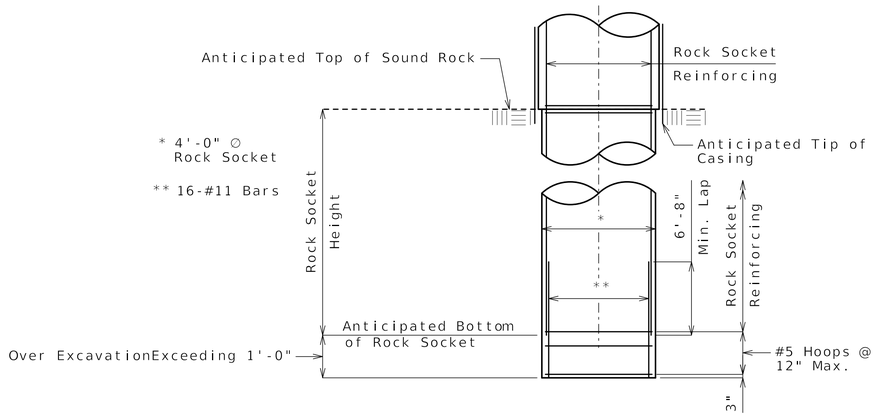
Sacrificial graffiti protective coating shall be applied on all exposed concrete and stone areas as noted in the plans in accordance with Sec 711. See Sheet No. B02-29.

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

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

Load Bearing Piles:
Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads/Resistance Factor
HP piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702. When pile refusal on rock occurs, as approved by the engineer, the minimum nominal axial compressive resistance is verified and no additional pile driving verification method is required.
Prebore for piles at Bent No. 1 to elevation 850.
If optional pipe pile spacers are used, set at least 5 ft below bottom of MSE Wall leveling pad.
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.
DT = Dynamic Testing

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



ROCK SOCKET OVER EXCAVATION DETAIL

For Rock Socket Details see Intermediate Bent Details

Foundation Data

Type	Design Data		Bent Number 1	2	3
Load Bearing Pile	Pile Type and Size		HP 12x53	---	HP 12x53
	Number	ea	10	---	10
	Approximate Length Per Each	ft	37	---	44
	Pile Point Reinforcement	ea	All	---	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length	---	Full Length
	Minimum Tip Penetration (Elev.)	ft	845	---	850
	Criteria for Min. Tip Penetration		Min Embed	---	Min Embed
	Pile Driving Verification Method		DT	---	DT
	Resistance Factor		0.65	---	0.65
	Minimum Nominal Axial Compressive Resistance	kip	371	---	371
Rock Socket	Number	ea	---	3	---
	Layer 1 Foundation Material		---	Limestone	---
	Layer 1 Elevation Range	ft	---	855.5-852	---
	Layer 1 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	---	14.7	---
	Layer 2 Foundation Material		---	Shale	---
	Layer 2 Elevation Range	ft	---	852-829	---
	Layer 2 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	---	1.3	---
	Layer 3 Foundation Material		---	Limestone	---
	Layer 3 Elevation Range	ft	---	829-819	---
	Layer 3 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	---	14.7	---
	*Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	---	92	---

*Rock Socket shall extend a minimum of 12" into Limestone.

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Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

GENERAL NOTES

Detailed DEC 2024
Checked JAN 2025

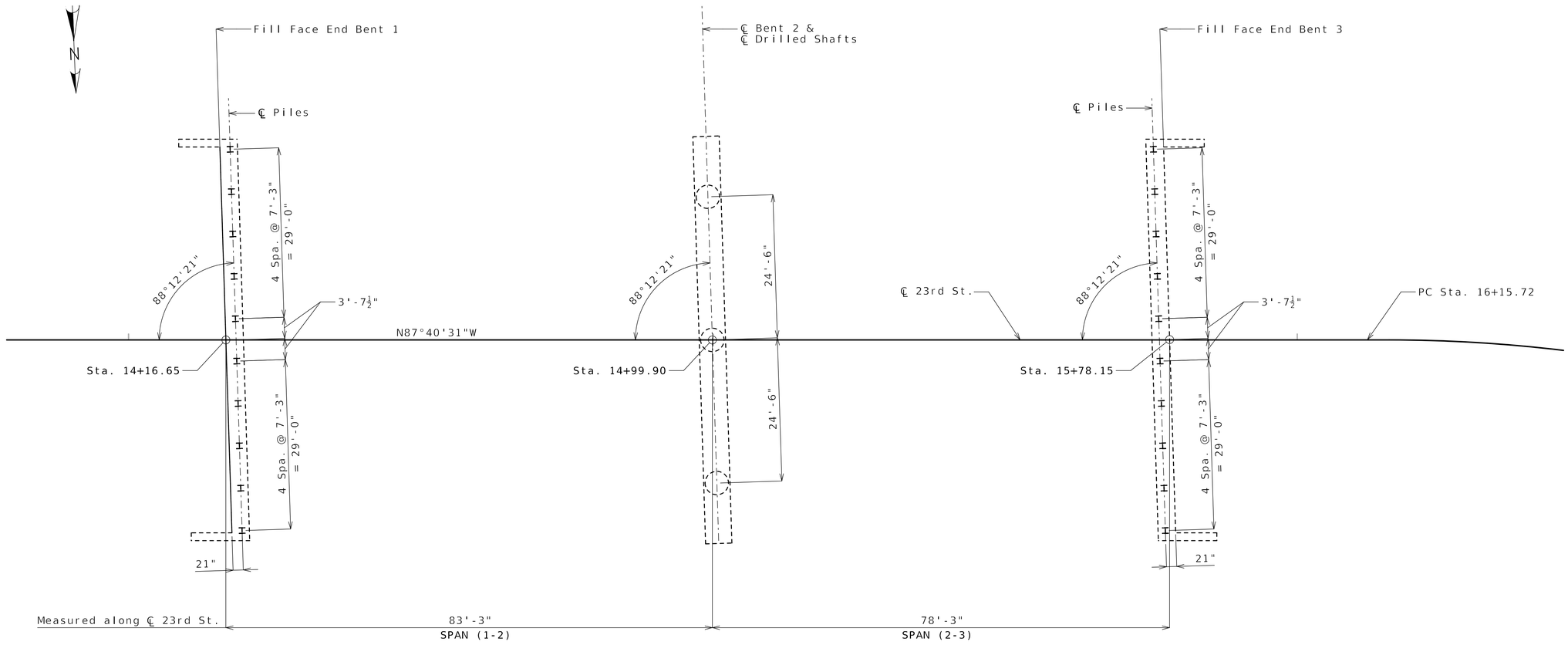
Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
VAN WILLIAM ROBBINS
PE-2017015106
PROFESSIONAL ENGINEER
04-11-25

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-03
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

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



SUBSTRUCTURE LAYOUT

Notes:
All dimensions are horizontal.

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Date: 04/11/2025
Package: BRD-02-23rd_ST

SUBSTRUCTURE LAYOUT

Detailed DEC 2024
Checked JAN 2025

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

WILLIAM JOSEPH STURGEON
PE-2014017021
STATE OF MISSOURI
PROFESSIONAL ENGINEER
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-04
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	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
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KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB

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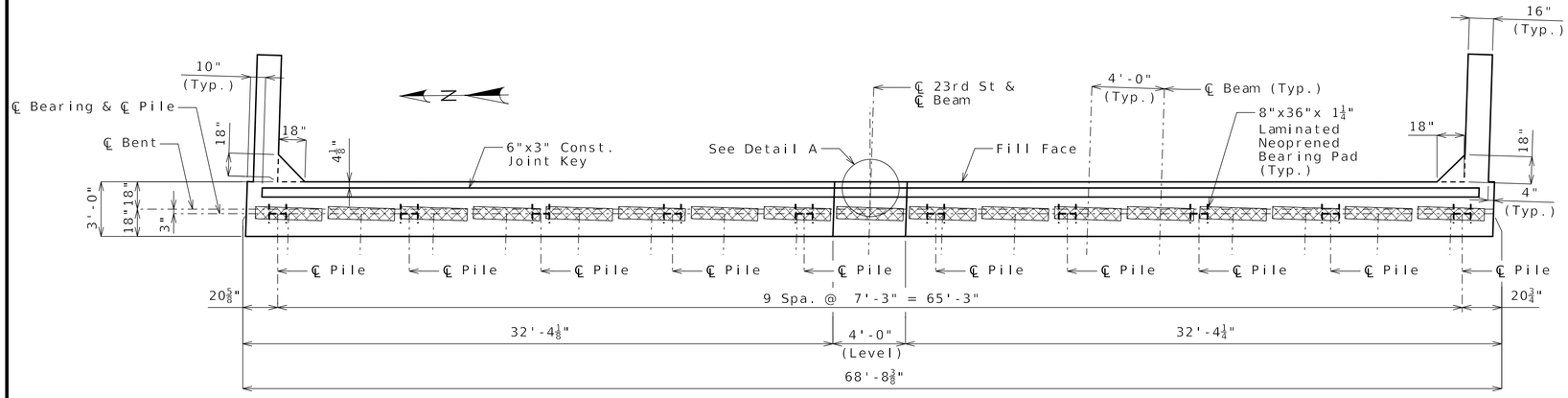
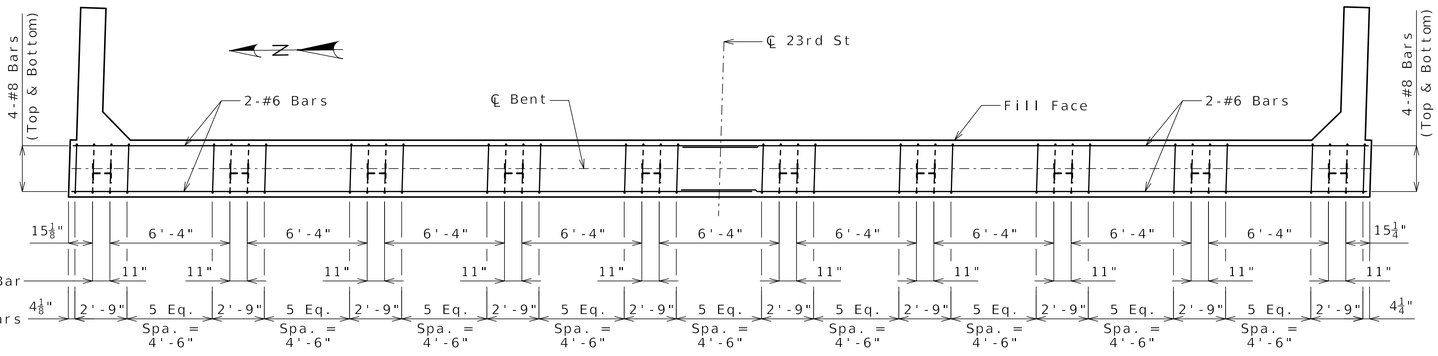
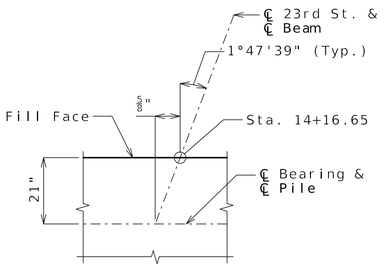
Date: 04/11/2025
Package: BRD-02-23rd_ST



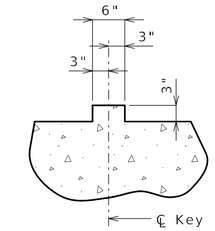
PLAN OF BEAM



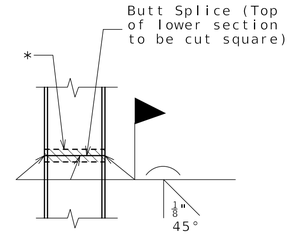
PLAN OF BEAM SHOWING REINFORCING
(Key and steps not shown for clarity.)



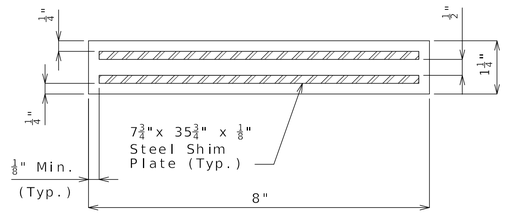
DETAIL A
(Skew exaggerated for clarity)



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.



LAMINATED NEOPRENE BEARING PAD
(17 Required for each End Bent)

Notes:
Work this sheet with Sheets No. B02-06 and B02-07.
All U bars and pairs of vertical bars shall be placed along skew. Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1½ inches.
All concrete above the construction joint shall be Class B-2.
For details of bridge approach slab, see Sheet No. B02-31.

DETAILS OF END BENT NO. 1

Detailed DEC 2024
Checked JAN 2025

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

B_A9628_B02-05_J4I1486D.dgn 1:36:54 PM 4/10/2025

STATE OF MISSOURI
GINA D. HORNER
PE-30413
PROFESSIONAL ENGINEER
Gina D. Horner 4/11/2025

DATE PREPARED: 04/11/2025
ROUTE: I-70 | STATE: MO
DISTRICT: BR | SHEET NO.: B02-05
COUNTY: JACKSON
JOB NO.: J4I1486D
CONTRACT ID.: 240807-C01
PROJECT NO.:
BRIDGE NO.: A9628

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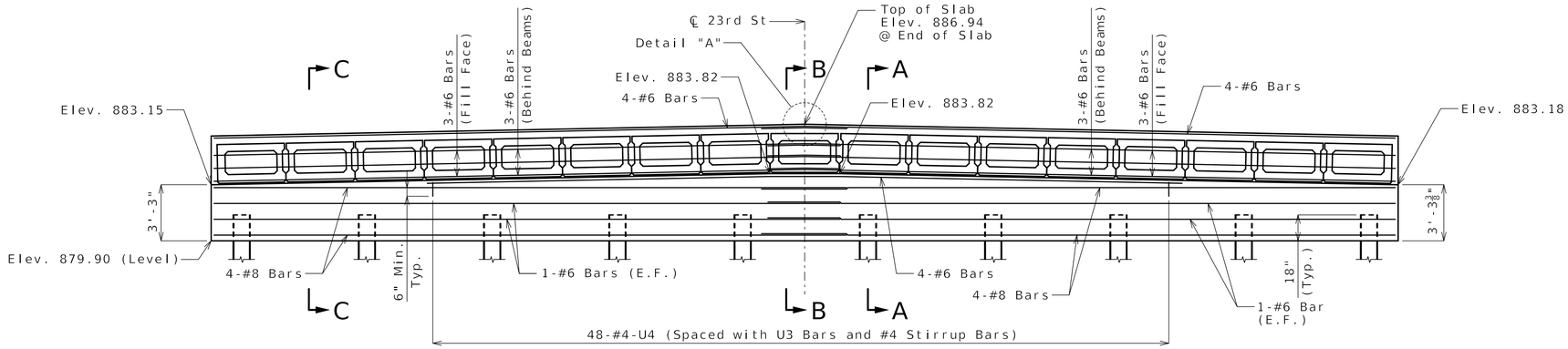
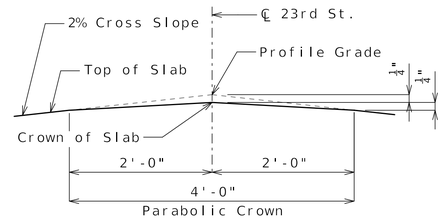
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

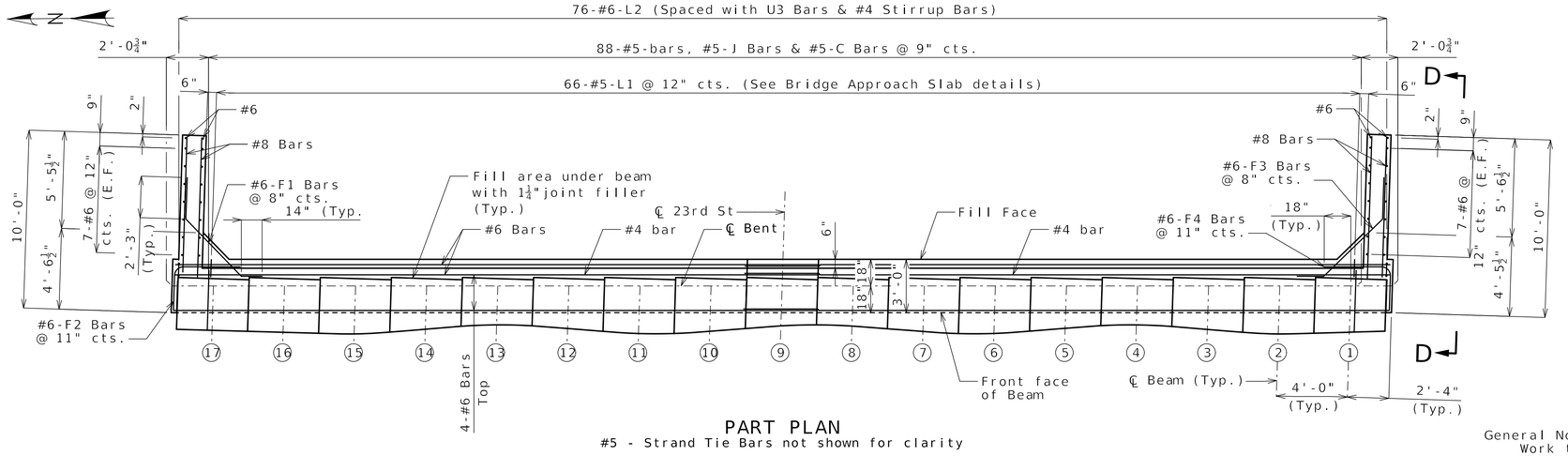
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB



SECTION NEAR END BENT
(Looking Back Station)
(Sidewalks and Type D Barrier not shown for clarity)



DETAIL "A"



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

General Notes:
Work this sheet with Sheets No. B02-05 and B02-07.
For Sections A-A, B-B and C-C, and Elevation D-D, see Sheet No. B02-07.
Lap Splice for #4 bars = 2'10" (Min.)
Lap Splice for #6 bars = 4'-3" (Min.)
Lap Splice* for #8 bars = 5'-8" (Min.)
Splices for the capbeam top and bottom #8 bars shall be staggered.
Strands at end of the beams shall be field bent or, if necessary, cut in field to maintian 1 1/2-inch minimum clearance to fill face of end bent.
The #6-F bars shall be bent in the field to clear beams.
See additional details in Retaining Walls A9643 and A9642 Plans.

(1) Denotes beam number.

DETAILS OF END BENT NO. 1

GINA D. HORNER PE-30413
STATE OF MISSOURI PROFESSIONAL ENGINEER
Gina D. Horner 4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-06
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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CLARKSON RADMACHER JOINT VENTURE
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KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB

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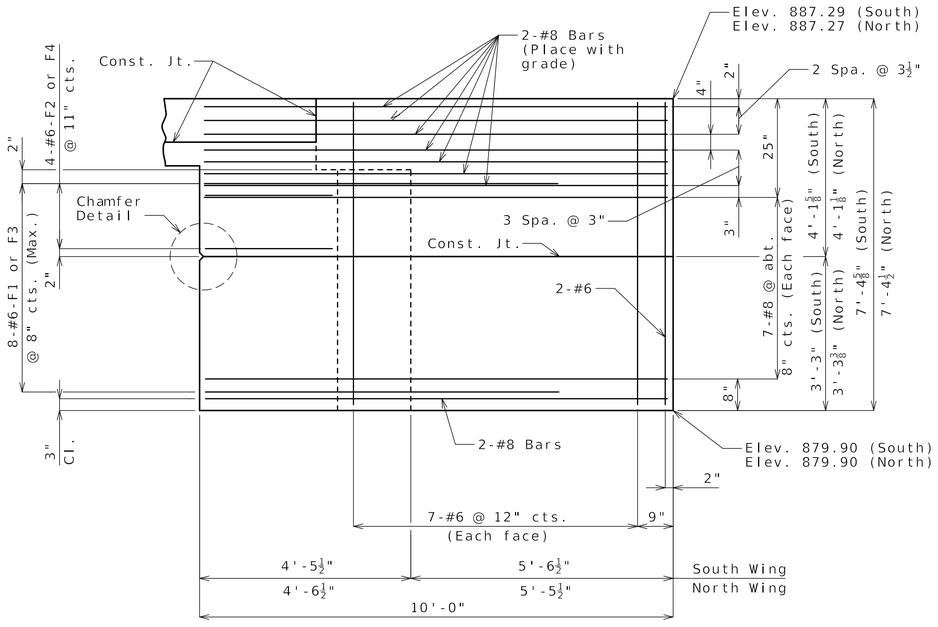
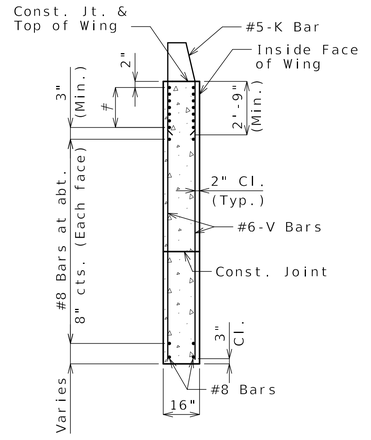


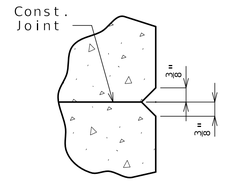
ELEVATION D-D

(South wingwall shown, North wingwall similar except opposite hand)

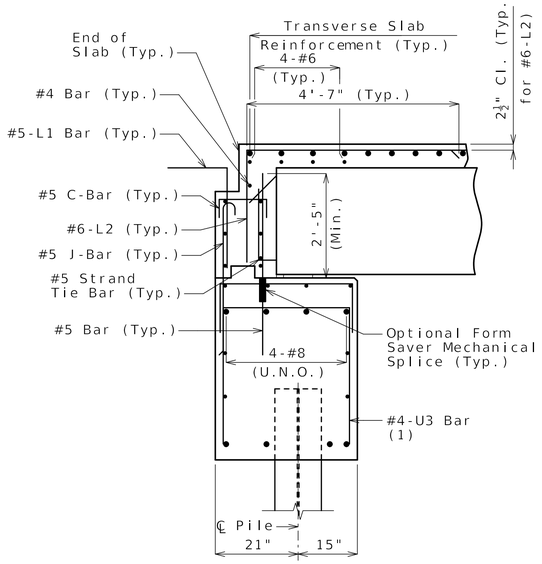


TYPICAL SECTION THRU WING

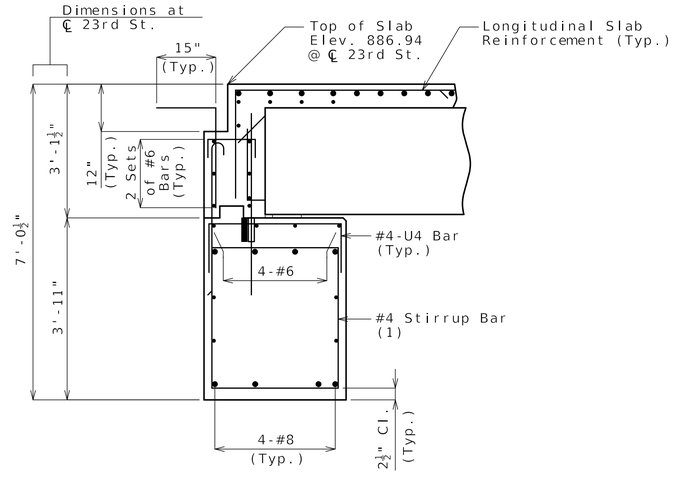
#8 Bars at 3" cts. (Each face)(Place with grade) See Elevation D-D for number of bars



CHAMFER DETAIL

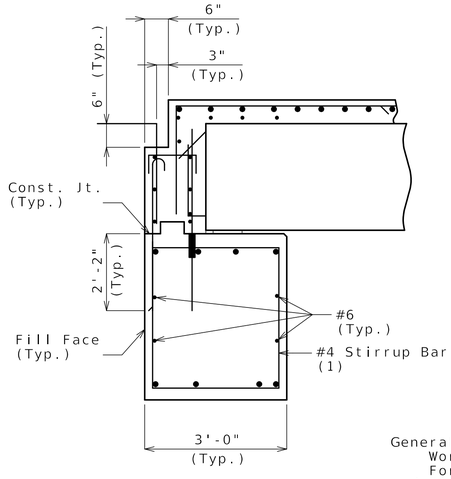


SECTION A-A



SECTION B-B

(1) U3 & #4 stirrup bar vertical leg = 2'-10"



SECTION C-C

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

General Notes:
Work this sheet with Sheets No. B02-05 and B02-06.
For location of Sections A-A, B-B and C-C and Elevation D-D, see Sheet No. B02-06.
For reinforcement of the Type D Barrier, see Sheet No. B02-26.

DETAILS OF END BENT NO. 1

Detailed DEC 2024
Checked JAN 2025

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

STATE OF MISSOURI
GINA D. HORNER PE-30413
PROFESSIONAL ENGINEER
Gina D. Horner 4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-07
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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CLARKSON RADMACHER JOINT VENTURE
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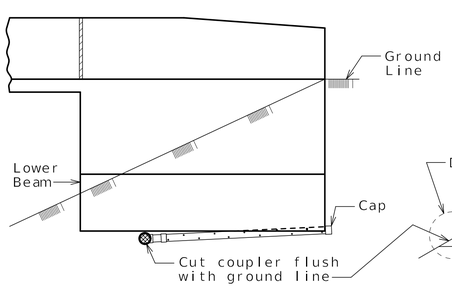
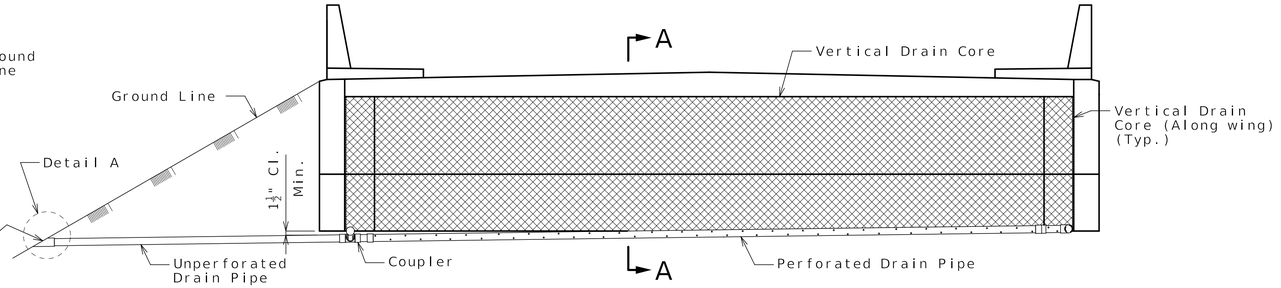
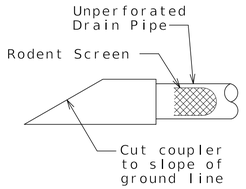
CERTIFICATE OF AUTHORITY NO. 001270
HNTB



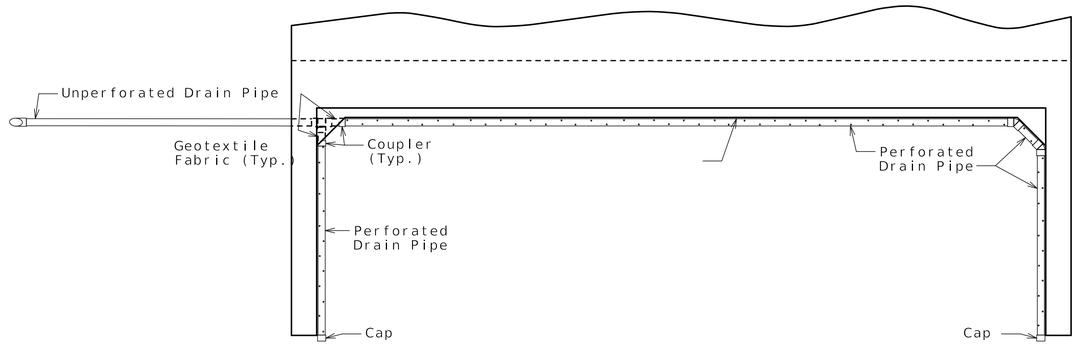
ELEVATION OF WING



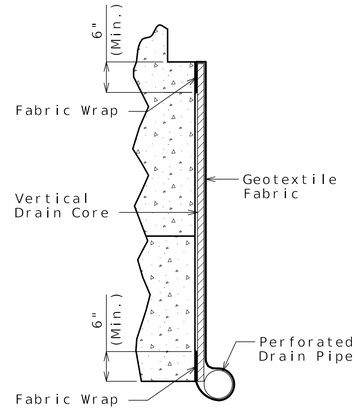
ELEVATION OF END BENT



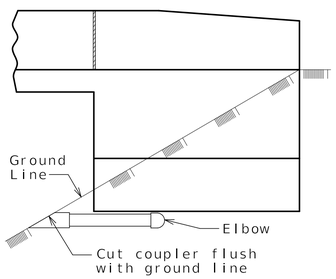
DETAIL A



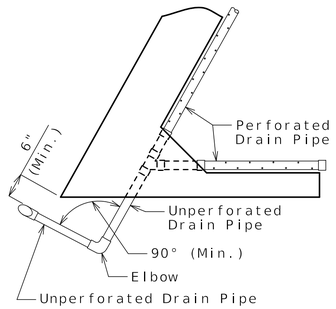
PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING



PART PLAN

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

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

General Notes:

Squared end bent shown, skewed end bent similar.

All drain pipe shall be sloped 1 to 2 percent.

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

Drain pipe shall be placed at fill face of end bent and inside face of wings. The pipe shall slope to lowest grade of ground line, also missing the lower beam of end bent by a minimum of 1 1/2 inches.

Perforated pipe shall be placed at fill face side and inside face of wings at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

If free draining granular fill material is used behind end bent and wingwalls, and if water can freely gravity drain to lower select granular backfill for structural system of MSE wall, then drain pipes are not required and internal drainage system of MSE wall can be used to collect water from Vertical Strip Drain.

VERTICAL DRAIN AT END BENTS

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
Gina D. Horner
4/11/2025

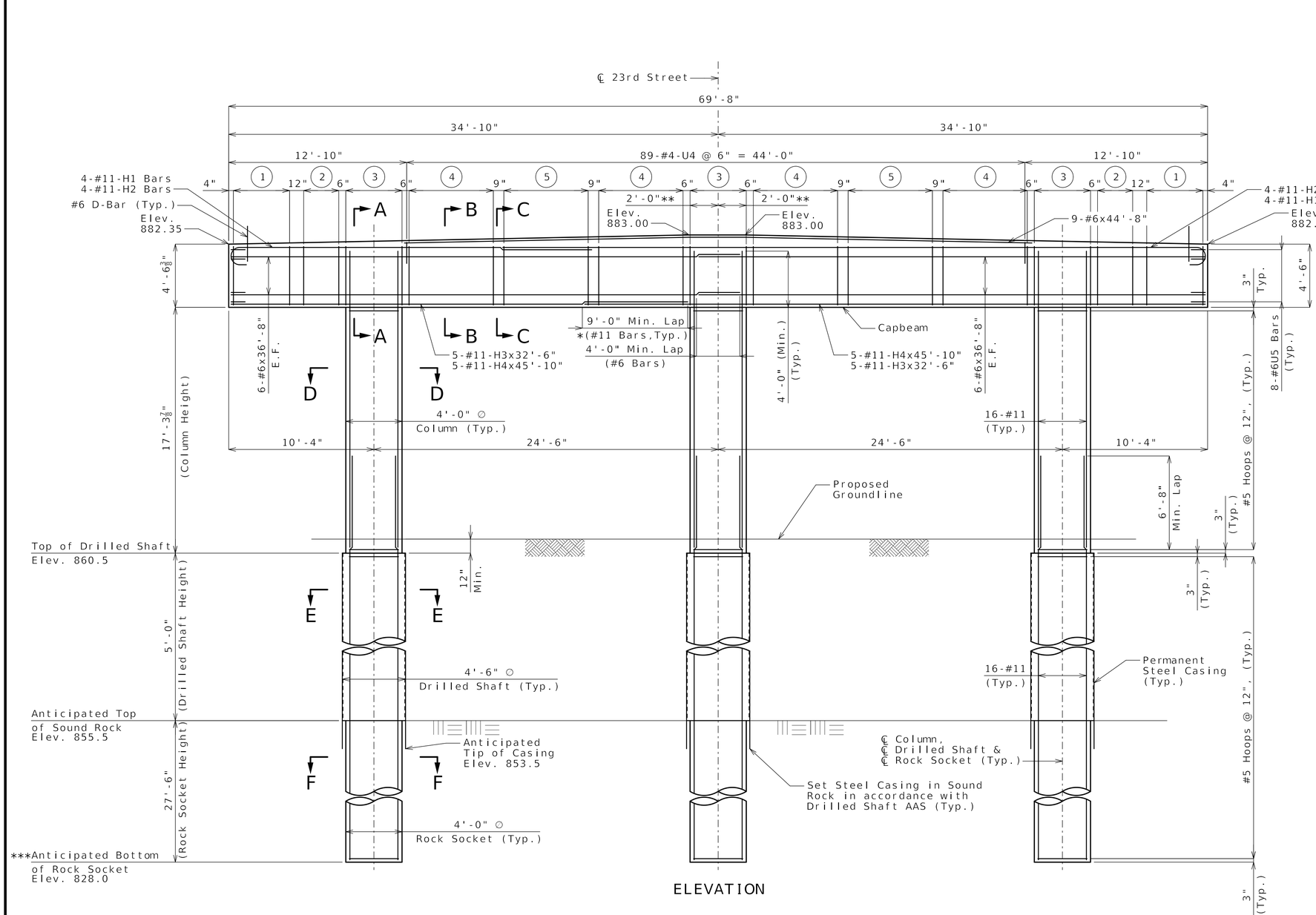
DATE PREPARED: 04/11/2025
ROUTE: I-70 | STATE: MO
DISTRICT: BR | SHEET NO.: B02-08
COUNTY: JACKSON
JOB NO.: J4I1486D
CONTRACT ID.: 240807-C01
PROJECT NO.:
BRIDGE NO.: A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

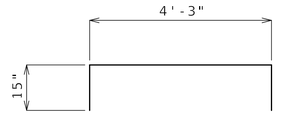
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

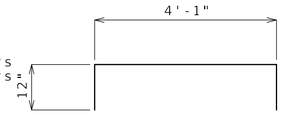
HNTB



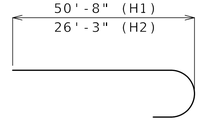
ELEVATION



#4-U4 BAR



#6-U5 BAR



#11-H1 & #11-H2 BAR

1. 5-#6-U3 @ 12" cts.
2. 6-#6-U3 @ 6" cts.
3. 5-#6-U1 @ 12" cts.
4. 13 Sets of 1-#6 - U2 & 2-#6 Tie Bars @ 6" cts.
5. 7-#6-U3 @ 12" cts.

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Notes:
* Alternate location of lap splices between adjacent bars about centerline of bent. Alternate lap splice not shown.
Work this sheet with Sheets No. B02-10 and B02-11.
** See Plan of Capbeam on Sheet B02-10 for plan view of skewed geometry.
*** For additional Rock Socket tip requirements, see Foundation Data Table on Sheet No. B02-03.
Prior to placing concrete for columns, position of vertical reinforcement shall be verified so as to provide clearance for capbeam reinforcement as applicable.
For location of drilled shafts, see Sheet No. B02-04.
For Sections A-A thru F-F, see Sheet No. B02-11.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed DEC 2024
Checked JAN 2025

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

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STATE OF MISSOURI
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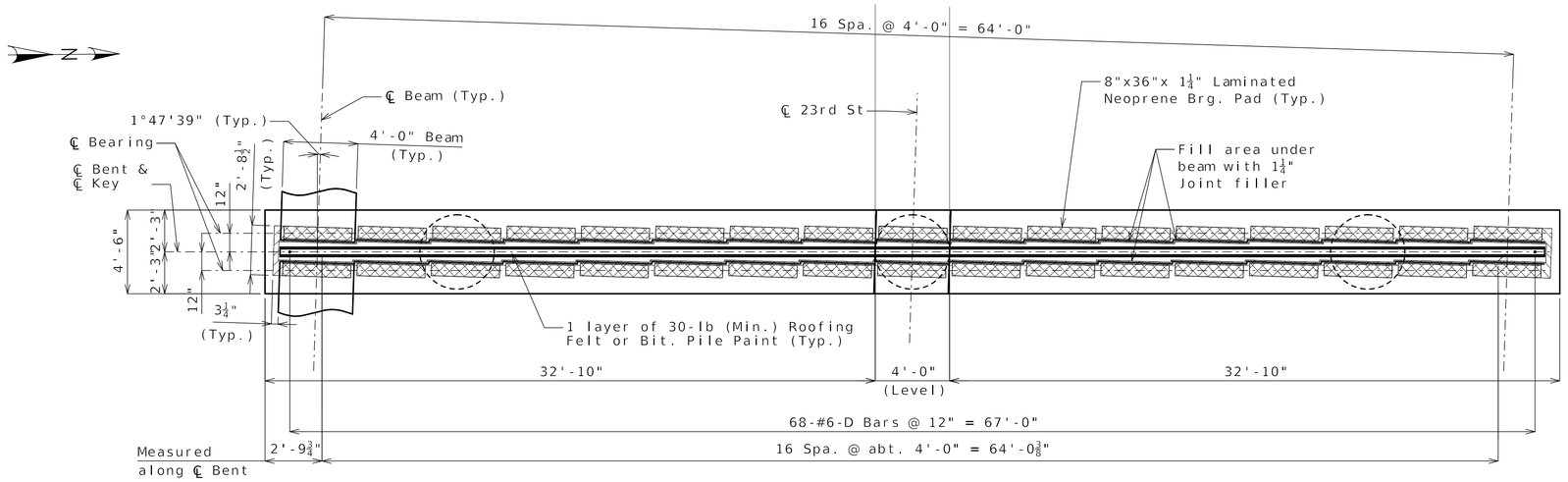
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-09
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

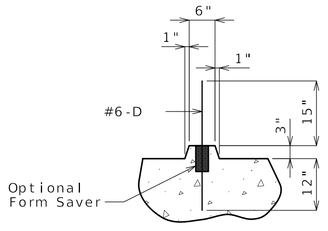
DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

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

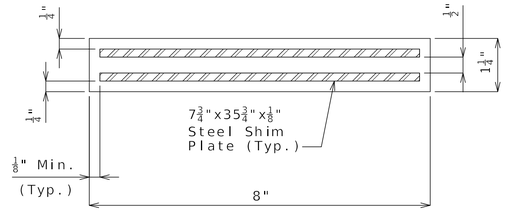
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB



PLAN OF CAPBEAM



SECTION THRU KEY



TYPICAL SECTION THRU
LAMINATED NEOPRENE BEAING PAD
34 Required

Notes:
Work this sheet with Sheets No. B02-09 and B02-11.
For additional details of joint filler, see Sheet No. B02-20.

DETAILS OF INTERMEDIATE BENT NO. 2

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Date: 04/11/2025
Package: BRD-02-23rd_ST

STATE OF MISSOURI
WILLIAM JOSEPH STURGEON
PE-2014017021
PROFESSIONAL ENGINEER
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-10
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

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
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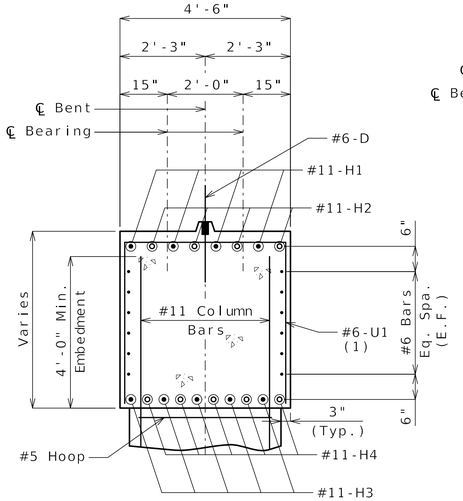
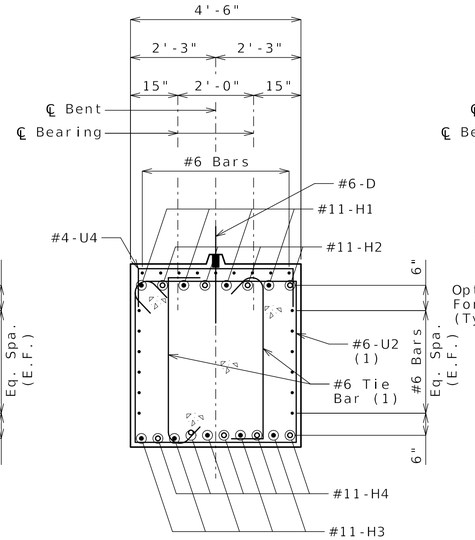
Detailed DEC 2024
Checked JAN 2025

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

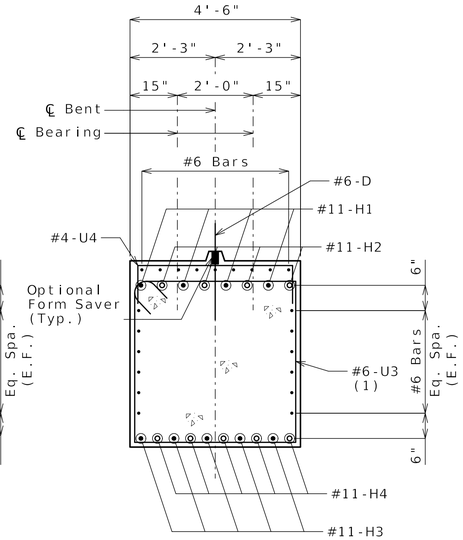
B_A9628_B02-10_J4I1486D.dgn 1:37:31 PM 4/10/2025



SECTION A-A

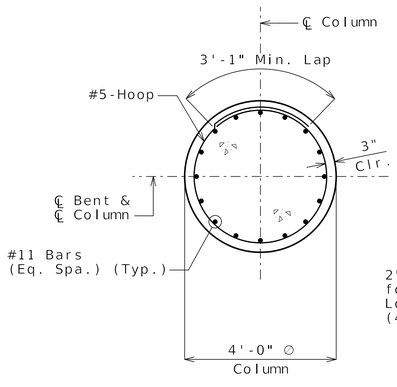


SECTION B-B

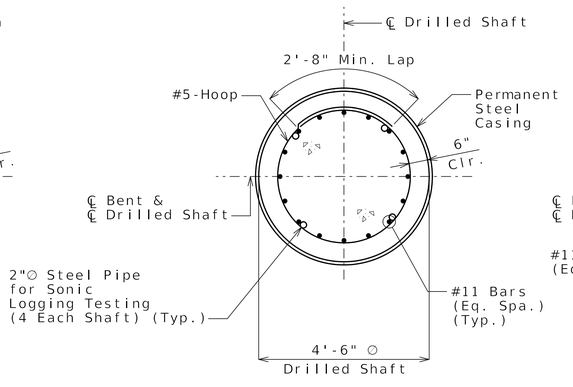


SECTION C-C

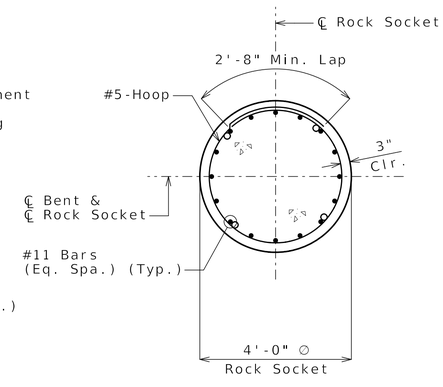
(1) U1, U2, U3, & #6 tie bar vertical leg = 4'-3"



SECTION D-D



SECTION E-E



SECTION F-F

Notes:
Work this sheet with Sheets No. B02-09 and B02-10.
Hoop splices shall be staggered around the drilled shaft and rock socket at 90 degree intervals.

DETAILS OF INTERMEDIATE BENT NO. 2

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

Detailed DEC 2024
Checked JAN 2025

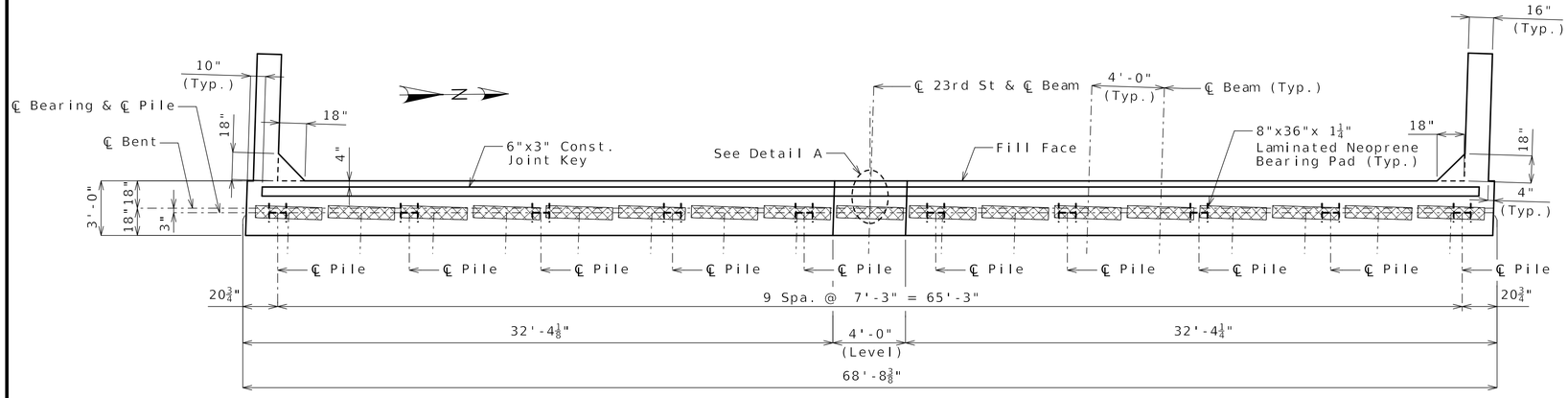
Note: This drawing is not to scale. Follow dimensions.

WILLIAM JOSEPH STURGEON
PE-2014017021
STATE OF MISSOURI
PROFESSIONAL ENGINEER
4/11/2025

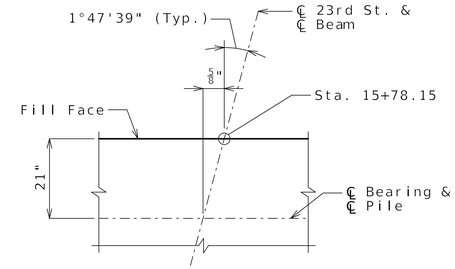
DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-11
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

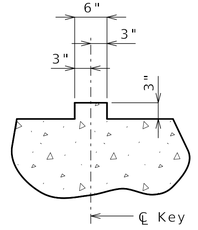
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB



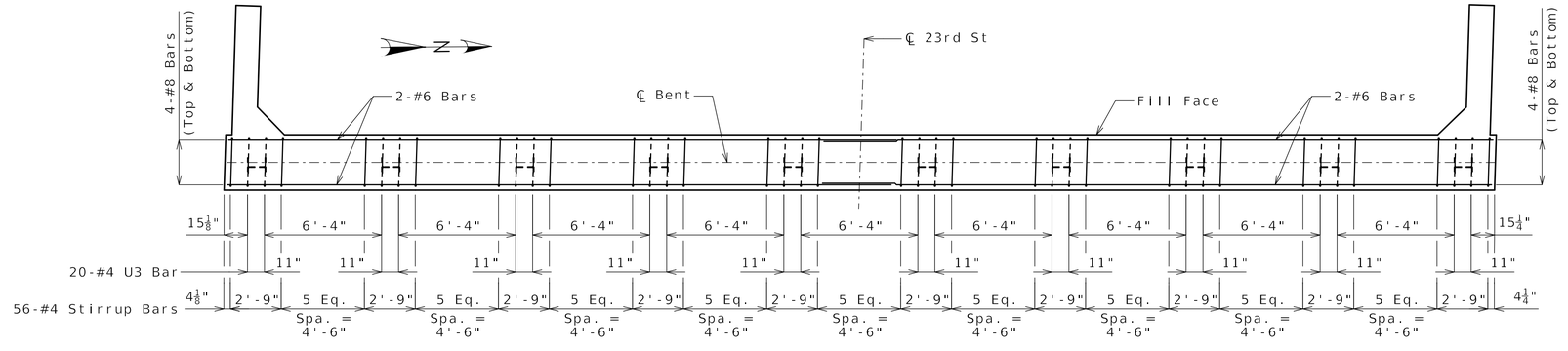
PLAN OF BEAM



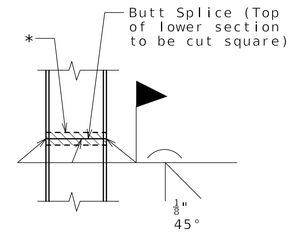
DETAIL A
(Skew exaggerated for clarity)



SECTION THRU KEY



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



STEEL PILE SPLICE
(If required)

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

Released For Construction
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Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

Notes:
Work this sheet with Sheets No. B02-13 and B02-14.
All U bars and pairs of vertical bars shall be placed along skew.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1½ inches.
For laminated neoprene bearing detail, see Sheet No. B02-05.
All concrete above the construction joint shall be Class B-2.
For details of bridge approach slab, see Sheet No. B02-31.

DETAILS OF END BENT NO. 3

Detailed DEC 2024
Checked JAN 2025

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

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
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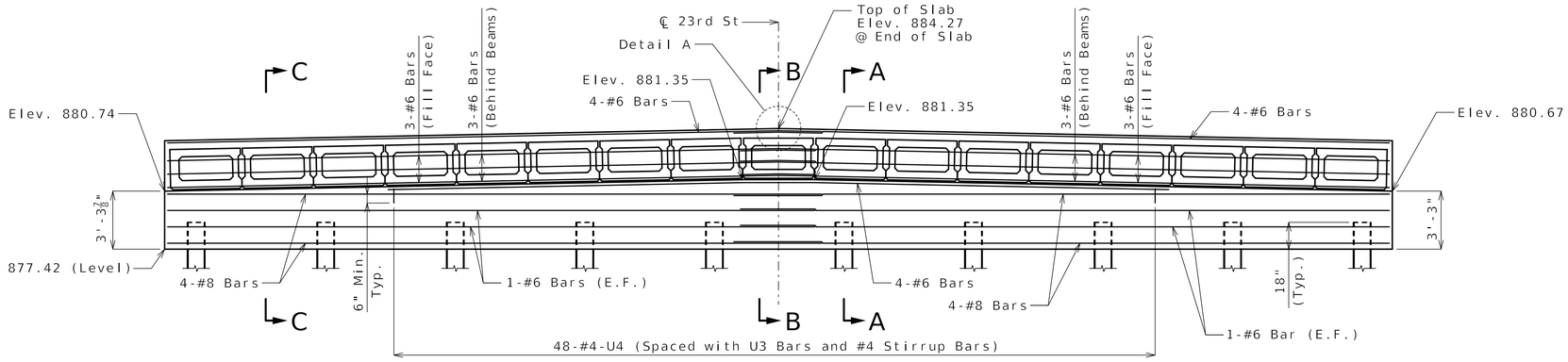
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-12
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

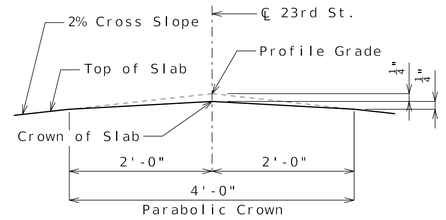
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

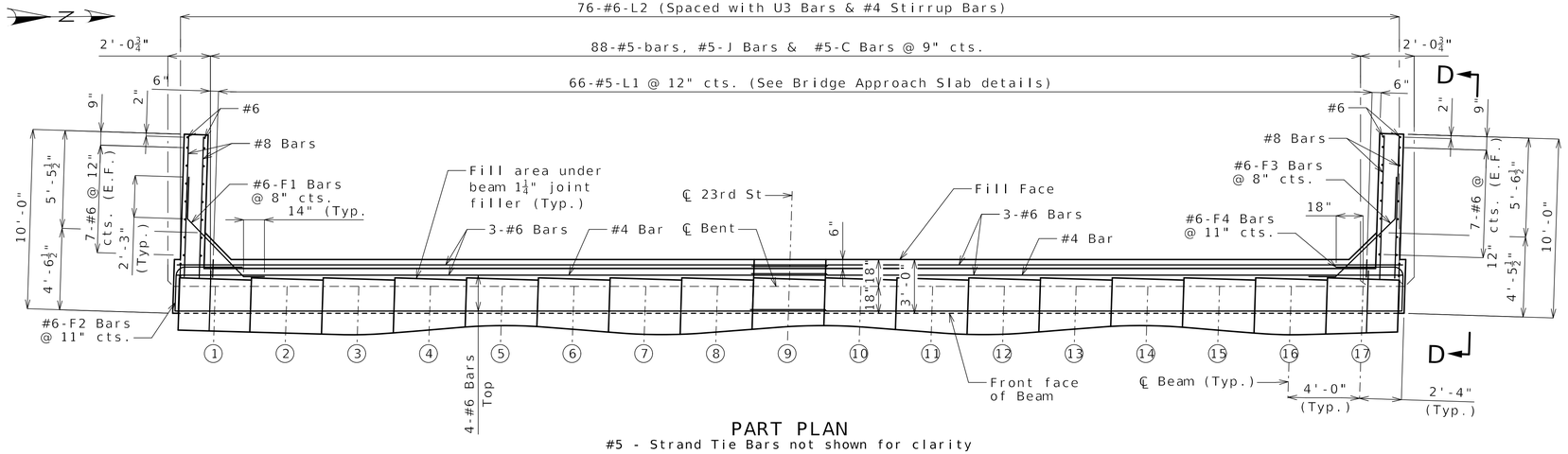


SECTION NEAR END BENT
(Sidewalks and Type D Barrier not shown for clarity)

Notes:
Lap Splice for #4 bars = 2'-10" (Min.)
Lap Splice for #6 bars = 4'-3" (Min.)
Lap Splice for #8 bars = 5'-8" (Min.)



DETAIL A



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

General Notes:
Work this sheet with Sheets No. B02-12 and B02-14.
For Sections A-A, B-B and C-C, and Elevation D-D, see Sheet No. B02-14.
Splices for the capbeam top and bottom #8 bars shall be staggered.
Strands at end of the beams shall be field bent or, if necessary, cut in field to maintain 1½-inch minimum clearance to fill face of end bent.
The #6-F bars shall be bent in the field to clear beams.
See additional details in Retaining Walls A9643 and A9642 Plans.

ⓧ Denotes beam number.

DETAILS OF END BENT NO. 3

Detailed DEC 2024
Checked JAN 2025

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

STATE OF MISSOURI
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PE-30413
PROFESSIONAL ENGINEER
Gina D. Horner
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-13
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	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
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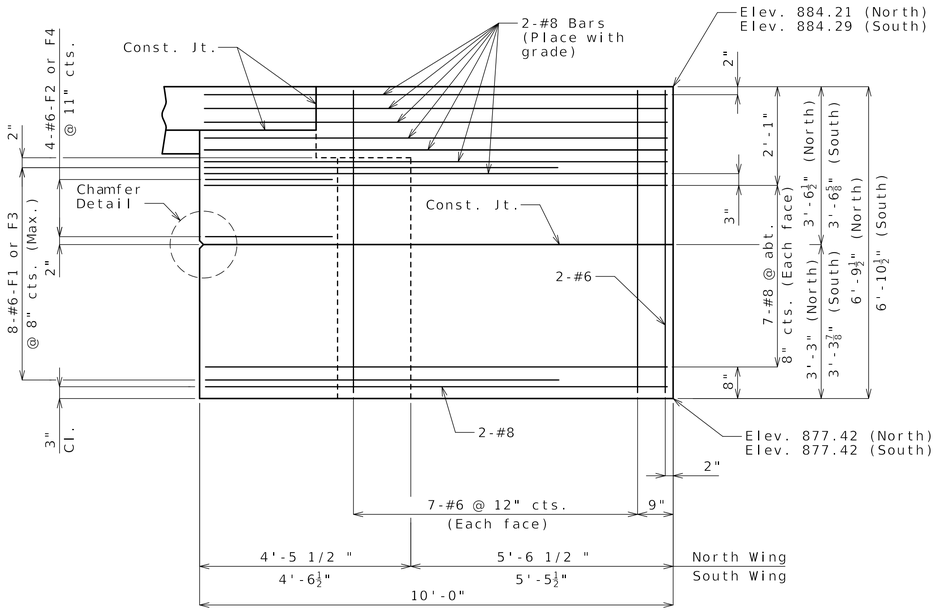
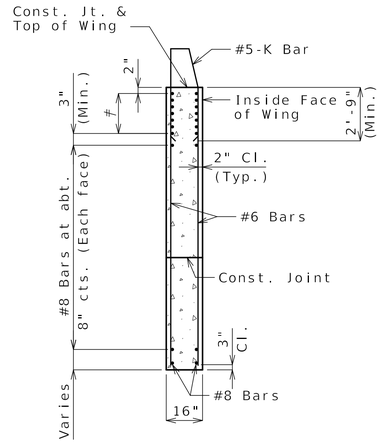
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST



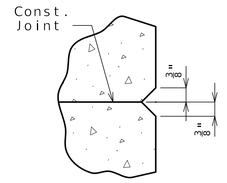
ELEVATION D-D

(North wingwall shown, South wingwall similar except opposite hand)

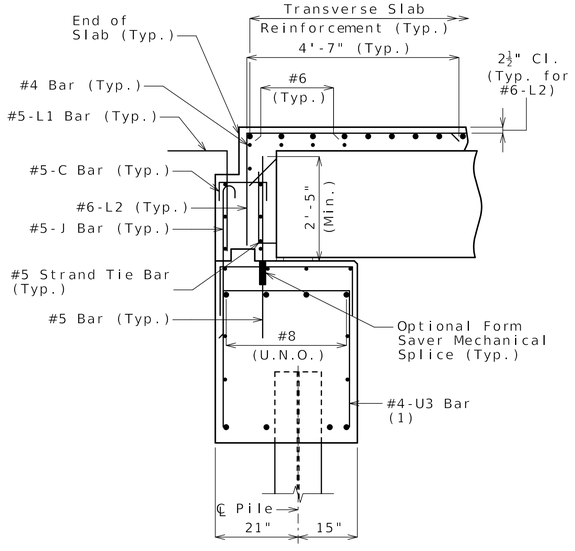


TYPICAL SECTION THRU WING

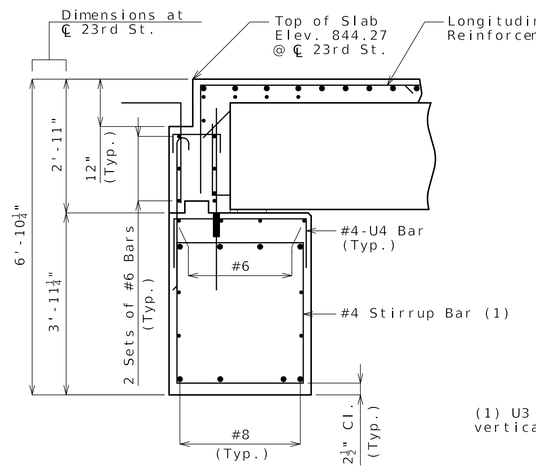
≠ #8 Bars at 3" cts. (Each face)(Place with grade)
See Elevation D-D for number of bars



CHAMFER DETAIL

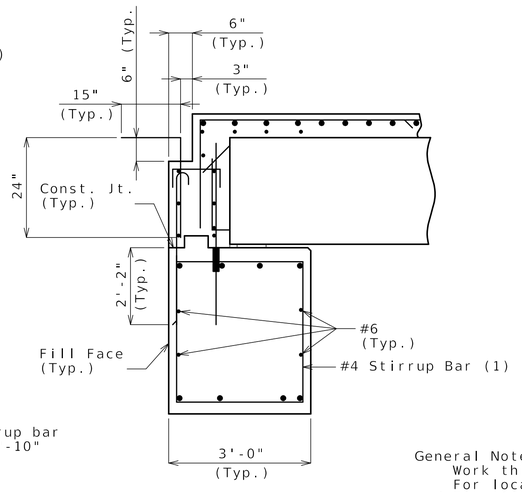


SECTION A-A



SECTION B-B

(1) U3 & #4 stirrup bar vertical leg = 2'-10"



SECTION C-C

Released For Construction
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Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

General Notes:
Work this sheet with Sheets No. B02-12 and B02-13.
For location of Sections A-A, B-B and C-C and Elevation D-D, see Sheet No. B02-13.
For reinforcement of the Type D Barrier, see Sheet No. B02-26.

DETAILS OF END BENT NO. 3

Detailed DEC 2024
Checked JAN 2025

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

STATE OF MISSOURI
GINA D. HORNER PE-30413
PROFESSIONAL ENGINEER
Gina D. Horner 4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-14
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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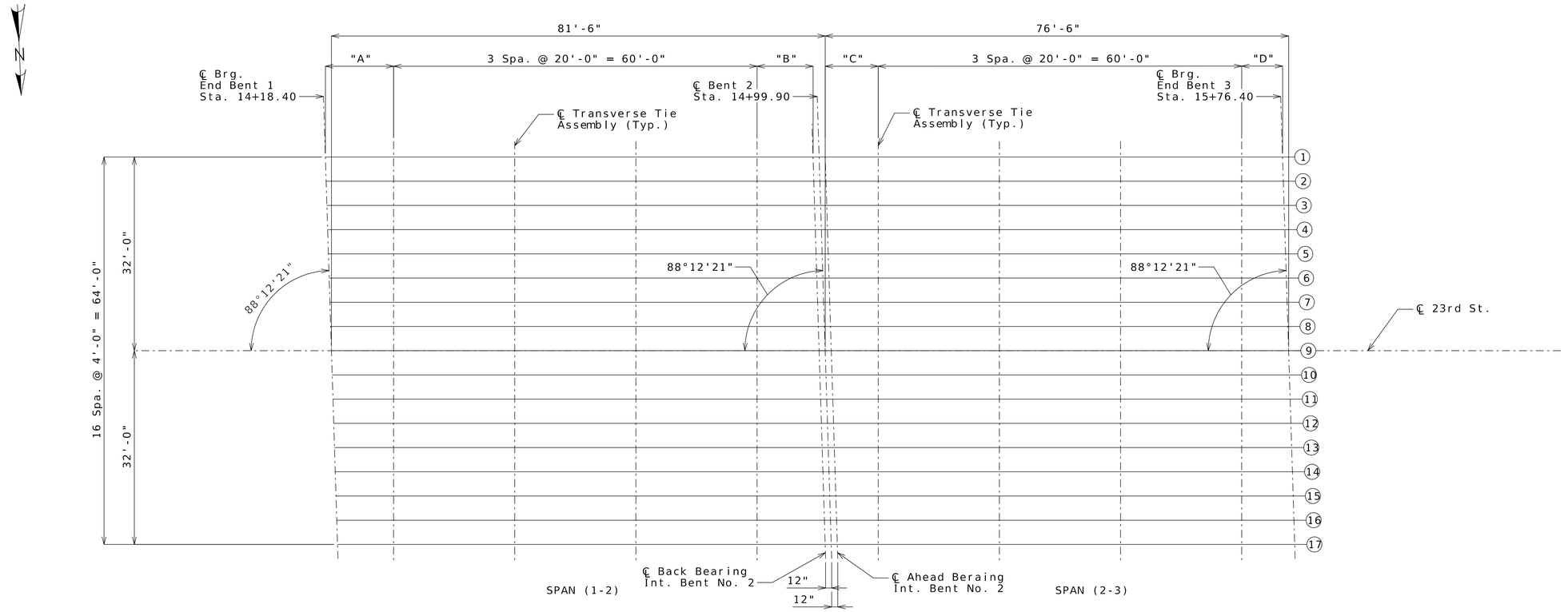
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB



FRAMING PLAN

Table of Dimensions				
Beam Number	"A"	"B"	"C"	"D"
1	11'-3"	9'-3"	8'-9"	6'-9"
2	11'-1½"	9'-4½"	8'-7½"	6'-10½"
3	11'-0"	9'-6"	8'-6"	7'-0"
4	10'-10½"	9'-7½"	8'-4½"	7'-1½"
5	10'-9"	9'-9"	8'-3"	7'-3"
6	10'-7½"	9'-10½"	8'-1½"	7'-4½"
7	10'-6"	10'-0"	8'-0"	7'-6"
8	10'-4½"	10'-1½"	7'-10½"	7'-7½"
9	10'-3"	10'-3"	7'-9"	7'-9"
10	10'-1½"	10'-4½"	7'-7½"	7'-10½"
11	10'-0"	10'-6"	7'-6"	8'-0"
12	9'-10½"	10'-7½"	7'-4½"	8'-1½"
13	9'-9"	10'-9"	7'-3"	8'-3"
14	9'-7½"	10'-10½"	7'-1½"	8'-4½"
15	9'-6"	11'-0"	7'-0"	8'-6"
16	9'-4½"	11'-1½"	6'-10½"	8'-7½"
17	9'-3"	11'-3"	6'-9"	8'-9"

Notes:
Longitudinal dimensions are measured horizontally.
All bents are parallel.

(X) Denotes beam number.

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

FRAMING PLAN

Detailed DEC 2024
Checked JAN 2025

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

B_A9628_B02-15_J4I1486D.dgn 1:38:10 PM 4/10/2025

STATE OF MISSOURI
PROFESSIONAL ENGINEER
KALEB S. HAWK
NUMBER PE-2024007443
Kaleb S. Hawk
9-11-25

DATE PREPARED
04/11/2025

ROUTE	STATE
I-70	MO
DISTRICT	SHEET NO.
BR	B02-15

COUNTY
JACKSON

JOB NO.
J4I1486D

CONTRACT ID.
240807-C01

PROJECT NO.

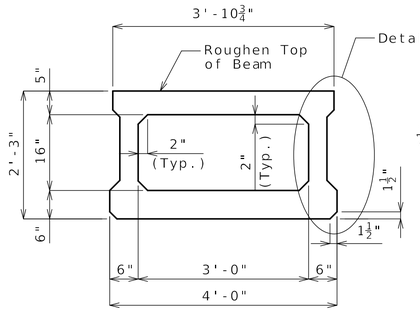
BRIDGE NO.
A9628

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

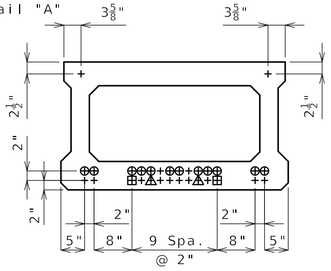
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

HNTB



BEAM DIMENSIONS



STRAND ARRANGEMENT

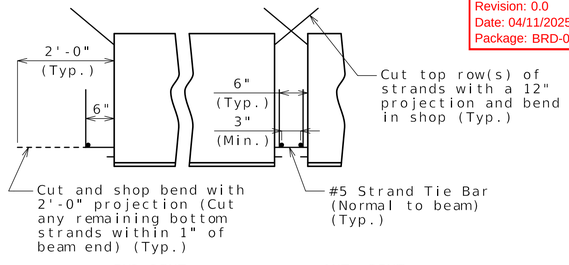
All strands are fully bonded unless otherwise noted.

+ Indicates prestressing strand.

○ Indicates cut and shop bend with 2'-0" projection.

□ Indicates debonded for 5'-0" from end of beam.

△ Indicates debonded for 2'-0" from end of beam.



END BENT INT. BENT

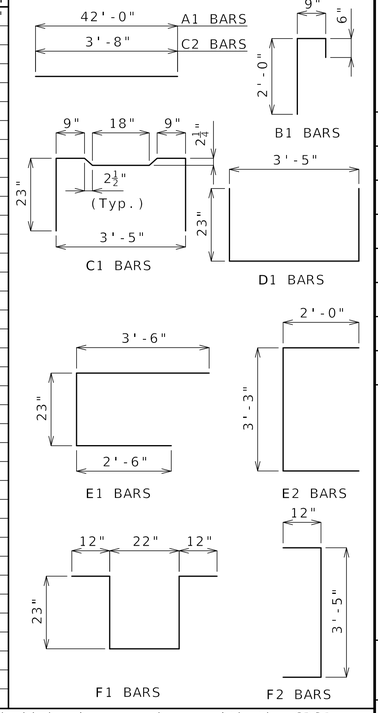
STRAND DETAILS AT BEAM ENDS

(Shear keys and chamfers not shown for clarity)

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

BILL OF REINFORCING STEEL EACH BEAM

NO.	SIZE & MARK	ACTUAL LENGTH
16	5 A1	42'-0"
204	5 B1	3'-0"
102	5 C1	7'-1"
102	5 C2	3'-8"
102	5 D1	7'-0"
16	6 E1	7'-8"
10	6 E2	7'-0"
24	4 F1	7'-3"
32	4 F2	5'-3"



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

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

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

All reinforcement shall be Grade 60.

All B1 bars shall be epoxy coated.

General Notes:

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

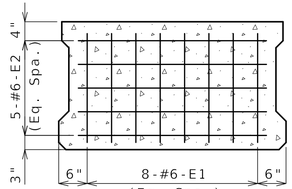
Use 30 strands, 0.6"Ø Grade 270, with an initial prestress force of 1318 kips.

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

For Detail "A" & Additional Beam Details, see Sheets No. B02-18 and B02-19.

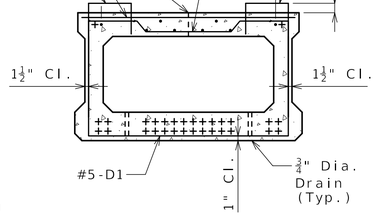
For Beam Camber Diagram, see Sheet No. B02-21.

For dimensions A and B, see Sheet No. B02-15.

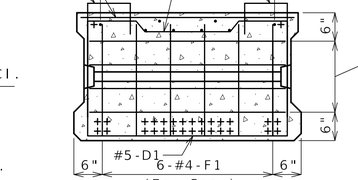


(Shift E1 and E2 to clear strands)

ELEVATION A-A

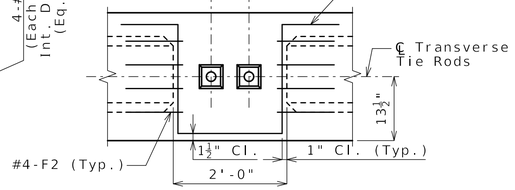


SECTION B-B



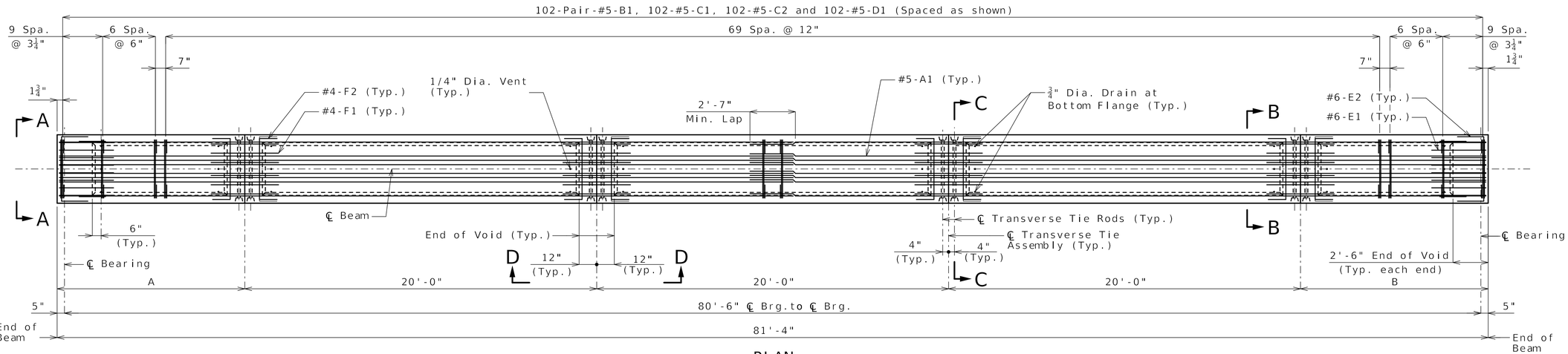
(Shift E1 and E2 to clear strands)

SECTION C-C



ELEVATION D-D

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



PLAN

ADJACENT BOX BEAMS - SPAN (1-2)

Detailed DEC 2024
Checked JAN 2025

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

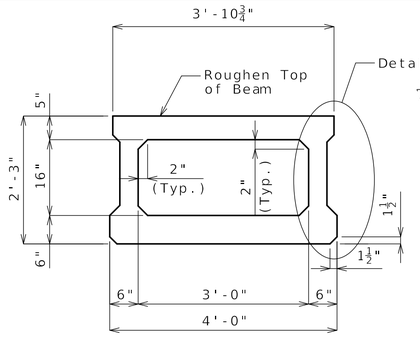
STATE OF MISSOURI
KALEB S. HAWK NUMBER PE-2024007443
PROFESSIONAL ENGINEER
Kaleb S. Hawk
4-11-25

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-16
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

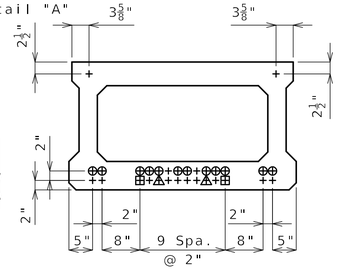
DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

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



BEAM DIMENSIONS



STRAND ARRANGEMENT

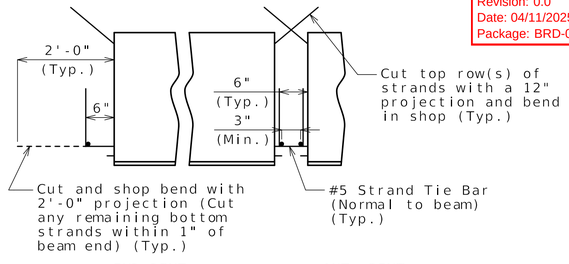
All strands are fully bonded unless otherwise noted.

+ Indicates prestressing strand.

○ Indicates cut and shop bend with 2'-0" projection.

□ Indicates debonded for 5'-0" from end of beam.

△ Indicates debonded for 2'-0" from end of beam.



STRAND DETAILS AT BEAM ENDS

(Shear keys and chamfers not shown for clarity)

General Notes:

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

Use 30 strands, 0.6"Ø Grade 270, with an initial prestress force of 1318 kips.

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

For Detail "A" & Additional Beam Details, see Sheets No. B02-18 and B02-19.

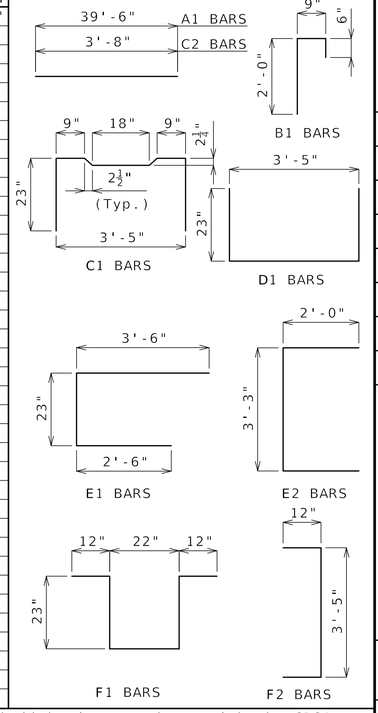
For Beam Camber Diagram, see Sheet No. B02-21.

For dimensions C and D, see Sheet No. B02-15.

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

BILL OF REINFORCING STEEL EACH BEAM

NO.	SIZE & MARK	ACTUAL LENGTH
16	5 A1	39'-6"
194	5 B1	3'-0"
97	5 C1	7'-1"
97	5 C2	3'-8"
97	5 D1	7'-0"
16	6 E1	7'-8"
10	6 E2	7'-0"
24	4 F1	7'-3"
32	4 F2	5'-3"



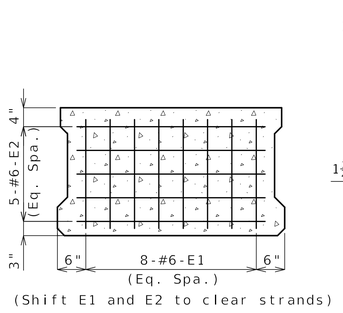
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

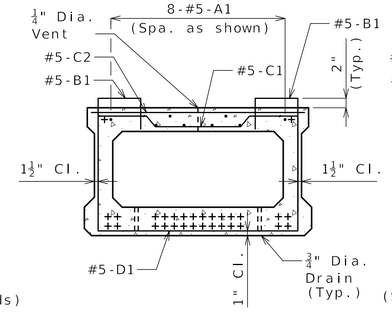
All reinforcement shall be Grade 60.

All B1 bars shall be epoxy coated.

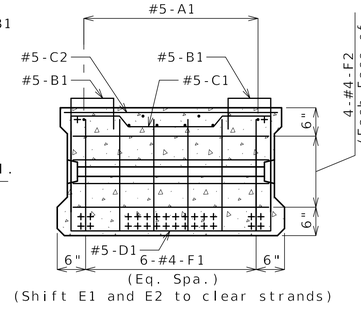


(Shift E1 and E2 to clear strands)

ELEVATION A-A

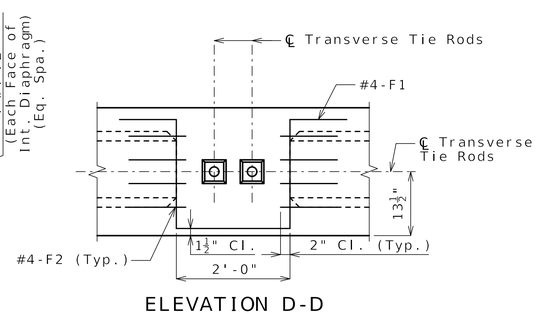


SECTION B-B



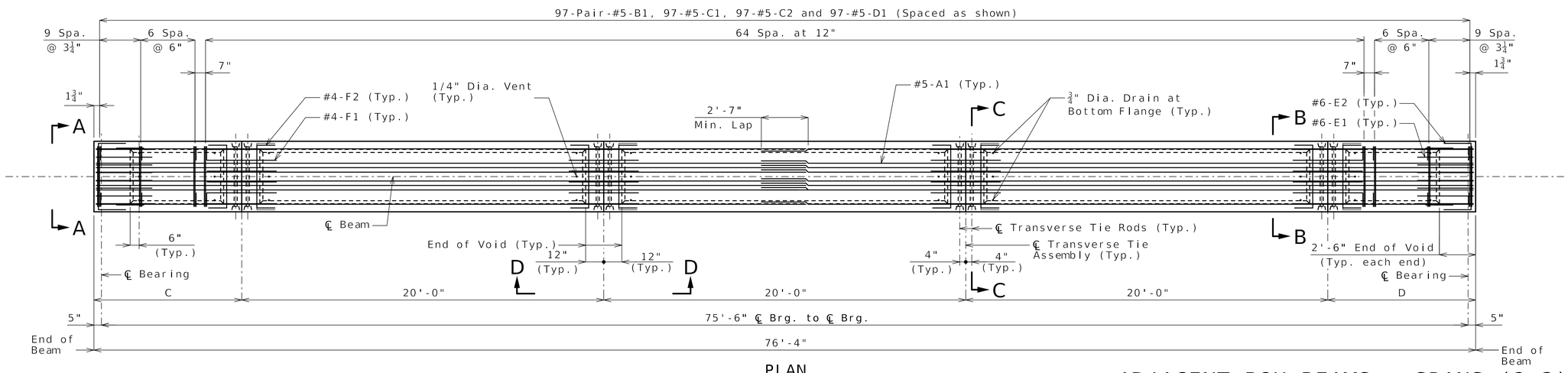
(Shift E1 and E2 to clear strands)

SECTION C-C



ELEVATION D-D

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



PLAN

ADJACENT BOX BEAMS - SPANS (2-3)

Detailed DEC 2024
Checked JAN 2025

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

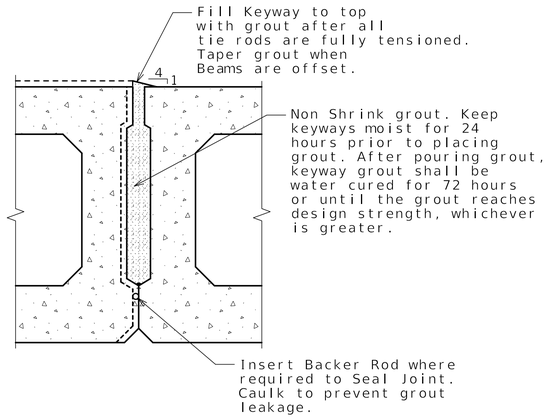
KALEB S. HAWK NUMBER PE-2024007443 PROFESSIONAL ENGINEER STATE OF MISSOURI
9-11-25

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-17
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

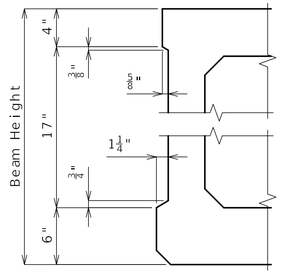
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

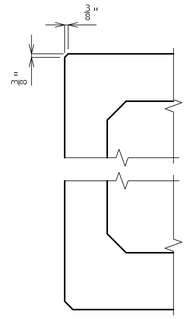


KEYWAY GROUT DETAIL

Int rior beams & t ior beams)

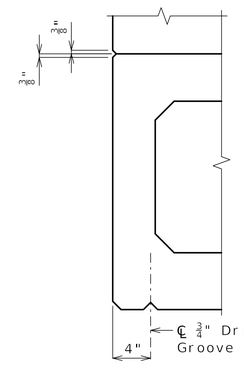


Interior face of exterior beams & both faces of interior beams)



(Exterior face of exterior beams)

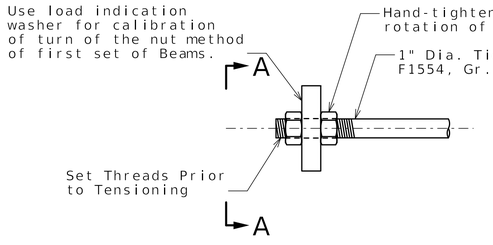
DETAIL A



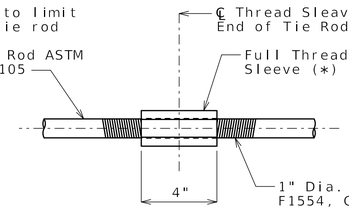
CHAMFER & DRIP BEVEL AT EXTERIOR FACE OF EXTERIOR BEAM

TURN OF THE NUT REQUIREMENTS
Beam No. 1 thru 17 - 2.25 Turn

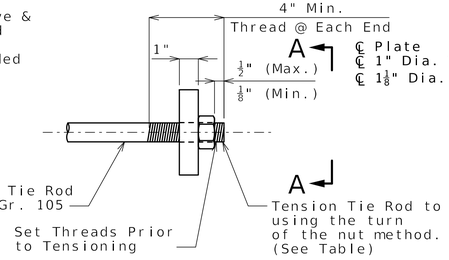
Notes: From snug tight condition. 1" Dia. bolt threaded at 8 threads per inch.
Pretension = 55 Kips



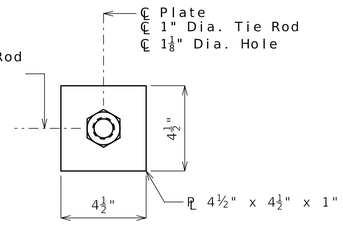
ANCHOR END



THREAD SLEEVE



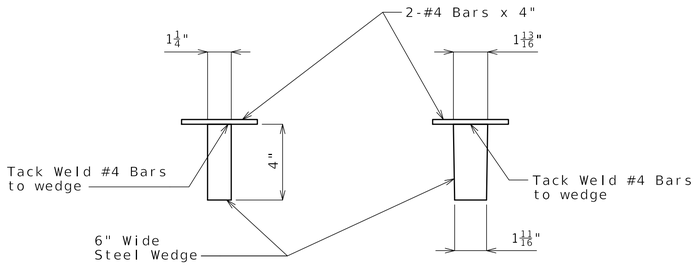
TENSIONING END



VIEW A-A

TIE ROD & BEARING PLATE DETAILS

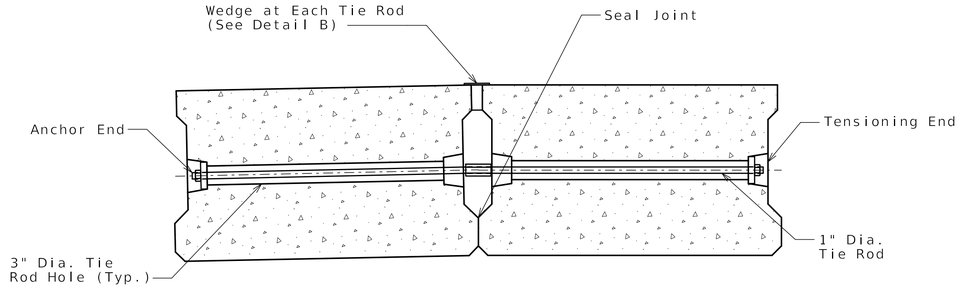
* Full Threaded Sleeve axial capacity shall exceed capacity of tie rod.



TYPICAL WEDGE BEVELED WEDGE**

DETAIL B

**Beveled wedge required between beams at substructure slope breaks (Beam No. 8, 9 and 10)



TYPICAL DETAIL FOR INSTALLING WEDGE

Notes:

Add steel wedge at each tie rod crossing tie rods. Hot-dip galvanize wedge and #4 bar assembly in accordance with ASTM A123 and Sec 1081.

Steel wedges shall be ASTM A709 Grade 36.

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

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

MISCELLANEOUS ADJACENT BOX BEAM DETAILS

Detailed DEC 2024
Checked JAN 2025

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

STATE OF MISSOURI
KALEB S. HAWK
NUMBER PE-2024007443
PROFESSIONAL ENGINEER
Kaleb S. Hawk
9-11-25

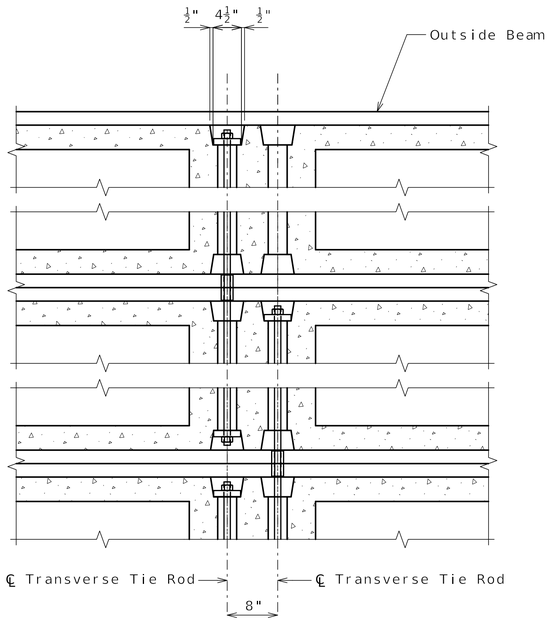
DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-18
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

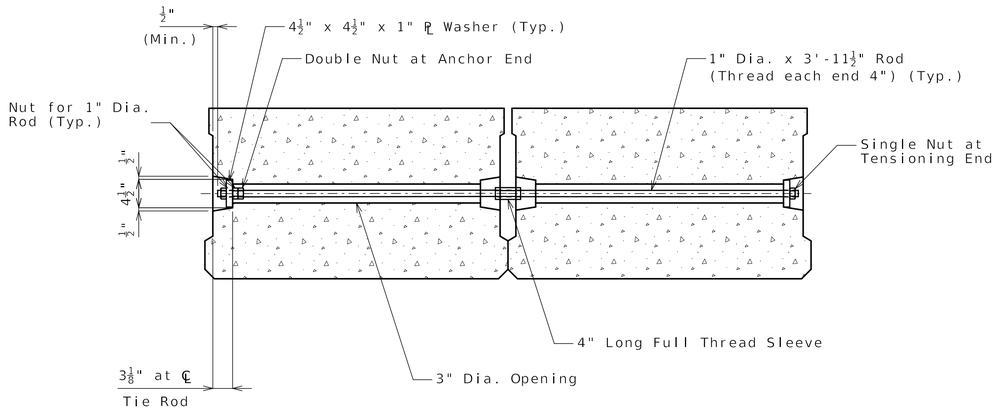
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

HNTB



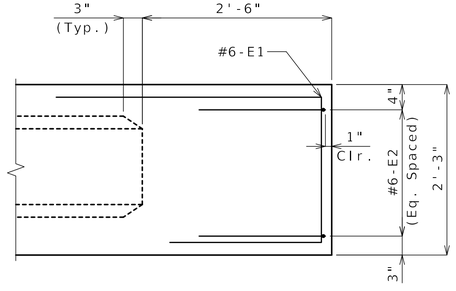
PART PLAN



PART SECTION

TYPICAL TRANSVERSE TIE ASSEMBLY

(Reinforcement & Strands not shown for clarity)



TYPICAL END ELEVATION

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

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

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

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

Use mechanically galvanized load indication washers conforming to ASTM F959 when tensioning the tie rods on the first pair (8 & 9) of Beams to calibrate the turn of the nut method. The load indication washers shall be placed on the anchor end, not the tensioning end.

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

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

MISCELLANEOUS ADJACENT BOX BEAM DETAILS

Detailed DEC 2024
Checked JAN 2025

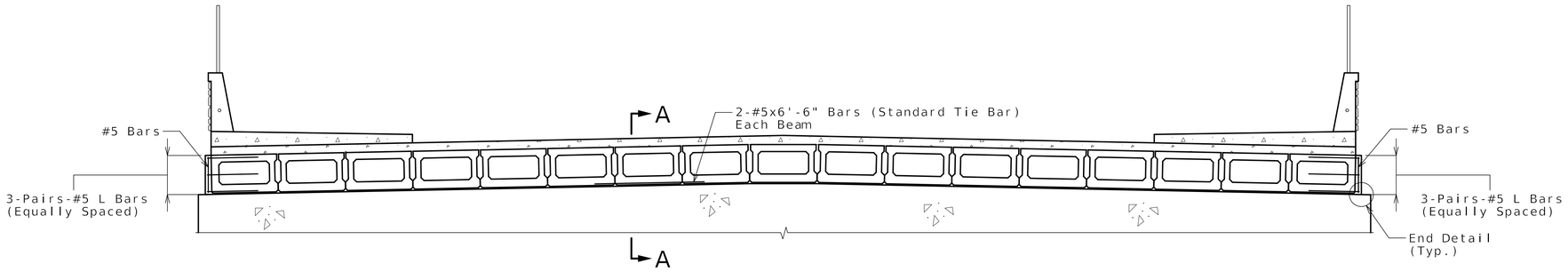
Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
KALEB S. HAWK
NUMBER PE-2024007443
PROFESSIONAL ENGINEER
Kaleb S. Hawk
9-11-25

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-19
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

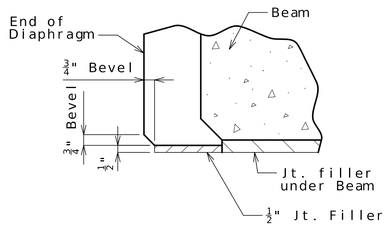
DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

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

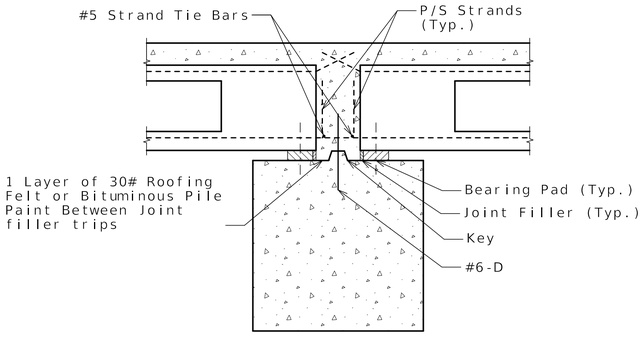


ELEVATION THRU INT. BENT DIAPHRAGM

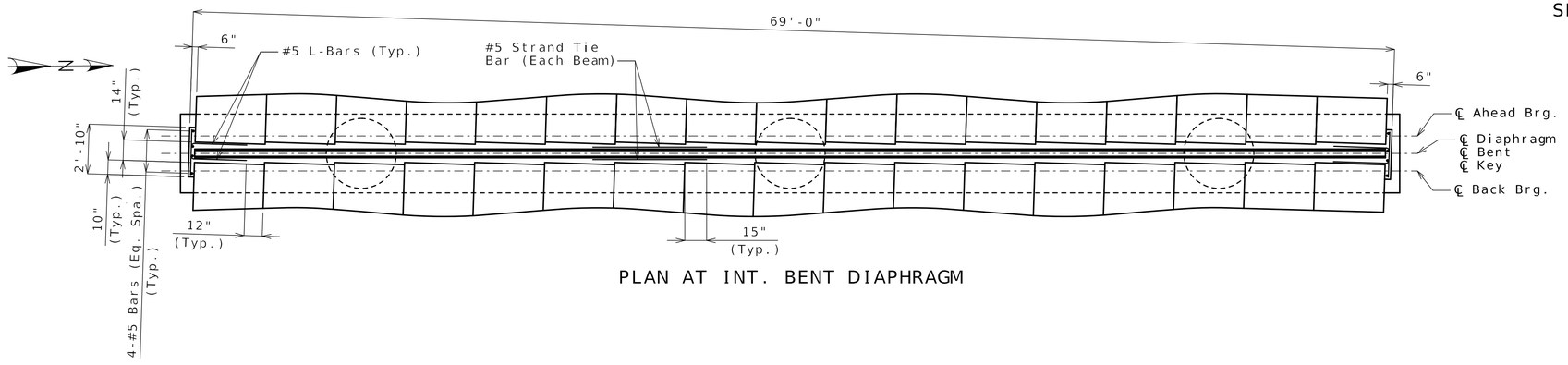
(Reinforcement in Bent Cap & Columns not shown for clarity)



END DETAIL



SECTION A-A



PLAN AT INT. BENT DIAPHRAGM

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Date: 04/11/2025
Package: BRD-02-23rd_ST

Notes:
Reinforcing steel in the diaphragms shall be epoxy coated.
Diaphragms shall be built vertical.
For location of #5 Strand Tie Bars, see Sheets No. B02-16 and B02-17.
For Bearing Details, see Sheet No. B02-10.
For Cap beam, bearing location, dowel placement, shear key details, roofing felt details, joint filler details see Sheets No. B02-09 thru B02-11.

CONCRETE DIAPHRAGM AT INTERMEDIATE BENT NO. 2

Detailed DEC 2024
Checked JAN 2025

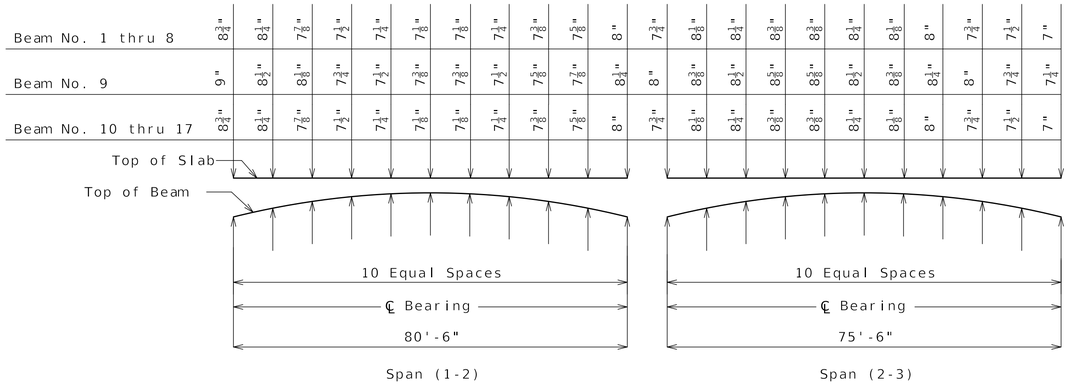
Note: This drawing is not to scale. Follow dimensions.

KALEB S. HAWK
NUMBER PE-2024007443
PROFESSIONAL ENGINEER
STATE OF MISSOURI
Kaleb S. Hawk
9-11-25

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-20
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

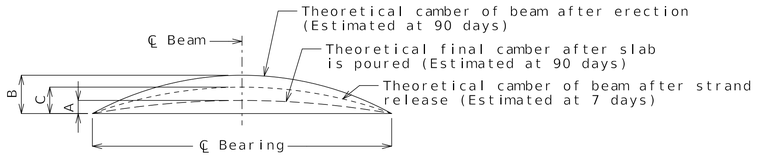
DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

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



THEORETICAL CAST IN PLACE SLAB DIAGRAM

(Assumed Erection @ 90 Day Maturity)



Beam	Span (1-2)			Span (2-3)		
	A	B	C	A	B	C
1 thru 17	$1\frac{3}{8}$"	$2\frac{3}{4}$"	$1\frac{7}{8}$"	$1\frac{3}{4}$"	$2\frac{7}{8}$"	$1\frac{7}{8}$"

BEAM CAMBER DIAGRAM

Conversion Factors for Beam Camber (Estimated at 90 days)

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

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

CAMBER DIAGRAM & THEORETICAL CAST IN PLACE SLAB DIAGRAM

Sheet No. B02-21 of B02-36

Detailed DEC 2024
Checked JAN 2025

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

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Package: BRD-02-23rd_ST

STATE OF MISSOURI
KALEB S. HAWK
NUMBER PE-2024007443
PROFESSIONAL ENGINEER
9-11-25

DATE PREPARED: 04/11/2025
ROUTE: I-70 | STATE: MO
DISTRICT: BR | SHEET NO.: B02-21
COUNTY: JACKSON
JOB NO.: J4I1486D
CONTRACT ID.: 240807-C01
PROJECT NO.:
BRIDGE NO.: A9628

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

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

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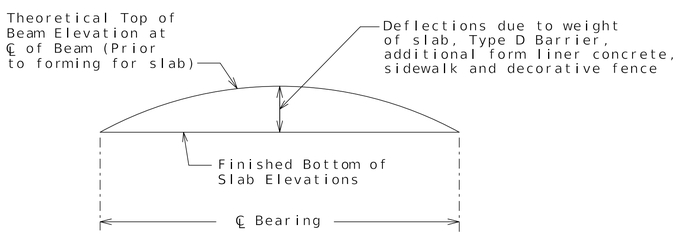
Theoretical Top of Beam Elevations at Centerline of Beam (Prior to forming for slab)**

Beam Number	Span (1-2) (80'-6" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	885.59	885.58	885.56	885.53	885.48	885.41	885.31	885.20	885.06	884.92	884.76
2	885.66	885.65	885.64	885.61	885.56	885.48	885.39	885.28	885.14	885.00	884.84
3	885.74	885.73	885.72	885.68	885.63	885.56	885.47	885.35	885.22	885.07	884.92
4	885.82	885.81	885.79	885.76	885.71	885.64	885.55	885.43	885.30	885.15	885.00
5	885.90	885.89	885.87	885.84	885.79	885.72	885.63	885.51	885.38	885.23	885.08
6	885.98	885.97	885.95	885.92	885.87	885.80	885.71	885.59	885.46	885.31	885.16
7	886.06	886.05	886.03	886.00	885.95	885.88	885.78	885.67	885.54	885.39	885.23
8	886.14	886.13	886.11	886.08	886.03	885.96	885.86	885.75	885.62	885.47	885.31
9	886.17	886.16	886.15	886.11	886.06	885.99	885.90	885.78	885.65	885.50	885.35
10	886.13	886.12	886.11	886.07	886.02	885.95	885.86	885.75	885.61	885.47	885.31
11	886.05	886.04	886.02	885.99	885.94	885.87	885.78	885.66	885.53	885.38	885.23
12	885.97	885.96	885.94	885.91	885.86	885.79	885.70	885.58	885.45	885.30	885.15
13	885.89	885.88	885.86	885.83	885.78	885.71	885.62	885.50	885.37	885.22	885.07
14	885.81	885.80	885.78	885.75	885.70	885.63	885.53	885.42	885.29	885.14	884.98
15	885.73	885.72	885.70	885.67	885.62	885.55	885.45	885.34	885.21	885.06	884.90
16	885.65	885.64	885.62	885.59	885.54	885.46	885.37	885.26	885.12	884.98	884.82
17	885.56	885.55	885.54	885.50	885.45	885.38	885.29	885.18	885.04	884.90	884.74

Beam Number	Span (2-3) (75'-6" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	884.76	884.67	884.58	884.47	884.34	884.19	884.01	883.82	883.61	883.38	883.14
2	884.84	884.75	884.66	884.54	884.42	884.26	884.09	883.90	883.68	883.45	883.22
3	884.92	884.83	884.73	884.62	884.49	884.34	884.17	883.97	883.76	883.53	883.29
4	885.00	884.91	884.81	884.70	884.57	884.42	884.24	884.05	883.83	883.61	883.37
5	885.08	884.99	884.89	884.78	884.65	884.50	884.32	884.13	883.91	883.68	883.44
6	885.15	885.07	884.97	884.86	884.73	884.57	884.40	884.20	883.99	883.76	883.52
7	885.23	885.14	885.05	884.93	884.80	884.65	884.48	884.28	884.06	883.83	883.60
8	885.31	885.22	885.12	885.01	884.88	884.73	884.55	884.36	884.14	883.91	883.67
9	885.35	885.26	885.16	885.05	884.92	884.76	884.59	884.39	884.17	883.94	883.71
10	885.31	885.22	885.12	885.01	884.88	884.72	884.55	884.35	884.13	883.90	883.66
11	885.23	885.14	885.04	884.92	884.79	884.64	884.46	884.27	884.05	883.82	883.58
12	885.15	885.06	884.96	884.84	884.71	884.56	884.38	884.18	883.96	883.73	883.49
13	885.06	884.97	884.87	884.76	884.63	884.47	884.30	884.10	883.88	883.65	883.41
14	884.98	884.89	884.79	884.68	884.54	884.39	884.21	884.01	883.80	883.57	883.33
15	884.90	884.81	884.71	884.60	884.46	884.31	884.13	883.93	883.71	883.48	883.24
16	884.82	884.73	884.63	884.51	884.38	884.22	884.05	883.85	883.63	883.40	883.16
17	884.74	884.65	884.55	884.43	884.30	884.14	883.96	883.76	883.55	883.31	883.07

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



TYPICAL SLAB ELEVATIONS DIAGRAM

Detailed DEC 2024
Checked JAN 2025

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

THEORETICAL TOP OF BEAM ELEVATIONS

STATE OF MISSOURI
KALEB S. HAWK NUMBER PE-2024007443
PROFESSIONAL ENGINEER
9-11-25

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-22
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

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

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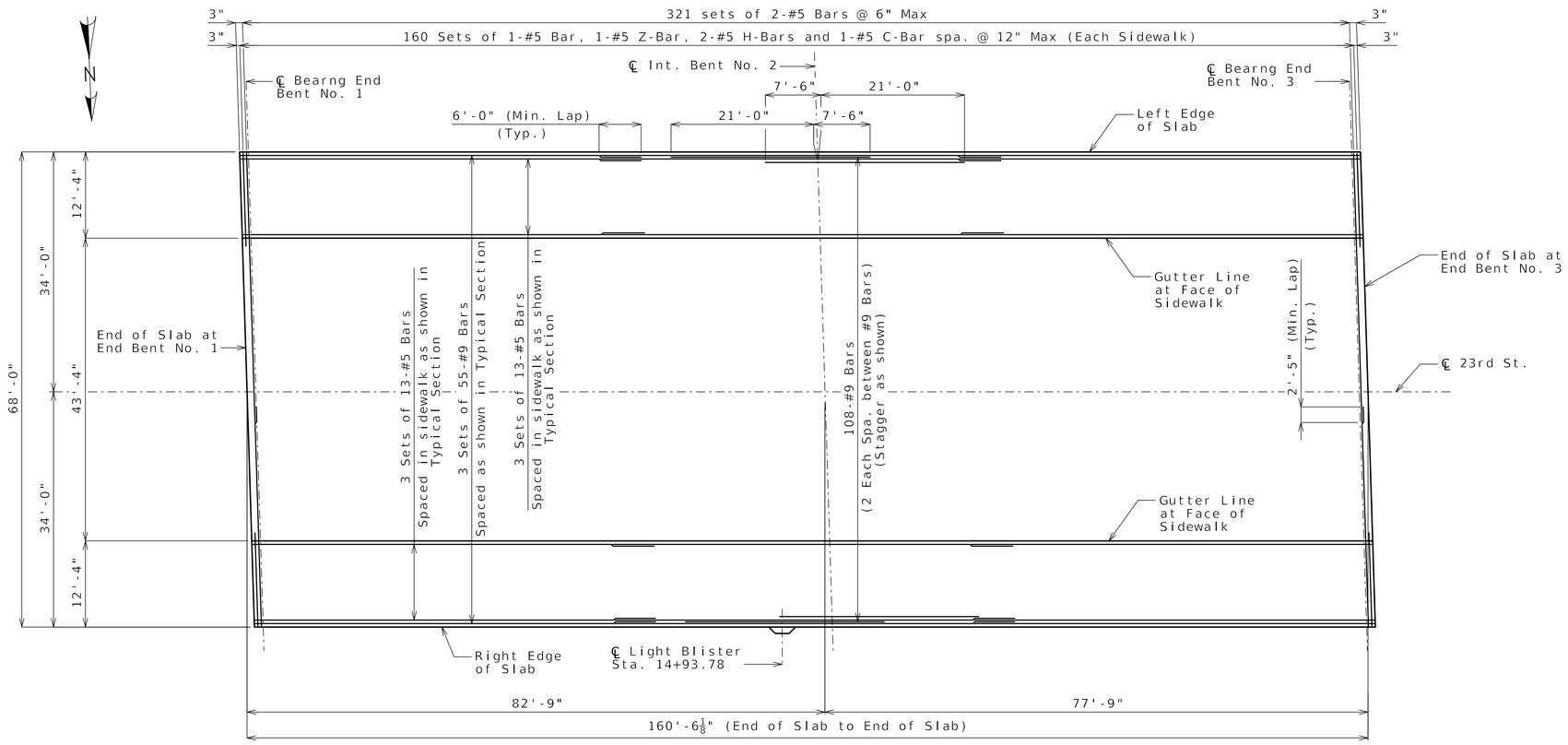
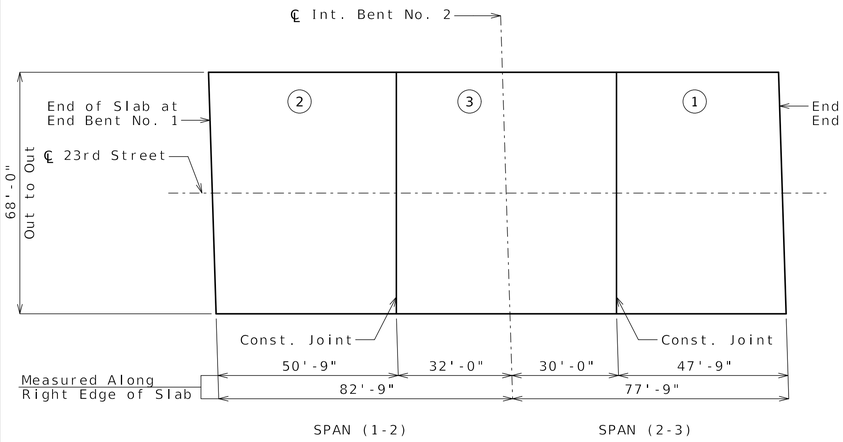


PLAN



	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			With Retarder
Basic Sequence	1	3	2	25
	End to 3	1 to 2	3 to End	
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate A Pours	1	3 + 2		42
	End to 3	1 to End		
Alternate B Pours	1 + 3 + 2			42
	End to End			

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

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

SLAB POURING SEQUENCE

Notes:
For Typical Section, see Sheet No. B02-24.
For Details and Reinforcement of Type D Barrier, see Sheet No. B02-25.
For Theoretical Cast in Place Slab Diagram and Beam Camber Diagram, see Sheet No. B02-21.
For Theoretical Top of Beam Elevations at Centerline of Beam, see Sheet B02-22.
Longitudinal slab dimensions are measured horizontally.
For Light Blister Reinforcing and details, see Sheet No. B02-27.

SLAB PLAN SHOWING REINFORCEMENT

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Date: 04/11/2025
Package: BRD-02-23rd_ST

BENJAMIN LICHTY NUMBER PE-2023038803 PROFESSIONAL ENGINEER STATE OF MISSOURI
04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-23
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	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

Detailed DEC 2024
Checked JAN 2025

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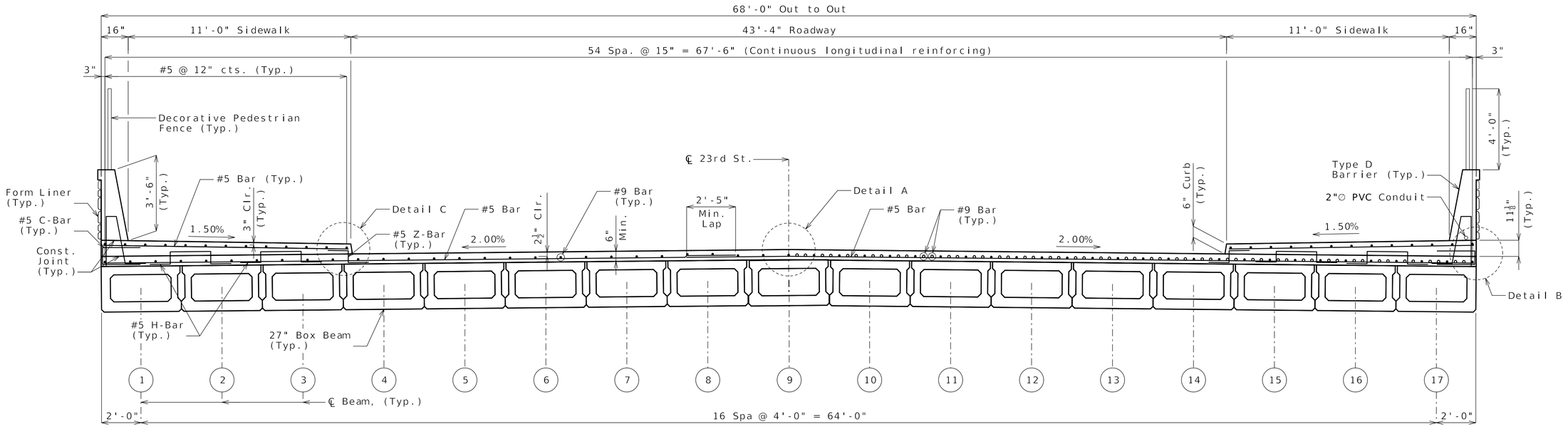
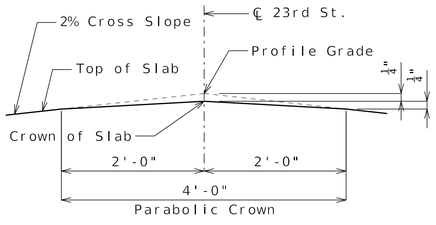


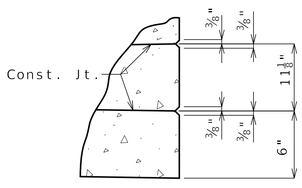
HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INTERMEDIATE BENT

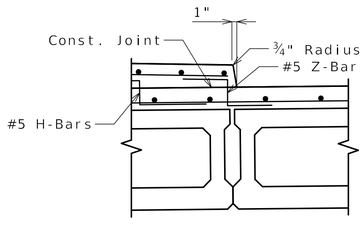
TYPICAL SECTION
(Looking Ahead Sta.)



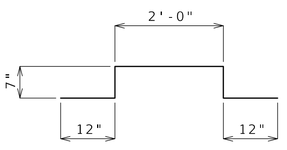
DETAIL A



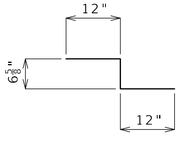
DETAIL B



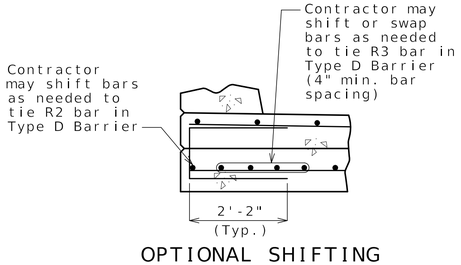
DETAIL C



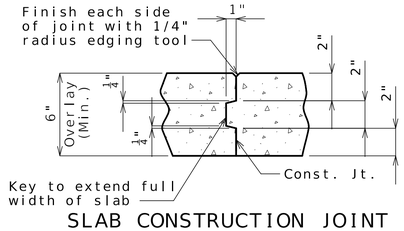
#5 H-Bar



#5 Z-Bar



OPTIONAL SHIFTING TOP BARS AT BARRIER



SLAB CONSTRUCTION JOINT

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Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

Notes:
For Slab Plan showing Reinforcement, see Sheet No. B02-23.
For reinforcement of Type D Barrier not shown, see Sheet No. B02-25.
For Details of Conduit System on Structure, see Sheet No. B02-30.
For Decorative Pedestrian Fence Details, see Sheet No. B02-28.
For Form Liner and Aesthetic Stain Details not shown, see Sheet No. B02-29.

(X) Denotes beam number.

SLAB DETAILS

BENJAMIN LICHTY NUMBER PE-2023038803
PROFESSIONAL ENGINEER
STATE OF MISSOURI
04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-24
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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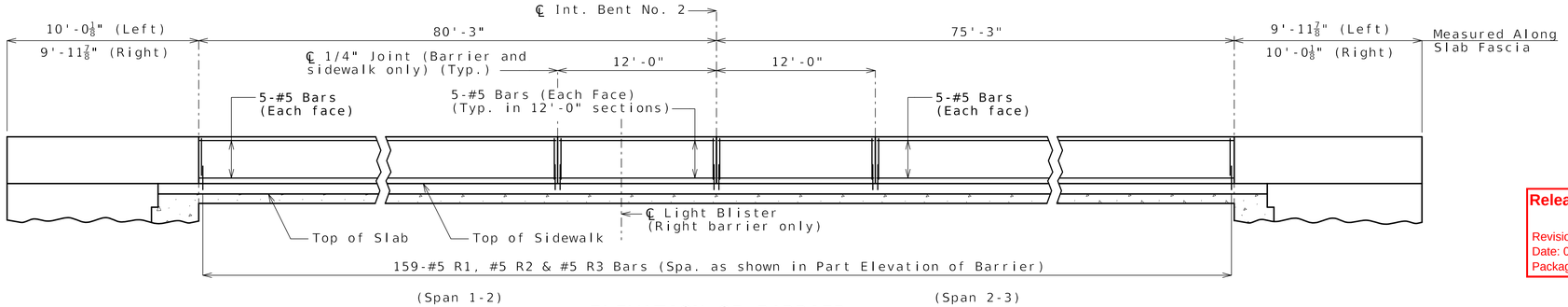
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270

HNTB

Detailed DEC 2024
Checked JAN 2025

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

B_A9628_B02-24_J4I1486D.dgn 1:39:15 PM 4/10/2025



ELEVATION OF BARRIER

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

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
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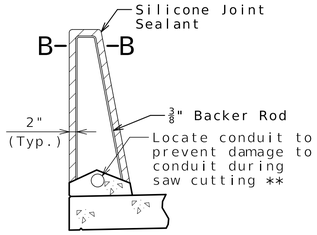
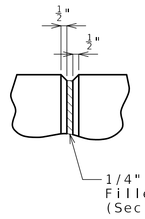
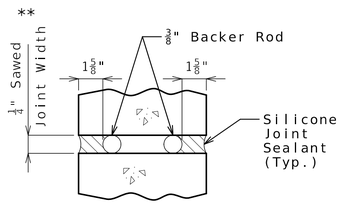


SECTION THRU SAW CUT JOINT

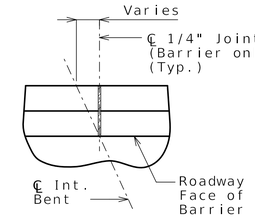
(Form liner and aesthetic details not shown.)



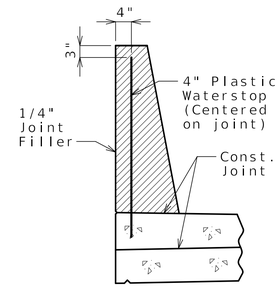
PART ELEVATION AT FORMED JOINT



SECTION B-B



PART PLAN SHOWING JOINT LOCATION



WATERSTOP DETAIL

Plastic waterstop shall be placed in all formed joints.

General Notes:

** 2" Ø PVC Conduit (Right barrier only) For Details of Conduit System on Structure, see Sheet No. B02-30.

Conventional forming shall be used. Saw cut joints may be used with conventional forming.

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

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

Concrete in barrier shall be Class B-1.

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides.

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

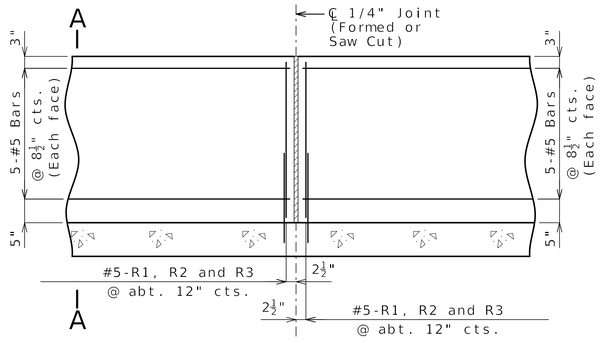
Plastic waterstop shall not be used with saw cut joints.

For Form Liner and Aesthetic Stain details of right barrier not shown, see Sheet No. B02-29.

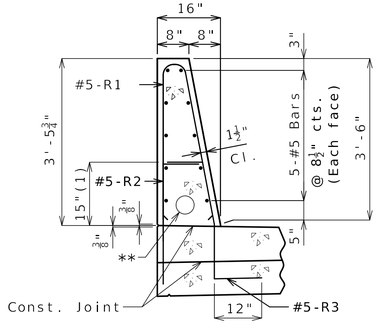
For Decorative Pedestrian Fence Details, see Sheet No. B02-28

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

For Light Blister details, see Sheet No. B02-27.



PART ELEVATION OF BARRIER

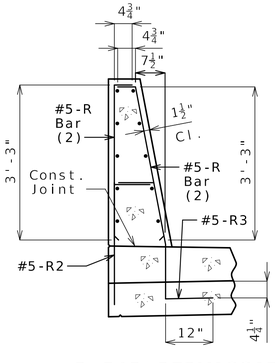


SECTION A-A

(Form liner aesthetic details not shown.)

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

(1) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

(Form liner aesthetic details not shown.)

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

TYPE D BARRIER

Detailed DEC 2024
Checked JAN 2025

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

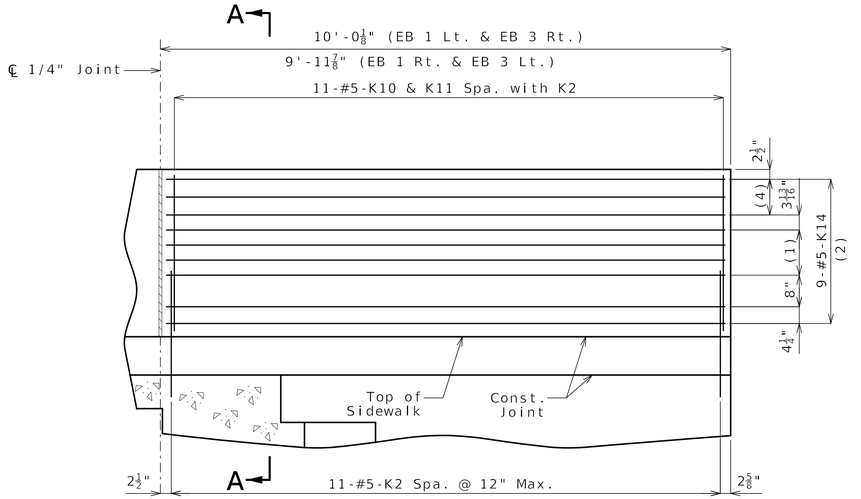
BENJAMIN LICHTY NUMBER PE-2023038803
PROFESSIONAL ENGINEER — STATE OF MISSOURI
04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-25
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

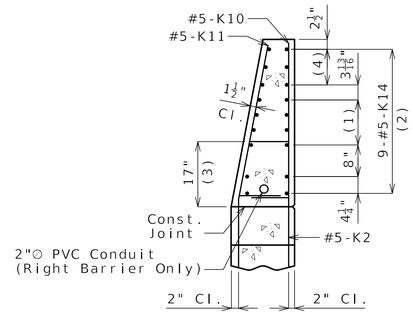
DESCRIPTION	DATE
REV 0 - RFC SUBMITTAL	04/11/25

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

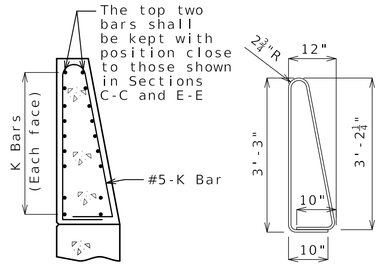
CLARKSON RADMACHER JOINT VENTURE
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
HNTB



PART ELEVATION



SECTION A-A



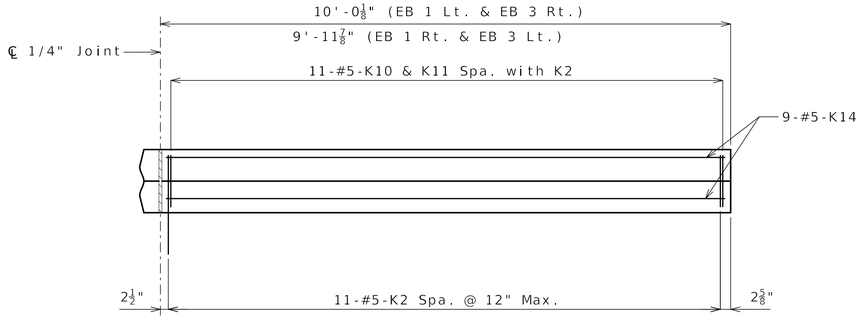
K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

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

All dimensions are out to out.

PVC conduit in right barrier not shown.



PART PLAN

(1) 3 spaces @ 3 13/16"

(2) Spaced as shown, each face

(3) To top of bar

(4) 2 spaces @ 4½"

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General Notes:

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides.

All dimensions are out to out.

EB 1 denotes End Bent No. 1

EB 3 denotes End Bent No. 3

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

TYPE D BARRIER AT END BENTS

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

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BENJAMIN LICHTY
NUMBER PE-2023038803
PROFESSIONAL ENGINEER
04-11-2025

DATE PREPARED 04/11/2025
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DISTRICT BR | SHEET NO. B02-26
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
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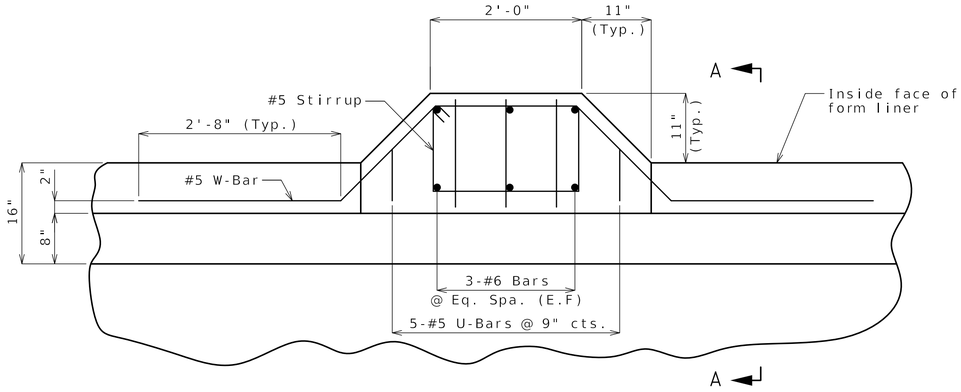
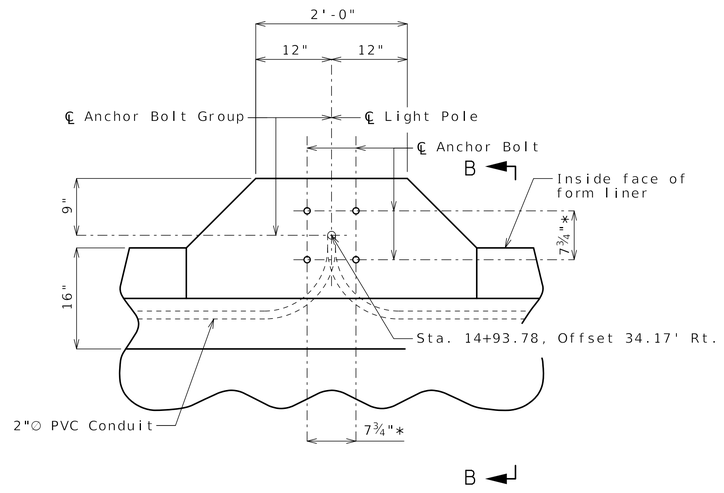
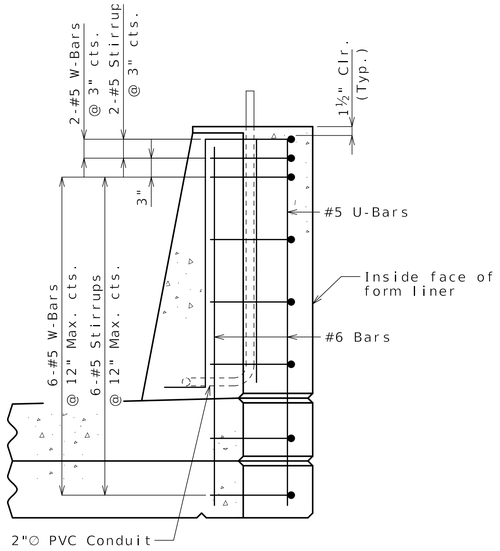


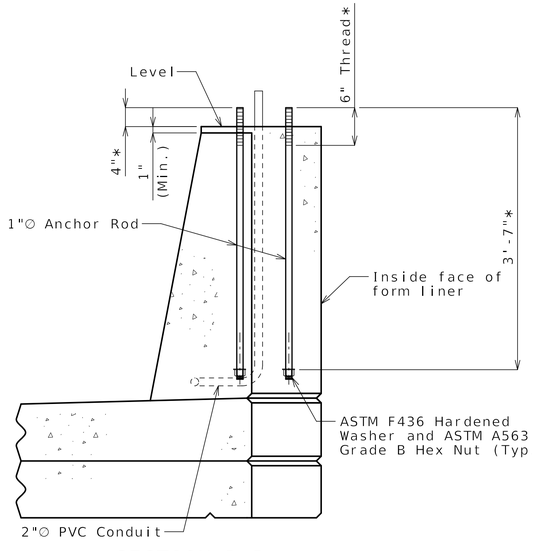
LIGHT POLE MOUNTING PLAN SHOWING REINFORCEMENT



LIGHT POLE MOUNTING PLAN



SECTION A-A



SECTION B-B

Notes:

∗ Contractor shall confirm dimension with light pole manufacturer before setting anchor bolts.

Anchor bolts and nuts shall be ASTM F1554 Grade 55. Anchor bolts, nuts and washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C or ASTM B695, Class 55.

Top of light standard supports shall be made horizontal; anchor rods shall be placed vertically.

Contractor has the option to splice vertical bars with mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 710.

For locations of light blister, see Sheet No. B02-23.

For Form Liner and Aesthetic Stain Details not shown, see Sheet No. B02-29.

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LIGHT BLISTER DETAILS

BENJAMIN LICHTY NUMBER PE-2023038803
PROFESSIONAL ENGINEER ★ STATE OF MISSOURI ★
04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-27
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
CERTIFICATE OF AUTHORITY NO. 001270
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Notes:

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

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

Base plate shall be ASTM A709, Grade 50.

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

All fence posts shall be vertical.

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

Decorative pedestrian fencing shall be in accordance with 2020-AASHTO LRFD Bridge Design Specifications, 9th Ed.

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

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

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

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

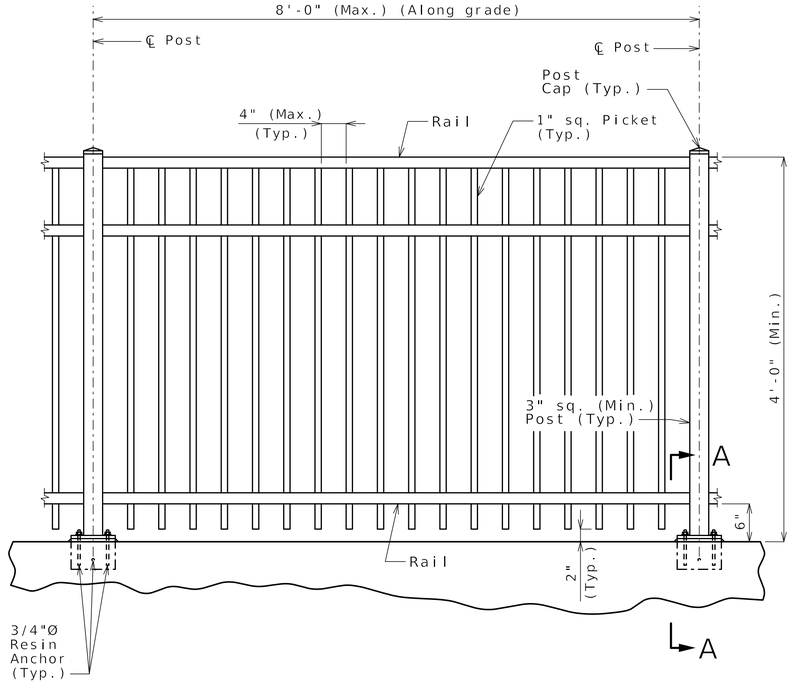
For details of Type D Barrier, see Sheet No. B02-25.

Longitudinal dimensions of fence are horizontal.

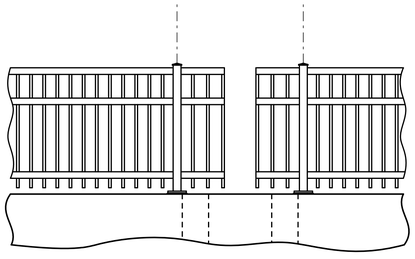
Resin Anchor Notes:
Resin anchors shall be ASTM F1554 Grade 36.

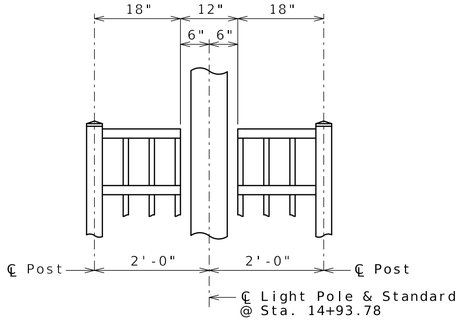
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1029.

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

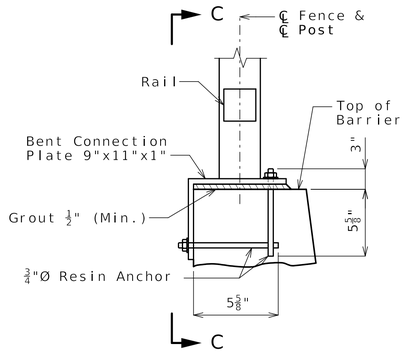


TYPICAL PART ELEVATION

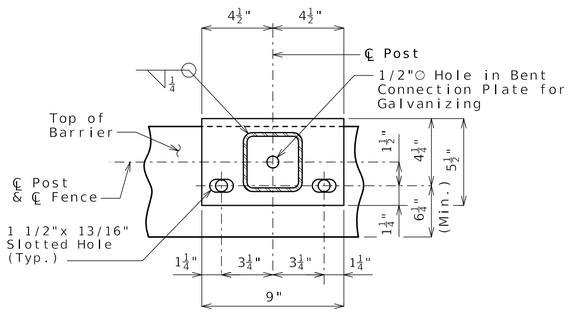




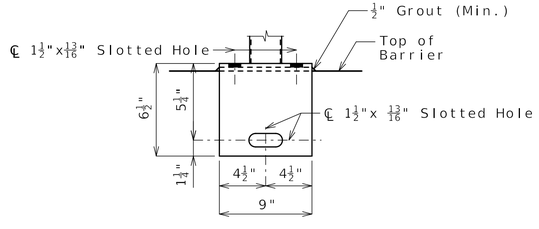
TYPICAL DETAIL OF FENCE AT LIGHT STANDARDS



SECTION A-A



PART PLAN SHOWING CONNECTION PLATE



ELEVATION C-C

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

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04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-28
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	REV 0 - RFC SUBMITTAL

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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DECORATIVE PEDESTRIAN FENCE DETAILS

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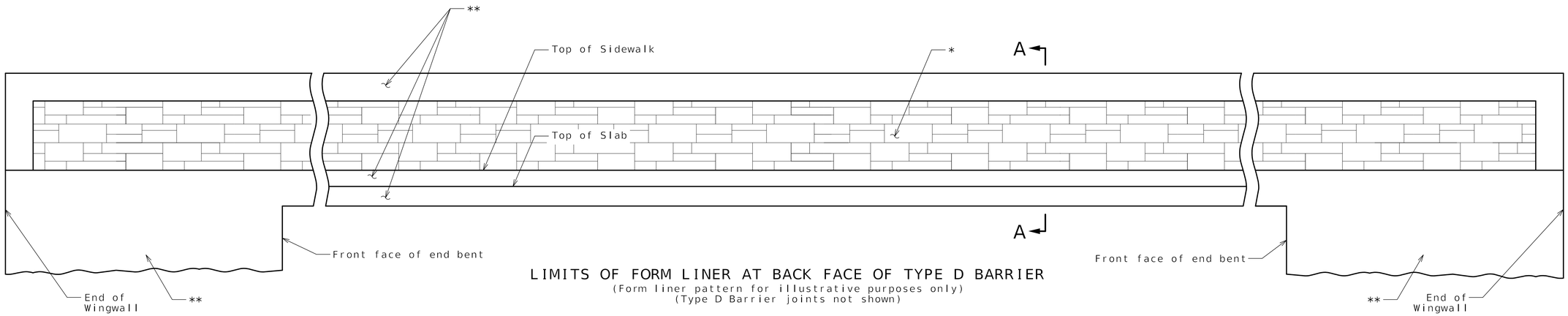


LIMITS OF FORM LINER AT BACK FACE OF TYPE D BARRIER

(Form liner pattern for illustrative purposes only)
(Type D Barrier joints not shown)

Form Liner and Aestetic 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"

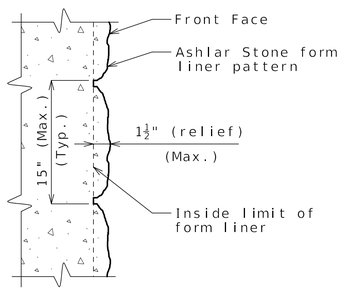
-Customrock: Form liner pattern #12020 "Tollway Ashlar"

-An approved equal

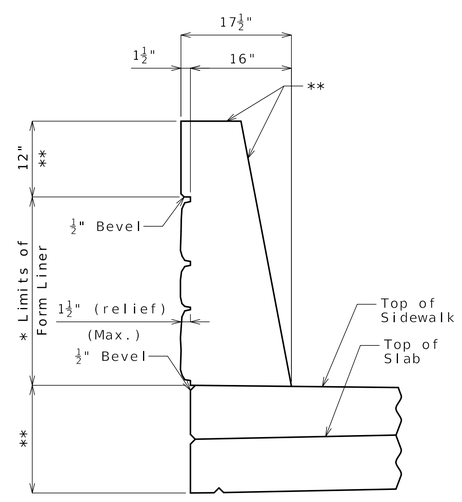
Aesthetic Concrete Stain Notes:

* 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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FORM LINER AND AESTHETIC STAIN DETAILS

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STATE OF MISSOURI
BENJAMIN LICHTY
NUMBER PE-2023038803
PROFESSIONAL ENGINEER
04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-29
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE
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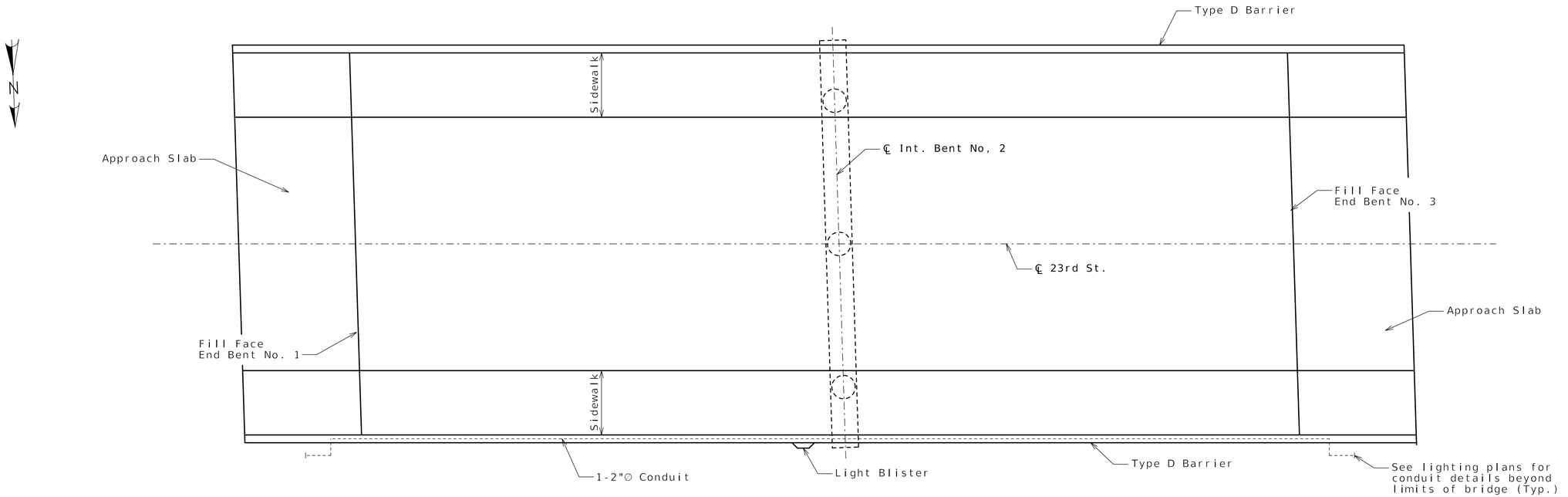
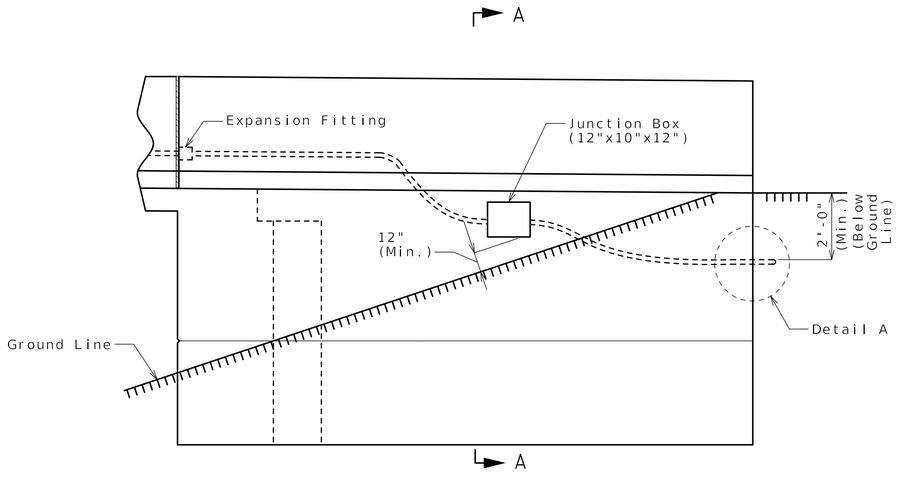
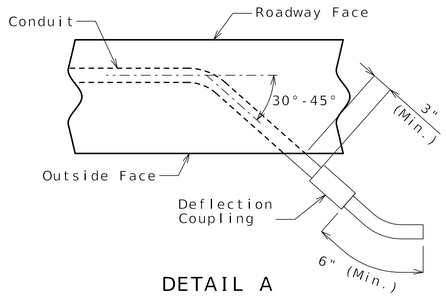


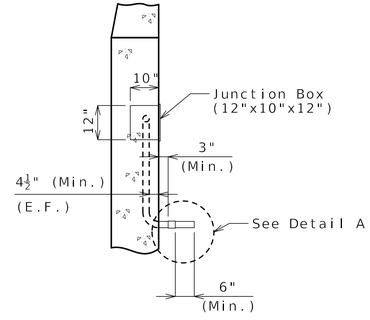
PLAN OF CONDUIT SYSTEM



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 4½" minimum cover in concrete. Each section of conduit shall bear the Underwriters laboratories (UL) label.

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

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

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

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

For additional form liner details not shown, see Sheet No. B02-29.

DETAILS OF CONDUIT SYSTEM ON STRUCTURE

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04-11-2025

DATE PREPARED 04/11/2025

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DISTRICT	SHEET NO.
BR	B02-30

COUNTY JACKSON

JOB NO. J4I1486D

CONTRACT ID. 240807-C01

PROJECT NO.

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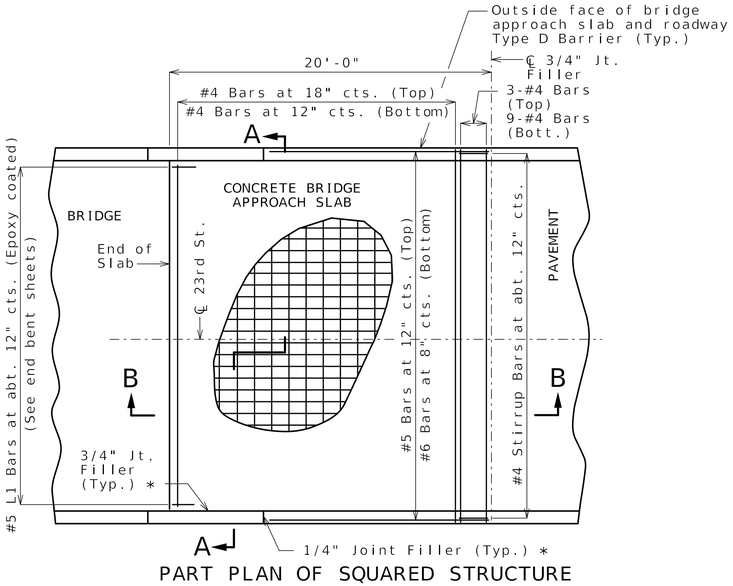
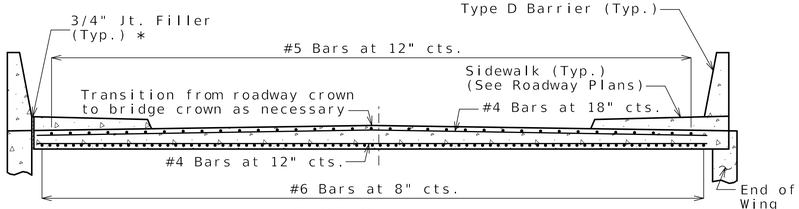
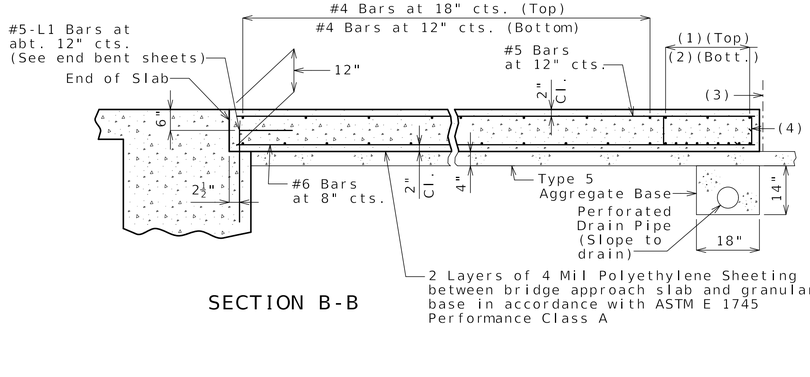


PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)
(Sidewalk not shown)



SECTION A-A



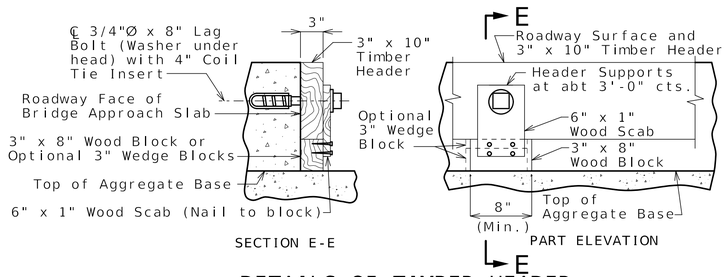
SECTION B-B

(1) 3-#4 Bars

(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.



DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

Notes:

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

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

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

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

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

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

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

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BRIDGE APPROACH SLAB (MINOR)

BENJAMIN LICHTY NUMBER PE-2023038803
PROFESSIONAL ENGINEER — STATE OF MISSOURI
04-11-2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-31
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	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

Detailed DEC 2024
Checked JAN 2025

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

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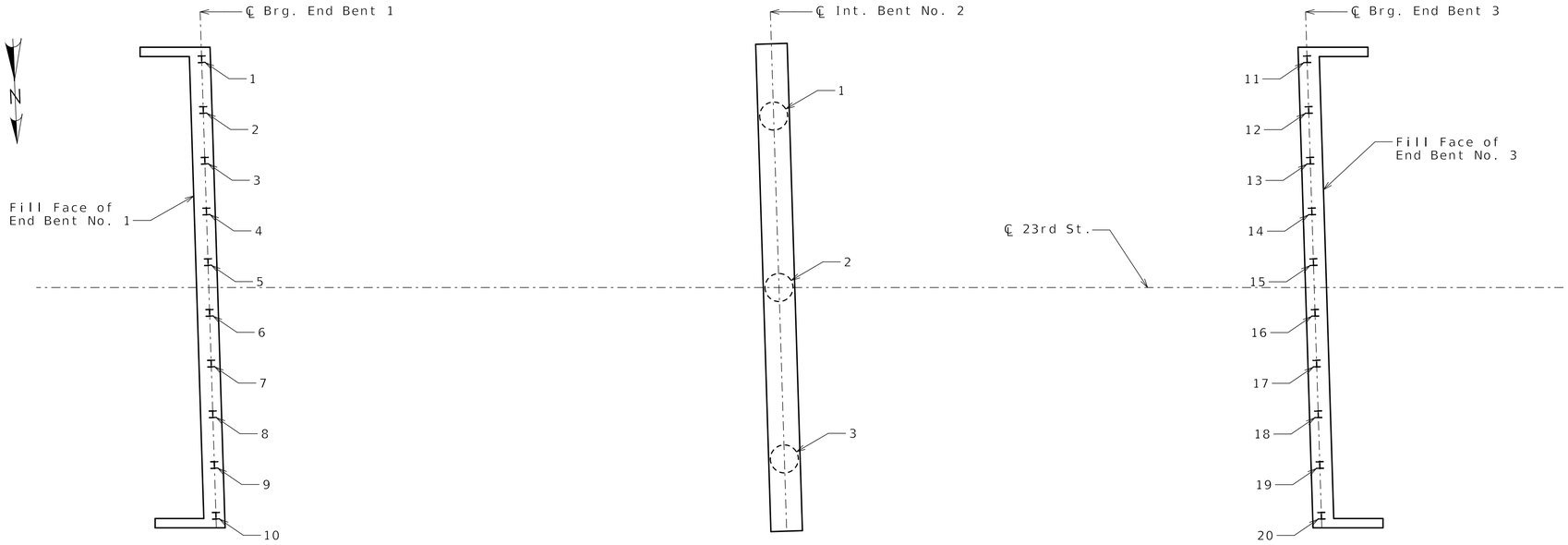

PART PLAN SHOWING PILE AND DRILLED SHAFT NUMBERING FOR RECORDING AS-BUILT PILE DATA AND AS-BUILT DRILLED SHAFT DATA

As-Built Pile Data

Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 1
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
					End Bent No. 3
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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 Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Intermediate Bent No. 2
1				
2				
3				

Note:
This sheet to be completed by design-builder.

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Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

AS-BUILT PILE AND DRILLED SHAFT DATA

GINA D. HORNER PE-30413
STATE OF MISSOURI PROFESSIONAL ENGINEER
Gina D. Horner 4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-32
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION	DATE	REV
REV 0 - RFC SUBMITTAL	04/11/25	

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

HNTB

SOIL BORING NUMBER: 23St_B1_1

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1062394.2 / 2777155.9
DRILLING FIRM PPI **DRILLER** Josh Starkey
DATE STARTED 11/19/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 11/19/2024
SURFACE ELEVATION 879.5'
RIG TYPE CME-55LC
METHOD Water Rotary
TOOLING 4-1/2" Continuous Flight Auger

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
										0.5 FILL, light brown, firm, CLAY 879				
										FILL, grayish brown, stiff to hard, moist, LEAN CLAY, mottled, shaley (residual)				
5	3.5 ft		J-1	10	6-10-11 (21)	56		>4.5						
										7.0 872.5				
										FILL, gray, stiff to very stiff, LEAN CLAY, trace gravel				
10	8.5 ft		J-2	11	3-4-4 (8)	61		4.0			40-21-19	13.8		
										11.7 867.8				
										12.5 Rough drilling - Limestone boulder 867				
15	13.5 ft		J-3	18	4-7-4 (11)	100		1.5		FILL, dark brown, firm to stiff, moist, fine to medium grained, SANDY LEAN CLAY with GRAVEL - 6" rubble at 14'				
										18.5 861				
20	18.5 ft		J-4	18	x-x-2 (2)	100		<0.25		Dark brown-gray, soft, moist, FAT CLAY, trace organics				
	20.5 ft		U-1	17		71		0.5			43-21-22	33.9	86.6	0.47
25	25.5 ft		J-5	18	x-2-2 (4)	100		0.5						
										28.5 851				
30	28.5 ft		J-6	18	x-1-3 (4)	100		<0.25		organics - wood, decayed 30.0 849.5				
	▽									Dark brown-gray, soft, moist, FAT CLAY, trace organics				
	33.5 ft									33.5 846				
35			J-7	18	12-20-40 (60)	100		>4.5		Grayish brown, hard to very stiff, moist, CLAY, shaley	44-22-22	21.1		

HNTB

SOIL BORING NUMBER: 23St_B1_1

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1062394.2 / 2777155.9
DRILLING FIRM PPI **DRILLER** Josh Starkey
DATE STARTED 11/19/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 11/19/2024
SURFACE ELEVATION 879.5'
RIG TYPE CME-55LC
METHOD Water Rotary
TOOLING 4-1/2" Continuous Flight Auger

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
	38.5 ft		J-8	5	50/5" (5")	100		>4.5		Grayish brown, hard to very stiff, moist, CLAY,				
40	40.2 ft		C-1	60		100	67			38.9 shaley 840.6 Shale, weathered to highly weathered, dark gray to gray				
45	45.2 ft		C-2	53		88	65							
50										50.2 829.3 Bottom of Boring at 50.2' Boring backfilled with cuttings 11/19/2024				
55														
60														
65														
70														

WILLIAM JOSEPH STURGEON PE-2014017021
STATE OF MISSOURI PROFESSIONAL ENGINEER
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-33
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION: REV 0 - RFC SUBMITTAL
DATE: 04/11/25

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: 04/11/2025
Package: BRD-02-23rd_ST

Notes:
For locations of borings, see Sheet No. B02-02 and Geotechnical Report.

BORING LOGS

Detailed DEC 2024
Checked JAN 2025

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

HNTB

SOIL BORING NUMBER: 23St_B1_2

PROJECT Improve I 70 KC Design Build
DRILLING FIRM PPI **DRILLER** Josh Starkey
LOGGED BY Cameron Dupont
SURFACE ELEVATION 878.9'
METHOD Water Rotary

NORTHING/EASTING 1062307.3 / 2777165.2
DATE STARTED 11/20/2024
DATE COMPLETED 11/20/2024
RIG TYPE CME-55LC
TOOLING 4-1/8" Tricone

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
										0.5 TOPSOIL 878.4 FILL, brownish gray, hard to very stiff, LEAN CLAY, trace gravel and organics				
5	3.5 ft		J-1	13	5-6-7 (13)	72		>4.5						
10	8.5 ft		U-1	24		100		>4.5			39-25-14	14.6	119.5	1.84
										11.3 867.6 Rough drilling - Limestone boulder 12.7 866.2 Brown to dark brown, soft, moist, FAT CLAY				
15	13.5 ft		J-2	13	3-3-3 (6)	72		0.5			35-20-15	24.2		
20	18.5 ft		J-3	18	2-2-2 (4)	100		<0.25						
25	23.5 ft		J-4	18	1-2-3 (5)	100		<0.25		- gray, trace organics (wood) at 23.5'		29.3		
30	28.5 ft		J-5	18	2-2-3 (5)	100		0.75						
	33.3 ft									33.3 845.6 Shale, thinly bedded, highly weathered, dark gray, hard to stiff, with clay				
35	34.8 ft		J-6	18	13-30-49 (79)	100		>4.5						
	35.5 ft		C-1	9		100	0							
			C-2	60		100	0							

HNTB

SOIL BORING NUMBER: 23St_B1_2

PROJECT Improve I 70 KC Design Build
DRILLING FIRM PPI **DRILLER** Josh Starkey
LOGGED BY Cameron Dupont
SURFACE ELEVATION 878.9'
METHOD Water Rotary

NORTHING/EASTING 1062307.3 / 2777165.2
DATE STARTED 11/20/2024
DATE COMPLETED 11/20/2024
RIG TYPE CME-55LC
TOOLING 4-1/8" Tricone

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
40	40.5 ft		C-2	60		100				Shale, thinly bedded, highly weathered, dark gray, hard to stiff, with clay				
45			C-3	51		100	59			44.8 834.1 Bottom of Boring at 44.8' Boring backfilled with cuttings 11/20/2024				
50														
55														
60														
65														
70														

WILLIAM JOSEPH STURGEON PE-2014017021
STATE OF MISSOURI PROFESSIONAL ENGINEER
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 STATE MO
DISTRICT BR SHEET NO. B02-34
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DESCRIPTION: REV 0 - RFC SUBMITTAL
DATE: 04/11/25

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: 04/11/2025
Package: BRD-02-23rd_ST

Notes:
For locations of borings, see Sheet No. B02-02 and Geotechnical Report.

BORING LOGS

Detailed DEC 2024
Checked JAN 2025

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

HNTB

SOIL BORING NUMBER: 23St_B2_1

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1062381.5 / 2777263.7
DRILLING FIRM PPI **DRILLER** David Allen
DATE STARTED 12/10/2024
LOGGED BY Pradip Adhikari
DATE COMPLETED 12/10/2024
SURFACE ELEVATION 862'*
RIG TYPE CME-55
METHOD Water Rotary
TOOLING 4-1/2" Continuous Flight Auger

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
										0.7 CONCRETE 861.3				
										0.9 Base 861.1				
										Brown, firm, moist, LEAN CLAY (CL), silty, trace sand				
5	3.5 ft		J-1	9	2-2-3 (5)	50		0.75						
	6.5 ft		J-2	0	50/0"					6.5 855.5				
	8 ft		C-1			100	77			Limestone, thinly bedded, slightly weathered, very fine grained, light gray, moderately hard				
10			C-2			100	83			10.0 852		0.3	167.4	1707
	13 ft									Clayey shale, highly weathered, gray, soft		24.8	106.7	8
15			C-3			100	60							
	18 ft		C-4			100	27			- becomes slightly weathered, moderately hard at 23'				
20														
	23 ft		C-5			100	83							
25												8.5	139.0	39
	28 ft		C-6			100	38							
30										32.0 830				
	33 ft		C-7			100	95			Shaley limestone, medium to thick bedded, weathered, very fine grained, gray, moderately hard				
35														

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

HNTB

SOIL BORING NUMBER: 23St_B2_1

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1062381.5 / 2777263.7
DRILLING FIRM PPI **DRILLER** David Allen
DATE STARTED 12/10/2024
LOGGED BY Pradip Adhikari
DATE COMPLETED 12/10/2024
SURFACE ELEVATION 862'*
RIG TYPE CME-55
METHOD Water Rotary
TOOLING 4-1/2" Continuous Flight Auger

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
40	38 ft		C-7			100	82			Shaley limestone, medium to thick bedded, weathered, very fine grained, gray, moderately hard				
	43 ft		C-8			100	98			43.0 819				
45			C-9							Limestone, medium bedded, slightly weathered, light gray, hard				
										48.0 814				
50										Bottom of Boring at 48'				
										Boring backfilled with cuttings 12/10/2024				
55														
60														
65														
70														

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

WILLIAM JOSEPH STURGEON PE-2014017021
STATE OF MISSOURI PROFESSIONAL ENGINEER
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-35
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	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: 04/11/2025
Package: BRD-02-23rd_ST

Notes:
For locations of borings, see Sheet No. B02-02 and Geotechnical Report.

BORING LOGS

Detailed DEC 2024
Checked JAN 2025

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

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SOIL BORING NUMBER: 23St_B3_1

Page 1 of 1

PROJECT Improve I 70 KC Design Build
NORTHING/EASTING 1062382.6 / 2777383.1
DRILLING FIRM PPI **DRILLER** Josh Starkey
DATE STARTED 11/26/2024
LOGGED BY Cameron Dupont
DATE COMPLETED 11/26/2024
SURFACE ELEVATION 884.4'
RIG TYPE CME-55LC
METHOD Water Rotary
TOOLING 4-1/8" Tricone, AWJ

Groundwater Data	
During Drilling (ft):	N/A
After Drilling (ft):	N/A
After __ Hours (ft):	N/A

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	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)	Lab: Dry Density (PCF)	Lab: UCS (tsf)
										0.5 TOPSOIL 883.9 FILL, very stiff to hard, moist, FAT CLAY				
5	3.25 ft		J-1	4	4-5-5 (10)	22		>4.5				20.7		
10	8.3 ft		U-1	24		100		2.5			46-16-30	22.9	101.1	1.31
	12.2 ft		C-1	38		100	53			- rough drilling from 10.83' to 12.2' 12.2 872.2 Limestone, weathered to highly weathered, gray, hard, some clay seams		0.2	167.1	820
15	15.4 ft		C-2	60		100	73			17.4 867 Shale, highly weathered to weathered, black-dark gray		19.2	107.2	8
20	20.4 ft		C-3	22		100	30			22.2 862.2 Bottom of Boring at 22.2' Boring backfilled with cuttings 11/26/2024				
25														
30														
35														

Notes:
For locations of borings, see Sheet No. B02-02 and Geotechnical Report.

BORING LOGS

Released For Construction
Not to Scale
Revision: 0.0
Date: 04/11/2025
Package: BRD-02-23rd_ST

WILLIAM JOSEPH STURGEON
PE-2014017021
STATE OF MISSOURI
PROFESSIONAL ENGINEER
4/11/2025

DATE PREPARED 04/11/2025
ROUTE I-70 | STATE MO
DISTRICT BR | SHEET NO. B02-36
COUNTY JACKSON
JOB NO. J4I1486D
CONTRACT ID. 240807-C01
PROJECT NO.
BRIDGE NO. A9628

DATE	DESCRIPTION
04/11/25	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

Detailed DEC 2024
Checked JAN 2025

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

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