MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED

US HIGHWAY 169

CLAY COUNTY

DESIGN DESIGNATION

A.A.D.T. - 2025 = 27,000 vpd
A.A.D.T. - 2045 = 36,000 vpd
D.H.V. = 12%
D = 50%
T = 8%
V = 55 M.P.H.

FUNCTIONAL CLASSIFICATION-FREEWAY

CONTROLLED ACCESS HIGHWAY

THIS SHALL BE A CONTROLLED ACCESS HIGHWAY, BETWEEN STA. 169+00.00 AND STA. 185+56.00, EXCEPT AT LOCATIONS AND AS OTHERWISE SPECIFICALLY SHOWN ON THESE PLANS. NO ABUTTER'S RIGHTS IN OR OF DIRECT ACCESS TO, FROM, OR ACROSS THE HIGHWAY OR ITS RIGHT-OF-WAY SHALL ATTACH OR BELONG TO ANY PROPERTY ABUTTING ON SAID SECTION OF HIGHWAY, OR TO ANY PERSON MERELY BECAUSE OF OWNERSHIP OF SUCH ABUTTING PROPERTY. THERE SHALL BE THE USUAL RIGHT OF ACCESS OVER ANY LOCATION SHOWN ON THESE PLANS EITHER AS (1) AN ENTRANCE OR (2) A PRIVATE UNDERPASS. WHEREVER AN ADJACENT OUTER ROADWAY OR SERVICE ROAD IS SHOWN, THERE SHALL BE THE USUAL RIGHT OF DIRECT ACCESS BETWEEN THE ABUTTING PROPERTY AND SUCH OUTER ROADWAY OR SERVICE ROAD (EXCEPT WHERE ACCESS IS SPECIFICALLY PROHIBITED BY THE SPECIAL SYMBOL DENOTING NO RIGHT OF ACCESS) AND ALONG IT TO AND FROM THE NEAREST LANE OF THE THROUGHWAY OF A PUBLIC HIGHWAY. OUTER ROADWAYS AND SERVICE ROADS, AS THE CASE MAY BE, ARE SO DESIGNATED ON THE PLANS.

BEGINNING AND ENDING OF CONTROLLED ACCESS

CONTROLLED ACCESS

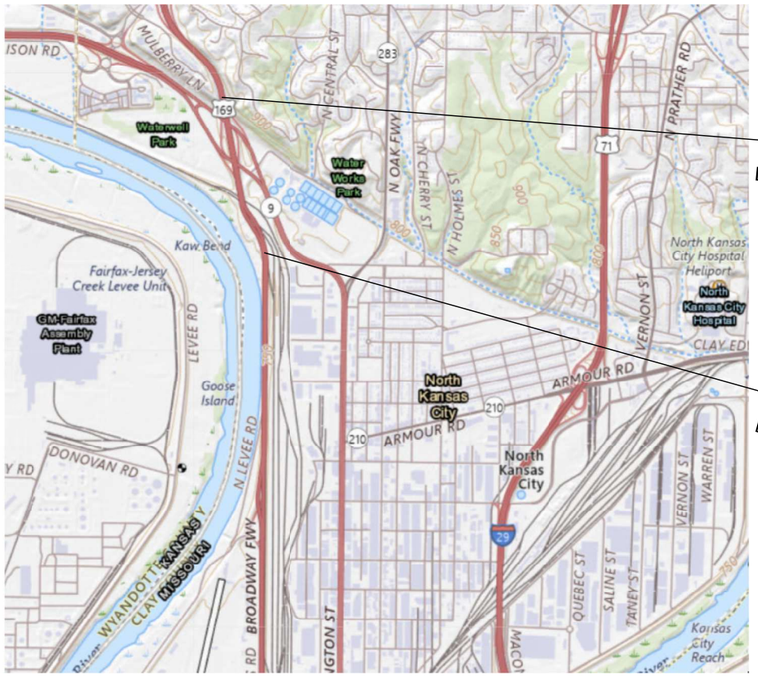
NO RIGHT OF ACCESS OR CROSSING OF LINES BEARING THIS SYMBOL WILL BE PERMITTED UNDER ANY CIRCUMSTANCES.

CONVENTIONAL SYMBOLS

(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
GUARD CABLE		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	-FO-	-FO-
OVERHEAD CABLE TV	-OTV-	-OTV-
UNDERGROUND CABLE TV	-UTV-	-UTV-
OVERHEAD TELEPHONE	-OT-	-OT-
UNDERGROUND TELEPHONE	-UT-	-UT-
OVERHEAD POWER	-OE-	-OE-
UNDERGROUND POWER	-UE-	-UE-
SANITARY SEWER	-S-	-S-
STORM SEWER	-SS-	-SS-
GAS	-G-	-G-
WATER	-W-	-W-
MANHOLE	SAN	
FIRE HYDRANT	HYD	
WATER VALVE	WV	
WATER METER	WM	
DROP INLET	DI	
DITCH BLOCK		
GROUND MOUNTED SIGN	SIGN	
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL	PED	
FENCE		
CHAIN LINK	-V-	
WOVEN WIRE	-X-	
GATE POST		
BENCHMARK	BM	

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES



BRIDGE REPLACEMENT, GRADING, DRAINAGE AND PAVING
NORTHBOUND US ROUTE 169
BRIDGE A4642 OVER BNSF
LENGTH = 0.31 MILES

SCALE IN FEET
0 500 1000 1500 2000 2500

NOTE:

THE DESIGN GUIDE FOR THE WIDTH OF RIGHT OF WAY FOR THIS PROJECT WILL BE VARIABLE. MORE OR LESS RIGHT OF WAY AS WELL AS OTHER PROPERTY INTERESTS MAY BE SECURED TO SATISFY THE REQUIREMENTS OF THE DESIGN FEATURES OF THIS PROJECT. FULLY CONTROLLED ACCESS RIGHT OF WAY IS TO BE ACQUIRED FOR THIS PROJECT.

THE EXISTENCE AND APPROXIMATE LOCATION OF UTILITY FACILITIES KNOWN TO EXIST, AS SHOWN ON THE PLANS, ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE. RELIANCE UPON THIS INFORMATION IS DONE AT THE RISK AND PERIL OF THE USER, AND THE COMMISSION SHALL NOT BE LIABLE FOR ANY DAMAGES THAT MAY ARISE FROM ANY ERROR IN THE INFORMATION. IT IS, THEREFORE, THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE, LOCATION AND STATUS OF ANY FACILITY. SUCH VERIFICATION INCLUDES DIRECT CONTACT WITH THE LISTED UTILITIES.

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LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 169+00.00	
END OF PROJECT	STA. 185+56.00	
APPARENT LENGTH	1656.00	FEET
EQUATIONS AND EXCEPTIONS:		
EQ. STA. 189+98.81 BK = STA. 190+00.00 AH		
TOTAL CORRECTIONS	0	FEET
NET LENGTH OF PROJECT	1656.00	FEET
STATE LENGTH	0.314	MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	1.52	ACRES

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 1/28/2026
ROUTE: 169 | STATE: MO
DISTRICT: KC | SHEET NO.: 1
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

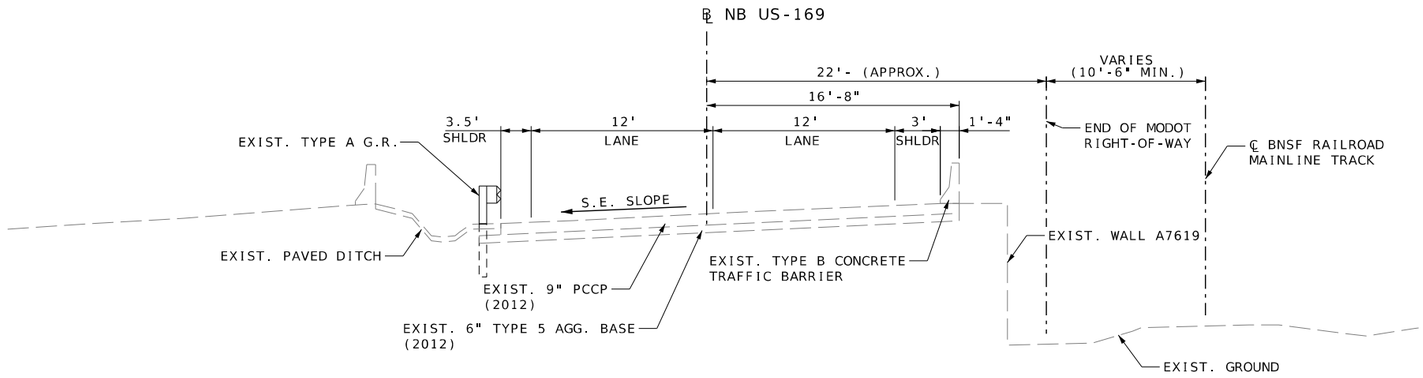
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

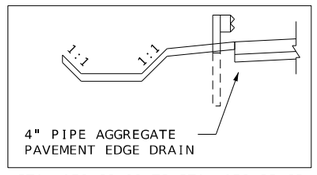
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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NOTE: SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION TRANSITION DETAILS.



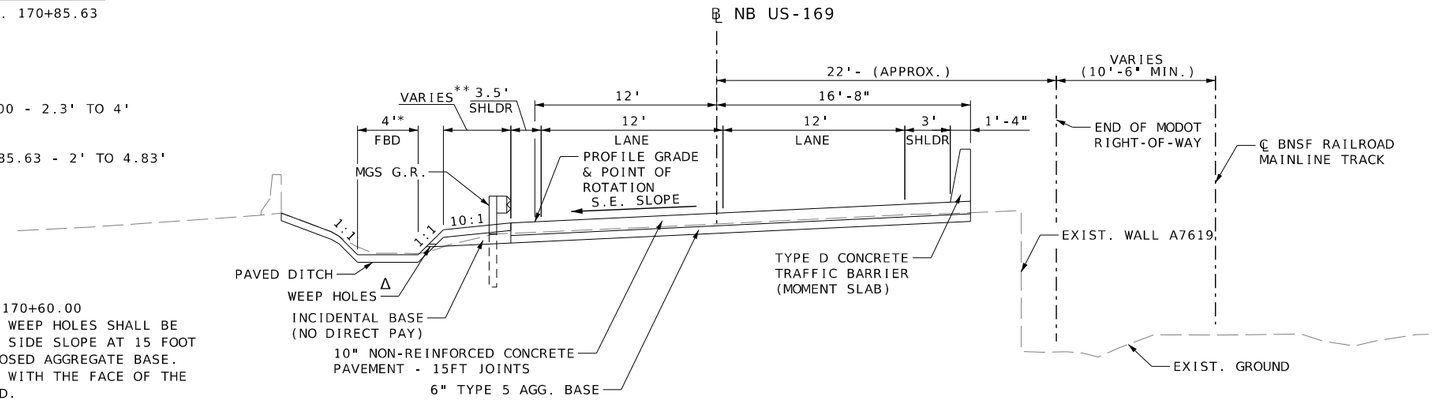
TYPICAL SECTION EXIST. US-169 NB



STA. 170+60.00 TO STA. 170+85.63

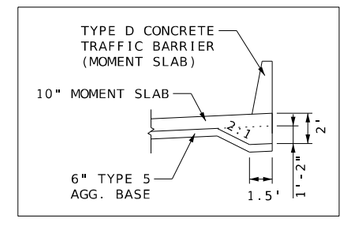
* WIDTH VARIES:
STA. 169+00 TO STA. 170+00 - 2.3' TO 4'

** WIDTH VARIES:
STA. 169+00 TO STA. 170+85.63 - 2' TO 4.83'



Δ STA. 169+00.00 TO STA. 170+60.00
TWO INCH DIAMETER PLASTIC WEEP HOLES SHALL BE PLACED IN THE PAVED DITCH SIDE SLOPE AT 15 FOOT CENTERS TO DRAIN THE PROPOSED AGGREGATE BASE. WEEP HOLES SHALL BE FLUSH WITH THE FACE OF THE CONCRETE AND BACK SCREENED.

TYPICAL SECTION US-169 NB
STA.169+00.00 TO STA. 170+85.63



THICKENED PAVEMENT EDGE
STA. 170+00.00 TO STA. 170+85.63
SEE STANDARD SHEET 617.10M FOR REINFORCEMENT DETAILS

NOTES:

SEE PLAN SHEETS FOR SAWCUT LOCATIONS.
NO DIRECT PAY FOR PAVEMENT SAWCUTS.

TYPICAL SECTION
SHEET 1 OF 5

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

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DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	2

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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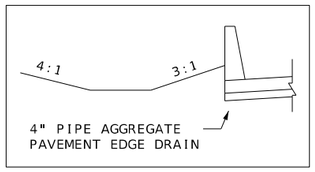
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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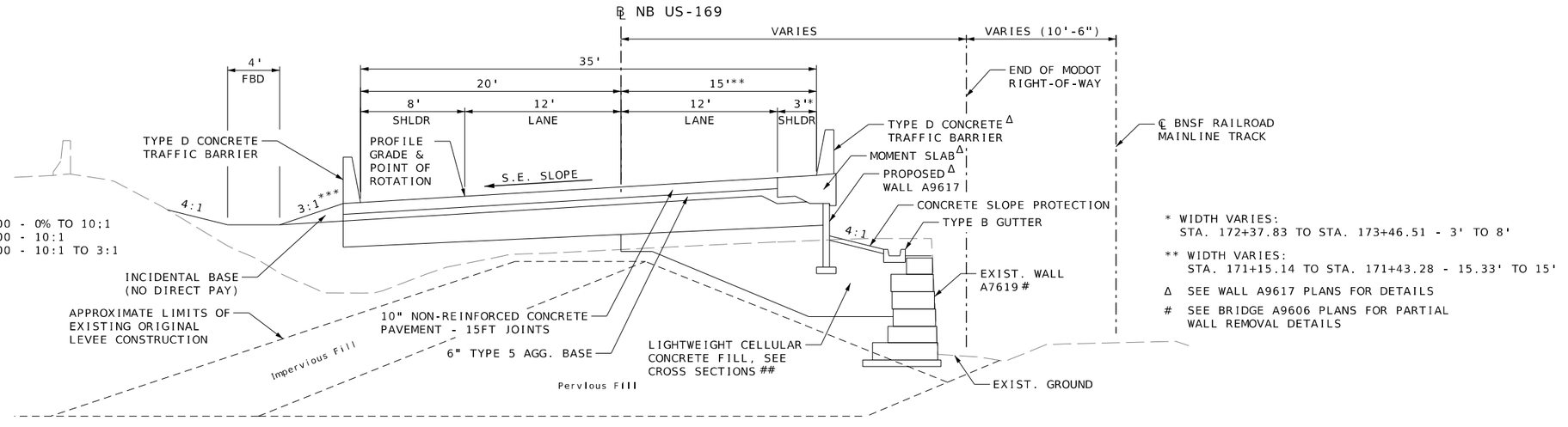
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OVER EXCAVATION OF WALL BACKFILL REQUIRED FOR WALL STABILITY IN PROPOSED ULTIMATE CONDITION. PROVIDED GEOMETRIC INFORMATION FOR LIMITS OF EXCAVATION AND LCC ARE INTENDED TO MINIMIZE IMPACT TO THE EXISTING LEVEE SECTION. EXISTING WALL A7619 AND EXISTING LEVEE SECTION ARE SHOWN BASED ON EXISTING PLAN INFORMATION. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS. THE CONTRACTOR SHALL BE REQUIRED TO TAKE SPECIAL PRECAUTION AND CARE WITH EXCAVATION AND LCC PLACEMENT IN THE LEVEE SECTION, WITHOUT DISTURBANCE OF IMPERVIOUS FILL. IF IMPERVIOUS FILL IS ENCOUNTERED DURING EXCAVATION OF THE WALL, BACKFILL WITH COMPACTED IMPERVIOUS CLAY MATERIAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE WORK SHALL BE IN ACCORDANCE WITH THE USACE APPROVED DIPP FOR MSE WALL BRIDGE NO. 9617. PAYMENT FOR FURNISHING ALL MATERIAL, EQUIPMENT, TOOLS, LABOR AND ANY OTHER INCIDENTAL WORK AS REQUIRED FOR LEVEE IMPERVIOUS FILL, COMPLETE IN PLACE, WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR COMPACTING EMBANKMENT.

NOTE: SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION TRANSITION DETAILS.



STA. 170+85.63 TO STA. 172+00.00



*** SLOPE VARIES:
STA. 170+85.63 TO STA. 171+00.00 - 0% TO 10:1
STA. 170+00.00 TO STA. 171+50.00 - 10:1
STA. 171+50.00 TO STA. 172+00.00 - 10:1 TO 3:1

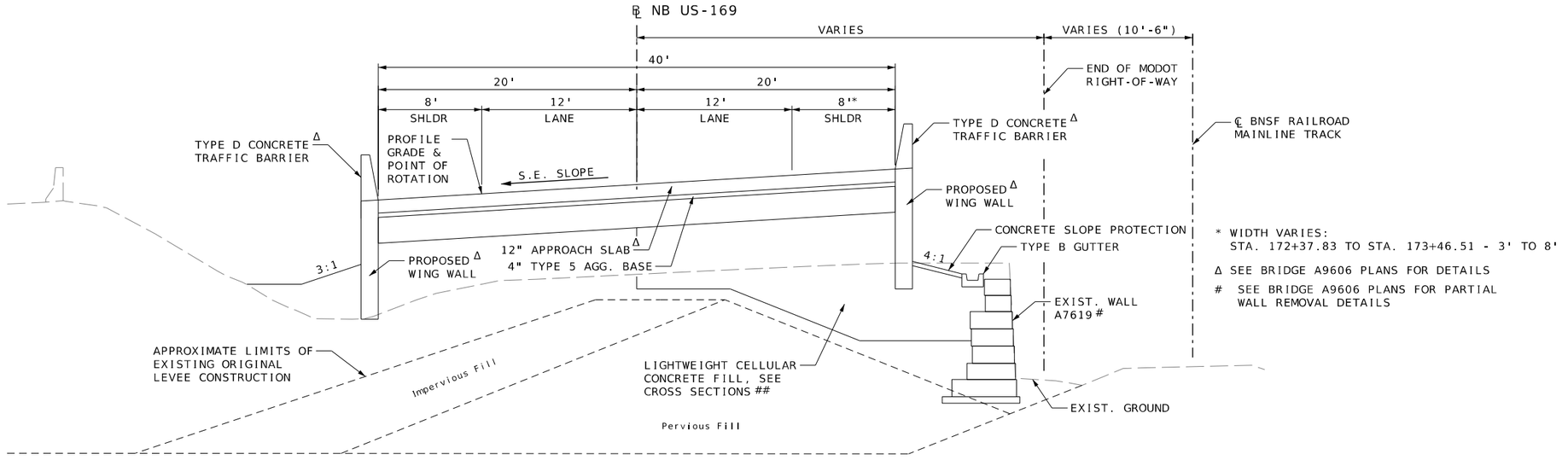
* WIDTH VARIES:
STA. 172+37.83 TO STA. 173+46.51 - 3' TO 8'

** WIDTH VARIES:
STA. 171+15.14 TO STA. 171+43.28 - 15.33' TO 15'

Δ SEE WALL A9617 PLANS FOR DETAILS

SEE BRIDGE A9606 PLANS FOR PARTIAL WALL REMOVAL DETAILS

TYPICAL SECTION US-169 NB
STA.170+85.63 TO STA. 173+26.93



* WIDTH VARIES:
STA. 172+37.83 TO STA. 173+46.51 - 3' TO 8'

Δ SEE BRIDGE A9606 PLANS FOR DETAILS

SEE BRIDGE A9606 PLANS FOR PARTIAL WALL REMOVAL DETAILS

TYPICAL SECTION US-169 NB
STA.173+26.93 TO STA. 173+46.93

TYPICAL SECTION
SHEET 2 OF 5

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 1/28/2026
ROUTE: 169 | STATE: MO
DISTRICT: KC | SHEET NO.: 2
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

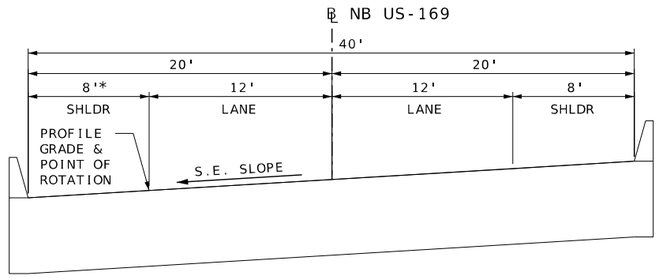
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

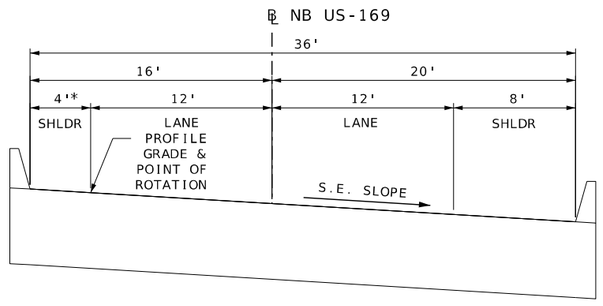
NOTE: SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION TRANSITION DETAILS.



BRIDGE TYPICAL SECTION US-169 NB

STA.173+46.93 TO STA. 176+39.32

* WIDTH VARIES: STA. 175+98.19 TO STA. 177+08.19 - 4' TO 8'



BRIDGE TYPICAL SECTION US-169 NB

STA.176+39.32 TO STA. 183+62.33

TYPICAL SECTION
SHEET 3 OF 5

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

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DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	2

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

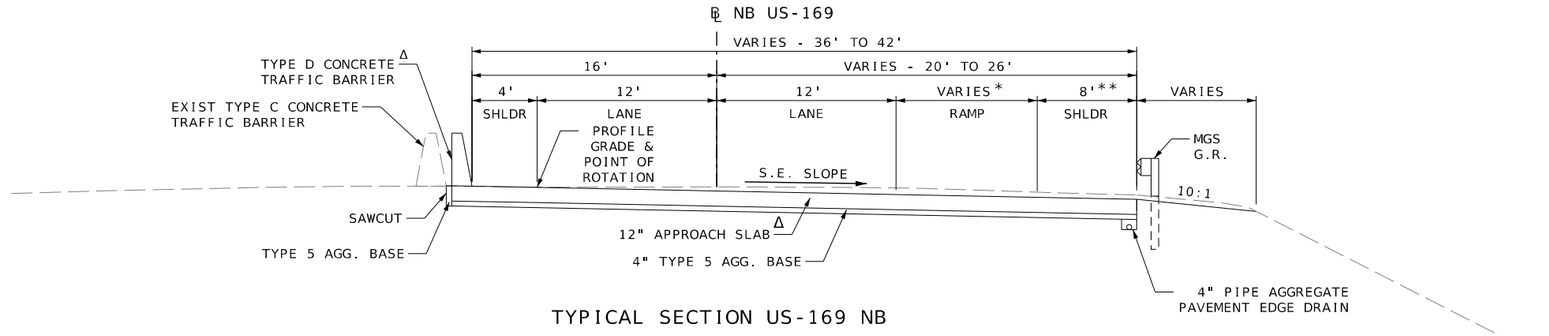
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NOTE: SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION TRANSITION DETAILS.



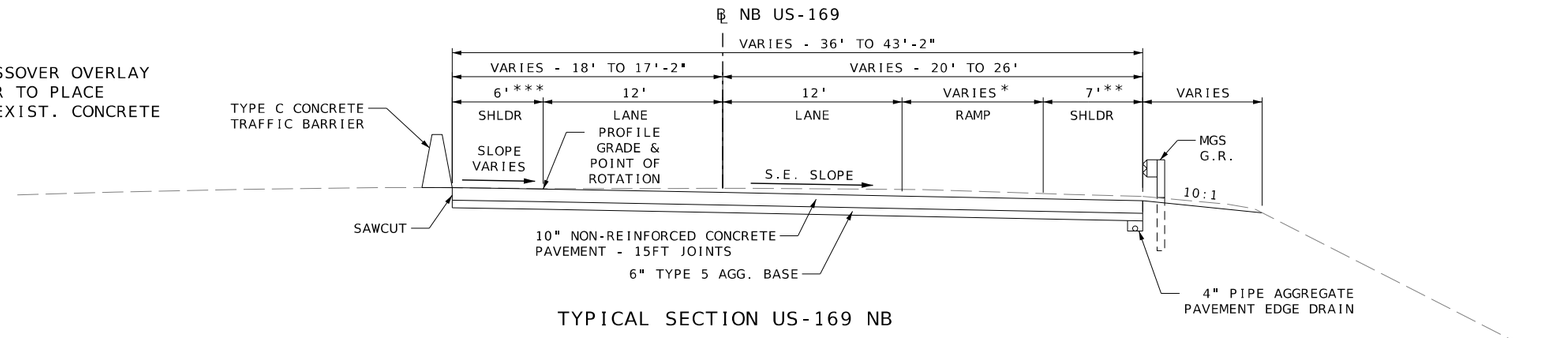
TYPICAL SECTION US-169 NB

STA.183+62.33 TO STA. 183+83.88

Δ SEE BRIDGE A9606 PLANS FOR DETAILS

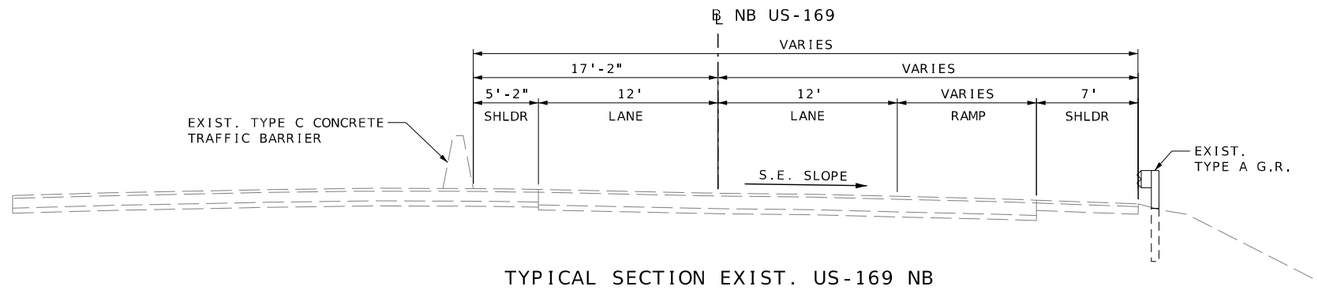
* WIDTH VARIES: STA. 183+75.58 TO STA. 185+56.00 - 0' TO 7'
** WIDTH VARIES: STA. 183+75.58 TO STA. 184+01.09 - 8' TO 7'
*** WIDTH VARIES: STA. 183+57.17 TO STA. 185+56.00 - 6' TO 5'-2"

NOTE:
MILL OUT EXIST. CROSSOVER OVERLAY UNDER TYPE C BARRIER TO PLACE THE BARRIER ON THE EXIST. CONCRETE PAVEMENT.



TYPICAL SECTION US-169 NB

STA.183+83.88 TO STA. 185+56.00



TYPICAL SECTION EXIST. US-169 NB

TYPICAL SECTION
SHEET 4 OF 5

THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

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DATE PREPARED	1/28/2026
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	2
COUNTY	CLAY
JOB NO.	JKU0099
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

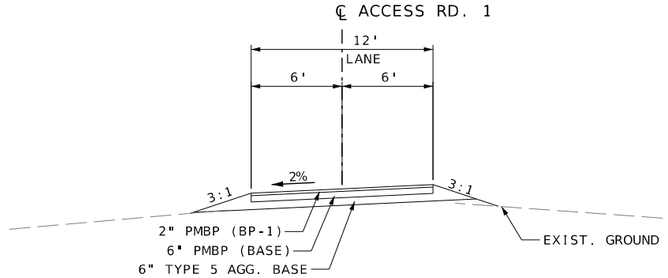
DESCRIPTION	DATE

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JEFFERSON CITY, MO 65102
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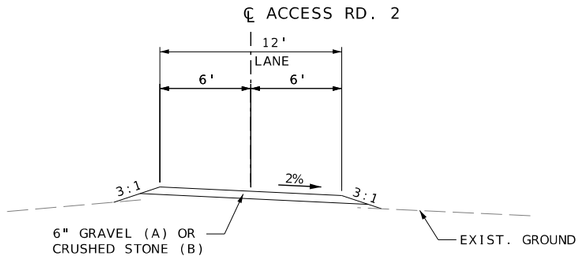
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NOTE: SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION TRANSITION DETAILS.



TYPICAL SECTION ACCESS ROAD 1

STA.1+77.21 TO STA. 8+64.00



TYPICAL SECTION ACCESS ROAD 2

STA. 20+10.99 TO STA. 20+94.58

ESTIMATE FACTORS (FOR INFORMATION ONLY)
BITUMINOUS PAVEMENT MIXTURE PG64-22, (BP-1) = 1.987 TON/C.Y.
BITUMINOUS PAVEMENT MIXTURE PG64-22, (BASE) = 2.005 TON/C.Y.

TYPICAL SECTION
SHEET 5 OF 5

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	2

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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REMOVAL OF IMPROVEMENTS

PLAN SHEET	STA.*	STA.*	ROUTE	OFFSET	DESCRIPTION	QUANTITY	UNITS	REMARKS
PAVEMENT AND SHOULDERS								
4	169+00.00	175+05.61	US-169	CT	NB US-169 PAVEMENT & SHOULDERS	2061.27	SY	
5	183+18.17	185+57.19	US-169	CT	NB US-169 PAVEMENT & SHOULDERS	951.47	SY	
6	176+29.62	177+82.92	US-169	LT	ACCESS ROAD 1	209.57	SY	
BARRIERS								
4	169+00.00	175+05.48	US-169	RT	TYPE B CONCRETE TRAFFIC BARRIER	610.55	LF	
4	173+99.05	175+05.64	US-169	LT	TYPE B CONCRETE TRAFFIC BARRIER	105.22	LF	
GUARDRAIL								
4	169+00.00	174+00.86	US-169	LT	TYPE B GUARDRAIL	496.82	LF	INCLUDES BRIDGE TRANSITION SECTION
5	183+27.34	185+57.19	US-169	RT	TYPE B GUARDRAIL	230.10	LF	INCLUDES BRIDGE TRANSITION SECTION
RETAINING WALL								
4	173+99.05	175+00.66	US-169	LT	WALL A8081	430.00	SF	
DRAINAGE								
4	174+50.00		US-169	LT	DROP INLET	1	EA	
4	174+50.00		US-169	LT	12" PIPE	5	LF	
4	175+08.05		US-169	LT	12" PIPE	38	LF	
4	175+08.05		US-169	LT	12" FES	2	EA	
4	177+43.95		US-169	LT	12" PIPE	20	LF	
5	178+71.58		US-169	LT	12" PIPE	19	LF	
5	183+82.29		US-169	RT	DROP INLET	1	EA	
5	183+82.29		US-169	RT	12" PIPE	152	LF	
SIGNING								
33	171+50.22		US-169	LT	NB .2 ERM SIGN	EST. 7.5	SF	ONE POST SHEET SIGN
33	174+04.67		US-169	LT	NB EXIT	EST. 144	SF	ON SIGN TRUSS
33	174+04.67		US-169	LT	CURVE SIGN	EST. 22.25	SF	ON SIGN TRUSS
33	174+04.67		US-169	LT	SIGN TRUSS	1	EA	
33	175+01.60		US-169	LT	CURVE SIGN	EST. 22.25	SF	ONE POST SHEET SIGN
					TOTAL	1 LUMP SUM		

* REMOVAL OF IMPROVEMENTS IS STATIONED FROM THE EXISTING NB US-169 ALIGNMENT

NOTES:
1) SAWCUTTING PAVEMENT SHALL BE INCIDENTAL TO REMOVAL OF IMPROVEMENTS.

MOBILIZATION
1 LUMP SUM

CONTRACTOR FURNISHED SURVEY AND STAKING
1 LUMP SUM

RAILROAD PLAN SUBMITTAL
1 LUMP SUM

ADDITIONAL MOBILIZATION FOR SEEDING
1 EACH

CLEARING AND GRUBBING IN LEVEE CRITICAL AREA

SHEET	STA.	STA.	ROUTE	CLEARING AND GRUBBING IN LEVEE CRITICAL AREA (ACRE)
4, 5	169+00.00	185+56.00	US-169	3
			TOTAL	3

CONCRETE PAVEMENT

SHEET	STA.	STA.	ROUTE	CONCRETE PAVEMENT (10 IN. NON-REINFORCED 15 FT JOINTS) (SY)	TYPE 5 AGGREGATE BASE (6" THICK) (SY)
4	169+00.00	173+11.45	US-169	1,491.4	1,491
5	184+03.17	185+56.00	US-169	682.8	683
			TOTAL	2,174.2	2,174

ACCESS ROAD PAVEMENT

SHEET	STA.	STA.	ROUTE	ASPHALT PAVEMENT (SY)	BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-1)** (TONS)	BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BASE)** (TONS)	TYPE 5 AGGREGATE BASE (6" THICK) (SY)	GRAVEL (A) OR CRUSHED STONE (B) (6" THICK) (SY)	GRAVEL (A) OR CRUSHED STONE (B) (2" THICK)* (SY)
4, 31	173+51.70	176+69.59	US-169						2041
6, 31, 32	1+77.21	8+64.00	ACCESS ROAD 1	569.6	62.3	190.3	570		222
7, 32	20+10.99	20+94.58	ACCESS ROAD 2					116	19
			TOTAL		62.3	190.3	570	116	2,282

* USED FOR GROUND COVER ON GRADING UNDER BRIDGE.
** ESTIMATE FACTORS (FOR INFORMATION ONLY)
BITUMINOUS PAVEMENT MIXTURE PG64-22, (BP-1) = 1.987 TON/C.Y.
BITUMINOUS PAVEMENT MIXTURE PG64-22, (BASE) = 2.005 TON/C.Y.

CONCRETE APPROACH PAVEMENT

SHEET	STA.	STA.	ROUTE	CONCRETE APPROACH PAVEMENT (SY)
4	173+11.45	173+26.93	US-169	56.8
5	183+83.88	184+03.17	US-169	82.50
			TOTAL	139.3

CONCRETE TRAFFIC BARRIER

SHEET	STA.	STA.	ROUTE	SIDE	CONCRETE TRAFFIC BARRIER, TYPE D (LF)	CONCRETE TRAFFIC BARRIER, TYPE D (MOMENT SLAB) (LF)	CONCRETE TRAFFIC BARRIER, TYPE C (LF)
6	169+00.00	170+85.63	US-169	RT		188	
6	170+85.63	173+27.25	US-169	RT		245	
6	170+85.63	173+26.57	US-169	LT	237		
6	183+90.97	186+62.15	US-169	LT			272
				TOTAL	237	433	272

NOTE: TYPE C BID ITEM INCLUDES STANDARD BARRIER AND TRANSITIONS AND MODIFICATIONS NEEDED TO INSTALL AT LOCATION SHOWN ON THE PLANS

SUMMARY OF QUANTITIES
SHEET 1 OF 4

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000200
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/28/2026
ROUTE 169 | STATE MO
DISTRICT KC | SHEET NO. 3
COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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TEMPORARY EROSION CONTROL

BEGIN STA.	END STA.	ROUTE	SIDE	SILT FENCE (LF)	ROCK DITCH CHECK (LF)	CURB INLET CHECK (EACH)	SEDIMENT TRAP EXCAVATION & ROCK (CY)	SEDIMENT REMOVAL (CY)
169+00.00	177+86.40	US-169	LT / RT	764	52		3	15
177+86.40	185+56.00	US-169	LT / RT	1,644	50	1	6	25
			TOTAL	2,408	102	1	9	40

GUARDRAIL

LOCATION	STA.	STA.	MGS GUARDRAIL (LF)	MGS GUARDRAIL, 6 FT. POSTS, 3 FT. -1.5 IN. SPACING (LF)	MGS HEIGHT AND BLOCK TRANSITION (EA)	MGS BRIDGE APPROACH TRANSITION SECTION (EXTENDED CURB) (EA)	MGS BRIDGE APPROACH TRANSITION SECTION (REGULAR / NO CURB) (EA)	MGS END ANCHOR (EA)	TYPE A CRASHWORTHY END TERMINAL (MASH) (EA)
NB US-169	169+00.00	171+10.00	137.5	37.5	1			1	
NB US-169	183+68.16	185+55.66	125		1	1			
NB US-169 *			275				1		1
SB US-169 *			262.5				1	1	
		TOTAL	800	38	2	1	2	2	1

* REPLACEMENT OF GUARDRAIL AT THE ENDS OF THE EXISTING CONCRETE BARRIER THAT WAS REMOVED FOR THE SOUTH CROSSOVER

ROCK BLANKET

SHEET	STA.	STA.	ROUTE	LOCATION	FURNISHING TYPE 2 ROCK BLANKET (CY)	PLACING TYPE 2 ROCK BLANKET (CY)
5	182+87.47	184+24.88	US-169	LT / RT	303	303
				TOTAL	303	303

COLDMILLING *

BEGIN STA.	END STA.	ROUTE	SIDE	COLDMILLING BITUMINOUS PAVEMENT FOR REMOVAL OF SURFACING (GREATER THAN 3 IN. THICK) (SY)
183+90.97	186+62.15	US-169	LT	61
			TOTAL	61

* COLDMILLING FOR REMOVING TEMP CROSSOVER PAVEMENT TO PLACE TYPE C BARRIER ON EXISTING CONCRETE

EARTHWORK

ROADWAY	BEGIN STA.	END STA.	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	COMPACTING IN CUT (STA)
US-169	169+00.00	176+50.00	1,454	1,056	7.5
US-169	182+87.25	185+56.00	1,009	13	2.7
ACCESS ROAD 1	1+77.21	8+64.00	225	113	
ACCESS ROAD 2	20+10.99	20+94.58	12	1	
		TOTAL	2,700	1,183	10.2

SEEDING AND MULCHING

BEGIN STA.	END STA.	ROUTE	LOCATION	SEEDING COOL SEASON GRASSES (ACRE)	TEMPORARY SEEDING (ACRE)	MULCHING (ACRE)
170+85.63	173+49.21	US-169	LT	0.08	0.08	0.16
183+64.06	185+40.00	US-169	RT	0.02	0.02	0.04
6+65.00	8+64.00	ACCESS ROAD 1	LT & RT	0.10	0.10	0.20
			TOTAL	0.2	0.2	0.4

PAVEMENT UNDERDRAINAGE

BEGIN STA.	END STA.	ROUTE	SIDE	PIPE AGGREGATE PAVEMENT EDGE DRAIN (LF)
170+60.00	172+00.00	US-169	LT	140
184+05.00	185+56.00	US-169	RT	151
			TOTAL	291

SLOPE PROTECTION

BEGIN STA.	END STA.	ROUTE	SIDE	SLOPE PROTECTION (SY)
171+92.19	173+54.70	US-169	RT	59
			TOTAL	59

SUMMARY OF QUANTITIES
SHEET 2 OF 4

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	3

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

PAVED DITCH

BEGIN STA.	END STA.	ROUTE	SIDE	PAVED DITCH (SY)
169+00.00	170+85.63	US-169	LT	250
173+49.55	174+07.15	US-169	LT	89
			TOTAL	339

CONCRETE GUTTER

BEGIN STA.	END STA.	ROUTE	SIDE	CONCRETE GUTTER TYPE B (LF)
171+92.17	173+54.26	US-169	RT	166
			TOTAL	166

GROUTED RIPRAP FLUME

BEGIN STA.	END STA.	ROUTE	SIDE	GROUTED RIPRAP FLUME (SY)
177+01.74	177+12.29	US-169	LT & RT	15
177+13.69	177+24.33	US-169	LT & RT	15
178+22.65	178+24.08	US-169	LT & RT	15
			TOTAL	45

DRAINAGE STRUCTURES

STA.	ROUTE	SIDE	PRECAST CONCRETE DROP INLET TYPE S-1 3 FT X 2 FT (FT)	PRECAST CONCRETE DROP INLET TYPE S-1 5 FT X 2 FT (FT)	DRAIN BASIN (EA)	GRATE AND BEARING PLATE 3FT X 2 FT (EA)	GRATE AND BEARING PLATE 5 FT X 2 FT (EA)		CLASS 3 EXCAVATION (CY)
172+00.00	US-169	LT		4			1		6
183+00.00	US-169	RT	3			1			7
183+88.34	US-169	RT			1				96
		TOTAL	3	4	1	1	1	SUBTOTAL	109

PIPE CULVERT AND END SECTIONS

BEGIN STA.	END STA.	ROUTE	SIDE	18 IN PIPE GROUP B (LF)	24 IN PIPE GROUP B (LF)	12 IN PIPE GROUP C (LF)	18 IN GROUP B FES (EA)	24 IN GROUP B FES (EA)	BEVELED PIPE END TREATMENT FOR 12 IN. PIPE (EA)	CONCRETE SLOPE PROTECTION (SY)	ROCK LINING (CY)		CLASS 3 EXCAVATION (CY)
170+84.87	171+98.98	US-169	LT		112								69
172+01.03	173+45.82	US-169	LT		141			1					144
183+00.00	183+00.00	US-169	RT			148			1	3	2		86
183+88.34	183+88.34	US-169	RT								2		
0+47.66	0+47.66	ACCESS ROAD 1	RT / LT	35			2						34
			TOTAL	35	253	148	2	1	1	3	4	SUBTOTAL	333

HEADWALL

STA.	ROUTE	SIDE	CLASS B CONCRETE (CY)	REINFORCING STEEL (LBS)
170+84.87	US-169	LT	2.3	180
		TOTAL	2.3	180

PAVEMENT MARKING

STA	STA	LOCATION	WHITE 6" (LF)	YELLOW 6" (LF)	WHITE INTERMITTENT 6" (LF)	REMARKS
169+00.00	185+56.00	LT		1656		INCLUDES BRIDGE
169+00.00	185+55.95	RT	1656			INCLUDES BRIDGE
169+00.00	185+56.00	CL			414	INCLUDES BRIDGE
		CROSSOVER		6739	402	REPLACE PAVEMENT MARKING TO ORGINAL CONDITION WHEN CROSSOVERS ARE REMOVED
		TOTALS	1656	8395	816	

DITCH LINING

BEGIN STA.	END STA.	ROUTE	SIDE	FURNISHING TYPE 1 ROCK DITCH LINER (CY)	PLACING TYPE 1 ROCK DITCH LINER (CY)
174+07.15	174+50.00	US-169	LT	49	49
			TOTAL	49	49

TEMPORARY SHORING

BEGIN STA.	END STA.	ROUTE	SIDE	TEMPORARY SHORING * (SF)
170+82.30	173+44.80	US-169	LT	2985
174+88.67	175+03.00	US-169	RT	120
179+96.17	180+96.64	US-169	LT & RT	864
181+61.92	182+02.98	US-169	LT & RT	400
			TOTAL	1 LUMP SUM

* FOR INFORMATION PURPOSES ONLY

SUMMARY OF QUANTITIES
SHEET 3 OF 4

STATE OF MISSOURI
THOMAS M, GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 2/6/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	3

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

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Certificate of Authority No.: 000165
BMcD Project No. 154749

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WARNING SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NO.	DESCRIPTION
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)
WO1-4L	48X48	16.00	4	64.00			15	REVERSE CURVE (SYMBOL LEFT)
WO1-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
WO3-4	48X48	16.00						BE PREPARED TO STOP
WO3-5	48X48	16.00						SPEED LIMIT AHEAD
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
WO4-1R	48X48	16.00	1	16.00				MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00	5	80.00			6A	MERGE (LEFT)
WO4-1aR	48X48	16.00	4	64.00			6A	MERGE (RIGHT)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00						UNEVEN LANES
WO8-12	48X48	16.00						NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
WO12-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00	5	80.00			2	ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	7	112.00			18	DETOUR AHEAD
WO20-3	48X48	16.00	2	32.00			20	ROAD CLOSED AHEAD
WO20-4	48X48	16.00						ONE LANE ROAD AHEAD
WO20-5	48X48	16.00	4	64.00			5	RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00	2	32.00			5A	2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00	2	32.00			6	RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00						FLAGGER (SYMBOL)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK / SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
GO22-1	21X15	2.19						WET PAINT (ARROW PIVOTS)

GUIDE SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NO.	DESCRIPTION
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
GO20-1	60X24	10.00	4	40.00			1	ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00	4	32.00			26	END ROAD WORK
GO20-4	36X18	4.50						PILOT CAR FOLLOW ME
GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW
GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW
GO20-5aP	36X24	6.00	4	24.00			54	WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00						END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT)
MO4-9R	48X36	12.00						DETOUR (RIGHT)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)
MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)

REGULATORY SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NO.	DESCRIPTION
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00	6	72.00			4/25	SPEED LIMIT 2-35,2-45,2-55
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00	1	16.00				NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00						NO TURNS
R3-4	48X48	16.00						NO U-TURN (SYMBOL)
R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00						DO NOT PASS
R4-2	36X48	12.00						PASS WITH CARE
R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25						DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00						ONE WAY (LEFT)
R6-2R	24X30	5.00						ONE WAY (RIGHT)
R9-9	24X12	2.00						SIDEWALK CLOSED
R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R10-6	24X36	6.00						STOP HERE ON RED (45^ ARROW)
R11-2	48X30	10.00	3	30.00			29	ROAD CLOSED (RAMP)
R11-3a	60X30	12.50						ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50						ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)

MISCELLANEOUS SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NO.	DESCRIPTION
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00	2	64.00				POINT OF PRESENCE
CONST-8	48X36	12.00	4	48.00				WORK ZONE NO PHONE ZONE
CONST-7-72	48x48	12.00						Rate our Work Zone
CONST-7-48	48X48	12.00						Rate our Work Zone
SPECIAL	48x48	16.00	1	16.00				TRUCKS ENTERING/EXITING

616-10.05 CONSTRUCTION SIGNS	TOTAL 918
616-10.10 RELOCATED SIGNS	TOTAL

ITEM NUMBER	TOTAL QTY	EFFECTIVE: 07-01-2025 DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6122040		WORK ZONE CRASH CUSHION (NARROW)
6122041		WORK ZONE CRASH CUSHION (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161020		CHANNELIZER (DRUM-LIKE)
6161022		CHANNELIZER (CONE)
6161025	200	CHANNELIZER (TRIM-LINE)
6161026		CHANNELIZER (VERTICAL PANEL)
6161030	14	TYPE 3 MOVEABLE BARRICADE
6161033	30	DIRECTION INDICATOR BARRICADE
6161040	4	FLASHING ARROW PANEL
6161047		TYPE 3 OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A		CHANGEABLE MESSAGE SIGN WITHOUT COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6161099	5	CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER, CONTRACTOR FURNISHED/RETAINED
6173700B		TEMP. TRAFFIC BARRIER ANCHORED, CONTRACTOR FURNISHED/RETAINED
6173706		TEMP. TRAFFIC BARRIER STIFFNESS TRANSITION CONTRACTOR FURNISHED/RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION, CONTRACTOR FURNISHED/RETAINED
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6175011B		RELOCATING TEMP. TRAFFIC BARRIER ANCHORED
6175013		RELOCATING TEMP. TRAFFIC BARRIER STIFFNESS
6175020A		RELOCATING TEMP. TRAFFIC BARRIER HEIGHT
6208063	2600	TEMPORARY PAVEMENT MARKING
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

SUMMARY OF QUANTITIES
SHEET 4 OF 4

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
KC	3

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekkdesigngroup.com

Missouri Cert. of Authority 2002010300

TREKK DESIGN GROUP, LLC

NOTES:
1. ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL AND A PART OF THE CONSTRUCTION OF THE PROJECT.
2. R/W STATION & OFFSETS ARE BASED ON THE US169 ℄ SURVEY, UNLESS OTHERWISE INDICATED.
3. RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STA. 166+57.13 TO STA. 185+96.00 A DISTANCE OF 0.37 MILES.
4. ALL BEARINGS ARE BASED ON THE MISSOURI STATE PLANE COORDINATE SYSTEM - CENTRAL ZONE.
5. UTILITIES: THE INFORMATION CONCERNING LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON WHICH ARE NOT VISIBLE FROM THE SURFACE, HAS BEEN TAKEN FROM THE RECORDS AND FIELD LOCATIONS OF THE VARIOUS UTILITY COMPANIES AND HAS NOT BEEN FIELD VERIFIED. THESE LOCATIONS ARE NOT TO BE CONSTRUED AS ACCURATE OR EXACT.
6. THE APPROXIMATE LOCATION OF THE PROPERTY LINES AS SHOWN ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE.

STA. 173+46.43 ℄ NB US-169
CONSTRUCT NB BRIDGE NO. A9606 OVER BNSF
(125'-125'-110'-110') PRESTRESSED NU53 & NU43 GIRDER SPANS
(105.4'-92.9') PRESTRESSED CONCRETE NU53 GIRDER SPANS
(153.3'-160') PRESTRESSED CONCRETE NU78 GIRDER SPANS
(32.5') SOLID SLAB SPAN

STA. 175+39.19 ℄ EXIST. NB US-169
REMOVE BRIDGE A4642

CITY OF KANSAS CITY

STA. 173+11.45 TO STA. 173+26.93
CONSTRUCT CONC. APPROACH PAVEMENT

BEGIN PROJECT
STA 166+57.13
℄ NB US-169

START STA 165+00.00

PC STA 166+57.71

TEMP. ESMT. (CONST.)

EXIST. BNSF RR R/W
EXIST. PERM ESMT. (ACCESS)

N. KC LEVEE DISTRICT

CURVE NB 169_1
PI 168+72.63
PC 166+57.71
PT 170+85.63
Δ 13°14'55.2" (LT)
D 3°5'46.0"
L 427.91' (ARC)
T 214.92'
R 1,850.58'

N00°31'28"E

BEGIN CONC. PAVED DITCH STA. 169+00 19.4' LT

ASPHALT DRIVE

END CONC. PAVED DITCH STA. 170+84.87 25' LT

EOS
EOP
12'

EXIST. PERM. ESMT. (ACCESS)
NE ¼ NE ¼
SEC 15 - T50N-R33W

SECTION LINE

SAWCUT

BEGIN CONST. - NB US-169
STA 169+00.00
℄ NB US-169

℄ NB US-169

℄ TRACKS
BNSF MAINLINE (DND)

SE ¼ SE ¼
SEC 10 - T50N-R33W

BEGIN TAPER
STA 171+15.17
OFF 15.33' RT.

END TAPER
STA 171+43.28
OFF 15.00' RT.

BEGIN PROJECT STA. 166+57.13 ℄ NB US-169
IMPROVEMENT BEGINS AT A POINT 272.81 FT
N89°15'29"W OF THE SOUTHEAST
CORNER OF SECTION 10-T50N-R33W

SCALE
0 50 100 150

BURLINGTON NORTHERN SANTA FE RAILWAY

TEMPORARY SHORING

BEGIN CONC. PAVED DITCH STA. 173+48.38 31.28' LT

END CONC. PAVED DITCH STA. 174+07.15 39.51' LT

BEGIN BRIDGE
STA. 173+46.93

4' FBD
S.L. SP. DT. LT.

PROPOSED RETAINING WALL

BEGIN TAPER
STA 172+37.83
OFF 15.00' RT.

EXIST. PERM. ESMT. (ACCESS)

(UIP) EXIST. WALL A7619

END TAPER
STA 173+46.51
OFF 20.00' RT.

EXIST. 54" RCP DISCHARGE LINE (KCMO WATER SERVICES) (DND)

EXIST. 60" RCP AUXILIARY INTAKE LINE (KCMO WATER SERVICES) (DND)

EXIST. GATEWELL (DND)

STA.176+63.48 ℄ NB 169 =
STA.2+24.96 ℄ ACCESS RD 1
(UIP) EXIST. BRIDGE A4643
℄ ACCESS RD 1

PC STA 177+48.42

MATCHLINE STA. 177+50.00

177+08.18
16.00' LT

175+98.18
20.00' LT

CURVE NB 169_2
PI 173+10.50
PC 170+85.63
PT 175+30.22
Δ 21°13'40.3" (LT)
D 4°46'28.7"
L 444.60' (ARC)
T 224.88'
R 1,200.00'

PC STA 175+30.22

N33°57'07"W

EXIST. BRIDGE A4642

TEMPORARY SHORING

(R) EXIST. WALL A8081

13'W X 100'L X 1'D ROCK DITCH LINER TYPE 1

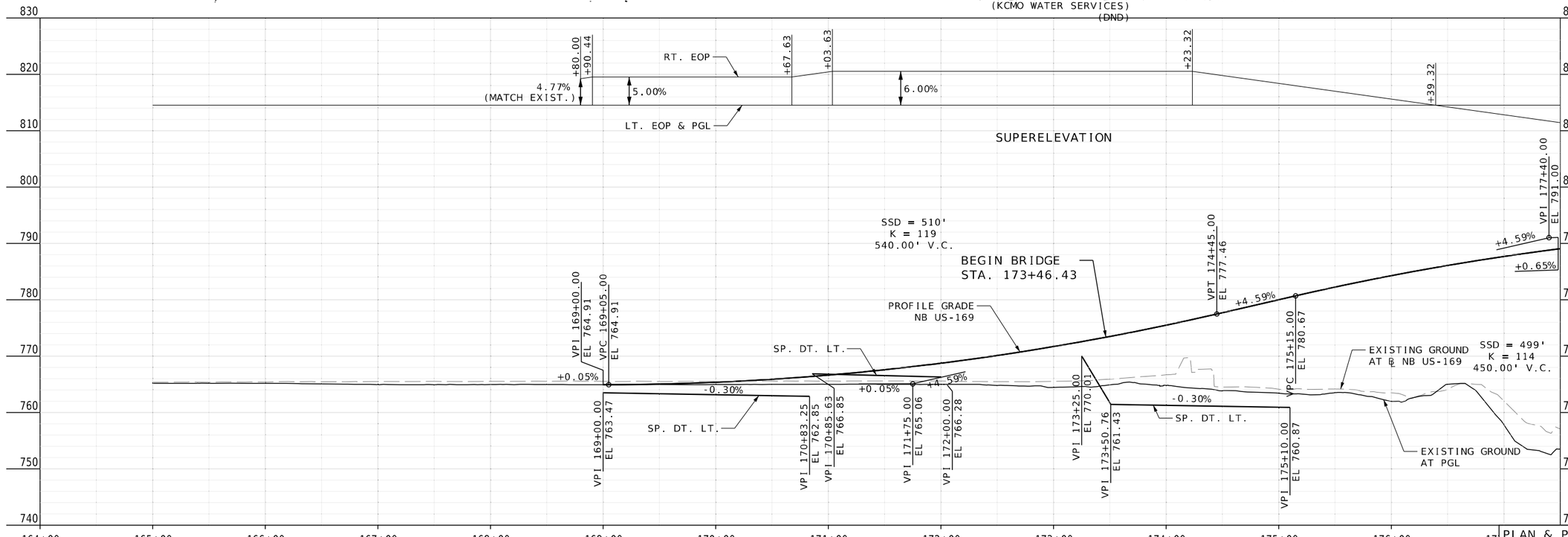
(R) EXIST. OVERHEAD SIGN STRUCTURE

BNSF MURRAY YARD

TEMP. ESMT. (CONST.)

CURVE NB 169_3
PI 179+94.97
PC 177+48.42
PT 182+34.76
Δ 23°13'15.5" (RT)
D 4°46'28.7"
L 486.34' (ARC)
T 246.55'
R 1,200.00'

LAND TIE
A 1" BAR IN RAILYARD
SOUTHEAST CORNER OF SECTION 10
T50N, R33W, 218.44' N44°54'58"E
OF ℄ NB US-169 STA. 165+00.00
RECORDED DOC #600-52238



PLAN & PROFILE
US-169
SHEET 1 OF 5

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STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	4

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

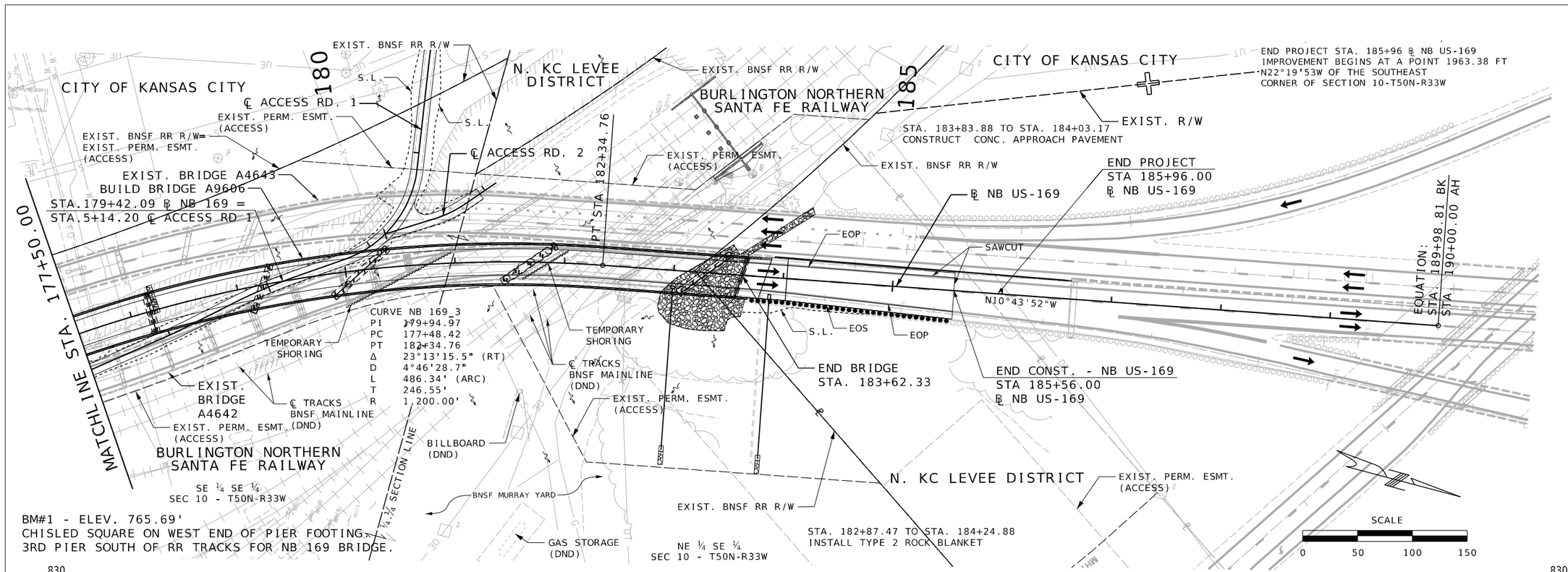
BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



PLAN & PROFILE
US-169
SHEET 2 OF 5

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED	
1/28/2026	
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	5

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

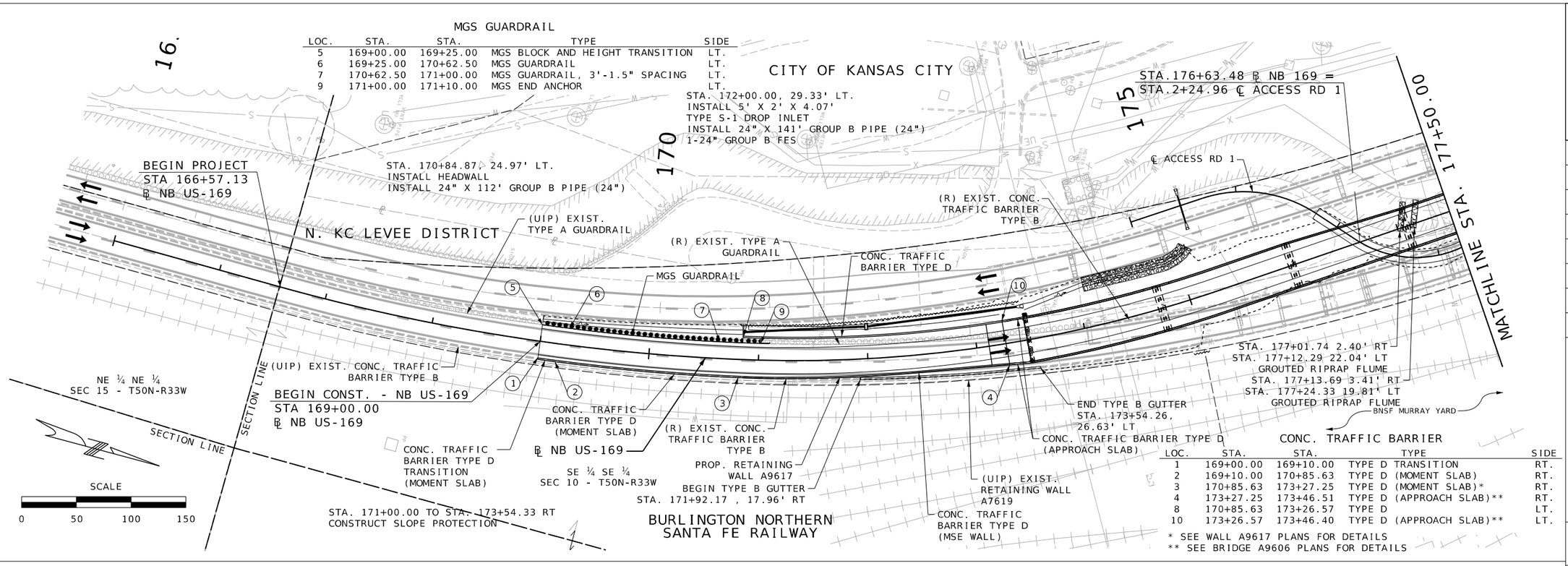
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	6

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

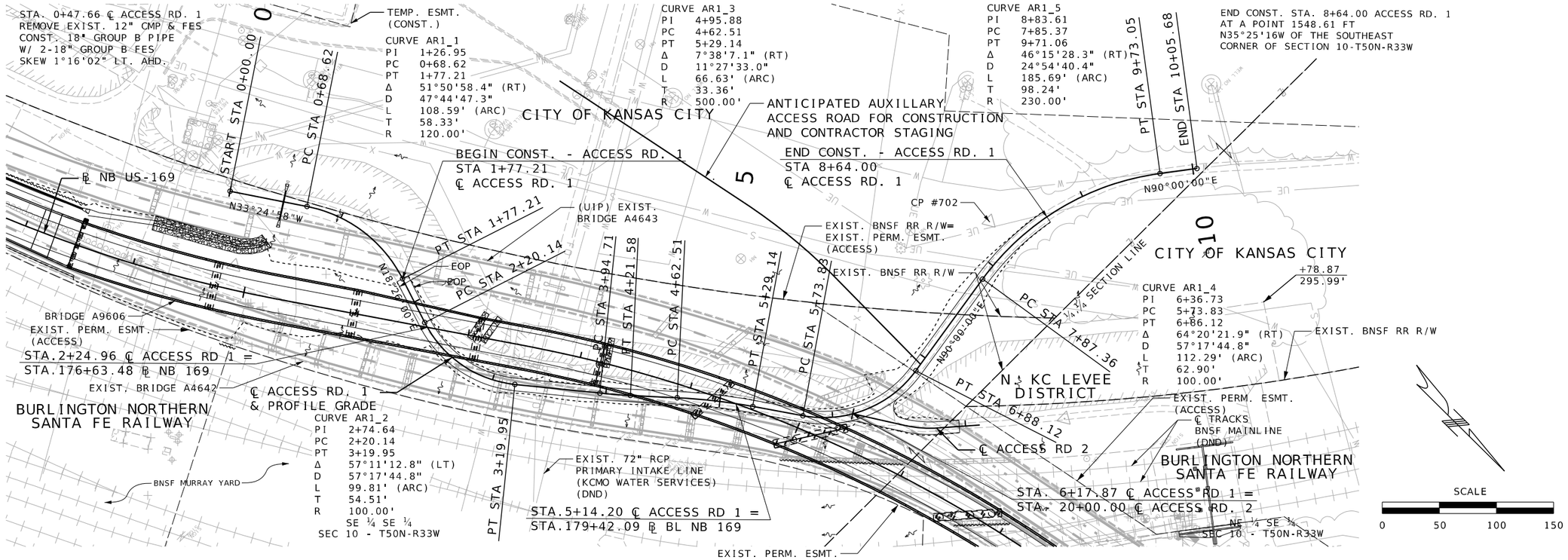
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

BARRIER, GUARDRAIL, & DRAINAGE PLAN & PROFILE US-169 SHEET 3 OF 5

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PLAN & PROFILE
ACCESS RD. 1
SHEET 4 OF 5

THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	7

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

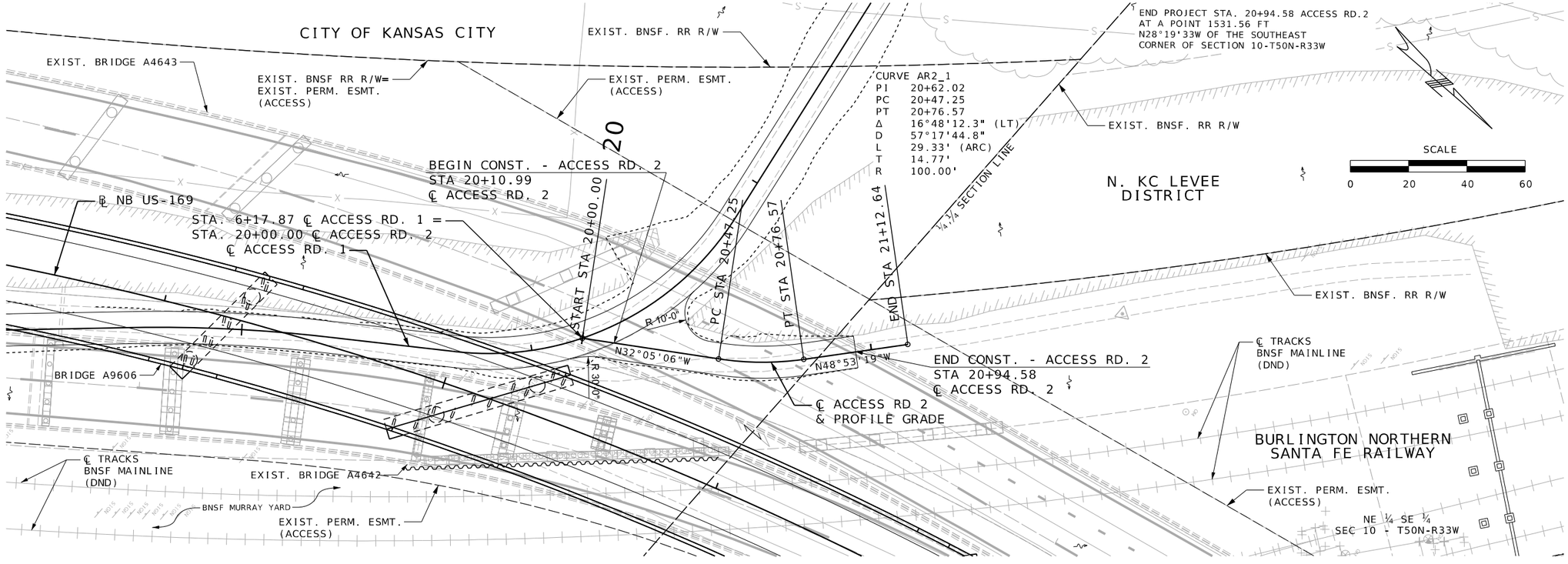
DESCRIPTION | DATE

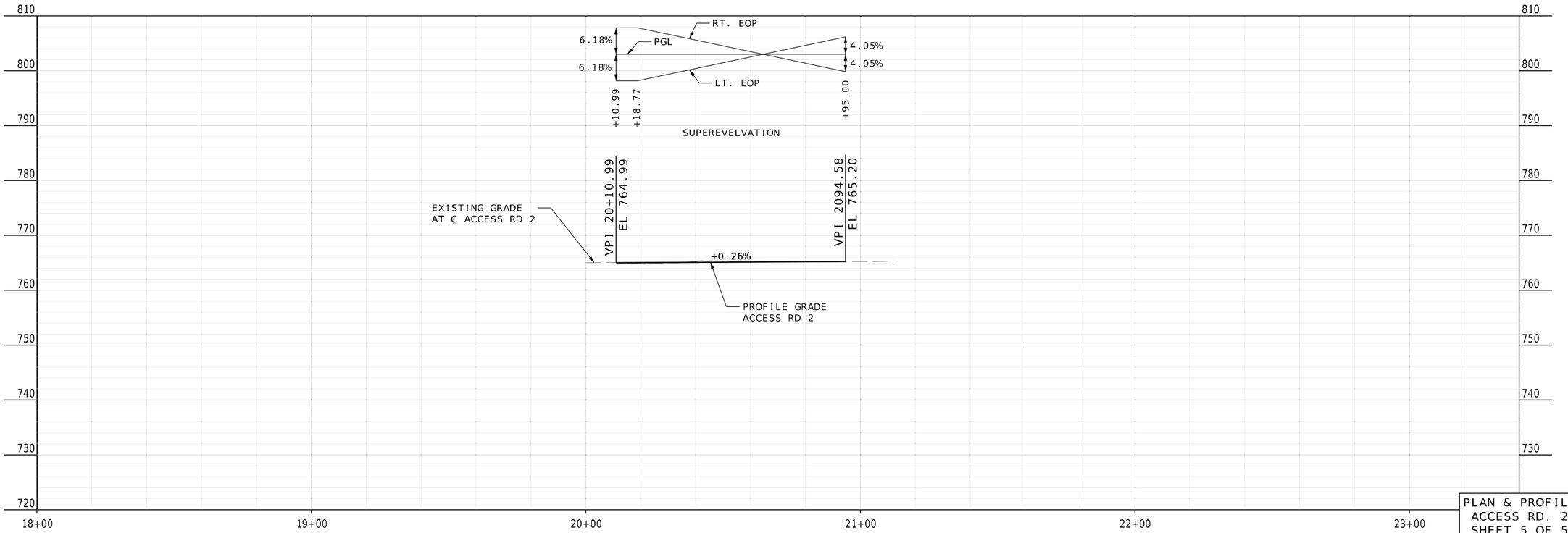
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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PLAN & PROFILE
ACCESS RD. 2
SHEET 5 OF 5

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	8

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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MISSOURI RIVER

APPROX. LOW WATER LINE

NE ¼ NE ¼
SEC 15 - T50N-R33W

SECTION LINE

+40.00
290.00'

+40.00
205.00'

+57.13
120.00'

+57.00
86.30'

PC STA 166+57.71

TEMP. ESMT. (CONST.)

NKCLD
PERM. ESMT.

+60.00
360.00'

+00.00
400.00'

+75.00
265.00'

+15.00
275.00'

1

CITY OF KANSAS CITY
358,934 SF TEMP. ESMT. (CONSTRUCTION)

N. KC LEVEE
DISTRICT
(NO ACQUISITION)

170

+34.96
83.39'

℄ SB US-169

EXIST. BNSF RR R/W
EXIST. PERM. ESMT.
(ACCESS)

R=2516.60'

175

℄ ACCESS RD. 1

EXIST. PERM. ESMT
(ACCESS)

S.L.

N33°57'07"W

S.L.

℄ NB US-169

EXIST. ℄ NB US-169

LAND TIE
A 1" BAR IN RAILYARD
SOUTHEAST CORNER OF SECTION 10
T50N, R33W, 218.44' N44°54'58"E
OF EXISTING ℄ NB US-169 STA. 165+00.00
RECORDED DOC #600-52238

CURVE EXIST. NB 169_3
PI 172+77.52
PC 166+57.71
PT 178+53.86
Δ 37°2'2.2" (RT)
D 3°5'46.0"
L 1,196.15' (ARC)
T 619.81'
R 1,850.58'

SE ¼ SE ¼
SEC 10 - T50N-R33W

SECTION LINE

SW ¼ SW ¼
SEC 11 - T50N-R33W

SCALE
0 40 80 120

EXIST. ESMT. (CONST.)

3

BURLINGTON NORTHERN
SANTA FE RAILWAY

SEE SHEET 11

NOTE: ALL STATIONS AND OFFSETS OF R/W
MEASURED FROM EXIST. ℄ NB US-169

R/W SHEET
US-169
SHEET 1 OF 3

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	9

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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MISSOURI RIVER

APPROX. LOW WATER LINE

TEMP. ESMT. (CONST.)

+30.00
380.00'

+40.00
315.00'

1

CITY OF KANSAS CITY

SEE SHEET 9

SE ¼ SE ¼
SEC 10 - T50N-R33W

EXIST. PERM. ESMT. (ACCESS)= TEMP. ESMT. (CONST.)

EXIST. BNSF RR R/W
EXIST. PERM. ESMT (ACCESS)

R=2516.60'

180

+90.55
122.27'

℄ ACCESS RD. 2

STA 178+53.86

STA 179+38.87

PC

PI

PT

Δ=25°46'42.3" (RT)

°57'07"W

S.L.

N36° 0'34"W

EXIST. ℄ NB US-169

EXIST. PERM. ESMT (ACCESS)

℄ NB US-169

3

BURLINGTON NORTHERN SANTA FE RAILWAY

SEE SHEET 11

CURVE EXIST. NB 169_4
PI 180+76.17
PC 179+38.87
PT 182+08.82
Δ 25°46'42.3" (RT)
D 9°32'57.5"
L 269.95' (ARC)
T 137.30'
R 600.00'

NE ¼ SE ¼
SEC 10 - T50N-R33W

SCALE
0 40 80 120

NOTE: ALL STATIONS AND OFFSETS OF R/W MEASURED FROM EXIST. ℄ NB US-169

1/4,1/4 SECTION LINE

NW ¼ SE ¼
SEC 10 - T50N-R33W

+80.00
480.00'

1/4, 1/4 SECTION LINE

TEMP. ESMT. (CONST.)

+25.05
340.00'

R=1951.35'

+80.07
295.99'

R=2021.35'

EXIST. BNSF RR R/W = TEMP. ESMT. (CONST.)

EXIST. BNSF RR R/W = TEMP. ESMT. (CONST.)

+29.81
246.62'

EXIST. ESMT. (SEWER)

+53.33
185.84'

2

N. KC LEVEE DISTRICT

NKCLD ESMT.

+51.77
179.06'

16,273 SF
TEMP. ESMT. (CONSTRUCTION)

+25.68
81.53'

+26.08
81.47'

PT STA 182+08.82

NKCLD ESMT.

EXIST. PERM. ESMT. (CONST.)

EXIST. R/W

185

LAND TIE
A 1" BAR IN RAILYARD
SOUTHEAST CORNER OF SECTION 10
T50N, R33W, 2359.36' S20°21'51"E
OF ℄ NB US-169 STA. 190+00.00
RECORDED DOC #600-52238

℄ SB US-169

℄ RAMP 4

EXIST. PERM. ESMT. (ACCESS)

NKCLD PERM. ESMT.

S.L.

N10°43'52"W

EXIST. BNSF RR R/W

EXIST. PERM. ESMT. (ACCESS)

R/W SHEET
US-169
SHEET 2 OF 3

STATE OF MISSOURI
THOMAS M, GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	10

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.

9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400

Certificate of Authority
No.: 000165

BMcD Project No. 154749

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1 CITY OF KANSAS CITY
SEE SHEET 9

2 N. KC LEVEE DISTRICT
SEE SHEET 10

3 BURLINGTON NORTHERN SANTA FE RAILWAY
271,379 SF TEMP. ESMT. (CONSTRUCTION)

4 CITY OF KANSAS CITY
60,548 SF TEMP. ESMT. (CONSTRUCTION)

N. KC LEVEE DISTRICT
(NO ACQUISITION)

175
180
185

℄ ACCESS RD. 1
℄ ACCESS RD. 2
℄ NB US-169
℄ SB US-169
EXIST. ℄ NB US-169
EXIST. BNSF RR R/W
EXIST. BNSF RR R/W=
EXIST. PERM. ESMT. (ACCESS)
EXIST. PERM. ESMT.
EXIST. R/W
S.L.
TEMP. ESMT. (CONST.)
NKCLD PERM. ESMT.
℄ SB MO-9
℄ NB MO-9
9 HWY.

N33°57'07"W
N36°30'34"W
S20°59'55"E

R = 1872.58'
R = 578'

STA 178+53.86
STA 179+38.87
PT STA 182+08.82

+05.00 22.00'
+53.86 22.00'
+38.87 22.00'
+35.00 22.00'
+34.00 180.00'
+02.65 180.00'
+08.64 325.15'
+39.87 361.57'
+34.54 290.52'
+50.00 331.97'
+97.20 273.80'
+40.00 404.11'
+22.90 422.59'
+50.55 445.21'
+71.90 327.60'
+31.18 487.86'

SE ¼ SE ¼
SEC 10 - T50N-R33W

NE ¼ SE ¼
SEC 10 - T50N-R33W

SW ¼ SW ¼
SEC 11 - T50N-R33W

1/4. 1/4 SECTION LINE
SECTION LINE

SCALE
0 40 80 120

NOTE: ALL STATIONS AND OFFSETS OF R/W MEASURED FROM EXIST. ℄ NB US-169

R/W SHEET
US-169
SHEET 3 OF 3

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED	1/28/2026
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	11
COUNTY	CLAY
JOB NO.	JKU0099
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

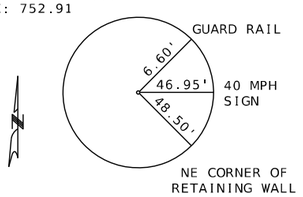
NO.	DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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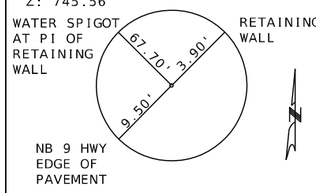
CP-598
N: 1089555.009
E: 2763627.559
Z: 752.91



191+03.35 ℄ NB 169
OFF. 88.22' LT.

5/8" IRON BAR

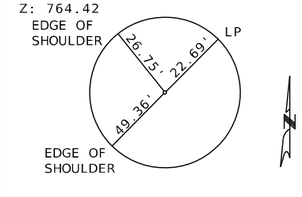
CP-599
N: 1088884.781
E: 2764455.744
Z: 745.56



182+89.45 ℄ NB 169
OFF. 600.69' RT.

5/8" IRON BAR

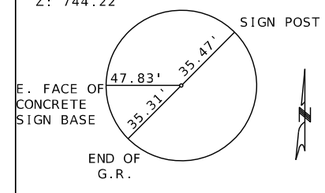
CP-600
N: 1089335.567
E: 2764136.182
Z: 764.42



187+91.95 ℄ NB 169
OFF. 370.57' RT.

1/2" IRON BAR WITH CAP

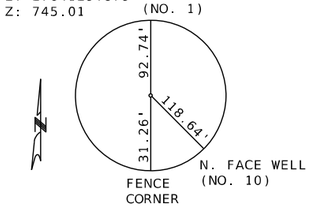
CP-601
N: 1089887.326
E: 2763365.187
Z: 744.22



194+78.71 ℄ NB 169
OFF. 284.13' LT.

1/2" IRON BAR WITH CAP

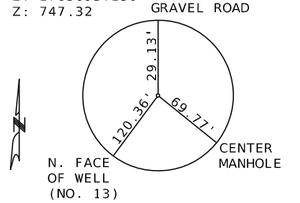
CP-701
N: 1087593.942
E: 2764129.879
Z: 745.01



170+40.24 ℄ NB 169
OFF. 240.59' RT.

1/2" IRON BAR WITH CAP

CP-702
N: 1088487.153
E: 2763695.250
Z: 747.32



180+71.57 ℄ NB 169
OFF. 233.78' LT.

1/2" IRON BAR WITH CAP

REFERENCE POINTS
SHEET 1 OF 1

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

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ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	12

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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)

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BMcD Project No. 154749

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ALL PROJECT COORDINATES HAVE BEEN PROJECTED FROM THE MISSOURI STATE PLANE COORDINATE (SPC) SYSTEM OF 1983 USING AN AVERAGE PROJECT PROJECTION (GRID TO GROUND) FACTOR. TO GET BACK TO STATE PLANE COORDINATES MULTIPY THE PROJECT COORDINATES BY THE AVERAGE GRID FACTOR AS SHOWN IN THE "REFERENCE CONTROL INFORMATION" PORTION OF THIS TABLE.

PROJECT COORDINATE INFORMATION

COORDINATE SYSTEM	Missouri SPC of 1983 West Zone
HORIZONTAL DATUM	NAD 83 EPOCH 2010.00
VERTICAL DATUM	NAVD 88
GEOID MODEL	GEOID 12B
ELEVATIONS DETERMINED BY	GPS OBSERVATIONS W/ COMBINATION OF LEVEL LOOP THROUGH CONTROL
PROJECT PROJECTION FACTOR	1.000088408

HORIZONTAL REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	Missouri SPC of 1983 West Zone
CONTROL STATION	MOIP Independence CORS ARP
DESIGNATION	MOIP Independence CORS ARP
CORS_ID	MOIP
PID	DR4005
LATITUDE	39°07'18.59712"(N)
LONGITUDE	094°23'14.84177"(W)
NORTHING (M)	327980.066
EASTING (M)	859731.965
ZONE	WEST
PROJECT AVERAGE GRID FACTOR	0.9999116

VERTICAL REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	Missouri SPC of 1983 West Zone
CONTROL STATION	ELEVATION: 768.18 FEET
DESIGNATION	L 345
CORS_ID	N/A
PID	KE 1647
LATITUDE	39°07'17"(N)
LONGITUDE	094°35'15"(W)
NORTHING (M)	331630
EASTING (M)	842440
VERTICAL ORDER	FIRST CLASS II
PROJECT AVERAGE GRID FACTOR	0.9999116

EXAMPLE OF PROJECT COORDINATE TO S.P.C.

PROJECT NORTHING X AVERAGE GRID FACTOR
= STATE PLANE NORTHING
PROJECT EASTING X AVERAGE GRID FACTOR
= STATE PLANE EASTING

EXAMPLE: CONTROL POINT #502
N 1082758.64 X 0.9999116 = N 1082662.92
E 2764320.60 X 0.9999116 = E 2764076.23

LINEAR UNIT CONVERSION

1 METER = 3.280833333 US SURVEY FEET (USFT)

CONTROL POINTS LISTING

POINT NO	STATION	LOCATION	OFFSET (USFT)	MODIFIED STATE PLANE (GROUND) NORTHING	EASTING	Elevation	DESCRIPTION
PROJECT CONTROL POINTS							
601	194+77.52	US-169 NB CL	-284.13'	1089887.326	2763365.187	744.27	1/2" REBAR W/ CAP
600	187+91.85	US-169 NB CL	370.57'	1089335.651	2764136.089	764.44	1/2" REBAR W/ CAP
701	170+40.24	US-169 NB CL	240.59'	1088487.153	2763695.250	747.32	1/2" REBAR W/ CAP
702	180+71.57	US-169 NB CL	-233.78'	1088487.153	2763695.250	747.32	1/2" REBAR W/ CAP
ALIGNMENTS							
1	87+96.29	Exist. US-169 NB CL	0.00'	1079400.750	2764307.500		START
2	100+00.00	Exist. US-169 NB CL	0.00'	1080604.430	2764317.010		PI
3	120+97.30	Exist. US-169 NB CL	0.00'	1082701.640	2764336.060		PC
4	122+10.78	Exist. US-169 NB CL	2.25'	1082815.120	2764337.090		PI
5	123+24.14	Exist. US-169 NB CL	0.00'	1082928.150	2764347.090		PRC
6	125+13.36	Exist. US-169 NB CL	3.74'	1083116.630	2764363.770		PI
7	127+02.38	Exist. US-169 NB CL	0.00'	1083305.840	2764365.500		PT
8	166+57.71	Exist. US-169 NB CL	0.00'	1087261.010	2764401.710		PC
9	172+77.52	Exist. US-169 NB CL	101.04'	1087880.730	2764407.380		PI
10	178+53.86	Exist. US-169 NB CL	0.00'	1088378.970	2764038.630		PT
11	179+38.87	Exist. US-169 NB CL	0.00'	1088447.230	2763988.050		PC
12	180+76.17	Exist. US-169 NB CL	15.51'	1088557.650	2763906.360		PI
13	182+08.82	Exist. US-169 NB CL	0.00'	1088692.550	2763880.800		PT
14	204+62.05	Exist. US-169 NB CL	0.00'	1090906.370	2763461.250		END
15	165+00.00	US-169 NB BL	0.00'	1087103.307	2764400.266		START
16	166+57.71	US-169 NB BL	0.00'	1087261.013	2764401.709		PC
17	168+72.63	US-169 NB BL	-12.44'	1087475.919	2764403.677		PI
18	170+85.63	US-169 NB BL	0.00'	1087685.557	2764356.340		PCC
19	173+10.50	US-169 NB BL	20.89'	1087904.910	2764306.809		PI
20	175+30.22	US-169 NB BL	0.00'	1088091.446	2764181.216		PT
21	177+48.42	US-169 NB BL	0.00'	1088272.441	2764059.354		PC
22	179+94.97	US-169 NB BL	25.07'	1088476.958	2763921.654		PI
23	182+34.76	US-169 NB BL	0.00'	1088719.230	2763875.746		PT
24	189+98.81	US-169 NB BL	0.00'	1089469.839	2763733.480		END
25	0+00.00	ACCESS RD. 1	0.00'	1087995.344	2764143.270		START
26	0+68.62	ACCESS RD. 1	0.00'	1088052.618	2764105.481		PC
27	1+26.95	ACCESS RD. 1	-13.43'	1088101.308	2764073.357		PI
28	1+77.21	ACCESS RD. 1	0.00'	1088156.618	2764091.801		PT
29	2+41.57	ACCESS RD. 1	0.00'	1088217.733	2764112.151		PC
30	2+69.21	ACCESS RD. 1	7.13'	1088243.929	2764120.892		PI
31	2+92.07	ACCESS RD. 1	0.00'	1088265.277	2764103.330		PT
32	3+97.95	ACCESS RD. 1	0.00'	1088347.041	2764036.069		PI (POT)
33	5+17.73	ACCESS RD. 1	0.00'	1088441.533	2763962.514		PC
34	5+22.43	ACCESS RD. 1	-0.11'	1088445.238	2763959.632		PI
35	5+27.11	ACCESS RD. 1	0.00'	1088449.246	2763957.109		PT
36	5+72.87	ACCESS RD. 1	0.00'	1088487.838	2763932.515		PC
37	6+37.85	ACCESS RD. 1	19.26'	1088542.633	2763897.596		PI
38	6+88.12	ACCESS RD. 1	0.00'	1088532.938	2763833.340		PT
39	7+87.36	ACCESS RD. 1	0.00'	1088518.256	2763735.194		PC
40	8+85.60	ACCESS RD. 1	-20.10'	1088503.673	2763638.041		PI
41	9+73.05	ACCESS RD. 1	0.00'	1088563.779	2763560.334		PT
42	10+05.68	ACCESS RD. 1	0.00'	1088583.743	2763534.523		END
43	20+00.00	ACCESS RD. 2	0.00'	1088520.139	2763899.039		START
44	20+47.25	ACCESS RD. 2	0.00'	1088560.228	2763873.943		PC
45	20+62.02	ACCESS RD. 2	1.09'	1088572.742	2763866.098		PI
46	20+76.57	ACCESS RD. 2	0.00'	1088582.454	2763854.970		PT
47	21+12.64	ACCESS RD. 2	0.00'	1088606.156	2763827.799		END

PROJECT COORDINATES SHOWN HEREON ARE BASED ON GRID NORTH OF THE MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD-83, NAVD-88 PER THE 12B GEOID AND MODIFIED TO STATE PLANE (GROUND). ALL COORDINATES SHOWN ARE IN U.S. SURVEY FEET

(1) GROUND DISTANCE

NOTE: THE RECIPROCAL OF THE AVERAGE GRID FACTOR IS USED AS A MULTIPLIER FROM STATE PLANE DISTANCE TO GROUND DISTANCE.

GRID DISTANCE TO GROUND DISTANCE FACTOR: 1.000088408
GROUND DISTANCE TO GRID DISTANCE FACTOR: 0.9999116

COORDINATE POINTS
SHEET 1 OF 1

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

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DATE PREPARED
1/30/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	13

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

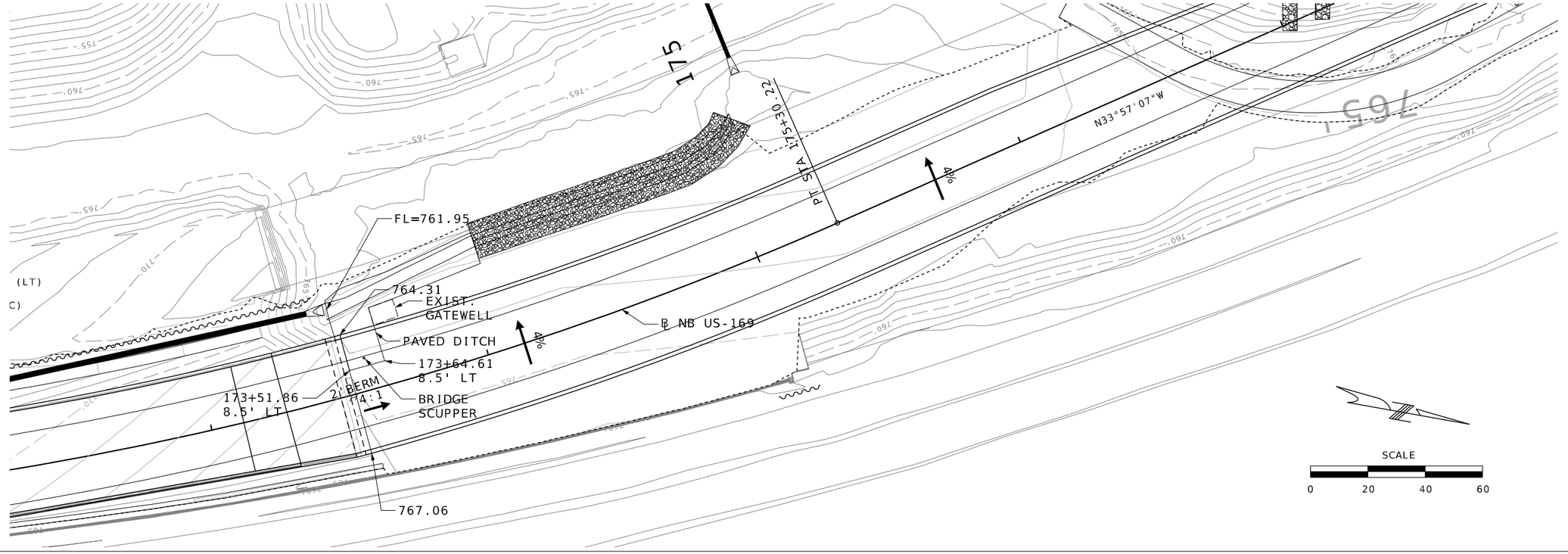
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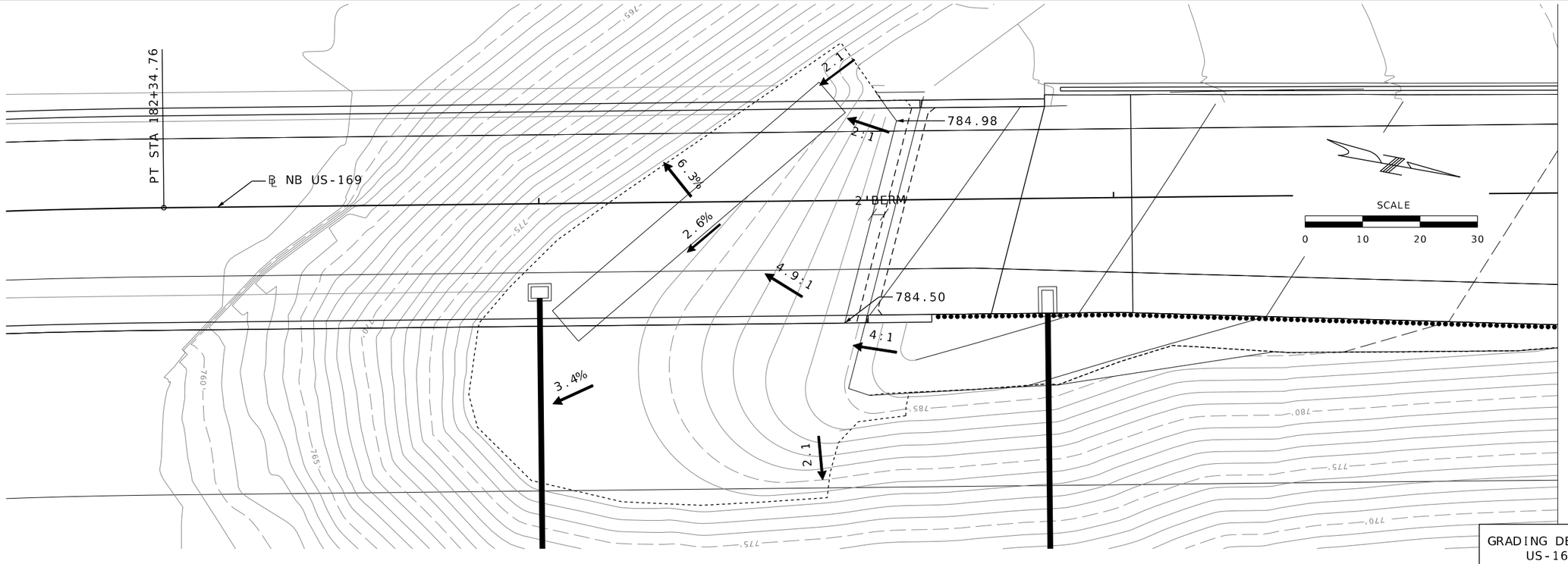
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
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Certificate of Authority
No.: 000165
BMcD Project No. 154749

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GRADING DETAILS
US-169
SHEET 1 OF 1

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

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1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	14

COUNTY
CLAY

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JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

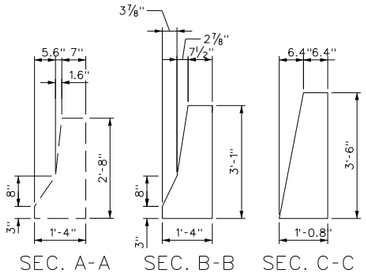
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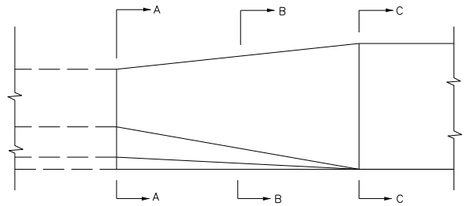
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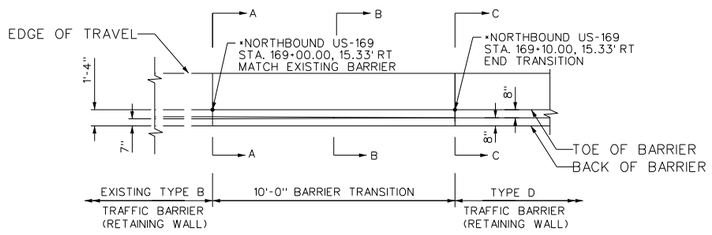
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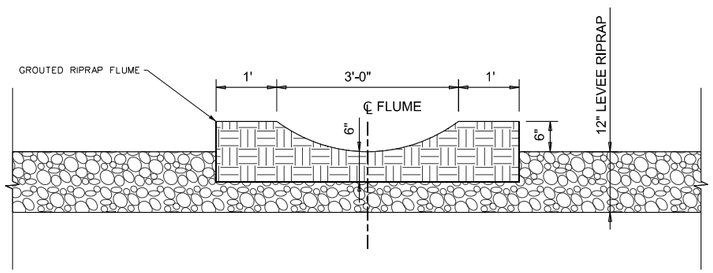
SEC. A-A SEC. B-B SEC. C-C



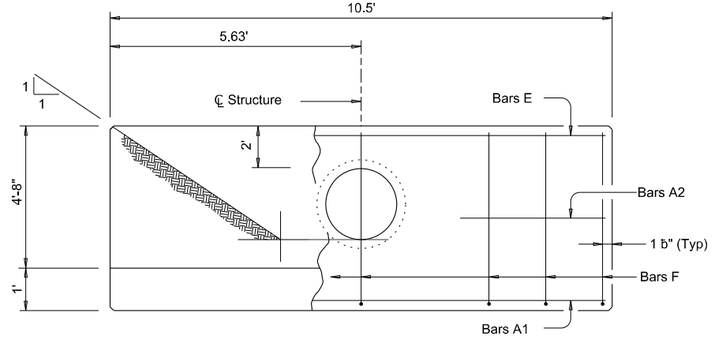
FRONT VIEW
N.T.S.



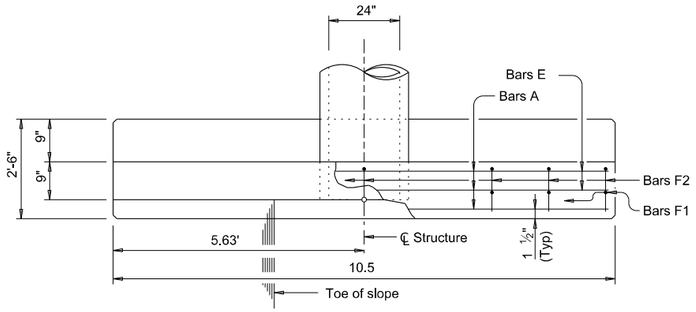
PLAN VIEW
TYPE D CONCRETE TRAFFIC BARRIER TRANSITION
NORTHBOUND US-169 (RT)
N.T.S.



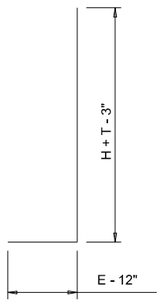
GROUTED RIPRAP FLUME
SEE JOB SPECIAL PROVISIONS
N.T.S.



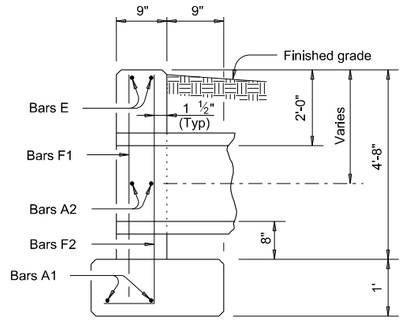
ELEVATION



PLAN OF NON-SKEWED PIPES



BARS F2



SECTION AT
CENTER OF PIPE

TABLE OF REINFORCING STEEL			
Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' - 6"	~
E	#5	~	2
F	#5	1' - 0"	~

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

SPECIAL DETAILS
SHEET 1 OF 1

STATE OF MISSOURI
THOMAS M. GREER
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KC	15

COUNTY
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Traffic Control Legend, Sign Spacing, Device Spacing, Channelizing Taper Lengths And Recommended Maximum Speed Reductions

SIGN SPACING FOR ADVANCE SIGN SERIES **		
PERMANENT POSTED SPEED MPH	UNDIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200'	200'
40-45	350'	500'
50-55	500'	1000'
60-70	1000'	SA - 1000' SB - 1500' SC - 2640'

** THE SA DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN.

THE SB DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS.

THE SC DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS.

(THE "FIRST SIGN" IS THE SIGN IN A THREE-SIGN SERIES THAT IS CLOSEST TO THE TEMPORARY TRAFFIC CONTROL ZONE. THE "THIRD SIGN" IS THE SIGN THAT IS FURTHEST UPSTREAM FROM THE TEMPORARY TRAFFIC CONTROL ZONE)

FORMULAS FOR DETERMINING TAPER LENGTHS

L = W X S FOR 45 MPH OR MORE

L = $\frac{WS^2}{60}$ FOR 40 MPH OR LESS

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANITICIPATED OPERATING SPEED IN MPH.

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- FLAGGER
- CHANNELIZER
- PROTECTIVE VEHICLE WITH WORK SIGN, FLASHING ARROW PANEL AND REAR-MOUNTED IMPACT ATTENUATOR UNIT.
- FLASHING ARROW PANEL
- CHANGEABLE MESSAGE BOARD
- BARRICADE
- DIRECTIONAL INDICATOR BARRICADE

LEGEND NOTE:

THE PROTECTIVE VEHICLE SIGN SHALL BE MOUNTED AT A RECOMMENDED HEIGHT OF 48 IN. ABOVE THE ROAD SURFACE.

TAPER LENGTHS AND SPACING FOR CHANNELIZERS					
PERMANENT POSTED SPEED	MINIMUM LANE TAPER LENGTH (T2)(2)	MINIMUM SHOULDER TAPER LENGTH (T1)(1) BASED ON 10' SHOULDER	BUFFER LENGTH	MAXIMUM CHANNELIZER SPACING	
				THROUGH TAPER	THROUGH WORK AREA
MPH	12'		FT		
0-35	245'	70'	250'	35'	40'
40-45	540'	150'	360'	40'	80'
50-55	660'	185'	495'	50'	80'
60-70	840'	235'	730'	60'	120'

(1) SHOULDER TAPER LENGTH BASED ON 10 FT. (STANDARD SHOULDER WIDTH) OFFSET.
(2) LANE TAPER BASED ON 12 FT. (STANDARD LANE WIDTH) OFFSET.

GENERAL NOTES:

1. SEE STANDARD PLAN 616.10 FOR DETAILS AND ITEMS NOT SHOWN.
2. EXISTING SIGNS SHALL BE COVERED DURING WORKING HOURS ONLY IF IN CONFLICT WITH TRAFFIC CONTROL PLANS.
3. NO DIRECT PAYMENT WILL BE MADE FOR RELOCATING, COVERING, UNCOVERING OR REMOVING SIGNS.
4. CONES ALLOWABLE FOR DAYTIME OPERATIONS ON MINOR ROUTES ONLY.
5. LOCATE FLASHING ARROW PANEL AT BEGINNING OF TAPER WHEN FEASIBLE, ARROW PANELS ARE ALWAYS LOCATED BEHIND CHANNELIZERS OR CONES.

TEMPORARY TRAFFIC BARRIER:

(1) A FLARE RATE OF 8:1 FOR THE FLARED CONCRETE BARRIER IS USED FROM THE EDGE OF TRAVELWAY TO THE LIMITS OF THE CLEAR ZONE WHERE THE SIDE SLOPE IS 6:1 OF FLATTER.

(2) CONCRETE BARRIER WITHIN THE CLEAR ZONE WILL USE AN APPROVED CRASH CUSHIION WHEN THE NORMAL SPEED LIMIT IS GREATER THAN 35 MPH.

(3) CONCRETE BARRIER WITHIN THE CLEAR ZONE CAN USE EITHER A BARRIER HEIGHT TRANSITION OR AN APPROVED CRASH CUSHION WHEN THE NORMAL POSTED SPEED LIMIT IS LESS THAN OR EQUAL TO 35 MPH.

(4) REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED. TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.

(5) FOR TEMPORARY TRAFFIC BARRIER, REFER TO EPG 616.6.85 TEMPORARY TRAFFIC BARRIER.

EPG TABLE 616.12 RECOMMENDED MAXIMUM SPEED REDUCTIONS	
ACTIVITY (I.E. WORKERS, EQUIPMENT OR MATERIAL) LOCATION	RECOMMENDED WORK ZONE SPEED REDUCTION (WHEN APPLICABLE)
10 FT. BEYOND EDGE OF TRAVELWAY TO EDGE OF RIGHT OF WAY	NO SPEED REDUCTION
IN TRAFFIC LANE OR WITHIN 10FT. OF THE TRAFFIC LANE	10 MPH
HEAD-TO-HEAD ON MULTILANE	10 MPH
SPECIAL CIRCUMSTANCES WITHIN A TEMPORARY TRAFFIC CONTROL WORK ZONE MAY WARRANT A LOWER SPEED LIMIT THAN RECOMMENDED ABOVE. ALL SPEED LIMIT REDUCTIONS GREATER THAN 10 MPH SHALL BE DOCUMENTED, SUBMITTED TO AND APPROVED BY THE DISTRICT WORK ZONE COORDINATOR.	

TRAFFIC CONTROL
SHEET 1 OF 12

STATE OF MISSOURI
TAWN A NUGENT
NUMBER PE-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	16

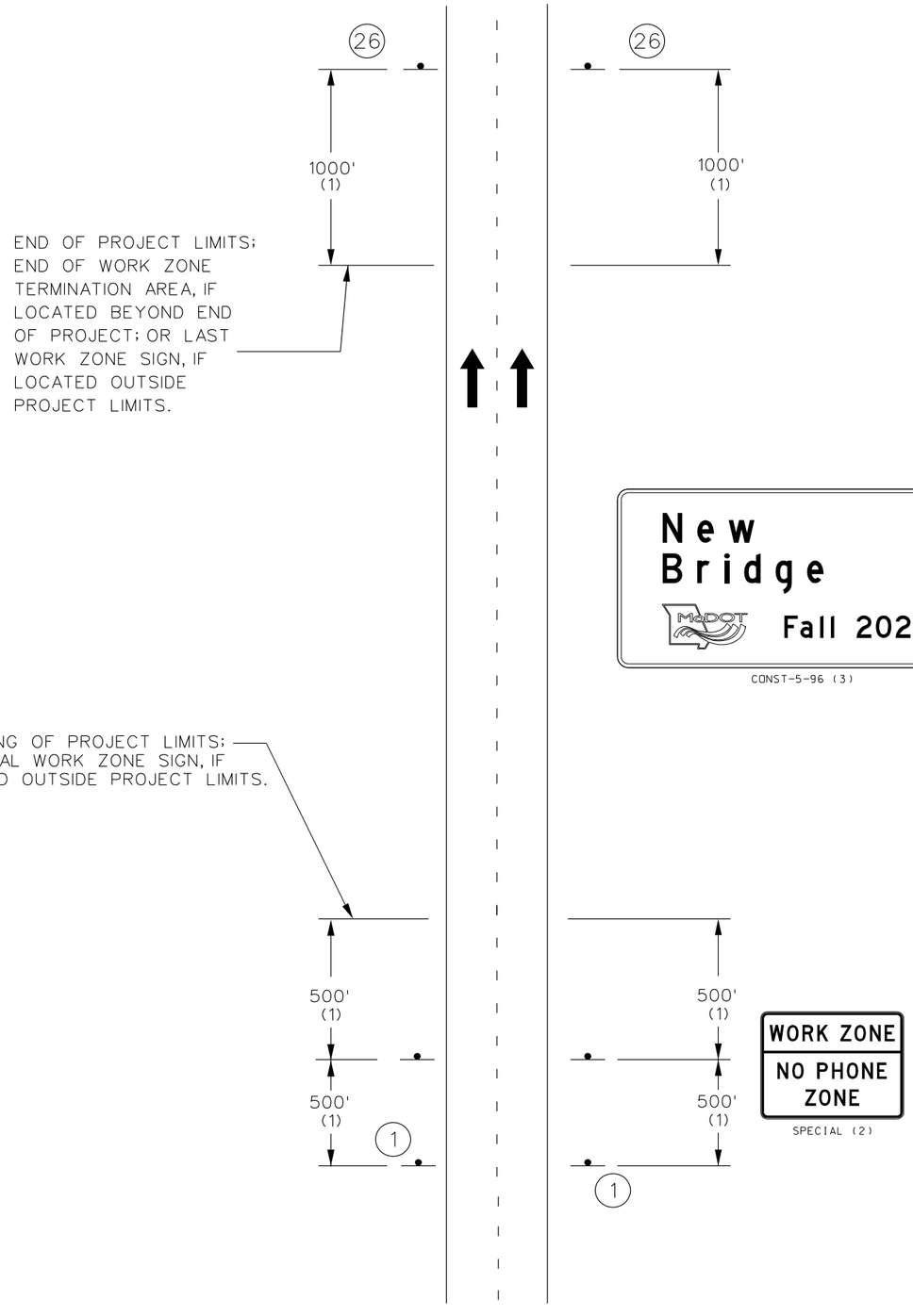
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TREK DESIGN GROUP, LLC
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NOTES:

SIGN G020-1 IS REQUIRED PER EPG 616.6.3.

SIGN G020-2 IS USED ON ALL PROJECTS WHERE SIGN G020-1 IS USED.

OTHER SIGNS SUCH AS DETOUR OR ALTERNATE ROUTE SIGNING MAY BE USED OUTSIDE THE PROJECT LIMITS.

ANY EXISTING SIGNING THAT CONFLICTS WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED.

(1) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS. WHERE TRAFFIC BACKUPS ARE EXPECTED BEYOND THE ADVANCE WARNING AREA, ADDITIONAL SIGNING MAY BE NEEDED.

(2) THE "WORK ZONE NO PHONE ZONE" SIGN IS PLACED A MINIMUM OF 500 FEET BEFORE THE ROAD WORK AHEAD SIGN.

(3) THE "POINT OF PRESENCE" SIGN, CONST-5-96 IS PLACED IN A VISABLE AREA WITHIN THE PROJECT LIMITS PROVIDED ITS PLACEMENT DOES NOT DISRUPT A SEQUENCE OF SIGNS. IF A VISIBLE LOCATIN WITHIN THE PROJECT IS NOT AVAILABLE, THE SIGN MAY BE PLACED 500 FEET BEFORE SIGN G020-1, ROAD WORK NEXT XX MILES.

BEGIN/END OF PROJECT SIGNING

BEGIN/END
TRAFFIC CONTROL
SHEET 2 OF 12

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER 2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	17

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

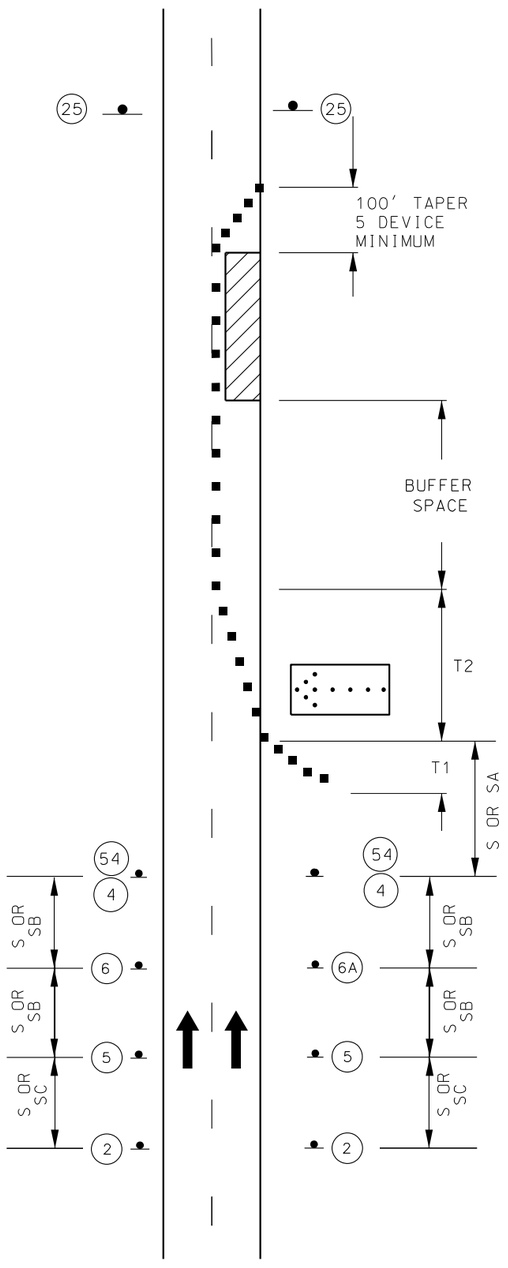
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JEFFERSON CITY, MO 65102
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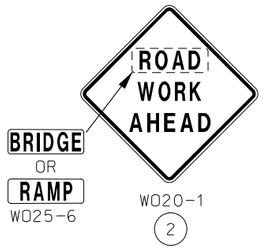
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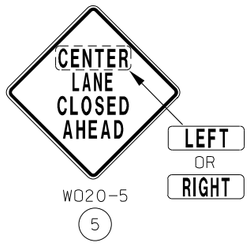
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TWO-LANE DIVIDED HIGHWAY





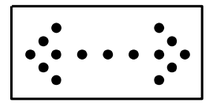














NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.

THIS INFORMATION ALSO SHALL BE USED WHEN WORK IS BEING PREFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY. IN THIS CASE, THE LEFT LANE CLOSED SIGNS AND THE CORRESPONDING MERGE OR LANE ENDS SIGN SHALL BE SUBSTITUTED.

WHEN A SIDE ROAD INTERSECTS THE HIGHWAY WITHIN THE TTC ZONE ADDITIONAL TTC DEVICES SHALL BE PLACED AS NEEDED.

TEMPORARY TRAFFIC BARRIERS, IF USED SHALL COMPLY WITH THE PROVISIONS IN EPG 617.1 TEMPORARY TRAFFIC BARRIER AND REVIEW LANE CLOSURE WITH A TEMPORARY TRAFFIC BARRIER.

REVIEW EPG LANE CLOSURE WITH WIDTH AND LANE RESTRICTIONS DE/CM FOR A LANE CLOSURE WITH WIDTH RESTRICTIONS.

AN ARROW BOARD SHALL BE USED WHEN A FREEWAY LANE IS CLOSED. WHEN MORE THAN ONE FREEWAY LANE IS CLOSED, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

REVIEW EPG 616.12.7 WARNING LIGHTS WHEN SEQUENTIAL OR WARNING LIGHTS SHOULD BE USED ON NIGHTTIME OPERATIONS.

IF RUMBLE STRIPS ARE USED, REVIEW EPG 616.13.6 RUMBLE STRIPS.

REVIEW EPG 616.11.1 CHANNELIZING DEVICES FOR DIFFERENT TYPES AND GUIDELINES FOR THE DEVICES

STATIONARY
LANE CLOSURE
DIVIDED HIGHWAY
TRAFFIC CONTROL
SHEET 3 OF 12

STATE OF MISSOURI
TAWN A NUGENT
NUMBER PE-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

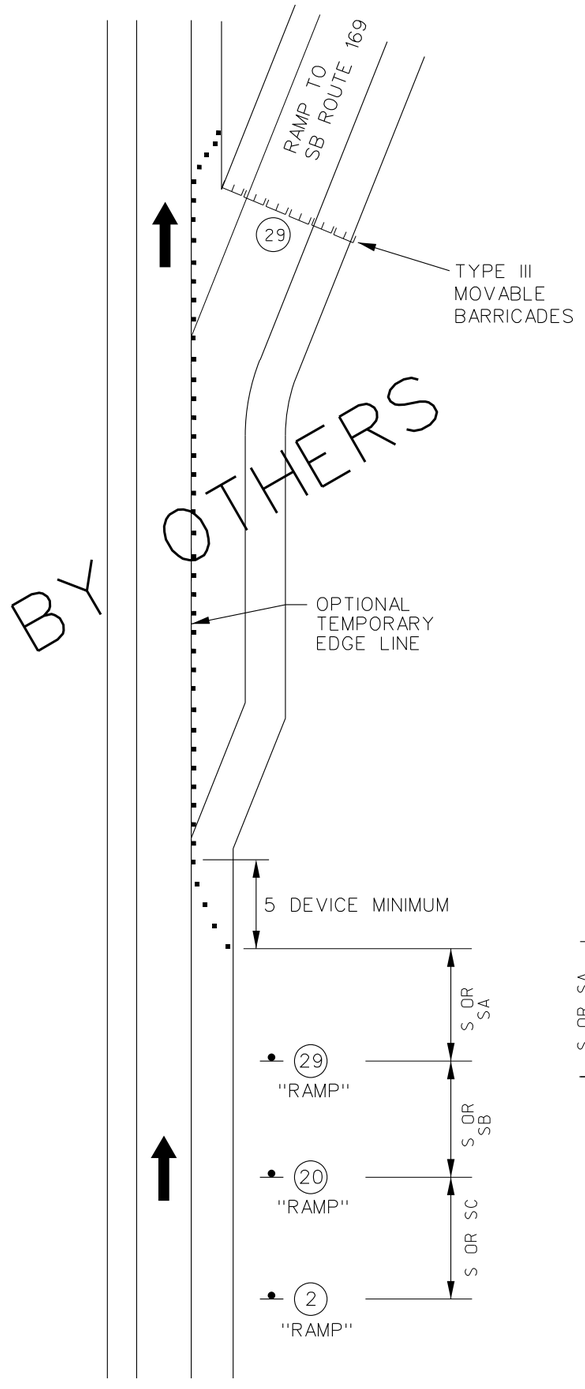
DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	18

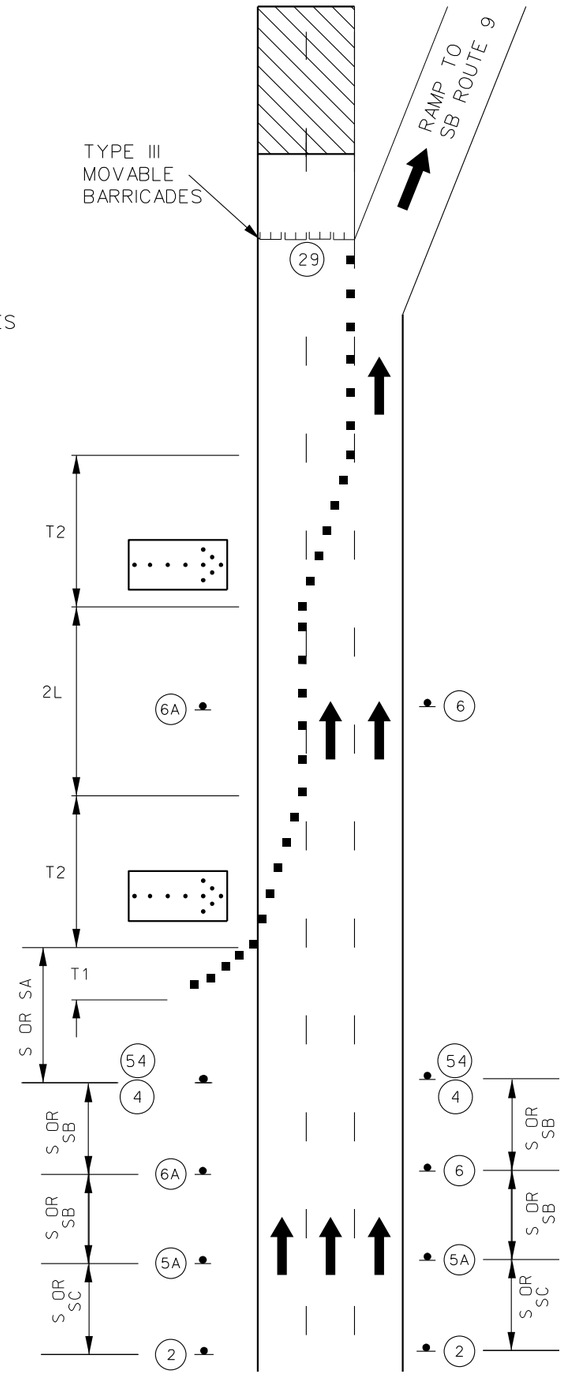
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

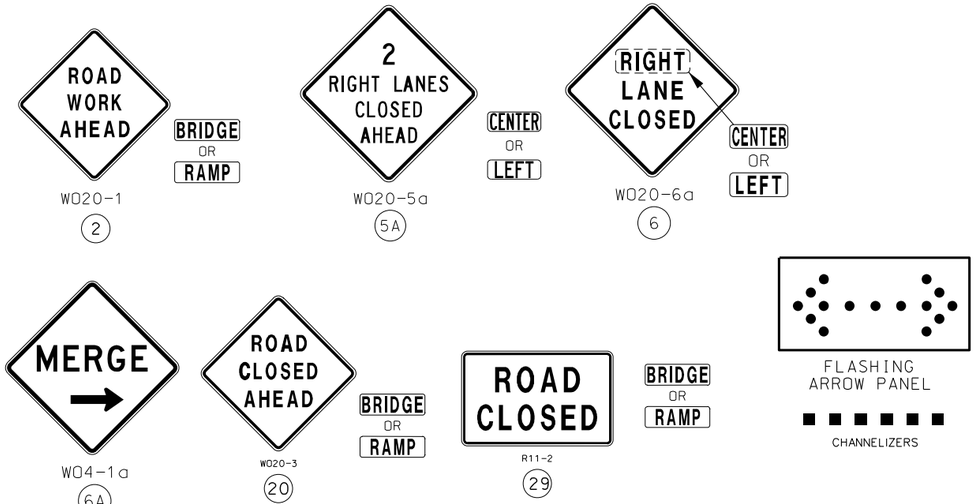
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JEFFERSON CITY, MO 65102
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HIGHWAY 9 RAMP CLOSURE



SB US 169 CLOSURE



CMS SHALL BE USED IN ADVANCE OF TRAFFIC CONTROL SETUP WITH THE MESSAGE "SB US 169 CLOSED AHEAD/USE ALT. ROUTES"

NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.

THIS INFORMATION ALSO SHALL BE USED WHEN WORK IS BEING PREFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY. IN THIS CASE, THE LEFT LANE CLOSED SIGNS AND THE CORRESPONDING MERGE OR LANE ENDS SIGN SHALL BE SUBSTITUTED.

AN ARROW BOARD SHALL BE USED WHEN A FREEWAY LANE IS CLOSED. WHEN MORE THAN ONE FREEWAY LANE IS CLOSED, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

REVIEW EPG 616.12.7 WARNING LIGHTS WHEN SEQUENTIAL OR WARNING LIGHTS SHOULD BE USED ON NIGHTTIME OPERATIONS.

IF RUMBLE STRIPS ARE USED, REVIEW EPG 616.11.1 RUMBLE STRIPS.

REVIEW EPG 616.13.6 CHANNELIZING DEVICES FOR DIFFERENT TYPES AND GUIDELINES FOR THE DEVICES

SOUTHBOUND ROUTE 169
CLOSURE
TRAFFIC CONTROL
SHEET 4 OF 12

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER 2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	19

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE	DESCRIPTION

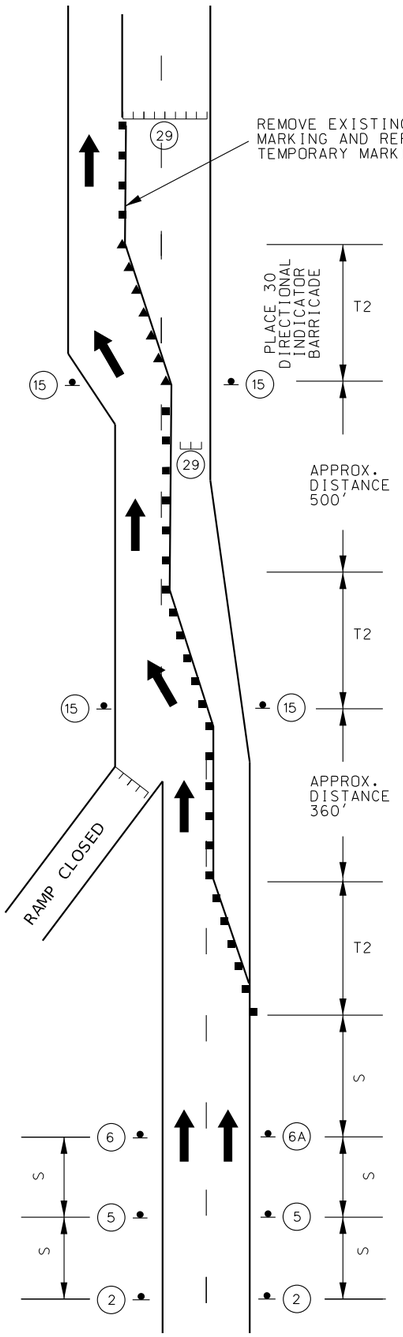
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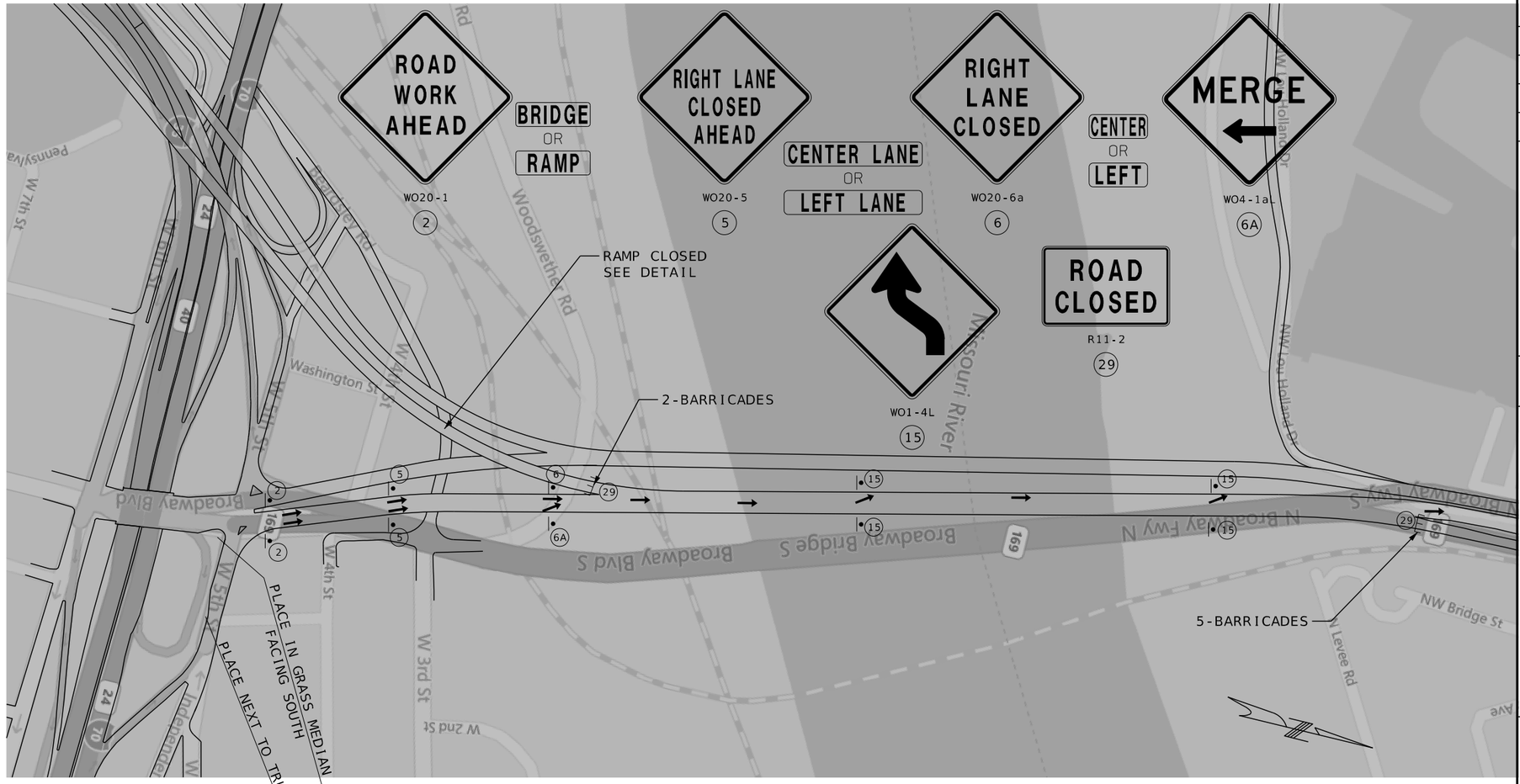
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019_TC_04_KU0099_SB_RTE169_CLOSURE.dgn 3:02:06 PM 2/5/2026

NOTE: SIGNS ON BRIDGE SHALL BE BRIDGE MOUNT AS NEEDED





NB ROUTE 169
CLOSED AHEAD

DIRECTIONAL INDICATOR BARRICADE

NOT TO SCALE

NB ROUTE 169 CLOSURE
TRAFFIC CONTROL
SHEET 5 OF 12

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

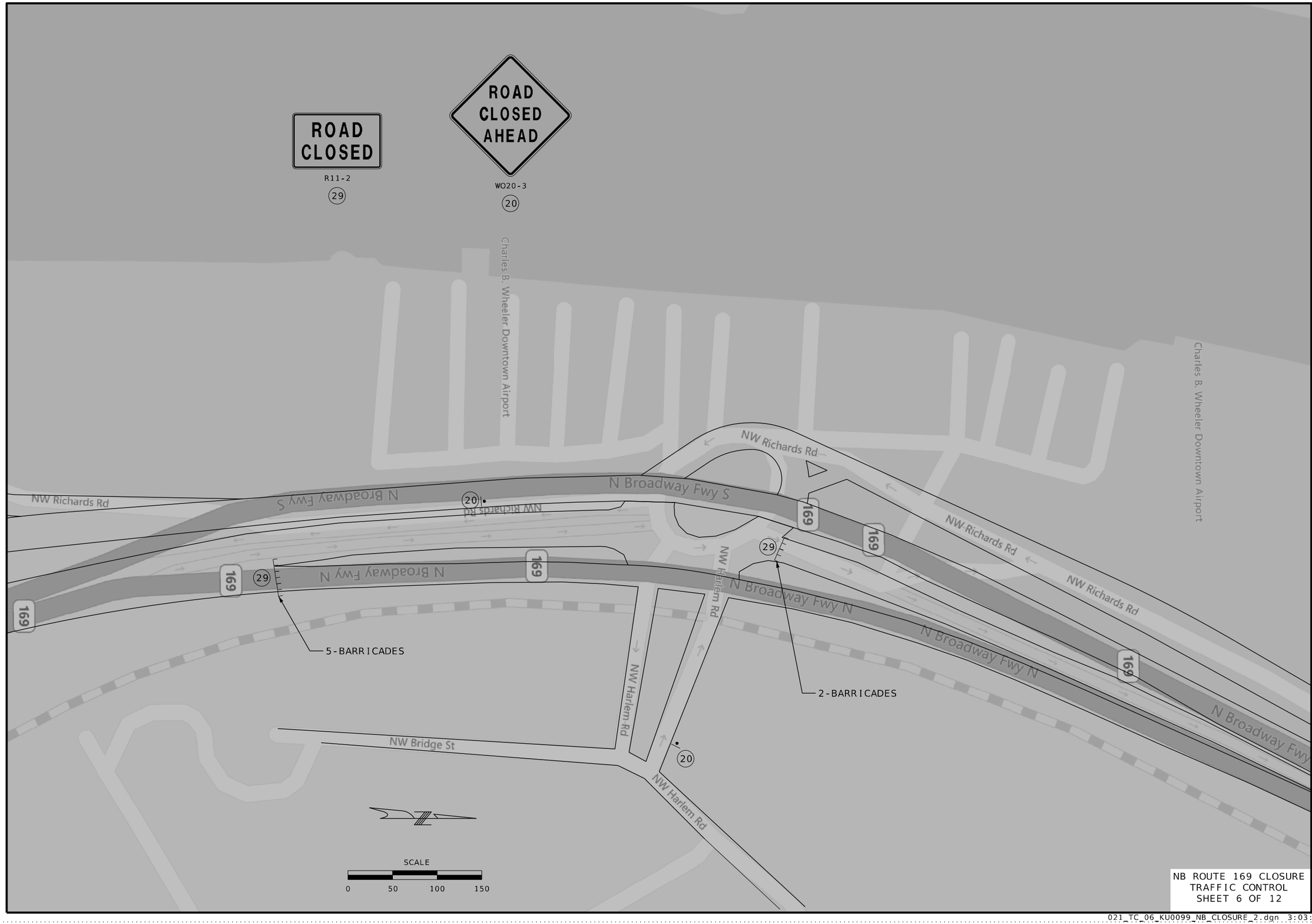
STATE OF MISSOURI
TAWN A NUGENT
NUMBER PE-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 2/5/2026
ROUTE: 169 | STATE: MO
DISTRICT: KC | SHEET NO.: 20
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DATE	DESCRIPTION

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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NB ROUTE 169 CLOSURE
TRAFFIC CONTROL
SHEET 6 OF 12

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED SEALED AND DATED ELECTRONICALLY.

DATE

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	21

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

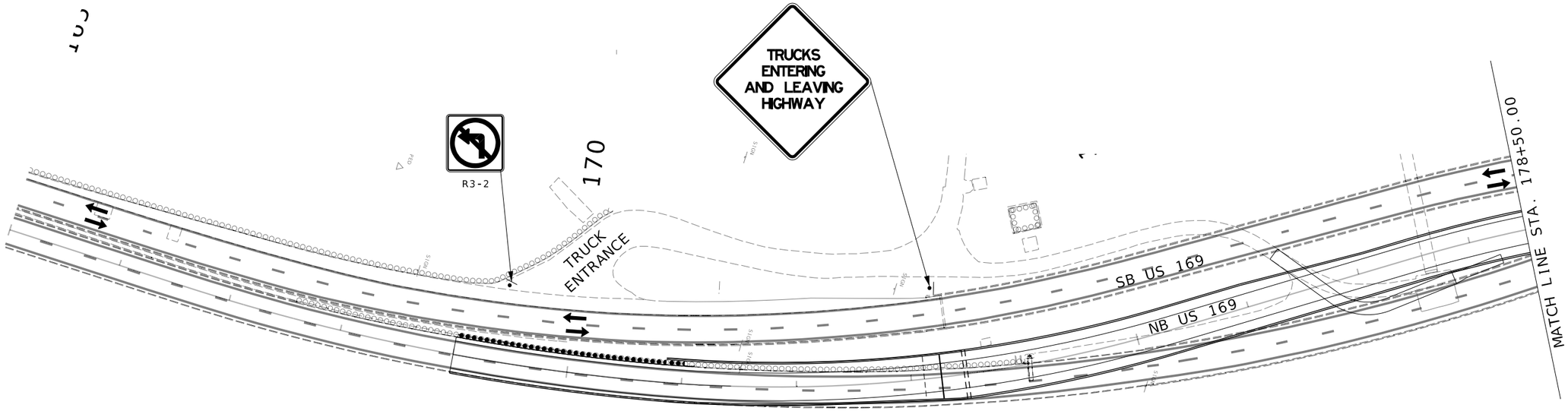
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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021_TC_06_KU0099_NB_CLOSURE_2.dgn 3:03:11 PM 2/5/2026



NOTE:
SEE TRAFFIC CONTROL FOR HEAD TO HEAD TRAFFIC ON SB ROUTE 169

SCALE
0 50 100 150

TRUCK ENTRANCE
TRAFFIC CONTROL
SHEET 7 OF 12

STATE OF MISSOURI
TAWIN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	22

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

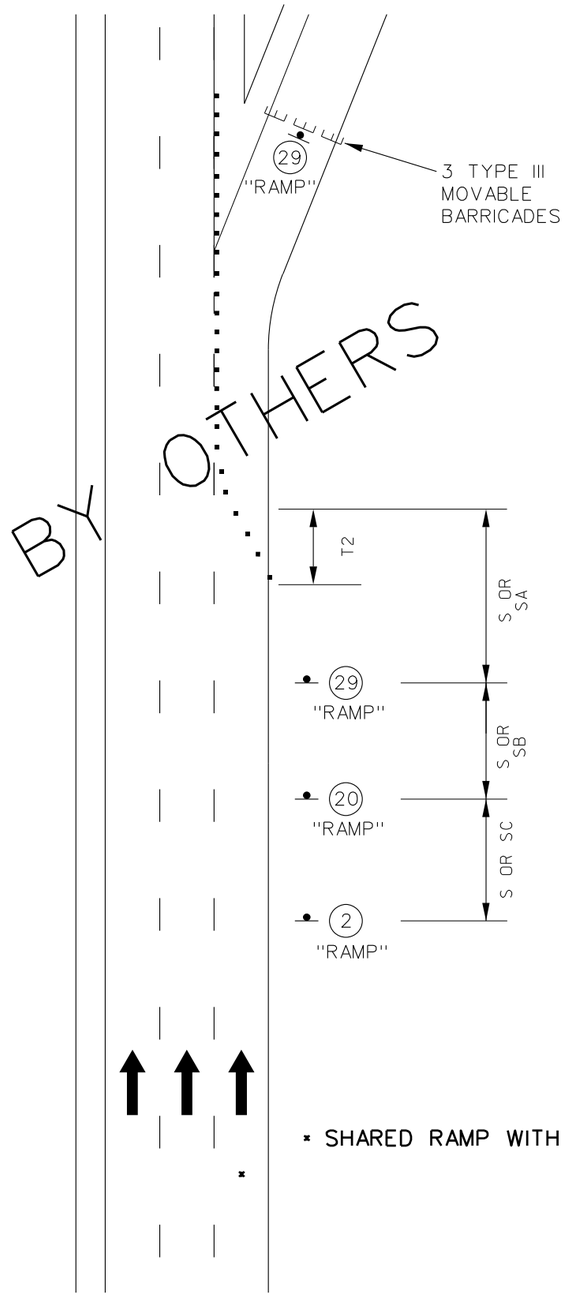
BRIDGE NO.

DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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W020-1
(2)

BRIDGE OR RAMP



W020-3
(20)

BRIDGE OR RAMP



R11-2
(29)

BRIDGE OR RAMP

CHANNELIZERS

NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

IF RUMBLE STRIPS ARE USED, REVIEW EPG 616.11.1 RUMBLE STRIPS.

REVIEW EPG 616.13.6 CHANNELIZING DEVICES FOR DIFFERENT TYPES AND AND GUIDELINES FOR THE DEVICE.

I-35 NB TO US 169 NB
EXIT RAMP CLOSURE
TRAFFIC CONTROL
SHEET 8 OF 12

STATE OF MISSOURI
TAWN A NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	23

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

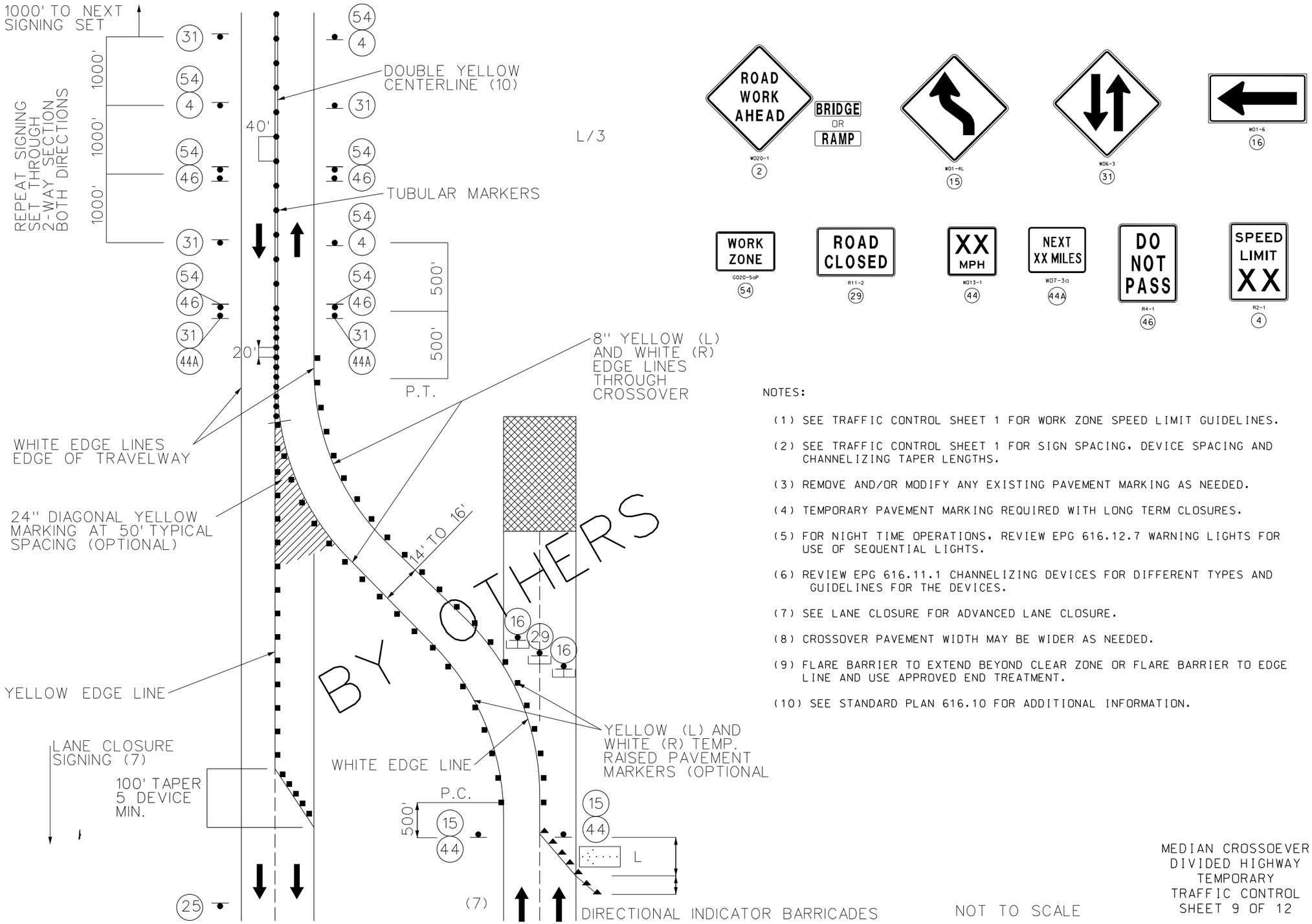
BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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NOTES:

(1) SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

(2) SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

(3) REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED.

(4) TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.

(5) FOR NIGHT TIME OPERATIONS, REVIEW EPG 616.12.7 WARNING LIGHTS FOR USE OF SEQUENTIAL LIGHTS.

(6) REVIEW EPG 616.11.1 CHANNELIZING DEVICES FOR DIFFERENT TYPES AND GUIDELINES FOR THE DEVICES.

(7) SEE LANE CLOSURE FOR ADVANCED LANE CLOSURE.

(8) CROSSOVER PAVEMENT WIDTH MAY BE WIDER AS NEEDED.

(9) FLARE BARRIER TO EXTEND BEYOND CLEAR ZONE OR FLARE BARRIER TO EDGE LINE AND USE APPROVED END TREATMENT.

(10) SEE STANDARD PLAN 616.10 FOR ADDITIONAL INFORMATION.

NOT TO SCALE

MEDIAN CROSSOEVER
DIVIDED HIGHWAY
TEMPORARY
TRAFFIC CONTROL
SHEET 9 OF 12

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER PE-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	24

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

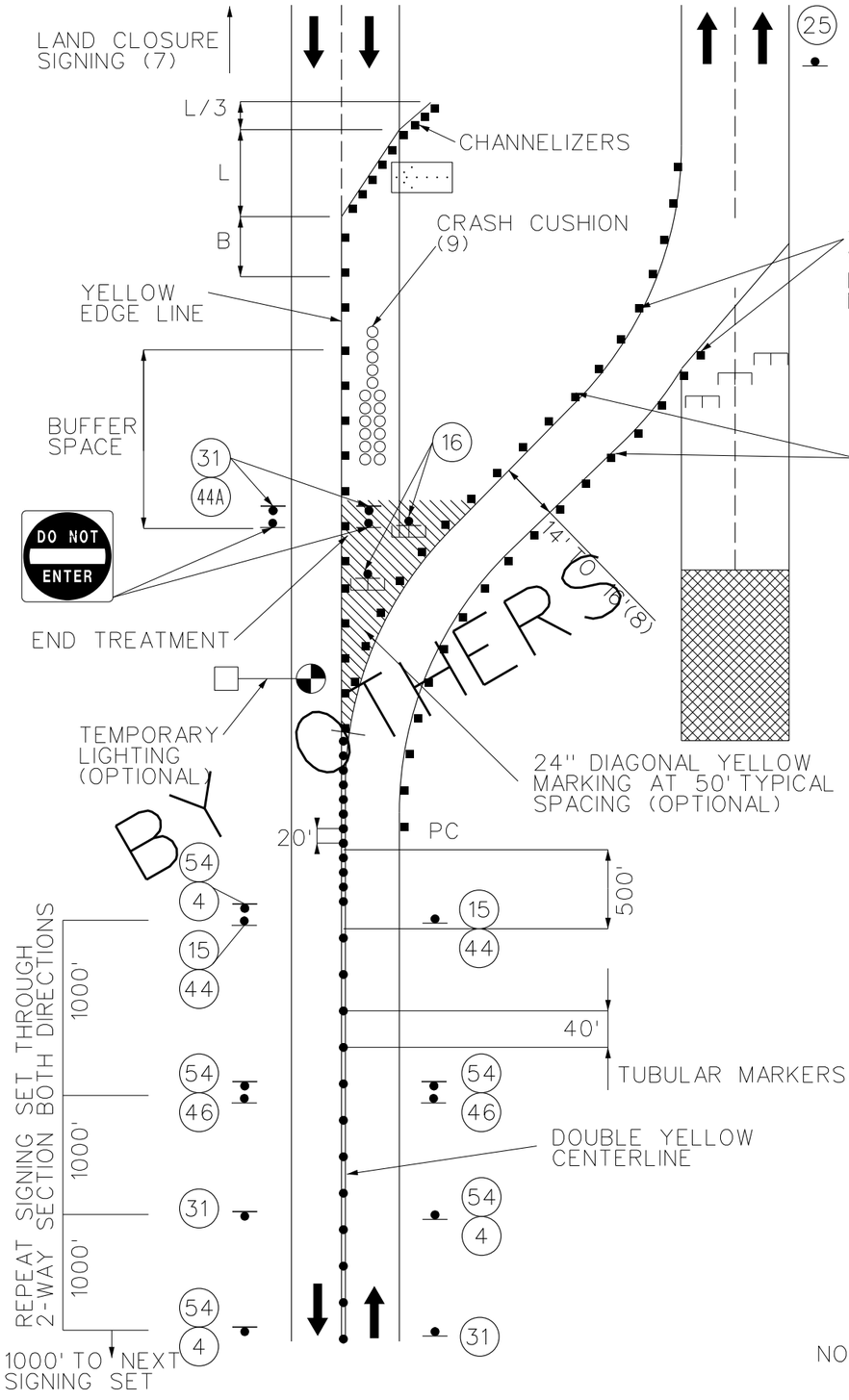
DESCRIPTION	DATE

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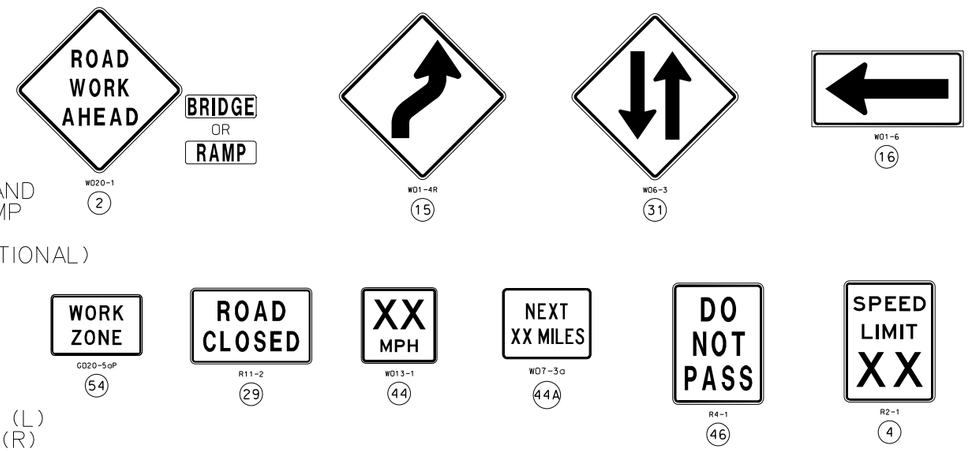
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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NOT TO SCALE



NOTES:

(1) SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

(2) SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

(3) REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED.

(4) TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.

(5) FOR NIGHT TIME OPERATIONS, REVIEW EPG 616.12.7 WARNING LIGHTS FOR USE OF SEQUENTIAL LIGHTS.

(6) REVIEW EPG 616.11.1 CHANNELIZING DEVICES FOR DIFFERENT TYPES AND GUIDELINES FOR THE DEVICES.

(7) ADVANCED LANE CLOSURE SIGNING IS AS SHOWN ON EPG LANE CLOSURE WITH A TEMPORARY TRAFFIC BARRIER.

(8) CROSSOVER PAVEMENT WIDTH MAY BE WIDER AS NEEDED.

(9) CRASH CUSHION SHALL CONSIST OF IMPACT ATTENUATOR (SAND BARRELS) OR OTHER TEMPORARY CRASHWORTHY DEVICE, AS APPROVED BY THE ENGINEER.

(10) SEE STANDARD PLAN 616.10 FOR ADDITIONAL INFORMATION.

MEDIAN CROSSOVER
DIVIDED HIGHWAY
TEMPORARY
TRAFFIC CONTROL
SHEET 10 OF 12

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	25

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

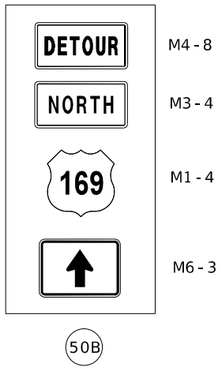
DESCRIPTION	DATE

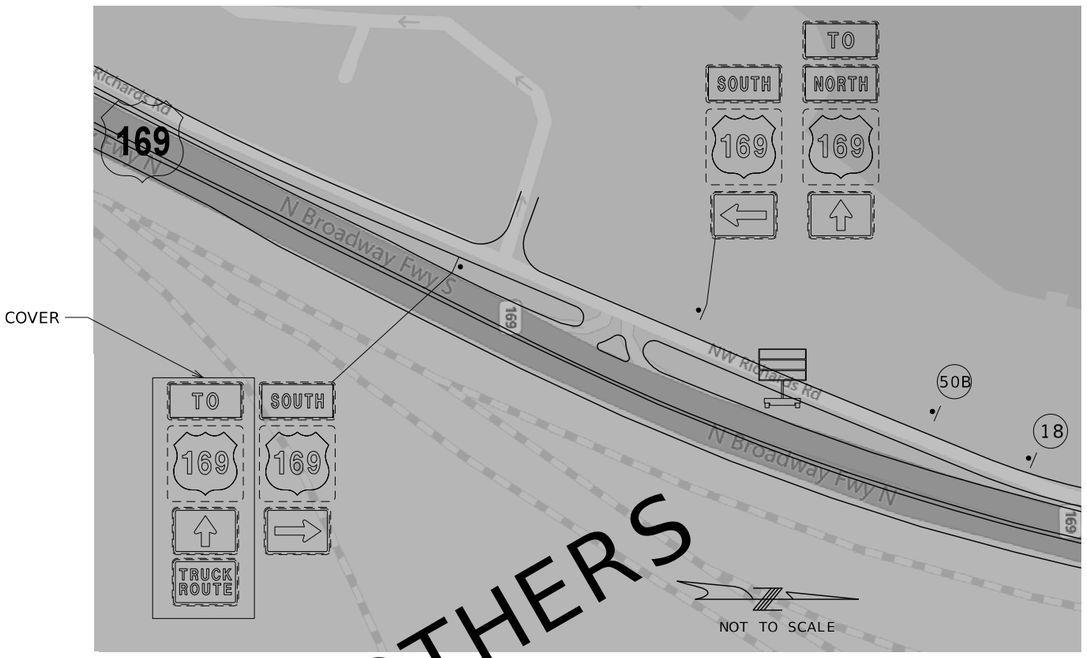
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300







WO20-2

18



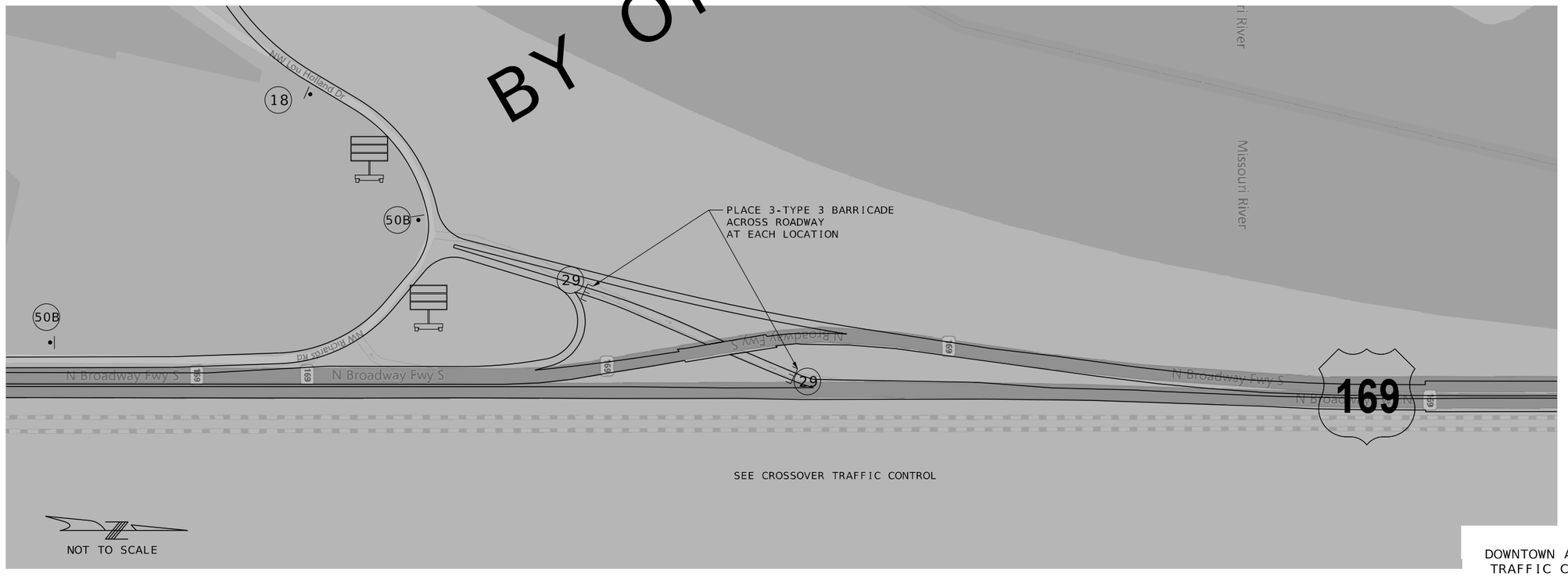
NB ROUTE 169
CLOSE AHEAD



R11-2

29

BY OTHERS



SEE CROSSOVER TRAFFIC CONTROL

DOWNTOWN AIRPORT
TRAFFIC CONTROL
SHEET 11 OF 12

STATE OF MISSOURI
TAWN A NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	26

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

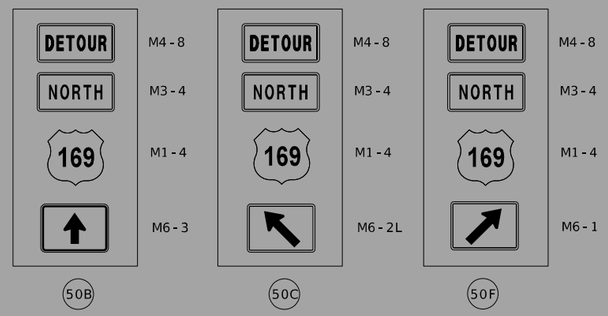
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

1411 East 104th St.
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Tel (816) 874-4655
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026_TC_11_KU0099_AIRPORT_1.dgn 3:04:13 PM 2/5/2026





DOWNTOWN AIRPORT
TRAFFIC CONTROL
SHEET 12 OF 12

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER PE-2009024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	27

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

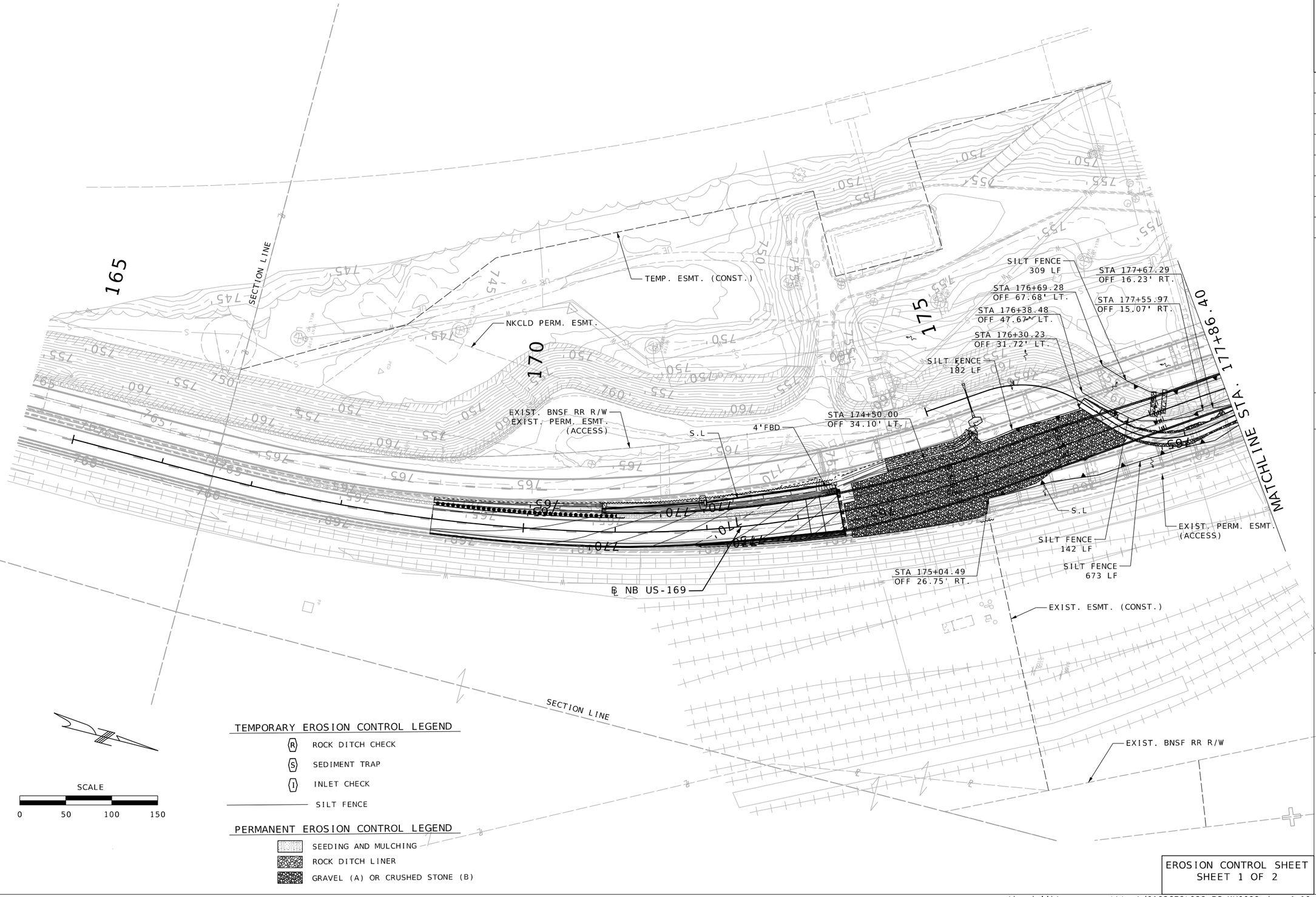
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TREKK DESIGN GROUP, LLC
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Missouri Cert. of Authority 2002010300



SCALE

0 50 100 150

TEMPORARY EROSION CONTROL LEGEND

- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- (I) INLET CHECK
- SILT FENCE

PERMANENT EROSION CONTROL LEGEND

- SEEDING AND MULCHING
- ROCK DITCH LINER
- GRAVEL (A) OR CRUSHED STONE (B)

EROSION CONTROL SHEET
SHEET 1 OF 2

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	28

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

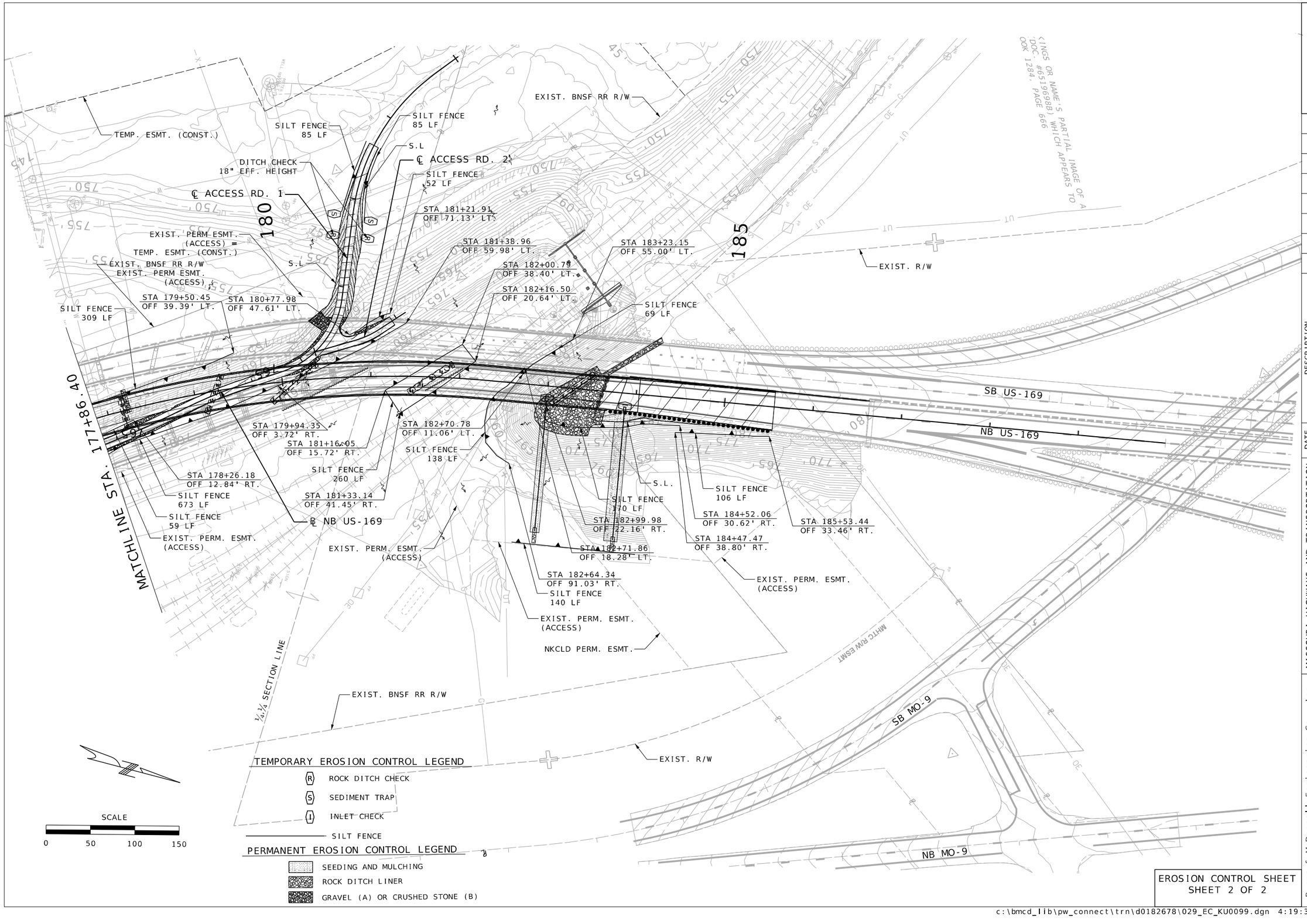
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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EROSION CONTROL SHEET
SHEET 2 OF 2

THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	29

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

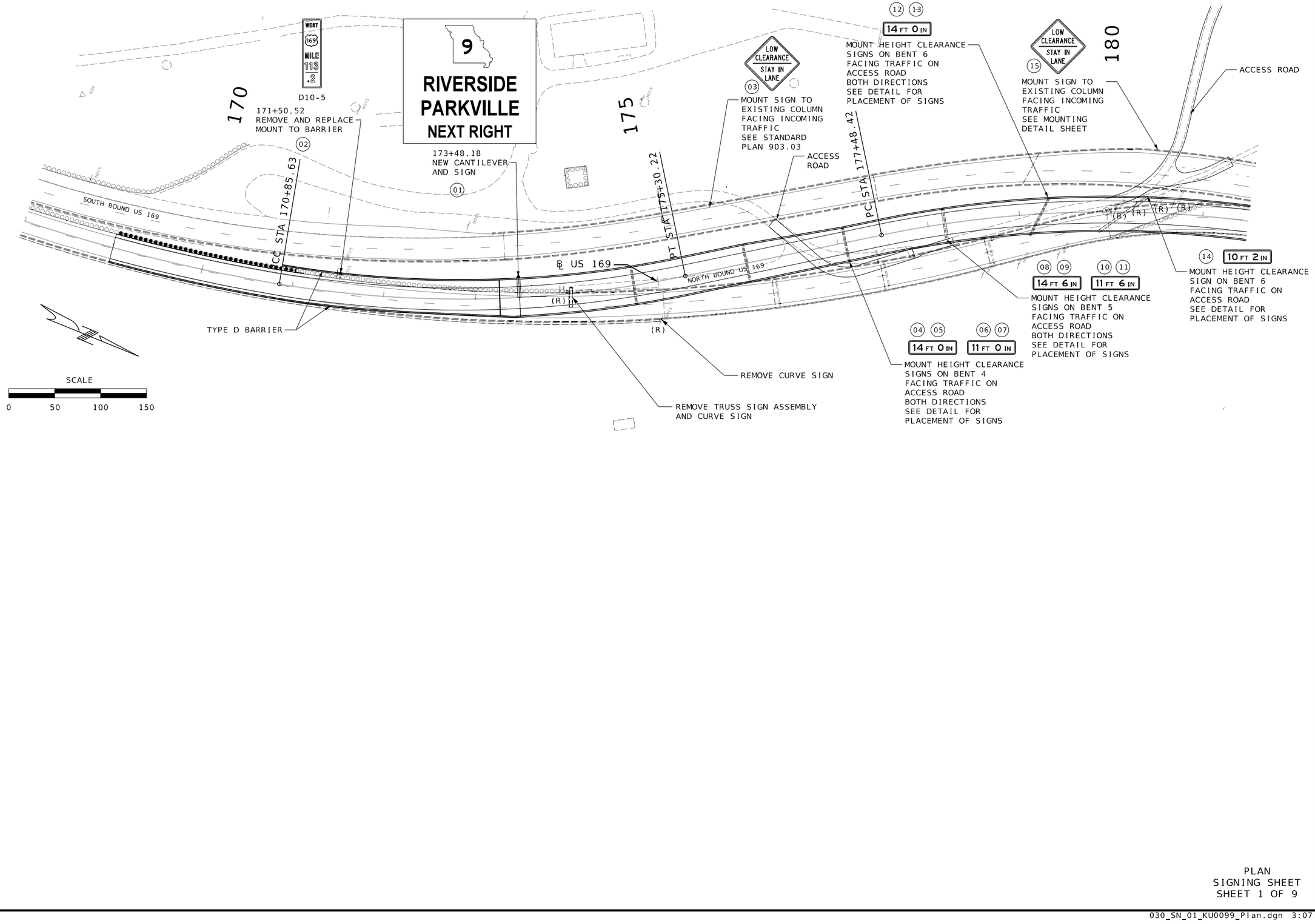
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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THE LOCATIONS OR NAME'S PARTIAL IMAGE OF A #651969881 WHICH APPEARS TO DOC. 1284, PAGE 666 OOK

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PLAN
SIGNING SHEET
SHEET 1 OF 9

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER 2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED	
2/5/2026	
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	30
COUNTY	
CLAY	
JOB NO.	
JKU0099	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

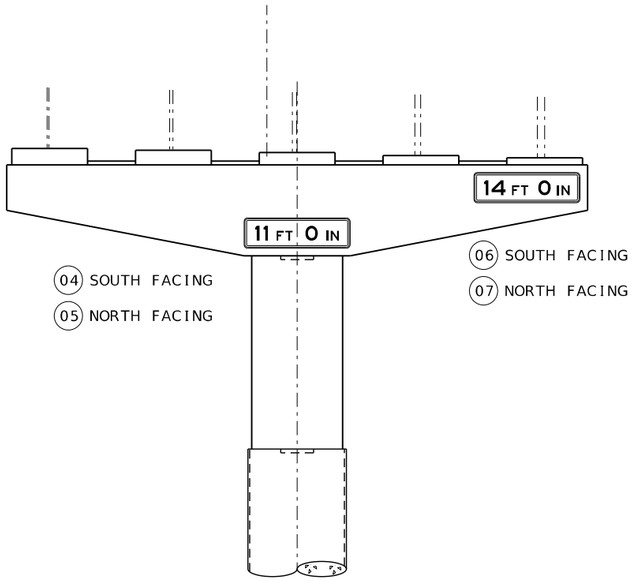
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

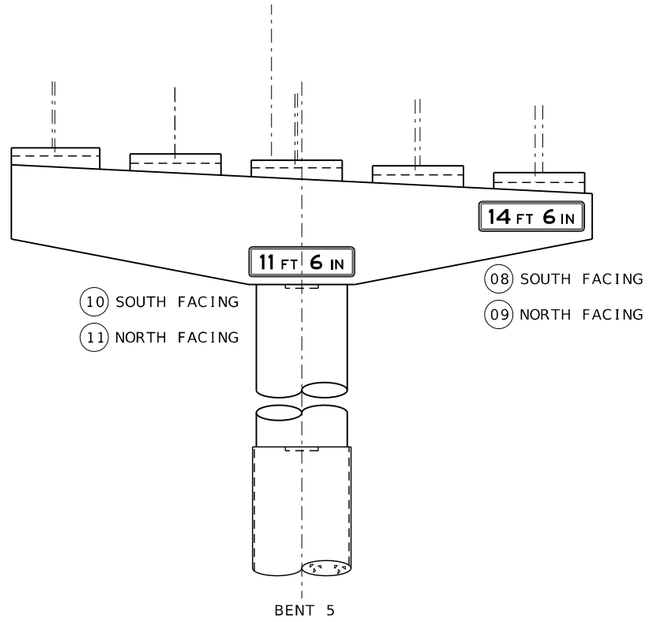
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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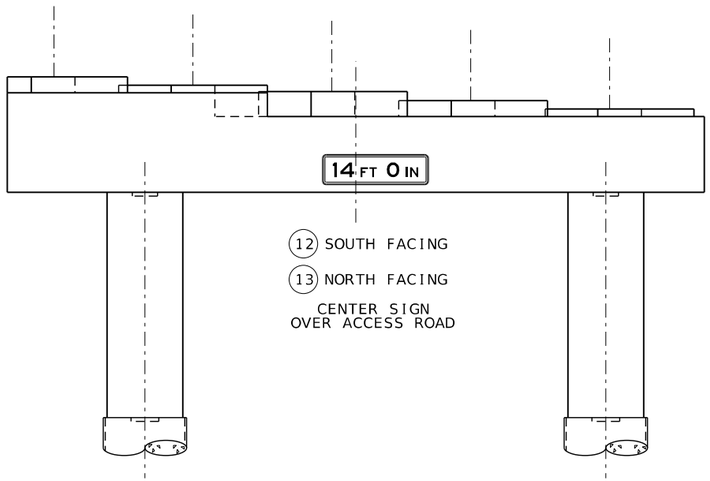
NOTE: SEE MOUTING DETAIL SHEET.



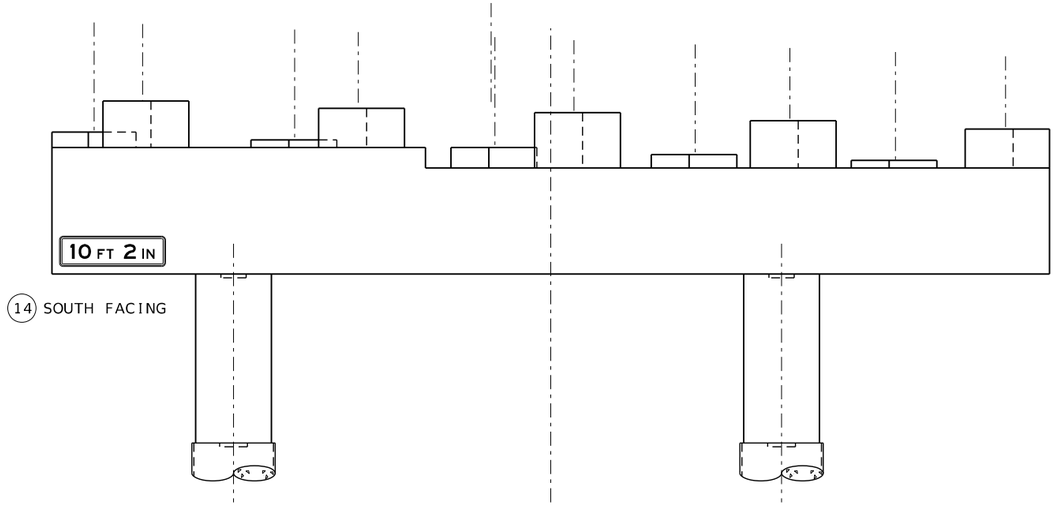
BENT 4



BENT 5



BENT 6



BENT 7

BENT CAP SIGN LOCATIONS
SIGNING SHEET
SHEET 2 OF 9

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER PE-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED: 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	31

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

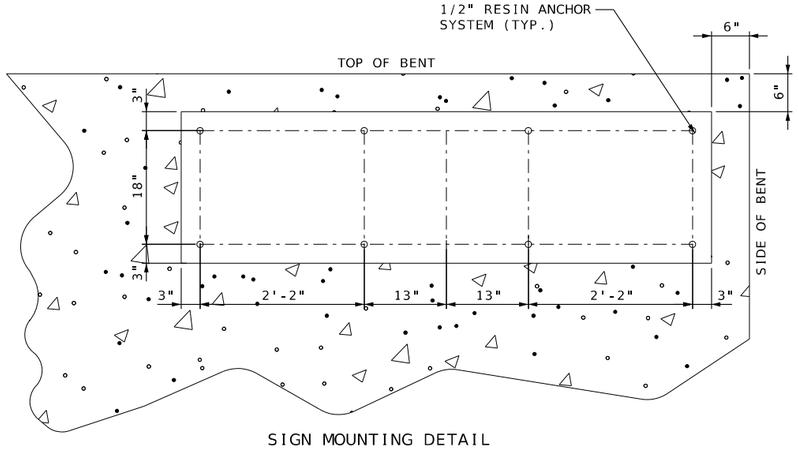
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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1411 East 104th St.
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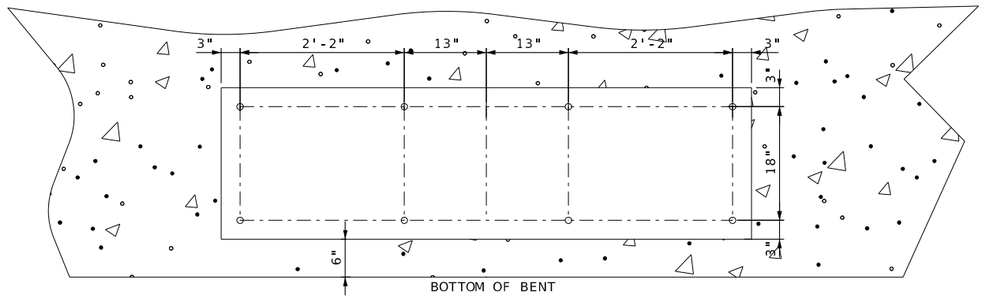
Missouri Cert. of Authority 2002010300

TREKK DESIGN GROUP, LLC

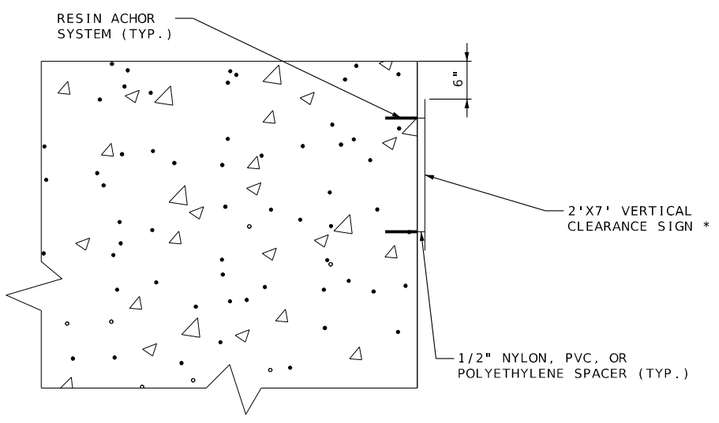
NOTE: DETAIL DOES NOT SHOW EACH LOCATION BUT A TYPICAL DEPICTION OF THE SIGN PLACEMENT ON THE BENTS.
SIGNS SHOULD BE OFFSET 6" FROM THE EDGE OF THE BENT.
SEE SIGN PLACEMENT DETAIL FOR SIGN LOCATION.



SIGN MOUNTING DETAIL
SEE SHEET 34 FOR SIGN LOCATIONS
ON TOP CORNER OF BRIDGE BENTS

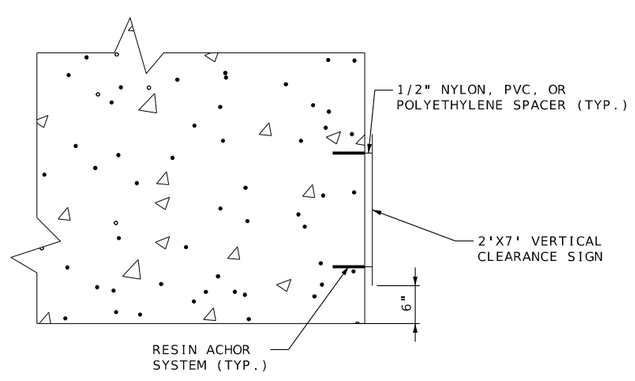


SIGN MOUNTING DETAIL
SEE SHEET 34 FOR SIGN LOCATIONS
ON TOP CORNER OF BRIDGE BENTS



SIDE DETAIL OF SIGN MOUNTING

* SIGN 15
SEE STANDARD PLAN 903.02 FOR HOLE PLACEMENT.
USE SPACERS AND ACHORS AS SHOW ABOVE.



SIDE DETAIL OF SIGN MOUNTING

NOTE:
THE CONTRACTOR SHALL USE ONE OF THE QUALIFIED RESIN ANCHOR SYSTEM IN ACCORDANCE WITH SEC 1039.

THE MINIMUM EMBEDMENT DEPTH IS 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".

THE BOLT FOR THE RESIN ANCHOR SYSTEM SHALL BE STAINLESS STEEL WITH NYLON, PVC OR POLYETHYLENE WASHER.

THE COST OF THE MATERIAL, LABOR AND EQUIPMENT NECESSARY TO INSTALL THE VERTICAL CLEARANCE SIGNS WILL BE CONSIDERED INCIDENTAL TO THE COST OF OTHER CONTRACT ITEMS.

MOUNTING DETIAL
SIGNING SHEET
SHEET 3 OF 9

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	32

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

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

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010390

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)						CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS*						PIPE POSTS*					BACKING BARS**				U-CHANNEL POST	PERFORATED SQUARE STEEL TUBE												BREAK-AWAY ASSEMBLY	REMARKS AND OTHER REQUIRED ITEMS
																							2-INCH POST						2.5-INCH POST							
																									TOTAL	ANCHORS					TOTAL	2.25"	ANCHORS				
SIGN NO.	SIGN SIZE	STATION OR LOG MILE	HORIZ CLEAR IF NOT STD	LOCATION	SIGN DTL SHT NO.	ITEM NO. 9031010	POST DES NO.	POST NO. 1	POST NO. 2	POST NO. 3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO. 1	POST NO. 2	LBS PER FT	TOTAL ITEM NO. 9031220	2" X 3/8" BARS AT 2.55 LBS/FT NO.	LGTH	TOTAL	TOTAL	ITEM NO. 9031250A	POST NO. 1	POST NO. 2	ITEM NO. 9031270A	DRIVEN 12 GA. ITEM NO. 9031271A	DRIVEN 7 GA. ITEM NO. 9031273A	CONCRETE 7 GA. ITEM NO. 9031274	POST NO. 1	POST NO. 2	ITEM NO. 9031280	INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7 GA. ITEM NO. 9031281A	CONCRETE 7 GA. ITEM NO. 9031285	ITEM NO. 9031241	
						CY		LF	LF	LF		LBS	IN	LF	LF		LBS	EACH	IN.	LF	LBS	LF	LF	LF	LF	EACH	EACH	EACH	LF	LF	LF	EACH	EACH	EACH	EACH	
2	1.5'X5'	171+50.52		NB RTE 169																			16		16											ATTACH TO BARRIER
SUBTOTAL																								16											
TOTAL																								16											

*BREAKAWAY ASSEMBLY IS INCIDENTAL FOR STRUCTURAL STEEL AND PIPE POSTS.
**BACKING BARS ARE TOALED WITH STRUCTURAL STEEL OR PIPE POSTS.

ROUND PIPE POST AND FOOTING DATA TABLE

NOM. SIZE	WEIGHT		STUB LENGTH	FOOTING		CONCRETE
(IN.)	LBS/FT	LBS/IN		DIA.	DEPTH	C.Y.
2½	5.79	0.48	4'- 3½"	12"	4~6"	0.13
4	10.79	0.90	5'- 3½"	18"	5~6"	0.36

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

POST DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE C.Y.
1	W6	9.0	0.75	3'-0"	15"	3'-0"	0.14	3'-2"	0.15	3'-3"	0.16	3'-6"	0.17
2	W6	15.0	1.25	4'-0"	24"	4'-0"	0.47	4'-2"	0.50	4'-3"	0.51	4'-6"	0.54
3	W8	18.0	1.50	4'-6"	28"	4'-6"	0.71	4'-8"	0.73	4'-9"	0.74	5'-0"	0.78
4	W10	22.0	1.83	5'-0"	36"	5'-0"	1.31	5'-2"	1.36	5'-3"	1.39	5'-6"	1.45
5	W10	26.0	2.17	5'-0"	36"	5'-0"	1.31	5'-3"	1.37	5'-5"	1.43	5'-9"	1.52
6	W12	35.0	2.92	5'-6"	36"	5'-6"	1.44	5'-9"	1.52	5'-11"	1.56	6'-3"	1.65

SIGNING SHEET
SHEET 4 OF 9

D-29

EFFECTIVE: 07-01-2024

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER LE-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	33

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com

Missouri Cert. of Authority 2002010300

033_SN_04_KU0099_D-29.dgn 3:07:18 PM 2/5/2026

STANDARD SIGN ASSEMBLIES

SIGN NO.	STATION OR LOG MILE	LOCATION	SIGN, TYPE, DESIGNATION, SIZE & NUMBER OF EACH																		
			WEST 169 MILE 113 .2 D10-5	LOW CLEARANCE STAY IN LANE	14 FT 0 IN	11 FT 0 IN	14 FT 6 IN	11 FT 6 IN	10 FT 2 IN												
02	171+50.52	NB RTE 169	1																		
03	EX. COLUMN	ACCESS RD		1																	
04	BENT 4	ACCESS RD			1																
05	BENT 4	ACCESS RD			1																
06	BENT 4	ACCESS RD				1															
07	BENT 4	ACCESS RD				1															
08	BENT 5	ACCESS RD					1														
09	BENT 5	ACCESS RD					1														
10	BENT 5	ACCESS RD						1													
11	BENT 5	ACCESS RD						1													
12	BENT 6	ACCESS RD			1																
13	BENT 6	ACCESS RD			1																
14	BENT 7	ACCESS RD							1												
15	EX. COLUMN	ACCESS RD		1																	
		TOTALS	1	2	4	2	2	2	1												

SIGN SUMMARY

STANDARD OR SPECIAL SIGN DESIGNATION	SIGN DTL. SHT. NO.	NO. EACH	SIGN SIZE	TYPE & SQUARE FEET			
				FLAT SHEET SH ITEM NO. 9035004A	FLAT SHEET FLUORESCENT SHF* ITEM NO. 9035069A	STRUCTURAL ST ITEM NO. 9035011A	STRUCTURAL FLUORESCENT STF* ITEM NO. 9035071A
1-TRUSS SIGN	X	1	12'X12'			144	
D10-5	X	1	1.5'X5'	7.5			
W12-2a	X	2	3'X3'		18		
LOW CLEARANCE	X	11	7'X2'		154		
			TOTALS	7.5	172	144	

*ORANGE, YELLOW AND YELLOW-GREEN

SIGNING SHEET
SHEET 5 OF 9

D-30

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER PE-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
KC	34

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DATE	DESCRIPTION

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

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Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010360

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGN NO.	1
STATION	174+58.18
ROADWAY	NB RTE 169



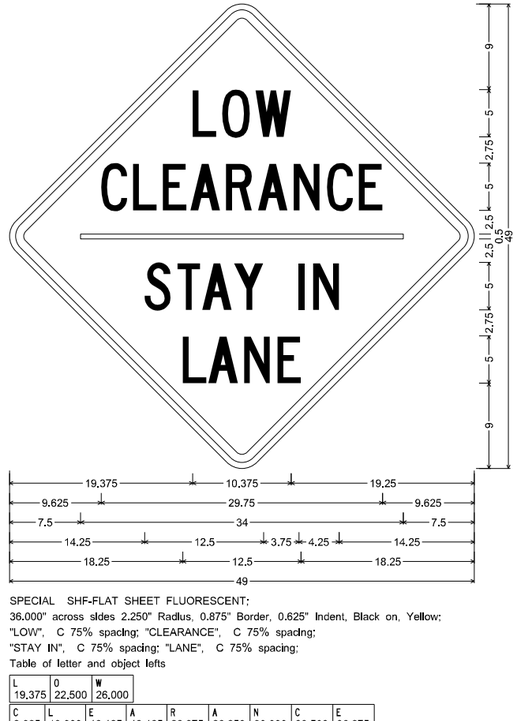
E1-1 ST-STRUCTURAL;
12.000" Radius, 2.000" Border, White on, Green;
State Highway 9 M1-6a3 18.000" D; "Riverside", E Mod; "Parkville", E Mod; "NEXT RIGHT", E Mod;
Table of letter and object lefts

19
54.000

R	I	v	e	r	s	I	d	e
15.000	33.125	40.625	55.750	70.875	80.750	95.750	103.625	118.750
P	a	r	k	v	I	I	I	e
16.750	33.375	49.625	61.125	74.375	90.875	100.000	109.125	117.000
N	E	X	T	R	I	G	H	T
17.625	30.250	41.625	53.750	74.625	87.250	92.750	105.375	117.500

SIGN NO.	03, 15
STATION	*
ROADWAY	ACCESS ROAD

*SEE SIGNING SHEETS ATTACHED TO EXISTING BRIDGE COLUMNS



SPECIAL SHF-FLAT SHEET FLUORESCENT;
36.000" across sides 2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Yellow;
"LOW", C 75% spacing; "CLEARANCE", C 75% spacing;
"STAY IN", C 75% spacing; "LANE", C 75% spacing;
Table of letter and object lefts

L	O	W
19.375	22.500	26.000

C	L	E	A	R	A	N	C	E
9.625	13.000	16.125	19.125	22.875	26.250	30.000	33.500	36.875

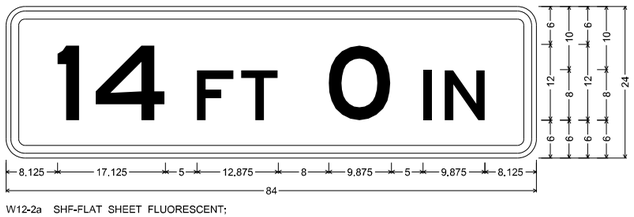
—
7.500

S	T	A	Y	I	N
14.250	17.625	20.375	23.625	30.500	32.000

L	A	N	E
18.250	21.000	24.750	28.250

SIGN NO.	04, 05, 12, 13
STATION	*
ROADWAY	ACCESS ROAD

*SEE SIGNING SHEETS ATTACHED TO EXISTING BRIDGE COLUMNS



W12-2a SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.250" Border, 0.750" Indent, Black on, Yellow;
"14 FT 0 IN", E;
Table of letter and object lefts

1	4	F	T	0	I	N
8.125	14.250	30.250	37.250	51.125	66.000	69.500

SIGNING SHEET
SHEET 6 OF 9

D-31

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	35

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com

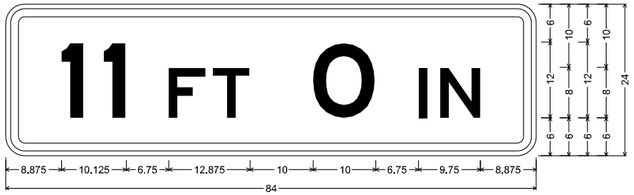
Missouri Cert. of Authority 2002010300

TREKK DESIGN GROUP, LLC

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGN NO.	06, 07
STATION	*
ROADWAY	ACCESS ROAD

*SEE SIGNING SHEETS ATTACHED TO EXISTING BRIDGE COLUMNS

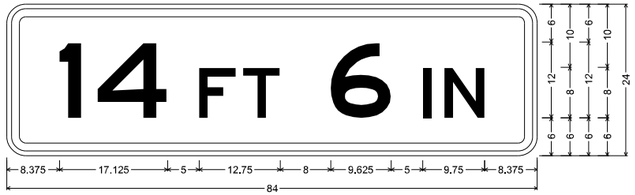


W12-2a SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.250" Border, 0.750" Indent, Black on, Yellow;
"11 FT 0 IN", E;
Table of letter and object lefts

1	1	F	T	0	I	N
8.875	15.500	25.750	32.750	48.625	65.375	68.750

SIGN NO.	08, 09
STATION	*
ROADWAY	ACCESS ROAD

*SEE SIGNING SHEETS ATTACHED TO EXISTING BRIDGE COLUMNS

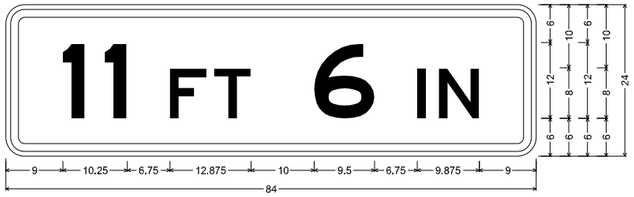


W12-2a SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.250" Border, 0.750" Indent, Black on, Yellow;
"14 FT 6 IN", E;
Table of letter and object lefts

1	4	F	T	6	I	N
8.375	14.375	30.500	37.375	51.250	65.875	69.250

SIGN NO.	10, 11
STATION	*
ROADWAY	ACCESS ROAD

*SEE SIGNING SHEETS ATTACHED TO EXISTING BRIDGE COLUMNS

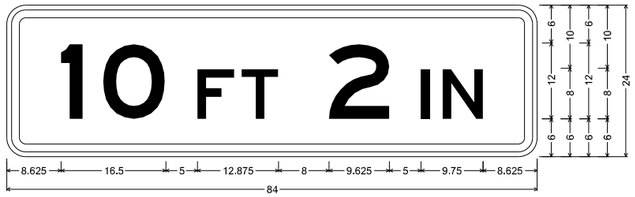


W12-2a SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.250" Border, 0.750" Indent, Black on, Yellow;
"11 FT 6 IN", E;
Table of letter and object lefts

1	1	F	T	6	I	N
9.000	15.625	26.000	33.000	48.875	65.125	68.625

SIGN NO.	14
STATION	*
ROADWAY	ACCESS ROAD

*SEE SIGNING SHEETS ATTACHED TO EXISTING BRIDGE COLUMNS



W12-2a SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.250" Border, 0.750" Indent, Black on, Yellow;
"10 FT 2 IN", E;
Table of letter and object lefts

1	0	F	T	2	I	N
8.625	15.250	30.125	37.125	51.000	65.625	69.000

SIGNING SHEET
SHEET 7 OF 9

D-31

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	36

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

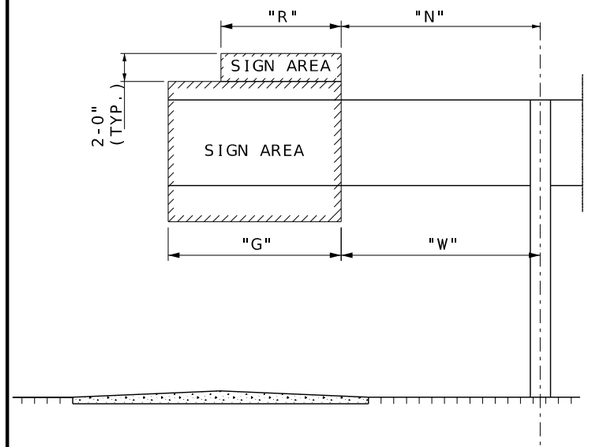
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

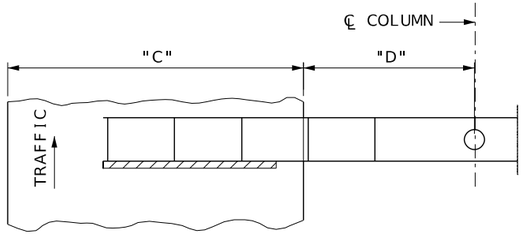
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4825
Fax (816) 874-4875
www.trekkdesigngroup.com

Missouri Cert. of Authority 2002010300

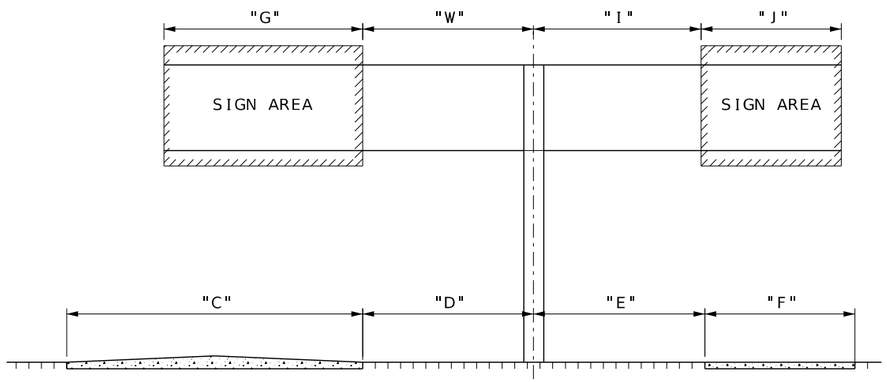
TREKK DESIGN GROUP, LLC



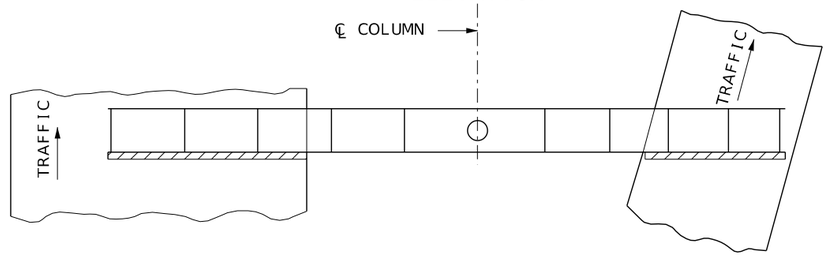
ELEVATION



PLAN
CANTILEVER OVERHEAD SIGN TRUSS



ELEVATION



PLAN
BUTTERFLY OVERHEAD SIGN TRUSS

GENERAL NOTES:

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 2001 AND LATEST INTERIM.

STRUCTURAL CARBON STEEL (ASTM A709 GRADE 36) fy = 36,000 psi.

REINFORCING STEEL (GRADE 60) fY = 60,000 psi.

CLASS B CONCRETE f'c = 3,000 psi.

MINIMUM CLEARANCE: VERTICAL ROADWAY CLEARANCE = 17~6".

MINIMUM CLEARANCE TO REINFORCING SHALL BE 3", UNLESS OTHERWISE SHOWN.

TRUSS SHALL BE ALL WELDED CONSTRUCTION. ALL WELDING TO BE CONTINUOUS UNLESS OTHERWISE SHOWN.

QUALIFICATION OF WELDING OPERATORS WILL BE REQUIRED.

STRUCTURAL STEEL WELDING AND WELDER QUALIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH THE A.W.S. D1.5 BRIDGE WELDING CODE AS AMMENDED BY THE MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS ON STRUCTURAL STEEL CONSTRUCTION.

ALUMINUM WELDING AND WELDER QUALIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF A.W.S. D1.2 STRUCTURAL WELDING CODE - ALUMINUM, EXCEPT AS AMENDED BY SECTION 903 OF THE MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

ALL ALUMINUM FILLET WELDS SHALL BE □" UNLESS OTHERWISE SHOWN.

COATING: ALL COLUMNS SHALL BE GALVANIZED AS PER AASHTO M 111. ALL STRUCTURAL STEEL (EXCEPT THE COLUMNS) SHALL BE CLEANED AND COATED WITH SYSTEM G IN ACCORDANCE WITH STANDARD SPECIFICATIONS, SECTION 1081 AND 903 COLOR OF THE FINISHED COAT SHALL BE GRAY.

PAYMENT FOR GALVANIZING, CLEANING AND COATING SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER SIGN TRUSS. ALL THE STRUCTURAL STEEL MAY BE GALVANIZED IN LIEU OF COATING. PORTIONS OF THE STEEL MAY BE GALVANIZED WITH THE APPROVAL OF THE ENGINEER.

PERMITS MUST BE OBTAINED FOR ALL TRUCK LOADS OVER LEGAL LENGTH.

OVERHEAD SIGN DIMENSIONS

SIGN NO.	STATION NUMBER	TYPE SIGN		COL. H	COL. TYPE	ROADWAY DESCRIPTION				SIGN SPACING								CONCRETE FOOTINGS (CU. YD.)
		CANT.	BUTTERFLY			"C"	"D"	"E"	"F"	"G"	Ht.	"W"	"I"	"J"	Ht.	"R"	"N"	
1	173+48.18	X		21'7"	VI	24	8			12'	12'	8'						SEE BRIDGE

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024002
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	37

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

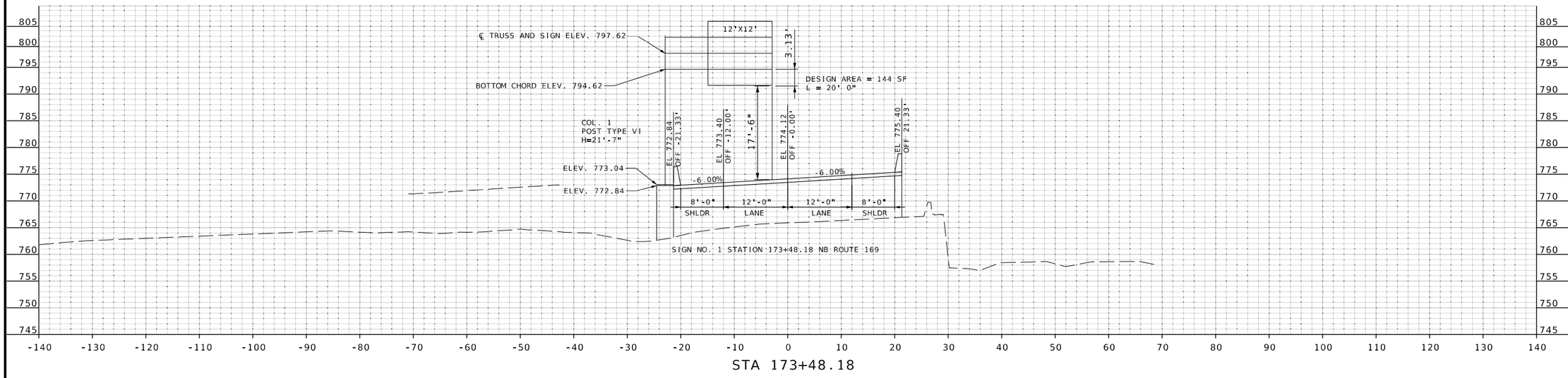
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

BUTTERFLY AND CANTILEVER OVERHEAD SIGN TRUSSES

STRUCTURAL STEEL

SIGNING SHEET
SHEET 8 OF 9

DATA SHEET
(SEE STANDARD 903.12) D-32



STA 173+48.18

SIGNING SHEET
SHEET 9 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER 2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	38

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

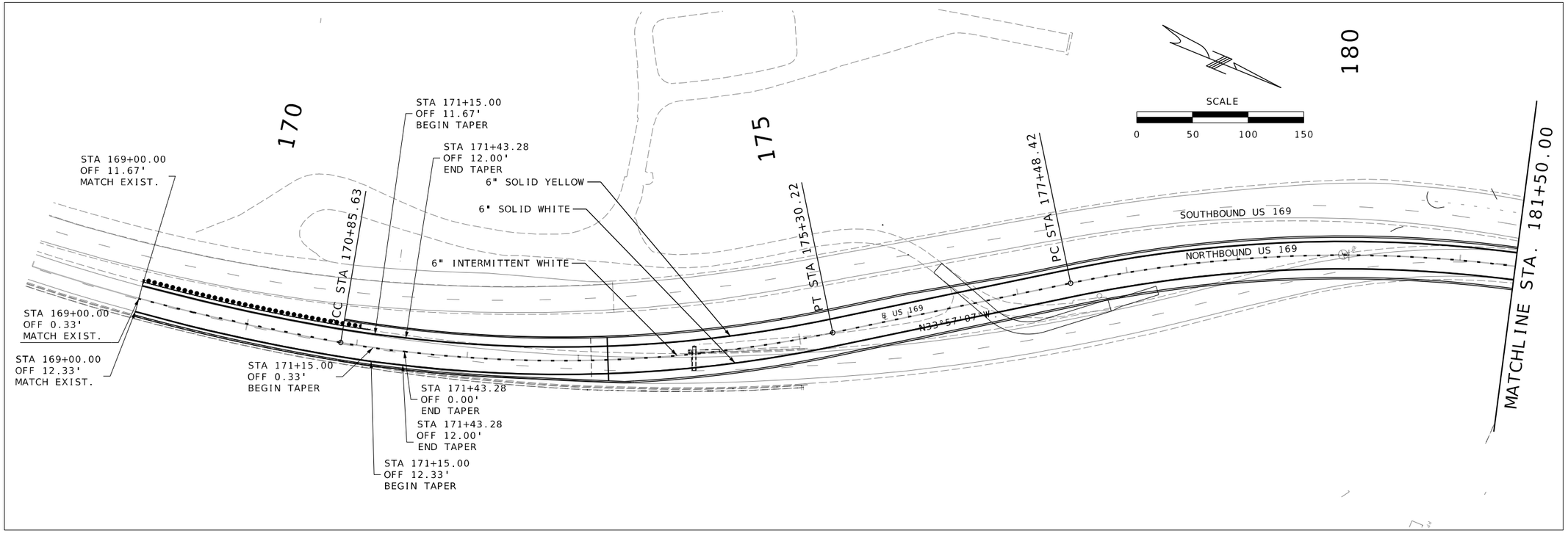
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

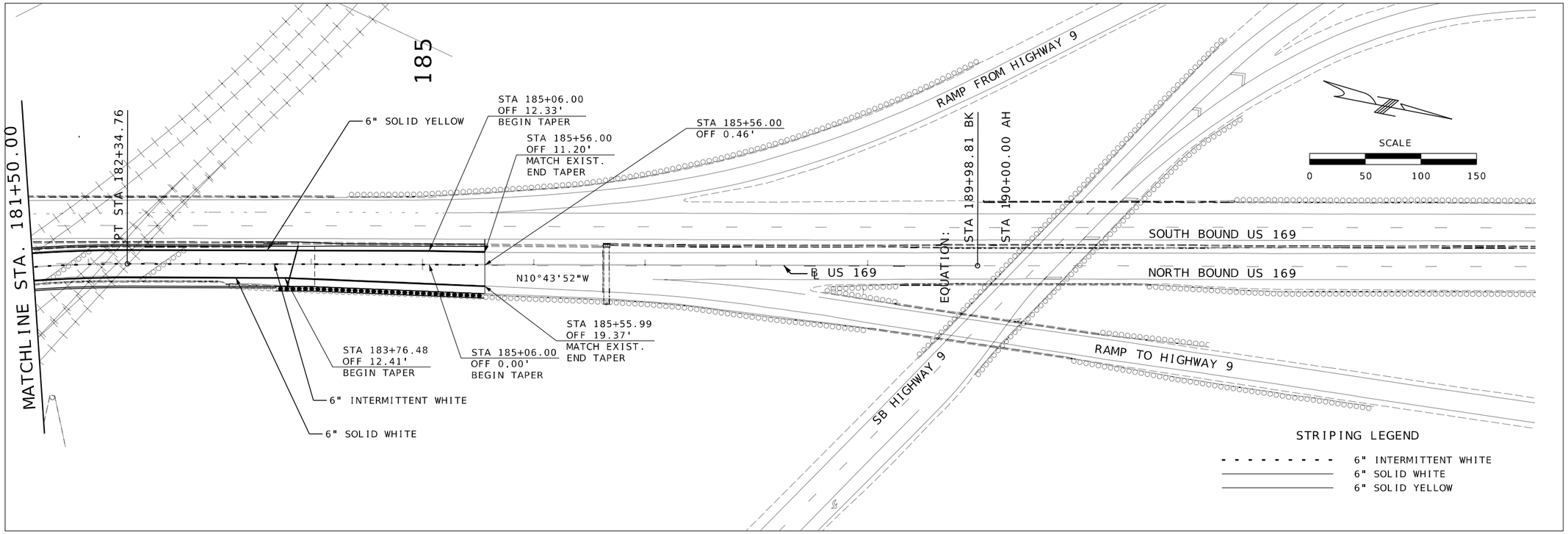
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com

Missouri Cert. of Authority 2002010390

TREKK DESIGN GROUP, LLC





PAVEMENT MARKING
SHEET 1 OF 1

039_PM_KU0099.dgn 3:07:24 PM 2/5/2026

STATE OF MISSOURI
TAWN A. NUGENT
NUMBER E-2002024022
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
2/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	39

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

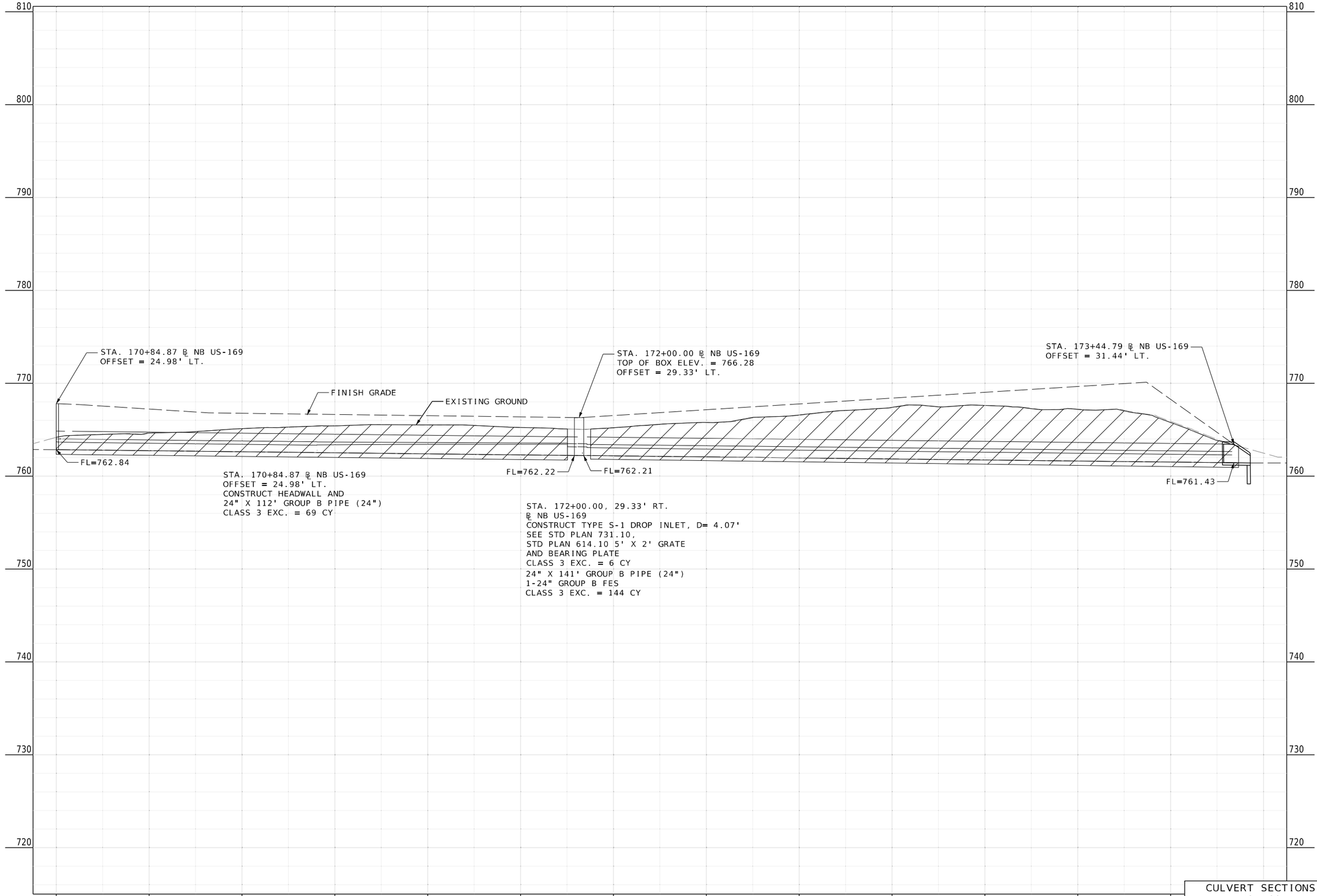
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300



CULVERT SECTIONS
US-169
SHEET 1 OF 3

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
KC	40

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

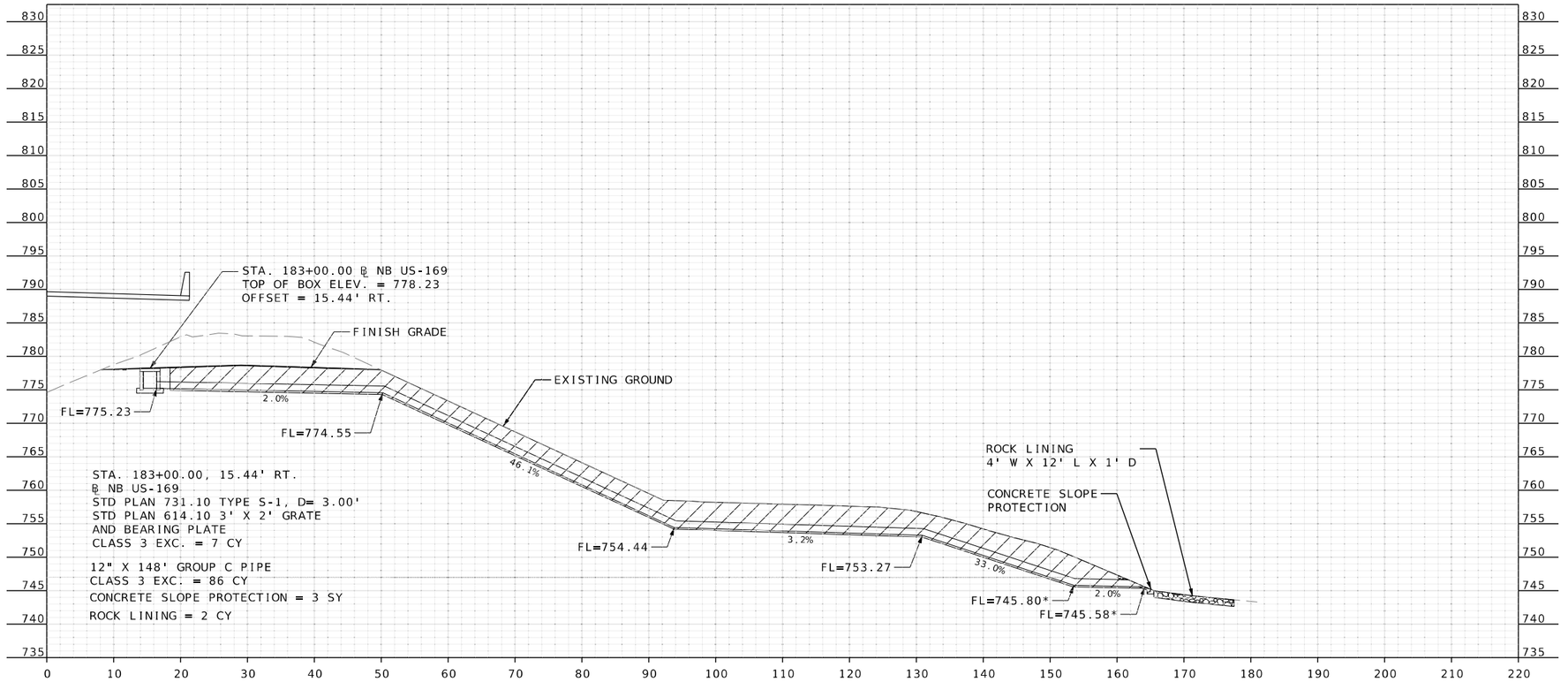
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

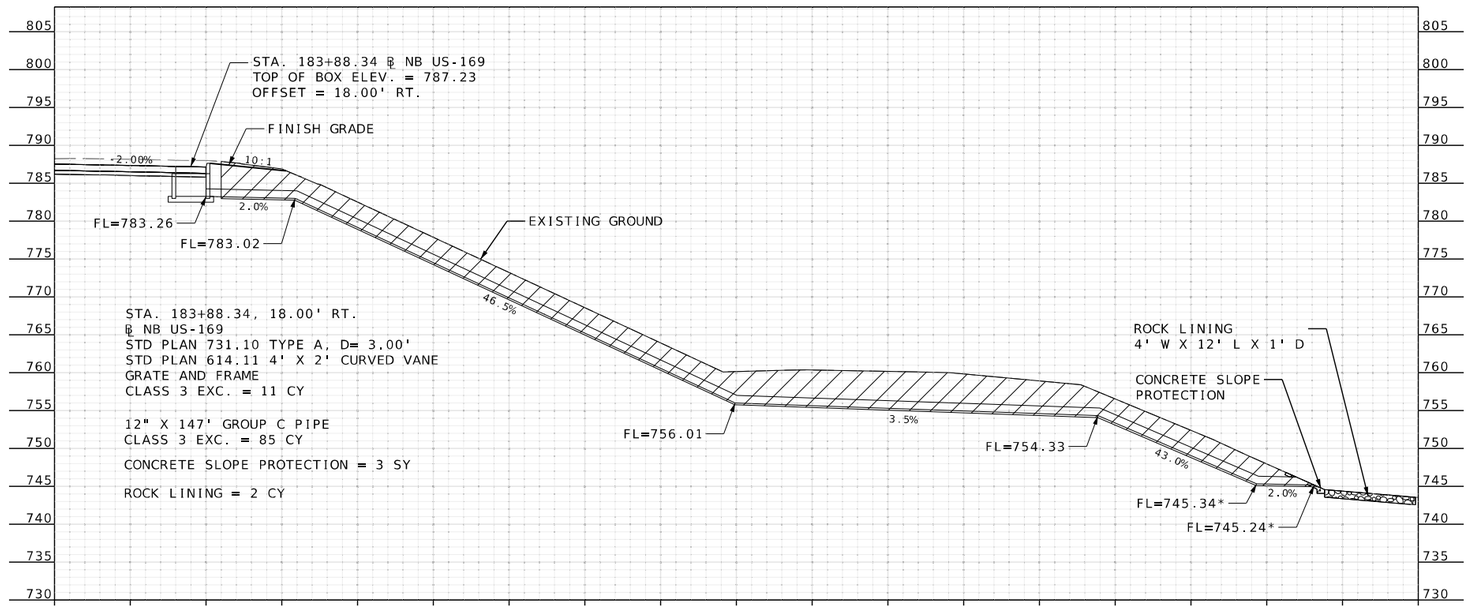
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

c:\bmcd_lib\pw_connect\trn\d0182678\040-042_CS_1-3_KU0099.dgn 4:19:42 PM 1/28/2026



STA 183+00.00



STA 183+88.34

* THE LOCATION AND ELEVATION OF THE STORM SEWER OUTLETS AT THE TOE OF SLOPE IS APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION AND ELEVATION OF THE OUTLETS PRIOR TO CONSTRUCTION.

CULVERT SECTIONS
US-169
SHEET 2 OF 3

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	41

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

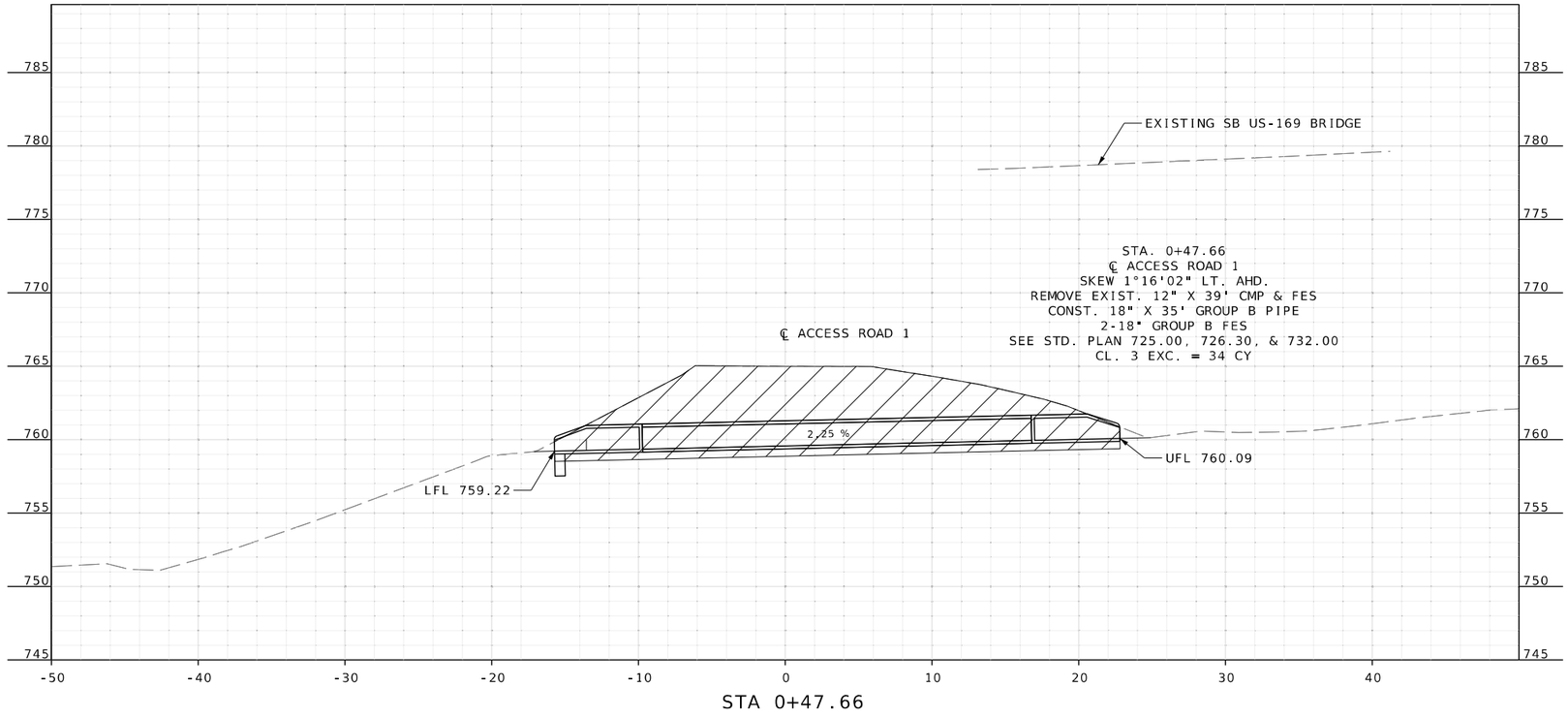
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/28/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	42

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CULVERT SECTIONS
ACCESS RD.
SHEET 3 OF 3

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CURVE DATA

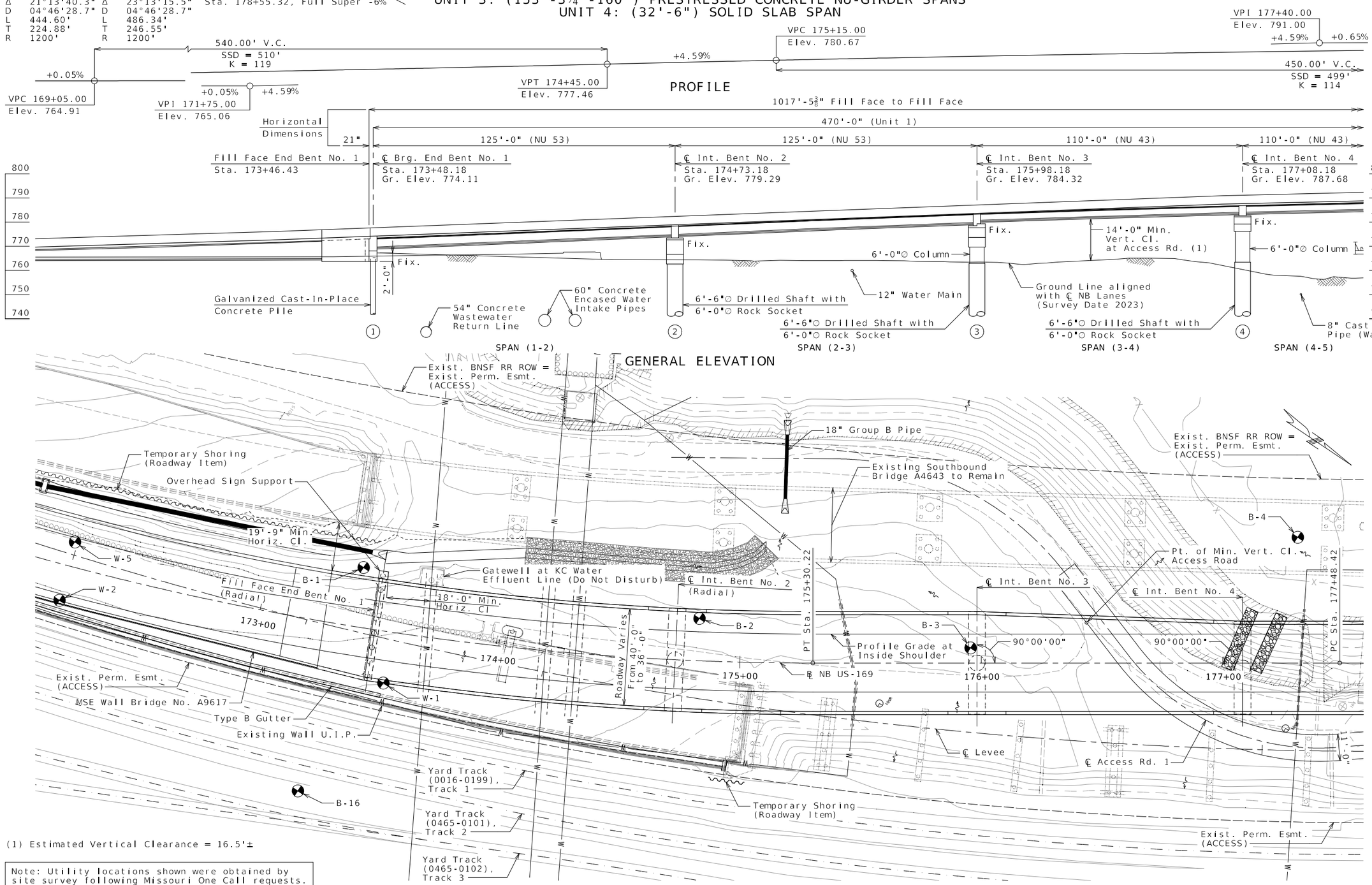
PI	173+10.50	PI	179+94.97
PCC	170+85.63	PC	177+48.42
PT	175+30.22	PT	182+34.76
Δ	21°13'40.3"	Δ	23°13'15.5"
D	04°46'28.7"	D	04°46'28.7"
L	444.60'	L	486.34'
T	224.88'	T	246.55'
R	1200'	R	1200'

SUPERELEVATION DATA

Sta. 171+03.63, Full Super 6% /
Sta. 174+23.32, Full Super 6% /
Sta. 176+39.32, 0% Cross Slope —
Sta. 178+55.32, Full Super -6% \

UNIT 1: (2 @ 125'-2 @ 110') PRESTRESSED CONCRETE NU-GIRDER SPANS
UNIT 2: (105'-4½"-92'-11½") PRESTRESSED CONCRETE NU-GIRDER SPANS
UNIT 3: (153'-3¾"-160') PRESTRESSED CONCRETE NU-GIRDER SPANS
UNIT 4: (32'-6") SOLID SLAB SPAN

SEC/SUR 10 TWP 50N RGE 33W



(1) Estimated Vertical Clearance = 16.5'±

Note: Utility locations shown were obtained by site survey following Missouri One Call requests. Locations are approximate.

Designed: Sept. 2025
Detailed: Oct. 2025
Checked: Oct. 2025

Note: "⌖" Indicates location of boring. For Notice and Disclaimer Regarding Boring Log Data, see Sheet No. 4.

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

Sheet No. 1 of 132

BRIDGE: ROUTE 169 OVER BNSF R.R.

ROUTE 169 NB FROM ROUTE I-70 TO ROUTE 9
ABOUT 0.5 MILE SOUTH OF ROUTE 9
BEGINNING STATION 173+46.43

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

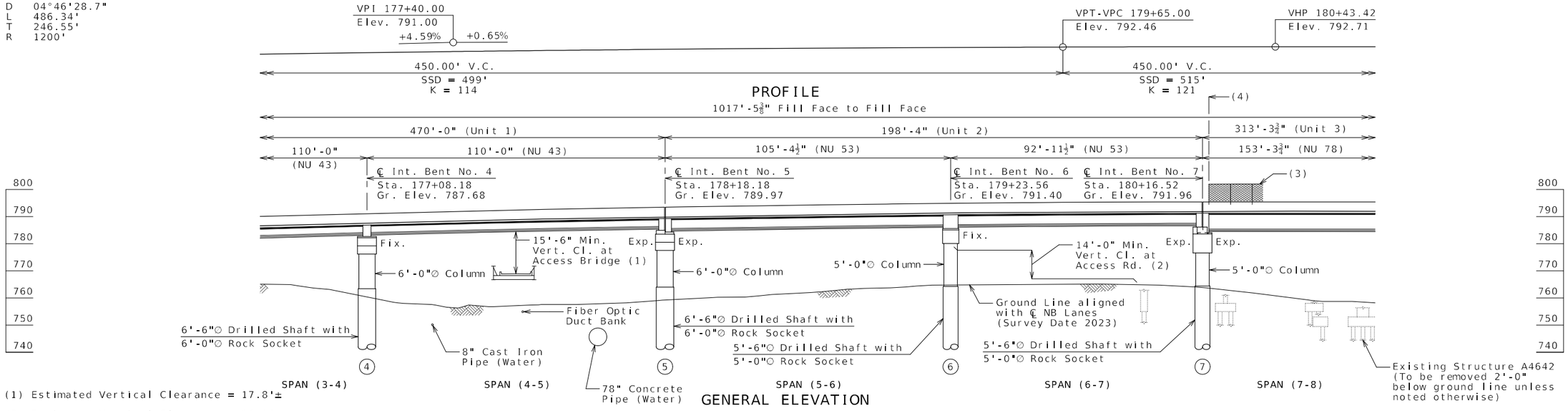
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_001_KU0099.dgn 7:26:13 PM 1/5/2026

CURVE DATA
PI 179+94.97
PC 177+48.42
PT 182+34.76
Δ 23°13'15.5"
D 04°46'28.7"
L 486.34'
T 246.55'
R 1200'

SUPERELEVATION DATA
Sta. 176+39.32, 0% Cross Slope —
Sta. 178+55.32, Full Super -6% ╲



GENERAL ELEVATION

(1) Estimated Vertical Clearance = 17.8'±

(2) Estimated Vertical Clearance = 14.1'±

(3) Continuous Chain Link Fence 6'-6" on 3'-6" Barrier Curb

(4) Start Fence Sta. 179+88.92 Rt.

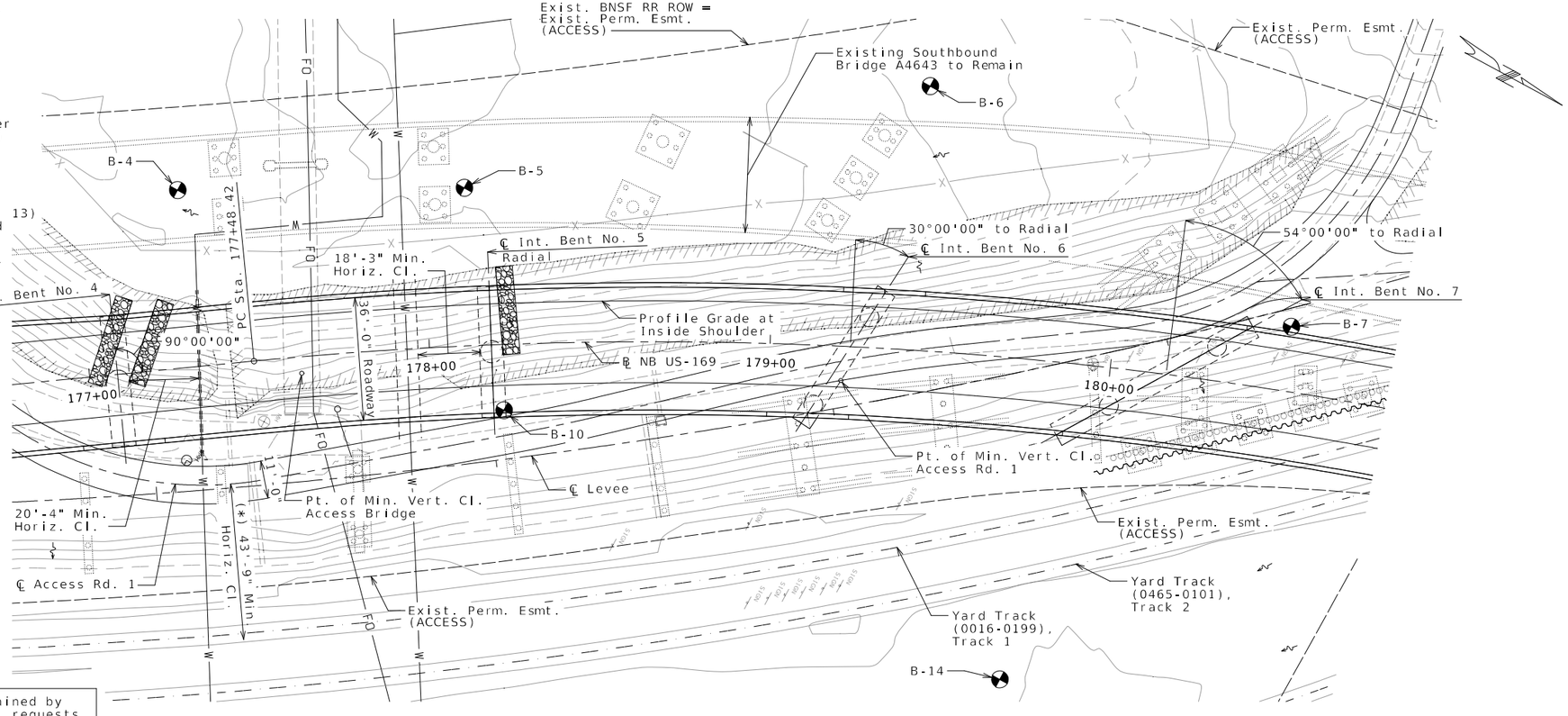
(*) Perpendicular to ℄ RR Tracks

CP 701: 1/2" Iron Bar with Cap
RM 1 - 31.26' S to 90 degree Fence corner
RM 2 - 118.64' SE to N Face Well (No.10)
RM 3 - 92.74' N to S Face Well (No. 1)
Elevation: 745.01

CP 702: 1/2" Iron Bar with Cap
RM 1 - 69.77' SE to Center Manhole
RM 2 - 120.36' SW to N Face of Well (No. 13)
RM 3 - 29.13' N to Center of Gravel Road
Elevation: 747.32

BM 1: Chisled Square on West End of Pier Footing 3rd Pier South of RR Tracks for NB 169 Bridge.
Elevation: 765.69

BM 2: Chiseled Square on Southeast Corner Abutment of Bridge
Elevation: 765.42



PLAN

Note: Utility locations shown were obtained by site survey following Missouri One Call requests. Locations are approximate.

Note: "⊕" Indicates location of boring. For Notice and Disclaimer Regarding Boring Log Data, see Sheet No. 4.

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

Detailed: Oct. 2025
Checked: Oct. 2025

Sheet No. 2 of 132

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	2

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

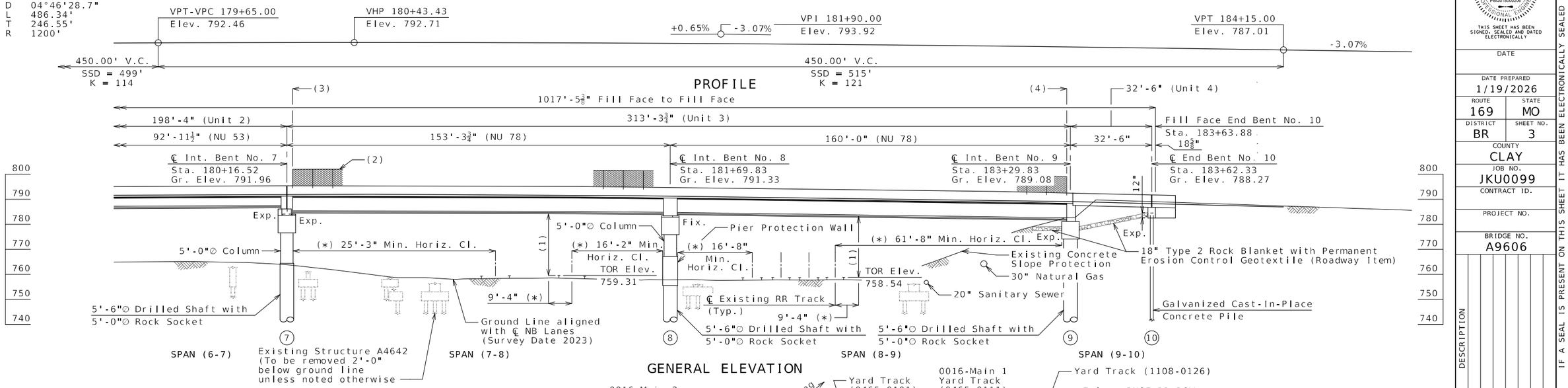
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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CURVE DATA
PI 179+94.97
PC 177+48.42
PT 182+34.76
Δ 23°13'15.5"
D 04°46'28.7"
L 486.34'
T 246.55'
R 1200'

SUPERELEVATION DATA
Sta. 181+86.77, Full Super -6%
Sta. 183+30.77, End Super Transition -2%
Sta. 185+33.65, -2% Cross Slope

PROFILE



GENERAL ELEVATION

(1) Final Vertical Clearance from top of rails to bottom of superstructure shall be at least 23'-6". Track elevations should be verified in the field prior to construction to determine if the final vertical clearance shown will be obtained. Estimated Min. Vertical Clearance = 23'-10"±.

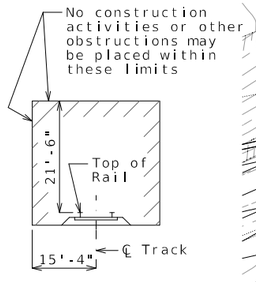
(2) Continuous Chain Link Fence 6'-6" on 3'-6" Barrier Curb (Typ.)

(3) Start Fence Sta. 179+88.92 Rt.

(4) End Fence Sta. 183+06.80 Rt.

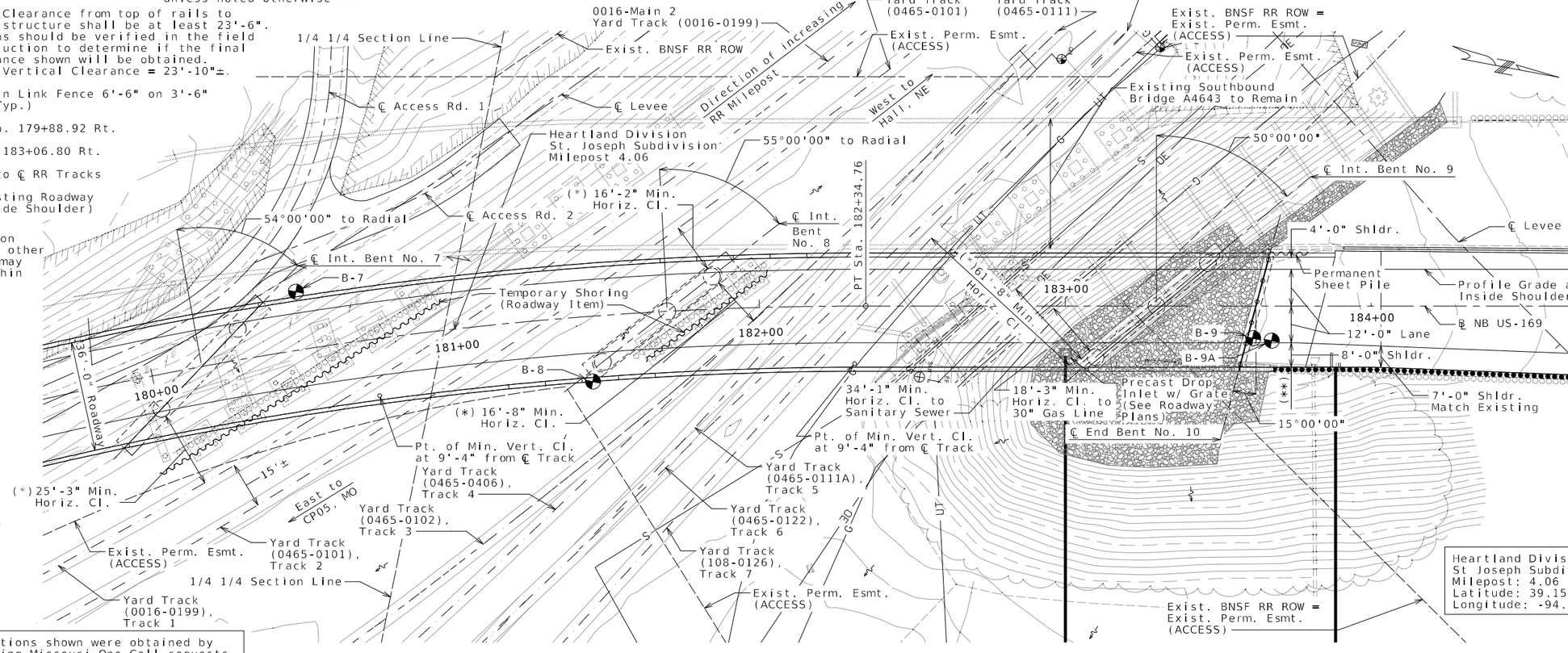
(*) Perpendicular to ℄ RR Tracks

(**) Proposed = Existing Roadway (Lanes and Inside Shoulder)



MINIMUM CONSTRUCTION CLEARANCES

(Normal to railroad)
(Not to scale)



PLAN

Note: Utility locations shown were obtained by site survey following Missouri One Call requests. Locations are approximate.

Note: "⌖" Indicates location of boring. For Notice and Disclaimer Regarding Boring Log Data, see Sheet No. 4.

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

Detailed: Oct. 2025
Checked: Oct. 2025

Sheet No. 3 of 132

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	3

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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GENERAL NOTES:

DESIGN SPECIFICATIONS:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)
Seismic Design Category = A (Nonseismic)
Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{D1} < 0.15 = 0.084
Acceleration Coefficient (effective peak ground acceleration coefficient), A_S = 0.053

DESIGN LOADING:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf (Min.)
Superstructure (Prestressed Concrete NU-Girder - Units 1-3):
Simply-supported, non-composite for dead load.
Continuous composite for live load.

DESIGN UNIT STRESSES:

Class B Concrete (Substructure at Bents No. 1, 6, 7, 8, 9, 10)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-1 Concrete (Type D Barrier, Substructure at Int. Bents No. 2, 3, 4, 5 and Cast-in-Place Concrete Piles)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Type D Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Steel Permanent Sheet Pile (ASTM A572 Grade 50)	fy = 50,000 psi
Welded or Seamless steel shell (pipe) for CIP pile (ASTM A252 Modified Grade 3)	fy = 50,000 psi

For prestressed girder stresses, see Sheets No. 48 thru 58.

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.

Minimum clearance between galvanized piles (CIP pile and Sheet Pile) and uncoated (plain) reinforcing steel including bar supports shall be 1 1/2". Nylon, PVC, or polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

For bridge bent columns and drilled shafts, the Contractor may propose alternate reinforcing bar lap splice locations or mechanical bar splices for approval by the Engineer. Lap splice lengths shall be equal to or greater than those shown on the Plans. No additional payment will be made for increased bar length, mechanical bar splice, or additional reinforcing steel required due to relocated splices. Mechanical bar splices shall be in accordance with Sec 706 or 710.

TRAFFIC HANDLING:

Structure to be closed during construction. Traffic to be maintained on other routes during construction. See roadway plans for traffic control.

Vertical clearance for BNSF Railroad during construction shall be 21'-6" minimum over a 15'-4" wide horizontal opening on each side of the centerline of existing tracks.

CONCRETE PROTECTIVE COATINGS:

Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

TEMPORARY SHORING:

Temporary shoring may be required for construction of Intermediate Bent No. 8. Temporary shoring will be required for existing bridge removals. For Railroad shoring requirements, see Sheet No. 5.

Temporary shoring will be required for construction of the median culvert in the south approach roadway.

Contractor shall backfill temporary shoring with flowable fill during removal of shoring. Flowable fill shall be maintained at least 1 foot above the bottom of temporary shoring as it is extracted. Payment for flowable fill will be considered completely covered by the contract unit price for Temporary Shoring (Roadway Item).

Temporary casing for drilled shaft construction shall include backfill procedures per approved USACE DIPP.

The Contractor shall be responsible for the stability of the structure during all phases of construction prior to completion of the final configuration. The Contractor shall provide all necessary temporary supports and bracing to ensure stability of the structure during erection and construction. The Engineer's review or approval of temporary works shall not relieve the Contractor of this responsibility.

MISCELLANEOUS:

Rubblized concrete from the existing bridge deck that qualifies as clean fill may be placed on spill slope at End Bent No. 10 (Roadway item).

NOTICE AND DISCLAIMER REGARDING BORING LOG DATA:

The locations of all subsurface borings for this structure are shown on the plan sheets for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheets No. 116 thru 132 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the on the plan sheets than is given to the subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risk it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

USACE DRILLED SHAFT REQUIREMENTS NOTES:

Temporary casing is required to allow for a 6" space between temporary and permanent casing.

Extend temporary casing at a minimum 1 foot below the bottom of the upper clay blanket material shown in the nearest geotechnical boring. The clay blanket material is the cohesive zone that lies below the footprint of the levee and above the pervious foundation sand.

The contractor shall completely fill the void between the permanent and temporary casing. Backfill shall be a bentonite-cement grout mix or other mix with limited volume change that can properly fill the void. Backfill shall be installed from bottom up. Temporary casing shall be pulled in manner that backfill grout is always 1 foot above the bottom of the casing.

The USACE Drilled Shaft Requirements shall be will be considered completely covered by the contract unit price for Drilled Shafts.

LEVEE RELATED BACKFILL WITH COMPACTED IMPERVIOUS CLAY MATERIAL:

After removal of structures, backfill with compacted impervious clay, cohesive material benched into existing soil as shown on the plans. Backfill materials shall be placed in 6-inch lifts.

Cohesive materials include silts and clays generally exclusive of sands and gravel: materials for which impact compaction will produce a well-defined moisture-density relationship curve. Granular backfill shall not be allowed. Material shall be approved by the Engineer.

Compaction of backfill materials shall achieve a minimum of 90 percent of maximum density with a moisture content plus or minus 3 percent at optimum moisture per ASTM D698.

Payment for furnishing all material, equipment, tools, labor and any other incidental work for compacted impervious clay backfill or flowable fill, complete in place, will be considered completely covered by the contract unit price for Removal of bridges (A4642).

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

RAILROAD GENERAL NOTES:

These Railroad General Notes are not all inclusive of BNSF requirements. Refer to the BNSF Railway Special Provisions for all additional requirements and coordination information.

For Railroad coordination please refer to the Railroad's Coordination Requirements as part of the Specifications or Special Provisions of the project.

Railroad review and approval of any shoring, erection, demolition, and false-work to build this structure is required. Allow a minimum of four weeks for the review and approval of each submittal and each re-submittal. (Section 3.10 UPRR/BNSF Guidelines for Railroad Grade Separation Project).

Prior to excavation in BNSF Right-of-Way the Contractor shall call and notify the following: (Section 4.10 UPRR/BNSF Guidelines for Railroad Grade Separation Projects).

BNSF Signal/Telecommunications Engineering:
"Call Before You Dig"
1-800-533-2891

BNSF Grade Crossings:
1-800-832-5452

Please refer to the BNSF website for utility review and approval process and application.

A flagman is required when any work is performed within 25 feet of track centerline. If the Railroad provides flagging or other services, the Contractor shall not be relieved of any responsibilities or liabilities as set forth in any document authorizing work. No work is allowed within 50 feet of track centerline when a train passes the work site, and all personnel must clear the area within 25 feet of track centerline and secure equipment when trains are present.

Provide access to BNSF R.O.W., maintained at all times.

Existing ditches to be maintained open at all times during construction.

The proposed grade separation project shall not increase the quantity and/or characteristics of the flow in the Railroad's ditches and/or drainage structures. (Section 5.8 UPRR/BNSF Guidelines for Railroad Grade Separation Projects).

The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad. (Section 4.6 UPRR/BNSF Guidelines for Railroad Grade Separation Projects).

Any shoring system that impact the Railroad operations and/or supports Railroad embankment shall be designed and constructed per Railroad temporary Shoring Requirements. (Section 4.4.2 UPRR/BNSF Guidelines for Railroad Grade Separation Projects).

All demolition within the Railroad's Right-of-Way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad's Demolition requirements. Hot-Work plan shall be submitted to BNSF. (Section 4.4.3 UPRR/BNSF Guidelines for Railroad Grade Separation Projects).

The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the Railroad prior to construction.

Temporary Construction Clearances shall include clearances for falsework. See Sheet No.3 for the Minimum Construction Clearance diagram. (Section 4.4.1; 4.4.5; 5.3 UPRR/BNSF Guidelines for Railroad Grade Separation Projects)

All permanent clearances shall be verified before project closeout.(Plan No. 711100 Sheet 1 UPRR/BNSF Guidelines for Railroad Grade Separation Projects)

Vegetation on or adjacent to ROW shall not become a fire hazard or obstruction to inspection.

TRACK PROTECTION SHORING NOTES:

All dimensions are measured perpendicular to centerline track.

The Contractor shall provide and install track protection shoring before commencing excavation.

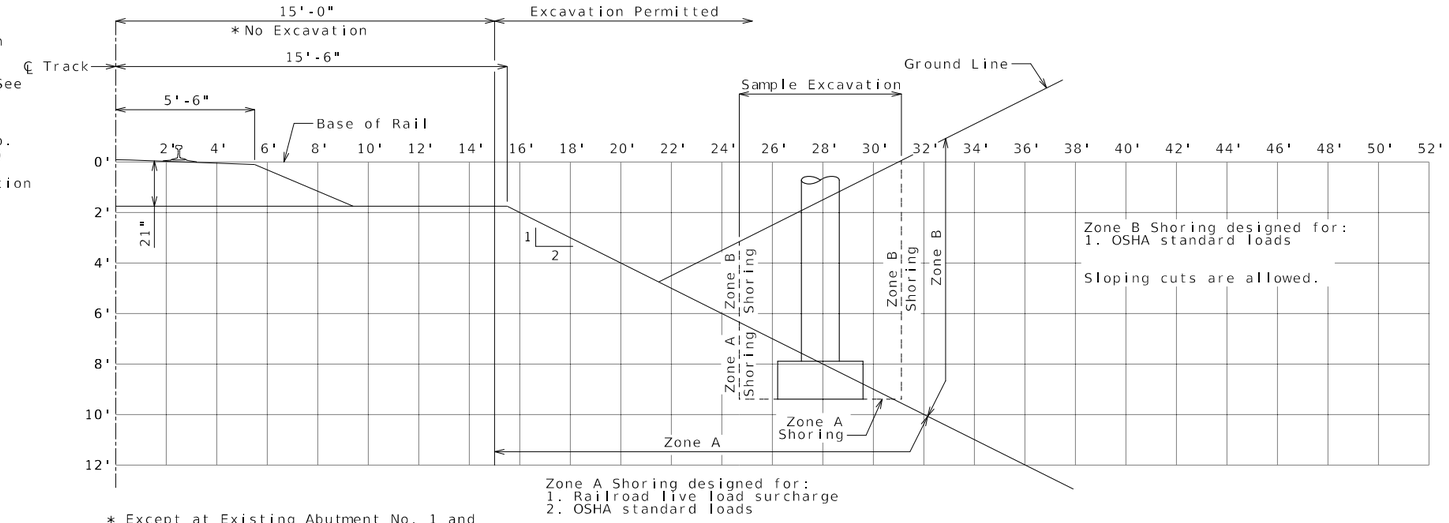
Prior to the start of excavation, the Contractor shall submit detailed plans indicating the nature and extent of the track protection shoring proposed for approval by the Railroad. Installation of track protection shoring shall not happen until the plans have been approved by the Railroad.

Design and construction of the shoring shall comply with the 2021 UPRR/BNSF Guidelines for Temporary Shoring and the AREMA Specifications for Design and Construction of Shoring Adjacent to Active Railroad Tracks.

The Contractor shall monitor the track, ground, and shoring for movement to ensure proper performance of the shoring system and safe operations of trains. A top of rail monitoring plan must be included with the detailed shoring plans. A maximum of 1/4" is acceptable horizontal or vertical movement of the rail for shoring within 25' of the centerline Track.

For all excavations within Zone A, track protection shoring plans must be accompanied by the design calculations. Both the plans and calculations shall be stamped by a Professional Engineer registered in the State of Missouri.

Payment for shoring plans, calculations, installation and removal of shoring shall be considered subsidiary to Temporary Shoring (Roadway Item).



* Except at Existing Abutment No. 1 and Bents No. 12, 15 & 16 for temporary shoring required for Removal of Bridges (A4642) with BNSF approved design variance. Shoring shall be designed and constructed per the Railroad temporary shoring requirements. Shoring design and construction procedures shall be submitted to the Railroad. Shoring shall be at locations as to provide maximum clearance from tracks as practical.

TRACK PROTECTION SHORING REQUIREMENTS

RAILROAD NOTES & DETAILS

Detailed: Sept. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	195		195
Removal of Bridges (A4642)	lump sum			1
Bridge Approach Slab (Major)	sq. yard		174	174
(78 in.) Chain-Link Railroad Fence (Structures)	linear foot		314	314
Drilled Shafts (5 ft. 6 in. Dia.)	linear foot	1322.9		1322.9
Drilled Shafts (6 ft. 6 in. Dia.)	linear foot	523.2		523.2
Rock Sockets (5 ft. 0 in. Dia.)	linear foot	251.0		251.0
Rock Sockets (6 ft. 0 in. Dia.)	linear foot	110.5		110.5
Video Camera Inspection	each	14		14
Foundation Inspection Holes	linear foot	509.5		509.5
Sonic Logging Testing	each	14		14
Galvanized Cast-In-Place Concrete Piles (16 in.)	linear foot	384		384
Galvanized Cast-In-Place Concrete Piles (24 in.)	linear foot	400		400
Dynamic Pile Testing	each	9		9
Pile Point Reinforcement	each	6		6
Pile Point Reinforcement for 24 in. CIP Piles	each	8		8
Class B Concrete (Substructure)	cu. yard	679.5		679.5
Class B-1 Concrete (Substructure)	cu. yard	314.3		314.3
Class B-2 Concrete (Superstructure Solid Slab)	cu. yard		72.0	72.0
Type D Barrier	linear foot		2100	2100
Slab on Concrete NU-Girder	sq. yard		4351	4351
NU 43, Prestressed Concrete NU-Girder	linear foot		1088	1088
NU 53, Prestressed Concrete NU-Girder	linear foot		2201	2201
NU 78, Prestressed Concrete NU-Girder	linear foot		1550	1550
Reinforcing Steel (Bridges)	pound	519,730		519,730
Reinforcing Steel (Epoxy Coated)	pound	93,570		93,570
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1		1
Steel Intermediate Diaphragm for P/S Concrete Girders	each		61	61
Drainage System (On Structure)	lump sum		1	1
Galvanized Permanent Sheet Pile Wall	sq. foot	210		210
Vertical Drain at End Bents	each	2		2
Laminated Neoprene Bearing Pad	each		20	20
Laminated Neoprene Bearing Pad (Tapered)	each		35	35
Laminated Neoprene Bearing Pad Assembly	each		25	25
Strip Seal Expansion Joint System	linear foot		135	135

All concrete above the construction joint in End Bent No. 1 is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All reinforcement in End Bent No. 1 and all reinforcement in cast-in-place pile at End Bent No. 1 is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All reinforcement in End Bent No. 10 and all reinforcement in cast-in-place pile at End Bent No. 10 is included in Reinforcing Steel (Epoxy Coated).

All concrete above the construction joint in End Bent No. 10 is included in Class B-2 Concrete (Superstructure Solid Slab).

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All concrete for Unit 4 solid slab is included in Class B-2 Concrete (Superstructure Solid Slab).

All reinforcing steel for Unit 4 solid slab is included in Reinforcing Steel (Epoxy Coated).

Removal of Bridges (A4642) shall include removal of the gravity block wall Bridge No. A8081 located on the west side of the south approach roadway. Payment for Removal of Bridges (A8081) will be considered completely covered by the contract unit price for Removal of Bridges (A4642).

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	1488
Reinforcing Steel (Epoxy Coated)	pound	435,030

The tables of Estimated Quantities for Slab on Concrete NU-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs in Units 1-3. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for stay-in-place corrugated steel forms, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

Slab shall be cast-in-place with corrugated steel forms. Precast panels will not be permitted.

STAY-IN-PLACE CORRUGATED STEEL FORMS:

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

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

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

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

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	6

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

SUMMARY OF ESTIMATED QUANTITIES

Foundation Data

Type	Design Data		Bent Number 1	2	3	4	5	6	7	8	9	10
Load Bearing Pile	Pile Type and Size		CECIP 24"	-	-	-	-	-	-	-	-	CECIP 16"
	Number	each	8	-	-	-	-	-	-	-	-	6
	Approximate Length Per Each	foot	50	-	-	-	-	-	-	-	-	64
	Pile Point Reinforcement	each	All	-	-	-	-	-	-	-	-	All
	Min. Galvanized Penetration (Elev.)	foot	Full Length	-	-	-	-	-	-	-	-	Full Length
	Minimum Tip Penetration (Elev.)	foot	-	-	-	-	-	-	-	-	-	-
	Criteria for Min. Tip Penetration		-	-	-	-	-	-	-	-	-	-
	Pile Driving Verification Method		DT	-	-	-	-	-	-	-	-	DT
	Resistance Factor, Ø dyn		0.75	-	-	-	-	-	-	-	-	0.65
	Minimum Nominal Axial Compressive Resistance	kip	325	-	-	-	-	-	-	-	-	220
Rock Socket	Number	each	-	1	1	1	1	2	2	3	3	-
	Layer 1 Foundation Material		-	Rock	Rock	Rock	Rock	Rock	Rock	Rock	Rock	-
	Layer 1 Elevation Range	foot	-	624.0-596.0	628.0-604.0	631.0-609.0	630.5-611.5	627.0-609.0	628.5-610.5	622.0-602.0	622.0-608.0	-
	Layer 1 Resistance Factor, Ø qs		-	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	-
	Layer 1 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	-
	Resistance Factor, Ø qp		-	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	-
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	-	113.8	119.6	117.1	121.1	119.1	113.2	113.7	112.5	-

LOAD BEARING PILES:

DT = Dynamic Testing. Perform on all pile at End Bent No. 1 and on 1 pile at End Bent No. 10. Contractor shall have the option for single PDA at End Bent No. 1 with approval by Engineer if dynamic pile testing demonstrates MNACR of 375 kips.

CECIP = Closed Ended Cast-in-Place concrete pile

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

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

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

ROCK SOCKET (DRILLED SHAFTS):

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

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

The cost of any required excavation to the top of the drilled shafts, temporary fill for drilled shaft construction, and any restoration of levee riprap will be considered completely covered by the contract unit price for other items.

Thickness for permanent steel casing shall be as shown on the plans and in accordance with Sec 701.

Use smooth-walled steel for all temporary and permanent drilled shaft casings.

FOUNDATION DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	7

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

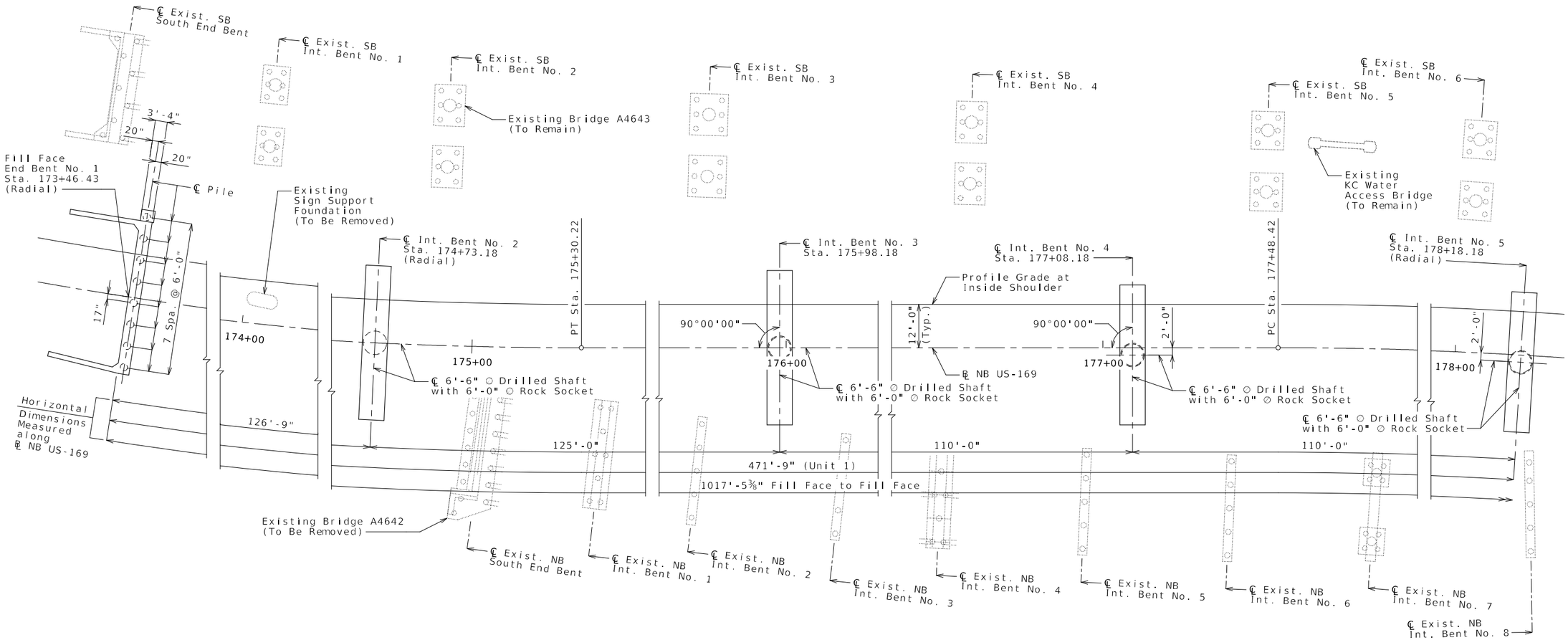
PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No. : 000165
BMcD Project No. 154749



PLAN

SUBSTRUCTURE LAYOUT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	8

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

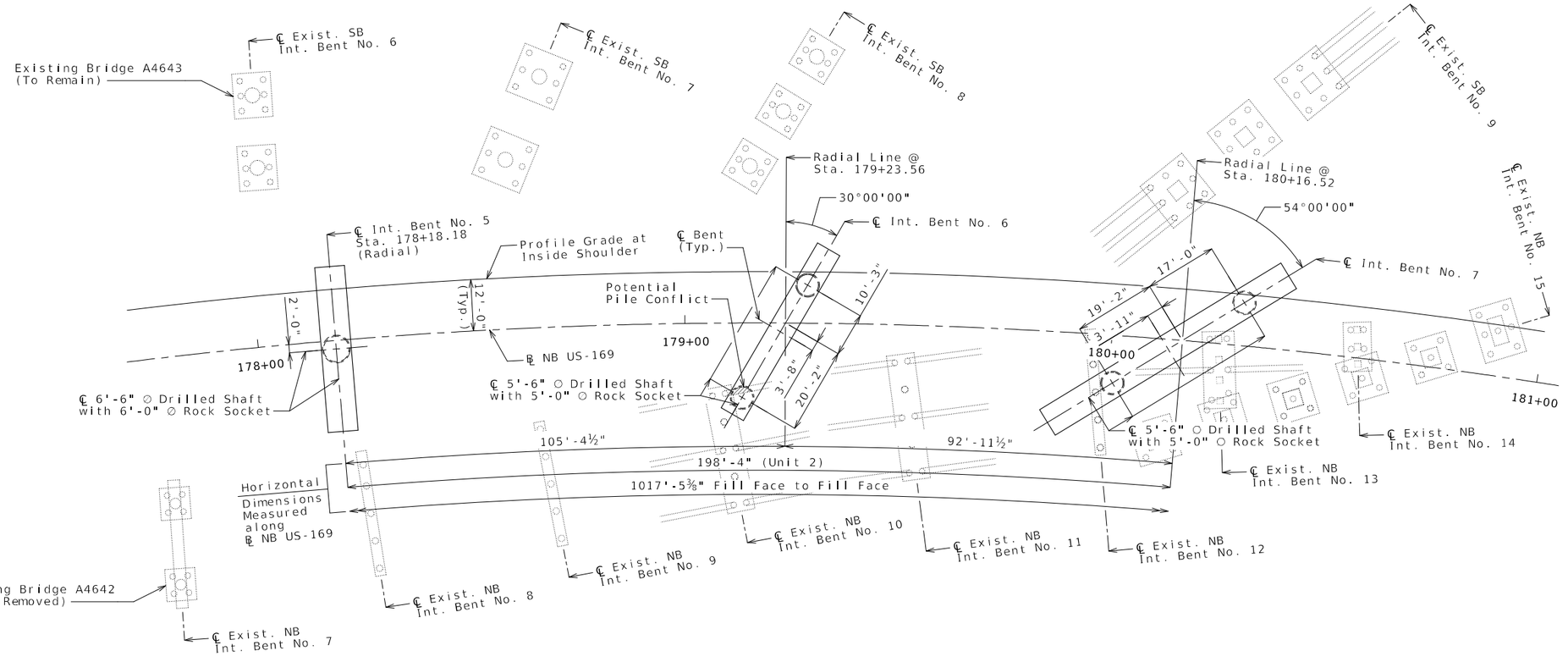
BRIDGE NO.
A9606

DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



PLAN

SUBSTRUCTURE LAYOUT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER
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DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	9

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

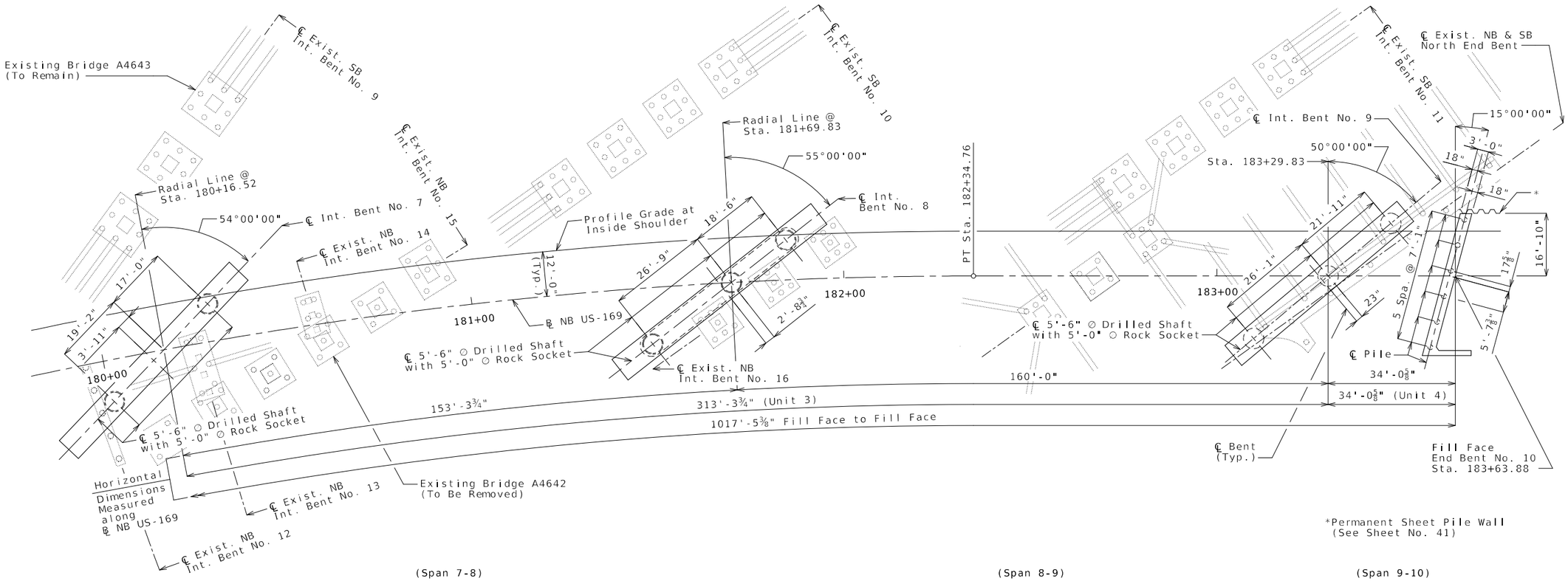
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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Certificate of Authority No.: 000165
BMcD Project No. 154749



PLAN

SUBSTRUCTURE LAYOUT

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 10 of 132

THOMAS M. GREER
NUMBER PE-2010000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	10

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

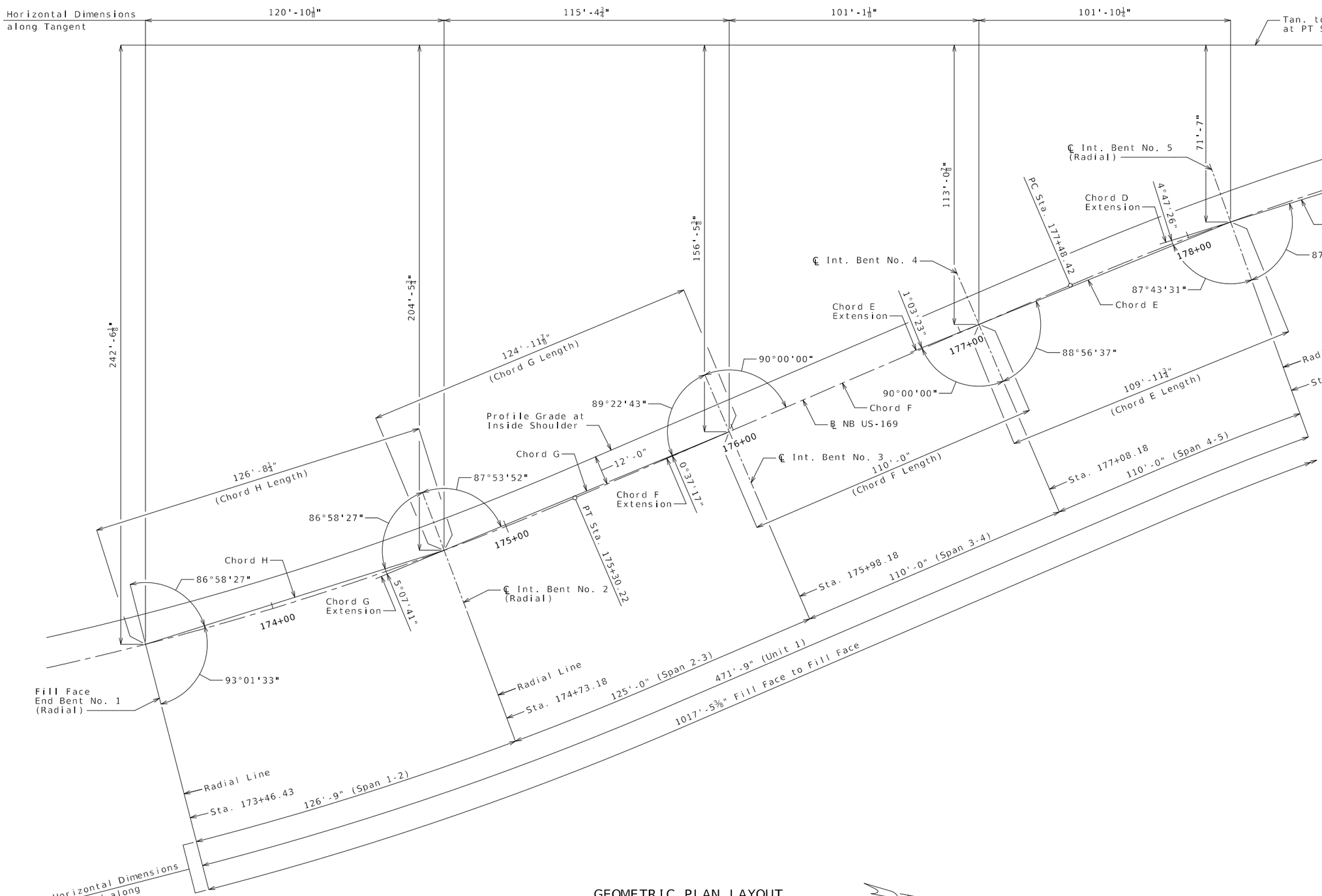
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Certificate of Authority
No.: 000165
BMcD Project No. 154749

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GEOMETRIC PLAN LAYOUT
END BENT NO. 1 TO INT. BENT NO. 5

GEOMETRIC PLAN LAYOUT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
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DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

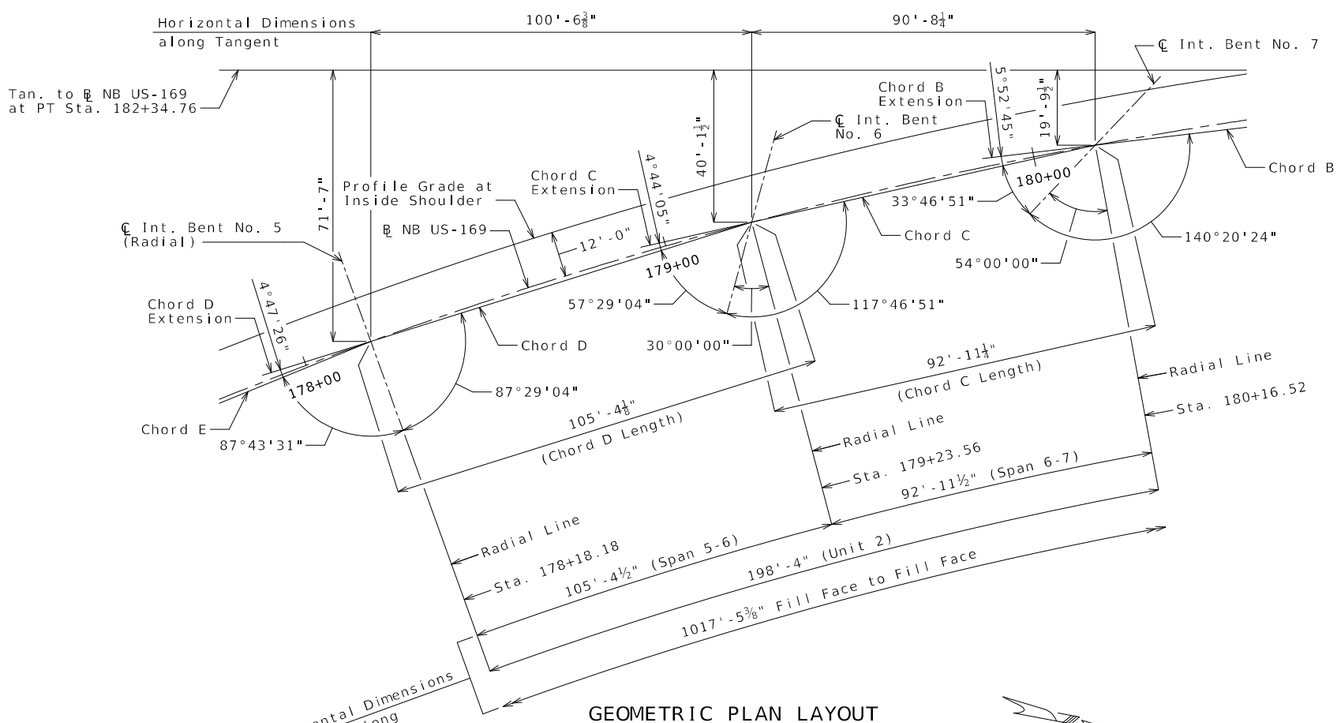
BRIDGE NO.
A9606

DESCRIPTION	DATE

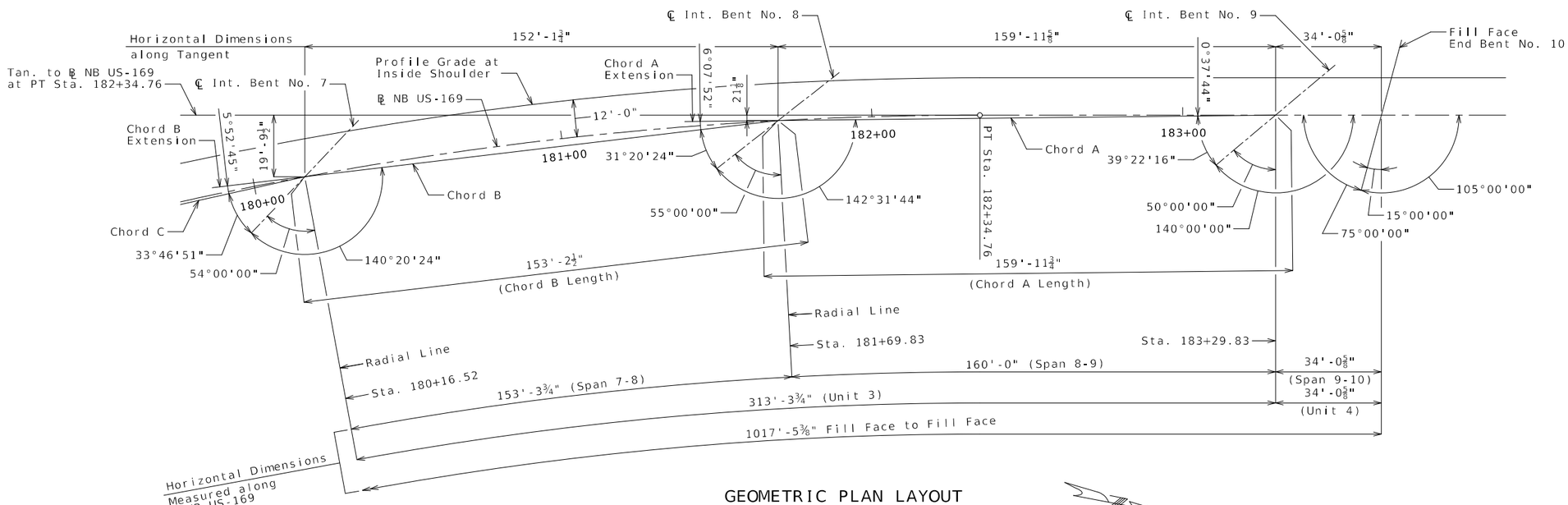
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BMcD Project No. 154749



GEOMETRIC PLAN LAYOUT
INT. BENT NO. 5 TO INT. BENT NO. 7



GEOMETRIC PLAN LAYOUT
INT. BENT NO. 7 TO END BENT NO. 10

GEOMETRIC PLAN LAYOUT

Detailed: Oct. 2025
Checked: Oct. 2025

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THOMAS M. GREER
NUMBER PE-2010000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

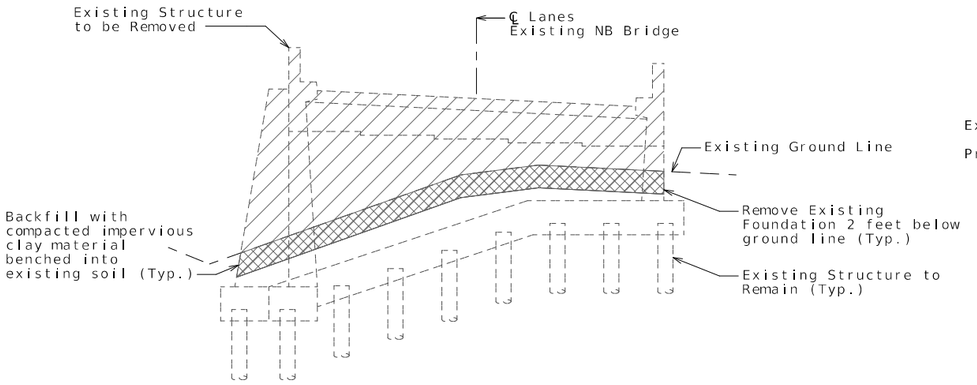
BRIDGE NO.
A9606

DESCRIPTION	DATE

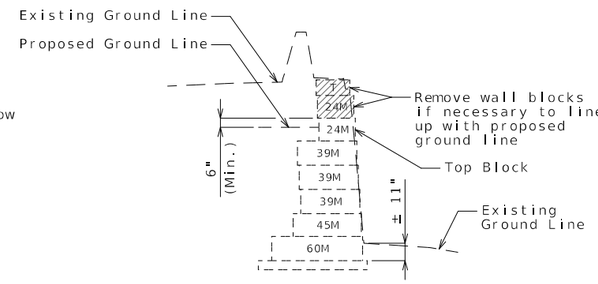
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Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

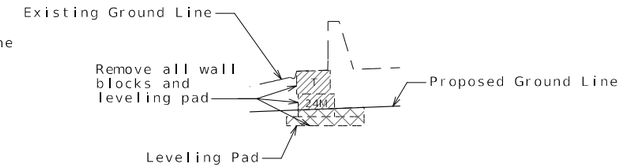


SOUTH ABUTMENT

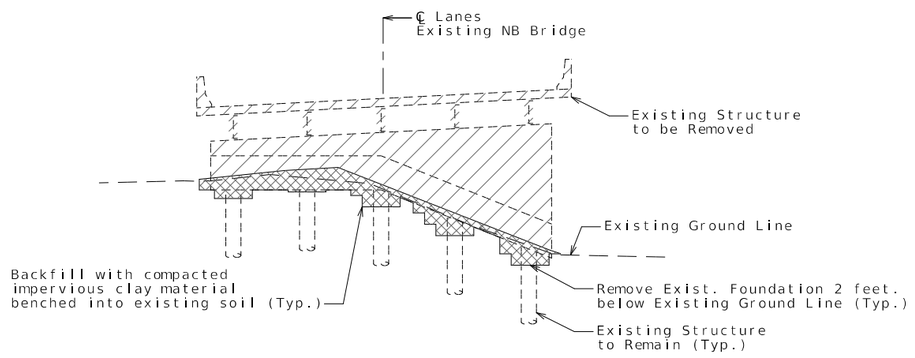


EXISTING WALL A7619 TYPICAL SECTION

(Near Bridge No. A9606 End Bent No. 1)



EXISTING WALL A8081 TYPICAL SECTION



EXISTING BENTS NO. 1 & 2

(Existing Bent No. 1 shown, Bent No. 2 similar)

LEGEND

Limits of Removal

Limits of Backfill

Notes:
For Notes for Levee Related Backfill with Compacted Impervious Clay Material, See Sheet No. 4.

Removal details and dimensions are shown based upon the existing bridge plans. Contractor to field verify all dimensions.

Removals shall follow Sec 216.10 of the Standard Specifications. Removal depths shall be based upon depths shown in these plans.

Retaining Wall A7619:

Only remove blocks as directed by the Engineer where adjusting ground line elevation for the proposed condition.

Typical Section of wall is shown based on existing plan information. Contractor to field verify all dimensions. Proposed and existing ground line varies. Number and type of blocks to remove may vary.

Top block shall have a minimum of 6" clear above the proposed ground line before removing the upper block(s).

Prevent ponding of water on top of wall. Provide grout on the upper surface of the top block, or other material as directed by the Engineer, to drain away from the
front face as necessary.

The cost of block removal and grout, complete in place, will be considered completely covered by the contract unit price for Removal of Bridges (A4642).

REMOVAL DETAILS
WALL, SOUTH ABUTMENT AND BENTS NO. 1 AND 2

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	13

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

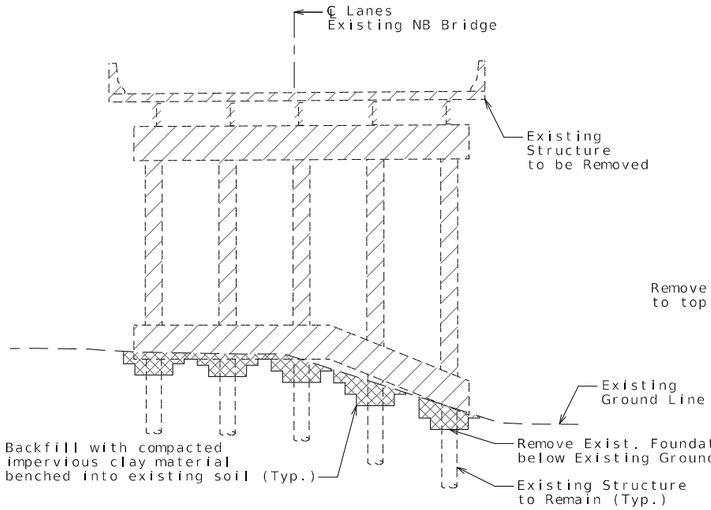
BRIDGE NO.
A9606

DESCRIPTION	DATE

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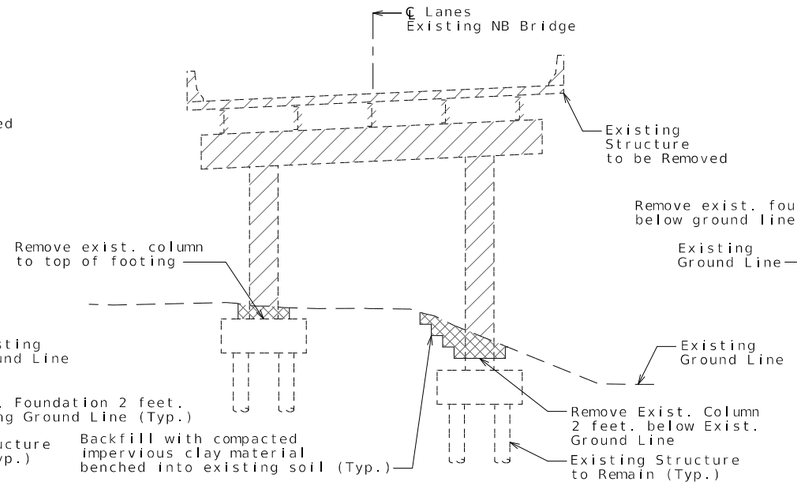
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

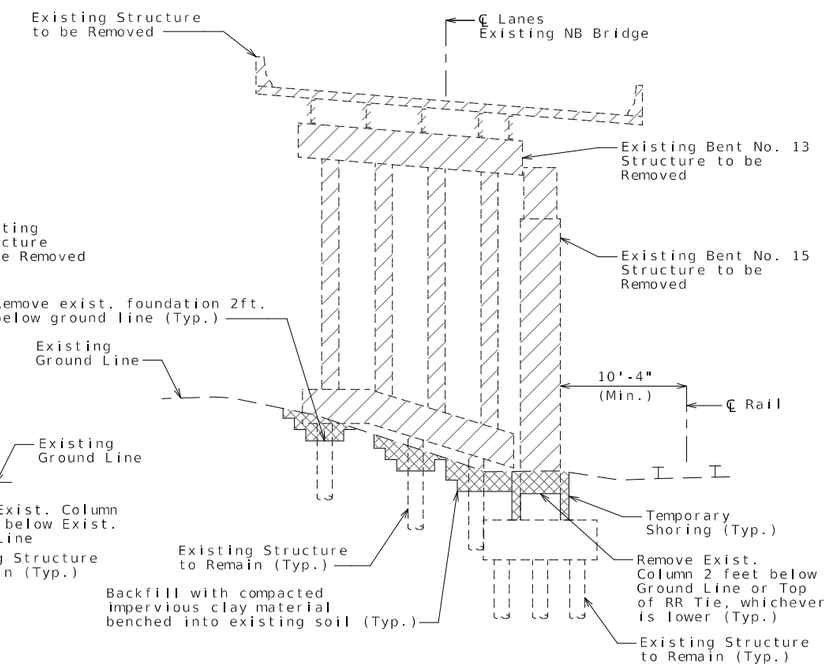


EXISTING BENTS NO. 3-6 AND 8-12

(Existing Bent No. 9 shown. Others similar.)



EXISTING BENT NO. 7



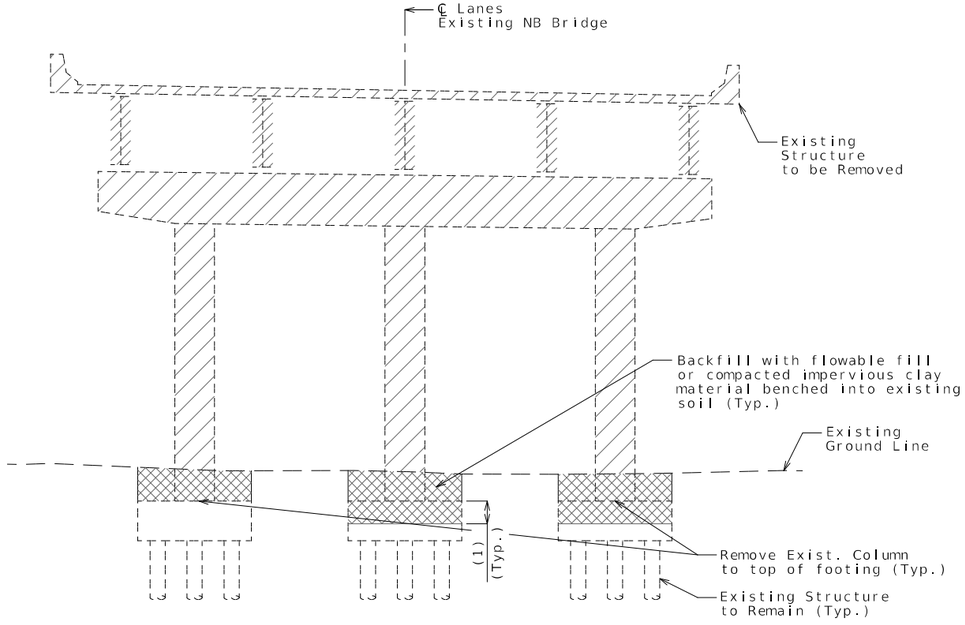
EXISTING BENTS NO. 13 AND 15

(Existing Bent No. 13 shown. Bent No. 14 similar.)

LEGEND

Limits of Removal

Limits of Backfill

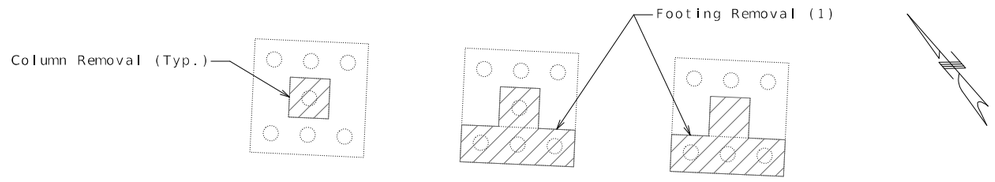


EXISTING BENT NO. 16 ELEVATION

Notes:
For Notes for Levee Related Backfill with Compacted Impervious Clay Material, See Sheet No. 4.

Removal details and dimensions are shown based upon the existing bridge plans. Contractor to field verify all dimensions.

Removals shall follow Sec 216.10 of the Standard Specifications. Removal depths shall be based upon depths shown in these plans.



EXISTING BENT NO. 16 PLAN

(1) Remove Exist. Footings as necessary to construct proposed Bent No. 8 Pier Protection Wall.

REMOVAL DETAILS BENTS NO. 3-16

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	14

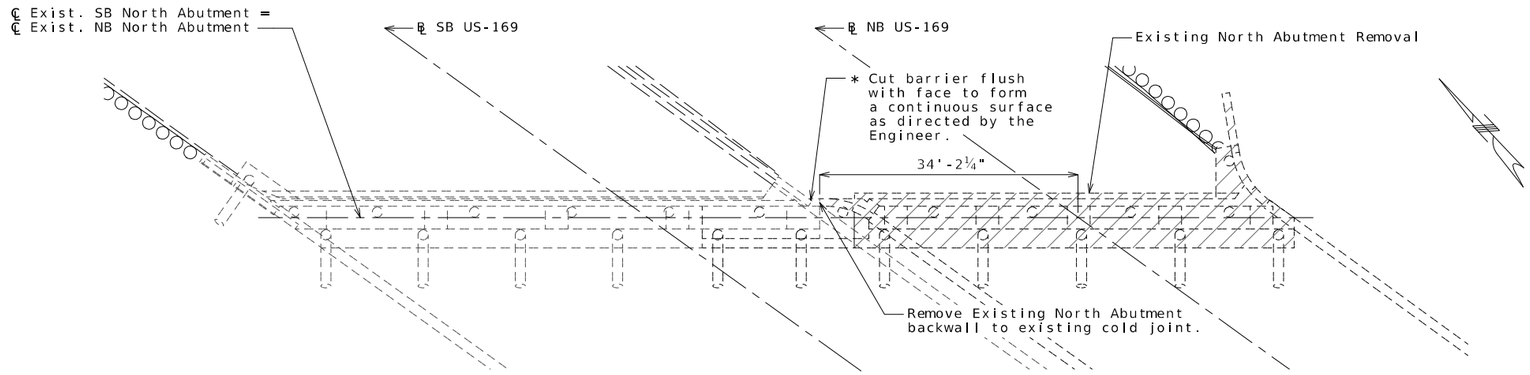
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION	DATE

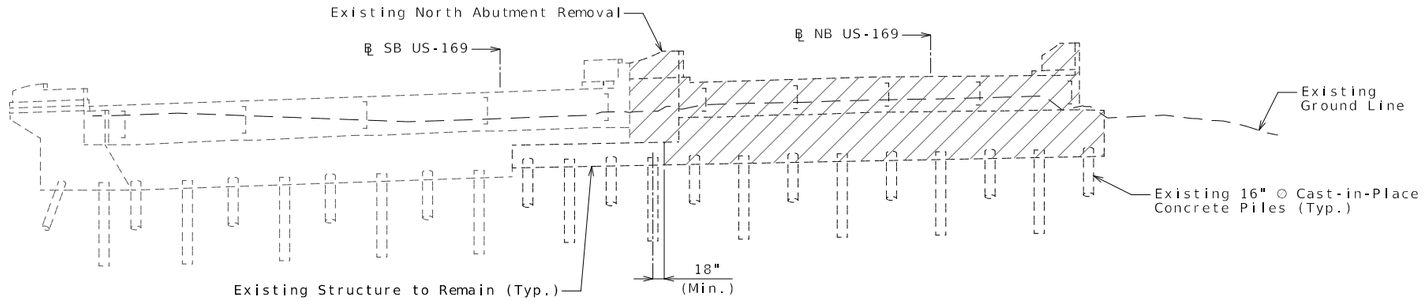
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

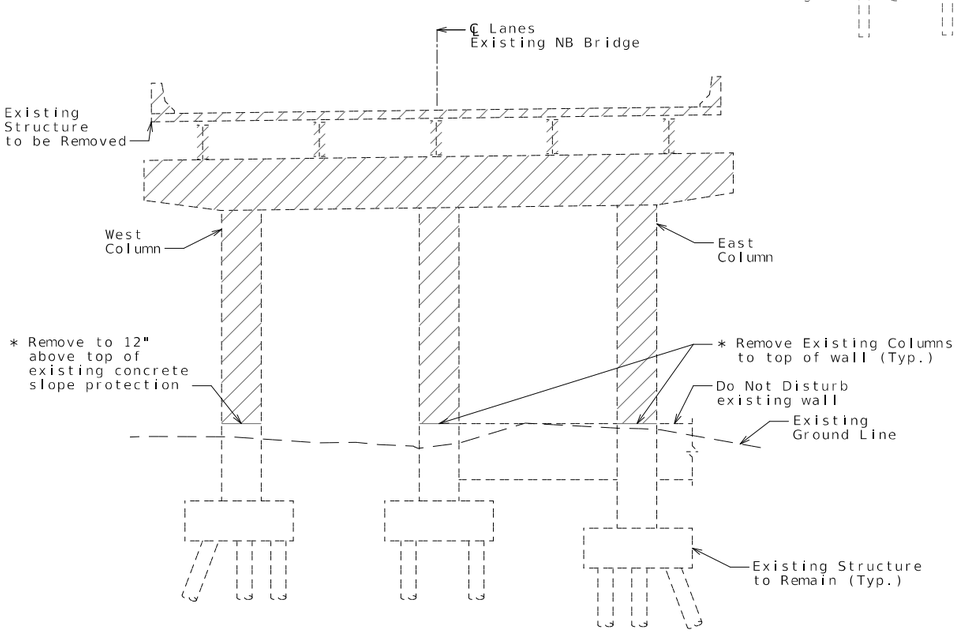
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Kansas City, Missouri 64114
816-333-9400
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BMcD Project No. 154749



EXISTING NORTH ABUTMENT - PLAN



EXISTING NORTH ABUTMENT - ELEVATION



EXISTING BENT NO. 17

LEGEND

Limits of Removal

Notes:

Removal details and dimensions are shown based upon the existing bridge plans. North Abutment details are shown based upon the 1972 Broadway Extension Plans. Contractor to field verify all dimensions.

Partial Removal of Bent No. 17 columns and the North Abutment shall follow Sec 216.70. Removal methods shall not damage or reduce structural integrity of the portion of the abutment supporting the Southbound Bridge (A4643). Any portion of the remaining structure damaged during removal of the existing concrete shall be repaired or the material replaced, at the Contractor's expense, as directed by the Engineer.

* Apply Protective Coating - Concrete Bents and Piers (Epoxy) to exposed removal line at Existing North Abutment and Existing Bent No. 17.

For details of Permanent Steel Pile Wall, see Sheet No. 41.

REMOVAL DETAILS
BENT NO. 17 & NORTH ABUTMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
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DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	15

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

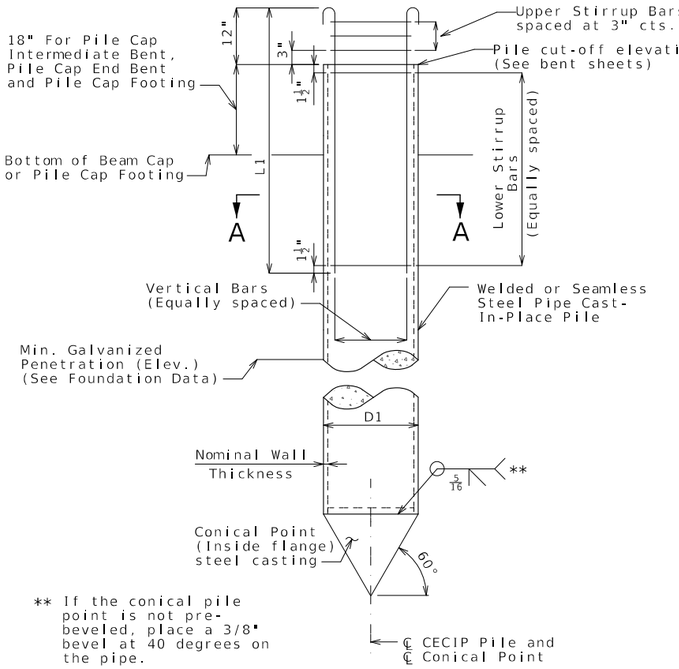
BRIDGE NO.
A9606

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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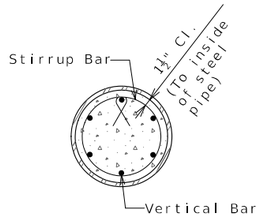
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9400 Ward Parkway
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816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

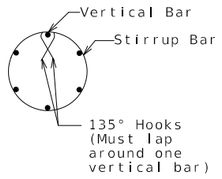


** If the conical pile point is not pre-beveled, place a 3/8" bevel at 40 degrees on the pipe.

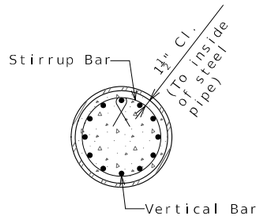
GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE WITH CONICAL PILE POINT REINFORCEMENT



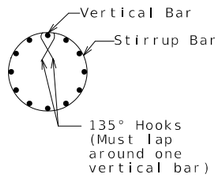
SECTION A-A
END BENT NO. 10



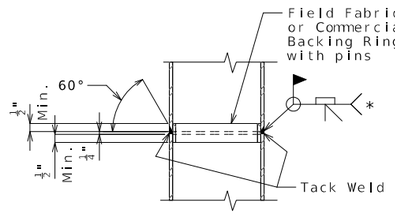
DETAIL OF SEISMIC STIRRUP BAR
END BENT NO. 10



SECTION A-A
END BENT NO. 1



DETAIL OF SEISMIC STIRRUP BAR
END BENT NO. 1



STEEL PIPE PILE SPLICE

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

Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data		
Bent Number	1	10
D1, CECIP Pile (O.D.)	24"	16"
Min. Nominal Wall Thickness	½"	½"
Pile Point Reinforcement	Conical	Conical
Vertical Bars	12-#6-V100	6-#6-V1000
L1, Length of Vertical Bars	7'-3"	5'-3"
Upper Stirrup Bars	3-#4-P100	3-#4-P1000
Lower Stirrup Bars	7-#4-P100	5-#4-P1000

Notes:

Welded or seamless steel shell (pipe) shall be ASTM A252 Modified Grade 3 (fy = 50,000 psi) with physical and chemical requirements that meet ASTM A572 Grade 50. Pipe certification and source material certification shall be required.

Concrete for cast-in-place pile shall be Class B-1.

Steel casting for conical pile point reinforcement shall be ASTM A148 Grade 90-60.

The minimum wall thickness of any spot or local area of any type shall not be more than 12.5% under the specified nominal wall thickness.

The contractor shall determine the pile wall thickness required to avoid damage from all driving activities, but wall thickness shall not be less than the minimum specified. No additional payment will be made for furnishing a thicker pile wall than specified on the plans.

Splices of pipe for cast-in-place concrete pile shall be made watertight and to the full strength of the pipe above and below the splice to permit hard driving without damage. Pipe damaged during driving shall be replaced without cost to the state. Pipe sections used for splicing shall be at least 5 feet in length.

At the contractor's option, the hooks of vertical bars embedded in the beam cap may be oriented inward or outward.

Reinforcing steel for cast-in-place piles is included in the Bill of Reinforcing Steel.

All reinforcement for cast-in-place pile at End Bent No. 1 is included in the Estimated Quantities for Slab on Concrete NU-Girder. All reinforcement for cast-in-place pile at End Bent No. 10 is included in Reinforcing Steel (Epoxy Coated).

For Foundation Data table, see Sheet No. 7.

GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE 169 | STATE MO

DISTRICT BR | SHEET NO. 16

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

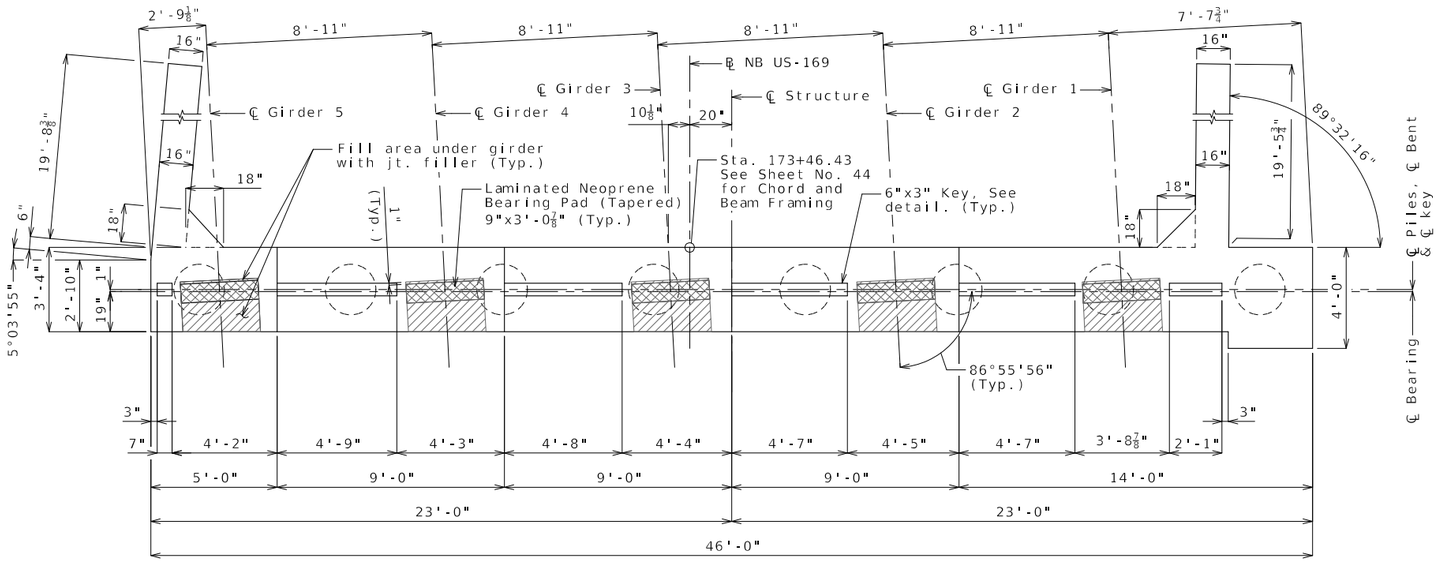
REV.

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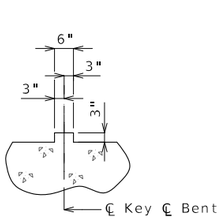
Detailed: Oct. 2025
Checked: Oct. 2025

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

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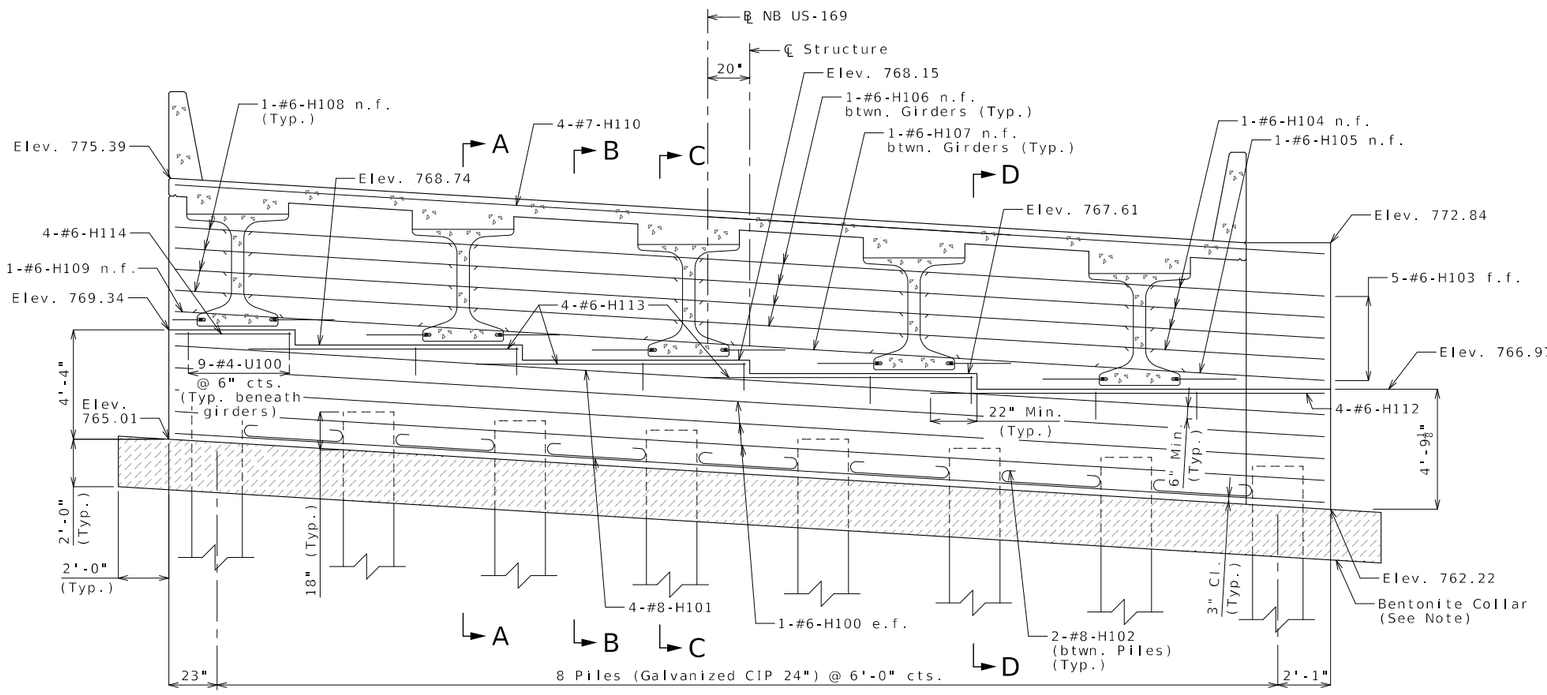
PLAN OF BEAM



SECTION THRU KEY

Substructure Quantity Table for End Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	35
Galvanized Cast-in-Place Concrete Piles (24 in.)	linear foot	400
Dynamic Pile Testing	each	8
Pile Point Reinforcement for 24 in. CIP Piles	each	8
Class B Concrete (Substructure)	cu. yard	32.6

These quantities are included in the Estimated Quantities table on Sheet No. 6.



SECTION NEAR END BENT
(Sign support foundation details not shown for Clarity)

Notes:

For details of the Laminated Neoprene Bearing Pad, see Sheet No. 43.

Strands at end of girders shall be field bent, or if necessary, cut in field to maintain 1 1/2-inch minimum clearance to fill face of end bent.

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

For Sections A-A, B-B, C-C & D-D, see Sheet No. 19.

e.f. denotes each face
f.f. denotes far face
n.f. denote near face

For details of Vertical Drain at End Bents, see Sheet No. 21.

Work this sheet with Sheets No. 18 thru 20.

For details and reinforcement for sign support foundation, see Sheet No. 20.

Notes for Bentonite Collar:

After installation of the piles, a bentonite collar shall be constructed under the end bent barrel beam. Bentonite collar shall have a depth of two (2) feet below the end bent barrel beam. It shall be five (5) feet wide centered on the end bent barrel beam.

Bentonite collar shall be well mixed soil material with a minimum of 20 lbs of bentonite per cubic feet of soil. Bentonite shall be mixed with cohesive material. Uniform blending of the bentonite into the soil matrix shall be performed with equipment appropriate for the volume of materials placed. The final bentonite collar material shall be consistent and homogeneous.

Collar and backfill materials shall be placed in 6-inch lifts. Cohesive materials include silts and clays generally exclusive of sands and gravel: materials for which impact compaction will produce a well-defined moisture-density relationship curve. Granular backfill shall not be allowed.

Compaction of collar and backfill shall achieve a minimum of 90 percent of maximum density with a moisture content plus or minus 3 percent at optimum moisture per ASTM D698.

Payment for furnishing all material, equipment, tools, labor and any other incidental work as shown on this sheet for Bentonite Collar, complete in place, will be considered completely covered by the contract unit price for Class 1 Excavation.

END BENT NO. 1 - PLAN & ELEVATION

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	17

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

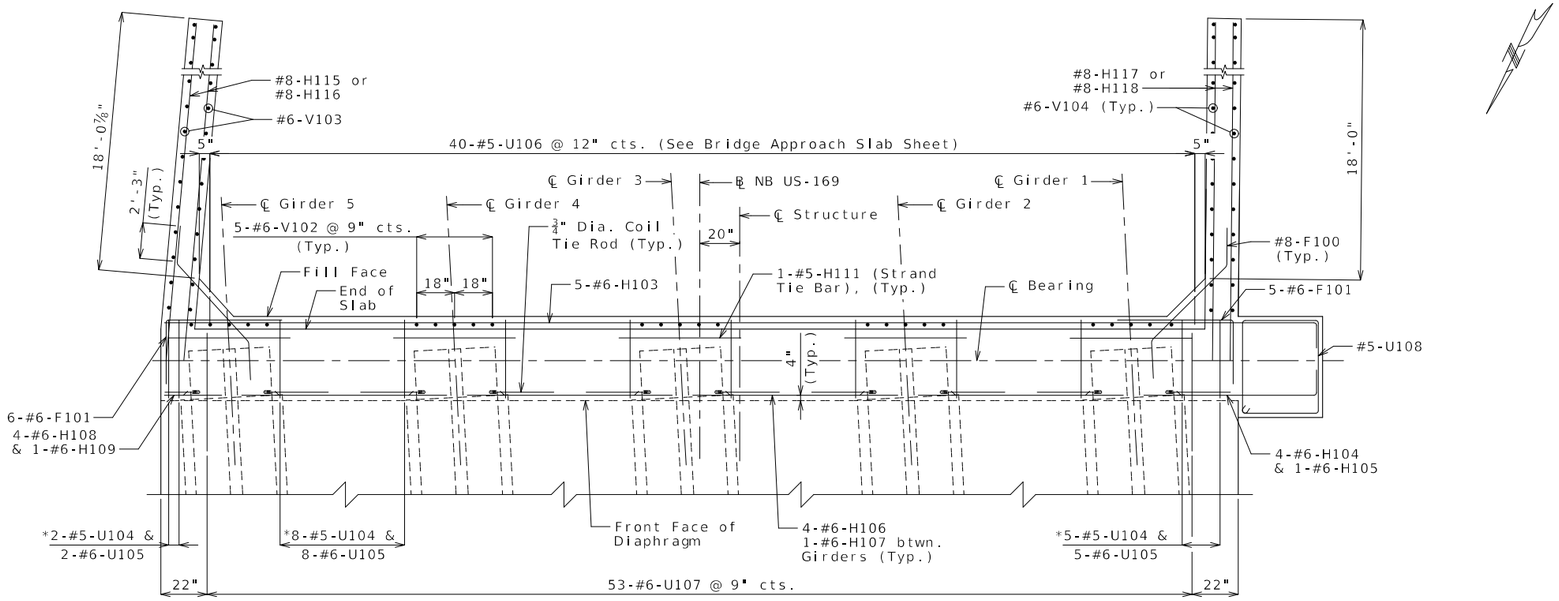
BRIDGE NO.
A9606

DESCRIPTION	DATE

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

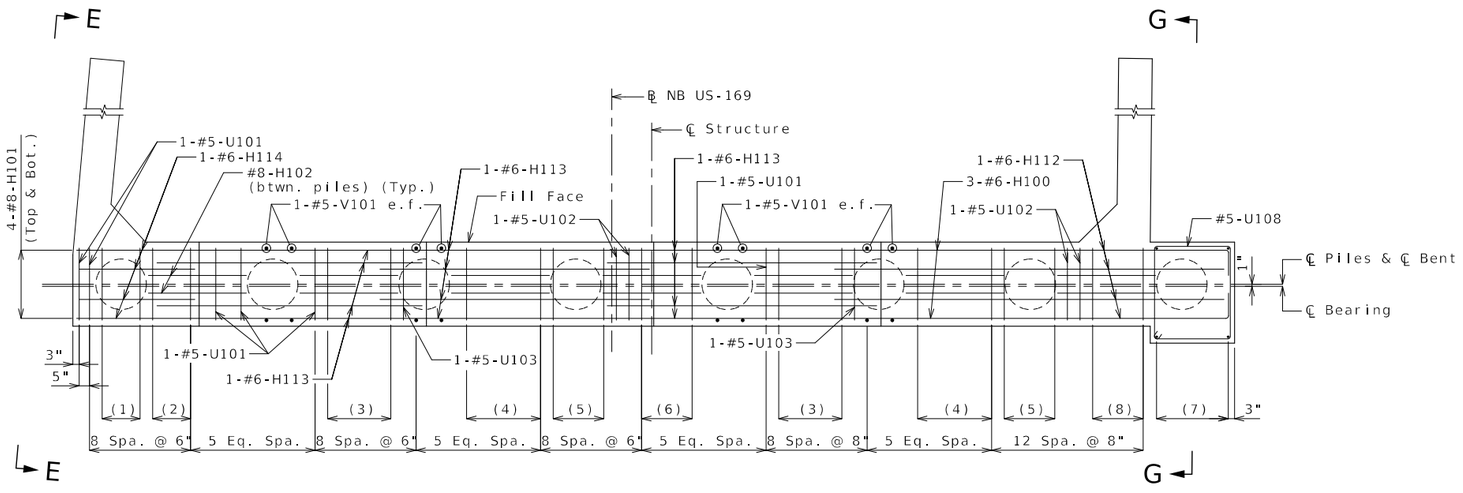
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Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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PART PLAN OF DIAPHRAGM & WINGWALL REINFORCING

∗ Space bars to match Bearing Beam Reinforcing.



PLAN OF BEARING BEAM REINFORCING

(Keys not shown for clarity)

(1) 4-#5-U103
(2) 4-#5-U102
(3) 6-#5-U102
(4) 4-#5-U101
(5) 5-#5-U103
(6) 3-#5-U101
(7) 7-#5-V105 e.f.
(8) 5-#5-U101

Notes:

For location of coil tie rods and #7-H110 (strand tie bar), see Sheets No. 49 & 50.

For Elevations E-E and G-G, see Sheet No. 19.

e.f. denotes each face

Work this sheet with Sheets No. 17, 19 & 20.

END BENT NO. 1 - REINFORCING DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

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THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

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DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	18

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

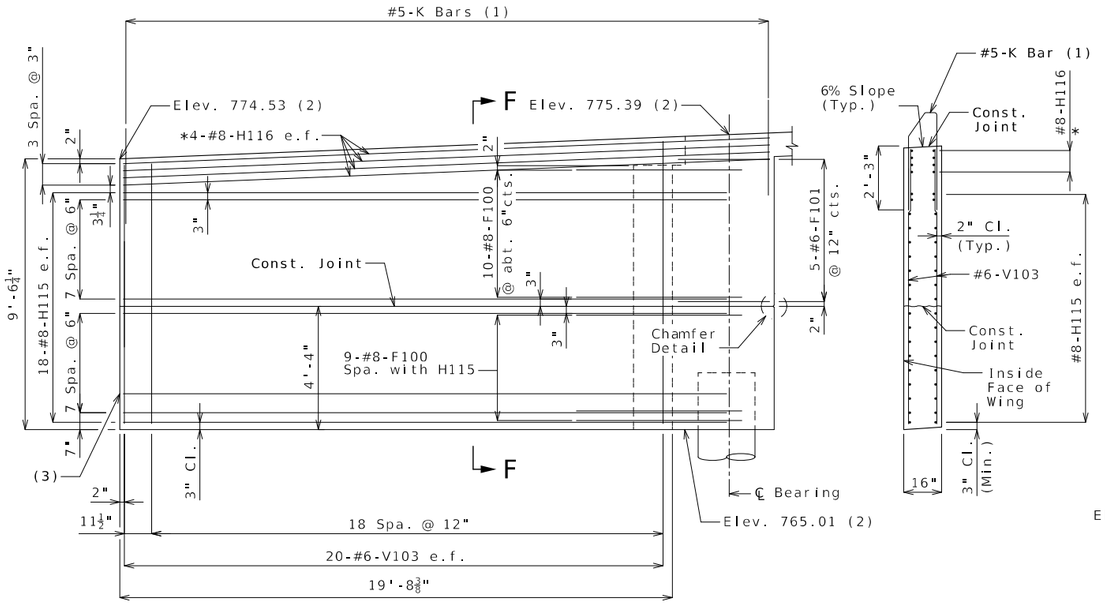
BRIDGE NO.
A9606

DESCRIPTION	DATE

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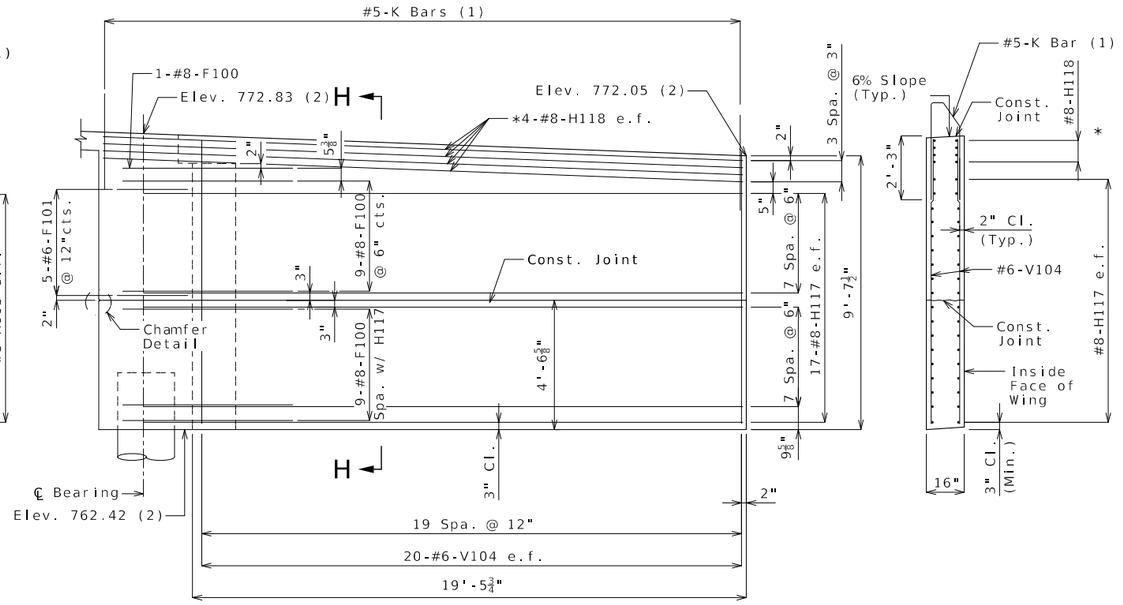
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
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Certificate of Authority No.: 000165
BMcD Project No. 154749



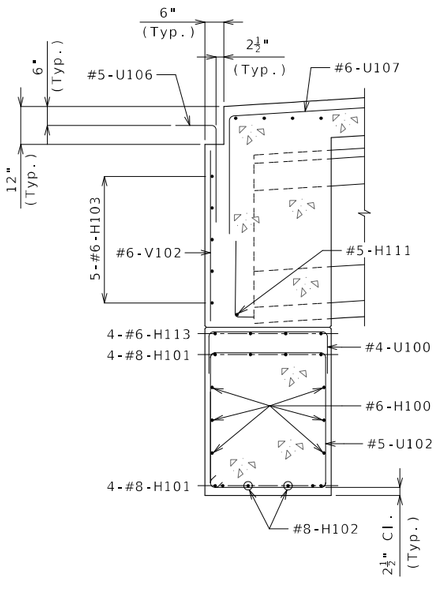
ELEVATION E-E
East Wing
*Place bars parallel to top of wing.

SECTION F-F

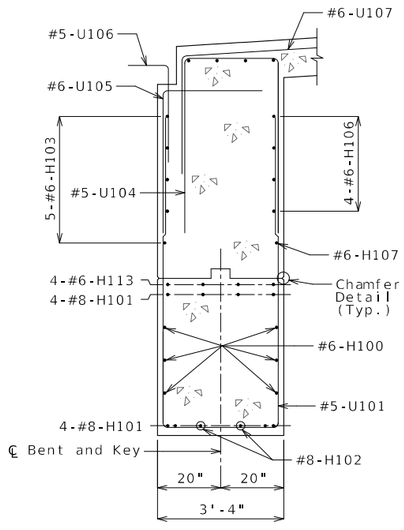


ELEVATION G-G
West Wing
*Place bars parallel to top of wing.

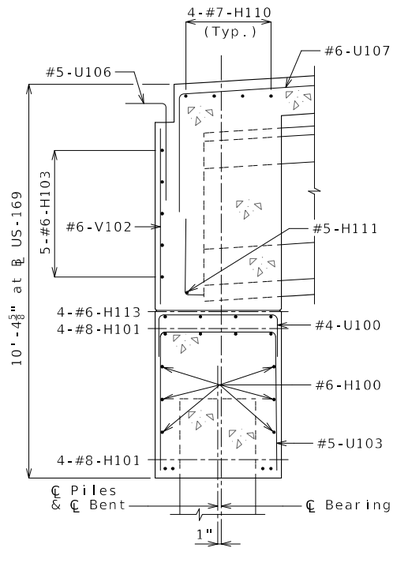
SECTION H-H



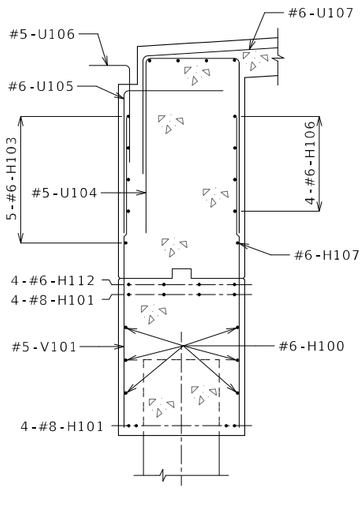
SECTION A-A



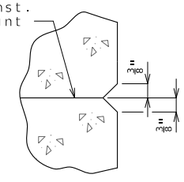
SECTION B-B



SECTION C-C



SECTION D-D



CHAMFER DETAIL

Notes:

e.f. denotes each face

(1) For reinforcement of the Type D Barrier at the End Bent, see Sheet No. 103.

(2) Measured at outer edge of wing

(3) Place 2 inch joint filler between all contact surfaces between the end of wing and Wall No. A9617.

For location of Sections A-A, B-B, C-C, & D-D, see Sheet No. 17.

Slab reinforcing not shown in Sections A-A, B-B, C-C & D-D for clarity.

For location of Elevations E-E and G-G, see Sheet No. 18.

For details of bridge approach slab, see Sheet No. 105.

For notes and location of the bentonite collar see Sheet No. 105.

Work this sheet with Sheets No. 17, 18 & 20.

END BENT NO. 1 - WING DETAILS & SECTIONS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	19

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

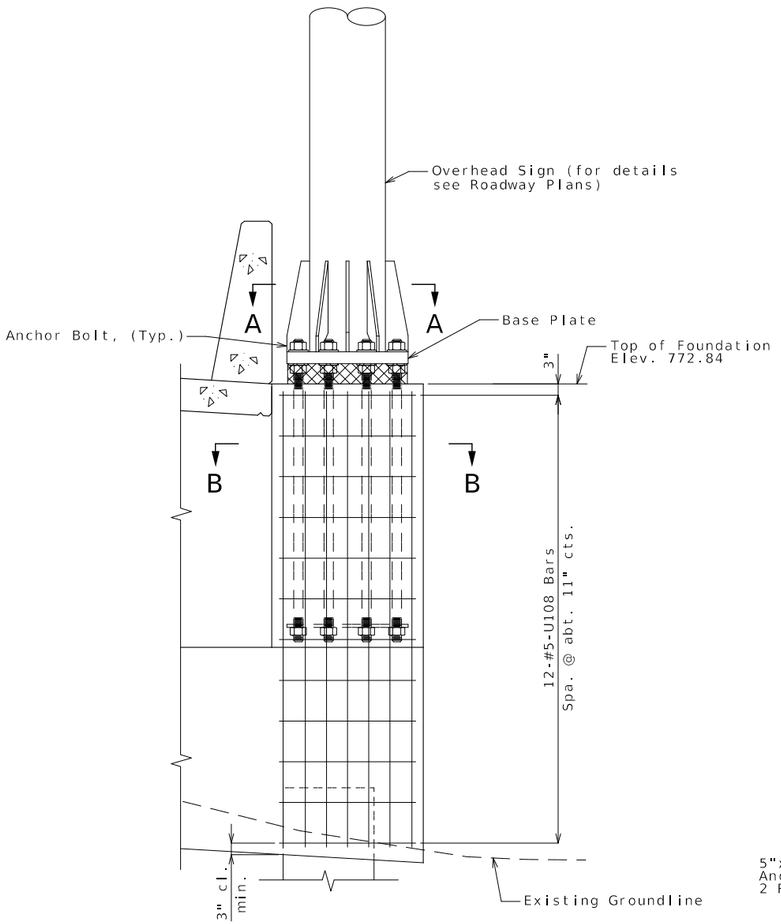
BRIDGE NO.
A9606

DESCRIPTION	DATE

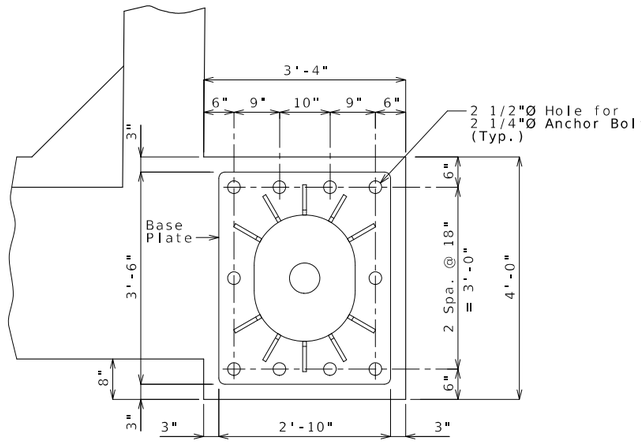
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

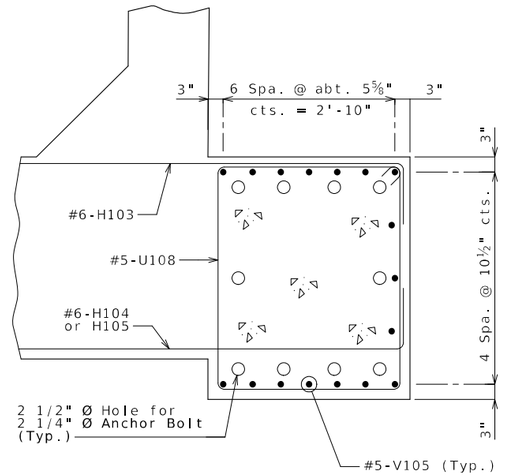
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



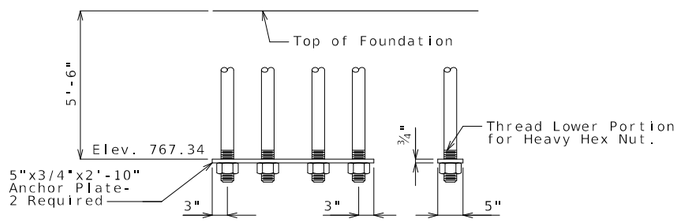
SIGN SUPPORT ELEVATION



SECTION A-A



SECTION B-B



ANCHORAGE DETAIL

Notes:

All reinforcement and concrete for Sign Support Foundation is included in the estimated quantities for End Bent No. 1.

Anchor bolts shall conform to the requirements of ASTM F1554, Grade 36 and be galvanized per ASTM A153.

Anchor bolts, nuts, base plate and all other materials shall be included with the Replace Overhead Cantilever Truss 21'-7" pay item (Roadway Item).

For additional Overhead Sign Truss details, see Roadway Plans.

END BENT NO. 1
SIGN SUPPORT DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2019020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	20

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

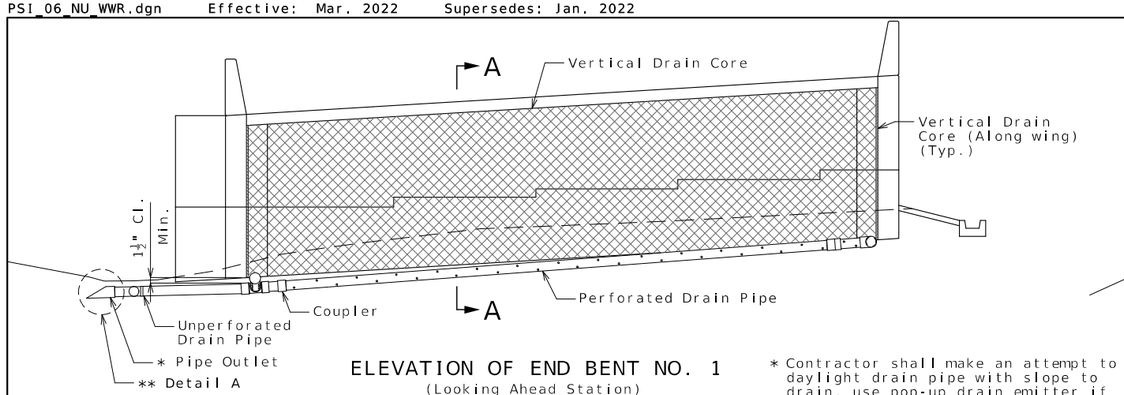
BRIDGE NO.
A9606

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)

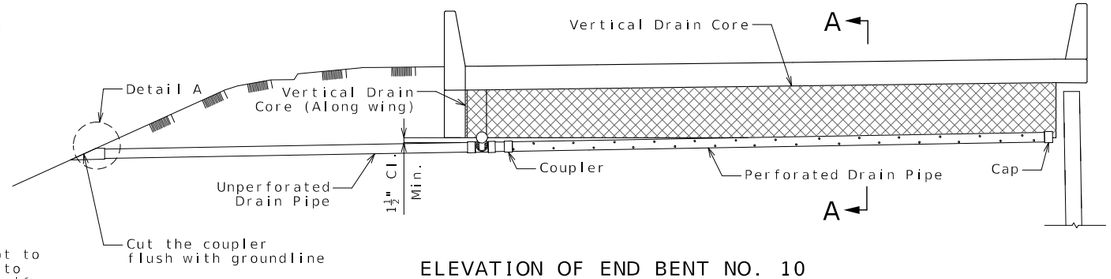
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816-333-9400
Certificate of Authority No.: 000165
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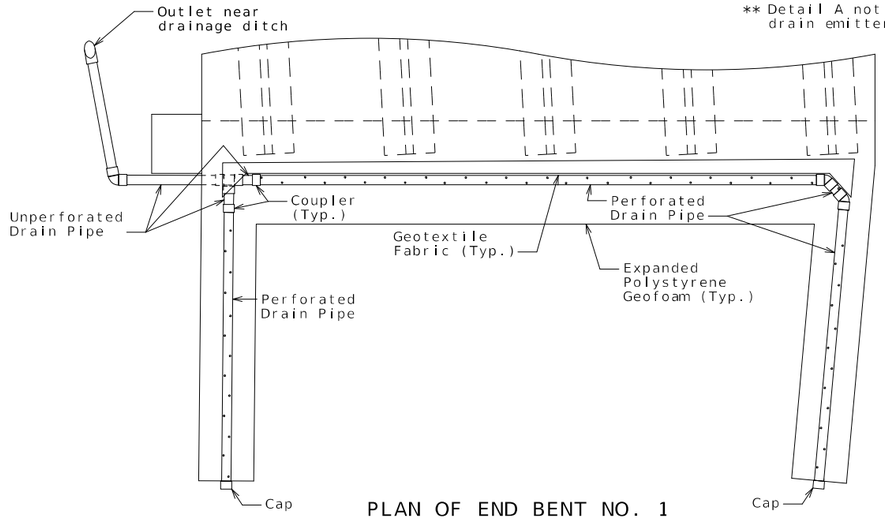
ELEVATION OF END BENT NO. 1
(Looking Ahead Station)

* Contractor shall make an attempt to daylight drain pipe with slope to drain, use pop-up drain emitter if necessary. Drill hole in bottom of emitter.

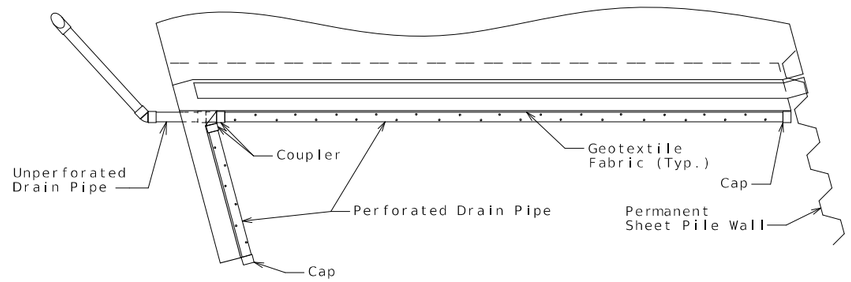
** Detail A not necessary if pop-up drain emitter used.



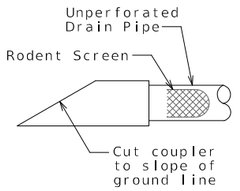
ELEVATION OF END BENT NO. 10
(Looking Back Station)



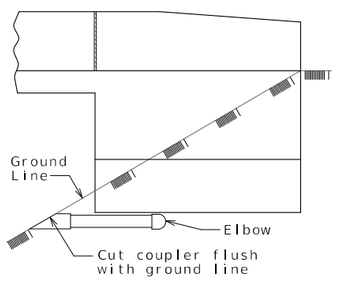
PLAN OF END BENT NO. 1



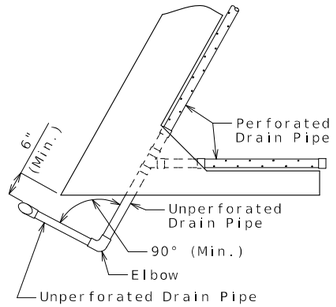
PLAN OF END BENT NO. 10



DETAIL A

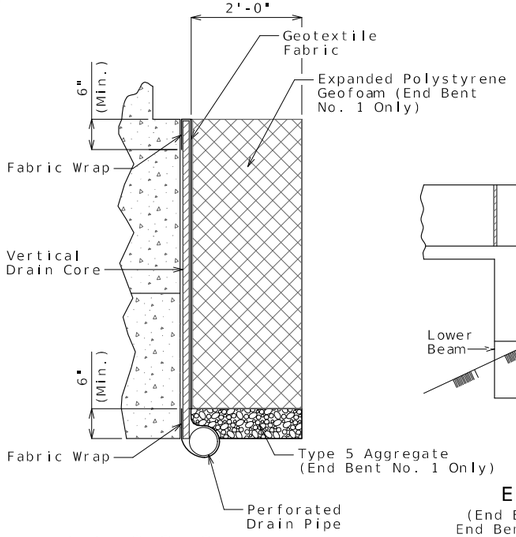


ELEVATION OF WING

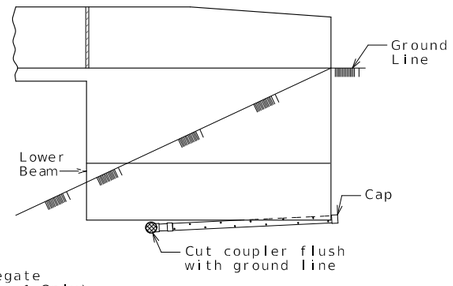


PART PLAN

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



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING
(End Bent No. 1 West Wing Shown, End Bent No. 10 East Wing Similar)

General Notes:

All drain pipe shall be sloped 1 to 2 percent.

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

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

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

Geofoam at End Bent No. 1 shall conform to the requirements of ASTM D6817, Type EPS29. Payment for furnishing all material, equipment, tools, labor and any other incidental work as shown on this sheet for geofoam, complete in place, will be considered completely covered by the contract unit price for Vertical Drain at End Bents.

VERTICAL DRAIN AT END BENTS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	21

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

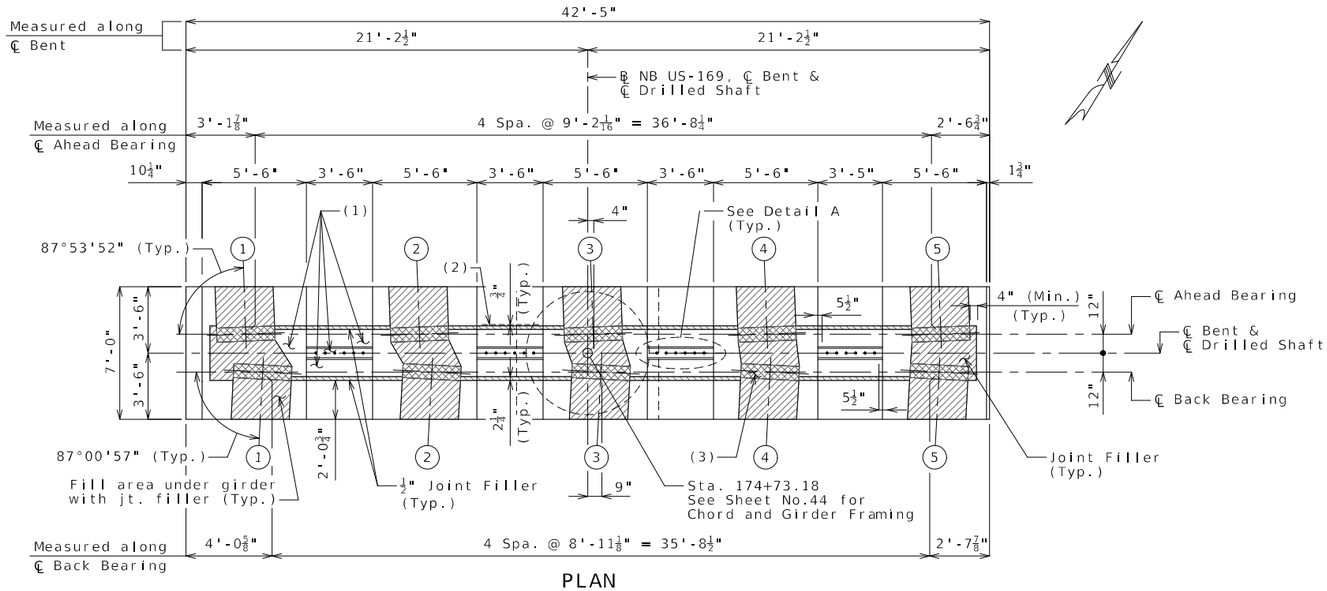
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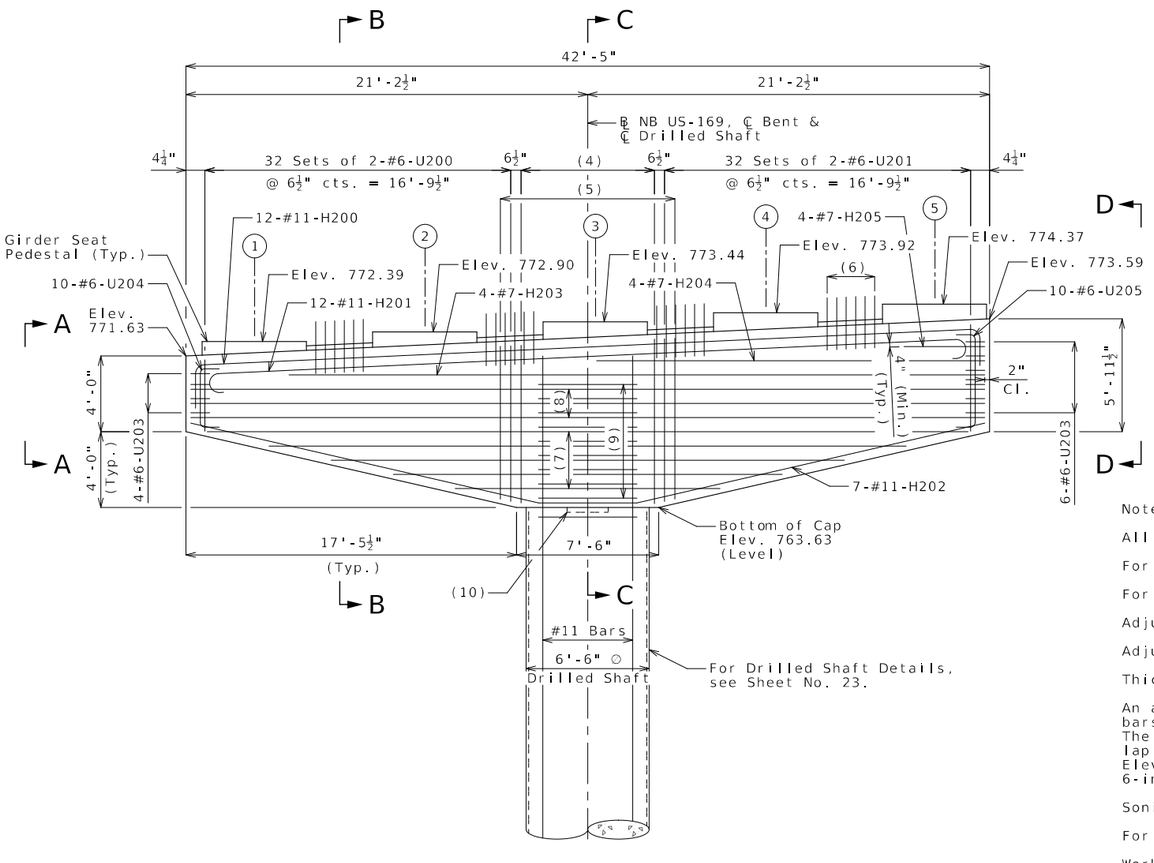
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JEFFERSON CITY, MO 65102
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816-333-9400
Certificate of Authority No.: 000165
BURNS McDONNELL
BMcD Project No. 154749

REV.



PLAN



ELEVATION

(1) 1-Layer of 30-lb (Min.) Roofing Felt or Bituminous Pile Paint including sides of pedestals (Typ.)

(2) Face of Diaphragm (Typ.)

(3) Laminated Neoprene Bearing Pad (Tapered) 9"x3'-0 7/8" (Typ.)

(4) 14 Sets of 2-#6-U202 @ 6 1/2" cts. = 7'-0 1/2"

(5) 18 Sets of 2-#6-U206 Paired with #6-U200, #6-U201 & #6-U202

(6) 6-#6-D200 @ 6" cts. (Typ.)

(7) 5 Sets of 4-#7-H207 @ 9" cts.

(8) 3 Sets of 4-#7-H206 @ 9" cts.

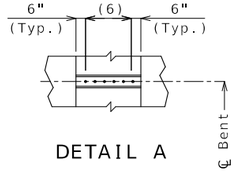
(9) 9-#6-P200 Paired with #7-H206, #7-H207 & #11-H202

(10) 2'-2"x2'-2"x2" Keyed Const. Jt.

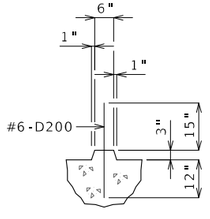
Substructure Quantity Table for Bent No. 2

Item		Quantity
Drilled Shafts (6 ft. 6 in. Dia.)	linear foot	131.7
Rock Sockets (6 ft. 0 in. Dia.)	linear foot	36.0
Video Camera Inspection	each	1
Foundation Inspection Holes	linear foot	48.0
Sonic Logging Testing	each	1
Class B-1 Concrete (Substructure)	cu. yard	86.3
Reinforcing Steel (Bridges)	pound	56,790

These quantities are included in the Estimated Quantities table on Sheet No. 6.



DETAIL A



SECTION THRU KEY

Notes:

All concrete above drilled shaft shall be Class B-1 with f'c = 4,000 psi.

For details of the Laminated Neoprene Bearing Pad, see Sheet No. 43.

For Elevation A-A, Sections B-B, & C-C and Elevation D-D, see Sheet No. 23.

Adjust cap reinforcing as needed to clear column V-bars.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 6-#6-P200 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

For steps 2 inches or more, use 2 1/4x1/2 inch joint filler up vertical face.

Work this sheet with Sheet No. 23.

INTERMEDIATE BENT NO. 2 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	22

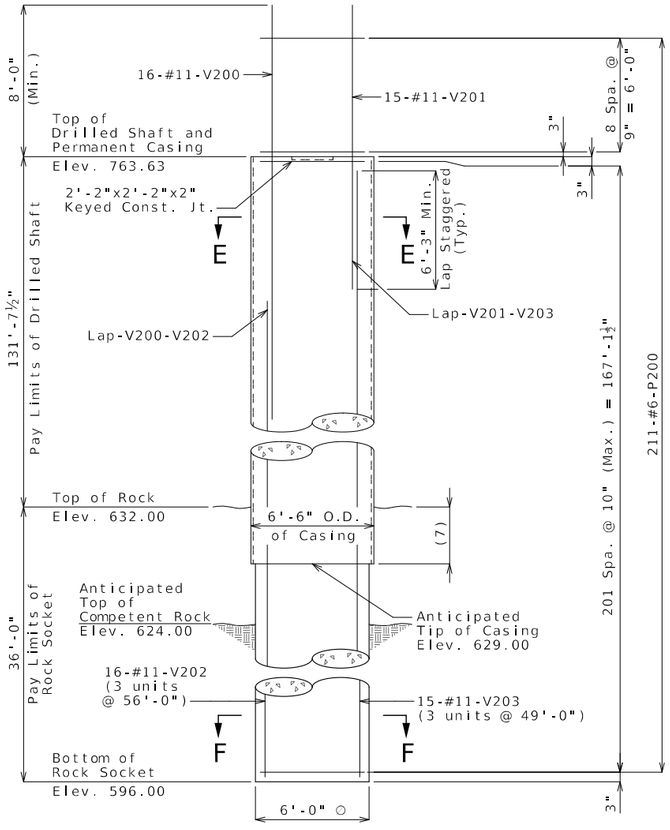
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

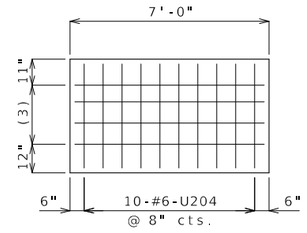
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

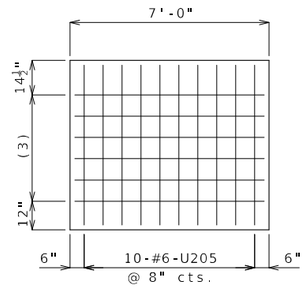
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



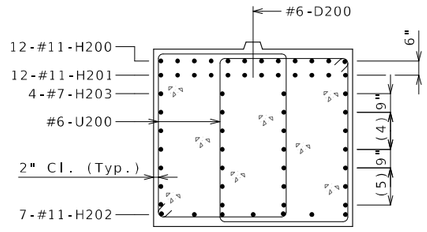
ELEVATION OF DRILLED SHAFT



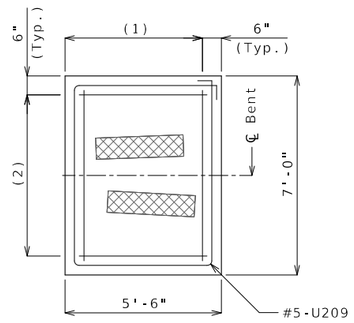
ELEVATION A-A



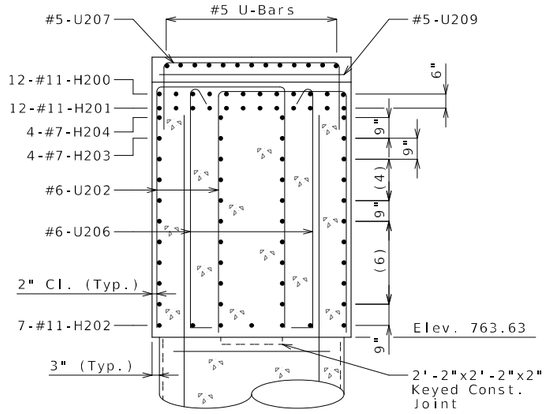
ELEVATION D-D



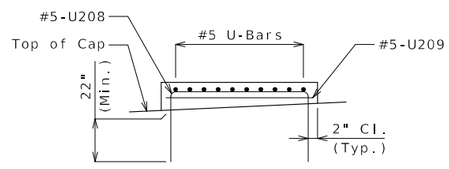
SECTION B-B



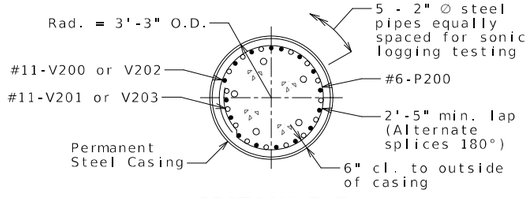
PEDESTAL PLAN



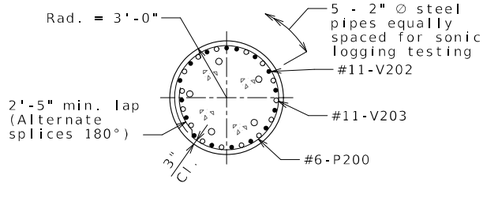
SECTION C-C



PEDESTAL ELEVATION



SECTION E-E



SECTION F-F

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) 10-#5-U207 @ 6" cts.

(2) 13-#5-U208 @ 6" cts.

(3) #6-U203 Spa. with Horiz. Reinf.

(4) 3 Sets of 4-#7-H206 @ 9" cts.

(5) 3 Sets of 4-#7-H207 @ 9" cts.

(6) 5 Sets of 4-#7-H207 @ 9" cts.

(7) Seat casing into sound rock in accordance with Sec 701

Work this sheet with Sheet No. 22 .

INTERMEDIATE BENT NO. 2 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018020226
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	23

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

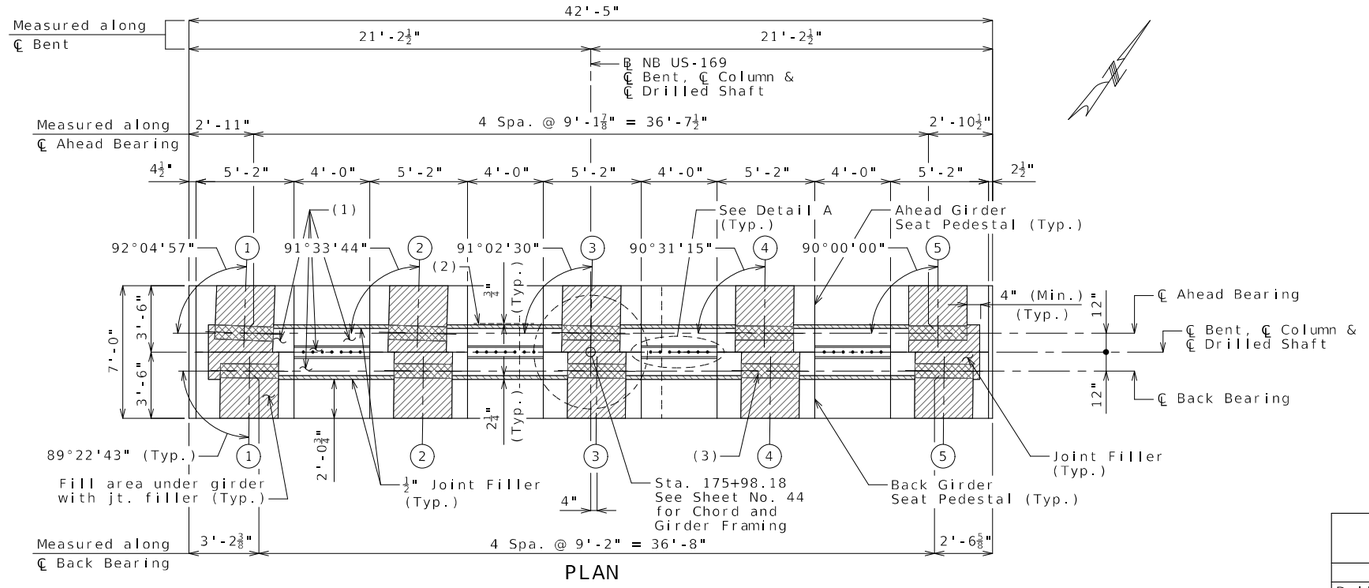
BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

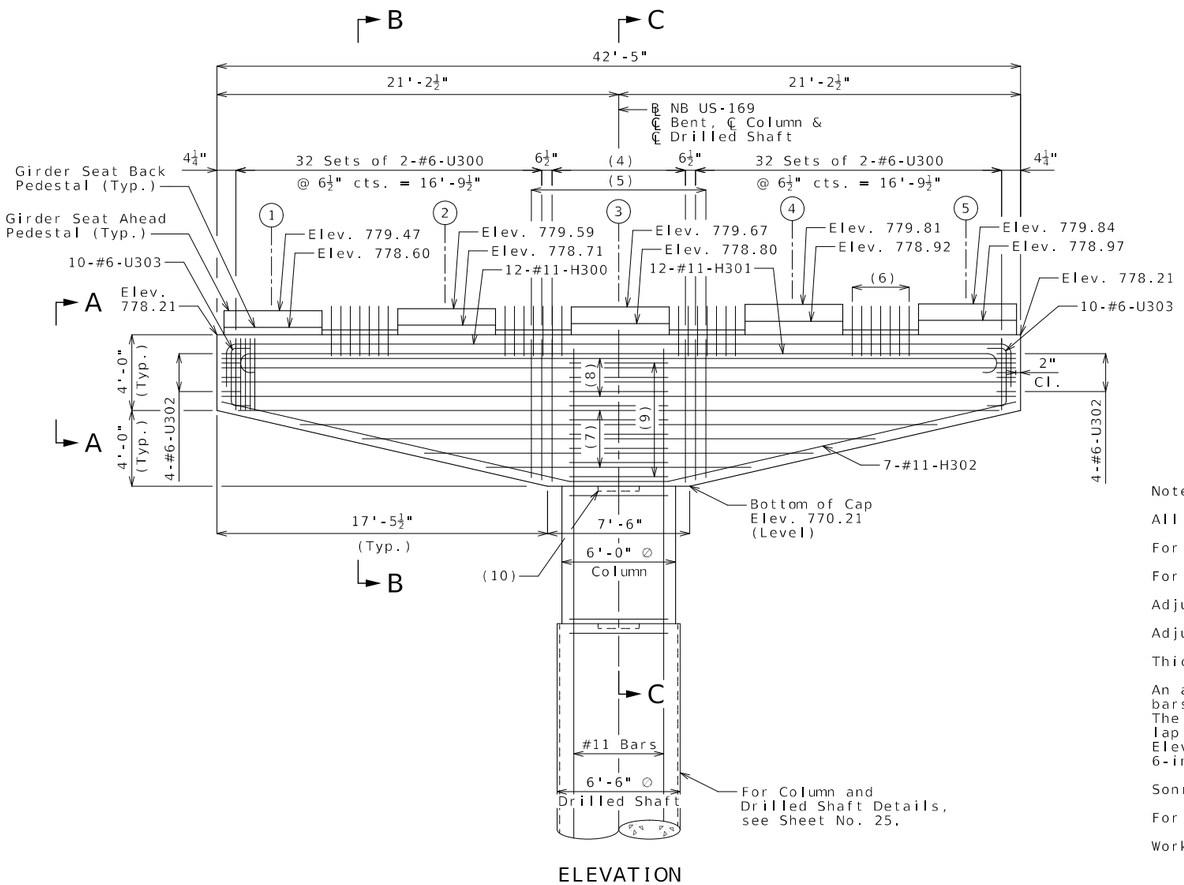
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



PLAN



ELEVATION

(1) 1-Layer of 30-lb (Min.) Roofing Felt or Bituminous Pile Paint, including sides of pedestals (Typ.)

(2) Face of Diaphragm (Typ.)

(3) Laminated Neoprene Bearing Pad (Tapered) 9"x3'-0 7/8 (Typ.)

(4) 14 Sets of 2-#6-U301 @ 6 1/2" cts. = 7'-0 1/2"

(5) 18 Sets of 2-#6-U304 Paired with #6-U300 & #6-U301

(6) 7-#6-D300 @ 6" cts. (Typ.)

(7) 5 Sets of 4-#7-H304 @ 9" cts.

(8) 4 Sets of 4-#7-H303 @ 9" cts.

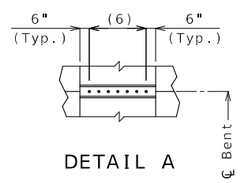
(9) 9-#6-P300 Paired with #7-H303, #7-H304 & #11-H302

(10) 2'-0"x2'-0"x2" Keyed Const. Jt.

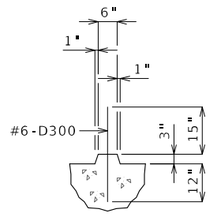
Substructure Quantity Table for Bent No. 3

Item		Quantity
Drilled Shafts (6 ft. 6 in. Dia.)	linear foot	131.0
Rock Sockets (6 ft. 0 in. Dia.)	linear foot	28.0
Video Camera Inspection	each	1
Foundation Inspection Holes	linear foot	40.0
Sonic Logging Testing	each	1
Class B-1 Concrete (Substructure)	cu. yard	84.5
Reinforcing Steel (Bridges)	pound	55,830

These quantities are included in the Estimated Quantities table on Sheet No. 6.



DETAIL A



SECTION THRU KEY

Notes:

All concrete above drilled shaft shall be Class B-1 with f'c = 4,000 psi.

For details of the Laminated Neoprene Bearing Pad, see Sheet No. 43.

For Elevation A-A, Sections B-B and C-C, see Sheet No. 25.

Adjust cap reinforcing as needed to clear column V-bars.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 6-#6-P300 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

For steps 2 inches or more, use 2 1/4x1/2 inch joint filler up vertical face.

Work this sheet with Sheet No. 25.

INTERMEDIATE BENT NO. 3 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000226 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	24

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

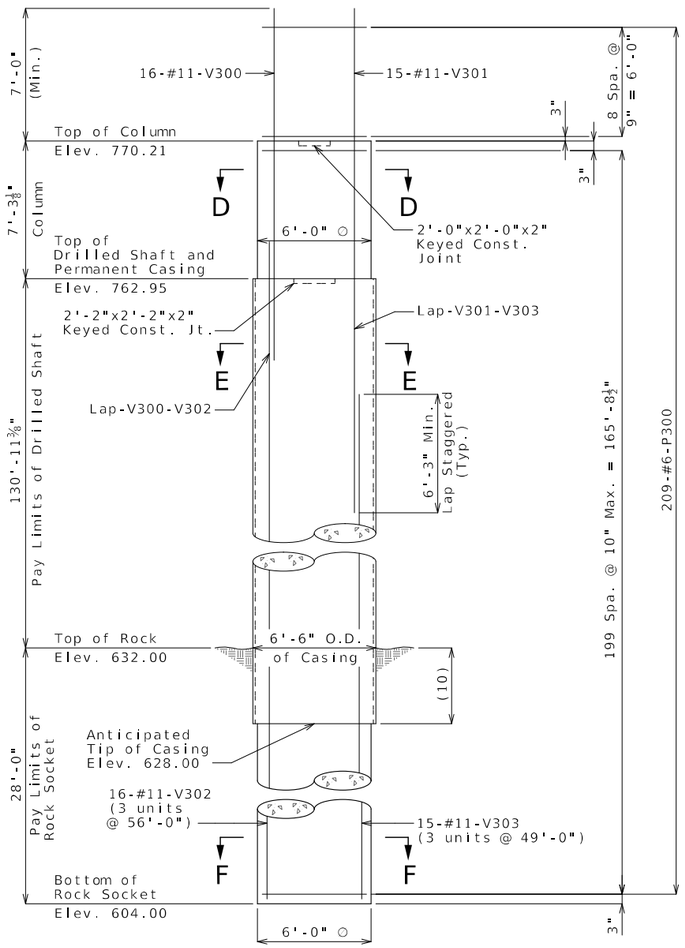
DESCRIPTION

DATE

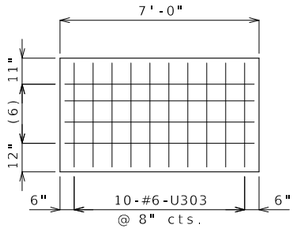
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

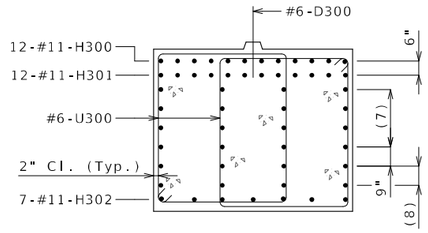
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



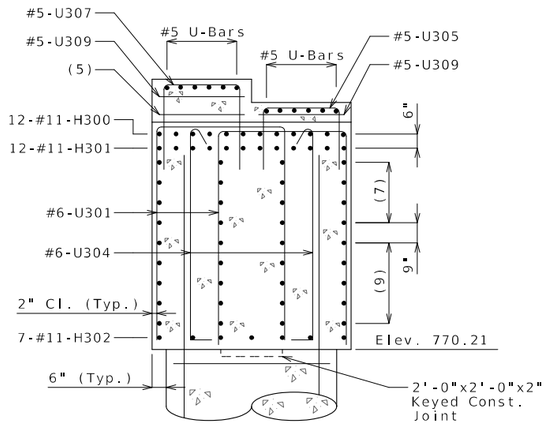
ELEVATION OF DRILLED SHAFT



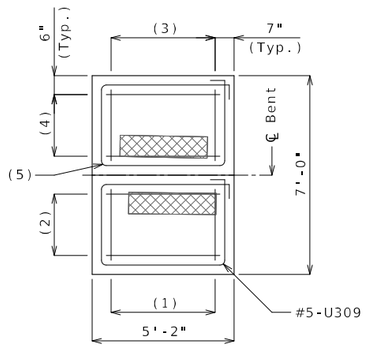
ELEVATION A-A



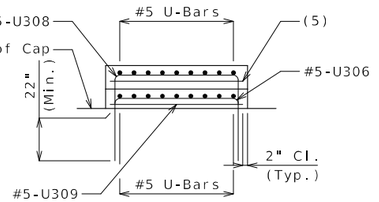
SECTION B-B



SECTION C-C



PEDESTAL PLAN



PEDESTAL ELEVATION

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) 9-#5 U305 @ 6" cts.

(2) 6-#5 U306 @ 6" cts.

(3) 9-#5 U307 @ 6" cts.

(4) 6-#5 U308 @ 6" cts.

(5) When pedestal exceeds 8" in height, place additional #5-U309 Bars Eq. Spa. @ 8" (Max.) between adjacent bars.

(6) #6-U302 Spa. with Horiz. Reinf.

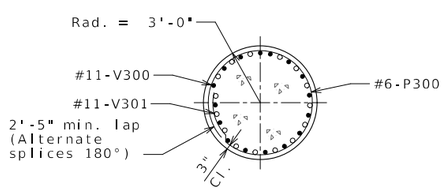
(7) 4 Sets of 4-#7-H303 @ 9" cts.

(8) 2 Sets of 4-#7-H304 @ 9" cts.

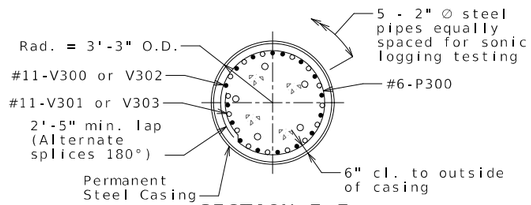
(9) 5 Sets of 4-#7-H304 @ 9" cts.

(10) Seat casing into sound rock in accordance with Sec 701

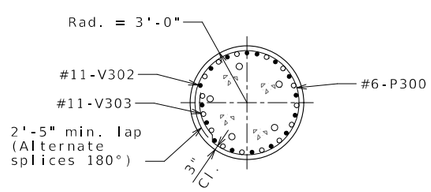
Work this sheet with Sheet No.24 .



SECTION D-D



SECTION E-E



SECTION F-F

INTERMEDIATE BENT NO. 3 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DESCRIPTION

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	25

COUNTY CLAY

JOB NO. JKU0099

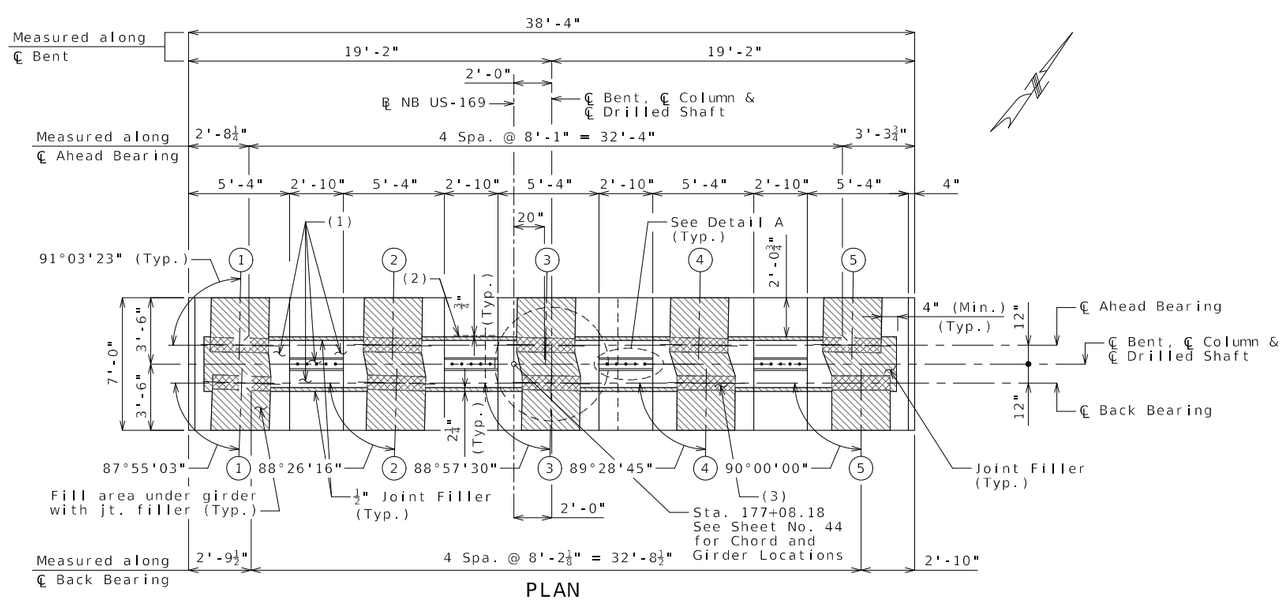
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



(1) 1-Layer of 30-lb (Min.) Roofing Felt or Bituminous Pile Paint, including sides of pedestals (Typ.)

(2) Face of Diaphragm (Typ.)

(3) Laminated Neoprene Bearing Pad (Tapered) 9"x3'-0 7/8" (Typ.)

(4) 13 Sets of 2-#6-U401 @ 6 1/2" cts. = 6'-6"

(5) 17 Sets of 2-#6-U404 Paired with #6-U400 & #6-U401

(6) 5-#6-D400 @ 6" cts. (Typ.)

(7) 4 Sets of 4-#7-H404 @ 9" cts.

(8) 2 Sets of 4-#7-H403 @ 9" cts.

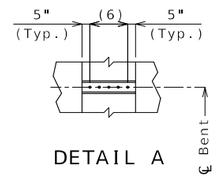
(9) 7-#6-P400 Paired with #7-H403, #7-H404 & #11-H402

(10) 2'-0"x2'-0"x2" Keyed Const. Jt.

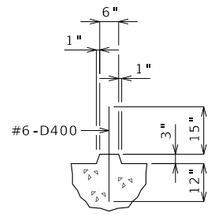
Substructure Quantity Table for Bent No. 4

Item		Quantity
Drilled Shafts (6 ft. 6 in. Dia.)	linear foot	130.4
Rock Sockets (6 ft. 0 in. Dia.)	linear foot	24.0
Video Camera Inspection	each	1
Foundation Inspection Holes	linear foot	36.0
Sonic Logging Testing	each	1
Class B-1 Concrete (Substructure)	cu. yard	66.3
Reinforcing Steel (Bridges)	pound	53,280

These quantities are included in the Estimated Quantities table on Sheet No. 6.



DETAIL A



SECTION THRU KEY

Notes:

All concrete above drilled shaft shall be Class B-1 with f'c = 4,000 psi.

For details of the Laminated Neoprene Bearing Pad, see Sheet No. 43.

For Elevation A-A, Sections B-B and C-C, see Sheet No. 27.

Adjust cap reinforcing as needed to clear column V-bars.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 6-#6-P400 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

For steps 2 inches or more, use 2 1/4x1/2 inch joint filler up vertical face.

Work this sheet with Sheet No. 27.

INTERMEDIATE BENT NO. 4 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	26

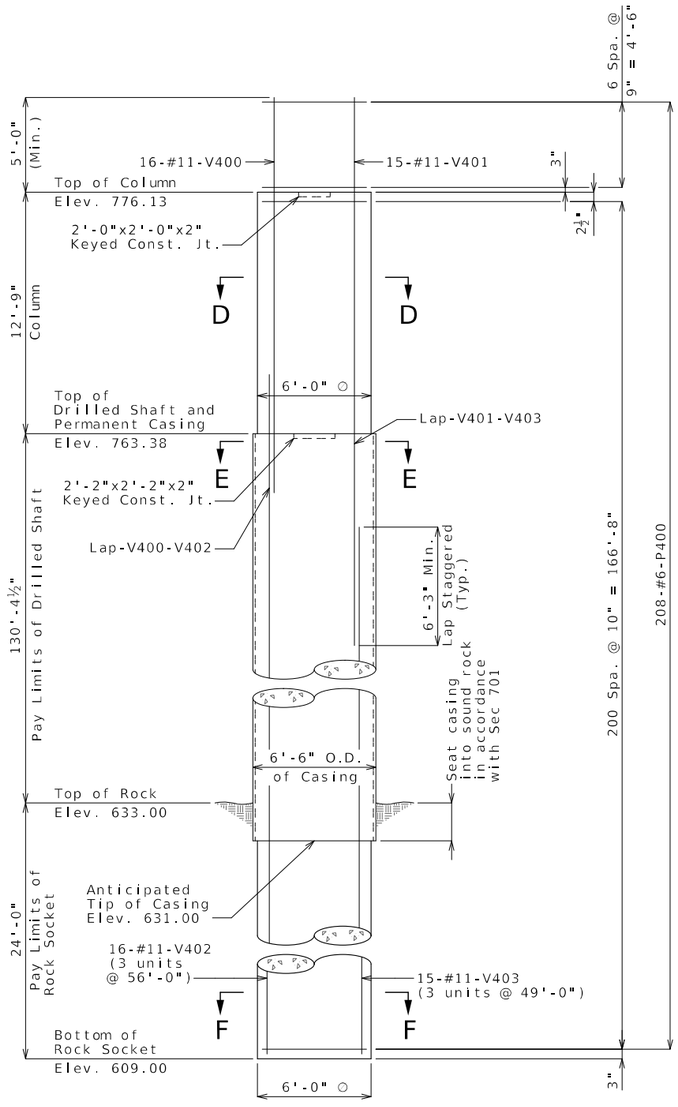
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

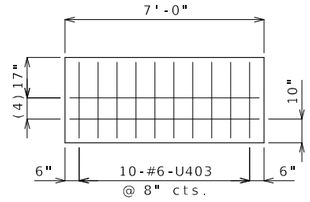
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

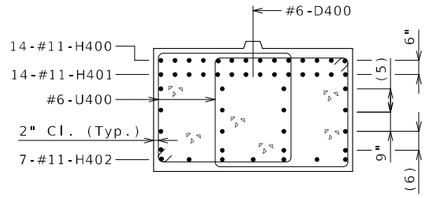
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



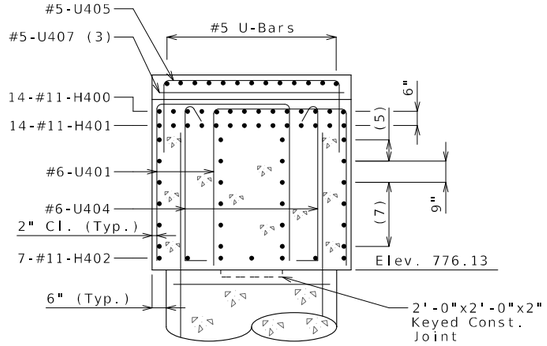
ELEVATION OF DRILLED SHAFT



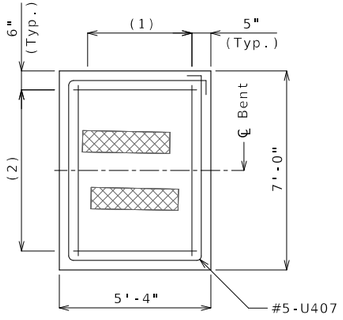
ELEVATION A-A



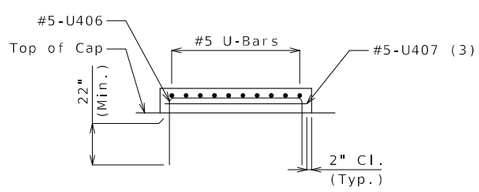
SECTION B-B



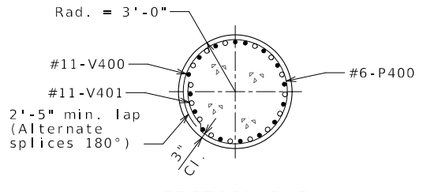
SECTION C-C



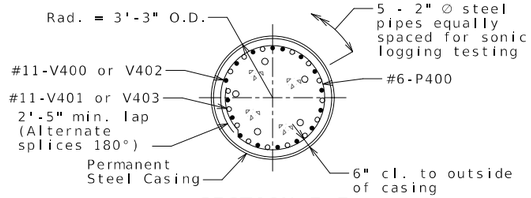
PEDESTAL PLAN



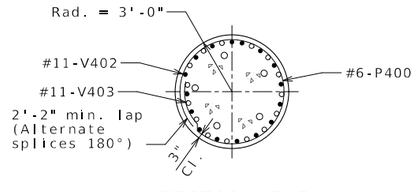
PEDESTAL ELEVATION



SECTION D-D



SECTION E-E



SECTION F-F

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) 10-#5 U405 @ 6" cts.

(2) 13-#5 U406 @ 6" cts.

(3) When pedestal exceeds 8" in height, place additional #5-U407 Bars Eq. Spa. @ 8" (Max.) between adjacent bars.

(4) #6-U402 Spa. with Horiz. Reinf.

(5) 2 Sets of 4-#7-H403 @ 9" cts.

(6) 2 Sets of 4-#7-H404 @ 9" cts.

(7) 4 Sets of 4-#7-H404 @ 9" cts.

Work this sheet with Sheet No.26 .

INTERMEDIATE BENT NO. 4 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	27

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

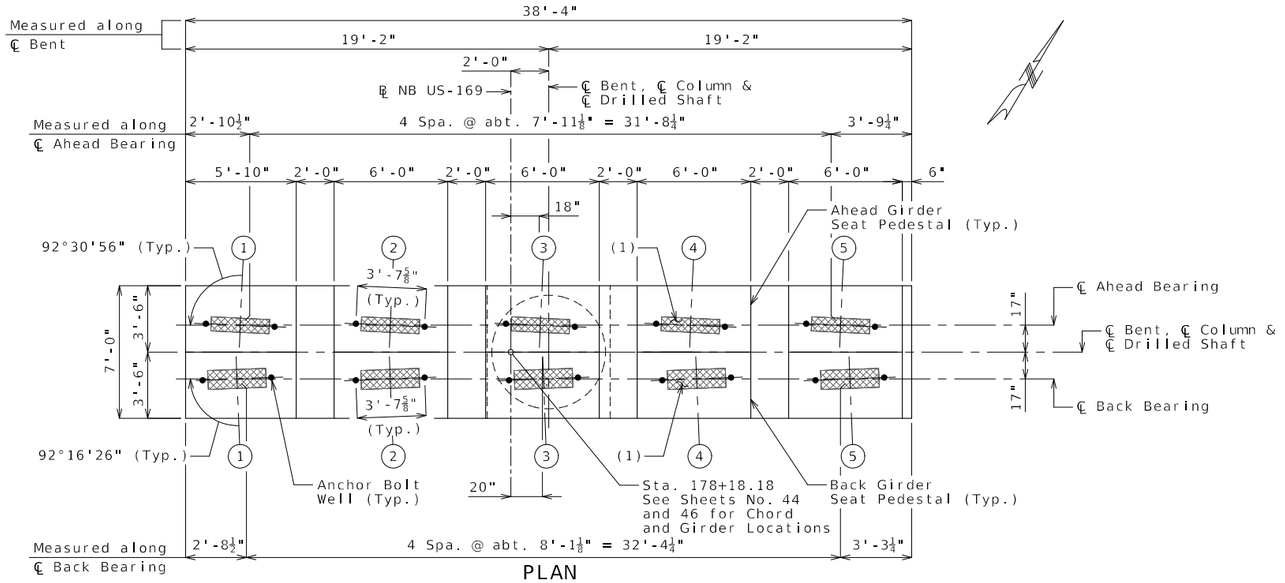
DESCRIPTION

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



(1) Laminated Neoprene Bearing Pad Assembly (Typ.)

(3) 13 Sets of 2-#6-U502 @ 6 1/2" cts. = 6'-6"

(4) 17 Sets of 2-#6-U506 Paired with #6-U500 & #6-U502

(5) 3 Sets of 4-#7-H506 @ 9" cts.

(6) 3 Sets of 4-#7-H505 @ 9" cts.

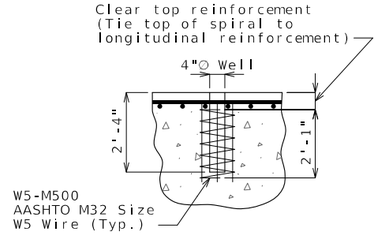
(7) 8-#6-P500 Paired with #7-H503, #7-H505, #7-H506 & #11-H502

(8) 2'-0"x2'-0"x2" Keyed Const. Jt.

Substructure Quantity Table for Bent No. 5

Item		Quantity
Drilled Shafts (6 ft. 6 in. Dia.)	linear foot	130.1
Rock Sockets (6 ft. 0 in. Dia.)	linear foot	22.5
Video Camera Inspection	each	1
Foundation Inspection Holes	linear foot	34.5
Sonic Logging Testing	each	1
Class B-1 Concrete (Substructure)	cu. yard	77.2
Reinforcing Steel (Bridges)	pound	31,610
Reinforcing Steel (Epoxy Coated)	pound	21,030

These quantities are included in the Estimated Quantities table on Sheet No. 6.



ANCHOR BOLT WELLS

Notes:

All concrete above drilled shaft shall be Class B-1 with f'c = 4,000 psi.

For details of the Laminated Neoprene Bearing Pad Assembly, see Sheet No. 42.

For Elevation A-A, Sections B-B, & C-C and Elevation D-D, see Sheet No. 29.

Adjust cap reinforcing as needed to clear column V-bars and anchor bolt wells.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 6-#6-P501 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to top and all sides of pedestals, top and all sides of cap, and all sides of columns above permanent casing.

Work this sheet with Sheet No. 29.

INTERMEDIATE BENT NO. 5 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	28

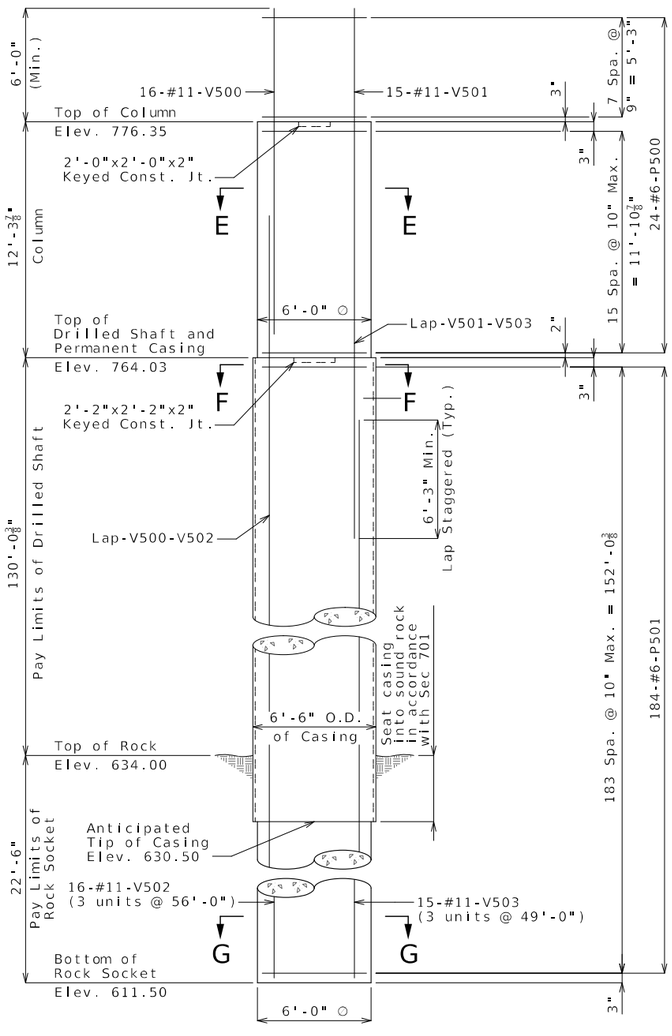
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION	DATE

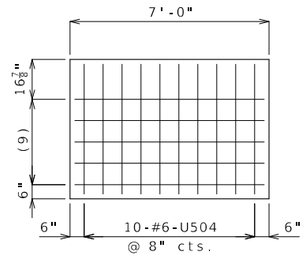
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

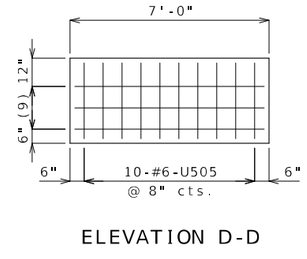
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



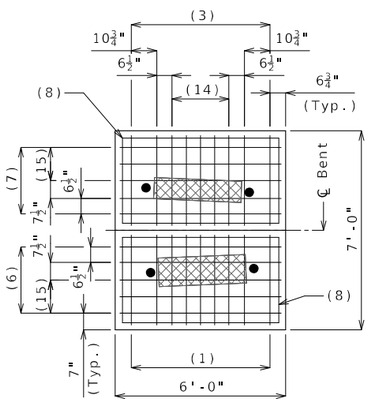
ELEVATION OF DRILLED SHAFT



ELEVATION A-A

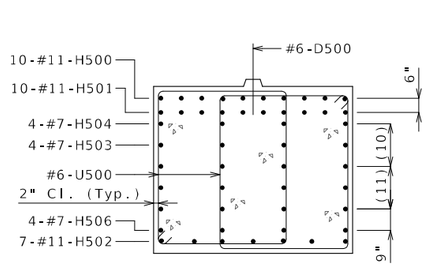


ELEVATION D-D

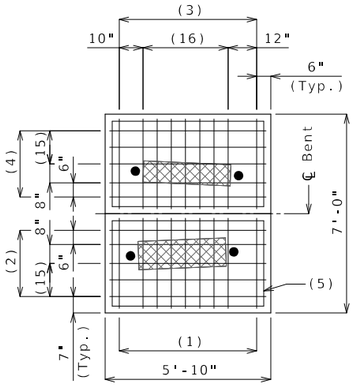


PEDESTAL PLAN

(Girders 2-5)

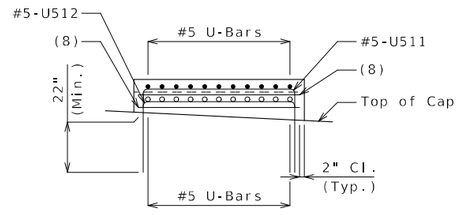


SECTION B-B



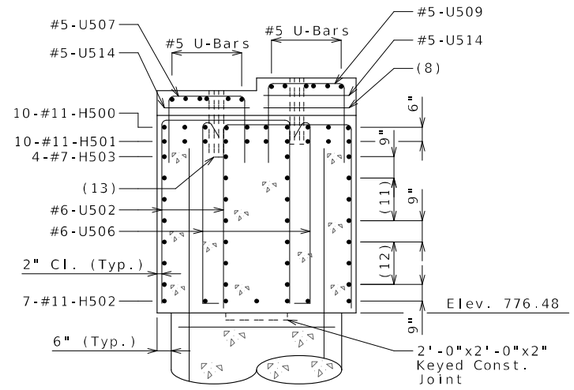
PEDESTAL PLAN

(Girder 1)

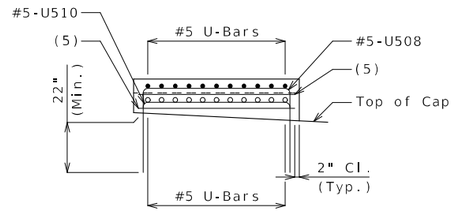


PEDESTAL ELEVATION

(Girders 2-5)



SECTION C-C



PEDESTAL ELEVATION

(Girder 1)

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) 9-#5-U507

(2) 5-#5-U508

(3) 9-#5-U509

(4) 5-#5-U510

(5) When pedestal exceeds 8" in height, place additional #5-U513 Bars Eq. Spa. @ 8" (Max.) between adjacent bars.

(6) 5-#5-U512

(7) 5-#5-U511

(8) When pedestal exceeds 8" in height, place additional #5-U514 Bars Eq. Spa. @ 8" (Max.) between adjacent bars.

(9) #6-U503 Spa. with Horiz. Reinf.

(10) 2 Spa. @ 9" cts.

(11) 3 Sets of 4-#7-H505 @ 9" cts.

(12) 3 Sets of 4-#7-H506 @ 9" cts.

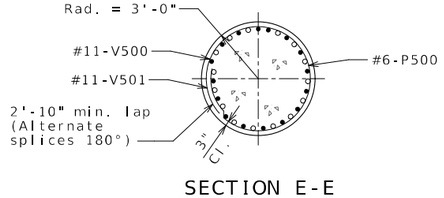
(13) Anchor Bolt Well, see detail on Sheet No. 28

(14) 4 Spa. @ 6" = 2'-0"

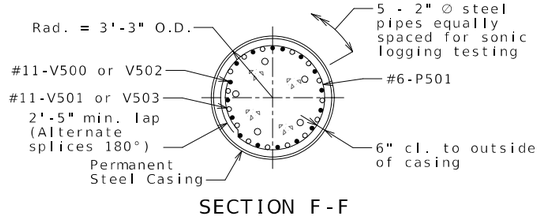
(15) 2 Spa. @ 7" = 14"

(16) 6 Spa. @ 6" = 3'-0"

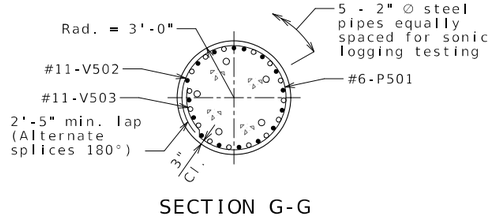
Work this sheet with Sheet No. 28.



SECTION E-E



SECTION F-F



SECTION G-G

INTERMEDIATE BENT NO. 5 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	29

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

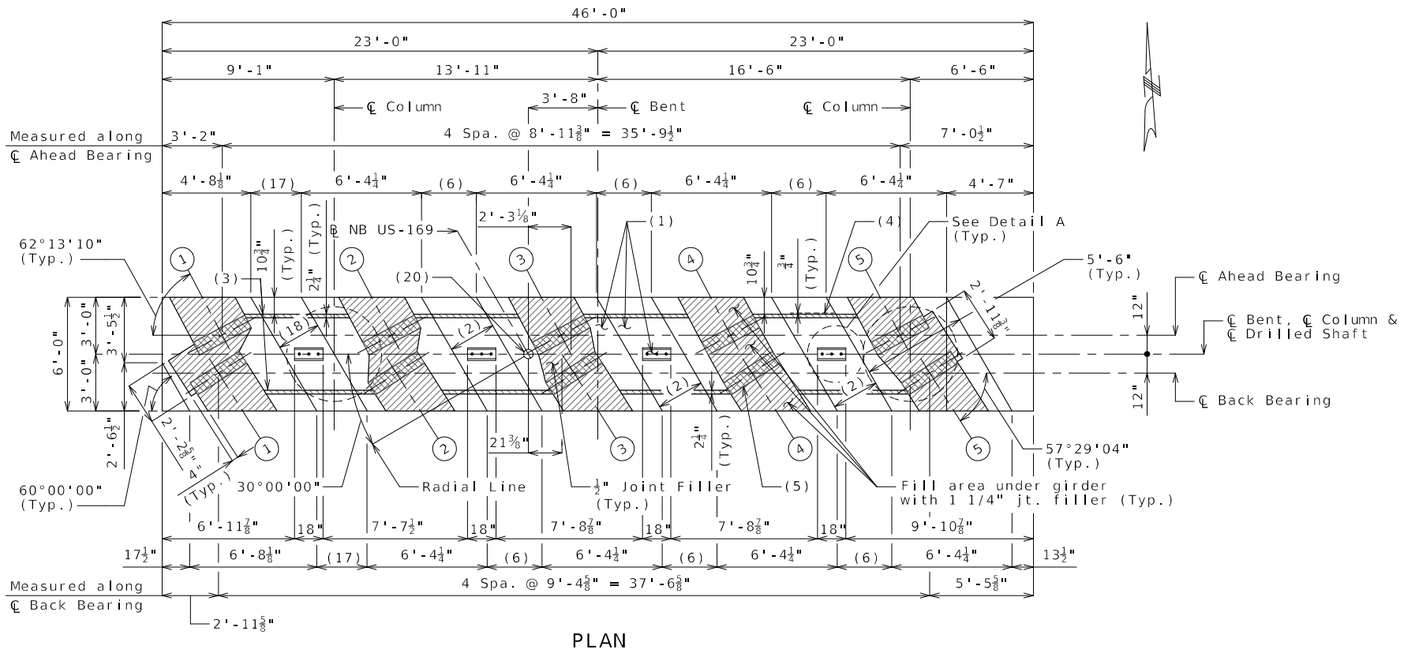
BRIDGE NO.: A9606

DESCRIPTION | DATE

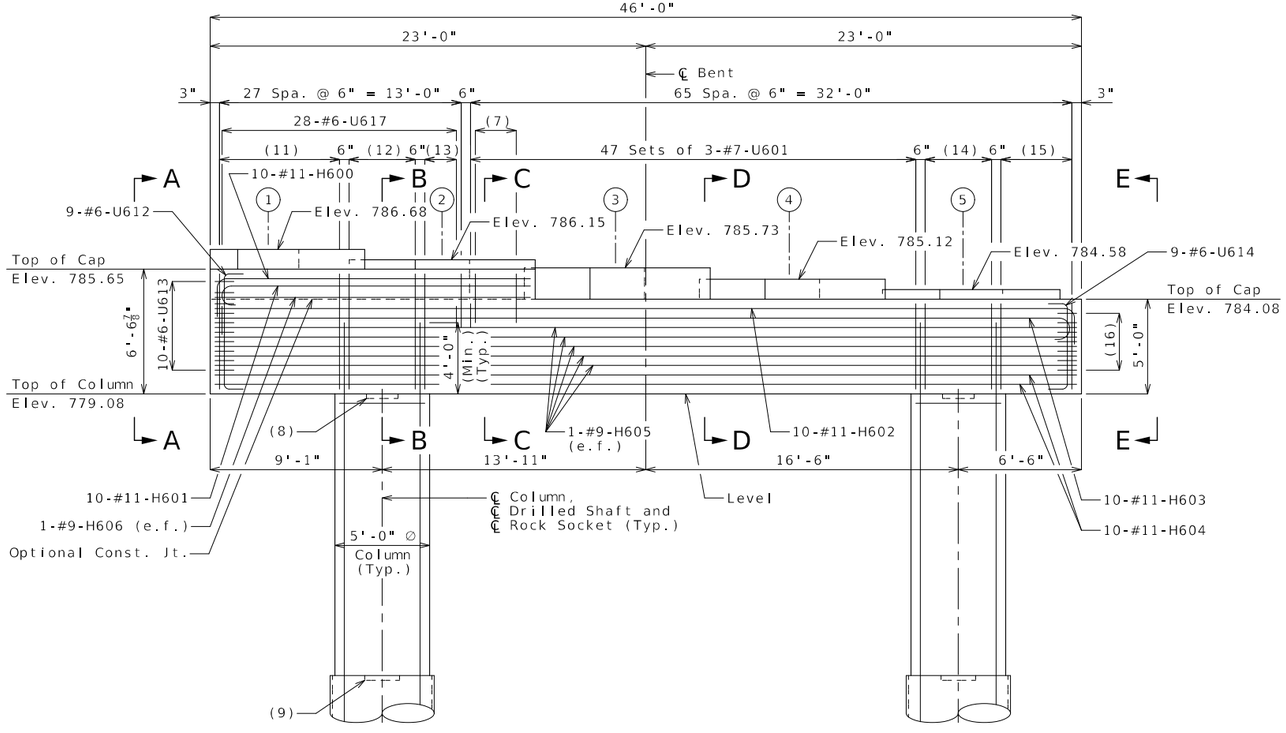
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



PLAN



ELEVATION

(1) 1-Layer of 30-lb (Min.) Roofing Felt or Bituminous Pile Paint including sides of pedestals (Typ.)

(2) 2'-6"

(3) 1/2" Joint Filler (Typ.)

(4) Face of Diaphragm (Typ.)

(5) 9"x3'-0 7/8" Laminated Neoprene Bearing Pad (Typ.)

(6) 2'-10 5/8"

(7) See Part Plan View F-F on Sheet No. 31 for U602 and U603 bars.

(8) 20"x20"x2" Keyed Const. Jt. (Typ.)

(9) 22"x22"x2" Keyed Const. Jt. (Typ.)

(10) 3-#6-D600 Spa. @ 6" cts.

(11) 14 Sets of 3-#7-U600

(12) 9 Sets of 3-#7-U615

(13) 4 Sets of 3-#7-U600

(14) 10 Sets of 3-#7-U616

(15) 8 Sets of 3-#7-U601

(16) 7-#6-U613

(17) 2'-8"

(18) 2'-3 3/4"

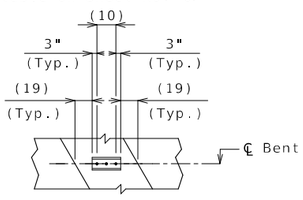
(19) 7" btwn. Pedestals 1 & 2, 8 3/8" btwn. All Other Pedestals

(20) Sta. 179+23.56 See Sheet No. 46 for Chord and Beam Locations.

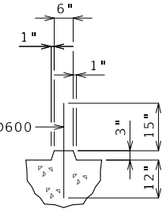
Substructure Quantity Table for Bent No. 6

Item		Quantity
Drilled Shafts (5 ft. 6 in. Dia.)	linear foot	264.5
Rock Sockets (5 ft. 0 in. Dia.)	linear foot	46.0
Video Camera Inspection	each	2
Foundation Inspection Holes	linear foot	66.0
Sonic Logging Testing	each	2
Class B Concrete (Substructure)	cu. yard	84.7
Reinforcing Steel (Bridges)	pound	81,950

These quantities are included in the Estimated Quantities table on Sheet No. 6.



DETAIL A



SECTION THRU KEY

Notes:

All concrete above drilled shafts shall be Class B with f'c = 3,000 psi.

For details of the Laminated Neoprene Bearing Pad, see Sheet No. 43.

For Elevation A-A, Sections B-B, C-C, & D-D, and Elevation E-E, see Sheet No. 31

Adjust cap reinforcing as needed to clear column V-bars.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 8-#6-P600 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

For steps 2 inches or more, use 2 1/4x1/2 inch joint filler up vertical face.

Work this sheet with Sheet No. 31.

INTERMEDIATE BENT NO. 6 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	30

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION	DATE

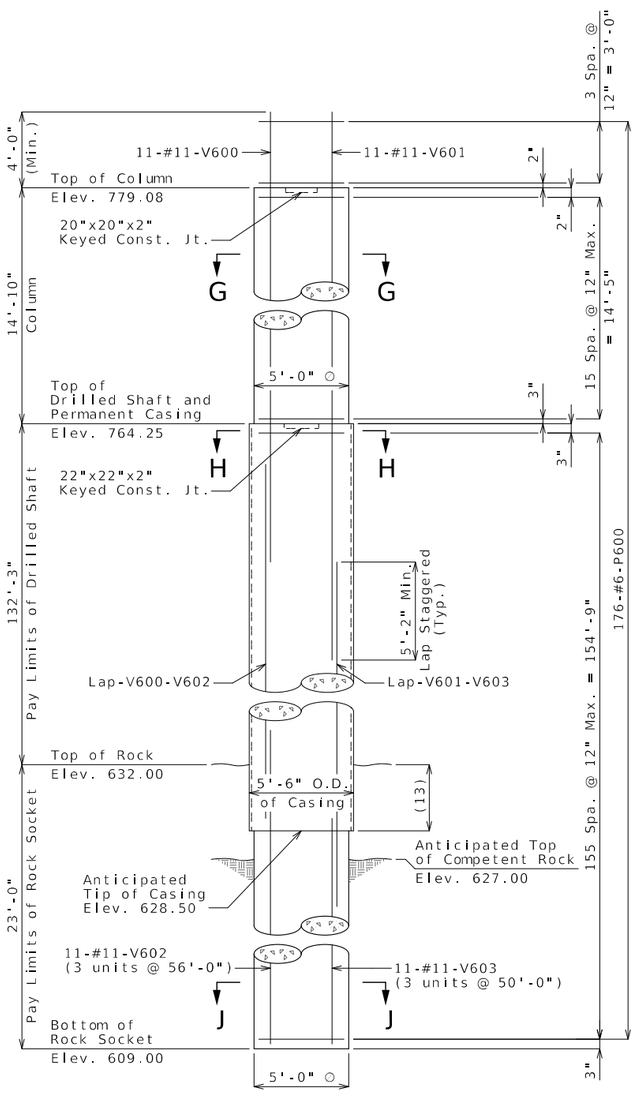
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

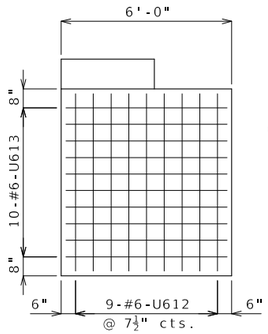
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

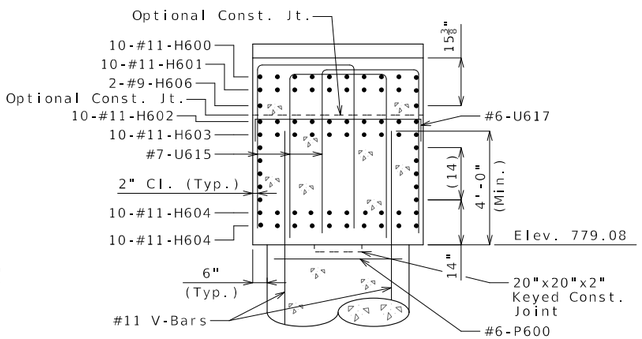
BMcD Project No. 154749



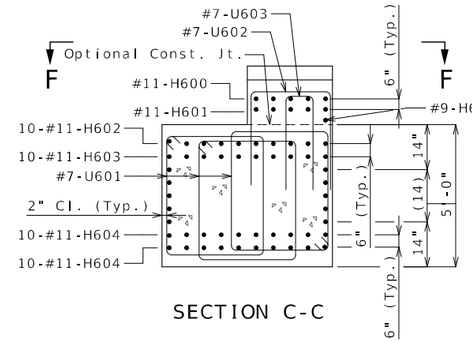
ELEVATION OF DRILLED SHAFT



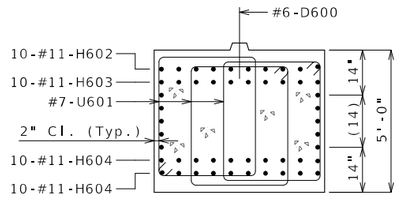
ELEVATION A-A



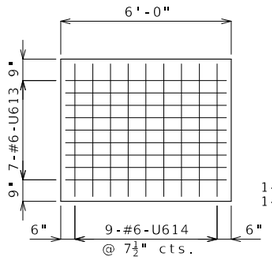
SECTION B-B



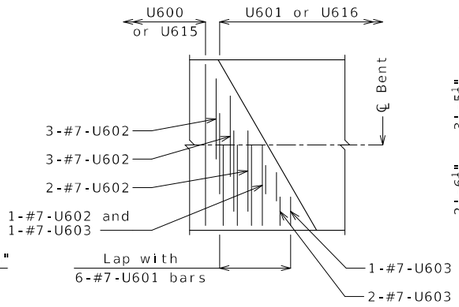
SECTION C-C



SECTION D-D

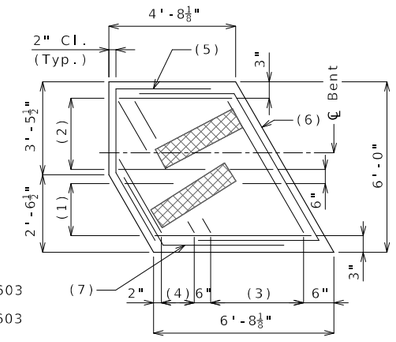


ELEVATION E-E



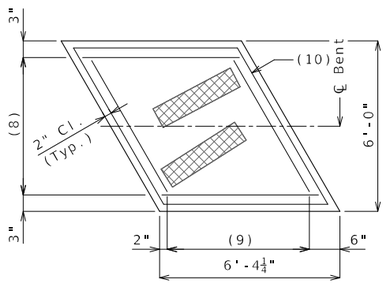
PART PLAN VIEW F-F

(Only top step stirrups shown for clarity.)



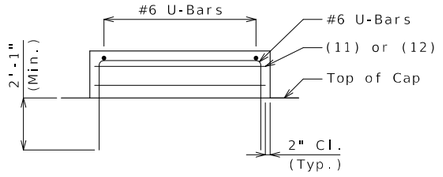
PEDESTAL PLAN

(Girder 1)



PEDESTAL PLAN

(Girders 2-5)



PEDESTAL ELEVATION

(Pedestal 2 shown, Others similar)

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) 5-#6-U604 @ 6" cts.

(2) 7-#6-U605 @ 6" cts.

(3) 9-#6-U606 @ 6" cts.

(4) 4-#6-U607 equally spaced

(5) #6-U608

(6) #6-U609

(7) #6-U610

(8) 12-#6-U618 @ 6" cts.

(9) 13-#6-U606 @ 6" cts. (Max.)

(10) #6-U611

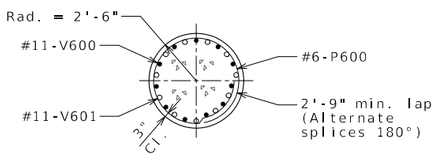
(11) For Girder 1 pedestal, place additional U608, U609, and U610 Bars @ Eq. Spa. (6" Max.) once pedestal exceeds 8" in height.

(12) For Girder 2-5 pedestals, when pedestals exceeds 8" in height, place additional U611 Bars @ Eq. Spa. (6" Max.).

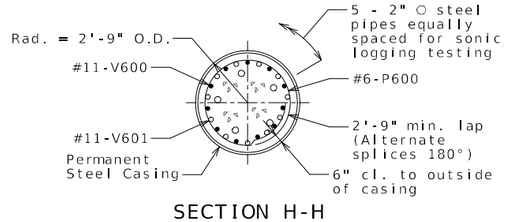
(13) Seat casing into sound rock in accordance with Sec 701.

(14) 5-#9-H605 each face @ 8" cts.

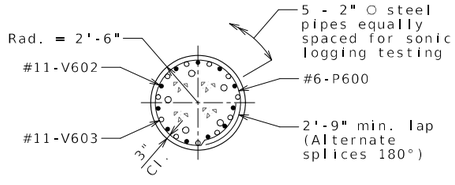
Work this sheet with Sheet No. 30 .



SECTION G-G



SECTION H-H



SECTION J-J

INTERMEDIATE BENT NO. 6 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	31

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

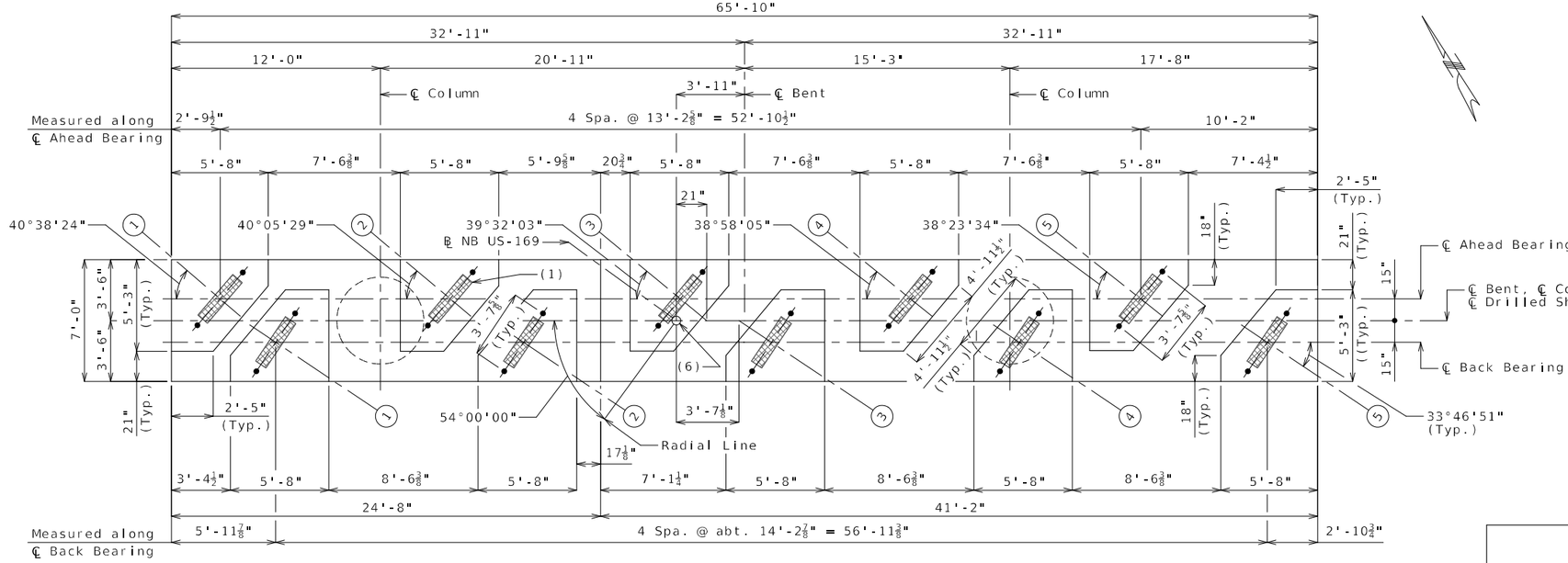
PROJECT NO.

BRIDGE NO. A9606

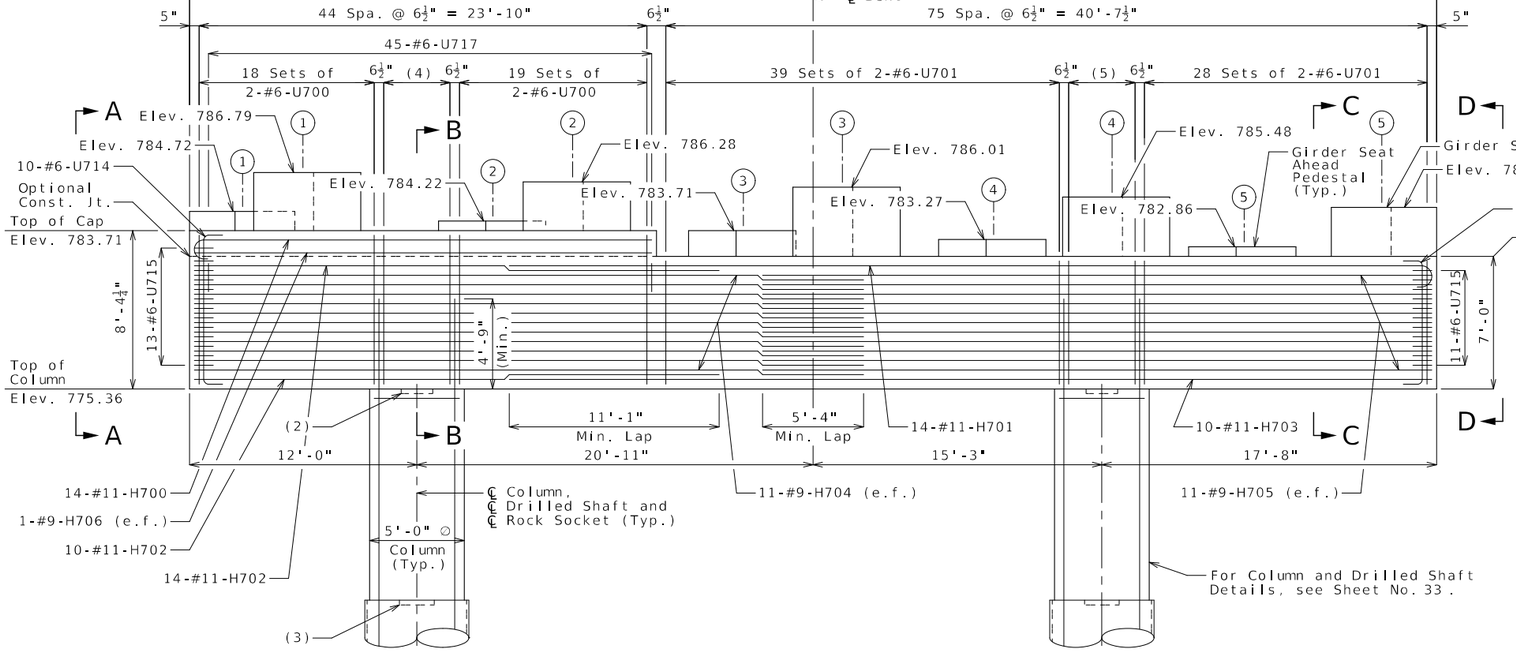
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



PLAN



ELEVATION

(1) Laminated Neoprene Bearing Pad Assembly (Typ.)

(2) 20"x20"x2" Keyed Const. Jt. (Typ.)

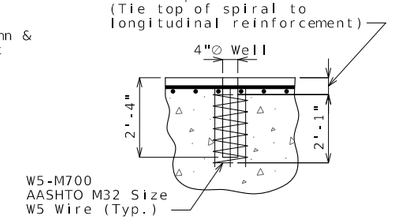
(3) 22"x22"x2" Keyed Const. Jt. (Typ.)

(4) 8 Sets of 2-#6-U710

(5) 9 Sets of 2-#6-U711

(6) Sta. 180+16.52 See Sheets No. 46 and No. 47 for Chord and Beam Locations

e.f. = each face



ANCHOR BOLT WELLS

Substructure Quantity Table for Bent No. 7

Item		Quantity
Drilled Shafts (5 ft. 6 in. Dia.)	linear foot	264.9
Rock Sockets (5 ft. 0 in. Dia.)	linear foot	43.0
Video Camera Inspection	each	2
Foundation Inspection Holes	linear foot	63.0
Sonic Logging Testing	each	2
Class B Concrete (Substructure)	cu. yard	160.9
Reinforcing Steel (Bridges)	pound	45,250
Reinforcing Steel (Epoxy Coated)	pound	39,940

These quantities are included in the Estimated Quantities table on Sheet No. 6.

Notes:

All concrete above drilled shafts shall be Class B with f'c = 3,000 psi.

For details of the Laminated Neoprene Bearing Pad Assembly, see Sheet No. 42.

For Elevation A-A, Sections B-B & C-C and Elevation D-D, see Sheet No. 33.

Adjust cap reinforcing as needed to clear column V-bars.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 8-#6-P701 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to top and all sides of pedestals, top and all sides of cap, and all sides of columns above the permanent casing.

Work this sheet with Sheet No. 33.

INTERMEDIATE BENT NO. 7 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	32

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

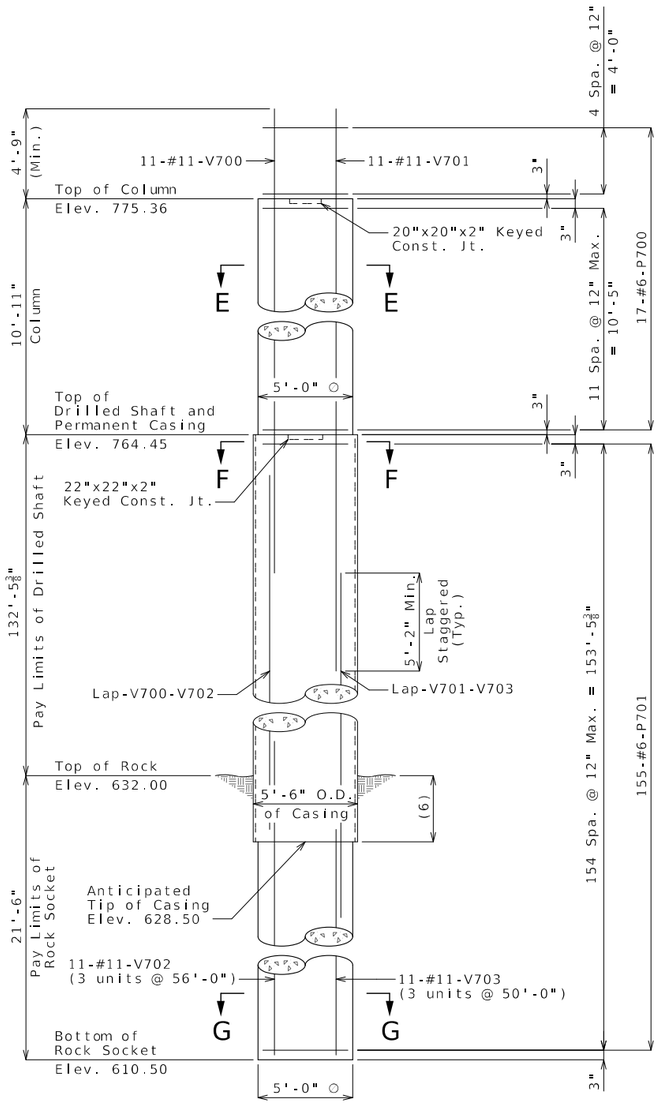
DESCRIPTION

DATE

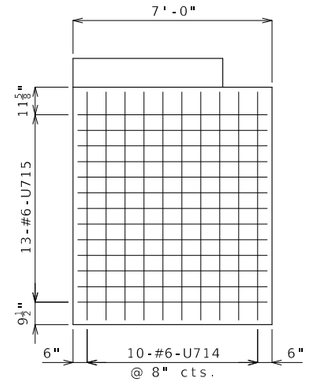
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

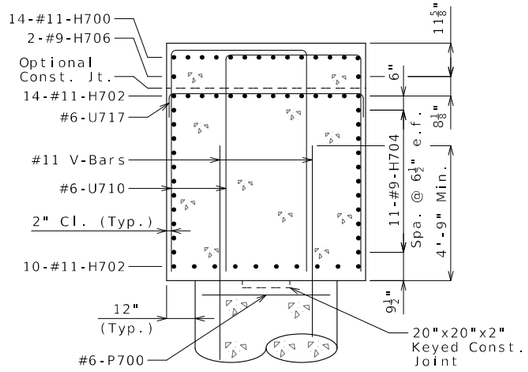
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



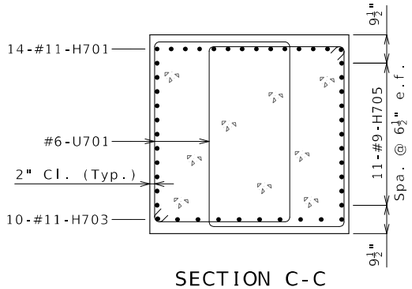
ELEVATION OF DRILLED SHAFT



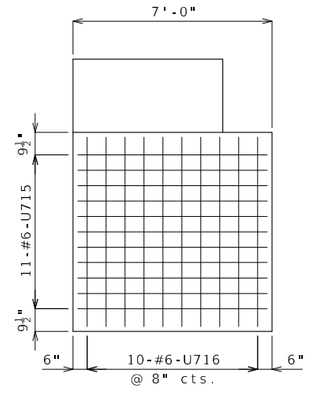
ELEVATION A-A



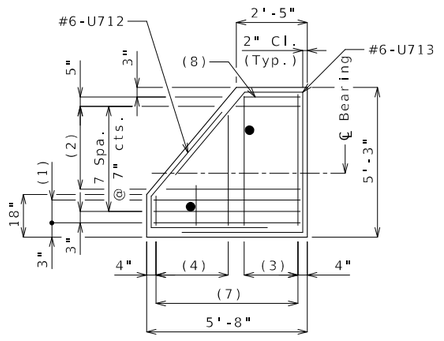
SECTION B-B



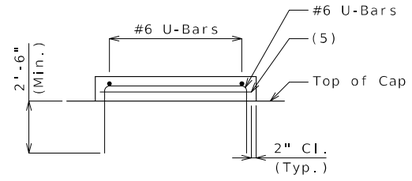
SECTION C-C



ELEVATION D-D



PEDESTAL PLAN



PEDESTAL ELEVATION

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) 3-#6-U702 for ahead bearings
3-#6-U703 for back bearings

(2) 6-#6-U704 for ahead bearings
6-#6-U705 for back bearings

(3) 5-#6-U706 for ahead bearings
5-#6-U707 for back bearings

(4) 6-#6-U708 for ahead bearings
6-#6-U709 for back bearings

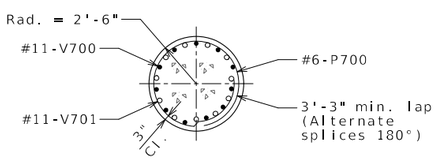
(5) For both ahead and back bearings, place additional U712 and U713 Bars @ Eq. Spa. (6" Max.) when pedestal exceeds 8" in height.

(6) Seat casing into sound rock in accordance with Sec 701

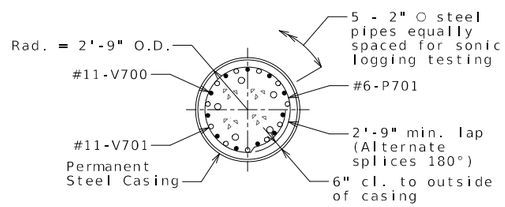
(7) 10 Spa. @ 6" cts.

(8) 1-#6-U718 for ahead bearings
1-#6-U719 for back bearings

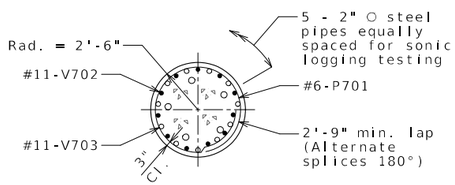
Work this sheet with Sheet No. 32.



SECTION E-E



SECTION F-F



SECTION G-G

INTERMEDIATE BENT NO. 7 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	33

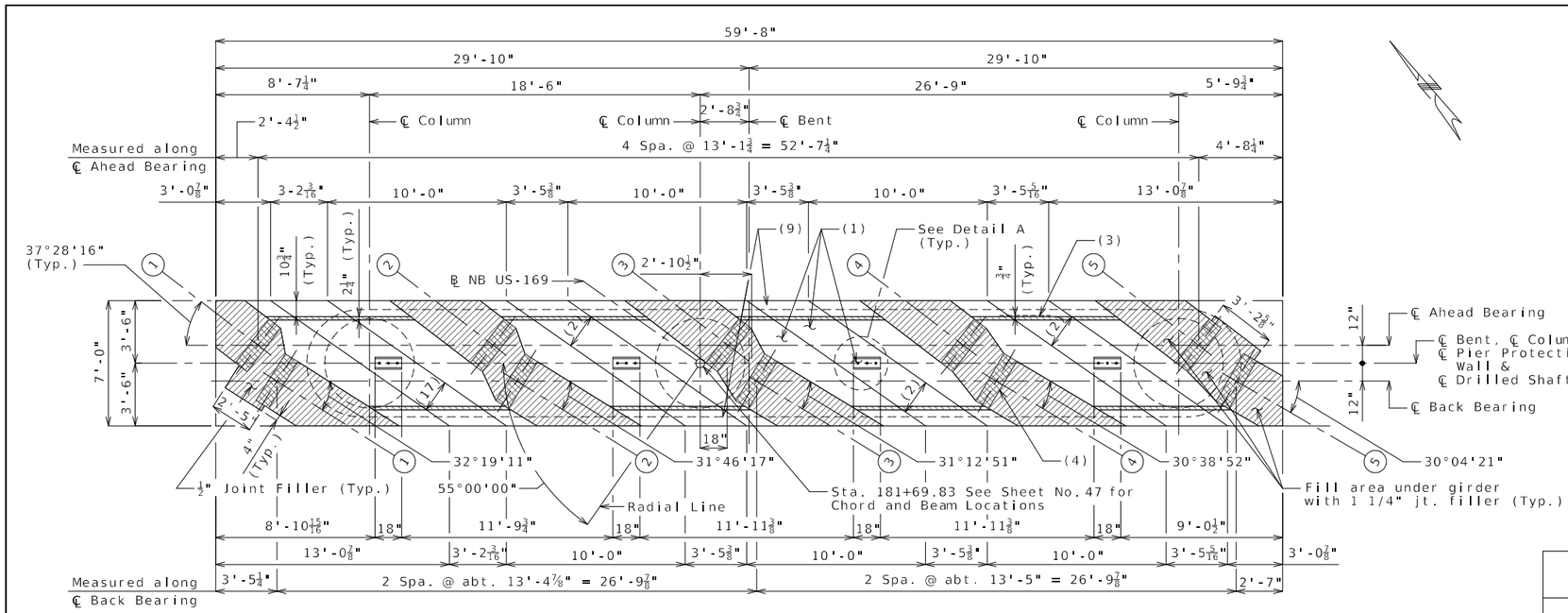
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

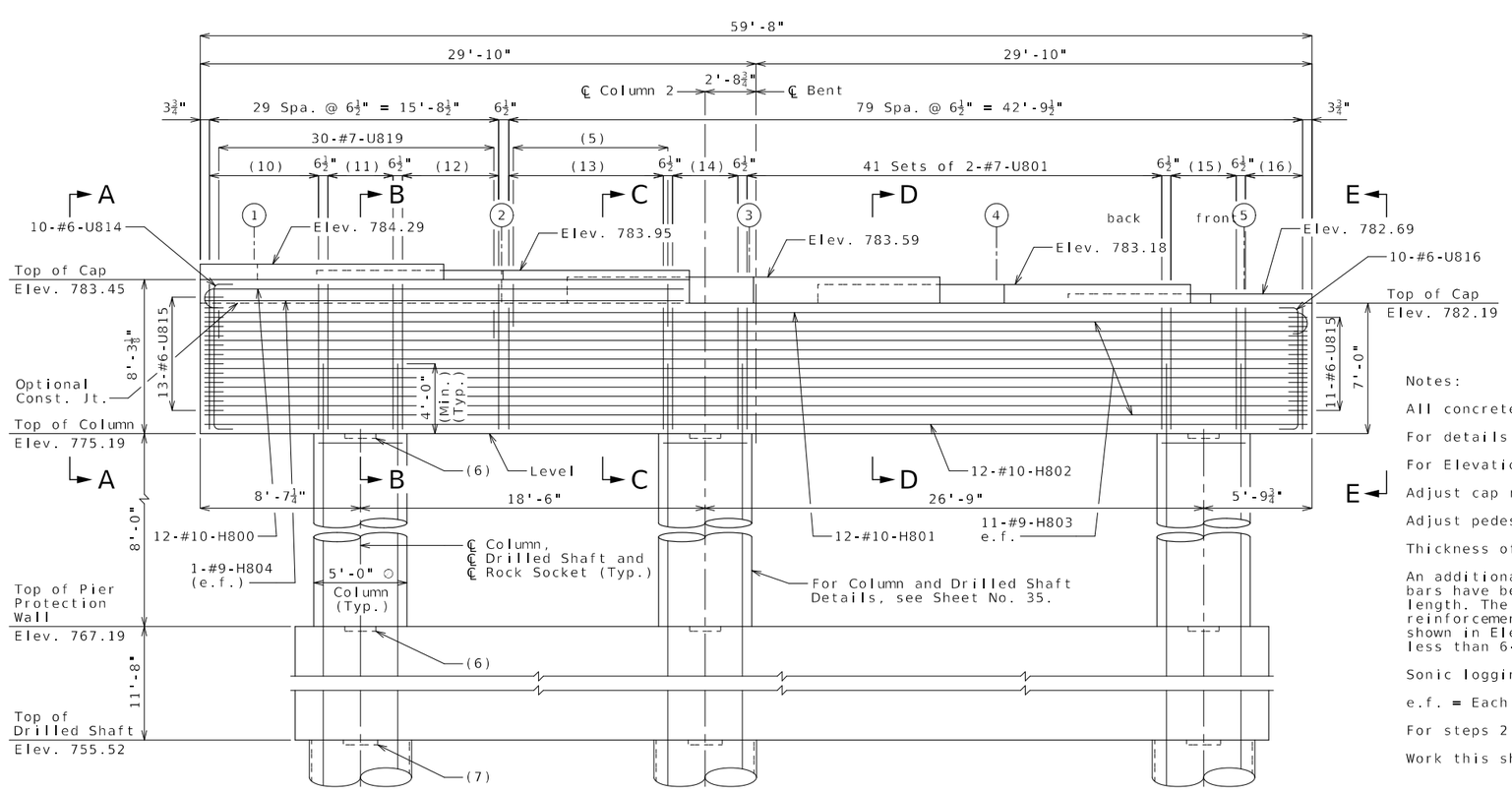
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



PLAN



ELEVATION

(1) 1-Layer of 30-lb (Min.) Roofing Felt or Bituminous Pile Paint including sides of pedestals (Typ.)

(2) 23 3/4"

(3) Face of Diaphragm (Typ.)

(4) 10"x3'-0 7/8" Laminated Neoprene Bearing Pad (Typ.)

(5) See Part Plan View F-F on Sheet No. 35 for U802 and U803 bars.

(6) 20"x20"x2" Keyed Const. Jt. (Typ.)

(7) 22"x22"x2" Keyed Const. Jt. (Typ.)

(8) 3-#6-D800 @ 6" cts.

(9) 1/2" Joint Filler (Typ.)

(10) 12 Sets of 2-#7-U800

(11) 8 Sets of 2-#7-U817

(12) 10 Sets of 2-#7-U800

(13) 16 Sets of 2-#7-U801

(14) 8 Sets of 2-#7-U818

(15) 8 Sets of 2-#7-U818

(16) 7 Sets of 2-#7-U801

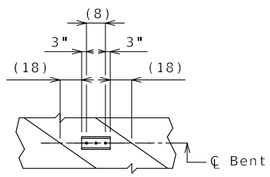
(17) 21 7/8"

(18) 10 1/8" Between Pedestals 1 & 2.
11 5/8" Between All Other Pedestals.

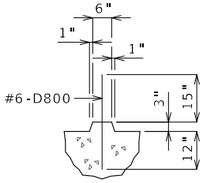
Substructure Quantity Table for Bent No. 8

Item		Quantity
Class 1 Excavation	cu. yard	20
Drilled Shafts (5 ft. 6 in. Dia.)	linear foot	364.6
Rock Sockets (5 ft. 0 in. Dia.)	linear foot	96
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	126.0
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	275.2
Reinforcing Steel (Bridges)	pound	124,200

These quantities are included in the Estimated Quantities table on Sheet No. 6.



DETAIL A



SECTION THRU KEY

Notes:

All concrete above drilled shafts shall be Class B with f'c = 3,000 psi

For details of the Laminated Neoprene Bearing Pad, see Sheet No. 43.

For Elevation A-A, Sections B-B, C-C & D-D, and Elevation E-E, see Sheet No. 35.

Adjust cap reinforcing as needed to clear column V-bars.

Adjust pedestal reinforcing as needed to clear cap reinforcing.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 12-#6-P800 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

e.f. = Each Face

For steps 2 inches or more, use 2 1/4x1/2 inch joint filler up vertical face.

Work this sheet with Sheets No. 35 & 36.

INTERMEDIATE BENT NO. 8 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000208
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	34

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

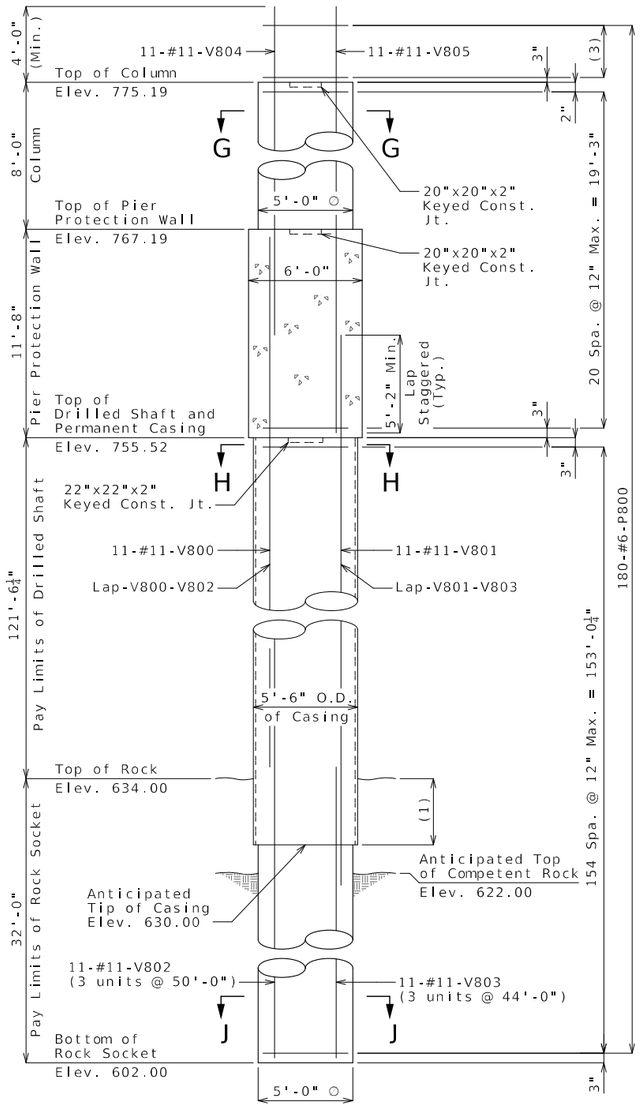
BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

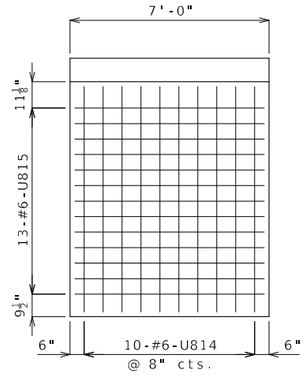
DESCRIPTION	DATE

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

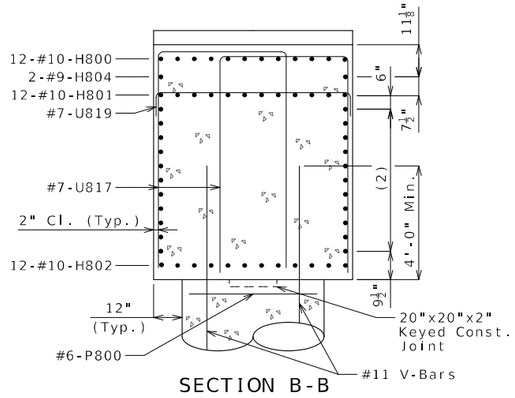
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



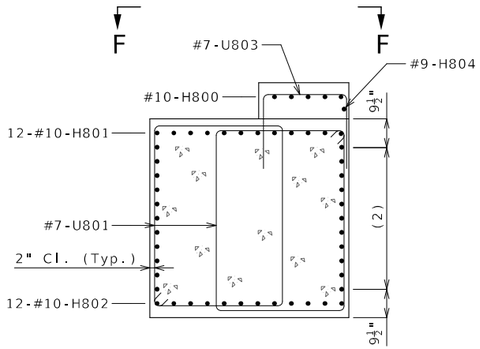
SECTION NEAR DRILLED SHAFT



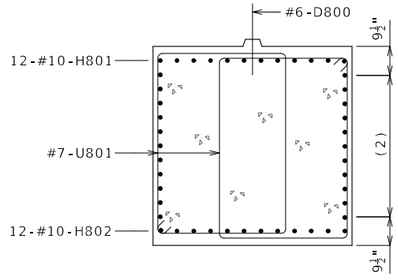
ELEVATION A-A



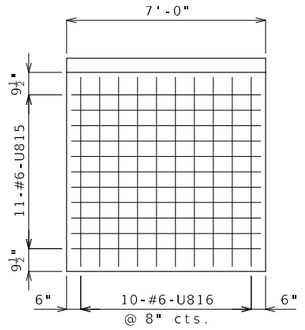
SECTION B-B



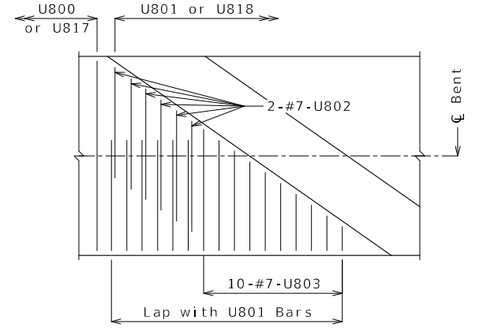
SECTION C-C



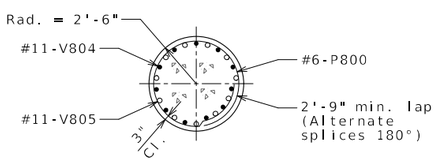
SECTION D-D



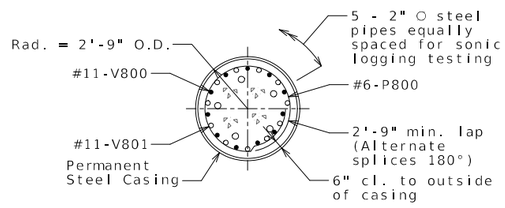
ELEVATION E-E



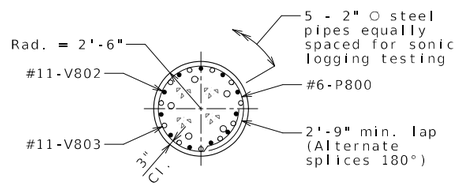
PART PLAN VIEW F-F
(Only top step stirrups shown for clarity.)



SECTION G-G



SECTION H-H



SECTION J-J

Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

(1) Seat casing into sound rock in accordance with Sec 701

(2) 11-#9-H803 @ 6 1/2" cts. e.f.

(3) 3 Spa. @ 12" = 3'-0"

e.f. = Each Face

Work this sheet with Sheets No. 34 & 36.

INTERMEDIATE BENT NO. 8 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	35

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

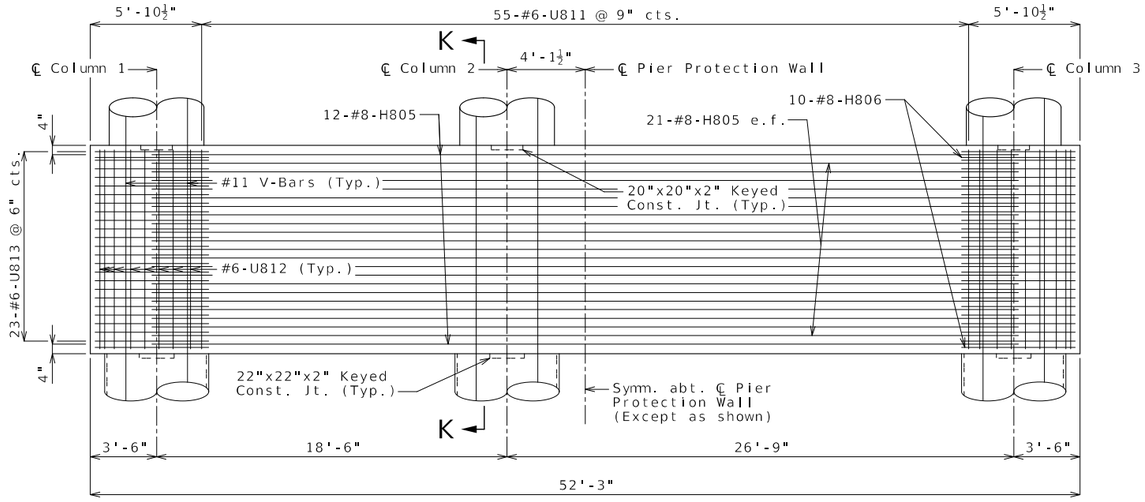
BRIDGE NO.
A9606

DESCRIPTION	DATE

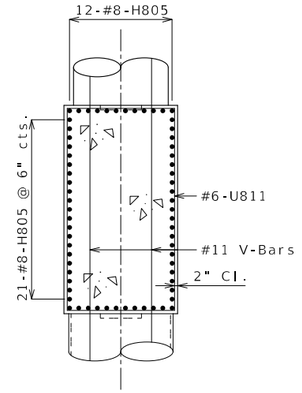
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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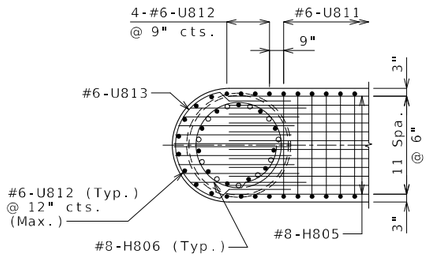
Burns & McDonnell Engineering Co., Inc.
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Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



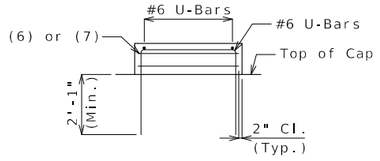
ELEVATION OF PIER PROTECTION WALL



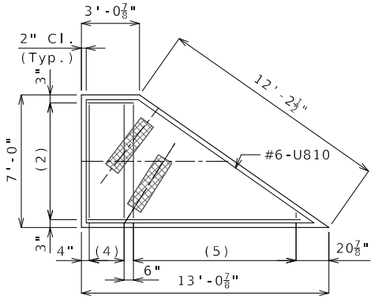
SECTION K-K



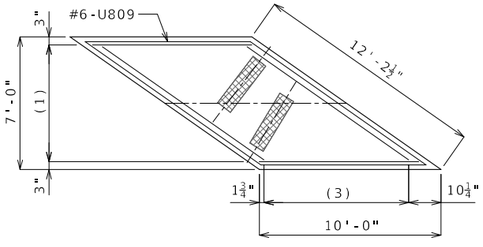
PART PLAN OF PIER PROTECTION WALL



PEDESTAL ELEVATION



PEDESTAL PLAN
(Girders 1 & 5)



PEDESTAL PLAN
(Girders 2 - 4)

(1) 14-#6-U804 @ 6" cts.

(2) 14-#6-U805 @ 6" cts.

(3) 19-#6-U806 @ 6" cts.

(4) 6-#6-U807 @ 6" cts.

(5) 17-#6-U808 @ 6" cts.

(6) For Girders 1 and 5, place additional U810 Bars @ Eq. Spa. (6" Max.) when pedestal exceeds 8" in height.

(7) For Girders 2 through 4, place additional U809 Bars @ Eq. Spa. (6" Max.) when pedstal exceeds 8" in height.

e.f. = Each Face

Work this sheet with Sheets. No. 34 & 35.

INTERMEDIATE BENT NO. 8 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

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DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	36

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

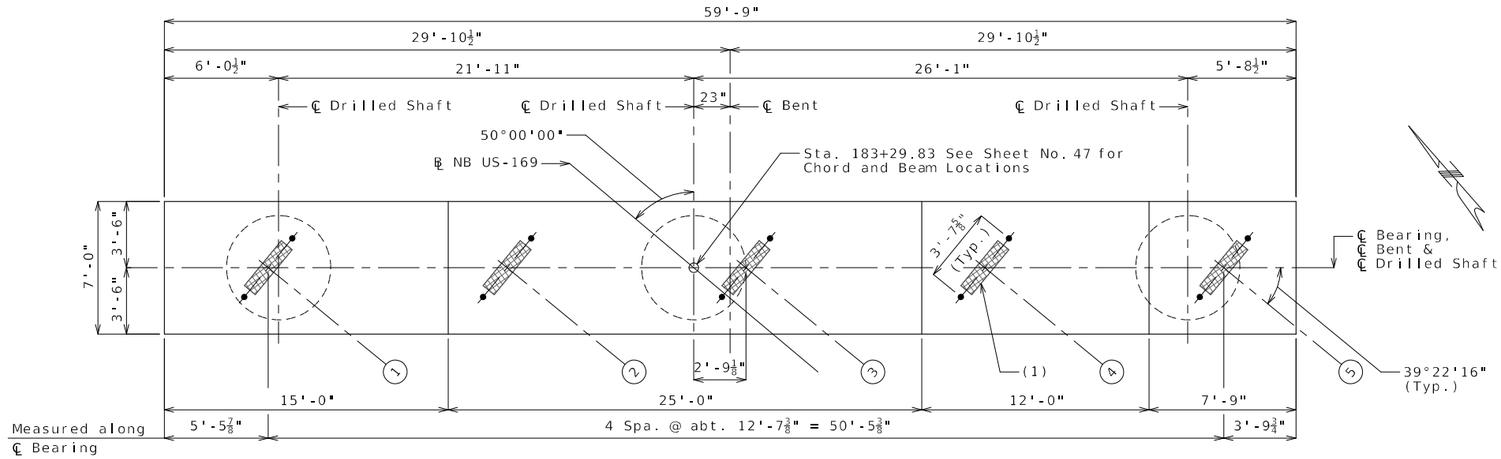
BRIDGE NO.
A9606

DESCRIPTION	DATE

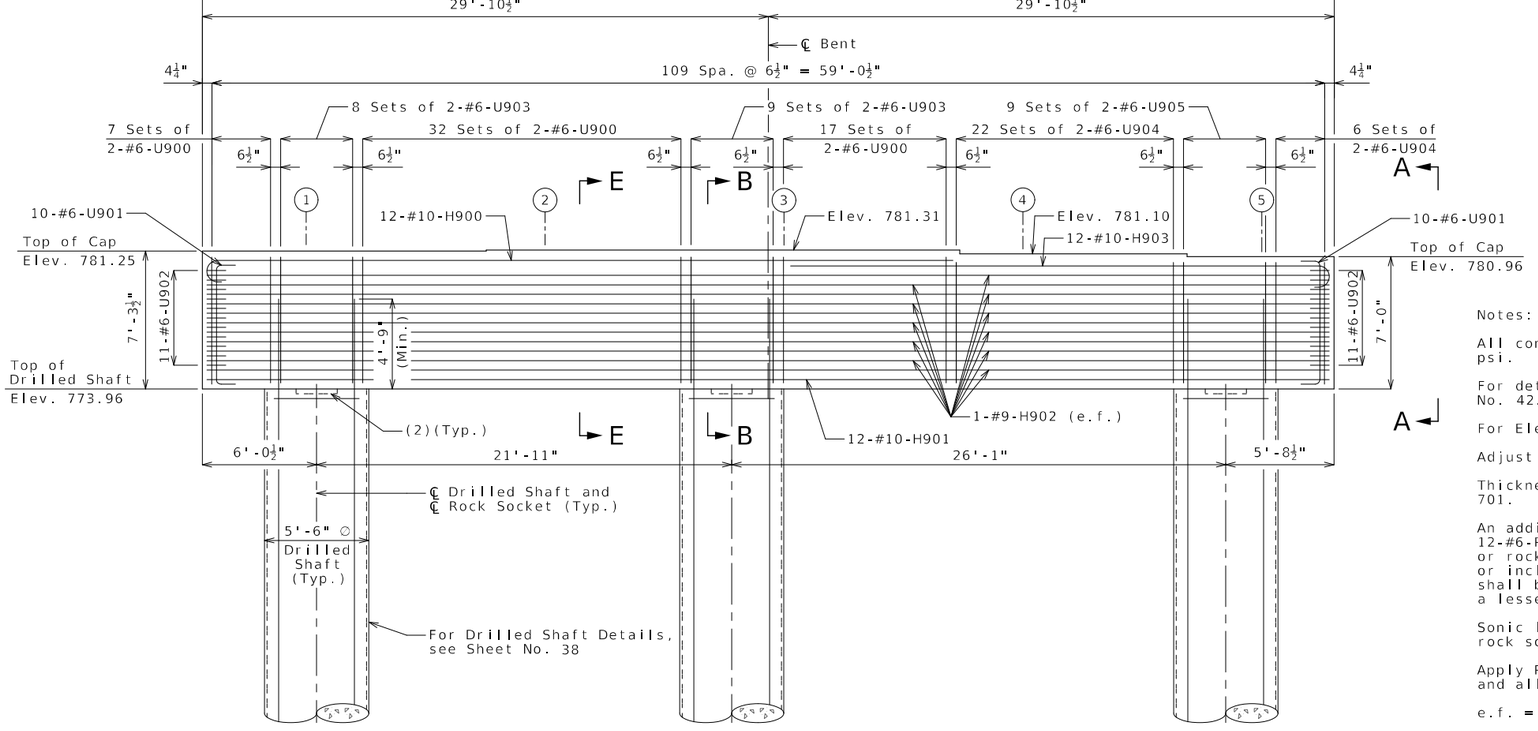
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105 WEST CAPITOL
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Kansas City, Missouri 64114
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Certificate of Authority
No.: 000165
BMcD Project No. 154749



PLAN



ELEVATION

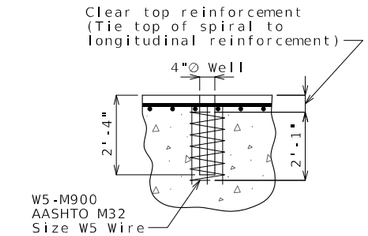
(1) Laminated Neoprene Bearing Pad Assembly (Typ.)

(2) 22"x22"x2" Keyed Const. Jt.

Substructure Quantity Table for Bent No. 9

Item		Quantity
Class 1 Excavation	cu. yard	115
Drilled Shafts (5 ft. 6 in. Dia.)	linear foot	428.9
Rock Sockets (5 ft. 0 in. Dia.)	linear foot	66.0
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	96.0
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	112.3
Reinforcing Steel (Bridges)	pound	70,820
Reinforcing Steel (Epoxy Coated)	pound	29,800

These quantities are included in the Estimated Quantities table on Sheet No. 6.



ANCHOR BOLT WELLS

Notes:

All concrete above drilled shafts shall be Class B with f'c = 3,000 psi.

For details of the Laminated Neoprene Bearing Pad Assembly, see Sheet No. 42.

For Elevation A-A and Section B-B, see Sheet No. 38.

Adjust cap reinforcing as needed to clear column V-bars.

Thickness of permanent steel casing shall be in accordance with Sec 701.

An additional 4 feet has been added to V-bar lengths and additional 12-#6-P900 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to top and all sides of pedestals and top and all sides of cap.

e.f. = Each Face

Work this sheet with Sheet No. 38.

INTERMEDIATE BENT NO. 9 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	37

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

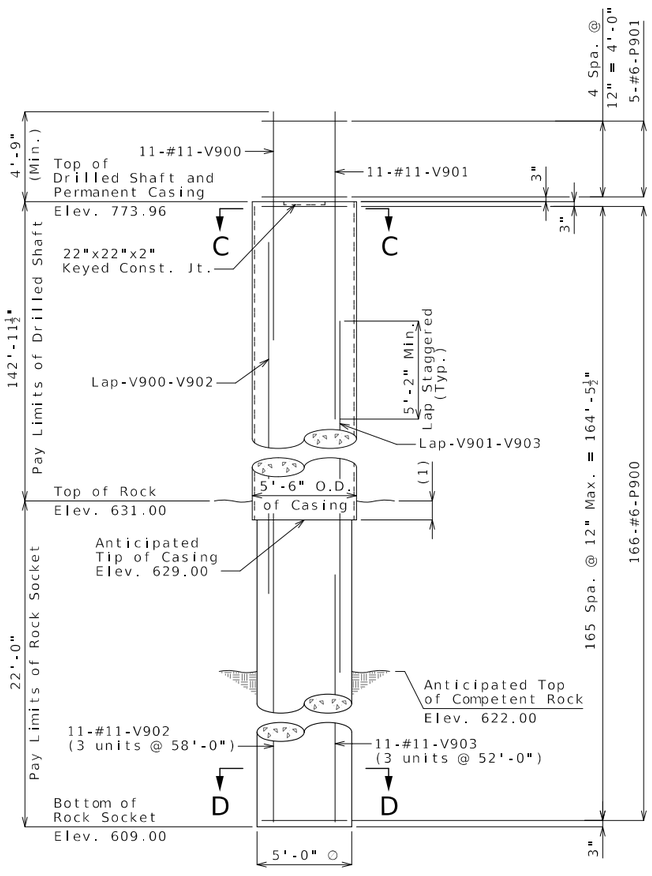
DESCRIPTION	DATE

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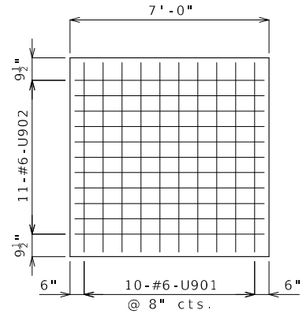
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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

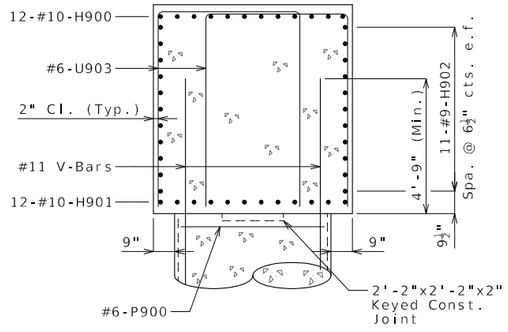
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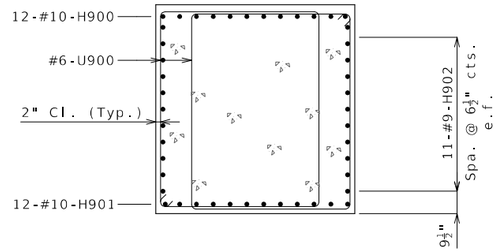
ELEVATION OF DRILLED SHAFT



ELEVATION A-A



SECTION B-B



SECTION E-E

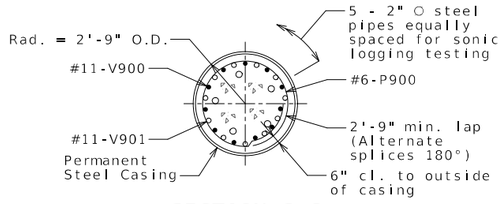
Notes:

For notes on splices in bridge bent columns and drilled shafts, see Sheet No. 4.

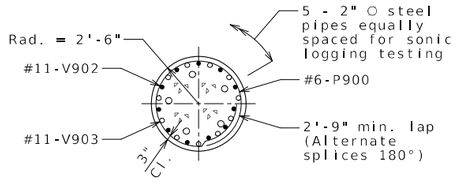
(1) Seat casing into sound rock in accordance with Sec 701

e.f. = Each Face

Work this sheet with Sheet No. 37.



SECTION C-C



SECTION D-D

INTERMEDIATE BENT NO. 9 DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	38

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

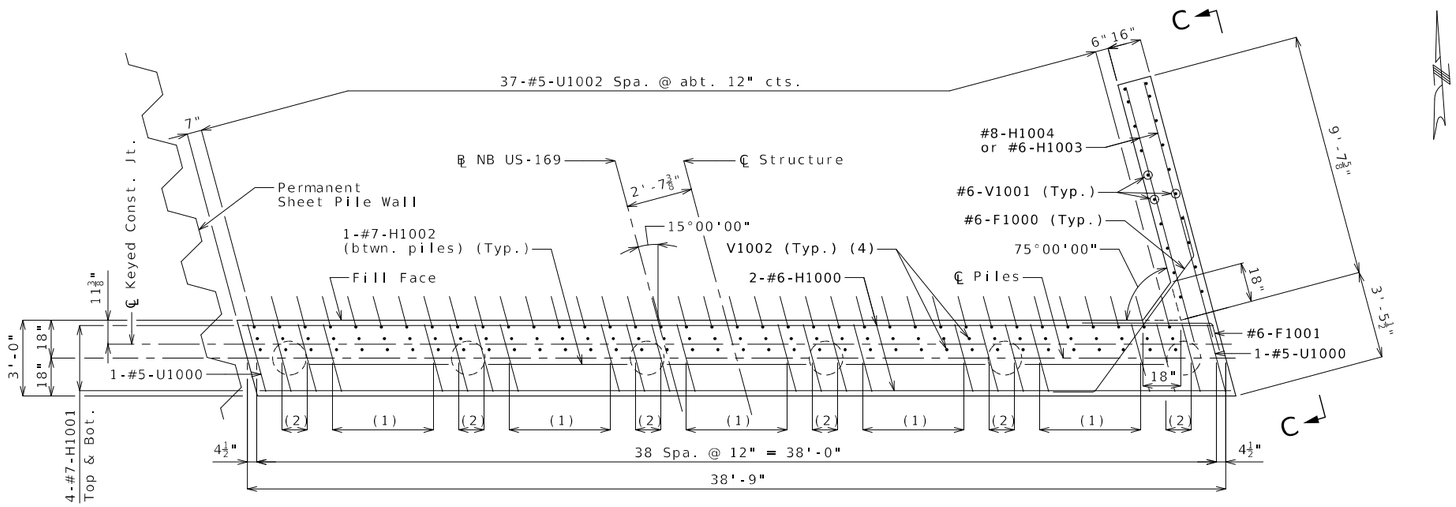
BRIDGE NO. A9606

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)

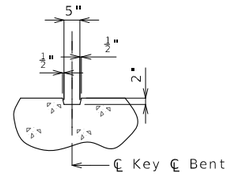
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Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



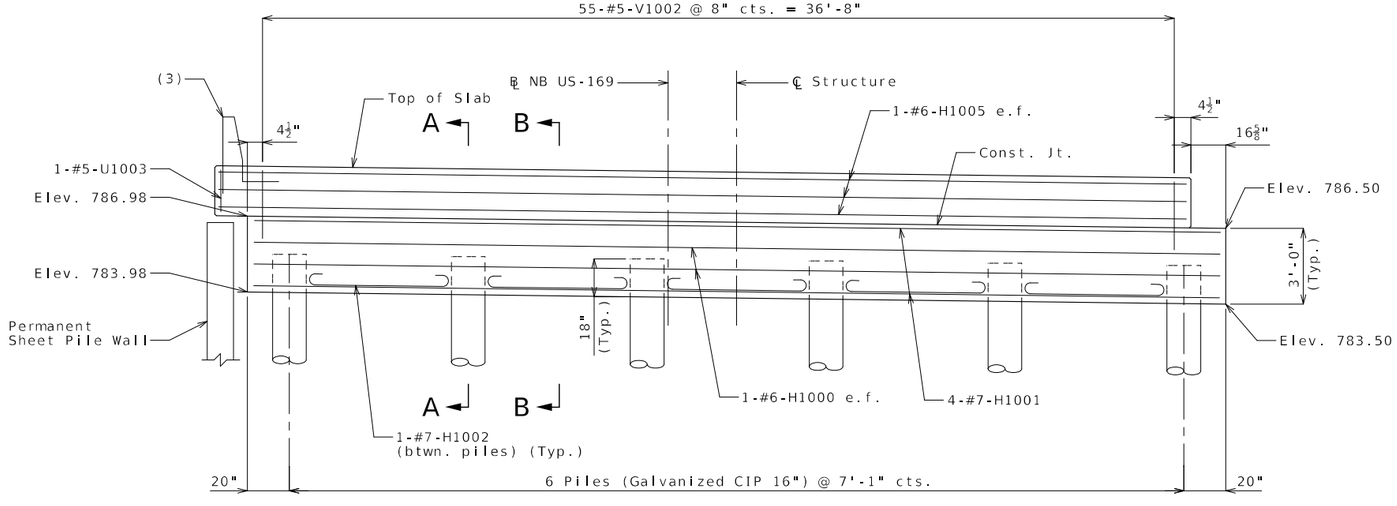
PLAN OF BEARING BEAM REINFORCING
(Preformed fiber expansion joint details and Keys not shown for clarity)

(1) 5-#5-U1000

(2) 2-#5-U1001



DETAIL OF KEYED CONST. JOINT



SECTION NEAR END BENT

Substructure Quantity Table for End Bent No. 10		
Item		Quantity
Class 1 Excavation	cu. yard	25
Galvanized Cast-in-Place Concrete Piles (16 in.)	linear foot	384
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	6
Class B Concrete (Substructure)	cu. yard	13.8
Reinforcing Steel (Epoxy Coated)	pound	3150

These quantities are included in the Estimated Quantities table on Sheet No. 6.

Notes:

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

For Sections A-A & B-B, & Elevation C-C, see Sheet No. 40.

e.f. denotes each face

For details of Vertical Drain at End Bents, see Sheet No. 21.

For Permanent Sheet Pile information, see Sheet No. 41.

For details of bridge approach slab, see Sheet No. 106.

For Preformed fiber expansion joint filler details recessed in the bearing beam, see Sheet No. 92.

Work this sheet with Sheets No. 40 & 41.

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to top and all sides of bearing beam and sides of slab "backwall" on End Bent.

(3) For details of barrier reinforcement, see Sheet No. 104.

(4) See Section B-B and Part Plan on Sheet No. 40 for location of V1002 bars.

Detailed: Oct. 2025
Checked: Oct. 2025

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

END BENT NO. 10 - PLAN & ELEVATION REINFORCING DETAILS

Sheet No. 39 of 132

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	39

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

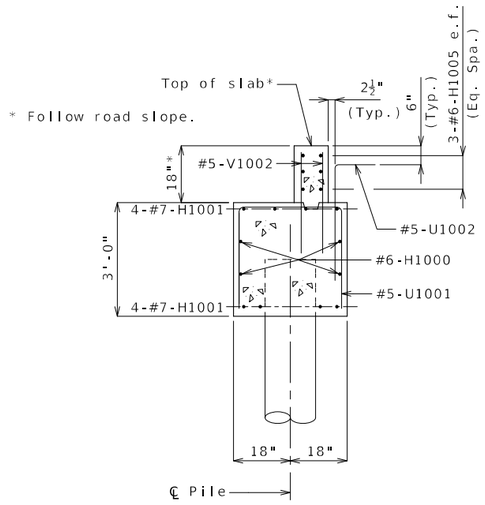
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

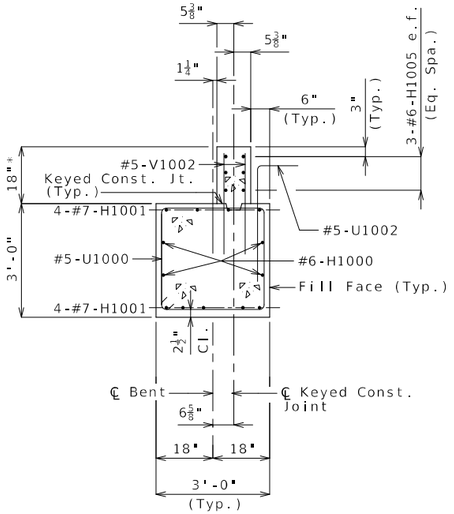
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JEFFERSON CITY, MO 65102
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Burns & McDonnell Engineering Co., Inc.
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816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

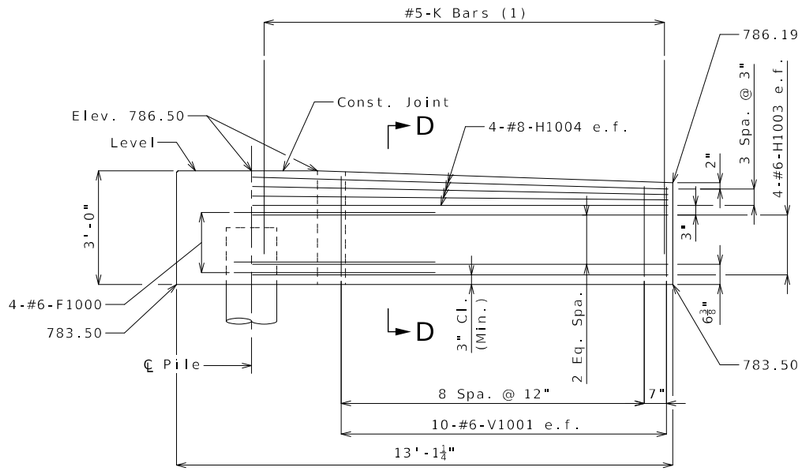
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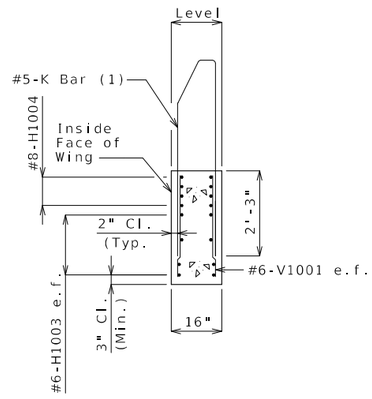
SECTION A-A



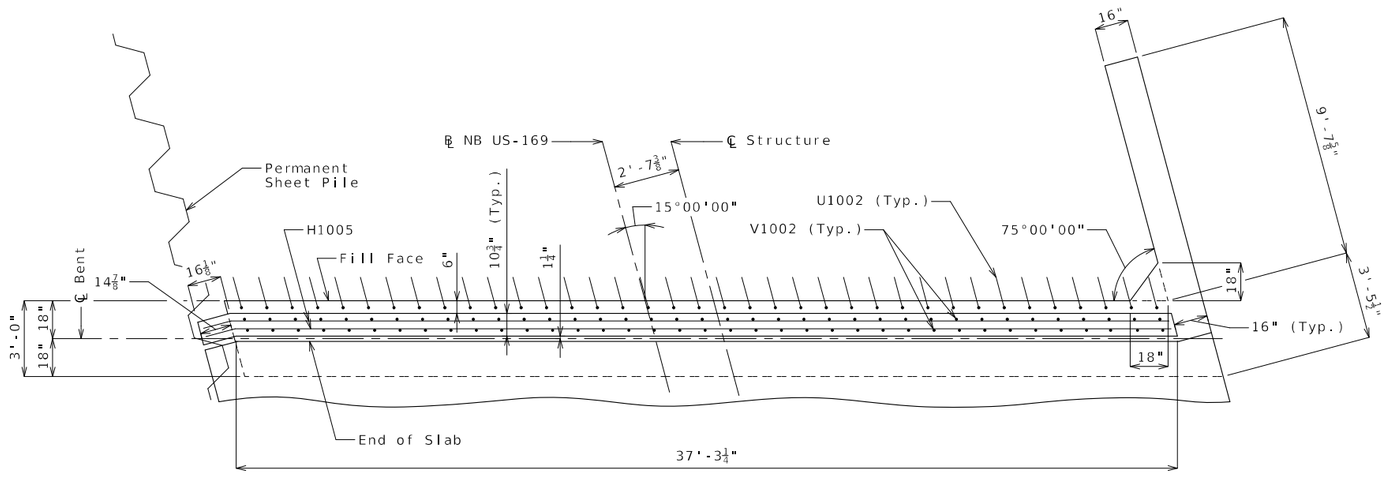
SECTION B-B



ELEVATION C-C



SECTION D-D



PART PLAN

Notes:

e.f. denotes each face

(1) For reinforcement of the Type D Barrier at the End Bent, see Sheet No. 104.

For location of Sections A-A & B-B, & Elevation C-C, see Sheet No. 39.

Work this sheet with Sheet No. 39.

END BENT NO. 10 - WING DETAILS & SECTIONS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
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DATE

DATE PREPARED
1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	40

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

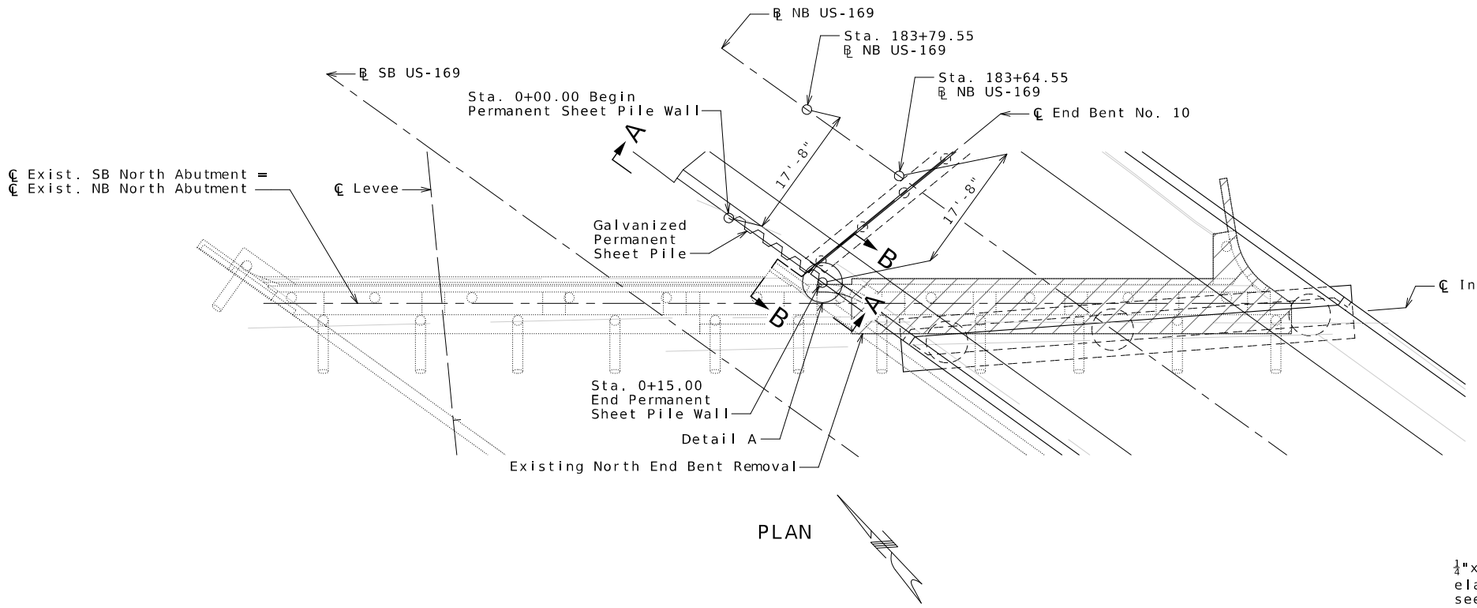
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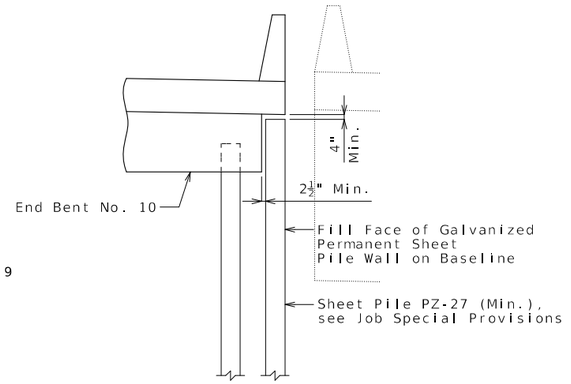
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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
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Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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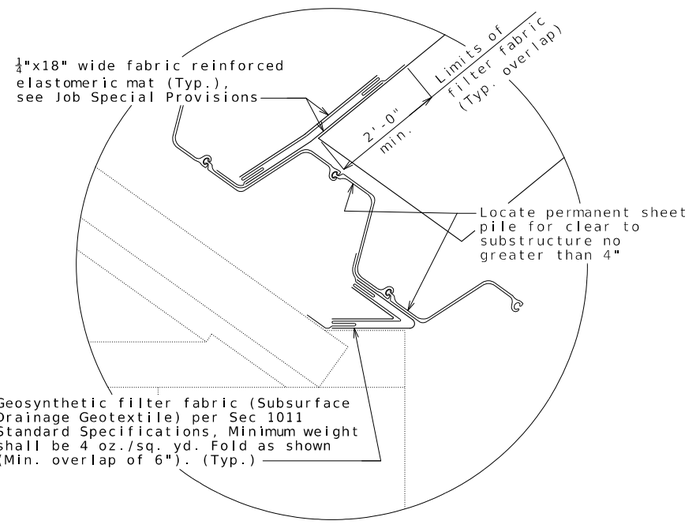


PLAN

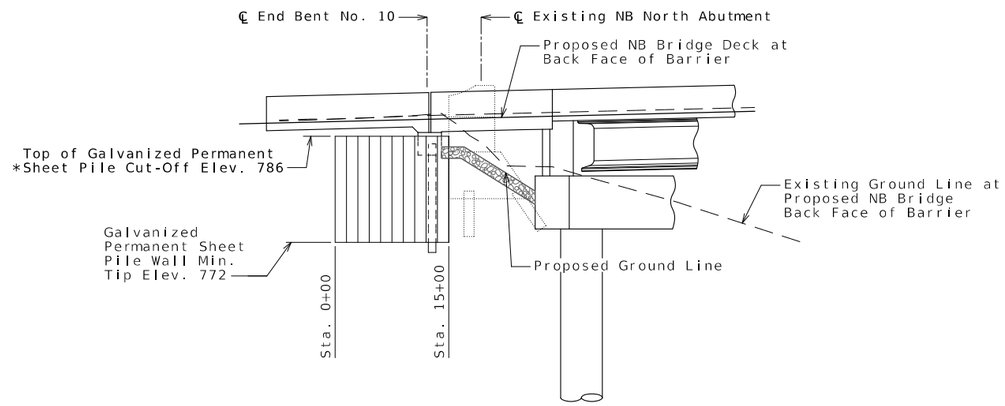


VIEW B-B

Install filter fabric and elastomeric mat full depth adjacent to substructure elements as shown. Payment for furnishing all material, equipment, tools, labor and any other incidental work as shown on this sheet for geosynthetic filter fabric and fabric reinforced elastomeric mat, complete in place, will be considered completely covered by the contract unit price for Permanent Sheet Pile Wall.



DETAIL A



VIEW A-A

As a minimum, all steel sheet piling shall conform to ASTM A572 (Grade 50) steel and shall meet the following requirements.

Maximum Section Depth.....12 in.
Minimum Section Thickness....0.375 in.
Elastic Section Modulus.....30.2 in³/ft.



The Contractor shall submit for approval a working drawing of the sheet pile layout showing all pertinent dimensions, details, and section properties.

The maximum retained cantilever height of the sheet pile allowed shall be 3'-9".

The constructed wall dimensions will be within 12"± of the sheet pile wall dimensions in plan view shown unless otherwise noted. The Contractor may elect to install a greater length as approved by the Engineer. Plan quantities will be paid regardless of actual length and height of sheet pile installed.

The Contractor is responsible for verifing that the shoring is adequate for all field conditions encountered during construction.

*The sheet pile wall shall be installed to fit the ground slope and retain fill supporting SB traffic and to construct Bridge No. A9606 substructure elements. Cut off top of permanent sheet piling to allow minimum 4" clearance under the Unit 4 slab and approach slab.

NOTE:

Approximate Top of Levee Elevation = 764 under sheet pile wall. Contractor shall take all necessary precautions to avoid levee impacts.

GALVANIZED PERMANENT SHEET PILE WALL AT END BENT NO. 10

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	41

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

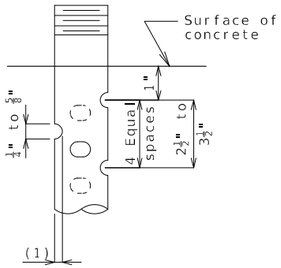
BRIDGE NO.
A9606

DESCRIPTION	DATE

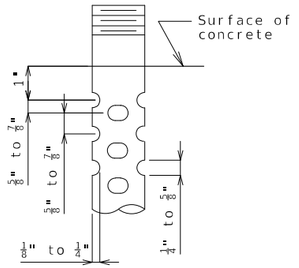
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JEFFERSON CITY, MO 65102
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Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



DETAIL FOR 3/4"Ø THRU 2 1/2"Ø ANCHOR BOLTS

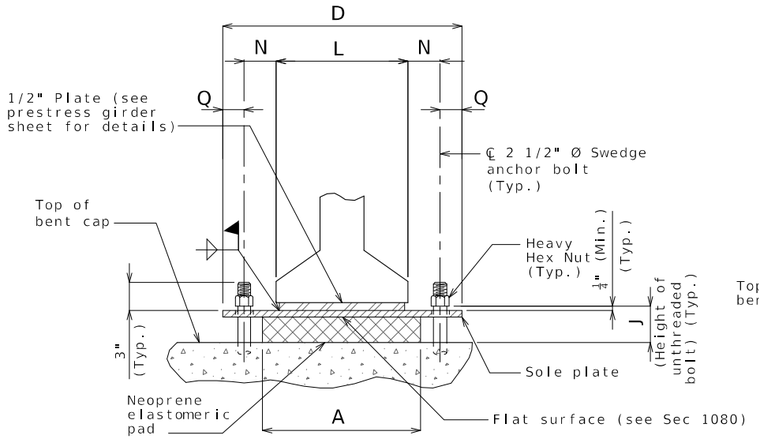


OPTIONAL DETAIL FOR 1 3/8"Ø THRU 2 1/2"Ø ANCHOR BOLTS

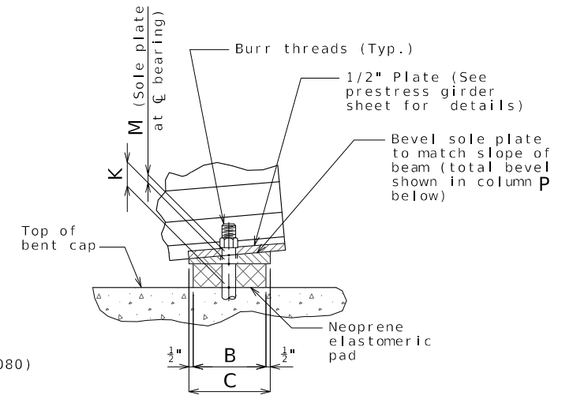
SWEDGE ANCHOR BOLT DETAILS

(1) $\frac{1}{8}$" for $\frac{3}{4}$"Ø thru $1\frac{1}{4}$"Ø anchor bolts

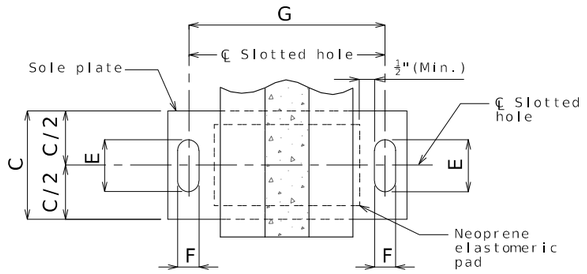
$\frac{1}{8}$" to $\frac{1}{4}$" for $1\frac{3}{8}$"Ø thru $2\frac{1}{2}$"Ø anchor bolts



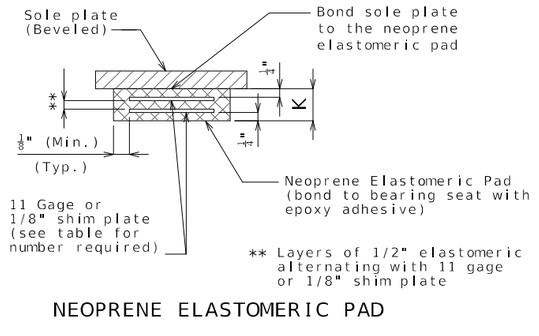
END VIEW



SIDE VIEW



PART PLAN VIEW



NEOPRENE ELASTOMERIC PAD

EXPANSION BEARINGS																	
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	NUMBER OF SHIM PLATES *	NUMBER REQUIRED
5 Back	27"	13½"	14½"	51⅛"	7¾"	2⅝"	43⅜"	7⅜"	5⅝"	38⅜"	1½"	2⅝"	+⅛"	3¾"	5/16"	9	5
5 Ahead	36⅞"	9"	10"	51⅛"	4¾"	2⅝"	43⅜"	4⅞"	3⅛"	38⅜"	1½"	2⅝"	+⅛"	3¾"	5/16"	5	5
7 Back	30"	10½"	11½"	51⅛"	5"	2⅝"	43⅜"	6⅛"	4⅜"	38⅜"	1½"	2⅝"	0"	3¾"	⅛"	7	5
7 Ahead	36⅞"	10½"	11½"	51⅛"	5¾"	2⅝"	43⅜"	6⅛"	4⅜"	38⅜"	1½"	2⅝"	0"	3¾"	⅛"	7	5
9	36⅞"	9"	10"	51⅛"	5½"	2⅝"	43⅜"	4¼"	2½"	38⅜"	1½"	2⅝"	-⅛"	3¾"	⅛"	4	5
																TOTAL BEARINGS	25

* The required shim plate shall be placed between layers of elastomeric and molded together to form an integral unit.

GENERAL NOTES:

Anchor bolts shall be 2 1/2"Ø ASTM F1554 Grade 55 swedged bolts and shall extend 25" into the concrete with ASTM A563 Grade A Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor bolt shall be at the centerline of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

Anchor bolts and heavy hex nuts shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 36 and shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

LAMINATED NEOPRENE BEARING PAD ASSEMBLY AT EXPANSION BENTS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	42

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

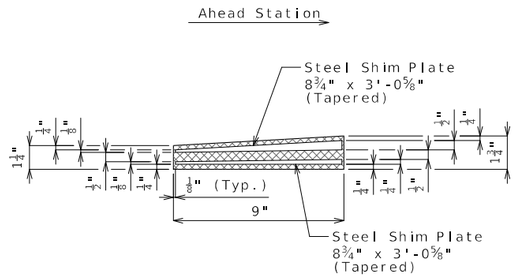
BRIDGE NO.
A9606

DESCRIPTION | DATE

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

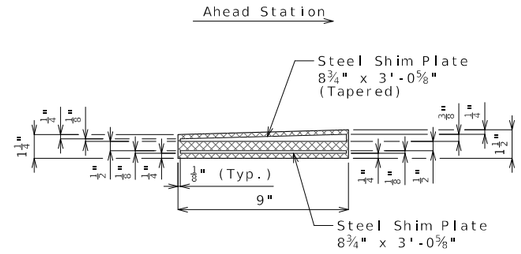
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No: 154749



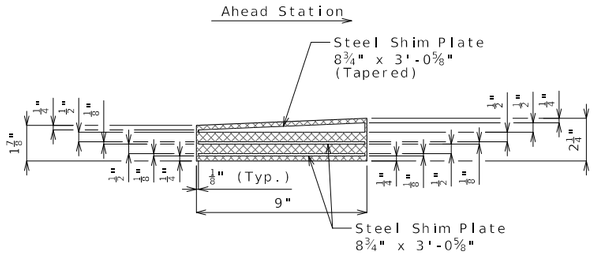
TYPICAL SECTION THRU 9" x 3'-0⅞" x 1½"
LAMINATED NEOPRENE BEARING PAD

5 Required End Bent No. 1
5 Required Intermediate Bent No. 2 Ahead



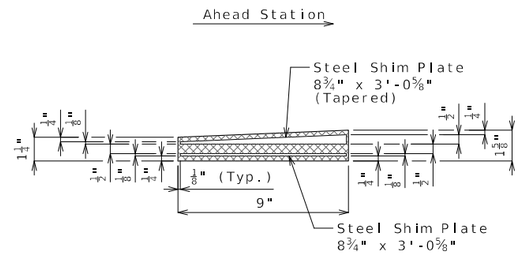
TYPICAL SECTION THRU 9" x 3'-0⅞" x 1⅜"
LAMINATED NEOPRENE BEARING PAD

5 Required Intermediate Bent No. 2 Back
5 Required Intermediate Bent No. 4 Ahead



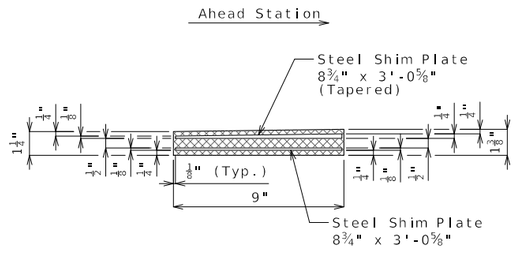
TYPICAL SECTION THRU 9" x 3'-0⅞" x 2 1/16"
LAMINATED NEOPRENE BEARING PAD

5 Required Intermediate Bent No. 3 Back



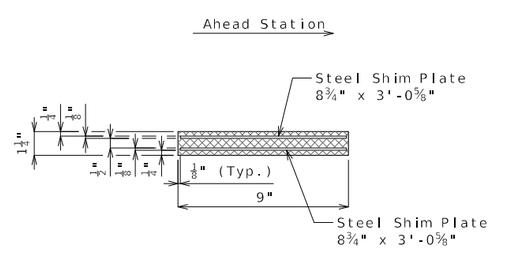
TYPICAL SECTION THRU 9" x 3'-0⅞" x 1 7/16"
LAMINATED NEOPRENE BEARING PAD

5 Required Intermediate Bent No. 3 Ahead



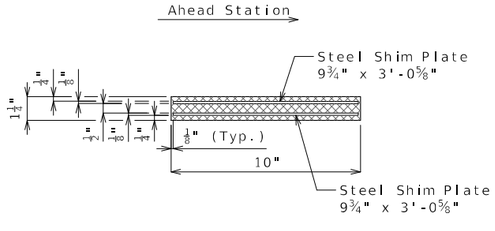
TYPICAL SECTION THRU 9" x 3'-0⅞" x 1 5/16"
LAMINATED NEOPRENE BEARING PAD

5 Required Intermediate Bent No. 4 Back



TYPICAL SECTION THRU 9" x 3'-0⅞" x 1¼"
LAMINATED NEOPRENE BEARING PAD

10 Required Intermediate Bent No. 6



TYPICAL SECTION THRU 10" x 3'-0⅞" x 1¼"
LAMINATED NEOPRENE BEARING PAD

10 Required Intermediate Bent No. 8

LAMINATED NEOPRENE BEARING PADS AT FIXED BENTS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010002206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	43

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

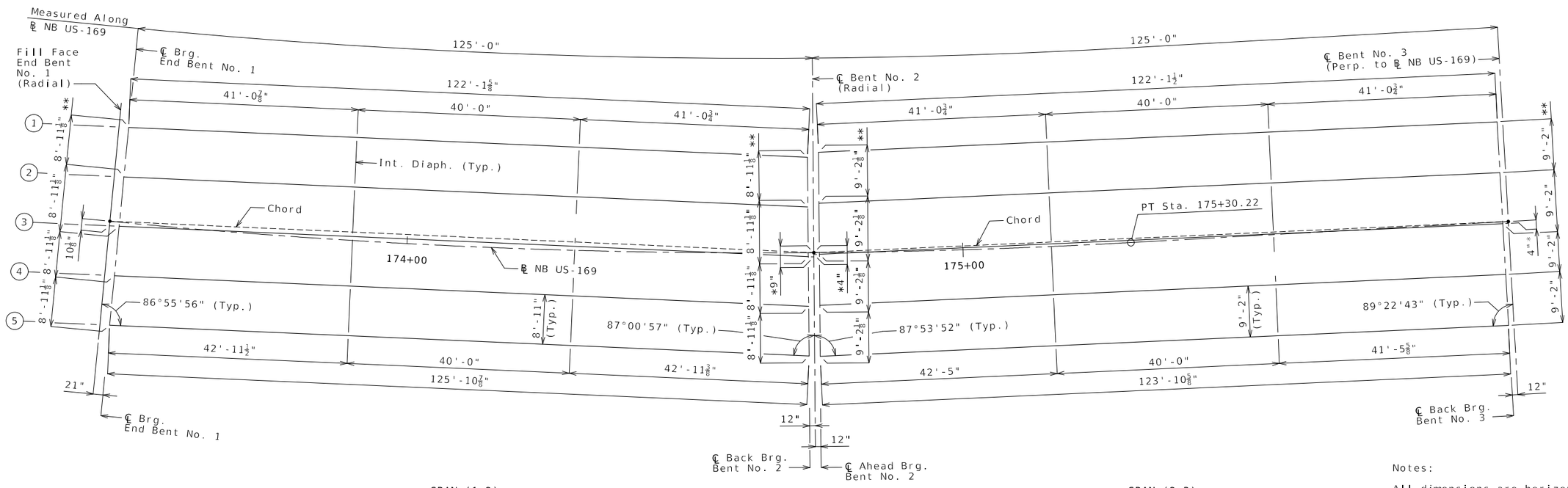
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



PART PLAN SHOWING
LOCATION OF INTERMEDIATE DIAPHRAGMS

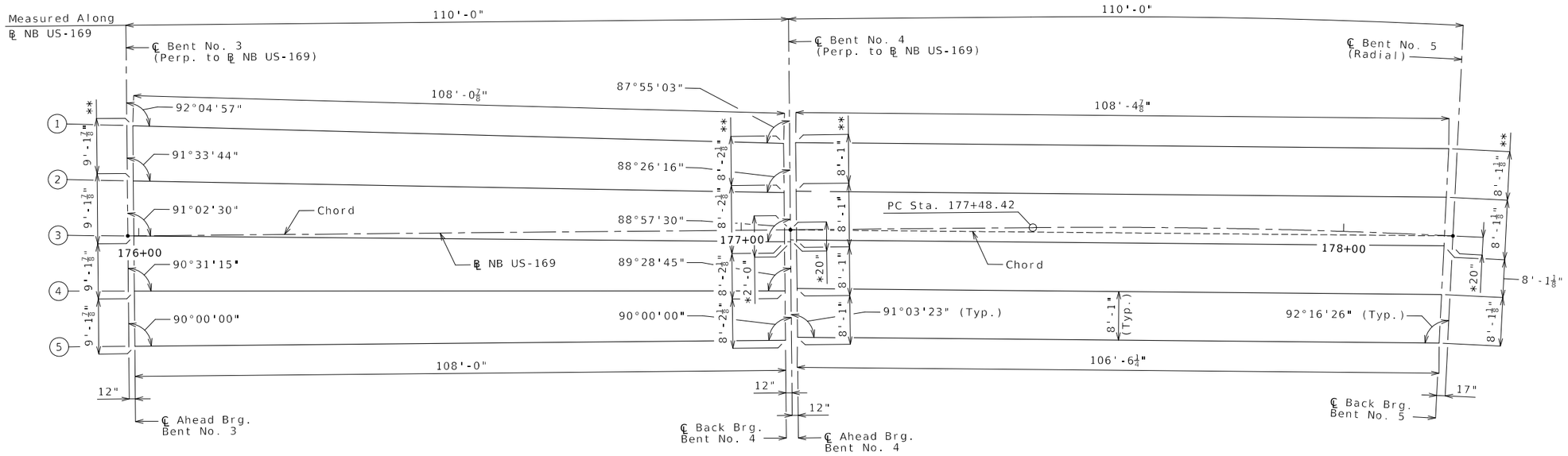
Notes:

All dimensions are horizontal.

For notes on Contractor responsibility for temporary bracing, see Sheet No. 4.

* Measured along ℄ Bent

** Measured along Bearing Line



PART PLAN SHOWING
LOCATION OF INTERMEDIATE DIAPHRAGMS

FRAMING PLAN - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	44

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

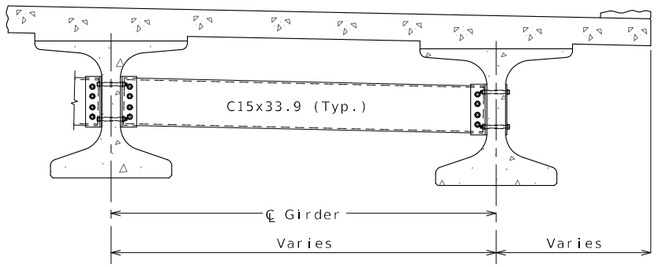
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

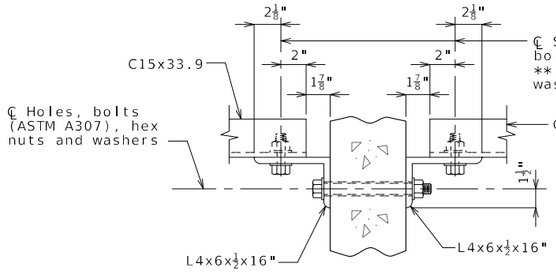
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
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816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

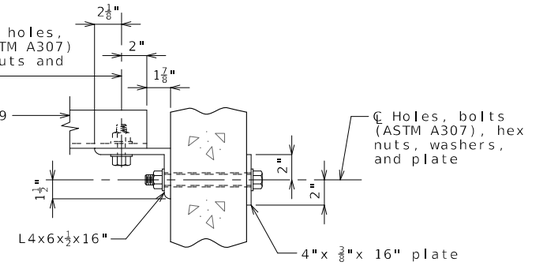
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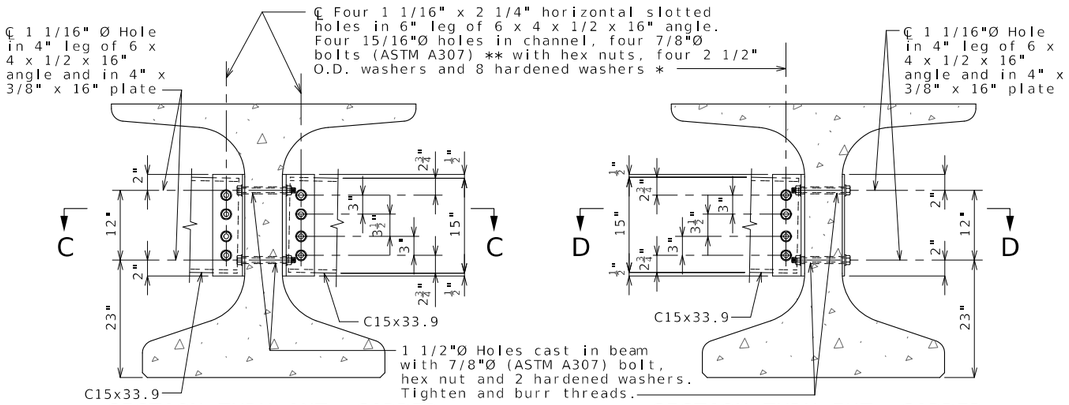
PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS



SECTION C-C



SECTION D-D



SECTION THRU INT. GIRDER
AT DIAPHRAGM

SECTION THRU EXT. GIRDER
AT DIAPHRAGM

STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.

For location of intermediate diaphragms, see Sheet No. 44.

STEEL INTERMEDIATE DIAPHRAGMS - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	45

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

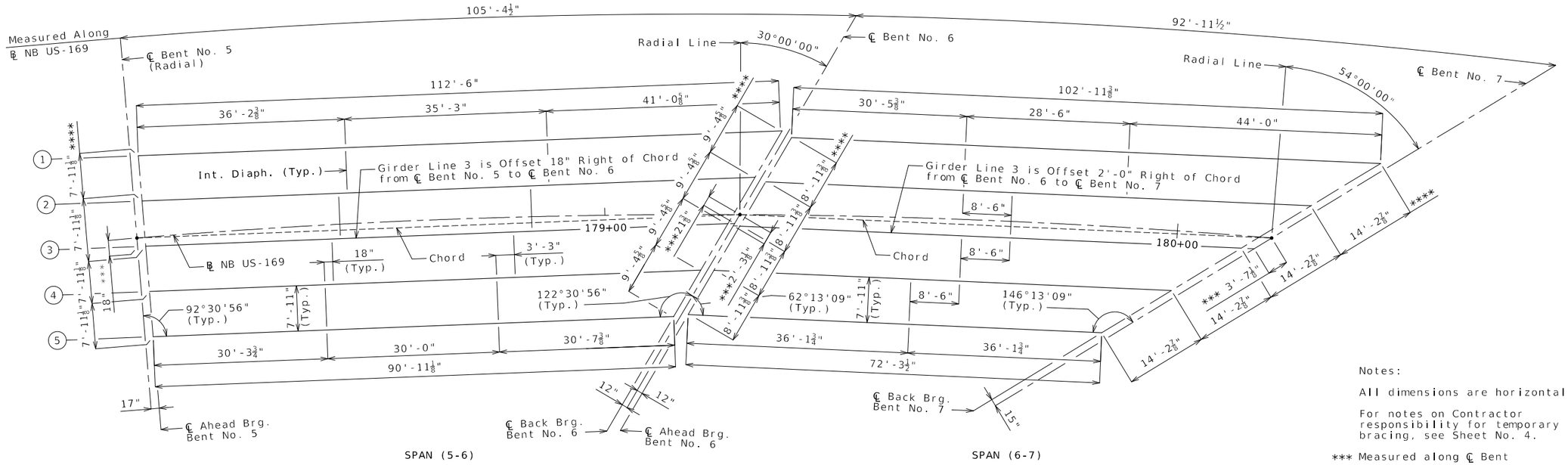
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



Notes:

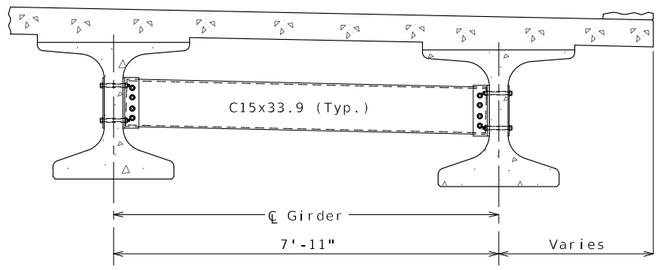
All dimensions are horizontal.

For notes on Contractor responsibility for temporary bracing, see Sheet No. 4.

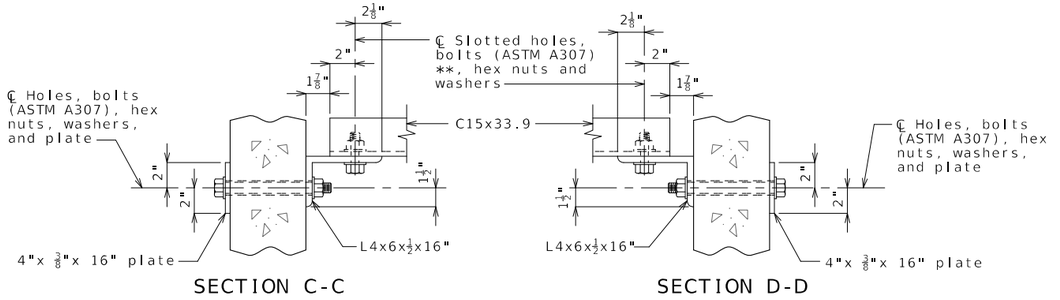
*** Measured along ℄ Bent

**** Measured along Bearing Line

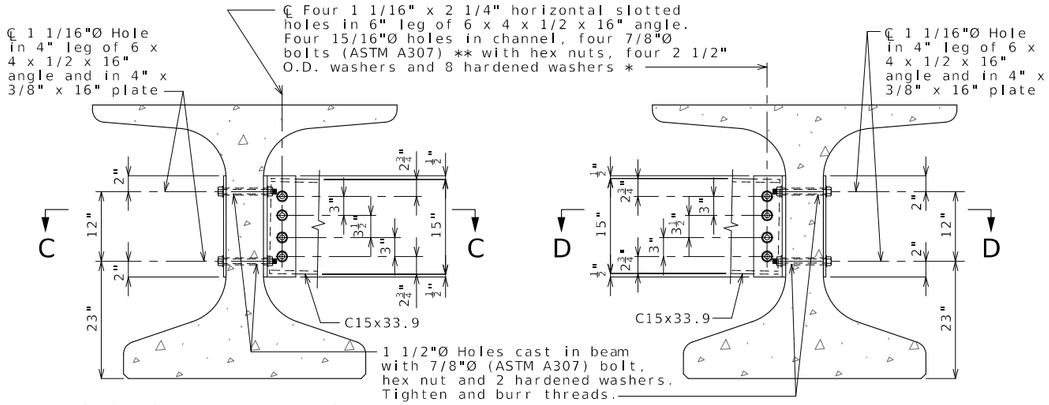
PART PLAN SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS



PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS



SECTION C-C SECTION D-D



SECTION THRU INT. GIRDER AT DIAPHRAGM

SECTION THRU EXT.GIRDER AT DIAPHRAGM

STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.

Detailed: Oct. 2025
Checked: Oct. 2025

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

FRAMING PLAN & STEEL INTERMEDIATE DIAPHRAGMS - UNIT 2

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	46

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9606

DESCRIPTION	DATE

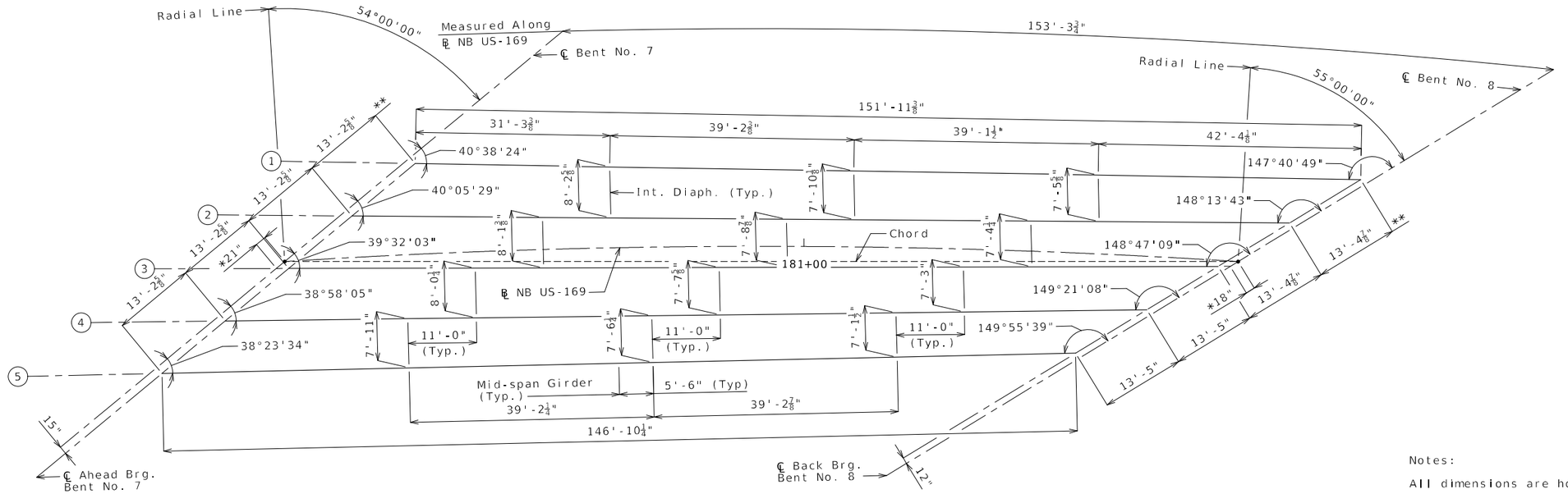
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



SPAN (7-8)

PART PLAN SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

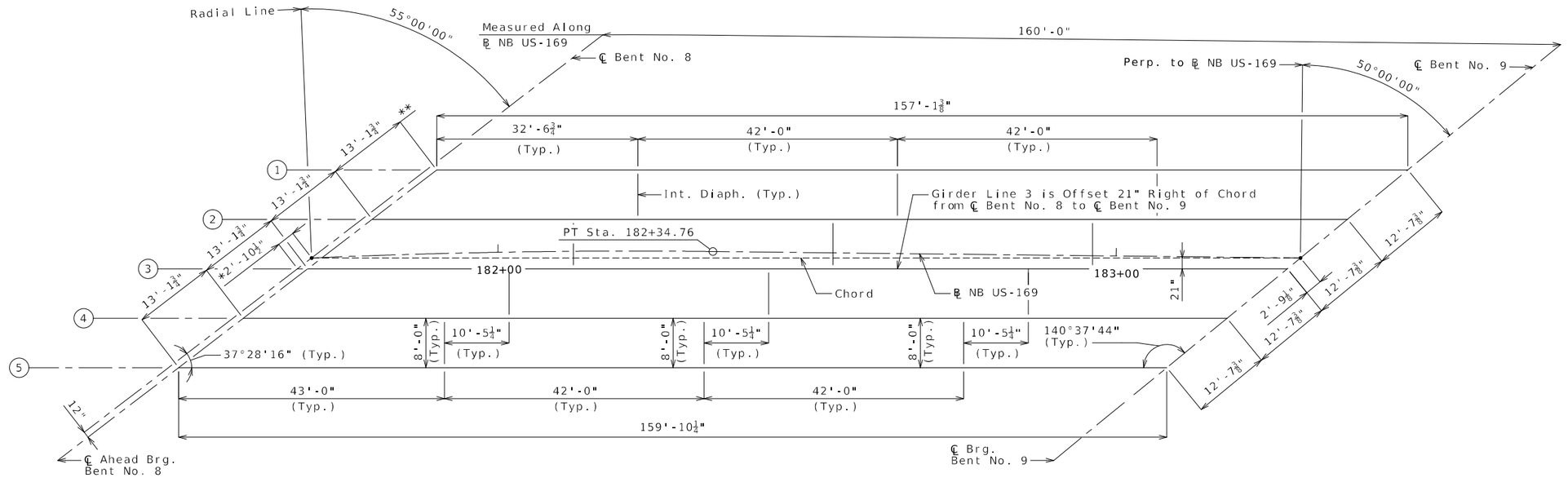
Notes:

All dimensions are horizontal.

For notes on Contractor responsibility for temporary bracing, see Sheet No. 4.

* Measured along ℄ Bent

** Measured along Bearing Line



SPAN (8-9)

PART PLAN SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 47 of 132

FRAMING PLAN - UNIT 3

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	47

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9606

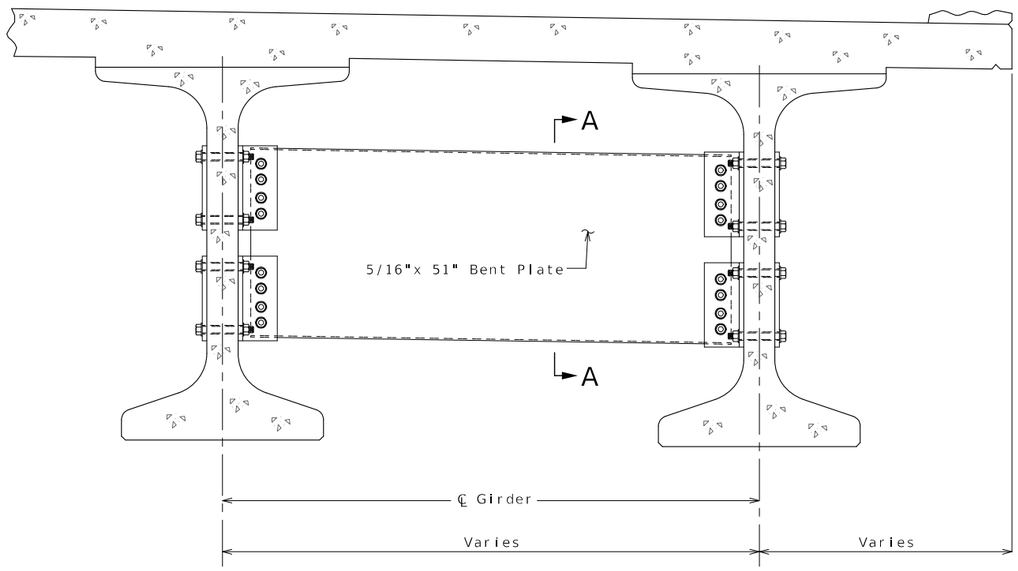
DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

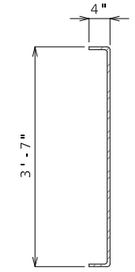
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

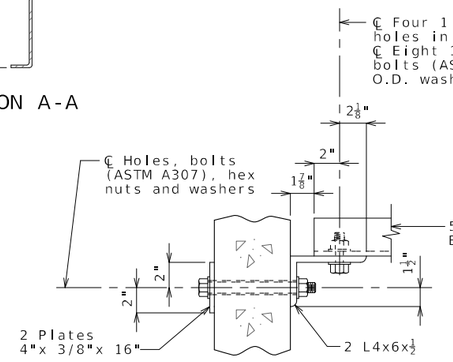
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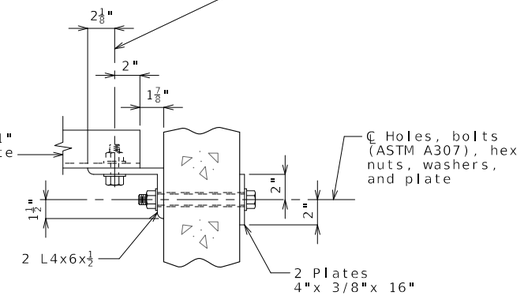
PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS



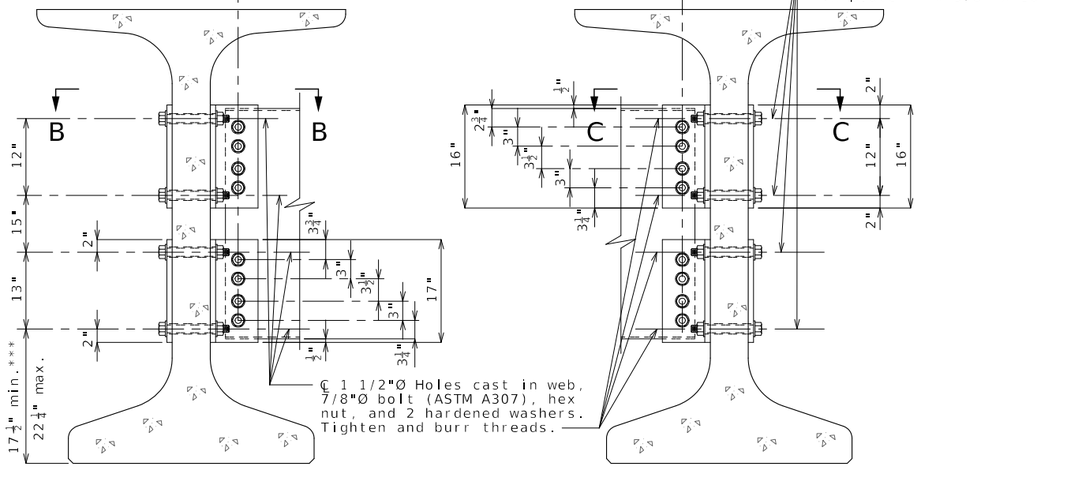
SECTION A-A



SECTION B-B



SECTION C-C



SECTION THRU INT. GIRDER
AT DIAPHRAGM

SECTION THRU EXT. GIRDER
AT DIAPHRAGM

STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

*** Hole locations in prestressed girders shall be placed by the Fabricator to provide a 1 1/2" clear dimension between the prestressing strands and the edge of the 1 1/2" cast hole. The length of the diaphragm, angle and plates shall be adjusted as necessary to maintain the edge distances as shown.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

For location of intermediate diaphragms, see Sheet No. 47.

STEEL INTERMEDIATE DIAPHRAGMS - UNIT 3

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	48

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

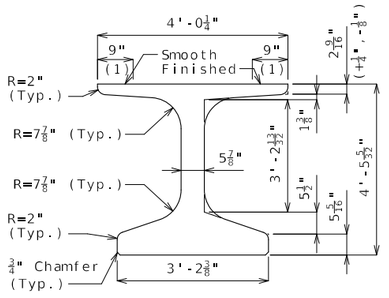
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

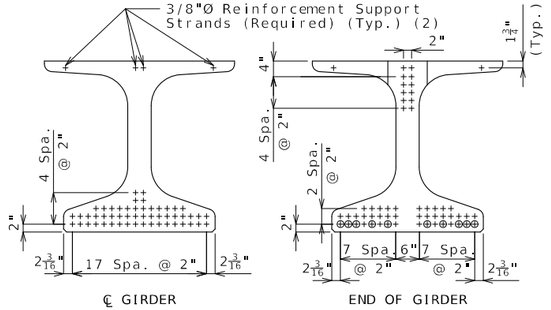
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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

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



DIMENSIONS

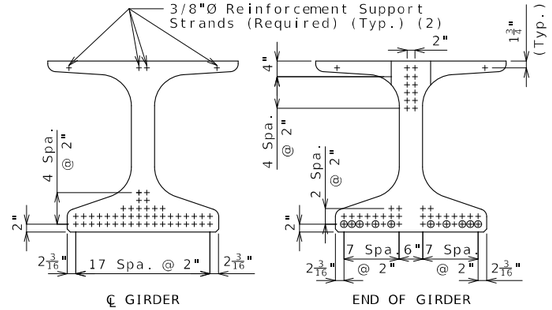


℄ GIRDER END OF GIRDER

SPAN (1-2) STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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



℄ GIRDER END OF GIRDER

SPAN (2-3) STRAND ARRANGEMENT

\+ Indicates prestressing strand.

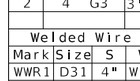
o Indicates cut & shop bend with 3'-0" projection.

Bill of Reinforcing Steel

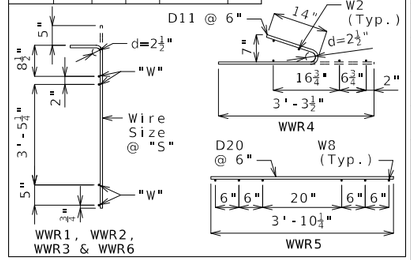
Bars Each Girder				
No.	Size/Mark		Length	Shape
F	3	G1	2'-10"	8
2	4	G3	3'-10¾"	20

Welded Wire Each Girder					
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	13'-4"	J1
WWR2	D31	12"	W12	E	J2
WWR3	D31	16"	W12	50'-8"	--
WWR6	D31	2"	W12	16"	3¼"

Bending Diagrams



Shape 20



All dimensions are out to out.

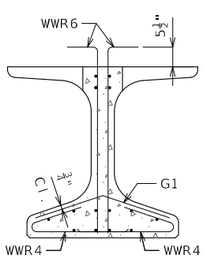
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

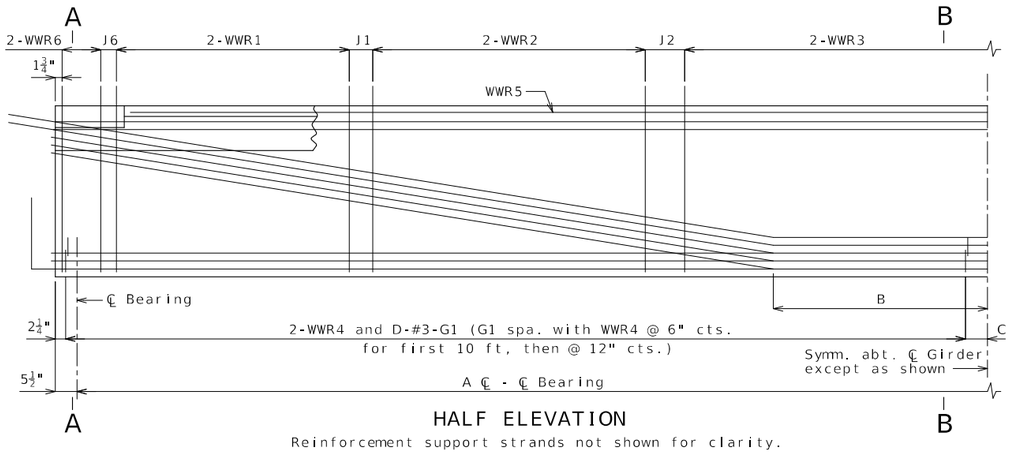
All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.



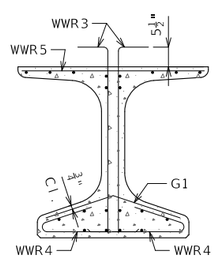
SECTION A-A

Strands not shown for clarity.



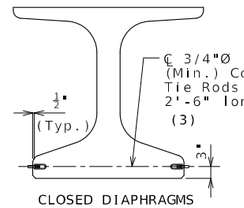
HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

Strands not shown for clarity.

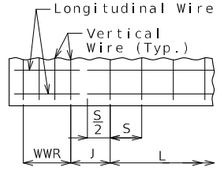


CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-3" at exterior face of exterior girders at end bents

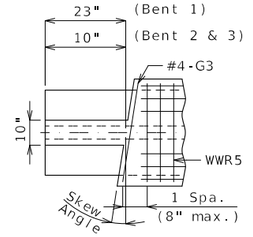


WELDED WIRE PLACEMENT

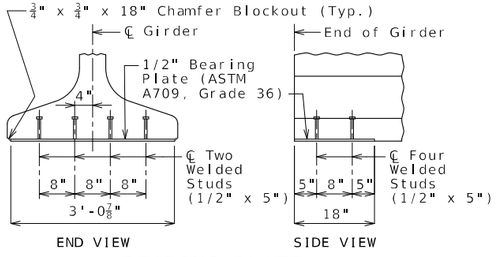
S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

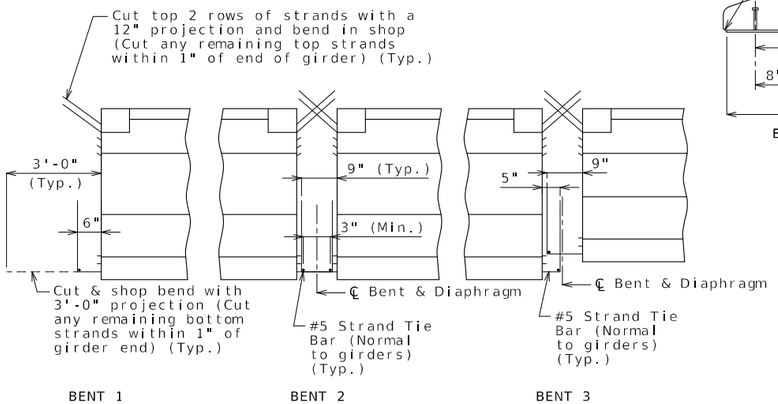


TOP FLANGE BLOCKOUT



END VIEW SIDE VIEW

BEARING PLATE



BENT 1 BENT 2 BENT 3

STRANDS AT GIRDER ENDS

Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	J1	J2
1-2	1	122'-1⅝"	12'-3¾"	4⅛"	72	19'-0"	144	10⅜"	15"
	2	123'-1"	12'-4¾"	3¾"	*73	20'-0"	146	6"	13"
	3	124'-0¼"	12'-6"	3⅜"	73	20'-0"	146	9⅝"	15"
	4	124'-11½"	12'-7"	3"	*74	21'-0"	148	5¼"	13"
	5	125'-10⅞"	12'-8¼"	2¾"	74	21'-0"	148	10"	14"
2-3	1	122'-1⅝"	12'-3¾"	4⅛"	72	19'-0"	144	10⅜"	15"
	2	122'-6⅞"	12'-4¼"	6¾"	72	20'-0"	144	5"	11"
	3	123'-0"	12'-4¾"	3¼"	*73	20'-0"	146	6½"	12"
	4	123'-5¼"	12'-5¼"	5⅞"	*73	20'-0"	146	8⅛"	13"
	5	123'-10½"	12'-5¾"	2½"	73	20'-0"	146	9¾"	14"

* Includes #3-G1 Bar at midspan.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7500 psi. for Span (1-2) and 7000 psi for Span (2-3)

Use 52 strands, 0.6"Ø Grade 270, with an initial prestress force of 2285 kips for Span (1-2).

Use 46 strands, 0.6"Ø Grade 270, with an initial prestress force of 2021 kips for Span (2-3).

Pretensioned members shall be in accordance with Sec 1029.

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

For Girder Camber Diagram, see Sheet No. 79.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheets No. 44 and 45.

For location of coil inserts at slab drains, see Sheet No. 73.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 18, 61, and 62.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

Detailed: Oct. 2025
Checked: Oct. 2025

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

NU-GIRDERS - SPANS (1-2) AND (2-3)

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000006
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	49

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV. | DESCRIPTION | DATE

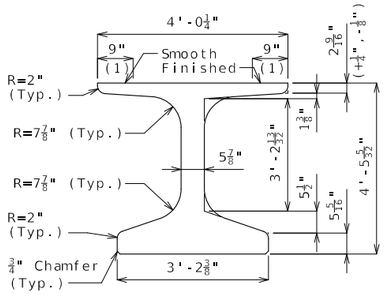
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

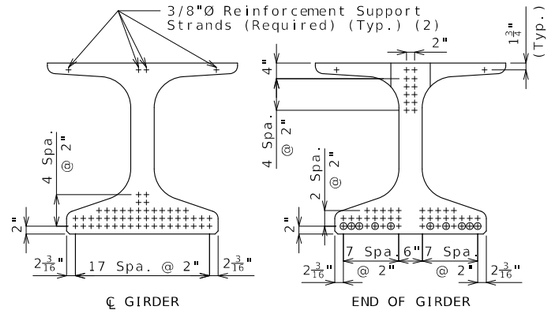
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(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.

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



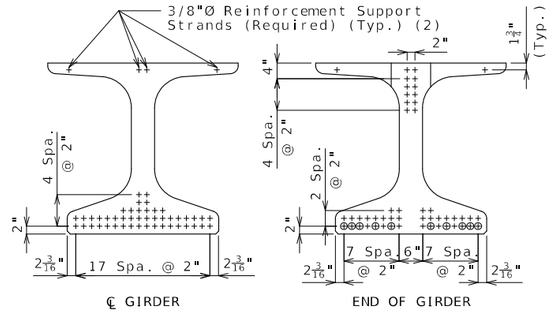
DIMENSIONS



SPAN (1-2) STRAND ARRANGEMENT

+ Indicates prestressing strand.

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



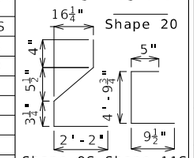
SPAN (2-3) STRAND ARRANGEMENT

+ Indicates prestressing strand.

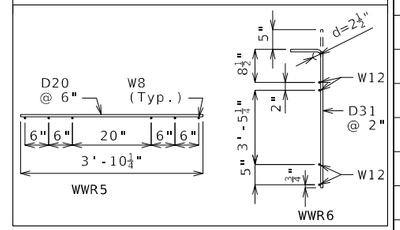
o Indicates cut & shop bend with 3'-0" projection.

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
H	5 B1	5'-10"	11S
H	4 D1	4'-0"	9S
2	4 G3	3'-10¾"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

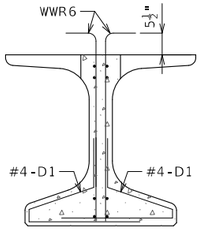
Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

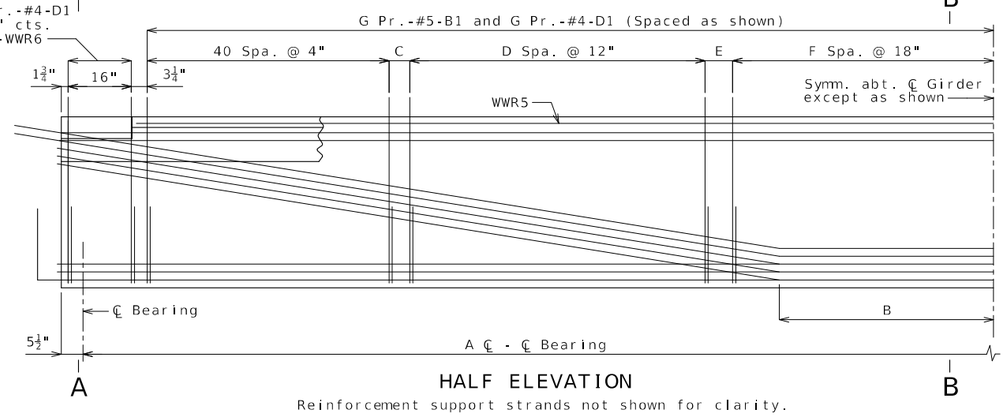
All B1 bars shall be epoxy coated.

A



SECTION A-A

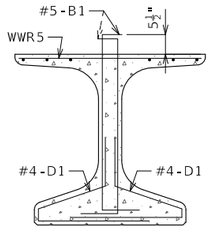
Strands not shown for clarity.



HALF ELEVATION

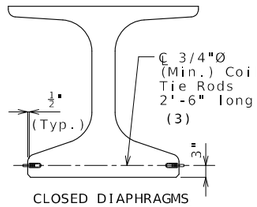
Reinforcement support strands not shown for clarity.

B



SECTION B-B

Strands not shown for clarity.

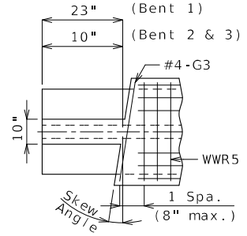


CLOSED DIAPHRAGMS AND INTEGRAL BENTS

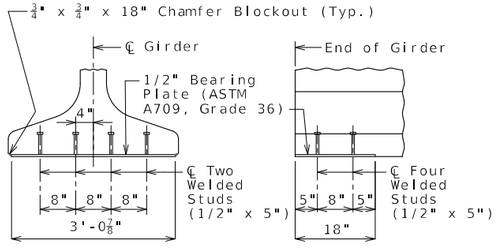
COIL TIES

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

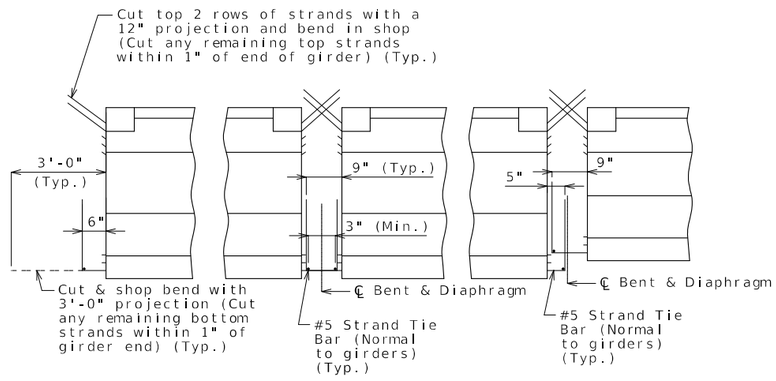
(3) 2'-3" at exterior face of exterior girders at end bents



TOP FLANGE BLOCKOUT



BEARING PLATE



STRANDS AT GIRDER ENDS

Table of Dimensions									
Span No.	Girder	A	B	C	D	E	F	G	H
1-2	1	122'-1⅝"	12'-3¾"	9⅜"	10	14"	23	76	302
	2	123'-1"	12'-5"	4½"	11	12¼"	23	77	306
	3	124'-0¼"	12'-6"	4⅝"	10	12"	24	77	306
	4	124'-11½"	12'-7"	3¾"	9	12½"	25	77	306
	5	125'-10⅞"	12'-8¼"	9"	9	13"	25	77	306
2-3	1	122'-1⅝"	12'-3¾"	9⅜"	10	14"	23	76	302
	2	122'-6⅞"	12'-4¼"	8"	12	12"	22	77	306
	3	123'-0"	12'-4¾"	4½"	11	12"	23	77	306
	4	123'-5¼"	12'-5¼"	6⅛"	11	13"	23	77	306
	5	123'-10½"	12'-5¾"	8¾"	8	13"	25	76	302

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7500 psi, for Span (1-2) and 7000 psi for Span (2-3)

Use 52 strands, 0.6"Ø Grade 270, with an initial prestress force of 2285 kips for Span (1-2).

Use 46 strands, 0.6"Ø Grade 270, with an initial prestress force of 2021 kips for Span (2-3).

Pretensioned members shall be in accordance with Sec 1029.

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

For Girder Camber Diagram, see Sheet No. 79.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheets No. 44 and 45.

For location of coil inserts at slab drains, see Sheet No. 73.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 18, 61, and 62.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

Detailed: Oct. 2025
Checked: Oct. 2025

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

NU-GIRDERS (ALT. REINFORCEMENT) - SPANS (1-2) AND (2-3)

THOMAS M. GREER NUMBER PE-2010000206 STATE OF MISSOURI PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	50

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

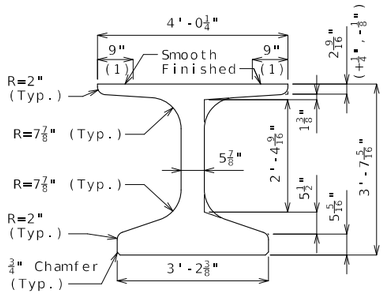
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

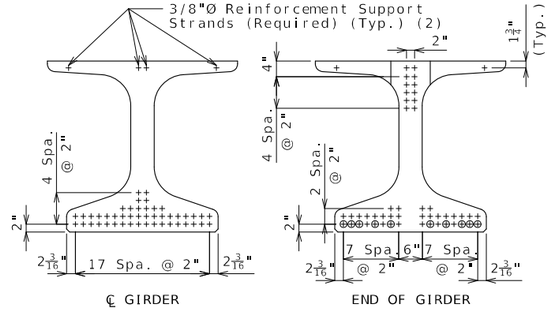
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(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.

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



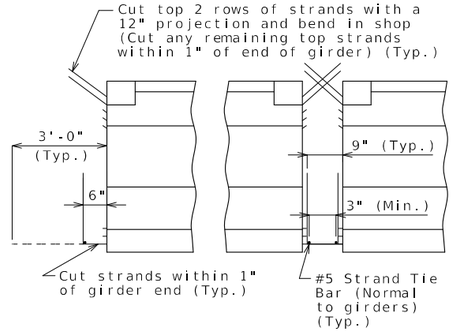
DIMENSIONS



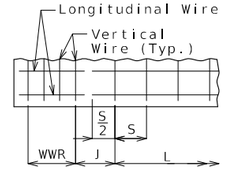
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

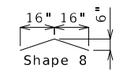
L = Length of WWR mats

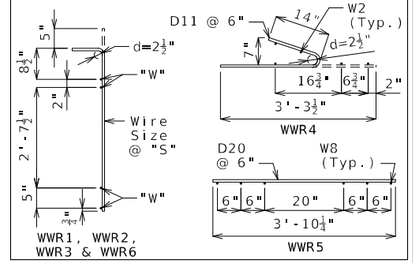
J = Distance between WWR mats

Bill of Reinforcing Steel

Bars Each Girder					
No.	Size/Mark		Length	Shape	
F	3	G1	2'-10"	8	
2	4	G3	3'-10¾"	20	
Welded Wire Each Girder					
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	13'-4"	J1
WWR2	D31	12"	W12	E	J2
WWR3	D31	16"	W12	45'-4"	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams





All dimensions are out to out.

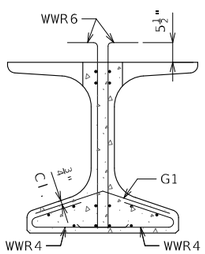
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

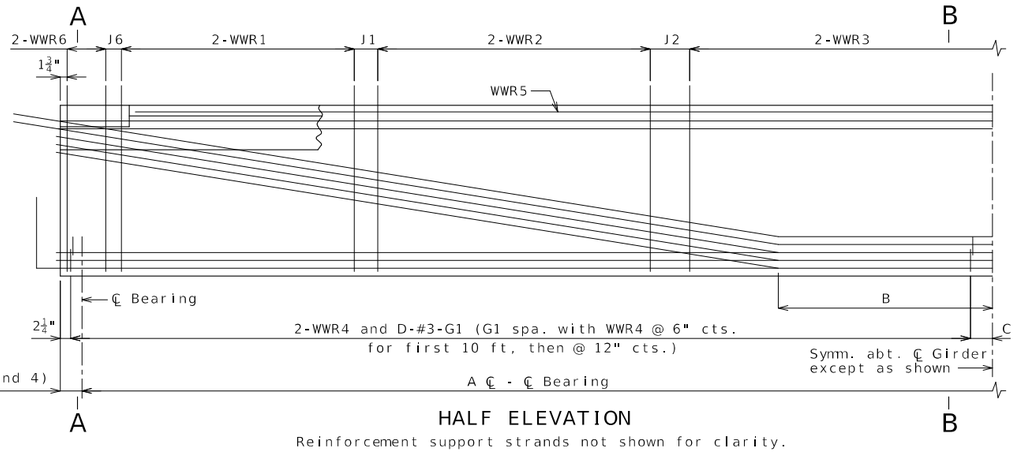
All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.



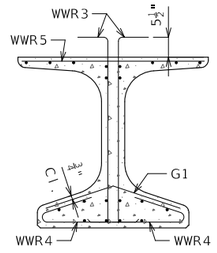
SECTION A-A

Strands not shown for clarity.



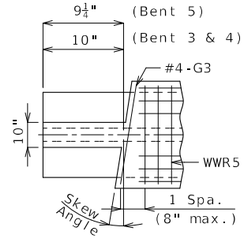
HALF ELEVATION

Reinforcement support strands not shown for clarity.

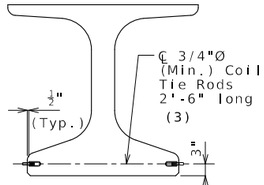


SECTION B-B

Strands not shown for clarity.



TOP FLANGE BLOCKOUT



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-3" at exterior face of exterior girders at end bents

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

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

Use 46 strands, 0.6"Ø Grade 270, with an initial prestress force of 2021 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

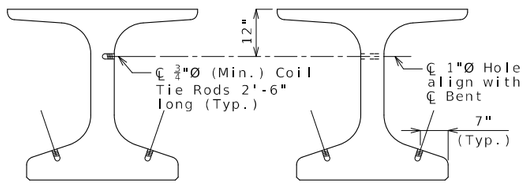
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 79.

For location of coil inserts at slab drains, see Sheet No. 73.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 62, 63, and 64.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

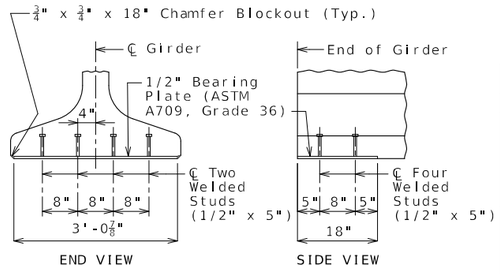


EXTERIOR GIRDER AT BENT 5

INTERIOR GIRDER AT BENT 5

DETAILS OF COIL TIES

Cast 1"Ø hole horizontally (skewed)in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.



BEARING PLATE

Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	J1	J2
3-4	1	108'-0⅞"	10'-10¾"	3¾"	65	15'-0"	130	8"	13"
	2	108'-0½"	10'-10¾"	3½"	65	15'-0"	130	7¾"	13"
	3	108'-0¼"	10'-10¾"	3⅜"	65	15'-0"	130	7⅜"	13"
	4	108'-0"	10'-10¾"	3¼"	65	15'-0"	130	7½"	13"
	5	108'-0"	10'-10¾"	3¼"	65	15'-0"	130	7½"	13"
4-5	1	108'-4⅞"	10'-11½"	6⅞"	65	15'-0"	130	11"	13"
	2	107'-11¼"	10'-10¾"	4"	65	15'-0"	130	8¼"	13"
	3	107'-5⅝"	10'-10¾"	1¼"	65	15'-0"	130	5⅜"	13"
	4	106'-11⅞"	10'-9¾"	4⅜"	*65	14'-0"	130	12"	15½"
	5	106'-6¼"	10'-9¾"	1½"	*65	14'-0"	130	11¾"	13"

* Includes #3-G1 Bar at midspan.

THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	51

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

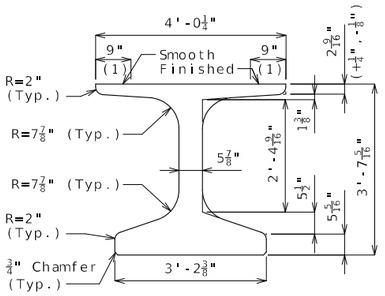
REV.

Detailed: Oct. 2025
Checked: Oct. 2025

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

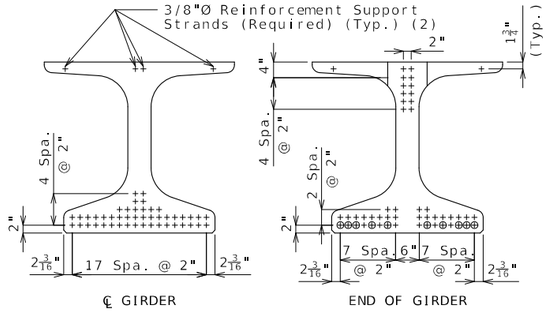
NU-GIRDERS - SPANS (3-4) AND (4-5)

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



DIMENSIONS

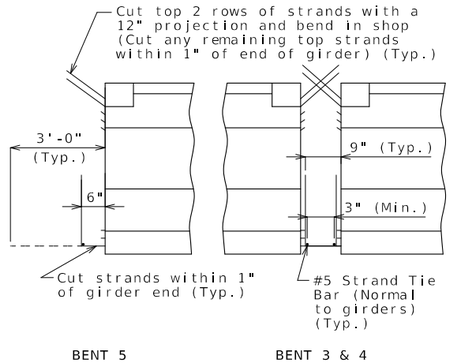
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



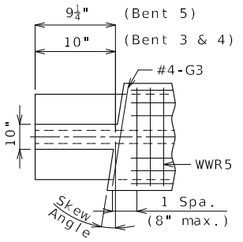
STRAND ARRANGEMENT

+ Indicates prestressing strand.

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



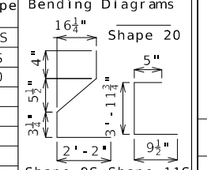
STRANDS AT GIRDER ENDS



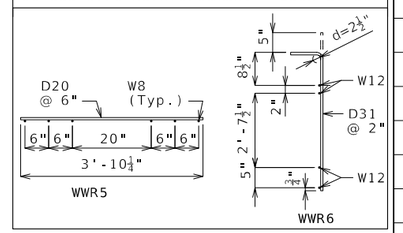
TOP FLANGE BLOCKOUT

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
H	5 B1	5'-0"	11S
H	4 D1	4'-0"	9S
2	4 G3	3'-10¼"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

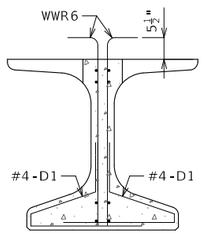
Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

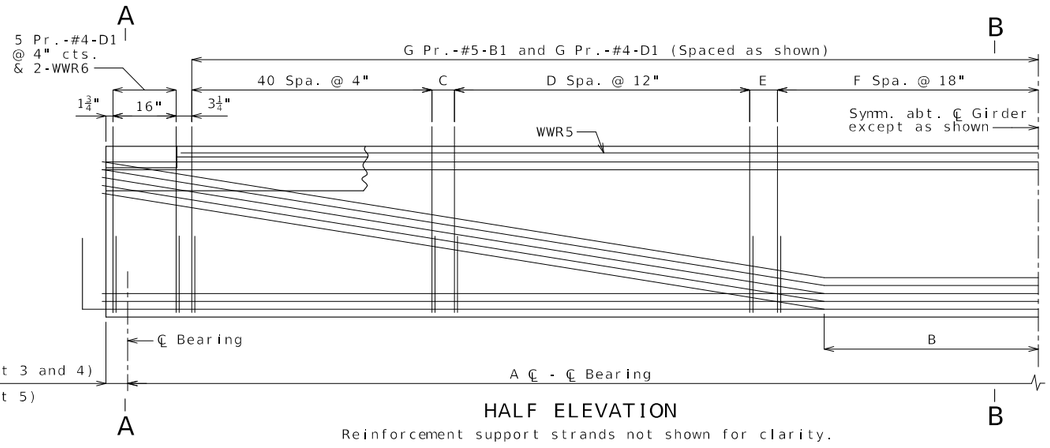
The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.



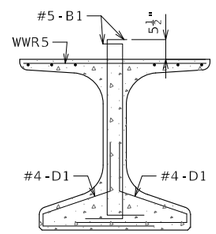
SECTION A-A

Strands not shown for clarity.



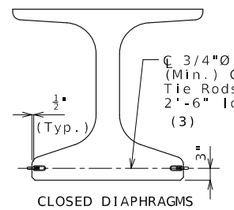
HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

Strands not shown for clarity.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

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

Use 46 strands, 0.6"Ø Grade 270, with an initial prestress force of 2021 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

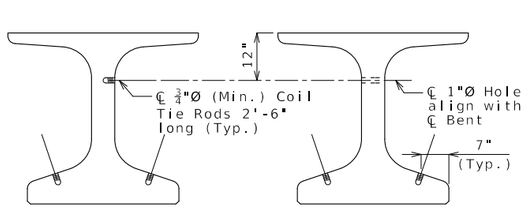
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 79.

For location of coil inserts at slab drains, see Sheet No. 73.

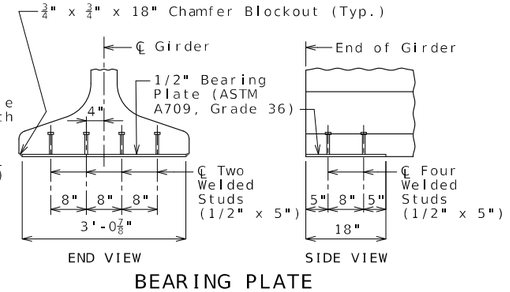
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 62, 63, and 64.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



DETAILS OF COIL TIES

Cast 1"Ø hole horizontally (skewed)in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.



BEARING PLATE

Table of Dimensions									
Span No.	Girder	A	B	C	D	E	F	G	H
3-4	1	108'-0⅞"	10'-10¾"	10"	12	13"	17	72	286
	2	108'-0½"	10'-10¾"	9¾"	12	13"	17	72	286
	3	108'-0¼"	10'-10¾"	9⅝"	12	13"	17	72	286
	4	108'-0"	10'-10¾"	9½"	12	13"	17	72	286
	5	108'-0"	10'-10¾"	9½"	12	13"	17	72	286
4-5	1	108'-4⅞"	10'-11⅛"	12⅛"	12	14"	17	72	286
	2	107'-11¼"	10'-10¾"	9¼"	12	14"	17	72	286
	3	107'-5⅝"	10'-10¾"	7½"	12	13"	17	72	286
	4	106'-11⅞"	10'-9¾"	12½"	11	17"	17	71	282
	5	106'-6¼"	10'-9¼"	11¼"	11	15"	17	71	282

Detailed: Oct. 2025
Checked: Oct. 2025

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

NU-GIRDERS (ALT. REINFORCEMENT) - SPANS (3-4) AND (4-5)

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	52

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.

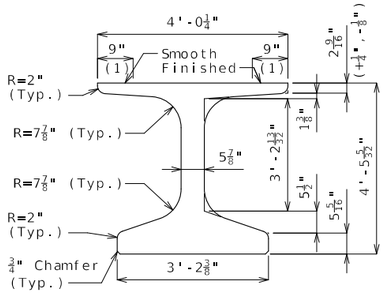
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400

Certificate of Authority No.: 000165

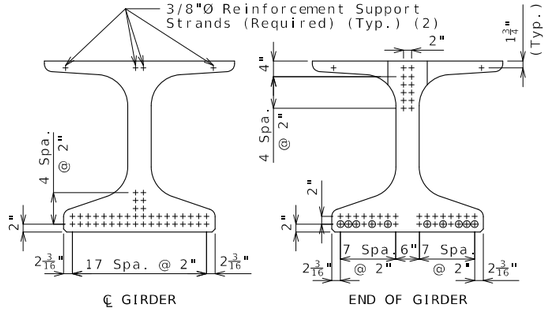
BMcD Project No. 154749

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

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



DIMENSIONS

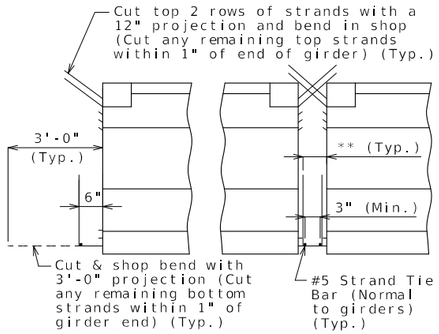


STRAND ARRANGEMENT

(4) #6 spacings around Bent 7 holes starting from beam end: 2¼" clr., 2¼", 5", 3 @ 2¾"

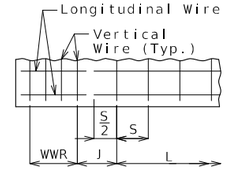
\+ Indicates prestressing strand.

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



STRANDS AT GIRDER ENDS

** 6½" at Girder 1, 8" at Girder 2, 10" at Girder 3, and 6" for Girders 4 and 5.



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

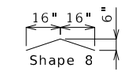
Bars Each Girder

No.	Size/Mark	Length	Shape
"G"	3 G1	2'-10"	8
2	4 G3	Varies	20
2	4 G4	2'-3"	20
2	4 G5	Varies	20
L1	4 G6	Varies	20

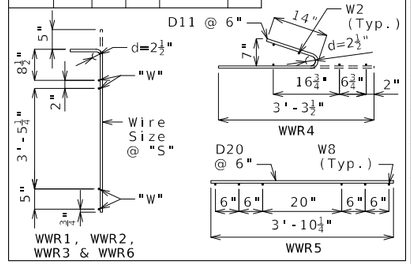
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	16'-8"	J1
WWR2	D31	12"	W12	E	J2
WWR3	D31	16"	W12	F	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

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

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 42 strands, 0.6"Ø Grade 270, with an initial prestress force of 1846 kips for Girders G1 and G2 in both Span (5-6) & (6-7).

Pretensioned members shall be in accordance with Sec 1029.

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

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

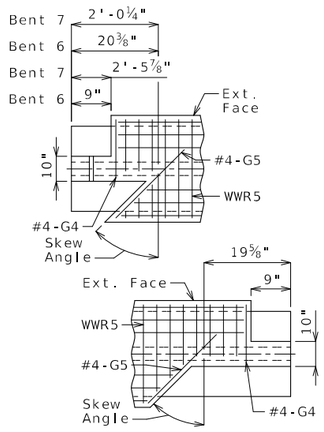
For Girder Camber Diagram, see Sheet No. 80.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and etails of steel intermediate diaphragms, see Sheet No. 46.

For location of coil inserts at slab drains, see Sheet No. 74.

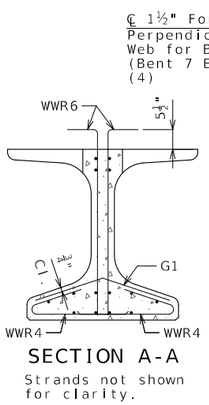
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 64 and 66.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



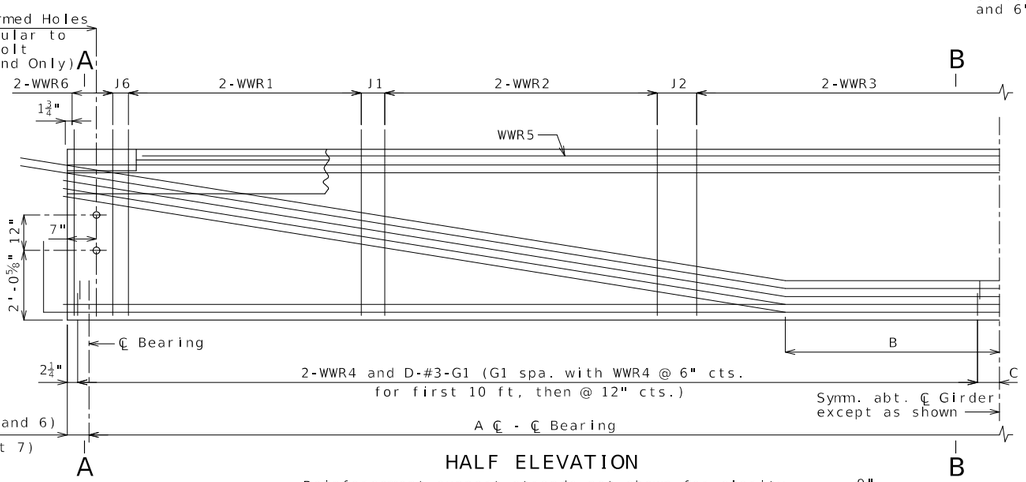
EAST EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for West ext.



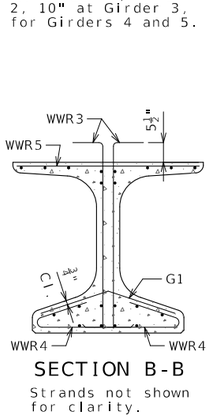
SECTION A-A

Strands not shown for clarity.



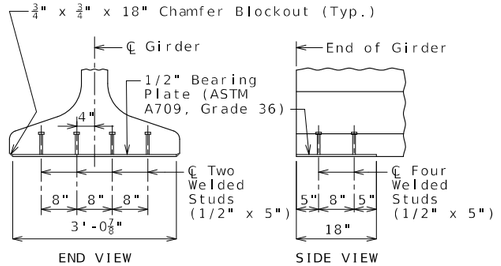
HALF ELEVATION

Reinforcement support strands not shown for clarity.

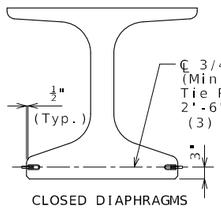


SECTION B-B

Strands not shown for clarity.



BEARING PLATE

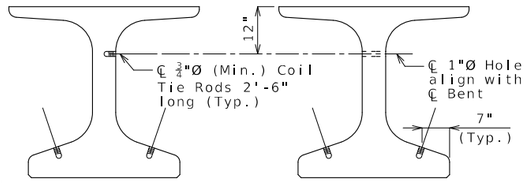


CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders at Bent No. 6. Exclude all coil tie at expansion Bent No. 7

*** number of spaces = K+1

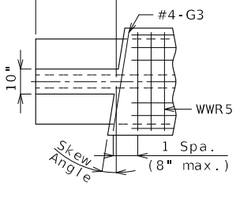


EXTERIOR GIRDER AT BENT 5

INTERIOR GIRDER AT BENT 5

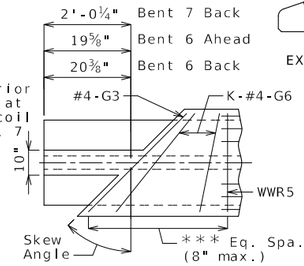
DETAILS OF COIL TIES

Cast 1"Ø hole horizontally (skewed) in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.



TOP FLANGE BLOCKOUT

Bent 5



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT EXPANSION BENT

TOP FLANGE BLOCKOUT

Table of Values

Span No.	K		L1
5-6	Bent 5 Ahead	Bent 6 Ahead	5
	0	5	
6-7	Bent 6 Ahead	Bent 7 Ahead	15
	4	11	

Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	G	J1	J2
5-6	1	112'-6"	11'-4"	6¼"	67	16'-0"	40'-0"	134	11¾"	15¾"
	2	107'-1⅜"	10'-9¾"	4"	*65	11'-0"	45'-4"	130	10⅜"	13"
Span No.	Girder	A	B	C	D	E	F	G	J1	J2
6-7	1	102'-11⅜"	10'-4¾"	3⅜"	*63	16'-0"	32'-0"	126	6⅜"	12½"
	2	95'-3⅜"	9'-7½"	5⅜"	*59	12'-0"	32'-0"	118	8⅜"	12½"

* #3-G1 Bar at midspan.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 53 of 132

NU-GIRDERS 1 AND 2 - SPANS (5-6) AND (6-7)

THOMAS M. GREER NUMBER PE-2010000206 STATE OF MISSOURI PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE 169 | STATE MO

DISTRICT BR | SHEET NO. 53

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

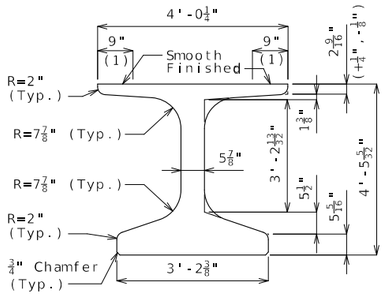
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

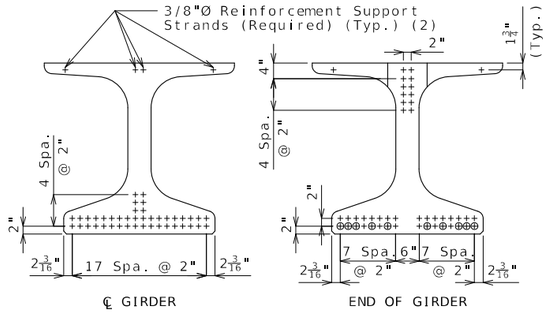
c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_053_KU0099.dgn 7:39:41 PM 1/5/2026

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



DIMENSIONS

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

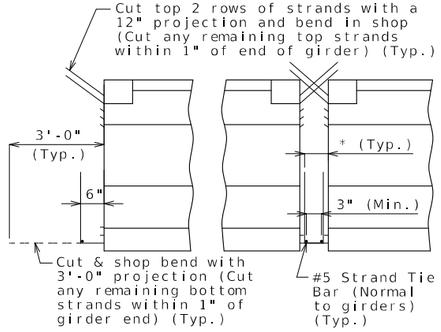


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

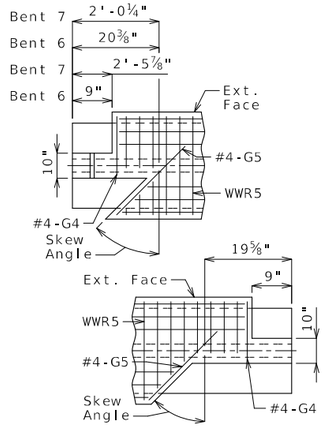
o Indicates cut & shop bend with 3'-0" projection.



BENTS 5 & 7 BENT 6

STRANDS AT GIRDER ENDS

* 6½" at Girder 1, 8" at Girder 2, 10" at Girder 3, and 6" for Girders 4 and 5.

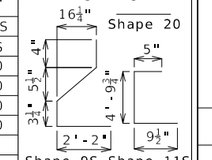


EAST EXTERIOR GIRDER AT INTERMEDIATE BENT

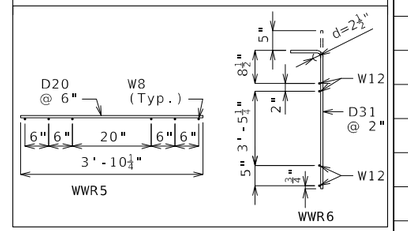
Rotate 180° for West ext.

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
H	5 B1	5'-10"	11S
H	4 D1	4'-0"	9S
2	4 G3	Varies	20
2	4 G4	2'-3"	20
2	4 G5	Varies	20
L1	4 G6	Varies	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

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

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 42 strands, 0.6"Ø Grade 270, with an initial prestress force of 1846 kips for Girders G1 and G2 in both Span (5-6) & (6-7).

Pretensioned members shall be in accordance with Sec 1029.

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

For Girder Camber Diagram, see Sheet No. 80.

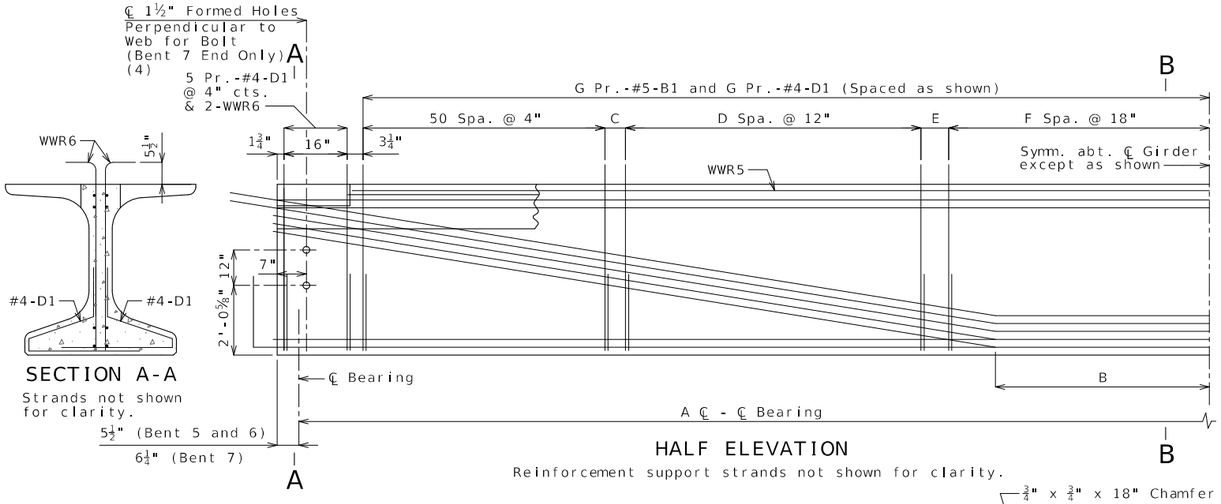
The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 46.

For location of coil inserts at slab drains, see Sheet No. 74.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 64 and 66.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

(4) #6 spacings around Bent 7 holes starting from beam end: 2¼" clr., 2¾", 5", 3 @ 2¾"

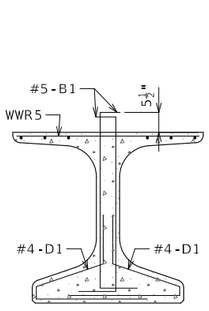


SECTION A-A

Strands not shown for clarity.

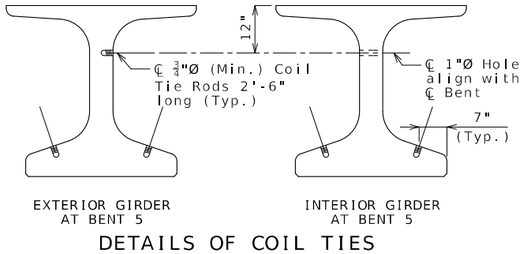
HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

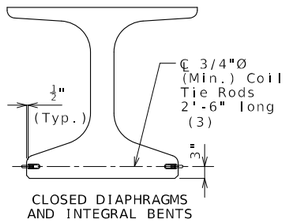
Strands not shown for clarity.



EXTERIOR GIRDER AT BENT 5 INTERIOR GIRDER AT BENT 5

DETAILS OF COIL TIES

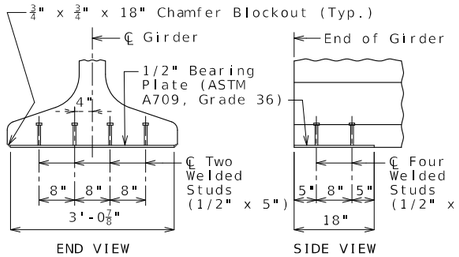
Cast 1"Ø hole horizontally (skewed) in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

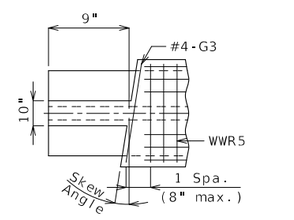
COIL TIES

Exclude coil tie at exterior face of exterior girders at Bent No. 6. Exclude all coil tie at expansion Bent No. 7.



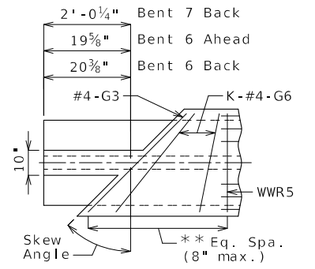
END VIEW SIDE VIEW

BEARING PLATE



TOP FLANGE BLOCKOUT

Bent 5



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT EXPANSION BENT

TOP FLANGE BLOCKOUT

Mirror for right advanced.

**number of spaces = K+1

Table of Dimensions									
Span No.	Girder	A	B	C	D	E	F	G	H
5-6	1	112'-6"	11'-4"	7¾"	8	14"	19	80	318
	2	107'-1⅜"	10'-9¾"	10¼"	5	14⅞"	19	77	306
Span No.	Girder	A	B	C	D	E	F	G	H
6-7	1	102'-11⅜"	10'-4¾"	6⅛"	8	12½"	16	77	306
	2	95'-3⅜"	9'-7½"	7⅛"	7	13½"	14	74	294

Table of Values			
Span No.	K		L1
5-6	Bent 5 Ahead	Bent 6 Ahead	5
	0	5	
6-7	Bent 6 Ahead	Bent 7 Ahead	15
	4	11	

Detailed: Oct. 2025
Checked: Oct. 2025

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

NU-GIRDERS 1 AND 2 (ALT. REINFORCEMENT) - SPANS (5-6) AND (6-7)

Sheet No. 54 of 132

THOMAS M. GREER — NUMBER PE-2010000206 — STATE OF MISSOURI — PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	54

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

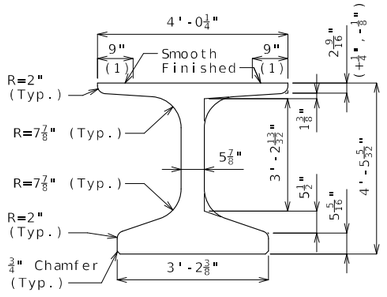
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No: 154749

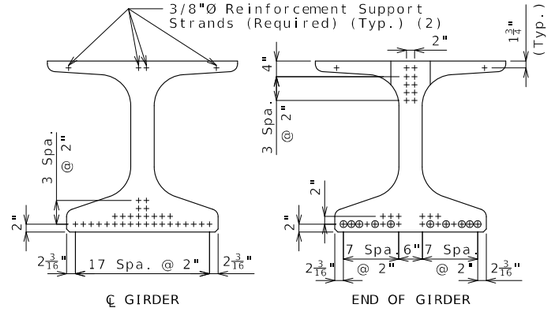
c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_054_KU0099.dgn 7:39:56 PM 1/5/2026

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

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



DIMENSIONS

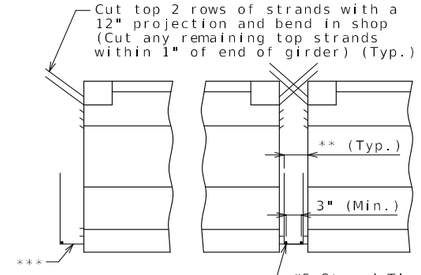


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

+ Indicates prestressing strand.

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

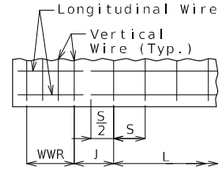


*** Prestressing strands at open diaphragms shall be trimmed to 1" and encased in diaphragms.

BENT 5 BENT 6

STRANDS AT GIRDER ENDS

** 6½" at Girder 1, 8" at Girder 2, 10" at Girder 3, and 6" for Girders 4 and 5.

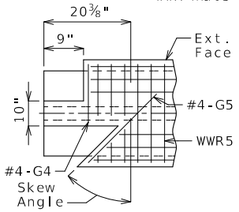


WELDED WIRE PLACEMENT

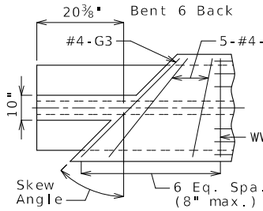
S = Vertical wire spacing

L = Length of WWR mats

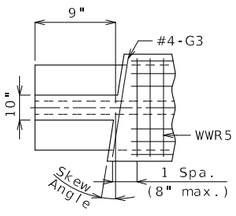
J = Distance between WWR mats



EAST EXTERIOR GIRDER
Bent 6 Back



TOP FLANGE BLOCKOUT
Bent 6 Back



TOP FLANGE BLOCKOUT
Bent 5 Ahead

Bill of Reinforcing Steel

Bars Each Girder

No.	Size/Mark	Length	Shape
G	3 G1	2'-10"	8
2	4 G3	4'-6"	20
2	4 G4	2'-3"	20
2	4 G5	3'-1"	20
5	4 G6	Varies	20

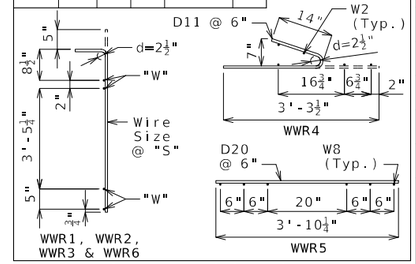
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	13'-4"	J1
WWR2	D31	12"	W12	E	J2
WWR3	D31	16"	W12	F	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams

16" 16" 6"
Shape 8

Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

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

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 30 strands, 0.6"Ø Grade 270, with an initial prestress force of 1318 kips for Girders G3, G4 and G5 in Span (5-6).

Pretensioned members shall be in accordance with Sec 1029.

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

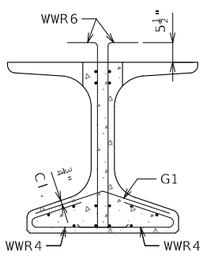
For Girder Camber Diagram, see Sheet No. 80.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 46.

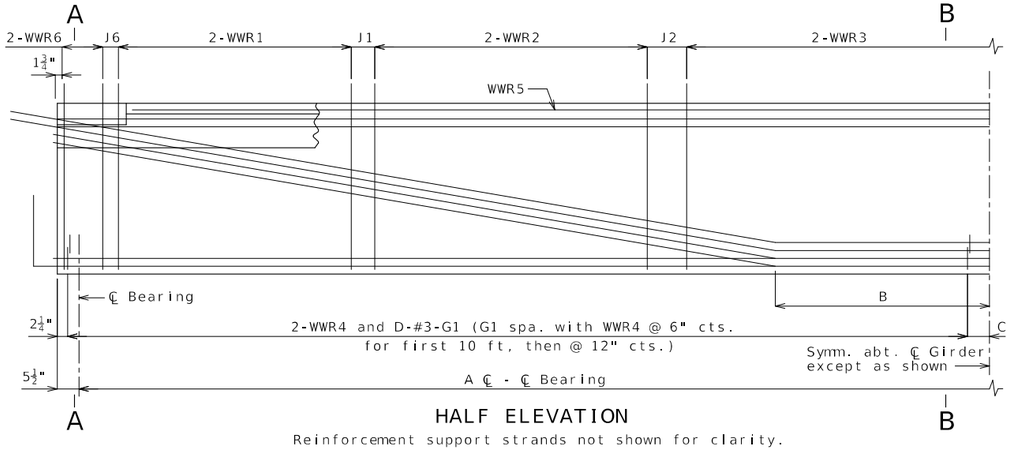
For location of coil inserts at slab drains, see Sheet No. 74.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 64 and 66

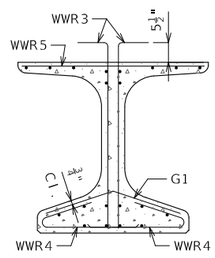
Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



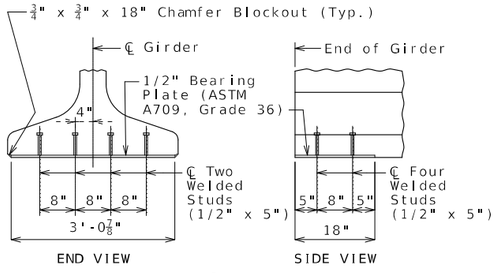
SECTION A-A
Strands not shown for clarity.



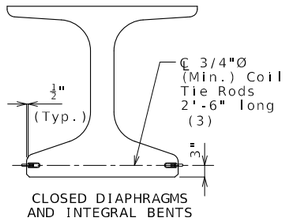
HALF ELEVATION
Reinforcement support strands not shown for clarity.



SECTION B-B
Strands not shown for clarity.



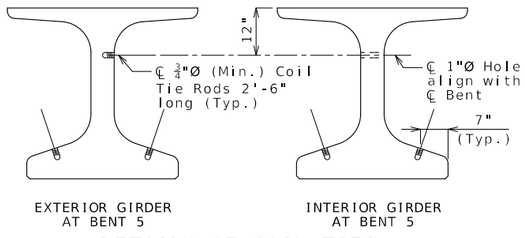
BEARING PLATE



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at Bent No. 6.



EXTERIOR GIRDER AT BENT 5 INTERIOR GIRDER AT BENT 5

DETAILS OF COIL TIES

Cast 1"Ø hole horizontally (skewed) in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.

Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	G	J1	J2
5-6	3	101'-8⅜"	10'-3¼"	1⅝"	62	9'-0"	50'-8"	124	9⅞"	13"
	4	96'-3⅞"	9'-8¾"	5¼"	59	5'-0"	53'-4"	118	9½"	13"
	5	90'-11⅛"	9'-2½"	2⅝"	*57	5'-0"	48'-0"	114	9"	13"

* Includes #3-G1 Bar at midspan.

NU-GIRDERS 3, 4 AND 5 - SPAN (5-6)

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 55 of 132

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE 169 | STATE MO

DISTRICT BR | SHEET NO. 55

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION | DATE | REV.

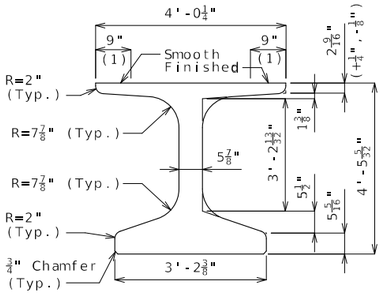
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

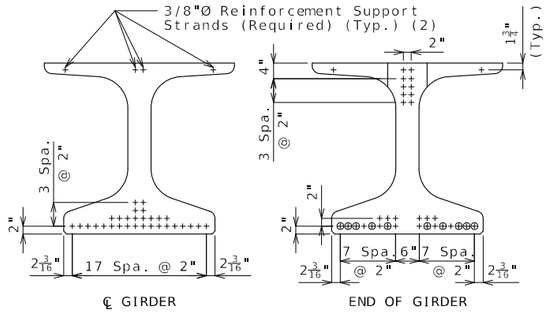
c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_055_KU0099.dgn 7:40:33 PM 1/5/2026

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



DIMENSIONS

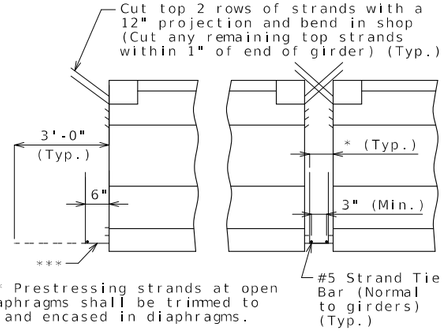
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

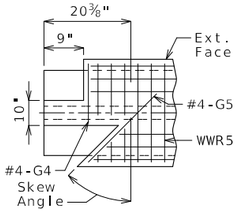


*** Prestressing strands at open diaphragms shall be trimmed to 1" and encased in diaphragms.

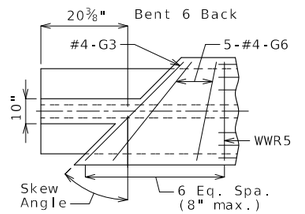
BENT 5 BENT 6

STRANDS AT GIRDER ENDS

* 6½" at Girder 1, 8" at Girder 2, 10" at Girder 3, and 6" for Girders 4 and 5.

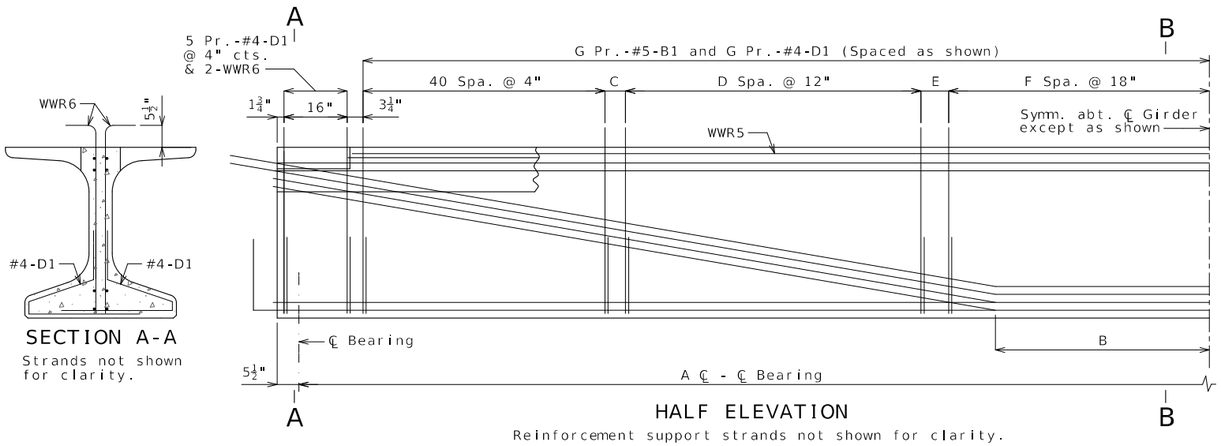


EAST EXTERIOR GIRDER



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT EXPANSION BENT

TOP FLANGE BLOCKOUT



SECTION A-A

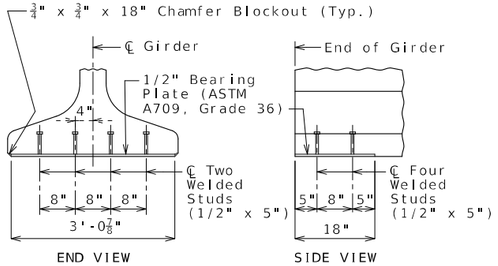
Strands not shown for clarity.

SECTION B-B

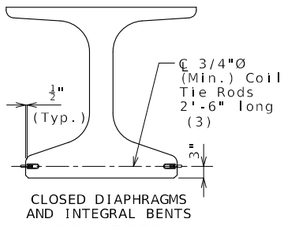
Strands not shown for clarity.

HALF ELEVATION

Reinforcement support strands not shown for clarity.



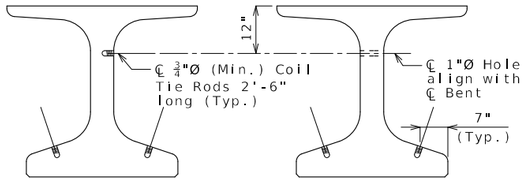
BEARING PLATE



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at Bent No. 6.

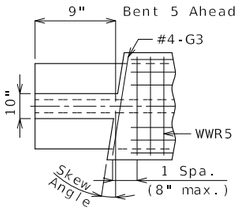


EXTERIOR GIRDER AT BENT 5

INTERIOR GIRDER AT BENT 5

DETAILS OF COIL TIES

Cast 1"Ø hole horizontally (skewed)in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT EXPANSION BENT

TOP FLANGE BLOCKOUT

Mirror for right advanced.

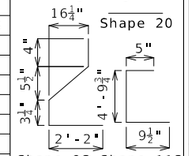
Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	G	H
5-6	3	101'-8⅝"	10'-3¼"	6⅞"	6	14"	19	68	270
	4	96'-3⅜"	9'-8¾"	5½"	5	13"	18	66	262
	5	90'-11⅛"	9'-2¼"	7"	5	15"	16	64	254

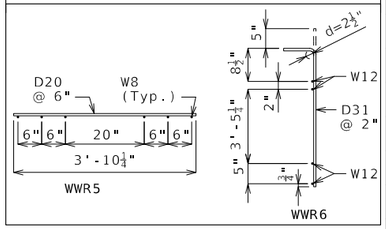
Bill of Reinforcing Steel - Each Girder

No.	Size/ Mark	Length	Shape
H	5 B1	5'-10"	11S
H	4 D1	4'-0"	9S
2	4 G3	Varies	20
2	4 G4	2'-3"	20
2	4 G5	Varies	20
5	4 G6	Varies	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

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

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 30 strands, 0.6"Ø Grade 270, with an initial prestress force of 1318 kips for Girders G3, G4 and G5 in Span (5-6).

Pretensioned members shall be in accordance with Sec 1029.

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

For Girder Camber Diagram, see Sheet No. 80.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 46.

For location of coil inserts at slab drains, see Sheet No. 74.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 64 and 66.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

STATE OF MISSOURI — THOMAS M. GREER — NUMBER PE-2010002206 — PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	56

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

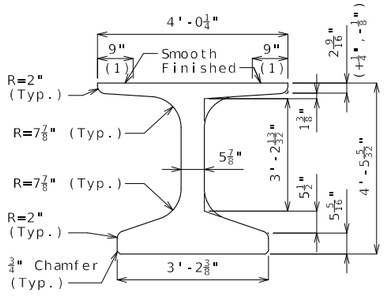
Detailed: Oct. 2025
Checked: Oct. 2025

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

NU-GIRDERS 3, 4 AND 5 (ALT. REINFORCEMENT) - SPAN (5-6)

c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_056_KU0099.dgn 7:40:48 PM 1/5/2026

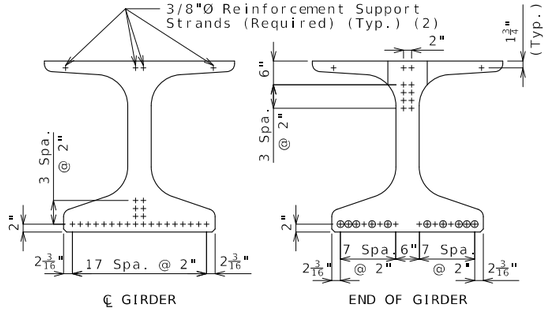
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(4) #6 spacings around Bent 7 holes starting from beam end: 2¼" clr, 2¼", 5", 3 @ 2¾"

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

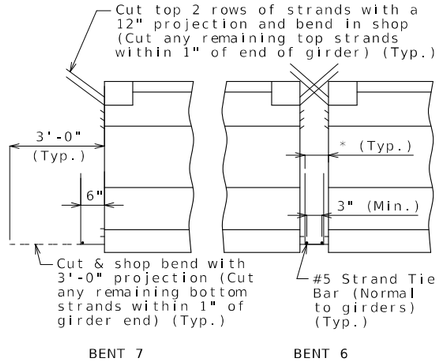


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

+ Indicates prestressing strand.

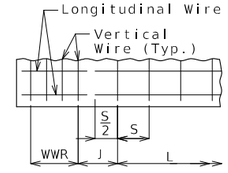
○ Indicates cut & shop bend with 3'-0" projection.



BENT 7 BENT 6

STRANDS AT GIRDER ENDS

* 6½" at Girder 1, 8" at Girder 2, 10" at Girder 3, and 6" for Girders 4 and 5.



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

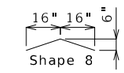
Bars Each Girder

No.	Size/Mark	Length	Shape
G	3 G1	2'-10"	8
2	4 G3	Varies	20
2	4 G4	2'-3"	20
2	4 G5	Varies	20
L1	4 G6	Varies	20

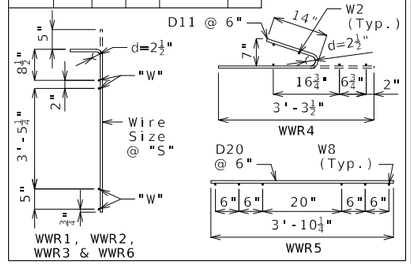
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	13'-4"	J1
WWR2	D31	12"	W12	E	J2
WWR3	D31	16"	W12	F	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

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

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 24 strands, 0.6"Ø Grade 270, with an initial prestress force of 1055 kips for Girders G3, G4 and G5 in Span (6-7).

Pretensioned members shall be in accordance with Sec 1029.

Draped strands are shifted down 2" from standard orientation for Girders G3, G4 and G5 in Span (6-7).

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

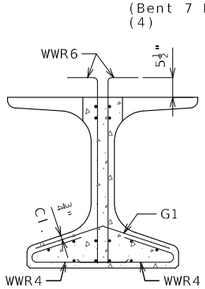
For Girder Camber Diagram, see Sheet No. 80.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No.46.

For location of coil inserts at slab drains, see Sheet No. 74.

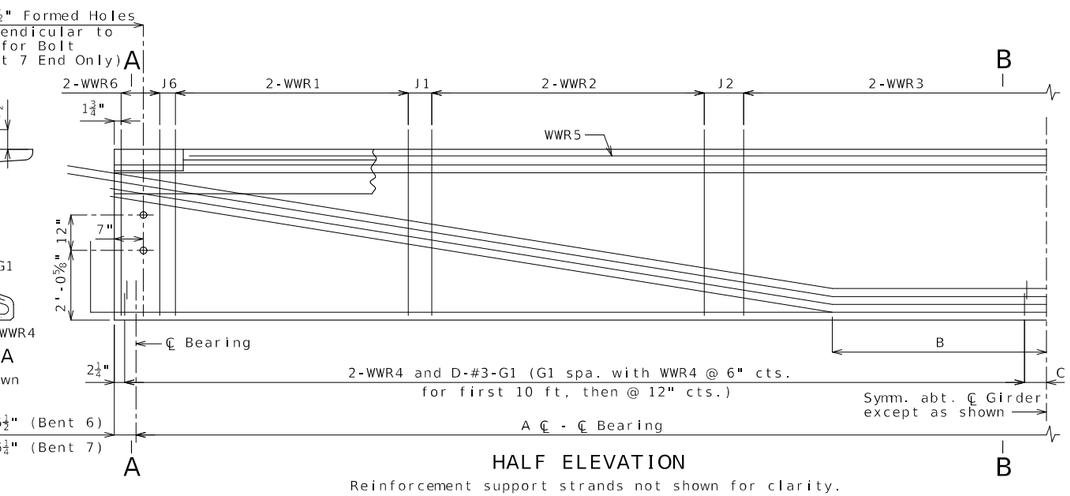
For location of coil ties at concrete diaphragms and integral bents, see Sheet No. 66.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



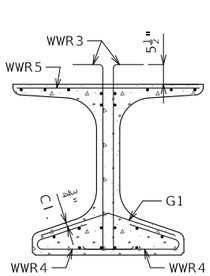
SECTION A-A

Strands not shown for clarity.



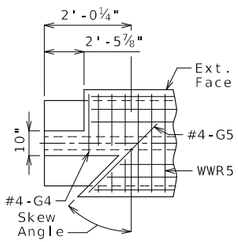
HALF ELEVATION

Reinforcement support strands not shown for clarity.

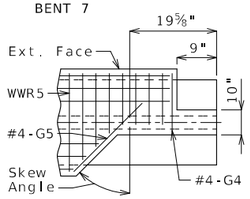


SECTION B-B

Strands not shown for clarity.

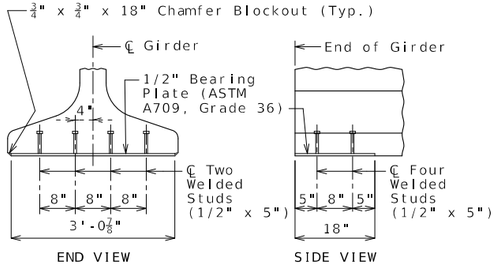


BENT 7



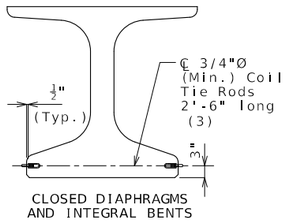
BENT 6 AHEAD

EAST EXTERIOR GIRDER AT INTERMEDIATE BENT



END VIEW SIDE VIEW

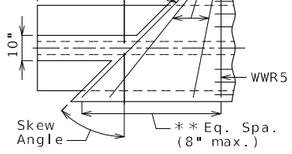
BEARING PLATE



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders. Exclude all coil tie at expansion Bent No. 7.



INTERIOR GIRDER

TOP FLANGE BLOCKOUT

**number of spaces = K+1

Table of Values

Span No.	K		L1
	Bent 6 Ahead	Bent 7 Ahead	
6-7	4	11	15

Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	G	J1	J2
6-7	3	87'-7⅜"	8'-10¼"	1⅜"	55	7'-0"	40'-0"	110	13"	13½"
	4	79'-11½"	8'-1¼"	3⅜"	51	6'-0"	34'-8"	102	10⅝"	14"
	5	72'-3½"	7'-4"	5⅜"	47	5'-0"	29'-4"	94	10⅛"	12½"

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 57 of 132

NU-GIRDERS 3, 4 AND 5 - SPAN (6-7)

THOMAS M. GREER — STATE OF MISSOURI — NUMBER PE-2010020206 — PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	57

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

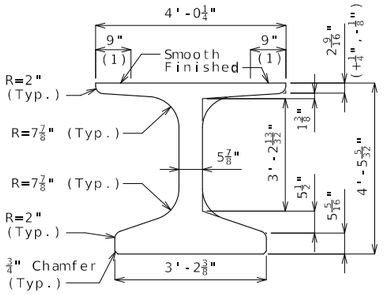
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

REV.

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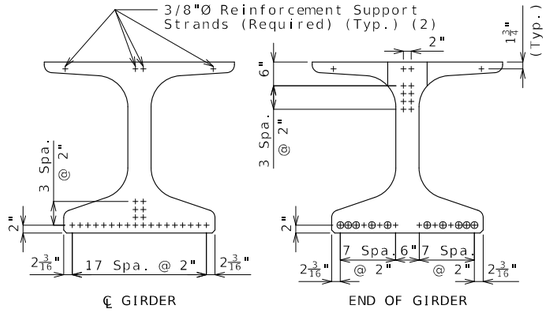
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

(4) #6 spacings around Bent 7 holes starting from beam end: 2¼" clr, 2¼", 5", 3 @ 2¾"

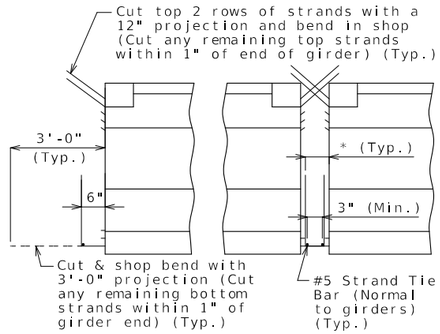
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

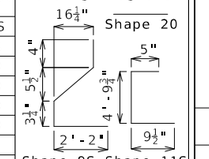


STRANDS AT GIRDER ENDS

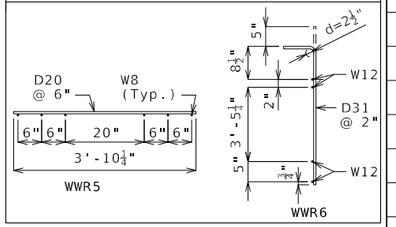
* 6½" at Girder 1, 8" at Girder 2, 10" at Girder 3, and 6" for Girders 4 and 5.

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
H	5 B1	5'-10"	11S
H	4 D1	4'-0"	9S
2	4 G3	Varies	20
2	4 G4	2'-3"	20
2	4 G5	Varies	20
L1	4 G6	Varies	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

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

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 24 strands, 0.6"Ø Grade 270, with an initial prestress force of 1055 kips for Girders G3, G4 and G5 in Span (6-7).

Pretensioned members shall be in accordance with Sec 1029.

Draped strands are shifted down 2" from standard orientation for Girders G3, G4 and G5 in Span (6-7).

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

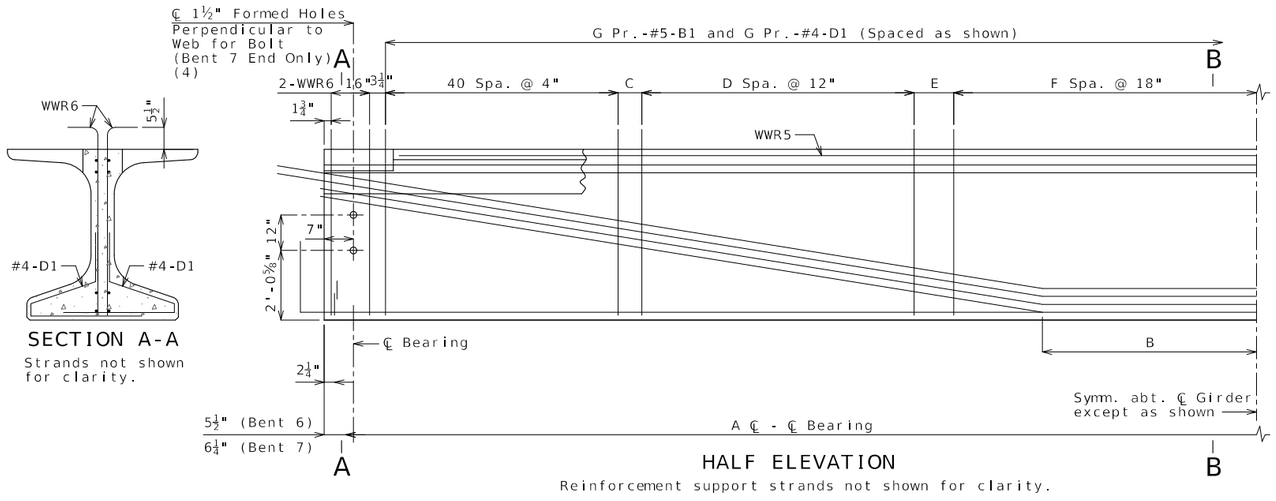
For Girder Camber Diagram, see Sheet No. 80.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 46.

For location of coil inserts at slab drains, see Sheet No. 74.

For location of coil ties at concrete diaphragms and integral bents, see Sheet No. 66.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

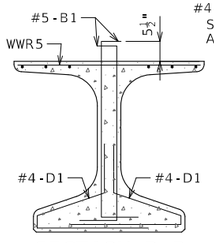


SECTION A-A

Strands not shown for clarity.

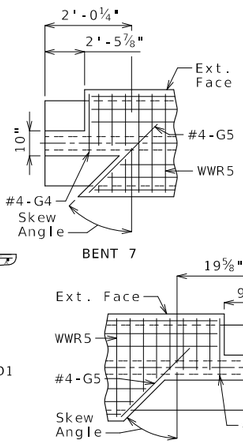
HALF ELEVATION

Reinforcement support strands not shown for clarity.

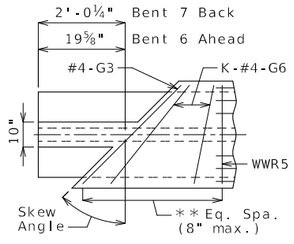


SECTION B-B

Strands not shown for clarity.

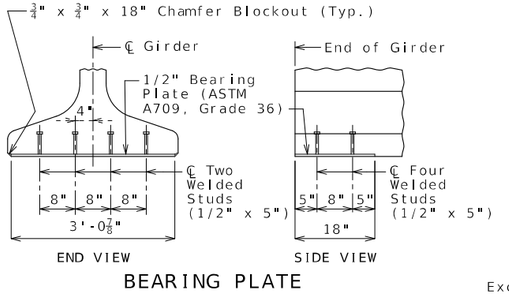


EAST EXTERIOR GIRDER AT INTERMEDIATE BENT

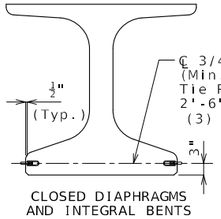


INTERIOR GIRDER

TOP FLANGE BLOCKOUT



BEARING PLATE



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

Exclude coil tie at exterior face of exterior girders. Exclude all coil tie at expansion Bent No. 7.

**number of spaces = K+1

Table of Values			
Span No.	K		L1
6-7	Bent 6 Ahead	Bent 7 Back	15
	4	11	

Table of Dimensions									
Span No.	Girder	A	B	C	D	E	F	G	H
6-7	3	87'-7⅜"	8'-10¼"	7"	5	13½"	15	63	250
	4	79'-11⅛"	8'-1¼"	9⅝"	7	13"	11	61	242
	5	72'-3½"	7'-4"	11⅜"	6	13"	9	58	230

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	58

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9606

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

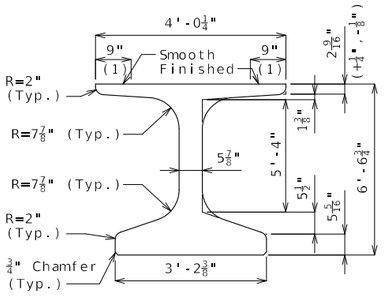
Detailed: Oct. 2025
Checked: Oct. 2025

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

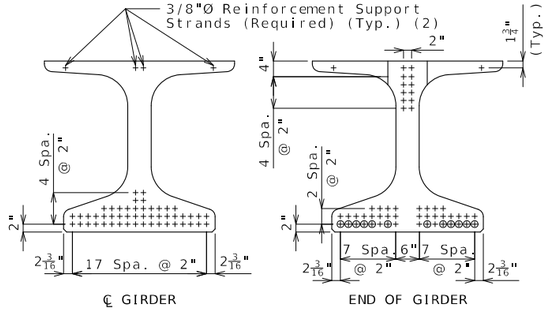
NU-GIRDERS 3, 4 AND 5 (ALT. REINFORCEMENT) - SPAN (6-7)

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

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



DIMENSIONS

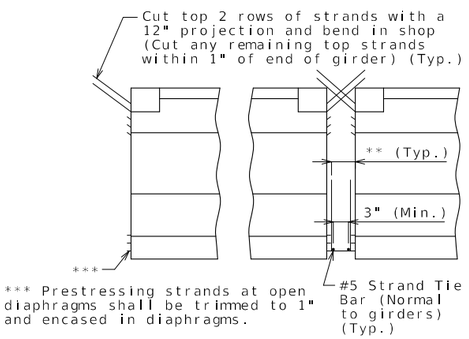


STRAND ARRANGEMENT

(4) #6 spacings around Bent 7 holes starting from beam end: 2¼" clr, 2¼", 5", 3 @ 2¾"

\+ Indicates prestressing strand.

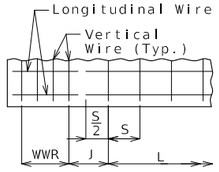
o Indicates cut & shop bend with 3'-0" projection.



*** Prestressing strands at open diaphragms shall be trimmed to 1" and encased in diaphragms.

STRANDS AT GIRDER ENDS

** 9" at Girder 1, 10" at Girder 2, and 6" for Girders 3, 4, and 5.

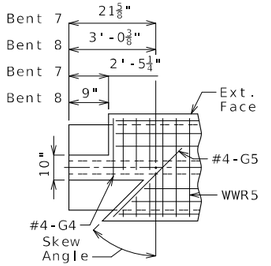


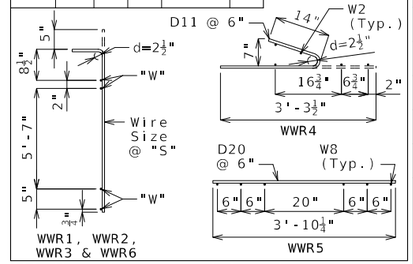
WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats



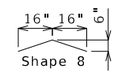


Bill of Reinforcing Steel

Bars Each Girder				
No.	Size/Mark		Length	Shape
G	3	G1	2'-10"	8
2	4	G3	Varies	20
2	4	G4	2'-3"	20
2	4	G5	Varies	20
L1	4	G6	Varies	20

Welded Wire Each Girder					
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	16'-8"	J1
WWR2	D31	12"	W12	E	J2
WWR3	D31	16"	W12	F	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

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

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 50 strands, 0.6"Ø Grade 270, with an initial prestress force of 2197 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

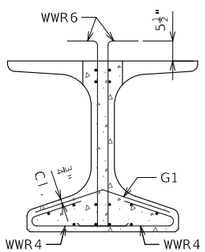
For Girder Camber Diagram, see Sheet No. 81.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheets No. 47 and 48.

For location of coil inserts at slab drains, see Sheet No. 75.

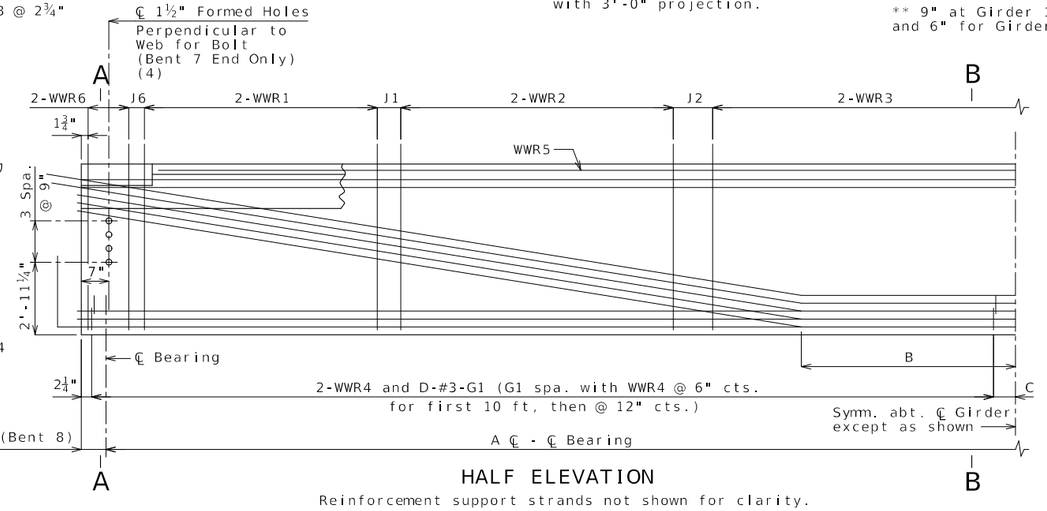
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 69 and 71.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



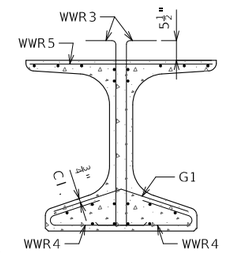
SECTION A-A

Strands not shown for clarity.



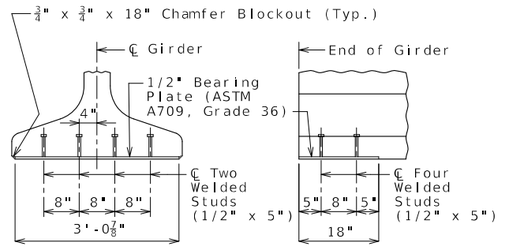
HALF ELEVATION

Reinforcement support strands not shown for clarity.



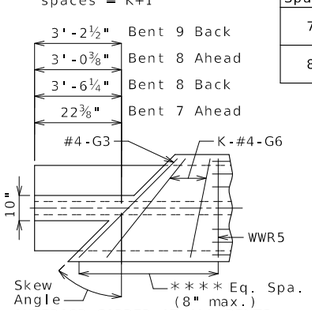
SECTION B-B

Strands not shown for clarity.



BEARING PLATE

**** number of spaces = K+1



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIDER AT EXPANSION BENT NO. 7.

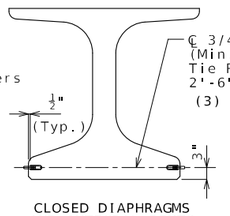
TOP FLANGE BLOCKOUT

Mirror for right advanced.

Table of Values

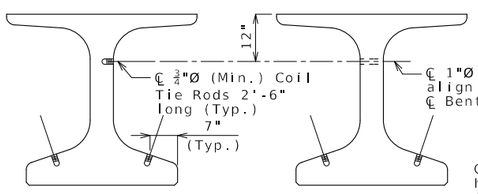
Span No.	K		L1
7-8	Bent 7 Ahead	Bent 8 Back	21
	9	12	
8-9	Bent 8 Ahead	Bent 9 Back	19
	10	9	

Exclude coil tie at exterior face of exterior girders at Bent No. 8. Exclude all coil tie at expansion Bent No. 7.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES



DETAILS OF COIL TIES

Cast 1"Ø hole horizontally (skewed) in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.

Cast 1"Ø hole horizontally (skewed) in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1½" minimum.

Table of Dimensions

Span No.	Girder	A	B	C	D	E	F	G	J1	J2
7-8	1	151'-11½"	15'-3½"	3⅝"	87	20'-0"	72'-0"	174	9½"	15"
	2	150'-8"	15'-2"	1⅛"	*87	20'-0"	72'-0"	174	4⅜"	12½"
	3	149'-4⅜"	15'-0½"	6¼"	*85	19'-0"	72'-0"	170	7⅜"	14"
	4	148'-1⅛"	14'-11"	4⅜"	85	18'-0"	72'-0"	170	11⅞"	14"
	5	146'-10¼"	14'-9½"	3"	*85	18'-0"	72'-0"	170	5¼"	13"
8-9	1	157'-1⅜"	15'-9¾"	4¼"	*90	20'-0"	77'-4"	180	8½"	15"
	2	157'-9⅜"	15'-10½"	2⅜"	90	20'-0"	77'-4"	180	11¾"	15⅞"
	3	158'-5⅜"	15'-11¼"	6½"	90	21'-0"	77'-4"	180	7¾"	12"
	4	159'-2"	16'-0¼"	4½"	*91	21'-0"	77'-4"	182	10¾"	13"
	5	159'-10¼"	16'-1"	2⅝"	91	20'-0"	80'-0"	182	9⅞"	14"

* Includes #3-G1 Bar at midspan

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 59 of 132

NU-GIRDERS - SPANS (7-8) AND (8-9)

THOMAS M. GREER NUMBER PE-2010020206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	59

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

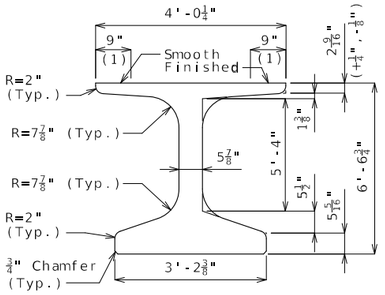
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

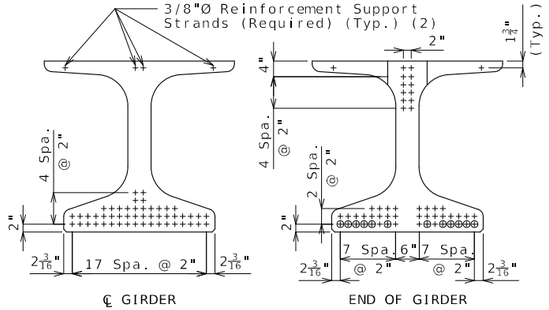
c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_059_KU0099.dgn 7:41:30 PM 1/5/2026

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



DIMENSIONS

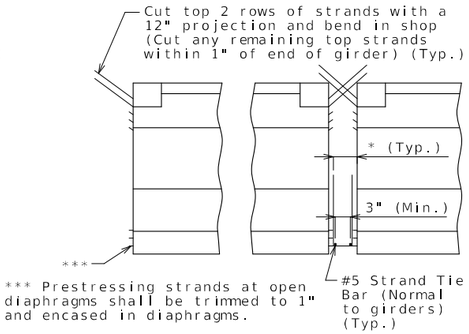
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



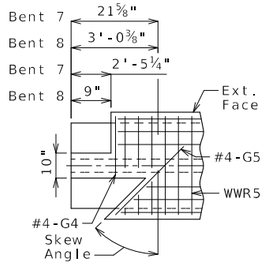
STRAND ARRANGEMENT

+ Indicates prestressing strand.

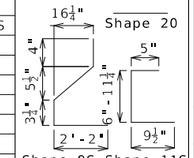
○ Indicates cut & shop bend with 3'-0" projection.



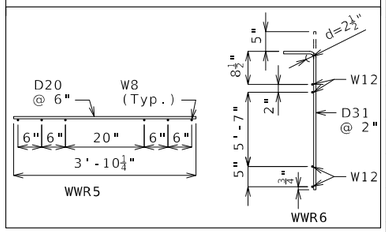
STRANDS AT GIRDER ENDS



Bill of Reinforcing Steel - Each Girder				
No.	Size/ Mark	Length	Shape	Bending Diagrams
H	5 B1	7'-11"	11S	
H	4 D1	4'-0"	9S	
2	4 G3	Varies	20	
2	4 G4	2'-3"	20	
2	4 G5	Varies	20	
L1	4 G6	Varies	20	



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

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

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 10000 psi and f'ci = 7000 psi.

Use 50 strands, 0.6"Ø Grade 270, with an initial prestress force of 2197 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

For Girder Camber Diagram, see Sheet No. 81.

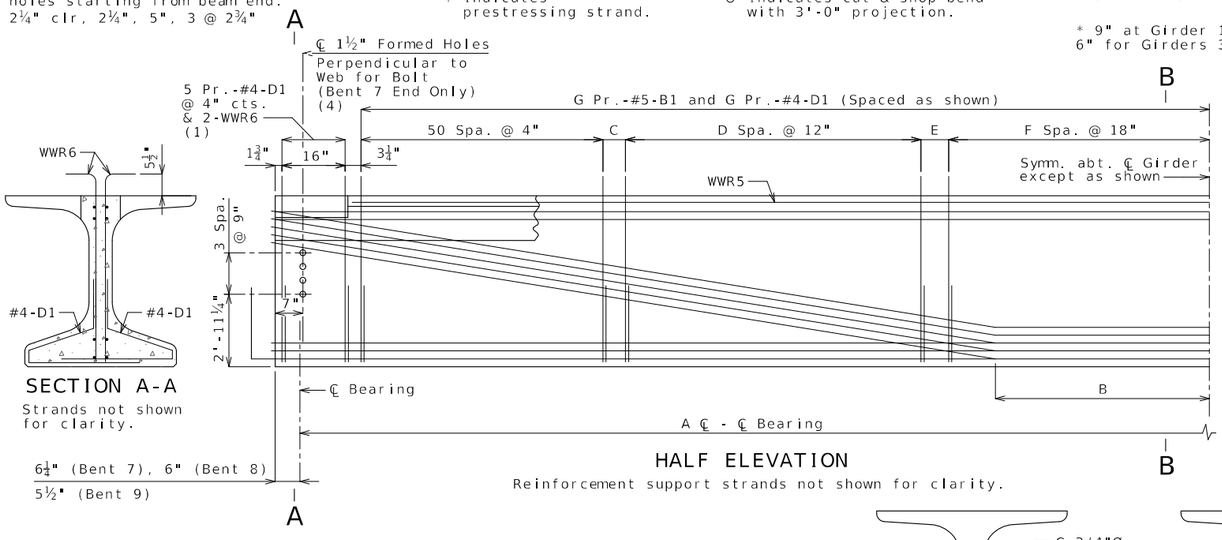
The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheets No. 47 and 48.

For location of coil inserts at slab drains, see Sheet No. 75.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 69 and 71.

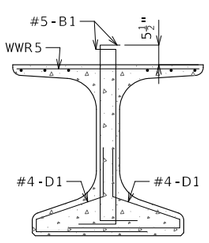
Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

(4) #6 spacings around Bent 7 holes starting from beam end: 2¼" clr, 2¼", 5", 3 @ 2¾"



HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

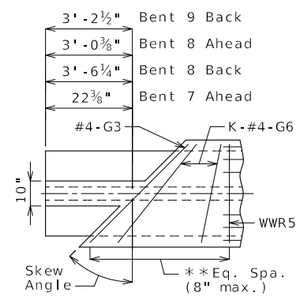
Strands not shown for clarity.

SECTION A-A

Strands not shown for clarity.

* 9" at Girder 1, 10" at Girder 2, 6" for Girders 3, 4, and 5.

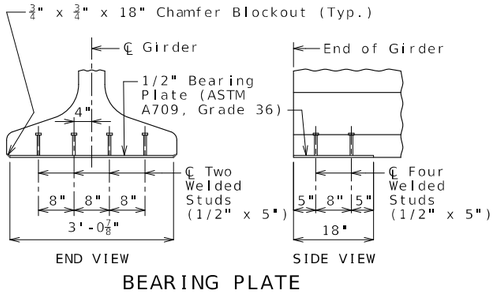
** number of spaces = K+1



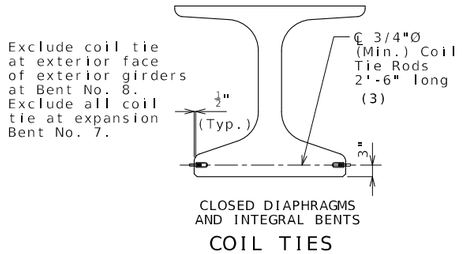
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT EXPANSION BENT NO. 7

TOP FLANGE BLOCKOUT

Mirror for right advanced.

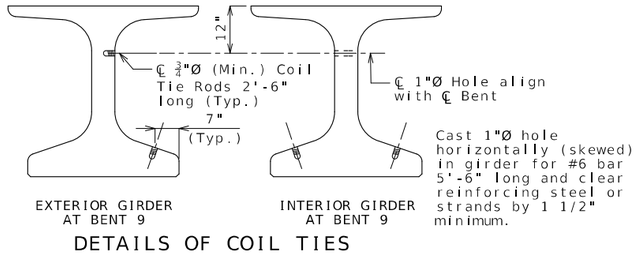


BEARING PLATE



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES



DETAILS OF COIL TIES

Table of Values			
Span No.	K		L1
7-8	Bent 7 Ahead	Bent 8 Back	21
	9	12	
8-9	Bent 8 Ahead	Bent 9 Back	19
	10	9	

Table of Dimensions									
Span No.	Girder	A	B	C	D	E	F	G	H
7-8	1	151'-11½"	15'-3½"	9⅞"	11	15"	30	94	374
	2	150'-8"	15'-2"	4⅝"	11	12½"	30	94	374
	3	149'-4⅝"	15'-0½"	7⅜"	10	14"	30	93	370
	4	148'-1⅜"	14'-11"	11⅛"	9	14"	30	92	366
	5	146'-10¼"	14'-9½"	5¼"	9	13"	30	92	366
8-9	1	157'-1⅜"	15'-9¾"	5½"	11	14"	32	96	382
	2	157'-9⅝"	15'-10½"	7¾"	11	15⅞"	32	96	382
	3	158'-5⅞"	15'-11¼"	14⅜"	11	13"	32	96	382
	4	159'-2"	16'-0¼"	6¾"	12	13"	32	97	386
	5	159'-10¼"	16'-1"	3⅞"	11	14"	33	97	386

Detailed: Oct. 2025
Checked: Oct. 2025

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

NU-GIRDERS (ALT. REINFORCEMENT) - SPANS (7-8) AND (8-9)

Sheet No. 60 of 132

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	60

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9606

DESCRIPTION	DATE

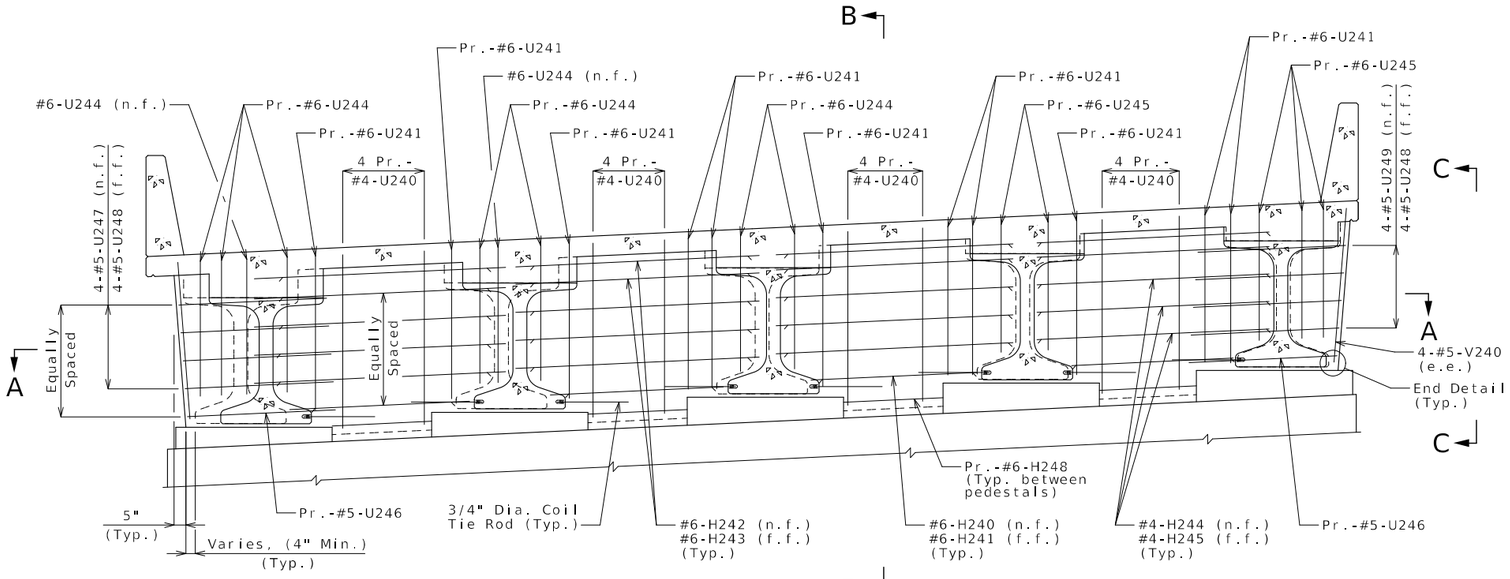
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

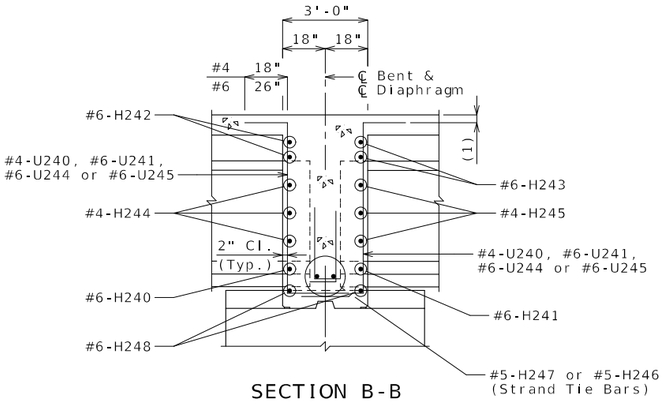
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

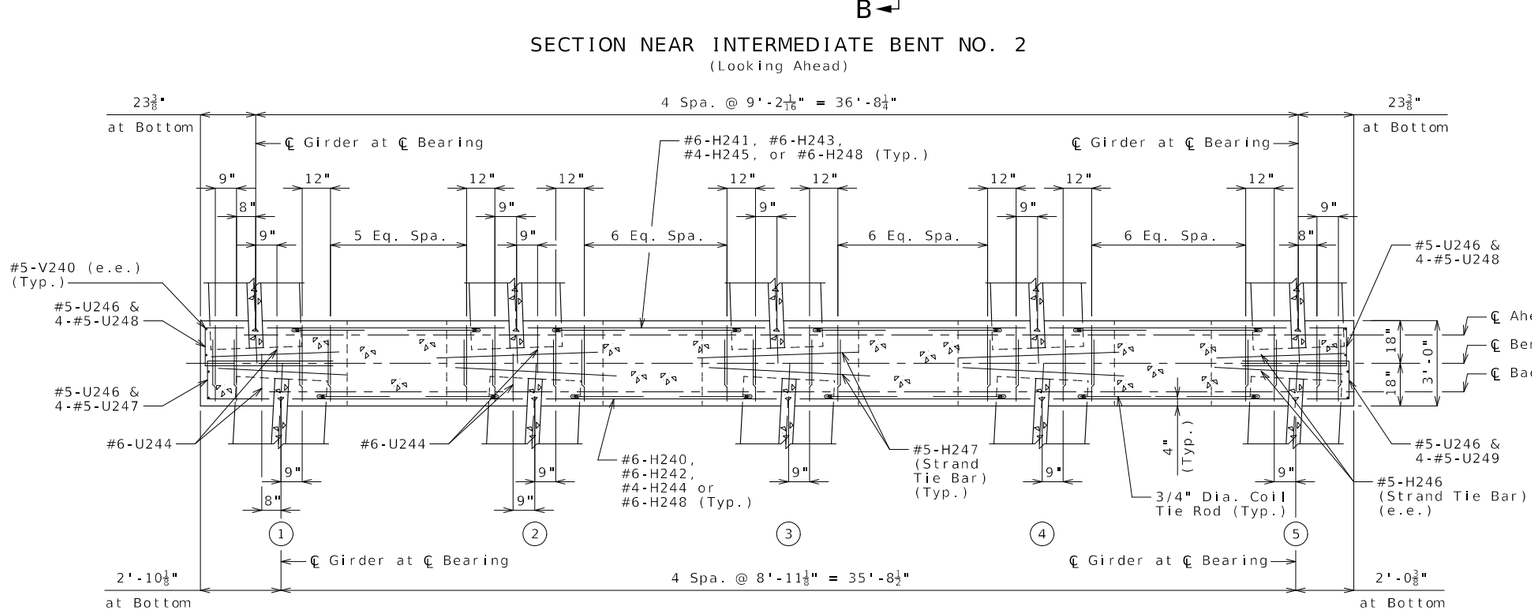
c:\bmcd_lib\pw_connect\trn\d0121694\B_A9606_060_KU0099.dgn 7:41:45 PM 1/5/2026



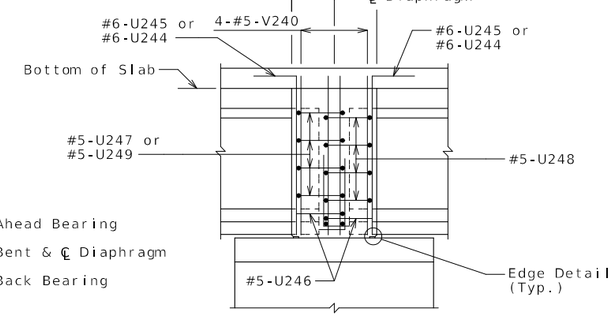
SECTION NEAR INTERMEDIATE BENT NO. 2
(Looking Ahead)



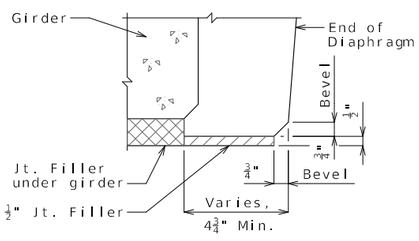
SECTION B-B
(1) $3\frac{1}{4}$" (#4) & 3" (#6)



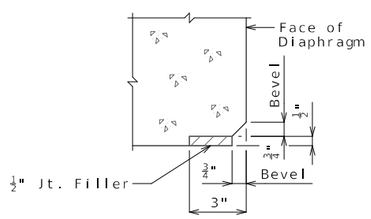
SECTION A-A



ELEVATION C-C



END DETAIL



EDGE DETAIL

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

For location and details of Coil Tie Rods and strand tie bars, see Sheets No. 49 and 50.

For location of joint filler, see Sheet No. 22.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 2

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	61

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

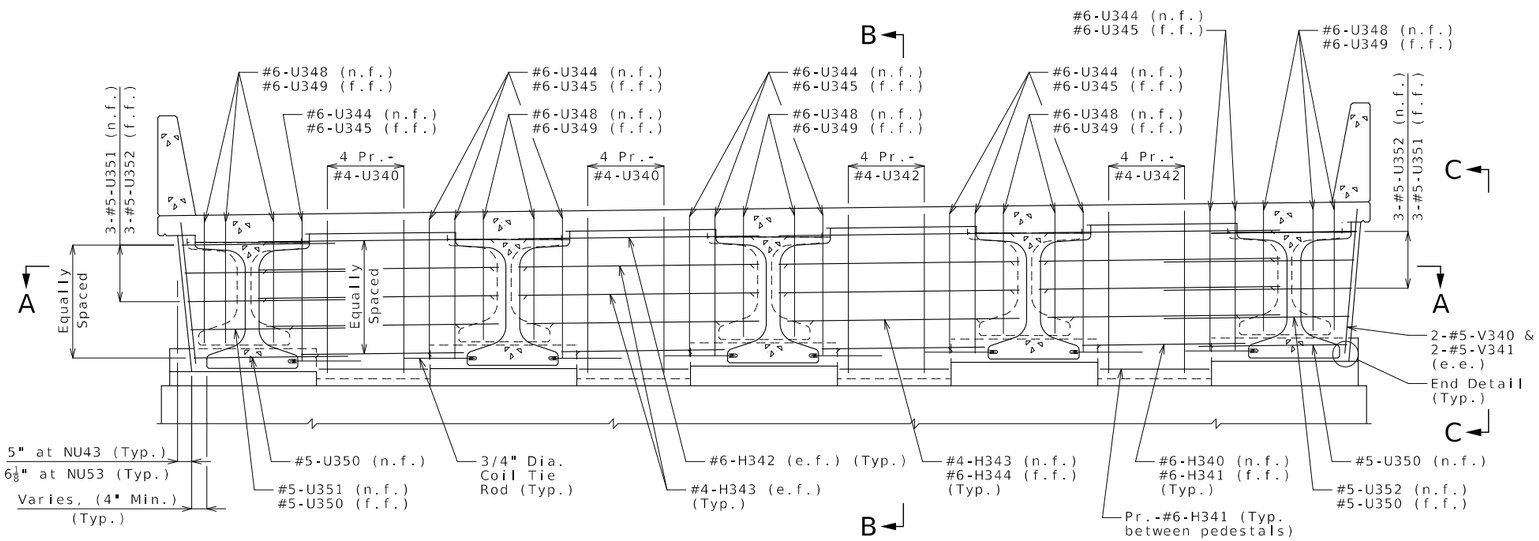
BRIDGE NO.
A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

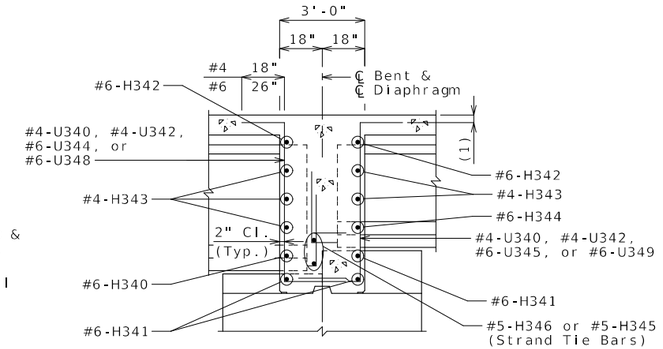
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



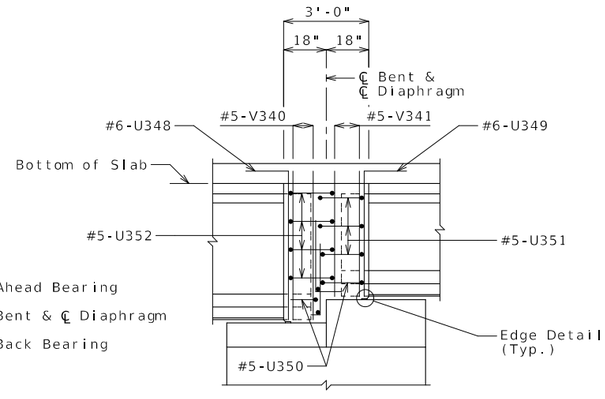
SECTION NEAR INTERMEDIATE BENT NO. 3

(Looking Ahead)



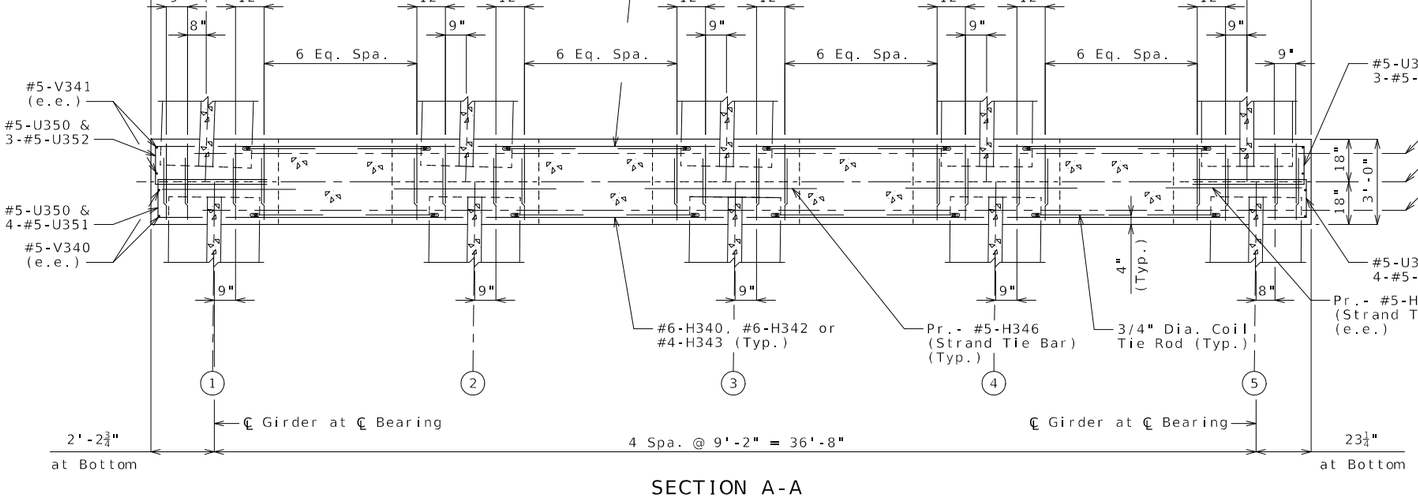
SECTION B-B

(1) 3¼" (#4) & 3" (#6)

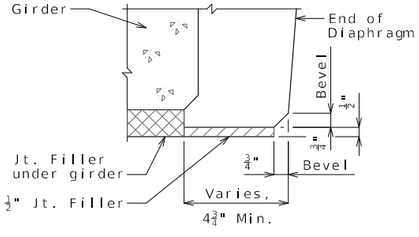


ELEVATION C-C

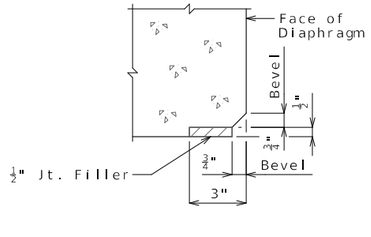
(Shown at East face)



SECTION A-A



END DETAIL



EDGE DETAIL

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

For location and details of Coil Tie Rods and strand tie bars, see Sheets No. 49 thru 52.

For location of joint filler, see Sheet No. 24.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 3

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	62

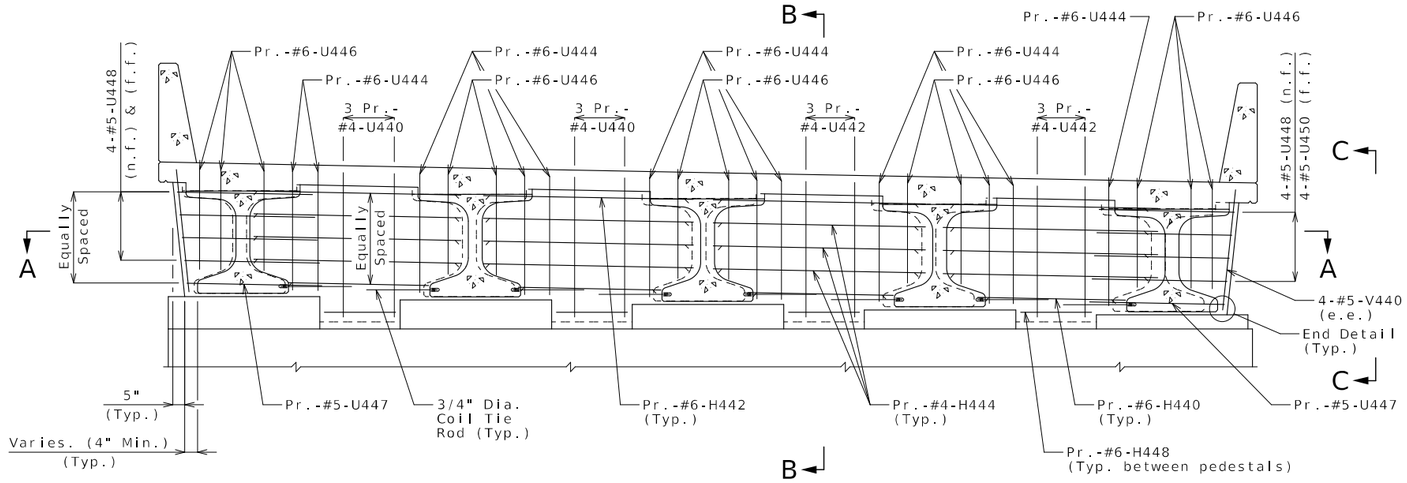
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

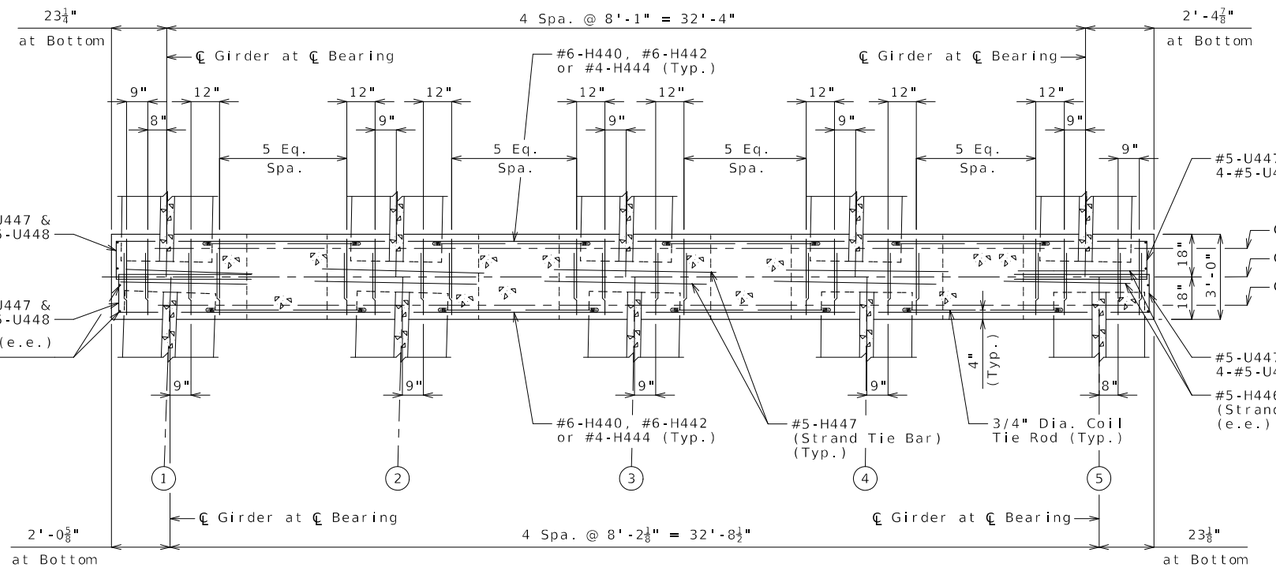
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

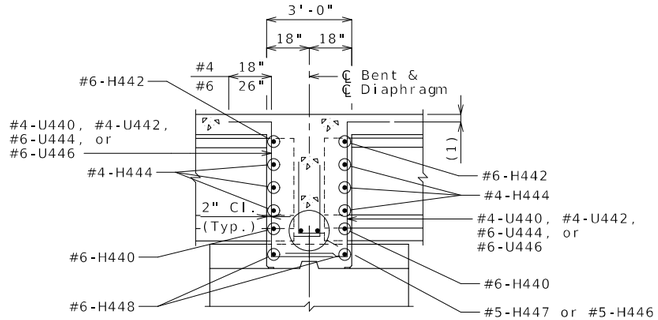


SECTION NEAR INTERMEDIATE BENT NO. 4

(Looking Ahead)

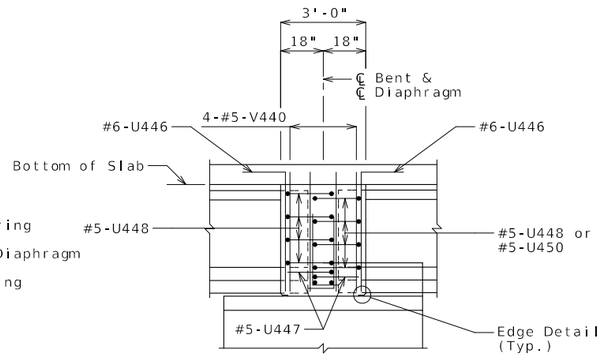


SECTION A-A

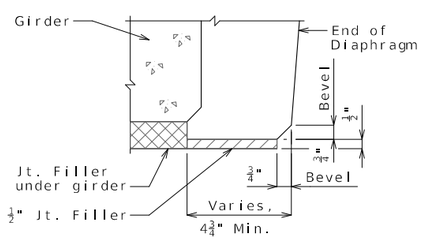


SECTION B-B

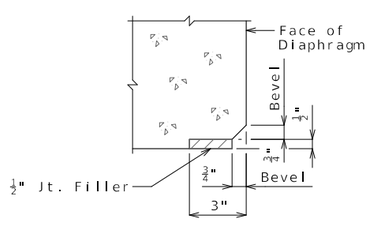
(1) 3 1/4" (#4) & 3" (#6)



ELEVATION C-C



END DETAIL



EDGE DETAIL

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

For location and details of Coil Tie Rods and strand tie bars, see Sheets No. 51 and 52.

For location of joint filler, see Sheet No. 26.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 4

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	63

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

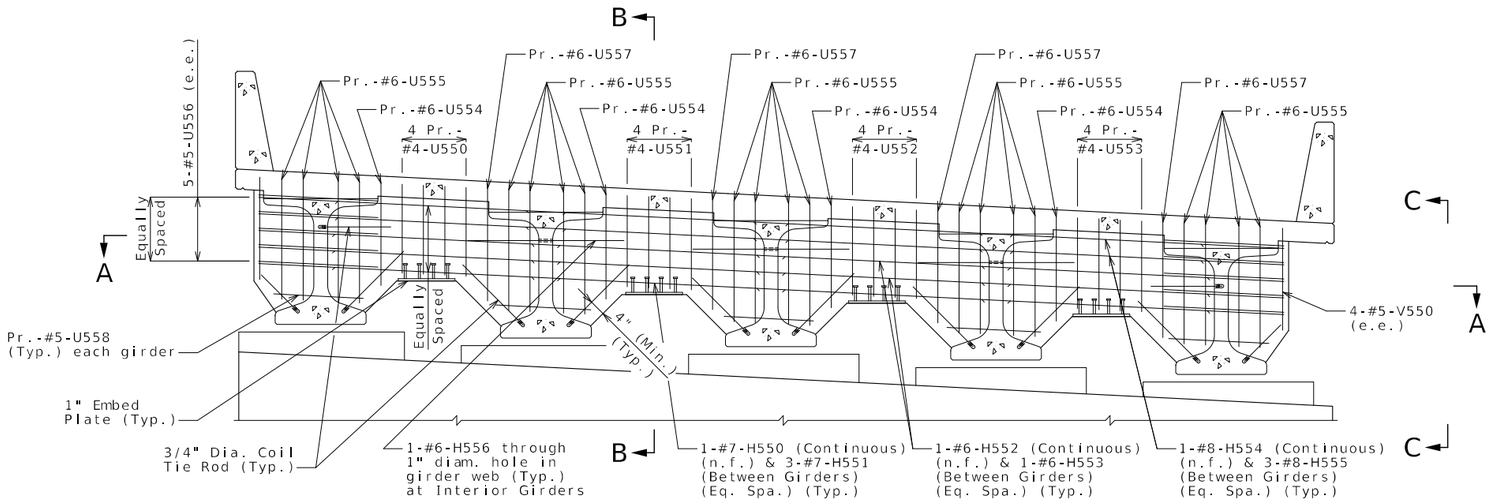
BRIDGE NO. A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

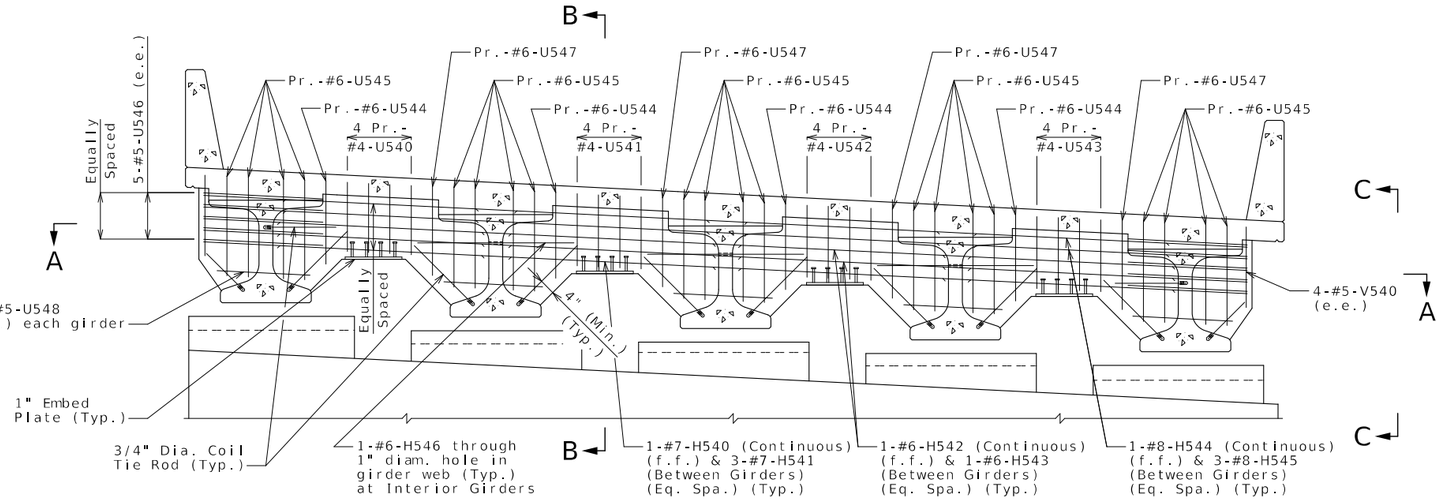
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



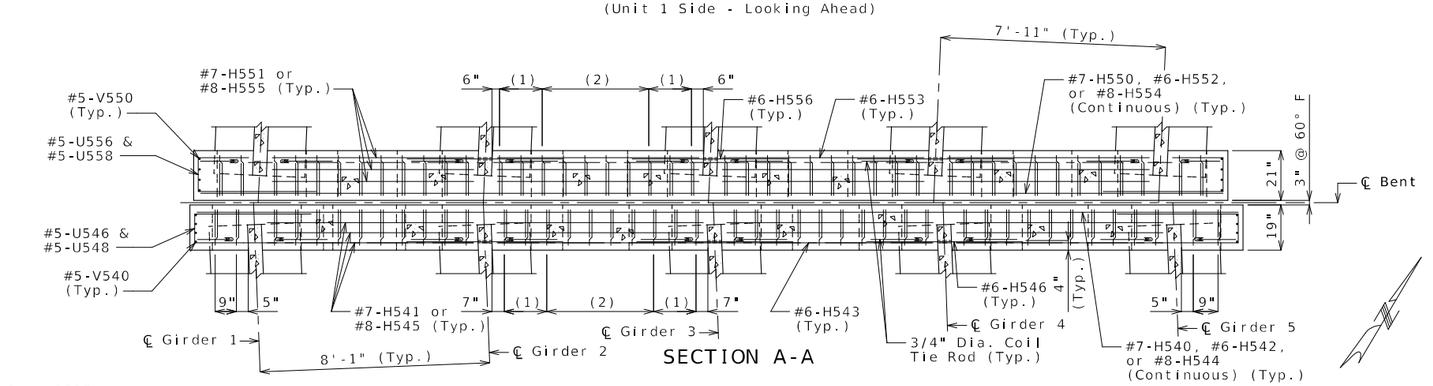
TYPICAL SECTION NEAR INTERMEDIATE BENT NO. 5

(Unit 2 Side - Looking Ahead)

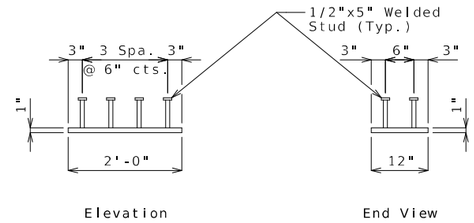


TYPICAL SECTION NEAR INTERMEDIATE BENT NO. 5

(Unit 1 Side - Looking Ahead)



SECTION A-A



EMBED PLATE DETAIL

Galvanize the embed plates (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the embed plates (ASTM A709 Grade 36) will be considered completely covered by the contract unit price for other items in the contract.

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to diaphragm and exposed edges of girder under diaphragm.

For Section B-B and Elevation C-C, see Sheet No. 65 .

For location and details of Coil Tie Rods, see Sheets No. 51 thru 56 .

(1) 2 Spa. @ 9"

(2) 5 Spa. @ 9" (Max.)

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 5

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	64

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

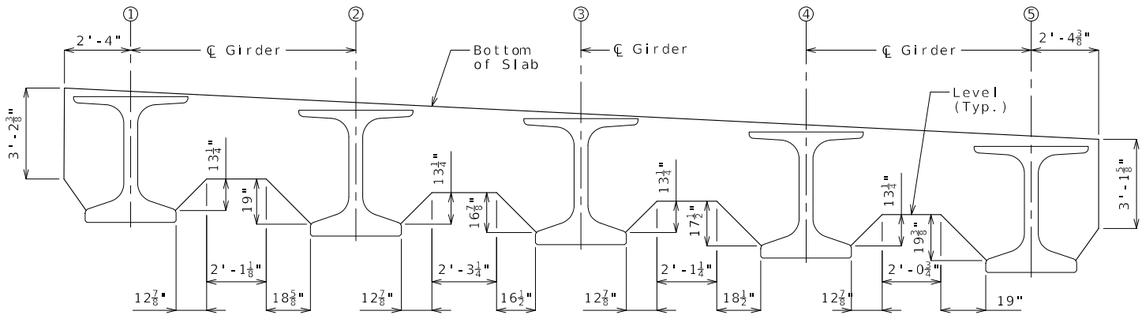
BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

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

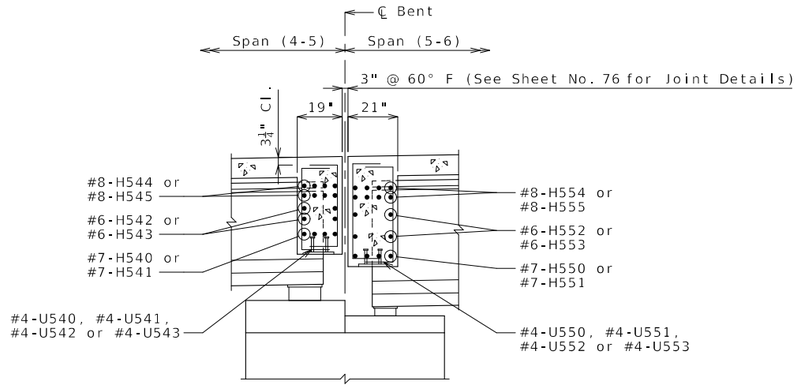
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



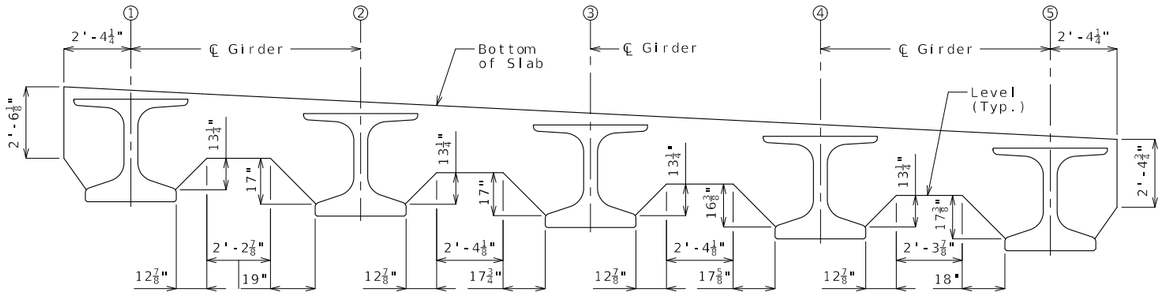
DIAPHRAGM FORMING DETAIL

(Unit 2 Side - Looking Ahead)

(Horizontal dimensions shown are measured parallel to CL Bent @ far face of diaphragm)



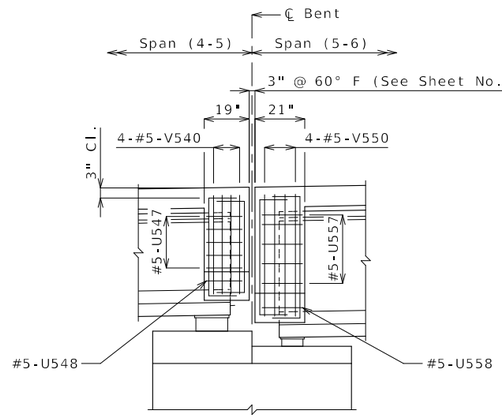
SECTION B-B



DIAPHRAGM FORMING DETAIL

(Unit 1 Side - Looking Ahead)

(Horizontal dimensions shown are measured parallel to CL Bent @ near face of diaphragm)



ELEVATION C-C

Notes:

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

For location of Section B-B and Elevation C-C, see Sheet No. 64.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 5

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000208 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	65

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

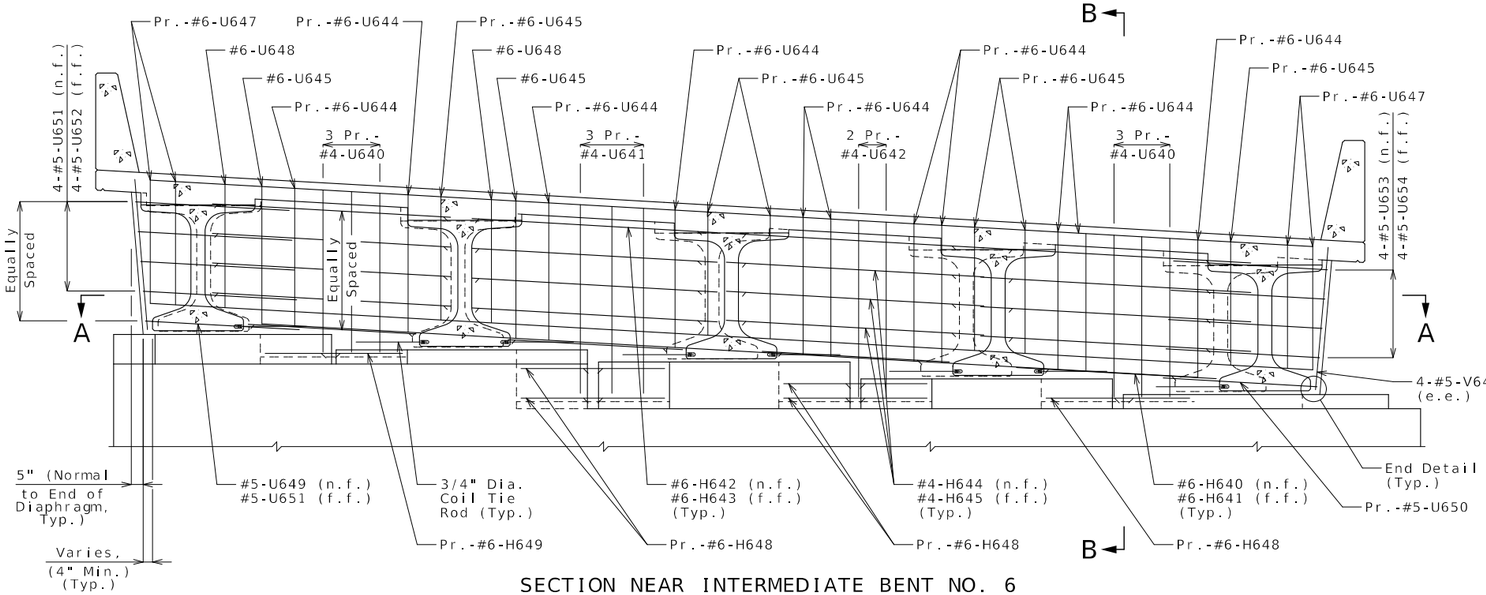
BRIDGE NO.: A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

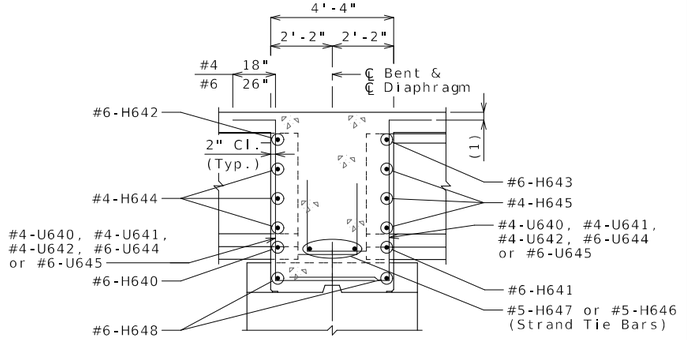
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



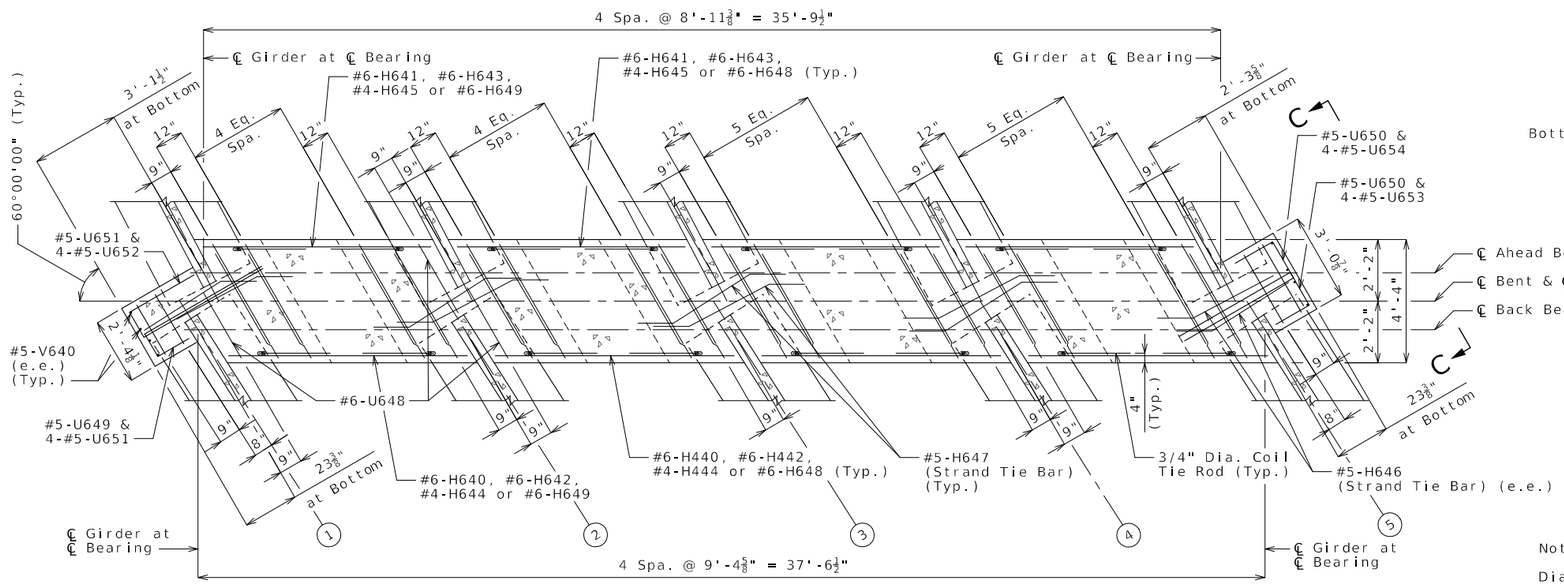
SECTION NEAR INTERMEDIATE BENT NO. 6

(Looking Ahead)

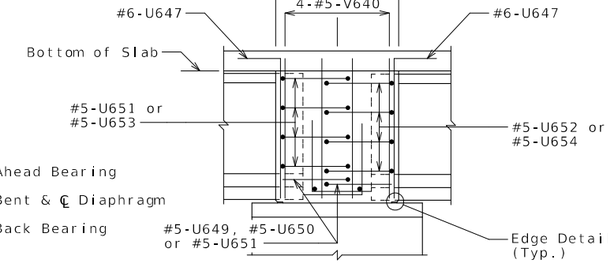


SECTION B-B

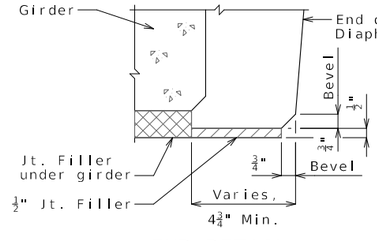
(1) $3\frac{1}{4}$" (#4) & 3" (#6)



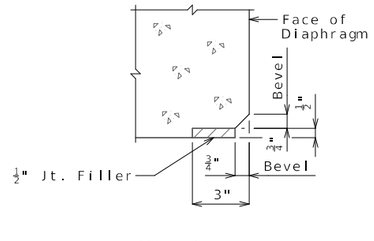
SECTION A-A



ELEVATION C-C



END DETAIL



EDGE DETAIL

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

For location and details of Coil Tie Rods and strand tie bars, see Sheets No. 53 thru 58.

For location of joint filler, see Sheet No. 30.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 6

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	66

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

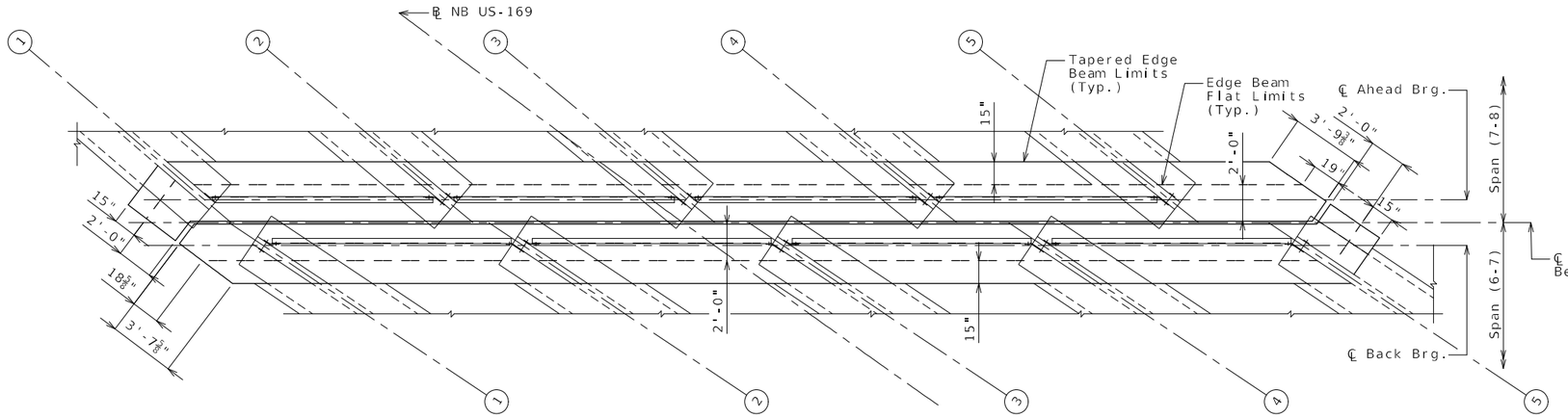
BRIDGE NO.: A9606

DESCRIPTION	DATE

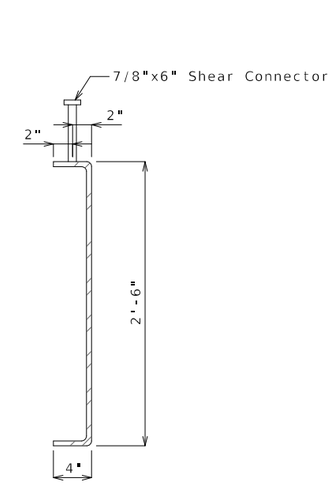
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

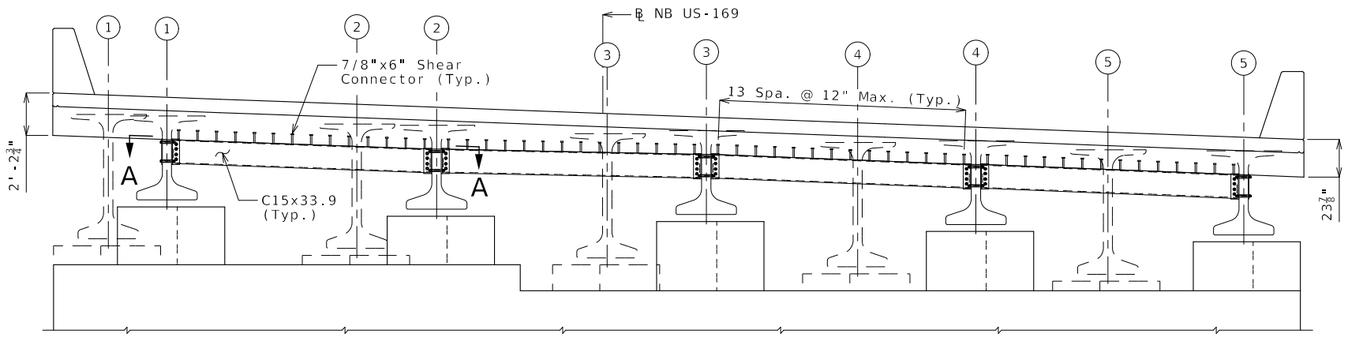
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



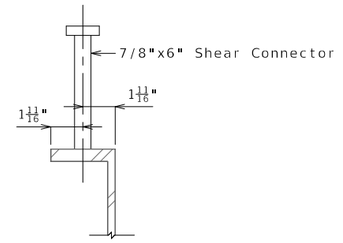
PLAN OF EDGE BEAM
(Edge beam reinforcing not shown for clarity)



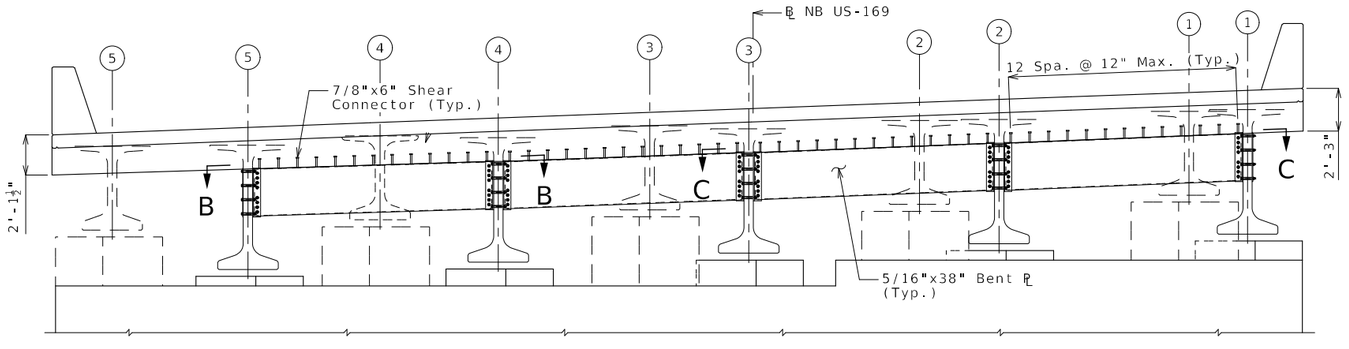
BENT PLATE SECTION



ELEVATION
Looking Upstation
(Edge beam reinforcing not shown for clarity)



CHANNEL SHEAR CONNECTOR DETAIL



ELEVATION
Looking Backstation
(Edge beam reinforcing not shown for clarity)

Notes:

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Shop drawings will be required for steel diaphragms and angle connections at Intermediate Bent No. 7.

Payment for furnishing and installing steel diaphragms at Intermediate Bent No. 7 will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

For location of 1 1/2" diameter holes in the web, see Sheets No. 53, 54, and 57 thru 60.

For Sections A-A, B-B, and C-C, see Sheet No. 68 .

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to edge beam and exposed edges of girders under diaphragm.

DIAPHRAGM DETAILS
INTERMEDIATE BENT NO. 7

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	67

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

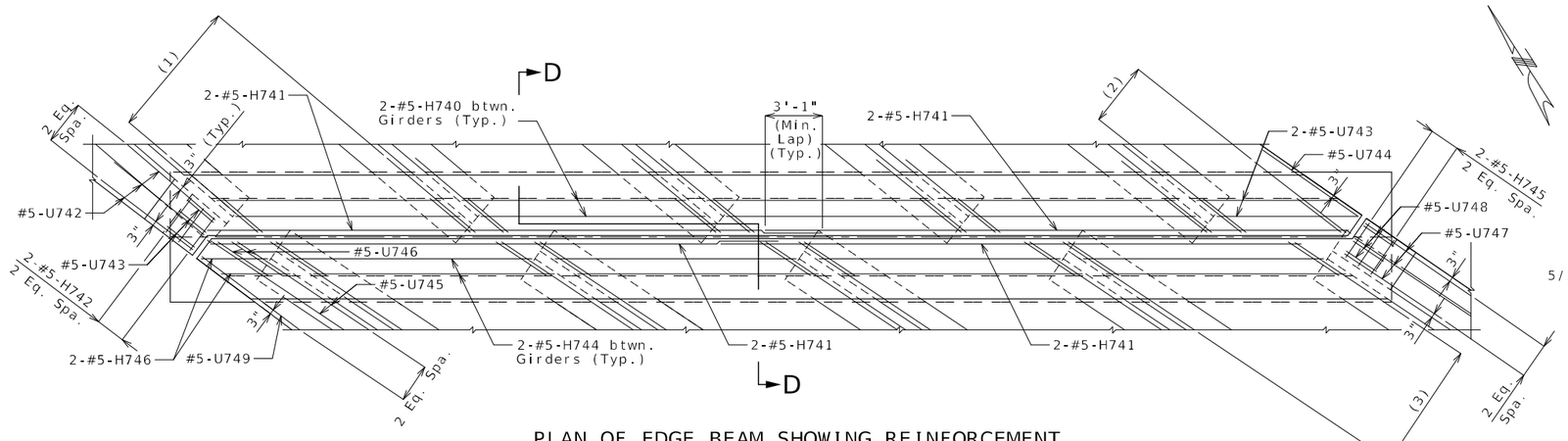
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

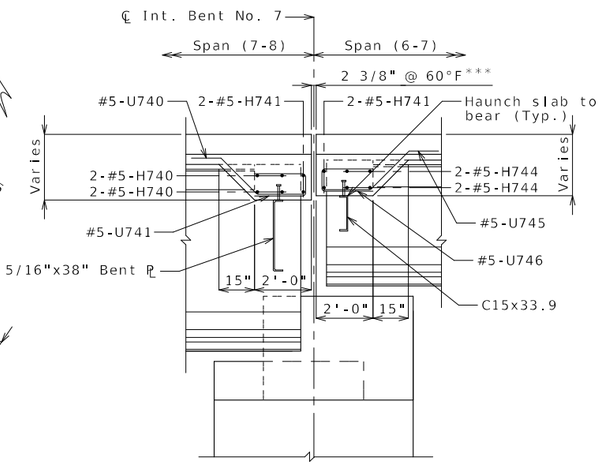


PLAN OF EDGE BEAM SHOWING REINFORCEMENT
(Steel diaphragm and connection details not shown for clarity)

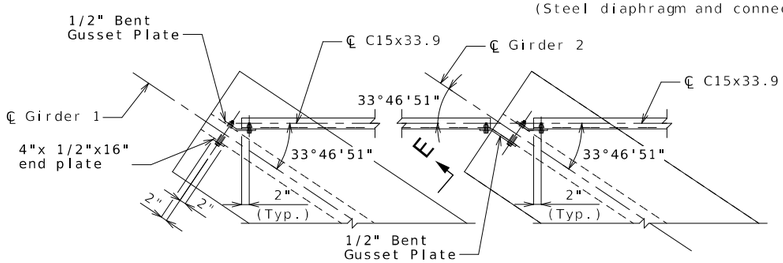
(1) 9-#5-U740 with 9-#5-U741 btwn. Girders (Typ.)
8 Spa. @ 12" Max.

(2) 5-#5-U740 with 5-#5-U741
4 Spa. @ 12" Max.

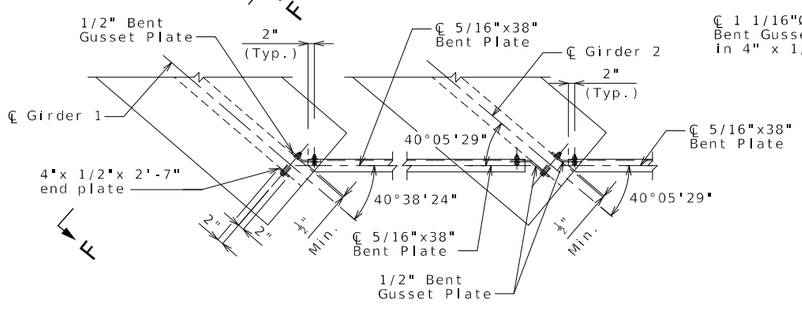
(3) 8-#5-U745 with 8-#5-U746 btwn. Girders (Typ.)
7 Spa. @ 12" Max.



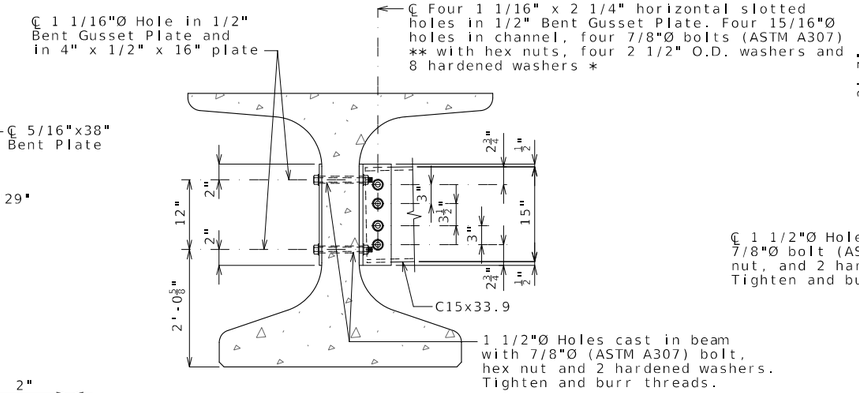
SECTION D-D
(Slab reinforcing not shown for clarity)



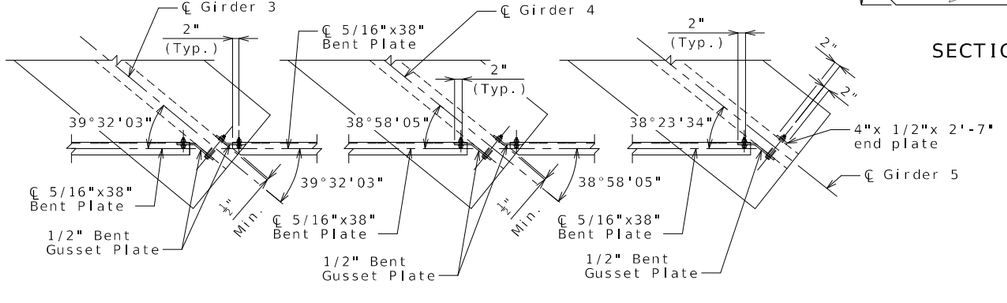
SECTION A-A



SECTION B-B

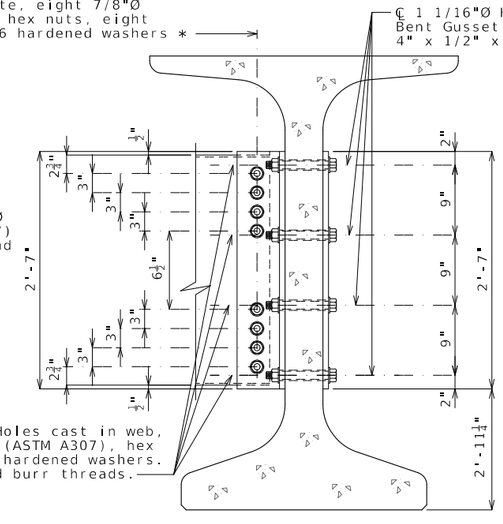


SECTION E-E



SECTION C-C

℄ Four 1 1/16" x 2 1/4" horizontal slotted holes in 1/2" Bent Gusset Plate; ℄ Eight 15/16"Ø holes in bent plate, eight 7/8"Ø bolts (ASTM A307) ** with hex nuts, eight 2 1/2" O.D. washers and 16 hardened washers *



SECTION F-F

* In lieu of 2 1/2" outside diameter washers, Contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" ∅ holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

*** See Sheet No. 77 for Joint Details.

DIAPHRAGM DETAILS
INTERMEDIATE BENT NO. 7

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020226
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	68

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

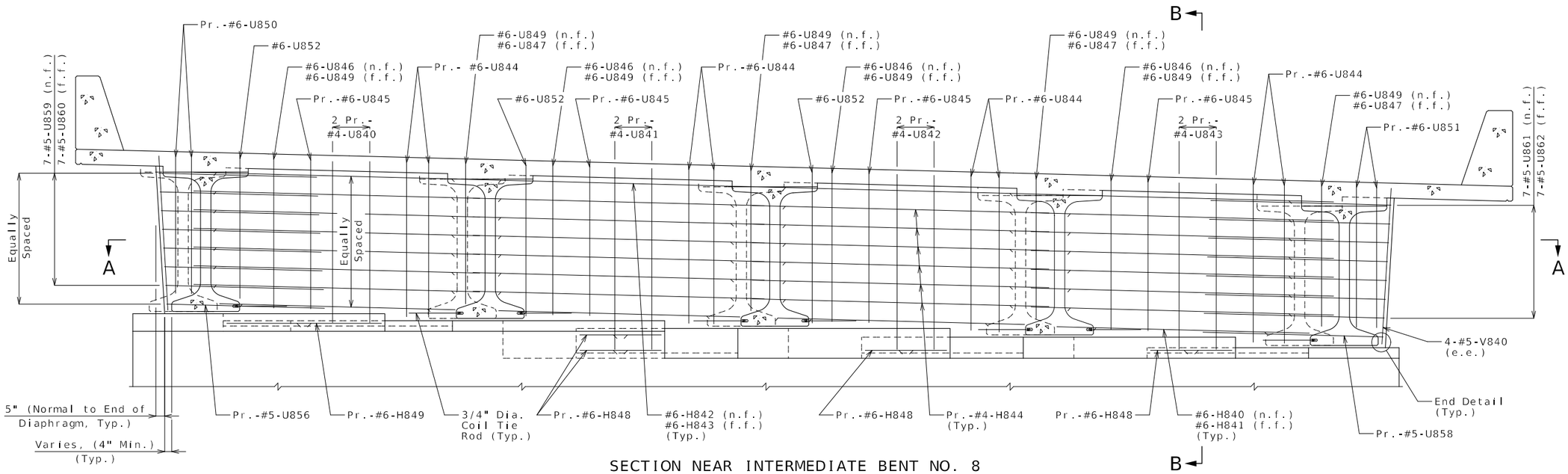
BRIDGE NO.
A9606

DESCRIPTION	DATE

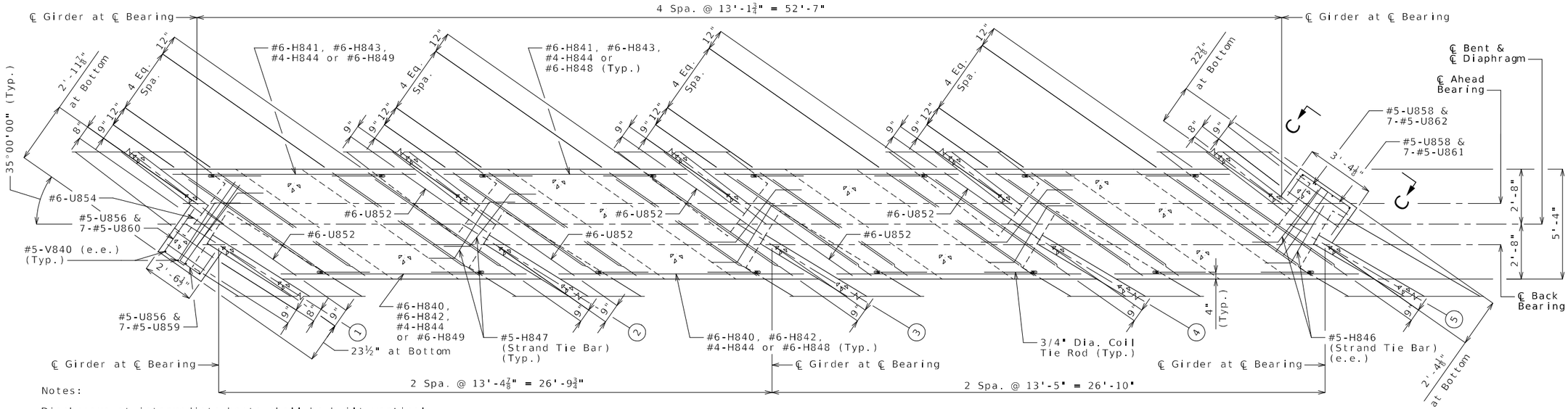
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



SECTION NEAR INTERMEDIATE BENT NO. 8
(Looking Ahead)



SECTION A-A

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

For location and details of Coil Tie Rods and strand tie bars, see Sheets No. 59 and 60.

For location of joint filler, see Sheet No. 34.

For Section B-B and Elevation C-C, see Sheet No. 70.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 8

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	69

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

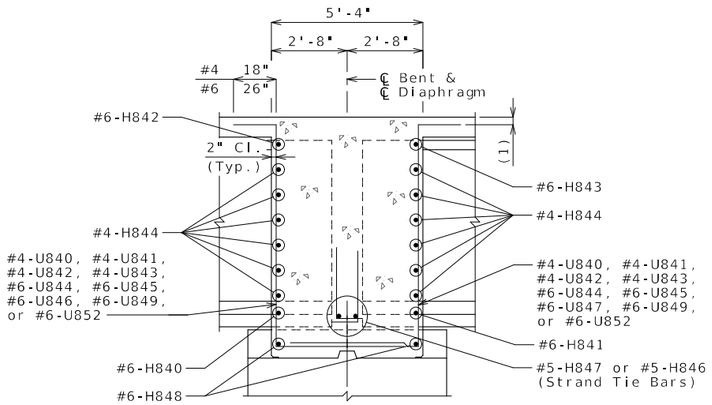
BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION | DATE

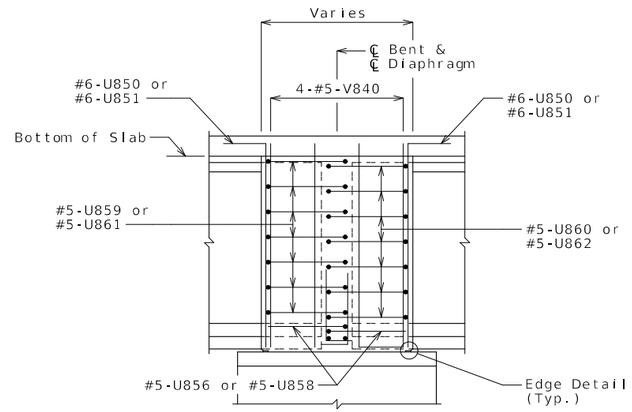
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

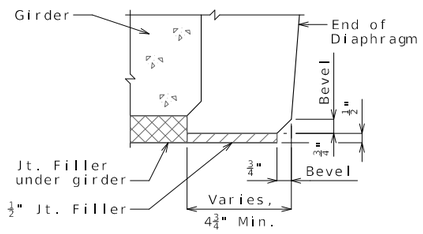


SECTION B-B

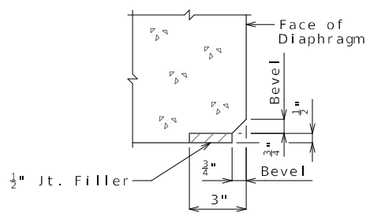
(1) $3\frac{1}{4}$" (#4) & 3" (#6)



ELEVATION C-C



END DETAIL



EDGE DETAIL

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

For location of joint filler, see Sheet No. 34.

For location of strand tie bars, see Sheets No. 59 and 60.

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 8

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	70

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

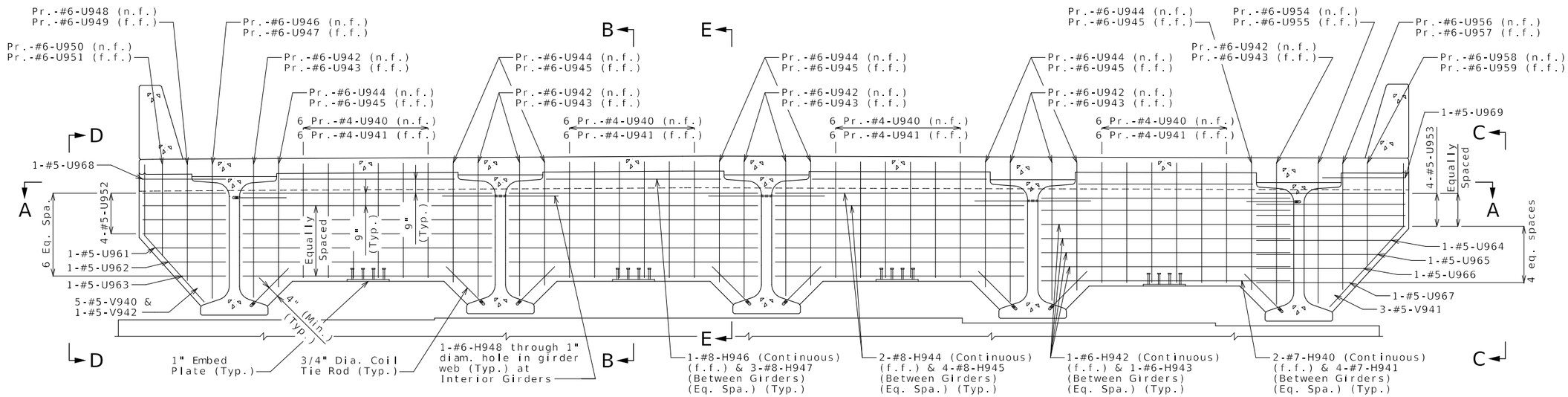
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

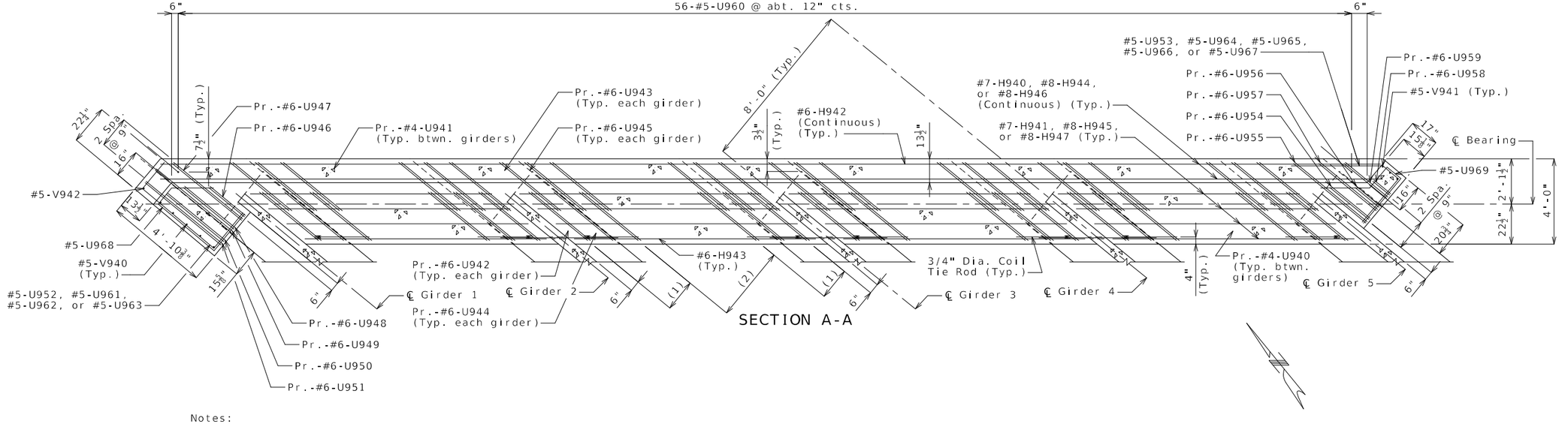
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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TYPICAL SECTION NEAR INTERMEDIATE BENT NO. 9

(Looking Ahead)



SECTION A-A

Notes:

Diaphragms at intermediate bents shall be built vertical.

Slab reinforcement not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

Apply Protective Coating - Concrete Bents and Piers (Epoxy) to diaphragm and exposed edges of girder under diaphragm.

For Sections B-B & E-E and Elevations C-C & D-D. see Sheet No. 72.

For location and details of Coil Tie Rods, see Sheet No. 59.

For embed plate details, see Sheet No. 72.

(1) 2 Spa. @ 9" (Typ.)

(2) 5 Spa. @ 9" (Max.) (Typ. between girders)

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 9

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	71

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

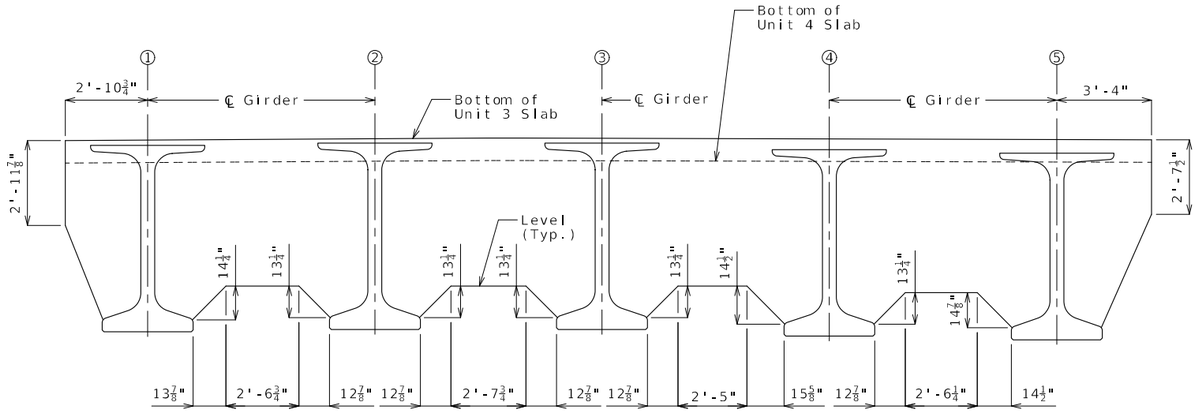
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

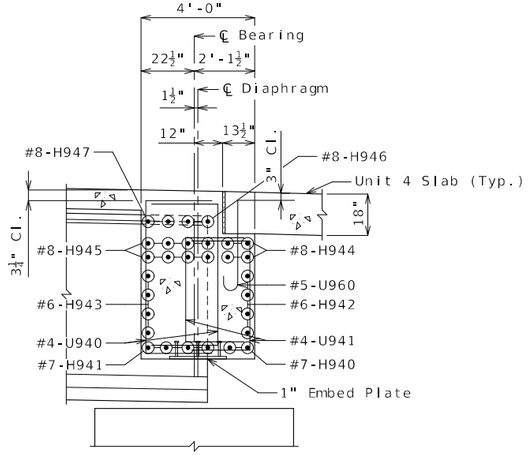
BMcD Project No. 154749

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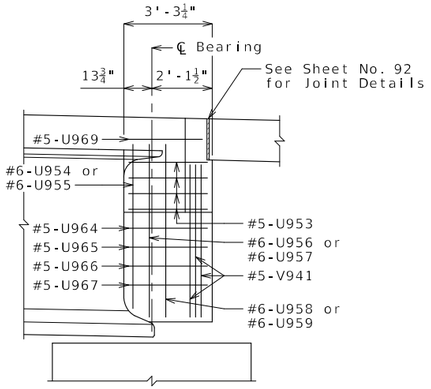


DIAPHRAGM FORMING DETAIL

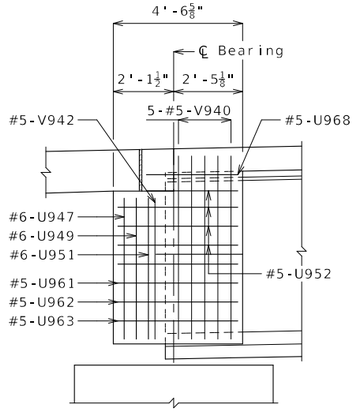
(Looking Ahead)
(Horizontal dimensions shown are normal to ℄ Girder)



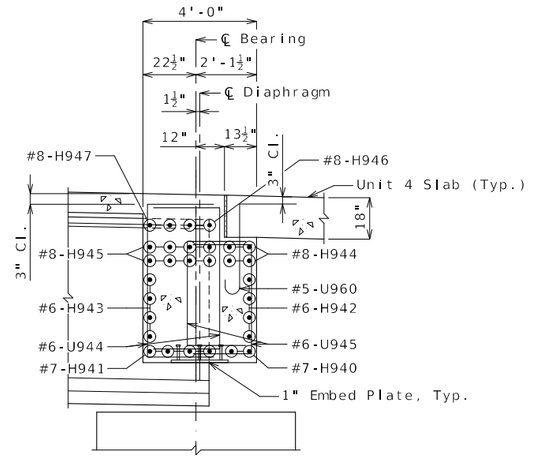
SECTION B-B



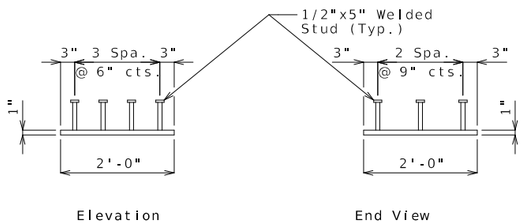
ELEVATION C-C



ELEVATION D-D



SECTION E-E



EMBED PLATE DETAIL

Galvanize the embed plates (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the embed plates (ASTM A709 Grade 36) will be considered completely covered by the contract unit price for other items in the contract.

Notes:

For locations of Sections B-B & E-E and Elevations C-C & D-D. see Sheet No. 71.

For Unit 4 slab details, see Sheets No.88 and 92.

Slab reinforcing not shown for clarity.

e.e. denotes each end

f.f. denotes far face

n.f. denotes near face

C.I.P. DIAPHRAGM DETAILS INTERMEDIATE BENT NO. 9

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2018000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	72

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

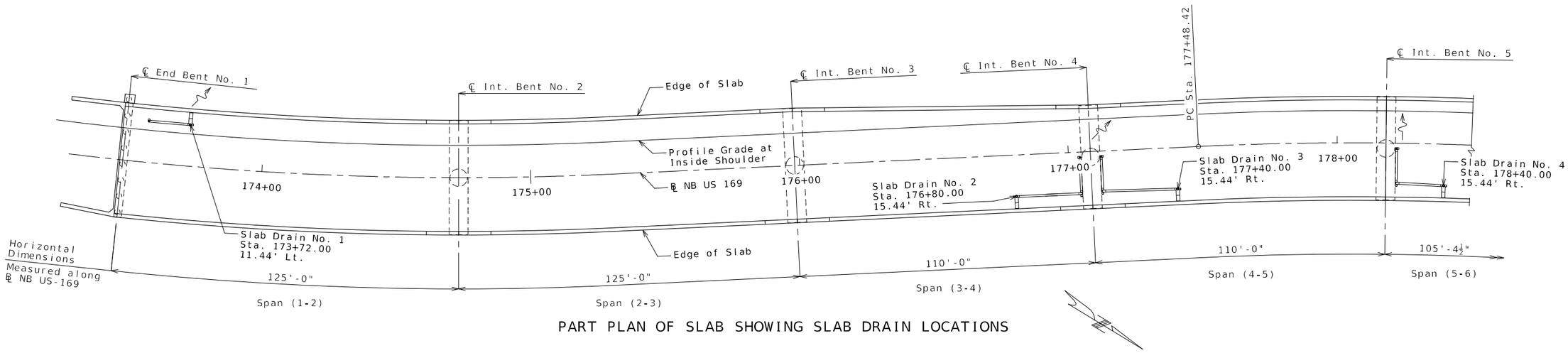
BRIDGE NO.
A9606

DESCRIPTION	DATE

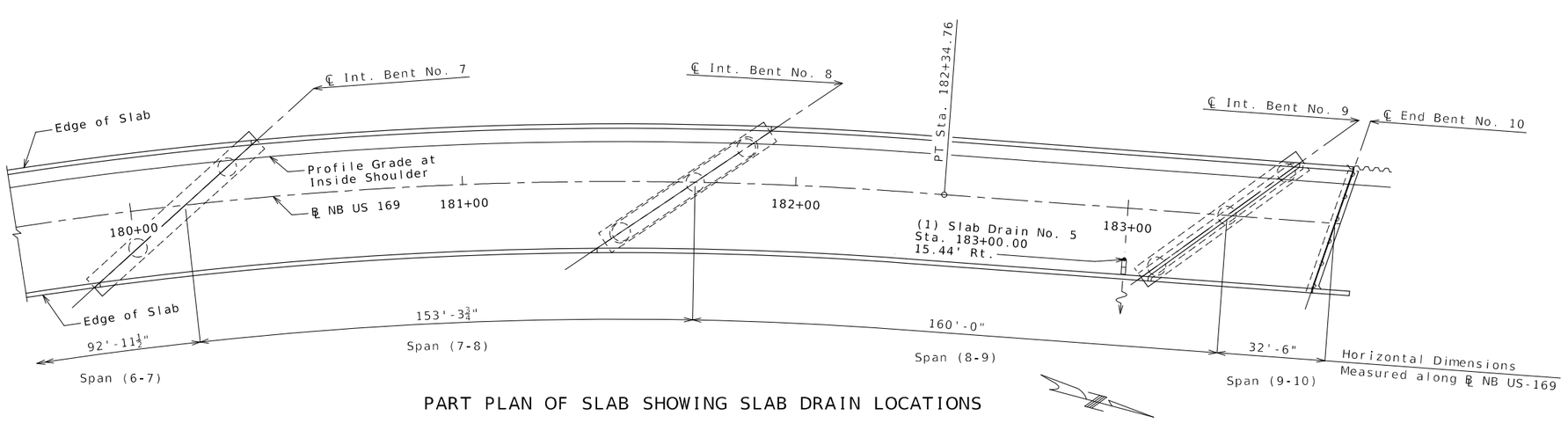
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



PART PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



PART PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

Notes:
All Stations are along ℄ NB US-169 unless noted otherwise.

Drain stations are measured to centerline of drain. Drain offsets are measured to ℄ Pipe of Drainage System conduit piping. See Slab Drain Orientation Detail on Sheet No. 74.

For slab drain details, see Sheets No. 74 and 75.

(1) Contractor shall align drain pipe with precast drop inlet, see Sheet No. 73 for details.

SLAB DRAIN AND DRAIN SYSTEM DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	73

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

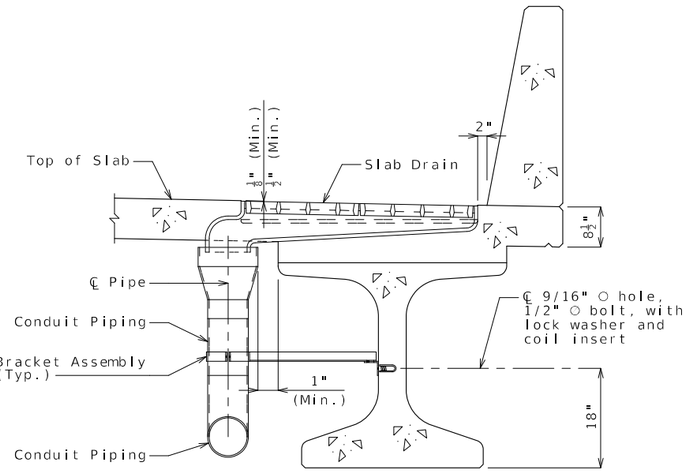
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

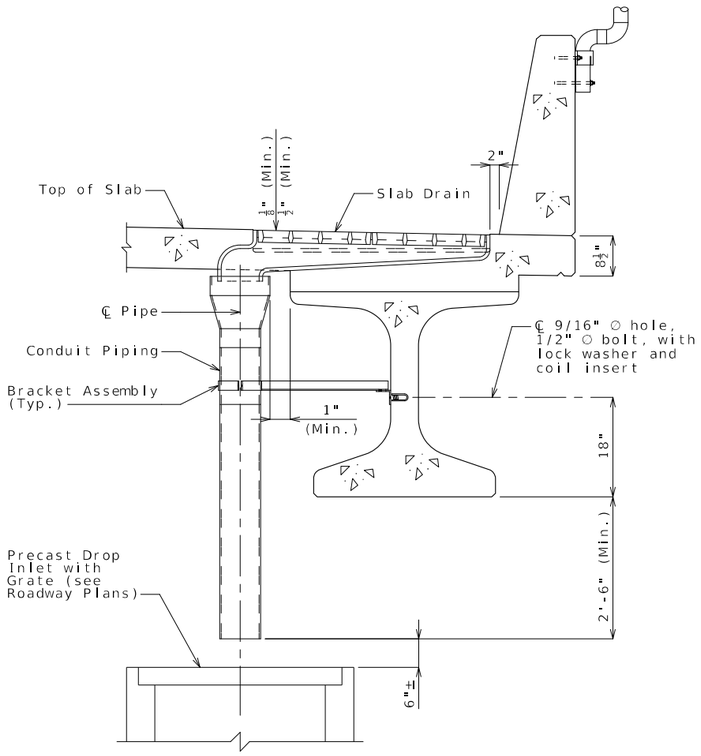
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



PART SECTION WITH CONDUIT PIPING

Drain No. 1 - 4



PART SECTION WITH CONDUIT PIPING

Drain No. 5

General Notes:

Slab drains shall be Neenah R-3951 or approved equal. Pipe shall be FRP.

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

For drain numbers and locations, including station and offsets, see Sheet No. 73.

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

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

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

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

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

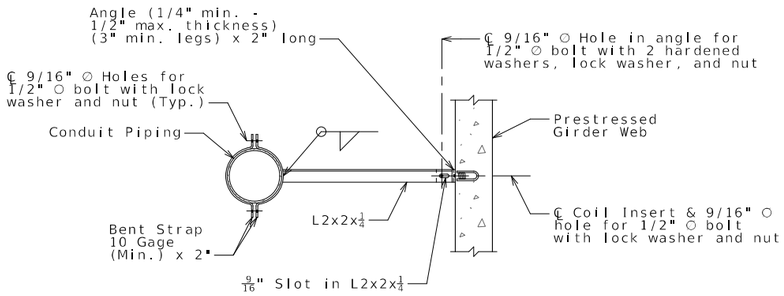
The coil insert required for the bracket assembly attachment shall be located on the prestressed girder shop drawings.

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

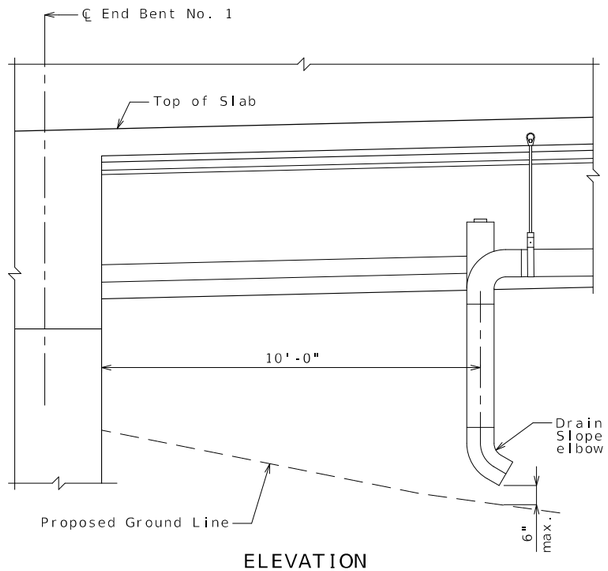
The bolts required to attach the slab drain bracket assembly to the prestressed girder web shall be supplied by the prestressed girder fabricator.

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

See Sheet No. 75 for additional bracket assembly locations associated with conduit piping runs.



PART SECTION SHOWING BRACKET ASSEMBLY



ELEVATION

Slab Drain No. 1 at End Bent No. 1
Pipe straight down.

Notes for FRP Pipe and Conduit Piping:

Conduit piping inner diameter shall meet or exceed Slab Drain outlet.

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

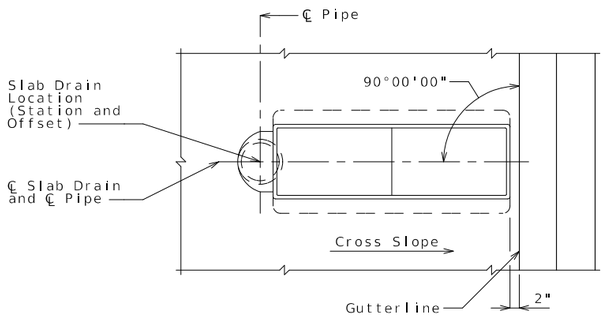
Minimum reinforced wall thickness shall be 1/4 inch.

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

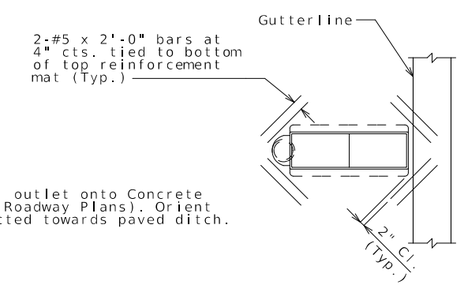
The color of the pipe shall be Gray (Federal Standard #26373). The color shall be uniform throughout the resin and any coating used.

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

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



SLAB DRAIN ORIENTATION DETAIL



REINFORCEMENT DETAIL AT SLAB DRAIN

SLAB DRAIN AND DRAIN SYSTEM DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	74

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

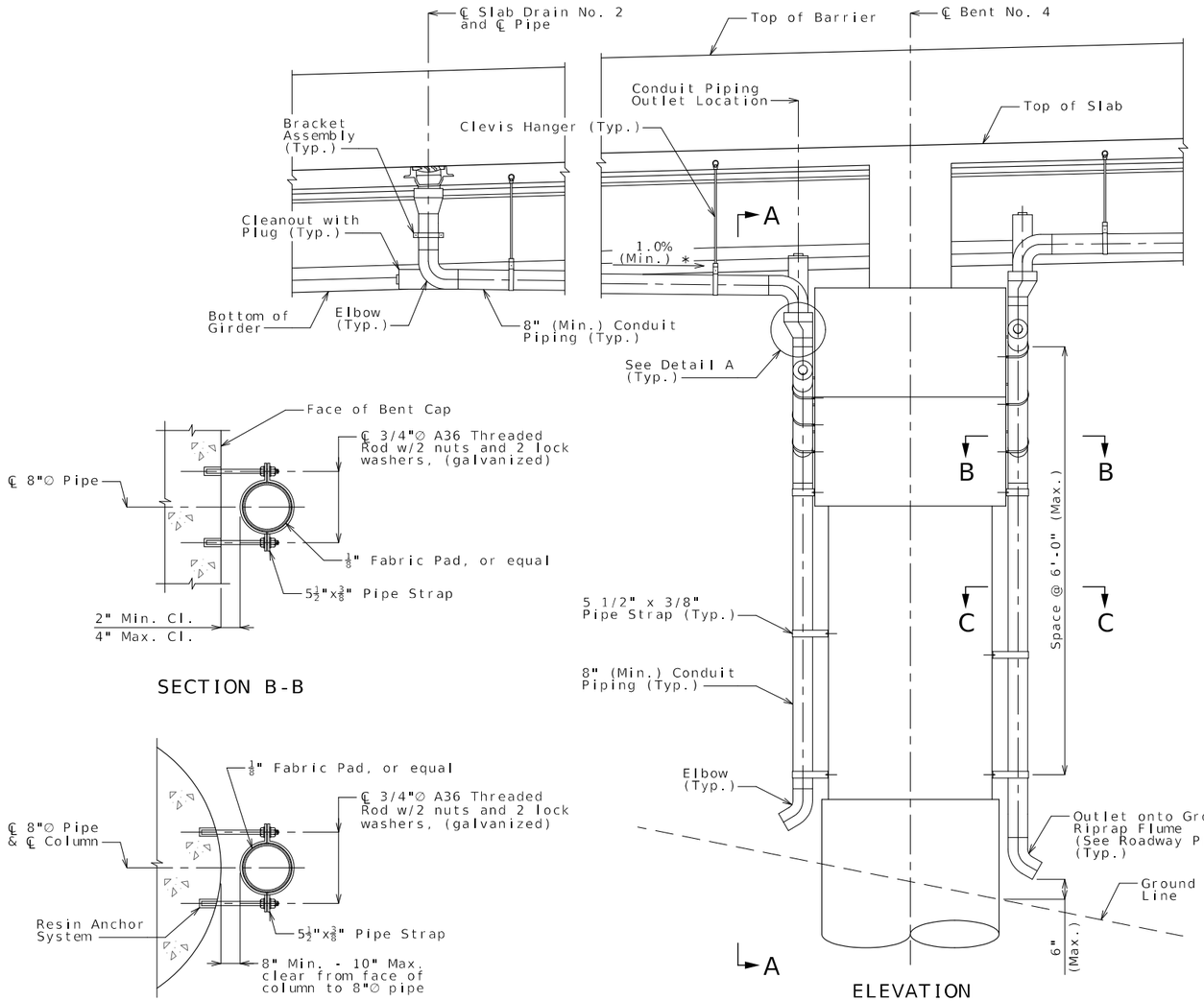
DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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ELEVATION

Span (3-4) with Drain No. 2 shown, Drains 3 & 4 similar
Looking West

SECTION B-B

SECTION C-C

NOTES:

Pipe supports shall be ASTM A709 Grade 36 steel and shall be galvanized in accordance with ASTM A123.

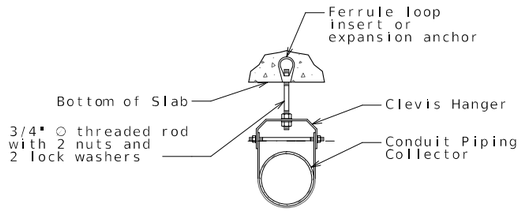
All threaded rods, clevis hangers, bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

8" Collector pipes shall be FRP conforming to the notes for FRP Pipe on Sheet No. 74.

For drain details and general notes, see Sheet No. 74.

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

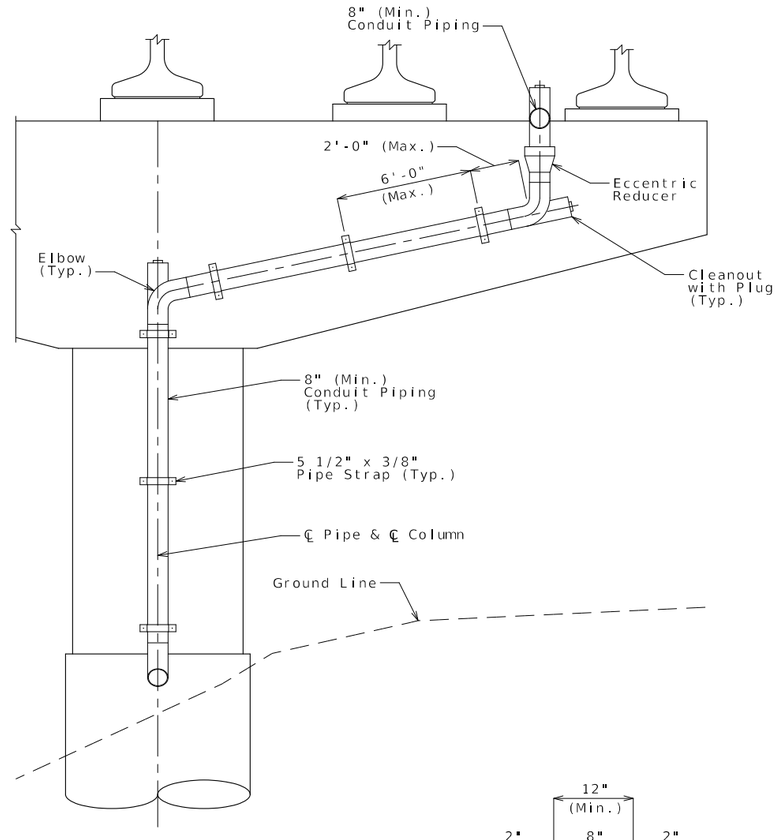
Payment for the work necessary to complete the drainage system, including all material (slab drain scuppers, bracket assemblies, pipe supports, concrete anchorages, drain pipes), labor, tools, equipment and incidentals will be considered completely covered by the contract lump sum price for Drainage System (On Structure).



CLEVIS HANGER DETAIL

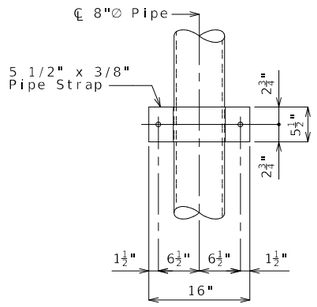
Pipe hanger assemblies shall be composed of a galvanized heavy duty clevis hanger supported by a 3/4" diameter A36 galvanized threaded steel rod and a galvanized threaded insert cast into the bottom of the concrete slab. The cast-in-place insert shall have a minimum safe working tensile capacity of 2,000 pounds. The hanger assemblies shall be spaced at a maximum of 8'-0" on center. Galvanizing shall be in accordance with ASTM A153 and ASTM A123 as appropriate.

* Pipe slope shall be as steep as practical for the girder geometry and permissible bracket locations. Deflection due to weight of conduit piping and water shall be included when determining maximum clevis hanger spacing. Localized sag resulting in a slope less than the minimum noted is not allowed.

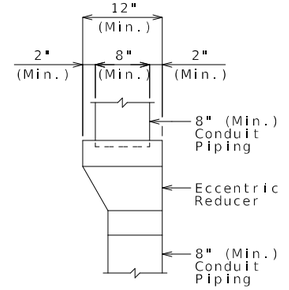


SECTION A-A

Partial Elevation of Bent No. 4, other intermediate bents similar
Looking Ahead Station



STRAP ELEVATION



DETAIL A

SLAB DRAIN AND DRAIN SYSTEM DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	75

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

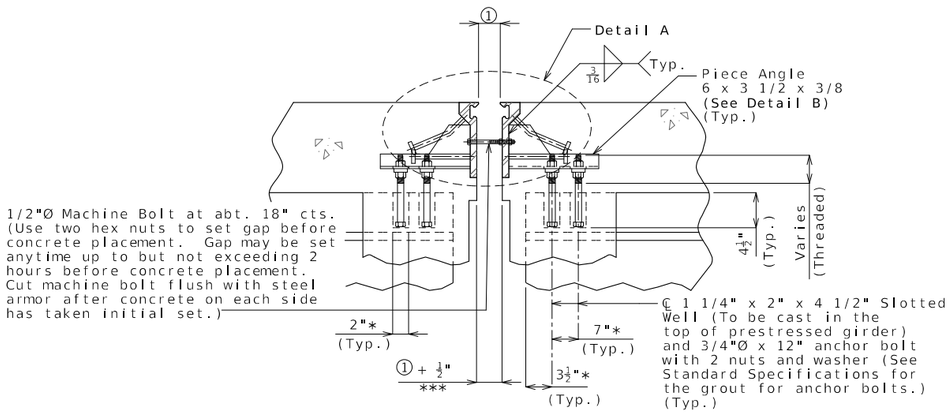
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

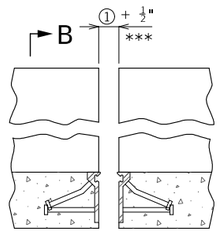
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



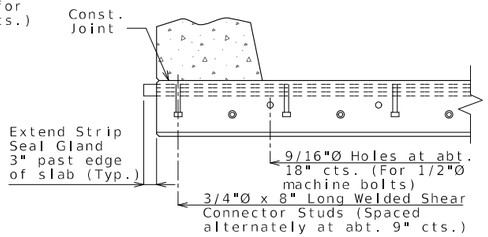
SECTION A-A

Strip seal gland not shown for clarity.
* Dimension along ℄ Girder

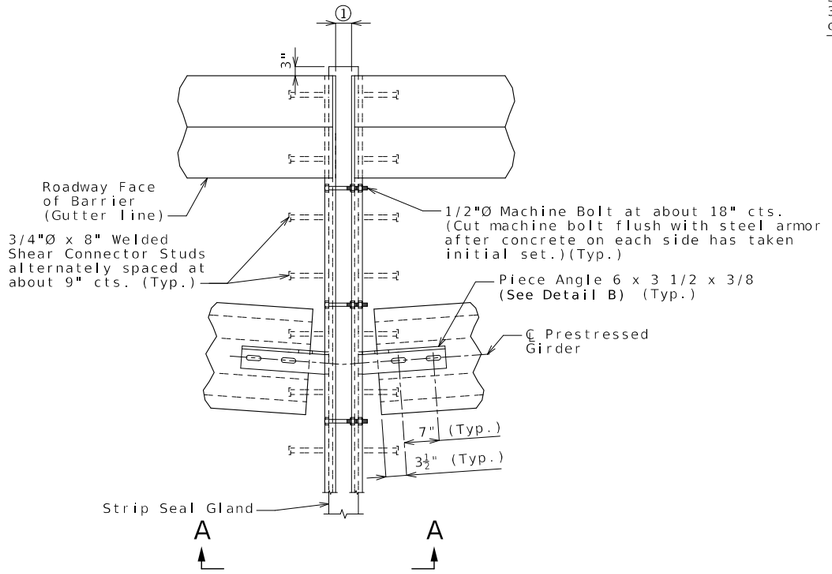


PART ELEVATION OF BARRIER

Strip seal gland not shown for clarity.



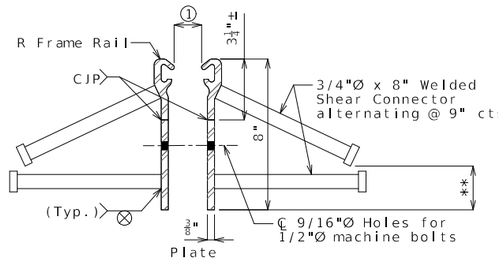
PART SECTION B-B



PART PLAN

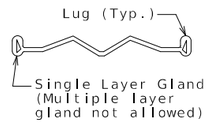
DETAIL OF JOINT ARMOR

(P Rail)

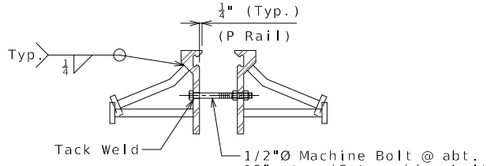


** Bend stud in shop if necessary to maintain 1" min. from bottom of vertical plate.

OPTIONAL R RAIL DETAIL

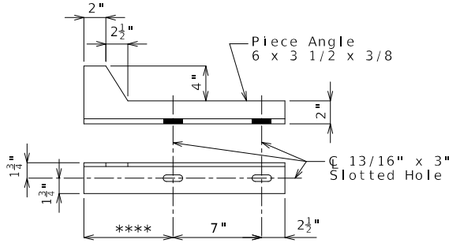


DETAIL OF GLAND



DETAIL A

(P Rail shown, R Rail similar)



**** $10\frac{3}{4}$" Span (4-5)
13" Span (5-6)

DETAIL B

Table of Allowed Transverse Strip Seal Expansion Joint System

Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	① Normal to Joint at RDWY Surface @ Air/Surface Temperature ②						③
			@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
D S Brown	Strip seal L2-500	3⅞"	3⅛"	2 13/16"	2½"	2 3/16"	1⅞"	1½"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-500	3⅞"	3⅛"	2 13/16"	2½"	2 3/16"	1⅞"	1½"	☐

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail. The terms P and R rail are used for identification only, and are not endorsements for any particular manufacturer.

*** Because of variation in armor dimensions, the concrete opening will vary if the optional R rail is used. Dimensions shown are based on the P rail option.

Detailed: Oct. 2025
Checked: Oct. 2025

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

STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO. 5

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	76

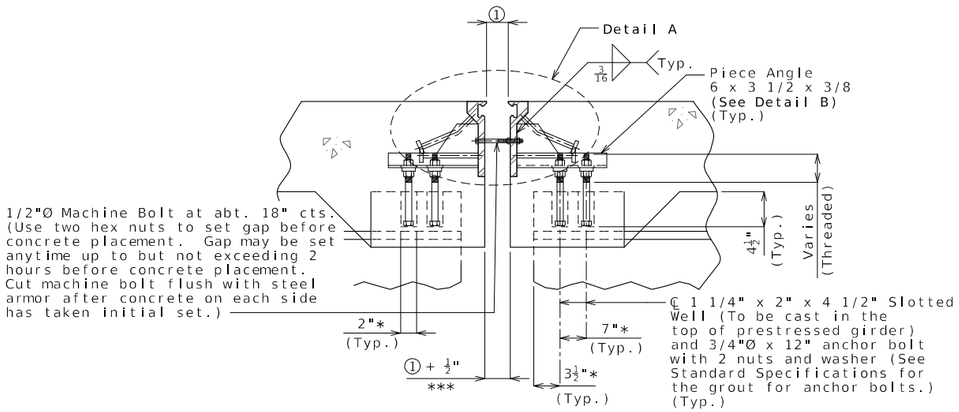
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

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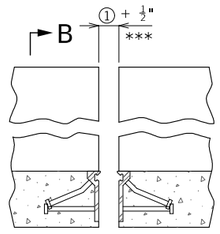
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



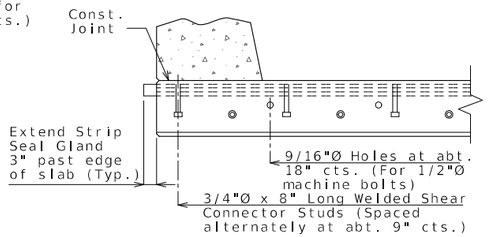
SECTION A-A

Strip seal gland not shown for clarity.
* Dimension along ℄ Girder

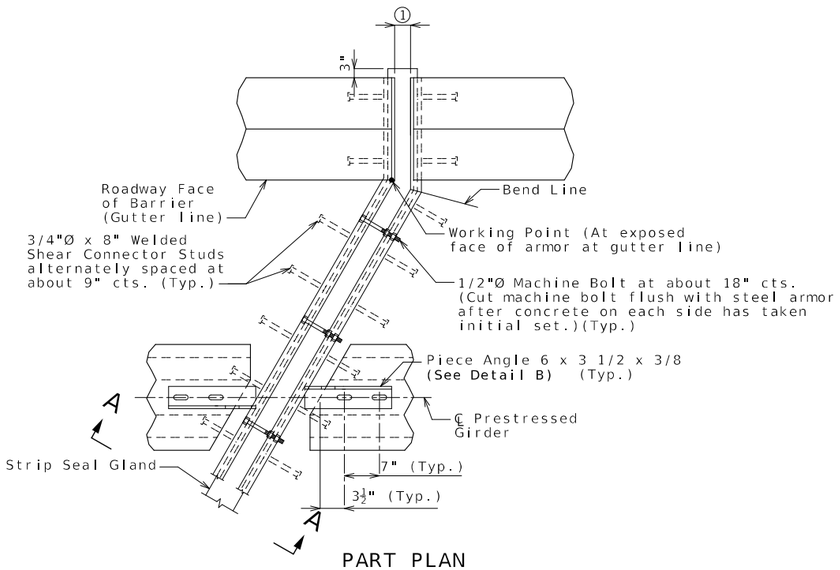


PART ELEVATION OF BARRIER

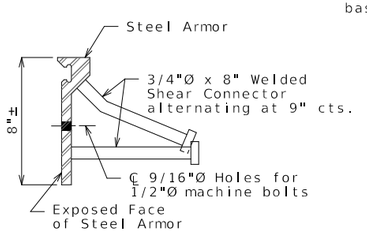
Strip seal gland not shown for clarity.



PART SECTION B-B

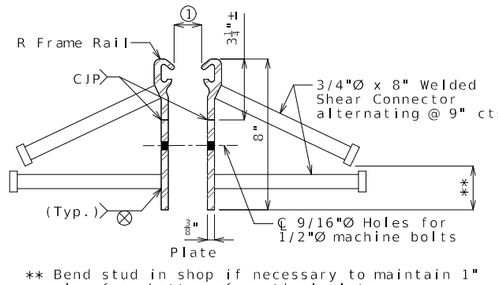


PART PLAN



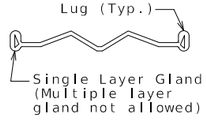
DETAIL OF JOINT ARMOR

(P Rail)

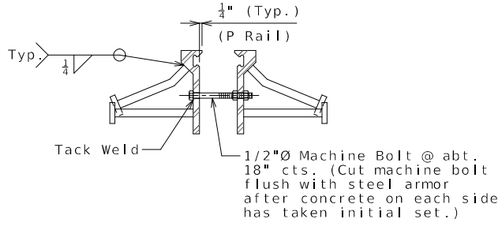


** Bend stud in shop if necessary to maintain 1" min. from bottom of vertical plate.

OPTIONAL R RAIL DETAIL

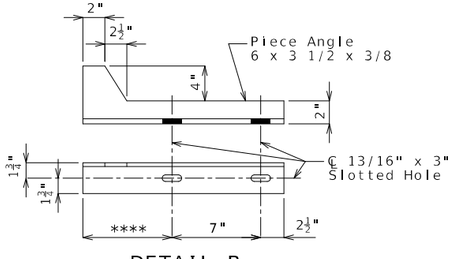


DETAIL OF GLAND



DETAIL A

(P Rail shown, R Rail similar)



**** 18½" Span (6-7)
16" Span (7-8)

DETAIL B

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail. The terms P and R rail are used for identification only, and are not endorsements for any particular manufacturer.

*** Because of variation in armor dimensions, the concrete opening will vary if the optional R rail is used. Dimensions shown are based on the P rail option.

Table of Allowed Transverse Strip Seal Expansion Joint System

Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	Allowed Installation Gap ① Normal to Joint at RDWY Surface @ Air/Surface Temperature ②						③
			@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
D S Brown	Strip seal L2-500	2¾"	2⅛"	2"	1⅞"	1¾"	1⅝"	1½"	☐

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Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Detailed: Oct. 2025
Checked: Oct. 2025

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

STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO. 7

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

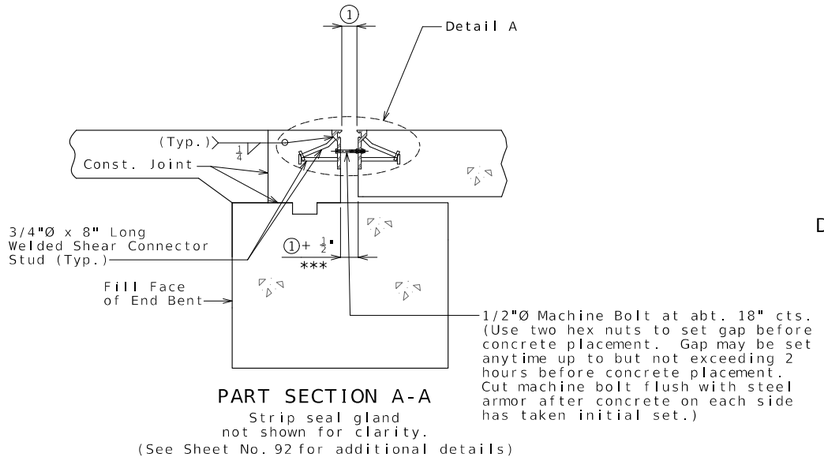
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	77

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION	DATE

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

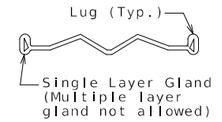
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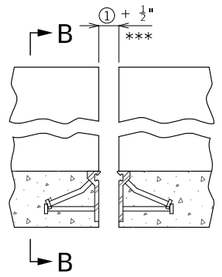
PART SECTION A-A

Strip seal gland
not shown for clarity.

(See Sheet No. 92 for additional details)

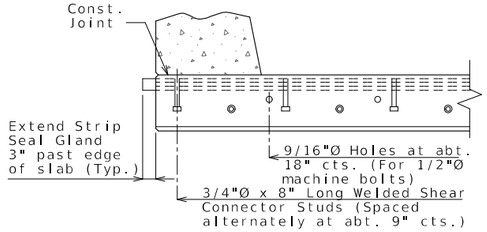


DETAIL OF GLAND

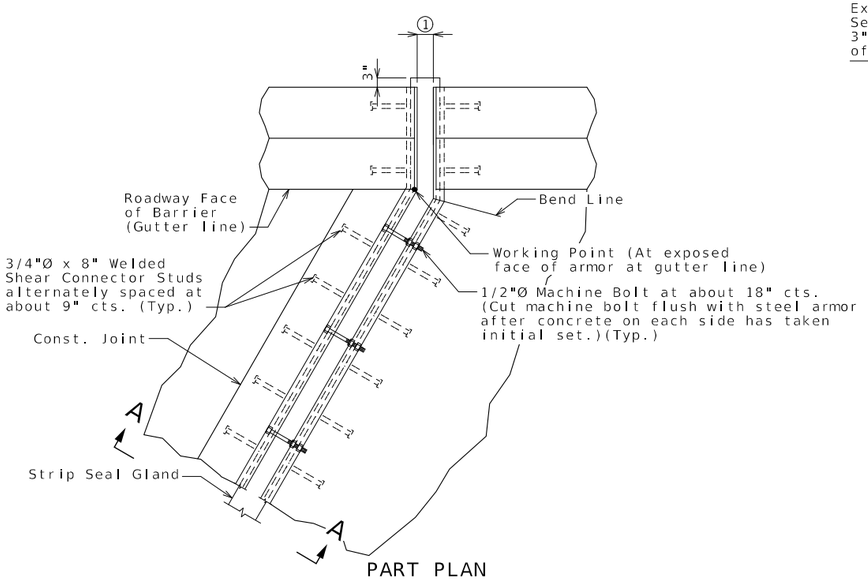


PART ELEVATION
OF BARRIER

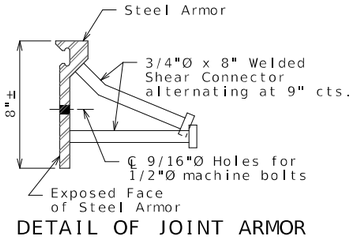
Strip seal gland
not shown for clarity.



PART SECTION B-B

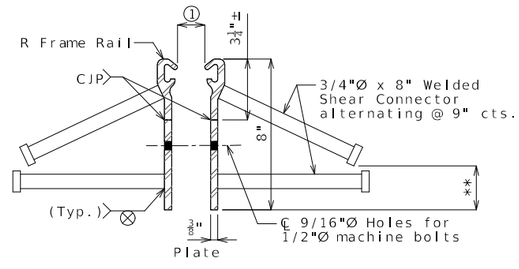


PART PLAN



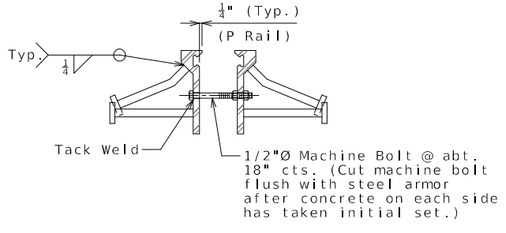
DETAIL OF JOINT ARMOR

(P Rail)



** Bend stud in shop if necessary to maintain 1" min. from bottom of vertical plate.

OPTIONAL R RAIL DETAIL



DETAIL A

(P Rail shown, R Rail similar)

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

The terms P and R rail are used for identification only, and are not endorsements for any particular manufacturer.

*** Because of variation in armor dimensions, the concrete opening will vary if the optional R rail is used. Dimensions shown are based on the P rail option.

Table of Allowed Transverse Strip Seal Expansion Joint System

Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	① Allowed Installation Gap Normal to Joint at RDWY Surface @ Air/Surface Temperature ②						③
			@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
D S Brown	Strip seal L2-400	1 5/8"	2 1/4"	2 1/8"	2"	1 7/8"	1 3/4"	1 5/8"	☐
D S Brown	Strip seal L2-500	1 5/8"	2 1/4"	2 1/8"	2"	1 7/8"	1 3/4"	1 5/8"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-400	1 5/8"	2 1/4"	2 1/8"	2"	1 7/8"	1 3/4"	1 5/8"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-500	1 5/8"	2 1/4"	2 1/8"	2"	1 7/8"	1 3/4"	1 5/8"	☐

STRIP SEAL EXPANSION JOINT SYSTEM AT END BENT NO. 10

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	78

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.

PROJECT NO.

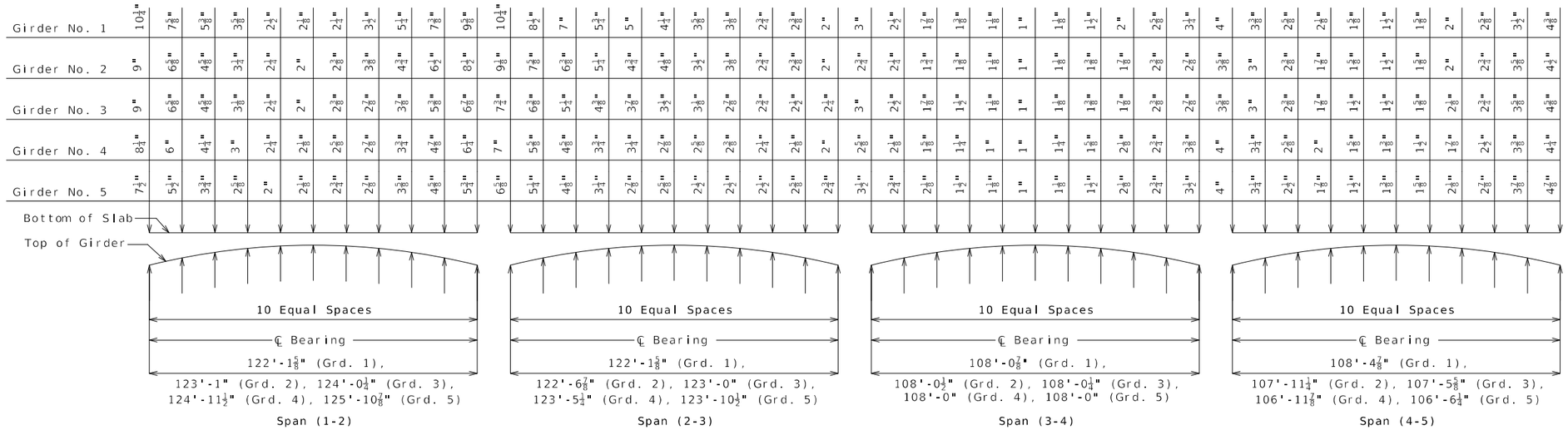
BRIDGE NO.: A9606

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)

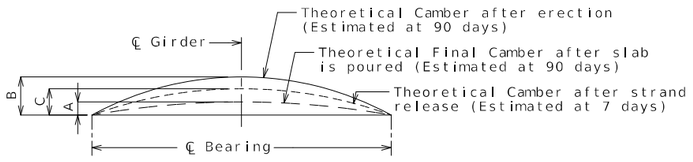
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



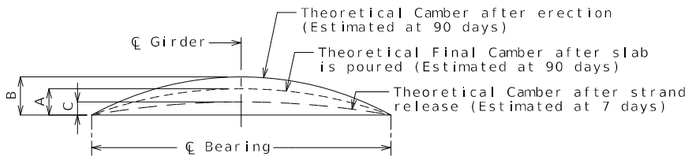
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. The haunch shall be limited to ensure the projecting girder reinforcement or hairpin bar is embedded into slab at least 2 inches. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU-Girder.



CAMBER DIAGRAM FOR
SPAN (2-3) GIRDERS 2-4



CAMBER DIAGRAM FOR SPAN
(1-2), SPAN (2-3) GIRDERS 1 & 5,
SPAN (3-4), AND SPAN (4-5)

Girder	Span (1-2)			Span (2-3)			Span (3-4)			Span (4-5)		
	A	B	C	A	B	C	A	B	C	A	B	C
1	4½"	7"	4"	3⅝"	6"	3⅜"	4"	6⅜"	3⅝"	3⅞"	6⅜"	3⅝"
2	4⅛"	7"	4"	3"	6"	3⅜"	3⅝"	6⅜"	3⅝"	3¾"	6⅜"	3⅜"
3	4⅛"	7"	4"	3"	6"	3⅜"	3⅝"	6⅜"	3⅜"	3¾"	6⅜"	3⅜"
4	4"	7⅛"	4"	3"	6"	3⅜"	3⅝"	6⅜"	3⅝"	3⅞"	6⅜"	3⅜"
5	4⅛"	7⅛"	4"	3⅜"	6"	3⅜"	4"	6⅜"	3⅝"	4⅛"	6⅜"	3⅜"

GIRDER CAMBER DIAGRAM

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

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

GIRDER CAMBER AND SLAB HAUNCHING - UNIT 1

THOMAS M. GREER
NUMBER PE-2010000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	79

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

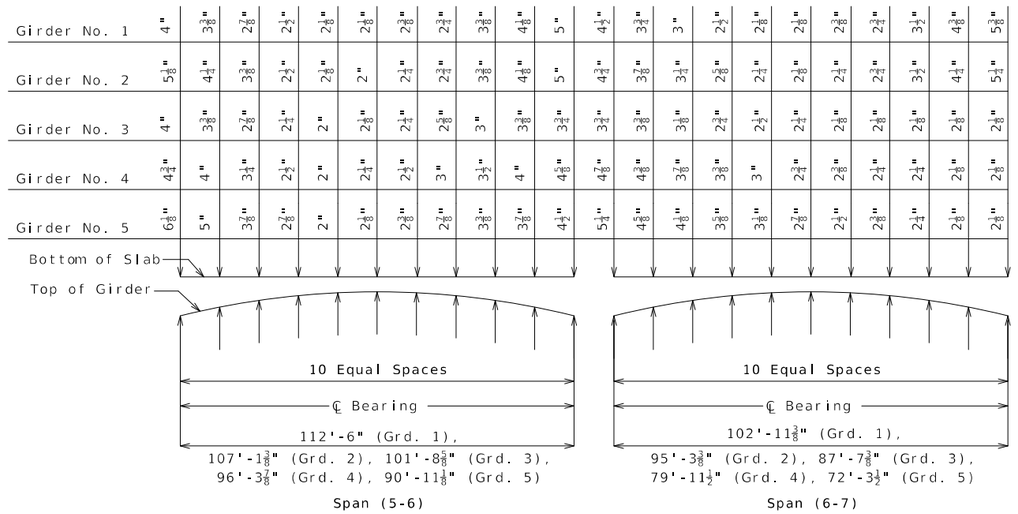
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

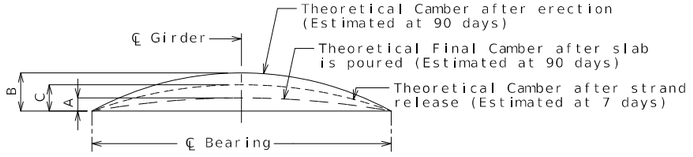
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



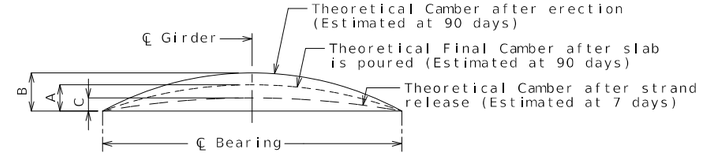
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. The haunch shall be limited to ensure the projecting girder reinforcement or hairpin bar is embedded into slab at least 2 inches. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU-Girder.



CAMBER DIAGRAM FOR
SPAN (5-6) GIRDER 3



CAMBER DIAGRAM FOR SPAN (5-6)
GIRDERS 1-2 & 4-5 AND SPAN (6-7)

Girder	Span (5-6)			Span (6-7)		
	A	B	C	A	B	C
1	3¼"	5"	2¾"	3⅜"	4⅝"	2⅝"
2	3¼"	4¾"	2¾"	3⅜"	4¼"	2⅜"
3	1½"	2¾"	1⅝"	1"	1¾"	1"
4	1¾"	2¾"	1½"	1⅛"	1⅝"	⅞"
5	1⅞"	2⅝"	1½"	1¼"	1½"	⅞"

GIRDER CAMBER DIAGRAM

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

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

GIRDER CAMBER AND SLAB HAUNCHING - UNIT 2

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010002026
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	80

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

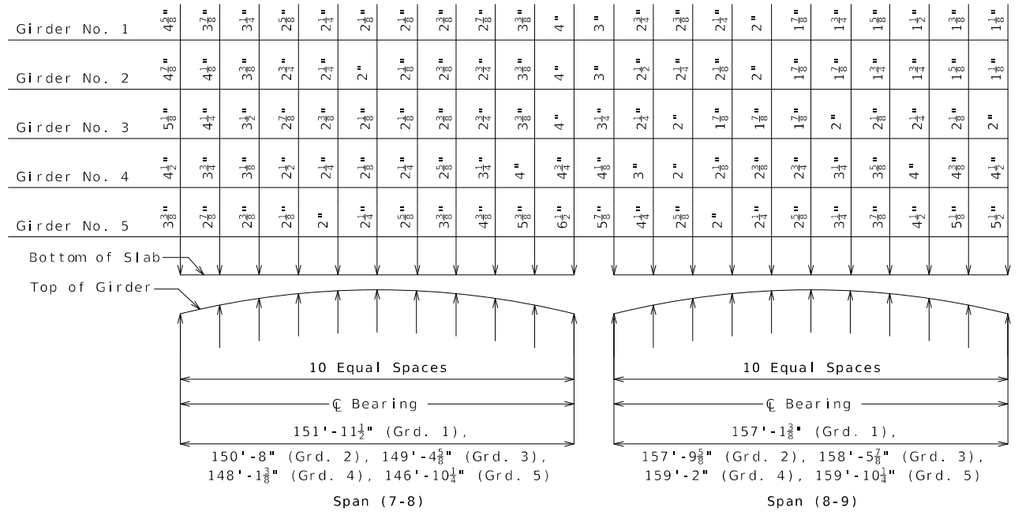
PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

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

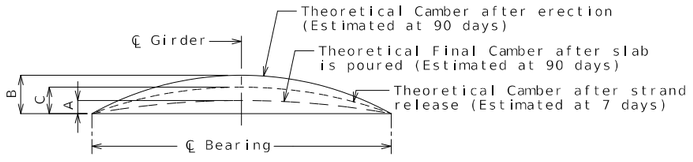
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



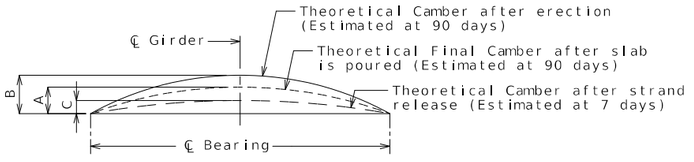
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. The haunch shall be limited to ensure the projecting girder reinforcement or hairpin bar is embedded into slab at least 2 inches. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU-Girder.



CAMBER DIAGRAM FOR SPAN (8-9)



CAMBER DIAGRAM FOR SPAN (7-8)

Girder	Span (7-8)			Span (8-9)		
	A	B	C	A	B	C
1	3⅜"	5¾"	3¼"	3⅛"	5¾"	3¼"
2	3½"	5¾"	3¼"	3"	5¾"	3¼"
3	3⅝"	5¾"	3¼"	3"	5¾"	3¼"
4	3⅜"	5¾"	3¼"	2⅞"	5¾"	3¼"
5	3⅞"	5¾"	3¼"	3¼"	5¾"	3¼"

GIRDER CAMBER DIAGRAM

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

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 81 of 132

GIRDER CAMBER AND SLAB HAUNCHING - UNIT 3

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE 169 | STATE MO
DISTRICT BR | SHEET NO. 81
COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION | DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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

Unit 1

Girder Number	Span (1-2) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	772.38	772.88	773.40	773.92	774.45	774.99	775.52	776.08	776.64	777.19	777.74
2	772.91	773.43	773.96	774.49	775.03	775.56	776.09	776.61	777.13	777.65	778.16
3	773.45	773.97	774.50	775.03	775.57	776.10	776.63	777.13	777.62	778.10	778.57
4	773.99	774.50	775.04	775.57	776.11	776.65	777.18	777.64	778.10	778.54	778.99
5	774.52	775.04	775.57	776.10	776.64	777.17	777.71	778.14	778.57	778.99	779.40

Girder Number	Span (2-3) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	777.80	778.43	779.07	779.70	780.34	780.92	781.47	781.99	782.47	782.93	783.37
2	778.22	778.83	779.45	780.06	780.66	781.22	781.74	782.22	782.66	783.08	783.48
3	778.64	779.22	779.81	780.38	780.95	781.48	781.97	782.42	782.84	783.22	783.58
4	779.06	779.61	780.16	780.70	781.24	781.74	782.19	782.61	783.00	783.36	783.69
5	779.48	779.99	780.50	781.00	781.50	781.96	782.39	782.79	783.15	783.49	783.80

Girder Number	Span (3-4) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	783.45	783.94	784.42	784.87	785.30	785.69	786.05	786.38	786.68	786.96	787.21
2	783.55	784.03	784.48	784.92	785.32	785.69	786.02	786.32	786.59	786.83	787.06
3	783.65	784.10	784.53	784.94	785.31	785.65	785.96	786.24	786.48	786.70	786.90
4	783.75	784.17	784.58	784.95	785.30	785.62	785.90	786.15	786.38	786.57	786.75
5	783.86	784.24	784.60	784.95	785.27	785.55	785.81	786.04	786.25	786.43	786.60

Girder Number	Span (4-5) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	787.27	787.65	788.01	788.34	788.65	788.92	789.17	789.39	789.59	789.78	789.95
2	787.12	787.47	787.81	788.12	788.40	788.65	788.87	789.07	789.25	789.40	789.55
3	786.96	787.29	787.60	787.88	788.14	788.37	788.57	788.74	788.89	789.03	789.15
4	786.80	787.10	787.39	787.65	787.88	788.08	788.26	788.41	788.54	788.65	788.75
5	786.65	786.91	787.16	787.39	787.59	787.77	787.93	788.06	788.17	788.27	788.35

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

Unit 2

Girder Number	Span (5-6) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	790.00	790.24	790.46	790.67	790.86	791.04	791.19	791.32	791.44	791.55	791.64
2	789.60	789.80	789.99	790.17	790.34	790.50	790.65	790.78	790.90	791.01	791.11
3	789.20	789.37	789.52	789.66	789.81	789.97	790.12	790.25	790.36	790.47	790.57
4	788.81	788.94	789.06	789.17	789.29	789.44	789.58	789.71	789.83	789.93	790.04
5	788.41	788.51	788.60	788.68	788.77	788.91	789.04	789.17	789.28	789.39	789.50

Girder Number	Span (6-7) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	791.59	791.69	791.79	791.88	791.96	792.02	792.07	792.11	792.14	792.15	792.16
2	791.08	791.17	791.26	791.34	791.41	791.47	791.52	791.56	791.60	791.62	791.64
3	790.57	790.65	790.73	790.81	790.87	790.93	790.98	791.02	791.06	791.09	791.11
4	790.06	790.13	790.21	790.27	790.33	790.39	790.43	790.48	790.51	790.55	790.58
5	789.55	789.61	789.68	789.74	789.79	789.84	789.89	789.93	789.97	790.01	790.04

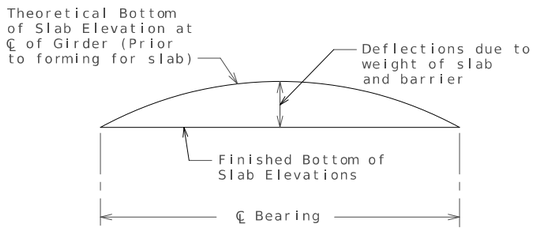
Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

Unit 3

Girder Number	Span (7-8) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	792.16	792.17	792.16	792.14	792.09	792.02	791.92	791.79	791.64	791.47	791.29
2	791.67	791.69	791.70	791.69	791.65	791.59	791.50	791.39	791.26	791.11	790.95
3	791.19	791.22	791.23	791.23	791.21	791.16	791.09	791.00	790.88	790.75	790.60
4	790.69	790.74	790.77	790.78	790.77	790.74	790.68	790.60	790.50	790.38	790.25
5	790.20	790.25	790.29	790.31	790.31	790.29	790.25	790.19	790.11	790.01	789.90

Girder Number	Span (8-9) (℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	791.20	791.05	790.88	790.69	790.46	790.19	789.88	789.52	789.12	788.70	788.25
2	790.87	790.74	790.62	790.47	790.29	790.06	789.80	789.49	789.14	788.75	788.32
3	790.53	790.39	790.30	790.19	790.05	789.88	789.66	789.39	789.09	788.75	788.38
4	790.19	790.06	789.93	789.86	789.76	789.63	789.46	789.25	788.99	788.70	788.38
5	789.85	789.71	789.56	789.46	789.40	789.31	789.19	789.03	788.82	788.59	788.32

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



TYPICAL SLAB ELEVATIONS DIAGRAM

THEORETICAL BOTTOM OF SLAB ELEVATIONS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER — STATE OF MISSOURI — NUMBER PE-2010000206 — PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED: 1/5/2026

ROUTE: 169 | STATE: MO

DISTRICT: BR | SHEET NO.: 82

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.

PROJECT NO.

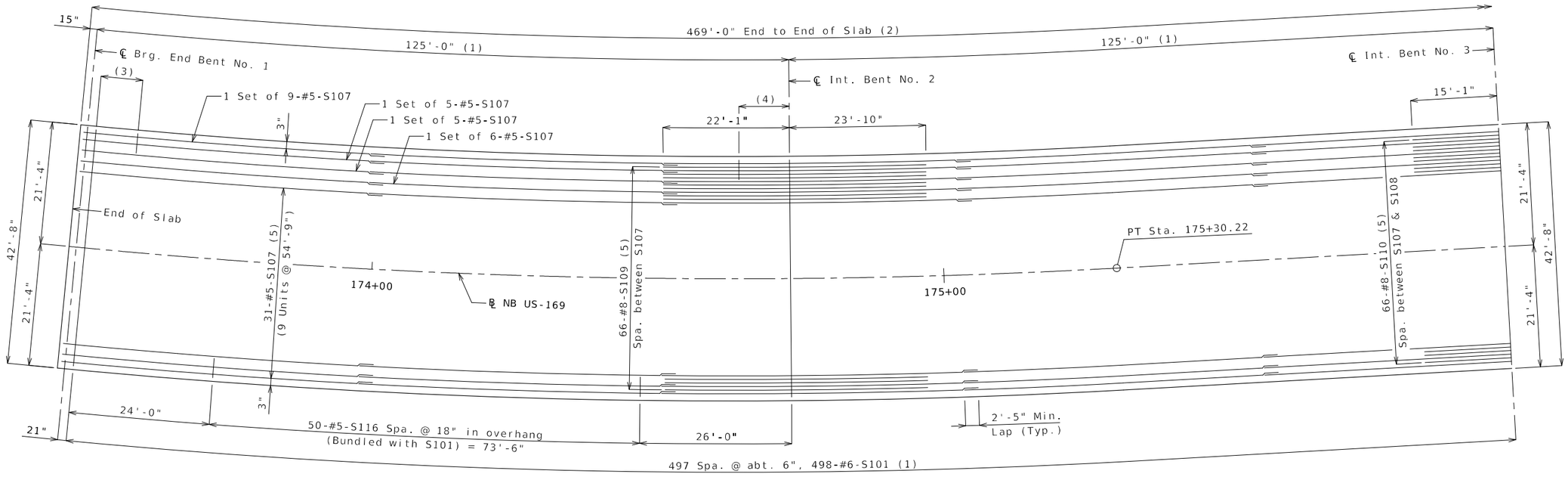
BRIDGE NO.: A9606

DESCRIPTION

DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



SPAN (1-2)

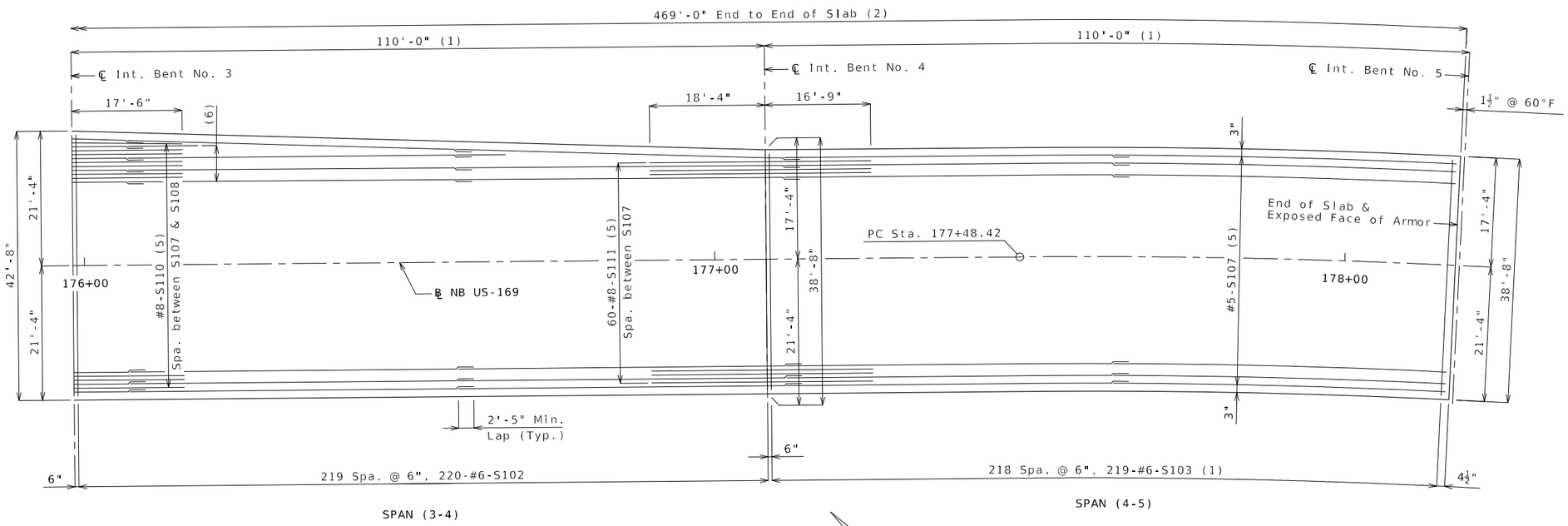
PLAN

SPAN (2-3)

Notes:
All dimensions are horizontal.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

(1) Measured along ℄ NB US-169.
(2) Measured along left edge of slab.
(3) 5-#5-S116 Spa. @ 18" in overhang (Bundled with S101) = 6'-0"
(4) 7-#5-S116 Spa. @ 18" in overhang (Bundled with S101) = 9'-0"
(5) For spacing of longitudinal bars not shown, see Slab Section & Details on Sheet No. 89.
(6) 3-#5-S108 varies bar spliced to #5-S107



SPAN (3-4)

PLAN

SPAN (4-5)

SLAB PLAN - UNIT 1
TOP REINFORCEMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	83

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

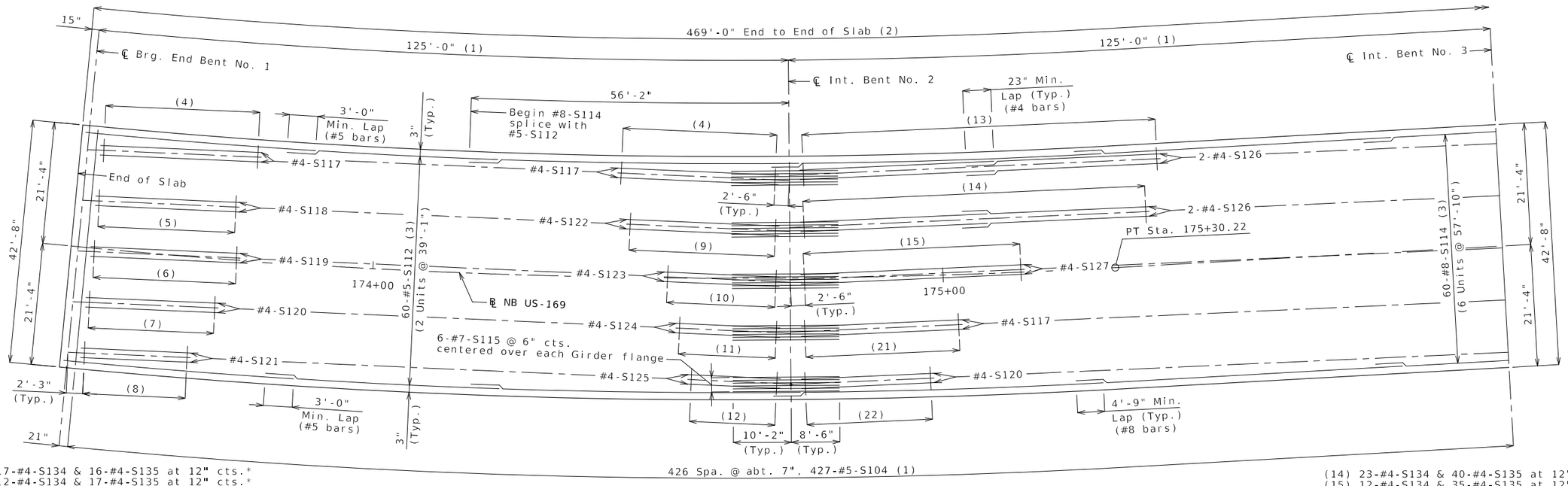
BRIDGE NO.
A9606

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)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

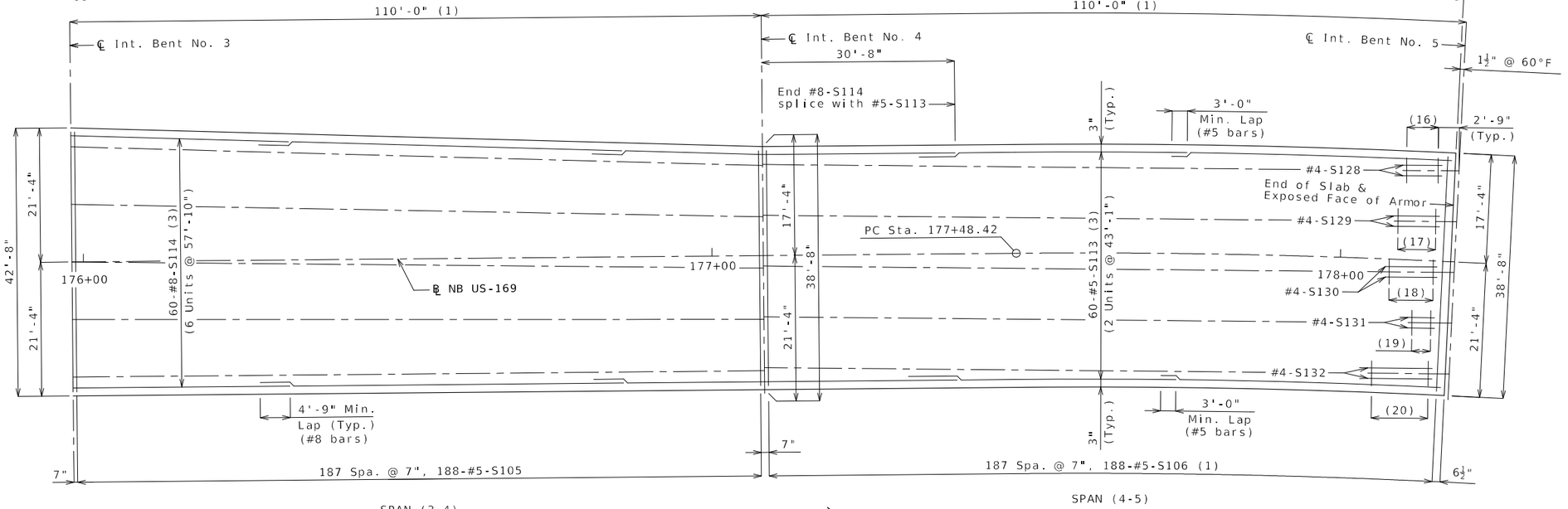


PLAN

(4) 17-#4-S134 & 16-#4-S135 at 12" cts.*
(5) 12-#4-S134 & 17-#4-S135 at 12" cts.*
(6) 12-#4-S134 & 18-#4-S135 at 12" cts.*
(7) 9-#4-S134 & 18-#4-S135 at 12" cts.*
(8) 5-#4-S134 & 18-#4-S135 at 12" cts.*
(9) 13-#4-S134 & 18-#4-S135 at 12" cts.*
(10) 3-#4-S134 & 21-#4-S135 at 12" cts.*
(11) 22-#4-S135 at 12" cts.*
(12) 20-#4-S135 at 12" cts.*
(13) 29-#4-S134 & 36-#4-S135 at 12" cts.*

*Place #4-S134 hairpin bars in haunch starting near end of girder followed by #4-S135 hairpin bars after #4-S134 bars have all been placed.

(14) 23-#4-S134 & 40-#4-S135 at 12" cts.*
(15) 12-#4-S134 & 35-#4-S135 at 12" cts.*
(16) 5-#4-S135 at 12" cts.
(17) 6-#4-S135 at 12" cts.
(18) 7-#4-S135 at 12" cts.
(19) 3-#4-S135 at 12" cts.
(20) 9-#4-S135 at 12" cts.
(21) 5-#4-S134 & 28-#4-S135 at 12" cts.*
(22) 27-#4-S135 at 12" cts.



PLAN

Notes:
All dimensions are horizontal.
(1) Measured along ℄ NB US-169.
(2) Measured along left edge of slab.
(3) For spacing of longitudinal bars not shown, see Slab Section & Details on Sheet No. 89.

SLAB PLAN - UNIT 1
BOTTOM REINFORCEMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	84

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

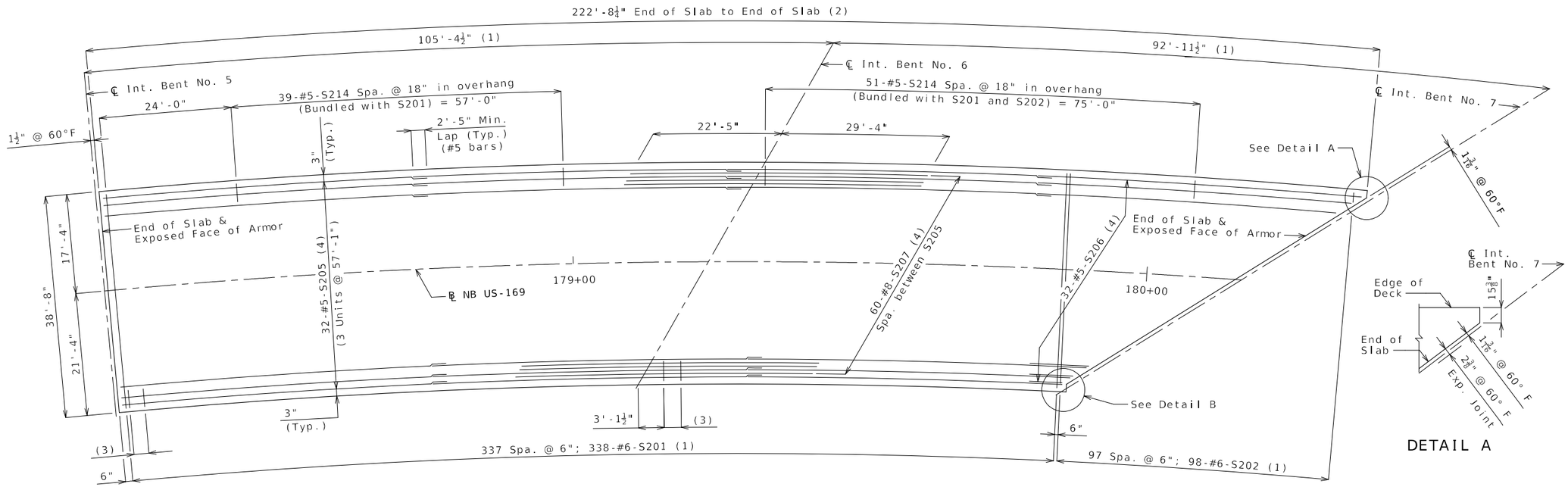
BRIDGE NO.
A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

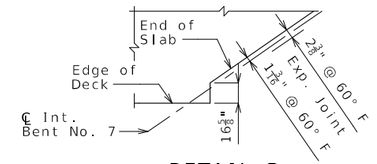
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



PLAN - TOP REINFORCEMENT

DETAIL A

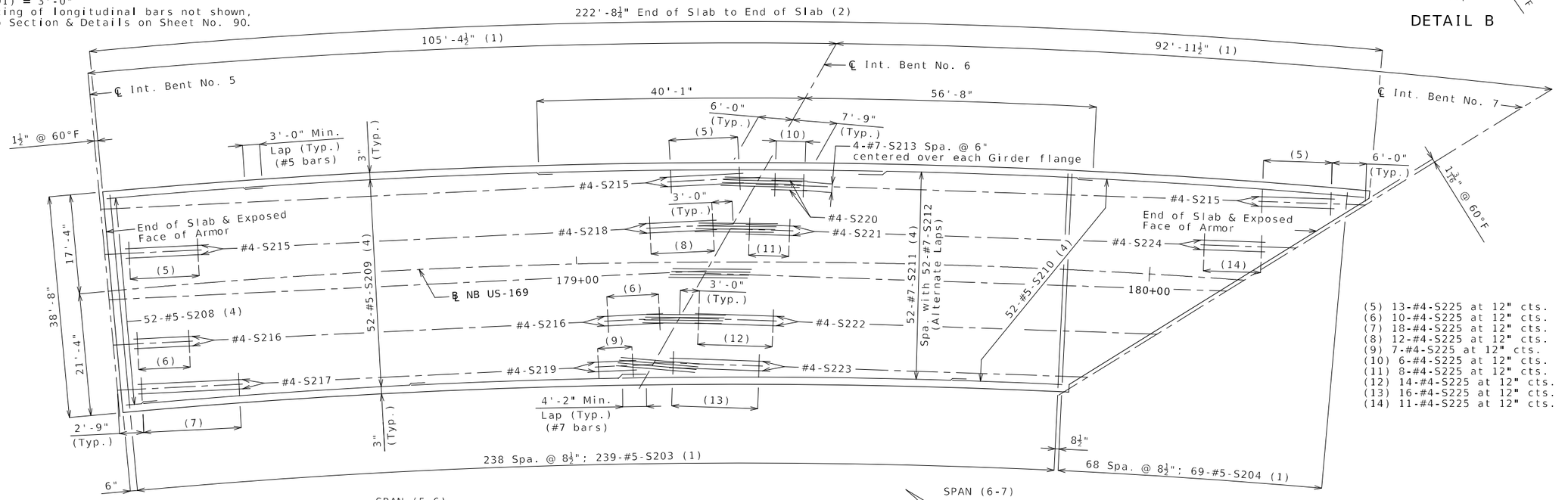


DETAIL B

Notes:
All dimensions are horizontal.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

(1) Measured along ℄ NB US-169.
(2) Measured along left edge of slab.
(3) 3-#5-S214 Spa. @ 18" in overhang (Bundled with S201) = 3'-0"
(4) For spacing of longitudinal bars not shown, see Slab Section & Details on Sheet No. 90.



PLAN - BOTTOM REINFORCEMENT

(5) 13-#4-S225 at 12" cts.
(6) 10-#4-S225 at 12" cts.
(7) 18-#4-S225 at 12" cts.
(8) 12-#4-S225 at 12" cts.
(9) 7-#4-S225 at 12" cts.
(10) 6-#4-S225 at 12" cts.
(11) 8-#4-S225 at 12" cts.
(12) 14-#4-S225 at 12" cts.
(13) 16-#4-S225 at 12" cts.
(14) 11-#4-S225 at 12" cts.

SLAB PLAN - UNIT 2 REINFORCEMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	85

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

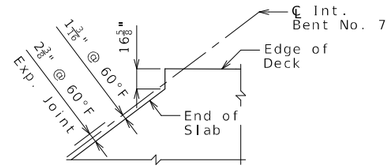
DESCRIPTION

DATE

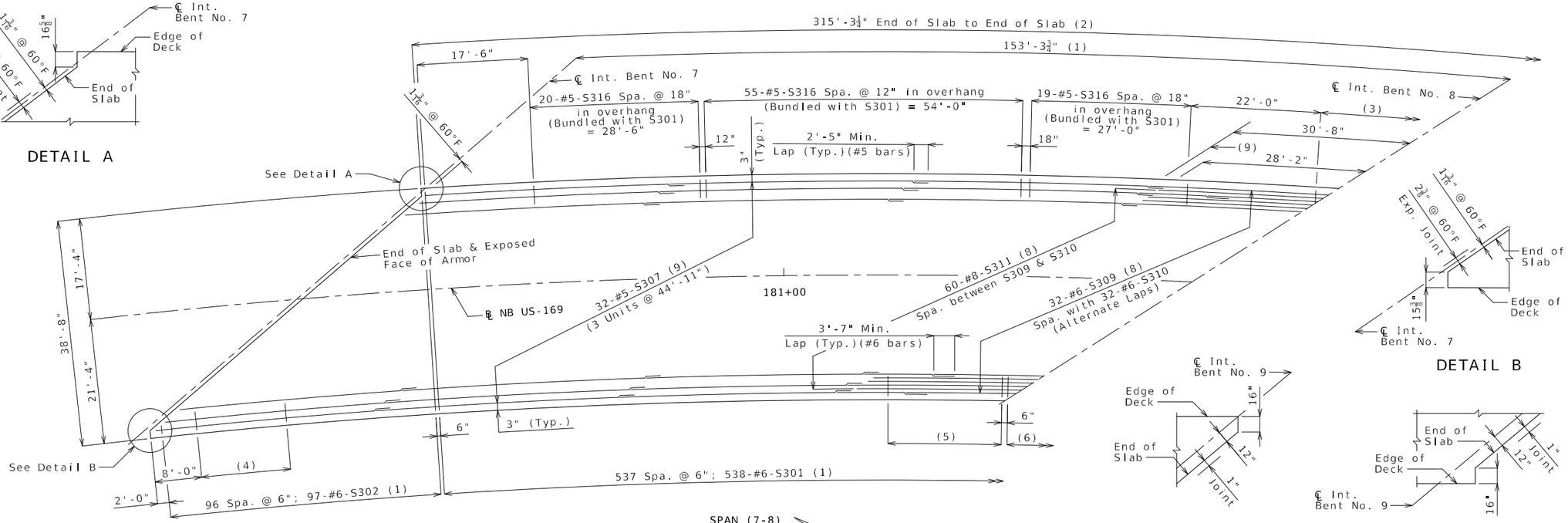
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



DETAIL A



SPAN (7-8)

PLAN

DETAIL B

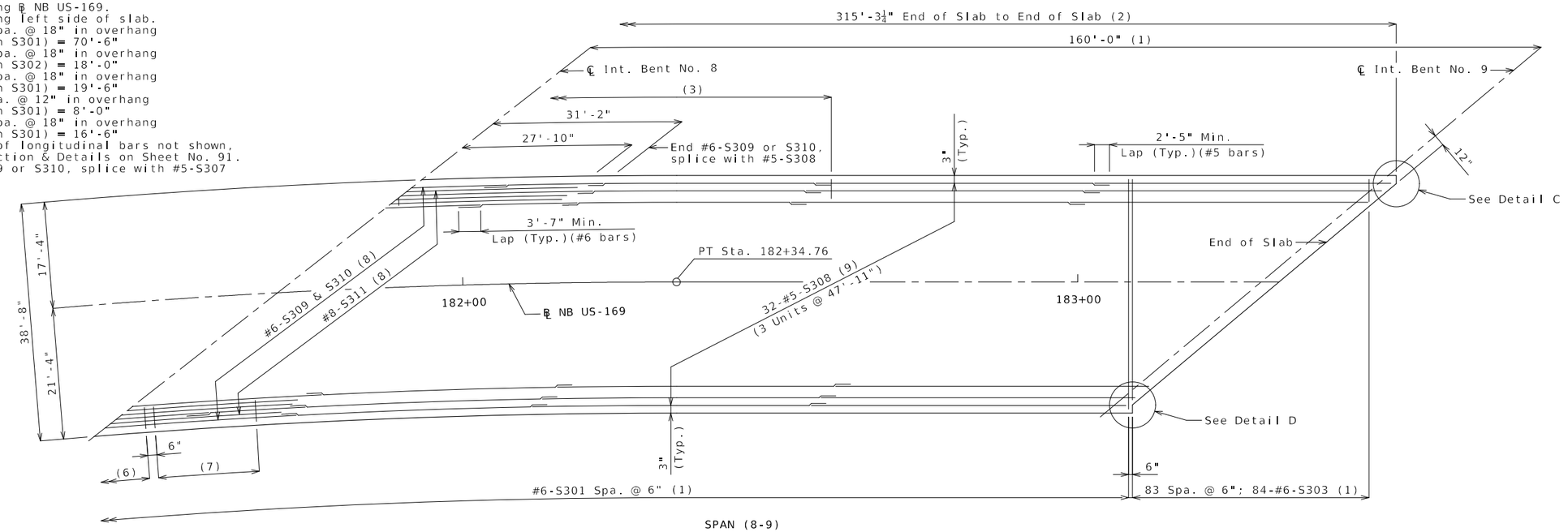
DETAIL C

DETAIL D

Notes:
All dimensions are horizontal.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

(1) Measured along ℄ NB US-169.
(2) Measured along left side of slab.
(3) 48-#5-S316 Spa. @ 18" in overhang
(Bundled with S301) = 70'-6"
(4) 13-#5-S316 Spa. @ 18" in overhang
(Bundled with S302) = 18'-0"
(5) 14-#5-S316 Spa. @ 18" in overhang
(Bundled with S301) = 19'-6"
(6) 9-#5-S316 Spa. @ 12" in overhang
(Bundled with S301) = 8'-0"
(7) 12-#5-S316 Spa. @ 18" in overhang
(Bundled with S301) = 16'-6"
(8) For spacing of longitudinal bars not shown, see Slab Section & Details on Sheet No. 91.
(9) Begin #6-S309 or S310, splice with #5-S307



SPAN (8-9)

PLAN

SLAB PLAN - UNIT 3
TOP REINFORCEMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010020026
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	86

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

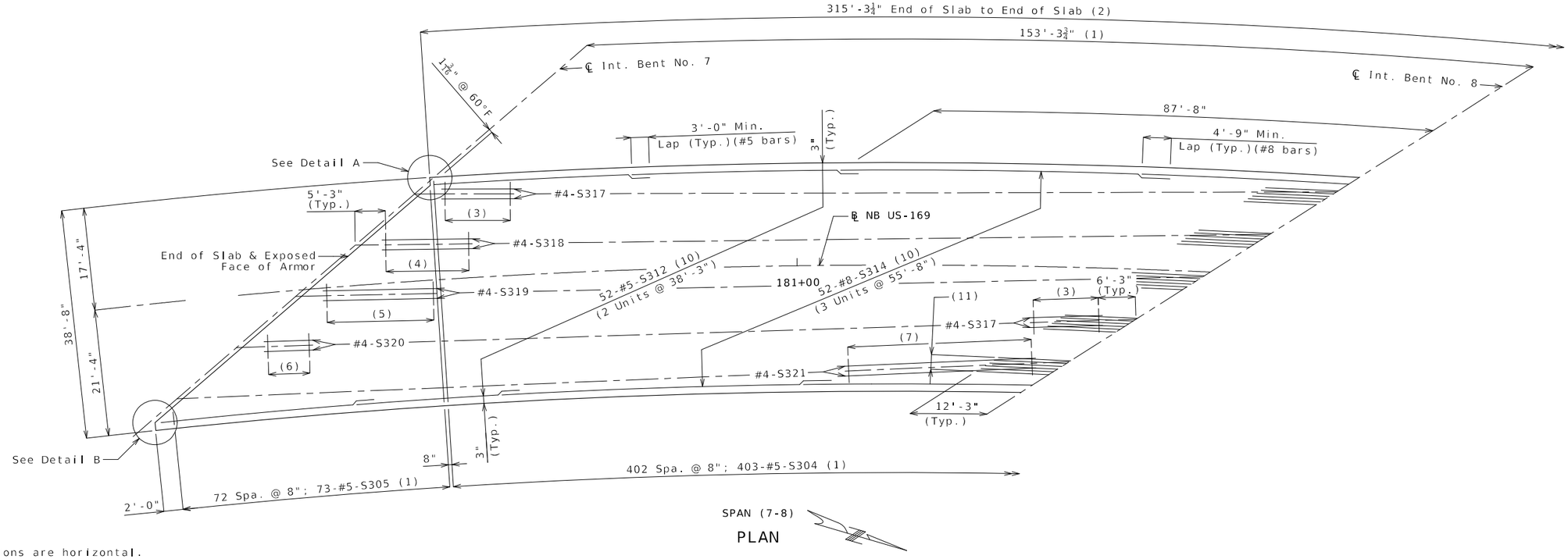
DESCRIPTION

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)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



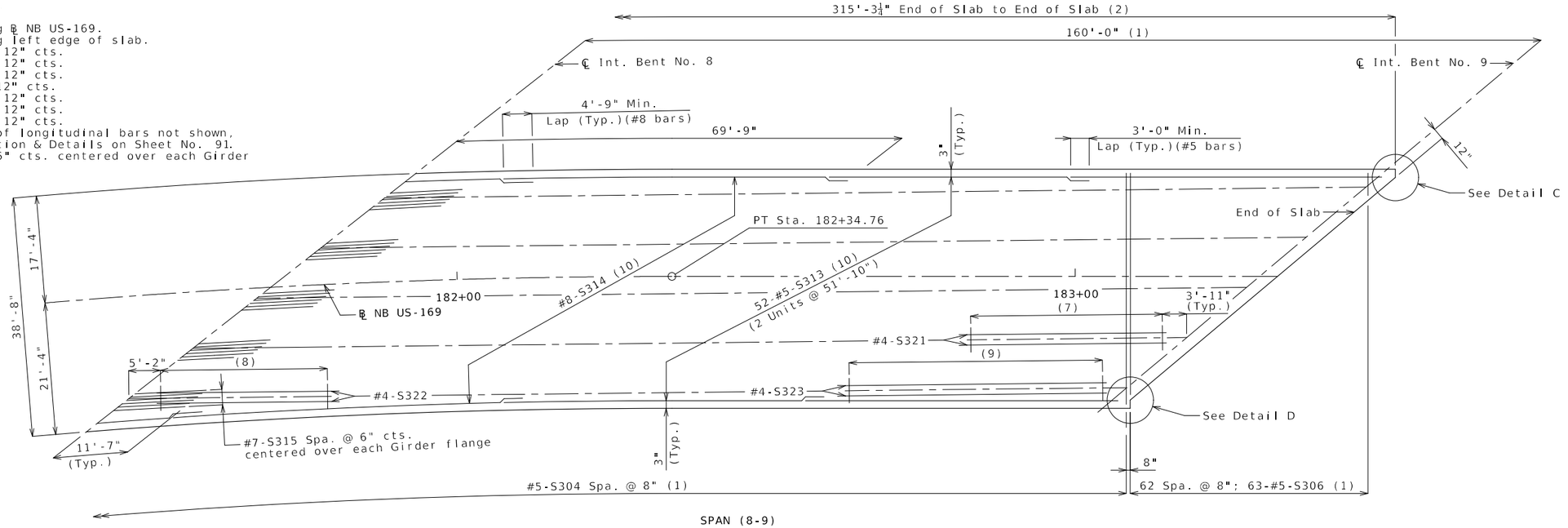
SPAN (7-8)

PLAN

Notes:
All dimensions are horizontal.

For Detail A, Detail B, Detail C, and Detail D, see Slab Plan - Unit 3 Top Reinforcement on Sheet No. 85.

(1) Measured along ℄ NB US-169.
(2) Measured along left edge of slab.
(3) 12-#4-S324 at 12" cts.
(4) 15-#4-S324 at 12" cts.
(5) 19-#4-S324 at 12" cts.
(6) 8-#4-S324 at 12" cts.
(7) 32-#4-S324 at 12" cts.
(8) 16-#4-S324 at 12" cts.
(9) 43-#4-S324 at 12" cts.
(10) For spacing of longitudinal bars not shown, see Slab Section & Details on Sheet No. 91.
(11) 6-#7-S315 @ 6" cts. centered over each Girder flange



SPAN (8-9)

PLAN

SLAB PLAN - UNIT 3 BOTTOM REINFORCEMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	87

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

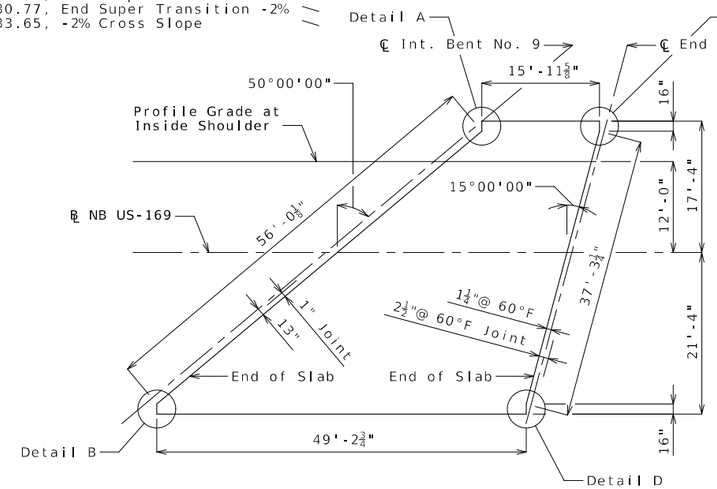
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No. : 000165
BMcD Project No. 154749

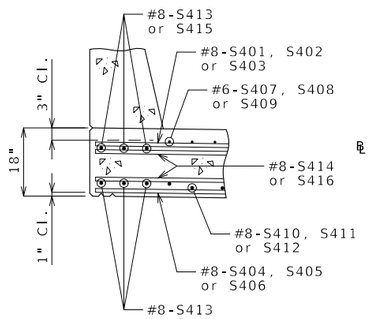
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SUPERELEVATION DATA
Sta. 181+86.77, Full Super -6%
Sta. 183+30.77, End Super Transition -2%
Sta. 185+33.65, -2% Cross Slope

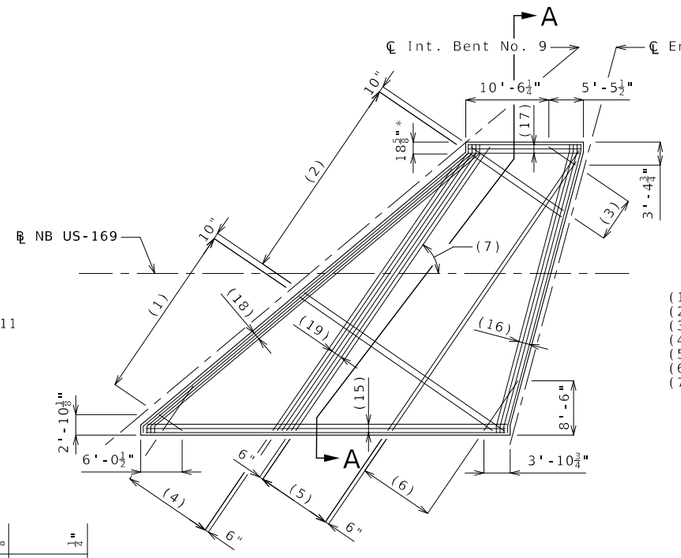


SPAN (9-10)

PLAN



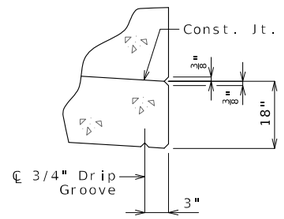
PART SECTION NEAR CORNER



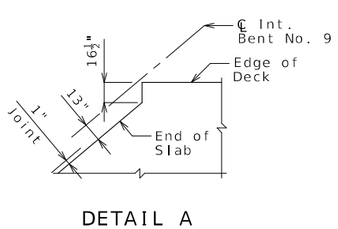
(1) 28 Spa. @ 10"; 29-#6-S409
(2) 33 Spa. @ 10"; 34-#6-S408
(3) 7 Spa. @ 10"; 8-#6-S407
(4) 24 Spa. @ 6"; 25-#8-S401
(5) 20 Spa. @ 6"; 21-#8-S402
(6) 20 Spa. @ 6"; 21-#8-S403
(7) 55°48'11.47"

SPAN (9-10)

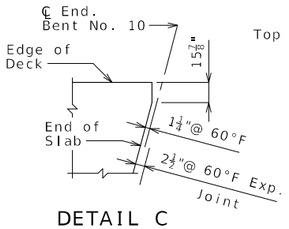
PLAN
TOP REINFORCEMENT



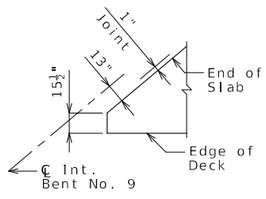
DETAIL E



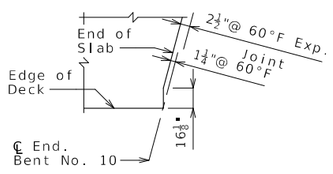
DETAIL A



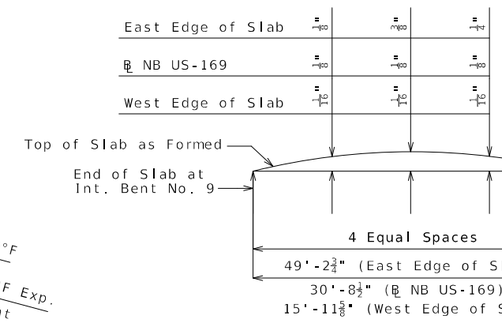
DETAIL C



DETAIL B

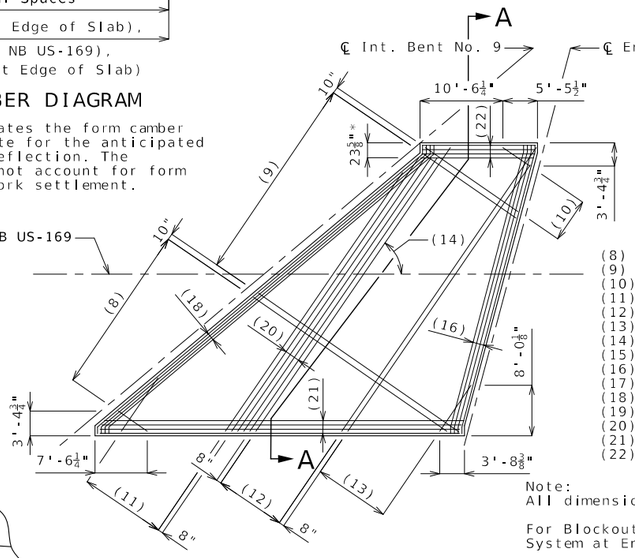


DETAIL D



FORM CAMBER DIAGRAM

This diagram illustrates the form camber required to compensate for the anticipated ultimate dead load deflection. The dimensions shown do not account for form deflection or falsework settlement.



* Measured from edge of slab to end of #8-S417 or #8-S418 bar

(8) 27 Spa. @ 10"; 28-#8-S412
(9) 33 Spa. @ 10"; 34-#8-S411
(10) 7 Spa. @ 10"; 8-#8-S410
(11) 17 Spa. @ 8"; 18-#8-S404
(12) 14 Spa. @ 8"; 15-#8-S405
(13) 15 Spa. @ 8"; 16-#8-S406
(14) 55°48'11.47"
(15) 2 Spa. @ 6"; 3-#8-S413
(16) 3 Spa. @ 6"; 4-#8-S414 (Top & Bottom)
(17) 2 Spa. @ 6"; 3-#8-S415
(18) 3 Spa. @ 6"; 4-#8-S416 (Top & Bottom)
(19) 3 Spa. @ 6"; 4-#8-S417
(20) 3 Spa. @ 8"; 4-#8-S418
(21) 3 Spa. @ 6"; 4-#8-S413
(22) 3 Spa. @ 6"; 4-#8-S415

SPAN (9-10)

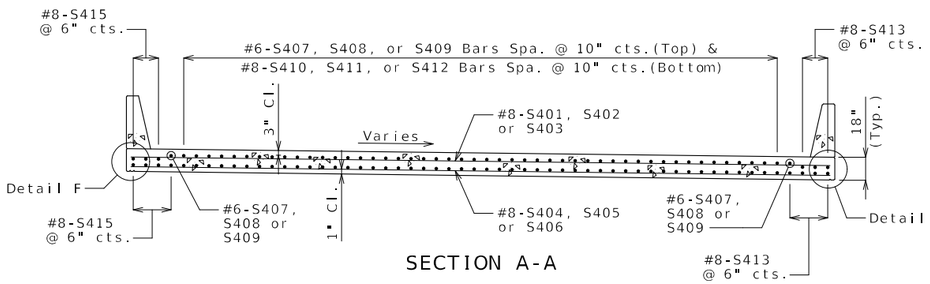
PLAN
BOTTOM REINFORCEMENT

Note:
All dimensions are horizontal.

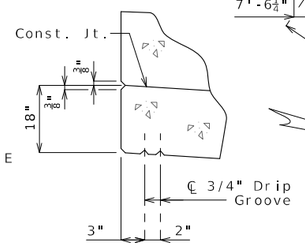
For Blockout Details for Strip Seal Expansion Joint System at End Bent No. 10, see Sheet No. 78.

Work this sheet with Sheet No. 92.

Falsework shall be in accordance with Sec 703. The Contractor shall submit detailed plans for falsework, including the supporting design computations. The Engineer's acceptance of the plans will not relieve the Contractor of the responsibility for obtaining satisfactory results.



SECTION A-A



DETAIL F

SLAB PLAN - UNIT 4 REINFORCEMENT

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010030206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	88

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

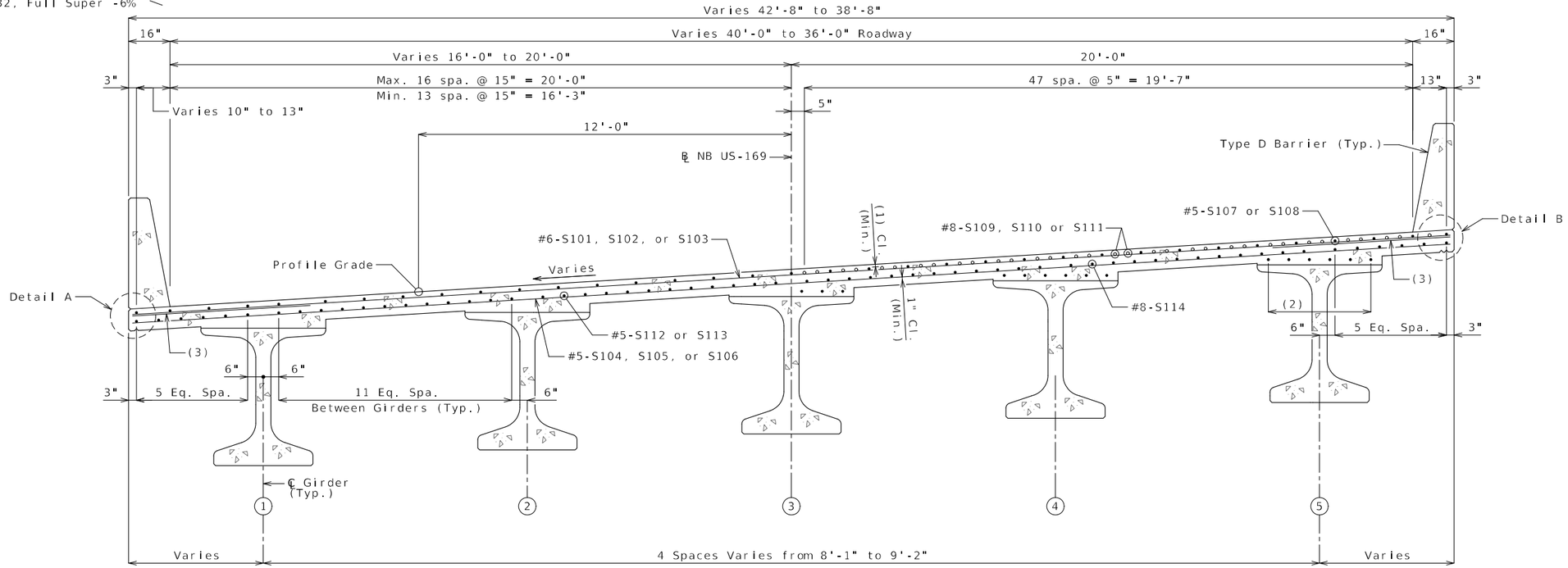
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

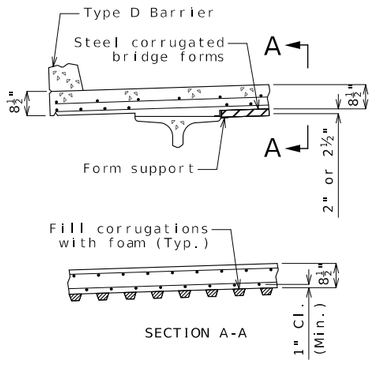
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

SUPERELEVATION DATA
Sta. 171+03.63, Full Super 6%
Sta. 174+23.32, Full Super 6%
Sta. 176+39.32, 0% Cross Slope
Sta. 178+55.32, Full Super -6%



PART SECTION NEAR MIDSPAN

PART SECTION NEAR INTERIOR BENT



STAY-IN-PLACE FORM DETAILS

General Notes:

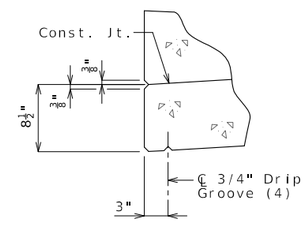
Corrugated steel bridge deck forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of permanent steel deck forms shall be rerquired in accordance with Sec 1080.

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

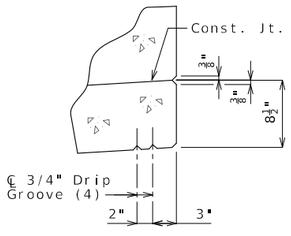
Form sheets shall not rest directly on the top of girders. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. All steel fabrication and construction shall be in accordance with Sec's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

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

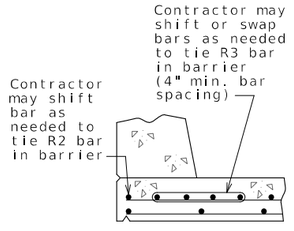
SECTION THRU SLAB



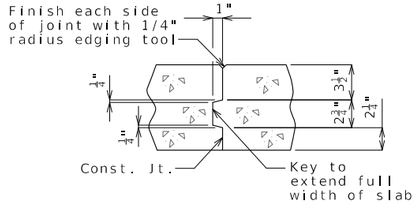
DETAIL A



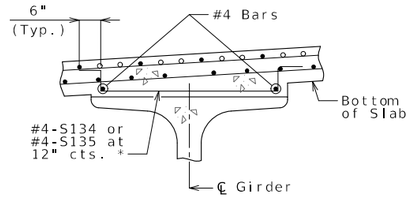
DETAIL B



OPTIONAL SHIFTING TOP BARS AT BARRIER



SLAB CONSTRUCTION JOINT



HAUNCH REINFORCING DETAIL

* #4-S134 and #4-S135 Hairpin bars may be placed at an angle to meet clearances.

Notes:

For reinforcement of barrier not shown, see Sheets No. 99 and 100.

For Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 79.

For Theoretical Bottom of Slab Elevations, see Sheet No. 82.

For Plan of Slab Showing Reinforcement, see Sheet No. 83 and 84.

For Slab Pouring Sequence, see Sheet No. 93.

(1) $3\frac{1}{8}$" (#5), $2\frac{3}{4}$" (#8)

(2) #7-S115 (over each Girder flange over Bent No. 2)

(3) #5-S116 bundled with #6 bars in overhang; See Sheet No. 83 for locations and spacing.

(4) Double drip groove along right side of slab from Sta. 173+46.43 to Sta. 176+39.32 and left side of slab from Sta. 176+39.32 to Sta. 178+18.18.

SLAB SECTION & DETAILS - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010002206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	89

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

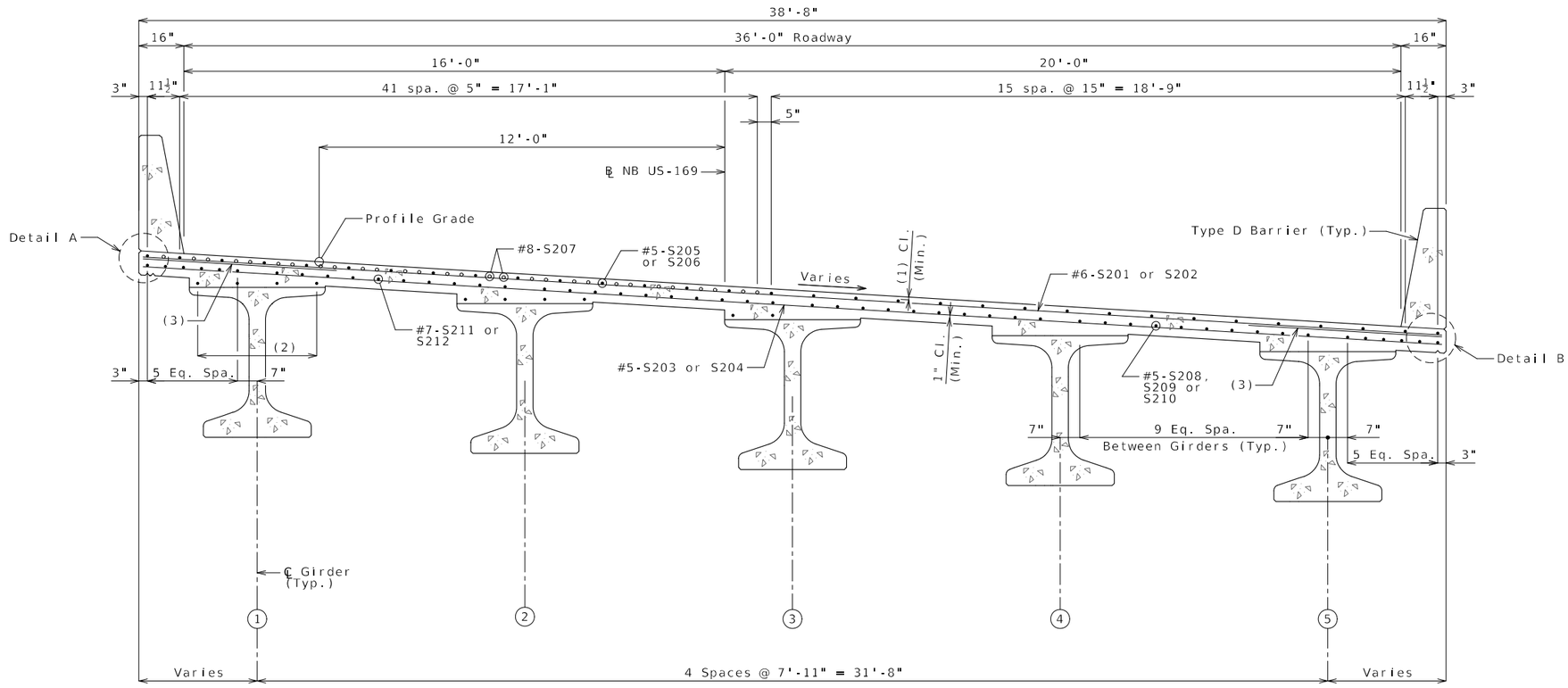
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

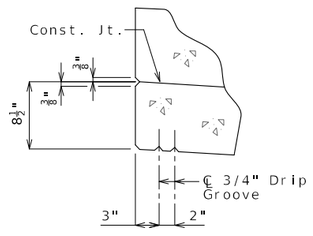
SUPERELEVATION DATA
Sta. 176+39.32, 0% Cross Slope —
Sta. 178+55.32, Full Super -6% ⟋



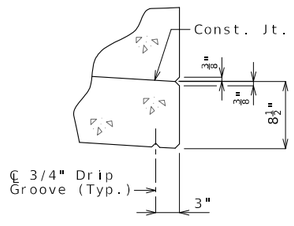
PART SECTION NEAR INTERIOR BENT

PART SECTION NEAR MIDSPAN

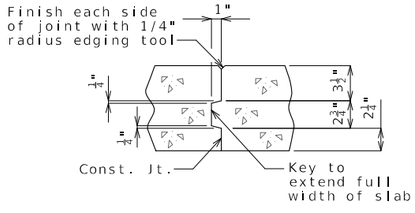
SECTION THRU SLAB



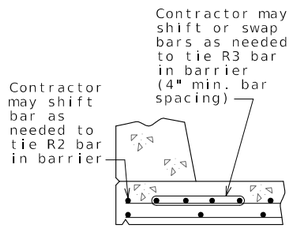
DETAIL A



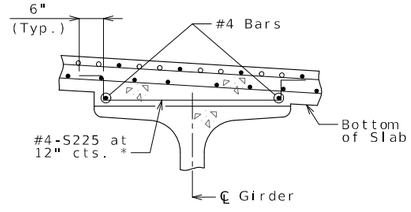
DETAIL B



SLAB CONSTRUCTION JOINT



OPTIONAL SHIFTING TOP BARS AT BARRIER



HAUNCH REINFORCING DETAIL

* #4-S225 Hairpin bars may be placed at an angle to meet clearances.

Notes:

For Stay-In-Place Form Notes and Details, see Sheet No. 89.

For reinforcement of barrier not shown, see Sheet No. 101.

For Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 80.

For Theoretical Bottom of Slab Elevations, see Sheet No. 82.

For Plan of Slab Showing Reinforcement, see Sheet No. 85.

For Slab Pouring Sequence, see Sheet No. 94.

(1) 3⅜" (#5), 2¾" (#8)

(2) #7-S213 (over each Girder flange over Bent No. 6)

(3) #5-S214 bundled with #6 bars in overhang; See Sheet No. 85 for locations and spacing

SLAB SECTION & DETAILS - UNIT 2

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	90

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

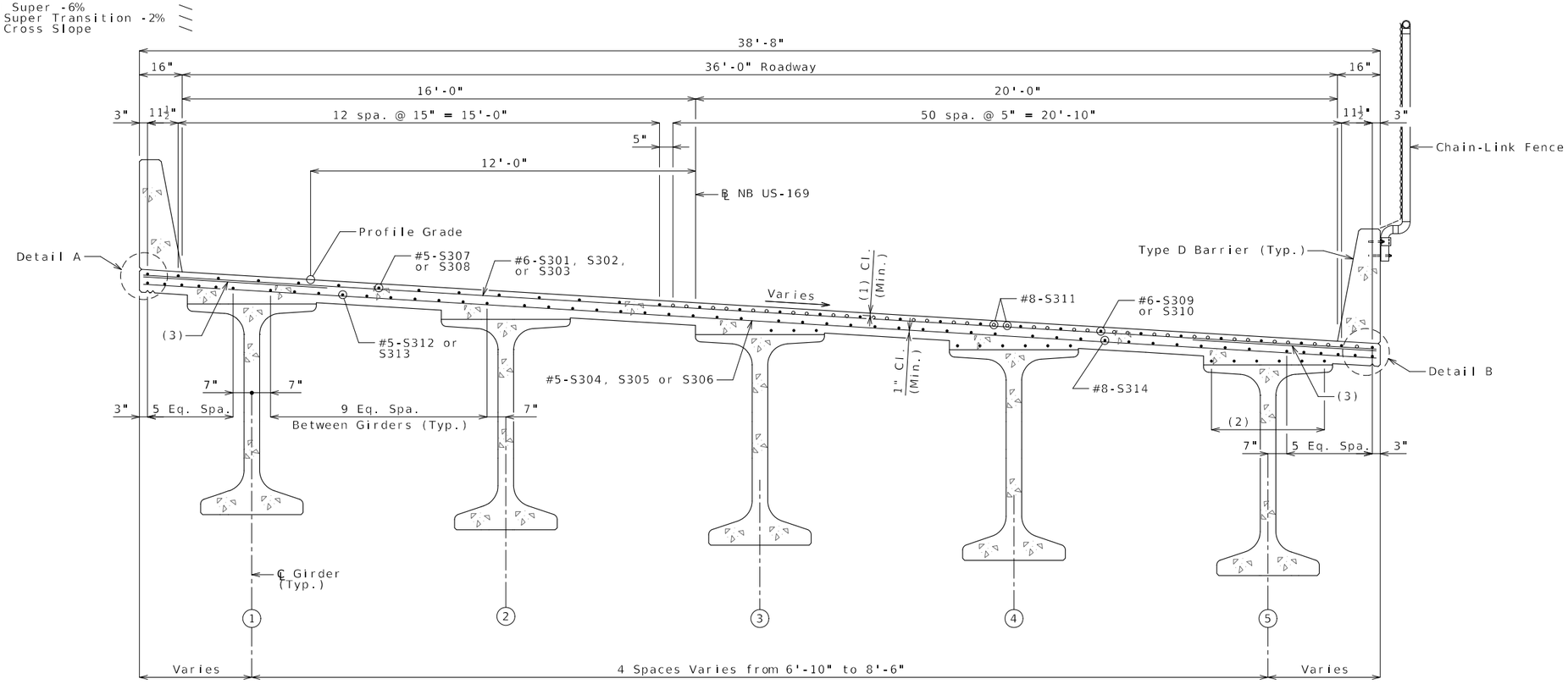
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

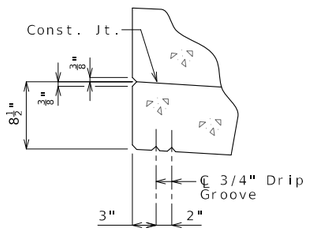
SUPERELEVATION DATA
Sta. 181+86.77, Full Super -6%
Sta. 183+30.77, End Super Transition -2%
Sta. 185+33.65, -2% Cross Slope



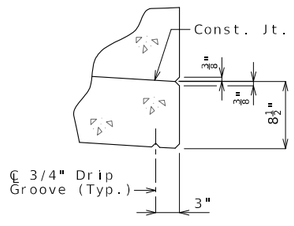
PART SECTION NEAR MIDSPAN

PART SECTION NEAR INTERIOR BENT

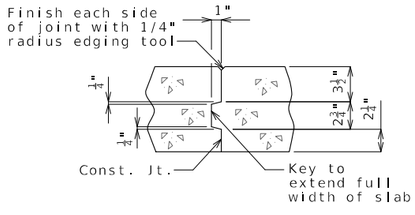
SECTION THRU SLAB



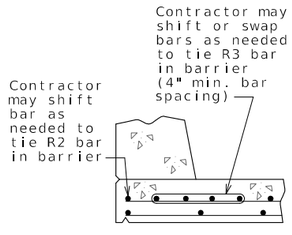
DETAIL A



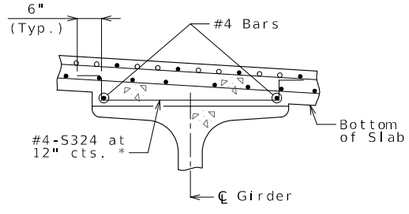
DETAIL B



SLAB CONSTRUCTION JOINT



OPTIONAL SHIFTING TOP BARS AT BARRIER



HAUNCH REINFORCING DETAIL

* #4-S324 Hairpin bars may be placed at an angle to meet clearances.

Notes:

For Stay-In-Place Form Notes and Details, see Sheet No. 89.

For reinforcement of barrier not shown, see Sheet No. 102.

For Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 81.

For Theoretical Bottom of Slab Elevations, see Sheet No. 82.

For Plan of Slab Showing Reinforcement, see Sheets No. 86 & 87.

For Slab Pouring Sequence, see Sheet No. 95.

(1) 3⅜" (#5), 3" (#6), 2¾" (#8)

(2) #7-S315 (over each Girder flange over Bent No. 8)

(3) #5-S316 bundled with #6 bars in overhang; See Sheet No. 86 for locations and spacing

SLAB SECTION & DETAILS - UNIT 3

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/29/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	91

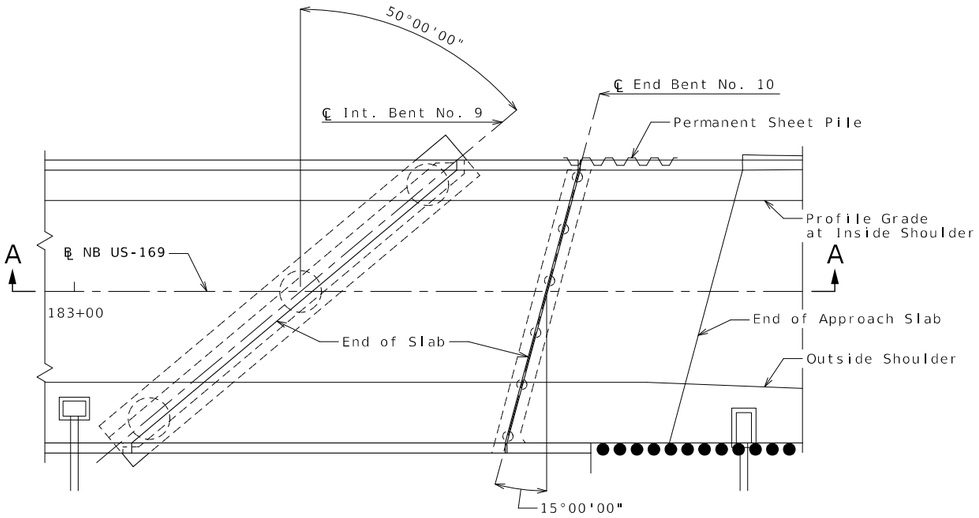
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

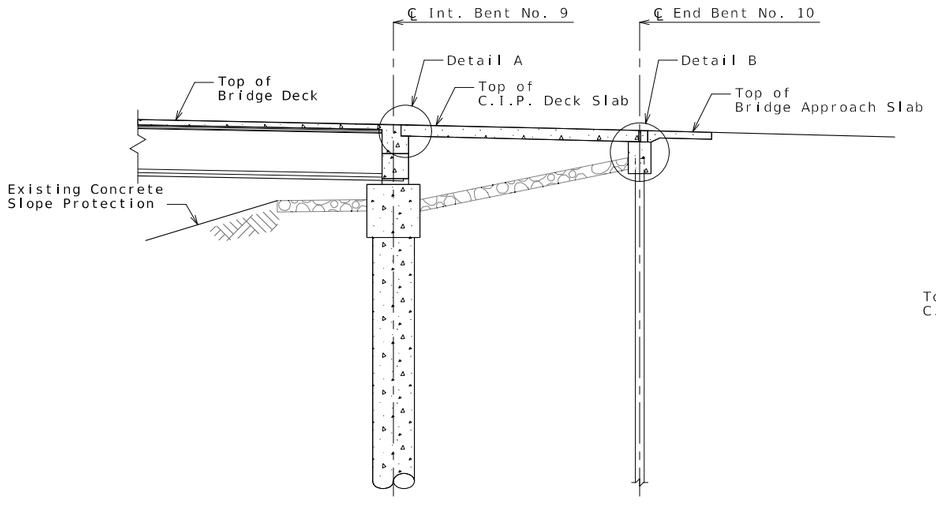
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

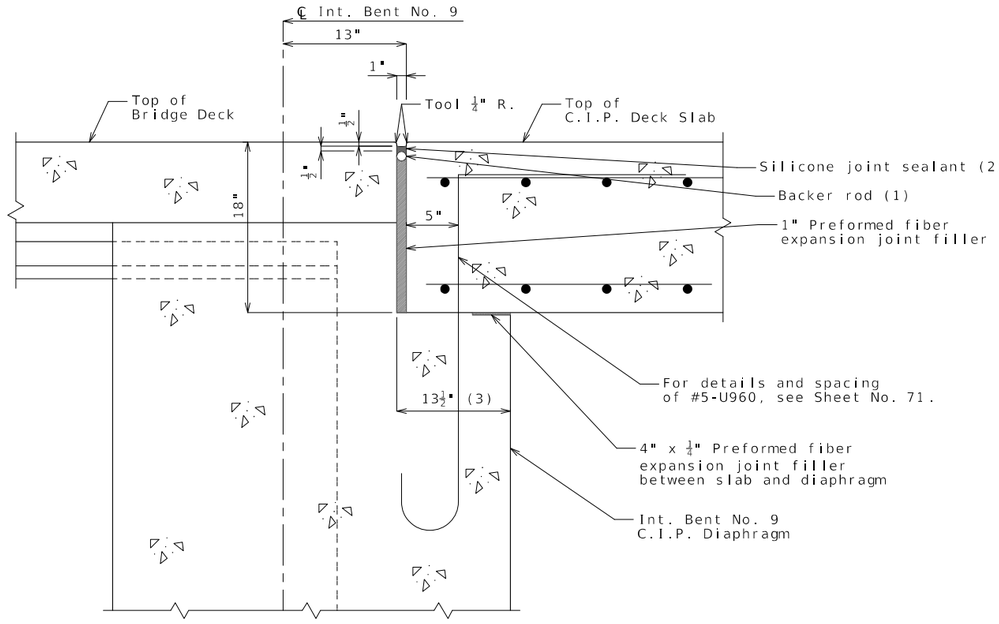
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



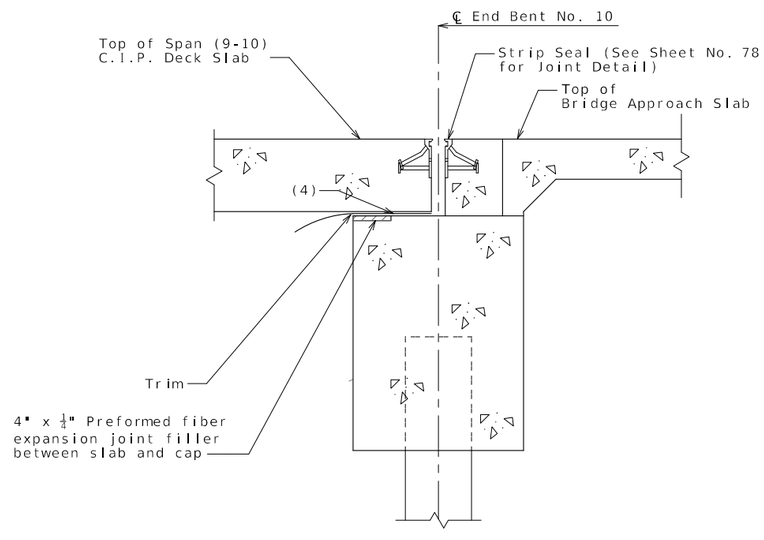
PLAN



SECTION A-A



DETAIL A



DETAIL B

Notes:

Payment for furnishing all material, equipment, tools, labor and any other incidental work for the silicon joint seal, backer rod, preformed fiber expansion joint filler and other materials associated with Detail A and B will be considered completely covered by the contract unit price for Class B-2 Concrete (Superstructure Solid Slab).

(1) 1¼" backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted.

(2) Joint Sealant should follow criteria in Sec 717.40.

(3) Perpendicular to diaphragm.

(4) Smooth trowel finish. Oil top of cap with 60 grade oil and apply heavy coat of powdered graphite. Press down one layer of 30-lb roofing felt.

SLAB DETAILS - UNIT 4

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	92

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

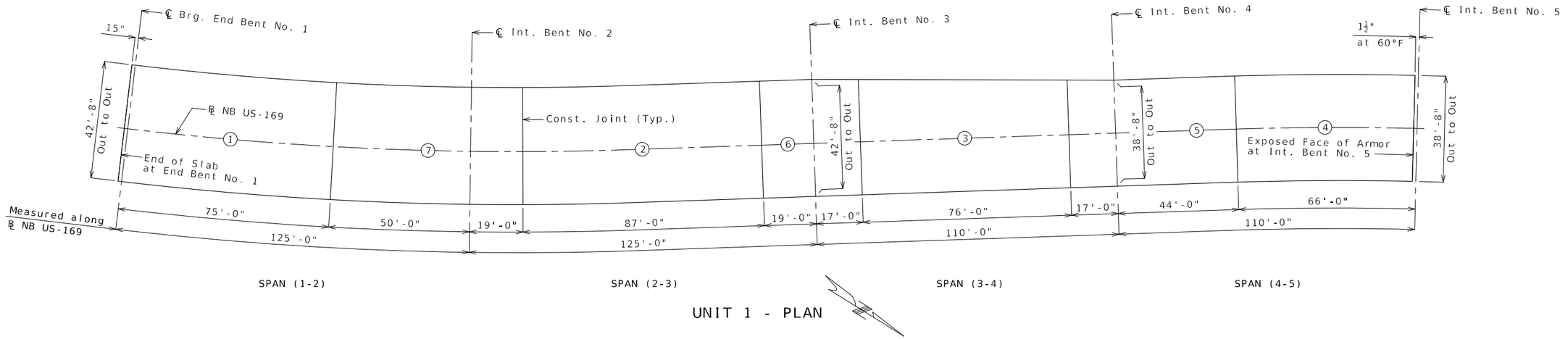
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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UNIT 1 - PLAN

Unit 1	Sequence of Pours							Min. Rate of Pour Cu. Yds./Hr.
	Direction							With Retarder
Basic Sequence	1	2	3	4	5	6	7	25
	→							
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.								
Alternate A Pours	1	7 + 2		6 + 3		5 + 4		42
	End to 7	1 to 6		2 to 5		3 to End		
Alternate B Pours	1 + 7 + 2			6 + 3		5 + 4		42
	End to 6			2 to 5		3 to End		
Alternate C Pours	1 + 7 + 2			6 + 3 + 5 + 4				42
	End to 6			2 to End				
Alternate D Pours	1 + 7 + 2 + 6 + 3 + 5 + 4							42
	End to End							

Notes:

For notes on Contractor responsibility for temporary bracing, see Sheet No. 4.

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.

End diaphragms at expansion devices may be poured with a construction joint between the diaphragm and slab, or monolithic with the slab.

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

SLAB POURING SEQUENCE - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	93

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

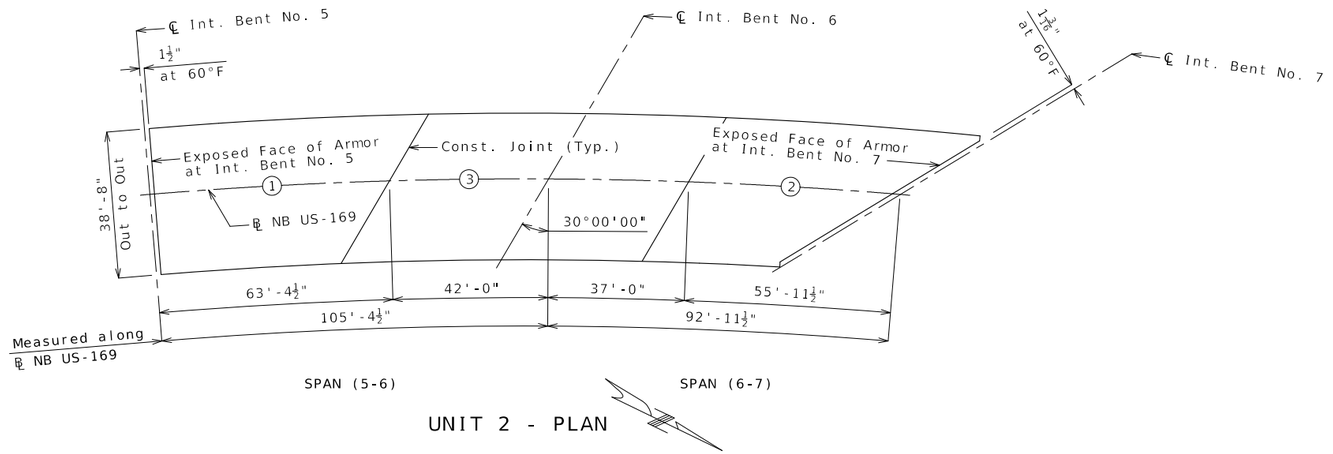
BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



UNIT 2 - PLAN

Unit 2	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			With Retarder
Basic Sequence	1	2	3	25
	→			
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate A Pours	1	3 + 2		33
	End to 3	1 to End		
Alternate B Pours	1 + 3 + 2			33
	End to End			

Notes:

For notes on Contractor responsibility for temporary bracing, see Sheet No. 4.

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.

End diaphragms at expansion devices may be poured with a construction joint between the diaphragm and slab, or monolithic with the slab.

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

SLAB POURING SEQUENCE - UNIT 2

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	94

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

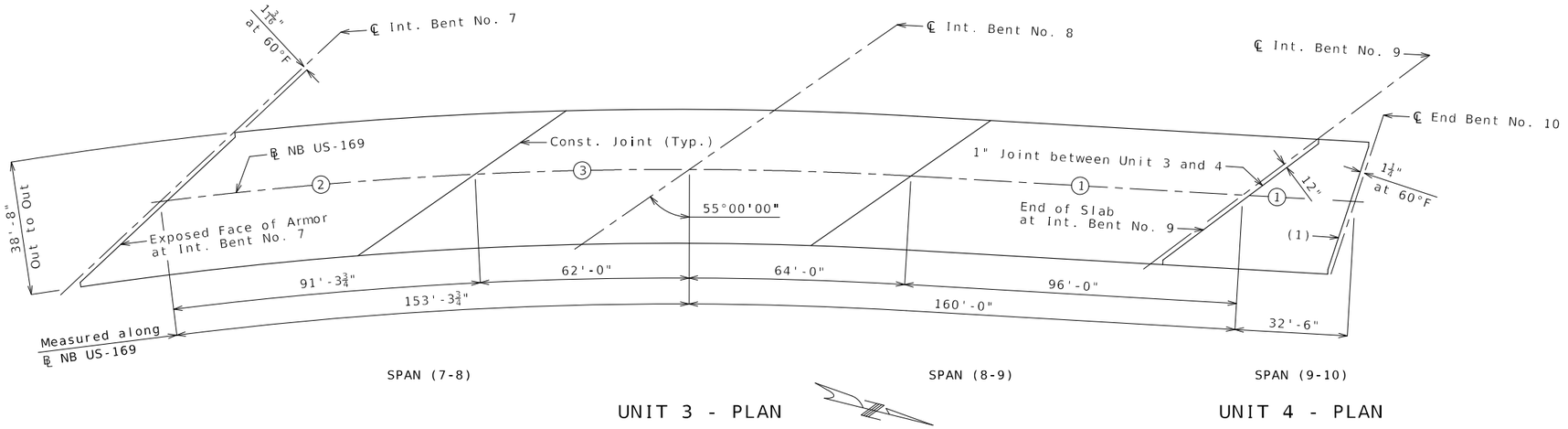
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



UNIT 3 - PLAN

UNIT 4 - PLAN

(1) End of Slab at End Bent No. 10 and Exposed Face of Armor

Unit 3	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			With Retarder
Basic Sequence	1	2	3	25
	←			
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate A Pours	1	3 + 2		49
	End to 3	1 to End		
Alternate B Pours	1 + 3 + 2			49
	End to End			

Notes:

For notes on Contractor responsibility for temporary bracing, see Sheet No. 4.

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.

End diaphragms at expansion devices may be poured with a construction joint between the diaphragm and slab, or monolithic with the slab.

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

Unit 4 (Span 9-10) shall be poured up-grade in one complete sequence with a minimum pour rate of 43 Cu. Yds./Hr.

Concrete for the Unit 4 slab shall be placed only after the concrete in Unit 3 has been placed and has cured sufficiently according to Sec 703 of the Standard Specifications.

SLAB POURING SEQUENCE - UNITS 3 AND 4

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	95

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

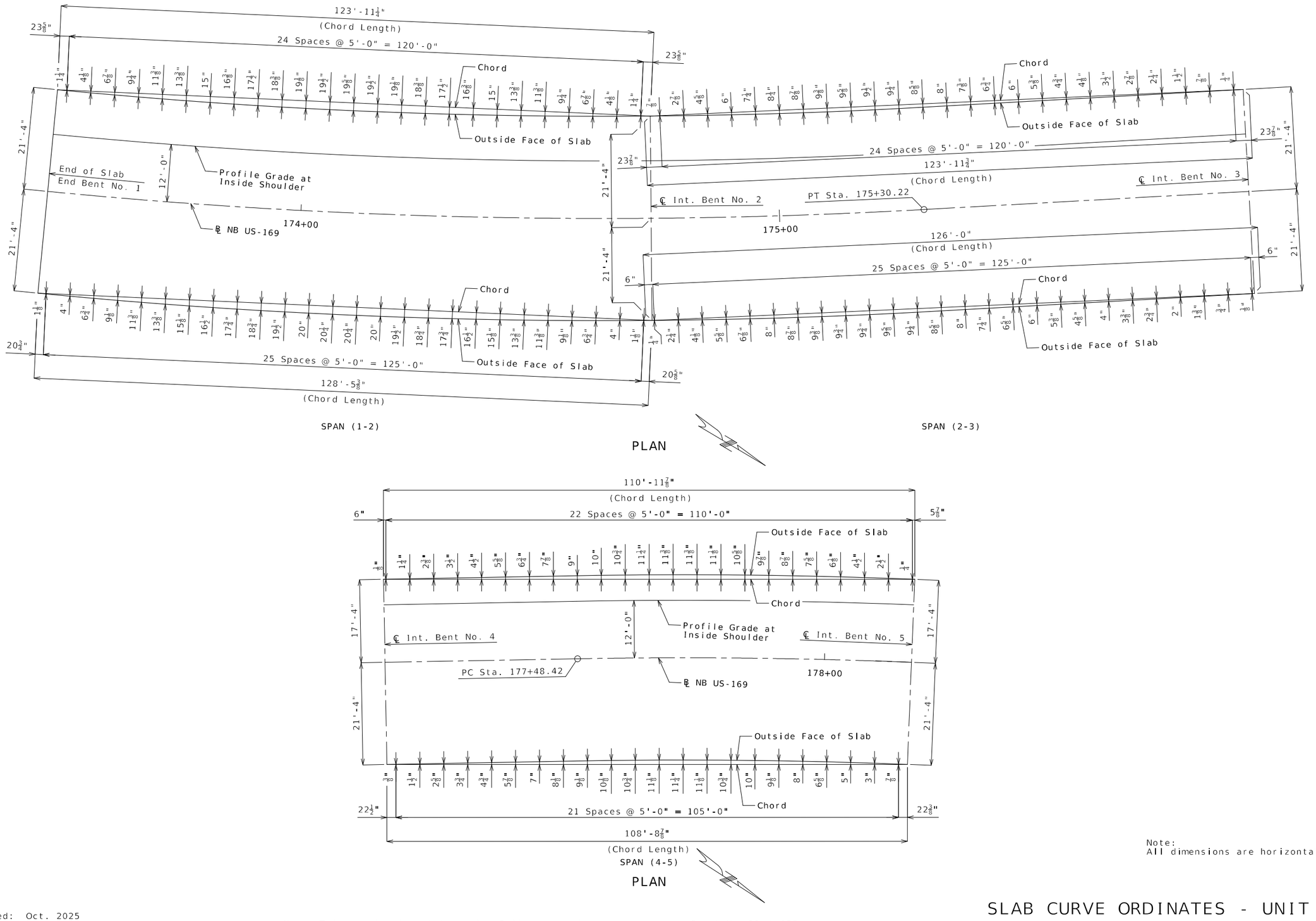
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



Note:
All dimensions are horizontal.

SLAB CURVE ORDINATES - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	96

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

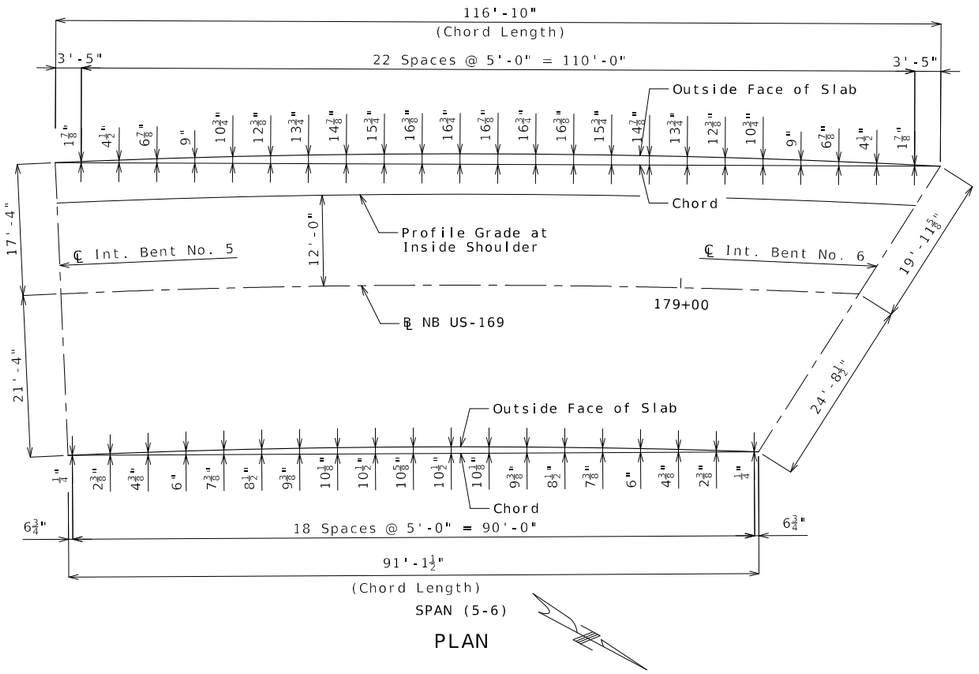
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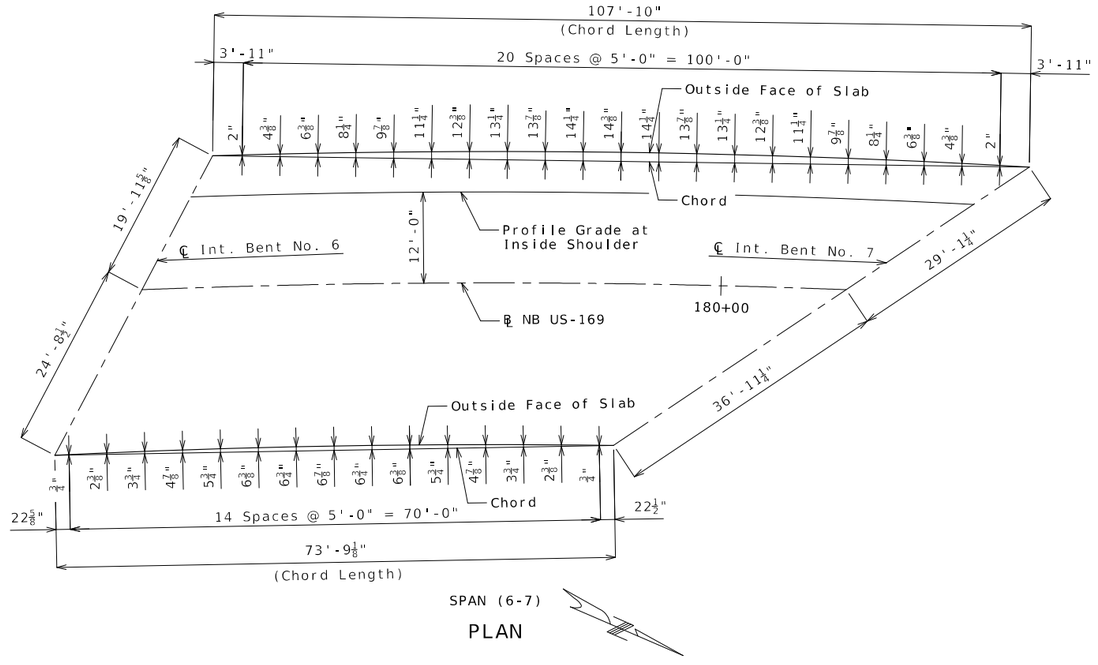
BRIDGE NO.
A9606

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
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816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749





Note:
All dimensions are horizontal.

SLAB CURVE ORDINATES - UNIT 2

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010005206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	97

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

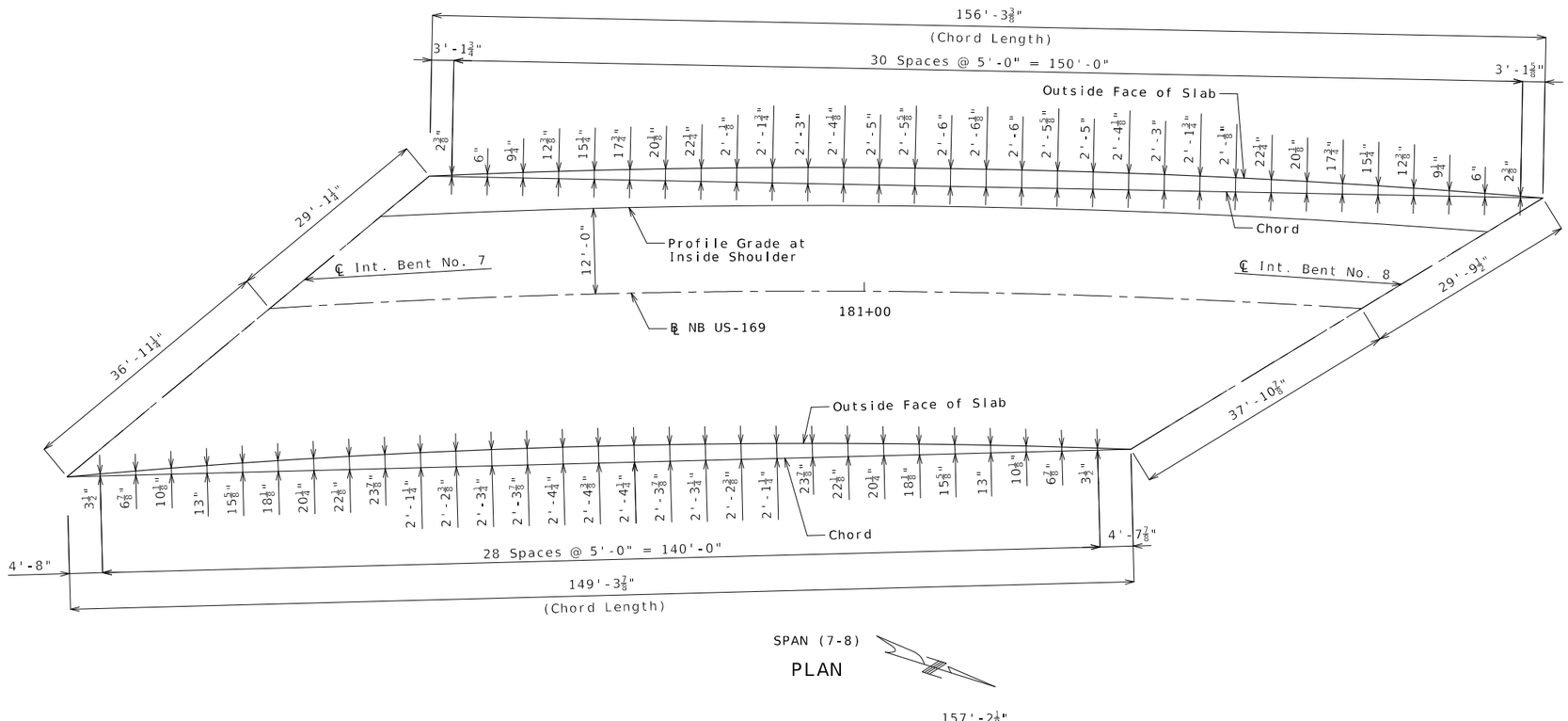
DESCRIPTION	DATE

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

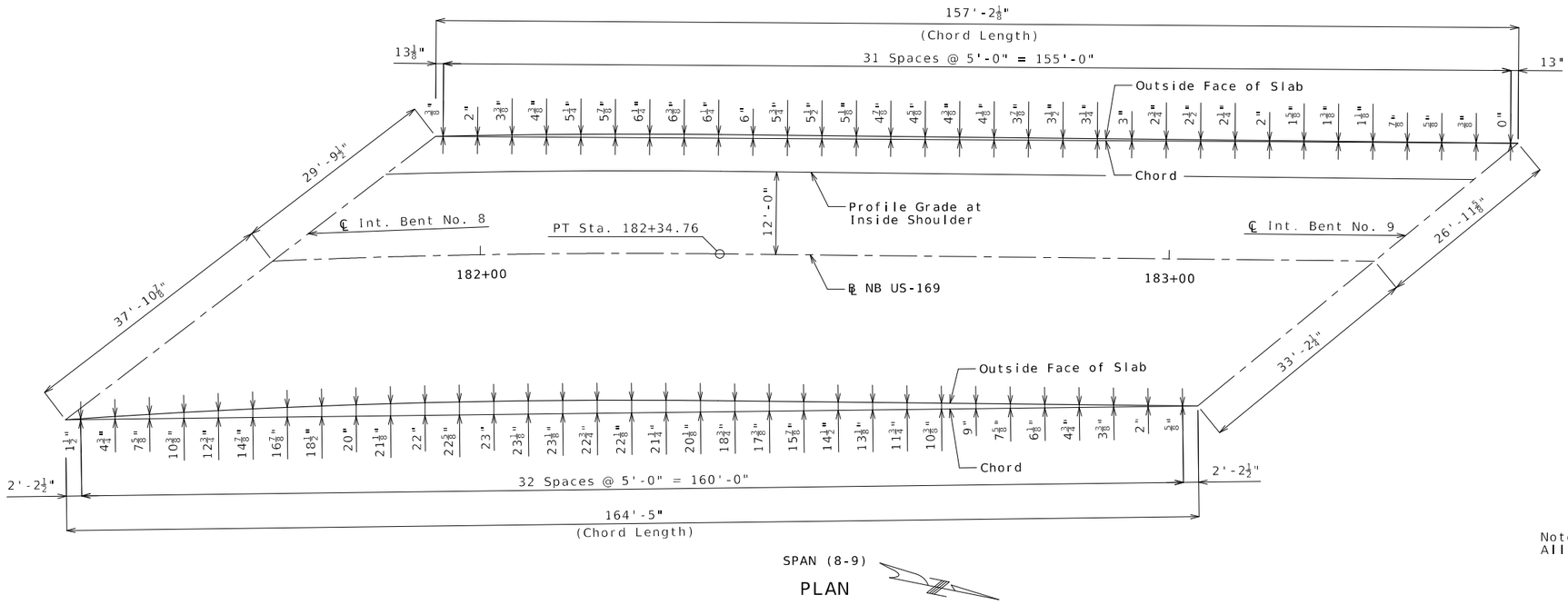
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

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SPAN (7-8)

PLAN



SPAN (8-9)

PLAN

Note:
All dimensions are horizontal.

SLAB CURVE ORDINATES - UNIT 3

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	98

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

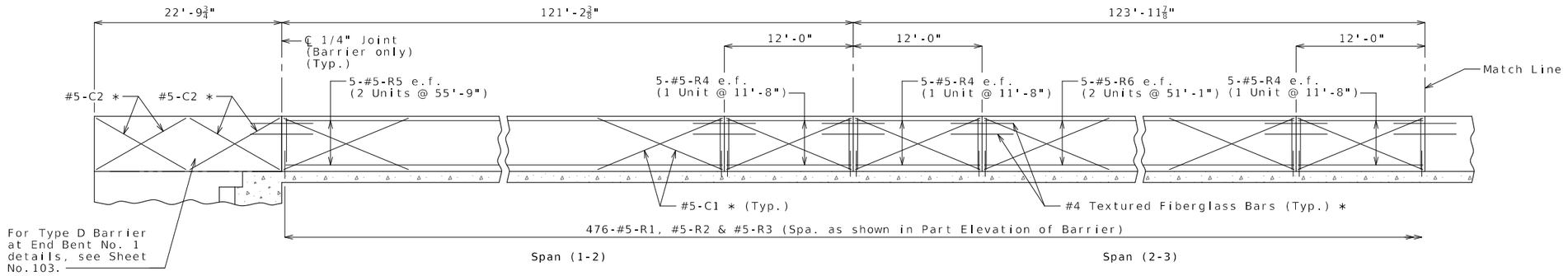
BRIDGE NO.
A9606

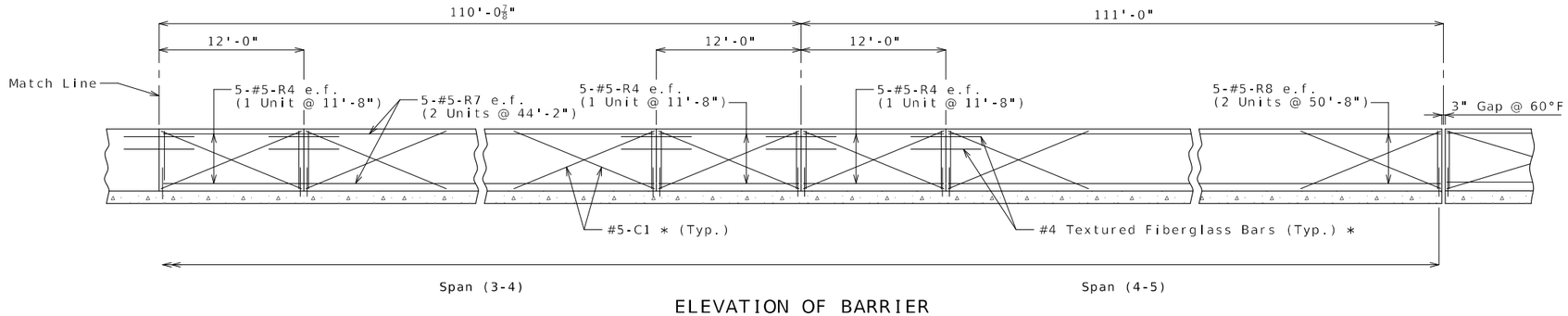
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

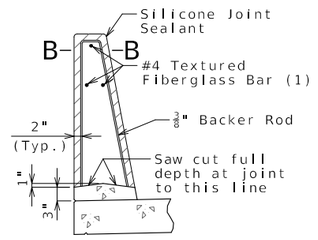
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



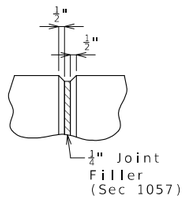


ELEVATION OF BARRIER

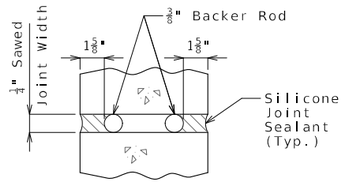
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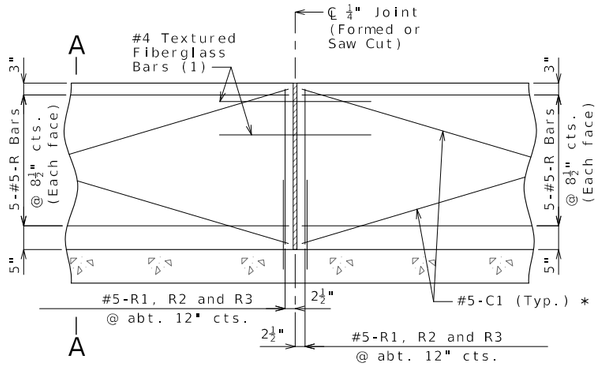
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

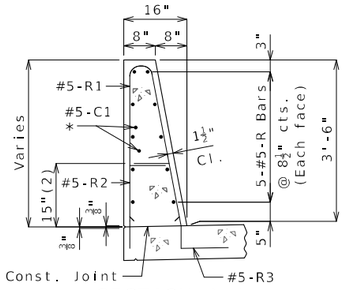


SECTION B-B



PART ELEVATION OF BARRIER

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

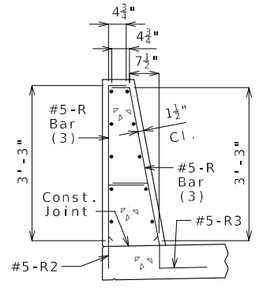


SECTION A-A

Use a minimum lap of 2'-6" for #5 horizontal barrier bars.

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of slab for Left Barrier.

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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

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

LEFT TYPE D BARRIER - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED 1/5/2026

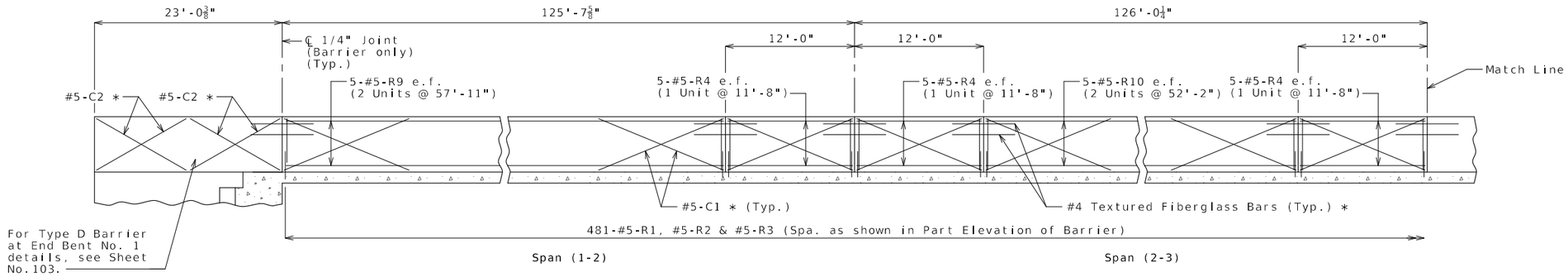
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	99

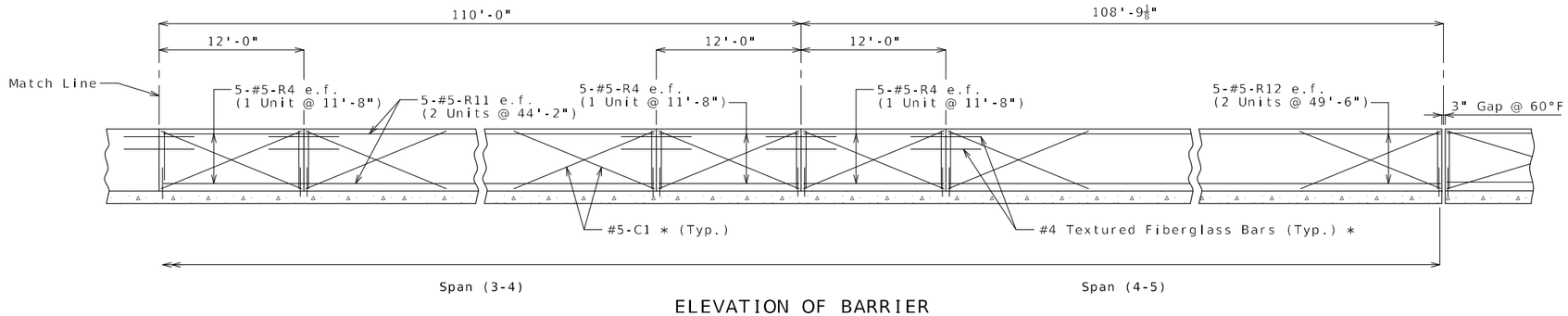
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION	DATE

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

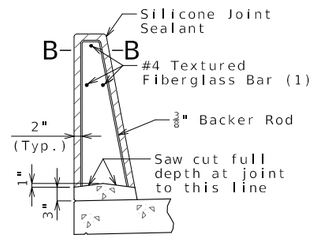
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



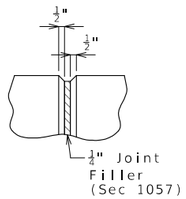


ELEVATION OF BARRIER

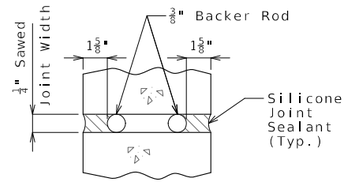
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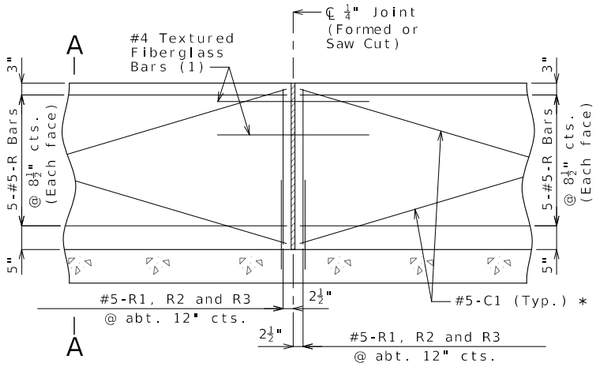
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

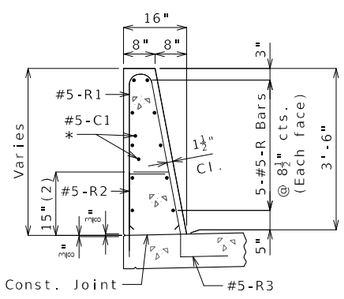


SECTION B-B



PART ELEVATION OF BARRIER

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

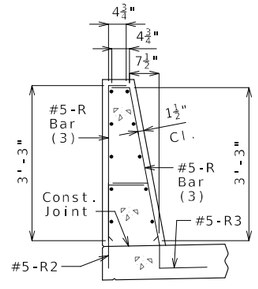


SECTION A-A

Use a minimum lap of 2'-6" for #5 horizontal barrier bars.

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing for Right Barrier.

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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

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

RIGHT TYPE D BARRIER - UNIT 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	100

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

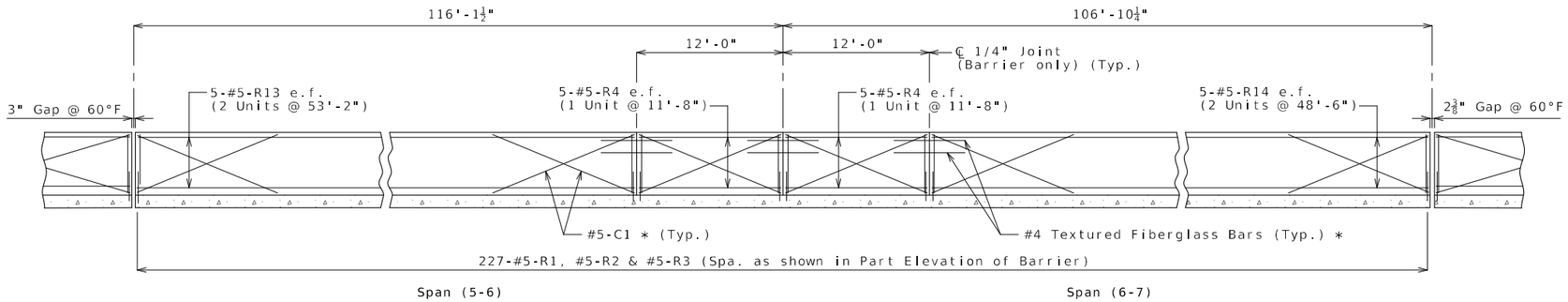
DESCRIPTION

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

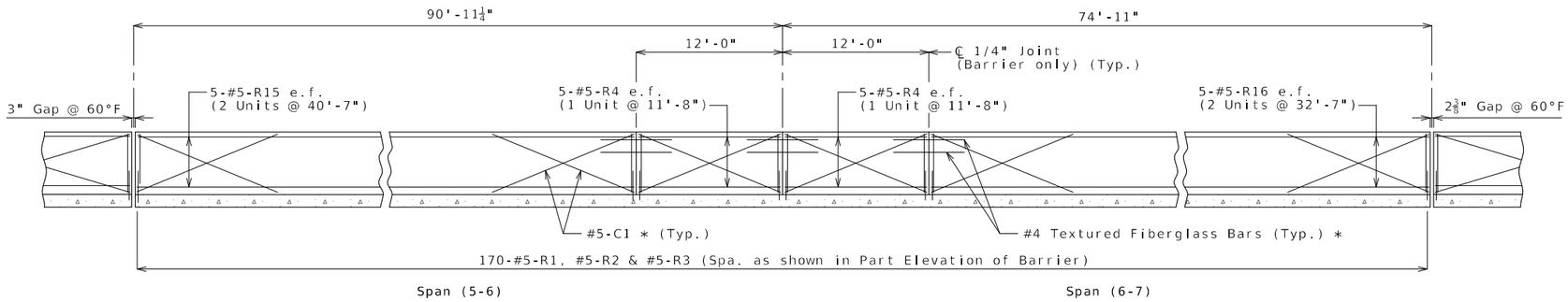
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



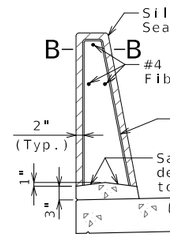
ELEVATION OF LEFT BARRIER

Longitudinal dimensions are horizontal.

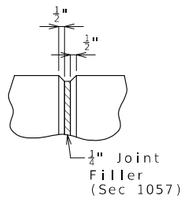


ELEVATION OF RIGHT BARRIER

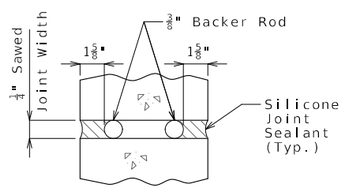
Longitudinal dimensions are horizontal.



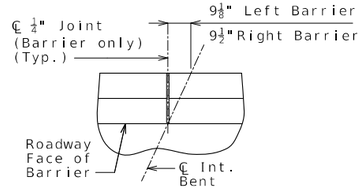
SECTION THRU SAW CUT JOINT



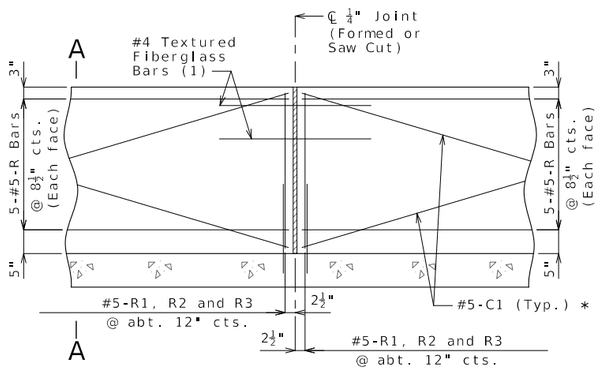
PART ELEVATION AT FORMED JOINT



SECTION B-B

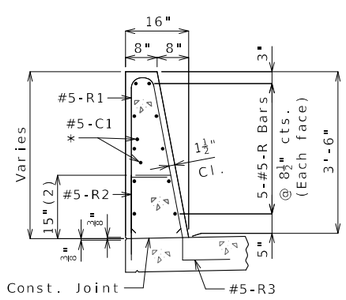


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

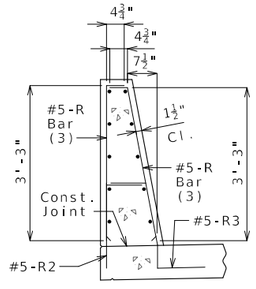


SECTION A-A

Use a minimum lap of 2'-6" for #5 horizontal barrier bars.

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

Top of barrier shall be built parallel to grade and barrier joints 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.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of slab for Left Barrier and end of wing to end of wing for Right Barrier.

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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

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

TYPE D BARRIER - UNIT 2

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	101

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

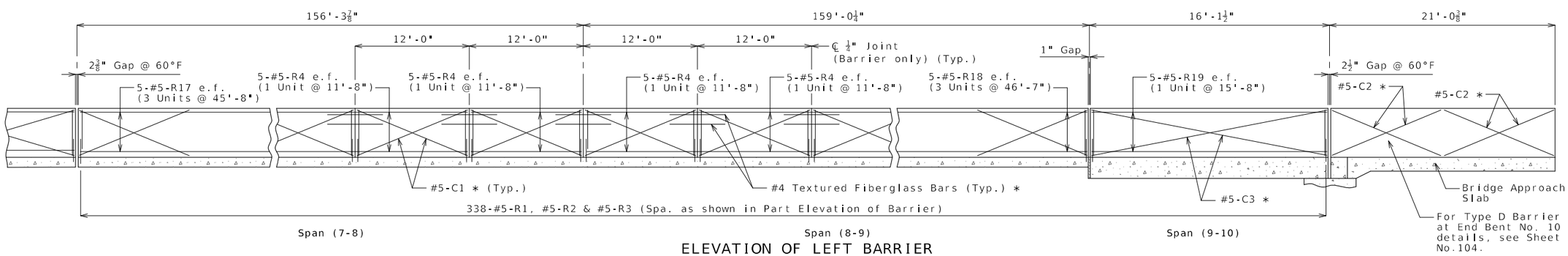
BRIDGE NO.
A9606

DESCRIPTION	DATE

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

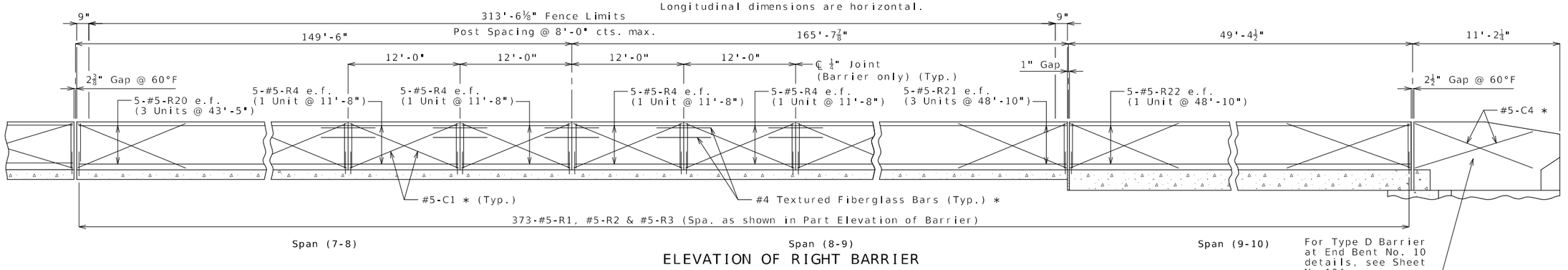
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



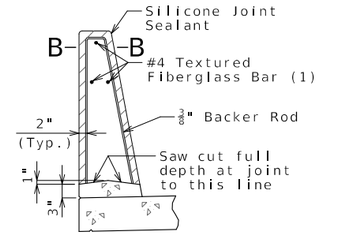
ELEVATION OF LEFT BARRIER

Longitudinal dimensions are horizontal.

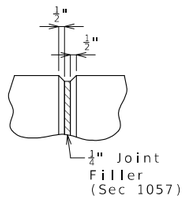


ELEVATION OF RIGHT BARRIER

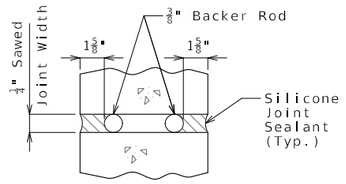
Longitudinal dimensions are horizontal.



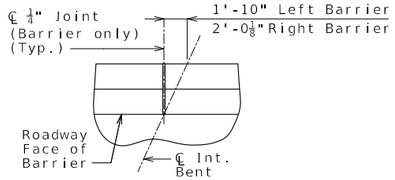
SECTION THRU SAW CUT JOINT



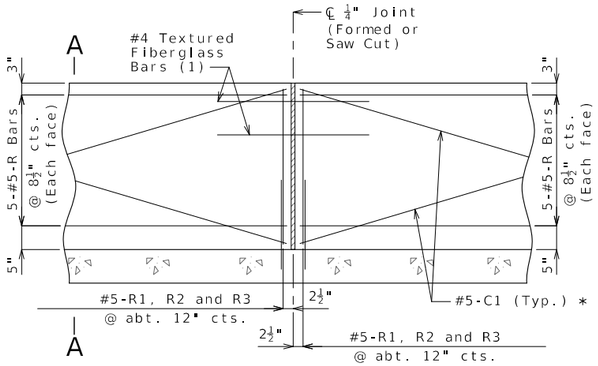
PART ELEVATION AT FORMED JOINT



SECTION B-B

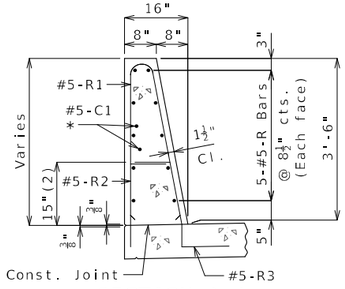


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

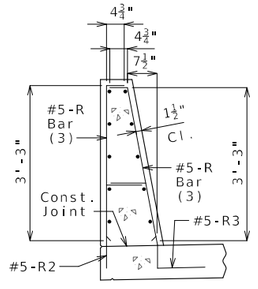


SECTION A-A

Use a minimum lap of 2'-6" for #5 horizontal barrier bars.

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of slab for Left Barrier and end of wing to end of wing for Right Barrier.

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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

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

For chain link fence details, see Sheet No. 104A.

TYPE D BARRIER - UNITS 3 & 4

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/19/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	102

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

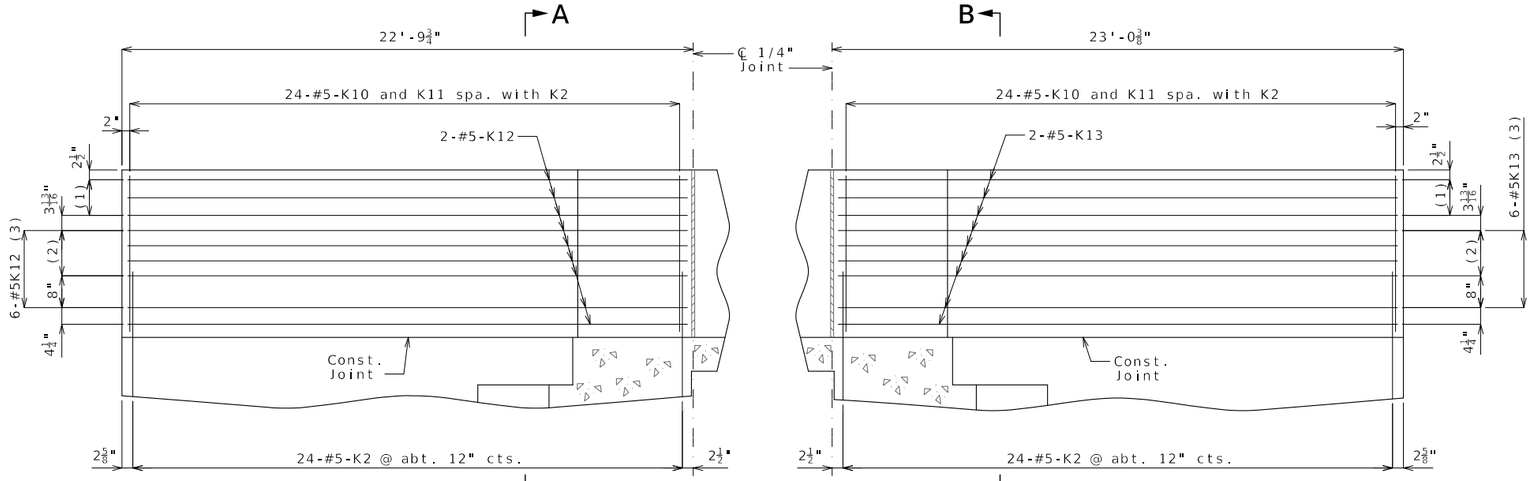
BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

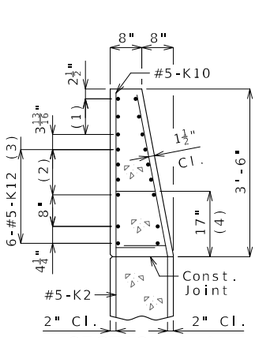
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



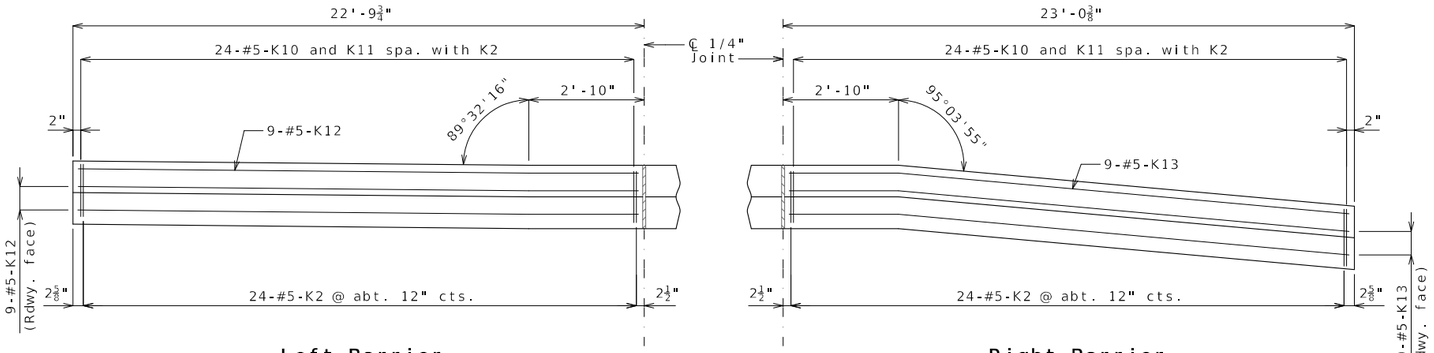
Looking at Roadway Face of Left Barrier

PART ELEVATION

Looking at Roadway Face of Right Barrier



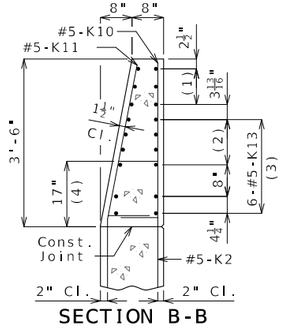
SECTION A-A



Left Barrier

PART PLAN

Right Barrier



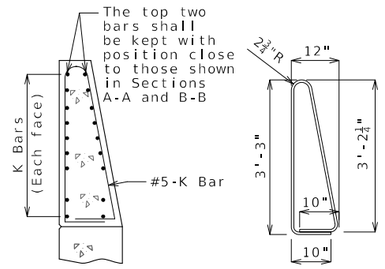
SECTION B-B

(1) 3-#5-K12 or K13 @ 4½" cts., each face

(2) 3 spaces @ 3 13/16"

(3) Spaced as shown, each face

(4) To top of bar



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.

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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

TYPE D BARRIER AT END BENT NO. 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010020206 STATE OF MISSOURI PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	103

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

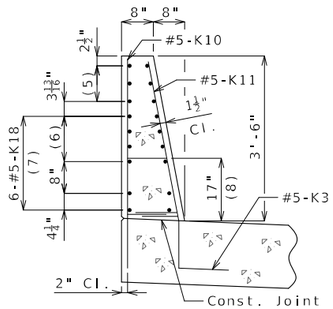
BRIDGE NO.: A9606

DESCRIPTION | DATE

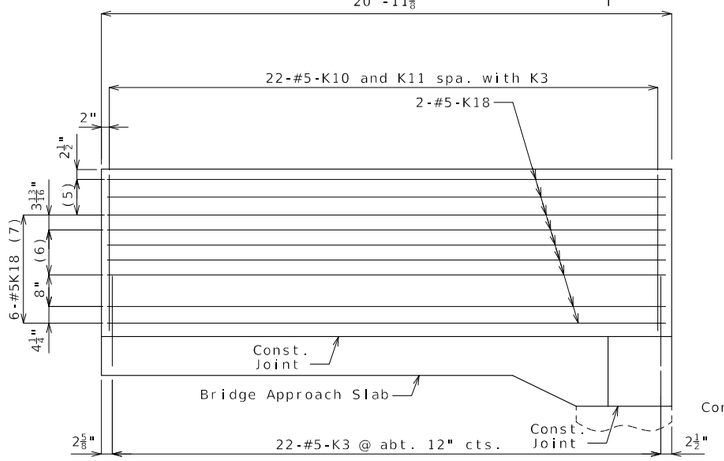
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

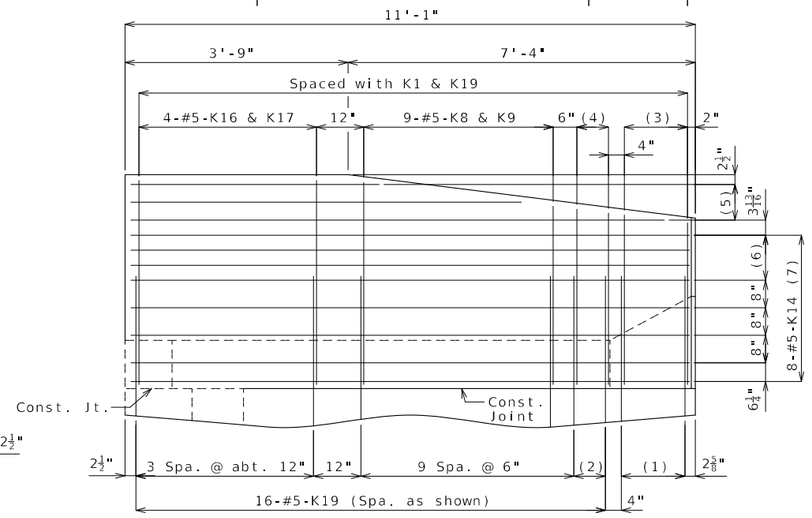
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



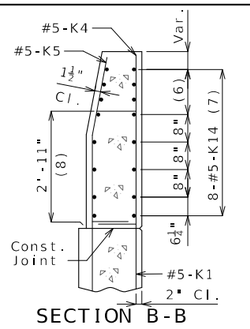
SECTION A-A



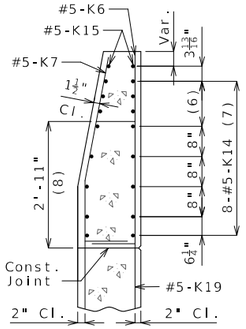
Looking at Back Face of Left Barrier



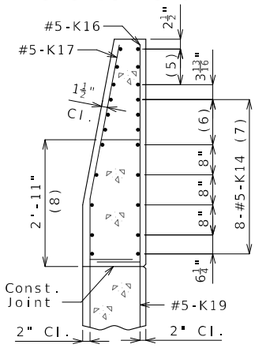
Looking at Back Face of Right Barrier



SECTION B-B

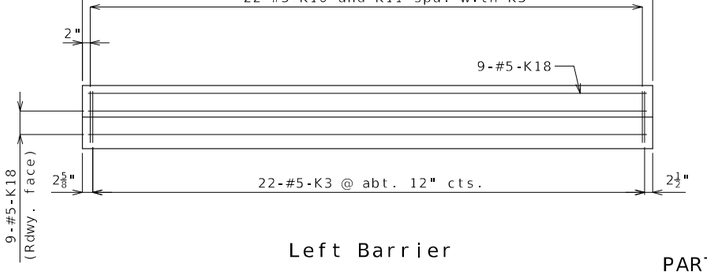


SECTION C-C

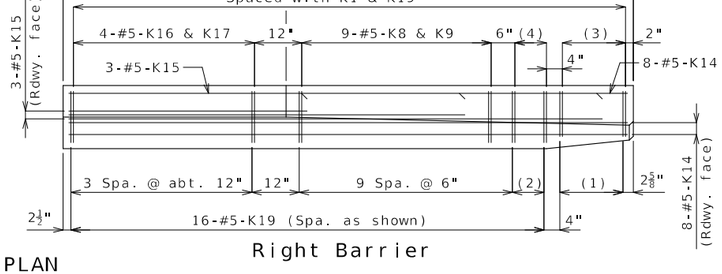


SECTION D-D

PART ELEVATION



Left Barrier



Right Barrier

PART PLAN

(1) 5-#5-K1 @ 4" cts.

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

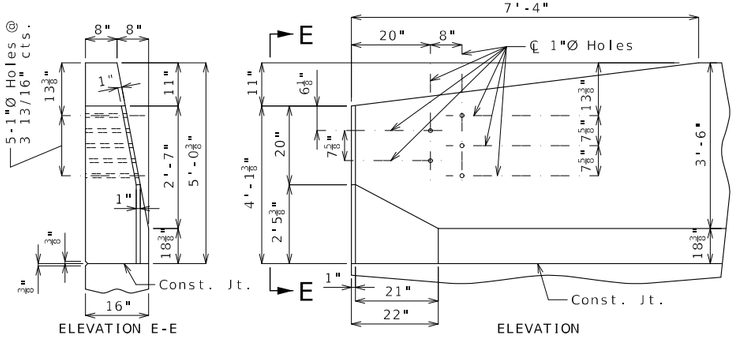
(4) 3-#5-K6 & K7

(5) 3-#5-K15 or K18 @ 4½" cts., each face

(6) 3 Spaces @ $3\frac{13}{16}$"

(7) Spaced as shown, each face

(8) To top of bar



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

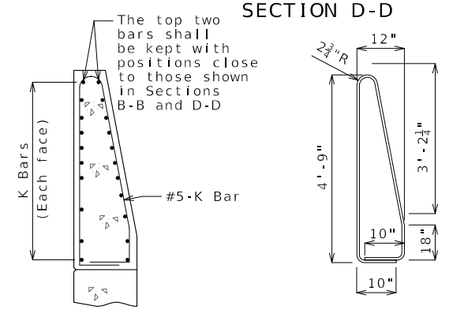
DETAILS OF GUARD RAIL ATTACHMENT AT RIGHT BARRIER

General Notes:

Reinforcing Steel:

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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



K16-K17 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

The K16-K17 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

TYPE D BARRIER AT END BENT NO. 10

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000226
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	104

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

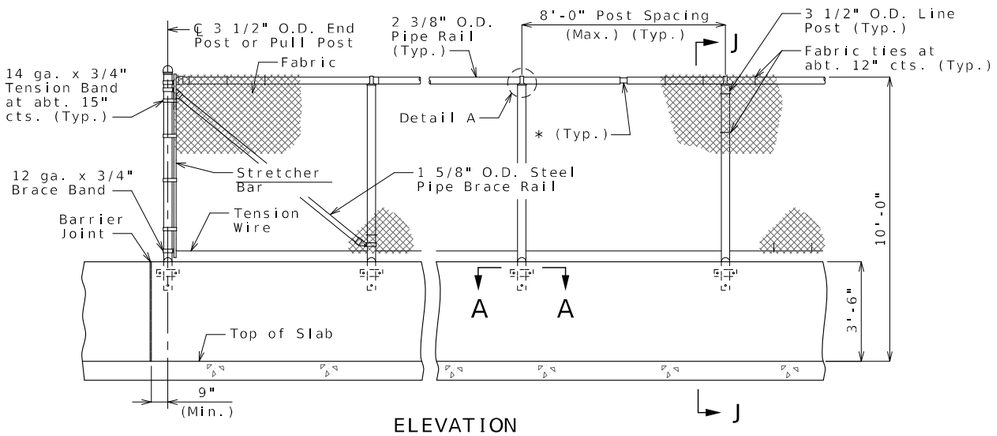
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165

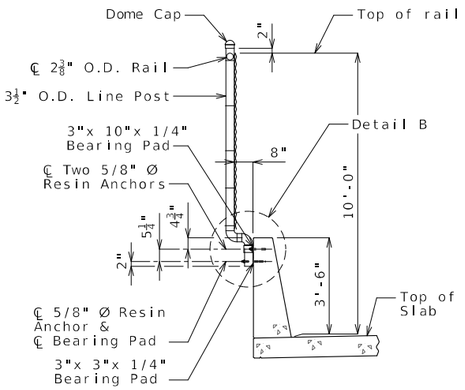
BMcD Project No. 154749



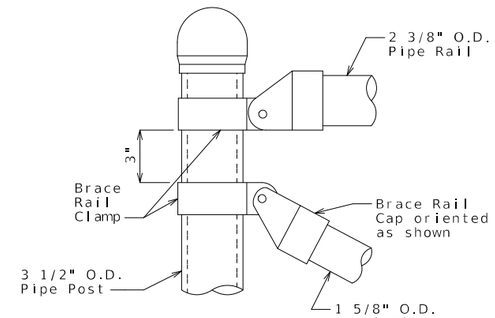
ELEVATION

(Welded Wire Panel not shown for clarity.)

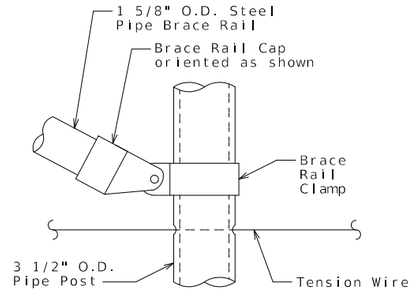
* $\frac{3}{8}$" Gap for splice at about 30'-0" centers with at least one splice gap between pull or end posts.



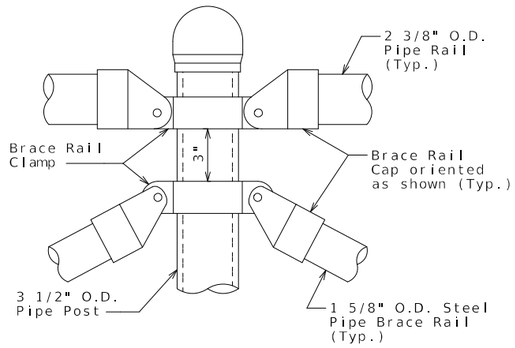
SECTION J-J (TYPE D BARRIER)



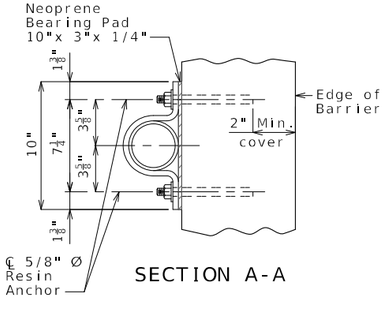
UPPER BRACE RAIL CONNECTION DETAIL



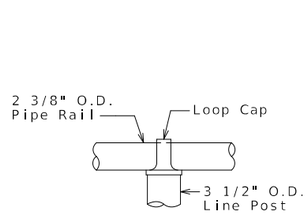
LOWER BRACE RAIL CONNECTION DETAIL



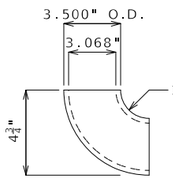
DUAL UPPER BRACE RAIL CONNECTION DETAIL



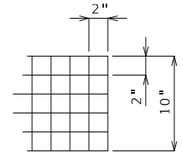
SECTION A-A



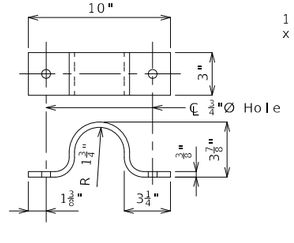
DETAIL A



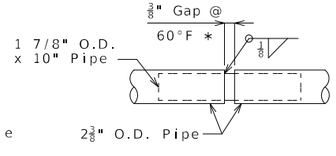
DETAIL C



PANEL DETAIL

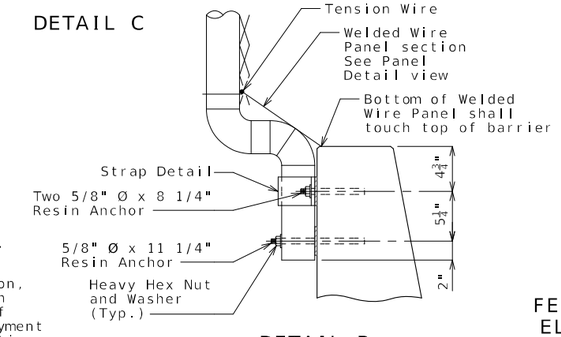


STRAP DETAIL

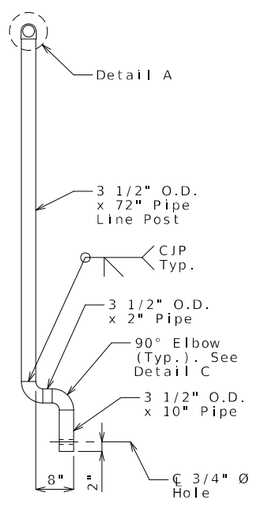


TYPICAL RAIL DETAIL AT SPLICE GAP

Note: At the contractor's option, manufacturer-approved expansion coupling may be used in lieu of detail shown. No additional payment will be made for this substitution.



DETAIL B



FENCE POST ELEVATION

(Galvanized after fabrication complete)

GENERAL NOTES:

Chain link fence shall be in accordance with Sec 1043 except all fabric shall have the top and bottom edges knuckled and pipe members shall be in accordance with ASTM F1083, Schedule 40, regular grade (minimum yield = 30 ksi).

All posts shall be vertical.

Payment for furnishing, galvanizing and erecting the fence and frame complete in place will be considered completely covered by the contract unit price for (78 in.) Chain-Link Railroad Fence (Structures) per linear foot.

Dimensions of chain link railroad fence are measured horizontally.

The maximum spacing allowed between pull posts and end posts is 100 feet. Post brace and Steel Pipe Brace Rail are required for panels adjacent to pull post and end posts only. Connect the upper end of brace rail to top of pull posts and end posts to which the stretcher bar is attached.

Rail clamps, dome cap, loop caps, bands, tie wires, stretcher bars and brace rail caps shall be in accordance with the manufacturer's recommendations. The brace rail and brace rail connections shall have a minimum capacity of 2000 pounds. Dome cap, loop caps, and brace rail caps shall fit tightly.

Expansion joints shall be placed in the horizontal pieces at not more than 30-foot centers and at all joint filler locations in the barrier with a minimum gap of 3/8 inch at 60 degrees F.

Steel for post straps shall be ASTM A709 Grade 50. Neoprene bearing pads shall be 50 durometer and shall be in accordance with Sec 716.

Tension Wire shall be Type II, ASTM A824 and A817, 7 guage, with Class 4 zinc coating. Position Tension Wires in center of diamonds in Chain Link as close as possible. Secure Tension Wire to Brace Band bolt at each end. Secure Chain Link to Tension Wires at 24" spacing with 12 guage zinc coated hog rings (ASTM F626). Tie Tension Wire to intermediate Posts with minimum 9 guage zinc coated wire (ASTM F626), with 3 wraps around the Tension Wire at each end of the tie wire.

Welded Wire panel is made of 0.122 inch diameter wire, at 2 inch spacing in each direction (cut to 10 inch wide from larger panels). Use 12 guage minimum hog rings (ASTM F626) to secure panels to each other two places at joints between sections, to each post, and to tension wire or chain link at 24 inch spacing.

Brace Rail is galvanized 1-5/8" O.D. steel pipe, cut to fit securely in Brace Rail Caps. Secure chain link fabric to Brace Rails with 9 guage zinc coated wire (ASTM F626) at 24" spacing.

Contractor shall submit complete detailed shop drawings in accordance with Sec 1080.

All straps, anchors, hex nuts and washers shall be galvainized in accordance with ASTM A123 and Sec 1081.

All steel components of the fence including purchased parts, hardware, and fabricated components, shall be galvanized.

Resin anchors shall be ASTM F1554 Grade 36.

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

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for (78 in.) Chain-Link Railroad Fence (Structures).

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 6 1/2 inches.

(78 in.) Chain-Link Railroad Fence (Structures) will be measured to the nearest linear foot for each structure, measured along the centerline fence from end of fence to end of fence.

Chain link wire fabric shall be 9 gauge minimum, 2-inch diamond mesh, 75" in height.

Fabric ties shall be 9 gauge minimum zinc coated wire (ASTM F626).

The chain link fence shall be built in accordance with Sec 607 and Sec 1043.

For details of barrier and limits of fence, see Sheet No. 102.

CHAIN LINK RAILROAD FENCE DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 2/3/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	104A

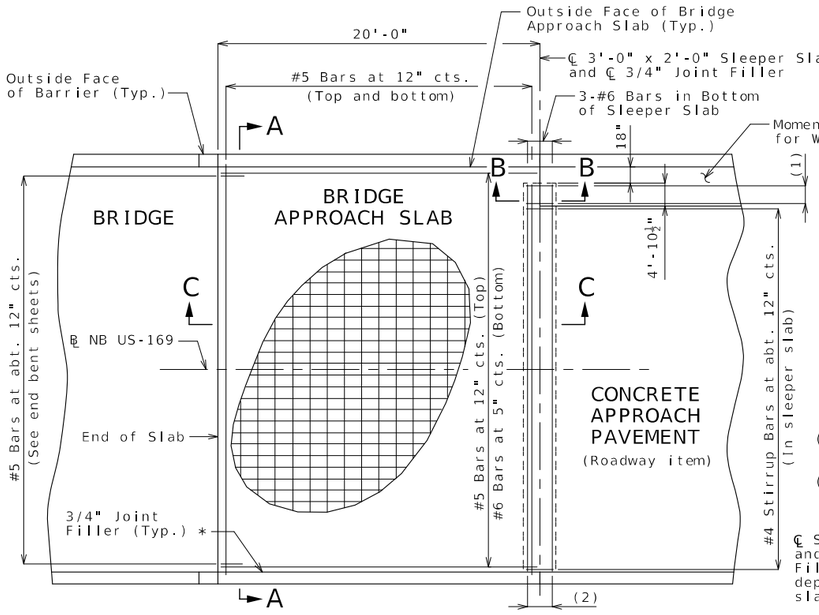
COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION	DATE

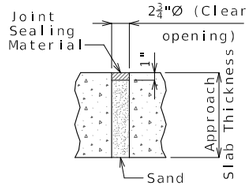
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

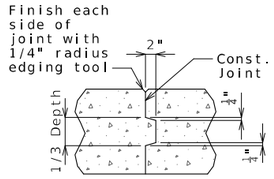


PART PLAN SHOWING REINFORCEMENT



UNDERSEAL ACCESS HOLE DETAIL

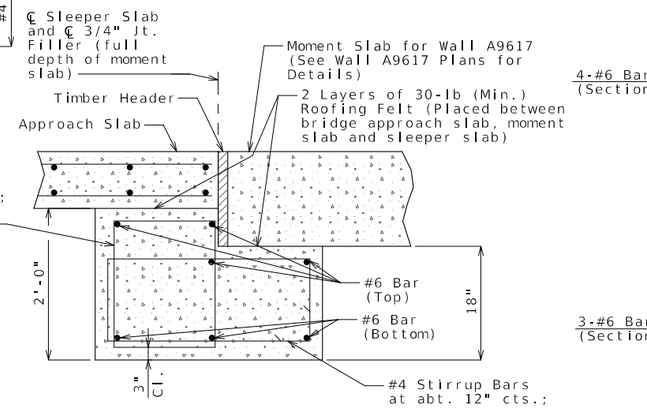
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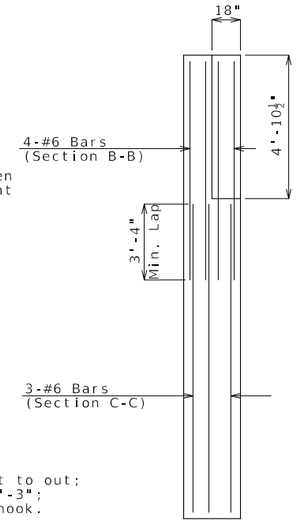
CONSTRUCTION JOINT DETAIL

(1) Pr.-#4 Stirrup Bars at abt. 12" cts. (In sleeper slab) (See Section B-B)

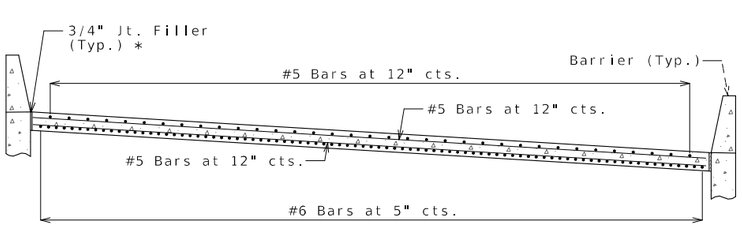
(2) See Sleeper Slab Top Reinforcing Plan Detail.



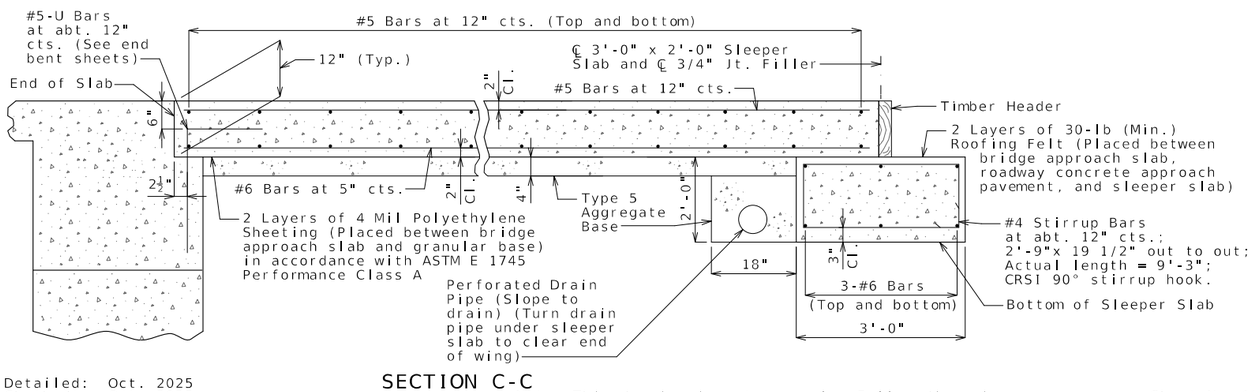
SECTION B-B



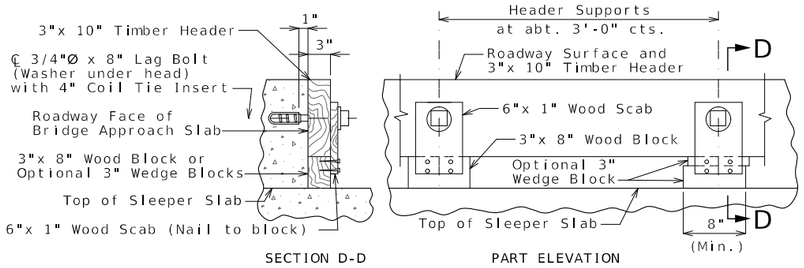
SLEEPER SLAB TOP REINFORCING PLAN



SECTION A-A



SECTION C-C



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

General Notes:

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

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

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 24 inches for #5 bars and 40 inches for #6 bars, or by mechanical bar splice.

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

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

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

For concrete approach pavement details, see roadway plans.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major) per square yard.

* 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.

BRIDGE APPROACH SLAB (MAJOR) - END BENT NO. 1

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020026
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	105

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

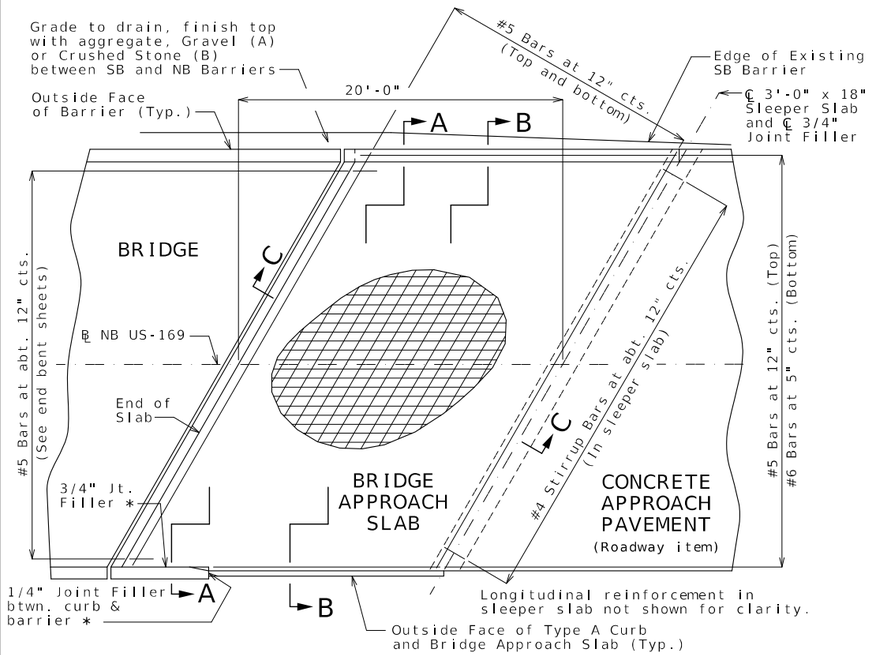
BRIDGE NO.
A9606

DESCRIPTION	DATE

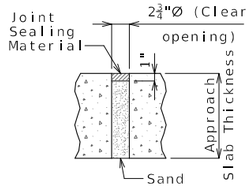
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

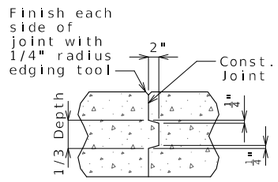


PART PLAN SHOWING REINFORCEMENT



UNDERSEAL ACCESS HOLE DETAIL

(If required)



CONSTRUCTION JOINT DETAIL

General Notes:

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

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

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 24 inches for #5 bars and 40 inches for #6 bars, or by mechanical bar splice.

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

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

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

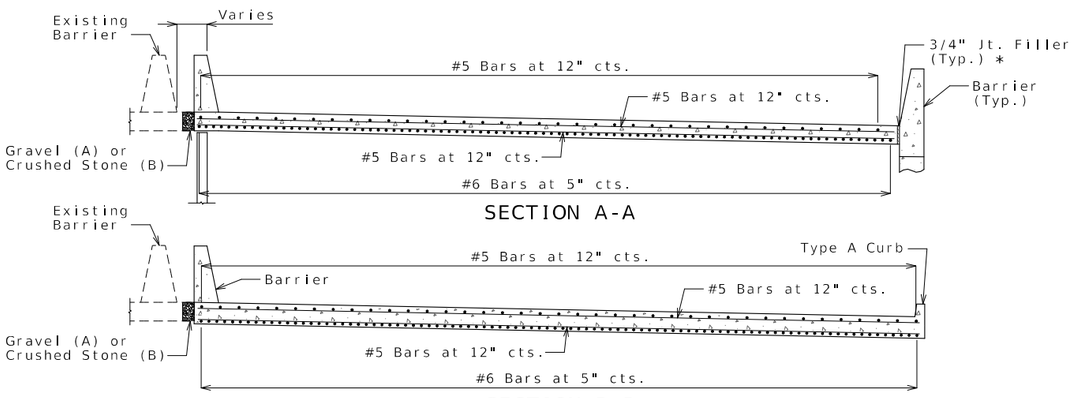
For concrete approach pavement details, see roadway plans.

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

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler, other aggregate and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major) per square yard.

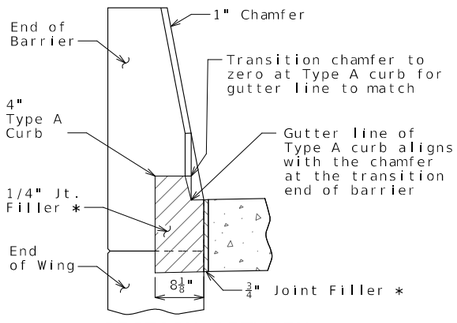
* Seal joint between vertical face of approach slab and wing with sealant in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

For reinforcement of the barrier, see Sheet No.104 .

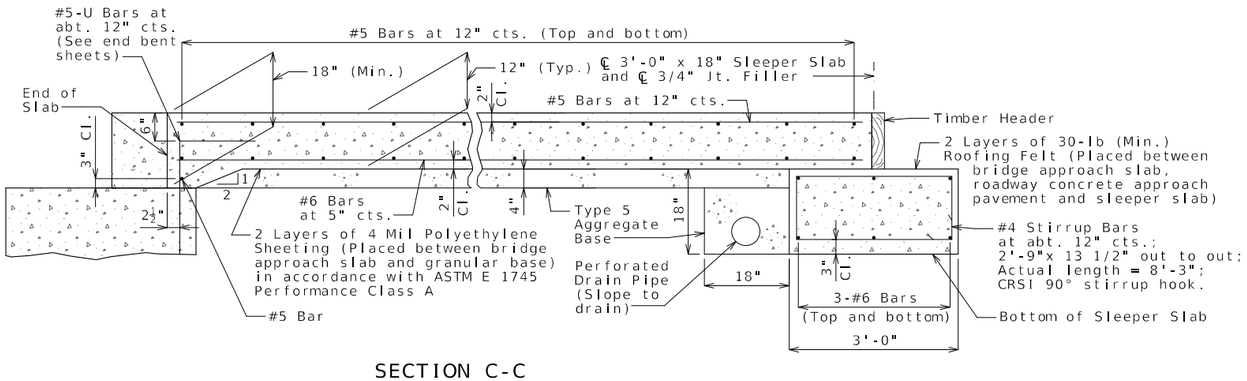


SECTION A-A

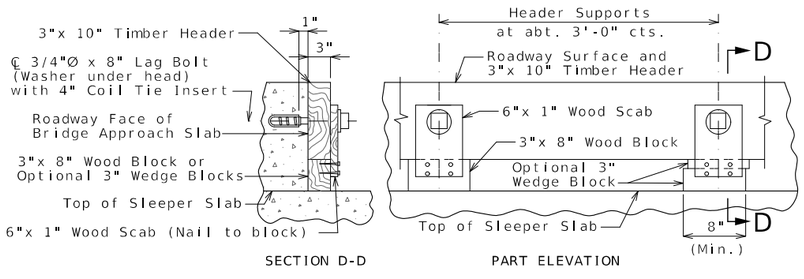
SECTION B-B



SECTION BETWEEN CURB AND BARRIER



SECTION C-C



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

BRIDGE APPROACH SLAB (MAJOR) - END BENT NO. 10

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI THOMAS M. GREER NUMBER PE-2010020026 PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	106

COUNTY: CLAY

JOB NO.: JKU0099

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9606

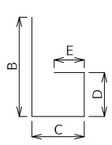
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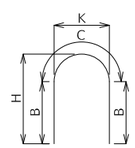
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

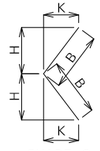
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



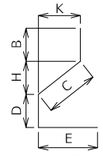
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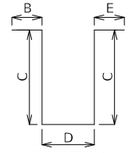
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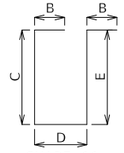
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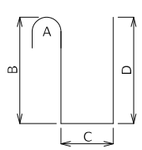
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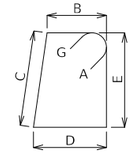
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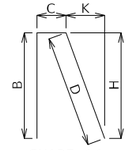
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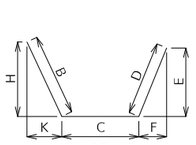
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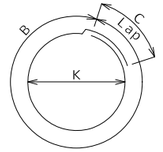
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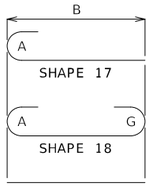
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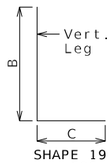
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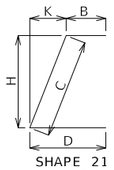
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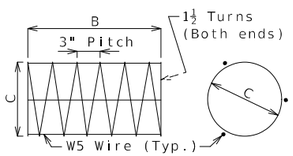
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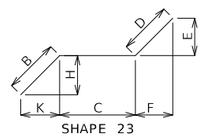
SHAPE 19
or 19S



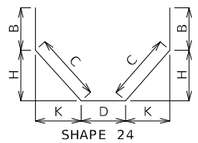
SHAPE 21
or 21S



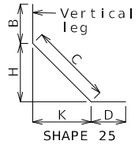
SHAPE 22



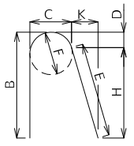
SHAPE 23
or 23S



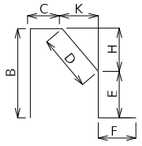
SHAPE 24
or 24S



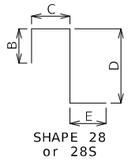
SHAPE 25
or 25S



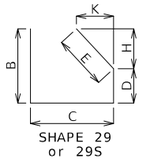
SHAPE 26



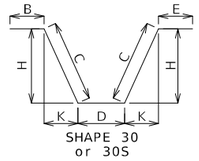
SHAPE 27S



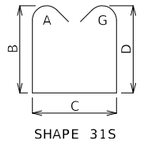
SHAPE 28
or 28S



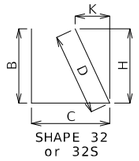
SHAPE 29
or 29S



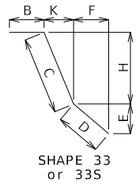
SHAPE 30
or 30S



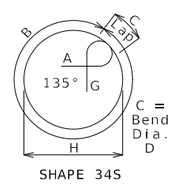
SHAPE 31S



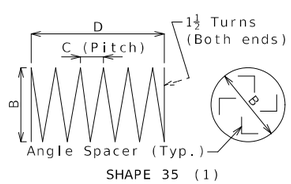
SHAPE 32
or 32S



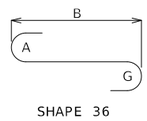
SHAPE 33
or 33S



SHAPE 34S



SHAPE 35 (1)

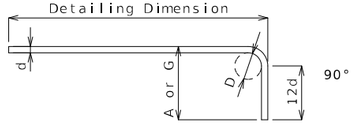


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4½"	12"	8¼"	6"
#7	2	5¼"	14"	9¾"	7"
	3	7"	15"	11½"	8¾"
#8	2	6"	16"	11"	8"
	3	8"	17"	13¼"	10"
#9	1	9½"	19½"	15½"	11¾"
#10	1	10¾"	22"	17½"	13¼"
#11	1	12"	24½"	19½"	14⅞"
#14	1	18¼"	31¼"	27½"	21⅝"
#18	1	24"	41½"	36¼"	28½"

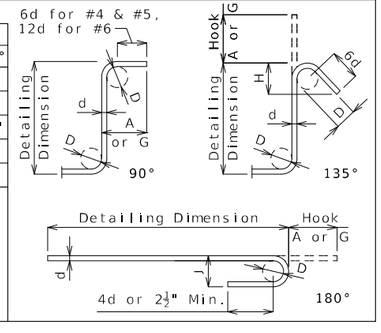


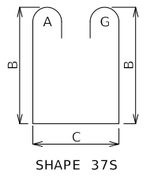
Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G		H	J	
			90°	135°	180°	135°	180°
#4	2	2"	4½"	4½"	5"	2⅝"	3"
	3	3"	5"	5¼"	6"	3"	4"
#5	2	2½"	5¾"	5¾"	5¾"	3⅜"	3¾"
	3	3¾"	6¼"	6½"	7"	3⅜"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅜"	6"

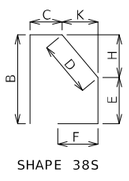
Applicable for all grades of steel.

Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.

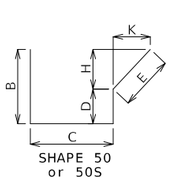




SHAPE 37S



SHAPE 38S



SHAPE 50
or 50S

BENDING DIAGRAMS

All dimensions are out to out.

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

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

(1) Shall be a deformed or plain spiral bar or wire.

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

Reinforcing Steel Totals (Pounds)

		Substructure		Superstructure				Entire Bridge	
				Slab			Slip		
	Size	Plain	Epoxy	Plain	Epoxy	Barrier	Form	Plain	Epoxy
By Size	W5	0	275	0	0	0	0	0	275
	4	0	126	0	7,725	0	0	0	7,851
	5	4,716	2,541	0	132,287	51,428	1,603	4,716	187,859
	6	97,895	31,412	0	135,657	0	0	97,895	167,069
	7	26,030	2,501	0	15,376	0	0	26,030	17,877
	8	8,588	235	0	143,986	0	0	8,588	144,221
	9	6,235	7,258	0	0	0	0	6,235	7,258
	10	7,346	6,726	0	0	0	0	7,346	6,726
	11	368,918	42,492	0	0	0	0	368,918	42,492
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type		519,728	93,566	0	435,031	51,428	1,603	519,728	581,628

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	107

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
		SUBSTRUCTURE													
		INT. BENT 2													
24	6 D200	Beam		20		2 6.000							2 6	2 6	90
12	11 H200	Beam		10			2 0.000	42 0.000					46 0	45 4	2,890
12	11 H201	Beam		18		41 4.000							44 7	44 7	2,842
7	11 H202	Beam		15		17 9.000	7 5.000	17 9.000	4 0.000	17 3.500	4 0.000	17 3.500	42 11	42 11	1,596
4	7 H203	Beam		20		38 9.000							38 9	38 9	317
4	7 H204	Beam		20		22 6.000							22 6	22 6	184
4	7 H205	Beam		20		6 3.000							6 3	6 3	51
12	7 H206	Beam		20		42 1.000							42 1	42 1	1,032
20	7 H207	Beam		20	4	14 11.00							14 11	14 11	
		Inc. = 6'-7"				41 3.000							41 3	41 3	1,148
64	6 U200	Beam		13S	2	4 6.000	3 9.000	4 6.000	3 9.000				17 10	17 4	
		Inc. = 1.750"				4 6.000	8 3.250	4 6.000	8 3.250				25 8	25 2	2,043
64	6 U201	Beam		13S	2	4 6.000	5 8.000	4 6.000	5 8.000				21 8	21 2	
		Inc. = 1.125"				4 6.000	8 6.875	4 6.000	8 6.875				26 6	26 0	2,267
28	6 U202	Beam		10S	2		8 5.000	4 6.000					21 4	21 0	
		Inc. = 0.250"					8 8.250	4 6.000					26 6	25 10	985
10	6 U203	Beam		10S			12.000	6 6.000					8 6	8 2	123
10	6 U204	Beam		10S			12.000	3 8.000					5 8	5 4	80
10	6 U205	Beam		10S			12.000	5 7.000					7 7	7 3	109
36	6 U206	Beam		31S		8 5.000	12.000						10 9	10 5	563
50	5 U207	Beam		10S			2 7.000	6 6.000					11 8	11 5	595
65	5 U208	Beam		10S			2 7.000	5 0.000					10 2	9 11	672
5	5 U209	Beam		13S		5 2.000	6 8.000	5 2.000	6 8.000				24 8	24 4	127
217	6 P200	DS/Column		16		17 3.375	2 5.000					5 6.000	19 8	19 8	6,410
16	11 V200	DS/Column		20		30 4.000							30 4	30 4	2,579
15	11 V201	DS/Column		20		51 4.000							51 4	51 4	4,091
48	11 V202	DS/Column		20		56 0.000							56 0	56 0	14,281
45	11 V203	DS/Column		20		49 0.000							49 0	49 0	11,715
		INT. BENT 3													
28	6 D300	Beam		20		2 6.000							2 6	2 6	105
12	11 H300	Beam		10			2 0.000	42 0.000					46 0	45 4	2,890
12	11 H301	Beam		18		41 4.000							44 7	44 7	2,842
7	11 H302	Beam		15		17 9.000	7 5.000	17 9.000	4 0.000	17 3.500	4 0.000	17 3.500	42 11	42 11	1,596
16	7 H303	Beam		20		42 1.000							42 1	42 1	1,376
20	7 H304	Beam		20	4	12 4.000							12 4	12 4	
		Inc. = 6'-7"				38 8.000							38 8	38 8	1,042
128	6 U300	Beam		13S	4	4 6.000	3 8.500	4 6.000	3 8.500				17 9	17 3	
		Inc. = 1.500"				4 6.000	7 7.000	4 6.000	7 7.000				24 2	23 8	3,933
28	6 U301	Beam		10S			7 8.000	4 6.000					19 10	19 6	820
8	6 U302	Beam		10S			12.000	6 6.000					8 6	8 2	98
20	6 U303	Beam		10S			12.000	3 8.000					5 8	5 4	160
36	6 U304	Beam		31S		7 5.000	12.000						9 9	9 5	509
45	5 U305	Beam		10S			2 5.000	3 0.000					7 10	7 7	356
30	5 U306	Beam		10S			2 5.000	4 8.000					9 6	9 3	289
45	5 U307	Beam		10S			3 3.000	3 0.000					9 6	9 3	434
30	5 U308	Beam		10S			3 3.000	4 8.000					11 2	10 11	342
23	5 U309	Beam		13S		3 2.000	4 10.00	3 2.000	4 10.00				17 0	16 8	400
215	6 P300	DS/Column		16		17 3.375	2 5.000					5 6.000	19 8	19 8	6,351
16	11 V300	DS/Column		20		28 0.000							28 0	28 0	2,380
15	11 V301	DS/Column		20		49 0.000							49 0	49 0	3,905
48	11 V302	DS/Column		20		56 0.000							56 0	56 0	14,281
45	11 V303	DS/Column		20		49 0.000							49 0	49 0	11,715
		INT. BENT 4													
20	6 D400	Beam		20		2 6.000							2 6	2 6	75
14	11 H400	Beam		10			2 0.000	37 11.00					41 11	41 3	3,068

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
		INT. BENT 4 CONT.													
14	11 H401	Beam		18		37 3.000							40 6	40 6	3,012
7	11 H402	Beam		15		15 9.000	6 11.00	15 9.000	3 0.000	15 5.500	3 0.000	15 5.500	38 5	38 5	1,429
8	7 H403	Beam		20		38 0.000							38 0	38 0	621
16	7 H404	Beam		20	4	14 4.000							14 4	14 4	
		Inc. = 7'-10"				37 10.00							37 10	37 10	853
116	6 U400	Beam		13S	4	4 9.000	2 8.000	4 9.000	2 8.000				16 2	15 8	
		Inc. = 1.250"				4 9.000	5 7.000	4 9.000	5 7.000				20 8	20 2	3,122
26	6 U401	Beam		10S			5 8.000	4 9.000					16 1	15 9	615
4	6 U402	Beam		10S			12.000	6 6.000					8 6	8 2	49
20	6 U403	Beam		10S			12.000	2 8.000					4 8	4 4	130
34	6 U404	Beam		31S		5 6.000	12.000						7 10	7 6	383
50	5 U405	Beam		10S			2 8.000	6 6.000					11 10	11 7	604
65	5 U406	Beam		10S			2 8.000	4 10.00					10 2	9 11	672
9	5 U407	Beam		13S		5 0.000	6 8.000	5 0.000	6 8.000				24 4	24 0	225
214	6 P400	DS/Column		16		17 3.375	2 5.000					5 6.000	19 8	19 8	6,321
16	11 V400	DS/Column		20		26 11.00							26 11	26 11	2,288
15	11 V401	DS/Column		20		47 11.00							47 11	47 11	3,819
48	11 V402	DS/Column		20		56 0.000							56 0	56 0	14,281
45	11 V403	DS/Column		20		49 0.000							49 0	49 0	11,715
		INT. BENT 5													
10	11 H500	Beam	E	10			2 0.000	38 0.000					42 0	41 4	2,196
10	11 H501	Beam	E	18		37 4.000							40 7	40 7	2,156
7	11 H502	Beam	E	15		15 9.000	6 11.00	15 9.000	3 0.000	15 5.500	3 0.000	15 5.500	38 5	38 5	1,429
4	7 H503	Beam	E	20		24 10.00							24 10	24 10	203
4	7 H504	Beam	E	20		9 9.000							9 9	9 9	80
12	7 H505	Beam	E	20		38 0.000							38 0	38 0	932
12	7 H506	Beam	E	20	4	16 0.000							16 0	16 0	
		Inc. = 7'-10"				31 8.000							31 8	31 8	585
58	6 U500	Beam	E	13S	2	4 9.000	4 5.000	4 9.000	4 5.000				19 8	19 2	
		Inc. = 1.000"				4 9.000	6 9.000	4 9.000	6 9.000				22 6	22 0	1,793
58	6 U501	Beam	E	13S	2	4 9.000	2 8.000	4 9.000	2 8.000				16 2	15 8	
		Inc. = 1.500"				4 9.000	6 2.000	4 9.000	6 2.000				21 4	20 10	1,590
26	6 U502	Beam	E	10S	2	4 9.000	6 5.000	4 9.000	6 5.000				28 9	28 1	
		Inc. = 0.333"				4 9.000	6 9.000	4 9.000	6 9.000				22 6	21 10	975
8	6 U503	Beam	E	10S			12.000	6 6.000					8 6	8 2	98
10	6 U504	Beam	E	10S			12.000	4 6.000					6 6	6 2	93
10	6 U505	Beam	E	10S			12.000	2 8.000					4 8	4 4	65
34	6 U506	Beam	E	31S		6 5.000	12.000						8 9	8 5	430
45	5 U507	Beam	E	10S			3 0.000	3 0.000					9 0	8 9	411
5	5 U508	Beam	E	10S			3 0.000	5 4.000					11 4	11 1	58
45	5 U509	Beam	E	10S			2 6.000	3 0.000					8 0	7 9	364
5	5 U510	Beam	E	10S			2 6.000	5 4.000					10 4	10 1	53
20	5 U511	Beam	E	10S			3 0.000	5 6.000					11 6	11 3	235
20	5 U512	Beam	E	10S			2 6.000	5 6.000					10 6	10 3	214
4	5 U513	Beam	E	13S		3 2.000	5 6.000	3 2.000	5 6.000				18 4	18 0	75
13	5 U514	Beam	E	13S		3 2.000	5 8.000	3 2.000	5 8.000				18 8	18 4	249
24	6 P500	Column	E	16		17 3.375	2 10.00					5 6.000	20 1	20 1	724
190	6 P501	DS/Column		16		17 3.375	2 5.000					5 6.000	19 8	19 8	5,612
16	11 V500	DS/Column	E	20		25 9.000							25 9	25 9	2,189
15	11 V501	DS/Column	E	20		46 9.000							46 9	46 9	3,726
48	11 V502	DS/Column		20		56 0.000							56 0	56 0	14,281
45	11 V503	DS/Column		20		49 0.000							49 0	49 0	11,715
20	W5 M500	Beam	E	22		2 1.000	9.000						33 1	32 4	110
		INT. BENT 6													
12	6 D600	Beam		20		2 6.000							2 6	2 6	45
10	11 H600	Beam		17	1	16 8.000							18 9	18 9	
		Inc. = 4.250"				13 6.000							15 7	15 7	912

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

For bending diagrams and steel reinforcing totals, see Sheet No. 107.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

BILL OF REINFORCING STEEL

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	108

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
		INT. BENT 6 CONT.													
10	11 H601	Beam		17	1	16 8.000							18 4	18 4	
		Inc. = 4.250"				13 6.000							15 2	15 2	890
10	11 H602	Beam		17		45 8.000							47 9	47 9	2,537
10	11 H603	Beam		17		45 8.000							47 4	47 4	2,515
20	11 H604	Beam		20		45 8.000							45 8	45 8	4,853
10	9 H605	Beam		20		45 8.000							45 8	45 8	1,553
2	9 H606	Beam		20	1	16 8.000							16 8	16 8	
		Inc. = 3'-2"				13 6.000							13 6	13 6	103
54	7 U600	Beam		13		3 4.000	6 3.000	3 4.000	6 3.000				20 8	20 2	2,226
165	7 U601	Beam		13		3 4.000	4 8.000	3 4.000	4 8.000				17 6	17 0	5,733
9	7 U602	Beam		6		3 7.000	2 10.00	3 7.000					10 0	9 8	178
4	7 U603	Beam		6		3 7.000	12.000	3 7.000					8 2	7 10	64
5	6 U604	Beam		6S		3 7.000	6 2.000	3 7.000					13 4	13 0	98
7	6 U605	Beam		6S	1	3 7.000	6 1.375	3 7.000					13 3	13 0	
		Inc. = 3.625"				3 7.000	4 3.875	3 7.000					11 6	11 2	127
61	6 U606	Beam		6S		3 7.000	6 3.500	3 7.000					13 6	13 2	1,206
4	6 U607	Beam		6S	1	3 7.000	5 7.750	3 7.000					12 10	12 6	
		Inc. = 11.25"				3 7.000	2 10.00	3 7.000					10 0	9 8	67
1	6 U608	Beam		14S		3 4.000	3 2.875	2 8.000			16.875	2 3.250	9 3	9 1	14
1	6 U609	Beam		21S		3 6.000	6 7.125	4 5.000			5 8.000	3 4.500	14 6	14 5	22
1	6 U610	Beam		21S		4 3.000	2 8.000				2 3.625	16.250	6 11	6 11	10
4	6 U611	Beam		13S		6 6.500	5 11.63	6 6.500	5 11.63				26 4	25 10	155
9	6 U612	Beam		10S			12.000	6 1.000					8 1	7 9	105
17	6 U613	Beam		10S			12.000	5 6.000					7 6	7 2	183
9	6 U614	Beam		10S			12.000	4 6.000					6 6	6 2	83
27	7 U615	Beam		6		6 3.000	3 4.000	6 3.000					15 10	15 6	855
30	7 U616	Beam		6		4 8.000	3 4.000	4 8.000					12 8	12 4	756
28	6 U617	Beam		6S		2 6.000	5 8.000	2 6.000					10 8	10 4	435
48	6 U618	Beam		6S		3 7.000	5 10.00	3 7.000					13 0	12 8	913
360	6 P600	DS/Column		16		14 1.625	2 9.000					4 6.000	16 11	16 11	9,147
22	11 V600	DS/Column		20		29 6.000							29 6	29 6	3,448
22	11 V601	DS/Column		20		47 6.000							47 6	47 6	5,552
66	11 V602	DS/Column		20		56 0.000							56 0	56 0	19,637
66	11 V603	DS/Column		20		50 0.000							50 0	50 0	17,533
		INT. BENT 7													
14	11 H700	Beam	E	17		24 4.000							26 0	26 0	1,934
14	11 H701	Beam	E	17		45 6.000							47 2	47 2	3,508
24	11 H702	Beam	E	20		31 1.000							31 1	31 1	3,963
10	11 H703	Beam	E	20		45 6.000							45 6	45 6	2,417
11	9 H704	Beam	E	20		40 0.000							40 0	40 0	1,496
11	9 H705	Beam	E	20		30 10.00							30 10	30 10	1,153
2	9 H706	Beam	E	20		24 4.000							24 4	24 4	165
74	6 U700	Beam	E	13S		4 9.000	8 0.000	4 9.000	8 0.000				26 10	26 4	2,927
134	6 U701	Beam	E	13S		4 9.000	6 8.000	4 9.000	6 8.000				24 2	23 8	4,763
15	6 U702	Beam	E	6S		3 9.000	5 2.500	3 9.000					12 9	12 5	280
15	6 U703	Beam	E	6S		6 0.000	5 2.500	6 0.000					17 3	16 11	381
30	6 U704	Beam	E	6S	5	3 9.000	4 11.38	3 9.000					12 5	12 2	
		Inc. = 6.125"				3 9.000	2 4.875	3 9.000					9 11	9 7	490
30	6 U705	Beam	E	6S	5	6 0.000	4 11.38	6 0.000					16 11	16 8	
		Inc. = 6.125"				6 0.000	2 4.875	6 0.000					14 5	14 1	693
25	6 U706	Beam	E	6S		3 9.000	4 8.000	3 9.000					12 2	11 10	444
25	6 U707	Beam	E	6S		6 0.000	4 8.000	6 0.000					16 8	16 4	613
30	6 U708	Beam	E	6S	5	3 9.000	4 1.375	3 9.000					11 7	11 4	
		Inc. = 6.875"				3 9.000	14.75	3 9.000					8 9	8 5	445
30	6 U709	Beam	E	6S	5	6 0.000	4 1.375	6 0.000					16 1	15 10	
		Inc. = 6.875"				6 0.000	14.75	6 0.000					13 3	12 11	648
16	6 U710	Beam	E	10S			8 0.000	4 9.000					20 9	20 5	491
18	6 U711	Beam	E	10S			6 8.000	4 9.000					18 1	17 9	480
43	6 U712	Beam	E	14S		4 0.000	15.250	3 10.00			2 6.125	2 10.75	9 1	8 11	576
43	6 U713	Beam	E	29S		4 0.000	4 11.00	2 2.125	3 10.00		2 6.125	2 10.75	14 11	14 7	942
10	6 U714	Beam	E	10S			12.000	7 10.00					9 10	9 6	143
24	6 U715	Beam	E	10S			12.000	6 6.000					8 6	8 2	294
10	6 U716	Beam	E	10S			12.000	6 6.000					8 6	8 2	123
45	6 U717	Beam	E	10S			2 6.000	6 8.000					11 8	11 4	766
5	6 U718	Beam	E	6S		3 9.000	2 1.000	3 9.000					9 7	9 3	69
5	6 U719	Beam	E	6S		6 0.000	2 1.000	6 0.000					14 1	13 9	103

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
		INT. BENT 7 CONT													
20	W5 M700	Beam	E	22		2 1.000	9.000						33 1	32 4	110
34	6 P700	Column	E	16		14 1.625	3 3.000					4 6.000	17 5	17 5	889
318	6 P701	DS/Column		16		14 1.625	2 9.000					4 6.000	16 11	16 11	8,080
22	11 V700	DS/Column	E	20		29 5.000							29 5	29 5	3,438
22	11 V701	DS/Column	E	20		44 5.000							44 5	44 5	5,192
66	11 V702	DS/Column		20		56 0.000							56 0	56 0	19,637
66	11 V703	DS/Column		20		50 0.000							50 0	50 0	17,533
		INT. BENT 8													
12	6 D800	Beam		20		2 6.000							2 6	2 6	45
12	10 H800	Beam		17	1	25 3.000							26 9	26 9	
		Inc. = 10"				16 1.000							17 7	17 7	1,145
12	10 H801	Beam		17		59 4.000							60 10	60 9	3,137
12	10 H802	Beam		20		59 4.000							59 4	59 4	3,064
22	9 H803	Beam		20		59 4.000							59 4	59 4	4,438
2	9 H804	Beam		20	1	25 3.000							25 3	25 3	
		Inc. = 9'-2"				16 1.000							16 1	16 1	141
46	8 H805	Beam		20		47 9.000							47 9	47 9	5,865
4	8 H806	Beam		20		49 8.000							49 8	49 8	530
4	8 H807	Beam		20		50 8.000							50 8	50 8	541
4	8 H808	Beam		20		51 4.000							51 4	51 4	548
8	8 H809	Beam		20		51 8.000							51 8	51 8	1,104
44	7 U800	Beam		13		4 6.000	7 11.00	4 6.000	7 11.00				26 4	25 10	2,323
96	7 U801	Beam		13		4 6.000	6 8.000	4 6.000	6 8.000				23 10	23 4	4,579
12	7 U802	Beam		6		3 7.000	3 11.00	3 7.000					11 1	10 9	264
10	7 U803	Beam		6	1	3 7.000	4 1.000	3 7.000					11 3	10 11	
		Inc. = 4.5625"				3 7.000	8.000	3 7.000					7 10	7 6	188
42	6 U804	Beam		6S		3 4.000	9 1.750	3 4.000					15 10	15 6	978
28	6 U805	Beam		6S	2	2 10.00	12 0.500	2 10.00					17 9	17 5	
		Inc. = 8.625"				2 10.00	2 9.375	2 10.00					8 5	8 1	536
57	6 U806	Beam		6S		3 4.000	11 2.750	3 4.000					17 11	17 7	1,505
12	6 U807	Beam		6S		2 10.00	6 5.250	2 10.00					12 1	11 9	212
34	6 U808	Beam		6S	2	2 10.00	6 3.000	2 10.00					11 11	11 7	
		Inc. = 4.25"				2 10.00	7.750	2 10.00					6 4	6 0	449
6	6 U809	Beam		13S		9 5.000	11 7.500	9 5.000	11 7.500				43 5	42 3	381
3	6 U810	Beam		13S		2 10.25	11 7.500	12 4.500	6 8.000				34 10	33 7	151
55	6 U811	Beam		13S		5 8.000	11 2.000	5 8.000	11 2.000				35 0	34 6	2,850
32	6 U812	Beam		20		11 2.000							11 2	11 2	537
46	6 U813	Beam		7S		3 3.000	8 7.625					6 1.000 5 6.000	15 5	15 5	1,065
10	6 U814	Beam		10S			12.000	7 9.000					9 9	9 5	141
24	6 U815	Beam		10S			12.000	6 6.000					8 6	8 2	294
10	6 U816	Beam		10S			12.000	6 6.000					8 6	8 2	123
16	7 U817	Beam		6S		4 6.000	7 11.00	4 6.000					16 11	16 7	542
32	7 U818	Beam		6S		4 6.000	6 8.000	4 6.000					15 8	15 4	1,003
30	7 U819	Beam		6S		2 6.000	6 8.000	2 6.000					11 8	11 4	695
552	6 P800	DS/Column		16		14 1.625	2 9.000					4 6.000	16 11	16 11	14,026
33	11 V800	DS/Column		20		29 6.000							29 6	29 6	5,172
33	11 V801	DS/Column		20		52 7.000							52 7	52 7	9,219
99	11 V802	DS/Column		20		50 0.000							50 0	50 0	26,299
99	11 V803	DS/Column		20		44 0.000							44 0	44 0	23,143
33	11 V804	DS/Column		20		22 5.000							22 5	22 5	3,930
33	11 V805	DS/Column		20		17 4.000							17 4	17 4	3,039
		INT. BENT 9													
12	10 H900	Beam	E	17		39 8.000							41 2	41 2	2,126
12	10 H901	Beam	E	20		59 5.000							59 5	59 5	3,068
22	9 H902	Beam	E	20		59 5.000							59 5	59 5	4,444
12	10 H903	Beam	E	17		28 2.000							29 8	29 8	1,532
112	6 U900	Beam	E	13S		4 6.000	6 11.00	4 6.000	6 11.00				24 2	23 8	3,981
20	6 U901	Beam	E	10S			12.000	6 6.000					8 6	8 2	245
22	6 U902	Beam	E	10S			12.000	6 6.000					8 6	8 2	270
34	6 U903	Beam	E	10S			6 11.00	4 6.000					18 4	18 0	919
56	6 U904	Beam	E	13S		4 6.000	6 8.000	4 6.000	6 8.000				23 8	23 2	1,949
18	6 U905	Beam	E	10S			6 8.000	4 6.000					17 10	17 6	473

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

For bending diagrams and steel reinforcing totals, see Sheet No. 107.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 109 of 132

BILL OF REINFORCING STEEL

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE 169 | STATE MO
DISTRICT BR | SHEET NO. 109
COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

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Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
						ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	lb
		INT. BENT 9 CONT.													
10	W5 M900	Beam	E	22		2 1.000	9.000						33 1	32 4	55
510	6 P900	DS/Column		16		14 1.625	2 9.000					4 6.000	16 11	16 11	12,959
15	6 P901	DS/Column	E	16		14 1.625	3 3.000					4 6.000	17 5	17 5	392
33	11 V900	DS/Column	E	20		20 6.000							20 6	20 6	3,594
33	11 V901	DS/Column	E	20		38 6.000							38 6	38 6	6,750
99	11 V902	DS/Column		20		58 0.000							58 0	58 0	30,507
99	11 V903	DS/Column		20		52 0.000							52 0	52 0	27,351
		END BENT 10													
4	6 F1000	Wing	E	23S		2 3.000	4 6.000	14.000	9.875	9.875	19.125	19.125	7 11	7 10	47
4	6 F1001	Diaphragm	E	6S		5 6.000	3 0.000						8 6	8 4	50
4	6 H1000	Beam	E	20		38 5.000							38 5	38 5	231
8	7 H1001	Beam	E	20		38 5.000							38 5	38 5	628
5	7 H1002	Beam	E	18		5 6.000							7 2	7 2	73
8	6 H1003	Wing	E	20		11 0.000							11 0	11 0	132
8	8 H1004	Wing	E	20		11 0.000							11 0	11 0	235
6	6 H1005	Stem	E	20		38 3.000							38 3	38 3	345
27	5 U1000	Beam	E	13S		2 8.000	2 5.000	2 8.000	2 5.000				11 2	10 10	305
12	5 U1001	Beam	E	10S			2 5.000	2 8.000					7 6	7 3	91
37	5 U1002	Approach Seat	E	19S		2 6.000	15.000						3 9	3 8	142
1	5 U1003	Stem	E	13S		0 6.750	14.000	0 0.675	14.000				4 5	4 1	4
48	4 P1000	CIP Pile	E	34S		3 1.625					12.000		3 11	3 11	126
36	6 V1000	CIP Pile	E	17		5 3.000							5 11	5 11	320
20	6 V1001	Wing	E	20	2	2 4.000							2 4	2 4	
		Inc. = 0.444"					2 8.000						2 8	2 8	75
110	5 V1002	Stem	E	20		3 0.000							3 0	3 0	344
		SUPERSTRUCTURE													
		END BENT 1													
38	8 F100	Wing	E	23S		2 3.000	4 6.000	14.000	9.875	9.875	19.125	19.125	7 11	7 10	795
10	6 F101	Diaphragm	E	6S		5 6.000	3 0.000						8 6	8 4	125
6	6 H100	Beam	E	20		45 8.000							45 8	45 8	412
8	8 H101	Beam	E	20		45 8.000							45 8	45 8	975
14	8 H102	Beam	E	18		3 9.000							5 7	5 7	209
5	6 H103	Diaphragm	E	20		45 8.000	2 10.00						48 6	48 4	363
4	6 H104	Diaphragm	E	20		7 0.000	2 10.00						9 10	9 8	58
1	6 H105	Diaphragm	E	20		5 8.000	2 10.00						8 6	8 4	13
16	6 H106	Diaphragm	E	20		8 1.000							8 1	8 1	194
4	6 H107	Diaphragm	E	20		5 6.000							5 6	5 6	33
4	6 H108	Diaphragm	E	20		2 3.000							2 3	2 3	14
1	6 H109	Diaphragm	E	20		0 10.00							0 10	0 10	1
4	7 H110	Diaphragm	E	20		45 8.000							45 8	45 8	373
5	5 H111	Strand Tie	E	20		4 10.00							4 10	4 10	25
4	6 H112	Beam	E	20		15 8.000							15 8	15 8	94
12	6 H113	Beam	E	20		10 8.000							10 8	10 8	192
4	6 H114	Beam	E	20		4 8.000							4 8	4 8	28
36	8 H115	Wing	E	20		21 3.000							21 3	21 3	2,043
8	8 H116	Wing	E	20		22 9.000							22 9	22 9	486
34	8 H117	Wing	E	20		21 1.000							21 1	21 1	1,914
8	8 H118	Wing	E	20		22 6.000							22 6	22 6	481
45	4 U100	Beam	E	10S			13.000	3 0.000					5 2	5 0	150
22	5 U101	Beam	E	10S			8 2.000	3 0.000					19 4	19 1	438
20	5 U102	Beam	E	13S		3 0.000	3 6.750	3 0.000	3 6.750				14 1	13 9	287
16	5 U103	Beam	E	10S			3 6.750	3 0.000					10 2	9 11	165
39	5 U104	Diaphragm	E	10S			5 3.000	2 2.000					12 8	12 5	505
39	6 U105	Diaphragm	E	19S		4 3.000	2 8.000						6 11	6 9	395
40	5 U106	Approach Seat	E	19S		2 0.000	15.000						3 3	3 2	132
53	6 U107	Diaphragm	E	19S		3 3.000	4 7.000						7 10	7 8	610
12	5 U108	Sign Support	E	13S		3 0.000	3 8.000	3 0.000	3 8.000				14 4	14 0	175

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
						ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	lb
		INT. BENT 1 CONT.													
80	4 P100	CIP Pile	E	34S		5 2.875					20.000		6 0	6 0	321
96	6 V100	CIP Pile	E	17		7 3.000							7 11	7 11	1,142
8	5 V101	Beam	E	20		8 2.000							8 2	8 2	68
25	6 V102	Diaphragm	E	20		4 6.000							4 6	4 6	169
40	6 V103	Wing	E	20	2	9 2.000							9 2	9 2	
		Inc. = 0.526"				10 0.000							10 0	10 0	576
40	6 V104	Wing	E	20	2	9 3.750							9 4	9 4	
		Inc. = 0.434"				10 0.000							10 0	10 0	581
17	5 V105	Sign Support	E	20S		10 1.000							10 1	10 1	179
		DIA. INT. BENT 2													
4	6 H240	Diaphragm	E	20		5 5.000							5 5	5 5	33
4	6 H241	Diaphragm	E	20		5 8.000							5 8	5 8	34
8	6 H242	Diaphragm	E	20		7 7.000							7 7	7 7	91
8	6 H243	Diaphragm	E	20		7 10.00							7 10	7 10	94
12	4 H244	Diaphragm	E	20		7 11.00							7 11	7 11	63
12	4 H245	Diaphragm	E	20		8 2.000							8 2	8 2	65
4	5 H246	Strand Tie	E	20		4 8.000							4 8	4 8	19
6	5 H247	Strand Tie	E	20		5 9.000							5 9	5 9	36
8	6 H248	Diaphragm	E	20		3 2.000							3 2	3 2	38
32	4 U240	Diaphragm	E	28S			2 2.000	6 1.000	18.000				9 9	9 7	205
22	6 U241	Diaphragm	E	28S			2 8.000	5 4.000	2 2.000				10 2	9 10	325
10	6 U244	Diaphragm	E	28S			2 8.000	4 9.000	2 2.000				9 7	9 3	139
18	6 U245	Diaphragm	E	28S			2 8.000	4 6.000	2 2.000				9 4	9 0	243
4	5 U246	Diaphragm	E	6S		4 6.000	16.000						5 10	5 9	24
4	5 U247	Diaphragm	E	6S		4 6.000	16.000	2 2.000					8 0	7 9	32
8	5 U248	Diaphragm	E	6S		4 6.000	16.000	15.000					7 1	6 10	57
4	5 U249	Diaphragm	E	6S		4 6.000	16.000	17.000					7 3	7 0	29
8	5 V240	Diaphragm	E	20		5 5.000							5 5	5 5	45
		DIA. INT. BENT 3													
4	6 H340	Diaphragm	E	20		5 8.000							5 8	5 8	34
12	6 H341	Diaphragm	E	20		3 8.000							3 8	3 8	66
8	6 H342	Diaphragm	E	20		7 8.000							7 8	7 8	92
20	4 H343	Diaphragm	E	20		8 1.000							8 1	8 1	108
4	6 H344	Diaphragm	E	20		6 8.000							6 8	6 8	40
4	5 H345	Strand Tie	E	20		4 8.000							4 8	4 8	19
6	5 H346	Strand Tie	E	20		5 9.000							5 9	5 9	36
16	4 U340	Diaphragm	E	28S			2 2.000	5 4.000	18.000				9 0	8 10	94
16	4 U342	Diaphragm	E	28S			2 2.000	5 7.000	18.000				9 3	9 1	97
12	6 U344	Diaphragm	E	28S			2 8.000	4 11.00	2 2.000				9 9	9 5	170
12	6 U345	Diaphragm	E	28S			2 8.000	4 2.000	2 2.000				9 0	8 8	156
12	6 U348	Diaphragm	E	28S			2 8.000	4 3.000	2 2.000				9 1	8 9	158
12	6 U349	Diaphragm	E	28S			2 8.000	3 5.000	2 2.000				8 3	7 11	143
4	5 U350	Diaphragm	E	6S		3 11.00	16.000						5 3	5 2	22
7	5 U351	Diaphragm	E	6S		3 11.00	16.000	19.000					6 10	6 7	48
7	5 U352	Diaphragm	E	6S		3 11.00	16.000	16.000					6 7	6 4	46
4	5 V340	Diaphragm	E	20		5 0.000							5 0	5 0	21
4	5 V341	Diaphragm	E	20		4 2.000							4 2	4 2	17
		DIA. INT. BENT 4													
8	6 H440	Diaphragm	E	20		4 7.000							4 7	4 7	55
8	6 H442	Diaphragm	E	20		6 9.000							6 9	6 9	81
24	4 H444	Diaphragm	E	20		7 1.000							7 1	7 1	114
4	5 H446	Strand Tie	E	20		4 8.000							4 8	4 8	19
6	5 H447	Strand Tie	E	20		5 9.000							5 9	5 9	36
8	6 H448	Diaphragm	E	20		2 6.000							2 6	2 6	30
12	4 U440	Diaphragm	E	28S			2 2.000	4 11.00	18.000				8 7	8 5	67
12	4 U442	Diaphragm	E	28S			2 2.000	4 8.000	18.000				8 4	8 2	65
24	6 U444	Diaphragm	E	28S			2 8.000	4 2.000	2 2.000				9 0	8 8	312

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

For bending diagrams and steel reinforcing totals, see Sheet No. 107.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 110 of 132

BILL OF REINFORCING STEEL

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	110

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	Dimensions B	Dimensions C	Dimensions D	Dimensions E	Dimensions F	Dimensions H	Dimensions K	Nom. Length	Actual Length	Weight
		DIA. INT. BENT 4													
24	6 U446	Diaphragm	E	28S		4 9.000	2 8.000	3 6.000	2 2.000				8 4	8 0	288
4	5 U447	Diaphragm	E	6S		4 9.000	16.000						6 1	6 0	25
12	5 U448	Diaphragm	E	6S		4 9.000	16.000	16.000					7 5	7 2	90
4	5 U450	Diaphragm	E	6S		4 9.000	16.000	21.000					7 10	7 7	32
8	5 V440	Diaphragm	E	20		4 3.000							4 3	4 3	35
		DIA. INT. BENT 5													
1	7 H540	Diaphragm	E	20		36 9.000							36 9	36 9	75
12	7 H541	Diaphragm	E	20		7 4.000							7 4	7 4	180
2	6 H542	Diaphragm	E	20		36 9.000							36 9	36 9	110
8	6 H543	Diaphragm	E	20		7 4.000							7 4	7 4	88
2	8 H544	Diaphragm	E	20		36 9.000							36 9	36 9	196
24	8 H545	Diaphragm	E	20		7 0.000							7 0	7 0	449
3	6 H546	Diaphragm	E	20		5 6.000							5 6	5 6	25
8	4 U540	Diaphragm	E	10S			15.000	2 5.000					4 11	4 9	25
8	4 U541	Diaphragm	E	10S			15.000	2 6.000					5 0	4 10	26
8	4 U542	Diaphragm	E	10S			15.000	2 6.000					5 0	4 10	26
8	4 U543	Diaphragm	E	10S			15.000	2 6.000					5 0	4 10	26
8	6 U544	Diaphragm	E	10S			15.000	2 11.00					5 5	5 1	61
40	6 U545	Diaphragm	E	10S			15.000	3 4.000					5 10	5 6	330
10	5 U546	Diaphragm	E	6S		4 0.000	14.000	22.000					7 0	6 9	70
8	6 U547	Diaphragm	E	10S			15.000	3 1.000					5 7	5 4	64
10	5 U548	Diaphragm	E	6S		3 2.000	14.000	15.000					5 7	5 4	56
8	5 V540	Diaphragm	E	20		2 10.00							2 10	2 10	24
1	7 H550	Diaphragm	E	20		36 2.000							36 2	36 2	74
12	7 H551	Diaphragm	E	20		7 2.000							7 2	7 2	176
2	6 H552	Diaphragm	E	20		36 2.000							36 2	36 2	109
8	6 H553	Diaphragm	E	20		7 2.000							7 2	7 2	86
2	8 H554	Diaphragm	E	20		36 2.000							36 2	36 2	193
24	8 H555	Diaphragm	E	20		6 10.00							6 10	6 10	438
3	6 H556	Diaphragm	E	20		5 6.000							5 6	5 6	25
8	4 U550	Diaphragm	E	10S			17.000	3 1.000					5 11	5 9	31
8	4 U551	Diaphragm	E	10S			17.000	3 2.000					6 0	5 10	31
8	4 U552	Diaphragm	E	10S			17.000	3 1.000					5 11	5 9	31
8	4 U553	Diaphragm	E	10S			17.000	3 2.000					6 0	5 10	31
8	6 U554	Diaphragm	E	10S			17.000	3 7.000					6 5	6 1	73
40	6 U555	Diaphragm	E	10S			17.000	4 1.000					6 11	6 7	396
10	5 U556	Diaphragm	E	6S		4 0.000	16.000	22.000					7 2	6 11	72
8	6 U557	Diaphragm	E	10S			17.000	3 11.00					6 9	6 6	78
10	5 U558	Diaphragm	E	6S		3 2.000	16.000	17.000					5 11	5 8	59
8	5 V550	Diaphragm	E	20		3 7.000							3 7	3 7	30
		DIA. INT. BENT 6													
4	6 H640	Diaphragm	E	20		5 5.000							5 5	5 5	33
4	6 H641	Diaphragm	E	20		5 0.000							5 0	5 0	30
4	6 H642	Diaphragm	E	20		8 1.000							8 1	8 1	49
4	6 H643	Diaphragm	E	20		7 7.000							7 7	7 7	46
12	4 H644	Diaphragm	E	20		8 4.000							8 4	8 4	67
12	4 H645	Diaphragm	E	20		7 11.00							7 11	7 11	63
4	5 H646	Strand Tie	E	23		15.000	3 3.000				7.000	13.250	4 6	4 6	19
6	5 H647	Strand Tie	E	23		15.000	3 3.000	15.000	7.000	13.250	7.000	13.250	5 9	5 9	36
10	6 H648	Diaphragm	E	20		2 6.000							2 6	2 6	38
2	6 H649	Diaphragm	E	20		2 4.000							2 4	2 4	7
12	4 U640	Diaphragm	E	28S			4 6.000	5 7.000	18.000				11 7	11 5	92
6	4 U641	Diaphragm	E	28S			4 6.000	6 8.000	18.000				12 8	12 6	50
4	4 U462	Diaphragm	E	28S			4 6.000	6 1.000	18.000				12 1	11 11	32
22	6 U644	Diaphragm	E	28S			4 6.000	4 10.00	2 2.000				11 6	11 2	369
16	6 U645	Diaphragm	E	28S			4 6.000	4 4.000	2 2.000				11 0	10 8	256
8	6 U647	Diaphragm	E	28S			2 0.000	4 4.000	2 2.000				8 6	8 2	98
3	6 U648	Diaphragm	E	28S			2 6.000	4 4.000	2 2.000				9 0	8 8	39
1	5 U649	Diaphragm	E	6S		4 10.00	12.000						5 10	5 9	6
2	5 U650	Diaphragm	E	6S		4 6.000	16.000						5 10	5 9	12

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	Dimensions B	Dimensions C	Dimensions D	Dimensions E	Dimensions F	Dimensions H	Dimensions K	Nom. Length	Actual Length	Weight
		DIA. INT. BENT 6													
5	5 U651	Diaphragm	E	6S		4 10.00	12.000	16.000					7 2	6 11	36
4	5 U652	Diaphragm	E	6S		4 10.00	12.000	2 7.000					8 5	8 2	34
4	5 U653	Diaphragm	E	6S		4 6.000	16.000	16.000					7 2	6 11	29
4	5 U654	Diaphragm	E	6S		4 6.000	16.000	19.000					7 5	7 2	30
8	5 V640	Diaphragm	E	20		5 0.000							5 0	5 0	42
		DIA. INT. BENT 7													
16	5 H740	Diaphragm	E	20		12 1.000							12 1	12 1	202
8	5 H741	Diaphragm	E	20		32 6.000							32 6	32 6	271
6	5 H742	Diaphragm	E	20		2 2.000							2 2	2 2	14
4	5 H743	Diaphragm	E	20		7 7.000							7 7	7 7	32
16	5 H744	Diaphragm	E	20		13 0.000							13 0	13 0	217
6	5 H745	Diaphragm	E	20		2 1.000							2 1	2 1	13
4	5 H746	Diaphragm	E	20		3 9.000							3 9	3 9	16
41	5 U740	Diaphragm	E	27S			2 10.00	3 0.875		12.000	20.000	2 7.000	6 11	6 11	296
41	5 U741	Diaphragm	E	10S			2 10.00	13.000					6 9	6 6	278
3	5 U742	Diaphragm	E	27S			21.000	2 2.875		12.000	20.000	18.000	5 0	5 0	16
3	5 U743	Diaphragm	E	10S			21.000	13.000					4 7	4 4	14
1	5 U744	Diaphragm	E	27S			16.000	3 0.875		12.000	20.000	2 7.000	5 5	5 5	6
34	5 U745	Diaphragm	E	27S			3 4.000	3 2.125		12.000	19.000	2 9.000	7 6	7 6	266
34	5 U746	Diaphragm	E	10S			3 4.000	12.000					7 8	7 5	263
3	5 U747	Diaphragm	E	27S			21.000	2 2.125		12.000	19.000	18.000	4 11	4 11	15
3	5 U748	Diaphragm	E	10S			21.000	12.000					4 6	4 3	13
1	5 U749	Diaphragm	E	27S			16.000	3 2.125		12.000	19.000	2 9.000	5 6	5 6	6
4	5 U840	Diaphragm	E	28S			8 6.000	7 6.000	18.000				17 6	17 4	46
4	4 U841	Diaphragm	E	28S			8 6.000	8 6.000	18.000				18 6	18 4	49
4	4 U842	Diaphragm	E	28S			8 6.000	8 2.000	18.000				18 2	18 0	48
4	4 U843	Diaphragm	E	28S			8 6.000	7 10.00	18.000				17 10	17 8	47
16	6 U844	Diaphragm	E	28S			8 6.000	7 3.000	2 2.000				17 11	17 7	423
8	6 U845	Diaphragm	E	28S			8 6.000	7 0.000	2 2.000				17 8	17 4	208
4	6 U846	Diaphragm	E	28S			6 5.000	7 0.000	2 2.000				15 7	15 3	92
4	6 U847	Diaphragm	E	28S			6 3.000	6 5.000	2 2.000				14 10	14 6	87
8	6 U849	Diaphragm	E	28S			8 6.000	6 5.000	2 2.000				17 1	16 9	201
4	6 U850	Diaphragm	E	28S			2 2.000	6 5.000	2 2.000				10 9	10 5	63
4	6 U851	Diaphragm	E	28S			3 0.000	6 5.000	2 2.000				11 7	11 3	68
6	6 U852	Diaphragm	E	28S			5 0.000	6 5.000	2 2.000				13 7	13 3	119
1	6 U854	Diaphragm	E	28S			17.000	6 5.000	2 2.000				10 0	9 8	15
2	5 U856	Diaphragm	E	6S		4 9.000	14.000						5 11	5 10	12
2	5 U858	Diaphragm	E	6S		3 10.00	18.000						5 4	5 3	11
7	5 U859	Diaphragm	E	6S		4 9.000	14.000	16.000					7 3	7 0	51
7	5 U860	Diaphragm	E	6S		4 9.000	15.000	2 5.000					8 5	8 2	60
7	5 U861	Diaphragm	E	6S		3 10.00	18.000	20.000					7 0	6 9	49
7	5 U862	Diaphragm	E	6S		3 10.00	18.000	16.000					6 8	6 5	47
8	5 V840	Diaphragm	E	20		7 3.000							7 3	7 3	60
		DIA. INT. BENT 9													
2	7 H940	Diaphragm	E	20		57 1.000							57 1	57 1	233
16	7 H941	Diaphragm	E	20		11 4.000							11 4	11 4	371
4	6 H942	Diaphragm	E	20		57 1.000							57 1	57 1	343
16	6 H943	Diaphragm	E	20		11 4.000							11 4	11 4	272
2	8 H944	Diaphragm	E	20		57 1.000							57 1	57 1	305
32	8 H945	Diaphragm	E	20		10 9.000							10 9	10 9	918

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

For bending diagrams and steel reinforcing totals, see Sheet No. 107.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

BILL OF REINFORCING STEEL

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE 169 | STATE MO

DISTRICT BR | SHEET NO. 111

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
		DIA. INT. BENT 9													
1	8 H946	Diaphragm	E	20		57 1.000							57 1	57 1	152
12	8 H947	Diaphragm	E	20		11 4.000							11 4	11 4	363
3	6 H948	Diaphragm	E	20		5 6.000							5 6	5 6	25
48	4 U940	Diaphragm	E	10S			3 8.000	5 5.000					12 9	12 7	403
48	4 U941	Diaphragm	E	10S			3 8.000	4 0.000					11 4	11 2	358
16	6 U942	Diaphragm	E	10S			3 8.000	6 3.000					13 7	13 3	318
16	6 U943	Diaphragm	E	10S			3 8.000	4 10.00					12 2	11 10	284
16	6 U944	Diaphragm	E	10S			3 8.000	5 9.000					13 1	12 9	306
16	6 U945	Diaphragm	E	10S			3 8.000	4 4.000					11 8	11 4	272
2	6 U946	Diaphragm	E	10S			2 4.000	6 3.000					10 11	10 7	32
2	6 U947	Diaphragm	E	10S			4 2.000	4 10.00					13 2	12 10	39
2	6 U948	Diaphragm	E	10S			3 3.000	5 7.000					12 1	11 9	35
2	6 U949	Diaphragm	E	10S			4 7.000	4 2.000					13 4	13 0	39
2	6 U950	Diaphragm	E	10S			3 5.000	4 4.000					11 2	10 10	33
2	6 U951	Diaphragm	E	10S			4 7.000	2 11.00					12 1	11 9	35
4	5 U952	Diaphragm	E	6S		2 2.000	4 5.000	19.000					8 2	7 11	33
4	5 U953	Diaphragm	E	14S		2 9.000	13.000	4 3.000			2 9.000	3 3.500	8 1	7 11	33
2	6 U954	Diaphragm	E	10S			2 5.000	6 7.000					11 5	11 1	33
2	6 U955	Diaphragm	E	10S			4 2.000	5 2.000					13 6	13 2	40
2	6 U956	Diaphragm	E	10S			17.000	6 0.000					8 10	8 6	26
2	6 U957	Diaphragm	E	10S			3 3.000	4 7.000					11 1	10 9	32
2	6 U958	Diaphragm	E	10S			12.000	4 10.00					6 10	6 6	20
2	6 U959	Diaphragm	E	10S			2 4.000	3 5.000					8 1	7 9	23
56	5 U960	Diaphragm	E	12		3 0.000	22.000						5 5	5 2	302
1	5 U961	Diaphragm	E	6S		22.250	4 5.000	15.250					7 7	7 4	8
1	5 U962	Diaphragm	E	6S		18.500	4 5.000	11.500					6 11	6 8	7
1	5 U963	Diaphragm	E	6S		14.750	4 5.000	7.750					6 4	6 1	6
1	5 U964	Diaphragm	E	14S		2 3.250	13.000	4 3.000			2 9.000	3 3.500	7 7	7 6	8
1	5 U965	Diaphragm	E	14S		23.500	13.000	4 3.000			2 9.000	3 3.500	7 4	7 2	7
1	5 U966	Diaphragm	E	14S		19.750	13.000	4 3.000			2 9.000	3 3.500	7 0	6 10	7
1	5 U967	Diaphragm	E	14S		16.000	13.000	4 3.000			2 9.000	3 3.500	6 8	6 6	7
1	5 U968	Diaphragm	E	29S		2 2.000	3 4.000	12.000	18.000		11.625	13.750	8 0	7 9	8
1	5 U969	Diaphragm	E	50S		2 7.000	10.000	15.000	2 6.000		19.250	23.000	7 2	6 11	7
5	5 V940	Diaphragm	E	25		3 4.000	3 4.000				3 0.125	17.500	6 8	6 8	35
3	5 V941	Diaphragm	E	25		2 11.50	4 2.000				3 8.500	22.750	7 2	7 1	22
1	5 V942	Diaphragm	E	25		23.000	3 4.000				3 0.125	17.500	5 3	5 3	5
		UNIT 1 SLAB													
498	6 S101	Slab	E	20		42 5.000							42 5	42 5	31,727
220	6 S102	Slab	E	20	1	38 5.000							38 5	38 5	
		Inc = 0.218"				42 4.750							42 5	42 5	13,355
219	6 S103	Slab	E	20		38 5.000							38 5	38 5	12,637
427	5 S104	Slab	E	20		42 5.000							42 5	42 5	18,891
188	5 S105	Slab	E	20	1	38 5.000							38 5	38 5	
		Inc = 0.255"				42 4.750							42 5	42 5	7,925
188	5 S106	Slab	E	20		38 5.000							38 5	38 5	7,533
304	5 S107	Slab	E	20		54 9.000							54 9	54 9	17,360
3	5 S108	Slab	E	20	1	16 0.000							16 0	16 0	
		Inc = 17'-3"				50 6.000							50 6	50 6	104
66	8 S109	Slab	E	20		45 11.00							45 11	45 11	8,091
66	8 S110	Slab	E	20		32 7.000							32 7	32 7	5,742
60	8 S111	Slab	E	20		35 1.000							35 1	35 1	5,620
120	5 S112	Slab	E	20		39 1.000							39 1	39 1	4,892
120	5 S113	Slab	E	20		43 1.000							43 1	43 1	5,392
360	8 S114	Slab	E	20		57 10.00							57 10	57 10	55,589
30	7 S115	Slab	E	20		18 8.000							18 8	18 8	1,145
62	5 S116	Slab	E	20		6 5.000							6 5	6 5	415
6	4 S117	Slab	E	20		32 3.000							32 3	32 3	129
2	4 S118	Slab	E	20		28 3.000							28 3	28 3	38
2	4 S119	Slab	E	20		29 3.000							29 3	29 3	39
4	4 S120	Slab	E	20		26 3.000							26 3	26 3	70
2	4 S121	Slab	E	20		22 3.000							22 3	22 3	30
2	4 S122	Slab	E	20		30 3.000							30 3	30 3	40
2	4 S123	Slab	E	20		23 3.000							23 3	23 3	31
2	4 S124	Slab	E	20		21 3.000							21 3	21 3	28
2	4 S125	Slab	E	20		19 3.000							19 3	19 3	26
8	4 S126	Slab	E	20		33 1.000							33 1	33 1	177
2	4 S127	Slab	E	20		46 3.000							46 3	46 3	62

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
		UNIT 1 SLAB CONT													
2	4 S128	Slab	E	20		4 3.000							4 3	4 3	6
2	4 S129	Slab	E	20		5 3.000							5 3	5 3	7
2	4 S130	Slab	E	20		6 3.000							6 3	6 3	8
2	4 S131	Slab	E	20		2 3.000							2 3	2 3	3
2	4 S132	Slab	E	20		8 3.000							8 3	8 3	11
157	4 S134	Slab	E	10		6.000	13.000	3 6.000	6.000				6 8	6 3	655
380	4 S135	Slab	E	10		6.000	9.250	3 6.000	6.000				6 1	5 7	1,417
		UNIT 2 SLAB													
338	6 S201	Slab	E	20		38 5.000							38 5	38 5	19,503
98	6 S202	Slab	E	20	1	2 4.000							2 4	2 4	
		Inc. = 4.309"				37 2.000							37 2	37 2	2,907
239	5 S203	Slab	E	20		38 5.000							38 5	38 5	9,576
69	5 S204	Slab	E	20	1	2 4.000							2 4	2 4	
		Inc. = 6.118"				37 0.000							37 0	37 0	1,415
96	5 S205	Slab	E	20		57 1.000							57 1	57 1	5,716
32	5 S206	Slab	E	20	1	2 5.000							2 5	2 5	
		Inc. = 21.677"				58 5.000							58 5	58 5	1,015
60	8 S207	Slab	E	20		51 9.000							51 9	51 9	8,290
52	5 S208	Slab	E	20	1	3 0.000							3 0	3 0	
		Inc. = 5.961"				28 4.000							28 4	28 4	850
52	5 S209	Slab	E	20		54 1.000							54 1	54 1	2,933
52	5 S210	Slab	E	20	1	21 8.000							21 8	21 8	
		Inc. = 7.196"				52 3.000							52 3	52 3	2,004
52	7 S211	Slab	E	20		60 0.000							60 0	60 0	6,377
52	7 S212	Slab	E	20		40 11.00							40 11	40 11	4,349
20	7 S213	Slab	E	20		13 9.000							13 9	13 9	562
96	5 S214	Slab	E	20		6 5.000							6 5	6 5	642
6	4 S215	Slab	E	20		12 3.000							12 3	12 3	49
4	4 S216	Slab	E	20		9 3.000							9 3	9 3	25
2	4 S217	Slab	E	20		17 3.000							17 3	17 3	23
2	4 S218	Slab	E	20		11 3.000							11 3	11 3	15
2	4 S219	Slab	E	20		6 3.000							6 3	6 3	8
2	4 S220	Slab	E	20		5 3.000							5 3	5 3	7
2	4 S221	Slab	E	20		7 3.000							7 3	7 3	10
2	4 S222	Slab	E	20		13 3.000							13 3	13 3	18
2	4 S223	Slab	E	20		15 3.000							15 3	15 3	20
2	4 S224	Slab	E	20		10 3.000							10 3	10 3	14
151	4 S225	Slab	E	10		6.000	10.000	3 6.000	6.000				6 2	5 9	580
		UNIT 3 SLAB													
538	6 S301	Slab	E	20		38 5.000							38 5	38 5	31,044
97	6 S302	Slab	E	20	1	2 5.000							2 5	2 5	
		Inc. = 4.333"				37 1.000							37 1	37 1	2,877
84	6 S303	Slab	E	20	1	2 2.000							2 2	2 2	
		Inc. = 5.042"				37 0.500							37 1	37 1	2,471
403	5 S304	Slab	E	20		38 5.000							38 5	38 5	16,148
73	5 S305	Slab	E	20	1	2 6.000							2 6	2 6	
		Inc. = 5.763"				37 1.000							37 1	37 1	1,507
63	5 S306	Slab	E	20	1	2 4.000							2 4	2 4	
		Inc. = 6.710"				37 0.000							37 0	37 0	1,292
96	5 S307	Slab	E	20		44 11.00							44 11	44 11	4,497
96	5 S308	Slab	E	20		47 11.00							47 11	47 11	4,798
32	6 S309	Slab	E	20		50 0.000							50 0	50 0	2,403
32	6 S310	Slab	E	20		15 5.000							15 5	15 5	741
60	8 S311	Slab	E	20		56 0.000							56 0	56 0	8,971
104	5 S312	Slab	E	20		38 3.000							38 3	38 3	4,149
104	5 S313	Slab	E	20		51 10.00							51 10	51 10	5,622
156	8 S314	Slab	E	20		55 8.000							55 8	55 8	23,186
30	7 S315	Slab	E	20		23 10.00							23 10	23 10	1,461
190	5 S316	Slab	E	20		6 5.000							6 5	6 5	1,272
4	4 S317	Slab	E	20		11 3.000							11 3	11 3	30
2	4 S318	Slab	E	20		14 3.000							14 3	14 3	19
2	4 S319	Slab	E	20		18 3.000							18 3	18 3	24
2	4 S320	Slab	E	20		7 3.000							7 3	7 3	10
4	4 S321	Slab	E	20		31 3.000							31 3	31 3	84
2	4 S322	Slab	E	20		15 3.000							15 3	15 3	20
2	4 S323	Slab	E	20		42 3.000							42 3	42 3	56
189	4 S324	Slab	E	10		6.000	10.000	3 6.000	6.000				6 2	5 9	726

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

For bending diagrams and steel reinforcing totals, see Sheet No. 107.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 112 of 132

BILL OF REINFORCING STEEL

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020226
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE 169 | STATE MO

DISTRICT BR | SHEET NO. 112

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165

BMcD Project No. 154749

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Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
		UNIT 4 SLAB													
25	8 S401	Slab	E	20	1	9 8.000							9 8	9 8	
		Inc. = 17.125"				43 11.00							43 11	43 11	1,788
21	8 S402	Slab	E	20		46 4.000							46 4	46 4	2,598
21	8 S403	Slab	E	20	1	10 1.000							10 1	10 1	
		Inc. = 21.150"				45 4.000							45 4	45 4	1,554
18	8 S404	Slab	E	20	1	11 1.250							11 1	11 1	
		Inc. = 22.809"				43 5.000							43 5	43 5	1,310
15	8 S405	Slab	E	20		46 4.000							46 4	46 4	1,856
16	8 S406	Slab	E	20	1	9 6.000							9 6	9 6	
		Inc. = 28.367"				44 11.50							45 0	45 0	1,164
8	6 S407	Slab	E	20	1	5 9.000							5 9	5 9	
		Inc. = 18.143"				16 4.000							16 4	16 4	133
34	6 S408	Slab	E	20	1	16 0.000							16 0	16 0	
		Inc. = 6.364"				33 6.000							33 6	33 6	1,264
29	6 S409	Slab	E	20	1	4 9.000							4 9	4 9	
		Inc. = 11.893"				32 6.000							32 6	32 6	811
8	8 S410	Slab	E	20	1	5 9.000							5 9	5 9	
		Inc. = 18.143"				16 4.000							16 4	16 4	236
34	8 S411	Slab	E	20	1	16 0.000							16 0	16 0	
		Inc. = 6.364"				33 6.000							33 6	33 6	2,247
28	8 S412	Slab	E	20	1	5 9.000							5 9	5 9	
		Inc. = 11.889"				32 6.000							32 6	32 6	1,430
8	8 S413	Slab	E	20		48 4.000							48 4	48 4	1,032
8	8 S414	Slab	E	23		13.500	37 3.000	13.500	3.500	13.000	3.500	13.000	39 6	39 6	844
8	8 S415	Slab	E	20		15 7.500							15 8	15 8	335
8	8 S416	Slab	E	23		12.000	56 0.000	12.000	9.250	7.750	9.250	7.750	58 0	57 11	1,237
4	8 S417	Slab	E	20		44 8.000							44 8	44 8	477
4	8 S418	Slab	E	20		44 2.000							44 2	44 2	472
		BARRIER													
5	5 K1	Barrier	E	27S		5 2.000	9.250	5.375	4 8.750		5.250	1.000	11 1	10 11	57
48	5 K2	Barrier	E	27S		3 8.000	9.250	14.500	2 5.750		14.250	2.750	8 2	7 11	396
22	5 K3	Barrier	E	27S		2 1.500	9.250	17.250	8.500	12.000	17.000	3.250	6 1	5 9	132
5	5 K4	Barrier	E	19S	1	3 10.25	10.000						4 8	4 7	
		Inc. = 0.500"				4 0.250	10.000						4 10	4 9	24
5	5 K5	Barrier	E	38S	1			18.500	2 3.500	8.250	18.000	4.000	4 6	4 5	
		Inc. = 0.500"						20.500	2 3.500	8.250	20.000	4.500	4 8	4 7	23
3	5 K6	Barrier	E	19S		4 0.750	10.000						4 11	4 9	15
3	5 K7	Barrier	E	38S				2 6.375	18.250	10.000	2 5.750	6.250	4 11	4 9	15
9	5 K8	Barrier	E	19S	1	4 2.500	10.000						5 1	4 11	
		Inc. = 0.750"				4 8.500	10.000						5 7	5 5	48
9	5 K9	Barrier	E	38S	1			2 8.250	18.250	10.000	2 7.500	6.750	5 1	4 11	
		Inc. = 0.750"						3 2.250	18.250	10.000	3 1.500	7.750	5 7	5 5	48
70	5 K10	Barrier	E	19S		3 3.000	10.000						4 1	4 0	292
70	5 K11	Barrier	E	21S		3 3.000	10.000				3 2.250	7.750	4 1	4 1	298
18	5 K12	Barrier	E	20		22 6.000							22 6	22 6	422
18	5 K13	Barrier	E	20		22 9.000							22 9	22 9	427
16	5 K14	Barrier	E	20		10 9.000							10 9	10 9	179
6	5 K15	Barrier	E	20	2	10 0.000							10 0	10 0	
		Inc. = 3'-0"				4 0.000							4 0	4 0	44
4	5 K16	Barrier	E	19S		4 9.000	10.000						5 7	5 6	23
4	5 K17	Barrier	E	38S				3 3.000	18.250	10.000	3 2.250	7.750	5 7	5 6	23
18	5 K18	Barrier	E	20		20 7.000							20 7	20 7	386
16	5 K19	Barrier	E	27S		5 2.000	9.250	14.500	3 11.75		14.250	2.750	11 2	10 11	182
2065	5 R1	Barrier	E	26		3 3.000	5.500	2.250	3 1.375	5.500	3 0.750	6.750	6 11	6 10	14,718
2065	5 R2	Barrier	E	19S		20.500	9.500						2 6	2 5	5,205
2065	5 R3	Barrier	E	27S			9.500	15.250	5.000	12.000	15.000	3.000	3 6	3 3	7,000
240	5 R4	Barrier	E	20		11 8.000							11 8	11 8	2,920
20	5 R5	Barrier	E	20		55 9.000							55 9	55 9	1,163
20	5 R6	Barrier	E	20		51 1.000							51 1	51 1	1,066
20	5 R7	Barrier	E	20		44 2.000							44 2	44 2	921
20	5 R8	Barrier	E	20		50 8.000							50 8	50 8	1,057
20	5 R9	Barrier	E	20		57 11.00							57 11	57 11	1,208
20	5 R10	Barrier	E	20		52 2.000							52 2	52 2	1,088
20	5 R11	Barrier	E	20		44 2.000							44 2	44 2	921
20	5 R12	Barrier	E	20		49 6.000							49 6	49 6	1,033
20	5 R13	Barrier	E	20		53 2.000							53 2	53 2	1,109
20	5 R14	Barrier	E	20		48 6.000							48 6	48 6	1,012
20	5 R15	Barrier	E	20		40 7.000							40 7	40 7	847
20	5 R16	Barrier	E	20		32 7.000							32 7	32 7	680
30	5 R17	Barrier	E	20		45 8.000							45 8	45 8	1,429

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
		BARRIER CONT.													
30	5 R18	Barrier	E	20		46 7.000							46 7	46 7	1,458
10	5 R19	Barrier	E	20		15 8.000							15 8	15 8	163
30	5 R20	Barrier	E	20		43 5.000							43 5	43 5	1,359
30	5 R21	Barrier	E	20		48 10.00							48 10	48 10	1,528
10	5 R22	Barrier	E	20		48 10.00							48 10	48 10	509
		SLIP FORM													
116	5 C1	Slip Form	E	20		12 0.000							12 0	12 0	1,452
12	5 C2	Slip Form	E	20		8 0.000							8 0	8 0	100
2	5 C3	Slip Form	E	20		16 0.000							16 0	16 0	33
2	5 C4	Slip Form	E	20		8 9.000							8 9	8 9	18

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

For bending diagrams and steel reinforcing totals, see Sheet No. 107.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 113 of 132

BILL OF REINFORCING STEEL

THOMAS M. GREER NUMBER PE-2010000208 PROFESSIONAL ENGINEER STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE 169 | STATE MO

DISTRICT BR | SHEET NO. 113

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

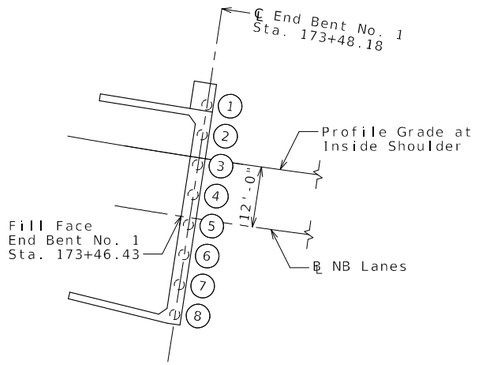
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

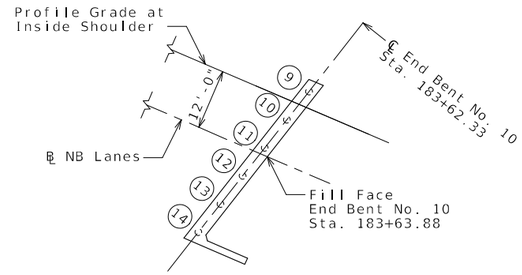
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No. : 000165

BMcD Project No. 154749

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SPAN (1-2)



SPAN (9-10)

PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE 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 (Galvanized Cast-In-Place Pile 24 in.)					
1					
2					
3					
4					
5					
6					
7					
8					

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. 10 (Galvanized Cast-In-Place Pile - 16 in.)					
9					
10					
11					
12					
13					
14					

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.)

This sheet to be completed by MoDOT construction personnel.

Detailed: Oct. 2025
Checked: Oct. 2025

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

AS-BUILT PILE DATA

THOMAS M. GREER NUMBER PE-2018000206 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	114

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

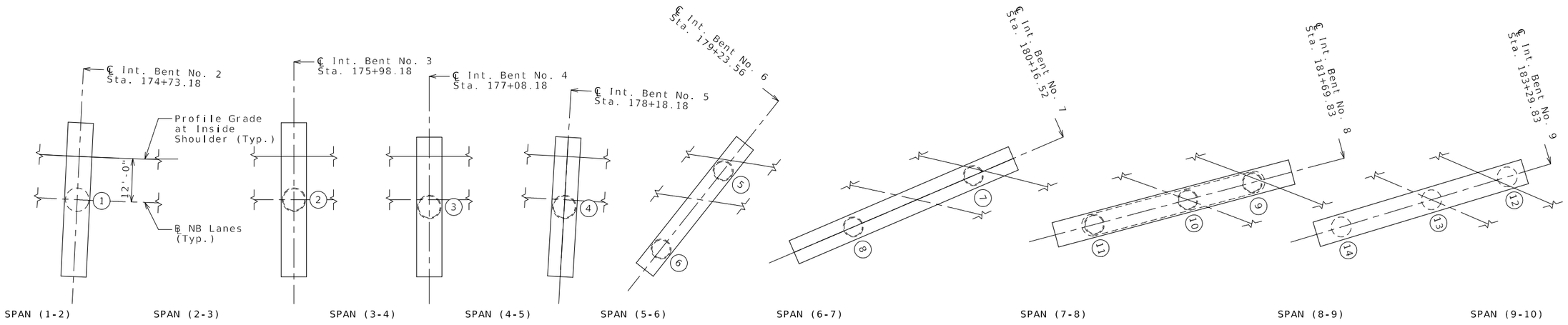
BRIDGE NO. A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749



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

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

Note:
This sheet to be completed by MoDOT construction personnel.

As-Built Drilled Shaft Data				
Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
Int. Bent No. 6 (5'-6" Ø Drilled Shaft)				
5				
6				
Int. Bent No. 7 (5'-6" Ø Drilled Shaft)				
7				
8				
Int. Bent No. 8 (5'-6" Ø Drilled Shaft)				
9				
10				
11				
Int. Bent No. 9 (5'-6" Ø Drilled Shaft)				
12				
13				
14				

AS-BUILT DRILLED SHAFT DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	115

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority
No.: 000165
BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 1
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1087915.0699 **Date of Work:** 04/16/25-04/18/25
Offset: **Easting:** 2764252.3107 **Depth to Water:** 68.0
Elevation: 762.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.5' ROOT ZONE							
		0.5-4.0' FILL - brown silt	760						
		4.0-6.5' FILL - cobbles, gravel and sand (rough drilling)		X	56	3-10-11 (29)			
		6.5-14.2' FILL - brown to gray silt, gray fat clay							
10				X	100	3-6-6 (17)		PP = 1.00 tsf	MC = 20.7%
			750						
		14.2-17.0' SAND - tan, medium dense, fine and medium, poorly graded, silty - (SM) 14.2' 23.8% passing No. 200 sieve		X	100	4-7-11 (25)		PP = 1.00 tsf	MC = 22.0%
		17.0-21.0' SAND - tan and brown, medium dense, fine and medium, poorly graded, with silt - (SP-SM) 18.5' 5.4% passing No. 200 sieve		X	100	5-9-12 (29)			MC = 7.5%
20		21.0-27.0' SILT - brown, medium stiff - ML	740						
				X	100	3-3-4 (10)		PP = 0.75 tsf	MC = 23.3%
		27.0-42.0' SAND - tan, loose to medium dense, fine, poorly graded - SP 28.0' non-plastic		■	96			PP = 1.75 tsf	LL = 0 PL = 0
30			730						
		33.0' non-plastic		■	83				LL = 0 PL = 0 MC = 4.6%
				X	100	4-5-6 (15)			
40			720						
		42.0-47.0' SAND - tan, medium dense, fine to coarse, poorly graded - (SP) 43.5' 3.5% passing No. 200 sieve		X	83	5-8-12 (28)			MC = 2.0%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:46 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 1
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1087915.0699 **Date of Work:** 04/16/25-04/18/25
Offset: **Easting:** 2764252.3107 **Depth to Water:** 68.0
Elevation: 762.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
50		47.0-67.0' SAND - brown, medium dense and dense, fine and medium, poorly graded - (SP) 48.5' 3.7% passing No. 200 sieve	710	X	100	10-12-24 (50)			
				X	89	6-8-14 (30)			
60				X	100	5-7-11 (25)			
			700						
				X	100	6-11-15 (36)			
		▽ 67.0-72.0' SILT - gray, medium stiff, sandy - (ML) 68.5' 55% passing No. 200 sieve		X	100	2-3-5 (11)		PP = 0.75 tsf	
70		72.0-77.0' SAND - gray, medium dense, fine and medium, some silt and clay seams - SM	690	X	100	10-10-12 (30)			MC = 44.4%
		77.0-82.0' SAND - gray, dense, fine and medium, poorly graded - SP		X	83	22-24-24 (66)			
80		82.0-116.0' SAND - gray, medium dense, fine to coarse, poorly graded, trace gravel - (SP)	680						
90		88.5' 4.7% passing No. 200 sieve		X	100	14-14-14 (39)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 116 of 132

BORING DATA

THOMAS M. GREER NUMBER PE-2010000206 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	116

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 1
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1087915.0699 **Date of Work:** 04/16/25-04/18/25
Offset: **Easting:** 2764252.3107 **Depth to Water:** 68.0
Elevation: 762.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
90		82.0-116.0' SAND - gray, medium dense, fine to coarse, poorly graded, trace gravel - (SP) *(continued)*	670						
		97.0' rough drilling		X	83	10-12-12 (33)			
100			660						
				X	72	13-13-17 (42)			
110			650						
		116.0-136.5' GRAVEL - gray, dense, well graded, some sand - GW							
120				X	78	19-25-26 (71)			
			640						
130				X	72	17-16-23 (54)			
			630						

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 1
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1087915.0699 **Date of Work:** 04/16/25-04/18/25
Offset: **Easting:** 2764252.3107 **Depth to Water:** 68.0
Elevation: 762.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
		135.5' rough drilling							
		136.5-138.0' Weathered SHALE							
		137.8' sampler refusal			100	50/0.3'			MC = 16.5%
140		138.0-165.0' SHALE - gray, extremely soft to soft, slightly weathered, with sandstone beds			92 (46)				MC = 8.7%
		139.4' Qu = 57 ksf; Unit Weight = 148 pcf	620						
					100 (72)				MC = 8.4%
		144.2' Qu = 156 ksf; Unit Weight = 150 pcf							
150					100 (68)				MC = 8.4%
		148.5' Qu = 159 ksf; Unit Weight = 148 pcf	610						
					100 (88)				MC = 7.7%
		154.0' Qu = 260 ksf; Unit Weight = 149 pcf							
					100 (85)				MC = 7.5%
160		158.0' Qu = 183 ksf; Unit Weight = 150 pcf	600						
					100 (75)				MC = 11.5%
		163.1' Qu = 12 ksf; Unit Weight = 142 pcf							
		Bottom of borehole at 165.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020226
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	117

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 2
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088042.1791 **Date of Work:** 04/21/25-04/24/25
Offset: **Easting:** 2764192.1564 **Depth to Water:** 67.0
Elevation: 763.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.3' ROOT ZONE							
		0.3-12.0' FILL - brown lean clay, limestone fragments, sandy silt	760						
		3.5' 79.5 percent passing No. 200 sieve		X	50	1-2-10 (17)		PP = 0.75 tsf	MC = 16.8%
		4.5' rough drilling							
		8.5' 53.5 percent passing No. 200 sieve		X	39	2-6-7 (18)		PP = 0.50 tsf	MC = 17.7%
10		9.0' rough drilling							
		12.0-17.0' SILTY CLAY - gray, very stiff, lean - (CL-ML)	750	X	83	5-8-10 (25)		PP = 1.50 tsf	LL = 29 PL = 22 MC = 18.3%
		17.0-19.3' SAND - brown, medium dense, fine to coarse, silty - (SM)		X	100	6-8-8 (22)		PP = 2.00 tsf	MC = 15.4%
20		18.5' 34.5 percent passing No. 200 sieve							
		19.3-22.0' CLAY - gray, stiff, trace sand to sandy - CL							
		22.0-27.0' CLAY - brown, stiff, fat - (CH)	740	■	88		UU Test Results UU/2 = 1.06 ksf MC = 29% γ_{moist} = 118.68 pcf	PP = 2.00 tsf	LL = 66 PL = 20
		27.0-34.0' SILT - brown, medium stiff - (ML)		■	96		Unit Weight Results MC = 30.6% γ_{moist} = 117.54 pcf	PP = 1.25 tsf	LL = 28 PL = 24
30			730	X	100	5-8-11 (26)			
		34.0-47.0' SAND - tan and brown, medium dense, fine, poorly graded, with silt - (SP-SM)							
		38.5' 7.7 percent passing No. 200 sieve		X	100	5-8-14 (30)			MC = 4.3%
40			720	X	100	6-11-18 (40)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 2
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088042.1791 **Date of Work:** 04/21/25-04/24/25
Offset: **Easting:** 2764192.1564 **Depth to Water:** 67.0
Elevation: 763.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
50		47.0-67.0' SAND - tan and brown, medium dense, fine to coarse, poorly graded - SP		X	100	6-8-11 (26)			
			710	X	100	5-8-16 (33)			
60				X	100	5-11-17 (39)			
			700	X	100	5-8-16 (33)			
		67.0-72.0' SAND - brown, medium dense, fine and medium, poorly graded - SP		X	83	6-7-22 (40)			
70		72.0-77.0' SAND - light gray, very dense, fine, poorly graded - SP	690	X	100	22-33-60 (129)			
		77.0-84.0' SAND - dark gray, medium dense, fine, some silt - SM		X	83	6-11-11 (30)			
80			680						
		84.0-99.3' SAND - gray, medium dense, fine to coarse, poorly graded - SP		X	83	9-8-7 (21)			
90									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

BORING DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010020206 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026
ROUTE 169 | STATE MO
DISTRICT BR | SHEET NO. 118
COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No: 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 2
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088042.1791 **Date of Work:** 04/21/25-04/24/25
Offset: **Easting:** 2764192.1564 **Depth to Water:** 67.0
Elevation: 763.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
90		84.0-99.3' SAND - gray, medium dense, fine to coarse, poorly graded - SP *(continued)*	670						
100		99.3-101.5' COBBLES, GRAVEL and SAND (rough drilling) 99.8' sampler refusal		X	93	13-50-50/0.2'			
		101.5-111.5' SAND - gray, dense, fine to coarse, poorly graded, some gravel - SP	660						
110				X	100	15-21-22 (59)			
		111.5-131.0' SAND - gray, dense and very dense, fine to coarse, well graded, gravelly - SW	650						
120				X	83	18-26-43 (95)			
			640						
130				X	83	20-16-20 (50)			
		131.0-133.0' Weathered SANDSTONE 132.3' sampler refusal	630	X	100	50/0.3'			MC = 17.3%
		133.0-134.8' SANDSTONE - gray, soft,			96 (56)				MC = 9.6%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 2
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088042.1791 **Date of Work:** 04/21/25-04/24/25
Offset: **Easting:** 2764192.1564 **Depth to Water:** 67.0
Elevation: 763.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
		slightly weathered 133.5' Qu = 274 ksf; Unit Weight = 143 pcf			100 (60)				MC = 12.2%
140		134.8-160.0' SHALE - gray, extremely soft to soft, slightly weathered, with sandstone beds *(continued)* 135.0' Qu = 6 ksf; Unit Weight = 150 pcf							
		142.6' Qu = 142 ksf; Unit Weight = 149 pcf	620		98 (82)				MC = 7.7%
		146.4' Qu = 143 ksf; Unit Weight = 149 pcf			100 (82)				MC = 8.5%
150			610		98 (98)				
		155.0' Qu = 290 ksf; Unit Weight = 149 pcf			95 (67)				MC = 7.7%
160		159.3' Qu = 190 ksf; Unit Weight = 150 pcf Bottom of borehole at 160.0 feet.							MC = 7.9%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

BORING DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	119

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION

DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 3
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088142.1122 **Date of Work:** 04/25/25-04/29/25
Offset: **Easting:** 2764139.5598 **Depth to Water:** 66.0
Elevation: 762.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.3' ROOT ZONE 0.3-4.0' FILL - brown lean clay	760						
		4.0-14.0' FILL - limestone fragments 4.9' sampler refusal			71	4-17-50/0.4'		PP = 0.75 tsf	MC = 21.2%
10		8.5' Shelby tube refusal after 6-inch push 8.5' 6.9% passing No. 200 sieve	750		67 44	13-30-37 (93)			MC = 1.9%
		13.5' Shelby tube refusal after zero push 14.0-17.5' CLAY - gray, stiff, lean - (CL)			78	4-7-8 (21)		PP = 1.00 tsf	LL = 36 PL = 18 MC = 20.5%
20		17.5-22.0' SAND - tan to brown, medium dense, fine and medium, poorly graded - (SP) 18.0' 2% passing No 200 sieve 18.8' Shelby tube refusal after 9-inch push			100 89	8-9-13 (30)			MC = 14.4%
		22.0-27.0' CLAY - brown, stiff, lean - (CL) 23.5' 95.4% passing No 200 sieve	740		63		UU Test Results UU/2 = 1.04 ksf MC = 23.6% γ_{moist} = 117.42 pcf	PP = 1.25 tsf	LL = 42 PL = 20
30		27.0-33.7' CLAY - brown and gray, medium stiff, lean - (CL)			100	3-3-3 (8)		PP = 1.25 tsf	LL = 37 PL = 24 MC = 28.7%
		33.7-42.0' SAND - light brown, medium dense and dense, fine, poorly graded, with silt - (SP-SM)	730		100	8-11-12 (32)			
40		38.5' 9.2% passing No. 200 sieve			100	11-17-22 (54)			MC = 3.8%
		42.0-67.0' SAND - brown, medium dense and dense, fine to coarse, poorly graded - SP	720		100	5-10-14 (33)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 3
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088142.1122 **Date of Work:** 04/25/25-04/29/25
Offset: **Easting:** 2764139.5598 **Depth to Water:** 66.0
Elevation: 762.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
50		42.0-67.0' SAND - brown, medium dense and dense, fine to coarse, poorly graded - SP *(continued)*			100	7-15-18 (46)			
			710		83	5-6-10 (22)			
60					100	7-11-15 (36)			
			700		100	8-20-25 (62)			
70		67.0-72.0' SAND - brown, dense, fine and medium, poorly graded - SP			100	6-10-21 (43)			
		72.0-97.0' SAND - gray, dense and very dense, fine and medium, poorly graded - SP	690		83	15-24-31 (76)			
80					83	11-13-18 (43)			
			680						
90					83	13-25-26 (71)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	120

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 3
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088142.1122 **Date of Work:** 04/25/25-04/29/25
Offset: **Easting:** 2764139.5598 **Depth to Water:** 66.0
Elevation: 762.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
90		72.0-97.0' SAND - gray, dense and very dense, fine and medium, poorly graded - SP *(continued)*	670						
100		97.0-131.0' SAND - gray, dense, fine to coarse, poorly graded - SP		X	83	13-16-15 (43)			
			660						
110				X	78	13-14-17 (43)			
			650						
120				X	100	13-15-16 (43)			
			640						
130				X	72	14-17-15 (44)			
		131.0-134.0' Weathered SANDSTONE	630						
		133.2' sampler refusal			100	50/0.2'			
					83				

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 3
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088142.1122 **Date of Work:** 04/25/25-04/29/25
Offset: **Easting:** 2764139.5598 **Depth to Water:** 66.0
Elevation: 762.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
					(50)				MC = 8.3%
140		134.0-159.2' SHALE - gray, soft, slightly weathered, with sandstone beds *(continued)* 135.1' Qu = 132 ksf; Unit Weight = 148 pcf			100 (68)				MC = 8.1%
		138.9' Qu = 109 ksf; Unit Weight = 150 pcf	620						
		144.0' Qu = 172 ksf; Unit Weight = 150 pcf			100 (65)				MC = 8.2%
150		148.8' Qu = 208 ksf; Unit Weight = 150 pcf			100 (73)				MC = 8.0%
		153.2' Qu = 211 ksf; Unit Weight = 150 pcf	610		100 (92)				MC = 7.8%
		156.7' Qu = 192 ksf; Unit Weight = 151 pcf			83 (83)				MC = 7.5%
160		159.2-160.0' CORE LOSS							
		Bottom of borehole at 160.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

THOMAS M. GREER
NUMBER PE-2010020026
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	121

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION
DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 4
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088228.9023 **Date of Work:** 05/19/25-05/22/25
Offset: **Easting:** 2764025.9126 **Depth to Water:** 48.0
Elevation: 751.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-6.5' POTHOLE FLOWABLE FILL	750						
5			745						
10		6.5-17.0' CLAY - brown, medium stiff and stiff, fat - (CH)	740		54		Qu Test Results UCS = 3.60 ksf MC = 32.9% γ_{moist} = 118.281 pcf	PP = 2.00 tsf	LL = 72 PL = 24
15			735		50		Qu Test Results UCS = 1.84 ksf MC = 33.7% γ_{moist} = 113.645 pcf	PP = 1.25 tsf	LL = 73 PL = 25
20		17.0-22.0' SILT - brown, medium stiff, some sand - (ML) 18.0' 80.9% passing No. 200 sieve	730		92		Qu Test Results UCS = 1.40 ksf MC = 29% γ_{moist} = 118.68 pcf	PP = 1.75 tsf	LL = 33 PI = 24
25		22.0-32.0' SAND - tan, medium dense, fine, poorly graded - SP	725		100	5-7-7 (19)			
30			720		100	5-9-10 (26)			
35		32.0-52.0' SAND - light brown, medium dense, fine to coarse, poorly graded - SP	715		83	5-8-11 (26)			
40					100	5-9-11 (28)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 4
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088228.9023 **Date of Work:** 05/19/25-05/22/25
Offset: **Easting:** 2764025.9126 **Depth to Water:** 48.0
Elevation: 751.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
40		32.0-52.0' SAND - light brown, medium dense, fine to coarse, poorly graded - SP *(continued)*	710						
45			705		100	4-5-7 (17)			
50			700		83	4-5-6 (15)			
55		52.0-57.0' SAND - brown, medium dense, fine, some silt - SM	695		83	12-13-13 (36)			
60		57.0-62.0' SAND - brown, dense, fine, poorly graded - SP	690		100	13-16-18 (47)			
65		62.0-68.0' SAND - gray, medium dense, fine, poorly graded - SP	685		83	12-13-14 (37)			
70		68.0-76.0' SAND - gray, loose, fine, silty - SM 68.5' stiff gray clay and wood fragments	680		100	3-4-3 (10)			
75		73.5' medium stiff, gray, lean clay	675		100	3-3-3 (8)			MC = 41.8%
80		76.0-82.0' SAND - gray, dense, fine to coarse, poorly graded - SP			100	12-16-15 (43)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 122 of 132

BORING DATA

THOMAS M. GREER NUMBER PE-2010020026 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE
DATE PREPARED 1/5/2026
ROUTE 169 | STATE MO
DISTRICT BR | SHEET NO. 122
COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606
DESCRIPTION
DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 4
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088228.9023 **Date of Work:** 05/19/25-05/22/25
Offset: **Easting:** 2764025.9126 **Depth to Water:** 48.0
Elevation: 751.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
80		76.0-82.0' SAND - gray, dense, fine to coarse, poorly graded - SP *(continued)*	670						
		82.0-118.0' SAND - gray, medium dense to very dense, fine to coarse, poorly graded, trace and some gravel - SP							
85			665						
90				X	100	8-11-17 (39)			
		90.5' rough drilling	660						
95									
		95.0' rough drilling	655						
100				X	100	15-20-21 (57)			
			650						
105									
			645						
110				X	61	12-25-30 (76)			
			640						
115									
			635						
120		118.0-119.5' Weathered SANDSTONE 118.7' sampler refusal		X	100 100	50/0.2'			MC = 15.4%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 4
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088228.9023 **Date of Work:** 05/19/25-05/22/25
Offset: **Easting:** 2764025.9126 **Depth to Water:** 48.0
Elevation: 751.3 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
120		119.5-145.5' SHALE - gray, very soft to soft, slightly weathered, with sandstone beds *(continued)*	630		(50)				MC = 8.9%
		120.0' Qu = 34 ksf; Unit Weight = 146 pcf			100 (80)				
125		125.0' Qu = 176 ksf; Unit Weight = 147 pcf	625						MC = 7.4%
					100 (58)				
130		131.0' Qu = 226 ksf; Unit Weight = 150 pcf	620						MC = 7.4%
					100 (92)				
135		133.9' Qu = 156 ksf; Unit Weight = 148 pcf	615						MC = 7.7%
					100 (90)				MC = 7.9%
140		139.0' Qu = 187 ksf; Unit Weight = 148 pcf	610						
					100 (85)				MC = 7.3%
145		144.1' Qu = 108 ksf; Unit Weight = 149 pcf Bottom of borehole at 145.5 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	123

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 5
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088302.5612 **Date of Work:** 05/08/25-05/09/25
Offset: **Easting:** 2763985.3497 **Depth to Water:** 52.0
Elevation: 751.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.5' ROOT ZONE	750						
		0.5-12.0' FILL - brown lean clay, brown fat clay, limestone gravel		X	67	3-4-5 (12)		PP = 2.50 tsf	MC = 20.1%
5			745						
		8.2' Shelby tube refusal after 2-inch push		X	83	4-6-7 (18)		PP = 3.00 tsf	MC = 24.3%
10			740						
		12.0-15.0' CLAY - brown, soft, fat - (CH)		■	75		UU Test Results UU/2 = 0.40 ksf MC = 35.7% γ_{moist} = 112.631 pcf	PP = 0.75 tsf	LL = 94 PL = 28
15		15.0-19.0' CLAY - brown, stiff, lean - CL	735						
				■	79		UU Test Results UU/2 = 1.04 ksf MC = 29.4% γ_{moist} = 124.224 pcf	PP = 0.75 tsf	
20		19.0-37.0' SAND - tan, medium dense, fine, poorly graded - SP	730						
25			725	X	100	6-9-11 (28)			
30			720	X	100	5-7-8 (21)			
35			715	X	100	5-6-8 (19)			
40		37.0-42.0' SAND - tan and light brown, medium dense, fine to coarse, poorly graded - SP		X	100	5-8-10 (25)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 5
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088302.5612 **Date of Work:** 05/08/25-05/09/25
Offset: **Easting:** 2763985.3497 **Depth to Water:** 52.0
Elevation: 751.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
40									
		42.0-52.0' SAND - light brown, medium dense, fine and medium, poorly graded - SP	710	X	100	6-10-15 (35)			
45									
			705	X	100	5-8-13 (29)			
50									
		52.0-62.0' SAND - brown, medium dense, fine, poorly graded - SP	700						
55				X	100	5-9-12 (29)			
			695						
60				X	83	12-15-15 (42)			
		62.0-67.5' SAND - gray, dense, fine, poorly graded - SP	690						
65				X	83	15-19-16 (48)			
			685						
		67.5-69.0' CLAY - gray, stiff, fat - CH							
70		69.0-117.0' SAND - gray, medium dense and dense, fine to coarse, poorly graded - SP	680	X	100	9-15-18 (46)			MC = 56.6%
75			675	X	83	11-12-9 (29)			
80				X	100	13-18-18 (50)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

BORING DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 124 of 132

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	124

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 5
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088302.5612 **Date of Work:** 05/08/25-05/09/25
Offset: **Easting:** 2763985.3497 **Depth to Water:** 52.0
Elevation: 751.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
80		69.0-117.0' SAND - gray, medium dense and dense, fine to coarse, poorly graded - SP *(continued)*	670						
85			665						
90			660		100	11-11-9 (28)			
95			655						
100			650		72	11-10-9 (26)			
105			645						
110			640			9-11-12 (32)			
115			635						
120		117.0-119.3' Weathered SANDSTONE 118.8' sampler refusal			100 25	50/0.3'			MC = 16.9%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RWMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 5
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088302.5612 **Date of Work:** 05/08/25-05/09/25
Offset: **Easting:** 2763985.3497 **Depth to Water:** 52.0
Elevation: 751.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
120		119.3-120.0' CORE LOSS	630		(0)				MC = 9.7%
		120.0-121.6' SANDSTONE - gray, soft, slightly weathered 120.1' Qu = 179 ksf; Unit Weight = 144 pcf			97 (87)				
125		121.6-145.0' SHALE - gray, soft, slightly weathered, with sandstone beds 124.5' Qu = 129 ksf; Unit Weight = 148 pcf	625						MC = 6.9%
					100 (77)				
130		129.4' Qu = 255 ksf; Unit Weight = 150 pcf	620						MC = 7.4%
					100 (92)				
135		134.1' Qu = 232 ksf; Unit Weight = 148 pcf	615						MC = 7.7%
		137.8' Qu = 255 ksf; Unit Weight = 149 pcf			98 (78)				MC = 7.7%
140			610						
		141.5' Qu = 273 ksf; Unit Weight = 148 pcf			100 (88)				MC = 8.3%
145		Bottom of borehole at 145.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RWMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

BORING DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010002206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	125

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 6
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088408.6035 **Date of Work:** 05/06/25-05/07/25
Offset: **Easting:** 2763894.1861 **Depth to Water:** 50.5
Elevation: 753.2 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.5' ROOT ZONE							
		0.5-12.0' FILL - brown clayey silt, gray fat clay, sand, limestone fragments, brick fragments	750						
5					78	4-5-10 (21)			
			745						
10					38				MC = 18.3%
		12.0-24.0' CLAY - brown, soft and medium stiff, lean - (CL)	740						
15					46		UU Test Results UU/2 = 0.48 ksf MC = 26.3% γ_{moist} = 121.248 pcf		
			735						
20					100		UU Test Results UU/2 = 0.68 ksf MC = 34% γ_{moist} = 109.88 pcf		LL = 44 PL = 20
			730						
25		24.0-32.0' SAND - tan to light brown, medium dense, fine, poorly graded - SP			100	5-10-12 (30)			
			725						
30					89	4-5-7 (17)			
		32.0-47.0' SAND - tan and light brown to light brown, medium dense, fine to coarse, poorly graded - SP	720						
35					100	5-8-10 (25)			
			715						
40					100	6-12-18 (42)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129.00224.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00224.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 6
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088408.6035 **Date of Work:** 05/06/25-05/07/25
Offset: **Easting:** 2763894.1861 **Depth to Water:** 50.5
Elevation: 753.2 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
40		32.0-47.0' SAND - tan and light brown to light brown, medium dense, fine to coarse, poorly graded - SP *(continued)*							
			710						
45					100	6-12-18 (42)			
		47.0-52.0' SAND - brown, medium dense, fine, poorly graded - SP	705						
50					100	5-8-12 (28)			
		52.0-62.0' SAND - brown, medium dense to dense, fine and medium, poorly graded - SP	700						
55					100	4-6-12 (25)			
			695						
60					83	13-16-16 (44)			
		62.0-67.0' SAND - brown, dense, fine, poorly graded - SP	690						
65					100	14-17-17 (47)			
		67.0-77.0' SAND - gray, medium dense and dense, fine and medium, poorly graded - SP	685						
70					100	11-12-10 (30)			
			680						
75					100	20-24-25 (68)			
		77.0-104.0' SAND - gray, medium dense and dense, fine to coarse, poorly graded - SP	675						
80					100	12-12-12 (33)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129.00224.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00224.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2019020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	126

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 6
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088408.6035 **Date of Work:** 05/06/25-05/07/25
Offset: **Easting:** 2763894.1861 **Depth to Water:** 50.5
Elevation: 753.2 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
80		77.0-104.0' SAND - gray, medium dense and dense, fine to coarse, poorly graded - SP *(continued)*							
			670						
85									
			665						
90				X	100	10-12-12 (33)			
			660						
95									
		99.0' trace gravel	655						
100				X	100	9-13-23 (50)			
		104.0-121.5' SAND - brown, medium dense and dense, fine to coarse, poorly graded - SP	650						
105									
			645						
110				X	100	9-10-11 (29)			
			640						
115									
			635						
120				X	78	10-17-24 (57)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 6
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088408.6035 **Date of Work:** 05/06/25-05/07/25
Offset: **Easting:** 2763894.1861 **Depth to Water:** 50.5
Elevation: 753.2 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
120									
		121.5-123.0' Weathered SHALE	630		100	50/0.3'			MC = 15.0%
		122.8' sampler refusal							
125		123.0-150.5' SHALE - gray, soft, slightly weathered, with sandstone beds			100 (60)				MC = 12.7%
		126.1' Qu = 196 ksf; Unit Weight = 141 pcf							MC = 7.9%
130		128.3' Qu = 158 ksf; Unit Weight = 149 pcf	625		100 (73)				MC = 6.9%
			620		100 (82)				MC = 7.5%
135		134.1' Qu = 212 ksf; Unit Weight = 148 pcf							
		139.7' Qu = 365 ksf; Unit Weight = 147 pcf	615		100 (90)				MC = 7.0%
140			610		100 (67)				
		145.5' Qu = 326 ksf; Unit Weight = 145 pcf							MC = 7.7%
145		147.8' Qu = 327 ksf; Unit Weight = 149 pcf	605		100 (93)				MC = 6.7%
150		Bottom of borehole at 150.5 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

THOMAS M. GREER NUMBER PE-2010000206 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	127

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 7
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088535.2807 **Date of Work:** 05/01/25-05/05/25
Offset: **Easting:** 2763905.8851 **Depth to Water:** 64.0
Elevation: 765.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-1.0' GRAVEL 1.0-7.0' FILL - brown fat clay, sand	760		83	3-4-5 (11)		PP = 1.25 tsf	MC = 21.1%
10		7.0-14.0' FILL - brown sandy lean clay 8.0' 61.6% passing No. 200 sieve			46		Qu Test Results MC = 18.5% γ_{moist} = 118.5 pcf	PP = 1.50 tsf	LL = 38 PL = 17
		14.0-22.0' SAND - brown, loose, fine, trace silt - SP-SM	750		83		Qu Test Results UCS = 0.580 ksf MC = 27.7% γ_{moist} = 120.038 pcf		
20		19.5' Shelby tube refusal after 18-inch push			56				
		22.0-27.0' CLAY - brown, medium stiff, fat - (CH) 23.0' 85.9% passing No. 200 sieve	740		100		Qu Test Results MC = 30.9% γ_{moist} = 113.883 pcf	PP = 2.00 tsf	LL = 62 PL = 18
30		27.0-32.0' SILT - brown, medium stiff, some sand - ML			83	2-3-3 (8)		PP = 0.75 tsf	MC = 28.2%
		32.0-37.0' SILT - brown, medium stiff, some clay - ML	730		100	2-3-2 (6)		PP = 1.00 tsf	MC = 36.4%
40		37.0-42.0' SAND - light brown, medium dense, fine, poorly graded, with silt - (SP-SM) 38.5' 11.1% passing No. 200 sieve			100	8-9-8 (21)			MC = 5.2%
		42.0-47.0' SAND - light brown, dense, fine to coarse, poorly graded - SP			100	8-15-22 (46)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMATV23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 7
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088535.2807 **Date of Work:** 05/01/25-05/05/25
Offset: **Easting:** 2763905.8851 **Depth to Water:** 64.0
Elevation: 765.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
			720						
50		47.0-52.0' SAND - light brown, dense, fine, poorly graded - SP			83	7-13-18 (39)			
		52.0-57.0' SAND - light brown, medium dense, fine to coarse, poorly graded - SP	710		100	4-7-9 (20)			
60		57.0-62.0' SAND - brown, medium dense, fine and medium, poorly graded - SP			83	5-6-9 (19)			
		62.0-72.0' SAND - brown, medium dense, fine, poorly graded - SP	700		100	5-8-12 (25)			
70					100	5-7-12 (24)			
		72.0-95.0' SAND - grayish brown to gray, medium dense to very dense, fine, poorly graded - SP	690		100	12-17-17 (43)			
80					83	14-15-11 (33)			
			680						
90					100	24-27-29 (70)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMATV23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	128

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION | DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 7
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088535.2807 **Date of Work:** 05/01/25-05/05/25
Offset: **Easting:** 2763905.8851 **Depth to Water:** 64.0
Elevation: 765.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
90		72.0-95.0' SAND - grayish brown to gray, medium dense to very dense, fine, poorly graded - SP *(continued)*							
			670						
		95.0-121.5' SAND - gray, medium dense, fine to coarse, poorly graded - SP							
100				X	83	10-11-11 (28)			
			660						
110				X	100	11-13-15 (35)			
			650						
		118.5' rock fragments		X	225	38-30-19/0.0', 10/0'			
120		121.5-133.5' SAND - brown, very dense, fine to coarse, poorly graded - SP							
			640						
130				X	100	16-26-29 (69)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 7
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088535.2807 **Date of Work:** 05/01/25-05/05/25
Offset: **Easting:** 2763905.8851 **Depth to Water:** 64.0
Elevation: 765.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
		134.8' sampler refusal	630		100	50/0.3'			MC = 8.3%
140		133.5-136.3' SANDSTONE - gray, very soft and soft, weathered to slightly weathered *(continued)* 135.3' Qu = 139 ksf; Unit Weight = 148 pcf			100 (78)				MC = 7.9%
		136.3-140.5' SHALE - gray, very soft, slightly weathered, with sandstone beds 139.6' Qu = 70 ksf; Unit Weight = 149 pcf							
		140.5-145.0' CORE LOSS (Due to Mechanical Difficulty)	620		10 (0)				
150		145.0-165.0' SHALE - gray, soft, slightly weathered, with sandstone beds 145.8' Qu = 162 ksf; Unit Weight = 145 pcf			100 (72)				MC = 8.7%
		148.1' Qu = 250 ksf; Unit Weight = 146 pcf							MC = 7.0%
		152.6' Qu = 163 ksf; Unit Weight = 146 pcf	610		100 (57)				MC = 7.0%
		155.7' Qu = 301 ksf; Unit Weight = 147 pcf			100 (85)				MC = 6.9%
160		161.1' Qu = 218 ksf; Unit Weight = 151 pcf			100 (88)				MC = 5.7%
		Bottom of borehole at 165.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 129 of 132

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	129

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 8
Page 1 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088636.1202 **Date of Work:** 06/30/25-07/01/25
Offset: **Easting:** 2763916.6521 **Depth to Water:** 47.0
Elevation: 757.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.5' FILL - gravel 0.5-11.0' FILL - cinders, sand, gravel, silt	755						
5				X	67	5-4-3 (9)			
			750						
10		9.0' poor sample recovery		X	6	2-3-2 (6)			
		11.0-17.5' SAND - light brown, medium dense, fine to coarse, poorly graded - SP	745						
15				X	83	2-6-7 (16)			
		17.5-22.0' SILT - brown, soft, some sand - ML 18.0' non-plastic	740						
20					67		Qu Test Results MC = 15.19578% γ_{moist} = 117.4997 pcf	PP = 0.50 tsf	LL = 0 PL = 0
		22.0-27.5' CLAY - brown, medium stiff, lean - (CL)	735						
25					92		Qu Test Results UCS = 0.860 ksf MC = 31.4% γ_{moist} = 132.714 pcf	PP = 0.50 tsf	LL = 36 PL = 19
		27.5-37.0' SAND - tan, medium dense, fine, poorly graded - SP	730						
30				X	100	4-7-12 (24)			
			725						
35				X	100	5-7-8 (19)			
		37.0-42.0' SAND - tan, dense, fine to coarse, poorly graded - SP	720						
40				X	100	8-21-20 (51)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 8
Page 2 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088636.1202 **Date of Work:** 06/30/25-07/01/25
Offset: **Easting:** 2763916.6521 **Depth to Water:** 47.0
Elevation: 757.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
40		37.0-42.0' SAND - tan, dense, fine to coarse, poorly graded - SP *(continued)*							
		42.0-47.0' SAND - tan, medium dense, fine and medium, poorly graded - SP	715						
45				X	83	7-10-13 (29)			
		47.0-57.0' SAND - brown, medium dense, fine to coarse, poorly graded, trace gravel - SP	710						
50				X	100	4-5-7 (15)			
			705						
55				X	100	9-11-14 (31)			
		57.0-62.0' SAND - brownish gray, dense, fine and medium, poorly graded - SP	700						
60				X	83	13-18-23 (51)			
		62.0-72.0' SAND - brown, very dense, fine to coarse, poorly graded - SP	695						
65				X	100	10-25-32 (71)			
			690						
70				X	83	22-26-33 (74)			
		72.0-77.0' SAND - gray, dense, fine, poorly graded, trace silt - SP-SM	685						
75				X	100	14-20-22 (53)			
		77.0-79.0' CLAY - gray, stiff, fat - CH	680						
80				X	100	10-25-37 (78)			MC = 37.9%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 130 of 132

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2018000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	130

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9606

DESCRIPTION

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 8
Page 3 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088636.1202 **Date of Work:** 06/30/25-07/01/25
Offset: **Easting:** 2763916.6521 **Depth to Water:** 47.0
Elevation: 757.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
80		79.0-84.0' SAND - gray, very dense, fine to coarse, poorly graded, trace silt - SP-SM *(continued)*	675						
85		84.0-114.0' SAND - gray, medium dense, fine to coarse, poorly graded, trace gravel - SP							
90			670	X	72	12-14-13 (34)			
95			665						
100			660	X	100	9-12-13 (31)			
105			655						
110			650	X	83	17-16-14 (38)			
115		114.0-124.0' SAND - gray, dense, fine to coarse, poorly graded - SP	645						
120			640	X	100	19-22-25 (59)			

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:47 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 8
Page 4 of 4

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088636.1202 **Date of Work:** 06/30/25-07/01/25
Offset: **Easting:** 2763916.6521 **Depth to Water:** 47.0
Elevation: 757.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,Split-Spoon Sampler, Shelby Tube, NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
120		114.0-124.0' SAND - gray, dense, fine to coarse, poorly graded - SP *(continued)*							
		122.0' gravelly	635						
125		124.0-126.5' Weathered SHALE			100	50/0.3'			MC = 14.4%
		126.3' sampler refusal							
130		126.5-155.5' SHALE - gray, extremely soft to soft, weathered and slightly weathered, with sandstone beds	630		100 (63)				MC = 8.3%
		129.1' Qu = 27 ksf; Unit weight = 141 pcf							
135		133.9' Qu = 14 ksf; Unit weight = 142 pcf	625		100 (75)				MC = 10.2%
140		138.5' Qu = 223 ksf; Unit weight = 148 pcf	620		100 (87)				MC = 6.8%
145		143.7' 5-inch limestone bed; Qu = 821 ksf; Unit weight = 152 pcf	615		100 (92)				MC = 3.6%
150		149.8' Qu = 339 ksf; Unit weight = 148 pcf	610		100 (92)				MC = 6.5%
155		155.1' Qu = 26 ksf; Unit weight = 146 pcf Bottom of borehole at 155.5 feet.	605		100 (80)				MC = 9.3%

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 9/5/25 12:48 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 131 of 132

BORING DATA

THOMAS M. GREER NUMBER PE-2010000206 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	131

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9606

DESCRIPTION | DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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Missouri Department of Transportation
Construction and Materials

BORING NO. B- 9
Page 1 of 2

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088845.5748 **Date of Work:** 05/18/25-05/19/25
Offset: **Easting:** 2763862.5194 **Depth to Water:**
Elevation: 789.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.4' ASPHALT - 4.25 inches 0.4-1.4' CONCRETE - 13 inches 1.4-2.9' CRUSHED ROCK - 18 inches 2.9-158.0' No Soil Sampling Performed to Complete the Boring in the Time Allowed	780						
10			770						
20			760						
30			750						
40			740						
50			730						
60			720						
70			710						
80									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B- 9
Page 2 of 2

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RFW (UES) **Operator:** BCS
Station: **Northing:** 1088845.5748 **Date of Work:** 05/18/25-05/19/25
Offset: **Easting:** 2763862.5194 **Depth to Water:**
Elevation: 789.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 550 ,NQ2
Requested Elevation: **Location Note:**
Drill No.: S/N 357883 **Hammer Efficiency:** 83% **Drilling Method:** Hollow Stem Auger and Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
90		2.9-158.0' No Soil Sampling Performed to Complete the Boring in the Time Allowed *(continued)*	700						
100			690						
110			680						
120			670						
130			660						
140			650						
150			640						
160		158.0-159.0' Weathered SHALE 159.0-163.5' SHALE - gray, very soft, slightly weathered, with sandstone beds 163.5-165.0' CORE LOSS Bottom of borehole at 165.0 feet.	630		100 (33) 70 (60)				

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

LETTER BOREHOLE - MODOT_20151118.GDT - 8/20/25 07:42 - K:\PROJECTS\A23129\A23129.00024.000 - US 169 NB BRIDGE REPLACEMENT OVER BNSF RMODOT FORMAT\A23129.00024.000 US169NB.GPJ

For location of borings, see Sheets No. 1, 2 & 3.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 132 of 132

BORING DATA

STATE OF MISSOURI — THOMAS M. GREER — NUMBER PE-2010020206 — PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	132

COUNTY: CLAY
JOB NO.: JKU0099
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9606

DESCRIPTION | DATE

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

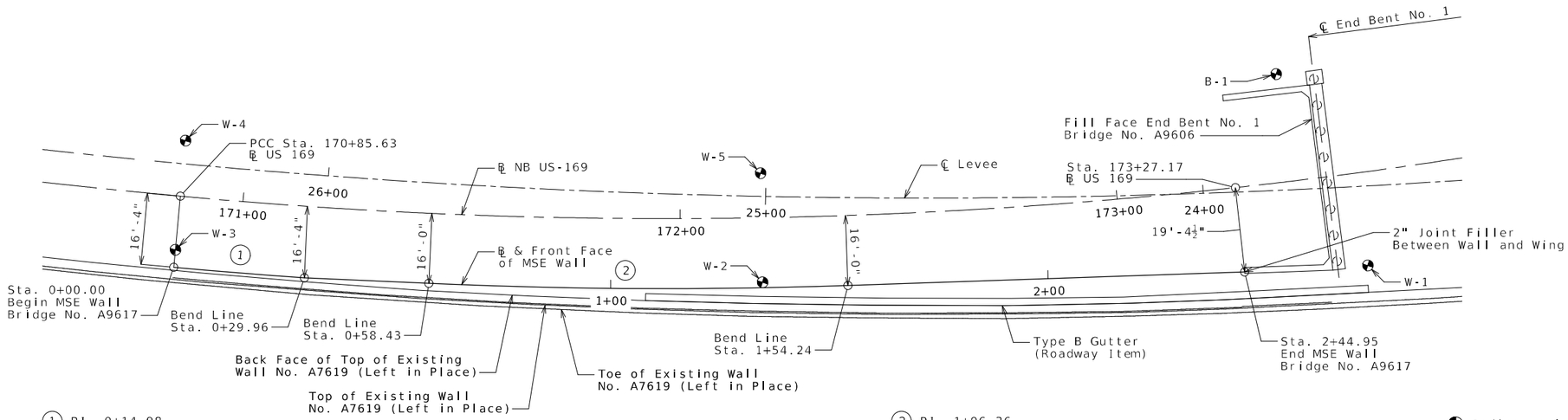
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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244.95' MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL SYSTEM

SEC/SUR 10 TWP 50N RGE 33W



PLAN

① PI 0+14.98
PC 0+00.00
PT 0+29.96
Δ 1°24'40.5" (LT)
D 4°42'37.9"
L 29.96' (ARC)
T 14.98'
R 1,216.33'

② PI 1+06.36
PC 0+58.43
PT 1+54.24
Δ 4°30'51.9" (LT)
D 4°42'42.6"
L 95.81' (ARC)
T 47.93'
R 1,216.00'

Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet(s) No. 6 to 8 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

NOTES:

Dimensions in Plan View are taken from the baseline of MSE Walls.

Baseline of MSE Walls are at the front face of the wall.

Stationing of MSE Wall is along front face of the wall.

For Elevation of MSE Wall see Sheet No. 2.

CP 701: 1/2" Iron Bar with Cap
RM 1 - 31.26' S to 90 degree Fence corner
RM2 - 118.64' SE to N Face Well (No. 10)
RM 3 - 92.74' N to S Face Well (No. 1)
Elevation: 747.32

BM 1: Chisled Square on West End of Pier
Footing 3rd Pier South of RR Tracks for
NB 169 Bridge
Elevation: 765.69

Estimated Quantities

Item		Total
MSE Wall Systems with Lightweight Fill	sq. foot	1203

MSE Wall Systems Data Table

Proprietary Wall Systems		Combination Wall Systems			
Manufacturer	System	Facing Unit Manufacturer	Facing Unit	Geogrid Manufacturer	Geogrid

MSE Wall Systems Data Table is to be completed by MoDOT construction personnel to record the manufacturer of the proprietary wall system or the manufacturers of the combination wall system that was used for constructing the MSE wall.

MSE RETAINING WALL ON US-169 -STRUCTURE A9617

ROUTE 169 NB FROM COUNTY LINE TO ROUTE 9
ABOUT 0.5 MILES SOUTH OF ROUTE 9
TIE STATION 173+27.17

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	1

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9617

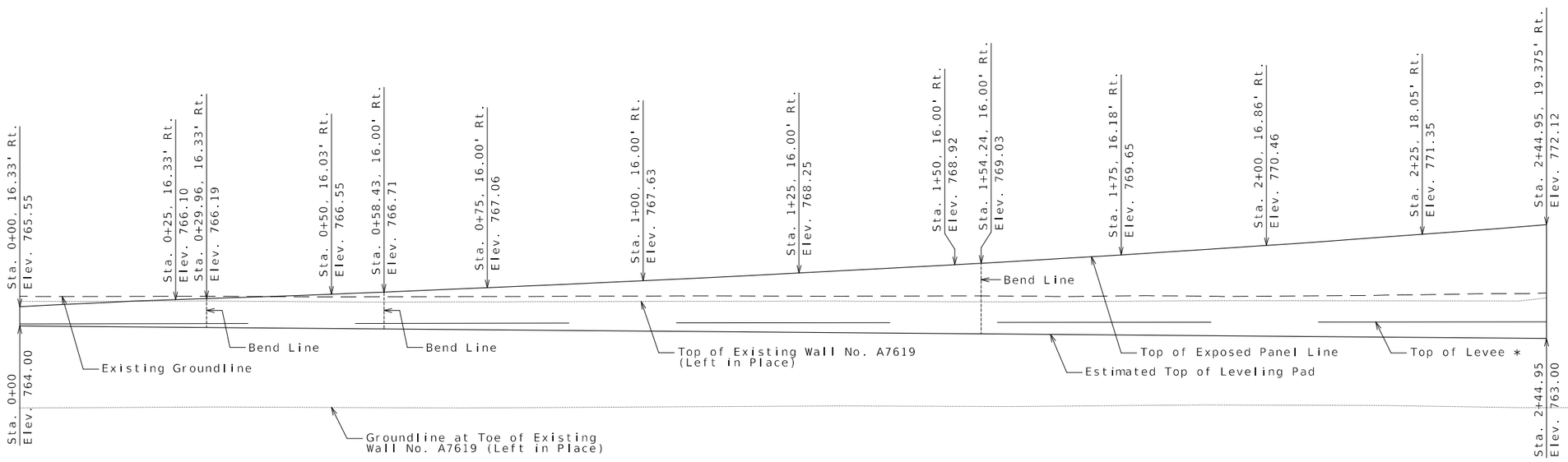
DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

SEC/SUR 10 TWP 50N RGE 33W



ELEVATION

* Interpolated from the 2013 Levee Certification Table 2.1 and Converted to NAVD88 datum. Elevation shown along ℄ Levee.

NOTES:

Offsets shown are from ℄ NB US 169.

For Plan of MSE Wall see Sheet No. 1.

Leveling Pad Notes:

Wall Contractor shall show the following items on the design drawings and/or on the fabricator shop drawings:

1. Leveling pad horizontal.
2. Leveling pad length and step elevations shall be based on wall manufacturer's recommendation. Top of leveling pad elevations shall not be higher than theoretical top of leveling pad elevations shown on these plans.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 2 of 8

MSE WALL NO. A9617 - ELEVATION

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010020206
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	2

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9617

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)
Seismic Design Category = A (Seismic Zone - 1)
Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{a1}<0.15 = 0.084
Acceleration Coefficient (effective peak ground acceleration coefficient), A_s= 0.053

The MSE wall designer shall show on the shop drawings the limits of soil reinforcement and stations where changes in length and/or size of soil reinforcement occur. All details of the soil reinforcement placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, coping, foundations, and utilities, etc., shall be addressed. Modifications to the design of these appurtenances to accommodate a particular system shall be submitted to the Engineer.

Design Loading:

For strength limit state and extreme event limit state, the wall designer to confirm that the minimum Capacity to Demand Ratio (CDR) for bearing, sliding, overturning, eccentricity, and internal stability is greater than or equal to 1.0. MSE wall designer shall include this note on shop drawings.

For Extreme Event I limit state, the wall designer shall design wall for γEQ = 0.5

Unit weight, cohesion and friction angle for various fill materials for design shall be as shown in the geotechnical report or as recommended by the lightweight fill suppier. See Roadway plans.

Φ_b= 34° and Unit weight, γ_b = 110 pcf for retained existing gravity wallbackfill material to be retained by the MSE Wall Systems with Lightweight Fill.

Φ_b= 32° and Unit weight, γ_b = 115 pcf for retained levee fill material to be retained by the MSE Wall Systems with Lightweight Fill.

Φ_b= 34° and Unit weight, γ_b = 30 pcf for retained Class II lightweight fill material to be retained by the MSE Wall Systems with Lightweight Fill.

Φ_b= 34° and Unit weight, γ_b = 36 pcf for retained Class III lightweight fill material to be retained by the MSE Wall Systems with Lightweight Fill.

For unimproved foundation ground, factored bearing resistance is 10.9 ksf for strength limit state and factored bearing resistance is 15.1 ksf for extreme event limit state.

The maximum applied factored bearing stress for the strength and extreme event limit state(s) at the foundation level shall be shown on the shop drawings and shall be less than the factored bearing resistance.

Factored bearing resistance shall not be greater than the values as shown on the plans. Lightweight fill shall be considered in bearing resistance as necessary. See Roadway plans.

Use default values for the pullout friction factor, F, in accordance with LRFD figure 11.10.6.3.2-2 and default value for scale effect correction factor, α, in accordance with LRFD table 11.10.6.3.2-1 unless MoDOT has pre-approved a higher value for a specific product. For approved steel strips not shown in LRFD figure 11.10.6.3.2-2, use F* ≤ 2.0 at zero depth and F ≤ Tan Φ at 20 feet depth and Φ_f design = 34°. F*and α values shall be shown on the shop drawings.

Design Unit Stresses:

All concrete for leveling pad and moment slab shall be Class B or B-1 with f'c = 4000 psi.

The minimum compressive strength of concrete for precast modular panel shall be 4,000 psi in accordance with Sec 1052.

Excavation:

Excavation quantities and pay items are given on the roadway plans. Excavation quantities are based on limits of lightweight fill defined in roadway cross sections. Plan excavation quantities will be paid regardless of any actual quantities.

The MSE wall system shall be built vertical.

The MSE wall system shall be built in accordance with Sec 720 except lightweight fill shall be used in place of Select Granular Backfill for Structural Systems. See Job Special Provisions for Lightweight Cellular Concrete Fill.

The MSE wall system shall be a precast modular panel.

The cost of joint filler and joint seal, complete in place, will be considered completely covered by the contract unit price for MSE Wall Systems with Lightweight Fill.

Panel, concrete block and moment slab reinforcement shall be epoxy coated.

A filter cloth meeting the requirements for a Separation Geotextile material shall be placed between the lightweight fill and the backfill being retained by the mechanically stabilized earth wall system.

The lightweight fill material supplier shall be recommended in writing by the manufacturer of the proprietary wall system.

The cost of the lightweight fill within the limits noted in these plans. complete in place, will be considered completely covered by the contract unit price for MSE Wall Systems with Lightweight Fill.

For lightweight fill placement soil reinforcement shall be supported on galvanized reinforcing stakes (or approved equivalent) on 4 foot centers, 6 inches minimum cover over soil reinforcement shall be provded between cold joints of adjent fill lift layers. Thickness of lift layers and minimum curing times between subsequent lifts shall be indicated in the manufacturer's design plans. Heavy construction equipment or other unusual loading of the Lightweight Fill shall not be permitted until it has attained the specified compressive strength.

The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed and placed to avoid damage by pile driving, guardrail post installation, utility and sign foundations. (See Roadway and Bridge plans.)

Minimum 18" wide non-woven geotextile (geomembrane) strips shall be centered at vertical and horizontal joints of panel. Geotextile material shall be adhered to back face of panel using a high strength construction adhesive compound supplied by the manufacturer. All edges of each fabric strip shall provide a positive seal. A minimum 18" overlap shall be provided between spliced filter fabric.

Aluminized soil reinforcement shall have edges coated with coating material per manufacturer.

Soil reinforcement shall be spaced to avoid drain system behind wall.

All steel soil reinforcements shall be separated from other metallic elements by at least 3 inches.

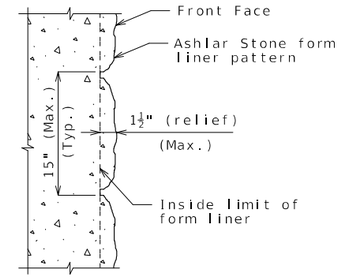
The splay angle should be less than 15° and tensile capacity of splayed reinforcement shall be reduced by the cosine of the splay angle. Soil reinforcement shall clear the obstruction by at least 3 inches.

No reinforcement shall be left unconnected to the wall face or arbitrarily cut/bent in the field to avoid the obstruction.

Where interference between the vertical obstruction and the soil reinforcement is unavoidable, the design of the wall near the obstruction may be modified using one of the alternatives in FHWA-NHI-10-024, Section 5.4.2. Show detail layout on the drawings. For wall designs with horizontal obstructions in reinforced soil mass, see FHWA-NHI-10-024, Section 5.4.3.

Contractor to field verify all dimensions including existing wall A7619 dimensions. The Contractor shall make any necessary adjustments to wall design dimensions as approved by the Engineer. The Contractor is responsible for verifying that the MSE Wall Systems with Lightweight Fill are adequate for all field conditions encountered during construction. Plan quantities will be paid regardless of actual dimensions of MSE wall system installed.

Contractor shall take all necessary precautions to contain lightweight fill material and prevent any discharge, migration, or spillage onto adjacent railroad property.



FORM LINER DETAIL (PRECAST MODULAR PANEL WALL)

Notes for Form Liners:

The cost of form liners for MSE wall systems, complete in place, will be considered completely covered by the contract unit price for MSE Wall Systems with Lightweight Fill.

Form liner shall be constructed in accordance with Special Provisions.

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

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

GENERAL NOTES

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

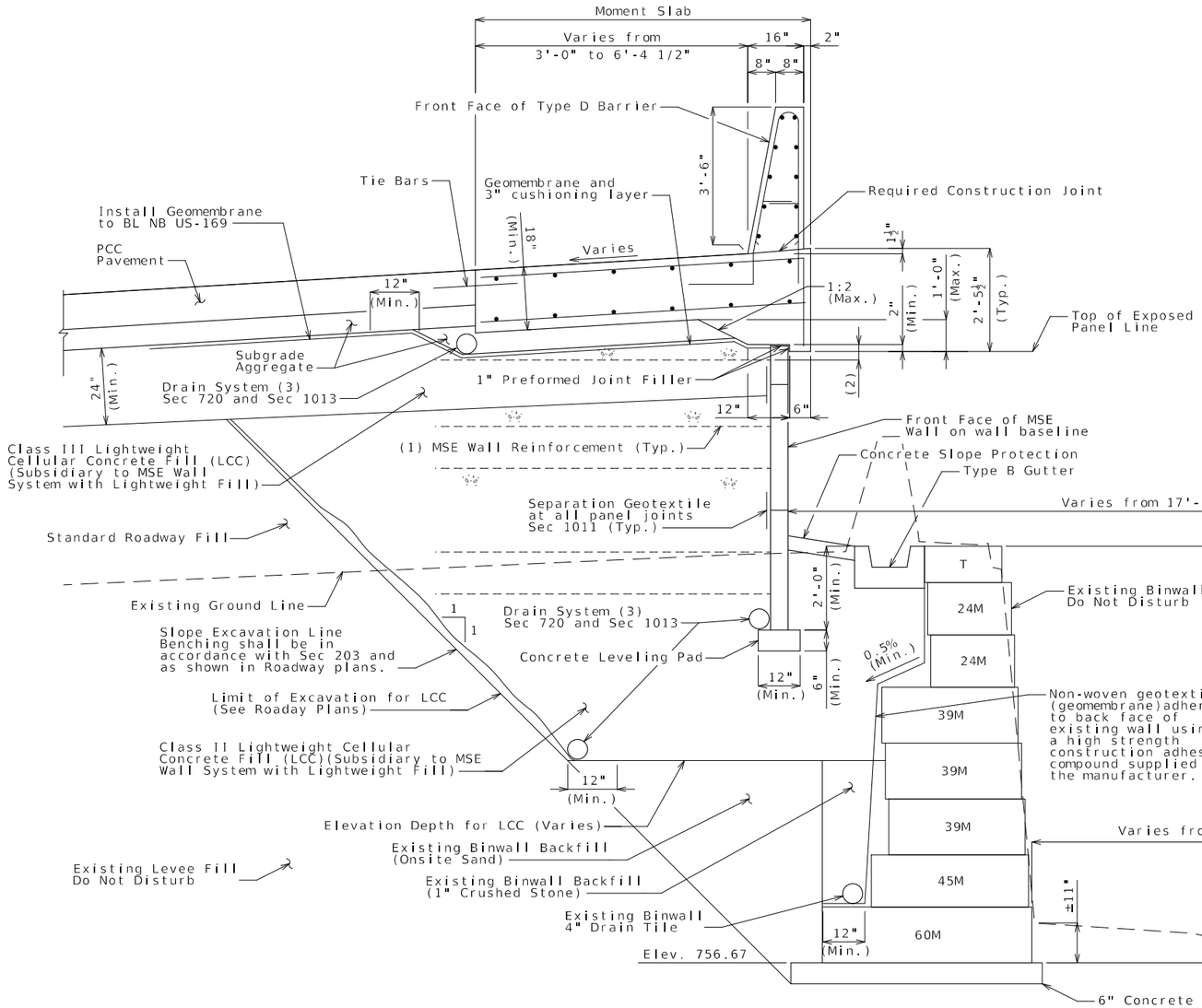
BRIDGE NO.
A9617

DESCRIPTION	DATE

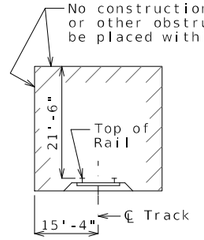
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



*** Approximate clearance measured from project survey.



MINIMUM CONSTRUCTION CLEARANCES

(Normal to railroad)
(Not to scale)

A flagman is required when any work is performed within 25 feet of track centerline. If the Railroad provides flagging or other services, the Contractor shall not be relieved or any responsibilities or liabilities as set forth in any document authorizing the work. No work is allowed within 50 feet of track centerline when a train passes the work site, and all personnel must clear the area within 25 feet of track centerline and secure all equipment when trains are present.

Soil Reinforcement Layer	Impact Rupture Load (lb./ft. of wall)	Impact Rupture Load (lb./ft. of wall)
Upper Layer	2,300	2,300
Second Layer	600	600

(1) The MSE wall suppliers internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and corresponding horizontal force with respect to reinforcement layer location and load type.

(2) Topmost layer of reinforcement shall be fully covered with lightweight fill, as approved by the wall manufacturer, before placement of the Separation Geotextile.

(3) Minimum 6" diameter perforated PVC or PE pipe.

Manufacturer shall show drain details on design plans to be submitted as shown on MoDOT MSE wall plans and/or roadway plans.

Pipe shall slope to drain and outlet as directed by the engineer. Pipe drop to existing Binwall drain allowed.

Contractor shall modify the drain details as shown if it will improve flow as may be the case for stepped leveling pad, and for an uneven ground line (approval of the engineer required).

Note:

Furnish and install geomembrane in accordance with Special Provisions.

TYPICAL SECTION THRU PRECAST MODULAR PANEL WALL

(*) Perpendicular to ℄ RR Tracks

Material Properties Used in Design						
Lightweight Fill			Active Force Computations			Foundation
Φ_f°	γ_f (pcf)		Φ°	γ (pcf)		Φ_f°

Show range of acceptable theta (Θ) angle on shop drawings which must be consistent with design computations and proposed construction of wall. Show active force computation properties ($\Phi° = \Phi_f°$ and $\gamma = \gamma_f$ or $\Phi° = \Phi_b°$ and $\gamma = \gamma_b$) on shop drawings and in design computations. Coordination between wall designer (manufacturer) and contractor is required before shop drawing submittal.

MSE Wall designer shall include table on shop drawings and provide values used in the design computations. Effects of cohesion shall be ignored unless approved by the engineer.

DETAILS FOR MSE WALL

Detailed: Oct. 2025
Checked: Oct. 2025

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

THOMAS M. GREER NUMBER PE-2018000206 PROFESSIONAL ENGINEER STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	4

COUNTY CLAY

JOB NO. JKU0099

CONTRACT ID.

PROJECT NO.

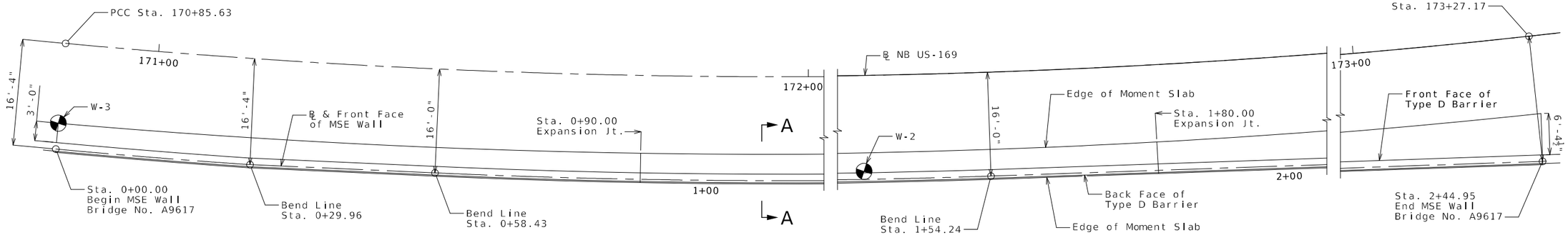
BRIDGE NO. A9617

DESCRIPTION | DATE

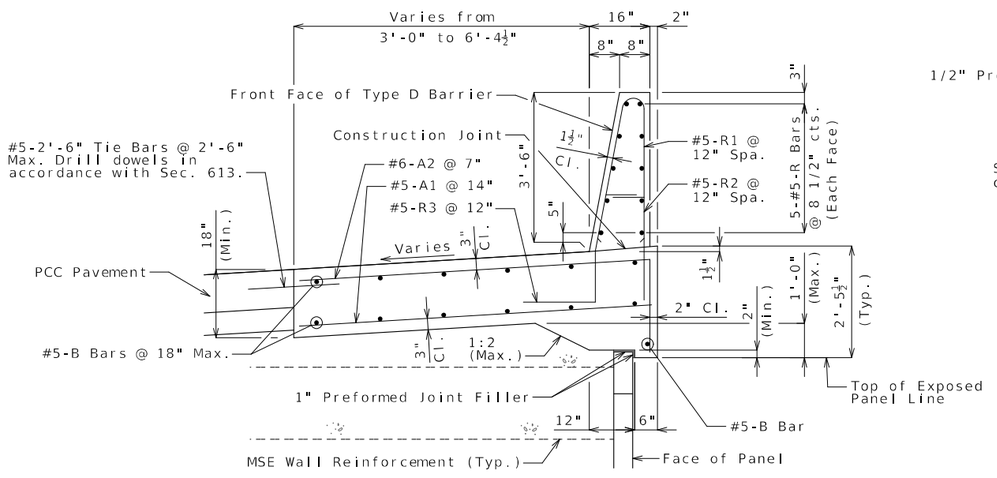
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

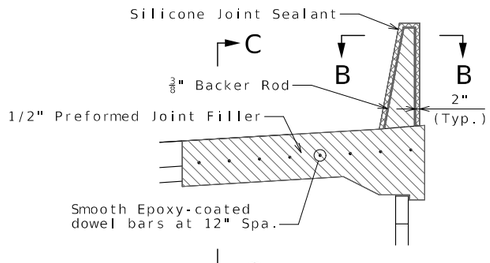
Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749



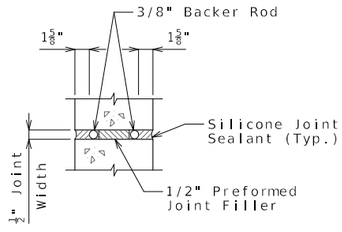
PLAN



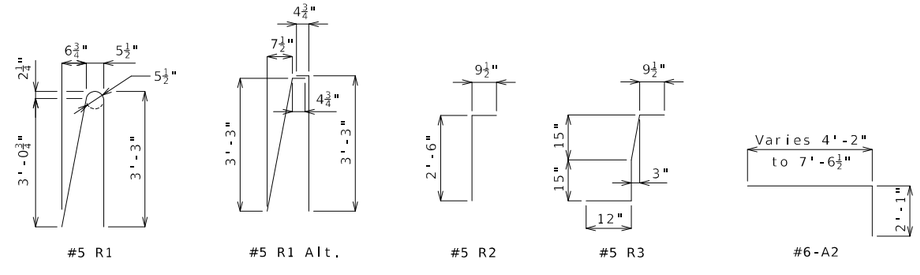
SECTION A-A



EXPANSION JOINT DETAIL

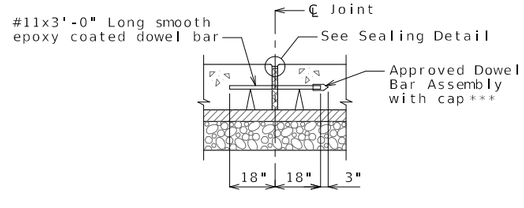


SECTION B-B



BENDING DIAGRAMS

Minimum Bar Lap:
#5-R Bar = 2'-6"
#5-B Bar = 3'-2"



SECTION C-C

***Expansion caps shall be installed on the exposed end of each dowel bar once the header has been removed

NOTES:
Sawed construction joints shall be spaced to match concrete pavement joints. See Standard Plans for Joint Detail. If construction joints are not aligned, provide bond beaker between moment slab and adjacent pavement.

The Contractor has the option to slip-form the barrier. In which case, additional reinforcement may be tied to the upper two thirds of the reinforcing cage to provide bracing. For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

See Roadway plans for cross-slope, roadway elevations, and other roadway geometric details.

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

Concrete in slab and barrier shall be Class B-1.

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

See Bridge Sheet "Approach Slab (Major)-End Bent 1" for details of bridge approach slab and sleeper slab at end of moment slab.

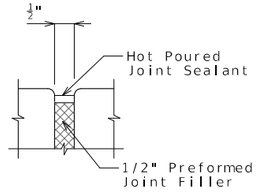
For Concrete Traffic Barrier Delineation details see Std. Plan 903.03.

All Reinforcement shall be grade 60 epoxy coated.

No direct payment will be made for reinforcing steel.

Minimum clearance to reinforcing steel shall be 1½" unless otherwise shown.

Payment for furnishing all material, equipment, tools, labor and other incidental work as shown on this sheet for construction of the moment slab and Type D barrier shall be completely covered by the contract unit price for Concrete Traffic Barrier Type D (Moment Slab) per linear foot(Roadway Item).



SLAB SEALING DETAIL

MOMENT SLAB DETAILS

Detailed: Oct. 2025
Checked: Oct. 2025

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

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED
1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
CLAY

JOB NO.
JKU0099

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9617

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

Missouri Department of Transportation
Construction and Materials

BORING NO. W-1
Page 1 of 1

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RAW **Operator:** BCS
Station: **Northing:** 1087946.4521 **Date of Work:** 04/02/25-04/02/25
Offset: **Easting:** 2764287.5633 **Depth to Water:** 30.5
Elevation: 766.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 55LC ,Split-Spoon Sampler, Shelby Tube
Requested Elevation: **Location Note:**
Drill No.: S/N 424035 **Hammer Efficiency:** 75% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.8' CONCRETE - 10 inches							
		0.8-1.3' CRUSHED ROCK - 5 inches	765						
		1.3-23.0' FILL - brown, fine to coarse, poorly graded sand, trace gravel		X	89	8-14-13 (34)			
5				X	83	4-8-9 (21)			
			760	X	100	3-5-5 (13)			
10				X	100	4-4-4 (10)			
			755	X	100	2-2-1 (4)			
15		14.3' 1-inch clay inclusion		X	78	2-1-1 (3)			
			750						
20				X	100	3-4-4 (10)			
			745						
25		23.0-24.0' FILL - gray and brown fat clay, brick fragments		X	78	4-4-7 (14)	PP = 0.50 tsf		MC = 17.4%
		24.0-26.0' SILT - brown, stiff - ML			79		PP = 1.00 tsf		
		26.0-28.5' CLAY - brown, medium stiff, lean - (CL)	740						
30		28.5-31.0' SAND - brown, loose, fine, poorly graded - SP			79		Qu Test Results UCS = 1.56 ksf MC = 19.95% γ_{moist} = 115.152 pcf	PP = 1.50 tsf	LL = 42 PL = 17
				X	100	5-3-2 (6)		PP = 0.25 tsf	
		31.0-31.5' SILT - brown, medium stiff - ML 31.0' 89.3% passing No. 200 sieve							
		Bottom of borehole at 31.5 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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

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Missouri Department of Transportation
Construction and Materials

BORING NO. W-2
Page 1 of 1

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RAW **Operator:** BCS
Station: **Northing:** 1087815.6455 **Date of Work:** 04/02/25-04/02/25
Offset: **Easting:** 2764331.3062 **Depth to Water:** 29.0
Elevation: 766.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 55LC ,Split-Spoon Sampler, Shelby Tube
Requested Elevation: **Location Note:**
Drill No.: S/N 424035 **Hammer Efficiency:** 75% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.7' CONCRETE - 8.5 inches							
		0.7-1.2' CRUSHED ROCK - 5.5 inches	765						
		1.2-23.0' FILL - brown, fine to coarse, poorly graded sand, trace gravel and clay inclusions		X	89	5-11-11 (28)			
5				X	94	3-5-6 (14)			
			760	X	89	4-6-6 (15)			
10				X	72	4-5-4 (11)			
			755	X	67	1-2-1 (4)			
15				X	67	2-4-5 (11)			
			750	X	100	5-5-6 (14)			
20				X	100	4-7-8 (19)			
			745						
25		23.0-23.8' FILL - gray and brown silt, brick fragments		X	78	3-5-4 (11)			LL = 24 PL = 20 MC = 24.8%
		23.8-25.7' SILTY CLAY - brown, stiff, sandy - (CL-ML) 24.0' 59.4% passing No. 200 sieve	740		100		UU Test Results UU/2 = 0.88 ksf MC = 30.7% γ_{moist} = 113.709 pcf	PP = 0.50 tsf	LL = 53 PL = 27
30		25.7-30.0' CLAY - brown, soft and medium stiff, fat - (CH) 26.0' 4-inch fine sand layer		X	100	3-3-1 (5)			MC = 33.6%
		Bottom of borehole at 30.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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For location of borings, see Sheet No. 1.

Detailed: Oct. 2025
Checked: Oct. 2025

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

BORING DATA

STATE OF MISSOURI THOMAS M. GREER NUMBER PE-2010000206 PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026
ROUTE 169 STATE MO
DISTRICT BR SHEET NO. 6
COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9617

DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. W-3
Page 1 of 1

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RAW **Operator:** BCS
Station: **Northing:** 1087685.4903 **Date of Work:** 04/01/25-04/01/25
Offset: **Easting:** 2764366.9423 **Depth to Water:**
Elevation: 766.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 55LC ,Split-Spoon Sampler, Shelby Tube
Requested Elevation: **Location Note:**
Drill No.: S/N 424035 **Hammer Efficiency:** 75% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.7' CONCRETE - 8 inches	765						
		0.7-1.3' CRUSHED ROCK - 7 inches							
		1.3-17.0' FILL - brown, fine to coarse, poorly graded sand			89	9-13-13 (33)			
5			760		72	8-7-6 (16)			
					83	4-6-7 (16)			
10			755		100	3-5-6 (14)			
					100	2-1-2 (4)			
15					100	2-4-4 (10)			
			750						
		17.0-24.0' SAND - brown, fine and medium, medium dense, poorly graded - SP			100	4-6-7 (16)			
20			745						
25		24.0-24.5' CLAY - brown, lean - CL			100	3-2-5 (9)			MC = 27.6%
		24.5-27.5' SAND - brown, fine and medium, medium dense, poorly graded - SP	740						
		27.5-29.5' CLAY - brown, medium stiff, lean - (CL)			96		UU Test Results UU/2 = 0.70 ksf MC = 30.7% γ_{moist} = 116.323 pcf	PP = 3.00 tsf	LL = 40 PL = 20
30		29.5-30.7' SAND - brown, fine and medium, medium dense, poorly graded - SP	735		100	3-4-7 (14)		PP = 0.25 tsf	MC = 24.5%
		30.7-31.3' SILT - brown - ML							
		31.3-32.0' SAND - brown, fine and medium, medium dense, poorly graded - SP							
		Bottom of borehole at 32.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. W-4
Page 1 of 1

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RAW **Operator:** BCS
Station: **Northing:** 1087685.3873 **Date of Work:** 04/07/25-04/07/25
Offset: **Easting:** 2764345.9709 **Depth to Water:**
Elevation: 765.1 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 55LC ,Split-Spoon Sampler, Shelby Tube
Requested Elevation: **Location Note:**
Drill No.: S/N 424035 **Hammer Efficiency:** 75% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.8' CONCRETE - 9 inches	765						
		0.8-1.7' CRUSHED ROCK - 11 inches							
		1.7-6.3' FILL - brown lean to fat clay, sand, trace brick fragments			75	5-6-6 (15)		PP = 2.50 tsf	MC = 13.7%
5			760		100	4-6-5 (14)		PP = 1.00 tsf	MC = 29.6%
		6.3-24.0' FILL - brown, fine to medium, poorly graded sand			94	5-9-7 (20)			
10			755		89	2-2-3 (6)			
					100	3-4-4 (10)			
15			750		83	4-7-9 (20)			
20			745		78	5-6-8 (18)			
25		24.0-29.8' CLAY - brown, soft, lean - (CL)	740		88			PP = 1.00 tsf	
30		29.8-30.0' SAND - brown, very loose, fine, poorly graded - SP			100	1-2-2 (5)		PP = 0.50 tsf	LL = 39 PL = 20 MC = 31.5%
		Bottom of borehole at 30.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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For location of borings, see Sheet No. 1.

BORING DATA

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 7 of 8

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000226
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	7

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9617

DESCRIPTION

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
816-333-9400
Certificate of Authority No.: 000165
BMcD Project No. 154749

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Missouri Department of Transportation
Construction and Materials

BORING NO. W-5
Page 1 of 1

Job No.: KU0099 **County:** Clay **Route:** Northbound US Route 169
Design: **Skew:** **Location:** BNSF Railroad
Bent: **Logged By:** RAW **Operator:** BCS
Station: **Northing:** 1087809.1419 **Date of Work:** 04/03/25-04/03/25
Offset: **Easting:** 2764313.8115 **Depth to Water:** 30.0
Elevation: 765.2 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** CME 55LC ,Split-Spoon Sampler, Shelby Tube
Requested Elevation: **Location Note:**
Drill No.: S/N 424035 **Hammer Efficiency:** 75% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.8' CONCRETE - 9.5 inches 0.8-1.3' CRUSHED ROCK - 5.5 inches 1.3-7.0' FILL - gray fat clay	760	X	78	5-7-7 (18)		PP = 1.00 tsf	MC = 22.9%
10		7.0-18.0' FILL - brown, fine to coarse, poorly graded sand		X	44	3-3-4 (9)			
			750	X	78	3-4-4 (10)			
				X	94	4-7-7 (18)			
20		18.0-22.0' SAND - brown, medium dense, fine, poorly graded - SP		X	100	5-7-9 (20)			
		22.0-25.5' CLAY - brown, soft, lean - (CL)	740	X	100	2-2-2 (5)			LL = 47 PL = 17 MC = 34.8%
		25.5-28.5' SAND - brown, loose, fine, poorly graded - SP			75				
30	▽	28.5-32.0' SILT - brown, medium stiff - ML 28.5' 89.9% passing No. 200 sieve		X	100	2-4-2 (8)			MC = 32.6%
		32.0-34.0' SAND - brown, loose, fine, some clay - SC							
		34.0-37.0' SILT - dark brown, soft, some clay - (ML)	730		100		Qu Test Results UCS = 0.470 ksf MC = 23.9% γ_{moist} = 112.749 pcf	PP = 0.75 tsf	LL = 33 PL = 24
		37.0-40.0' SAND - brown, medium dense, fine, poorly graded - SP		X	100	5-8-9 (21)			
40		Bottom of borehole at 40.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: **Coordinate Zone:** **Coordinate Proj. Factor:**
Coordinate Datum: NAVD88 **Coordinate Units:** U.S. Survey Feet

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For location of borings, see Sheet No. 1.

Detailed: Oct. 2025
Checked: Oct. 2025

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

Sheet No. 8 of 8

BORING DATA

STATE OF MISSOURI
THOMAS M. GREER
NUMBER PE-2010000206
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE

DATE PREPARED 1/5/2026

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	8

COUNTY CLAY
JOB NO. JKU0099
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9617

DESCRIPTION	DATE

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

Burns & McDonnell Engineering Co., Inc.
9400 Ward Parkway
Kansas City, Missouri 64114
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Certificate of Authority No.: 000165
BMcD Project No. 154749