DESIGN DESIGNATION

A.A.D.T. - 2024 = 6500
A.A.D.T. - 2044 = 9000
D.H.V. = 1360
T = 9%
V = 60 M.P.H.
D = 100
FUNCTIONAL CLASSIFICATION - INTERSTATE

NO RIGHT OF WAY IS ACQUIRED

CONVENTIONAL SYMBOLS
(USED IN PLANS)

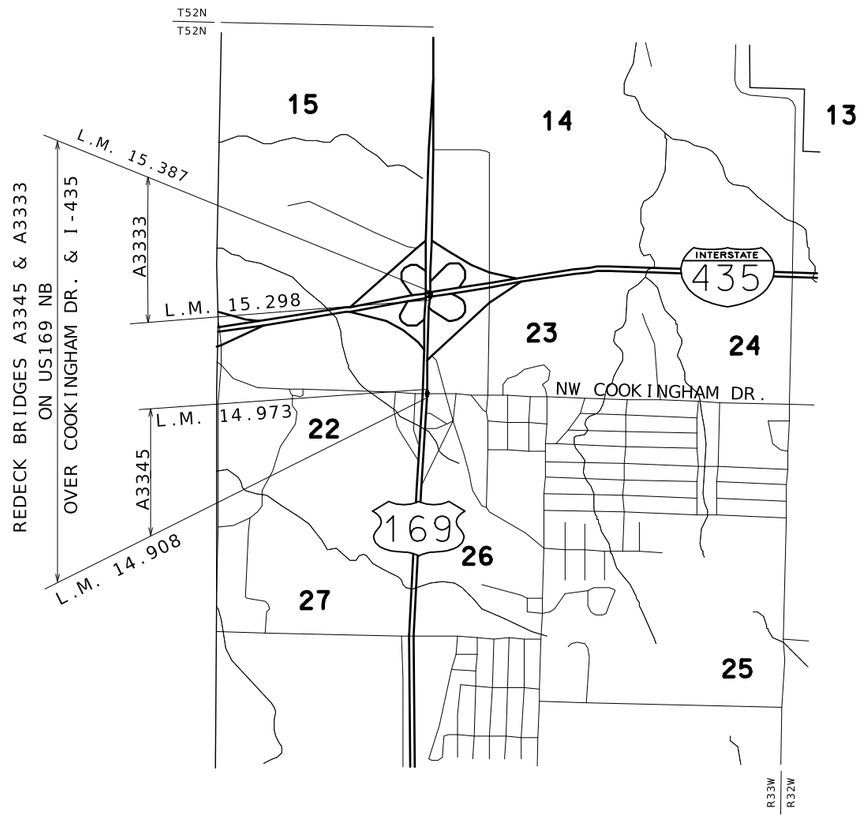
	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
GUARD CABLE		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	-FO-	FO
OVERHEAD CABLE TV	-OTV-	OTV
UNDERGROUND CABLE TV	-UTV-	UTV
OVERHEAD TELEPHONE	-OT-	OT
UNDERGROUND TELEPHONE	-UT-	UT
OVERHEAD 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	D	
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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY CLAY COUNTY

KEY MAP
LOCATION OF CLAY COUNTY



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.

INDEX OF SHEETS

LENGTH OF PROJECT

BEGINNING OF PROJECT	L.M. 14.908
END OF PROJECT	L.M. 14.973
BEGINNING OF PROJECT	L.M. 15.298
END OF PROJECT	L.M. 15.387
APPARENT LENGTH	813.12 FEET

EQUATIONS AND EXCEPTIONS:

BRIDGE A3345 L.M. 14.925 - L.M. 14.957
BRIDGE A 3333 L.M. 15.315 - L.M. 15.371

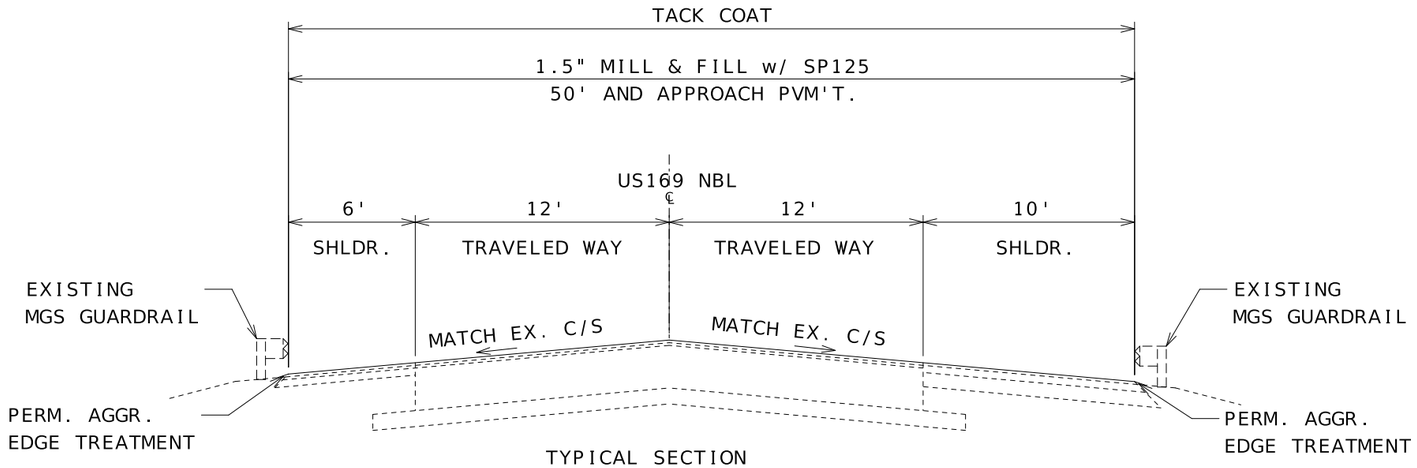
TOTAL CORRECTIONS	464.64 FEET
NET LENGTH OF PROJECT	348.48 FEET
STATE LENGTH	00.066 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	0.70 ACRES

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:10:25 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED: 3/3/2025
ROUTE: 169 | STATE: MO
DISTRICT: KC | SHEET NO.: 1
COUNTY: CLAY
JOB NO.: JKU0039
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)



TYPICAL SECTION
US169 NORTHBOUND
LOG MILE 14.908 TO 14.973
LOG MILE: 15.298 TO 15.387

BRIDGE & APPR. SLAB EXCEPTIONS
BR. A3345 L.M. 14.921 TO 14.960
BR. A3333 L.M 15.311 TO 15.374

ESTIMATE FACTORS	
TACK COAT	0.10 GAL/YD²
SP125 BSM, PG 70-22	1.961 TON/YD³
PERMANENT AGGREGATE EDGE TREATMENT	1.880 TON/YD³

NOT TO SCALE

TYPICAL SECTION
SHEET 1 OF 1

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/31/2025 9:37:36 AM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/31/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	2

COUNTY
CLAY

JOB NO.
JKU0039

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)

REMOVAL OF IMPROVEMENTS

LOCATIONS	QUANTITIES	UNITS	REMARKS
US169 NB	80	LF	SAW CUT BEG. AND END OF PVM'T.(MILL & FILL 50' & APPR. PVM'T EACH SIDE OF BR. A3345)
US169 NB	80	LF	SAW CUT BEG. AND END OF PVM'T.(MILL & FILL 50' & APPR. PVM'T EACH SIDE OF BR. A3333)
FINAL TOTAL	1	LS	

PAVING QUANTITIES

BEG. LOG MILE	END LOG MILE	LOCATION	WIDTH LF	EX. SHLDR RT & LT LF	COLDMILLING SQYD	MAIN LANE & SHLDR 1.5" SP125BSM TONS	TACK COAT GAL	REMARKS
14.908	14.921	US169 NB , SOUTH OF BRIDGE A3345	24	16	288.89	23.88	28.89	BEG. OF PROJECT
14.921	14.960	A3345 & BRIDGE APPROACH SLAB						BRIDGE & APPROACH SLAB EXCEPTION-A3345
14.960	14.973	US169 NB, NORTH OF BRIDGE A3345	24	16	288.89	23.88	28.89	
15.298	15.311	US169 NB, SOUTH OF BRIDGE A3333	24	16	298.33	24.66	29.83	
15.311	15.374	A3333 & BRIDGE APPROACH SLAB						BRIDGE & APPROACH SLAB EXCEPTION-A3333
15.374	15.387	US169 NB, NORTH OF BRIDGE A3333	24	16	298.33	24.66	29.83	END OF PROJECT
TOTAL					1174.44	97.08	117.44	
FINAL TOTAL					1174.50	97.10	118.00	

DITCH CLEANOUT

LOG MILE	LOG MILE	LENGTH	LOCATIONS	DITCH CLEANOUT LF	REMARKS
4.800	4.950	792.00	NE COOKINGHAM DR	792.00	EB & WB ALONG CONC. SLOPE PROTECTION OF EX. BRIDGE A3345
20.520	20.650	686.40	I-435 EB	686.40	EB ALONG CONC. SLOPE PROTECTION OF EX. BRIDGE A3333
34.600	34.740	739.20	I-435 WB	739.20	WB ALONG CONC. SLOPE PROTECTION OF EX. BRIDGE A3333
TOTAL				1478.40	
FINAL TOTAL				1480.00	

PERMANENT AGGREGATE EDGE TREATMENT

BEG. BEG. LOG MILE	END END LOGMILE	LENGTH LF	PERM. AGGR. EDGE TREATMENT TYPE 1 OR 5 AGGR. TON	REMARKS
14.908	14.921	68.64	3.18	BEG. OF PROJECT
14.921	14.96			BRIDGE EXCEPTION A3345
14.960	14.973	68.64	3.18	
15.298	15.311	68.64	3.18	
15.311	15.374			BRIDGE EXCEPTION A3333
15.374	15.387	68.64	3.18	END OF PROJECT
TOTAL		274.56	12.72	
FINAL TOTAL			12.80	

SEEDING AND EROSION CONTROL BLANKET

LOG MILE	LOG MILE	LENGTH LF	WIDTH LF	LOCATIONS	SEEDING COOL SEAS. GRASSES ACRE	TYPE 1A ECB SY	REMARKS
4.800	4.950	792.00	10.00	NE COOKINGHAM DR	0.36	1760.00	EB & WB ALONG CONC. SLOPE PROTECTION OF EX. BRIDGE A3345
20.520	20.650	686.40	10.00	I-435 EB	0.16	762.67	EB ALONG CONC. SLOPE PROTECTION OF EX. BRIDGE A3333
34.600	34.740	739.20	10.00	I-435 WB	0.17	821.33	WB ALONG CONC. SLOPE PROTECTION OF EX. BRIDGE A3333
TOTAL					0.69	3344.00	
FINAL TOTAL					0.70	3344.00	

PAVEMENT MARKINGS

BEG. LOG	END LOG	LENGTH LF	6" YELLOW WATERBORNE PAINT WITH TYPE L BEADS LF	6" INTERMITTENT WHITE WATERBORNE PAINT WITH TYPE L BEADS LF	3' DOTTED WHITE WATERBORNE PAINT WITH TYPE L BEADS LF	6" WHITE WATERBORNE PAINT WITH TYPE L BEADS LF	COMMENTS
13.755	15.387	8616.96		2154.24			ROUTE 169 NB
14.320	14.480	844.80			633.60		ROUTE 169 NB
14.908	15.387	2529.12	2529.12			2529.12	ROUTE 169 NB
TOTAL			2529.12	2154.24	633.60	2529.12	
FINAL TOTAL			2530.00	5317.00			

TEMP. MARKING AND REMOVAL OF PAVEMENT MARKINGS

BEG. LOG	END LOG	LENGTH LF	4" TEMP. REMOVABLE MARKING TAPE YELLOW LF	4" TEMP. REMOVABLE MARKING TAPE, YELLOW REMOVAL LF	INTERMITTENT WHITE PVM'T. MARKING REMOVAL LF	DOTTED WHITE PVM'T. MARKING REMOVAL LF	COMMENTS
13.755	14.395	3379.20			844.80		ROUTE 169 NB
14.320	14.480	844.80				633.60	ROUTE 169 NB
13.755	14.395	3379.20	3379.20	3379.20			ROUTE 169 NB
TOTAL			3379.20	3379.20	844.80	633.60	
FINAL TOTAL			3380.00	4858.00			

MOBILIZATION

1 LUMP SUM

SUMMARY OF QUANTITIES

SHEET 1 OF 2

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:28:16 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED 3/3/2025

ROUTE 169 | STATE MO

DISTRICT KC | SHEET NO. 3

COUNTY CLAY

JOB NO. JKU0039

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)

EFFECTIVE: 07-01-2024

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
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						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						MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00						MERGE (LEFT)
WO4-1aR	48X48	16.00	4	64				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	2	32				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)
W012-2x	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	9	144				ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	4	64				DETOUR AHEAD
WO20-3	48X48	16.00	8	128				ROAD CLOSED AHEAD/ ROAD CLOSED XXX FT
WO20-4	48X48	16.00						ONE LANE ROAD AHEAD
WO20-5	48X48	16.00	8	128				RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT LANES CLOSED AHEAD/ 2 RT. LANES CLOSED
WO20-6a	48X48	16.00	4	64				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)

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00	1	12				EXIT CLOSED
GO20-1	60X24	10.00	4	40				ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00	4	32				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	11	66				WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00	4	12				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								
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	10	120				SPEED LIMIT XX
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	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	9	90				ROAD CLOSED
R11-3a	60X30	12.50	6	75				ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	6	75				ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00	1	32				POINT OF PRESENCE
CONST-8	48X36	12.00	1	12				WORK ZONE NO PHONE ZONE
SPECIAL	78X36	19.50	24	468				DETOUR ASSEMBLY(50A-50C & 51A-51D)
SPECIAL	48X48	16.00	3	48				STRAIGHT ARROW COOKINGHAM DR. DETOUR
SPECIAL	48X48	16.00	3	48				RIGHT ARROW COOKINGHAM DR. DETOUR ASSEMBLY
SPECIAL	48X48	16.00	2	32				SLIGHT RIGHT ARROW DETOUR ASSEMBLY _COOKINGHAM DR.
SPECIAL	48X48	16.00	2	32				LEFT ARROW DETOUR ASSEMBLY _COOKINGHAM DR.
SPECIAL								
SPECIAL								
SPECIAL								
SPECIAL								
SPECIAL								
SPECIAL								

616-10.05 CONSTRUCTION SIGNS	TOTAL
	1702

616-10.10 RELOCATED SIGNS	TOTAL
	0

ITEM NUMBER	TOTAL QTY	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)
6123001	1	TRUCK MOUNTED ATTENUATOR (TMA)
6161008		ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	400	CHANNELIZER (TRIM LINE)
6161030	54	TYPE III MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040	1	FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A	9	CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		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
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

SUMMARY OF QUANTITIES

SHEET 2 OF 2

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:31:25 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED: 3/3/2025
ROUTE: 169 | STATE: MO
DISTRICT: KC | SHEET NO.: 3
COUNTY: CLAY
JOB NO.: JKU0039
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)

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

SIGN SPACING FOR ADVANCE SIGN SERIES (1) (2)		
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′

TAPER LENGTHS AND END TREATEMENTS FOR CONCRETE BARRIER				
PERMANENT POSTED SPEED MPH	MINIMUM LANE TAPER LENGTH (3) 10′	11′	12′	END TREATMENT (4)
<40	160′	168′	176′	BARRIER HEIGHT TRANSITION
>40	160′	168′	176′	APPROVED CRASH CUSHION

TAPER LENGTHS AND SPACING FOR CHANNELIZERS							
PERMANENT POSTED SPEED MPH	MINIMUM LANE TAPER LENGTH (L) (3) 10′	11′	12′	MINIMUM SHOULDER TAPER LENGTH (T1) BASED ON 10′ SHOULDER	BUFFER LENGTH FT	MAXIMUM CHANNELIZER SPACING THROUGH TAPER	THROUGH WORK AREA
0-35	205′	225′	245′	70′	280′	35′	40′
40-45	450′	495′	540′	150′	400′	40′	80′
50-55	550′	605′	660′	185′	560′	50′	80′
60-70	700′	770′	840′	235′	840′	60′	120′

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.	

LEGEND NOTE:

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

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
- TUBULAR MARKERS

TAPER LENGTH (L)

L = W X P FOR 40 MPH OR MORE

L = $\frac{WP^2}{60}$ FOR 35 MPH OR LESS

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

P = POSTED SPEED PRIOR TO ROAD WORK IN MPH

DETAILS NOTES:

(1) SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OF SIGNED CONDITION.

(2) SPACING MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

(3) TAPER LENGTHS SHOWN INCLUDE LENGTH REQUIRED FOR LANE AND 10' SHOULDER

(4) CONCRETE BARRIER MAY BE INSTALLED AT 8:1 FLARE RATE FROM THE SHOULDER POINT OF THE LIMITS OF THE CLEAR ZONE WHERE THE SIDE SLOPE IS 6:1 OR FLATTER

** 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)

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 ONLY.
5. LOCATE FLASHING ARROW PANEL AT BEGINNING OF TAPER WHEN FEASIBLE, ARROW PANELS ARE ALWAYS LOCATED BEHIND CHANNELIZERS OR CONES.
6. SIGN SPACING MAY BE ADJUSTED AS NECESSARY TO MEET FEILD CONDITIONS.

SPACING
TEMPORARY
TRAFFIC CONTROL
SHEET 1 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:38:43 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED 3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	4

COUNTY CLAY

JOB NO. JKU0039

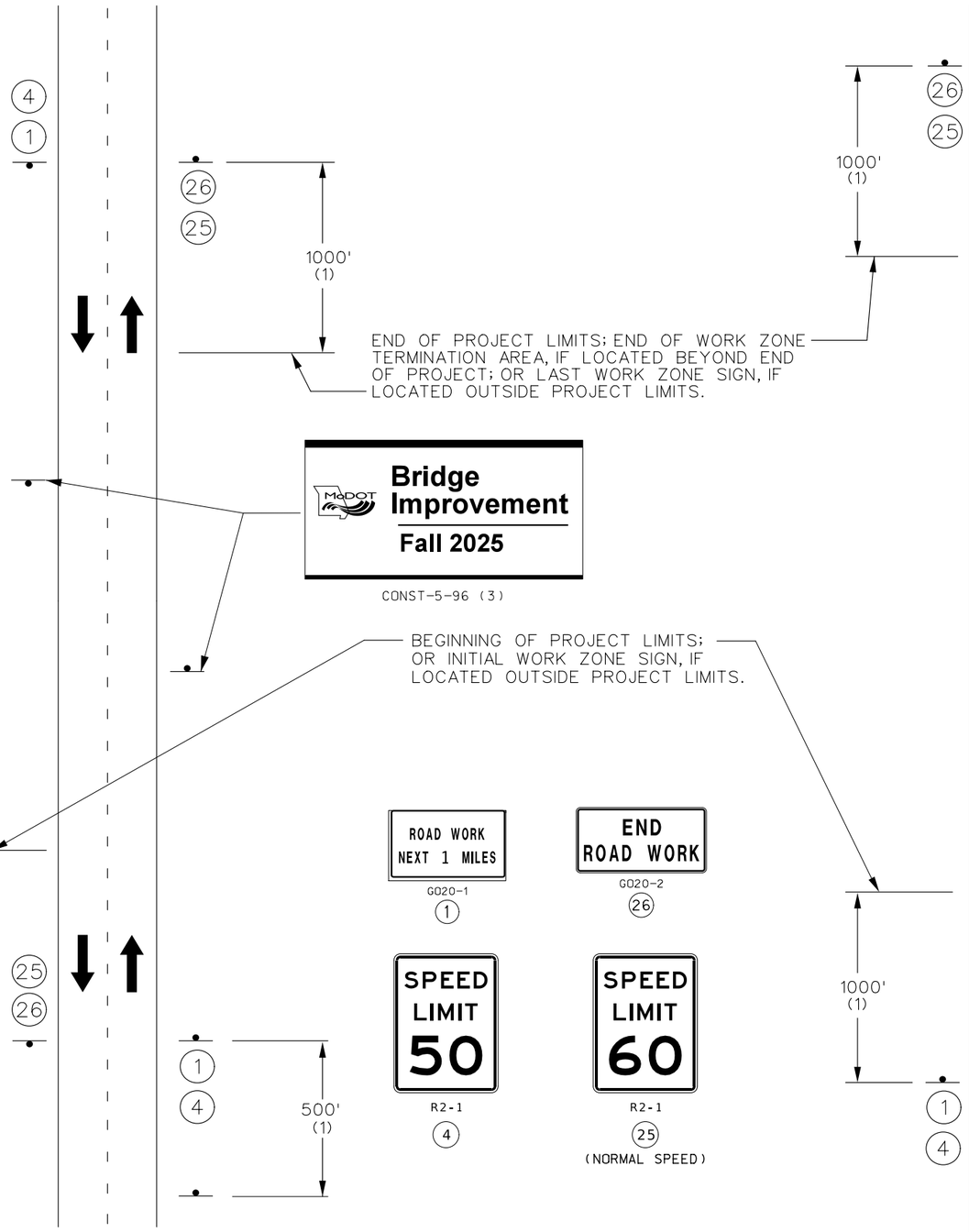
CONTRACT ID.

PROJECT NO.

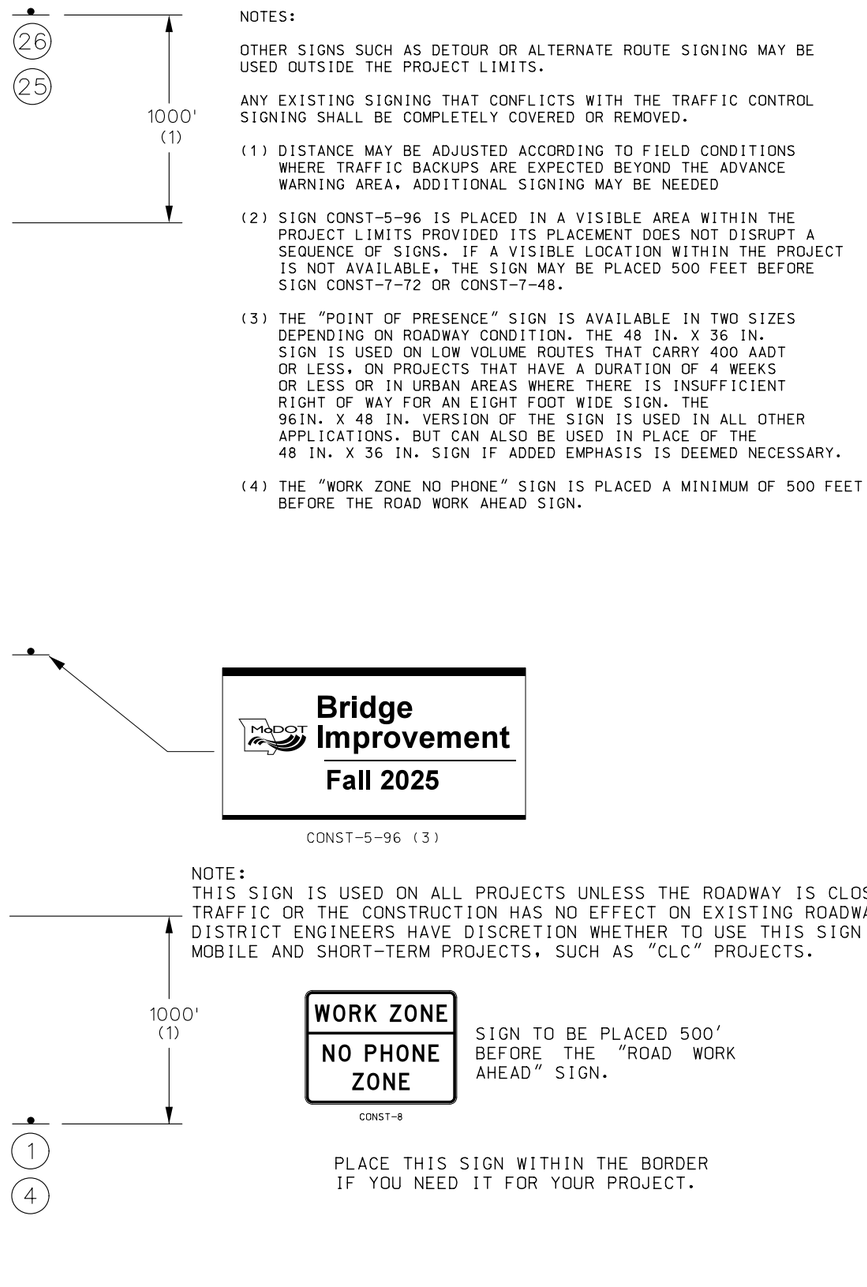
BRIDGE NO.

DESCRIPTION | DATE

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



TWO-LANE UNDIVIDED



MULTI-LANE DIVIDED

NOTES:

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) SIGN CONST-5-96 IS PLACED IN A VISIBLE AREA WITHIN THE PROJECT LIMITS PROVIDED ITS PLACEMENT DOES NOT DISRUPT A SEQUENCE OF SIGNS. IF A VISIBLE LOCATION WITHIN THE PROJECT IS NOT AVAILABLE, THE SIGN MAY BE PLACED 500 FEET BEFORE SIGN CONST-7-72 OR CONST-7-48.

(3) THE "POINT OF PRESENCE" SIGN IS AVAILABLE IN TWO SIZES DEPENDING ON ROADWAY CONDITION. THE 48 IN. X 36 IN. SIGN IS USED ON LOW VOLUME ROUTES THAT CARRY 400 AADT OR LESS, ON PROJECTS THAT HAVE A DURATION OF 4 WEEKS OR LESS OR IN URBAN AREAS WHERE THERE IS INSUFFICIENT RIGHT OF WAY FOR AN EIGHT FOOT WIDE SIGN. THE 96IN. X 48 IN. VERSION OF THE SIGN IS USED IN ALL OTHER APPLICATIONS. BUT CAN ALSO BE USED IN PLACE OF THE 48 IN. X 36 IN. SIGN IF ADDED EMPHASIS IS DEEMED NECESSARY.

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

NOTE:
THIS SIGN IS USED ON ALL PROJECTS UNLESS THE ROADWAY IS CLOSED TO TRAFFIC OR THE CONSTRUCTION HAS NO EFFECT ON EXISTING ROADWAYS. DISTRICT ENGINEERS HAVE DISCRETION WHETHER TO USE THIS SIGN ON MOBILE AND SHORT-TERM PROJECTS, SUCH AS "CLC" PROJECTS.

WORK ZONE
NO PHONE ZONE
CONST-8

SIGN TO BE PLACED 500' BEFORE THE "ROAD WORK AHEAD" SIGN.

PLACE THIS SIGN WITHIN THE BORDER IF YOU NEED IT FOR YOUR PROJECT.

BEGIN/END OF PROJECT SIGNING
(FOR USE ON ALL PROJECTS)

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
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BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	5

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

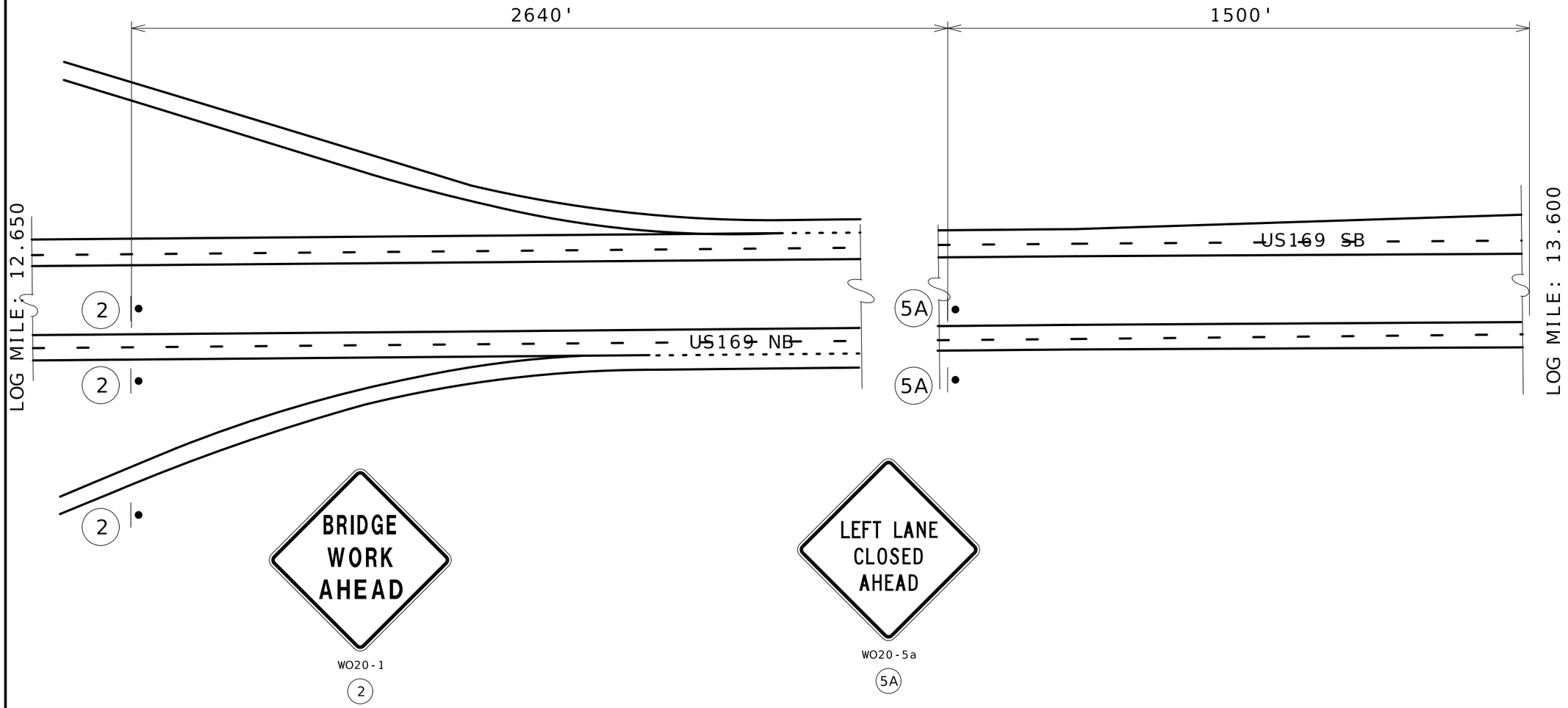
BRIDGE NO.

DESCRIPTION	DATE

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

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- SIGN (DOUBLE SIDED)
- FLAGGER
- CONE
- CHANNELIZER
- BARRICADE
- CHANGEABLE MESSAGE BOARD



NOT TO SCALE

TEMP. TRAFFIC CONTROL SHEET
DOUBLE LANE CLOSURE US169 NB
(TA-37S)
SHEET 3 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:39:53 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	6

COUNTY
CLAY

JOB NO.
JKU0039

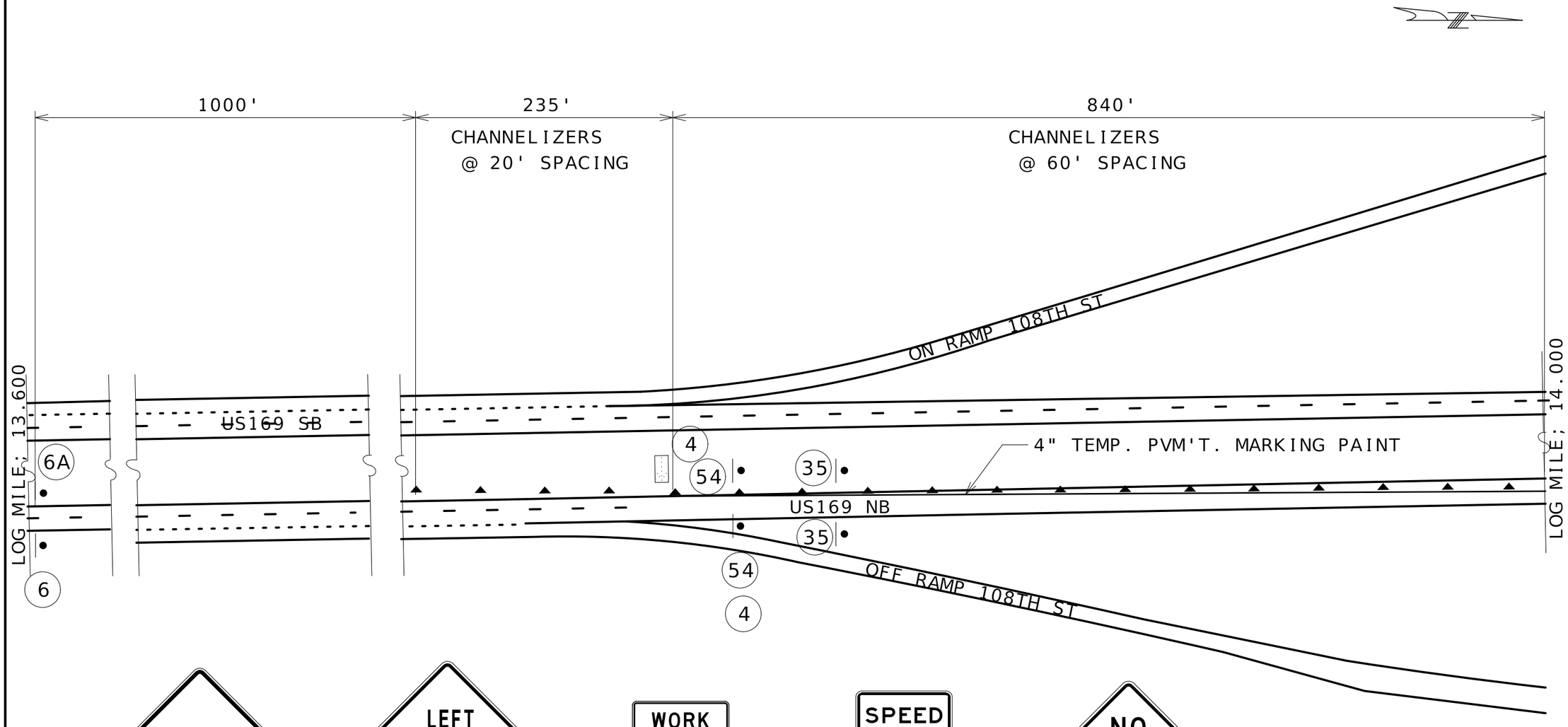
CONTRACT ID.

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)



NOT TO SCALE

TEMP. TRAFFIC CONTROL SHEET
DOUBLE LANE CLOSURE ON US169NB
(TA-37S)
SHEET 4 OF 19

STATE OF MISSOURI
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NUMBER PE-2003015005
PROFESSIONAL ENGINEER
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BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	7

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

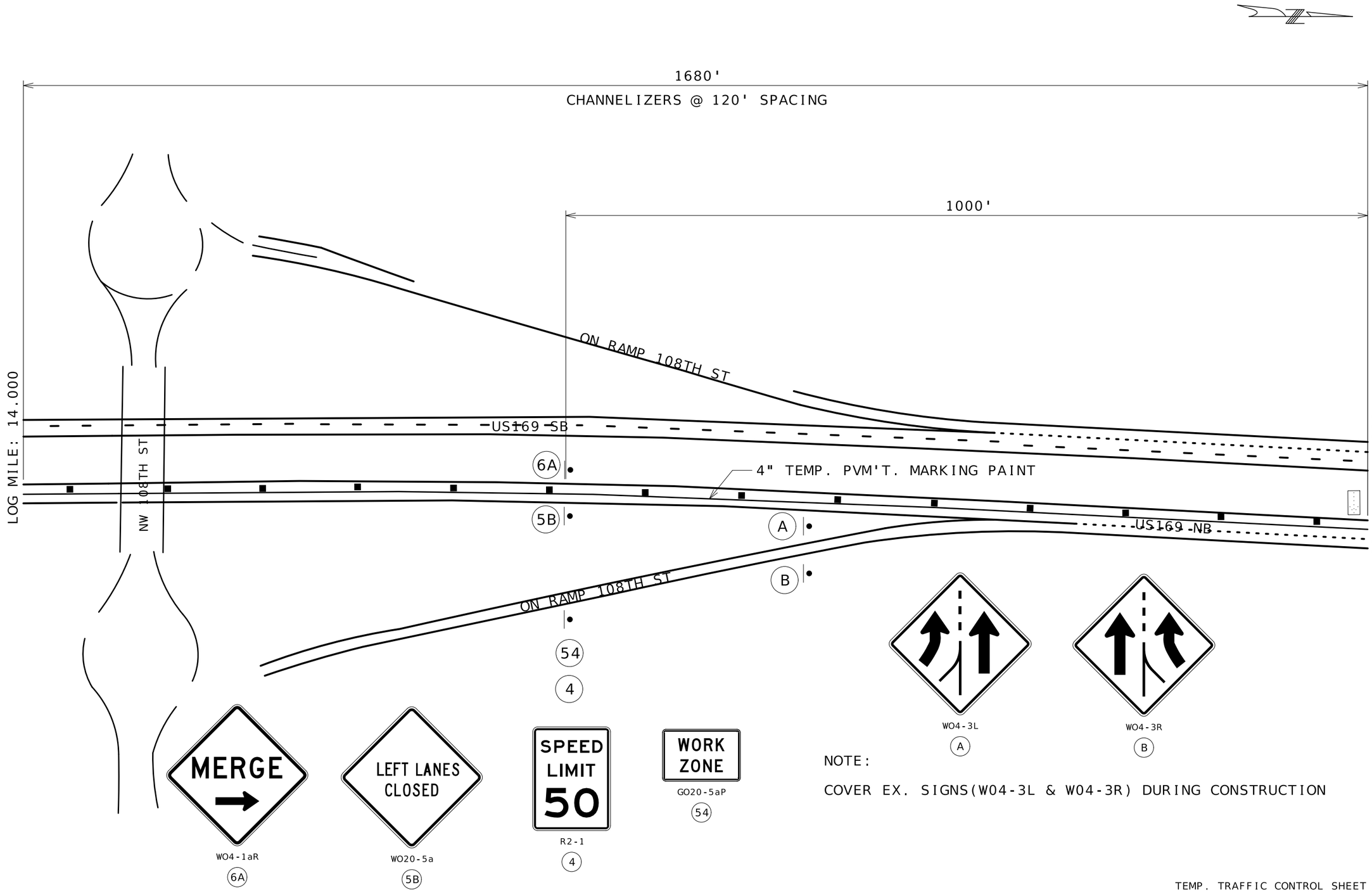
PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



NOTE:

COVER EX. SIGNS(W04-3L & W04-3R) DURING CONSTRUCTION

NOT TO SCALE

TEMP. TRAFFIC CONTROL SHEET
DOUBLE LANE CLOSURE ON US169NB
(TA-37S)
SHEET 5 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER

03/03/2025 12:41:05 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED: 3/3/2025

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
KC	8

COUNTY: CLAY

JOB NO.: JKU0039

CONTRACT ID.:

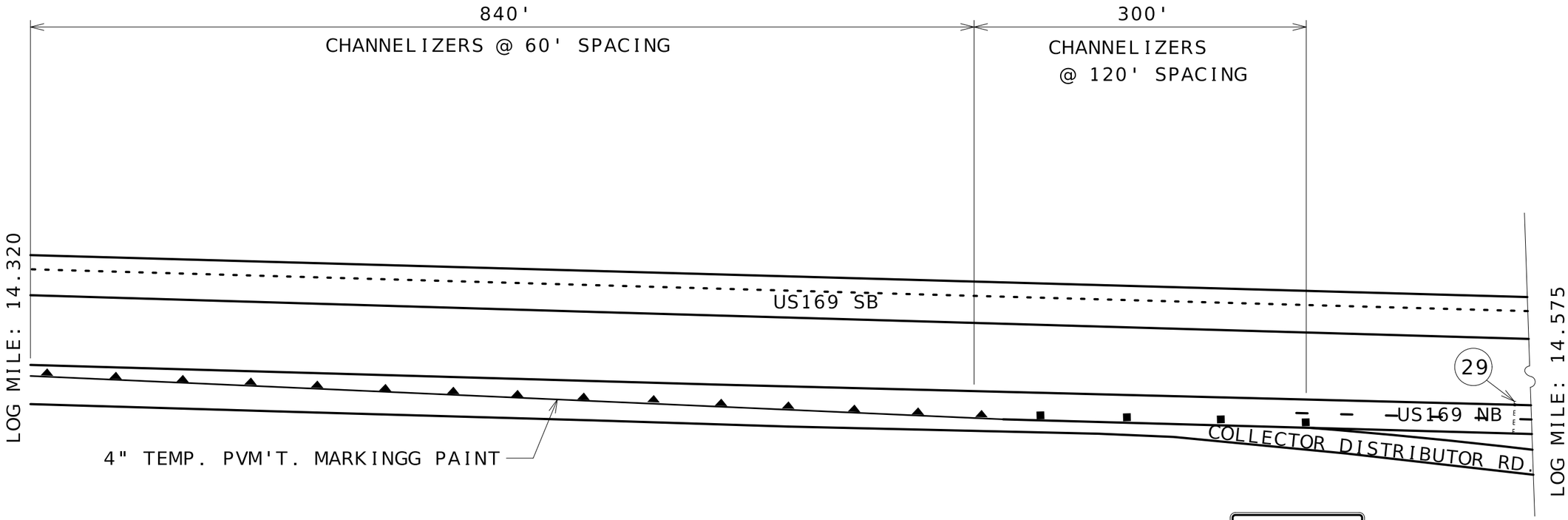
PROJECT NO.:

BRIDGE NO.:

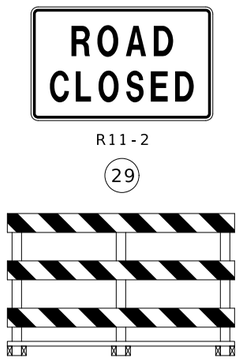
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



TYPE III MOVEABLE BARRICAGES SIGN R11-1(ROAD CLOSED)
SHALL BE INSTALLED ON THE MIDDLE BARRICADE
(6 BARRICADES)



NOTES:
1. PAY TO REMOVE EXISITNG INTERMITTENT & DOTTED PAVEMENT MARKING
2. PAY TO PLACE 4" TEMP. PAVEMENT MARKING PAINT
3. PAY TO REMOVE TEMP. PAVEMENT MARKING PAINT
4. PAY TO RE-STRIPE ALL LANES WITHIN THE PROJECT LIMITS

NOT TO SCALE

TEMP. TRAFFI CCONTROL SHEET
DOUBLE LANE CLOSURE ON US169NB
(TA-37S)
SHEET 6 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:41:51 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	9

COUNTY
CLAY

JOB NO.
JKU0039

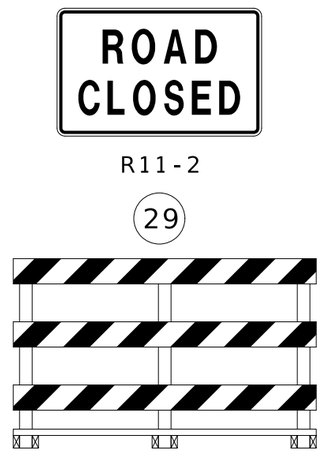
CONTRACT ID.

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)



R11-2

29

TYPE III MOVEABLE BARRICADE
SIGN R11-2 SHALL BE INSTALLED
ON THE MIDDLE BARRICADE

ON RAMP FROM COOKINGHAM DR.

US169 SB

LOG MILE: 14.430

LOG MILE: 14.690

29

US169 NB

COLLECTOR DISTRIBUTOR RD.

OFF RAMP TO COOKINGHAM DR.

*435 WEST/ ST. JOSEPH
CLOSED
USE DETOUR ROUTE

60

* THE MESSAGING ON THE CMS BOARD SHOULD BE APPROVED BY THE ENGINEER

NOT TO SCALE

TEMPORARY TRAFFIC CONTROL
US169 NB
SHEET 7 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER

03/03/2025 12:43:16 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	10

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

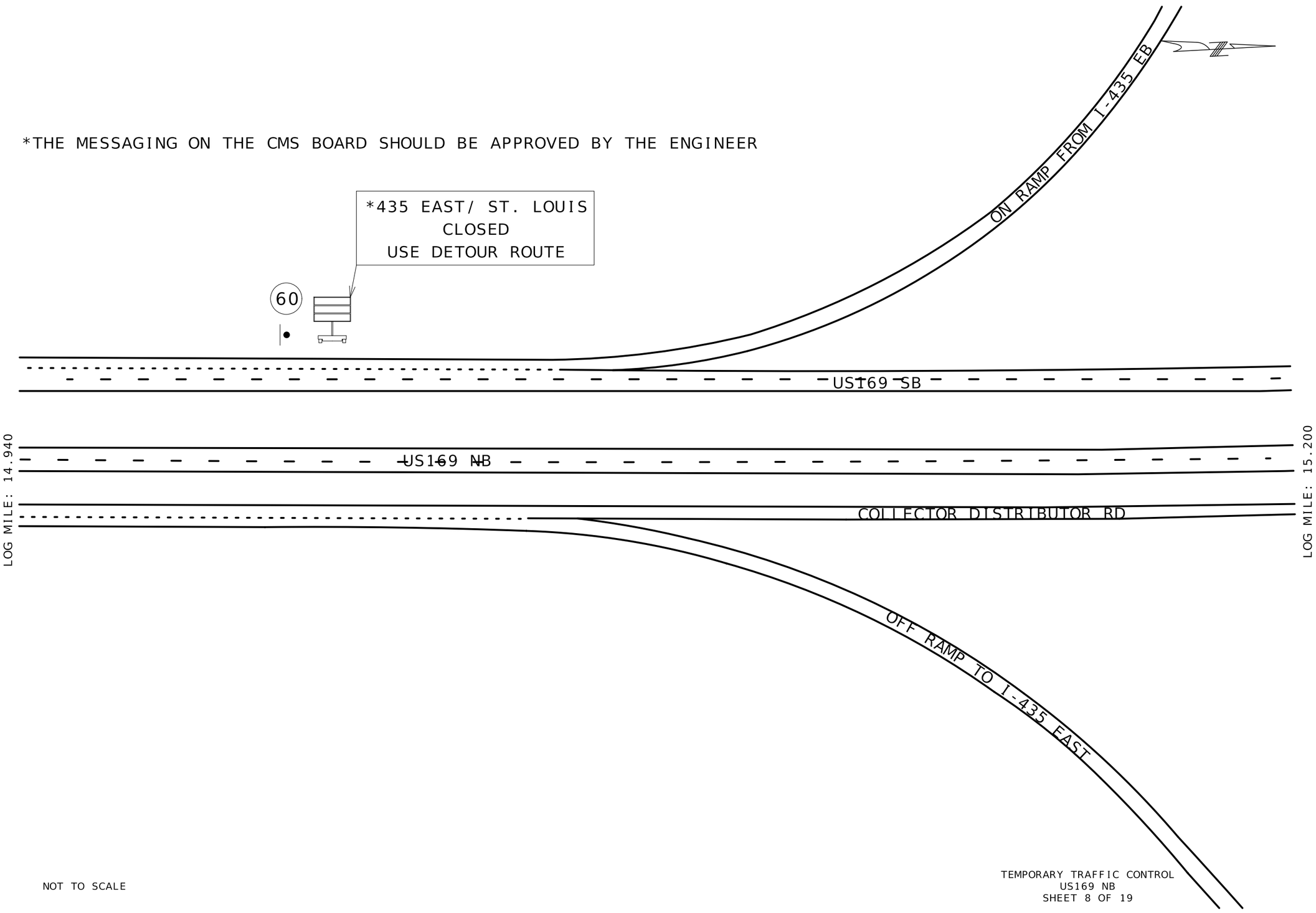
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

*THE MESSAGING ON THE CMS BOARD SHOULD BE APPROVED BY THE ENGINEER



NOT TO SCALE

TEMPORARY TRAFFIC CONTROL
US169 NB
SHEET 8 OF 19

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
03/03/2025 12:47:14 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	11

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

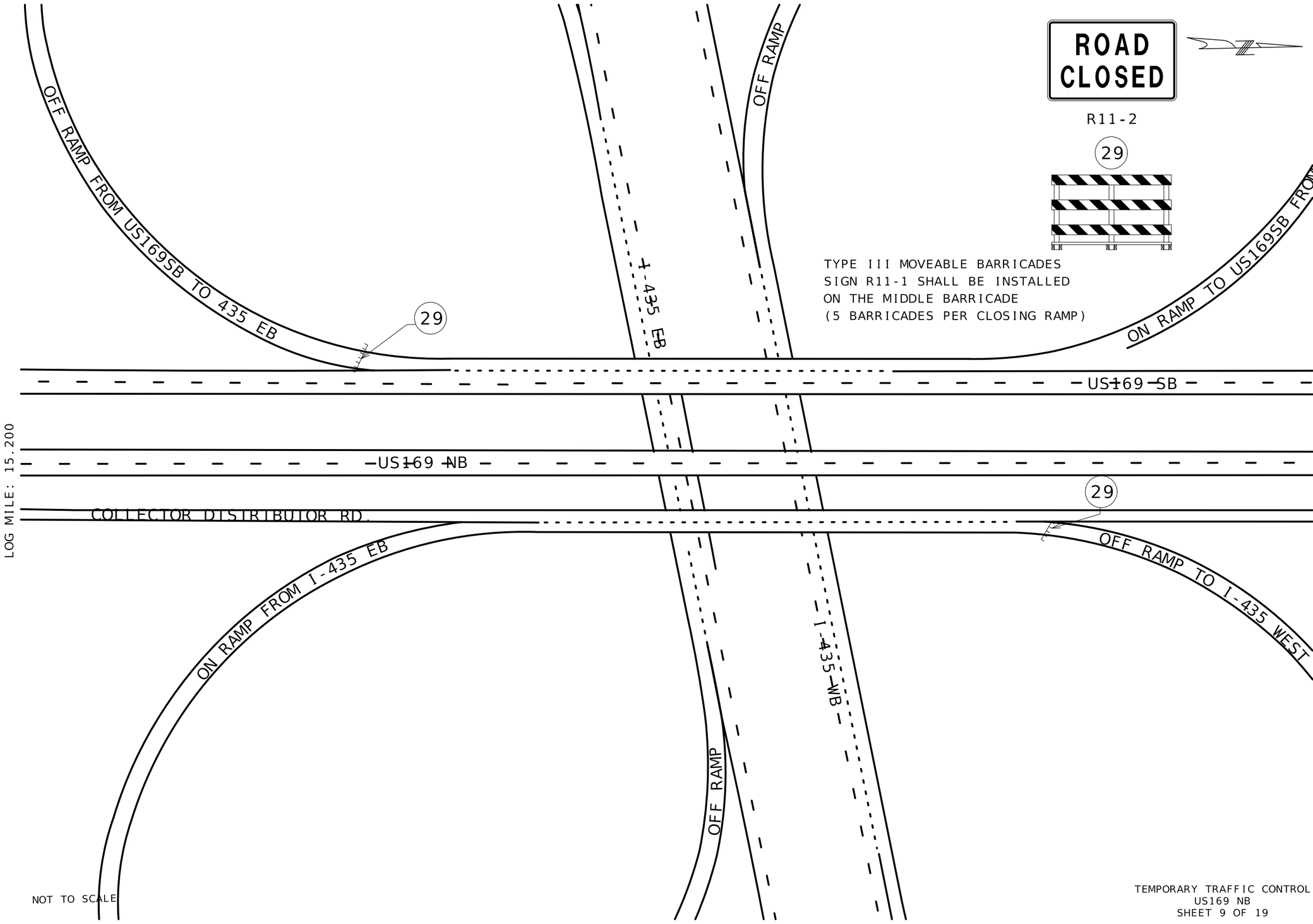
PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005 PROFESSIONAL ENGINEER

03/03/2025 12:46:50 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	12

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

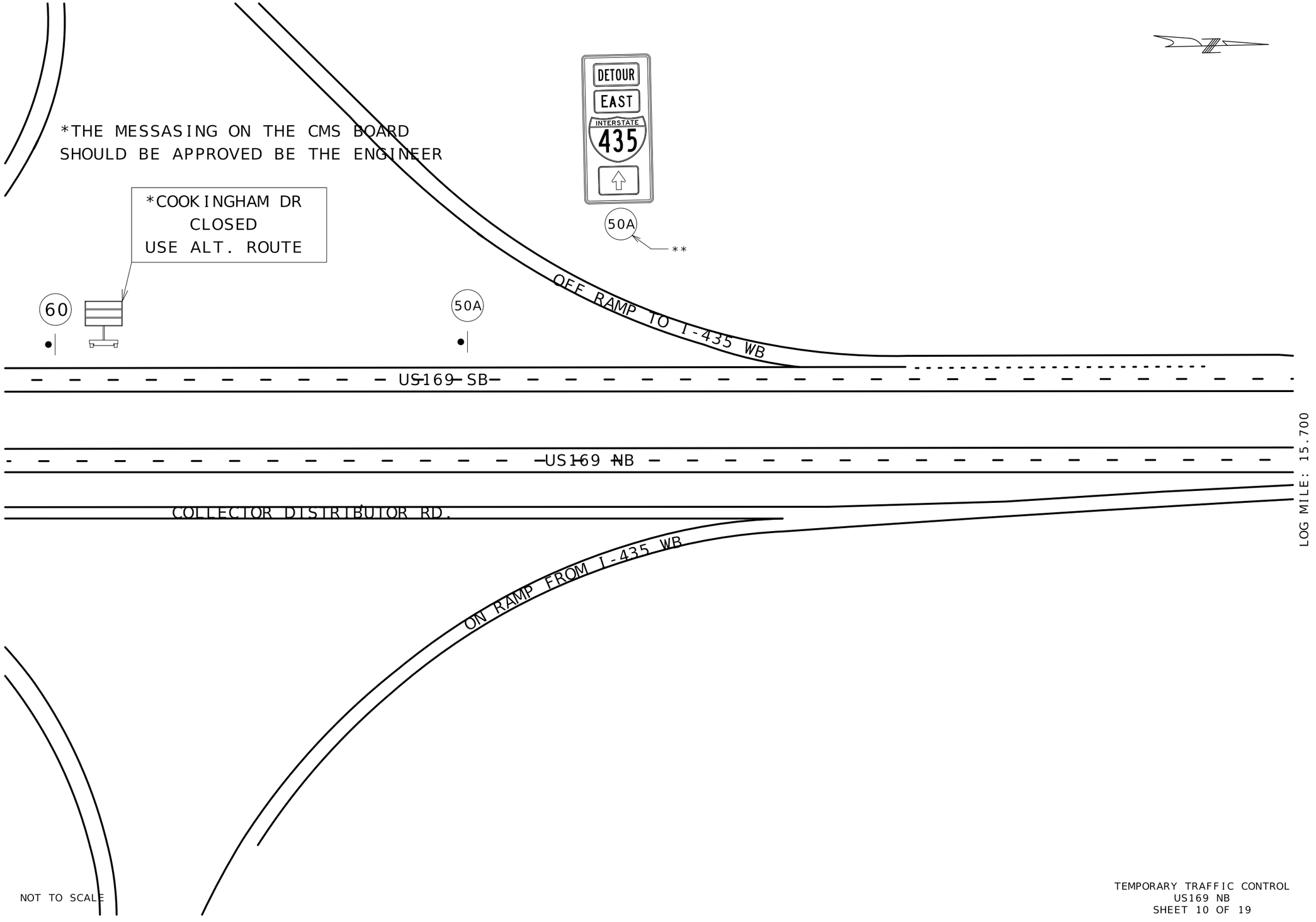
PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



TEMPORARY TRAFFIC CONTROL
US169 NB
SHEET 10 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER

03/03/2025 12:46:24 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	13

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

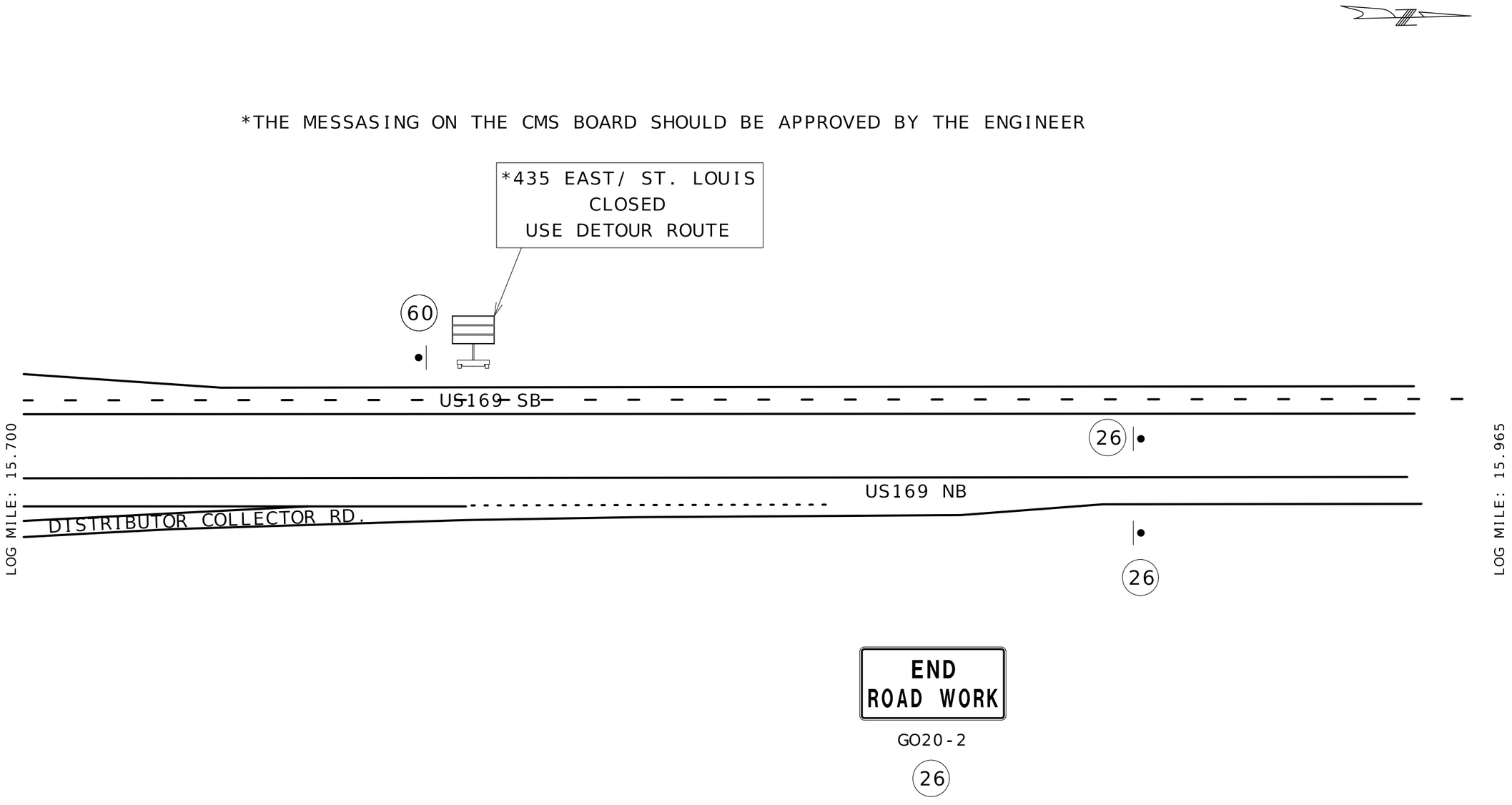
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

*THE MESSASING ON THE CMS BOARD SHOULD BE APPROVED BY THE ENGINEER



NOT TO SCALE

TEMPORARY TRAFFIC CONTROL
US169 NB
SHEET 11 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:46:02 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	14

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

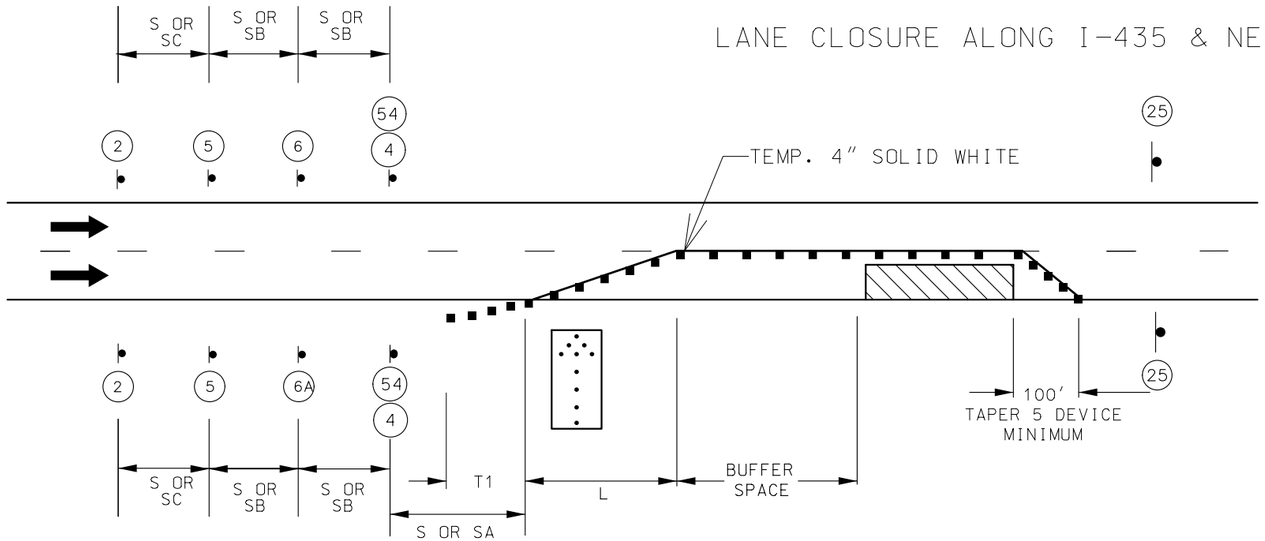
BRIDGE NO.

DESCRIPTION	DATE

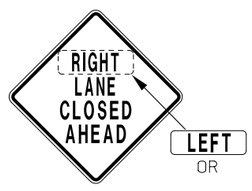
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

LANE CLOSURE ALONG I-435 & NE COOKINGHAM DR



W020-1
(2)



W020-5
(5)

W020-6a
(6)

W04-1a
(6A)

OR

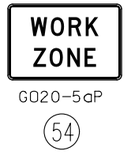
W04-1a
(6A)

R2-1
✳(4)

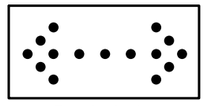
R2-1
NORMAL SPEED
✳(25)

R2-1
✳✳(4)

R2-1
NORMAL SPEED
✳✳(25)



G020-5aP
(54)



FLASHING
ARROW PANEL

CHANNELIZERS

✳ - I-435 ✳✳ - NE COOKINGHAM DR.

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.

TEMPORARY TRAFFIC BARRIERS, IF USED SHALL COMPLY WITH THE PROVISIONS IN EPG 616.6.85 TEMPORARY TRAFFIC BARRIER AND REVIEW TA-34 LANE CLOSURE WITH A TEMPORARY TRAFFIC BARRIER.

REVIEW EPG TA-34a 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 616.6.83 WARNING LIGHTS WHEN SEQUENTIAL OR WARNING LIGHTS SHOULD BE USED ON NIGHTTIME OPERATIONS.

IF RUMBLE STRIPS ARE USED, REVIEW EPG 616.6.87 RUMBLE STRIPS.

FOR FLAGS AND ADVANCE WARNING RAIL SYSTEM, REFER TO EPG 616.6.2.2 FLAG AND ADVANCE WARNING RAIL SYSTEM.

REVIEW EPG 616.6.63 CHANNELIZING DEVICES FOR DIFFERENT TYPES AND GUIDELINES FOR THE DEVICES

REVIEW EPG 616.6.87 TEMPORARY RUMBLE STRIP FOR WORK ZONES

STATIONARY LANE CLOSURE
ON DIVIDED & UNDIVIDED HIGHWAY
TEMP. TRAFFIC CONTROL
SHEET 12 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
Benjamin Stephen McCabe Sr
03/03/2025 12:45:39 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	15

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

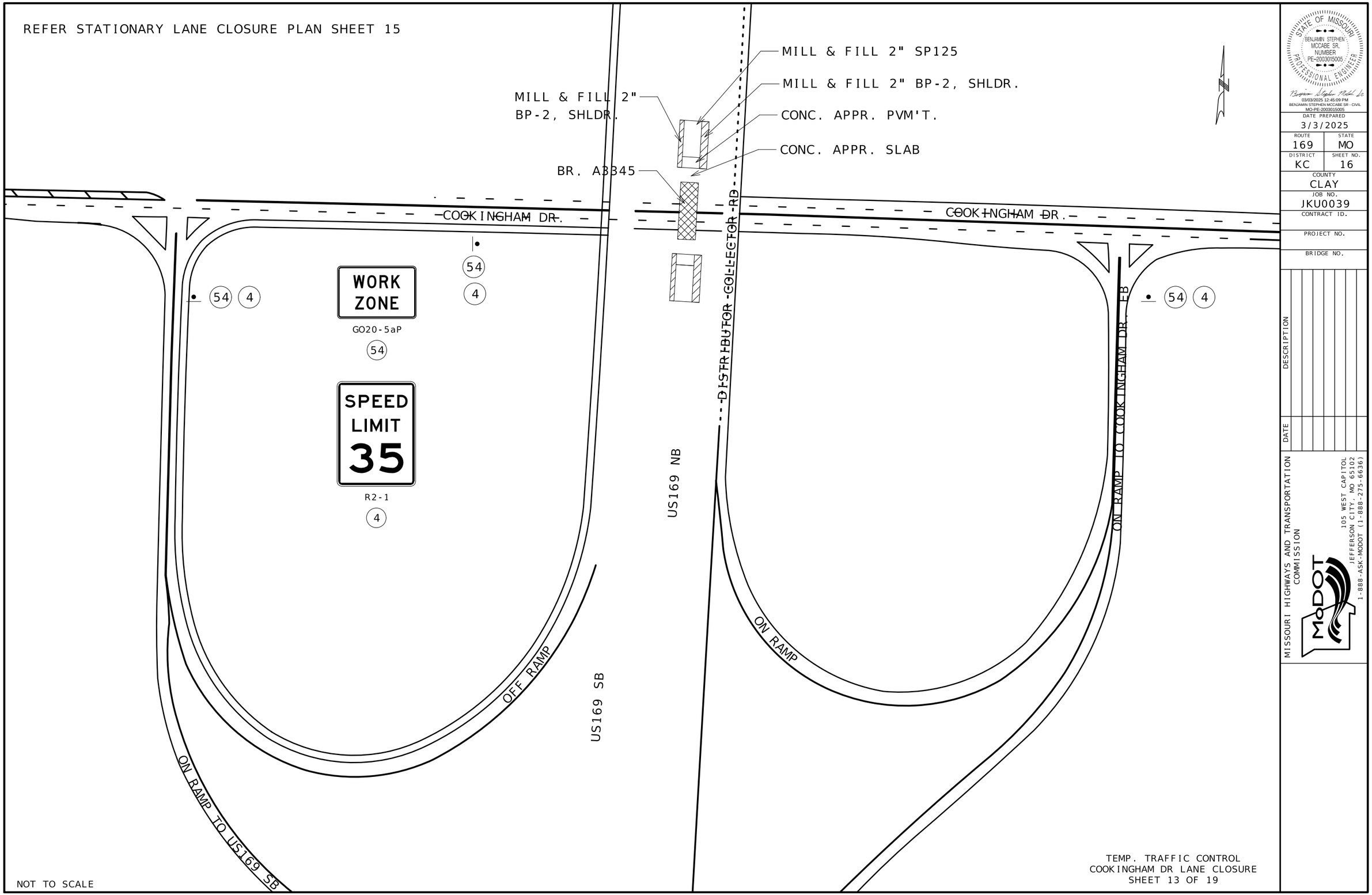
PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

REFER STATIONARY LANE CLOSURE PLAN SHEET 15



TEMP. TRAFFIC CONTROL
COOKINGHAM DR LANE CLOSURE
SHEET 13 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER

03/03/2025 12:45:09 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED	3/3/2025
ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	16
COUNTY	CLAY
JOB NO.	JKU0039
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)

NOTES:
1. REFER TTC SHEET 1 FOR SIGN SPACING & CHANNELIZERS SPACING
2. USE THIS SHEET FOR TTC FOR AUX.LANE & RAMP CLOSURE ON 435 EB AND WB
3. FOR LANE 1 & 2 CLOSURE USE PLAN SHEET 15

ON RAMP TO I-435 WB

OFF RAMP FROM I-435 WB

RAMP (20)

US-69 SB

ROAD CLOSED
R11-2
(29)

5 BARRICADES PER RAMP CLOSURE

EXIT CLOSED
E05-2a
(49)

ON RAMP TO I-435 WB

SA SB SC

S

T

CHANNELIZERS @ 120'

CHANNELIZERS @ 60'

RAMP (2)

(4) (54) (49) (20) (2)

WORK ZONE
GO20-5aP
(54)

SPEED LIMIT 60
R2-1
(4)

I-435 WB

I-435 EB

OR RAMP

ROAD WORK AHEAD
WO20-1
(2)

(29)

BRIDGE A3333

CONC. APPR. SLAB

CONC. APPR. PVM'T

MILL & FILL 2" BP-2,SHLDR

MILL & FILL 2" BP-2,SHLDR

MILL & FILL 2" SP125

ROAD CLOSED AHEAD
OR RAMP
WO20-3
(20)

ON RAMP TO I-435 EB

OFF RAMP FROM I-435 EB

(29)

US-69 SB

DISTRIBUTOR COLLECTOR RD

(20) RAMP

OFF RAMP FROM I-435 EB

ON RAMP TO I-435 EB

NOT TO SCALE

TEMP. TRAFFIC CONTROL
I-435 LANE CLOSURE
SHEET 14 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:44:45 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

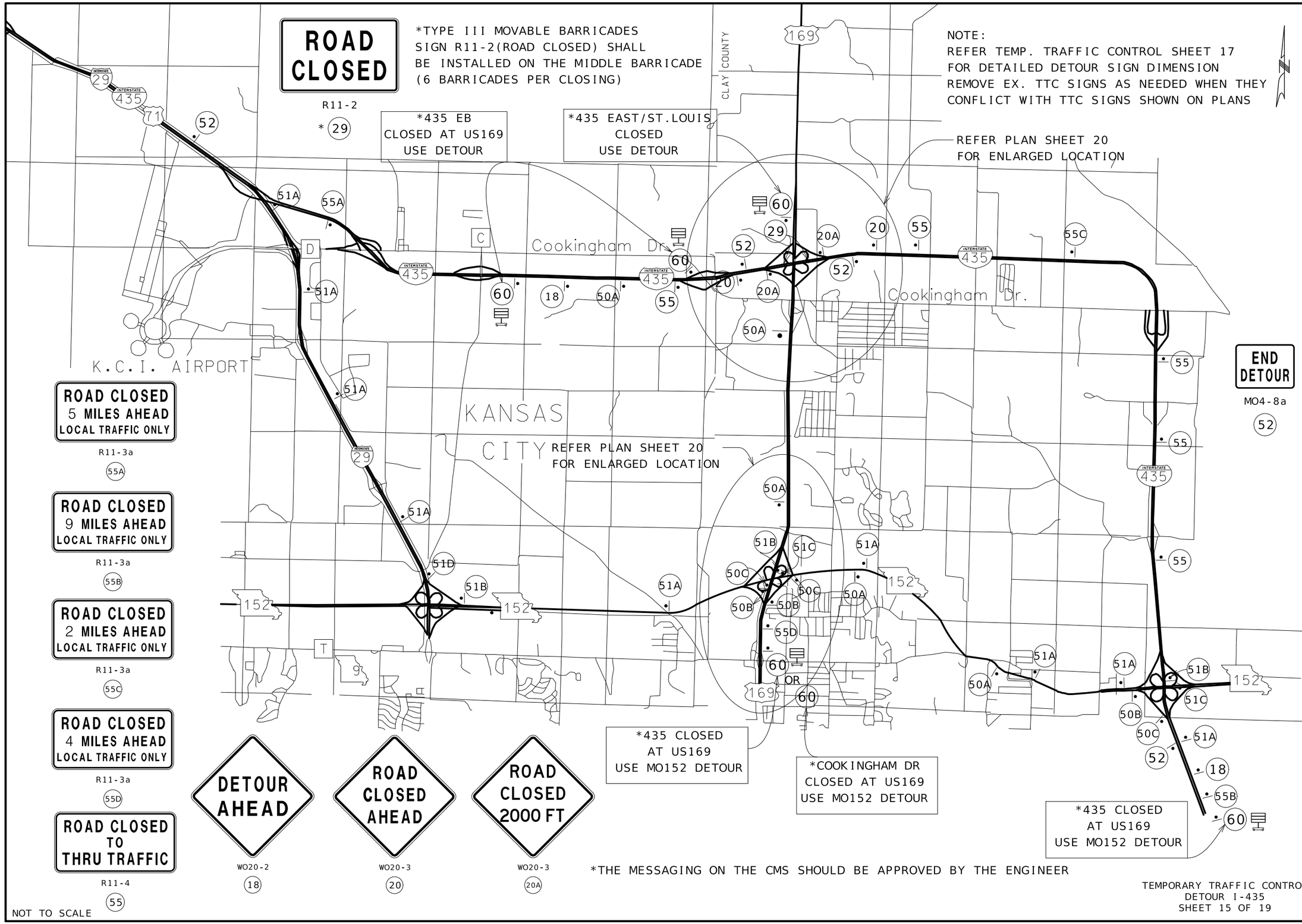
DATE PREPARED 3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	17

COUNTY: CLAY
JOB NO.: JKU0039
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)



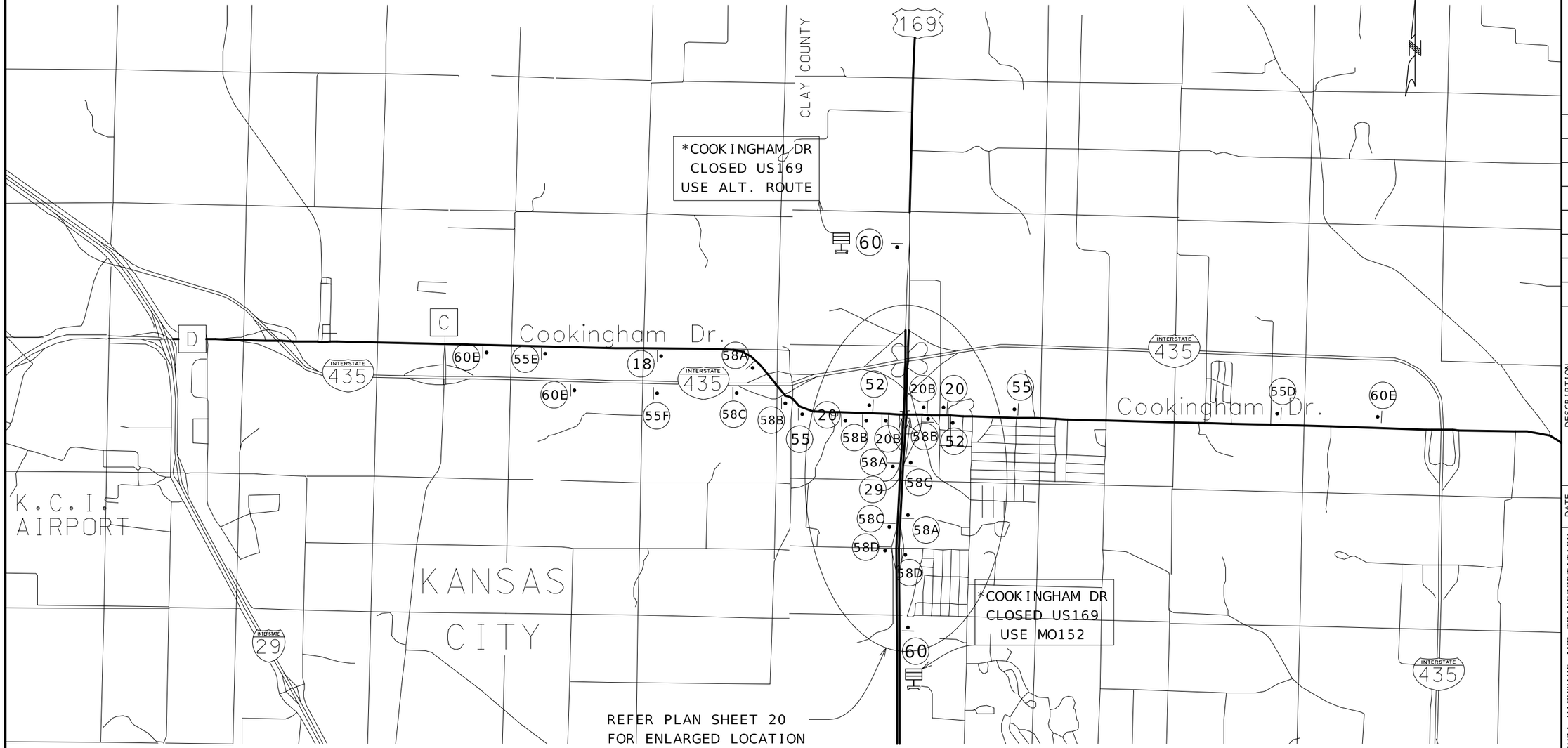
STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:44:06 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED	3/3/2025
ROUTE	169
STATE	MO
DISTRICT	KC
SHEET NO.	18
COUNTY	CLAY
JOB NO.	JKU0039
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)

TEMPORARY TRAFFIC CONTROL
DETOUR I-435
SHEET 15 OF 19



R11-3a

55E

R11-3a

55F

R11-4

55

WO20-2

18

WO20-3

20

MO4-8a

52

WO20-3

20B

R11-2

* 29

*TYPE III MOVABLE BARRICADES
SIGN R11-1(ROAD CLOSED) SHALL
BE INSTALLED ON THE MIDDLE BARRICADE
(8 BARRICADES PER CLOSING)

NOTE:
REFER TEMP. TRAFFIC CONTROL SHEET 17
FOR DETOUR SIGN DIMENSION
REMOVE EXISTING TEMP. TRAFFIC CONTROL SIGNS AS NEEDED
WHEN THEY CONFLICT WITH TTC SIGNS SHOWN ON PLANS

NOT TO SCALE

*THE MESSAGING ON THE CMS BOARD SHOULD BE APPROVED BY THE ENGINEER

TEMPORARY TRAFFIC CONTROL
DETOUR COOKINGHAM DR.
SHEET 16 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER

Benjamin Stephen McCabe Sr
03/03/2025 12:43:44 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	19

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

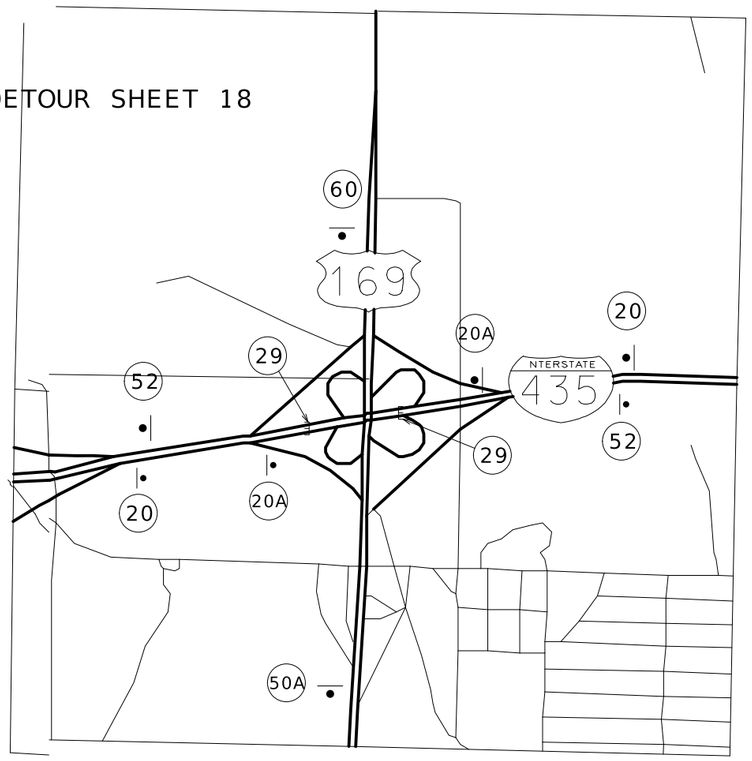
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

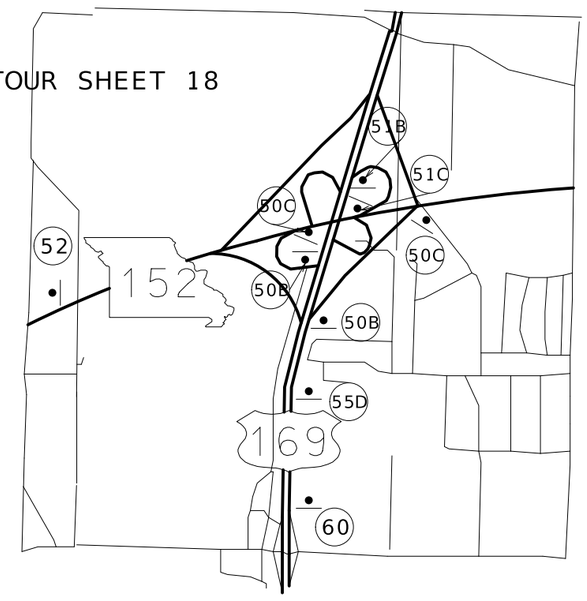
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

REFER 435 DETOUR SHEET 18



US169 AND 435 INTERCHANGE

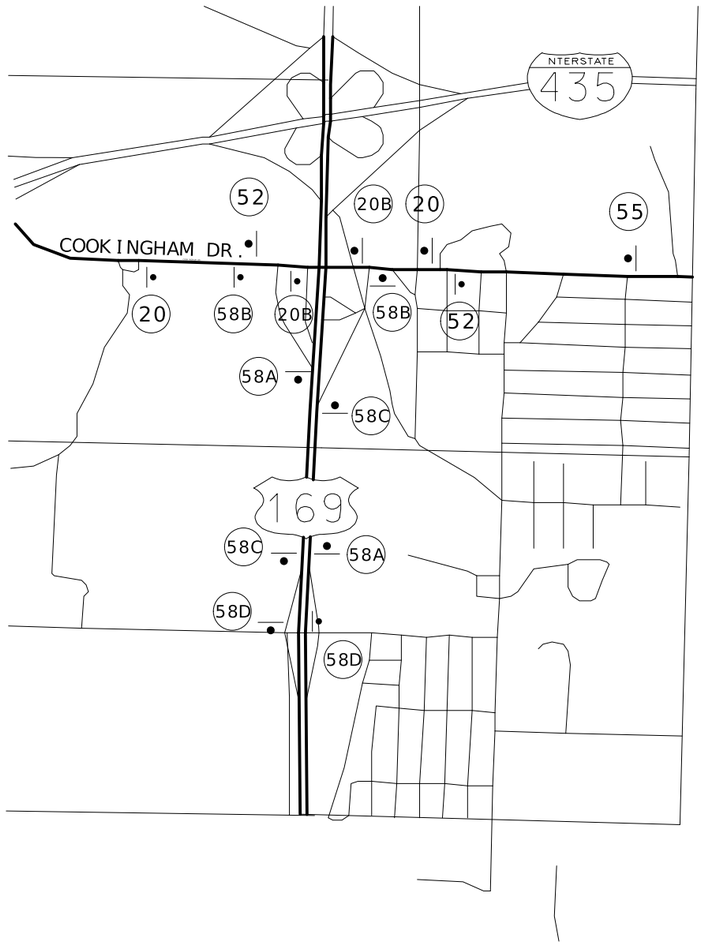
REFER 435 DETOUR SHEET 18



US169 AND MO152 INTERCHANGE

NOT TO SCALE

REFER COOKINGHAM DETOUR SHEET 19



US169 AND COOKINGHAM DR. INTERCHANGE

TEMP. TRAFFIC CONTROL SHEET
ENLARGED DETOUR INTERCHANGES
SHEET 17 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:42:45 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	20

COUNTY
CLAY

JOB NO.
JKU0039

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)

MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

50A

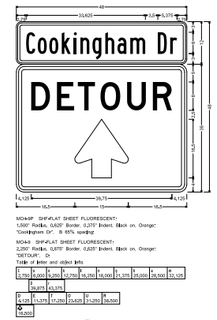
MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

50B

MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

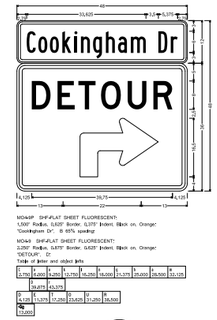
50C

57



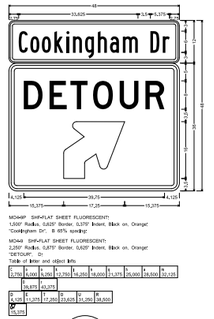
MO4-SHF SHF-FLAT SHEET FLUORESCENT:
1.500" Radius, 0.625" Border, 0.375" Indent, Black on, Orange:
"Cookingham Dr", B 65% spacing:
MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
"DETOUR" Dr
Table of letter and object lefts

58A



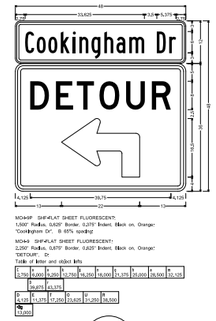
MO4-SHF SHF-FLAT SHEET FLUORESCENT:
1.500" Radius, 0.625" Border, 0.375" Indent, Black on, Orange:
"Cookingham Dr", B 65% spacing:
MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
"DETOUR" D
Table of letter and object lefts

58B



MO4-SHF SHF-FLAT SHEET FLUORESCENT:
1.500" Radius, 0.625" Border, 0.375" Indent, Black on, Orange:
"Cookingham Dr", B 65% spacing:
MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
"DETOUR"
Table of letter and object lefts

58C



MO4-SHF SHF-FLAT SHEET FLUORESCENT:
1.500" Radius, 0.625" Border, 0.375" Indent, Black on, Orange:
"Cookingham Dr", B 65% spacing:
MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
"DETOUR"
Table of letter and object lefts

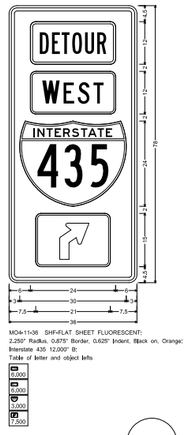
58D

MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

51A

MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

51B

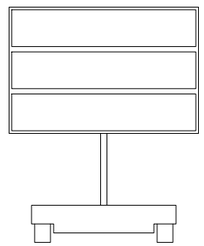


MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

51C

MO4-11-36 SHF-FLAT SHEET FLUORESCENT:
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange:
Interstate 435 12.000" B:
Table of letter and object lefts

51D



60

✳ REFER DETOUR PLAN SHEETS 18 AND 19
THE MESSAGINH ON THE CMS BOARDS SHOULD BE APPROVED BY THE ENGINEER

TEMPORARY TRAFFIC CONTROL
DETOUR SIGN SHEET
SHEET 18 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR.
NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:42:17 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED
3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	21

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

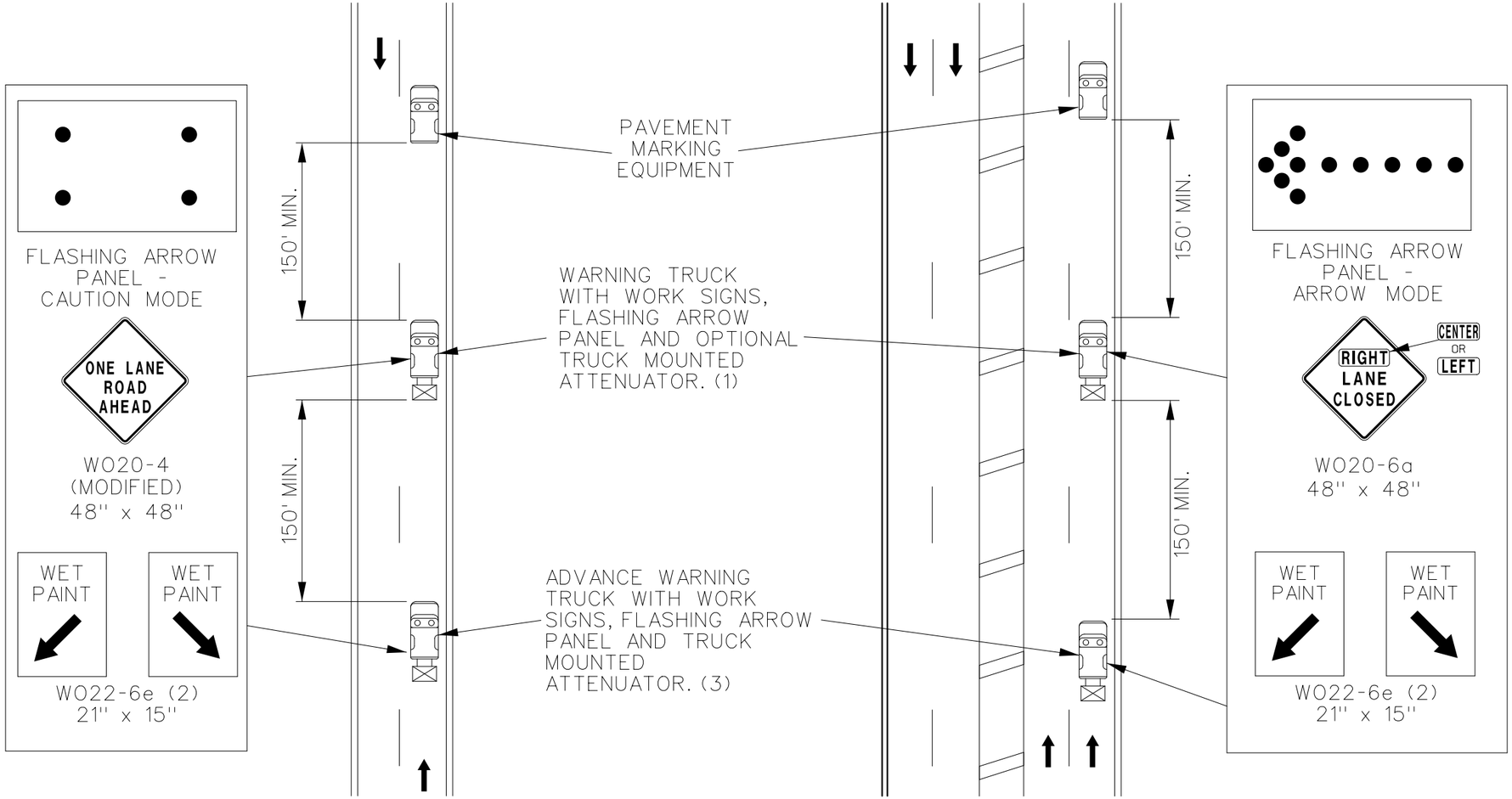
PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

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



TWO-LANE UNDIVIDED HIGHWAY **TWO LANES OF UNDIVIDED HIGHWAY**

MOVING OPERATION ON HIGHWAY OPEN TO TRAFFIC

NOTES:

ALL SIGNS HAVE TYPE 3 FLUORESCENT ORANGE RETROFLECTIVE SHEETING.

(1). TRUCK IS OPTIONAL ON TWO-LANE UNDIVIDED HIGHWAYS IF SIGNING AND ARROW BOARD IS MOUNTED ON THE PAVEMENT MARKING EQUIPMENT.

(2). WET PAINT SIGNS ARE INSTALLED TO INDICATE THE SIDE IN WHICH THE PAVEMENT MARKING MATERIAL IS BEING APPLIED. AT THE CONTRACTOR'S OPTION, A FRONT FACING WET PAINT SIGN MAY BE INSTALLED ON THE LEFT SIDE OF THE PAVEMENT MARKING EQUIPMENT.

(3). ADVANCE WARNING TRUCK IS POSITIONED AT THE NO TRACK POINT OF THE PAVEMENT MARKING MATERIAL OR SPACING SHOWN, WHICHEVER IS GREATER.

NOT TO SCALE

TEMP. TRAFFIC CONTROL SHEET
MOVING OPERATION
SHEET 19 OF 19

STATE OF MISSOURI
BENJAMIN STEPHEN MCCABE SR. NUMBER PE-2003015005
PROFESSIONAL ENGINEER
03/03/2025 12:38:10 PM
BENJAMIN STEPHEN MCCABE SR - CIVIL
MO-PE-2003015005

DATE PREPARED 3/3/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
KC	22

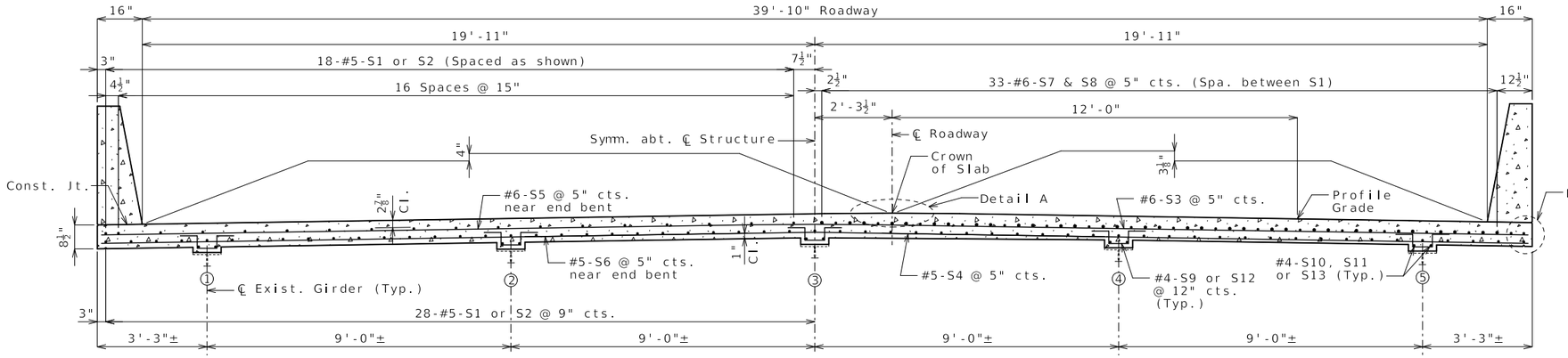
COUNTY: CLAY
JOB NO.: JKU0039
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

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

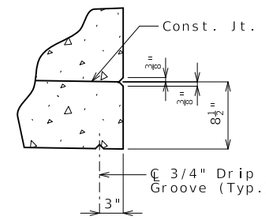
SEC/SUR 23 TWP 52N RGE 33W

U.I.P. & REDECK EXISTING (125'-129') CONTINUOUS COMPOSITE PLATE GIRDER SPANS (SKEW: 11°22'00" RA)



HALF SECTION NEAR MIDSPAN AND END BENT

HALF SECTION NEAR INT. BENT



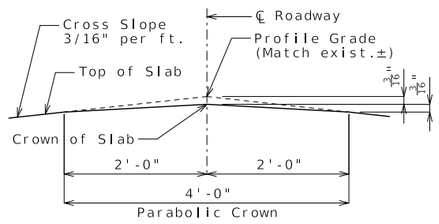
DETAIL B

Notes:

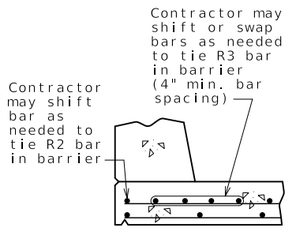
For Plan of Slab Showing Reinforcement, see Sheet No. 5.

For details and reinforcement of barrier not shown, see Sheet No. 6.

TYPICAL SECTION THRU SLAB



DETAIL A



OPTIONAL SHIFTING TOP BARS AT BARRIER

General Notes:

Design Specifications:

2002 AASHTO LFD (17th Ed.) Standard Specifications
Seismic Performance Category A

Design Loading:

HS20-44 (1973 & New Construction)
35 lb/sf Future Wearing Surface
Earth = 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Fatigue Stress - Case III

Design Unit Stresses:

Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Class B-2 Concrete (End Bents & Superstructure, except Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Carbon Steel (ASTM A709 Grade 36)	fy = 36,000 psi

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.

Miscellaneous:

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

Contractor shall verify all dimensions in field before finalizing the shop drawings.

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface. (Roadway item)

Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

For adjusted girder deflection due to the weight of the new deck and barriers, see Bridge Electronic Deliverables.

Traffic Handling:

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

Structural Steel Protective Coating:

All exposed surfaces of the existing structural steel plate girders shall be recoated with one 6-mil thickness of gray epoxy-mastic primer applied over an SSPC-SP3 surface preparation in accordance with Sec 1081. The bituminous coating shall be applied to the ends of girders for a distance of ten feet and in accordance with Sec 702. The cost of surface preparation will be considered completely covered by the contract lump sum price for Surface Preparation for Applying Epoxy-Mastic Primer. The cost of the gray epoxy-mastic primer and bituminous coating will be considered completely covered by the contract lump sum price for Gray Epoxy-Mastic Primer.

Estimated Quantities

Item		Total
Removal of Miscellaneous ACM (Non-Friable)	sq. foot	28
Removal of Asphalt Wearing Surface	sq. foot	1786
Removal of Existing Bridge Deck	sq. foot	10,915
Removal of Existing Expansion Joint & Adjacent Concrete	linear foot	87
Bridge Approach Slab (Major)	sq. yard	182
Low Slump Concrete Wearing Surface	sq. yard	200
Slab on Steel	sq. yard	1205
Type D Barrier	linear foot	627
Substructure Repair (Formed)	sq. foot	15
Half-Sole Repair	sq. foot	50
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Strengthening Existing Beams	lump sum	1
Surface Preparation for Applying Epoxy-Mastic Primer	lump sum	1
Gray Epoxy-Mastic Primer	lump sum	1
Strip Seal Expansion Joint System	linear foot	87

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Estimated Quantities for Slab on Steel

Item		Total
Class B-2 Concrete	cu. yard	303
Reinforcing Steel (Epoxy Coated)	pound	103,100

The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. 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. 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 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 conventional forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

For Optional Stay-In-Place Form Details, see Sheet No. 2.

REPAIRS TO BRIDGE: ROUTE 169 NB OVER ROUTE I-435

ROUTE 169 FROM ROUTE 92 TO ROUTE 152
ABOUT 4.0 MILES SOUTH OF ROUTE 92
BEGINNING STATION 545+27.13± (MATCH EXISTING)

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/17/2025 7:37:31 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED 3/17/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	1

COUNTY CLAY

JOB NO. JKU0039

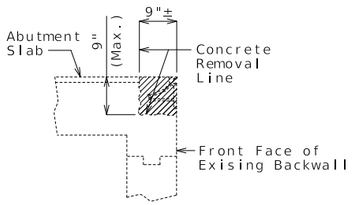
CONTRACT ID.

PROJECT NO.

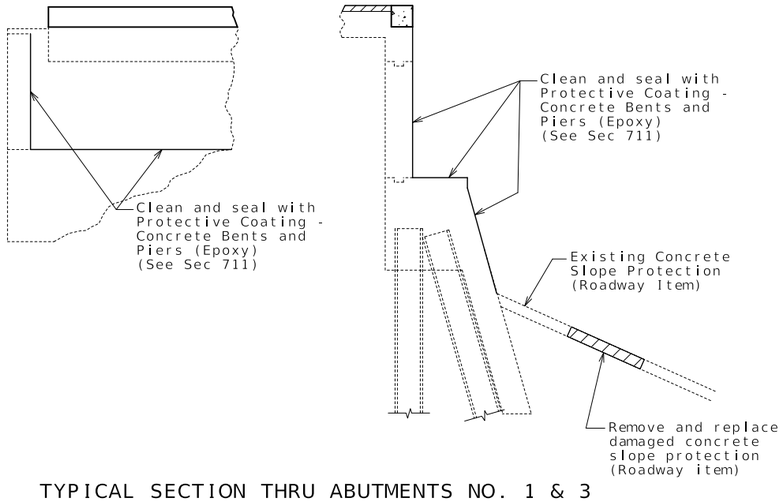
BRIDGE NO. A33332

DESCRIPTION	DATE

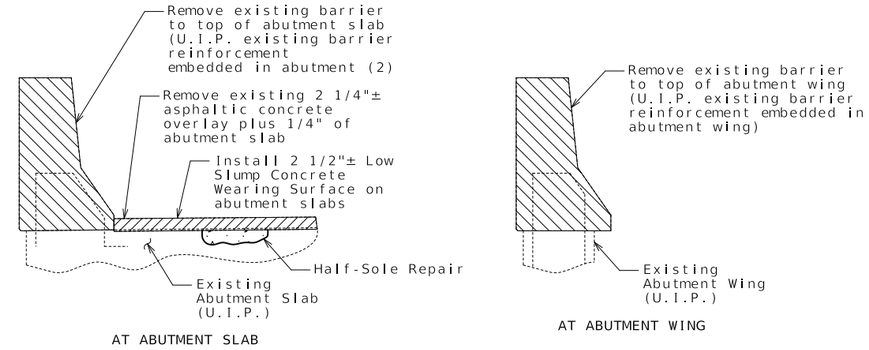
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PART SECTION THRU ABUTMENTS NO. 1 & 3 SHOWING REMOVAL OF EXISTING CONCRETE AND EXPANSION DEVICE



TYPICAL SECTION THRU ABUTMENTS NO. 1 & 3 SHOWING PROTECTIVE COATING AND REPAIR OF CONCRETE SLOPE PROTECTION



PART SECTION SHOWING REMOVAL OF BARRIER, SLAB REPAIR, AND OVERLAY REPLACEMENT AT ABUTMENTS NO. 1 & 3

(2) Where necessary, cut existing reinforcement at roadway face of barrier. Bend remaining portion of bar and U.I.P.

General Notes:

Stay-In-Place 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 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.

Pouring and Finishing Slab:

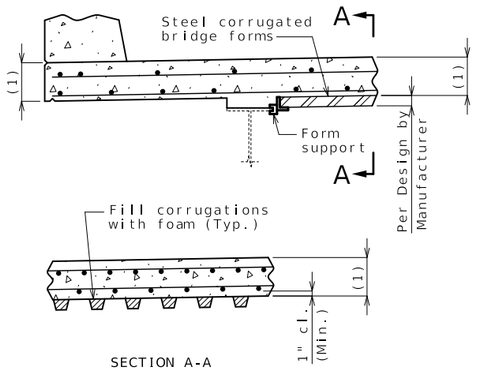
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the girders. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Slab on Steel.

Slab shall be poured upgrade from end to end at a minimum rate of 25 cubic yards per hour.

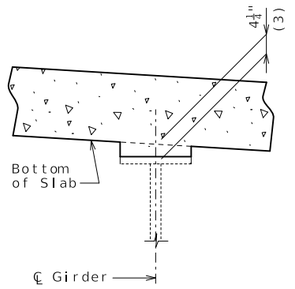
Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

Haunching:

(1) Slab is to be considered a uniform thickness as shown on the plans. See front sheet for slab thickness.

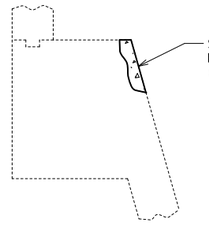


OPTIONAL STAY-IN-PLACE FORM DETAILS



THEORETICAL SLAB HAUNCH

(3) 1 3/4 inches was added to existing haunch depth to account for raising of grade. Dimension (bottom of slab to top of web) may vary if girder camber after erection differs from plan camber by more than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.



PART SECTION THRU ABUTMENT NO. 1 SHOWING SUBSTRUCTURE REPAIR

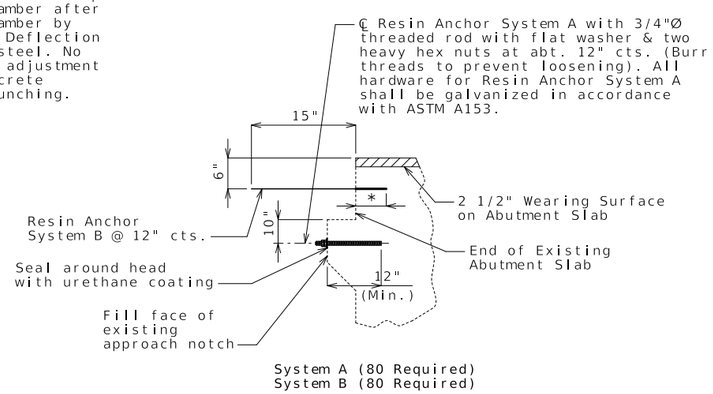
Resin Anchor Notes:

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 Bridge Approach Slab (Major).

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.

An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8-inch diameter rod for Resin Anchor System B.



DETAILS OF RESIN ANCHOR SYSTEMS AT APPROACH NOTCH

∗ Manufacturer's recommended embedment length (5 inches minimum)

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ROUTE	STATE
I-169	MO
DISTRICT	SHEET NO.
BR	2

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CONTRACT ID.

PROJECT NO.

BRIDGE NO.
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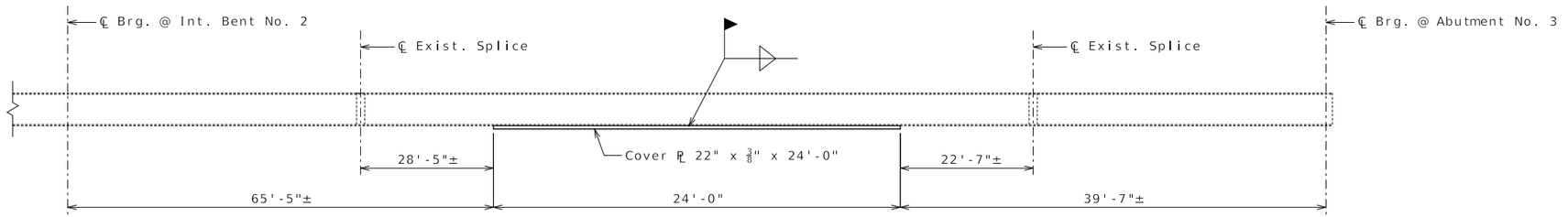
DESCRIPTION	DATE

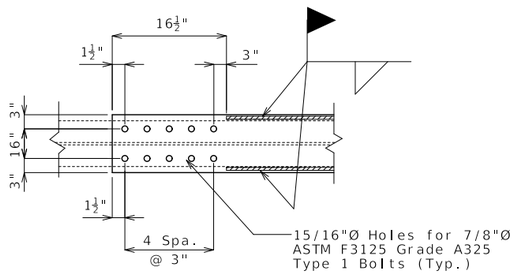
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed Dec. 2024
Checked Jan. 2025

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



PART ELEVATION OF INTERIOR GIRDER SHOWING COVER PLATE INSTALLATION
SPAN (2-3)



TYPICAL DETAIL OF THE
ENDS OF COVER PLATES
(BOTTOM VIEW)

Notes:

Beam with end-bolted cover plates shall be installed in the following sequence after existing bridge deck is removed:

1. Drill holes in cover plate and flange.
2. Clean faying surfaces. (See Special Provisions)
3. Install and tighten bolts.
4. Weld cover plate to flange.

Fabricated Structural Steel shall be ASTM A709 Grade 36, except as noted.

Payment for 2203 pounds of new cover plates, complete in place, will be considered completely covered by the contract lump sum price for Strengthening Existing Beams.

Notch toughness is required for all cover plates.

Contractor shall verify all dimensions in field before finalizing the shop drawings.

STRENGTHENING EXISTING INTERIOR BEAMS

Detailed Dec. 2024
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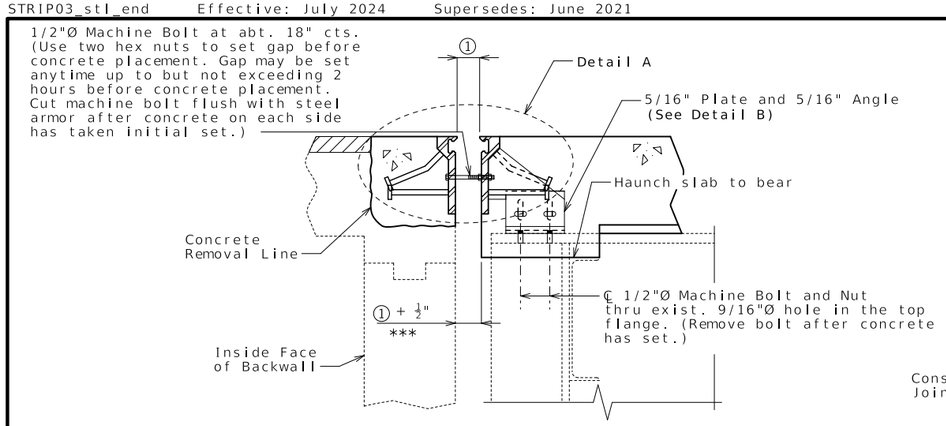
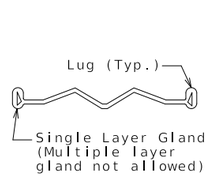
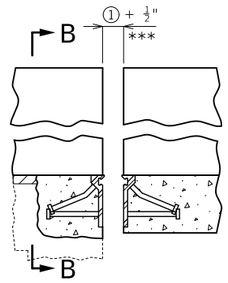


SECTION A-A

Strip seal gland not shown for clarity.

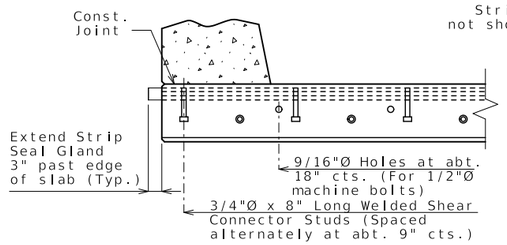


DETAIL OF GLAND

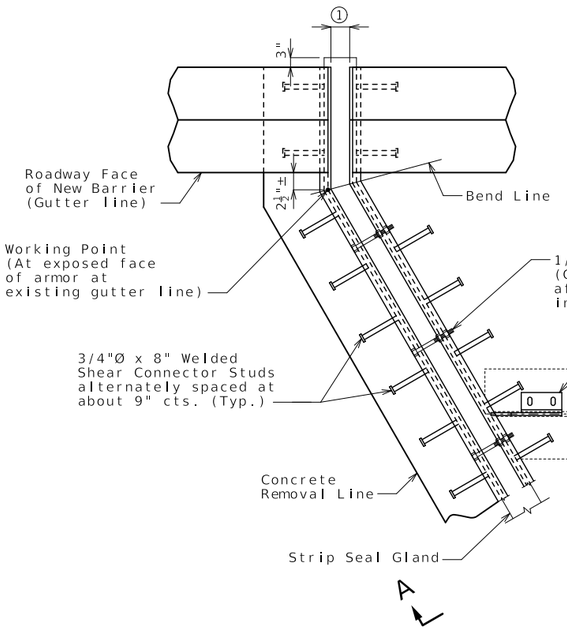


PART ELEVATION OF BARRIER

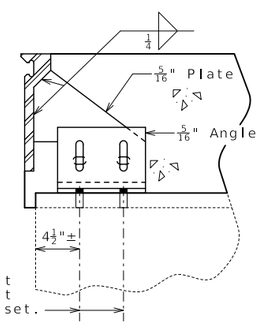
Strip seal gland not shown for clarity.

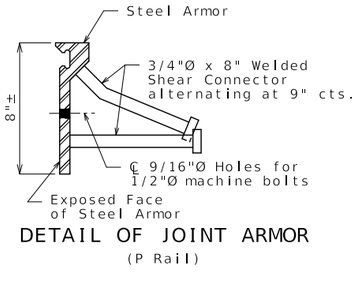


PART SECTION B-B



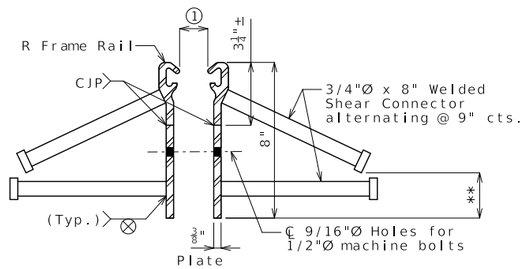
PART PLAN





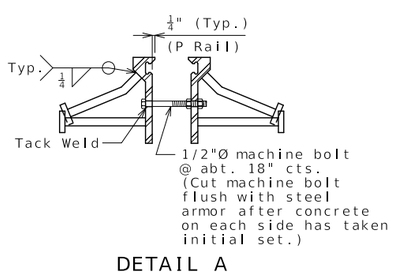
DETAIL OF JOINT ARMOR

(P Rail)



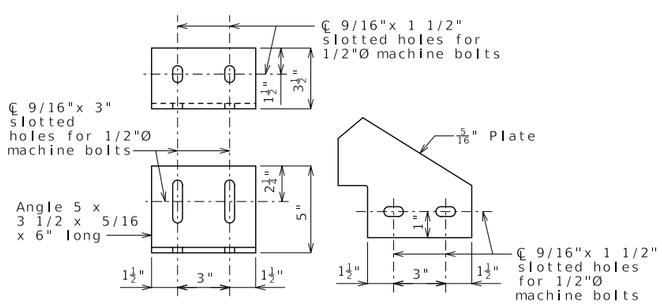
** Bend stud in shop if necessary to maintain 1" min. from bottom of vertical plate.

OPTIONAL R RAIL DETAIL



DETAIL A

(P Rail shown, R Rail similar)



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 L2-400	1½"	2 3/16"	2 1/16"	2"	1 7/8"	1¾"	1 11/16"	☐
D S Brown	Strip seal L2-500	1½"	2 3/16"	2 1/16"	2"	1 7/8"	1¾"	1 11/16"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-300	1½"	2 3/16"	2 1/16"	2"	1 7/8"	1¾"	1 11/16"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-400	1½"	2 3/16"	2 1/16"	2"	1 7/8"	1¾"	1 11/16"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-500	1½"	2 3/16"	2 1/16"	2"	1 7/8"	1¾"	1 11/16"	☐

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.

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ROUTE	STATE
I-169	MO
DISTRICT	SHEET NO.
BR	4

COUNTY CLAY

JOB NO. JKU0039

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33332

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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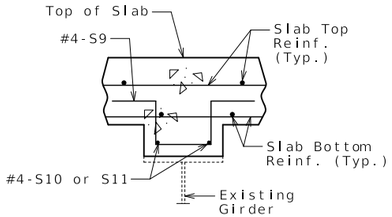
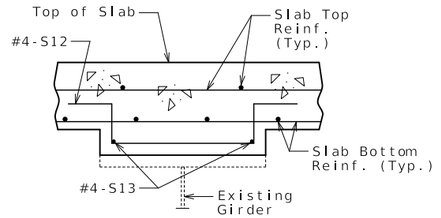
STRIP SEAL EXPANSION JOINT SYSTEM AT END BENTS NO. 1 & 3

Detailed Dec. 2024
Checked Jan. 2025

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

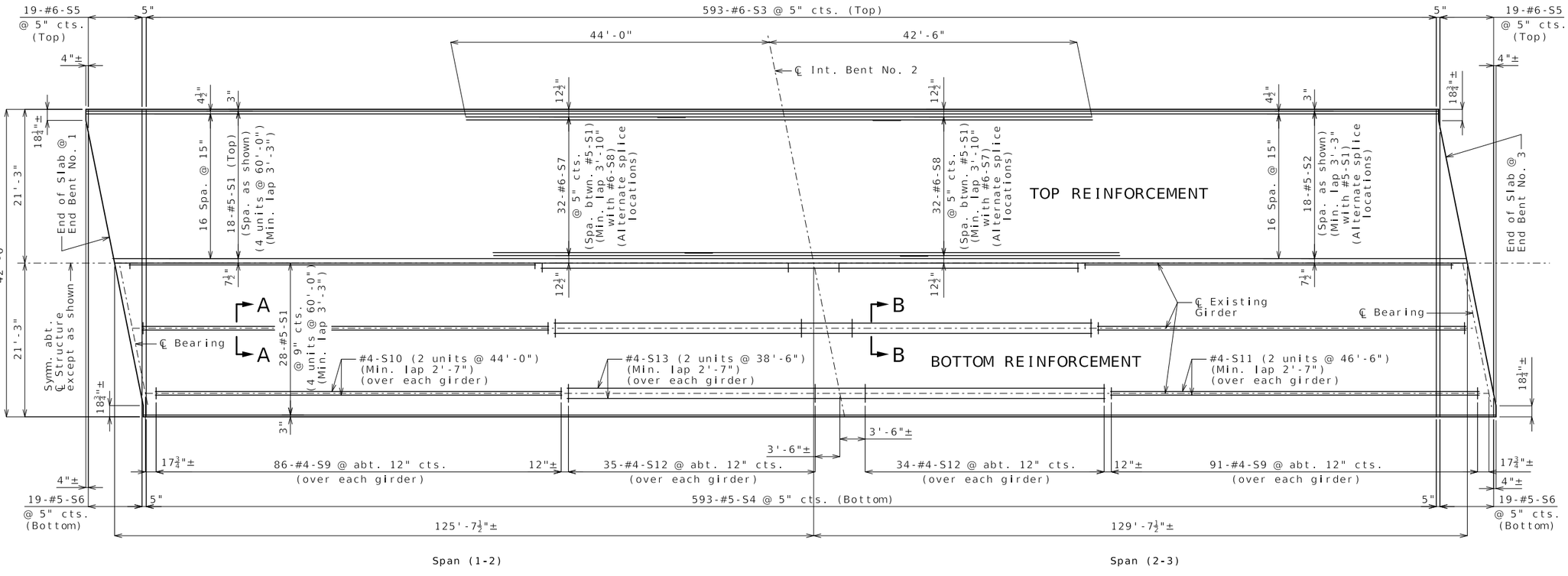


SECTION A-A
(HAIRPIN BAR DETAIL)



SECTION B-B
(HAIRPIN BAR DETAIL)

Note: #4-S9 or S12 hairpin bars may be placed at an angle to meet clearances.



Notes:

For Typical Section thru Slab, see Sheet No. 1.

For details of barrier not shown, see Sheet No. 6.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Jan. 2025
Checked Jan. 2025

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

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ROUTE	STATE
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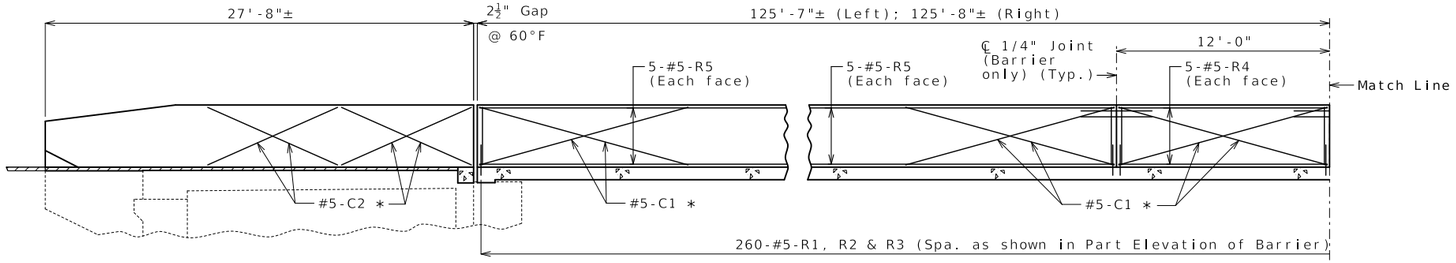
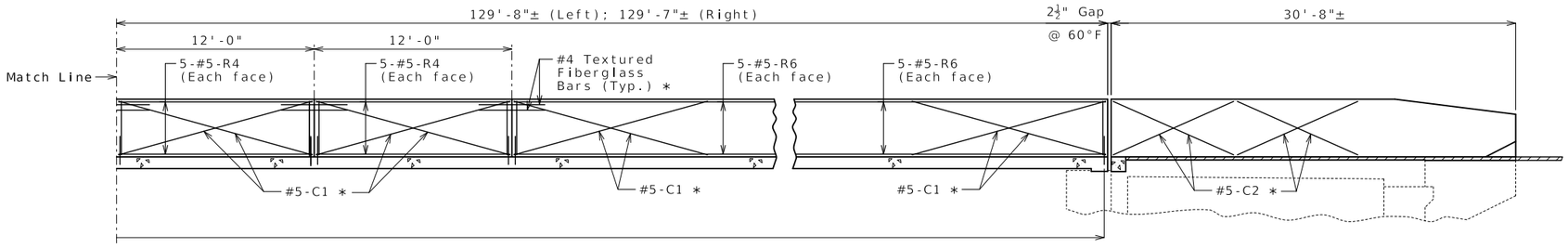


SPAN (1-2)

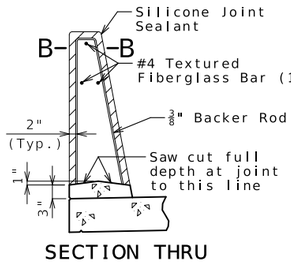


SPAN (2-3)

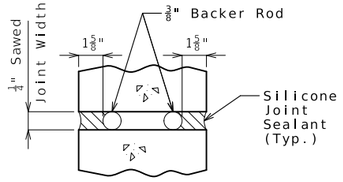
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

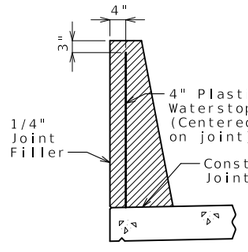
Longitudinal dimensions are horizontal.



SECTION THRU SAW CUT JOINT



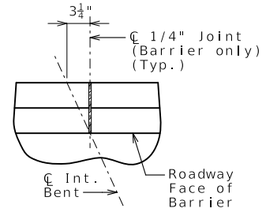
SECTION B-B



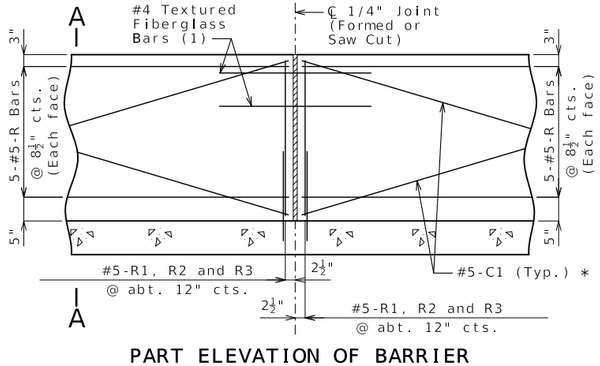
Plastic waterstop shall be placed in all formed joints, except structures with superelevation, use on lower joints only.

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

WATERSTOP DETAIL

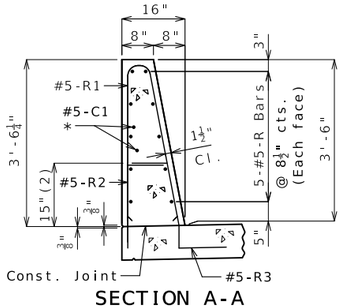


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

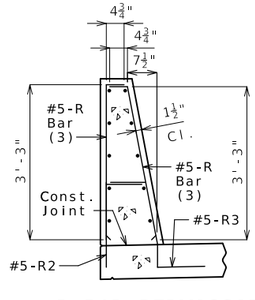


SECTION A-A

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

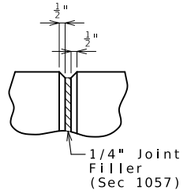
The cross-sectional area above the slab is 3.52 square feet.

(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.)



PART ELEVATION AT FORMED JOINT

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 wing.

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

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

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

Plastic waterstop shall not be used with saw cut joints.

TYPE D BARRIER

Detailed Dec. 2024
Checked Jan. 2025

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

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COUNTY CLAY

JOB NO. JKU0039

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33332

DESCRIPTION	DATE

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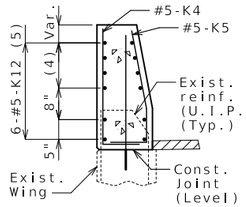
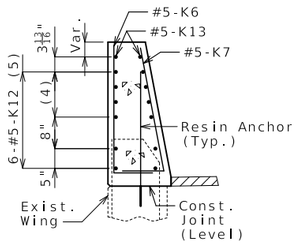
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION A-A



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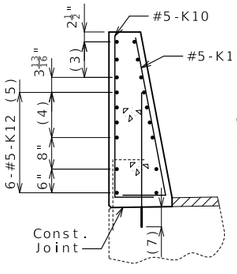
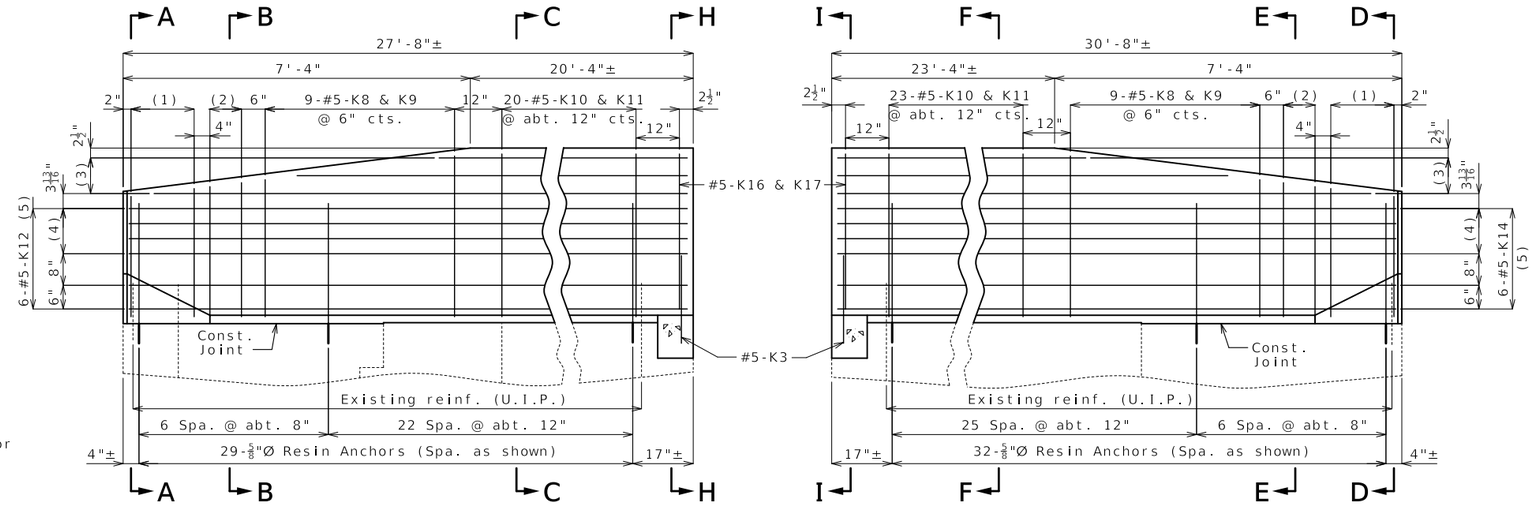
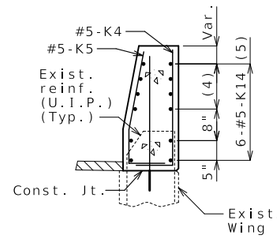


SECTION C-C



PART ELEVATION



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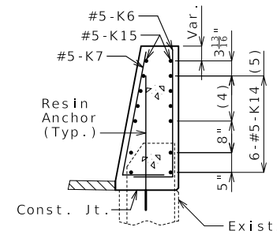

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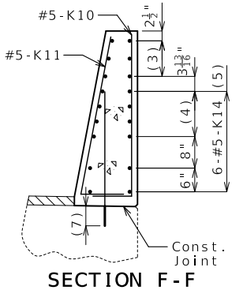

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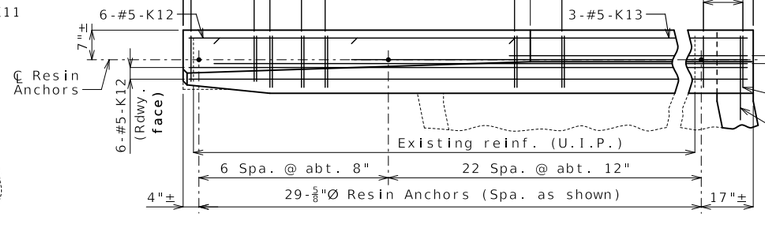
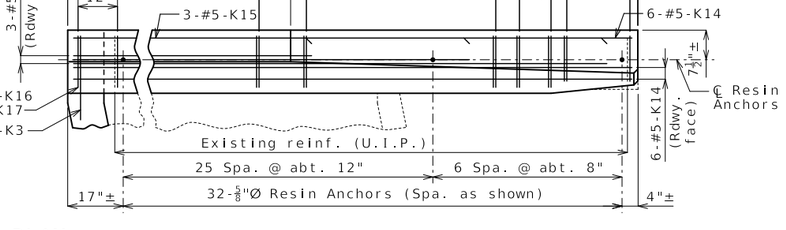
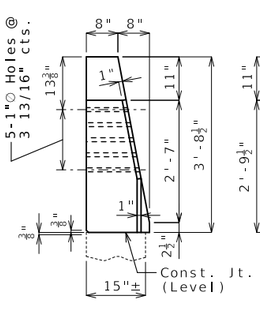




PART PLAN



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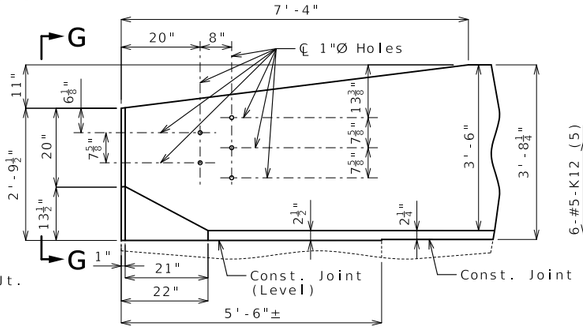
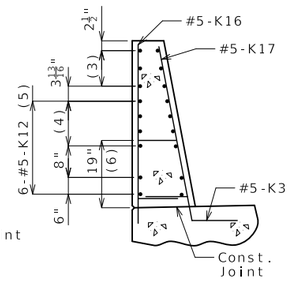


ELEVATION



SECTION H-H

(1) 5-#5-K4 & K5 @ 4" cts.

(2) 3-#5-K6 & K7 @ 4" cts.

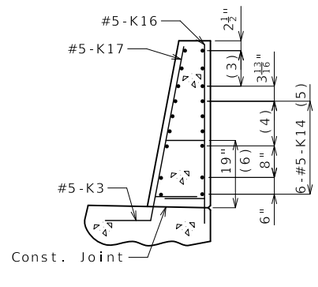
(3) 3-#5-K13 or K15 @ 4½" cts., each face

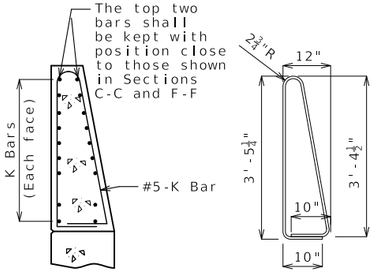
(4) 3 spaces @ 3 13/16"

(5) Spaced as shown, each face

(6) To top of bar

(7) Manufacturer's recommended embedment length (5" minimum) (Typ.) See Sheet No. 2 for additional resin anchor notes.





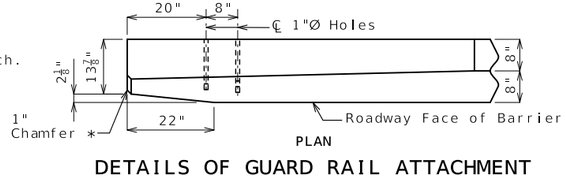
K10-K11 & K16-K17 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

The K10-K11 & K16-K17 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

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



DETAILS OF GUARD RAIL ATTACHMENT

General Notes:

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

TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed Dec. 2024
Checked Jan. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/17/2025 7:40:06 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED: 3/17/2025

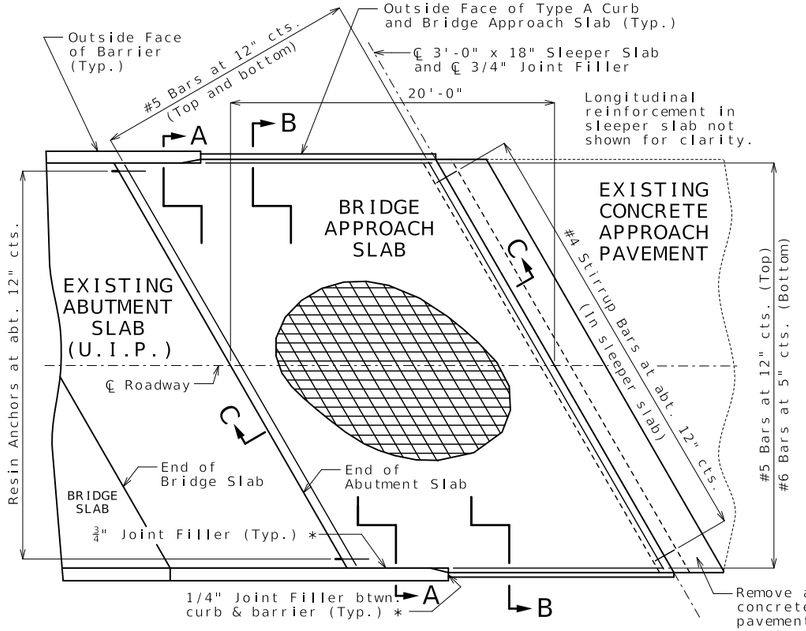
ROUTE	STATE
I-169	MO
DISTRICT	SHEET NO.
BR	7

COUNTY: CLAY
JOB NO.: JKU0039
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A33332

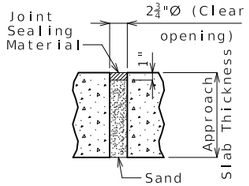
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

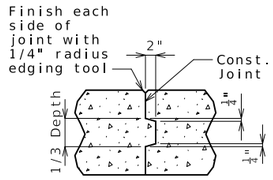


PART PLAN SHOWING REINFORCEMENT



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 29 inches for #5 bars and 44 inches for #6 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

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

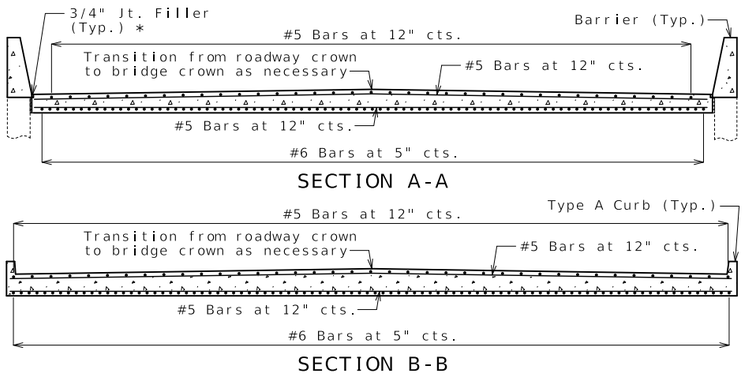
For concrete approach pavement details, see roadway plans.

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 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.

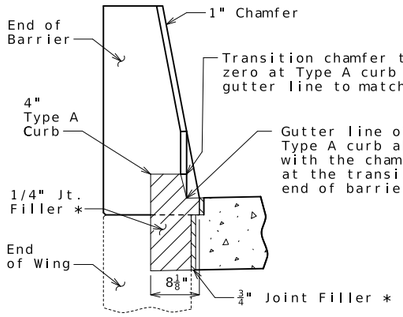
For resin anchor details, see Sheet No. 2.



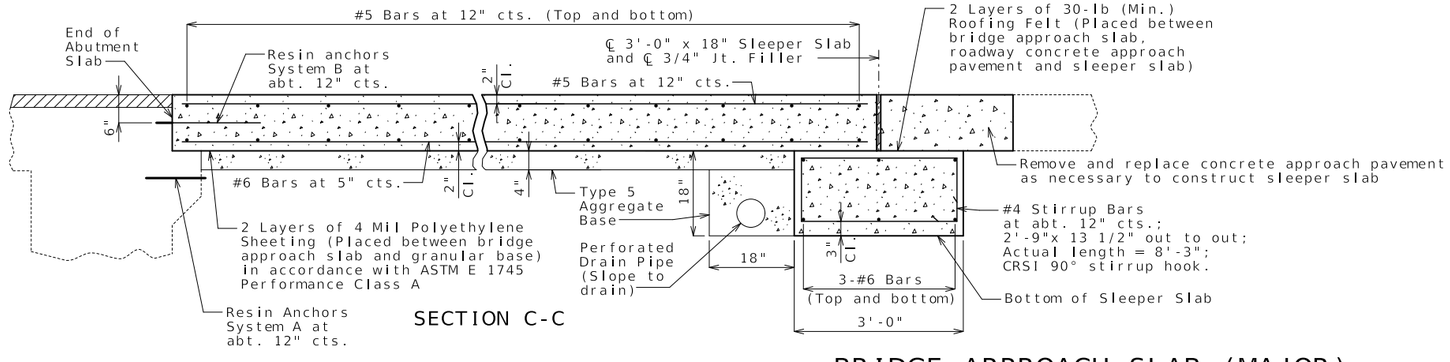
SECTION A-A

SECTION B-B

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



SECTION BETWEEN CURB AND BARRIER



SECTION C-C

BRIDGE APPROACH SLAB (MAJOR)

Detailed Feb. 2025
Checked Feb. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/17/2025 7:40:37 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED
3/17/2025

ROUTE	STATE
I-169	MO
DISTRICT	SHEET NO.
BR	8

COUNTY
CLAY

JOB NO.
JKU0039

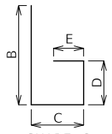
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A33332

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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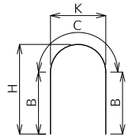
or 6S



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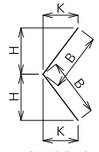

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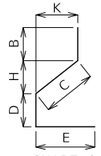

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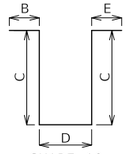

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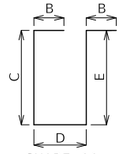

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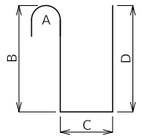

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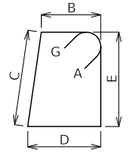

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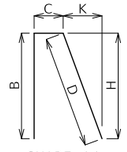

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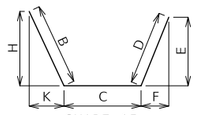

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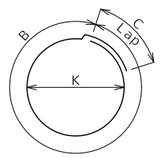

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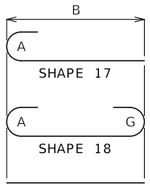
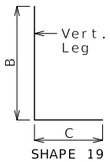


SHAPE 17
SHAPE 18
SHAPE 20



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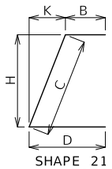

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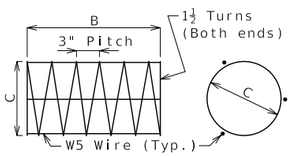

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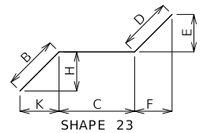

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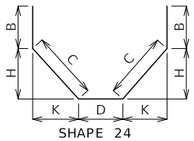

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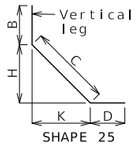

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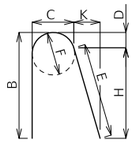

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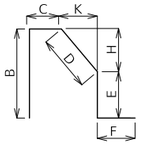

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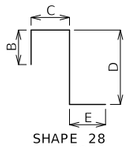

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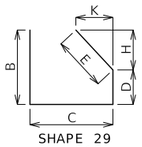

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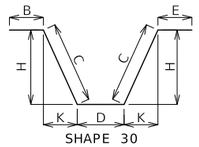

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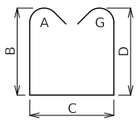

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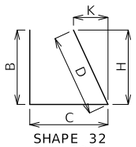

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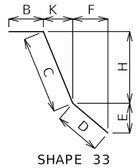

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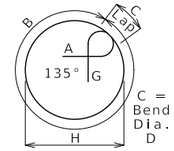

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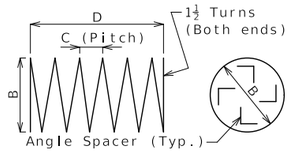

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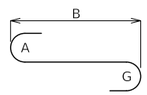
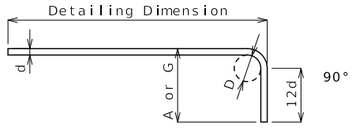


SHAPE 36

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"	36¾"	28½"

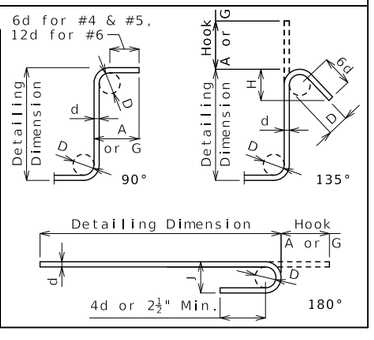


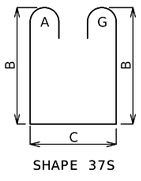
Stirrup Pin Bend Shapes (S)

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"	3⅝"	3¾"
	3	3¾"	6¼"	6½"	7"	3⅞"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅝"	6"

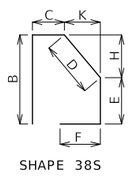
Applicable for all grades of steel.

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

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)

	Size	Substructure		Superstructure			Entire Bridge	
		Plain	Epoxy	Slab	Barrier	Slip Form	Plain	Epoxy
By Size	W5	0	0	0	0	0	0	0
	4	0	0	2,903	0	0	0	2,903
	5	0	0	52,405	15,604	484	0	68,493
	6	0	0	47,789	0	0	0	47,789
	7	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0
By Type		0	0	103,097	15,604	484	0	119,185

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Jan. 2025
Checked Jan. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/17/2025 7:41:08 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED
3/17/2025

ROUTE	STATE
I-169	MO
DISTRICT	SHEET NO.
BR	9

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A33332

DESCRIPTION	DATE

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

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
		Superstructure													
		Slab													
364	5 S1	SLAB	E	20		60 0.00							60	60	22,779
91	5 S2	SLAB	E	20		28 0.00							28	28	2,658
593	6 S3	SLAB	E	20		42 3.00							42 3	42 3	37,631
593	5 S4	SLAB	E	20		42 3.00							42 3	42 3	26,132
38	6 S5	SLAB	E	20	2	39 9.00							39 9	39 9	
		Incr. = 24.875"				2 5.00							2 5	2 5	1,203
38	5 S6	SLAB	E	20	2	39 9.00							39 9	39 9	
		Incr. = 24.875"				2 5.00							2 5	2 5	836
66	6 S7	SLAB	E	20		60 0.00							60	60	5,948
66	6 S8	SLAB	E	20		30 4.00							30 4	30 4	3,007
885	4 S9	SLAB	E	10S		6.00	6.00	7.00	6.00				2 7	2 3	1,330
10	4 S10	SLAB	E	20		44 0.00							44	44	294
10	4 S11	SLAB	E	20		46 6.00							46 6	46 6	311
345	4 S12	SLAB	E	10S		6.00	5.50	18.00	6.00				3 5	3 1	711
10	4 S13	SLAB	E	20		38 6.00							38 6	38 6	257
		Barrier													
		Type D													
4	5 K3	BARRIER	E	27S		2 0.50	9.25	14.50	9.75	12.00	14.25	2.75	5 10	5 6	23
20	5 K4	BARRIER	E	19S	4	2 6.25	10.00						3 4	3 3	
		Incr. = 0.500"				2 8.25	10.00						3 6	3 5	70
20	5 K5	BARRIER	E	38S	4			18.50	11.50	8.25	18.00	4.00	3 2	3 1	
		Incr. = 0.500"						20.50	11.50	8.25	20.00	4.50	3 4	3 3	66
12	5 K6	BARRIER	E	19S		2 8.75	10.00						3 7	3 5	43
12	5 K7	BARRIER	E	21S			2 8.75	10.00			2 8.00	6.50	3 7	3 6	44
36	5 K8	BARRIER	E	19S	4	2 10.50	10.00						3 9	3 7	
		Incr. = 0.750"				3 4.50	10.00						4 3	4 1	144
36	5 K9	BARRIER	E	21S	4		2 10.50	10.00			2 9.75	7.00	3 9	3 8	
		Incr. = 0.750"					3 4.50	10.00			3 3.75	8.00	4 3	4 2	147
86	5 K10	BARRIER	E	19S		3 5.00	10.00						4 3	4 2	374
86	5 K11	BARRIER	E	21S			3 5.00	10.00			3 4.25	8.00	4 3	4 2	374
24	5 K12	BARRIER	E	20		27 5.00							27 5	27 5	686
12	5 K13	BARRIER	E	20	4	26 8.00							26 8	26 8	
		Incr. = 36.000"				20 8.00							20 8	20 8	296
24	5 K14	BARRIER	E	20		30 5.00							30 5	30 5	761
12	5 K15	BARRIER	E	20	4	29 8.00							29 8	29 8	
		Incr. = 36.000"				23 8.00							23 8	23 8	334
4	5 K16	BARRIER	E	19S		3 3.00	10.00						4 1	4	17
4	5 K17	BARRIER	E	21S			3 3.00	10.00			3 2.25	7.75	4 1	4	17
520	5 R1	BARRIER	E	26		3 3.00	5.50	2.25	3 1.25	5.50	3 0.75	6.75	7	6 9	3,661
520	5 R2	BARRIER	E	19S		20.50	9.50						2 6	2 5	1,311
520	5 R3	BARRIER	E	27S			9.50	15.25	5.00	12.00	15.00	3.00	3 6	3 4	1,808
60	5 R4	BARRIER	E	20		11 9.00							11 9	11 9	735
40	5 R5	BARRIER	E	20		58 3.00							58 3	58 3	2,430
40	5 R6	BARRIER	E	20		54 3.00							54 3	54 3	2,263
		Slip-Form													
28	5 C1	SLIP FORM	E	20		12 0.00							12	12	350
16	5 C2	SLIP FORM	E	20		8 0.00							8	8	134

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

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. 8.

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 Jan. 2025
Checked Jan. 2025

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
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03/17/2025 7:41:33 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED
3/17/2025

ROUTE	STATE
I-169	MO
DISTRICT	SHEET NO.
BR	10

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A33332

DESCRIPTION	DATE

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

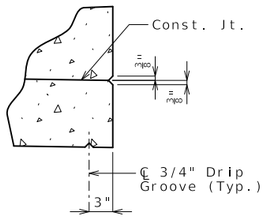
SEC/SUR 23 TWP 52N RGE 33W

U.I.P. & REDECK EXISTING (43'- 67'- 43') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS

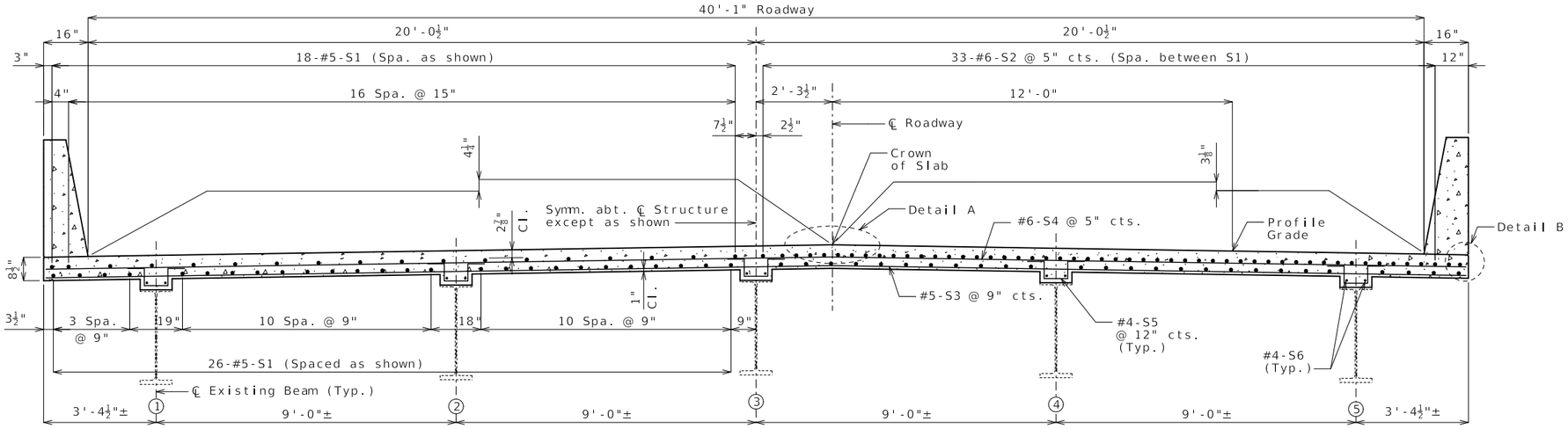
Table Showing S2 Bar Lengths			
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
20'-0"	17'-0"	17'-0"	20'-0"

Required Lap Length For Bar Splices **	
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

** Unless otherwise shown.



DETAIL B



HALF SECTION NEAR MIDSPAN HALF SECTION NEAR INT. BENT

TYPICAL SECTION THRU SLAB

General Notes:

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Seismic Performance Category A

Design Loading:
HS20-44 (1973 & New Construction)
35 lb/sf Future Wearing Surface
Earth = 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Fatigue Stress - Case III

Design Unit Stresses:

Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Class B-2 Concrete (End Bents & Superstructure, except Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi

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.

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

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface. (Roadway item)

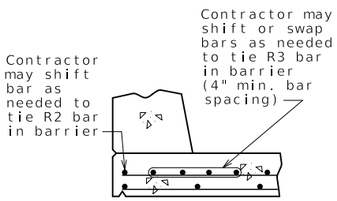
Contractor shall verify all dimensions in field before finalizing the shop drawings.

Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

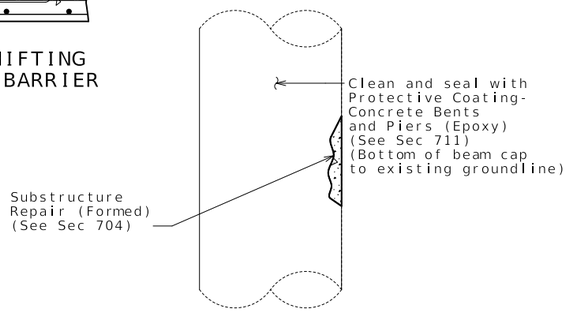
The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

For adjusted girder deflection due to the weight of the new deck and barriers, see Bridge Electronic Deliverables.

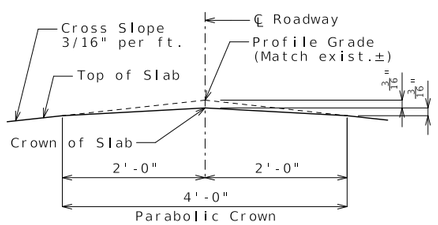
Traffic Handling:
Structure to be closed during construction. Traffic to be maintained on other routes during construction. See roadway plans for traffic control.



OPTIONAL SHIFTING TOP BARS AT BARRIER



PART ELEVATION OF COLUMN AT INT. BENTS NO. 2 & 3 SHOWING SUBSTRUCTURE REPAIR AND CONCRETE COATING



DETAIL A

Estimated Quantities		
Item		Total
Removal of Miscellaneous ACM (Non-Friable)	sq. foot	17
Removal of Existing Bridge Deck	sq. foot	6626
Bridge Approach Slab (Major)	sq. yard	181
Class B Concrete (Substructure)	cu. yard	5.7
Slab on Steel	sq. yard	736
Type D Barrier	linear foot	346
Substructure Repair (Formed)	sq. foot	45
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Non-Destructive Testing	linear foot	51
Vertical Drain at End Bents	each	2

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	216
Reinforcing Steel (Epoxy Coated)	pound	62,990

The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. 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 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 conventional forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

For Optional Stay-In-Place Form Details, see Sheet No. 2.

REPAIRS TO BRIDGE: ROUTE 169 NB OVER NW COOKINGHAM DRIVE

ROUTE 169 FROM ROUTE I-435 TO ROUTE 152
ABOUT 0.4 MILE SOUTH OF ROUTE I-435
BEGINNING STATION 24+71.00± (MATCH EXISTING)

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/20/2025 8:08:33 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

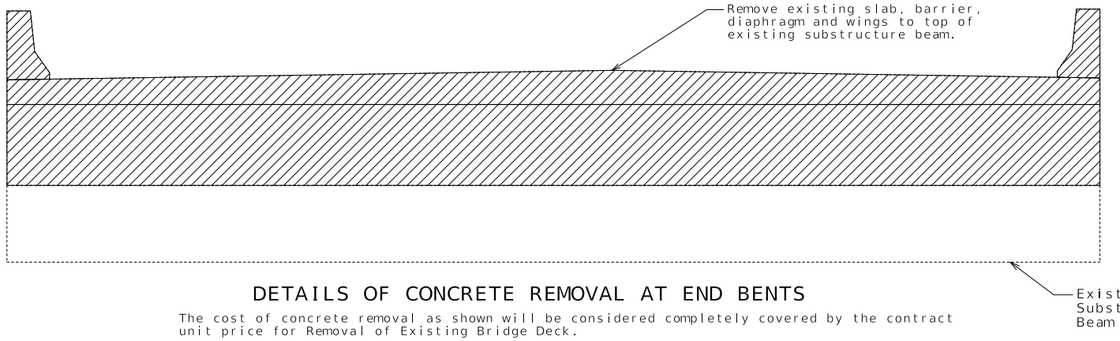
DATE PREPARED 3/20/2025
ROUTE 169 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY CLAY
JOB NO. JKU0039
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A33452

DESCRIPTION | DATE

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

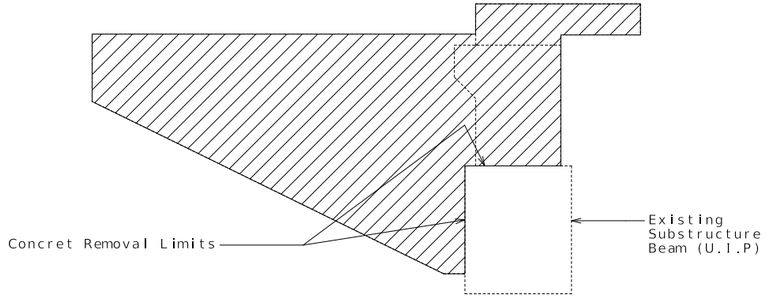
Detailed Mar. 2025
Checked Mar. 2025

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

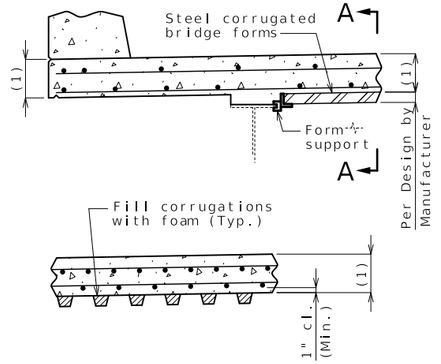


DETAILS OF CONCRETE REMOVAL AT END BENTS

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Removal of Existing Bridge Deck.



PART SECTION SHOWING CONCRETE REMOVAL AT END BENTS



SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

General Notes:

Stay-In-Place 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 beam 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 beam 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 beam loading.

Pouring and Finishing Slab:

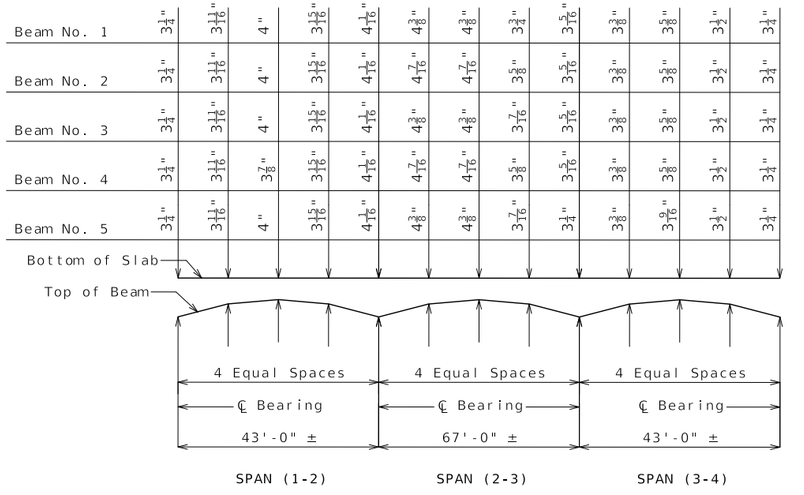
The contractor shall provide bracing necessary for lateral and torsional stability of the beams during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the beams. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Slab on Steel.

Slab shall be poured upgrade from end to end at a minimum rate of 25 cubic yards per hour.

Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

Haunching:

(1) Slab is to be considered a uniform thickness as shown on the plans. See front sheet for slab thickness.



THEORETICAL SLAB HAUNCH

1 3/4 inches was added to existing haunch depth to account for raising grade. 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 Steel.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
03/20/2025 8:09:01 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED: 3/20/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	2

COUNTY: CLAY

JOB NO.: JKU0039

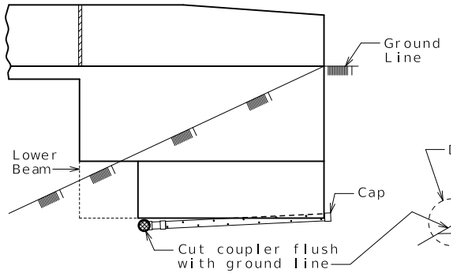
CONTRACT ID.:

PROJECT NO.:

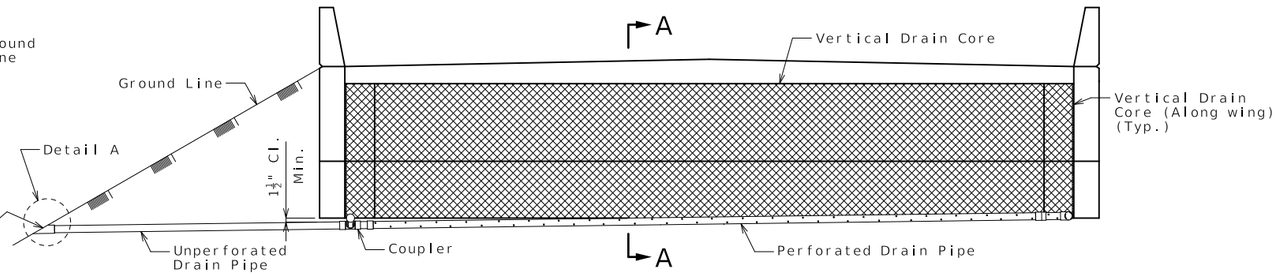
BRIDGE NO.: A33452

DATE	DESCRIPTION

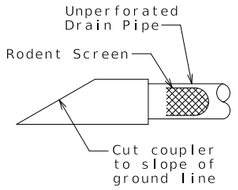
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



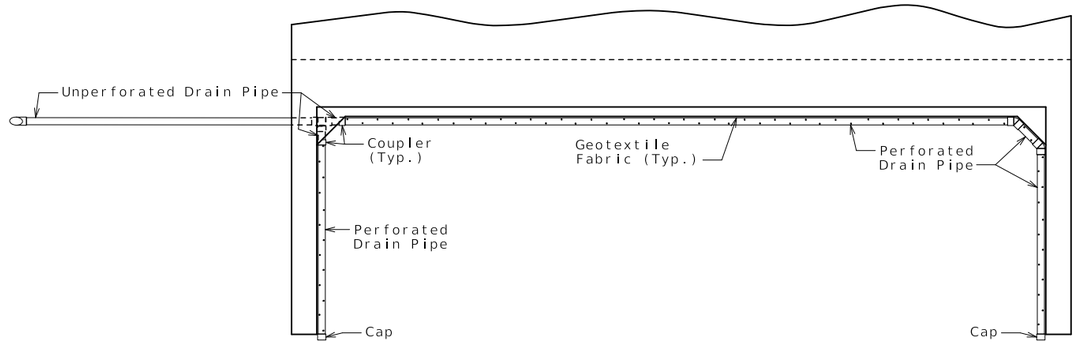
ELEVATION OF WING



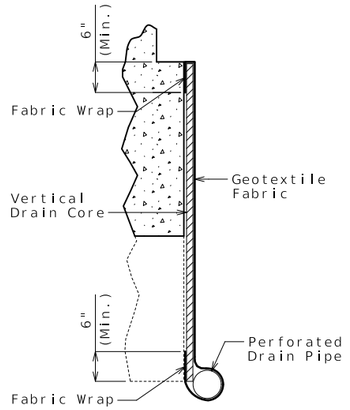
ELEVATION OF END BENT



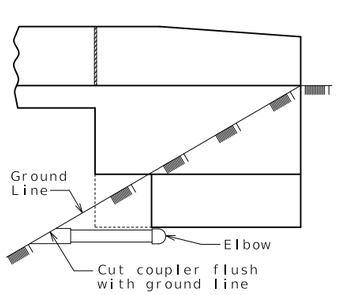
DETAIL A



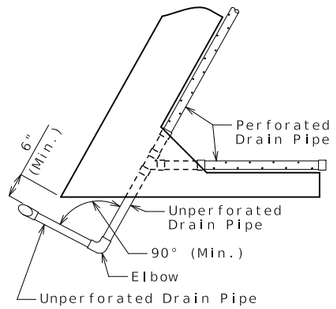
PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING



PART PLAN

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

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.

VERTICAL DRAIN AT END BENTS

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NUMBER PE-2013000591
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03/20/2025 8:09:31 AM
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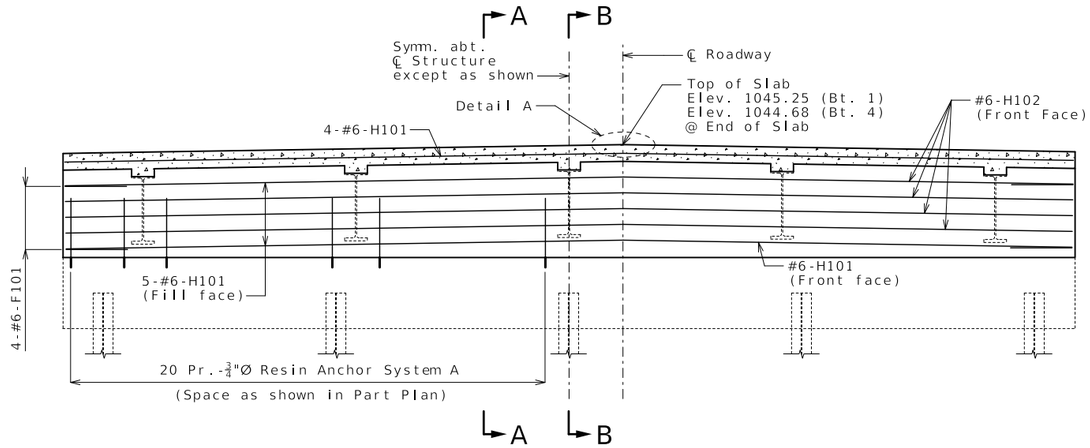
MO-PE-2013000591

DATE PREPARED: 3/20/2025
ROUTE: 169 | STATE: MO
DISTRICT: BR | SHEET NO.: 3
COUNTY: CLAY
JOB NO.: JKU0039
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A33452

DESCRIPTION | DATE

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



PART SECTION NEAR END BENT

Beam chairs not shown for clarity.

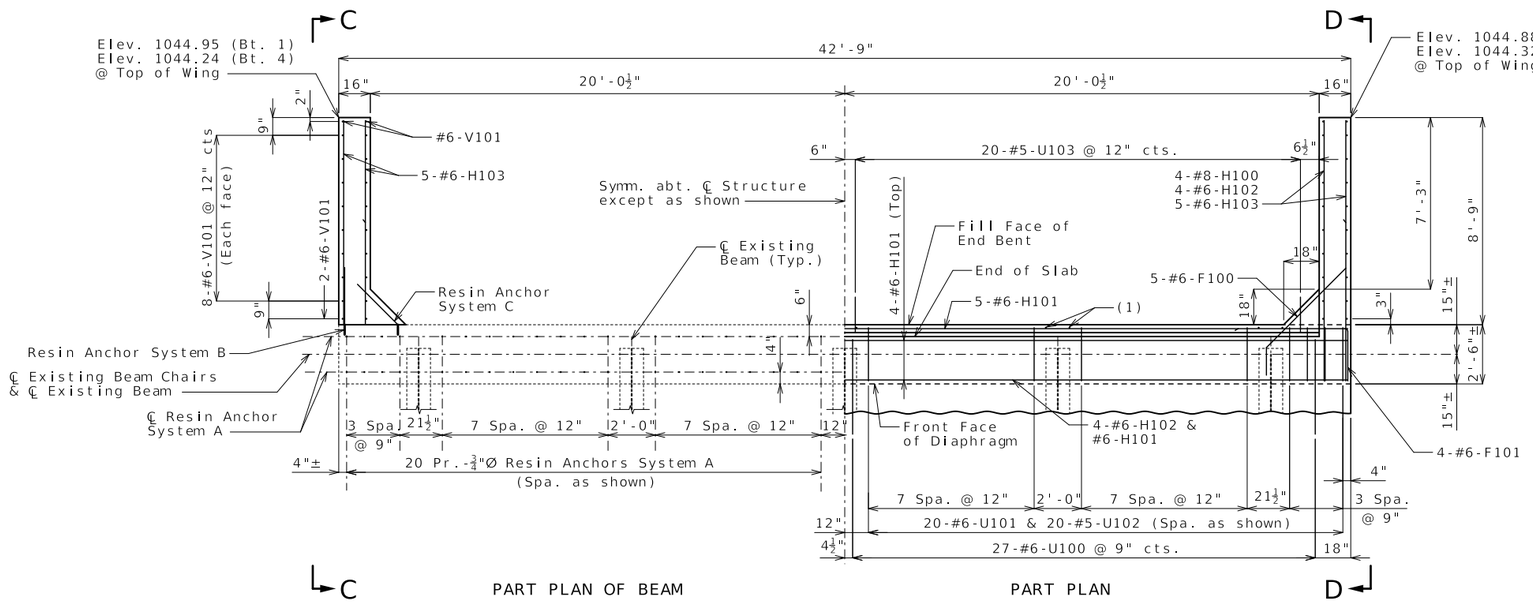
Notes:

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-3 surface preparation and coated with a minimum of one coat of gray epoxy-mastic primer (non-aluminum) in accordance with Sec 1081 to produce a dry film thickness of not less than 3 mils before concrete is poured. The surface preparation and coating for girders shall extend a minimum of one foot outside the face of the girder encasement. Payment for cleaning and coating steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

The #6-H102 bars are segmented for ease of placement through girder web holes. The total bar length for #6-H102 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-8". Actual bar segment lengths to be determined by contractor for ease of installing bars. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment length will be determined by the contractor to accommodate manufacturer's recommendations for installation and ease of construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Slab on Steel. No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.

For Detail A, see Sheet No. 1.

Work this sheet with Sheet No. 5.



PART PLAN OF BEAM

PART PLAN

(1) #6-V100 @ 9" cts. (Centered behind beam)(Typ.)

END BENTS NO. 1 & 4

Detailed Mar. 2025
Checked Mar. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
03/20/2025 8:10:08 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED: 3/20/2025

ROUTE	STATE
169	MO

DISTRICT	SHEET NO.
BR	4

COUNTY: CLAY

JOB NO.: JKU0039

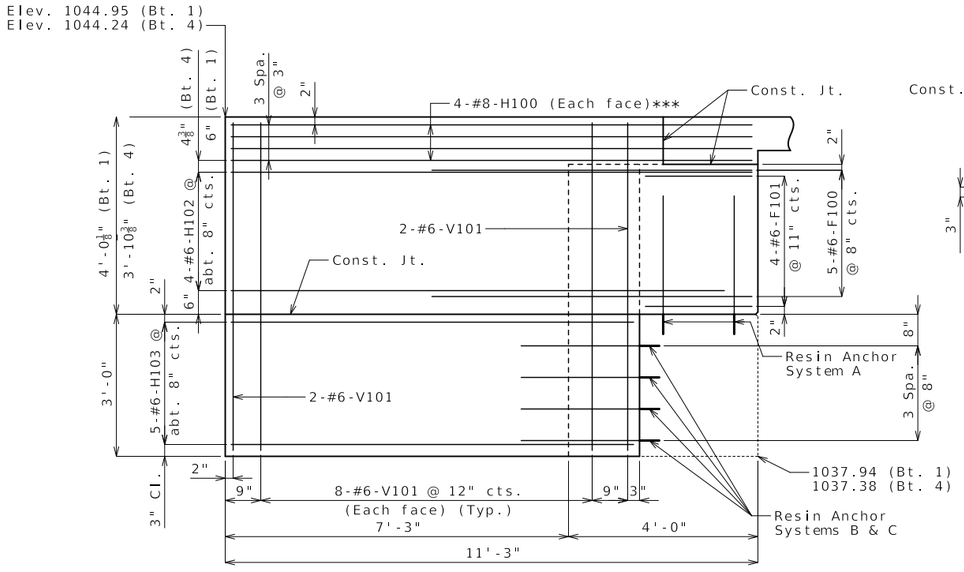
CONTRACT ID.:

PROJECT NO.:

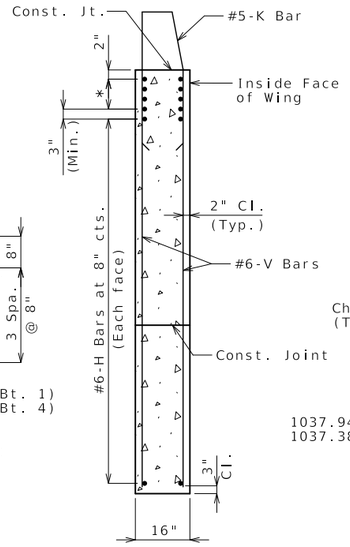
BRIDGE NO.: A33452

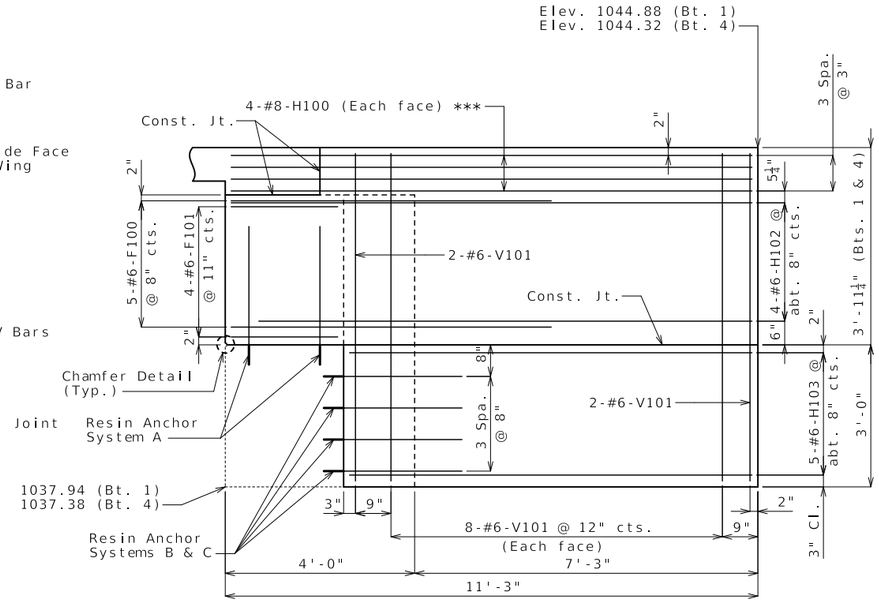
DESCRIPTION	DATE

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

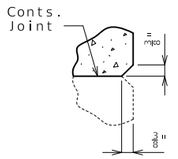


ELEVATION C-C





ELEVATION D-D



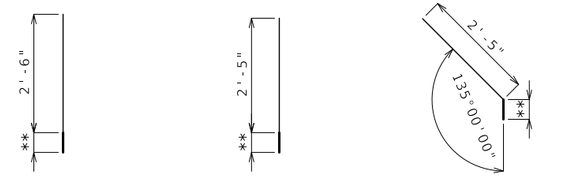
CHAMFER DETAIL

TYPICAL SECTION THRU WING

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

*** Place with grade

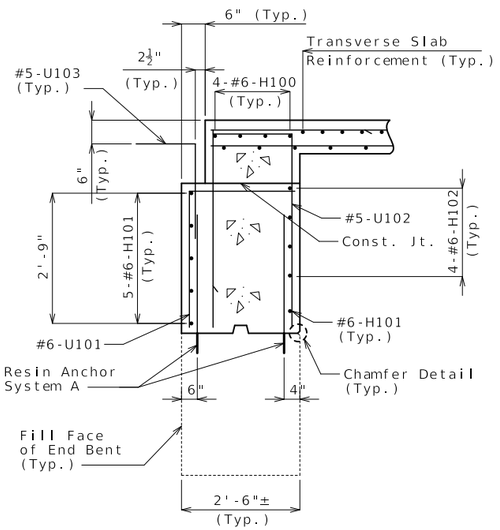
℄ 1 1/16"Ø holes in each beam. Cost of field drilling holes in existing webs will be considered completely covered by the contract unit price for Slab on Steel.



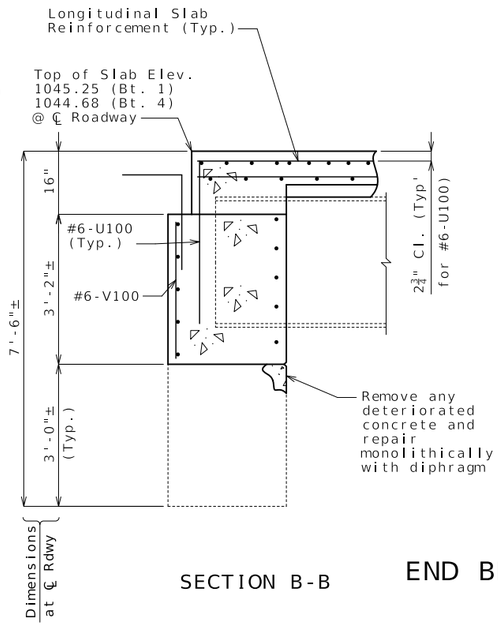
System A (80 required) System B (16 required) System C (16 required)

** Manufacturer's recommended embedment length. (5" minimum)

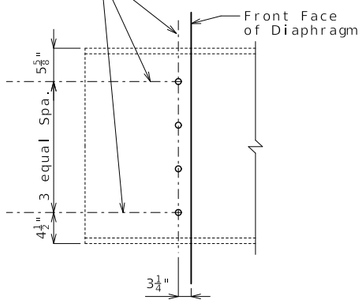
DETAILS OF RESIN ANCHORS



SECTION A-A



SECTION B-B



DETAIL OF WEB HOLES

END BENTS NO. 1 & 4

Notes:

Work this sheet with Sheet No. 4.

For reinforcement of the barrier, see Sheets No. 6 & 7.

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

All concrete below lower construction joint shall be Class B.

Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.

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 shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

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

An epoxy coated #6 Grade 60 reinforcing bar of same length shall be substituted for the 3/4"Ø threaded rod for Resin Anchor Systems A, B & C.

Detailed Mar. 2025
Checked Mar. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
03/20/2025 8:10:52 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED 3/20/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	5

COUNTY CLAY

JOB NO. JKU0039

CONTRACT ID.

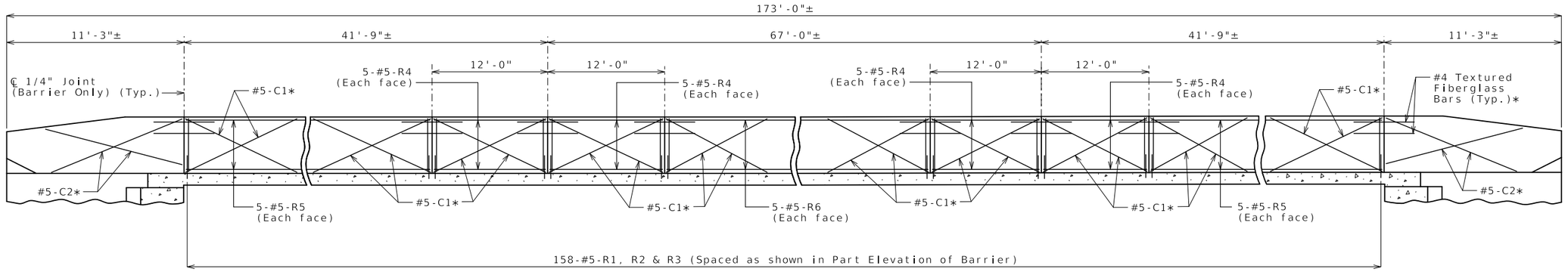
PROJECT NO.

BRIDGE NO. A33452

DESCRIPTION

DATE

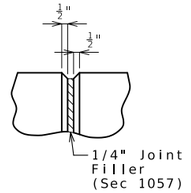
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



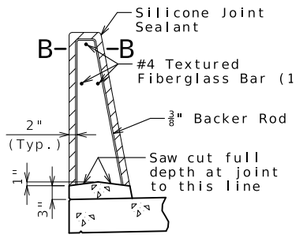
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

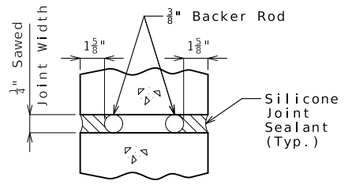
Longitudinal dimensions are horizontal.



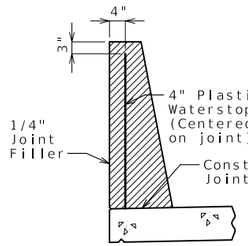
PART ELEVATION AT FORMED JOINT



SECTION THRU SAW CUT JOINT



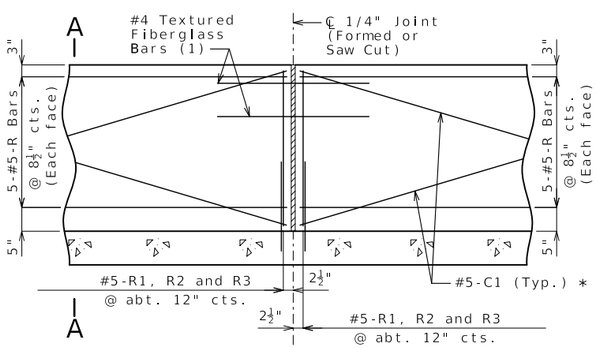
SECTION B-B



WATERSTOP DETAIL

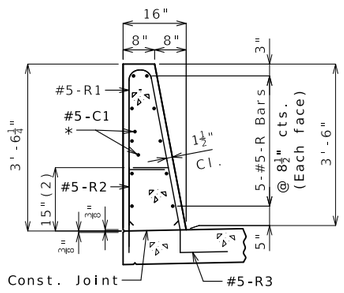
Plastic waterstop shall be placed in all formed joints, except structures with superelevation, use on lower joints only.

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



PART ELEVATION OF BARRIER

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

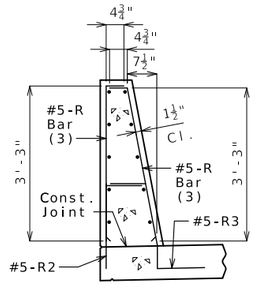


SECTION A-A

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

The cross-sectional area above the slab 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.

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

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

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

Plastic waterstop shall not be used with saw cut joints.

TYPE D BARRIER

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MO-PE-2013000591

DATE PREPARED 3/20/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	6

COUNTY CLAY

JOB NO. JKU0039

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33452

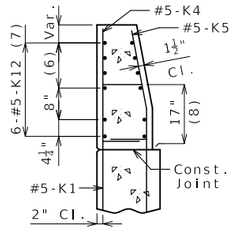
DESCRIPTION

DATE

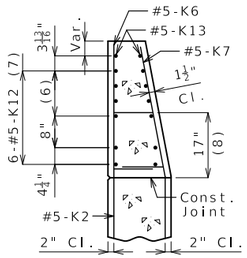
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed Mar. 2025
Checked Mar. 2025

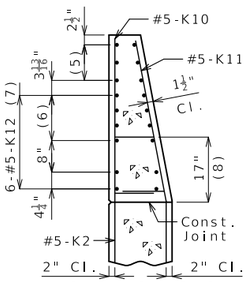
Note: This drawing is not to scale. Follow dimensions.



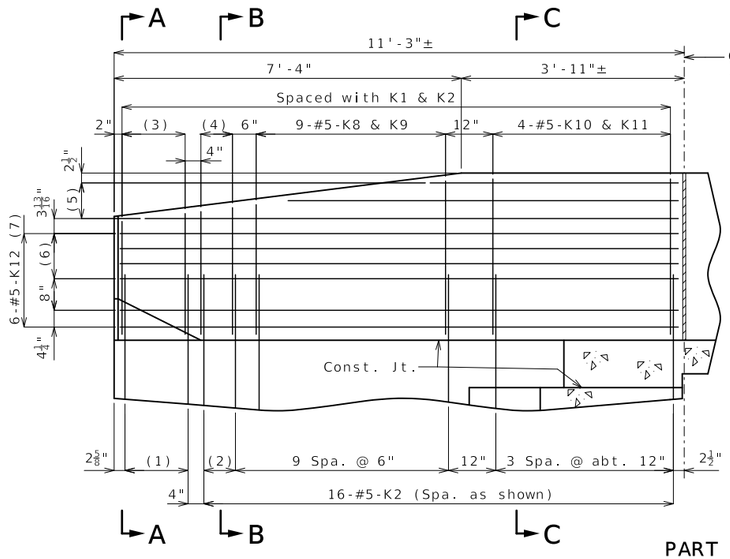
SECTION A-A

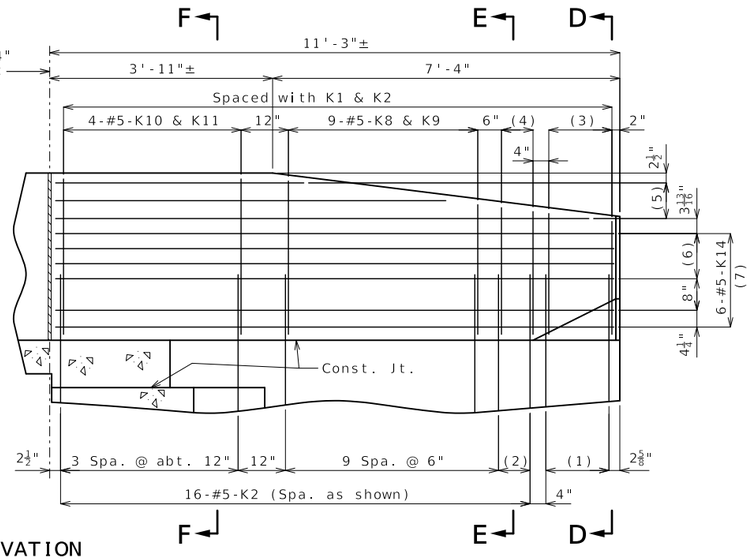


SECTION B-B

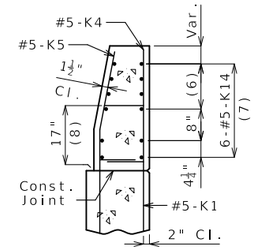


SECTION C-C

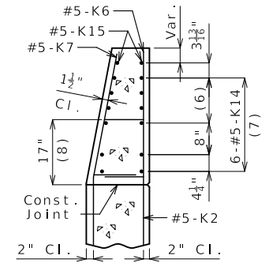




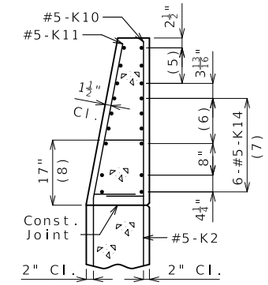
PART ELEVATION



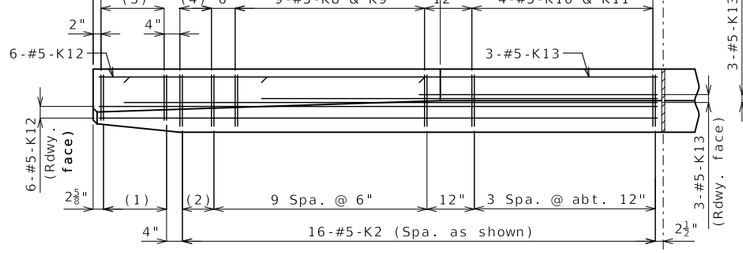
SECTION D-D

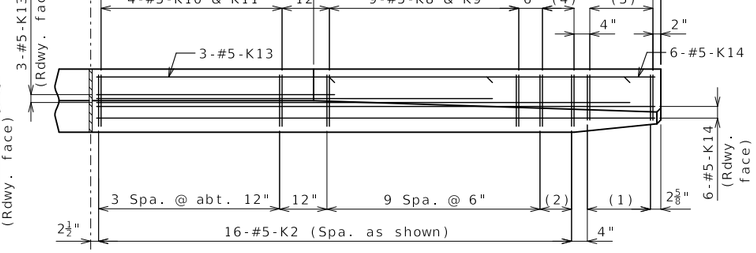


SECTION E-E

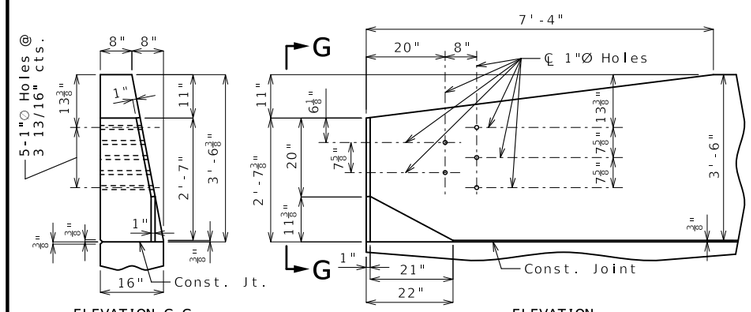


SECTION F-F

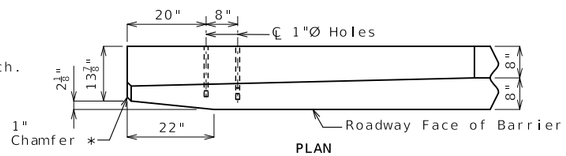




PART PLAN



ELEVATION G-G ELEVATION



PLAN

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

DETAILS OF GUARD RAIL ATTACHMENT

(1) 5-#5-K1 @ 4" cts.

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

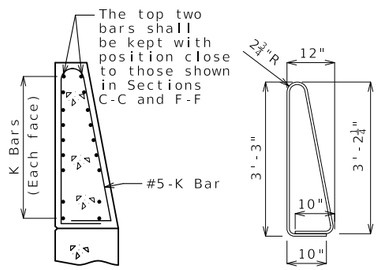
(4) 3-#5-K6 & K7

(5) 3-#5-K13 or K15 @ 4½" cts., each face

(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) 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. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

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

TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed Mar. 2025
Checked Mar. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
03/20/2025 8:12:12 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED 3/20/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	7

COUNTY CLAY

JOB NO. JKU0039

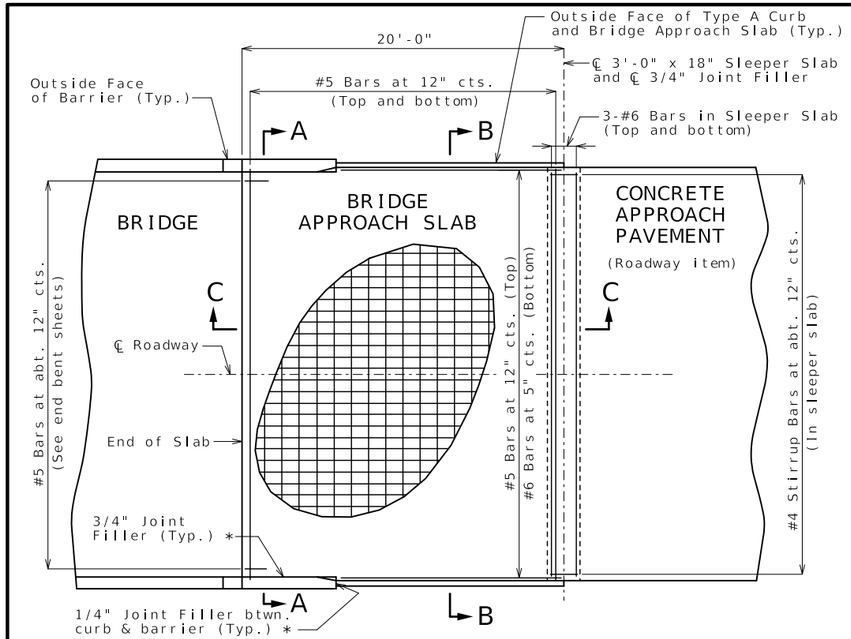
CONTRACT ID.

PROJECT NO.

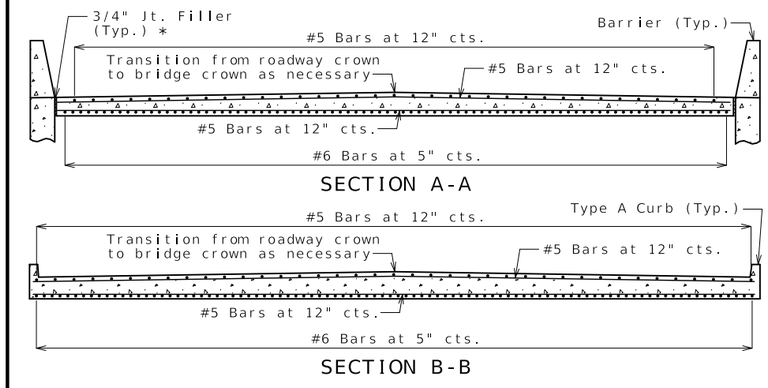
BRIDGE NO. A33452

DESCRIPTION | DATE

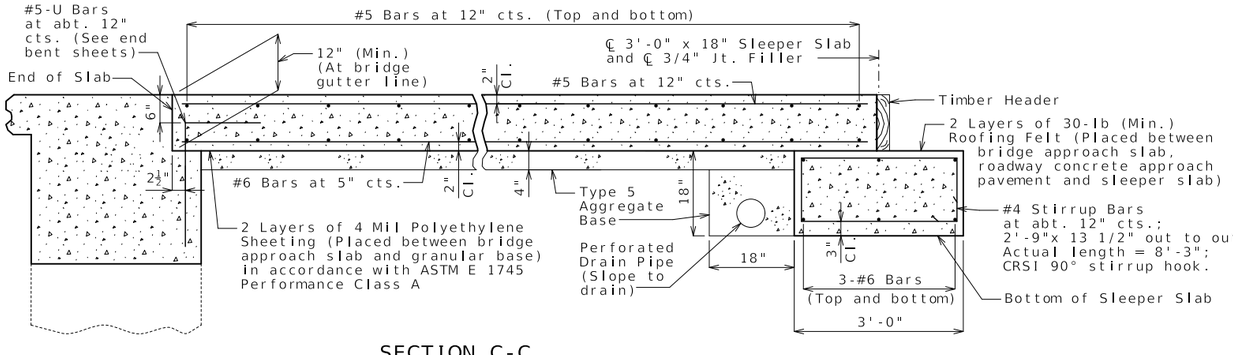
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



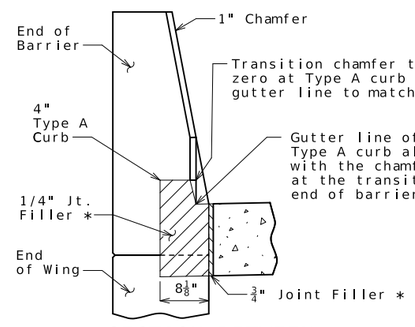
PART PLAN SHOWING REINFORCEMENT



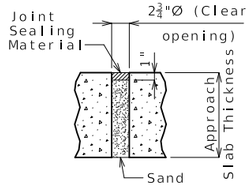
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION C-C

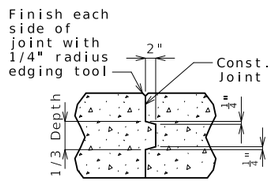


SECTION BETWEEN CURB AND BARRIER

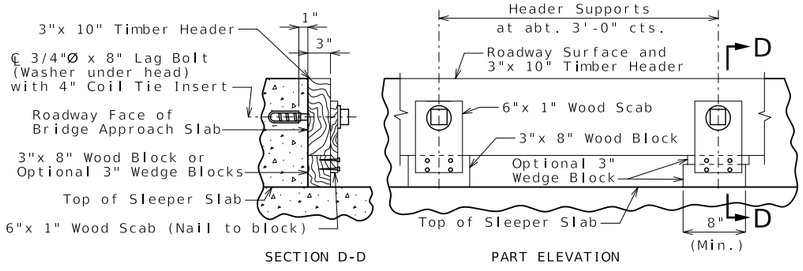


UNDERSEAL ACCESS HOLE DETAIL

(If required)



CONSTRUCTION JOINT DETAIL



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 29 inches for #5 bars and 44 inches for #6 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

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

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

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

For concrete approach pavement details, see roadway plans.

See Missouri Standard Plan 609.00 for details of Type A curb.

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.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/20/2025 8:12:42 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED: 3/20/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	8

COUNTY: CLAY

JOB NO.: JKU0039

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A33452

DESCRIPTION

DATE

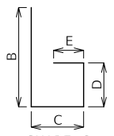
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

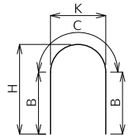
Detailed Mar. 2025
Checked Mar. 2025

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

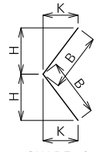
BRIDGE APPROACH SLAB (MAJOR)



SHAPE 6
or 6S



SHAPE 7



SHAPE 8
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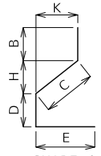
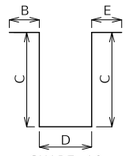


SHAPE 9
or 9S



SHAPE 10
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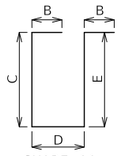
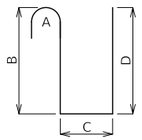


SHAPE 11
or 11S



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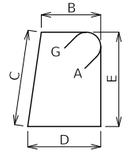

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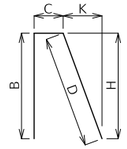

SHAPE 14
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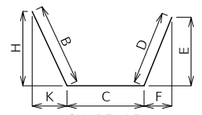

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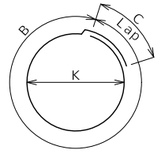

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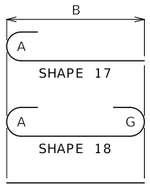
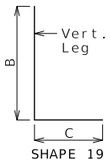


SHAPE 17
SHAPE 18
SHAPE 20



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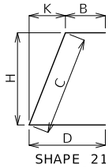
or 19S



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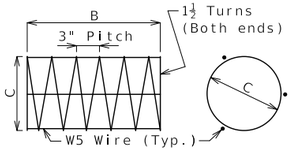
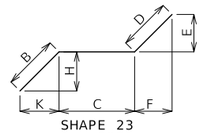
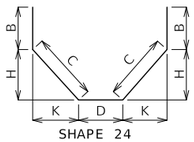


SHAPE 22



SHAPE 23
or 23S



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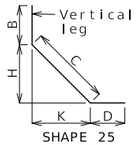

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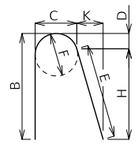
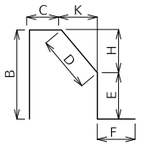


SHAPE 26



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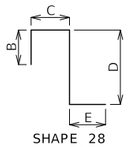

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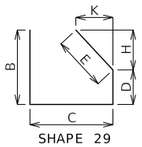
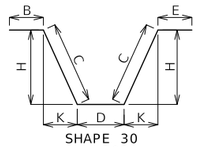


SHAPE 29
or 29S



SHAPE 30
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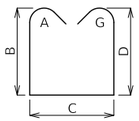

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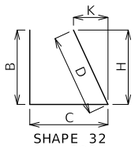

SHAPE 32
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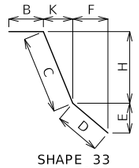

SHAPE 33
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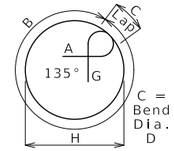
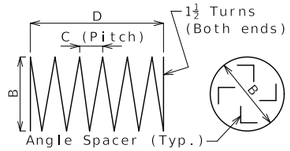
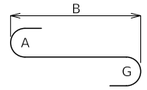


SHAPE 34S



SHAPE 35 (1)

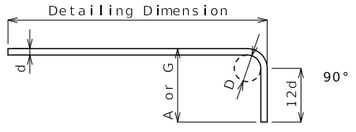


SHAPE 36

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"	36¾"	28½"

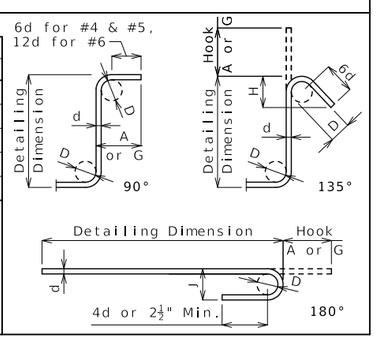


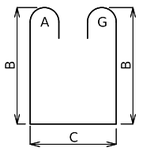
Stirrup Pin Bend Shapes (S)

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"	3⅝"	3¾"
	3	3¾"	6¼"	6½"	7"	3⅞"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅝"	6"

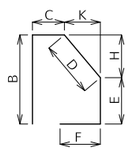
Applicable for all grades of steel.

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

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	
	Size	Plain	Epoxy	Slab	Barrier	Slip Form	Plain	Epoxy
By Size	W5	0	0	0	0	0	0	0
	4	0	0	2,161	0	0	0	2,161
	5	0	0	24,547	9,494	574	0	34,615
	6	0	0	35,342	0	0	0	35,342
	7	0	0	0	0	0	0	0
	8	0	0	940	0	0	0	940
	9	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0
By Type		0	0	62,990	9,494	574	0	73,058

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Mar. 2025
Checked Mar. 2025

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
03/20/2025 8:13:29 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED
3/20/2025

ROUTE	STATE
169	MO
DISTRICT	SHEET NO.
BR	9

COUNTY
CLAY

JOB NO.
JKU0039

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A33452

DATE	DESCRIPTION

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

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
		Superstructure													
		End Bent 1													
108	6 U100	DIAPHRAGM	E	19		3 4.00	4 0.00						7 4	7 2	1,163
80	6 U101	DIAPHRAGM	E	19		2 10.00	2 3.00						5 1	4 11	591
80	5 U102	DIAPHRAGM	E	10S			4 0.00	21.00					9 9	9 6	793
20	6 F100	DIAPHRAGM	E	23S		14.25	4 4.00	2 2.75	19.00	19.00	10.00	10.00	7 9	7 8	230
16	6 F101	DIAPHRAGM	E	10S			3 0.00	2 1.00					8 1	7 9	186
20	6 V100	DIAPHRAGM	E	20		2 10.00							2 10	2 10	85
80	6 V101	WING	E	20		6 9.00							6 9	6 9	811
32	8 H100	WING	E	20		11 0.00							11	11	940
20	6 H101	DIAPHRAGM	E	20		42 6.00							42 6	42 6	1,277
8	6 H102	DIAPHRAGM	E	20		46 2.00							46 2	46 2	555
		Slab													
264	5 S1	SLAB	E	20		53 9.00							53 9	53 9	14,800
132	6 S2	SLAB	E	20		37 0.00							37	37	7,336
202	5 S3	SLAB	E	20		42 6.00							42 6	42 6	8,954
362	6 S4	SLAB	E	20		42 6.00							42 6	42 6	23,108
750	4 S5	SLAB	E	10S		6.00	5.50	8.50	6.00				2 8	2 3	1,127
30	4 S6	SLAB	E	20		51 7.00							51 7	51 7	1,034
		Barrier													
		Type D													
20	5 K1	BARRIER	E	27S		3 11.00	9.25	5.25	3 5.75		5.25	1.00	8 7	8 5	176
64	5 K2	BARRIER	E	27S		3 11.00	9.25	14.50	2 8.75		14.25	2.75	8 8	8 5	562
20	5 K4	BARRIER	E	19S	4	2 4.25	10.00						3 2	3 1	
		Incr. = 0.500"				2 6.25	10.00						3 4	3 3	66
20	5 K5	BARRIER	E	38S	4			18.50	9.50	8.25	18.00	4.00	3	2 11	
		Incr. = 0.500"						20.50	9.50	8.25	20.00	4.50	3 2	3 1	63
12	5 K6	BARRIER	E	19S		2 6.75	10.00						3 5	3 3	41
12	5 K7	BARRIER	E	21S			2 6.75	10.00			2 6.00	6.25	3 5	3 4	42
36	5 K8	BARRIER	E	19S	4	2 8.50	10.00						3 7	3 5	
		Incr. = 0.750"				3 2.50	10.00						4 1	3 11	138
36	5 K9	BARRIER	E	21S	4		2 8.50	10.00			2 7.75	6.75	3 7	3 6	
		Incr. = 0.750"					3 2.50	10.00			3 1.75	7.75	4 1	4	141
16	5 K10	BARRIER	E	19S		3 3.00	10.00						4 1	4	67
16	5 K11	BARRIER	E	21S			3 3.00	10.00			3 2.25	7.75	4 1	4	67
48	5 K12	BARRIER	E	20		11 0.00							11	11	551
24	5 K13	BARRIER	E	20	8	10 3.00							10 3	10 3	
		Incr. = 31.000"				5 0.50							5 1	5 1	192
316	5 R1	BARRIER	E	26		3 3.00	5.50	2.25	3 1.25	5.50	3 0.75	6.75	7	6 9	2,225
316	5 R2	BARRIER	E	19S		23.50	9.50						2 9	2 8	879
316	5 R3	BARRIER	E	27S			9.50	15.25	8.00	12.00	15.00	3.00	3 9	3 7	1,181
80	5 R4	BARRIER	E	20		11 9.00							11 9	11 9	980
40	5 R5	BARRIER	E	20		29 6.00							29 6	29 6	1,231
20	5 R6	BARRIER	E	20		42 9.00							42 9	42 9	892
		Slip-Form													
40	5 C1	SLIP FORM	E	20		12 0.00							12	12	501
8	5 C2	SLIP FORM	E	20		8 9.00							8 9	8 9	73

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

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. 7.

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 Mar. 2025
Checked Mar. 2025

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
Ted Koester
03/20/2025 8:13:58 AM
TED S. KOESTER - CIVIL
MO-PE-2013000591

DATE PREPARED
3/20/2025

ROUTE 169 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY CLAY
JOB NO. JKU0039
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A33452

DESCRIPTION | DATE

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