DESIGN DESIGNATION

A.A.D.T. - 2024 = 874
A.A.D.T. - 2044 = 1398
T = 5.7%
V = 55 M.P.H.

FUNCTIONAL CLASSIFICATION-RURAL MAJOR COLLECTOR

NORMAL RIGHT OF WAY

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

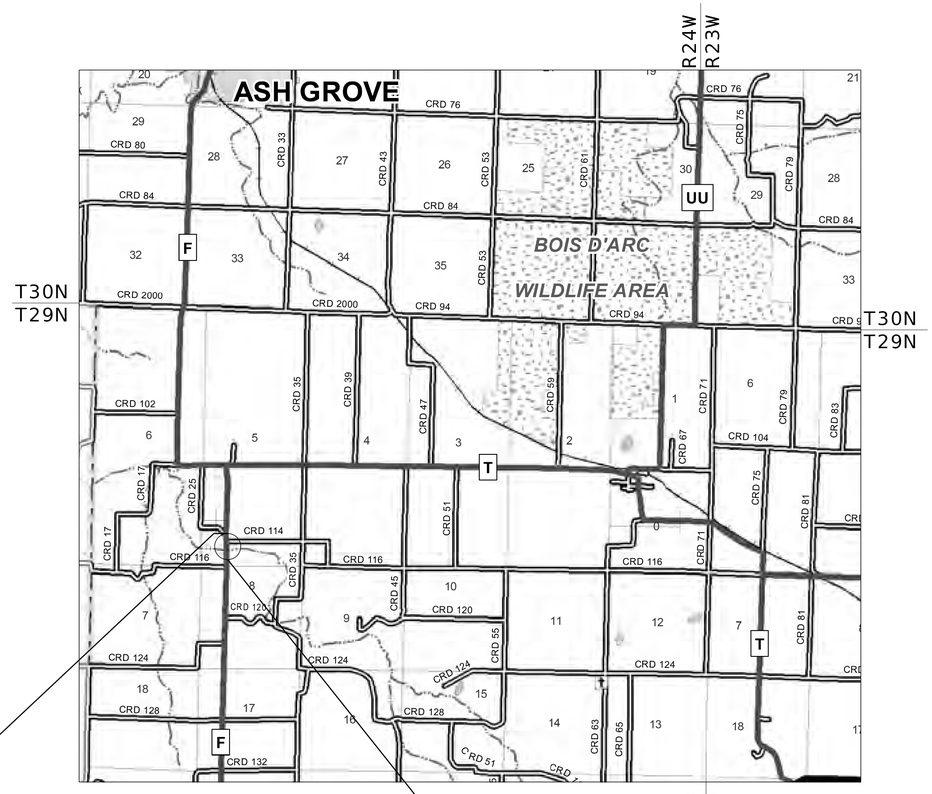
PLANS FOR PROPOSED STATE HIGHWAY

GREENE COUNTY



KEY MAP
LOCATION OF GREENE COUNTY

NOT TO SCALE



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

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
TYPICAL SECTIONS (TS) (2 SHEETS)	2
QUANTITIES (QU) (3 SHEETS)	3
PLAN-PROFILE (PP)	4-5
RIGHT OF WAY (RW)	6
REFERENCE POINTS (RP)	7
COORDINATE POINTS (CP)	8
SPECIAL SHEETS (SS)	9-11
TRAFFIC CONTROL SHEETS (TC)	12-14
EROSION CONTROL SHEETS (EC)	15
SIGNING (SN)	16-18
PAVEMENT MARKING (PM)	19
CULVERT SECTIONS (CS)	20
BRIDGE DRAWINGS (B)	
A9077	1-54
CROSS SECTIONS (XS)	1-14

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 39 + 25.00	
END OF PROJECT	STA. 48 + 50.00	
APPARENT LENGTH	925.00	FEET
EQUATIONS AND EXCEPTIONS:		
TOTAL CORRECTIONS	0.00	FEET
NET LENGTH OF PROJECT	925.00	FEET
STATE LENGTH	0.175	MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	4.0	ACRES

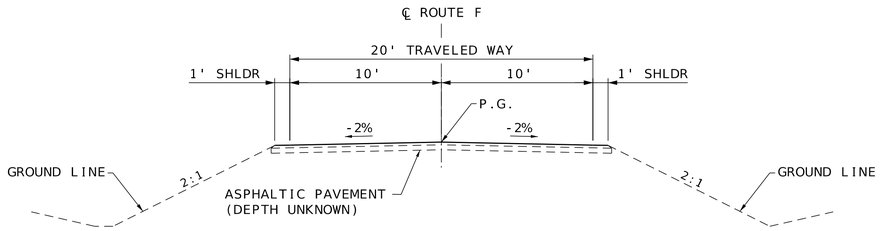
STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 05/20/2026
ROUTE: F | STATE: MO
DISTRICT: SW | SHEET NO.: 1
COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

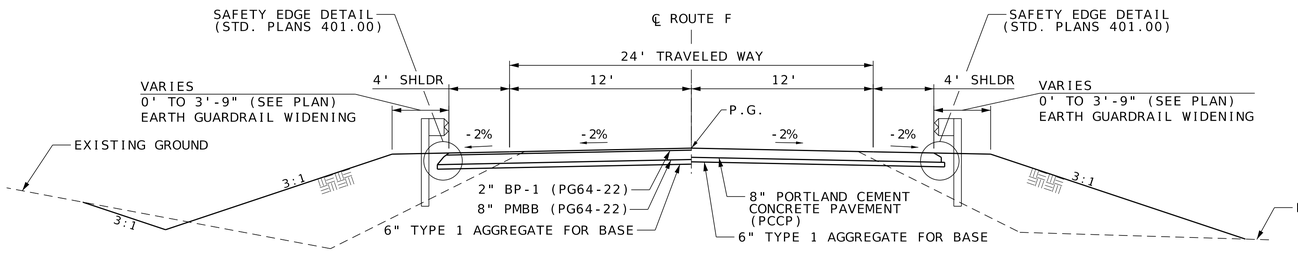
DESCRIPTION | DATE

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

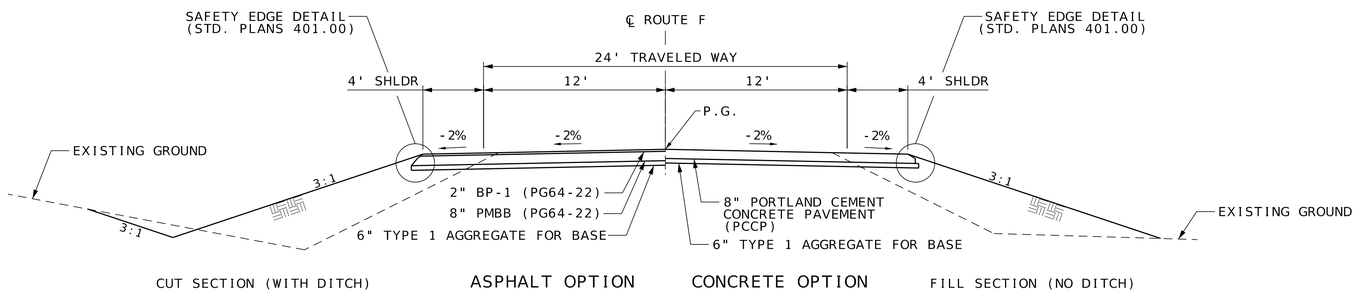
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



EXISTING SECTION ON TANGENT
ROUTE F
STA. 39+25.00 TO STA. 48+50.00
(EXCLUDING BRIDGE)



PROPOSED SECTION ON TANGENT
ROUTE F
STA. 40+27.00 TO STA. 42+29.42
STA. 46+11.92 TO STA. 48+15.00

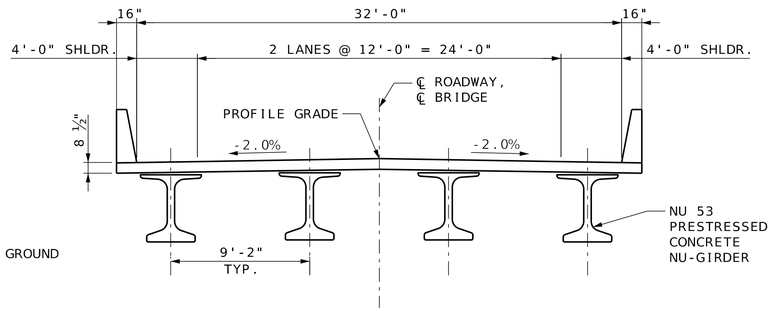


PROPOSED SECTION ON TANGENT
ROUTE F
STA. 39+25.00 TO STA. 40+27.00
STA. 48+15.00 TO STA. 48+50.00

NOTES:

CENTERLINE AND EDGELINE RUMBLE STRIPS SHALL BE CONSTRUCTED ON ROUTE F PER SPECIFICATIONS.

TYPE 2 ROCK BLANKET TO BE INSTALLED ON EMBANKMENT SLOPES NEAR BRIDGE STRUCTURE. SEE SPECIAL SHEETS FOR DETAILS.



PROPOSED BRIDGE SECTION
ROUTE F - BRIDGE A9077
STA. 42+48.92 TO STA. 45+92.42

ESTIMATE FACTORS

BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-1)	= 1.948	TON/CY
BITUMINOUS PAVEMENT MIXTURE PG 64-22 (PMBB)	= 1.943	TON/CY
TACK COAT	= 0.05	GAL/SY

ROUTE F

TYPICAL SECTION
SHEET 1 OF 2

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	2

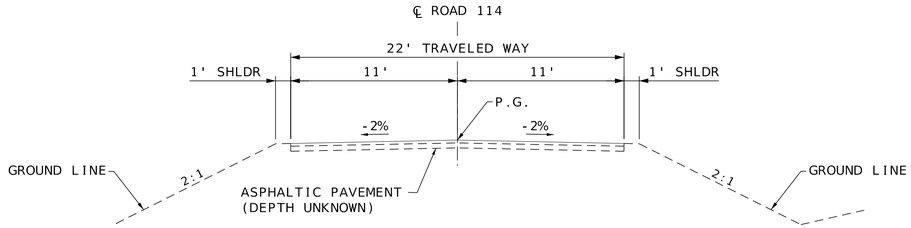
COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

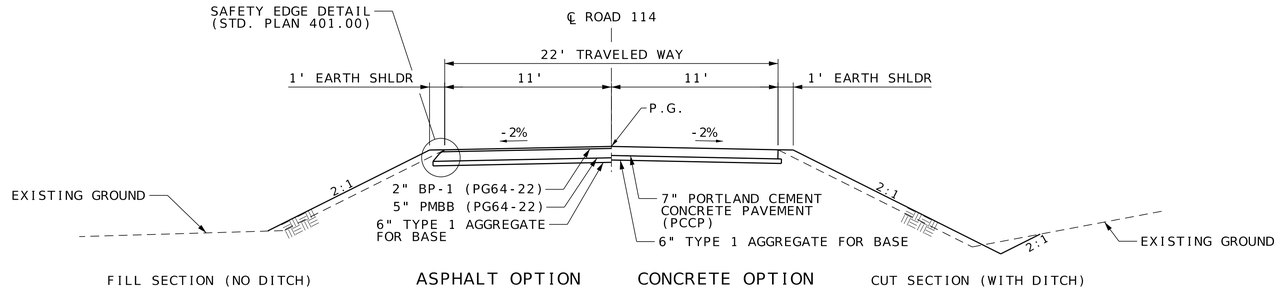
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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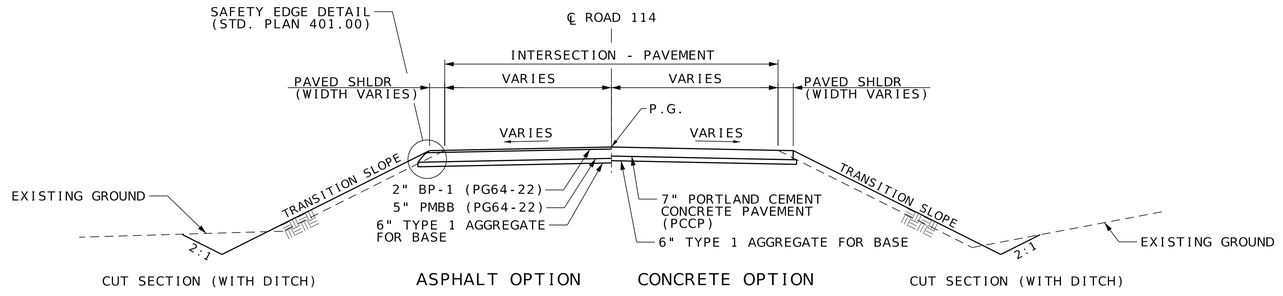
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EXISTING SECTION ON TANGENT
TYPICAL SECTION ROAD 114
STA. 0+34.00 TO STA. 1+14.07



PROPOSED SECTION ON TANGENT
TYPICAL SECTION ROAD 114
STA. 0+34.00 TO STA. 0+78.08



PROPOSED SECTION AT INTERSECTION
TYPICAL SECTION ROAD 114
STA. 0+78.08 TO STA. 1+18.07

ESTIMATE FACTORS

BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-1)	= 1.948	TON/CY
BITUMINOUS PAVEMENT MIXTURE PG 64-22 (PMBB)	= 1.943	TON/CY
TACK COAT	= 0.05	GAL/SY

ROAD 114

TYPICAL SECTION
SHEET 2 OF 2

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	2

COUNTY
GREENE

JOB NO.
JSR0083

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)

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CLEARING & GRUBBING

STATION	LOCATION	SIDE	QUANTITY (AC)	REMARKS
39+25 TO CREEK	RTE F	LT/RT	0.9	
CREEK TO 48+50	RTE F	LT/RT	1.1	
		TOTAL	2.0	
		PAY TOTAL	2	

MOBILIZATION

LUMP SUM	1

CONTRACTOR FURNISHED SURVEYING & STAKING

LUMP SUM	1

REMOVAL OF IMPROVEMENTS

STATION	LOCATION	SIDE	QUANTITY (LS)	REMARKS
39+00 TO 49+00	RTE F	LT/RT	-	REMOVE EXISTING FENCE
39+25 TO 48+50	RTE F	RT/LT	-	REMOVE EXISTING SIGN POSTS (4 EACH)
39+96	RTE F	LT	-	REMOVE EXISTING CULVERT
41+26 TO 42+38	RTE F	LT	-	REMOVE EXISTING GUARDRAIL
40+52 TO 42+38	RTE F	RT	-	REMOVE EXISTING GUARDRAIL
45+73 TO 47+60	RTE F	LT	-	REMOVE EXISTING GUARDRAIL
45+73 TO 46+85	RTE F	RT	-	REMOVE EXISTING GUARDRAIL
		PAY TOTAL	1	

TYPE 1 AGGREGATE FOR BASE (6 IN. THICK)

STATION	LOCATION	SIDE	WIDTH (FT)	QUANTITY (SY)	REMARKS
39+25 TO 42+30	RTE F	LT/RT	32	1084	
46+12 TO 48+50	RTE F	LT/RT	32	846	
0+34 TO 1+14	ROAD 114	LT/RT	22	247	
			PAY TOTAL	2177	

OPTIONAL PAVEMENT

STATION	LOCATION	SIDE	WIDTH (FT)	QUANTITY (SY)	REMARKS
39+25 TO 42+30	RTE F	LT/RT	32	1084	
46+12 TO 48+50	RTE F	LT/RT	32	846	
0+34 TO 1+14	ROAD 114	LT/RT	22	247	
			PAY TOTAL	2177	

PIPE CULVERTS

STATION	LOCATION	SIDE	18 IN. Ø GROUP B (LF)	18 IN. FLARED END SECTION GROUP B (EA)	REMARKS
1+08	ROAD 114	LT/RT	86	2	
		PAY TOTAL	86	2	

OPTIONAL PAVEMENT RUMBLE STRIPS

STATION	LOCATION	SIDE	CENTERLINE RUMBLE STRIPS (STA)	SHOULDER RUMBLE STRIPS (STA)	REMARKS
39+25 TO 42+29	RTE F	℄	3.0		
46+12 TO 48+50	RTE F	℄	2.4		
39+25 TO 42+29	RTE F	RT		3.0	
41+38 TO 42+29	RTE F	LT		0.9	
46+12 TO 48+50	RTE F	RT		2.4	
46+12 TO 48+50	RTE F	LT		2.4	
		PAY TOTAL	5.4	8.7	

TEMPORARY ORANGE VINYL FENCE

STATION	LOCATION	SIDE	QUANTITY (LF)	REMARKS
39+36 TO 40+56	RTE F	RT	135	
		TOTAL	135	
		PAY TOTAL	135	

FENCING (WOVEN WIRE)

STATION	LOCATION	SIDE	QUANTITY (LF)	REMARKS
40+21 TO 42+60	RTE F	LT	253	
38+99 TO 42+80	RTE F	RT	411	
44+10 TO 49+01	RTE F	LT	510	
46+15 TO 49+01	RTE F	RT	300	
		TOTAL	1474	
		PAY TOTAL	1474	

SEEDING/MULCHING

STATION	LOCATION	SIDE	SEEDING (AC)	MULCHING (AC)	TEMPORARY SEEDING (AC)	REMARKS
39+00 TO CREEK	RTE F	LT/RT	0.7	0.9	0.2	
CREEK TO 49+00	RTE F	LT/RT	1.6	2.0	0.4	
		TOTAL	2.3	2.9	0.6	
		PAY TOTAL	2.3	2.9	0.6	

TYPE A CRASHWORTHY END TERMINAL (MASH)

STATION	LOCATION	SIDE	QUANTITY (EA)	REMARKS
41+77	RTE F	LT	1	LENGTH = 50'
41+02	RTE F	RT	1	LENGTH = 50'
47+39	RTE F	LT	1	LENGTH = 50'
46+64	RTE F	RT	1	LENGTH = 50'
		PAY TOTAL	4	

MGS GUARDRAIL

STATION	LOCATION	SIDE	QUANTITY (LF)	REMARKS
41+77	RTE F	LT	25.0	2 SECTIONS
41+02	RTE F	RT	100.0	8 SECTIONS
47+39	RTE F	LT	100.0	8 SECTIONS
46+64	RTE F	RT	25.0	2 SECTIONS
		TOTAL	250.0	
		PAY TOTAL	250	

MGS BRIDGE APPROACH TRANSITION SECTION (REGULAR/NO CURB)

STATION	LOCATION	SIDE	QUANTITY (EA)	REMARKS
42+39	RTE F	LT	1	LENGTH = 37.5'
42+39	RTE F	RT	1	LENGTH = 37.5'
46+02	RTE F	LT	1	LENGTH = 37.5'
46+02	RTE F	RT	1	LENGTH = 37.5'
		PAY TOTAL	4	

QUANTITIES
SHEET 1 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	3

COUNTY
GREENE

JOB NO.
JSR0083

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)

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
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EARTHWORK

STATION	LOCATION	SIDE	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	EMBANKMENT IN PLACE (CY)	COMPACTING IN CUT (STA)	CLASS 3 EXCAVATION (CY)	REMARKS
39+25 TO 42+39	RTE F	LT/RT	439	439	1974	3.2		
46+02 TO 48+50	RTE F	LT/RT	535	1523	1932	2.6		OBTAIN 988 CY FROM STOCKPILE
0+34 TO 1+18	RTE F	LT/RT	276	8		0.8		STOCKPILE 269 CY
1+08	ROAD 114	LT/RT					50	CULVERT INSTALL
42+48 TO 45+92	CREEK	LT/RT	2235	1516				STOCKPILE 719 CY
39+25 TO 48+50	RTE F	LT/RT	88					ROUNDING (500 CY/MI)
		TOTAL	3573	3486	3906	6.6	50	
		PAY TOTAL	3573	3486	3906	6.6	50	

NOTES:
- NO SOIL PROPERTY DATA AVAILABLE. SHRINK/SWELL FACTOR WAS NOT USED IN QUANTITIES SHOWN.
  UNSUITABLE AND EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM PROJECT SITE BY CONTRACTOR.
  DISPOSAL SITE SHALL BE APPROVED BY ENGINEER. NO DIRECT PAY.

- LOCATION FOR STOCKPILE OF EXCAVATED MATERIAL TO BE APPROVED BY ENGINEER.

PERMANENT EROSION CONTROL

STATION	LOCATION	SIDE	FURNISHING TYPE 1 ROCK DITCH LINER (CY)	PLACING TYPE 1 ROCK DITCH LINER (CY)	FURNISHING TYPE 2 ROCK BLANKET (CY)	PLACING TYPE 2 ROCK BLANKET (CY)	PERMANENT EROSION CONTROL GEOTEXTILE (SY)	REMARKS
42+29 TO CREEK		LT/RT			933	933	1527	2' ROCK BLANKET
CREEK TO 46+08		LT/RT			903	903	1460	2' ROCK BLANKET
46+08 TO 46+12		LT	9	9			33	DRAIN FLUME
46+08 TO 46+12		RT	9	9			33	DRAIN FLUME
40+43 TO 42+29		LT	29	29			161	DITCH LINER
41+50 TO 45+29		RT	16	16			86	DITCH LINER
		PAY TOTAL	63	63	1836	1836	3300	

TEMPORARY EROSION CONTROL

STATION	LOCATION	SIDE	TYPE C BERM (LF)	SEDIMENT REMOVAL (CY)	ALTERNATE DITCH CHECK (LF)	REMARKS
43+10	RTE F	LT/RT	228			
43+90	RTE F	LT/RT	224			
39+40 TO 39+75	RTE F	LT		2.0	30	2 @ 15' EA.
39+46 TO 41+45	RTE F	RT		3.0	45	3 @ 15' EA.
46+19 TO 48+43	RTE F	LT		3.0	45	3 @ 15' EA.
46+19 TO 48+43	RTE F	RT		3.0	45	3 @ 15' EA.
		TOTAL	452	11.0	165	
		PAY TOTAL	452	11	165	

NOTE:
SEDIMENT REMOVAL RATE: 1 CY/100 LF SILT FENCE, 1 CY/EA ALTERNATE DITCH CHECK.

PERMANENT PAVEMENT MARKING

STATION	LOCATION	SIDE	4" YELLOW STANDARD CLASS 1 PAVEMENT MARKING TYPE P BEADS (LF)	4" WHITE STANDARD CLASS 1 PAVEMENT MARKING TYPE P BEADS (LF)	REMARKS
39+25 TO 48+50	RTE F	℄	1850		DOUBLE SOLID CENTERLINE
39+25 TO 0+34	RTE F/ROAD 114	LT/RT		127	SOLID EDGE LINE (EAST AND NORTH)
0+34 TO 48+50	RTE F/ROAD 114	LT		910	SOLID EDGE LINE (EAST AND SOUTH)
39+25 TO 48+50	RTE F	RT		925	SOLID EDGE LINE (WEST)
0+34 TO 0+78	ROAD 114	℄	88		DOUBLE SOLID CENTERLINE
		PAY TOTAL	1938	1962	

QUANTITIES
SHEET 2 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 05/20/2026
ROUTE: F | STATE: MO
DISTRICT: SW | SHEET NO.: 3
COUNTY: GREENE
JOB NO.: JSR0083
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)

VEENSTRA & KIMM INC.
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WARNING SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)
WO1-4L	48X48	16.00						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						MERGE (RIGHT)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00						UNEVEN LANES
WO8-12	48X48	16.00						NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
WO12-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00						ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00						DETOUR AHEAD
WO20-3	48X48	16.00	2	32.00			20	ROAD CLOSED AHEAD
WO20-4	48X48	16.00	2	32.00			20A	ROAD CLOSED 500 FT
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00						FLAGGER (SYMBOL)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK / SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
GO22-1	21X15	2.19						WET PAINT (ARROW PIVOTS)

GUIDE SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
GO20-1	60X24	10.00						ROAD WORK NEXT 2 MILES
GO20-2	48X24	8.00						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						WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00	2	6.00			52	END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT)
MO4-9R	48X36	12.00						DETOUR (RIGHT)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)
MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)

REGULATORY SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00						SPEED LIMIT 55/65
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	2	20.00			29	ROAD CLOSED
R11-3a	60X30	12.50	1	12.50			55A	ROAD CLOSED 1 MILE AHEAD
R11-3a	60X30	12.50	1	12.50			55B	LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	2	25.00			55	ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)

MISCELLANEOUS SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
CONST-5	96X48	32.00	2	64.00			58A	POINT OF PRESENCE
CONST-5	60X8	3.33	2	6.66			58B	POINT OF PRESENCE
SPECIAL	60X36	15.00	9	135.00			50A	DETOUR BLANK SIGN
SPECIAL	60X36	15.00	3	45.00			50B	DETOUR BLANK SIGN
SPECIAL	60X36	15.00	3	45.00			50C	DETOUR BLANK SIGN
SPECIAL	606X36	15.00	2	30.00			50D	DETOUR BLANK SIGN
SPECIAL	60X36	15.00	3	45.00			50E	DETOUR BLANK SIGN
SPECIAL	96X48	32.00	2	64.00			56A	'F' CLOSED 2 MILES AHEAD
SPECIAL	96X48	32.00	1	32.00			56B	'F' CLOSED 9 MILES AHEAD
SPECIAL	96X48	32.00	1	32.00			56C	'F' CLOSED 6 MILES AHEAD

616-10.05 CONSTRUCTION SIGNS	TOTAL
	639

616-10.10 RELOCATED SIGNS	TOTAL
	0

EFFECTIVE: 07-01-2025

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)
6122040		WORK ZONE CRASH CUSHION (NARROW)
6122041		WORK ZONE CRASH CUSHION (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161020		CHANNELIZER (DRUM-LIKE)
6161022		CHANNELIZER (CONE)
6161025		CHANNELIZER (TRIM-LINE)
6161026		CHANNELIZER (VERTICAL PANEL)
6161030	10	TYPE 3 MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040		FLASHING ARROW PANEL
6161047		TYPE 3 OBJECT MARKER
6161055	20	SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A		CHANGEABLE MESSAGE SIGN WITHOUT COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6161099	4	CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173700B		TEMP. TRAFFIC BARRIER ANCHORED, CONTRACTOR FURNISHED/RETAINED
6173706		TEMP. TRAFFIC BARRIER STIFFNESS TRANSITION CONTRACTOR FURNISHED/RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION CONTRACTOR FURNISHED/RETAINED
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6175011B		RELOCATING TEMP. TRAFFIC BARRIER ANCHORED
6175013		RELOCATING TEMP. TRAFFIC BARRIER STIFFNESS
6175020A		RELOCATING TEMP. TRAFFIC BARRIER HEIGHT
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

QUANTITIES
SHEET 3 OF 3

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

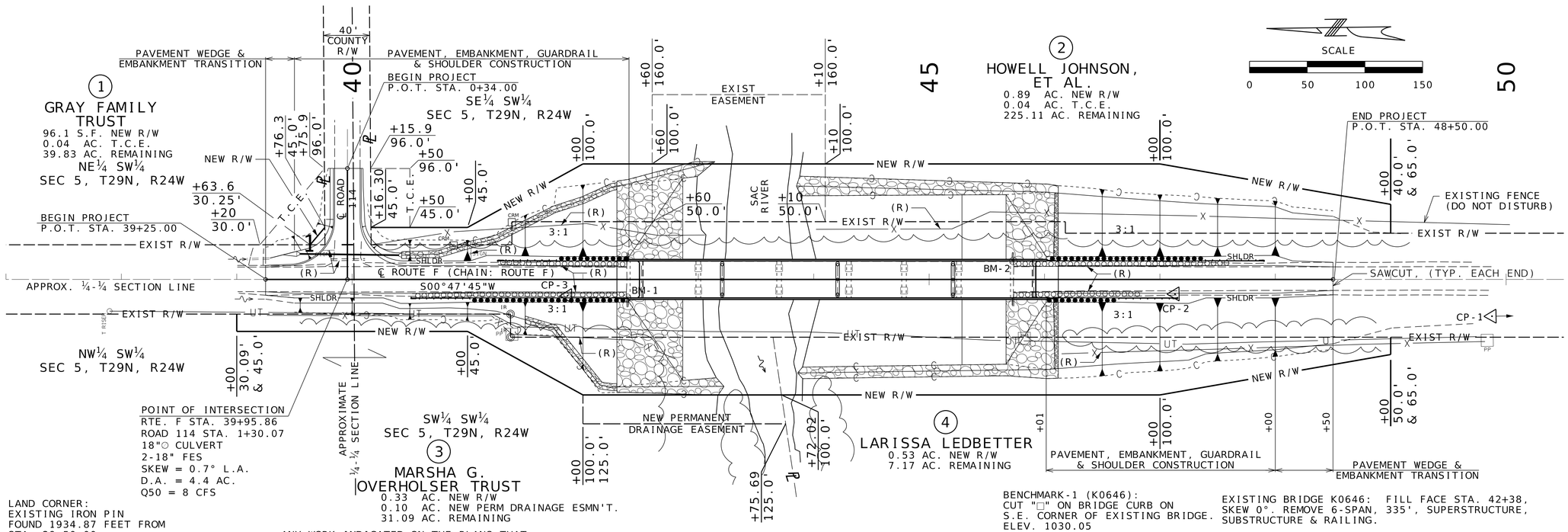
DATE PREPARED 05/20/2026

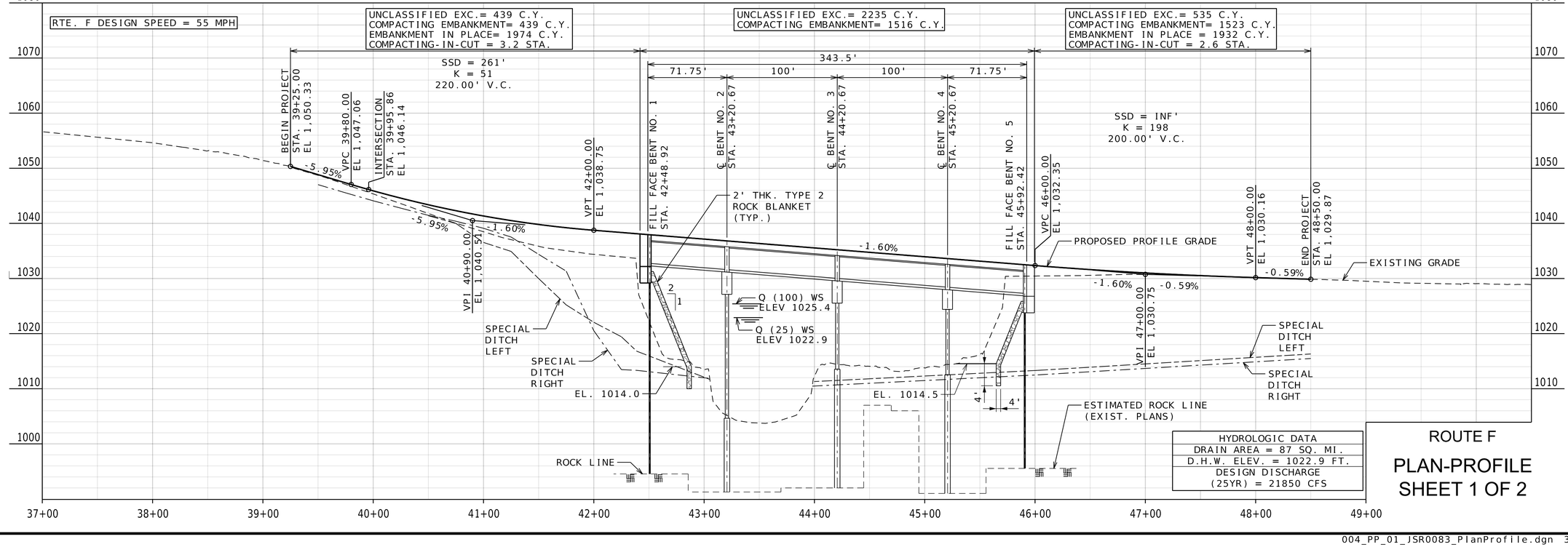
ROUTE F | STATE MO
DISTRICT SW | SHEET NO. 3
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

Taliaferro & Browne, Inc.
Civil / Structural Engineering,
Landscape Architecture & Surveying
1020 E. 8th STREET
KANSAS CITY, MISSOURI 64106
PHONE 816.421.4566 FAX 816.421.4610
PROFESSIONAL ENGINEERING CORPORATION
MISSOURI LICENSE NO. 000466 KANSAS LICENSE NO. E-1481
PROFESSIONAL LAND SURVEYING CORPORATION
MISSOURI LICENSE NO. 000004





ROUTE F

PLAN-PROFILE
SHEET 1 OF 2

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

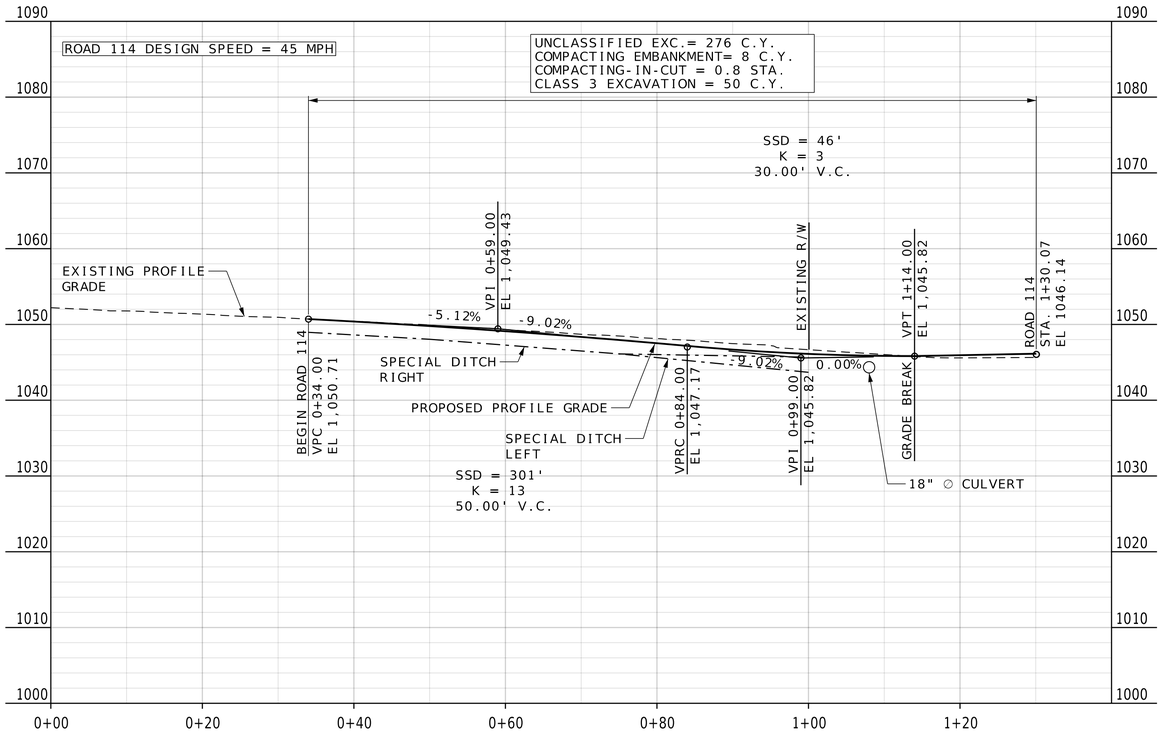
DATE PREPARED: 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	4

COUNTY: GREENE
JOB NO.: JSR0083
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)
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



NOTES:

- EXISTING R/W MARKERS SHALL NOT BE DISTURBED.
- FOR CHANNEL GRADING & ROCK BLANKET, SEE SPECIAL SHEETS.
- ROADWAY SOIL BORINGS WERE NOT TAKEN FOR PROJECT.
- ALL BEARINGS BASED ON MODIFIED STATE PLANE COORDINATES, CENTRAL ZONE.

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.

THE APPROXIMATE LOCATION OF PROPERTY LINES AS SHOWN ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE.

UTILITY CONTACTS

ELECTRIC:	TELEPHONE:
OZARK ELECTRIC CO-OP	AT&T
ALEX WITMER	JOHN PENNER
P.O. BOX 420	600 E. ST. LOUIS ST
10943 HWY 39	SPRINGFIELD, MO 65806
MT. VERNON, MISSOURI 65712	417-353-8877
417-466-8380	JP1392@ATT.COM
AWITMER@OZARKELECTRIC.COM	

ROAD 114

PLAN-PROFILE
SHEET 2 OF 2

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	5

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

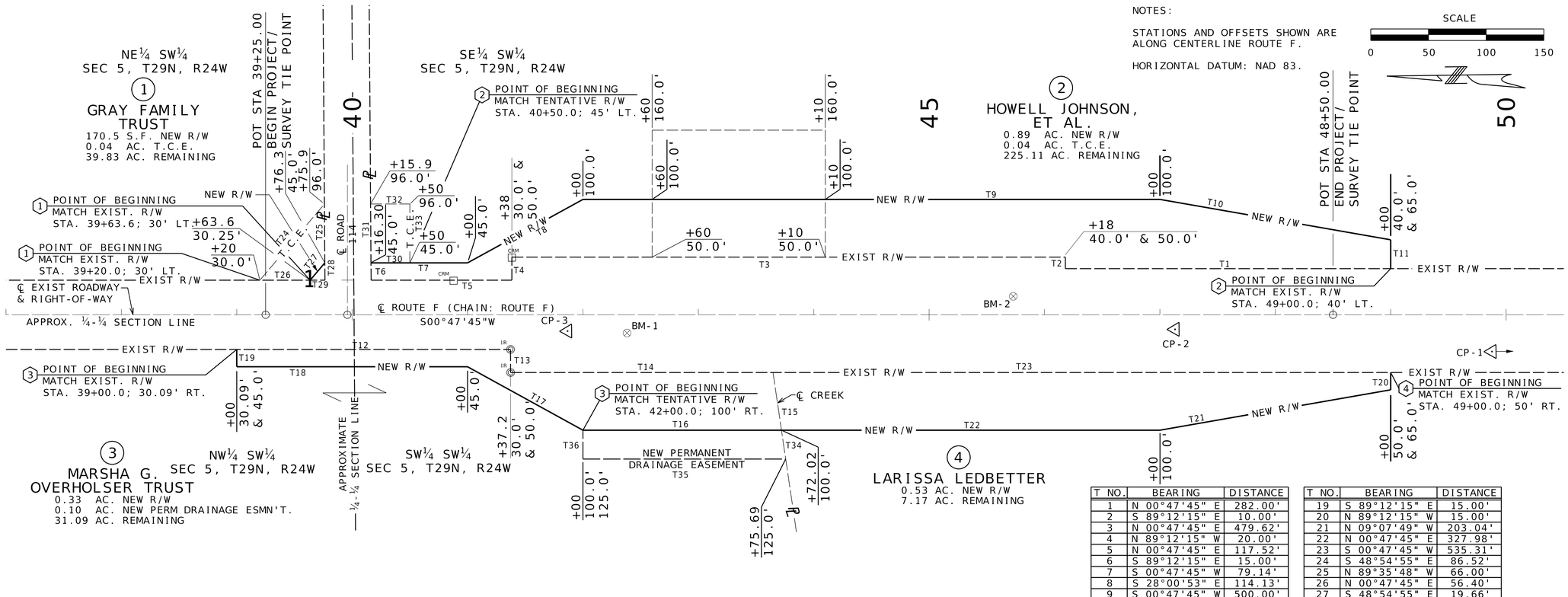
BRIDGE NO.

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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T NO.	BEARING	DISTANCE
1	N 00°47'45" E	282.00'
2	S 89°12'15" E	10.00'
3	N 00°47'45" E	479.62'
4	N 89°12'15" W	20.00'
5	N 00°47'45" E	117.52'
6	S 89°12'15" E	15.00'
7	S 00°47'45" W	79.14'
8	S 28°00'53" E	114.13'
9	S 00°47'45" W	500.00'
10	S 10°43'20" W	203.04'
11	N 89°12'15" W	25.00'
12	S 00°47'45" W	237.22'
13	N 89°22'45" W	20.00'
14	S 00°47'45" W	227.41'
15	S 82°26'58" W	50.54'
16	N 00°47'45" E	172.02'
17	N 29°36'24" E	114.13'
18	N 00°47'45" E	200.00'

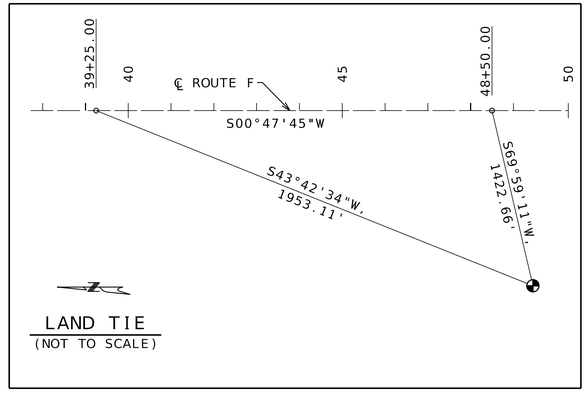
T NO.	BEARING	DISTANCE
19	S 89°12'15" E	15.00'
20	N 89°12'15" W	15.00'
21	N 09°07'49" W	203.04'
22	N 00°47'45" E	327.98'
23	S 00°47'45" W	535.31'
24	S 48°54'55" E	86.52'
25	N 89°35'48" W	66.00'
26	N 00°47'45" E	56.40'
27	S 48°54'55" E	19.66'
28	N 89°35'48" W	15.00'
29	N 00°47'45" E	12.82'
30	N 00°47'45" E	33.70'
31	S 89°35'48" E	51.00'
32	S 00°47'45" W	34.05'
33	N 89°12'15" W	51.00'
34	S 82°26'58" W	25.28'
35	N 00°47'45" E	175.69'
36	S 89°12'15" E	25.00'

PARCEL	DESCRIPTION - POINT OF BEGINNING FOR NEW R/W PARCELS AND EASEMENTS	COORDINATES (GROUND)
1 R/W	LOCATION: A PARCEL LOCATED IN THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 45 DEGREES 07 MINUTES 48 SECONDS EAST, A DISTANCE OF 1945.87 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 30.00 FEET OFFSET LEFT AND PERPINDICULAR TO STA. 39+63.58 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 516,674.762 E 1,325,620.918
1 TCE	LOCATION: A PARCEL LOCATED IN THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 44 DEGREES 14 MINUTES 51 SECONDS EAST, A DISTANCE OF 1977.28 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 30.00 FEET OFFSET LEFT AND PERPINDICULAR TO STA. 39+20.00 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 516,718.341 E 1,325,621.523
2 TCE	LOCATION: A PARCEL LOCATED IN THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 47 DEGREES 16 MINUTES 48 SECONDS EAST, A DISTANCE OF 1895.88 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 45.00 FEET OFFSET LEFT AND PERPINDICULAR TO STA. 40+50.00 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 516,588.145 E 1,325,634.716
2 R/W	LOCATION: A PARCEL LOCATED IN THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 72 DEGREES 24 MINUTES 22 SECONDS EAST, A DISTANCE OF 1443.58 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 40.00 FEET OFFSET LEFT AND PERPINDICULAR TO STA. 49+00.00 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 515,738.297 E 1,325,617.909
3 R/W	LOCATION: A PARCEL LOCATED IN THE NORTHWEST AND SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 42 DEGREES 33 MINUTES 52 SECONDS EAST, A DISTANCE OF 1951.38 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 30.00 FEET OFFSET RIGHT AND PERPINDICULAR TO STA. 39+00.00 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 516,739.173 E 1,325,561.807
3 PDE	LOCATION: A PARCEL LOCATED IN THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 47 DEGREES 35 MINUTES 00 SECONDS EAST, A DISTANCE OF 1687.47 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 100.00 FEET OFFSET RIGHT AND PERPINDICULAR TO STA. 42+00.00 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 516,440.174 E 1,325,487.646
4 R/W	LOCATION: A PARCEL LOCATED IN THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST, GREENE COUNTY, MISSOURI. COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29 NORTH, RANGE 24 WEST; THENCE, NORTH 71 DEGREES 12 MINUTES 31 SECONDS EAST, A DISTANCE OF 1358.47 FEET TO THE POINT OF BEGINNING. SAID POINT BEING LOCATED 50.00 FEET OFFSET RIGHT AND PERPINDICULAR TO STA. 49+00.00 OF THE CENTERLINE OF MISSOURI HIGHWAY F. PARCEL IS HEREINAFTER SHOWN AND DESCRIBED.	N 515,739.547 E 1,325,527.917

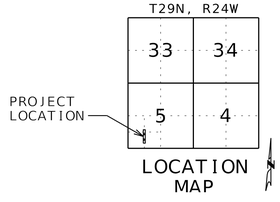
DESCRIPTION - CENTERLINE OF MISSOURI STATE ROUTE F:

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 5, TOWNSHIP 29N, RANGE 24W, SAID POINT BEING AN ALUMINUM CAP RECORDED AS CERTIFIED CORNER DOCUMENT # 600-71899 IN THE GREENE COUNTY, MISSOURI, RECORDER'S OFFICE; THENCE NORTH 43 DEGREES 42 MINUTES 34 SECONDS EAST, A DISTANCE OF 1953.11 FEET TO A POINT ON TANGENT BEING LOCATED AT STA. 39+25.00 ON THE CENTERLINE OF MISSOURI HIGHWAY F. SAID POINT BEING THE POINT OF BEGINNING.

THENCE, SOUTH 00 DEGREES 47 MINUTES 45 SECONDS WEST, ALONG SAID HIGHWAY CENTERLINE, A DISTANCE OF 925.00 FEET TO A POINT ON TANGENT BEING LOCATED AT STA. 48+50.00 ON THE CENTERLINE OF MISSOURI HIGHWAY F. SAID POINT BEING THE END OF PROJECT.



LAND TIE
(NOT TO SCALE)



LOCATION MAP

RIGHT OF WAY
SHEET 1 OF 1

SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

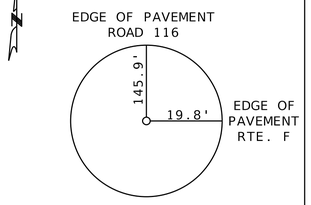
DATE PREPARED: 05/20/2026
ROUTE: F
STATE: MO
DISTRICT: SW
SHEET NO.: 6
COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

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

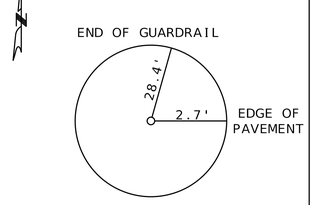
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

ELEV. 1042.99



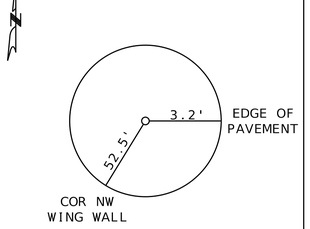
CONTROL POINT - 1
REBAR WITH CAP

ELEV. 1030.15



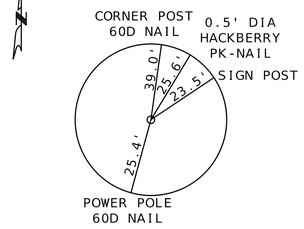
CONTROL POINT - 2
REBAR WITH CAP

ELEV. 1033.50



CONTROL POINT - 3
REBAR WITH CAP

ELEV. 1127.90



LAND CORNER
DOCUMENT #600-71899

REFERENCE POINTS
SHEET 1 OF 1

SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	7

COUNTY: GREENE
JOB NO.: JSR0083
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)

VEENSTRA & KIMM INC.
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THIS PROJECT IS BASED ON MISSOURI STATE PLANE COORDINATES (SPC) SYSTEM OF 1983 HAVING A PROJECT PROJECTION FACTOR AS SHOWN IN THE "PROJECT COORDINATE INFORMATION" PORTION OF THIS TABLE.

PROJECT COORDINATE INFORMATION

COORDINATE SYSTEM	STATE PLANE
HORIZONTAL DATUM	NAD83 (2011) EPOCH 2010
VERTICAL DATUM	NAVD88
GEOID MODEL	GEOID12B
ELEVATIONS DETERMINED BY	GNSS
PROJECT PROJECTION FACTOR	1.00000

REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	STATE PLANE
CONTROL STATION	
DESIGNATION	MODOT SPRINGFIELD CORS ARP
CORS_ID	MOSF
PID	DL5388
LATITUDE	37°14'30.33454"
LONGITUDE	093°13'47.54333"
NORTHING (M)	156,530.873
EASTING (M)	435,242.882
ZONE	2402 (MO-CENTRAL)
PROJECT AVERAGE GRID FACTOR	0.99992269

LINEAR UNIT CONVERSION

1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING

SHEET NO	STATION	LOCATION	OFFSET (US FT)	STATE PLANE COORDINATES NORTHING (US SURVEY FT)	EASTING (US SURVEY FT)	ELEVATION (US SURVEY FT)	DESCRIPTION	POINT ID
PROJECT CONTROL POINTS								
4,10	55+12.16	℄ ROUTE F	38.7 RT	515,127.29	1,325,530.67	1042.99	REBAR WITH CAP	1
4,10	47+13.05	℄ ROUTE F	12.6 RT	515,925.96	1,325,567.92	1030.15	REBAR WITH CAP	2
4,9	41+86.68	℄ ROUTE F	14.1 RT	516,452.30	1,325,573.69	1033.50	REBAR WITH CAP	3
-				515,301.95	1,324,241.86	1127.90	SW CORNER SEC 5 T29N R24W DOCUMENT #600-71899	
ALIGNMENTS								
4,9	39+25.00	℄ ROUTE F	0	516,713.76	1,325,591.46		BEGIN PROJECT - ROUTE F	
4,9	39+95.86	℄ ROUTE F	0	516,642.90	1,325,590.47		POINT OF INTERSECTION	
4,9	0+34.00	℄ ROAD 114	0	516,641.57	1,325,686.54		BEGIN PROJECT - ROAD 114	
4,10	48+50.00	℄ ROUTE F	0	515,788.85	1,325,578.61		END PROJECT - ROUTE F	
4,9	42+48.92	℄ ROUTE F	0	516,389.87	1,325,586.96		FILL FACE - BRIDGE #A9077	
4,10	45+92.42	℄ ROUTE F	0	516,046.41	1,325,582.19		FILL FACE - BRIDGE #A9077	

COORDINATE POINTS
SHEET 1 OF 1

SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 05/20/2026

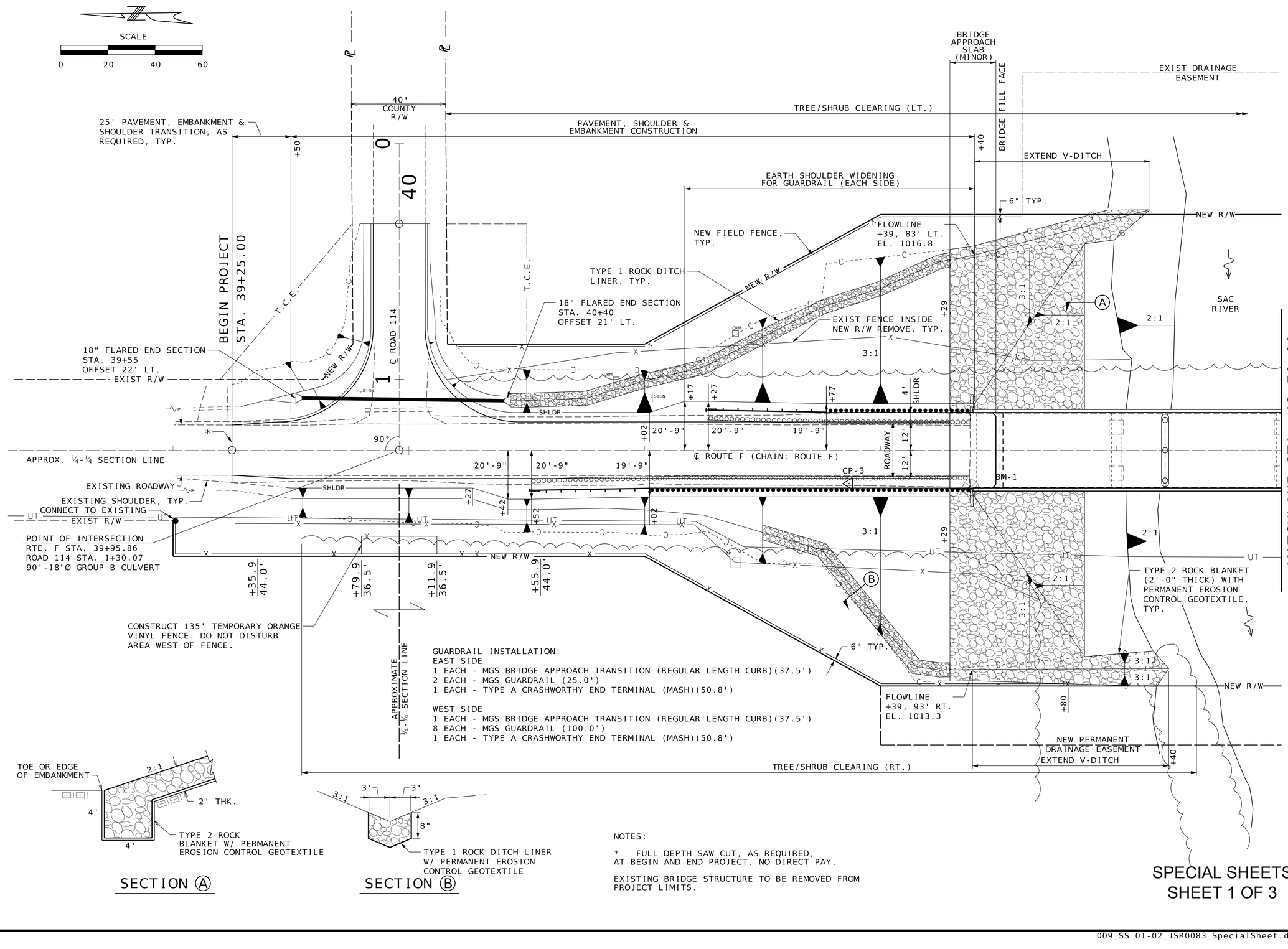
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	8

COUNTY: GREENE
JOB NO.: JSR0083
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)

VEENSTRA & KIMM INC.
A Kleinfelder Company
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816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	9

COUNTY
GREENE

JOB NO.
JSR0083

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)

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SCALE

0 20 40 60

EXIST DRAINAGE EASEMENT

TREE/SHRUB CLEARING (LT.)

BRIDGE APPROACH SLAB (MINOR)

EXTEND V-DITCH

PAVEMENT, SHOULDER & EMBANKMENT CONSTRUCTION

50' PAVEMENT, EMBANKMENT & SHOULDER TRANSITION, AS REQUIRED, TYP.

EARTH SHOULDER WIDENING FOR GUARDRAIL (EACH SIDE)

45

BRIDGE FILL FACE

+89 +10 +01 +00

END FENCE

6" TYP.

NEW R/W

TYPE 2 ROCK BLANKET (2'-0" THICK) WITH PERMANENT EROSION CONTROL GEOTEXTILE, TYP.

END PROJECT STA. 48+50.00

NEW FIELD FENCE, TYP.

3:1

3:1

2:1

EXIST FENCE INSIDE NEW R/W REMOVE, TYP.

~ LEVEL BERM ~

+28

FLOWLINE +02, 76' LT. EL. 1013.3

BUILD 4' DRAIN FLUME AT END TYPE A CURB

CONNECT TO EXISTING

+12

SHLDR VARIES

+40 +90 +00 +15

SHLDR

BM-2

19'-9" 19'-9" 19'-9" 19'-9" 20'-9" 20'-9" 20'-9"

ROADWAY 12' 12' 16'

℄ ROUTE F (CHAIN: ROUTE

MATCHLINE STA. 43+70.00

+65 +15 +25 +40

CP-2

SHLDR

4' SHLDR

EXISTING ROADWAY

EXISTING SHOULDER, TYP.

CP-1

~ LEVEL BERM ~

Ⓐ

BUILD DRAIN FLUME AT END TYPE A CURB

UT

TYPE 2 ROCK BLANKET (2'-0" THICK) WITH PERMANENT EROSION CONTROL GEOTEXTILE, TYP.

CONNECT TO EXIST FENCE, TYP.

NEW R/W

FLOWLINE +02, 78' RT. EL. 1012.5

6" TYP.

END FENCE

+90 +15

EXTEND V-DITCH

TREE/SHRUB CLEARING (RT.)

TOE OR EDGE OF EMBANKMENT

2:1

2' THK.

4'

4'

TYPE 2 ROCK BLANKET W/ PERMANENT EROSION CONTROL GEOTEXTILE

SECTION Ⓐ

GUARDRAIL INSTALLATION:
EAST SIDE
1 EACH - MGS BRIDGE APPROACH TRANSITION (REGULAR LENGTH CURB)(37.5')
8 EACH - MGS GUARDRAIL (100.0')
1 EACH - TYPE A CRASHWORTHY END TERMINAL (MASH)(50.8')

WEST SIDE
1 EACH - MGS BRIDGE APPROACH TRANSITION (REGULAR LENGTH CURB)(37.5')
2 EACH - MGS GUARDRAIL (25.0')
1 EACH - TYPE A CRASHWORTHY END TERMINAL (MASH)(50.8')

NOTES:

* FULL DEPTH SAW CUT, AS REQUIRED, AT BEGIN AND END PROJECT. NO DIRECT PAY.

EXISTING BRIDGE STRUCTURE TO BE REMOVED FROM PROJECT LIMITS.

SPECIAL SHEETS
SHEET 2 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	10

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

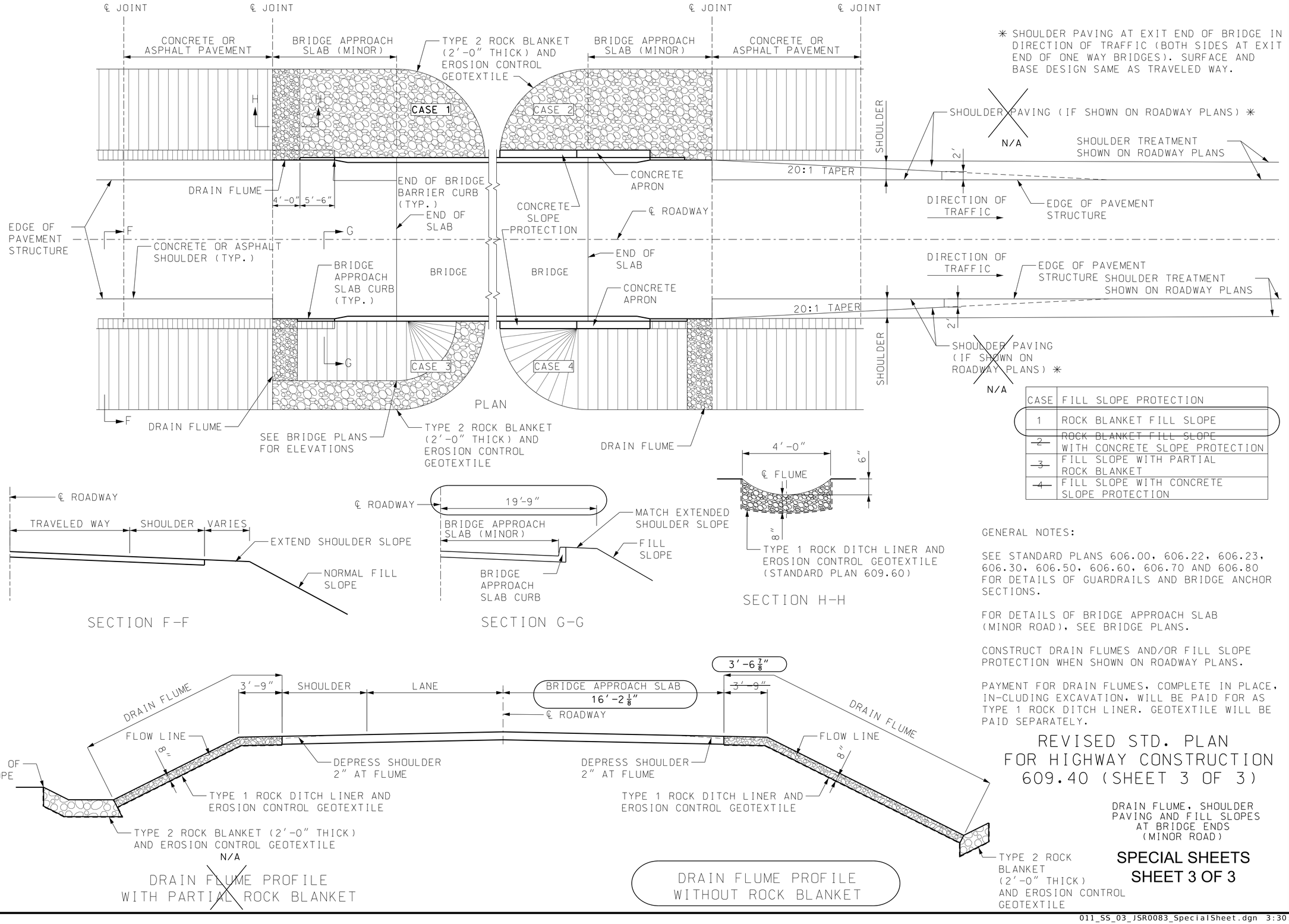
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

VEENSTRA & KIMM INC.
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Certificate of Authority No. 2002006347

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CASE	FILL SLOPE PROTECTION
1	ROCK BLANKET FILL SLOPE
~~2~~	~~ROCK BLANKET FILL SLOPE~~ WITH CONCRETE SLOPE PROTECTION
~~3~~	FILL SLOPE WITH PARTIAL ROCK BLANKET
~~4~~	FILL SLOPE WITH CONCRETE SLOPE PROTECTION

GENERAL NOTES:

SEE STANDARD PLANS 606.00, 606.22, 606.23, 606.30, 606.50, 606.60, 606.70 AND 606.80 FOR DETAILS OF GUARDRAILS AND BRIDGE ANCHOR SECTIONS.

FOR DETAILS OF BRIDGE APPROACH SLAB (MINOR ROAD), SEE BRIDGE PLANS.

CONSTRUCT DRAIN FLUMES AND/OR FILL SLOPE PROTECTION WHEN SHOWN ON ROADWAY PLANS.

PAYMENT FOR DRAIN FLUMES, COMPLETE IN PLACE, IN-CLUDING EXCAVATION, WILL BE PAID FOR AS TYPE 1 ROCK DITCH LINER. GEOTEXTILE WILL BE PAID SEPARATELY.

REVISED STD. PLAN FOR HIGHWAY CONSTRUCTION 609.40 (SHEET 3 OF 3)

DRAIN FLUME, SHOULDER PAVING AND FILL SLOPES AT BRIDGE ENDS (MINOR ROAD)

SPECIAL SHEETS SHEET 3 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	11

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

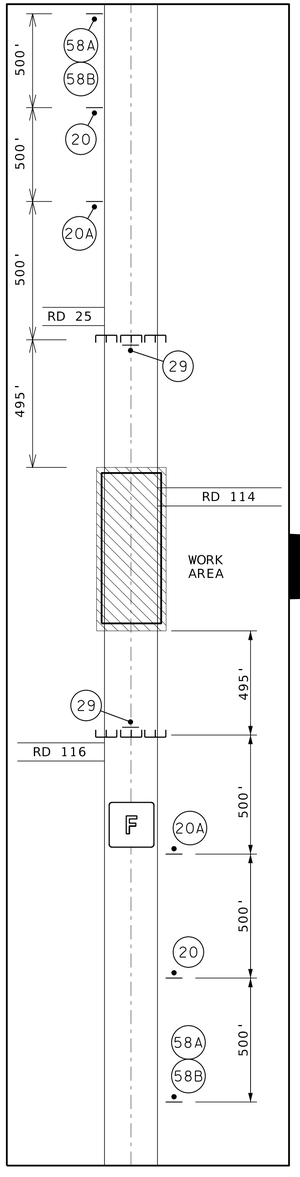
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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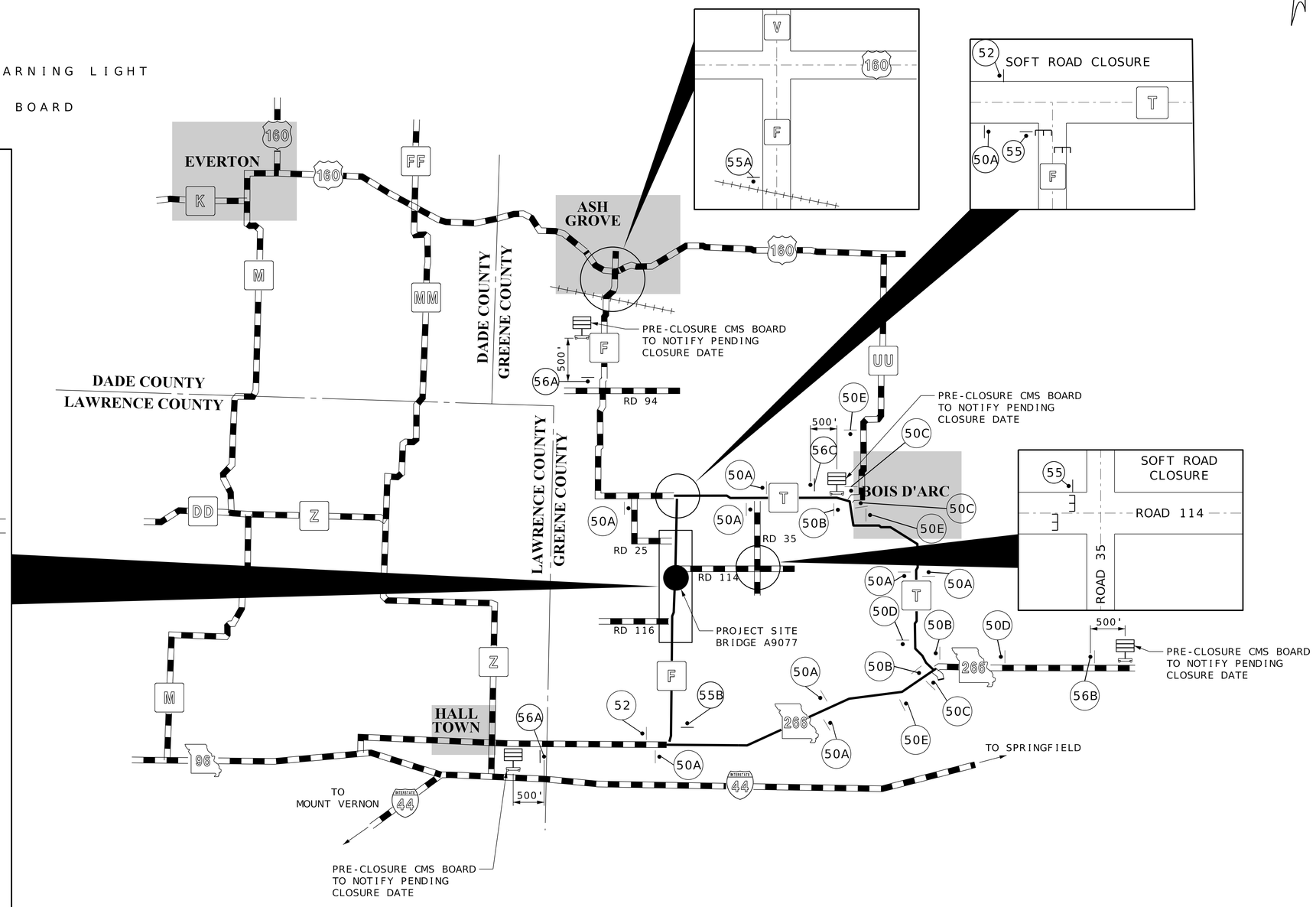
TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- EXISTING SIGN (SINGLE SIDED)
- BARRICADE
- WORK ZONE
- SEQUENTIAL FLASH WARNING LIGHT
- CHANGEABLE MESSAGE BOARD

NOTES:

FOR DETAIL OF SOFT ROAD CLOSURE, SEE TRAFFIC CONTROL SHEET 2 OF 3.





NOT TO SCALE. FOLLOW DIMENSIONS.

TRAFFIC CONTROL
SHEET 1 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	12

COUNTY
GREENE

JOB NO.
JSR0083

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)

Taliaferro & Browne, Inc.
Civil / Structural Engineering,
Landscape Architecture & Surveying
1020 E. 8th STREET
KANSAS CITY, MISSOURI 64106
PHONE: 816-842-1566 FAX: 816-842-1570
PROFESSIONAL ENGINEERING CORPORATION
MISSOURI LICENSE NO. 000486 KANSAS LICENSE NO. E-1481
PROFESSIONAL LAND SURVEYING CORPORATION
MISSOURI LICENSE NO. 000094

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- EXISTING SIGN (SINGLE SIDED)
- BARRICADE
- WORK ZONE
- SEQUENTIAL FLASH WARNING LIGHT
- CHANGEABLE MESSAGE BOARD

RECOMMENDED ADVANCE WARNING SIGN MINIMUM SPACING			
SPEED LIMIT (MPH)	SIGN SPACING 'S' (FT)		BUFFER LENGTH (FT) (B)
	UNDIVIDED HIGHWAY	DIVIDED HIGHWAY	
0-35	200	200	250
40-45	350	500	360
50-55	500	1000	495
60-70	1000	SA-1000 SB-1500 SC-2640	730

1. SPEED LIMIT IS BASED ON POSTED SPEED LIMIT.
2. SIGN SPACING MAY BE ADJUSTED, NORMALLY INCREASING IT, TO ACCOMODATE FIELD CONDITIONS AND VISIBILITY.
3. FOR URBAN LOW SPEED, MINIMUM RECOMMENDED SPACING IN MUTCD IS 100 FT.

NOTES:

ANY EXISTING WARNING OR REGULATORY SIGNS (NOT SHOWN) THAT INTERFERE WITH THE TRAFFIC CONTROL SIGNING SHALL BE REMOVED OR COMPLETELY COVERED.

ALL TRAFFIC CONTROL SIGNS ARE TO BE NON-PORTABLE UNLESS NOTED OTHERWISE.

SEE STANDARD PLANS 616.10, 903.01 AND 903.03 FOR ADDITIONAL DETAILS REGARDING TRAFFIC CONTROL OR HIGHWAY SIGNING.

TEMPORARY TRAFFIC CONTROL SIGN AND DEVICE LOCATIONS MAY BE ADJUSTED UPON APPROVAL OF THE ENGINEER.

ANY RELOCATION OF SIGNS AND DEVICES FOR TRAFFIC CONTROL DEVICES OR SIGNS SHALL BE CONSIDERED INCIDENTAL. NO DIRECT PAY.

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ENTRANCES AT ALL TIMES. CONTRACTOR SHALL COORDINATE ACCESS TO FIELD ENTRANCES WITH PROPERTY OWNERS.

TWO (2) - WARNING LIGHTS SHALL BE INSTALLED ON THE MOVEABLE BARRICADES UNLESS NOTED OTHERWISE.



WO20-3

(20)



WO20-3

(20A)



MO4-8a

(52)



R11-4

(55)



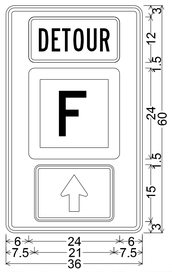
R11-3a

(55A)



R11-3a

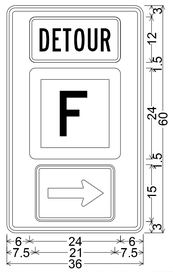
(55B)



MO4-12 SHF-FLAT SHEET FLUORESCENT; 2.250" Radius, 0.875" Border, 0.625" Indent; Black on Orange; Table of letter and object lefts

DETOUR 6.000
F 6.000
7.500

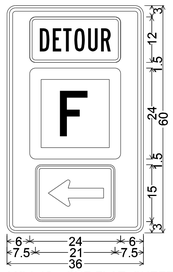
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MO4-12 SHF-FLAT SHEET FLUORESCENT; 2.250" Radius, 0.875" Border, 0.625" Indent; Black on Orange; Table of letter and object lefts

DETOUR 6.000
F 6.000
7.500

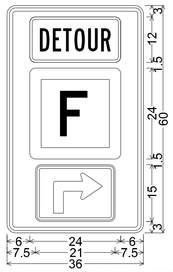
(50B)



MO4-12 SHF-FLAT SHEET FLUORESCENT; 2.250" Radius, 0.875" Border, 0.625" Indent; Black on Orange; Table of letter and object lefts

DETOUR 6.000
F 6.000
7.500

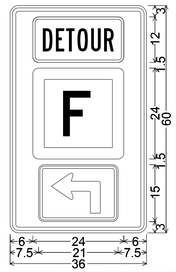
(50C)



MO4-12 SHF-FLAT SHEET FLUORESCENT; 2.250" Radius, 0.875" Border, 0.625" Indent; Black on Orange; Table of letter and object lefts

DETOUR 6.000
F 6.000
7.500

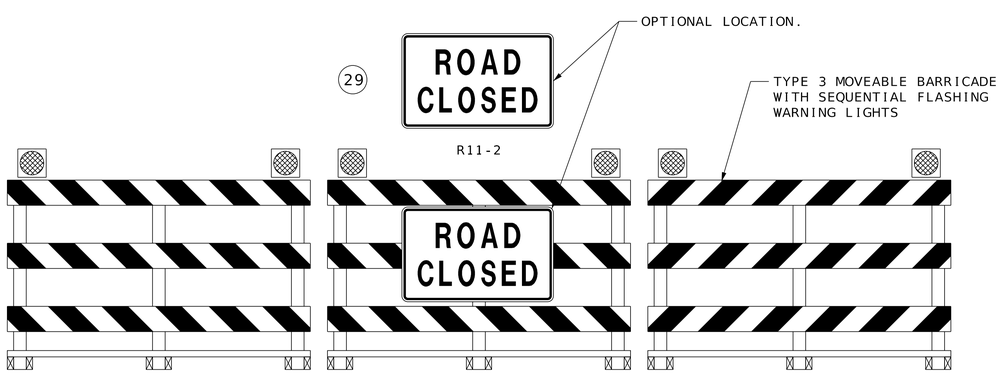
(50D)



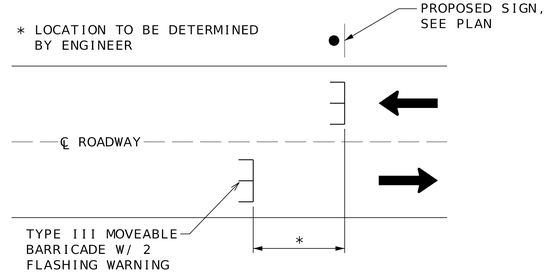
MO4-12 SHF-FLAT SHEET FLUORESCENT; 2.250" Radius, 0.875" Border, 0.625" Indent; Black on Orange; Table of letter and object lefts

DETOUR 6.000
F 6.000
7.500

(50E)



3 BARRRICADE DETAIL AT PROJECT SITE



SOFT ROAD CLOSURE DETAIL

TRAFFIC CONTROL
SHEET 2 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	13

COUNTY: GREENE

JOB NO.: JSR0083

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)

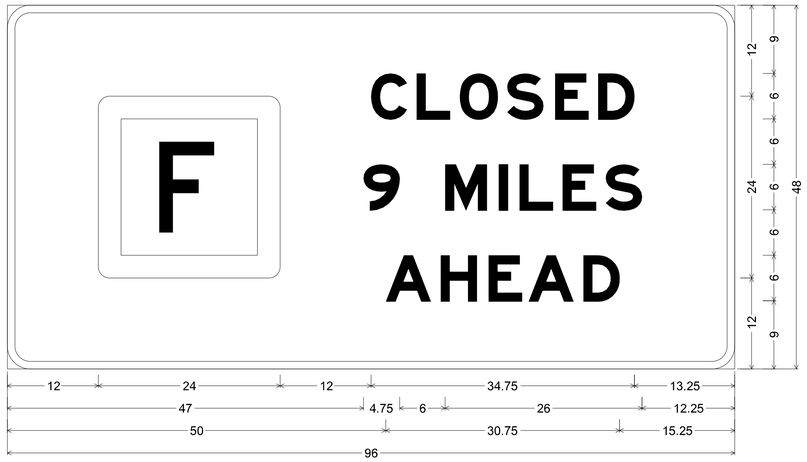
Taliaferro & Browne, Inc.
Civil / Structural Engineering,
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1020 E. 8th STREET
KANSAS CITY, MISSOURI 64106
PH (816) 421-4566 FAX (816) 421-2641
PROFESSIONAL ENGINEERING CORPORATION
MISSOURI LICENSE NO 000466 KANSAS LICENSE NO. E-1481
PROFESSIONAL LAND SURVEYING CORPORATION
MISSOURI LICENSE NO 000094



MO4-13 SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.000" Border, Black on, Orange;
"CLOSED", E Mod; "2 MILES", E Mod; "AHEAD", E Mod;
Table of letter and object lefts

F 12.000	C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000
2 47.000	M 57.750	I 64.875	L 67.625	E 73.250	S 79.000	
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

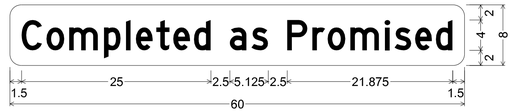
56A



MO4-13 SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.000" Border, Black on, Orange;
"CLOSED", E Mod; "9 MILES", E Mod; "AHEAD", E Mod;
Table of letter and object lefts

F 12.000	C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000
9 47.000	M 57.750	I 64.875	L 67.625	E 73.250	S 79.000	
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

56B



CONST-5P-60 SHF-FLAT SHEET FLUORESCENT;
1.500" Radius, No border, Yellow;
"Completed as Promised" Black, D 65% spacing;
Table of letter and object lefts

C 1.500	o 4.875	m 7.875	p 12.375	l 15.375	e 16.625	t 19.375	e 21.500	d 24.250	a 29.000	s 31.875
P 36.625	r 39.875	o 41.875	m 44.875	i 49.500	s 50.750	e 53.500	d 56.250			

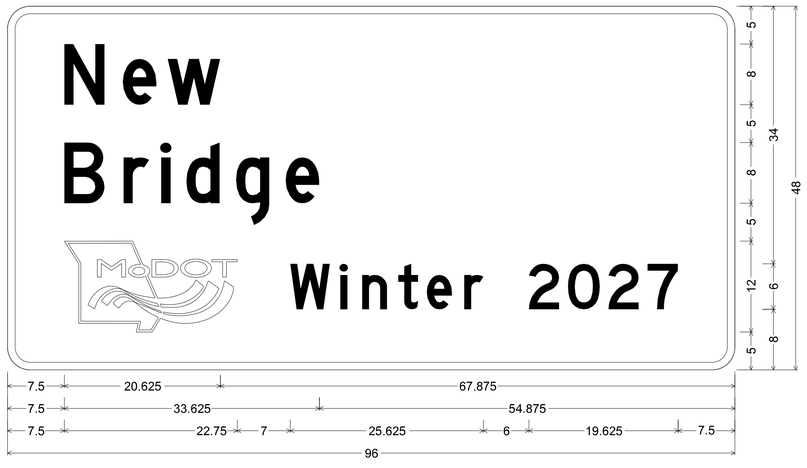
58B



MO4-13 SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.000" Border, Black on, Orange;
"CLOSED", E Mod; "6 MILES", E Mod; "AHEAD", E Mod;
Table of letter and object lefts

F 12.000	C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000
6 47.000	M 57.750	I 64.875	L 67.625	E 73.250	S 79.000	
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

56C



CONST-5-96 SH-FLAT SHEET;
3.000" Radius, 1.000" Border, White on Blue;
[New] D; [Bridge] D; [Winter 2027] D;
Table of letter and object lefts.

N 7.500	e 15.250	w 21.125												
B 7.500	r 15.250	i 20.250	d 23.625	g 30.125	e 36.750									
7.500	W 37.250	i 43.875	n 46.750	t 51.625	e 55.375	r 60.250	2 68.875	0 74.000	2 79.375	7 84.500				

58A

TRAFFIC CONTROL
SHEET 3 OF 3

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	14

COUNTY
GREENE

JOB NO.
JSR0083

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)

Taliaferro & Browne, Inc.
Civil / Structural Engineering,
Landscape Architecture & Surveying
1020 E. 8th STREET
KANSAS CITY, MISSOURI 64106
PH. (816) 842-4464 FAX (816) 842-0410
PROFESSIONAL ENGINEERING CORPORATION
MISSOURI LICENSE NO. 000466 KANSAS LICENSE NO. E-1481
PROFESSIONAL LAND SURVEYING CORPORATION
MISSOURI LICENSE NO. 000644

SCALE

0 50 100 150

TEMPORARY EROSION CONTROL LEGEND

A — ALTERNATE DITCH CHECK (9" EFF HEIGHT, L = 15')

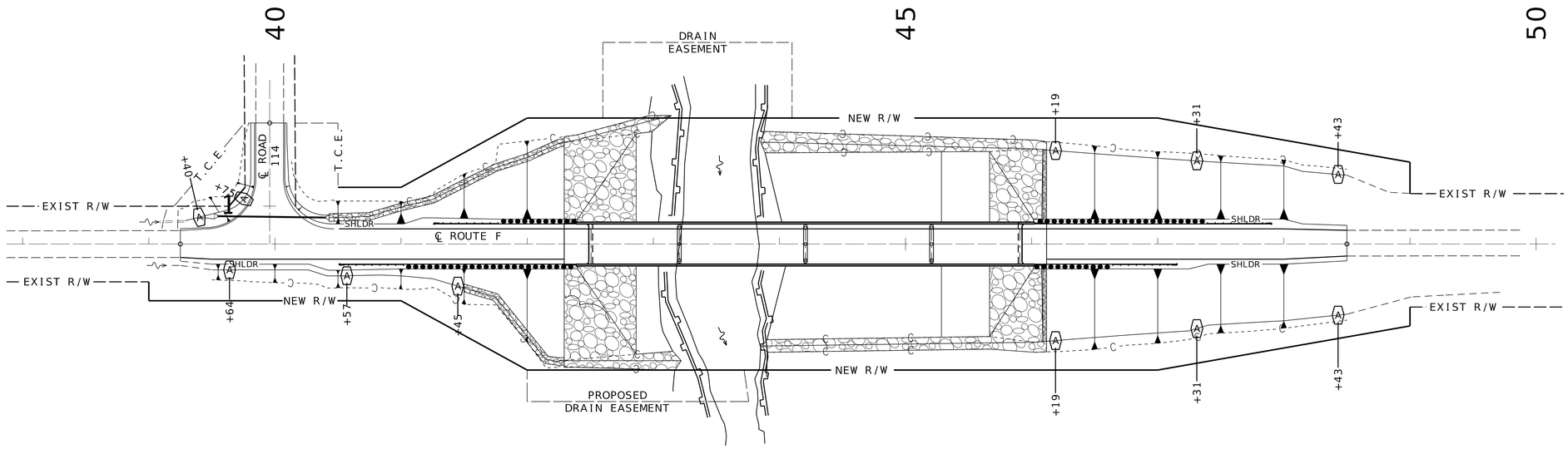
TYPE C BERM

NOTES:

ROCK DITCH LINER, DRAIN FLUMES, ROCK BLANKET AND ROCK LINING INSTALLATIONS SHALL ALL BE PERMANENT. FOR DETAILS, SEE SPECIAL SHEET NO. 3.

ALL DISTURBED AREAS SHALL BE RESTORED TO PRE-CONSTRUCTION OR BETTER. DISTURBED AREAS SHALL BE SEEDED AND MULCHED PER JOB SPECIAL PROVISIONS.

AS REQUIRED, CONTRACTOR SHALL INSTALL DITCH CHECKS AND SILT FENCE IN AREAS WHERE ROCK BLANKET IS NOT INSTALLED IMMEDIATELY AFTER EMBANKMENT CONSTRUCTION. NO DIRECT PAY.



EROSION CONTROL
SHEET 1 OF 1

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	15

COUNTY: GREENE

JOB NO.: JSR0083

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)

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PHONE (816) 531-4456 FAX (816) 842-6010
PROFESSIONAL ENGINEERING CORPORATION
MISSOURI LICENSE NO. 000466 KANSAS LICENSE NO. E-1481
PROFESSIONAL LAND SURVEYING CORPORATION
MISSOURI LICENSE NO. A000094

SIGNING LEGEND

SCALE

0 50 100 150

EXISTING SIGN (SINGLE SIDED)

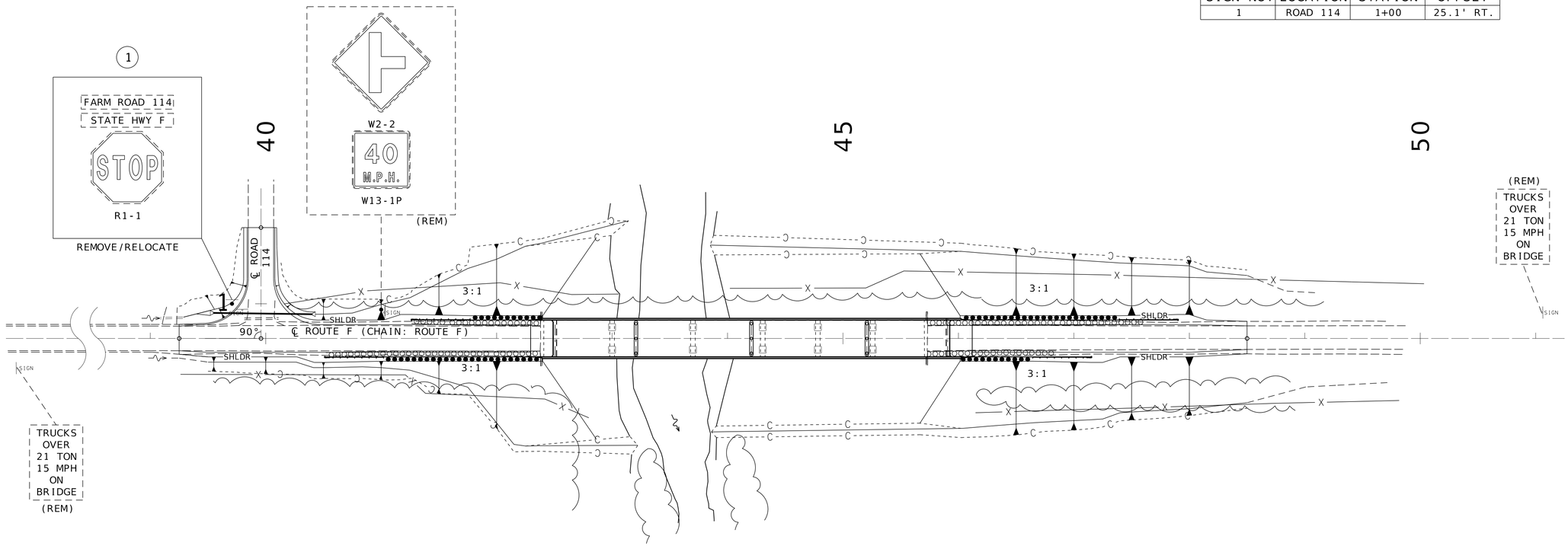
PROPOSED SIGN (SINGLE SIDED)

(REM) - "REMOVE"
(UIP) - "USE IN PLACE"

NOTES:

ALL EXISTING SIGNS AND POSTS SHALL BE REMOVED AND DELIVERED TO THE MODOT MAINTENANCE LOCATION PER JOB SPECIAL PROVISIONS.

SIGN LOCATIONS			
SIGN NO.	LOCATION	STATION	OFFSET
1	ROAD 114	1+00	25.1' RT.



SIGNING
SHEET 1 OF 3

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	16

COUNTY: GREENE

JOB NO.: JSR0083

CONTRACT ID.:

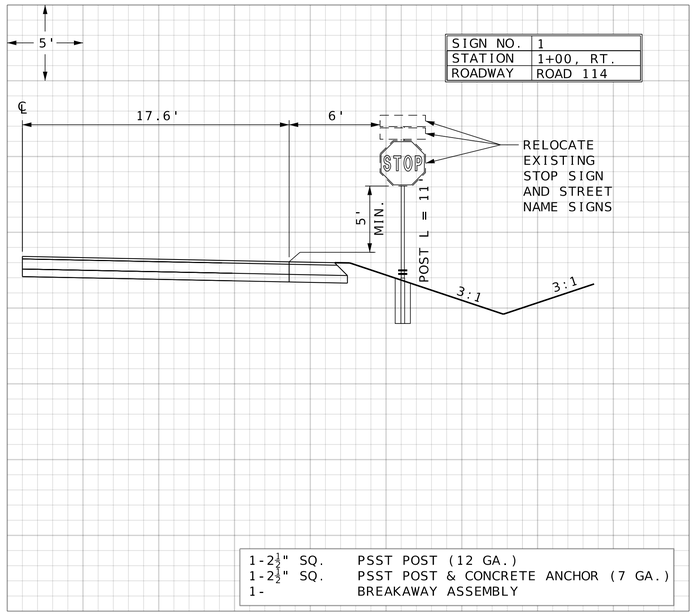
PROJECT NO.:

BRIDGE NO.:

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue
816-781-6182
Kansas City, Missouri 64157
816-781-0643 (FAX)
Certificate of Authority No. 2002006347



SIGN NO.	1
STATION	1+00, RT.
ROADWAY	ROAD 114

1-2½" SQ.	PSST POST (12 GA.)
1-2½" SQ.	PSST POST & CONCRETE ANCHOR (7 GA.)
1-	BREAKAWAY ASSEMBLY

SIGNING
SHEET 2 OF 3

D-31

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	17

COUNTY
GREENE

JOB NO.
JSR0083

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)

VEENSTRA & KIMM INC.
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816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A)					CONCRETE FOOTINGS EMBEDDED	I-BEAM POSTS*						PIPE POSTS*						4" SQUARE STEEL POST*		PERFORATED SQUARE STEEL TUBE**										U-CHANNEL POST	ALUMINUM BACKING BARS			COLUMN MOUNTING C-CHANNEL	EFFECTIVE: 07-01-2026
																				2" POST					2.5" POST				BREAK-AWAY					REMARKS AND OTHER REQUIRED ITEMS
																				POST			ANCHORS		POST			ANCHORS					
SIGN NO.	SIGN SIZE	STATION/ LOG MILE	LOCATION	SIGN DTL SHT NO.	(I-BEAM/PIPE) ITEM NO. 9031010	POST + STUB				LBS PER	TOTAL ITEM NO. 9031210	POST + STUB			LBS PER	TOTAL ITEM NO. 9031220	BASE ITEM NO. 9031005	POST ITEM NO. 9031230	NO. 1	NO. 2	TOTAL ITEM NO. 9031270A	DRIVEN ITEM NO. 9031273A	CONCRETE ITEM NO. 9031274	NO. 1	NO. 2	TOTAL ITEM NO. 9031280	DRIVEN ITEM NO. 9031281A	CONCRETE ITEM NO. 9031285	ASSEMBLY ITEM NO. 9031241	U-CHANNEL POST ITEM NO. 9031250A	COUNT	LENGTH	TOTAL ITEM NO. 9035030	C-CHANNEL ITEM NO. 9035031	
					CY	DES NO.	NO. 1 LF	NO. 2 LF	NO. 3 LF	FT	LBS	SIZE IN.	NO. 1 LF	NO. 2 LF	FT	LBS	EACH	LF	LF	LF	LF	EACH	EACH	LF	LF	LF	LF	EACH	EACH	EACH	LF	EACH	IN.	LF	LF	
1	ASMBLY	1+00	ROAD 114																						11		11		1	1					
SUBTOTAL																									11		11		1	1					
TOTAL																									11		11		1	1					

*BREAKAWAY ASSEMBLY IS INCIDENTAL FOR I-BEAM, PIPE AND 4" SQUARE STEEL POSTS.

**FOR PSST WITHOUT BREAKAWAY DEVICES, POST LENGTH SHALL INCLUDE AN ADDITIONAL 6" FOR INSERTION INTO ANCHOR; FOR SURFACED MOUNTED PSST ON ISLANDS, NO ANCHOR IS USED, JUST A SURFACE MOUNT BREAKAWAY ASSEMBLY.

I-BEAM POST AND FOOTING DATA TABLE

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

PIPE POST AND FOOTING DATA TABLE

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

SIGNING
SHEET 3 OF 3

D-29

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/20/2026

ROUTE F | STATE MO

DISTRICT SW | SHEET NO. 18

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

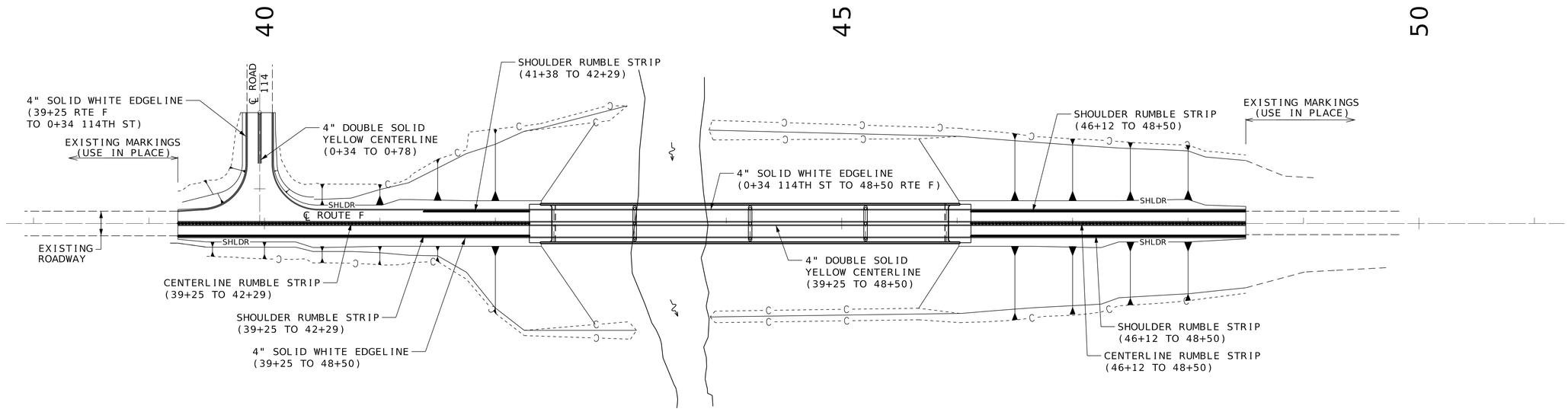
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue 816-781-6182
Kansas City, Missouri 64157 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

018_SN_03_JSR0083_Signing.dgn 11:19:11 AM 8/13/2026

SCALE

0 50 100 150



NOTES:

PAVEMENT MARKING MATERIAL SHALL BE CLASS 1 PAVEMENT MARKING PAINT (18 MIL.) WITH TYPE P BEADS.

SEE STANDARD PLAN 620.00 FOR PAVEMENT MARKING GUIDELINES.

PAVEMENT MARKING
SHEET 1 OF 1

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET IT HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	19

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

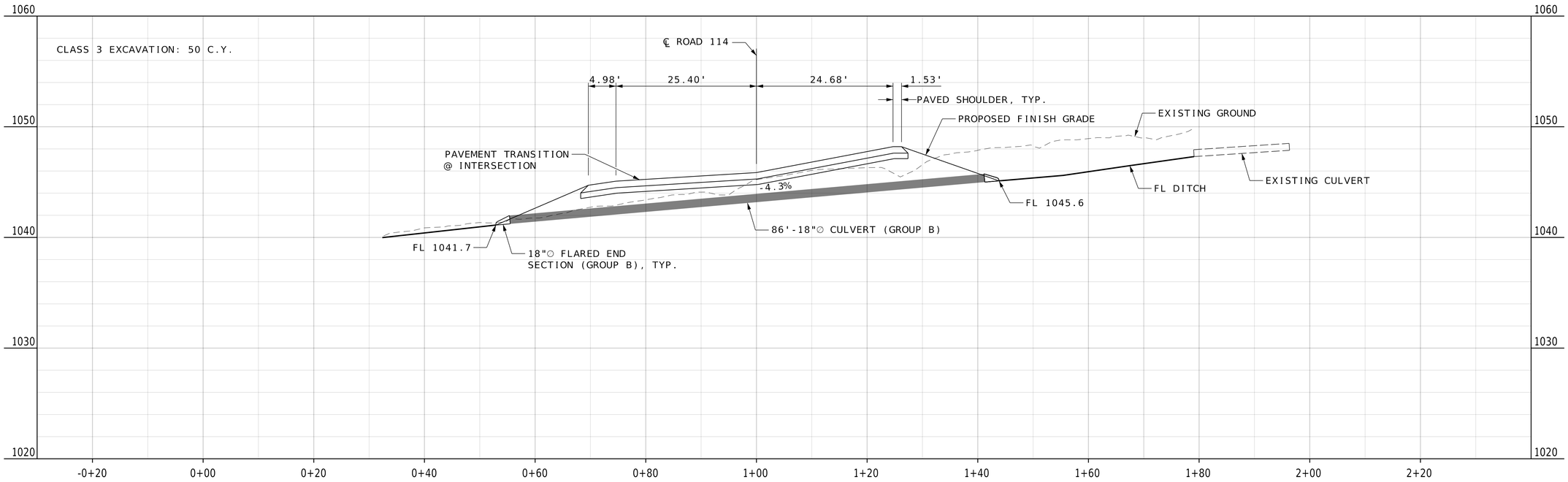
DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
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Taliaferro & Browne, Inc.
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PHONE 816-221-1545 FAX 816-221-0810
PROFESSIONAL ENGINEERING CORPORATION
MISSOURI LICENSE NO. 000466 KANSAS LICENSE NO. E-1481
PROFESSIONAL LAND SURVEYING CORPORATION
MISSOURI LICENSE NO. 000994



PROFILE - PIPE CULVERT
STA. 1+08.5 ; ROAD 114

CULVERT SECTIONS
SHEET 1 OF 1

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
05/20/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
SW	20

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

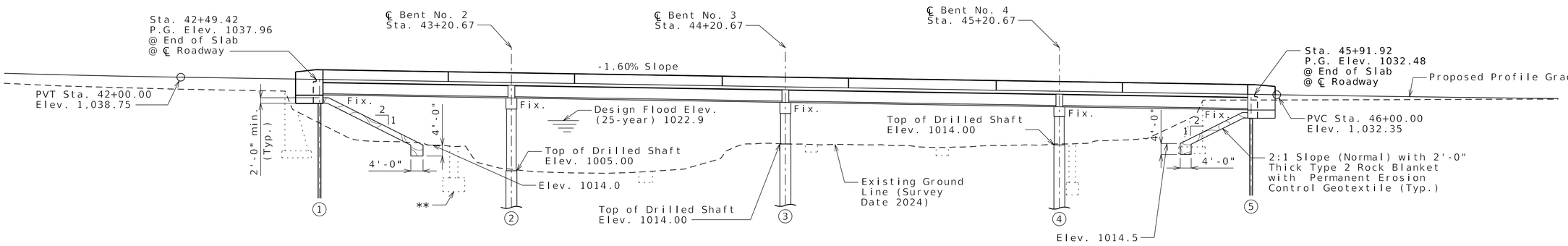
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

VEENSTRA & KIMM INC.
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9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006547

020_CS_01_JSR0083_CulvertSection.dgn 3:31:07 PM 7/17/2026

SEC/SUR 5 TWP 29N RGE 24W

(70'-100'-100'-70') PRESTRESSED CONCRETE NU-GIRDER SPANS



GENERAL ELEVATION

● Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of relevant subsurface borings for this structure are shown on the plan sheet for this structure. The boring data for all locations indicated are shown on Sheets No. 40 thru 54 and may be included in the Electronic Bridge Deliverables. Additional subsurface borings were drilled at the site for an alternate structure location, but are not included on the general plan for clarity. All boring log data or other factual records of subsurface data and investigations performed by the department for the design of the project will be availableThey will from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

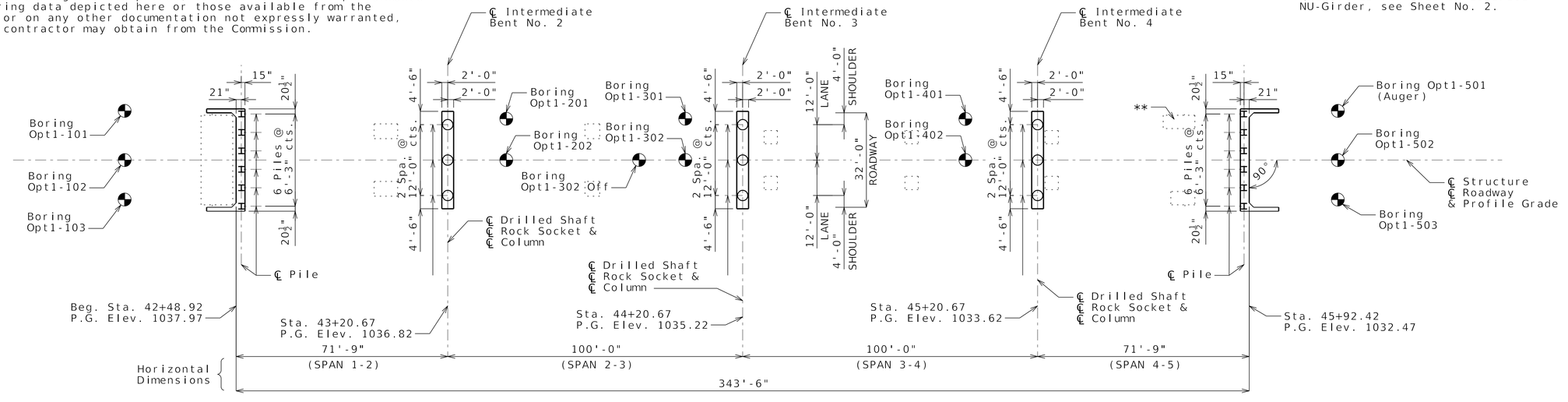
The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those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

Notes:

** Existing Bridge No. K0646 to be removed per Standard Specifications.

Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.

For General Notes, Location Sketch, Hydrologic Data, Foundation Data, Estimated Quantities and Estimated Quantities for Slab on Concrete NU-Girder, see Sheet No. 2.



PLAN

BM-1
Cut "□" ON BRIDGE CURB ON S.E. CORNER OF EXISTING BRIDGE
ELEV. 1030.05

BM-2
Cut "□" ON BRIDGE CURB ON N.W. CORNER OF EXISTING BRIDGE
ELEV. 1033.41

BRIDGE: ROUTE F OVER SAC RIVER

ROUTE F FROM ROUTE T TO ROUTE 266
ABOUT 0.8 MILE SOUTH OF ROUTE T
BEGINNING STATION 42+48.92

Designed Jul. 2025
Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	1

COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)

2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)

Seismic Design Category = B (Seismic Details)

Design earthquake response spectral acceleration coefficient at 1.0 second period, SD1 = 0.183g
Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.125

Design Loading:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf
Superstructure: Simply-Supported, Non-Composite for dead load.
Continuous Composite for live load.

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Barrier, and Prestressed Girders)	f'c = 4,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Reinforcing Steel (ASTM A706 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For prestressed girder stresses, see Sheets No. 21 thru 24.

Neoprene Pads:

Neoprene bearing pads shall be 60 durometer and shall be in accordance with Sec 716.

Joint Filler:

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

Reinforcing Steel:

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

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

Traffic Handling:

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

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	429
Reinforcing Steel (Epoxy Coated)	pound	106,790

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

DF = FHWA - Modified Gates Dynamic Pile Formula

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

Piles are to be placed in prebored holes and driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702. When pile refusal on rock occurs as approved by the engineer, the minimum nominal axial compressive resistance is verified and no additional pile driving verification method is required.

Prebore for piles at End Bents No. 1 and 5 to elevations 995.4 and 983.9 respectively

Rock Socket (Drilled Shafts):
Minimum Nominal Axial Compressive Resistance (Side Resistance + Tip Resistance)= Maximum Factured Loads/Resistance Factors.

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	50		50
Removal of Bridges (K0646)	lump sum			1
Bridge Approach Slab (Minor)	sq. yard		144	144
Drilled Shafts (4 ft. 0 in., Dia.)	linear foot	102		102
Rock Sockets (3 ft. 6 in., Dia.)	linear foot	90		90
Video Camera Inspection	each	9		9
Foundation Inspection Holes	linear foot	180		180
Sonic Logging Testing	each	9		9
Galvanized Structural Steel Piles (12 in.)	linear foot	504		504
Pre-Bore for Piling	linear foot	444		444
Pile Point Reinforcement	each	12		12
Class B Concrete (Substructure)	cu. yard	139.7		139.7
Type D Barrier	linear foot		727	727
Slab on Concrete NU-Girder	sq. yard		1319	1319
NU 53, Prestressed Concrete NU-Girder	linear foot		1356	1356
Reinforcing Steel (Bridges)	pound	58,230		58,230
Slab Drain	each		4	4
Vertical Drain at End Bents	each	2		2
Plain Neoprene Bearing Pad	each		8	8
Laminated Neoprene Bearing Pad (Tapered)	each		24	24

Notes:

All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

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

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

Cost of L4x4 ASTM A709 Grade 36 HP Pile anchors and 3/4-inch diameter ASTM F3125 Grade A325 Type 1 bolts, complete in place, will be considered completely covered by the contract unit price for Galvanized Structural Steel Piles (12 in.).

Notes:

The table of Estimated Quantities for Slab on Concrete NU-Girder 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 or conventional forms, all concrete, and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

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

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

Hydrologic Data

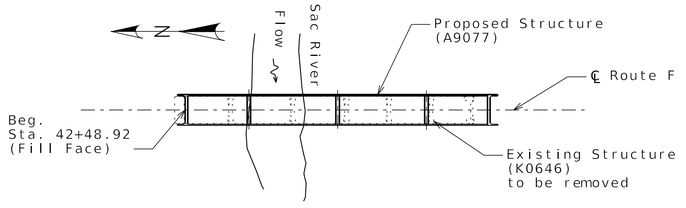
Drainage Area = 87 mi²
Design Flood Frequency = 25 years
Design Flood Discharge = 21,850 cfs
Design Flood (D.F.) Elevation = 1022.9
Base Flood (100-year)
Base Flood Elevation = 1025.4
Base Flood Discharge = 29,430 cfs
Estimated Backwater = 3.3 ft
Average Velocity thru Opening = 9.7 ft/s
Freeboard (50-year)
Freeboard = 6.1 ft
Roadway Overtopping
Overtopping Flood Discharge = N/A cfs
Overtopping Flood Frequency >500 years
500-year Flood Elevation = 1027.9

Foundation Data

Type	Design Data		Bent 1	Bent 2	Bent 3	Bent 4	Bent 5
Load Bearing Pile	Pile Type and Size		HP12x53	-	-	-	HP12x53
	Number	ea	6	-	-	-	6
	Approximate Length Per Each	ft	40	-	-	-	44
	Pile Point Reinforcement	ea	All	-	-	-	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length	-	-	-	Full Length
	Est. Max. Scour Depth (Elev.)	ft	*	-	-	-	*
	Minimum Tip Penetration (Elev.)	ft	995	-	-	-	984
	Criteria for Min. Tip Penetration		**	-	-	-	**
	Pile Driving Verification Method		DF	-	-	-	DF
	Resistance Factor		0.4	-	-	-	0.4
	Minimum Nominal Axial Compressive Resistance	kip	440	-	-	-	440
Rock Socket	Number	ea	-	3	3	3	-
	Layer 1 Foundation Material		-	STRONG ROCK	STRONG ROCK	STRONG ROCK	-
	Layer 1 Elevation Range	ft	-	997-981	1005-996	998-989	-
	Layer 1 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	24	24	24	-

* Piles are located within Type 2 Rock Blanket on spill slopes.

** Penetrate past voids and soft material to bear on sound limestone.



LOCATION SKETCH

Detailed Jun. 2025
Checked Apr. 2026

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

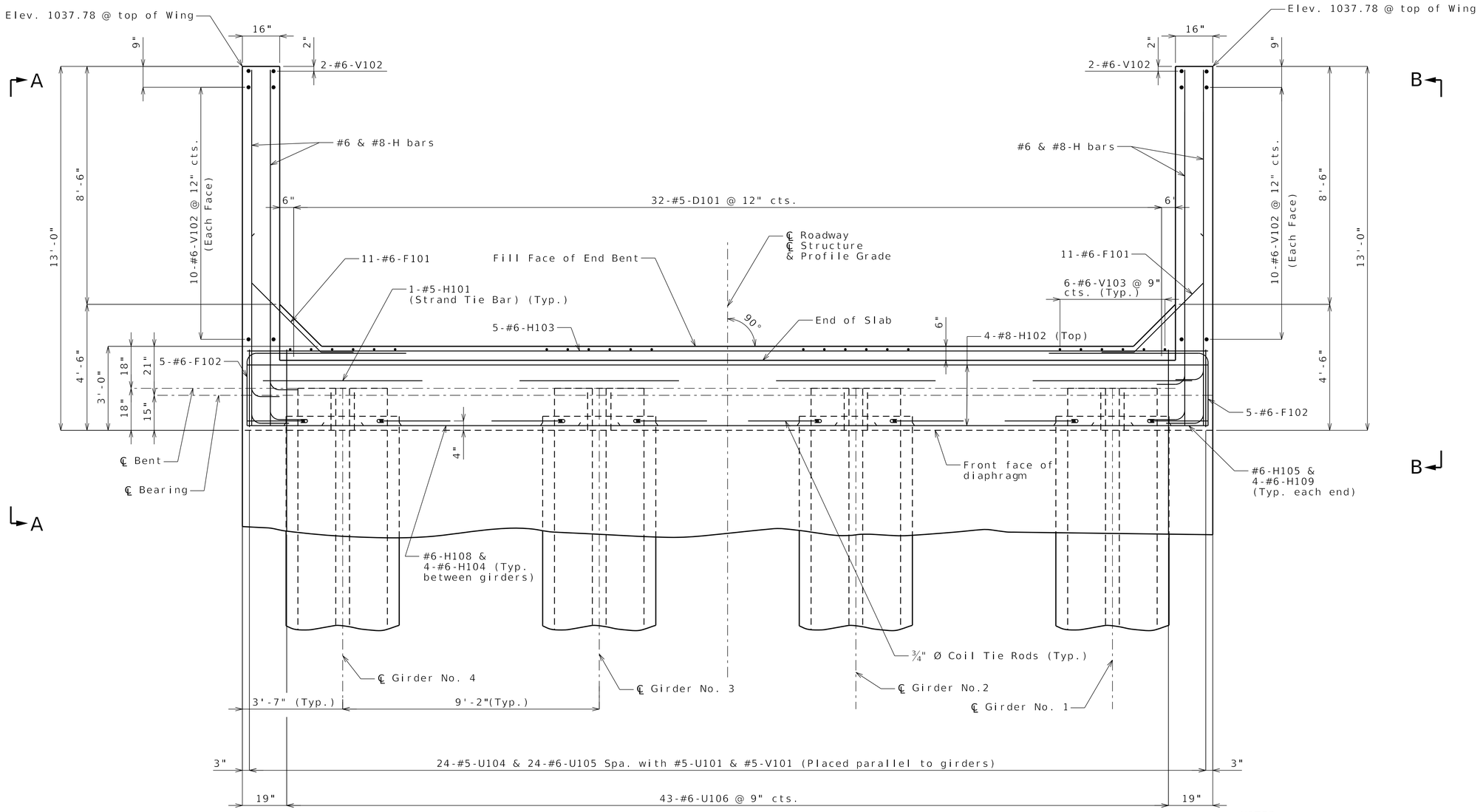
DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	2

COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



PART PLAN

Substructure Quantity Table for End Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	0
Galvanized Structural Steel Piles (12 in.)	linear foot	240
Pre-Bore for Piling	linear foot	204
Pile Point Reinforcement	each	6
Class B Concrete (Substructure)	cu. yard	15.1

These quantities are included in the Estimated Quantities table on Sheet No. 2.

NOTES:

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

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

For location of coil tie rods and #5-H101 (strand tie bar), see Sheets No. 21 thru 24.

For Elevation A-A and Elevation B-B, see Sheet No. 6.

For details of Vertical Drain at End Bent, see Sheet No. 7.

For details of Bridge Approach Slab, see Sheet No. 34.

For details of End Bent No. 1 not shown, see Sheets No. 4, 5, & 6.

DETAILS OF END BENT NO. 1

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

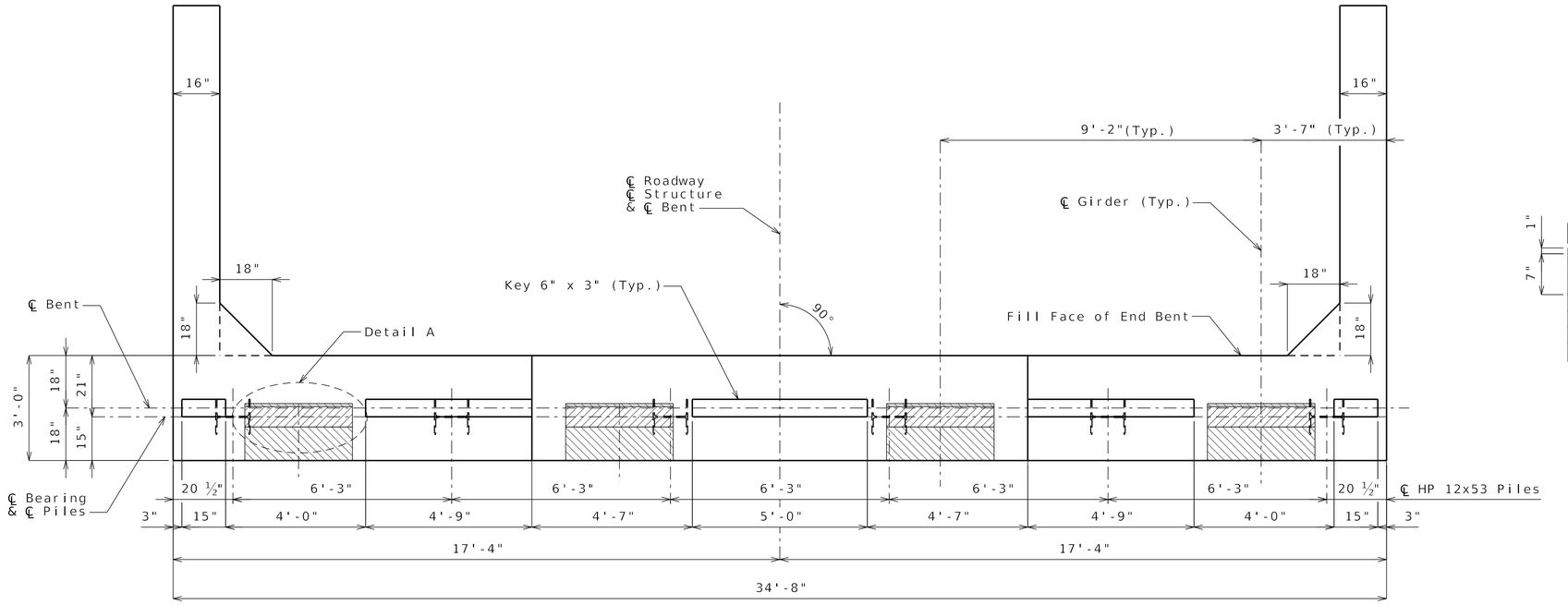
PROJECT NO.

BRIDGE NO.
A9077

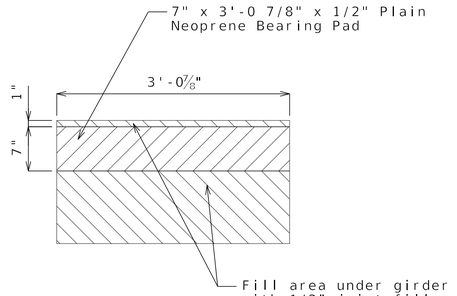
DATE	DESCRIPTION

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

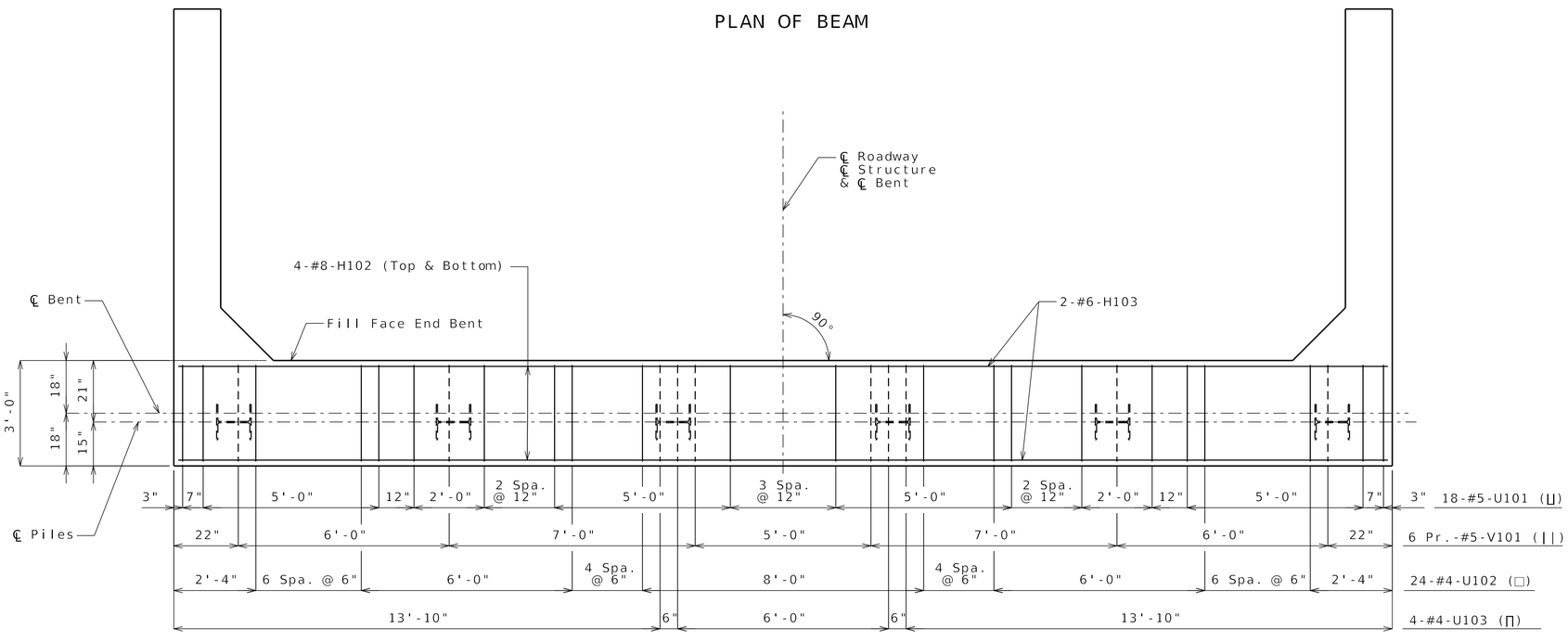
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue
816-781-6182
Kansas City, Missouri 64157
816-781-0643 (FAX)
Certificate of Authority No. 2002006347



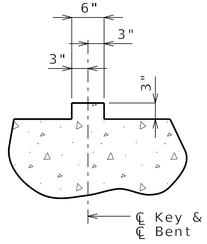
PLAN OF BEAM



DETAIL A



PLAN OF BEAM SHOWING REINFORCEMENT



SECTION THRU KEY

NOTES:

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

For details of End Bent No. 1 not shown, see Sheets No. 3, 5 & 6.

DETAILS OF END BENT NO. 1

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

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DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	4

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

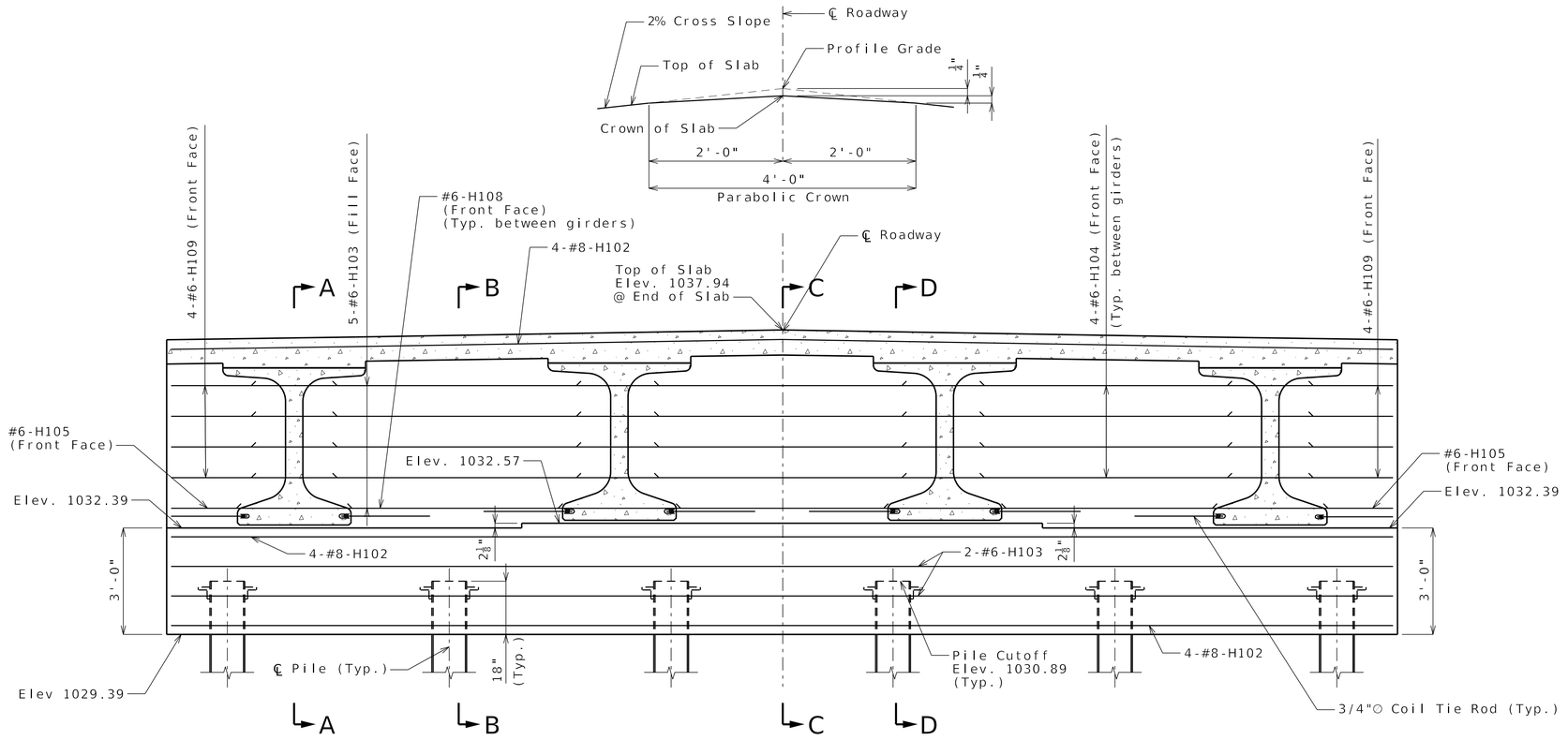
PROJECT NO.

BRIDGE NO. A9077

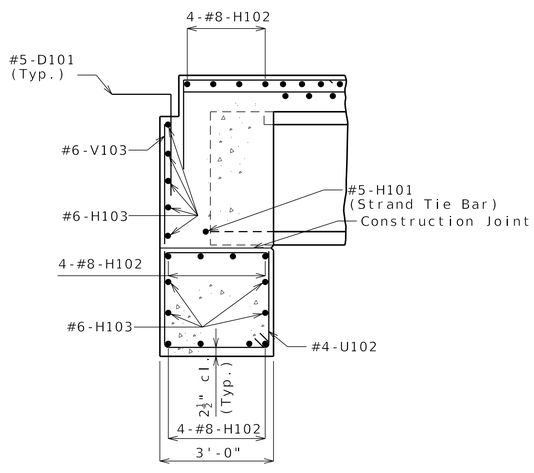
DESCRIPTION	DATE

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

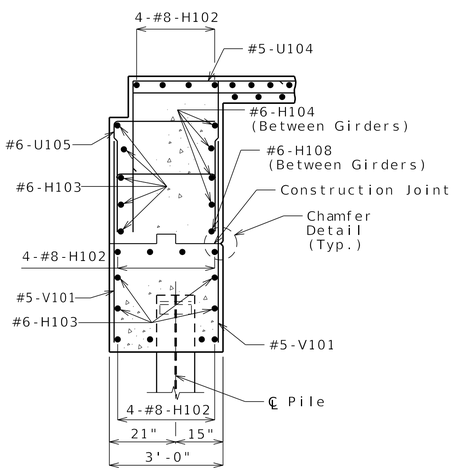
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
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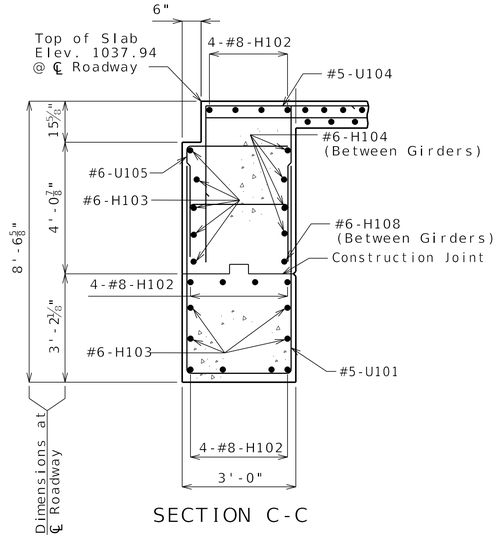
SECTION NEAR END BENT



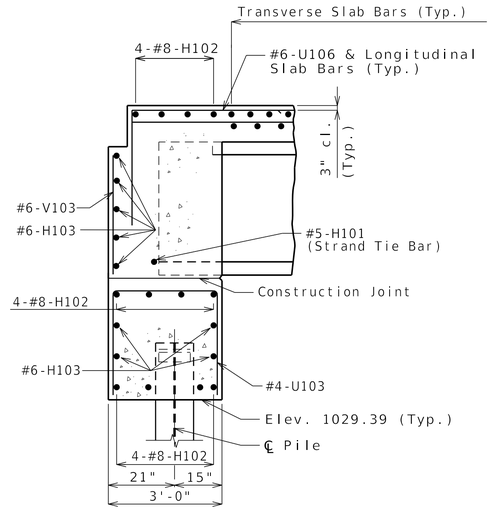
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

DETAILS OF END BENT NO. 1

NOTES:

For details of End Bent No. 1 not shown, see Sheets No. 3, 4, & 6.

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

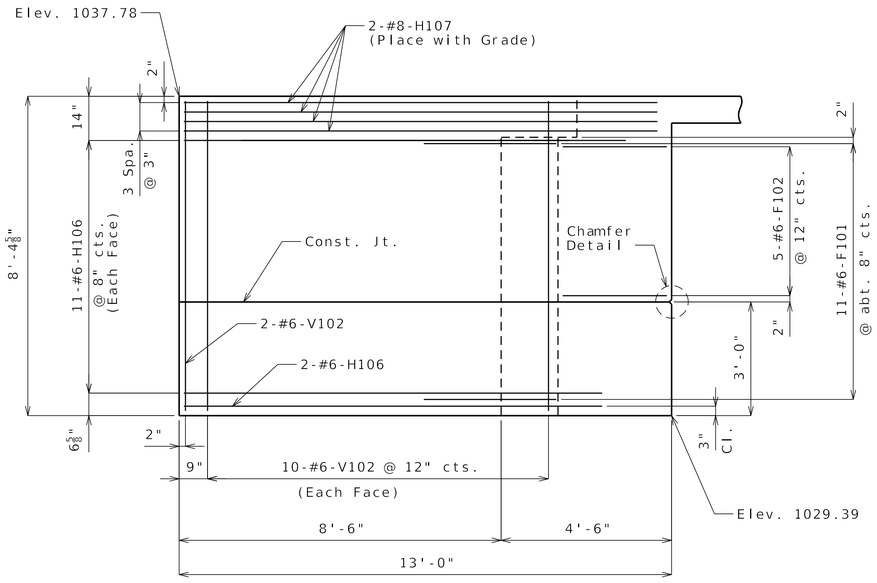
BRIDGE NO.
A9077

DESCRIPTION

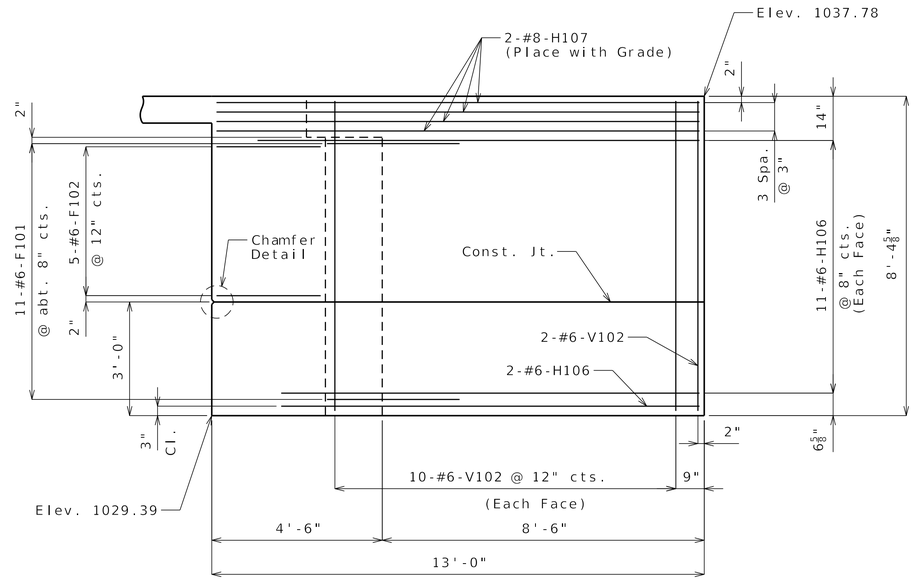
DATE

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

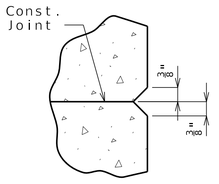
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



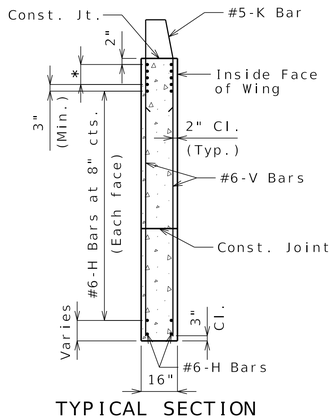
ELEVATION A-A



ELEVATION B-B

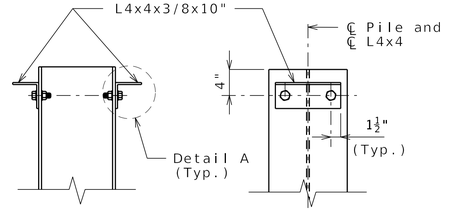


CHAMFER DETAIL

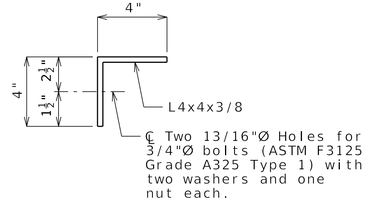


TYPICAL SECTION
THRU WING

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

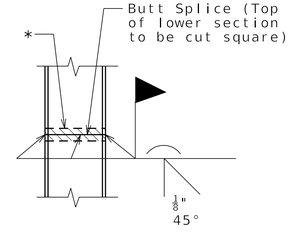


DETAILS OF HP PILE ANCHORS



DETAIL A

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



STEEL PILE SPLICE
(If required)

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

Note:
For location of Elevation A-A and Elevation B-B, see Sheet No. 3.

For Details of End Bent No. 1 not shown, see Sheets No. 3, 4 & 5.

DETAILS OF END BENT NO. 1

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	6

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

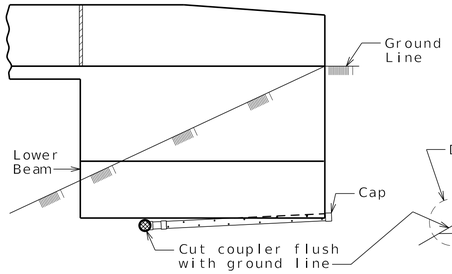
PROJECT NO.

BRIDGE NO.
A9077

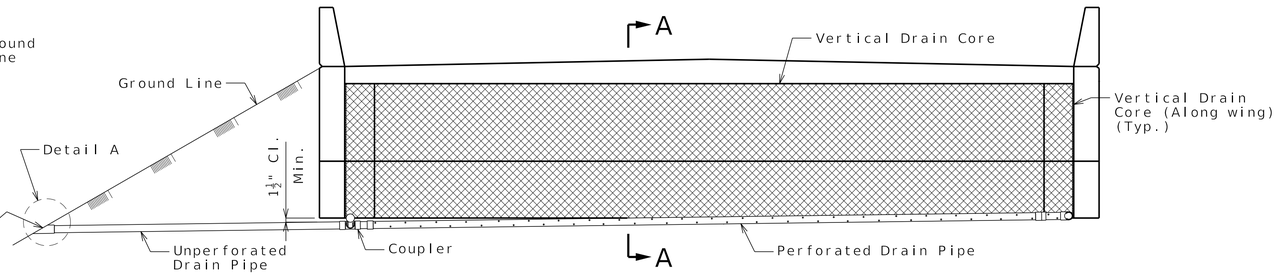
DESCRIPTION	DATE

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

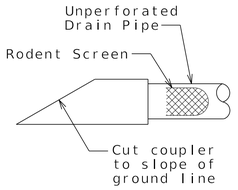
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue 816-781-6182
Kansas City, Missouri 64157 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



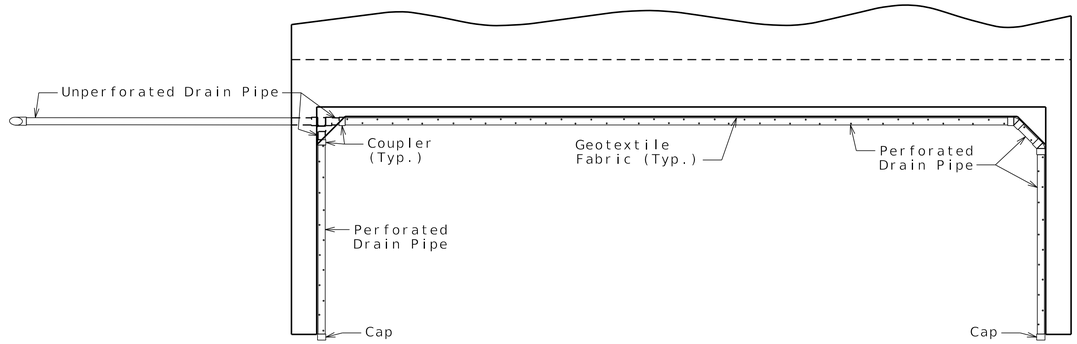
ELEVATION OF WING



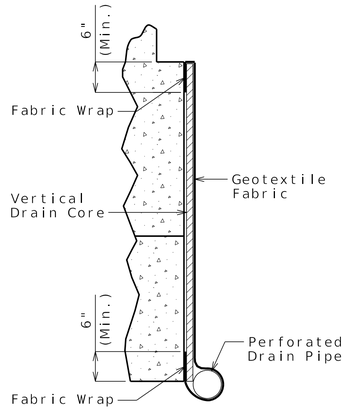
ELEVATION OF END BENT



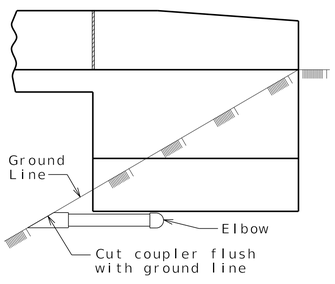
DETAIL A



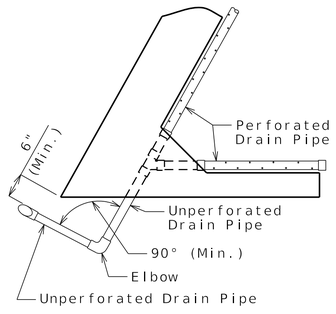
PLAN OF END BENT



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

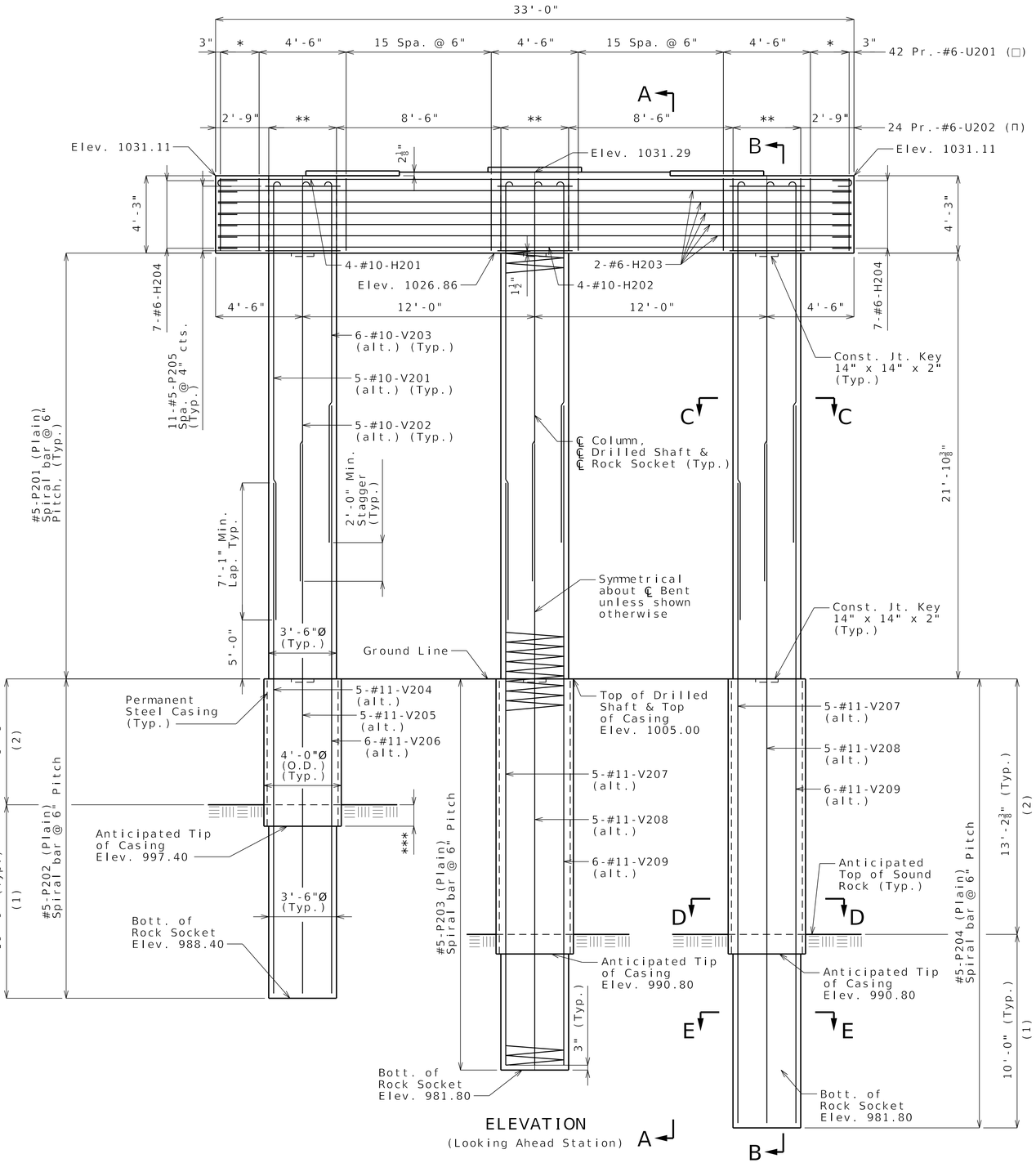
(Squared end bent shown, skewed end bent similar)

SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 7
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



* 4 Spa. @ 6"
** 7 Spa. @ 6"
*** Set steel casing into sound rock in accordance with Sec. 701 (Typ.)

(1) Pay Limits of Rock Sockets (3 ft. 6 in. Dia.)
(2) Pay Limits of Drilled Shafts (4 ft. 0 in. Dia.)

Note:

For additional details of Intermediate Bent No. 2, see Sheets No. 9 & 10.

Splice #10-V201 with #11-V204, & #11-V207.
Splice #10-V202 with #11-V205, & #11-V208.
Splice #10-V203 with #11-V206, & #11-V209.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
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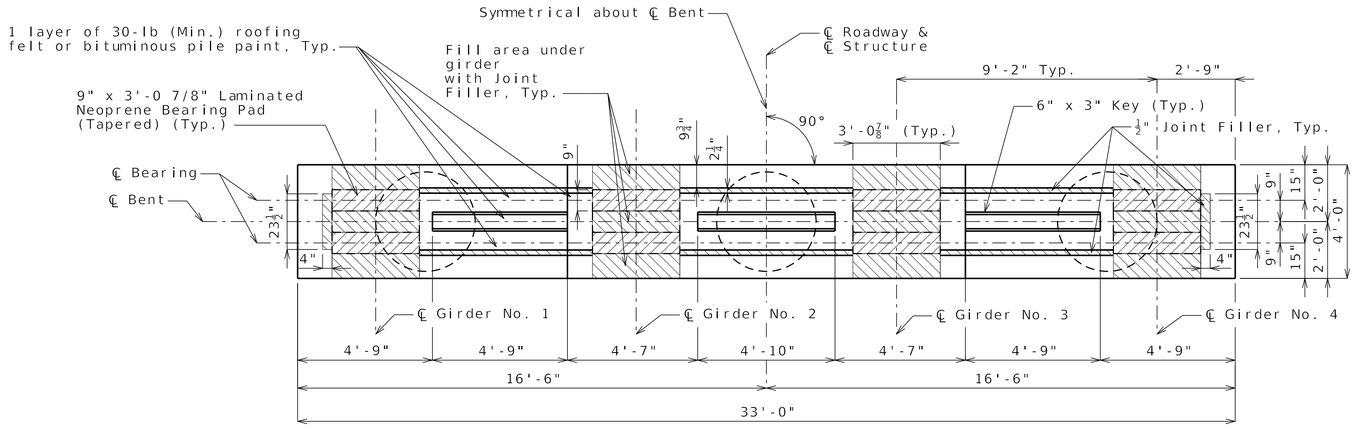
DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	8

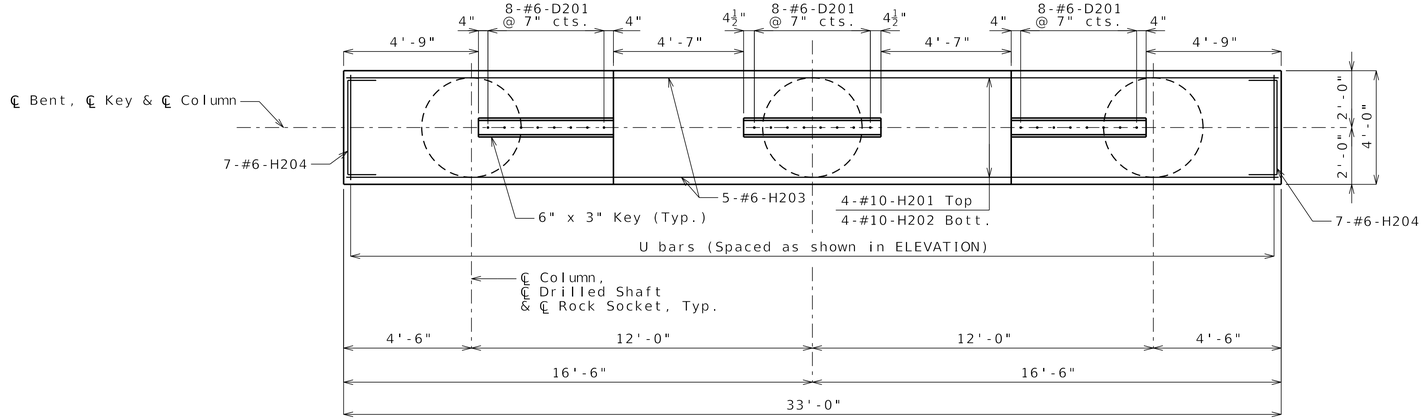
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION	DATE

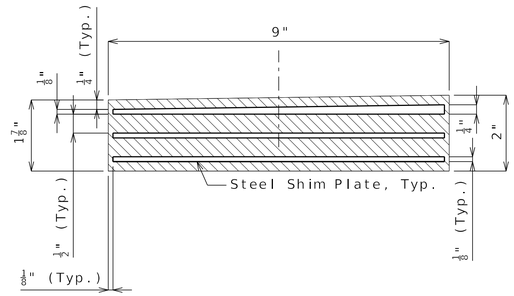
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A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



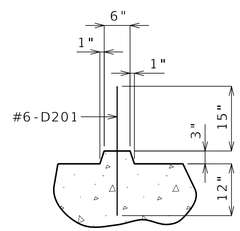
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT



DETAIL OF LAMINATED NEOPRENE BEARING PAD (TAPERED)



SECTION THRU KEY

Notes:

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

For Details of Intermediate Bent No. 2 not shown, see Sheets No. 8 & 10.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

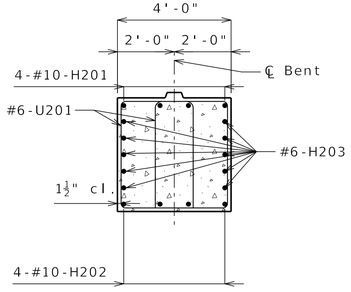
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	9

COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

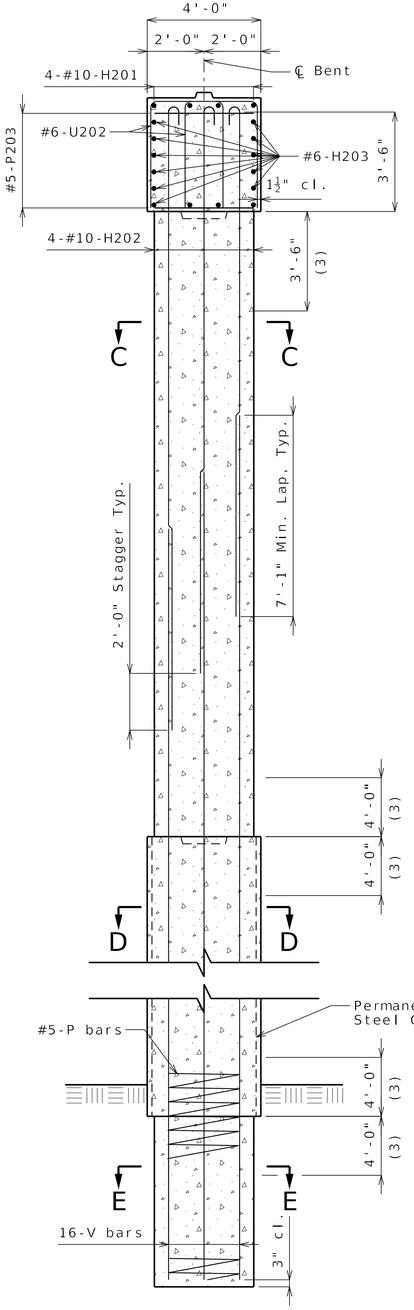
DESCRIPTION | DATE

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

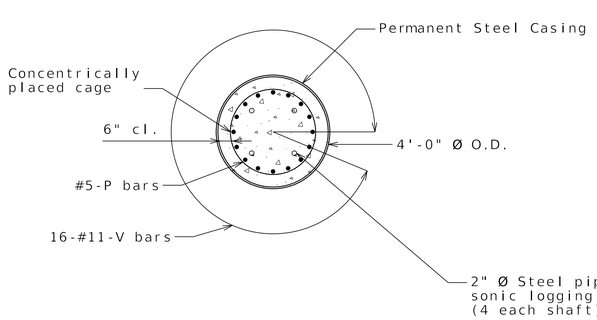
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006047



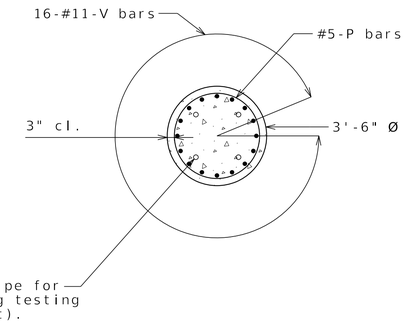
SECTION A-A



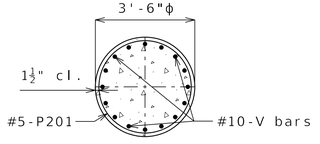
SECTION B-B



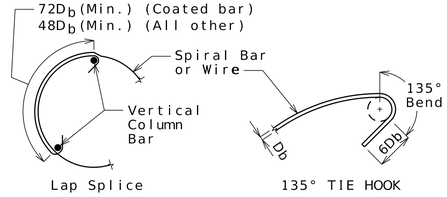
SECTION D-D



SECTION E-E

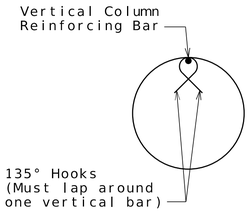


SECTION C-C



INTERMEDIATE SPLICE OF SPIRALS

Standard 135-degree tie hooks that engage vertical column reinforcing bars shall be provided at each end of splice.



SEISMIC STIRRUP BAR

(3) Lapping of spiral and vertical reinforcement is not allowed in this zone.

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Drilled Shafts (4 ft. 0 in. Dia.)	linear foot	33
Rock Sockets (3 ft. 6 in. Dia.)	linear foot	30
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	60
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	44.6
Reinforcing Steel (Bridges)	pound	22,610

These quantities are included in the Estimated Quantities table on Sheet No. 2.

Reinforcing steel for drilled shafts & rock sockets is included in the substructure quantities.

Notes:

An additional 4 feet has been added to V-bar lengths and an additional 4 feet of height has been added to the P-bar spiral bar lengths in the quantities, if required, for possible change in drilled shaft or rock socket lengths. The additional V-bar lengths shall be cut off or included in the reinforcement lap if not required.

The additional P-bar length shall be cut off, with allowance for maintaining the required 1-1/2 turns at the end of spiral lengths.

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

Permanent steel casing shall be in accordance with Sec 701.

For additional details of Intermediate Bent No. 2, see Sheets No. 8 & 9.

For locations of Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 8.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

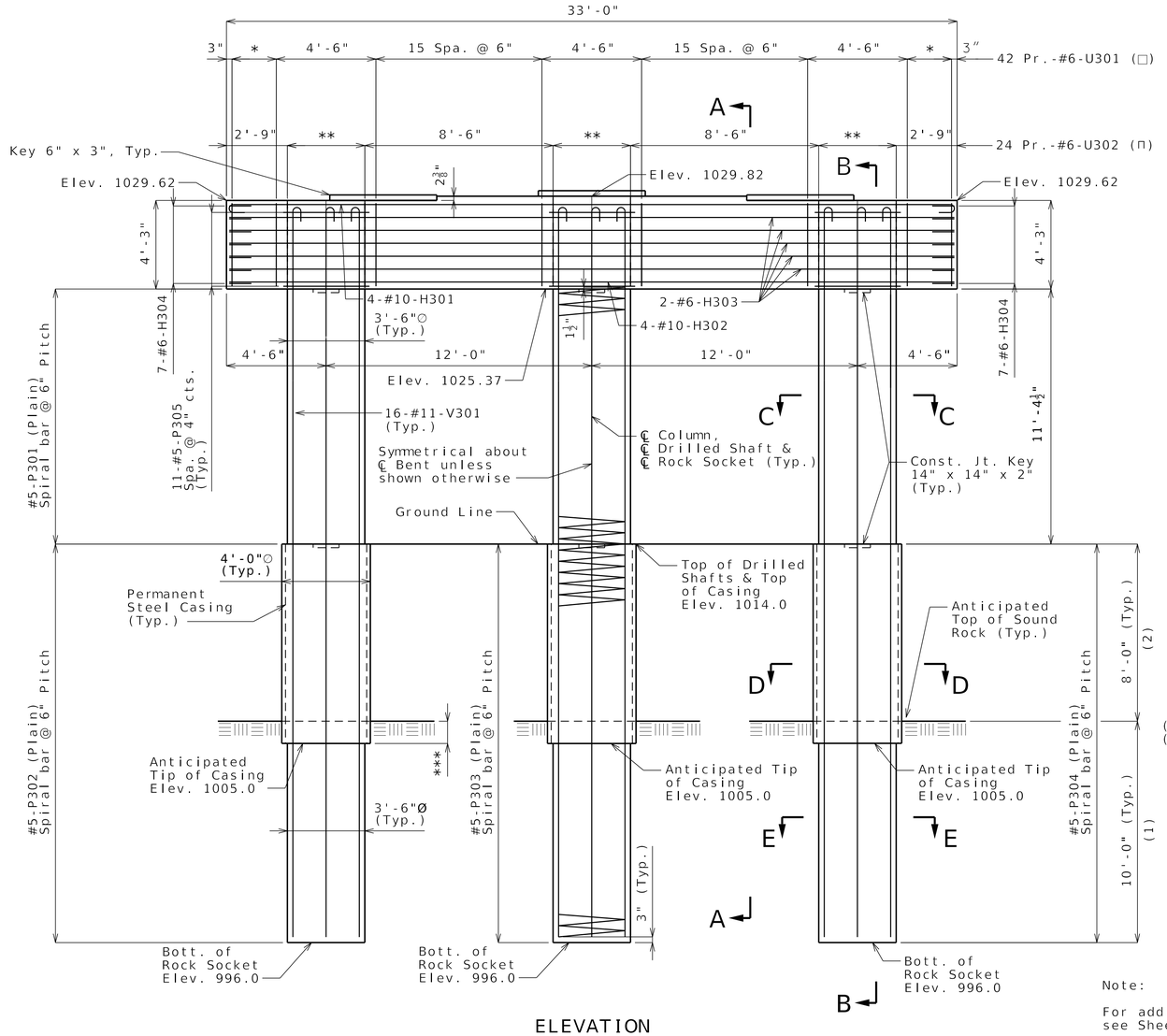
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	10

COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9077

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



ELEVATION
(Looking Ahead Station)

* 4 Spa. @ 6"
** 7 Spa. @ 6"

*** Set steel casing into sound rock in accordance with Sec. 701 (Typ.)

(1) Pay Limits of Rock Sockets (3 ft. 6 in. Dia.)
(2) Pay Limits of Drilled Shafts (4 ft. 0 in. Dia.)

Note:

For additional details of Intermediate Bent No. 3, see Sheets No. 12 & 13.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Aug. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

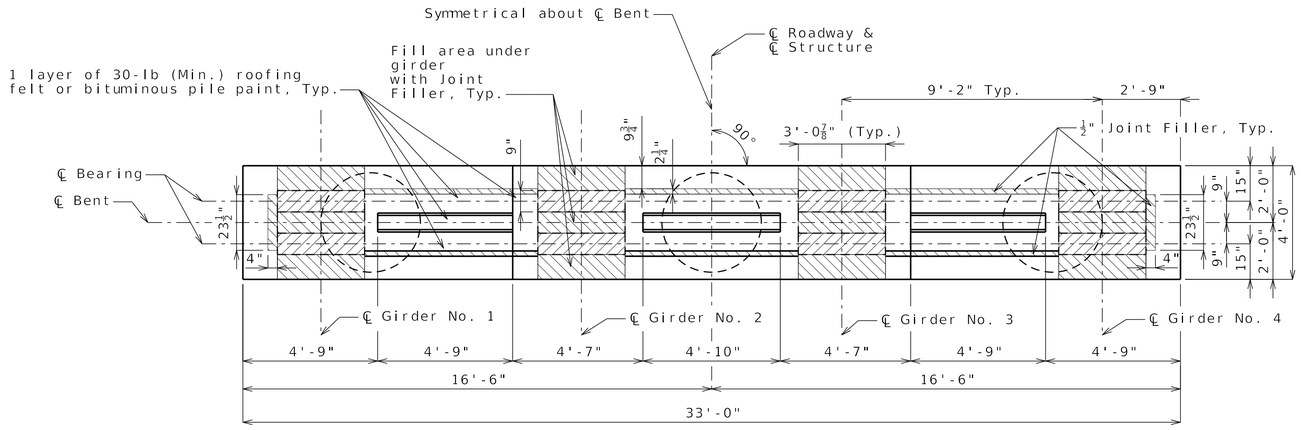
PROJECT NO.

BRIDGE NO.
A9077

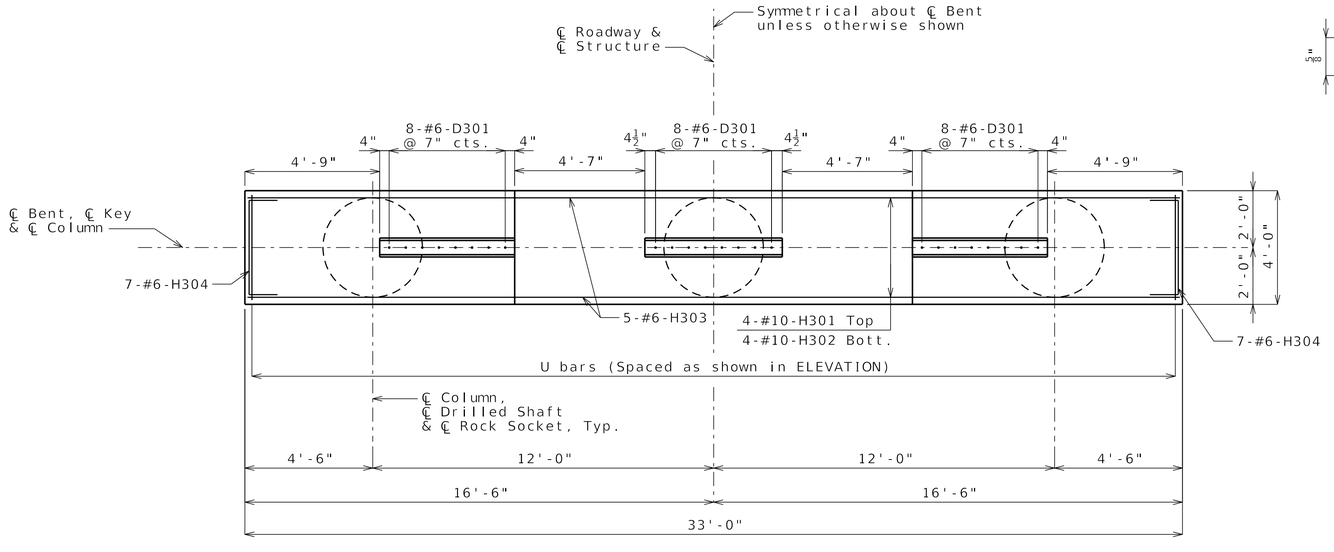
DESCRIPTION	DATE

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

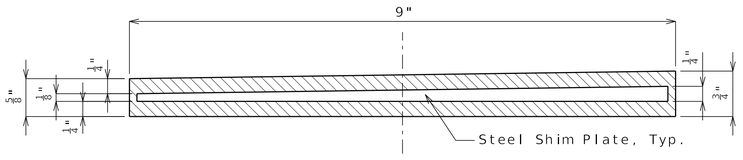
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



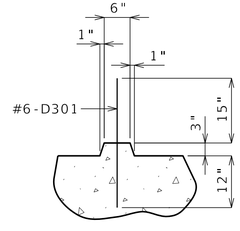
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT



DETAIL OF LAMINATED NEOPRENE BEARING PAD (TAPERED)



SECTION THRU KEY

Notes:

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

For Details of Intermediate Bent No. 3 not shown, see Sheets No. 11 & 13.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

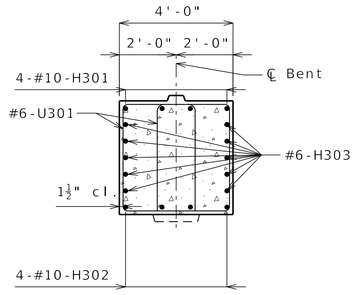
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	12

COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9077

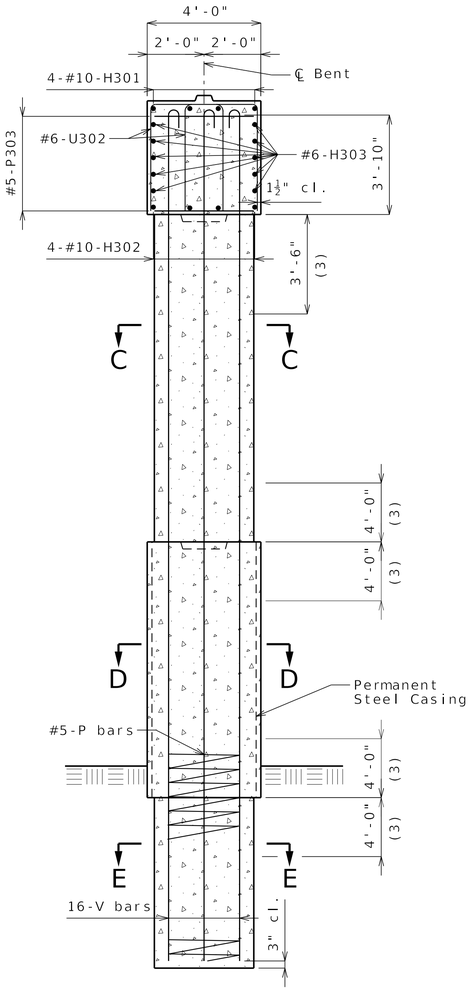
DESCRIPTION	DATE

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

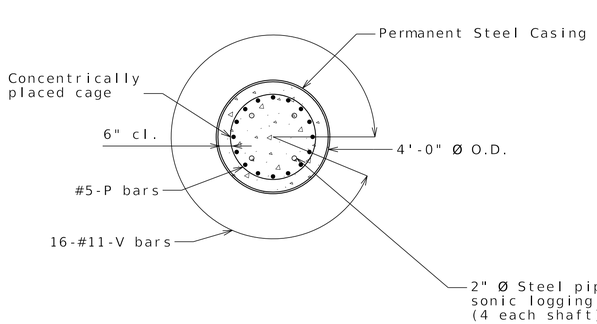
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



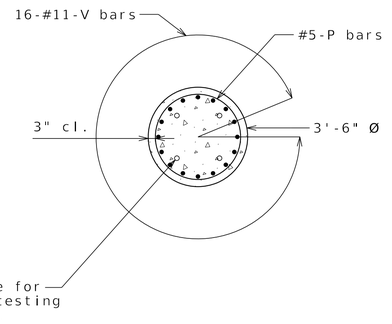
SECTION A-A



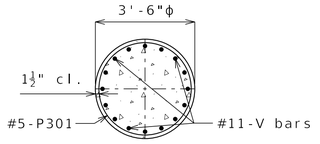
SECTION B-B



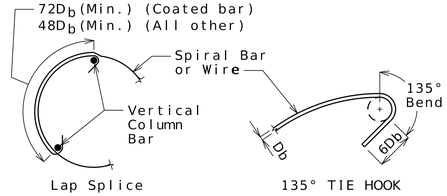
SECTION D-D



SECTION E-E

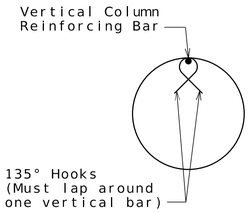


SECTION C-C



INTERMEDIATE SPLICE OF SPIRALS

Standard 135-degree tie hooks that engage vertical column reinforcing bars shall be provided at each end of splice.



SEISMIC STIRRUP BAR

(3) Lapping of spiral and vertical reinforcement is not allowed in this zone.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Drilled Shafts (4 ft. 0 in. Dia.)	linear foot	24
Rock Sockets (3 ft. 6 in. Dia.)	linear foot	30
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	60
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	33.4
Reinforcing Steel (Bridges)	pound	17,010

These quantities are included in the Estimated Quantities table on Sheet No. 2.

Reinforcing steel for drilled shafts & rock sockets is included in the substructure quantities.

Notes:

An additional 4 feet has been added to V-bar lengths and an additional 4 feet of height has been added to the P-bar spiral bar lengths in the quantities, if required, for possible change in drilled shaft or rock socket lengths. The additional V-bar lengths shall be cut off or included in the reinforcement lap if not required.

The additional P-bar length shall be cut off, with allowance for maintaining the required 1-1/2 turns at the end of spiral lengths.

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

Permanent steel casing shall be in accordance with Sec 701.

For additional details of Intermediate Bent No. 2, see Sheets No. 8 & 9.

For locations of Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 8.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	13

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

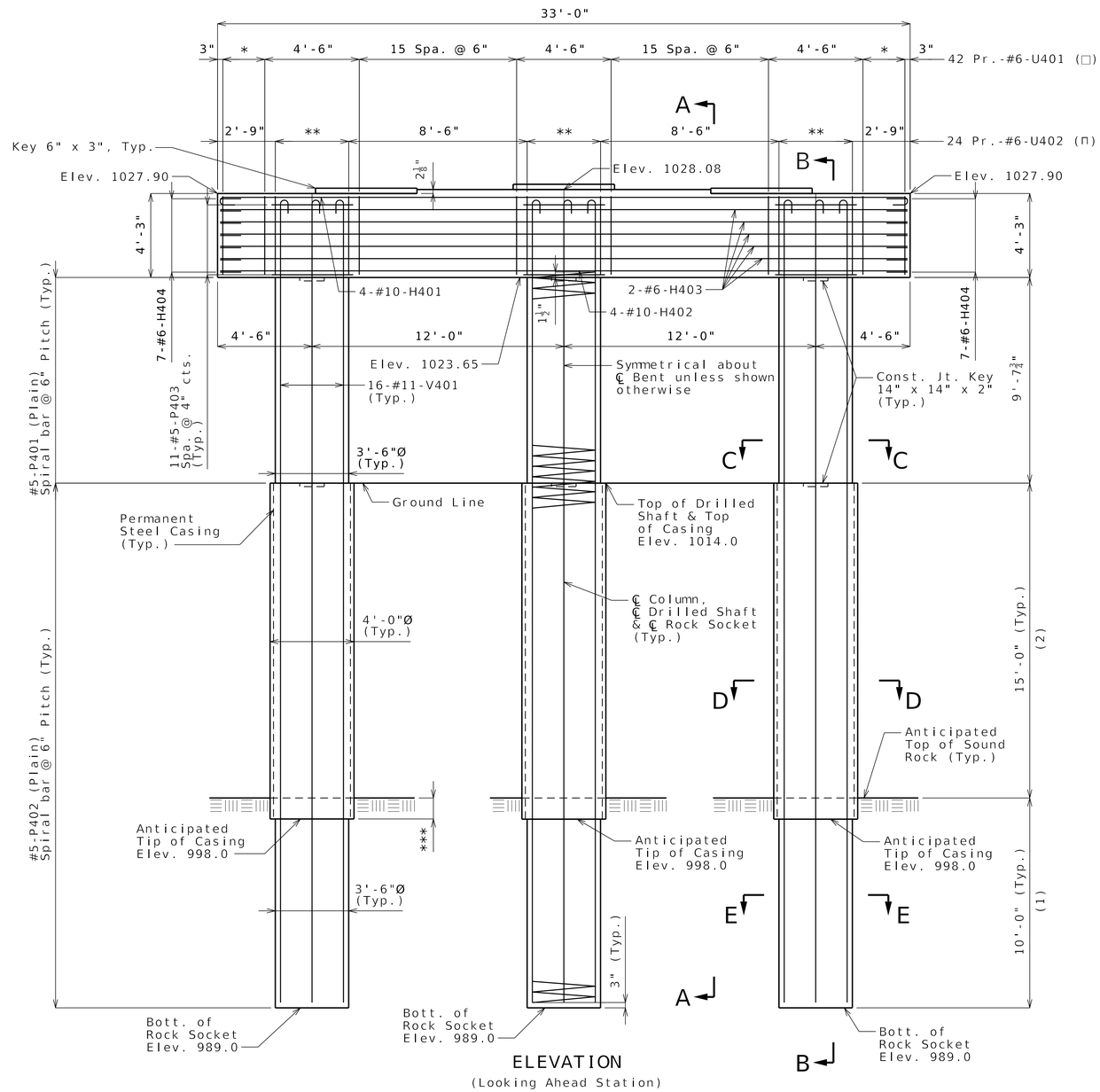
PROJECT NO.

BRIDGE NO.
A9077

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



ELEVATION
(Looking Ahead Station)

* 4 Spa. @ 6"
** 7 Spa. @ 6"

*** Set steel casing into sound rock in accordance with Sec. 701 (Typ.)

(1) Pay Limits of Rock Sockets (3 ft. 6 in. Dia.)
(2) Pay Limits of Drilled Shafts (4 ft. 0 in. Dia.)

Note:

For additional details of Intermediate Bent No. 4, see Sheets No. 15 & 16.

DETAILS OF INTERMEDIATE BENT NO. 4

Detailed Aug. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	14

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

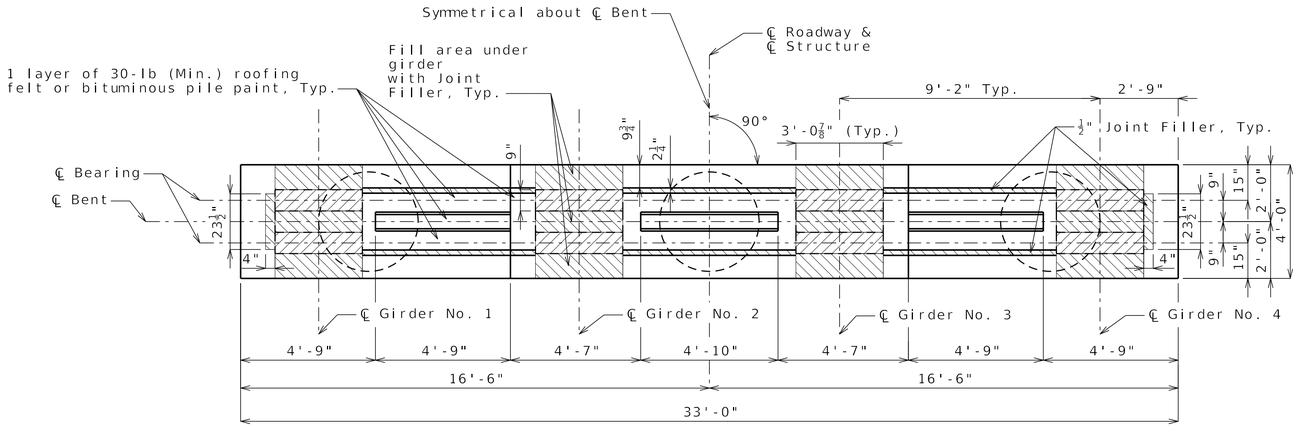
PROJECT NO.

BRIDGE NO.
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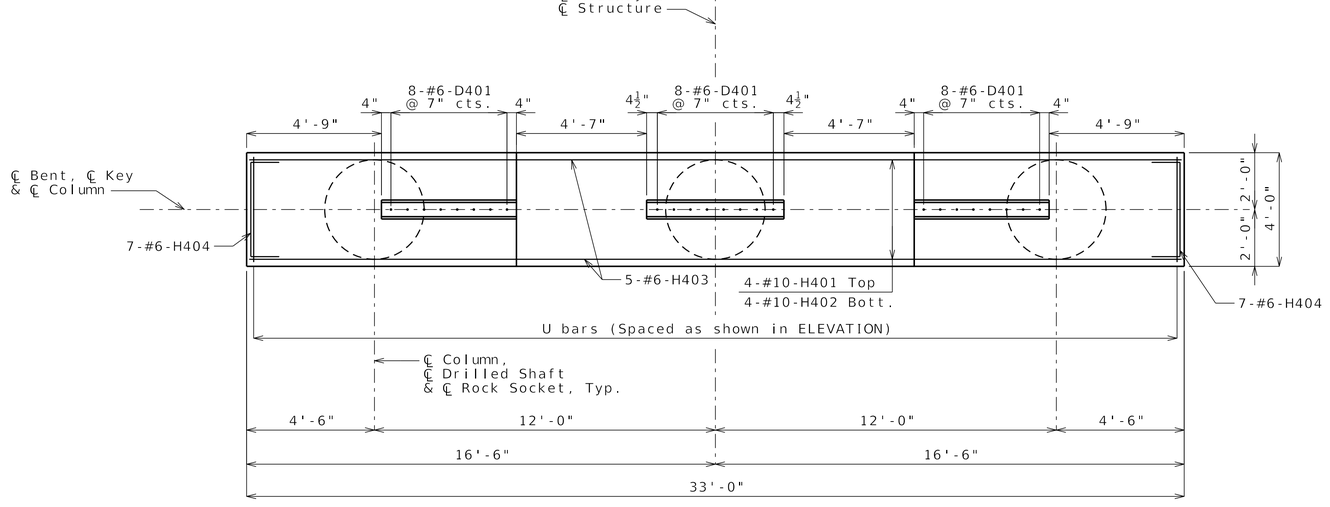
DESCRIPTION	DATE

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

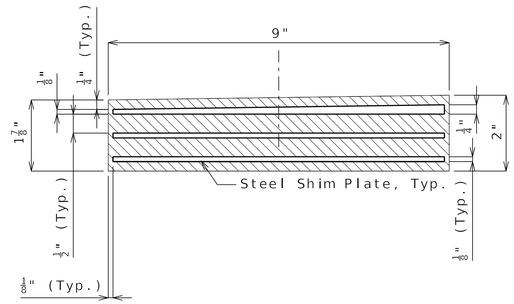
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



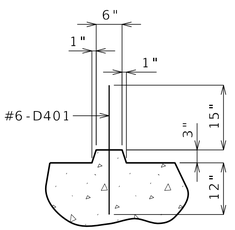
PLAN OF BEAM



PLAN OF BEAM



DETAIL OF LAMINATED NEOPRENE BEARING PAD (TAPERED)



SECTION THRU KEY

Notes:

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

For Details of Intermediate Bent No. 4 not shown, see Sheets No. 14 & 16.

DETAILS OF INTERMEDIATE BENT NO. 4

Detailed Aug. 2025
Checked Sep. 2025

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

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

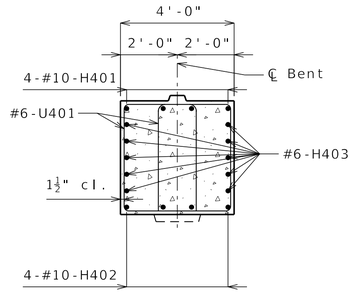
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	15

COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

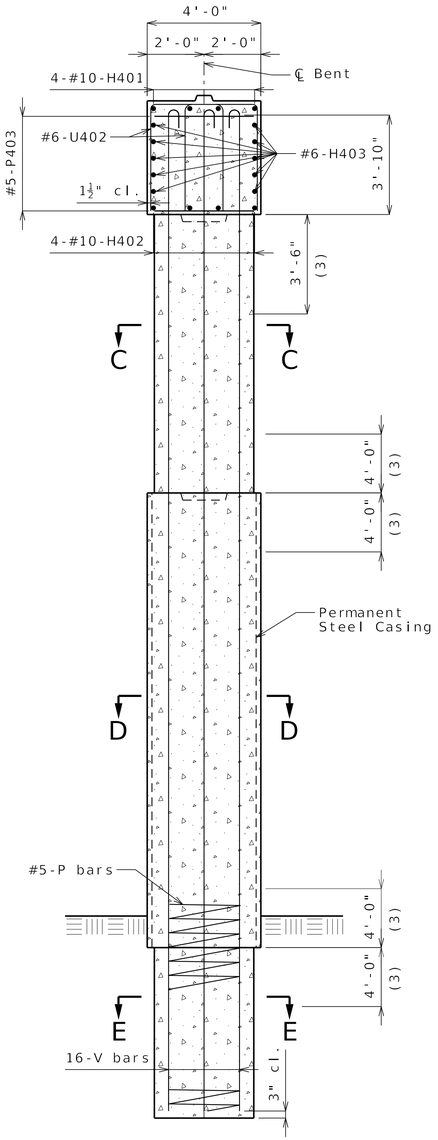
DESCRIPTION | DATE

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

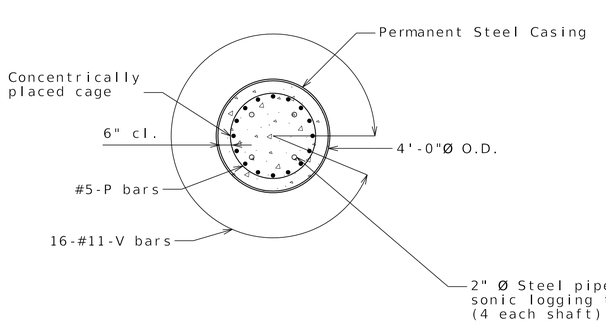
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006047



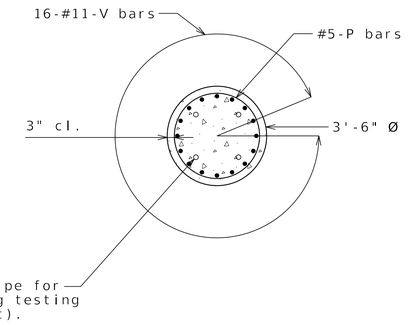
SECTION A-A



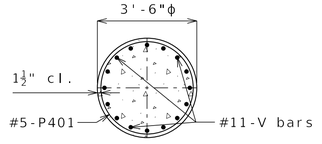
SECTION B-B



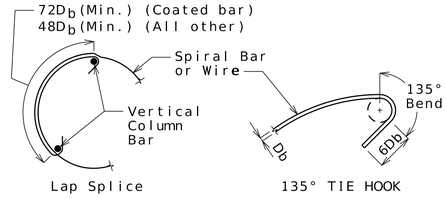
SECTION D-D



SECTION E-E

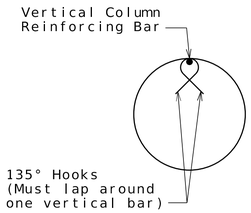


SECTION C-C



INTERMEDIATE SPLICE OF SPIRALS

Standard 135-degree tie hooks that engage vertical column reinforcing bars shall be provided at each end of splice.



SEISMIC STIRRUP BAR

(3) Lapping of spiral and vertical reinforcement is not allowed in this zone.

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Drilled Shafts (4 ft. 0 in. Dia.)	linear foot	45
Rock Sockets (3 ft. 6 in. Dia.)	linear foot	30
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	60
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	31.5
Reinforcing Steel (Bridges)	pound	18,610

These quantities are included in the Estimated Quantities table on Sheet No. 2.

Reinforcing steel for drilled shafts & rock sockets is included in the substructure quantities.

Notes:

An additional 4 feet has been added to V-bar lengths and an additional 4 feet of height has been added to the P-bar spiral bar lengths in the quantities, if required, for possible change in drilled shaft or rock socket lengths. The additional V-bar lengths shall be cut off or included in the reinforcement lap if not required.

The additional P-bar length shall be cut off, with allowance for maintaining the required 1-1/2 turns at the end of spiral lengths.

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

Permanent steel casing shall be in accordance with Sec 701.

For additional details of Intermediate Bent No. 2, see Sheets No. 8 & 9.

For locations of Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 8.

DETAILS OF INTERMEDIATE BENT NO. 4

Detailed Aug. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	16

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

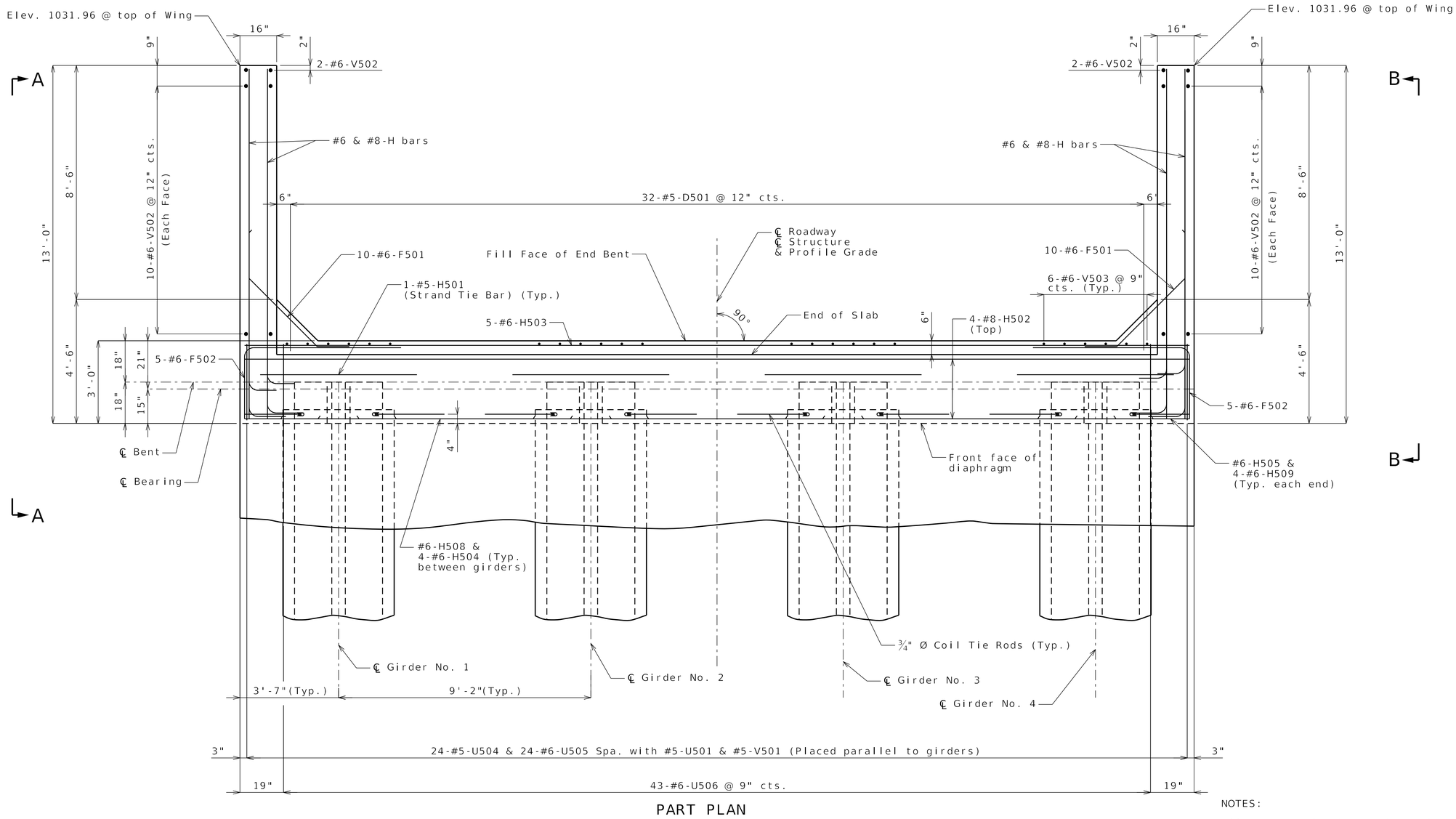
PROJECT NO.

BRIDGE NO. A9077

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



PART PLAN

Substructure Quantity Table for End Bent No. 5		
Item		Quantity
Class 1 Excavation	cu. yard	50
Galvanized Structural Steel Piles (12 in.)	linear foot	264
Pre-Bore for Piling	linear foot	240
Pile Point Reinforcement	each	6
Class B Concrete (Substructure)	cu. yard	15.1

These quantities are included in the Estimated Quantities table on Sheet No. 2.

NOTES:

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

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

For location of coil tie rods and #5-H501 (strand tie bar), see Sheets No. 21 thru 24.

For Elevation A-A and Elevation B-B, see Sheet No. 20.

For details of Vertical Drain at End Bent, see Sheet No. 7.

For details of Bridge Approach Slab, see Sheet No. 34.

For details of End Bent No. 5 not shown, see Sheets No. 18, 19, & 20.

DETAILS OF END BENT NO. 5

Detailed Aug. 2025
Checked Sep. 2025

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ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	17

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

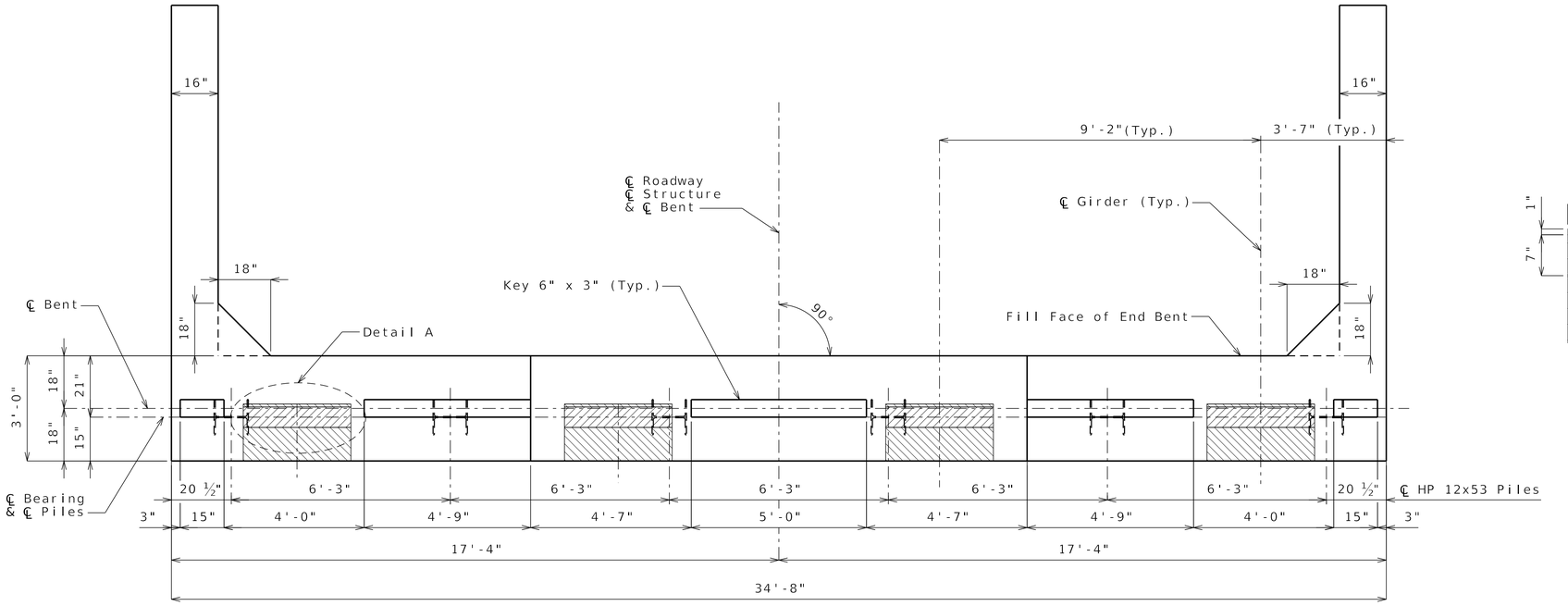
PROJECT NO.

BRIDGE NO. A9077

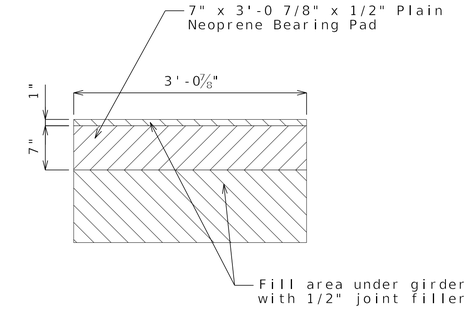
DATE	DESCRIPTION

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

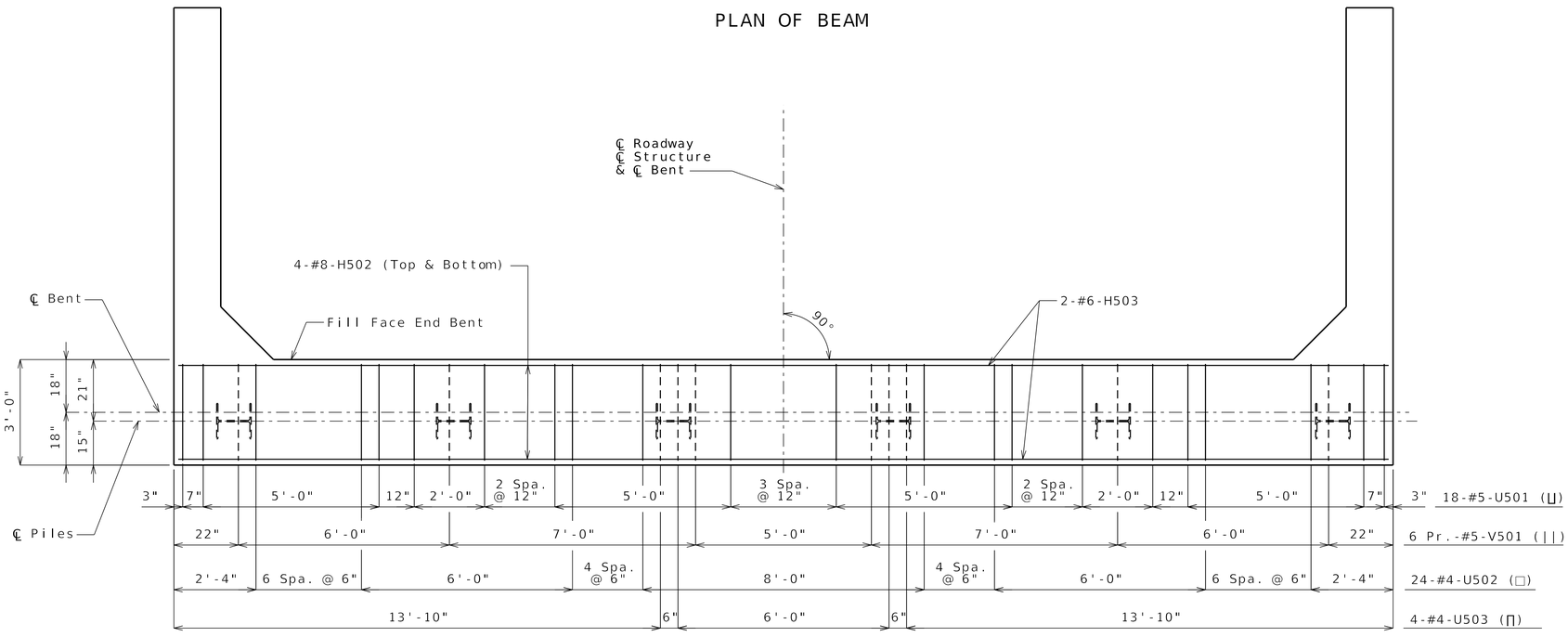
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816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



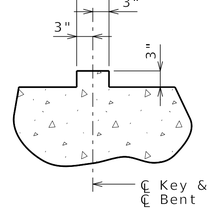
PLAN OF BEAM



DETAIL A



PLAN OF BEAM SHOWING REINFORCEMENT



SECTION THRU KEY

NOTES:

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

For details of End Bent No. 5 not shown, see Sheets No. 17, 19 & 20.

DETAILS OF END BENT NO. 5

Detailed Aug. 2025
Checked Sep. 2025

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SCOTT MICHAEL MCDONALD
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PROFESSIONAL ENGINEER

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DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	18

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

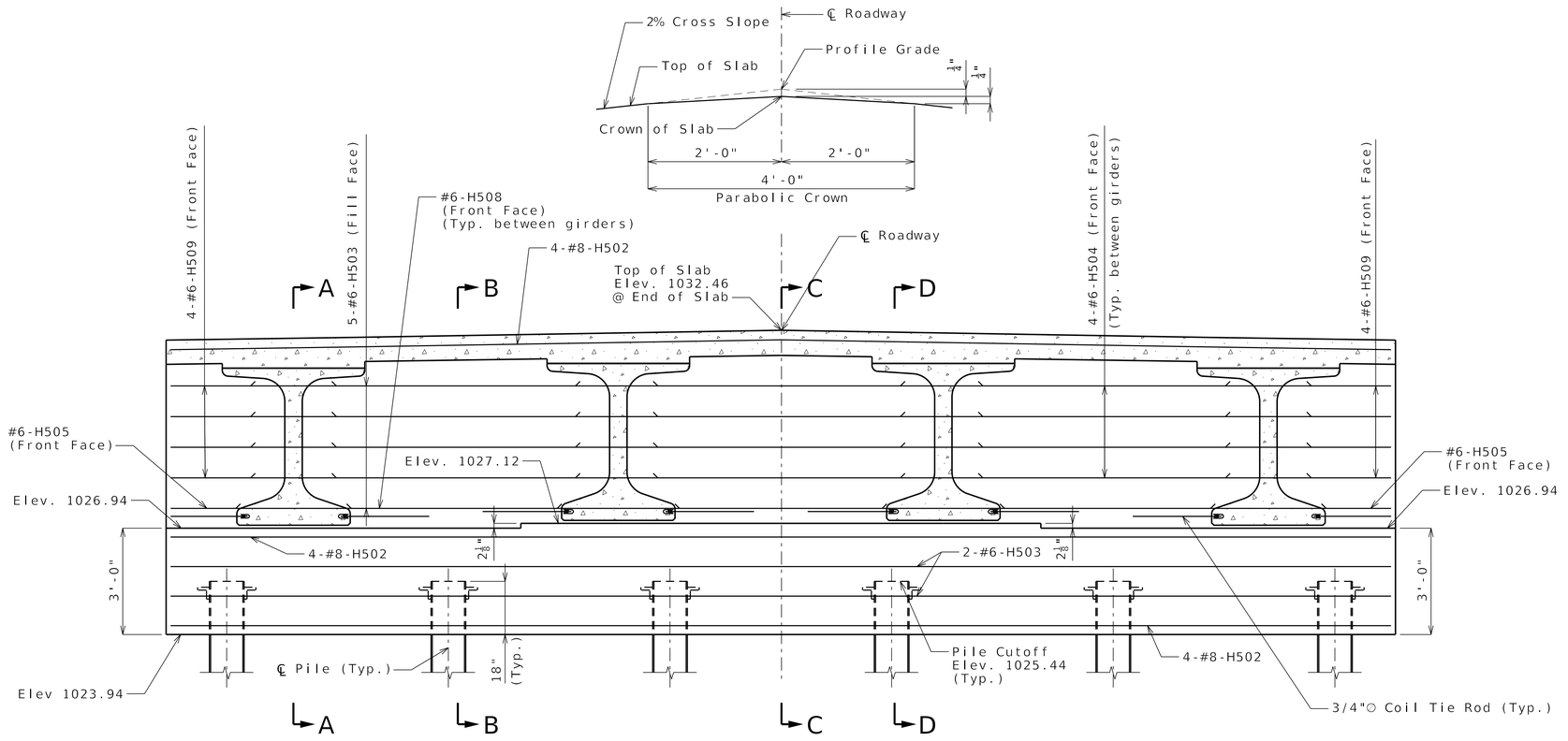
BRIDGE NO.
A9077

DESCRIPTION	DATE

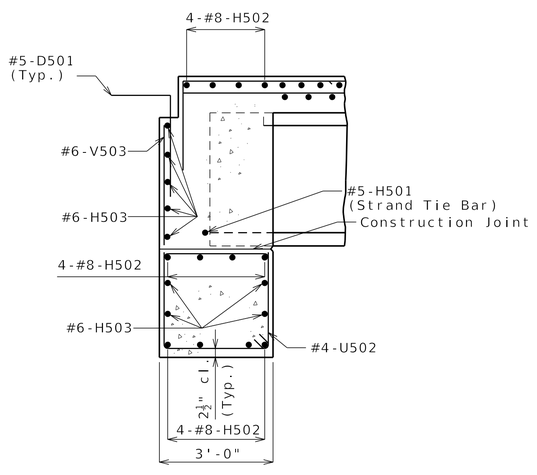
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

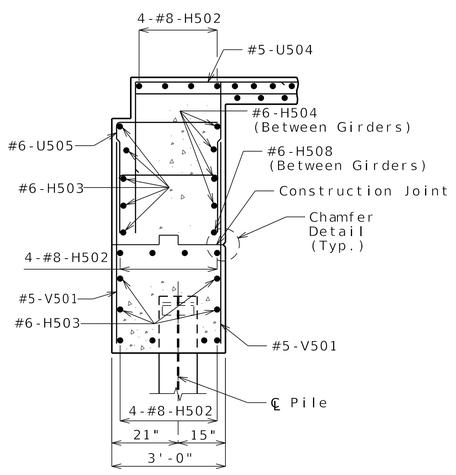
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9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



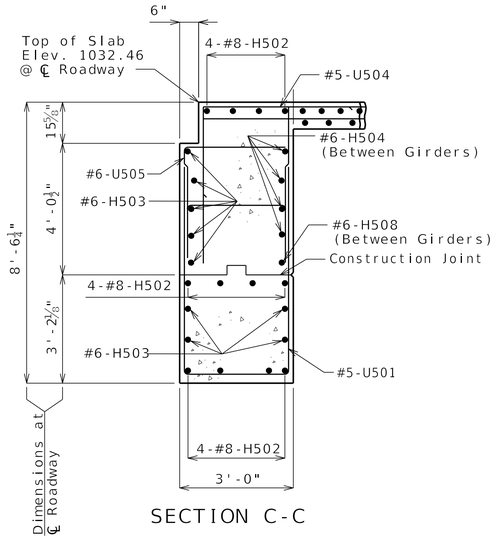
SECTION NEAR END BENT



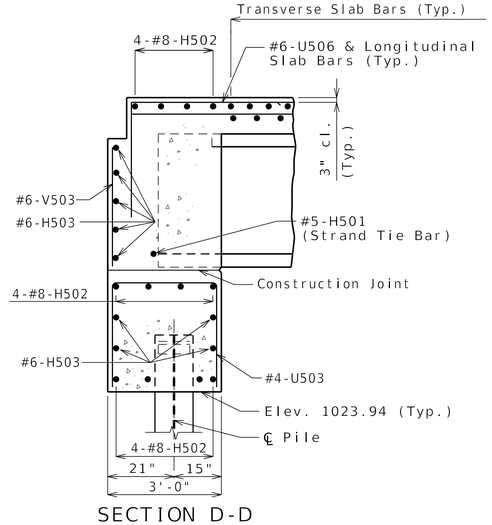
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

DETAILS OF END BENT NO. 5

NOTES:

For details of End Bent No. 5 not shown, see Sheets No. 17, 18, & 20.

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	19

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

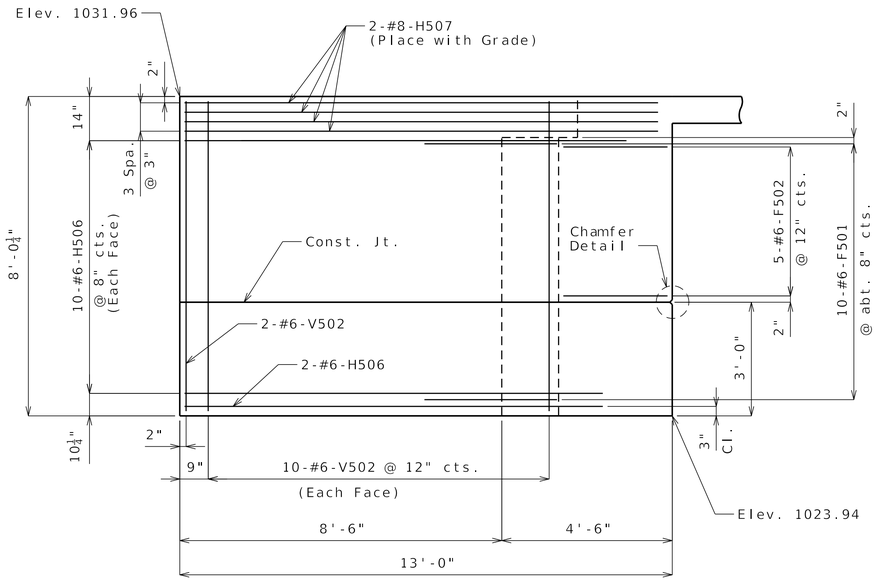
PROJECT NO.

BRIDGE NO. A9077

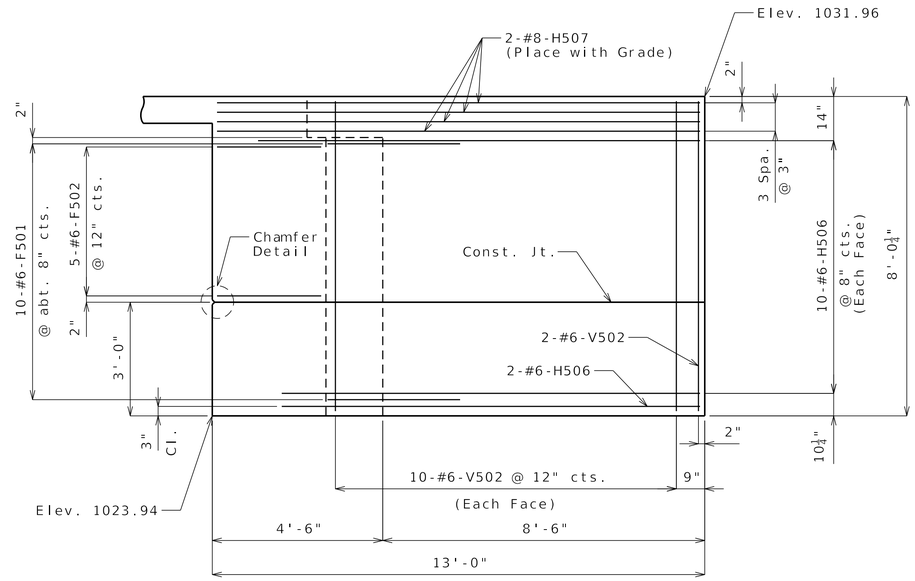
DESCRIPTION	DATE

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

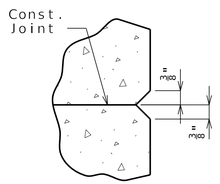
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue
Kansas City, Missouri 64157
816-781-6182
816-781-0643 (FAX)
Certificate of Authority No. 2002006347



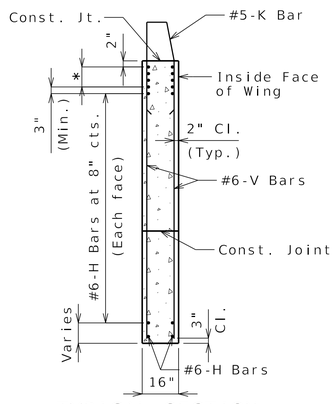
ELEVATION A-A



ELEVATION B-B

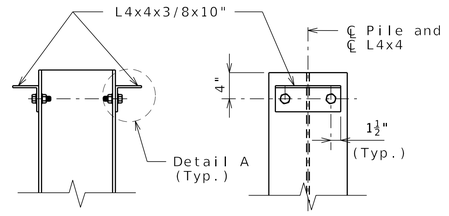


CHAMFER DETAIL

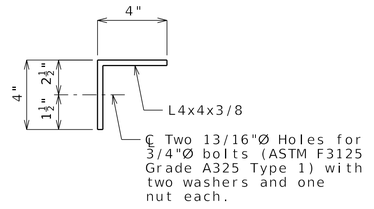


TYPICAL SECTION
THRU WING

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

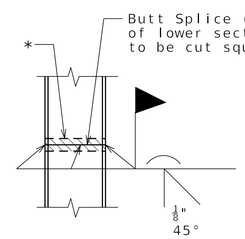


DETAILS OF HP PILE ANCHORS



DETAIL A

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



STEEL PILE SPLICE
(If required)

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

Note:
For location of Elevation A-A and Elevation B-B, see Sheet No. 17.

For Details of End Bent No. 5 not shown, see Sheets No. 17, 18 & 19.

DETAILS OF END BENT NO. 5

Detailed Aug. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

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DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	20

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

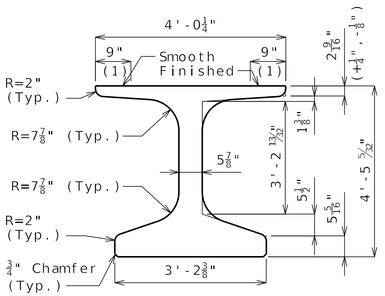
BRIDGE NO.
A9077

DESCRIPTION	DATE

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

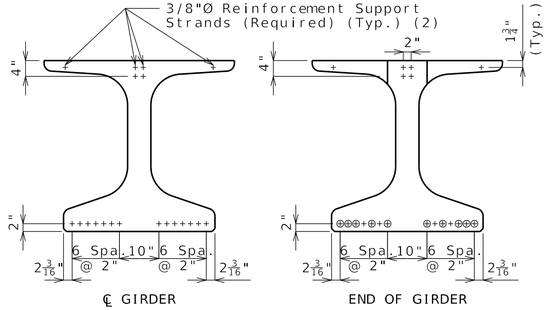
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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



DIMENSIONS

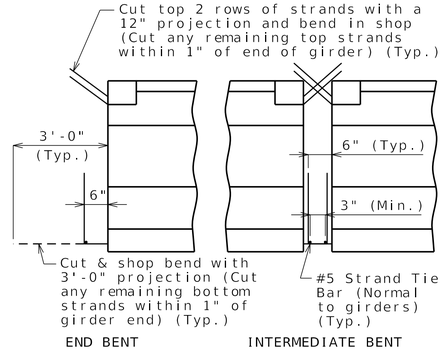
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



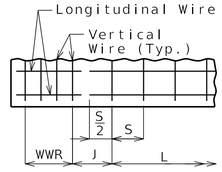
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

(4) Bent No. 2: 10¾"
Bent No. 4: 9⅜"

(5) Bent No. 2: 8¼"
Bent No. 4: 6⅝"

(6) Bent No. 1: 17⅛"
Bent No. 5: 18¾"

Bill of Reinforcing Steel

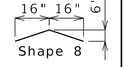
Bars Each Girder

No.	Size/Mark	Length	Shape
92	3 G1	2'-10"	8
2	4 G3	3'-10"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8"	20

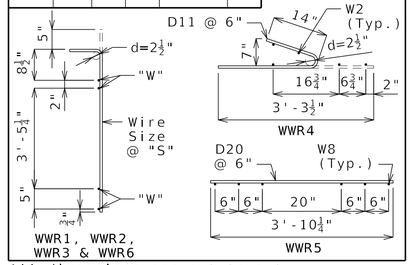
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	5'-4"	12"
WWR2	D31	12"	W12	27'-0"	-.-
WWR6	D31	2"	W12	16"	2¾"

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

Minimum clearance to the reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be ASTM A615 or A706 Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 not required for exterior girders of intermediate spans. Half no. of G3, G4, and G5 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 16 strands, 0.6"Ø Grade 270, with an initial prestress force of 703 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties, top flange blockout, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

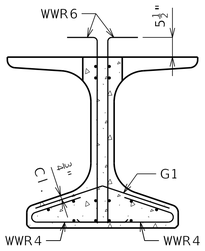
For Girder Camber Diagram, see Sheet No. 28.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 25.

For location of coil inserts at slab drains, see Sheet No. 27.

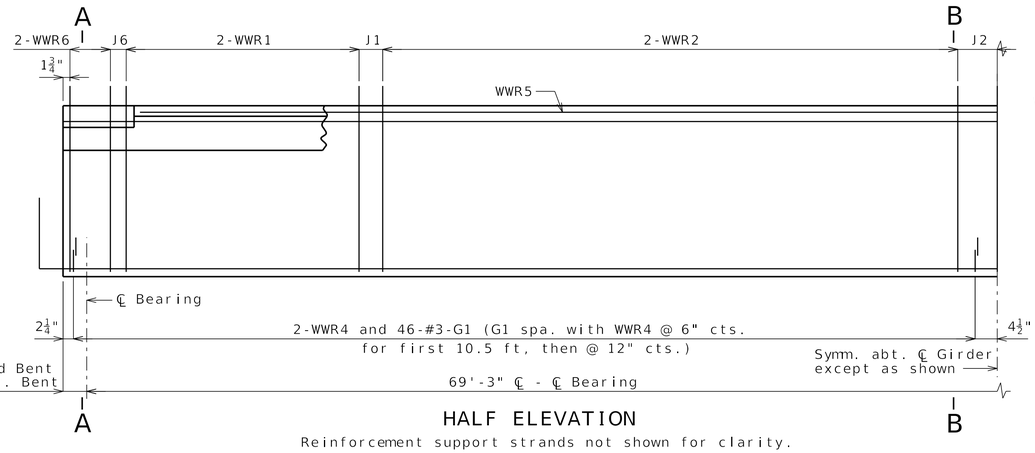
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 3, 17 and 26.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



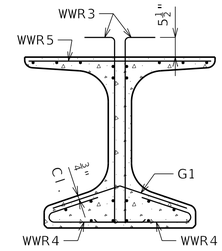
SECTION A-A

Strands not shown for clarity.



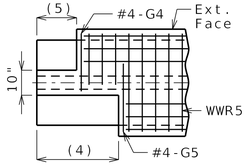
HALF ELEVATION

Reinforcement support strands not shown for clarity.



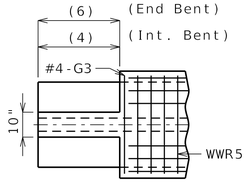
SECTION B-B

Strands not shown for clarity.



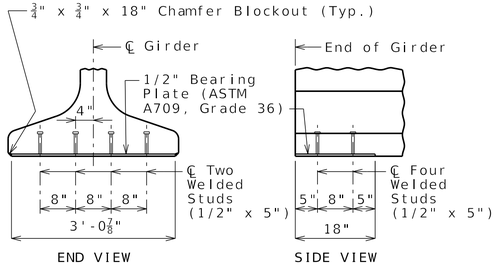
LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.

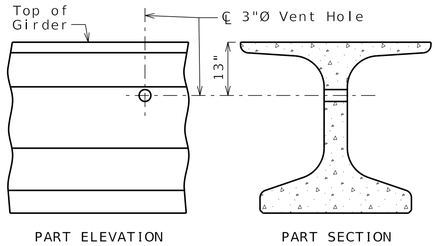


INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

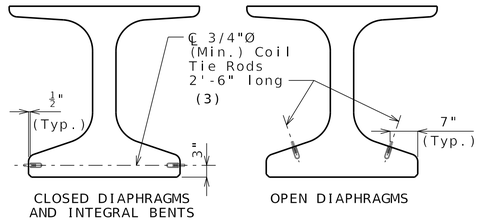


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 22" at exterior face of exterior girders at end bents

NU-GIRDERS - SPANS (1-2) AND (4-5)

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
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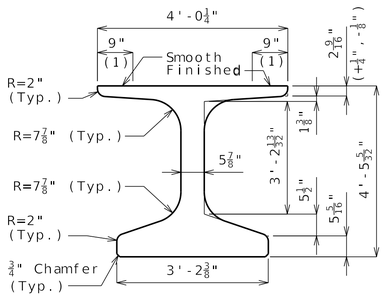
DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

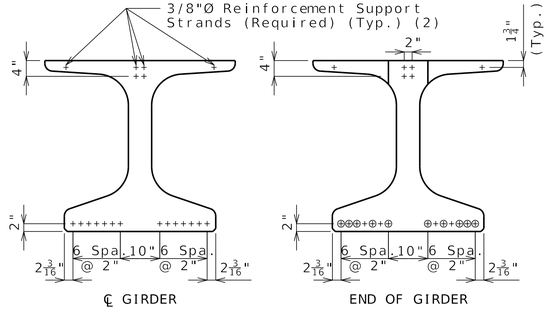
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

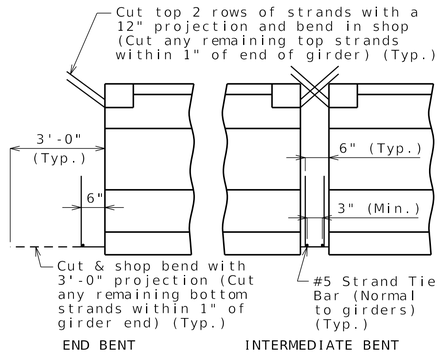


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

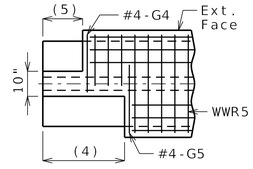
\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

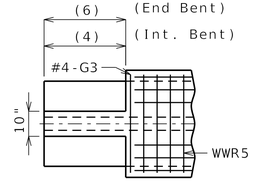


END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

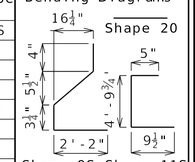
(4) Bent No. 2: 10¾"
Bent No. 4: 9⅛"

(5) Bent No. 2: 8¼"
Bent No. 4: 6⅜"

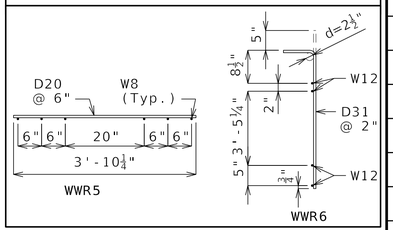
(6) Bent No. 1: 17⅛"
Bent No. 5: 18¾"

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
134	5 B1	5'-10"	11S
154	4 D1	4'-0"	9S
2	4 G3	3'-10"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be ASTM A615 or A706 Grade 60.

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

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 not required for exterior girders of intermediate spans. Half no. of G3, G4, and G5 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 16 strands, 0.6"Ø Grade 270, with an initial prestress force of 703 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties, top flange blockout, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

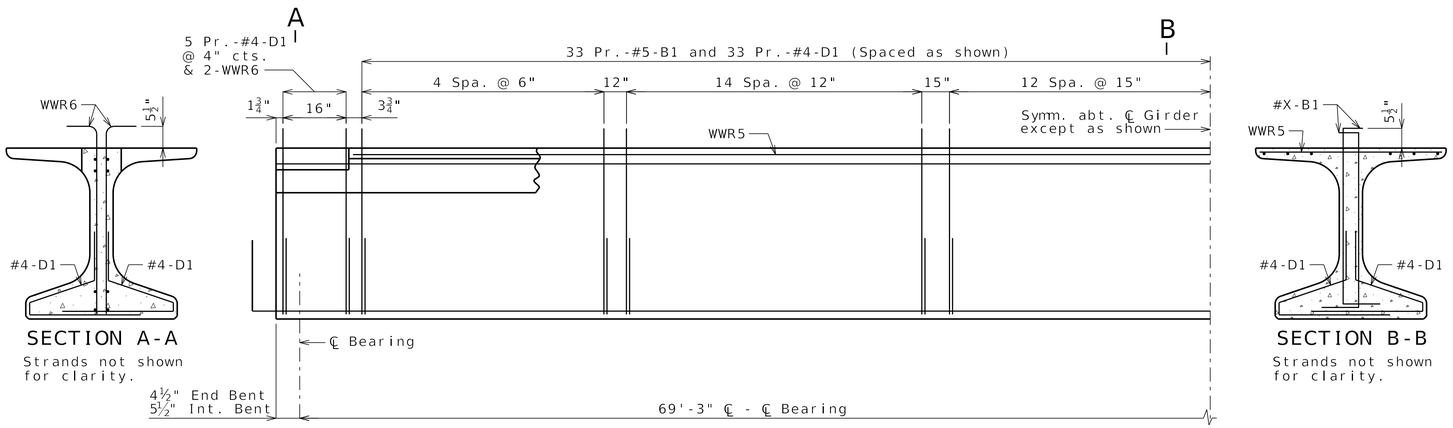
For Girder Camber Diagram, see Sheet No. 28.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 25.

For location of coil inserts at slab drains, see Sheet No. 27.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 3, 17, and 26.

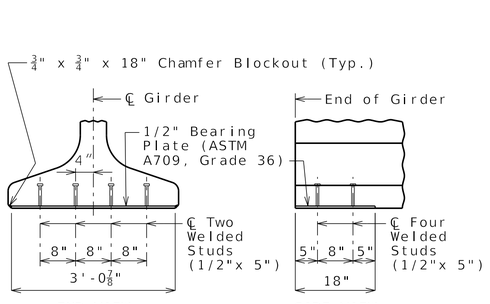
Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



SECTION A-A
Strands not shown for clarity.

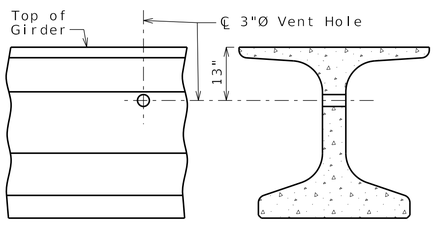
SECTION B-B
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.



END VIEW SIDE VIEW

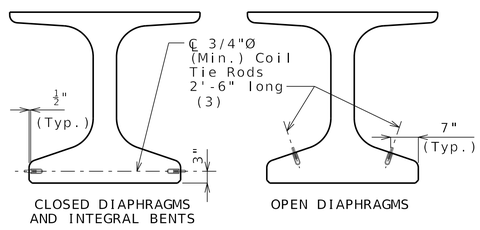
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS OPEN DIAPHRAGMS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

(3) 22" at exterior face of exterior girders at end bents

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (1-2) AND (4-5)

Detailed Mar. 2026
Checked Apr. 2026

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	22

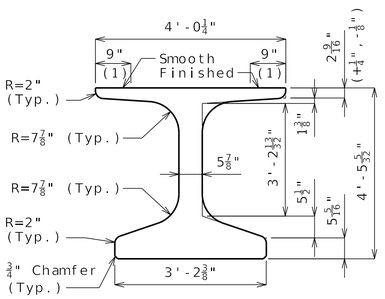
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DATE	DESCRIPTION

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

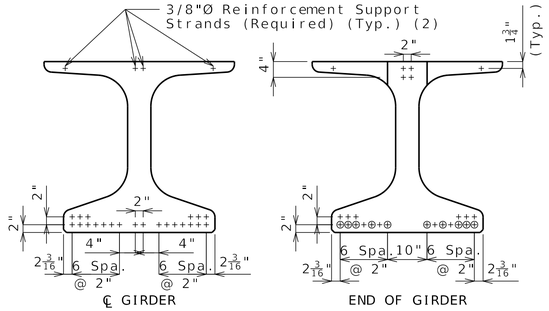
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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



DIMENSIONS

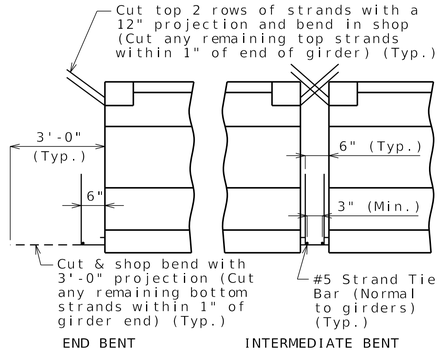
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



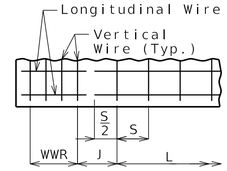
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

(3) Bent No. 2: 9⅛" (Span 2-3)
Bent No. 3: 10¾" (Span 2-3)
9⅛" (Span 3-4)
Bent No. 4: 10¾" (Span 3-4)

(4) Bent No. 2: 6⅝" (Span 2-3)
Bent No. 3: 8¼" (Span 2-3)
6⅝" (Span 3-4)
Bent No. 4: 8¼" (Span 3-4)

Bill of Reinforcing Steel

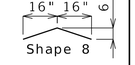
Bars Each Girder

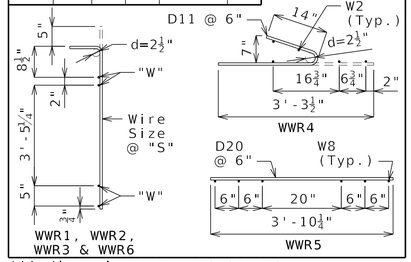
No.	Size/Mark	Length	Shape
120	3 G1	2'-10"	8
2	4 G3	3'-10"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8"	20

Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	11'-0"	12"
WWR2	D31	12"	W12	37'-0"	- -
WWR6	D31	2"	W12	16"	2¾"

Bending Diagrams





All dimensions are out to out.

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

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

Minimum clearance to the reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be ASTM A615 or A706 Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 not required for exterior girders of intermediate spans. Half no. of G3, G4, and G5 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 22 strands, 0.6"Ø Grade 270, with an initial prestress force of 967 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties, top flange blockout, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

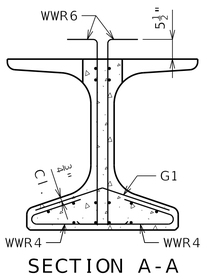
For Girder Camber Diagram, see Sheet No. 28.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 25.

For location of coil inserts at slab drains, see Sheet No. 27.

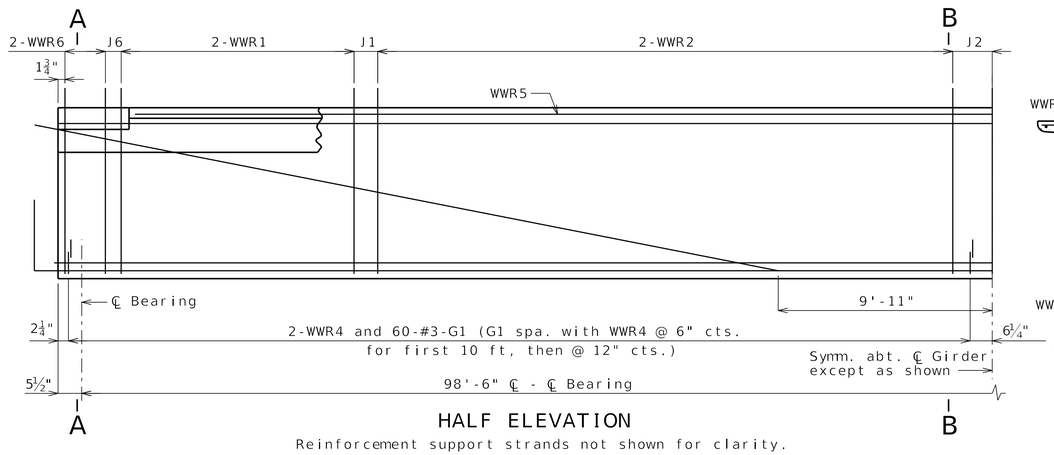
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 3, 17 and 26.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.



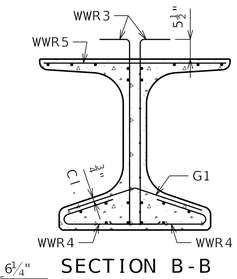
SECTION A-A

Strands not shown for clarity.



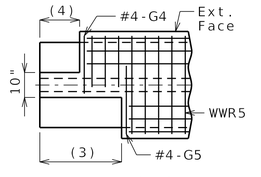
HALF ELEVATION

Reinforcement support strands not shown for clarity.



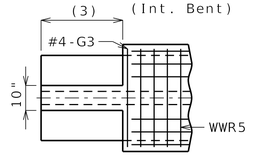
SECTION B-B

Strands not shown for clarity.



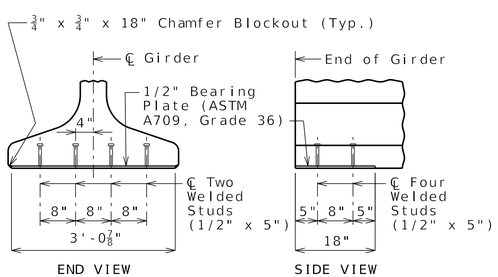
LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.

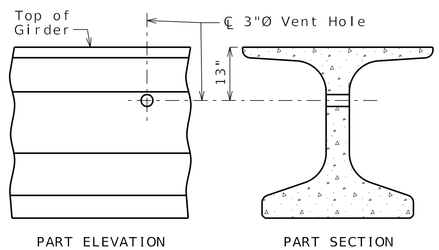


INTERIOR GIRDER AT ALL BENTS

TOP FLANGE BLOCKOUT

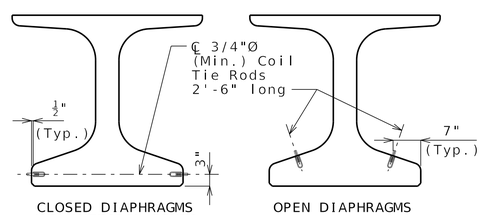


BEARING PLATE



VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

NU-GIRDERS - SPANS (2-3) AND (3-4)

Detailed Jul. 2025
Checked Sep. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

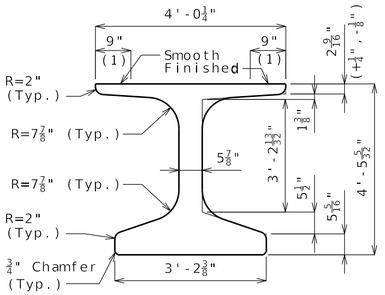
DATE PREPARED 07/17/2026
ROUTE F
STATE MO
DISTRICT BR
SHEET NO. 23
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION
DATE

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

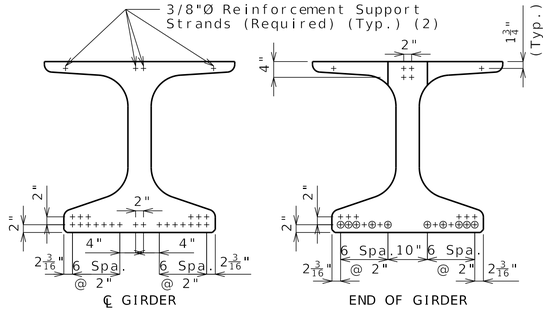
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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



DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

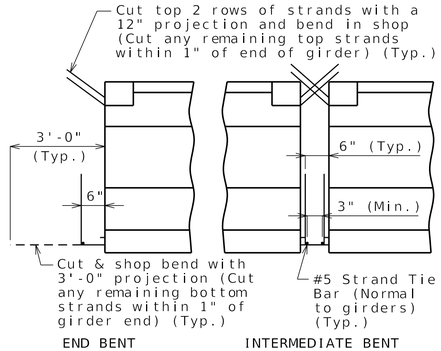


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

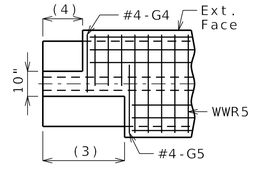
\+ Indicates prestressing strand.

○ Indicates cut & shop bend with 3'-0" projection.

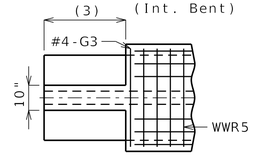


END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT
Rotate 180° for right ext.

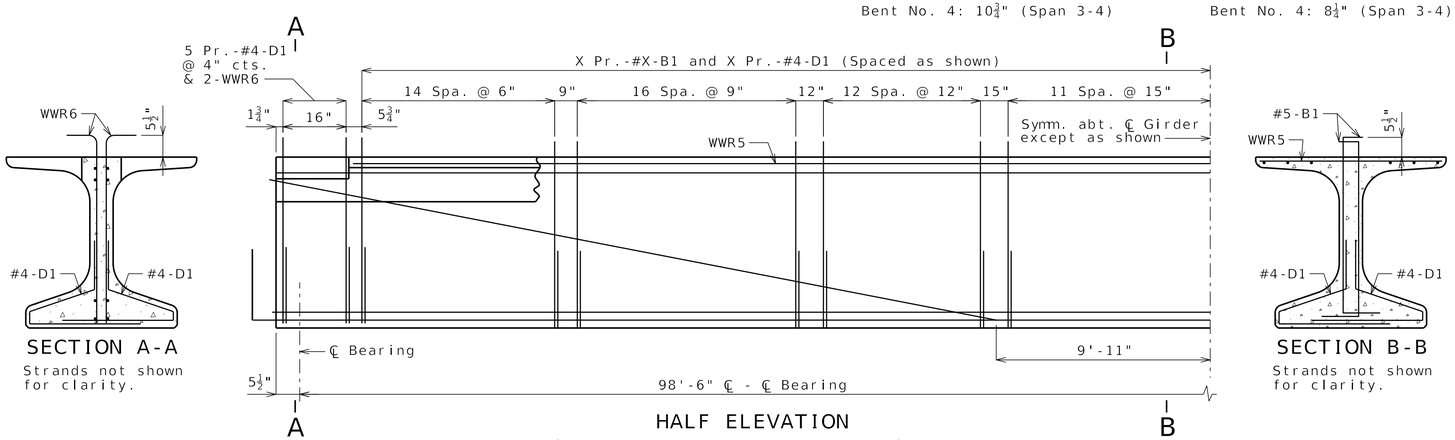


INTERIOR GIRDER AT ALL BENTS

TOP FLANGE BLOCKOUT

(3) Bent No. 2: 9⅛" (Span 2-3)
Bent No. 3: 10¾" (Span 2-3)
9⅛" (Span 3-4)
Bent No. 4: 10¾" (Span 3-4)

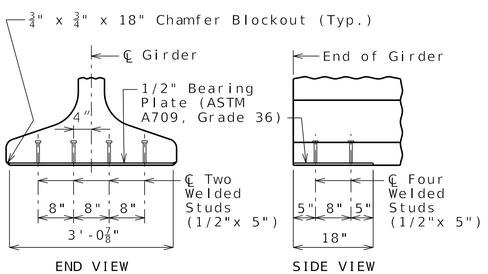
(4) Bent No. 2: 6⅝" (Span 2-3)
Bent No. 3: 8¼" (Span 2-3)
6⅝" (Span 3-4)
Bent No. 4: 8¼" (Span 3-4)



SECTION A-A
Strands not shown for clarity.

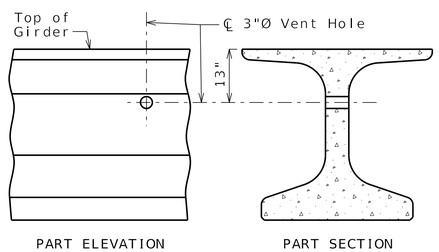
HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.



END VIEW SIDE VIEW

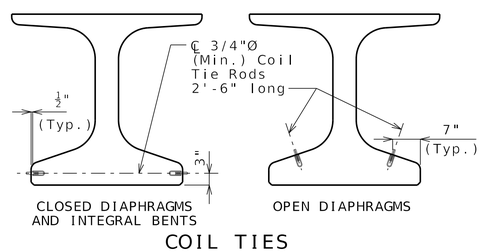
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS OPEN DIAPHRAGMS

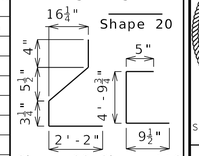
COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

Bill of Reinforcing Steel - Each Girder

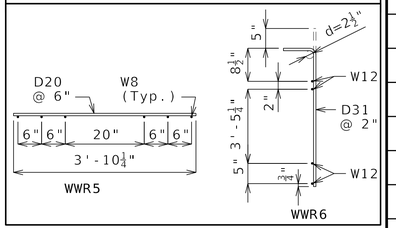
No.	Size/ Mark	Length	Shape
226	5 B1	5'-10"	11S
246	4 D1	4'-0"	9S
2	4 G3	3'-10"	20
2	4 G4	2'-3"	20
2	4 G5	2'-8"	20

Bending Diagrams



Shape 9S Shape 11S

Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be ASTM A615 or A706 Grade 60.

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

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 not required for exterior girders of intermediate spans. Half no. of G3, G4, and G5 not required for ext. girders of end spans.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 22 strands, 0.6"Ø Grade 270, with an initial prestress force of 967 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties, top flange blockout, application of bond breaker, coil inserts for slab drains, holes for steel intermediate diaphragms.

For Girder Camber Diagram, see Sheet No. 28.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 25.

For location of coil inserts at slab drains, see Sheet No. 27.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 3, 17 and 26.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

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SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
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ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	24

COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

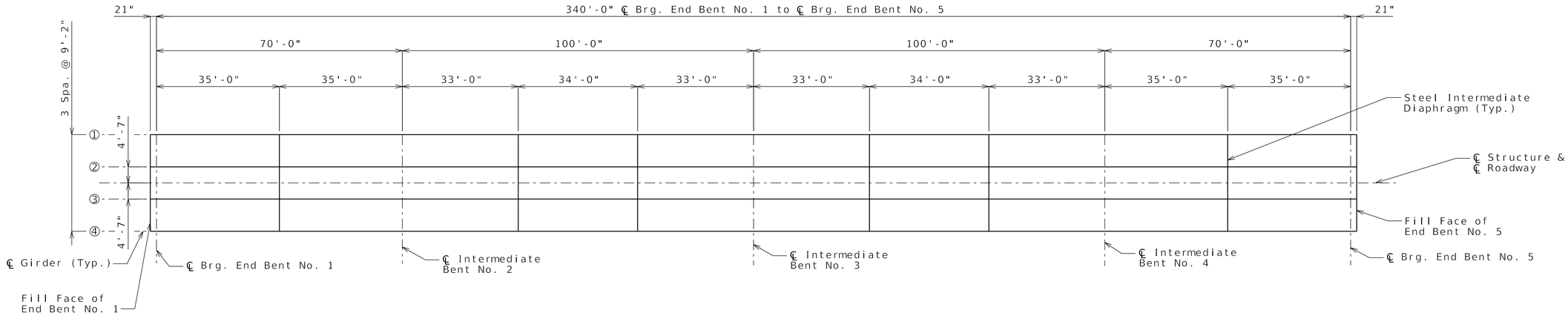
DESCRIPTION | DATE

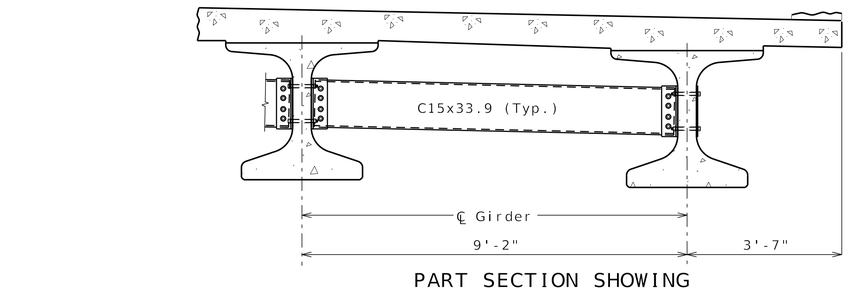
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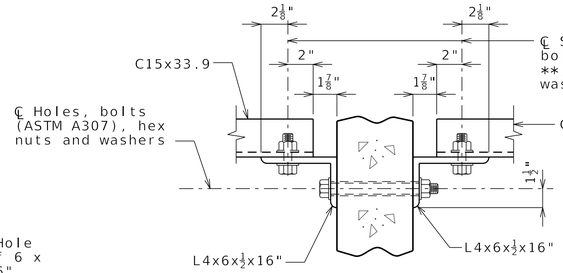
NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (2-3) AND (3-4)

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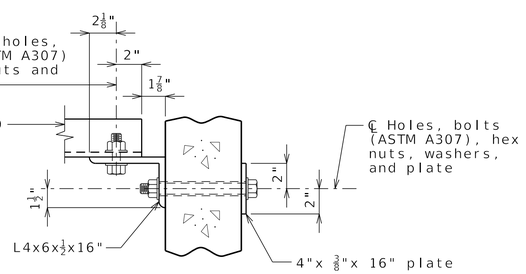




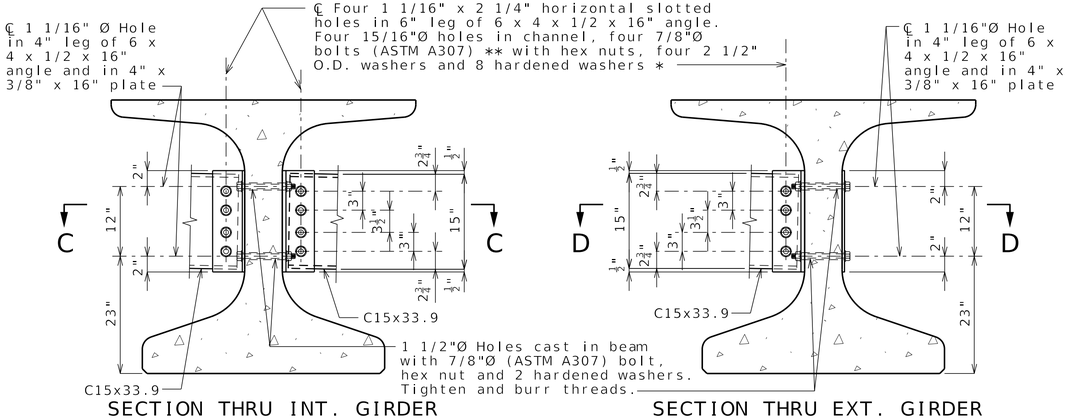
PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS



SECTION C-C



SECTION D-D



SECTION THRU INT. GIRDER
AT DIAPHRAGM

SECTION THRU EXT. GIRDER
AT DIAPHRAGM

STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.

STEEL INTERMEDIATE DIAPHRAGMS

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

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SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
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07/17/2026

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F	MO
DISTRICT	SHEET NO.
BR	25

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

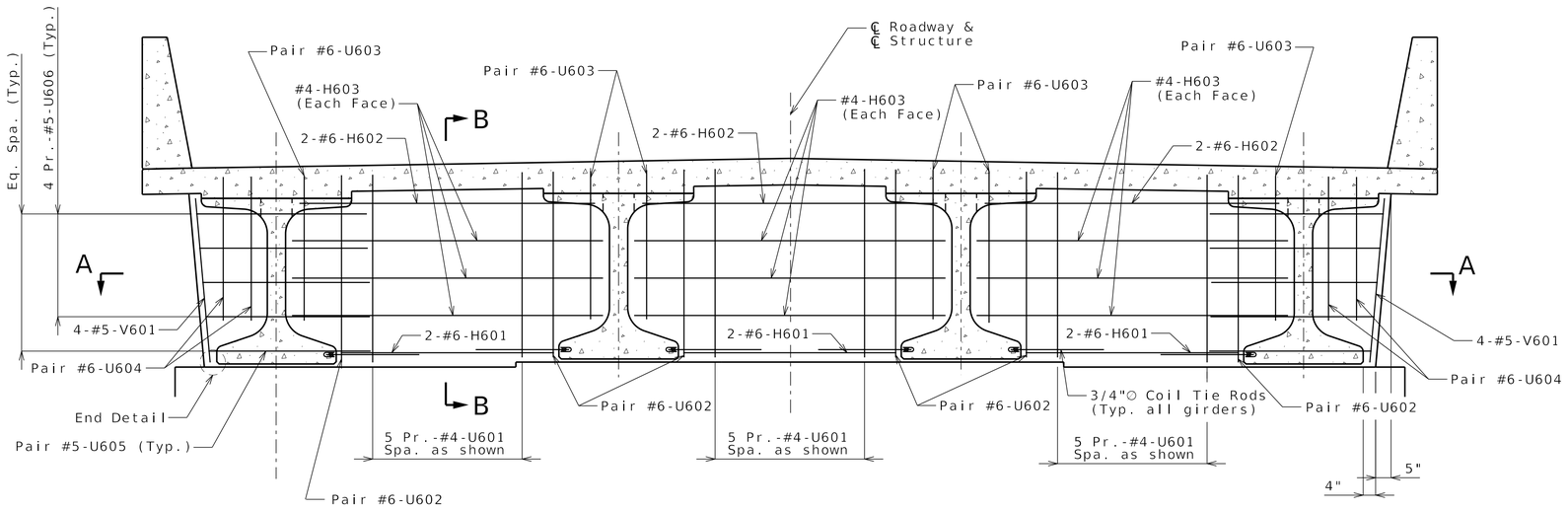
PROJECT NO.

BRIDGE NO.
A9077

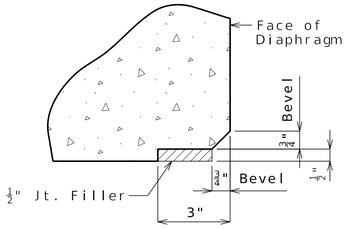
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105 WEST CAPITOL
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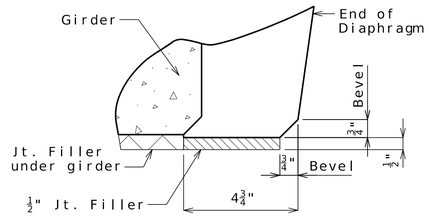
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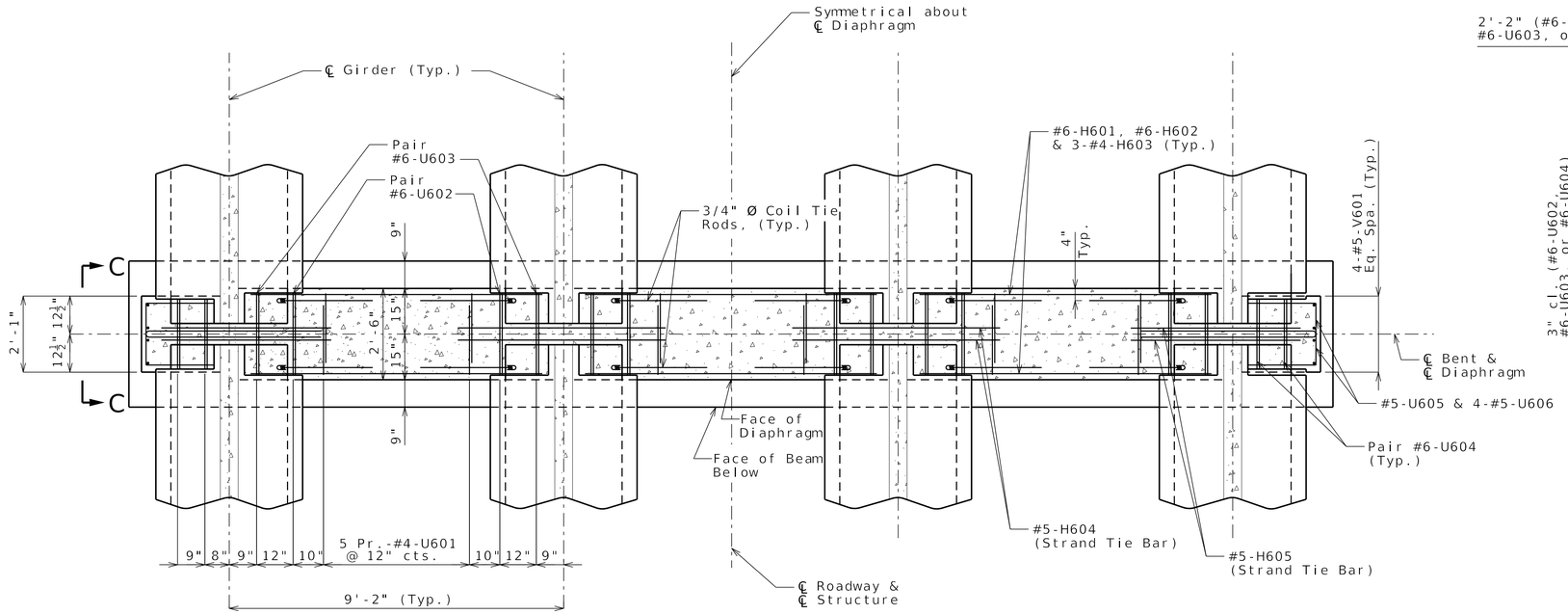
SECTION NEAR INTERMEDIATE BENTS



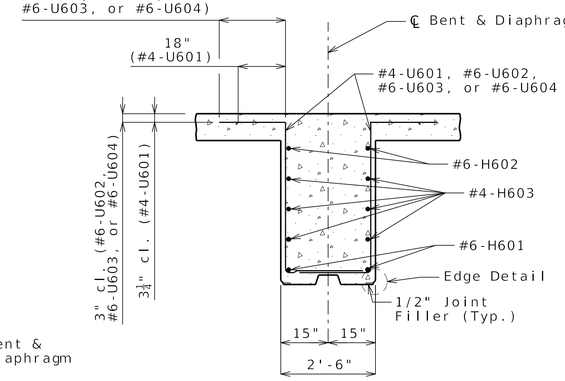
EDGE DETAIL



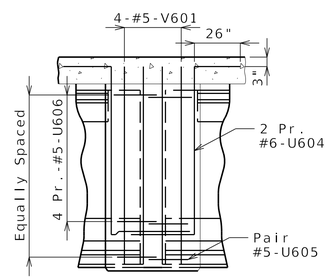
END DETAIL



SECTION A-A



SECTION B-B



ELEVATION C-C

DETAILS OF DIAPHRAGM AT INTERMEDIATE BENTS NO. 2, 3, & 4

Detailed Jul. 2025
Checked Jul. 2025

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

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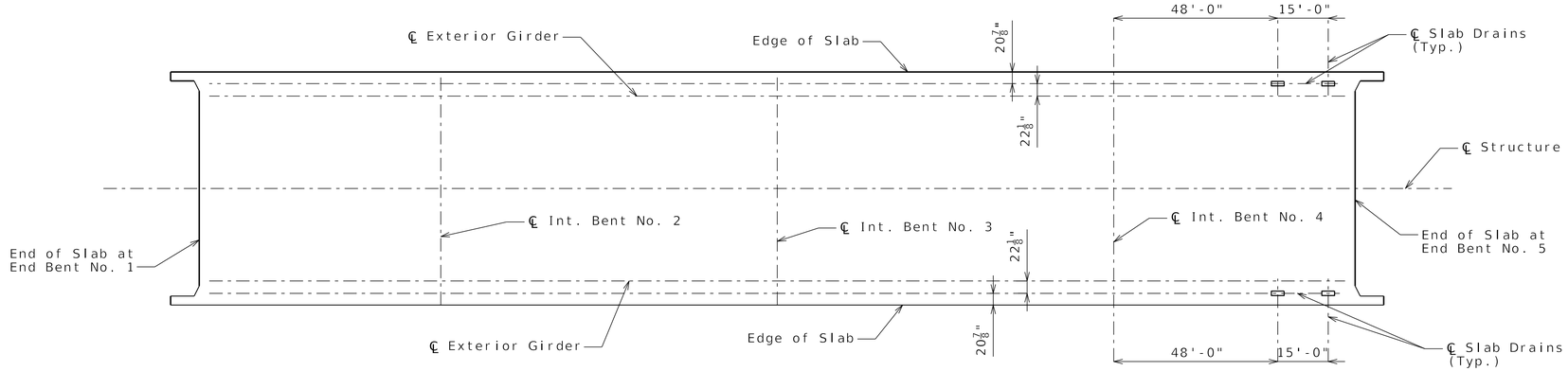
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	26

COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9077

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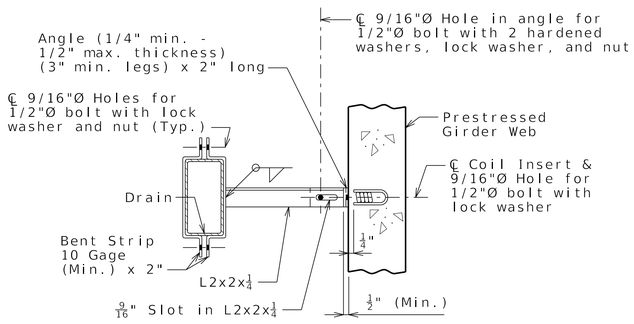
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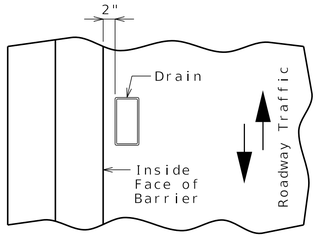


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

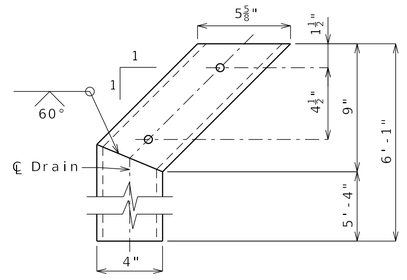
PART SECTION NEAR DRAIN



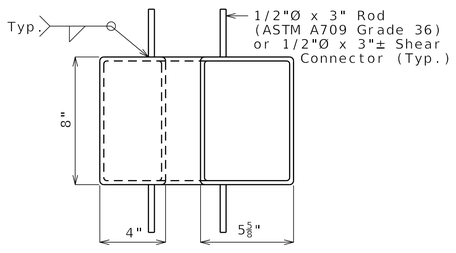
PART SECTION SHOWING BRACKET ASSEMBLY



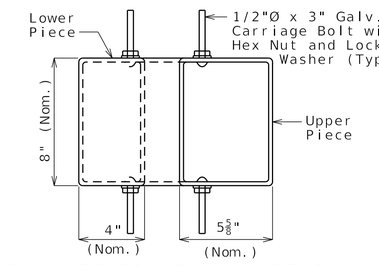
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type.

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

Locate drains in slab by dimensions shown in Part Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

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

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM F2329.

All 1/2"Ø bolts shall be ASTM A307.

Shop drawings will not be required for the slab drains and the bracket assembly.

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

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

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

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

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

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

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

The color of the slab drain shall be gray (Federal Standard #26373). The color shall be uniform throughout the resin and any coating used.

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

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

Both upper and lower drain pieces shall be rigidly connected to each other. Drain flow shall not be obstructed. Approval of the engineer is required.

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
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DISTRICT BR | SHEET NO. 27
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

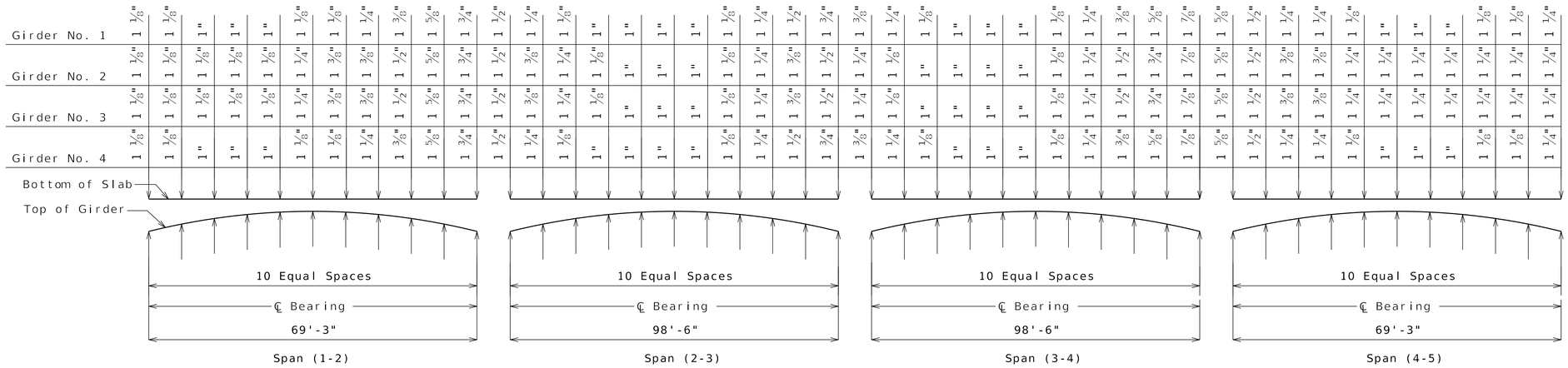
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SLAB DRAINS

Detailed Jul. 2025
Checked Jul. 2025

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



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

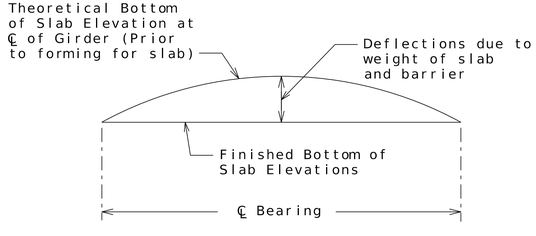
If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU-Girder.

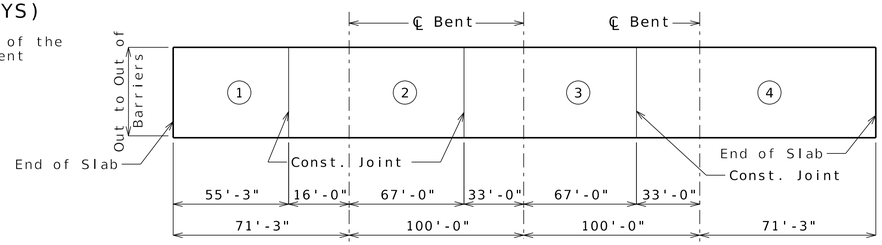
Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

Girder Number	Span (1-2) (69'-3" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	1036.96	1036.85	1036.75	1036.65	1036.54	1036.43	1036.32	1036.20	1036.09	1035.97	1035.85
2	1037.14	1037.04	1036.94	1036.83	1036.73	1036.62	1036.50	1036.39	1036.27	1036.15	1036.03
3	1037.14	1037.04	1036.94	1036.83	1036.73	1036.62	1036.50	1036.39	1036.27	1036.15	1036.03
4	1036.96	1036.85	1036.75	1036.65	1036.54	1036.43	1036.32	1036.20	1036.09	1035.97	1035.85
Girder Number	Span (2-3) (98'-6" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	1035.82	1035.70	1035.57	1035.44	1035.30	1035.15	1034.99	1034.81	1034.63	1034.44	1034.25
2	1036.01	1035.89	1035.77	1035.64	1035.50	1035.34	1035.18	1035.01	1034.82	1034.63	1034.43
3	1036.01	1035.89	1035.77	1035.64	1035.50	1035.34	1035.18	1035.01	1034.82	1034.63	1034.43
4	1035.82	1035.70	1035.57	1035.44	1035.30	1035.15	1034.99	1034.81	1034.63	1034.44	1034.25
Girder Number	Span (3-4) (98'-6" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	1034.22	1034.10	1033.97	1033.84	1033.70	1033.55	1033.39	1033.21	1033.03	1032.84	1032.65
2	1034.41	1034.29	1034.17	1034.04	1033.90	1033.74	1033.58	1033.41	1033.22	1033.03	1032.83
3	1034.41	1034.29	1034.17	1034.04	1033.90	1033.74	1033.58	1033.41	1033.22	1033.03	1032.83
4	1034.22	1034.10	1033.97	1033.84	1033.70	1033.55	1033.39	1033.21	1033.03	1032.84	1032.65
Girder Number	Span (4-5) (69'-3" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	1032.62	1032.52	1032.42	1032.31	1032.21	1032.10	1031.99	1031.87	1031.75	1031.64	1031.52
2	1032.81	1032.71	1032.60	1032.50	1032.39	1032.28	1032.17	1032.06	1031.94	1031.82	1031.70
3	1032.81	1032.71	1032.60	1032.50	1032.39	1032.28	1032.17	1032.06	1031.94	1031.82	1031.70
4	1032.62	1032.52	1032.42	1032.31	1032.21	1032.10	1031.99	1031.87	1031.75	1031.64	1031.52

Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab and barrier.



TYPICAL SLAB ELEVATIONS DIAGRAM



	Sequence of Pours				Min. Rate of Pour Cu. Yds./Hr.
	Direction				With Retarder
Basic Sequence	1	2	3	4	27
	End to 2	1 to 3	2 to 4	3 to End	
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.					
Alternate A Pours	1 + 2		3	4	27
	End to 3		2 to 4	3 to End	
Alternate B Pours	1 + 2		3 + 4		27
	End to 3		2 to End		
Alternate C Pours	1 + 2 + 3 + 4				27
	End to End				

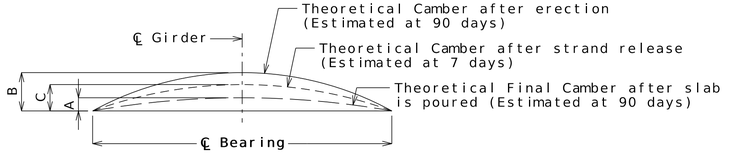
The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

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

SLAB POURING SEQUENCE

Conversion Factors for Girder Camber (Estimated at 90 days):

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



Girder	Span (1-2) & (4-5)			Span (2-3) & (3-4)		
	A	B	C	A	B	C
Exterior	3/8"	5/8"	3/8"	5/8"	2"	1 1/8"
Interior	1/4"			1/2"		

GIRDER CAMBER DIAGRAM

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
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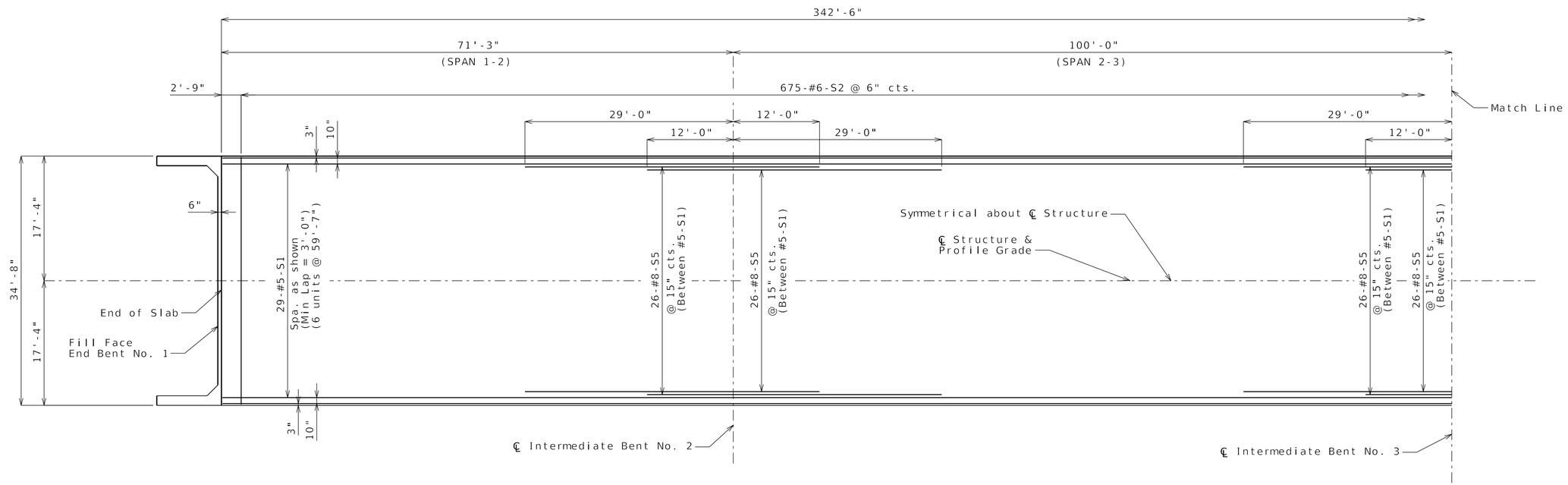
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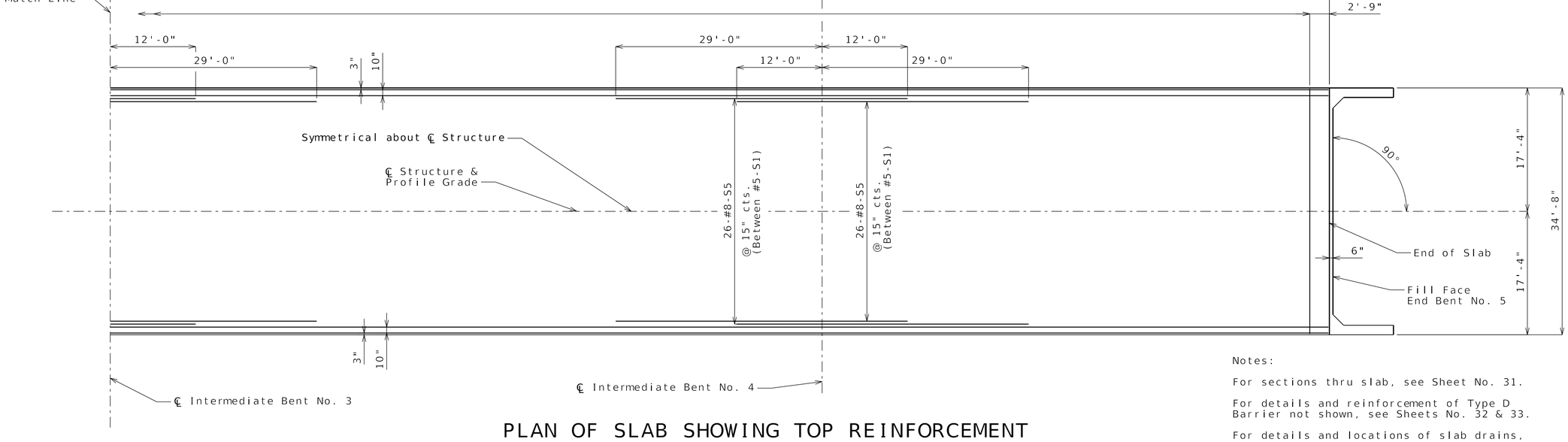
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	28

COUNTY: GREENE
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CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9077

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PLAN OF SLAB SHOWING TOP REINFORCEMENT

Notes:

For sections thru slab, see Sheet No. 31.

For details and reinforcement of Type D Barrier not shown, see Sheets No. 32 & 33.

For details and locations of slab drains, see Sheet No. 27.

For Theoretical Bottom of Slab Elevations, Theoretical Slab Haunching Diagram, and Slab Pouring Sequence, see Sheet No. 28.

Longitudinal slab dimensions are measured horizontally.

Detailed Jul. 2025
Checked Jul. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	29

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

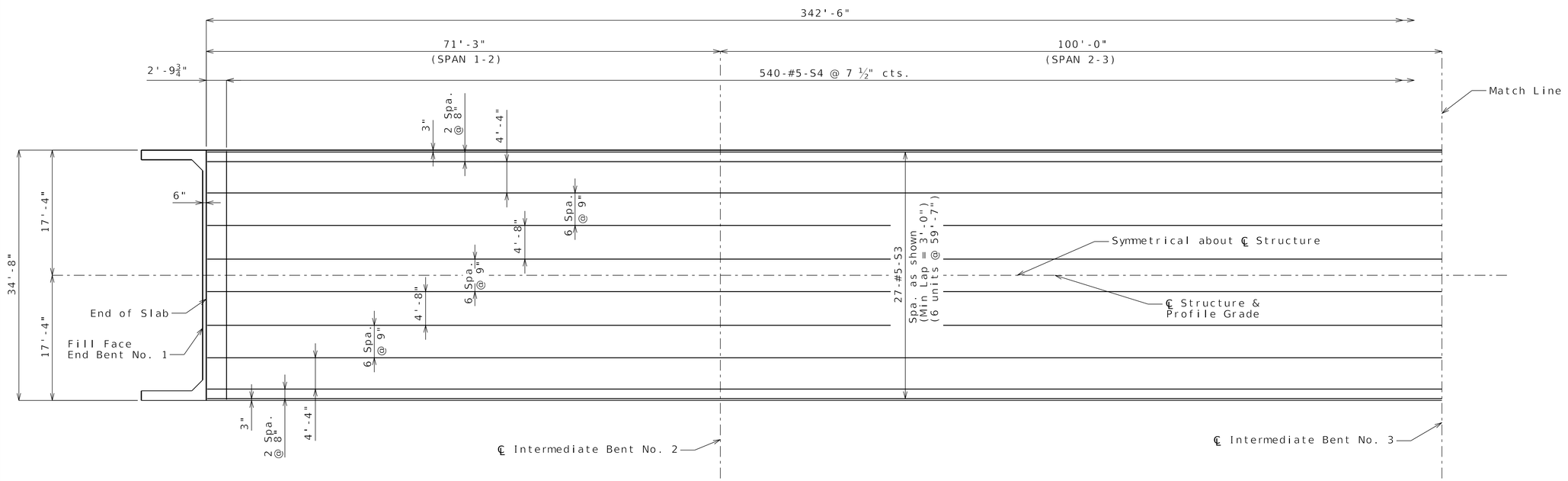
PROJECT NO.

BRIDGE NO.
A9077

DATE	DESCRIPTION

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Notes:

For sections thru slab, see Sheet No. 31.

For details and reinforcement of Type D Barrier not shown, see Sheets No. 32 & 33.

For details and locations of slab drains, see Sheet No. 27.

For Theoretical Bottom of Slab Elevations, Theoretical Slab Haunching Diagram, and Slab Pouring Sequence, see Sheet No. 28.

Longitudinal slab dimensions are measured horizontally.

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
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DATE PREPARED
07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	30

COUNTY
GREENE

JOB NO.
JSR0083

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9077

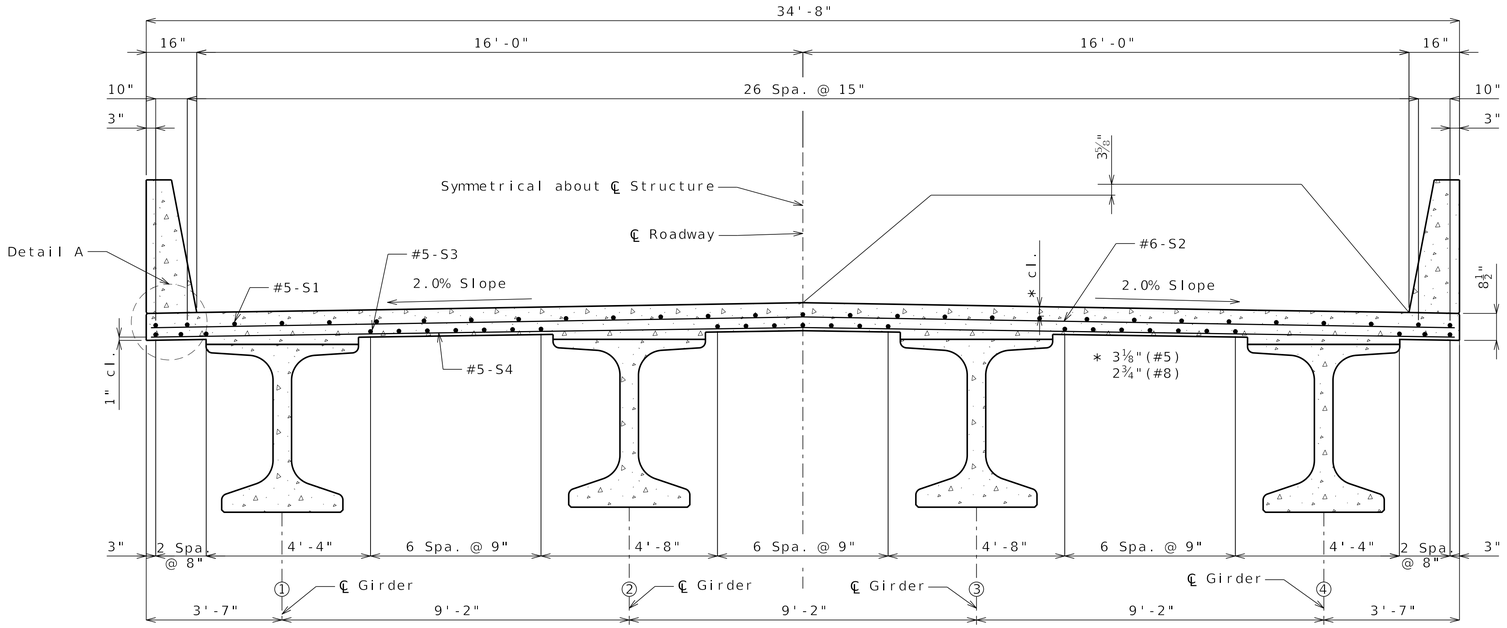
DESCRIPTION	DATE

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

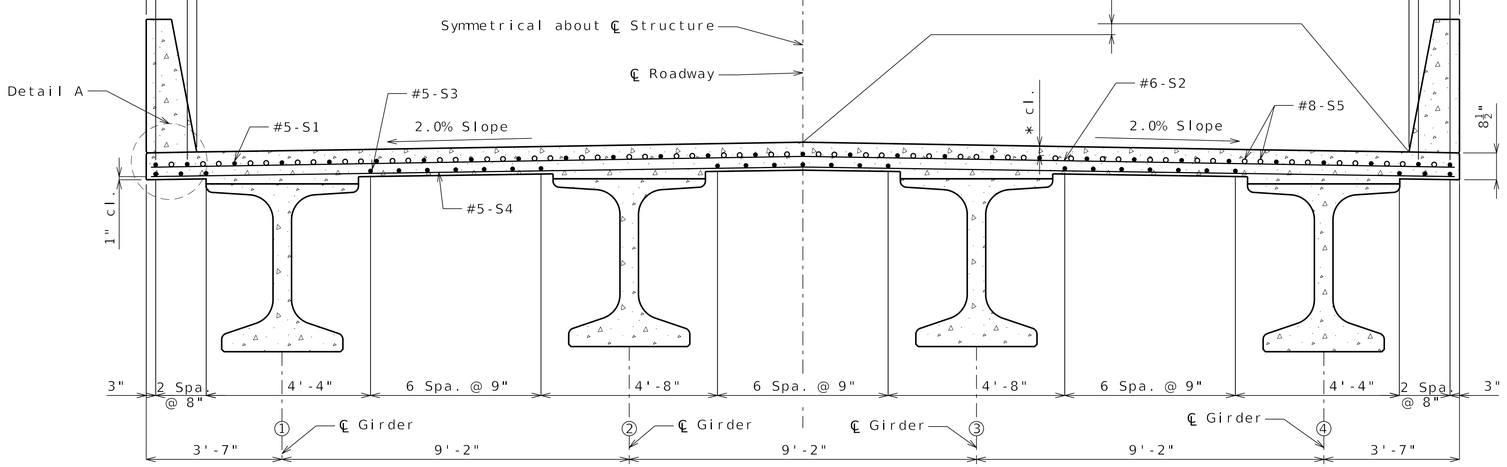
VEENSTRA & KIMM INC.
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TYPICAL HALF SECTION NEAR MID SPAN



TYPICAL HALF SECTION NEAR INTERMEDIATE BENT

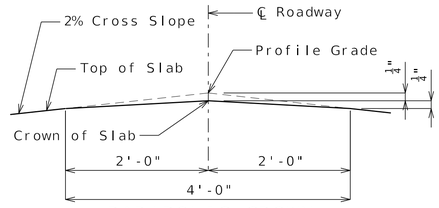
Notes:

For plan of slab showing reinforcement, see Sheets No. 29 & 30.

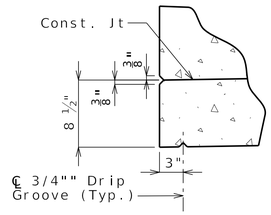
For details and reinforcement of Type D Barrier not shown, see Sheets No. 32 & 33.

For details and locations of slab drains, see Sheet No. 27.

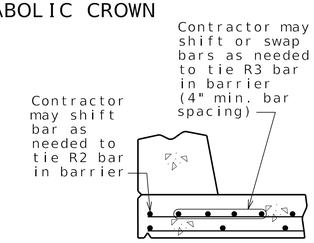
For Theoretical Bottom of Slab Elevations, Theoretical Slab Haunching Diagram, Girder Camber Diagram, and Slab Pouring Sequence, see Sheet No. 28.



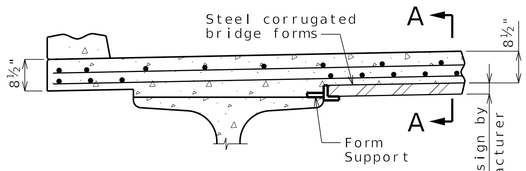
PARABOLIC CROWN

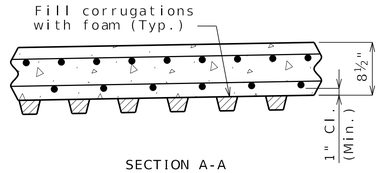


DETAIL A



OPTIONAL SHIFTING TOP BARS AT BARRIER





SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

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. 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.

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
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ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	31

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

PROJECT NO.

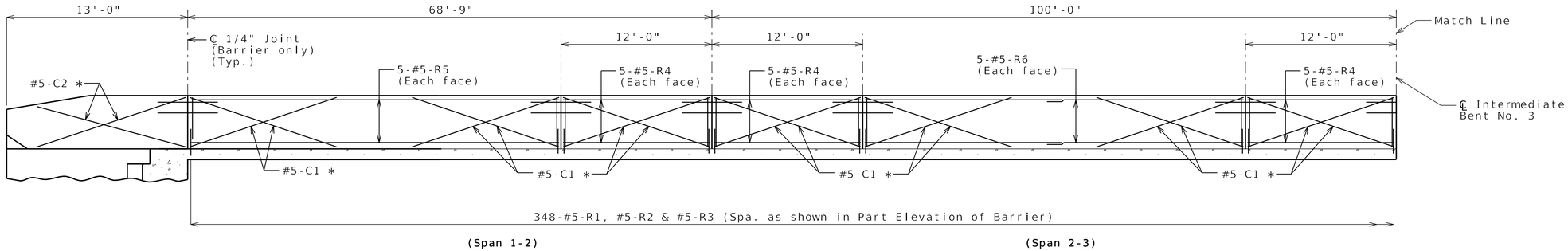
BRIDGE NO. A9077

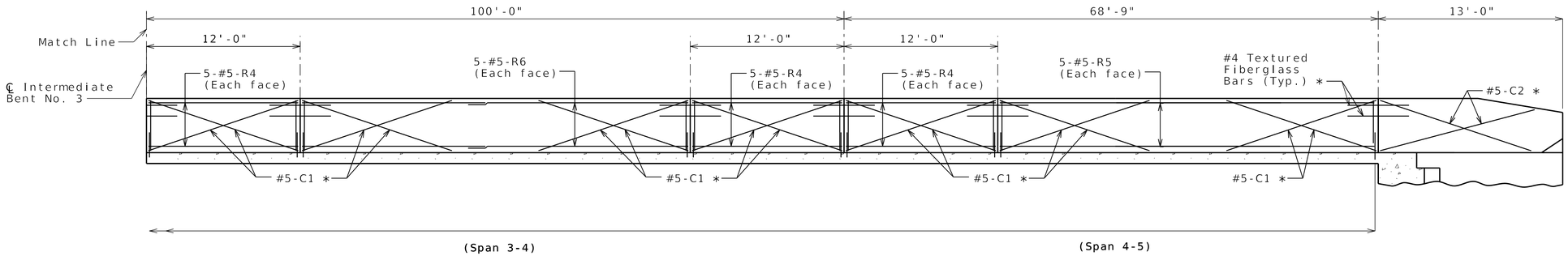
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

Detailed Jul. 2025
Checked Apr. 2026

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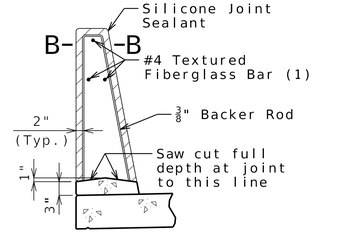




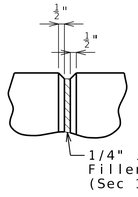
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

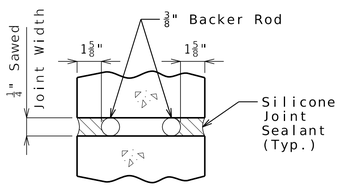
Longitudinal dimensions are horizontal.



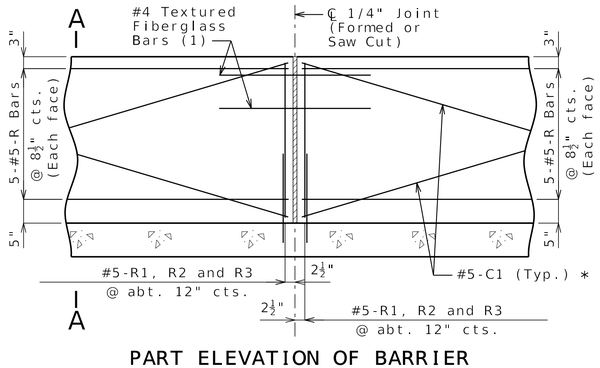
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

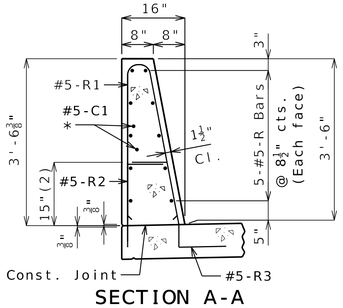


SECTION B-B



PART ELEVATION OF BARRIER

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

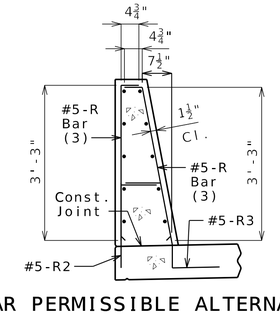


SECTION A-A

Use a minimum lap of 2'-6" for #5 horizontal barrier bars.

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

Conventional forming or slip forming may be used. Saw cut joints may be used with conventional forming.

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

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

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

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.

TYPE D BARRIER

Detailed Jun. 2025
Checked Jul. 2025

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STATE OF MISSOURI
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NUMBER PE-2018000240
PROFESSIONAL ENGINEER
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ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	32

COUNTY GREENE

JOB NO. JSR0083

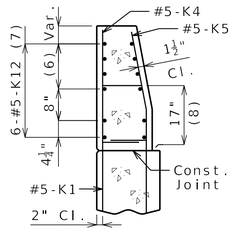
CONTRACT ID.

PROJECT NO.

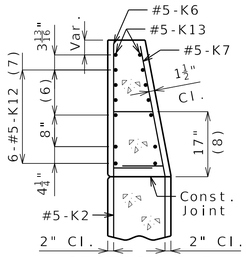
BRIDGE NO. A9077

DESCRIPTION	DATE

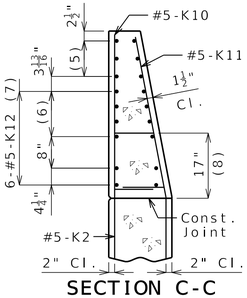
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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MoDOT
VEENSTRA & KIMM INC.
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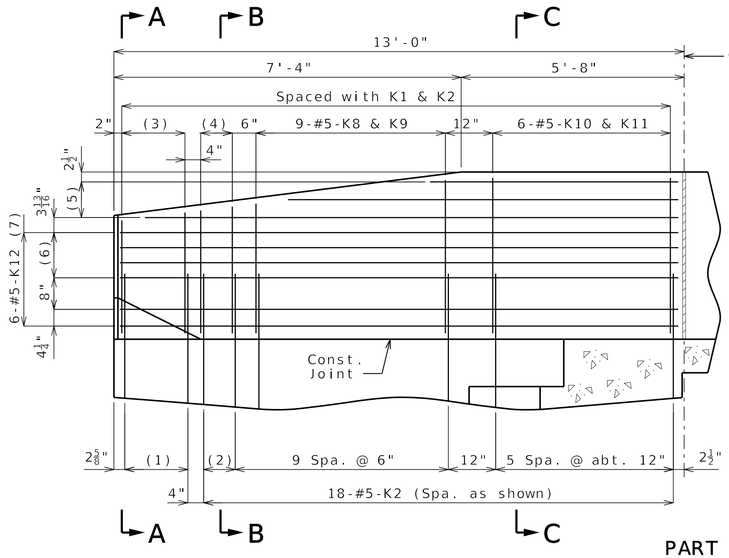
SECTION A-A

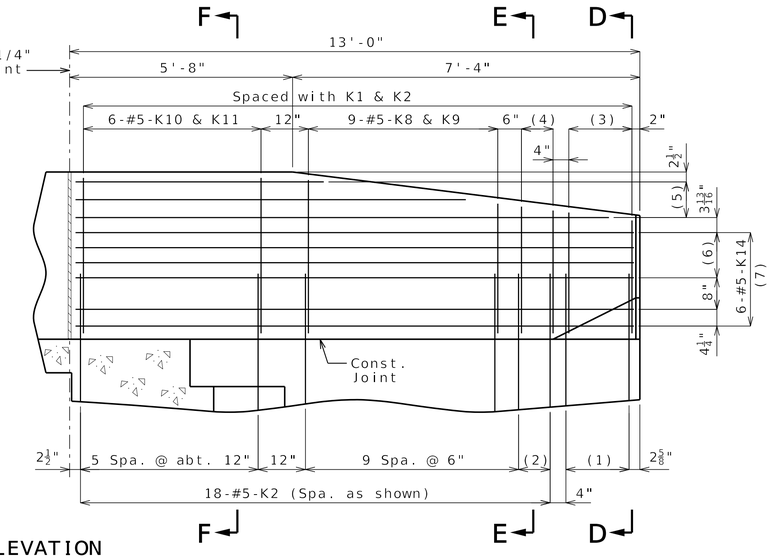


SECTION B-B

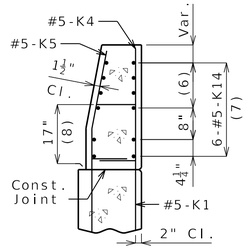


SECTION C-C

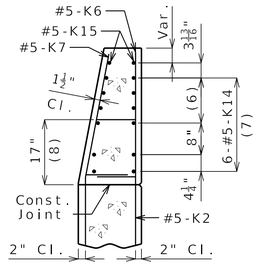




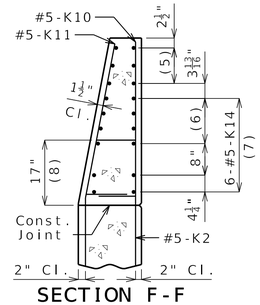
PART ELEVATION



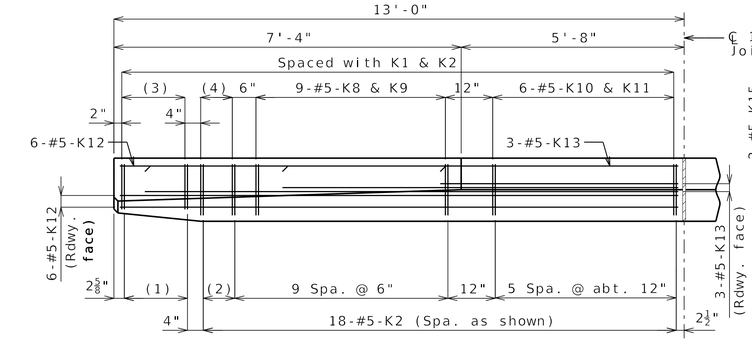
SECTION D-D

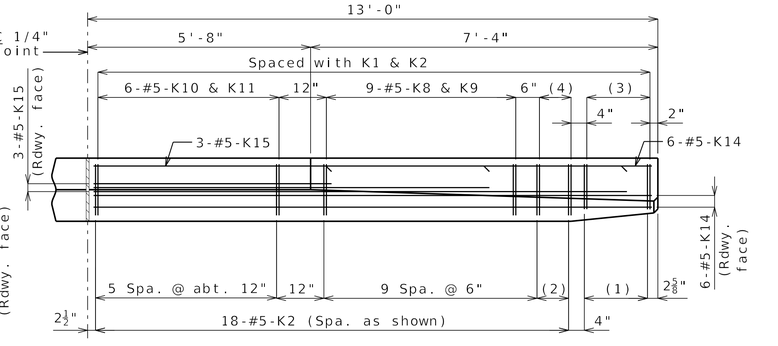


SECTION E-E

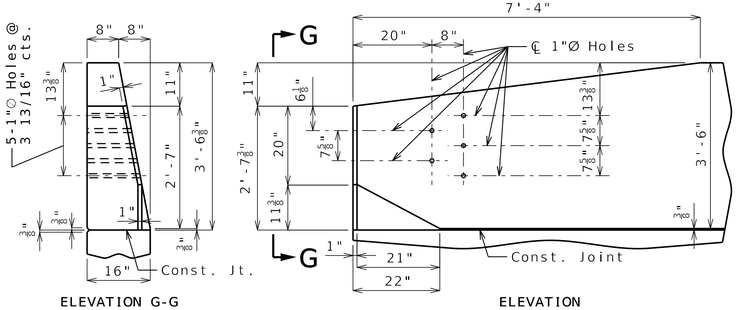


SECTION F-F





PART PLAN



ELEVATION G-G

ELEVATION

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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

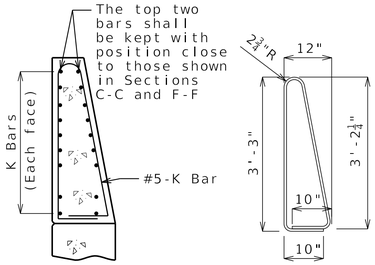
(4) 3-#5-K6 & K7

(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



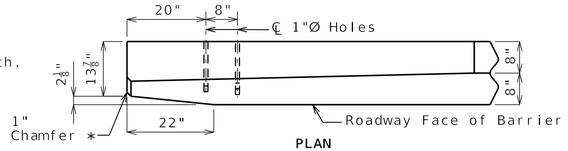
K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(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.

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



PLAN

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.

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 Jun. 2025
Checked Jul. 2025

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

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ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	33

COUNTY GREENE

JOB NO. JSR0083

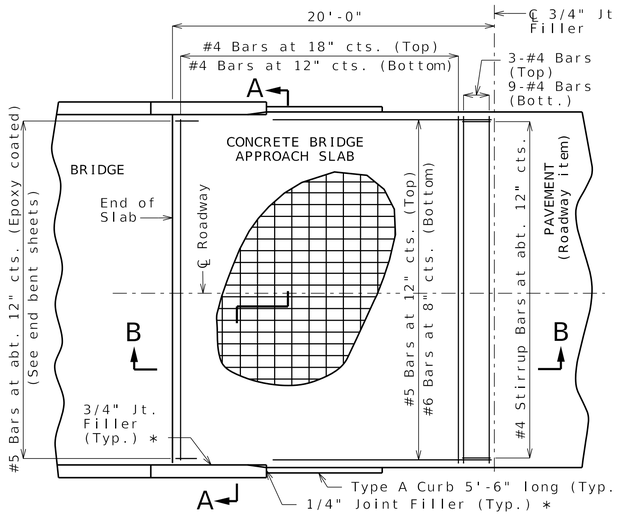
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9077

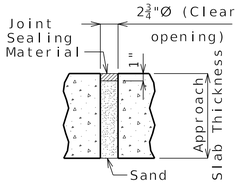
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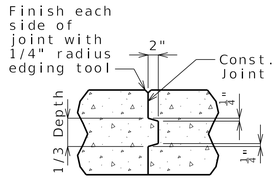
PART PLAN OF SQUARED STRUCTURE

(Skewed structure similar)

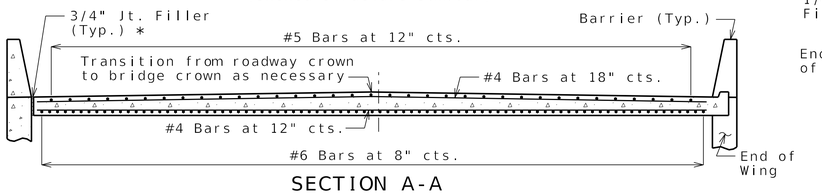


UNDERSEAL ACCESS HOLE DETAIL

(If required)

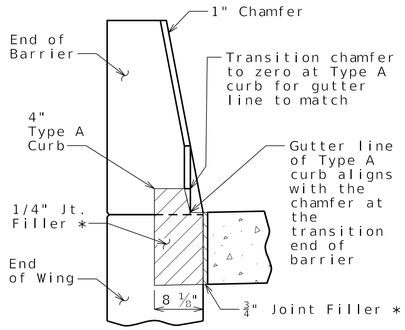


CONSTRUCTION JOINT DETAIL

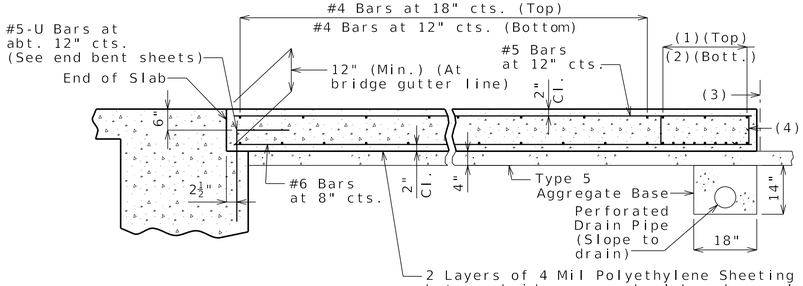


SECTION A-A

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



(1) 3-#4 Bars

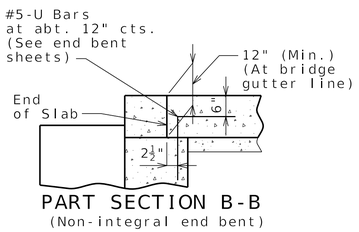
(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

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

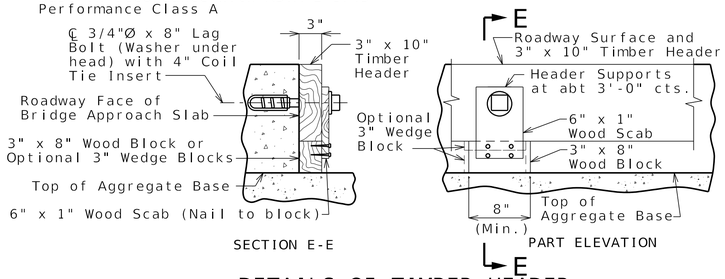
SECTION B-B

(Integral end bent)



PART SECTION B-B

(Non-integral end bent)



SECTION E-E

PART ELEVATION

DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

Notes For Concrete Slab Only:

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

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

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

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 26 inches for #4 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.

Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, 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 (Minor) per square yard.

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

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

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

General Notes:

Contractor shall have the option to construct either slab except as noted.

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

MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

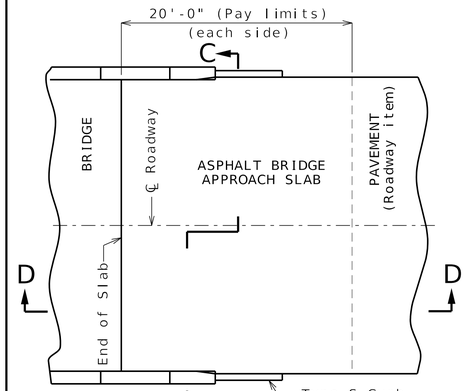
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

Notes For Asphalt Slab Only:

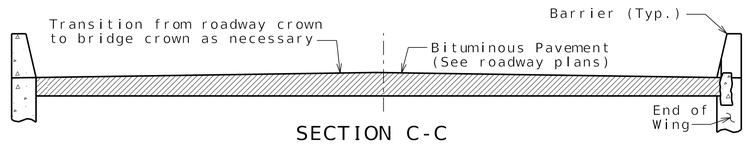
Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor) per square yard.

Application of tack is required between lifts per Sec 403.



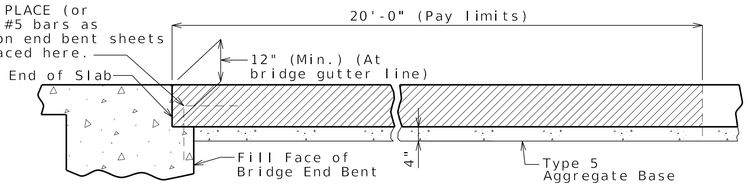
PART PLAN

(Squared structure shown, skewed structure similar)

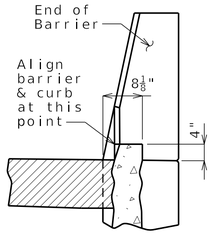


SECTION C-C

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 D-D



4" TYPE S CURB

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

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

Integral end bents shown, non-integral end bent similar.

Detailed Jul. 2025
Checked Jul. 2025

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

ROUTE F | STATE MO

DISTRICT BR | SHEET NO. 34

COUNTY GREENE

JOB NO. JSR0083

CONTRACT ID.

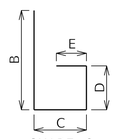
PROJECT NO.

BRIDGE NO. A9077

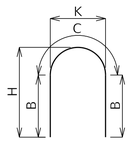
DESCRIPTION | DATE

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

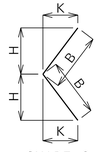
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



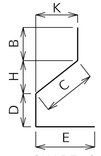
SHAPE 6
or 6S



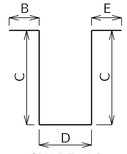
SHAPE 7



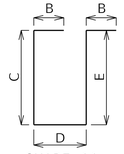
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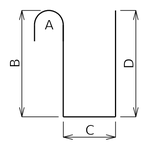
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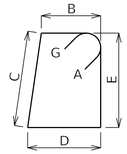
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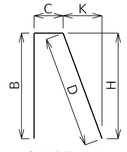
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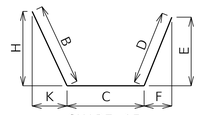
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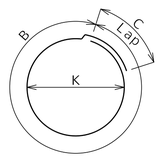
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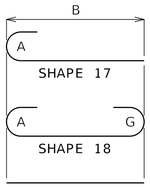
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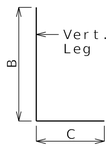
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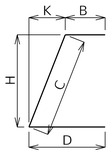
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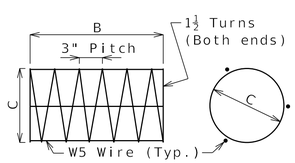
SHAPE 17
SHAPE 18
SHAPE 20



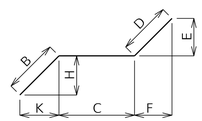
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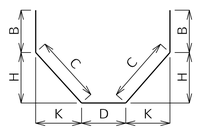
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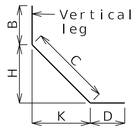
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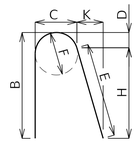
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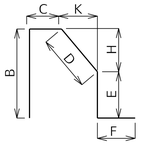
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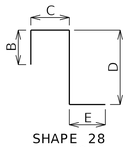
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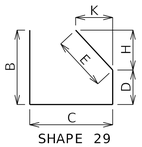
SHAPE 26



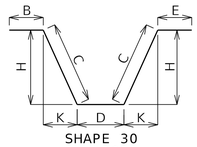
SHAPE 27S



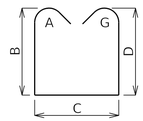
SHAPE 28
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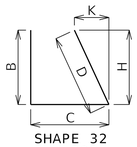
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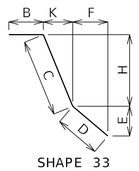
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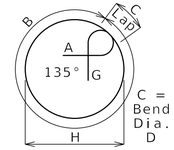
SHAPE 31S



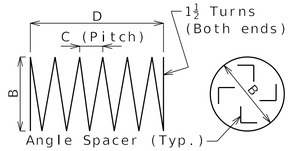
SHAPE 32
or 32S



SHAPE 33
or 33S



SHAPE 34S



SHAPE 35 (1)

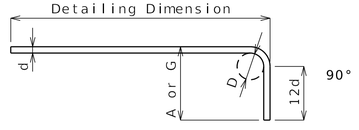


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4½"	12"	8¼"	6"
#7	2	5¼"	14"	9⅜"	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"

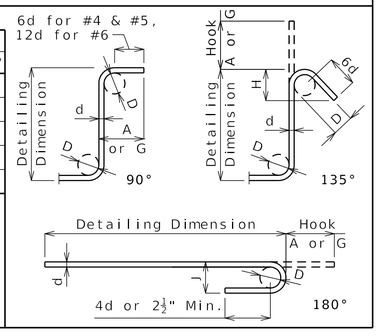


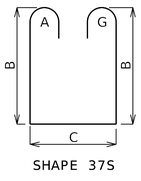
Stirrup Pin Bend Shapes (S)

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"

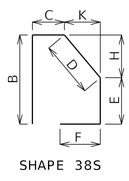
Applicable for all grades of steel.

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	
				Slab					
		Plain	Epoxy	Plain	Epoxy	Barrier	Slip Form	Plain	Epoxy
By Size	W5	0	0	0	0	0	0	0	0
	4	0	0	0	1173	0	0	0	1173
	5	8898	0	0	42,498	18,422	789	8898	61,709
	6	10,728	0	0	42,752	0	0	10,728	42,752
	7	0	0	0	0	0	0	0	0
	8	0	0	0	20,365	0	0	0	20,365
	9	0	0	0	0	0	0	0	0
	10	7674	0	0	0	0	0	7674	0
	11	30,932	0	0	0	0	0	30,932	0
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type		58,232	0	0	106,788	18,422	789	58,232	125,999

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Mar. 2026
Checked Apr. 2026

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 35
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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
		SUBSTRUCTURE													
		INT. BENT NO. 2													
24	6 D201	BEAM		20		2 6.000							2 6	2 6	90
4	10 H201	BEAM		18		32 9.000							35 8	35 8	614
4	10 H202	BEAM		20		32 9.000							32 9	32 9	564
10	6 H203	BEAM		20		32 9.000							32 9	32 9	492
14	6 H204	BEAM		10S			3 7.000	3 7.000					5 7	5 3	110
3	5 P201	COLUMN		35S		3 3.000	6.000	22 1.375					571 9	571 9	1789
1	5 P202	DRILLED SHAFT		35S		3 0.000	6.000	20 8.000					427 3	427 3	446
1	5 P203	DRILLED SHAFT		35S		3 0.000	6.000	27 3.000					551 4	551 4	575
1	5 P204	DRILLED SHAFT		35S		3 0.000	6.000	27 3.000					551 4	551 4	575
33	5 P205	BEAM		34S		10 2.500	2.500				3 3.000		11 5	11 5	393
84	6 U201	BEAM		13S		3 9.000	4 0.000	3 9.000	4 0.000				16 10	16 4	2061
48	6 U202	BEAM		10S			4 0.000	3 9.000					11 9	11 5	823
15	10 V201	COLUMN		17		20 8.000							22 2	22 2	1431
15	10 V202	COLUMN		17		18 8.000							20 2	20 2	1302
18	10 V203	COLUMN		17		16 8.000							18 2	18 2	1407
5	11 V204	DRILLED SHAFT		20		32 6.000							32 6	32 6	863
5	11 V205	DRILLED SHAFT		20		34 6.000							34 6	34 6	916
6	11 V206	DRILLED SHAFT		20		36 6.000							36 6	36 6	1164
10	11 V207	DRILLED SHAFT		20		39 0.000							39 0	39 0	2072
10	11 V208	DRILLED SHAFT		20		41 0.000							41 0	41 0	2178
12	11 V209	DRILLED SHAFT		20		43 0.000							43 0	43 0	2742
		INT. BENT NO. 3													
24	6 D301	BEAM		20		2 6.000							2 6	2 6	90
4	10 H301	BEAM		18		32 9.000							35 8	35 8	614
4	10 H302	BEAM		20		32 9.000							32 9	32 9	564
10	6 H303	BEAM		20		32 9.000							32 9	32 9	492
14	6 H304	BEAM		10S			12.000	3 7.000					5 7	5 3	110
3	5 P301	COLUMN		35S		3 3.000	6.000	11 4.500					232 3	232 3	727
3	5 P302	DRILLED SHAFT		35S		3 0.000	6.000	22 0.000					415 3	415 3	1299
33	5 P303	BEAM		34S		10 2.500	2.500				3 3.000		11 5	11 5	393
84	6 U301	BEAM		13S		3 9.000	4 0.000	3 9.000	4 0.000				16 10	16 4	2061
48	6 U302	BEAM		10S			4 0.000	3 9.000					11 9	11 5	823
48	11 V301	COLUMN		17		36 11.00							38 7	38 7	9840
		INT. BENT NO. 4													
24	6 D401	BEAM		20		2 6.000							2 6	2 6	90
4	10 H401	BEAM		18		32 9.000							35 8	35 8	614
4	10 H402	BEAM		20		32 9.000							32 9	32 9	564
10	6 H403	BEAM		20		32 9.000							32 9	32 9	492
14	6 H404	BEAM		10S			12.000	3 7.000					5 7	5 3	110
3	5 P401	COLUMN		35S		3 3.000	6.000	9 3.625					190 0	190 0	595
3	5 P402	DRILLED SHAFT		35S		3 0.000	6.000	29 0.000					547 5	547 5	1713
33	5 P403	BEAM		34S		10 2.500	2.500				3 3.000		11 5	11 5	393
84	6 U401	BEAM		13S		3 9.000	4 0.000	3 9.000	4 0.000				16 10	16 4	2061
48	6 U402	BEAM		10S			4 0.000	3 9.000					11 9	11 5	823
48	11 V401	COLUMN		17		42 2.000							43 9	43 9	11157

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
		INT. BENT DIAPHRAGM													
18	6 H601	DIAPHRAGM	E	20		5 6.000							5 6	5 6	149
18	6 H602	DIAPHRAGM	E	20		7 10.000							7 10	7 10	212
54	4 H603	DIAPHRAGM	E	20		8 2.000							8 2	8 2	295
12	5 H604	DIAPHRAGM	E	20		5 9.000							5 9	5 9	72
12	5 H605	DIAPHRAGM	E	20		4 6.000							4 6	4 6	56
90	4 U601	DIAPHRAGM	E	28S			2 1.000	4 7.000	18.000				8 2	7 11	476
36	6 U602	DIAPHRAGM	E	28S			2 3.000	4 7.000	2 2.000				9 0	8 8	469
36	6 U603	DIAPHRAGM	E	28S			2 3.000	3 9.000	2 2.000				8 2	7 10	424
24	6 U604	DIAPHRAGM	E	28S			20.000	3 9.000	2 2.000				7 7	7 3	261
12	5 U605	DIAPHRAGM	E	6S		4 11.000	12.000						5 11	5 9	72
48	5 U606	DIAPHRAGM	E	6S		4 11.000	12.000	18.000					7 5	7 2	359
24	5 V601	DIAPHRAGM	E	20		4 3.000							4 3	4 3	106

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. 35.

Reinforcing steel (ASTM A706 Grade 60) fy = 60,000 psi

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 Jul. 2025
Checked Apr. 2026

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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 NO. 1													
32	5 D101	DIAPHRAGM	E	19		2 0.000	15.000						3 3	3 2	106
22	6 F101	WING BRACE	E	15		20.000	3 8.000	20.000	14.125	14.125	14.125	14.125	7 0	6 10	226
10	6 F102	DIAPHRAGM	E	6		5 3.000	2 9.000						8 0	7 10	118
4	5 H101	DIAPHRAGM	E	20		6 6.000							6 6	6 6	27
12	8 H102	BEAM & DIAPHRAGM	E	20		34 5.000							34 5	34 5	1103
9	6 H103	BEAM & DIAPHRAGM	E	20		34 5.000							34 5	34 5	465
12	6 H104	DIAPHRAGM	E	20		8 2.000							8 2	8 2	147
2	6 H105	DIAPHRAGM	E	20		20.000							1 8	1 8	5
48	6 H106	WINGWALL	E	20		11 2.000							11 2	11 2	805
16	8 H107	WINGWALL	E	20		12 8.000							12 8	12 8	541
3	6 H108	DIAPHRAGM	E	20		5 5.000							5 5	5 5	24
8	6 H109	DIAPHRAGM	E	20		3 0.000							3 0	3 0	36
18	5 U101	BEAM	E	10S			6 11.000	2 9.000					16 7	16 4	307
24	4 U102	BEAM	E	13S		2 9.000	2 8.000	2 9.000	2 8.000				11 7	11 3	180
4	4 U103	BEAM	E	10S			2 8.000	2 9.000					8 1	7 10	21
24	5 U104	DIAPHRAGM	E	10S			4 2.000	2 3.000					10 7	10 4	259
24	6 U105	DIAPHRAGM	E	19S		3 0.000	2 9.000						5 9	5 7	201
43	6 U106	DIAPHRAGM	E	19S		4 2.000	4 3.000						8 5	8 3	533
12	5 V101	BEAM	E	20		6 11.000							6 11	6 11	87
44	6 V102	WINGWALL	E	20		8 0.000							8 0	8 0	507
24	6 V103	DIAPHRAGM	E	20		3 10.000							3 10	3 10	138

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 NO. 5													
32	5 D501	DIAPHRAGM	E	19		2 0.000	15.000						3 3	3 2	106
20	6 F501	WING BRACE	E	15		20.000	3 8.000	20.000	14.125	14.125	14.125	14.125	7 0	6 10	205
10	6 F502	DIAPHRAGM	E	6		5 3.000	2 9.000						8 0	7 10	118
4	5 H501	DIAPHRAGM	E	20		6 6.000							6 6	6 6	27
12	8 H502	BEAM & DIAPHRAGM	E	20		34 5.000							34 5	34 5	1103
9	6 H503	BEAM & DIAPHRAGM	E	20		34 5.000							34 5	34 5	465
12	6 H504	DIAPHRAGM	E	20		8 2.000							8 2	8 2	147
2	6 H505	DIAPHRAGM	E	20		20.000							1 8	1 8	5
44	6 H506	WINGWALL	E	20		11 2.000							11 2	11 2	738
16	8 H507	WINGWALL	E	20		12 8.000							12 8	12 8	541
3	6 H508	DIAPHRAGM	E	20		5 5.000							5 5	5 5	24
8	6 H509	DIAPHRAGM	E	20		3 0.000							3 0	3 0	36
18	5 U501	BEAM	E				6 10.000	2 9.000					16 5	16 2	304
24	4 U502	BEAM	E			2 9.000	2 8.000	2 9.000	2 8.000				11 7	11 3	180
4	4 U503	BEAM	E				2 8.000	2 9.000					8 1	7 10	21
24	5 U504	DIAPHRAGM	E				4 2.000	2 3.000					10 7	10 4	259
24	6 U505	DIAPHRAGM	E			3 0.000	2 9.000						5 9	5 7	201
43	6 U506	DIAPHRAGM	E			4 2.000	4 3.000						8 5	8 3	533
12	5 V501	BEAM	E	20		6 10.000							6 10	6 10	86
44	6 V502	WINGWALL	E	20		7 8.000							7 8	7 8	507
24	6 V503	DIAPHRAGM	E	20		3 10.000							3 10	3 10	138

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. 35.

Reinforcing steel (ASTM A706 Grade 60) fy = 60,000 psi

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. 2026
Checked Mar. 2026

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	37

COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9077

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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
		SLAB													
174	5 S1	SLAB	E	20		59 7.000							59 7	59 7	10813
675	6 S2	SLAB	E	20		34 5.000							34 5	34 5	34893
162	5 S3	SLAB	E	20		59 7.000							59 7	59 7	10068
540	5 S4	SLAB	E	20		34 5.000							34 5	34 5	19384
156	8 S5	SLAB	E	20		41 0.000							41 0	41 0	17077
		BARRIER													
20	5 K1	BARRIER	E	27S		3 5.000	9.250	5.375	2 11.750		5.250	1.000	7 7	7 3	151
72	5 K2	BARRIER	E	27S		3 5.000	9.250	14.500	2 2.750		14.250	2.750	7 8	7 5	557
20	5 K4	BARRIER	E	19S	4	2 4.250	10.000						3 2	3 0	
		INCR.= 0.50 INCH				2 6.750	10.000						3 5	3 3	65
20	5 K5	BARRIER	E	38S	4			18.500	9.500	8.250	18.000	4.000	3 0	2 10	
		INCR.= 0.50 INCH						20.500	9.500	8.250	20.000	4.500	3 2	3 0	61
12	5 K6	BARRIER	E	19S		2 6.750	10.000						3 5	3 3	41
12	5 K7	BARRIER	E	21S			2 6.625	10.000			2 6.000	6.250	3 5	3 3	41
36	5 K8	BARRIER	E	19S	4	2 8.500	10.000						3 7	3 5	
		INCR.= 0.75 INCH				3 2.500	10.000						4 1	3 11	138
36	5 K9	BARRIER	E	21S	4		2 8.500	10.000			2 7.750	6.750	3 7	3 5	
		INCR.= 0.75 INCH					3 2.500	10.000			3 1.750	7.750	4 1	3 11	138
24	5 K10	BARRIER	E	19S		3 3.000	10.000						4 1	3 11	98
24	5 K11	BARRIER	E	21S			3 3.000	10.000			3 2.250	7.750	4 1	3 11	98
24	5 K12	BARRIER	E	20		12 9.000							12 9	12 9	319
12	5 K13	BARRIER	E	20	4	6 0.000							6 0	6 0	
		INCR.= 24.0 INCH				12 0.000							12 0	12 0	113
24	5 K14	BARRIER	E	20		12 9.000							12 9	12 9	319
12	5 K15	BARRIER	E	20	4	6 0.000							6 0	6 0	
		INCR.= 24.0 INCH				12 0.000							12 0	12 0	113
696	5 R1	BARRIER	E	26S		3 3.000	5.500	2.250	3 1.375	5.500	3 0.750	6.750	6 11	6 11	5021
696	5 R2	BARRIER	E	19S		20.500	9.500						2 6	2 4	1694
696	5 R3	BARRIER	E	27S			9.500	15.250	5.000	12.000	15.000	3.000	3 6	3 3	2359
120	5 R4	BARRIER	E	20		11 9.000							11 9	11 9	1471
40	5 R5	BARRIER	E	20		56 6.000							56 6	56 6	2357
80	5 R6	BARRIER	E	20		39 2.000							39 2	39 2	3268
		SLIP FORM OPTION													
56	5 C1	BARRIER	E	20		12 0.000							12 0	12 0	701
8	5 C2	BARRIER	E	20		10 6.000							10 6	10 6	88

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. 35.

Reinforcing steel (ASTM A706 Grade 60) fy = 60,000 psi

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. 2026
Checked Apr. 2026

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

BILL OF REINFORCING STEEL

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED. SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

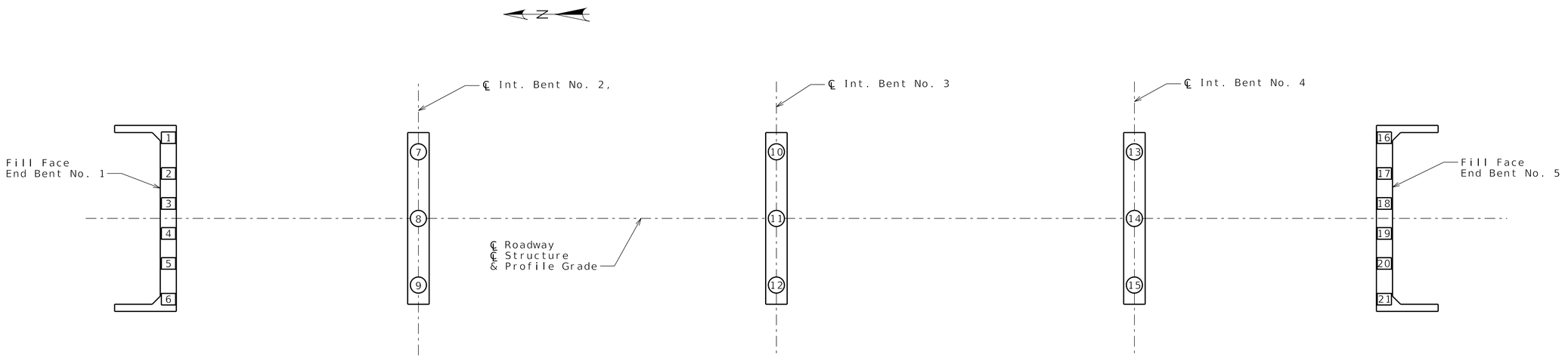
ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	38

COUNTY: GREENE
JOB NO.: JSR0083
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9077

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



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

As-Built Pile Data

Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
5			
6			

As-Built Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Intermediate Bent No. 2
7				
8				
9				
				Intermediate Bent No. 3
10				
11				
12				
				Intermediate Bent No. 4
13				
14				
15				

As-Built Pile Data

Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent Bent No. 5
16			
17			
18			
19			
20			
21			

AS-BUILT PILE & DRILLED SHAFT DATA

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

This sheet to be completed by MoDOT construction personnel.

Detailed Jul. 2025
Checked Feb. 2026

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	39

COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006047

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-101 (V-24-57)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 1-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516387.4 **Date of Work:** 11/05/24-11/05/24
Offset: **Easting:** 1325592.5 **Depth to Water:**
Elevation: 1033.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-12.9' AIR	1030						
5			1025						
10			1020						
15		12.9-35.9' Overburden	1015						
20			1010						
25			1005						
30			1000						
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-101 (V-24-57)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 1-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516387.4 **Date of Work:** 11/05/24-11/05/24
Offset: **Easting:** 1325592.5 **Depth to Water:**
Elevation: 1033.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		12.9-35.9' Overburden *(continued)*							
40		35.9-36.8' Limestone, gray and tan, highly weathered, Vuggy 36.8-38.1' VOID 38.1-39.5' Limestone, gray, thin bedded, moderately weathered, scattered chert and pitting, fine grained	995		66 (46)		Qu Test Results UCS = 1650 ksf MC = 0% γ_{moist} = 158.2 pcf		
45		39.5-48.9' Limestone, gray, thin bedded, very strong rock, slightly weathered, scattered chert and pitting, fine grained	990		100 (100)		Qu Test Results UCS = 1190 ksf MC = 0% γ_{moist} = 160.7 pcf		
			985		100 (100)				
		Bottom of borehole at 48.9 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE -MODOT_20151118.GDT - 1/16/25 13:09 - Z:\SG\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2010000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 40
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-102 (V-24-53)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 1-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516387.4 **Date of Work:** 10/28/24-10/29/24
Offset: **Easting:** 1325587.7 **Depth to Water:** 28.6
Elevation: 1033.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-14.0' AIR	1030						
5			1025						
10			1020						
15		14.0-23.0' Brown, CLAYEY GRAVEL scattered cobbles, medium dense, moist	1015						
20			1010	X		33	8-6-12 (28)		
25		23.0-28.6' Brownish gray, GRAVELLY LEAN CLAY, medium stiff, moist	1005	X		67	3-2-2 (6)	PP = 0.50 tsf	
30		28.6-31.8' Whitish gray, GRAVEL trace cobbles, medium dense, wet, medium grained	1000	X		33	5-9-5 (22)		
35		31.8-34.9' Limestone, highly weathered, cut with casing advancer							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-102 (V-24-53)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 1-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516387.4 **Date of Work:** 10/28/24-10/29/24
Offset: **Easting:** 1325587.7 **Depth to Water:** 28.6
Elevation: 1033.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		34.9-38.9' Cherty Limestone, tannish gray, medium bedded, medium strong rock, slightly weathered, fine grained *(continued)*	995		100 (38)		Qu Test Results UCS = 359 ksf MC = 0% γ_{moist} = 148.6 pcf		
40		38.9-47.6' Cherty Limestone, tannish gray, medium bedded, strong rock to very strong rock, slightly weathered, fine grained	990		100 (90)		Qu Test Results UCS = 738 ksf MC = 0% γ_{moist} = 159.6 pcf		
45			985		100 (90)		Qu Test Results UCS = 1800 ksf MC = 0% γ_{moist} = 160.1 pcf		
50		47.6-52.0' Cherty Limestone, tannish gray, thin bedded, medium strong rock, slightly weathered, fine grained, pitted	980		100 (80)		Qu Test Results UCS = 417 ksf MC = 0% γ_{moist} = 160.9 pcf		
55		52.0-64.9' Limestone, tannish gray, thin bedded, extremely strong rock to very strong rock, slightly weathered, fine grained, interbedded with Chert	975		100 (46)		Qu Test Results UCS = 2090 ksf MC = 0% γ_{moist} = 161.1 pcf		
60			970		100 (78)		Qu Test Results UCS = 1190 ksf MC = 0% γ_{moist} = 161.1 pcf		
		Bottom of borehole at 64.9 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 12/23/24 09:57 - Z:\SG\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 41
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-103 (V-24-68)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 1-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516387.5 **Date of Work:** 11/21/24-11/21/24
Offset: **Easting:** 1325582.1 **Depth to Water:**
Elevation: 1033.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-12.3' AIR	1030						
5									
10			1025						
		12.3-31.9' Overburden	1020						
15									
			1015						
20									
			1010						
25									
			1005						
30									
		31.9-40.4' Limestone, gray, highly weathered, cut with casing advancer	1000						
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-103 (V-24-68)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 1-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516387.5 **Date of Work:** 11/21/24-11/21/24
Offset: **Easting:** 1325582.1 **Depth to Water:**
Elevation: 1033.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		31.9-40.4' Limestone, gray, highly weathered, cut with casing advancer *(continued)*	995						
40		40.4-50.4' Cherty Limestone, gray, thin bedded, very strong rock to extremely strong rock, slightly weathered, fine grained	990		100 (80)		Qu Test Results UCS = 1730 ksf MC = 0% γ_{moist} = 161.2 pcf		
45			985		100 (64)		Qu Test Results UCS = 2010 ksf MC = 0% γ_{moist} = 163.4 pcf		
50		Bottom of borehole at 50.4 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 42
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-201 (V-24-56)
Page 1 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 2-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516318.1 **Date of Work:** 11/05/24-11/05/24
Offset: **Easting:** 1325591.4 **Depth to Water:** 25.5
Elevation: 1032.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0	0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-25.5' AIR	1030						
5		1025						
10		1020						
15		1015						
20		1010						
25	25.5-28.1' Water (Sac River) 28.1-33.2' Overburden	1005						
30		1000						
35	33.2-34.4' Limestone, highly weathered, cut with casing advancer							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-201 (V-24-56)
Page 2 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 2-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516318.1 **Date of Work:** 11/05/24-11/05/24
Offset: **Easting:** 1325591.4 **Depth to Water:** 25.5
Elevation: 1032.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35	34.4-41.2' Limestone, gray, thin bedded, strong rock, moderately weathered, With crystalline calcite, scattered chert and pitting, fine grained *(continued)*	995		94 (76)		Qu Test Results UCS = 965 ksf MC = 0% γ_{moist} = 155.2 pcf		
40	41.2-55.4' Limestone, gray, thin bedded to medium bedded, strong rock to very strong rock, slightly weathered, scattered chert and pitting, fine grained	990		100 (72)		Qu Test Results UCS = 647 ksf MC = 0% γ_{moist} = 153 pcf		
45		985		94 (82)		Qu Test Results UCS = 719 ksf MC = 0% γ_{moist} = 149.4 pcf		
50	52.0-52.2' brecciated	980		100 (100)		Qu Test Results UCS = 1440 ksf MC = 0% γ_{moist} = 161.4 pcf		
55	55.4-74.4' Cherty Limestone, gray and bluish gray, thin bedded, very strong rock to extremely strong rock, slightly weathered, fine grained	975		98 (96)		Qu Test Results UCS = 1040 ksf MC = 0% γ_{moist} = 154.9 pcf		
60		970		92 (38)		Qu Test Results UCS = 1410 ksf MC = 0% γ_{moist} = 157.2 pcf		
65		965		96 (88)		Qu Test Results UCS = 3020 ksf MC = 0% γ_{moist} = 165.2 pcf		
70								

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed Jun. 2025
Checked Jul. 2025

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 43
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-201 (V-24-56)
Page 3 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 2-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516318.1 **Date of Work:** 11/05/24-11/05/24
Offset: **Easting:** 1325591.4 **Depth to Water:** 25.5
Elevation: 1032.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		55.4-74.4' Cherty Limestone, gray and bluish gray, thin bedded, very strong rock to extremely strong rock, slightly weathered, fine grained *(continued)*	960		84 (40)		Qu Test Results UCS = 1260 ksf MC = 0% γ_{moist} = 165.6 pcf		
		Bottom of borehole at 74.4 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-202 (V-24-67)
Page 1 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 2-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516318.1 **Date of Work:** 11/20/24-11/20/24
Offset: **Easting:** 1325586 **Depth to Water:** 24.0
Elevation: 1032.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT							
		0.2-0.8' CONCRETE, (Bridge Deck)							
		0.8-24.0' AIR	1030						
5			1025						
10			1020						
15			1015						
20			1010						
25		24.0-29.2' Water (Sac River)	1005						
30		29.2-35.0' Overburden	1000						
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

LETTER BOREHOLE - MODOT_20151118.GDT - 12/23/24 09:57 - Z:\SG\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

(Continued Next Page)

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 44
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-202 (V-24-67)

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 2-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516318.1 **Date of Work:** 11/20/24-11/20/24
Offset: **Easting:** 1325586 **Depth to Water:** 24.0
Elevation: 1032.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		35.0-36.0' Limestone, highly weathered, cut with casing advancer							
		36.0-38.2' Limestone, gray, thin bedded, very strong rock, slightly weathered, fine grained	995		39 (32)		Qu Test Results UCS = 1140 ksf MC = 0% γ_{moist} = 163.3 pcf		
40		38.2-41.0' Clay Layer							
		41.0-43.5' Cherty Limestone, gray, thin bedded, very strong rock, slightly weathered, Vuggy, fine grained	990		80 (48)		Qu Test Results UCS = 1190 ksf MC = 0% γ_{moist} = 156.6 pcf		
45		43.5-44.5' Clay Layer							
		44.5-48.3' Cherty Limestone, gray, thin bedded, very strong rock, slightly weathered, Vuggy, fine grained	985		88 (44)		Qu Test Results UCS = 1930 ksf MC = 0% γ_{moist} = 162.5 pcf		
		48.3-48.6' Clay Seam							
50		48.6-76.0' Cherty Limestone, gray, thin bedded to medium bedded, very strong rock to strong rock, slightly weathered, fine grained 50.7-52.0' Vuggy	980		100 (80)		Qu Test Results UCS = 484 ksf MC = 0% γ_{moist} = 143.4 pcf		
55			975		100 (82)		Qu Test Results UCS = 1240 ksf MC = 0% γ_{moist} = 157.4 pcf		
60			970		88 (74)		Qu Test Results UCS = 1880 ksf MC = 0% γ_{moist} = 164.4 pcf		
65			965		64 (48)		Qu Test Results UCS = 1110 ksf MC = 0% γ_{moist} = 156.5 pcf		
70									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

LETTER BOREHOLE - MODOT_20151118.GDT - 12/23/24 09:57 - Z:\SGI\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-202 (V-24-67)

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 2-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516318.1 **Date of Work:** 11/20/24-11/20/24
Offset: **Easting:** 1325586 **Depth to Water:** 24.0
Elevation: 1032.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		48.6-76.0' Cherty Limestone, gray, thin bedded to medium bedded, very strong rock to strong rock, slightly weathered, fine grained *(continued)*	960		76 (74)		Qu Test Results UCS = 733 ksf MC = 0% γ_{moist} = 161.1 pcf		
75		Bottom of borehole at 76.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 45
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION
DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-301 (V-24-58)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516217.7 **Date of Work:** 11/06/24-11/06/24
Offset: **Easting:** 1325589.7 **Depth to Water:**
Elevation: 1031.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-17.8' AIR	1030						
5			1025						
10			1020						
15			1015						
20		17.8-25.6' Overburden	1010						
25		25.6-25.9' Limestone, highly weathered 25.9-51.9' Limestone, light gray, thin bedded to medium bedded, very strong rock to extremely strong rock, slightly weathered, trace chert, fine grained	1005		100 (86)		Qu Test Results UCS = 1050 ksf MC = 0% γ_{moist} = 166.5 pcf		
30			1000		100 (100)		Qu Test Results UCS = 1610 ksf MC = 0% γ_{moist} = 168.2 pcf		
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-301 (V-24-58)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516217.7 **Date of Work:** 11/06/24-11/06/24
Offset: **Easting:** 1325589.7 **Depth to Water:**
Elevation: 1031.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		25.9-51.9' Limestone, light gray, thin bedded to medium bedded, very strong rock to extremely strong rock, slightly weathered, trace chert, fine grained *(continued)*	995		100 (100)		Qu Test Results UCS = 1520 ksf MC = 0% γ_{moist} = 170.4 pcf		
40			990		100 (100)		Qu Test Results UCS = 994 ksf MC = 0% γ_{moist} = 166.8 pcf		
45			985		100 (100)		Qu Test Results UCS = 2070 ksf MC = 0% γ_{moist} = 168.8 pcf		
50			980		100 (96)		Qu Test Results UCS = 1340 ksf MC = 0% γ_{moist} = 158.7 pcf		
55		51.9-65.9' Cherty Limestone, dark gray and tannish gray, thin bedded, very strong rock to strong rock, slightly weathered, scattered pitting, fine grained	975		100 (100)		Qu Test Results UCS = 1280 ksf MC = 0% γ_{moist} = 162.2 pcf		
60			970		100 (96)		Qu Test Results UCS = 957 ksf MC = 0% γ_{moist} = 158.6 pcf		
65		Bottom of borehole at 65.9 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 46
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077
DESCRIPTION
DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-302 (V-24-54)
Page 1 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516218.2 **Date of Work:** 10/29/24-10/30/24
Offset: **Easting:** 1325584.9 **Depth to Water:**
Elevation: 1032.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-18.4' AIR	1030						
5			1025						
10			1020						
15			1015						
20		18.4-25.3' Tannish gray, GRAVELLY LEAN CLAY scattered cobbles, very stiff, moist	1010						
25		25.3-25.9' Limestone, gray, highly weathered			67	7-11-6 (26)			
30		25.9-50.9' Limestone, gray, thick bedded to medium bedded, very strong rock to strong rock, slightly weathered, fine grained	1005		100 (94)		Qu Test Results UCS = 1210 ksf MC = 0% γ_{moist} = 167 pcf		
35			1000		100 (100)		Qu Test Results UCS = 1380 ksf MC = 0% γ_{moist} = 167.5 pcf		

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-302 (V-24-54)
Page 2 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516218.2 **Date of Work:** 10/29/24-10/30/24
Offset: **Easting:** 1325584.9 **Depth to Water:**
Elevation: 1032.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		25.9-50.9' Limestone, gray, thick bedded to medium bedded, very strong rock to strong rock, slightly weathered, fine grained *(continued)*	995		100 (100)		Qu Test Results UCS = 1280 ksf MC = 0% γ_{moist} = 170.7 pcf		
40			990		100 (94)		Qu Test Results UCS = 976 ksf MC = 0% γ_{moist} = 166.6 pcf		
45			985		100 (100)		Qu Test Results UCS = 1530 ksf MC = 0% γ_{moist} = 167.3 pcf		
50		50.9-65.9' Cherty Limestone, tannish gray, thin bedded to medium bedded, strong rock, slightly weathered, fine grained	980		100 (84)		Qu Test Results UCS = 1630 ksf MC = 0% γ_{moist} = 158.5 pcf		
55			975		100 (100)		Qu Test Results UCS = 591 ksf MC = 0% γ_{moist} = 155.6 pcf		
60			970		100 (92)		Qu Test Results UCS = 2270 ksf MC = 0% γ_{moist} = 162.3 pcf		
65			965		100 (76)		Qu Test Results UCS = 2550 ksf MC = 0% γ_{moist} = 168.7 pcf		
70		65.9-85.9' Limestone, tannish gray, thin bedded, extremely strong rock to strong rock, slightly weathered, fine grained, interbedded with chert							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 47
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077
DESCRIPTION
DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-302 (V-24-54)
Page 3 of 3

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516218.2 **Date of Work:** 10/29/24-10/30/24
Offset: **Easting:** 1325584.9 **Depth to Water:**
Elevation: 1032.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		65.9-85.9' Limestone, tannish gray, thin bedded, extremely strong rock to strong rock, slightly weathered, fine grained, interbedded with chert *(continued)*	960		100 (54)		Qu Test Results UCS = 2100 ksf MC = 0% γ_{moist} = 164.3 pcf		
75			955		100 (94)		Qu Test Results UCS = 651 ksf MC = 0% γ_{moist} = 159.5 pcf		
80			950		100 (100)		Qu Test Results UCS = 727 ksf MC = 0% γ_{moist} = 154.1 pcf		
85		Bottom of borehole at 85.9 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-302 Off (V-24-66)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516228.2 **Date of Work:** 11/20/24-11/20/24
Offset: **Easting:** 1325584.9 **Depth to Water:**
Elevation: 1032.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout (additional Boring)
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-19.4' AIR	1030						
5			1025						
10			1020						
15			1015						
20		19.4-25.5' Overburden	1010						
25		25.5-36.7' Limestone, gray, thick bedded, very strong rock to strong rock, slightly weathered, fine grained	1005		100 (94)		Qu Test Results UCS = 1920 ksf MC = 0% γ_{moist} = 166.1 pcf		
30			1000		100 (94)		Qu Test Results UCS = 875 ksf MC = 0% γ_{moist} = 165.7 pcf		
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 48
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-302 Off (V-24-66)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 3-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516228.2 **Date of Work:** 11/20/24-11/20/24
Offset: **Easting:** 1325584.9 **Depth to Water:**
Elevation: 1032.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout (additional Boring)
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35									
40		36.7-37.0' Clay Seam 37.0-50.0' Limestone, gray, medium bedded, very strong rock, slightly weathered, fine grained	995		94 (94)		Qu Test Results UCS = 2270 ksf MC = 0% γ_{moist} = 167.9 pcf		
45			990		100 (100)		Qu Test Results UCS = 1330 ksf MC = 0% γ_{moist} = 166.5 pcf		
50			985		100 (100)		Qu Test Results UCS = 1770 ksf MC = 0% γ_{moist} = 168.8 pcf		
		50.0-55.0' Cherty Limestone, gray, thin bedded, very strong rock, slightly weathered, fine grained	980		94 (82)		Qu Test Results UCS = 1780 ksf MC = 0% γ_{moist} = 167.8 pcf		
55		55.0-55.3' Clay Seam							
60		55.3-65.5' Cherty Limestone, gray, thin bedded, extremely strong rock, slightly weathered, fine grained	975		100 (100)		Qu Test Results UCS = 2810 ksf MC = 0% γ_{moist} = 169.2 pcf		
			970		100 (94)		Qu Test Results UCS = 2210 ksf MC = 0% γ_{moist} = 158.2 pcf		
65		Bottom of borehole at 65.5 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-401 (V-24-59)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 4-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516122.1 **Date of Work:** 11/06/24-11/06/24
Offset: **Easting:** 1325588.4 **Depth to Water:**
Elevation: 1030.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT 0.2-0.8' CONCRETE, (Bridge Deck) 0.8-16.8' AIR	1030						
5			1025						
10			1020						
15			1015						
20		16.8-29.9' Overburden	1010						
25			1005						
30		29.9-31.0' Limestone, highly weathered, cut with casing advancer	1000						
35		31.0-48.2' Fossiliferous Limestone, light gray, thin bedded to medium bedded, strong rock to very strong rock, slightly weathered, fine grained			96 (88)		Qu Test Results UCS = 867 ksf MC = 0% γ_{moist} = 163.9 pcf		

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

LETTER BOREHOLE -MODOT_20151118.GDT - 12/23/24 09:57 - Z:\SG\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 49
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-401 (V-24-59)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 4-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516122.1 **Date of Work:** 11/06/24-11/06/24
Offset: **Easting:** 1325588.4 **Depth to Water:**
Elevation: 1030.9 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		31.0-48.2' Fossiliferous Limestone, light gray, thin bedded to medium bedded, strong rock to very strong rock, slightly weathered, fine grained *(continued)*	995						
		37.3-37.8' crystalline calcite vein			100 (82)		Qu Test Results UCS = 1290 ksf MC = 0% γ_{moist} = 165.2 pcf		
40			990						
					100 (100)		Qu Test Results UCS = 1160 ksf MC = 0% γ_{moist} = 165.2 pcf		
45			985						
		48.2-51.1' Argillaceous Limestone, dark gray and grayish black, thin bedded, slightly weathered, very fine grained			100 (80)				
50			980						
		51.1-61.0' Cherty Limestone, light gray and tannish gray, thin bedded, medium strong rock to strong rock, slightly weathered, scattered pitting, fine grained			100 (68)		Qu Test Results UCS = 428 ksf MC = 0% γ_{moist} = 150.7 pcf		
55			975						
					100 (88)		Qu Test Results UCS = 556 ksf MC = 0% γ_{moist} = 156 pcf		
60			970						
		Bottom of borehole at 61.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-402 (V-24-60)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 4-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516121.7 **Date of Work:** 11/06/24-11/07/24
Offset: **Easting:** 1325584 **Depth to Water:**
Elevation: 1031.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT	1030						
		0.2-0.8' CONCRETE, (Bridge Deck)							
		0.8-17.1' AIR							
5			1025						
10			1020						
15			1015						
		17.1-26.0' Overburden							
20			1010						
25			1005						
		26.0-32.0' Limestone, highly weathered, cut with casing advancer							
30			1000						
		32.0-34.7' Limestone, gray and grayish tan, thin bedded, strong rock, moderately weathered, Vertically fractured with crystalline calcite, fine grained			95 (28)		Qu Test Results UCS 964 ksf MC = 0% γ_{moist} = 165.4		
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

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SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 50
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION
DATE
APPROVED

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed Jun. 2025
Checked Jul. 2025

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-402 (V-24-60)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 4-Opt1 **Logged By:** Matthew Kistler **Operator:** Bradley Wadlow
Station: **Northing:** 516121.7 **Date of Work:** 11/06/24-11/07/24
Offset: **Easting:** 1325584 **Depth to Water:**
Elevation: 1031.0 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		34.7-50.7' Limestone, light gray, thin bedded to medium bedded, very strong rock, slightly weathered, Scattered calcite crystals, fine grained *(continued)*					pcf		
40			995		100 (96)		Qu Test Results UCS = 1910 ksf MC = 0% γ_{moist} = 166.4 pcf		
45			990		100 (100)		Qu Test Results UCS = 1010 ksf MC = 0% γ_{moist} = 165.9 pcf		
50			985		100 (94)				
55		50.7-51.4' Shale, light grayish black, thinly laminated, slightly weathered 51.4-56.0' Cherty Limestone, light gray and, thin bedded, very strong rock, slightly weathered, fine grained	980		100 (86)		Qu Test Results UCS = 1340 ksf MC = 0% γ_{moist} = 156.8 pcf		
		Bottom of borehole at 56.0 feet.	975						

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-501 (Auger)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 5-Opt1 **Logged By:** Ricardo Todd **Operator:** Manu Te'O
Station: **Northing:** 516050.7 **Date of Work:** 11/21/24-11/21/24
Offset: **Easting:** 1325587.9 **Depth to Water:**
Elevation: 1030.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Mobile B-31 ,
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9402 **Hammer Efficiency:** **Drilling Method:** Continuous Flight Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.6' ASPHALT	1030						
		0.6-1.0' GRAVEL, Crushed Aggregate Base							
5		1.0-13.2' Dark gray, LEAN CLAY scattered gravel, medium stiff, moist	1025						
10			1020						
15		13.2-16.6' Dark gray, GRAVELLY LEAN CLAY, stiff, moist	1015						
20		16.6-46.7' Gray, LEAN CLAY scattered gravel, medium stiff, moist	1010						
25			1005						
30			1000						
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 51
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-501 (Auger)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 5-Opt1 **Logged By:** Ricardo Todd **Operator:** Manu Te'O
Station: **Northing:** 516050.7 **Date of Work:** 11/21/24-11/21/24
Offset: **Easting:** 1325587.9 **Depth to Water:**
Elevation: 1030.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Mobile B-31 ,
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9402 **Hammer Efficiency:** **Drilling Method:** Continuous Flight Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		16.6-46.7' Gray, LEAN CLAY scattered gravel, medium stiff, moist *(continued)*	995						
40			990						
45			985						
		46.7-47.2' Limestone, Cut With Rockbit Bottom of borehole at 47.2 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-502 (V-24-55)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 5-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516050.6 **Date of Work:** 10/30/24-10/30/24
Offset: **Easting:** 1325582.7 **Depth to Water:**
Elevation: 1030.6 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.2' ASPHALT	1030						
		0.2-0.8' GRAVEL, Crushed Aggregate Base 0.8-8.3' Dark gray, CLAYEY SAND scattered gravel, loose, moist, fine grained							
5		5.0-6.5' Sample not captured by SPT	1025		0	1-2-3 (8)			
10		8.3-14.5' Dark gray, LEAN CLAY trace sand, very soft, moist	1020		33	0-0-0 (0)		PP = 0.13 tsf	
15		14.5-25.1' Dark gray, GRAVELLY LEAN CLAY, stiff to very stiff, moist	1015		67	13-4-3 (11)		PP = 1.25 tsf	
20			1010		67	6-18-10 (43)		PP = 2.50 tsf	
25		25.1-25.8' Limestone, gray, highly weathered	1005		100	33/0.4'			
30		25.8-42.0' Limestone, gray, thin bedded to medium bedded, strong rock to very strong rock, slightly weathered, fine grained	1000		88 (78)		Qu Test Results UCS = 956 ksf MC = 0% γ_{moist} = 166.3 pcf		
35					100 (98)		Qu Test Results UCS = 1410 ksf MC = 0% γ_{moist} = 166.6 pcf		

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F STATE MO
DISTRICT BR SHEET NO. 52
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION | DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-502 (V-24-55)
Page 2 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 5-Opt1 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 516050.6 **Date of Work:** 10/30/24-10/30/24
Offset: **Easting:** 1325582.7 **Depth to Water:**
Elevation: 1030.6 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		25.8-42.0' Limestone, gray, thin bedded to medium bedded, strong rock to very strong rock, slightly weathered, fine grained *(continued)*	995						
40			990		92 (92)		Qu Test Results UCS = 1460 ksf MC = 0% γ_{moist} = 166.8 pcf		
45		42.0-42.6' Cherty Limestone, tannish gray, thin bedded, strong rock, slightly weathered, fine grained, Vuggy 42.6-43.8' Clay Layer 43.8-46.8' Cherty Limestone, tannish gray, thin bedded, strong rock, slightly weathered, fine grained, Vuggy	985		76 (26)				
50		46.8-52.4' Limestone, gray, medium bedded, very strong rock, slightly weathered, fine grained	980		98 (98)		Qu Test Results UCS = 1670 ksf MC = 0% γ_{moist} = 162.4 pcf		
55		52.4-53.0' Cherty Limestone, tannish gray, thin bedded, strong rock, slightly weathered, fine grained, Vuggy 53.0-55.8' Limestone, gray, medium bedded, strong rock, slightly weathered, fine grained	975		98 (80)		Qu Test Results UCS = 1020 ksf MC = 0% γ_{moist} = 149.3 pcf		
		Bottom of borehole at 55.8 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-503 (V-24-61)
Page 1 of 2

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 5-Opt1 **Logged By:** Matthew Kistler **Operator:** Manu Te'O
Station: **Northing:** 516050.7 **Date of Work:** 11/07/24-11/07/24
Offset: **Easting:** 1325577.9 **Depth to Water:**
Elevation: 1030.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.9' ASPHALT	1030						
		0.9-29.0' Overburden							
5			1025						
10			1020						
15			1015						
20			1010						
25			1005						
		27.0' water lost while using casing advancer							
30		29.0-44.3' Very soft, Minimal resistance on casing advancer, casing lowered into overburden from 29' to 44.3'.	1000						
35									

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

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SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F STATE MO
DISTRICT BR SHEET NO. 53
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077

DESCRIPTION
DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

Missouri Department of Transportation
Construction and Materials

BORING NO. Opt1-503 (V-24-61)

Job No.: SR0083 **County:** Greene **Route:** F
Design: A9077 **Skew:** Square **Location:** Over Sac River
Bent: 5-Opt1 **Logged By:** Matthew Kistler **Operator:** Manu Te'O
Station: **Northing:** 516050.7 **Date of Work:** 11/07/24-11/07/24
Offset: **Easting:** 1325577.9 **Depth to Water:**
Elevation: 1030.5 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:**
Requested Offset: **Equipment:** Acker Renegade ,NQ
Requested Elevation: **Location Note:** Revised Layout
Drill No.: G-9667 **Hammer Efficiency:** 93% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		29.0-44.3' Very soft, Minimal resistance on casing advancer, casing lowered into overburden from 29' to 44.3'. *(continued)*	995						
40			990						
45		44.3-46.4' Limestone, highly weathered, cut with casing advancer	985						
		46.4-52.6' Limestone, light gray, medium bedded, very strong rock, slightly weathered, fine grained			100 (100)		Qu Test Results UCS = 1250 ksf MC = 0% γ_{moist} = 164.3 pcf		
50			980						
		52.6-54.1' Limestone, tannish gray, very thin bedded, medium strong rock, moderately weathered, With crystalline calcite, fine grained			100 (70)		Qu Test Results UCS = 1110 ksf MC = 0% γ_{moist} = 166.5 pcf		
55		54.1-56.4' Limestone, light gray, thin bedded, strong rock, slightly weathered, fine grained	975						
		Bottom of borehole at 56.4 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value; (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri Central **Coordinate Proj. Factor:**
Coordinate Datum: NAD 83 (CONUS) CORS96 **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

LETTER BOREHOLE - MODOT_20151118.GDT - 12/23/24 09:57 - Z:\SG\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

MoDOT-Geotechnical Section
1617 Missouri Blvd
Jefferson City, MO 65109

KEY TO SYMBOLS

CLIENT **PROJECT NAME** Bridge Replacement
PROJECT NUMBER SR0083 **PROJECT LOCATION** Over Sac River

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- Air
- Asphalt
- Boulders and cobbles
- USCS Low Plasticity Clay
- USCS Low Plasticity Gravelly Clay
- Concrete
- Overburden
- USCS Clayey Gravel
- USCS Poorly-graded Gravel
- USCS Well-graded Gravel
- Highly Weathered Limestone
- Limestone
- No Core
- USCS Clayey Sand
- Shale
- USCS Poorly-graded Sand

SAMPLER SYMBOLS

- Rock Core Barrel
- Split-Spoon Sampler

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)
Qu - UNCONFINED COMPRESSIVE STRENGTH (PSF)
TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

▽ Water Level at Time of Drilling
▼ Water Level at End of Drilling
▼ Water Level after Drilling

KEY TO SYMBOLS - MODOT 20150728.GDT - 12/26/24 08:15 - Z:\SG\GINT\PROJECT FILES\SR0083-A9077_GREENE_RTF_SACRIVER.GPJ

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/17/2026
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 54
COUNTY GREENE
JOB NO. JSR0083
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9077
DESCRIPTION
DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed Jun. 2025
Checked Jul. 2025

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

DESIGN DESIGNATION

A.A.D.T. - 2026 = 2,838
A.A.D.T. - 2046 = 3,699
D.H.V. = 8.05%
T = 7.36%
V = 35 M.P.H.
D = 51.1%/48.9%
FUNCTIONAL CLASSIFICATION-MINOR ARTERIAL

NORMAL RIGHT OF WAY
TEMPORARY EASEMENT

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

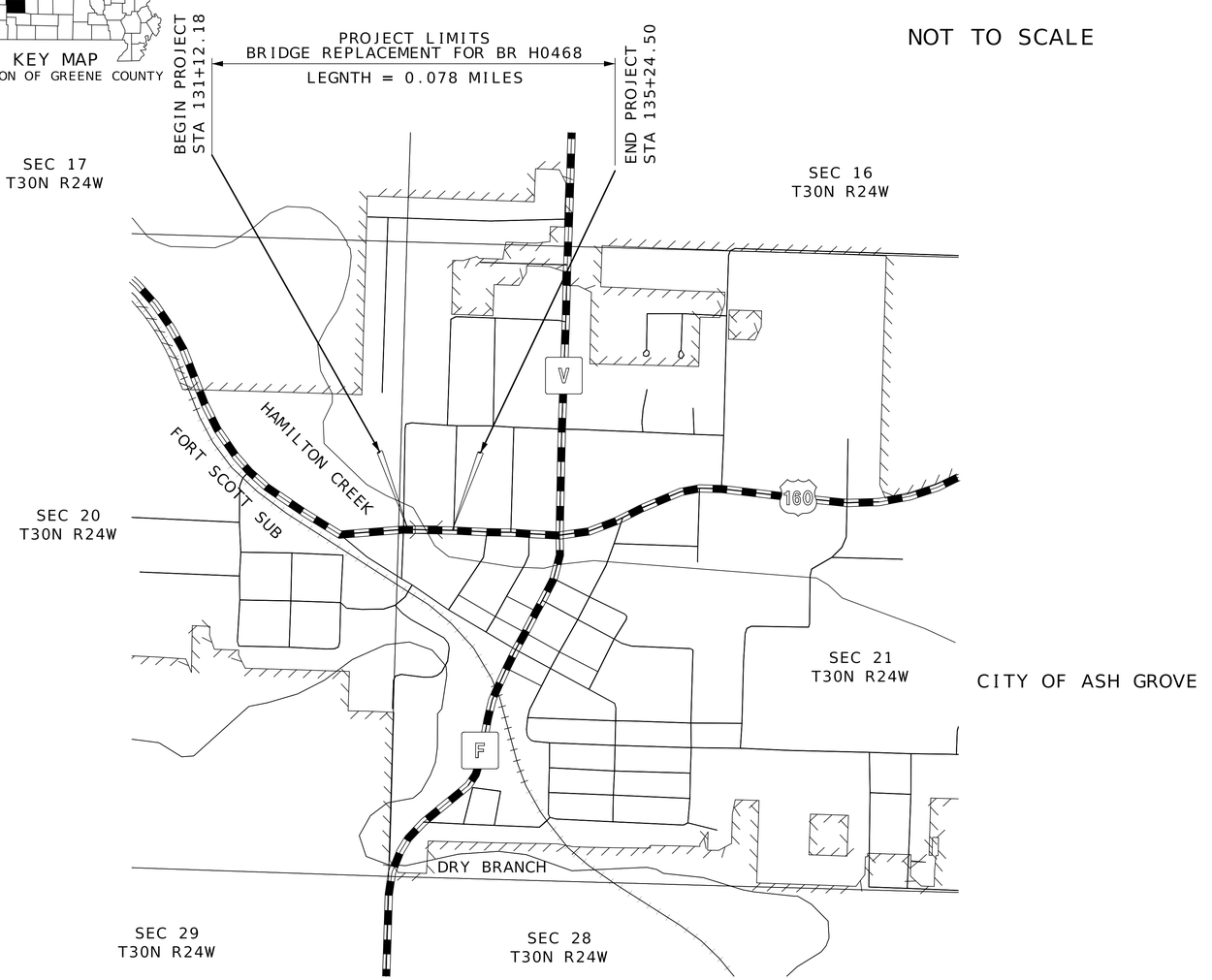
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY

GREENE COUNTY



NOT TO SCALE



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

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
TYPICAL SECTIONS (TS) (1 SHEET)	2
QUANTITIES (QU) (3 SHEETS)	3
PLAN (PP)	4
PROFILE (PR)	5-6
RIGHT OF WAY (RW)	7-8
COORDINATE POINTS (CP)	9
SPECIAL SHEETS (SS)	10-11
TRAFFIC CONTROL SHEETS (TC)	12-16
EROSION CONTROL SHEETS (EC)	17
SIGNING (SN)	18
BRIDGE DRAWINGS (B)	
A9603	1-6
CROSS SECTIONS (XS)	1-8

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA.	131 + 12.18
END OF PROJECT	STA.	135 + 24.50
APPARENT LENGTH		412.32 FEET
EQUATIONS AND EXCEPTIONS:		NONE
TOTAL CORRECTIONS		0.00 FEET
NET LENGTH OF PROJECT		412.32 FEET
STATE LENGTH		0.078 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES		0.7 ACRES

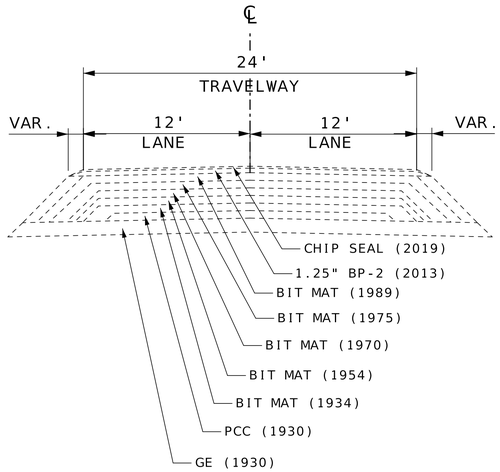
STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
10/7/2026 8:08:29
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED: 10/7/2026
ROUTE: 160 | STATE: MO
DISTRICT: SW | SHEET NO.: 1
COUNTY: GREENE
JOB NO.: JSR0136
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

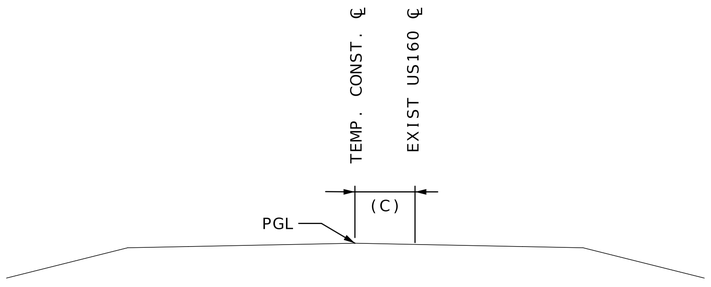
DESCRIPTION	DATE

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

EQUIVALENT PAVEMENT DESIGN			
LOCATION	BASE TYPE	HMA DESIGN	PCCP DESIGN
ROUTE E	6" TYPE 1 AGGREGATE BASE	9" HMA 2" BP1 W/ PG 64-22 OVER 7" BIT. BASE W/ PG 64-22	8" PCCP 15 FT JOINTS W/ 1¼" DOWELS

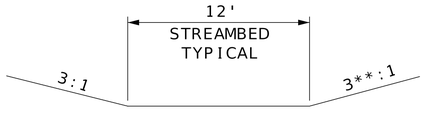


SECTION ON TANGENT
EXISTING TYPICAL SECTION US 160



CONSTRUCTION ℄ OFFSET

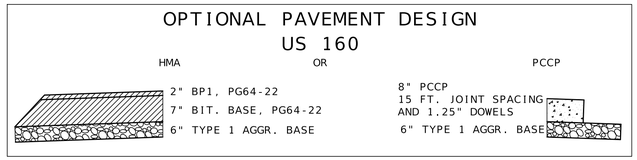
(C) 2.35FT AT PT STA 2+03.57 TO 0.93FT FT AT STA 5+29.28

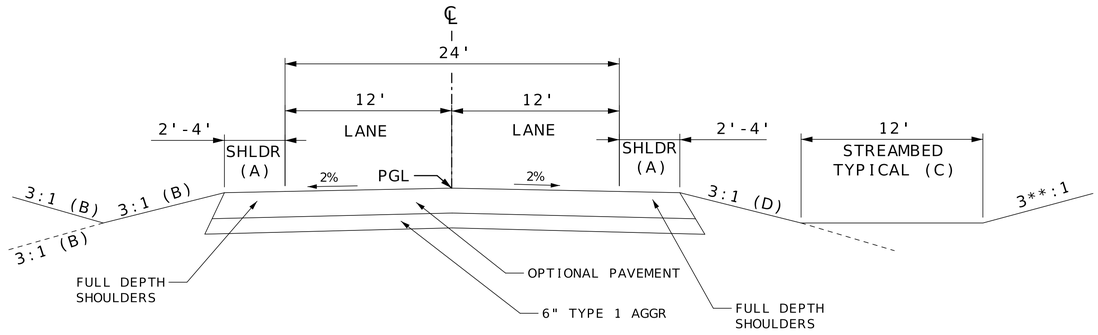


STREAMBED TYPICAL

FROM STA 14+95.00 TO STA 16+92.38
** - BACK SLOPE TRANSITIONS FROM 3:1 TO 6:1
FROM STA 16+40.55 TO STA 16+92.38

DRAWING IS NOT TO SCALE





SECTION ON TANGENT
PROPOSED TYPICAL SECTION US 160 CONSTRUCTION ALIGNMENT

FROM STA 1+16.21 TO STA 5+29.28

(A) 2' FROM STA 1+16.21 TO STA 1+94.88
TRANSITION 2' TO 4' FROM STA 1+94.88 TO STA 2+35.88
TRANSITION 4' TO 2' FROM STA 2+91.19 TO STA 3+32.19
2' FROM STA 3+32.19 TO STA 5+29.28

(B) 3:1 FILL FROM STA 1+16.21 TO STA 2+62.46
DITCH W/ 2:1 BACK SLOPE & 2.5:1 FORE SLOPE FROM STA 2+62.46 TO STA 3+73.22
DITCH W/ 3:1 BACK SLOPE & FORE SLOPE FROM STA 3+73.22 TO STA 4+62.47
3:1 FILL FROM STA 4+62.47 TO STA 5+29.28

(C) 4:1 FILL FROM STA 1+16.21 TO STA 2+91.19
STREAMBED FROM STA 2+91.19 TO STA 3+50.54
3:1 FILL FROM STA 3+50.54 TO STA 5+29.28

** - BACK SLOPE TRANSITIONS FROM 3:1 TO 6:1
FROM STA 3+00.00 TO STA 3+50.54

TYPICAL SECTIONS
SHEET 1 OF 1

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
10/31/2026 1:31:46
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	2

COUNTY
GREENE

JOB NO.
JSR0136

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)

SEEDING AND MULCHING - COOL SEASON GRASSES
1 LUMP SUM

MOBILIZATION
1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING & STAKING
1 LUMP SUM

REMOVAL OF IMPROVEMENTS

ROUTE	STA	-	STA	LOCATION	DESCRIPTION	UNITS	TOTAL	REMARKS
US 160	1+66.05	-		RT	SIGN	EACH	1	
US 160	2+38.46	-		CL	CULVERT	LF	45	
US 160	2+43.12	-		RT	SEWER MANHOLE	EACH	1	
US 160	2+26.99		2+45.97	RT/LT	SEWER PIPE	LF	115	
US 160	2+52.66			LT	SIGN	EACH	1	
US 160	2+84.59			LT	SIGN	EACH	1	
US 160	2+93.03			RT	SIGN	EACH	1	
US 160	3+07.01			RT	WOODEN POST	EACH	1	
US 160	3+24.25	-		RT	SIGN	EACH	1	
US 160	3+16.21			LT	LARGE WOOD SIGN POST	EACH	1	
US 160	3+17.47			LT	SIGN	EACH	1	
US 160	3+36.57		4+05.98	LT	CURB	LF	55	
US 160	3+37.40			CL	CULVERT	LF	38	
US 160	3+48.62		3+98.32	LT	CULVERT	LF	50	
US 160	4+62.47	-	5+17.20	LT	CULVERT	LF	55	
						TOTAL	1 LUMP SUM	

EARTHWORK

BEGIN STA	END STA	LOCATION	APPROXIMATE EARTHWORK CUT (CY)	APPROXIMATE EARTHWORK FILL (CY)	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	REMARKS
1+16.21	5+29.28	RTE E	559.9	418.7	559.9	418.7	
ROUNDING 500 CY / MILE					40.0		
				TOTAL	599.9	418.7	
				USE	600	419	

TEMPORARY EROSION CONTROL

STA	STA	LOCATION	SILT FENCE (LF)	ROCK DITCH CHECK (LF)	SEDIMENT REMOVAL (CY)
1+16.21	5+29.28	LT/RT RTE E	908.8	100	21.59
		TOTAL	908.8	100	21.59
		USE	909	100	22

ROCK BLANKET

BEGIN STA	END STA	LOCATION	ROCK DEPTH (FT)	TYPE 2 ROCK BLANKET FURNISH (CY)	TYPE 2 ROCK BLANKET PLACE (CY)	GEOTEXTILE FABRIC (SY)	REMARKS
2+27.63	3+45.53	LT US 160	2	160.86	160.86	241.29	WEST END OF BRIDGE
			TOTAL	160.86	160.86	241.29	
			USE	161	161	242	

OPTIONAL PAVEMENT & AGGREGATE BASE

BEGIN STA	END STA	LENGTH	WIDTH	LOCATION	OPTIONAL PAVEMENT (SY)	6" TYPE 1 AGGREGATE (SY)	CURB AND GUTTER TYPE B (LF)	REMARKS
1+16.21	1+94.88	78.67	28	US 160	244.75	244.75		
1+94.88	2+35.88	41	30	US 160	136.67	136.67		SHOULDER TRANSITION
2+35.88	2+91.19	55.31	32	US 160	196.66	196.66		
2+91.19	3+32.19	41	30	US 160	136.67	136.67		SHOULDER TRANSITION
3+32.19	5+29.28	197.09	28	US 160	613.17	613.17		
1+16.21	5+29.28			US 160	317.44	317.44		ENTRANCES
3+36.57	4+05.98			US 160			55	REPLACE CURB ALONG RENROP LLC ENTRANCE
				TOTAL	1645.4	1645.4	55.0	
				USE	1645.4	1646	55	

SUMMARY OF QUANTITIES
SHEET 1 OF 3

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 1:31:46
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	3

COUNTY
GREENE

JOB NO.
JSR0136

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)

ASPHALT, TACK, COLDMILLING

LOCATION	BP-1 2.00" 2.000 TONS/CY TONS	TACK 0.10 GAL	COLDMILL 3" OR LESS SY	REMARKS
MAIN ST	363.0	326.7	3266.7	LOCATIONS TO BE DETERMINED BY THE ENGINEER
TOTALS	363.0	326.7	3266.7	
USE	363.0	327	3267	

DRAINAGE

STA	LOCATION (LT / RT)	18" PIPE GROUP C (LF)	18" FES GROUP C (EACH)	15" PIPE GROUP C (LF)	15" FES GROUP C (EACH)	REMARKS
3+73.34	LT	43.0	2.0			
4+88.66	LT			48.0	2.0	
	TOTAL	43.0	2.0	48.0	2.0	
	USE	43.0	2.0	48.0	2.0	

PERMANENT PAVEMENT MARKING

BEGIN STA	END STA	LOCATION	LENGTH (FT)	4" WHITE CLASS 1 PAVEMENT MARKING PAINT (18-MIL, TYPE P BEADS) (FT)	4" YELLOW CLASS 1 PAVEMENT MARKING PAINT (18-MIL, TYPE P BEADS) (FT)	REMARKS
1+16.21	5+29.28	LT, RT, CL OF US 160	413.07	826.14	826.1	EDGELINES & DOUBLE SOLID CL
			TOTAL	826.14	826.1	
			USE	827	827	

FULL DEPTH PAVEMENT REPAIR

LOCATION	FURNISHING AND PLACING CONCRETE MATERIAL FOR FULL DEPTH PAVEMENT REPAIR (SY)	SUBGRADE COMPACTION (6 IN. DEPTH) (SY)	TYPE 1 OR 5 AGGREGATE FOR BASE (4 IN. THICK) (SY)	FULL DEPTH PAVEMENT REPAIR SAW CUT (FOR PERIMETER AND INTERNAL CUTS) (LF)	DOWEL BAR (DRILLING, FURNISHING AND INSTALLATION) FOR FULL DEPTH PAVEMENT REPAIR EACH	REMARKS
MAIN ST	32.0	3.2	3.2	144	120	LOCATIONS TO BE DETERMINED BY THE ENGINEER
TOTALS	32.0	3.2	3.2	144	120	
USE	32.0	4	4	144	120	

SANITARY SEWER RELOCATION

BEGIN STA	END STA	LOCATION	8" PVC (LF)	4' MANHOLE (LF)	20" CONCRETE CASING (LF)	REMARKS
2+21.74	2+45.96	LT US 160 CONST.	43.6	4	43.6	
		TOTAL	43.6	4	43.6	
		USE	44	4	44	

SUMMARY OF QUANTITIES
SHEET 2 OF 3

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
08-23-2026
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
8/10/2026

ROUTE	STATE
160	MO

DISTRICT	SHEET NO.
SW	3

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NO.	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)
WO4-2L	48X48	16.00						LANE ENDS LEFT
WO4-2R	48X48	16.00						LANE ENDS 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	6	96.00				UNEVEN LANES
WO8-12	48X48	16.00	4	64.00				NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
WO12-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00	2	32.00				ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	2	32.00				DETOUR AHEAD
WO20-3	48X48	16.00	4	64.00				ROAD CLOSED AHEAD
WO20-4	48X48	16.00	2	32.00				ONE LANE ROAD AHEAD
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00	2	32.00				FLAGGER (SYMBOL)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00	2	32.00				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 NO.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
GO20-1	60X24	10.00						ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00						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						WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00	2	6.00				END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT)
MO4-9R	48X36	12.00						DETOUR (RIGHT)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)
MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)
REGULATORY SIGNS								
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	2	24.00				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	2	20.00				ROAD CLOSED
R11-3a	60X30	12.50						ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	2	25.00				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	2	64.00				POINT OF PRESENCE
CONST-8	48X36	12.00	2	24.00				WORK ZONE NO PHONE ZONE
DETOUR	36X60	15.00	10	150.00				

616-10.05 CONSTRUCTION SIGNS	TOTAL
	697

616-10.10 RELOCATED SIGNS	TOTAL

EFFECTIVE: 07-01-2025

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)
6122040		WORK ZONE CRASH CUSHION (NARROW)
6122041		WORK ZONE CRASH CUSHION (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161020		CHANNELIZER (DRUM-LIKE)
6161022		CHANNELIZER (CONE)
6161025	30	CHANNELIZER (TRIM-LINE)
6161026		CHANNELIZER (VERTICAL PANEL)
6161030	10	TYPE 3 MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040		FLASHING ARROW PANEL
6161047		TYPE 3 OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A		CHANGEABLE MESSAGE SIGN WITHOUT COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6161099	2	CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER, CONTRACTOR FURNISHED/RETAINED
6173700B		TEMP. TRAFFIC BARRIER ANCHORED, CONTRACTOR FURNISHED/RETAINED
6173706		TEMP. TRAFFIC BARRIER STIFFNESS TRANSITION CONTRACTOR FURNISHED/RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION, CONTRACTOR FURNISHED/RETAINED
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6175011B		RELOCATING TEMP. TRAFFIC BARRIER ANCHORED
6175013		RELOCATING TEMP. TRAFFIC BARRIER STIFFNESS
6175020A		RELOCATING TEMP. TRAFFIC BARRIER HEIGHT
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
10/31/2025 1:31:46
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO

DISTRICT	SHEET NO.
SW	3

COUNTY
GREENE

JOB NO.
JSR0136

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)

SUMMARY OF QUANTITIES
SHEET 3 OF 3

LEGEND

PROPOSED PAVEMENT

DRIVEWAY REMOVAL

TYPE 2 ROCK BLANKET

EX_US160_1
PI 130+78.59
PC 129+96.20
PT 131+60.80
Δ 6°34'59.8" (RT)
D 3°59'58.5"
L 164.60' (ARC)
T 82.39'
R 1,432.54''

SW ¼ - NW ¼
SEC 21 T30N R24W

SE ¼ - NE ¼
SEC 20 T30N R24W

STA 2+47.10 TO STA 2+69.88
10'X4' DOUBLE BARREL BOX CULVERT
32' ROADWAY

BR H0468 - REMOVE EXISTING
BRIDGE TYPE:
5' TRIPLE BOX CULVERT
STA 132+85.20
WIDTH: 17'-1"
SKEW: 37°-03'

ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

THE APPROXIMATE LOCATION OF PROPERTY LINES AS SHOWN ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE.

RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STATION 130+76.80 TO STATION 134+53.34, A DISTANCE OF 0.065 MILES

ALL BEARINGS BASED ON STATE PLANE BEARINGS CENTRAL ZONE

EXISTING AND CONSTRUCTED ENTRANCES MAY BE WIDENED TO A MAXIMUM WIDTH OF 60 FEET BY PERMIT UNLESS OTHERWISE NOTED

* REMOVE EXISTING CURB AND REPLACE AT NEW EDGE OF PAVEMENT OF PARKING LOT

4+89.72 (US160CONST)
0+50.66 (PERRYMAN AVE.)

SEE SURVEY NOTES

SEE SPECIAL SHEET 1 FOR PROPOSED SEWER DETAILS

1 BETHUREM, FLOYD & PATRICIA

2 CITY OF ASH GROVE

3 RENPROP, LLC

4 MFA INCORPORATED

SECTION LINE

CITY R/W

THURMOND AVE.

PERRYMAN AVE.

START STA 129+00.00

START STA 0+00.00 TEMP US 160
PC STA 129+96.20
PC STA 0+09.39

N85°44'38"E

BEGIN CONST. ALIGNMENT
STA 129+96.20 EXIST. US 160

EXIST. R/W

S.L.

LEFT DITCH ℄

RELOCATE PP (BY OTHERS)

T.C.E.

PT STA 131+60.80

PT STA 2+03.57

CP#1

NEW R/W

(R&R)*

(R)

(DND)

DND

28'

30'

40'

20'

W

S87°40'32"E

EXISTING US 160 ℄ (RTE160) S87°25'22"E

TEMP. US 160 (RTE160_CONST)

4" SW

4" DSY

MATCH STA 7+41.79 CONST. ALIGN. US 160
EXIST. STA 137+37.87 US 160

HAMILTON CREEK

CP#2

BM1

RELOCATE PP (BY OTHERS)

BEGIN CONSTRUCTION
EXIST. US 160 (1.21' LT)
STA 1+16.21 TEMP. US 160

EXISTING BUILDING

REMOVE SANITARY MH

STA 131+12.18

EXIST. DRAINAGE EASEMENT

END CONSTRUCTION
STA 135+24.50 EXIST. US 160
STA 5+29.28 TEMP. US 160

SW = SOLID WHITE
DSY = DOUBLE SOLID YELLOW

EXISTING IRON PIN
COMMON 1/4 CORNER
SECTIONS 20 & 21
TOWNSHIP 30 N
RANGE 24W
WALKER ADDITION
PB A PAGE 66

TEMP_US160_1
PI 1+06.59
PC 0+09.39
PT 2+03.57
Δ 6°50'0.7" (RT)
D 3°31'9.0"
L 194.18' (ARC)
T 97.20'
R 1,628.10'

SCALE
0 30 60 90

TYPE 2 DRWY. LT.
STA 1+91.17 GR = -7.00%
CONST. 28' X 40'
NO PIPE

TYPE 1 DRWY. LT.
STA 4+87.41 GR. = -0.92%
CONST. 25' X 30'
15" X 48' GRP B PIPE
W/ FES LT/RT

TYPE 2 DRWY. LT.
STA 3+73.67 GR. = -5.00%
CONST. 30' X 20'
18" X 43' GRP B PIPE
W/ FES LT/RT

PLAN SHEET
SHEET 1 OF 1

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
08-JUN-2026 11:44:29
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
8/10/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	4

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

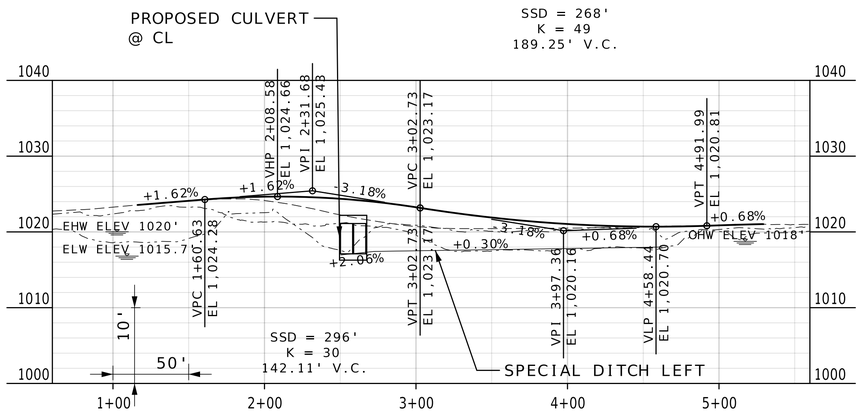
DESCRIPTION

DATE

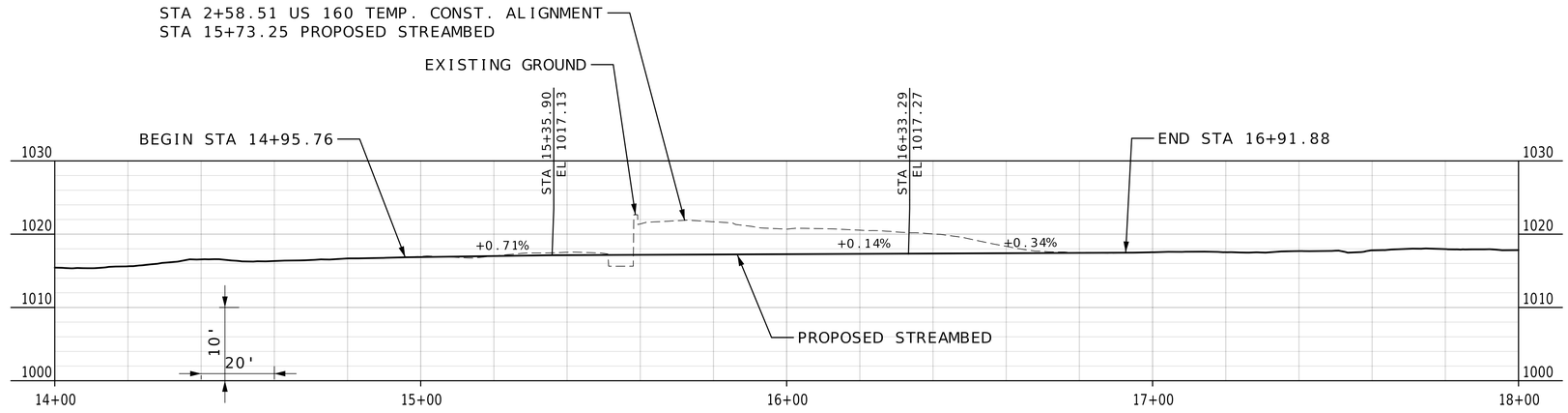
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

US 160
PROFILE



———————	℄ PROPOSED
- -	℄ EXISTING
-·-	30' RIGHT
-·-	30' LEFT



PROPOSED STREAMBED PROFILE

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
08-JUL-2026 11:40:04
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	5

COUNTY
GREENE

JOB NO.
JSR0136

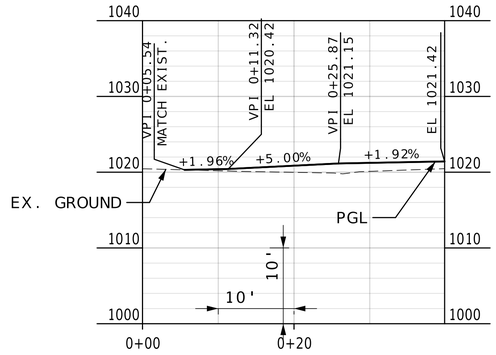
CONTRACT ID.

PROJECT NO.

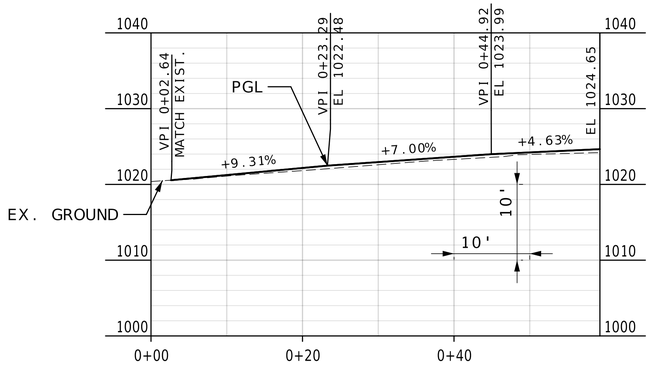
BRIDGE NO.

DESCRIPTION	DATE

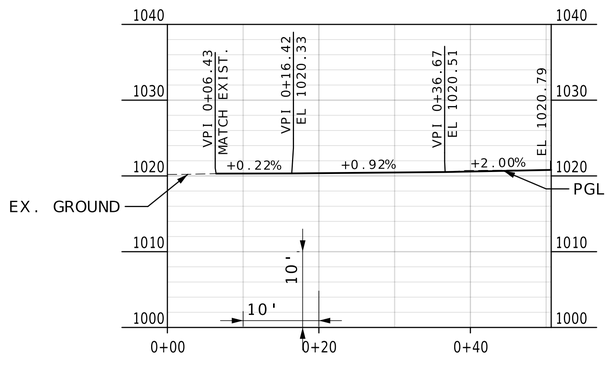
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



RENPROP LLC ENTRANCE



FLOYD BETHUREM ENTRANCE



PERRYMAN AVENUE

PROFILE
SHEET 2 OF 2

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

08-22-2026 10:00:18
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
8/10/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	6

COUNTY
GREENE

JOB NO.
JSR0136

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)

LEGEND

NEW RIGHT OF WAY

TEMPORARY EASEMENT

SW ¼ - NW ¼
SEC 21 T30N R24W

SE ¼ - NE ¼
SEC 20 T30N R24W

SECTION LINE

130

135

1
BETHUREM, FLOYD & PATRICIA
0.56 AC. EXIST.
820 SF NEW R/W
4,416 SF TEMP. ESM'T
0.54 AC. REMAINING

2
CITY OF ASH GROVE
450 SF NEW R/W
300 SF TEMP. ESM'T

3
RENPROP, LLC
0.75 AC. EXIST.
657 SF NEW R/W
1,826 SF TEMP. ESM'T.
0.73 AC. REMAINING

4
MFA INCORPORATED
4.62 AC. EXIST.
1,254 SF NEW R/W
2,700 SF TEMP. ESM'T.
4.59 AC REMAINING

SEE SURVEY NOTES

CITY R/W

THURMOND AVE.

PERRYMAN AVE.

T.C.E. SLOPE

EXIST. R/W

NEW R/W

S.L.

PT STA 131+60.80

START STA 129+00.00

PC STA 129+96.20

+00.00 30.00'

+96.20 30.00'

+60.80 30.00'

+60.80 40.00'

+60.80 80.00'

+76.80 40.00'

+76.28 30.00'

+21.00 30.00'

+21.00 60.00'

+63.01 80.00'

+63.19 60.00'

+63.30 48.00'

+63.47 30.00'

+78.00 42.00'

+51.00 30.00'

+51.00 38.00'

+53.34 30.00'

+53.34 38.00'

N85°44'38"E

S87°40'22"E

US_160(US_160)

30'

20'

HAMILTON CREEK

CP#1

CP#2

BM1

+90.00 30.00'

+90.00 75.00'

+50.00 30.00'

+50.00 60.00'

+50.00 75.00'

+85.20 30.00'

+85.00 60.00'

+85.20 50.00'

+25.00 50.00'

+44.55 50.00'

+44.44 30.00'

EXIST. DRAINAGE EASEMENT

EXISTING IRON PIN
COMMON 1/4 CORNER
SECTIONS 20 & 21
TOWNSHIP 30 N
RANGE 24W
WALKER ADDITION
PB A PAGE 66

SCALE
0 30 60 90

ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

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RIGHT OF WAY
SHEET 1 OF 2

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

08-23-2026 | 22:18
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
8/11/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	7

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

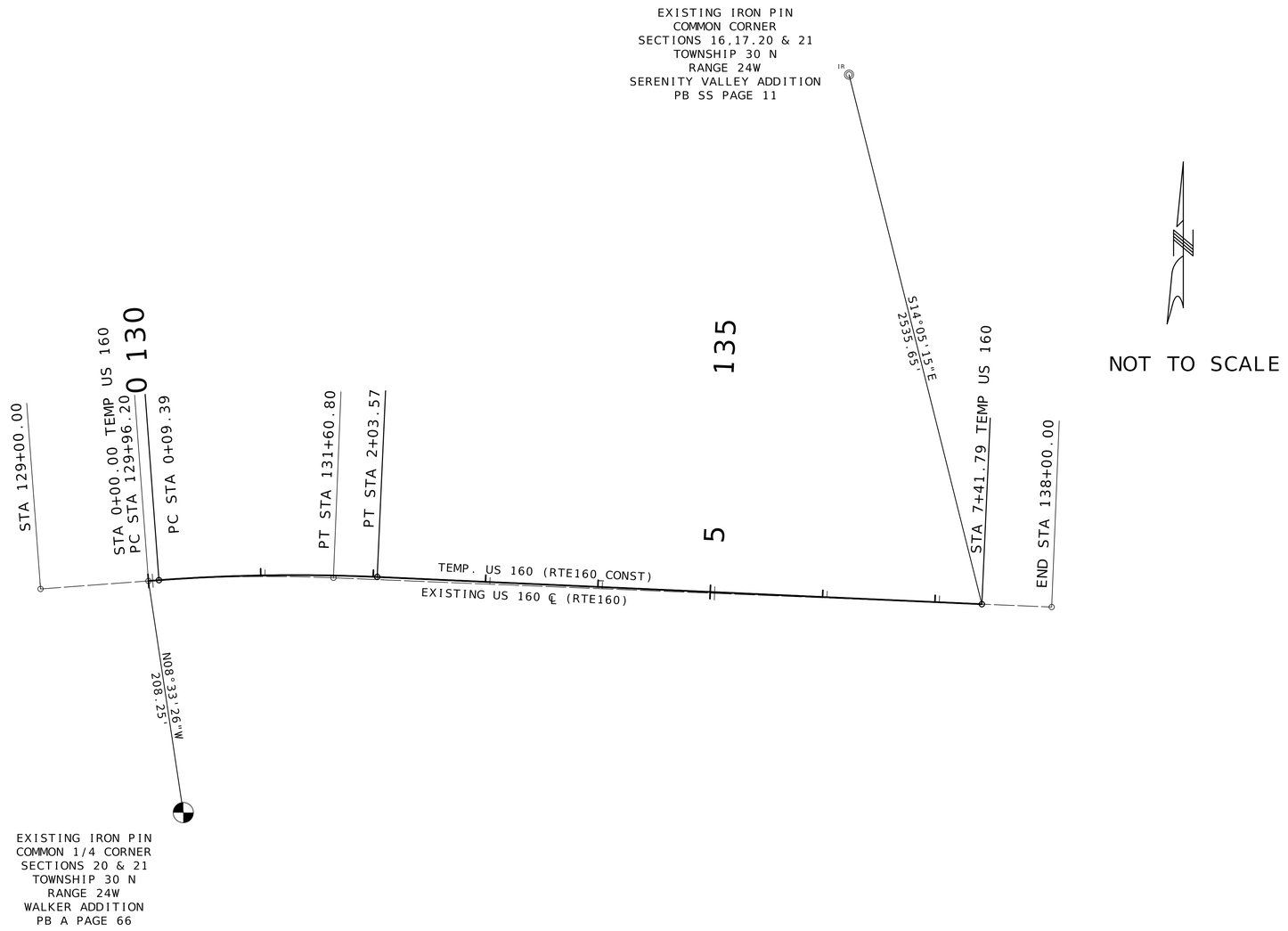
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CERTIFIED LAND CORNER



NOT TO SCALE

RIGHT OF WAY
SHEET 2 OF 2

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10-01-2026 10:01:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	8

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

PROJECT COORDINATE INFORMATION

COORDINATE SYSTEM	STATE PLANE
HORIZONTAL DATUM	NAD83
VERTICAL DATUM	NAVD88
GEOID MODEL	GEOID18
ELEVATIONS DETERMINED BY	MODOT GNSS
PROJECT PROJECTION FACTOR	1.00000000

REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	MISSOURI STATE PLANE
CONTROL STATION	MODOT GNSS
DESIGNATION	MODOT GREENFIELD CORS ARP
CORS_ID	MOGF
PID	DM3515
LATITUDE	372545.52038
LONGITUDE	935045.96762
NORTHING (M)	140313.033
EASTING (M)	907872.601
ZONE	CENTRAL
PROJECT AVERAGE GRID FACTOR	1.00000000

EXAMPLE OF PROJECT COORDINATE TO S.P.C.

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

EXAMPLE: CONTROL POINT #BM1
N 542294.09782 X 1.00000000 = N 542294.09782
E 1324264.70409 X 1.00000000 = E 1324264.70409

LINEAR UNIT CONVERSION

1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING

SHEET NO	STATION	LOCATION	OFFSET (USFT)	MODIFIED STATE PLANE (GROUND) NORTHING (US SURVEY FT)	EASTING (US SURVEY FT)	ELEVATION (US SURVEY FT)	DESCRIPTION
PROJECT CONTROL POINTS							
4	132+76.52	EX. US 160	29.2972	542312.47250	1324215.68855	1020.388	1 - 5/8" REBAR
4	134+44.55	EX. US 160	32.9743	542301.97577	1324383.43028	1018.030	2 - MAG HUB
4	132+04.47	EX. US 160	-23.3395	542367.99128	1324145.83756	1023.120	3 - PK NAIL IN ASPHALT
4	133+26.24	EX. US 160	45.6665	542294.09782	1324264.70409	1020.420	BM1 - RR SPIKE IN POWER POLE
ALIGNMENTS							
4	129+00.00	EX. US 160	0.00	542336.5354	1323840.8288	-	POT - BEGIN EX. US 160 CHAIN
4	129+96.20	EX. US 160	0.00	542343.6750	1323936.7628	-	PC
4	131+60.80	EX. US 160	0.00	542346.4445	1324101.2490	-	PT
8	138+00.00	EX. US 160	0.00	542320.4903	1324739.9212	-	POT - END EX. US 160 CHAIN
4	0+00.00	US 160 CONST	0.00	542343.6750	1323936.7628	-	POT - BEGIN US 160 CONST CHAIN
4	0+09.39	US 160 CONST	0.00	542344.3718	1323946.1243	-	PC
4	2+03.57	US 160 CONST	0.00	542347.2150	1324140.1679	-	PT
4	7+41.79	US 160 CONST	0.00	542323.0129	1324677.8467	-	POT - END US 160 CONST CHAIN

COORDINATE POINT SHEET
SHEET 1 OF 1

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
10/21/2026 1:21:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	9

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

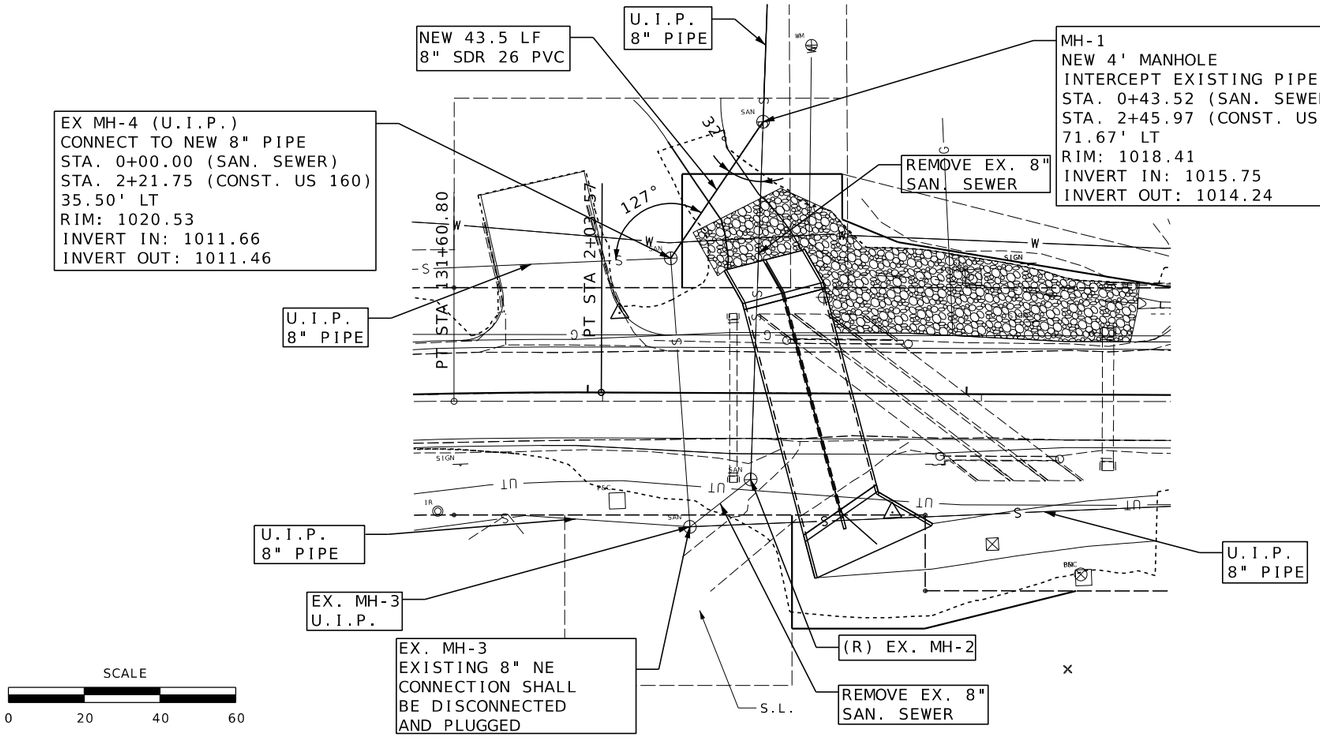
PROJECT NO.

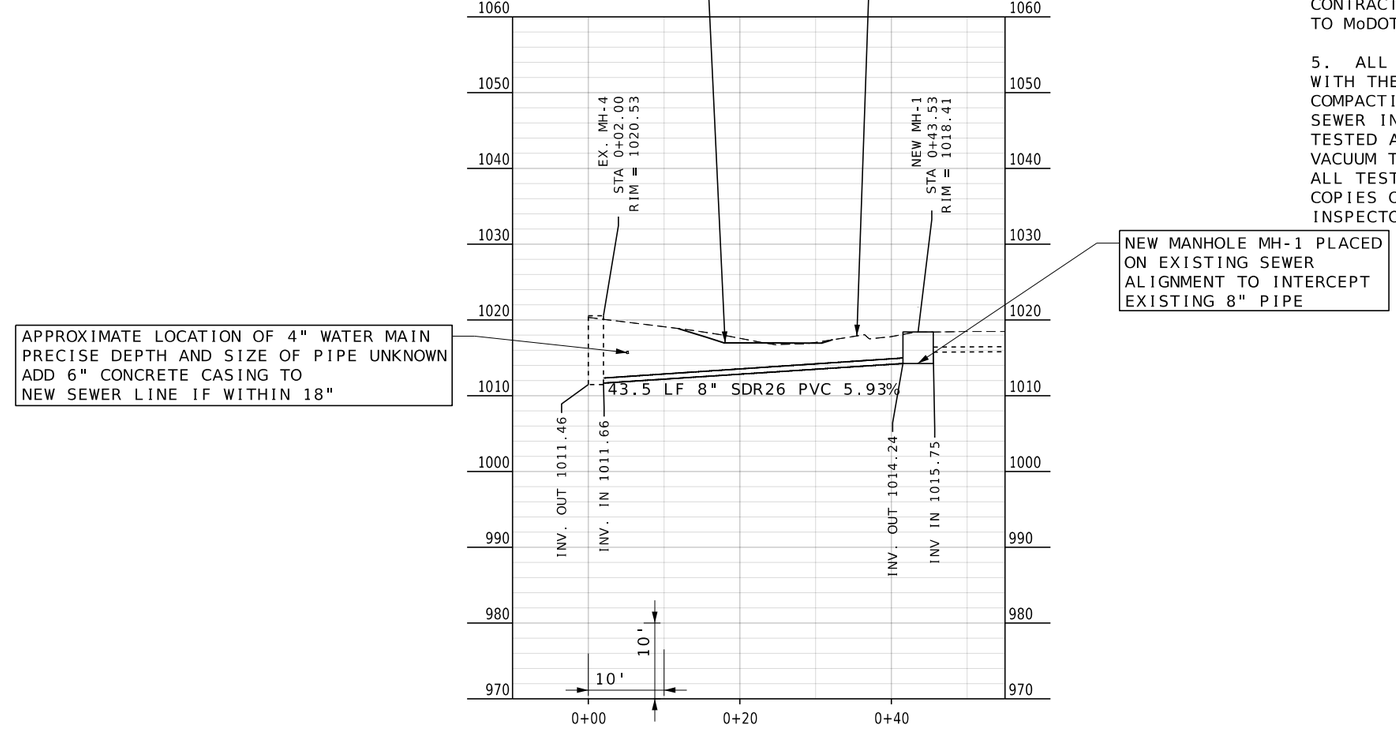
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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





NOTES:

1. CONTRACTOR TO VERIFY EXISTING PIPE DIAMETER AND LOCATION CONNECTING TO THE EXISTING SANITARY SEWER. ENGINEER MAY ADJUST LOCATION OR INVERT TO INTERCEPT SEWER AT NO ADDITIONAL COST TO PROJECT.

2. OPENINGS IN MANHOLE SECTIONS FOR SEWER CONNECTIONS SHALL BE CORE-DRILLED AND SHALL BE DONE TO PRODUCE A SMOOTH, UNIFORM, CYLINDRICAL HOLE OF PROPER SIZE TO ACCOMODATE A RESILIENT CONNECTOR MEETING THE REQUIREMENTS OF ASTM C 923. THE RESILIENT CONNECTORS SHALL BE EITHER FERNCO OR PSX GASKET OR APPROVED EQUALS.

3. FLOW IN EXISTING MAINS AND SERVICE LINES SHALL BE MAINTAINED AT ALL TIMES AND SHALL NOT BE DISCHARGED TO THE ENVIRONMENT. FLOW SHALL NOT BE TRANSFERRED TO THE RELOCATED MAIN UNTIL CITY ACCEPTANCE OF THE RELOCATED MAIN.

4. MANHOLES TO BE BUILT ON AN EXISTING SEWER SHALL BE CONSTRUCTED IN SUCH A MANNER AS WILL NOT DISRUPT SERVICE OF THE EXISTING SEWER. THE MANHOLE BASE, WALLS, AND INVERT SHALL BE COMPLETED BEFORE THE TOP HALF OF THE SEWER PIPE IS CUT OR BROKEN AWAY. ROUGH EDGES OF THE PIPE THUS EXPOSED SHALL BE COVERED WITH EXPANSIVE GROUT, IN SUCH A MANNER AS TO PRODUCE A SMOOTH AND ACCEPTABLE FINISH. ANY PORTION OF THE EXISTING SEWER DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT NO EXPENSE TO MoDOT.

5. ALL ACCEPTANCE TESTING SHALL BE DONE IN ACCORDANCE WITH THE JOB SPECIAL PROVISIONS, AFTER THE BACKFILL AND COMPACTION OPERATIONS HAVE BEEN COMPLETED. ALL GRAVITY SEWER INSTALLED ON THE PROJECT SHALL BE AIR LEAKAGE TESTED AND DEFLECTION TESTED. ALL MANHOLES SHALL BE VACUUM TESTED ACCORDING TO ASTM C1244 PROCEDURES. ALL TESTS SHALL BE WITNESSED BY THE CITY INSPECTOR. COPIES OF ALL TEST RECORDS SHALL BE PROVIDED TO THE CITY INSPECTOR FOR PROJECT ACCEPTANCE.

SPECIAL SHEET
SANITARY SEWER RELOCATION
SHEET 1 OF 2

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

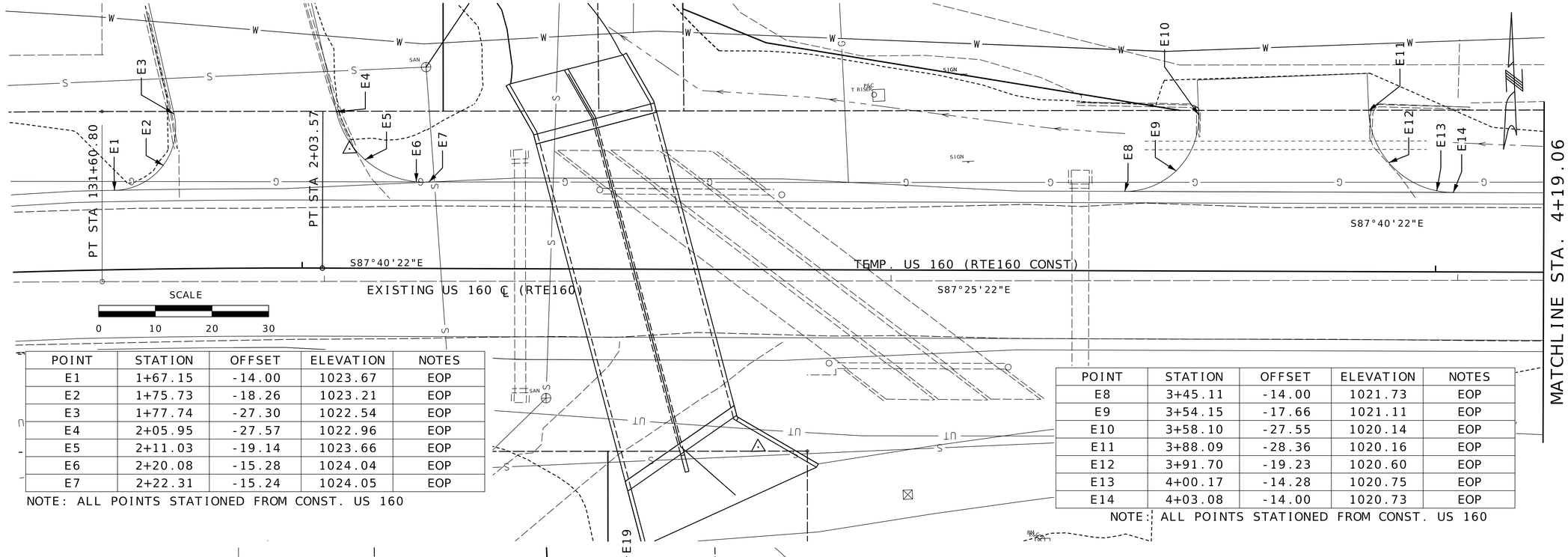
DATE PREPARED	
08/13/2026	
ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	10

COUNTY: GREENE
JOB NO.: JSR0136
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)

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

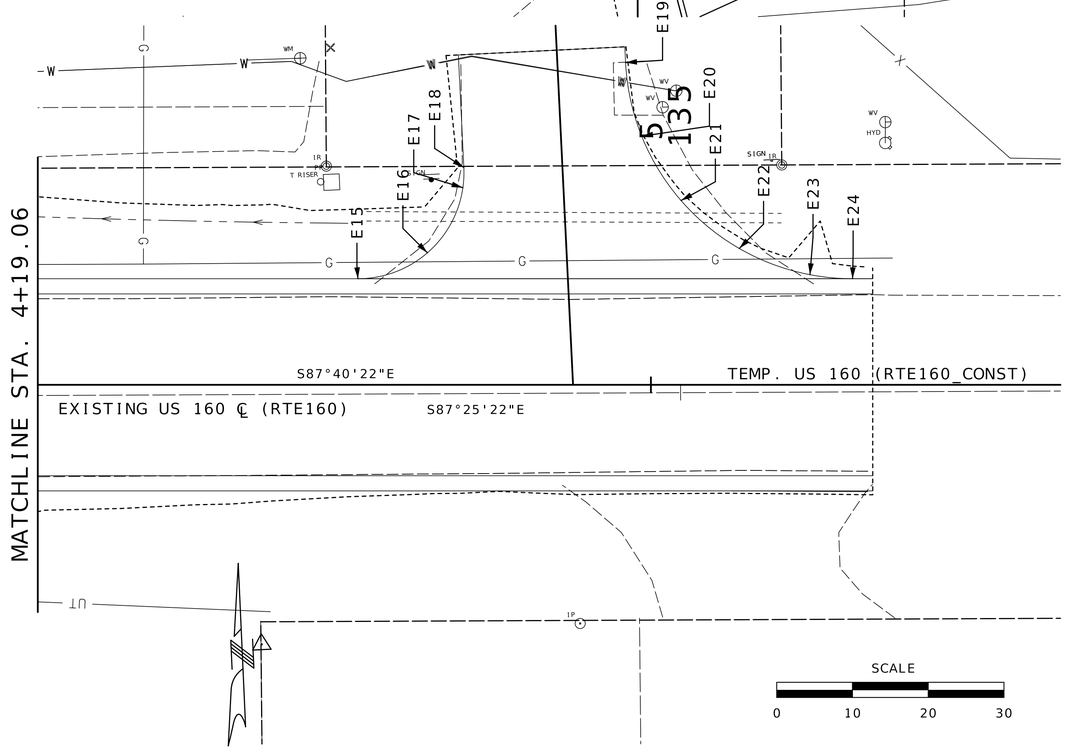


POINT	STATION	OFFSET	ELEVATION	NOTES
E1	1+67.15	-14.00	1023.67	EOP
E2	1+75.73	-18.26	1023.21	EOP
E3	1+77.74	-27.30	1022.54	EOP
E4	2+05.95	-27.57	1022.96	EOP
E5	2+11.03	-19.14	1023.66	EOP
E6	2+20.08	-15.28	1024.04	EOP
E7	2+22.31	-15.24	1024.05	EOP

NOTE: ALL POINTS STATIONED FROM CONST. US 160

POINT	STATION	OFFSET	ELEVATION	NOTES
E8	3+45.11	-14.00	1021.73	EOP
E9	3+54.15	-17.66	1021.11	EOP
E10	3+58.10	-27.55	1020.14	EOP
E11	3+88.09	-28.36	1020.16	EOP
E12	3+91.70	-19.23	1020.60	EOP
E13	4+00.17	-14.28	1020.75	EOP
E14	4+03.08	-14.00	1020.73	EOP

NOTE: ALL POINTS STATIONED FROM CONST. US 160



POINT	STATION	OFFSET	ELEVATION	NOTES
E15	4+61.32	-14	1020.42	EOP
E16	4+70.49	-17.42	1020.35	EOP
E17	4+75.18	-26.02	1020.18	EOP
E18	4+75.31	-28.68	1020.15	EOP
E19	4+96.66	-42.54	1020.09	EOP
E20	4+98.78	-32.82	1020.16	EOP
E21	5+03.98	-24.32	1020.32	EOP
E22	5+11.66	-18.00	1020.55	EOP
E23	5+20.99	-14.53	1020.70	EOP
E24	5+26.62	-14.00	1020.74	EOP

NOTE: ALL POINTS STATIONED FROM CONST. US 160

SPECIAL SHEET
INTERSECTION DETAILS
SHEET 2 OF 2

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
10/31/2025 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	11

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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



WO20-3

(20)



WO20-3

(20A)



R11-2

(29)

NOTE:

(1) ROAD CLOSED SIGN MAY BE PLACED 7-10 FEET BEHIND THE BARRICADES AND AT A SIGN HEIGHT APPROPRIATE TO THE TYPE OF ROADWAY. ONE BARRICADE SHOULD BE REQUIRED TO COMPLETELY CLOSE EACH 8 FEET OF PAVEMENT. PAVED SHOULDERS SHALL BE INLCUDED IN THE AREA TO BE CLOSED.

(2) IF USED, THE "ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY" OR "ROAD CLOSED TO THRU TRAFFIC" SIGN SHOULD BE LOCATED AT THE FIRST STATE ROUTE OR, AT THE DISCRETION OF THE ENGINEER, ANY OTHER INTERSECTION IN ADVANCE OF THE CLOSURE. ADDITIONAL BARRICADES MAY BE USED AND OFFSET TO FACILITATE ACCESS FOR WORK VEHICLES, LOCAL TRAFFIC, ETC.

USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER AND/OR REMOVE CONFLICTING SIGNS AT NO DIRECT PAY.

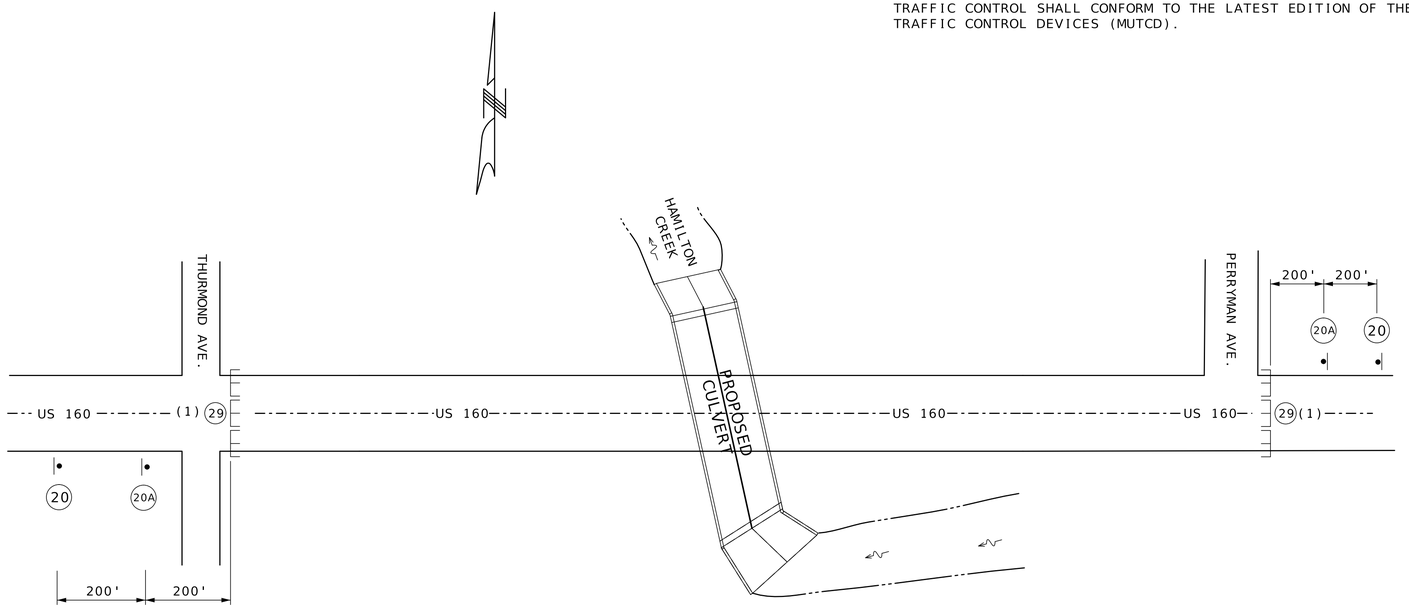
ALL R11-2 SIGNS SHALL BE MOUNTED ON TYPE III BARRICADE.

TRAFFIC CONTROL SHOULD BE REMOVED AS SOON AS PRACTICAL AFTER CONDITION FOR CLOSURE NO LONGER EXISTS.

REFER TO STANDARD DRAWING 616.10, 619.10 AND 620.10 FOR ADDITIONAL DETAILS AND 903.03 FOR SIGN AND SIGN MOUNTING REQUIREMENTS.

SPACING AND DISTANCES OF TRAFFIC CONTROL DEVICES ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER.

TRAFFIC CONTROL SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- BARRICADE

DRAWING NOT TO SCALE

TRAFFIC CONTROL SHEET
SHEET 1 OF 5

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	12

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

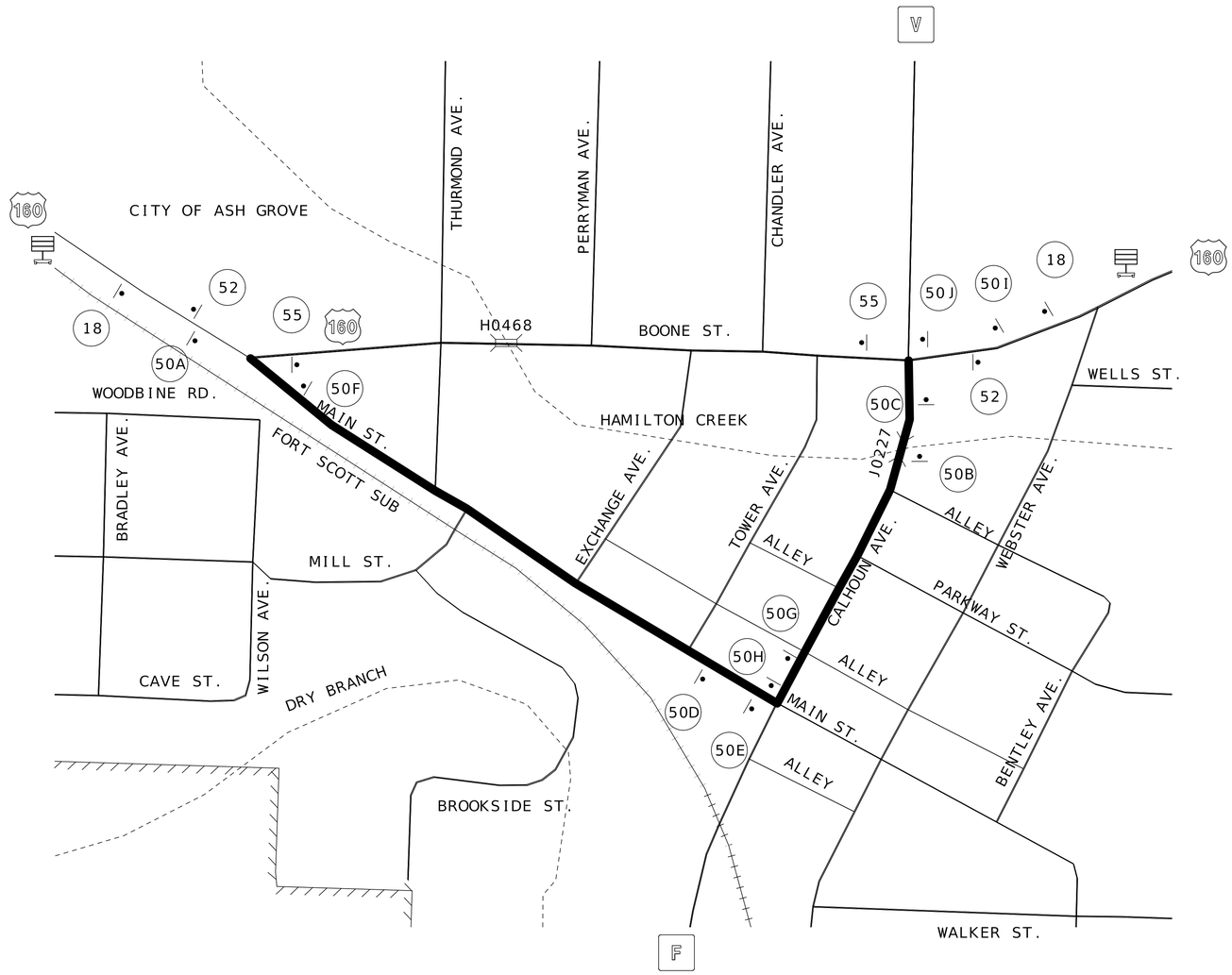
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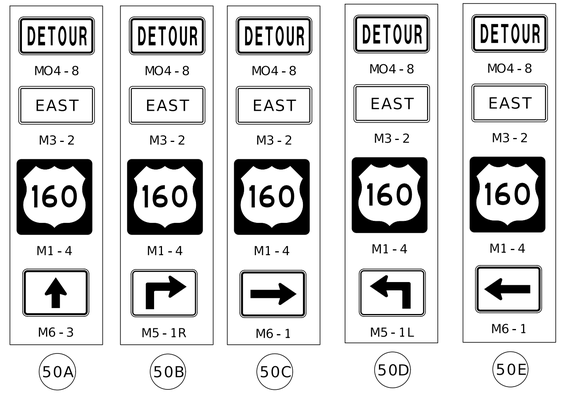
BRIDGE NO.

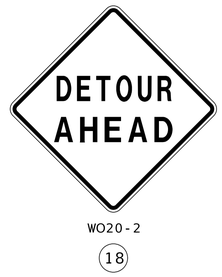
DESCRIPTION	DATE

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)
- CHANGEABLE MESSAGE BOARD

NOT TO SCALE

TRAFFIC CONTROL SHEET
SHEET 2 OF 5

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	13

COUNTY
GREENE

JOB NO.
JSR0136

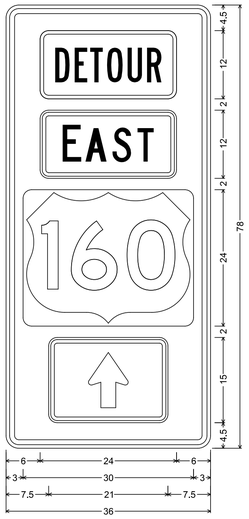
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

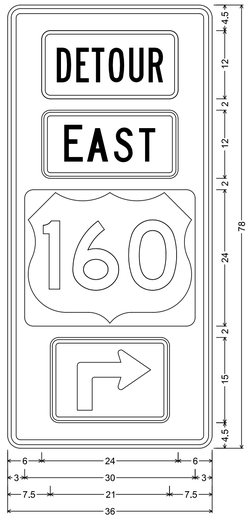
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

	6.000
	6.000
	3.000
	7.500

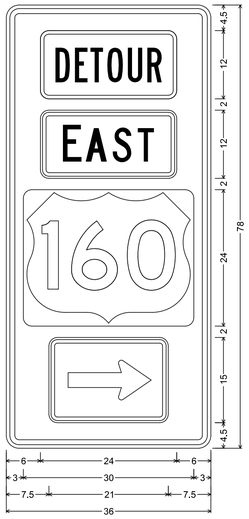
50A



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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	6.000
	3.000
	7.500

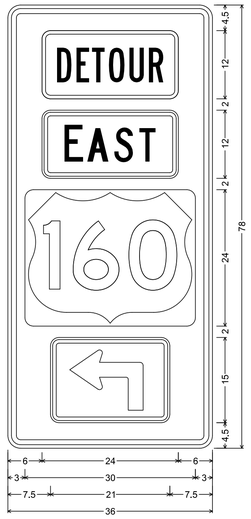
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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	6.000
	3.000
	7.500

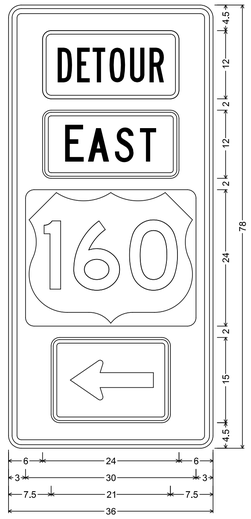
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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	6.000
	3.000
	7.500

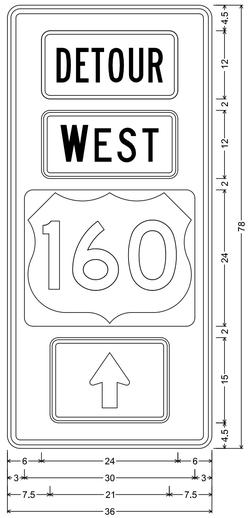
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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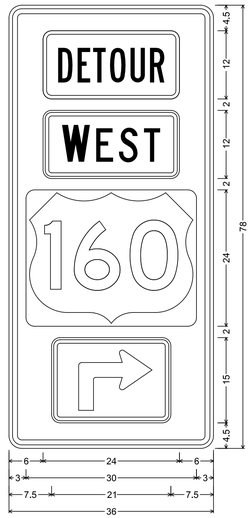
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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	6.000
	3.000
	7.500

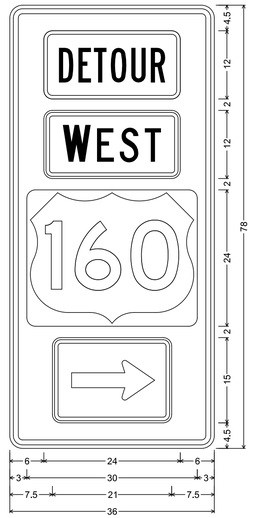
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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	6.000
	3.000
	7.500

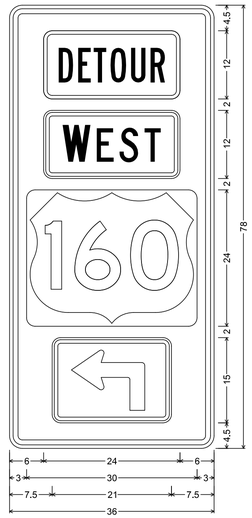
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

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	6.000
	3.000
	7.500

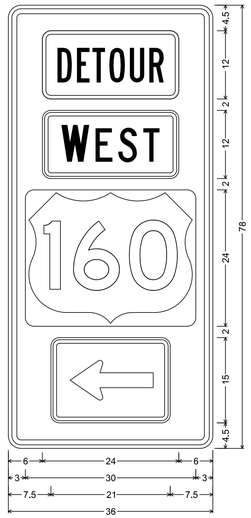
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MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

	6.000
	6.000
	3.000
	7.500

50I



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

	6.000
	6.000
	3.000
	7.500

50J

TRAFFIC CONTROL SHEET
SHEET 3 OF 5

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 12:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	14

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

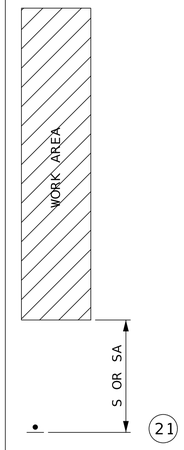
BRIDGE NO.

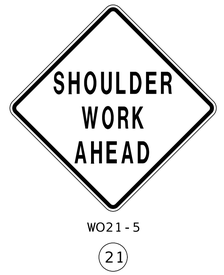
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

NOT TO SCALE





WORK BEYOND THE SHOULDER

UNDIVIDED OR DIVIDED HIGHWAY

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	15

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

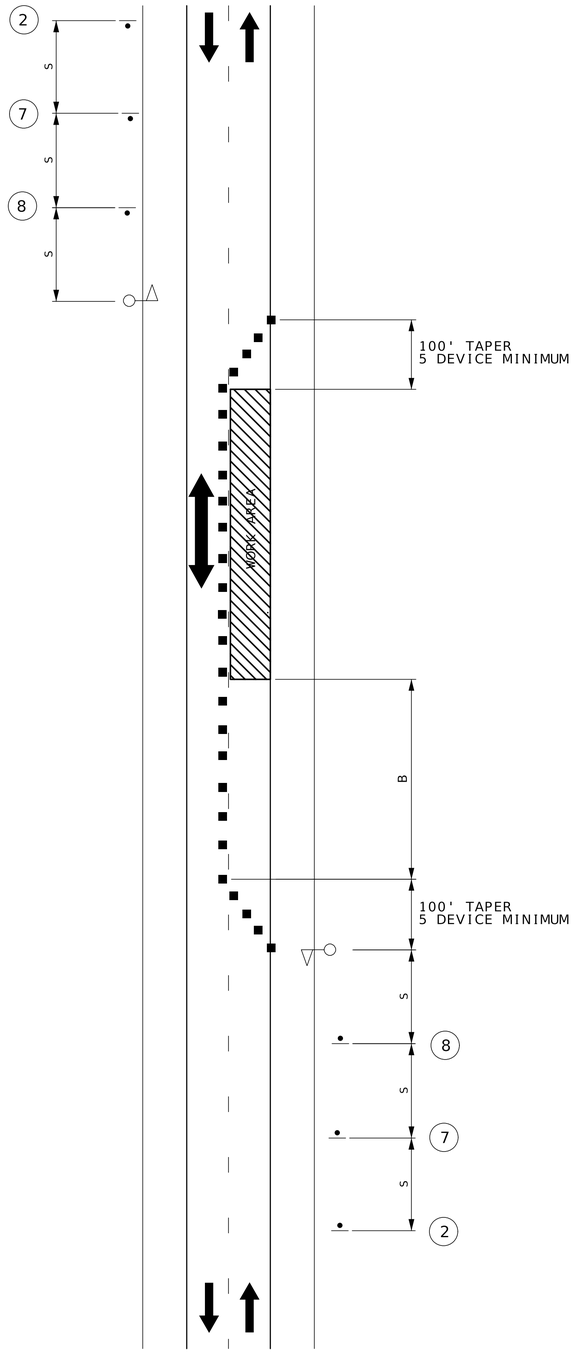
PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

NOT TO SCALE



LANE CLOSURE
ON TWO-LANE ROAD
USING FLAGGERS



WO20-1

(2)



WO20-4

(7)



WO20-7a

(8)

TRAFFIC CONTROL SHEET
SHEET 5 OF 5

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	16

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TEMPORARY EROSION CONTROL LEGEND

SILT FENCE

ROCK DITCH CHECK

SECTION LINE

PC STA 129+96.20

START STA 0+00.00

PC STA 0+09.39

PT STA 131+60.80

PT STA 2+03.57

T.C.E.

NEW R/W

S87°40'22"E

0 130

5 135

+16.09 +70.05 +01.08 +17.03 +30.43 +36.57 +56.59 +74.47 +41.83 +50.62 +88.88 +02.71 +56.72 +72.34 +98.22 +29.27

+16.22 +94.85 +50.66 +47.39 +50.66 +29.28

SEE SURVEY NOTES

NOTE:

LOCATION / LIMITS OF TEMPORARY EROSION CONTROL DEVICES
MAY BE ADJUSTED TO MEET FIELD CONDITIONS AS DIRECTED BY THE ENGINEER

SCALE

0 20 40 60

EROSION CONTROL
SHEET 1 OF 1

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER

10/31/2026 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

DATE PREPARED
7/27/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
SW	17

COUNTY
GREENE

JOB NO.
JSR0136

CONTRACT ID.

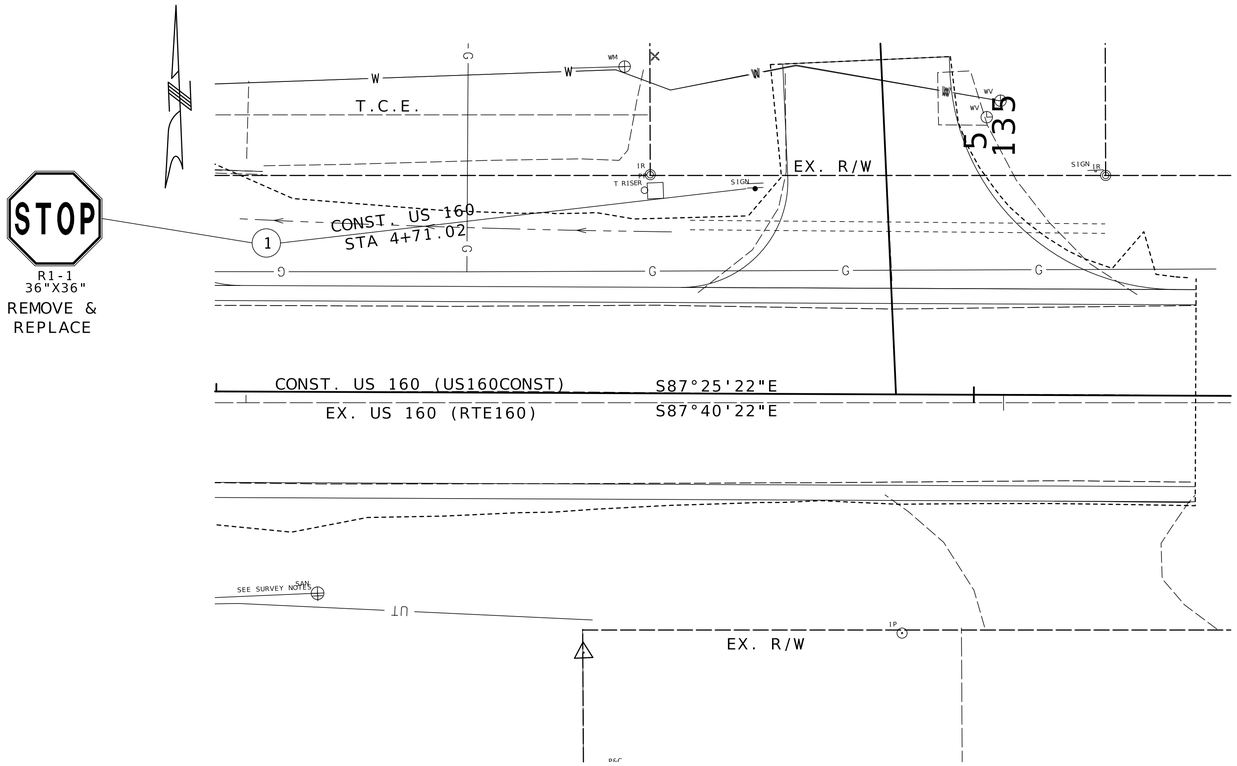
PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



SIGNS 902 SIGNAL SIGNS TABULATED ON D-37A					CONCRETE FOOTINGS EMBEDDED	I-BEAM POSTS*						PIPE POSTS*						4"SQUARE STEEL POST*		PERFORATED SQUARE STEEL TUBE**										U-CHANNEL POST	ALUMINUM BACKING BARS			COLUMN MOUNTING C-CHANNEL	EFFECTIVE: 07-01-2026
																				2" POST					2.5" POST			BREAK-AWAY						
																				POST		ANCHORS			POST		ANCHORS						
SIGN NO.	SIGN SIZE	STATION/ LOG MILE	LOCATION	SIGN DTL SHT NO.	(I-BEAM/PIPE) ITEM NO. 9031010	POST + STUB				LBS PER	TOTAL ITEM NO. 9031210	POST + STUB				LBS PER	TOTAL ITEM NO. 9031220	BASE ITEM NO. 9031005	POST ITEM NO. 9031230	NO. 1	NO. 2	TOTAL ITEM NO. 9031270A	DRIVEN ITEM NO. 9031273A	CONCRETE ITEM NO. 9031274	NO. 1	NO. 2	TOTAL ITEM NO. 9031280	DRIVEN ITEM NO. 9031281A	CONCRETE ITEM NO. 9031285	ASSEMBLY ITEM NO. 9031241	ITEM NO. 9031250A	COUNT	LENGTH	TOTAL ITEM NO. 9035030	ITEM NO. 9035031	REMARKS AND OTHER REQUIRED ITEMS
				NO.	CY	DES	NO. 1	NO. 2	NO. 3	FT	LBS	SIZE	NO. 1	NO. 2	FT	LBS	EACH	LF	LF	LF	LF	LF	EACH	EACH	LF	LF	LF	EACH	EACH	EACH	LF	EACH	IN.	LF	LF	
1	36"X36"	4+71.02	CONST. US 160																						16		16		1	1						
			SUBTOTAL																								16		1	1						
			TOTAL																								16		1	1						

*BREAKAWAY ASSEMBLY IS INCIDENTAL FOR I-BEAM, PIPE AND 4" SQUARE STEEL POSTS.
**FOR PSST WITHOUT BREAKAWAY DEVICES, POST LENGTH SHALL INCLUDE AN ADDITIONAL 6" FOR INSERTION INTO ANCHOR;
FOR SURFACED MOUNTED PSST ON ISLANDS, NO ANCHOR IS USED, JUST A SURFACE MOUNT BREAKAWAY ASSEMBLY.

D-29

SIGN NO.	STATION OR LOG MILE	LOCATION	STOP SH R1-1 36X36	
1	4+71.02	CONST. US 160	1	
		TOTALS	1	

D-30

SIGN SUMMARY EFFECTIVE: 10-01-2016

STANDARD OR SPECIAL SIGN DESIGNATION	SIGN DTL. SHT. NO.	NO. EACH	SIGN SIZE	TYPE & SQUARE FEET FLAT SHEET SH ITEM NO. 9035004A	FLAT SHEET FLUORESCENT SHF* ITEM NO. 9035069A	STRUCTURAL ST ITEM NO. 9035011A	STRUCTURAL FLUORESCENT STF* ITEM NO. 9035071A
R1-1		1	36X36	9.00			
			TOTALS	9			

*ORANGE, YELLOW AND YELLOW-GREEN

SIGNING
SHEET 1 OF 1

STATE OF MISSOURI
CAMERON SOOY
NUMBER PE-2021019715
PROFESSIONAL ENGINEER
10/31/2026 1:31:47
CAMERON SOOY - CIVIL
MO-PE-2021019715

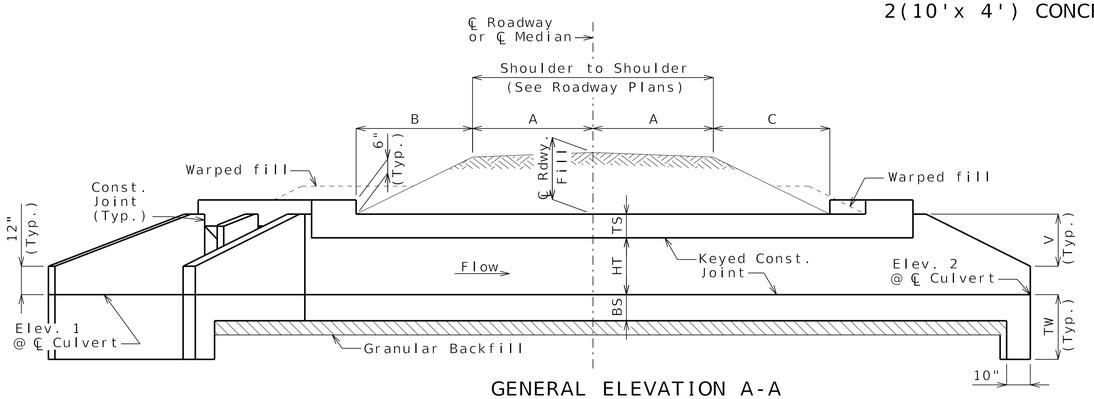
DATE PREPARED 8/25/2026
ROUTE 160 | STATE MO
DISTRICT SW | SHEET NO. 18
COUNTY GREENE
JOB NO. JSR0136
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

2(10'x 4') CONCRETE BOX CULVERT

SEC/SUR 21 TWP 30N RGE 24W



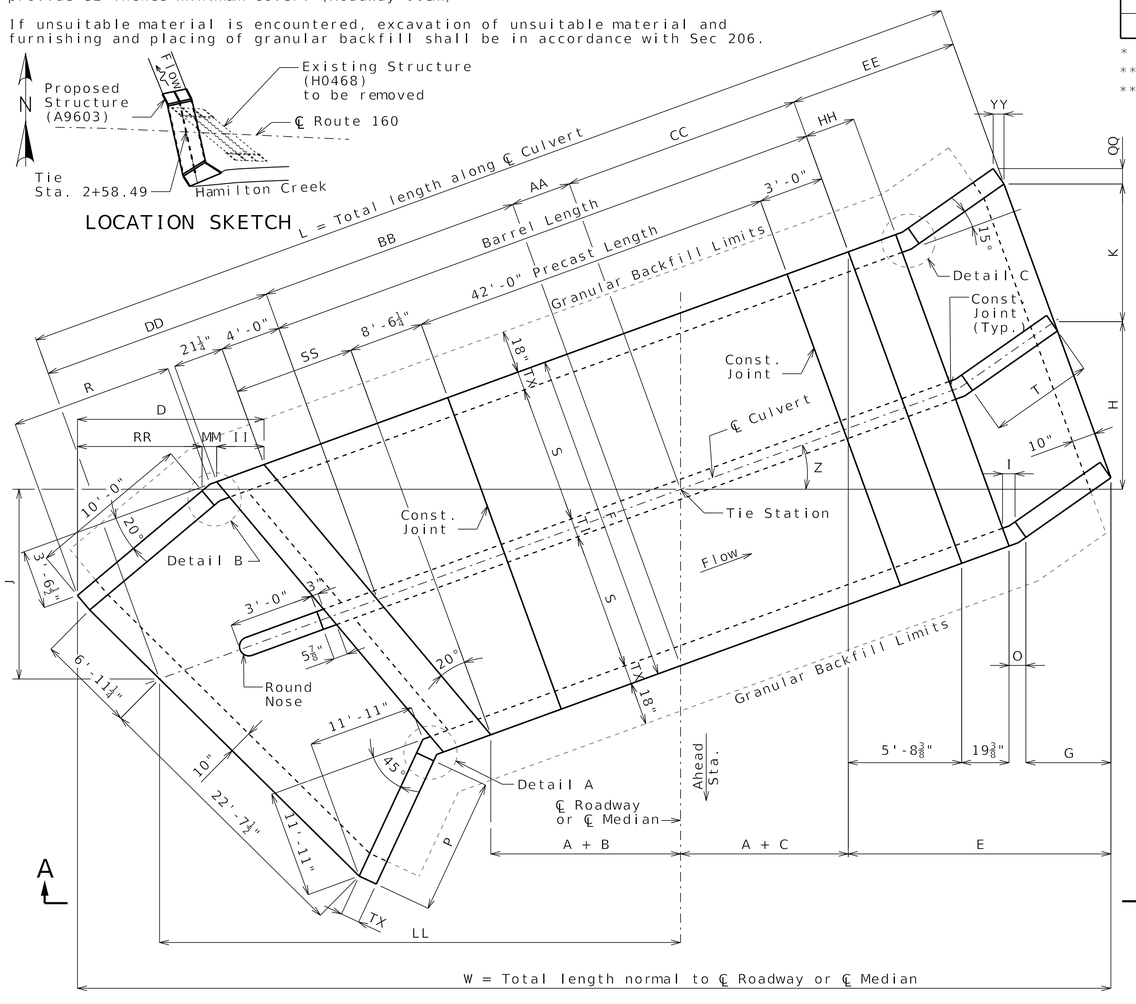
GENERAL ELEVATION A-A

Construction joint key not shown for clarity, see standard plans for details.

If any part of the barrel is exposed, the roadway fill shall be warped to provide 12 inches minimum cover. (Roadway Item)

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

LOCATION SKETCH

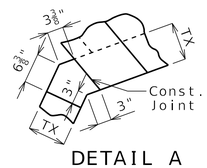


PLAN OF LAYOUT DIMENSIONS

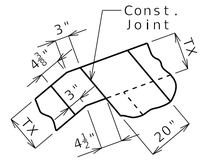
Layout Dimensions

Var.	Equation	Dim.	Var.	Equation	Dim.	Var.	Equation	Dim.
S	- - -	10'-0"	K	- - -	10'-0⅛"	BB	(A + B)(sec Z) + SS/2	28'-10¼"
HT	- - -	4'-0"	L	AA + BB + CC + DD + EE	83'-2⅞"	CC	*	25'-8⅝"
TS	- - -	13"	M	- - -	N/A	DD	- - -	14'-3½"
BS	- - -	10"	N	- - -	N/A	EE	- - -	11'-5⅜"
TX	- - -	8"	O	I + YY - TX(sin 15°)	7⅜"	HH	- - -	20"
TI	- - -	8"	P	2V[sec(Z + 45°)]	16'-4"	II	[20"/(cos 20°)](cos Z)	20½"
A	- - -	16'-0"	Q	- - -	N/A	KK	- - -	N/A
B	- - -	8'-0"	R	(10'-0" + 4⅜")(cos 20°)	9'-8⅞"	LL	(AA + BB + DD)(cos Z)	44'-6¼"
C	- - -	6'-0½"	T	G[(sec(Z + 15°)]	9'-5"	MM	**	6½"
D	II + MM + RR	10'-5⅜"	U	- - -	N/A	QQ	TX[cos(Z + 15°)]	6⅞"
E	- - -	16'-1⅛"	V	HT + TS - 12"	4'-1"	RR	(10'-0")[cos(Z + 20°)]	8'-2¼"
F	2S + 2TX + TI	22'-0"	W	***	85'-11½"	SS	- - -	8'-0⅛"
G	2V	8'-2"	X	- - -	N/A	TT	- - -	N/A
H	- - -	12'-0¼"	Y	- - -	N/A	YY	TX[sin(Z + 15°)]	4"
I	3"[cos Z + cos(Z+15°)]	5½"	Z	Skew Angle	15°	TW	Max{3'-4" or (BS + 12")}	3'-4"
J	(AA + BB + DD)(sin Z)	11'-11⅛"	AA	F(tan Z)/2	2'-11⅜"			

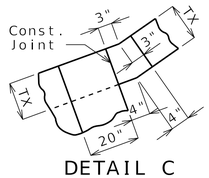
* [A + C + (F/2)(sin Z)](sec Z)
** 3"(cos Z) + 4⅜"[cos(Z + 20°)]
*** 2A + B + C + D + E + [(F)(sec 20°)(sin 35°)]



DETAIL A



DETAIL B



DETAIL C

Hydrologic Data

Drainage Area = 1.7 mi²
Design Flood Frequency = 25 year
Design Flood Discharge = 400 cfs
Design Flood (D.F.) Elevation = 1021.0
Base Flood (100-year)
Base Flood Elevation = 1021.5
Base Flood Discharge = 560 cfs
Estimated Backwater = 0.1 ft
Outlet Velocity = 8.4 ft/s
Roadway Overtopping
Overtopping Flood Discharge = 424 cfs
Overtopping Flood Frequency = 32 years
32-year Flood Elevation = 1020.0

Elevations

Upstream (Elev. 1) = 1017.27
Downstream (Elev. 2) = 1017.13
Pr. Gr. at Tie Sta. = 1024.24

Fill Heights

℄ Rdwy at ℄ Culvert = 1.96 ft
Design (All units) = 2.0'

Dimensions are based on end units.
Fill heights are measured from the top of top slab to the top of earth fill or roadway.

Estimated Quantities

			Final
Class 4 Excavation	cu. yard	550	
Dewatering	lump sum	1	
Removal of Bridges (H0468)	lump sum	1	
Class B-1 Concrete (Culverts-Bridge)	cu. yard	67.1	
Precast Double 10'x4' Box Culvert	linear foot	42	
Reinforcing Steel (Culverts-Bridge)	pound	9010	

Cost of Reinforcing Steel and Class B-1 Concrete for precast section of box culvert shall be considered completely covered by the contract unit price for Precast Double 10'x4' Box Culvert.

General Notes:

Design Specifications:
2010 AASHTO LRFD Bridge Design Specifications and 2010 Interim Revisions

Design Loading:
Vehicular = HL-93 minus lane load, Earth = 120 lb/cf
Equivalent Fluid Pressure = 30 lb/cf (min.), 60 lb/cf (max.)

Design Unit Stresses:
Class B-1 Concrete (Box Culvert) f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60) fy = 60,000 psi

Standard Plans:
703.37, 703.45, 703.46, 703.47

Miscellaneous:
Channel bottom shall be graded within the right of way for transition of channel bed to culvert openings. Channel banks shall be tapered to match culvert openings. (Roadway Item)

Traffic Handling:
Structure to be closed during construction of precast culvert barrels and will be open for the remainder of construction. See roadway plans for traffic control.

BM1
RAILROAD SPIKE IN POWERPOLE
ELEV. 1020.42

CULVERT-BRIDGE: ROUTE 160 OVER HAMILTON CREEK

ROUTE 160 FROM ROUTE FF TO ROUTE V
ABOUT 0.2 MILE WEST OF ROUTE V
TIE STA. 2+58.49

Designed Nov. 2025
Detailed Jul. 2026
Checked Jul. 2026

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

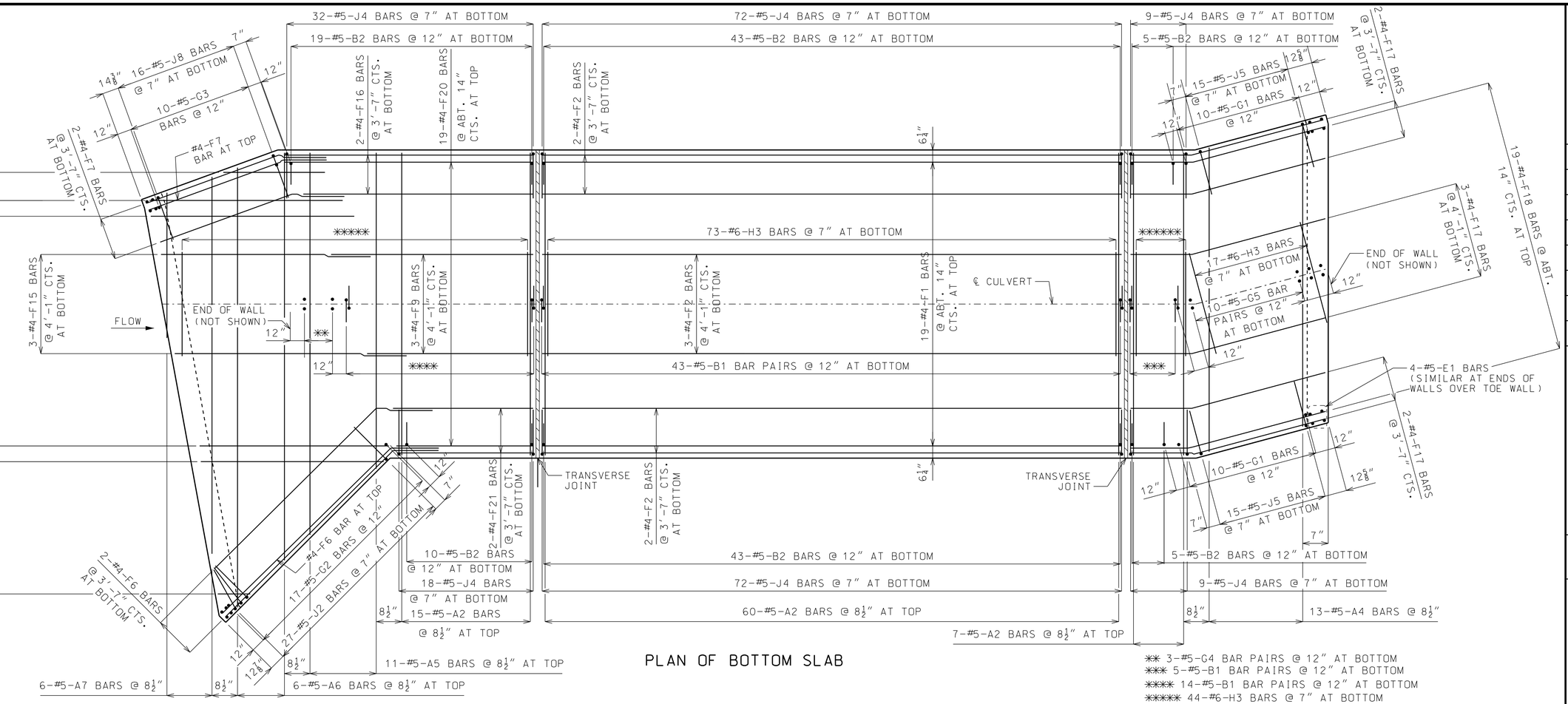
STATE OF MISSOURI
SCOTT MICHAEL MCDONALD
NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/30/2026
ROUTE 160 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY GREENE
JOB NO. JSR0136
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9603

DESCRIPTION | DATE

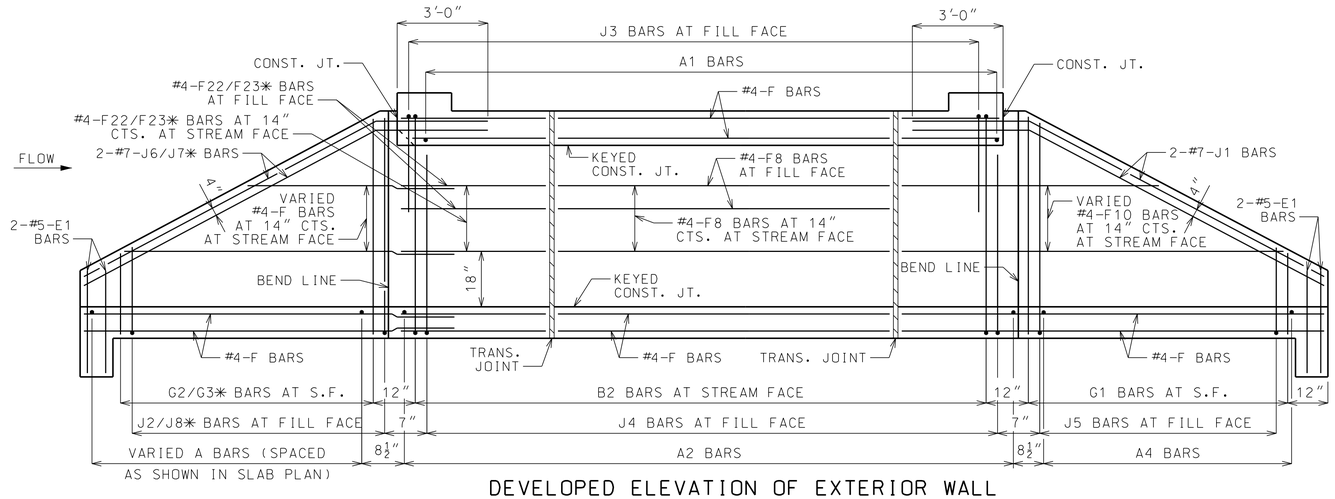
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



PLAN OF BOTTOM SLAB

** 3-#5-G4 BAR PAIRS @ 12" AT BOTTOM
*** 5-#5-B1 BAR PAIRS @ 12" AT BOTTOM
**** 14-#5-B1 BAR PAIRS @ 12" AT BOTTOM
***** 44-#6-H3 BARS @ 7" AT BOTTOM
****** 8-#6-H3 BARS @ 7" AT BOTTOM



DEVELOPED ELEVATION OF EXTERIOR WALL

J1, J6, AND J7 BARS MAY BE BENT IN FIELD OR SHOP.
* J2. G2, J6, AND F22 BARS AT EAST EXTERIOR WALL.
J8, G3, J7, AND F23 BARS AT WEST EXTERIOR WALL.

GENERAL NOTES:

FOR SECTIONS THRU BARREL, WINGS AND HEADWALLS, SEE SHEET 4 OF 6.

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY IN PLAN AND ELEVATION, SEE SHEET 4 OF 6 FOR DETAILS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½".

LAP LONGITUDINAL BARS A MINIMUM OF 23" AT SPLICES.

BEVELED HEADWALL SHALL BE LOCATED AT UPSTREAM END.

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/30/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
BR	2

COUNTY: GREENE
JOB NO.: JSR0136
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9603

DATE	DESCRIPTION

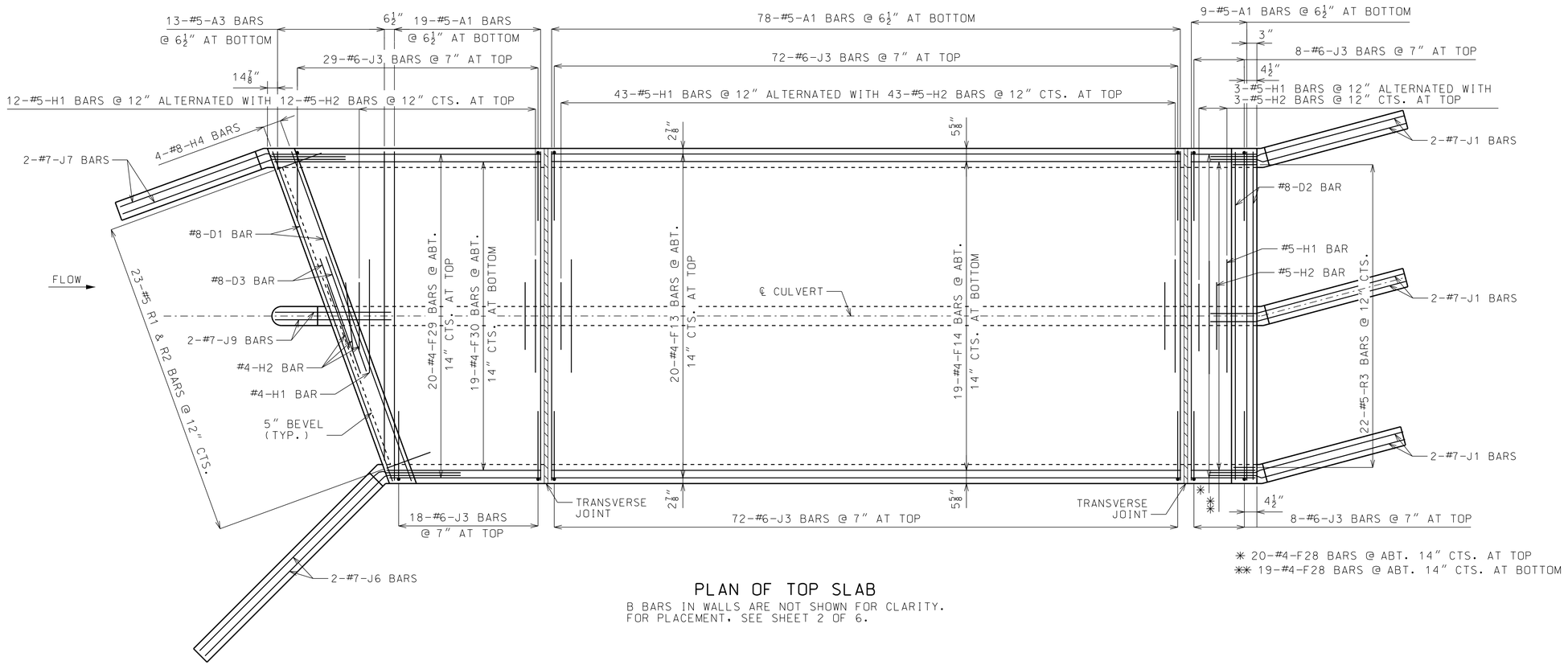
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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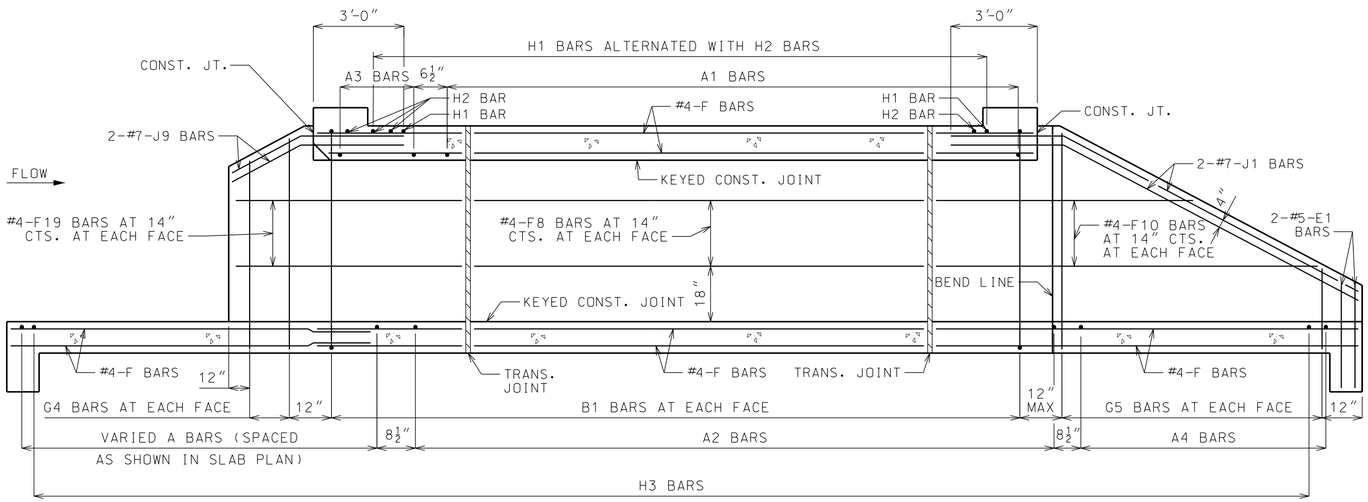
Detailed Jul. 2026
Checked Jul. 2026

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



PLAN OF TOP SLAB

B BARS IN WALLS ARE NOT SHOWN FOR CLARITY.
FOR PLACEMENT, SEE SHEET 2 OF 6.



SECTION NEAR INTERIOR WALL

J1 AND J9 BARS MAY BE BENT IN FIELD OR SHOP.

GENERAL NOTES:

FOR SECTIONS THRU BARREL, WINGS AND HEADWALLS, SEE SHEET 4 OF 6.

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY IN PLAN AND SECTION, SEE SHEET 4 OF 6 FOR DETAILS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½".

LAP LONGITUDINAL BARS A MINIMUM OF 23" AT SPLICES.

BEVELED HEADWALL SHALL BE LOCATED AT UPSTREAM END.

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/30/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
BR	3

COUNTY: GREENE
JOB NO.: JSR0136
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9603

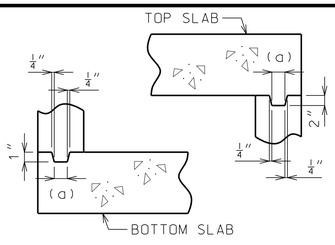
DESCRIPTION	DATE

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

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816-781-6182 816-781-0643 (FAX)
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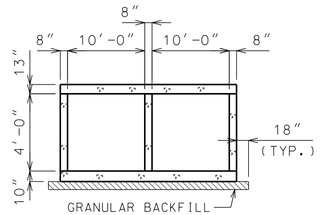
Detailed Jul. 2026
Checked Jul. 2026

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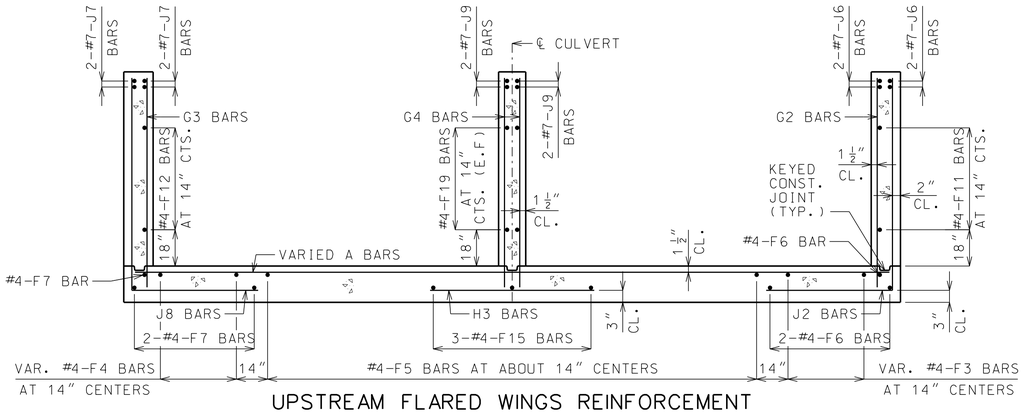


KEYED CONSTRUCTION JOINT

(a) APPROXIMATELY ONE-THIRD OF WALL THICKNESS

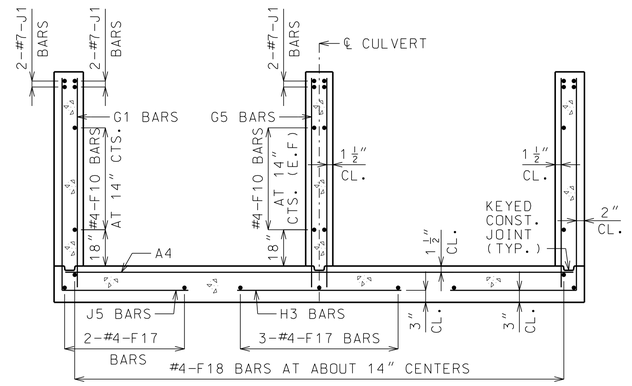


GRANULAR BACKFILL LIMITS AND MEMBER DIMENSIONS

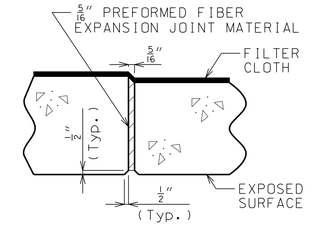


UPSTREAM FLARED WINGS REINFORCEMENT

(LOOKING DOWNSTREAM)



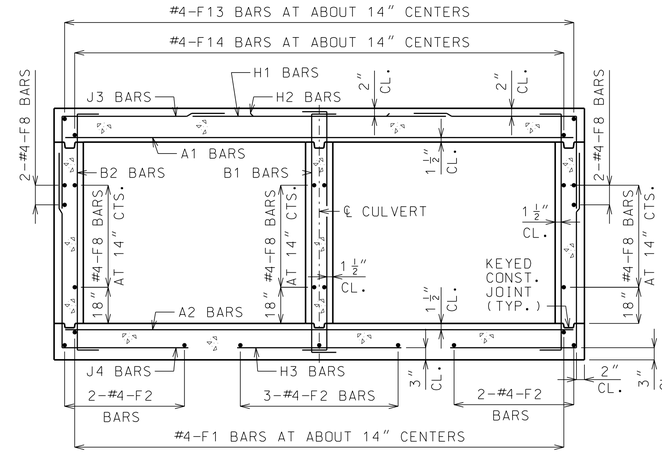
DOWNSTREAM WINGS REINFORCEMENT



TRANSVERSE JOINT THRU BARREL

PREFORMED FIBER EXPANSION JOINT MATERIAL IN ACCORDANCE WITH SEC 1057 SHALL BE SECURELY STITCHED TO ONE FACE OF THE CONCRETE WITH 10 GAGE COPPER WIRE OR 12 GAGE SOFT DRAWN GALVANIZED STEEL WIRE.

FILTER CLOTH 3 FEET IN WIDTH AND DOUBLE THICKNESS SHALL BE CENTERED ON TRANSVERSE JOINTS IN TOP SLAB AND SIDEWALLS WITH EDGES SEALED WITH MASTIC OR TWO SIDED TAPE. FILTER CLOTH SHALL BE A SEPARATION GEOTEXTILE IN ACCORDANCE WITH SEC 1011. COST OF FURNISHING AND INSTALLING FILTER CLOTH WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

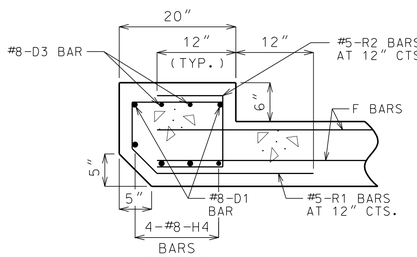


BARREL REINFORCEMENT

FOR DESIGN FILLS 2'-0" OR LESS

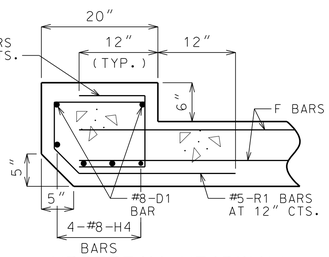
(LOOKING DOWNSTREAM)

NOTE: BAR CALLOUTS ABOVE ARE FOR THE MAIN PRECAST LENGTH OF THE BARREL. FOR BAR CALLOUTS IN THE BARREL BEYOND THE UPSTREAM AND DOWNSTREAM TRANSVERSE JOINTS, SEE SHEET NOS. 2 AND 3.



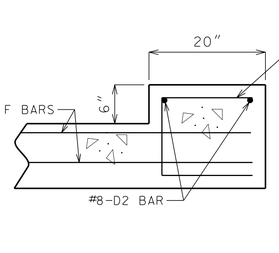
UPSTREAM HEADWALL REINFORCEMENT

NEAR INTERIOR WALL



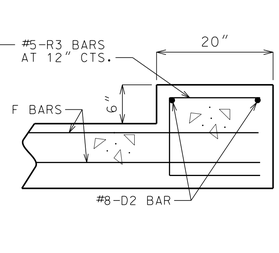
UPSTREAM HEADWALL REINFORCEMENT

NEAR MIDSPAN



DOWNSTREAM HEADWALL REINFORCEMENT

NEAR INTERIOR WALL



DOWNSTREAM HEADWALL REINFORCEMENT

NEAR MIDSPAN

GENERAL NOTES:

BARREL AND WINGS SECTIONS ARE SYMMETRICAL ABOUT AND NORMAL TO ℄ CULVERT. HEADWALL SECTIONS ARE NORMAL TO LONG DIRECTION OF HEADWALL.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½".

SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 07/30/2026

ROUTE	STATE
160	MO
DISTRICT	SHEET NO.
BR	4

COUNTY: GREENE

JOB NO.: JSR0136

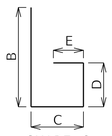
CONTRACT ID.:

PROJECT NO.:

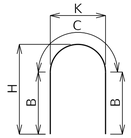
BRIDGE NO.: A9603

DESCRIPTION	DATE

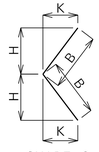
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347



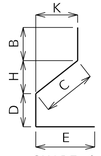
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or 6S



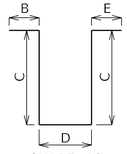
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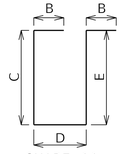
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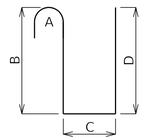
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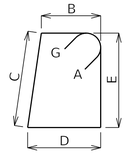
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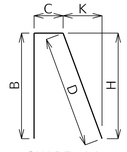
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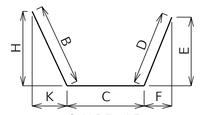
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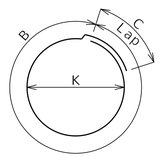
SHAPE 13S



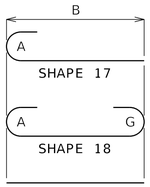
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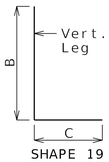
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or 15S



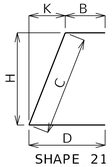
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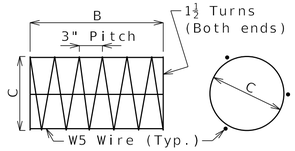
SHAPE 17
SHAPE 18
SHAPE 20



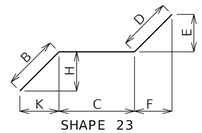
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or 19S



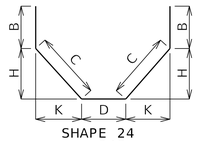
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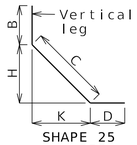
SHAPE 22



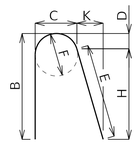
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or 23S



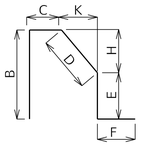
SHAPE 24
or 24S



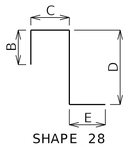
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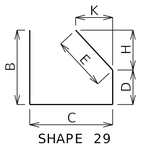
SHAPE 26



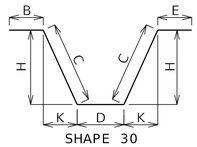
SHAPE 27S



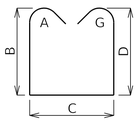
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or 28S



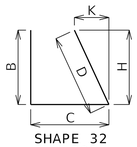
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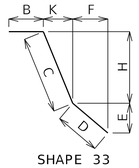
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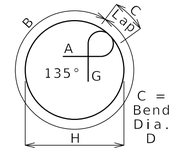
SHAPE 31S



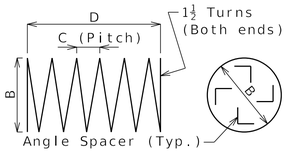
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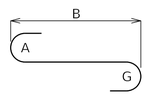
SHAPE 33
or 33S



SHAPE 34S



SHAPE 35 (1)

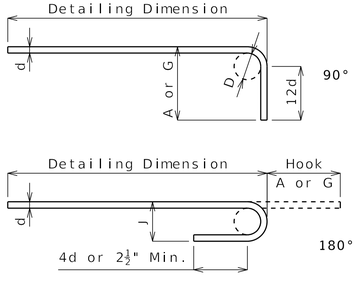


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4½"	12"	8¼"	6"
#7	2	5¼"	14"	9⅜"	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"

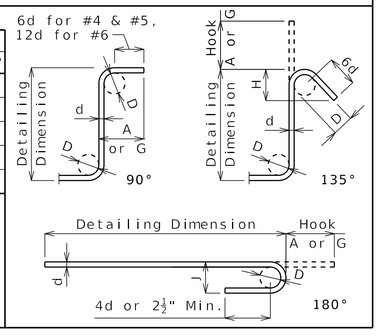


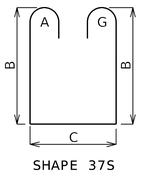
Stirrup Pin Bend Shapes (S)

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"

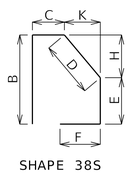
Applicable for all grades of steel.

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)

		Precast Section		Cast-In-Place		Entire Culvert	
	Size	Plain	Epoxy	Plain	Epoxy	Plain	Epoxy
By Size	W5	0	0	0	0	0	0
	4	2148	0	1485	0	3633	0
	5	6600	0	4862	0	11,462	0
	6	2302	0	1470	0	3772	0
	7	0	0	661	0	661	0
	8	0	0	529	0	529	0
	9	0	0	0	0	0	0
	10	0	0	0	0	0	0
	11	0	0	0	0	0	0
	14	0	0	0	0	0	0
	18	0	0	0	0	0	0
By Type		11,050	0	9,007	0	20,057	0

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Jul. 2026
Checked Jul. 2026

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/30/2026
ROUTE 160 | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY GREENE
JOB NO. JSR0136
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9603

DESCRIPTION	DATE

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

VEENSTRA & KIMM INC.
A Kleinfelder Company
9788 N Ash Avenue Kansas City, Missouri 64157
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. 2002006347

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
		BOX CULVERT													
28	5 A1	TOP SLAB		20		21 9.000							21 9	21 9	636
22	5 A2	BOTTOM SLAB		20		21 9.000							21 9	21 9	499
13	5 A3	TOP SLAB		20	1	2 11.000							2 11	2 11	
		INCR. = 17.875 INCH				20 9.000							20 9	20 9	160
13	5 A4	BOTTOM SLAB		20		21 9.000							21 9	21 9	295
11	5 A5	BOTTOM SLAB		20	1	22 1.500							22 2	22 2	
		INCR. = 8.500 INCH				29 2.500							29 2	29 2	294
6	5 A6	BOTTOM SLAB		20	1	29 10.000							29 10	29 10	
		INCR. = 5.375 INCH				32 1.000							32 1	32 1	194
6	5 A7	BOTTOM SLAB		20	1	8 8.000							8 8	8 8	
		INCR. = 49.500 INCH				29 3.000							29 3	29 3	119
38	5 B1	INTERIOR WALL		10			12.000	5 6.000					7 6	7 3	288
39	5 B2	EXTERIOR WALL		10			12.000	5 6.000					7 6	7 3	295
2	8 D1	HEADWALL		20		23 1.000							23 1	23 1	123
2	8 D2	HEADWALL		20		21 9.000							21 9	21 9	116
2	8 D3	HEADWALL		20		8 0.000							8 0	8 0	43
20	5 E1	TOEWALL		20		3 11.000							3 11	3 11	82
9	4 F3	BOTTOM SLAB		20	1	2 1.000							2 1	2 1	
		INCR. = 16.500 INCH				13 1.000							13 1	13 1	46
3	4 F4	BOTTOM SLAB		20	1	7 2.000							7 2	7 2	
		INCR. = 36.000 INCH				13 2.000							13 2	13 2	20
15	4 F5	BOTTOM SLAB		20	1	13 4.000							13 4	13 4	
		INCR. = 2.625 INCH				16 4.000							16 4	16 4	149
3	4 F6	BOTTOM SLAB		15		2 0.000	16 11.000				17.000	17.000	18 11	18 10	38
3	4 F7	BOTTOM SLAB		15		2 0.000	10 1.000				8.250	22.500	12 1	12 0	24
3	4 F9	BOTTOM SLAB		20	1	12 8.000							12 8	12 8	
		INCR. = 18.000 INCH				15 8.000							15 8	15 8	28
8	4 F10	WINGWALL		15	4	4 6.000	5 5.000				14.000	4 4.125	9 11	9 10	
		INCR. = 32.000 INCH				4 6.000	8 1.000				14.000	4 4.125	12 7	12 6	60
2	4 F11	WINGWALL		15	1	2 0.000	9 3.000				17.000	17.000	11 3	11 2	
		INCR. = 56.000 INCH				2 0.000	13 11.000				17.000	17.000	15 11	15 10	18
2	4 F12	WINGWALL		15	1	2 0.000	5 9.000				8.250	22.500	7 9	7 8	
		INCR. = 34.000 INCH				2 0.000	8 7.000				8.250	22.500	10 7	10 6	12
3	4 F15	BOTTOM SLAB		20	1	13 8.000							13 8	13 8	
		INCR. = 9.000 INCH				15 2.000							15 2	15 2	29
2	4 F16	BOTTOM SLAB		20	1	16 10.000							16 10	16 10	
		INCR. = 15.000 INCH				18 1.000							18 1	18 1	23
7	4 F17	BOTTOM SLAB		15		4 6.000	9 11.000				14.000	4 4.125	14 5	14 4	67
19	4 F18	BOTTOM SLAB		15		4 6.000	9 11.000				14.000	4 4.125	14 5	14 4	182
4	4 F19	WINGWALL		20		17 3.000							17 3	17 3	46
19	4 F20	BOTTOM SLAB		20	1	10 4.000							10 4	10 4	
		INCR. = 5.125 INCH				18 0.000							18 0	18 0	180
2	4 F21	BOTTOM SLAB		20	1	10 3.000							10 3	10 3	
		INCR. = 15.000 INCH				11 6.000							11 6	11 6	15
4	4 F22	EXTERIOR WALL		20		10 3.000							10 3	10 3	27
4	4 F23	EXTERIOR WALL		20		18 1.000							18 1	18 1	48
39	4 F28	TOP SLAB		20		4 4.000							4 4	4 4	113
20	4 F29	TOP SLAB		20	1	10 1.500							10 2	10 2	
		INCR. = 5.000 INCH				17 11.500							18 0	18 0	188
19	4 F30	TOP SLAB		20	1	9 9.000							9 9	9 9	
		INCR. = 5.125 INCH				17 5.000							17 5	17 5	172

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
		BOX CULVERT													
20	5 G1	WINGWALL		20	2	16.000							1 4	1 4	
		INCR. = 5.500 INCH				5 5.000							5 5	5 5	70
17	5 G2	WINGWALL		20	1	16.000							1 4	1 4	
		INCR. = 3.000 INCH				5 5.000							5 5	5 5	60
10	5 G3	WINGWALL		20	1	16.000							1 4	1 4	
		INCR. = 5.500 INCH				5 5.000							5 5	5 5	35
6	5 G4	WINGWALL		20	2	4 11.000							4 11	4 11	
		INCR. = 3.000 INCH				5 5.000							5 5	5 5	32
20	5 G5	WINGWALL		20	2	16.000							1 4	1 4	
		INCR. = 5.500 INCH				5 5.000							5 5	5 5	70
15	5 H1	TOP SLAB		20		16 4.000							16 4	16 4	256
17	5 H2	TOP SLAB		20		5 0.000							5 0	5 0	89
69	6 H3	BOTTOM SLAB		20		8 4.000							8 4	8 4	863
4	8 H4	HEADWALL		20		23 1.000							23 1	23 1	247
12	7 J1	WINGWALL		15		10 1.500	3 6.000				4 0.375	9 3.500	13 8	13 6	331
27	5 J2	WINGWALL		19	1	20.250	3 8.000						5 4	5 2	
		INCR. = 1.750 INCH				5 5.000	3 8.000						9 2	9 0	199
63	6 J3	TOP SLAB		19		2 5.000	4 1.000						6 6	6 5	607
68	5 J4	EXTERIOR WALL		19		4 6.000	3 8.000						8 2	8 1	573
30	5 J5	WINGWALL		19	2	22.500	3 8.000						5 6	5 5	
		INCR. = 3.000 INCH				5 5.000	3 8.000						9 1	8 11	224
4	7 J6	WINGWALL		15		16 8.500	3 6.000				4 0.625	16 2.500	20 2	20 0	164
4	7 J7	WINGWALL		15		10 8.000	3 6.000				4 0.375	9 10.500	14 2	14 0	114
16	5 J8	WINGWALL		19	1	22.875	3 8.000						5 7	5 5	
		INCR. = 2.875 INCH				5 6.000	3 8.000						9 2	9 0	120
4	7 J9	WINGWALL		15		2 11.500	3 6.000				8.625	2 10.500	6 6	6 4	52
23	5 R1	HEADWALL		27		17.000	11.000	5.875	2 2.000		4.125	4.125	5 0	4 9	114
23	5 R2	HEADWALL		10			10.500	16.000					3 1	2 10	68
22	5 R3	HEADWALL		10			17.000	16.000					4 2	3 11	90
		PRECAST BOX CULVERT													
78	5 A1	TOP SLAB		20		21 9.000							21 9	21 9	1769
60	5 A2	BOTTOM SLAB		20		21 9.000							21 9	21 9	1361
86	5 B1	INTERIOR WALL		10			12.000	5 6.000					7 6	7 3	650
86	5 B2	EXTERIOR WALL		10			12.000	5 6.000					7 6	7 3	650
19	4 F1	BOTTOM SLAB		20		41 9.000							41 9	41 9	530
7	4 F2	BOTTOM SLAB		20		41 9.000							41 9	41 9	195
12	4 F8	WALL		20		41 9.000							41 9	41 9	335
20	4 F13	TOP SLAB		20		41 9.000							41 9	41 9	558
19	4 F14	TOP SLAB		20		41 9.000							41 9	41 9	530
43	5 H1	TOP SLAB		20		16 4.000							16 4	16 4	732
43	5 H2	TOP SLAB		20		5 0.000							5 0	5 0	224
73	6 H3	BOTTOM SLAB		20		8 4.000							8 4	8 4	914
144	6 J3	TOP SLAB		19		2 5.000	4 1.000						6 6	6 5	1388
144	5 J4	EXTERIOR WALL		19		4 6.000	3 8.000						8 2	8 1	1214

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. 5.

Reinforcing steel (ASTM A615 Grade 60) fy = 60,000 psi

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 Jul. 2026
Checked Jul. 2026

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
SCOTT MICHAEL MCDONALD NUMBER PE-2018000240
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 07/30/2026
ROUTE 160 | STATE MO
DISTRICT BR | SHEET NO. 6
COUNTY GREENE
JOB NO. JSR0136
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9603

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

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