DESIGN DESIGNATION

A.A.D.T. – 2025 = 14,641
A.A.D.T. – 2045 = 18,136
D.H.V. = 7.99%
T = 27.86%
V = 65 MPH
D = 48.1% NB / 51.9% SB
FUNCTIONAL CLASSIFICATION- FREEWAY

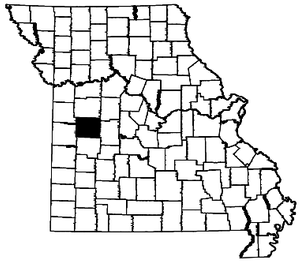
NO NEW R/W REQUIRED

CONVENTIONAL SYMBOLS
(USED IN PLANS)

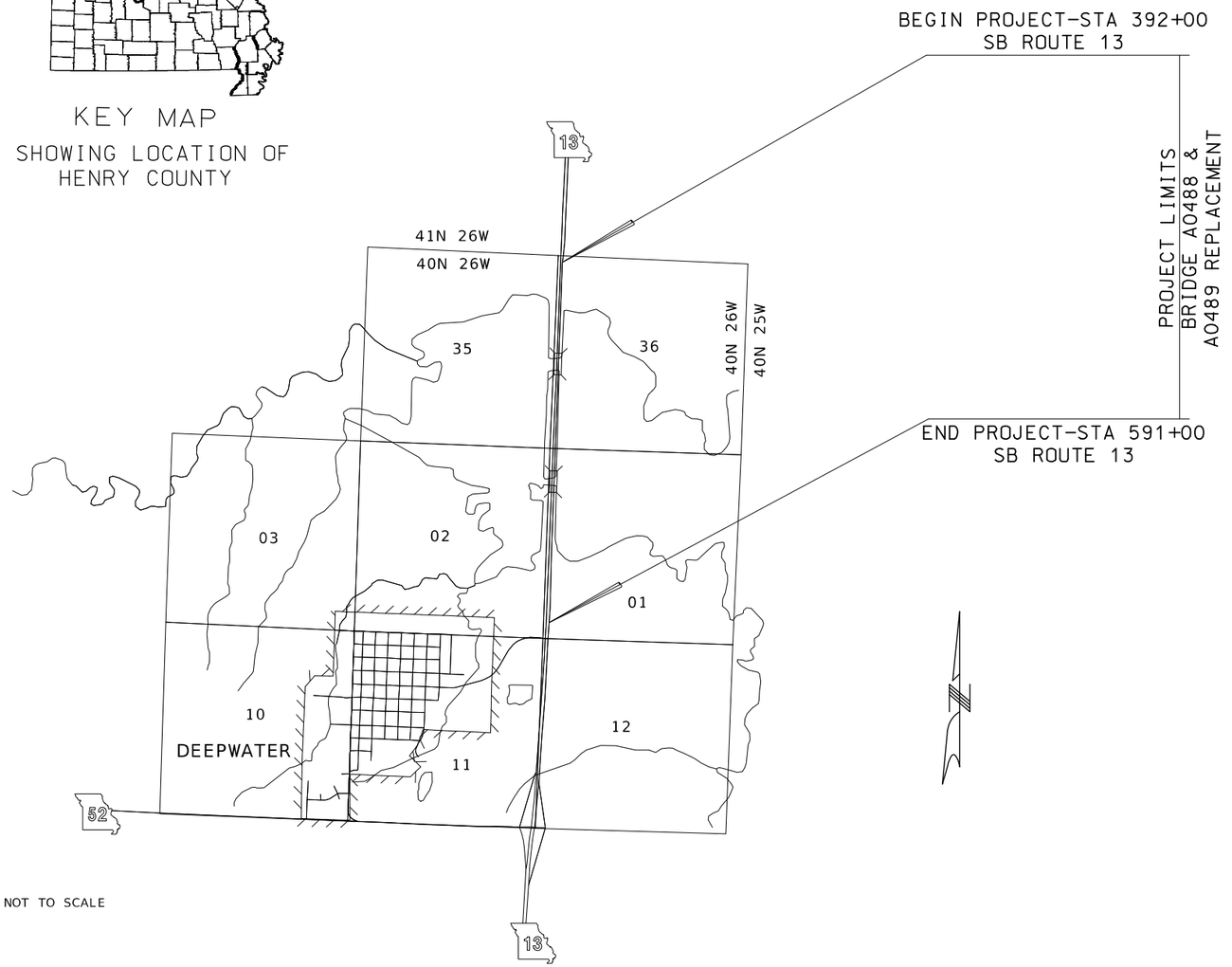
	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
GUARD CABLE		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	-FO-	~~FO~~
OVERHEAD CABLE TV	-OTV-	~~OTV~~
UNDERGROUND CABLE TV	-UTV-	~~UTV~~
OVERHEAD TELEPHONE	-OT-	~~OT~~
UNDERGROUND TELEPHONE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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
PLANS FOR PROPOSED
STATE HIGHWAY
HENRY COUNTY



KEY MAP
SHOWING LOCATION OF HENRY 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

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA 392+00
END OF PROJECT	STA 591+00
APPARENT LENGTH	19900 FEET
EQUATIONS AND EXCEPTIONS:	NONE
TOTAL CORRECTIONS	0.00 FEET
NET LENGTH OF PROJECT	19900 FEET
STATE LENGTH	3.769 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	6 ACRES

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:05:34 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

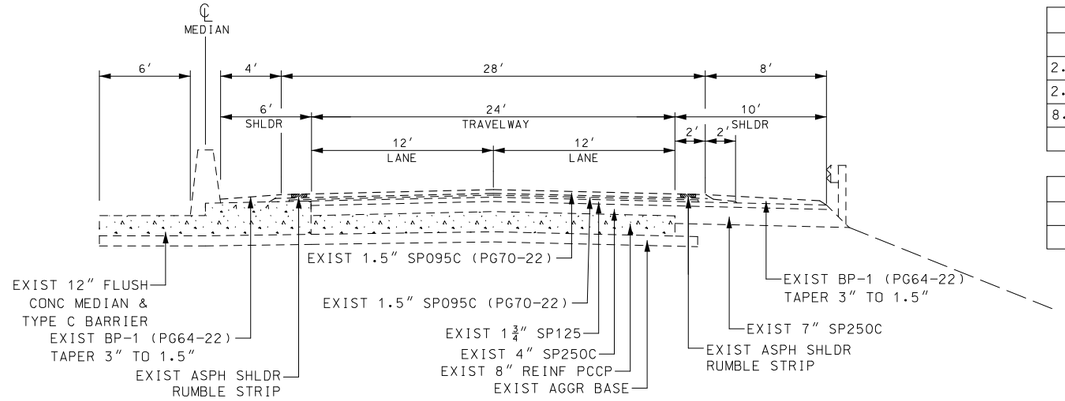
DATE PREPARED: 3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	1

COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338 & A9339

DESCRIPTION	DATE

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

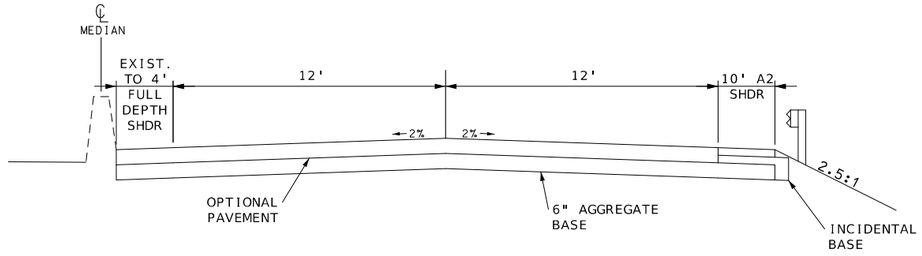


ASPHALT OPTION		
TYPE	ASPHALT PERCENTAGE	CONVERSION FACTOR
2.00″ SP125C (PG70-22)	5.5%	1.970 TONS/CY
2.00″ SP125C (PG70-22)	5.5%	1.970 TONS/CY
8.00″ SP250C (PG64-22)	4.8%	1.995 TONS/CY
6″ TYPE 5 AGG BASE	–	–

CONCRETE OPTION
10″ PCCP
6″ TYPE 5 AGG BASE

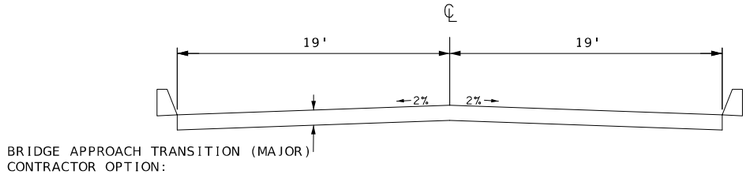
EXISTING PAVEMENT SOUTHBOUND ROUTE 13

SB STA – 408+30.86 – 473+40.40
SB STA – 479+29.73 – 507+48.40
SB STA – 511+52.24 – 581+71.36



PROPOSED PAVEMENT SOUTHBOUND ROUTE 13

SB STA 471+14.20 – 473+40.40
SB STA 479+29.73 – 480+99.14
SB STA 503+00.00 – 507+48.40
SB STA 511+52.24 – 519+09.24



ROUTE 13 SB
PROPOSED BRIDGES A0488 & A0489
(INCLUDES APPROACH SLABS)

A0488 – SB STA 473+40.40 – 479+29.73

A0489 – SB STA 507+48.40 – 511+52.24

NOT TO SCALE

TYPICAL SECTIONS
SHEET 1 OF 2

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:05:57 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	2

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

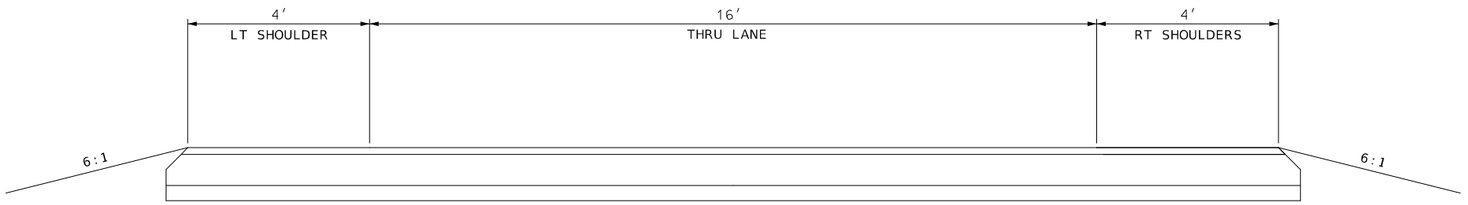
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

ASPHALT OPTION		
TYPE	ASPHALT PERCENTAGE	CONVERSION FACTOR
2.00" SP125C (PG70-22)	5.5%	1.970 TONS/CY
2.00" BP-1 (PG70-22)	5.2%	1.985 TONS/CY
7.00" SP250C (PG64-22)	4.8%	1.995 TONS/CY
7.00" OF BIT BASE	4.8%	1.995 TONS/CY
4" TYPE 5 AGG BASE	-	-

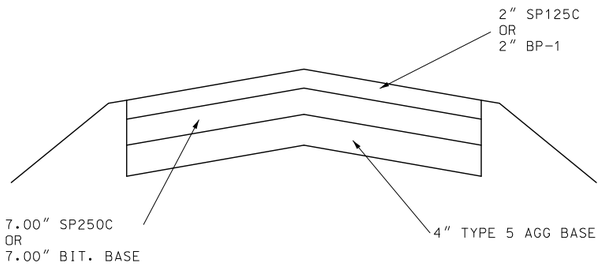
CONCRETE OPTION
8" PCCP
4" TYPE 5 AGG BASE



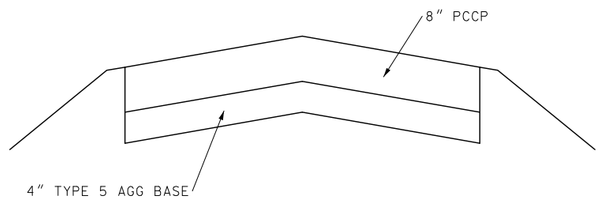
NORTH CROSSOVER PROPOSED
SB STA 0+00.00 - 10+09.25

SOUTH CROSSOVER PROPOSED
SB STA 0+00.00 - 10+10.09

ASPHALT OPTION



CONCRETE OPTION



NOT TO SCALE

TYPICAL SECTIONS
SHEET 2 OF 2

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:06:12 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	2

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A0488 & A0489

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

REMOVAL OF IMPROVEMENTS
REMARKS
7165 SY ASPHALT PAVEMENT
1750 LF GUARDRAIL
140 LF SAW CUTS
1 SOLAR POWER ANTENNA
1 LUMP SUM

SIGN REMOVAL				
ALIGNMENT	STA	OFFSET (FT)	QTY (EA)	REMARKS
RTE13_SB_CL	505+90.00	40	1	TRUMAN LAKE DEEPWATER ARM
		TOTAL	1	
*PAID FOR IN REMOVAL OF IMPROVEMENTS LUMP SUM		USE	1	

EARTHWORK							
BEGIN STA	END STA	LOCATION	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	EMBANKMENT IN PLACE (CY)	CLASS 3 EXCAVATION (CY)	REMARKS
3+36.91	8+45.69	RT & LT	84.6	71.9	375.3	71.0	NORTH CROSSOVER
471+14.20	473+60.40	RT & LT	16.0	13.6	22.6		NORTH OF A9338
479+09.73	480+99.14	RT & LT			3209.1		SOUTH OF A9338
503+00.00	507+68.40	RT & LT	262.1	222.8			NORTH OF A9339
511+32.24	519+09.24	RT & LT	32.7	27.8	784.7		SOUTH OF A9339
1+70.00	8+42.68	RT & LT	202.2	171.9	300.6	4.0	SOUTH CROSSOVER
		TOTAL	597.6	508.0	4692.3	75.0	
		USE	598	508	4692	75	

MOBILIZATION
1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING AND STAKING
1 LUMP SUM

ASPHALT QUANTITIES								
BEGIN STA	END STA	LENGTH (FT)	AREA (SY)	4" TYPE 5 AGGREGATE (SY)	6" TYPE 5 AGGREGATE (SY)	OPTIONAL PAVEMENT (SY)	TACK (GAL)	REMARKS
3+36.91	8+45.69	509	1357.33	1357.3		1357.3	135.7	NORTH CROSSOVER
471+14.20	473+40.40	226	984.11		984.1	984.1	98.4	ALIGNMENT SHIFT NORTH OF A9338
473+40.40	479+29.73	589						EXCEPT BRIDGE & APPROACH SLABS FOR A9338
479+29.73	480+99.14	169	816.44		816.4	816.4	81.6	ALIGNMENT SHIFT SOUTH OF A9338
480+99.14	503+00.00	2201						EXCEPT EXISTING PAVEMENT
503+00.00	507+48.40	448	2042.22		2042.2	2042.2	204.2	ALIGNMENT SHIFT NORTH OF A9339
507+48.40	511+52.24	404						EXCEPT BRIDGE & APPROACH SLABS FOR A9339
511+52.24	519+09.24	757	3343.33		3343.3	3343.3	334.3	ALIGNMENT SHIFT SOUTH OF A9339
1+70.00	8+42.68	673	1267.92	1267.9		1267.9	126.8	SOUTH CROSSOVER
			TOTAL	2625.2	7186.0	9811.2	981.0	
			USE	2625	7186	9811	981	
* TACK APPLICATION RATES: 0.05 (GAL/SY)								

TYPE 2 ROCK BLANKET					
BEGIN STA	END STA	FURNISHING TYPE 2 ROCK BLANKET (CY)	PLACING TYPE 2 ROCK BLANKET (CY)	PERMANENT EROSION GEOTEXTILE (SY)	REMARKS
470+98.46	473+60.96	3625.3	3625.3	5438.0	A9338 NORTH
479+09.89	481+22.39	4033.3	4033.3	6050.0	A9338 SOUTH
502+80.33	507+67.83	3692.7	3692.7	5539.0	A9339 NORTH
511+32.22	519+19.72	5038.0	5038.0	7557.0	A9339 SOUTH
	TOTAL	16389.3	16389.3	24584.0	
	USE	16390	16390	24584	

PAVEMENT MARKING							
BEGIN STA	END STA	LENGTH (FT)	4" YELLOW TYPE L (LF)	6" WHITE TYPE L (LF)	24" YELLOW PREFORMED (LF)	PAVE. MARK. REMOVAL (LF)	REMARKS
+0.00	10+02.00	1002	1500.0	1625.0	324.0	1077.0	NORTH CROSSOVER
471+14.20	480+99.14	985	985.0	1231.3			A9338
411+95.00	571+66.00	15971	47916.0	51909.0		102149.0	NB TRAFFIC CONTROL
503+00.00	519+09.24	1609	1609.0	2011.3			A9339
+0.00	10+10.09	1010	1510.0	1635.0		1020.0	SOUTH CROSSOVER
		TOTAL	53520.0	58411.6	324.0	104246.0	
		USE	53520	58412	324	104246	

BITUMINOUS RUMBLE STRIPS					
STA	STA	LENGTH (FT)	LEFT RUMBLE (STA)	RIGHT RUMBLE (STA)	REMARKS
471+14.20	480+99.14	985	5.89	5.89	A9338
503+00.00	519+09.24	1609	12.13	12.13	A9339
		SUBTOTAL	18.02	18.02	
		TOTAL	36.04		
		USE	36.0		

TEMPORARY EROSION CONTROL				
LOC	TYPE C BERM (LF)	SILT FENCE (LF)	SEDIMENT REMOVAL (CY)	DITCH CHECK (LF)
NORTH CROSSOVER				50.0
A9338 NORTH	600.0	280.0	28.0	
A9338 SOUTH	525.0	280.0	28.0	
A9339 NORTH	800.0	280.0	28.0	
A9339 SOUTH	1150.0	280.0	28.0	
SOUTH CROSSOVER				50.0
TOTAL	3,075.0	1,120.0	112.0	100.0
USE	3,075	1,120	112	100

MGS GUARDRAIL							
BEGIN STA	END STA	LT/RT	REMOVALS (FT)	SHAPING SLOPES CLASS III (100FT)	MGS BRIDGE TRANSITION (EA)	MGS GUARDRAIL 8' POSTS 6'3" SPACING (LF)	REMARKS
470+97.90	473+60.40	RT	262.5	2.3	1.0	225.0	A9338 NORTH
479+09.73	481+22.23	RT	212.5	1.8	1.0	175.0	A9338 SOUTH
502+80.90	507+68.40	RT	487.5	4.9	1.0	450.0	A9339 NORTH
511+32.24	519+19.74	RT	787.5	7.9	1.0	750.0	A9339 SOUTH
		TOTAL	1750.0	16.9	4.0	1,600.0	
		USE	SEE REMOVALS	17	4	1,600	
REMOVAL OF IMPROVEMENTS PAID AS LUMP SUM, BUT SHOWN IN LINEAR FEET FOR CLARITY EROSION CONTROL AND SEEDING INCIDENTAL TO SHAPING SLOPES CLASS III							

DRAINAGE							
BEGIN STA	END STA	18 IN GROUP A PIPE (FT)	18 IN FES 4:1 SLOPE (EA)	36 IN GROUP A PIPE (FT)	36 IN PIPE COLLAR (EA)	5 FT MANHOLE (EA)	REMARKS
3+76.03	4+65.61	87.0	1.0				NORTH CROSSOVER
4+68.00				40.0	1.0	1.0	NORTH CROSSOVER
4+68.65	6+93.39	227.0	1.0				NORTH CROSSOVER
2+90.63	3+83.16	381.0	2.0				SOUTH CROSSOVER
	TOTAL	695.0	4.0	40.0	1.0	1.0	
	USE	695	4	40	1	1	

QUANTITY SHEET
SHEET 1 OF 2

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:06:27 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/13/2024

ROUTE 13 | STATE MO
DISTRICT SW | SHEET NO. 3
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9338 & A9339

DESCRIPTION | DATE

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

EFFECTIVE: 04-01-2024

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)
WO1-4L	48X48	16.00	2	32.00				REVERSE CURVE (SYMBOL LEFT)
WO1-4R	48X48	16.00	2	32.00				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	4	50.00				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	10	160.00				TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00	4	20.00				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	4	200.00				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	4	20.00				X MILE (PLAQUE)
WO20-1	48X48	16.00						ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	2	32.00				DETOUR AHEAD
WO20-3	48X48	16.00						ROAD CLOSED AHEAD
WO20-4	48X48	16.00						ONE LANE ROAD AHEAD
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00	2	32.00				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)

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
GO20-1	60X24	10.00	8	80.00				ROAD WORK NEXT 3 MILES
GO20-2	48X24	8.00	2	16.00				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	26	156.00				WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00						END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT)
MO4-9R	48X36	12.00						DETOUR (RIGHT)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)
MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)
REGULATORY SIGNS								
R1-1	48X48	13.25	1	13.25				STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00	10	120.00				SPEED LIMIT(2x65mph, 8x55mph)
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00	4	64.00				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	4	25.00				RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00	18	216.00				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	2	12.50				DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75	4	27.00				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	4	40.00				ROAD CLOSED
R11-3a	60X30	12.50						ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50						ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00	2	64.00				POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00	4	72.00				RATE OUR WORK ZONE
CONST-8	48X36	12.00	4	48.00				WORK ZONE NO PHONE ZONE
SPECIAL	12X72	6						DETOUR ROUTE GUIDE SIGNS

616-10.05 CONSTRUCTION SIGNS	TOTAL
	1532.00

616-10.10 RELOCATED SIGNS	TOTAL
	0

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017	1	IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161008	4	ADVANCED WARNING RAIL SYSTEM
6161012	8	BUOYS (BOATS KEEP OUT)
6161013	10	BUOYS (NO WAKE)
6161014	6	SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	198	CHANNELIZER (TRIM LINE)
6161030	26	TYPE III MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040	2	FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070	510	TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A		CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099	4	CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002	20	TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A	130	TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING
6169903	350	SEPARATOR CURB W/ DELINEATORS (LF)
6122040	2	WORK ZONE CRASH CUSHION NARROW (EA)

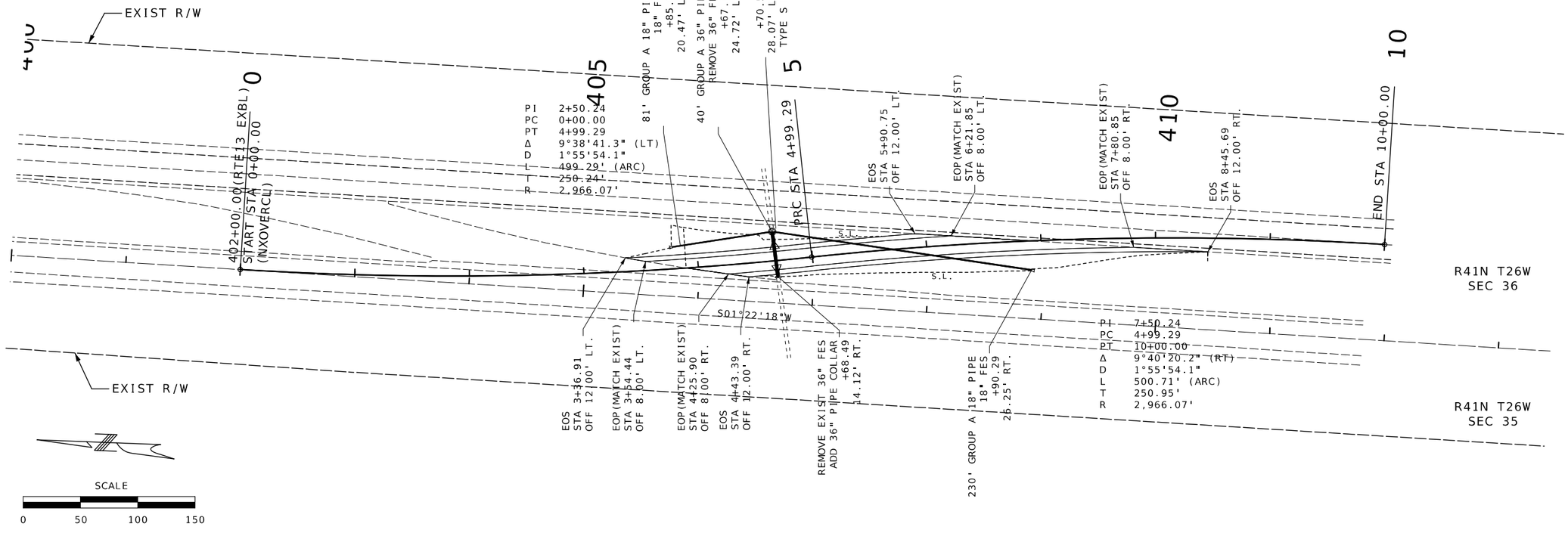
QUANTITY SHEET
SHEET 2 OF 2

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:06:42 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

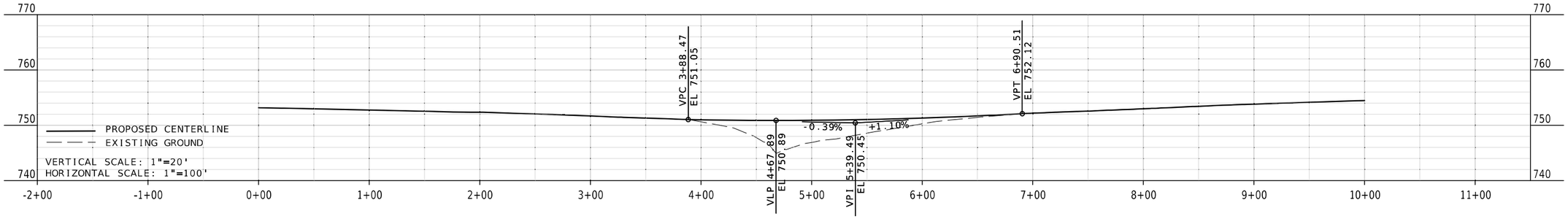
DATE PREPARED: 3/13/2024
ROUTE: 13 | STATE: MO
DISTRICT: SW | SHEET NO.: 3
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338 & A9339

DESCRIPTION | DATE

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



SSD = INF'
K = 202
302.04' V.C.



PLAN SHEET
SHEET 1 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:09:20 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	4

COUNTY
HENRY

JOB NO.
J7P3484C

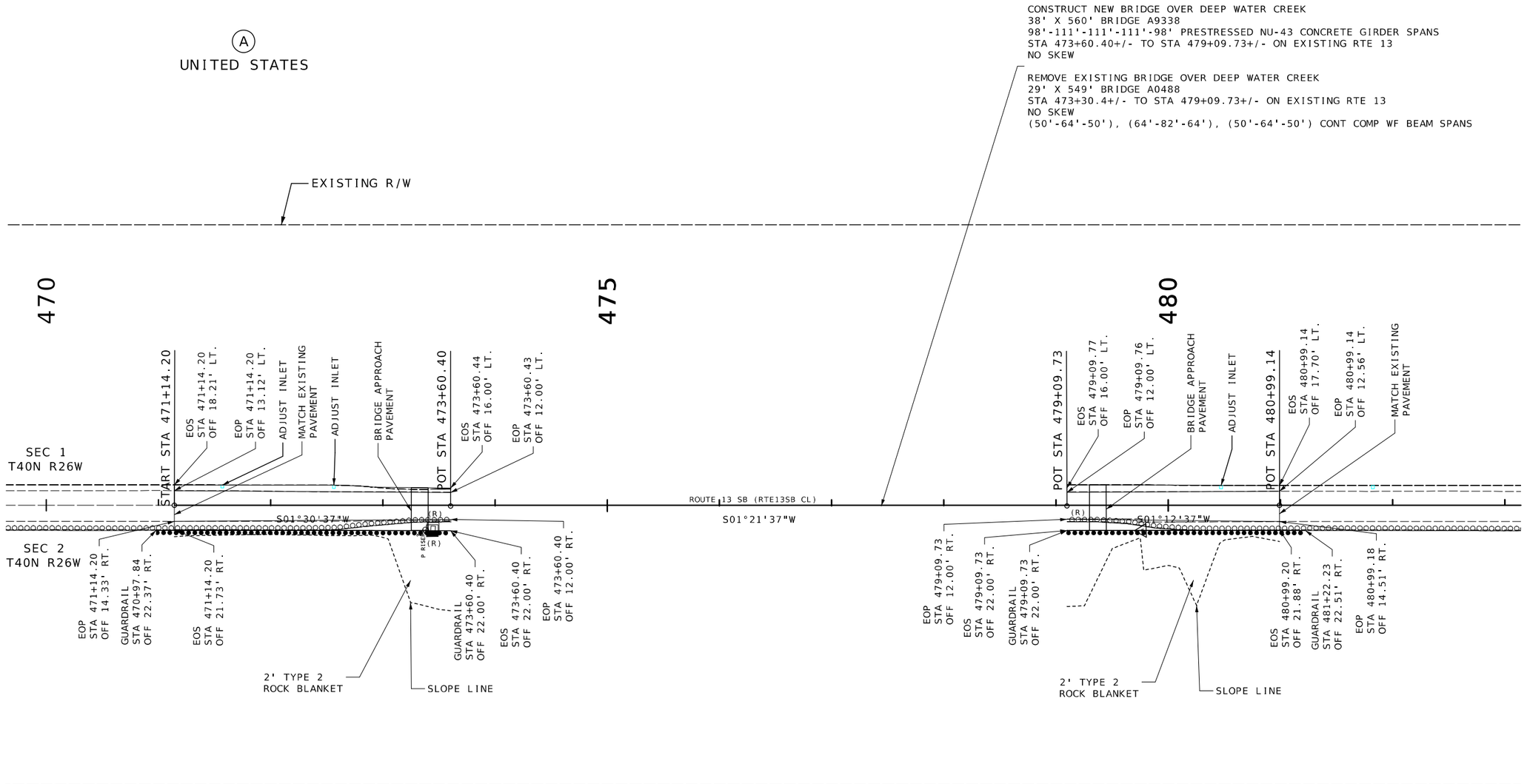
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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



NOTES:

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 SUITABLILITY OF THE INFORMATION FOR ANY USE.

ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STATION 392+00 TO 591+00, A DISTANCE OF 3.769 MILES.

ALL BEARINGS BASED ON STATE PLANE BEARINGS WESTERN ZONE.

ACCESS IS ALLOWED UNDER THE BRIDGE; HOWEVER, NO ATTACHMENTS MAY BE MADE TO THE STRUCTURE

SCALE

0 50 100 150

PLAN SHEET
SHEET 2 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:09:31 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	5

COUNTY
HENRY

JOB NO.
J7P3484C

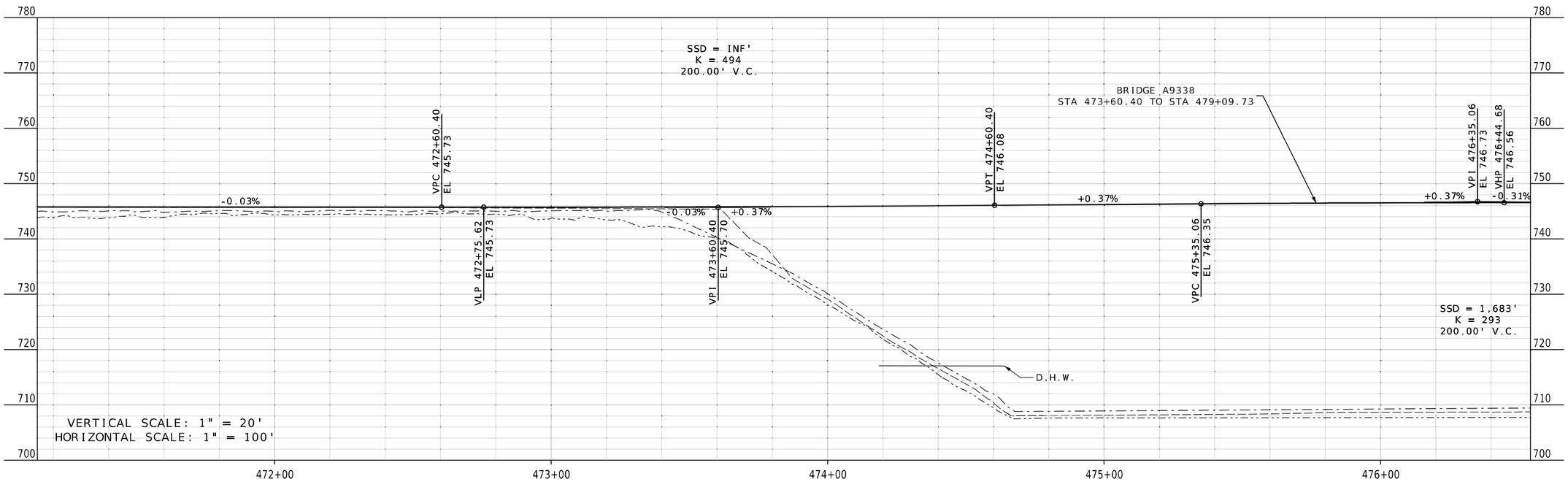
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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



PROPOSED CENTERLINE

EXISTING GROUND

30' RIGHT

30' LEFT

PLAN SHEET
SHEET 3 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:09:44 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO

DISTRICT	SHEET NO.
SW	6

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

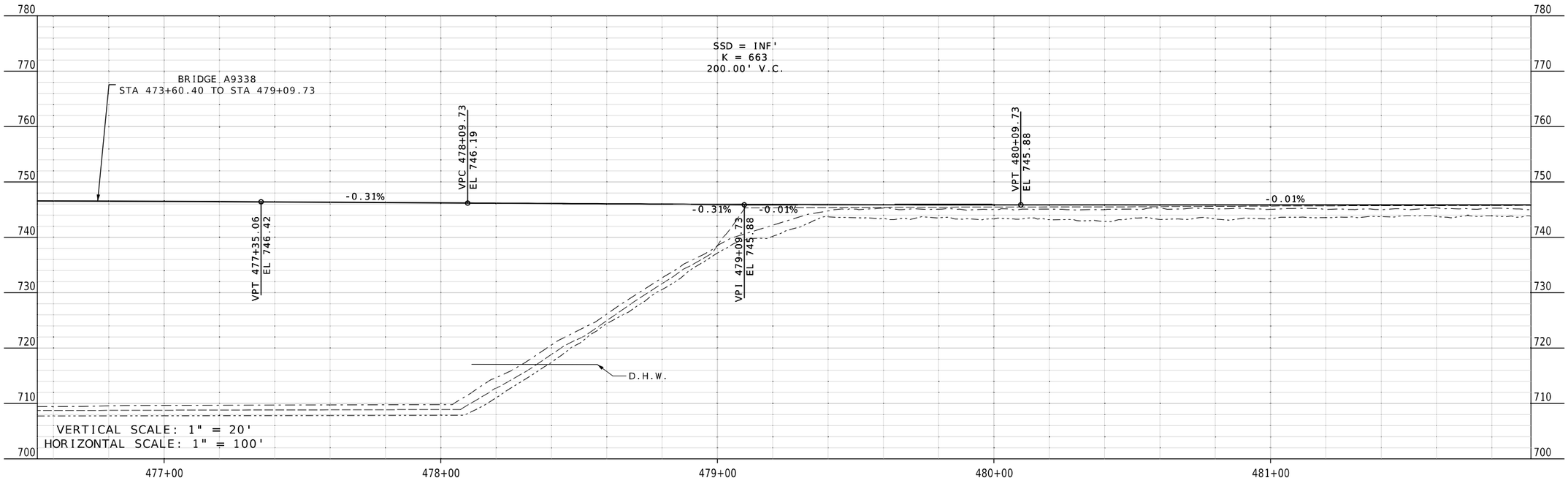
PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



PROPOSED CENTERLINE

EXISTING GROUND

30' RIGHT

30' LEFT

PLAN SHEET
SHEET 4 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:09:56 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	7

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

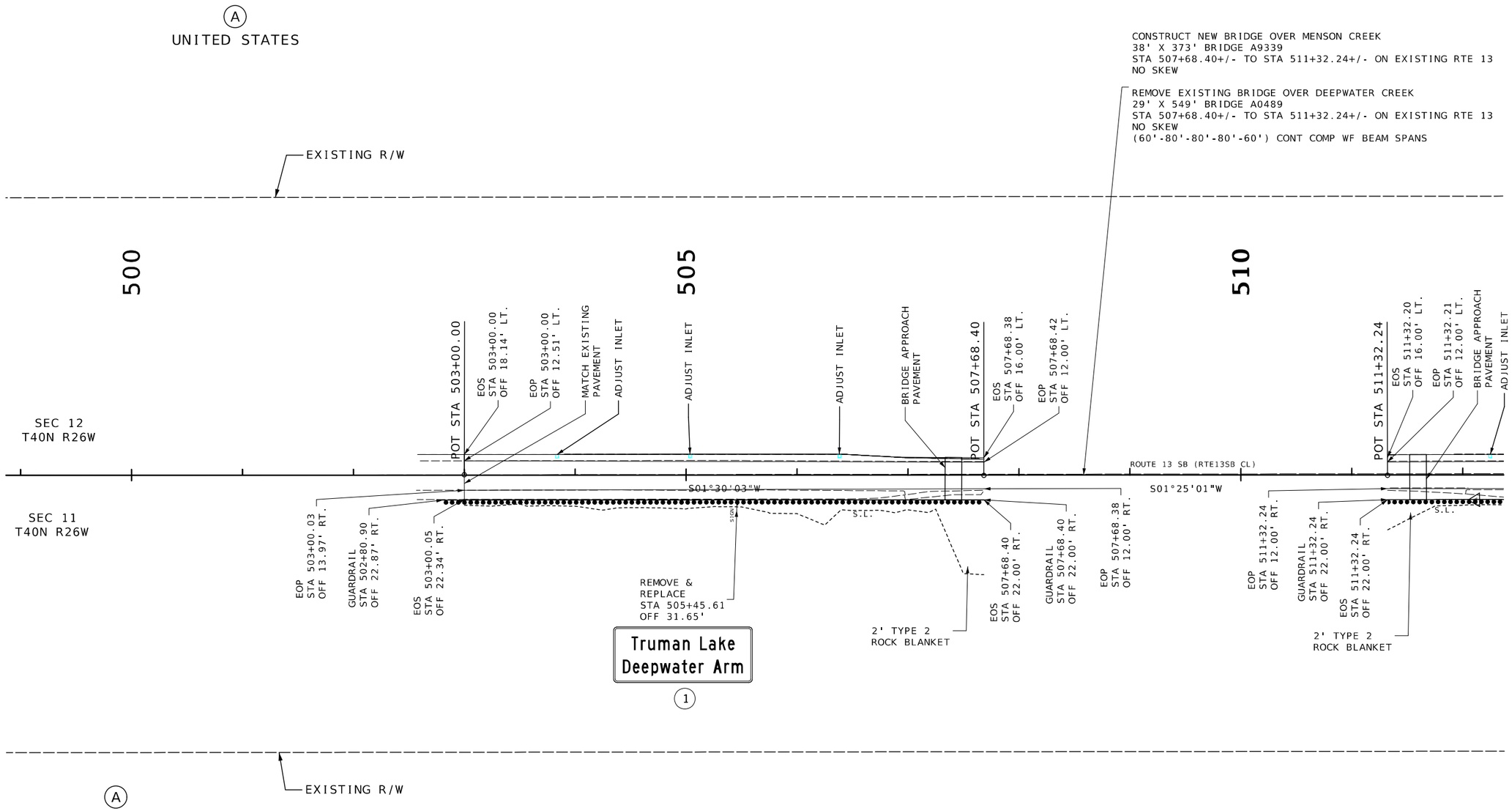
PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



SCALE

0 50 100 150

NOTES:

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RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STATION 392+00 TO 591+00, A DISTANCE OF 3.769 MILES.

ACCESS IS ALLOWED UNDER THE BRIDGE; HOWEVER, NO ATTACHMENTS MAY BE MADE TO THE STRUCTURE

PLAN SHEET
SHEET 5 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:10:08 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	8

COUNTY
HENRY

JOB NO.
J7P3484C

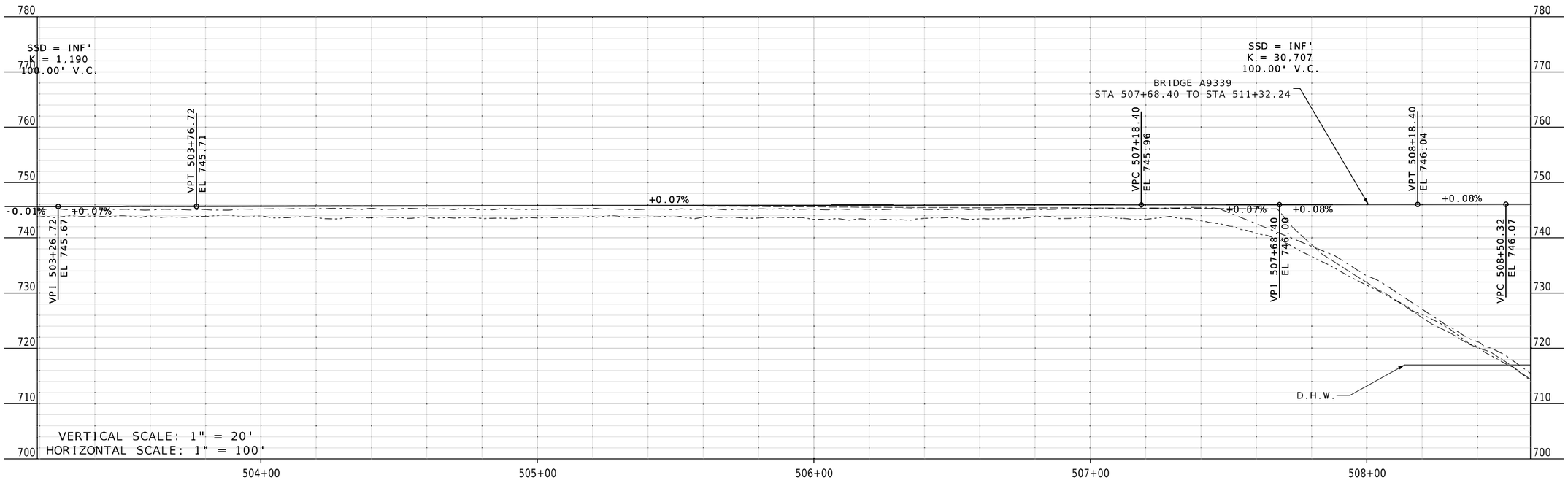
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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



PROPOSED CENTERLINE

EXISTING GROUND

30' RIGHT

30' LEFT

PLAN SHEET
SHEET 6 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:10:22 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	9

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

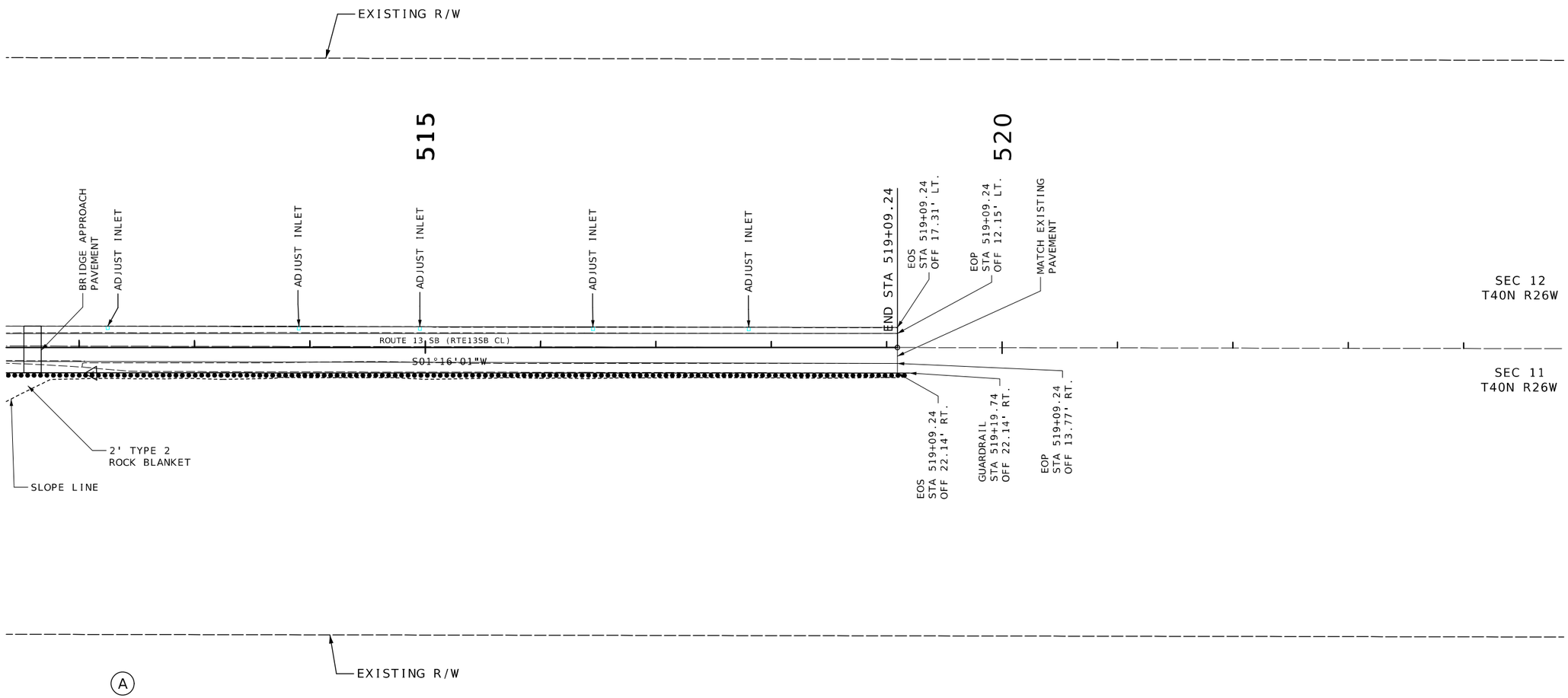
PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



SCALE

0 50 100 150

NOTES:

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RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STATION 392+00 TO 591+00, A DISTANCE OF 3.769 MILES.

ACCESS IS ALLOWED UNDER THE BRIDGE; HOWEVER, NO ATTACHMENTS MAY BE MADE TO THE STRUCTURE

PLAN SHEET
SHEET 7 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:10:35 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	10

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

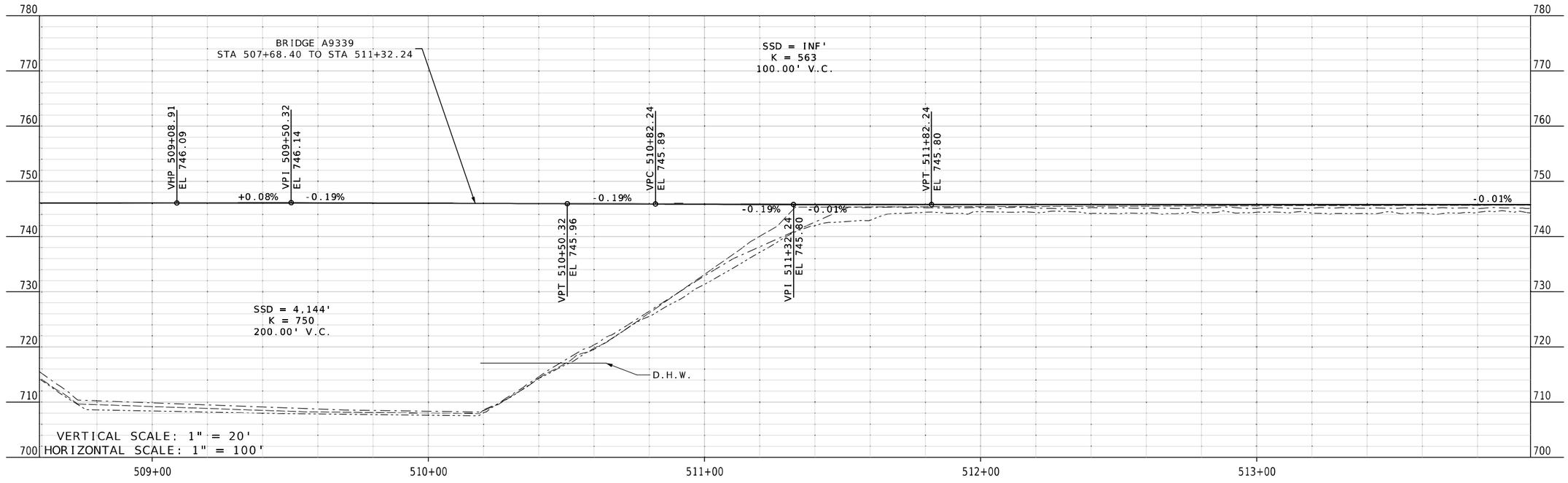
PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



PROPOSED CENTERLINE

EXISTING GROUND

30' RIGHT

30' LEFT

PLAN SHEET
SHEET 8 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:10:50 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	11

COUNTY
HENRY

JOB NO.
J7P3484C

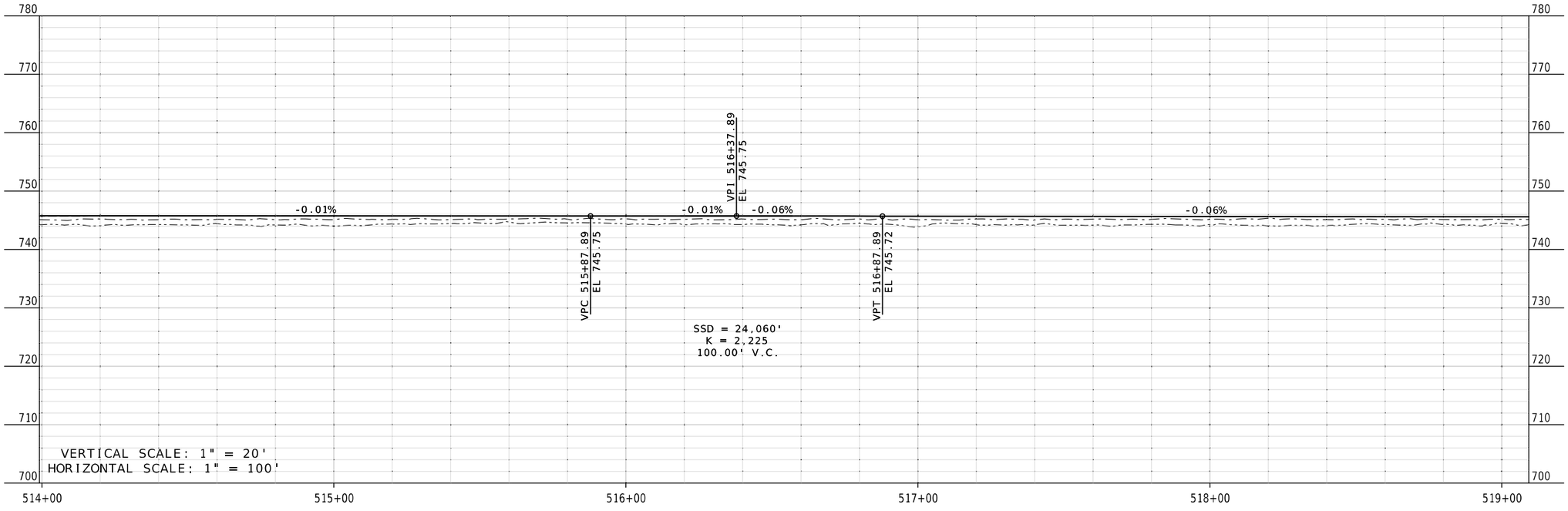
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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



PROPOSED CENTERLINE

EXISTING GROUND

30' RIGHT

30' LEFT

PLAN SHEET
SHEET 9 OF 10

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:11:02 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	12

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

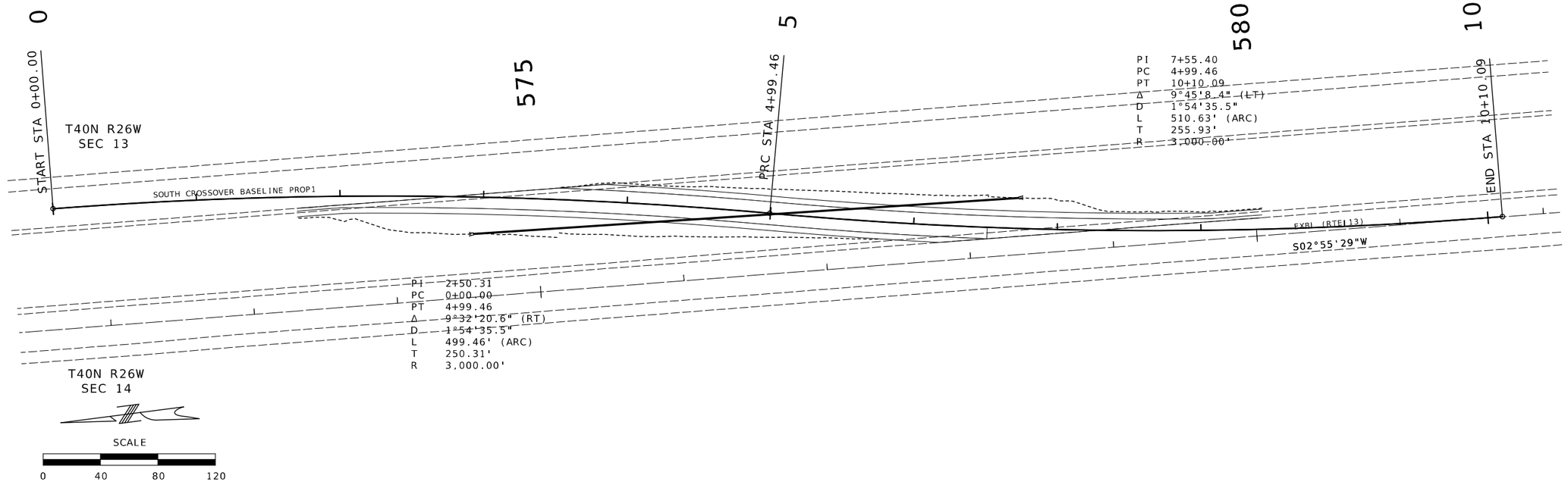
PROJECT NO.

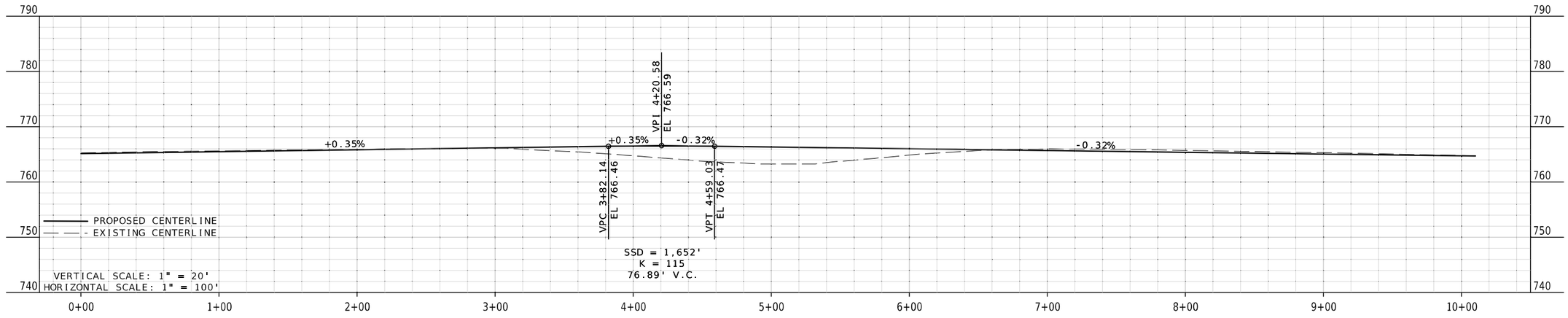
BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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





PLAN SHEET
SHEET 10 OF 10

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	13

COUNTY
HENRY

JOB NO.
J7P3484C

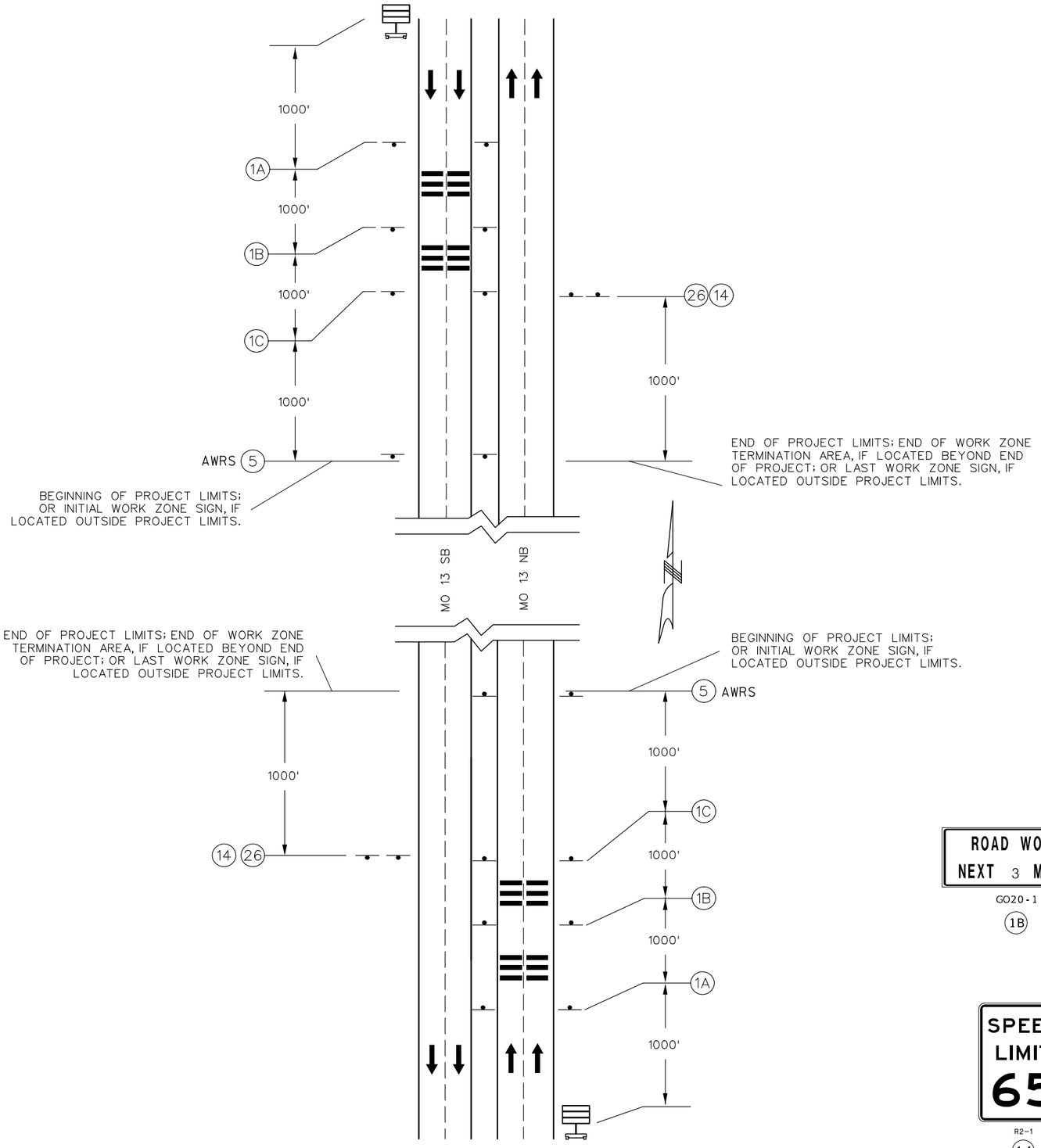
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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

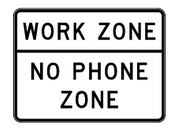


GENERAL NOTES:

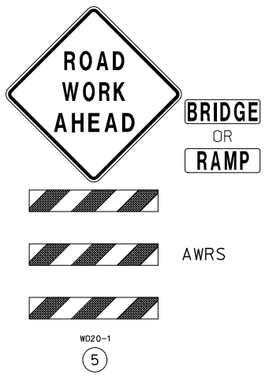
1. ANY EXISTING SIGNS THAT CONFLICT WITH TRAFFIC CONTROL PLAN SHALL BE COVERED.
2. TEMPORARY SIGNING SHOWN IS FOR WORK ON ONE SIDE OF THE ROAD, FOR WORK ON THE OTHER SIDE, REVERSE ORDER OF THE SIGNS AND CHANNELIZERS.
3. SIGNING SHOWN SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
4. ALTERNATE TRAFFIC CONTROL MAY BE USED AS NEEDED AT THE APPROVAL OF THE ENGINEER.
5. SEE STANDARD DRAWING 616.10, 619.10, AND 620.10 FOR ADDITIONAL DETAILS AND 903.03 FOR SIGN AND SIGN MOUNTING REQUIREMENTS.
6. SPEED LIMIT SIGNS INDICATING THE NORMAL SPEED LIMIT SHALL BE INSTALLED AT THE END OF THE WORK ZONE, PROVIDED NO FURTHER WORK ZONES WILL BE ENCOUNTERED WITHIN THE NEXT 1/2 MILE.
7. TEMPORARY SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED WHEN THE CONDITIONS REQUIRING REDUCED SPEEDS DO NO EXIST.
8. NO DIRECT PAYMENT WILL BE MADE FOR RELOCATION OF CHANNELIZERS, OR CONSTRUCTION SIGNS.
9. DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS.
10. FLAGS AND AWRS WILL ONLY BE REQUIRED ON THE FIRST ROAD WORK AHEAD SIGN FOR EACH DIRECTION UNLESS OTHERWISE SPECIFIED. WHERE TRAFFIC BACKUPS ARE EXPECTED BEYOND THE ADVANCED WARNING AREA, ADDITIONAL SIGNING MAY BE NEEDED. FLAGS AND AWRS ARE NOT REQUIRED FOR SIDE ROADS.
11. CONST-7-72 IS PLACED IN A VISIBLE AREA WITHIN THE PROJECT LIMITS PROVIDED ITS PLACEMENT DOES NOT DISRUPT THE SEQUENCE OF SIGNS.

G020-1
(1B)

CONST-7-72
(1A)

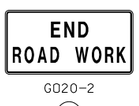


SPECIAL
(1C)

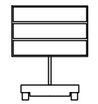


W020-1
(5)

R2-1
(14)



G020-2
(26)


CHANGEABLE MESSAGE SIGN

= TEMP LONG-TERM RUMBLE STRIPS

NOT TO SCALE

TRAFFIC CONTROL
SHEET 1 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:14:24 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	14

COUNTY
HENRY

JOB NO.
J7P3484C

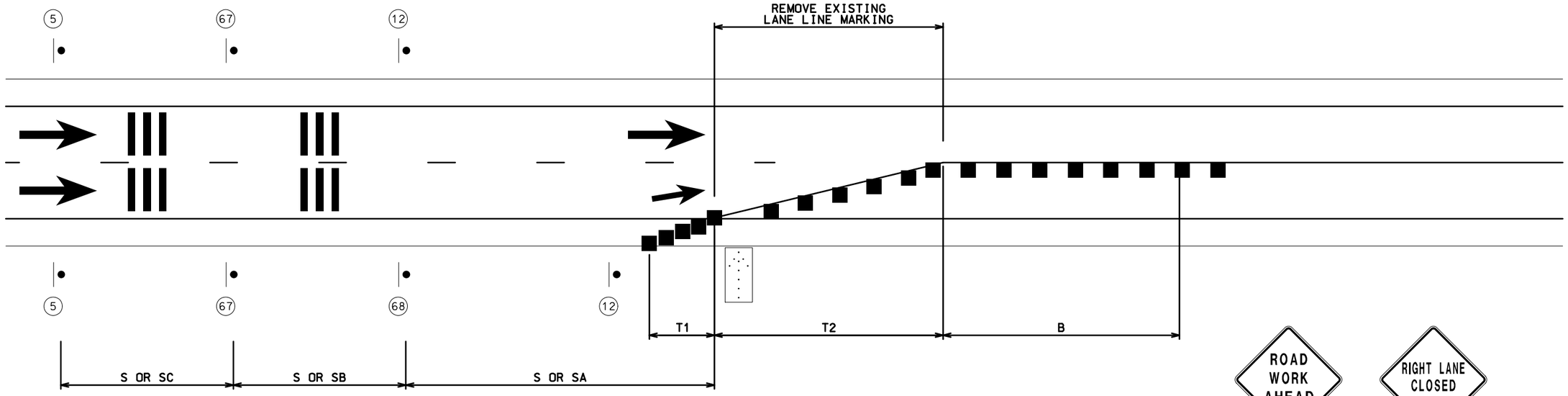
CONTRACT ID.

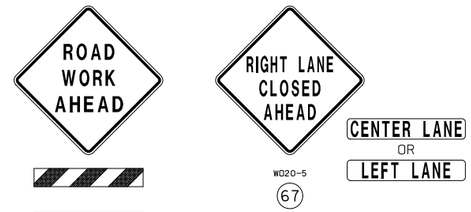
PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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





NOTE: SEE BEGIN/END SIGNING SHEET FOR ADDITIONAL SIGNS.

REMOVE AND/OR MODIFY EXISTING PAVEMENT MARKING AS NEEDED.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM LANE CLOSURES. NO DIRECT PAY.

NO DIRECT PAY WILL BE MADE FOR THE RELOCATION OF CHANNELIZERS, CONSTRUCTION SIGNS, OR FLASHING ARROW PANELS.

FOR SHORT TERM OPERATIONS WHERE IT IS NOT FEASIBLE TO MODIFY PAVEMENT MARKINGS, DEVICE SPACING ARE ONE-HALF OF THE SPACING SHOWN IN THE TABLE.

ALL SIGNS, EXCEPT "RATE QUE WORK ZONE" AND "POINT OF PRESENCE" SHALL BE PORTABLE MOUNT AND ARE TO BE MOVED AS WORK PROGRESSES, UNLESS OTHERWISE NOTED. ALL TRAFFIC CONTROL ITEMS SHALL BE REMOVED FROM THE ROADWAY DURING NON-WORKING HOURS. (SEE JSP'S)*

TEMPORARY TRAFFIC BARRIERS SHALL COMPLY WITH THE PROVISIONS IN EPG 616.6.85 TEMPORARY TRAFFIC BARRIERS.

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

CONCRETE BARRIER SHALL BE INSTALLED AT AN 8:1 FLARE RATE WITHIN THE TRAVEL LANES. CONCRETE BARRIER SHALL BE INSTALLED AT AN 8:1 FLARE RATE FROM THE SHOULDER POINT TO THE LIMITS OF THE CLEAR ZONE WHERE THE SIDE SLOPE IS 6:1 OR FLATTER.

APPROVED CRASH CUSHION ARE TO BE USED WHEN THE POSTED SPEED LIMIT PRIOR TO ROAD WORK IS GREATER THAN OR EQUAL TO 40 MPH.

BARRIER HEIGHT TRANSITION MAY BE USED WHEN THE POSTED SPEED LIMIT PRIOR TO ROAD WORK IS LESS THAN 40MPH.

WORK WILL REQUIRE LANE CLOSURES UNLESS OTHERWISE APPROVED BY ENGINEER.

LAYOUT IS TYPICAL FOR EITHER DIRECTION.

SEE STANDARD PLAN 616.10 FOR ADDTIONAL DETAILS.

FOR NIGHTTIME OPERATIONS, REVIEW EPG 616.6.83 WARNING LIGHTS FOR USE OF SEQUENTIAL LIGHTS.

TEMPORARY RUMBLE STRIPS SHALL BE ORANGE IN COLOR.

LONG-TERM RUMBLE STRIPS SHALL CONSIST OF 5 STRIPS SEPARATED AT 2-4FT. CENTERS OR MANUFACTURER'S RECOMMENDATION.

SHORT-TERM RUMBLE STRIPS SHALL CONSIST OF 3 STRIPS.

SEE EPG 616.6.87 FOR ADDITIONAL INFORMATION.

TAPER LENGTHS AND SPACING OF CHANNELIZING DEVICES

SPEED MPH (P)	MINIMUM TAPER LENGTHS (L) FOR LATERAL SHIFTS (W)			TAPER LENGTH		MAXIMUM CHANNELIZER SPACING		OPTIONAL BUFFER
	10 FT	11 FT	12 FT	SHOULDER (1) (T1)	LANE (2) (T2)	THROUGH TAPER	THROUGH WORK AREA	LENGTH (B)
0-35	205 FT	225 FT	245 FT	70 FT	245 FT	35 FT	40 FT	280FT
40-45	450 FT	495 FT	540 FT	150 FT	540 FT	40 FT	80 FT	400FT
50-55	550 FT	605 FT	660 FT	185 FT	660 FT	50 FT	80 FT	560FT
60-70	700 FT	770 FT	840 FT	235 FT	840 FT	60 FT	120 FT	840FT

SIGN SPACING FOR ADVANCE SIGN SERIES

SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OR SIGNED CONDITION.

SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

SPEED MPH (P)		
	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	SA-1000 FT, SB-1500 FT, SC-2640 FT	

TAPER LENGTH (L)

L = W x P FOR 40 MPH OR MORE

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

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

P = POSTED SPEED PRIOR TO ROAD WORK IN MPH

TRAFFIC CONTROL LEGEND

- SIGN
- CHANNELIZER
- TEMP LONG-TERM RUMBLE STRIP
- ARROW PANEL

NOT TO SCALE

TRAFFIC CONTROL
SHEET 2 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:14:34 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	15

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

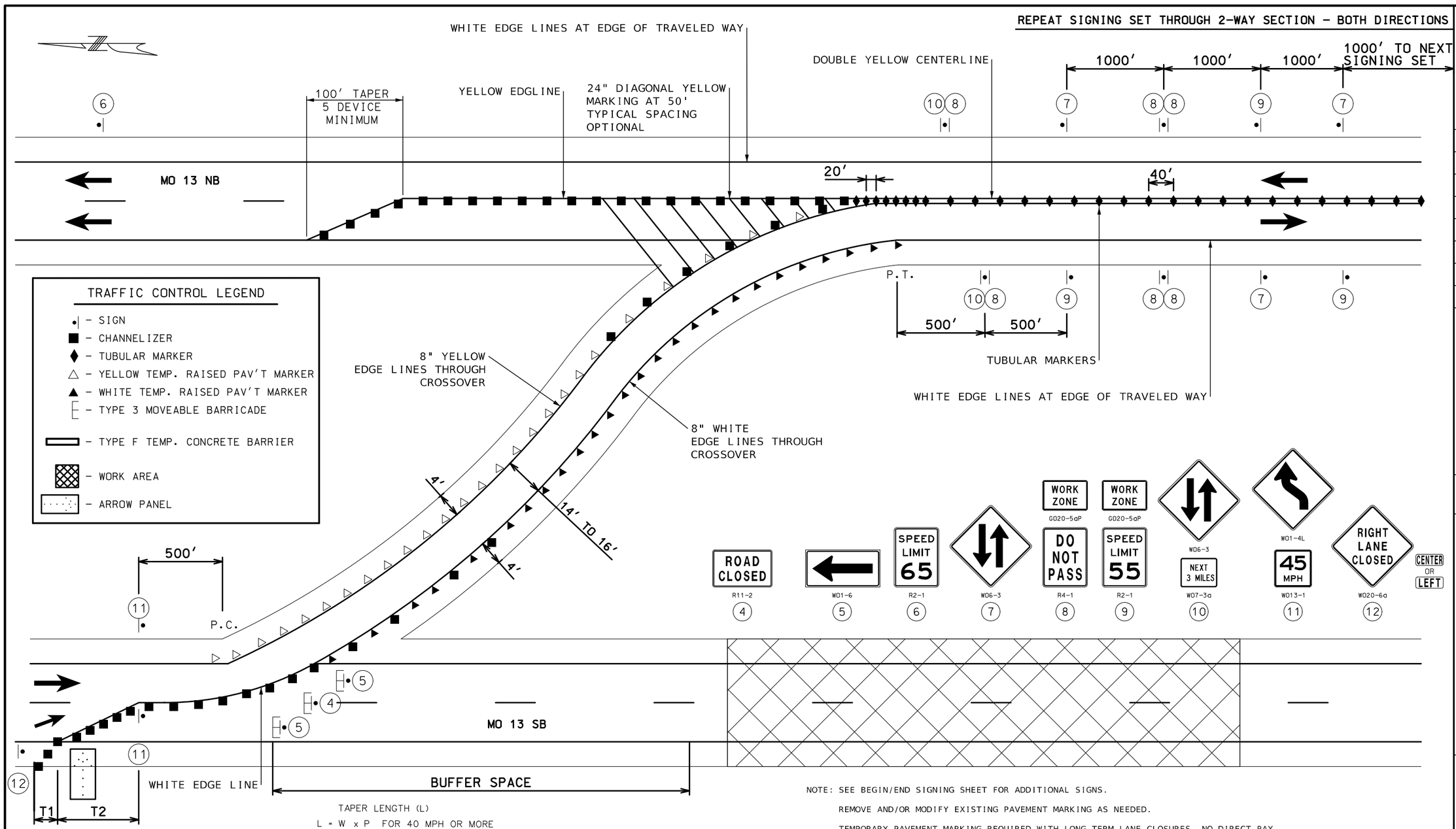
PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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

REPEAT SIGNING SET THROUGH 2-WAY SECTION – BOTH DIRECTIONS



TRAFFIC CONTROL LEGEND

- – SIGN
- – CHANNELIZER
- – TUBULAR MARKER
- – YELLOW TEMP. RAISED PAV'T MARKER
- – WHITE TEMP. RAISED PAV'T MARKER
- – TYPE 3 MOVEABLE BARRICADE
- – TYPE F TEMP. CONCRETE BARRIER
- – WORK AREA
- – ARROW PANEL

TAPER LENGTH (L)

L = W x P FOR 40 MPH OR MORE

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

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

P = POSTED SPEED PRIOR TO ROAD WORK IN MPH

TAPER LENGTHS AND SPACING OF CHANNELIZING DEVICES

SPEED MPH (P)	MINIMUM TAPER LENGTHS (L) FOR LATERAL SHIFTS (W)			TAPER LENGTH		MAXIMUM CHANNELIZER SPACING		OPTIONAL BUFFER
	10 FT	11 FT	12 FT	SHOULDER (1) (T1)	LANE (2) (T2)	THROUGH TAPER	THROUGH WORK AREA	LENGTH (B)
0-35	205 FT	225 FT	245 FT	70 FT	245 FT	35 FT	40 FT	280FT
40-45	450 FT	495 FT	540 FT	150 FT	540 FT	40 FT	80 FT	400FT
50-55	550 FT	605 FT	660 FT	185 FT	660 FT	50 FT	80 FT	560FT
60-70	700 FT	770 FT	840 FT	235 FT	840 FT	60 FT	120 FT	840FT

SIGN SPACING FOR ADVANCE SIGN SERIES

SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OR SIGNED CONDITION.

SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

SPEED MPH (P)	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	SA-1000 FT, SB-1500 FT, SC-2640 FT	

NOTE: SEE BEGIN/END SIGNING SHEET FOR ADDITIONAL SIGNS.

REMOVE AND/OR MODIFY EXISTING PAVEMENT MARKING AS NEEDED.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM LANE CLOSURES. NO DIRECT PAY.

NO DIRECT PAY WILL BE MADE FOR THE RELOCATION OF CHANNELIZERS, CONSTRUCTION SIGNS, OR FLASHING ARROW PANELS.

FOR SHORT TERM OPERATIONS WHERE IT IS NOT FEASIBLE TO MODIFY PAVEMENT MARKINGS, DEVICE SPACING ARE ONE-HALF OF THE SPACING SHOWN IN THE TABLE.

SPEED LIMIT SIGNS INDICATING THE NORMAL SPEED LIMIT SHALL BE INSTALED AT THE END OF THE WORK ZONE, PROVIDED NO FURTHER WORK ZONES WILL BE ENCOUNTERED WITHIN 1/2 MILE.

ALL SIGNS, EXCEPT "RATE QUE WORK ZONE" AND "POINT OF PRESENCE" SHALL BE PORTABLE MOUNT AND ARE TO BE MOVED AS WORK PROGRESSES, UNLESS OTHERWISE NOTED. ALL TRAFFIC CONTROL ITEMS SHALL BE REMOVED FROM THE ROADWAY DURING NON-WORKING HOURS. (SEE JSP'S)

WORK WILL REQUIRE LANE CLOSURES UNLESS OTHERWISE APPROVED BY ENGINEER.

LAYOUT IS TYPICAL FOR EITHER DIRECTION.

SEE STANDARD PLAN 616.10 FOR ADDTIONAL DETAILS.

NOT TO SCALE

TRAFFIC CONTROL SHEET 3 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:14:45 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED: 3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	16

COUNTY: HENRY

JOB NO.: J7P3484C

CONTRACT ID.:

PROJECT NO.:

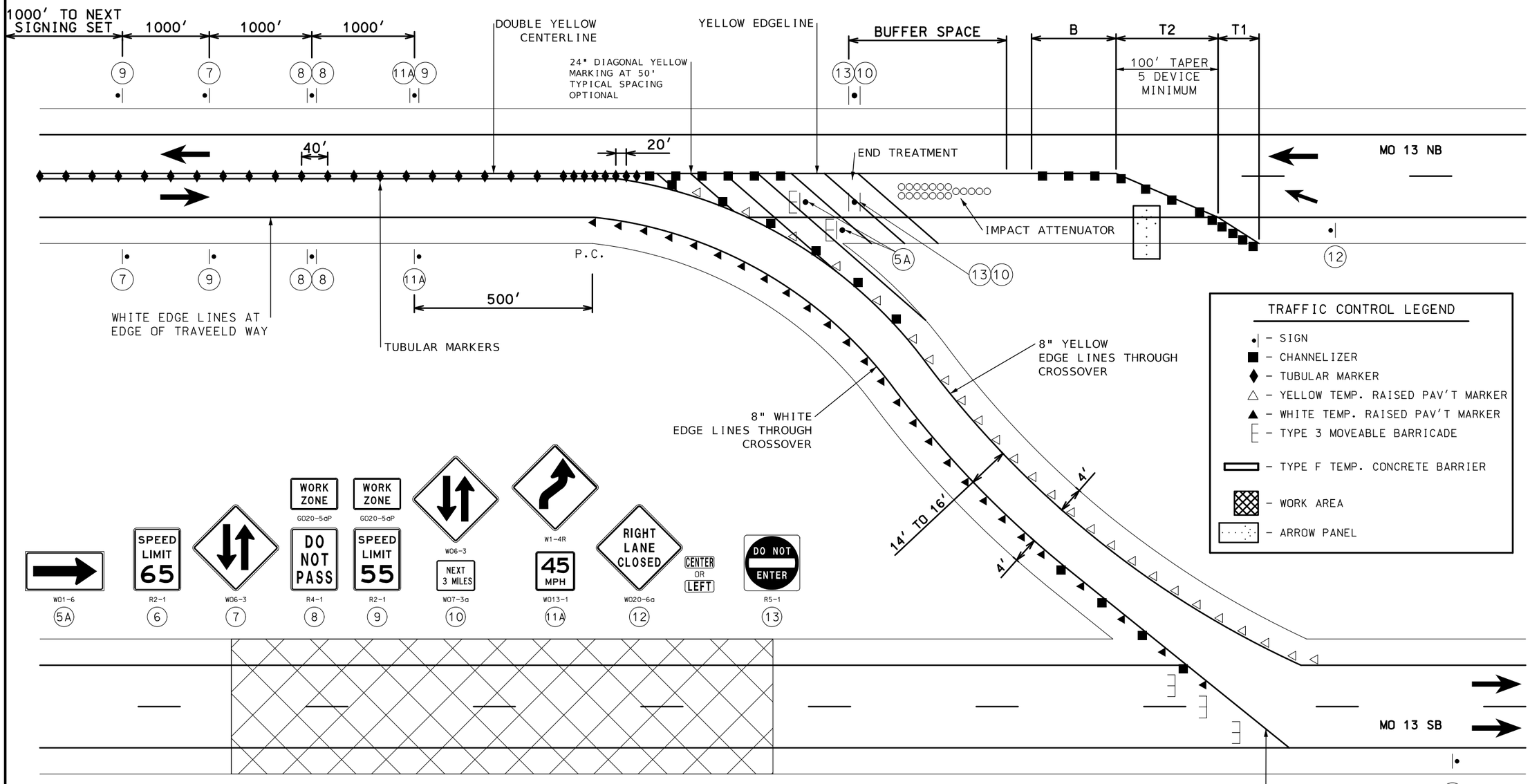
BRIDGE NO.: A9338 & A9339

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

REPEAT SIGNING SET THROUGH 2-WAY SECTION – BOTH DIRECTIONS



TRAFFIC CONTROL LEGEND

- – SIGN
- – CHANNELIZER
- – TUBULAR MARKER
- – YELLOW TEMP. RAISED PAV'T MARKER
- – WHITE TEMP. RAISED PAV'T MARKER
- – TYPE 3 MOVEABLE BARRICADE
- – TYPE F TEMP. CONCRETE BARRIER
- – WORK AREA
- – ARROW PANEL

TAPER LENGTH (L)

L = W x P FOR 40 MPH OR MORE

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

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

P = POSTED SPEED PRIOR TO ROAD WORK IN MPH

TAPER LENGTHS AND SPACING OF CHANNELIZING DEVICES

SPEED MPH (P)	MINIMUM TAPER LENGTHS (L) FOR LATERAL SHIFTS (W)			TAPER LENGTH		MAXIMUM CHANNELIZER SPACING		OPTIONAL BUFFER
	10 FT	11 FT	12 FT	SHOULDER (1) (T1)	LANE (2) (T2)	THROUGH TAPER	THROUGH WORK AREA	LENGTH (B)
0-35	205 FT	225 FT	245 FT	70 FT	245 FT	35 FT	40 FT	280FT
40-45	450 FT	495 FT	540 FT	150 FT	540 FT	40 FT	80 FT	400FT
50-55	550 FT	605 FT	660 FT	185 FT	660 FT	50 FT	80 FT	560FT
60-70	700 FT	770 FT	840 FT	235 FT	840 FT	60 FT	120 FT	840FT

SIGN SPACING FOR ADVANCE SIGN SERIES

SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OR SIGNED CONDITION.

SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

SPEED MPH (P)	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	SA-1000 FT, SB-1500 FT, SC-2640 FT	

NOTE: SEE BEGIN/END SIGNING SHEET FOR ADDITIONAL SIGNS.

REMOVE AND/OR MODIFY EXISTING PAVEMENT MARKING AS NEEDED.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM LANE CLOSURES. NO DIRECT PAY.

NO DIRECT PAY WILL BE MADE FOR THE RELOCATION OF CHANNELIZERS, CONSTRUCTION SIGNS, OR FLASHING ARROW PANELS.

FOR SHORT TERM OPERATIONS WHERE IT IS NOT FEASIBLE TO MODIFY PAVEMENT MARKINGS, DEVICE SPACING ARE ONE-HALF OF THE SPACING SHOWN IN THE TABLE.

SPEED LIMIT SIGNS INDICATING THE NORMAL SPEED LIMIT SHALL BE INSTALED AT THE END OF THE WORK ZONE, PROVIDED NO FURTHER WORK ZONES WILL BE ENCOUNTERED WITHIN 1/2 MILE.

ALL SIGNS, EXCEPT "RATE OUE WORK ZONE" AND "POINT OF PRESENCE" SHALL BE PORTABLE MOUNT AND ARE TO BE MOVED AS WORK PROGRESSES, UNLESS OTHERWISE NOTED. ALL TRAFFIC CONTROL ITEMS SHALL BE REMOVED FROM THE ROADWAY DURING NON-WORKING HOURS. (SEE JSP'S)

WORK WILL REQUIRE LANE CLOSURES UNLESS OTHERWISE APPROVED BY ENGINEER.

LAYOUT IS TYPICAL FOR EITHER DIRECTION.

SEE STANDARD PLAN 616.10 FOR ADDTIONAL DETAILS.

NOT TO SCALE

TRAFFIC CONTROL SHEET 4 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:14:57 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED: 3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	17

COUNTY: HENRY

JOB NO.: J7P3484C

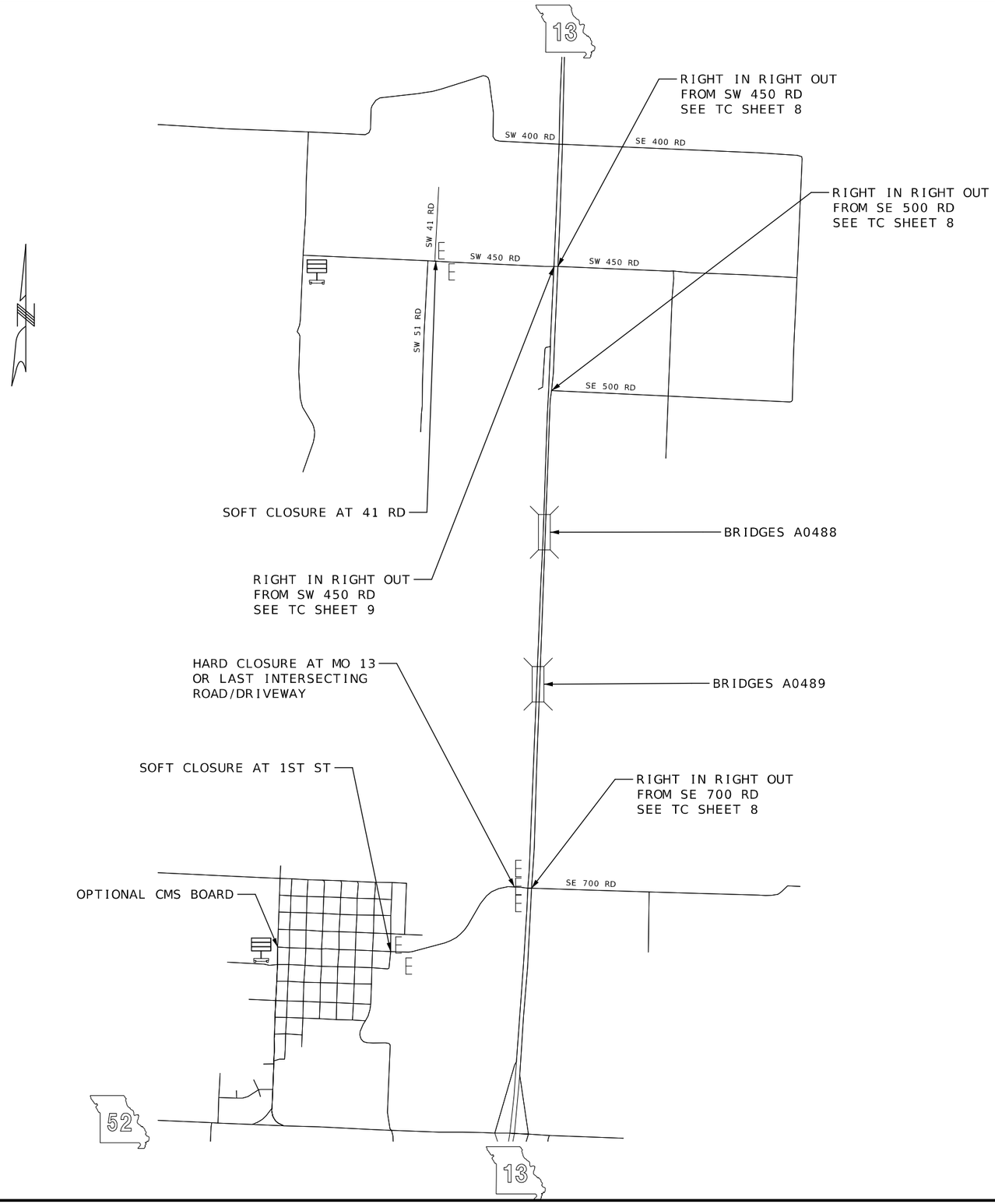
CONTRACT ID.:

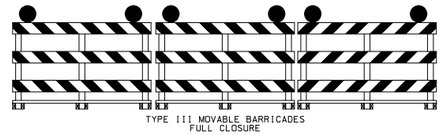
PROJECT NO.:

BRIDGE NO.: A9338 & A9339

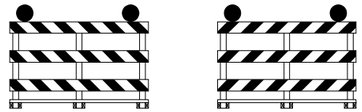
DESCRIPTION | DATE

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





TYPE III MOVABLE BARRICADES
FULL CLOSURE



TYPE III MOVABLE BARRICADES
SOFT CLOSURE (STAGGERED)

CHANGEABLE MESSAGE BOARD

TYPE III MOVABLE BARRICADE

NOTE: FOLLOW TRAFFIC CONTROL SHEET 6 & 7
FOR ROAD CLOSURE SIGNING

NOT TO SCALE

TRAFFIC CONTROL
SHEET 5 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:15:07 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	18

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TYPICAL CLOSURE OF EXISTING BRIDGES OR NON-TRAVERSABLE ROADS

SPEED	SIGN SPACING (FT.)		TAPER LENGTH (FT.)		OPTIONAL	CHANNELIZER SPACING (FT.)	
NORMAL POSTED (MPH)	UNDIVIDED (S)	DIVIDED (S)	SHOULDER (T1)	LANE (T2)	BUFFER LENGTH (FT.) (B)	TAPERS	BUFFER/ WORK AREAS
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	-	-

TYPE OF ROADWAY	SIGN HEIGHT	MAXIMUM WORK ZONE LENGTH (L)
URBAN	1' PORTABLE 7' POST	1 MI.
RURAL UNDIVIDED	1' PORTABLE 5' POST	3 MI.

REFER TO EPG 606.1.3.5 CLOSURES OF EXISTING STREETS, ROADS, AND BRIDGES OR NON-TRAVERSABLE ROADS FOR BRIDGE AND/OR ROAD CLOSURES DESIGNATED NON-TRAVERSABLE

(1) THE ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY SIGN SHOULD BE LOCATED AT THE FIRST STATE ROUTE OR, UPON THE DISCRETION OF THE SUPERVISOR, ANY OTHER INTERSECTION IN ADVANCE OF THE CLOSURE.

(2) ADDITIONAL BARRICADES MAY BE USED AND OFFSET TO FACILITATE ACCESS FOR LOCAL TRAFFIC, ETC.

(3) THE USE OF TYPE D GUARDRAIL AND TYPE 4 OBJECT MARKERS VERSUS TYPE III BARRICADES AND TEMPORARY CONCRETE TRAFFIC BARRIERS ARE DEPENDENT UPON THE DISTRICT/CENTRAL OFFICE REPLACEMENT SCHEDULE.

TRAFFIC CONTROL SHOULD BE REMOVED AS SOON AS PRACTICAL AFTER CONDITION FOR THE CLOSURE NO LONGER EXISTS.

FOR ADVANCE WARNING RAIL SYSTEM, REFER TO EPG 616.6.2.2 FLAGS AND ADVANCE WARNING RAIL SYSTEM (AWRS).

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 606.00 GUARDRAIL TYPE D FOR GUARDRAIL AND POST-MOUNTED TYPE III BARRICADES.

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 616.10 TEMPORARY TRAFFIC CONTROL DEVICES FOR TYPE III BARRICADES.

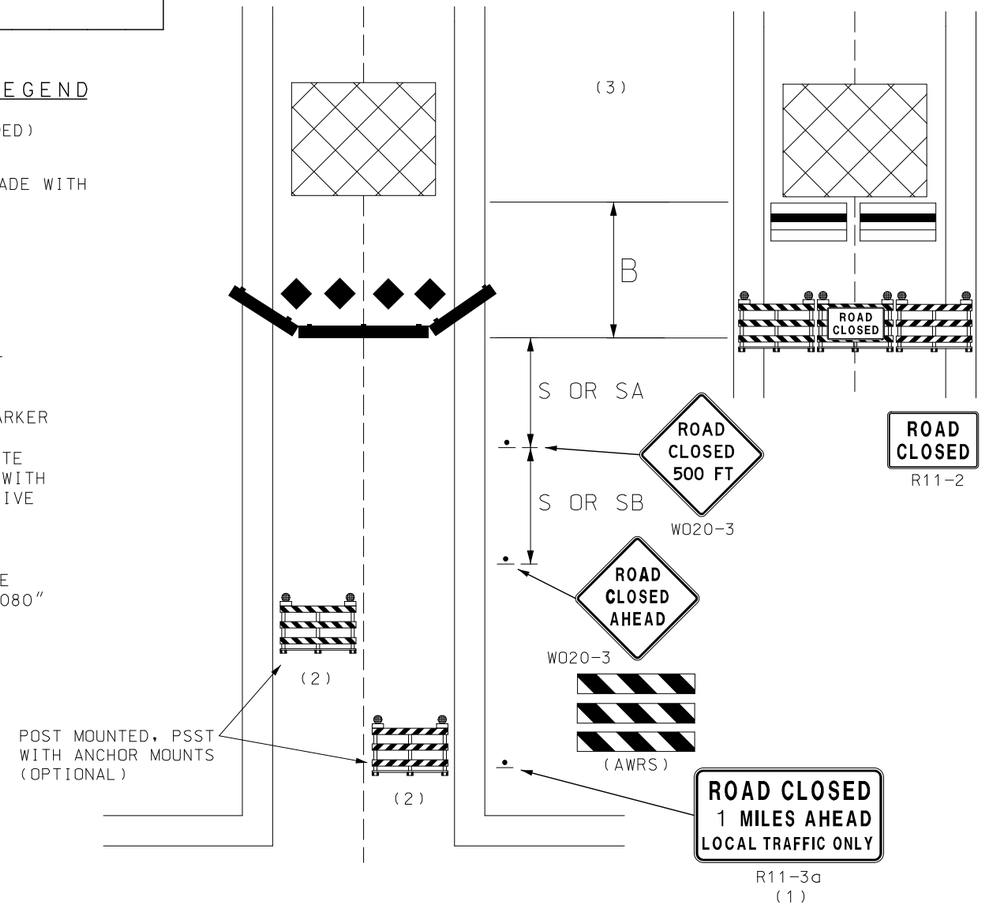
REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 903.03 SIGN MOUNTING DETAILS DELINEATORS OBJECT MARKERS FOR TYPE 4 OBJECT MARKER.

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 617.20 TEMPORARY CONCRETE TRAFFIC BARRIER FOR CONCRETE BARRIERS.

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 1042 HIGHWAY SIGN MATERIAL FOR 6-INCH WIDE, 10-12-FOOT LONG RED RETROFLECTIVE SHEETING.

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- TYPE III BARRICADE WITH WARNING LIGHTS
- WORK SPACE
- TYPE D GUARDRAIL
- TYPE 4 OBJECT MARKER
- TEMPORARY CONCRETE TRAFFIC BARRIER WITH RED RETROREFLECTIVE SHEETING
- ASTM TYPE IV 6" RED REFLECTIVE SHEETING WITH 0.080" ALUMINUM BACKING



NOT TO SCALE

TRAFFIC CONTROL SHEET 6 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:15:21 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED 3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	19

COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338 & A9339

DESCRIPTION | DATE

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

TYPICAL CLOSURE OF ROADS

SPEED	SIGN SPACING (FT.)		TAPER LENGTH (FT.)		OPTIONAL	CHANNELIZER SPACING (FT.)	
NORMAL POSTED (MPH)	UNDIVIDED (S)	DIVIDED (S)	SHOULDER (T1)	LANE (T2)	BUFFER LENGTH (FT.) (B)	TAPERS	BUFFER/ WORK AREAS
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 SHOULDER TAPER LENGTH BASED ON 10 FT. (STANDARD SHOULDER WIDTH) OFFSET. 2. LANE TAPER LENGTH BASED ON 12 FT. (STANDARD LANE WIDTH) OFFSET.

TYPE OF ROADWAY	SIGN HEIGHT	MAXIMUM WORK ZONE LENGTH (L)
URBAN	1' PORTABLE 7' POST	1 MI.
RURAL UNDIVIDED	1' PORTABLE 5' POST	3 MI.

TRAFFIC CONTROL LEGEND

SIGN (SINGLE SIDED)

TYPE III BARRICADE WITH WARNING LIGHTS

WORK SPACE

(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 INCLDUED 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 FACILITAGE ACCESS FOR WORK VEHICLES, LOCAL TRAFFIC, ETC.

TRAFFIC CONTROL SHOULD BE REMOVED AS SOON AS PRACTICAL AFTER CONDITION FOR THE CLOSURE NO LONGER EXISTS.

FOR LONG-TERM OPERATIONS, REFER TO EPG 616.6.2.2 FLAGS AND ADVANCE WARNING RAIL SYSTEM (AWRS).

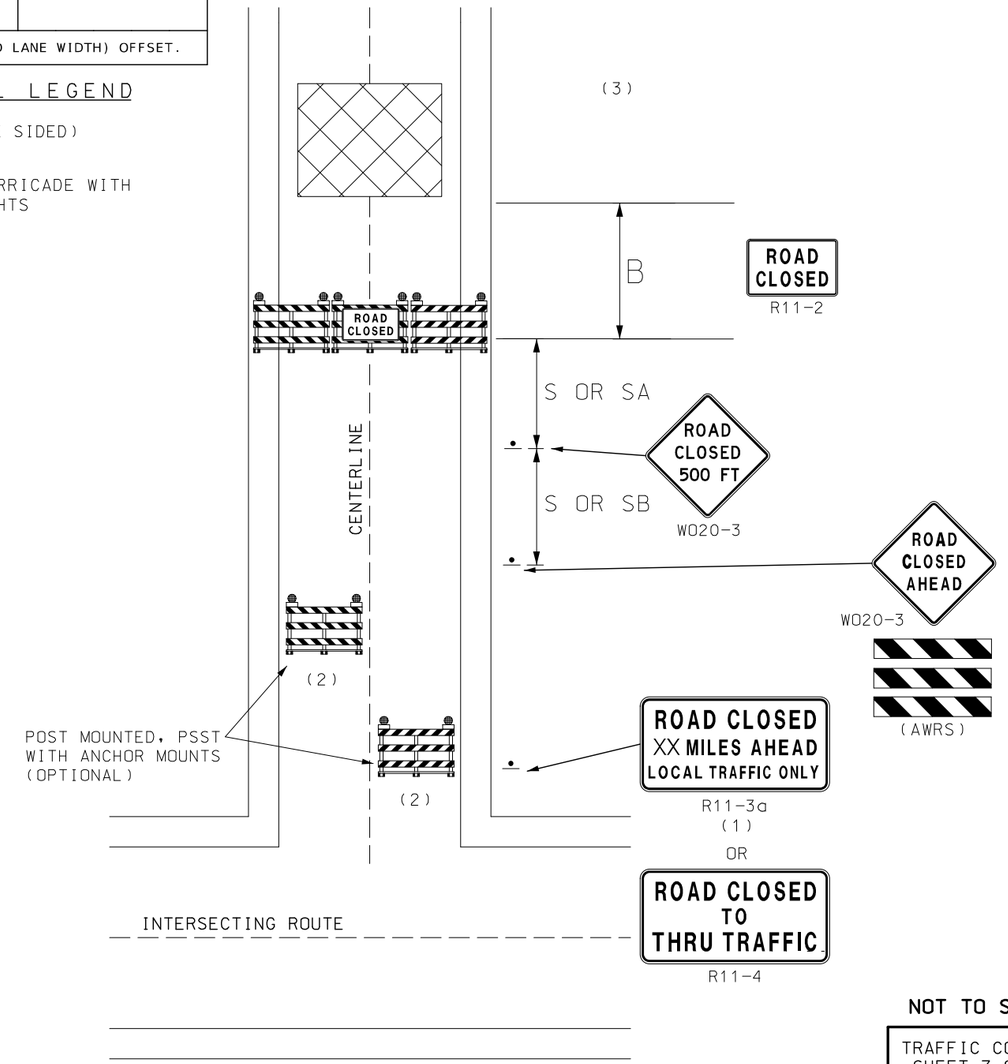
ADDITIONAL WARNING SIGNS SHOULD BE ERECTED AT EACH INTERSECTION WITHIN THE WORK ZONE.

SUPPLEMENTAL WARNING METHODS MAY BE USED TO CALL ATTENTION TO THE WORK ZONE.

SEE STANDARD PLAN 616.10 FOR USE OF BARRICADES AND SIGNS.

FOR LONG-TERM CLOSURE, DETOUR SIGNING SHOULD BE CONSIDERED.

FOR DETOUR SIGNING, REVIEW EPG 616.8.9 ROAD CLOSED BEYOND JUNCTION DETOUR.



NOT TO SCALE

TRAFFIC CONTROL
SHEET 7 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:15:33 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	20

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION

DATE

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


R3-2
3

W020-1
2

R3-7R
61

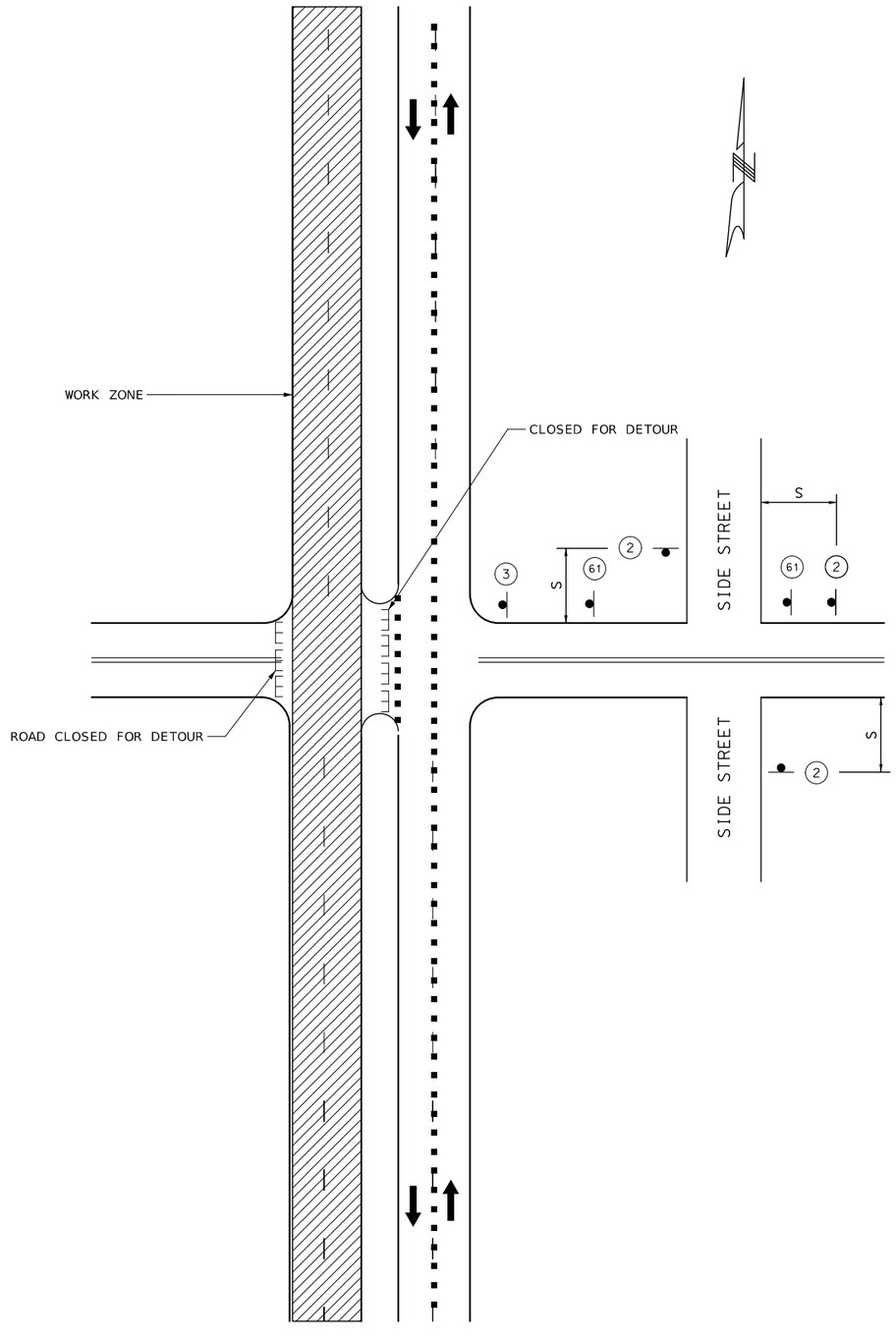
CHANNELIZERS

TYPE III MOVABLE BARRICADE

NOTES:

REFER TO TRAFFIC CONTROL SHEET 1 FOR MAINLINE ADVANCED WARNING SIGNS

REMOVE AND/OR MODIFY EXISTING PAVEMENT MARKING AS NEEDED.



TAPER LENGTHS AND SPACING OF CHANNELIZING DEVICES						
SPEED MPH (P)	MINIMUM TAPER LENGTHS (L) FOR LATERAL SHIFTS (W)			MAXIMUM CHANNELIZER SPACING		BUFFER LENGTH
	10 FT	11 FT	12 FT	THROUGH TAPER	THROUGH WORK AREA	
0-35	205 FT	225 FT	245 FT	35 FT	50 FT	250FT
40-45	450 FT	495 FT	540 FT	40 FT	100 FT	360FT
50-55	550 FT	605 FT	660 FT	50 FT	100 FT	495FT
60-70	700 FT	770 FT	840 FT	60 FT	100 FT	730FT

SIGN SPACING FOR ADVANCE SIGN SERIES SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OR SIGNED CONDITION. SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.		
SPEED MPH (P)	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	SA-1000 FT, SB-1500 FT, SC-2640 FT	

TAPER LENGTH (L)

L = W x P FOR 40 MPH OR MORE

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

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

P = POSTED SPEED PRIOR TO ROAD WORK IN MPH

NOT TO SCALE

RIGHT IN, RIGHT OUT AT INTERSECTIONS
NOT TO SCALE

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:15:45 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	21

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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

R3-2

(3)

W020-1

(2)

R3-7R

(61)

R1-1

(99)

R6-1R

(98)

CHANNELIZERS

TYPE III MOVABLE BARICADE

SEPARATOR CURB WITH DELINEATORS

NOTES:

REFER TO TRAFFIC CONTROL SHEET 1 FOR MAINLINE ADVANCED WARNING SIGNS

REMOVE AND/OR MODIFY EXISTING PAVEMENT MARKING AS NEEDED.

BARRICADES MUST COVER ENTIRE ROADWAY FROM EDGE OF SHOULDER TO EDGE OF SHOULDER

TAPER LENGTHS AND SPACING OF CHANNELIZING DEVICES						
SPEED MPH (P)	MINIMUM TAPER LENGTHS (L) FOR LATERAL SHIFTS (W)			MAXIMUM CHANNELIZER SPACING		BUFFER LENGTH
	10 FT	11 FT	12 FT	THROUGH TAPER	THROUGH WORK AREA	
0-35	205 FT	225 FT	245 FT	35 FT	50 FT	250FT
40-45	450 FT	495 FT	540 FT	40 FT	100 FT	360FT
50-55	550 FT	605 FT	660 FT	50 FT	100 FT	495FT
60-70	700 FT	770 FT	840 FT	60 FT	100 FT	730FT

SIGN SPACING FOR ADVANCE SIGN SERIES SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OR SIGNED CONDITION. SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.		
SPEED MPH (P)	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	SA-1000 FT, SB-1500 FT, SC-2640 FT	

TAPER LENGTH (L)

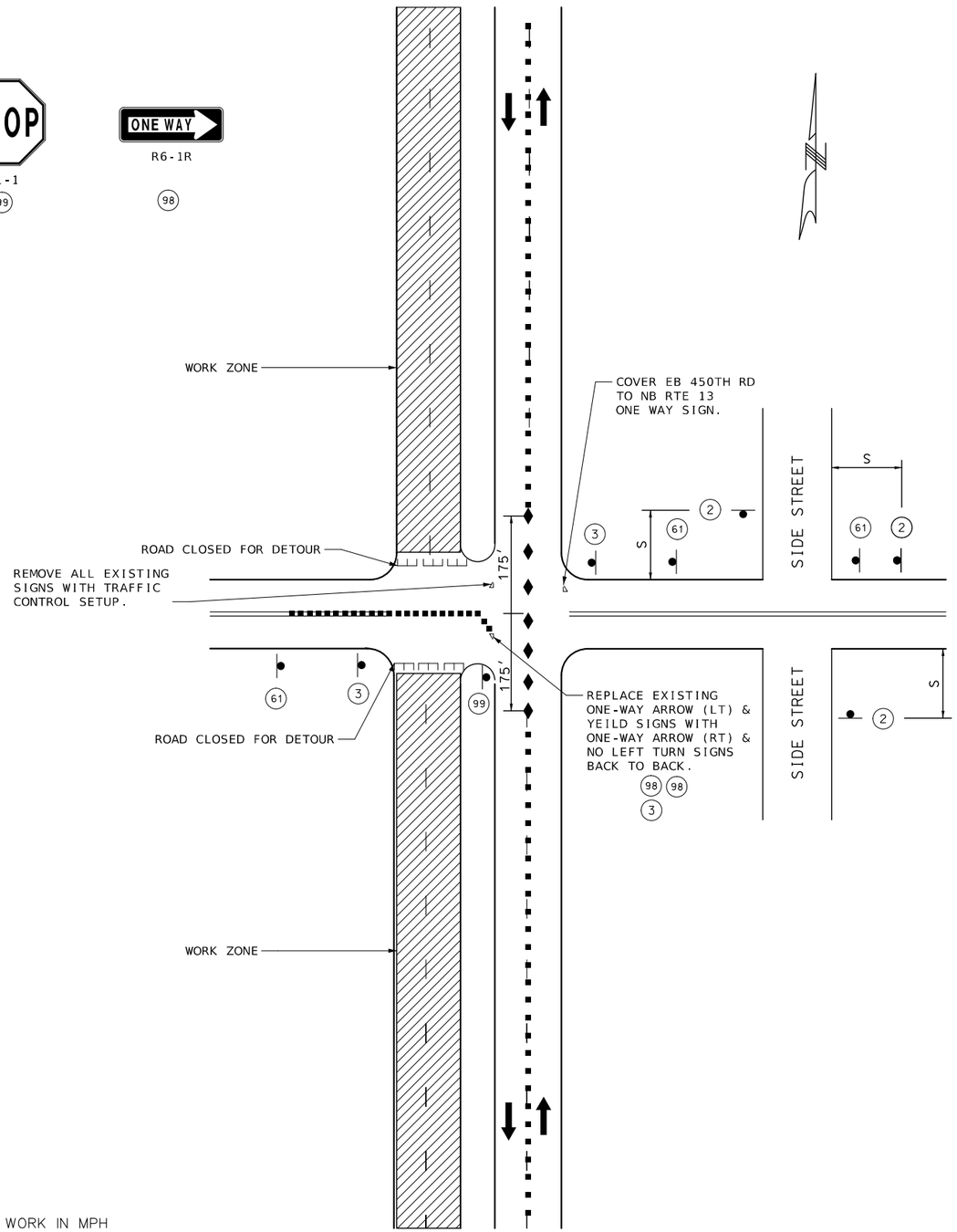
L = W x P FOR 40 MPH OR MORE

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

L = TAPER LENGTH IN FEET

W = LATERAL SHIFT IN FEET

P = POSTED SPEED PRIOR TO ROAD WORK IN MPH



NOT TO SCALE

RIGHT IN, RIGHT OUT AT SW 450TH RD

NOT TO SCALE

TRAFFIC CONTROL SHEET 9 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:15:58 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED: 3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	21A

COUNTY: HENRY

JOB NO.: J7P3484C

CONTRACT ID.:

PROJECT NO.:

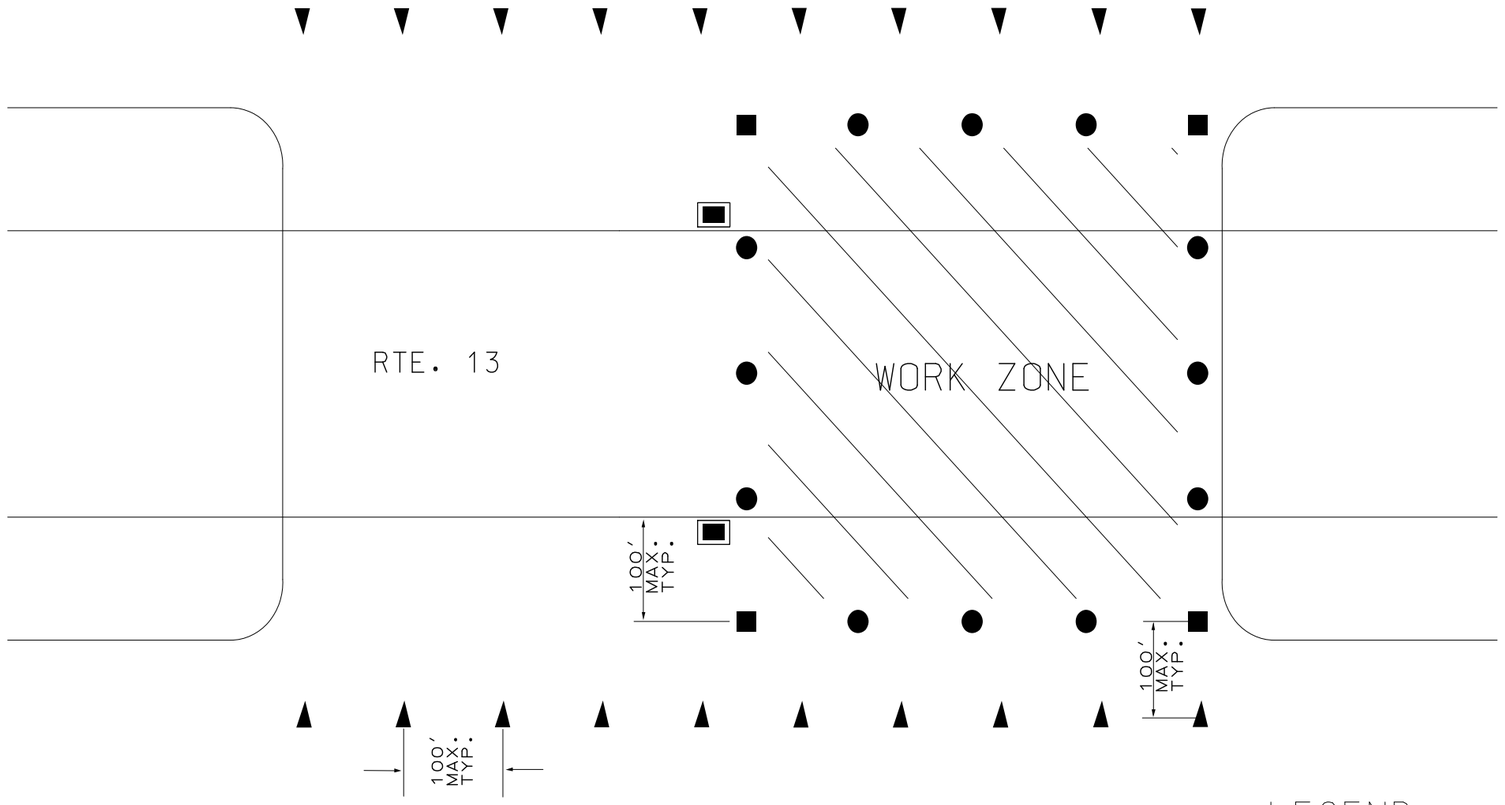
BRIDGE NO.: A9338 & A9339

DESCRIPTION

DATE

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

BRIDGES A0488 AND A0489



LEGEND

- BOATS KEEP OUT (SIGN)
- BOATS KEEP OUT (RESTRICTED AREA BUOY)
- NO WAKE (CONTROLLED AREA BUOY)
- OVERHEAD SIGN (BOATS NO WAKE)

NOTES:

SHIFT WORK ZONE, SIGNS, AND BUOYS AS REQUIRED (NO DIRECT PAY)

A MINIMUM OF ONE SPAN SHALL REMAIN OPEN TO BOAT TRAFFIC AT ALL TIMES.

MOUNT OVERHEAD SIGNS TO BRIDGE USING A METHOD APPROVED BY THE ENGINEER (NO DIRECT PAY).

NOT TO SCALE

TRAFFIC CONTROL
SHEET 10 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:16:09 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	22

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

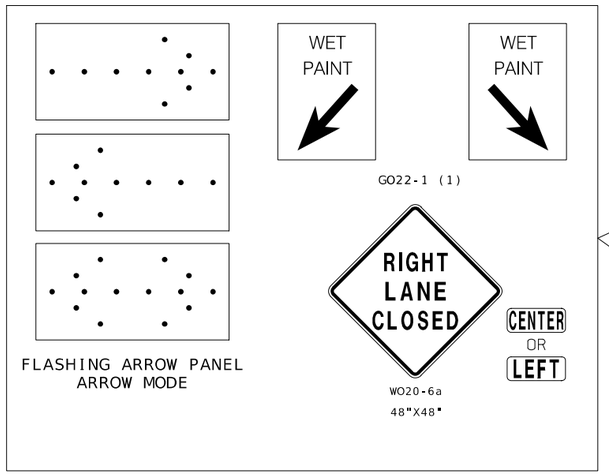
DESCRIPTION	DATE

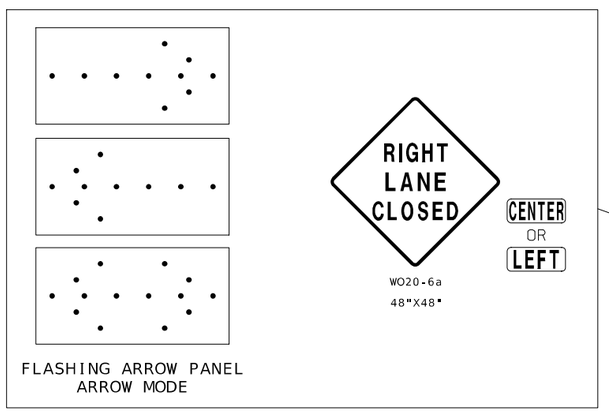
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

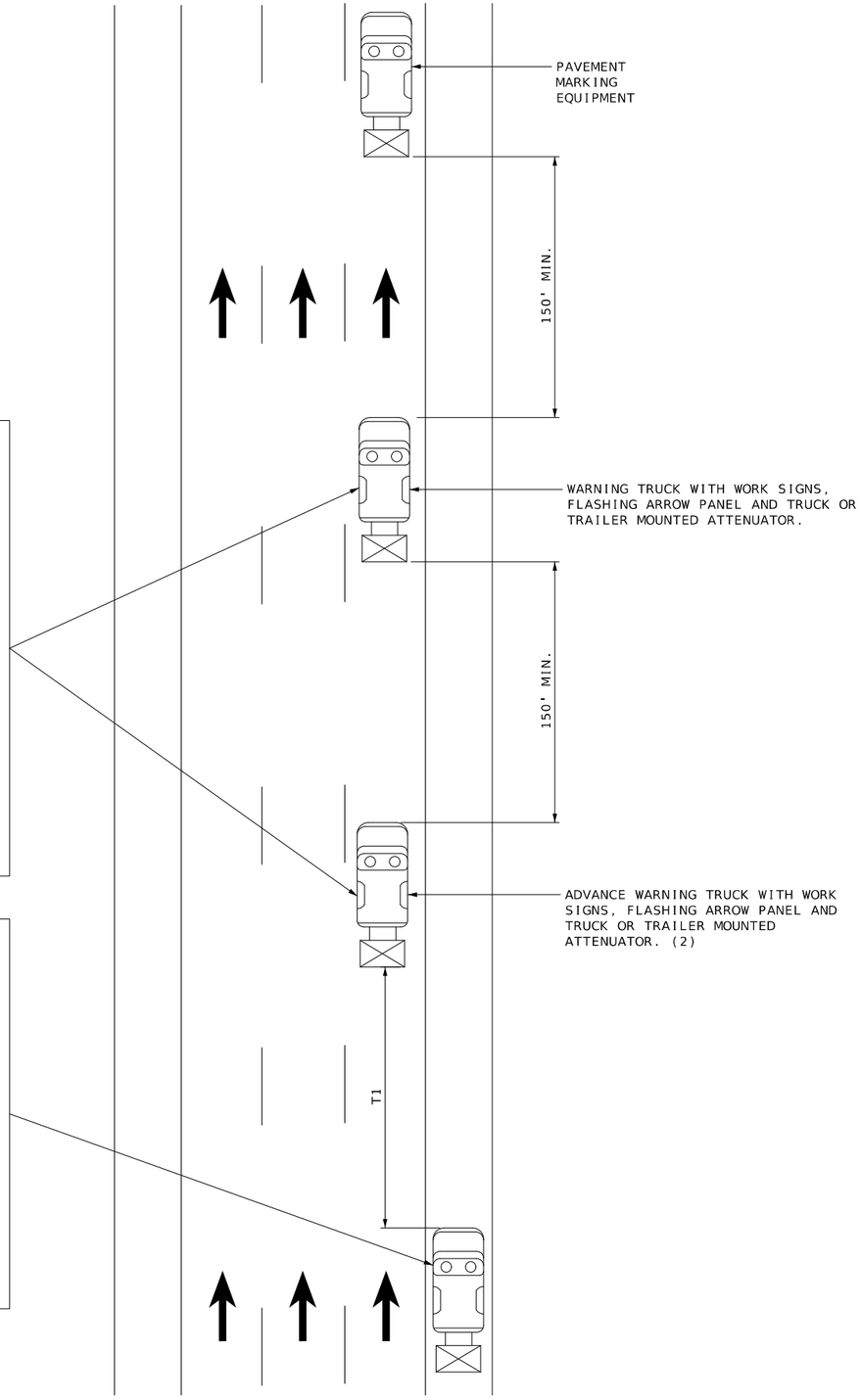
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

REVISED: 4/26/2023

SPEED	SPACING LENGTH (FT)
REGULATORY (MPH)	SPACING (T1)
0-35	245
40-45	540
50-55	660
60-70	840







NOTES:
UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY PROVIDE ADDITIONAL PROTECTIVE TRUCKS EQUIPPED WITH PROPER WARNING DEVICES.

PROTECTIVE TRUCK AND WORK VEHICLES SHALL DISPLAY HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

FLASHING ARROW PANELS AND SIGNS SHALL BE INCIDENTAL TO TRUCK MOUNTED ATTENUATORS, WHEREVER USED. NO ADDITIONAL PAYMENT SHALL BE MADE.

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

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

FLASHING ARROW PANELS SHALL, AS A MINIMUM, BE TYPE B, WITH A SIZE OF 60 X 30 INCHES.

VEHICLE-MOUNTED SIGNS SHALL BE MOUNTED IN A MANNER SUCH THAT THEY ARE NOT OBSCURED BY EQUIPMENT OR SUPPLIES. SIGN LEGENDS ON VEHICLE-MOUNTED SIGNS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.

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

NOT TO SCALE

CENTERLINE AND/OR LANE LINE STRIPING ON MULTI-LANE, UNDIVIDED HIGHWAYS

TRAFFIC CONTROL
SHEET 11 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:16:20 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	23

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

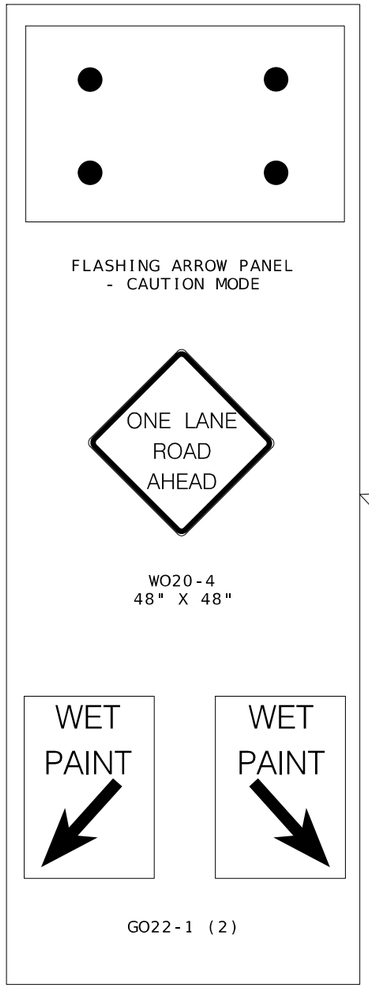
PROJECT NO.

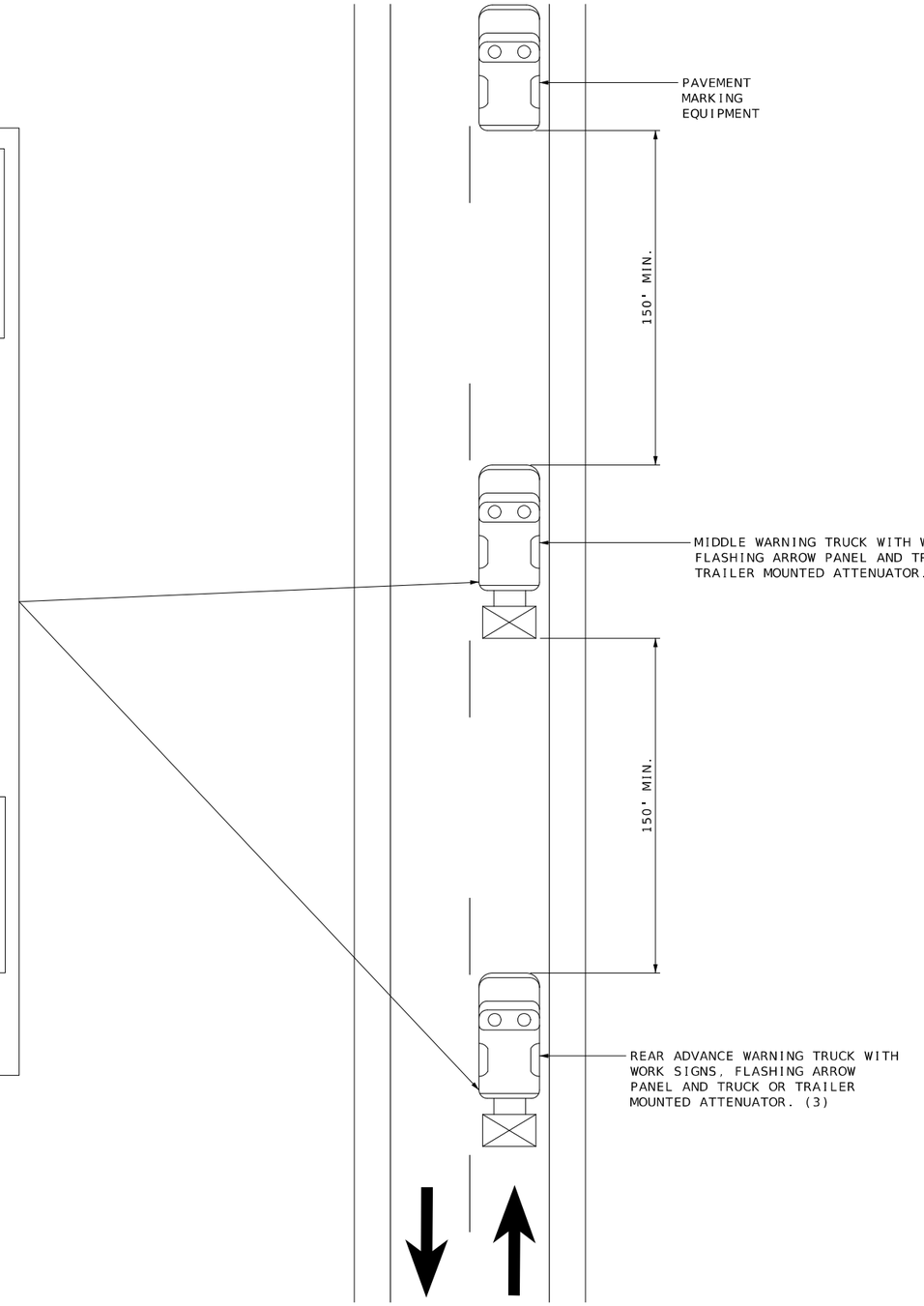
BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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

REVISED: 4/25/2023





NOTES:
UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY PROVIDE ADDITIONAL PROTECTIVE TRUCK EQUIPPED WITH PROPER WARNING DEVICES.

PROTECTIVE TRUCK AND WORK VEHICLES SHALL DISPLAY HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROPE LIGHTS.

FLASHING ARROW PANELS AND SIGNS SHALL BE INCIDENTAL TO TRUCK MOUNTED ATTENUATORS, WHEREVER USED. NO ADDITIONAL PAYMENT SHALL BE MADE.

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

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

(3) REAR ADVANCE WARNING TRUCK IS POSITIONED AT THE NO TRACK POINT OF THE PAVEMENT MARKING MATERIAL, OR VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE, OR SPACING SHOWN.

NOT TO SCALE

CENTERLINE/EDGELINE STRIPING ON TWO-LANE HIGHWAYS

TRAFFIC CONTROL
SHEET 12 OF 12

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:16:30 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	24

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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

EROSION CONTROL SHEETS
SHEET 1 OF 4

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:22:49 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	25

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

SCALE

0 50 100 150

EROSION CONTROL SHEET
SHEET 2 OF 4

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

03/13/2024 1:23:01 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	26

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

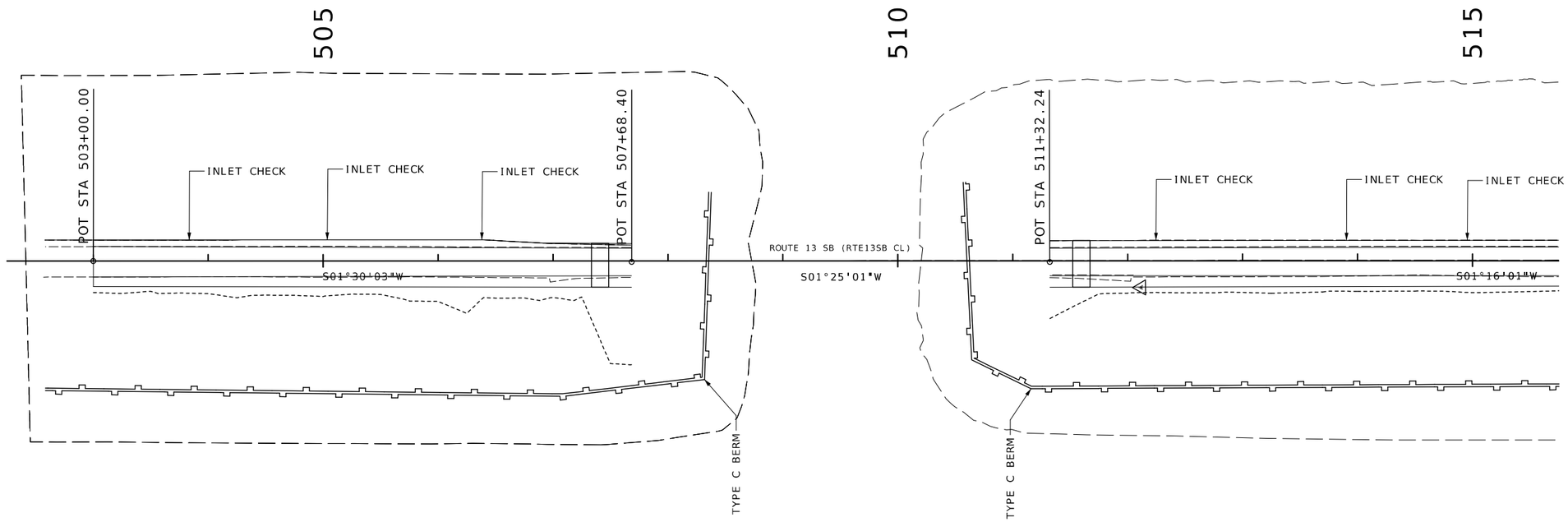
PROJECT NO.

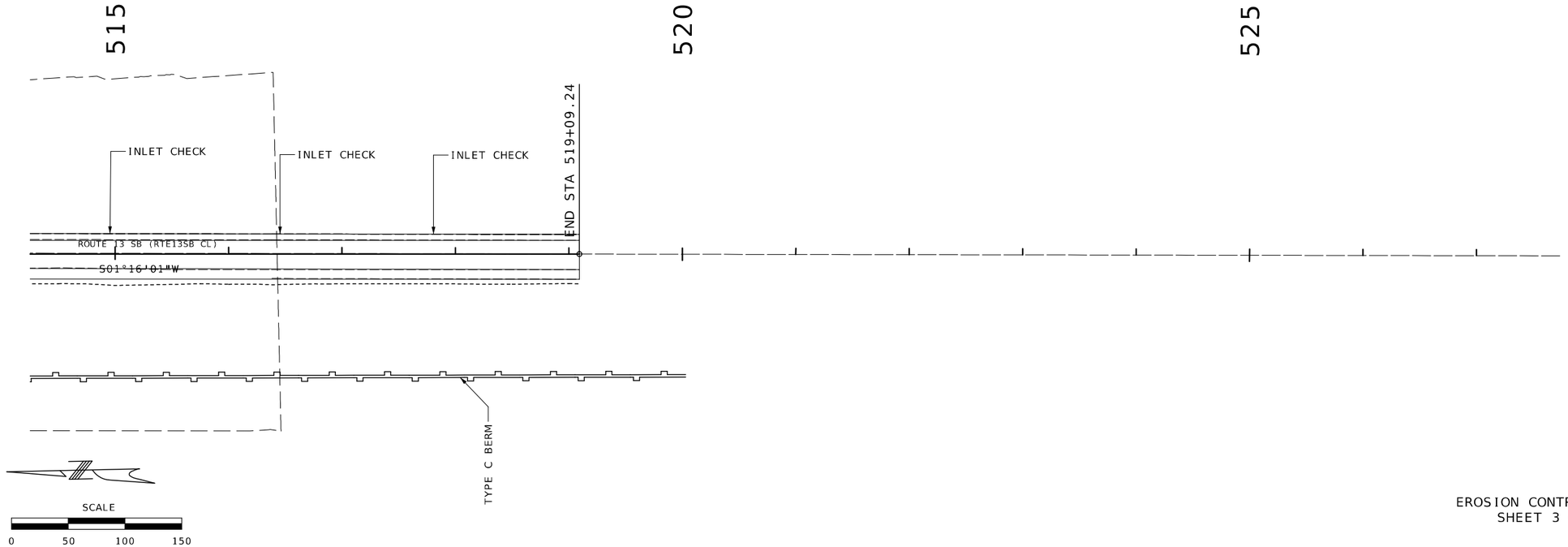
BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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





EROSION CONTROL SHEET
SHEET 3 OF 4

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:23:13 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	27

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

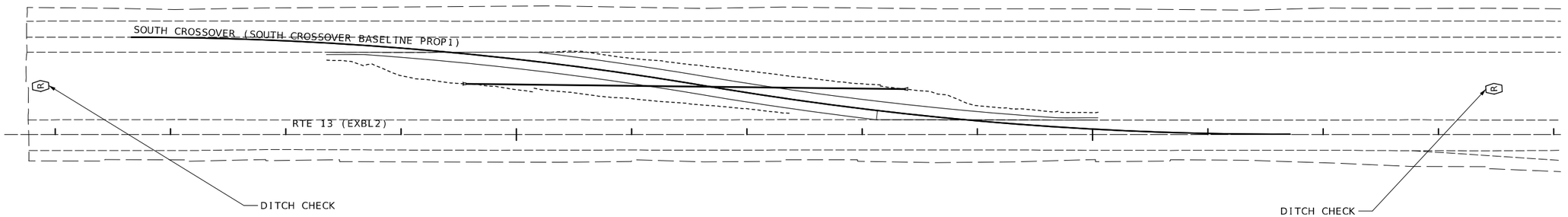
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

575

580



SCALE

0 50 100 150

EROSION CONTROL SHEET
SHEET 4 OF 4

03/13/2024 1:23:26 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	28

COUNTY
HENRY

JOB NO.
J7P3484C

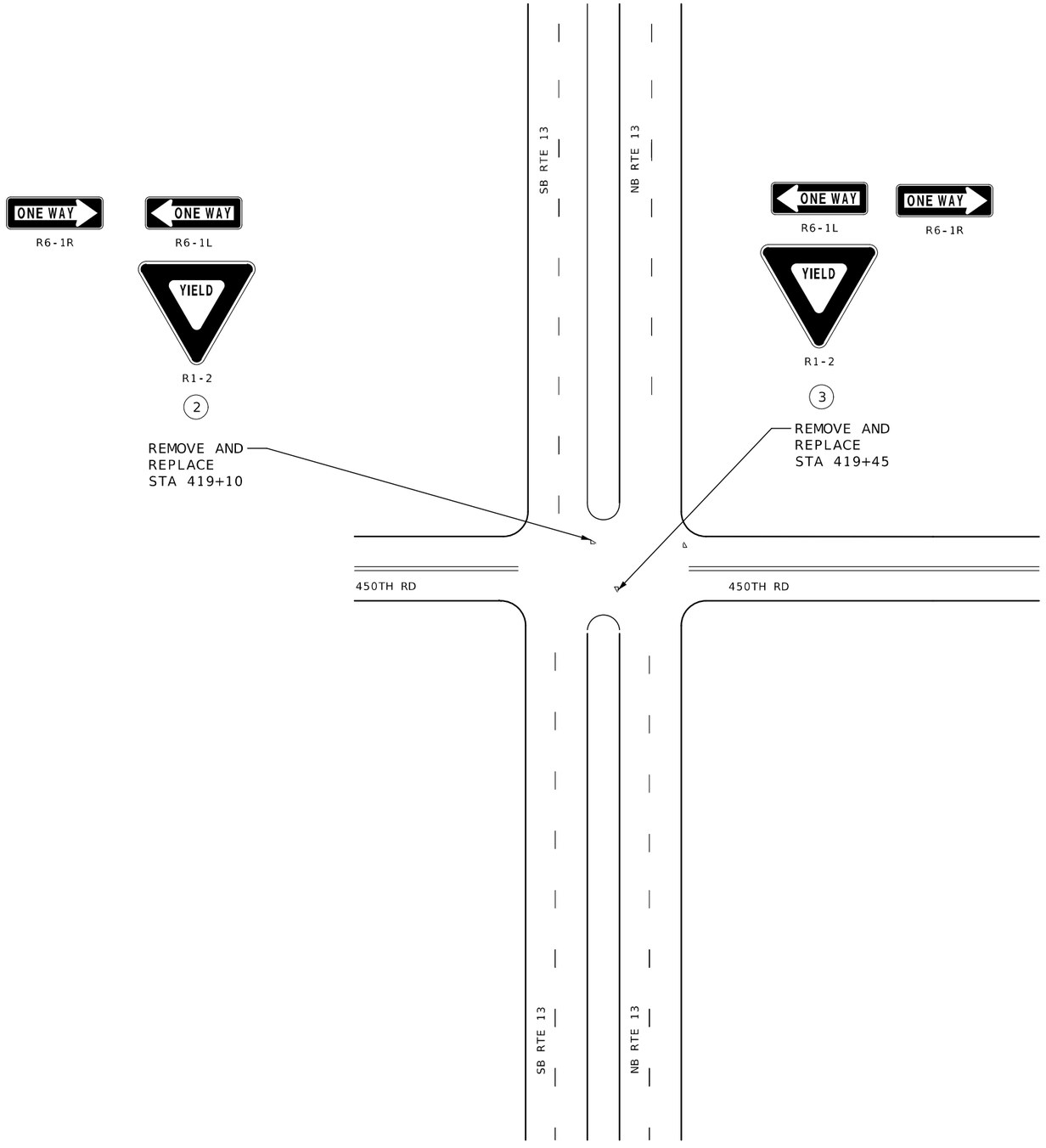
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

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



INTERSECTION AT SW 450TH RD
NOT TO SCALE

SIGNING SHEET
SHEET 1 OF 2

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:23:38 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	29

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

EFFECTIVE: 07-01-2022

SIGNS 902 SIGNAL SIGNS TABULATED ON D-37A SHEET						CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS *						PIPE POSTS *						BACKING BARS **				U-CHANNEL POST	PERFORATED SQUARE STEEL TUBE											REMARKS AND OTHER REQUIRED ITEMS
																								2 IN. POST						2.5 IN. POST						
																										ANCHORS						ANCHORS		BREAK-AWAY ASSEMBLY	
SIGN NO.	SIGN SIZE	STATION	HORZ CLEAR IF NOT STD	LOCATION	SIGN DTL. SHT. NO.	ITEM NO. 9031010	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	2" X 3/8" BARS @ 2.55 LBS PER FT NO. EACH	LGTH IN.	TOTAL LF	TOTAL LBS	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12-GA. ITEM NO. 9031271A	DRIVEN 7-GA. ITEM NO. 9031273A	CONCRETE 7-GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7-GA. ITEM NO. 9031281A	CONCRETE 7-GA. ITEM NO. 9031285	ITEM NO. 9031241	
						CY		LF	LF	LF		LBS	IN.	LF	LF		LBS	EACH	IN.	LF	LBS	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	EA	
1	60 X 24	505+45		RT																									16	16	32			2	2	SEE SHEET 8
1	36 X 36	419+65		LT																									16		16			1	1	STOP SIGN ON SHEET 21A
				SUBTOTAL																											48			3	3	
				TOTAL																		**									48			3	3	

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

ROUND PIPE POST AND FOOTING DATA TABLE

NOM.SIZE	WEIGHT		STUB LENGTH	FOOTING		CONCRETE
(IN.)	LBS/FT	LBS/IN		DIA.	DEPTH	C.Y.
2½	5.79	0.48	4'- 3½"	12"	4~6"	0.13
3	7.58	0.63	4'- 3½"	12"	4~6"	0.13
4	10.79	0.90	5'- 3½"	18"	5~6"	0.36

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

POST DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	DIA.	FOOTING LEVEL GROUND DEPTH	FOOTING LEVEL GROUND C.Y.	FOOTING 6:1 GRADE DEPTH	FOOTING 6:1 GRADE C.Y.	FOOTING 4:1 GRADE DEPTH	FOOTING 4:1 GRADE C.Y.	FOOTING 3:1 OR 2:1 GRADE DEPTH	FOOTING 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

D-29

STANDARD SIGN ASSEMBLIES

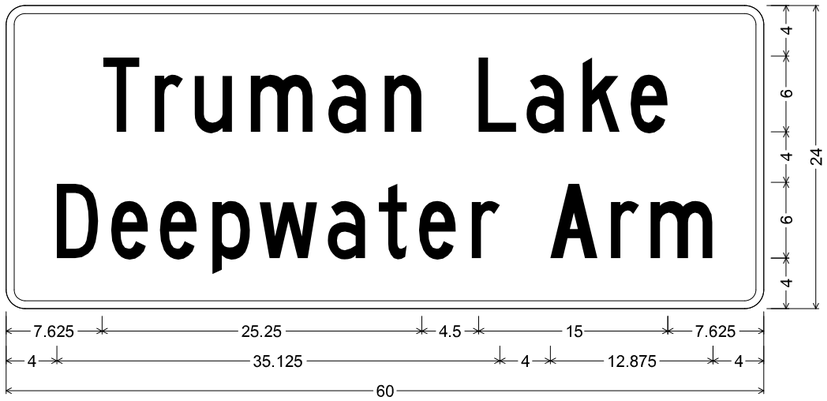
SIGN NUMBER	STATION	LOCATION	SIGN DESCRIPTION, SIZES & NUMBER OF EACH: ONE WAY R6-1L 54" X 18"	ONE WAY R6-1R 54" X 18"	YIELD R1-2 48" X 48"
2	419+10	LT	1	1	1
3	419+45	LT	1	1	1

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: SIZE (SF)	FLAT SHEET SH (SF) ITEM NO. 9035004A	FLAT SHEET FLUORESCENT SHF * ITEM NO. 9035069A	STRUCTURAL ST ITEM NO. 9035011A	STRUCTURAL FLUORESCENT STF * ITEM NO. 9035071A
SPECIAL-1	29	1	10.00	10			
YIELD R1-2		2	16.00	32			
ONE WAY ARROW (LT) R6-1L		2	6.75	14			
ONE WAY ARROW (RT) R6-1R		2	6.75	14			
TOTAL				70			

* ORANGE, YELLOW & YELLOW/GREEN

D-30



SIGN NO.	1
STATION	505+45
ROADWAY	RTE 13

I3-1 SH-FLAT SHEET;
1.500" Radius, 0.625" Border, White on, Green;
"Truman Lake", C 80% spacing; "Deepwater Arm", C 80% spacing;
Table of letter and object lefts

T 7.625	r 11.750	u 14.875	m 19.375	a 25.500	n 30.000	L 37.375	a 41.250	k 45.625	e 49.500	
D 4.000	e 8.250	e 12.125	p 16.375	w 20.125	a 25.500	t 29.500	e 32.750	r 36.875	A 43.125	r 47.875	m 51.000

SIGNING SHEET
SHEET 2 OF 2

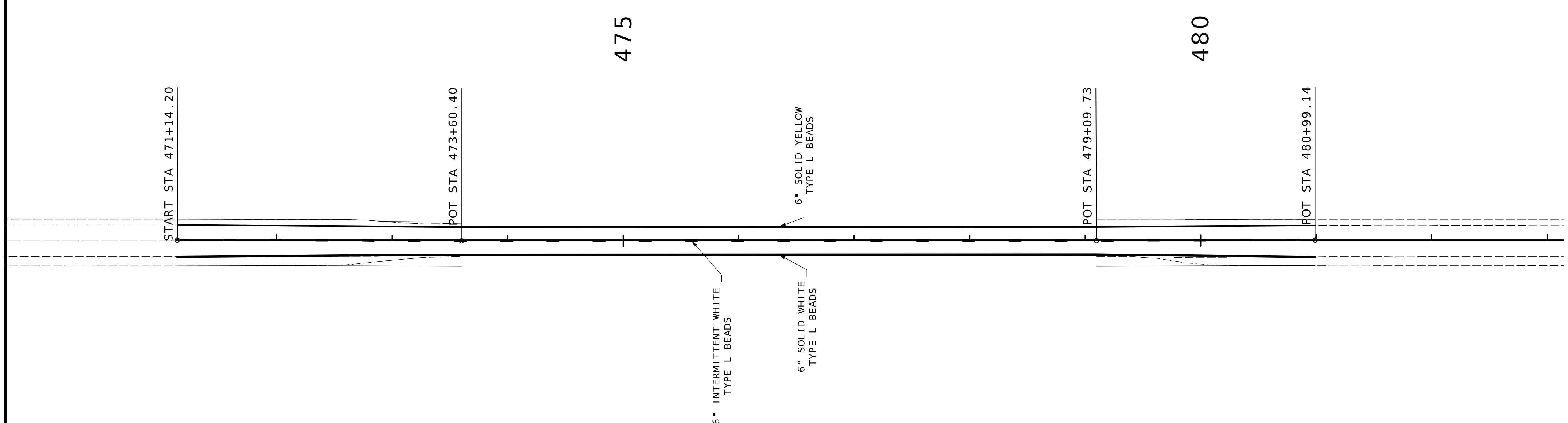
D-31

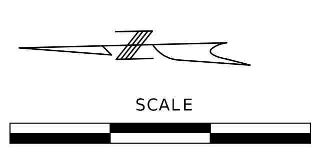
STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER
03/13/2024 1:23:51 PM
SHANNON M. KELLNER - CIVIL
MO-PE-2011015763

DATE PREPARED 3/12/2024
ROUTE 13 | STATE MO
DISTRICT SW | SHEET NO. 29A
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9338 & A9339

DESCRIPTION | DATE

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





PAVEMENT MARKING SHEET
SHEET 1 OF 3

STATE OF MISSOURI
SHANNON M. KELLNER
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DATE PREPARED	
3/12/2024	
ROUTE 13	STATE MO
DISTRICT SW	SHEET NO. 30
COUNTY HENRY	
JOB NO. J7P3484C	
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PROJECT NO.	
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DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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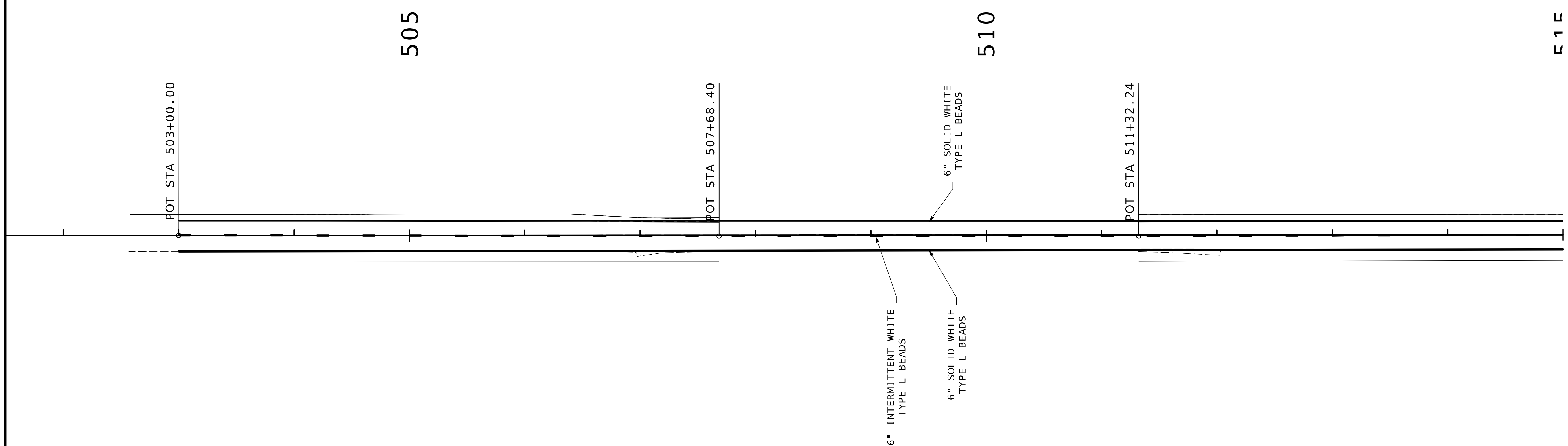

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PAVEMENT MARKING SHEET
SHEET 2 OF 3

STATE OF MISSOURI
SHANNON M. KELLNER
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PE-2011015763
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DATE PREPARED	
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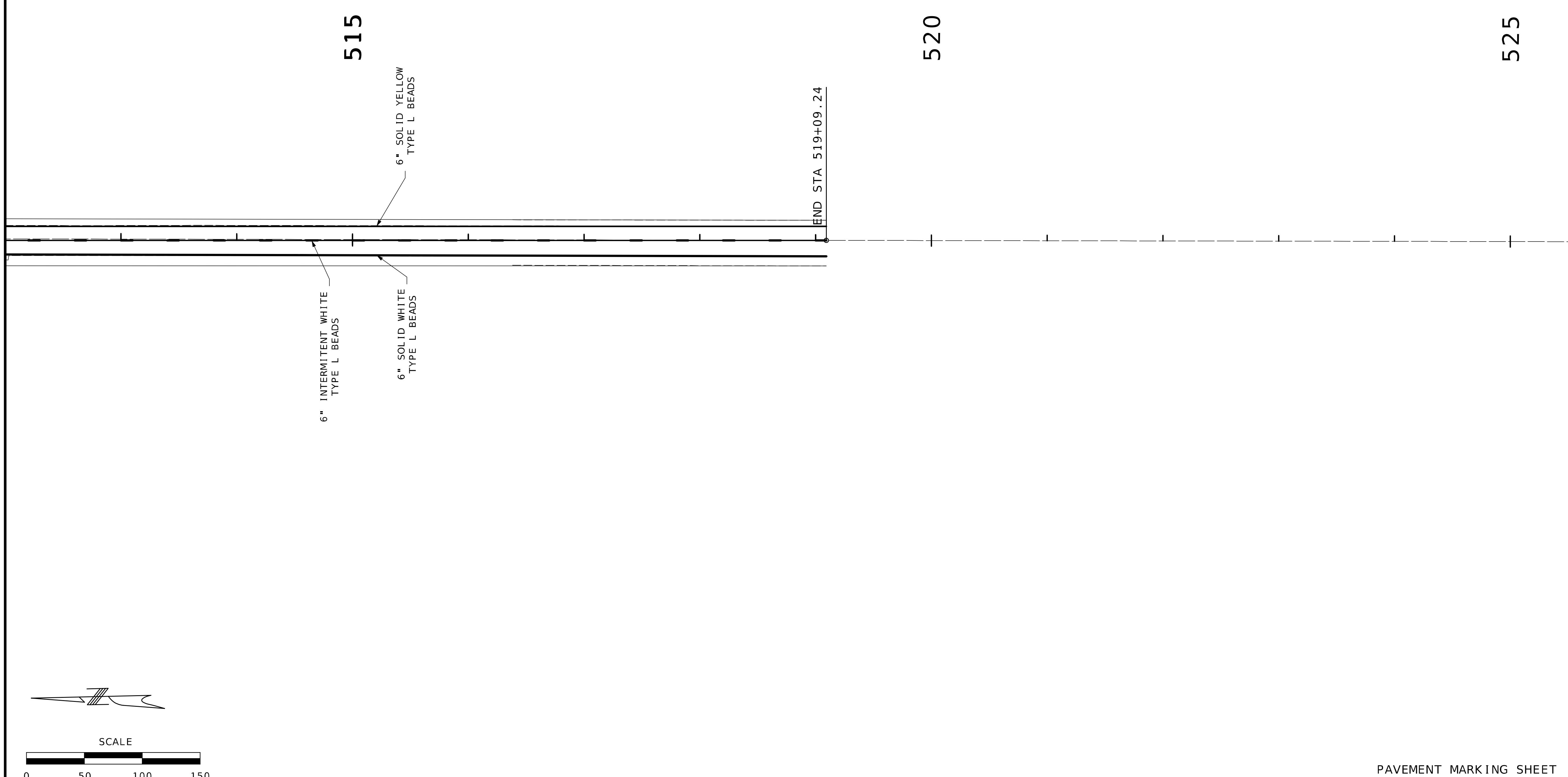
ROUTE 13	STATE MO
DISTRICT SW	SHEET NO. 31
COUNTY HENRY	
JOB NO. J7P3484C	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9338 & A9339	

DATE	DESCRIPTION

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



PAVEMENT MARKING SHEET
SHEET 3 OF 3

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DISTRICT SW	SHEET NO. 32
COUNTY HENRY	
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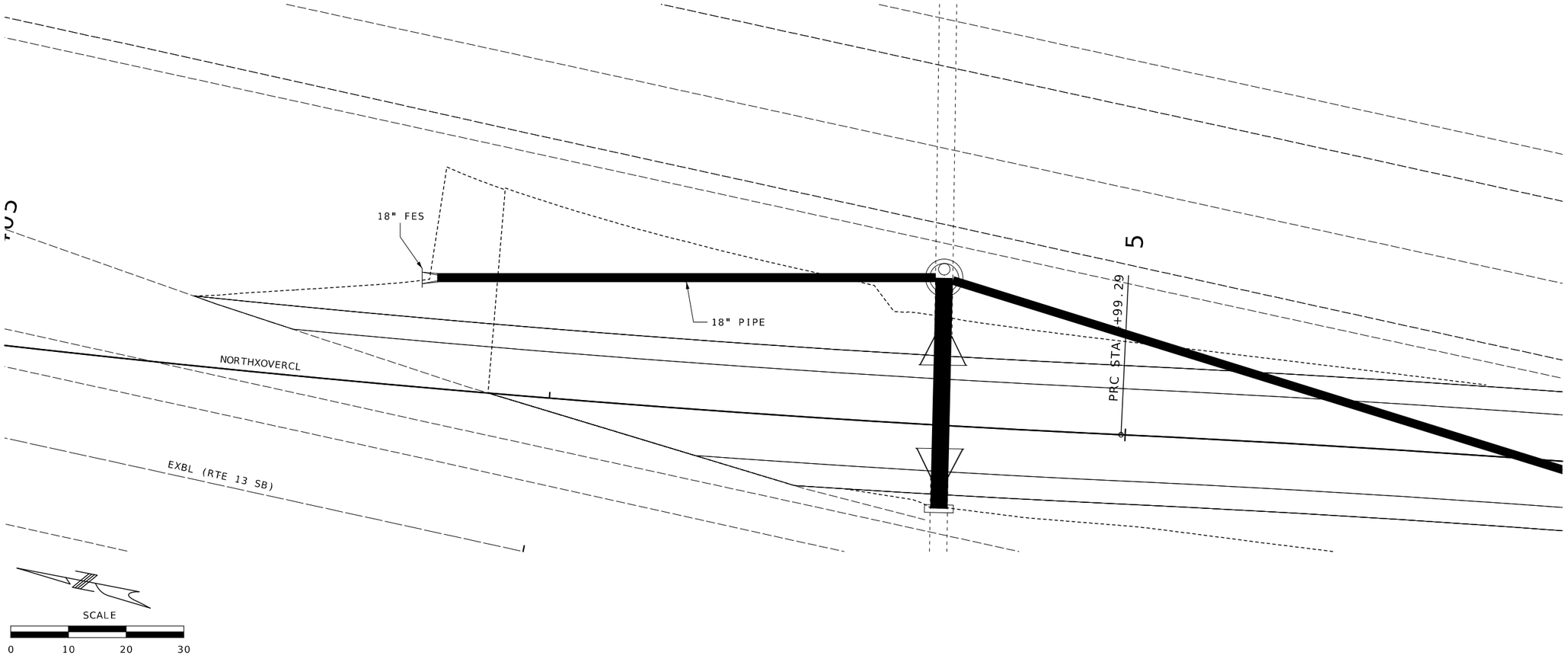

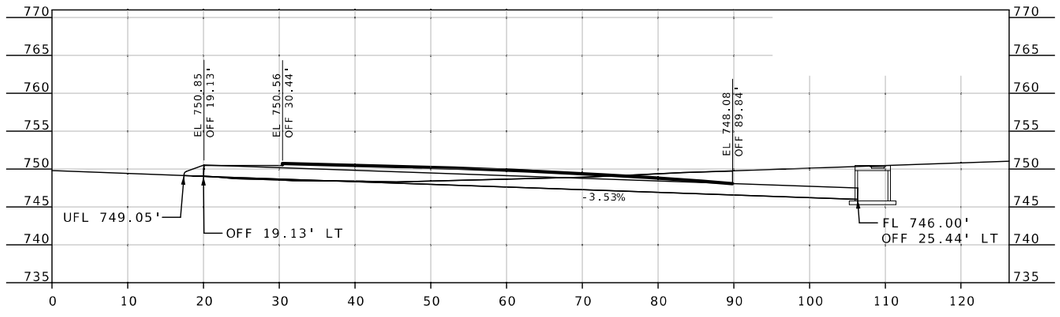

CULVERT SHEET
SHEET 1 OF 4

STATE OF MISSOURI
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PROFESSIONAL ENGINEER

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13	MO
DISTRICT	SHEET NO.
SW	33

COUNTY
HENRY

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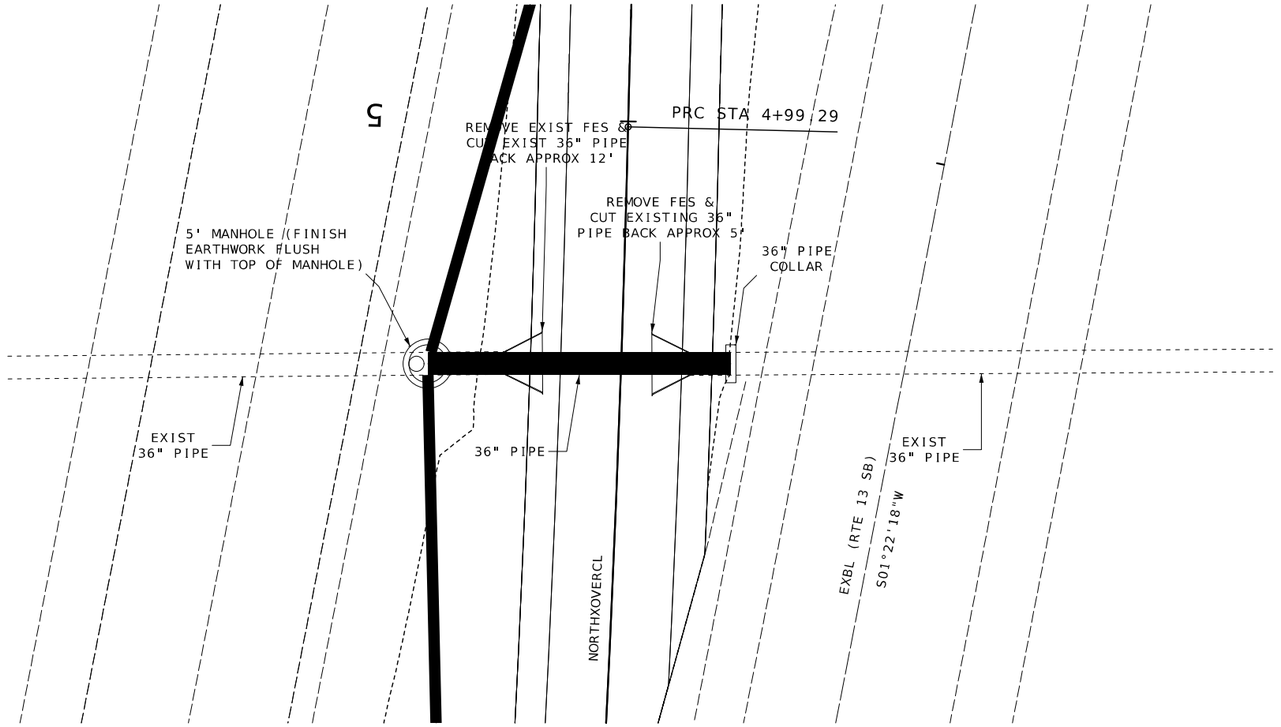

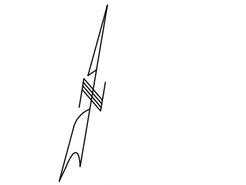

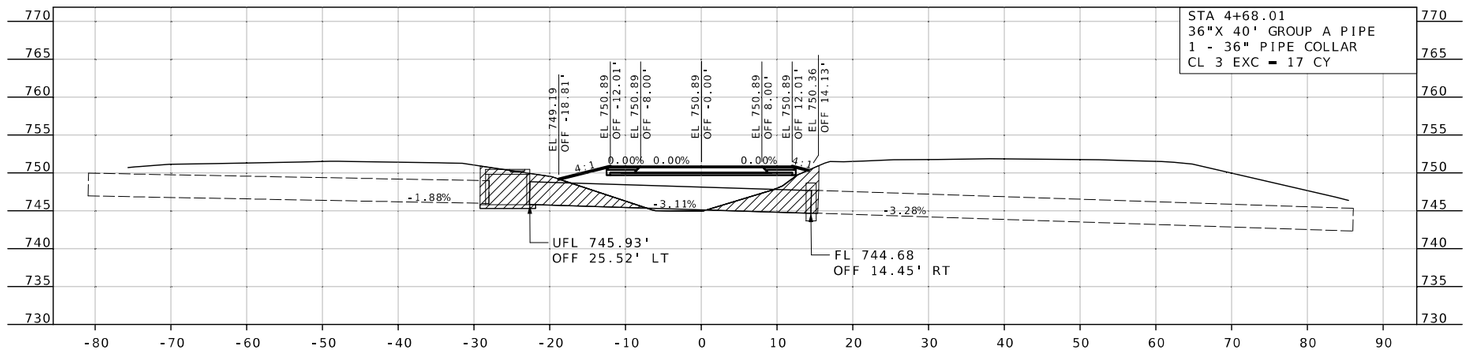

CULVERT SHEET
SHEET 2 OF 4

STATE OF MISSOURI
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ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	34

COUNTY
HENRY

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PROJECT NO.

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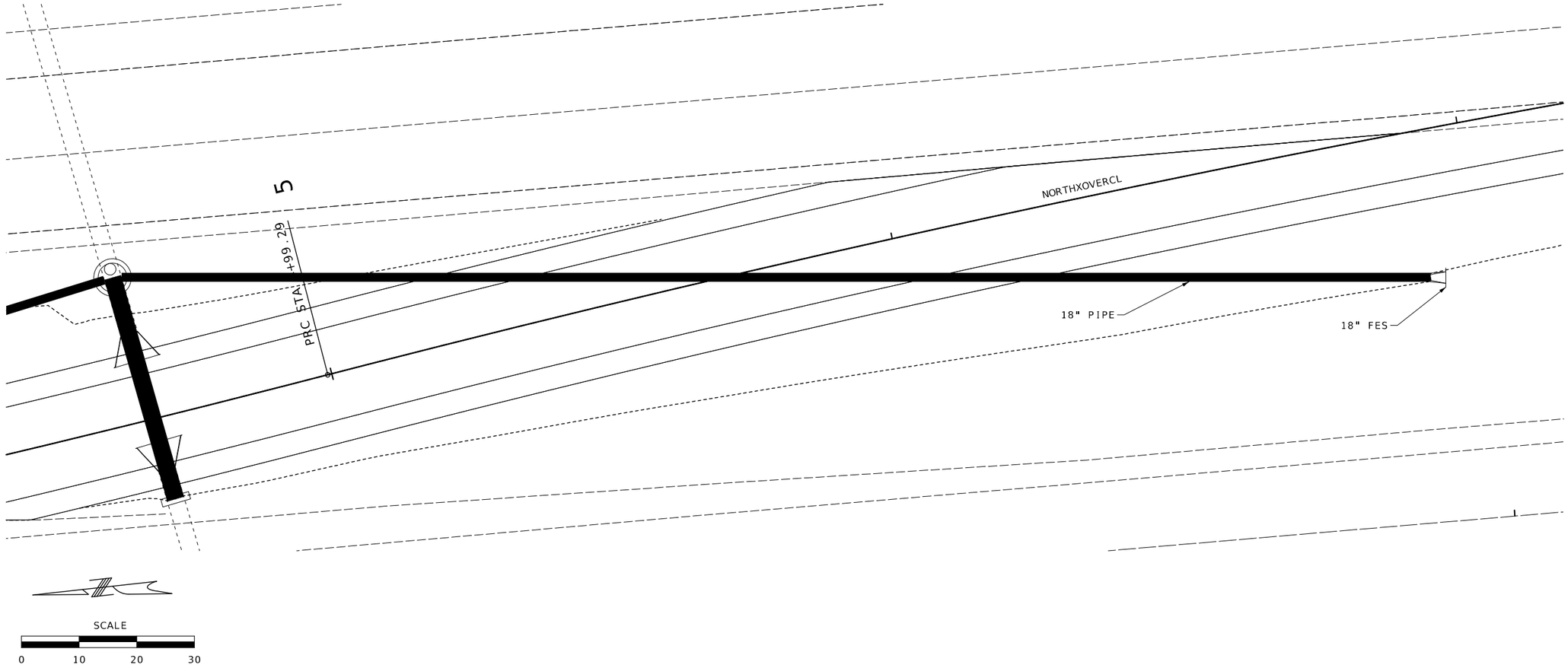

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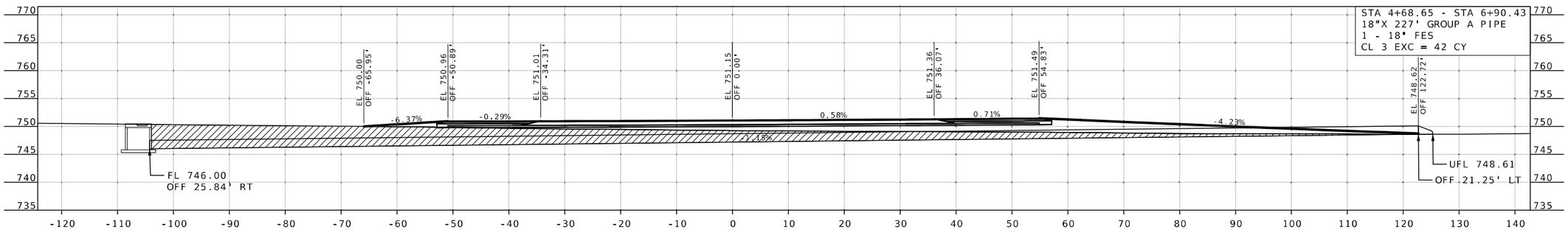

CULVERT SHEETS
SHEET 3 OF 4

STATE OF MISSOURI
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ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	35

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

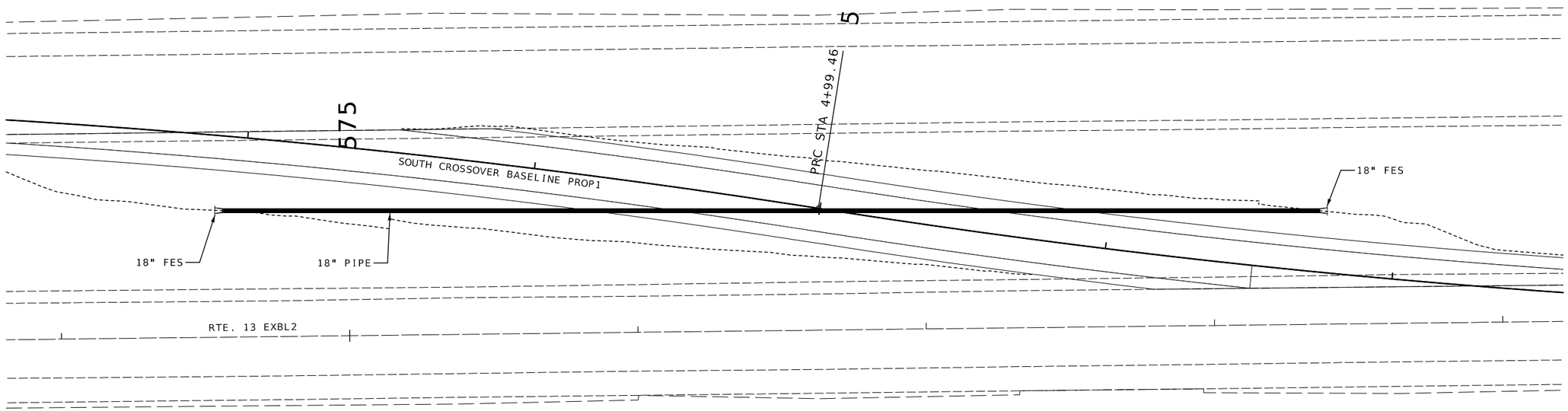
PROJECT NO.

BRIDGE NO.
A9338 & A9339

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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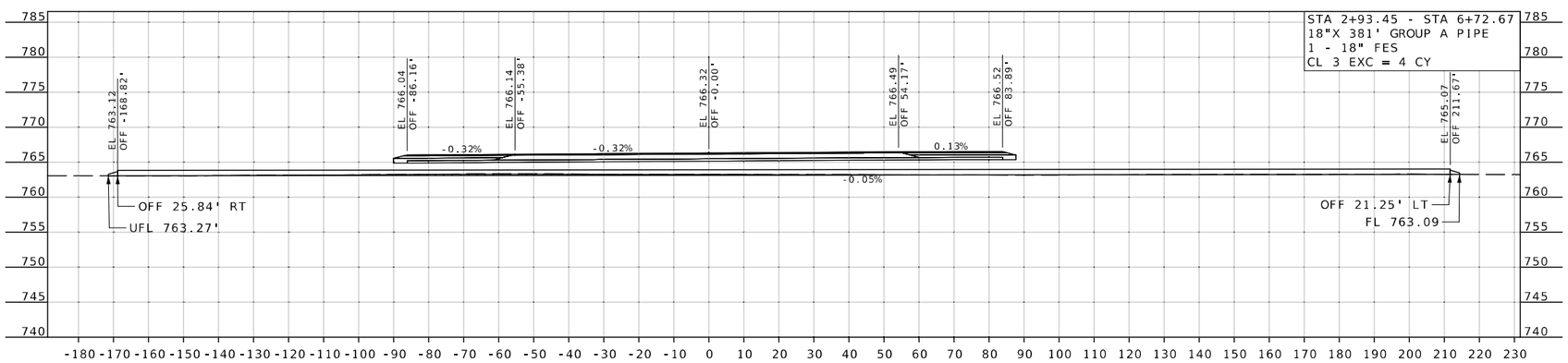

CULVERT SHEETS
SHEET 4 OF 4

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

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DATE PREPARED
3/12/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
SW	36

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338 & A9339

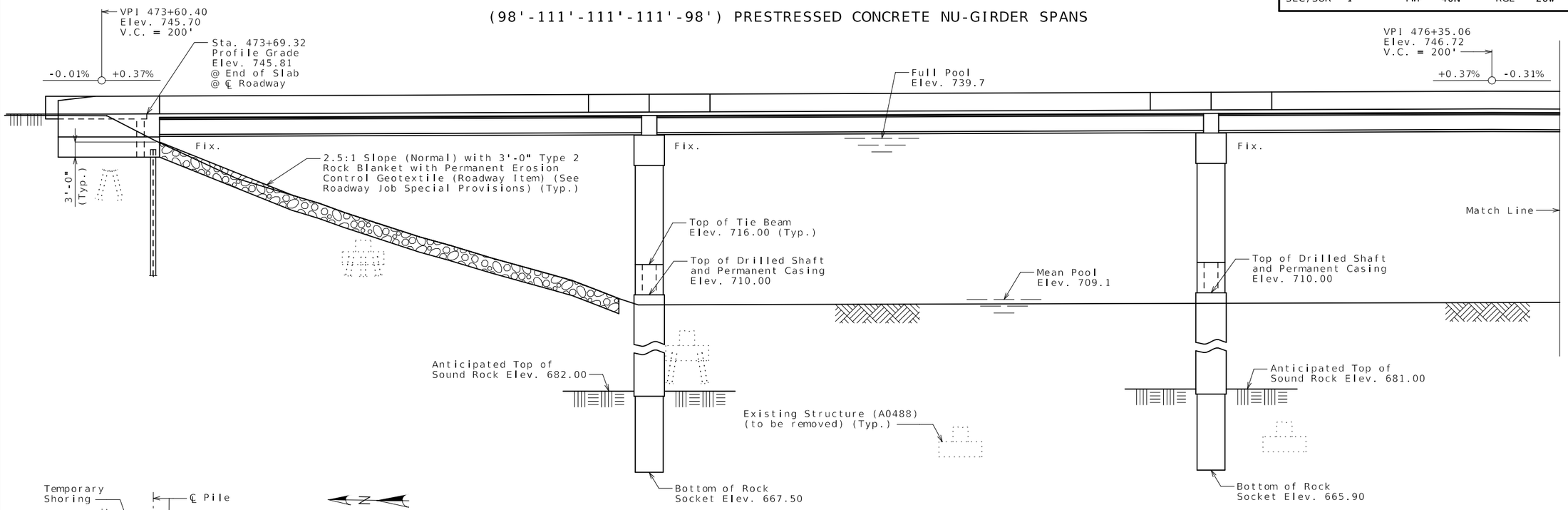
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

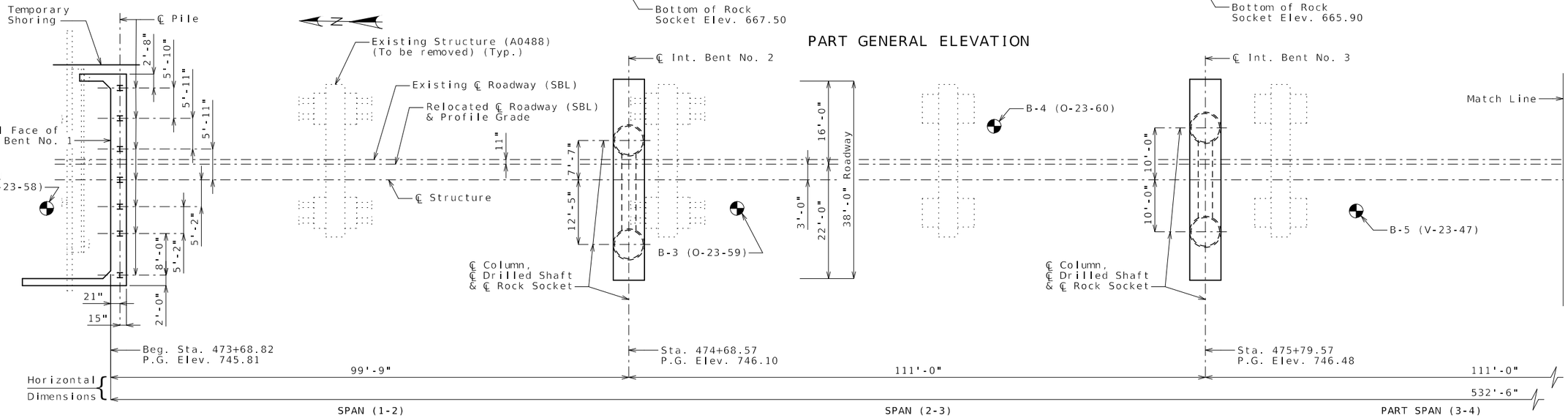
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SEC/SUR 1 TWP 40N RGE 26W

(98'-111'-111'-111'-98') PRESTRESSED CONCRETE NU-GIRDER SPANS



PART GENERAL ELEVATION



℄ Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet No. 32 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

PART PLAN

Notes:

For General Notes, Hydrologic Data, Foundation Data, Estimated Quantities, Estimated Quantities for Slab on Concrete NU-Girder and Location Sketch, see Sheet No. 3.

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.

Note: Work this sheet with Sheet No. 2.

B.M. (C.P.#2) 74/5/8" IP W/ PINK CAP: ELEV. 744.9596
EASTING 3001315.7432 NORTHING 771918.6539

BRIDGE: ROUTE 13 SB OVER TRUMAN RESERVOIR (DEEPWATER CREEK ARM)

ROUTE 13 FROM ROUTE 18 TO ROUTE Z
ABOUT 5.6 MILES SOUTH OF ROUTE 7
BEGINNING STATION 473+68.82

Designed Jan. 2024
Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:17:27 AM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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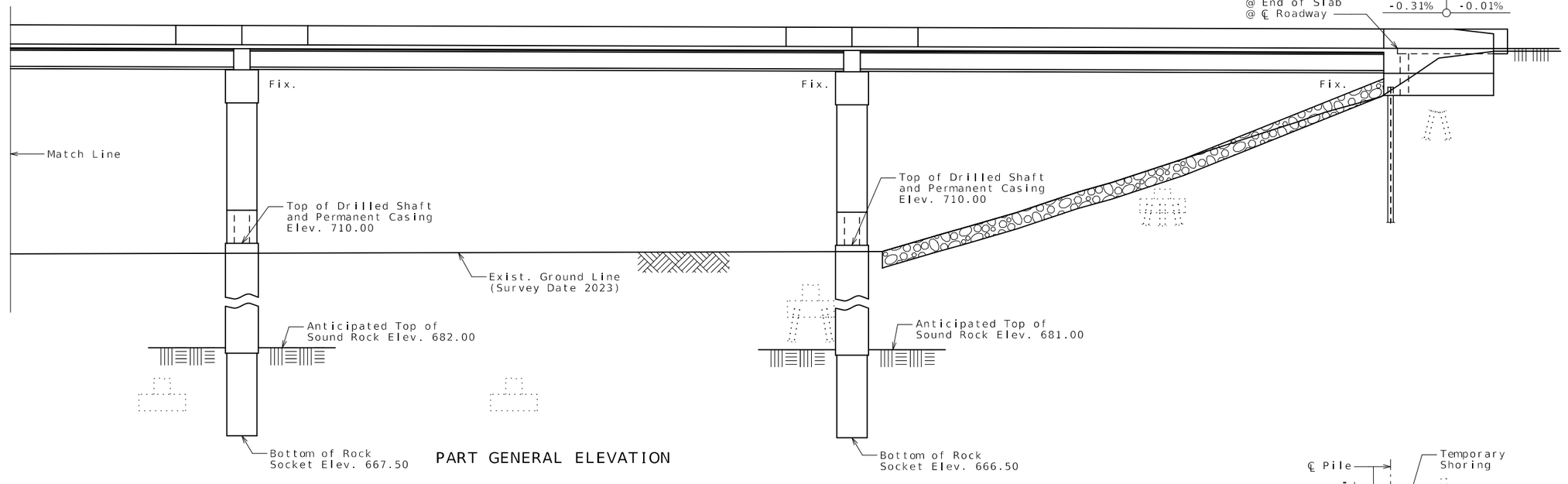
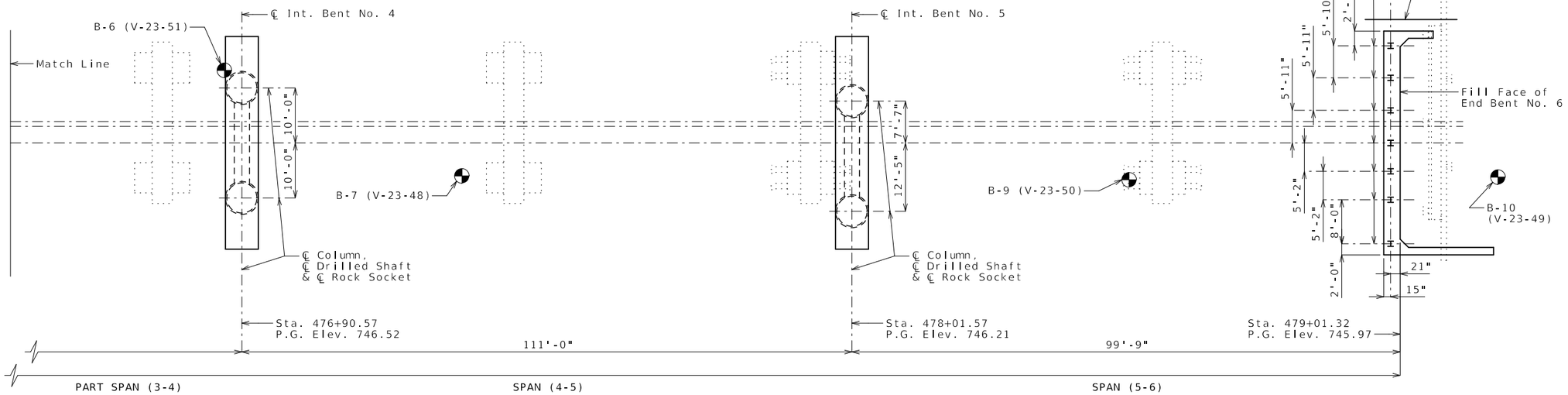


PART GENERAL ELEVATION



PART PLAN

Note: Work this sheet with Sheet No. 1.

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
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ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
HENRY

JOB NO.
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CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338

DESCRIPTION	DATE

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

Detailed Feb. 2024
Checked Feb. 2024

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

GENERAL NOTES:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)

Seismic Design Category = B

Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{D1} = 0.154g.

Acceleration Coefficient (effective peak ground acceleration coefficient), A_S = 0.096g.

Design Loading:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf (Min.)
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-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure except Prestressed Girders and Barrier)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50S)	fy = 50,000 psi

For prestressed girder stresses, see Sheets No. 15 thru 18.

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.

The spaces between the existing and proposed structures less than 5" wide, at the end bents, shall be filled with a joint filler material.

Reinforcing Steel:

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

MBS refers to mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 or 710.

Traffic Handling:

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

Estimated Quantities for Slab on Concrete NU-Girder

	Item		Total
	Class B-2 Concrete	cu. yard	729
	Reinforcing Steel	pound	280
*	Reinforcing Steel (Galvanized)	pound	237,230

* All superstructure reinforcement shall be galvanized except for Strand Tie Bars (#5-H109, #5-H609, #5-H805 & #5-H806). (See Special Provisions).

Specification, materials, zinc coating process and construction practice shall be in accordance with ASTM A1094/A1094M-18.

Galvanized reinforcing steel shall not come in contact with uncoated reinforcing steel or prestressing strands. Nylon, PVC, or polyethylene spacers shall be used where necessary. Nylon cable ties shall be used to bind the spacers to the reinforcement.

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, conventional forms, all concrete and plain & galvanized 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 prestressed panels will not be permitted.

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	120		120
Temporary Shoring	lump sum			1
Removal of Bridges (A0488)	lump sum			1
Bridge Approach Slab (Major)	sq. yard		173	173
Drilled Shafts (6 ft. 0 in. Dia.)	linear foot	228.0		228.0
Rock Sockets (5 ft. 6 in. Dia.)	linear foot	117.2		117.2
Video Camera Inspection	each	8		8
Foundation Inspection Holes	linear foot	197.2		197.2
Sonic Logging Testing	each	8		8
Galvanized Structural Steel Piles (12 in.)	linear foot	840		840
Pile Point Reinforcement	each	14		14
Class B Concrete (Substructure)	cu. yard	474.6		474.6
Type D Barrier	linear foot		1138	1138
Slab on Concrete NU-Girder	sq. yard		2402	2402
NU 43, Prestressed Concrete NU-Girder	linear foot		2638	2638
Reinforcing Steel (Bridges)	pound	137,620		137,620
Mechanical Bar Splice	each	200		200
Slab Drain	each		96	96
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		10	10
Laminated Neoprene Bearing Pad	each		40	40

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.

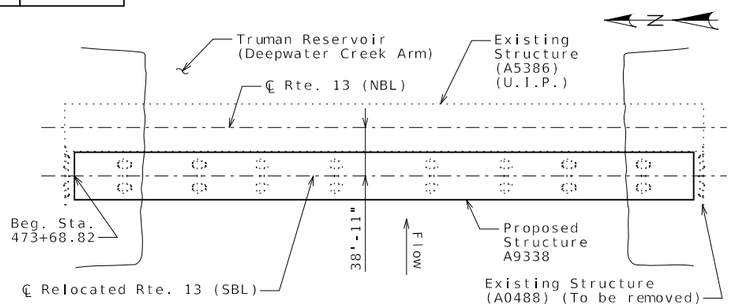
Cost of L4x4 ASTM A709 Grade 36 HP pile anchors and 3/4-inch diameter ASTM F3125 Grade A325 Type 1 bolts, complete in place, will be considered completely covered by the contract unit price for Galvanized Structural Steel Piles (12 in.).

Hydrologic Data

Drainage Area = N/A
Design Flood Frequency = N/A
Design Flood Discharge = N/A
Design Flood (D.F.) Elevation = 709.1 (Mean Pool Elev.)
Base Flood (100-year)
Base Flood Elevation = 741.0
Base Flood Discharge = N/A
Estimated Backwater = N/A
Average Velocity thru Opening = N/A
Freeboard (50-year)
Freeboard = 1.1 ft (a)
Roadway Overtopping
Overtopping Flood Discharge = N/A
Overtopping Flood Frequency = N/A
Overtopping Flood Elevation = 739.7 (b) (Full Pool Elev.)

(a) Based on full pool elevation converted to NAVD88 using VERTCON

(b) From USACE in NGVD29



LOCATION SKETCH

Foundation Data

Type		Design Data		Bent 1	Bent 2	Bent 3	Bent 4	Bent 5	Bent 6
Load Bearing Pile		Pile Type and Size		HP 12x53	–	–	–	–	HP 12x53
		Number	ea	7	–	–	–	–	7
		Approximate Length Per Each	ft	60	–	–	–	–	60
		Pile Point Reinforcement	ea	All	–	–	–	–	All
		Min. Galvanized Penetration (Elev.)	ft	714.00	–	–	–	–	714.00
		Pile Driving Verification Method		DF	–	–	–	–	DF
		Resistance Factor		0.4	–	–	–	–	0.4
		Minimum Nominal Axial Compressive Resistance	kip	510	–	–	–	–	510
Rock Socket		Number	ea	–	2	2	2	2	–
	Layer 1	Foundation Material		–	Strong Rock	Strong Rock	Strong Rock	Strong Rock	–
	Layer 1	Elevation Range	ft	–	679-649	678-663	680-654	678-653	–
	Layer 1	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	–	22.9 (Left) 16.7 (Right)	19.2	18.7	23.0 (Left) 16.8 (Right)	–

Load Bearing Pile:

DF = FHWA-modified Gates Dynamic Pile Formula

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

Rock Socket (Drilled Shafts):

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

All piles shall be galvanized down to the minimum galvanized penetration (elevation).

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

The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) shown on the plans for all piles. Deviations in penetration less than 5 feet of the minimum will be considered acceptable provided the contractor makes the necessary corrections to ensure the minimum penetration is achieved on subsequent piles.

STATE OF MISSOURI
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DATE PREPARED 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	3

COUNTY HENRY

JOB NO. J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9338

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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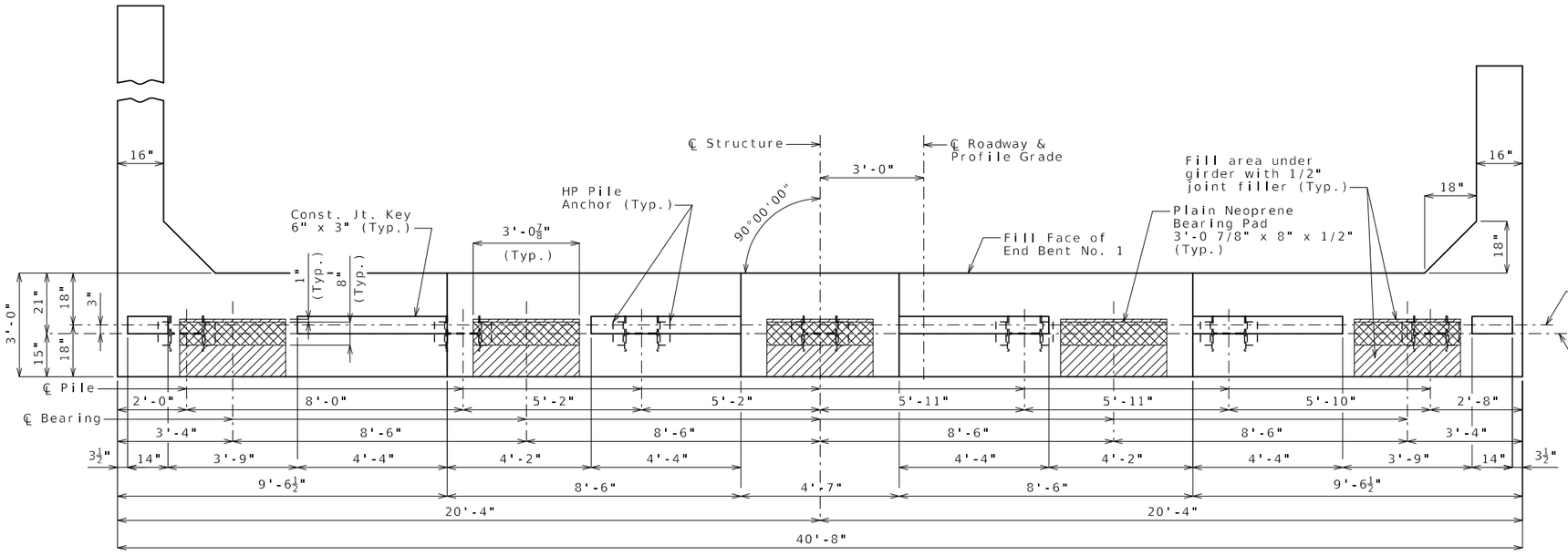
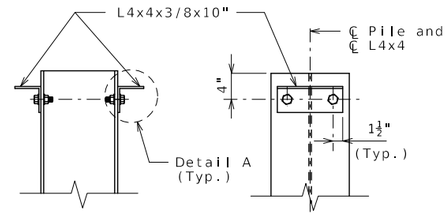
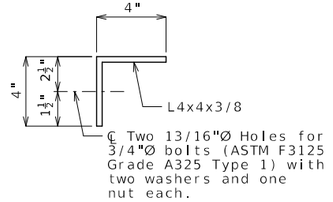


PLAN OF BEAM

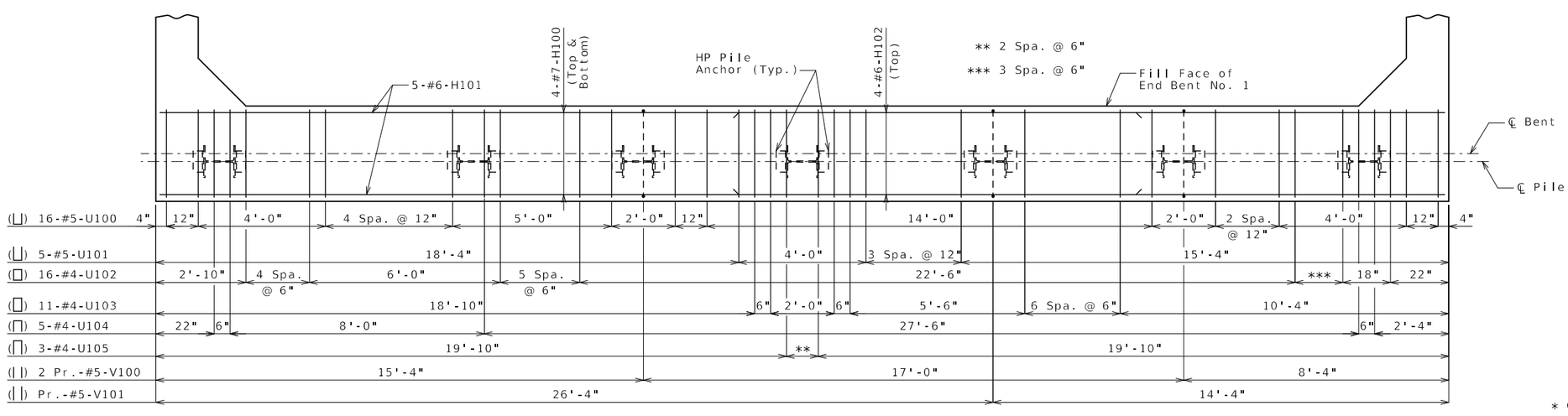


DETAILS OF HP PILE ANCHORS



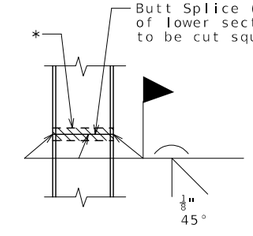
DETAIL A

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.



PLAN OF BEAM SHOWING REINFORCEMENT

(Steps & keys not shown for clarity)



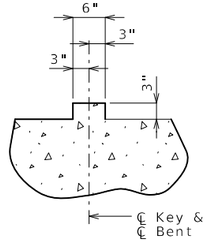
STEEL PILE SPLICE

(If required)

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

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	60
Temporary Shoring	lump sum	1
Galvanized Structural Steel Piles (12 in.)	linear foot	420
Pile Point Reinforcement	each	7
Class B Concrete (Substructure)	cu. yard	23.8

These quantities are included in the Estimated Quantities table on Sheet No. 3.



SECTION THRU KEY

Notes:

Work this sheet with Sheets No. 5 & 6.

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

The U bars and pairs V bars shall be placed parallel to centerline of roadway.

For details of vertical drain at end bent, see Sheet No. 7.

END BENT NO. 1

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:18:12 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

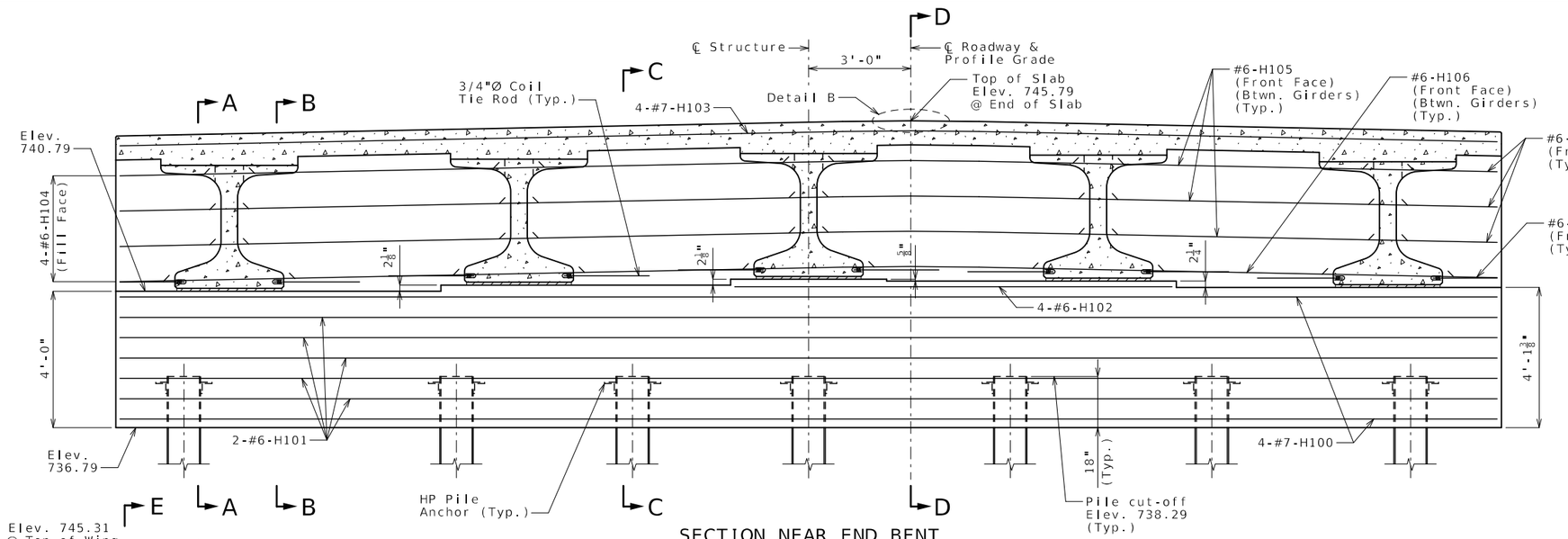
PROJECT NO.

BRIDGE NO.
A9338

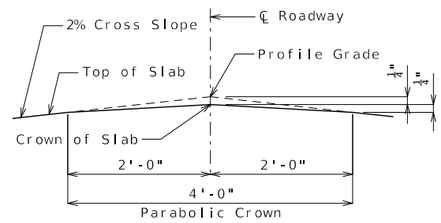
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

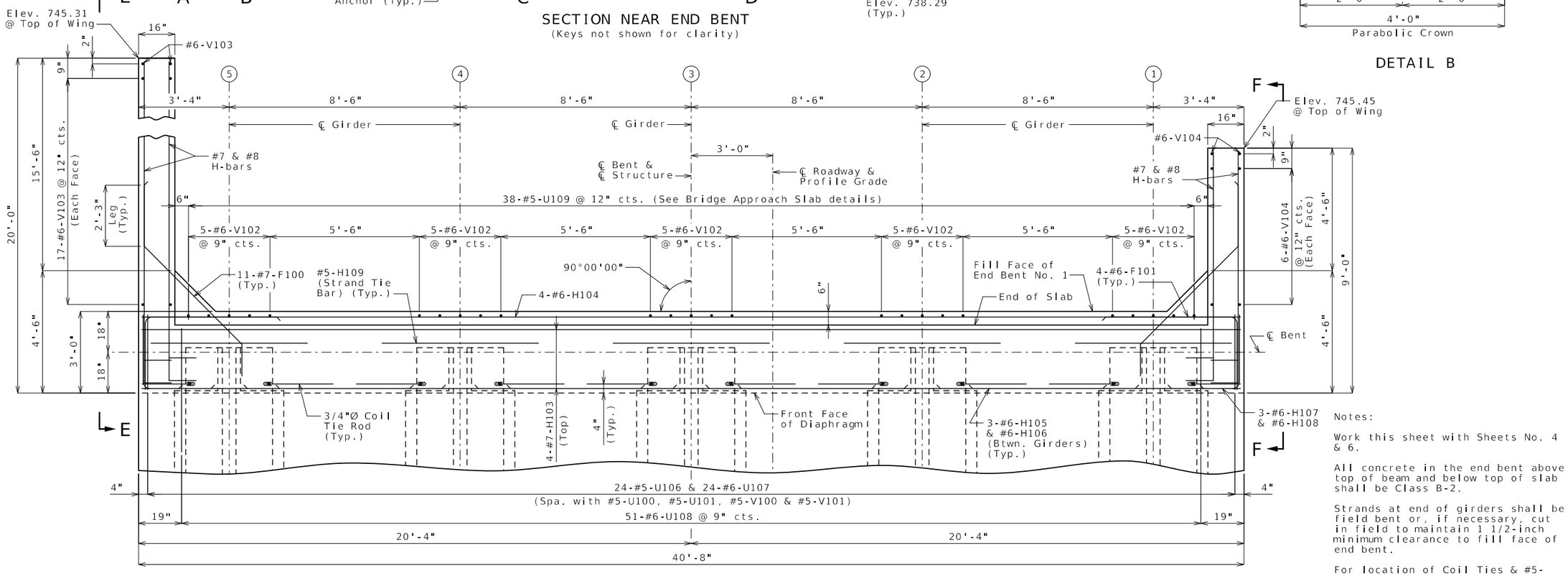
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION NEAR END BENT
(Keys not shown for clarity)



DETAIL B



PART PLAN

Notes:

Work this sheet with Sheets No. 4 & 6.

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 Ties & #5-H109 (Strand Tie Bars), see Sheets No. 15 & 16.

The U bars shall be placed parallel to ℄ Roadway.

The #6-F100 bars shall be bent in field to clear girders.

For details of bridge approach slab, see Sheet No. 27.

END BENT NO. 1

Detailed Feb. 2024
Checked Feb. 2024

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

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TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:12:27 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

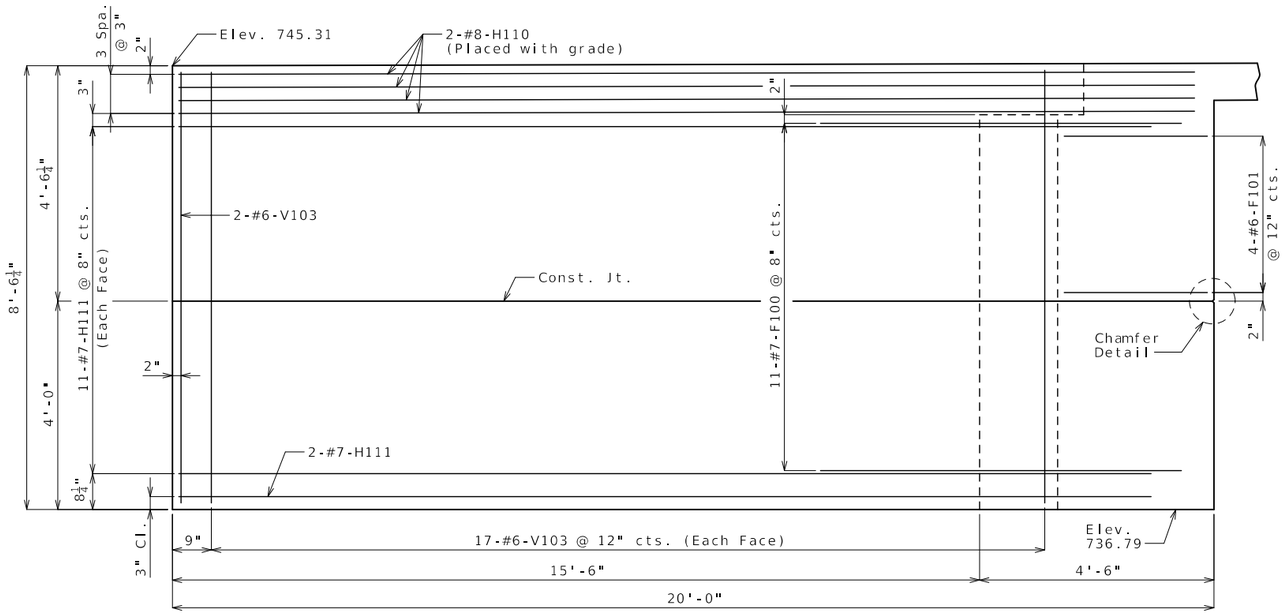
BRIDGE NO.
A9338

DESCRIPTION

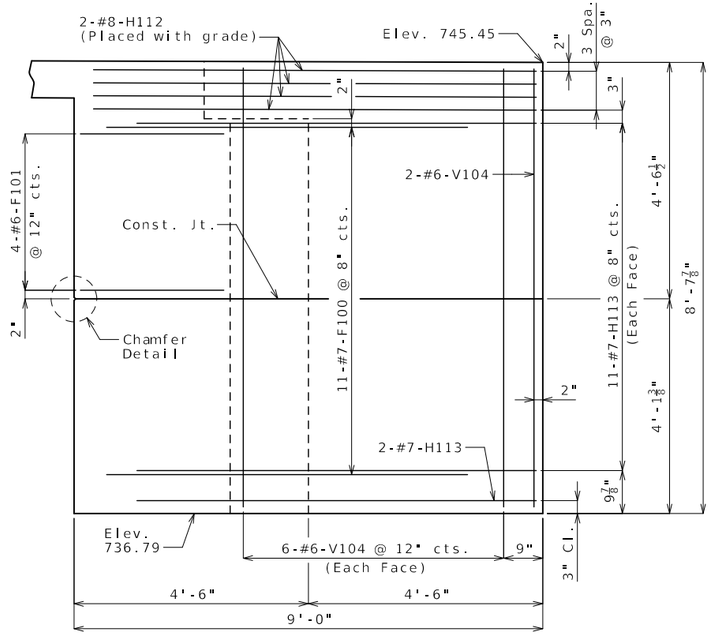
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

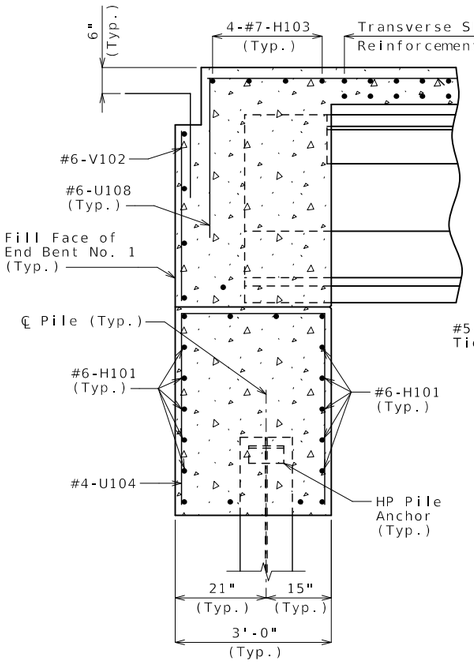
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



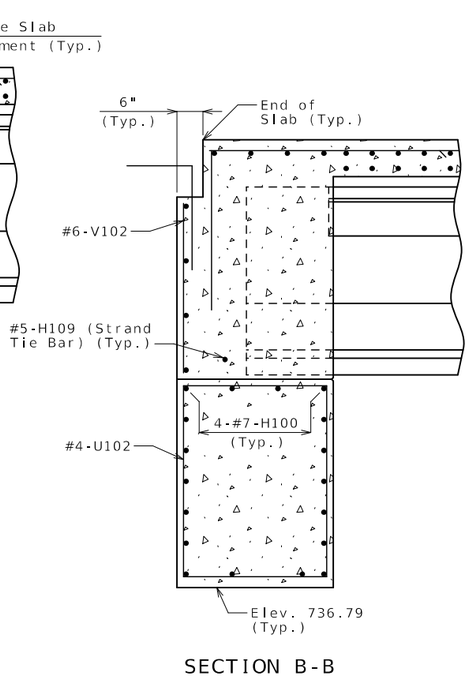
ELEVATION E-E



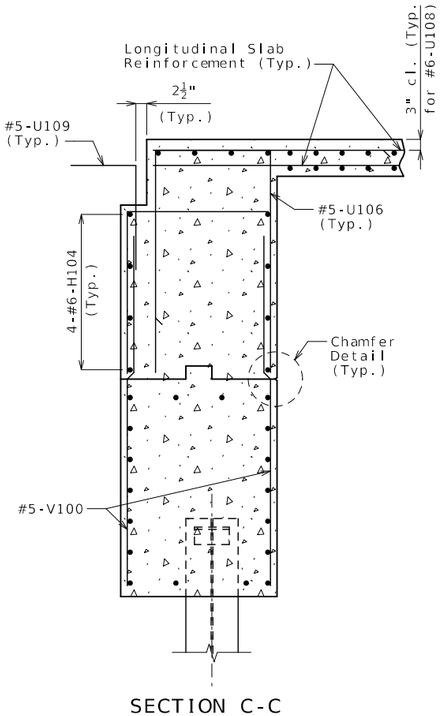
ELEVATION F-F



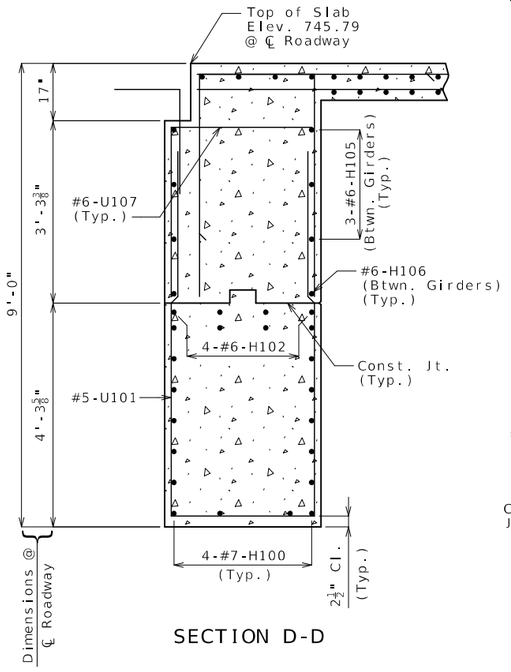
SECTION A-A



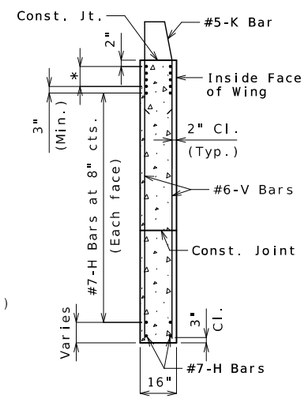
SECTION B-B



SECTION C-C

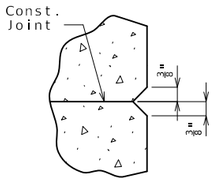


SECTION D-D



TYPICAL SECTION THRU WING

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



CHAMFER DETAIL

Notes:

Work this sheet with Sheets No. 4 & 5.

For reinforcement of the barrier, see Sheets No. 24 & 26.

END BENT NO. 1

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:18:36 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

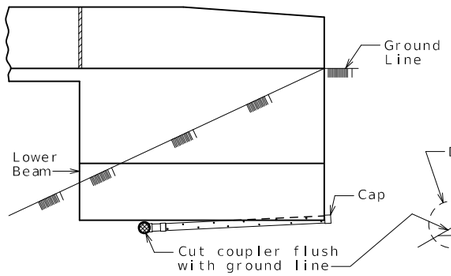
DATE PREPARED: 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	6

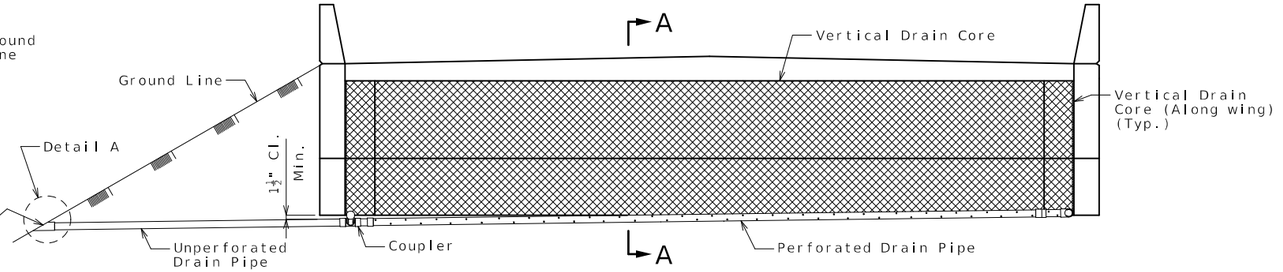
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338

DESCRIPTION | DATE

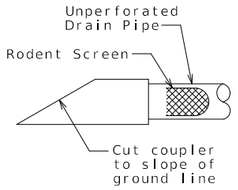
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



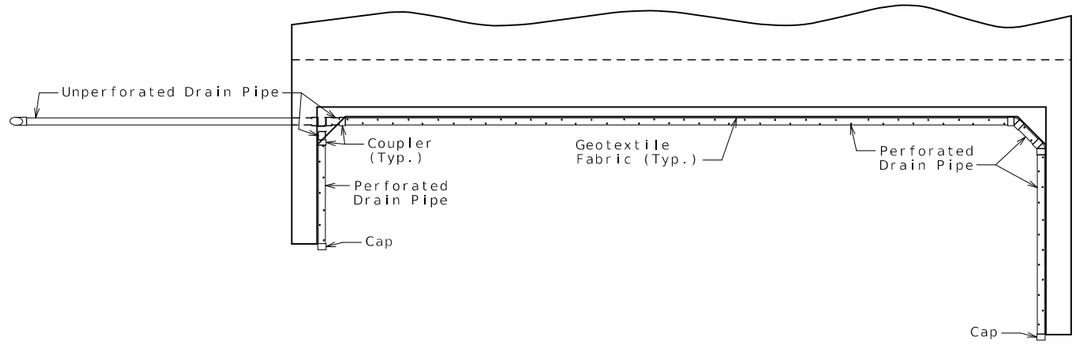
ELEVATION OF WING



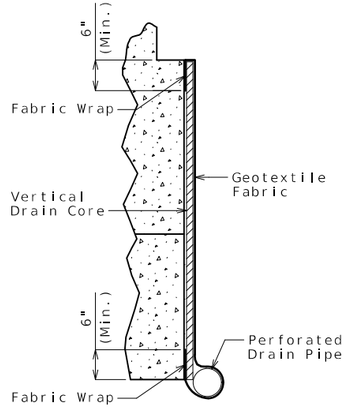
ELEVATION OF END BENT



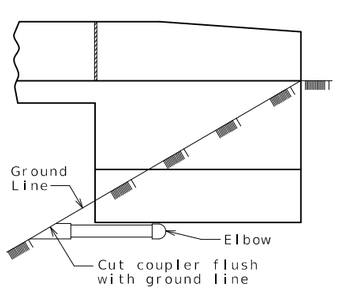
DETAIL A



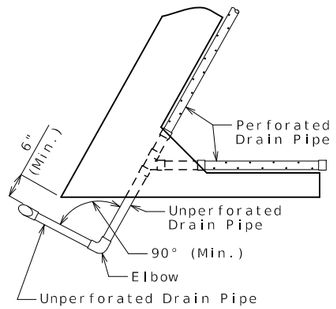
PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING



PART PLAN

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

General Notes:

All drain pipe shall be sloped 1 to 2 percent.

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

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

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

VERTICAL DRAIN AT END BENTS

(Squared end bent shown, skewed end bent similar)

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
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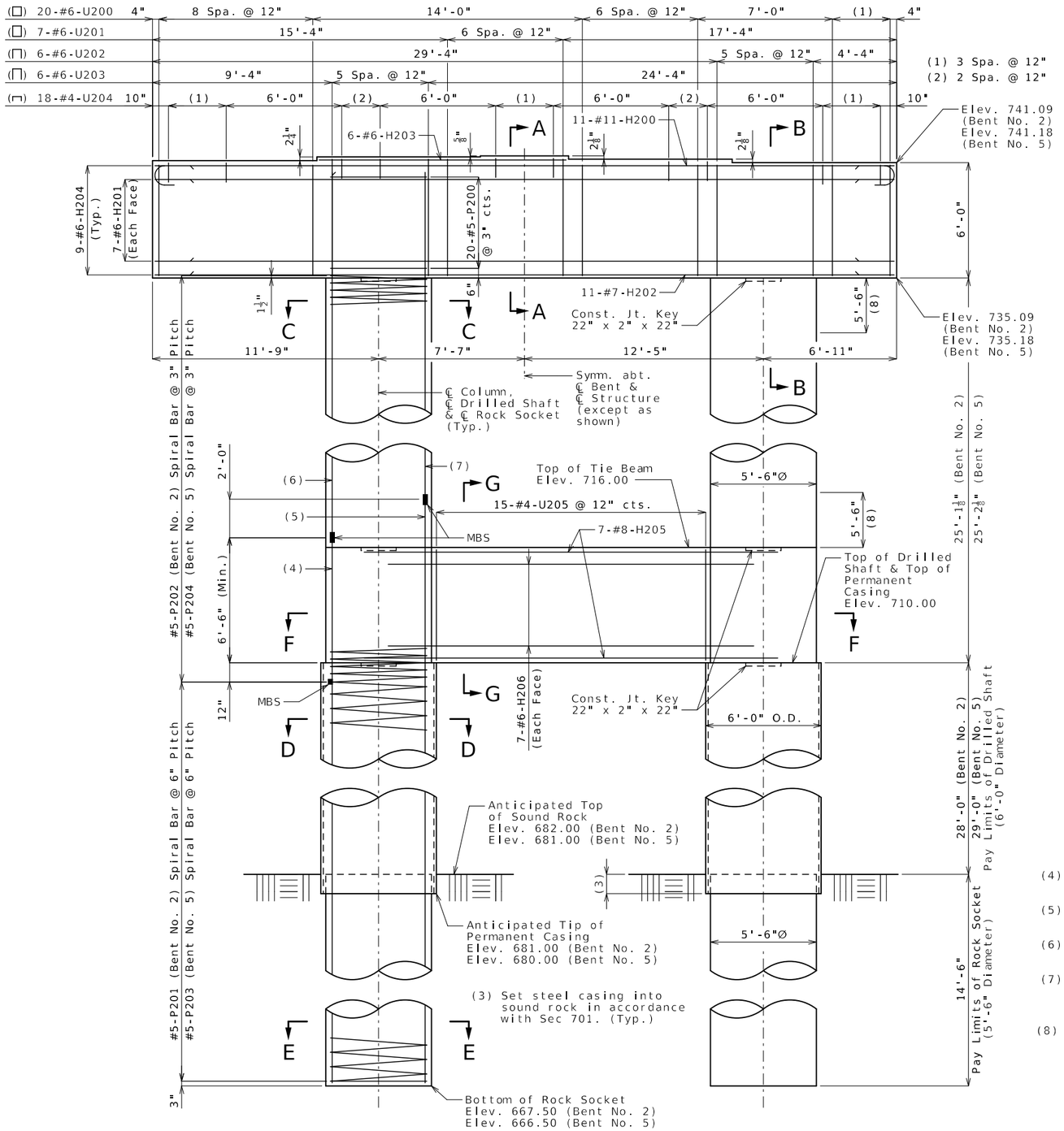
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

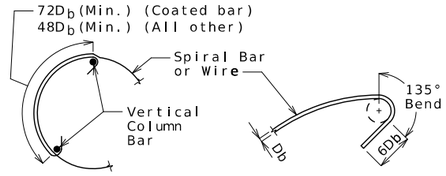
DATE PREPARED: 4/8/2024
ROUTE: 13 | STATE: MO
DISTRICT: BR | SHEET NO.: 7
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338

DESCRIPTION | DATE

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

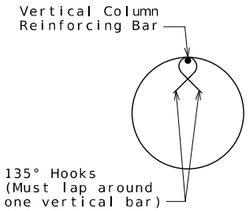


ELEVATION

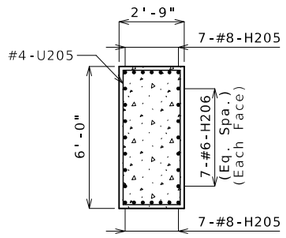


INTERMEDIATE SPLICE OF SPIRALS

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



SEISMIC STIRRUP BAR



SECTION G-G

Substructure Quantity Table for Bents No. 2 & 5

Item		Quantity Bent 2	Quantity Bent 5
Drilled Shafts (6 ft. 0 in. Dia.)	linear foot	56.0	58.0
Rock Sockets (5 ft. 6 in. Dia.)	linear foot	29.0	29.0
Video Camera Inspection	each	2	2
Foundation Inspection Holes	linear foot	49.0	49.0
Sonic Logging Testing	each	2	2
Class B Concrete (Substructure)	cu. yard	106.3	106.5
Reinforcing Steel (Bridges)	pound	34,460	34,800
Mechanical Bar Splice	each	50	50

These quantities are included in the Estimated Quantities table on Sheet No. 3.

(4) 12-#11-V200 (Bent No. 2)
12-#11-V204 (Bent No. 5)

(5) 12-#11-V201 (Bent No. 2)
12-#11-V205 (Bent No. 5)

(6) 12-#11-V202 (Bent No. 2)
12-#11-V206 (Bent No. 5)

(7) 12-#11-V203 (Bent No. 2)
12-#11-V207 (Bent No. 5)

(8) Lapping of spirals not permitted in these regions. If unavoidable, a mechanical bar splice (MBS) will be required, and no additional payment will be made for these MBS.

Notes:

Work this sheet with Sheet No. 9.

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

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

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

All reinforcement in drilled shaft and rock socket is included in the substructure quantities.

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

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

Mechanical Bar Splices (MBS) shall be required in lieu of lapping of V-bars. MBS locations shall be staggered at least 2'-0" on adjacent bars.

MBS at any location shall be capable of developing 125% of the specified minimum yield stress of the connected bars.

INTERMEDIATE BENTS NO. 2 & 5

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
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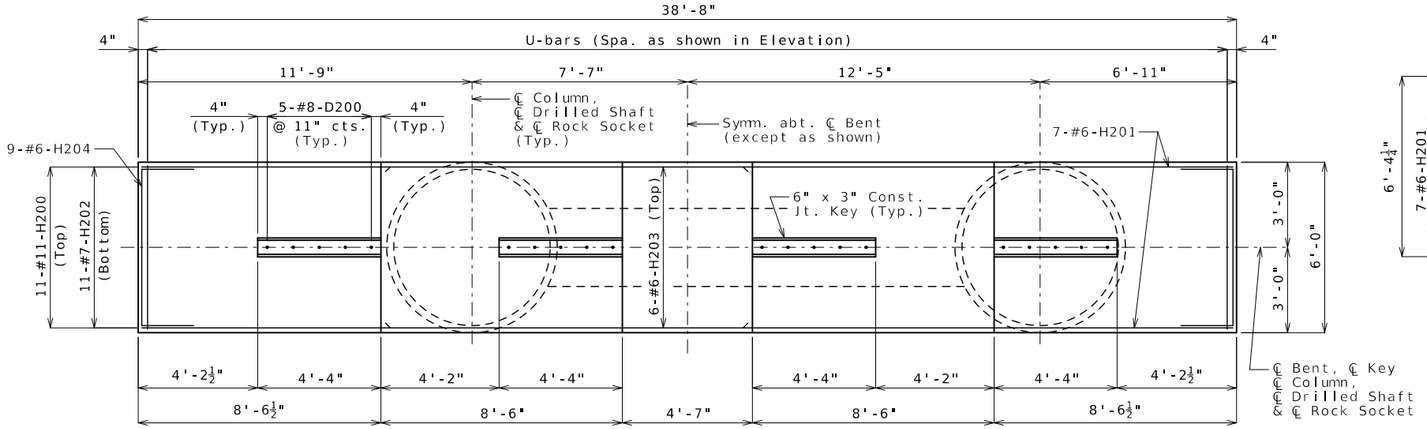
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

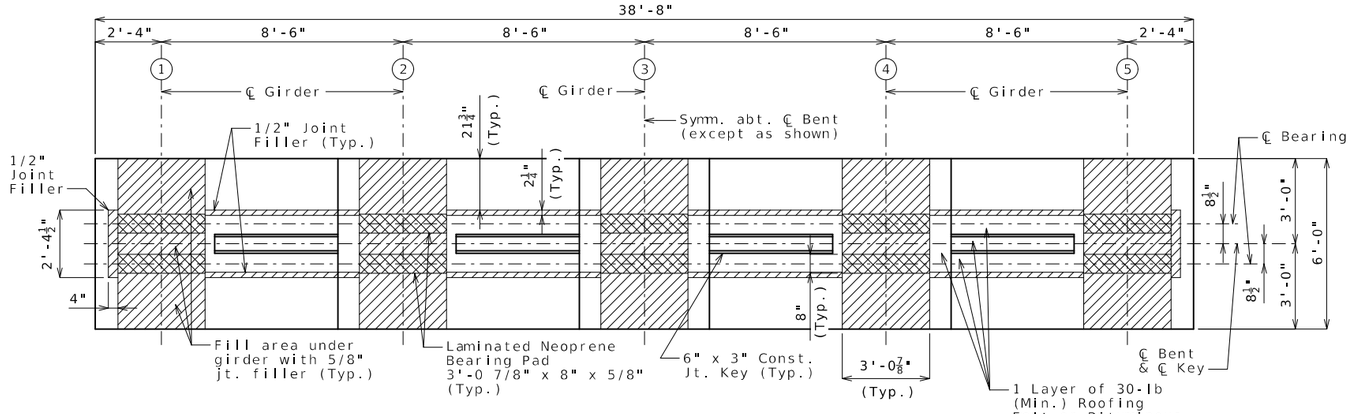
DATE PREPARED 4/8/2024
ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9338

DESCRIPTION | DATE

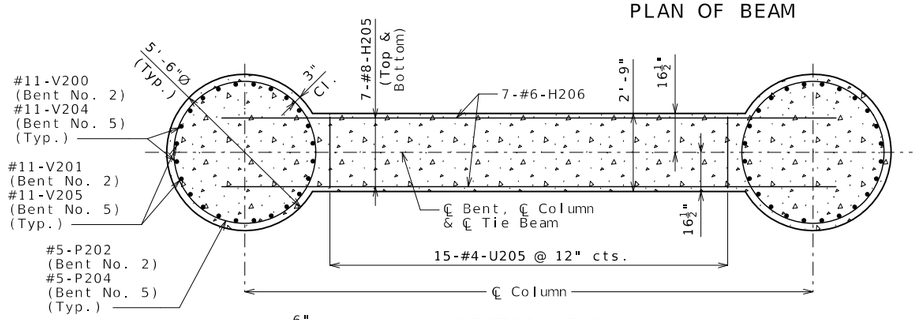
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



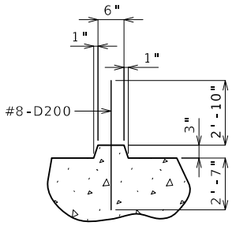
PLAN OF BEAM SHOWING REINFORCEMENT



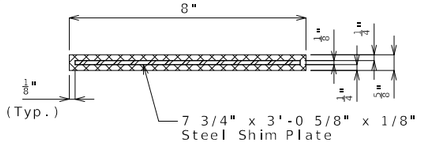
PLAN OF BEAM



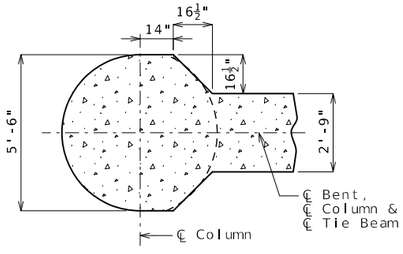
SECTION F-F



SECTION THRU KEY

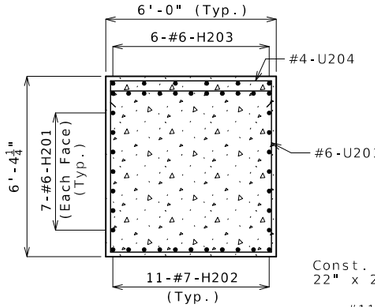


TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD

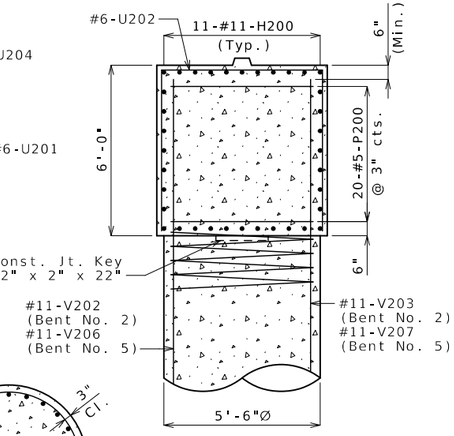


OPTIONAL PART SECTION F-F

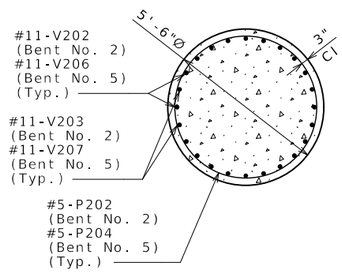
Note: At the contractor's option, the details shown in Optional Part Section G-G may be used for column-tie beam. No additional payment will be made for this substitution.



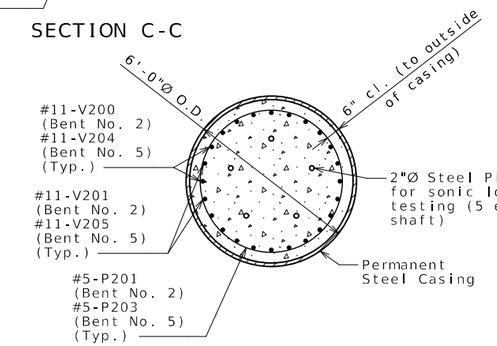
SECTION A-A



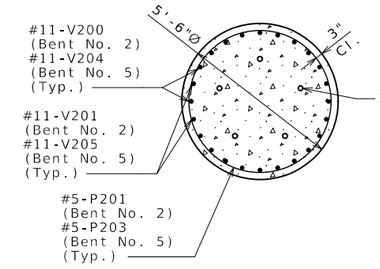
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

Notes:

Work this sheet with Sheet No. 8.

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

INTERMEDIATE BENTS NO. 2 & 5

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:19:43 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	9

COUNTY HENRY

JOB NO. J7P3484C

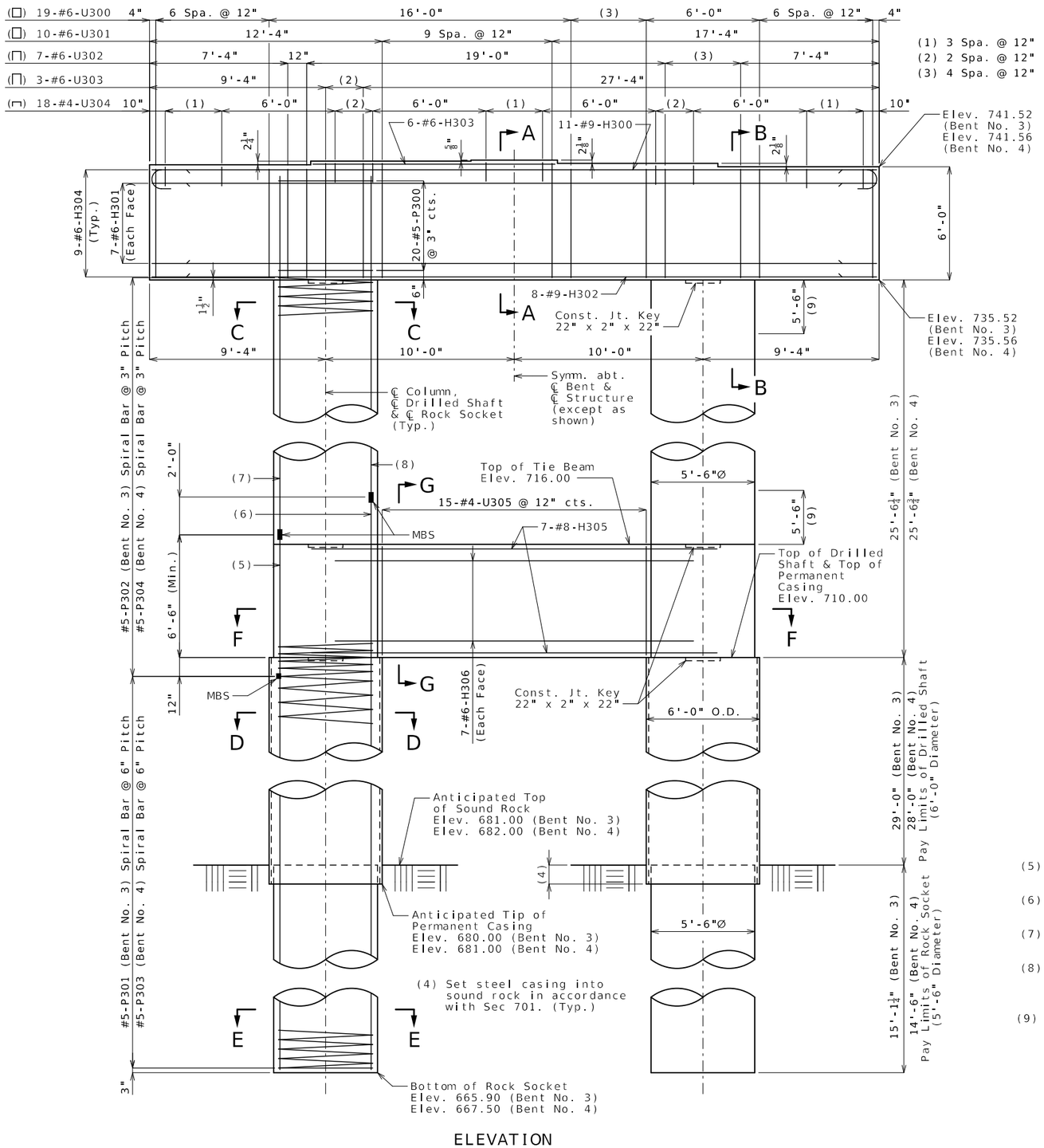
CONTRACT ID.

PROJECT NO.

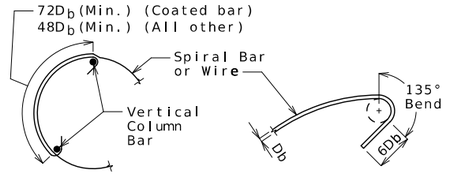
BRIDGE NO. A9338

DESCRIPTION | DATE

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

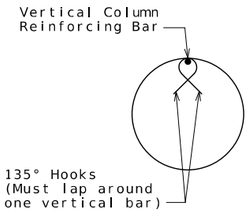


ELEVATION

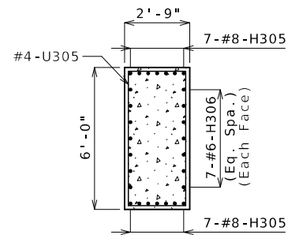


INTERMEDIATE SPLICE OF SPIRALS

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



SEISMIC STIRRUP BAR



SECTION G-G

Substructure Quantity Table for Bents No. 3 & 4

Item		Quantity	
		Bent 3	Bent 4
Drilled Shafts (6 ft. 0 in. Dia.)	linear foot	58.0	56.0
Rock Sockets (5 ft. 6 in. Dia.)	linear foot	30.2	29.0
Video Camera Inspection	each	2	2
Foundation Inspection Holes	linear foot	50.2	49.0
Sonic Logging Testing	each	2	2
Class B Concrete (Substructure)	cu. yard	107.1	107.1
Reinforcing Steel (Bridges)	pound	34,430	33,930
Mechanical Bar Splice	each	50	50

These quantities are included in the Estimated Quantities table on Sheet No. 3.

(5) 12-#11-V300 (Bent No. 3)
12-#11-V304 (Bent No. 4)

(6) 12-#11-V301 (Bent No. 3)
12-#11-V305 (Bent No. 4)

(7) 12-#11-V302 (Bent No. 3)
12-#11-V306 (Bent No. 4)

(8) 12-#11-V303 (Bent No. 3)
12-#11-V307 (Bent No. 4)

(9) Lapping of spirals not permitted in these regions. If unavoidable, a mechanical bar splice (MBS) will be required, and no additional payment will be made for these MBS.

Notes:

Work this sheet with Sheet No. 11.

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

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

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

All reinforcement in drilled shaft and rock socket is included in the substructure quantities.

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

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

Mechanical Bar Splices (MBS) shall be required in lieu of lapping of V-bars. MBS locations shall be staggered at least 2'-0" on adjacent bars.

MBS at any location shall be capable of developing 125% of the specified minimum yield stress of the connected bars.

INTERMEDIATE BENTS NO. 3 & 4

Detailed Feb. 2024
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TIMOTHY D. LEAF
NUMBER PE-2012000778
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MO-PE-2012000778

DATE PREPARED 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	10

COUNTY HENRY

JOB NO. J7P3484C

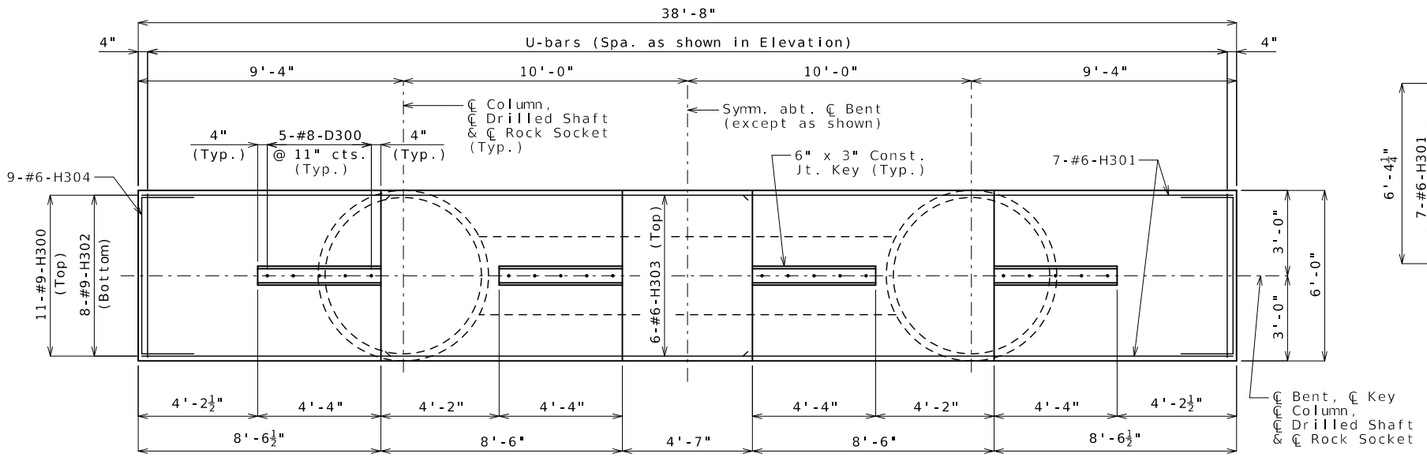
CONTRACT ID.

PROJECT NO.

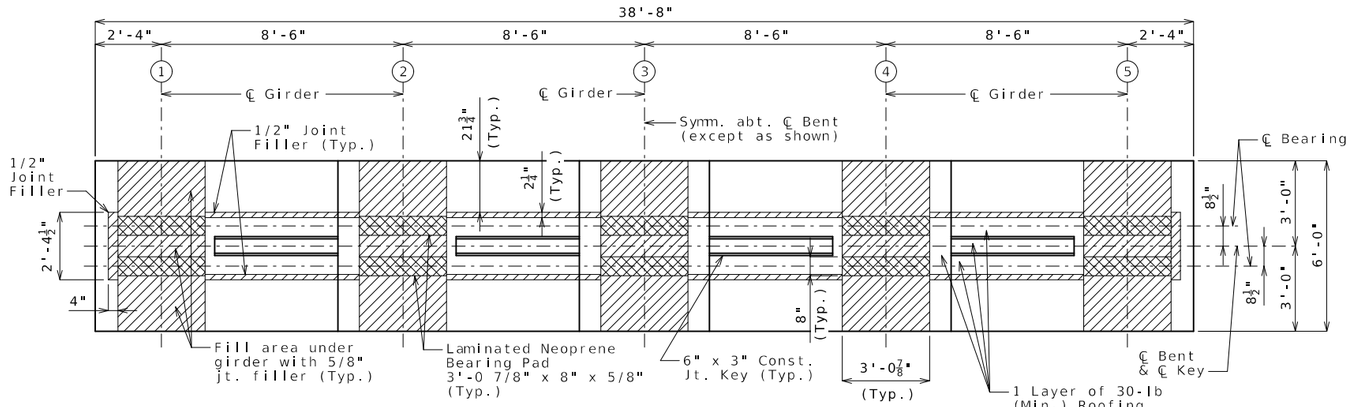
BRIDGE NO. A9338

DESCRIPTION	DATE

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

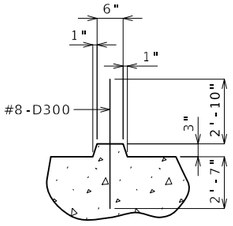


PLAN OF BEAM SHOWING REINFORCEMENT

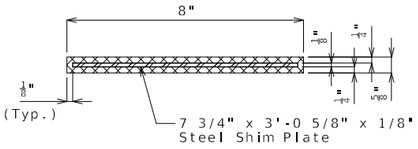


PLAN OF BEAM

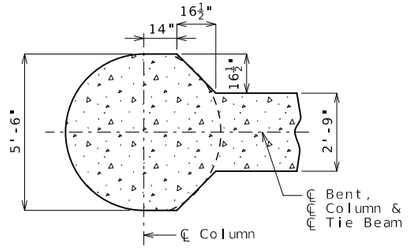
SECTION F-F



SECTION THRU KEY

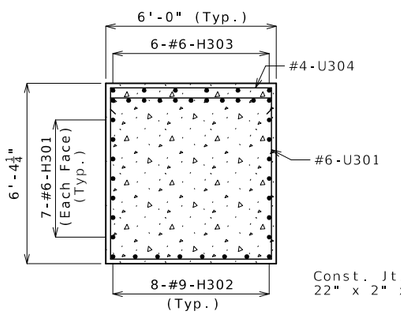


TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD

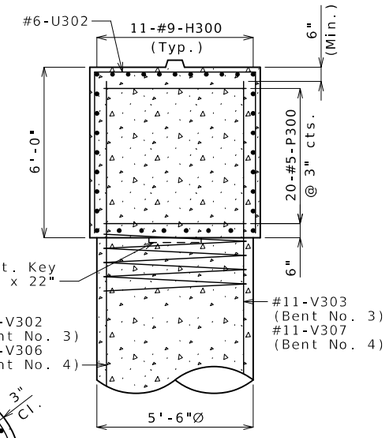


OPTIONAL PART SECTION F-F

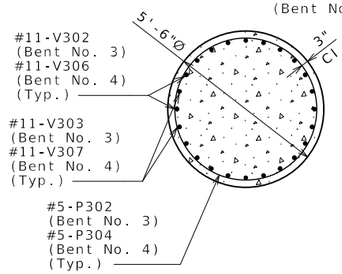
Note: At the contractor's option, the details shown in Optional Part Section G-G may be used for column-tie beam. No additional payment will be made for this substitution.



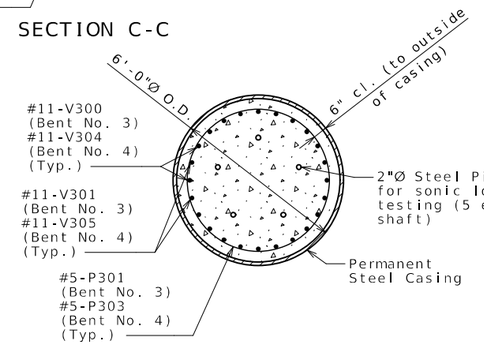
SECTION A-A



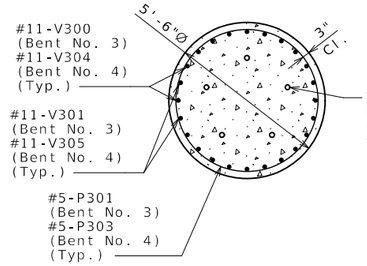
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

Note: Work this sheet with Sheet No. 10.

INTERMEDIATE BENTS NO. 3 & 4

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:20:21 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

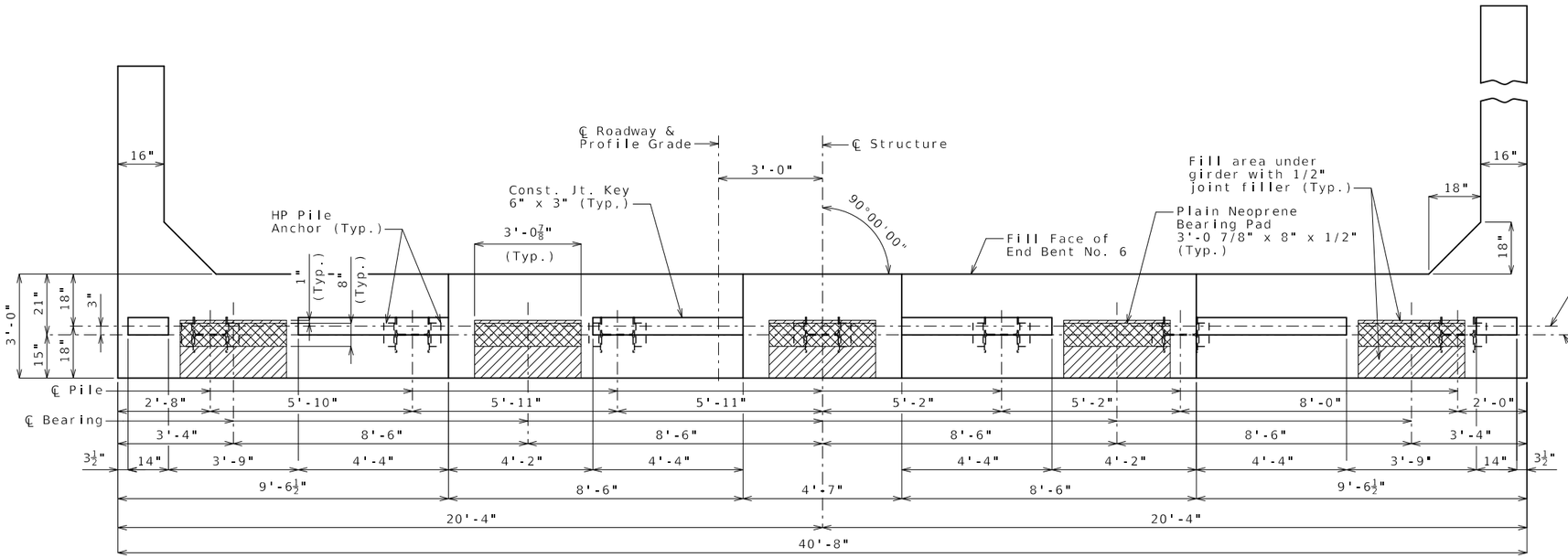
DATE PREPARED: 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	11

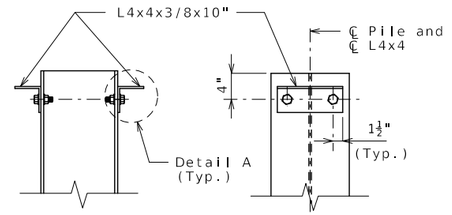
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338

DESCRIPTION | DATE

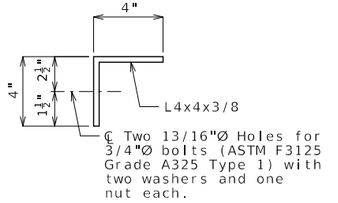
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PLAN OF BEAM

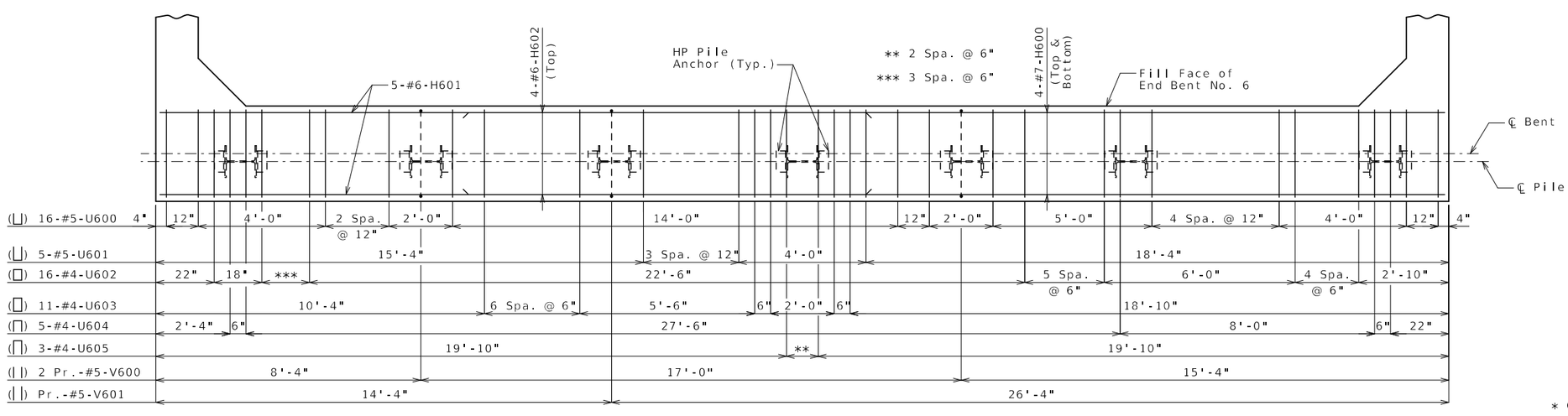


DETAILS OF HP PILE ANCHORS



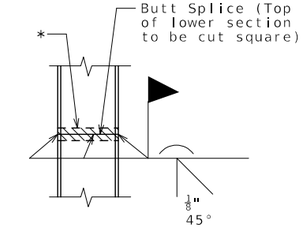
DETAIL A

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.



PLAN OF BEAM SHOWING REINFORCEMENT

(Steps & keys not shown for clarity)



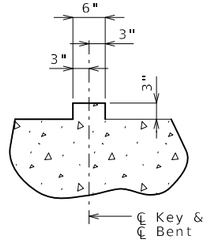
STEEL PILE SPLICE

(If required)

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

Substructure Quantity Table for Bent No. 6		
Item		Quantity
Class 1 Excavation	cu. yard	60
Temporary Shoring	lump sum	1
Galvanized Structural Steel Piles (12 in.)	linear foot	420
Pile Point Reinforcement	each	7
Class B Concrete (Substructure)	cu. yard	23.8

These quantities are included in the Estimated Quantities table on Sheet No. 3.



SECTION THRU KEY

Notes:

Work this sheet with Sheets No. 13 & 14.

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

The U bars and pairs V bars shall be placed parallel to centerline of roadway.

For details of vertical drain at end bent, see Sheet No. 7.

END BENT NO. 6

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
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TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
HENRY

JOB NO.
J7P3484C

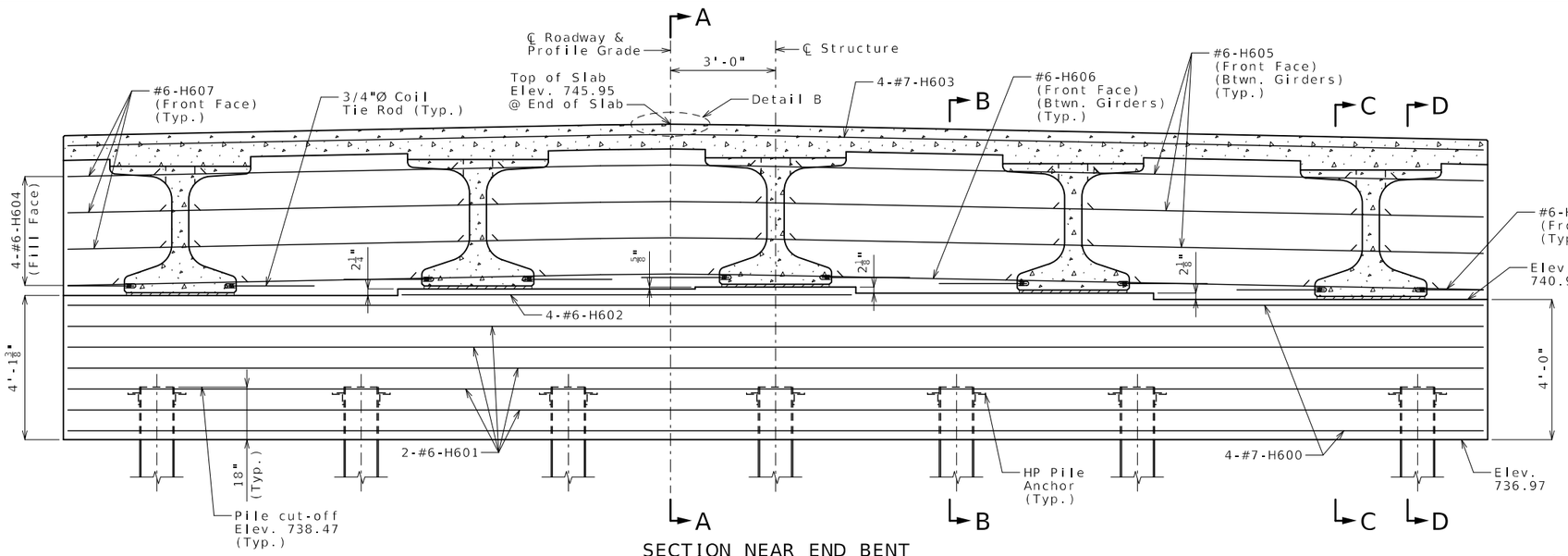
CONTRACT ID.

PROJECT NO.

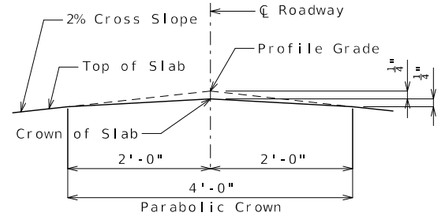
BRIDGE NO.
A9338

DATE	DESCRIPTION

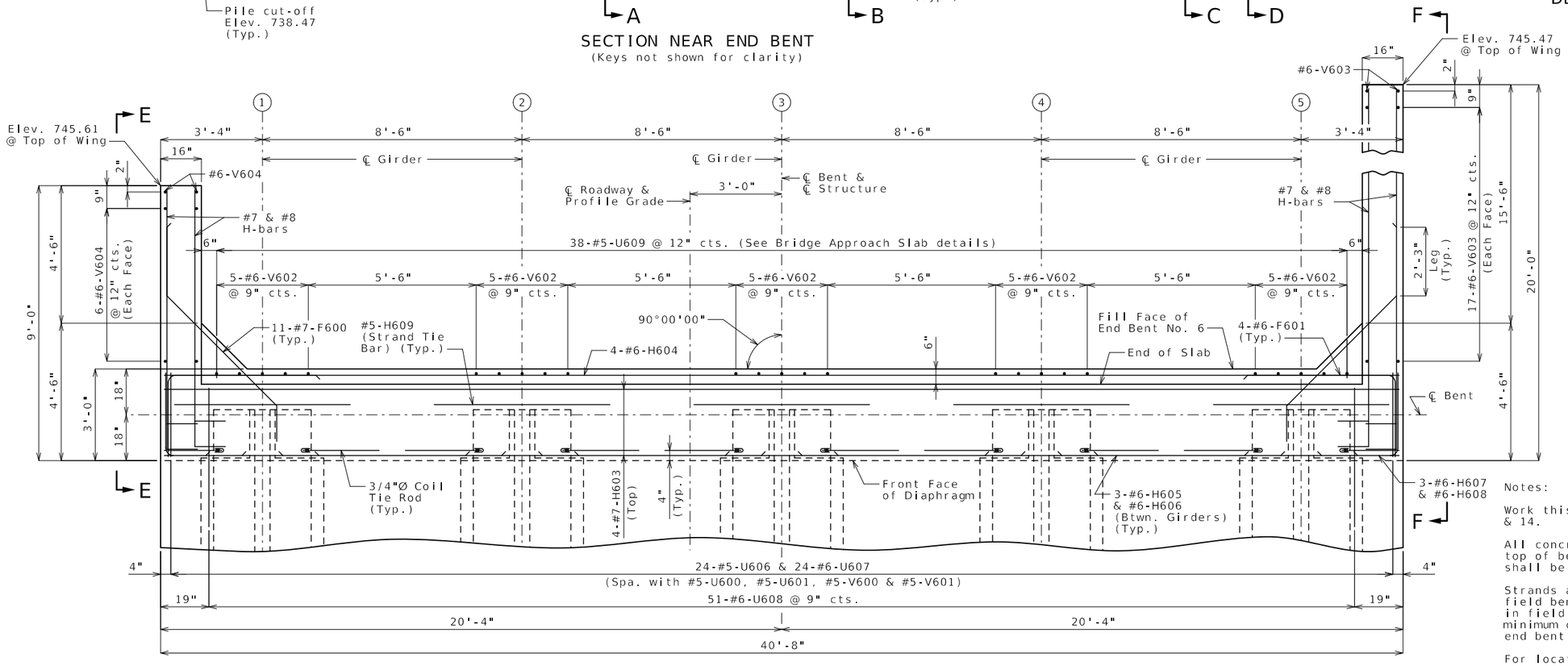
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION NEAR END BENT
(Keys not shown for clarity)



DETAIL B



PART PLAN

END BENT NO. 6

Notes:

Work this sheet with Sheets No. 12 & 14.

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 Ties & #5-H609 (Strand Tie Bars), see Sheets No. 15 & 16.

The U bars shall be placed parallel to ℄ Roadway.

The #6-F600 bars shall be bent in field to clear girders.

For details of bridge approach slab, see Sheet No. 27.

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:20:57 AM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	13

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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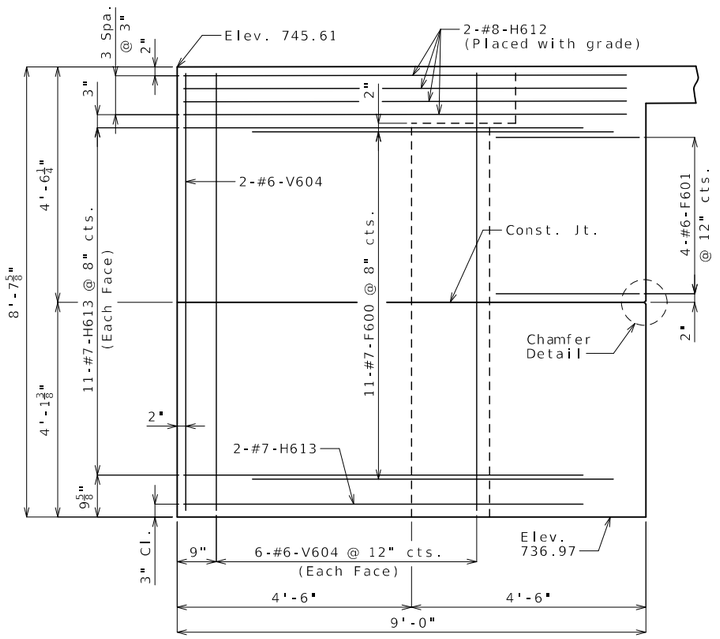
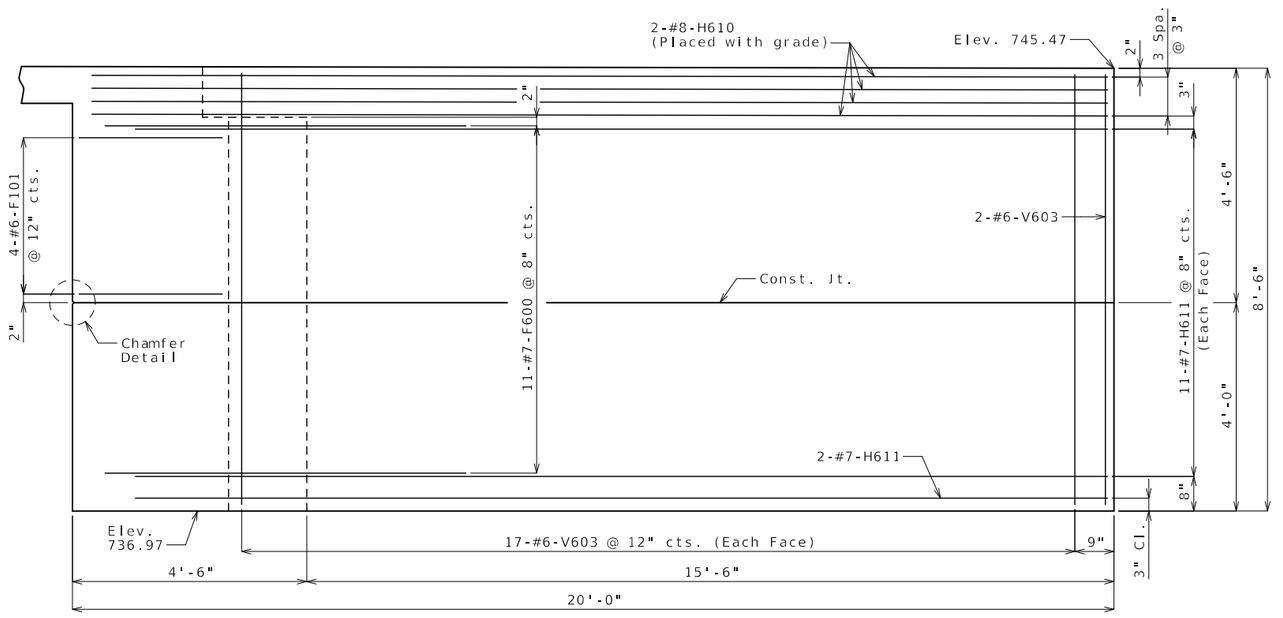
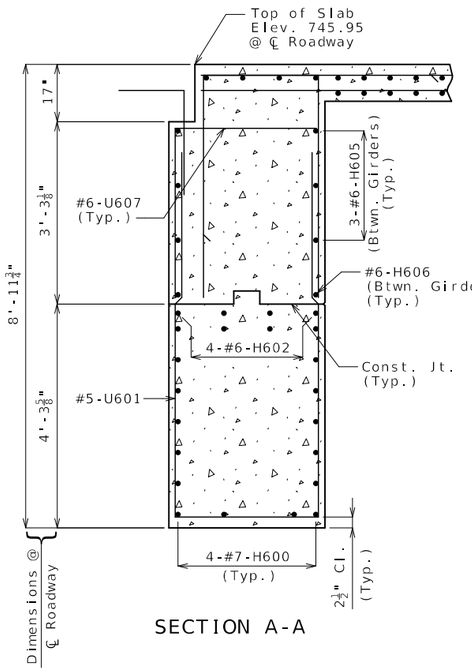


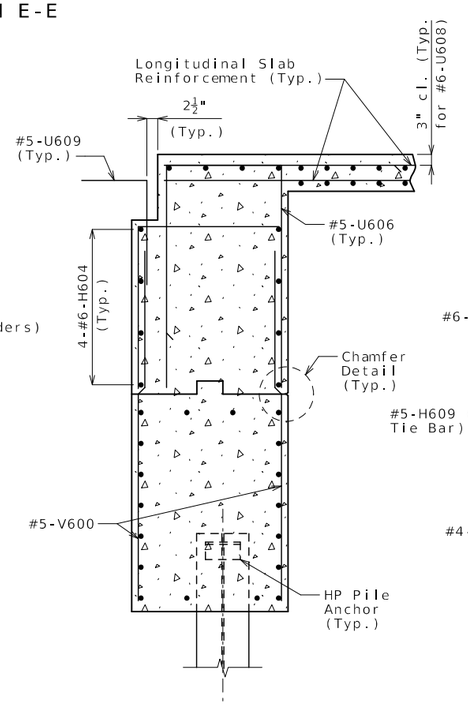
ELEVATION E-E



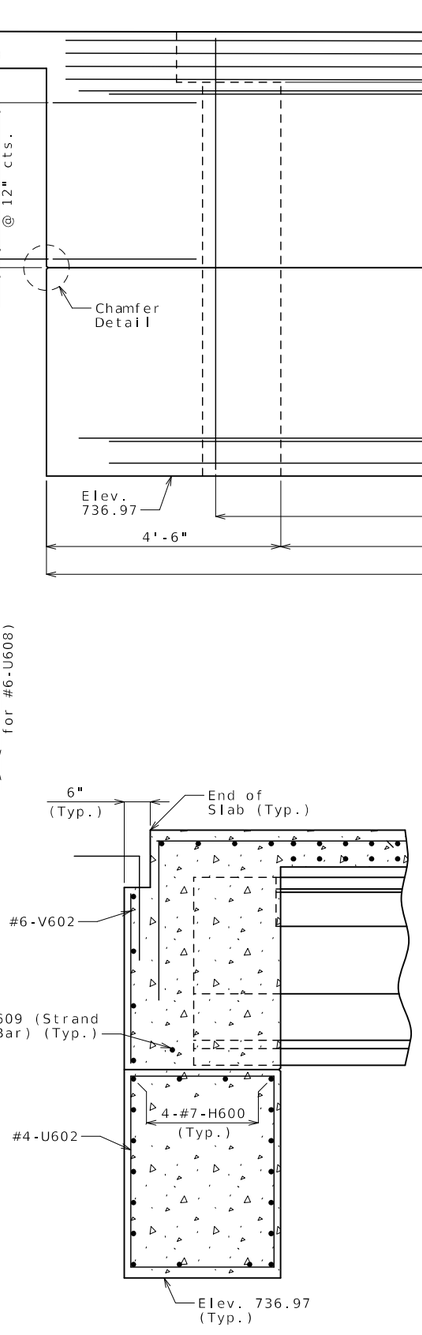
ELEVATION F-F



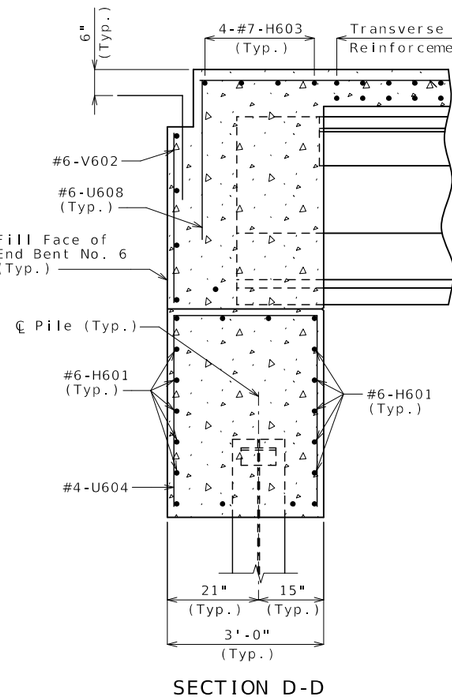
SECTION A-A



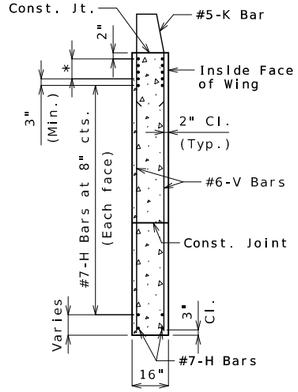
SECTION B-B



SECTION C-C

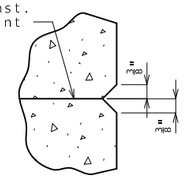


SECTION D-D



TYPICAL SECTION THRU WING

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



CHAMFER DETAIL

Notes:

Work this sheet with Sheets No. 12 & 13.

For reinforcement of the barrier, see Sheets No. 24 & 26.

END BENT NO. 6

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:13:05 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	14

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

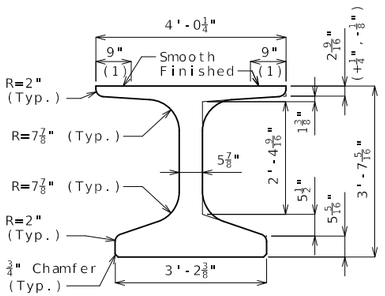
BRIDGE NO.
A9338

DESCRIPTION

DATE

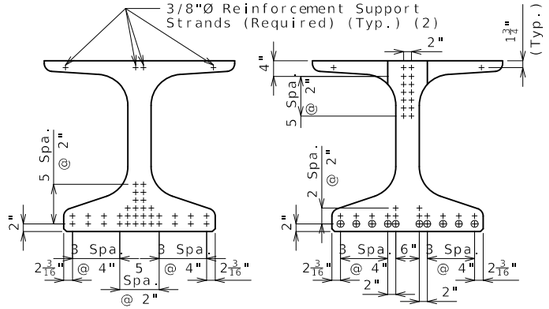
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

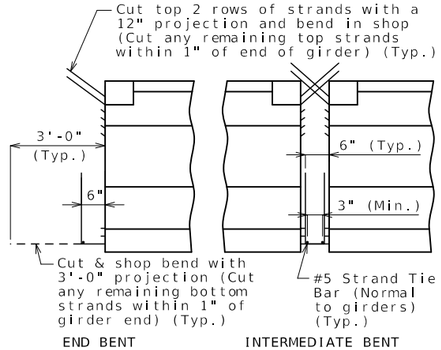


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

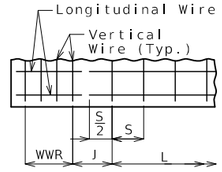
\+ Indicates prestressing strand.

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



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

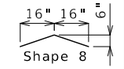
J = Distance between WWR mats

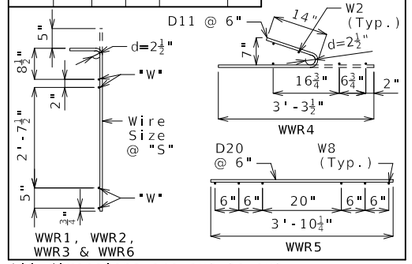
Bill of Reinforcing Steel

Bars Each Girder				
No.	Size/Mark		Length	Shape
120	3	G1	2'-10"	8
2	4	G3	3'-10"	20

Welded Wire Each Girder						
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	12'-8"	12"
WWR2	D31	12"	W12	12'-0"	20"
WWR3	D31	20"	W12	40'-0"	--
WWR6	D31	2"	W12	16"	3"

Bending Diagrams





All dimensions are out to out.

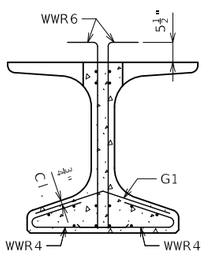
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

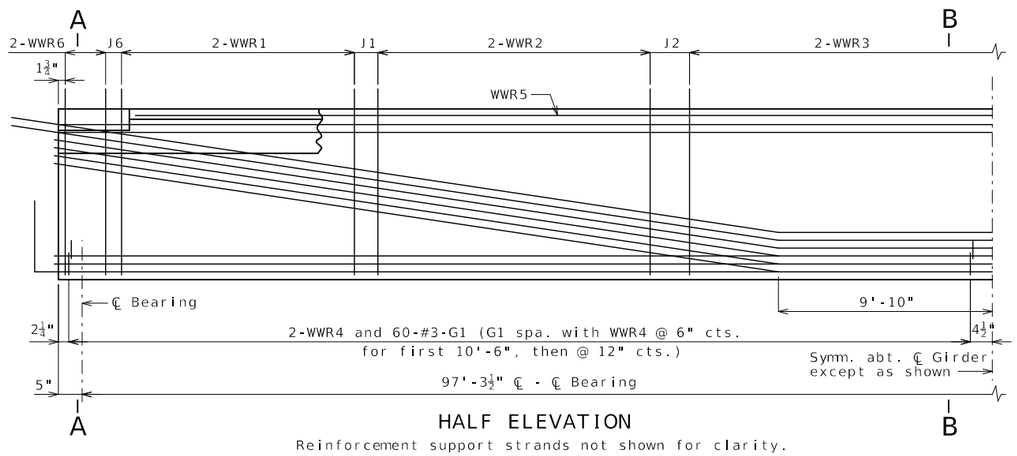
All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.



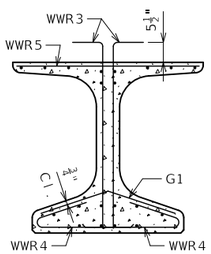
SECTION A-A

Strands not shown for clarity.



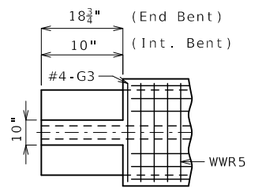
HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

Strands not shown for clarity.



TOP FLANGE BLOCKOUT

General Notes:

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

Use 34 strands, 0.6"Ø Grade 270, with an initial prestress force of 1494 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 and coil inserts for slab drains.

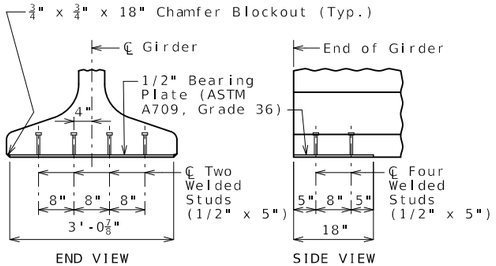
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

For location of coil inserts at slab drains, see Sheet No. 20.

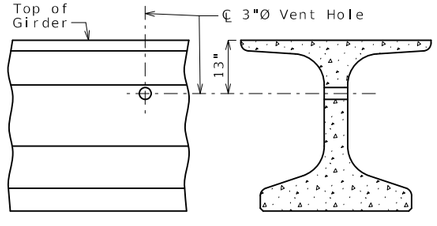
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 5, 13 and 19.

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.



END VIEW SIDE VIEW

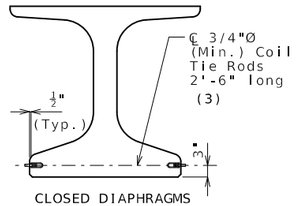
BEARING PLATE



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.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 21" at exterior face of exterior girders at end bents

NU-GIRDERS - SPANS (1-2) AND (5-6)

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:21:17 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	15

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

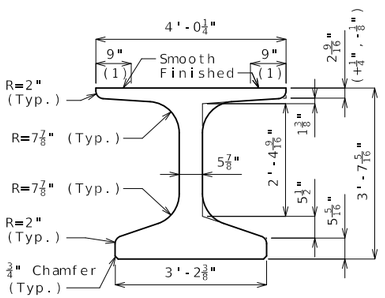
PROJECT NO.

BRIDGE NO.
A9338

DATE	DESCRIPTION

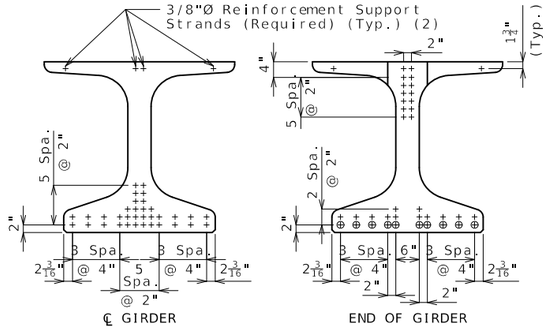
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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



DIMENSIONS

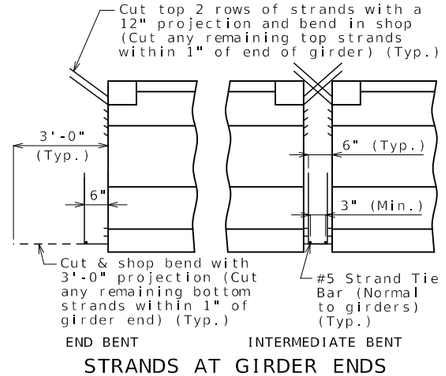
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



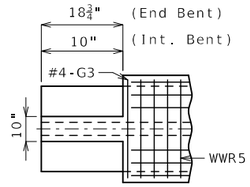
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

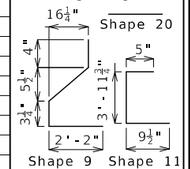


STRANDS AT GIRDER ENDS

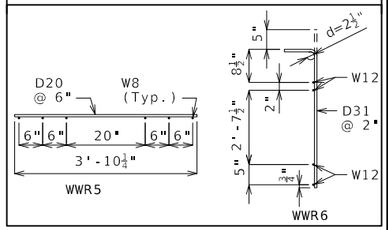


TOP FLANGE BLOCKOUT

Bill of Reinforcing Steel - Each Girder				
No.	Size/ Mark	Length	Shape	Bending Diagrams
202	5 B1	5'-0"	11	
222	4 D1	4'-0"	9	
2	4 G3	3'-10"	20	



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

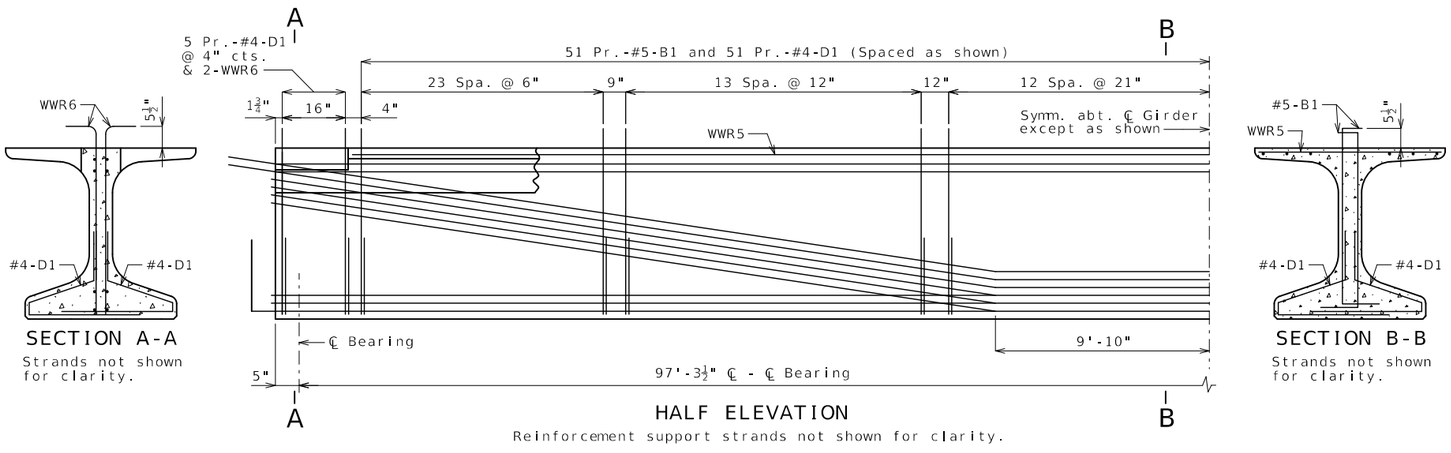
Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1".

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.



SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

General Notes:

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

Use 34 strands, 0.6"Ø Grade 270, with an initial prestress force of 1494 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 and coil inserts for slab drains.

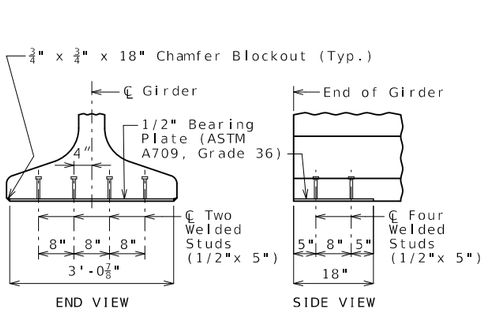
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

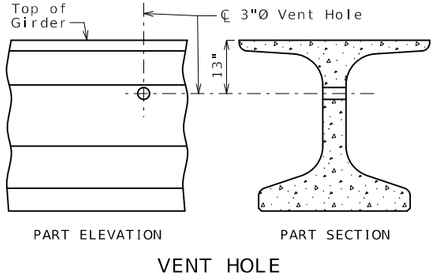
For location of coil inserts at slab drains, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 5, 13 and 19.

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.

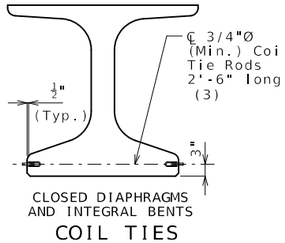


BEARING PLATE



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.



COIL TIES

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

(3) 21" at exterior face of exterior girders at end bents

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (1-2) AND (5-6)

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

Detailed Feb. 2024
Checked Feb. 2024

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:13:42 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED: 4/9/2024

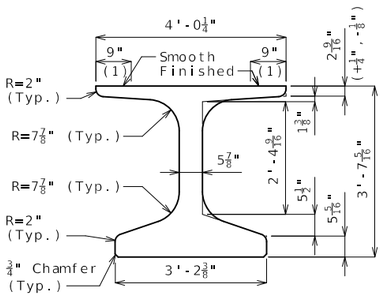
ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	16

COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338

DESCRIPTION	DATE

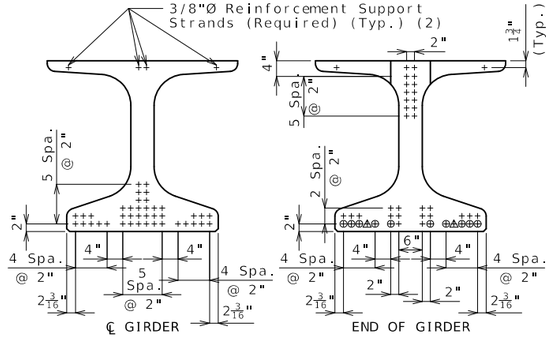
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

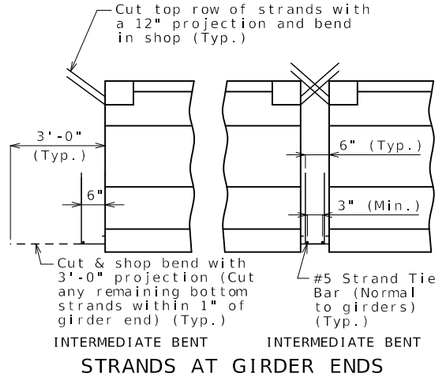


STRAND ARRANGEMENT

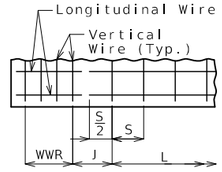
\+ Indicates prestressing strand.

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

△ Indicates debonded for 4'-0" from end of girder



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

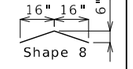
Bars Each Girder

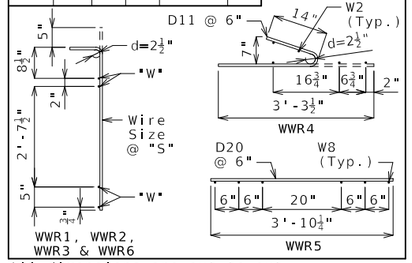
No.	Size/Mark	Length	Shape
132	3 G1	2'-10"	8
2	4 G3	3'-10"	20

Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	13'-0"	5"
WWR2	D31	12"	W12	14'-0"	12"
WWR3	D31	20"	W12	50'-0"	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams





All dimensions are out to out.

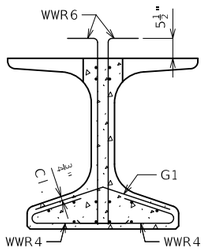
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

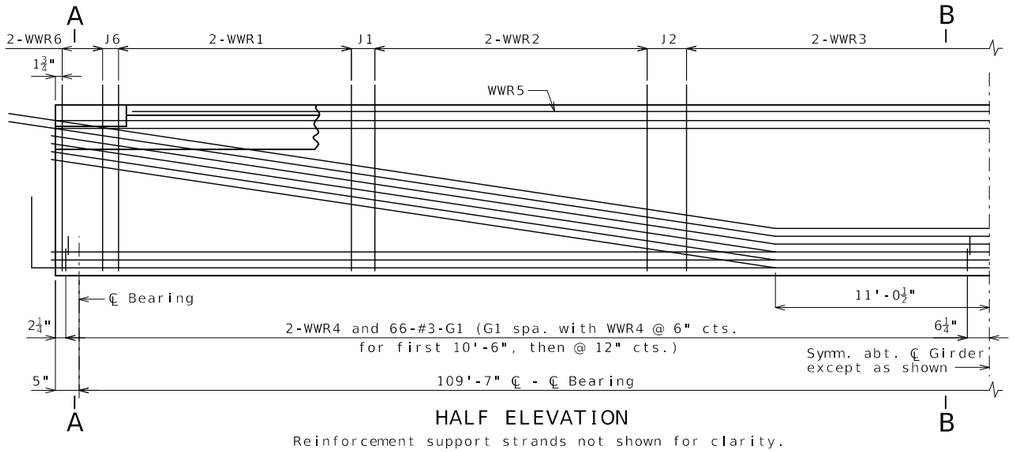
All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.



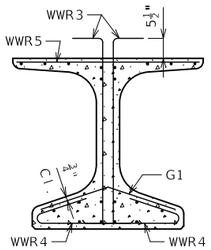
SECTION A-A

Strands not shown for clarity.



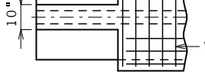
HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

Strands not shown for clarity.



TOP FLANGE BLOCKOUT

(3) 10" (Bents No. 2 & 3 back, Bents No. 4 & 5 ahead)

10⅛" (Bent No. 3 ahead, Bent No. 4 back)

10¼" (Bent No. 2 ahead, Bent No. 5 back)

General Notes:

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

Use 40 strands, 0.6"Ø Grade 270, with an initial prestress force of 1758 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 and coil inserts for slab drains.

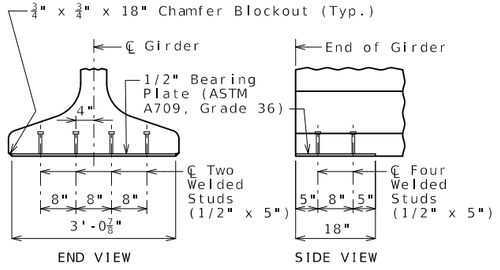
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

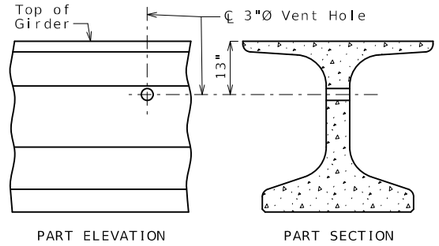
For location of coil inserts at slab drains, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheet No. 19.

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.

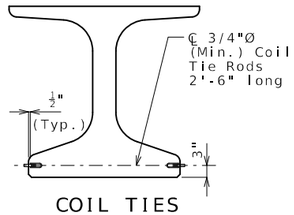


BEARING PLATE



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.



COIL TIES

Exclude coil tie at exterior face of exterior girders.

NU-GIRDERS - SPANS (2-3), (3-4) AND (4-5)

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:22:20 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	17

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

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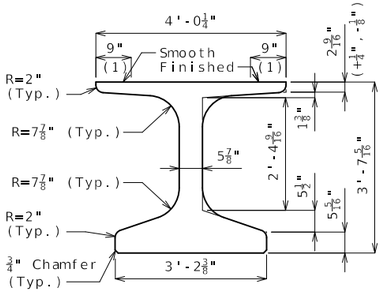
DESCRIPTION

DATE

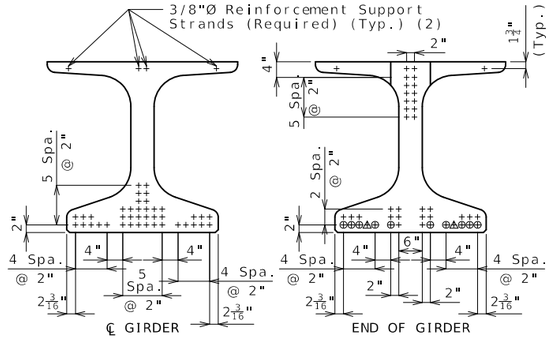
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

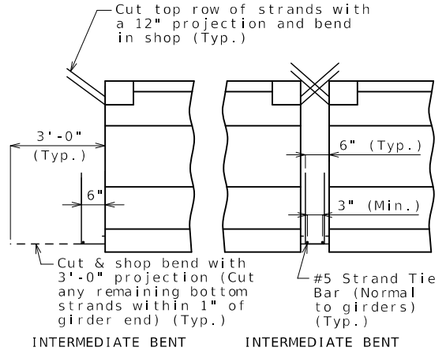


STRAND ARRANGEMENT

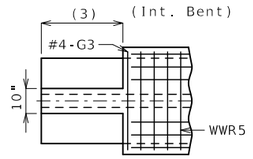
+ Indicates prestressing strand.

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

△ Indicates debonded for 4'-0" from end of girder



STRANDS AT GIRDER ENDS

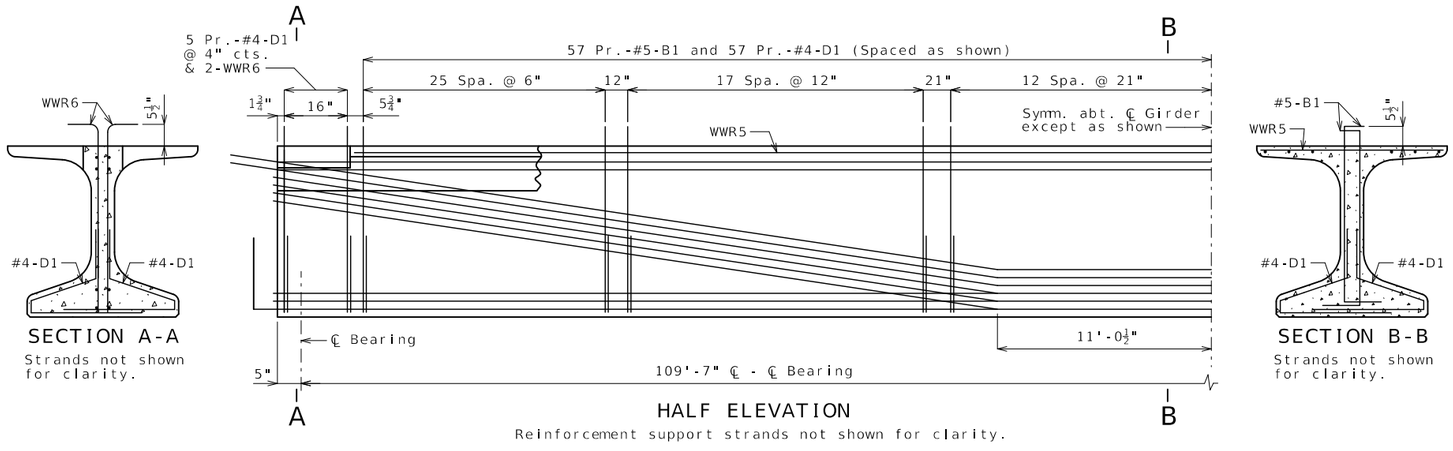


TOP FLANGE BLOCKOUT

(3) 10" (Bents No. 2 & 3 back, Bents No. 4 & 5 ahead)

10⅛" (Bent No. 3 ahead, Bent No. 4 back)

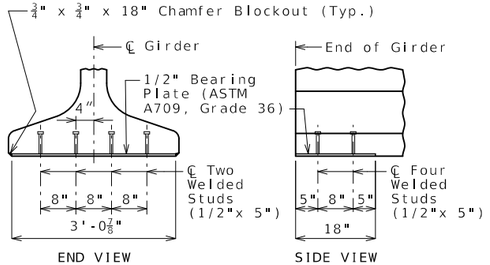
10¼" (Bent No. 2 ahead, Bent No. 5 back)



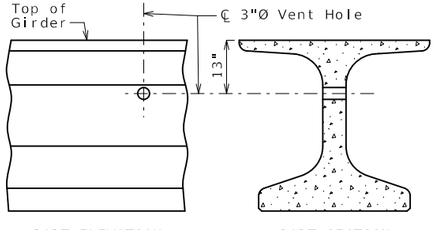
SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

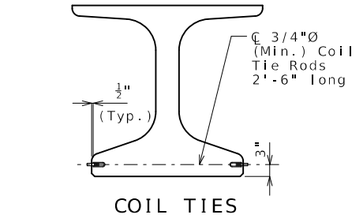
SECTION B-B
Strands not shown for clarity.



BEARING PLATE



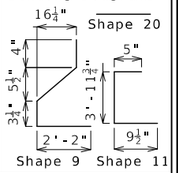
VENT HOLE
Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum.



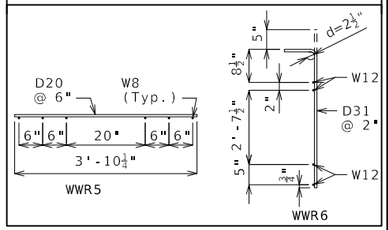
COIL TIES
Exclude coil tie at exterior face of exterior girders.

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
226	5 B1	5'-0"	11
246	4 D1	4'-0"	9
2	4 G3	3'-10"	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 1".

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

General Notes:

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

Use 40 strands, 0.6"Ø Grade 270, with an initial prestress force of 1758 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 and coil inserts for slab drains.

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

For Girder Camber Diagram, see Sheet No. 21.

For location of coil inserts at slab drains, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheet No. 19.

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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ROUTE 13 | STATE MO

DISTRICT BR | SHEET NO. 18

COUNTY HENRY

JOB NO. J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9338

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (2-3), (3-4) AND (4-5)

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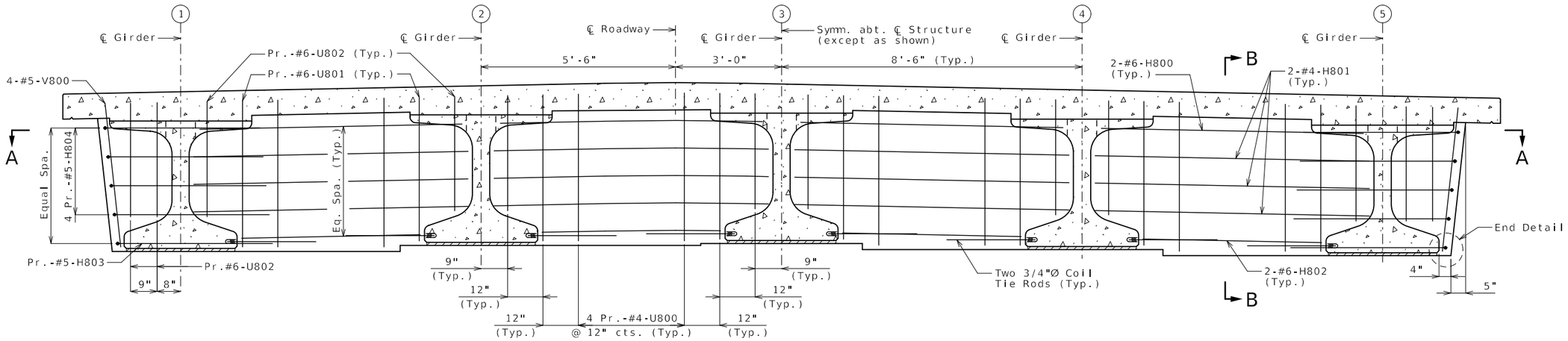
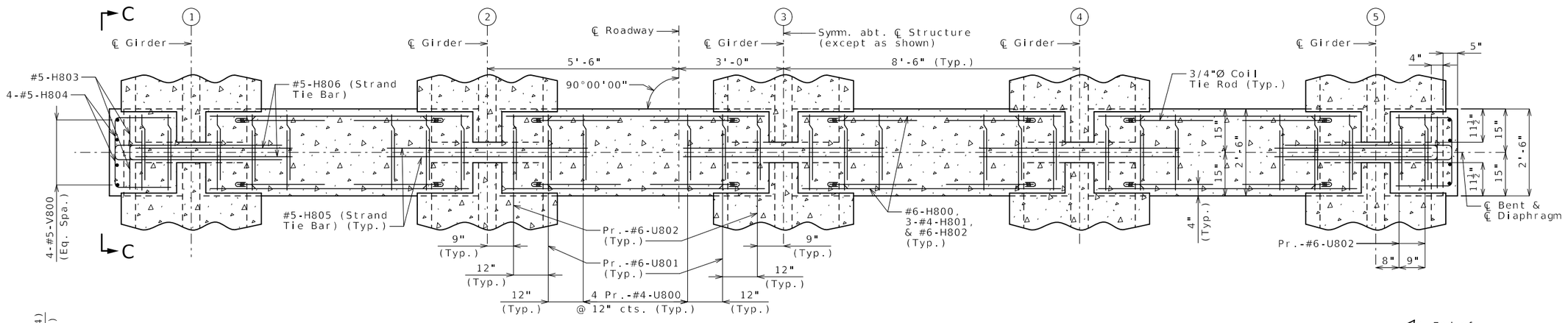
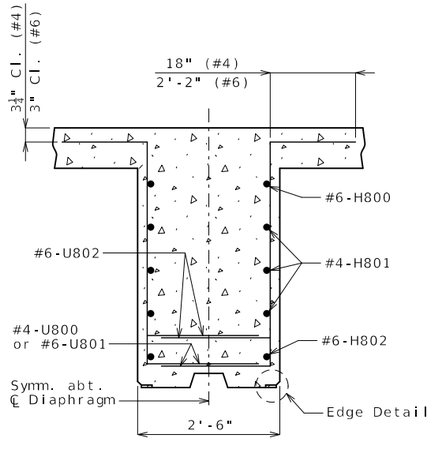
Note: This drawing is not to scale. Follow dimensions.



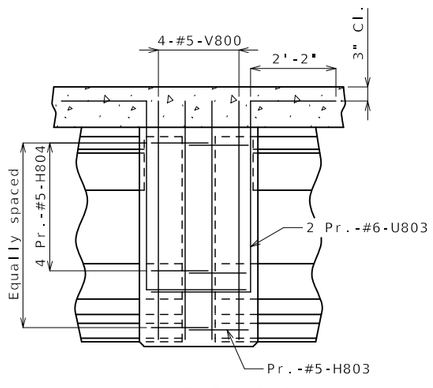
SECTION NEAR INTERMEDIATE BENT



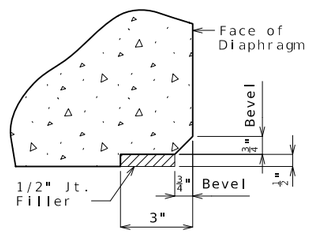
SECTION A-A



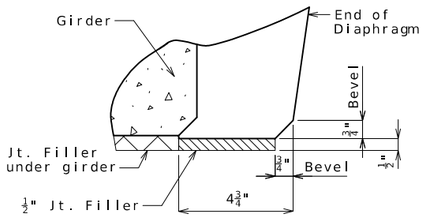
SECTION B-B



ELEVATION C-C



EDGE DETAIL



END DETAIL

Notes:

Diaphragm at intermediate bent shall be built vertical.

For location of #5-H805 & #5-H806 (Strand Tie Bars) and coil tie rods, see Sheets No. 15 thru 18.

All U bars in diaphragm shall be placed parallel to centerline of roadway.

CONCRETE DIAPHRAGM AT INTERMEDIATE BENTS NO. 2 THRU 5

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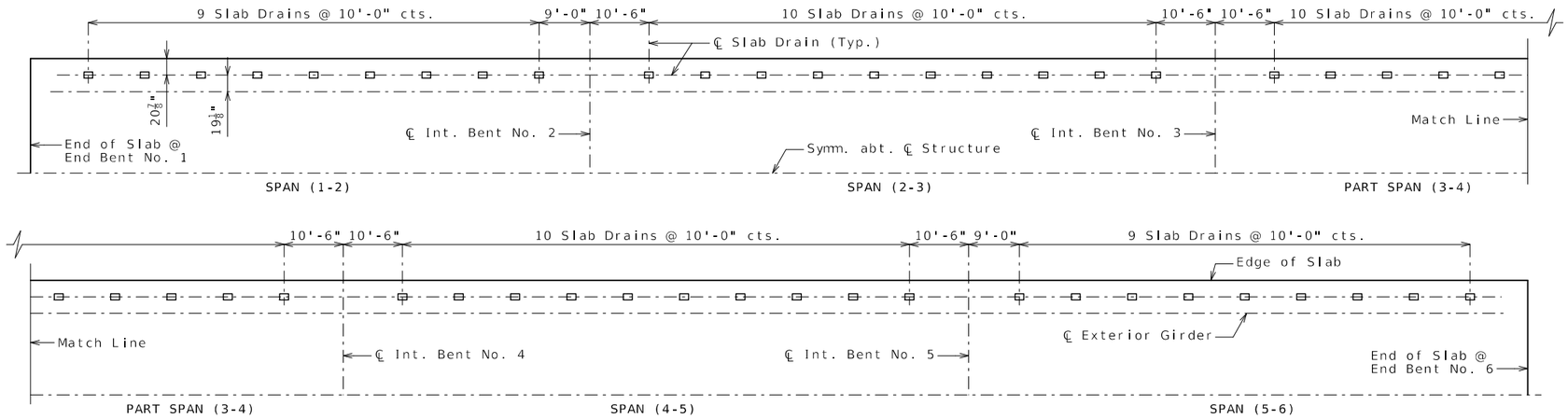
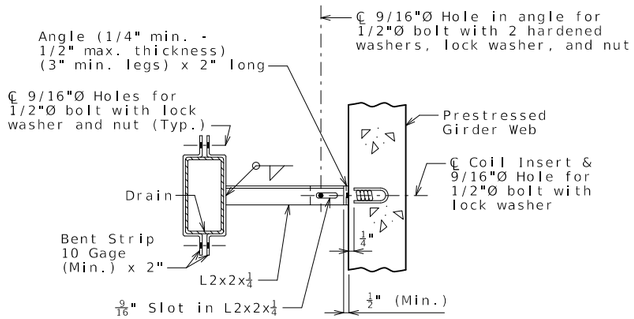
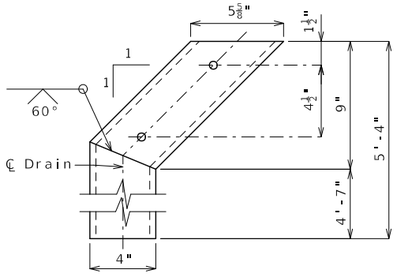


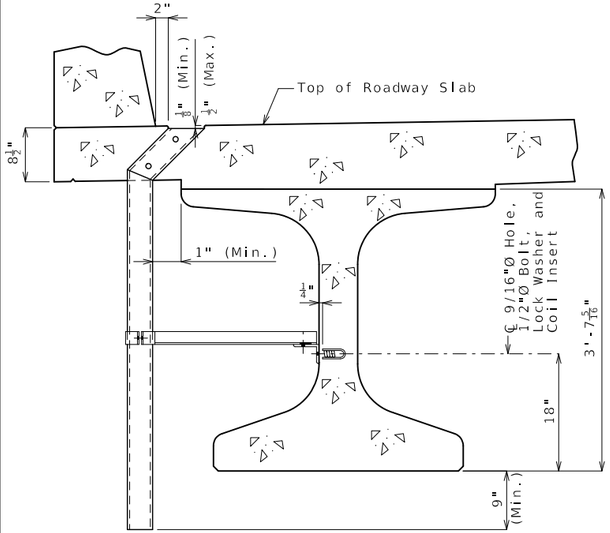
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



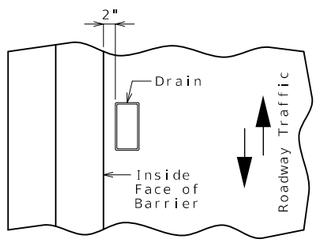
PART SECTION SHOWING BRACKET ASSEMBLY



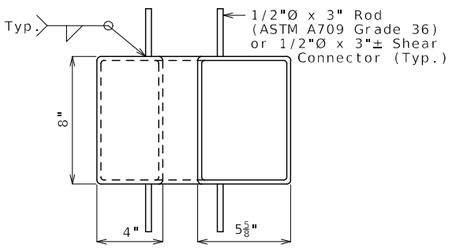
ELEVATION OF DRAIN



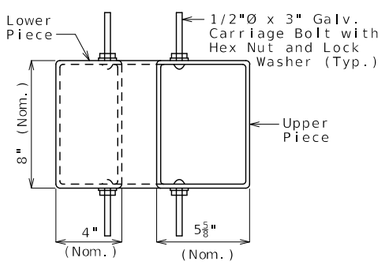
PART SECTION NEAR DRAIN



PART PLAN OF SLAB AT 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 AASHTO M 232 (ASTM A153), Class C.

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.

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PROJECT NO.:
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SLAB DRAINS

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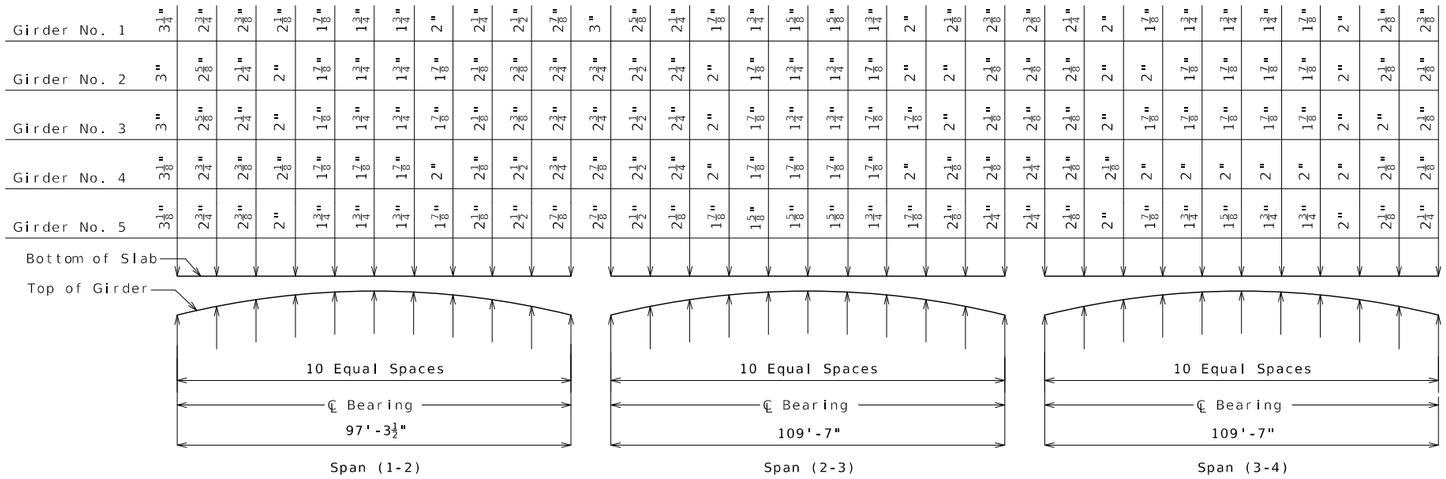
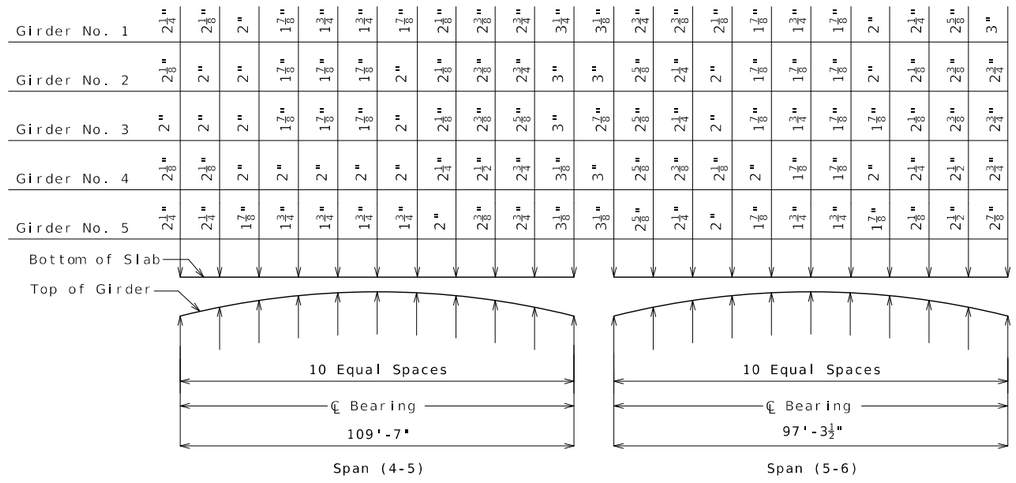
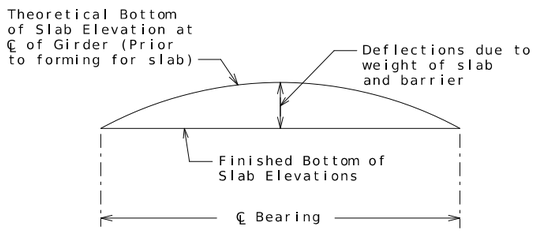




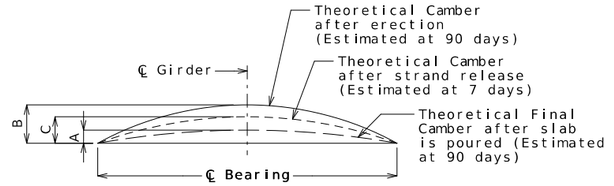
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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.



TYPICAL SLAB ELEVATIONS DIAGRAM



Girder	Spans (1-2) & (5-6)			Spans (2-3), (3-4) & (4-5)		
	A	B	C	A	B	C
Exterior	1"	2⅞"	2"	1¼"	4⅛"	3"
Interior	⅞"			⅞"		

GIRDER CAMBER DIAGRAM

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

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

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

Girder Number	Span (1-2) (97'-3½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	744.83	744.90	744.96	745.02	745.07	745.10	745.12	745.13	745.13	745.12	745.11
2	745.00	745.07	754.14	745.20	745.25	745.29	745.31	745.32	745.31	745.30	745.28
3	745.05	745.12	745.19	745.25	745.30	745.34	745.36	745.37	745.36	745.35	745.33
4	744.88	744.95	745.02	745.08	745.13	745.17	745.19	745.20	745.19	745.18	745.16
5	744.71	744.78	744.84	744.90	744.95	744.98	745.00	745.01	745.01	745.00	744.99
Girder Number	Span (2-3) (109'-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.12	745.23	745.34	745.44	745.51	745.56	745.59	745.60	745.58	745.54	745.49
2	745.29	745.41	745.53	745.63	745.71	745.76	745.79	745.79	745.77	745.72	745.66
3	745.34	745.46	745.58	745.68	745.76	745.81	745.84	745.84	745.82	745.77	745.71
4	745.17	745.29	745.41	745.51	745.59	745.64	745.67	745.67	745.65	745.60	745.54
5	745.00	745.11	745.22	745.32	745.39	745.44	745.47	745.48	745.46	745.42	745.37
Girder Number	Span (3-4) (109'-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.49	745.59	745.68	745.75	745.79	745.81	745.80	745.76	745.70	745.62	745.53
2	745.66	745.77	745.87	745.94	745.99	746.01	745.99	745.95	745.89	745.80	745.70
3	745.71	745.82	745.92	745.99	746.04	746.06	746.04	746.00	745.94	745.85	745.75
4	745.54	745.65	745.75	745.82	745.87	745.89	745.87	745.83	745.77	745.68	745.58
5	745.37	745.47	745.56	745.63	745.67	745.69	745.68	745.64	745.58	745.50	745.41
Girder Number	Span (4-5) (109'-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.53	745.59	745.63	745.66	745.66	745.64	745.59	745.53	745.44	745.34	745.22
2	745.70	745.76	745.82	745.85	745.86	745.84	745.79	745.72	745.62	745.51	745.39
3	745.75	745.81	745.87	745.90	745.91	745.89	745.84	745.77	745.67	745.56	745.44
4	745.58	745.64	745.70	745.73	745.74	745.72	745.67	745.60	745.50	745.39	745.27
5	745.41	745.47	745.51	745.54	745.54	745.52	745.47	745.41	745.32	745.22	745.10
Girder Number	Span (5-6) (97'-3½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.22	745.24	745.25	745.26	745.26	745.24	745.21	745.17	745.11	745.05	744.98
2	745.39	745.41	745.43	745.44	745.44	745.43	745.40	745.35	745.29	745.22	745.15
3	745.44	745.46	745.48	745.49	745.49	745.48	745.45	745.40	745.34	745.27	745.20
4	745.27	745.29	745.31	745.32	745.32	745.31	745.28	745.23	745.17	745.10	745.03
5	745.10	745.12	745.13	745.14	745.14	745.12	745.09	745.05	744.99	744.93	744.86

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.

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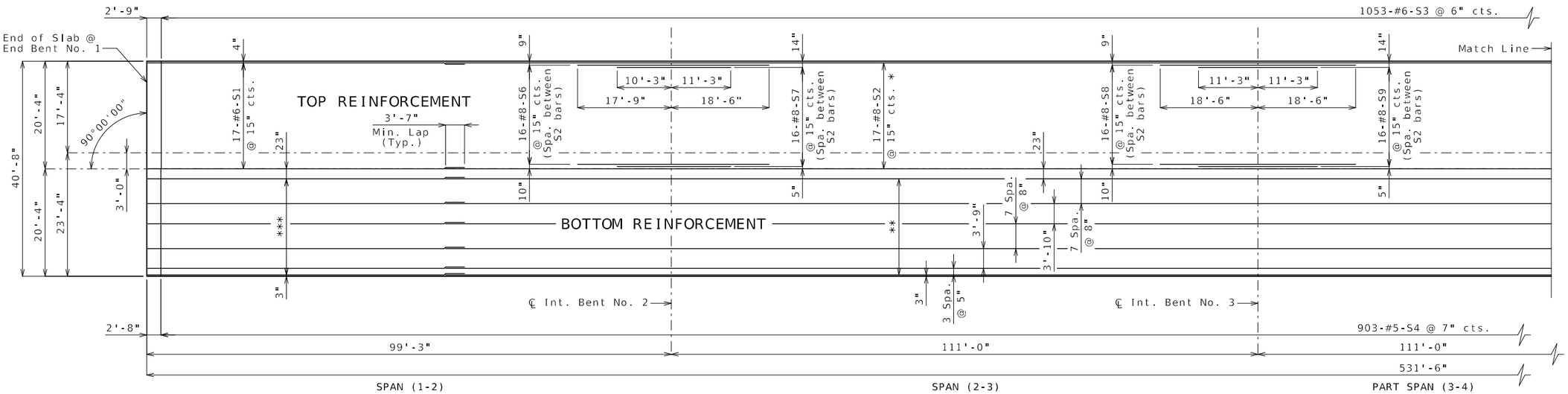
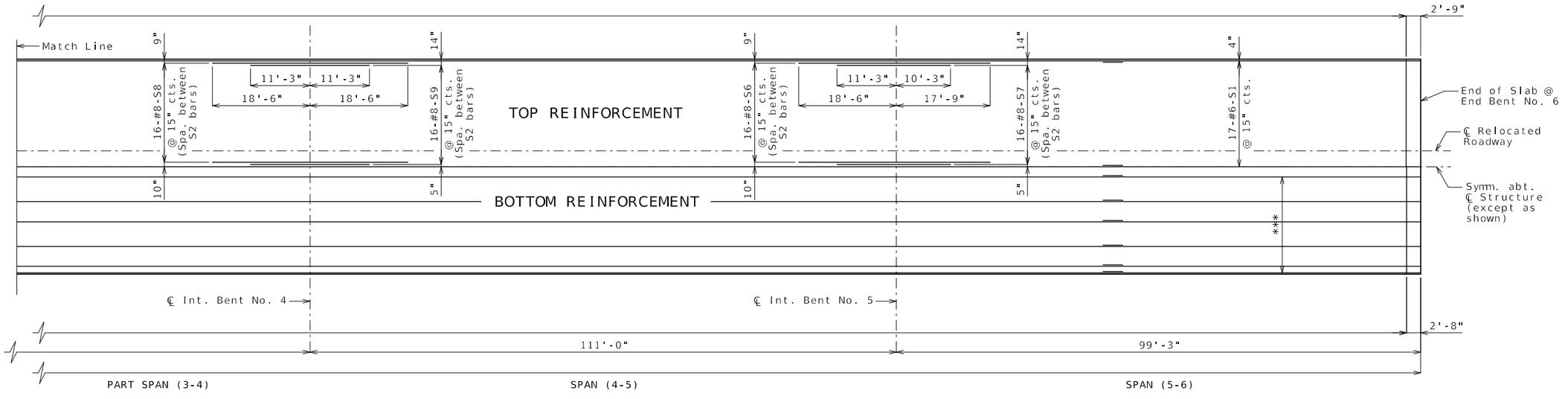


* (8 Units @ 56'-6")
(4'-9" Min. Lap)

** 20-#7-S5
(Spa. as shown)
(8 Units @ 56'-0")
(4'-2" Min. Lap)

*** 20-#6-S1 (Spa. with S5)



Note: Lap splices for S2 & S5 bars not shown for clarity.

Notes:

Longitudinal dimensions are measured horizontally.

For Slab Details, see Sheet No. 23.

For Theoretical Slab Haunching Diagram and Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For details and reinforcement of Type D Barrier, see Sheets No. 24 & 25.

PLAN OF SLAB SHOWING REINFORCEMENT

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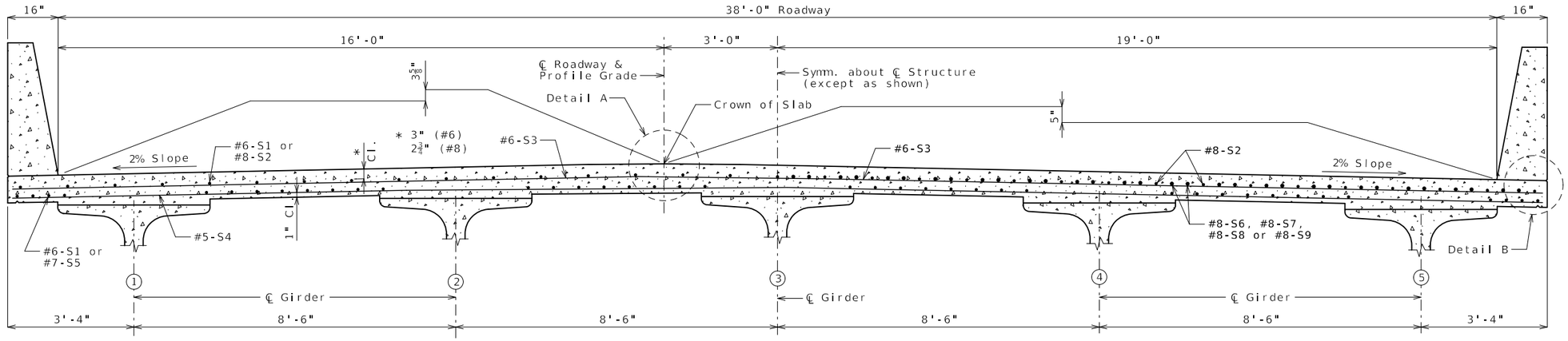
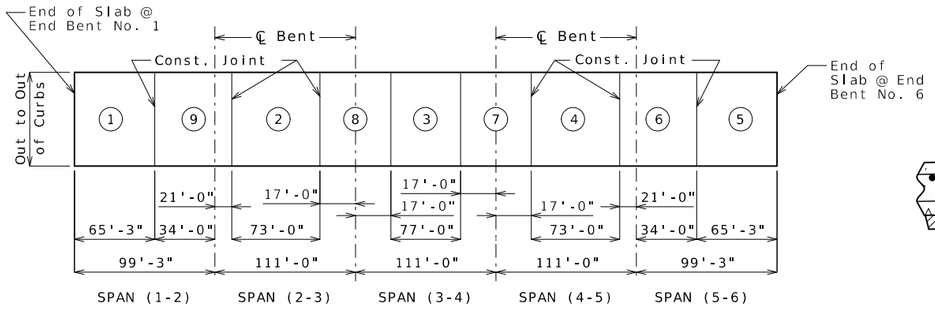


HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INTERMEDIATE BENT

SECTION THRU SLAB

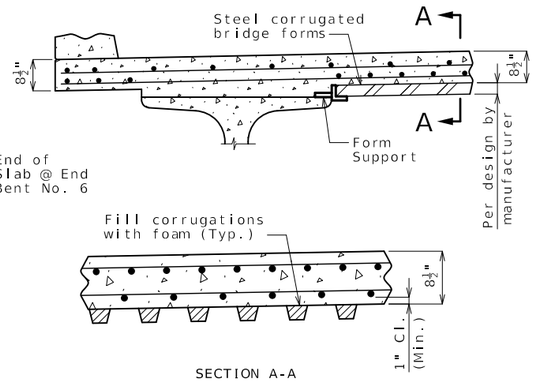


	Sequence of Pours									Min. Rate of Pour Cu. Yds./Hr.
	Direction									With Retarder
Basic Sequence	1	2	3	4	5	6	7	8	9	25
	Either Direction									
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.										
Alternate A Pours	1	9 + 2		8 + 3		7 + 4		6 + 5		36
	End to 9	1 to 8		2 to 7		3 to 6		4 to End		
Alternate B Pours	1 + 9 + 2			8 + 3			7 + 4 + 6 + 5			36
	End to 8			2 to 7			3 to End			
Alternate C Pours	1 + 9 + 2 + 8 + 3					7 + 4 + 6 + 5				36
	End to 7					3 to End				
Alternate D Pours	1 + 9 + 2 + 8 + 3 + 7 + 4 + 6 + 5									36
	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



SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

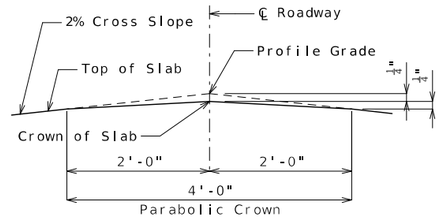
Stay-In-Place Forms:

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.

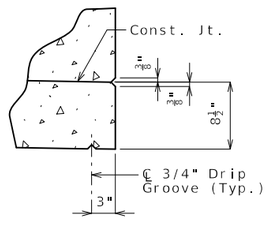
Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

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.

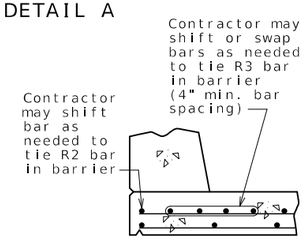
The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.



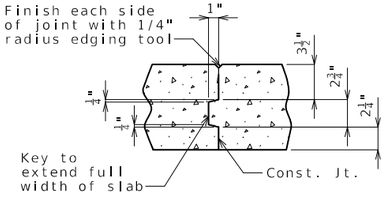
DETAIL A



DETAIL B



OPTIONAL SHIFTING TOP BARS AT BARRIER



SLAB CONSTRUCTION JOINT

Notes:

For reinforcement of barrier not shown, see Sheets No. 24 & 25.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 21.

For Plan of Slab Showing Reinforcement, see Sheet No. 22.

SLAB DETAILS

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:36:28 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	23

COUNTY HENRY

JOB NO. J7P3484C

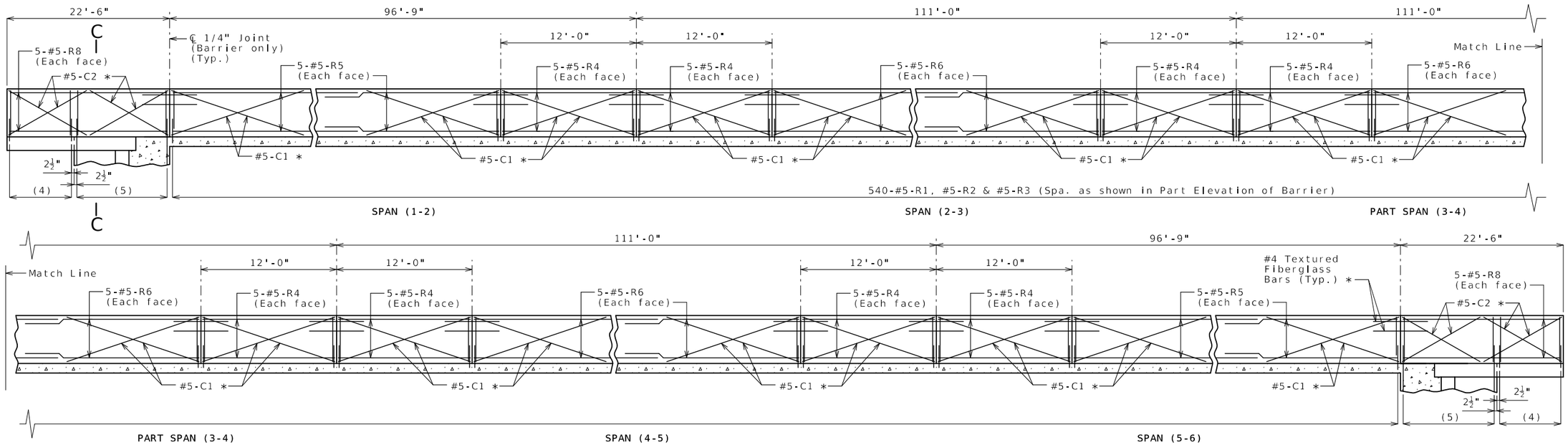
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9338

DESCRIPTION	DATE

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

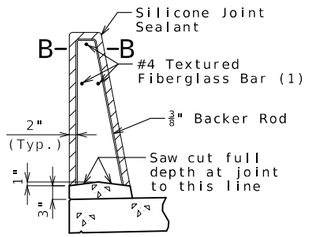


ELEVATION OF BARRIER

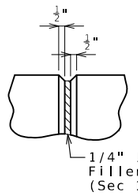
Longitudinal dimensions are horizontal.

(4) 15-#5-R1, R2 & R3 @ abt. 12" cts.

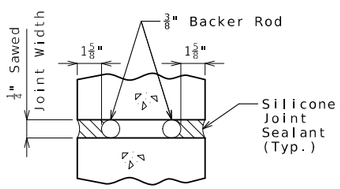
(5) 10-#5-R1 & R7 @ abt. 12" cts.



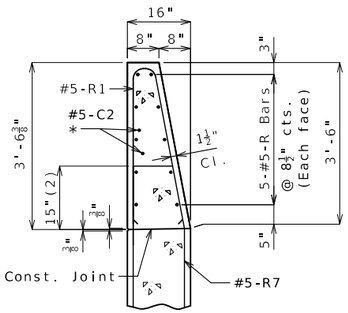
SECTION THRU SAW CUT JOINT



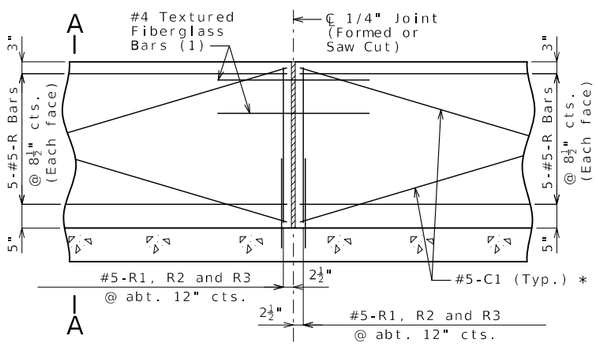
PART ELEVATION AT FORMED JOINT



SECTION B-B

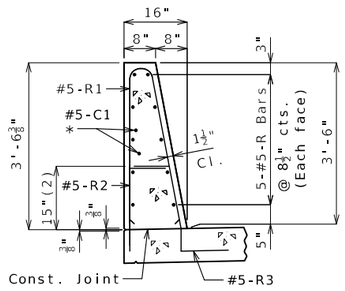


SECTION C-C



PART ELEVATION OF BARRIER

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

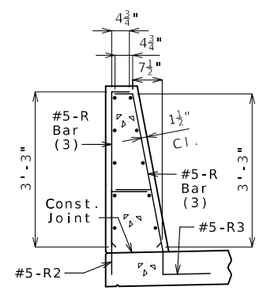


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

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

Concrete in barrier shall be Class B-1.

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

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.

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:36:48 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	24

COUNTY HENRY

JOB NO. J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9338

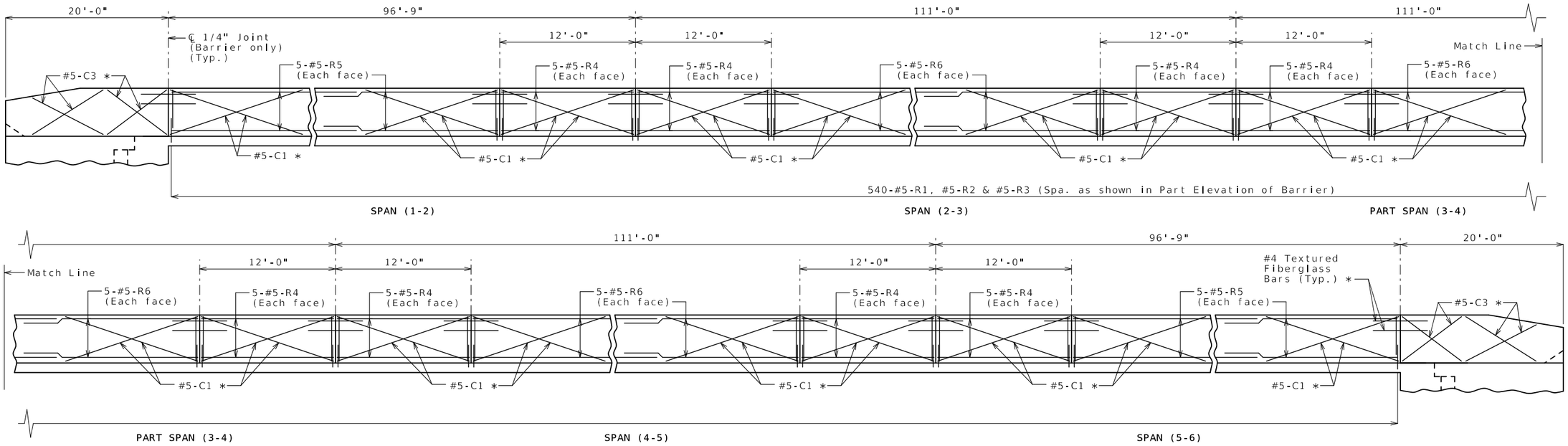
DESCRIPTION	DATE

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

Detailed Jan. 2024
Checked Feb. 2024

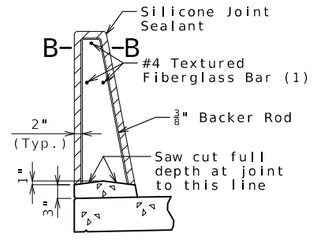
TYPE D BARRIER (LEFT)

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

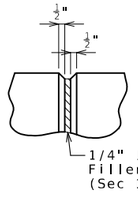


ELEVATION OF BARRIER

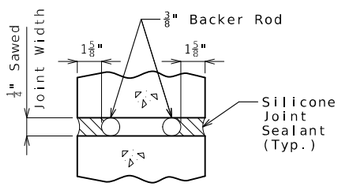
Longitudinal dimensions are horizontal.



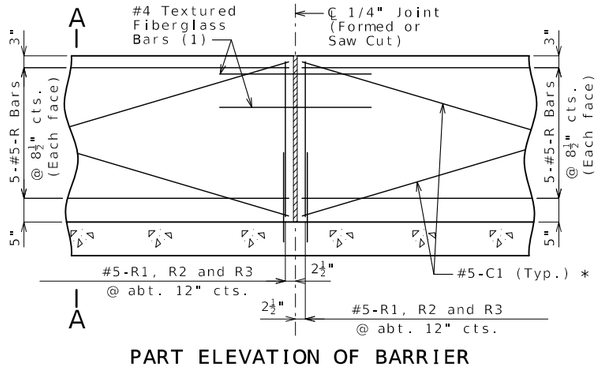
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

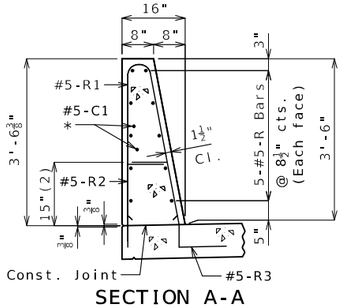


SECTION B-B



PART ELEVATION OF BARRIER

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

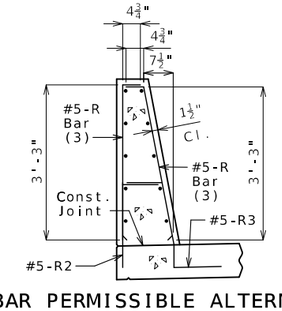


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

TYPE D BARRIER (RIGHT)

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:37:05 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

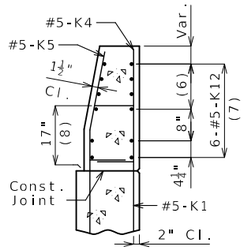
DATE PREPARED 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	25

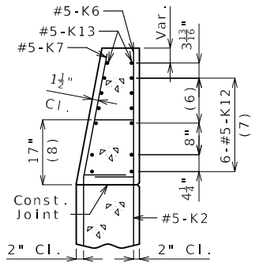
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338

DESCRIPTION	DATE

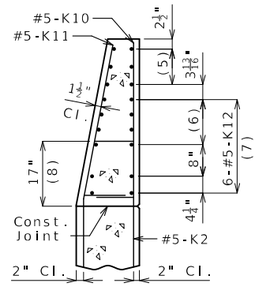
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



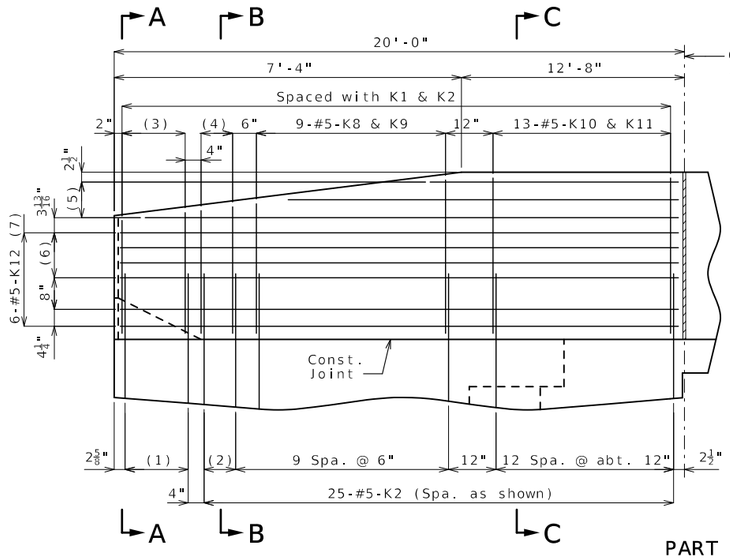
SECTION A-A

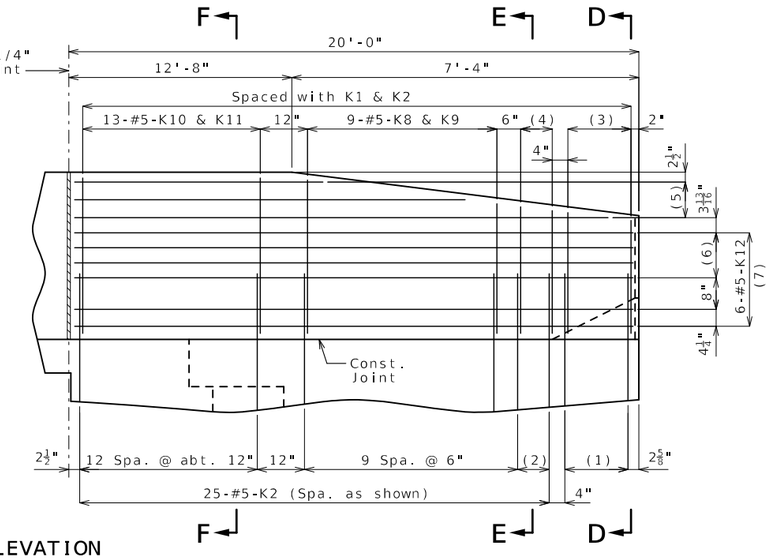


SECTION B-B

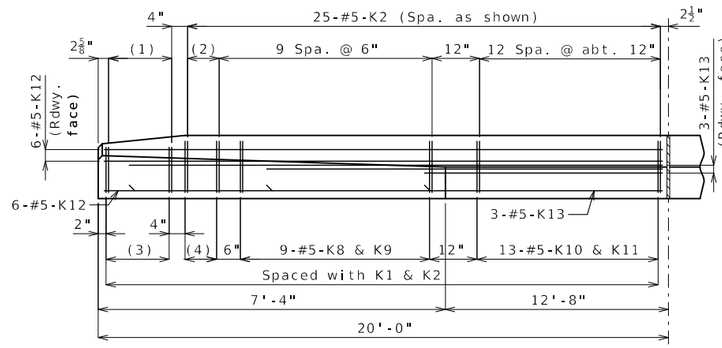


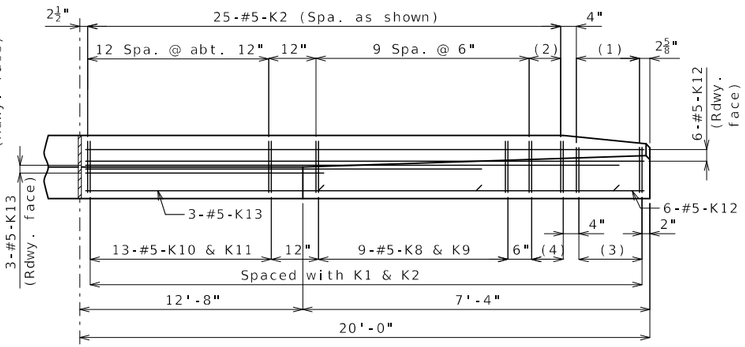
SECTION C-C



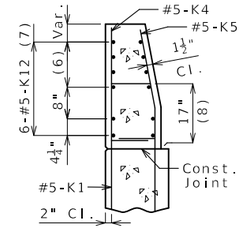


PART ELEVATION

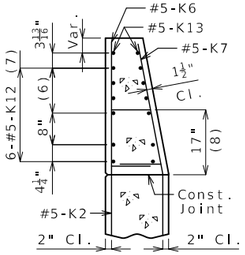




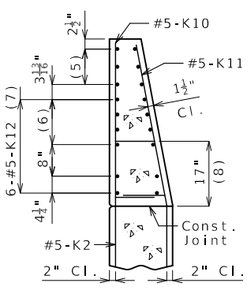
PART PLAN



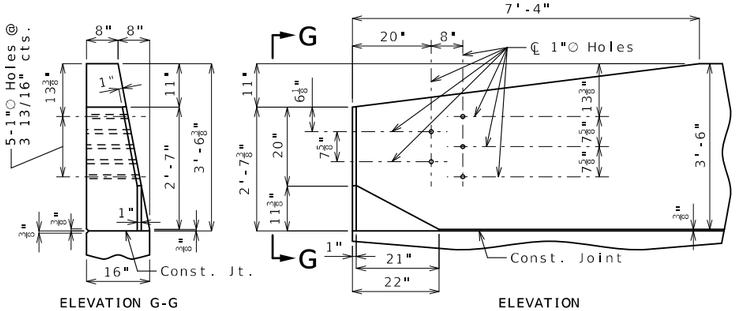
SECTION D-D



SECTION E-E



SECTION F-F



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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

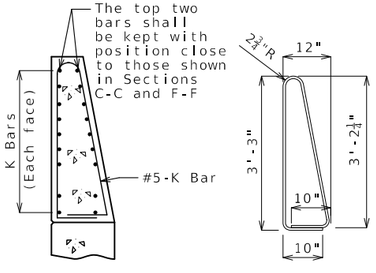
(4) 3-#5-K6 & K7

(5) 3-#5-K13 @ 4½" cts., each face

(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar



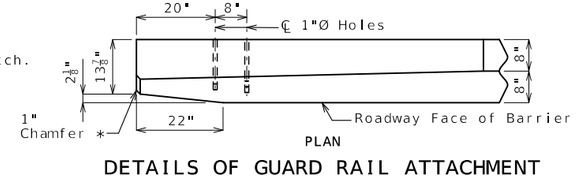
K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(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.



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 (RIGHT) AT END BENTS

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:37:23 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	26

COUNTY
HENRY

JOB NO.
J7P3484C

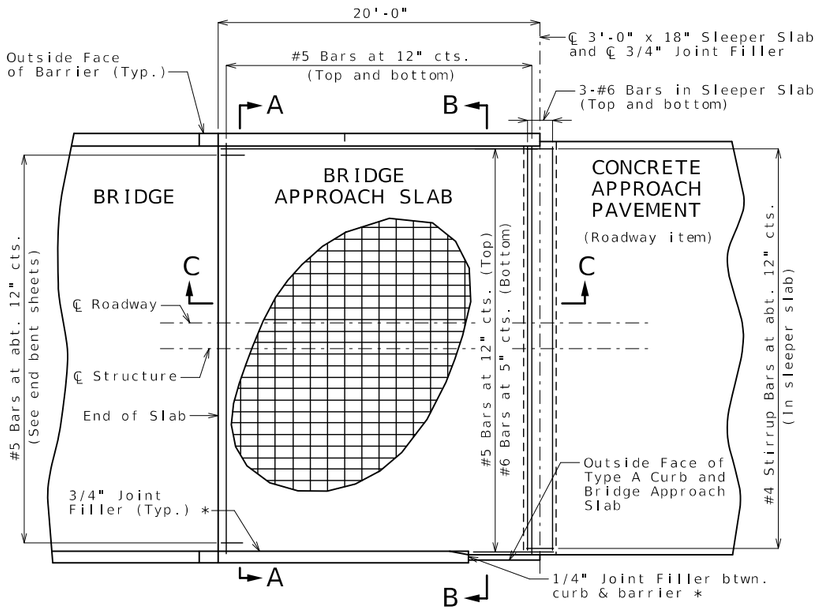
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338

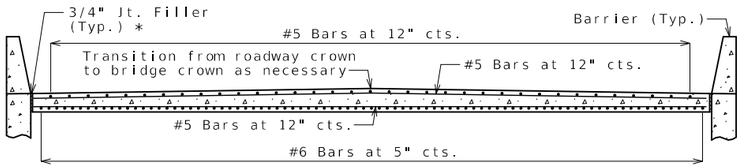
DESCRIPTION	DATE

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

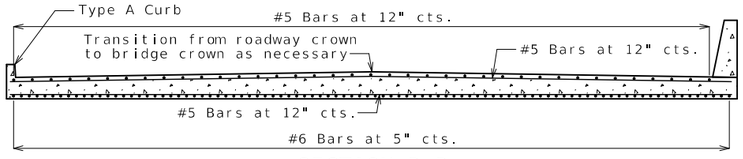


PART PLAN SHOWING REINFORCEMENT

End Bent No. 6 shown, End Bent No. 1 similar.

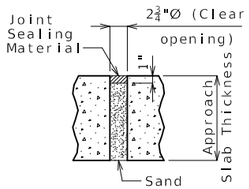


SECTION A-A



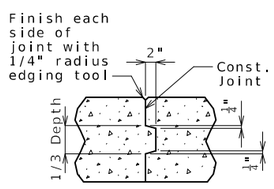
SECTION B-B

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

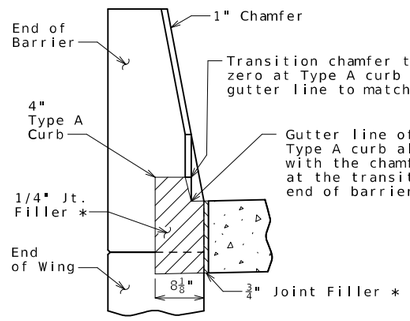


UNDERSEAL ACCESS HOLE DETAIL

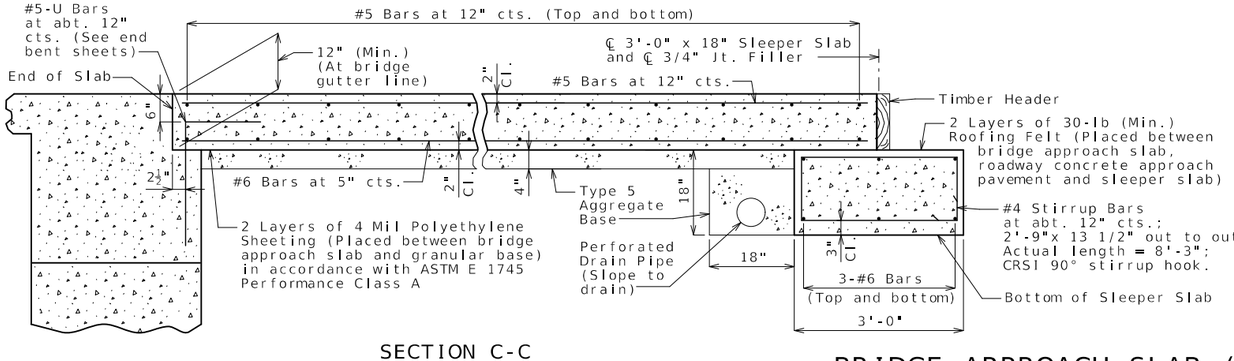
(If required)



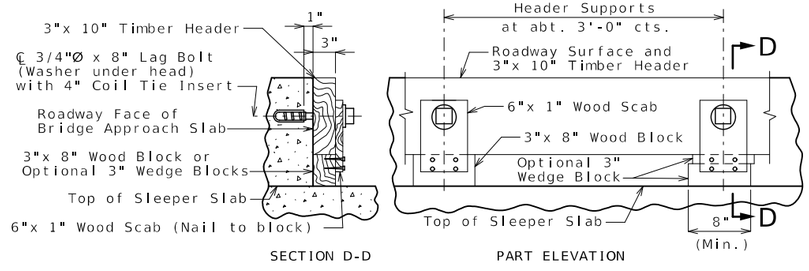
CONSTRUCTION JOINT DETAIL



SECTION BETWEEN CURB AND BARRIER



SECTION C-C



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

General Notes:

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

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

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 29 inches for #5 bars and 44 inches for #6 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

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

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

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

For concrete approach pavement details, see roadway plans.

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

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major) per square yard.

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:37:42 AM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED: 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	27

COUNTY: HENRY

JOB NO.: J7P3484C

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9338

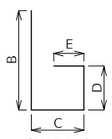
DATE	DESCRIPTION

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

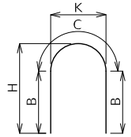
Detailed Jan. 2024
Checked Feb. 2024

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

BRIDGE APPROACH SLAB (MAJOR)



SHAPE 6
or 6S



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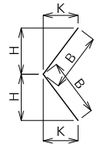

SHAPE 8
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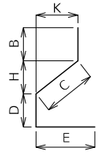
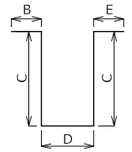


SHAPE 9
or 9S



SHAPE 10
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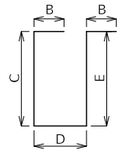
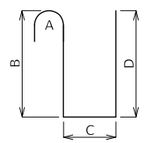
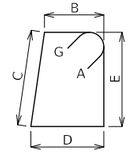


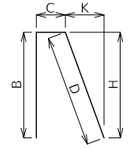
SHAPE 11
or 11S



SHAPE 12



SHAPE 13S



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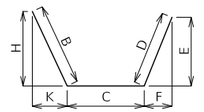

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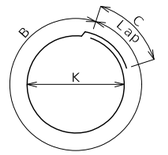

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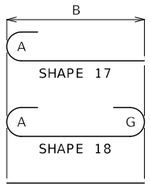
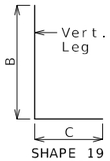


SHAPE 17
SHAPE 18
SHAPE 20



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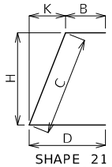
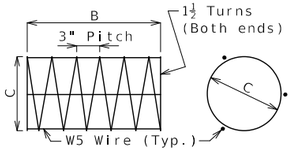
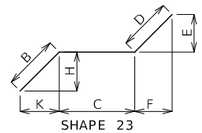


SHAPE 21
or 21S



SHAPE 22



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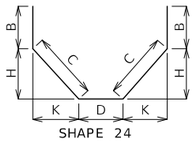

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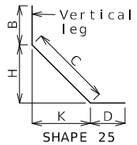
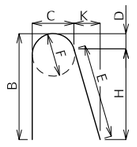
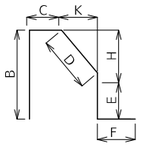


SHAPE 25
or 25S

SHAPE 21 or 21S



SHAPE 26



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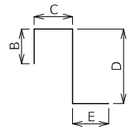

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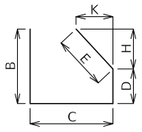

SHAPE 29
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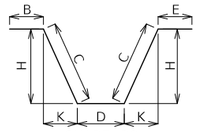

SHAPE 30
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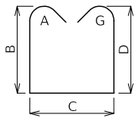
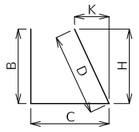


SHAPE 31S



SHAPE 32
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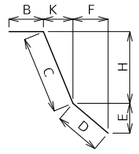

SHAPE 33
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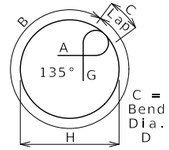
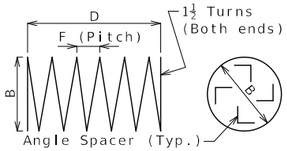


SHAPE 34S



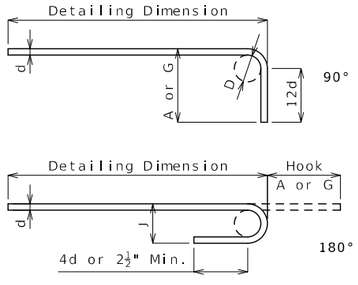
SHAPE 35 (1)

SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4½"	12"	8¼"	6"
#7	2	5¼"	14"	9¾"	7"
	3	7"	15"	11½"	8¾"
#8	2	6"	16"	11"	8"
	3	8"	17"	13¼"	10"
#9	1	9½"	19½"	15½"	11¾"
#10	1	10¾"	22"	17½"	13¼"
#11	1	12"	24½"	19½"	14⅞"
#14	1	18¼"	31¼"	27½"	21⅝"
#18	1	24"	41½"	36¾"	28½"

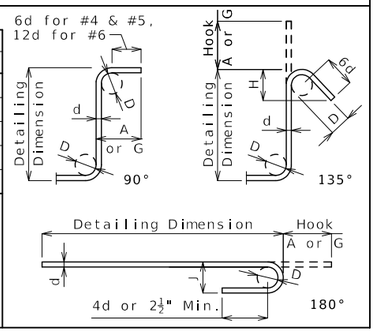


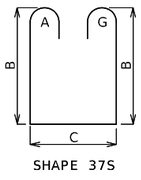
Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G			H	J
			90°	135°	180°	135°	180°
#4	2	2"	4½"	4½"	5"	2⅝"	3"
	3	3"	5"	5¼"	6"	3"	4"
#5	2	2½"	5¾"	5¾"	5¾"	3⅝"	3¾"
	3	3¾"	6¼"	6½"	7"	3⅞"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅝"	6"

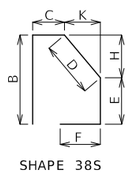
Applicable for all grades of steel.

Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.





SHAPE 37S



SHAPE 38S

BENDING DIAGRAMS

All dimensions are out to out.

Shapes ending with an S shall be bent in accordance 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	Galv.	Plain	Galv.	Barrier	Slip Form	Plain	Galv.
By Size	W5	0	0	0	0	0	0	0	0
	4	996	0	0	1,799	0	0	996	1,799
	5	29,224	0	282	42,185	29,869	1,098	29,506	73,152
	6	11,574	0	0	87,575	0	0	11,574	87,575
	7	1,728	0	0	43,214	0	0	1,728	43,214
	8	4,564	0	0	62,456	0	0	4,564	62,456
	9	5,150	0	0	0	0	0	5,150	0
	10	0	0	0	0	0	0	0	0
	11	84,388	0	0	0	0	0	84,388	0
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type		137,624	0	282	237,229	29,869	1,098	137,906	268,196

All superstructure reinforcing steel shall be galvanized unless otherwise specified.

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:38:15 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	28

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9338

DESCRIPTION	DATE

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

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
		Substructure													
		Int Bent 2													
20	8 D200	BEAM		20		5 8.00							5 8	5 8	303
11	11 H200	BEAM		18		38 5.00							41 7	41 7	2,430
14	6 H201	BEAM		20		38 5.00							38 5	38 5	808
11	7 H202	BEAM		20		38 5.00							38 5	38 5	864
6	6 H203	BEAM		20		12 10.00							12 10	12 10	116
18	6 H204	BEAM		10S			22.00	5 7.50					9 4	9	243
14	8 H205	TIE BEAM		20		22 5.00							22 5	22 5	838
14	6 H206	TIE BEAM		20		20 7.00							20 7	20 7	433
40	5 P200	BEAM		34S		15 8.50	2.50				5 0.00		16 10	16 8	695
2	5 P201	SHAFT/SOCKET		35		5 0.00	6.00	45 3.00					1469 5	1454 1	3,033
2	5 P202	COLUMN		35		5 0.00	3.00	26 3.00					1696 8	1679	3,502
20	6 U200	BEAM		13S		5 9.00	5 9.00	5 9.00	5 9.00				24 4	23 10	716
7	6 U201	BEAM		13S		5 9.00	6 0.50	5 9.00	6 0.50				24 11	24 5	257
6	6 U202	BEAM		10S			5 9.00	5 9.00					17 3	16 11	152
6	6 U203	BEAM		10S			6 0.50	5 9.00					17 10	17 6	158
18	4 U204	BEAM		10S			6.00	5 9.00					6 9	6 7	79
15	4 U205	TIE BEAM		13S		2 6.00	5 9.00	2 6.00	5 9.00				17 3	17	170
24	11 V200	SHAFT/SOCKET		20		52 11.00							52 11	52 11	6,748
24	11 V201	SHAFT/SOCKET		20		54 11.00							54 11	54 11	7,003
24	11 V202	COLUMN		20		24 2.00							24 2	24 2	3,082
24	11 V203	COLUMN		20		22 2.00							22 2	22 2	2,827
		Int Bent 3													
20	8 D300	BEAM		20		5 8.00							5 8	5 8	303
11	9 H300	BEAM		18		38 5.00							40 11	40 11	1,530
14	6 H301	BEAM		20		38 5.00							38 5	38 5	808
8	9 H302	BEAM		20		38 5.00							38 5	38 5	1,045
6	6 H303	BEAM		20		12 10.00							12 10	12 10	116
18	6 H304	BEAM		10S			22.00	5 7.50					9 4	9	243
14	8 H305	TIE BEAM		20		22 5.00							22 5	22 5	838
14	6 H306	TIE BEAM		20		20 7.00							20 7	20 7	433
40	5 P300	BEAM		34S		15 8.50	2.50				5 0.00		16 10	16 8	695
2	5 P301	SHAFT/SOCKET		35		5 0.00	6.00	46 11.00					1521 10	1506 0	3,142
2	5 P302	COLUMN		35		5 0.00	3.00	26 8.00					1722 10	1704 11	3,556
19	6 U300	BEAM		13S		5 9.00	5 9.00	5 9.00	5 9.00				24 4	23 10	680
10	6 U301	BEAM		13S		5 9.00	6 0.50	5 9.00	6 0.50				24 11	24 5	367
7	6 U302	BEAM		10S			5 9.00	5 9.00					17 3	16 11	178
3	6 U303	BEAM		10S			6 0.50	5 9.00					17 10	17 6	79
18	4 U304	BEAM		10S			6.00	5 9.00					6 9	6 7	79
15	4 U305	TIE BEAM		13S		2 6.00	5 9.00	2 6.00	5 9.00				17 3	17	170
24	11 V300	SHAFT/SOCKET		20		54 6.00							54 6	54 6	6,949
24	11 V301	SHAFT/SOCKET		20		56 6.00							56 6	56 6	7,204
24	11 V302	SHAFT/SOCKET		20		24 7.00							24 7	24 7	3,135
24	11 V303	SHAFT/SOCKET		20		22 7.00							22 7	22 7	2,880
		Int Bent 4													
20	8 D300	BEAM		20		5 8.00							5 8	5 8	303
11	9 H300	BEAM		18		38 5.00							40 11	40 11	1,530
14	6 H301	BEAM		20		38 5.00							38 5	38 5	808
8	9 H302	BEAM		20		38 5.00							38 5	38 5	1,045
6	6 H303	BEAM		20		12 10.00							12 10	12 10	116
18	6 H304	BEAM		10S			22.00	5 7.50					9 4	9	243
14	8 H305	TIE BEAM		20		22 5.00							22 5	22 5	838
14	6 H306	TIE BEAM		20		20 7.00							20 7	20 7	433
40	5 P300	BEAM		34S		15 8.50	2.50				5 0.00		16 10	16 8	695
2	5 P303	SHAFT/SOCKET		35		5 0.00	6.00	45 3.00					1469 5	1454 1	3,033
2	5 P304	COLUMN		35		5 0.00	3.00	26 9.00					1728 1	1710 1	3,567
19	6 U300	BEAM		13S		5 9.00	5 9.00	5 9.00	5 9.00				24 4	23 10	680
10	6 U301	BEAM		13S		5 9.00	6 0.50	5 9.00	6 0.50				24 11	24 5	367
7	6 U302	BEAM		10S			5 9.00	5 9.00					17 3	16 11	178

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
3	6 U303	BEAM		10S			6 0.50	5 9.00					17 10	17 6	79
18	4 U304	BEAM		10S			6.00	5 9.00					6 9	6 7	79
15	4 U305	TIE BEAM		13S		2 6.00	5 9.00	2 6.00	5 9.00				17 3	17	170
24	11 V304	SHAFT/SOCKET		20		52 11.00							52 11	52 11	6,748
24	11 V305	SHAFT/SOCKET		20		54 11.00							54 11	54 11	7,003
24	11 V306	COLUMN		20		24 7.00							24 7	24 7	3,135
24	11 V307	COLUMN		20		22 7.00							22 7	22 7	2,880
		Int Bent 5													
20	8 D200	BEAM		20		5 8.00							5 8	5 8	303
11	11 H200	BEAM		18		38 5.00							41 7	41 7	2,430
14	6 H201	BEAM		20		38 5.00							38 5	38 5	808
11	7 H202	BEAM		20		38 5.00							38 5	38 5	864
6	6 H203	BEAM		20		12 10.00							12 10	12 10	116
18	6 H204	BEAM		10S			22.00	5 7.50					9 4	9	243
14	8 H205	TIE BEAM		20		22 5.00							22 5	22 5	838
14	6 H206	TIE BEAM		20		20 7.00							20 7	20 7	433
40	5 P200	BEAM		34S		15 8.50	2.50				5 0.00		16 10	16 8	695
2	5 P203	SHAFT/SOCKET		35		5 0.00	6.00	46 3.00					1500 10	1485 3	3,098
2	5 P204	COLUMN		35		5 0.00	3.00	26 4.00					1701 11	1684 2	3,513
20	6 U200	BEAM		13S		5 9.00	5 9.00	5 9.00	5 9.00				24 4	23 10	716
7	6 U201	BEAM		13S		5 9.00	6 0.50	5 9.00	6 0.50				24 11	24 5	257
6	6 U202	BEAM		10S			5 9.00	5 9.00					17 3	16 11	152
6	6 U203	BEAM		10S			6 0.50	5 9.00					17 10	17 6	158
18	4 U204	BEAM		10S			6.00	5 9.00					6 9	6 7	79
15	4 U205	TIE BEAM		13S		2 6.00	5 9.00	2 6.00	5 9.00				17 3	17	170
24	11 V204	SHAFT/SOCKET		20		53 11.00							53 11	53 11	6,875
24	11 V205	SHAFT/SOCKET		20		55 11.00							55 11	55 11	7,130
24	11 V206	COLUMN		20		24 3.00							24 3	24 3	3,092
24	11 V207	COLUMN		20		22 3.00							22 3	22 3	2,837
		Superstructure													
		End Bent 1													
22	7 F100	WING BRACE	G	23		14.25	5 1.00	2 3.25	19.25	19.25	10.00	10.00	8 7	8 5	388
8	6 F101	DIAPHRAGM	G	19S		4 11.00	2 8.25						7 7	7 5	92
8	7 H100	BEAM	G	20		40 5.00							40 5	40 5	677
10	6 H101	BEAM	G	20		40 5.00							40 5	40 5	624
4	6 H102	BEAM	G	20		12 10.00							12 10	12 10	79
4	7 H103	DIAPHRAGM	G	20		40 5.00							40 5	40 5	339
4	6 H104	DIAPHRAGM	G	20		40 5.00							40 5	40 5	250
12	6 H105	DIAPHRAGM	G	20		7 5.00							7 5	7 5	138
4	6 H106	DIAPHRAGM	G	20		5 0.00							5	5	31
6	6 H107	DIAPHRAGM	G	20		2 8.00							2 8	2 8	25
2	6 H108	DIAPHRAGM	G	19S		2 9.00	17.00						4 2	4	12
5	5 H109	STRAND TIE		20		5 9.00							5 9	5 9	30
8	8 H110	WING	G	19		19 6.00	16.00						20 10	20 7	449
24	7 H111	WING	G	19		18 8.00	16.00						20	19 10	997
8	8 H112	WING	G	19		8 6.00	16.00						9 10	9 7	209
24	7 H113	WING	G	19		7 8.00	16.00						9	8 10	444
16	5 U100	BEAM	G	10S			7 0.00	2 9.00					16 9	16 6	285
5	5 U101	BEAM	G	10S			7 2.00	2 9.00					17 1	16 10	91
16	4 U102	BEAM	G	13S		2 9.00	3 8.00	2 9.00	3 8.00				13 7	13 4	149
11	4 U103	BEAM	G	13S		2 9.00	3 11.50	2 9.00	3 11.50				14 2	13 11	107
5	4 U104	BEAM	G	10S			3 8.00	2 9.00					10 1	9 11	35
3	4 U105	BEAM	G	10S			3 11.50	2 9.00					10 8	10 6	22
24	5 U106	DIAPHRAGM	G	10S			4 2.50	2 3.00					10 8	10 5	270
24	6 U107	DIAPHRAGM	G	19S		3 0.00	2 9.00						5 9	5 7	207
51	6 U108	DIAPHRAGM	G	19S		3 4.00	4 7.00						7 11	7 9	611
38	5 U109	APPROACH NOTCH	G	19S		2 0.00	15.00						3 3	3 2	130
4	5 V100	BEAM	G	20		7 0.00							7	7	30
2	5 V101	BEAM	G	20		7 2.00							7 2	7 2	15
25	6 V102	BEAM	G	20		3 0.00							3	3	116
36	6 V103	WING	G	20		8 3.00							8 3	8 3	459
14	6 V104	WING	G	20		8 4.00							8 4	8 4	180
		End Bent 6													

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. 28.

All bars shall be Grade 60.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

Detailed Feb. 2024
Checked Feb. 2024

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:38:32 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 29
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9338

DESCRIPTION | DATE

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

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
22	7 F600	WING BRACE	G	23		14.25	5 1.00	2 3.25	19.25	19.25	10.00	10.00	8 7	8 5	388
8	6 F601	DIAPHRAGM	G	19S		4 11.00	2 8.25						7 7	7 5	92
8	7 H600	BEAM	G	20		40 5.00							40 5	40 5	677
10	6 H601	BEAM	G	20		40 5.00							40 5	40 5	624
4	6 H602	BEAM	G	20		12 10.00							12 10	12 10	79
4	7 H603	DIAPHRAGM	G	20		40 5.00							40 5	40 5	339
4	6 H604	DIAPHRAGM	G	20		40 5.00							40 5	40 5	250
12	6 H605	DIAPHRAGM	G	20		7 5.00							7 5	7 5	138
4	6 H606	DIAPHRAGM	G	20		5 0.00							5	5	31
6	6 H607	DIAPHRAGM	G	20		2 8.00							2 8	2 8	25
2	6 H608	DIAPHRAGM	G	19S		2 9.00	17.00						4 2	4	12
5	5 H609	STRAND TIE		20		5 9.00							5 9	5 9	30
8	8 H610	WING	G	19		19 6.00	16.00						20 10	20 7	449
24	7 H611	WING	G	19		18 8.00	16.00						20	19 10	997
8	8 H612	WING	G	19		8 6.00	16.00						9 10	9 7	209
24	7 H613	WING	G	19		7 8.00	16.00						9	8 10	444
16	5 U600	BEAM	G	10S			7 0.00	2 9.00					16 9	16 6	285
5	5 U601	BEAM	G	10S			7 2.00	2 9.00					17 1	16 10	91
16	4 U602	BEAM	G	13S		2 9.00	3 8.00	2 9.00	3 8.00				13 7	13 4	149
11	4 U603	BEAM	G	13S		2 9.00	3 11.50	2 9.00	3 11.50				14 2	13 11	107
5	4 U604	BEAM	G	10S			3 8.00	2 9.00					10 1	9 11	35
3	4 U605	BEAM	G	10S			3 11.50	2 9.00					10 8	10 6	22
24	5 U606	DIAPHRAGM	G	10S			4 2.50	2 3.00					10 8	10 5	270
24	6 U607	DIAPHRAGM	G	19S		3 0.00	2 9.00						5 9	5 7	207
51	6 U608	DIAPHRAGM	G	19S		3 4.00	4 7.00						7 11	7 9	611
38	5 U609	APPROACH NOTCH	G	19S		2 0.00	15.00						3 3	3 2	130
4	5 V600	BEAM	G	20		7 0.00							7	7	30
2	5 V601	BEAM	G	20		7 2.00							7 2	7 2	15
25	6 V602	BEAM	G	20		3 0.00							3	3	116
36	6 V603	WING	G	20		8 3.00							8 3	8 3	459
14	6 V604	WING	G	20		8 4.00							8 4	8 4	180
		Int Diaphragms													
32	6 H800	DIAPHRAGM	G	20		7 5.00							7 5	7 5	367
96	4 H801	DIAPHRAGM	G	20		7 9.00							7 9	7 9	519
32	6 H802	DIAPHRAGM	G	20		5 0.00							5	5	247
16	5 H803	DIAPHRAGM	G	19S		15.25	4 5.00						5 8	5 7	96
64	5 H804	DIAPHRAGM	G	11S	16		4 6.00	13.50	16.00				7	6 9	466
		Incr. = 1.625"					4 9.00	13.50	18.00				7 5	7 2	464
24	5 H805	STRAND TIE		20		5 9.00							5 9	5 9	144
16	5 H806	STRAND TIE		20		4 8.00							4 8	4 8	78
128	4 U800	DIAPHRAGM	G	28S			2 0.00	4 0.00	18.00				7 6	7 4	654
64	6 U801	DIAPHRAGM	G	28S			2 0.00	4 0.00	2 2.00				8 2	7 10	775
96	6 U802	DIAPHRAGM	G	28S			2 0.00	3 4.00	2 2.00				7 6	7 2	1,063
32	5 V800	DIAPHRAGM	G	20		4 0.00							4	4	138
		Slab													
146	6 S1	SLAB	G	20		60 0.00							60	60	13,534
264	8 S2	SLAB	G	20		56 6.00							56 6	56 6	40,676
1056	6 S3	SLAB	G	20		40 5.00							40 5	40 5	65,941
903	5 S4	SLAB	G	20		40 5.00							40 5	40 5	39,379
320	7 S5	SLAB	G	20		56 0.00							56	56	37,524
64	8 S6	SLAB	G	20		36 3.00							36 3	36 3	6,327
64	8 S7	SLAB	G	20		21 6.00							21 6	21 6	3,752
64	8 S8	SLAB	G	20		37 0.00							37	37	6,458
64	8 S9	SLAB	G	20		22 6.00							22 6	22 6	3,927
		Barrier													
		Type D													
10	5 K1	BARRIER	G	27S		3 8.00	9.25	5.25	3 2.75		5.25	1.00	8 1	7 11	85
50	5 K2	BARRIER	G	27S		3 8.00	9.25	14.50	2 5.75		14.25	2.75	8 2	7 11	427
10	5 K4	BARRIER	G	19S	2	2 4.25	10.00						3 2	3 1	33
		Incr. = 0.500"				2 6.25	10.00						3 4	3 3	33
10	5 K5	BARRIER	G	14S	2	8.25	9.50	15.50			4.00	15.00	2 9	2 8	29
		Incr. = 1.250"				8.25	9.50	20.50			4.50	20.00	3 2	3 1	30
6	5 K6	BARRIER	G	19S	2	2 6.75	10.00						3 5	3 3	21

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
		Incr. = 0.500"				2 7.75	10.00						3 6	3 4	21
6	5 K7	BARRIER	G	21S	2	2 6.75	2 6.75				2 6.00	6.25	5 2	4 11	32
		Incr. = 1.000"				2 7.75	2 7.75				2 7.00	6.50	5 4	5 1	31
18	5 K8	BARRIER	G	19S	2	2 8.50	10.00						3 7	3 5	66
		Incr. = 0.750"				3 2.50	10.00						4 1	3 11	69
18	5 K9	BARRIER	G	21S	2	2 8.50	2 8.50				2 7.75	6.75	5 5	5 2	100
		Incr. = 1.500"				3 2.50	3 2.50				3 1.75	7.75	6 5	6 2	106
26	5 K10	BARRIER	G	19S		3 3.00	10.00						4 1	4	112
26	5 K11	BARRIER	G	21S		3 3.00	3 3.00				3 2.25	7.75	6 6	6 3	175
24	5 K12	BARRIER	G	20		19 9.00							19 9	19 9	511
12	5 K13	BARRIER	G	20	4	13 0.00							13	13	168
		Incr. = 36.000"				19 0.00							19	19	200
1130	5 R1	BARRIER	G	26		3 3.00	5.50	2.75	3 3.00	5.50	3 3.00		7 2	6 11	8,433
1110	5 R2	BARRIER	G	19S		20.50	9.50						2 6	2 5	2,894
1110	5 R3	BARRIER	G	27S			9.50	15.25	5.00	12.00	15.00	3.00	3 6	3 4	3,992
160	5 R4	BARRIER	G	20		11 9.00							11 9	11 9	2,029
80	5 R5	BARRIER	G	20		43 10.00							43 10	43 10	3,784
120	5 R6	BARRIER	G	20		45 1.00							45 1	45 1	5,837
20	5 R7	BARRIER	G	27S		3 8.00	9.25	14.50	2 5.75		14.25	2.75	8 2	7 11	171
20	5 R8	BARRIER	G	20		22 3.00							22 3	22 3	480
		Slip-Form													
72	5 C1	SLIP FORM	G	20		12 0.00							12	12	932
8	5 C2	SLIP FORM	G	20		11 3.00							11 3	11 3	97
8	5 C3	SLIP FORM	G	20		8 0.00							8	8	69

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. 28.

Detailed Feb. 2024
Checked Feb. 2024

All bars shall be Grade 60.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:38:50 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	30

COUNTY: HENRY

JOB NO.: J7P3484C

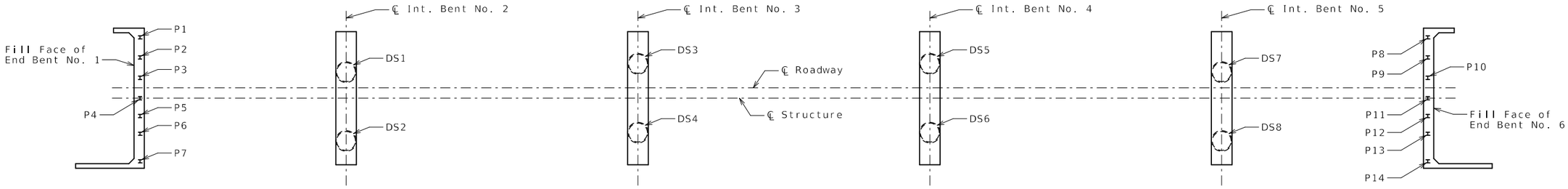
CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9338

DESCRIPTION	DATE

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



PART PLAN SHOWING PILE & DRILLED SHAFT NUMBERING FOR RECORDING AS-BUILT PILE DATA & 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
P1			
P2			
P3			
P4			
P5			
P6			
P7			
			End Bent No. 6
P8			
P9			
P10			
P11			
P12			
P13			
P14			

As-Built Drilled Shaft Data				
Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Int. Bent No. 2
DS1				
DS2				
				Int. Bent No. 3
DS3				
DS4				
				Int. Bent No. 4
DS5				
DS6				
				Int. Bent No. 5
DS7				
DS8				

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.

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:39:15 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED: 4/8/2024
ROUTE: 13 | STATE: MO
DISTRICT: BR | SHEET NO.: 31
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9338

DESCRIPTION | DATE

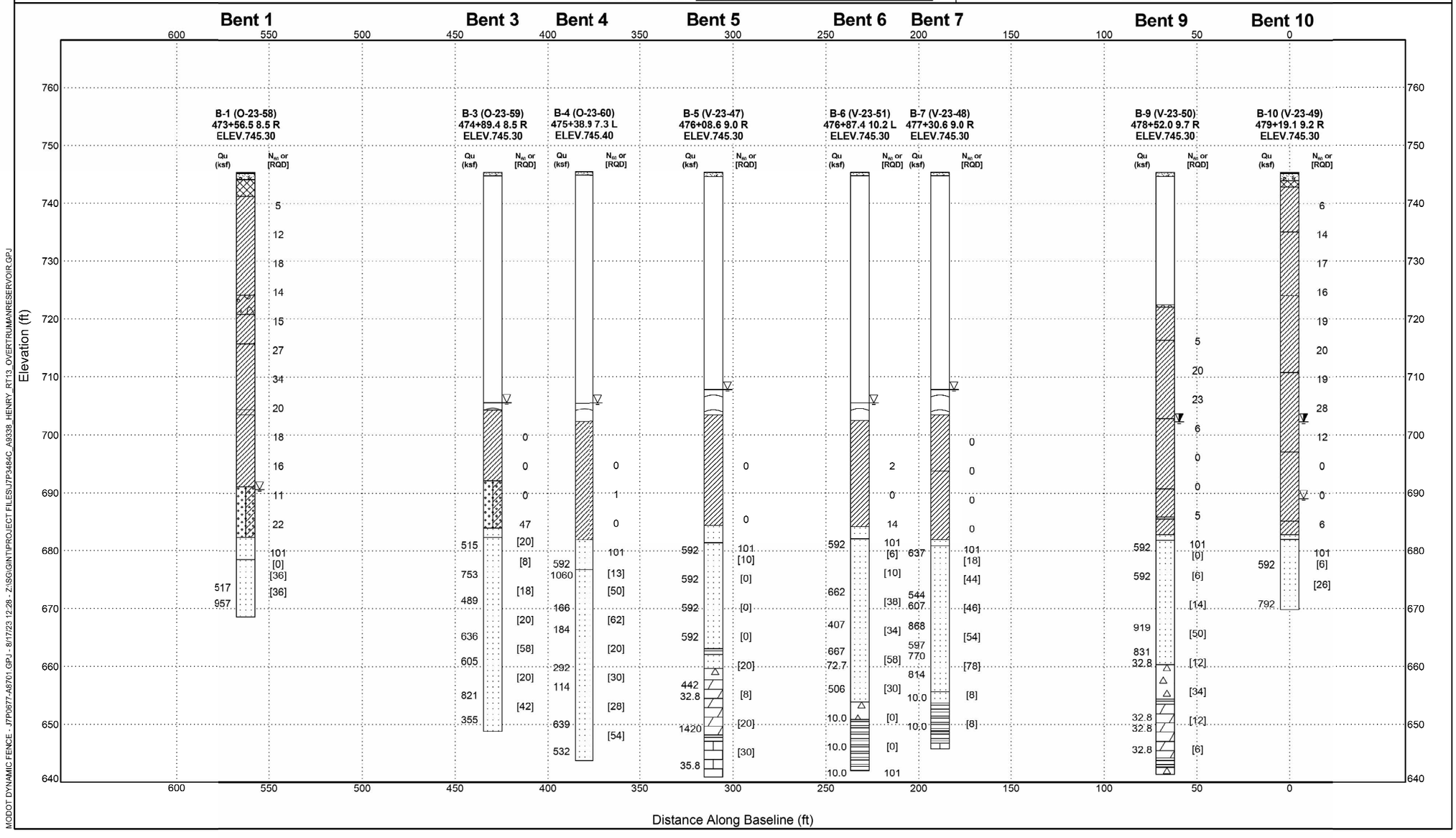
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Missouri Dept of Transportation

SUBSURFACE DIAGRAM

PROJECT NAME Bridge Replacement
PROJECT LOCATION Over Truman Reservoir
CLIENT
PROJECT NUMBER J7P3484C

Asphalt
Concrete
Fill (made ground)
USCS Low Plasticity Clay
USCS Low Plasticity Gravelly Clay
USCS Well-graded Sand with Clay
Sandstone
Water
No Core
Shale
Breccia
Dolomite



MODOT DYNAMIC FENCE - J7P0677-A8701.GPJ - 8/17/23 12:28 - Z:\SGG\GINT\PROJECT FILES\J7P3484C_A9338_HENRY_RT13_OVERTRUMANRESERVOIR.GPJ

BORING DATA

Note: For locations of borings, see Sheets No. 1 & 2.

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

Detailed Feb. 2024
Checked Mar. 2024

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:21:35 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/8/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	32

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

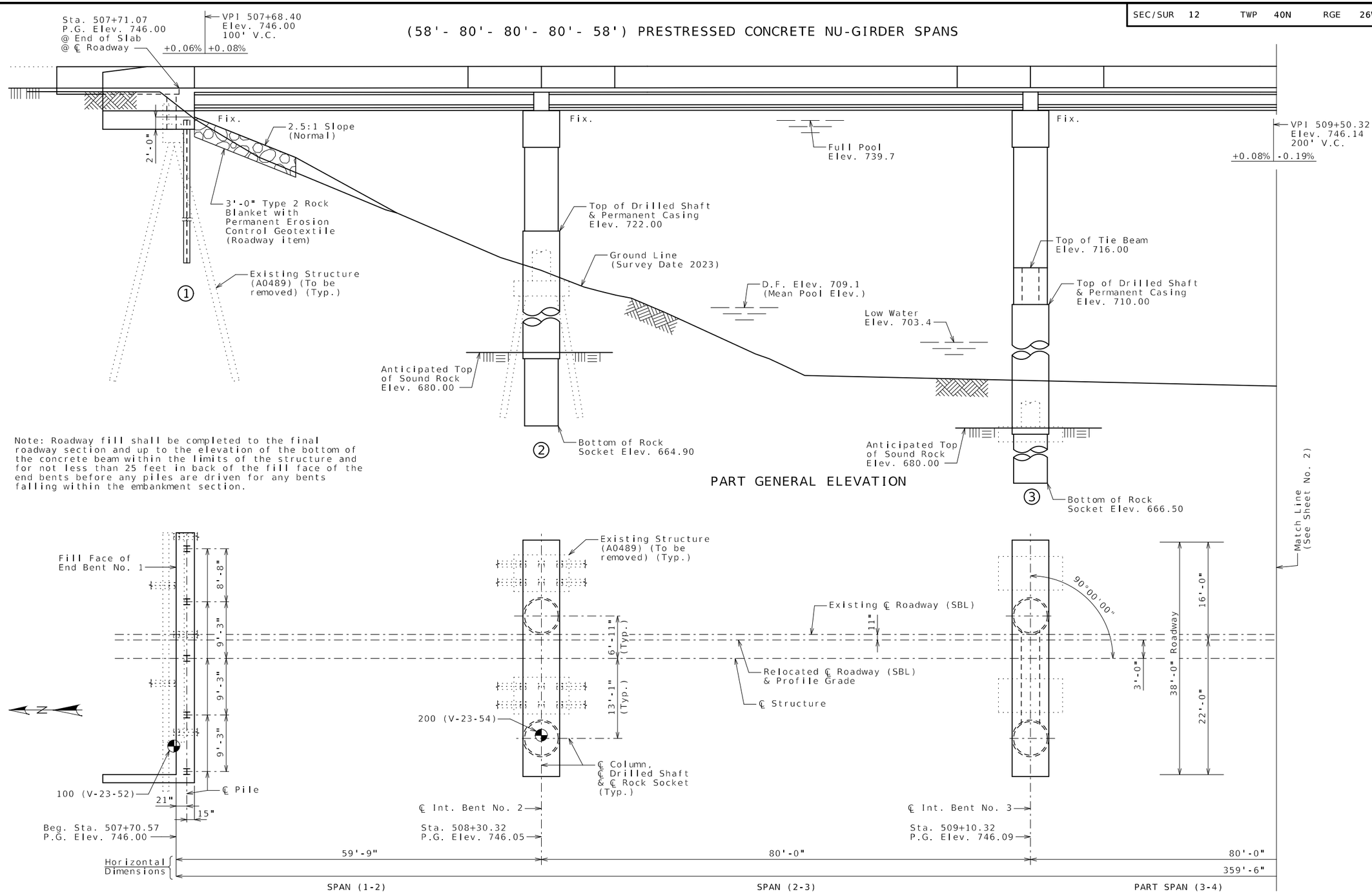
BRIDGE NO.
A9338

DATE	DESCRIPTION

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

SEC/SUR 12 TWP 40N RGE 26W

(58'- 80'- 80'- 80'- 58') PRESTRESSED CONCRETE NU-GIRDER SPANS



Note: 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.

PART GENERAL ELEVATION

PART PLAN

● Indicates location of borings.

For Notice and Disclaimer Regarding Boring Log Data, see Sheet No. 2.

B.M. (C.P. 3) 74/5/8" W/ PINK CAP; ELEV.744.8973; EASTING 3001237.3778; NORTHING 768684.6893

BRIDGE: ROUTE 13 (SB) OVER TRUMAN RESERVOIR (MENSON CREEK ARM)

ROUTE 13 (SB) FROM ROUTE 18 TO ROUTE Z
ABOUT 6.2 MILES SOUTH OF ROUTE 7
BEGINNING STATION 507+70.57

Designed Jan. 2024
Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
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04/09/2024 7:47:03 AM
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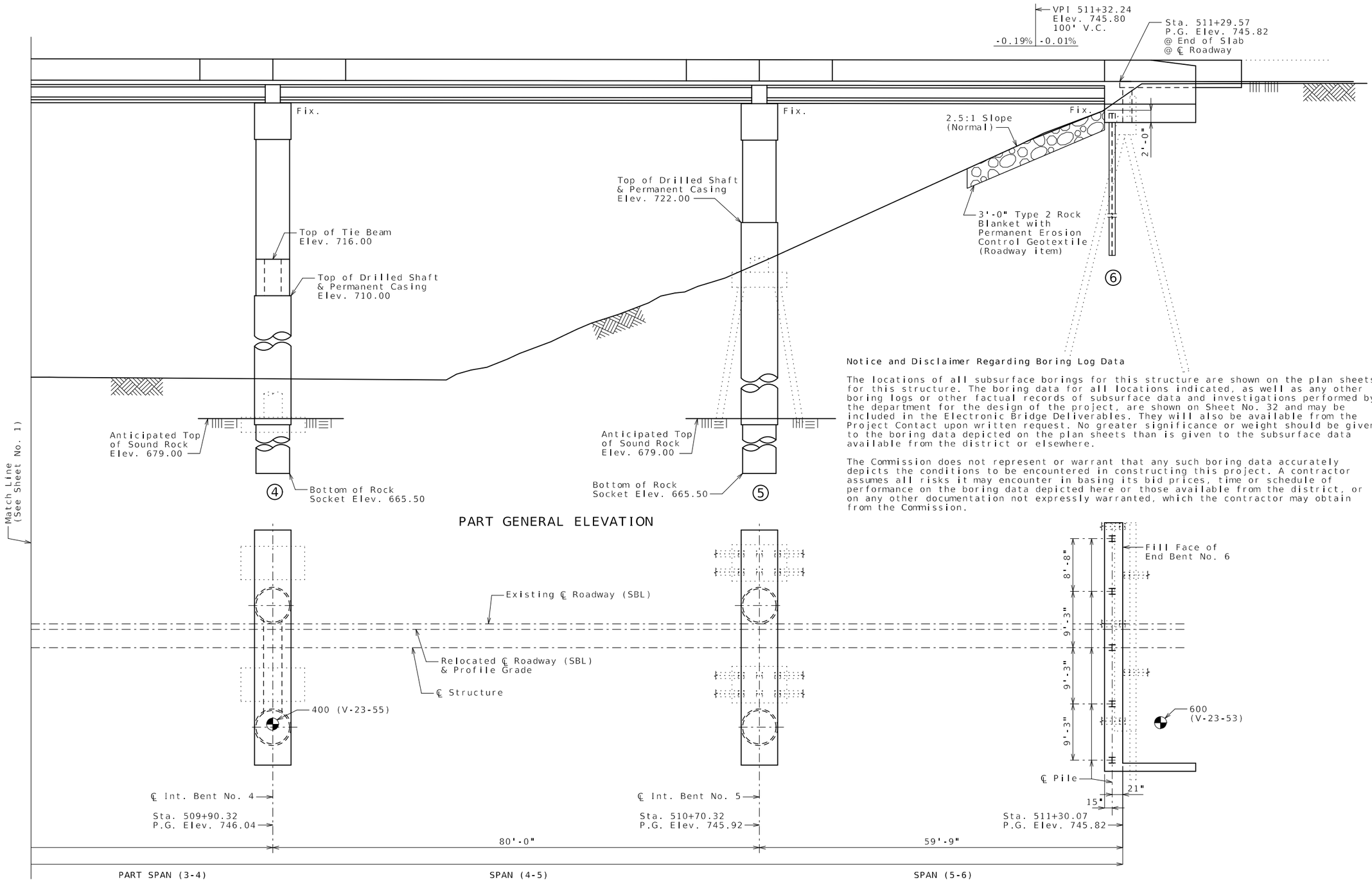
DATE PREPARED 4/9/2024
ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

DESCRIPTION | DATE

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



PART GENERAL ELEVATION

PART PLAN

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheets for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet No. 32 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

STATE OF MISSOURI
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DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION	DATE

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

Detailed Feb. 2024
Checked Feb. 2024

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

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)
Seismic Design Category = B

Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{D1} = 0.154g.

Acceleration Coefficient (effective peak ground acceleration coefficient), A_S = 0.096g.

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf (Min.)
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-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girder and Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50S)	fy = 50,000 psi

For prestressed girder stresses, see Sheets No. 15 thru 18.

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 filler, except as noted.

The spaces between the existing and proposed structures less than 5 inches wide, at the end bents, shall be filled with a joint filler material.

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

MBS refers to mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 or 710.

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

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	sq. yard	70		70
Temporary Shoring	lump sum			1
Removal of Bridges (A0489)	lump sum			1
Bridge Approach Slab (Major)	sq. yard			176
Drilled Shafts (6 ft. 0 in. Dia.)	linear foot	292.0		292.0
Rock Sockets (5 ft. 6 in. Dia.)	linear foot	111.2		111.2
Video Camera Inspection	each	8		8
Foundation Inspection Holes	linear foot	199.2		199.2
Sonic Logging Testing	each	8		8
Galvanized Structural Steel Piles (12 in.)	linear foot	620		620
Pile Point Reinforcement	each	10		10
Class B Concrete (Substructure)	cu. yard	400.4		400.4
Type D Barrier	linear foot		782	782
Slab on Concrete NU-Girder	sq. yard		1620	1620
NU 35, Prestressed Concrete NU-Girder	linear foot		1418	1418
Reinforcing Steel (Bridges)	pound	135,490		135,490
Mechanical Bar Splice	each	296		296
Slab Drain	each		62	62
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		8	8
Laminated Neoprene Bearing Pad	each		32	32

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.).

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 diaphragm 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.

Estimated Quantities for Slab on Concrete NU-Girder

	Item		Total
	Class B-2 Concrete	cu. yard	488
	Reinforcing Steel	pound	220
*	Reinforcing Steel (Galvanized)	pound	147,540

* All superstructure reinforcement shall be galvanized, except for Strand Tie Bars (#5-H107, #5-H607, #5-H703, #5-H704).

Specification, materials, zinc coating process and construction practice shall be in accordance with ASTM A1094/A1094M-18.

Galvanized reinforcing steel shall not come in contact with uncoated reinforcing steel or prestressing strands. Nylon, PVC, or polyethylene spacers shall be used where necessary. Nylon cable ties shall be used to bind the spacers to the reinforcement.

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 conventional forms, all concrete, and plain and galvanized 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 prestressed panels will not be permitted.

Foundation Data

Type	Design Data		Bent Number 1	2	3	4	5	6
Load Bearing Pile	Pile Type and Size		HP 12x53	--	--	--	--	HP 12x53
	Number	ea	5	--	--	--	--	5
	Approximate Length Per Each	ft	62	--	--	--	--	62
	Pile Point Reinforcement	ea	All	--	--	--	--	All
	Min. Galvanized Penetration (Elev.)	ft	715.00	--	--	--	--	715.00
	Pile Driving Verification Method		DF	--	--	--	--	DF
	Resistance Factor		0.4	--	--	--	--	0.4
	Minimum Nominal Axial Compressive Resistance	kip	481	--	--	--	--	481
Rock Socket	Number	ea	--	2	2	2	2	--
	Foundation Material		--	Strong Rock	Strong Rock	Strong Rock	Strong Rock	--
	Elevation Range	ft	--	677-651	677-651	676-650	676-650	--
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	--	16.4 (Left) 11.4 (Right)	20.3 (Left) 14.0 (Right)	20.4 (Left) 14.1 (Right)	18.9 (Left) 13.1 (Right)	--

DF = FHWA-modified Gates Dynamic Pile Formula

Load Bearing Pile:

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

Rock Socket (Drilled Shafts):

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

All piles shall be galvanized down to the minimum galvanized penetration (elevation).

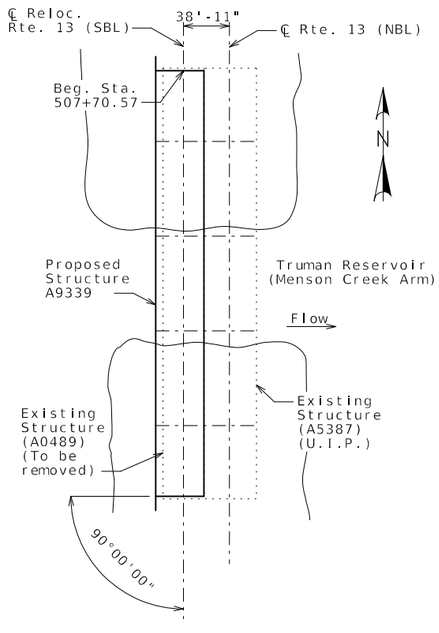
Pile point reinforcement need not be galvanized. Shop drawings will not be required for pile point reinforcement.

The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) shown on the plans for all piles. Deviations in penetration less than 5 feet of the minimum will be considered acceptable provided the contractor makes the necessary corrections to ensure the minimum penetration is achieved on subsequent piles.

Hydrologic Data

Drainage Area = NA
Design Flood Frequency = NA
Design Flood Discharge = NA
Design Flood (D.F.) Elevation = 709.1 (Mean Pool Elev.)
Base Flood (100-year)
Base Flood Elevation = 741.0 (FEMA-FIS)
Base Flood Discharge = NA
Estimated Backwater = NA
Average Velocity thru Opening = NA
Freeboard (50-year)
Freeboard = 1.5 ft (a)
Roadway Overtopping
Overtopping Flood Discharge = NA
Overtopping Flood Frequency = NA
Flood Elevation = 739.7 (b) (Full Pool Elev.)

(a) Based on full pool elevation converted to NAVD88 using VERTCON
(b) From USACE in NGVD29



LOCATION SKETCH

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:47:42 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

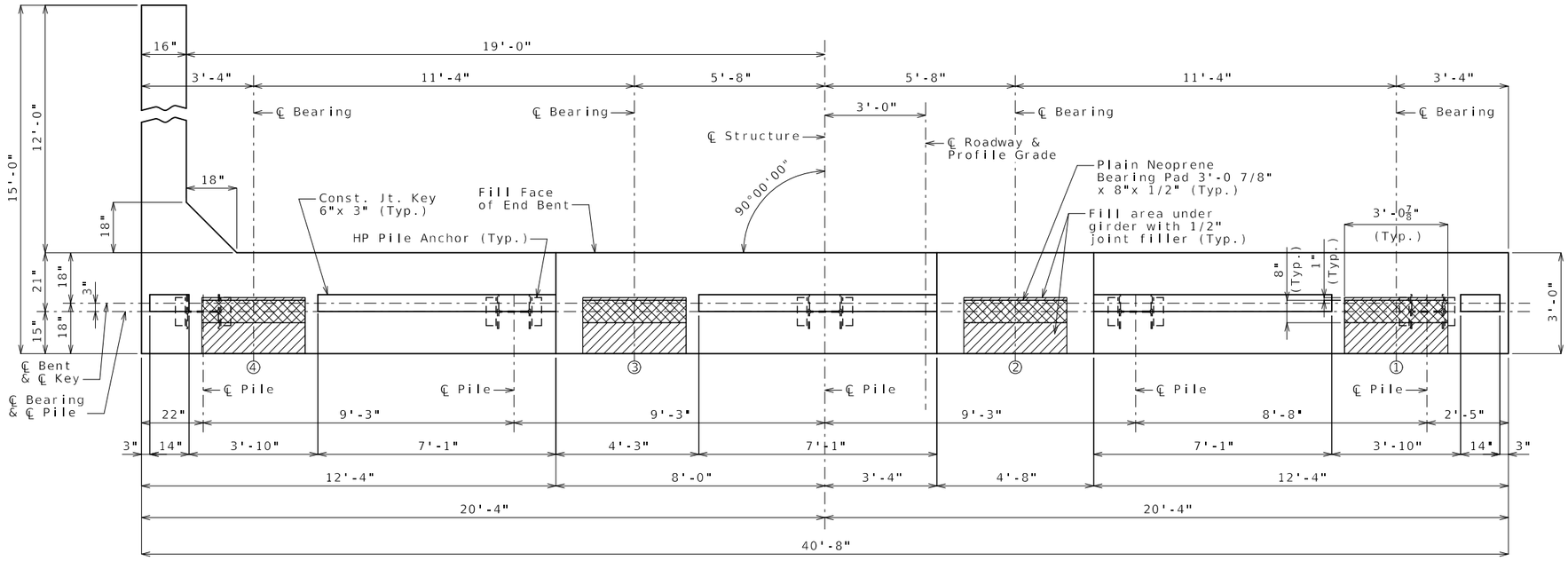
DATE PREPARED: 4/9/2024
ROUTE: 13 | STATE: MO
DISTRICT: BR | SHEET NO.: 3
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9339

DESCRIPTION	DATE

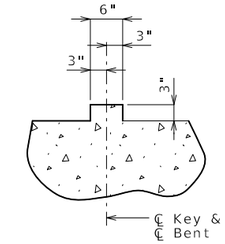
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed Jan. 2024
Checked Feb. 2024

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



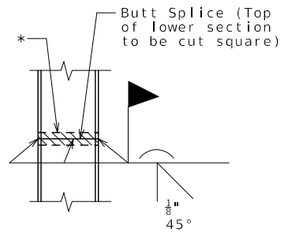
PLAN OF BEAM



SECTION THRU KEY

PLAN OF BEAM SHOWING REINFORCEMENT

(Keys not shown for clarity.)



STEEL PILE SPLICE

(If required)

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

Notes:

Work this sheet with Sheets No. 5 & 6.

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

The U bars and pairs V bars shall be placed parallel to centerline of roadway.

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	35
Temporary Shoring	lump sum	1
Galvanized Structural Steel Piles (12 in.)	linear foot	310
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	16.2

These quantities are included in the Estimated Quantities table on Sheet No. 3.

END BENT NO. 1

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:48:06 AM
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DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
HENRY

JOB NO.
J7P3484C

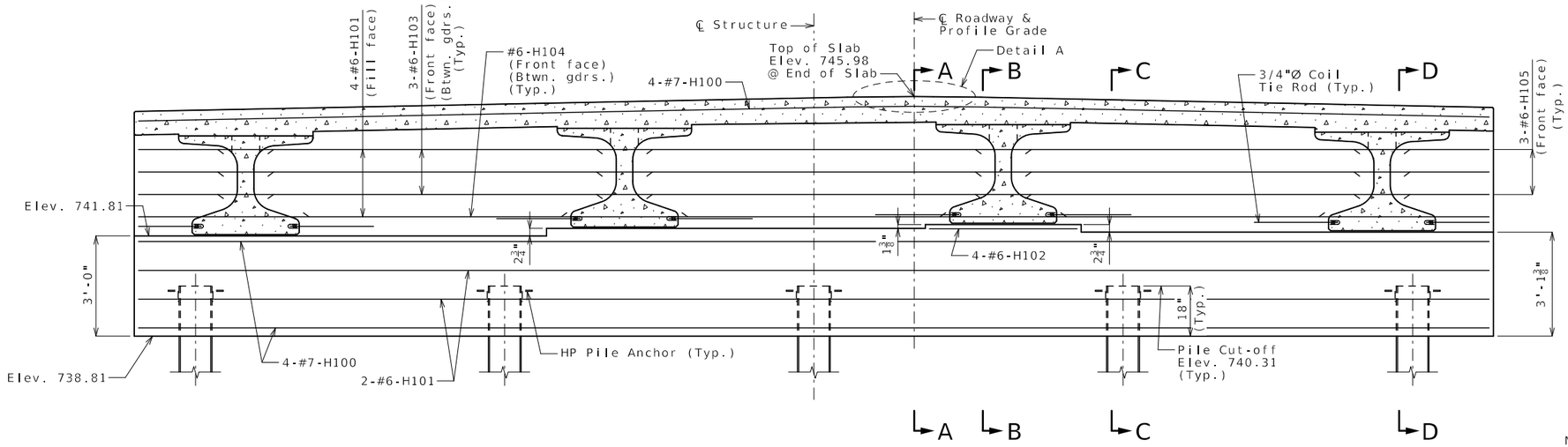
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

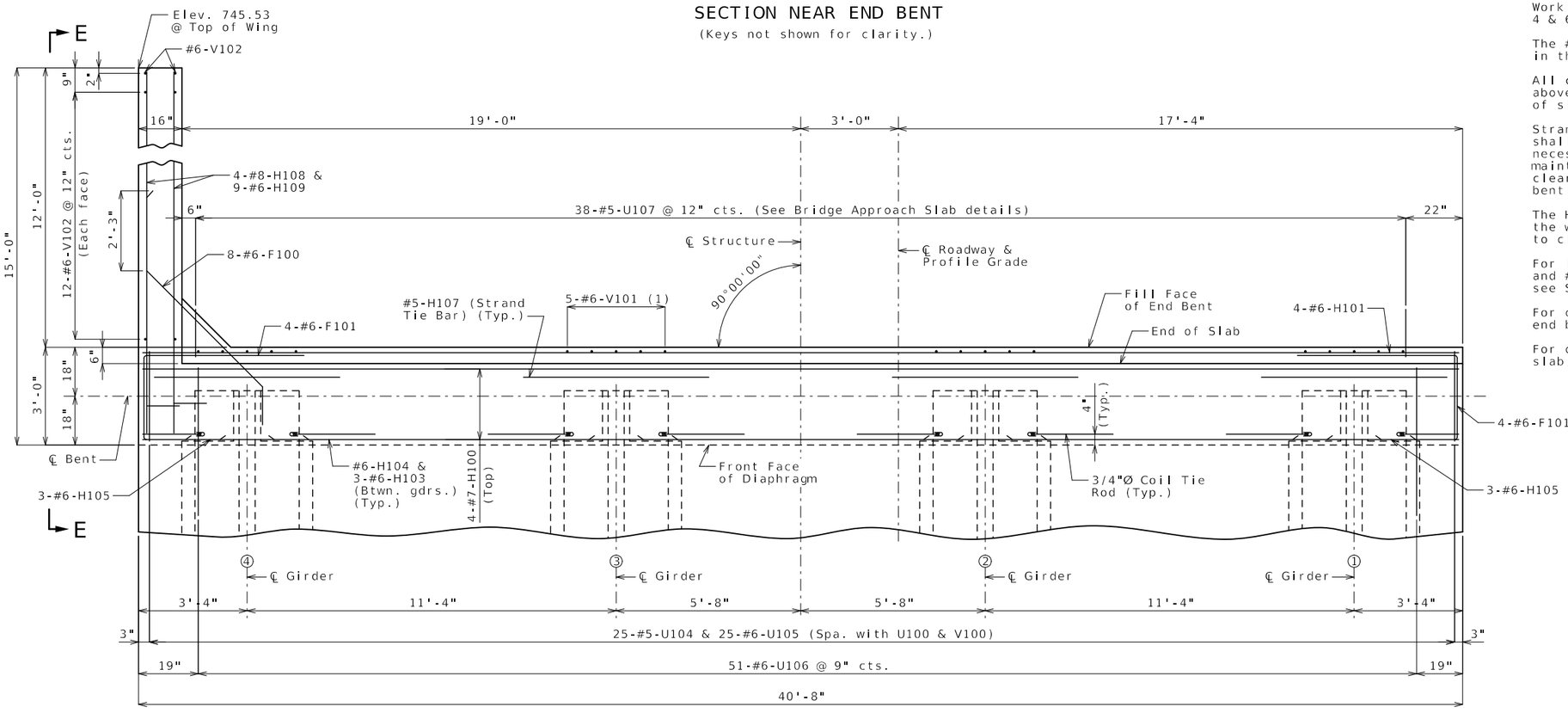
DESCRIPTION	DATE

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



SECTION NEAR END BENT

(Keys not shown for clarity.)



PART PLAN

(1) @ 9" cts. (Centered behind girder) (Typ.)

Notes:

Work this sheet with Sheets No. 4 & 6.

The #6-F100 bars shall be bent in the field to clear girders.

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

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

The H bars at the inside face of the wing shall be bent in field to clear piles.

For location of coil tie rods and #5-H107 (Strand Tie Bars), see Sheets No. 15 & 16.

For details of vertical drain at end bent, see Sheet No. 7.

For details of bridge approach slab, see Sheet No. 27.

END BENT NO. 1

Detailed Feb. 2024
Checked Feb. 2024

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

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TIMOTHY D. LEAF
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DATE PREPARED
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ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
HENRY

JOB NO.
J7P3484C

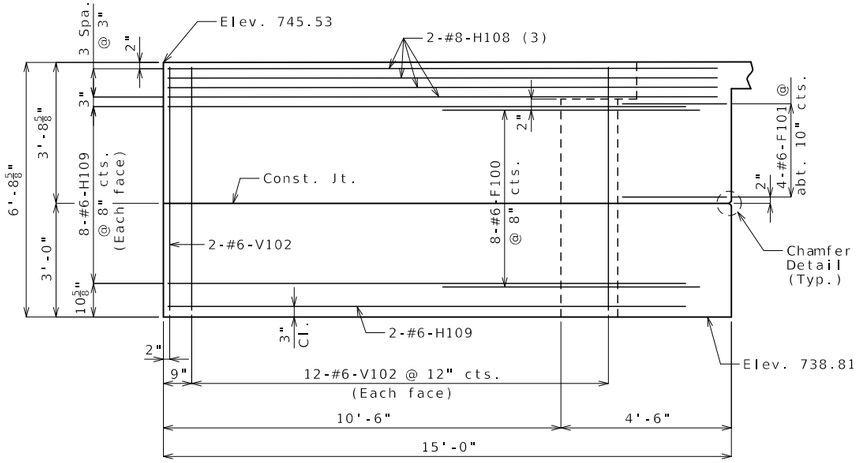
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION	DATE

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

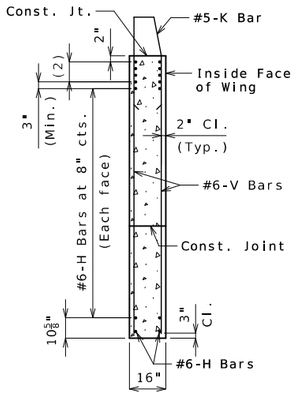


SECTION E-E

Notes:

Work this sheet with Sheets No. 4 & 5.

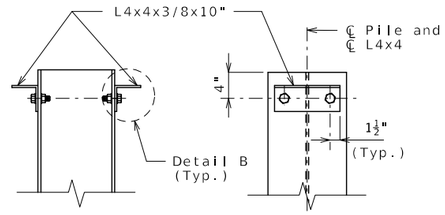
For reinforcement of the barrier, see Sheet No. 26.



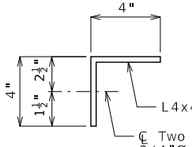
TYPICAL SECTION THRU WING

(2) #8-H Bars at 3" cts. (Each face)(Place with grade)

(3) Place with grade

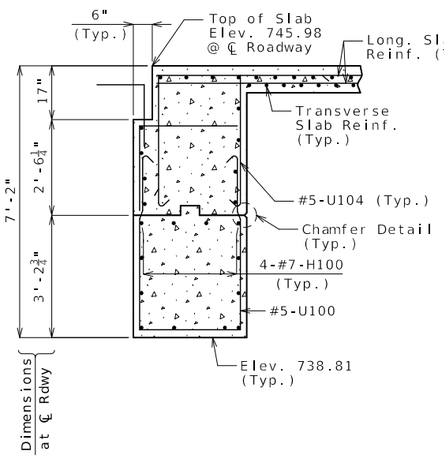


DETAILS OF HP PILE ANCHORS

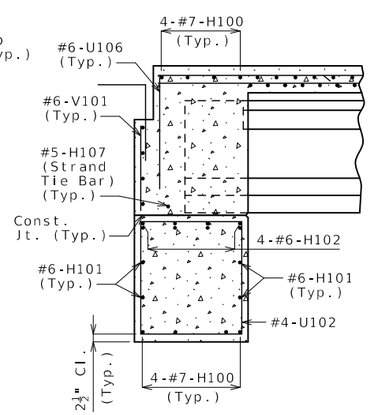


DETAIL B

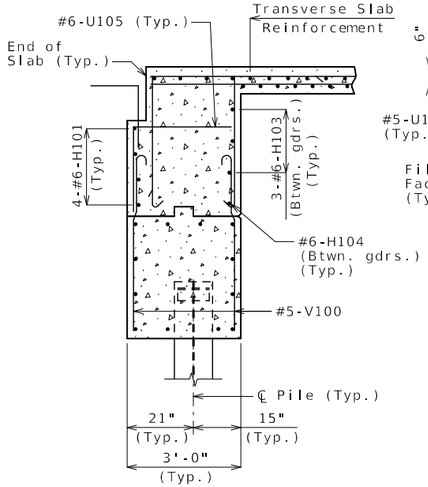
Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.



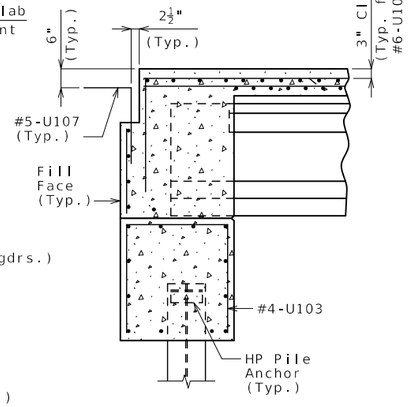
SECTION A-A



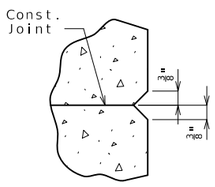
SECTION B-B



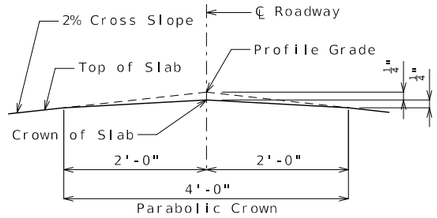
SECTION C-C



SECTION D-D



CHAMFER DETAIL



DETAIL A

END BENT NO. 1

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
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NUMBER PE-2012000778
PROFESSIONAL ENGINEER
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DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	6

COUNTY
HENRY

JOB NO.
J7P3484C

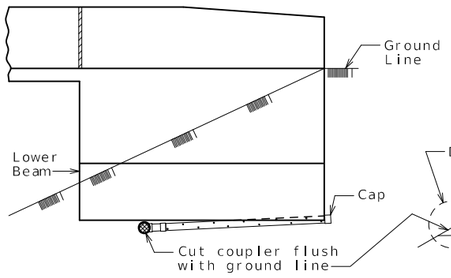
CONTRACT ID.

PROJECT NO.

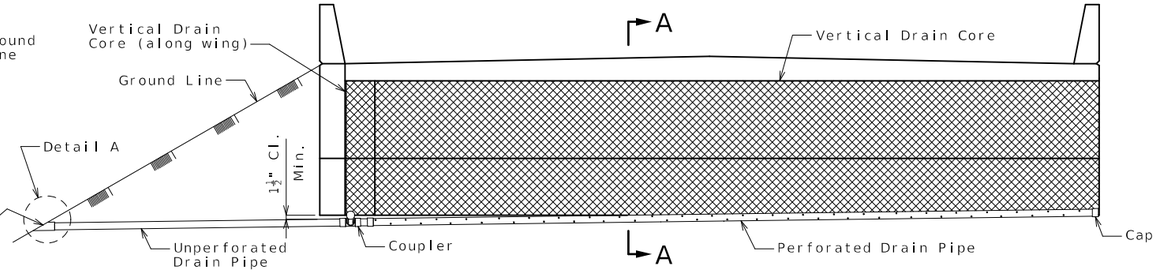
BRIDGE NO.
A9339

DESCRIPTION	DATE

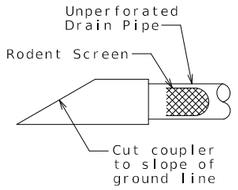
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



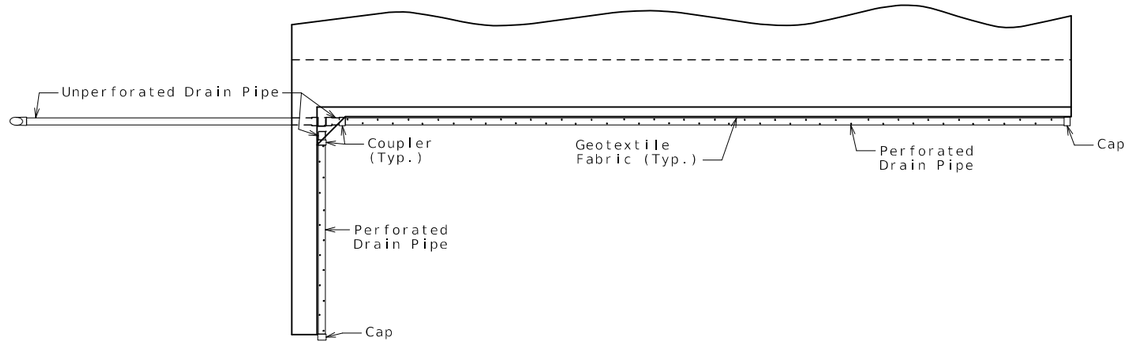
ELEVATION OF WING



ELEVATION OF END BENT

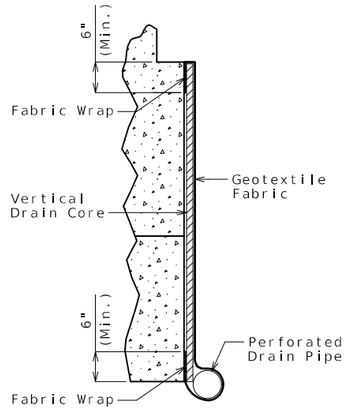


DETAIL A

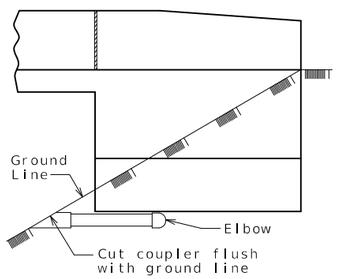


PLAN OF END BENT

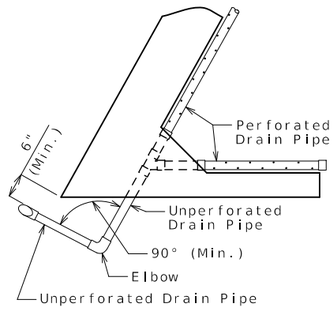
End Bent No. 6 shown, End Bent No. 1 similar.



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

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:49:12 AM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	7

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

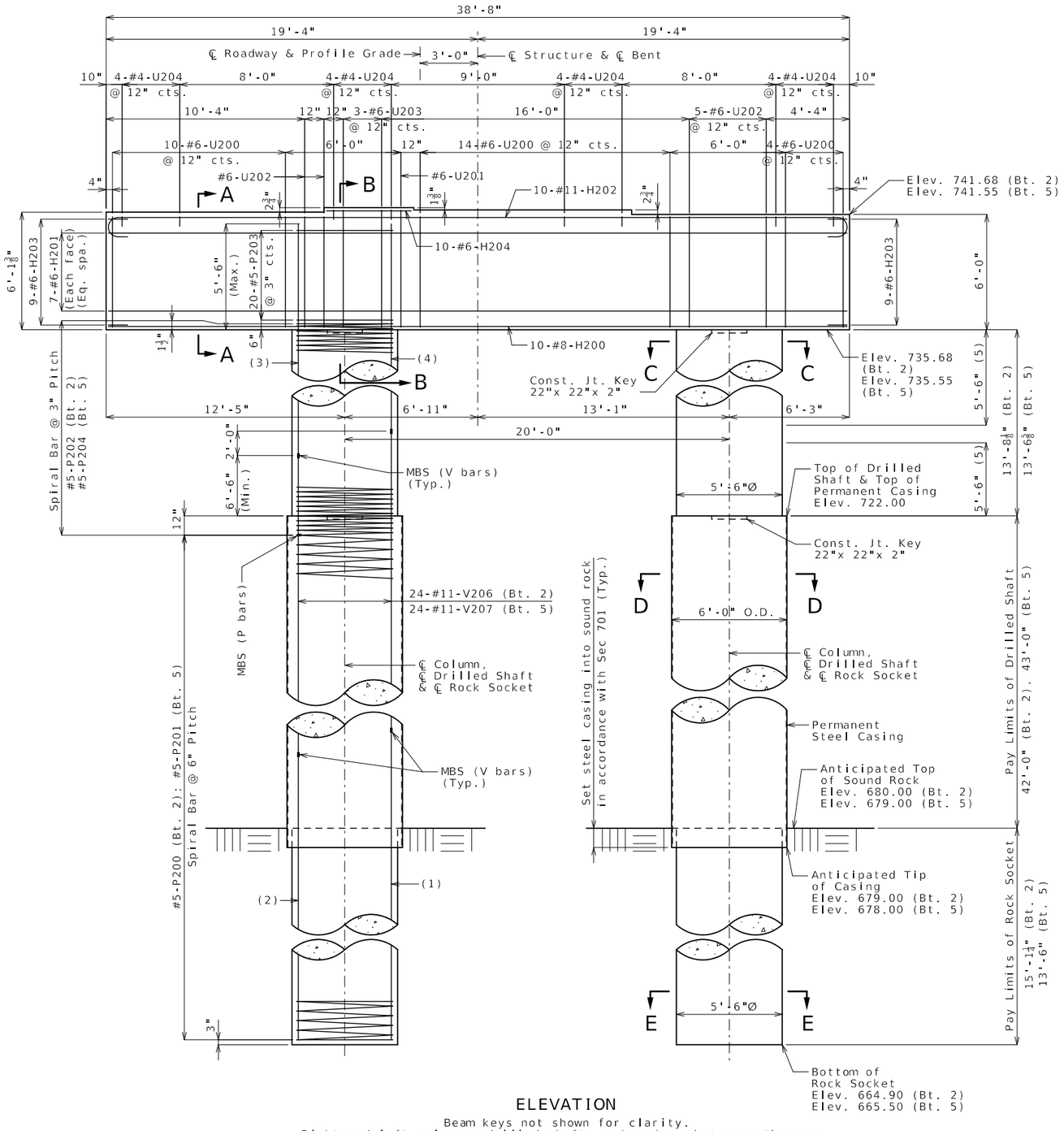
PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION

DATE

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



ELEVATION

Beam keys not shown for clarity.
Right and left columns, drilled shafts and rock sockets are the same.

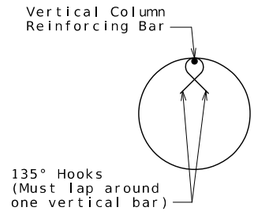
(1) 12-#11-V200 (Bt. 2 & 5)

(2) 12-#11-V201 (Bt. 2 & 5)

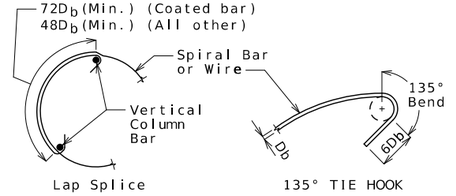
(3) 12-#11-V202 (Bt. 2)
12-#11-V204 (Bt. 5)

(4) 12-#11-V203 (Bt. 2)
12-#11-V205 (Bt. 5)

(5) Lapping of spirals not permitted in these regions. If unavoidable, a mechanical bar splice (MBS) will be required, and no additional payment will be made for these MBS.



SEISMIC STIRRUP BAR



INTERMEDIATE SPLICE OF SPIRALS

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

Notes:

Work this sheet with Sheet No. 9.

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

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

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

All reinforcement in drilled shaft and rock socket is included in the substructure quantities.

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

Mechanical Bar Splices (MBS) shall be required in lieu of lapping of V-bars. MBS locations shall be staggered at least 2'-0" on adjacent bars.

MBS at any location shall be capable of developing 125% of the specified minimum yield stress of the connected bars.

Substructure Quantity Table for Bents No. 2 & 5

Item		Quantity Bent 2	Quantity Bent 5
Drilled Shafts (6 ft. 0 in. Dia.)	linear foot	84.0	86.0
Rock Sockets (5 ft. 6 in. Dia.)	linear foot	30.2	27.0
Video Camera Inspection	each	2	2
Foundation Inspection Holes	linear foot	52.2	49.0
Sonic Logging Testing	each	2	2
Class B Concrete (Substructure)	cu. yard	77.0	76.7
Reinforcing Steel (Bridges)	pound	32,950	32,700
Mechanical Bar Splice	each	98	98

These quantities are included in the Estimated Quantities table on Sheet No. 3.

INTERMEDIATE BENTS NO. 2 & 5

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:49:43 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	8

COUNTY
HENRY

JOB NO.
J7P3484C

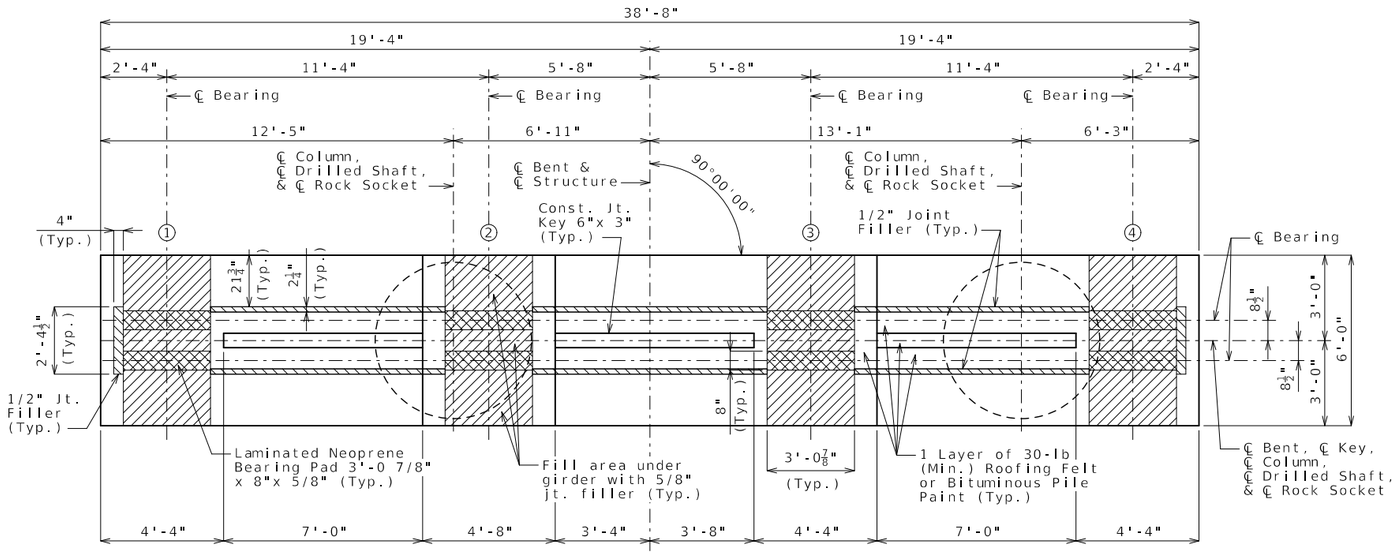
CONTRACT ID.

PROJECT NO.

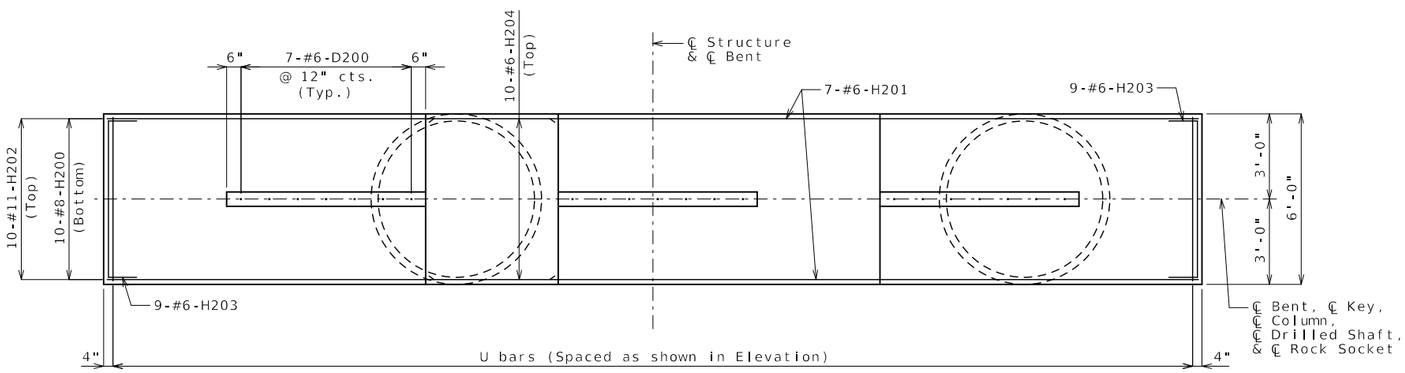
BRIDGE NO.
A9339

DATE	DESCRIPTION

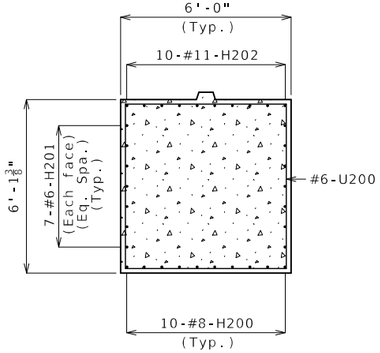
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



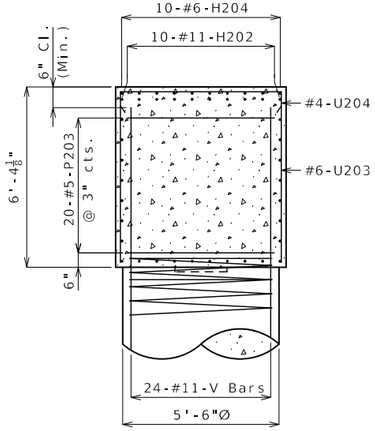
PLAN OF BEAM



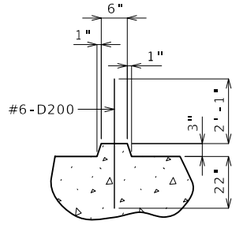
PLAN OF BEAM SHOWING REINFORCEMENT



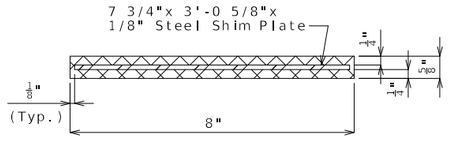
SECTION A-A



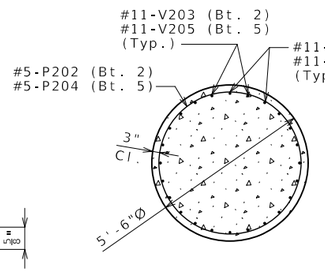
SECTION B-B



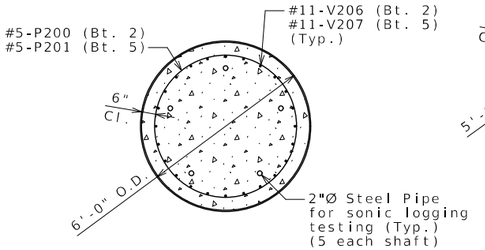
SECTION THRU KEY



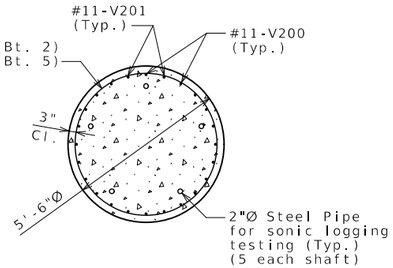
TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD



SECTION C-C (COLUMN)



SECTION D-D (DRILLED SHAFT)



SECTION E-E (ROCK SOCKET)

Notes:

Work this sheet with Sheet No. 8.

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

INTERMEDIATE BENTS NO. 2 & 5

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:50:04 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	9

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

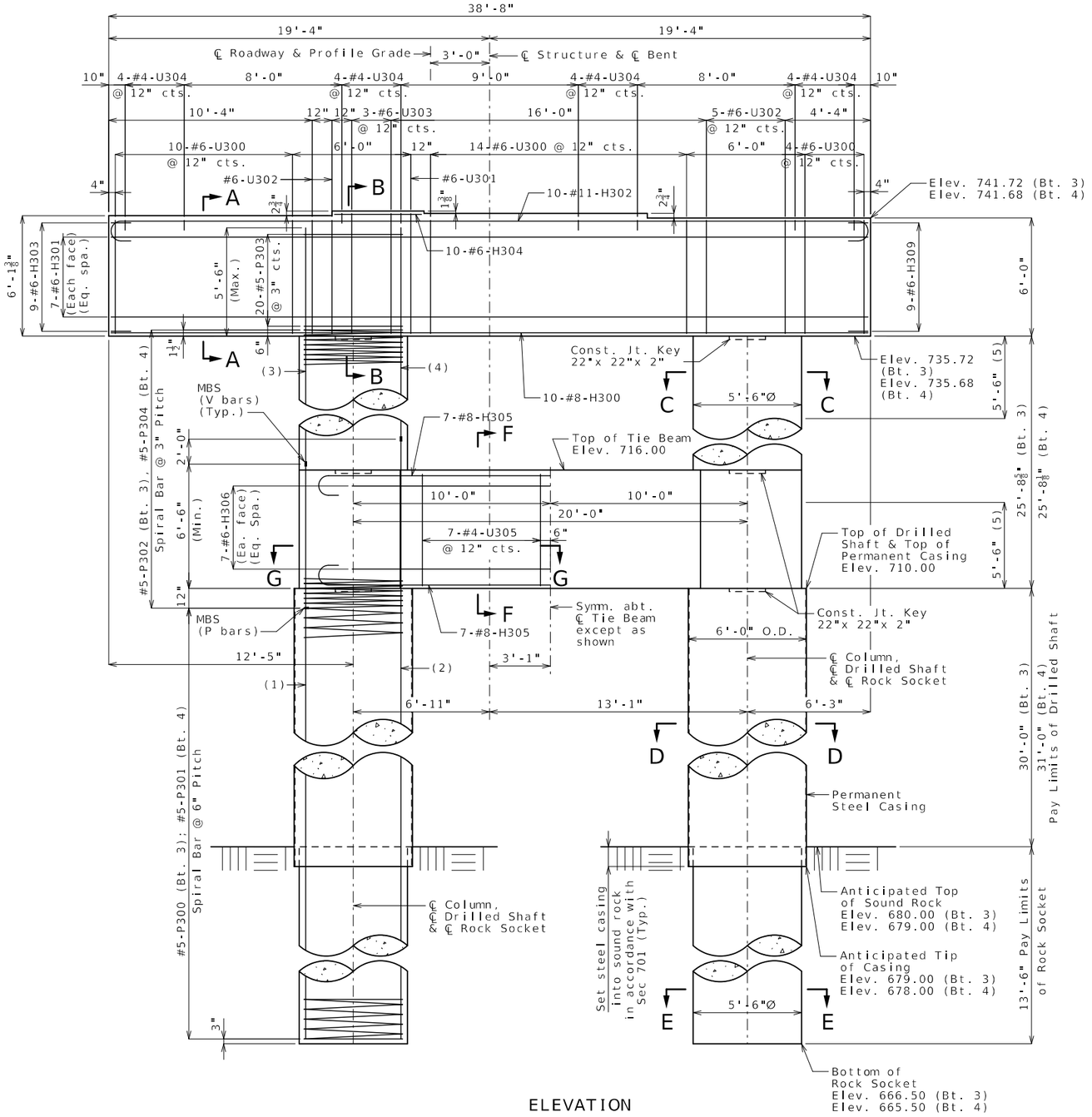
PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION

DATE

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



ELEVATION

Beam keys not shown for clarity.
Right and left columns, drilled shafts and rock sockets are the same.

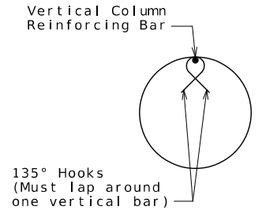
(1) 12-#11-V300 (Bt. 3)
12-#11-V304 (Bt. 4)

(2) 12-#11-V301 (Bt. 3)
12-#11-V305 (Bt. 4)

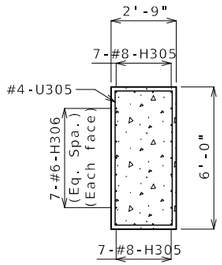
(3) 12-#11-V302 (Bt. 3)
12-#11-V306 (Bt. 4)

(4) 12-#11-V303 (Bt. 3)
12-#11-V307 (Bt. 4)

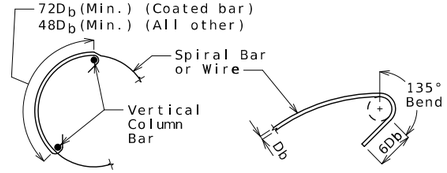
(5) Lapping of spirals not permitted in these regions. If unavoidable, a mechanical bar splice (MBS) will be required, and no additional payment will be made for these MBS.



SEISMIC STIRRUP BAR



SECTION F-F (TIE BEAM)



INTERMEDIATE SPLICE OF SPIRALS

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

Notes:

Work this sheet with Sheet No. 11.

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

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

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

All reinforcement in drilled shaft and rock socket is included in the substructure quantities.

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

Mechanical Bar Splices (MBS) shall be required in lieu of lapping of V-bars. MBS locations shall be staggered at least 2'-0" on adjacent bars.

MBS at any location shall be capable of developing 125% of the specified minimum yield stress of the connected bars.

Substructure Quantity Table for Bents No. 3 & 4

Item		Quantity Bent 3	Quantity Bent 4
Drilled Shafts (6 ft. 0 in. Dia.)	linear foot	60.0	62.0
Rock Sockets (5 ft. 6 in. Dia.)	linear foot	27.0	27.0
Video Camera Inspection	each	2	2
Foundation Inspection Holes	linear foot	49.0	49.0
Sonic Logging Testing	each	2	2
Class B Concrete (Substructure)	cu. yard	107.2	107.1
Reinforcing Steel (Bridges)	pound	34,630	35,210
Mechanical Bar Splice	each	50	50

These quantities are included in the Estimated Quantities table on Sheet No. 3.

INTERMEDIATE BENTS NO. 3 & 4

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:50:27 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

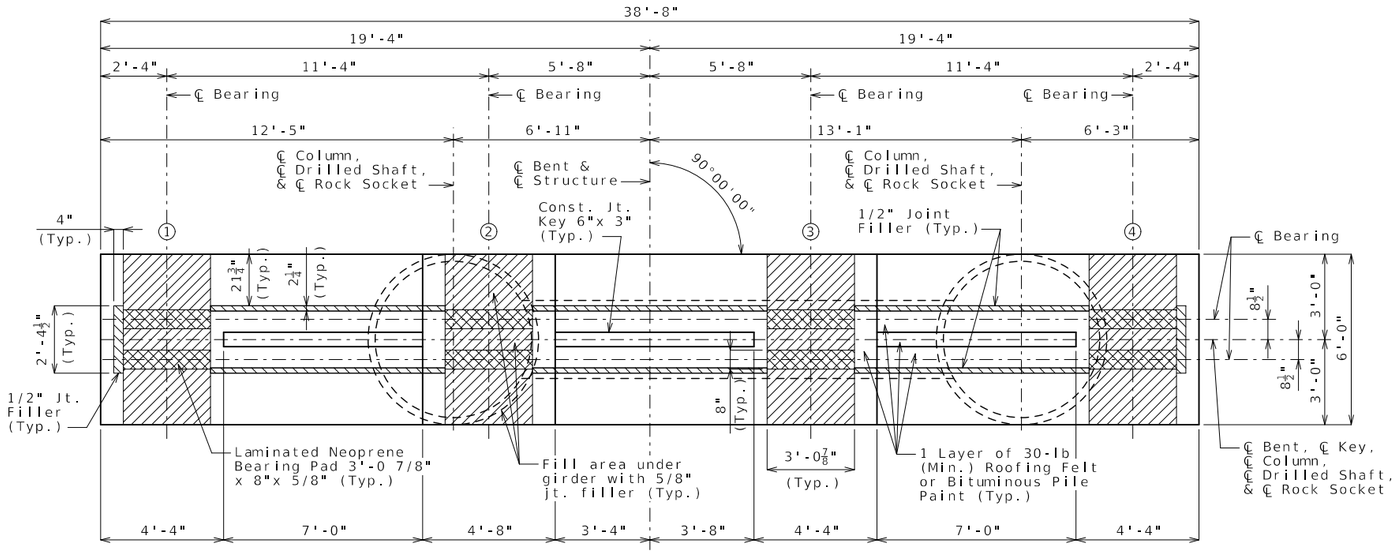
DATE PREPARED 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	10

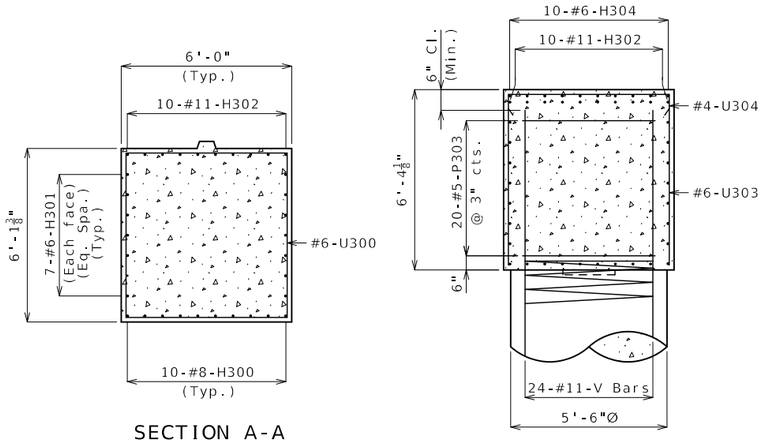
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

DESCRIPTION | DATE

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

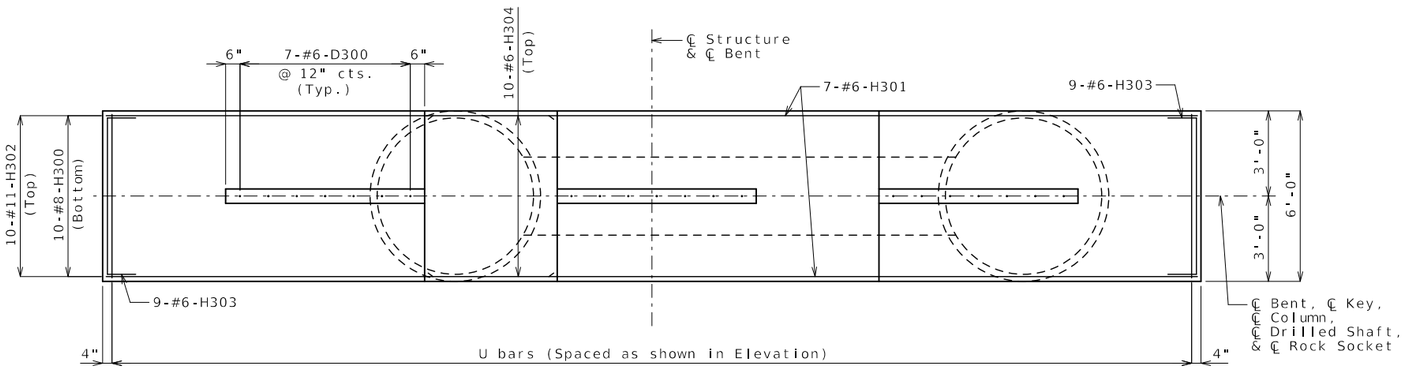


PLAN OF BEAM

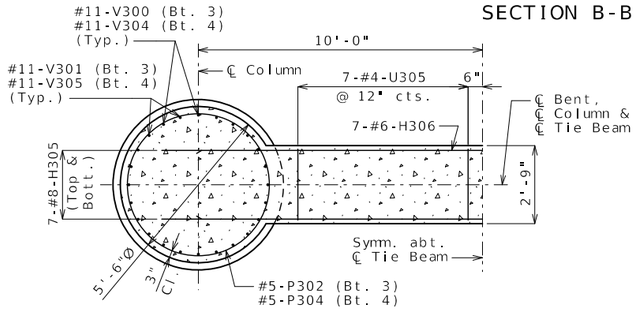


SECTION A-A

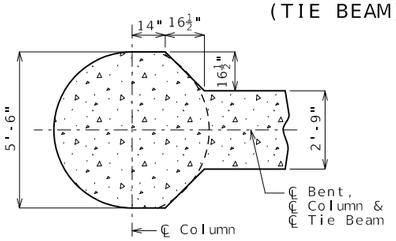
SECTION B-B



PLAN OF BEAM SHOWING REINFORCEMENT

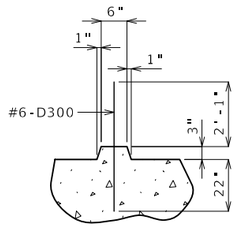


HALF SECTION G-G (TIE BEAM)

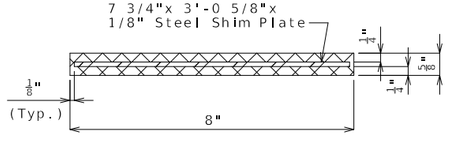


OPTIONAL PART SECTION G-G

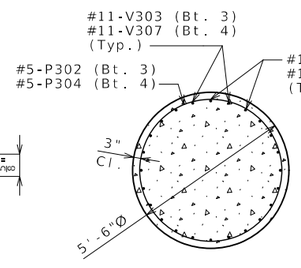
Note: At the contractor's option, the details shown in Optional Part Section G-G may be used for column-tie beam. No additional payment will be made for this substitution.



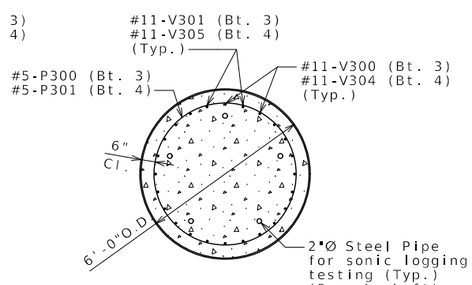
SECTION THRU KEY



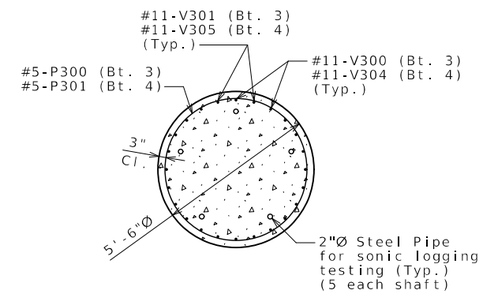
TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD



SECTION C-C (COLUMN)



SECTION D-D (DRILLED SHAFT)



SECTION E-E (ROCK SOCKET)

Notes:

Work this sheet with Sheet No. 8.

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

INTERMEDIATE BENTS NO. 3 & 4

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:50:47 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

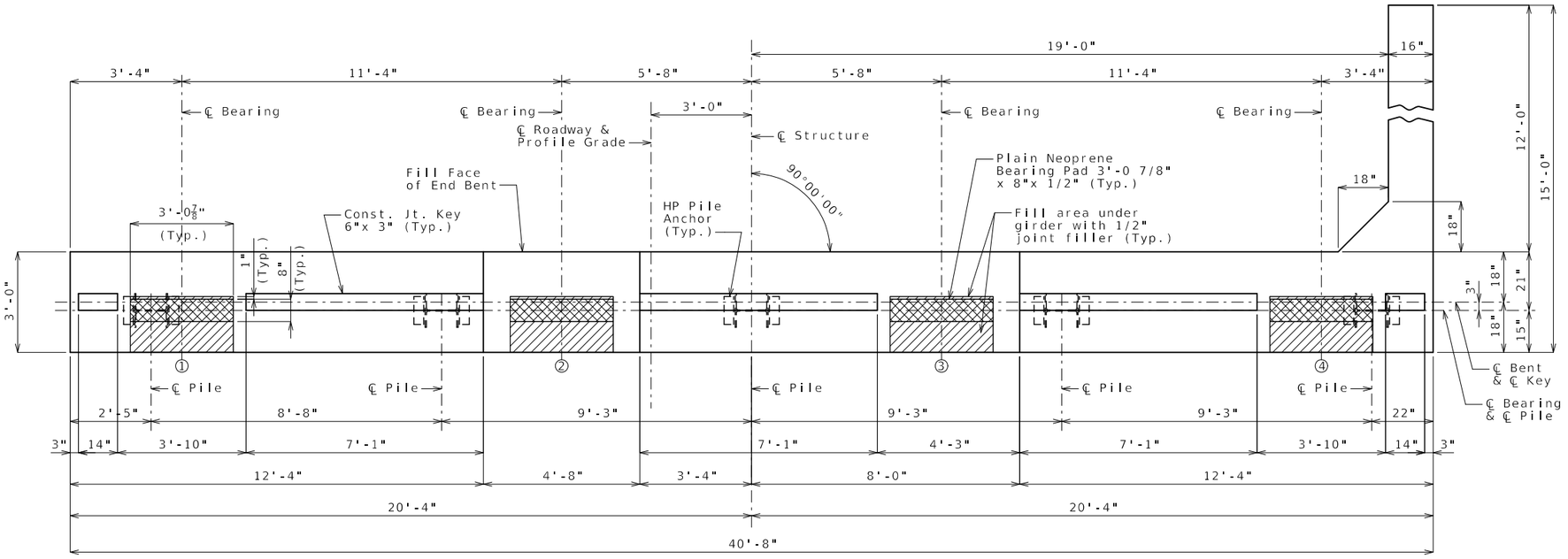
PROJECT NO.

BRIDGE NO.
A9339

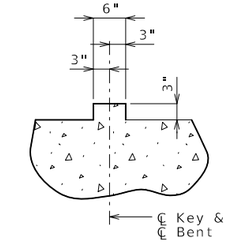
DESCRIPTION

DATE

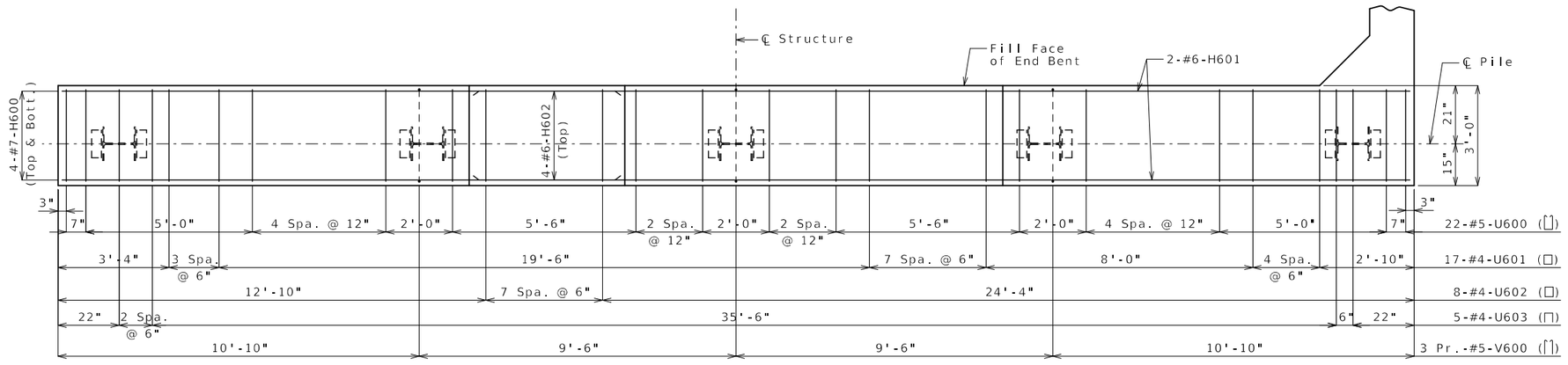
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PLAN OF BEAM

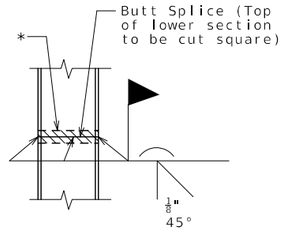


SECTION THRU KEY



PLAN OF BEAM SHOWING REINFORCEMENT

(Keys not shown for clarity.)



STEEL PILE SPLICE

(If required)

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

Notes:

Work this sheet with Sheets No. 13 & 14.

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

The U bars and pairs V bars shall be placed parallel to centerline of roadway.

Substructure Quantity Table for Bent No. 6		
Item		Quantity
Class 1 Excavation	cu. yard	35
Temporary Shoring	lump sum	1
Galvanized Structural Steel Piles (12 in.)	linear foot	310
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	16.2

These quantities are included in the Estimated Quantities table on Sheet No. 3.

END BENT NO. 6

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:51:07 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
HENRY

JOB NO.
J7P3484C

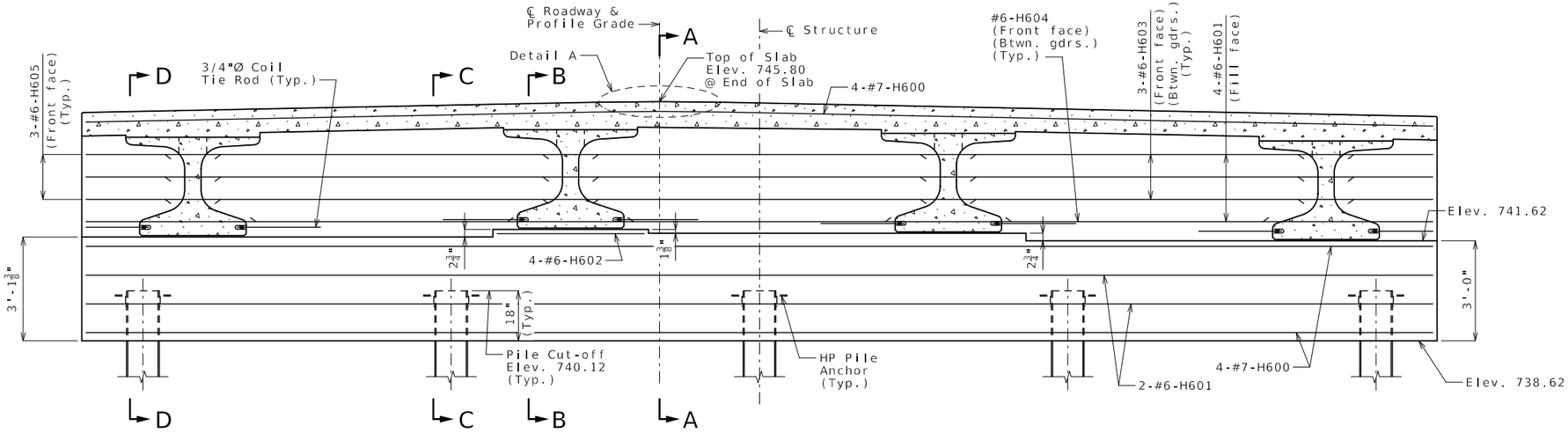
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

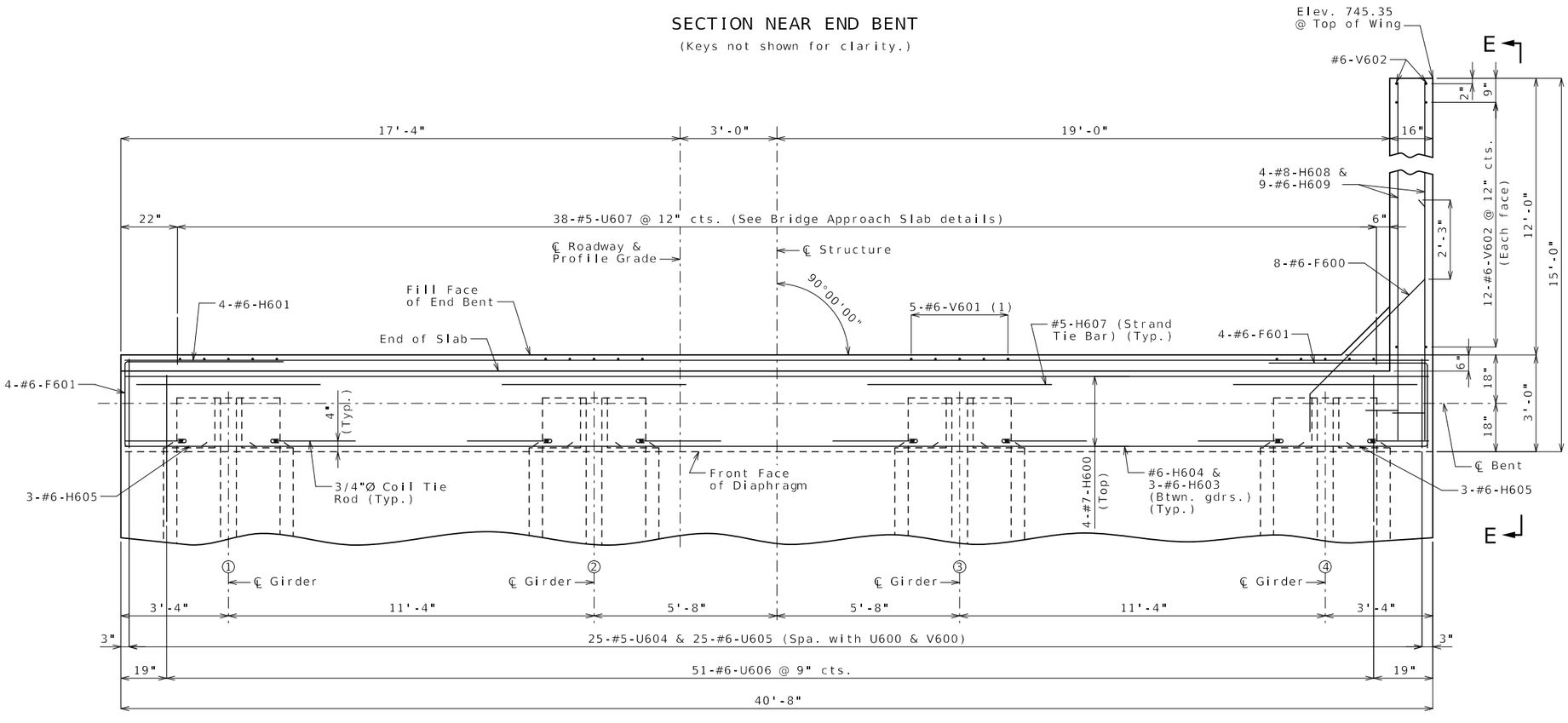
DATE	DESCRIPTION

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



SECTION NEAR END BENT

(Keys not shown for clarity.)



PART PLAN

(1) @ 9" cts. (Centered behind girder) (Typ.)

Notes:

Work this sheet with Sheets No. 12 & 14.

The #6-F600 bars shall be bent in the field to clear girders.

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

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

The H bars at the inside face of the wing shall be bent in field to clear piles.

For location of coil tie rods and #5-H607 (Strand Tie Bars), see Sheets No. 15 & 16.

For details of vertical drain at end bent, see Sheet No. 7.

For details of bridge approach slab, see Sheet No. 27.

END BENT NO. 6

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:51:29 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

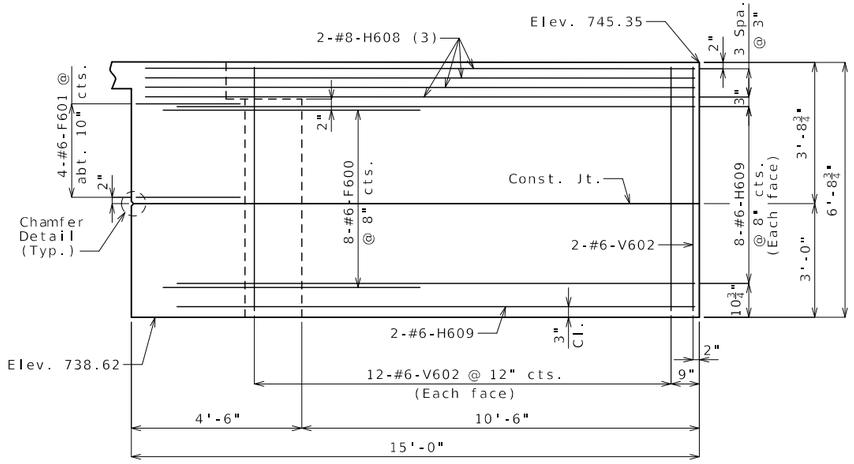
DATE PREPARED: 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	13

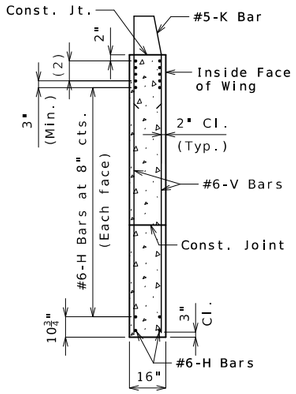
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9339

DESCRIPTION	DATE

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



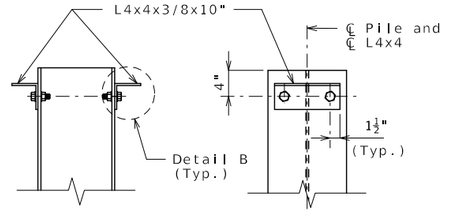
SECTION E-E



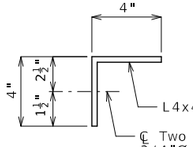
TYPICAL SECTION THRU WING

(2) #8-H Bars at 3" cts. (Each face)(Place with grade)

(3) Place with grade



DETAILS OF HP PILE ANCHORS



℄ Two 13/16"Ø Holes for 3/4"Ø bolts (ASTM F3125 Grade A325 Type 1) with two washers and one nut each.

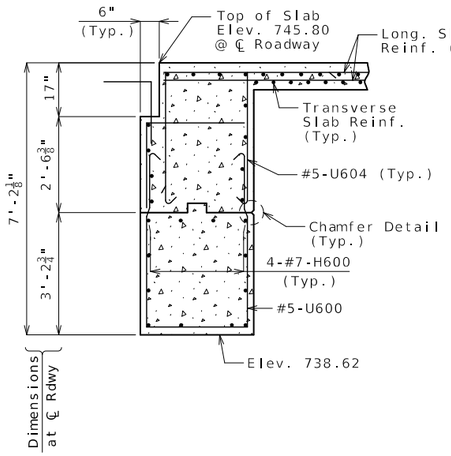
DETAIL B

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.

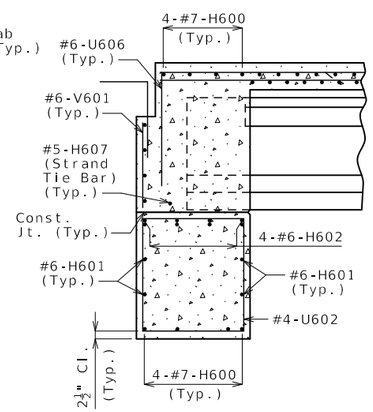
Notes:

Work this sheet with Sheets No. 12 & 13.

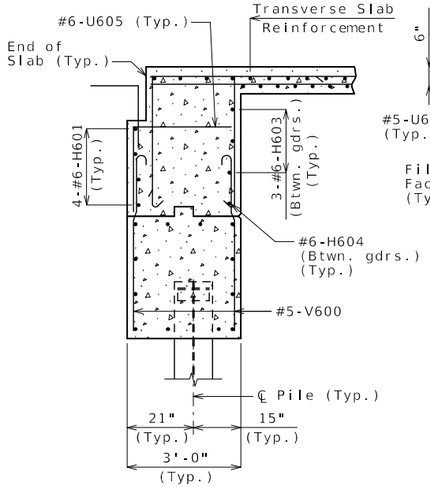
For reinforcement of the barrier, see Sheet No. 26.



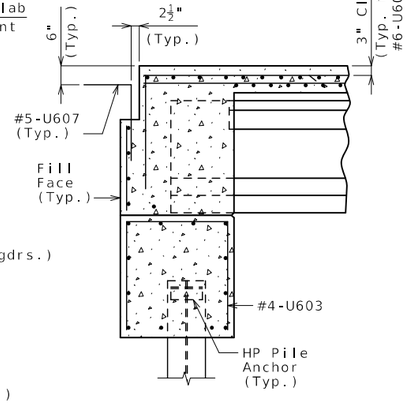
SECTION A-A



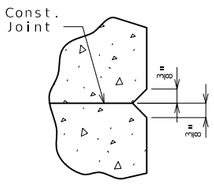
SECTION B-B



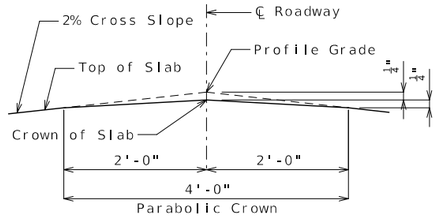
SECTION C-C



SECTION D-D



CHAMFER DETAIL



DETAIL A

END BENT NO. 6

Detailed Feb. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:51:50 AM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	14

COUNTY HENRY

JOB NO. J7P3484C

CONTRACT ID.

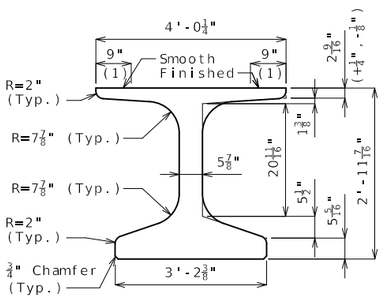
PROJECT NO.

BRIDGE NO. A9339

DESCRIPTION	DATE

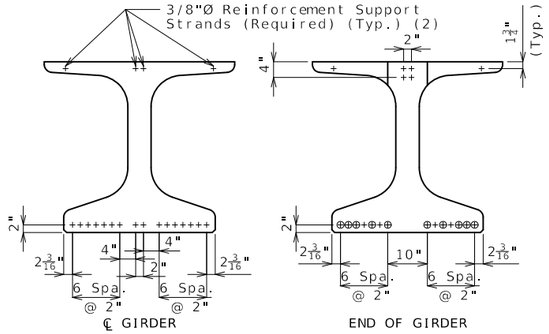
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

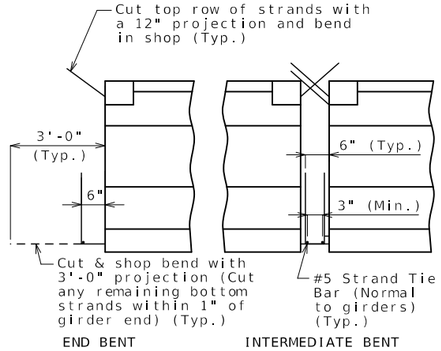


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

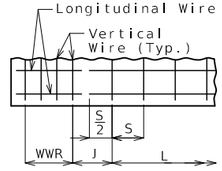
\+ Indicates prestressing strand.

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



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

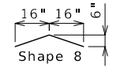
J = Distance between WWR mats

Bill of Reinforcing Steel

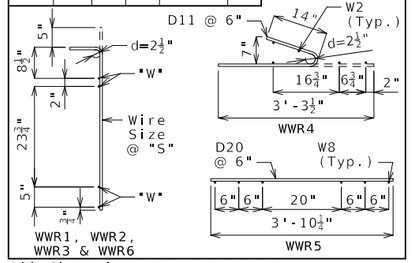
Bars Each Girder			
No.	Size/Mark	Length	Shape
80	3 G1	2'-10"	8
2	4 G3	3'-10"	20

Welded Wire Each Girder					
Mark	Size	S	W	L	J
WWR1	D31	4"	W12	10'-8"	4"
WWR2	D31	12"	W12	7'-0"	12"
WWR3	D31	20"	W12	16'-8"	--
WWR6	D31	2"	W12	16"	3"

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

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 and coil inserts for slab drains.

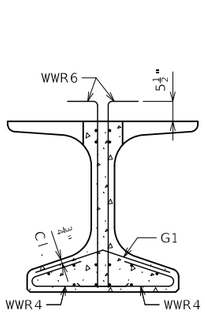
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

For location of coil inserts at slab drains, see Sheet No. 20.

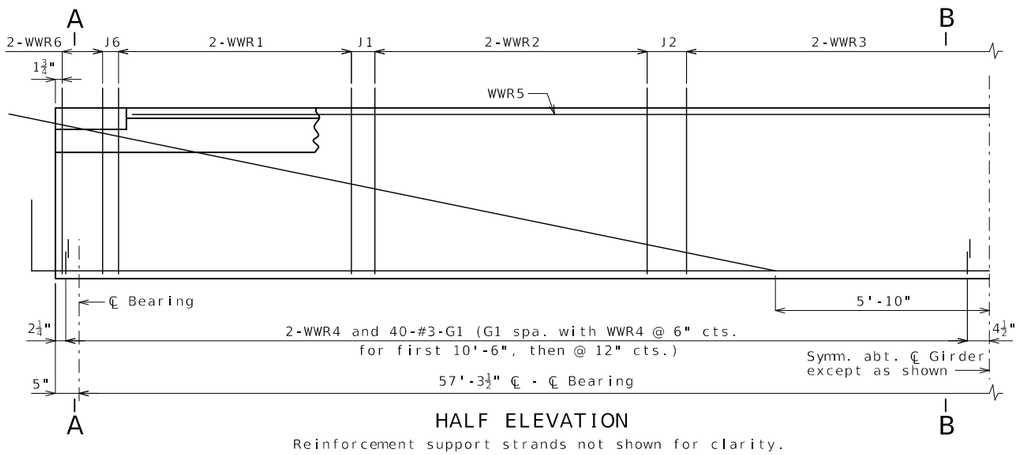
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 5, 13 and 19.

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.



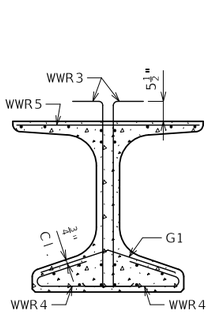
SECTION A-A

Strands not shown for clarity.



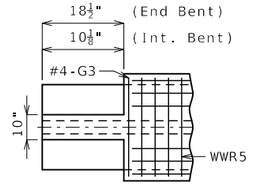
HALF ELEVATION

Reinforcement support strands not shown for clarity.

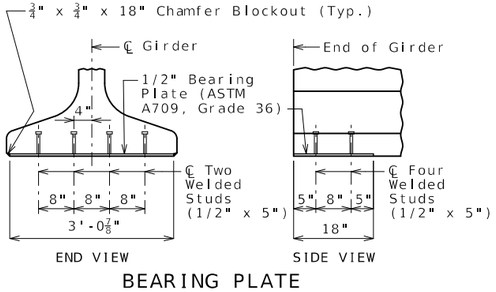


SECTION B-B

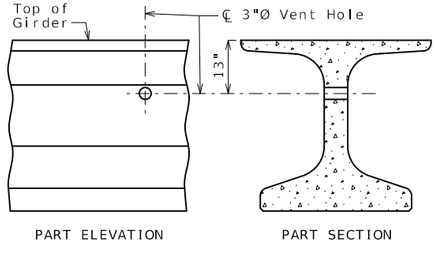
Strands not shown for clarity.



TOP FLANGE BLOCKOUT

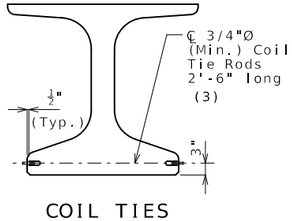


BEARING PLATE



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.



COIL TIES

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

(3) 21" at exterior face of exterior girders at end bents

NU-GIRDERS - SPANS (1-2) AND (5-6)

Detailed Jan. 2024
Checked Feb. 2024

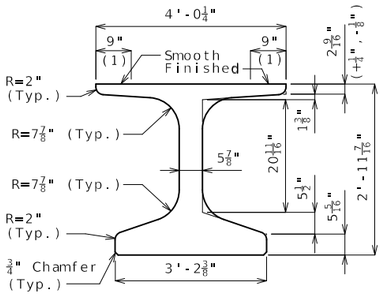
Note: This drawing is not to scale. Follow dimensions.

DESCRIPTION | DATE

DATE PREPARED 4/9/2024
ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 15
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

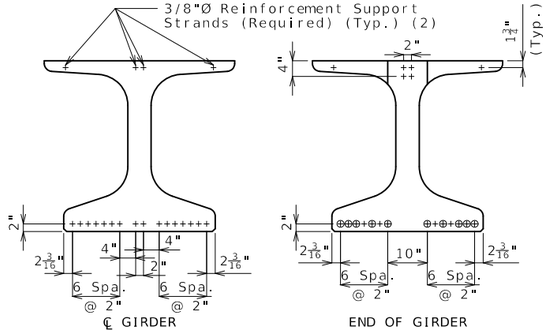
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

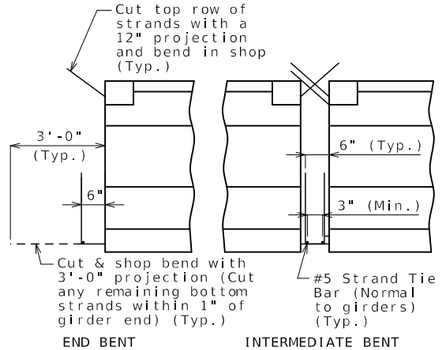


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

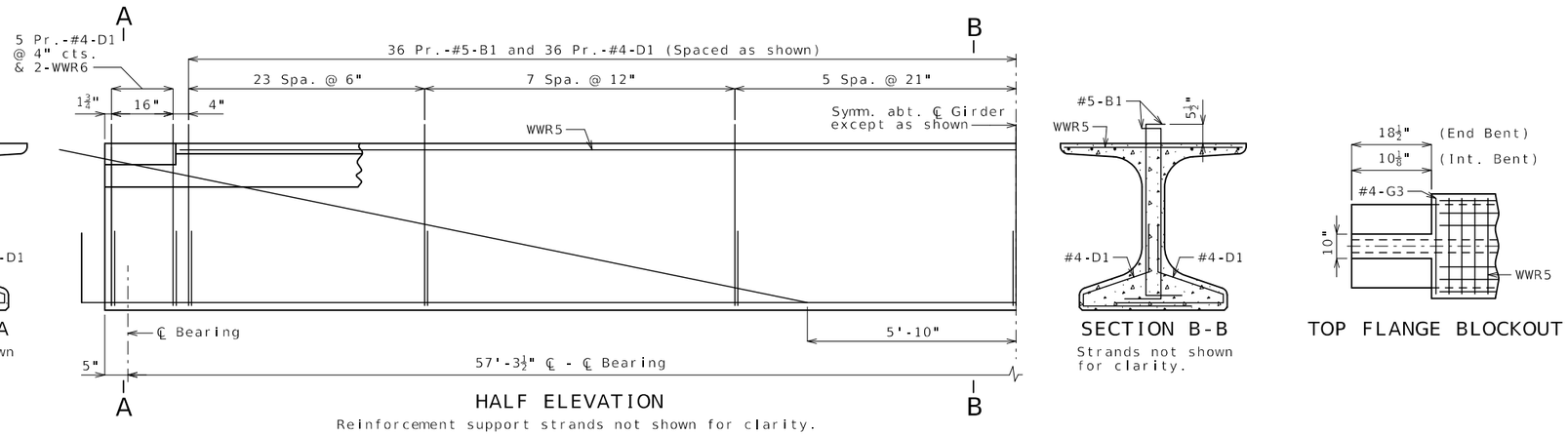
\+ Indicates prestressing strand.

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



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



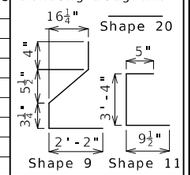
SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

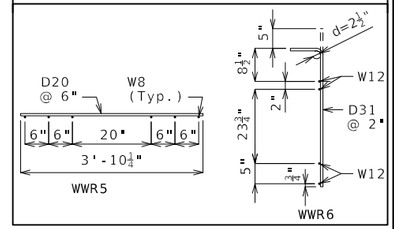
SECTION B-B
Strands not shown for clarity.

TOP FLANGE BLOCKOUT

Bill of Reinforcing Steel - Each Girder				
No.	Size/ Mark	Length	Shape	Bending Diagrams
142	5 B1	4'-4"	11	
162	4 D1	4'-0"	9	
2	4 G3	4'-10"	20	



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be 1".

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

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 and coil inserts for slab drains.

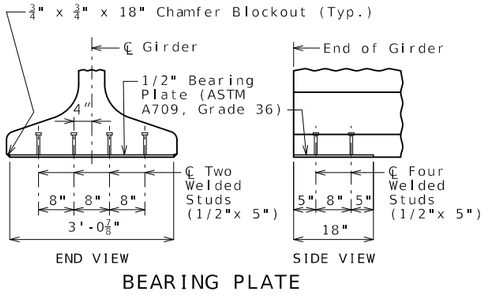
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

For location of coil inserts at slab drains, see Sheet No. 20.

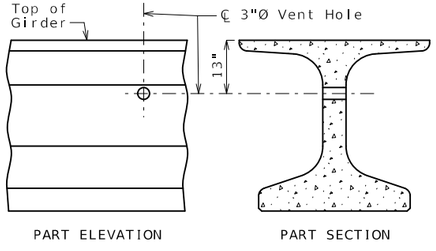
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 5, 13 and 19.

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.



END VIEW SIDE VIEW

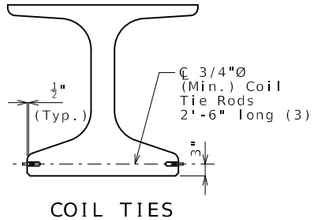
BEARING PLATE



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.



COIL TIES

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

(3) 21" at exterior face of exterior girders at end bents

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (1-2) AND (5-6)

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:53:27 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

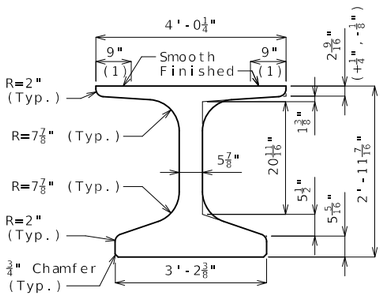
DATE PREPARED 4/9/2024

ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

DESCRIPTION | DATE

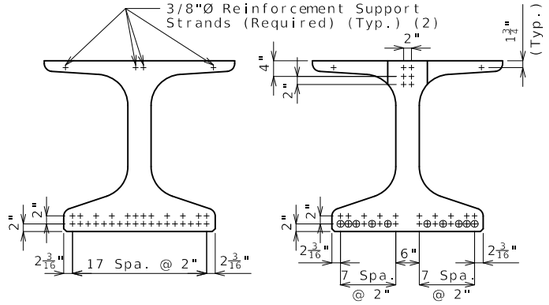
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

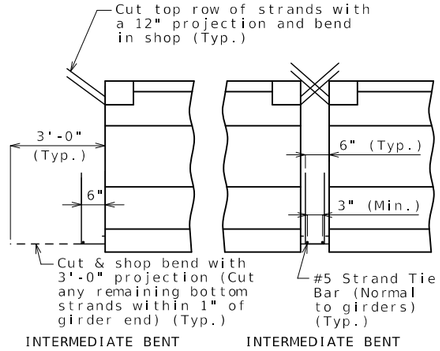


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

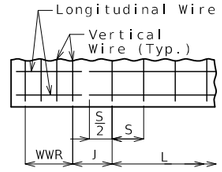
+ Indicates prestressing strand.

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



INTERMEDIATE BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

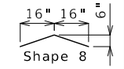
Bars Each Girder

No.	Size/Mark	Length	Shape
100	3 G1	2'-10"	8
2	4 G3	3'-10"	20

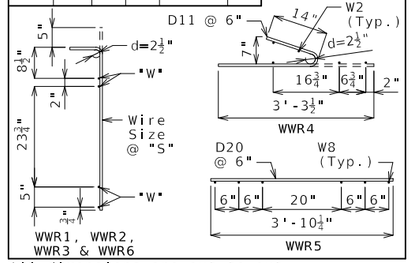
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	15'-0"	4"
WWR2	D31	12"	W12	8'-0"	16"
WWR3	D31	20"	W12	26'-8"	--
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 reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

General Notes:

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

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

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties and coil inserts for slab drains.

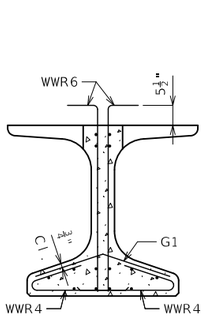
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

For location of coil inserts at slab drains, see Sheet No. 20.

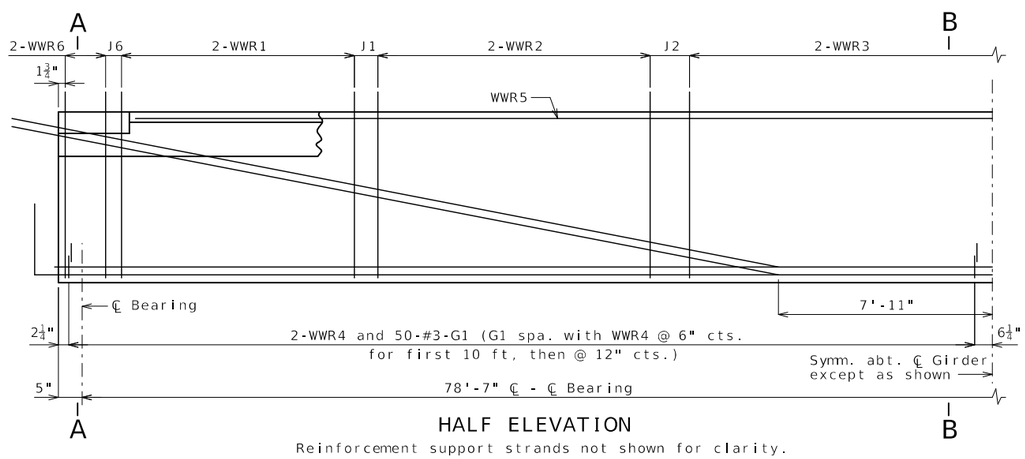
For location of coil ties at concrete diaphragms, see Sheet No. 19.

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.



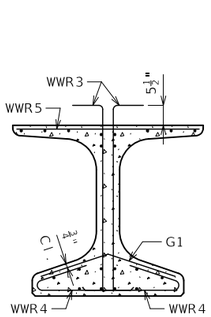
SECTION A-A

Strands not shown for clarity.



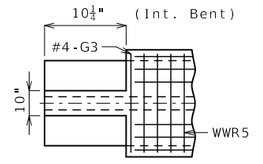
HALF ELEVATION

Reinforcement support strands not shown for clarity.

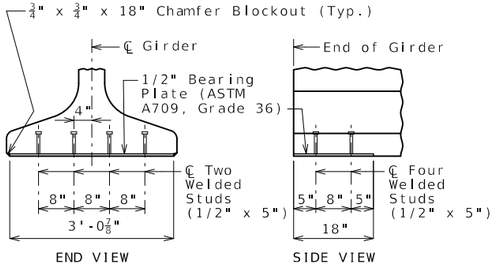


SECTION B-B

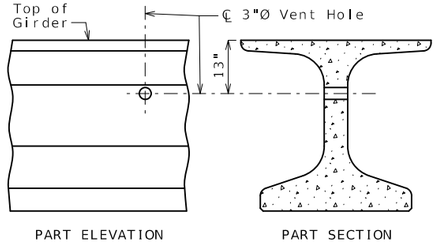
Strands not shown for clarity.



TOP FLANGE BLOCKOUT

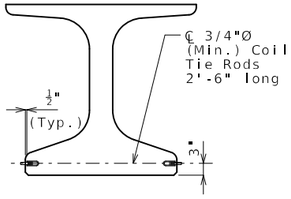


BEARING PLATE



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.



COIL TIES

Exclude coil tie at exterior face of exterior girders.

NU-GIRDERS - SPANS (2-3), (3-4) AND (4-5)

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:53:54 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

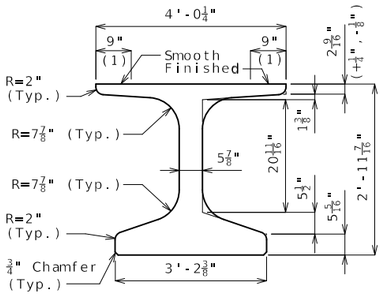
DATE PREPARED 4/9/2024

ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 17
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

DESCRIPTION | DATE

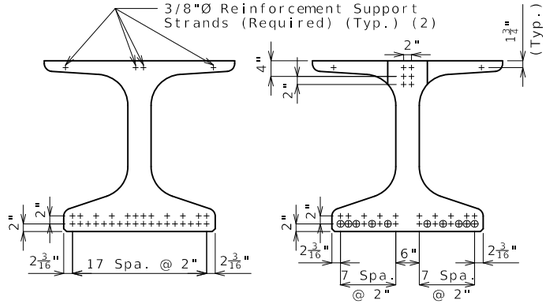
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(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.

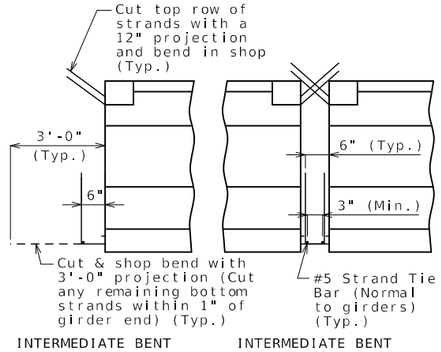


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

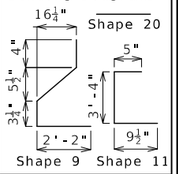


INTERMEDIATE BENT INTERMEDIATE BENT

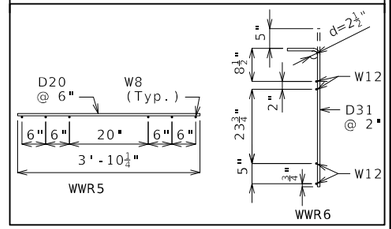
STRANDS AT GIRDER ENDS

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
198	5 B1	4'-4"	11
218	4 D1	4'-0"	9
2	4 G3	4'-10"	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 1".

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

General Notes:

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

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

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties and coil inserts for slab drains.

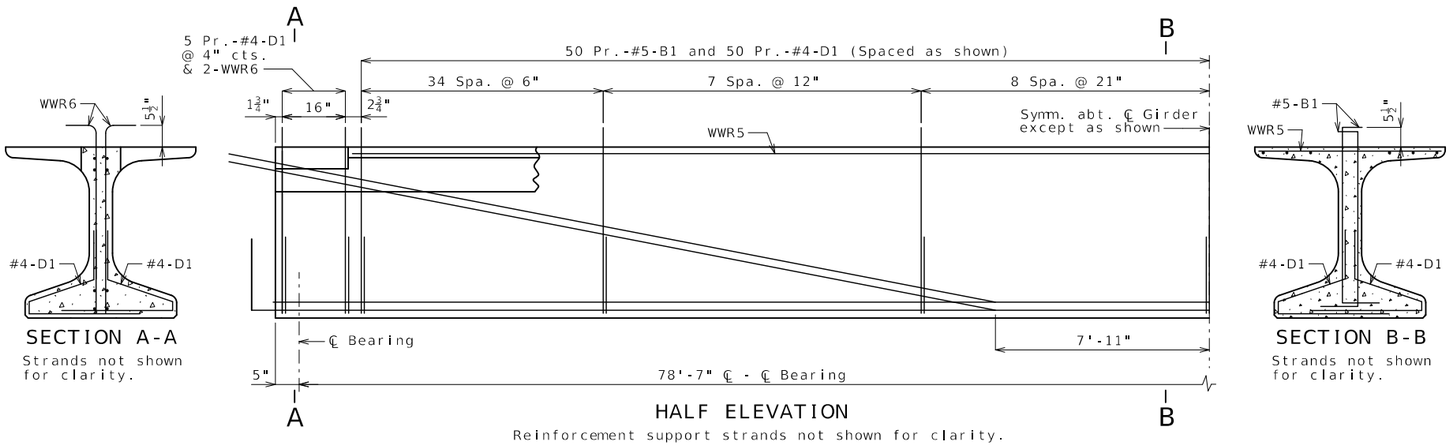
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 21.

For location of coil inserts at slab drains, see Sheet No. 20.

For location of coil ties at concrete diaphragms, see Sheet No. 19.

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

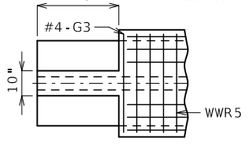
Strands not shown for clarity.

HALF ELEVATION

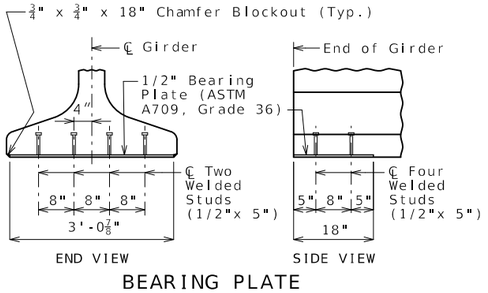
Reinforcement support strands not shown for clarity.

SECTION B-B

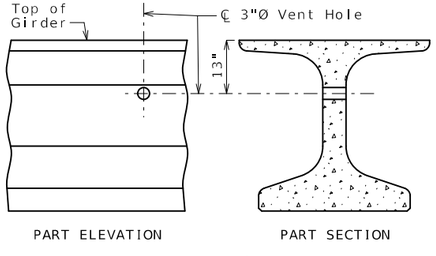
Strands not shown for clarity.



TOP FLANGE BLOCKOUT



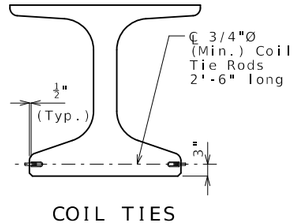
BEARING PLATE



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.



COIL TIES

Exclude coil tie at exterior face of exterior girders.

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:54:15 AM
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DATE PREPARED 4/9/2024

ROUTE 13 | STATE MO

DISTRICT BR | SHEET NO. 18

COUNTY HENRY

JOB NO. J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9339

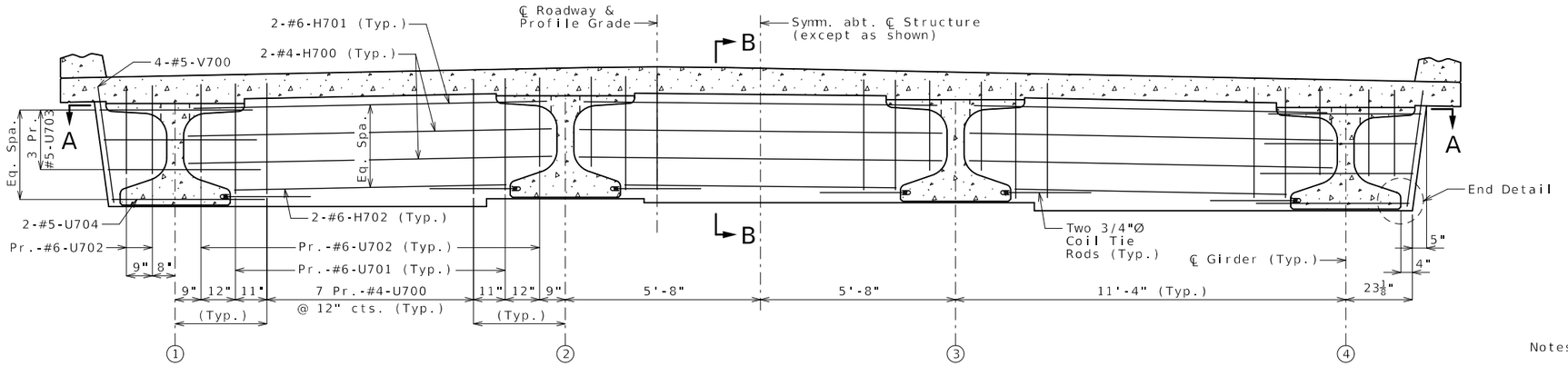
DESCRIPTION	DATE

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

Detailed Jan. 2024
Checked Feb. 2024

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPANS (2-3), (3-4) AND (4-5)

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



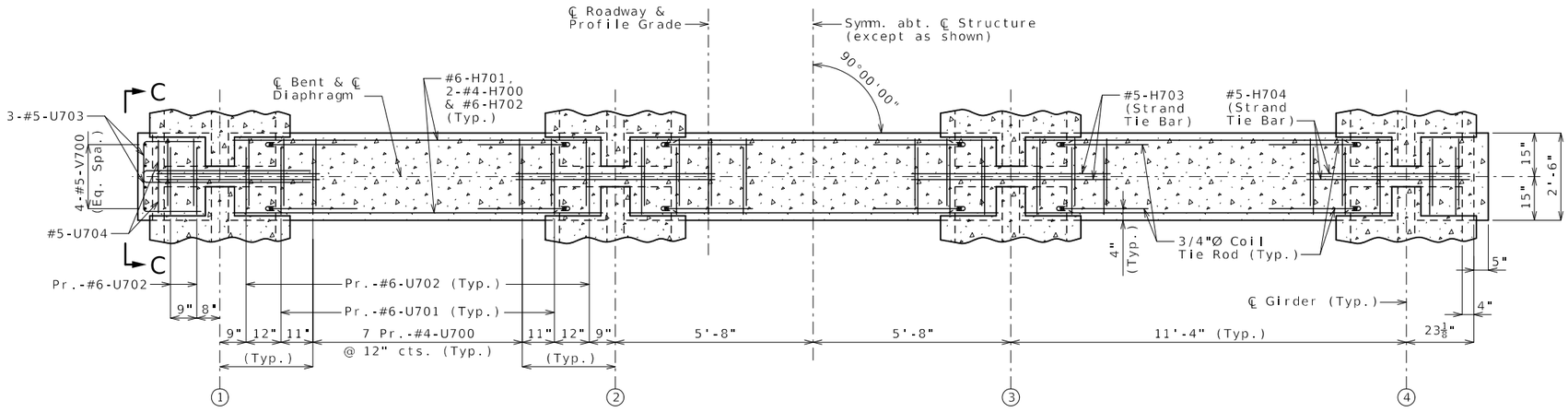
SECTION NEAR INTERMEDIATE BENT

Notes:

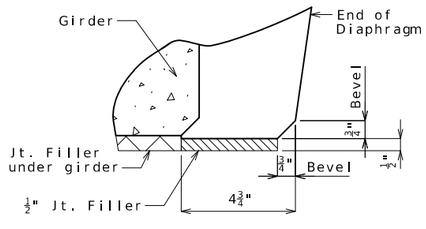
Diaphragm at intermediate bent shall be built vertical.

For location of #5-H703 & #5-H704 (Strand Tie Bars) and coil tie rods, see Sheets No. 15 thru 18.

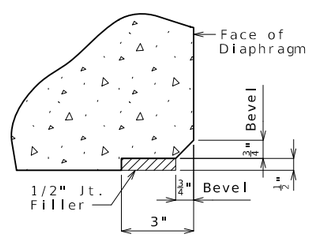
All U bars in diaphragm shall be placed parallel to centerline of roadway.



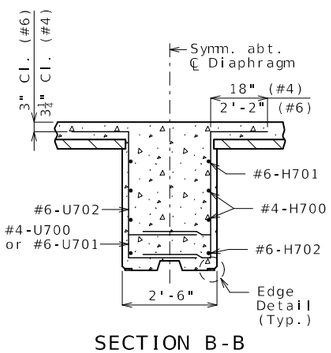
SECTION A-A



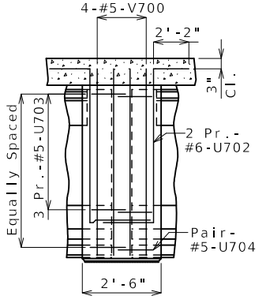
END DETAIL



EDGE DETAIL



SECTION B-B



ELEVATION C-C

CONCRETE DIAPHRAGM AT INTERMEDIATE BENTS NO. 2, 3, 4 & 5

Detailed Jan. 2024
Checked Feb. 2024

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

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TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
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MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	19

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

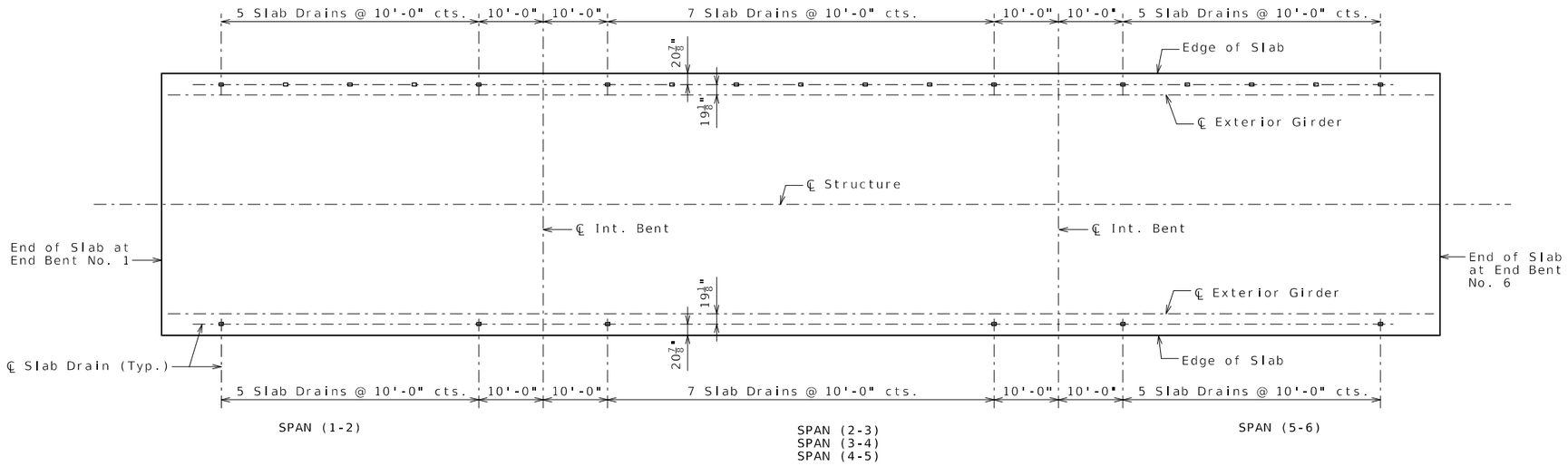
PROJECT NO.

BRIDGE NO.
A9339

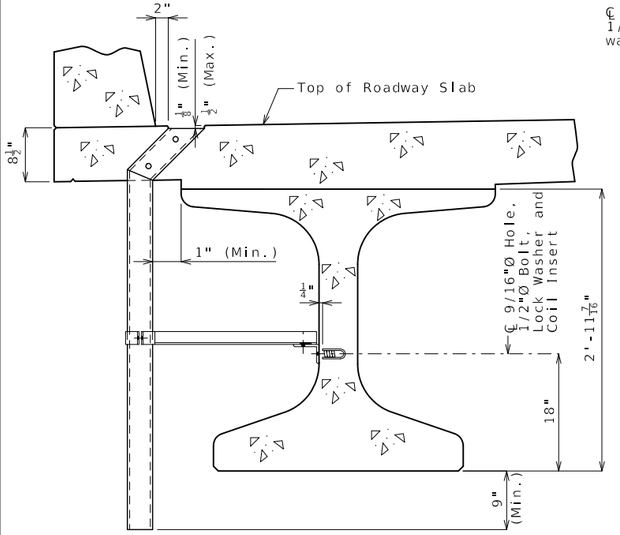
DESCRIPTION

DATE

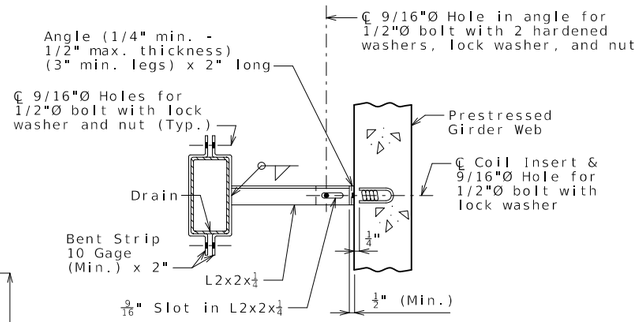
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



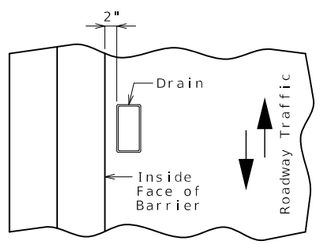
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



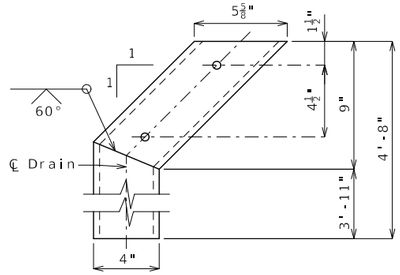
PART SECTION NEAR DRAIN



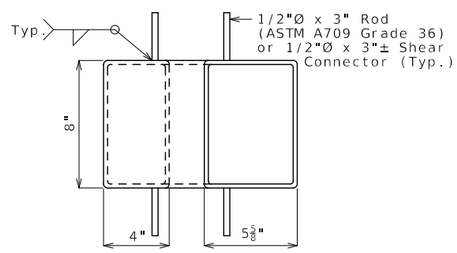
PART SECTION SHOWING BRACKET ASSEMBLY



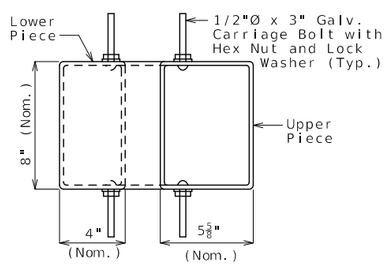
PART PLAN OF SLAB AT DRAIN



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 AASHTO M 232 (ASTM A153), Class C.

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
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:54:58 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	20

COUNTY HENRY

JOB NO. J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9339

DESCRIPTION	DATE

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

SLAB DRAINS

Detailed Jan. 2024
Checked Mar. 2024

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

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

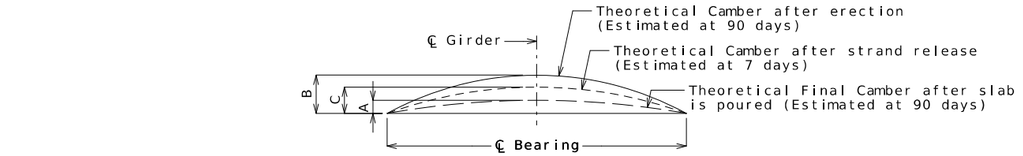
Girder Number	Span (1-2) (57'-3½" ℄ Brg. - ℄ Brg.)					Span (5-6) (57'-3½" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	.25	.50	.75	℄ Brg.	℄ Brg.	.25	.50	.75	℄ Brg.
1	745.02	745.05	745.07	745.07	745.06	744.93	744.92	744.91	744.88	744.84
2	745.24	745.28	745.31	745.31	745.29	745.15	745.16	745.15	745.11	745.06
3	745.12	745.16	745.19	745.19	745.17	745.03	745.04	745.03	744.99	744.94
4	744.90	744.93	744.95	744.95	744.94	744.81	744.80	744.79	744.76	744.72

Girder Number	Span (2-3) (78-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.06	745.10	745.15	745.18	745.20	745.21	745.21	745.19	745.17	745.14	745.10
2	745.29	745.34	745.39	745.43	745.46	745.47	745.47	745.45	745.41	745.37	745.32
3	745.17	745.22	745.27	745.31	745.34	745.35	745.35	745.33	745.29	745.25	745.20
4	744.94	744.98	745.03	745.06	745.08	745.09	745.09	745.08	745.05	745.02	744.98

Girder Number	Span (3-4) (78-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.10	745.14	745.17	745.19	745.21	745.21	745.20	745.18	745.14	745.10	745.05
2	745.32	745.37	745.41	745.45	745.46	745.47	745.46	745.43	745.39	745.34	745.28
3	745.20	745.25	745.29	745.33	745.34	745.35	745.34	745.31	745.27	745.22	745.16
4	744.98	745.02	745.05	745.07	745.09	745.09	745.08	745.06	745.02	744.98	744.93

Girder Number	Span (4-5) (78-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	745.05	745.08	745.11	745.12	745.13	745.12	745.10	745.07	745.03	744.98	744.93
2	745.28	745.32	745.35	745.38	745.39	745.38	745.36	745.33	745.28	745.22	745.16
3	745.16	745.20	745.23	745.26	745.27	745.26	745.24	745.21	745.16	745.10	745.04
4	744.93	744.96	744.99	745.00	745.01	745.00	744.98	744.95	744.91	744.86	744.81

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.



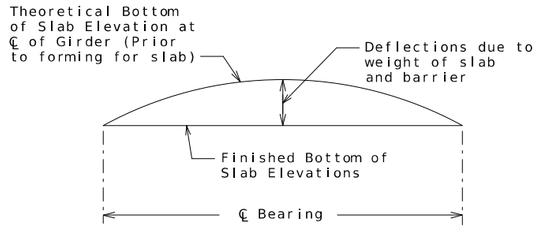
Girder	Spans (1-2) & (5-6)			Spans (2-3),(3-4) & (4-5)		
	A	B	C	A	B	C
Exterior	¾"	1¼"	¾"	2⅛"	3⅜"	2½"
Interior	⅝"			1¾"		

GIRDER CAMBER DIAGRAM

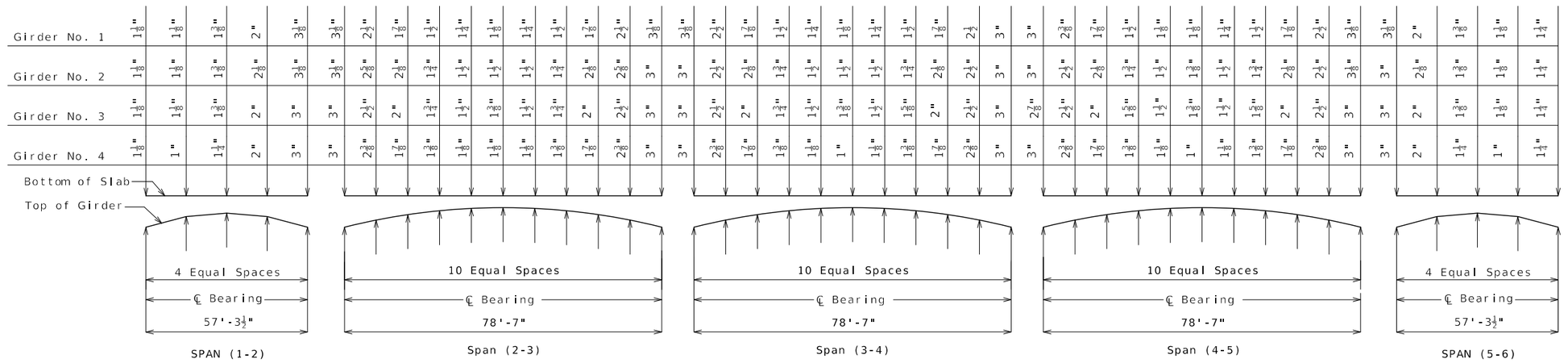
Conversion Factors for Girder Camber (Estimated at 90 days):

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

0.25 pt. = 0.7125 x 0.5 pt.



TYPICAL SLAB ELEVATIONS DIAGRAM



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.

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
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TIMOTHY D. LEAF - CIVIL
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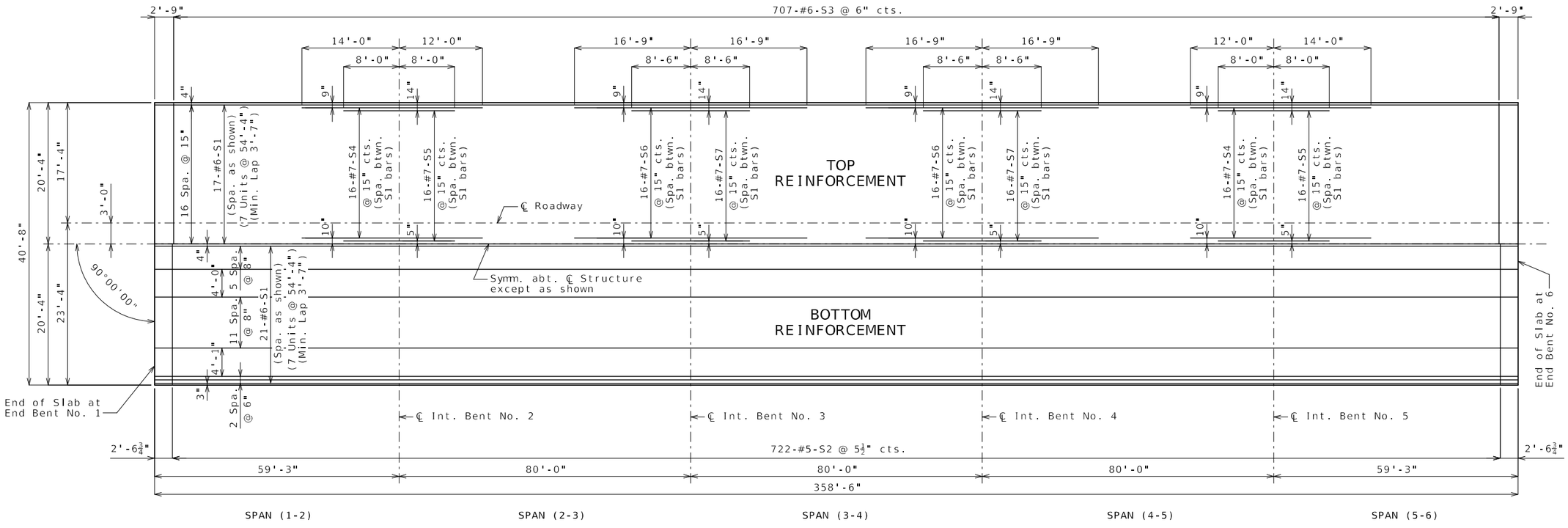
DATE PREPARED: 4/9/2024
ROUTE: 13 | STATE: MO
DISTRICT: BR | SHEET NO.: 21
COUNTY: HENRY
JOB NO.: J7P3484C
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9339

DESCRIPTION | DATE

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



Notes:

Longitudinal slab dimensions are measured horizontally.

For Slab Details, see Sheet No. 23.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram, and Theoretical Slab Haunching Diagram, see Sheet No. 21.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Jan. 2024
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Note: This drawing is not to scale. Follow dimensions.

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TIMOTHY D. LEAF
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TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	22

COUNTY
HENRY

JOB NO.
J7P3484C

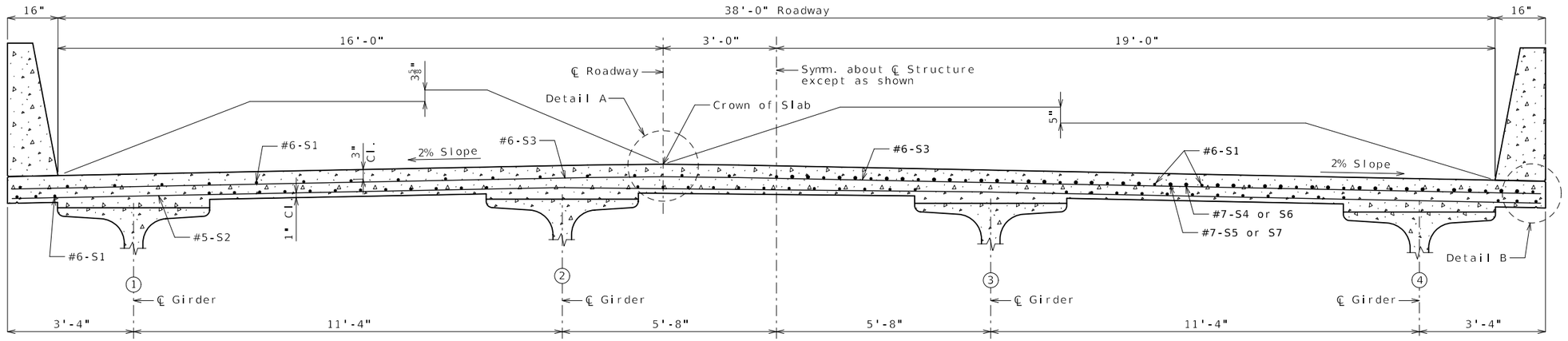
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DATE	DESCRIPTION

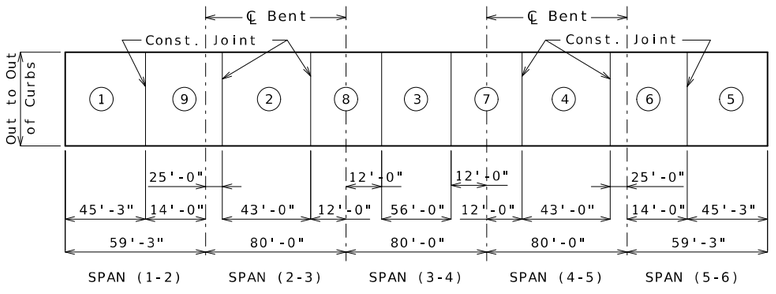
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INTERMEDIATE BENT

SECTION THRU SLAB

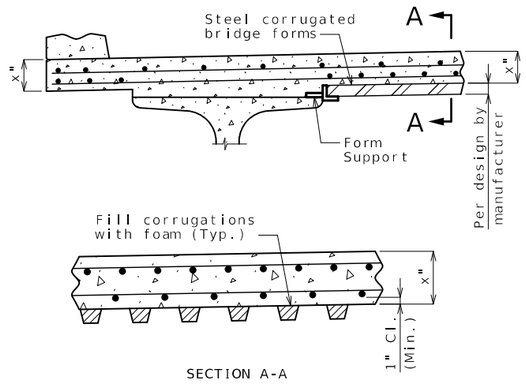


	Sequence of Pours									Min. Rate of Pour Cu. Yds./Hr.
	Direction									With Retarder
Basic Sequence	1	2	3	4	5	6	7	8	9	25
	Either Direction									
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.										
Alternate A Pours	1	9 + 2		8 + 3		7 + 4		6 + 5		26
	End to 9	1 to 8		2 to 7		3 to 6		4 to End		
Alternate B Pours	1 + 9 + 2			8 + 3			7 + 4 + 6 + 5			26
	End to 8			2 to 7			3 to End			
Alternate C Pours	1 + 9 + 2 + 8 + 3					7 + 4 + 6 + 5				26
	End to 7					3 to End				
Alternate D Pours	1 + 9 + 2 + 8 + 3 + 7 + 4 + 6 + 5									26
	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



SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

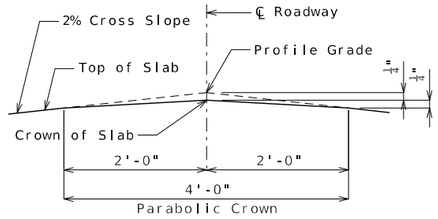
Stay-In-Place Forms:

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.

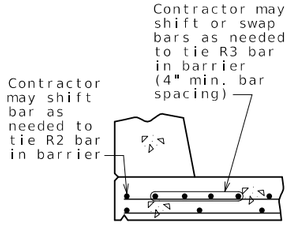
Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

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.

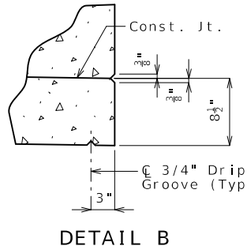
The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.



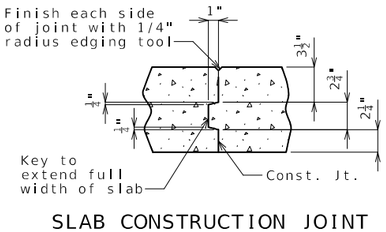
DETAIL A



OPTIONAL SHIFTING TOP BARS AT BARRIER



DETAIL B



SLAB CONSTRUCTION JOINT

Notes:

For reinforcement of barrier not shown, see Sheets No. 24 & 25.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 21.

For Plan of Slab Showing Reinforcement, see Sheet No. 22.

SLAB DETAILS

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:56:08 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	23

COUNTY HENRY

JOB NO. J7P3484C

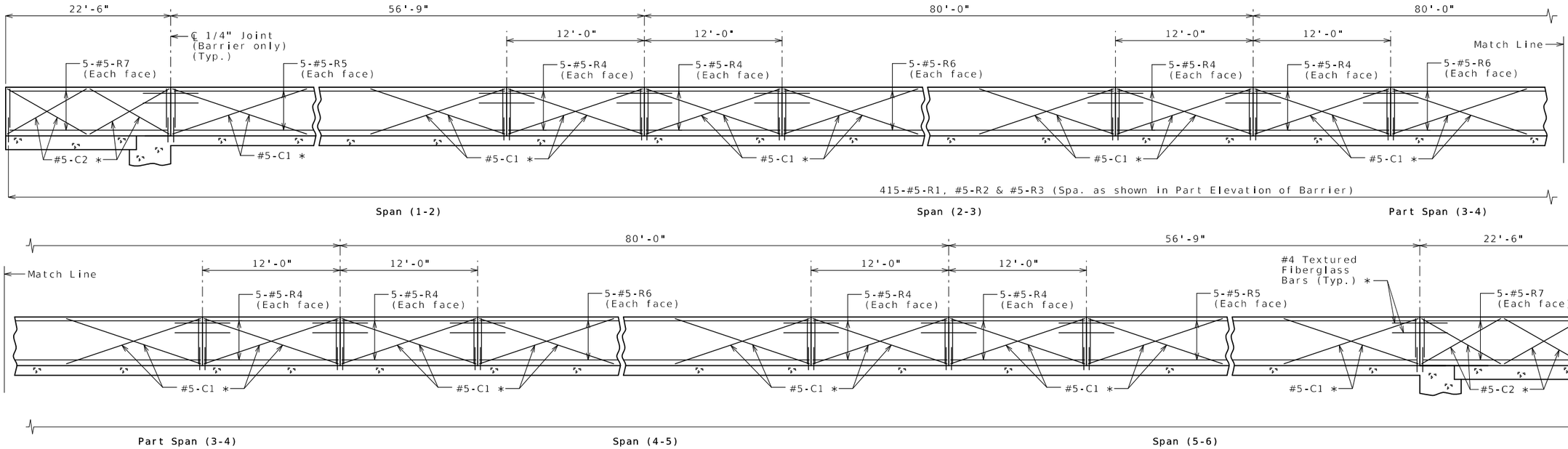
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9339

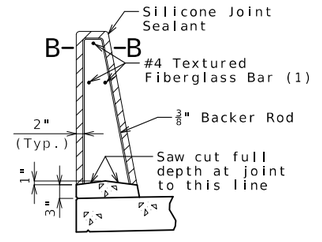
DESCRIPTION	DATE

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

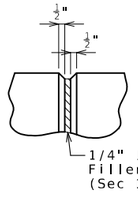


ELEVATION OF BARRIER

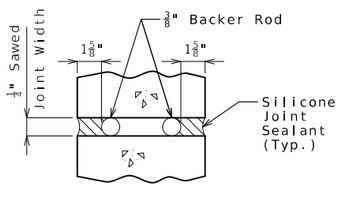
Longitudinal dimensions are horizontal.



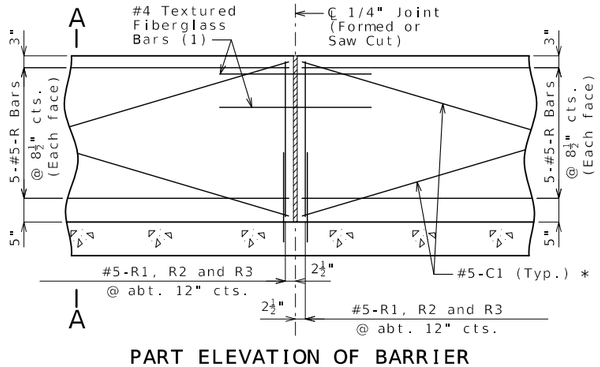
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

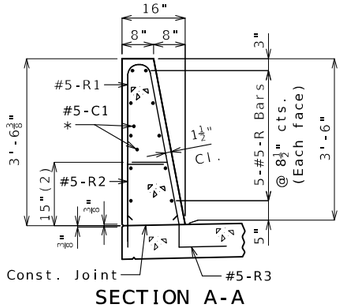


SECTION B-B



PART ELEVATION OF BARRIER

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

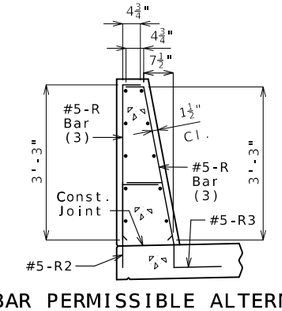


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

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

Concrete in barrier shall be Class B-1.

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

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 (LEFT)

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
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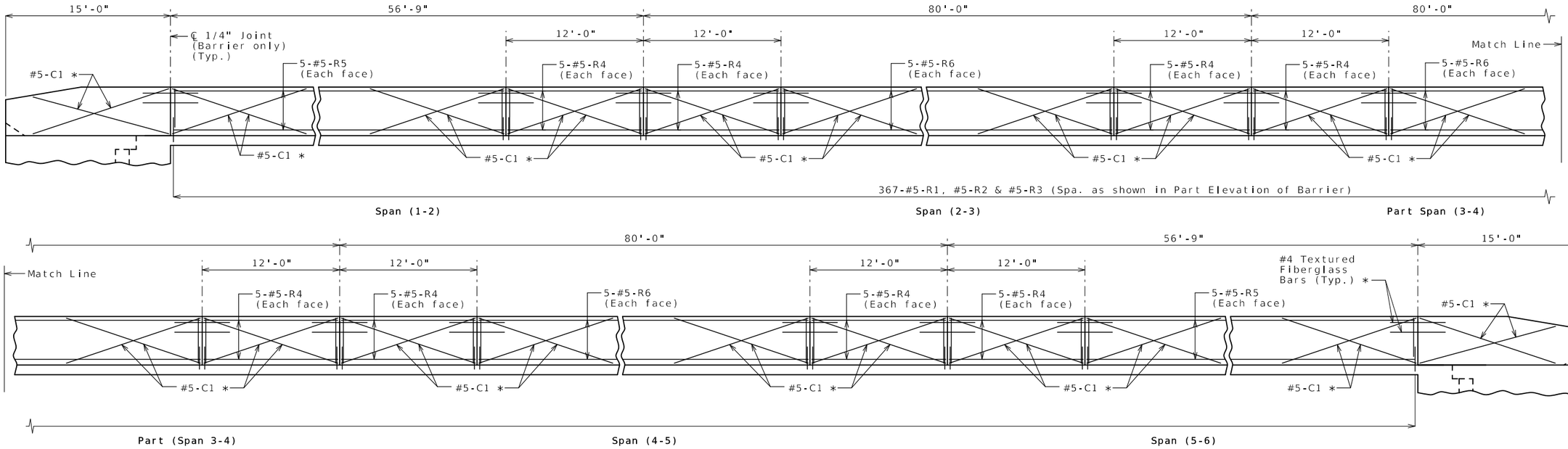
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/9/2024

ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 24
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

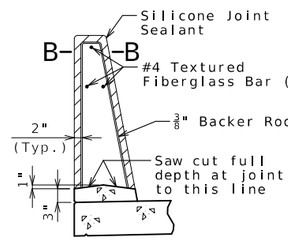
DESCRIPTION	DATE

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

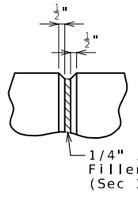


ELEVATION OF BARRIER

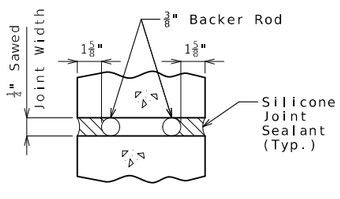
Longitudinal dimensions are horizontal.



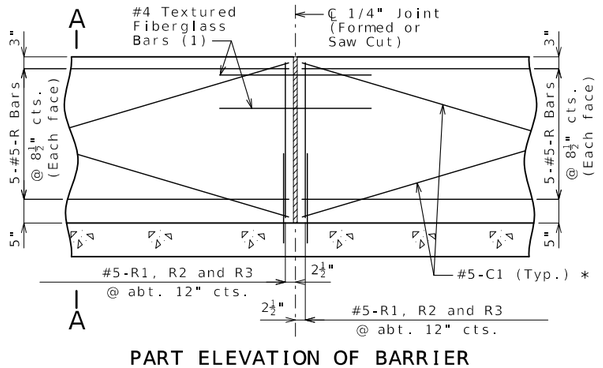
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

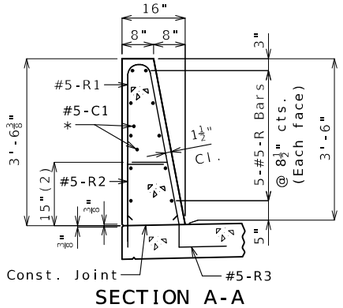


SECTION B-B



PART ELEVATION OF BARRIER

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

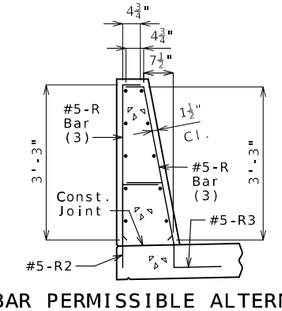


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

General Notes:

* Slip-formed option only.

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

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

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

TYPE D BARRIER (RIGHT)

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
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TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	25

COUNTY HENRY

JOB NO. J7P3484C

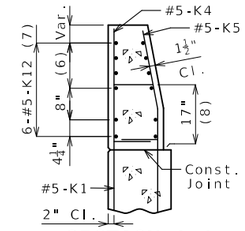
CONTRACT ID.

PROJECT NO.

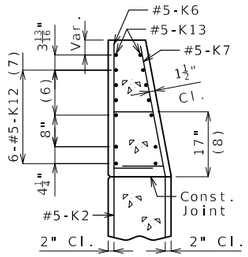
BRIDGE NO. A9339

DESCRIPTION	DATE

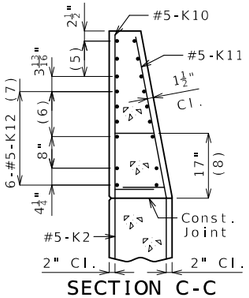
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



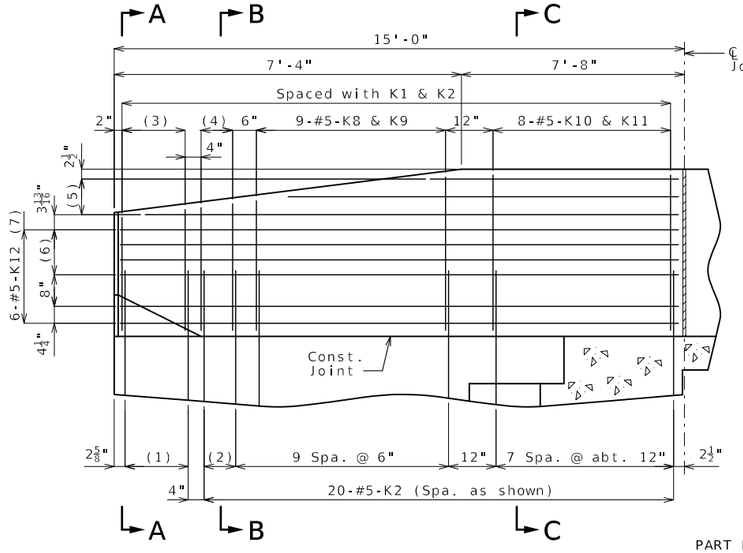
SECTION A-A

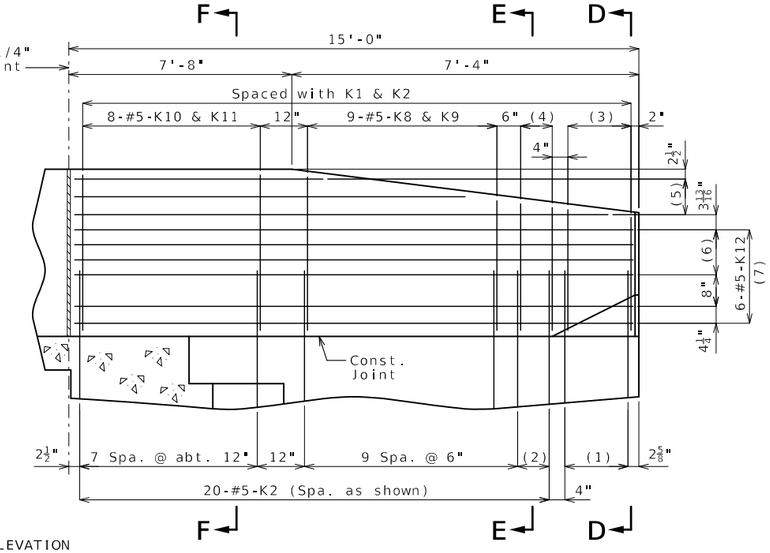


SECTION B-B

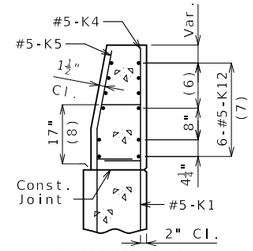


SECTION C-C





PART ELEVATION



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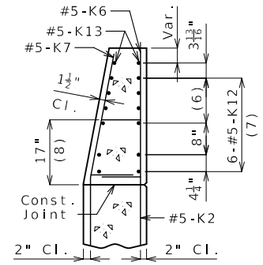
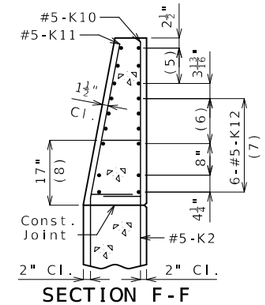
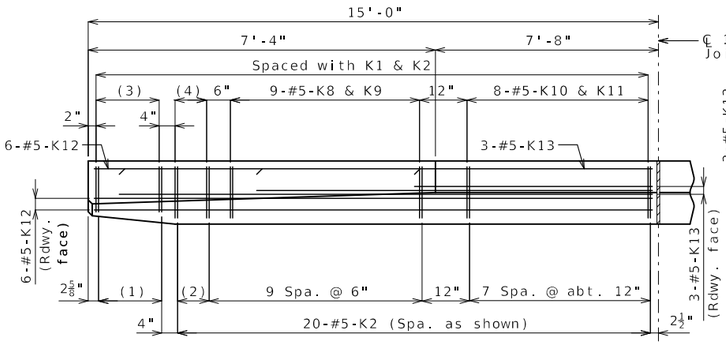
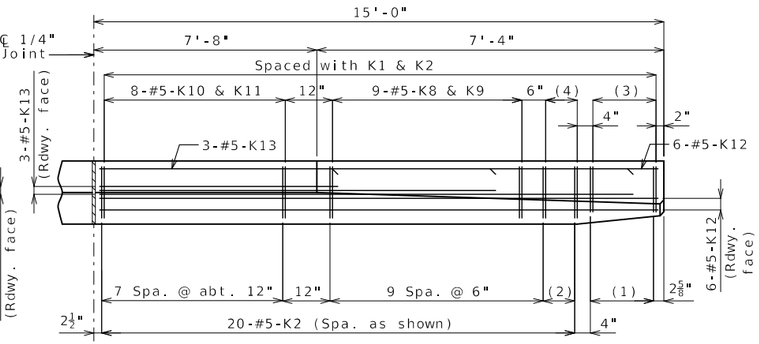


SECTION E-E



SECTION F-F

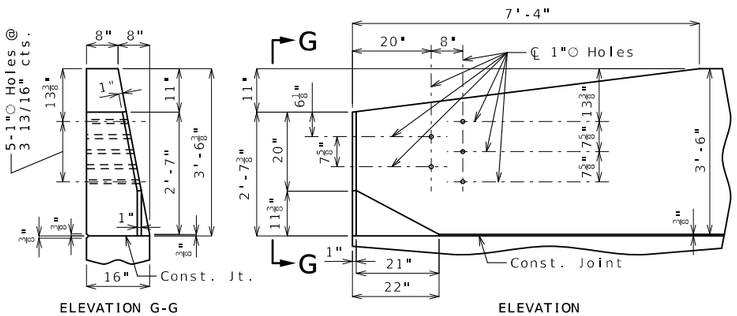




PART PLAN

BARRIER AT END BENT NO. 6

BARRIER AT END BENT NO. 1



ELEVATION G-G

ELEVATION

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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

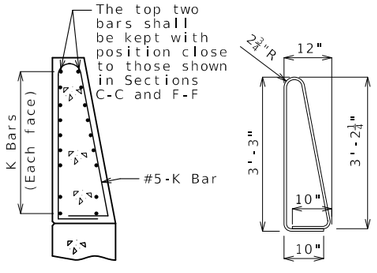
(4) 3-#5-K6 & K7

(5) 3-#5-K13 @ 4½" cts., each face

(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar



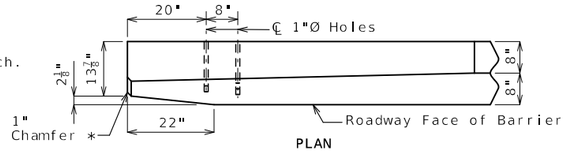
K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(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 (RIGHT)

Detailed Jan. 2024
Checked Feb. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:57:20 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	26

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

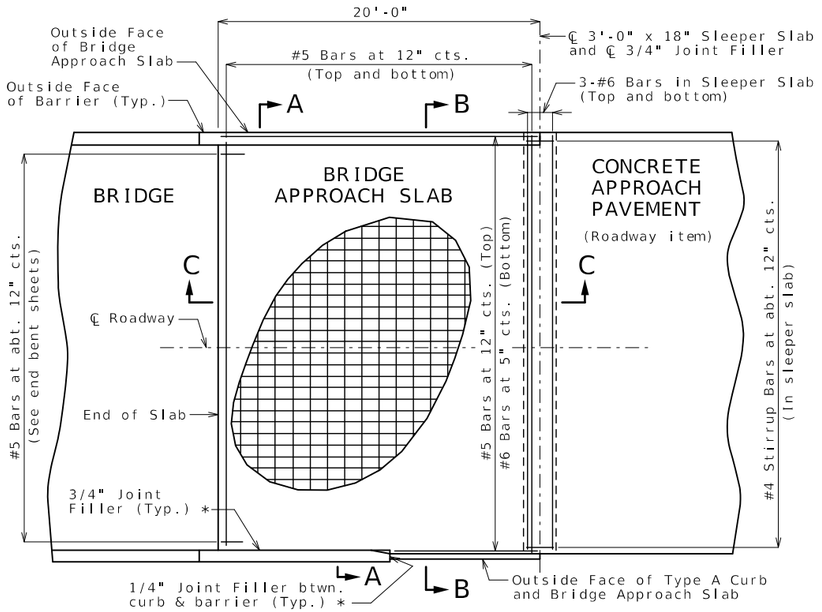
PROJECT NO.

BRIDGE NO.
A9339

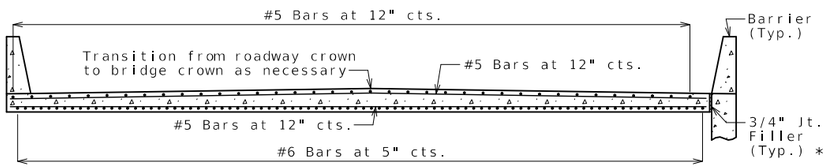
DESCRIPTION

DATE

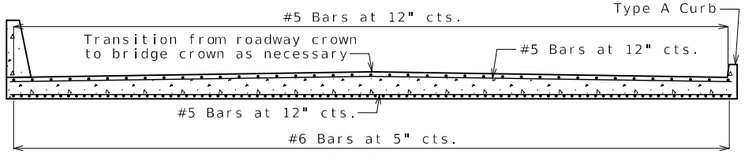
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PART PLAN SHOWING REINFORCEMENT

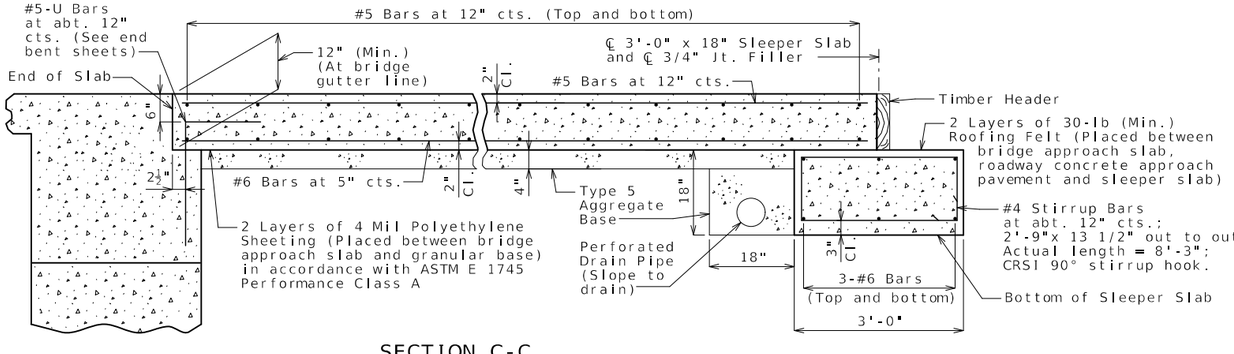


SECTION A-A

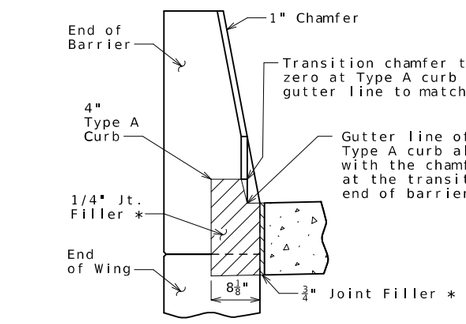


SECTION B-B

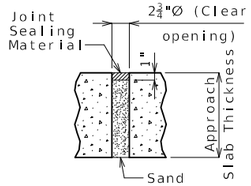
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION C-C

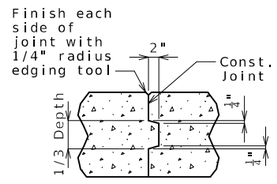


SECTION BETWEEN CURB AND BARRIER

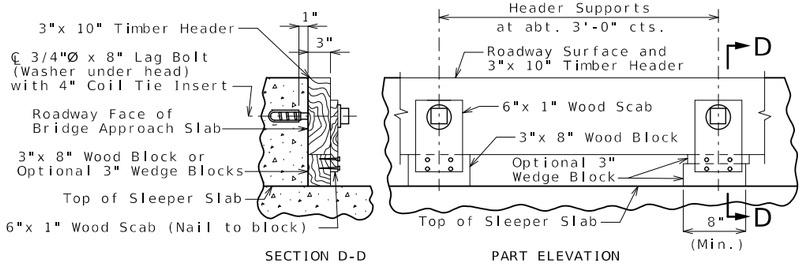


UNDERSEAL ACCESS HOLE DETAIL

(If required)



CONSTRUCTION JOINT DETAIL



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

General Notes:

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

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

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 29 inches for #5 bars and 44 inches for #6 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

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

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

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

For concrete approach pavement details, see roadway plans.

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

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major) per square yard.

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

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DATE PREPARED
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ROUTE	STATE
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COUNTY
HENRY

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J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

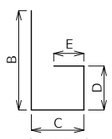
DESCRIPTION | DATE

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

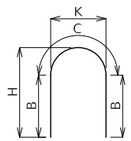
Detailed Jan. 2024
Checked Jan. 2024

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

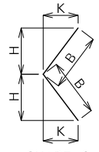
BRIDGE APPROACH SLAB (MAJOR)



SHAPE 6
or 6S



SHAPE 7



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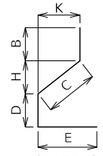

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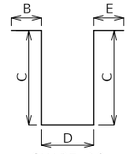

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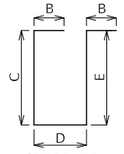

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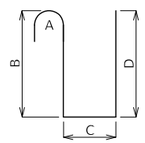

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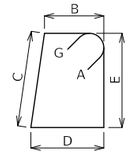

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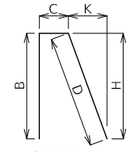

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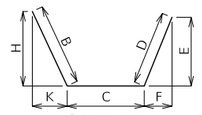

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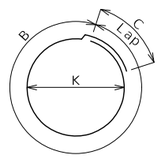

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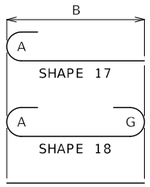
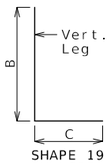


SHAPE 17
SHAPE 18
SHAPE 20



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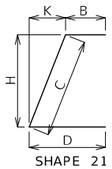

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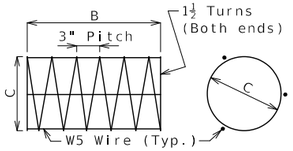

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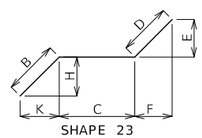

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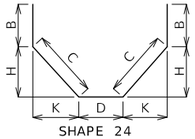

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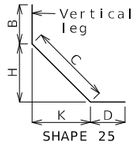

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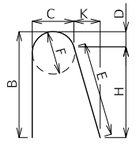
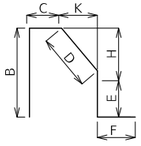


SHAPE 26

SHAPE 21 or 21S



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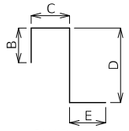

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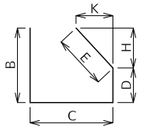

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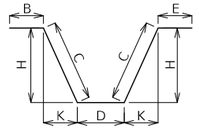

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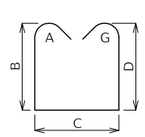

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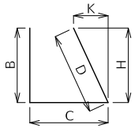

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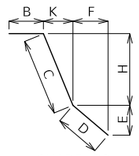

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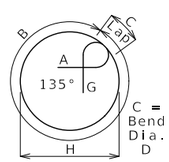

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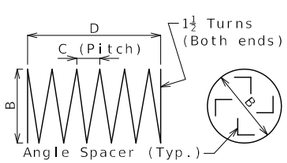

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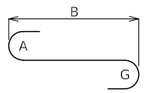
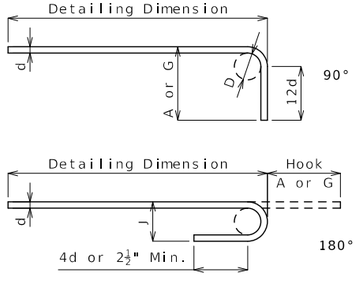


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4½"	12"	8¼"	6"
#7	2	5¼"	14"	9¾"	7"
	3	7"	15"	11½"	8¾"
#8	2	6"	16"	11"	8"
	3	8"	17"	13¼"	10"
#9	1	9½"	19½"	15½"	11¾"
#10	1	10¾"	22"	17½"	13¼"
#11	1	12"	24½"	19½"	14⅞"
#14	1	18¼"	31¼"	27½"	21⅝"
#18	1	24"	41½"	36¾"	28½"

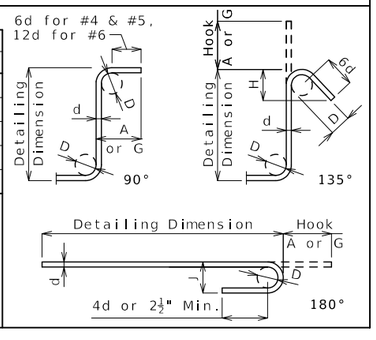


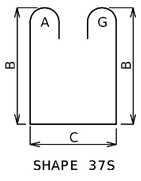
Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G			H	J
			90°	135°	180°	135°	180°
#4	2	2"	4½"	4½"	5"	2⅝"	3"
	3	3"	5"	5¼"	6"	3"	4"
#5	2	2½"	5¾"	5¾"	5¾"	3⅝"	3¾"
	3	3¾"	6¼"	6½"	7"	3⅞"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅝"	6"

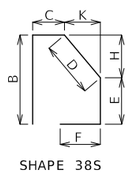
Applicable for all grades of steel.

Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.





SHAPE 37S



SHAPE 38S

BENDING DIAGRAMS

All dimensions are out to out.

Shapes ending with an S shall be bent in accordance 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	Galv.	Plain	Galv.	Barrier	Slip Form	Plain	Galv.
By Size	W5	0	0	0	0	0	0	0	0
	4	600	0	0	1,549	0	0	600	1,549
	5	28,144	0	222	35,728	19,785	1,079	28,366	56,592
	6	10,929	0	0	95,155	0	0	10,929	95,155
	7	0	0	0	14,428	0	0	0	14,428
	8	5,934	0	0	684	0	0	5,934	684
	9	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0
	11	89,872	0	0	0	0	0	89,872	0
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type		135,479	0	222	147,544	19,785	1,079	135,701	168,408

All superstructure reinforcing steel shall be galvanized unless otherwise specified.

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Mar. 2024
Checked Mar. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:58:07 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	28

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION	DATE

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

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
		Substructure													
		Int Bent 2 & 5													
42	6 D200	BEAM		20		4 2.00							4 2	4 2	263
20	8 H200	BEAM		20		38 5.00							38 5	38 5	2,051
28	6 H201	BEAM		20		38 5.00							38 5	38 5	1,616
20	11 H202	BEAM		18		38 5.00							41 7	41 7	4,419
36	6 H203	BEAM		10S			12.00	5 7.50					7 8	7 4	397
20	6 H204	BEAM		20		4 5.00							4 5	4 5	133
2	5 P200	DRILLED SHAFT		35		5 0.00	6.00	59 10.25					1928 5	1908 5	3,981
2	5 P201	DRILLED SHAFT		35		5 0.00	6.00	59 3.00					1909 6	1889 7	3,942
2	5 P202	COLUMN		35		5 0.00	3.00	14 9.75					977 11	967 9	2,019
80	5 P203	BEAM		34S		15 8.50	2.50				5 0.00		16 10	16 8	1,391
2	5 P204	COLUMN		35		5 0.00	3.00	14 8.25					970 1	960	2,003
56	6 U200	BEAM		13S		5 9.00	5 9.00	5 9.00	5 9.00				24 4	23 10	2,005
2	6 U201	BEAM		13S		5 9.00	6 1.00	5 9.00	6 1.00				25	24 6	74
14	6 U202	BEAM		10S			5 9.00	5 9.00					17 3	16 11	356
6	6 U203	BEAM		10S			6 1.00	5 9.00					17 11	17 7	158
32	4 U204	BEAM		10S			6.00	5 9.00					6 9	6 7	141
48	11 V200	DRILLED SHAFT		20		32 0.00							32	32	8,161
48	11 V201	DRILLED SHAFT		20		30 0.00							30	30	7,651
24	11 V202	COLUMN		20		12 8.00							12 8	12 8	1,615
24	11 V203	COLUMN		20		10 8.00							10 8	10 8	1,360
24	11 V204	COLUMN		20		12 6.00							12 6	12 6	1,594
24	11 V205	COLUMN		20		10 6.00							10 6	10 6	1,339
48	11 V206	DRILLED SHAFT		20		37 6.00							37 6	37 6	9,563
48	11 V207	DRILLED SHAFT		20		36 11.00							36 11	36 11	9,415
		Int Bent 3 & 4													
42	6 D300	BEAM		20		4 2.00							4 2	4 2	263
20	8 H300	BEAM		20		38 5.00							38 5	38 5	2,051
28	6 H301	BEAM		20		38 5.00							38 5	38 5	1,616
20	11 H302	BEAM		18		38 5.00							41 7	41 7	4,419
36	6 H303	BEAM		10S			12.00	5 7.50					7 8	7 4	397
20	6 H304	BEAM		20		4 5.00							4 5	4 5	133
28	8 H305	TIE BEAM		18		22 8.00							24 6	24 6	1,832
28	6 H306	TIE BEAM		20		22 0.00							22	22	925
2	5 P300	DRILLED SHAFT		35		5 0.00	6.00	46 3.00					1500 10	1485 3	3,098
2	5 P301	DRILLED SHAFT		35		5 0.00	6.00	47 3.00					1532 3	1516 4	3,163
2	5 P302	COLUMN		35		5 0.00	3.00	26 10.25					1734 8	1716 7	3,581
80	5 P303	BEAM		34S		15 8.50	2.50				5 0.00		16 10	16 8	1,391
2	5 P304	COLUMN		35		5 0.00	3.00	26 9.75					1732	1714	3,575
56	6 U300	BEAM		13S		5 9.00	5 9.00	5 9.00	5 9.00				24 4	23 10	2,005
2	6 U301	BEAM		13S		5 9.00	6 1.00	5 9.00	6 1.00				25	24 6	74
14	6 U302	BEAM		10S			5 9.00	5 9.00					17 3	16 11	356
6	6 U303	BEAM		10S			6 1.00	5 9.00					17 11	17 7	158
32	4 U304	BEAM		10S			6.00	5 9.00					6 9	6 7	141
28	4 U305	TIE BEAM		13S		2 6.00	5 9.00	2 6.00	5 9.00				17 3	17	318
24	11 V300	DRILLED SHAFT		20		53 11.00							53 11	53 11	6,875
24	11 V301	DRILLED SHAFT		20		55 11.00							55 11	55 11	7,130
24	11 V302	COLUMN		20		24 8.00							24 8	24 8	3,145
24	11 V303	COLUMN		20		22 8.00							22 8	22 8	2,890
24	11 V304	DRILLED SHAFT		20		54 11.00							54 11	54 11	7,003
24	11 V305	DRILLED SHAFT		20		56 11.00							56 11	56 11	7,258
24	11 V306	COLUMN		20		24 8.00							24 8	24 8	3,145
24	11 V307	COLUMN		20		22 8.00							22 8	22 8	2,890
		Superstructure													
		End Bent 1													
8	6 F100	WING BRACE	G	23S		2 2.75	5 2.00	14.25	10.00	10.00	19.00	19.00	8 7	8 6	105
8	6 F101	DIAPHRAGM	G	6S		5 0.00	2 8.00	17.00					9 1	8 9	108
12	7 H100	BM & DIAPH	G	20		40 5.00							40 5	40 5	1,016
8	6 H101	BM & DIAPH	G	20		40 5.00							40 5	40 5	500
4	6 H102	BEAM	G	20		4 5.00							4 5	4 5	27

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
9	6 H103	DIAPHRAGM	G	20		10 3.00							10 3	10 3	143
3	6 H104	DIAPHRAGM	G	20		7 10.00							7 10	7 10	36
6	6 H105	DIAPHRAGM	G	20		2 8.00							2 8	2 8	25
4	5 H107	STRAND TIE		20		5 9.00							5 9	5 9	24
8	8 H108	WING	G	19		14 7.00	16.00						15 11	15 8	342
18	6 H109	WING	G	19S		13 8.00	12.00						14 8	14 6	403
22	5 U100	BEAM	G	31S		5 1.00	2 9.00	5 1.00					14	13 9	326
17	4 U101	BEAM	G	13S		2 9.00	2 8.00	2 9.00	2 8.00				11 8	11 4	134
8	4 U102	BEAM	G	13S		2 9.00	3 0.00	2 9.00	3 0.00				12 4	12	67
5	4 U103	BEAM	G	10S			2 8.00	2 9.00					8 1	7 10	27
25	5 U104	DIAPHRAGM	G	31S		3 4.00	2 3.00	3 4.00					10	9 9	263
25	6 U105	DIAPHRAGM	G	19S		2 2.00	2 9.00						4 11	4 9	183
51	6 U106	DIAPHRAGM	G	19S		3 4.00	4 7.00						7 11	7 9	611
38	5 U107	DIAPHRAGM	G	19S		2 0.00	15.00						3 3	3 1	126
6	5 V100	BEAM	G	17		5 1.00							5 8	5 8	37
20	6 V101	DIAPHRAGM	G	20		2 2.00							2 2	2 2	67
26	6 V102	WING	G	20		6 5.00							6 5	6 5	258
		End Bent 6													
8	6 F600	WING BRACE	G	23S		2 2.75	5 2.00	14.25	10.00	10.00	19.00	19.00	8 7	8 6	105
8	6 F601	DIAPHRAGM	G	6S		5 0.00	2 8.00	17.00					9 1	8 9	108
12	7 H600	BM & DIAP	G	20		40 5.00							40 5	40 5	1,016
8	6 H601	BM & DIAPH	G	20		40 5.00							40 5	40 5	500
4	6 H602	BEAM	G	20		4 5.00							4 5	4 5	27
9	6 H603	DIAPHRAGM	G	20		10 3.00							10 3	10 3	143
3	6 H604	DIAPHRAGM	G	20		7 10.00							7 10	7 10	36
6	6 H605	DIAPHRAGM	G	20		2 8.00							2 8	2 8	25
4	5 H607	STRAND TIE		20		5 9.00							5 9	5 9	24
8	8 H608	WING	G	19		14 7.00	16.00						15 11	15 8	342
18	6 H609	WING	G	19S		13 8.00	12.00						14 8	14 6	403
22	5 U600	BEAM	G	31S		5 1.00	2 9.00	5 1.00					14	13 9	326
17	4 U601	BEAM	G	13S		2 9.00	2 8.00	2 9.00	2 8.00				11 8	11 4	134
8	4 U602	BEAM	G	13S		2 9.00	3 0.00	2 9.00	3 0.00				12 4	12	67
5	4 U603	BEAM	G	10S			2 8.00	2 9.00					8 1	7 10	27
25	5 U604	DIAPHRAGM	G	31S		3 4.00	2 3.00	3 4.00					10	9 9	263
25	6 U605	DIAPHRAGM	G	19S		2 2.00	2 9.00						4 11	4 9	183
51	6 U606	DIAPHRAGM	G	19S		3 4.00	4 7.00						7 11	7 9	611
38	5 U607	DIAPHRAGM	G	19S		2 0.00	15.00						3 3	3 1	126
6	5 V600	BEAM	G	17		5 1.00							5 8	5 8	37
20	6 V601	DIAPHRAGM	G	20		2 2.00							2 2	2 2	67
26	6 V602	WING	G	20		6 5.00							6 5	6 5	258
		Int Diaphragms													
48	4 H700	DIAPHRAGM	G	20		10 6.00							10 6	10 6	351
24	6 H701	DIAPHRAGM	G	20		10 3.00							10 3	10 3	380
24	6 H702	DIAPHRAGM	G	20		7 10.00							7 10	7 10	290
16	5 H703	STRAND TIE		20		5 9.00							5 9	5 9	96
16	5 H704	STRAND TIE		20		4 8.00							4 8	4 8	78
168	4 U700	DIAPHRAGM	G	28S			23.00	3 2.00	18.00				6 7	6 4	742
48	6 U701	DIAPHRAGM	G	28S			2 2.00	3 2.00	2 2.00				7 6	7 2	531
80	6 U702	DIAPHRAGM	G	28S			2 2.00	2 6.00	2 2.00				6 10	6 6	803
48	5 U703	DIAPHRAGM	G	6S		4 6.00	14.00	16.00					7	6 9	350
16	5 U704	DIAPHRAGM	G	19S		4 6.00	14.00						5 8	5 6	95
32	5 V700	DIAPHRAGM	G	20		3 3.00							3 3	3 3	112
		Slab													
525	6 S1	SLAB	G	20		54 4.00							54 4	54 4	44,071
772	5 S2	SLAB	G	20		40 5.00							40 5	40 5	33,667
707	6 S3	SLAB	G	20		40 5.00							40 5	40 5	44,148
64	7 S4	SLAB	G	20		26 0.00							26	26	3,484
64	7 S5	SLAB	G	20		16 0.00							16	16	2,144
64	7 S6	SLAB	G	20		33 6.00							33 6	33 6	4,490
64	7 S7	SLAB	G	20		17 0.00							17	17	2,278
		Barrier													
		Type D													
10	5 K1	BARRIER	G	27S		3 8.00	9.25	5.25	3 2.75		5.25	1.00	8 1	7 11	85

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. 28.

All bars shall be Grade 60.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

Detailed Mar. 2024
Checked Mar. 2024

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:59:24 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE 13 | STATE MO
DISTRICT BR | SHEET NO. 29
COUNTY HENRY
JOB NO. J7P3484C
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9339

DESCRIPTION | DATE

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

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
40	5 K2	BARRIER	G	27S		3 8.00	9.25	14.50	2 5.75		14.25	2.75	8 2	7 11	342
10	5 K4	BARRIER	G	19S	2	2 4.25	10.00						3 2	3 1	
		Incr. = 0.500"				2 6.25	10.00						3 4	3 3	34
10	5 K5	BARRIER	G	38S	2			18.50	9.50	8.25	18.00	4.00	3	2 11	
		Incr. = 0.500"						20.50	9.50	8.25	20.00	4.50	3 2	3 1	32
6	5 K6	BARRIER	G	19S		2 6.75	10.00						3 5	3 3	21
6	5 K7	BARRIER	G	21S			2 6.75	10.00			2 6.00	6.25	3 5	3 4	22
18	5 K8	BARRIER	G	19S	2	2 8.50	10.00						3 7	3 5	
		Incr. = 0.750"				3 2.50	10.00						4 1	3 11	71
18	5 K9	BARRIER	G	21S	2		2 8.50	10.00			2 7.75	6.75	3 7	3 5	
		Incr. = 0.750"					3 2.50	10.00			3 1.75	7.75	4 1	3 11	71
16	5 K10	BARRIER	G	19S		3 3.00	10.00						4 1	3 11	68
16	5 K11	BARRIER	G	21S			3 3.00	10.00			3 2.25	7.75	4 1	4	69
24	5 K12	BARRIER	G	20		14 9.00							14 9	14 9	382
12	5 K13	BARRIER	G	20	2	14 0.00							14	14	
		Incr. = 14.375"				8 0.00							8	8	142
782	5 R1	BARRIER	G	26		3 3.00	5.50	2.25	3 1.25	5.50	3 0.75	6.75	7	6 9	5,696
782	5 R2	BARRIER	G	19S		20.50	9.50						2 6	2 4	1,969
782	5 R3	BARRIER	G	27S			9.50	15.25	5.00	12.00	15.00	3.00	3 6	3 3	2,742
160	5 R4	BARRIER	G	20		11 9.00							11 9	11 9	2,029
40	5 R5	BARRIER	G	20		44 6.00							44 6	44 6	1,921
60	5 R6	BARRIER	G	20		55 9.00							55 9	55 9	3,609
20	5 R7	BARRIER	G	20		22 3.00							22 3	22 3	480
		Slip-Form													
76	5 C1	SLIP FORM	G	20		12 0.00							12	12	984
8	5 C2	SLIP FORM	G	20		11 0.00							11	11	95

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. 28.

All bars shall be Grade 60.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

Detailed Mar. 2024
Checked Mar. 2024

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:59:03 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	30

COUNTY
HENRY

JOB NO.
J7P3484C

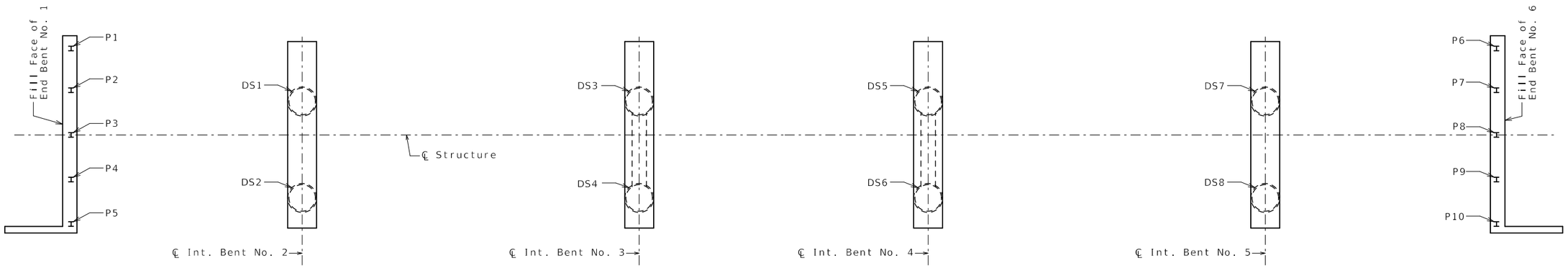
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION	DATE

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



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

As-Built Pile Data

Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
P1			
P2			
P3			
P4			
P5			
			End Bent No. 6
P6			
P7			
P8			
P9			
P10			

As-Built Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Int. Bent No. 2
DS1				
DS2				
				Int. Bent No. 3
DS3				
DS4				
				Int. Bent No. 4
DS5				
DS6				
				Int. Bent No. 5
DS7				
DS8				

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.

AS-BUILT PILE AND DRILLED SHAFT DATA

Detailed Mar. 2024
Checked Mar. 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:58:29 AM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	31

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION	DATE

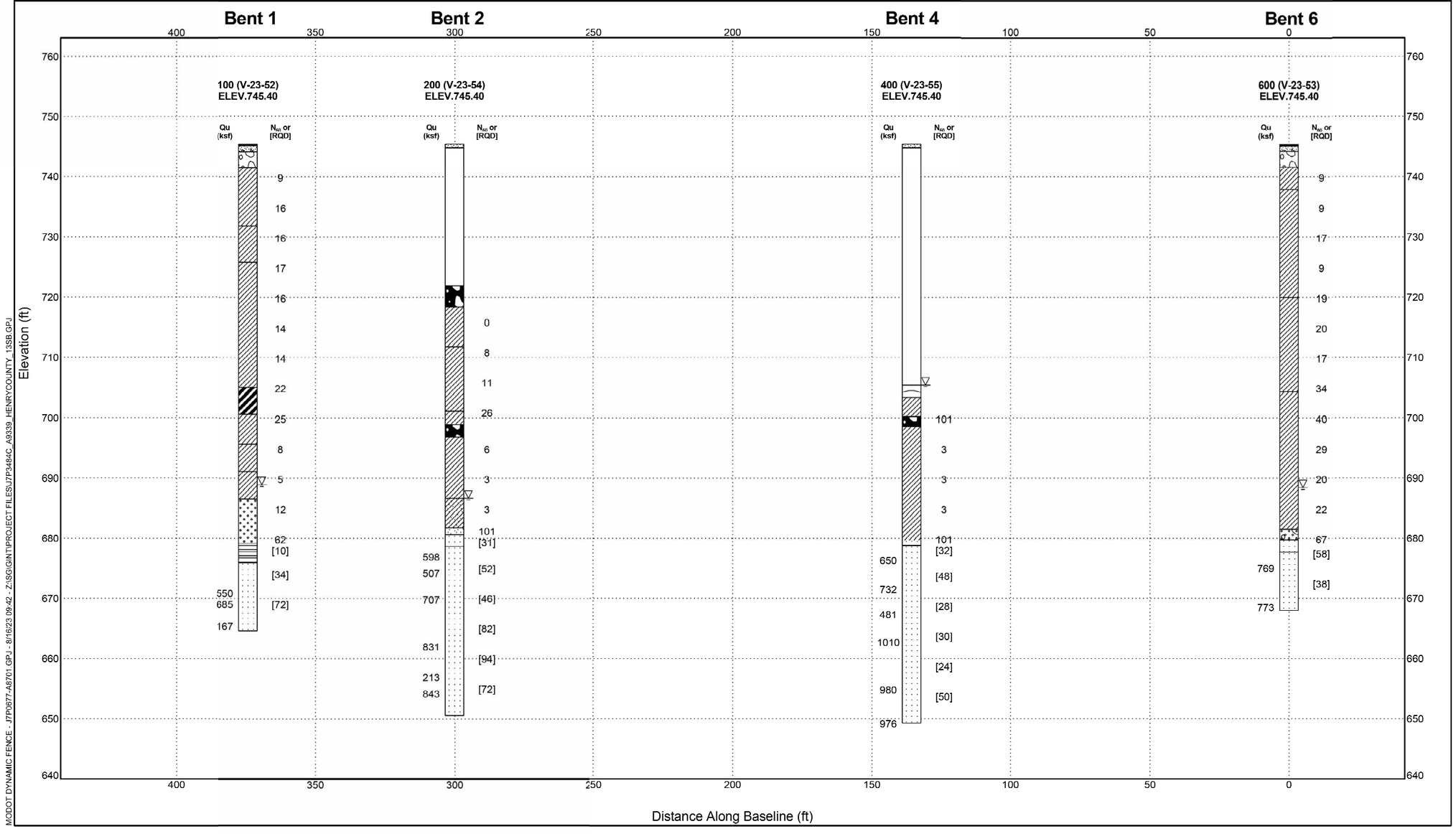
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Missouri Dept of Transportation

SUBSURFACE DIAGRAM

PROJECT NAME Bridge Replacement
PROJECT LOCATION Over Truman Reservoir
CLIENT
PROJECT NUMBER J7P3484C

Asphalt
USCS Low Plasticity Clay
Shale
Boulders and cobbles
Concrete
USCS High Plasticity Clay
Sandstone
USCS Low Plasticity Sandy Clay
USCS Poorly-graded Gravel
USCS Well-graded Sand
No Core
USCS Poorly-graded Sand



MODOT DYNAMIC FENCE - J7P0677-A8701.GPJ - 8/16/23 09:42 - Z:\SGG\GINT\PROJECT FILES\J7P3484C_A9339_HENRYCOUNTY_1SSB.GPJ

BORING DATA

Note: For locations of borings, see Sheets No. 1 & 2.

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

Detailed Jan. 2024
Checked Feb. 2024

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
04/09/2024 7:52:11 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
4/9/2024

ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	32

COUNTY
HENRY

JOB NO.
J7P3484C

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9339

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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