DESIGN DESIGNATION

A.A.D.T. - 2024 = 83
A.A.D.T. - 2044 = 120
T = 9.5%
V = 55 M.P.H.

FUNCTIONAL CLASSIFICATION- MINOR COLLECTOR

NORMAL ACCESS RIGHT OF WAY

TEMPORARY CONSTRUCTION
EASEMENTS 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		
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	

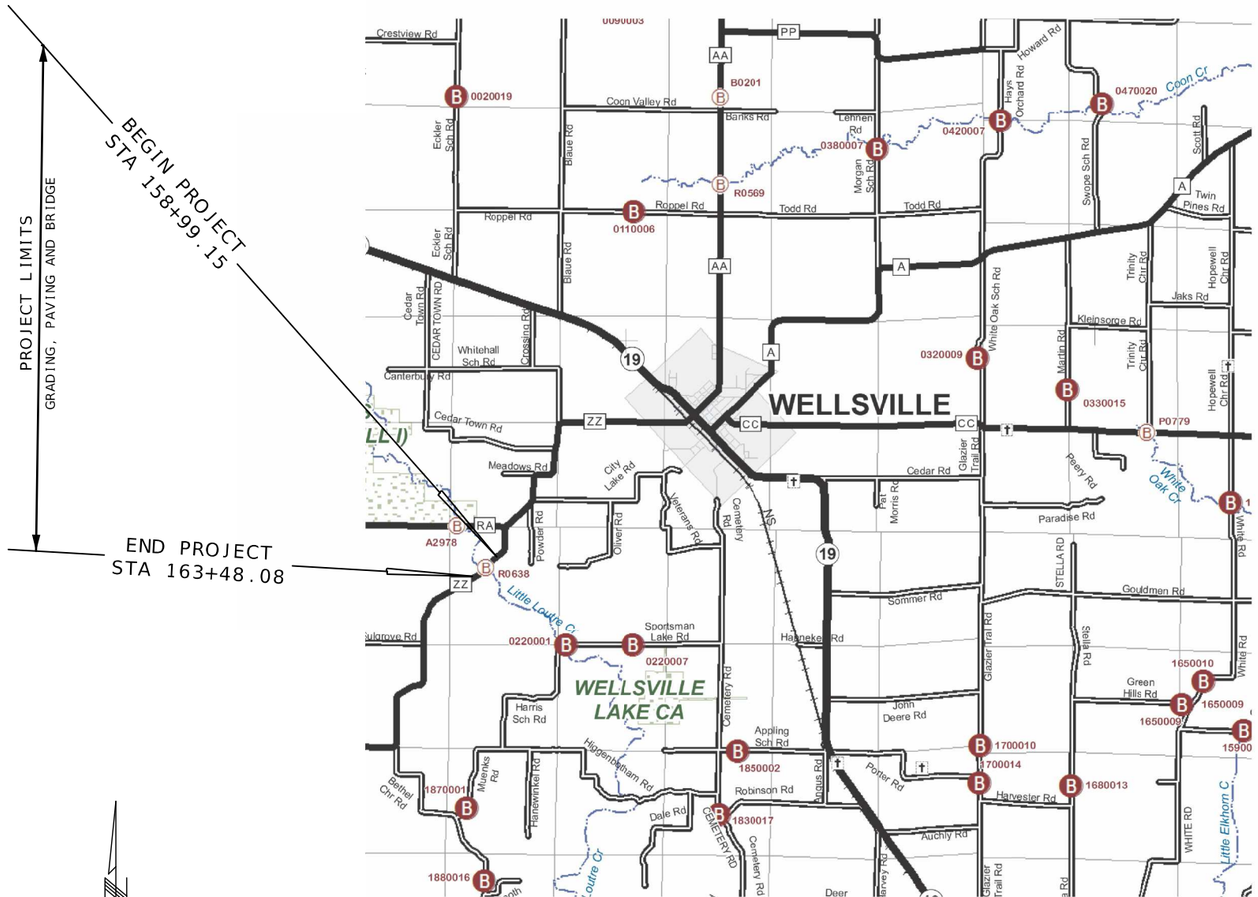
NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY MONTGOMERY COUNTY

T49N - R6W

PROJECT LOCATION



SCALE IN MILES

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.	158+99.15
END OF PROJECT	STA.	163+48.08
APPARENT LENGTH		448.93 FEET
EQUATIONS AND EXCEPTIONS: NONE		
TOTAL CORRECTIONS		0 FEET
NET LENGTH OF PROJECT		448.93 FEET
STATE LENGTH		0.085 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES		0.40 ACRES

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	1

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

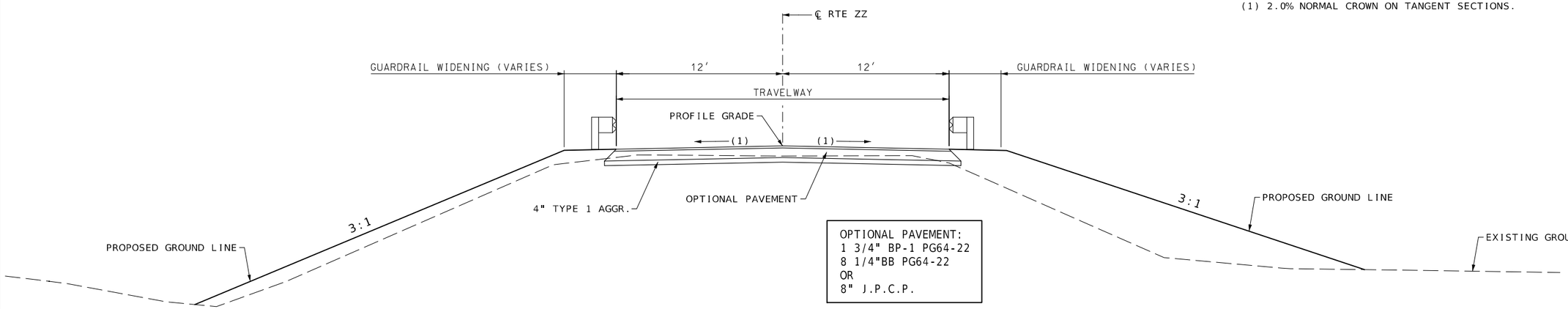
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TITLESHEET

NOTES:

CROSS SLOPE: MATCH EXISTING CROSS SLOPE AT START AND END OF PROJECT; SEE CROSS SECTION SHEETS.

(1) 2.0% NORMAL CROWN ON TANGENT SECTIONS.

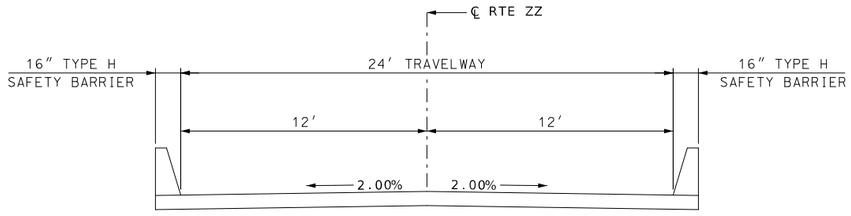


OPTIONAL PAVEMENT:
1 3/4" BP-1 PG64-22
8 1/4"BB PG64-22
OR
8" J.P.C.P.

TYPICAL SECTION ON TANGENT - RTE ZZ

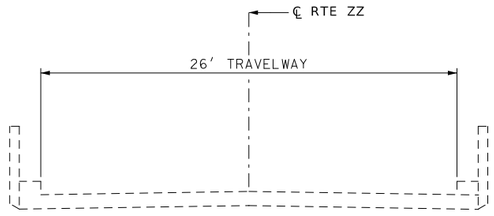
STA. 158+99.15 TO STA. 161+11.85
STA. 162+27.48 TO STA. 163+48.08

* STA. 160+91.85 TO STA. 161+12.37
STA. 162+26.96 TO STA. 162+47.48
INSTALL MINOR BR. APPR. SLAB
SEE BRIDGE PLANS FOR DETAILS



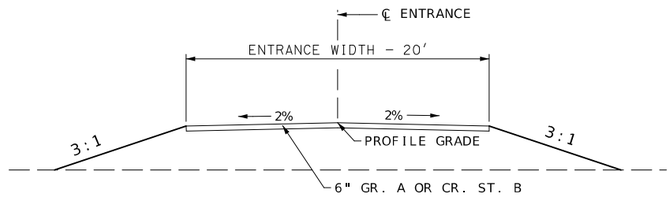
PROPOSED TYPICAL SECTION

BRIDGE A9320
STA. 161+11.85 TO STA. 162+27.48



EXISTING TYPICAL SECTION

BRIDGE R638
STA. 161+17.00 TO STA. 162+22.33



TYPICAL SECTION - FIELD ENTRANCE

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	2

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

TYPICAL SECTION SHEET
SHEET 1 OF 1
NOT TO SCALE

PAVEMENT MARKING

SHEET	STATION	STATION	WATERBORNE MARKING PAINT WITH TYPE P BEADS			REMARKS
			4" SOLID YELLOW L.F.	4" INT. YELLOW L.F.	4" WHITE L.F.	
5	158+99.00	160+62.00	163	41	326	WHITE EDGE LINES AND INT YELLOW (SBL) & SOLID (NBL) CENTERLINE
5	160+62.00	163+48.00	572		572	WHITE EDGE LINES AND DBL YELLOW CENTERLINE
		TOTALS	735	41	898	
		USE	776		898	

MISC. SEEDING & MULCHING

PERMANENT SEEDIGN	0.6 ACRE
TEMPORARY SEEDING	0.6 ACRE
USE	1 LUMP SUM
NOTE: SEEDING ACRES FOR INFORMATION ONLY	

REMOVAL OF IMPROVEMENTS

SHEET	STATION	STATION	LOCATION	QUANTITY UNITS	REMARKS
5	-	-	RTE. ZZ	2 EA.	REMOVE LOAD POSTING SIGNS - BEYOND PROJECT LIMITS
5	-	-	RTE. ZZ	4 EACH	REMOVE OBJECT MARKERS AT 4 CORNERS OF BRIDGE
5	158+99.15	-	RTE. ZZ	20 L.F.	SAW CUT AT BEGIN OF NEW OPTIONAL PAVEMENT
5	163+48.08	-	RTE. ZZ	20 L.F.	SAW CUT AT END OF NEW OPTIONAL PAVEMENT
5	158+99	161+13	RTE. ZZ	511 S.Y.	REMOVE EXISTING PAVEMENT ON THE NORTH END OF THE BRIDGE
5	162+26	163+48	RTE. ZZ	297 S.Y.	REMOVE EXISTING PAVEMENT ON THE SOUTH END OF THE BRIDGE
			TOTAL	1 LUMP SUM	

CONTRACTOR FURNISHED SURVEYING AND STAKING

QUANTITY = 1 LUMP SUM

CLEARING AND GRUBBING

TOTAL	0.1 ACRE
USE	1 ACRE

TYPE 2 ROCK BLANKET & PERMANENT EROSION CONTROL GEOTEXTILE

SHEET	STATION	STATION	FURNISHING TYPE 2 ROCK BLANKET C.Y.	PLACING TYPE 2 ROCK BLANKET C.Y.	PERMANENT EROSION CONTROL GEOTEXTILE S.Y.	REMARKS
4	160+82	161+42	223	223	335	SLOPE PROTECTION AROUND NORTH END BENT
4	161+97	162+57	202	202	303	SLOPE PROTECTION AROUND SOUTH END BENT
		TOTAL	425	425	638	

18" GROUP C PIPE

SHEET	STATION	LOCATION	LENGTH L.F.	REMARKS
4	159+61.52	LT.	50.0	ENTRANCE LT.
4	159+63.77	RT.	50.0	ENTRANCE RT.
		TOTAL	100	

LINEAR GRADING CL. 1

SHEET	STATION	LOCATION	LENGTH 100 FT.	REMARKS
4	159+61.52	LT.	1.1	ENTRANCE LT.
4	159+63.77	RT.	0.9	ENTRANCE RT.
		TOTAL	2	

GUARDRAIL

SHEET	STATION	STATION	MASH BRIDGE APPROACH TRANSITION SECTION EACH	MASH CRASHWORTHY END TERMINAL EACH	REMARKS
5	160+06	160+94	1	1	LEFT SIDE NORTH END
5	160+13	161+01	1	1	RIGHT SIDE NORTH END
5	162+37	163+25	1	1	LEFT SIDE SOUTH END
5	162+44	163+32	1	1	RIGHT SIDE SOUTH END
		TOTALS	4	4	

TEMPORARY EROSION CONTROL

SHEET	SILT FENCE L.F.	ROCK DITCH CHECK L.F.	TYPE C BERM L.F.	SEDIMENT REMOVAL C.Y.	REMARKS
9	960	80	210	18	ADJUST FOR FIELD CONDITIONS
TOTAL	960	80	210	18	
SEDIMENT REMOVAL ESTIMATED AT 1 CY PER DITCH CHECK AND 1 CY PER 100' OF SILT FENCE					

EARTHWORK

SHEET	STATION	STATION	LOCATION	CLASS A EXCAVATION C.Y.	EMBANKMENT IN PLACE C.Y.	COMPACTING EMBANKMENT C.Y.	REMARKS
4	158+99.15	161+11.85	RTE. ZZ	413	535	369	NORTH END OF BRIDGE
4	162+27.48	163+56.20	RTE. ZZ	269	187	240	SOUTH END OF BRIDGE
			TOTALS	682	722	609	

SUBGRADE COMPACTION (6 INCH DEPTH)

SHEET	STATION	STATION	LOCATION	LENGTH 100 FT.	REMARKS
4	158+99.15	161+11.85	RTE. ZZ	3	SUBGRADE PREPARATION FOR OPTIONAL PAVEMENT NORTH END OF BRIDGE
4	162+27.48	163+48.08	RTE. ZZ	2	SUBGRADE PREPARATION FOR OPTIONAL PAVEMENT SOUTH END OF BRIDGE
			TOTAL	5	

OPTIONAL PAVEMENT

SHEET	STATION	STATION	LOCATION	LENGTH FT.	WIDTH FT.	OPTIONAL PAVEMENT S.Y.	4" TYPE 1 AGGREGATE BASE S.Y.	REMARKS
4	158+99.15	159+35.00	RTE. ZZ	35.85	20-24	87.6	87.6	TAPER AT BEG PROJ.
4	159+35.00	160+91.85	RTE. ZZ	156.85	24	418.3	418.3	NORTH END OF BRIDGE
4	162+47.48	163+12.00	RTE. ZZ	64.52	24	172.1	172.1	SOUTH END OF BRIDGE
4	163+12.00	163+48.08	RTE. ZZ	36.08	24-20	88.2	88.2	TAPER AT END PROJ.
					TOTAL	766.20	766.20	
					USE	766.2	767.0	

MOBILIZATION

QUANTITY = 1 LUMP SUM

GRAVEL A OR CRUSHED STONE B

SHEET	STATION	LOCATION	DEPTH INCH	AREA S.Y.	TONS	REMARKS
4	159+61.52	RTE. ZZ	6	222.2	52.0	ENTRANCE LT.
4	159+63.77	RTE. ZZ	6	173.3	40.6	ENTRANCE RT.
				TOTAL	92.60	
				USE	93	

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED: 8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	3

COUNTY: MONTGOMERY
JOB NO.: J2S3195
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

QUANTITIES
SHEET 1 OF 2

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						REVERSE CURVE (SYMBOL LEFT)
WO1-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
WO3-4	48X48	16.00						BE PREPARED TO STOP
WO3-5	48X48	16.00						SPEED LIMIT AHEAD
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
WO4-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00						MERGE (LEFT)
WO4-1aR	48X48	16.00						MERGE (RIGHT)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00						UNEVEN LANES
WO8-12	48X48	16.00						NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
WO12-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00						ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00						DETOUR AHEAD
WO20-3	48X48	16.00	4	64			20A	ROAD CLOSED AHEAD
WO20-3a	48X48	16.00	2	32			20B	ROAD CLOSED 500 FT
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00						FLAGGER (SYMBOL)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK / SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
GO22-1	21X15	2.19						WET PAINT (ARROW PIVOTS)

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						ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00						END ROAD WORK
GO20-4	36X18	4.50						PILOT CAR FOLLOW ME
GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW
GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW
GO20-5aP	36X24	6.00						WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00						END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT)
MO4-9R	48X36	12.00						DETOUR (RIGHT)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)
MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)
REGULATORY SIGNS								
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00						SPEED LIMIT XX
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00						NO TURNS
R3-4	48X48	16.00						NO U-TURN (SYMBOL)
R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00						DO NOT PASS
R4-2	36X48	12.00						PASS WITH CARE
R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25						DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00						ONE WAY (LEFT)
R6-2R	24X30	5.00						ONE WAY (RIGHT)
R9-9	24X12	2.00						SIDEWALK CLOSED
R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R10-6	24X36	6.00						STOP HERE ON RED (45^ ARROW)
R11-2	48X30	10.00	2	20			29	ROAD CLOSED
R11-3a	60X30	12.50						ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	2	25			55A	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						POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00						RATE OUR WORK ZONE
CONST-8	48X36	12.00						WORK ZONE NO PHONE ZONE
SPECIAL	96X48	32.00	2	64	2	64	48	BRIDGE CLOSED_ _MILES AHEAD

616-10.05 CONSTRUCTION SIGNS	TOTAL
	205

616-10.10 RELOCATED SIGNS	TOTAL
	64

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161008	2	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025		CHANNELIZER (TRIM LINE)
6161030	14	TYPE III MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040		FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A		CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	3

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

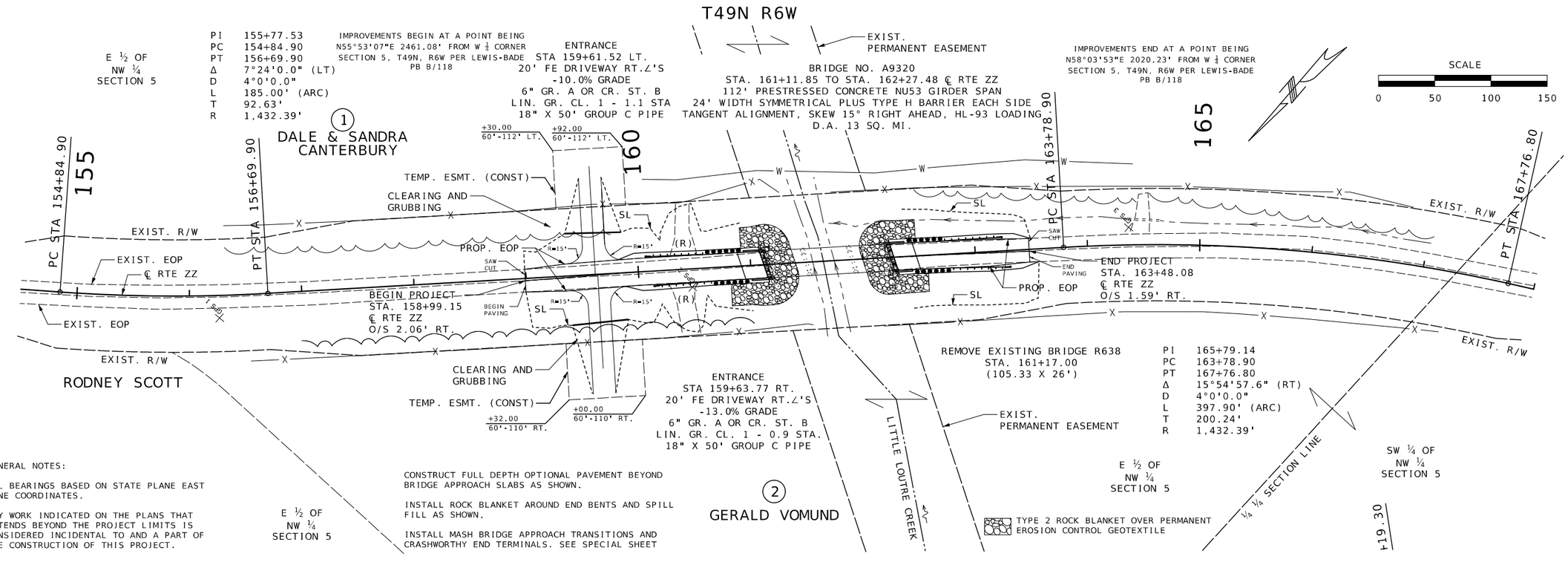
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

QUANTITIES
SHEET 2 OF 2



GENERAL NOTES:

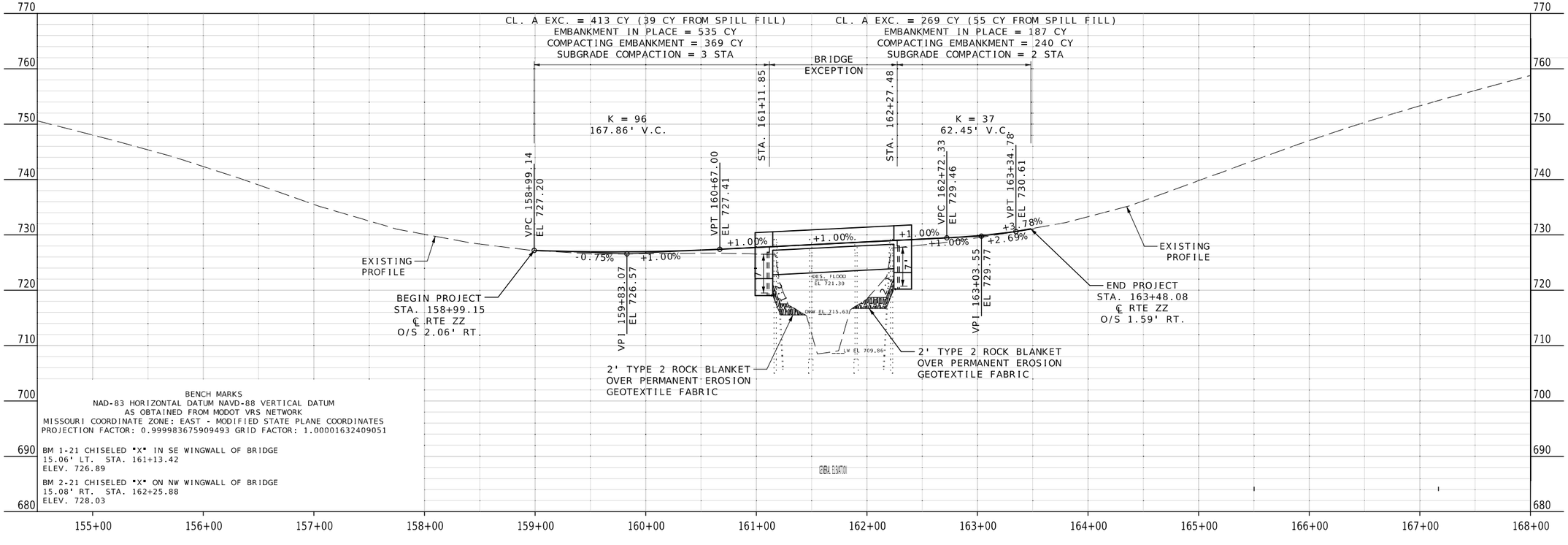
ALL BEARINGS BASED ON STATE PLANE EAST ZONE COORDINATES.

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

CONSTRUCT FULL DEPTH OPTIONAL PAVEMENT BEYOND BRIDGE APPROACH SLABS AS SHOWN.

INSTALL ROCK BLANKET AROUND END BENTS AND SPILL FILL AS SHOWN.

INSTALL MASH BRIDGE APPROACH TRANSITIONS AND CRASHWORTHY END TERMINALS. SEE SPECIAL SHEET



BENCH MARKS
NAD-83 HORIZONTAL DATUM NAVD-88 VERTICAL DATUM
AS OBTAINED FROM MODOT VRS NETWORK
MISSOURI COORDINATE ZONE: EAST - MODIFIED STATE PLANE COORDINATES
PROJECTION FACTOR: 0.999983675909493 GRID FACTOR: 1.00001632409051

BM 1-21 CHISELED "X" IN SE WINGWALL OF BRIDGE
15.06' LT. STA. 161+13.42
ELEV. 726.89

BM 2-21 CHISELED "X" ON NW WINGWALL OF BRIDGE
15.08' RT. STA. 162+25.88
ELEV. 728.03

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NE	4

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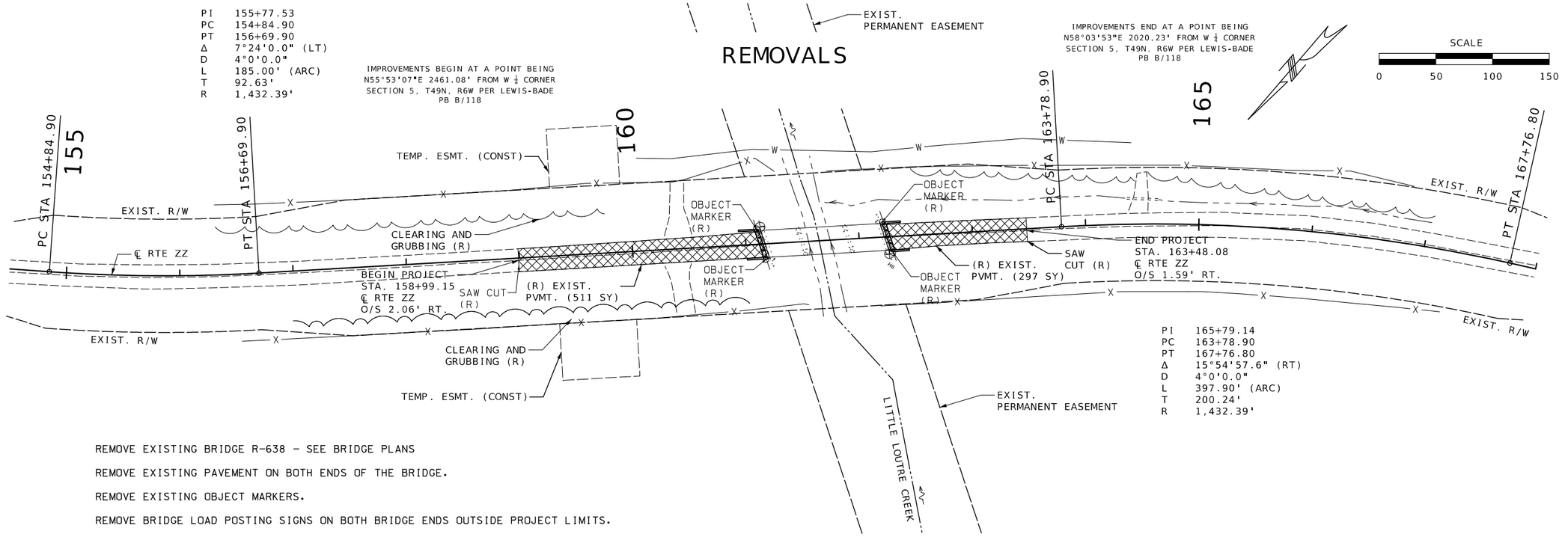
PLAN AND PROFILE SHEET
SHEET 1 OF 1

REMOVALS



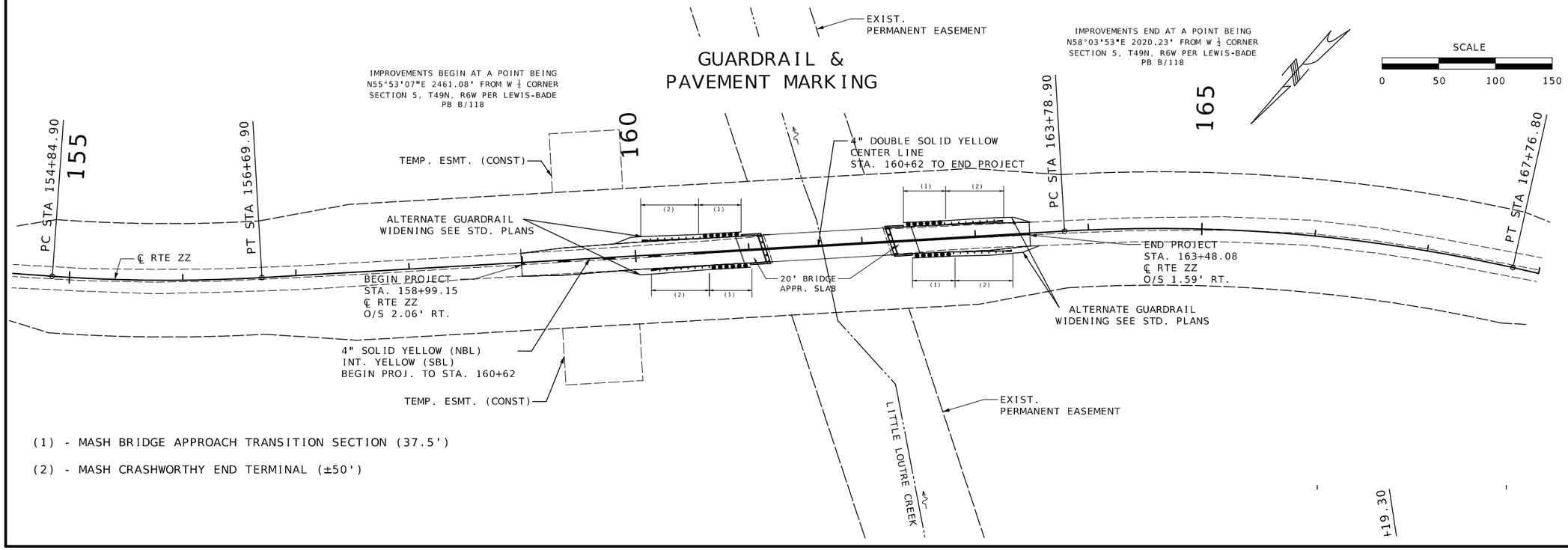
REMOVE EXISTING BRIDGE R-638 - SEE BRIDGE PLANS

REMOVE EXISTING PAVEMENT ON BOTH ENDS OF THE BRIDGE.

REMOVE EXISTING OBJECT MARKERS.

REMOVE BRIDGE LOAD POSTING SIGNS ON BOTH BRIDGE ENDS OUTSIDE PROJECT LIMITS.

GUARDRAIL & PAVEMENT MARKING



(1) - MASH BRIDGE APPROACH TRANSITION SECTION (37.5')

(2) - MASH CRASHWORTHY END TERMINAL (±50')

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ZZ	MO
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NE	5

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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SPECIAL SHEET
REMOVALS, GUARDRAIL,
PAVEMENT MARKING

+19.30

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

PROJECT COORDINATE INFORMATION

COORDINATE SYSTEM	MODIFIED STATE PLANE (GROUND)
HORIZONTAL DATUM	NAD 83(2011) EPOCH 2010.0
VERTICAL DATUM	NAVD 88: GNSS DERIVED
GEOID MODEL	18
ELEVATIONS DETERMINED BY	DIFFERENTIAL LEVELING / GPD - MODOT VRS
PROJECT PROJECTION FACTOR	0.999983675909493

REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	MO COORDINATE SYSTEM OF 1983
CONTROL STATION	MISSOURI CORS
DESIGNATION	MODOT WARRENTON CORS ARP
CORS_ID	MOWR
PID	DL6157
LATITUDE	38 48 52.70169 N
LONGITUDE	91 09 40.92390 W
NORTHING (M)	331062.3840
EASTING (M)	192562.4610
ZONE	EAST
PROJECT AVERAGE GRID FACTOR	1.00001632409051

EXAMPLE OF PROJECT COORDINATE TO S.P.C.

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

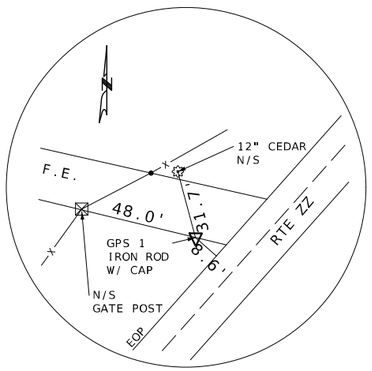
EXAMPLE: CONTROL POINT #201
N 1174479.928 X 1.00001632409051 = N 1174499.1011
E 505618.948 X 1.00001632409051 = E 505627.2016

LINEAR UNIT CONVERSION

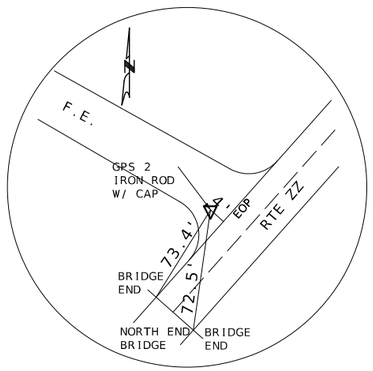
1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING

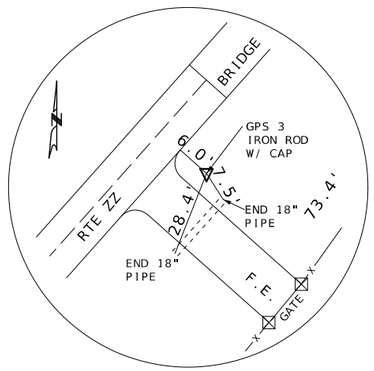
SHEET NO	STATION	LOCATION	OFFSET (USFT)	MODIFIED STATE PLANE (GROUND) NORTHING (US SURVEY FT)	EASTING (US SURVEY FT)	ELEVATION (US SURVEY FT)	DESCRIPTION	GPK POINT ID
PROJECT CONTROL POINTS								
4	156+26.29	CL RTE ZZ	20.02' RT	1,174,479.928	505,618.948	740.27	CP #201	
4	160+47.21	CL RTE ZZ	16.29' RT	1,174,185.057	505,317.706	725.55	CP #202	
4	164+36.97	CL RTE ZZ	15.57' LT	1,173,891.962	505,058.043	734.64	CP #203	
ALIGNMENTS								
-	149+72.60	CL RTE ZZ	0	1,174,860.002	506,153.090	-	BEGIN CHAIN	
4	154+84.90	CL RTE ZZ	0	1,174,554.783	505,741.638	748.82	PC	
4	156+69.90	CL RTE ZZ	0	1,174,435.288	505,600.576	737.63	PT	
4	158+99.15	CL RTE ZZ	0	1,174,276.131	505,435.582	727.20	BEGIN PROJECT	
4	161+14.96	CL RTE ZZ	0	1,174,126.303	505,280.259	726.49	FILL FACE BRIDGE #A9320	
4	162+24.37	CL RTE ZZ	0	1,174,050.338	505,201.508	727.71	FILL FACE BRIDGE #A9320	
4	163+48.08	CL RTE ZZ	0	1,173,964.454	505,112.475	731.09	END PROJECT	
4	163+78.90	CL RTE ZZ	0	1,173,943.057	505,090.293	732.18	PC	
4	167+76.80	CL RTE ZZ	0	1,173,709.870	504,769.461	757.57	PT	
-	170+31.00	CL RTE ZZ	0	1,173,590.325	504,545.125	766.82	END CHAIN	



CP #201
STA. 156+26.29 - 20.02' RT
N = 1,174,479.928
E = 505,618.948
ELEV. = 740.27



CP #202
STA. 160+47.21 - 16.29' RT
N = 1,174,185.057
E = 505,317.706
ELEV. = 725.55



CP #203
STA. 164+36.97 - 15.57' LT
N = 1,173,891.962
E = 505,058.043
ELEV. = 734.64

STATE OF MISSOURI
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DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO

DISTRICT	SHEET NO.
NE	6

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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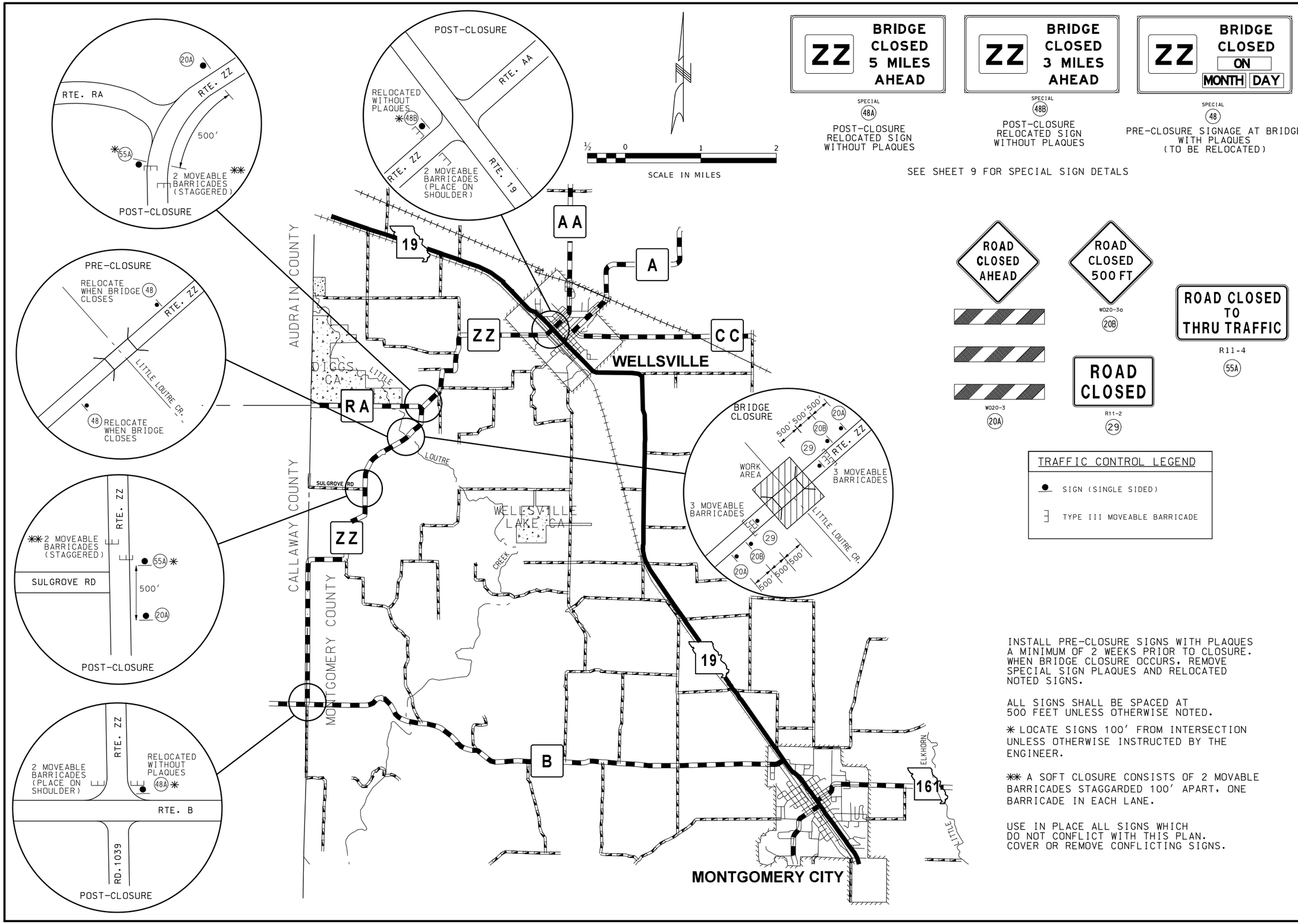
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

COORDINATES/REFERENCE POINTS



ZZ BRIDGE CLOSED 5 MILES AHEAD

SPECIAL 48A

POST-CLOSURE RELOCATED SIGN WITHOUT PLAQUES

ZZ BRIDGE CLOSED 3 MILES AHEAD

SPECIAL 48B

POST-CLOSURE RELOCATED SIGN WITHOUT PLAQUES

ZZ BRIDGE CLOSED ON MONTH DAY

SPECIAL 48

PRE-CLOSURE SIGNAGE AT BRIDGE WITH PLAQUES (TO BE RELOCATED)

SEE SHEET 9 FOR SPECIAL SIGN DETAILS

ROAD CLOSED AHEAD

WO20-3

20A

ROAD CLOSED 500 FT

WO20-3a

20B

ROAD CLOSED TO THRU TRAFFIC

R11-4

55A

ROAD CLOSED

R11-2

29

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- TYPE III MOVEABLE BARRICADE

INSTALL PRE-CLOSURE SIGNS WITH PLAQUES A MINIMUM OF 2 WEEKS PRIOR TO CLOSURE. WHEN BRIDGE CLOSURE OCCURS, REMOVE SPECIAL SIGN PLAQUES AND RELOCATED NOTED SIGNS.

ALL SIGNS SHALL BE SPACED AT 500 FEET UNLESS OTHERWISE NOTED.

* LOCATE SIGNS 100' FROM INTERSECTION UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.

** A SOFT CLOSURE CONSISTS OF 2 MOVABLE BARRICADES STAGGARDED 100' APART, ONE BARRICADE IN EACH LANE.

USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER OR REMOVE CONFLICTING SIGNS.

STATE OF MISSOURI
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NUMBER PE-2010000877
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VOID UNLESS DIGITALLY SIGNED
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MO-PE-2010000877

DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	7

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

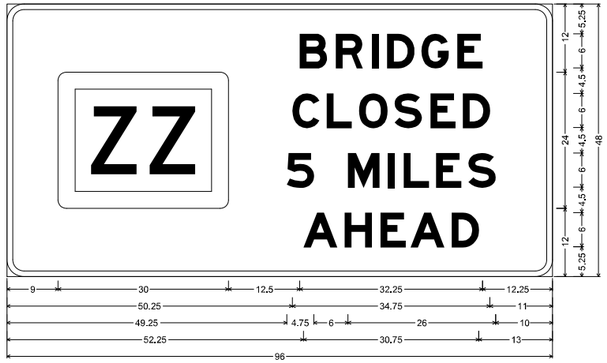
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

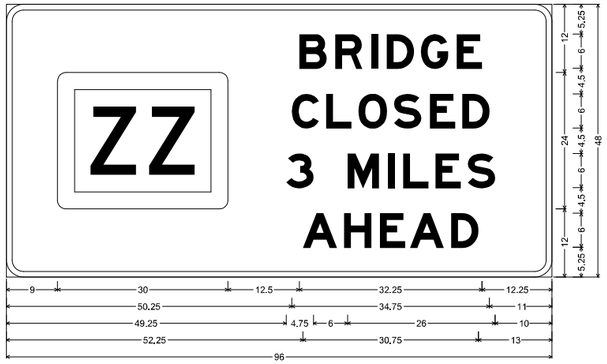
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TRAFFIC CONTROL SHEET
SHEET 1 OF 2



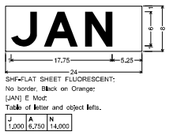
MO4-13 SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.000" Border, Black on, Orange;
"BRIDGE", E Mod; "CLOSED", E Mod; "5 MILES", E Mod; "AHEAD", E Mod;
Table of letter and object lefts

9.000	B 51.500	R 57.875	I 64.125	D 66.875	G 72.875	E 79.250	
C 50.250	L 56.250	O 62.000	S 68.250	E 74.500	D 80.250		
5 49.250	M 60.000	I 67.125	L 69.875	E 75.500	S 81.250		
A 52.250	H 59.375	E 65.750	A 71.000	D 78.250			



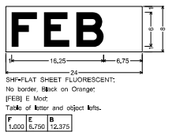
MO4-13 SHF-FLAT SHEET FLUORESCENT;
3.000" Radius, 1.000" Border, Black on, Orange;
"BRIDGE", E Mod; "CLOSED", E Mod; "3 MILES", E Mod; "AHEAD", E Mod;
Table of letter and object lefts

9.000	B 51.500	R 57.875	I 64.125	D 66.875	G 72.875	E 79.250	
C 50.250	L 56.250	O 62.000	S 68.250	E 74.500	D 80.250		
3 49.250	M 60.000	I 67.125	L 69.875	E 75.500	S 81.250		
A 52.250	H 59.375	E 65.750	A 71.000	D 78.250			



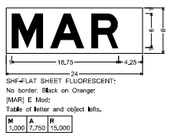
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[JAN] E Mod:
Table of letter and object lefts.

J 1.000	A 6.750	N 14.000



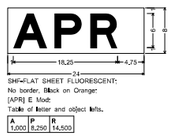
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[FEB] E Mod:
Table of letter and object lefts.

F 1.000	E 6.750	B 12.375



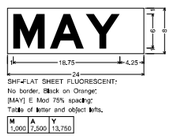
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[MAR] E Mod:
Table of letter and object lefts.

M 1.000	A 7.750	R 15.000



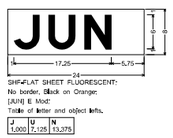
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[APR] E Mod:
Table of letter and object lefts.

A 1.000	P 8.250	R 14.500



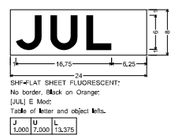
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[MAY] E Mod 75% spacing:
Table of letter and object lefts.

M 1.000	A 7.500	Y 13.750



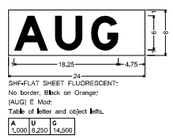
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[JUN] E Mod:
Table of letter and object lefts.

J 1.000	U 7.125	N 13.375



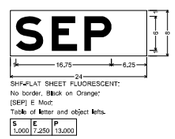
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[JUL] E Mod:
Table of letter and object lefts.

J 1.000	U 7.000	L 13.375



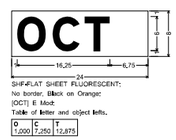
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[AUG] E Mod:
Table of letter and object lefts.

A 1.000	U 8.250	G 14.500



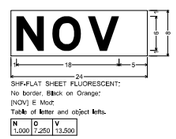
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[SEP] E Mod:
Table of letter and object lefts.

S 1.000	E 7.250	P 13.000



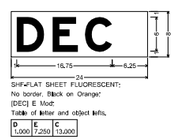
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[OCT] E Mod:
Table of letter and object lefts.

O 1.000	C 7.250	T 12.875



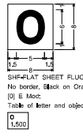
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[NOV] E Mod:
Table of letter and object lefts.

N 1.000	O 7.250	V 13.500



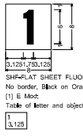
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[DEC] E Mod:
Table of letter and object lefts.

D 1.000	E 7.250	C 13.000



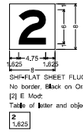
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[0] E Mod:
Table of letter and object lefts.

0 1.500



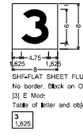
SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[1] E Mod:
Table of letter and object lefts.

1 3.125



SHF-FLAT SHEET FLUORESCENT:
No border, Black on Orange:
[2] E Mod:
Table of letter and object lefts.

2 1.625



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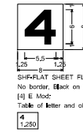
[3] E Mod:
Table of letter and object lefts.

3 1.625



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4 1.250

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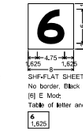
5 1.625



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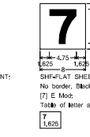
6 1.625



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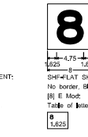
7 1.625



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[8] E Mod:
Table of letter and object lefts.

8 1.625

SHF-FLAT SHEET FLUORESCENT:
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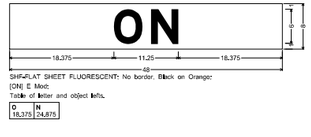
[9] E Mod:
Table of letter and object lefts.

9 1.625



SHF-FLAT SHEET FLUORESCENT: No border, Black on Orange:
[ON] E Mod:
Table of letter and object lefts.

O 18.375	N 24.875

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	8

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

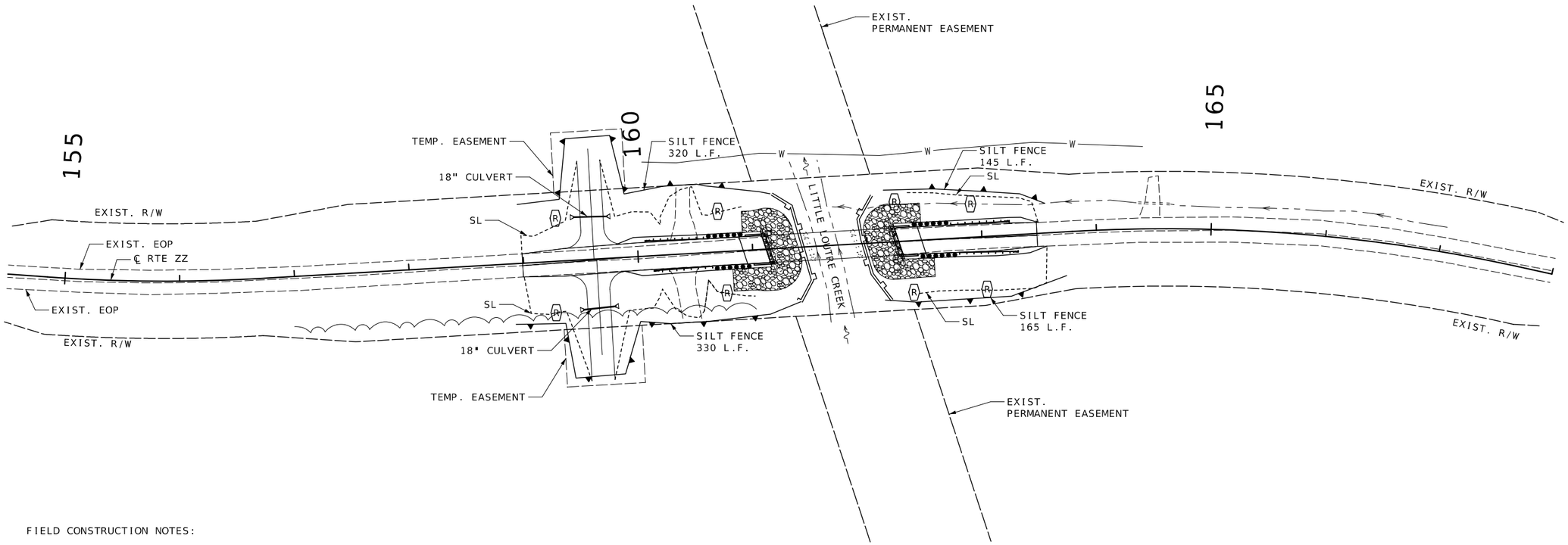
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TRAFFIC CONTROL
SPECIAL SIGN DESIGN SHEET
SHEET 2 OF 2

NOTES:

SEE STANDARD PLANS 806.10 FOR TEMPORARY EROSION CONTROL MEASURES.

LOCATE AND PLACE ALL MEASURES, AS SHOWN OR AS FIELD CONDITIONS DICTATE.



FIELD CONSTRUCTION NOTES:

TEMPORARY EROSION CONTROL LEGEND

- (R) ROCK DITCH CHECK
- TEMPORARY BERM TYPE C
- SILT FENCE

SCALE

0 50 100 150

ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
STATE OF MISSOURI

ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/9/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
NE	9

COUNTY
MONTGOMERY

JOB NO.
J2S3195

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DESCRIPTION

DATE

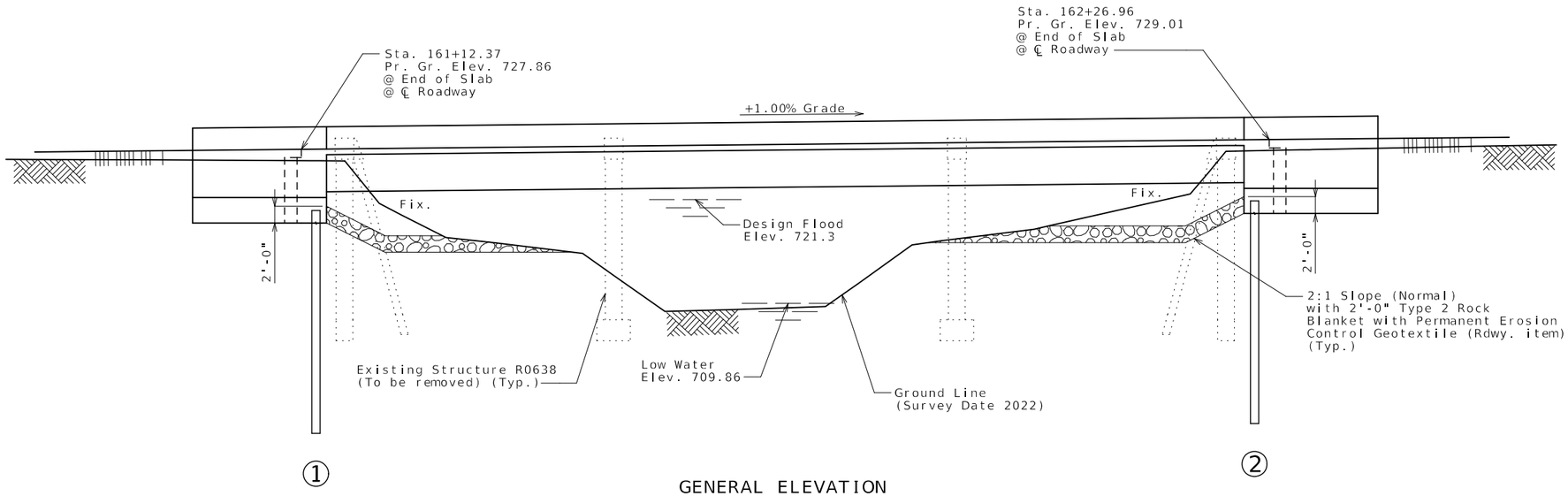
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

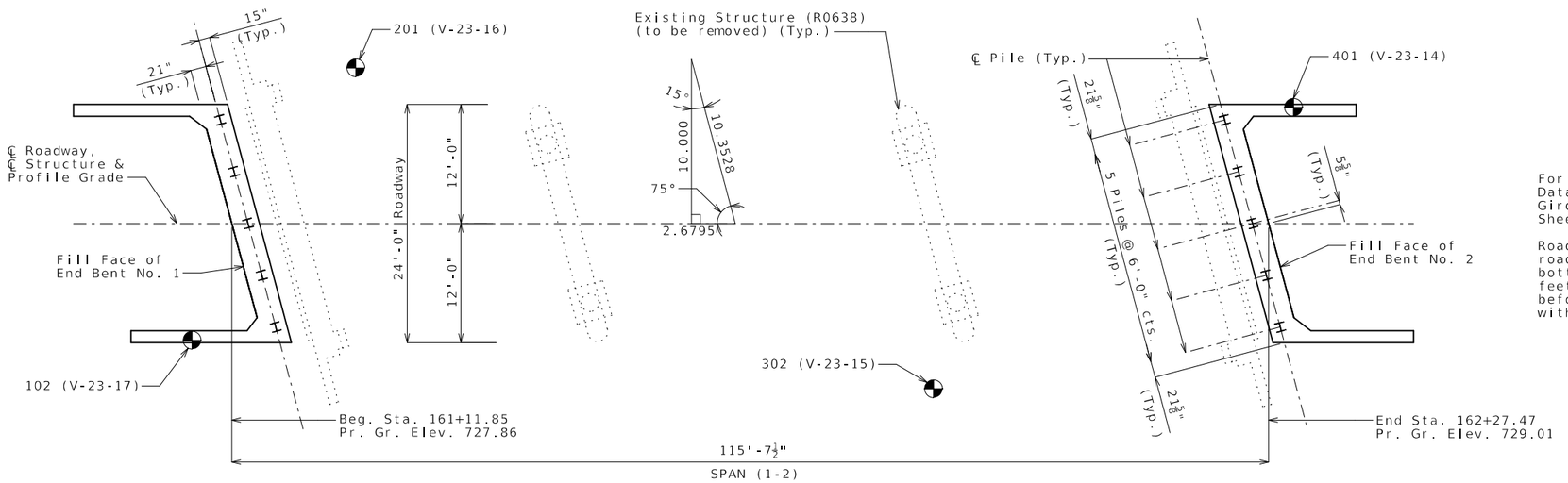
EROSION CONTROL PLAN

SEC/SUR 5 TWP 49N RGE 6W

(112') PRESTRESSED CONCRETE NU-GIRDER SPAN



GENERAL ELEVATION



PLAN

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

Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom 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.

◓ Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet(s) No. 23 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.

B.M. #1 - 21 CHISELED (X) IN SE WINGWALL OF BRIDGE
15.06' LT. STA. 161+13.42

B.M. #2 - 21 CHISELED (X) ON NW WINGWALL OF BRIDGE
15.08' RT. STA 162+25.88

BRIDGE: ROUTE ZZ OVER LITTLE LOUTRE CREEK

ROUTE 22 FROM ROUTE RA TO COUNTY LINE
ABOUT 0.5 MILES SOUTH OF ROUTE RA
BEGINNING STATION 161+11.85

Designed July 2023
Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2024
ROUTE ZZ | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION | DATE

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

Estimated Quantities

Item		Substr.	Superstr.	Total
Removal of Miscellaneous ACM (Non-Friable)	sq. foot	9		9
Class 1 Excavation	cu. yard	100		100
Removal of Bridges (R0638)	lump sum			1
Bridge Approach Slab (Minor)	sq. yard		108	108
Galvanized Structural Steel Piles (12 in.)	linear foot	200		200
Pile Point Reinforcement	each	10		10
Class B Concrete (Substructure)	cu. yard	27.0		27.0
Type H Barrier	linear foot		284	284
Slab on Concrete NU-Girder	sq. yard		340	340
NU 53, Prestressed Concrete NU-Girder	linear foot		339	339
Steel Intermediate Diaphragm for P/S Concrete Girders	each		4	4
Slab Drain	each		8	8
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		6	6

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.

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.).

Foundation Data

Type	Design Data		Bent Number 1	Bent Number 2
Load Bearing Pile	Pile Type and Size		HP 12x53	HP 12x53
	Number	ea	5	5
	Approximate Length Per Each	ft	20	20
	Pile Point Reinforcement	ea	ALL	ALL
	Min. Galvanized Penetration (Elev.)	ft	FULL LENGTH	FULL LENGTH
	Pile Driving Verification Method		DF	DF
	Resistance Factor		0.4	0.4
	Minimum Nominal Axial Compressive Resistance	kip	564	565

DF=FHWA-modified Gates Dynamic Pile Formula

Load Bearing Pile:
Minimum Nominal Axial Compressive 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) show on the plans for all piles. Deviations in peneration 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.

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

Hydrologic Data

Drainage Area = 13 mi²
Design Flood Frequency = 50 years
Design Flood Discharge = 4100 cfs
Design Flood (D.F.) Elevation = 721.3 ft
Base Flood (100-year)
Base Flood Elevation = 721.8 ft
Base Flood Discharge = 4800 cfs
Estimated Backwater = 0.0 ft
Average Velocity thru Opening = 6.5 ft/s
Freeboard (50-year)
Freeboard = 0.7 ft
Roadway Overtopping
Overtopping Flood Discharge > N/A cfs
Overtopping Flood Frequency > 500 years
500-year Flood Elevation = 723.0 ft

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 Seismic Details)
Seismic Design Category = B

Design Loading:

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

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders 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. 10 and 11.

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 fiber expansion joint filler, except as noted.

Reinforcing Steel:

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

Traffic Handling:

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

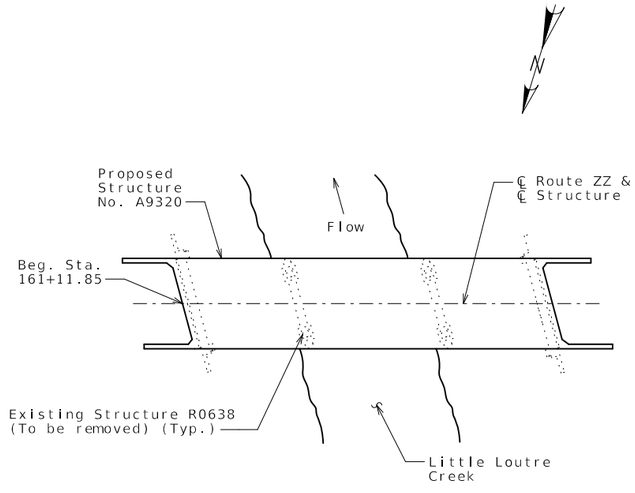
Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	124
Reinforcing Steel (Epoxy Coated)	pound	37,789

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 epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

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

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

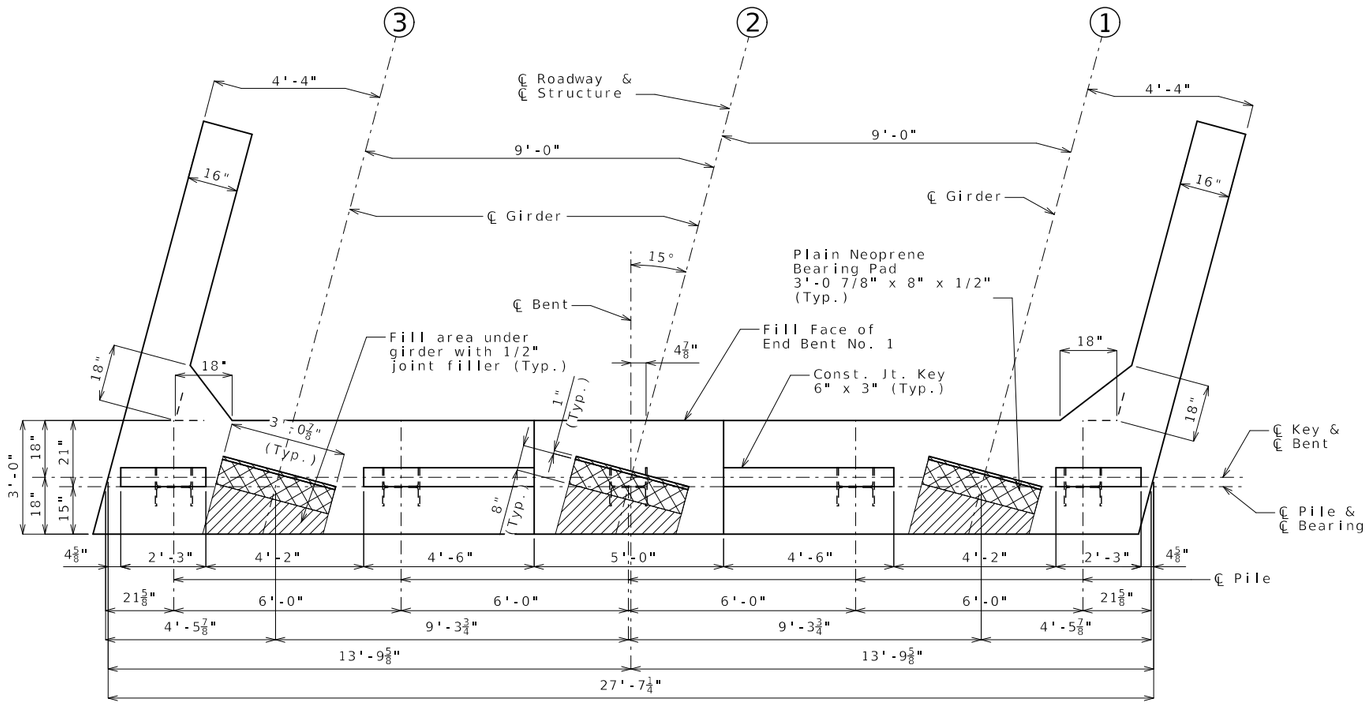


STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

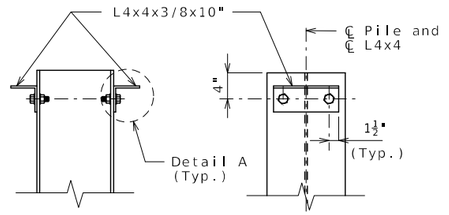
DATE PREPARED 5/31/2024
ROUTE ZZ | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION | DATE

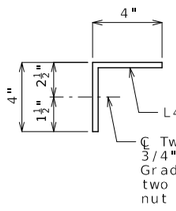
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PLAN OF BEAM SHOWING DIMENSIONS

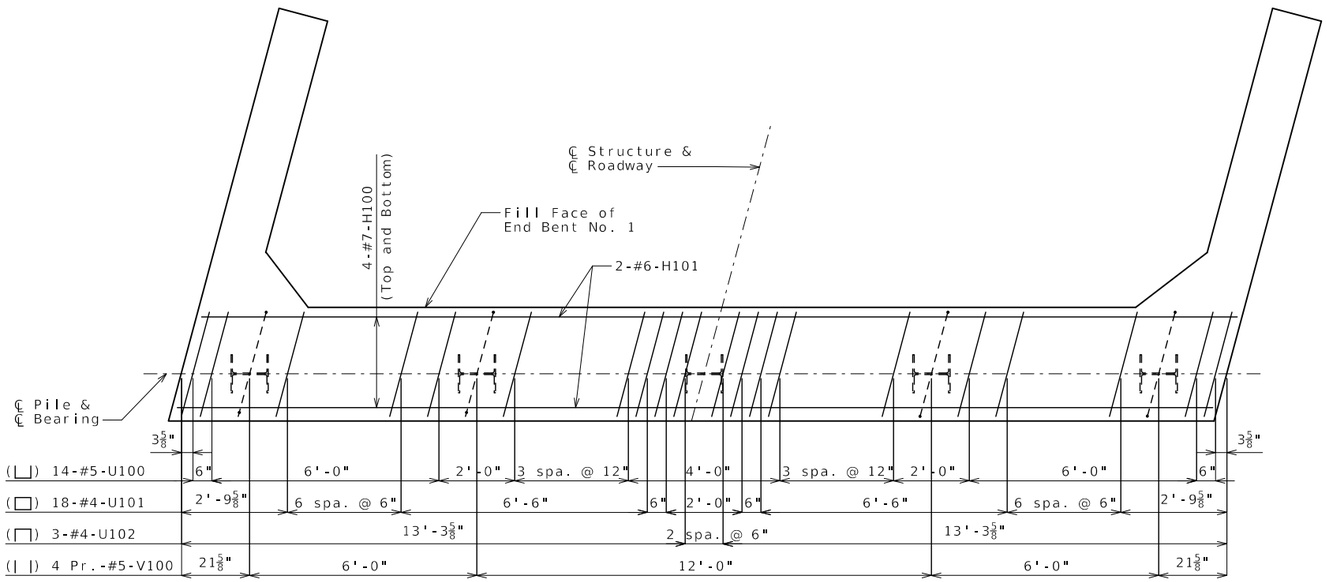


DETAILS OF HP PILE ANCHORS

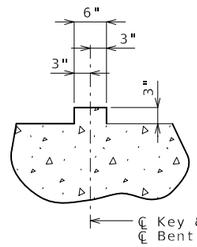


DETAIL A

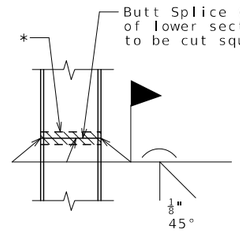
Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.



PLAN OF BEAM SHOWING REINFORCEMENT
Note: Steps and keys not shown for clarity.



SECTION THRU KEY



STEEL PILE SPLICE
(If required)

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

Notes:

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

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

The U bars and pairs of V bars shall be placed parallel to ℄ Roadway.

For details of Vertical Drain at End Bents, see Sheet No. 6.

DETAILS OF END BENT NO. 1

Detailed Aug. 2023
Checked Jan. 2024

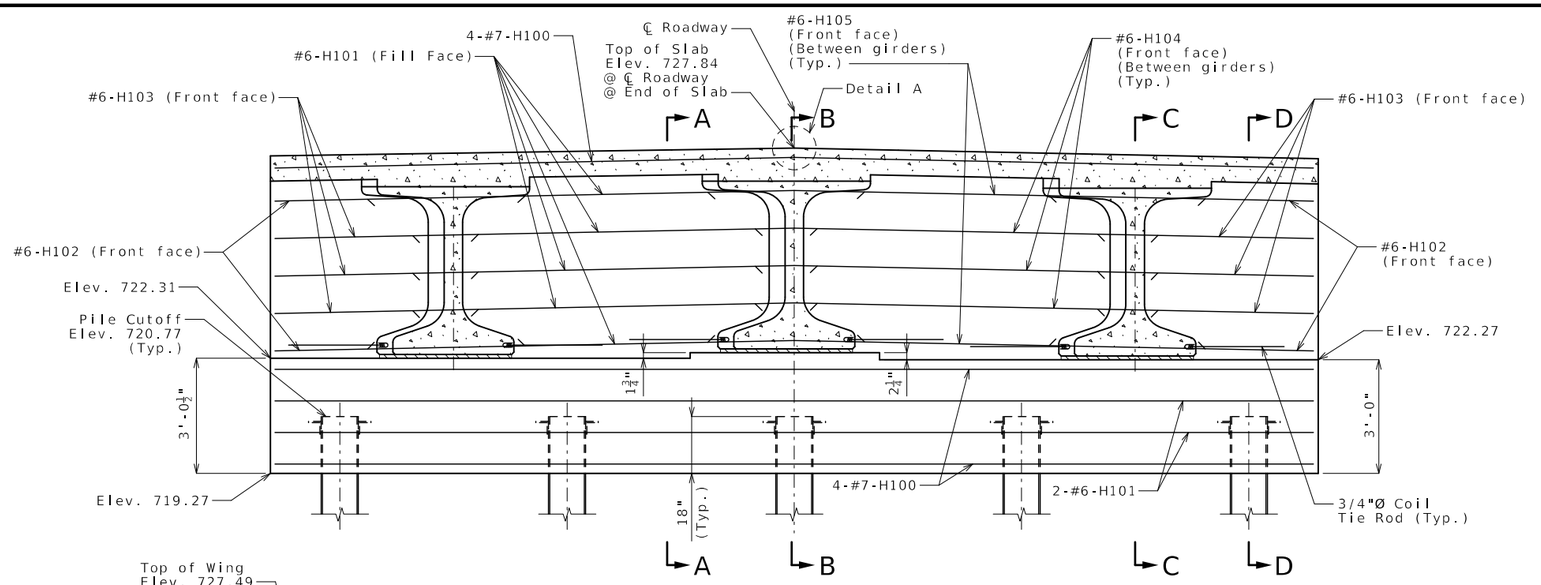
Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

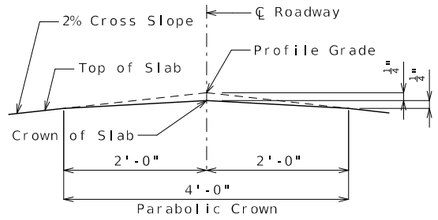
DATE PREPARED: 5/31/2024
ROUTE: ZZ | STATE: MO
DISTRICT: BR | SHEET NO.: 3
COUNTY: MONTGOMERY
JOB NO.: J2S3195
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9320

DESCRIPTION | DATE

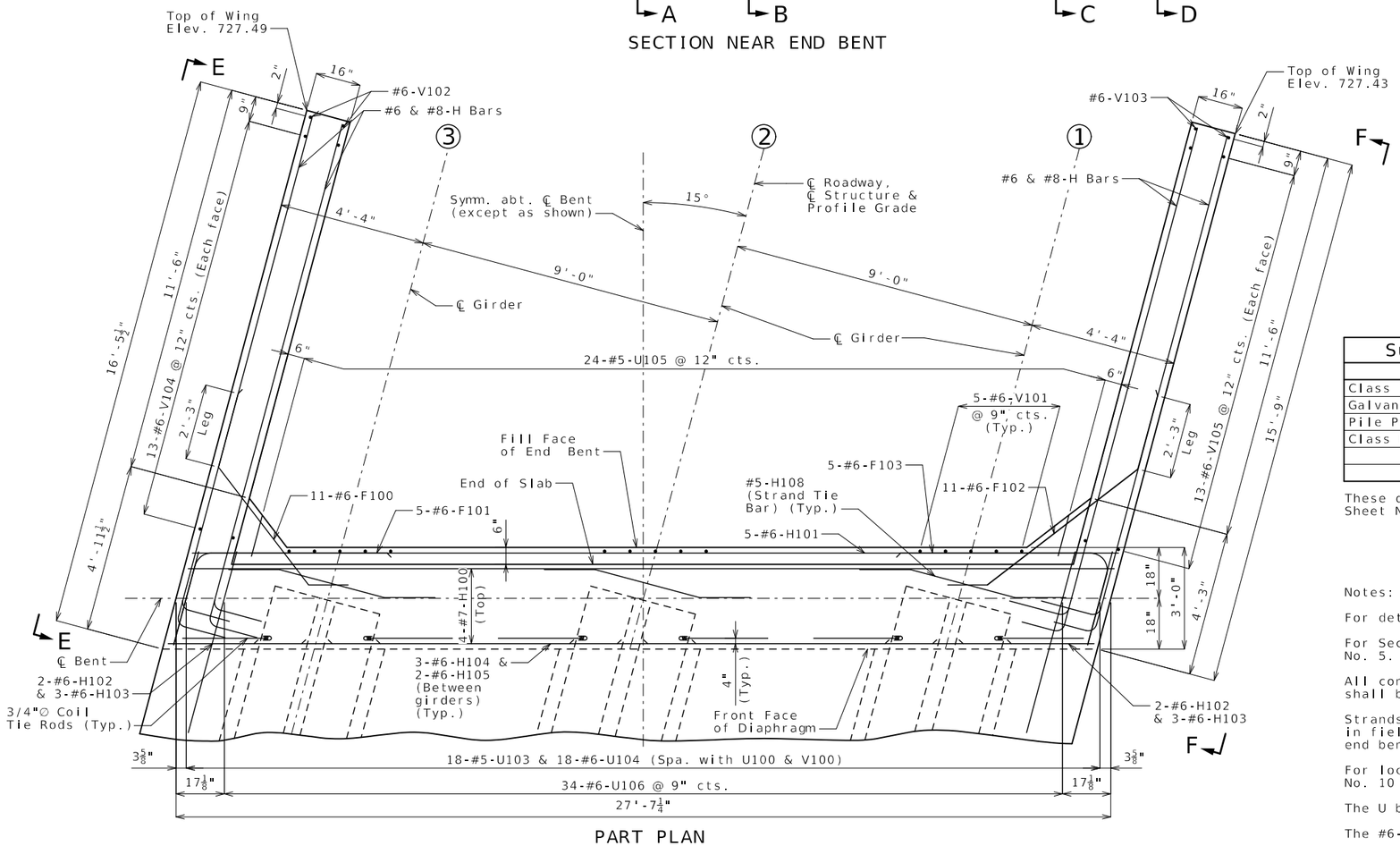
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION NEAR END BENT



DETAIL A



PART PLAN

DETAILS OF END BENT NO. 1

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	50
Galvanized Structural Steel Pile (12 in.)	linear foot	100
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	13.5

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

Notes:

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

For Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 5.

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

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

For location of coil tie rods & #5-H108 (strand tie bar), see Sheets No. 10 & 11.

The U bars shall be placed parallel to centerline of Roadway.

The #6-F100 & #6-F102 bars shall be bent in field to clear girders.

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

Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
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DATE PREPARED 5/31/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	4

COUNTY MONTGOMERY

JOB NO. J2S3195

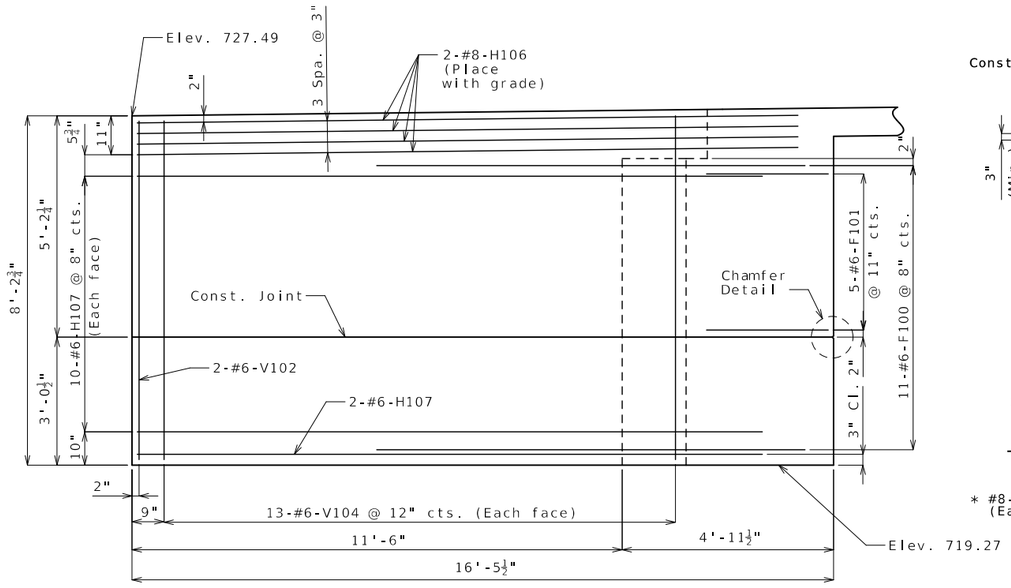
CONTRACT ID.

PROJECT NO.

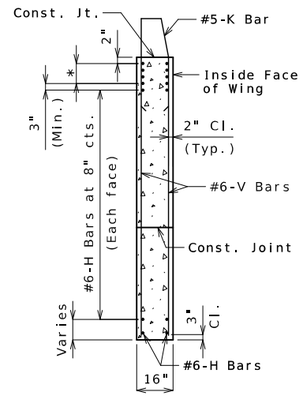
BRIDGE NO. A9320

DESCRIPTION | DATE

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

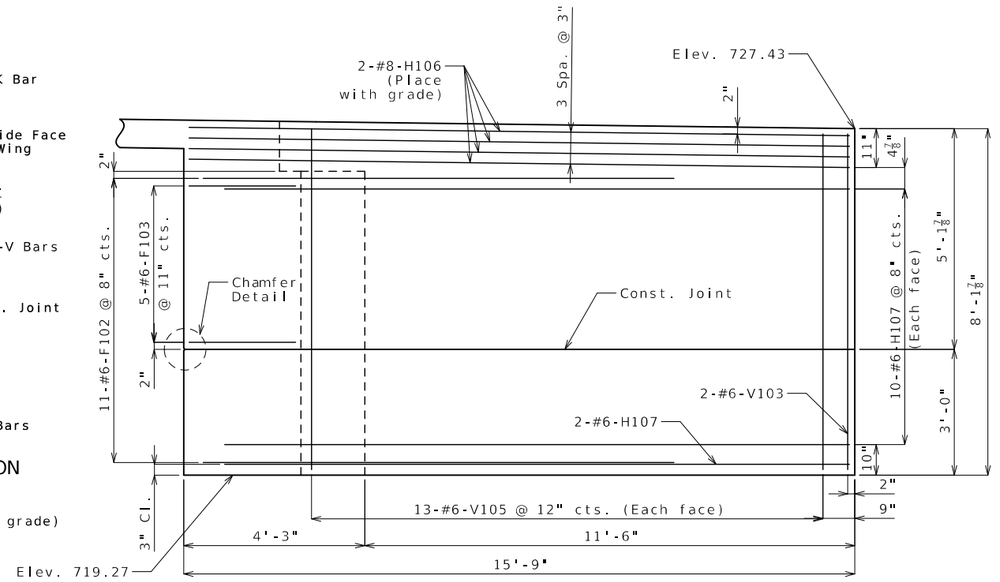


ELEVATION E-E

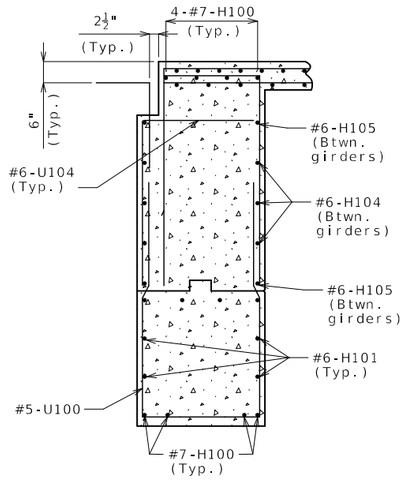


TYPICAL SECTION THRU WING

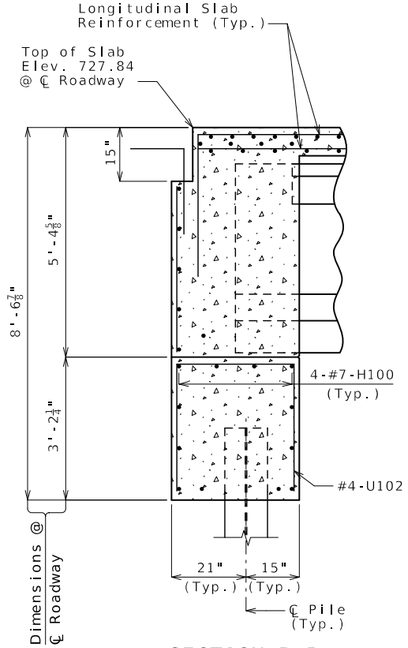
* #8-H Bars at 3" cts. (Each face)(Place with grade)



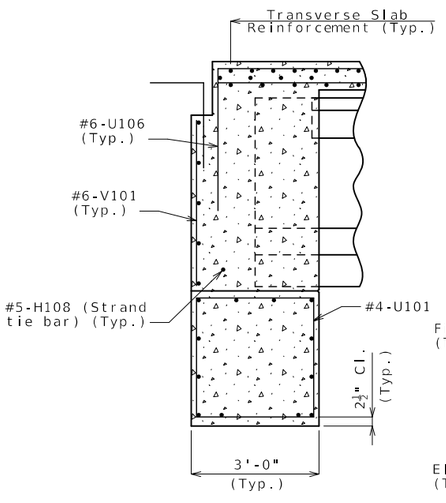
ELEVATION F-F



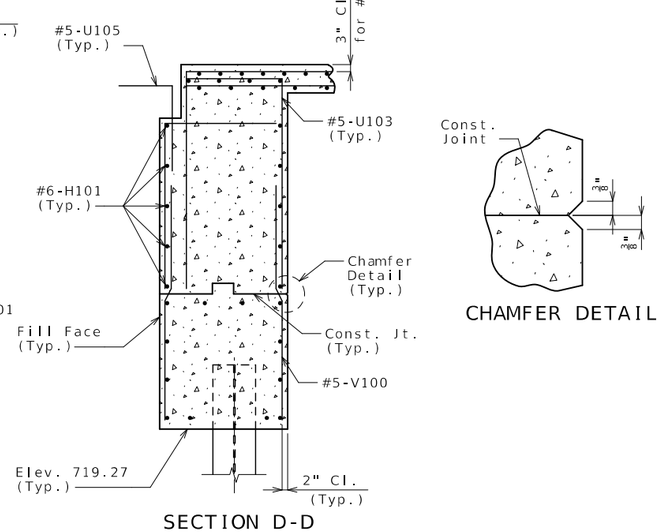
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

CHAMFER DETAIL

Notes:

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

For locations of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 4.

For reinforcement of the barrier, see Sheet No. 18.

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

DETAILS OF END BENT NO. 1

Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

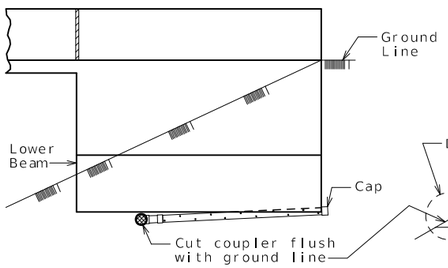
DATE PREPARED 5/31/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	5

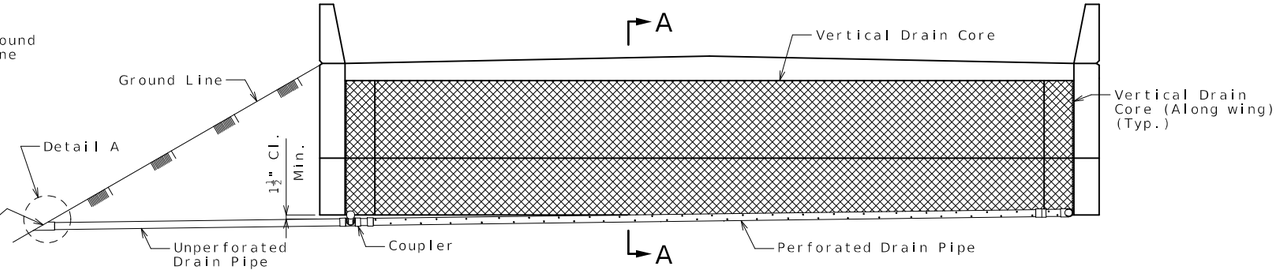
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION	DATE

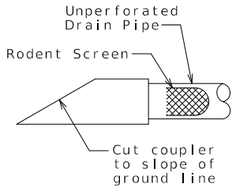
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



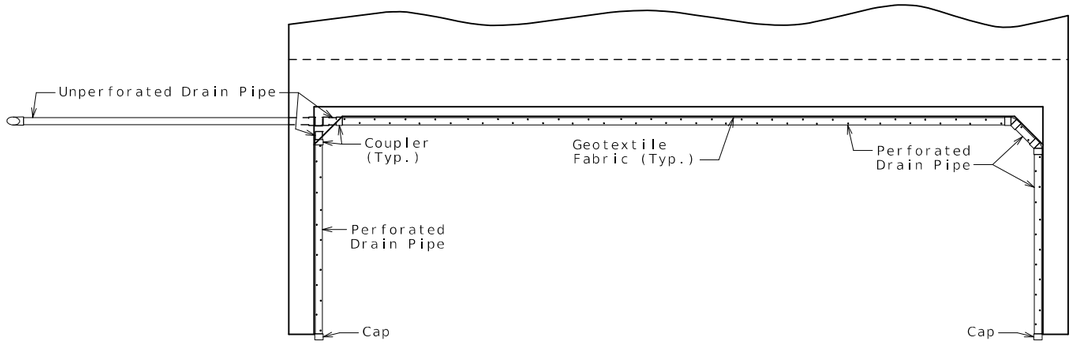
ELEVATION OF WING



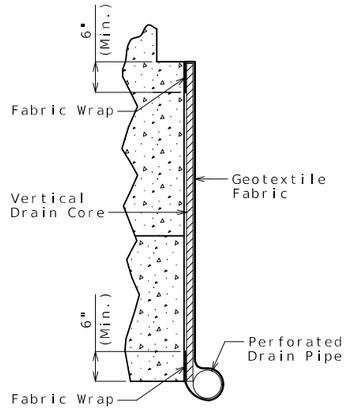
ELEVATION OF END BENT



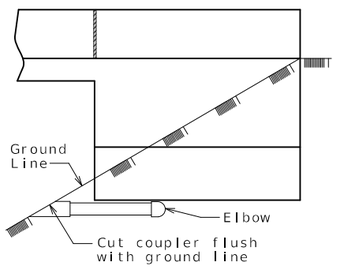
DETAIL A



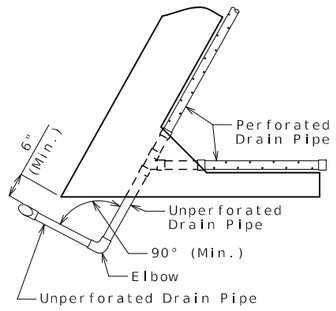
PLAN OF END BENT



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)

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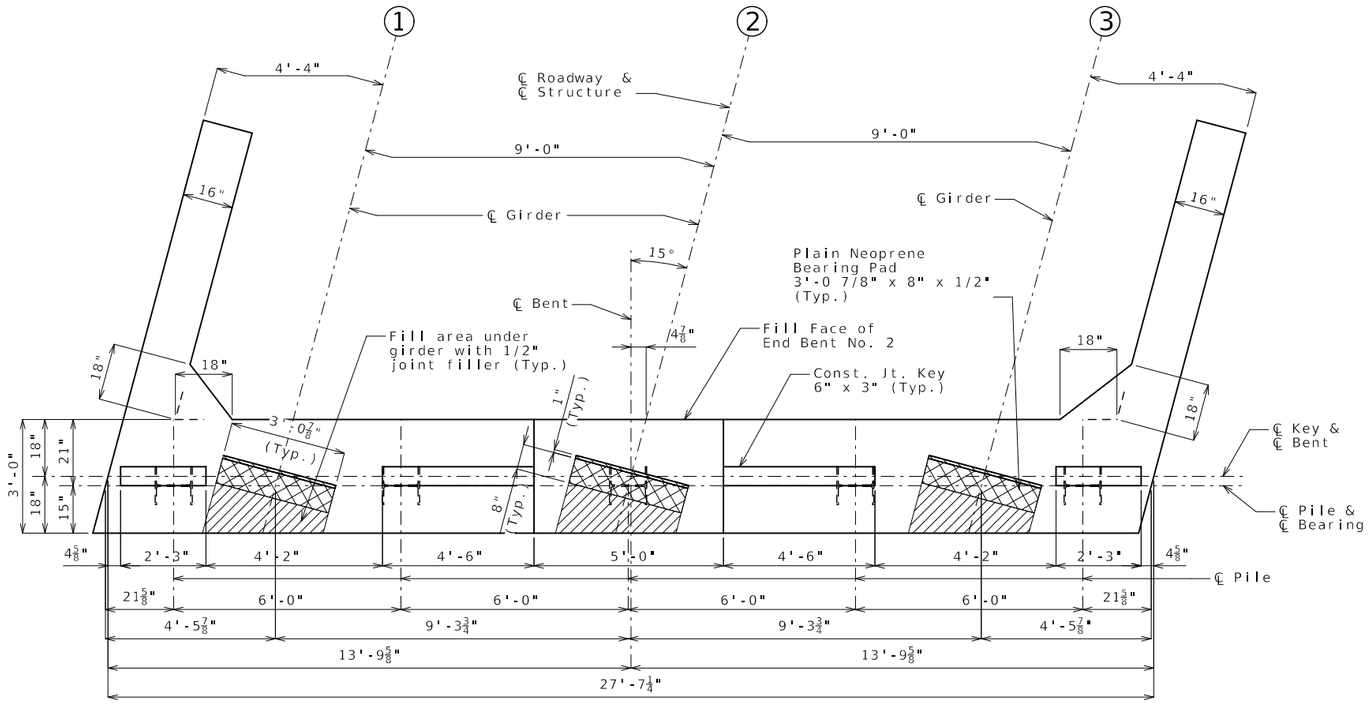
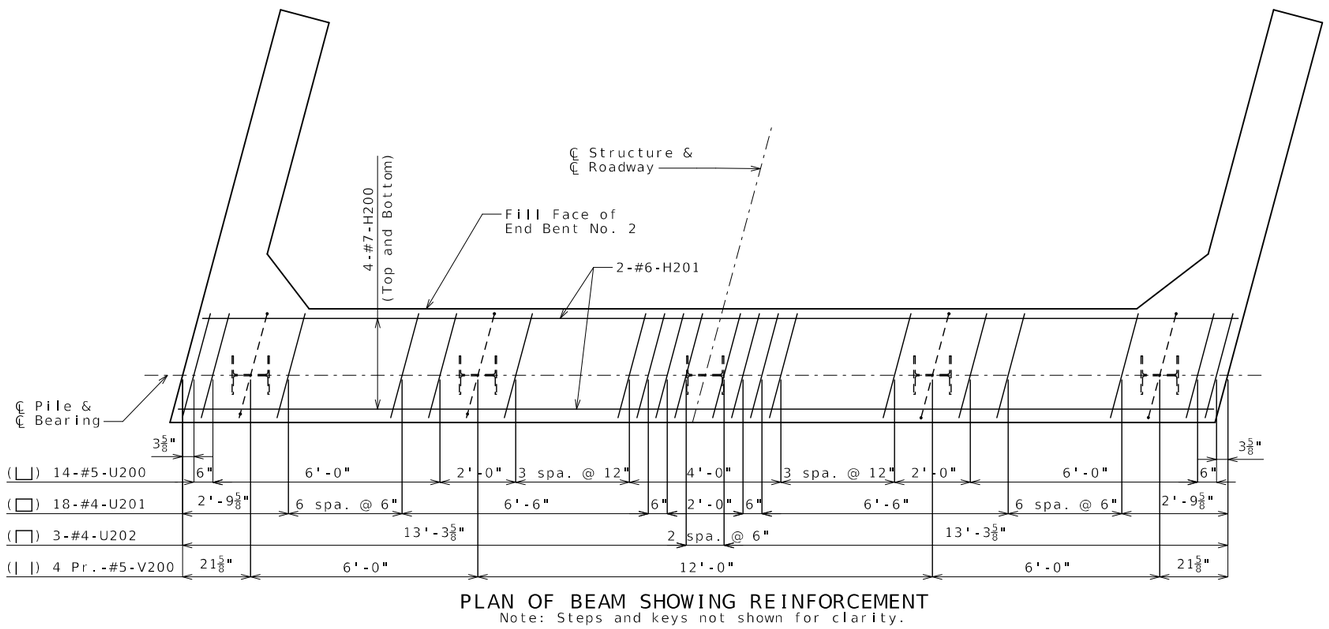
DATE PREPARED: 5/31/2024
ROUTE: ZZ | STATE: MO
DISTRICT: BR | SHEET NO.: 6
COUNTY: MONTGOMERY
JOB NO.: J2S3195
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9320

DESCRIPTION | DATE

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

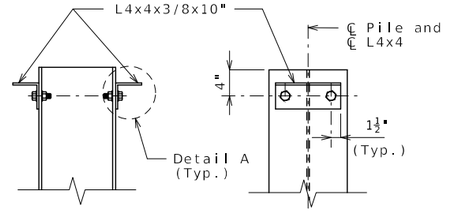


PLAN OF BEAM SHOWING DIMENSIONS

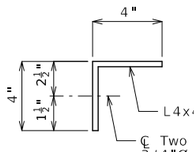


PLAN OF BEAM SHOWING REINFORCEMENT

Note: Steps and keys not shown for clarity.

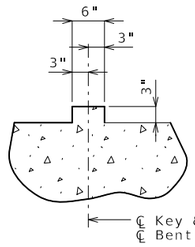


DETAILS OF HP PILE ANCHORS

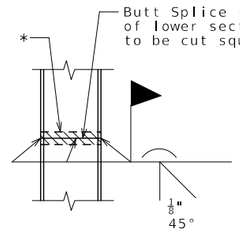


DETAIL A

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.



SECTION THRU KEY



STEEL PILE SPLICE

(If required)

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

Notes:

For details of End Bent No. 2 not shown, see Sheets No. 8 & 9.

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

The U bars and pairs of V bars shall be placed parallel to ℄ Roadway.

For details of Vertical Drain at End Bents, see Sheet No. 6.

DETAILS OF END BENT NO. 2

Detailed Aug. 2023
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ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	7

COUNTY MONTGOMERY

JOB NO. J2S3195

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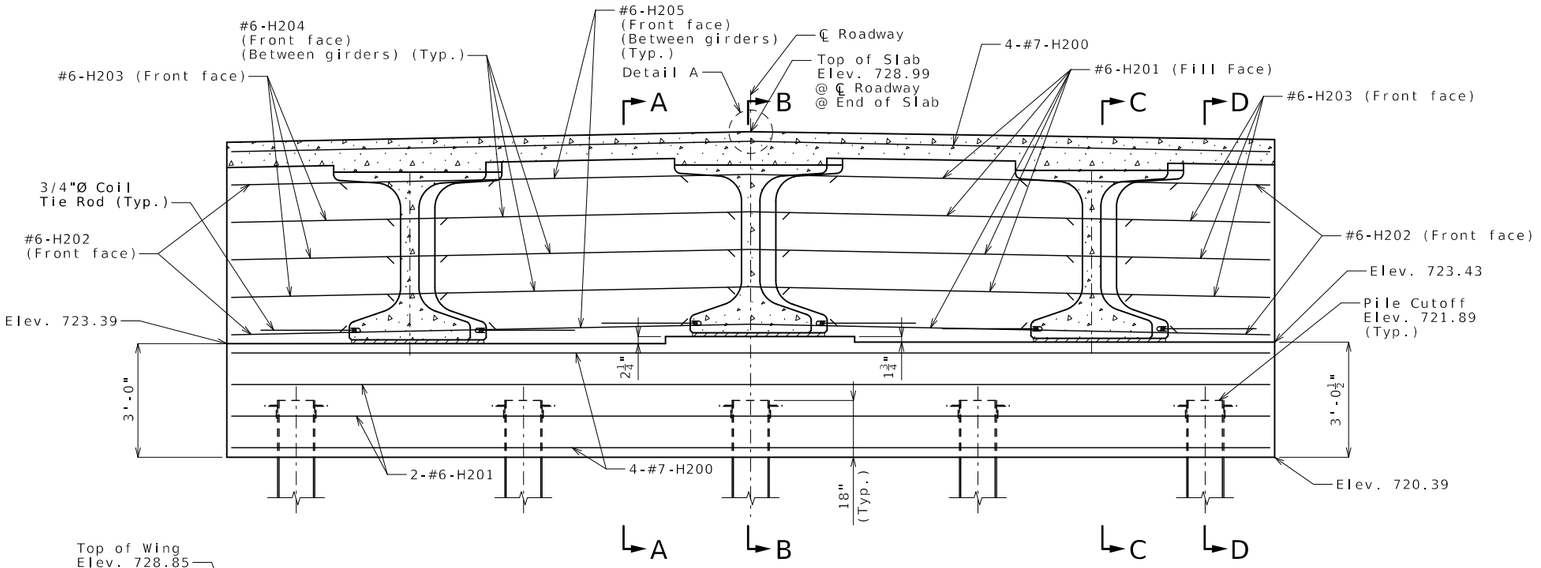
PROJECT NO.

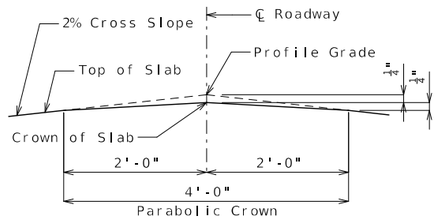
BRIDGE NO. A9320

DESCRIPTION	DATE

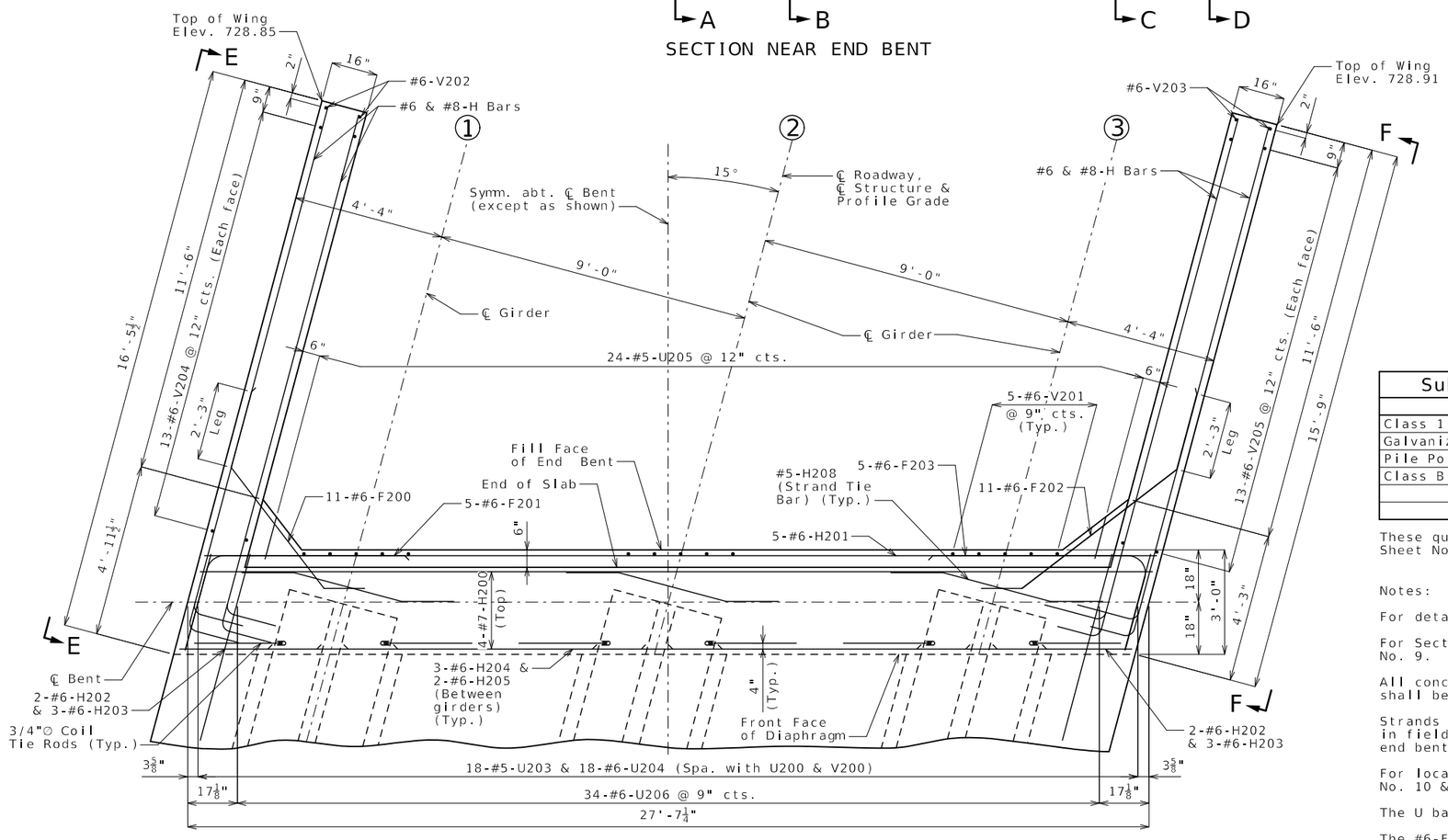
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION NEAR END BENT



DETAIL A



PART PLAN

DETAILS OF END BENT NO. 2

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	50
Galvanized Structural Steel Pile (12 in.)	linear foot	100
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	13.5

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

Notes:

For details of End Bent No. 2 not shown, see Sheets No. 7 & 9.

For Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 9.

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

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

For location of coil tie rods & #5-H208 (strand tie bar), see Sheets No. 10 & 11.

The U bars shall be placed parallel to centerline of Roadway.

The #6-F200 & #6-F202 bars shall be bent in field to clear girders.

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

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ROUTE	STATE
ZZ	MO
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BR	8

COUNTY MONTGOMERY

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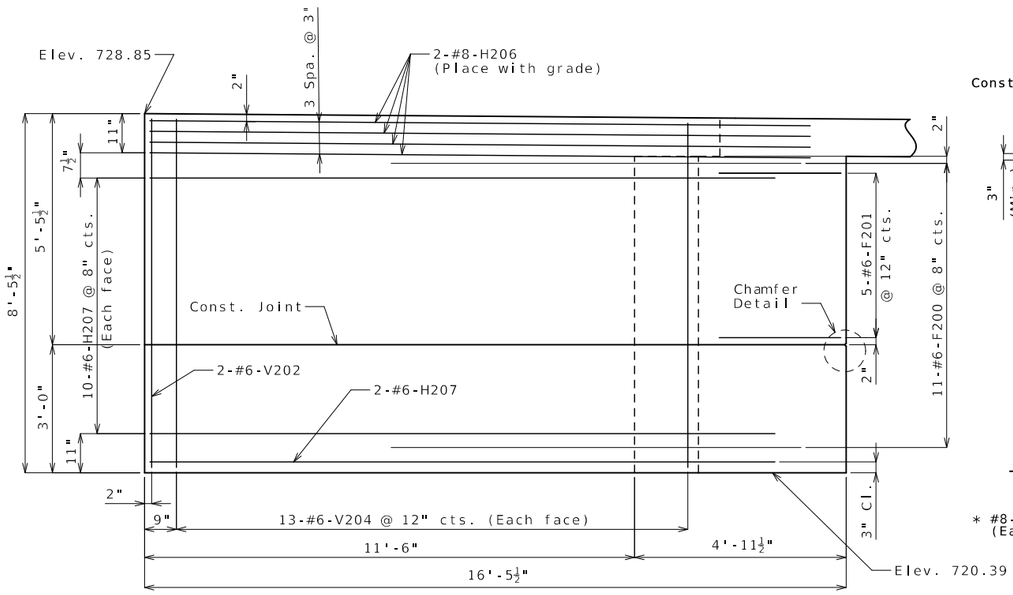
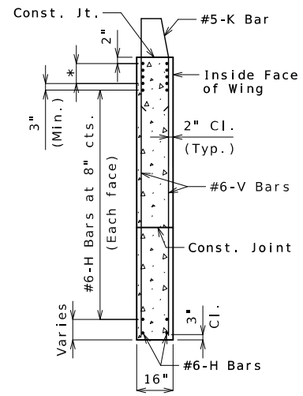
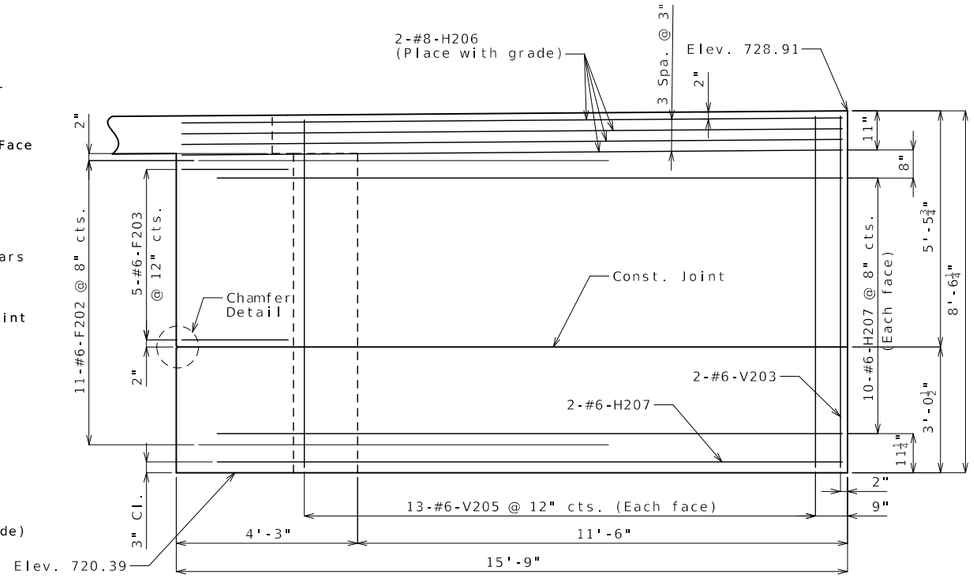


ELEVATION E-E

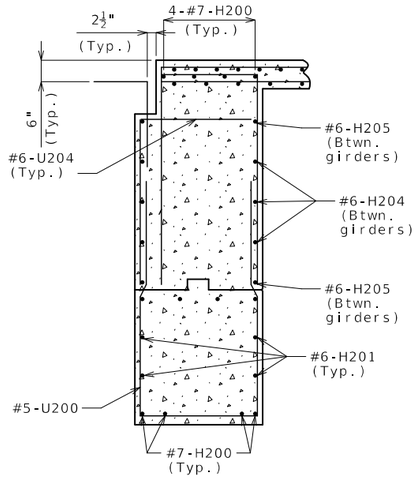


TYPICAL SECTION
THRU WING

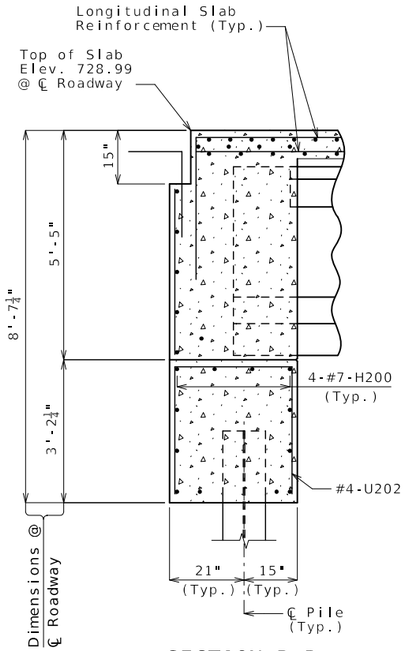
* #8-H Bars at 3" cts.
(Each face)(Place with grade)



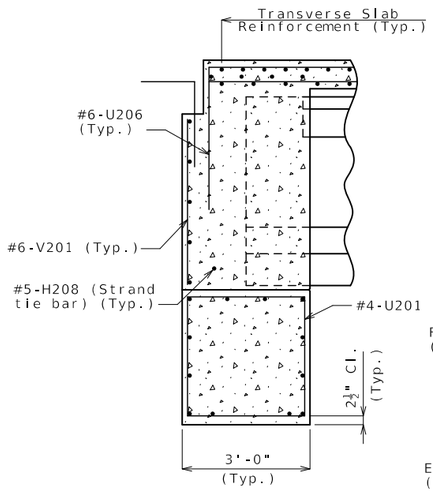
ELEVATION F-F



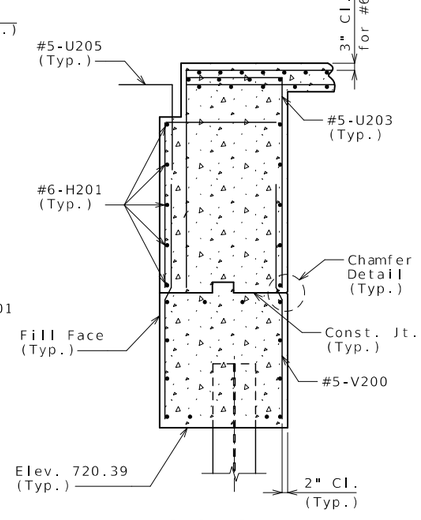
SECTION A-A



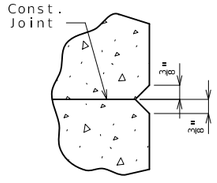
SECTION B-B



SECTION C-C



SECTION D-D



CHAMFER DETAIL

Notes:

For details of End Bent No. 2 not shown, see Sheets No. 7 & 8.

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

For reinforcement of the barrier, see Sheet No. 18.

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

DETAILS OF END BENT NO. 2

Detailed Aug. 2023
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ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	9

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

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BRIDGE NO.
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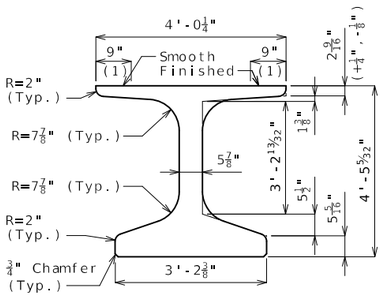
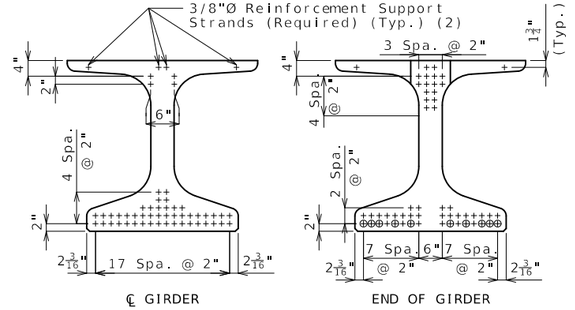
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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



DIMENSIONS

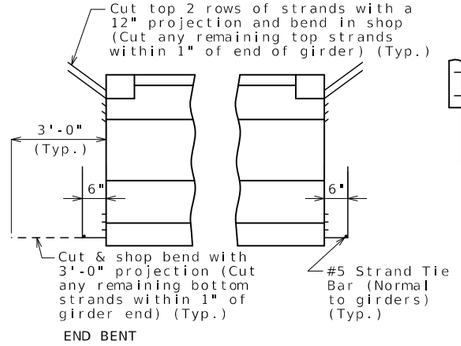
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



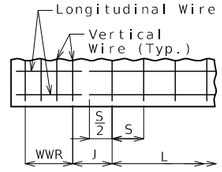
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

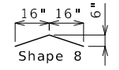
Bars Each Girder

No.	Size/Mark	Length	Shape
134	3 G1	2'-10"	8
2	4 G3	4'-0"	20
2	4 G6	Varies	20

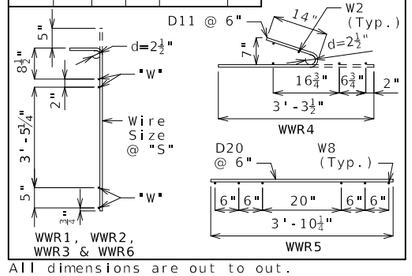
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D31	4"	W12	5'-8"	4"
WWR2	D31	12"	W12	6'-0"	12"
WWR3	D31	20"	W12	41'-8"	--
WWR6	D31	2"	W12	16"	3¼"

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 8500 psi and f'ci = 7000 psi.

Use 50 strands, 0.6"Ø Grade 270, with an initial prestress force of 2197 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil inserts for slab drains and holes for steel intermediate diaphragms.

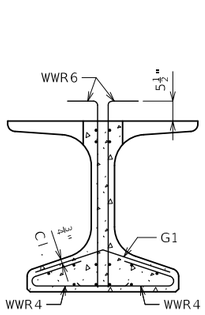
For Girder Camber Diagram, see Sheet No. 14.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 12.

For location of coil inserts at slab drains, see Sheet No. 13.

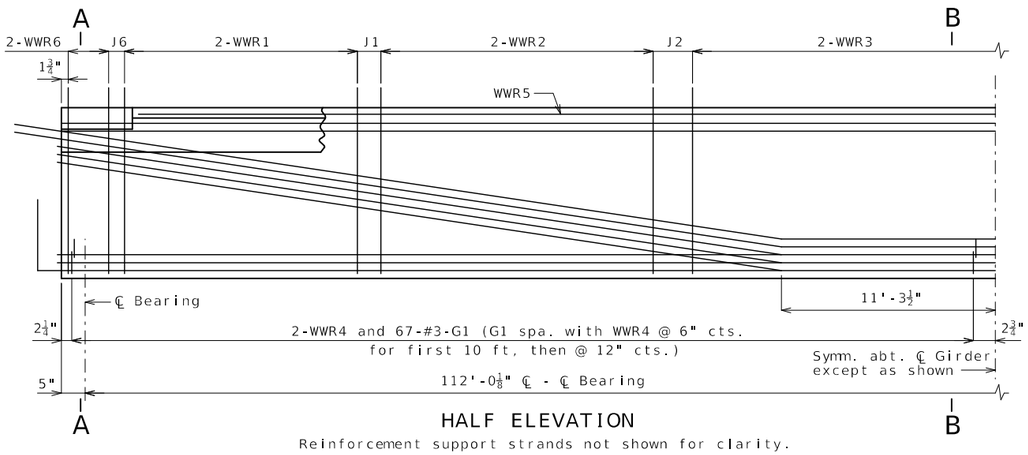
For location of coil ties at integral bents, see Sheets No. 4 and 8.

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



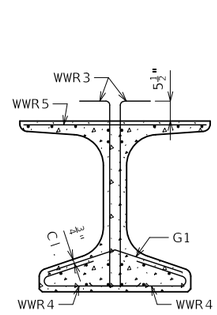
SECTION A-A

Strands not shown for clarity.



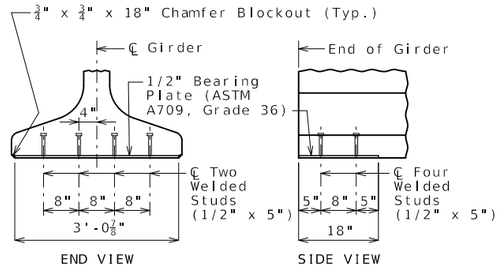
HALF ELEVATION

Reinforcement support strands not shown for clarity.

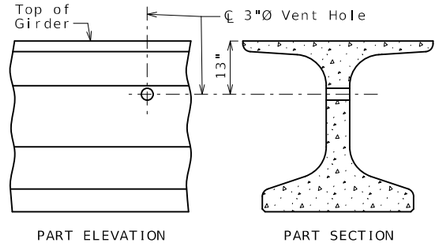


SECTION B-B

Strands not shown for clarity.

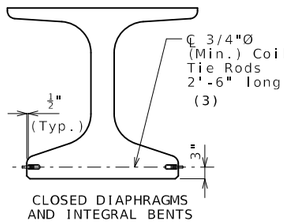


BEARING PLATE

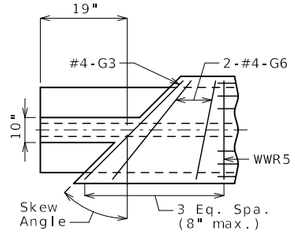


VENT HOLE

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



COIL TIES



ALL GIRDERS AT END BENTS

TOP FLANGE BLOCKOUT

Mirror for right advanced.

NU-GIRDERS - SPAN (1-2)

Detailed Aug. 2023
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ROUTE ZZ | STATE MO

DISTRICT BR | SHEET NO. 10

COUNTY MONTGOMERY

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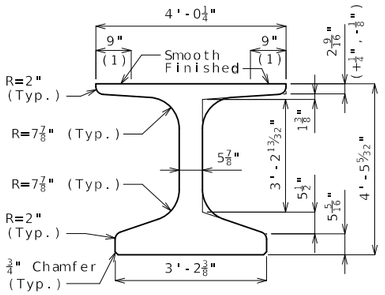
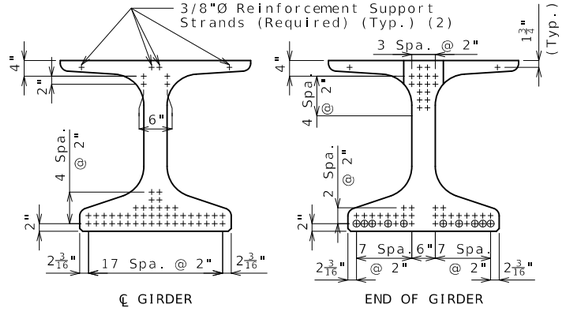
(1) Fabricator shall apply a bond breaker to this region.



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.

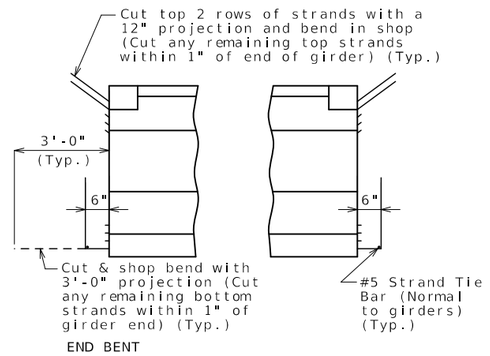


℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

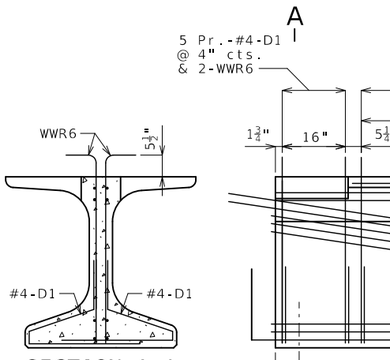
+ Indicates prestressing strand.

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



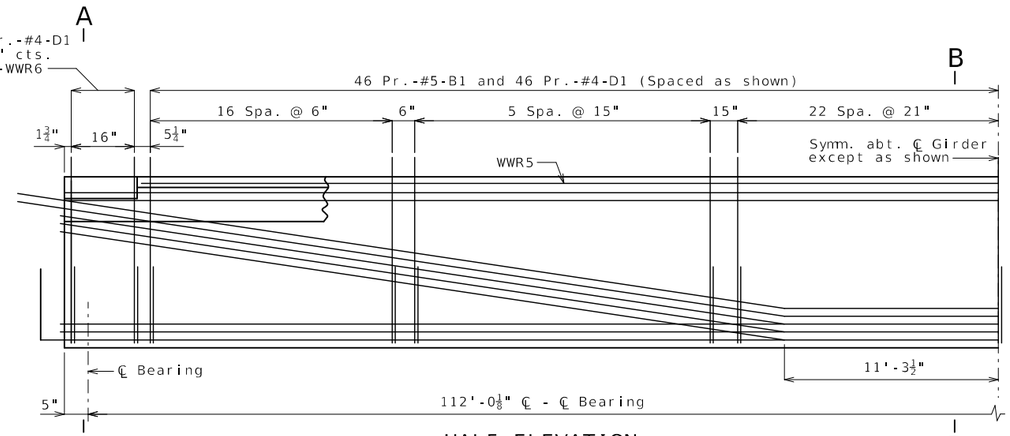
END BENT

STRANDS AT GIRDER ENDS



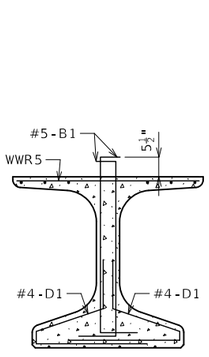
SECTION A-A

Strands not shown for clarity.



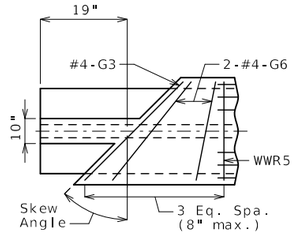
HALF ELEVATION

Reinforcement support strands not shown for clarity.



SECTION B-B

Strands not shown for clarity.



ALL GIRDERS AT END BENTS

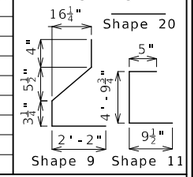
TOP FLANGE BLOCKOUT

Mirror for right advanced.

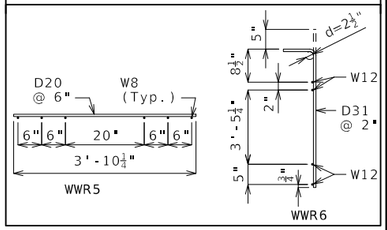
Bill of Reinforcing Steel - Each Girder

No.	Size/ Mark	Length	Shape
182	5 B1	5'-10"	11
202	4 D1	4'-0"	9
2	4 G3	4'-0"	20
2	4 G6	Varies	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be 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 = 8500 psi and f'ci = 7000 psi.

Use 50 strands, 0.6"Ø Grade 270, with an initial prestress force of 2197 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil inserts for slab drains and holes for steel intermediate diaphragms.

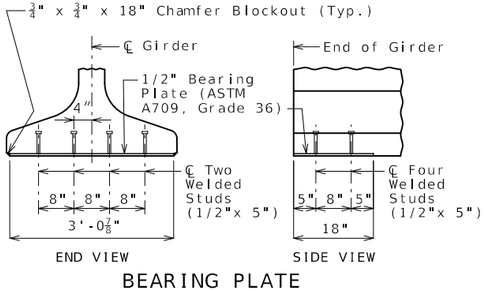
For Girder Camber Diagram, see Sheet No. 14.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 12.

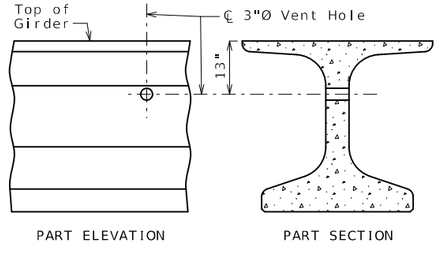
For location of coil inserts at slab drains, see Sheet No. 13.

For location of coil ties at integral bents, see Sheets No. 4 and 8.

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.

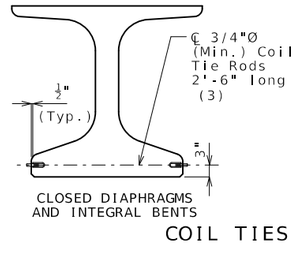


BEARING PLATE



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 and steel intermediate diaphragm bolt connections by 6" minimum.



COIL TIES

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPAN (1-2)

Detailed Aug. 2023
Checked Jan. 2024

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

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TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
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DATE PREPARED 5/31/2024

ROUTE ZZ | STATE MO

DISTRICT BR | SHEET NO. 11

COUNTY MONTGOMERY

JOB NO. J2S3195

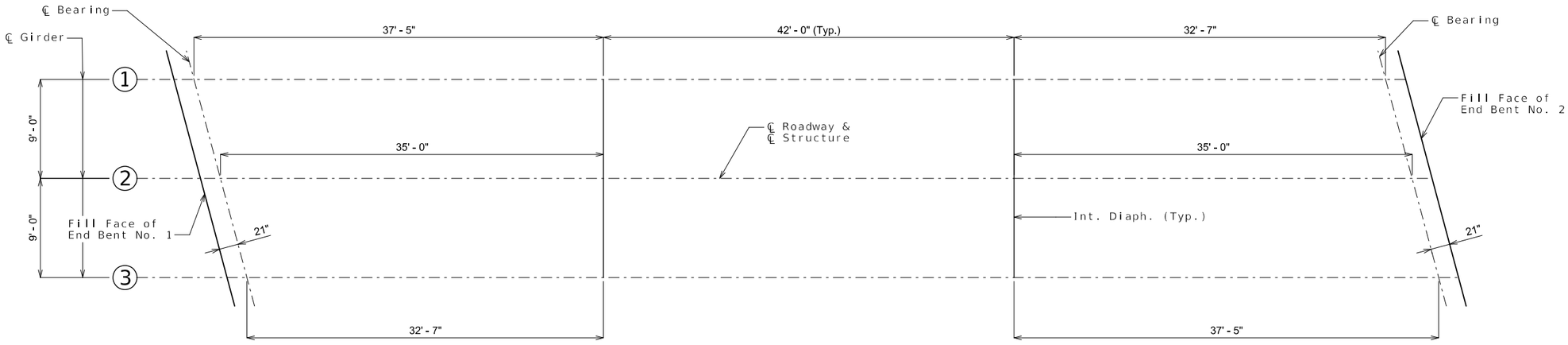
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9320

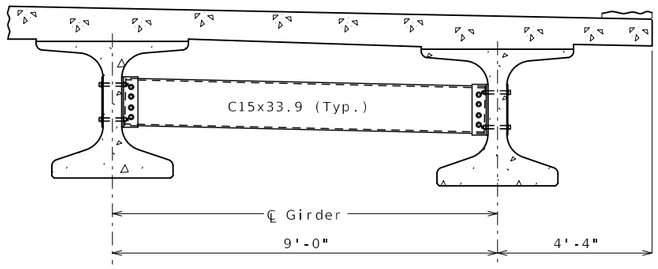
DESCRIPTION | DATE

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

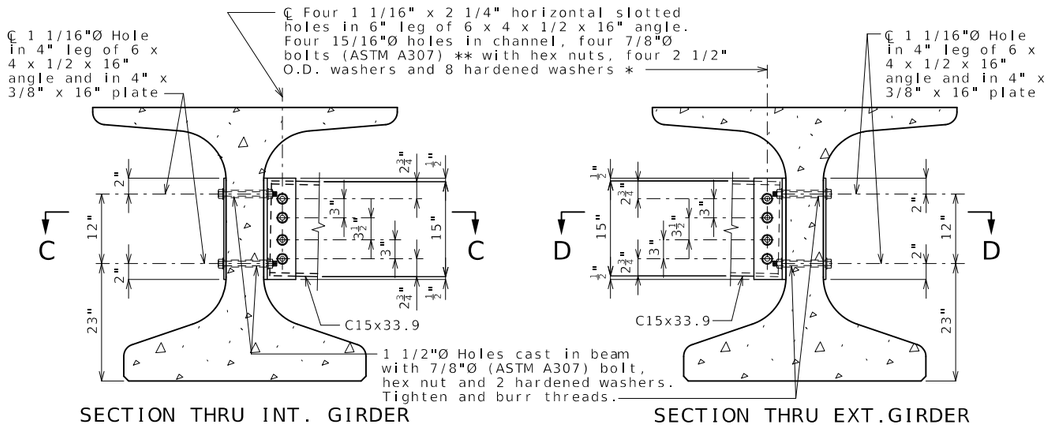


PLAN SHOWING LOCATION OF STEEL INTERMEDIATE DIAPHRAGMS

Longitudinal dimensions are measured horizontal.

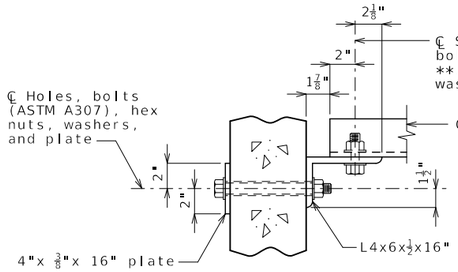


PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS

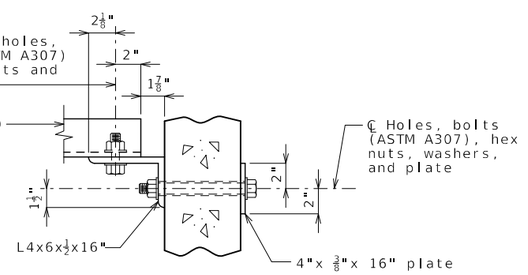


SECTION THRU INT. GIRDER AT DIAPHRAGM

SECTION THRU EXT.GIRDER AT DIAPHRAGM



SECTION C-C



SECTION D-D

STEEL DIAPHRAGM NOTES:

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

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

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

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

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

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

STEEL INTERMEDIATE DIAPHRAGMS

Detailed Aug. 2023
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ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	12

COUNTY: MONTGOMERY
JOB NO.: J2S3195
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9320

DESCRIPTION	DATE

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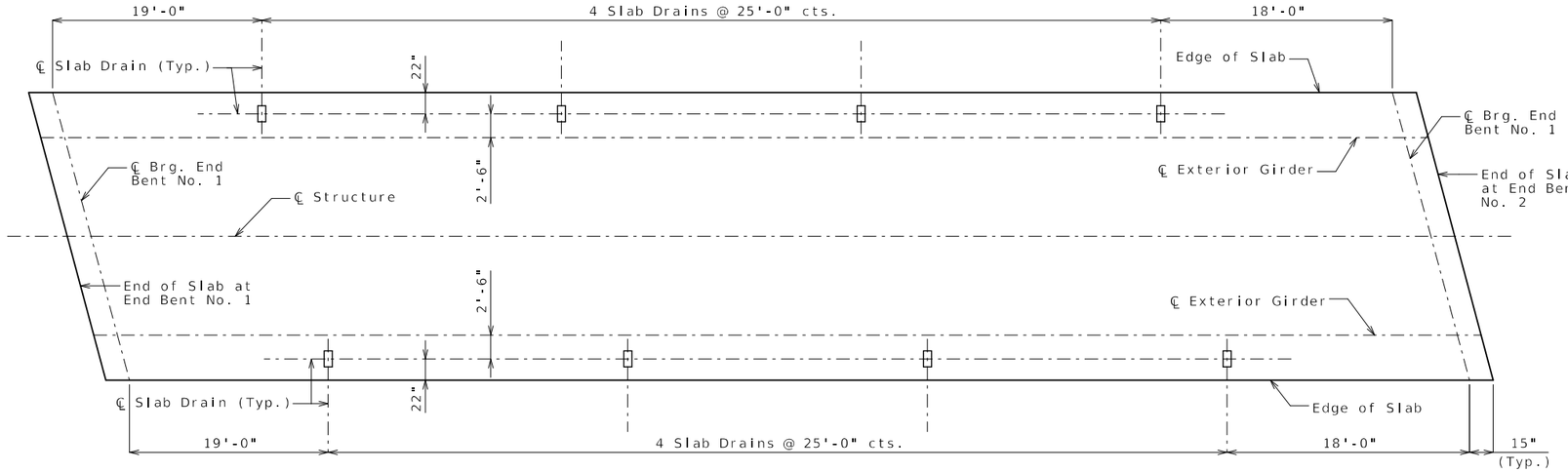
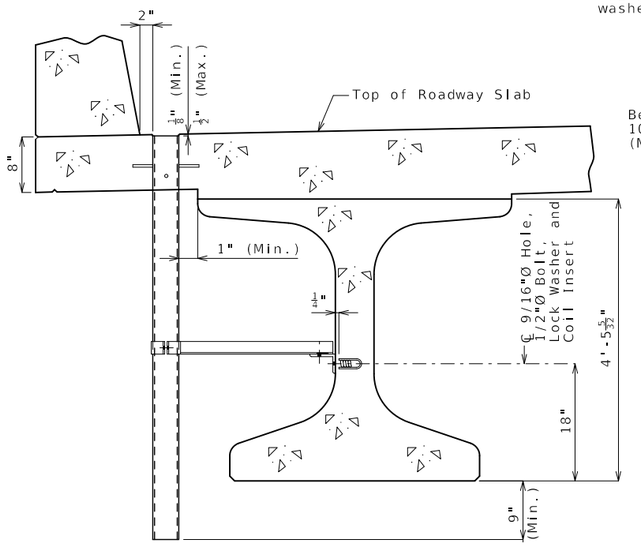
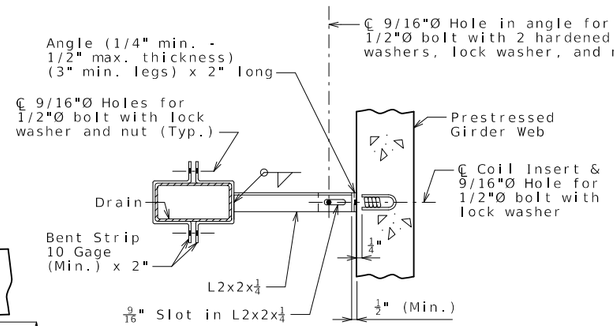


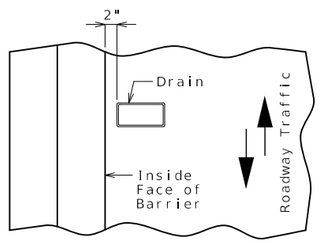
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



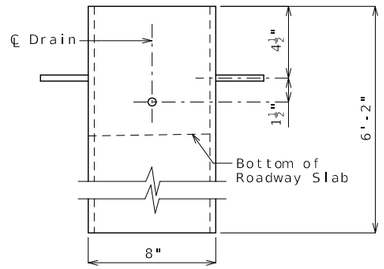
PART SECTION NEAR DRAIN



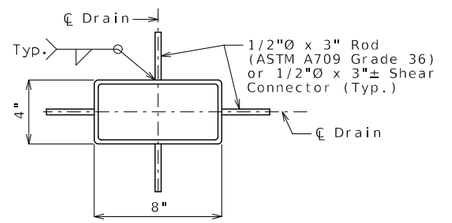
PART SECTION SHOWING BRACKET ASSEMBLY



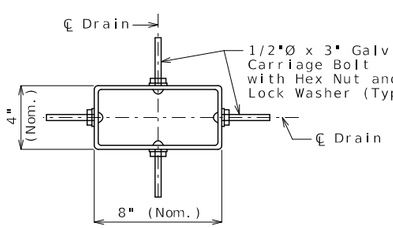
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

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

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

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

Reinforcing steel shall be shifted to clear drains.

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

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

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ROUTE ZZ | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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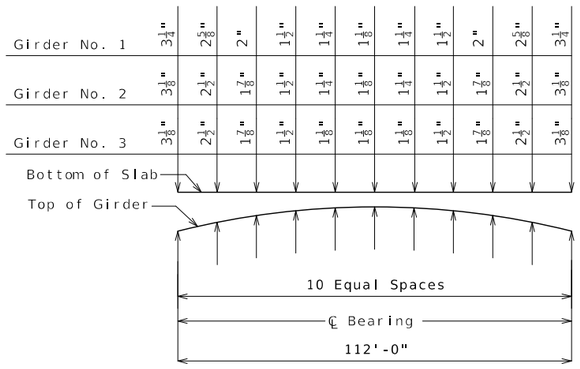
SLAB DRAINS

Detailed Aug. 2023
Checked Jan. 2024

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

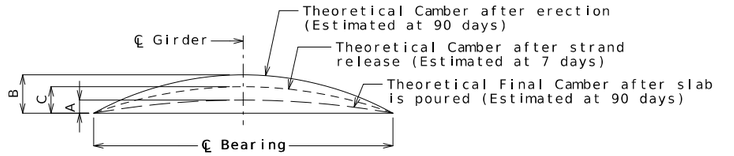


Span (1-2)

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.



Girder	Span (1-2)		
	A	B	C
Exterior	2⅛"	4⅛"	2⅞"
Interior	2⅛"		

GIRDER CAMBER DIAGRAM

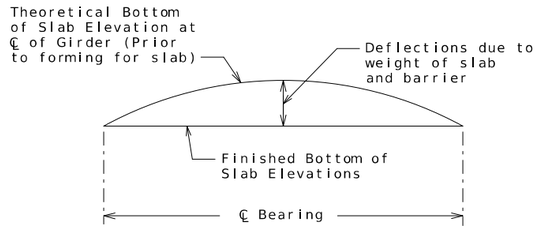
Conversion Factors for Girder Camber (Estimated at 90 days):

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) (112'-0" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	727.01	727.17	727.33	727.48	727.61	727.73	727.84	727.93	728.00	728.07	728.13
2	727.19	727.36	727.52	727.67	727.80	727.92	728.03	728.11	728.19	728.25	728.31
3	727.05	727.22	727.38	727.53	727.66	727.78	727.89	727.97	728.05	728.11	728.17

Elevations are based on a constant slab thickness of 8" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier.



TYPICAL SLAB ELEVATIONS DIAGRAM

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
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DATE PREPARED: 5/31/2024
ROUTE: ZZ | STATE: MO
DISTRICT: BR | SHEET NO.: 14
COUNTY: MONTGOMERY
JOB NO.: J2S3195
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9320

DESCRIPTION	DATE

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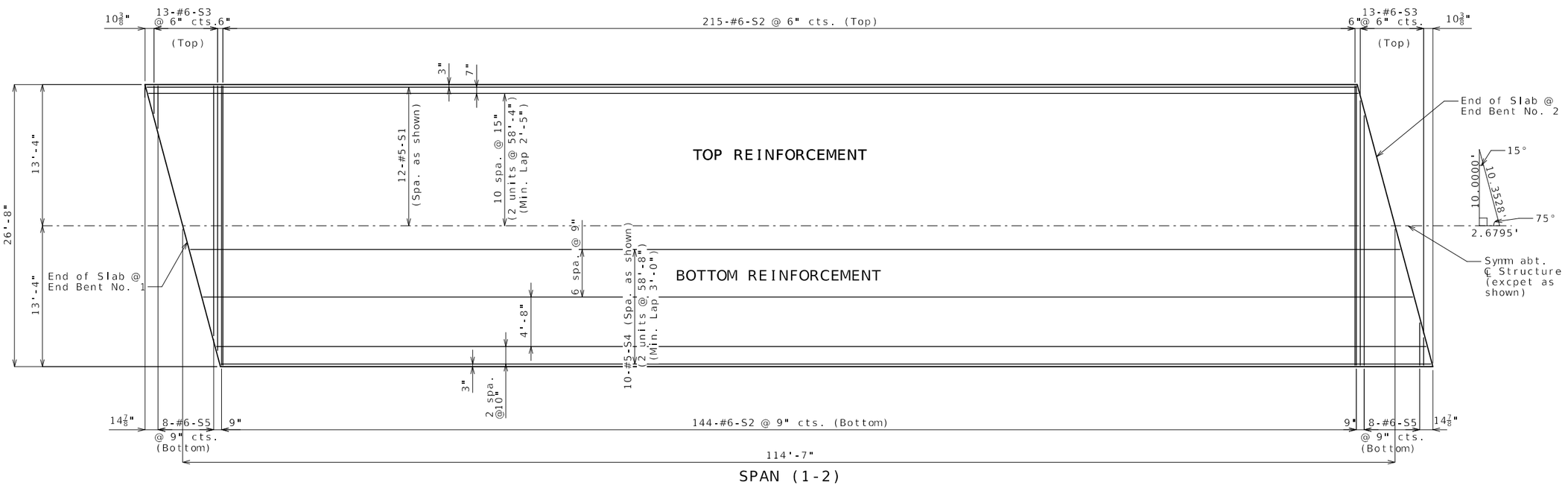
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



Notes:

Longitudinal slab dimensions are measured horizontally.

For Section Thru Slab, see Sheet No. 16.

For details and reinforcement of Barrier not shown, see Sheet No. 17 & 18.

For Theoretical Slab Haunching Diagram, see Sheet No. 14.

For Theoretical Bottom of Slab Elevations, see Sheet No. 14.

For details and locations of Slab Drains, see Sheet No. 13.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
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DATE PREPARED
5/31/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	15

COUNTY
MONTGOMERY

JOB NO.
J2S3195

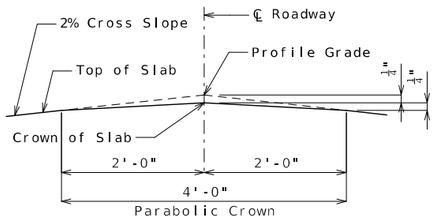
CONTRACT ID.

PROJECT NO.

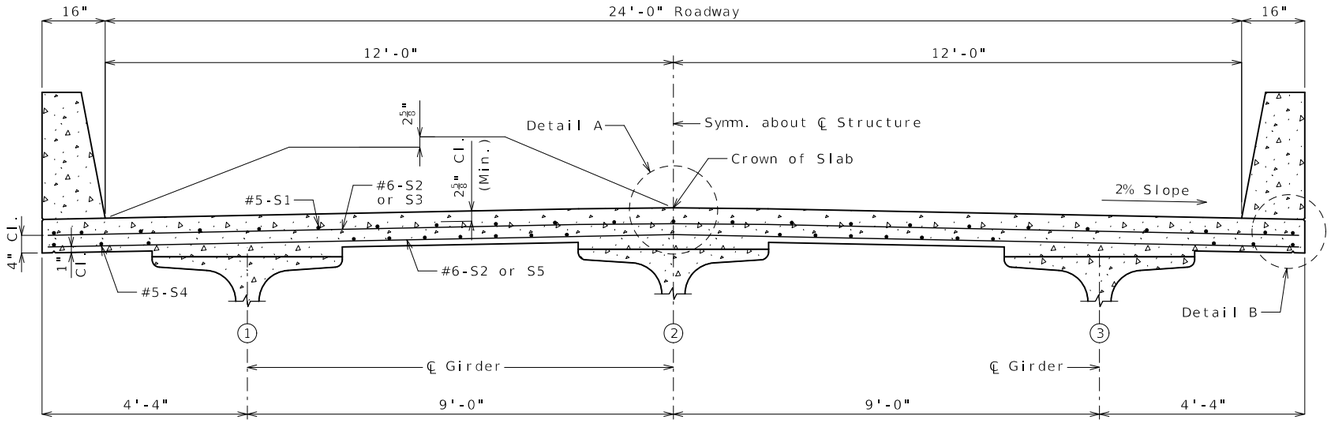
BRIDGE NO.
A9320

DESCRIPTION	DATE

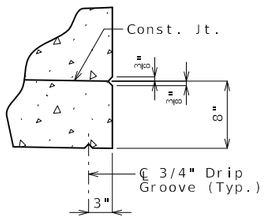
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



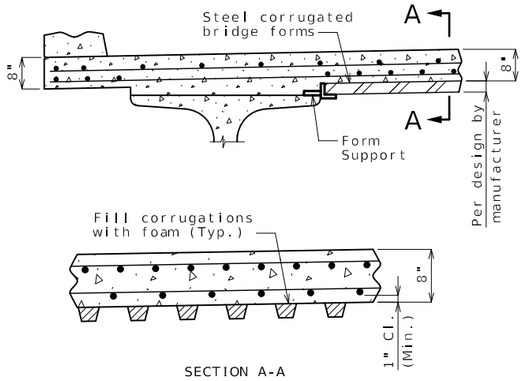
DETAIL A



SECTION THRU SLAB



DETAIL B



SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

General Notes:

Stay-In-Place Forms:

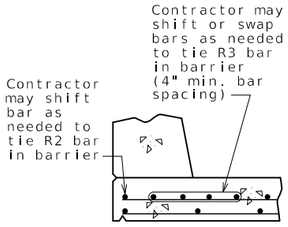
Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.

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

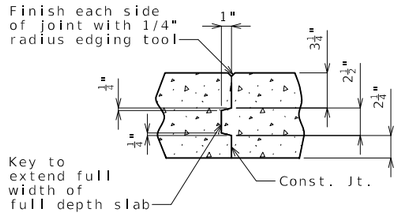
Form sheets shall not rest directly on the top of girder flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Welding on or drilling holes in the girder flanges will not be permitted.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

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

The contractor shall provide a method of preventing the direct contact of the stay-in-place forms and connection components with uncoated weathering steel members that is approved by the engineer.



OPTIONAL SHIFTING TOP BARS AT BARRIER



FULL DEPTH SLAB

SLAB CONSTRUCTION JOINT

Notes:

For reinforcement of barrier not shown, see Sheet No. 17 & 18.

For Plan of Slab Showing Reinforcement, see Sheet No. 15.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 14.

SLAB DETAILS

Detailed Aug. 2023
Checked Jan. 2024

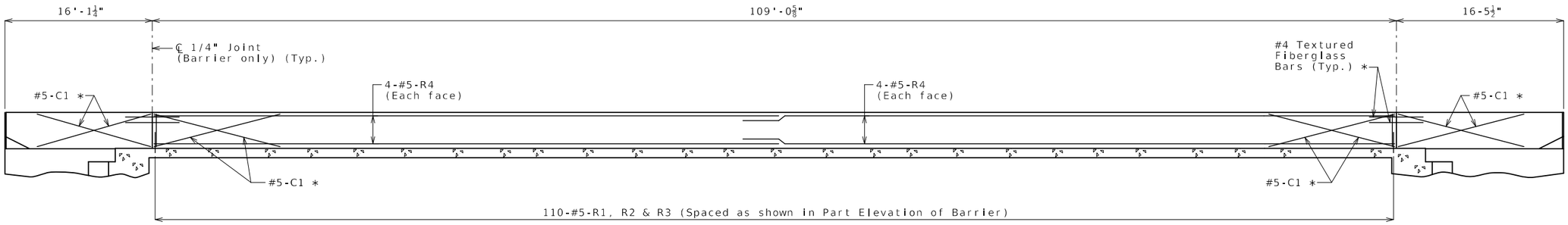
Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2024
ROUTE ZZ | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION | DATE

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

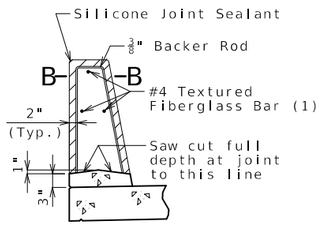


SPAN (1-2)

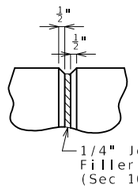
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

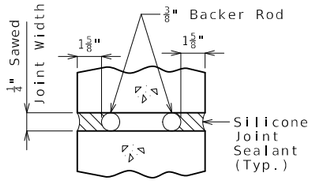
Longitudinal dimensions are horizontal.



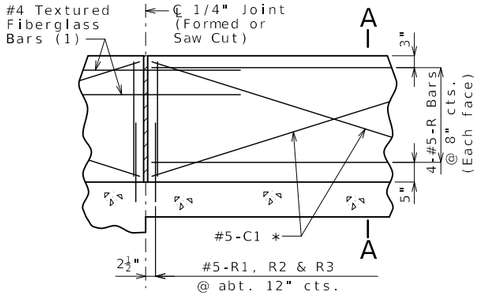
SECTION THRU
SAW CUT JOINT



PART ELEVATION
AT FORMED JOINT

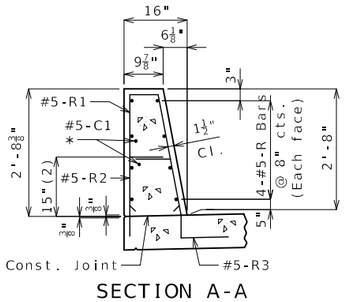


SECTION B-B



PART ELEVATION OF BARRIER

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

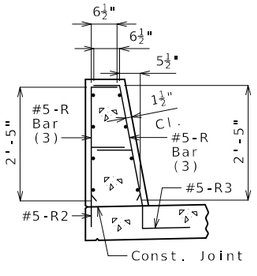


SECTION A-A

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

The cross-sectional area above the slab is 2.89 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 H 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 H 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
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	17

COUNTY: MONTGOMERY

JOB NO.: J2S3195

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9320

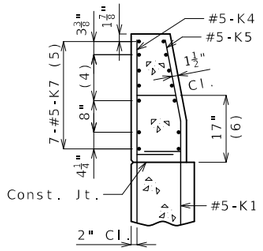
DESCRIPTION	DATE

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

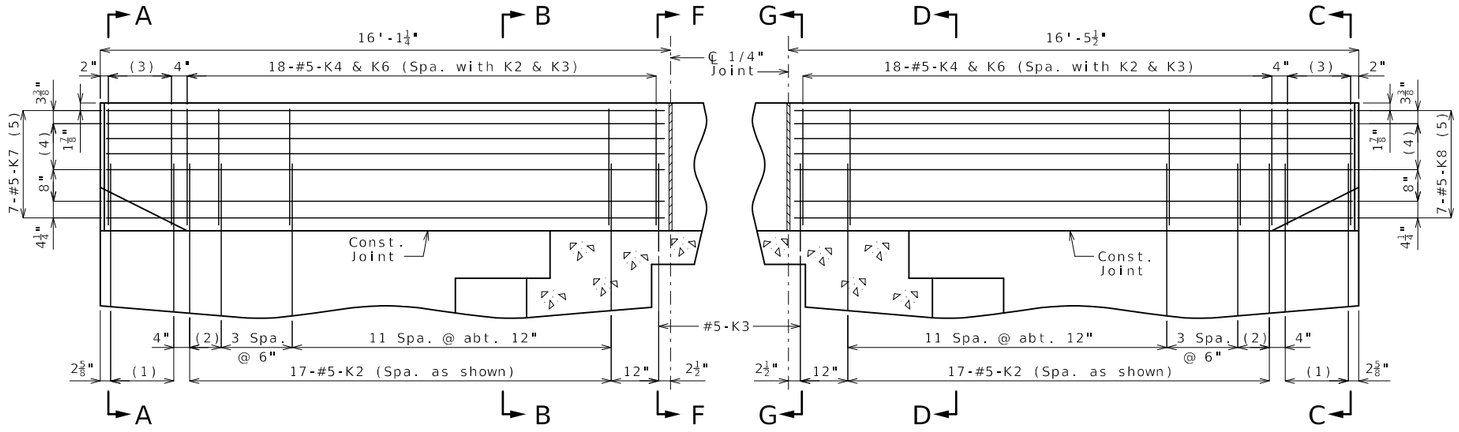
Detailed Aug. 2023
Checked Jan. 2024

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

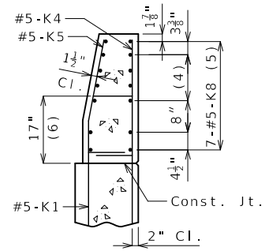
TYPE H BARRIER



SECTION A-A



PART ELEVATION



SECTION C-C

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

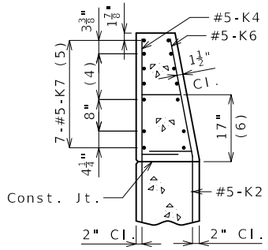
(2) 2 Spaces @ 4"

(3) 5-#5-K4 and 5-#5-K5, spaced with K1

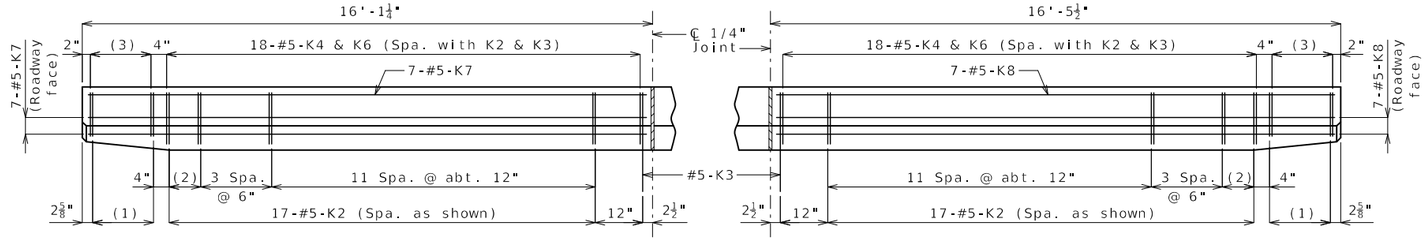
(4) 3 Spaces @ 3 13/16"

(5) Spaced as shown, each face

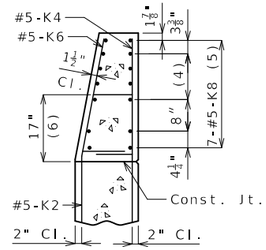
(6) To top of bar



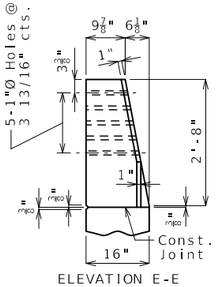
SECTION B-B



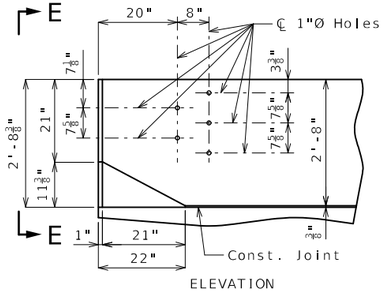
PART PLAN



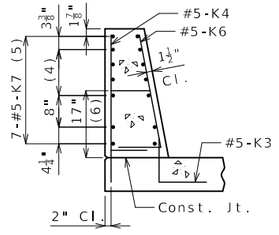
SECTION D-D



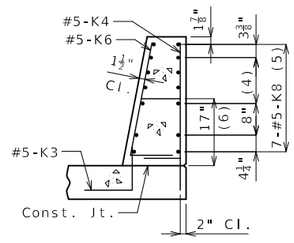
ELEVATION E-E



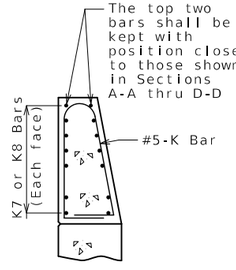
ELEVATION

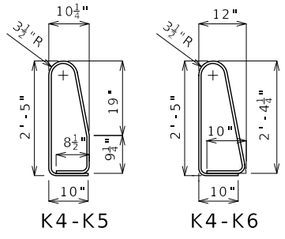


SECTION F-F



SECTION G-G



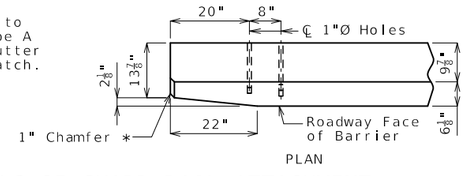


PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)

The K4-K5 and K4-K6 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.



PLAN

* 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 H Barrier.

Reinforcing Steel:

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

TYPE H BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	18

COUNTY MONTGOMERY

JOB NO. J2S3195

CONTRACT ID.

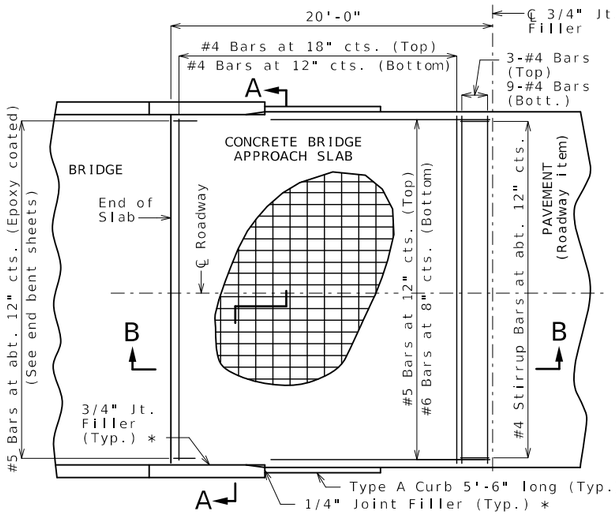
PROJECT NO.

BRIDGE NO. A9320

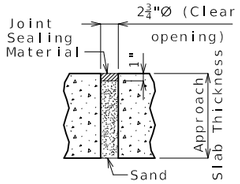
DESCRIPTION

DATE

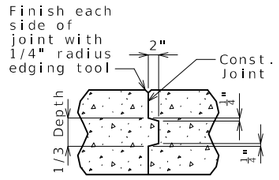
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



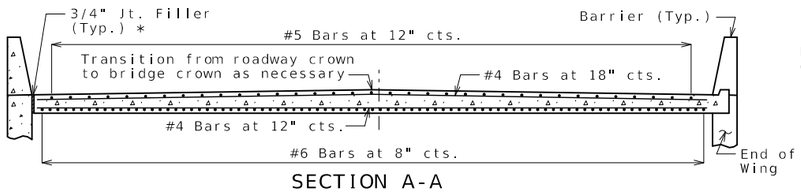
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



UNDERSEAL ACCESS HOLE DETAIL
(If required)

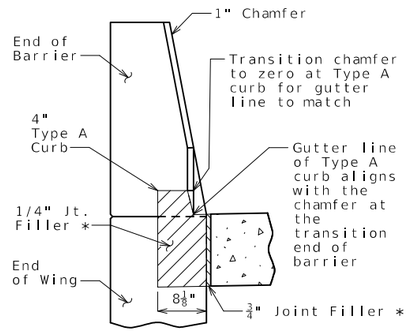


CONSTRUCTION JOINT DETAIL

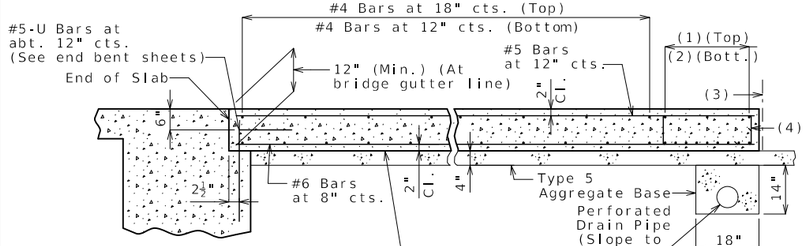


SECTION A-A

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



SECTION BETWEEN CURB AND BARRIER



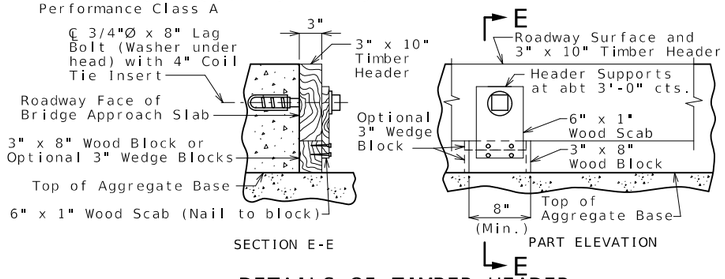
(1) 3-#4 Bars

(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

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

SECTION B-B
(Integral end bent)



SECTION E-E

PART ELEVATION

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

OPTIONAL CONCRETE SLAB

Notes For Concrete Slab Only:

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

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

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

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

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

Mechanical bar splices shall be in accordance with Sec 710.

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

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

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

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

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

General Notes:

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

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

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

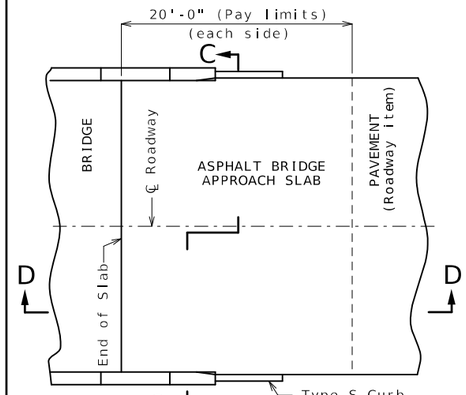
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

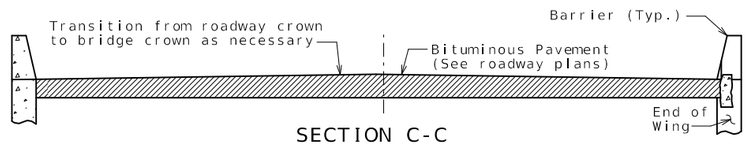
Notes For Asphalt Slab Only:

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

Application of tack is required between lifts per Sec 403.

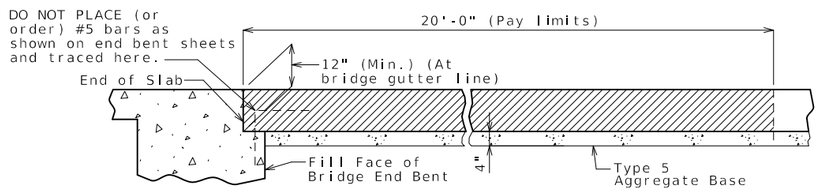


PART PLAN
(Squared structure shown, skewed structure similar)

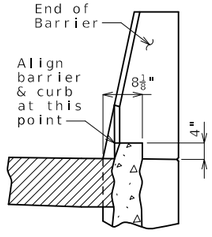


SECTION C-C

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



SECTION D-D



4" TYPE S CURB
See Missouri Standard Plan 609.00 for details of Type S curb.

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

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

Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 5/31/2024
ROUTE: ZZ | STATE: MO
DISTRICT: BR | SHEET NO.: 19
COUNTY: MONTGOMERY
JOB NO.: J2S3195
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9320

DESCRIPTION | DATE

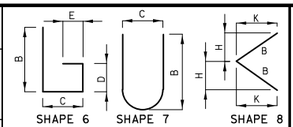
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

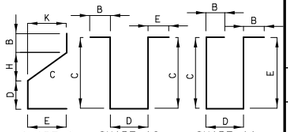
BILL OF REINFORCING STEEL

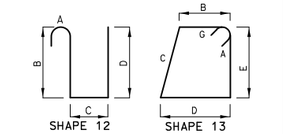
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUPERSTRUCT																									
			END BENT 1																									
11	6	F100	WING BRACE	E	15	S			2	3.000	4	4.500	14.000		11.125		8.500		21.375		16.500			7	10	7	8	127
5	6	F101	DIAPHRAGM	E	21	S			5	7.000	2	9.625						5	4.750		17.375			8	5	8	2	61
11	6	F102	WING BRACE	E	15	S			2	3.000	5	7.250	14.000		8.500		11.125		16.500		21.375			9	0	9	0	149
5	6	F103	DIAPHRAGM	E	21	S			6	3.000	2	9.625						6	0.500		19.375			9	1	8	10	66
12	7	H100	BEAM/DIAPH	E	20				27	4.000														27	4	27	4	670
9	6	H101	BEAM/DIAPH	E	20				27	4.000														27	4	27	4	369
4	6	H102	DIAPHRAGM	E	20				2	6.500														2	7	2	7	16
6	6	H103	DIAPHRAGM	E	20				3	11.875														4	0	4	0	36
6	6	H104	DIAPHRAGM	E	20				8	6.750														8	7	8	7	77
4	6	H105	DIAPHRAGM	E	20				5	3.500														5	4	5	4	32
16	8	H106	WING	E	20				15	6.000														15	6	15	6	662
44	6	H107	WING	E	20				14	8.000														14	8	14	8	969
3	5	H108	STRAND TIE	E	23					18.000	3	2.375	18.000		4.625		17.375		4.625		17.375			6	2	6	2	19
14	5	U100	BEAM	E	10	S					5	8.750	2	9.125										14	3	14	0	204
18	4	U101	BEAM	E	13	S			2	9.125	2	8.000	2	9.125	2	8.000								11	7	11	4	136
3	4	U102	BEAM	E	10	S					2	8.000	2	9.125										8	1	7	11	16
18	5	U103	DIAPHRAGM	E	10	S					4	11.125	2	4.000										12	2	12	0	225
18	6	U104	DIAPHRAGM	E	19	S			3	10.625	2	10.125												6	9	6	7	178
24	5	U105	APPROACH TIE	E	19	S			2	0.000		15.000												3	3	3	2	79
34	6	U106	DIAPHRAGM	E	19	S			3	2.000	4	8.500												7	11	7	9	396
8	5	V100	BEAM	E	20				5	6.500														5	7	5	7	47
15	6	V101	DIAPHRAGM	E	20				3	10.625														3	11	3	11	88
2	6	V102	WING	E	20				7	11.750														8	0	8	0	24
2	6	V103	WING	E	20				7	10.875														7	11	7	11	24
26	6	V104	WING	E	20			V	2	7	11.875													8	0	8	0	
			INCREMENT =							8	1.250													8	1	8	1	314
			0.125 INCH																									
26	6	V105	WING	E	20			V	2	7	11.000													7	11	7	11	
			INCREMENT =							8	0.500													8	1	8	1	312
			0.125 INCH																									
			END BENT 2																									
11	6	F200	WING BRACE	E	15	S			2	3.000	4	4.500	14.000		11.125		8.500		21.375		16.500			7	10	7	8	127
5	6	F201	DIAPHRAGM	E	21	S			5	7.000	2	9.625						5	4.750		17.375			8	5	8	2	61
11	6	F202	WING BRACE	E	15	S			2	3.000	5	7.250	14.000		8.500		11.125		16.500		21.375			9	0	9	0	149
5	6	F203	DIAPHRAGM	E	21	S			6	3.000	2	9.625						6	0.500		19.375			9	1	8	10	66
12	7	H200	BEAM/DIAPH	E	20				27	4.000														27	4	27	4	670
9	6	H201	BEAM/DIAPH	E	20				27	4.000														27	4	27	4	369
4	6	H202	DIAPHRAGM	E	20				2	6.500														2	7	2	7	16
6	6	H203	DIAPHRAGM	E	20				3	11.875														4	0	4	0	36
6	6	H204	DIAPHRAGM	E	20				8	6.750														8	7	8	7	77
4	6	H205	DIAPHRAGM	E	20				5	3.500														5	4	5	4	32
16	8	H206	WING	E	20				15	6.000														15	6	15	6	662
44	6	H207	WING	E	20				14	8.000														14	8	14	8	969
3	5	H208	STRAND TIE	E	23					18.000	3	2.375	18.000		4.625		17.375		4.625		17.375			6	2	6	2	19
14	5	U200	BEAM	E	10	S					5	8.750	2	9.125										14	3	14	0	204
18	4	U201	BEAM	E	13	S			2	9.125	2	8.000	2	9.125	2	8.000								11	7	11	4	136
3	4	U202	BEAM	E	10	S					2	8.000	2	9.125										8	1	7	11	16
18	5	U203	DIAPHRAGM	E	10	S					4	11.500	2	4.000										12	3	12	1	227

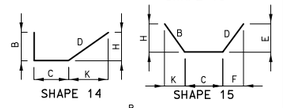
BILL OF REINFORCING STEEL

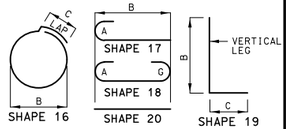
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
18	6	U204	DIAPHRAGM	E	19	S				3	11.000	2	10.125											6	9	6	7	178
24	5	U205	APPROACH TIE	E	19	S				2	0.000		15.000											3	3	3	2	79
34	6	U206	DIAPHRAGM	E	19	S				3	2.000	4	8.500											7	11	7	9	396
8	5	V200	BEAM	E	20					5	6.500													5	7	5	7	47
15	6	V201	DIAPHRAGM	E	20					3	11.000													3	11	3	11	88
2	6	V202	WING	E	20					8	2.500													8	3	8	3	25
2	6	V203	WING	E	20					8	3.250													8	3	8	3	25
26	6	V204	WING	E	20			V	2	8	2.500													8	3	8	3	
			INCREMENT =							8	1.250													8	1	8	1	319
			0.125 INCH																									
26	6	V205	WING	E	20			V	2	8	3.250													8	3	8	3	
			INCREMENT =							8	2.000													8	2	8	2	321
			0.125 INCH																									
			SLAB																									
46	5	S1	SLAB	E	20					58	4.000													58	4	58	4	2799
359	6	S2	SLAB	E	20					26	5.000													26	5	26	5	14244
26	6	S3	SLAB	E	20			V	2	25	0.125													25	0	25	0	
			INCREMENT =							2	7.375													2	7	2	7	539
			22.375 INCH																									
40	5	S4	SLAB	E	20					58	8.000													58	8	58	8	2448
16	6	S5	SLAB	E	20			V	2	23	7.250													23	7	23	7	
			INCREMENT =							4	0.125													4	0	4	0	331
			33.625 INCH																									
			BARRIER																									
20	5	K1	BARRIER CURB	E	27	S				3	8.000	9	250	5	375	3	2.750			5	250	1	000	8	1	7	11	165
68	5	K2	BARRIER CURB	E	27	S				3	8.000	9	250	14	500	2	5.750			14	250	2	750	8	2	7	11	561
4	5	K3	BARRIER CURB	E	27	S				22	000	9	250	14	500	7	250			14	250	2	750	4	5	4	3	18
92	5	K4	BARRIER CURB	E	19	S				2	5.000	10	000											3	3	3	2	304
20	5	K5	BARRIER CURB	E	14	S					8.250	9	500	19	250					4	250	18	750	3	1	3	0	63
72	5	K6	BARRIER CURB	E	21	S				2	4.875	10	000							2	4.250	6	000	3	3	3	1	232
28	5	K7	BARRIER CURB	E	20					15	10.250													15	10	15	10	462
28	5	K8	BARRIER CURB	E	20					16	2.500													16	3	16	3	475
220	5	R1	BARRIER CURB	E	14	S				2	5.000	6	500	2	5.500					2	5.000	5	500	5	5	5	3	1205
220	5	R2	BARRIER CURB	E	19	S					20.000	9	500											2	6	2	4	535
220	5	R3	BARRIER CURB	E	27	S						9	500	15	250	4	500	12	000	15	000	3	000	3	5	3	3	746
32	5	R4	BARRIER CURB	E	20					55	6.000													55	6	55	6	1852
			SLIP FORM																									
16	5	C1	SLIP FORM	E	20					12	0.000													12	0	12	0	200
			TOTALS																									
	4				E																							304
	5				E																							13215
	6				E																							21606
	7				E																							1340
	8				E																							1324

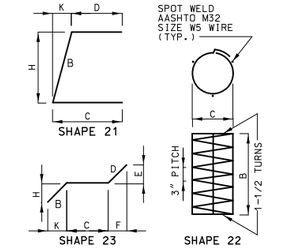


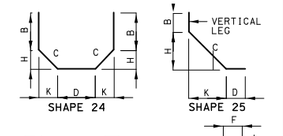


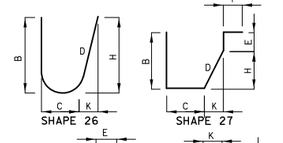


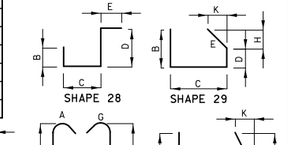


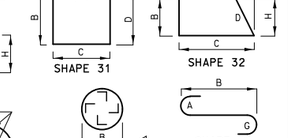


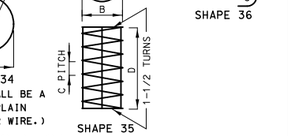




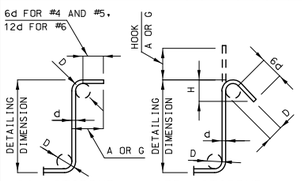






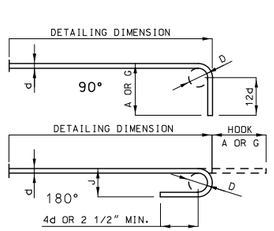


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 – 50 – 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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 (GRADE 60) FY = 60,000 PSI.

Detailed Nov. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2024
ROUTE ZZ | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION
DATE

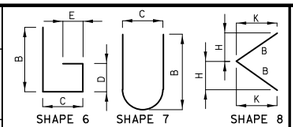
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

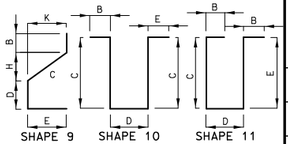
BILL OF REINFORCING STEEL

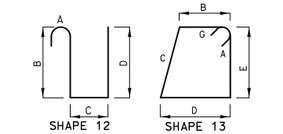
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			TOTAL																									0
			TOTAL	E																								37789
			Slab on																									
			Girder																									
	4			E																								304
	5			E																								6397
	6			E																								21606
	7			E																								1340
	8			E																								1324
			TOTAL																									30971
			Safety																									
			Barrier																									
			Curb																									
	5			E																								6618
			TOTAL																									6618
			Slip Form																									
			Option																									
	5			E																								200
			TOTAL																									200

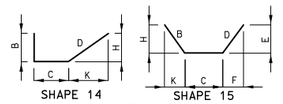
BILL OF REINFORCING STEEL

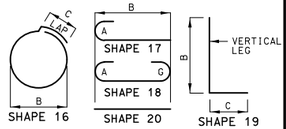
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.

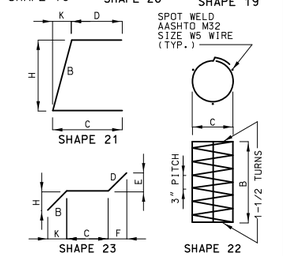


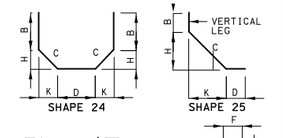


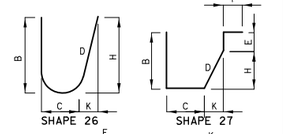


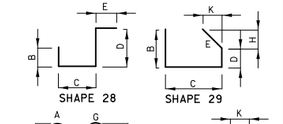


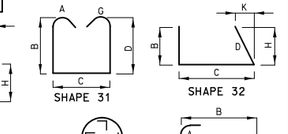


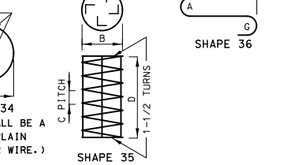




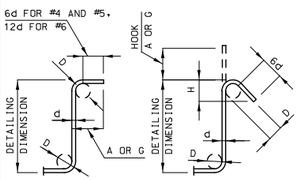






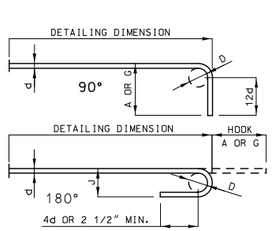


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

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NO. EA. = NUMBER OF BARS OF EACH LENGTH.

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TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
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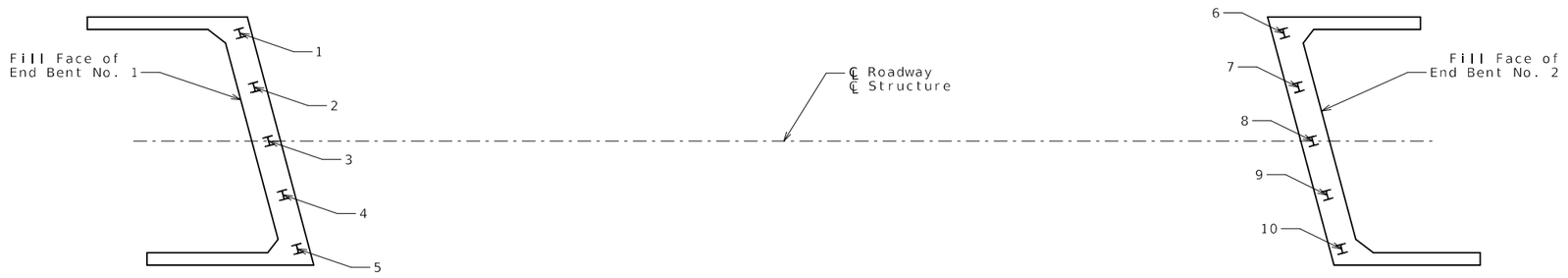
DATE PREPARED 5/31/2024
ROUTE ZZ | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION | DATE

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

Detailed Nov. 2023
Checked Jan. 2024

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



PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
5			
			End Bent No. 2
6			
7			
8			
9			
10			

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
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
5/31/2024

ROUTE	STATE
ZZ	MO
DISTRICT	SHEET NO.
BR	22

COUNTY
MONTGOMERY

JOB NO.
J2S3195

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9320

DESCRIPTION	DATE

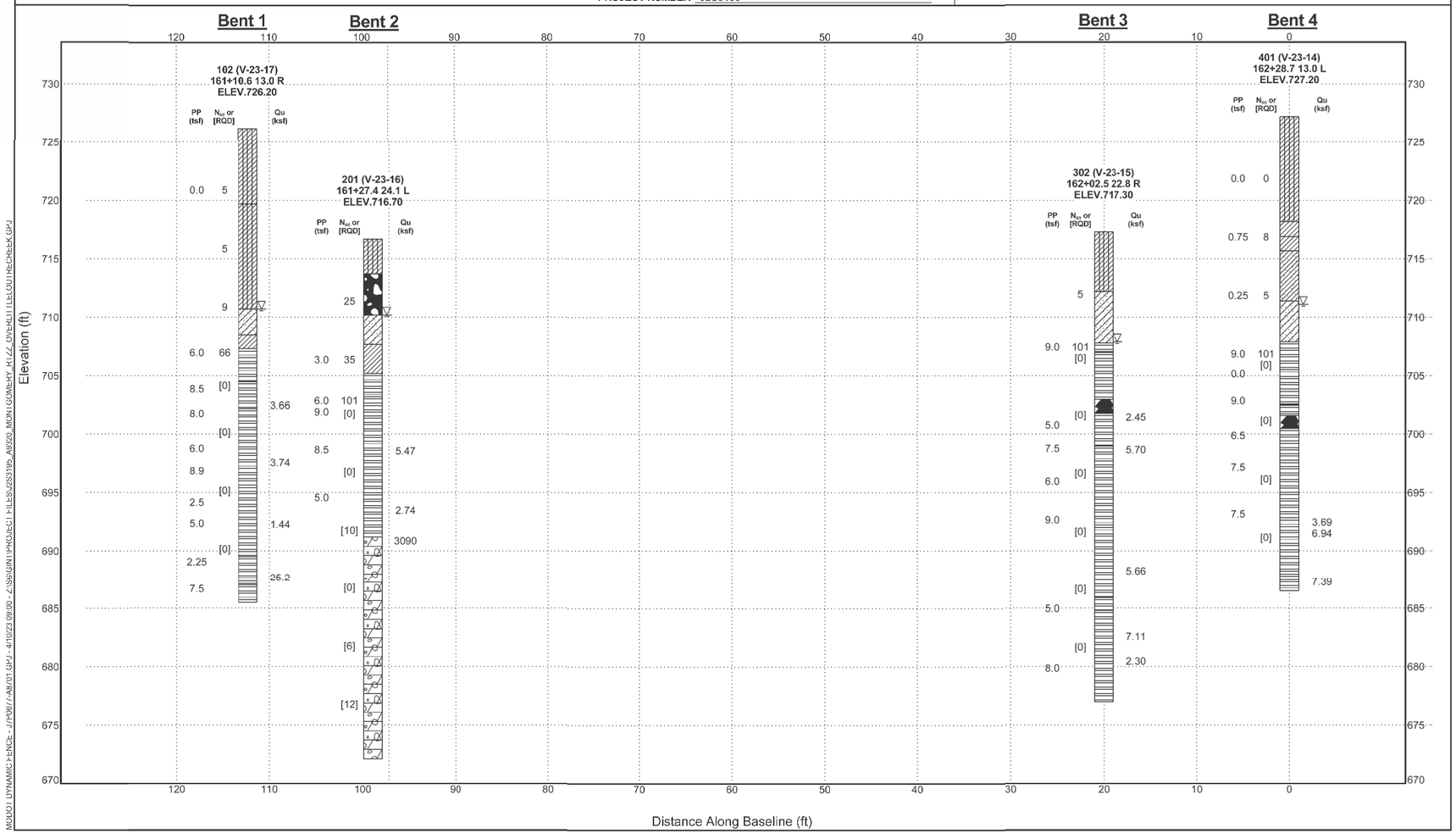
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MoDOT-Geotechnical Section
1617 Missouri Blvd
Jefferson City, MO 65109

SUBSURFACE DIAGRAM

PROJECT NAME Bridge Replacement
PROJECT LOCATION Over Little Loutre Creek
CLIENT
PROJECT NUMBER J2S3195

USCS Low Plasticity Silty Clay
Shale
Coal
USCS Clayey Sand
Boulders and cobbles
USCS Low Plasticity Sandy Clay
USCS Low Plasticity Clay
Highly Weathered Dolomite



BORING DATA

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

Detailed Aug. 2023
Checked Jan. 2024

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

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2024
ROUTE ZZ
STATE MO
DISTRICT BR
SHEET NO. 23
COUNTY MONTGOMERY
JOB NO. J2S3195
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9320

DESCRIPTION
DATE

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

DESIGN DESIGNATION

A.A.D.T. - 2023 = 151

A.A.D.T. - 2043 = 155

T = 24.01%

V = 55 M.P.H.

FUNCTIONAL CLASSIFICATION- MAJOR COLLECTOR

NORMAL ACCESS HIGHWAY

RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STA. 435+50 TO 441+50 A DISTANCE OF 0.114 MI.

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

AUDRAIN COUNTY

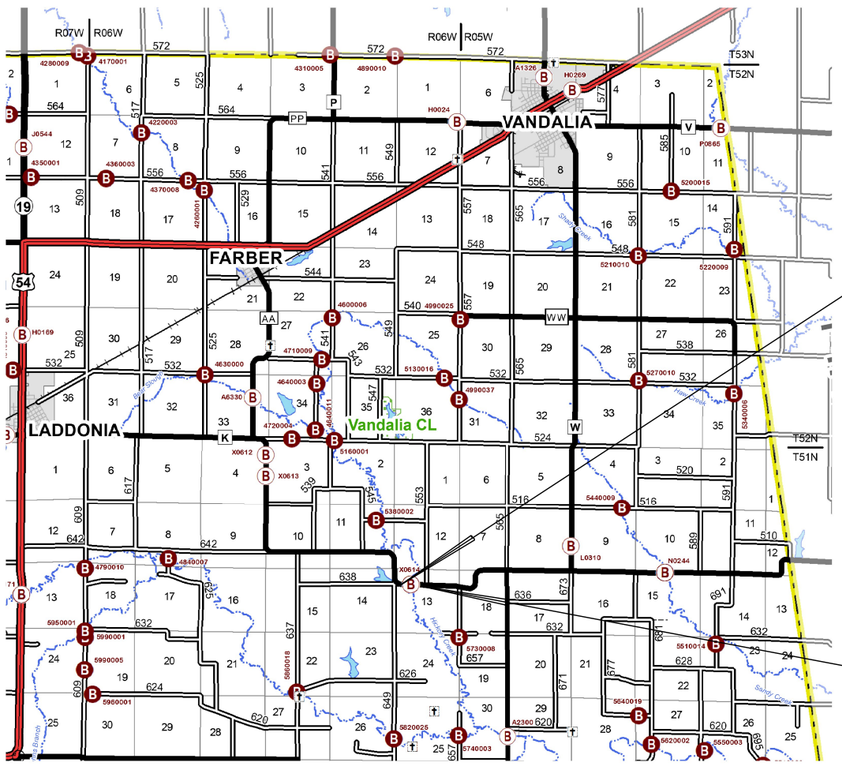
T51N - R06W

½ 0 1 2

SCALE IN MILES

KEY MAP

SHOWING LOCATION OF COUNTY



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

INDEX OF SHEETS

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA.	433+98.76
END OF PROJECT	STA.	442+87.03
APPARENT LENGTH		888.27 FEET
TOTAL CORRECTIONS		0 FEET
NET LENGTH OF PROJECT		888.27 FEET
STATE LENGTH		0.168 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES		0.6 ACRES

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED: 8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	1

COUNTY: AUDRAIN

JOB NO.: J2S3314

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.:

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

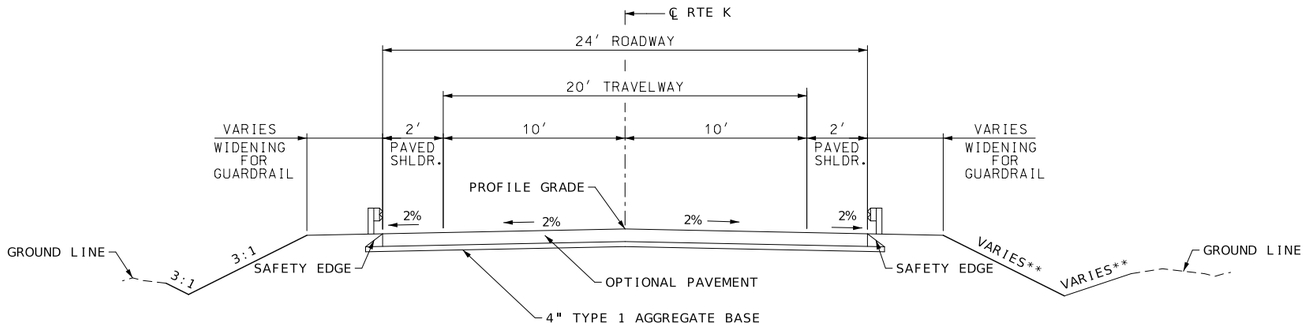
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

OPTIONAL PAVEMENT

HMA DESIGN
1-3/4" BP-1 (PG64-22)
8-1/4" BIT. BASE (PG64-22)

OR

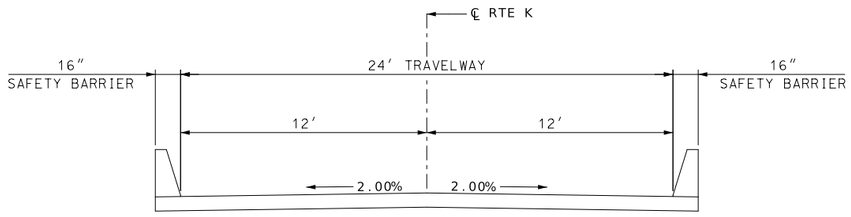
PCCP DESIGN
8" NON-REINFORCED PCCP



NOTES:
* STA. 437+40.50 TO STA. 437+60.00 AND STA. 438+91.50 TO STA. 439+11.00 INSTALL BRIDGE APPROACH SLAB. SEE BRIDGE PLANS FOR DETAILS.
CROSS SLOPE:
MATCH EXISTING CROSS SLOPE AT START AND END OF PROJECT; SEE CROSS SECTION SHEETS.
(1) 2.0% NORMAL CROWN ON TANGENT SECTIONS.
** SEE CROSS SECTIONS FOR EMBANKMENT SLOPES AND ROCK FILL DETAILS.

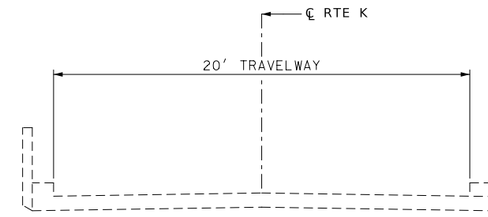
TYPICAL SECTION ON TANGENT - RTE K

STA. 433+98.76 TO STA. 437+40.50*
STA. 439+11.00* TO STA. 442+87.03



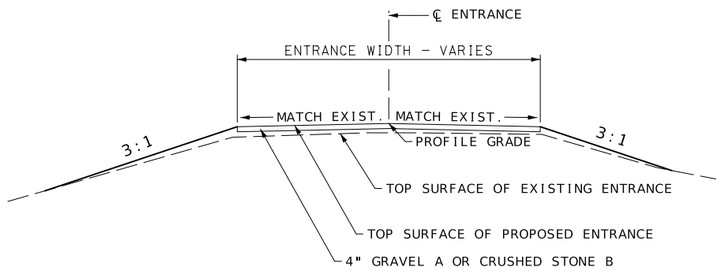
PROPOSED TYPICAL SECTION

BRIDGE A9318
STA. 437+60.00 TO STA. 438+91.50

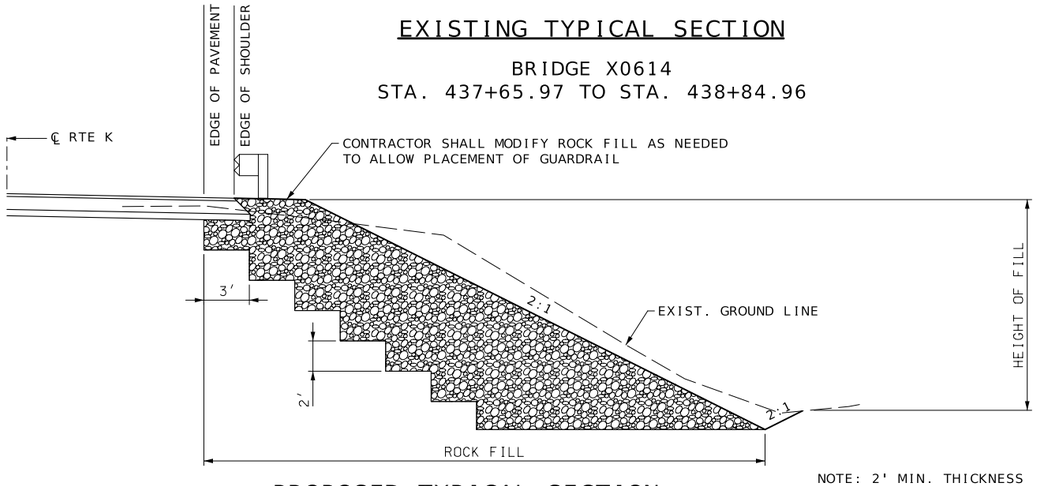


EXISTING TYPICAL SECTION

BRIDGE X0614
STA. 437+65.97 TO STA. 438+84.96



TYPICAL SECTION - AGGREGATE ENTRANCE



NOTE: 2' MIN. THICKNESS OF ROCK FILL

PROPOSED TYPICAL SECTION

STA. 436+50 RT TO 437+60 RT

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
VERIFICATION 11:01:30 PM
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	2

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

TYPICAL SECTION SHEET

SHEET 1 OF 1
NOT TO SCALE

MOBILIZATION
1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING AND STAKING
1 LUMP SUM

REMOVAL OF IMPROVEMENTS

SHEET	STATION	LOCATION	DESCRIPTION
4	430+00	RTE K	REMOVE EXISTING 'TRUCKS OVER 20 TON 15 MPH ON BRIDGE' SIGN
4	433+98.76	RTE K	SAWCUT 20' AT BEGINNING OF JOB
4	433+98.76	RTE K	REMOVE 776.71 SY EXISTING PAVEMENT ON WEST END OF BRIDGE
4	422+87.03	RTE K	SAWCUT 21' AT END OF JOB
4	422+87.03	RTE K	REMOVE 909.56 SY EXISTING PAVEMENT ON EAST END OF BRIDGE
4	437+60	RTE K	REMOVE 6 EXISTING OBJECT MARKERS
4	438+91.50	RTE K	REMOVE 6 EXISTING OBJECT MARKERS
4	440+71.60	RTE K	REMOVE EXISTING 18" PIPE (51')
4	436+50	RTE K	REMOVE 360 FT EXISTING FENCE NE AND NW QUADRANTS OF BRIDGE
4	443+00	RTE K	REMOVE EXISTING 'TRUCKS OVER 20 TON 15 MPH ON BRIDGE' SIGN
		1 LUMP SUM	

SUBGRADE COMPACTION (6" DEPTH)

SHEET	STATION	STATION	LOCATION	100 FT	REMARKS
4	433+98.76	437+60.00	RTE K	3.61	
4	438+91.50	442+87.03	RTE K	3.96	
			TOTAL	7.57	
			USE	8.0	

PAVEMENT

SHEET	STATION	STATION	LOCATION	OPTIONAL PAVEMENT S.Y.	TYPE 1 AGGREGATE FOR BASE (4" THICK) S.Y.	REMARKS
4	433+98.76	437+40.50	RTE K	886.78	886.78	
4	439+11.00	442+87.03	RTE K	987.88	987.88	
			SUBTOTAL	1874.7	1874.7	
			TOTAL	1874.7	1875	

TYPE 2 ROCK BLANKET & GEOTEXTILE MATERIAL

SHEET	STATION	TO	STATION	LOCATION	THICKNESS FT	SLOPE	FURNISHING C.Y.	PLACING C.Y.	PERM. EROSION CONTROL GEOTEXTILE S.Y.	REMARKS
4	437+30.50	TO	437+82.96	WEST BRIDGE END	2	VARIES	190.5	190.5	285.8	
4	438+61.08	TO	439+21.00	EAST BRIDGE END	2	VARIES	325.5	325.5	488.3	
						TOTAL	516.0	516.0	774.1	
						USE	516	516	775	

DITCH CHECKS

SHEET	LOCATION	ROCK L.F.	STATION	SPACING (FT)	REMARKS
11	LEFT	9	436+30.00	150	NORTHEAST DITCH
11	LEFT	9	437+80.00		
11	RIGHT	6	437+80.00		SOUTHEAST DITCH
11	LEFT	9	438+65.00	100	NORTHWEST DITCH
11	LEFT	9	439+65.00		
11	LEFT	14	440+65.00		
11	LEFT	15	441+65.00		
	TOTAL	71			

ROCK DITCH LINER

SHEET	STATION	TO	STATION	LOCATION	FURNISHING TYPE 2 ROCK DITCH LINER C.Y.	PLACING TYPE 2 ROCK DITCH LINER C.Y.	PERM. EROSION CONTROL GEOTEXTILE S.Y.	REMARKS
4	437+30.50	TO	437+90.52	NORTHWEST CORNER	20.351	20.351	61.053	
4	436+50.00	TO	438+12.09	SOUTHWEST CORNER	40.511	40.511	121.544	
4	438+37.22	TO	441+02.00	NORTHEAST CORNER	116.834	116.834	350.538	
				TOTAL	177.696	177.696	533.135	
				USE	178	178	534	

TEMP. BERM TYPE C

SHEET	STA. TO STA.	LOCATION	L.F.	REMARKS
4	437+82.96 TO 437+82.96	WEST BRIDGE END	75.8	
4	438+61.08 TO 439+11.00	EAST BRIDGE END	124.5	
	TOTAL		201	

GUARDRAIL

STATION	TO	STATION	LOCATION	(MASH) CRASHWORTHY END TERMINAL EACH	MGS GUARDRAIL L.F.	MGS BRIDGE APPROACH TRANS. SECTION (REGULAR/NO CURB) EACH	REMARKS
436+67.00	TO	437+54.50	RTE K - NORTHWEST OF BR.	1		1	
436+42.00	TO	437+54.50	RTE K - SOUTHWEST OF BR.	1	25	1	
438+97.00	TO	439+84.50	RTE K - NORTHEAST OF BR.	1		1	
438+97.00	TO	439+84.50	RTE K - SOUTHEAST OF BR.	1		1	
			TOTALS	4	25	4	

AGGREGATE ENTRANCE

SHEET	STATION	LOCATION	S.Y.	CLASS 1 LINEAR GRADING STA.	4" GRAVEL (A) CRUSHED STONE (B) TON	18" GROUP C PIPE FT.	REMARKS
4	440+71.60	RTE K - RIGHT	94.87	0.8	15	52	
			TOTAL	0.8	15	52	

PERMANENT STRIPING- WATERBORNE PAINT - TYPE P BEADS

STA.	STA.	LOCATION	4" SOLID WHITE EDGELINE L.F.	4" YELLOW SOLID/INTERMITTENT CENTERLINE L.F.	4" YELLOW INTERMITTENT CENTERLINE L.F.	REMARKS
433+98.76	439+41.50	RTE K	1085	678		EB INTERMITTENT AND WB SOLID
439+41.50	442+87.03	RTE K	691		90	
		SUBTOTAL	1776	678	90	
		TOTAL	1776	768		

NOTE: MATCH EXISTING PATTERN

MISC. SEEDING & MULCHING

PERMANENT SEEDING 0.29 ACRE
TEMPORARY SEEDING 0.29 ACRE
USE 1 LUMP SUM

NOTE: SEEDING ACRES FOR INFORMATION ONLY

SILT FENCE

SHEET	STATION	STATION	LOCATION	L.F.	REMARKS
11	433+98.76	435+69.93	NORTHEAST	180	
11	433+98.76	435+90.28	SOUTHEAST	210	
11	439+11.00	440+64.21	SOUTHWEST	155	
11	440+94.56	442+87.03	SOUTHWEST	195	
11	441+52.74	442+87.03	NORTHWEST	140	
			TOTAL	880	

SEDIMENT REMOVAL

SHEET	REMOVAL C.Y.	REMARKS
11	7	1 CY/ DITCH CHECK
11	9	1 CY/ 100 FT SILT FENCE
TOTAL	16	

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	3

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

SUMMARY OF QUANTITIES

SHEET 1 OF 3

EARTHWORK

STATION	STATION	LOCATION	CLASS A EXC. C.Y.	COMP. EMB. C.Y.	EMB. IN PLACE C.Y.	ROCK FILL FURNISHING C.Y.	ROCK FILL PLACING C.Y.	REMARKS
433+98.76	438+12.09	WEST OF BRIDGE	657	495	0			
438+37.22	442+87.03	EAST OF BRIDGE	555	568	245			OBTAINED 80.89 CY FROM WEST OF BRIDGE (COMPACTED)
436+50.00	437+60.00	WEST OF BRIDGE				414.2	414.2	
		TOTAL	1212	1063	245	415	415	

NOTE: 155 CY OF FILL EXCLUDED DUE TO ROCK BLANKET PLACEMENT; COMPACTION FACTOR 1.14

CLEARING AND GRUBBING

SHEET	UNITS	REMARKS
4	51.4008	
TOTAL EST. @	0.59	EST. @ 87.12 UNITS PER ACRE, NORTH SIDE OF ROADWAY FOR FILL SLOPES
	USE 1 ACRE	

SEE PLAN SHEET FOR DETAILS

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
VOID UNLESS ELECTRONICALLY SIGNED
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

SUMMARY OF QUANTITIES

SHEET 2 OF 3

EFFECTIVE: 04-01-2023

WARNING SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT ARROW)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT ARROW)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT ARROW)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT ARROW)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT ARROW)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT ARROW)
WO1-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT ARROW)
WO1-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT ARROW)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
WO3-4	48X48	16.00						BE PREPARED TO STOP
WO3-5	48X48	16.00						SPEED LIMIT AHEAD
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
WO4-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00						MERGE (ARROW SYMBOL)
WO4-1aR	48X48	16.00						MERGE (ARROW SYMBOL)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING (WITH FLAGS)
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)
WO8-17	48X48	16.00						SHOULDER DROP-OFF (SYMBOL)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
W012-2X	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						500 FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00						ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00						DETOUR AHEAD
WO20-3	48X48	16.00	2	32			20A	ROAD CLOSED AHEAD
WO20-3a	48X48	16.00	2	32			20B	ROAD CLOSED 500 FT
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00						FLAGGER (SYMBOL, WITH FLAGS)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
GO22-1	21X15	2.19						WET PAINT (ARROW PIVOTS)

GUIDE SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
GO20-1	60X24	10.00						ROAD WORK NEXT 2 MILES
GO20-2	48X24	8.00						END ROAD WORK
GO20-4	36X18	4.50						PILOT CAR FOLLOW ME
GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW
GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW
GO20-5aP	36X24	6.00						WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00						END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT ARROW)
MO4-9R	48X36	12.00						DETOUR (RIGHT ARROW)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR (ARROW LEFT)
MO4-10R	48X18	6.00						DETOUR (ARROW RIGHT)

REGULATORY SIGNS

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

MISCELLANEOUS SIGNS

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00						POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00						RATE OUR WORK ZONE
CONST-8	48X36	12.00						WORK ZONE NO PHONE ZONE
SPECIAL	48X96	32.00	4	128	2	64	55A,55B, 55C,55D	BRIDGE CLOSED XX MILES AHEAD

616-10.05 CONSTRUCTION SIGNS	TOTAL
	235

616-10.10 RELOCATED SIGNS	TOTAL
	64

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123000A		TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)
6161008	2	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025		CHANNELIZER (TRIM LINE)
6161030	15	TYPE III MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040		FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A		CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
NE	3

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

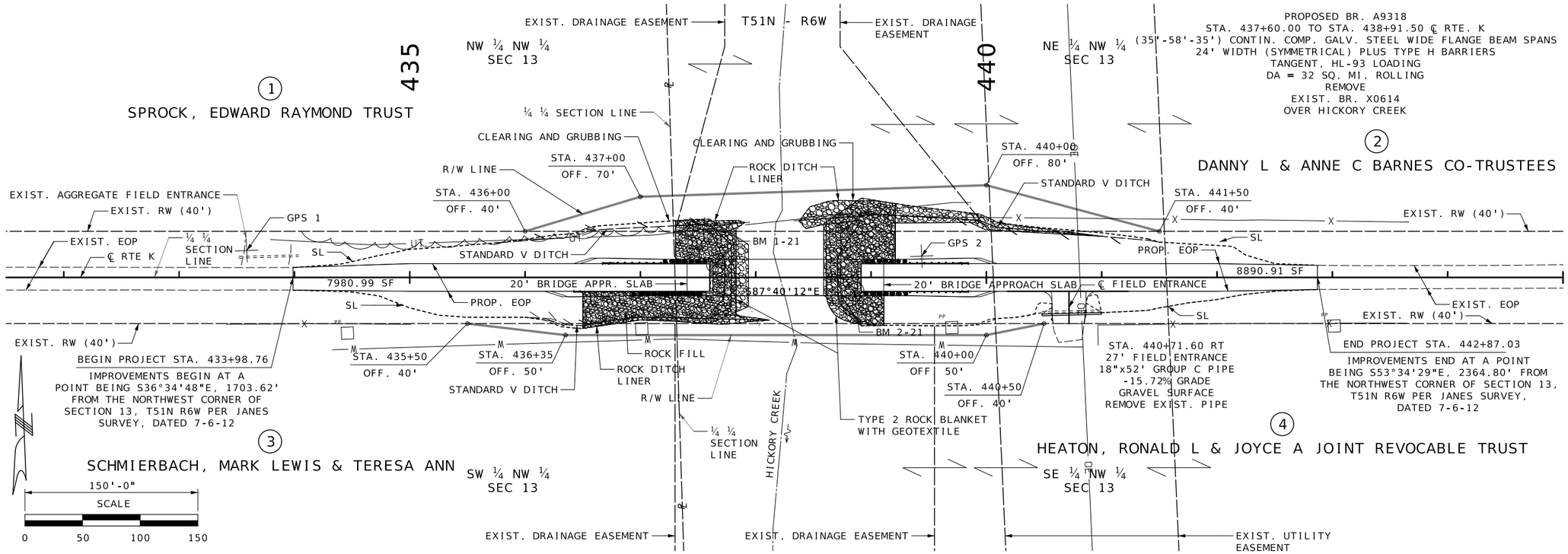
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

SUMMARY OF QUANTITIES

SHEET 3 OF 3



UTILITIES

COMMUNICATIONS

WINDSTREAM COMMUNICATIONS
JEROME MILES
11101 ANDERSON DR. SUITE 100
LITTLE ROCK, AR 72212
PHONE: (800)289-1901
CELL PHONE: (417)276-1460
EMAIL: JEROME.MILES@WINDSTREAM.COM

WATER

MONROE COUNTY PWSD 2
BRIAN VAUGHN
23504 HIGHWAY 24
PARIS, MO 65275
PHONE: (573)473-7304
EMAIL: PWSD2@PARISMO.NET

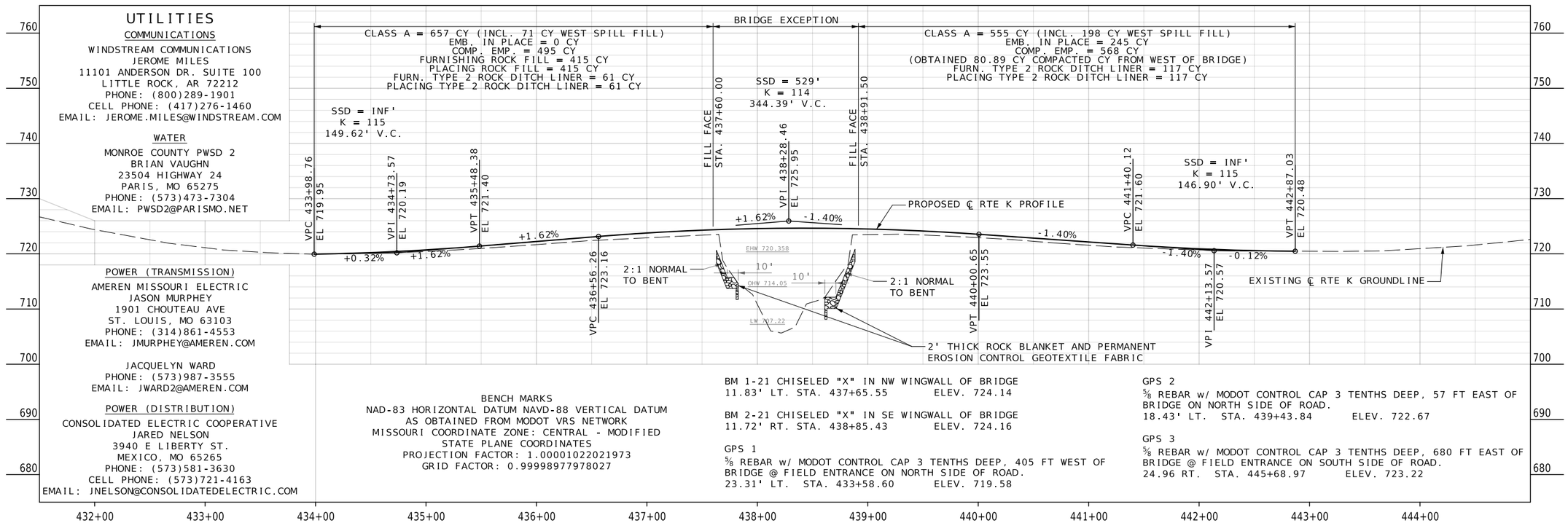
POWER (TRANSMISSION)

AMEREN MISSOURI ELECTRIC
JASON MURPHEY
1901 CHOUTEAU AVE
ST. LOUIS, MO 63103
PHONE: (314)861-4553
EMAIL: JMURPHEY@AMEREN.COM

JACQUELYN WARD
PHONE: (573)987-3555
EMAIL: JWARD2@AMEREN.COM

POWER (DISTRIBUTION)

CONSOLIDATED ELECTRIC COOPERATIVE
JARED NELSON
3940 E LIBERTY ST.
MEXICO, MO 65265
PHONE: (573)581-3630
CELL PHONE: (573)721-4163
EMAIL: JNELSON@CONSOLIDATEDELECTRIC.COM



BENCH MARKS
NAD-83 HORIZONTAL DATUM NAVD-88 VERTICAL DATUM
AS OBTAINED FROM MODOT VRS NETWORK
MISSOURI COORDINATE ZONE: CENTRAL - MODIFIED
STATE PLANE COORDINATES
PROJECTION FACTOR: 1.00001022021973
GRID FACTOR: 0.99998977978027

BM 1-21 CHISELED "X" IN NW WINGWALL OF BRIDGE
11.83' LT. STA. 437+65.55 ELEV. 724.14

BM 2-21 CHISELED "X" IN SE WINGWALL OF BRIDGE
11.72' RT. STA. 438+85.43 ELEV. 724.16

GPS 1
⅝ REBAR w/ MODOT CONTROL CAP 3 TENTHS DEEP, 405 FT WEST OF BRIDGE @ FIELD ENTRANCE ON NORTH SIDE OF ROAD.
23.31' LT. STA. 433+58.60 ELEV. 719.58

GPS 2
⅝ REBAR w/ MODOT CONTROL CAP 3 TENTHS DEEP, 57 FT EAST OF BRIDGE ON NORTH SIDE OF ROAD.
18.43' LT. STA. 439+43.84 ELEV. 722.67

GPS 3
⅝ REBAR w/ MODOT CONTROL CAP 3 TENTHS DEEP, 680 FT EAST OF BRIDGE @ FIELD ENTRANCE ON SOUTH SIDE OF ROAD.
24.96 RT. STA. 445+68.97 ELEV. 723.22

STATE OF MISSOURI
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8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	4

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

PLAN & PROFILE SHEET

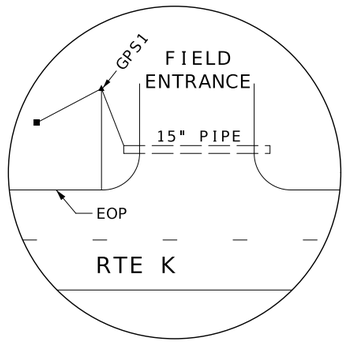
SHEET 1 OF 1

REFERENCE POINTS

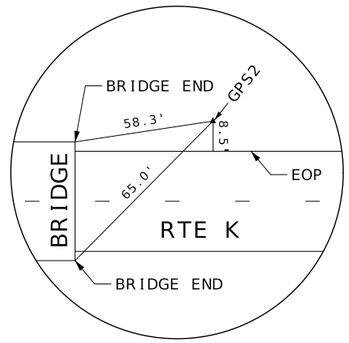
BRIDGE IMPROVEMENTS ON RTE K

PROJECTION FACTOR: 1.00001022021973
AVERAGE GRID FACTOR: 0.99998977978027

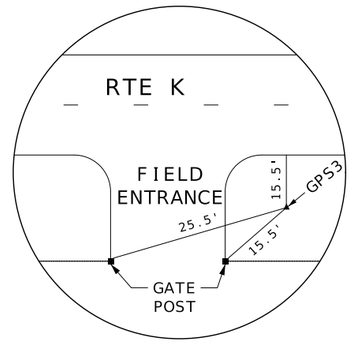
NAD-83 HORIZONTAL DATUM
NAVD-88 VERTICAL DATUM
GEOID 18



GPS 1
5/8 REBAR w/ MODOT CONTROL CAP
3 TENTHS DEEP, 405 FT WEST OF BRIDGE
@ FIELD ENTRANCE ON NORTH SIDE OF ROAD.
STA. = 433+58.60
OFF. = 23.3137' LT.
N = 1227693.4532
E = 1914471.6431
ELEV. = 719.58



GPS 2
5/8 REBAR w/ MODOT CONTROL CAP
3 TENTHS DEEP, 57 FT EAST OF
BRIDGE ON NORTH SIDE OF ROAD.
STA. = 439+43.84
OFF. = 18.4311' LT.
N = 1227664.7819
E = 1915056.1981
ELEV. = 722.67



GPS 3
5/8 REBAR w/ MODOT CONTROL CAP
3 TENTHS DEEP, 405 FT WEST OF BRIDGE
@ FIELD ENTRANCE ON NORTH SIDE OF ROAD.
STA. = 445+68.97
OFF. = 24.96' RT.
N = 1227596.0142
E = 1915679.0505
ELEV. = 723.22

ALL COORDINATES ARE MODIFIED STATE PLANE COORDINATES - EAST ZONE

MULTIPLY STATE PLANE COORDINATES BY THE PROJECTION FACTOR TO OBTAIN MODIFIED COORDINATES.

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	5

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

REFERENCE POINTS

SHEET 1 OF 1
NOT TO SCALE

MODIFIED COORDINATE POINT LISTING
HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
AS OBTAINED FROM MODOT VRS
MISSOURI COORDINATE ZONE: CENTRAL
PROJECTION FACTOR: 1.00001022021973
GRID FACTOR FACTOR: 0.99998977978027

NOTE: MULTIPLY STATE PLANE COORDINATES BY THE PROJECTION FACTOR TO OBTAIN MODIFIED COORDINATES.

Alignment Name:
CL_K

Alignment Description:

Alignment Style:
Alignment\MoDOT_Baseline_Proposed

Station

Northing

Easting

Element: Linear
START (START) 405+79.383 R1 1229733.231 1913498.478
PC (PC) 420+49.183 R1 1228263.447 1913491.723
Tangential Direction: S00°15'48.000"W
Tangential Length: 1469.800

Element: Circular
PC (PC) 420+49.183 R1 1228263.447 1913491.723
HPI (HPI) 426+02.508 R1 1227710.127 1913489.180
CC (CC) 1228260.810 1914065.402
PT (PT) 429+29.600 R1 1227687.600 1914042.046
Radius: 573.686
Delta: 87°55'48.000" Left
Degree of Curvature (Arc): 09°59'14.325"
Length: 880.417

Tangent: 553.325
Chord: 796.527
Middle Ordinate: 160.767
External: 223.361
Back Tangent Direction: S00°15'48.000"W
Back Radial Direction: N89°44'12.000"W
Chord Direction: S43°42'06.000"E
Ahead Radial Direction: S02°20'00.000"W
Ahead Tangent Direction: S87°40'00.000"E

Element: Linear
PT (PT) 429+29.600 R1 1227687.600 1914042.046
END (END) 472+91.240 R1 1227510.278 1918400.080
Tangential Direction: S87°40'12.000"E
Tangential Length: 4361.640

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

PROJECT COORDINATE INFORMATION	
COORDINATE SYSTEM	MODIFIED STATE PLANE (GROUND)
HORIZONTAL DATUM	NAD 83(2011) EPOCH 2010.0
VERTICAL DATUM	NAVD 88: GNSS DERIVED
GEOID MODEL	18
ELEVATIONS DETERMINED BY	DIFFERENTAL LEVELING / GPS - MODOT VRS
PROJECT PROJECTION FACTOR	1.00001022021973

REFERENCE CONTROL INFORMATION	
COORDINATE SYSTEM	MO COORDINATE SYSTEM OF 1983
CONTROL STATION	MISSOURI CORS
DESIGNATION	MODOT MEXICO CORS ARP
CORS_ID	MOMC
PID	DN6085
LATITUDE	39 09 42.50057 N
LONGITUDE	091 49 45.93363 W
NORTHING (M)	369606.958
EASTING (M)	557953.284
ZONE	CENTRAL
PROJECT AVERAGE GRID FACTOR	0.99998977978027

EXAMPLE OF PROJECT COORDINATE TO S.P.C.

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

EXAMPLE: CONTROL POINT #__GPS 1_
N 1227693.4532 X 0.99998977978027= N127680.906
E 1914471.6431 X 0.99998977978027 = E1914452.077

LINEAR UNIT CONVERSION

1 METER = 3.280833333 US SURVEY FEET (USFT)

	LOCATION	OFFSET (1) (FEET)	STATE PLANE NORTHING (FEET)	STATE PLANE EASTING (FEET)	MODIFIED STATE PLANE NORTHING (FEET)	MODIFIED STATE PLANE EASTING (FEET)	ELEVATION (FEET)	DESCRIPTION
433+98.76	CENTERLINE RTE K	0.00	1914491.2560	1227655.9792	1914510.8225	1227668.5261	719.95	START OF PROJECT
442+87.03	CENTERLINE RTE K	0.00	1915378.7740	1227619.8850	1915398.3496	1227632.4315	720.48	END OF PROJECT
433+58.60	CENTERLINE RTE K	23.31 LT	1914452.0770	1227680.9060	1914471.6431	1227693.4532	719.58	GPS 1
439+43.84	CENTERLINE RTE K	18.43 LT	1915036.6260	1227652.2350	1915056.1981	1227664.7819	722.67	GPS 2
445+68.97	CENTERLINE RTE K	24.96 RT	1915659.4720	1227583.4680	1915679.0505	1227596.0142	723.22	GPS 3
437+65.55	CENTERLINE RTE K	11.83 LT	1914858.2110	1227652.8840	1914877.7813	1227665.4309	724.14	BM 1-21
438+85.43	CENTERLINE RTE K	11.72 RT	1914977.0360	1227624.4880	1914996.6075	1227637.0346	724.16	BM 2-21

STATE OF MISSOURI
ZACHARY S. WALKER
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PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	6

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

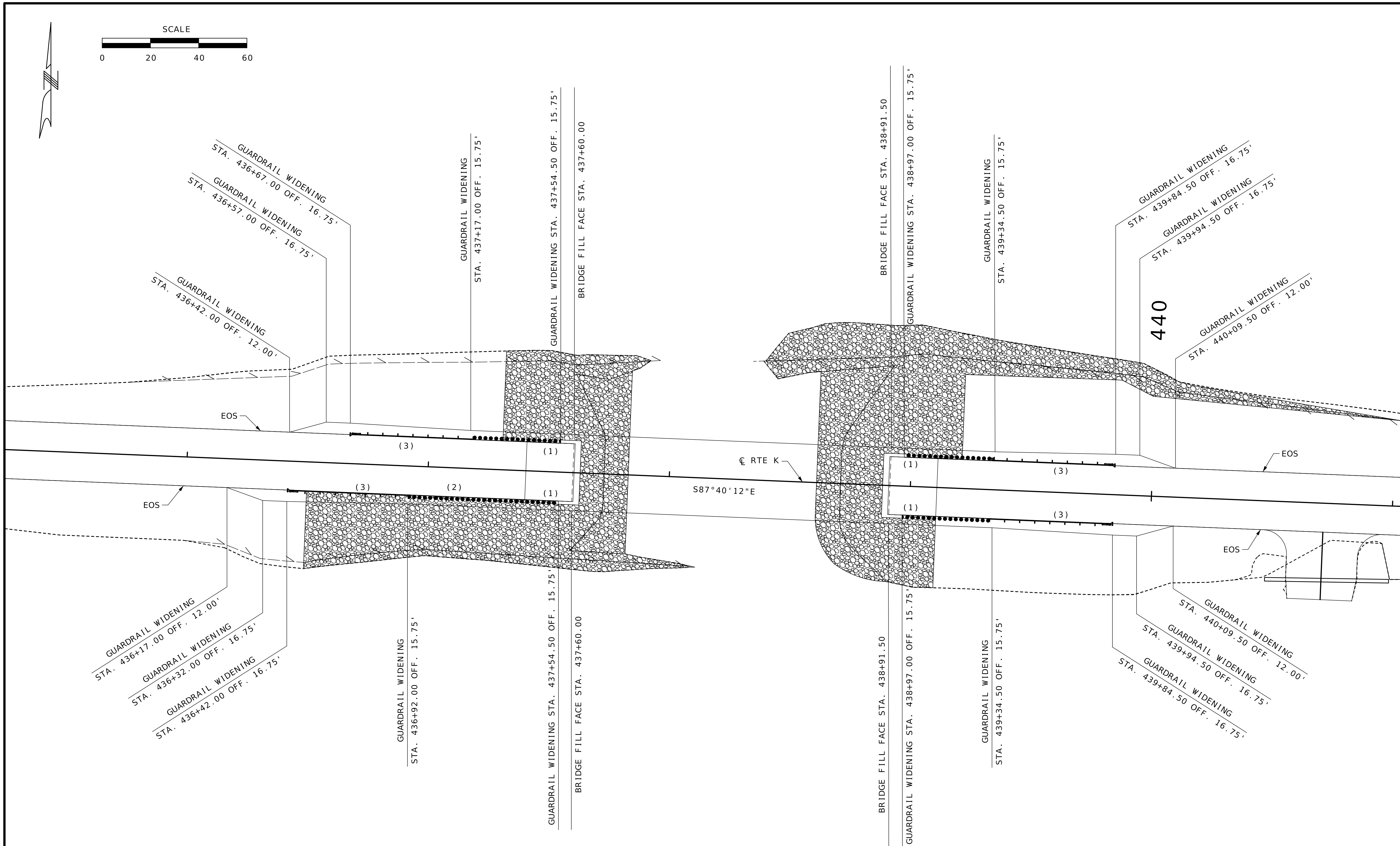
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

COORDINATE POINT SHEET

SHEET 1 OF 1



GUARDRAIL LEGEND

(1)	MGS BRIDGE APPROACH TRANSITION SECTION
(2)	MGS GUARDRAIL
(3)	(MASH) TYPE A CRASHWORTHY END TERMINAL

STATE OF MISSOURI
ZACHARY S. WALKER
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PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED	8/8/2024
ROUTE	K
STATE	MO
DISTRICT	NE
SHEET NO.	7
COUNTY	AUDRAIN
JOB NO.	J2S3314
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

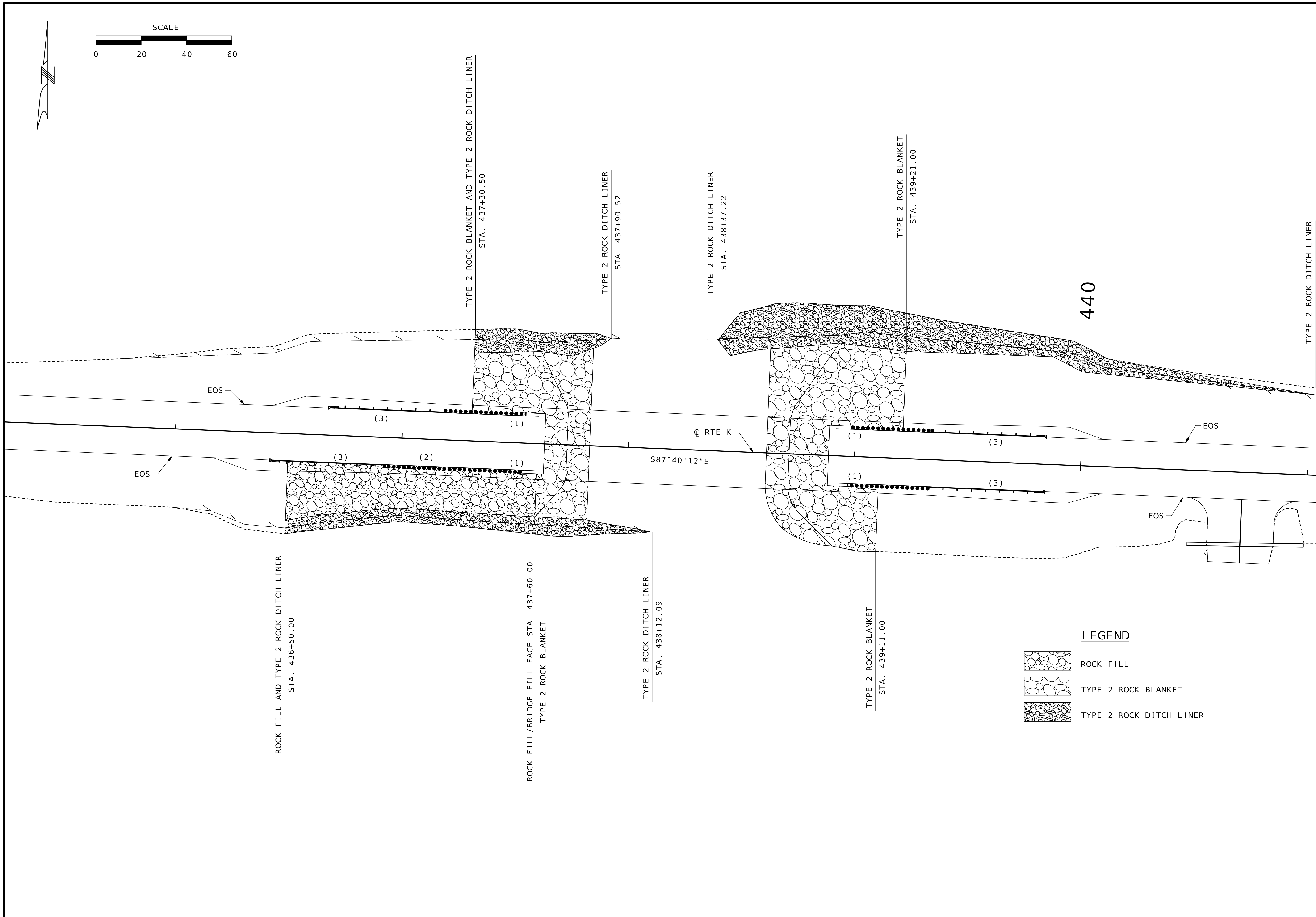
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

SPECIAL SHEET

GUARDRAIL WIDENING DETAILS

SHEET 1 OF 2



STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER

ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED	
8/12/2024	
ROUTE: K	STATE: MO
DISTRICT: NE	SHEET NO.: 8
COUNTY: AUDRAIN	
JOB NO.: J2S3314	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

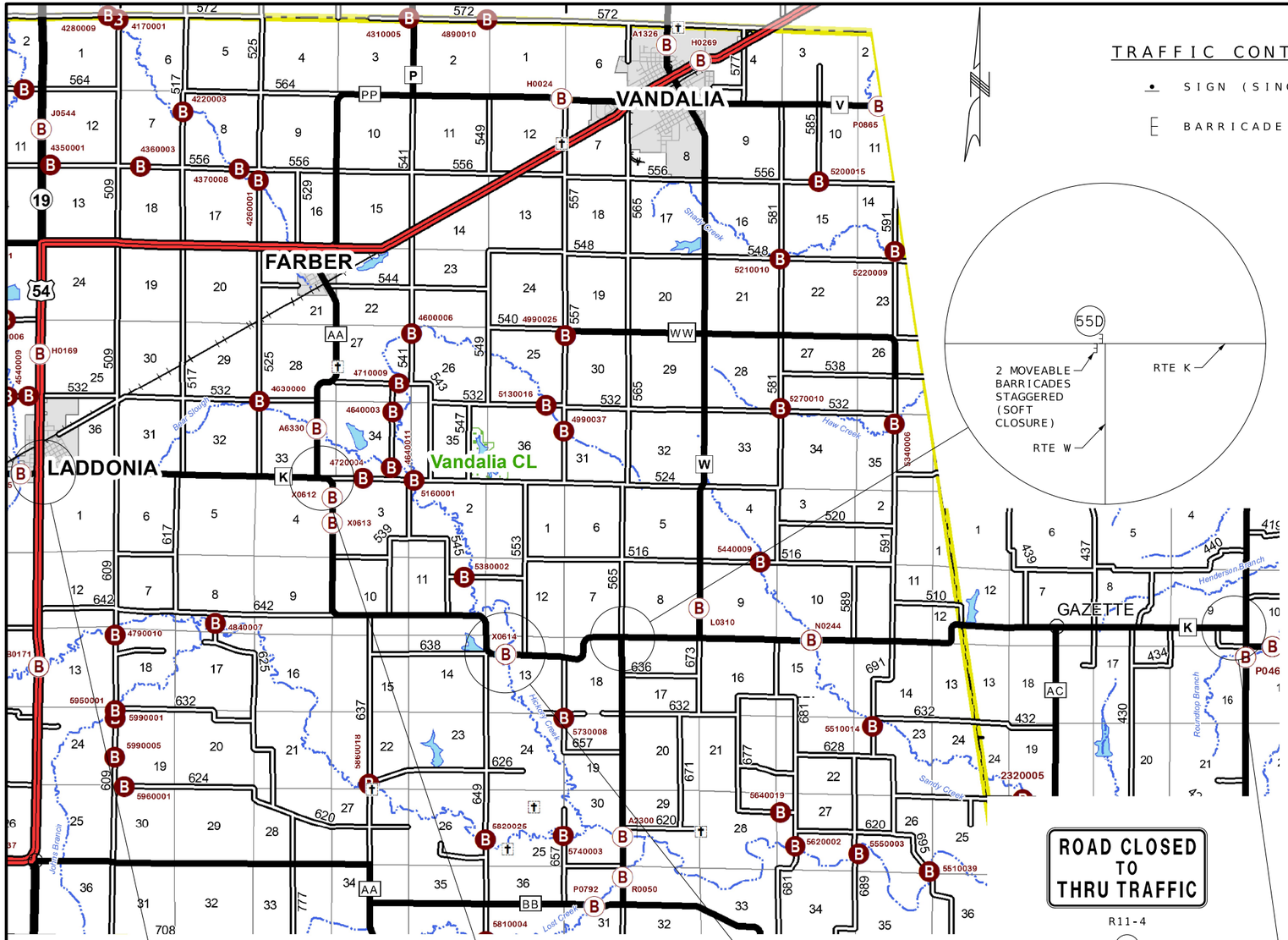
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

SPECIAL SHEET

ROCK DETAILS
SHEET 2 OF 2



ROAD CLOSED AHEAD

WO20-3

20A

ROAD CLOSED 500 FT

WO20-3a

20B

ROAD CLOSED

R11-2

29

NOTES:
ALL SIGNS SHALL BE SPACED AT 500' OR AS FIELD CONDITIONS DICTATE, AS DIRECTED BY THE ENGINEER.

* LOCATE SIGNS 100' FROM INTERSECTION.

** SEE SHEET 10 FOR SIGN DETAILS. LEAVE IN PLACE 55B AND 55D FOR THE DURATION OF PROJECT. RELOCATE 55A AND 55C AS SHOWN ON PLANS POST CLOSURE.

INSTALL PRE-CLOSURE SIGNS WITH PLAQUES A MINIMUM OF 2 WEEKS PRIOR TO CLOSURE. WHEN BRIDGE CLOSURE OCCURS, REMOVE SPECIAL SIGN PLAQUES AND RELOCATE NOTED SIGNS.

USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER OR REMOVE CONFLICTING SIGNS.

PRE-CLOSURE SIGN WITH PLAQUES ATTACHED	POST-CLOSURE SIGN WITHOUT PLAQUES ATTACHED
K BRIDGE CLOSED ON MONTH DATE — 55A **	K BRIDGE CLOSED 8 MILES AHEAD — 55A **
K BRIDGE CLOSED ON MONTH DATE — 55B **	K BRIDGE CLOSED 4 MILES AHEAD — 55B **
K BRIDGE CLOSED ON MONTH DATE — 55C **	K BRIDGE CLOSED 10 MILES AHEAD — 55C **
K BRIDGE CLOSED ON MONTH DATE — 55D **	K BRIDGE CLOSED 2 MILES AHEAD — 55D **

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ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	9

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

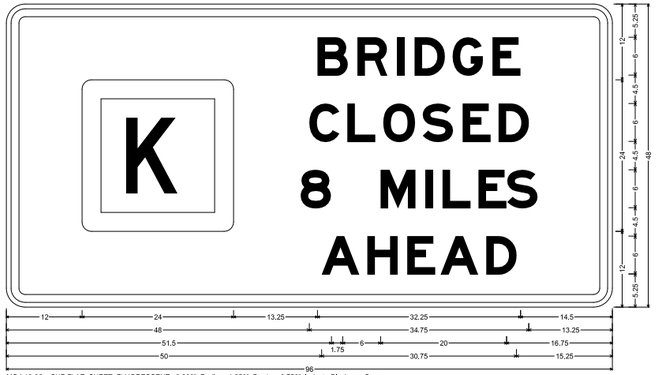
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TEMP. TRAFFIC CONTROL

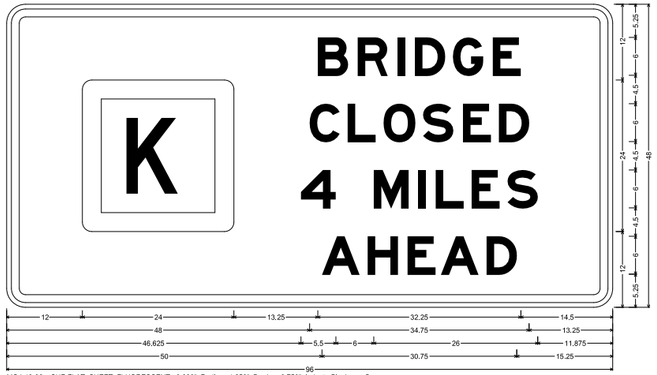
DURATION OF PROJECT
SHEET 1 OF 2
NOT TO SCALE



MO4-13-96 SHF-FLAT SHEET FLUORESCENT; 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;
[BRIDGE] E Mod; [CLOSED] E Mod; [1 MILE] E Mod; [AHEAD] E Mod;
Table of letter and object lefts.

□ 12.000	B 49.250	R 55.625	I 61.875	D 64.625	G 70.625	E 77.000
C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000	
I 51.500	M 59.250	I 66.375	L 69.125	E 74.750		
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

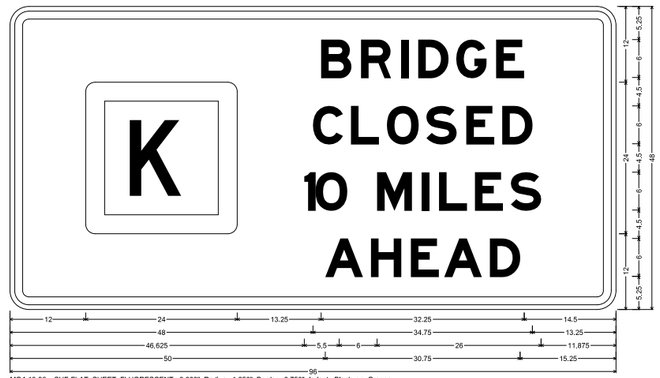
55A



MO4-13-96 SHF-FLAT SHEET FLUORESCENT; 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;
[BRIDGE] E Mod; [CLOSED] E Mod; [4 MILES] E Mod; [AHEAD] E Mod;
Table of letter and object lefts.

□ 12.000	B 49.250	R 55.625	I 61.875	D 64.625	G 70.625	E 77.000
C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000	
4 46.625	M 58.125	I 65.250	L 68.000	E 73.625	S 79.375	
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

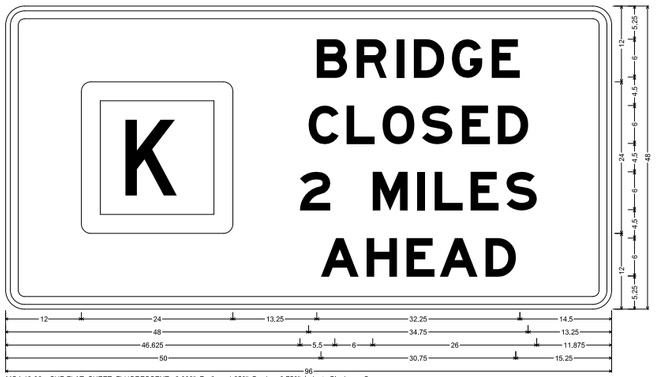
55B



MO4-13-96 SHF-FLAT SHEET FLUORESCENT; 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;
[BRIDGE] E Mod; [CLOSED] E Mod; [4 MILES] E Mod; [AHEAD] E Mod;
Table of letter and object lefts.

□ 12.000	B 49.250	R 55.625	I 61.875	D 64.625	G 70.625	E 77.000
C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000	
4 46.625	M 58.125	I 65.250	L 68.000	E 73.625	S 79.375	
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

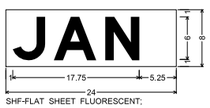
55C



MO4-13-96 SHF-FLAT SHEET FLUORESCENT; 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;
[BRIDGE] E Mod; [CLOSED] E Mod; [4 MILES] E Mod; [AHEAD] E Mod;
Table of letter and object lefts.

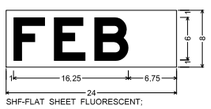
□ 12.000	B 49.250	R 55.625	I 61.875	D 64.625	G 70.625	E 77.000
C 48.000	L 54.000	O 59.750	S 66.000	E 72.250	D 78.000	
4 46.625	M 58.125	I 65.250	L 68.000	E 73.625	S 79.375	
A 50.000	H 57.125	E 63.500	A 68.750	D 76.000		

55D



SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[JAN] E Mod;
Table of letter and object lefts.

J 1.000	A 6.750	N 14.000



SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[FEB] E Mod;
Table of letter and object lefts.

F 1.000	E 6.750	B 12.375

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[MAR] E Mod;
Table of letter and object lefts.

M 1.000	A 7.750	R 15.000

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[APR] E Mod;
Table of letter and object lefts.

A 1.000	P 8.250	R 14.500

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[MAY] E Mod 75% spacing;
Table of letter and object lefts.

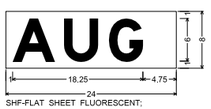
M 1.000	A 7.500	Y 13.750

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[JUN] E Mod;
Table of letter and object lefts.

J 1.000	U 7.125	N 13.375

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[JUL] E Mod;
Table of letter and object lefts.

J 1.000	U 7.000	L 13.375



SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[AUG] E Mod;
Table of letter and object lefts.

A 1.000	U 8.250	G 14.500

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[SEP] E Mod;
Table of letter and object lefts.

S 1.000	E 7.250	P 13.000

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[OCT] E Mod;
Table of letter and object lefts.

O 1.000	C 7.250	T 12.875

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[NOV] E Mod;
Table of letter and object lefts.

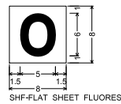
N 1.000	O 7.250	V 13.500

SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[DEC] E Mod;
Table of letter and object lefts.

D 1.000	E 7.250	C 13.000

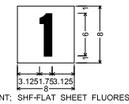
SHF-FLAT SHEET FLUORESCENT; No border, Black on Orange;
[ON] E Mod;
Table of letter and object lefts.

O 18.375	N 24.875



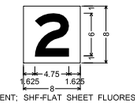
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[0] E Mod;
Table of letter and object lefts.

0 1.500



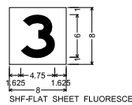
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[1] E Mod;
Table of letter and object lefts.

1 3.125



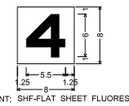
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[2] E Mod;
Table of letter and object lefts.

2 1.625



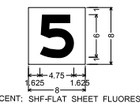
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[3] E Mod;
Table of letter and object lefts.

3 1.625



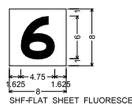
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[4] E Mod;
Table of letter and object lefts.

4 1.250



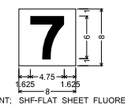
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[5] E Mod;
Table of letter and object lefts.

5 1.625



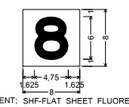
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[6] E Mod;
Table of letter and object lefts.

6 1.625



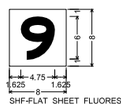
SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[7] E Mod;
Table of letter and object lefts.

7 1.625



SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[8] E Mod;
Table of letter and object lefts.

8 1.625



SHF-FLAT SHEET FLUORESCENT;
No border, Black on Orange;
[9] E Mod;
Table of letter and object lefts.

9 1.625

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER

VOLUNTARY ELECTRONIC SEAL
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	10

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TEMP. TRAFFIC CONTROL

SIGN DETAILS
SHEET 2 OF 2
NOT TO SCALE

SCALE

0 30 60 90

435

440

OUTFALL #1

OUTFALL #2

S87°40'12"E

OUTFALL #3

TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- TEMPORARY BERM TYPE C
- SILT FENCE

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER

ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	11

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

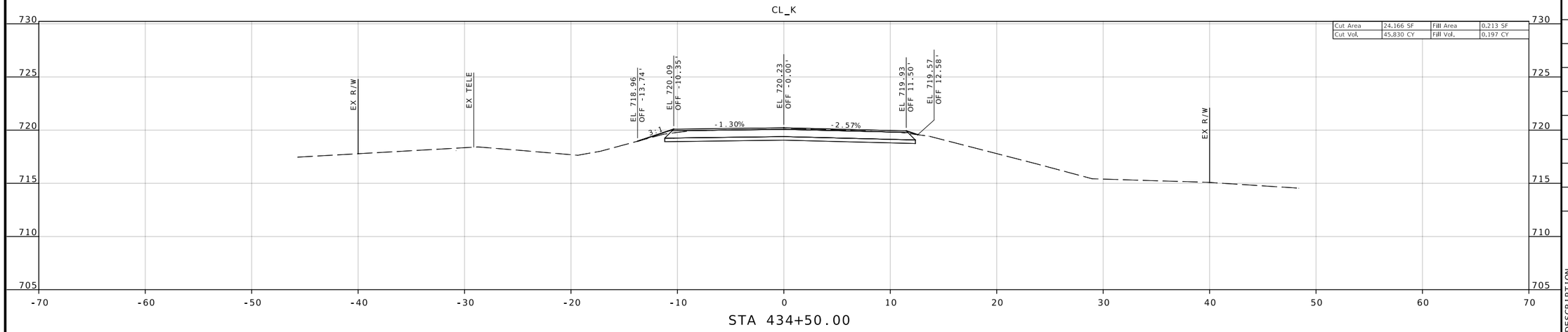
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

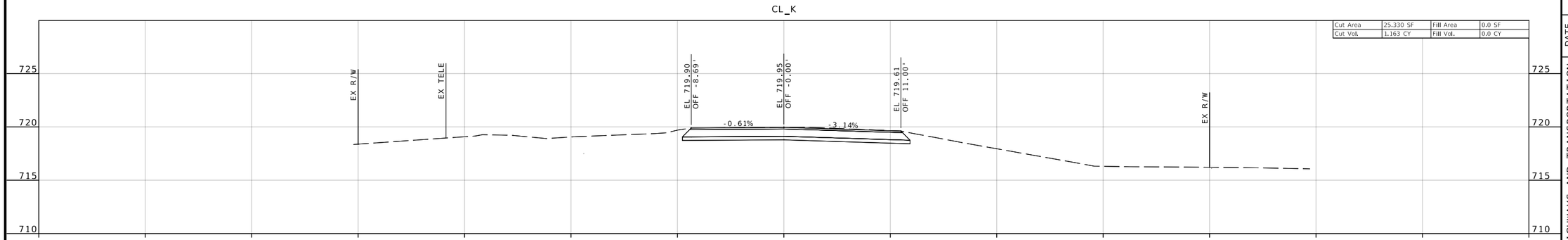
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

EROSION CONTROL SHEET

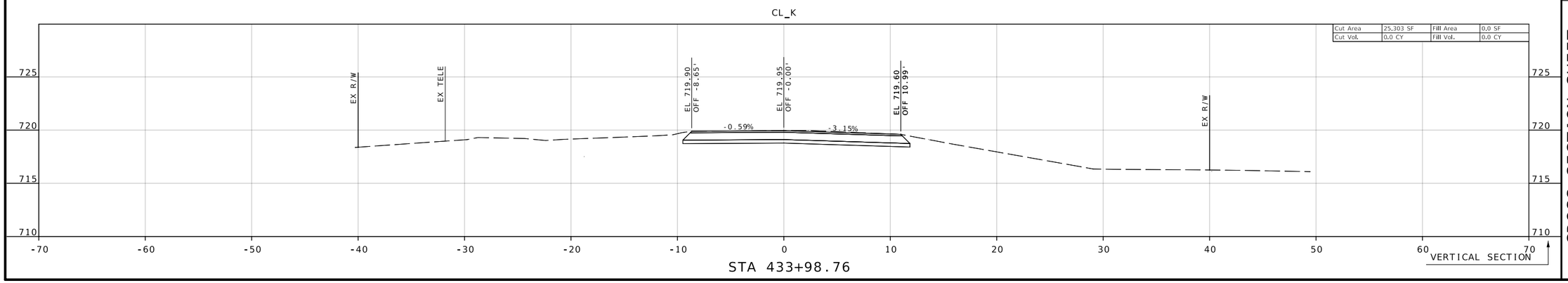
SHEET 1 OF 1



STA 434+50.00



STA 434+00.00



STA 433+98.76

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER

ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	1

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

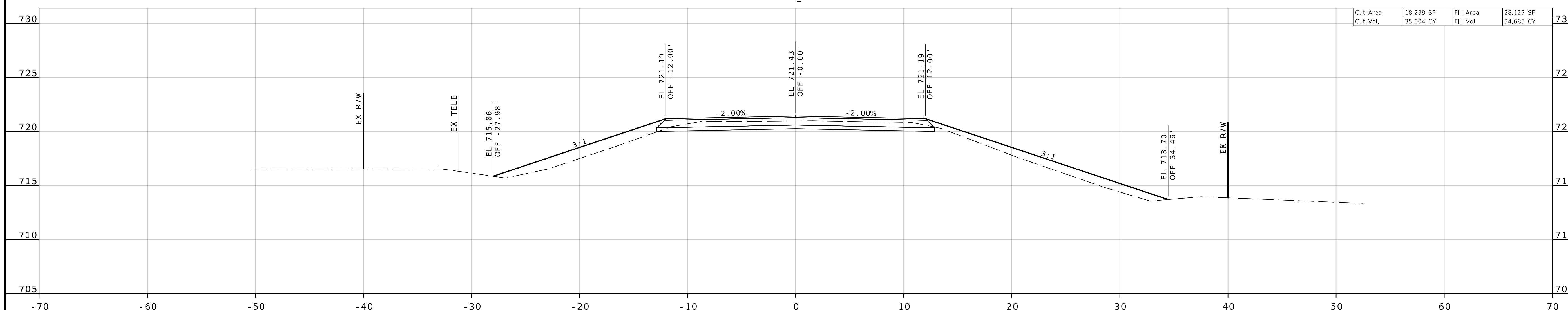
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CROSS SECTION SHEET

SHEET 1 OF 10

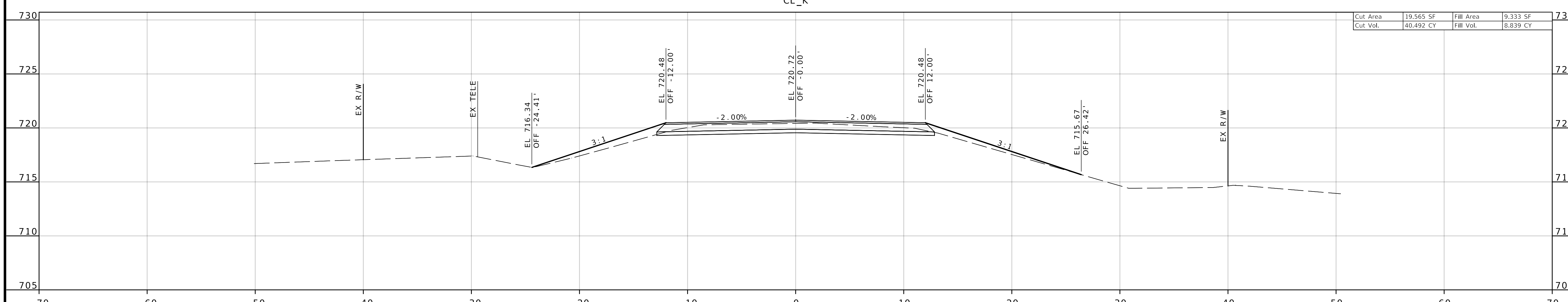
CL_K



Cut Area	18.239 SF	Fill Area	28.127 SF
Cut Vol.	35.004 CY	Fill Vol.	34.685 CY

STA 435+50.00

CL_K



Cut Area	19.565 SF	Fill Area	9.333 SF
Cut Vol.	40.492 CY	Fill Vol.	8.839 CY

STA 435+00.00

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER
PE-2010000877
PROFESSIONAL ENGINEER

ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED	8/8/2024
ROUTE	K
STATE	MO
DISTRICT	NE
SHEET NO.	2
COUNTY	AUDRAIN
JOB NO.	J2S3314
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

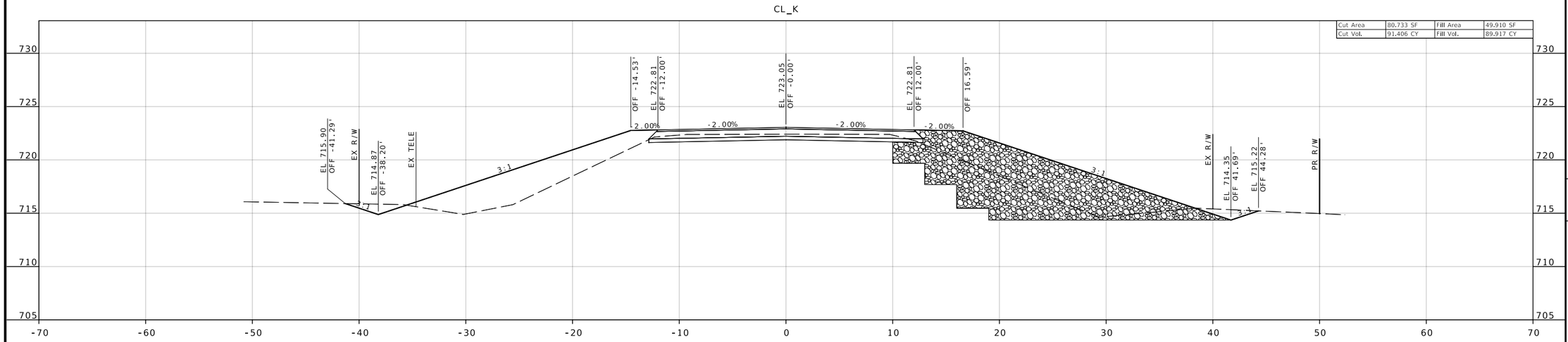
DATE

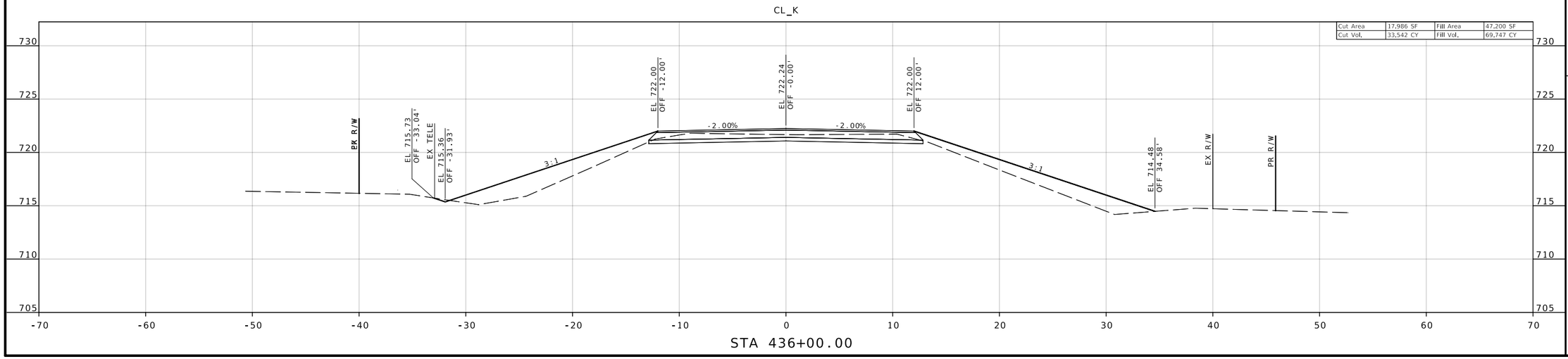
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CROSS SECTION SHEET

SHEET 2 OF 10





STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER

VOID UNLESS E-SIGNED PER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	3

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

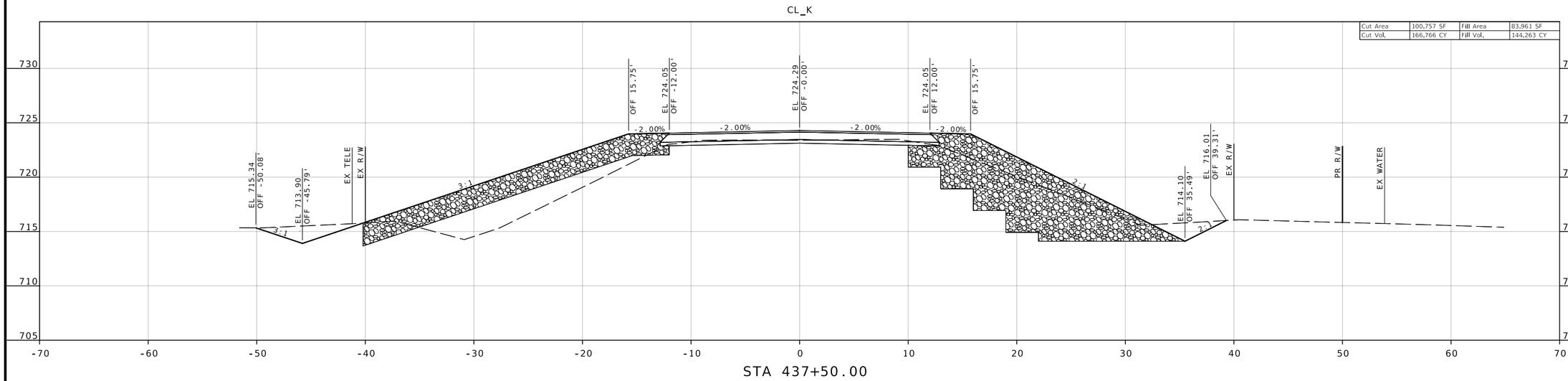
DESCRIPTION	DATE

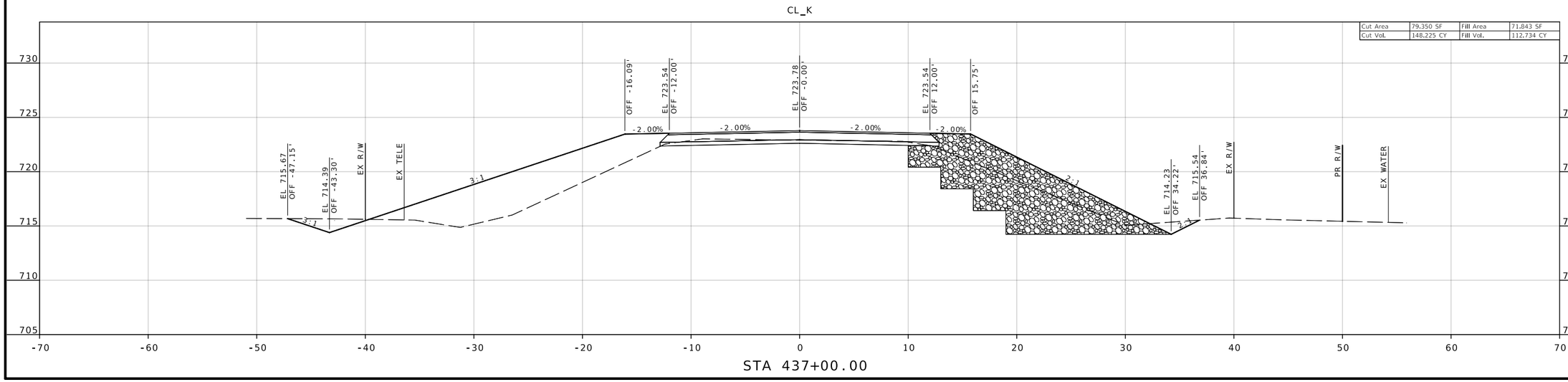
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

CROSS SECTION SHEET

SHEET 3 OF 10





STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
VERIFICATION 11.05.01 PMR
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
NE	4

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

CROSS SECTION SHEET

SHEET 4 OF 10

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER

ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	5

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

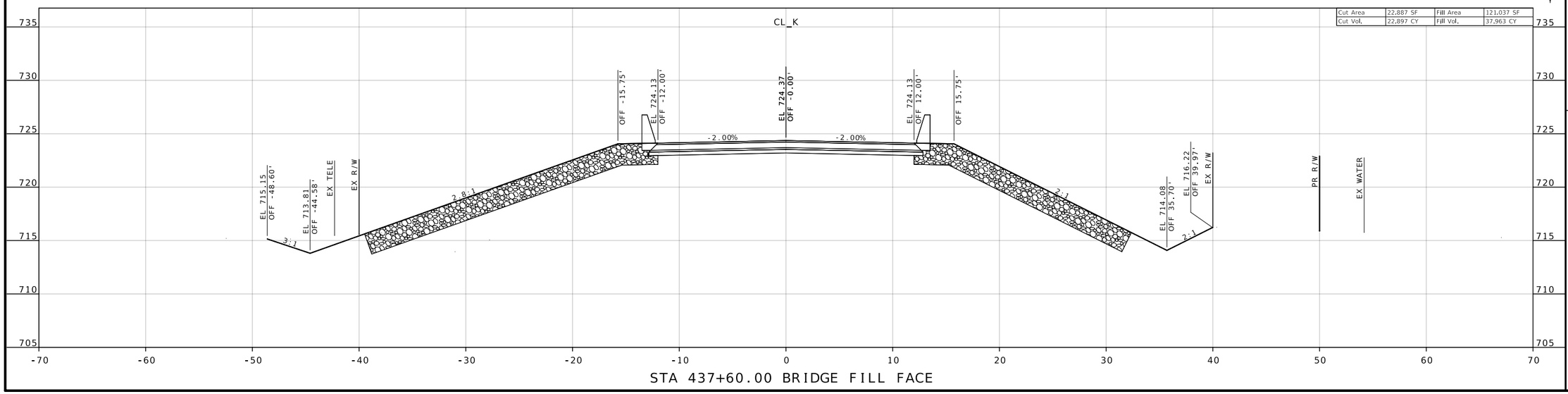
CROSS SECTION SHEET

SHEET 5 OF 10

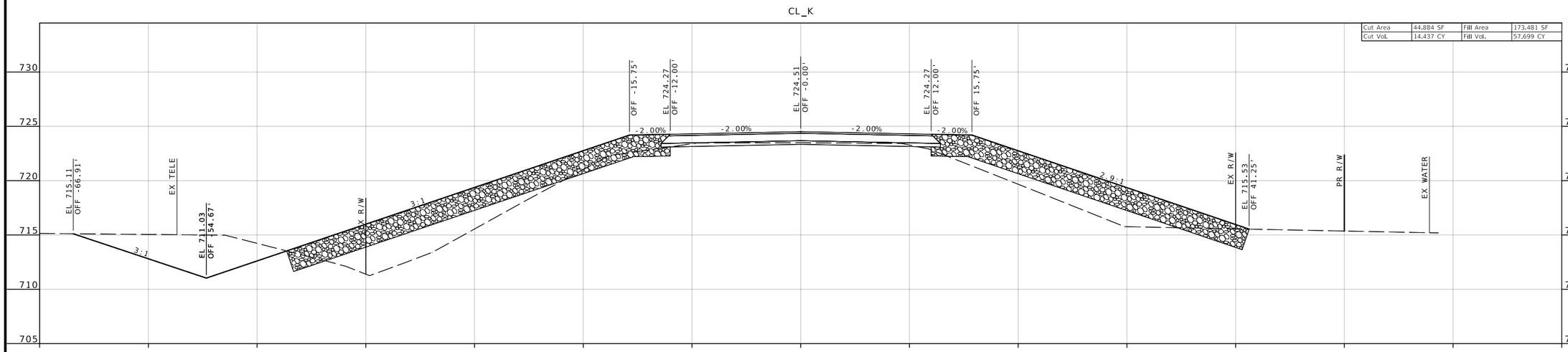
WEST SPILL FILL ADD YARDAGE: FILL: 55.378 CY CUT: 71.322 CY

VERTICAL SECTION
BRIDGE EXCEPTION

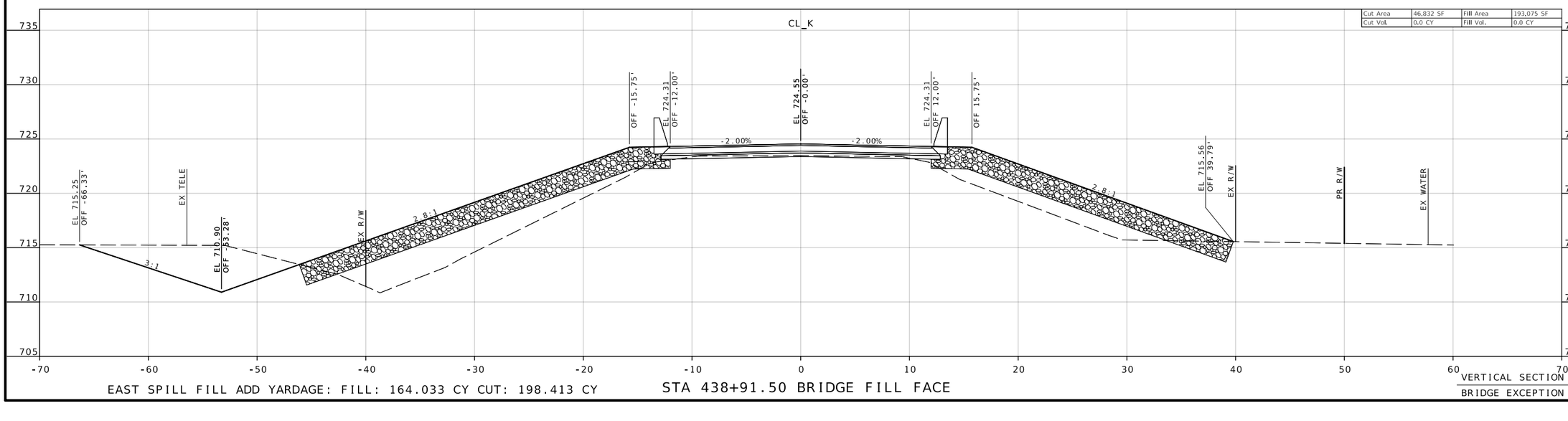
Cut Area	22.887 SF	Fill Area	121.037 SF
Cut Vol.	22.897 CY	Fill Vol.	37.963 CY



STA 437+60.00 BRIDGE FILL FACE



STA 439+00.00



EAST SPILL FILL ADD YARDAGE: FILL: 164.033 CY CUT: 198.413 CY

STA 438+91.50 BRIDGE FILL FACE

VERTICAL SECTION
BRIDGE EXCEPTION

STATE OF MISSOURI
ZACHARY S. WALKER
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ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	6

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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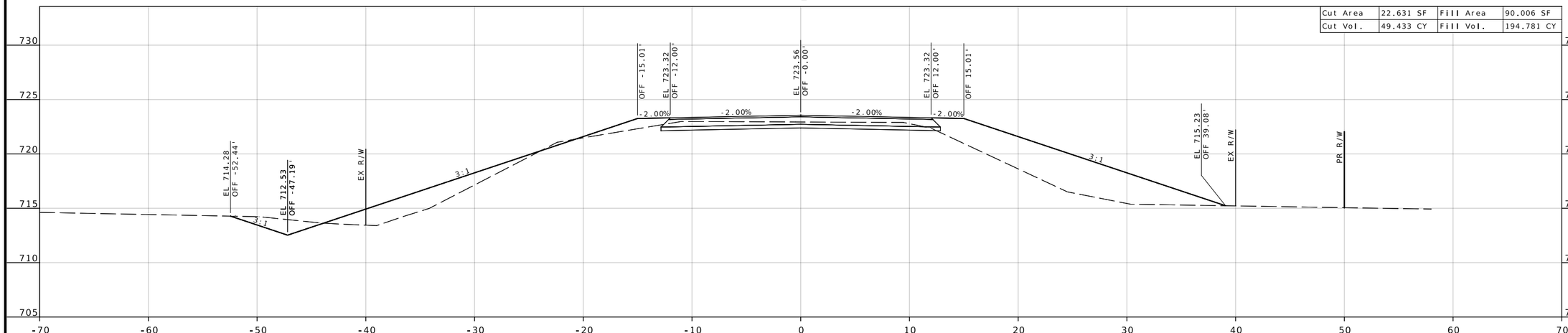
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CROSS SECTION SHEET

SHEET 6 OF 10

CL_K

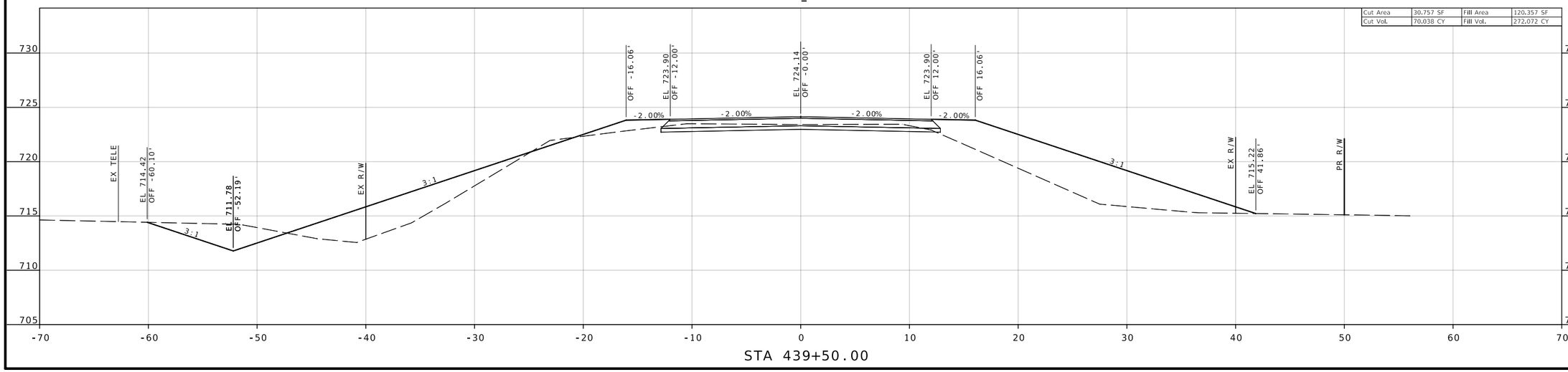
Cut Area	22.631 SF	Fill Area	90.006 SF
Cut Vol.	49.433 CY	Fill Vol.	194.781 CY



STA 440+00.00

CL_K

Cut Area	30.757 SF	Fill Area	120.357 SF
Cut Vol.	70.038 CY	Fill Vol.	272.072 CY



STA 439+50.00

STATE OF MISSOURI
ZACHARY S. WALKER
NUMBER PE-2010000877
PROFESSIONAL ENGINEER
ZACHARY S. WALKER - CIVIL
MO-PE-2010000877

DATE PREPARED
8/8/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
NE	7

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

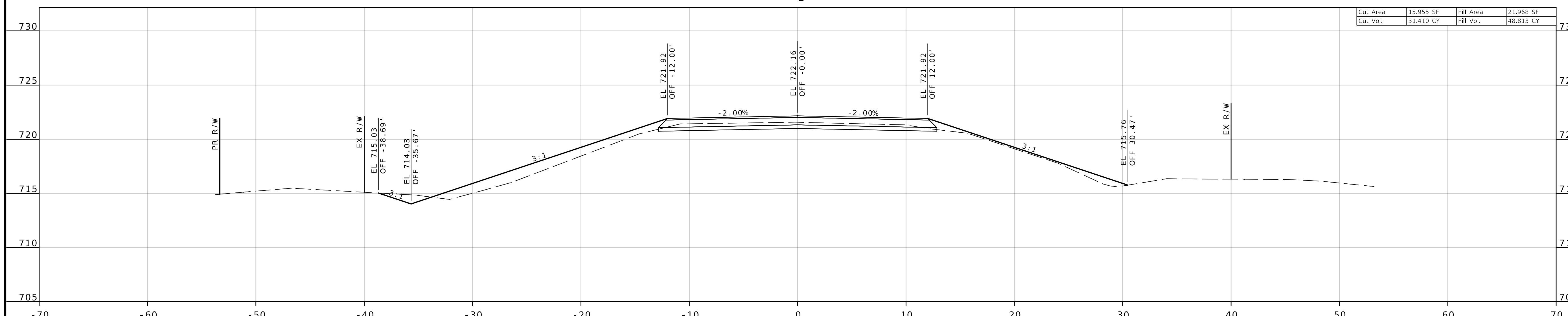
DESCRIPTION	DATE

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

CROSS SECTION SHEET

SHEET 7 OF 10

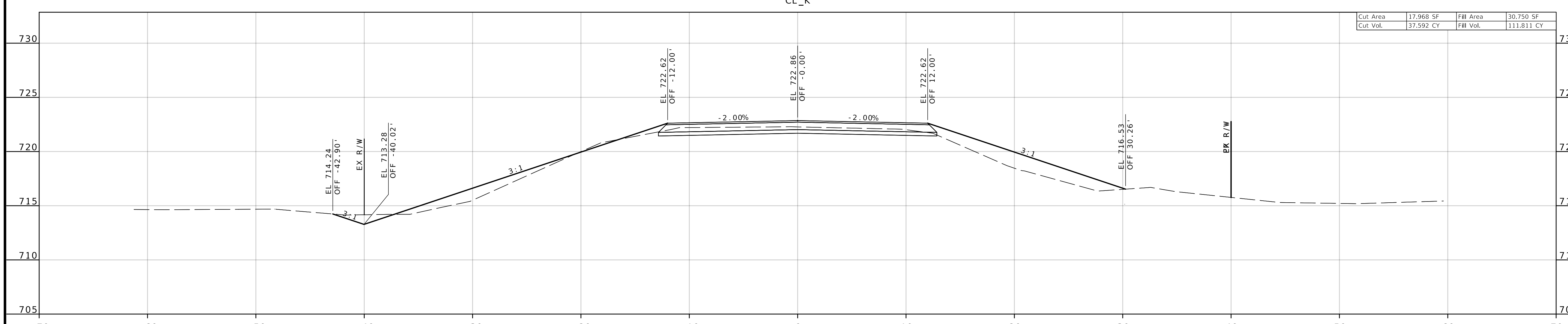
CL_K



Cut Area	15.955 SF	Fill Area	21.968 SF
Cut Vol.	31.410 CY	Fill Vol.	48.813 CY

STA 441+00.00

CL_K



Cut Area	17.968 SF	Fill Area	30.750 SF
Cut Vol.	37.592 CY	Fill Vol.	111.811 CY

STA 440+50.00

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ZACHARY S. WALKER
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DISTRICT	SHEET NO.
NE	8

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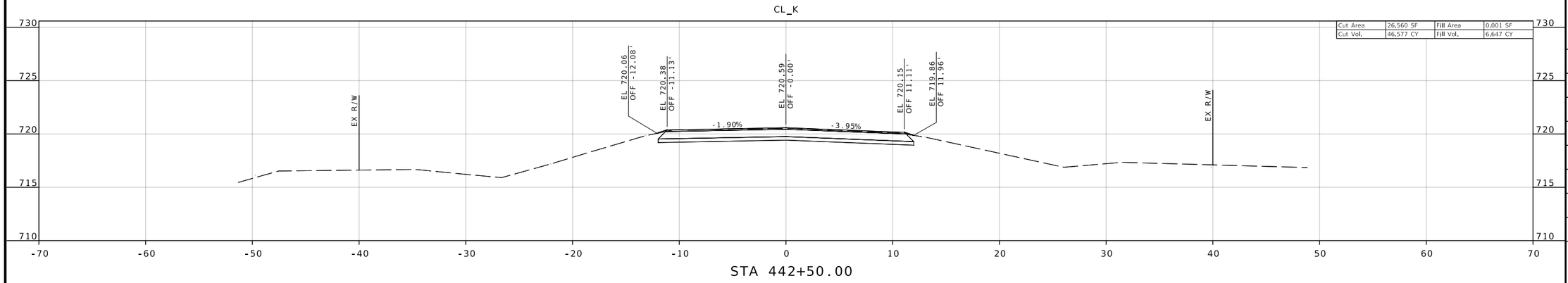
CROSS SECTION SHEET

SHEET 8 OF 10



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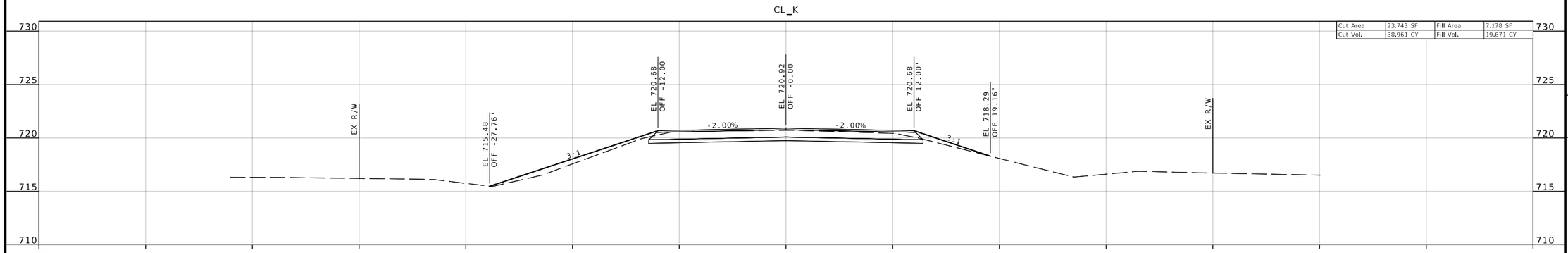

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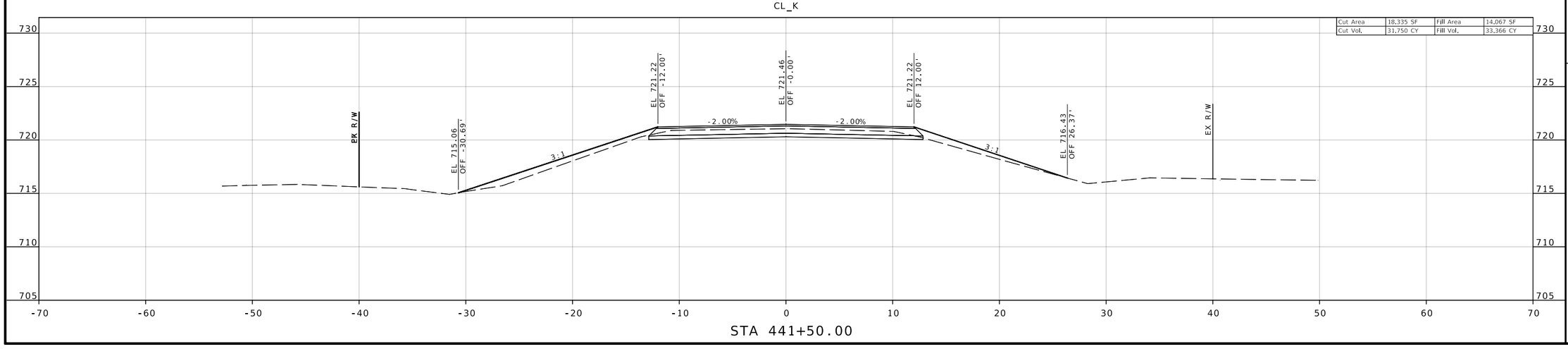

STA 441+50.00

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VERIFICATION 11:09:34 PMR
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ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
NE	9

COUNTY
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JOB NO.
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CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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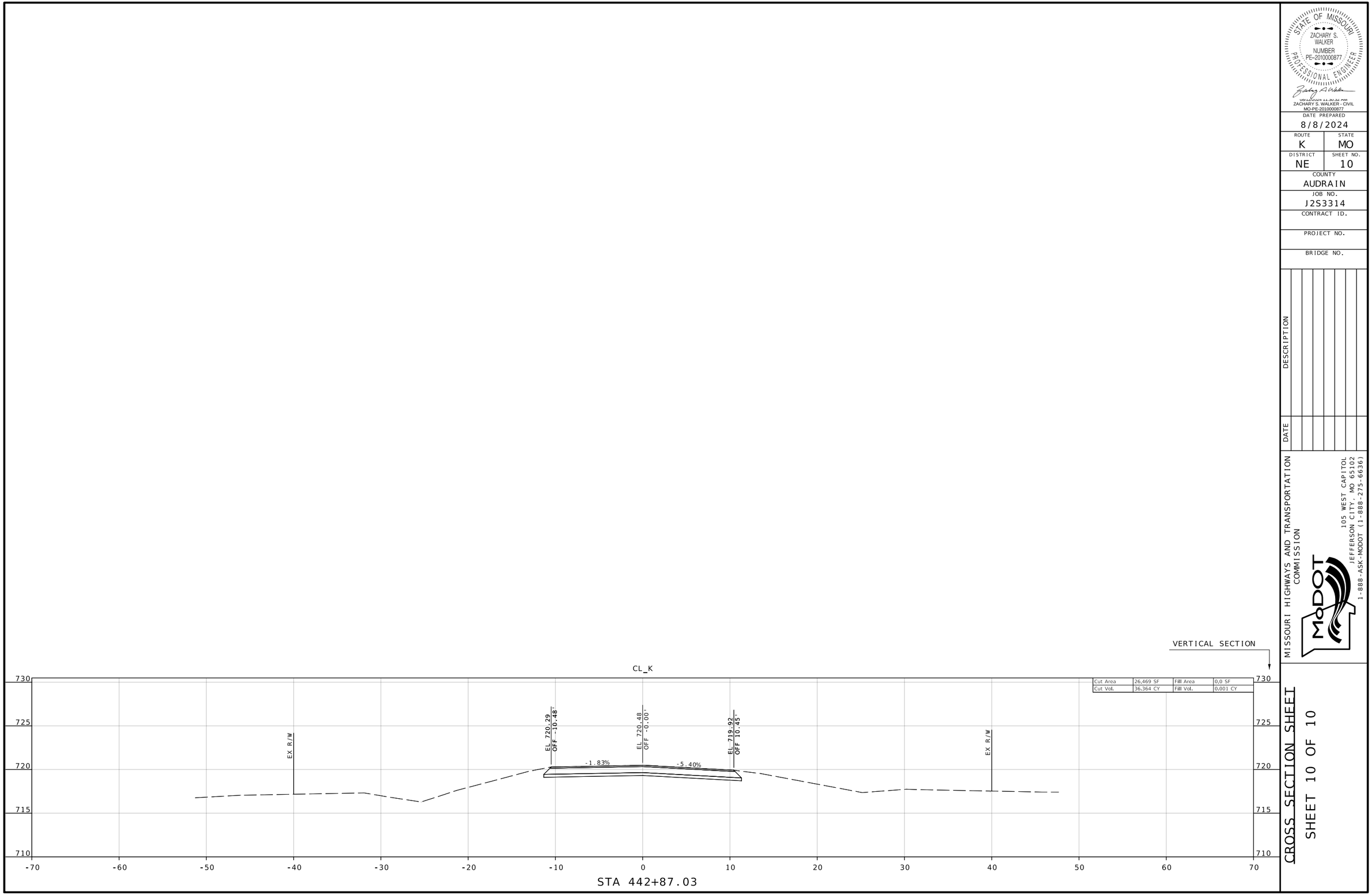
CROSS SECTION SHEET

SHEET 9 OF 10



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NE	10

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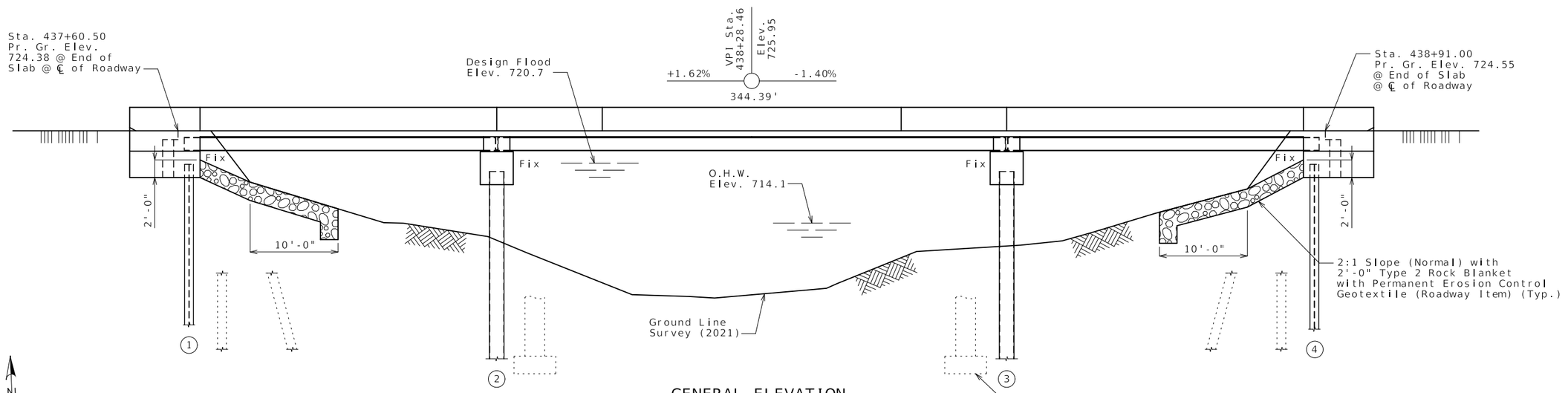
CROSS SECTION SHEET

SHEET 10 OF 10

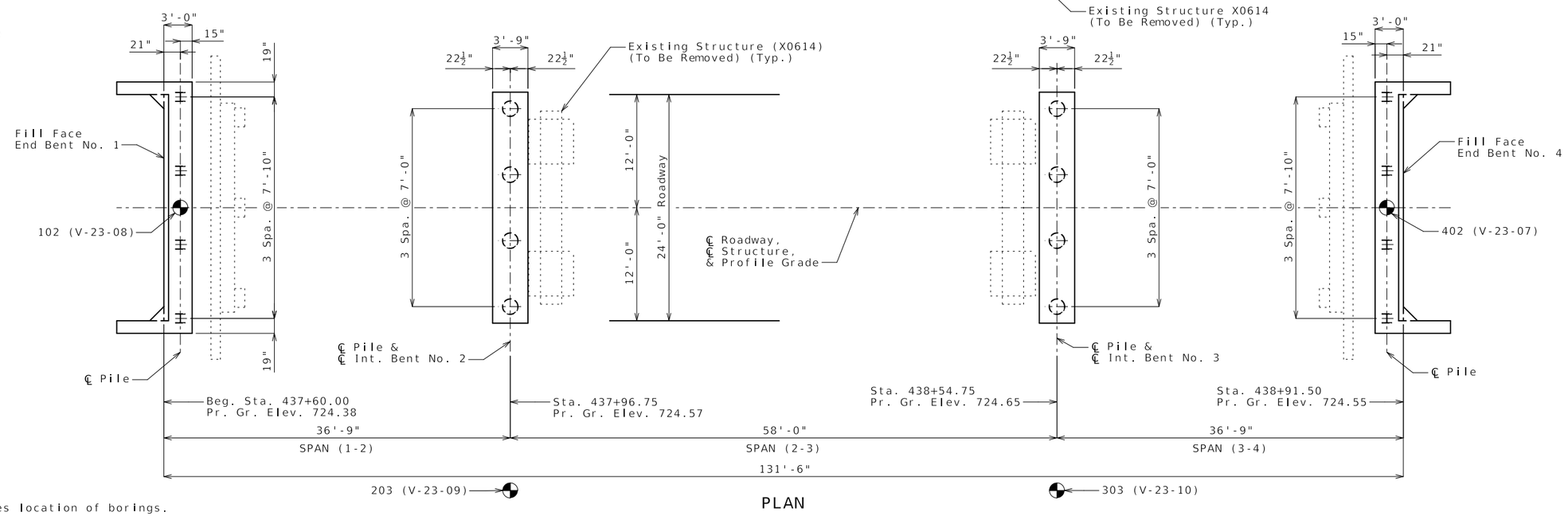
(35'-58'-35') CONTINUOUS COMPOSITE GALVANIZED STEEL WIDE FLANGE BEAM SPANS (SKEW: SQUARE)

SEC/SUR 13 TWP 51N RGE 6W



GENERAL ELEVATION

N



PLAN

℄ 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 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. 26 and are included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

Notes:

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

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.

B.M. 1-21
CHISELED "X" IN NW WINGWALL OF BRIDGE 11.82'
N = 1279970.60, E = 2788340.57
LT, STA. 437+65.55, ELEV. = 724.14

B.M. 2-21
CHISELED "X" ON SE WINGWALL OF BRIDGE 11.71'
N = 1279970.60, E = 2788340.57
RT, STA. 438+85.43, ELEV. = 724.16

BRIDGE: ROUTE K OVER HICKORY CREEK

ROUTE K FROM HWY 54 TO RTE W
ABOUT 1.7 MILES WEST OF RTE W
BEG. STATION 437+60.00

Designed Apr. 2024
Detailed May 2024
Checked June 2024

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

STATE OF MISSOURI
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DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9318

DESCRIPTION	DATE

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

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	50		50
Removal of Bridges (X0614)	lump sum			1
Bridge Approach Slab (Minor)	sq. yd.		110	110
Galvanized Structural Steel Piles (12 in)	linear foot		302	302
Galvanized Cast-In-Place Piles (16 in)	linear foot	280		280
Dynamic Pile Testing	each	2		2
Pile Point Reinforcement	each	16		16
Class B Concrete (Substructure)	cu. yard	47.2		47.2
Slab on Steel	sq. yd.		387	387
Type H Barrier	linear foot		283	283
Reinforcing Steel (Bridges)	pound	3,800		3,800
Fabricated Structural Carbon or Low Alloy Steel (I-Beam)	pound		66,500	66,500
Slab Drains	each		16	16
Galvanizing Structural Steel	lump sum		1	1
Vertical Drains at End Bents	each	2		2
Plain Neoprene Bearing Pads	each		8	8
Laminated Neoprene Bearing Pads	each		16	16

Notes:

All concrete between the upper and lower construction joint in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Steel.

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

All concrete above the intermediate beam cap, except for barriers is included in the Estimated Quantities for Slab on Steel.

Fabricated Structural Carbon Steel (Misc.) shall be galvanized in accordance with ASTM A123 and Sec. 1080.

Structural Steel shall be galvanized in accordance with ASTM A123 and Sec. 1081.

The minimum number of hours required to cure the diaphragm concrete at the bents, as mentioned elsewhere in the plans, may be reduced down to a minimum of 12 hours, if the diaphragm concrete reaches a minimum compressive strength of 3000 psi.

Estimated Quantities for Slab on Steel

Item		Total
Class B-2 Concrete	cu. yard	115
Reinforcing Steel (Galvanized)	pound	33,746

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

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC4 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.

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.).

For details and notes of optional stay-in-place corrugated steel forms, see Sheet No. 19.

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, SD1 = 0.203g Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.151g

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 (Superstructure except Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A706 Grade 60)	f'c = 60,000 psi
Structural Steel (ASTM A709 Grade 50)	fy = 50,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi
Welded or Seamless Steel Shell (Pipe) for CIP Pile (ASTM A252 Modified Grade 3)	fy = 45,000 psi

Neoprene Pads:
Neoprene bearing pads shall be 60 durometer and shall be in accordance with Sec716.

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

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

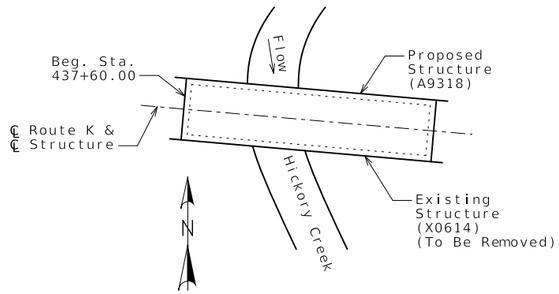
Traffic Handling:
Structure to be closed during construction. Traffic to be maintained on other routes during construction. See Roadway plans for traffic control details.

Fabricated Steel Connections:
Field connections shall be made with 3/4" diameter ASTM F3125 Grade A325 Type 1 bolts and 13/16 diameter holes, except as noted.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec. 106.

Hydrologic Data

Drainage Area = 32 mi^2
Design Flood Frequency = 25 years
Design Flood Discharge = 6,200 cfs
Design Flood (D.F.) Elevation = 720.7
Base Flood (100-year)
Base Flood Elevation = 721.6
Base Flood Discharge = 8,400 cfs
Estimated Backwater = 1.5 ft
Average Velocity thru Opening = 5.4 ft/s
Freeboard (50-year)
Freeboard Flood Elevation = 720.6 ft
Freeboard = 1.6 ft
Roadway Overtopping
Overtopping Flood Discharge = 5,300 cfs
Overtopping Flood Frequency = 17 years
Overtopping Flood Elevation = 720.0 ft



LOCATION SKETCH

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 12x53	OECIP 16"	OECIP 16"	HP 12x53
	Number	ea	4	4	4	4
	Approximate Length Per Each	ft	37.5	35	35	38
	Pile Point Reinforcement	ea	4	4	4	4
	Min. Galvanized Penetration (Elev.)	ft	Full Length	Full Length	Full Length	Full Length
	Est. Max. Scour Depth (Elev.)	ft	692.7	695.1	695.2	692.3
	Minimum Tip Penetration (Elev.)	ft	682.7	685.1	685.2	682.3
	Criteria for Min. Tip Penetration		(1)	(2)	(2)	(1)
	Pile Driving Verification Method		DF	DT	DT	DF
	Resistance Factor		0.4	0.65	0.65	0.4
	Minimum Nominal Axial Compressive Resistance	kip	334	348	346	335

OECIP = Open Ended Cast-In-Place Concrete Pile

DF = FHWA-modified Gates Dynamic Pile Formula

DT = Dynamic Testing

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

(1) Min. Embedment into Natural Ground

(2) Scour

Estimated Maximum Scour Depth (Elevation) shown is for verifying Minimum Nominal Axial Compressive Resistance using dynamic testing only where pile resistance contribution above this elevation shall not be considered.

Note:

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.

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

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.

GENERAL NOTES AND QUANTITIES

Detailed May 2024
Checked July 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
10/02/2024 6:49:38 AM
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DATE PREPARED
10/2/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9318

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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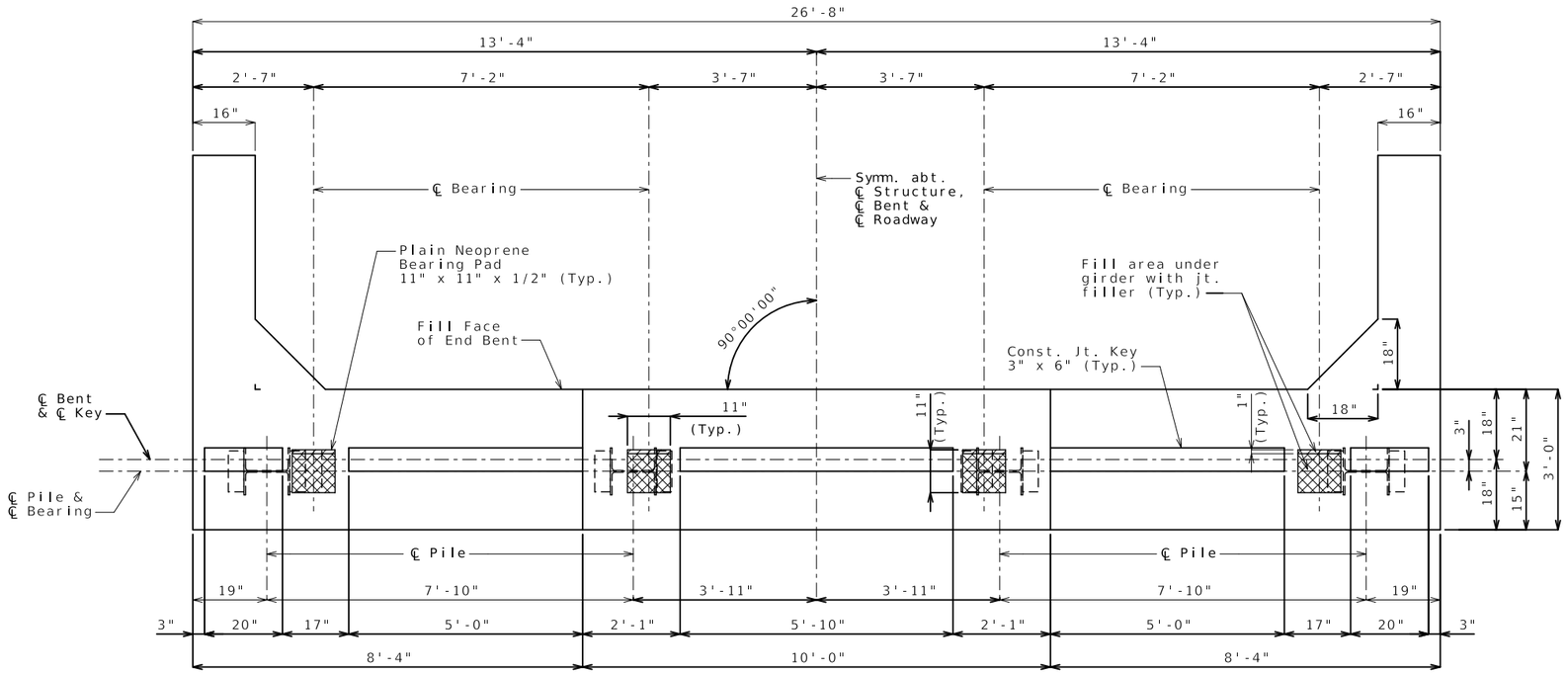
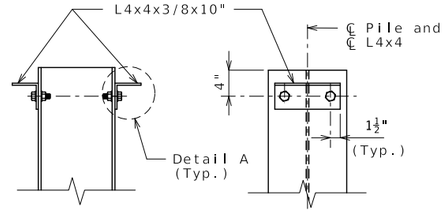
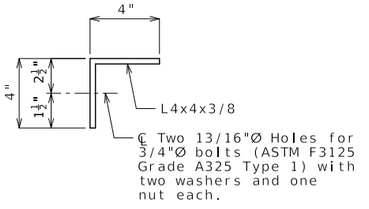


PLAN OF END BENT BEAM SHOWING DIMENSIONS

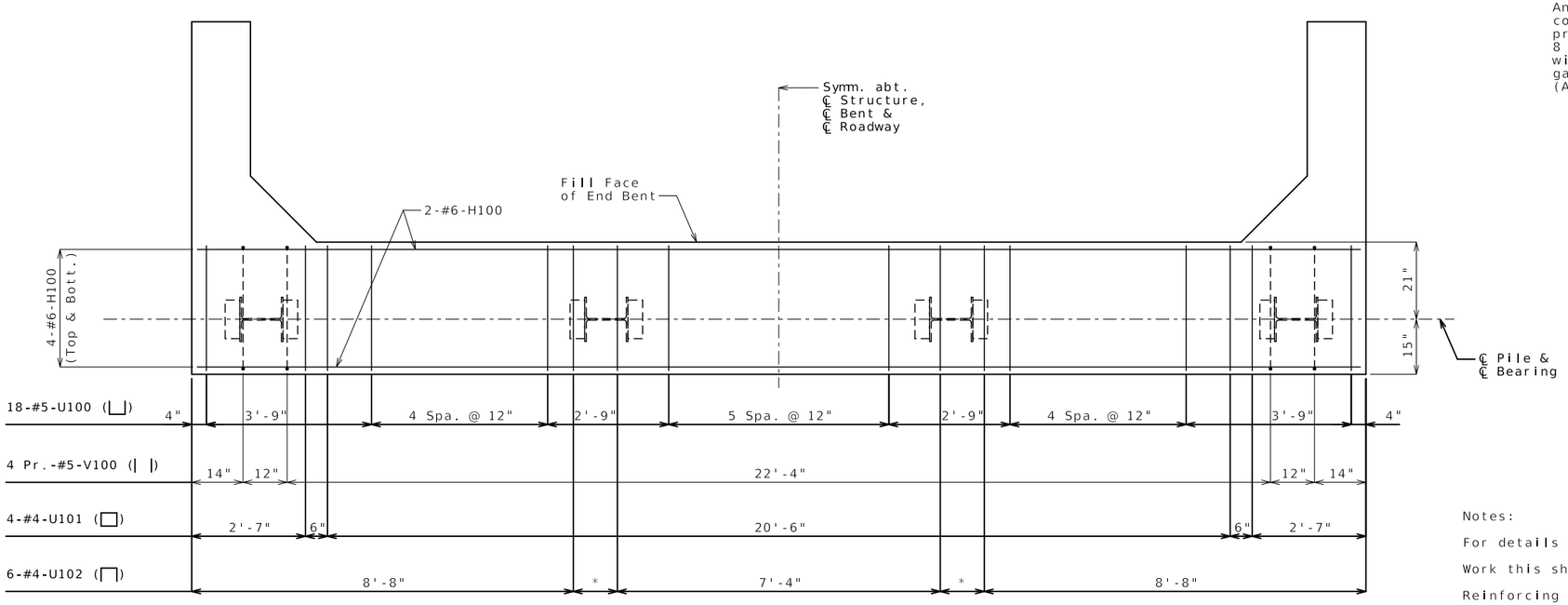


DETAILS OF HP PILE ANCHORS



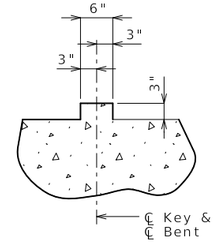
DETAIL A

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
Note: Keys not shown for clarity

* 2 Spa. @ 6"



SECTION THRU KEY

Notes:

For details of vertical drain at end bents, see Sheet No. 6.

Work this sheet with Sheets No. 4 & 5.

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½".

DETAILS OF END BENT NO. 1

Detailed May 2024
Checked June 2024

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

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TIMOTHY D. LEAF
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ROUTE	STATE
K	MO
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BR	3

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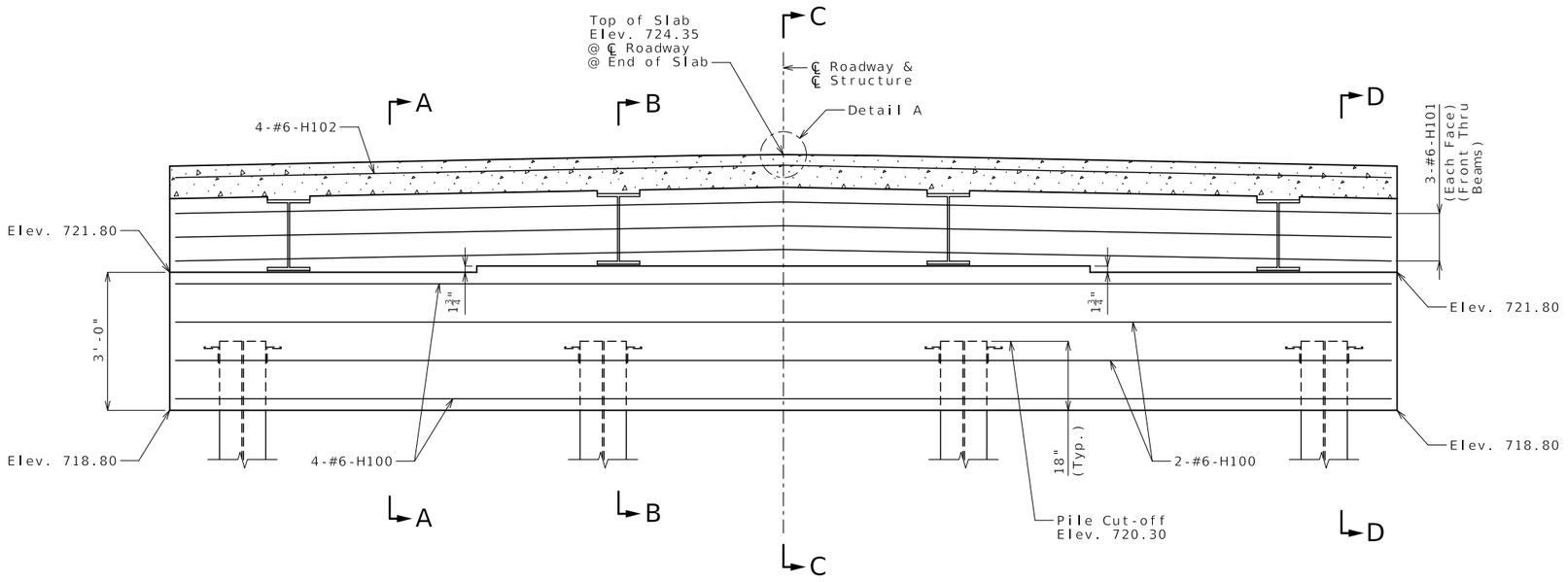
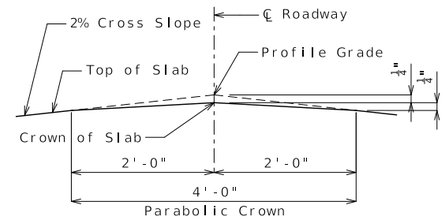
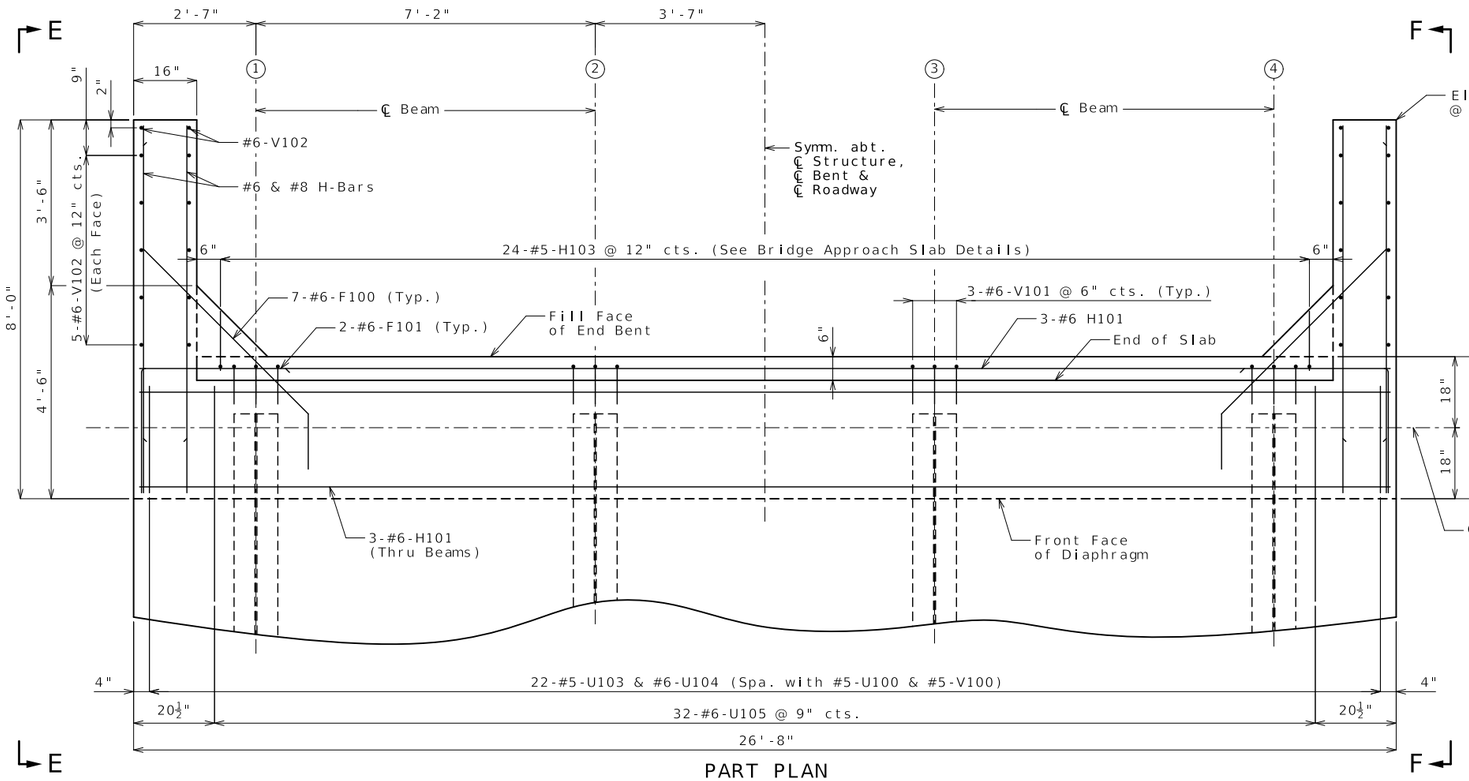


SECTION NEAR END BENT



DETAIL A



PART PLAN

DETAILS OF END BENT 1

Notes:

Work this sheet with Sheets No. 3 & 5.

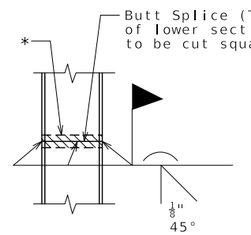
For Sections A-A, B-B, C-C, D-D and Elevations E-E and F-F, see Sheet No. 5.

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

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

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

For details of bridge approach slab, see Sheet No. 22.



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	25
Structural Steel Pile (12 in.)	linear foot	150
Pile Point Reinforcement	Each	4
Class B Concrete (Substructure)	cu. yard	10.9

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

STATE OF MISSOURI
TIMOTHY D. LEAF
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ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
AUDRAIN

JOB NO.
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DESCRIPTION

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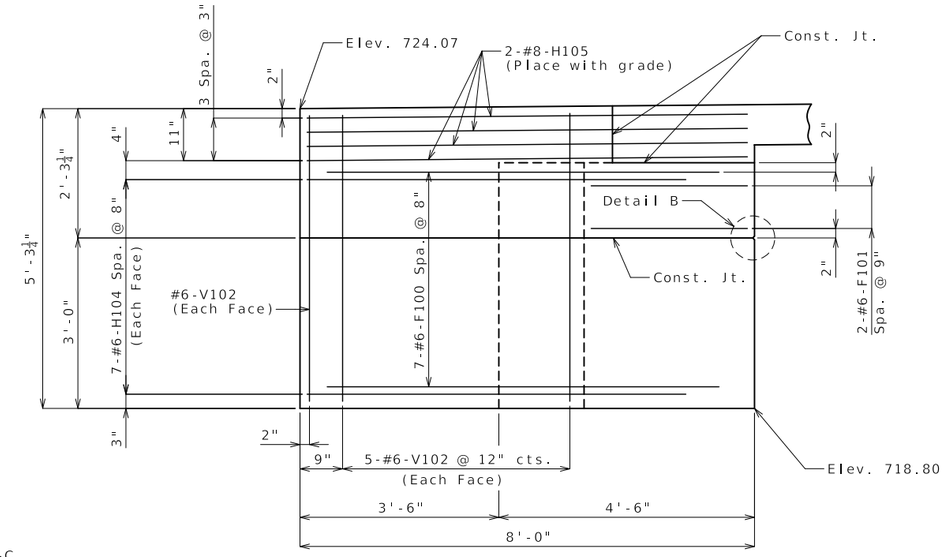
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed May 2024
Checked July 2024

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



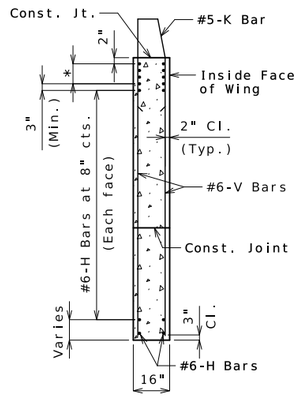
ELEVATIONS E-E & F-F

Notes:

Work this sheet with Sheets 3 & 4.

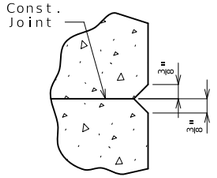
For locations of Sections A-A, B-B, C-C & D-D and Elevations of E-E & F-F, see Sheet 4.

For reinforcement of barrier, see Sheet 21.

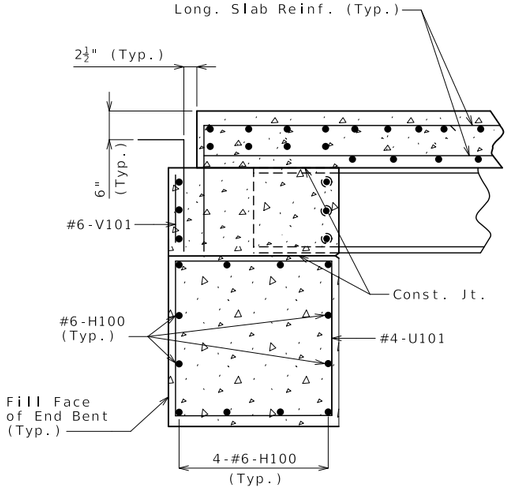


TYPICAL SECTION THRU WING

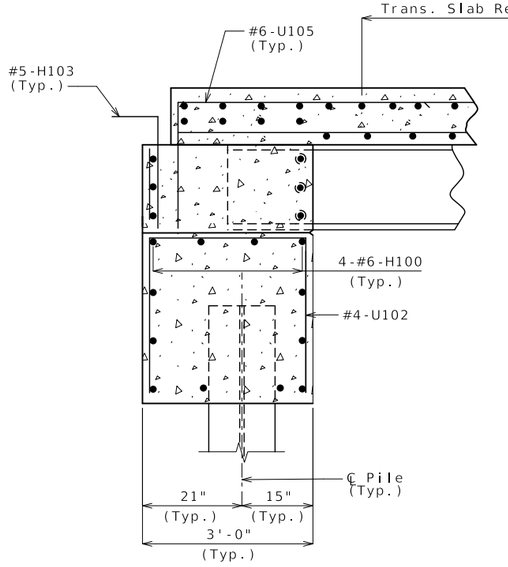
* #8-H Bars at 3" cts. (Each face)(Place with grade)



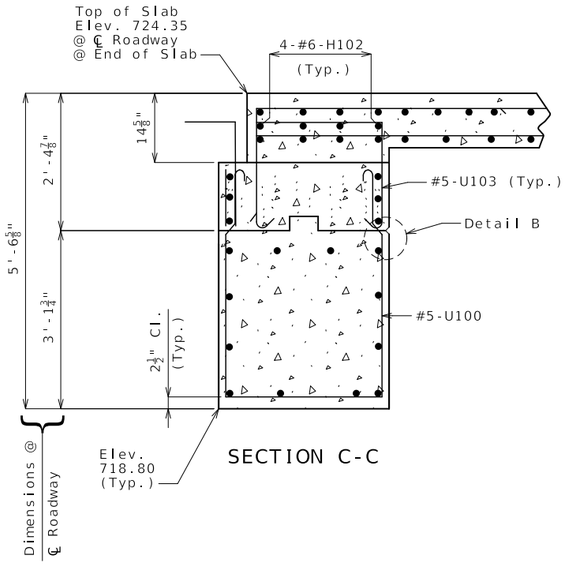
DETAIL B



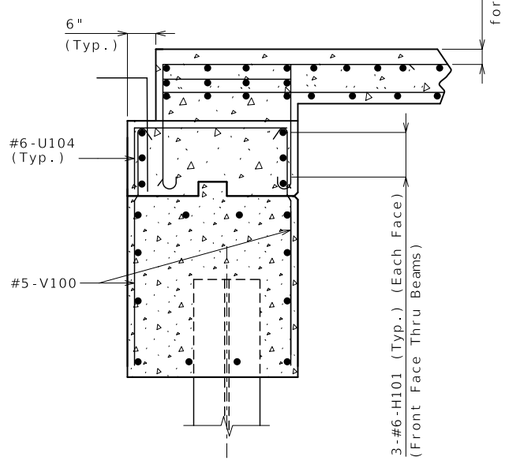
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

END BENT NO. 1 DETAILS

Detailed May 2024
Checked June 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 2:59:42 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
AUDRAIN

JOB NO.
J2S3314

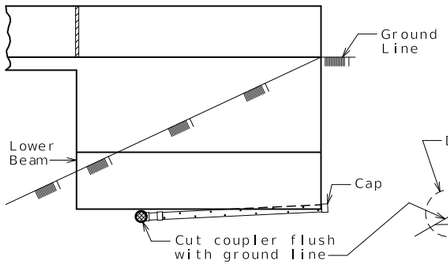
CONTRACT ID.

PROJECT NO.

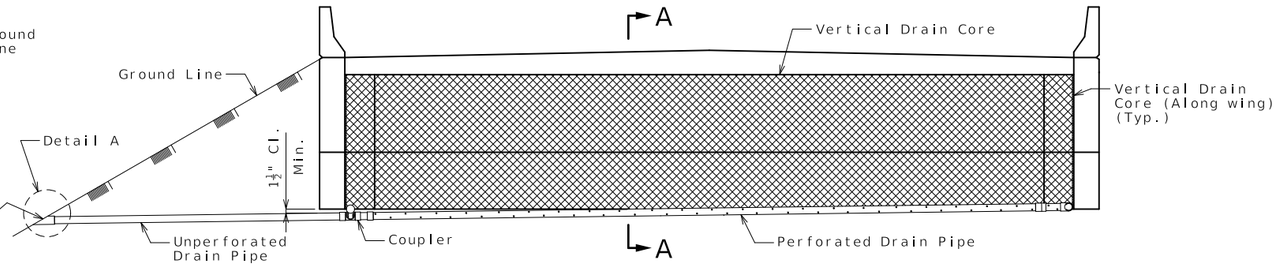
BRIDGE NO.
A9318

DESCRIPTION	DATE

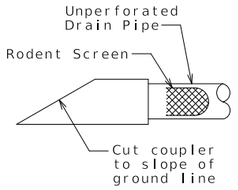
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



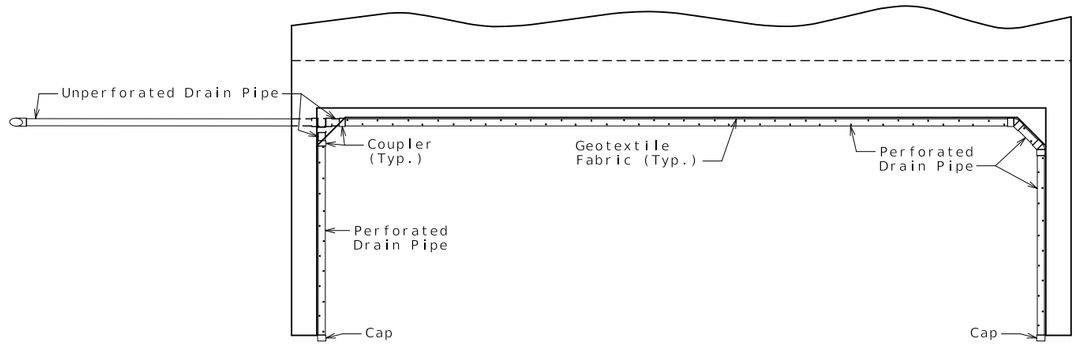
ELEVATION OF WING



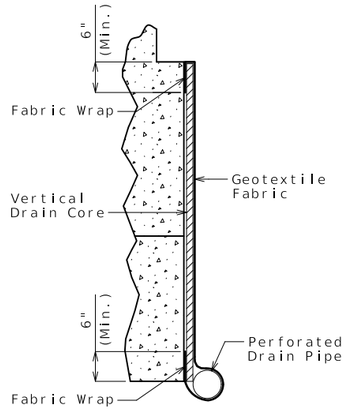
ELEVATION OF END BENT



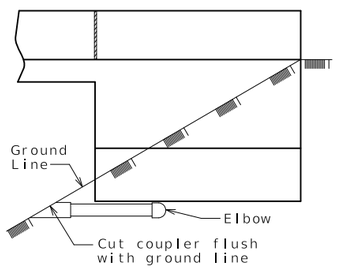
DETAIL A



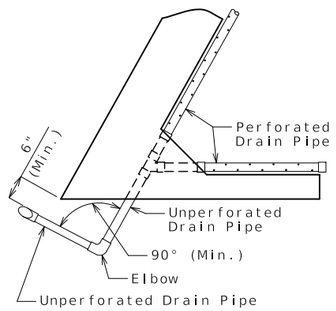
PLAN OF END BENT



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
08/30/2024 2:59:59 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

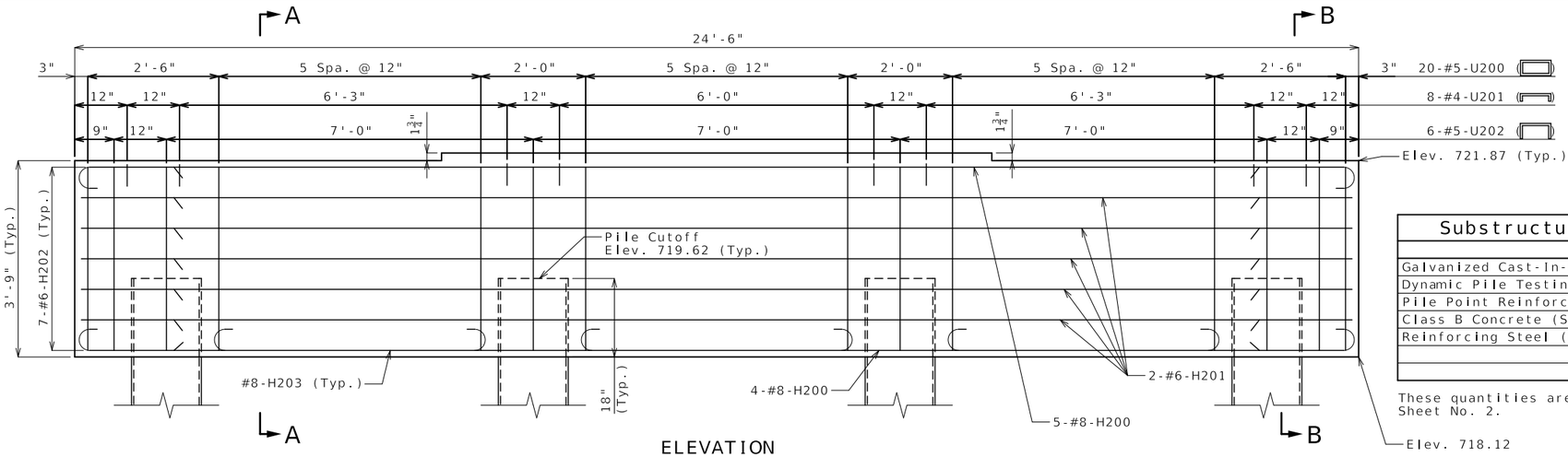
DATE PREPARED: 8/30/2024
ROUTE: K
STATE: MO
DISTRICT: BR
SHEET NO.: 6
COUNTY: AUDRAIN
JOB NO.: J2S3314
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9318

DESCRIPTION | DATE

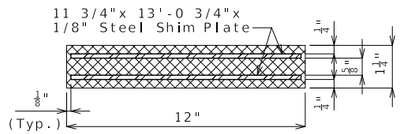
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed May 2024
Checked June 2024

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



ELEVATION

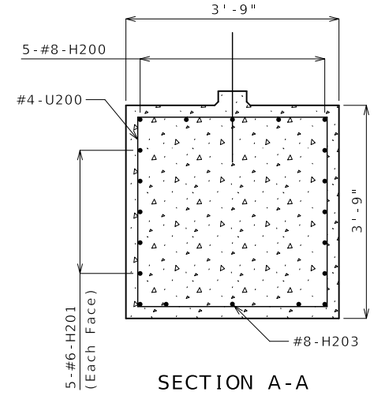


TYPICAL SECTION
THRU LAMINATED
NEOPRENE BEARING PAD

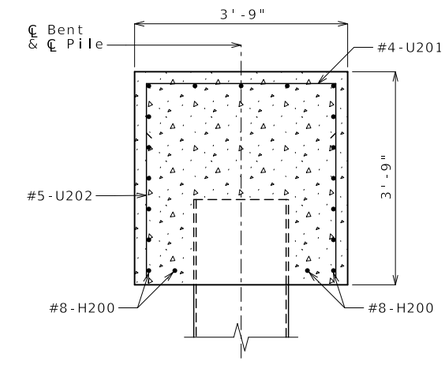
Substructure Quantity Table for Bent No. 2

Item		Quantity
Galvanized Cast-In-Place Piles (16 in)	linear foot	140
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	12.7
Reinforcing Steel (Bridges)	pound	1902

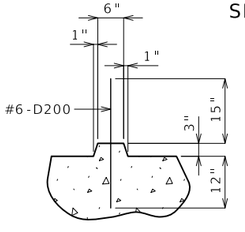
These quantities are included in the Estimated Quantities table on Sheet No. 2.



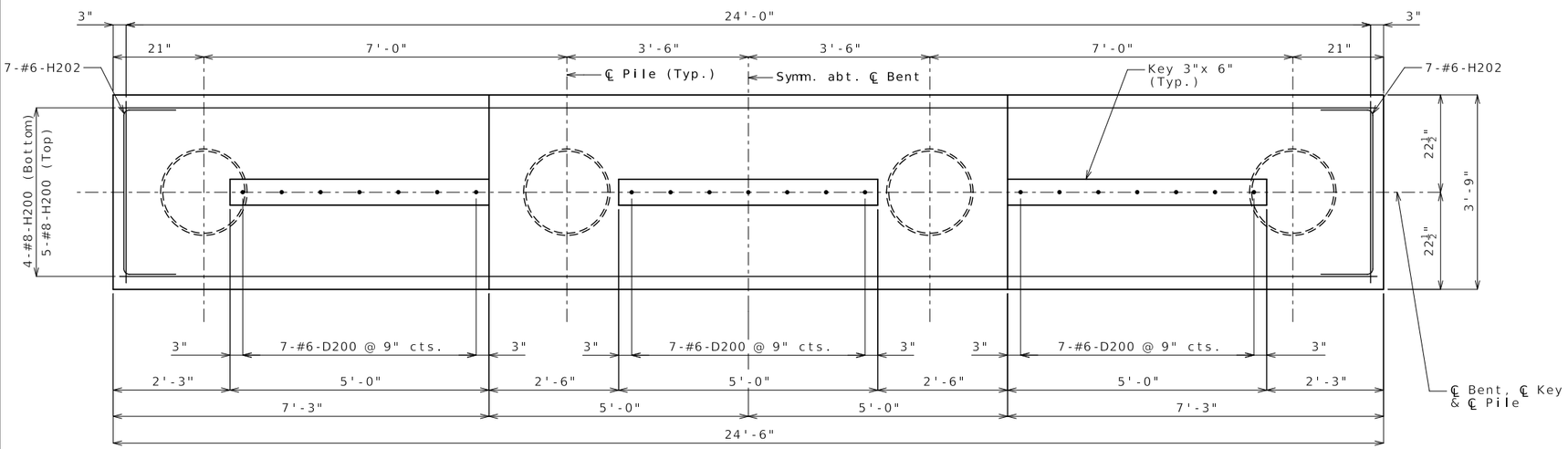
SECTION A-A



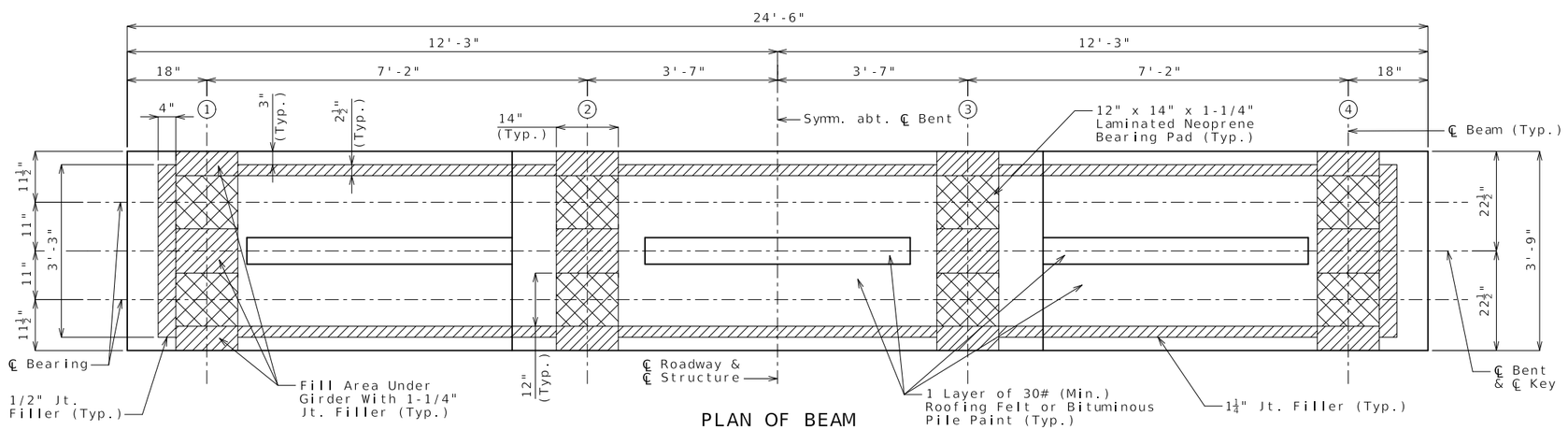
SECTION B-B



SECTION THRU KEY



PLAN OF BEAM SHOWING REINFORCEMENT



PLAN OF BEAM

INTERMEDIATE BENT NO. 2

Detailed May 2024
Checked July 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:00:15 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	7

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

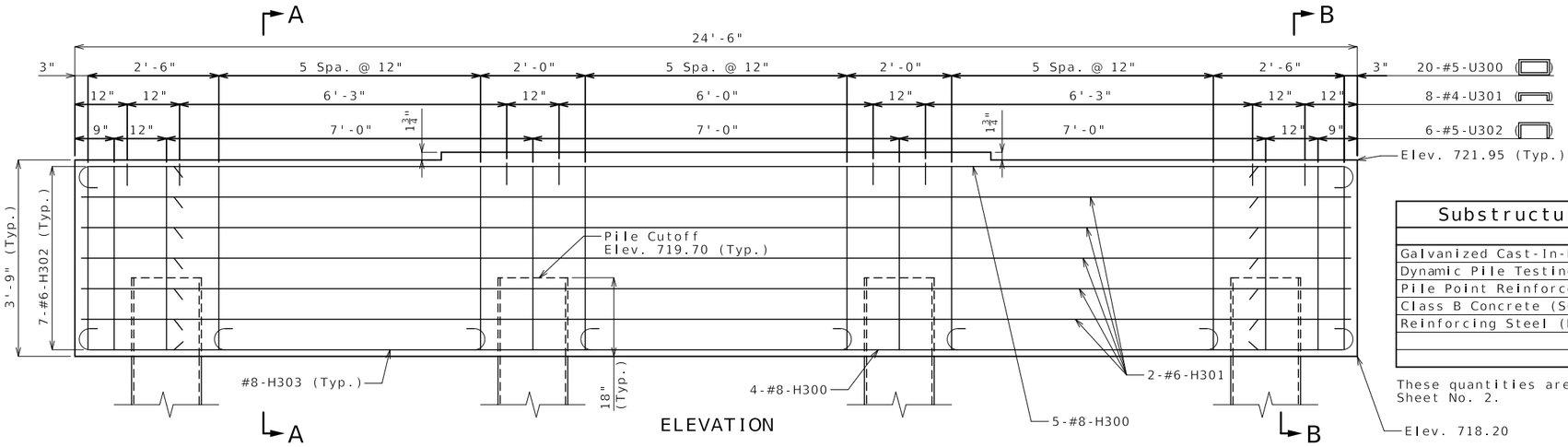
PROJECT NO.

BRIDGE NO.
A9318

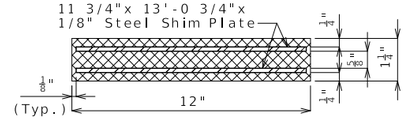
DESCRIPTION

DATE

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



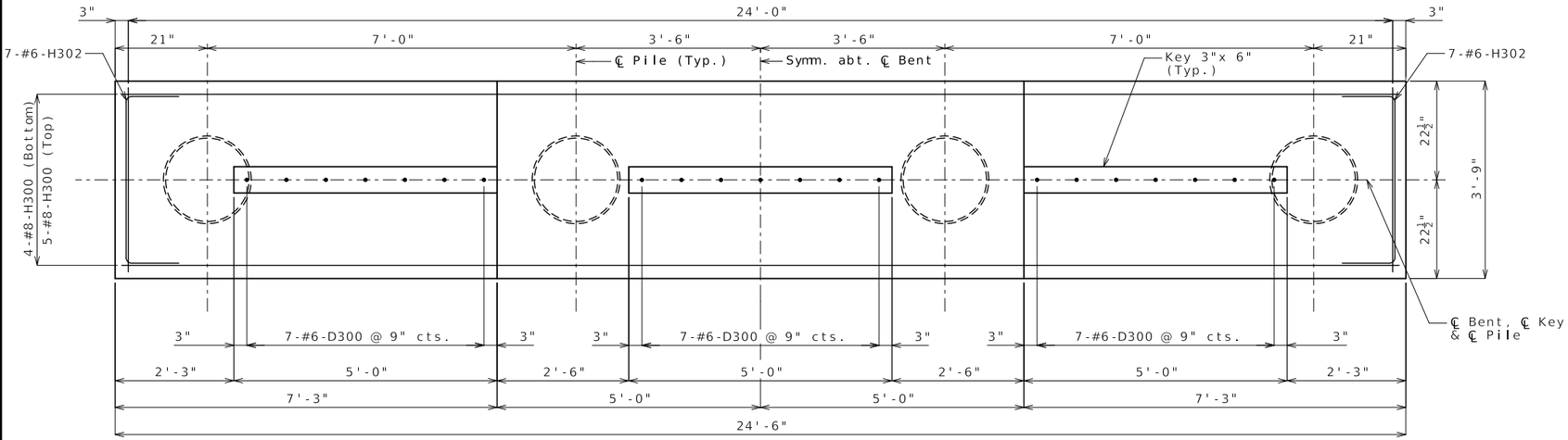
ELEVATION



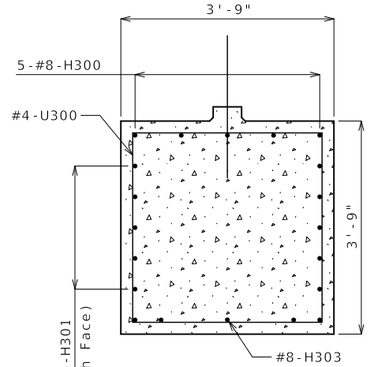
TYPICAL SECTION
THRU LAMINATED
NEOPRENE BEARING PAD

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Galvanized Cast-In-Place Piles (16 in)	linear foot	140
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	12.7
Reinforcing Steel (Bridges)	pound	1902

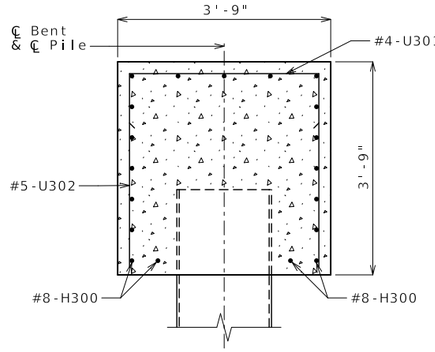
These quantities are included in the Estimated Quantities table on Sheet No. 2.



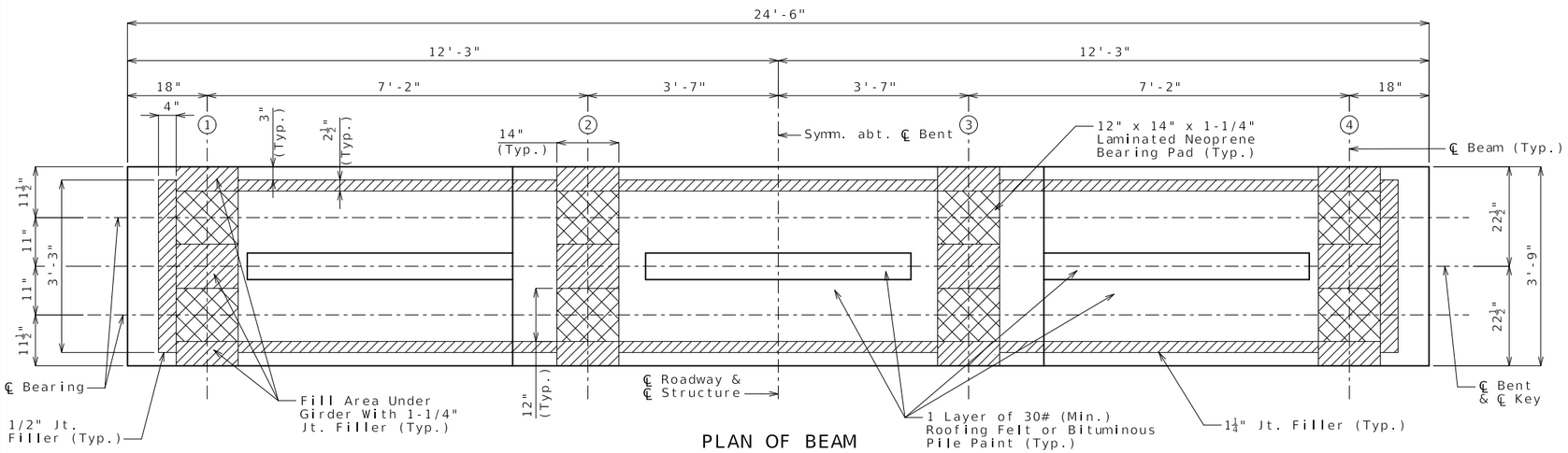
PLAN OF BEAM SHOWING REINFORCEMENT



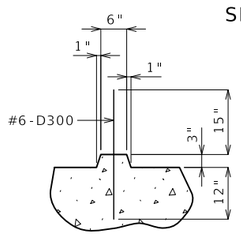
SECTION A-A



SECTION B-B



PLAN OF BEAM



SECTION THRU KEY

INTERMEDIATE BENT NO. 3

Detailed May 2024
Checked June 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:00:28 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	8

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

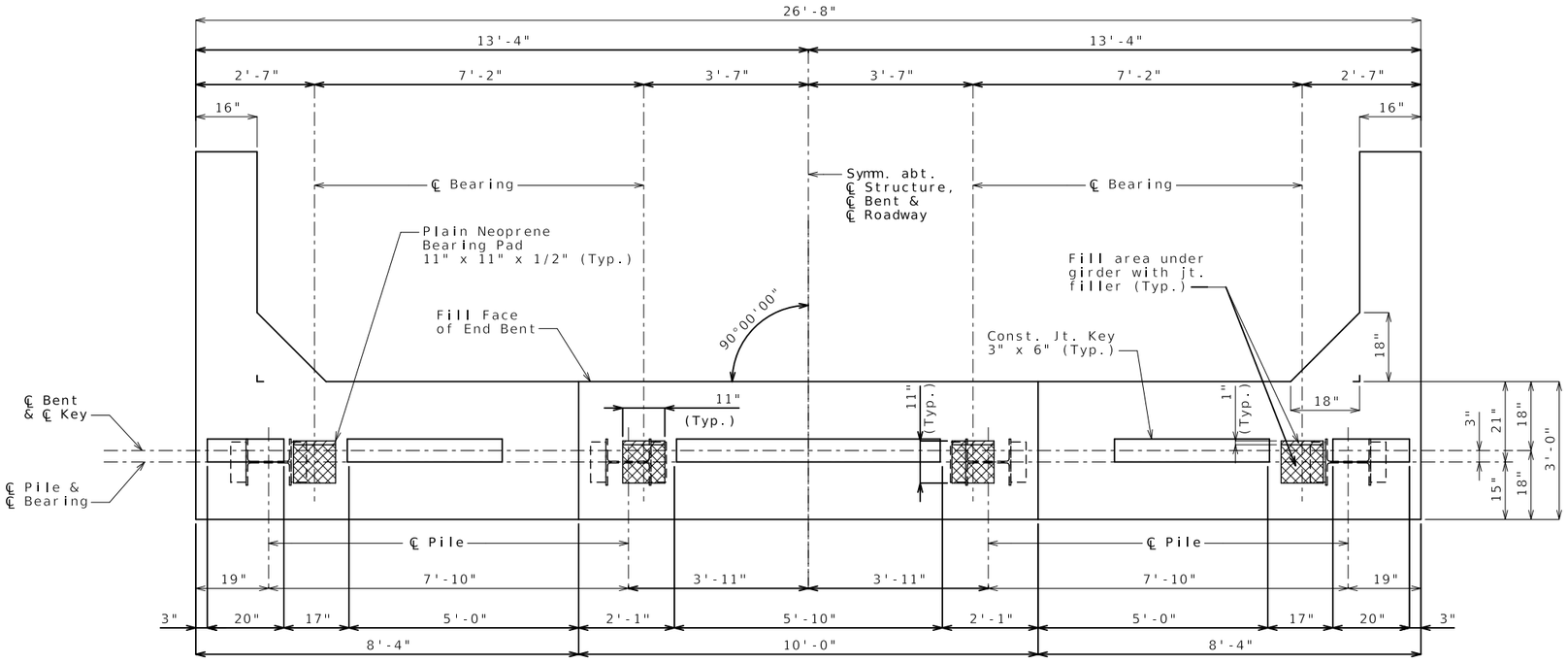
BRIDGE NO.
A9318

DESCRIPTION

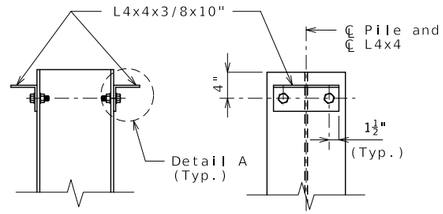
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

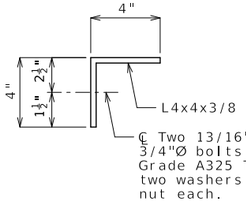
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PLAN OF END BENT BEAM SHOWING DIMENSIONS

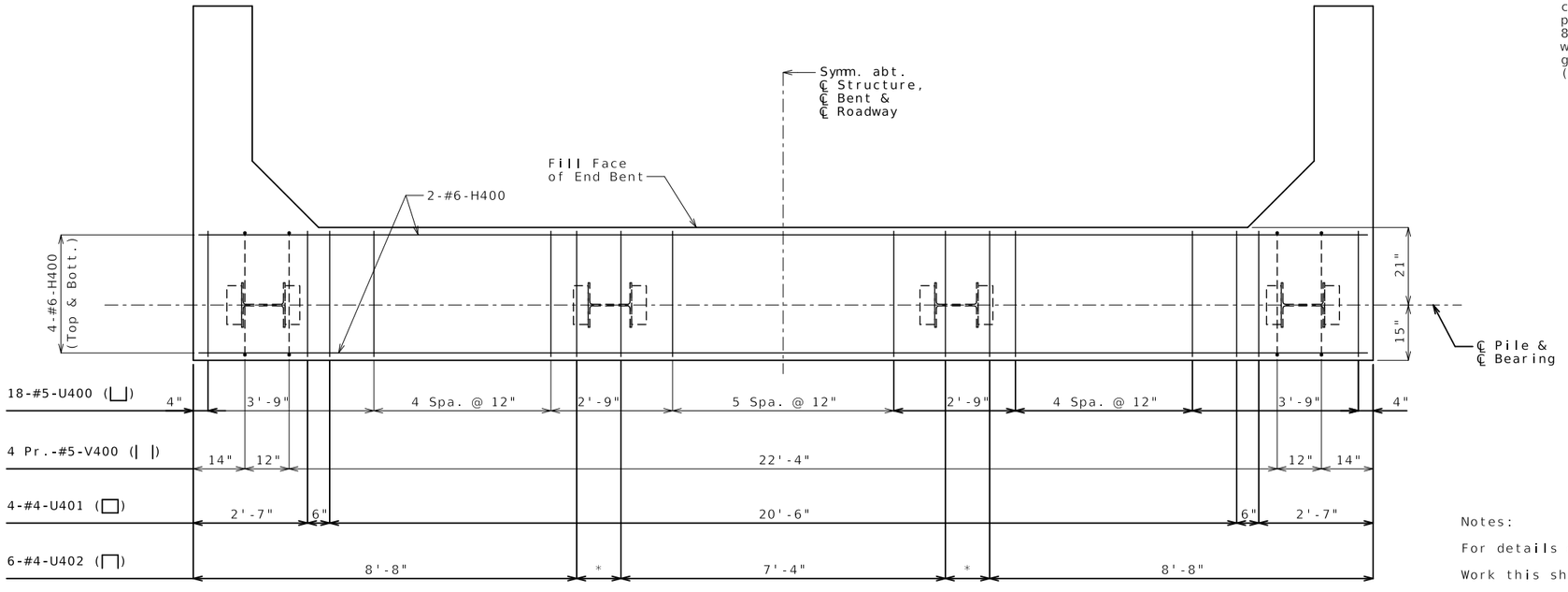


DETAILS OF HP PILE ANCHORS



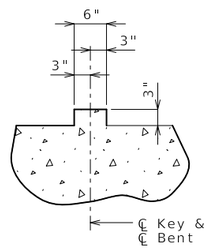
DETAIL A

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.



* 2 Spa. @ 6"

PLAN OF BEAM SHOWING REINFORCEMENT
Note: Keys not shown for clarity



SECTION THRU KEY

Notes:

For details of vertical drain at end bents, see Sheet No. 6.

Work this sheet with Sheets No. 10 & 11.

Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1½".

DETAILS OF END BENT NO. 4

Detailed May 2024
Checked June 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:00:40 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

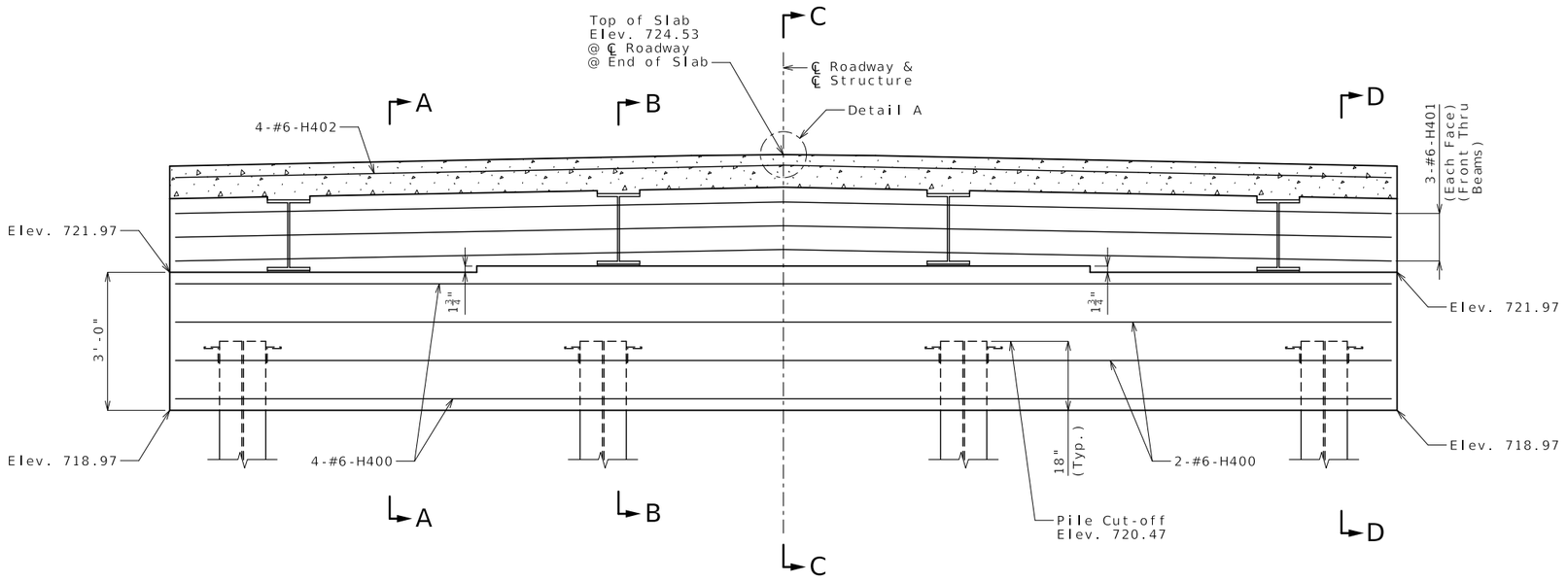
DATE PREPARED: 8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	9

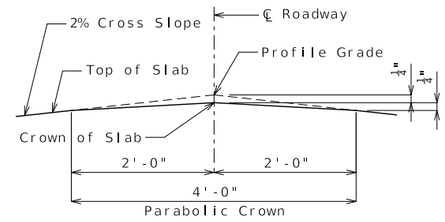
COUNTY: AUDRAIN
JOB NO.: J2S3314
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9318

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



DETAIL A

Notes:

Work this sheet with Sheets No. 9 & 11.

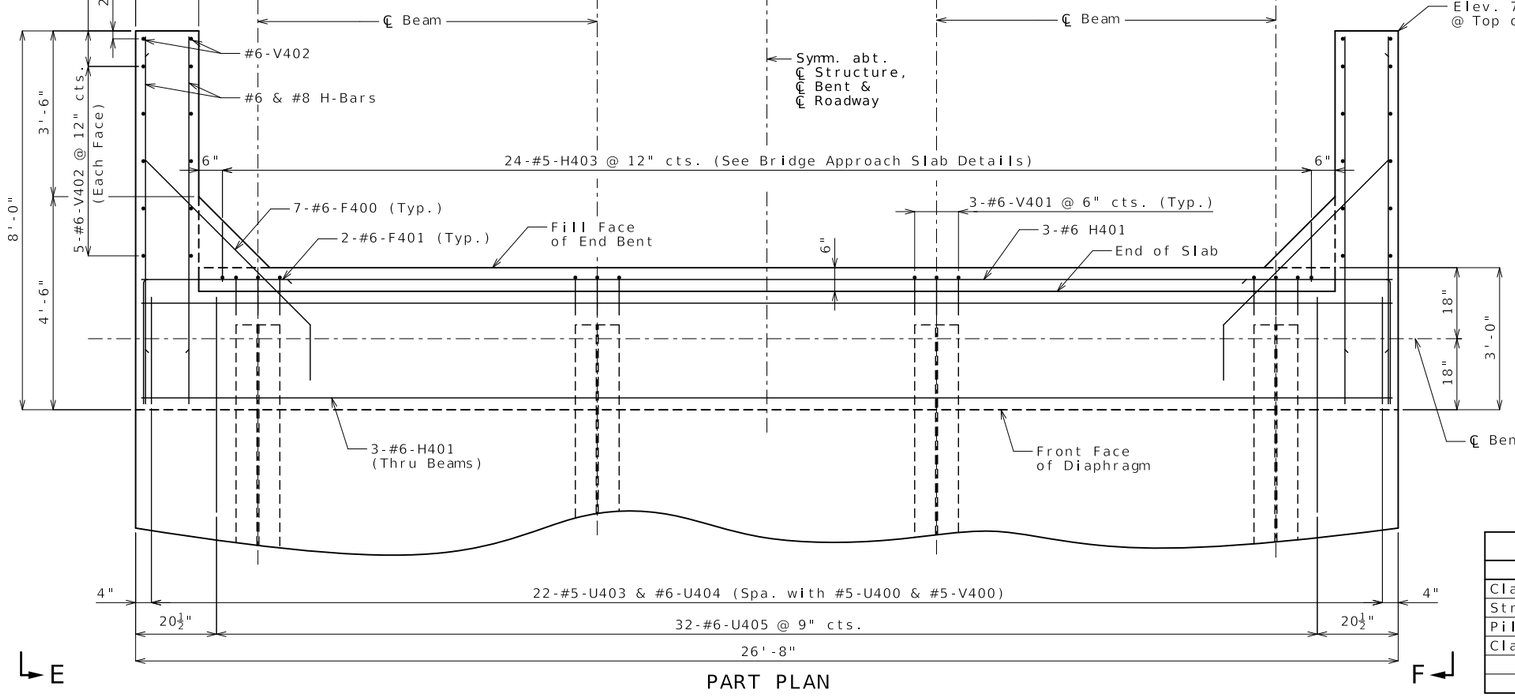
For Sections A-A, B-B, C-C, D-D and Elevations E-E and F-F, see Sheet No. 11.

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

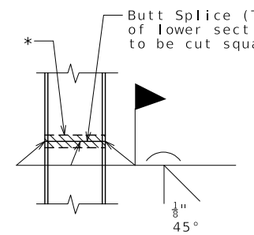
The #6-F400 bars shall be bent in the field to clear beams.

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

For details of bridge approach slab, see Sheet No. 22.



PART PLAN



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. 4

Item		Quantity
Class 1 Excavation	cu. yard	25
Structural Steel Pile (12 in.)	linear foot	152
Pile Point Reinforcement	Each	4
Class B Concrete (Substructure)	cu. yard	10.9

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

DETAILS OF END BENT 4

Detailed May 2024
Checked July 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:00:50 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	10

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

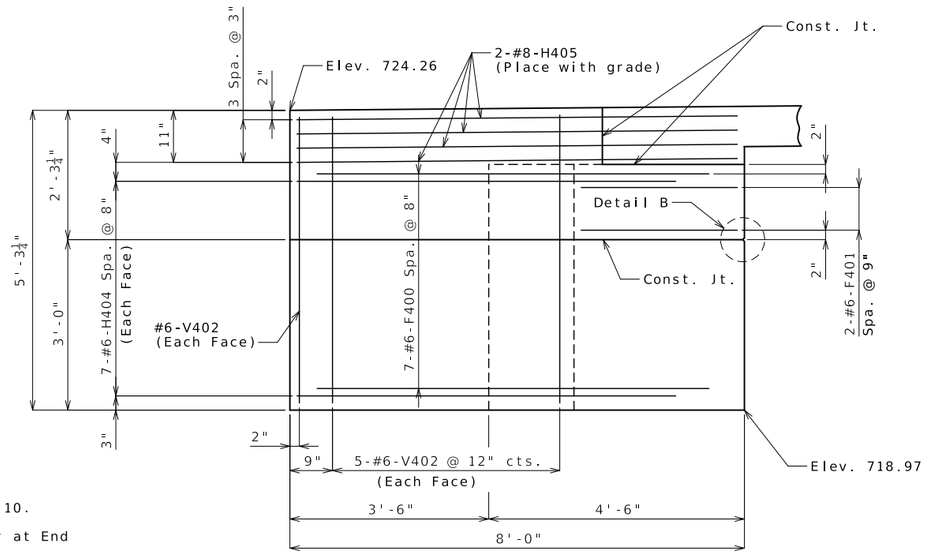
PROJECT NO.

BRIDGE NO.
A9318

DESCRIPTION

DATE

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



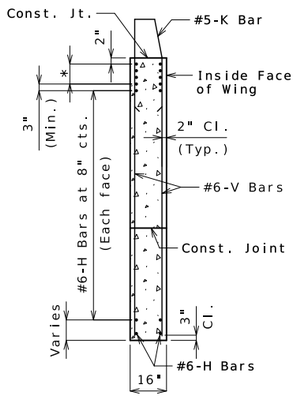
ELEVATIONS E-E & F-F

Notes:

Work this sheet with Sheets 9 & 10.

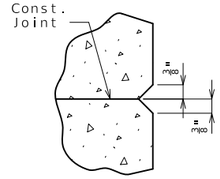
For reinforcement of the barrier at End Bent, see Sheet 21.

For locations of Sections A-A, B-B & C-C & D-D and Elevations of E-E & F-F, see Sheet 10.

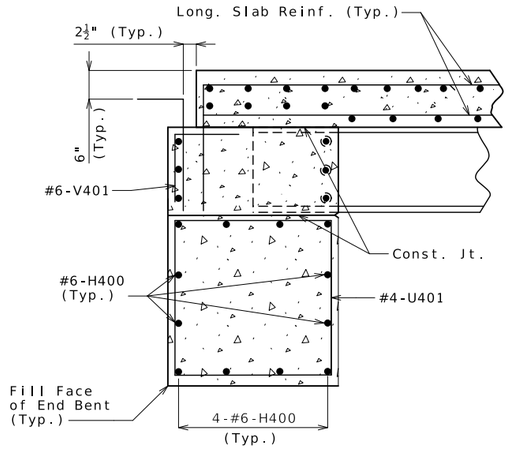


TYPICAL SECTION
THRU WING

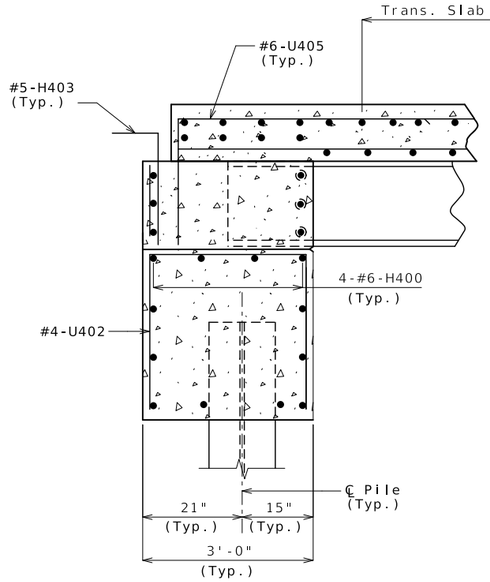
* #8-H Bars at 3" cts.
(Each face)(Place with grade)



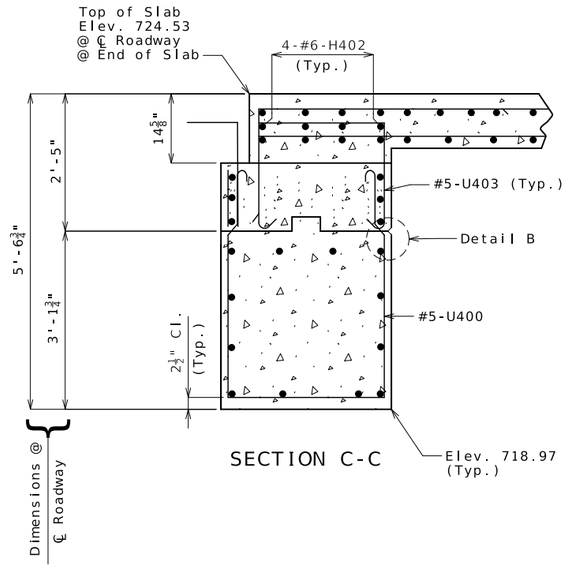
DETAIL B



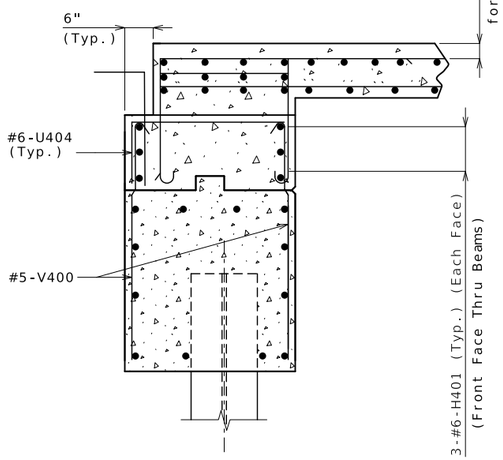
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

END BENT NO. 4 DETAILS

Detailed May 2024
Checked June 2024

Note: This drawing is not to scale.

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ROUTE	STATE
K	MO
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BR	11

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AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

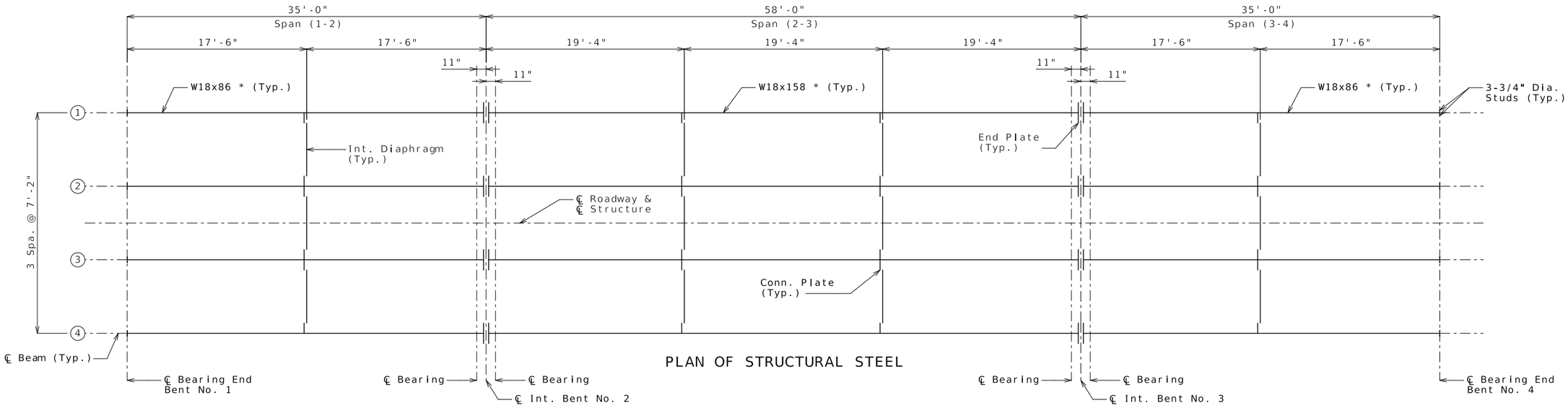
PROJECT NO.

BRIDGE NO.
A9318

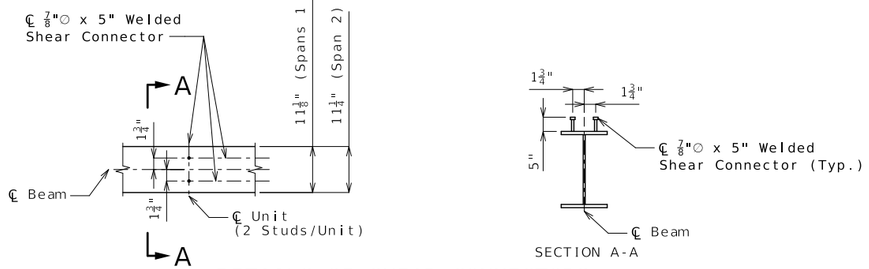
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



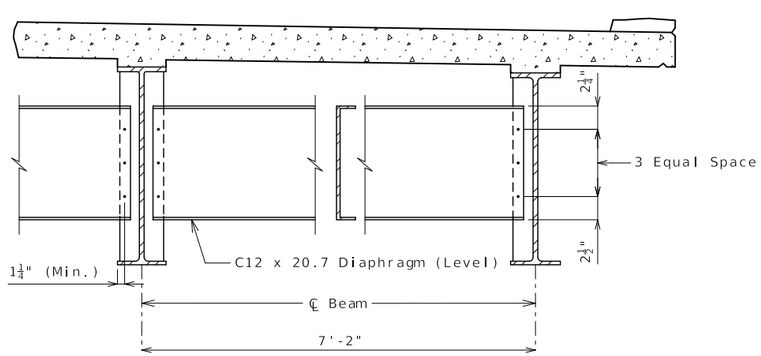
PLAN OF STRUCTURAL STEEL



SECTION A-A

DETAILS OF SHEAR CONNECTORS

Weight of 1836 pounds of shear connectors for the beams is included in the weight of the Fabricated Structural Carbon or Low Alloy Steel (I-Beams). Shear Connectors shall be in accordance with Sec. 712, 1037 & 1080.



TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS

FRAMING PLAN

Notes:

Intermediate diaphragm connection plate and diaphragm spacing may vary from plan dimension by a maximum of 3" for diaphragm to connect to the intermediate diaphragm connection plate.

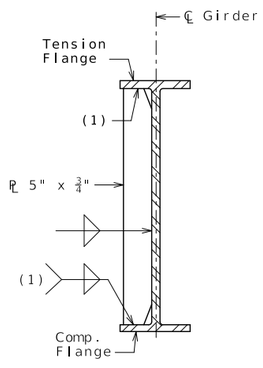
Field connections shall be made with 3/4" diameter ASTM F3125 Grade A325 Type 1 bolts and 13/16" diameter holes, except as noted.

At the contractor's option, holes in the diaphragm plate of non slab bearing diaphragms may be made 3/16" larger that the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate shall be standard size.

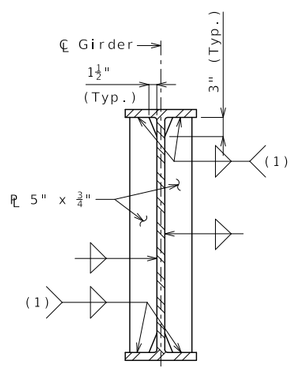
For additional steel details, see sheet No. 13.

* Notch toughness is rtrequired for all wide flange beams.

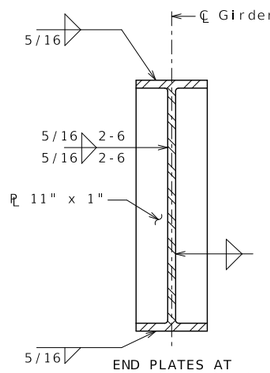
Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.



INTERMEDIATE WEB STIFFENER
(One side only)



INTERMEDIATE DIAPHRAGM CONNECTION PLATE



END PLATES AT INTERMEDIATE BENTS
(Looking from midspan towards end of beam)

WELDING DETAILS

(1) Tight fit

(2) Grind or mill to bear.

(3) Weld to compression flange as located on Elevation of Girder.

Detailed May 2024
Checked June 2024

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PROJECT NO.

BRIDGE NO.
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DESCRIPTION	DATE

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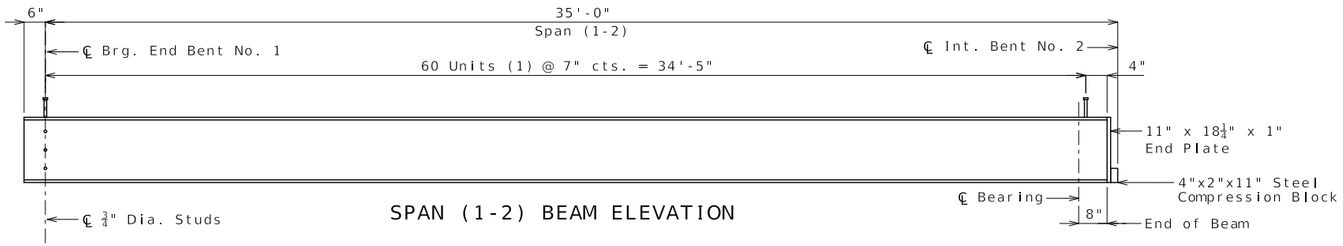


SPAN (1-2) BEAM ELEVATION

Notes:

Longitudinal dimensions are horizontal from centerline bearing to centerline bearing.

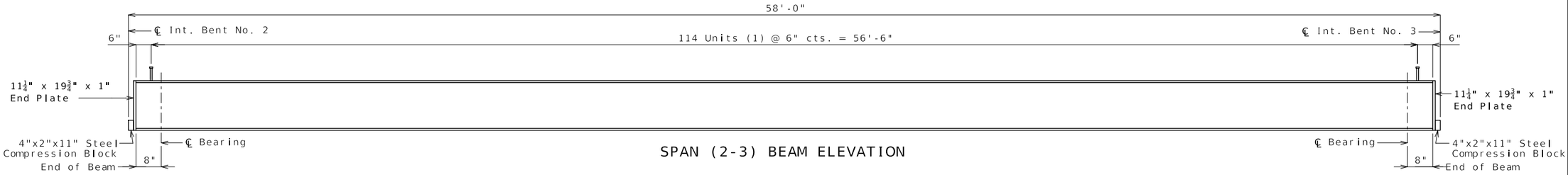
Fabricated structural steel shall be ASTM A709 Grade 50 and shall be galvanized in accordance with A123 and Sec. 1080.

For locations of slab drain attachment holes, see slab drain details sheet.

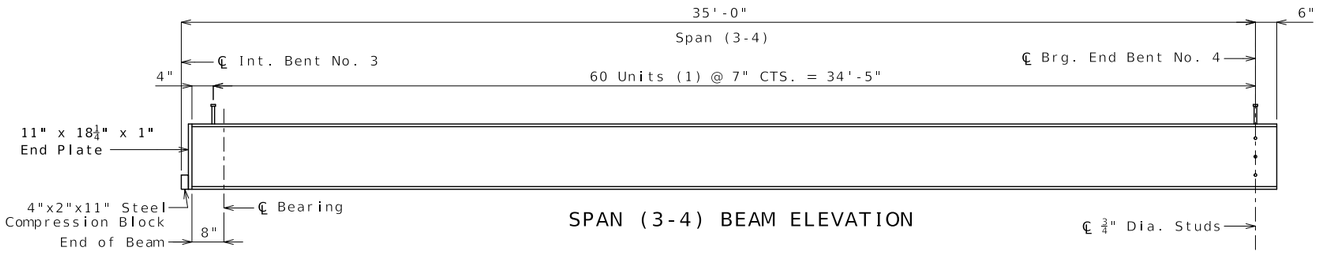
For details of intermediate diaphragms, see Sheet No. 14.

Weight of 1836 pounds of shear connectors is included in the weight of Fabricated Structural Steel.

Shear connectors shall be in accordance with Sec 712, 1037 and 1080.



SPAN (2-3) BEAM ELEVATION

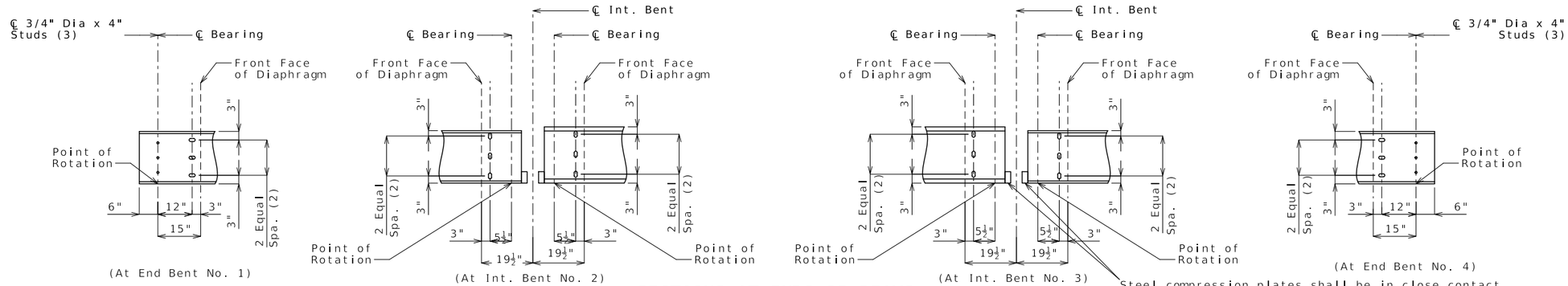


SPAN (3-4) BEAM ELEVATION

(1) 2 studs per unit

(2) 1-1/16" X 1-1/16" Slotted holes

(3) Line perpendicular to the bottom of the bottom flange at the intersection of ℄ Bearing and Point of Rotation.



SECTIONS AT ENDS OF BEAMS

STEEL BEAM DETAILS

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PROJECT NO.:
BRIDGE NO.: A9318

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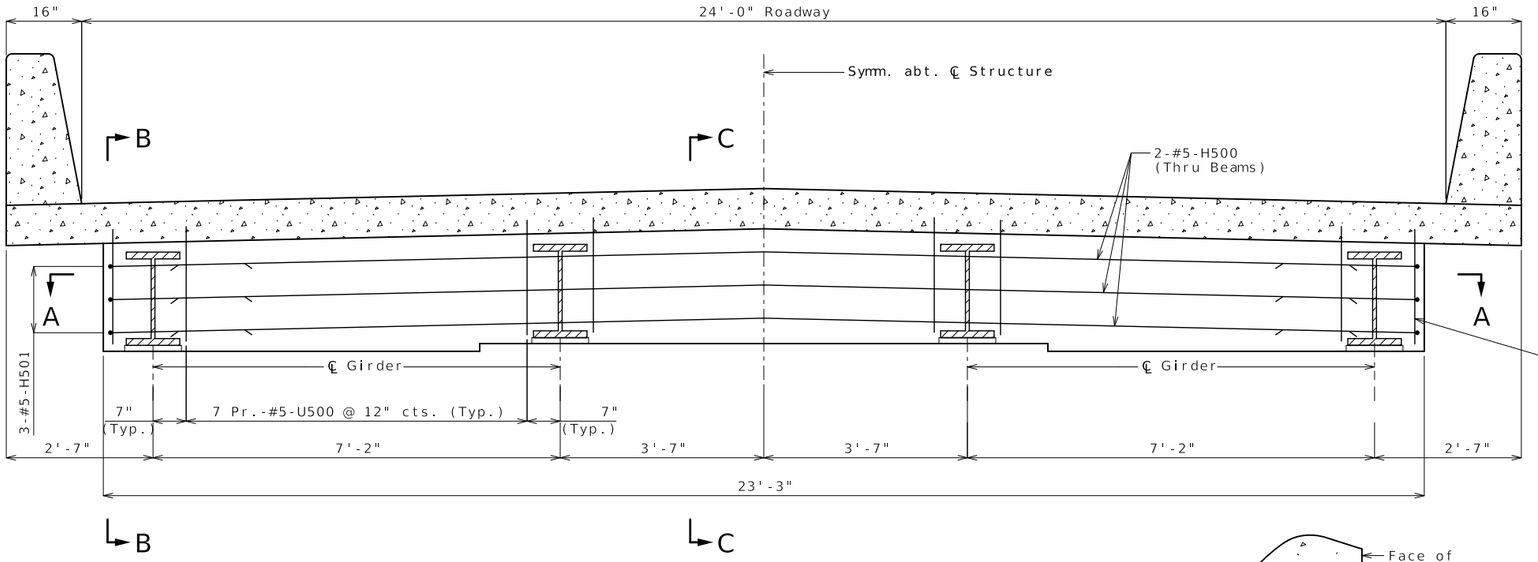
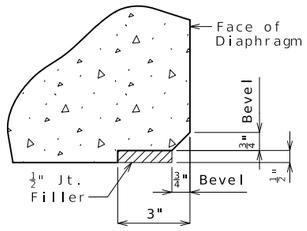
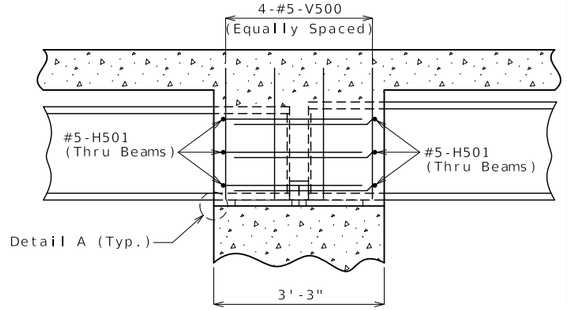


SECTION NEAR INTERMEDIATE BENT
(Dimensions are normal to ℄ Structure)

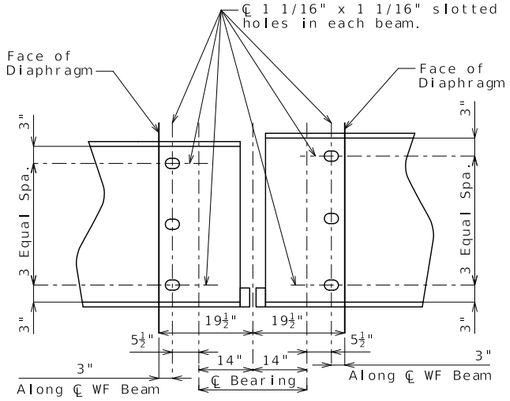
(Steel end plates and steel compression blocks not shown for clarity.)



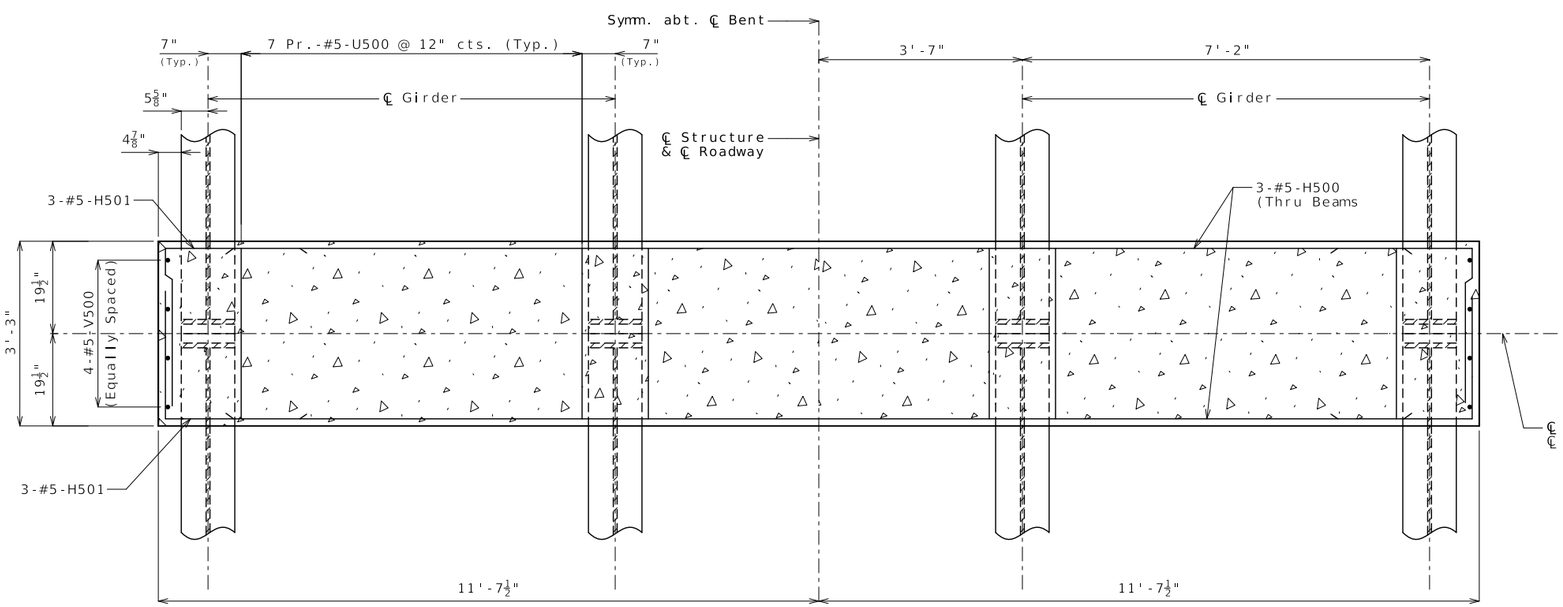
DETAIL A



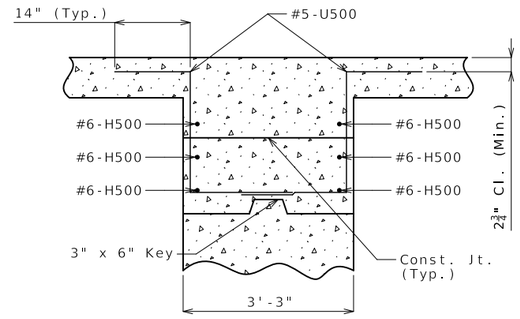
SECTION B-B



DETAILS OF WEB HOLES
IN ALL WF BEAMS AT
INTERMEDIATE BENTS



SECTION A-A



SECTION C-C

Concrete diaphragms below construction joint will be poured a minimum of 12 hours before the slab is poured.

Notes:

Diaphragms at intermediate bents shall be built vertical.

DETAILS OF DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 3

Detailed May 2024
Checked July 2024

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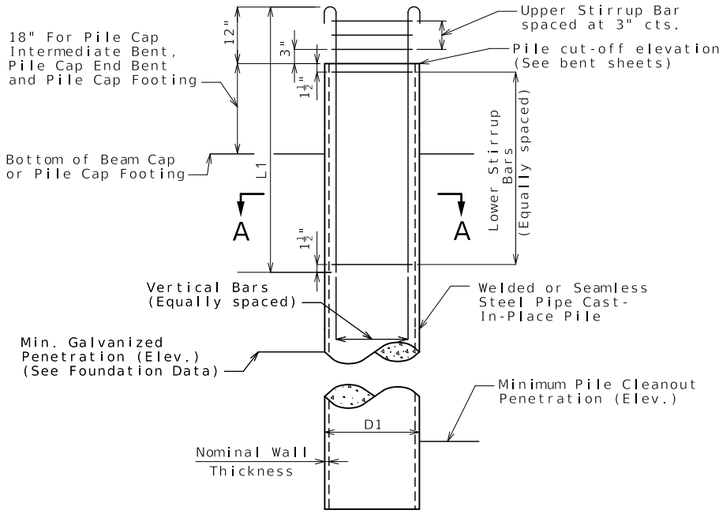
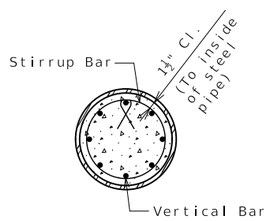
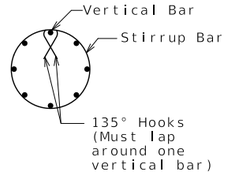


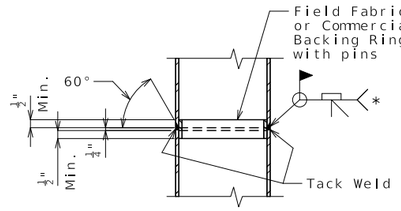
GALVANIZED OPEN ENDED CAST-IN-PLACE (OECIP) CONCRETE PILE WITHOUT PILE POINT REINFORCEMENT



SECTION A-A



DETAIL OF SEISMIC STIRRUP BAR

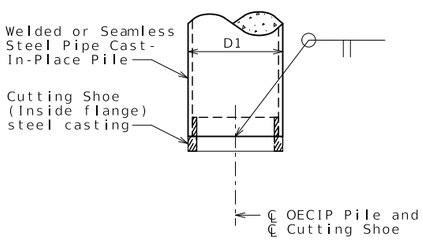


STEEL PIPE PILE SPLICE

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

GALVANIZED OPEN ENDED CAST-IN-PLACE (OECIP) CONCRETE PILE DATA				
Bent Number	1	2	3	4
D1, OECIP Pile (O.D.)		16"	16"	
Min. Nominal Wall Thickness		½"	½"	
Pile Point Reinforcement		**	**	
Min. Pile Cleanout Penetration (Elev.)		302	302	
Vertical Bars		6-#6-V200	6-#6-V300	
L1, Length of Vertical Bars		5'-3"	5'-3"	
Upper Stirrup Bars		3-#4-P200	3-#4-P300	
Lower Stirrup Bars		5-#4-P201	5-#4-P301	

** Open Ended Cutting Shoe



MANUFACTURED OPEN ENDED CUTTING SHOE (INSIDE FLANGE)

Notes:

Welded or seamless steel shell (pipe) shall be ASTM A252 Grade 3 (fy = 45,000 psi).

Open ended pile shall be augered out to the minimum pile cleanout penetration elevation and filled with Class B-1 concrete.

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

Steel casting for open ended cutting shoe pile point reinforcement shall be ASTM A148 Grade 90-60.

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

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

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

The hooks of vertical bars embedded in the beam cap should not be turned outward, away from the pile core.

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

All reinforcement for cast-in-place pile is included in the estimated quantities for bents.

For Foundation Data table, see Sheet No. 2.

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AUDRAIN

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CONTRACT ID.

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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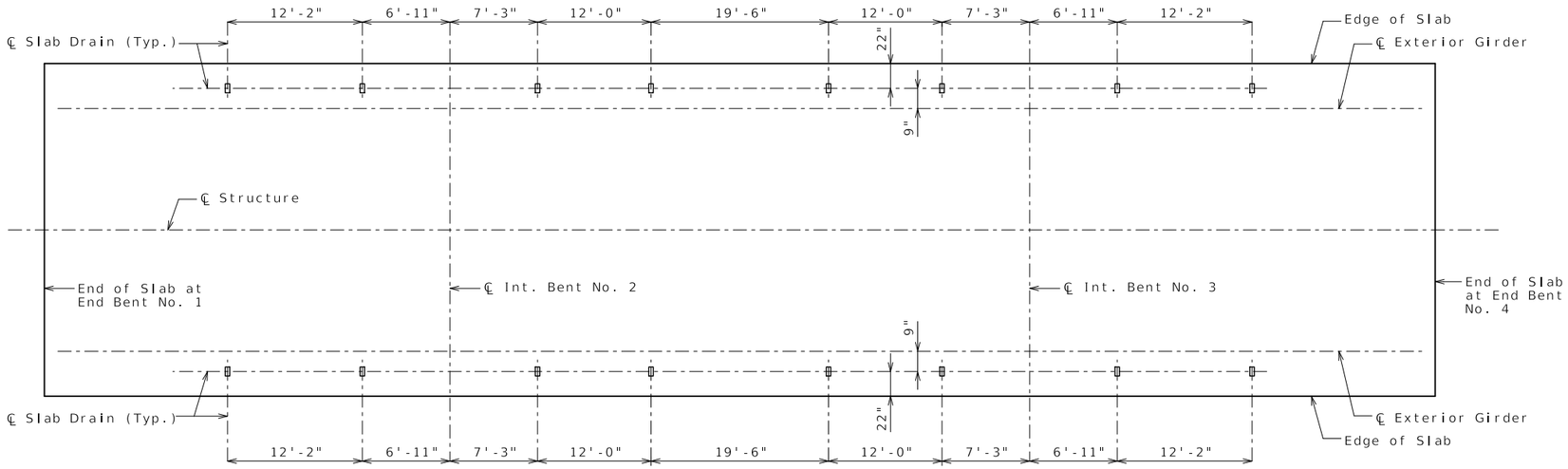
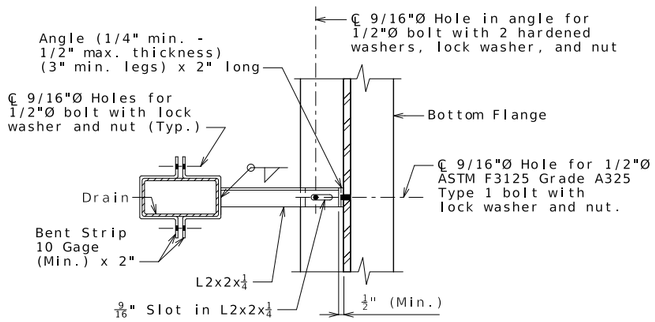
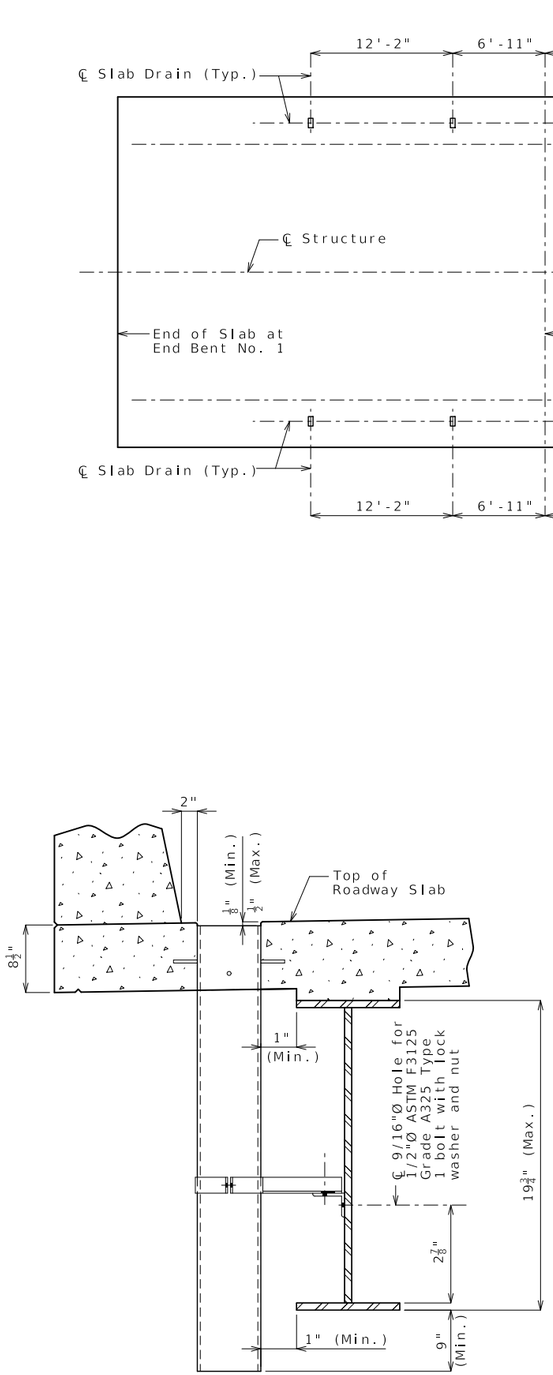
GALVANIZED OPEN ENDED CAST-IN-PLACE (OECIP) CONCRETE PILE



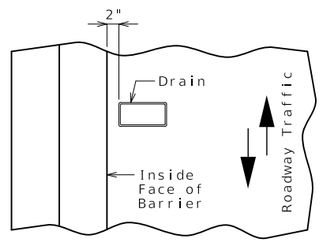
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



PART SECTION SHOWING BRACKET ASSEMBLY

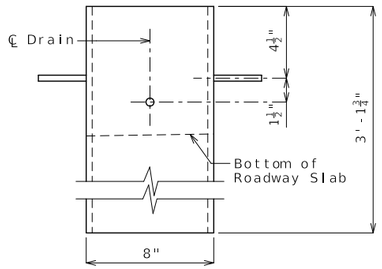


PART SECTION NEAR DRAIN

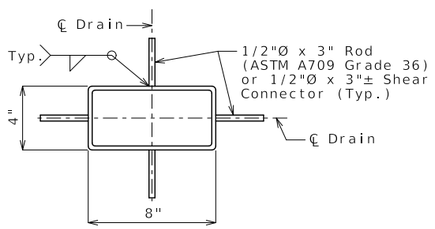


PART PLAN OF SLAB AT DRAIN

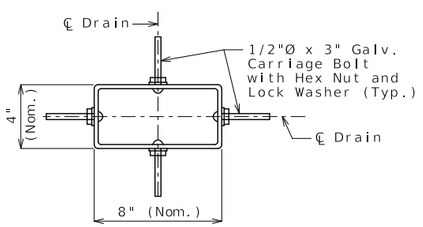
SLAB DRAINS



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 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-inch diameter bolts shall be ASTM A307, except as shown.

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

The bolt hole for the bracket assembly attachment shall be located on the Wide Flange Beam shop drawings.

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4-inch welded sheets of ASTM A709 Grade 36 steel or from 1/4-inch 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.

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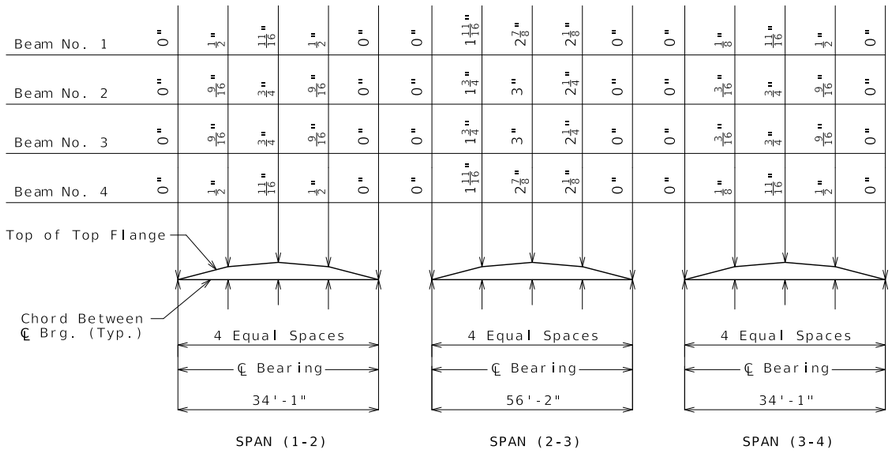
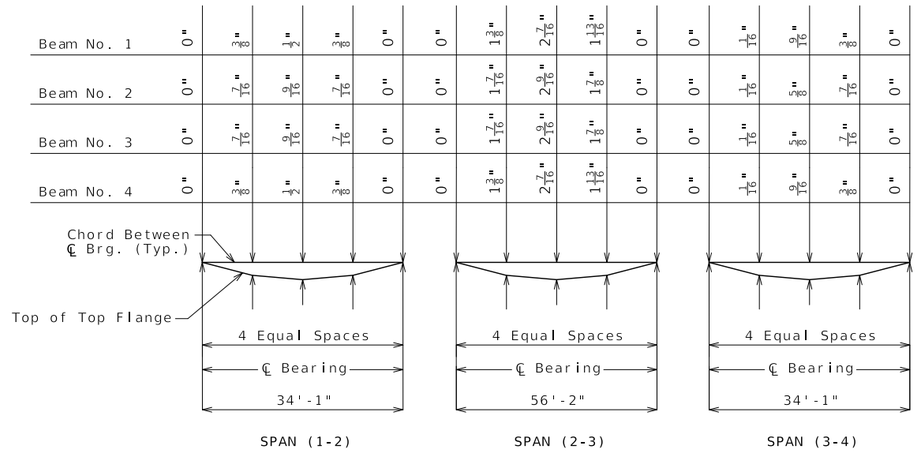


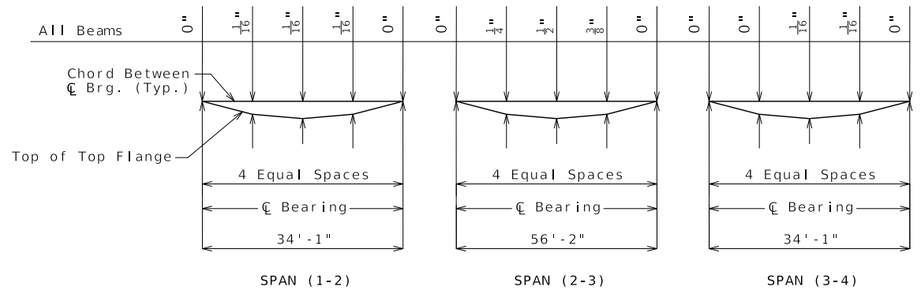
STEEL BEAM CAMBER DIAGRAM

Camber includes allowance for vertical curve and dead load deflection due to concrete slab, barrier, and structural steel.



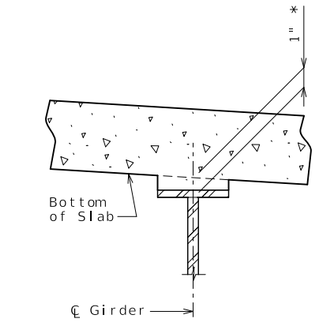
TOTAL DEAD LOAD DEFLECTION

Dead load deflection includes weight of structural steel, concrete slab, and barrier.

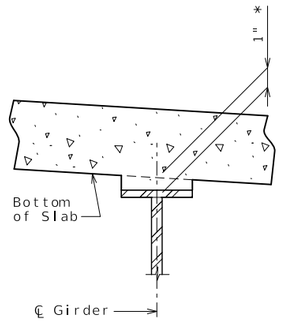


STEEL DEAD LOAD DEFLECTION

Dead load deflection includes weight of structural steel.

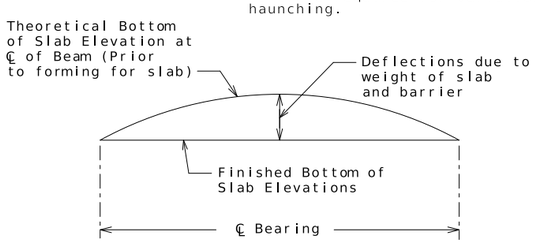


THEORETICAL SLAB HAUNCH FOR W18x86



THEORETICAL SLAB HAUNCH FOR W18x158

∗ Dimension (bottom of slab to top of web) may vary if girder camber after erection differs from plan camber by more or less than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.



TYPICAL SLAB ELEVATIONS DIAGRAM

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

Beam Number	Span (1-2) (35'-0" ℄ Brg. - ℄ Brg.)					Span (2-3) (58'-0" ℄ Brg. - ℄ Brg.)					Span (3-4) (35'-0" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	.25	.50	.75	℄ Brg.	℄ Brg.	.25	.50	.75	℄ Brg.	℄ Brg.	.25	.50	.75	℄ Brg.
1	723.46	723.54	723.60	723.64	723.65	723.65	723.78	723.88	723.85	723.73	723.73	723.71	723.73	723.69	723.63
2	723.60	723.69	723.75	723.78	723.79	723.79	723.93	724.03	724.00	723.87	723.87	723.86	723.88	723.84	723.77
3	723.60	723.69	723.75	723.78	723.79	723.79	723.93	724.03	724.00	723.87	723.87	723.86	723.88	723.84	723.77
4	723.46	723.54	723.60	723.64	723.65	723.65	723.78	723.88	723.85	723.73	723.73	723.71	723.73	723.69	723.63

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 (including SIP form) and barrier.

SLAB DETAILS

Detailed May 2024
Checked July 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
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DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	17

COUNTY
AUDRAIN

JOB NO.
J2S3314

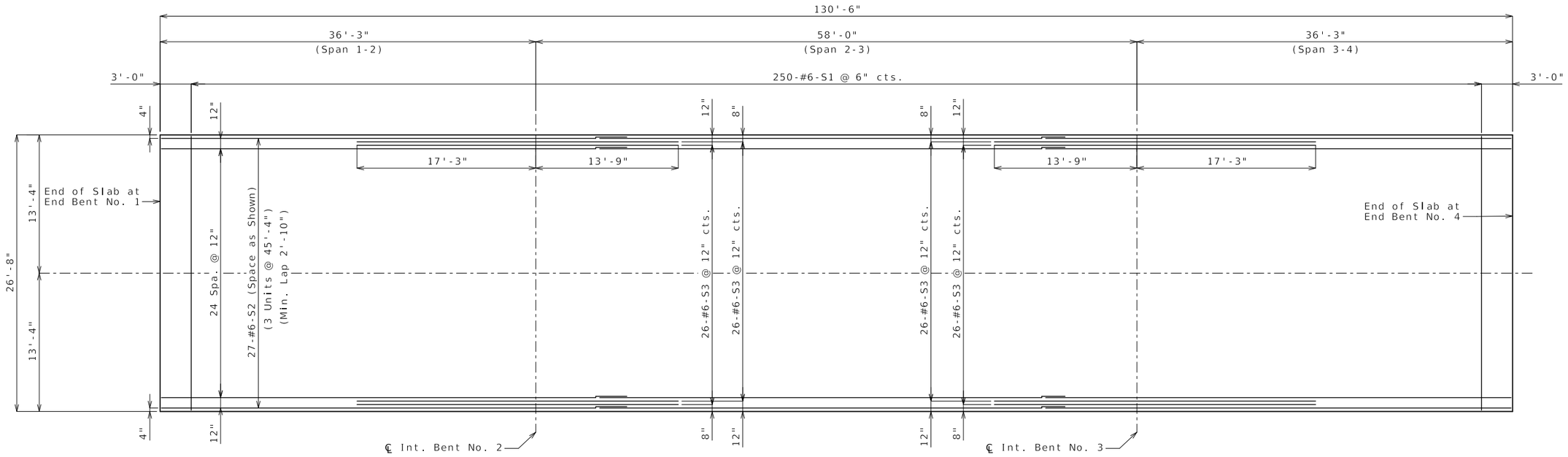
CONTRACT ID.

PROJECT NO.

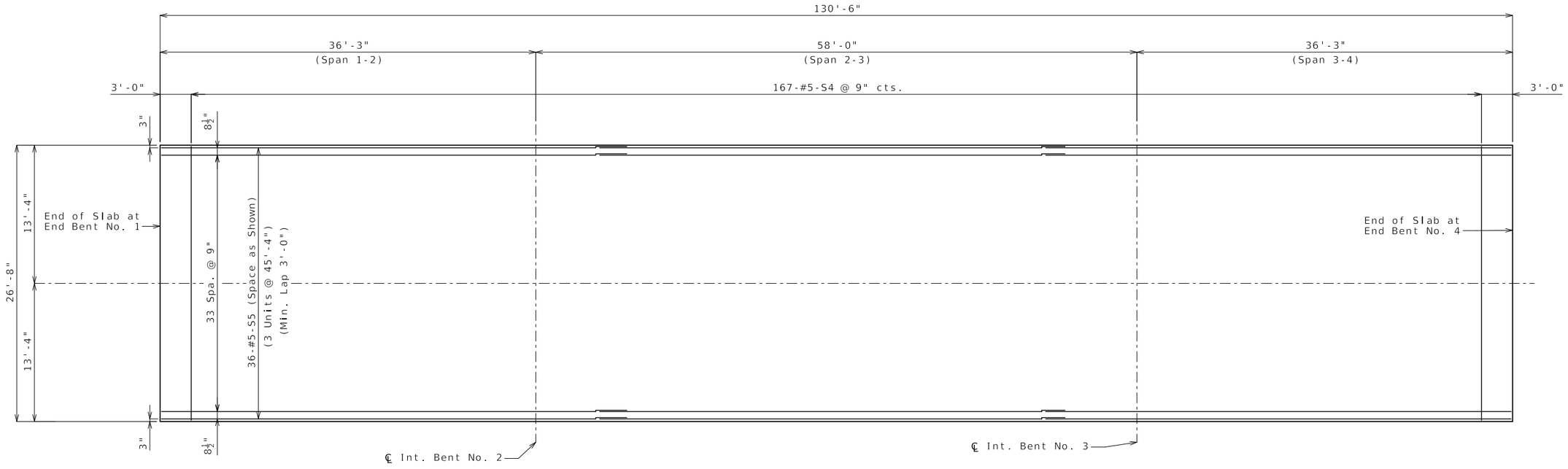
BRIDGE NO.
A9318

DESCRIPTION	DATE

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



TOP OF SLAB REINFORCEMENT



BOTTOM OF SLAB REINFORCEMENT

Notes:

Longitudinal slab dimensions are measured horizontally.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 19.

For details and reinforcement of Type H Barrier not shown, see Sheets No. 20 & 21.

For Dead Load Deflection Diagram, Beam Camber Diagram, and Theoretical Bottom of Slab Elevations, see Sheet No. 17.

For details and locations of slab drains, see Sheet No. 16.

SLAB DETAILS

Detailed May 2024
Checked July 2024

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

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J2S3314

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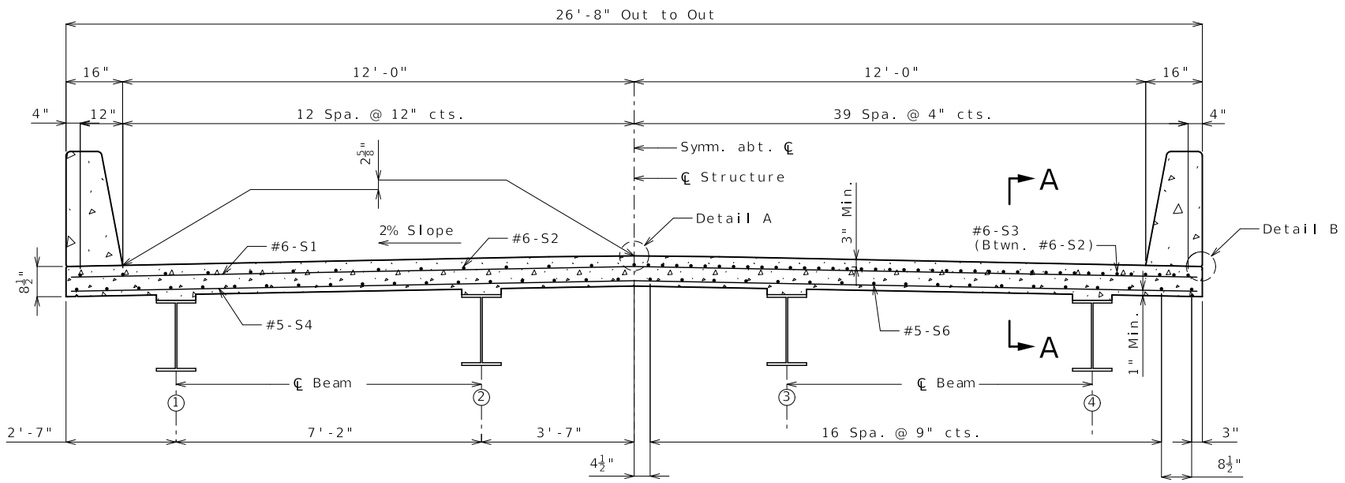
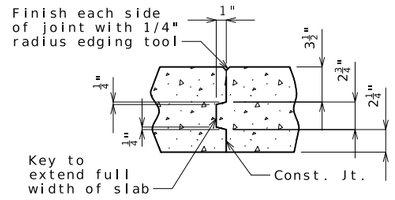
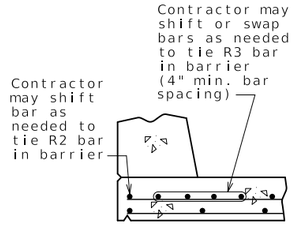


HALF SECTION NEAR MID-SPAN

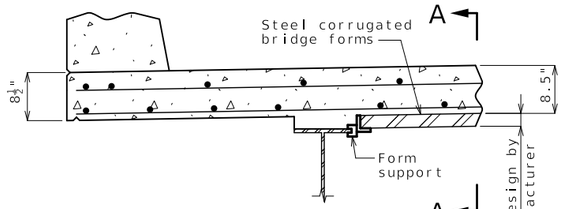
HALF SECTION NEAR INT. BENT



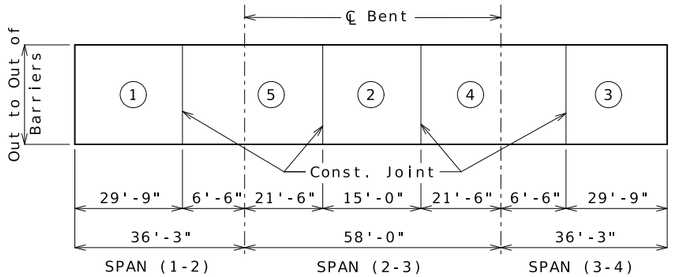
FULL DEPTH SLAB

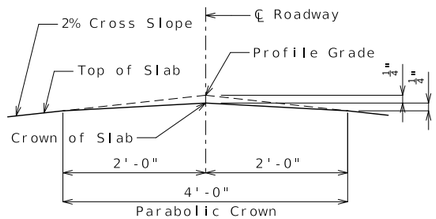


OPTIONAL SHIFTING
TOP BARS AT BARRIER

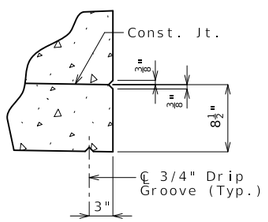


SECTION A-A





DETAIL A



DETAIL B

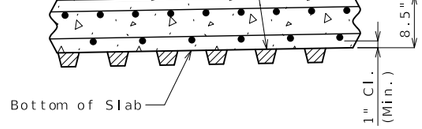
	Sequence of Pours					Min. Rate of Pour Cu. Yds./Hr.	
	Direction					With Retarder	No Retarder
Basic Sequence	1	2	3	4	5	25	25
	Either Direction						
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.							
Alternate A Pours	1	5 + 2		4 + 3		25	25
	End to 5	1 to 4		2 to End			
Alternate B Pours	1 + 5 + 2		4 + 3			25	27
	End to 4		2 to End				
Alternate C Pours	1 + 5 + 2 + 4 + 3					27	46
	End to End						

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE

Note:

For details of barrier not shown, see Sheet No. 21.



OPTIONAL STAY-IN-PLACE
FORM DETAILS

Stay-In-Place Corrugated Steel Forms:
Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirements and coating designation G165 and ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec. 1080.

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

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

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

SLAB DETAILS

STATE OF MISSOURI
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DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	19

COUNTY
AUDRAIN

JOB NO.
J2S3314

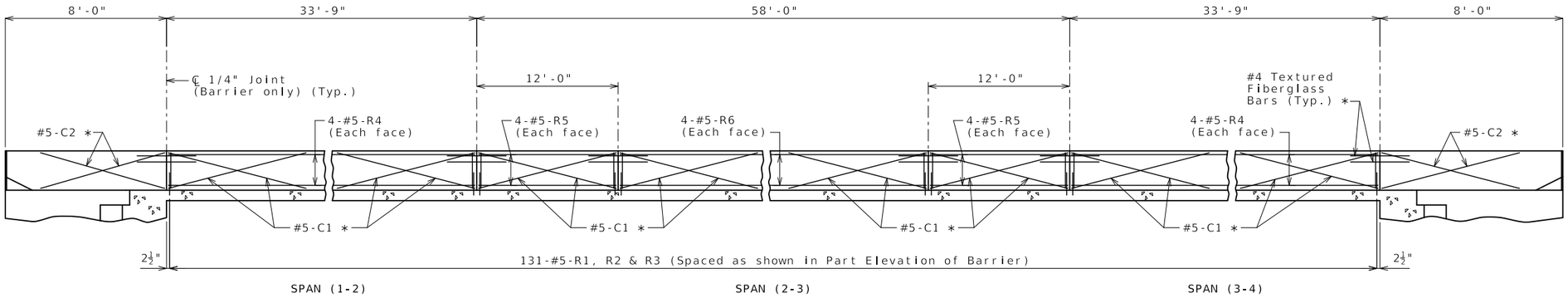
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9318

DESCRIPTION	DATE

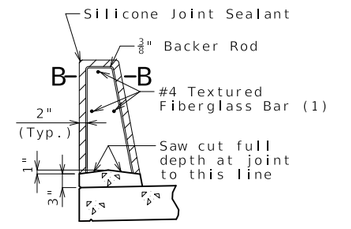
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



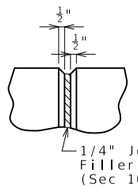
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

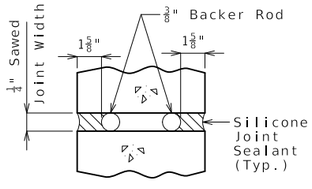
Longitudinal dimensions are horizontal.



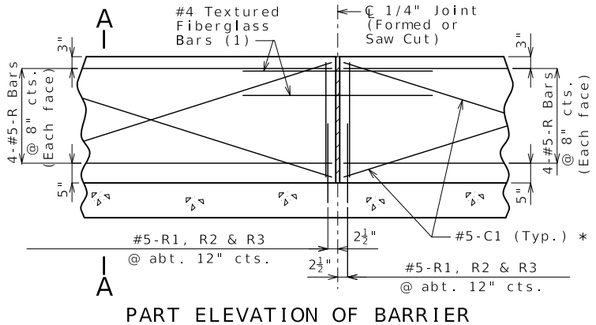
SECTION THRU
SAW CUT JOINT



PART ELEVATION
AT FORMED JOINT

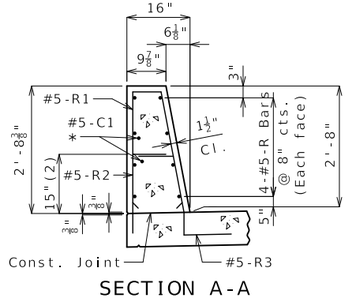


SECTION B-B



PART ELEVATION OF BARRIER

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

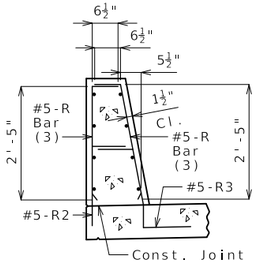


SECTION A-A

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

The cross-sectional area above the slab is 2.89 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 H 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 H 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 H BARRIER

Detailed May 2024
Checked July 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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DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	20

COUNTY
AUDRAIN

JOB NO.
J2S3314

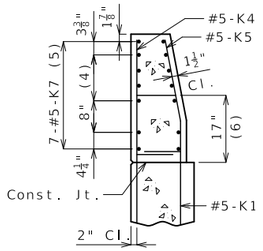
CONTRACT ID.

PROJECT NO.

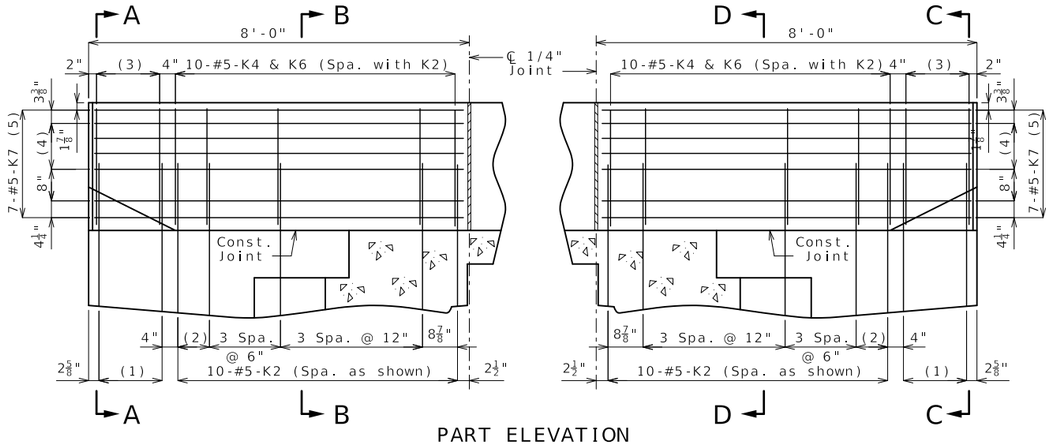
BRIDGE NO.
A9318

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



PART ELEVATION

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

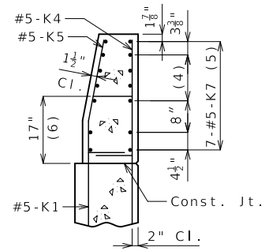
(2) 2 Spaces @ 4"

(3) 5-#5-K4 and 5-#5-K5, spaced with K1

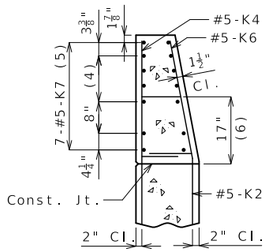
(4) 3 Spaces @ 3 13/16"

(5) Spaced as shown, each face

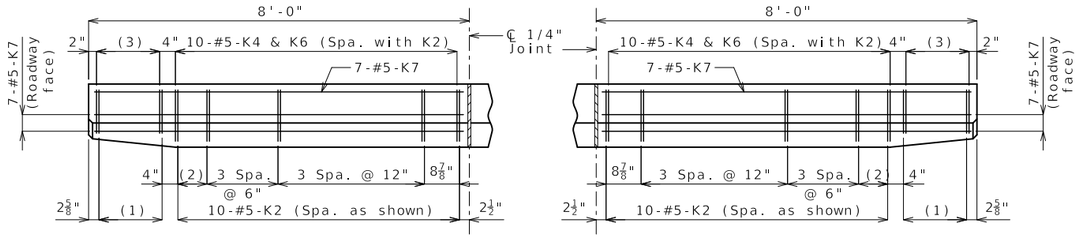
(6) To top of bar



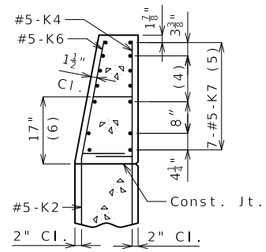
SECTION C-C



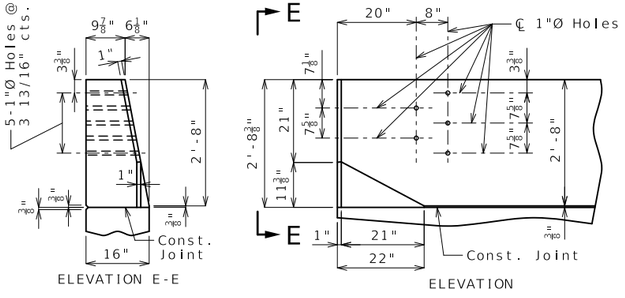
SECTION B-B

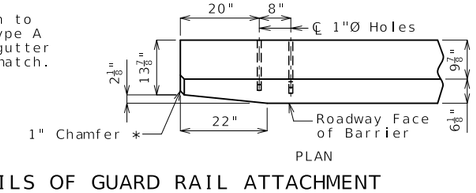


PART PLAN

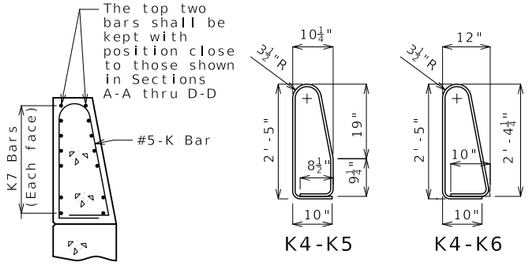


SECTION D-D





DETAILS OF GUARD RAIL ATTACHMENT



PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)

The K4-K5 and K4-K6 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

General Notes:

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

Reinforcing Steel:

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

TYPE H BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed May 2024
Checked July 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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MO-PE-2012000778

DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	21

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AUDRAIN

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J2S3314

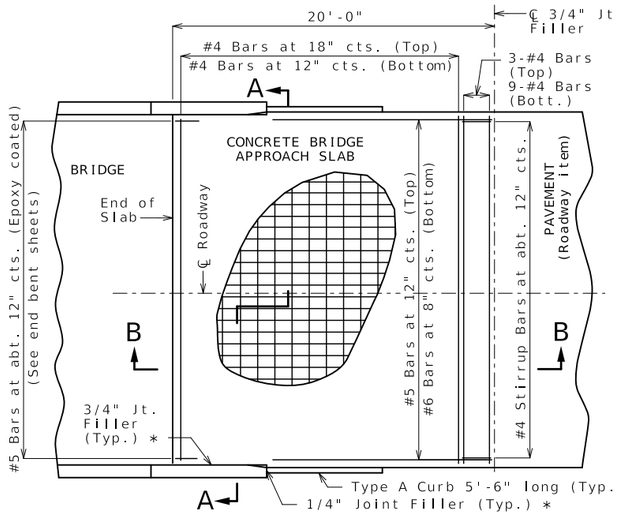
CONTRACT ID.

PROJECT NO.

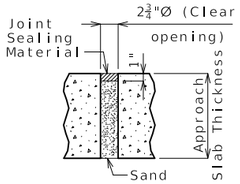
BRIDGE NO.
A9318

DESCRIPTION | DATE

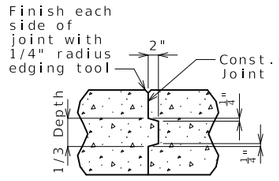
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



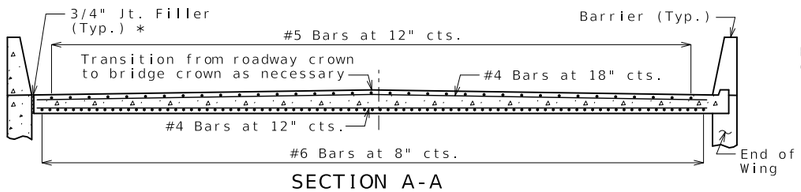
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



UNDERSEAL ACCESS HOLE DETAIL
(If required)

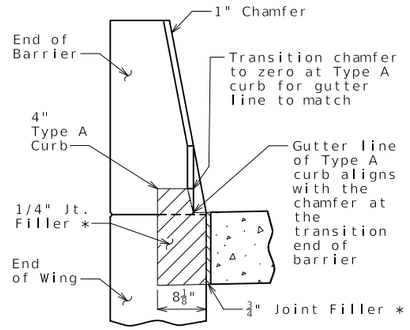


CONSTRUCTION JOINT DETAIL



SECTION A-A

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



SECTION BETWEEN CURB AND BARRIER

Notes For Concrete Slab Only:

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

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

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

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

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

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

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

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

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

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

General Notes:

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

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

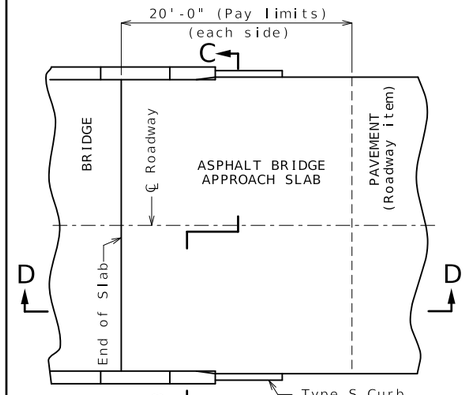
MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

☐ Concrete Bridge Approach Slab
☐ Asphalt Bridge Approach Slab

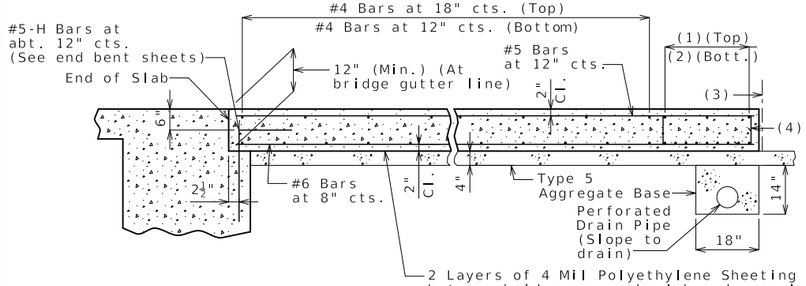
Notes For Asphalt Slab Only:

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

Application of tack is required between lifts per Sec 403.

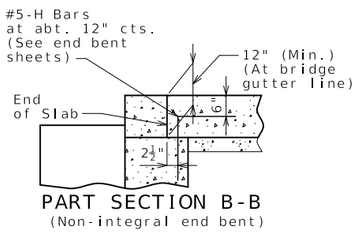


PART PLAN
(Squared structure shown, skewed structure similar)

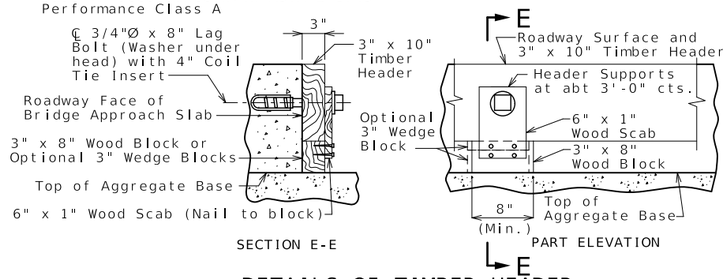


(1) 3-#4 Bars
(2) 9-#4 Bars
(3) ℄ 3/4" Jt. Filler
(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.

SECTION B-B
(Integral end bent)



PART SECTION B-B
(Non-integral end bent)

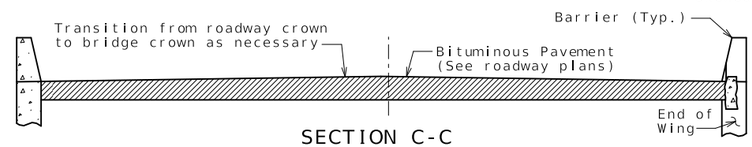


SECTION E-E

PART ELEVATION

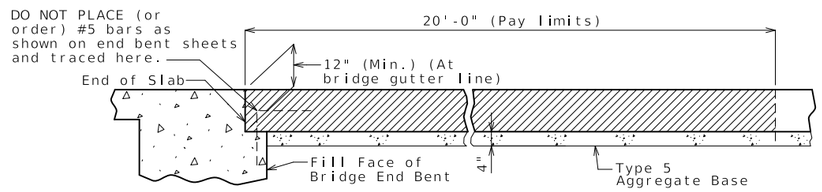
DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

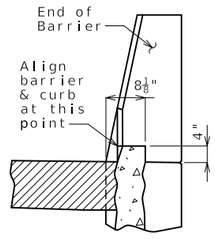


SECTION C-C

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



SECTION D-D



4" TYPE S CURB
See Missouri Standard Plan 609.00 for details of Type S curb.

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:04:39 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

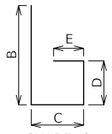
DATE PREPARED: 8/30/2024
ROUTE: K | STATE: MO
DISTRICT: BR | SHEET NO.: 22
COUNTY: AUDRAIN
JOB NO.: J2S3314
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9318

DESCRIPTION | DATE

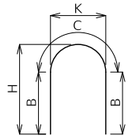
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed May 2024
Checked July 2024

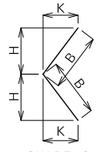
Note: This drawing is not to scale. Follow dimensions.



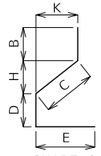
SHAPE 6
or 6S



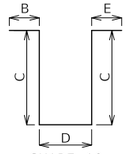
SHAPE 7



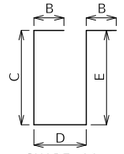
SHAPE 8
or 8S



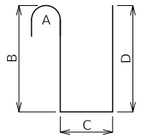
SHAPE 9
or 9S



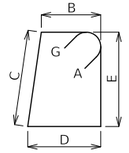
SHAPE 10
or 10S



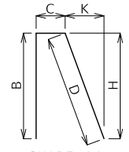
SHAPE 11
or 11S



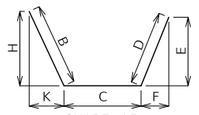
SHAPE 12



SHAPE 13S



SHAPE 14
or 14S



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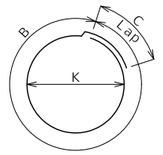
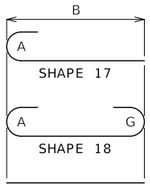
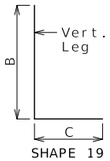
or 15S



SHAPE 16



SHAPE 17
SHAPE 18
SHAPE 20



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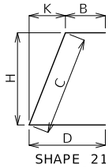
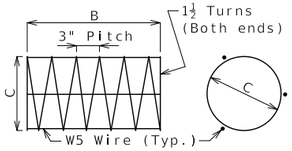
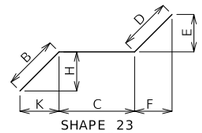
or 19S



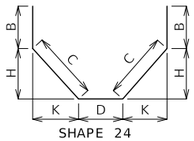
SHAPE 21
or 21S



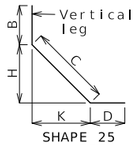
SHAPE 22



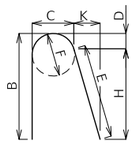
SHAPE 23
or 23S



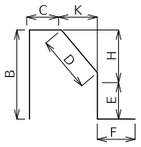
SHAPE 24
or 24S



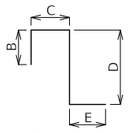
SHAPE 25
or 25S



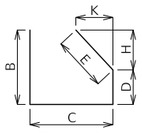
SHAPE 26



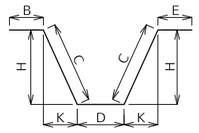
SHAPE 27S



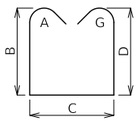
SHAPE 28
or 28S



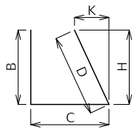
SHAPE 29
or 29S



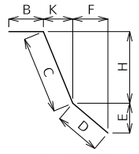
SHAPE 30
or 30S



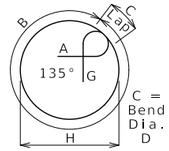
SHAPE 31S



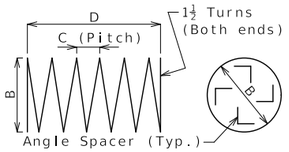
SHAPE 32
or 32S



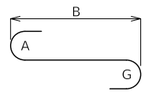
SHAPE 33
or 33S



SHAPE 34S



SHAPE 35 (1)

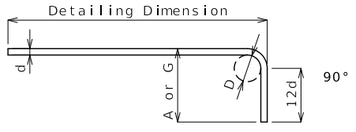


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

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

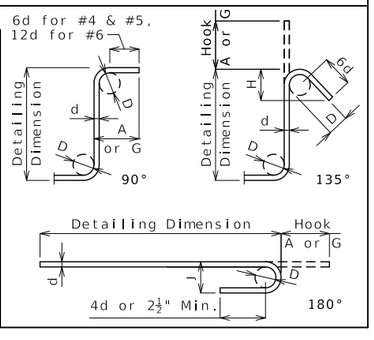


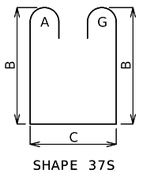
Stirrup Pin Bend Shapes (S)

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

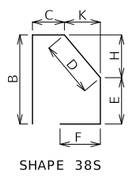
Applicable for all grades of steel.

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





SHAPE 37S



SHAPE 38S

BENDING DIAGRAMS

All dimensions are out to out.

Shapes ending with an S shall be bent in accordance with stirrup pin bend shapes.

Unless otherwise noted, finished bending diameter D is the same for all bends of a shape.

(1) Shall be a deformed or plain spiral bar or wire.

Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.

Reinforcing Steel Totals (Pounds)

		Substructure		Superstructure			Entire Bridge	
	Size	Plain	Epoxy	Slab	Barrier	Slip Form	Plain	Epoxy
By Size	W5	0	0	0	0	0	0	0
	4	234	0	126	0	0	234	126
	5	736	0	11,203	6,842	449	736	18,494
	6	1,474	0	21,777	0	0	1,474	21,777
	7	0	0	0	0	0	0	0
	8	1,360	0	640	0	0	1,360	640
	9	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0
By Type		3,804	0	33,746	6,842	449	3,804	41,037

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed May 2024
Checked July 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
10/07/2024 7:31:08 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED: 10/7/2024
ROUTE: K
STATE: MO
DISTRICT: BR
SHEET NO.: 23
COUNTY: AUDRAIN
JOB NO.: J2S3314
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9318

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													
21	6 D200	BEAM		20		2 6.00							2 6	2 6	79
9	8 H200	BEAM		18		24 3.00							26 1	26 1	627
10	6 H201	BEAM		20		24 3.00							24 3	24 3	364
14	6 H202	BEAM		10S			12.00	3 4.00					5 4	5 0	105
3	8 H203	BEAM		18		4 10.00							6 8	6 8	53
12	4 P200	COLUMN		34S		3 8.00	2.00				14.00		4 7	4 5	35
20	4 P201	COLUMN		34S		3 8.00	2.00				14.00		4 7	4 5	59
20	5 U200	BEAM		13S		3 6.00	3 6.00	3 6.00	3 6.00				14 11	14 7	304
8	4 U201	BEAM		10S			6.00	3 6.00					4 6	4 4	23
6	5 U202	BEAM		10S			3 6.00	3 6.00					10 6	10 3	64
24	6 V200	COLUMN		20		5 3.00							5 3	5 3	189
		Int Bent 3													
21	6 D300	BEAM		20		2 6.00							2 6	2 6	79
9	8 H300	BEAM		18		24 3.00							26 1	26 1	627
10	6 H301	BEAM		20		24 3.00							24 3	24 3	364
14	6 H302	BEAM		10S			12.00	3 4.00					5 4	5	105
3	8 H303	BEAM		18		4 10.00							6 8	6 8	53
12	4 P300	COLUMN		34S		3 8.00	2.00				14.00		4 7	4 5	35
20	4 P301	COLUMN		34S		3 8.00	2.00				14.00		4 7	4 5	59
20	5 U300	BEAM		13S		3 6.00	3 6.00	3 6.00	3 6.00				14 11	14 7	304
8	4 U301	BEAM		10S			6.00	3 6.00					4 6	4 4	23
6	5 U302	BEAM		10S			3 6.00	3 6.00					10 6	10 3	64
24	6 V300	COLUMN		20		5 3.00							5 3	5 3	189
		Superstructure													
		End Bent 1													
14	6 F100	WING BRACE	E	23S		2 2.75	4 11.00				19.00	19.00	7 2	7 0	147
4	6 F101	DIAPHRAGM	E	19S		4 0.00	2 8.00						6 8	6 6	39
12	6 H100	BEAM	E	20		26 5.00							26 5	26 5	476
6	6 H101	DIAPHRAGM	E	20		26 5.00							26 5	26 5	238
4	6 H102	SLAB	E	20		26 5.00							26 5	26 5	159
24	5 H103	APPROACH NOTCH	E	19S		22.00	15.00						3 1	3 0	75
28	6 H104	WING	E	20		6 8.00							6 8	6 8	280
16	8 H105	WING	E	20		7 6.00							7 6	7 6	320
18	5 U100	BEAM	E	31S		4 0.00	2 9.00	4 0.00					11 8	11 5	214
4	4 U101	BEAM	E	13S		2 9.00	2 9.00	2 9.00	2 9.00				11 9	11 6	31
6	4 U102	BEAM	E	10S			2 9.00	2 9.00					8 3	8 1	32
22	5 U103	BEAM	E	31S		2 1.00	2 3.00	2 1.00					7 4	7 1	163
22	6 U104	BEAM	E	19S			12.00	2 8.00					3 8	3 6	116
32	6 U105	DIAPHRAGM	E	19S		2 1.00	4 6.00						6 7	6 5	308
8	5 V100	BEAM	E	17		4 0.00							4 7	4 7	38
12	6 V101	DIAPHRAGM	E	20		11.50							1 0	1 0	18
24	6 V102	WING	E	20		5 0.00							5 0	5 0	180
		End Bent 4													
14	6 F100	WING BRACE	E	23S		2 2.75	4 11.00				19.00	19.00	7 2	7 0	147
4	6 F101	DIAPHRAGM	E	19S		4 0.00	2 8.00						6 8	6 6	39
12	6 H100	BEAM	E	20		26 5.00							26 5	26 5	476
6	6 H101	DIAPHRAGM	E	20		26 5.00							26 5	26 5	238
4	6 H102	SLAB	E	20		26 5.00							26 5	26 5	159
24	5 H103	APPROACH NOTCH	E	19S		22.00	15.00						3 1	3 0	75
28	6 H104	WING	E	20		6 8.00							6 8	6 8	280
16	8 H105	WING	E	20		7 6.00							7 6	7 6	320
18	5 U100	BEAM	E	31S		4 0.00	2 9.00	4 0.00					11 8	11 5	214
4	4 U101	BEAM	E	13S		2 9.00	2 9.00	2 9.00	2 9.00				11 9	11 6	31
6	4 U102	BEAM	E	10S			2 9.00	2 9.00					8 3	8 1	32

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	5 U103	DIAPHRAGM	E	31S		2 1.00	2 3.00	2 1.00					7 4	7 1	163
22	6 U104	DIAPHRAGM	E	19S		12.00	2 8.00						3 8	3 6	116
32	6 U105	DIAPHRAGM	E	19S		2 1.00	4 6.00						6 7	6 5	308
8	5 V100	BEAM	E	17		4 0.00							4 7	4 7	38
12	6 V101	DIAPHRAGM	E	20		11.50							1 0	1 0	18
24	6 V102	WING	E	20		5 0.00							5 0	5 0	180
		Int Diaphragms													
6	5 H500	DIAPHRAGM	E	20		23 0.00							23 0	23 0	144
12	5 H501	DIAPHRAGM	E	19S		4 0.00	3 0.00						7 0	6 11	87
42	5 U500	DIAPHRAGM	E	28S			14.00	2 2.00	3 0.00				6 4	6 1	266
8	5 V500	DIAPHRAGM	E	20		2 2.00							2 2	2 2	18
		Slab													
250	6 S1	SLAB	E	20		26 5.00							26 5	26 5	9,919
81	6 S2	SLAB	E	20		45 4.00							45 4	45 4	5,515
52	6 S3	SLAB	E	20		31 0.00							31 0	31 0	2,421
167	5 S4	SLAB	E	20		26 5.00							26 5	26 5	4,601
108	5 S5	SLAB	E	20		45 4.00							45 4	45 4	5,107
		Barrier													
		Type D													
20	5 K1	BARRIER	E	27S		3 8.00	9.25	5.25	3 2.75		5.25	1.00	8 1	7 11	165
40	5 K2	BARRIER	E	27S		3 8.00	9.25	14.50	2 5.75		14.25	2.75	8 2	7 11	330
60	5 K4	BARRIER	E	19S	4	2 4.25	10.00						3 2	3 1	
		Incr. = 0.125"				2 6.25	10.00						3 4	3 3	198
20	5 K5	BARRIER	E	38S	4	8.25	9.50	18.50	0.00	0.00	4.00	15.00	2 8	2 6	
		Incr. = 1.250"				8.25	9.50	20.50	0.00	0.00	4.50	20.00	3 1	2 11	56
40	5 K6	BARRIER	E	19S		2 6.75	10.00						3 5	3 3	136
59	5 K7	BARRIER	E	20		7 8.00							7 8	7 8	472
262	5 R1	BARRIER	E	26		3 3.00	5.50	2.25	3 1.25	5.50	3 0.75	6.75	7 0	6 9	1,845
262	5 R2	BARRIER	E	19S		20.50	9.50						2 6	2 5	660
262	5 R3	BARRIER	E	27S			9.50	15.25	5.00	12.00	15.00	3.00	3 6	3 4	911
32	5 R4	BARRIER	E	20		33 6.00							33 6	33 6	1,118
32	5 R5	BARRIER	E	20		11 9.00							11 9	11 9	392
16	5 R6	BARRIER	E	20		33 6.00							33 6	33 6	559
		Slip-Form													
32	5 C1	SLIP FORM	E	20		12 0.00							12 0	12 0	401
8	5 C2	SLIP FORM	E	20		5 9.00							5 9	5 9	48

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. _.

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 May 2024
Checked July 2024

BILL OF REINFORCING STEEL

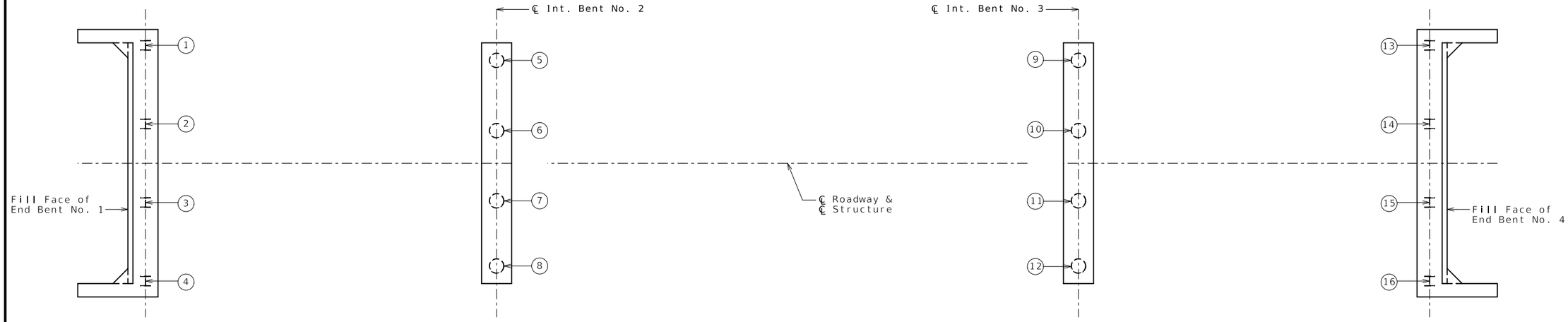
Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
10/07/2024 7:30:53 AM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 10/7/2024
ROUTE K | STATE MO
DISTRICT BR | SHEET NO. 24
COUNTY AUDRAIN
JOB NO. J2S3314
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9318

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 NUMBERING FOR RECORDING AS-BUILT PILE DATA

As-Built Pile Data (HP 12 x 53)			
Pile No.	Length In Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
			End Bent No. 4
13			
14			
15			
16			

As-Built Pile Data (OECIP)					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					Intermediate Bent No. 2
5					
6					
7					
8					
					Intermediate Bent No. 3
9					
10					
11					
12					

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal
D. PDA test pile
E. Minimum tip elevation controlled
(Use when actual blow count is less than PDA blow count due to minimum tip elevation requirement. A plus sign (+) shall be placed after the PDA nominal axial compressive resistance value indicating actual value is higher than PDA value.)

This sheet to be completed by MoDOT construction personnel.

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:05:55 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
8/30/2024

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
BR	25

COUNTY
AUDRAIN

JOB NO.
J2S3314

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9318

DESCRIPTION	DATE

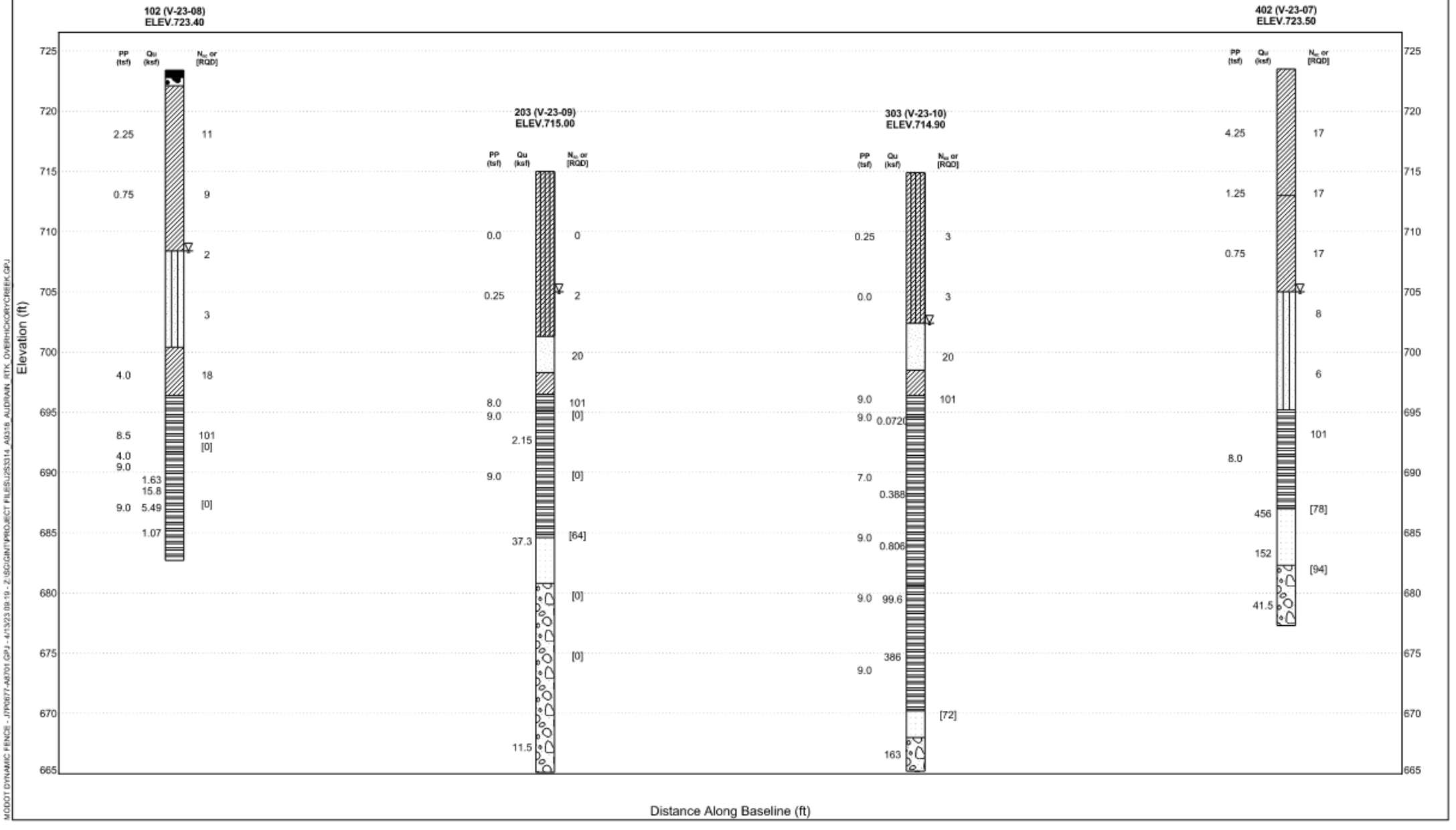
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MoDOT-Geotechnical Section
1617 Missouri Blvd.
Jefferson City, MO 65109

SUBSURFACE DIAGRAM

PROJECT NAME Bridge Replacement
PROJECT LOCATION Over Hickory Creek
CLIENT
PROJECT NUMBER J2S3314

Asphalt
USCS Silty Sand
USCS Poorly-graded Sand
USCS Low Plasticity Sandy Clay
USCS Well-graded Gravel
Shale
Sandstone
USCS Low Plasticity Clay
USCS Low Plasticity Silty Clay
Conglomerate



BORING DATA

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

Detailed May 2024
Checked July 2024

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
08/30/2024 3:17:23 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 8/30/2024
ROUTE K | STATE MO
DISTRICT BR | SHEET NO. 26
COUNTY AUDRAIN
JOB NO. J2S3314
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9318

DESCRIPTION | DATE

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