DESIGN DESIGNATION

ROUTE 46 BRIDGE

A.A.D.T. - 2025 = 1102
A.A.D.T. - 2045 = 1248
D.H.V. = 9.93%
T = 17.55%
V = 55 M.P.H.
D = 49.5%/50.5%

FUNCTIONAL CLASSIFICATION-MAJOR COLLECTOR

DESIGN DESIGNATION

ROUTE W BRIDGE

A.A.D.T. - 2025 = 249
A.A.D.T. - 2045 = 283
D.H.V. = 15.64%
T = 11.52%
V = 55 M.P.H.
D = 47.3%/52.7%

FUNCTIONAL CLASSIFICATION-MAJOR COLLECTOR

NO RIGHT OF WAY ACQUISITION

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		
FIRE HYDRANT		
WATER VALVE		
WATER METER		
DROP INLET		
DITCH BLOCK		
GROUND MOUNTED SIGN		
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL		
FENCE		
CHAIN LINK	-V-	
WOVEN WIRE	-X-	
GATE POST		
BENCHMARK		

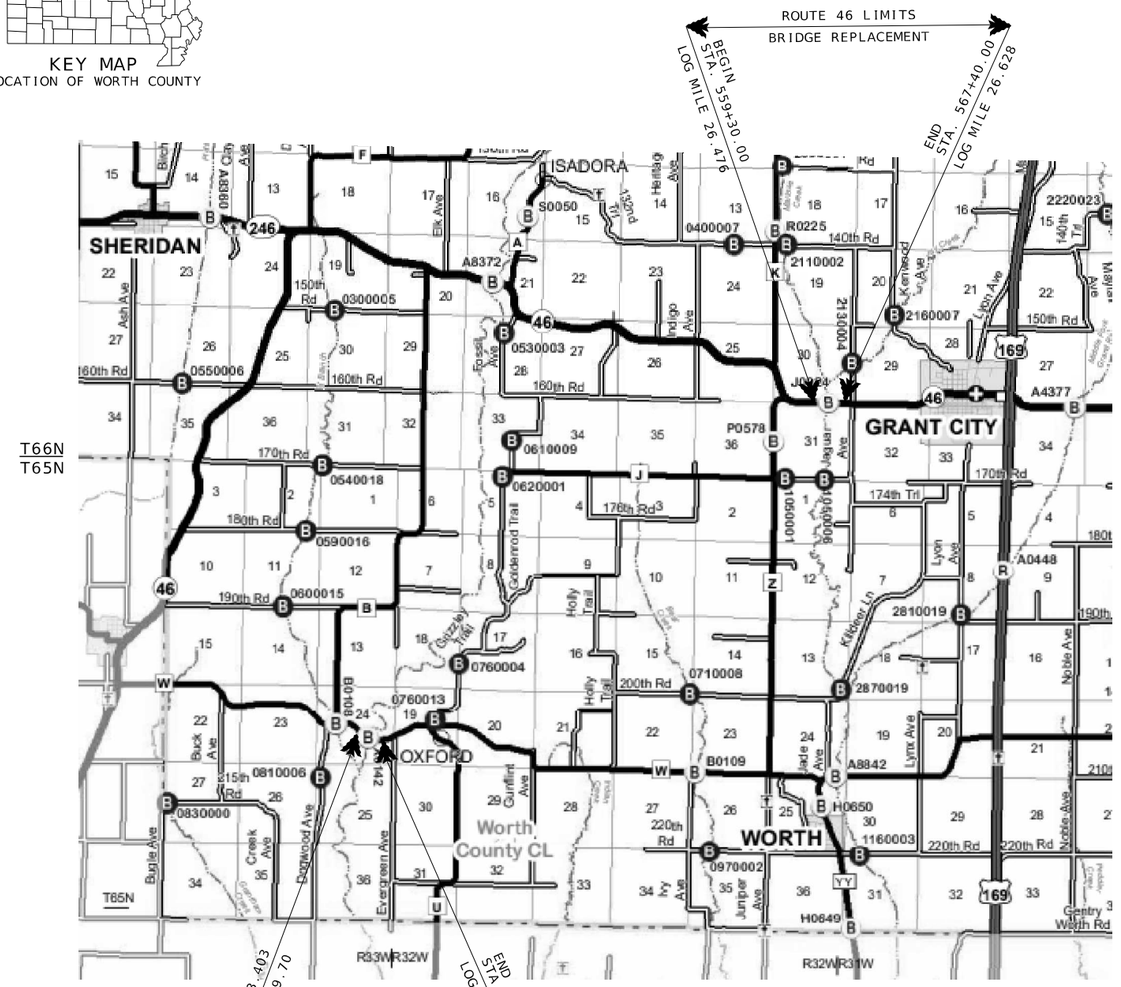
NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY 46/STATE HIGHWAY W WORTH COUNTY

KEY MAP
LOCATION OF WORTH COUNTY

N.T.S



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 ROUTE 46	STA.	559 + 30.00
END OF ROUTE 46	STA.	567 + 40.00
APPARENT LENGTH		810.00 FEET
EQUATIONS AND EXCEPTIONS:		
TOTAL CORRECTIONS		.00 FEET
NET LENGTH		810.00 FEET
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES		0.76 ACRES
BEGINNING OF ROUTE W	STA.	185 + 19.70
END OF ROUTE W	STA.	195 + 00.00
APPARENT LENGTH		980.30 FEET
EQUATIONS AND EXCEPTIONS:		
TOTAL CORRECTIONS		.00 FEET
NET LENGTH		980.30 FEET
NET LENGTH OF PROJECT		1,790.30 FEET
STATE LENGTH		0.339 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES		0.731 ACRES

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED: 11/22/2024
ROUTE: 46/W
STATE: MO
DISTRICT: NW
SHEET NO.: 1
COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

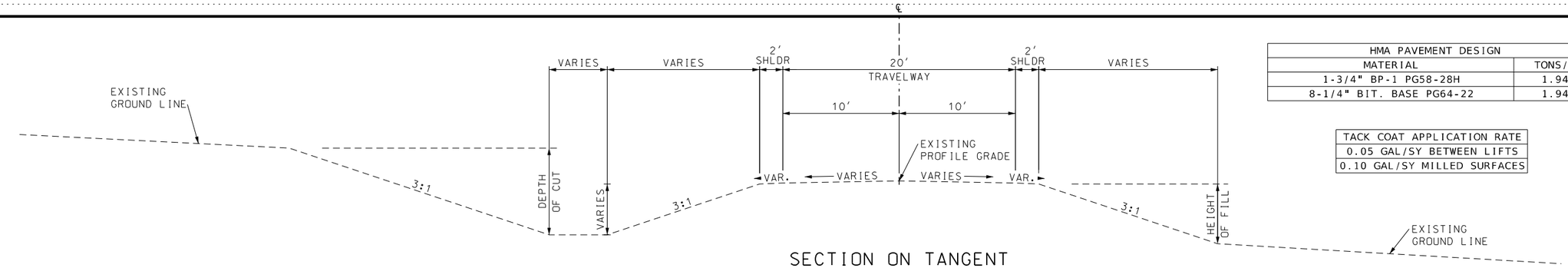
DESCRIPTION	DATE

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

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

TREK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

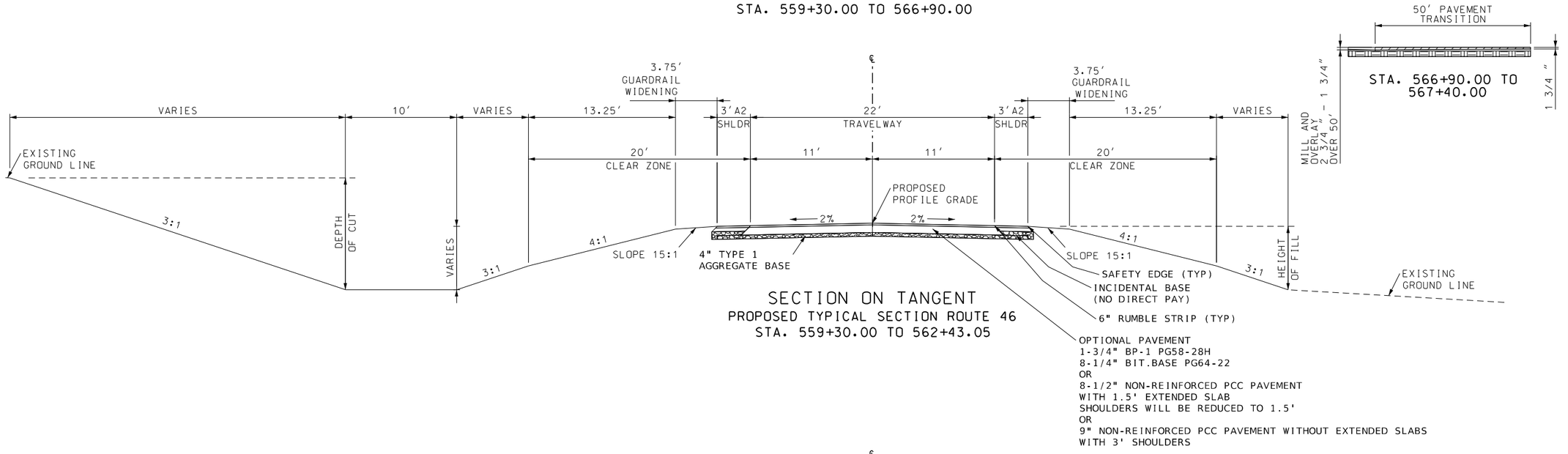
REV.



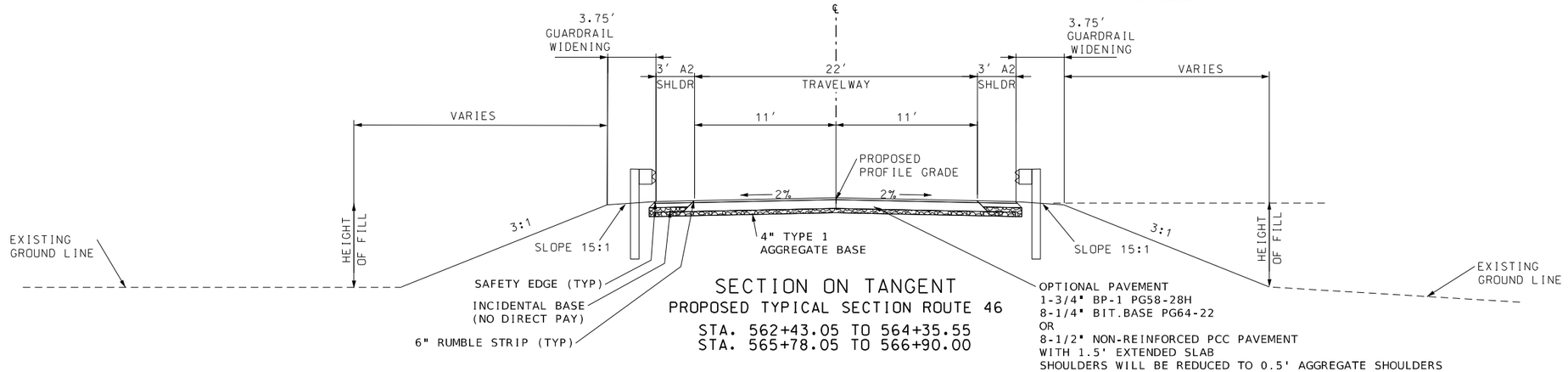
HMA PAVEMENT DESIGN	
MATERIAL	TONS/CY
1-3/4" BP-1 PG58-28H	1.948
8-1/4" BIT. BASE PG64-22	1.943

TACK COAT APPLICATION RATE
0.05 GAL/SY BETWEEN LIFTS
0.10 GAL/SY MILLED SURFACES

SECTION ON TANGENT
EXISTING TYPICAL SECTION ROUTE 46
STA. 559+30.00 TO 566+90.00



SECTION ON TANGENT
PROPOSED TYPICAL SECTION ROUTE 46
STA. 559+30.00 TO 562+43.05



SECTION ON TANGENT
PROPOSED TYPICAL SECTION ROUTE 46
STA. 562+43.05 TO 564+35.55
STA. 565+78.05 TO 566+90.00

NOT TO SCALE

ROUTE 46
TYPICAL SECTION
SHEET 1 OF 2

JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER
STATE OF MISSOURI

DATE PREPARED: 11/22/2024
ROUTE: 46/W | STATE: MO
DISTRICT: NW | SHEET NO.: 2
COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE | REV.

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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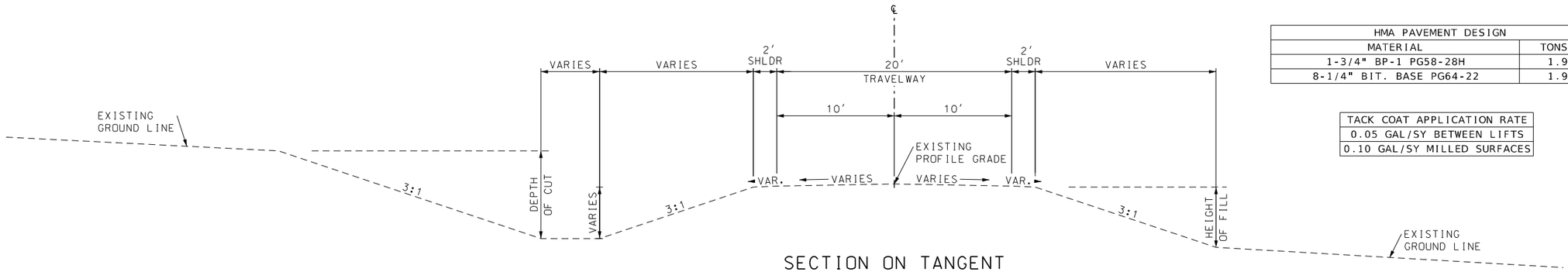
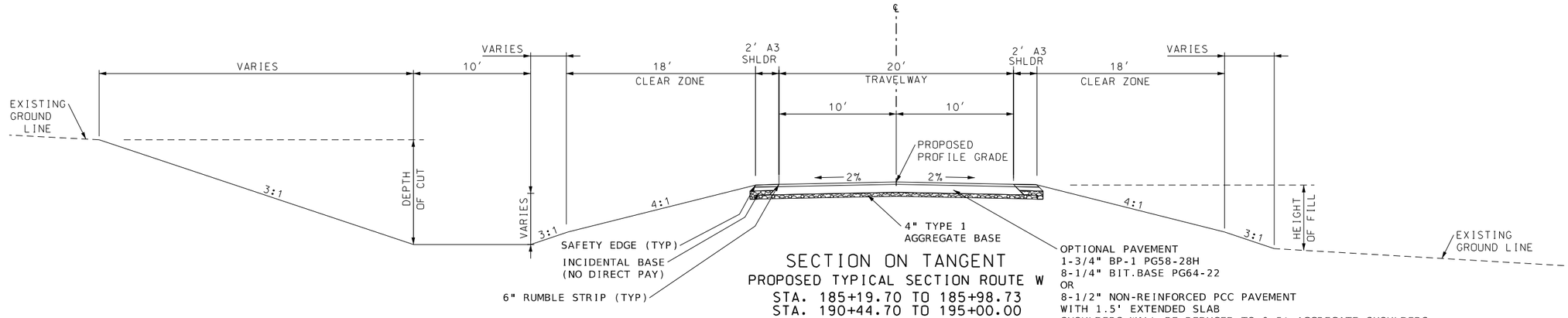


HMA PAVEMENT DESIGN	
MATERIAL	TONS/CY
1-3/4" BP-1 PG58-28H	1.948
8-1/4" BIT. BASE PG64-22	1.943

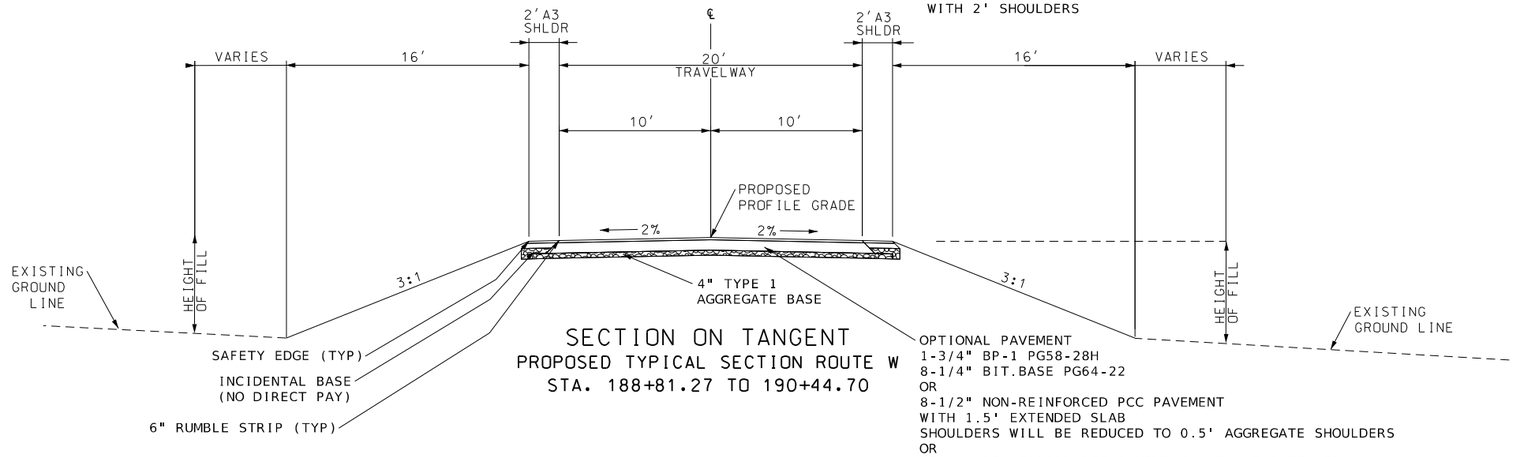
TACK COAT APPLICATION RATE
0.05 GAL/SY BETWEEN LIFTS
0.10 GAL/SY MILLED SURFACES

SECTION ON TANGENT
EXISTING TYPICAL SECTION ROUTE W
STA. 185+19.70 TO 195+00.00



SECTION ON TANGENT
PROPOSED TYPICAL SECTION ROUTE W
STA. 185+19.70 TO 185+98.73
STA. 190+44.70 TO 195+00.00

OPTIONAL PAVEMENT
1-3/4" BP-1 PG58-28H
8-1/4" BIT.BASE PG64-22
OR
8-1/2" NON-REINFORCED PCC PAVEMENT
WITH 1.5' EXTENDED SLAB
SHOULDERS WILL BE REDUCED TO 0.5' AGGREGATE SHOULDERS
OR
9" NON-REINFORCED PCC PAVEMENT WITHOUT EXTENDED
SLABS
WITH 2' SHOULDERS



SECTION ON TANGENT
PROPOSED TYPICAL SECTION ROUTE W
STA. 188+81.27 TO 190+44.70

OPTIONAL PAVEMENT
1-3/4" BP-1 PG58-28H
8-1/4" BIT.BASE PG64-22
OR
8-1/2" NON-REINFORCED PCC PAVEMENT
WITH 1.5' EXTENDED SLAB
SHOULDERS WILL BE REDUCED TO 0.5' AGGREGATE SHOULDERS
OR
9" NON-REINFORCED PCC PAVEMENT WITHOUT EXTENDED
SLABS
WITH 2' SHOULDERS

NOT TO SCALE

ROUTE W
TYPICAL SECTION
SHEET 2 OF 2

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	2

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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

REV.	DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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TREK DESIGN GROUP, LLC

002_TS_02_JNW0020_I5_002_HWYW.dgn 7:45:11 AM 11/22/2024

MOBILIZATION	
PROJECT TOTAL	1 LUMP SUM

ADDITIONAL MOBILIZATION FOR SEEDING	
PROJECT TOTAL	3 EA

CONTRACTOR FURNISHED SURVEYING & STAKING	
PROJECT TOTAL	1 LUMP SUM

ENTRANCES

LOCATION	STATION	SIDE	GRAVEL A CRUSHED STONE B 4" (SY)	15" GROUP C PIPE (LF)	15" GROUP C FES (EA)
ROUTE 46	561+22.21	LT	82.6	24	2
ROUTE 46	561+23.60	RT	44.8	32	2
		TOTALS	127	56	4

SEED AND MULCH

LOCATION	STATION	STATION	SEEDING - COOL SEASON GRASSES (ACRE)	MULCHING (ACRE)	REMARKS
ROUTE 46	559+30.00	564+15.55	0.5	0.5	WEST OF BRIDGE
ROUTE 46	565+98.05	567+73.80	0.2	0.2	EAST OF BRIDGE
		TOTALS	0.7	0.7	

MILL AND OVERLAY

LOCATION	STATION	STATION	1.75" BP-1 PG 58-28H (TON)	TACK COAT 0.10 GAL/SY (GAL)	MODIFIED COLDMILLING (DEPTH TRANSITIONS) (SY)	REMARKS
ROUTE 46	566+90.00	567+40.00	14.4	15.2	152	DEPTH TRANSITION
		TOTALS	14.4	15.2	152	

PERMANENT EROSION CONTROL

LOCATION	STATION	SIDE	FURNISHING TYPE 2 ROCK BLANKET (CY)	PLACING TYPE 2 ROCK BLANKET (CY)	PERMANENT EROSION CONTROL GEOTEXTILE (SY)
ROUTE 46	564+38.02	LT/RT	426.7	426.7	640
ROUTE 46	565+75.55	LT/RT	148.7	148.7	223
		TOTALS	575	575	863

BASE AND PAVEMENT

LOCATION	STATION	STATION	SIDE	OPTIONAL PAVEMENT (SY)	TYPE A2 SHOULDER (SY)	TYPE 1 AGG. FOR BASE (4 IN. THICK) (SY)	REMARKS
ROUTE 46	559+30.00	564+15.55	LT/RT	1186.9	321.0	1508	WEST OF BRIDGE
ROUTE 46	565+98.05	566+90.00	LT/RT	224.8	58.9	284	EAST OF BRIDGE
			TOTALS	1411.7	379.9	1792	

TEMPORARY EROSION CONTROL

LOCATION	STATION	STATION	SIDE	SILT FENCE (LF)	ROCK DITCH CHECK (LF)	TYPE C TEMPORARY BERM (LF)	SEDIMENT REMOVAL (CY)
ROUTE 46	559+44	561+77	LT		150		10
ROUTE 46	559+44	562+00	RT		165		11
ROUTE 46	561+80	564+60	LT	281			2.8
ROUTE 46	562+04	564+57	RT	254			2.5
ROUTE 46	564+82		LT/RT			150	1.5
ROUTE 46	565+54		LT/RT			126	1.3
ROUTE 46	565+60	567+21	RT	180			1.8
ROUTE 46	565+66	568+05	LT	244			2.4
			TOTALS	959	315	276	33

EARTHWORK

LOCATION	STATION	STATION	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	EMBANKMENT IN PLACE (CY)
ROUTE 46	559+30.00	564+38.02	114	91	2700
ROUTE 46	565+75.55	566+90.00	108	86	434
		TOTALS	222	177	3134

PAVEMENT MARKING

LOCATION	STATION	STATION	SIDE	4" WHITE STANDARD WATERBORNE PVMT MARKING PAINT WITH TYPE P BEADS (LF)	4" YELLOW STANDARD WATERBORNE PVMT MARKING PAINT WITH TYPE P BEADS (LF)	RUMBLE STRIP (STA)
ROUTE 46	559+30	567+40		1620	558	
ROUTE 46	559+30	564+35.55	LT			5
ROUTE 46	559+30	564+35.55	RT			5
ROUTE 46	565+78.05	567+40	LT			1.6
ROUTE 46	565+78.05	567+40	RT			1.6
		TOTALS		1620	558	13.2

REMOVAL OF IMPROVEMENTS

SHEET	LOCATION	STATION	STATION	SIDE	DESCRIPTION	QUANTITY	UNITS
4	ROUTE 46	561+11.71	561+35.76	RT	15" CMP	24	LF
4	ROUTE 46	561+11.88	561+35.55	LT	15" RCP	24	LF
4	ROUTE 46	563+99.94		LT	OM-3	1	EA
4	ROUTE 46	564+01.72		RT	OM-3	1	EA
4	ROUTE 46	564+15.55		RT	OM-3	1	EA
4	ROUTE 46	564+20.48		LT	OM-3	1	EA
4	ROUTE 46	564+21.30		RT	OM-3	1	EA
4	ROUTE 46	564+28.05	564+41.00	RT	GUARD RAIL	13	LF
4	ROUTE 46	564+40.11		LT	OM-3	1	EA
4	ROUTE 46	565+71.72	565+86.75	LT	GUARD RAIL	15	LF
4	ROUTE 46	565+72.19	565+86.76	RT	GUARD RAIL	15	LF
4	ROUTE 46	565+73.87		RT	OM-3	1	EA
4	ROUTE 46	565+73.88		LT	OM-3	1	EA
4	ROUTE 46	565+94.26		LT	OM-3	1	EA
4	ROUTE 46	565+95.37		RT	OM-3	1	EA
4	ROUTE 46	566+14.08		LT	OM-3	1	EA
4	ROUTE 46	566+14.63		RT	OM-3	1	EA
INCLUDE ROUTE W REMOVALS (SEE NEXT SHEET)					TOTAL	1	LS

GUARDRAIL

LOCATION	STATION	STATION	SIDE	BRIDGE ANCHOR SECTION (EA)	MGS GUARDRAIL (LF)	"TYPE A" MASH CRASHWORTHY END TERMINAL (EA)	SHAPING SLOPES CLASS III (100F)	REMARKS
ROUTE 46	562+39.80	564+28.05	RT	1	100	1	0.75	ADJACENT LANE
ROUTE 46	563+02.30	564+28.05	LT	1	37.5	1	0.75	OPPOSING LANE
ROUTE 46	565+85.55	567+11.30	RT	1	37.5	1	0.75	OPPOSING LANE
ROUTE 46	565+85.55	567+73.80	LT	1	100	1	0.75	ADJACENT LANE
			TOTALS	4	275	4	3	

CLEARING AND GRUBBING

LOCATION	STATION	STATION	SIDE	CLEARING AND GRUBBING ACRE	REMARKS
ROUTE 46	559+30.00	564+15.55	LT/RT	0.5	WEST OF BRIDGE
ROUTE 46	565+98.05	567+73.80	LT/RT	0.2	EAST OF BRIDGE
			TOTAL	1	

ROUTE 46
SUMMARY OF QUANTITIES
SHEET 1 OF 3

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED: 11/22/2024
ROUTE: 46/W
STATE: MO
DISTRICT: NW
SHEET NO.: 3
COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

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

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

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Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

ENTRANCES

LOCATION	STATION	SIDE	GRAVEL A CRUSHED STONE B 4" (SY)
ROUTE W	190+94.15	LT	52.1
		TOTALS	52

BASE AND PAVEMENT

LOCATION	STATION	STATION	SIDE	OPTIONAL PAVEMENT (SY)	TYPE A3 SHOULDER (SY)	TYPE 1 AGG. FOR BASE (4 IN. THICK) (SY)	REMARKS
ROUTE W	185+19.70	185+78.73	LT/RT	132.4	12.9	145	WEST OF BRIDGE
ROUTE W	189+01.27	195+00.00	LT/RT	1329.5	255.0	1585	EAST OF BRIDGE
			TOTALS	1461.9	267.9	1730	

EARTHWORK

LOCATION	STATION	STATION	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	EMBANKMENT IN PLACE (CY)	COMPACTING IN CUT (STA)	REMARKS
ROUTE W	185+19.70	185+98.73	140	2		1	WEST OF BRIDGE
ROUTE W	193+95.00	195+00.00	263	210	681	1.1	EAST OF BRIDGE
		TOTALS	403	212	681	2.1	

REMOVAL OF IMPROVEMENTS

SHEET	LOCATION	STATION	STATION	SIDE	DESCRIPTION	QUANTITY	UNITS
5	ROUTE W	185+67.91		LT	OM-3	1	EA
5	ROUTE W	185+68.32		RT	OM-3	1	EA
5	ROUTE W	185+88.05		LT	OM-3	1	EA
5	ROUTE W	185+88.28		RT	OM-3	1	EA
5	ROUTE W	186+07.60		RT	OM-3	1	EA
5	ROUTE W	186+07.68		LT	OM-3	1	EA
5	ROUTE W	186+08.15	188+70.94	RT	GUARDRAIL	263	LF
5	ROUTE W	186+08.51	188+70.50	LT	GUARDRAIL	262	LF
5	ROUTE W	188+70.55		RT	OM-3	1	EA
5	ROUTE W	188+70.96		LT	OM-3	1	EA
5	ROUTE W	188+90.62		LT	OM-3	1	EA
5	ROUTE W	189+11.29		LT	OM-3	1	EA
5	ROUTE W	189+11.34		RT	OM-3	1	EA

CLEARING AND GRUBBING

LOCATION	STATION	STATION	SIDE	CLEARING AND GRUBBING ACRE	REMARKS
ROUTE W	185+19.70	185+80.49	LT/RT	0.1	WEST OF BRIDGE
ROUTE W	188+99.15	195+00.00	LT/RT	0.4	EAST OF BRIDGE
			TOTAL	1	

SEED AND MULCH

LOCATION	STATION	STATION	SEEDING - COOL SEASON GRASSES (ACRE)	MULCHING (ACRE)	REMARKS
ROUTE W	185+19.70	185+80.49	0.1	0.1	WEST OF BRIDGE
ROUTE W	188+99.15	195+00.00	0.4	0.4	EAST OF BRIDGE
		TOTALS	0.5	0.5	

PERMANENT EROSION CONTROL

LOCATION	STATION	SIDE	FURNISHING TYPE 2 ROCK BLANKET (CY)	PLACING TYPE 2 ROCK BLANKET (CY)	PERMANENT EROSION CONTROL GEOTEXTILE (SY)
ROUTE W	186+01.27	LT/RT	176	176	264
ROUTE W	188+78.73	LT/RT	172	172	257
ROUTE W	196+40.11	RT	22	22	33
		TOTALS	370	370	554

TEMPORARY EROSION CONTROL

LOCATION	STATION	STATION	SIDE	SILT FENCE (LF)	TYPE C TEMPORARY BERM (LF)	SEDIMENT REMOVAL (CY)
ROUTE W	185+19	186+00	LT	87		0.9
ROUTE W	185+19	186+04	RT	88		0.9
ROUTE W	186+36		LT/RT		103	1.0
ROUTE W	188+60		LT/RT		106	1.1
ROUTE W	188+76	195+10	LT	683		6.8
ROUTE W	188+82	195+10	RT	634		6.3
			TOTALS	1492	209	17

PAVEMENT MARKING

LOCATION	STATION	STATION	SIDE	4" WHITE STANDARD WATERBORNE PVMT MARKING PAINT WITH TYPE P BEADS (LF)	4" YELLOW STANDARD WATERBORNE PVMT MARKING PAINT WITH TYPE P BEADS (LF)	RUMBLE STRIP (STA)
ROUTE W	185+19.70	195+00.00		1961	1961	
ROUTE W	185+19.70	185+96.81	LT			7.7
ROUTE W	185+19.70	186+00.85	RT			8.1
ROUTE W	188+79.15	195+00	LT			62.1
ROUTE W	188+83.39	195+00	RT			61.7
		TOTALS		1961	1961	139.6

ROUTE W
SUMMARY OF QUANTITIES
SHEET 2 OF 3

JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER
STATE OF MISSOURI

DATE PREPARED 11/22/2024
ROUTE 46/W
STATE MO
DISTRICT NW
SHEET NO. 3
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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TREK DESIGN GROUP, LLC

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)
W012-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00						ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	2	32.00				DETOUR AHEAD
WO20-3	48X48	16.00	5	80.00				ROAD CLOSED AHEAD
WO20-4	48X48	16.00						ONE LANE ROAD AHEAD
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 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	3	9.00				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	20.00				ROAD CLOSED
R11-3a	60X30	12.50	3	37.50				ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50						ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00						POINT OF PRESENCE
CONST-8	48X36	12.00						WORK ZONE NO PHONE ZONE
50A	36X78	19.50	2	39.00				
50B	36X78	19.50	2	39.00				
50C	36X78	19.50	2	39.00				
50D	36X78	19.50	3	58.50				
50E	36X78	19.50	3	58.50				
50F	36X78	19.50	3	58.50				
50G	36X78	19.50	1	19.50				
50H	36X78	19.50	1	19.50				

616-10.05 CONSTRUCTION SIGNS	TOTAL
	510

616-10.10 RELOCATED SIGNS	TOTAL
	0

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161008	3	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	10	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 WITHOUT COMM. INTERFACE- CONTRACTOR FURNISHED/RETAINED
6161099	5	CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE- CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
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

EFFECTIVE: 07-01-2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO

DISTRICT	SHEET NO.
NW	3

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
SHEET 3 OF 3

SW 1/4, SE 1/4
SECTION 30, T66N, R31W

PBR FARMS LLC

560

565

570

ROUTE 46
REMOVE EXISTING BRIDGE
BR. NO. J0024
(42.5',42.5',42.5') CONCRETE DECK GIRDER SPANS
STA. 564+43.3 TO STA 565+70.3
L=127.0' W=20' ROADWAY AT RT. ANGLES
D.A.=20.8 SQ. MI
PROPOSED BRIDGE
BR. NO. 9467
(40'-60' 40') SDCL WEATHERING STEEL BEAM SPANS
℄ EXISTING ROUTE 46
STA 564+35.55 TO 565+78.05
L=143.5 W=28' ROADWAY AT RT. ANGLES D.A.=21 SQ. MI.

GUARDRAIL STA.563+02.30-
564+28.05 REMOVE 15 LF OF
EXISTING GUARDRAIL
INSTALL BRIDGE ANCHOR SECTION
37.5 LF MGS GUARDRAIL

STA. 565+78.05 TO
STA. 565+98.05
BRIDGE APPROACH
(MINOR)

GUARDRAIL STA.565+85.55-567+73.80
REMOVE 15 LF OF
EXISTING GUARDRAIL
INSTALL BRIDGE ANCHOR SECTION
100 LF MGS GUARDRAIL

PBR FARMS LLC
SE 1/4, SE 1/4
SECTION 30, T66N, R31W

END STA 572+00.00

EX. R/W

ENTRANCE STA. 561+22.21
GRAVEL FIELD ENTRANCE

END SHOULDER TAPER +90.00

REMOVE EX.
INSTALL 24 LF
15" GROUP C PIPE
INSTALL 2-15"
GROUP C FES

TYPE 2
ROCK
BLANKET

MARLOWE CREEK

EX. R/W

END SHOULDER TAPER +30.00

+90.00

SL

CP
102

EXISTING R/W

RTE 46 ℄

(R) OBJECT
MARKERS

END ROUTE 46
STA 567+40.00

ROUTE 46

SECTION LINE

S89°30'53"E

CP 101

50' DEPTH
TRANSITION
STA 566+90.00-
567+40.00

EX. R/W

ENTRANCE STA. 561+23.60
GRAVEL FIELD ENTRANCE

REMOVE EX.
INSTALL 32 LF
15" GROUP C
INSTALL 2-15"
GROUP C FES

GUARDRAIL STA.562+39.80-
564+28.05 REMOVE 15 LF OF
EXISTING INSTALL BRIDGE
ANCHOR SECTION
100 LF MGS GUARDRAIL

BM 108

EXISTING R/W

NE 1/4, NE 1/4
SECTION 31, T66N, R31W

ALL BEARINGS BASED
ON STATE PLANE
WESTERN COORDINATES

BEGIN ROUTE 46
STA 559+30.00

DAVID AND ANN GILLAND

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

NW 1/4, NE 1/4
SECTION 31, T66N, R31W
STA.564+15.55 TO
STA.564+35.55
BRIDGE APPROACH
(MINOR)

GUARDRAIL STA.565+85.55-
567+11.30 REMOVE 15 LF OF
EXISTING GUARDRAIL
INSTALL BRIDGE ANCHOR SECTION
37.5 LF MGS GUARDRAIL

DAVID AND ANN GILLAND

SCALE
0 50 100 150

UNCLASSIFIED EXCAVATION = 114 CY
COMPACTING EMBANKMENT = 91 CY
EMBANKMENT IN PLACE = 2700 CY

CLASS A EXCAVATION = 108 CY
COMPACTING EMBANKMENT = 86 CY
EMBANKMENT IN PLACE = 434 CY

BEGIN ROUTE 46
MATCH EX.
VPC 559+30.00
EL 987.37

SSD = 503'
K = 117
760.00' V.C.

±35.55

BRIDGE EXCEPTION

±78.05

+90

PROPOSED GROUND

EXISTING GROUND

-6.35%

+0.15%

VPI 558+00.00
EL 963.24

D.H.W.
955.6

O.H.W.
939.7

VPT 566+90.00
EL 963.81

VLP 566+72.46
EL 963.80

END ROUTE 46
STA 567+40.00
MATCH EXISTING

DRIVEWAYS ROUTE 46

STATION	LOCATION	TYPE	SKEW	GRADE	SURFACE	PIPE	FES	REMARKS
561+22.21	LT	50' TYPE 1	90	10.98%	4" GRAVEL	24' - 15" GROUP C	15" GROUP C	FIELD ENTRANCE
561+23.60	RT	30' TYPE 1	90	8.32%	4" GRAVEL	32' - 15" GROUP C	15" GROUP C	FIELD ENTRANCE

UTILITY CONTACTS

CITY OF PARNELL
PH. 660-254-5515
CITYOFPARNELL.MO@GMAIL.COM

EVERGY
PAT EVERETT
PH. 816-652-1519
PAT.EVERETT@EVERGY.COM

MARK CARLSON
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MARK.CARLSON@EVERGY.COM

GRM NETWORKS
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MNOE@CORP.GRM.NET

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DAVID.CHRISTOPHER@WINDSTREAM.COM

DYLAN ROLLINS
DYLAN.ROLLINS@WINDSTREAM.COM

WORTH COUNTY PWSD1
BOBBI GLADSTONE
PH. 660-564-4082
WORTHPWSD@WINDSTREAM.NET

BENCHMARK #108 (VERTICAL ONLY)
(SET) STAPLED 60D NAIL IN THE W. FACE OF A 12" WALNUT TREE ON THE WEST SIDE OF MARLOW CREEK AND SOUTH SIDE OF HIGHWAY, LOCATED APPROXIMATELY DUE SOUTH OF THE WEST END OF BRIDGE AND APPROXIMATELY 8' SSE OF AN "ALLTELL" UTILITY MARKER SIGN
N:1572750.44 E:2803551.59 ELEVATION:956.49

1000 990 980 970 960 950 940 930 920

560+00 561+00 562+00 563+00 564+00 565+00 566+00 567+00 568+00 569+00 570+00 571+00

PLAN & PROFILE
SHEET 1 OF 3

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	4

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Missouri Cert. of
Authority 2002010300

TREK DESIGN GROUP, LLC

004_PP_JNW0020_I50_RTE-46.dgn 7:46:07 AM 11/22/2024

NW 1/4, SE 1/4
SECTION 24, T65N, R33W

SCALE
0 50 100 150

STEVEN AND
JONI MULLOCK

PI 181+74.96
PC 178+72.79
PT 184+44.37
Δ 45°45'0.0" (LT)
D 7°59'59,9"
L 571.88' (ARC)
T 302.17'
R 716.20'

ROUTE W
REMOVE EXISTING BRIDGE
BR. NO. X0142
(37') I-BEAM SPANS, (58'-70'-58')
CONTINUOUS I-BEAM SPANS, (37') I-BEAM SPANS
STA. 186+08.00 TO STA 188+70.75
L=262.75'W=20' ROADWAY AT RT. ANGLES
D.A.=249 SQ. MI.

PROPOSED BRIDGE
BR. NO. 9468
℄ EXISTING ROUTE W
(90'-110'-80')PRESTRESSED CONCRETE NU-GIRDER SPANS
STA. 185+98.73 TO 188+81.27
L=283.56'W=24' ROADWAY AT 10-DEGREE RT. ADVANCED
D.A.=249 SQ. MI.

CONSTRUCTION &
MAINTENANCE EASEMENT
FOR CHANGING OF CHANNEL
(TRACT #2) AS DESCRIBED BY THE
CONVEYANCE DEED REC. IN
BOOK 104 PG 587

WOVEN WIRE FENCE

BEGIN ROUTE W
STA:185+19.70

PT STA 184+44.37
EQ STATION 184+44.67 BK
STA 184+44.37 AH

END SHOULDER TAPER +76.63

EX. R/W

WEST FORK GRAND RIVER

(R) OBJECT MARKERS

(R) OBJECT MARKERS EX. R/W

STA. 190+94.15 GRAVEL FIELD ENTRANCE

CP 603

SL

EX.R/W

CP 605

℄ ROUTE W

CP 604

SL

EX. R/W

BM 905

D.N.D. FENCE
STA. 188+81.27 TO
STA. 189+01.27
BRIDGE APPROACH SLAB
(MINOR)

TYPE 2
ROCK BLANKET

1/4 SECTION LINE

MATCHLINE STA. 192+50.00

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

JERRY & ELAINE MULLOCK

STA. 185+78.73 TO
STA. 185+98.73
BRIDGE APPROACH SLAB
(MINOR)

END SHOULDER TAPER +80.85

ALL BEARINGS BASED
ON STATE PLANE
WESTERN COORDINATES

CLASS A EXCAVATION = 140 CY
COMPACTING EMBANKMENT = 2 CY
EMANKMENT IN PLACE = 0 CY

UNCLASSIFIED EXCAVATION = 263 CY
COMPACTING EMANKMENT = 210 CY
EMANKMENT IN PLACE = 681 CY

STA 185+19.70
BEGIN ROUTE W
MATCH EXISTING

+98.73

BRIDGE EXCEPTION

+81.27

VPC 186+20.00
EL 942.93

-4.69%

SSD = 676'
K = 165
800.00' V.C.

PROPOSED GROUND

EXISTING GROUND

D.H.W. ELEV.
924.3

O.H.W. ELEV.
909.5

-4.69%

+0.15%

VPI 190+20.00
EL 924.17

DRIVEWAYS ROUTE W

STATION	LOCATION	TYPE	SKEW	GRADE	SURFACE	PIPE	REMARKS
190+94.15	LT	30' TYPE 1	90	12.25%	4" GRAVEL	N/A	FIELD ENTRANCE

980 970 960 950 940 930 920 910 900 890

179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00 187+00 188+00 189+00 190+00 191+00

PLAN & PROFILE
SHEET 2 OF 3

UTILITY CONTACTS

CITY OF PARNELL
PH. 660-254-5515
CITYOFPARNELL.MO@GMAIL.COM

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DYLAN ROLLINS
DYLAN.ROLLINS@WINDSTREAM.COM

WORTH COUNTY PWSD1
BOBBI GLADSTONE
PH. 660-564-4082
WORTHPWSD@WINDSTREAM.NET

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	5

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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

REV. | DATE | DESCRIPTION

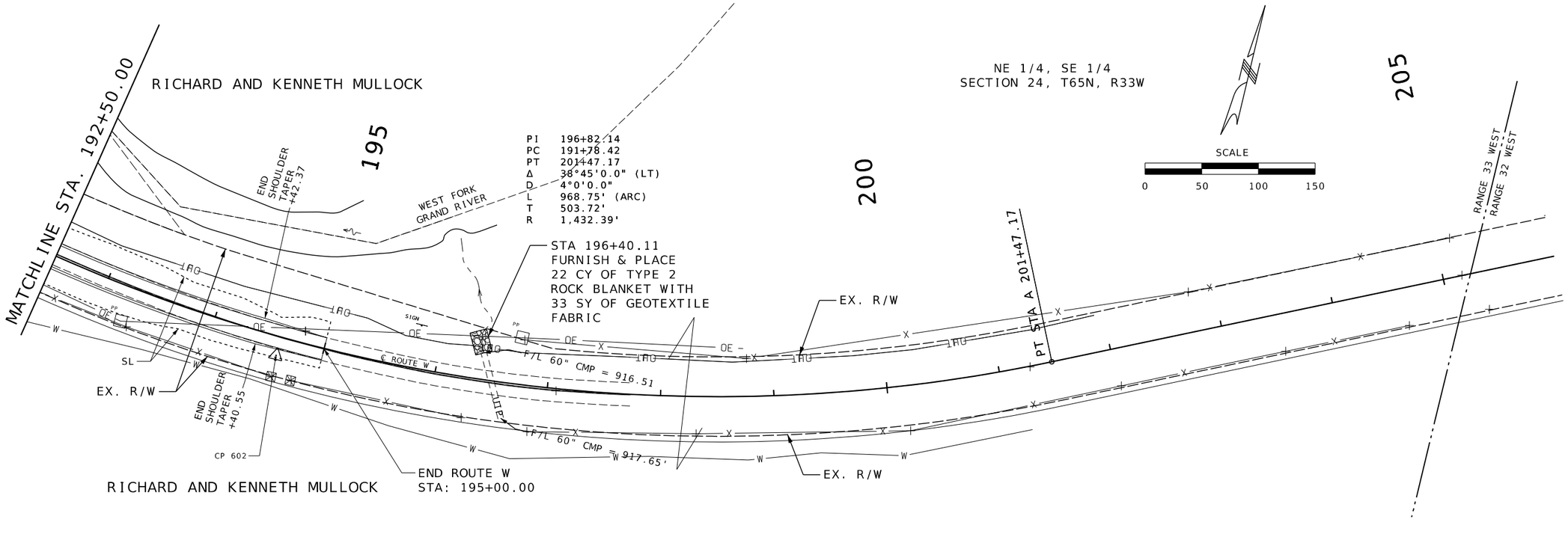
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

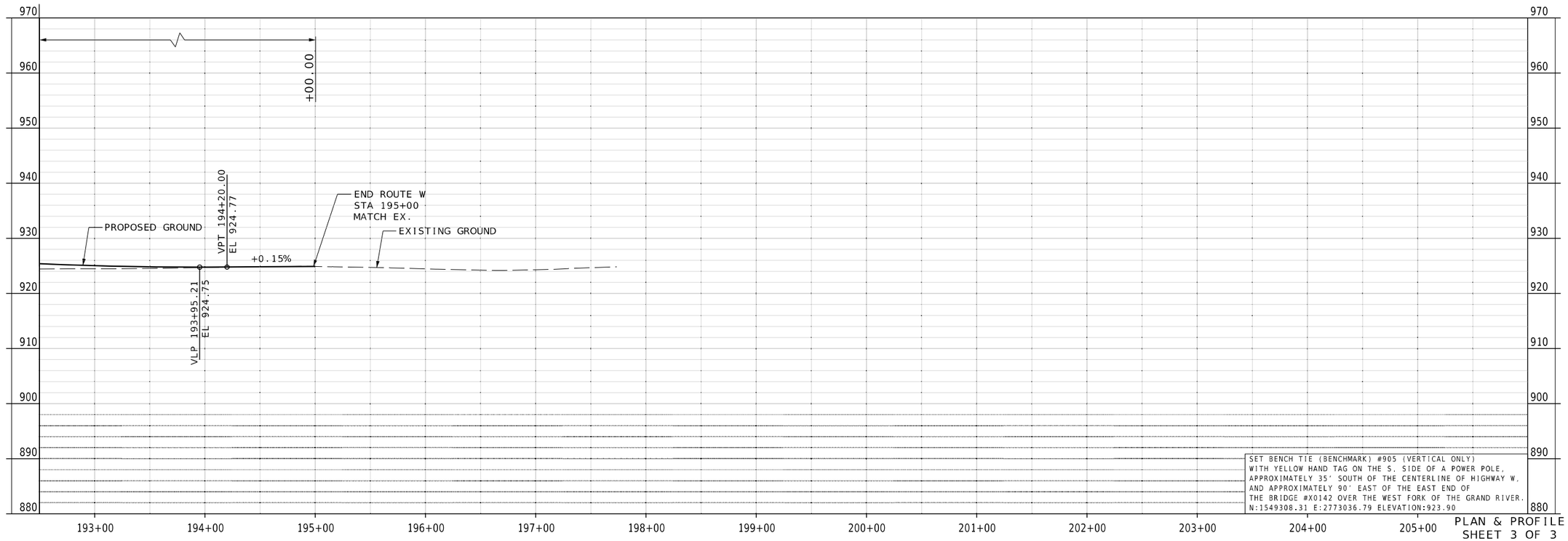
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

Missouri Cert. of Authority 2002010300

005_PP_01_JNW0020_150_001_RTE-W.dgn 7:46:11 AM 11/22/2024





SET BENCH TIE (BENCHMARK) #905 (VERTICAL ONLY)
WITH YELLOW HAND TAG ON THE S. SIDE OF A POWER POLE,
APPROXIMATELY 35' SOUTH OF THE CENTERLINE OF HIGHWAY W,
AND APPROXIMATELY 90' EAST OF THE EAST END OF
THE BRIDGE #X0142 OVER THE WEST FORK OF THE GRAND RIVER.
N:1549308.31 E:2773036.79 ELEVATION:923.90

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	6

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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

REV.	DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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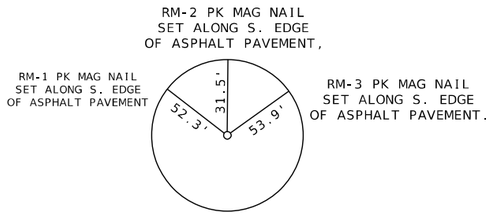
006_PP_02_JNW0020_I50_002_RTE-W.dgn 7:46:13 AM 11/22/2024

ROUTE 46 REFERENCE POINTS

GRID NORTH OF THE MISSOURI STATE PLANE COORDINATE SYSTEM, WESTERN ZONE, NAD-83, NAVD-88

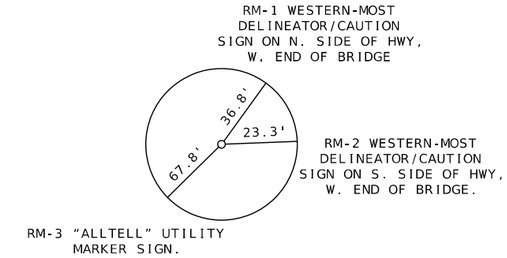
RECIPROCAL AVERAGE GRID FACTOR: 0.999901627

(SCALE FACTOR = 1.0000983827)



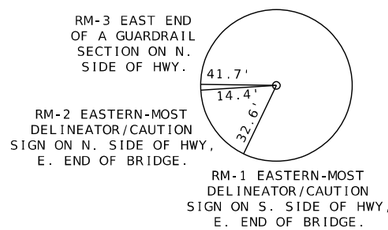
CONTROL PNT./PROJECT BENCHMARK #100(HORIZONTAL & VERTICAL)
(SET) 5/8" REBAR WITH ALUMINUM "TREKK CONTROL" CAP, ON THE SOUTH SIDE OF HIGHWAY 46, WEST OF THE WEST END OF BRIDGE #J0024 OVER MARLOW CREEK; LOCATED APPROXIMATELY 31.5' SOUTH OF THE SOUTHERN EDGE OF ASPHALT, AND APPROXIMATELY 570' WEST OF THE WEST END OF THE BRIDGE DECK.

COORDINATES
NORTHING = 1,572,781.85
EASTING = 2,802,997.74
ELEVATION = 999.33



CONTROL PNT. #101(HORIZONTAL ONLY)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP, ON THE SOUTH SIDE OF HIGHWAY 46, WEST OF THE WEST END OF BRIDGE #J0024 OVER MARLOW CREEK; LOCATED APPROXIMATELY 3' SOUTH OF THE SOUTHERN EDGE OF ASPHALT, AND APPROXIMATELY 65' WEST OF THE WEST END OF THE BRIDGE DECK.

COORDINATES
NORTHING = 1,572,805.88
EASTING = 2,803,501.43
ELEVATION = 963.98



CONTROL PNT. #102(HORIZONTAL ONLY)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP, ON THE NORTH SIDE OF HIGHWAY 46, EAST OF THE EAST END OF BRIDGE #J0024 OVER MARLOW CREEK; LOCATED APPROXIMATELY 2.75' NORTH OF THE NORTHERN EDGE OF ASPHALT, AND APPROXIMATELY 58' EAST OF THE EAST END OF THE BRIDGE DECK.

COORDINATES
NORTHING = 1,572,834.88
EASTING = 2,803,751.63
ELEVATION = 962.95

REFERENCE POINT
SHEET 1 OF 2

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	7

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
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www.trekdesigngroup.com

Missouri Cert. of Authority 2002010300

TREKK DESIGN GROUP, LLC

ROUTE W REFERENCE POINTS

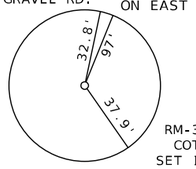
GRID NORTH OF THE MISSOURI STATE PLANE COORDINATE SYSTEM, WESTERN ZONE, NAD-83, NAVD-88

RECIPROCAL AVERAGE GRID FACTOR: 0.999901627

(SCALE FACTOR = 1.0000983827)

RM-2 A REFERENCE COTTON SPINDLE SET IN WESTERN SIDE OF GRAVEL RD.

RM-1 A PK IN SW FACE OF WOOD UTILITY POLE ON EAST SIDE OF GRAVEL RD.



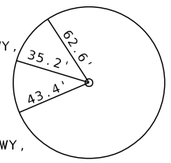
RM-3 A REFERENCE COTTON SPINDLE SET IN EASTERN SIDE OF GRAVEL RD.

CONTROL PNT./PROJECT BENCHMARK #100(HORIZONTAL & VERTICAL)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ALONG THE WEST SIDE OF COUNTY ROAD #87,
APPROXIMATELY 450' FEET SOUTH OF THE CENTERLINE OF
HIGHWAY W, AND APPROXIMATELY 5'
WEST OF THE WESTERN EDGE OF GRAVEL RD.

COORDINATES
NORTHING = = 1,549,090.82
EASTING = 2,774,527.89
ELEVATION = 930.34

RM-3 TO A TELEPHONE PEDESTAL AT THE BASE OF WOOD UTILITY POLE.

RM-2 EASTERN-MOST DELINEATOR/CAUTION SIGN ON N. SIDE OF HWY, E. END OF BRIDGE



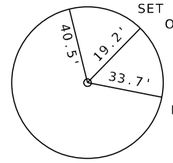
RM-1 EASTERN-MOST DELINEATOR/CAUTION SIGN ON S. SIDE OF HWY, E. END OF BRIDGE

CONTROL PNT. #603 (HORIZONTAL ONLY)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ON THE NORTH SIDE OF HIGHWAY W,
EAST OF THE EAST END OF BRIDGE #X0142
OVER THE WEST FORK OF THE GRAND RIVER; LOCATED
APPROXIMATELY 3' NORTH OF THE NORTHERN EDGE OF ASPHALT,
AND APPROXIMATELY 75' EAST OF
THE EAST END OF THE BRIDGE DECK.

COORDINATES
NORTHING = 1,549,357.58
EASTING = 2,773,033.50
ELEVATION = 928.57

RM-1 TO A REFERENCE PK MAG NAIL SET ALONG SW. EDGE OF PAVEMENT

RM-2 TO A REFERENCE PK MAG NAIL SET ALONG SW. EDGE OF PAVEMENT.



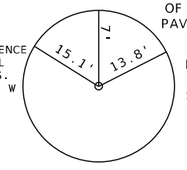
RM-3 TO A REFERENCE PK MAG NAIL SET ALONG SW. EDGE OF PAVEMENT.

CONTROL PNT. #605 (HORIZONTAL ONLY)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ON THE SOUTHWESTERN SIDE OF HIGHWAY
W, WEST OF THE WEST END OF BRIDGE #X0142
OVER THE WEST FORK OF THE GRAND RIVER; LOCATED
APPROXIMATELY 18' SOUTHWEST OF THE SOUTHWESTERN
EDGE OF ASPHALT, AND APPROXIMATELY
580' WEST OF THE WEST END OF THE BRIDGE DECK.

COORDINATES
NORTHING = 1,549,650.85
EASTING = 2,772,171.51
ELEVATION = 960.17

RM-2 A REFERENCE PK MAG NAIL SET ALONG S. EDGE OF HWY W. PAVEMENT.

RM-1 A REFERENCE PK MAG NAIL SET ALONG S. EDGE OF HWY. W PAVEMENT



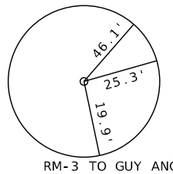
RM-3 A REFERENCE PK MAG NAIL SET ALONG S. EDGE OF HWY W. PAVEMENT.

CONTROL PNT. #602 (HORIZONTAL ONLY)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ON THE SOUTH SIDE OF HIGHWAY W,
EAST OFTHE EAST END OF BRIDGE #X0142
OVER THE WEST FORK OF GRAND RIVER; LOCATED APPROXIMATELY
6' SOUTH OF THE SOUTHERN EDGE OF ASPHALT, AND APPROXIMATELY 600'
EAST OF THE EAST END OF
THE BRIDGE DECK ALONG THE WEST SIDE OF AN OLD FIELD ENTRANCE.

COORDINATES
NORTHING = 1,549,236.43
EASTING = 2,773,534.81
ELEVATION = 923.67

RM-1 TO THE WESTERN-MOST DELINEATOR/CAUTION SIGN ON N. SIDE OF HWY, W. END OF BRIDGE

RM-2 TO THE WESTERN-MOST DELINEATOR/CAUTION SIGN ON S. SIDE OF HWY, W. END OF BRIDGE



RM-3 TO GUY ANCHOR

CONTROL PNT. #604 (HORIZONTAL ONLY)
(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ON THE SOUTH SIDE OF HIGHWAY W,
WEST OF THE WEST END OF BRIDGE #X0142
OVER THE WEST FORK OF THE GRAND RIVER; LOCATED
APPROXIMATELY 16.25' SOUTH OF THE SOUTHERN EDGE OF ASPHALT,
AND APPROXIMATELY 61' WEST
OF THE WEST END OF THE BRIDGE DECK.

COORDINATES
NORTHING = 1,549,413.45
EASTING = 2,772,635.51
ELEVATION = 946.09

REFERENCE POINT
SHEET 2 OF 2

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED 11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	8

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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ALL PROJECT COORDINATES HAVE BEEN PROJECTED FROM THE MISSOURI STATE PLANE COORDINATE (SPC) SYSTEM OF 1983 USING AN AVERAGE PROJECT PROJECTION (GRID TO GROUND) FACTOR. TO GET BACK TO STATE PLANE COORDINATES MULTIPY THE PROJECT COORDINATES BY THE AVERAGE GRID FACTOR AS SHOWN IN THE "REFERENCE CONTROL INFORMATION" PORTION OF THIS TABLE.

PROJECT COORDINATE INFORMATION RTE 46

COORDINATE SYSTEM	MOD. MO STATE PLANE (GROUND)
HORIZONTAL DATUM	NAD-83
VERTICAL DATUM	NAVD-88
GEOID MODEL	GEOID 18
ELEVATIONS DETERMINED BY	GPS & LEVELS
PROJECT PROJECTION FACTOR	1.0000983827

REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	MISSOURI STATE PLANE
CONTROL STATION	CORS
DESIGNATION	MODOT ALBANY CORS ARP
CORS_ID	MOAL
PID	DM4113
LATITUDE	N40°15'20.75415"
LONGITUDE	W094°17'58.90379
NORTHING (M)	453884.8900
EASTING (M)	867039.7900
ZONE	(2403) MO WEST
PROJECT AVERAGE GRID FACTOR	0.999901627

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

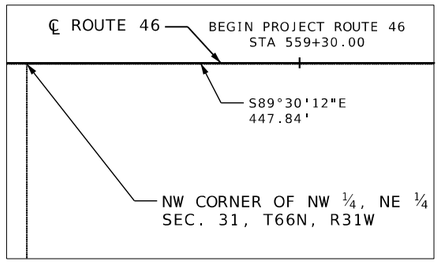
EXAMPLE: CONTROL POINT #100
N 1572781.85 x 0.999901627 = N 1572627.13
E 2802997.74 x 0.999901627 = E 2802722.00

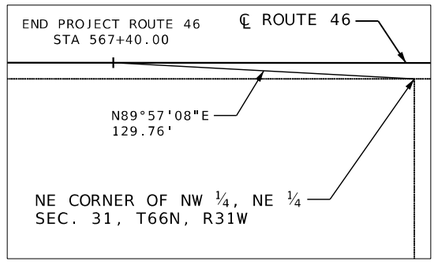
LINEAR UNIT CONVERSION

1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING RTE 46

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	558+74.98	RTE 46	44.07 RT	1,572,781.85	2,802,997.74	999.33	(SET) 5/8" REBAR WITH ALUMINUM "TREKK CONTROL" CAP	CP/BM#100
4	563+78.45	RTE 46	15.77 RT	1,572,805.88	2,803,501.43	963.98	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP#101
4	564+29.07	RTE 46	70.79 RT	1,572,750.44	2,803,551.59	956.49	(SET) STAPLED 60D NAIL	BM#108
4	566+28.39	RTE 46	15.34 LT	1,572,834.88	2,803,751.63	962.95	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP#102
ALIGNMENTS								
4	558+00.00	RTE 46	℄	1,572,826.55	2,802,923.14		START	1
4	572+00.00	RTE 46	℄	1,572,814.69	2,804,323.09		END	2





NOT TO SCALE

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED 11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	9

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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009_CP_01_JNW0020_I50_RTE-46.dgn 7:46:16 AM 11/22/2024

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 RTE W	
COORDINATE SYSTEM	MOD. MO STATE PLANE (GROUND)
HORIZONTAL DATUM	NAD-83
VERTICAL DATUM	NAVD-88
GEOID MODEL	GEOID 18
ELEVATIONS DETERMINED BY	GPS/OPUS & LEVELS
PROJECT PROJECTION FACTOR	1.0000983827

REFERENCE CONTROL INFORMATION	
COORDINATE SYSTEM	MISSOURI STATE PLANE
CONTROL STATION	CORS
DESIGNATION	MODOT ALBANY CORS ARP
CORS_ID	MOAL
PID	DM4113
LATITUDE	N40°15'20.75415"
LONGITUDE	W094°17'58.90379
NORTHING (M)	453884.8900
EASTING (M)	867039.7900
ZONE	(2403) MO WEST
PROJECT AVERAGE GRID FACTOR	0.999901627

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 #100
N 1549090.82 x 0.999901627 = N 1548938.43
E 2774527.89 x 0.999901627 = E 2774254.95

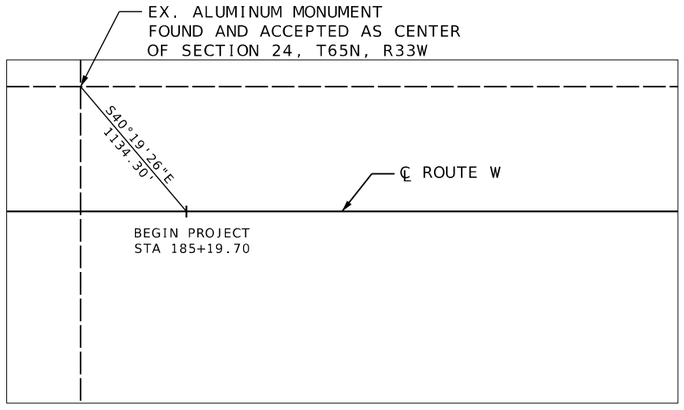
LINEAR UNIT CONVERSION

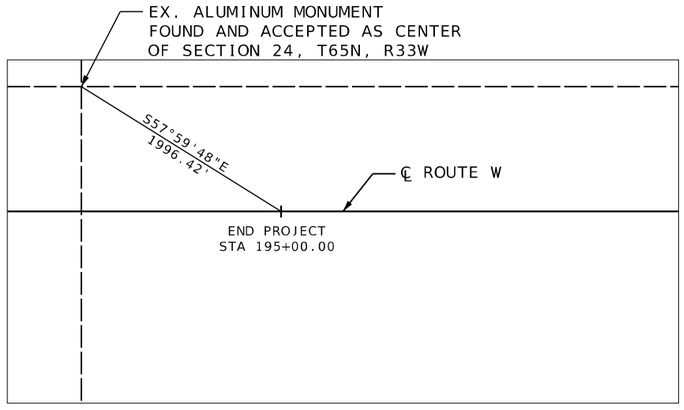
1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING RTE W

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								
5	180+30.75	RTE W	24.27 RT	1,549,650.85	2,772,171.51	960.17	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP#605
5	185+46.46	RTE W	26.54 RT	1,549,413.45	2,772,635.51	946.09	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP#604
5	189+46.49	RTE W	12.04 LT	1,549,357.58	2,773,033.50	928.57	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP#603
5	189+61.19	RTE W	35.10 RT	1,549,308.31	2,773,036.79	923.90	(SET) BENCHTIE WITH YELLOW HAND TAG	BM#905
6	194+60.77	RTE W	16.80 RT	1,549,236.43	2,773,534.81	923.67	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP#602
NA	203+15.07	RTE W	408.89 RT	1,549,090.82	2,774,527.89	930.34	(SET) 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP	CP/BM#100
ALIGNMENTS								
NA	176+86.17	RTE W	℄	1,549,953.69	2,771,998.71		START	1
NA	178+72.79	RTE W	℄	1,549,793.30	2,772,094.13		PC CURVE #1	2
5	181+74.96	RTE W	℄	1,549,533.62	2,772,248.62		PI CURVE #1	3
5	184+44.37*	RTE W	℄	1,549,463.08	2,772,542.44		PT CURVE #1	4
5	191+78.42	RTE W	℄	1,549,291.73	2,773,256.21		PC CURVE #2	5
6	196+82.14	RTE W	℄	1,549,174.14	2,773,746.02		PI CURVE #2	6
6	201+47.17	RTE W	℄	1,549,389.02	2,774,201.61		PT CURVE #2	7
NA	213+49.79	RTE W	℄	1,549,902.03	2,775,289.32		END	8

* THERE IS A STATION EQUATION HERE AT THE PT:184+44.67 (BK.) = 184+44.37 (AHD.)





NOT TO SCALE

COORDINATE POINT
SHEET 2 OF 2

DATE PREPARED 11/22/2024
ROUTE 46/W | STATE MO
DISTRICT NW | SHEET NO. 10
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

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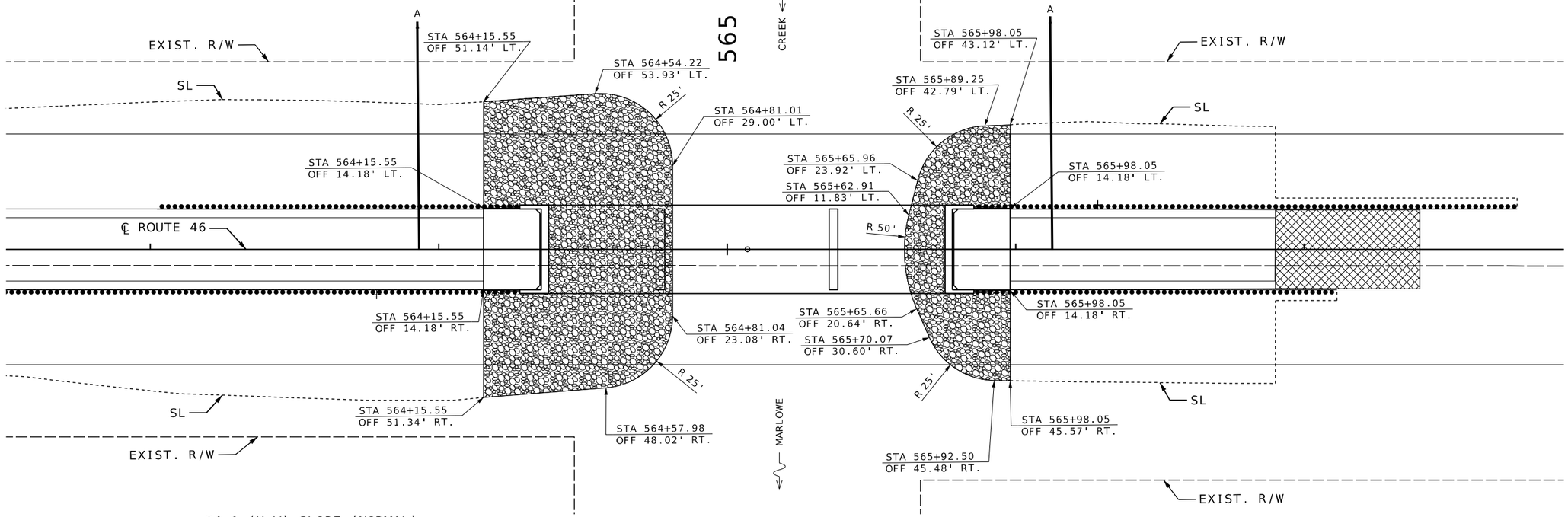
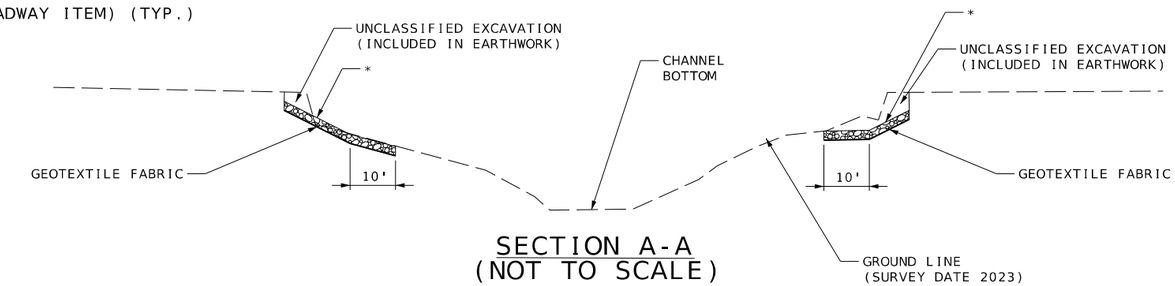
RTE. 46
STA. 564+15.55 TO 564+81.04
FURNISH & PLACE 426.7 CY TYPE 2 ROCK BLANKET &
640 SY PERMANENT EROSION CONTROL GEOTEXTILE

RTE. 46
STA. 565+61.39 TO 565+98.05
FURNISH & PLACE 148.7 CY TYPE 2 ROCK BLANKET &
223 SY PERMANENT EROSION CONTROL GEOTEXTILE

SCALE
0 20 40 60



*4:1 (H:V) SLOPE (NORMAL)
WITH 2'-0" TYPE 2 ROCK BLANKET
WITH PERMANENT EROSION CONTROL
GEOTEXTILE (ROADWAY ITEM) (TYP.)



SECTION A-A
(NOT TO SCALE)

ROUTE 46
PERMANENT EROSION CONTROL
SPECIAL SHEET 1 OF 3

011_SS_JNW0020_I20_RTE-46_Rock_Blanket.dgn 7:47:46 AM 11/22/2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	11

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

Missouri Cert. of Authority 2002010300

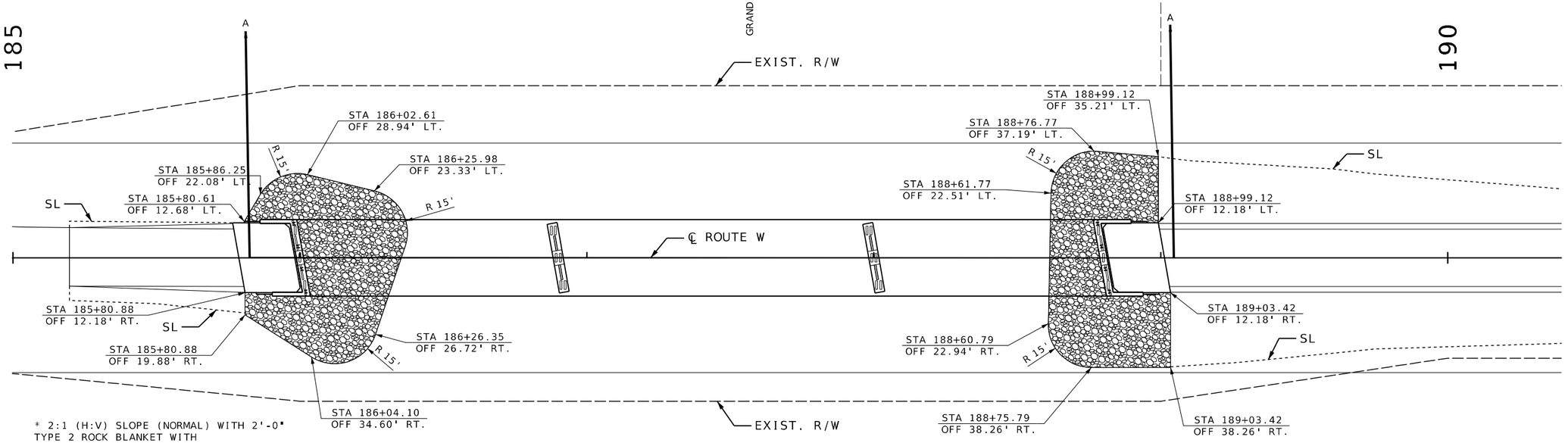
TREK DESIGN GROUP, LLC

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

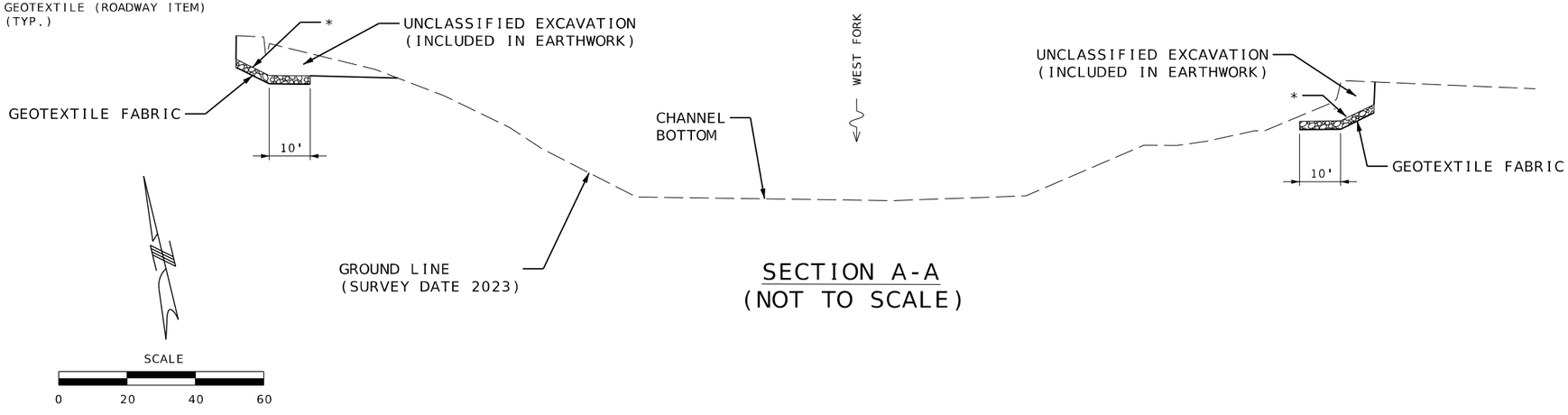
REV.

RTE. W
STA. 185+80.61 TO 186+37.47
FURNISH & PLACE 176 CY TYPE 2 ROCK BLANKET &
264 SY PERMANENT EROSION CONTROL GEOTEXTILE

RTE. W
STA. 188+60.79 TO 189+03.42
FURNISH & PLACE 172 CY TYPE 2 ROCK BLANKET &
257 SY PERMANENT EROSION CONTROL GEOTEXTILE



* 2:1 (H:V) SLOPE (NORMAL) WITH 2'-0" TYPE 2 ROCK BLANKET WITH PERMANENT EROSION CONTROL GEOTEXTILE (ROADWAY ITEM) (TYP.)



SECTION A-A
(NOT TO SCALE)

SCALE
0 20 40 60

ROUTE W
PERMANENT EROSION CONTROL
SPECIAL SHEET 2 OF 3

012_SS_JNW0020_I20_RTE-W_Rock_Blanket.dgn 7:49:11 AM 11/22/2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	12

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

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Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

SCALE

0 50 100 150

ROUTE W
SUPERELEVATION
SPECIAL SHEET 3 OF 3

013_SS_JNW0020_Rte_W_Super_Elevation.dgn 7:49:14 AM 11/22/2024

JASON MICHAEL SHAFER
NUMBER PE-2010019596
STATE OF MISSOURI
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO

DISTRICT	SHEET NO.
NW	13

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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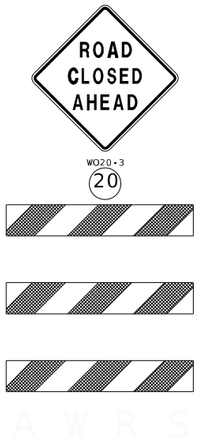
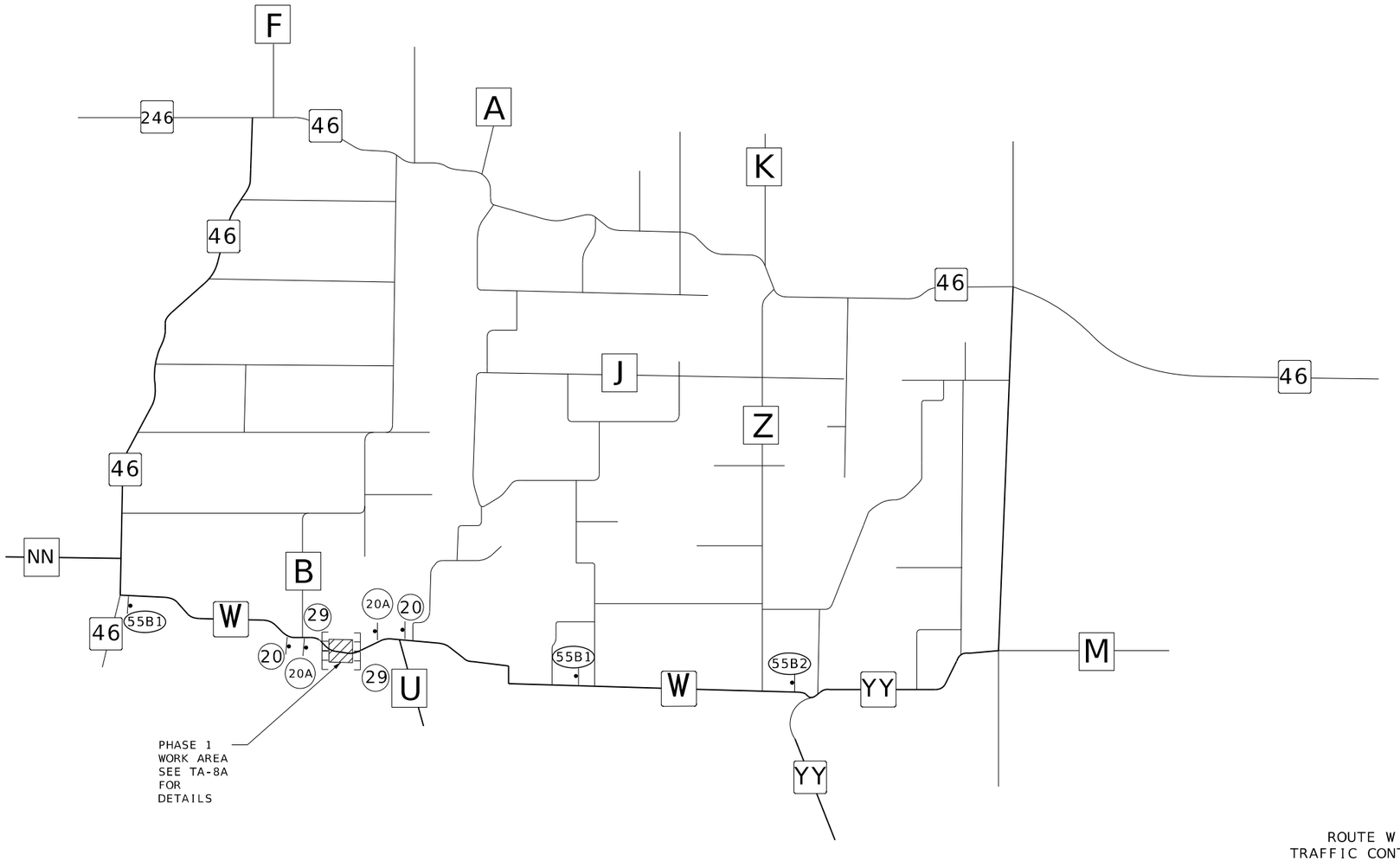
TREK DESIGN GROUP, LLC



TYPE III MOVABLE BARRICADE WITH OPTIONAL TYPE B WARNING LIGHTS

TYPE B WARNING LIGHT

NOT TO SCALE



ROUTE W
TRAFFIC CONTROL
SHEET 1 OF 3

JASON MICHAEL SHAFER
NUMBER PE-2010019596
STATE OF MISSOURI
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	14

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TREKK DESIGN GROUP, LLC
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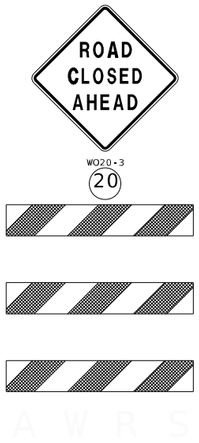
Missouri Cert. of Authority 2002010300

REV.

014_TC_01_JNW0020_RteW_Phase1.dgn 7:49:14 AM 11/22/2024

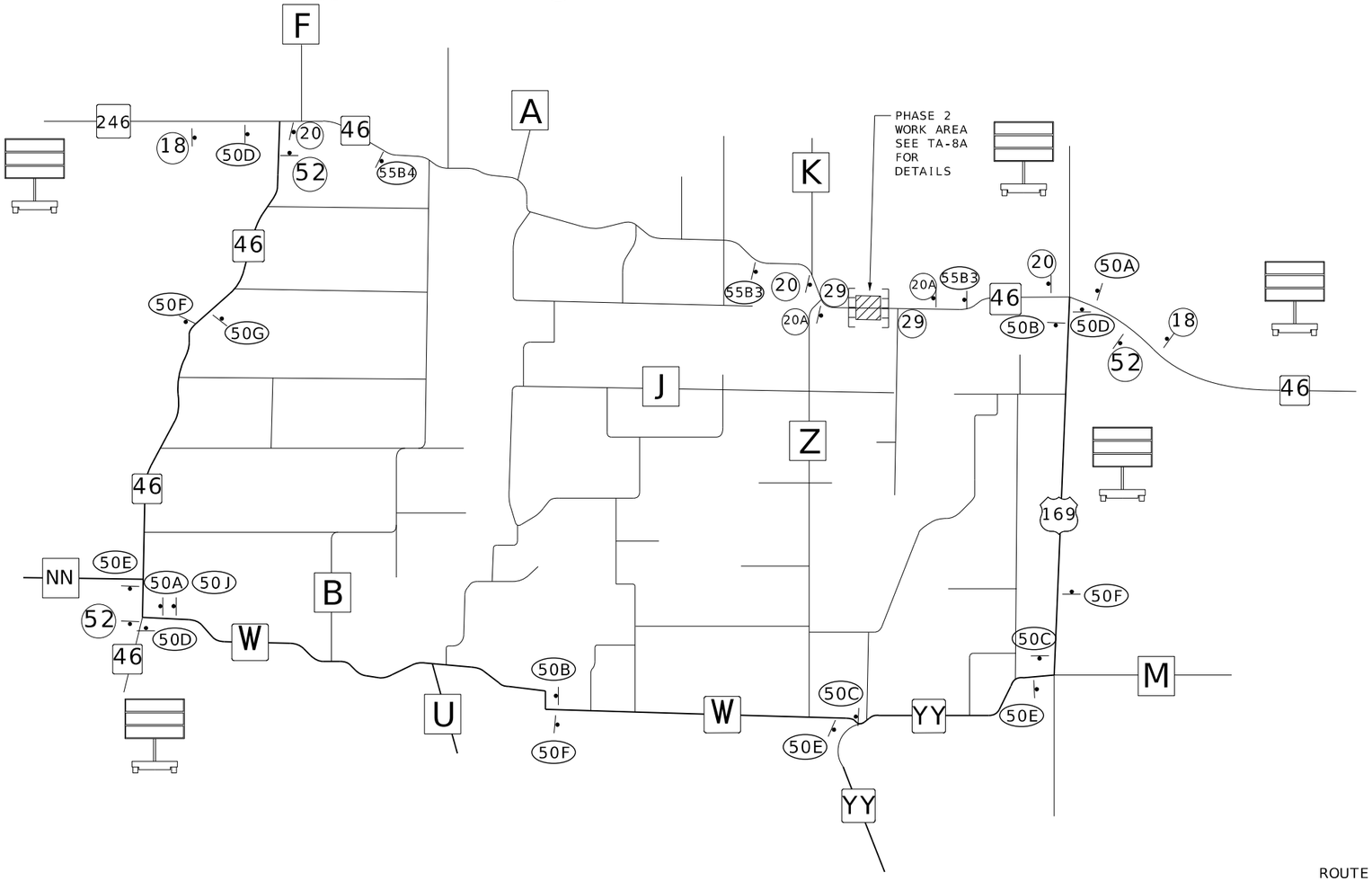
NOT TO SCALE




TYPE III MOVABLE BARRICADE WITH OPTIONAL TYPE B WARNING LIGHTS


TYPE B WARNING LIGHT


CHANGEABLE MESSAGE SIGN
FLASH 1-ROUTE 46 BRIDGE CLOSED
FLASH 2-DETOUR AHEAD



ROUTE 46
TRAFFIC CONTROL
SHEET 2 OF 3

015_TC_02_JNW0020_Rte46_Phase2.dgn 7:49:15 AM 11/22/2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	15

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

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

TREKK DESIGN GROUP, LLC
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Kansas City, MO 64131
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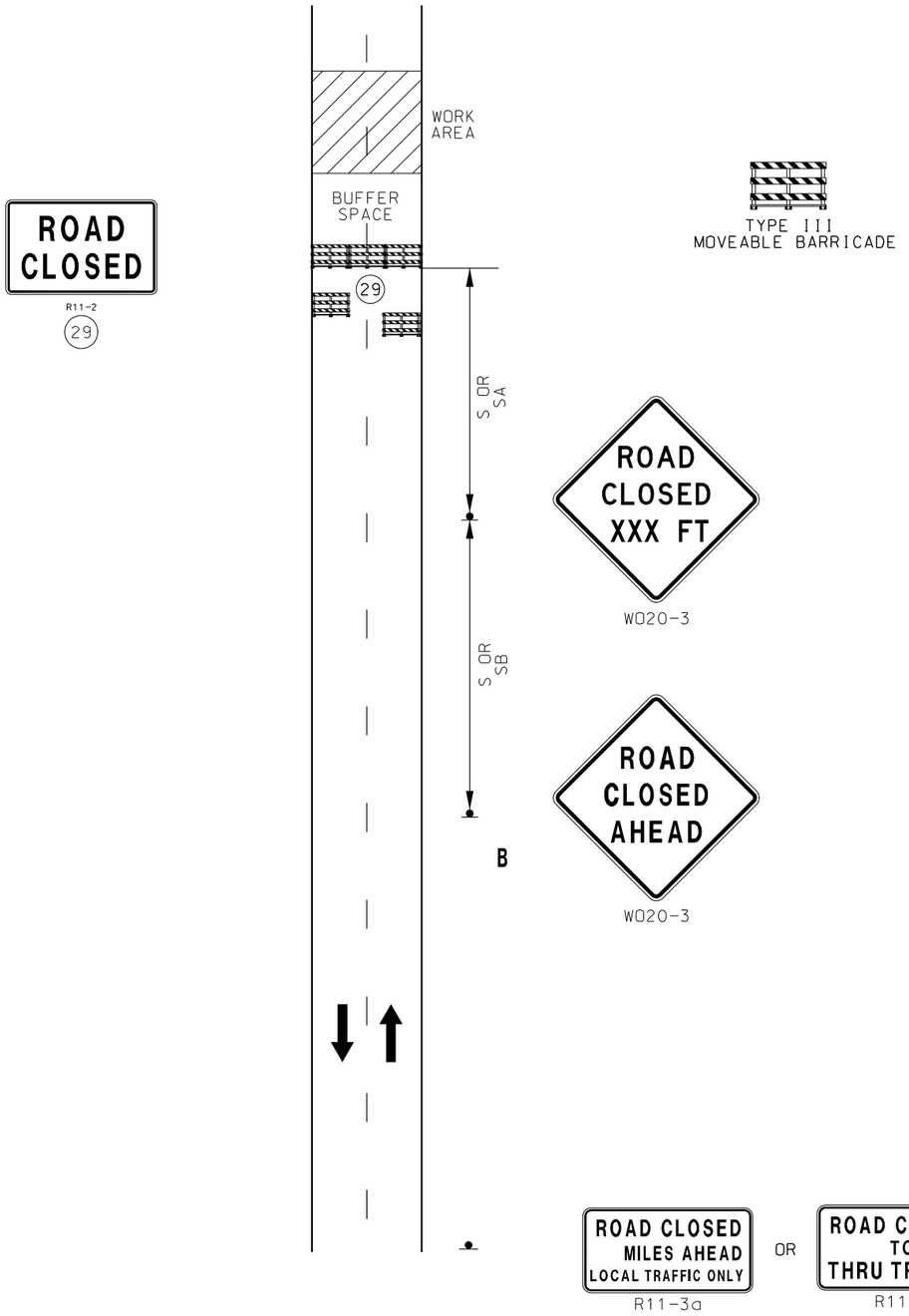
REV.



NOTES:

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

"ROAD CLOSED" SIGN MAY BE PLACED 7-10 FEET BEHIND THE BARRICADES AND AT A SIGN HEIGHT APPROPRIATE TO THE TYPE OF ROADWAY. ONE BARRICADE SHOULD BE REQUIRED TO COMPLETELY CLOSE EACH 8-FEET OF PAVEMENT. PAVED SHOULDERS SHALL BE INCLUDED IN THE AREA TO BE CLOSED.

IF USED, THE "ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY" OR "ROAD CLOSED TO THRU TRAFFIC" SIGN SHOULD BE LOCATED AT THE FIRST STATE ROUTE OR, UPON THE DISCRETION OF THE ENGINEER, ANY OTHER INTERSECTION IN ADVANCE OF THE CLOSURE. ADDITIONAL BARRICADES MAY BE USED AND OFFSET TO FACILITATE ACCESS FOR WORK VEHICLES, LOCAL TRAFFIC, ETC.

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

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

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

SEE STANDARD PLAN 616.10 FOR USE OF THE BARRICADES AND SIGNS.

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER
SEALED AND DATED ELECTRONICALLY

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	16

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

TREKK DESIGN GROUP, LLC
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REV.

TRAFFIC CONTROL
SHEET 3 OF 3

TEMPORARY EROSION CONTROL LEGEND

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

560

565

570

RTE. 46
STA. 564+48.84 TO 564+82.25
INSTALL 150 LF TYPE C TEMPORARY BERM

RTE. 46
STA. 565+53.42 TO 565+68.04
INSTALL 126 LF TYPE C TEMPORARY BERM

CREEK

ROCK DITCH CHECKS
AT 23' SPACING

+43.96 +66.96 +89.96 +12.95 +35.95 +58.95 +82.00 +05.00 +53.94 +76.88

EXIST. R/W

561+80 - 564+60
281' SILT FENCE

℄ ROUTE 46

565+66 - 568+05
244' SILT FENCE

EXIST. R/W

END STA 572+00.00

+44.04 +67.04 +90.04 +13.04 +36.05 +59.05 +82.00 +05.00 +53.94 +76.94 +00.00

ROCK DITCH CHECKS
AT 23' SPACING

EXIST. R/W

562+04 - 564+57
254' SILT FENCE

5

565+60 - 567+21
180' SILT FENCE

EXIST. R/W

MARLOWE

SCALE
0 50 100 150

EROSION CONTROL
SHEET 1 OF 2

017_EC_JNW0020_I50_RTE-46.dgn 7:49:20 AM 11/22/2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	17

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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Missouri Cert. of Authority 2002010300

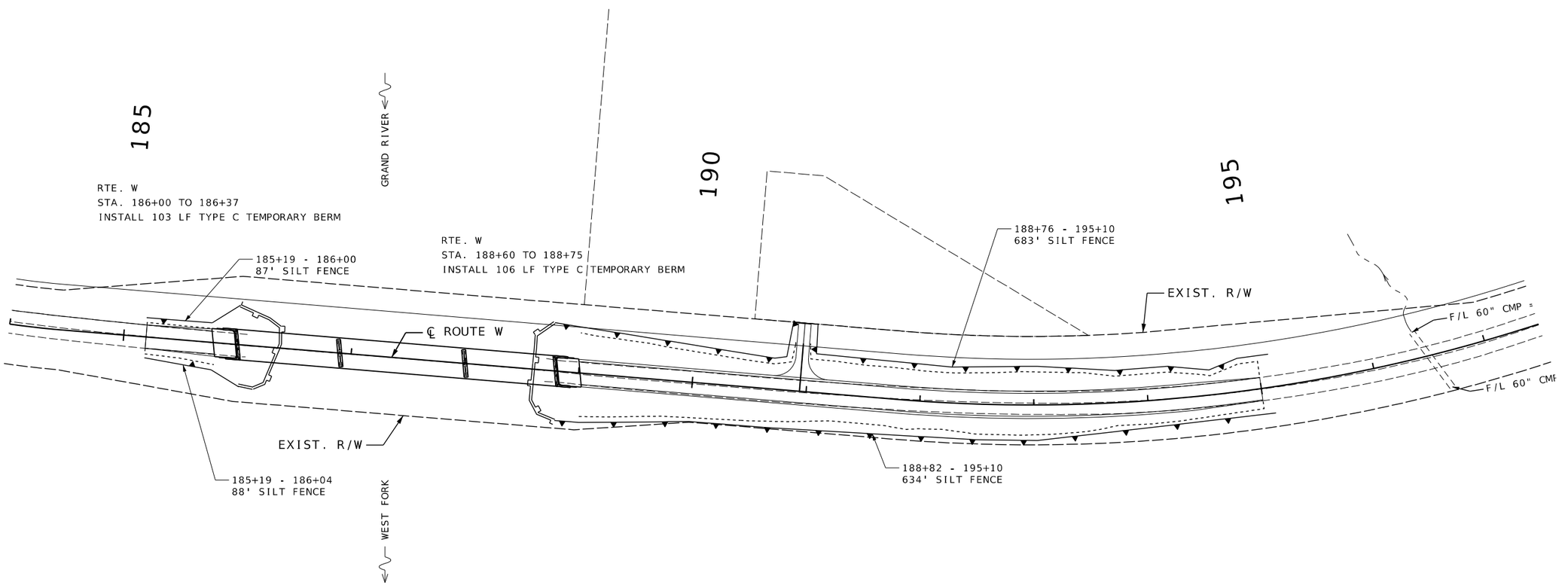
TREK DESIGN GROUP, LLC

REV.

TEMPORARY EROSION CONTROL LEGEND

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

SCALE
0 50 100 150



EROSION CONTROL
SHEET 2 OF 2

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

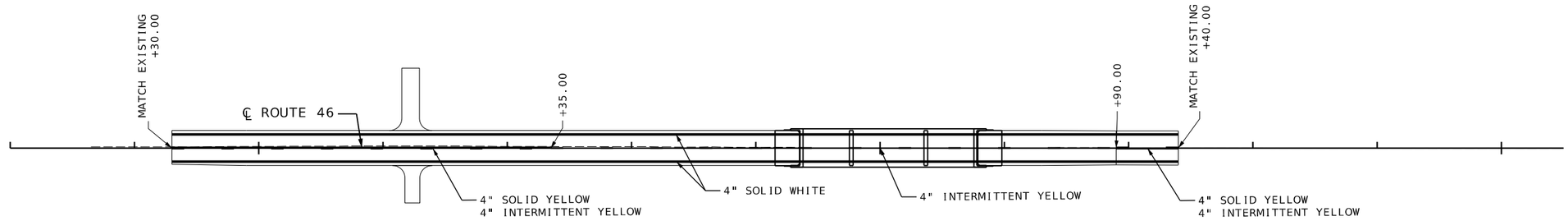
STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

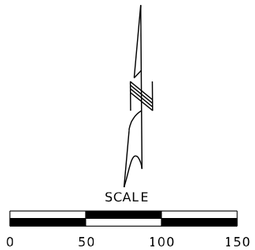
DATE PREPARED 11/22/2024
ROUTE 46/W
STATE MO
DISTRICT NW
SHEET NO. 18
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

REV.	DESCRIPTION	DATE

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

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4631
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300





STRIPING LEGEND

4" SOLID WHITE

4" INTERMITTENT YELLOW

4" SOLID YELLOW

ROUTE 46
SIGNING AND
PAVEMENT MARKING
SHEET 1 OF 2

019_PM_SN_01_JNW0020_I50_RTE-46.dgn 7:49:25 AM 11/22/2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	19

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

REV.

SCALE

0 50 100 150

STRIPING LEGEND

4" DOUBLE YELLOW

ROUTE W
SIGNING AND
PAVEMENT MARKING
SHEET 2 OF 2

020_PM_SN_02_JNW0020_I50_RTE-W.dgn 7:49:27 AM 11/22/2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO
DISTRICT	SHEET NO.
NW	20

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

REV.

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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TREKK DESIGN GROUP, LLC

SIGNS						CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS*						PIPE POSTS*					BACKING BARS**				U-CHANNEL POST	PERFORATED SQUARE STEEL TUBE												BREAK-AWAY ASSEMBLY	REMARKS AND OTHER REQUIRED ITEMS
902 SIGNAL SIGNS TABULATED ON D-37A SHEET																						2-INCH POST						2.5-INCH POST							
																									ANCHORS						ANCHORS				
SIGN NO.	SIGN SIZE	STATION OR LOG MILE	HORIZ CLEAR IF NOT STD	LOCATION	SIGN DTL SHT NO.	ITEM NO. 9031010	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	2" X 3/8" BARS AT 2.55 LBS/FT NO.	LGTH	TOTAL	TOTAL	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12 GA. ITEM NO. 9031271A	DRIVEN 7 GA. ITEM NO. 9031273A	CONCRETE 7 GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7 GA. ITEM NO. 9031281A	CONCRETE 7 GA. ITEM NO. 9031285	ITEM NO. 9031241	
						CY		LF	LF	LF		LBS	IN	LF	LF		LBS	EACH	IN.	LF	LBS	LF	LF	LF	LF	EACH	EACH	EACH	LF	LF	LF	EACH	EACH	EACH	EACH	
1	12"X36"	185+45		LT																		16														ROUTE W
2	12"X36"	185+49		RT																		16														ROUTE W
3	12"X36"	185+65		LT																		16														ROUTE W
4	12"X36"	185+69		RT																		16														ROUTE W
5	12"X36"	185+85		LT																		16														ROUTE W
6	12"X36"	185+89		RT																		16														ROUTE W
7	12"X36"	188+90		LT																		16														ROUTE W
8	12"X36"	188+95		RT																		16														ROUTE W
9	12"X36"	189+10		LT																		16														ROUTE W
10	12"X36"	189+15		RT																		16														ROUTE W
11	12"X36"	189+30		LT																		16														ROUTE W
12	12"X36"	189+35		RT																		16														ROUTE W
SUBTOTAL																						192														
TOTAL																						** 192														

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

ROUND PIPE POST AND FOOTING DATA TABLE

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

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

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

EFFECTIVE: 07-01-2024

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED 11/22/2024
ROUTE 46/W
STATE MO
DISTRICT NW
SHEET NO. 21
COUNTY WORTH
JOB NO. JNW0020
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)

TREKK DESIGN GROUP, LLC
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Missouri Cert. of Authority 2002010300

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

STANDARD SIGN ASSEMBLIES

SIGN NO.	STATION OR LOG MILE	LOCATION	SIGN, TYPE, DESIGNATION, SIZE & NUMBER OF EACH																					
			SHF OM3-L 12 x 36	SHF OM3-R 12 x 36																				
1	185+45	LT	1																					
2	185+49	RT		1																				
3	185+65	LT	1																					
4	185+69	RT		1																				
5	185+85	LT	1																					
6	185+89	RT		1																				
7	188+90	LT		1																				
8	188+95	RT	1																					
9	189+10	LT		1																				
10	189+15	RT	1																					
11	189+30	LT		1																				
12	189+35	RT	1																					
TOTALS			6	6																				

SIGN SUMMARY

EFFECTIVE: 10-01-2016

STANDARD OR SPECIAL SIGN DESIGNATION	SIGN DTL. SHT. NO.	NO. EACH	SIGN SIZE	TYPE & SQUARE FEET			
				FLAT SHEET SH ITEM NO. 9035004A	FLAT SHEET FLUORESCENT SHF* ITEM NO. 9035069A	STRUCTURAL ST ITEM NO. 9035011A	STRUCTURAL FLUORESCENT STF* ITEM NO. 9035071A
OM3-L STANDARD		6	12 x 36	18.00			
OM3-R STANDARD		6	12 x 36	18.00			
TOTALS				36			

*ORANGE, YELLOW AND YELLOW-GREEN

STATE OF MISSOURI
JASON MICHAEL SHAFER
NUMBER PE-2010019596
PROFESSIONAL ENGINEER

DATE PREPARED
11/22/2024

ROUTE	STATE
46/W	MO

DISTRICT	SHEET NO.
NW	22

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

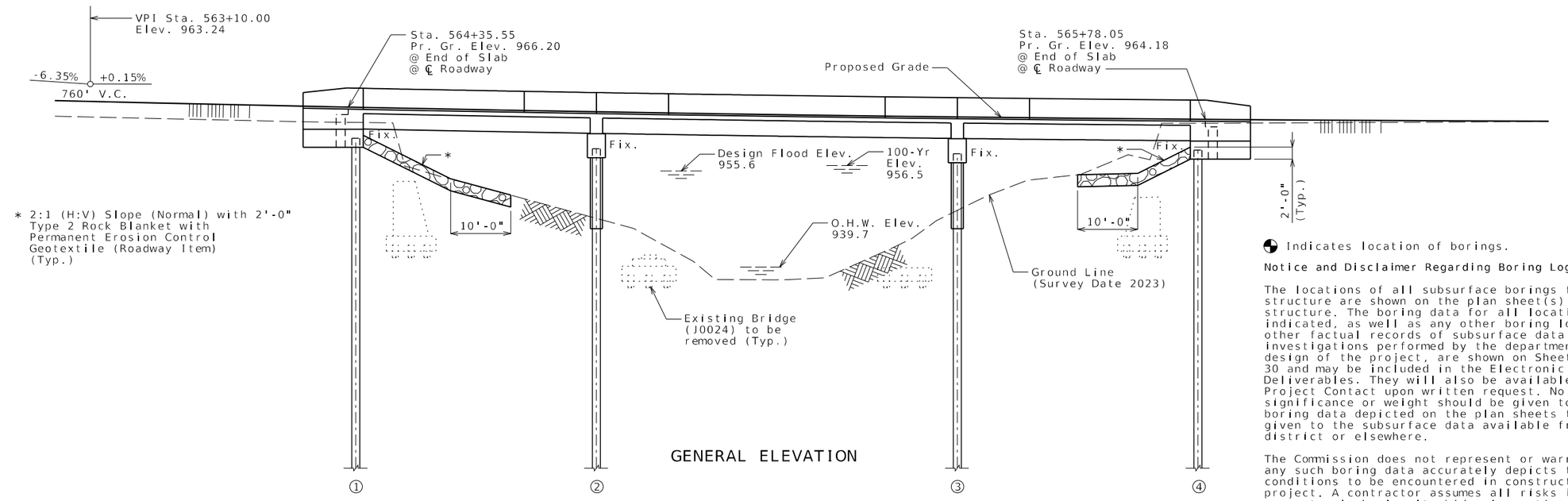
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

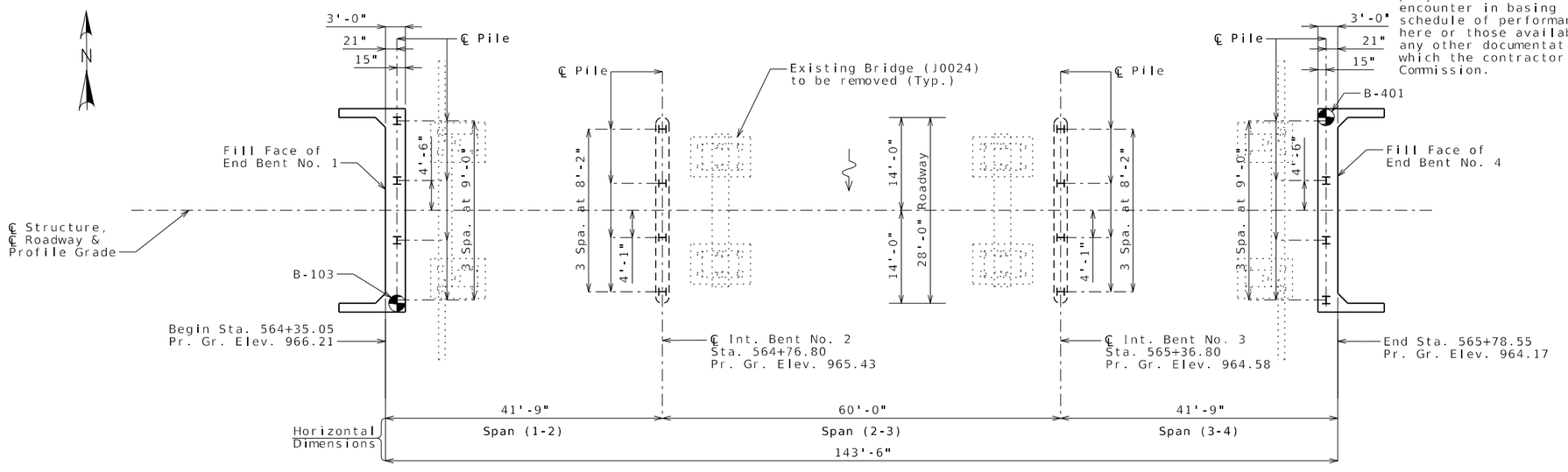
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

(40'-60'-40') SD-CL COMPOSITE WIDE FLANGE BEAM SPANS

SEC/SUR 30 & 31 TWP 66N RGE 31W



GENERAL ELEVATION



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(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 Sheets No. 29 & 30 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.

CPBM #100(HORIZONTAL & VERTICAL)
(SET) 5/8" REBAR WITH ALUMINUM "TREKK CONTROL" CAP, ON THE SOUTH SIDE OF HIGHWAY 46, WEST OF THE WEST END OF BRIDGE #J0024 OVER MARLOW CREEK; LOCATED APPROXIMATELY 31.5' SOUTH OF THE SOUTHERN EDGE OF ASPHALT, AND APPROXIMATELY 570' WEST OF THE WEST END OF THE BRIDGE DECK.
N: 1,572,781.85
E: 2,802,997.74
EL: 999.33

BM #108(VERTICAL ONLY)
SET) STAPLED 60D NAIL IN THE W. FACE OF A 12" WALNUT TREE ON THE WEST SIDE OF MARLOW CREEK AND SOUTH SIDE OF HIGHWAY, LOCATED APPROXIMATELY DUE SOUTH OF THE WEST END OF BRIDGE AND APPROXIMATELY 8' SSE OF AN "ALLTELL" UTILITY MARKER SIGN.
N: 1,572,750.44
E: 2,803,551.59
EL: 956.49

BRIDGE: ROUTE 46 OVER MARLOWE CREEK

ROUTE 46 FROM ROUTE 169 TO ROUTE Z
ABOUT 2.4 MILES WEST OF ROUTE 169
STATION 564+35.55

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/22/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION	DATE

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

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Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	95	--	95
Removal of Bridges (J0024)	lump sum	--	--	1
Bridge Approach Slab (Minor)	sq. yard	--	126	126
Galvanized Structural Steel Piles (14 in.)	linear foot	1,376	--	1,376
Pile Wave Analysis	each	2	--	2
Pile Point Reinforcement	each	16	--	16
Class B Concrete (Substructure)	cu. yard	97.7	--	97.7
Slab on Steel	sq. yard	--	486	486
Type D Barrier	linear foot	--	315	315
Reinforcing Steel (Bridges)	pound	4,620	--	4,620
Temporary coating- Concrete Bents and Pier (Weathering Steel)	lump sum	--	--	1
Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50 W	pound	--	69,990	69,990
Slab Drain	each	--	22	22
Vertical Drain at End Bent	each	2	--	2
Laminated Neoprene Bearing Pad (Tapered)	each	--	24	24

All concrete between the upper and lower construction joints 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 Quantitites 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 is included in the Estimated Quantities for Slab on Steel.

Sheet metal in intermediate concrete diaphragms is subsidiary to Slab on Steel.

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 unti price for Galvanized Structural Steel Piles (14 in.)

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 14x73	HP 14x73	HP 14x73	HP 14x73
	Number	ea	4	4	4	4
	Approximate Length Per Each	ft	88	86	85	85
	Pile Point Reinforcement	ea	All	All	All	All
	Min. Galvanized Penetration (Elev.)	ft	939.00	924.00	923.00	937.00
	Est. Max. Scour Depth 500 (Elev.)	ft	-	934.00	935.00	-
	Criteria for Min. Tip Penetration		Bear on Rock	Bear on Rock	Bear on Rock	Bear on Rock
	Pile Driving Verification Method		DF	WEAP	WEAP	DF
	Resistance Factor		0.4	0.5	0.5	0.4
	Minimum Nominal Axial Compressive Resistance	kip	448	640	640	448

Load Bearing Pile:
DF = FHWA-modified Gates Dynamic Pile Formula
WEAP = Wave Equation Analysis
Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{(Side Resistance + Tip Resistance)} \quad \text{Resistance Factors}}$

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

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.

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

Estimated Quantities for Slab on Steel

Item		Total
Class B-2 Concrete	cu. yard	153
Reinforcing Steel (Epoxy Coated)	pound	51,410

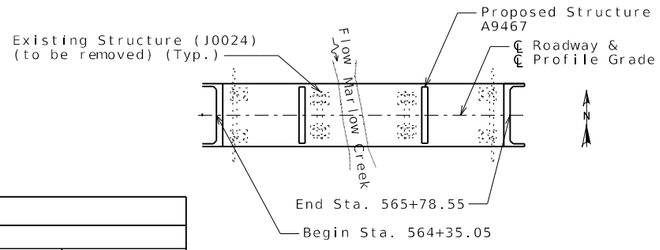
The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out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

Method of forming the slab shall be 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.

Bridge deck surface may be finished with a vibratory screed.

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



LOCATION SKETCH

Hydrologic Data

Drainage Area = 21 sq. mi.
Design Flood Frequency = 50 yr.
Design Flood Discharge = 6,500 cfs
Design Flood (D.F.) Elevation = 955.6 ft.
Base Flood (100-Year)
Base Flood Elevation = 956.5
Base Flood Discharge = 7,500 cfs.
Estimated Backwater = 0.1 ft.
Average Velocity thru Opening = 8.5 ft./p
Freeboard (50-year)
Freeboard = 5.3 ft.
Roadway Overtopping
Overtopping Flood Discharge = N/A
Overtopping Flood Frequency = >500-yr
500-yr Flood Elevation = 958.5

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specification (9th Ed)
Seismic Design Category A (Seismic Details)
Design earthquake response spectral acceleration coefficient at 1.0 second period, SD1 = 0.104g
Acceleration Coefficient (Effective peak ground acceleration coefficient), As = 0.064g

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

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-2 Concrete (Superstructure, except Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

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

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

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

Structural Steel Protective Coating:
Protective Coating: System G in accordance with Sec 1080.

Prime Coat: The cost of the inorganic zinc prime coat will be considered completely covered by the contract unit price for the fabricated structural steel.

Field Coats: The color of the field coats shall be Brown (Federal Standard #30045). The cost of the intermediate and finish field coats will be considered completely covered by the contract unit price for the fabricated structural steel.

At the option of the contractor, the intermediate and finish field coats may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.

Concrete Protective Coatings:
Temporary coating for concrete bents and piers (weathering steel) shall be applied on all concrete surfaces above the ground line or low water elevation on all abutments and intermediate bents in accordance with Sec 711.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 11/2", 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 to traffic during construction.
See roadway plans for traffic control.

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

GENERAL NOTES AND QUANTITIES

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY ISSUED, SIGNED AND DATED ELECTRONICALLY.

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

DATE PREPARED
12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9467

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
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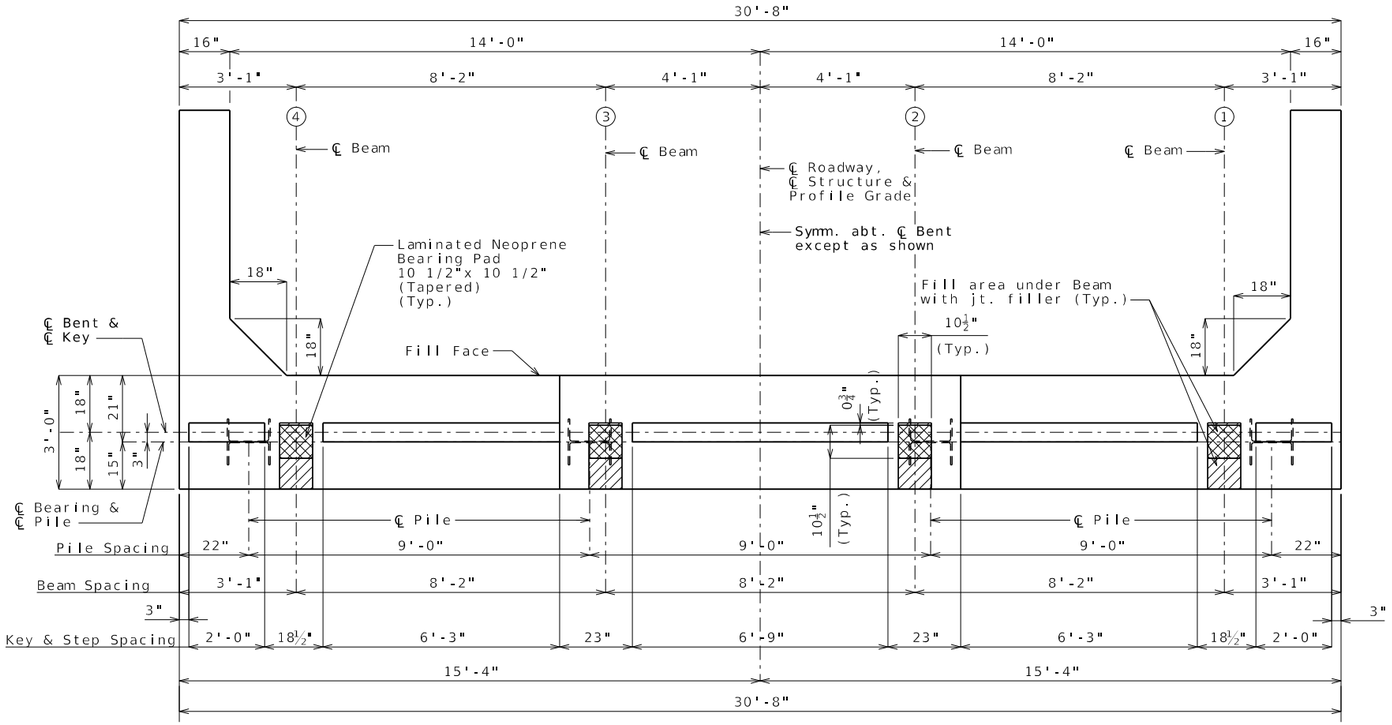
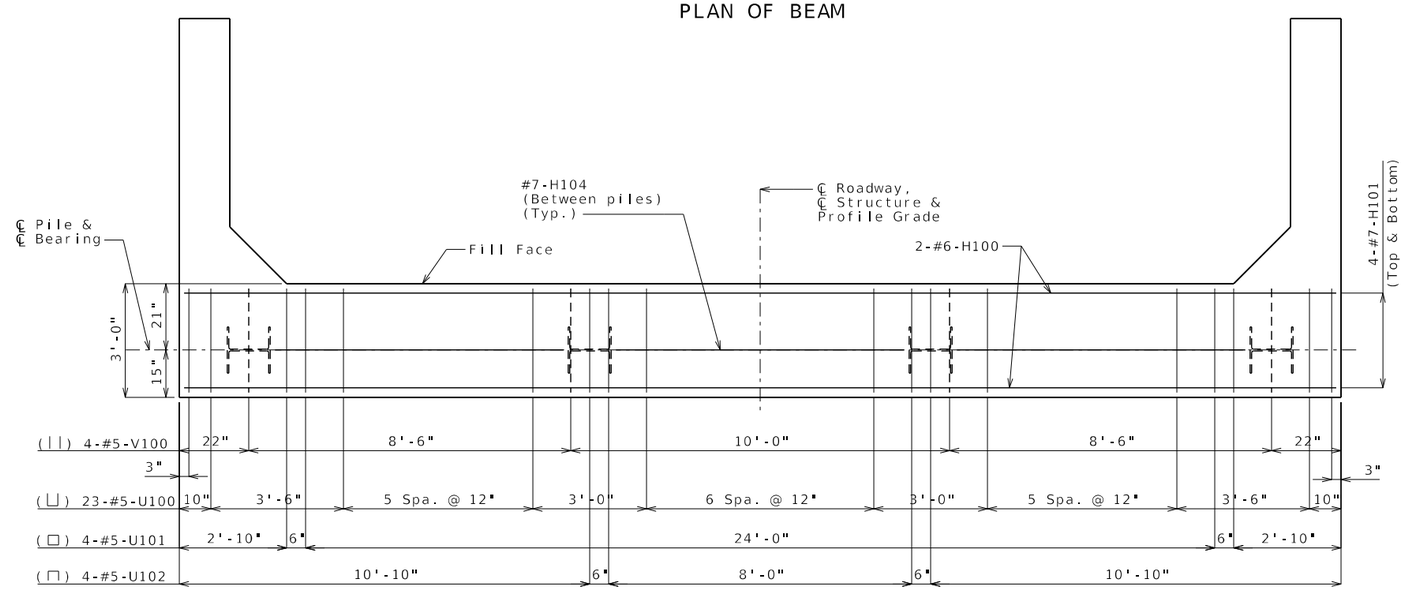
Missouri Cert. of Authority 2002010300
TREK DESIGN GROUP, LLC

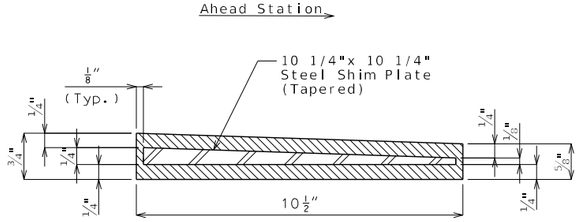


PLAN OF BEAM

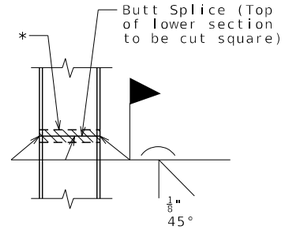


PLAN OF BEAM SHOWING REINFORCEMENT

Keys not shown for clarity



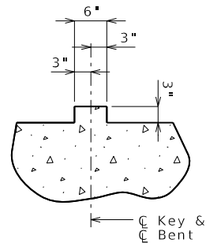
SECTION THRU LAMINATED NEOPRENE BEARING PAD



STEEL PILE SPLICE

(If required)

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



SECTION THRU KEY

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	35
Galvanized Structural Steel Piles (14 in.)	linear foot	352
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	13.7

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

General Notes:

The concrete diaphragm at the end bents shall be poured a minimum of 12 hours before the slab is poured.

Work this sheet with Sheets No. 4 & 5.

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

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

DETAILS OF END BENT NO. 1

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	3

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

DESCRIPTION	DATE

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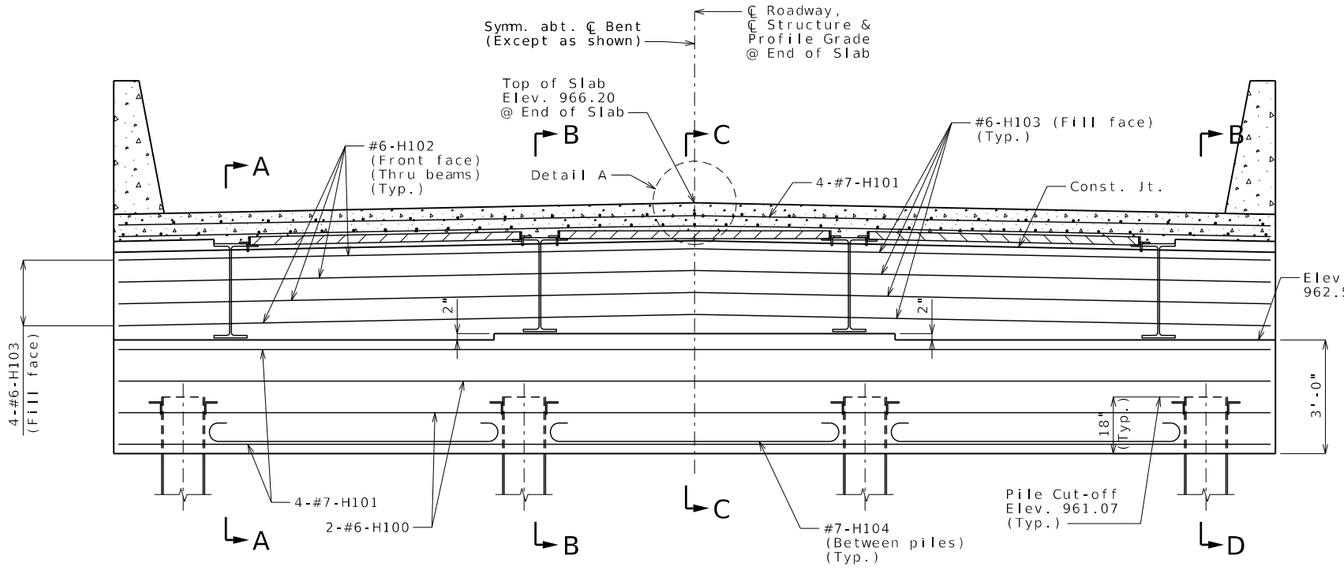
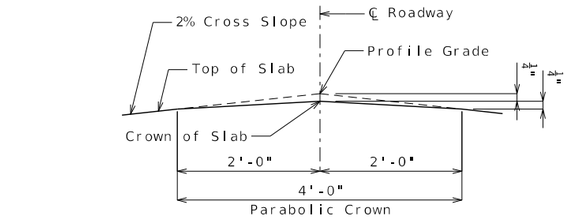
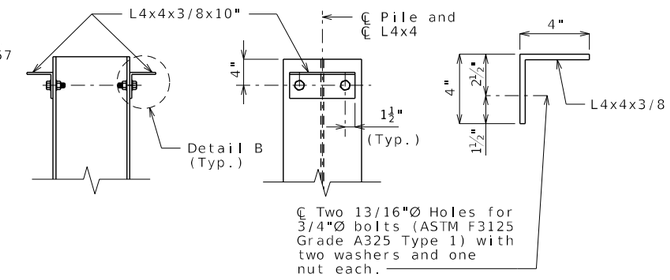


SECTION NEAR END BENT

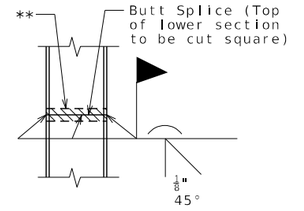


DETAIL A



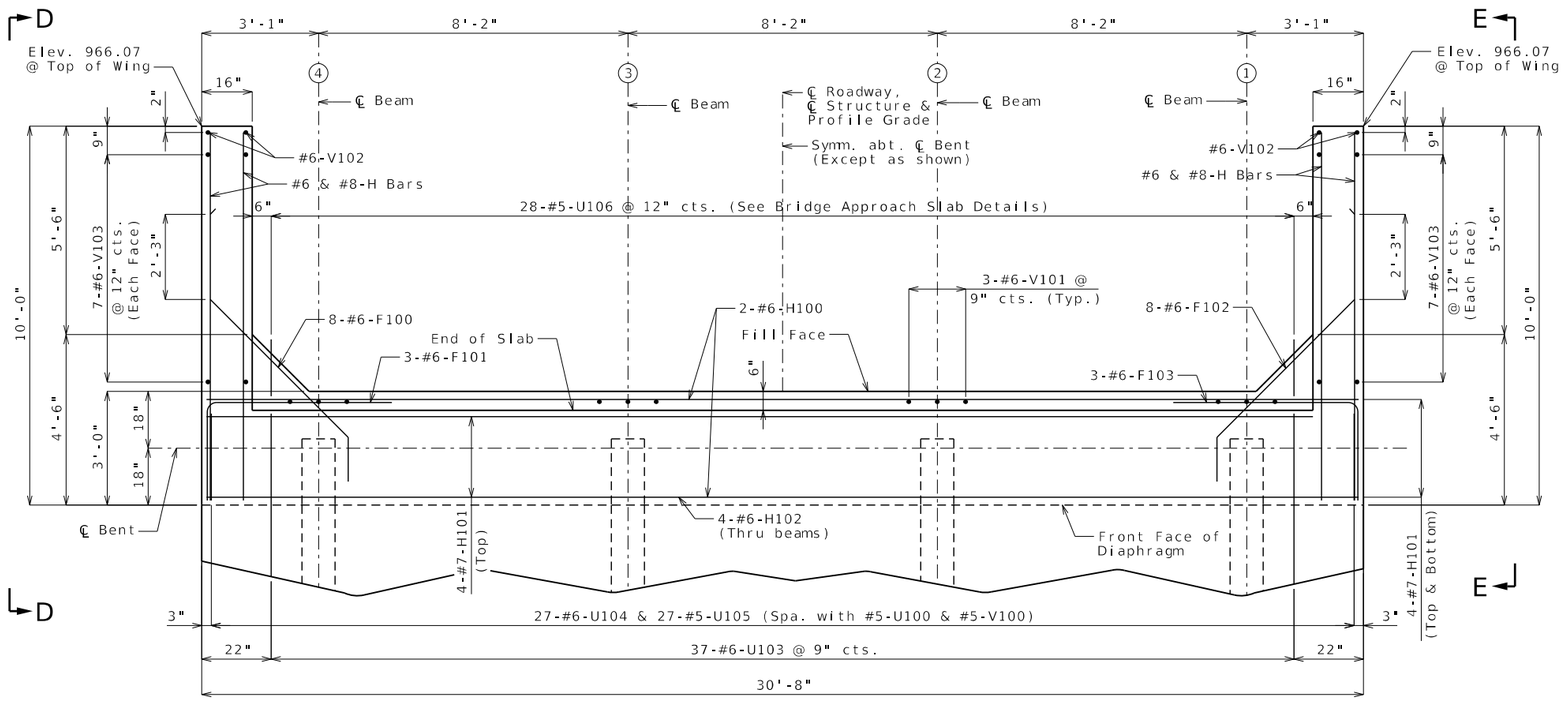
DETAILS OF HP PILE ANCHORS DETAIL B

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



STEEL PILE SPLICE
(If required)

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



PART PLAN

DETAILS OF END BENT NO. 1

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
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DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	4

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9467

DATE	DESCRIPTION

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

Work this sheet with Sheets No. 3 & 5.

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

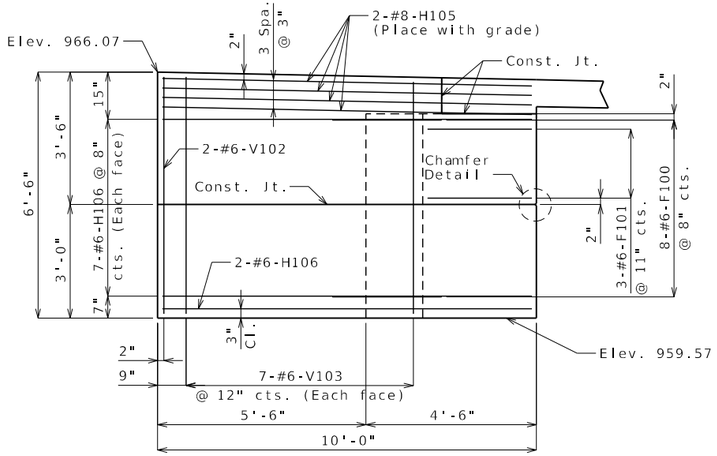
The #6-F100 and #6-F102 bars shall be bent in the field to clear Beams.

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

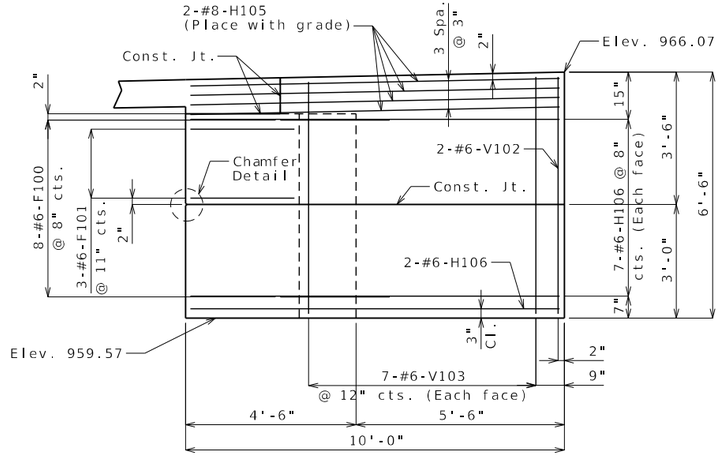
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

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

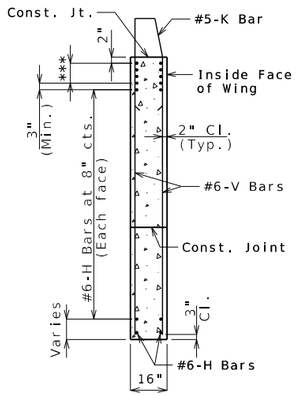
For details of bridge approach slab, see Sheet No. 24.



ELEVATION D-D

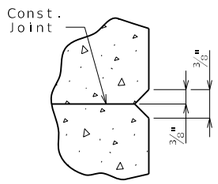


ELEVATION E-E

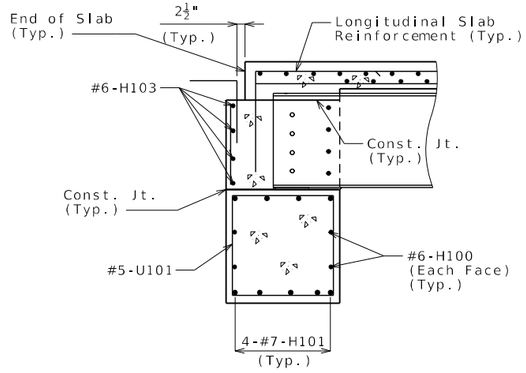


TYPICAL SECTION THRU WING

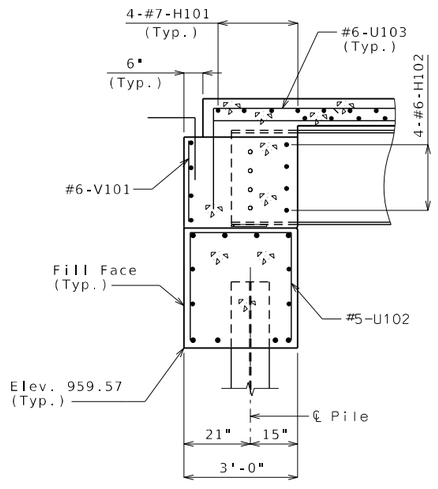
*** #8-H Bars at 3" cts. (Each face)(Place with grade)



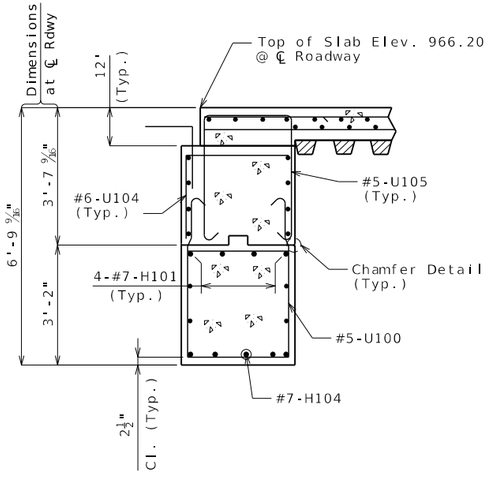
CHAMFER DETAIL



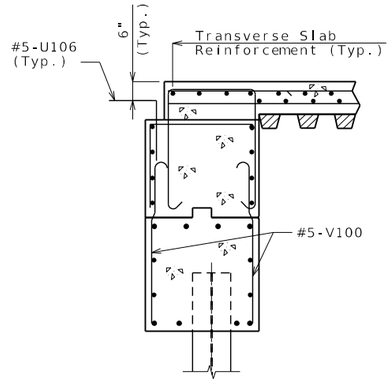
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

General Notes:

Work this sheet with Sheets No. 4 & 5.

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

For details and reinforcement of the Type D Barrier, see Sheets No. 22, & 23.

DETAILS OF END BENT NO. 1

Detailed: Oct. 2024
Checked: Oct. 2024

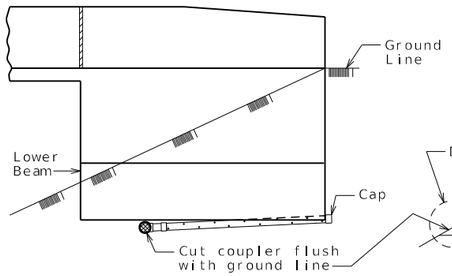
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

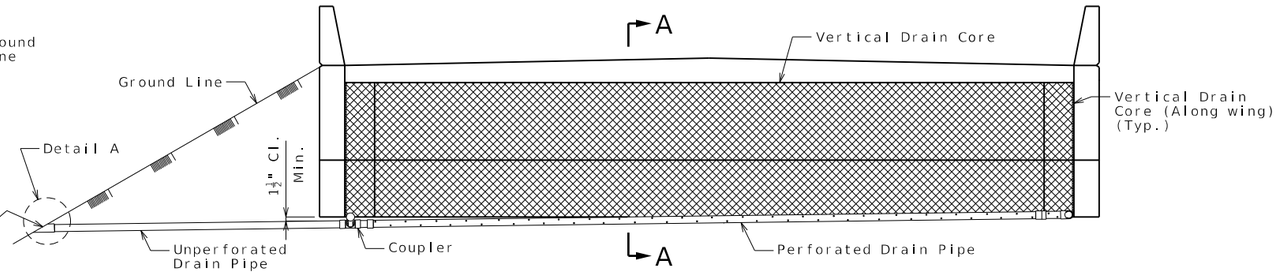
DESCRIPTION | DATE

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

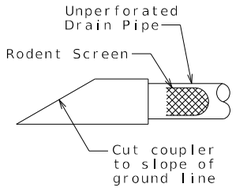
TREK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300



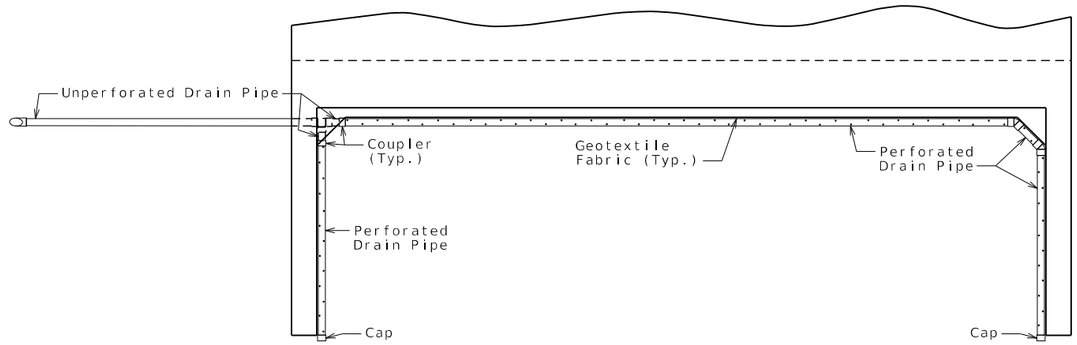
ELEVATION OF WING



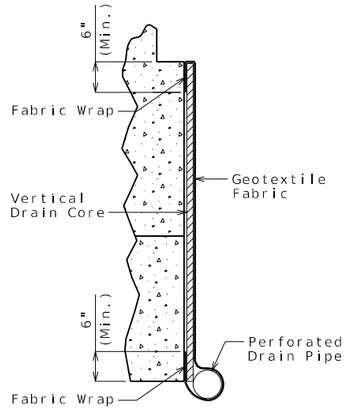
ELEVATION OF END BENT



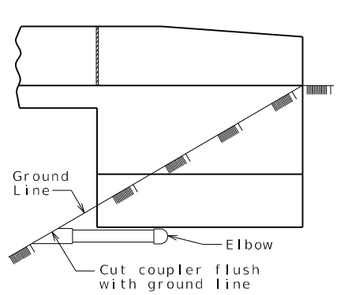
DETAIL A



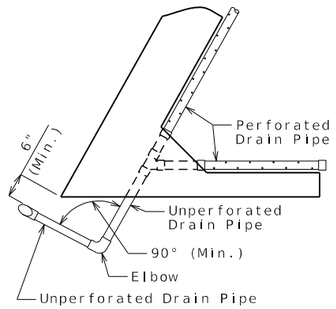
PLAN OF END BENT



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)

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	6

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
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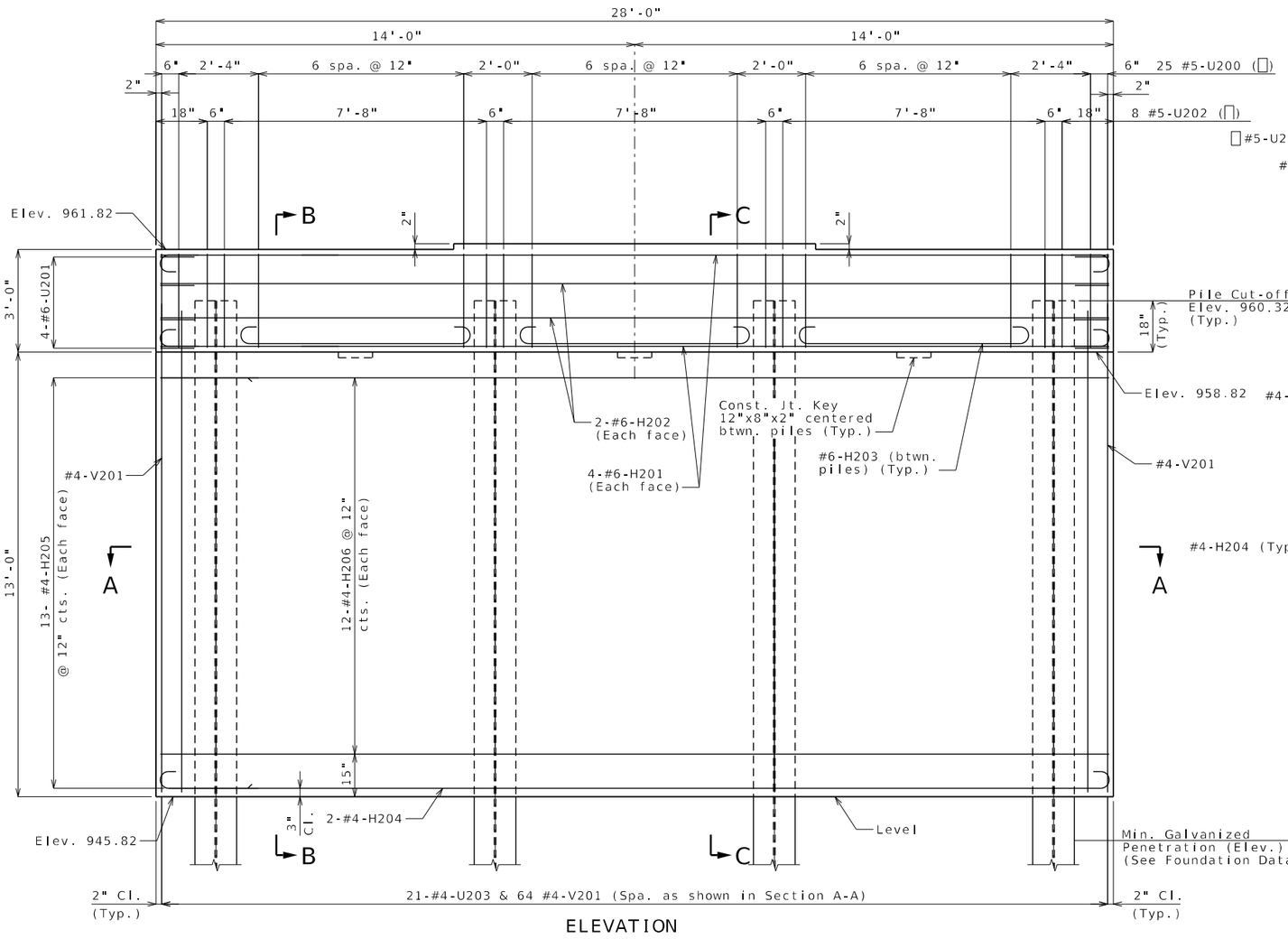
Missouri Cert. of Authority 2002010300

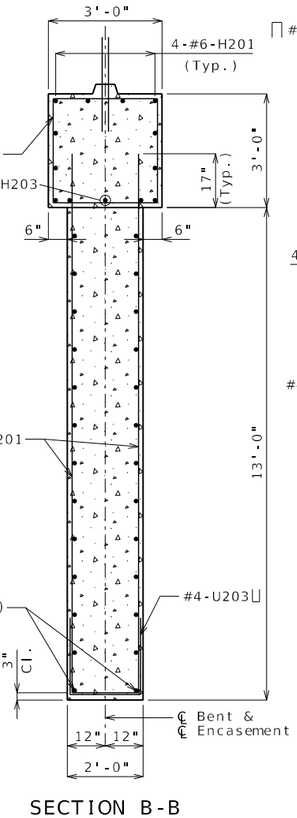
Detailed: Oct. 2024
Checked: Oct. 2024

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

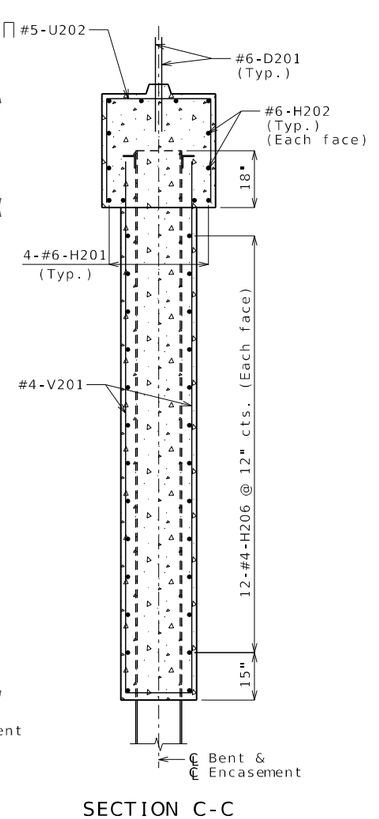
B_A9467_006_JNW0020_Vert Drain.dgn 4:37:05 PM 12/3/2024



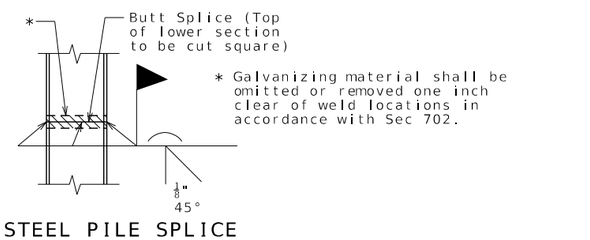
ELEVATION



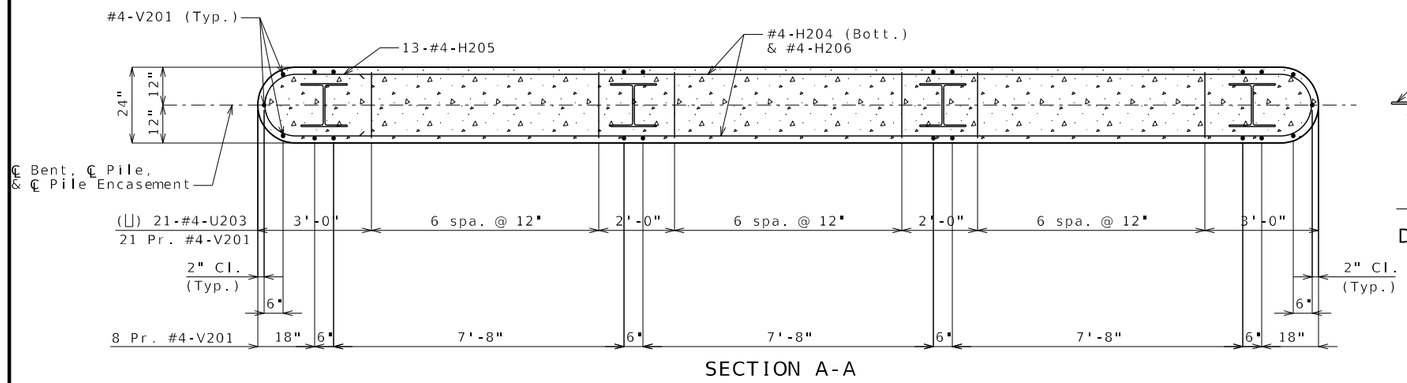
SECTION B-B



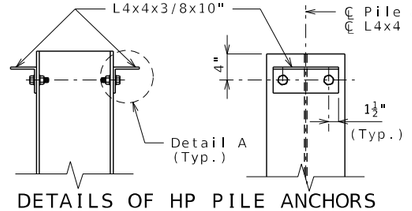
SECTION C-C



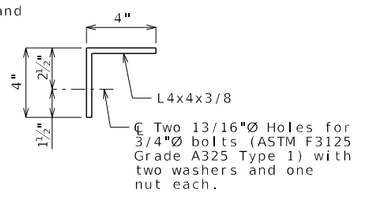
STEEL PILE SPLICE
(If required)



SECTION A-A



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.

Note: Work this sheet with Sheet No. 8.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED
12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	7

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9467

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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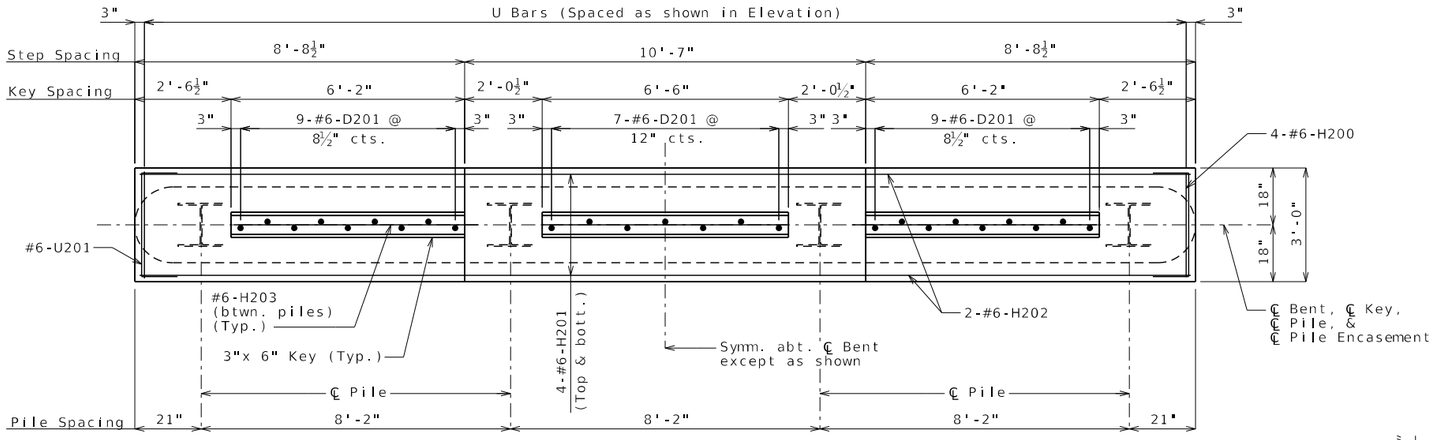
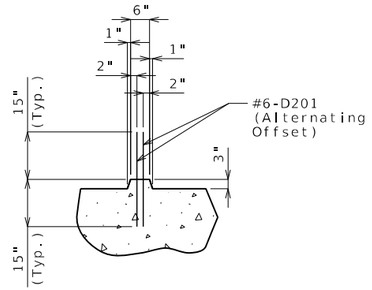
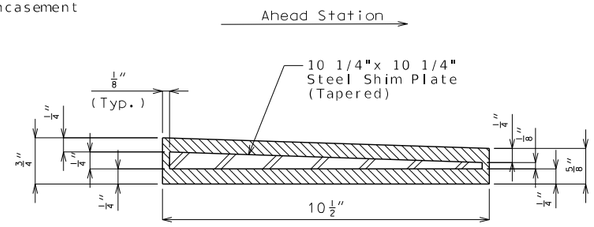
Authority 2002010300



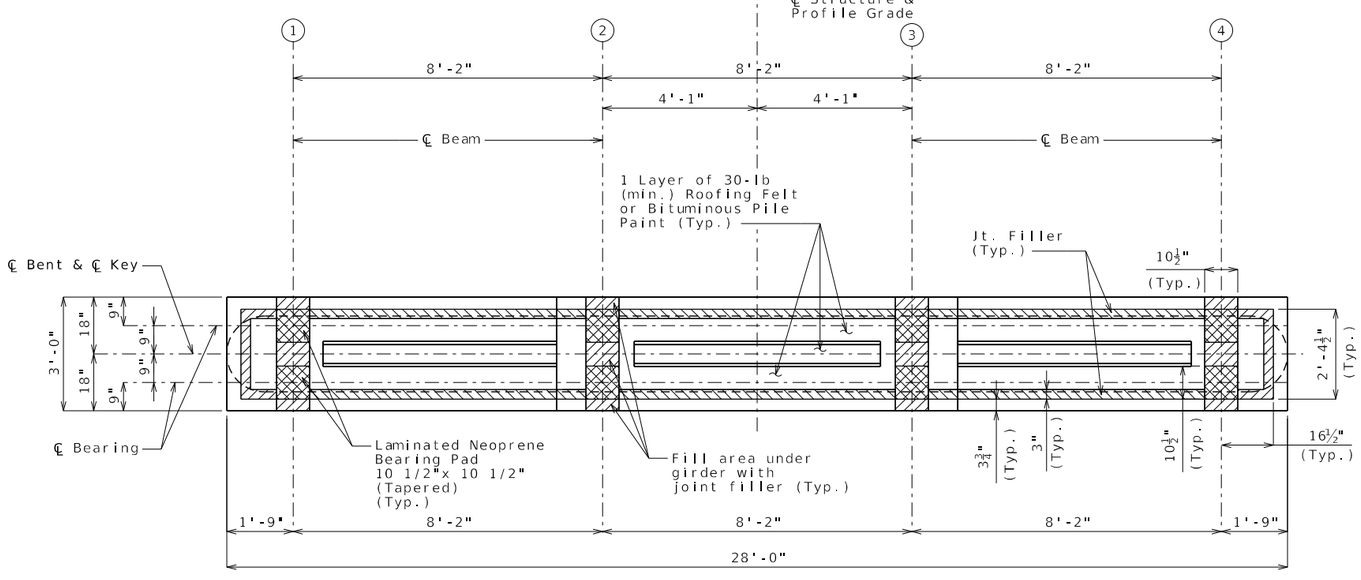
PLAN SHOWING REINFORCEMENT



SECTION THRU KEY



SECTION THRU LAMINATED NEOPRENE BEARING PAD



PLAN OF BEAM

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation		10
Galvanized Structural Steel Piles (14 in)	linear foot	344
Pile Wave Analysis	each	1
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	36.2
Reinforcing Steel (Bridges)	pound	2,340

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

Note: Work this sheet with Sheet No. 7.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER NUMBER PE-2016019369 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
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1411 East 104th St.
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Tel (816) 874-4665
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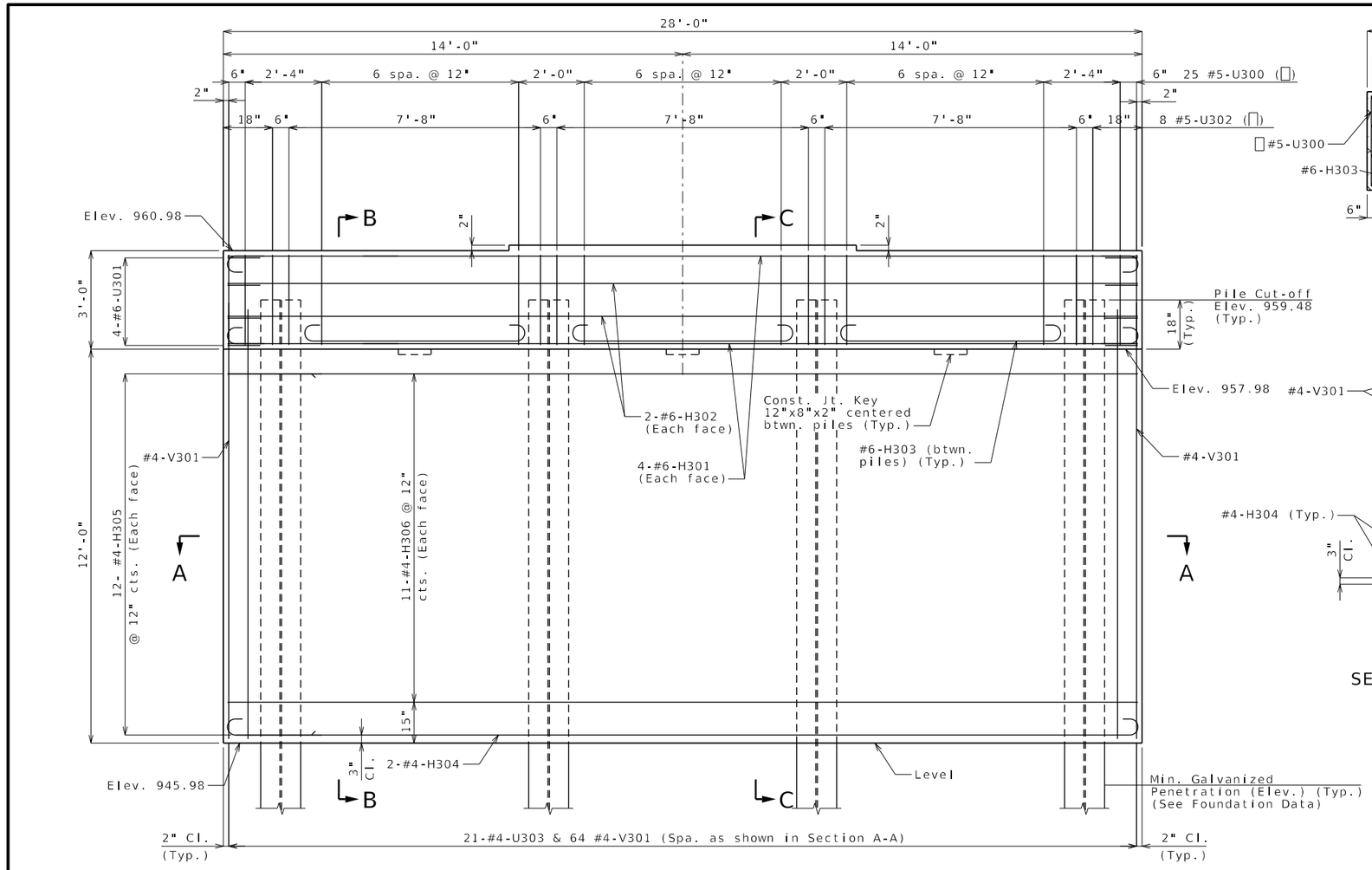
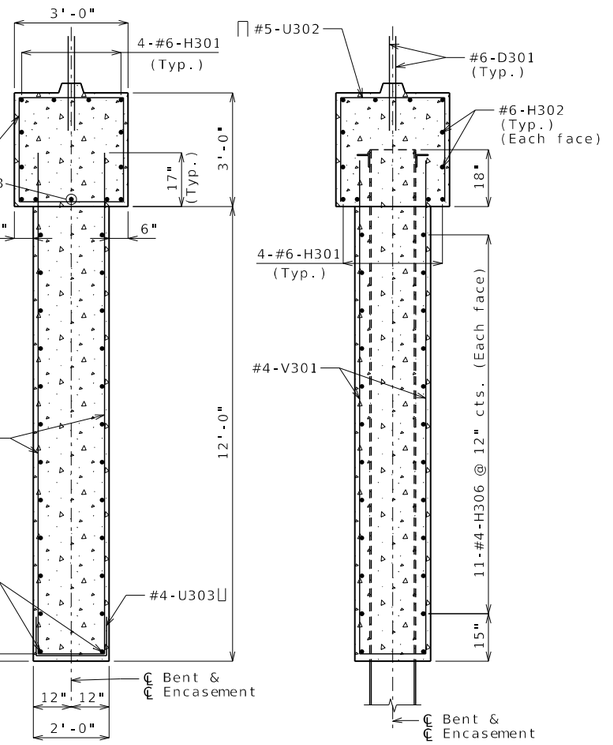
TREK DESIGN GROUP, LLC

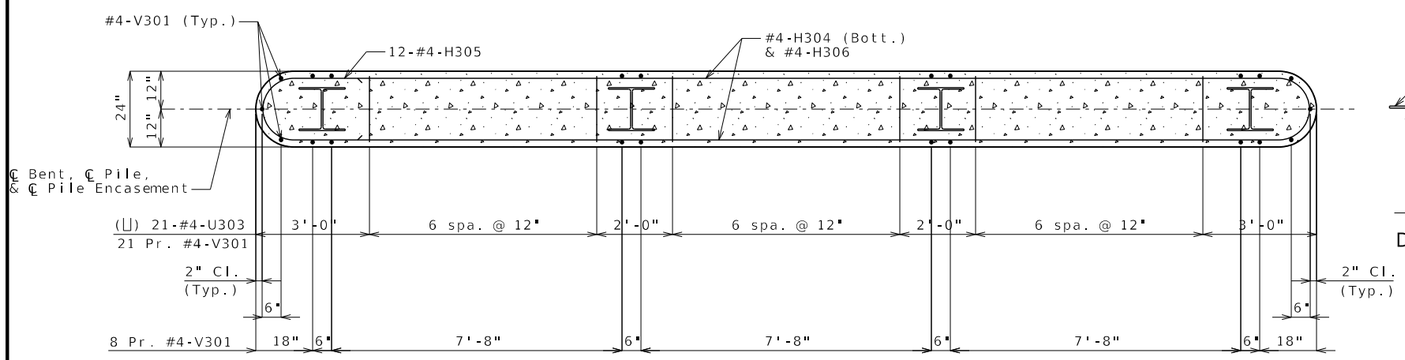


ELEVATION

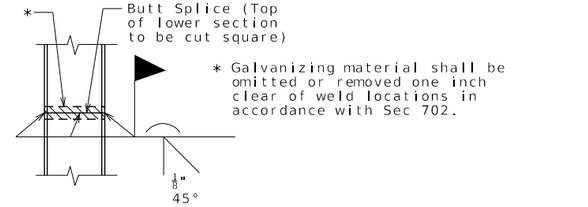


SECTION B-B

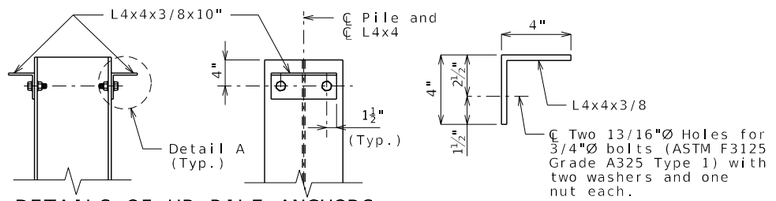
SECTION C-C



SECTION A-A



STEEL PILE SPLICE
(If required)



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.

Note: Work this sheet with Sheet No. 10.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed: Oct. 2024
Checked: Oct. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED, AND DATED ELECTRONICALLY.

DATE PREPARED
12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	9

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9467

DESCRIPTION	DATE

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

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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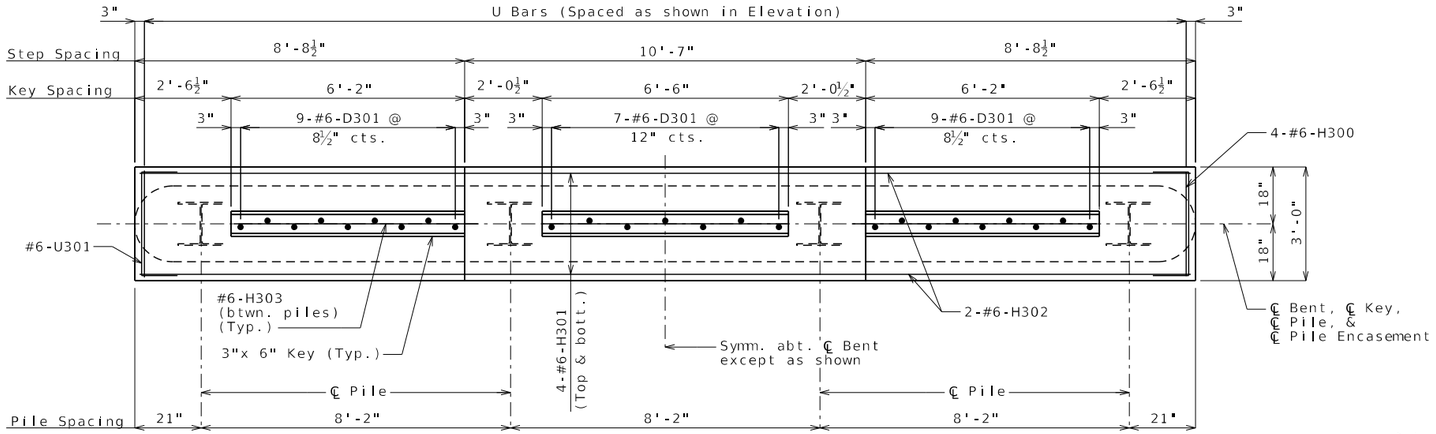
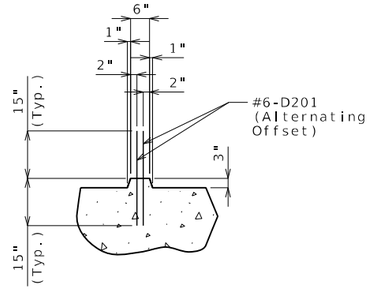
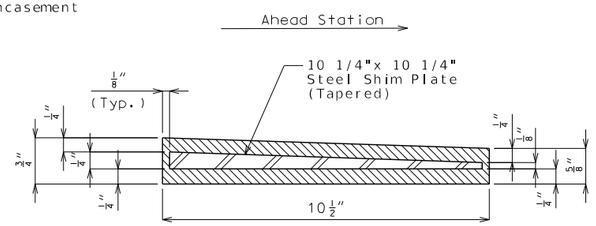


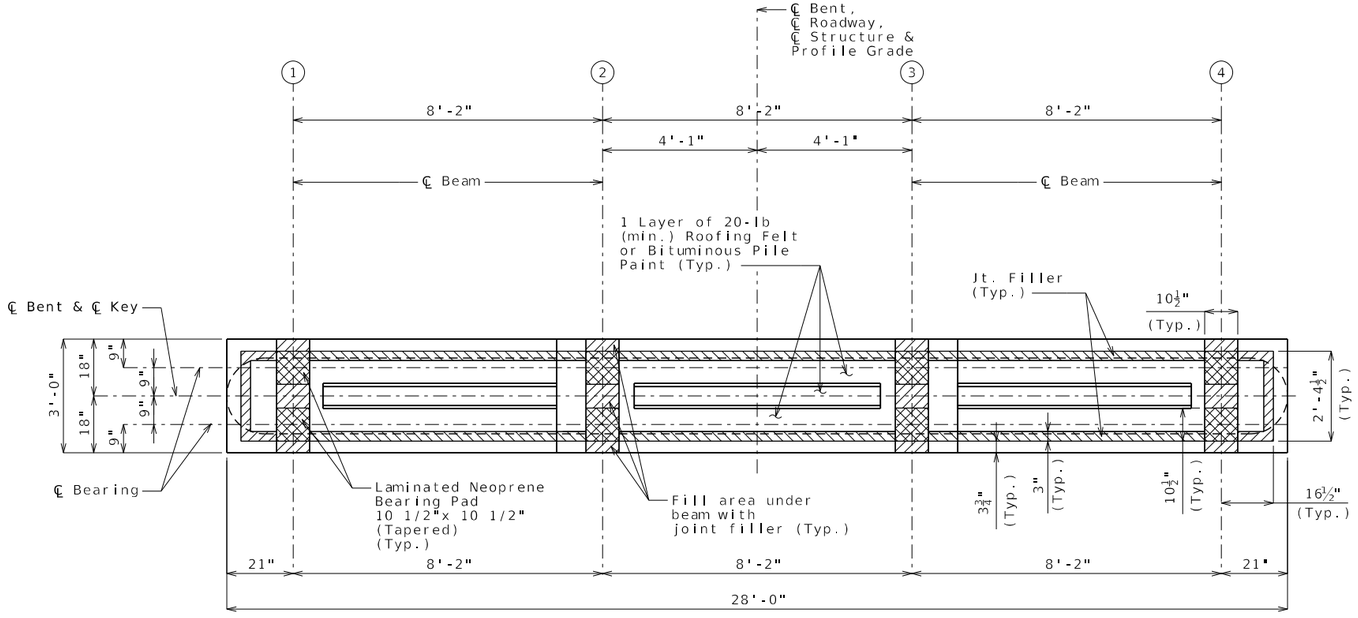
PLAN SHOWING REINFORCEMENT



SECTION THRU KEY



SECTION THRU
LAMINATED NEOPRENE
BEARING PAD



PLAN OF BEAM

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation		15
Galvanized Structural Steel Piles (14 in)	linear foot	340
Pile Wave Analysis	each	1
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	34.1
Reinforcing Steel (Bridges)	pound	2,280

Note: Work this sheet with Sheet No. 9.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed: Oct. 2024
Checked: Oct. 2024

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

B_A9467_010_JNW0020_IB3_02.dgn 4:37:09 PM 12/3/2024

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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

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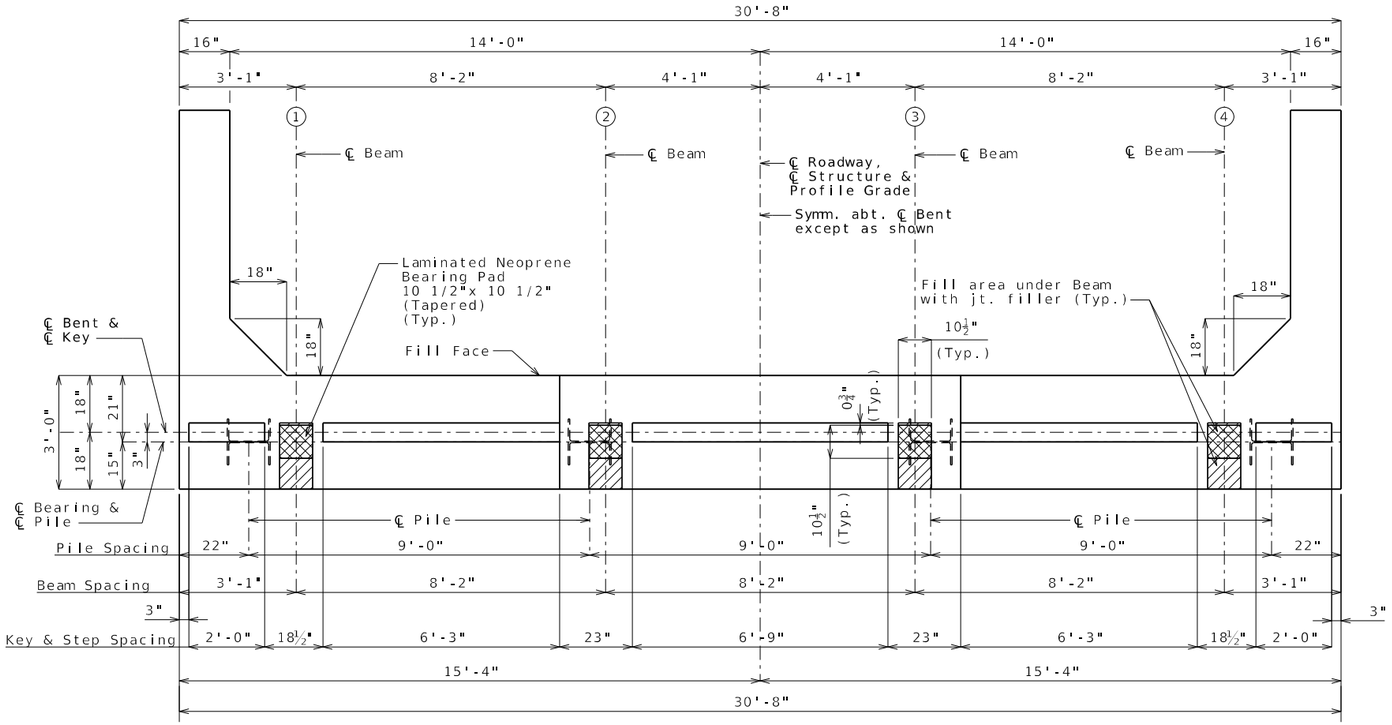
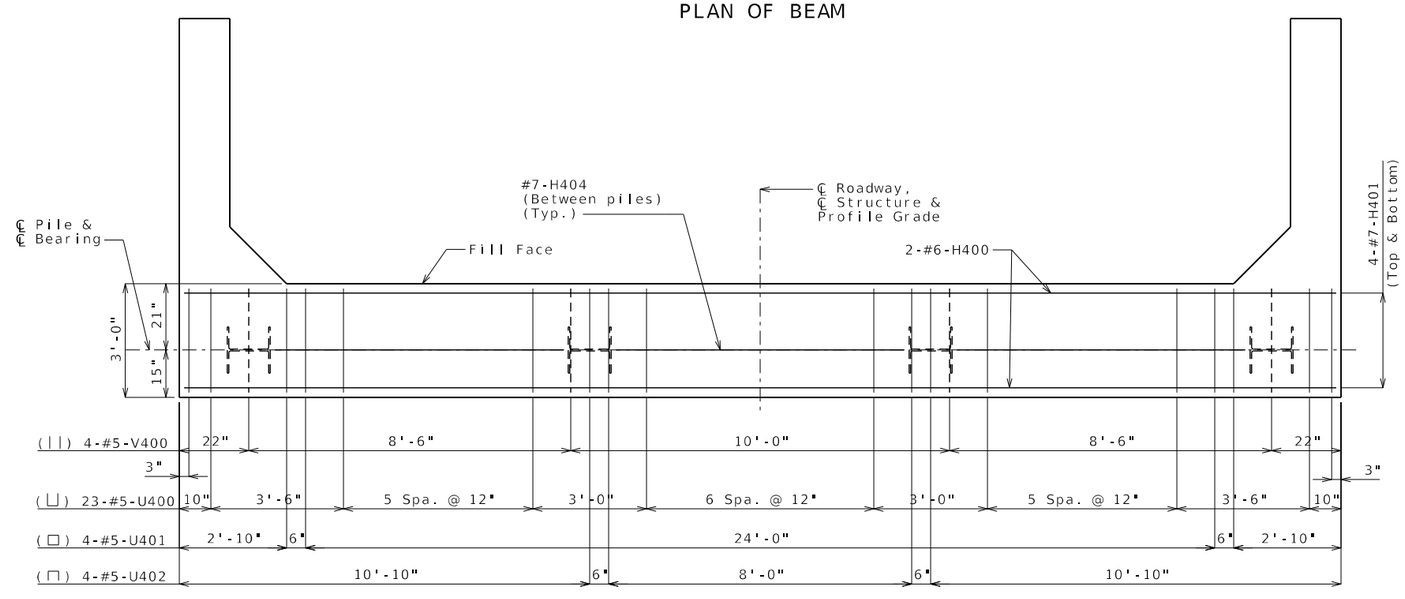
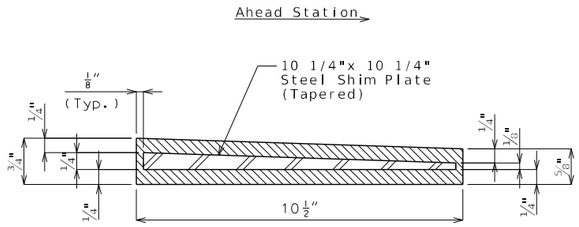


PLAN OF BEAM

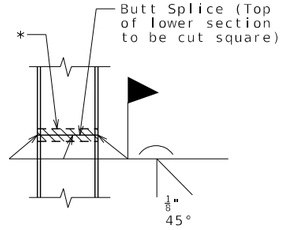


PLAN OF BEAM SHOWING REINFORCEMENT

Keys not shown for clarity



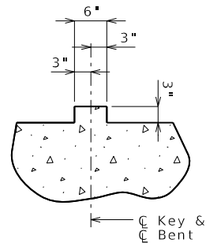
SECTION THRU LAMINATED NEOPRENE BEARING PAD



STEEL PILE SPLICE

(If required)

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



SECTION THRU KEY

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class B Concrete (Substructure)	cu. yard	13.7
Galvanized Structural Steel Piles (14 in)	linear foot	340
Pile Point Reinforcement	each	4
Class 1 Excavation	cu. yard	35

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

General Notes:

The concrete diaphragm at the end bents shall be poured a minimum of 12 hours before the slab is poured.

Work this sheet with Sheets No. 12 & 13.

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

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

DETAILS OF END BENT NO. 4

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

Sheet No. 11 of 30

Detailed: Oct. 2024
Checked: Oct. 2024

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	11

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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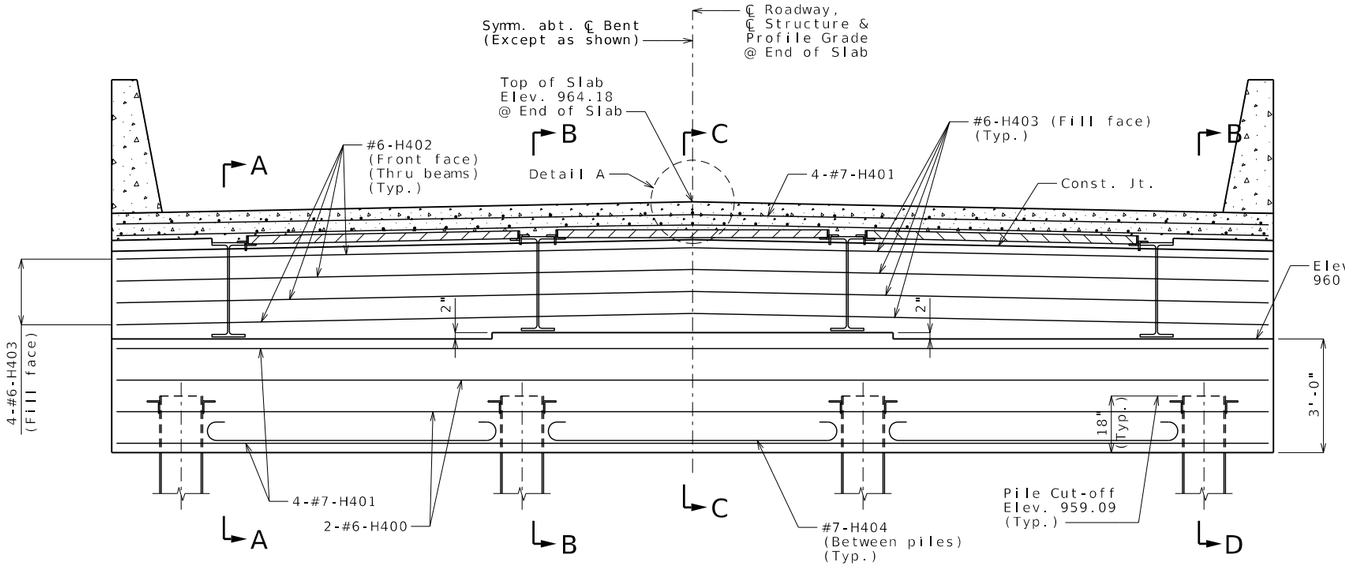
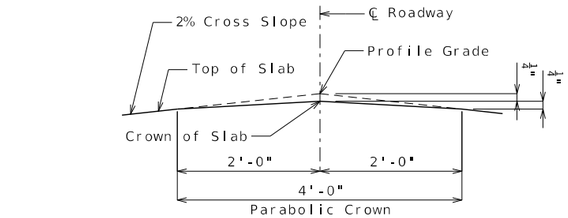
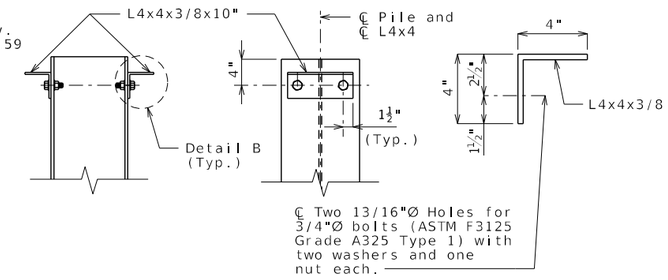
B_A9467_011_JNW0020_EB4_01.dgn 4:37:12 PM 12/3/2024



SECTION NEAR END BENT

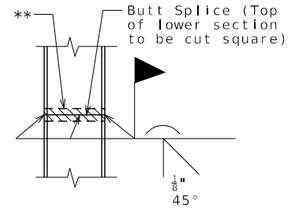


DETAIL A



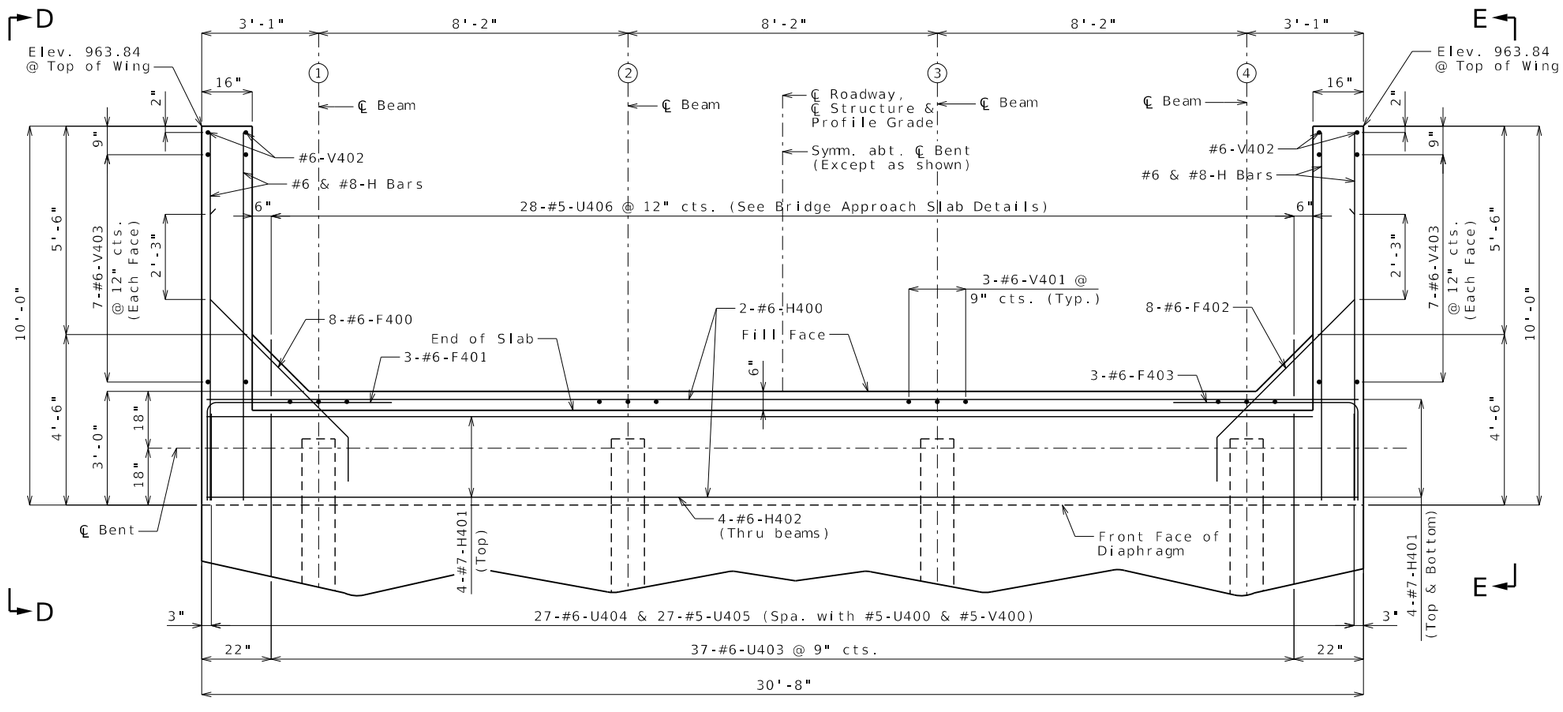
DETAILS OF HP PILE ANCHORS DETAIL B

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



STEEL PILE SPLICE
(If required)

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



PART PLAN

DETAILS OF END BENT NO. 4

General Notes:

Work this sheet with Sheets No. 11 & 13.

For Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 13

The #6-F400 and #6-F402 bars shall be bent in the field to clear Beams.

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

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

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

For details of bridge approach slab, see Sheet No. 24.

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024
ROUTE 46
STATE MO
DISTRICT BR
SHEET NO. 12
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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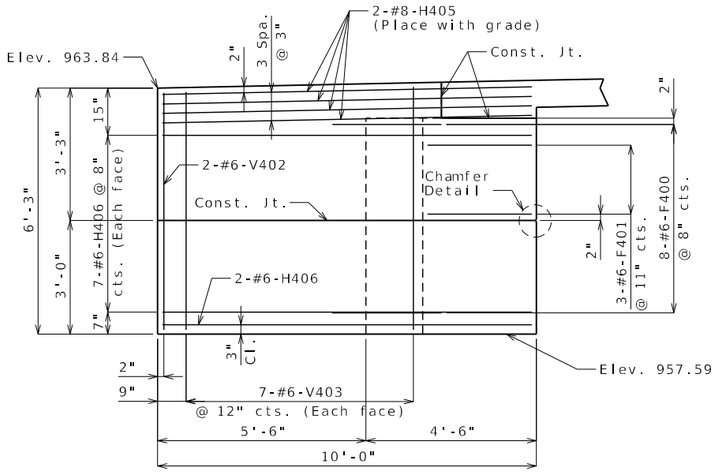
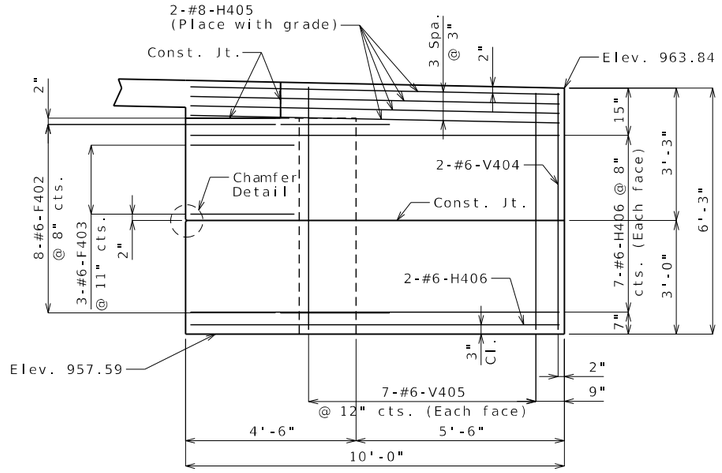
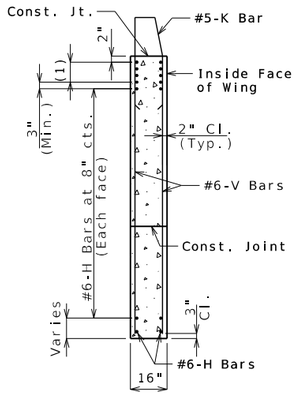


ELEVATION D-D

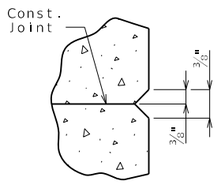


ELEVATION E-E

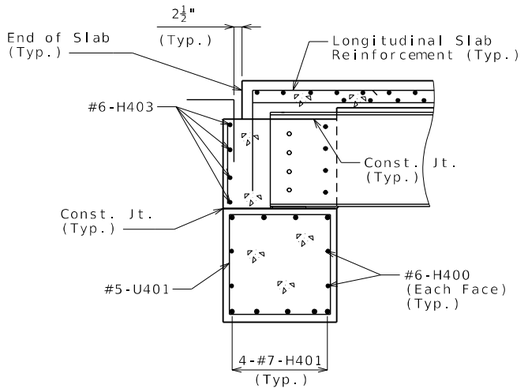


TYPICAL SECTION THRU WING

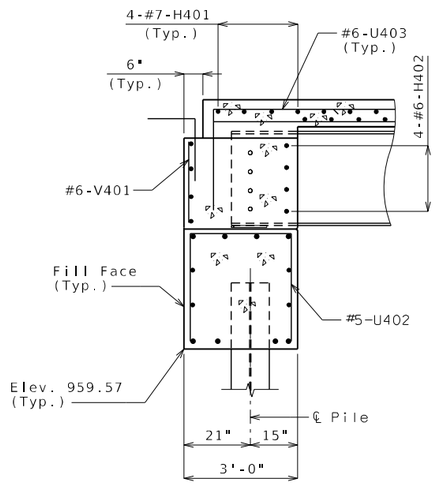
(1) #8-H Bars at 3" cts. (Each face)(Place with grade)



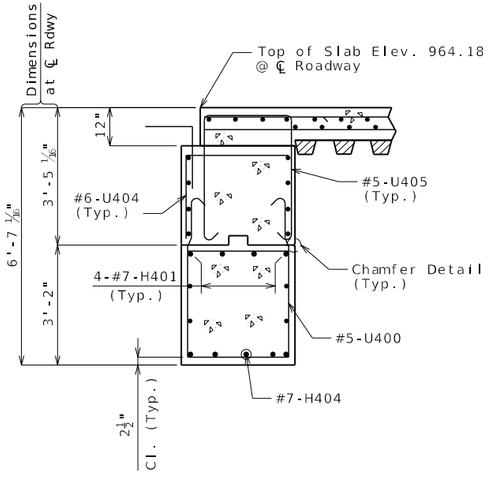
CHAMFER DETAIL



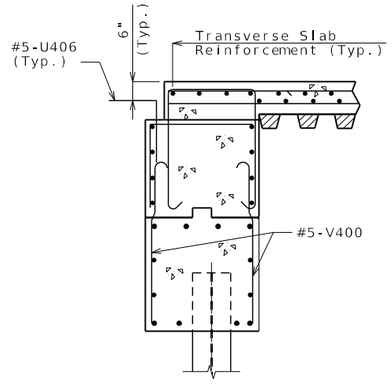
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

General Notes:

Work this sheet with Sheets No. 11 & 12.

For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 12.

For details and reinforcement of the Type D Barrier, see Sheets No. 22, & 23.

DETAILS OF END BENT NO. 4

Detailed: Oct. 2024
Checked: Oct. 2024

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

B_A9467_013_JNW0020_EB4_03.dgn 4:37:14 PM 12/3/2024

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DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	13

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

DESCRIPTION	DATE

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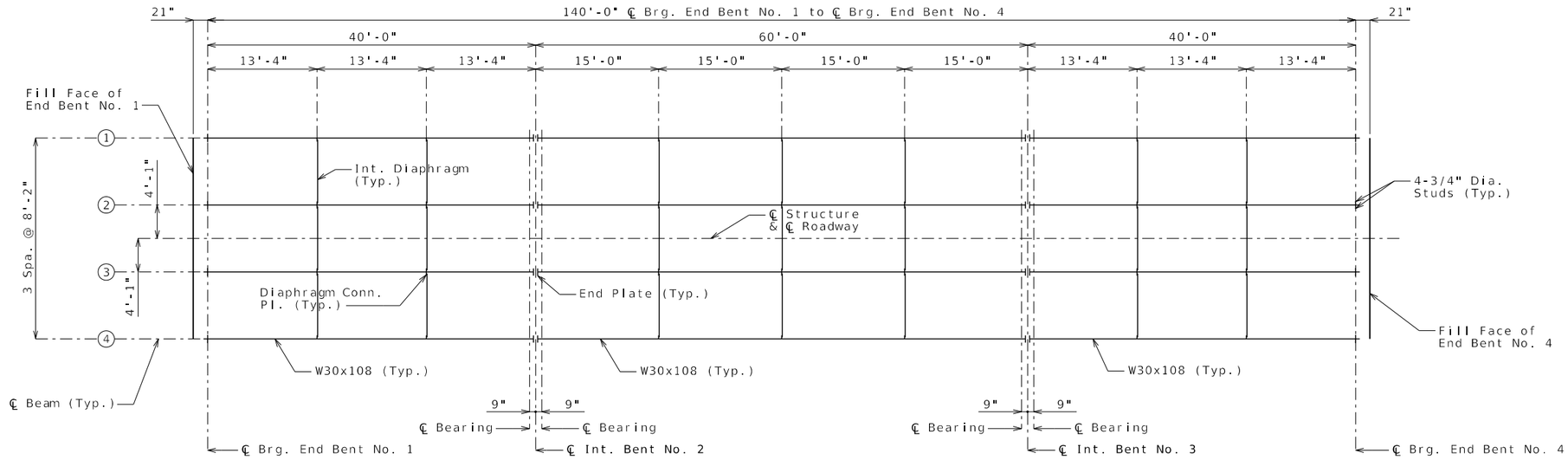
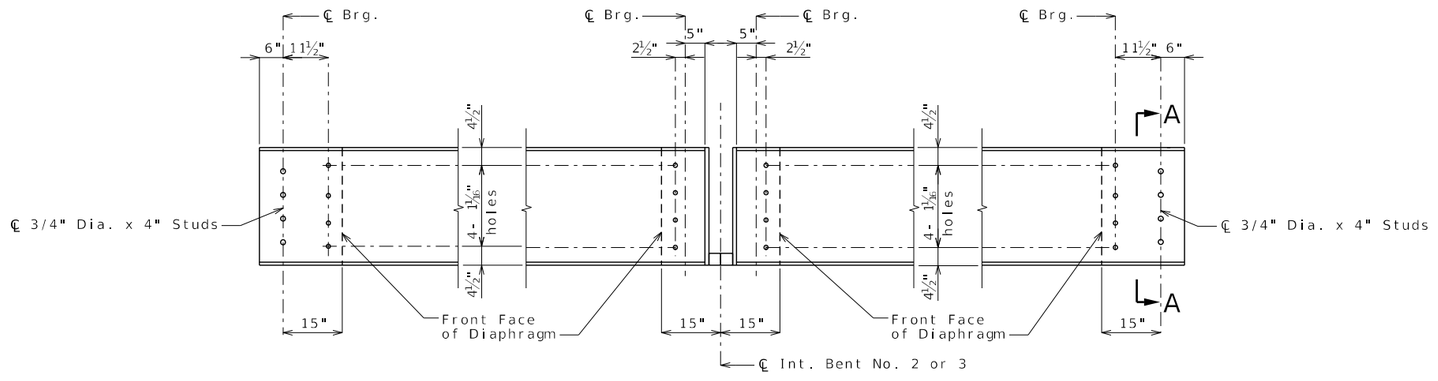


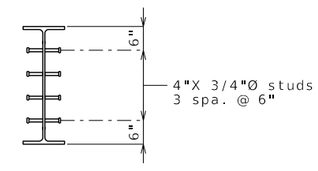
SPAN (1-2) SPAN (2-3) SPAN (3-4)

PLAN OF STRUCTURAL STEEL



(AT END BENT NO. 1) (AT INTERMEDIATE BENTS) (AT END BENT NO. 4)

DETAILS AT END OF BEAMS



SECTION A-A

FRAMING PLAN

Notes:

All dimensions are horizontal from ℄ Bearing to ℄ Bearing.

For details of intermediate diaphragms, connection plates and end plates see Sheet No. 16.

All structural steel shall be ASTM A709 Grade 50W and shall not be galvanized. Weight of all structural steel is included in the weight of Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50W.

Detailed: Oct. 2024
Checked: Oct. 2024

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

B_A9467_014_JNW0020_Framing.dgn 4:37:17 PM 12/3/2024

JEFF A. GARDNER
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STATE OF MISSOURI
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DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 14
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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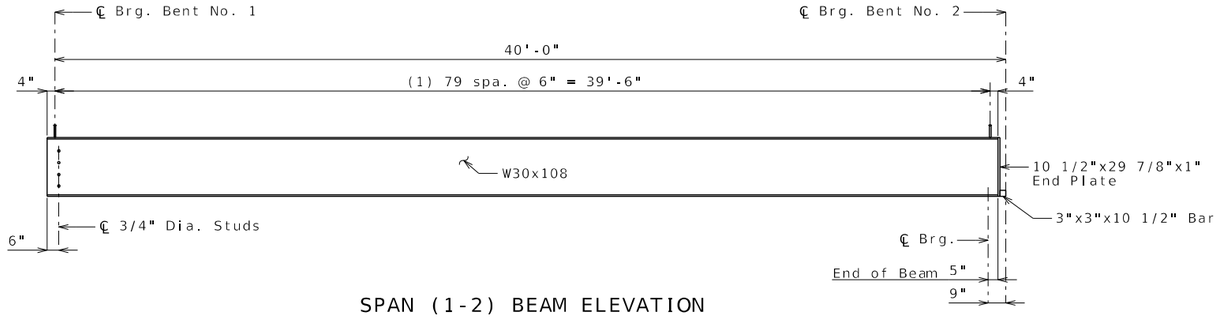
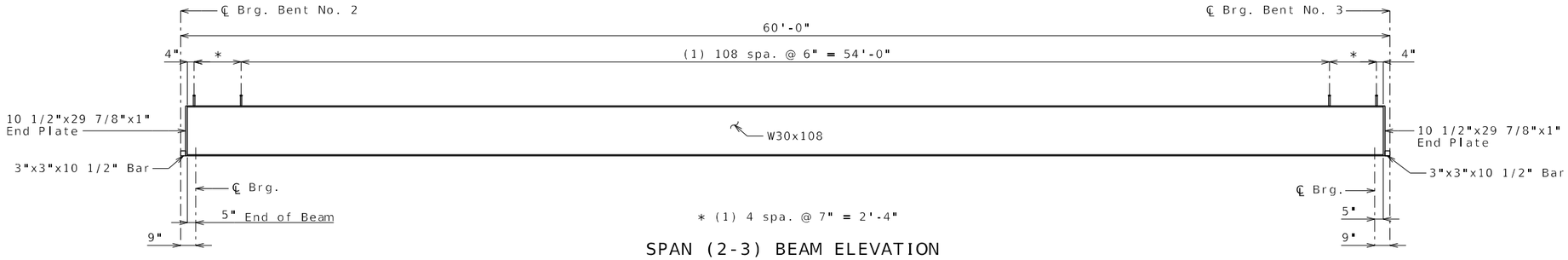
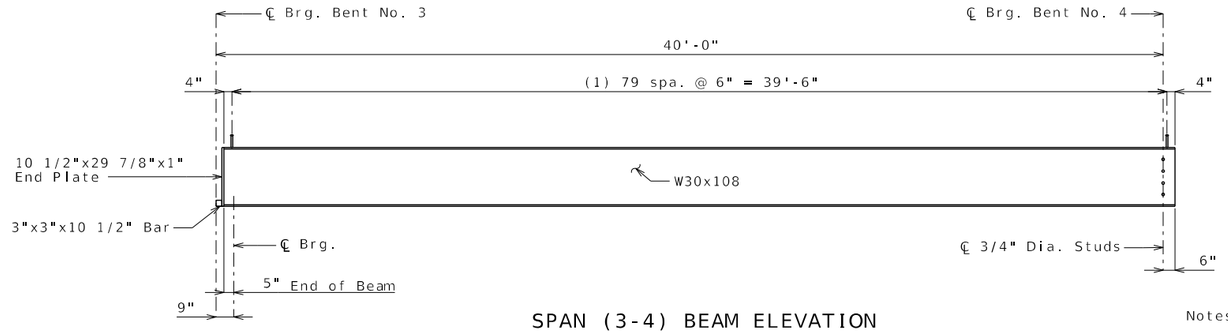


SPAN (1-2) BEAM ELEVATION



* (1) 4 spa. @ 7" = 2'-4"

SPAN (2-3) BEAM ELEVATION



SPAN (3-4) BEAM ELEVATION

BEAM ELEVATION

Notes:

Notch toughness is required for all wide flange beams.

Longitudinal dimensions shown in the Beam Elevations are horizontal dimensions.

Fabricated structural steel shall be ASTM A709 Grade 50W and shall not be galvanized.

For location of slab drain attachment holes, see Sheet No. 18.

(1) 2 studs per row.

For Details of Shear Connectors, see Sheet No. 16.

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
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ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	15

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9467

DESCRIPTION	DATE

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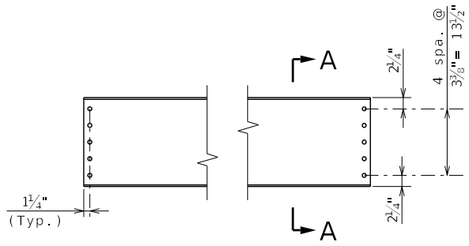
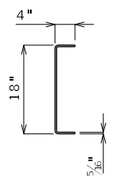


INTERMEDIATE DIAPHRAGM



SECTION A-A

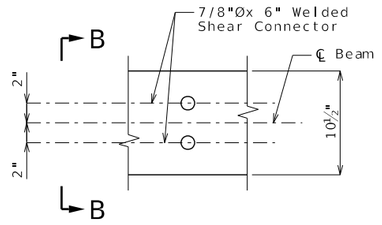
Notes:

All bolted connections shall be 7/8"Ø ASTM F3125 Type 3 bolts in 15/16"Ø.

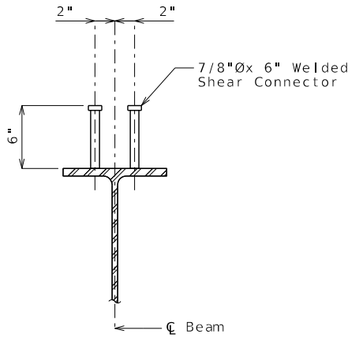
At the contractor's option, holes in the diaphragm plate of non slab bearing diaphragms may be made 3/16" larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate or transverse web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

All structural steel shall be ASTM A709 Grade 50W and shall not be galvanized.

Weight of all structural steel is included in the weight of Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50W.



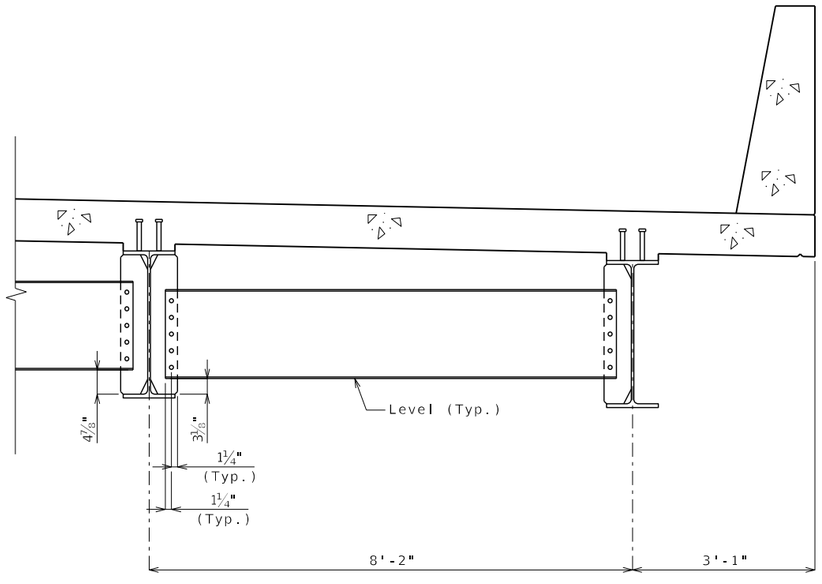
PLAN



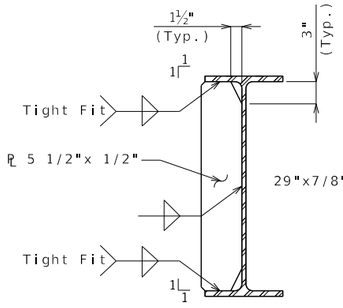
SECTION B-B

DETAILS OF SHEAR CONNECTORS

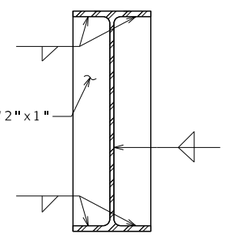
Weight of 2,549 pounds of shear connectors for the beams is included in the weight of Fabricated Structural Low Allow Steel (I-Beam) A709, Grade 50 W. Shear connectors shall be in accordance with Sec 712, 1037, and 1080.



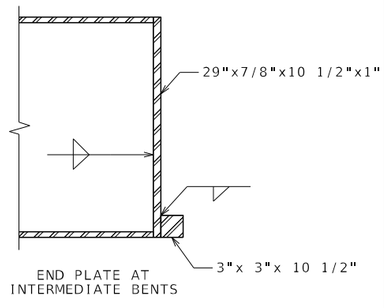
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS



INTERMEDIATE DIAPHRAGM
CONNECTION PLATE
(Exterior Beam Shown)



END PLATE AT
INTERMEDIATE BENTS



END PLATE AT
INTERMEDIATE BENTS

WELDING DETAILS

STEEL DETAILS

Detailed: Oct. 2024
Checked: Oct. 2024

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

B_A9467_016_JNW0020_Steel Dtls.dgn 4:37:19 PM 12/3/2024

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DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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

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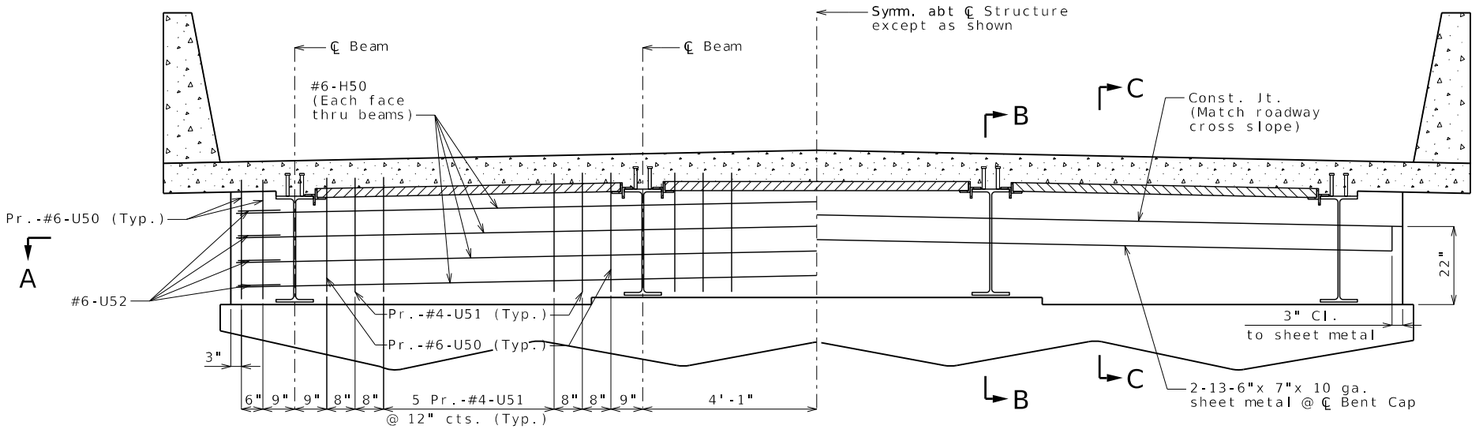


SHOWING REINFORCEMENT

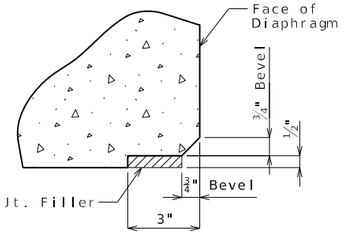
SHOWING SHEET METAL

SECTION NEAR INTERMEDIATE BENT

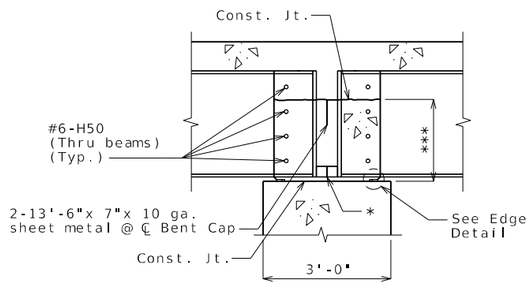
* Vertical face of compression blocks shall be in partial contact. Full contact throughout block height is not necessary. Vertical faces of adjacent blocks shall overlap a minimum of 2 1/2".

** #6-D201 or #6-D301, See Sheets No. 8 & 10.

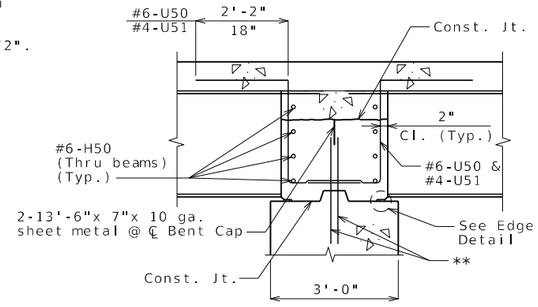
*** Varies, match roadway cross slope.



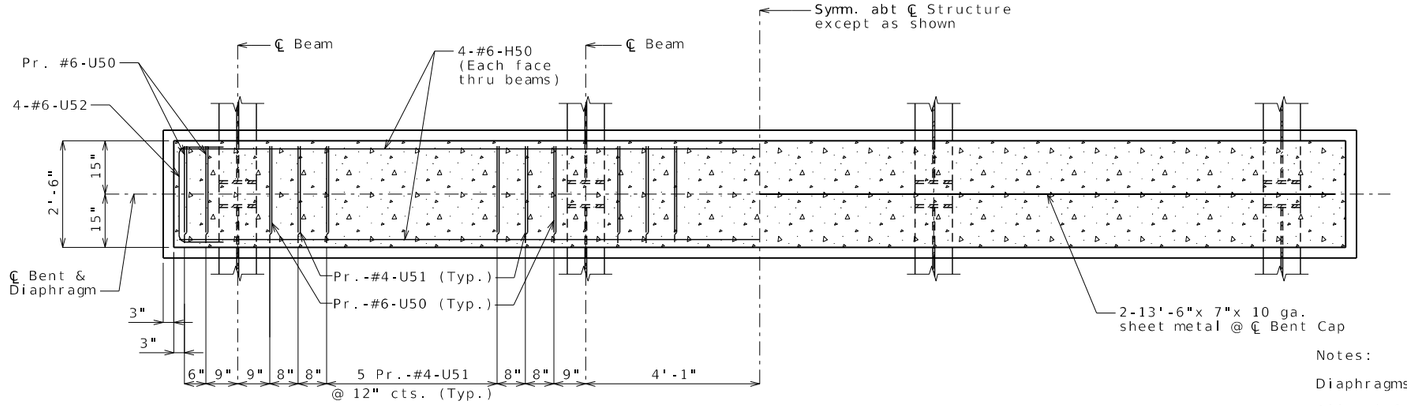
EDGE DETAIL



SECTION B-B



SECTION C-C



SHOWING REINFORCEMENT

SHOWING SHEET METAL

SECTION A-A

Notes:

Diaphragms at Intermediate Bents shall be built vertical.

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 is included in the Estimated Quantities for Slab on Steel.

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

Sheet metal shall be in accordance with Structural Grade 40 and coating designation of G165 of ASTM A653.

CONCRETE DIAPHRAGMS AT INTERMEDIATE BENTS

Detailed: Oct. 2024
Checked: Oct. 2024

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

B_A9467_017_JNW0020_Diaphragm.dgn 4:37:20 PM 12/3/2024

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46	MO
DISTRICT	SHEET NO.
BR	17

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JNW0020

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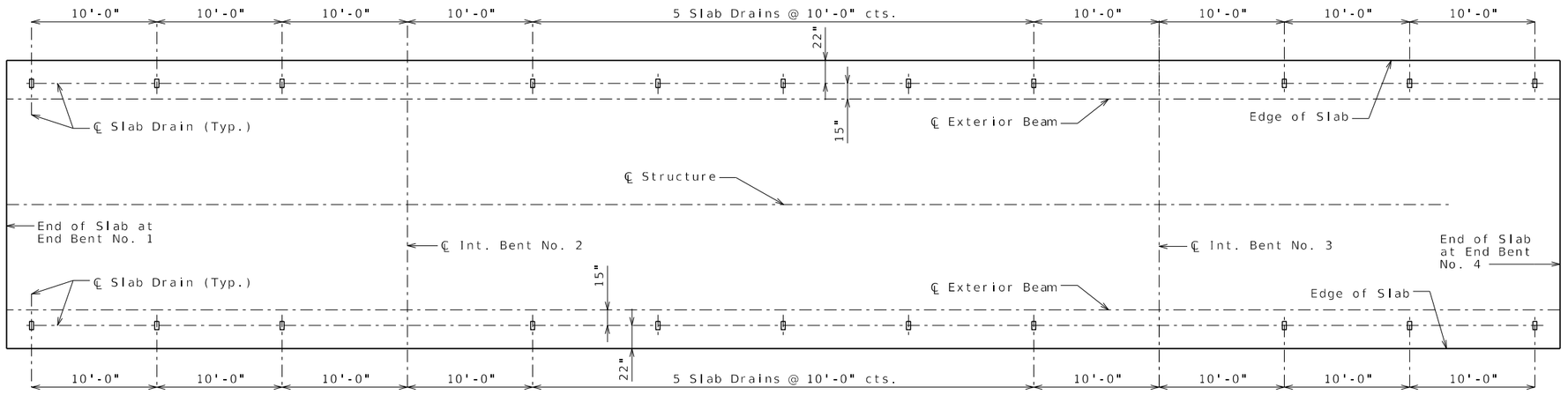
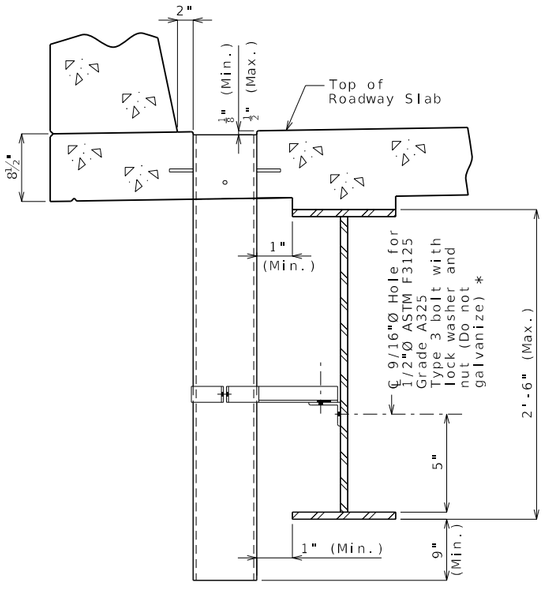
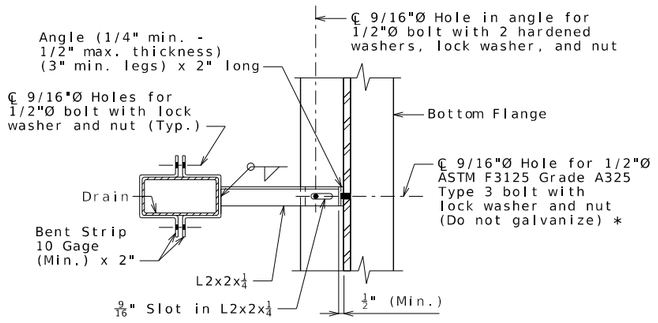


SPAN (1-2) SPAN (2-3) SPAN (3-4)

PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

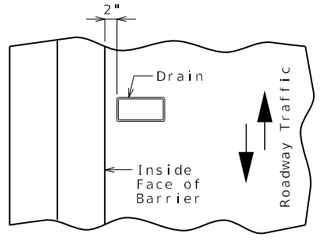


PART SECTION NEAR DRAIN

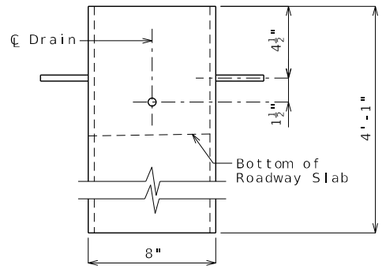


PART SECTION SHOWING BRACKET ASSEMBLY

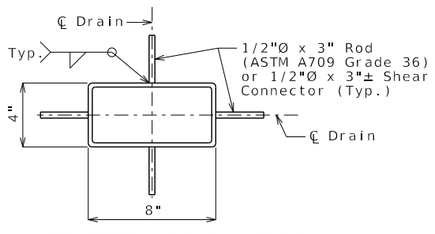
* See Sec 1080.4



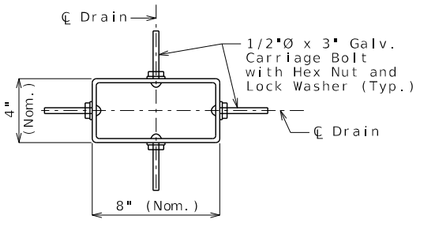
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

SLAB DRAINS

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, except as shown.

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 plate Beam shop drawings.

The galvanized surfaces of drain support brackets shall be prepared according to the coating manufacturer's recommendation and field coated with a gray epoxy-mastic primer (non-aluminum) within a distance of 6 inches from the point of connection to the weathering steel structure.

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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ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 18
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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105 WEST CAPITOL
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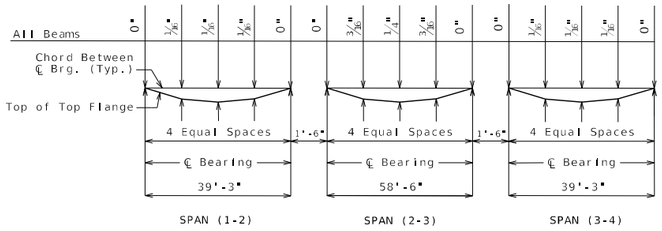
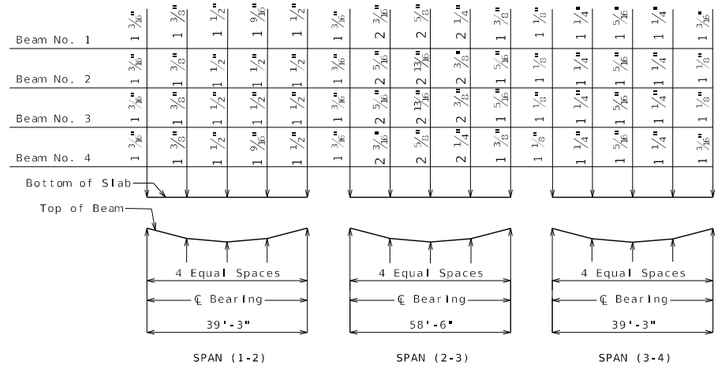


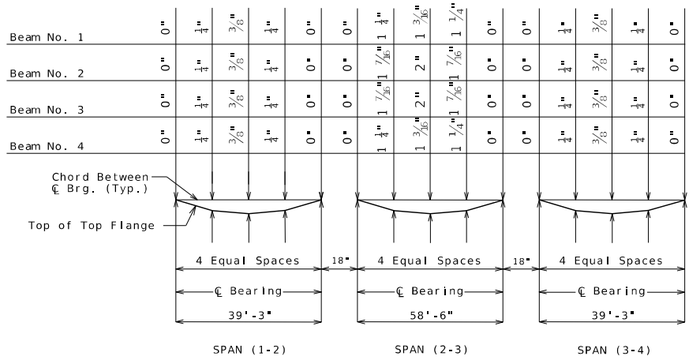
STEEL DEFLECTION



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If beam 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.

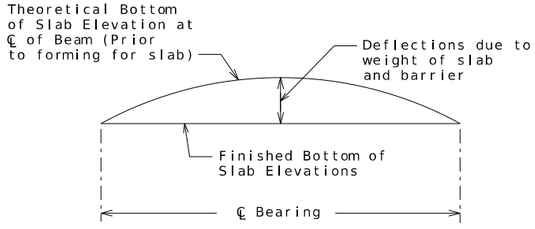
Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete Beam.



DEAD LOAD DEFLECTION

15% of dead load deflection is due to the weight of structural steel.

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



TYPICAL SLAB ELEVATIONS DIAGRAM

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

Beam Number	Span (1-2) (39'-3" ℄ Brg. - ℄ Brg.)					Span (2-3) (58'-6" ℄ Brg. - ℄ Brg.)					Span (3-4) (39'-3" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	.25	.50	.75	℄ Brg.	℄ Brg.	.25	.50	.75	℄ Brg.	℄ Brg.	.25	.50	.75	℄ Brg.
1	965.22	965.04	964.86	964.68	964.49	964.47	964.32	964.14	963.91	963.64	963.62	963.53	963.44	963.34	963.23
2	965.38	965.21	965.03	964.84	964.66	964.63	964.50	964.08	964.08	963.80	963.79	963.70	963.60	963.50	963.40
3	965.38	965.21	965.03	964.84	964.66	964.63	964.50	964.08	964.08	963.80	963.79	963.70	963.60	963.50	963.40
4	965.22	965.04	964.86	964.68	964.49	964.47	964.32	964.14	963.91	963.64	963.62	963.53	963.44	963.34	963.23

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 corrugated steel form) and barrier.

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ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	19

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

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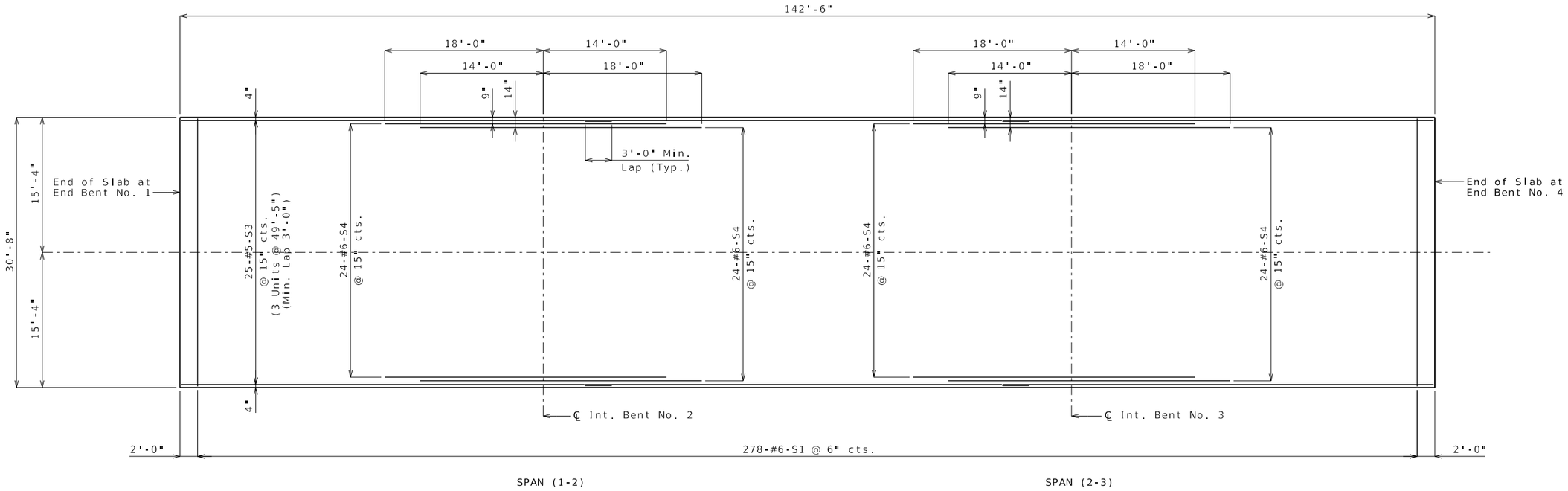
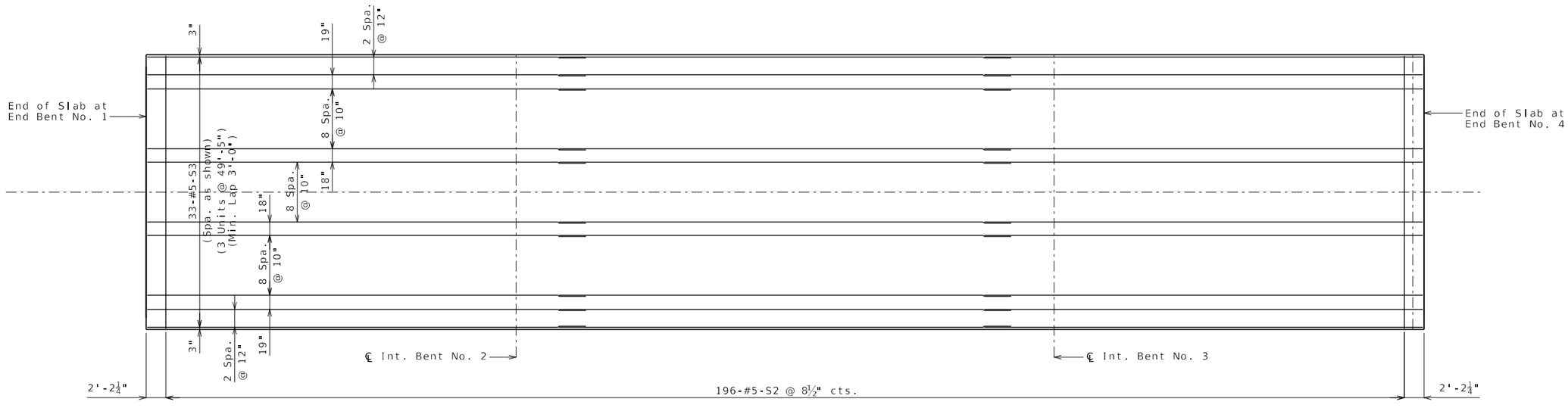


TOP REINFORCEMENT



BOTTOM REINFORCEMENT

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ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

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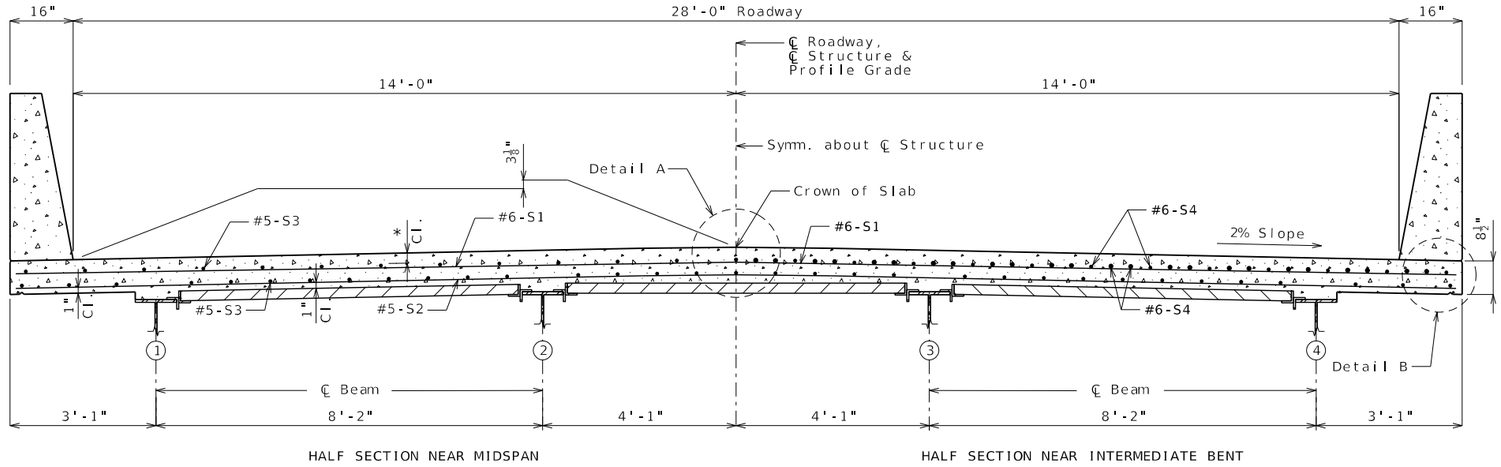
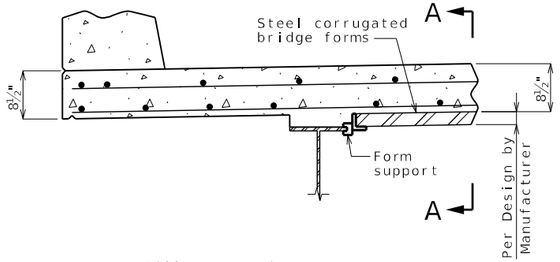


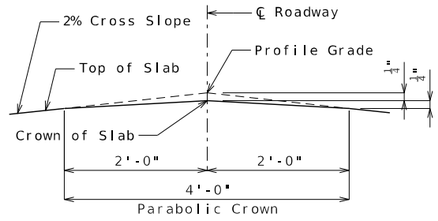
* 3 1/8" for #5
or 3" for #6

HALF SECTION NEAR MIDSPAN

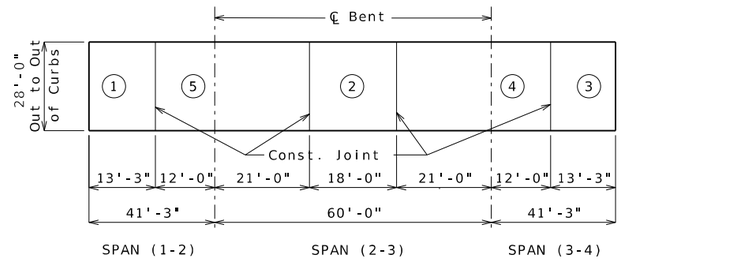
HALF SECTION NEAR INTERMEDIATE BENT

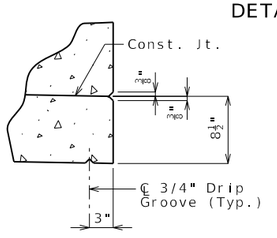
SECTION THRU SLAB



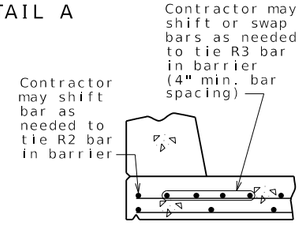


DETAIL A





DETAIL B

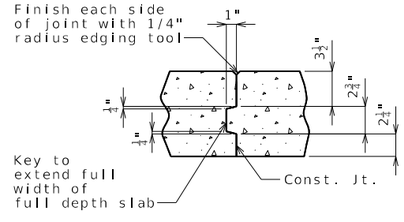


OPTIONAL SHIFTING
TOP BARS AT BARRIER

	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	25
	End to 4			2 to End			
Alternate C Pours	1 + 5 + 2 + 4 + 3					25	39
	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



FULL DEPTH SLAB

SLAB CONSTRUCTION JOINT

OPTIONAL STAY-IN-PLACE FORM DETAILS

Stay-In-Place Forms:

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

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

Form sheets shall not rest directly on the top of 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.

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.

Notes:

For reinforcement of barrier not shown, see Sheets No. 22 & 23.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 19.

For Plan of Slab Showing Reinforcement, see Sheet No. 20.

SLAB DETAILS

Detailed: Oct. 2024
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PROFESSIONAL ENGINEER
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ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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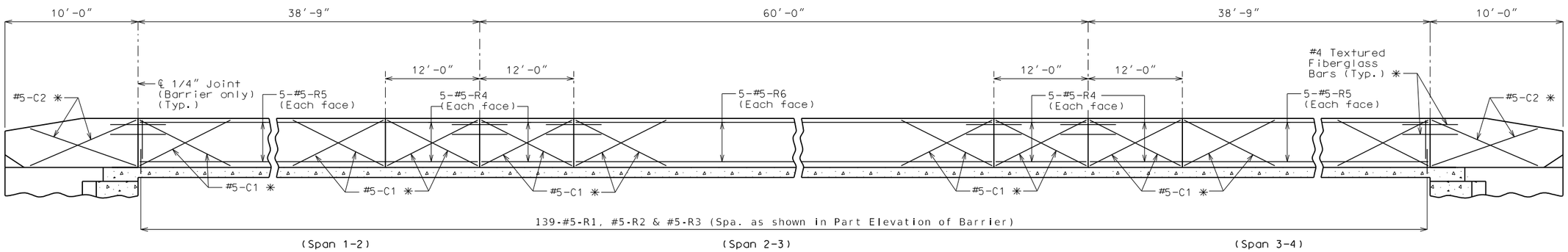
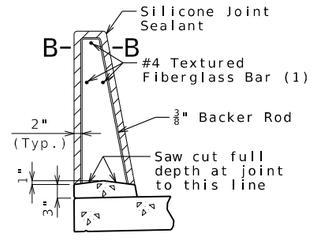


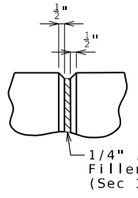
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

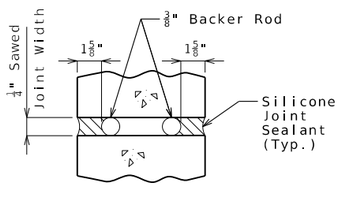
Longitudinal dimensions are horizontal.



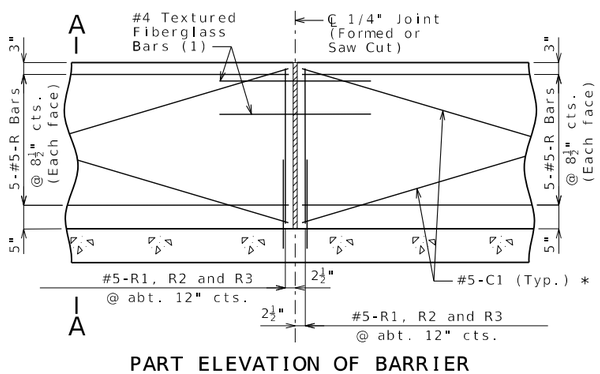
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT

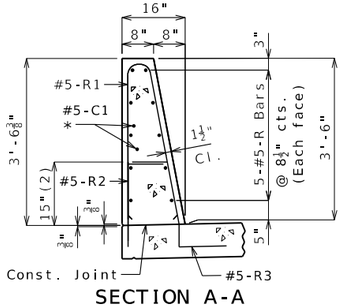


SECTION B-B



PART ELEVATION OF BARRIER

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

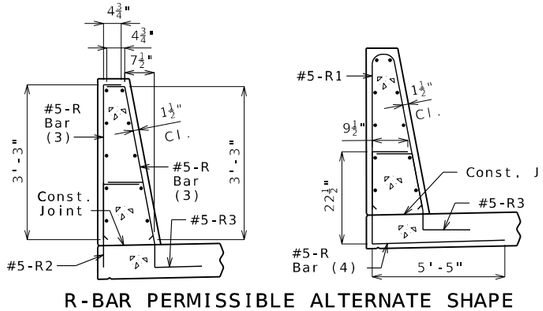


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

(4) The R2 bar and #5 bottom transverse slab bar in cantilever (prestressed panels only) combination may be furnished as one bar as shown, at the contractor's option.

General Notes:

✳ Slip-formed option only.

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

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

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

Plastic waterstop shall not be used with saw cut joints.

TYPE D BARRIER

Detailed: Oct. 2024
Checked: Oct. 2024

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

DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	22

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

DESCRIPTION	DATE

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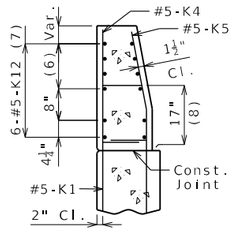
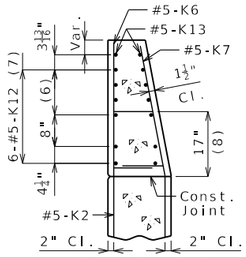
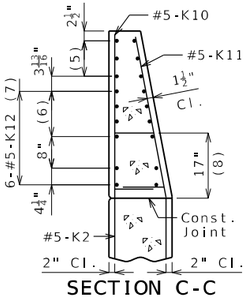


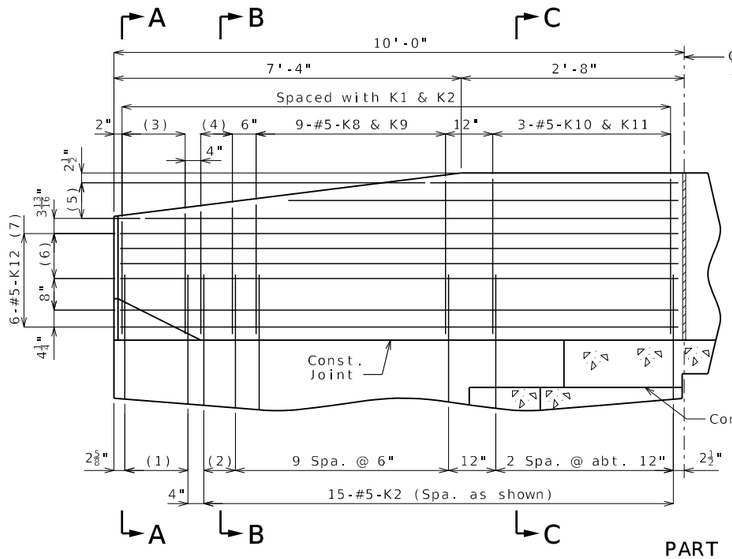
SECTION A-A

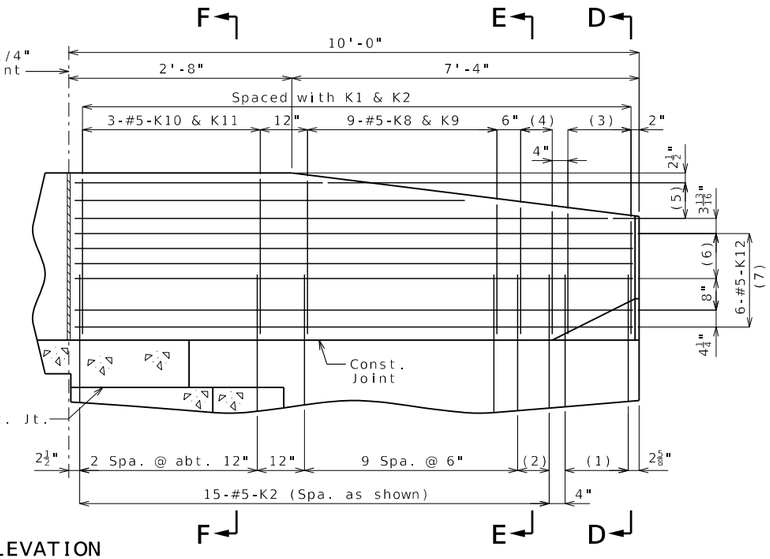


SECTION B-B

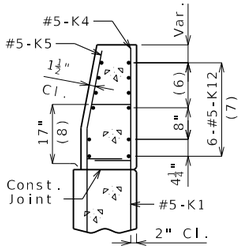


SECTION C-C





PART ELEVATION



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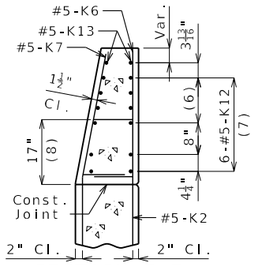

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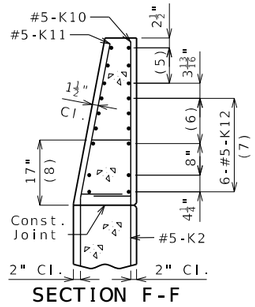
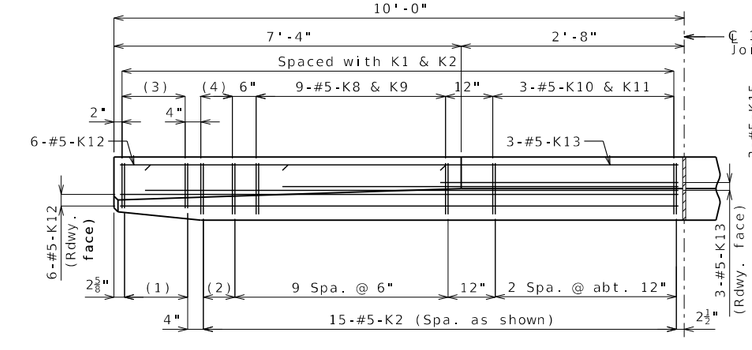
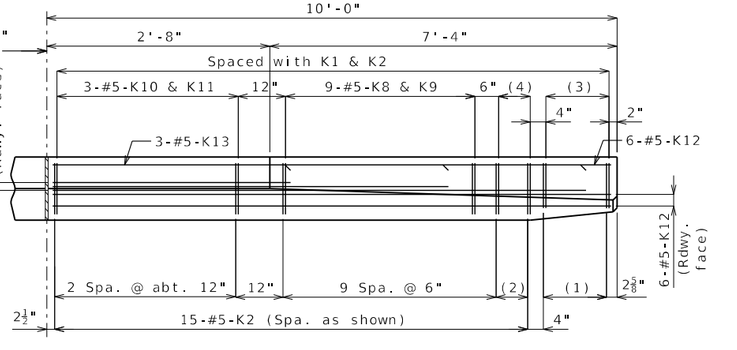
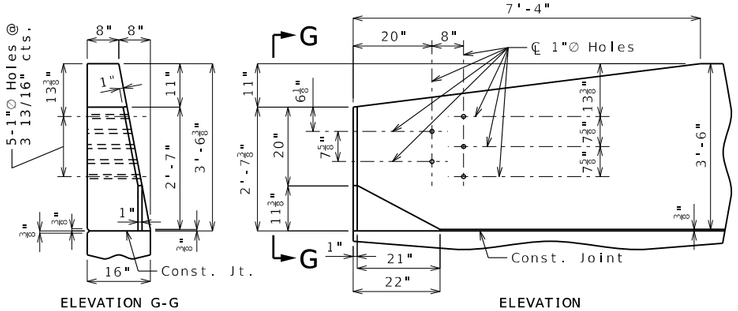


SECTION F-F





PART PLAN



ELEVATION G-G

ELEVATION

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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

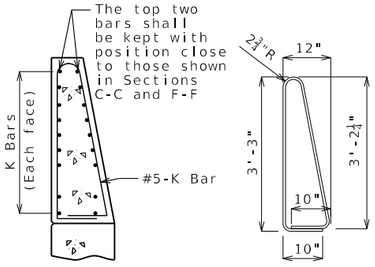
(4) 3-#5-K6 & K7

(5) 3-#5-K13 @ 4½" cts., each face

(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar

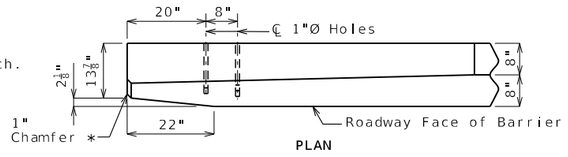


K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

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

All dimensions are out to out.



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 D Barrier.

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

TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
STATE OF MISSOURI
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED AND DATED ELECTRONICALLY.

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

DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	23

COUNTY: WORTH

JOB NO.: JNW0020

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9467

DESCRIPTION	DATE

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

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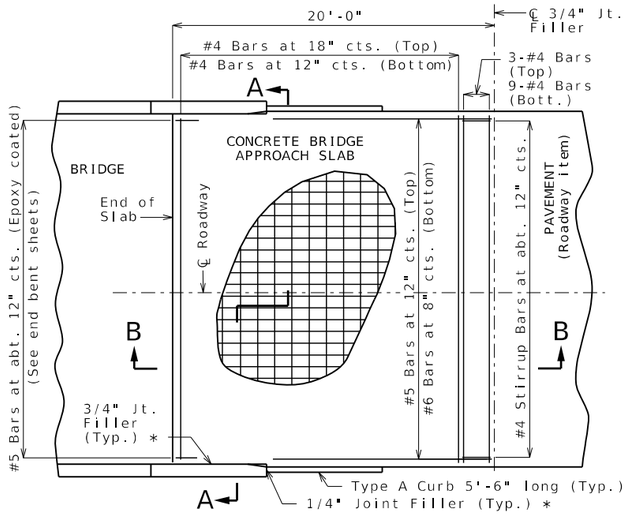
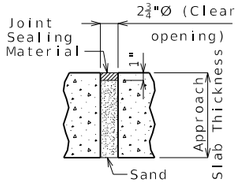
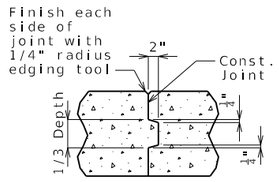
Missouri Cert. of Authority 2002010300



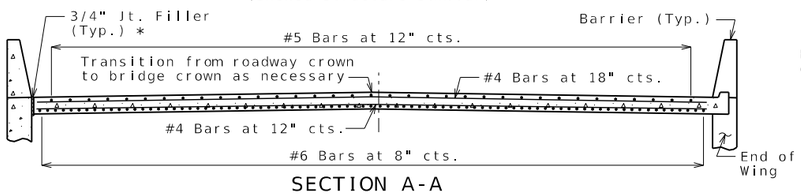
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



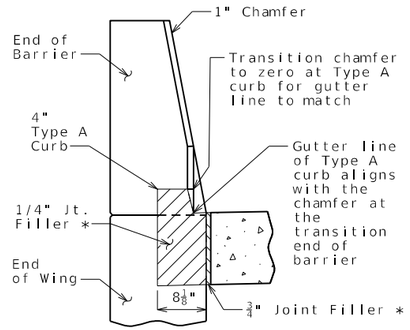
UNDERSEAL ACCESS HOLE DETAIL
(If required)



CONSTRUCTION JOINT DETAIL



SECTION A-A



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.

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:

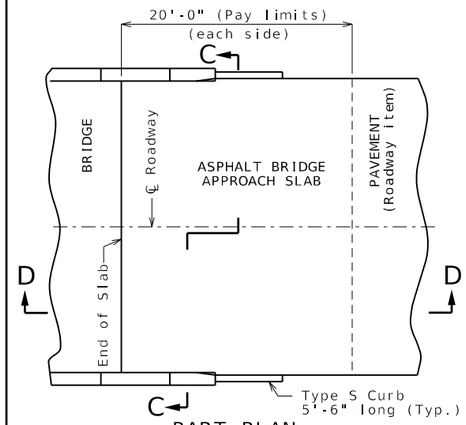
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

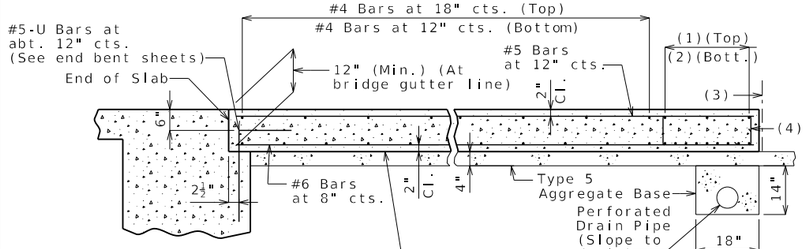
Notes For Asphalt Slab Only:

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)



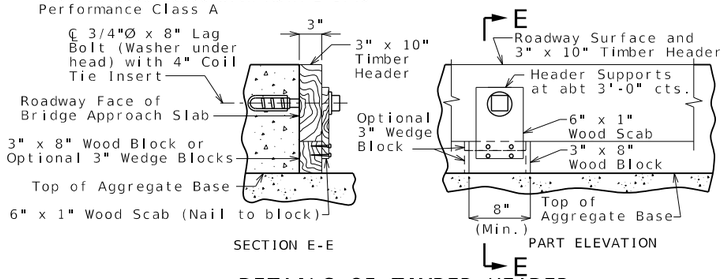
(1) 3-#4 Bars

(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)

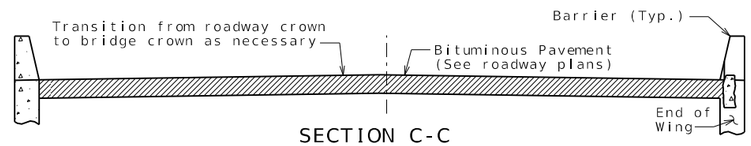


SECTION E-E

PART ELEVATION

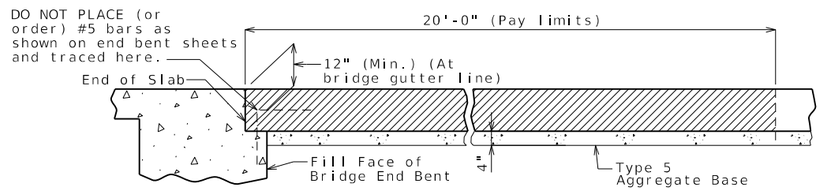
DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

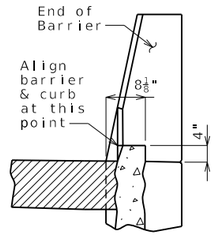


SECTION C-C

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: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
STATE OF MISSOURI
NUMBER PE-2010019360
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024

ROUTE	STATE
46	MO
DISTRICT	SHEET NO.
BR	24

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9467

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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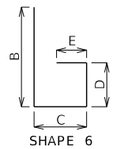
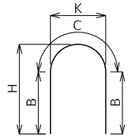


SHAPE 6
or 6S



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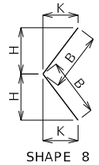

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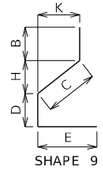

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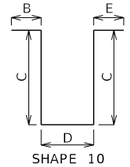

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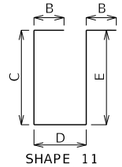

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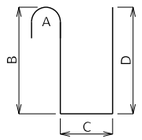

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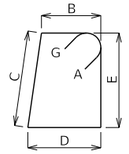

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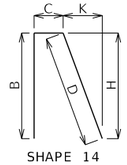

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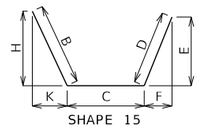

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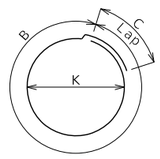

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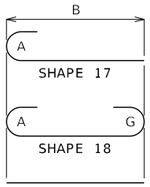
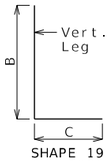


SHAPE 17
SHAPE 18
SHAPE 20



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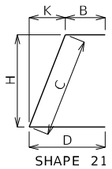

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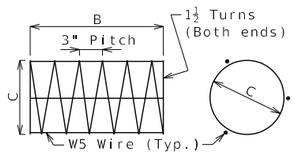

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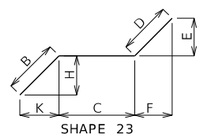

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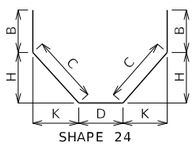

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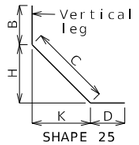

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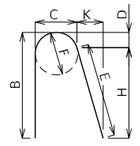

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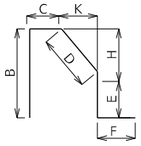

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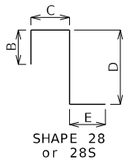

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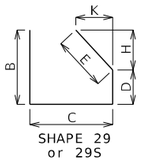

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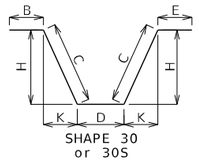

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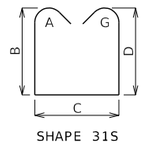

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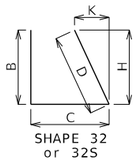

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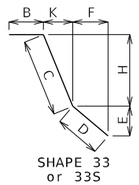

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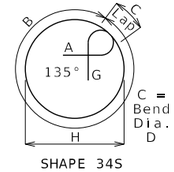

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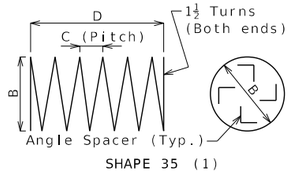

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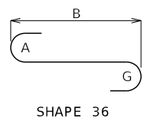
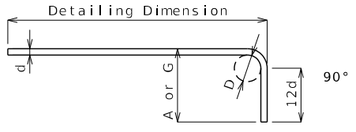


SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4¼"	12"	8¼"	6"
#7	2	5¼"	14"	9¾"	7"
	3	7"	15"	11½"	8¾"
#8	2	6"	16"	11"	8"
	3	8"	17"	13¾"	10"
#9	1	9½"	19½"	15½"	11¾"
#10	1	10¾"	22"	17½"	13¼"
#11	1	12"	24½"	19½"	14⅞"
#14	1	18¼"	31¼"	27½"	21⅝"
#18	1	24"	41½"	36¾"	28½"

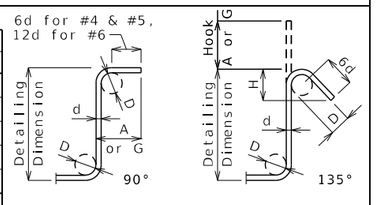


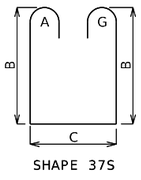
Stirrup Pin Bend Shapes (S)

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

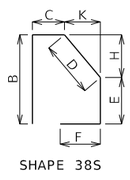
Applicable for all grades of steel.

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





SHAPE 37S



SHAPE 38S

BENDING DIAGRAMS

All dimensions are out to out.

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

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

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

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

Reinforcing Steel Totals (Pounds)

	Size	Substructure		Superstructure				Entire Bridge	
				Slab			Slip Form		
		Plain	Epoxy	Plain	Epoxy	Barrier		Plain	Epoxy
By Size	W5	0	0	0	0	0	0	0	0
	4	2,513	0	0	385	0	0	2,513	385
	5	716	0	0	16,210	8,250	566	716	25,026
	6	1,390	0	0	23,571	0	0	1,390	23,571
	7	0	0	0	1,594	0	0	0	1,594
	8	0	0	0	834	0	0	0	834
	9	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type		4,619	0	0	42,594	8,250	566	4,619	51,410

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 25
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekdesigngroup.com
Missouri Cert. of Authority 2002013000
TREK DESIGN GROUP, LLC

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	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.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
		SUBSTRUCTURE																						
		INT. BENT NO. 2																						
25	6 D201	BEAM KEY		20		2	6.000													2	6	2	6	94
8	6 H201	BEAM		18		27	8.000													29	0	29	0	348
4	6 H202	BEAM		20		27	8.000													27	8	27	8	166
3	6 H203	BEAM		18		6	8.000													8	0	8	0	36
2	4 H204	BEAM		18		26	0.000													27	0	27	0	36
26	4 H205	BEAM		7		3	0.000	2	5.750							3	9.500	19.000		8	6	8	6	148
24	4 H206	BEAM		20		26	0.000													26	0	26	0	417
25	5 U200	BEAM		13		2	8.000	2	8.000	2	8.000	2	8.000							11	11	11	3	293
8	6 U201	BEAM		10					12.000	2	6.750									4	6	4	3	51
8	5 U202	BEAM		10				2	8.000	2	8.000									8	0	7	9	65
21	4 U203	BEAM		10				2	0.000		20.000									5	8	5	6	77
64	4 V201	COLUMN		20		14	2.000													14	2	14	2	606
		INT. BENT NO. 3																						
25	6 D301	BEAM KEY		20		2	6.000													2	6	2	6	94
8	6 H301	BEAM		18		27	8.000													29	0	29	0	348
4	6 H302	BEAM		20		27	8.000													27	8	27	8	166
3	6 H303	BEAM		18		6	8.000													8	0	8	0	36
2	4 H304	BEAM		18		26	0.000													27	0	27	0	36
24	4 H305	BEAM		7		3	0.000	2	5.750							3	9.500	19.000		8	6	8	6	136
24	4 H306	BEAM		20		26	0.000													26	0	26	0	417
25	5 U300	BEAM		13		2	8.000	2	8.000	2	8.000	2	8.000							11	7	11	3	293
8	6 U301	BEAM		10					12.000	2	6.750									4	6	4	3	51
8	5 U302	BEAM		10				2	8.000	2	8.000									8	0	7	9	65
21	4 U303	BEAM		10				2	0.000		20.000									5	8	5	6	77
64	4 V301	COLUMN		20		13	2.000													13	2	13	2	563
		SUPERSTRUCTURE																						
		INT. BENT DIAPHRAGM																						
16	6 H50	DIAPHRAGM	E	20		27	2.000													27	2	27	2	653
40	6 U50	DIAPHRAGM	E	28				2	2.000	2	6.000	2	2.000							6	10	6	6	391
96	4 U51	DIAPHRAGM	E	28					18.000	2	6.000	2	2.000							6	2	6	0	385
16	6 U52	DIAPHRAGM	E	10					12.000	2	2.000									3	2	2	10	68

Bill of Reinforcing Steel

No. Req.	Size/ Mark	LOCATION	Codes C	Codes SH	Codes V	Dimensions B ft	B in.	C ft	C in.	D ft	D in.	F ft	F in.	F ft	F in.	H ft	H in.	K ft	K in.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
		END BENT 1																						
16	6 F100	WING BRACE	E	23		2	3.000	5	1.750	1	2.000		10.000		10.000	1	7.000	1	7.000	8	7	8	6	204
6	6 F101	DIAPHRAGM	E	6		4	10.000	2	8.500											7	7	7	5	67
4	6 H100	BEAM	E	20		30	5.000													30	5	30	5	183
12	7 H101	BEAM & DIAPHRAGM	E	20		30	5.000													30	5	30	5	746
4	6 H102	DIAPHRAGM	E	20		30	5.000													30	5	30	5	183
4	6 H103	DIAPHRAGM	E	20		30	5.000													30	5	30	5	183
3	7 H104	DIAPHRAGM	E	18		6	8.000													8	3	8	3	51
16	8 H105	WING	E	20		9	9.000													9	9	9	9	417
32	6 H106	WING	E	20		9	9.000													9	9	9	9	469
23	5 U100	BEAM	E	31		4	5.000	2	9.000	4	5.000									12	6	12	4	296
4	5 U101	BEAM	E	13		2	9.000	2	8.000	2	9.000	2	8.000							11	9	11	6	48
4	5 U102	BEAM	E	10				2	10.000	2	9.000									8	5	8	2	34
37	6 U103	BEAM	E	19		2	11.000	4	6.500											7	6	7	4	408
27	6 U104	BEAM	E	19		2	4.500	2	9.000											5	1	4	11	199
27	6 U105	DIAPHRAGM	E	31		2	10.750	2	3.000	2	10.750									9	0	8	9	355
28	5 U106	DIAPHRAGM	E	19		2	0.000	1	3.000											3	3	3	2	92
8	5 V100	BEAM	E	17		4	5.000													5	0	5	0	42
12	6 V101	BEAM	E	20		2	4.500													2	4	2	4	42
4	6 V102	WING	E	20		6	3.000													6	3	6	3	38
28	6 V103	WING	E	20	V	6	1.250													6	1	6	1	258
		INC = 0.125 INCH				6	2.750													6	2	6	2	
		END BENT 4																						
16	6 F400	WING BRACE	E	23		2	3.000	5	1.750	1	2.000		10.000		10.000	1	7.000	1	7.000	8	7	8	6	204
6	6 F401	DIAPHRAGM	E	6		4	10.000	2	8.500											7	7	7	5	67
4	6 H400	BEAM	E	20		30	5.000													30	5	30	5	183
12	7 H401	BEAM & DIAPHRAGM	E	20		30	5.000													30	5	30	5	746
4	6 H402	DIAPHRAGM	E	20		30	5.000													30	5	30	5	183
4	6 H403	DIAPHRAGM	E	20		30	5.000													30	5	30	5	183
3	7 H404	DIAPHRAGM	E	18		6	8.000													8	3	8	3	51
16	8 H405	WING	E	20		9	9.000													9	9	9	9	417
32	6 H406	WING	E	20		9	9.000													9	9	9	9	469
23	5 U400	BEAM	E	31		4	5.000	2	9.000	4	5.000									12	6	12	4	296
4	5 U401	BEAM	E	13		2	9.000	2	8.000	2	9.000	2	8.000							11	9	11	6	48
4	5 U402	BEAM	E	10				2	10.000	2	9.000									8	5	8	2	34
37	6 U403	BEAM	E	19		2	11.000	4	6.500											7	6	7	4	408
27	6 U404	BEAM	E	19		2	2.000	2	9.000											4	11	4	9	193
27	6 U405	DIAPHRAGM	E	31		2	8.250	2	3.000	2	8.250									8	7	8	4	338
28	5 U406	DIAPHRAGM	E	19		2	0.000	1	3.000											3	3	3	2	92
8	5 V400	BEAM	E	17		4	5.000													5	0	5	0	42
12	6 V401	BEAM	E	20		2	2.000													2	2	2	2	39
4	6 V402	WING	E	20		6	0.000													6	0	6	0	36
28	6 V103	WING	E	20		6	0.500													6	0	6	0	252

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. 25.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

BILL OF REINFORCING STEEL

Detailed: Oct. 2024
Checked: Oct. 2024

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

DATE PREPARED 12/3/2024

ROUTE 46 | STATE MO

DISTRICT BR | SHEET NO. 26

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9467

DESCRIPTION | DATE

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

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

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

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	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.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
		SLAB																						
278	6 S1	SLAB	E	20		30	5.000													30	5	30	5	12701
196	5 S2	SLAB	E	20		30	5.000													30	5	30	5	6218
174	5 S3	SLAB	E	20		49	5.000													49	5	49	5	8968
96	6 S4	SLAB	E	20		32	0.000													32	0	32	0	4614
		TYPE D BARRIER																						
278	5 R1	BARRIER	E	26		3	3.000	5.500		3	3.625					3	3.000	6.750		6	10	6	9	1957
278	5 R2	BARRIER	E	19			20.500	9.500												2	6	2	5	701
278	5 R3	BARRIER	E	27				9.500		15.250		5.000		12.000		15.000		3.000		3	6	3	4	967
80	5 R4	BARRIER	E	20		11	9.000													11	9	11	9	980
40	5 R5	BARRIER	E	20		26	5.000													26	5	26	5	1102
20	5 R6	BARRIER	E	20		35	9.000													35	9	35	9	746
20	5 K1	BARRIER	E	27		3	8.000	9.250		5.375		3 2.750					5.250	1.000		8	0	7	11	165
60	5 K2	BARRIER	E	27		3	8.000	9.250		14.500		2 5.750					14.250	2.750		8	2	7	11	495
20	5 K4	BARRIER	E	19	V	2	4.250	10.000												3	2	3	1	66
		INC. = 0.500 INCH				2	6.250	10.000												3	4	3	3	
20	5 K5	BARRIER	E	14	V		8.250	9.500		18.500							4.000	18.000		3	0	2	11	63
		INC. = 0.500 INCH					8.250	9.500		20.500							4.500	20.000		3	2	3	1	
12	5 K6	BARRIER	E	19	V	2	6.750	10.000												3	5	3	4	42
		INC. = 0.500 INCH				2	7.750	10.000												3	6	3	5	
12	5 K7	BARRIER	E	21	V	2	6.625	10.000								2	6.000	6.250		3	5	3	3	41
		INC. = 0.500 INCH				2	7.625	10.000								2	7.000	6.500		3	6	3	4	
36	5 K8	BARRIER	E	19	V	2	8.500	10.000												3	7	3	5	138
		INC. = 0.750 INCH				3	2.500	10.000												4	1	3	11	
12	5 K9	BARRIER	E	21	V	2	8.500	10.000								2	7.750	6.750		3	7	3	5	46
		INC. = 0.750 INCH				3	2.500	10.000								3	1.750	7.750		4	1	3	11	
12	5 K10	BARRIER	E	19		3	3.000	10.000												4	1	4	0	50
12	5 K11	BARRIER	E	21		3	3.000	10.000								3	2.250	7.750		4	1	3	11	49
48	5 K12	BARRIER	E	20		9	9.000													9	9	9	9	488
24	5 K13	BARRIER	E	20	V	3	2.000													3	2	3	2	154
		INC. = 36.000 INCH				9	2.000													9	2	9	2	
		SLIP FORM OPTION																						
40	5 C1	BARRIER	E	20		12	0.000													12	0	12	0	501
8	5 C2	BARRIER	E	20		7	9.000													7	9	7	9	65

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. 25.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

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

Detailed: Oct. 2024
Checked: Oct. 2024

BILL OF REINFORCING STEEL

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 12/3/2024
ROUTE 46
STATE MO
DISTRICT BR
SHEET NO. 27
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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

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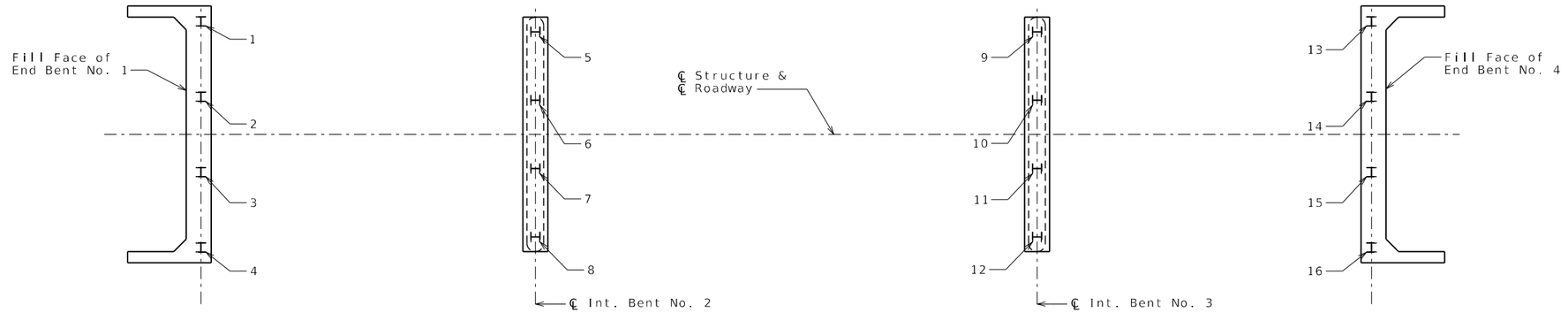
Missouri Cert. of Authority 2002010300



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			
			Int. Bent No. 2
5			
6			
7			
8			

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			Int. Bent No. 3
9			
10			
11			
12			
			End Bent No. 4
13			
14			
15			
16			

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

This sheet to be completed by MoDOT construction personnel.

Detailed: Oct. 2024
Checked: Oct. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 28
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DATE	DESCRIPTION

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

TREKK DESIGN GROUP, LLC
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Missouri Cert. of Authority 2002010300

Missouri Department of Transportation
Construction and Materials

BORING NO. B-103
Page 1 of 2

Job No.: NW0020 A9467 **County:** Worth **Route:** 46
Design: A9467 **Skew:** Square **Location:** 2 Miles West of Grant City
Bent: 1 **Logged By:** Ricardo Todd **Operator:** Robert Wadlow
Station: **Northing:** 1572811.2 **Date of Work:** 06/05/24-06/05/24
Offset: **Easting:** 2803559.9 **Depth to Water:** 20.1
Elevation: 963.5 **Requested Northing:** 1572807.2 **Depth Hole Open:** 39.7
Requested Station: 564+36.8 **Requested Easting:** 2803559.8 **Time Change:** 1 hour
Requested Offset: 14 R **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset slightly north of requested location
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.4' ASPHALT 0.4-1.1' CRUSHED AGGREGATE BASE							
		1.1-9.8' Dark gray, LEAN CLAY trace gravel, medium stiff, moist	960						
				X	67	3-3-3 (8)		PP = 0.75 tsf	MC = 31.8% γ_{sat} = 119 pcf[1)]
10		9.8-15.1' Gray, LEAN CLAY scattered gravel, very stiff, moist		X	67	3-7-8 (20)		PP = 2.75 tsf	MC = 15.7% γ_{sat} = 136 pcf[1)] LL = 28 PL = 16
			950						
		15.1-19.8' Gray, LEAN CLAY trace gravel, stiff, moist		X	73	3-3-4 (9)		PP = 1.25 tsf	MC = 25.1% γ_{sat} = 125 pcf[1)] LL = 33 PL = 19
20		19.8-29.3' Gray, LEAN CLAY trace sand, soft, moist		X	73	1-1-1 (3)		PP = 0.50 tsf	MC = 25.1% γ_{sat} = 125 pcf[1)] LL = 25 PL = 17
			940						
				X	67	1-1-2 (4)		PP = 0.50 tsf	MC = 27.4% γ_{sat} = 123 pcf[1)]
30		29.3-35.1' Grayish tan, LEAN CLAY trace gravel, and fine sand, medium stiff, moist		X	67	1-3-3 (8)		PP = 0.75 tsf	MC = 23.4% γ_{sat} = 127 pcf[1)] LL = 39 PL = 16
			930						
		35.1-69.8' Brown mottled gray, LEAN CLAY scattered gravel, stiff, moist		X	67	1-3-4 (9)		PP = 1.00 tsf	MC = 17.1% γ_{sat} = 134 pcf[1)] LL = 33 PL = 16
40				X	67	1-4-5 (12)		PP = 1.25 tsf	MC = 21.4% γ_{sat} = 129 pcf[1)]
			920						
				X	67	1-4-5 (12)		PP = 1.25 tsf	MC = 21.6% γ_{sat} = 129 pcf[1)]
50				X	67	2-4-6 (14)		PP = 1.50 tsf	MC = 20.0% γ_{sat} = 130 pcf[1)] LL = 34 PL = 16
			910						
60				X	73	2-4-6 (14)		PP = 1.75 tsf	MC = 21.2% γ_{sat} = 129 pcf[1)]

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-103
Page 2 of 2

Job No.: NW0020 A9467 **County:** Worth **Route:** 46
Design: A9467 **Skew:** Square **Location:** 2 Miles West of Grant City
Bent: 1 **Logged By:** Ricardo Todd **Operator:** Robert Wadlow
Station: **Northing:** 1572811.2 **Date of Work:** 06/05/24-06/05/24
Offset: **Easting:** 2803559.9 **Depth to Water:** 20.1
Elevation: 963.5 **Requested Northing:** 1572807.2 **Depth Hole Open:** 39.7
Requested Station: 564+36.8 **Requested Easting:** 2803559.8 **Time Change:** 1 hour
Requested Offset: 14 R **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset slightly north of requested location
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
60		35.1-69.8' Brown mottled gray, LEAN CLAY scattered gravel, stiff, moist *(continued)*		X	67	4-5-8 (18)		PP = 2.00 tsf	MC = 19.3% γ_{sat} = 131 pcf[1)]
			900						
				X	67	3-5-8 (18)		PP = 2.00 tsf	MC = 19.5% γ_{sat} = 131 pcf[1)] LL = 34 PL = 14
70		69.8-86.6' Black mottled gray, LEAN CLAY scattered gravel, very stiff, moist		X	67	3-5-11 (22)		PP = 2.75 tsf	MC = 19.0% γ_{sat} = 132 pcf[1)] LL = 33 PL = 14
			890						
				X	67	3-6-10 (22)		PP = 3.00 tsf	MC = 19.0% γ_{sat} = 132 pcf[1)]
80				X	67	3-6-11 (23)		PP = 3.25 tsf	MC = 17.9% γ_{sat} = 133 pcf[1)]
			880						
		86.6-90.1' Limestone, highly weathered		X	73	4-7-11 (24)		PP = 3.50 tsf	MC = 17.1% γ_{sat} = 134 pcf[1)] LL = 35 PL = 14
90		90.1-91.1' Limestone, whitish gray, medium bedded, strong rock, slightly weathered, fine grained		X	100	37/0.1', 10/0'	Qu Test Results UCS = 749 ksf MC = 0% γ_{moist} = 162.2 pcf		
		91.1-93.5' Shale, olive tan, thinly laminated, weak rock	870	X	100 (62)				
		93.5-94.9' Limestone, whitish gray, thin bedded, strong rock, slightly weathered, fine grained grained		X	100		Qu Test Results UCS = 39.4 ksf MC = 12.2% γ_{moist} = 138.9 pcf		
100		94.9-98.3' Shale, gray, thinly laminated, weak rock							
		98.3-99.4' Shale, black, thinly laminated, weak rock							
		99.4-100.1' Limestone, whitish gray, thin bedded, strong rock, slightly weathered, fine grained							
		Bottom of borehole at 100.1 feet.							

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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JEFF A. GARDNER
NUMBER PE-2010019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 29
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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

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

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

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

Detailed: Oct. 2024
Checked: Oct. 2024

Missouri Department of Transportation
Construction and Materials

BORING NO. B-401
Page 1 of 2

Job No.: NW0020 A9467 **County:** Worth **Route:** 46
Design: A9467 **Skew:** Square **Location:** 2 Miles West of Grant City
Bent: 4 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1572832.9 **Date of Work:** 06/05/24-06/05/24
Offset: **Easting:** 2803705 **Depth to Water:** 19.5
Elevation: 962.9 **Requested Northing:** 1572833.9 **Depth Hole Open:**
Requested Station: 565+76.8 **Requested Easting:** 2803700.0 **Time Change:** At Time of Drilling
Requested Offset: 14 L **Equipment:** CME 55 LC ,Grab Sample, Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset off roadway
Drill No.: 360485-PPI **Hammer Efficiency:** 84.7% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-2.2' GRAVEL, loose, dry, well graded, (Shoulder)	960						
		2.2-7.0' Brown, LEAN CLAY, soft, moist			27	2-1-2 (4)		PP = 0.25 tsf	MC = 24.2% γ_{tot} = 126 pcf(1)
		7.0-19.2' Dark gray, LEAN CLAY, medium stiff, moist			100				LL = 37 PL = 19
10					27	2-3-5 (11)		PP = 0.75 tsf	MC = 23.4% γ_{tot} = 127 pcf(1)
			950						
					53	2-2-2 (6)		PP = 0.50 tsf	MC = 25.2% γ_{tot} = 125 pcf(1)
20		19.2-24.1' Dark gray, LEAN CLAY, soft, moist to wet			53	1-2-1 (4)		PP = 0.25 tsf	MC = 27.0% γ_{tot} = 123 pcf(1) LL = 26 PL = 16
			940						
		23.8-88.5' switched to mud rotary after SPT at 23.5'			100	2-1-1 (3)			Sieve Analysis Sieve # % Passing 3/8" 100.0 #4 99.0 #10 97.0 #16 94.5 #40 50.0 #50 26.9 #100 13.8 #200 12.2
		24.1-28.0' Dark brownish tan, SAND with clay, very loose, wet			87	2-1-1 (3)			
30		28.0-38.0' Gray, CLAYEY SAND, loose, wet							
			930						
					73	3-2-2 (6)			Sieve Analysis Sieve # % Passing 3/8" 100.0 #4 99.6 #10 98.8 #16 98.8 #40 98.0 #50 96.7 #100 79.7 #200 58.5
40		38.0-48.0' Gray, SAND, medium dense, wet			47	4-6-7 (18)			
			920						
					40	5-5-6 (16)			
50		48.0-53.1' Gray, SAND with clay, medium dense to dense, moist			40	4-7-7 (20)			Sieve Analysis Sieve # % Passing 3/4" 100.0 3/8" 97.8 #4 93.9 #10 86.4 #16 79.4 #40 37.6 #50 21.2 #100 10.5 #200 8.0
			910						
		53.1-85.5' Dark gray, LEAN CLAY trace fine gravel, stiff to very stiff, moist, (GLACIAL TILL)			73	6-5-6 (16)		PP = 2.00 tsf	
60					100	3-5-8		PP = 1.75 tsf	MC = 16.7%

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

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Missouri Department of Transportation
Construction and Materials

BORING NO. B-401
Page 2 of 2

Job No.: NW0020 A9467 **County:** Worth **Route:** 46
Design: A9467 **Skew:** Square **Location:** 2 Miles West of Grant City
Bent: 4 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1572832.9 **Date of Work:** 06/05/24-06/05/24
Offset: **Easting:** 2803705 **Depth to Water:** 19.5
Elevation: 962.9 **Requested Northing:** 1572833.9 **Depth Hole Open:**
Requested Station: 565+76.8 **Requested Easting:** 2803700.0 **Time Change:** At Time of Drilling
Requested Offset: 14 L **Equipment:** CME 55 LC ,Grab Sample, Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset off roadway
Drill No.: 360485-PPI **Hammer Efficiency:** 84.7% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
60						(16)			γ_{tot} = 135 pcf(1)
		53.1-85.5' Dark gray, LEAN CLAY trace fine gravel, stiff to very stiff, moist, (GLACIAL TILL) *(continued)*	900						MC = 20.2% γ_{tot} = 130 pcf(1) LL = 35 PL = 15
					100	3-5-7 (17)		PP = 1.50 tsf	MC = 20.0% γ_{tot} = 130 pcf(1)
70					100	4-5-7 (17)		PP = 1.75 tsf	MC = 19.8% γ_{tot} = 131 pcf(1)
			890						
					100	4-5-7 (17)		PP = 1.75 tsf	MC = 19.5% γ_{tot} = 131 pcf(1)
80					100	4-6-8 (20)		PP = 2.25 tsf	MC = 18.3% γ_{tot} = 132 pcf(1)
			880						
					100	5-8-10 (25)		PP = 2.00 tsf	MC = 17.2% γ_{tot} = 134 pcf(1)
		85.5-88.5' Limestone, highly weathered							
90		88.5-90.5' Limestone, light whitish gray, thin bedded, strong rock, slightly weathered, fine grained g			0	24/0.0', 10/0"	Qu Test Results UCS = 696 ksf MC = 1.2% γ_{moist} = 163.5 pcf		
		90.5-93.1' Shale, brownish tan, thinly laminated, weak rock, moderately weathered	870		100 (22)				
		93.1-93.5' Limestone, light whitish gray, thin bedded, strong rock, slightly weathered, fine grained							
		Bottom of borehole at 93.5 feet.							

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
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BORING DATA

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

Detailed: Oct. 2024
Checked: Oct. 2024

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

Sheet No. 30 of 30

JEFF A. GARDNER
STATE OF MISSOURI
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 12/3/2024
ROUTE 46 | STATE MO
DISTRICT BR | SHEET NO. 30
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9467

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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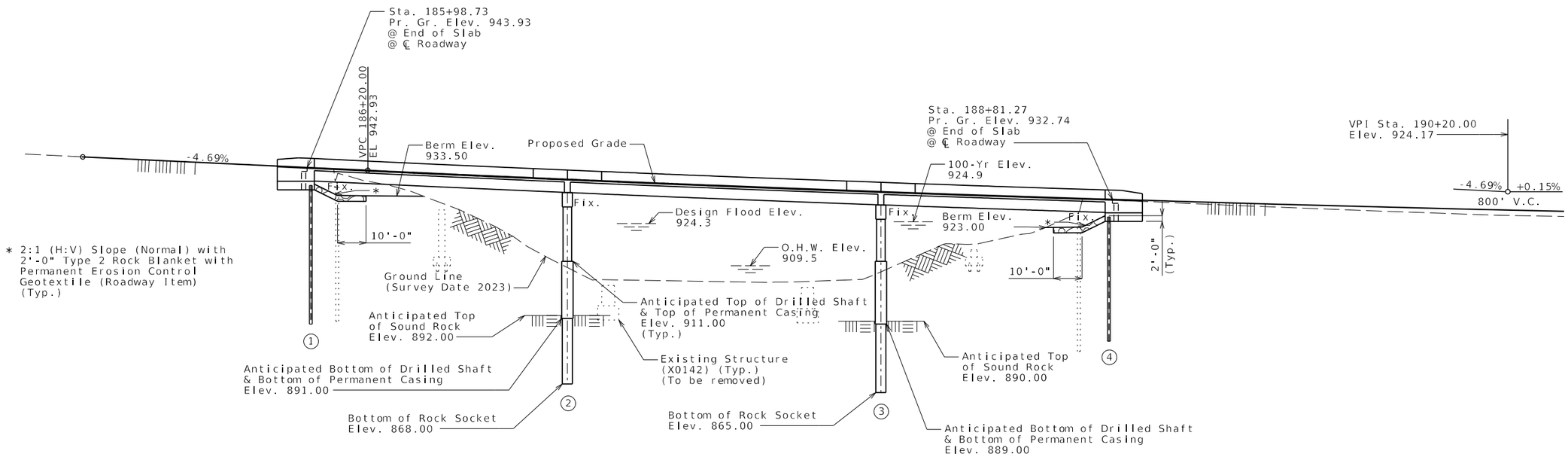
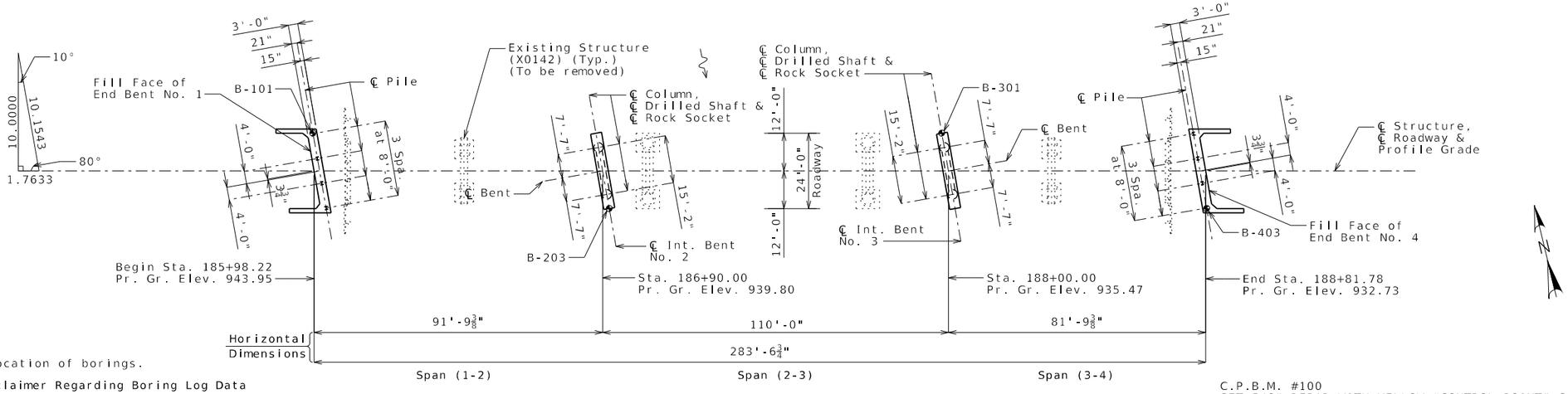
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

SEC/SUR 24 TWP 65N RGE 33W

(90'-110'-80') PRESTRESSED CONCRETE NU-GIRDER SPANS



GENERAL ELEVATION



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(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. 32-36 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.

C.P.B.M. #100
SET 5/8" REBAR WITH YELLOW "CONTROL POINT" CAP,
ALONG THE WEST SIDE OF COUNTY ROAD #87,
APPROXIMATELY 450' FEET SOUTH OF THE CENTERLINE OF
HIGHWAY W, AND APPROXIMATELY 5'
WEST OF THE WESTERN EDGE OF GRAVEL RD.
N: 1,549,090.82, E: 2,774,527.89, EL: 930.34
B.M. #905
SET BENCHTIE WITH YELLOW HAND TAG ON THE S. SIDE OF A POWER
POLE, APPROXIMATELY 35' SOUTH OF THE CENTERLINE OF HIGHWAY W,
AND APPROXIMATELY 90' EAST OF THE EAST END OF
THE BRIDGE #X0142 OVER THE WEST FORK OF THE GRAND RIVER
N: 1,549,308.31, E: 2,773,036.79, EL: 923.90

BRIDGE: ROUTE W OVER WEST FORK GRAND RIVER

ROUTE W FROM ROUTE B TO ROUTE U
ABOUT 0.4 MILES EAST OF ROUTE B
STATION 185+98.22

Detailed Oct. 2024
Checked Nov. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY

DATE PREPARED
05/22/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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Tel (816) 874-4655
Fax (816) 874-4675
www.trekdesigngroup.com

Missouri Cert. of
Authority 2002010300

TREK DESIGN GROUP, LLC

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	80	-	80
Removal of Bridges (X0142)	lump sum	-	-	1
Bridge Approach Slab (Minor)	sq. yard	-	109	109
Drilled Shaft (4ft. 0in. Dia.)	linear foot	80.0	-	80.0
Rock Sockets (3ft. 6in. Dia.)	linear foot	98.0	-	98.0
Video Camera Inspection	each	4	-	4
Foundation Inspection Holes	linear foot	138.0	-	138.0
Sonic Logging Test	each	4	-	4
Galvanized Structural Steel Piles (12 in.)	linear foot	372	-	372
Dynamic Pile Testing	each	2	-	2
Pre-Bore for Piling	linear foot	190	-	190
Pile Point Reinforcement	each	8	-	8
Class B Concrete (Substructure)	cu. yard	102.6	-	102.6
Type D Barrier	linear foot	-	607	607
Slab on Concrete NU-Girder	sq. yard	-	837	837
NU-43 Prestressed Concrete NU-Girder	linear foot	-	840	840
Reinforcing Steel (Bridges)	pound	33,250	-	33,250
Vertical Drain at End Bent	each	-	-	2
Laminated Neoprene Bearing Pad	each	-	12	12
Laminated Neoprene Bearing Pad (Tapered)	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.

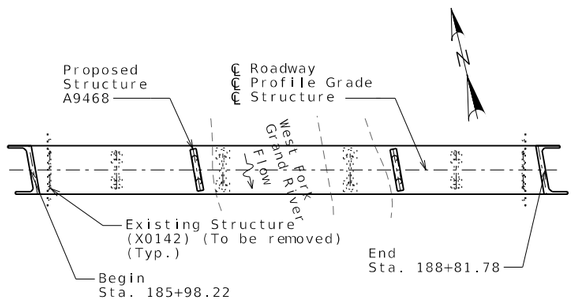
All reinforcement in the end bents is included in the Estimated Quantitites for Slab on Concrete NU-Girder.

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

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

Hydrologic Data

Drainage Area = 249 sq. mi.
Design Flood Frequency = 50 yr.
Design Flood Discharge = 18,500 cfs
Design Flood (D.F.) Elevation = 924.3 ft.
Base Flood (100-Year)
Base Flood Elevation = 924.9
Base Flood Discharge = 21,300 cfs.
Estimated Backwater = 0.2 ft.
Average Velocity thru Opening = 4.1 ft./p
Freeboard (50-year)
Freeboard = 5.7 ft.
Roadway Overtopping
Overtopping Flood Discharge = 12,800 cfs.
Overtopping Flood Frequency = 12-yr
Overtopping Flood Elevation = 922.7 ft.



LOCATION SKETCH

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specification (9th Ed)
Seismic Design Category = A (Nonseismic)
Design earthquake response spectral acceleration coefficient at 1.0 second period, SD1 = 0.104g
Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.066g

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

Design Unit Stresses:

Class B Concrete (Substructure, except Drilled Shaft & Rock Sockets)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For NU-Girders, see Sheets No. 14 thru 19.

Neoprene Pads:
Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec 716.

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

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 11/2", unless otherwise shown.

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

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 12x53	-	-	HP 12x53
	Number	ea	4	-	-	4
	Approximate Length Per Each	ft	49	-	-	44
	Pile Point Reinforcement	ea	All	-	-	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length	-	-	Full Length
	Pile Driving Verification Method		DT	-	-	DT
	Resistance Factor		0.65	-	-	0.65
	Minimum Nominal Axial Compressive Resistance	kip	358	-	-	341
Rock Socket	Number	ea	-	2	2	-
	Layer 1 Foundation Material		-	Weak Rock	Weak Rock	-
	Layer 1 Elevation Range	ft	-	888-878	886-874	-
	Layer 1 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	4.0	4.0	-
	Layer 2 Foundation Material		-	Strong Rock	Strong Rock	-
	Layer 2 Elevation Range	ft	-	878-855	874-861	-
	Layer 2 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	-	12.9	12.9	-
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	-	34.0	39.2	-

Load Bearing Pile:
DT = Dynamic Testing
Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factors}}$

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

Prebore for piles at Bent No. 1 to elevation 889.00.

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

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.

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.

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

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

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	262
Reinforcing Steel (Epoxy Coated)	pound	97,070

The table of Estimated Quantities for 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.

GENERAL NOTES AND QUANTITIES

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

TREKK DESIGN GROUP, LLC
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Kansas City, MO 64131
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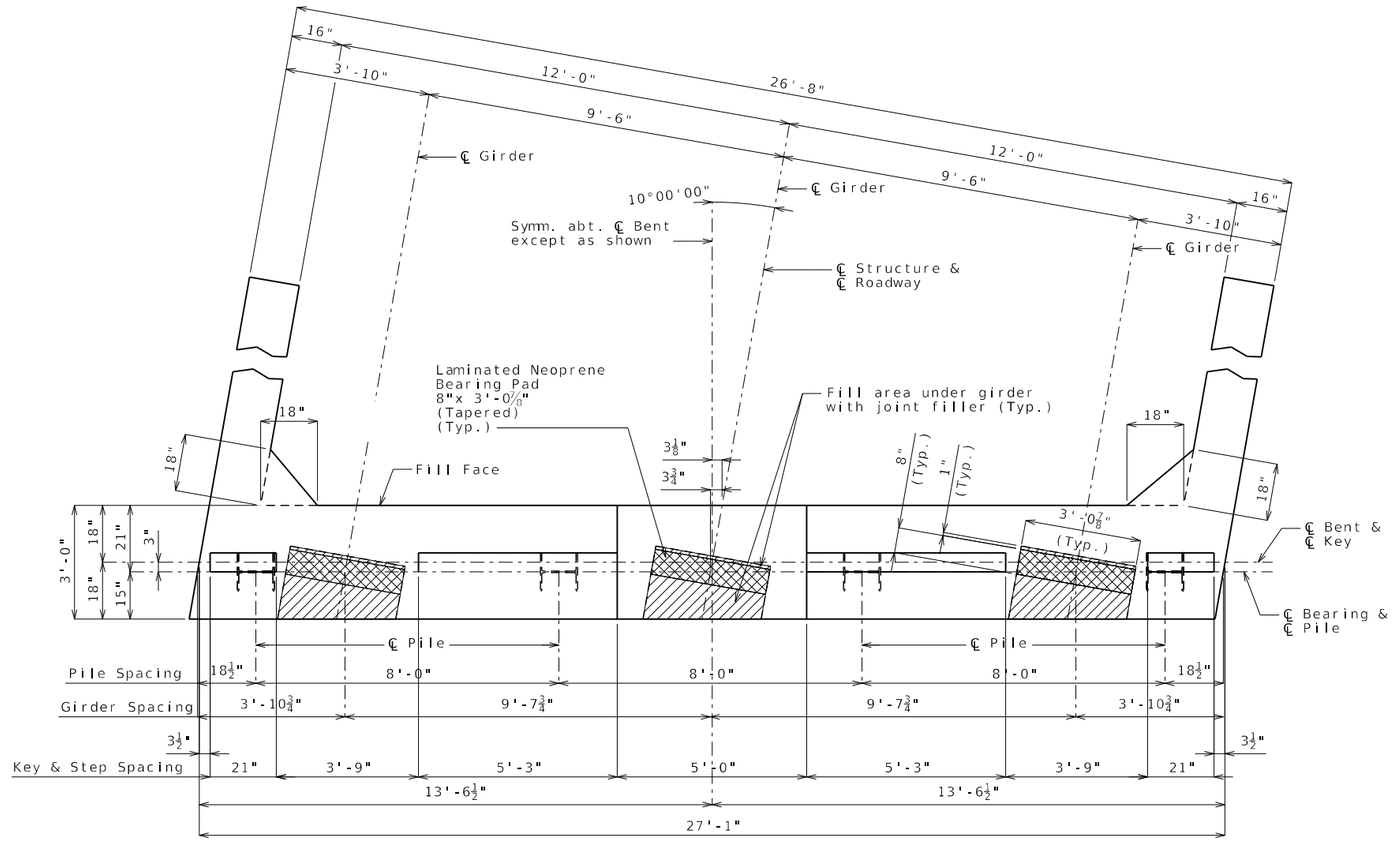
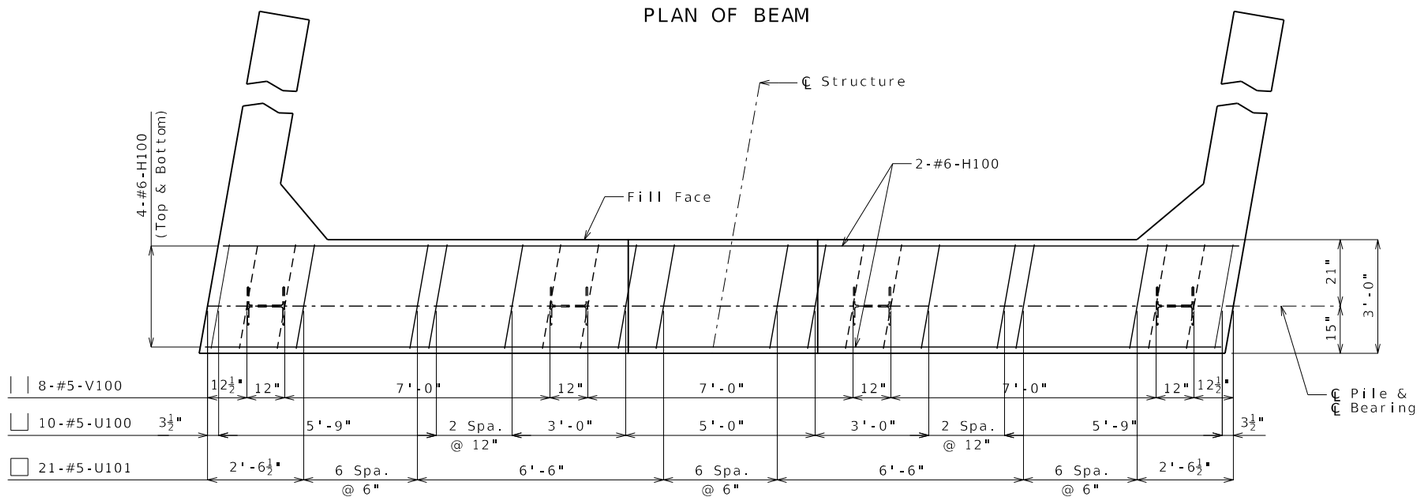
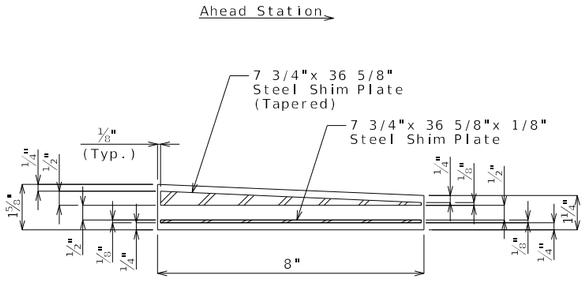


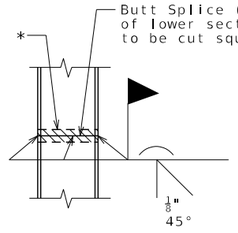
PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT
Keys not shown for clarity

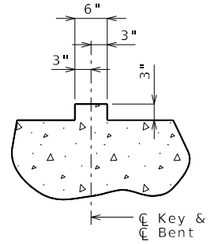


SECTION THRU
LAMINATED NEOPRENE
BEARING PAD



STEEL PILE SPLICE
(If required)

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



SECTION THRU KEY

General Notes:

Work this sheet with Sheets No. 4 & 5.

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

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

DETAILS OF END BENT NO. 1

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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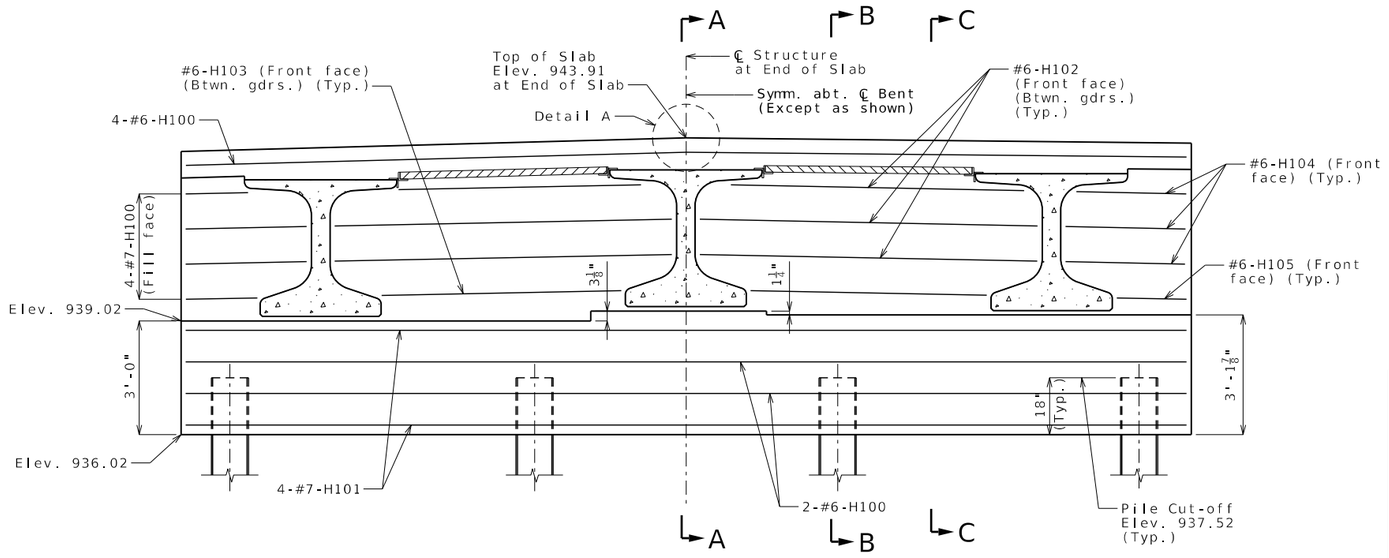
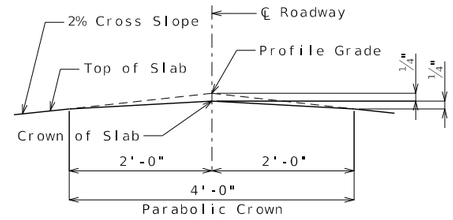


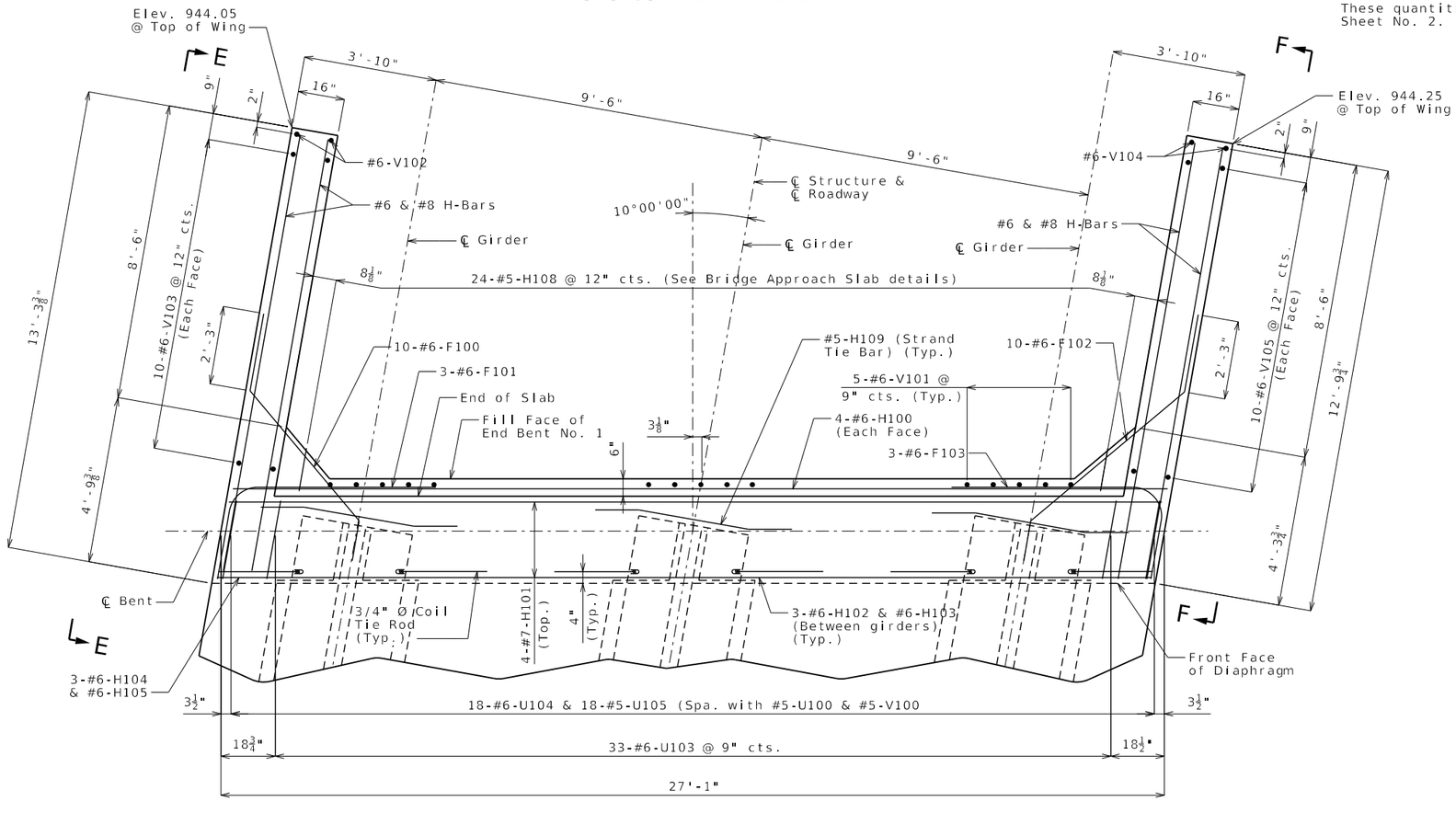
SECTION NEAR END BENT



DETAIL A

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	40
Galvanized Structural Steel Piles (12 in.)	linear foot	196
Dynamic Pile Testing	each	1
Pre-Bore for Piling	linear foot	190
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	12.7

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



PART PLAN

DETAILS OF END BENT NO. 1

General Notes:

Work this sheet with Sheets No. 3 & 5.

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

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

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

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

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

For location of coil tie rods and #5-H109 (strand tie bar), see Sheets No. 14 thru 19.

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

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

Detailed Oct. 2024
Checked Nov. 2024

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STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS BEING ELECTRONICALLY SEALED AND DATED.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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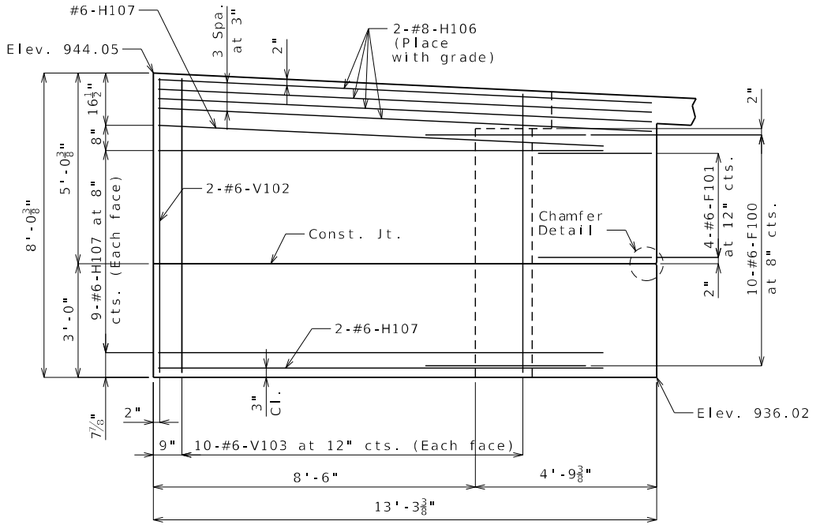
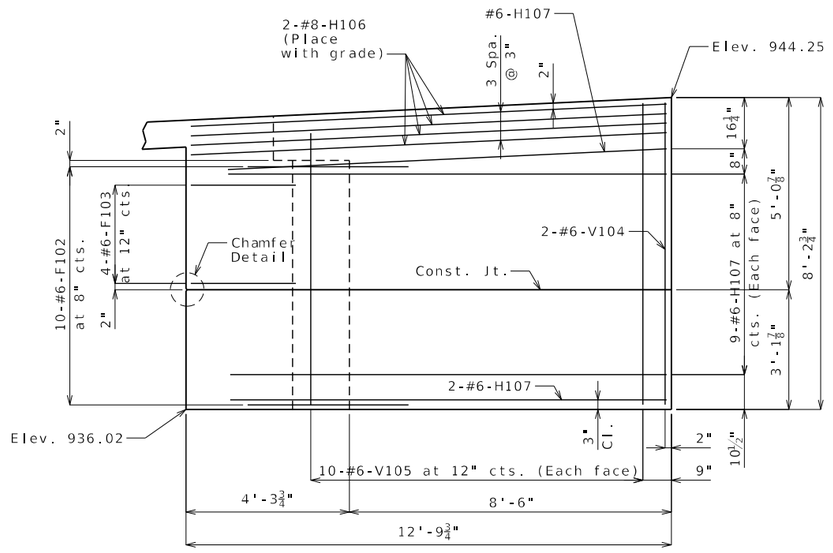
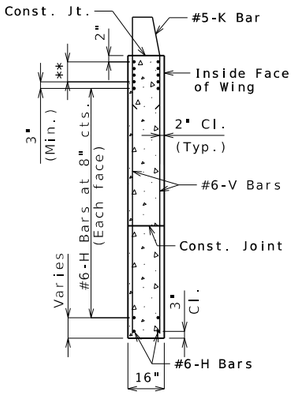


ELEVATION E-E

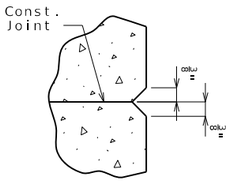


ELEVATION F-F

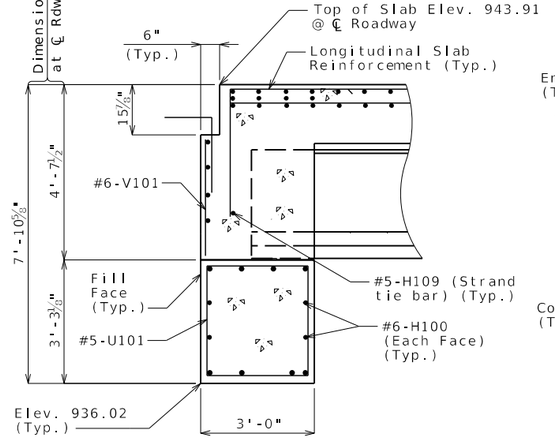


TYPICAL SECTION
THRU WING

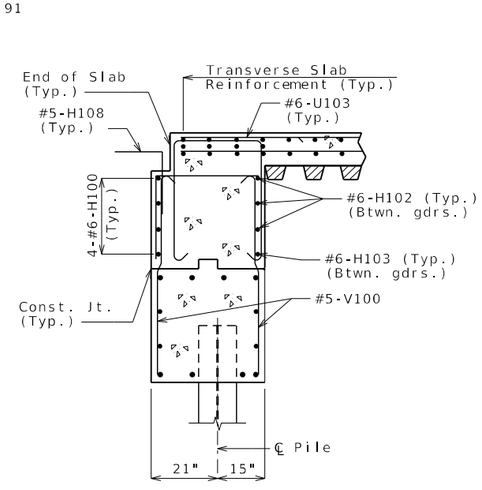
** #8-H Bars at 3" cts. (Each face)(Place with grade)



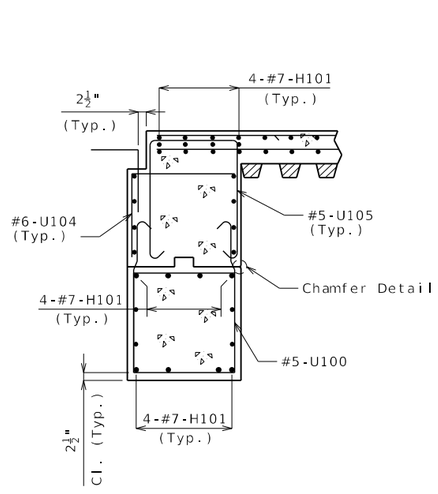
CHAMFER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

General Notes:

Work this sheet with Sheets No. 3 & 4.

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

For details and reinforcement of the Type D Barrier, see Sheets No. 25 & 26.

DETAILS OF END BENT NO. 1

Detailed Oct. 2024
Checked Nov. 2024

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JEFF A. GARDNER
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DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	5

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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JEFFERSON CITY, MO 65102
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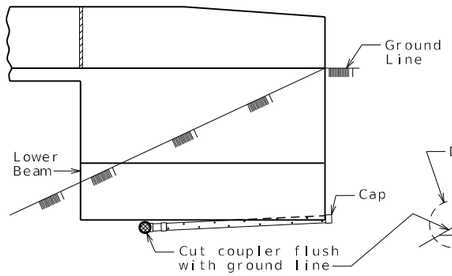
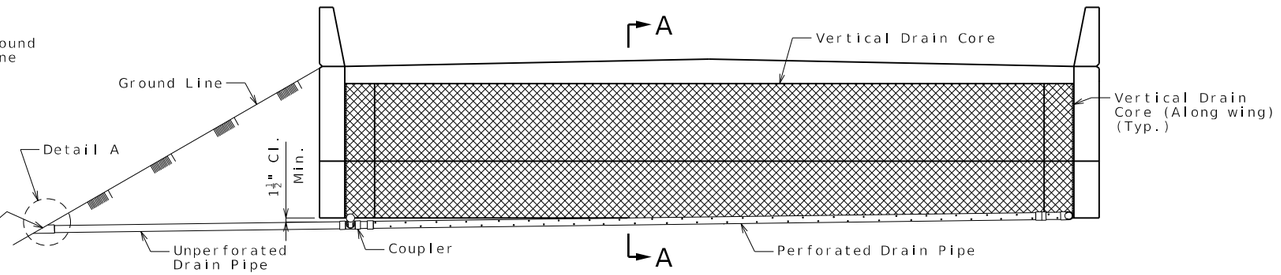
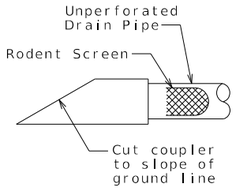


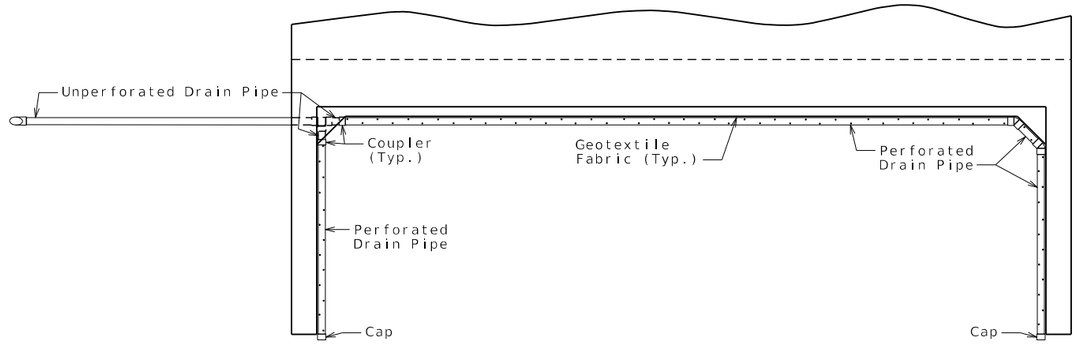
ELEVATION OF WING



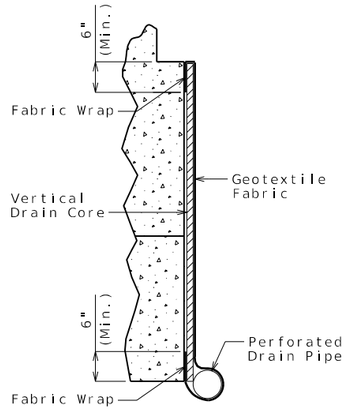
ELEVATION OF END BENT



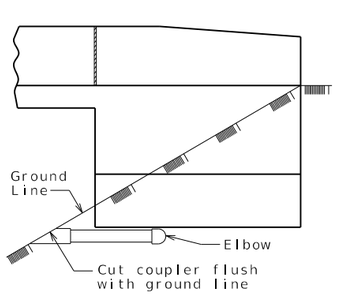
DETAIL A



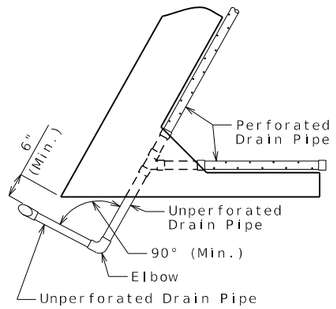
PLAN OF END BENT



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)

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 6
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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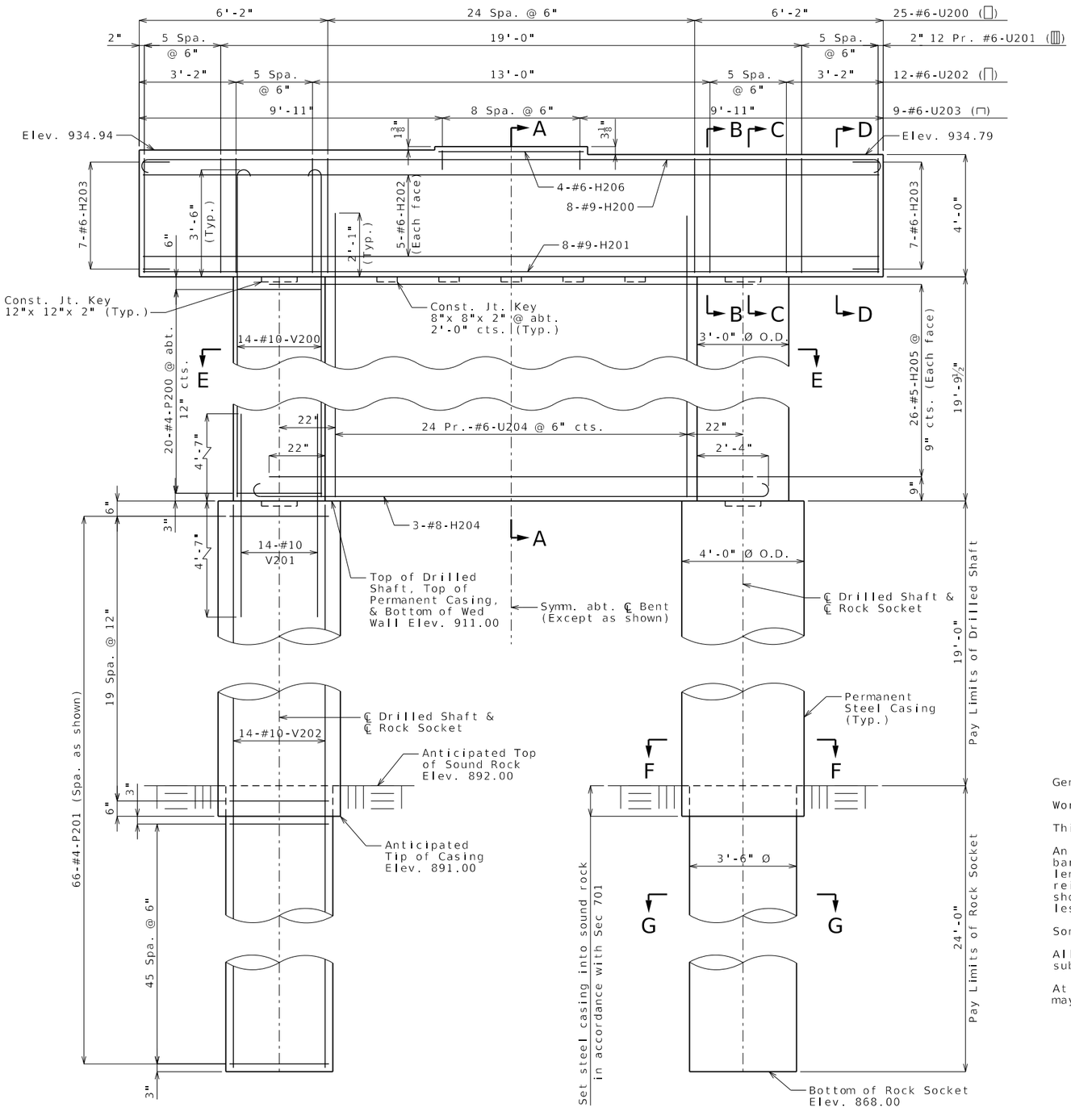
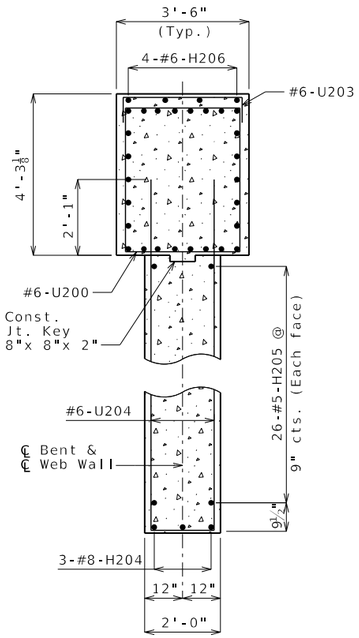
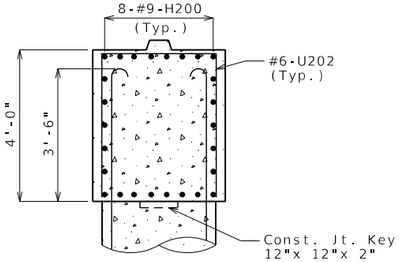


ELEVATION

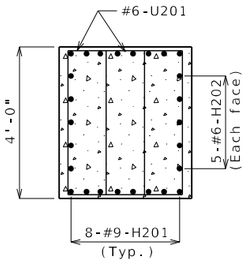
Beam keys not shown for clarity.



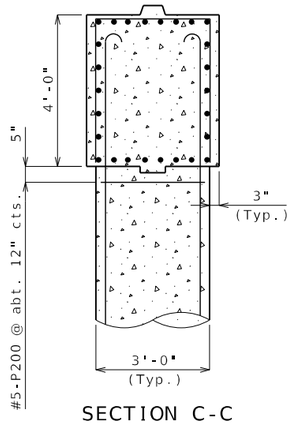
SECTION A-A



SECTION B-B



SECTION D-D



SECTION C-C

General Notes:

Work this sheet with Sheet No. 8.

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

An additional 4 feet has been added to V-bar lengths and additional 18-#4-P201 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

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

Substructure Quantity Table for Bent No. 2

Item		Quantity
Drilled Shaft (4ft. 0in. Dia.)	linear foot	38
Rock Sockets (3ft. 6in. Dia.)	linear foot	48
Video Camera Inspection	each	2
Foundation Inspection Holes	linear foot	68
Sonic Logging Test	each	2
Class B Concrete (Substructure)	cu. yard	41.8
Reinforcing Steel (Bridges)	pound	16,940

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

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	7

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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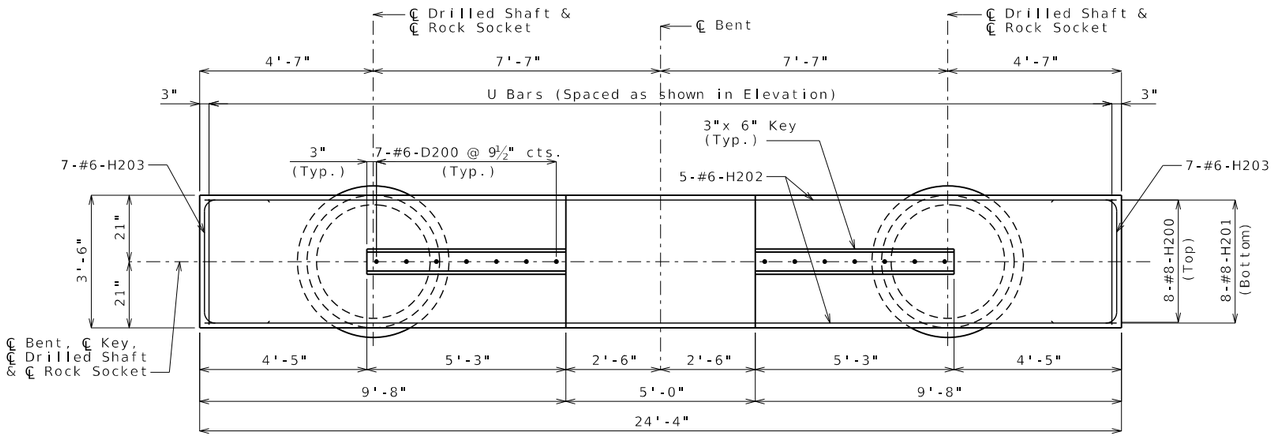
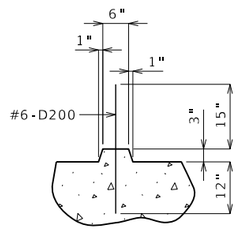
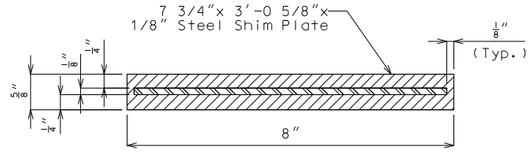
TREK DESIGN GROUP, LLC



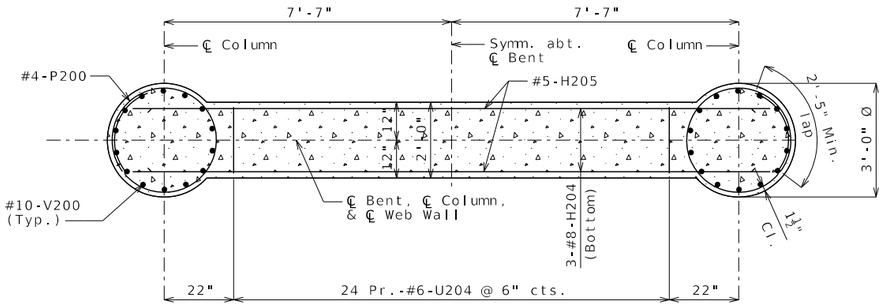
PLAN OF BEAM SHOWING REINFORCEMENT



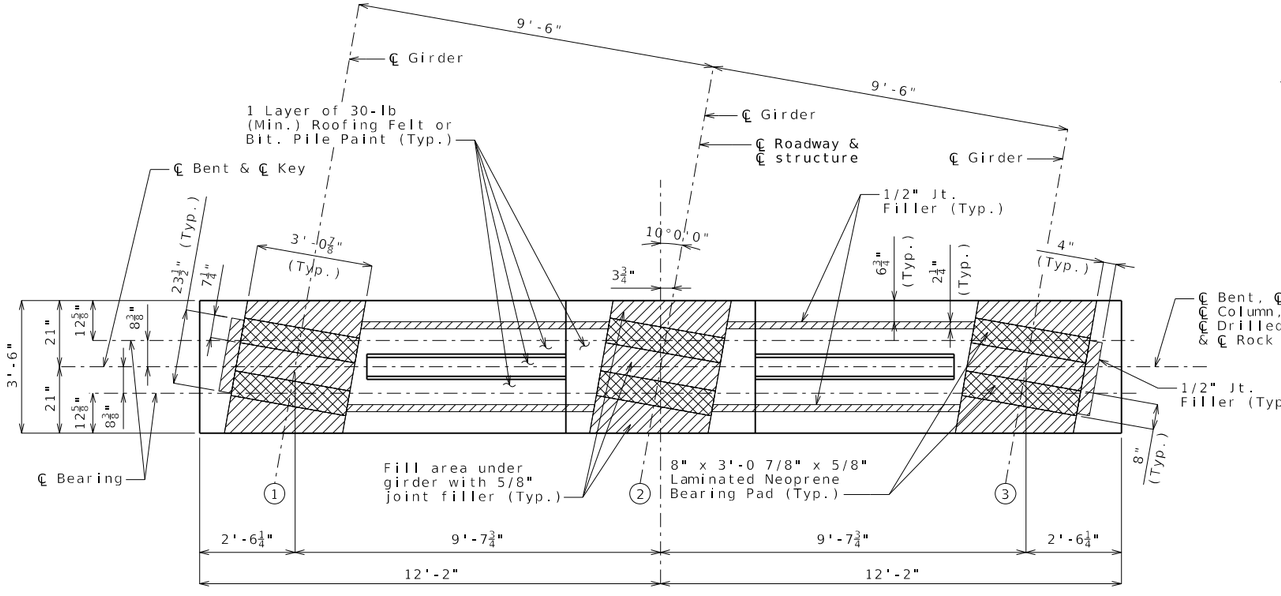
SECTION THRU KEY



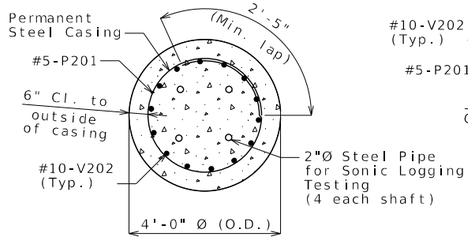
TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD



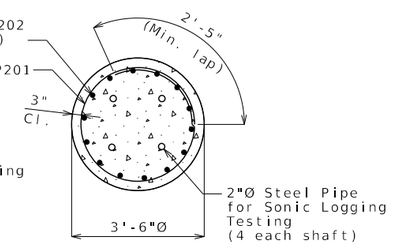
SECTION E-E



PLAN OF BEAM



SECTION F-F
(DRILLED SHAFT)



SECTION G-G
(ROCK SOCKET)

General Notes:

Work this sheet with Sheet No. 7.

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

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	8

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

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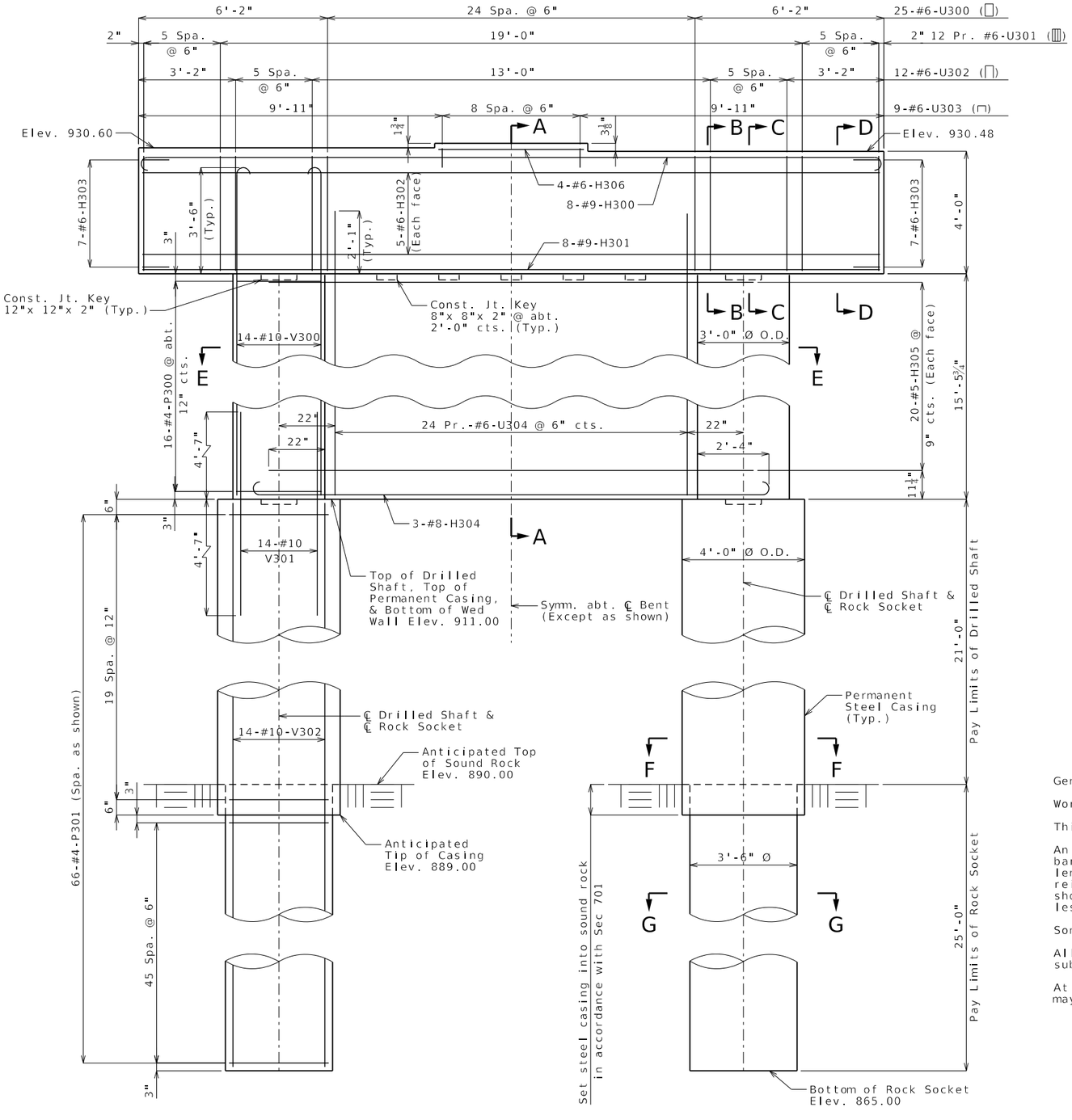
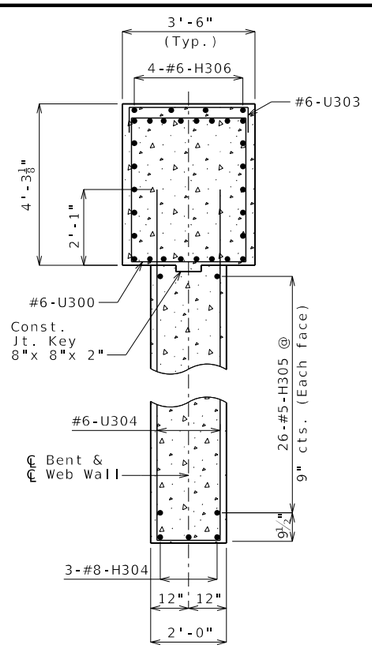
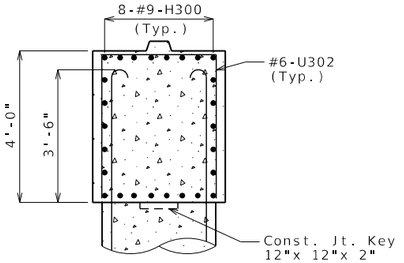


ELEVATION

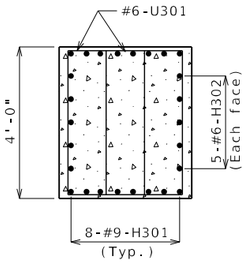
Beam keys not shown for clarity.



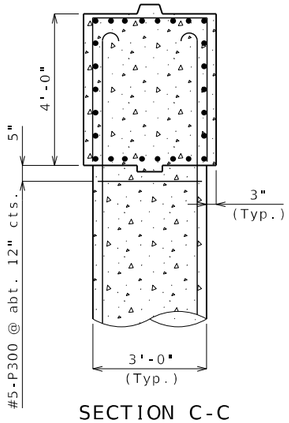
SECTION A-A



SECTION B-B



SECTION D-D



SECTION C-C

General Notes:

Work this sheet with Sheet No. 10.

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

An additional 4 feet has been added to V-bar lengths and additional 18-#4-P301 bars have been added for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The P bars shall be spaced similarly to that shown in Elevation, if required, or a lesser spacing if not required but not less than 6-inch centers.

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

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

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

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Drilled Shaft (4ft. 0in. Dia.)	linear foot	42
Rock Sockets (3ft. 6in. Dia.)	linear foot	50
Video Camera Inspection	each	2
Foundation Inspection Holes	linear foot	70
Sonic Logging Test	each	2
Class B Concrete (Substructure)	cu. yard	35.5
Reinforcing Steel (Bridges)	pound	16,310

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

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
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DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	9

COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

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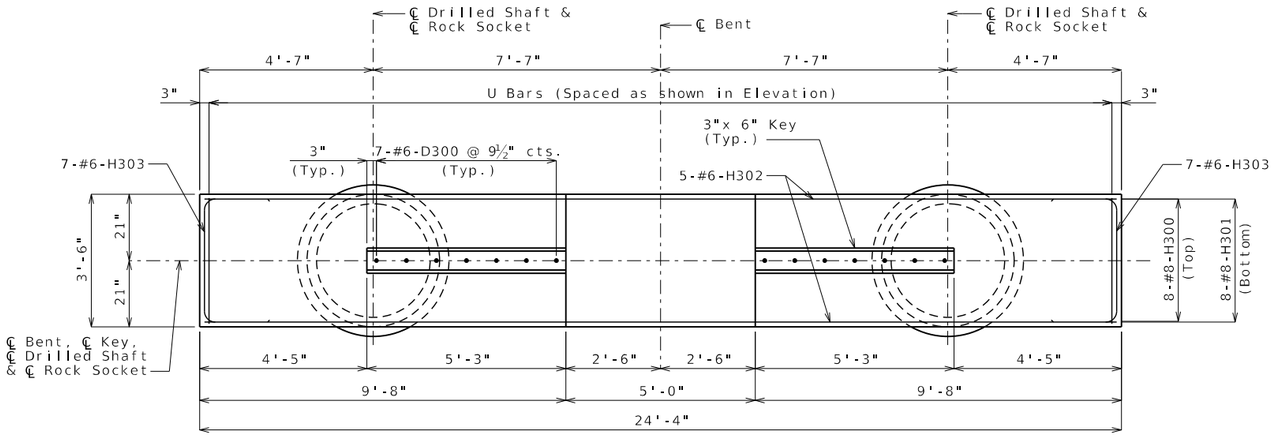
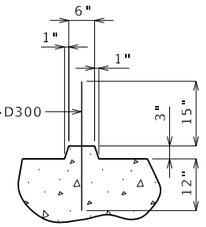
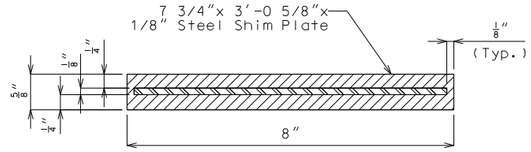


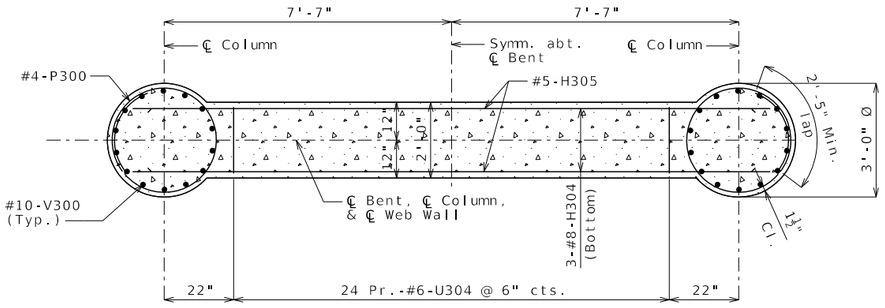
PLAN OF BEAM SHOWING REINFORCEMENT



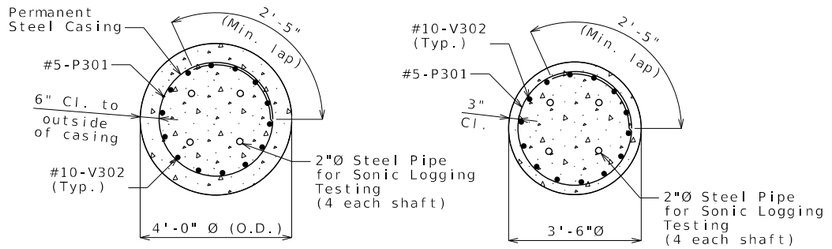
SECTION THRU KEY



TYPICAL SECTION THRU LAMINATED NEOPRENE BEARING PAD

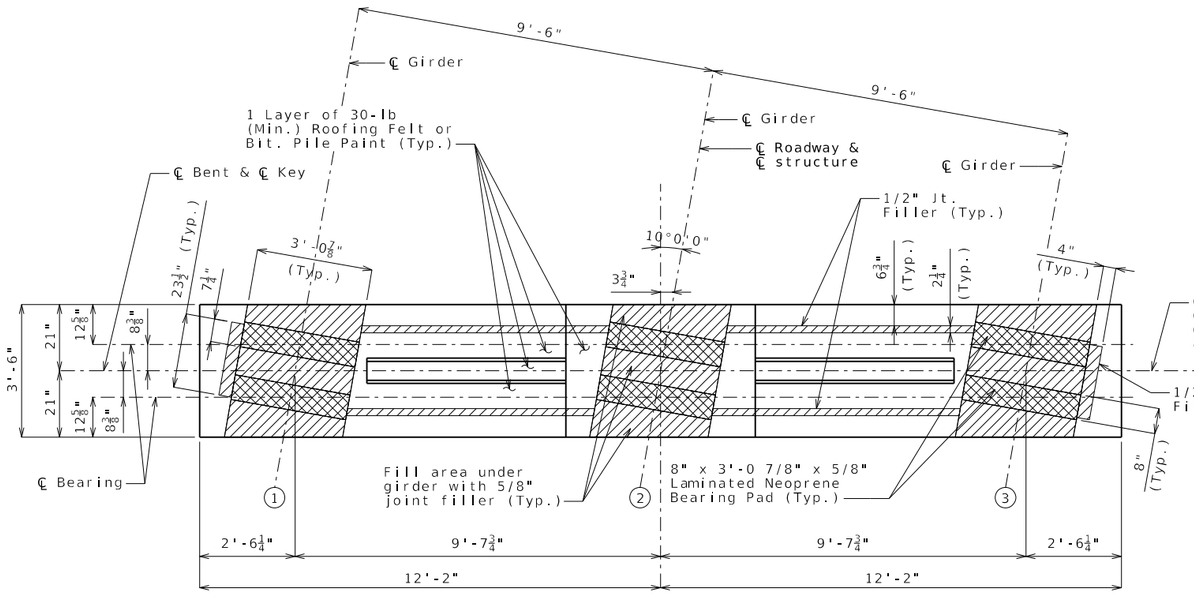


SECTION E-E



SECTION F-F (DRILLED SHAFT)

SECTION G-G (ROCK SOCKET)



PLAN OF BEAM

General Notes:

Work this sheet with Sheet No. 9.

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

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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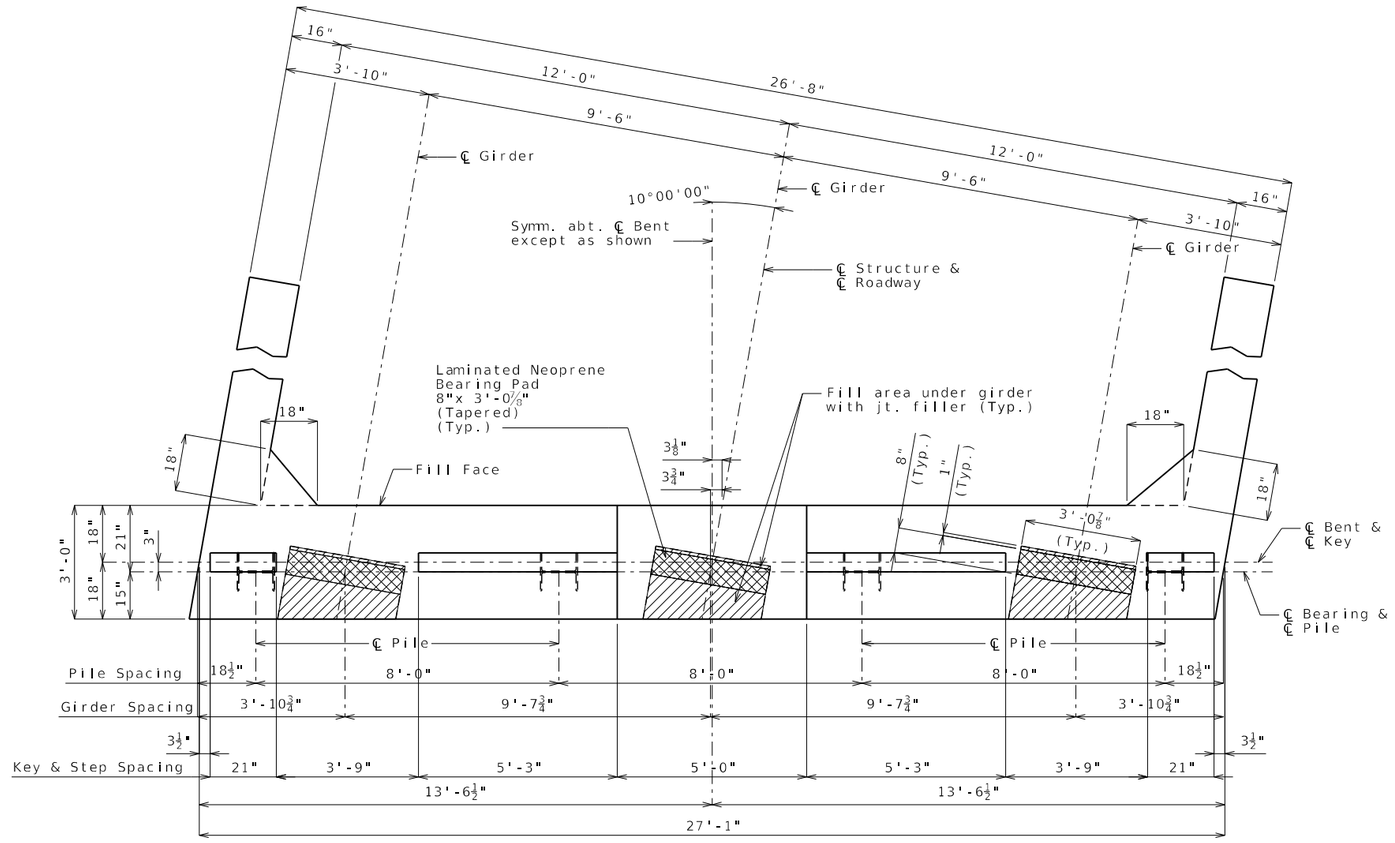
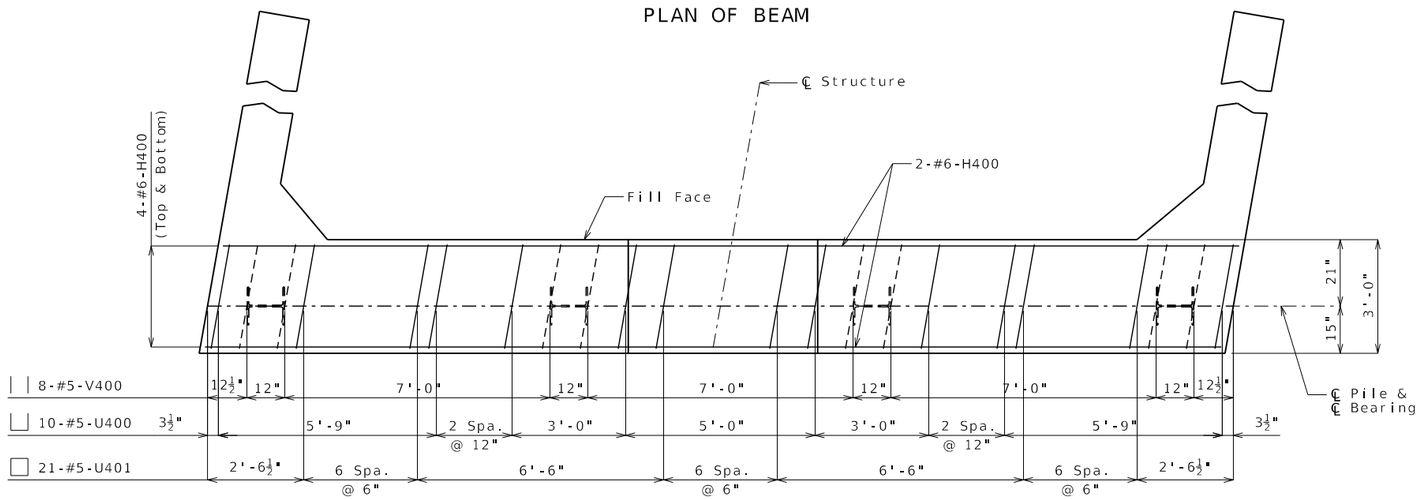
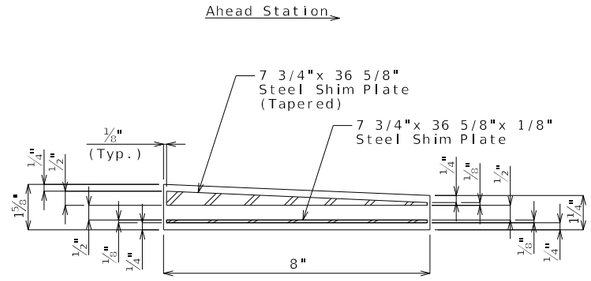


PLAN OF BEAM

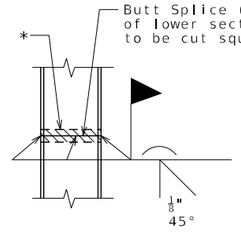


PLAN OF BEAM SHOWING REINFORCEMENT
Keys not shown for clarity

Ahead Station

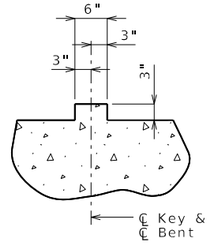


SECTION THRU
LAMINATED NEOPRENE
BEARING PAD



STEEL PILE SPLICE
(If required)

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



SECTION THRU KEY

General Notes:

Work this sheet with Sheets No. 12 & 13.

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

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

JEFF A. GARDNER
NUMBER PE-2016019369
STATE OF MISSOURI
PROFESSIONAL ENGINEER
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DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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Detailed Oct. 2024
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DETAILS OF END BENT NO. 4

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

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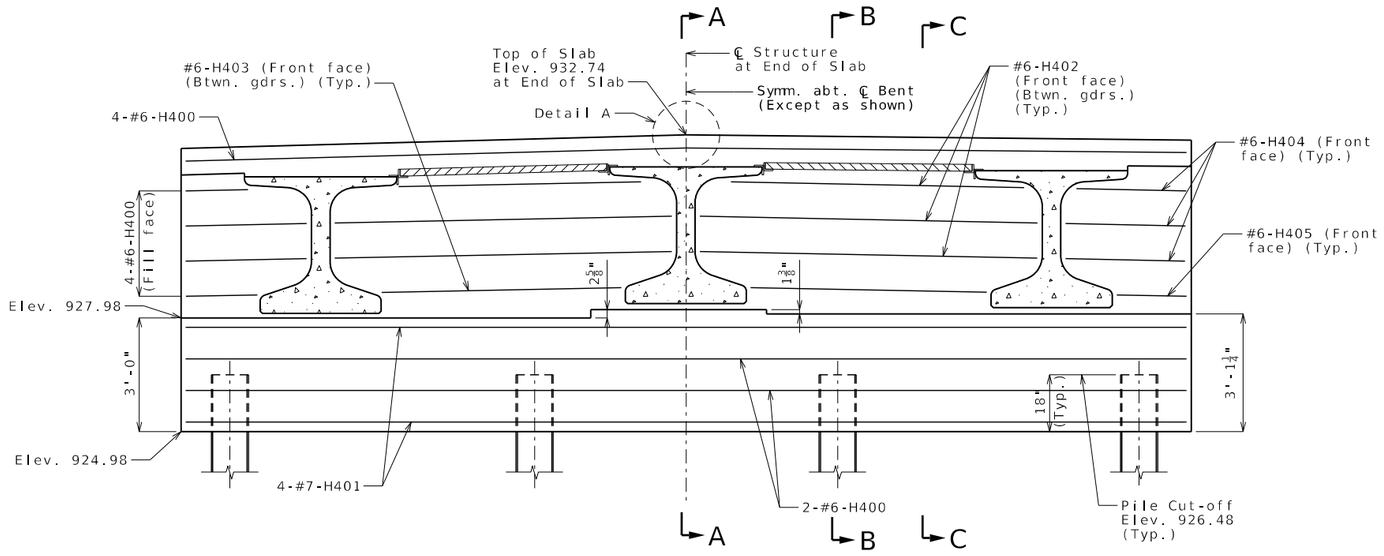
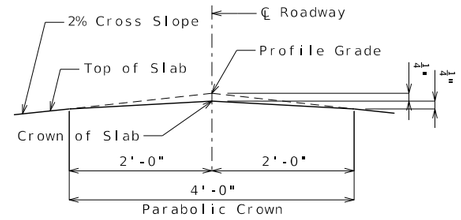


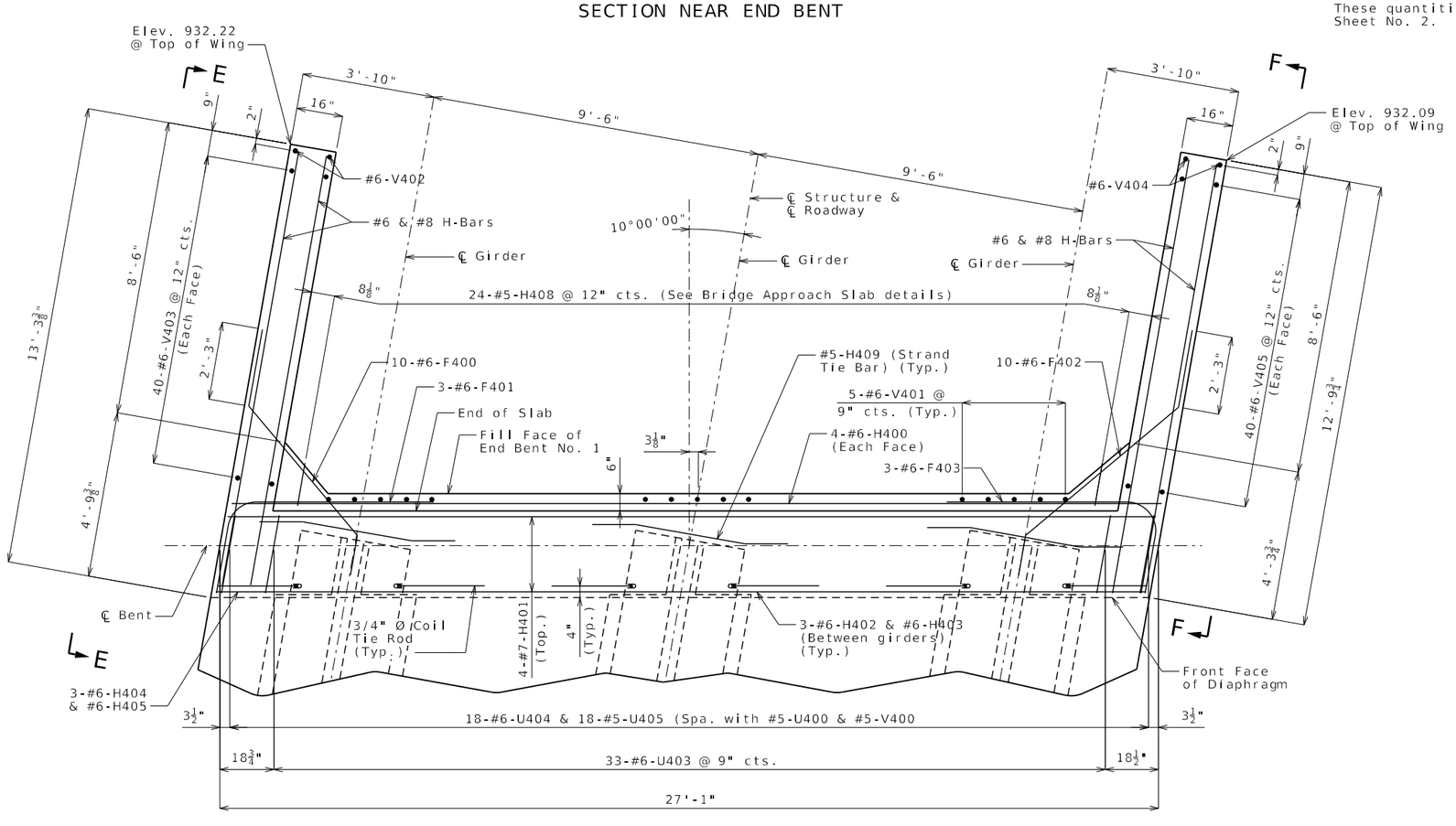
SECTION NEAR END BENT



DETAIL A

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	40
Galvanized Structural Steel Piles (12 in.)	linear foot	176
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	12.6

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



PART PLAN

DETAILS OF END BENT NO. 4

General Notes:

Work this sheet with Sheets No. 11 & 13.

For Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 13.

The #6-F400 and #6-F402 bars shall be bent in the field to clear girders.

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

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

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

For location of coil tie rods and #5-H409 (strand tie bar), see Sheets No. 14 thru 19.

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

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

Detailed Oct. 2024
Checked Nov. 2024

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DATE PREPARED
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ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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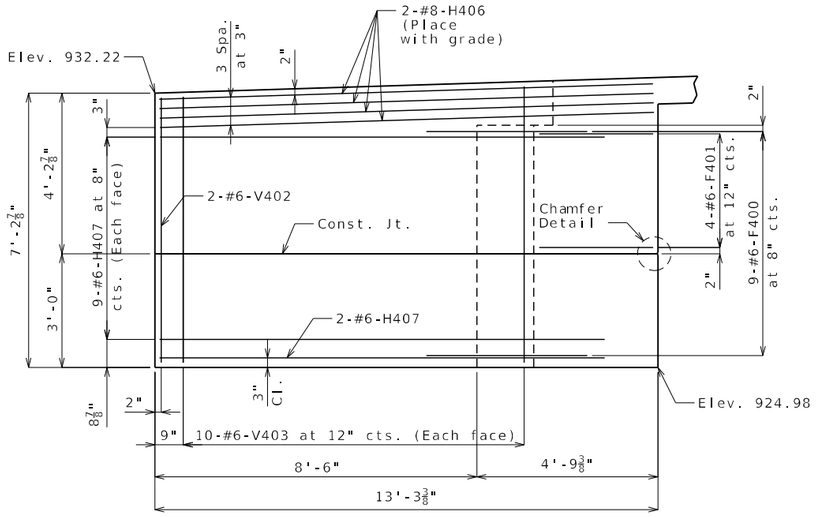
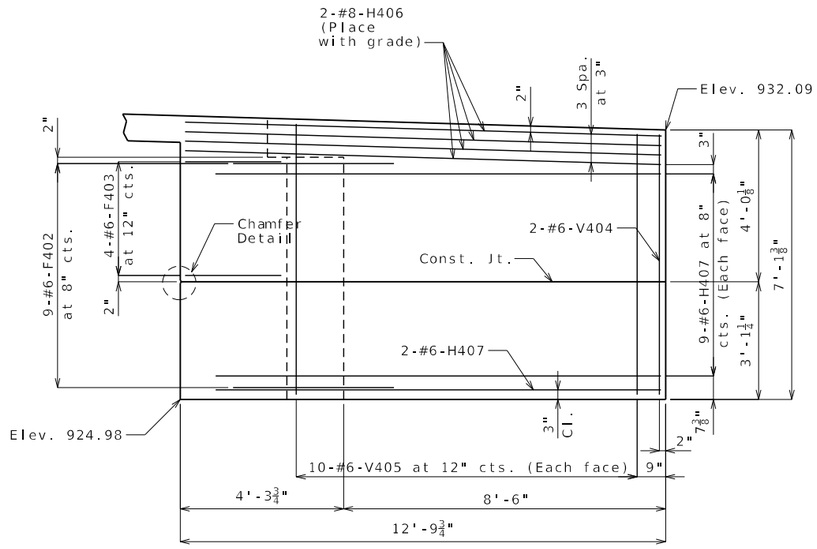
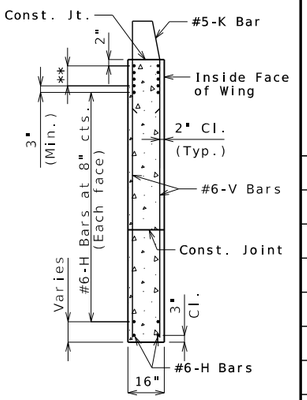


ELEVATION E-E

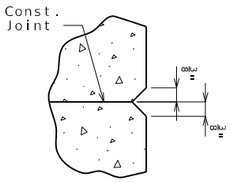


ELEVATION F-F

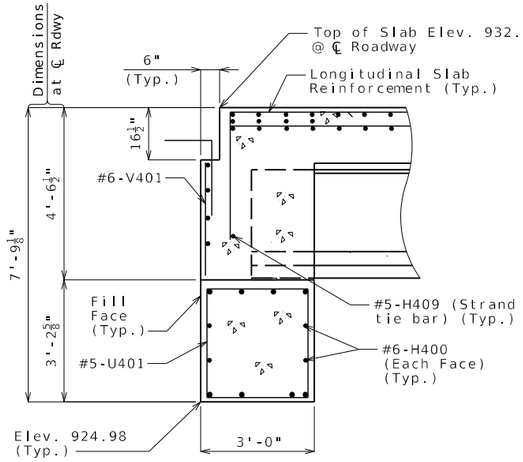


TYPICAL SECTION THRU WING

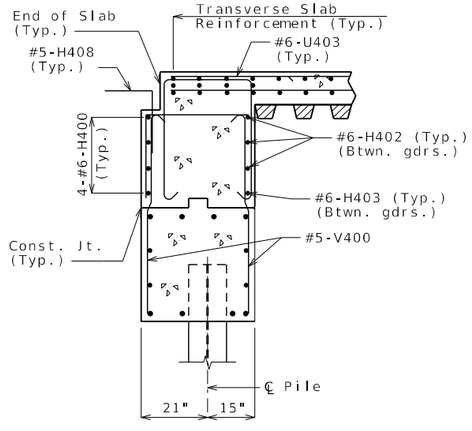
** #8-H Bars at 3" cts. (Each face)(Place with grade)



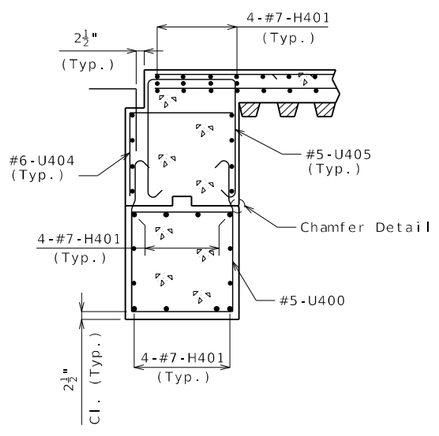
CHAMFER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

General Notes:

Work this sheet with Sheets No. 11 & 12.

For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No. 12.

For details and reinforcement of the Type D Barrier, see Sheets No. 25 & 26.

DETAILS OF END BENT NO. 4

Detailed Oct. 2024
Checked Nov. 2024

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JEFF A. GARDNER
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DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

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TREK DESIGN GROUP, LLC

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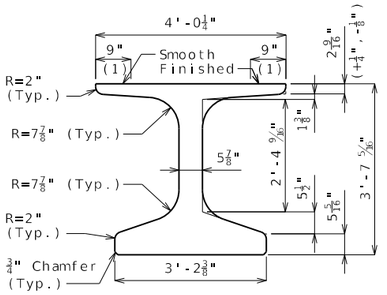
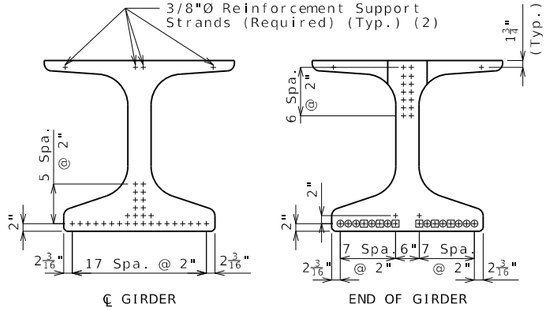
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

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



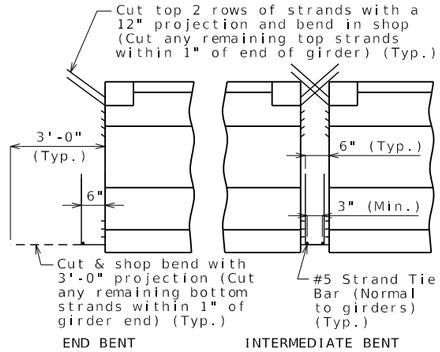
℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

□ Indicates debonded for 6'-0" from end of girder



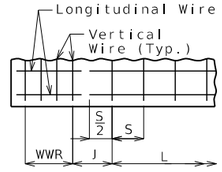
END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS

(3): Bent 1: 16 5/8"
Bent 2: 12 1/4"

(4): Bent 2: 12 1/4"

(5): Bent 2: 9 1/2"



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

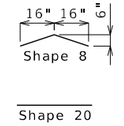
Bars Each Girder

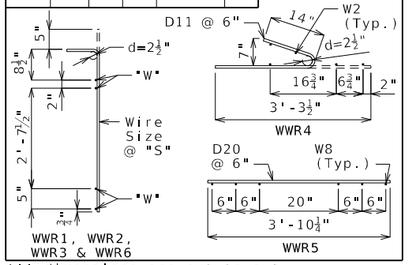
No.	Size/Mark	Length	Shape
112	3 G1	2'-10"	8
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D22	4"	W9	12'-4"	4"
WWR2	D22	8"	W9	16'-0"	8"
WWR3	D22	16"	W9	28'-0"	--
WWR6	D31	2"	W12	16"	3 5/16"

Bending Diagrams





All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

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

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

Pretensioned members shall be in accordance with Sec 1029.

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

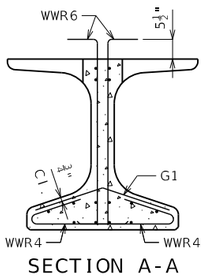
Exterior and interior girders are the same except: coil ties, top flange blockout.

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

For Girder Camber Diagram, see Sheet No. 20.

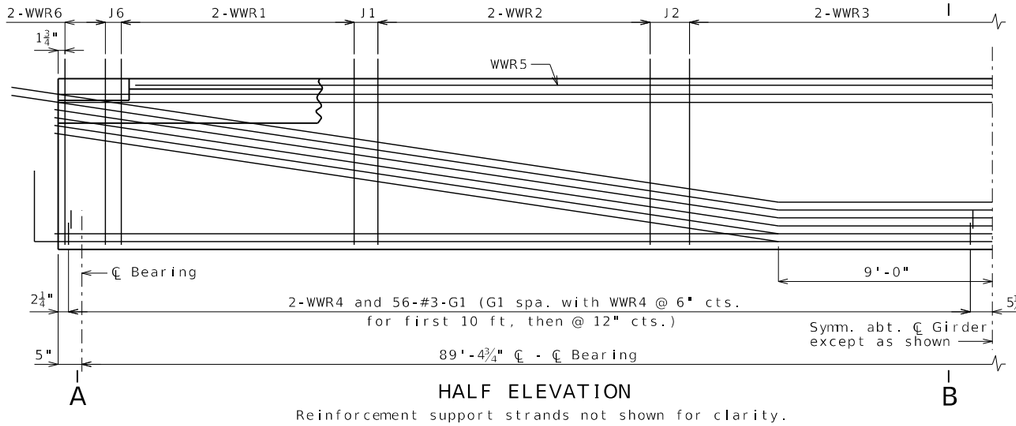
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

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



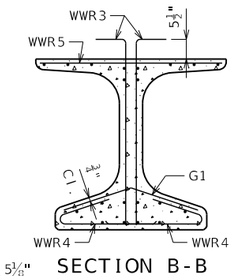
SECTION A-A

Strands not shown for clarity.



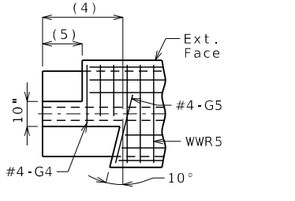
HALF ELEVATION

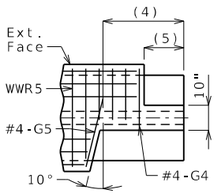
Reinforcement support strands not shown for clarity.



SECTION B-B

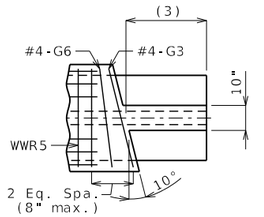
Strands not shown for clarity.





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

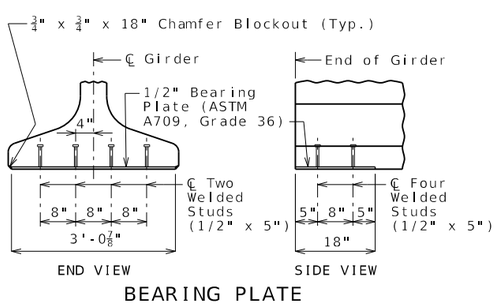
Rotate 180° for right ext.



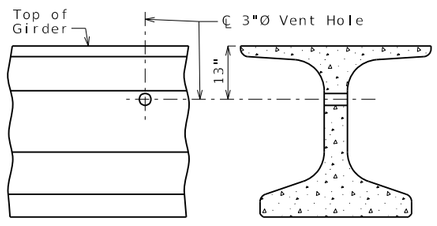
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced



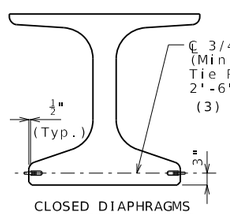
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

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



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS - SPAN (1-2)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

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

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

DESCRIPTION	DATE

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	14

COUNTY WORTH

JOB NO. JNW0020

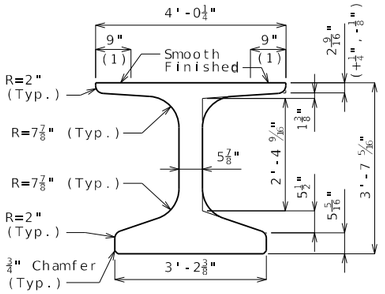
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

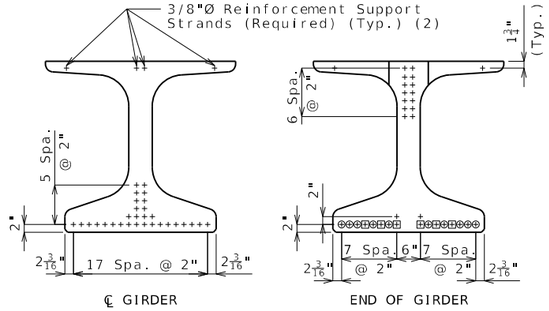
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

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

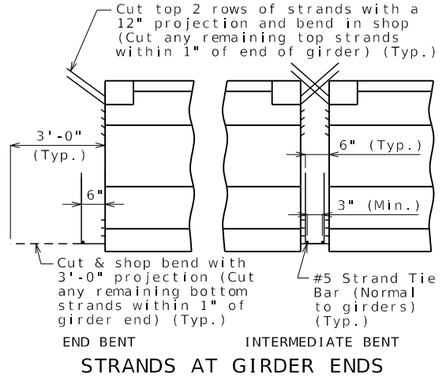


STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

□ Indicates debonded for 6'-0" from end of girder

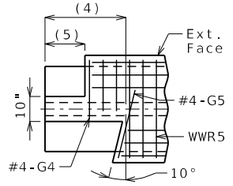


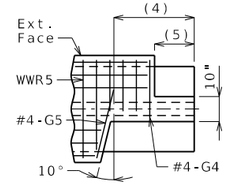
STRANDS AT GIRDER ENDS

(3): Bent 1: 16 5/8"
Bent 2: 12 1/4"

(4): Bent 2: 12 1/4"

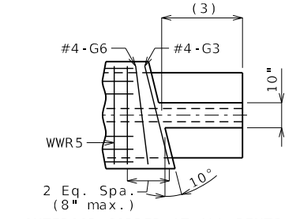
(5): Bent 2: 9 1/2"





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.



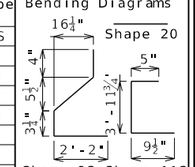
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

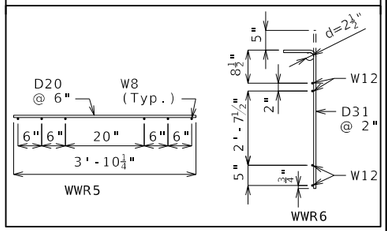
Right advanced

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
104	5 B1	5'-0"	11S
114	4 D1	4'-0"	9S
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

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

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

Pretensioned members shall be in accordance with Sec 1029.

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

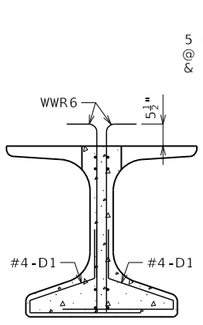
Exterior and interior girders are the same except: coil ties, top flange blockout.

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

For Girder Camber Diagram, see Sheet No. 20.

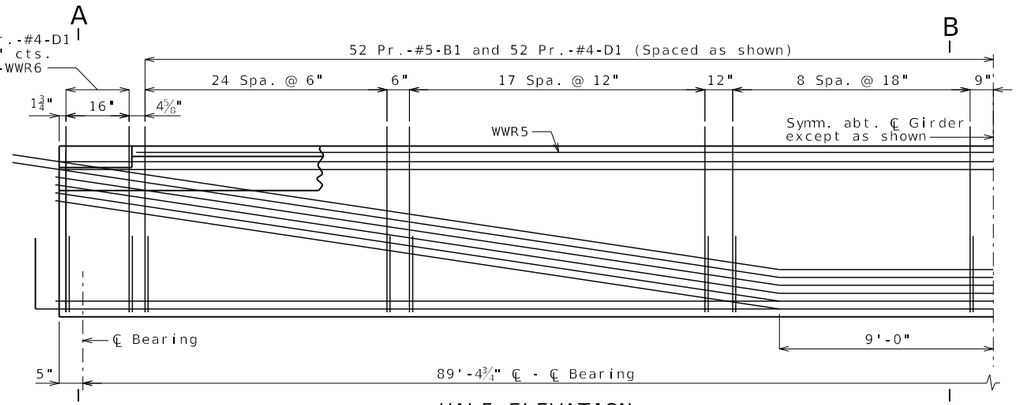
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

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.



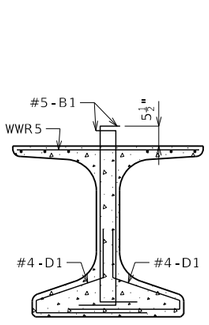
SECTION A-A

Strands not shown for clarity.



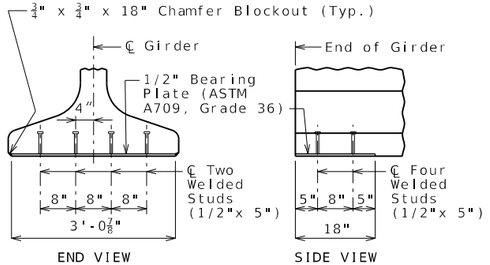
HALF ELEVATION

Reinforcement support strands not shown for clarity.

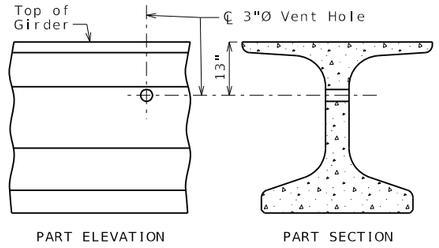


SECTION B-B

Strands not shown for clarity.

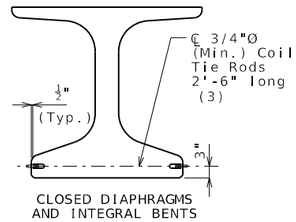


BEARING PLATE



VENT HOLE

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



COIL TIES

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

(3) 2'-0" at exterior face of exterior girders at end bents

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

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	15

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

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

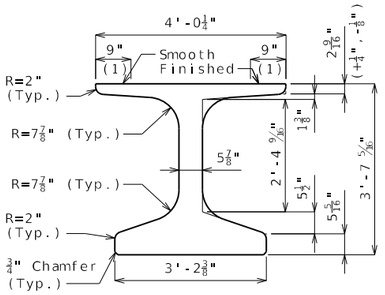
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

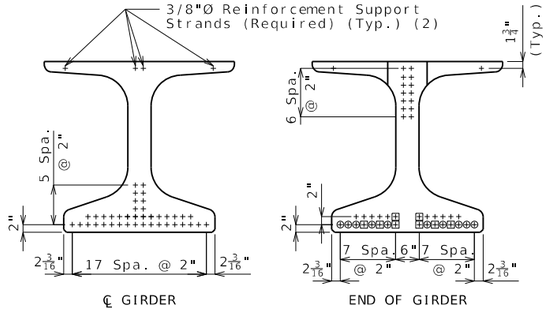
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

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



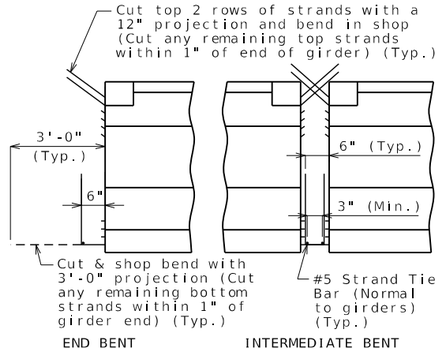
℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

□ Indicates debonded for 6'-0" from end of girder



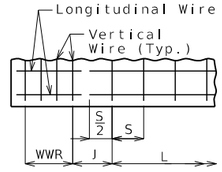
END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS

(3): Bent 2: 8 1/2"
Bent 3: 11 7/8"

(4): Bent 2: 8 1/2"
Bent 3: 11 7/8"

(5): Bent 2: 5 3/4"
Bent 3: 9 1/4"



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

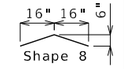
Bars Each Girder

No.	Size/Mark	Length	Shape
130	3 G1	2'-10"	8
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

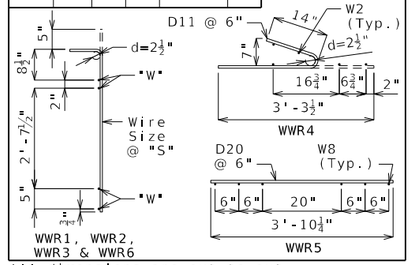
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D22	4"	W9	15'-4"	4"
WWR2	D22	8"	W9	20'-0"	8"
WWR3	D22	16"	W9	33'-4"	--
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.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

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

Use 40 strands, 0.6"Ø Grade 270, with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

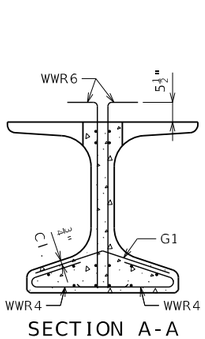
Exterior and interior girders are the same except: coil ties, top flange blockout.

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

For Girder Camber Diagram, see Sheet No. 20.

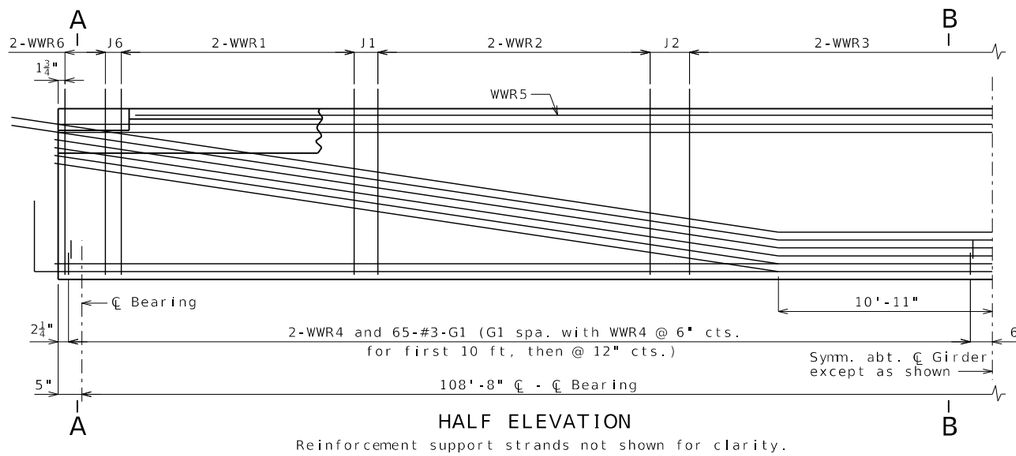
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

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



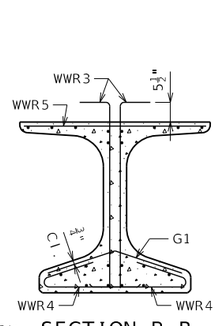
SECTION A-A

Strands not shown for clarity.



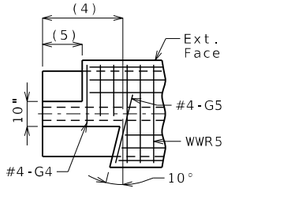
HALF ELEVATION

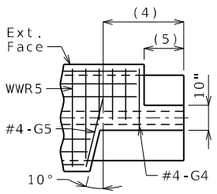
Reinforcement support strands not shown for clarity.



SECTION B-B

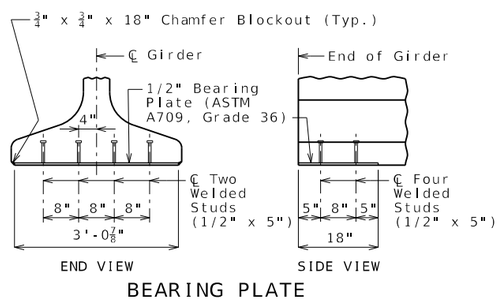
Strands not shown for clarity.



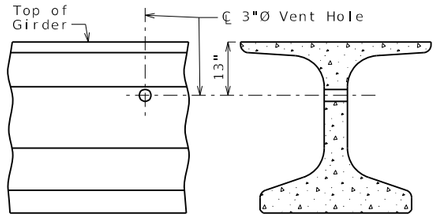


LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.



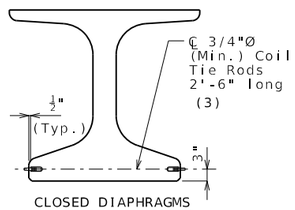
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

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

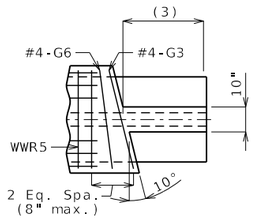


CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-0" at exterior face of exterior girders at end bents



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced

NU-GIRDERS - SPAN (2-3)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 16

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

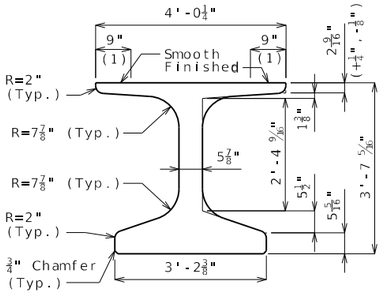
DESCRIPTION | DATE

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

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

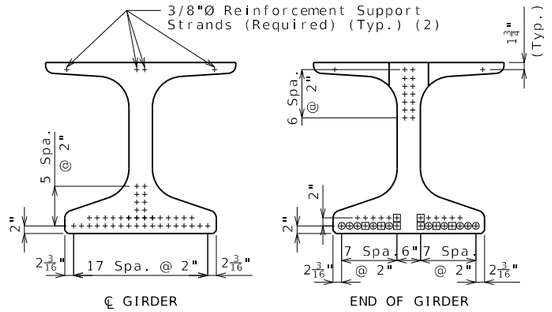
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

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



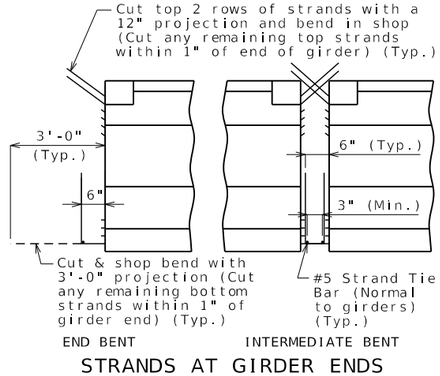
℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

□ Indicates debonded for 6'-0" from end of girder



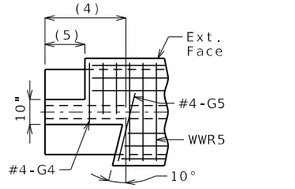
END BENT INTERMEDIATE BENT

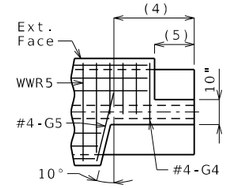
STRANDS AT GIRDER ENDS

(3): Bent 2: 8 1/2"
Bent 3: 11 7/8"

(4): Bent 2: 8 1/2"
Bent 3: 11 7/8"

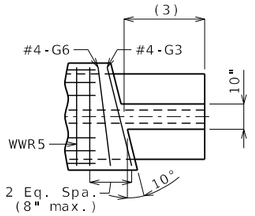
(5): Bent 2: 5 3/4"
Bent 3: 9 1/4"





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

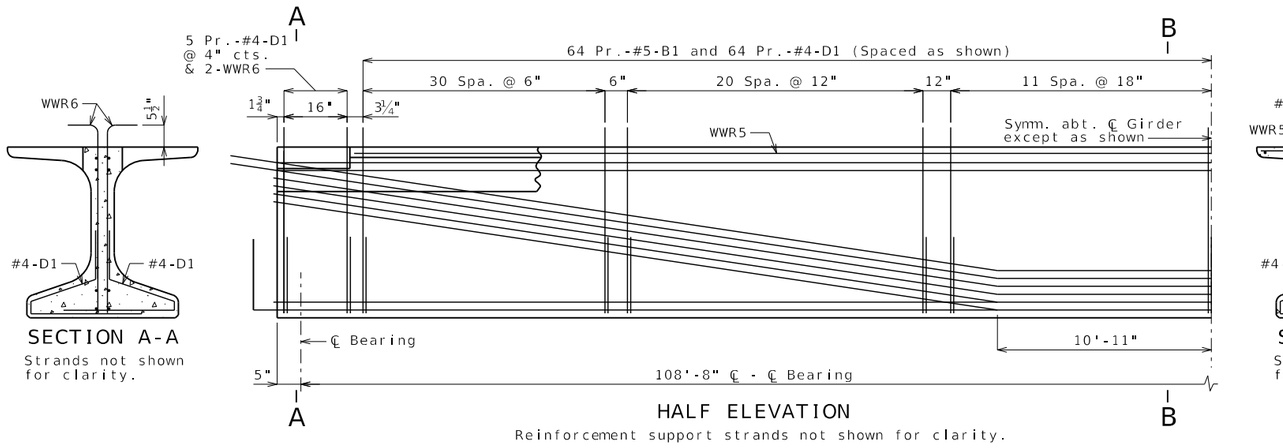
Rotate 180° for right ext.



INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced



SECTION A-A

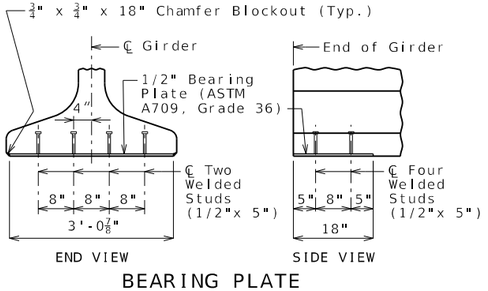
Strands not shown for clarity.

HALF ELEVATION

Reinforcement support strands not shown for clarity.

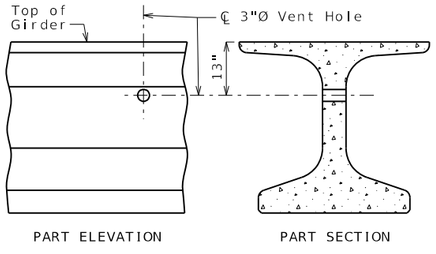
SECTION B-B

Strands not shown for clarity.



END VIEW SIDE VIEW

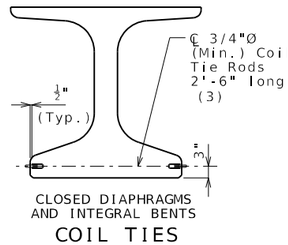
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

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



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

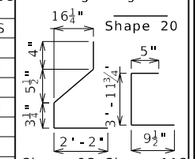
COIL TIES

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

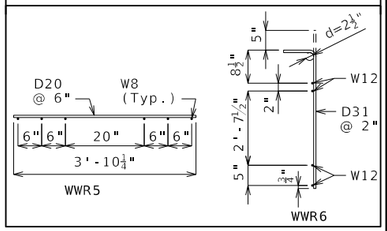
(3) 2'-0" at exterior face of exterior girders at end bents

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
127	5 B1	5'-0"	11S
137	4 D1	4'-0"	9S
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

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

Use 40 strands, 0.6"Ø Grade 270, with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

Exterior and interior girders are the same except: coil ties, top flange blockout.

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

For Girder Camber Diagram, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 ,12 and 21.

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 17

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DATE	DESCRIPTION

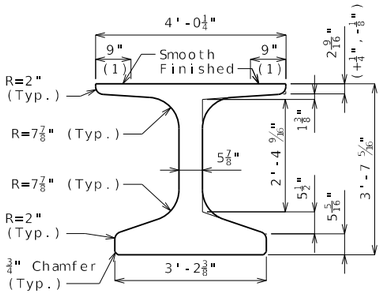
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

Detailed Oct. 2024
Checked Nov. 2024

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPAN (2-3)

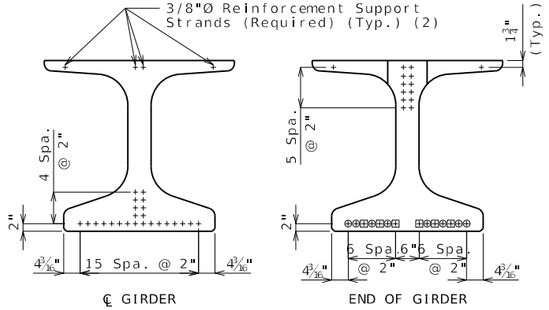
Note: This drawing is not to scale. Follow dimensions.

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

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

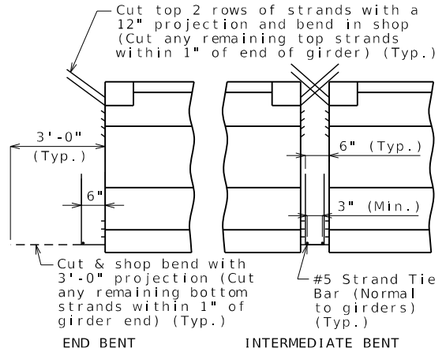


\+ Indicates prestressing strand.

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

□ Indicates debonded for 6'-0" from end of girder

STRAND ARRANGEMENT

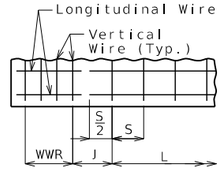


STRANDS AT GIRDER ENDS

(3): Bent 3: 8 7/8"
Bent 4: 20 1/8"

(4): Bent 3: 8 7/8"

(5): Bent 3: 6 1/8"



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

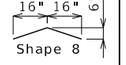
J = Distance between WWR mats

Bill of Reinforcing Steel

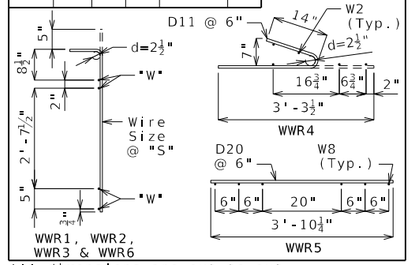
Bars Each Girder				
No.	Size/Mark		Length	Shape
104	3	G1	2'-10"	8
2	4	G3	3'-11"	20
2	4	G4	2'-3"	20
2	4	G5	2'-9"	20
1	4	G6	3'-10"	20

Welded Wire Each Girder					
Mark	Size	S	W	L	J
WWR1	D22	4"	W9	10'-8"	4"
WWR2	D22	8"	W9	14'-0"	8"
WWR3	D22	16"	W9	25'-4"	--
WWR6	D31	2"	W12	16"	3½"

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

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

Use 24 strands, 0.6"Ø Grade 270, with an initial prestress force of 1055 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

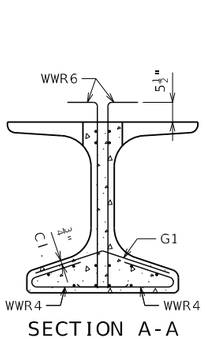
Exterior and interior girders are the same except: coil ties, top flange blockout.

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

For Girder Camber Diagram, see Sheet No. 20.

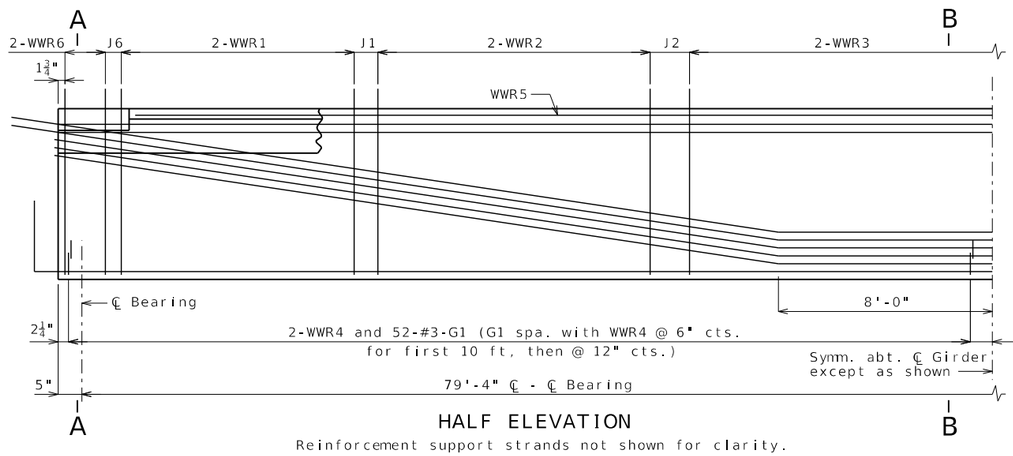
For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 , 12 and 21.

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



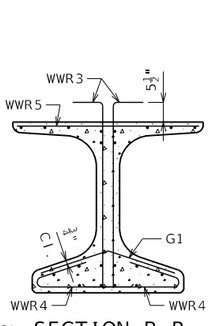
SECTION A-A

Strands not shown for clarity.



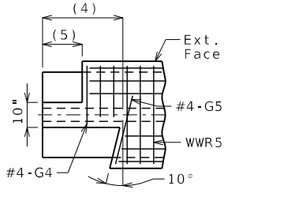
HALF ELEVATION

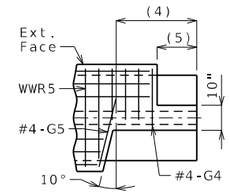
Reinforcement support strands not shown for clarity.



SECTION B-B

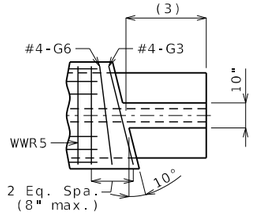
Strands not shown for clarity.





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

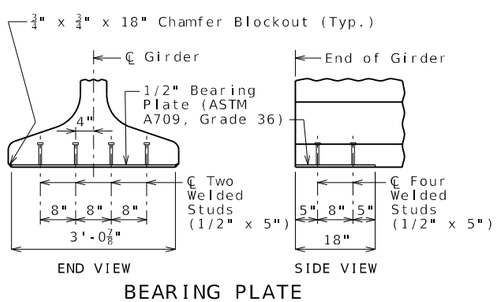
Rotate 180° for right ext.



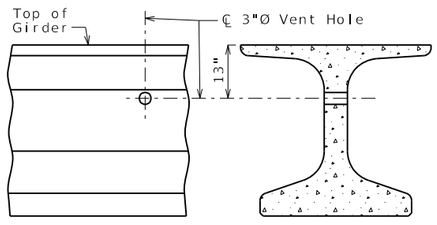
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

Right advanced

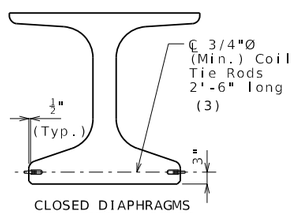


BEARING PLATE



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.



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS - SPAN (3-4)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 18

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

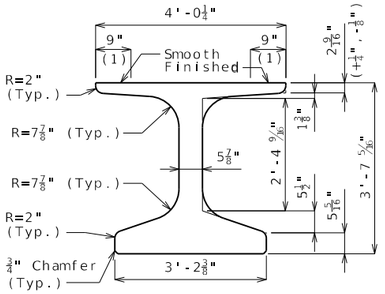
DESCRIPTION | DATE

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

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

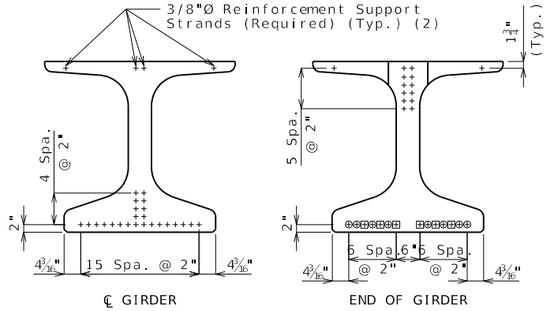
TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4655
Fax (816) 874-4675
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

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



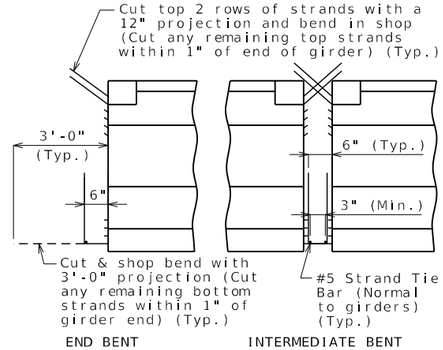
℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

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

□ Indicates debonded for 6'-0" from end of girder



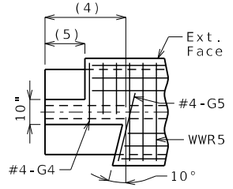
END BENT INTERMEDIATE BENT

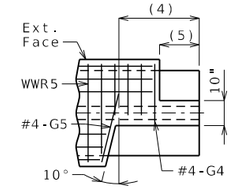
STRANDS AT GIRDER ENDS

(3): Bent 3: 8 7/8"
Bent 4: 20 1/8"

(4): Bent 3: 8 7/8"

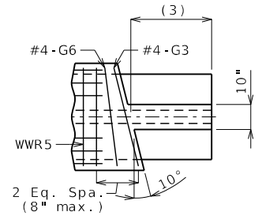
(5): Bent 3: 6 1/8"





LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT

Rotate 180° for right ext.



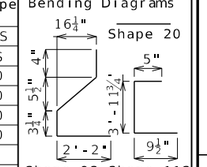
INTERIOR GIRDER AT ALL BENTS & EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

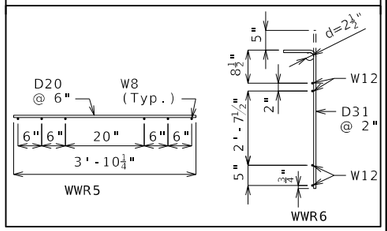
Right advanced

Bill of Reinforcing Steel - Each Girder			
No.	Size/ Mark	Length	Shape
92	5 B1	5'-0"	11S
100	4 D1	4'-0"	9S
2	4 G3	3'-11"	20
2	4 G4	2'-3"	20
2	4 G5	2'-9"	20
1	4 G6	3'-10"	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be one inch.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

General Notes:

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

Use 24 strands, 0.6"Ø Grade 270, with an initial prestress force of 1055 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

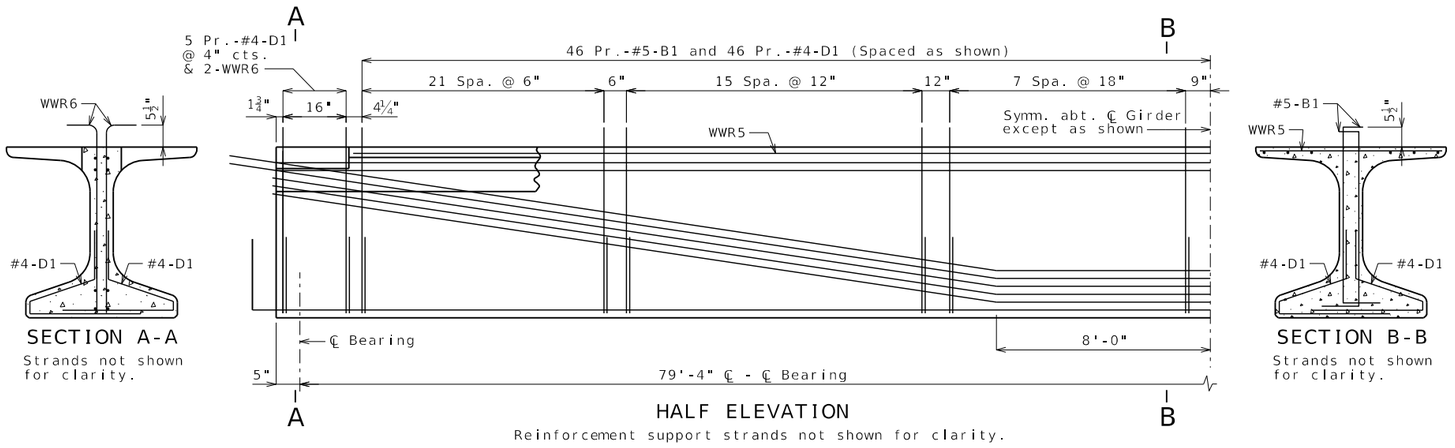
Exterior and interior girders are the same except: coil ties, top flange blockout.

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

For Girder Camber Diagram, see Sheet No. 20.

For location of coil ties at concrete diaphragms and integral bents, see Sheets No. 4 ,12 and 21.

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

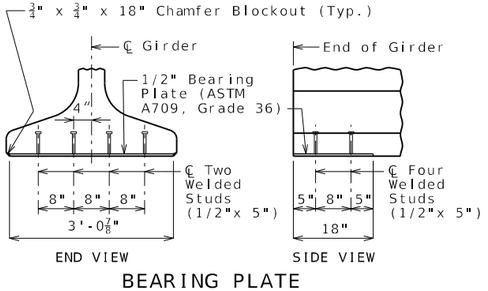
Strands not shown for clarity.

HALF ELEVATION

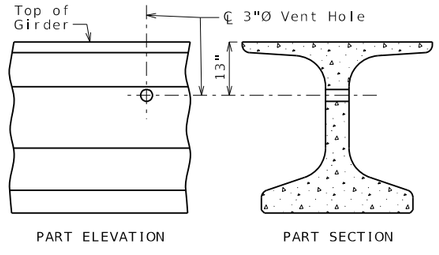
Reinforcement support strands not shown for clarity.

SECTION B-B

Strands not shown for clarity.



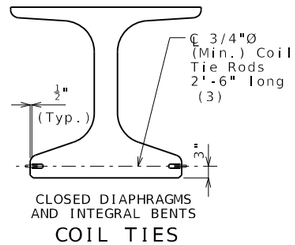
BEARING PLATE



PART ELEVATION PART SECTION

VENT HOLE

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



CLOSED DIAPHRAGMS AND INTEGRAL BENTS

COIL TIES

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

(3) 2'-0" at exterior face of exterior girders at end bents

NU-GIRDERS (ALTERNATE REINFORCEMENT) - SPAN (3-4)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 11/26/2024
ROUTE W
STATE MO
DISTRICT BR
SHEET NO. 19
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION	DATE

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

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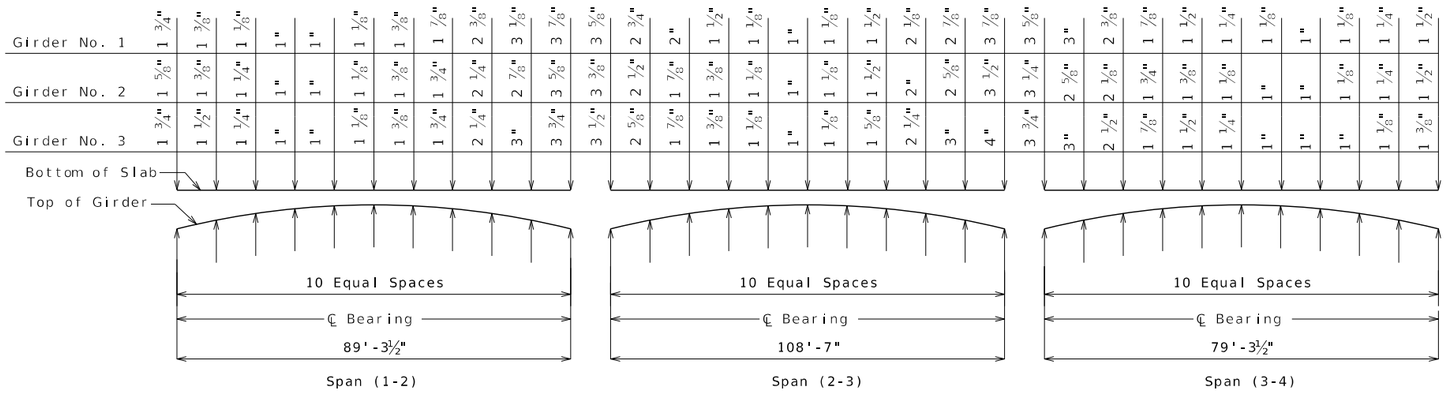
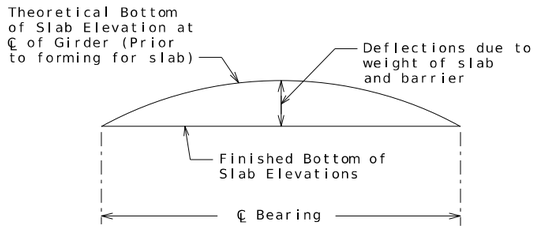


THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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

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

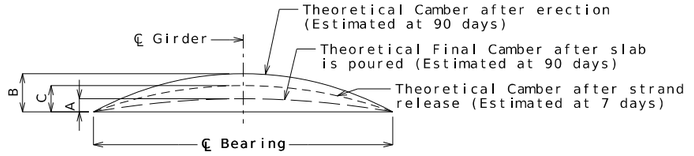


TYPICAL SLAB ELEVATIONS DIAGRAM

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

Girder Number	Span (1-2) (89'-3½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	942.89	942.47	942.05	941.63	941.22	940.81	940.40	940.00	939.61	939.22	938.84
2	943.14	942.72	942.30	941.88	941.46	941.05	940.65	940.25	939.85	939.46	939.08
3	943.05	942.63	942.21	941.79	941.37	940.96	940.55	940.15	939.76	939.37	938.98
Girder Number	Span (2-3) (108'-7" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	938.81	938.35	937.90	937.45	937.01	936.58	936.15	935.73	935.32	934.92	934.52
2	939.06	938.59	938.14	937.69	937.25	936.81	936.38	935.96	935.55	935.15	934.75
3	938.96	938.49	938.04	937.59	937.14	936.71	936.28	935.86	935.44	935.04	934.64
Girder Number	Span (3-4) (79'-3½" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	934.50	934.22	933.94	933.66	933.39	933.12	932.85	932.59	932.33	932.08	931.83
2	934.73	934.45	934.16	933.89	933.61	933.34	933.08	932.82	932.56	932.30	932.05
3	934.62	934.34	934.05	933.77	933.50	933.23	932.96	932.70	932.44	932.19	931.93

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 precast panel) and barrier.



Girder	Span (1-2)			Span (2-3)			Span (3-4)		
	A	B	C	A	B	C	A	B	C
Exterior	1"	2½"	1⅜"	1⅝"	4¾"	1¾"	¾"	1⅝"	1"
Interior	⅞"			1¼"			⅝"		

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.

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
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DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Checked Nov. 2024

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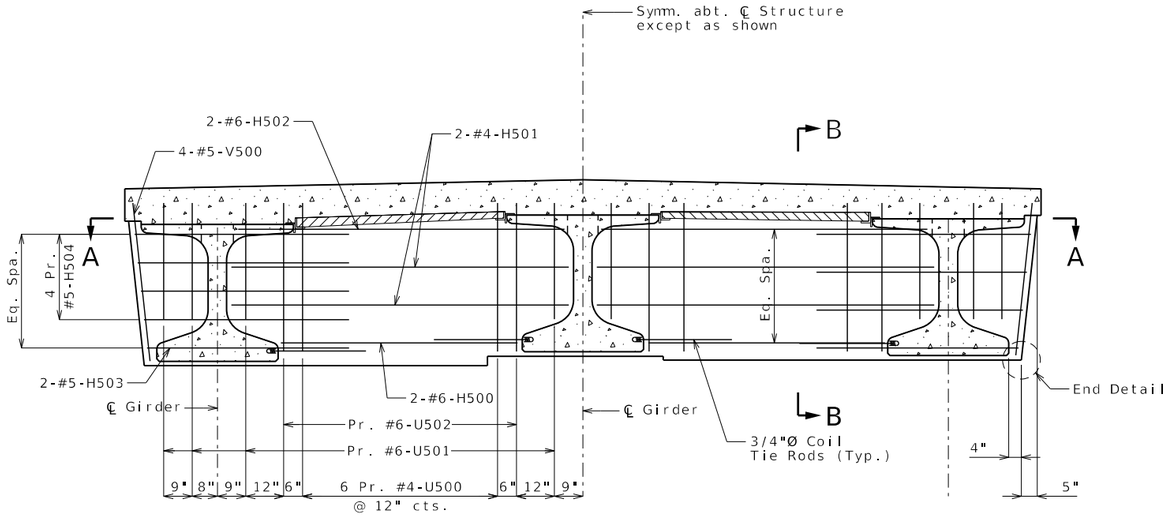
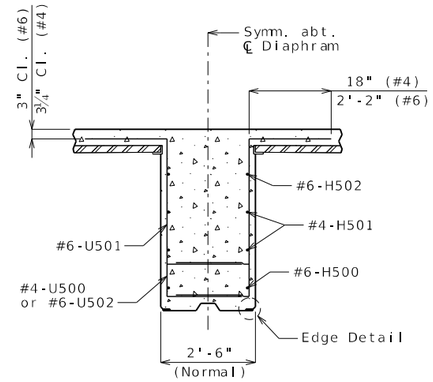
B_A9468_020_JNW0020_Hnch.dgn 1:18:26 PM 11/26/2024

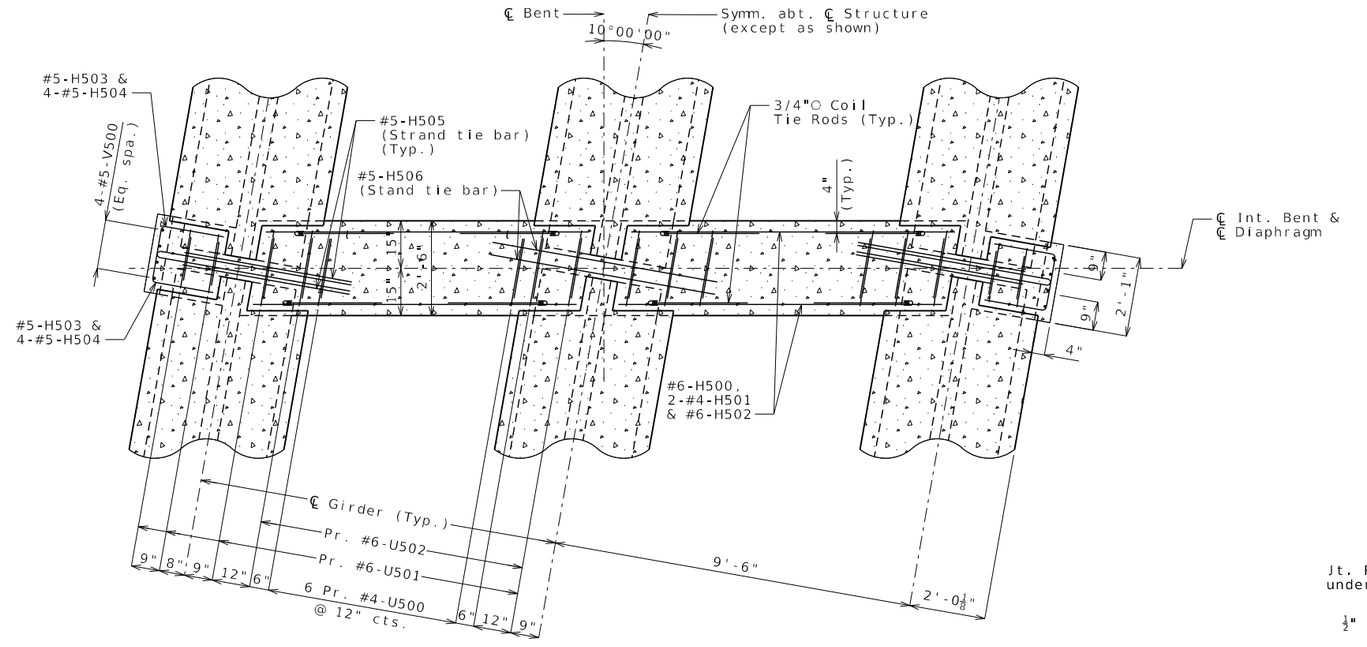


SECTION NEAR INTERMEDIATE BENT

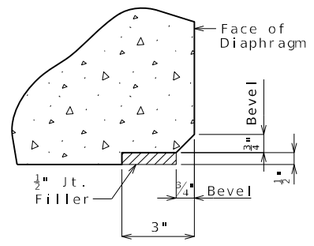
Normal to ℄ Structure



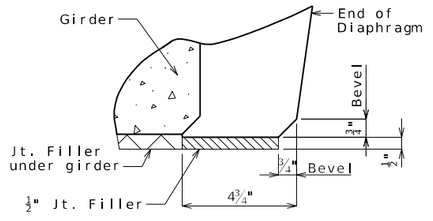
SECTION B-B



SECTION A-A



EDGE DETAIL



END DETAIL

CONCRETE DIAPHRAGMS AT INTERMEDIATE BENT NO. 2 & 3

Detailed Oct. 2024
Checked Nov. 2024

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STATE OF MISSOURI
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DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	21

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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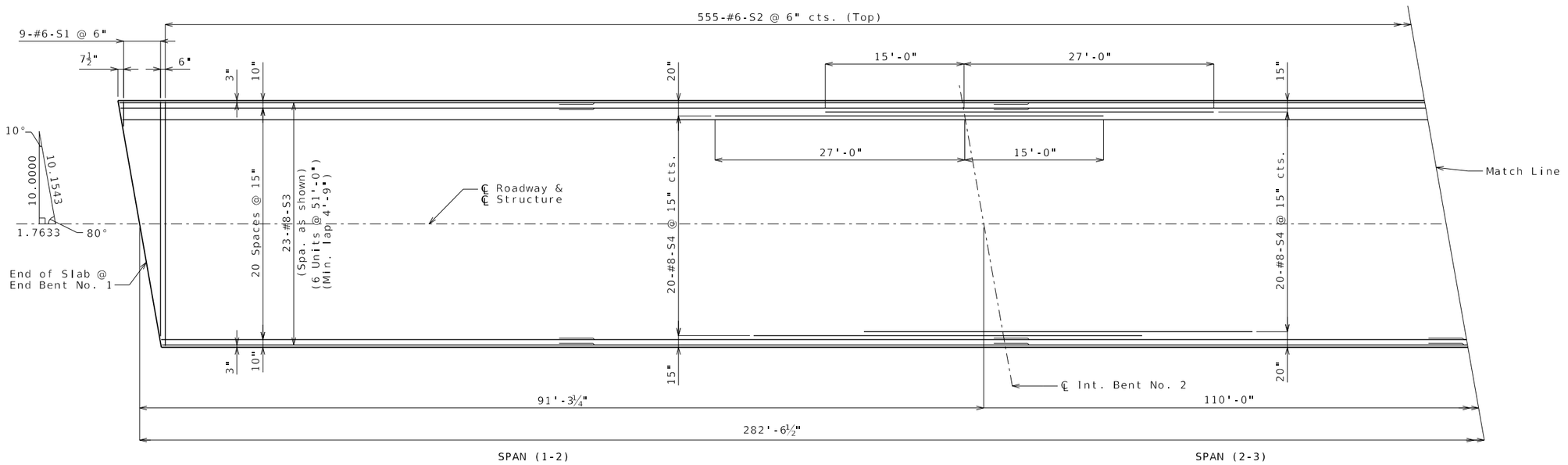

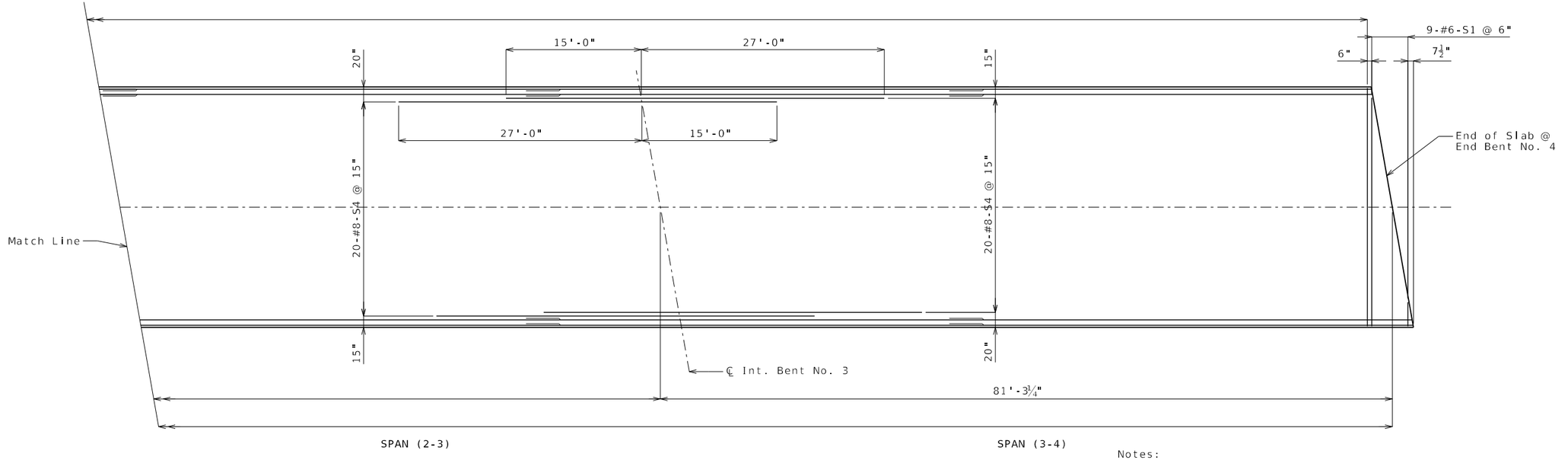

Notes:

Longitudinal dimensions shown are horizontal.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 24.

For Details and Reinforcement of Type D Barrier not shown, see Sheets No. 25 and 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 23.

PLAN OF SLAB SHOWING TOP REINFORCEMENT

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

Detailed Oct. 2024
Checked Nov. 2024

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
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DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 22
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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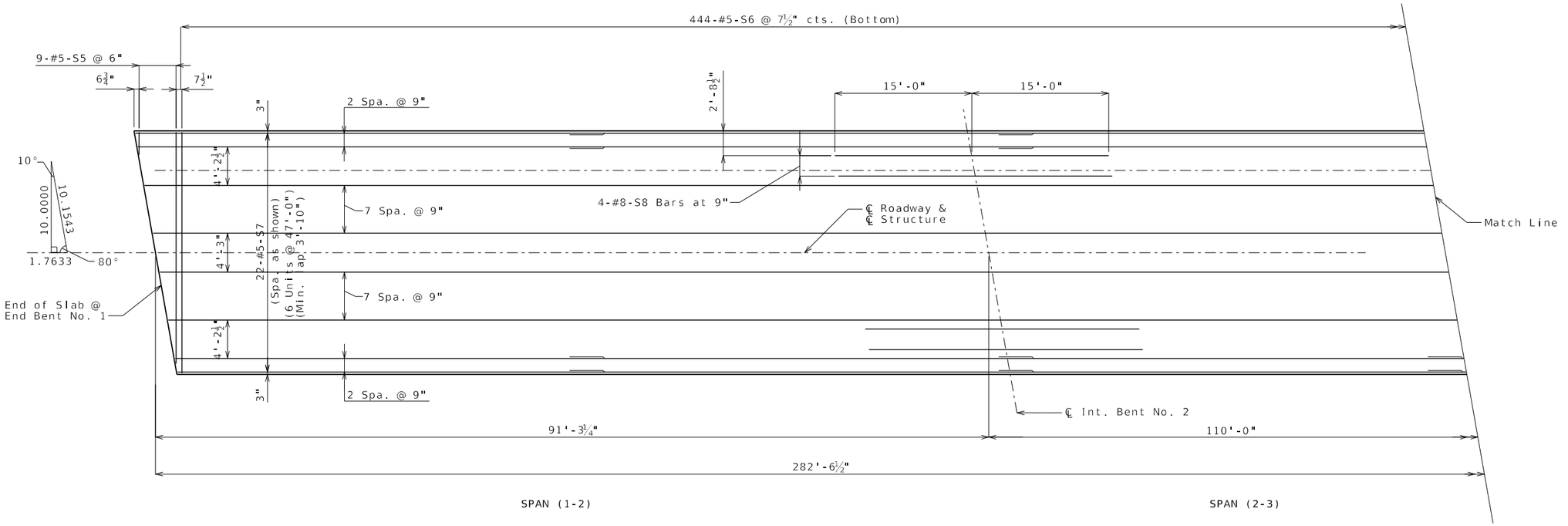

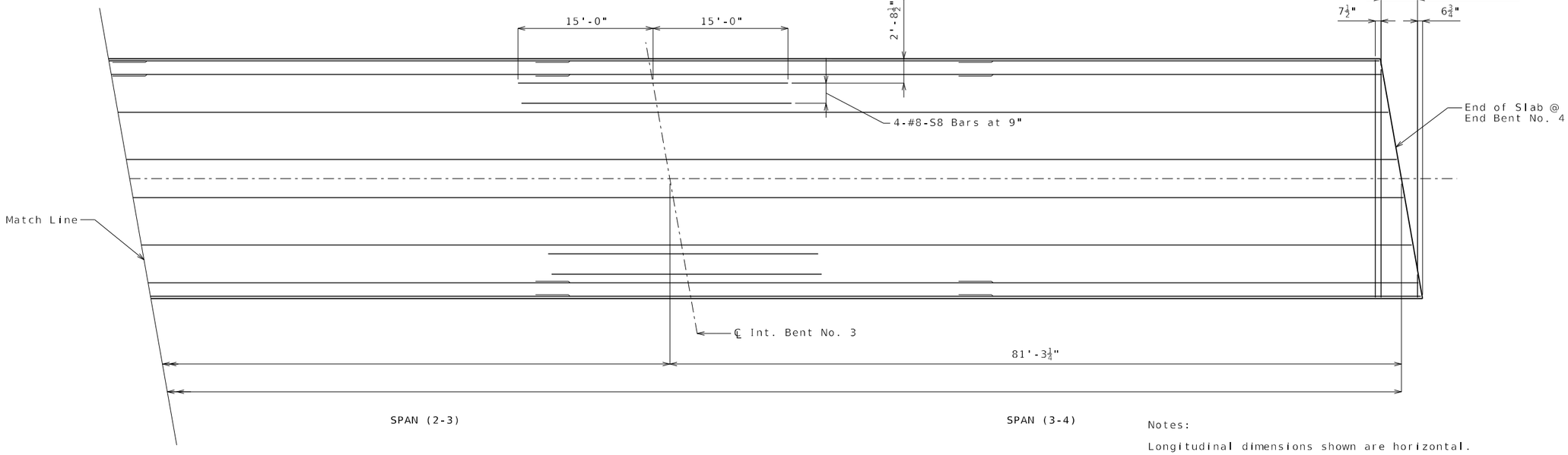

Notes:

Longitudinal dimensions shown are horizontal.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 24.

For Details and Reinforcement of Type D Barrier not shown, see Sheets No. 25 and 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20

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

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

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

Sheet No. 23 of 36

Detailed Oct. 2024
Checked Nov. 2024

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
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DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	23

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

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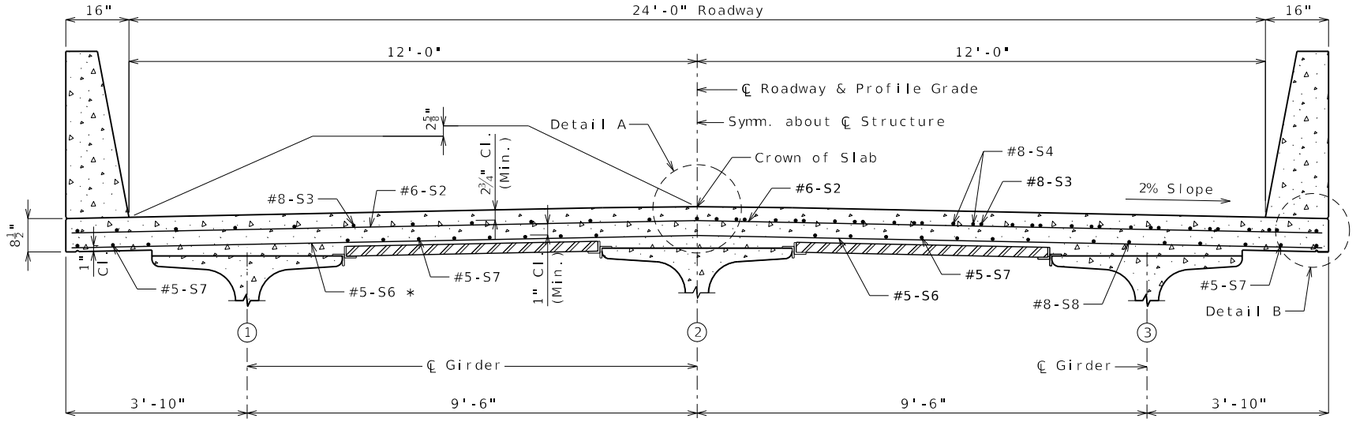
B_A9468_023_JNW0020_Slab Plan Bottom.dgn 1:18:31 PM 11/26/2024

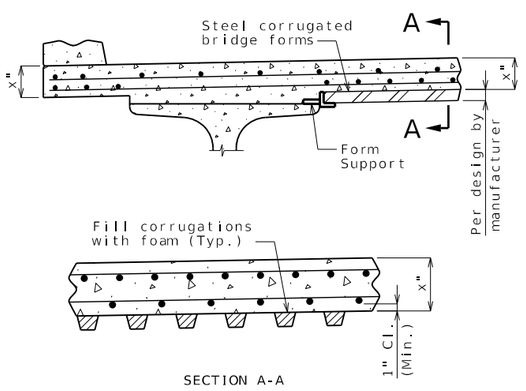


HALF SECTION NEAR MIDSPAN

SECTION THRU SLAB

HALF SECTION NEAR INTERMEDIATE BENT

* Alternate bar shape available, see barrier sheet.



SECTION A-A

OPTIONAL STAY-IN-PLACE FORM DETAILS

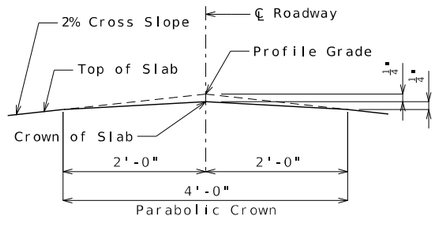
Stay-In-Place Forms:

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

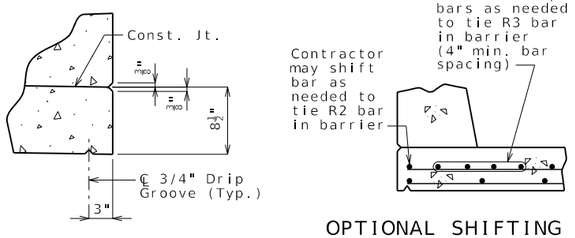
Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

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

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

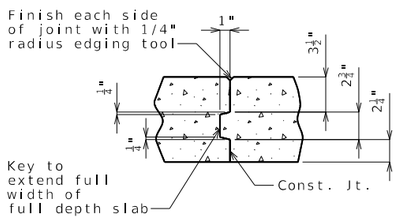


DETAIL A



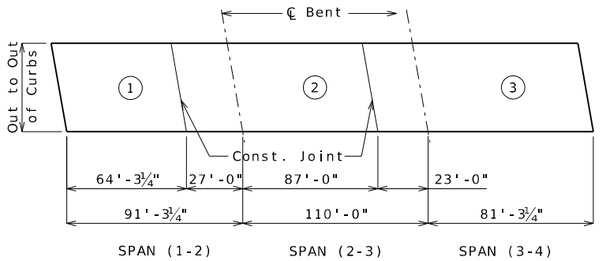
DETAIL B

OPTIONAL SHIFTING TOP BARS AT BARRIER



FULL DEPTH SLAB

SLAB CONSTRUCTION JOINT



	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			With Retarder
Basic Sequence	1	2	3	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 + 2		3	37
	End to 3		2 to End	
Alternate B Pours	1 + 2 + 3			59
	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

Notes:

For reinforcement of barrier not shown, see Sheets No. 25 & 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20.

For Plan of Slab Showing Reinforcement, see Sheets No. 22 & 23.

SLAB DETAILS

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS BEING SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 05/22/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	24

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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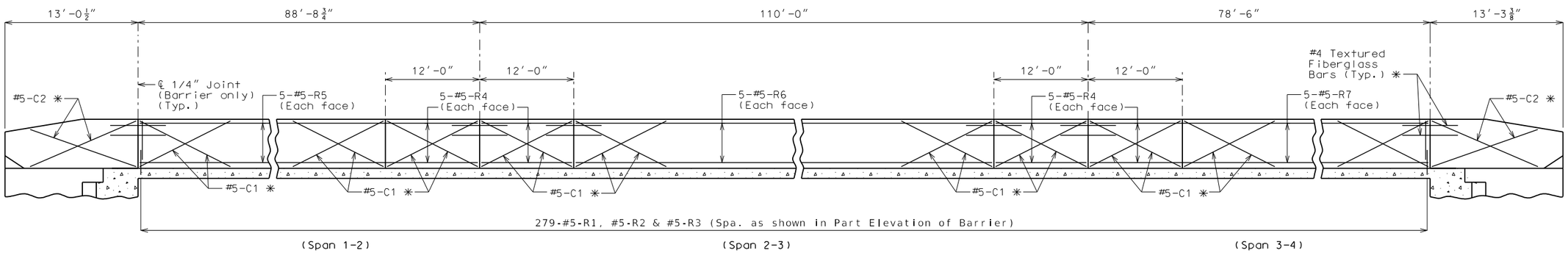
TREKK DESIGN GROUP, LLC

Detailed Oct. 2024
Checked Nov. 2024

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

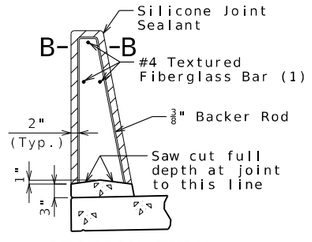
B_A9468_024_JNW0020_Slab Section.dgn 1:18:32 PM 11/26/2024



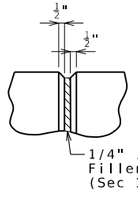
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

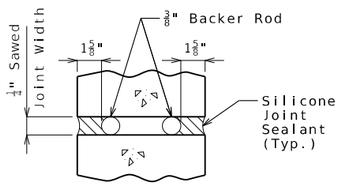
Longitudinal dimensions are horizontal.



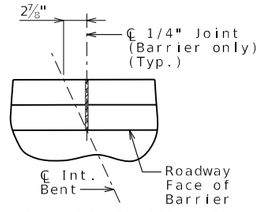
SECTION THRU SAW CUT JOINT



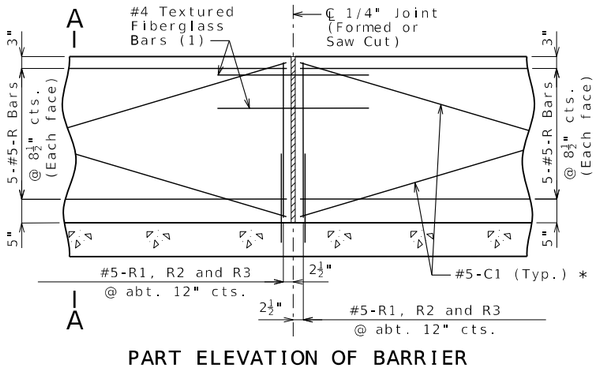
PART ELEVATION AT FORMED JOINT



SECTION B-B

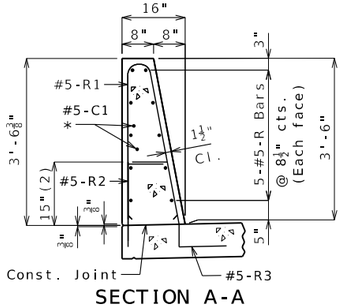


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

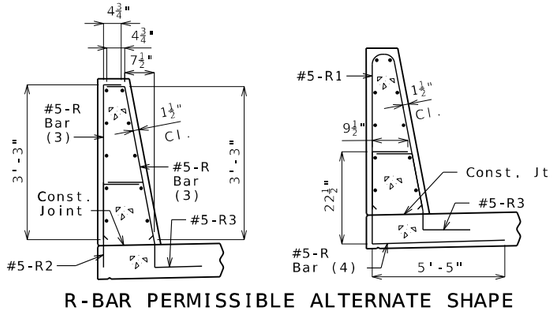


SECTION A-A

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

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

(4) The R2 bar and #5 bottom transverse slab bar in cantilever (prestressed panels only) combination may be furnished as one bar as shown, at the contractor's option.

General Notes:

✳ Slip-formed option only.

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

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

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

Plastic waterstop shall not be used with saw cut joints.

TYPE D BARRIER

Detailed Oct. 2024
Checked Nov. 2024

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

DATE PREPARED 11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	25

COUNTY: WORTH
JOB NO.: JNW0020
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9468

DATE	DESCRIPTION

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

TREKK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
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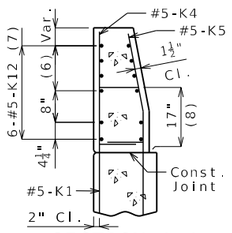
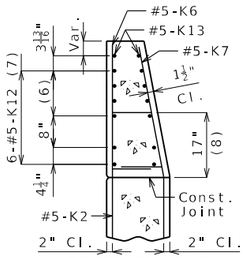
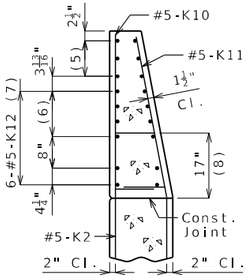
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300



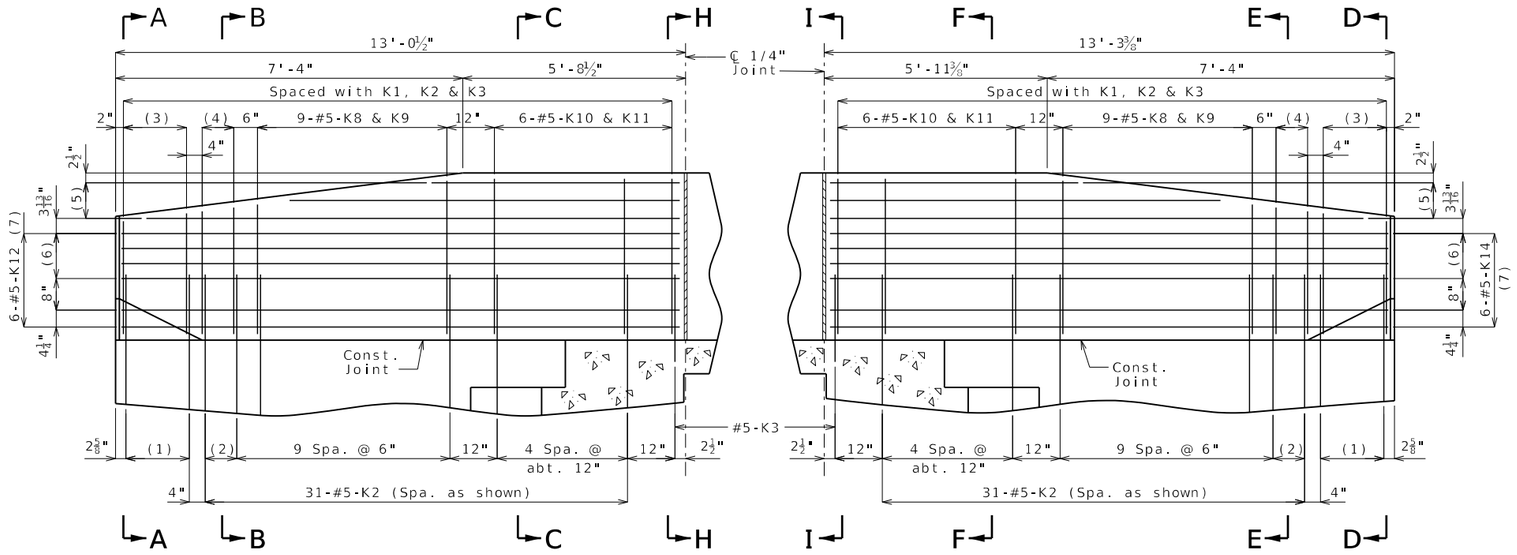
SECTION A-A



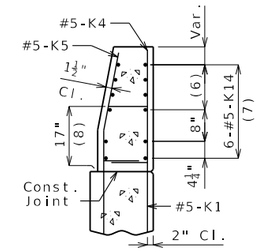
SECTION B-B



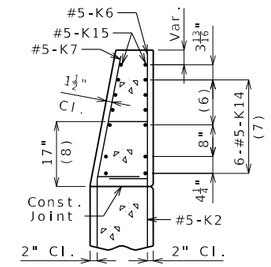
SECTION C-C



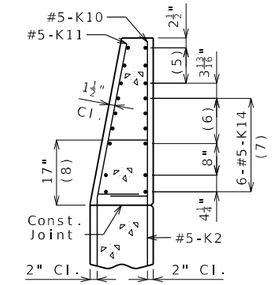
PART ELEVATION



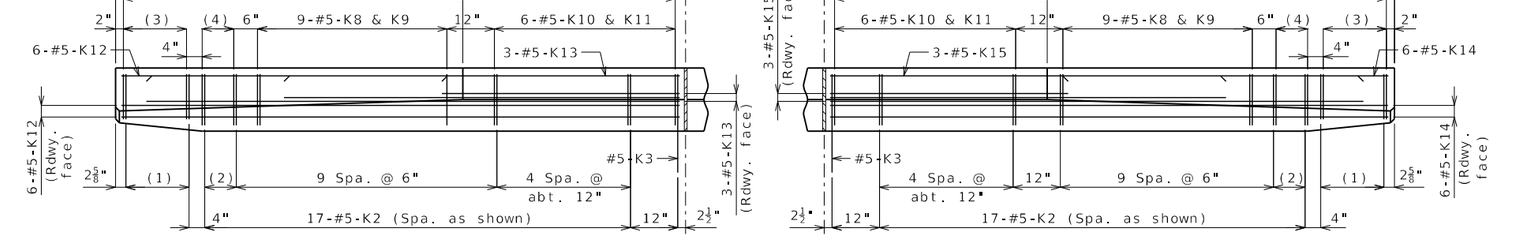
SECTION D-D



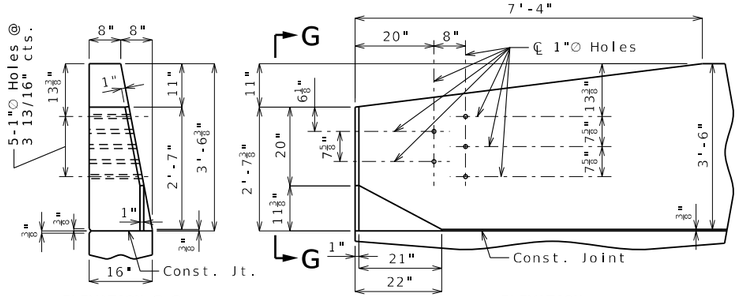
SECTION E-E



SECTION F-F

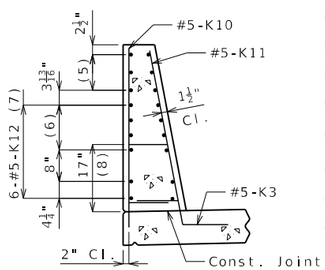


PART PLAN



ELEVATION G-G

ELEVATION



SECTION H-H

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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

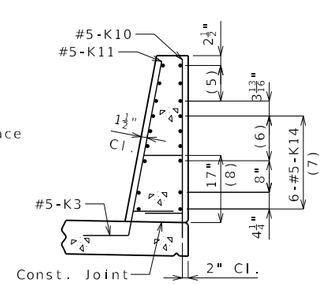
(4) 3-#5-K6 & K7

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

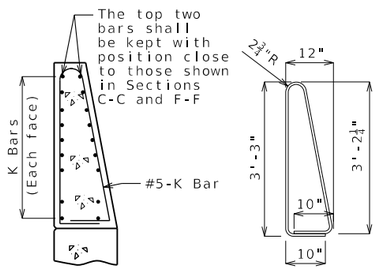
(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar



SECTION I-I



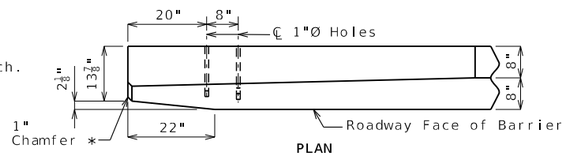
K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

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

All dimensions are out to out.

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



PLAN

DETAILS OF GUARD RAIL ATTACHMENT

General Notes:

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

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

TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
11/26/2024

ROUTE	STATE
W	MO
DISTRICT	SHEET NO.
BR	26

COUNTY
WORTH

JOB NO.
JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9468

DESCRIPTION	DATE

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

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

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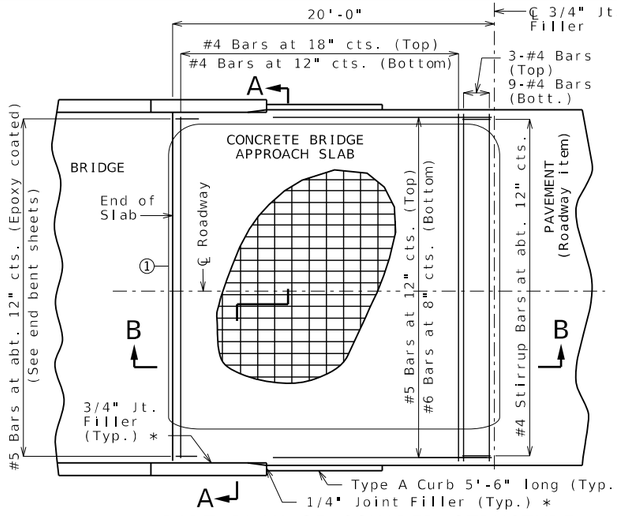
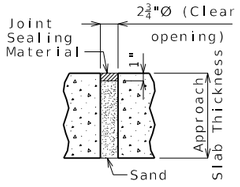
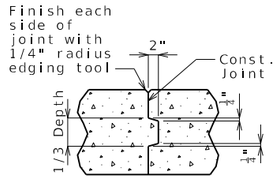


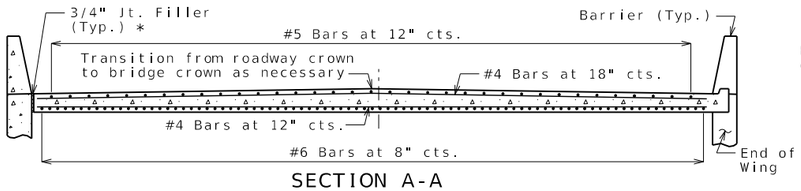
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



UNDERSEAL ACCESS HOLE DETAIL
(If required)

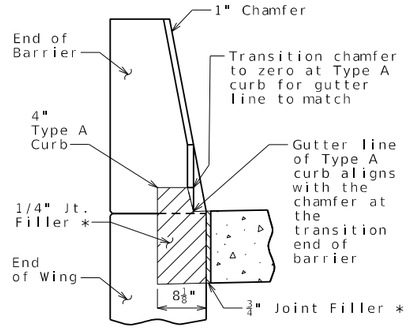


CONSTRUCTION JOINT DETAIL



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.

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:

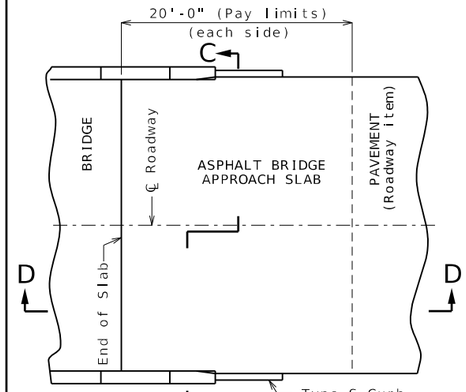
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

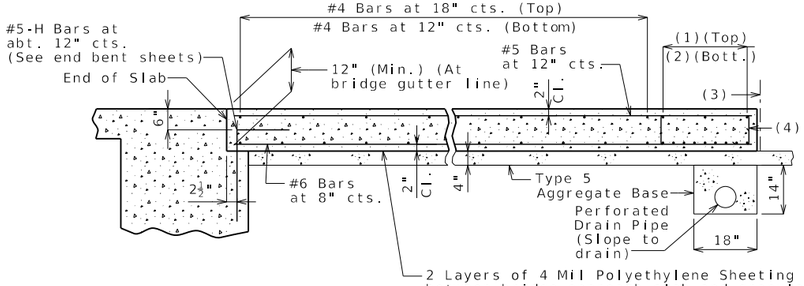
Notes For Asphalt Slab Only:

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)



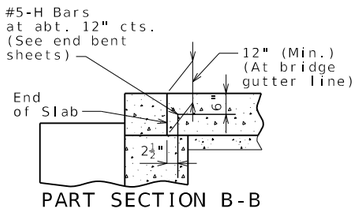
(1) 3-#4 Bars

(2) 9-#4 Bars

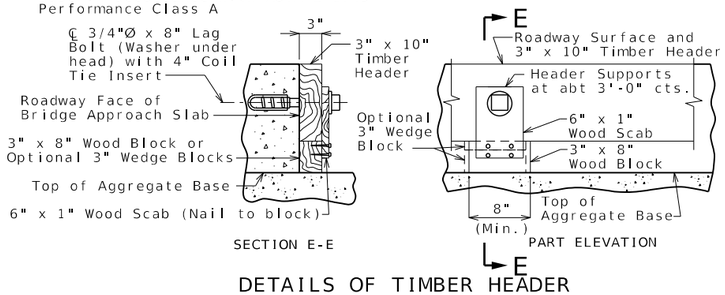
(3) ℄ 3/4" Jt. Filler

(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)

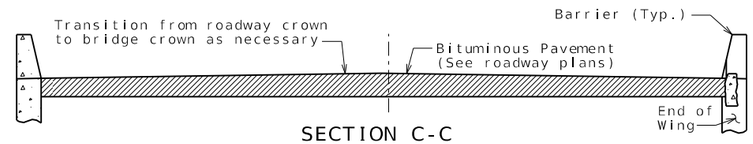


SECTION E-E

PART ELEVATION

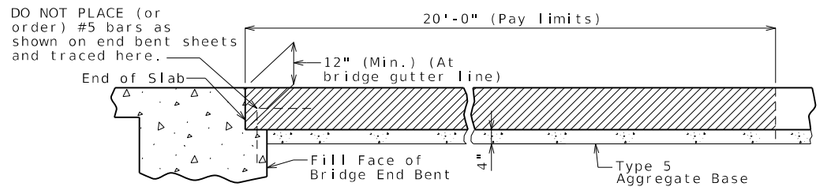
DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

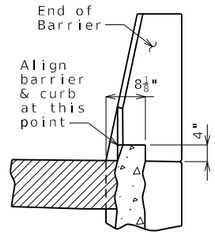


SECTION C-C

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.

Detailed Oct. 2024
Checked Nov. 2024

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

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024

ROUTE W | STATE MO

DISTRICT BR | SHEET NO. 27

COUNTY WORTH

JOB NO. JNW0020

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9468

DESCRIPTION | DATE

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

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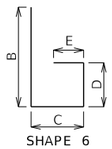
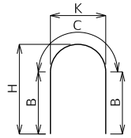
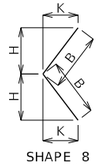


SHAPE 6
or 6S



SHAPE 7



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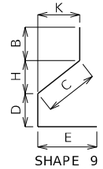
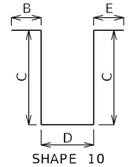
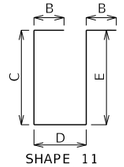
or 8S



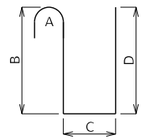
SHAPE 9
or 9S



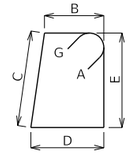
SHAPE 10
or 10S



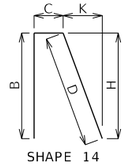
SHAPE 11
or 11S



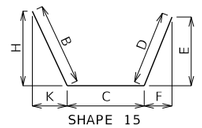
SHAPE 12



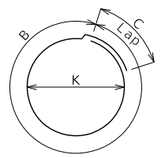
SHAPE 13S



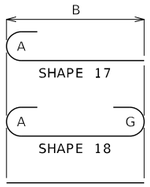
SHAPE 14
or 14S



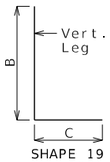
SHAPE 15
or 15S



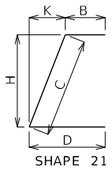
SHAPE 16



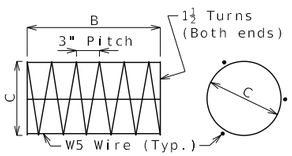
SHAPE 17
SHAPE 18
SHAPE 20



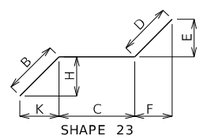
SHAPE 19
or 19S



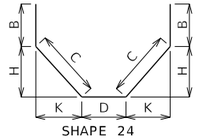
SHAPE 21
or 21S



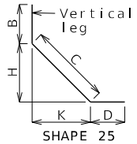
SHAPE 22



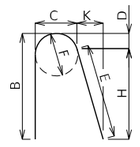
SHAPE 23
or 23S



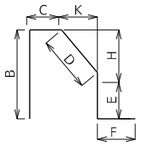
SHAPE 24
or 24S



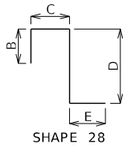
SHAPE 25
or 25S



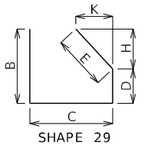
SHAPE 26



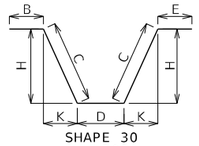
SHAPE 27S



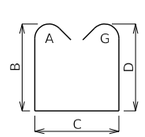
SHAPE 28
or 28S



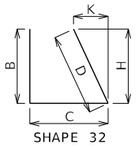
SHAPE 29
or 29S



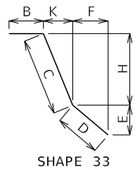
SHAPE 30
or 30S



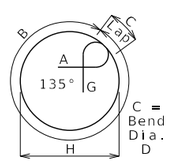
SHAPE 31S



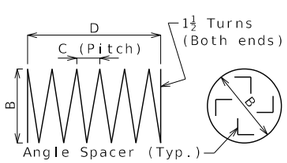
SHAPE 32
or 32S



SHAPE 33
or 33S



SHAPE 34S



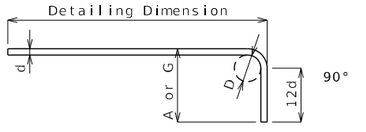
SHAPE 35 (1)

SHAPE 36

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3¾"	10"	7"	5"
#6	1	4¼"	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"

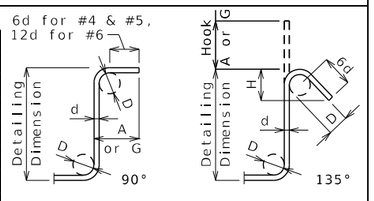


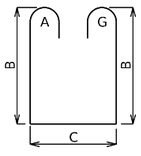
Stirrup Pin Bend Shapes (S)

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"	3⅝"	5"
#6	1	4½"	12"	7¾"	8¼"	4⅝"	6"

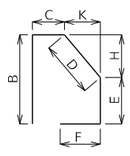
Applicable for all grades of steel.

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





SHAPE 37S



SHAPE 38S

BENDING DIAGRAMS

All dimensions are out to out.

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

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

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

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

Reinforcing Steel Totals (Pounds)

	Size	Substructure		Superstructure				Entire Bridge	
				Slab					
		Plain	Epoxy	Plain	Epoxy	Barrier	Slip Form	Plain	Epoxy
By Size	4	2,872	0	0	318	0	0	2,872	318
	5	1,560	0	0	21,246	15,451	589	1,560	37,286
	6	6,493	0	0	27,870	0	0	6,493	27,870
	7	0	0	0	1,316	0	0	0	1,316
	8	312	0	0	30,282	0	0	312	30,282
	9	2,760	0	0	0	0	0	2,760	0
	10	19,257	0	0	0	0	0	19,257	0
By Type		33,254	0	0	81,032	15,451	589	33,254	97,072

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 28
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DATE	DESCRIPTION

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

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

TREK DESIGN GROUP, LLC
1411 East 104th St.
Kansas City, MO 64131
Tel (816) 874-4855
Fax (816) 874-4875
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	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.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
		SUBSTRUCTURE																						
		INT. BENT NO. 2																						
14	6 D200	BEAM KEY		20		2	6.000													2	6	2	6	53
8	9 H200	BEAM		18		24	1.000													26	8	26	8	725
8	9 H201	BEAM		20		24	1.000													24	1	24	1	655
10	6 H202	BEAM		20		24	1.000													24	1	24	1	362
14	6 H203	BEAM		10				12.000	3 1.500											5	2	4	10	102
3	8 H204	WEB WALL		18		16	10.000													19	5	19	5	156
52	5 H205	WEB WALL		20		15	10.000													15	10	15	10	859
4	5 H206	BEAM		20		4	9.000													4	9	4	9	20
28	10 V200	COLUMN		17		23	2.000													24	8	24	8	2972
28	10 V201	SHAFT		20		9	2.000													9	2	9	2	1104
28	10 V202	SOCKET/SHAFT		20		46	9.000													46	9	46	9	5633
25	6 U200	BEAM		13		3	3.000	3	9.000 3 3.000	3	9.000									15	3	14	9	554
24	6 U201	BEAM		13		2	2.000	3	9.000 2 2.000	3	9.000									13	1	12	7	454
12	6 U202	BEAM		10				3	9.000 3 3.000											10	9	10	5	188
9	6 U203	BEAM		10					12.000 3 3.000											5	3	4	11	66
24	6 U204	WEB WALL		10				21	9.000 21.000											45	3	45	0	1622
20	4 P200	COLUMN		16		8	7.750	2	5.000									2	9.000	11	1	11	1	148
150	4 P201	SOCKET/SHAFT		16		10	2.500	2	5.000									2	9.000	12	8	12	8	1269
		INT. BENT NO. 3																						
14	6 D300	BEAM KEY		20		2	6.000													2	6	2	6	53
8	9 H300	BEAM		18		24	1.000													26	8	26	8	725
8	9 H301	BEAM		20		24	1.000													24	1	24	1	655
10	6 H302	BEAM		20		24	1.000													24	1	24	1	362
14	6 H303	BEAM		10				12.000	3 1.500											5	2	4	10	102
3	8 H304	WEB WALL		18		16	10.000													19	5	19	5	156
40	5 H305	WEB WALL		20		15	10.000													15	10	15	10	661
4	5 H306	BEAM		20		4	9.000													4	9	4	9	20
28	10 V300	COLUMN		17		18	10.000													20	4	20	4	2450
28	10 V301	SHAFT		20		9	2.000													9	2	9	2	1104
28	10 V302	SOCKET/SHAFT		20		49	9.000													49	9	49	9	5994
25	6 U300	BEAM		13		3	3.000	3	9.000 3 3.000	3	9.000									15	3	14	9	554
24	6 U301	BEAM		13		2	2.000	3	9.000 2 2.000	3	9.000									13	1	12	7	454
12	6 U302	BEAM		10				3	9.000 3 3.000											10	9	10	5	188
9	6 U303	BEAM		10					12.000 3 3.000											5	3	4	11	66
24	6 U304	WEB WALL		10				17	6.000 21.000											36	9	36	5	1313
16	4 P300	COLUMN		16		8	7.750	2	5.000									2	9.000	11	1	11	1	118
158	4 P301	SOCKET/SHAFT		16		10	2.500	2	5.000									2	9.000	12	8	12	8	1337
		SUPERSTRUCTURE																						
		END BENT 1																						
10	6 F100	WING BRACE	E	23		2	3.000	4	10.500 1 2.000		10.750		9.000	1	8.750	1	5.250	8	3	8	2	123		
4	6 F101	DIAPHRAGM	E	6		2	8.750	5	5.750					2	8.250		5.750	8	3	8	1	49		
10	6 F102	WING BRACE	E	23		2	3.000	5	9.000 1 2.000		10.750		9.000	1	8.750	1	5.250	9	2	9	1	136		
4	6 F103	DIAPHRAGM	E	6		2	8.750	5	5.750					2	8.250		5.750	8	3	8	0	48		

Bill of Reinforcing Steel

No. Req.	Size/ Mark	LOCATION	Codes C	SH	V	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.	Nom. Length ft	Nom. Length in.	Actual Length ft	Actual Length in.	Weight lb
4	6 H100	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	161
12	7 H101	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	658
6	6 H102	DIAPHRAGM	E	20		8	10.500													8	10	8	10	80
2	6 H103	DIAPHRAGM	E	20		6	1.500													6	1	6	1	18
6	6 H104	DIAPHRAGM	E	20		3	4.500													3	4	3	4	30
16	8 H105	DIAPHRAGM	E	20		2	0.000													2	0	2	0	85
16	8 H106	WING	E	20		12	6.750													12	6	12	6	534
40	6 H107	WING	E	20		11	9.500													11	10	11	10	711
24	5 H108	DIAPHRAGM	E	19		2	0.000	1	3.000											3	3	3	2	79
3	5 H109	STRAND TIE	E	23		1	3.000	3	2.500 1 3.000		2.500	1	2.750		2.500	1	2.750			5	9	5	8	18
10	5 U100	BEAM	E	31		4	6.125	2	9.500 4 6.125											12	9	12	7	131
21	5 U101	BEAM	E	13		2	9.500	2	8.000 2 9.500	2	8.000									11	10	11	6	252
33	6 U103	DIAPHRAGM	E	19		3	2.875	4	7.000											7	10	7	8	380
18	6 U104	DIAPHRAGM	E	19		3	1.625	2	9.500											5	11	5	9	155
18	5 U105	DIAPHRAGM	E	31		3	11.000	2	3.375 3 11.000											11	1	10	10	203
16	5 V100	BEAM & DIAPHRAGM	E	17		4	6.125													5	1	5	1	85
15	6 V101	DIAPHRAGM	E	20		3	0.625													3	0	3	0	68
2	6 V102	WING	E	20		7	9.375													7	9	7	9	23
20	6 V103	WING	E	20	V	7	3.750													7	3	7	3	224
		INC = 0.500 INCH				7	8.750													7	8	7	8	
2	6 V104	WING	E	20		7	11.750													7	11	7	11	24
20	6 V105	WING	E	20	V	7	6.250													7	6	7	6	232
		INC = 0.500 INCH				7	11.250													7	11	7	11	
		DIAPHRAGM AT INT. BENTS 2 & 3																						
8	6 H500	DIAPHRAGM	E	20		6	1.750													6	1	6	1	73
16	4 H501	DIAPHRAGM	E	20		8	6.500													8	6	8	6	91
8	6 H502	DIAPHRAGM	E	20		8	6.500													8	6	8	6	102
8	5 H503	DIAPHRAGM	E	6		4	5.000	10.500												5	3	5	2	43
32	5 H504	DIAPHRAGM	E	6		4	10.000	10.500												7	0	6	9	225
8	5 H505	STRAND TIE	E	20		4	5.500													4	6	4	6	38
4	5 H506	STRAND TIE	E	20		5	8.500													5	9	5	9	24
48	4 U500	DIAPHRAGM	E	28				1	11.000 3 9.500	1	6.000									7	3	7	1	227
32	6 U501	DIAPHRAGM	E	28				1	11.000 3 0.500	2	1.750									7	2	6	10	328
16	6 U502	DIAPHRAGM	E	28				1	11.000 3 9.500	2	1.750									7	11	7	7	182
16	5 V500	DIAPHRAGM	E	20		4	1.000													4	1	4	1	68
		END BENT 4																						
9	6 F400	WING BRACE	E	23		2	3.000	4	10.500 1 2.000		10.750		9.000	1	8.750	1	5.250	8	3	8	2	110		
4	6 F401	DIAPHRAGM	E	6		2	8.750	5	5.750						8.250		5.750	8	3	8	1	49		
9	6 F402	WING BRACE	E	23		2	3.000	5	9.000 1 2.000		10.750		9.000	1	8.750	1	5.250	9	2	9	1	123		
4	6 F403	DIAPHRAGM	E	6		2	8.750	5	5.750						8.250		5.750	8	3	8	0	48		
4	6 H400	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	161
12	7 H401	BEAM & DIAPHRAGM	E	20		26	10.000													26	10	26	10	658
6	6 H402	DIAPHRAGM	E	20		8	10.500													8	10	8	10	80
2	6 H403	DIAPHRAGM	E	20		6	1.500													6	1	6	1	18
6	6 H404	DIAPHRAGM	E	20		3	4.500													3	4	3	4	30
16	8 H405	DIAPHRAGM	E	20		2	0.000													2	0	2	0	85
16	8 H406	WING	E	20		12	6.750													12	6	12	6	534
36	6 H407	WING	E	20		11	9.500													11	10	11	10	640
24	5 H408	DIAPHRAGM	E	19		2	0.000	1	3.000											3	3	3	2	79
3	5 H409	STRAND TIE	E	23		1	3.000	3	2.500 1 3.000		2.500	1	2.750		2.500	1	2.750			5	9	5	8	18

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

For bending diagrams and steel reinforcing totals, see Sheet No. _.

Detailed Oct. 2024
Checked Nov. 2024

All bars shall be Grade 60.

BILL OF REINFORCING STEEL

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

Sheet No. 29 of 36

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.

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY ISSUED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 29
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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

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

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
						ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	lb
10	5 U400	BEAM	E	31		4 5.625	2 9.500	4 5.625					12 8	12 6	130
21	5 U401	BEAM	E	13		2 9.500	2 8.000	2 9.500	2 8.000				11 10	11 6	252
33	6 U403	DIAPHRAGM	E	19		3 3.500	4 7.000						7 10	7 9	384
18	6 U404	DIAPHRAGM	E	19		2 11.000	2 9.500						5 8	5 6	149
18	5 U405	DIAPHRAGM	E	31		3 10.000	2 3.375	3 10.000					10 11	10 8	200
16	5 V400	BEAM & DIAPHRAGM	E	17		4 5.625							5 1	5 1	85
15	6 V401	DIAPHRAGM	E	20		2 11.000							2 11	2 11	66
2	6 V402	WING	E	20		6 11.875							6 11	6 11	21
20	6 V403	WING	E	20	V	7 0.125							7 0	7 0	214
		INC = 0.375 INCH				7 3.375							7 3	7 3	
2	6 V404	WING	E	20		7 1.375							7 1	7 1	21
20	6 V405	WING	E	20	V	6 10.625							6 10	6 10	209
		INC = 0.375 INCH				7 1.875							7 1	7 1	
		SLAB													
18	6 S1	SLAB	E	20	V	2 8.000							2 8	2 8	379
		INC = 34.000 INCH				25 4.250							25 4	25 4	
555	6 S2	SLAB	E	20		26 5.000							26 5	26 5	22021
138	8 S3	SLAB	E	20		51 0.000							51 0	51 0	18791
80	8 S4	SLAB	E	20		42 0.000							42 0	42 0	8971
18	5 S5	SLAB	E	20	V	2 4.000							2 4	2 4	257
		INC = 34.000 INCH				25 0.000							25 0	25 0	
444	5 S6	SLAB	E	20		26 5.000							26 5	26 5	12233
132	5 S7	SLAB	E	20		49 6.500							49 7	49 7	6826
16	8 S8	SLAB	E	20		30 0.000							30 0	30 0	1282
		TYPE D BARRIER													
558	5 R1	BARRIER	E	26		3 3.000	5.500	3 3.625			3 3.000	6.750	6 10	6 9	3928
558	5 R2	BARRIER	E	19		20.500	9.500						2 6	2 5	1406
558	5 R3	BARRIER	E	27			9.500	15.500	5.000	12.000	15.000	3.000	3 6	3 4	1940
80	5 R4	BARRIER	E	20		11 9.000							11 9	11 9	980
40	5 R5	BARRIER	E	20		39 11.000							39 11	39 11	1665
40	5 R6	BARRIER	E	20		44 7.000							44 7	44 7	1860
40	5 R7	BARRIER	E	20		34 10.000							34 10	34 10	1453
20	5 K1	BARRIER	E	27		3 8.000	9.250	5.375	3 2.750		5.250	1.000	8 0	7 11	165
68	5 K2	BARRIER	E	27		3 8.000	9.250	14.500	2 5.750		14.250	2.750	8 2	7 11	561
4	5 K3	BARRIER	E	27		3 8.000	9.250	14.375	8.000	12.000	14.125	2.750	5 6	5 2	22
20	5 K4	BARRIER	E	19	V	2 4.250	10.000						3 2	3 1	66
		INC. = 0.500 INCH				2 6.250	10.000						3 4	3 3	
20	5 K5	BARRIER	E	14	V	8.250	9.500	18.500			4.000	18.000	3 0	2 11	63
		INC. = 0.500 INCH				8.250	9.500	20.500			4.500	20.000	3 2	3 1	
12	5 K6	BARRIER	E	19	V	2 6.750	10.000						3 5	3 4	42
		INC. = 0.500 INCH				2 7.750	10.000						3 6	3 5	
12	5 K7	BARRIER	E	21	V	2 6.625	10.000				2 6.000	6.250	3 5	3 3	41
		INC. = 0.500 INCH				2 7.625	10.000				2 7.000	6.500	3 6	3 4	
36	5 K8	BARRIER	E	19	V	2 8.500	10.000						3 7	3 5	138
		INC. = 0.750 INCH				3 2.500	10.000						4 1	3 11	
12	5 K9	BARRIER	E	21	V	2 8.500	10.000				2 7.750	6.750	3 7	3 5	46
		INC. = 0.750 INCH				3 2.500	10.000				3 1.750	7.750	4 1	3 11	
24	5 K10	BARRIER	E	19		3 3.000	10.000						4 1	4 0	100
24	5 K11	BARRIER	E	21		3 3.000	10.000				3 2.250	7.750	4 1	3 11	98
24	5 K12	BARRIER	E	20		12 9.500							12 9	12 9	319
12	5 K13	BARRIER	E	20	V	6 2.000							6 2	6 2	115
		INC. = 36.000 INCH				12 2.000							12 2	12 2	
24	5 K14	BARRIER	E	20		13 0.375							13 0	13 0	325
12	5 K15	BARRIER	E	20	V	6 5.750							6 5	6 5	118
		INC. = 36.000 INCH				12 5.750							12 5	12 5	

Bill of Reinforcing Steel

No. Req.	Size/ Mark	LOCATION	Codes C	SH	V	Dimensions B	C	D	E	F	H	K	Nom. Length	Actual Length	Weight
						ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	ft in.	lb
		SLIP FORM OPTION													
40	5 C1	BARRIER	E	20		12 0.000							12 0	12 0	501
8	5 C2	BARRIER	E	20		10 6.000							10 6	10 6	88

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.

BILL OF REINFORCING STEEL

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 30
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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

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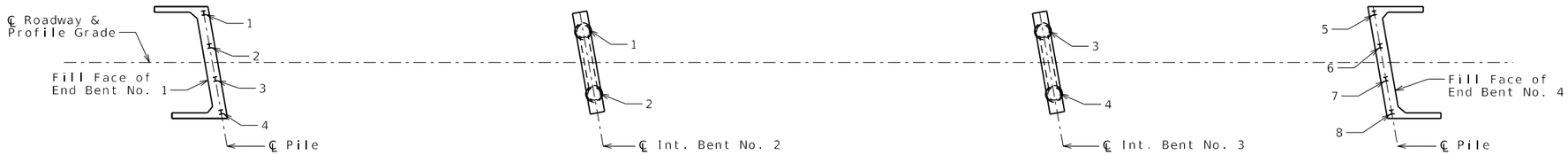

PART PLAN SHOWING PILE & DRILLED SHAFT NUMBERING FOR
RECORDING AS-BUILT PILE DATA & AS-BUILT DRILLED SHAFT DATA

As-Built Pile Data

Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 1
1					
2					
3					
4					
					End Bent No. 4
5					
6					
7					
8					

As-Built Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Intermediate Bent No. 2
1				
2				
				Intermediate Bent No. 3
3				
4				

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

This sheet to be completed by MoDOT construction personnel.

Detailed Oct. 2024
Checked Nov. 2024

AS-BUILT PILE AND DRILLED SHAFT DATA

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

B_A9468_031_JNW0020_Pile Data.dgn 1:20:07 PM 11/26/2024

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 31
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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Missouri Department of Transportation
Construction and Materials

BORING NO. B-101
Page 1 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 1 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549438.9 **Date of Work:** 05/29/24-05/29/24
Offset: **Easting:** 2772694.5 **Depth to Water:** 40.1
Elevation: 943.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-4.1' Brown, LEAN CLAY, medium stiff, moist	940						
5		4.1-6.0' Brown and gray, LEAN CLAY with sand, stiff, moist		X	93	2-3-6 (12)		PP = 1.75 tsf	MC = 17.4% γ_{sat} = 134 pcf[1] LL = 37 PL = 16
		6.0-8.8' Dark brown, LEAN CLAY, stiff, moist	935						
10		8.8-13.6' Light brown, LEAN CLAY trace fine gravel, moist		X	87	2-3-5 (10)		PP = 1.50 tsf	MC = 22.8% γ_{sat} = 127 pcf[1] LL = 41 PL = 19
			930						
15		13.6-20.0' Gray and tan, SAND, medium dense, moist 14.9-20.0' scattered Iron Manganese concretions		X	67	4-4-6 (13)			Sieve Analysis Sieve # % Passing 3/4" 100.0 3/8" 96.8 #4 94.0 #10 90.0 #16 87.0 #40 73.6 #50 48.7 #100 7.9 #200 4.6
			925						
20		20.0-27.6' Dark gray, LEAN CLAY trace fine gravel, stiff, moist, (Glacial Till)		X	0	6-6-9 (20)			
			920						
25				X	73	3-5-8 (17)		PP = 3.25 tsf	MC = 23.3% γ_{sat} = 127 pcf[1] LL = 49 PL = 21
		27.6-30.8' COBBLES, dense, Limestone Cobbles and Boulders	915						
30				X	33	30-15-23 (49)			
		30.8-53.2' Dark gray, LEAN CLAY trace fine gravel, very stiff, moist, (Glacial Till)	910						
35				X	93	9-6-7 (17)		PP = 2.75 tsf	MC = 20.5% γ_{sat} = 130 pcf[1]

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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

(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-101
Page 2 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 1 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549438.9 **Date of Work:** 05/29/24-05/29/24
Offset: **Easting:** 2772694.5 **Depth to Water:** 40.1
Elevation: 943.8 **Requested Northing:** **Depth Hole Open:**
Requested Station: **Requested Easting:** **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		30.8-53.2' Dark gray, LEAN CLAY trace fine gravel, very stiff, moist, (Glacial Till) *(continued)*							
			905						
40				X	93	4-5-7 (16)		PP = 2.50 tsf	MC = 22.1% γ_{sat} = 128 pcf[1]
			900						
45				X	100	4-6-11 (22)		PP = 2.50 tsf	MC = 21.1% γ_{sat} = 129 pcf[1]
			895						
50				X	100	5-8-5 (17)		PP = 2.25 tsf	MC = 20.7% γ_{sat} = 130 pcf[1]
		53.2-54.8' Shale, dark gray, highly weathered	890						
55				X	88	48-50/0.3"		PP = 9.00 tsf	
		54.8-67.4' Shale, dark gray, very weak rock, moderately weathered			100	100 (0)	Qu Test Results UCS = 15.0 ksf MC = 10.8% γ_{moist} = 142.3 pcf	PP = 5.00 tsf	
			885						
60					100	100 (48)	Qu Test Results UCS = 15.6 ksf MC = 11.1% γ_{moist} = 133.9 pcf		
		62.8-67.8' water used to extrude core.	880						
65					100	100 (36)	Qu Test Results UCS = 4.37 ksf MC = 18.2% γ_{moist} = 133.1 pcf		
		67.4-67.8' Fossiliferous Limestone, light gray slightly weathered Bottom of borehole at 67.8 feet.							

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SIG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

JEFF A. GARDNER NUMBER PE-2016019369 STATE OF MISSOURI PROFESSIONAL ENGINEER
THIS SHEET WAS BEING DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 32
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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

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Tel (816) 874-4665
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www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

BORING DATA

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

Detailed Oct. 2024
Checked Nov. 2024

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

Missouri Department of Transportation
Construction and Materials

BORING NO. B-203
Page 1 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 2 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 1549396.6 **Date of Work:** 06/04/24-06/04/24
Offset: **Easting:** 2772780.7 **Depth to Water:** 30.0
Elevation: 940.1 **Requested Northing:** 1549393.6 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772780.5 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.1' ASPHALT 0.1-0.6' CONCRETE 0.6-30.0' Air	940						
5			935						
10			930						
15			925						
20			920						
25			915						
30		30.0-31.0' Light tan black, SAND, very loose, wet 31.0-34.1' BOULDERS	910						
35		34.1-40.1' Gray, SAND, very loose, wet							

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-203
Page 2 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 2 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 1549396.6 **Date of Work:** 06/04/24-06/04/24
Offset: **Easting:** 2772780.7 **Depth to Water:** 30.0
Elevation: 940.1 **Requested Northing:** 1549393.6 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772780.5 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		34.1-40.1' Gray, SAND, very loose, wet *(continued)*	905		73	5-1-1 (3)			
40		40.1-45.7' Gray, LEAN CLAY scattered gravel, very stiff, moist	900		73	3-7-8 (20)		PP = 2.25 tsf	MC = 21.4% γ_{sat} = 129 pcf(1) LL = 36 PL = 19
45		45.7-55.1' Shale, gray, very weak rock, highly weathered	895		73	5-8-13 (28)		PP = 7.50 tsf	MC = 16.4% γ_{sat} = 135 pcf(1)
50			890		100 13 (0)	37/0.1', 10/0'		PP = 7.50 tsf	
55		55.1-60.1' Shale, gray, very weak rock, moderately weathered	885		100 0 (0)	37/0.1', 10/0'	Qu Test Results UCS = 2.54 ksf MC = 12.9% γ_{moist} = 124 pcf	PP = 7.50 tsf	
60		60.1-85.1' Calcareous Shale, gray, medium strong rock, moderately weathered to slightly weathered	880		100 66 (12)				
65			875		100 64 (32)		Qu Test Results UCS = 226 ksf MC = 7.3% γ_{moist} = 151.1 pcf Qu Test Results UCS = 122 ksf MC = 7.3% γ_{moist} = 151.1 pcf		
70					100 (60)		Qu Test Results UCS = 193 ksf MC = 6.1% γ_{moist} = 154.4		

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

LETTER BOREHOLE_MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SIG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED, DATED AND SEALED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 33
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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

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

Detailed Oct. 2024
Checked Nov. 2024

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

Missouri Department of Transportation
Construction and Materials

BORING NO. B-203
Page 3 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 2 **Logged By:** Ricardo Todd **Operator:** Bradley Wadlow
Station: **Northing:** 1549396.6 **Date of Work:** 06/04/24-06/04/24
Offset: **Easting:** 2772780.7 **Depth to Water:** 30.0
Elevation: 940.1 **Requested Northing:** 1549393.6 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772780.5 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: G-9462 **Hammer Efficiency:** 81% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		60.1-85.1' Calcarecus Shale, gray, medium strong rock, moderately weathered to slightly weathered *(continued)*	870						
75			865		100 (88)		pcf Qu Test Results UCS = 334 ksf MC = 4.8% γ_{moist} = 156.3 pcf Qu Test Results UCS = 346 ksf MC = 6.3% γ_{moist} = 157.1 pcf		
80			860		100 (70)		Qu Test Results UCS = 455 ksf MC = 5.5% γ_{moist} = 156.7 pcf Qu Test Results UCS = 163 ksf MC = 7.3% γ_{moist} = 151.4 pcf		
85		Bottom of borehole at 85.1 feet.	855		100 (90)		Qu Test Results UCS = 153 ksf MC = 8.1% γ_{moist} = 149.7 pcf Qu Test Results UCS = 113 ksf MC = 8.9% γ_{moist} = 148.8 pcf Qu Test Results UCS = 143 ksf MC = 9.1% γ_{moist} = 147.7 pcf		

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. B-301
Page 1 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 3 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549388.2 **Date of Work:** 06/11/24-06/11/24
Offset: **Easting:** 2772888.8 **Depth to Water:** 31.2
Elevation: 935.8 **Requested Northing:** 1549392.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772889.0 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55LC ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: Rig #360485 **Hammer Efficiency:** 84.7% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-0.1' ASPHALT	935						
		0.1-0.6' CONCRETE							
5		0.6-28.0' Air	930						
10			925						
15			920						
20			915						
25			910						
30		28.0-31.2' Dark brownish gray, LEAN CLAY, soft to medium stiff, moist	905						
		30.5' switched to mud rotary after spt							
35		31.2-42.0' Dark gray, SAND, very loose, wet, fine grained, poorly graded		20		2-0-0 (0)			
				40		2-1-1			

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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

(Continued Next Page)

LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 34
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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

BORING DATA

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

Detailed Oct. 2024
Checked Nov. 2024

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

Missouri Department of Transportation
Construction and Materials

BORING NO. B-301
Page 2 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 3 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549388.2 **Date of Work:** 06/11/24-06/11/24
Offset: **Easting:** 2772888.8 **Depth to Water:** 31.2
Elevation: 935.8 **Requested Northing:** 1549392.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772889.0 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55LC ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: Rig #360485 **Hammer Efficiency:** 84.7% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		31.2-42.0' Dark gray, SAND, very loose, wet, fine grained, poorly graded *(continued)*	900			(3)			
40			895		20	3-2-1 (4)			
		42.0-44.5' Dark gray, LEAN CLAY, stiff, (completely weathered shale)							
45		44.5-44.8' Shale, dark gray, thinly laminated, moderately weathered			93	31-37/0.3'		PP = 9.00 tsf	
		44.8-59.4' Shale, dark gray, very weak rock, slightly weathered	890		100 (94)		Qu Test Results UCS = 8.89 ksf MC = 13% γ_{moist} = 140 pcf		
50			885		100 (46)		Qu Test Results UCS = 15.1 ksf MC = 11.1% γ_{moist} = 140.2 pcf		
55			880		100 (52)		Qu Test Results UCS = 4.46 ksf MC = 12.2% γ_{moist} = 138.6 pcf		
60		59.4-60.1' Limestone, light gray, thin bedded, slightly weathered	875		100 (76)		Qu Test Results UCS = 4.09 ksf MC = 17.9% γ_{moist} = 133.1 pcf		
		60.1-61.9' Shale, dark gray, very weak rock, slightly weathered							
65		61.9-74.8' Calcareous Shale, light gray, medium bedded, weak rock to medium strong rock	870		100 (96)		Qu Test Results UCS = 50.8 ksf MC = 9.9% γ_{moist} = 145.7 pcf Qu Test Results UCS = 71.7 ksf MC = 7.6% γ_{moist} = 148.3 pcf		
70							Qu Test Results UCS = 185 ksf MC = 6.6% γ_{moist} = 153 pcf		

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. B-301
Page 3 of 3

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 3 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549388.2 **Date of Work:** 06/11/24-06/11/24
Offset: **Easting:** 2772888.8 **Depth to Water:** 31.2
Elevation: 935.8 **Requested Northing:** 1549392.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772889.0 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55LC ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Offset to avoid bridge cross member
Drill No.: Rig #360485 **Hammer Efficiency:** 84.7% **Drilling Method:** Casing Advancer

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
70		61.9-74.8' Calcareous Shale, light gray, medium bedded, weak rock to medium strong rock *(continued)*	865		100 (96)		Qu Test Results UCS = 125 ksf MC = 8.8% γ_{moist} = 151.1 pcf		
		Bottom of borehole at 74.8 feet.							

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SG\GINT\PROJECT FILES\NW0020-A9468_WORTH_RTW_WFORKGRANDRIVER.GPJ

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 35
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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

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Tel (816) 874-4655
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www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

BORING DATA

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

Detailed Oct. 2024
Checked Nov. 2024

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

Missouri Department of Transportation
Construction and Materials

BORING NO. B-403
Page 1 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 4 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549351.2 **Date of Work:** 05/30/24-06/04/24
Offset: **Easting:** 2772965.4 **Depth to Water:** 24.2
Elevation: 932.3 **Requested Northing:** 1549349.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772965.3 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake (offset by surveyor just north of requested location)
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
0		0.0-2.2' Light brown, LEAN CLAY, medium stiff, dry	930						
		2.2-9.7' Dark brown mottled dark gray, LEAN CLAY, soft, moist							
5					20	2-1-2 (4)		PP = 0.25 tsf	MC = 24.1% γ_{dd} = 126 pcf[1]
			925						
10		9.7-14.3' Dark gray, SILTY LEAN CLAY scattered wood fragments, medium stiff, moist			80	2-3-4 (9)		PP = 1.75 tsf	MC = 28.2% γ_{dd} = 122 pcf[1] LL = 28 PL = 21
			920						
15		14.3-24.0' Grayish brown to light tan, SAND scattered lean clay, loose, moist			80	2-2-3 (7)			
			915						
20					80	2-2-2 (5)			
			910						
25		24.0-29.5' Gray to tan, trace fine gravel, loose, wet			73	1-2-2 (5)			
			905						
30		29.5-46.0' Dark gray, SAND with lean clay, medium dense to loose, wet			60	3-3-3 (8)			
			900						
35						0-1-2			Sieve Analysis Sieve # % Passing 3/4" 100.0 3/8" 99.6 #4 99.4

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

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(Continued Next Page)

Missouri Department of Transportation
Construction and Materials

BORING NO. B-403
Page 2 of 2

Job No.: NW0020-A9468 **County:** Worth **Route:** W
Design: A9468 **Skew:** 10 RA **Location:** Over W. Fork Grand River
Bent: 4 **Logged By:** Matthew Kistler **Operator:** Josh Starkey
Station: **Northing:** 1549351.2 **Date of Work:** 05/30/24-06/04/24
Offset: **Easting:** 2772965.4 **Depth to Water:** 24.2
Elevation: 932.3 **Requested Northing:** 1549349.2 **Depth Hole Open:**
Requested Station: **Requested Easting:** 2772965.3 **Time Change:** At Time of Drilling
Requested Offset: **Equipment:** PPI CME 55S/N ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** On Stake (offset by surveyor just north of requested location)
Drill No.: Rig #408095 **Hammer Efficiency:** 78% **Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Data	Field Tests	Index Tests
35		29.5-46.0' Dark gray, SAND with lean clay, medium dense to loose, wet *(continued)*	895		93	(4)			#10 96.9 #16 94.7 #40 57.2 #50 28.6 #100 10.9 #200 9.0
40		39.2' sand heaved before SPT could be performed 40.0' switch to mud rotary	890						
45					13	4-3-4 (9)			
		46.0-48.9' Shale, dark gray, completely weathered to highly weathered	885		93	24-36/0.3', 10/0"		PP = 9.00 tsf	
50		48.9-54.0' Shale, dark gray, very weak rock, moderately weathered to slightly weathered			100 (65)		Qu Test Results UCS = 6.42 ksf MC = 12.8% γ_{moist} = 140 pcf	PP = 9.00 tsf	
			880		94 (42)		Qu Test Results UCS = 6.30 ksf MC = 14.4% γ_{moist} = 137.5 pcf		
55		54.0-55.1' Fossiliferous Limestone, light gray, thin bedded, slightly weathered							
		55.1-60.1' Shale, dark gray, weak rock, slightly weathered	875		100 (90)		Qu Test Results UCS = 65.4 ksf MC = 10.6% γ_{moist} = 145.6 pcf		
60		Bottom of borehole at 60.1 feet.							

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

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri West **Coordinate Proj. Factor:** 1.0000983827
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LETTER BOREHOLE - MODOT_20151118.GDT - 7/31/24 14:56 - Z:\SGG\INT\PROJECT FILES\NW0020-A9468_WORTH_RTW_W FORK GRAND RIVER.GPJ

BORING DATA

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

Detailed Oct. 2024
Checked Nov. 2024

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

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED, DATED AND SEALED ELECTRONICALLY.

DATE PREPARED 11/26/2024
ROUTE W | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY WORTH
JOB NO. JNW0020
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9468

DESCRIPTION | DATE

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

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