DESIGN DESIGNATION

A.A.D.T. - 2020 = 1651
A.A.D.T. - 2040 = 2477
D.H.V. = 10%
T = 3.4%
V = 55 M.P.H.
D = 50%

FUNCTIONAL CLASSIFICATION- RURAL MAJOR COLLECTOR

NO NEW R/W

CONVENTIONAL SYMBOLS

(USED IN PLANS)

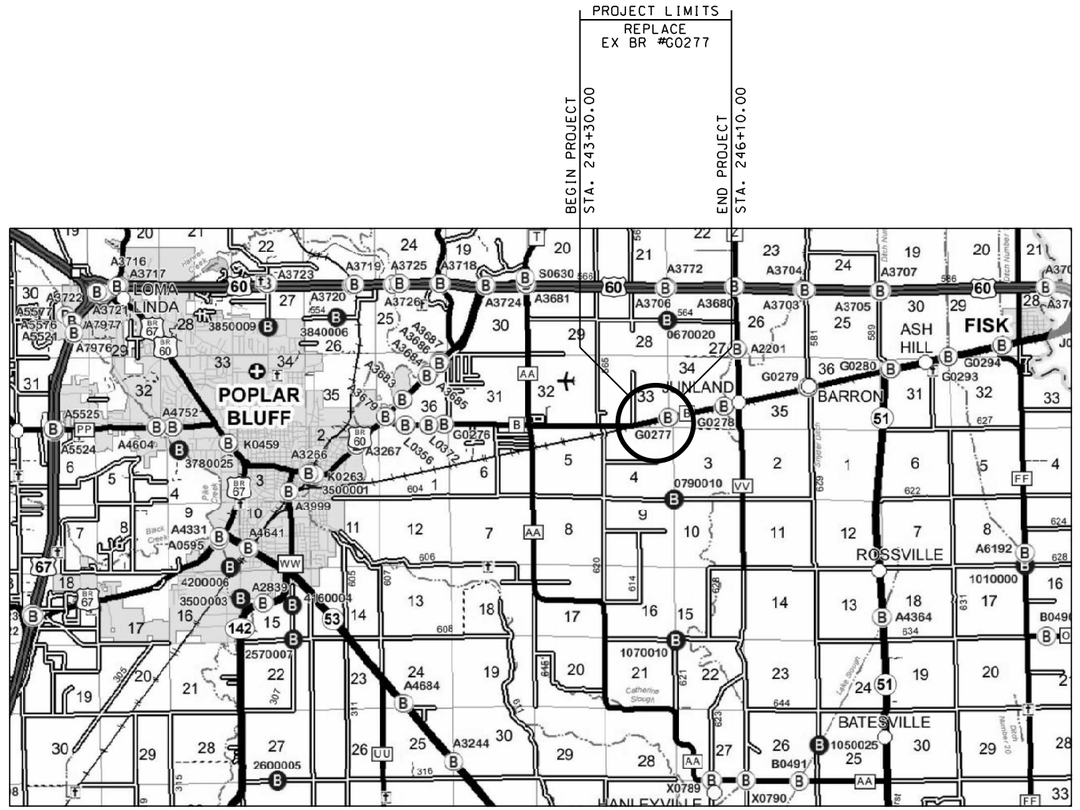
	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
GUARD CABLE		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	-FO-	-FO-
OVERHEAD CABLE TV	-OTV-	-OTV-
UNDERGROUND CABLE TV	-UTV-	-UTV-
OVERHEAD TELEPHONE	-OT-	-OT-
UNDERGROUND TELEPHONE	-UT-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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
PLANS FOR PROPOSED
STATE HIGHWAY B
BUTLER COUNTY

KEY MAP
SHOWING LOCATION OF COUNTY

NOT TO SCALE



S33 T25N R7E / S34 T25N R7E

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

INDEX OF SHEETS

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 243+30.00	
END OF PROJECT	STA. 246+10.00	
APPARENT LENGTH	280.00	FEET
EQUATIONS AND EXCEPTIONS:		
TOTAL CORRECTIONS	0	FEET
NET LENGTH OF PROJECT	280.00	FEET
STATE LENGTH	0.053	MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	0.50	ACRES

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 6/20/2024
ROUTE: B | STATE: MO
DISTRICT: SE | SHEET NO.: 1
COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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)

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166
Collinsville: 1 Mark Twain Circle, Suite 1, Collinsville, IL 62234, 618.346.2200
Belleville: 1 South Church, Suite 200, Belleville, IL 62220, 618.346.2200
St. Louis: 520 Clark Ave., Suite 700, St. Louis, MO 63101, 314.588.8381
St. Charles: 820 South Main, Suite 299, St. Charles, MO 63301, 636.493.0077
www.oatesassociates.com

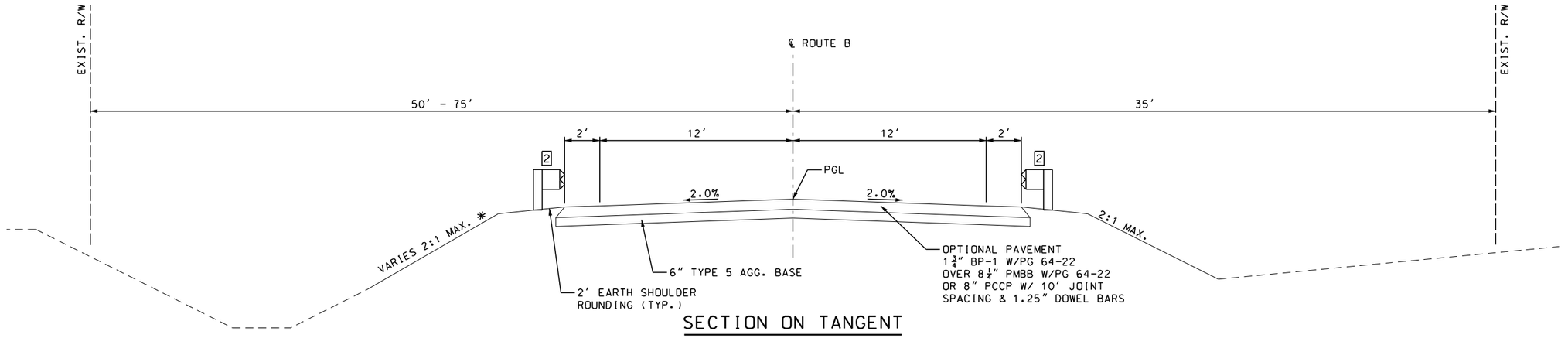
H:\P\221097 - BB ISE District\001-J9S3606-RteB-G0277\CADD\Microstation\CADD Drawings\001_TL_J9S3606_.dgn 3:17:11 PM 6/20/2024

✳ ROCK BLANKET NOTE: FORESLOPE IN THE N.E. QUADRANT FROM STA. 245+12 TO STA. 245+82, A 2′ ROCK BLANKET WITH PERMANENT EROSION CONTROL GEOTEXTILE WILL BE REQUIRED. SEE EROSION CONTROL SHEETS AND CROSS SECTIONS.

TYPICAL SECTION NOTES

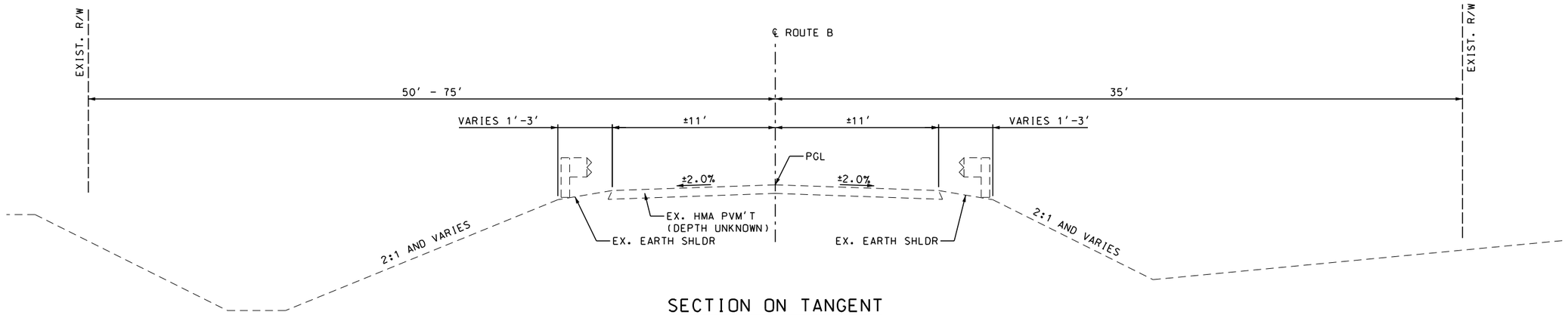
[1] BRIDGE SLABS
STA. 244+21.75 TO STA. 244+41.75
STA. 245+26.25 TO STA. 245+46.25

[2] GUARDRAIL
STA. 243+47 TO STA. 244+34 LT
STA. 244+23 TO STA. 244+42 RT
STA. 245+33 TO STA. 245+52 RT
STA. 245+33 TO STA. 245+52 LT



SECTION ON TANGENT

PROPOSED ROUTE B
STA. 243+30.00 TO STA. 246+10.00 [1]
(BRIDGE OMMISION STA. 244+41.75 TO STA. 245+26.25)



SECTION ON TANGENT

EXISTING ROUTE B
STA. 243+30.00 TO STA. 246+10.00
(BRIDGE OMMISION STA. 244+45.63 TO STA. 245+21.52)

TYPICAL SECTIONS
SHEET 1 OF 1

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
6/20/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	2

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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)

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166

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100 Corporate Court, Suite 1
Collinsville, IL 62234
618.345.2200

Belleville
1 South Church, Suite 200
Belleville, IL 62220
618.344.4888

St. Louis
701 Emerson Rd., Suite 390
St. Louis, MO 63101
314.588.8381

St. Charles
820 South Main, Suite 309
St. Charles, MO 63301
636.493.8277

www.oatesassociates.com

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REMOVAL OF IMPROVEMENTS

SHEET	ROADWAY	STATION	STATION	LOCATION	LENGTH (L.F.)	AREA (S.Y.)	EACH (EACH)	REMARKS
4	STATE HIGHWAY B	243+30			28.0			SAWCUT
4	STATE HIGHWAY B	243+30	244+45	LT/RT		343.0		PAVEMENT / APPROACH SLAB
4	STATE HIGHWAY B	243+58	244+46	LT	88.0			GUARDRAIL
4	STATE HIGHWAY B	244+26	244+45	RT	19.0			GUARDRAIL
4	STATE HIGHWAY B	245+22		RT			1	SIGN (OBJECT MARKER)
4	STATE HIGHWAY B	245+21	246+10	LT/RT		259.0		PAVEMENT / APPROACH SLAB
4	STATE HIGHWAY B	245+23	245+90	LT	94.0			GUARDRAIL
4	STATE HIGHWAY B	245+39		RT			1	SIGN (OBJECT MARKER)
4	STATE HIGHWAY B	245+56		RT			1	SIGN (OBJECT MARKER)
4	STATE HIGHWAY B	246+10			28.0			SAWCUT
				SUBTOTAL	257.0	602.0	3	
				PAY TOTAL	1 LUMP SUM			

ENTRANCES

SHEET	ROADWAY	STATION	LOCATION	GRAVEL (A) OR CRUSHED STONE (B) (TON)	REMARKS
4	STATE HIGHWAY B	244+05.00	RT	4.0	AGGREGATE
4	STATE HIGHWAY B	245+67.50	RT	3.0	AGGREGATE
4	STATE HIGHWAY B	246+10.00	LT	5.0	AGGREGATE
			SUBTOTAL	12.0	
			PAY TOTAL	12	

ENTRANCES NOTES:
1. ASSUMED 2 IN. OF AGGREGATE SURFACE QUANTITIES TO TRANSITION ENTRANCES.
2. ASSUMED 0.039 TON / SQYD / INCH

EARTHWORK

SHEET	ROADWAY	STATION	STATION	LOCATION	ESTIMATED CUT (C.Y.)	ESTIMATED FILL (C.Y.)	MODIFIED LINEAR GRADING CLASS 2 (STA.)	REMARKS
XS 1 - XS 2	STATE HIGHWAY B	243+30	244+22	LT/RT	13	120	0.9	WEST SIDE OF BR #A9215
XS 2 - XS 3	STATE HIGHWAY B	245+26	246+10	LT/RT	1	24	0.8	EAST SIDE OF BR #A9215
				SUBTOTAL	14	144	1.8	
				PAY TOTAL	0	0	1.8	

EARTHWORK NOTES:
1. CUT AND FILL VOLUMES PROVIDED FOR INFORMATION ONLY. INCLUDED IN COST OF MODIFIED LINEAR GRADING CLASS 2. EXCAVATION MATERIAL FROM CHANNEL MAY NOT BE SUITABLE FOR USE AS EMBANKMENT.

OPTIONAL PAVEMENT AND BASE

SHEET	ROADWAY	STATION	STATION	LOCATION	TYPE 5 AGGREGATE FOR BASE (6 IN. THICK) (S.Y)	OPTIONAL PAVEMENT (S.Y.)	REMARKS
4	STATE HIGHWAY B	243+30	244+22	LT/RT	286.0	286.0	WEST SIDE OF BR #A9215
4	STATE HIGHWAY B	245+46	246+10	LT/RT	199.0	199.0	EAST SIDE OF BR #A9215
				SUBTOTAL	485.0	485.0	
				PAY TOTAL	485	485.0	

PAVEMENT NOTES:
1. APPLICATION RATES USED FOR QUANTITY ESTIMATES ARE AS FOLLOWS:
   BP-1 1.948 TON/CU YD
   PMBB 1.943 TON/CU YD

ROCK BLANKET

SHEET	ROADWAY	STATION	STATION	LOCATION	FURNISHING TYPE 2 ROCK BLANKET (C.Y.)	PLACING TYPE 2 ROCK BLANKET (NOTE 2) (C.Y.)	ROCK BLANKET EXCAVATION (NOTE 2) (C.Y.)	PERMANENT EROSION CONTROL GEOTEXTILE FABRIC (S.Y.)	REMARKS
10	STATE HIGHWAY B	243+45	244+58	LT/RT	234.3	234.3	234.3	420.7	
10	STATE HGIHWAY B	245+03	245+82	LT/RT	255.2	255.2	255.2	455.4	
				SUBTOTAL	489.5	489.5	489.5	876.1	
				PAY TOTAL	490	490	0	876	

ROCK BLANKET NOTES:
1. ROCK QUANTITY MAY BE OBTAINED FROM REMOVED BRIDGE DECK IF BROKEN OR CRUSHED TO MEET SPECIFICATION WITH NO EXPOSED REBAR OR ASPHALT MATERIAL.
2. THE EXCAVATION QUANTITY SHOWN IS FOR INFORMATION ONLY. THE COST TO EXCAVATE THE SOIL FOR THE PLACEMENT OF THE ROCK BLANKET IS INCLUDED IN THE COST FOR PLACING TYPE 2 ROCK BLANKET.
3. THE EXCAVATION QUANTITY FOR ROCK BLANKET IS NOT INCLUDED IN THE EARTHWORK QUANTITIES. THE SUITABILITY OF THE MATERIAL FOR USE AS FILL MUST BE APPROVED BY THE ENGINEER.

CONTRACTOR FURNISHED SURVEYING AND STAKING

PAY TOTAL = 1 LUMP SUM

MOBILIZATION

PAY TOTAL = 1 LUMP SUM

SUMMARY OF QUANTITIES
SHEET 1 OF 3

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/2/2024
ROUTE B | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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)

OATES ASSOCIATES
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St. Charles: 820 South Main, Suite 399, St. Charles, MO 63301, 636.493.8277
Collinsville: 1000 Eastport Plaza Drive, Suite 1, Collinsville, IL 62234, 618.345.2200
Belleville: 1 South Church, Suite 200, Belleville, IL 62220, 618.344.4466
www.oatesassociates.com
MISSOURI DESIGN FIRM PE-001166

PERMANENT PAVEMENT MARKING - PAINT

SHEET	ROADWAY	STATION	STATION	LOCATION	4 IN. WHITE STANDARD WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS (L.F.)	4 IN. YELLOW STANDARD WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS (L.F.)	REMARKS
N/A	STATE HIGHWAY B	243+30	246+10	LT/RT	560		SOLID EDGE LINES
N/A	STATE HIGHWAY B	243+30	246+10	CL		70	DASHED CENTERLINE
				SUBTOTAL	560	70	
				PAY TOTAL	560	70	

PAVEMENT MARKING NOTES:

1. STATION RANGES ARE APPROXIMATE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER.

GUARDRAIL

SHEET	ROADWAY	STATION	STATION	LOCATION	MGS BRIDGE APPROACH TRANSITION SECTION (REGULAR/NO CURB) (EACH)	TYPE A CRASHWORTHY END TERMINAL (MASH) (EACH)	TYPE C CRASHWORTHY END TERMINAL (MASH) (EACH)	REMARKS
4	STATE HIGHWAY B	243+47	244+34	LT	1	1		NW CORNER OF BR #A9215
4	STATE HIGHWAY B	244+23	244+42	RT			1	SW CORNER OF BR #A9215
4	STATE HIGHWAY B	245+33	245+52	RT			1	SE CORNER OF BR #A9215
4	STATE HIGHWAY B	245+33	245+52	LT			1	NE CORNER OF BR #A9215
				SUBTOTAL	1	1	3	
				PAY TOTAL	1	1	3	

EROSION CONTROL

SHEET	ROADWAY	STATION	STATION	LOCATION	SILT FENCE (L.F.)	SEDIMENT REMOVAL (C.Y.)	TYPE 2D EROSION CONTROL BLANKET (S.Y)	TYPE C BERM (L.F.)	REMARKS
10	STATE HIGHWAY B	243+30	246+10	LT	143.0	1.4	26.0		
10	STATE HIGHWAY B	243+30	246+10	RT	119.0	1.2	63.0		
10	STATE HIGHWAY B	244+22	244+58	LT / RT				129.0	
10	STATE HIGHWAY B	245+03	245+73	L T/ RT				162.0	
				SUBTOTAL	262.0	2.6	89.0	291.0	
				PAY TOTAL	262	4	89	291	

POROUS BACKFILL

SHEET	ROADWAY	STATION	STATION	LOCATION	POROUS BACKFILL (C.Y.)	REMARKS
N/A	STATE HIGHWAY B	244+36	244+41	LT/RT	31.1	ASSUMED 5' X 28' X 6'
N/A	STATE HIGHWAY B	245+26	245+31	LT/RT	31.1	ASSUMED 5' X 28' X 6'
				SUBTOTAL	62.2	
				PAY TOTAL	62	

SEEDING

SHEET	ROADWAY	STATION	STATION	LOCATION	SEEDING - COOL SEASON GRASSES (ACRE)	MULCHING (ACRE)	REMARKS
4	STATE HIGHWAY B	243+30	246+10	LT / RT	1.00	1.00	
				SUBTOTAL	1.00	1.00	
				PAY TOTAL	1.00	1.00	

SUMMARY OF QUANTITIES
SHEET 2 OF 3

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/3/2024
ROUTE B | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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)

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166
St. Louis: 2100 Clark Ave. Suite 700, St. Louis, MO 63101, 314.588.8381
St. Charles: 820 South Main, Suite 399, St. Charles, MO 63301, 636.493.8277
Collinsville: 1 South Church, Suite 1, Collinsville, IL 62234, 618.345.2200
Belleville: 1 South Church, Suite 200, Belleville, IL 62220, 618.416.4566
www.oatesassociates.com

EFFECTIVE: 04-01-2024

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)
WO1-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT)
WO1-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
WO3-4	48X48	16.00						BE PREPARED TO STOP
WO3-5	48X48	16.00						SPEED LIMIT AHEAD
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
WO4-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00						MERGE (LEFT)
WO4-1aR	48X48	16.00						MERGE (RIGHT)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00						UNEVEN LANES
WO8-12	48X48	16.00						NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
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						DETOUR AHEAD
WO20-3	48X48	16.00	9	144.00			20	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						END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT)
MO4-9R	48X36	12.00						DETOUR (RIGHT)
M1-5a	24X24	4.00	5	20.00			20	STREET NAME (PLAQUE)
M5-1R	21X15	2.20	2	4.40			20	DETOUR ARROW (LEFT)
M5-1L	21X15	2.20	3	6.60			20	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			29	ROAD CLOSED
R11-3a	60X30	12.50	2	25.00			29A	ROAD CLOSED 1 MILE 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-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00						RATE OUR WORK ZONE
CONST-8	48X36	12.00						WORK ZONE NO PHONE ZONE
SPECIAL	96X48	32.00	2	64.00			56	RT B SHIELD CLOSED 2 MILES AHEAD

616-10.05 CONSTRUCTION SIGNS	TOTAL	284.00
616-10.10 RELOCATED SIGNS	TOTAL	0

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161008	4	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025		CHANNELIZER (TRIM LINE)
6161030	12	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	2	CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

SUMMARY OF QUANTITIES
SHEET 3 OF 3

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/2/2024
ROUTE B | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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)

St. Louis
Corporate Park 270
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St. Charles
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St. Charles, MO 63301
636.493.8277

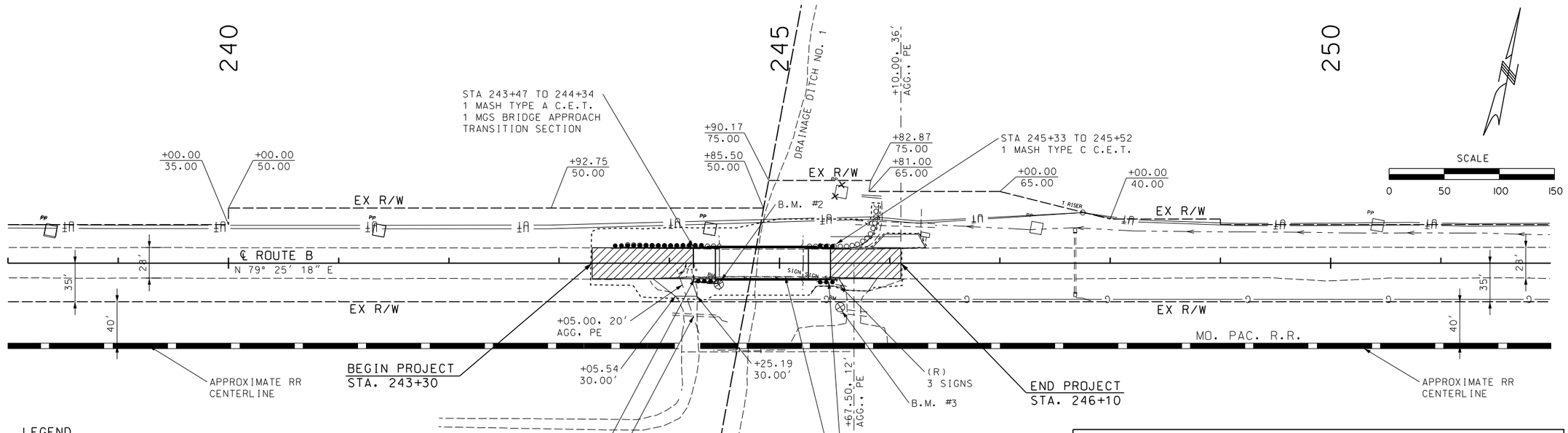
Collinsville
1 South Church, Suite 1
Collinsville, IL 62234
618.345.2200

Belleville
1 South Church, Suite 200
Belleville, IL 62220
618.344.4466

www.oatesassociates.com

MISSOURI DESIGN FIRM PE-001166

OATES ASSOCIATES



LEGEND

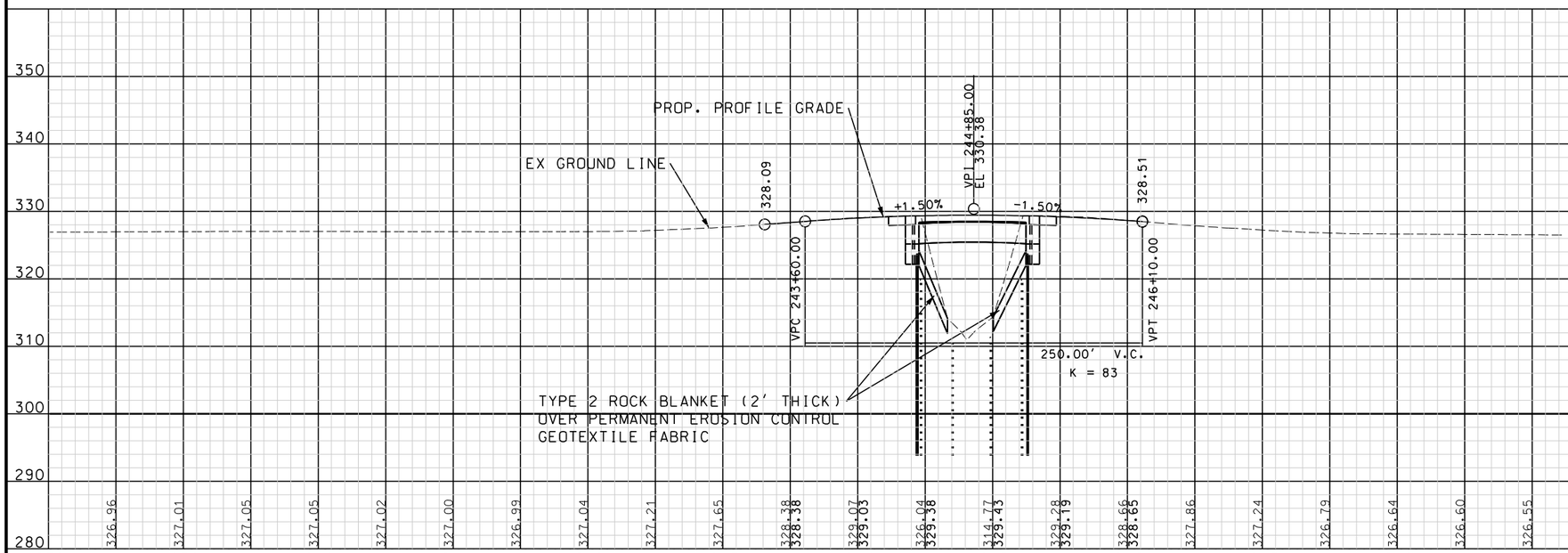
----- CONSTRUCTION LIMITS

▨ PAVEMENT REMOVAL

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

UTILITIES:

ELECTRIC	OZARK BORDER ELECTRIC COOP PO BOX 400 POPLAR BLUFF, MO 63902 CONTACT: JOHN WALKER PHONE: (573) 785-4631 CELL: (573) 300-1300	COMMUNICATIONS	AT&T DISTRIBUTION 601 VINE STREET POPLAR BLUFF, MO 63901 CONTACT: KEN LOVETTE PHONE: (573) 686-1152 CELL: (573) 300-0490
GAS	AMEREN MISSOURI GAS 45 SOUTH MINNESOTA CAPE GIRARDEAU, MO 63703 CONTACT: JOSH BEUSSINK PHONE: (573) 651-5640 CELL: (573) 579-6576	WATER	BULTER COUNTY PWSD 3 3129 HWY AA BROSELEY, MO 63932 CONTACT: BRIAN WILLIAMS PHONE: (573) 785-5571 CELL: (573) 718-8190



BENCHMARKS – USGS DATUM

B.M. #1 NAIL IN BASE OF POWER POLE
E 877864.3552
N 339368.1250
ELEV. 323.01
STA. 232+35, 30' LT

B.M. #2 CHISLED "D" ON SW WING WALL
E 879061.9875
N 339541.2959
ELEV. 325.11
STA. 244+45, 19' RT

B.M. #3 48" CMP END SECTION SE QUAD
E 897175.2770
N 339537.7100
ELEV. 323.36
STA. 245+55, 40' RT

B.M. #4 30" CMP ON N. SIDE OF RTE B
E 880023.8494
N 339770.1079
ELEV. 320.27
STA. 254+32, 29' LT

PLAN/PROFILE SHEET
SHEET 1 OF 1

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/3/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	4

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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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201 Progress Parkway
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St. Charles, MO 63301
636.493.8277
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618.345.2200
Belleville
1 South Church, Suite 200
Belleville, IL 62220
618.416.4488
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MISSOURI DESIGN FIRM PE-001166

REV.

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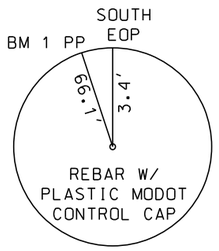

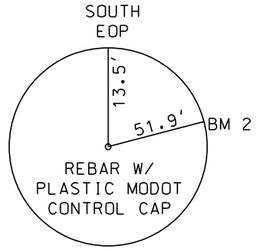

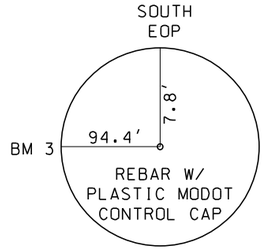

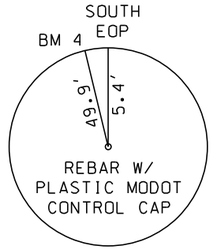

CONTROL PT #100
STA 232+82
OFFSET 16' RT
X-E = 877918.078
Y-N = 339330.778

CONTROL PT #101
STA 243+94
OFFSET 29' LT
X-E = 879014.007
Y-N = 339521.982

CONTROL PT #102
STA 246+48
OFFSET 22' RT
X-E = 879261.844
Y-N = 339575.760

CONTROL PT #103
STA 254+43
OFFSET 19' RT
X-E = 880043.534
Y-N = 339724.344

REFERENCE/COORDINATE POINTS SHEET
SHEET 1 OF 1

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
5/2/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	5

COUNTY
BUTLER

JOB NO.
J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9215

DESCRIPTION	DATE

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

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

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314.588.8381
St. Charles
820 South Main, Suite 399
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636.493.8277
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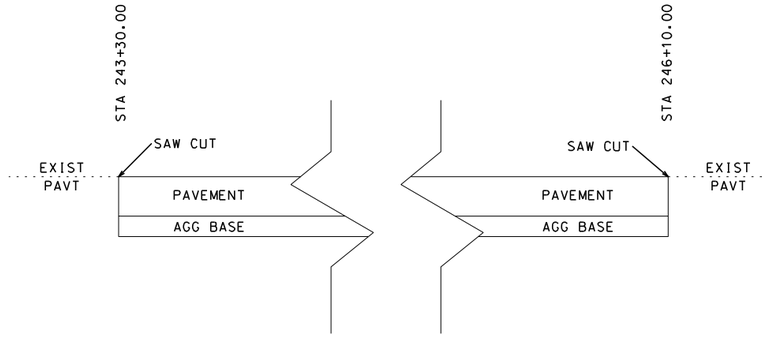
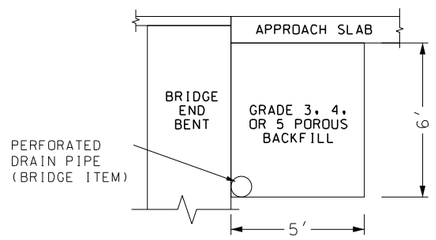


SAW CUT



POROUS BACKFILL

SPECIAL SHEETS
SHEET 1 OF 1

DATE PREPARED 5/2/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	6

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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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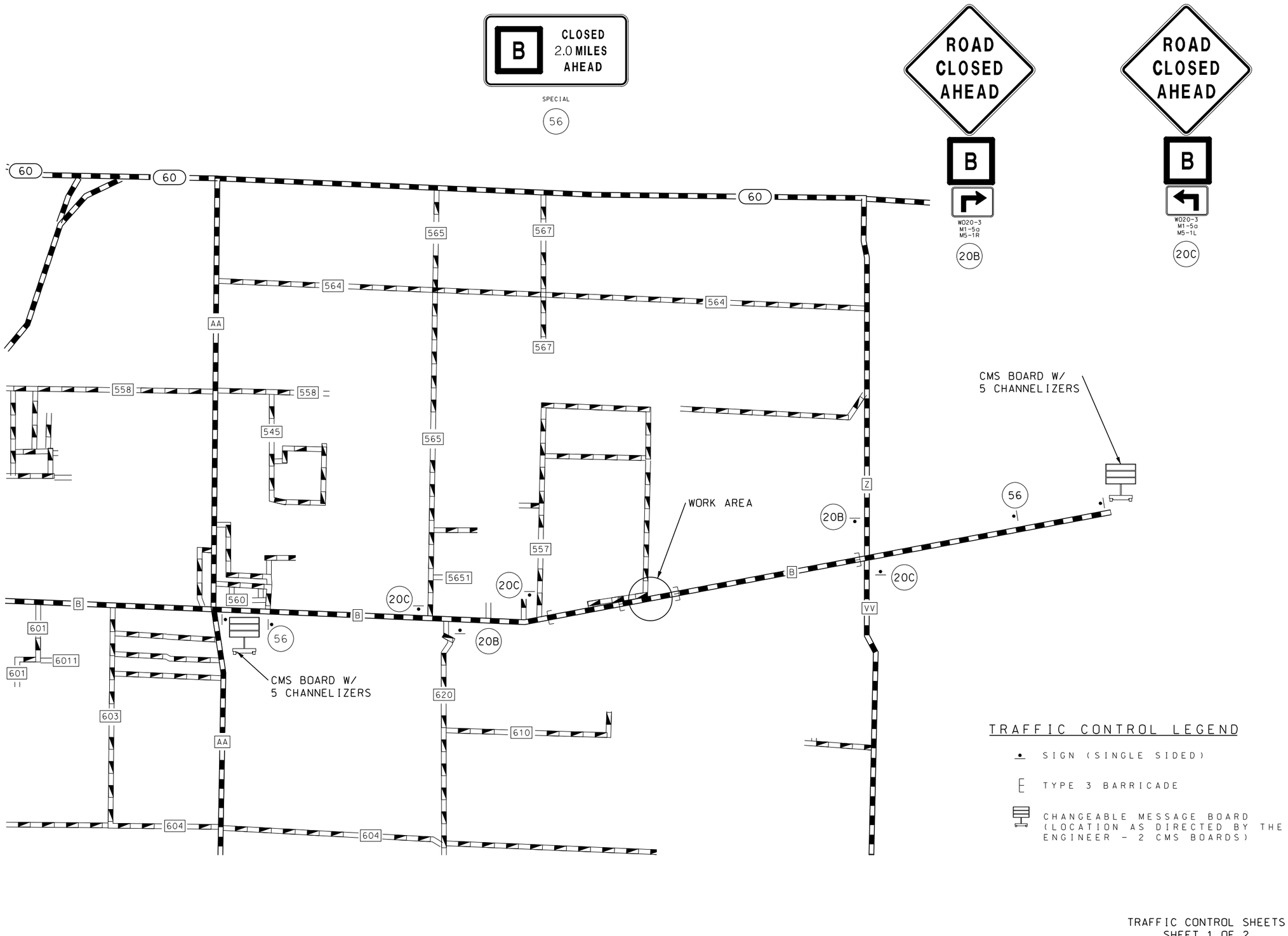
314.588.8381
St. Charles
820 South Main, Suite 399
St. Charles, MO 63301
636.493.8277
www.oatesassociates.com
MISSOURI DESIGN FIRM PE-001166



DRAWING NOT TO SCALE

TRAFFIC CONTROL SHEETS
SHEET 1 OF 2

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
6/5/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	7

COUNTY
BUTLER

JOB NO.
J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9215

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

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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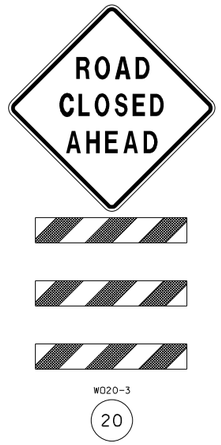
MISSOURI DESIGN FIRM PE-001166

SEE STANDARD PLAN 616.10
FOR DETAILS

29A

SEE STANDARD PLAN 616.10
FOR DETAILS

29



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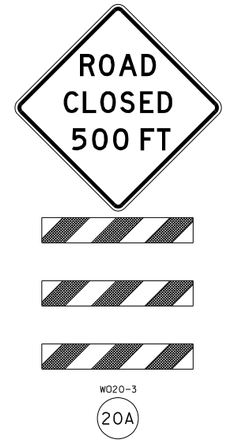

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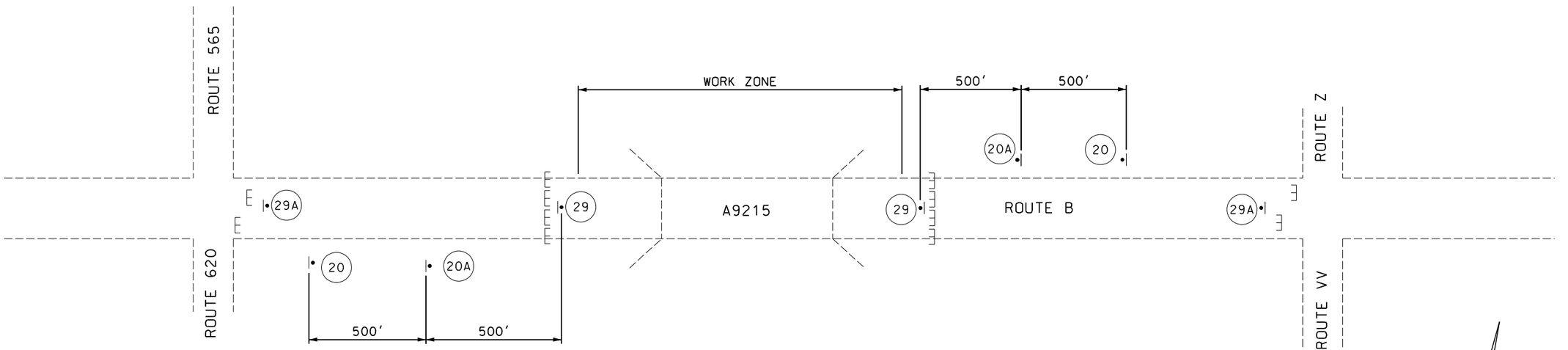

NOTES:
ALL SPACING AND DISTANCES OF TRAFFIC CONTROL DEVICES ARE APPROXIMATE. THEY MAY BE RELOCATED AS DIRECTED BY THE ENGINEER TO FIT FIELD CONDITIONS.

ANY EXISTING SIGNS THAT CONFLICT WITH THIS TRAFFIC CONTROL PLAN SHALL BE COVERED OR REMOVED.

TYPE 3 BARRICADES SHALL BE PLACED TO ALLOW LOCAL TRAFFIC TO PASS THROUGH.

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- TYPE 3 BARRICADE

DRAWING NOT TO SCALE

TRAFFIC CONTROL SHEETS
SHEET 2 OF 2

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
5/2/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	8

COUNTY
BUTLER

JOB NO.
J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9215

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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314.588.8381

St. Charles
820 South Main, Suite 399
St. Charles, MO 63301
636.493.8277

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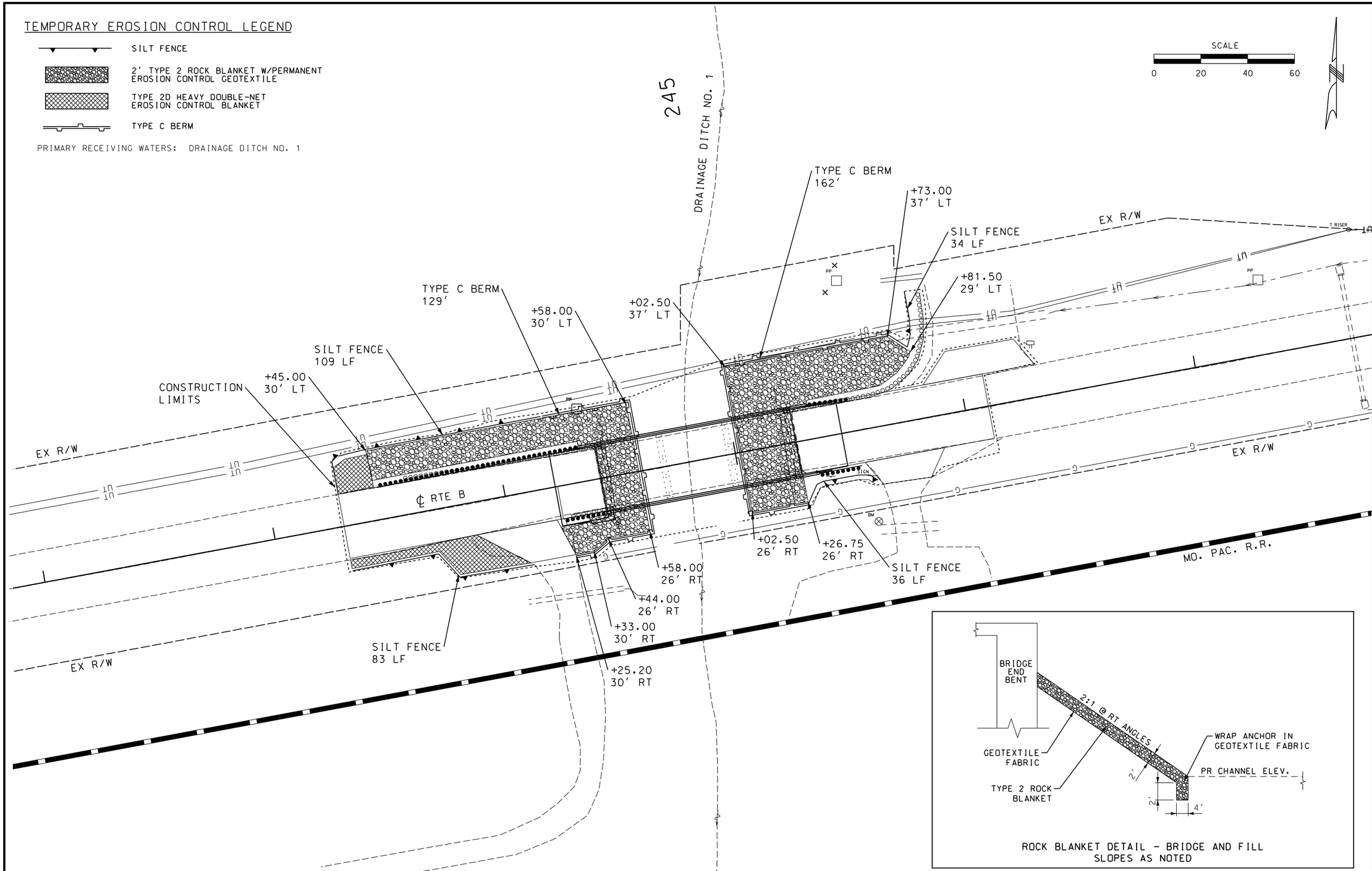
MISSOURI DESIGN FIRM PE-001166

TEMPORARY EROSION CONTROL LEGEND

- SILT FENCE
- 2' TYPE 2 ROCK BLANKET W/PERMANENT EROSION CONTROL GEOTEXTILE
- TYPE 2D HEAVY DOUBLE-NET EROSION CONTROL BLANKET
- TYPE C BERM

PRIMARY RECEIVING WATERS: DRAINAGE DITCH NO. 1

SCALE
0 20 40 60



ROCK BLANKET DETAIL - BRIDGE AND FILL SLOPES AS NOTED

NOTE:

ROCK BLANKET LIMITS SHOWN ARE APPROXIMATE. THE ACTUAL LIMITS SHALL BE APPROVED BY THE ENGINEER.

EROSION CONTROL SHEET
SHEET 1 OF 1

STATE OF MISSOURI
JEFFREY R. RENSING
NUMBER PE-2006012376
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
5/2/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
SE	9

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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)

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166
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Belleville: 1 South Church, Suite 200, Belleville, IL 62220, 618.346.2200, Fax 618.344.4666
St. Charles: 820 South Main, Suite 299, St. Charles, MO 63301, 636.443.6677
www.oatesassociates.com

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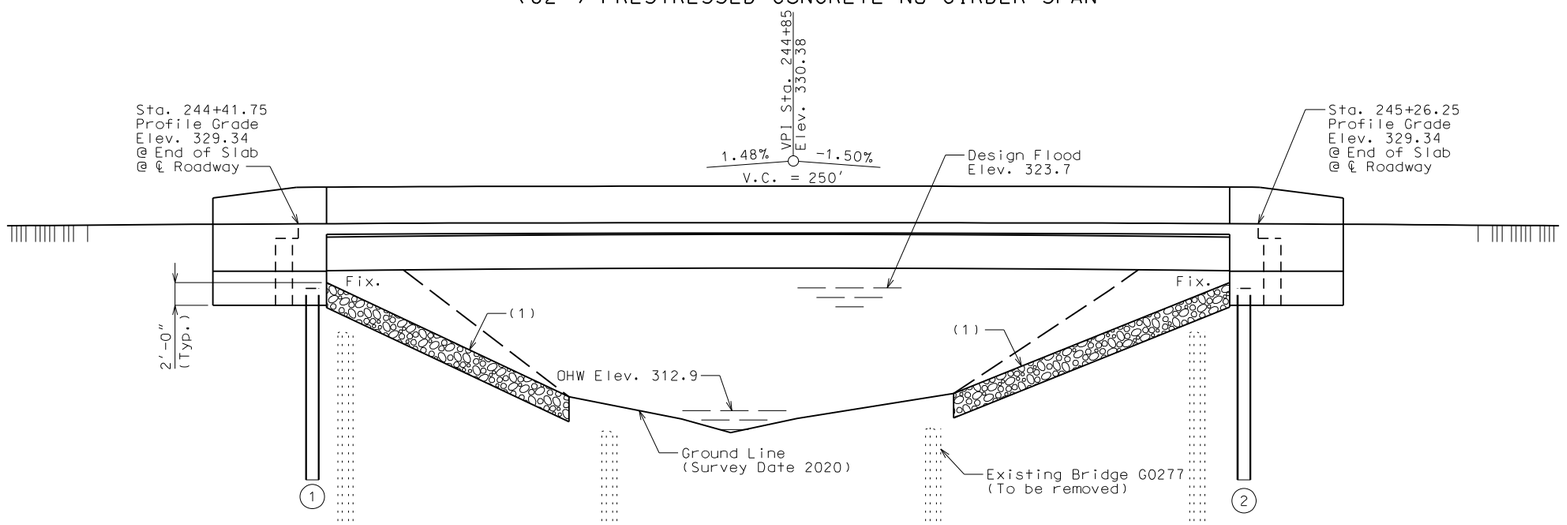
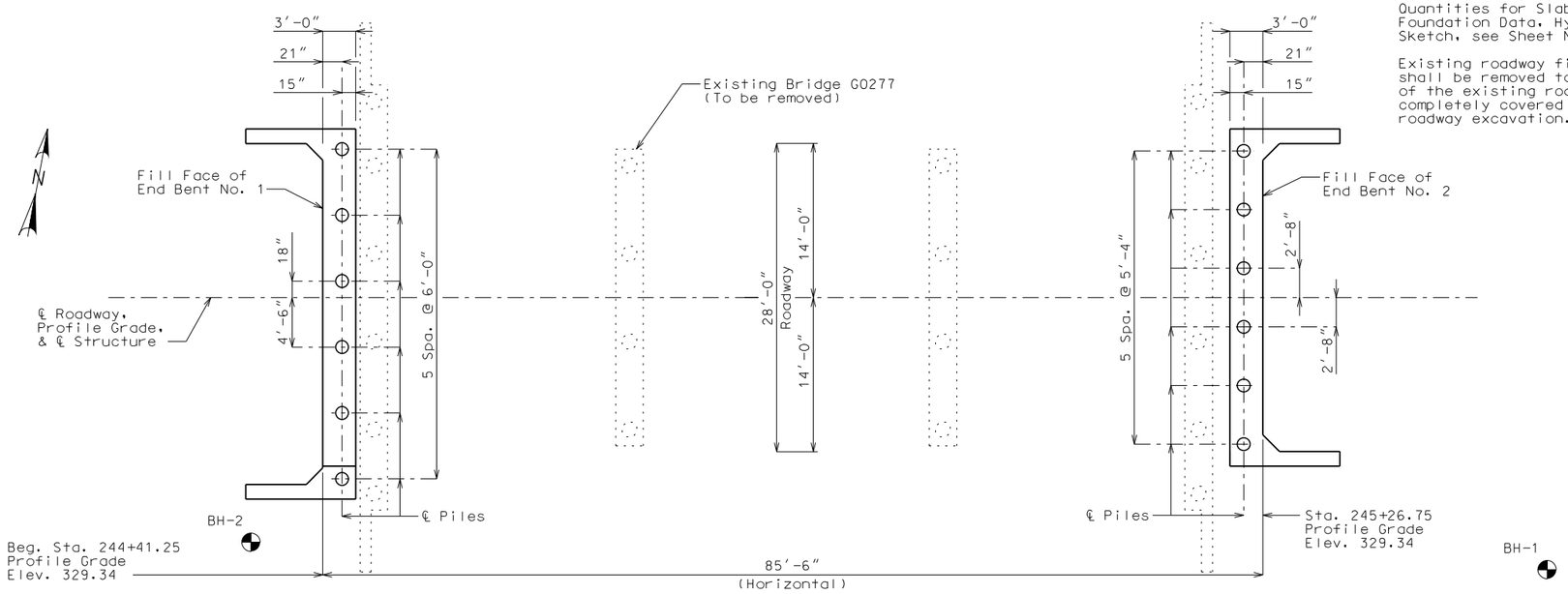
SEC/SUR 33 TWP 25N RGE 7E

(82′) PRESTRESSED CONCRETE NU-GIRDER SPAN



GENERAL ELEVATION



SPAN (1-2)

PLAN

Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on this sheet. 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. 24-27 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.

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

Existing roadway fill under the ends of the bridge shall be removed to the natural groundline. Removal of the existing roadway fill will be considered completely covered by contract unit price for roadway excavation.

Reference Notes:
(1) 2:1 or flatter Slope (Normal) with 2′-0″ thick Type 2 Rock Blanket with Permanent Erosion Control Geotextile (Roadway Item).

B.M. #2 - CHISLED SQUARE ON SW WINGWALL OF BRIDGE G0277 OVER DRAINAGE DITCH NO. 1
STA. 244+44.89, 19.21′ RT.
ELEV. 325.11

BRIDGE: ROUTE B OVER DRAINAGE DITCH NO. 1

ROUTE B FROM ROUTE Z TO ROUTE AA
ABOUT 1.0 MILE WEST OF ROUTE Z
BEGINNING STATION 244+41.25

Designed Jan. 2024
Detailed Jan. 2024
Checked Apr. 2024

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/29/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE

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Estimated Quantities

Item		Substr.	Superstr.	Total
Removal of Miscellaneous ACM (Non-Friable)	sq. foot			4
Class 1 Excavation	cu. yard	148		148
Removal of Bridges (G0277)	lump sum			1
Bridge Approach Slab (Minor)	sq. yard		133	133
Galvanized Cast-In-Place Concrete Piles (14 in)	linear foot	720		720
Dynamic Pile Testing	each	2		2
Pile Point Reinforcement	each	12		12
Class B Concrete (Substructure)	cu. yard	25.8		25.8
Type D Barrier	linear foot		192	192
Slab on Concrete NU-Girder	sq. yard		288	288
NU 35, Prestressed Concrete NU-Girder	linear foot		331	331
Slab Drain	each		16	16
Vertical Drain at End Bents	each	2		2
Plain Neoprene Bearing Pad	each		8	8

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 and all reinforcement in cast-in-place piles at end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	92
Reinforcing Steel (Epoxy Coated)	pound	20,150

The table of Estimated Quantities for Slab on Concrete NU-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for prestressed panels, 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.

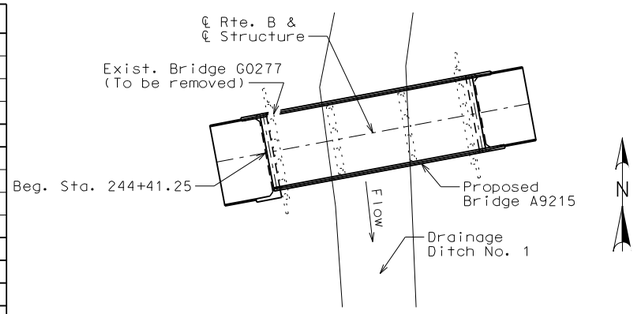
Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete NU-Girder.

Hydrologic Data

Drainage Area = 18.5 mi^2
Design Flood Frequency = 50 years
Design Flood Discharge = 2,220 cfs
Design Flood (D.F.) Elevation = 323.7
Base Flood (100-year)
Base Flood Elevation = 324.4
Base Flood Discharge = 2,510 cfs
Estimated Backwater = 0.0 ft
Average Velocity thru Opening = 4.3 ft/s
Freeboard (50-year)
Freeboard = 1.5 ft
Roadway Overtopping
Overtopping Flood Discharge = N/A
Overtopping Flood Frequency > 500 years
500-Year Flood Elevation = 325.9



LOCATION SKETCH

Foundation Data

Type	Design Data		Bent Number 1	Bent Number 2
Load Bearing Pile	Pile Type and Size		CECIP 14"	CECIP 14"
	Number	ea	6	6
	Approximate Length Per Each	ft	60	60
	Pile Point Reinforcement	ea	All	All
	Min. Galvanized Penetration (Elev.)	ft	302	302
	Minimum Tip Penetration (Elev.)	ft	265	265
	Criteria for Min. Tip Penetration		Liquefaction	Liquefaction
	Pile Driving Verification Method		DT	DT
	Resistance Factor		0.65	0.65
	Minimum Nominal Axial Compressive Resistance	kip	264	260

DT = Dynamic Testing

CECIP = Closed Ended Cast-In-Place Concrete Pile

Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads/Resistance Factor

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

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

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

General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)
Seismic Design Category = C
Design earthquake response spectral acceleration coefficient at 1.0 second period, SD1 = 0.375g
Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.424g

Design Loading:

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

Design Unit Stresses:

Class B Concrete (Substructure, except CIP pile)	f'c = 3,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier and CIP pile)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi
Welded or Seamless steel shell (pipe) for CIP pile (ASTM A252 Grade 3)	fy = 45,000 psi

For precast prestressed panel stresses, see Sheet No. 13.
For prestressed girder stresses, see Sheets No. 11 & 12.

Neoprene Pads:

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

Joint Filler:

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

Reinforcing Steel:

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

Traffic Handling:

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

Miscellaneous:

MoDOT Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:

☐ Constant Joint Filler
☐ Variable Joint Filler

GENERAL NOTES & QUANTITIES

Detailed Sep. 2022
Checked Nov. 2022

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/29/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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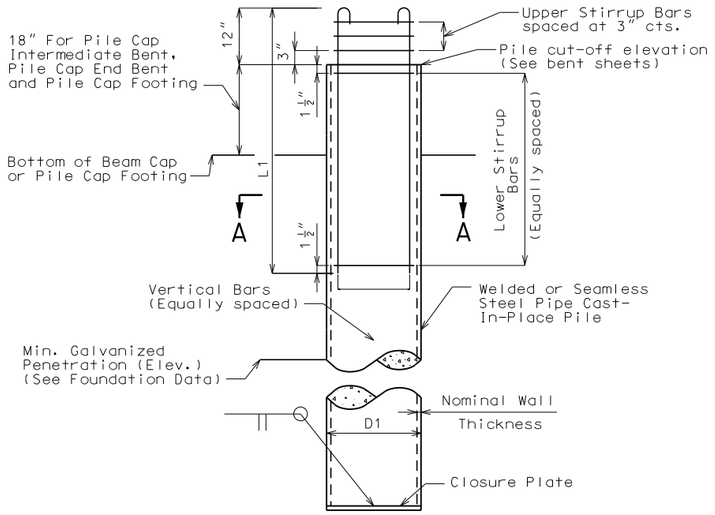
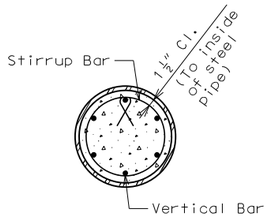
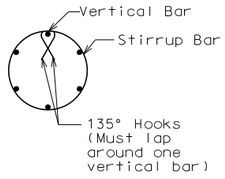


GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE
WITHOUT PILE POINT REINFORCEMENT



SECTION A-A



DETAIL OF SEISMIC STIRRUP BAR

Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data		
Bent Number	1	2
D1, CECIP Pile (O.D.)	14"	14"
Min. Nominal Wall Thickness	½"	½"
Closure Plate Thickness	N/A	N/A
Pile Point Reinforcement	Conical	Conical
Vertical Bars	6-#5-V105	6-#5-V204
L1, Length of Vertical Bars	5'-3"	5'-3"
Upper Stirrup Bars	3-#4-P100	3-#4-P200
Lower Stirrup Bars	5-#4-P100	5-#4-P200

Notes:

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

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

Steel casting for conical pile point reinforcement shall be ASTM A148 Grade 90-60.

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

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

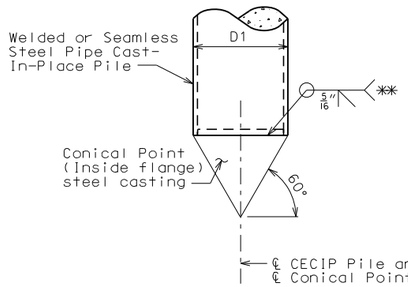
Splices of pipe for cast-in-place concrete pile shall be made watertight and to the full strength of the pipe above and below the splice to permit hard driving without damage. Pipe damaged during driving shall be replaced without cost to the state. Pipe sections used for splicing shall be at least 5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

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

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

All reinforcement for cast-in-place pile is included in the estimated quantities for Slab on Concrete NU-Girder.

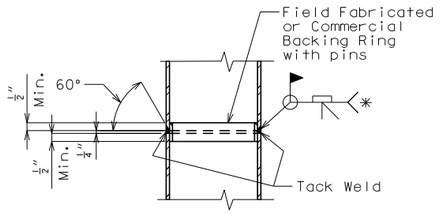
For Foundation Data table, see Sheet No. 2.



MANUFACTURED CONICAL PILE POINT

(Omit closure plate)

** If the conical pile point is not pre-beveled, place a 3/8" bevel at 40 degrees on the pipe.



STEEL PIPE PILE SPLICE

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

GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE

Detailed Jan. 2024
Checked Apr. 2024

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

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_003_J9S3606_Galvanized CECIP Concrete Pile.dgn 1:43:50 PM 5/29/2024

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

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DATE PREPARED 5/29/2024
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DISTRICT BR | SHEET NO. 3
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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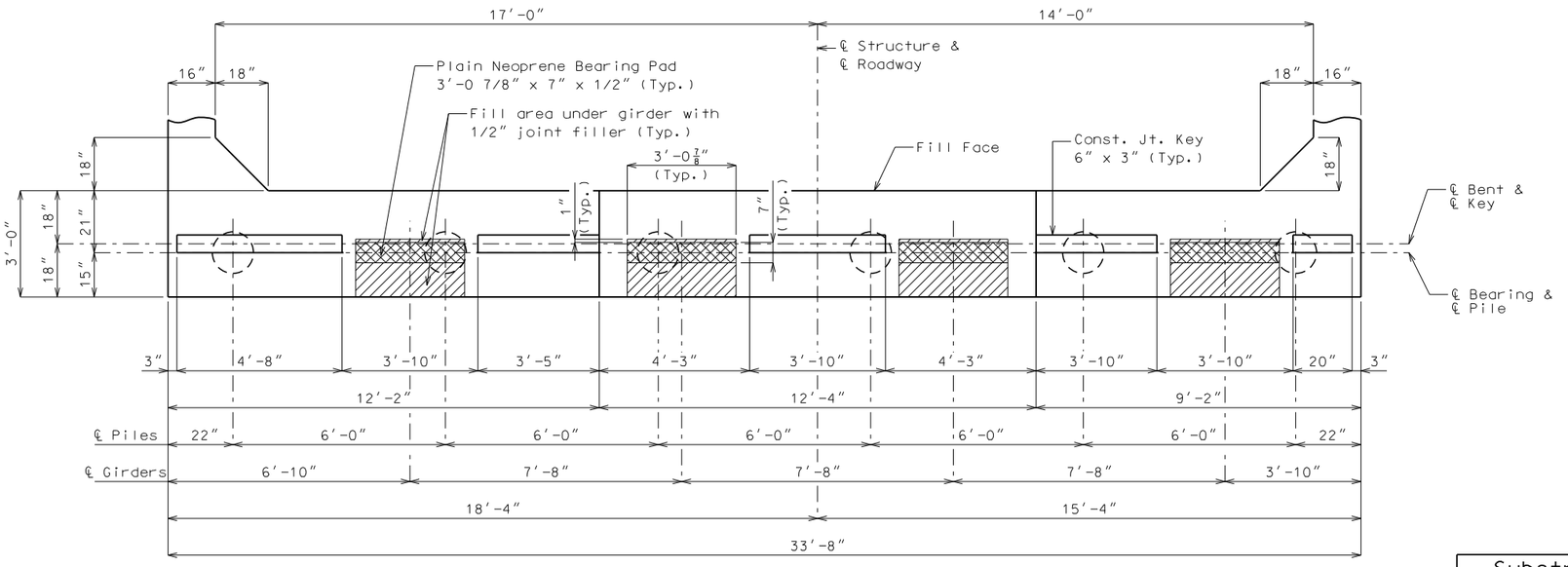
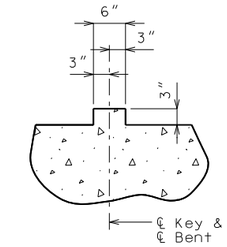


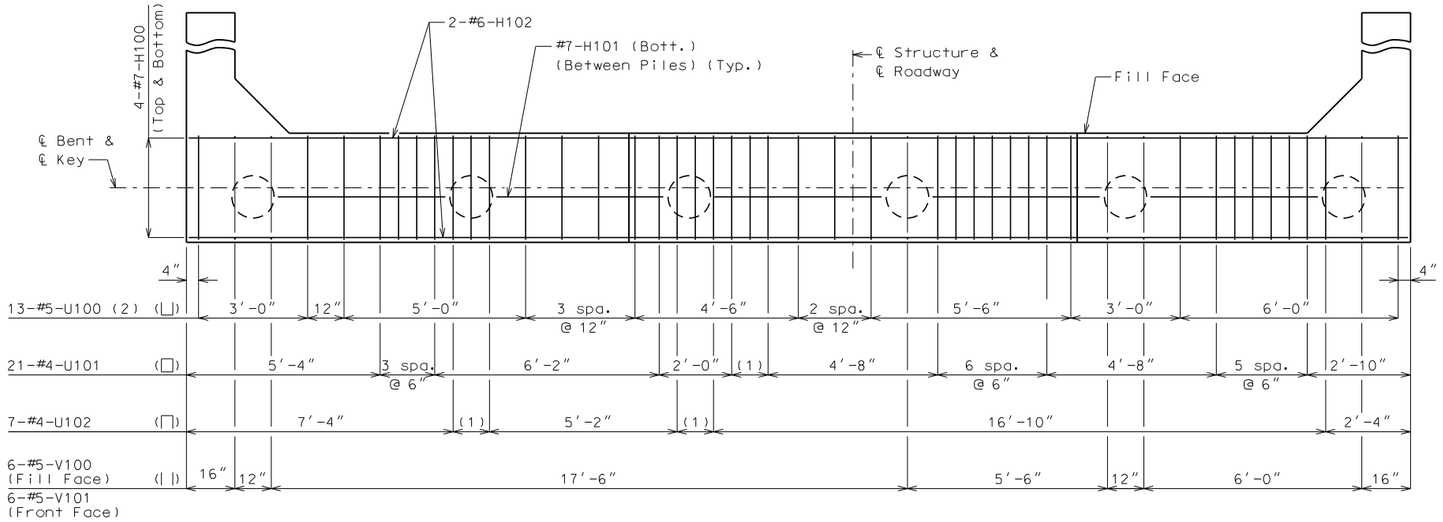
PLAN OF BEAM



SECTION THRU KEY

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	76
Galvanized Cast-In-Place Concrete Piles (14 in)	linear foot	360
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	6
Class B Concrete (Substructure)	cu. yard	13.4

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



PLAN OF BEAM SHOWING REINFORCEMENT
(Keys not shown for clarity)

Reference Notes:
(1) 2 spa. @ 6″
(2) Short leg located at fill face.

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

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 Jan. 2024
Checked Apr. 2024

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

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JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
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DATE PREPARED 4/30/2024
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DISTRICT BR | SHEET NO. 4
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE

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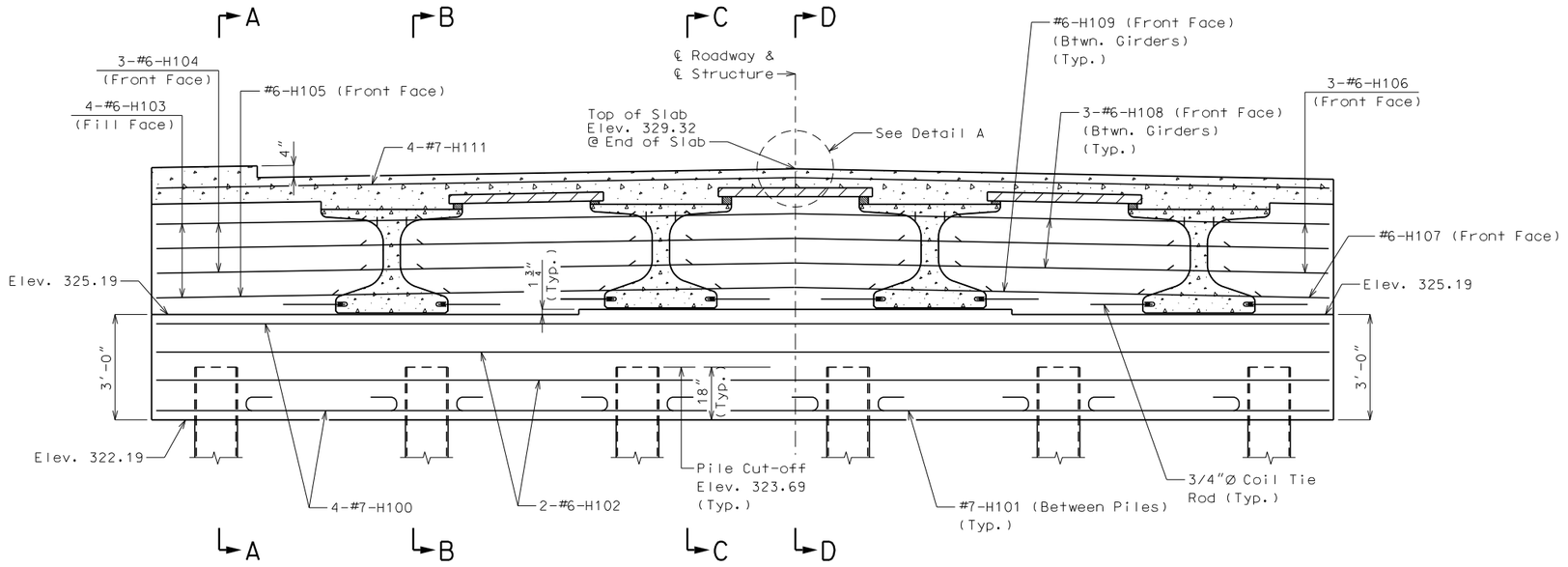
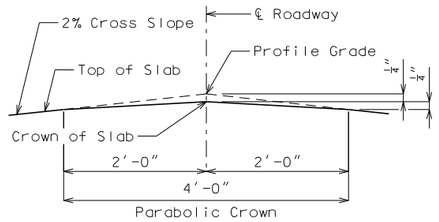
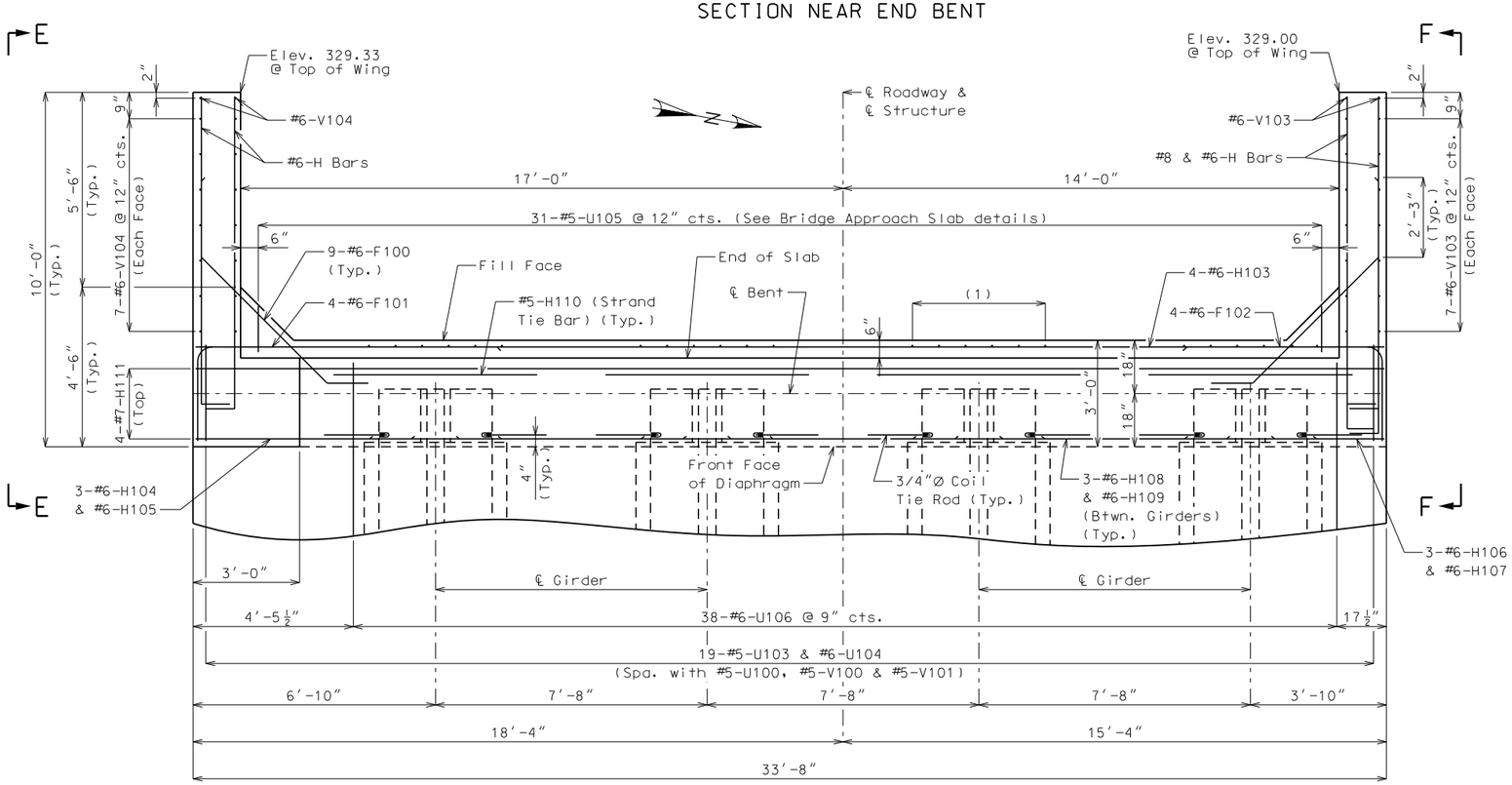


SECTION NEAR END BENT



DETAIL A



PART PLAN

Reference Notes:
(1) 6-#6-V102 @ 9" cts. (Typ.)

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

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

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

For location of Coil Tie Rods and #5-H110 (Strand Tie Bar), see Sheets No. 11 & 12.

For details of Vertical Drain at End Bents, see Sheet No. 10.

For details of Bridge Approach Slab, see Sheet No. 20.

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

For Sections A-A, B-B, C-C, & D-D and Elevations E-E & F-F, see Sheet No. 6.

DETAILS OF END BENT NO. 1

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

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DATE PREPARED 5/29/2024
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DISTRICT BR | SHEET NO. 5
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE | REV.

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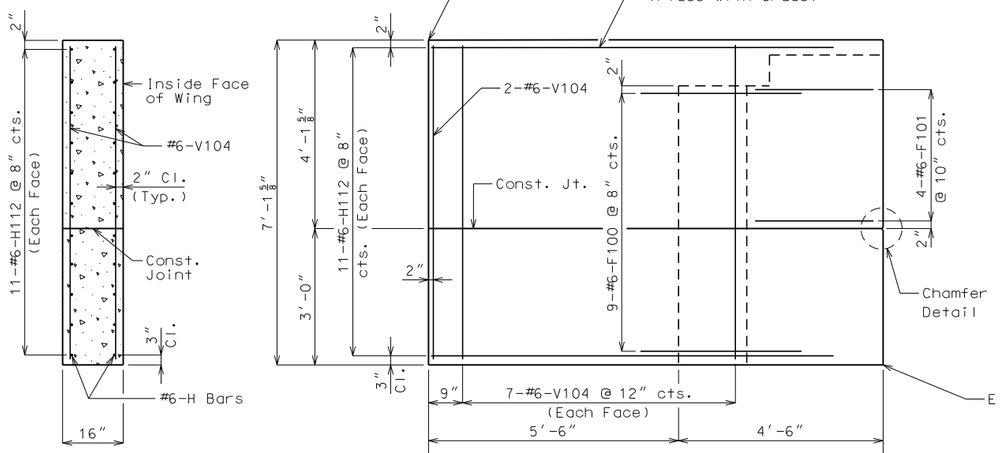
Detailed Jan. 2024
Checked Apr. 2024

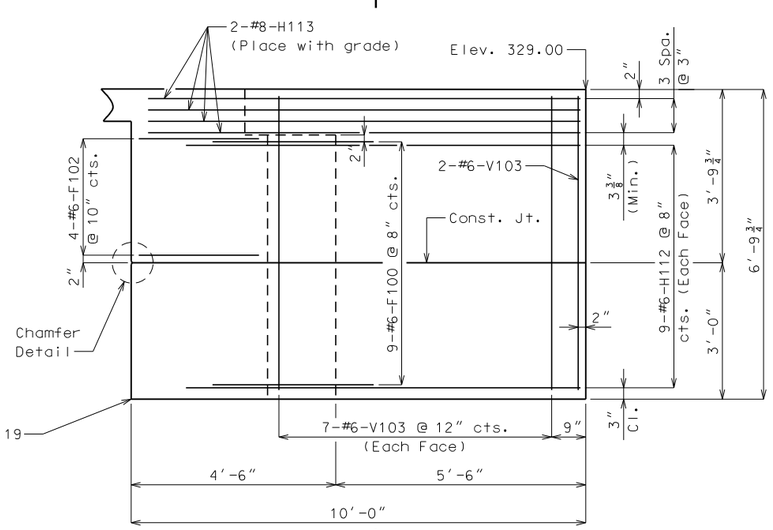
Note: This drawing is not to scale. Follow dimensions.

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_005_J9S3606_Details of End Bent No. 1.dgn 1:43:51 PM 5/29/2024

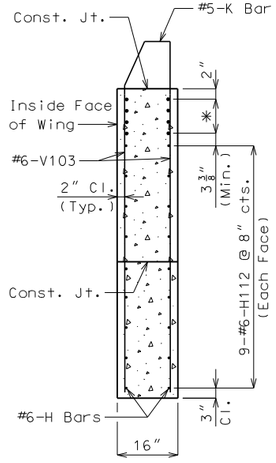


SECTION G-G

G
ELEVATION E-E

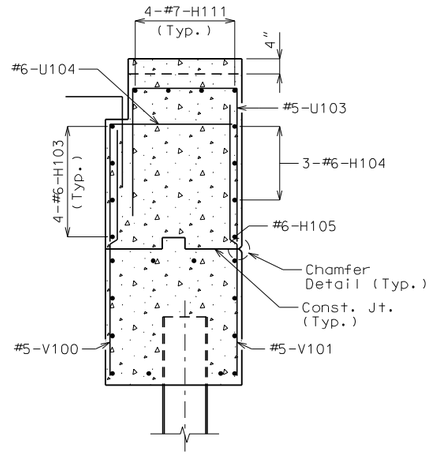


H
ELEVATION F-F

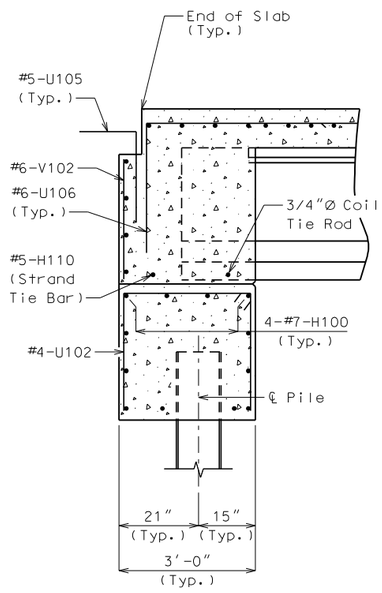


SECTION H-H

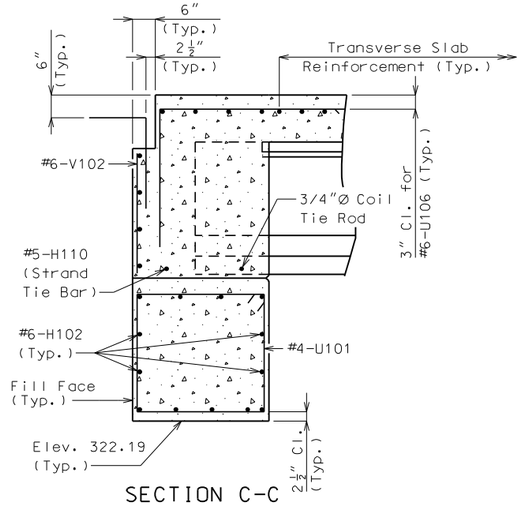
* 4-#8-H113 @ 3″ cts. (Each Face) (Place with grade)



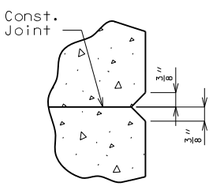
SECTION A-A



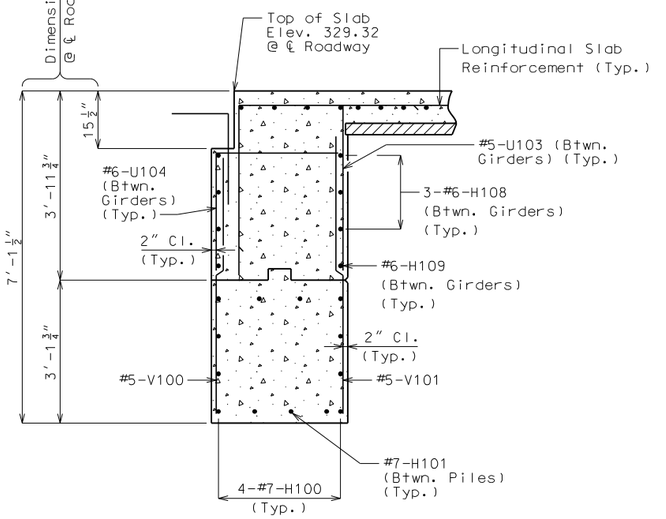
SECTION B-B



SECTION C-C



CHAMFER DETAIL



SECTION D-D

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

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

For reinforcement of the barrier, see Sheets No. 18 & 19.

DETAILS OF END BENT NO. 1

Detailed Jan. 2024
Checked Apr. 2024

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
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	
4/30/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	6
COUNTY	
BUTLER	
JOB NO.	
J9S3606	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9215	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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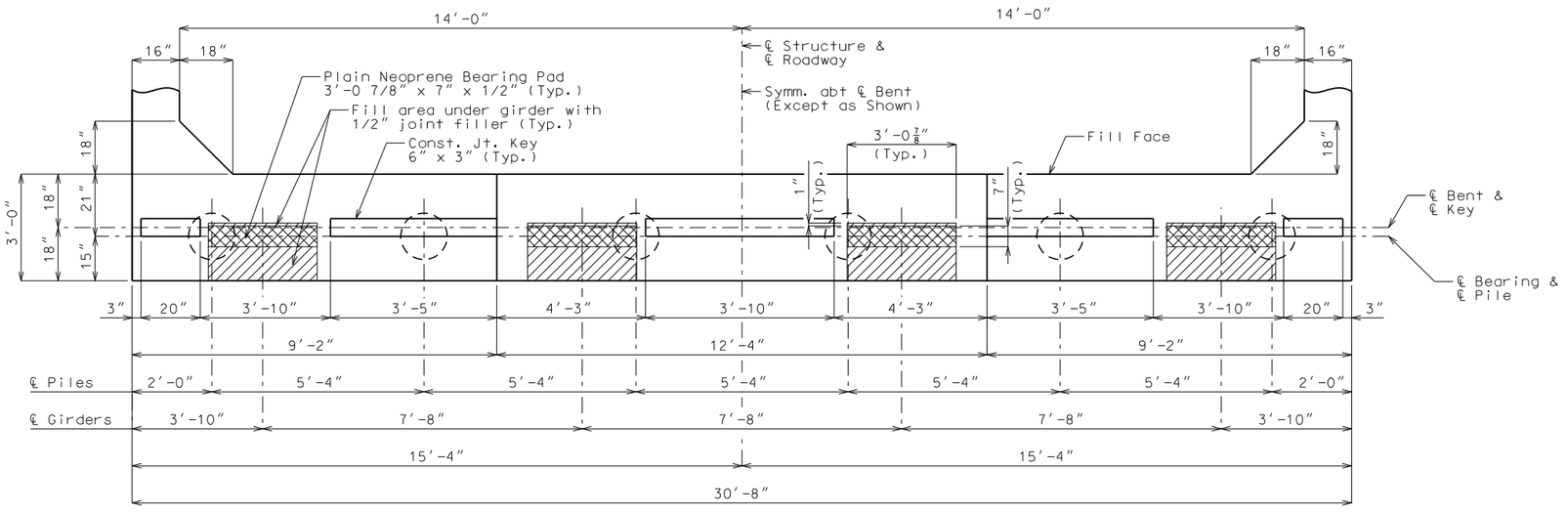
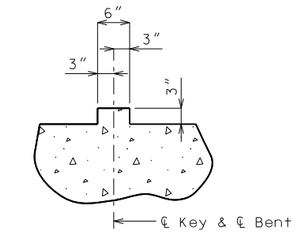
MISSOURI DESIGN FIRM PE-001166

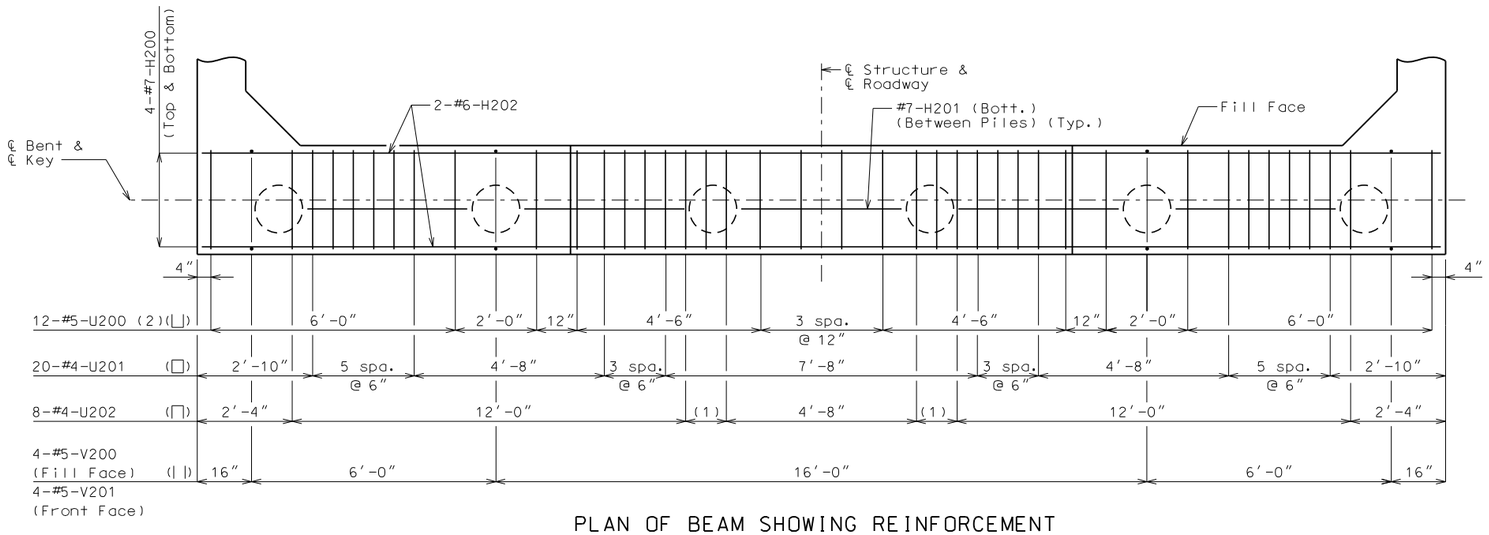
REV.



PLAN OF BEAM



SECTION THRU KEY



PLAN OF BEAM SHOWING REINFORCEMENT
(Keys not shown for clarity)

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	72
Galvanized Cast-In-Place Concrete Piles (14 in)	linear foot	360
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	6
Class B Concrete (Substructure)	cu. yard	12.4

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

Reference Notes:
(1) 2 spa. @ 6″
(2) Short leg located at fill face.

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

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

DETAILS OF END BENT NO. 2

Detailed Jan. 2024
Checked Apr. 2024

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	7

COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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

REV.	DESCRIPTION	DATE

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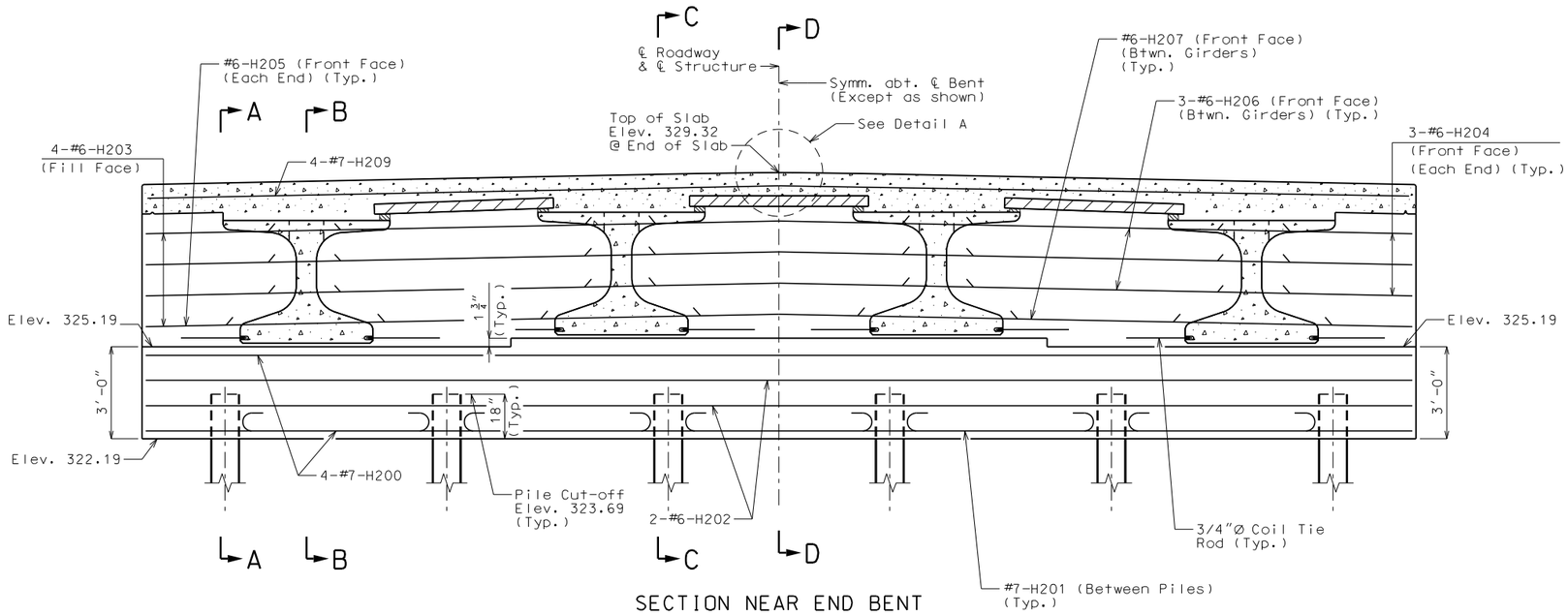
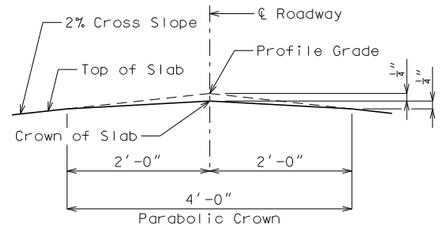
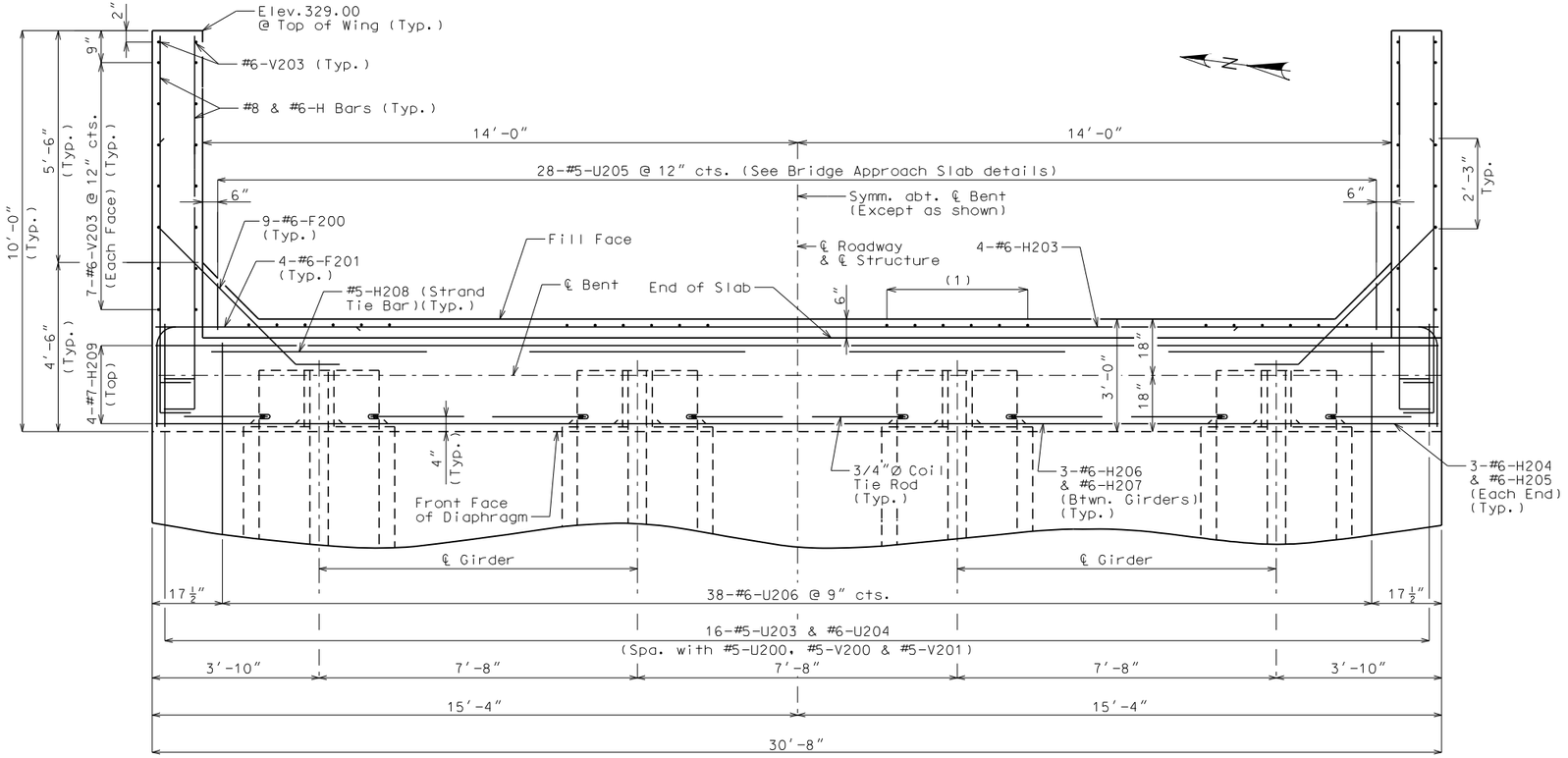


SECTION NEAR END BENT



DETAIL A



PART PLAN

Reference Notes:
(1) 6-#6-V202 @ 9" cts. (Typ.)

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

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

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

For location of Coil Tie Rods and #5-H208 (Strand Tie Bar), see Sheets No. 11 & 12.

For details of Vertical Drain at End Bents, see Sheet No. 10.

For details of Bridge Approach Slab, see Sheet No. 20.

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

For Sections A-A, B-B, C-C & D-D, see Sheet No. 9.

DETAILS OF END BENT NO. 2

Detailed Jan. 2024
Checked Apr. 2024

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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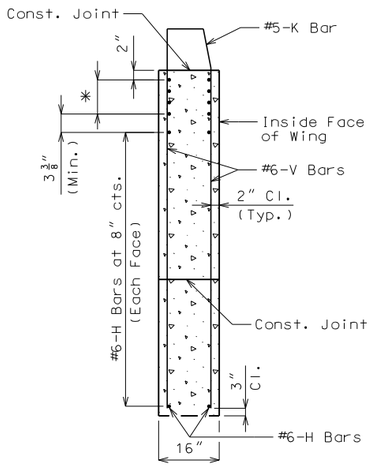
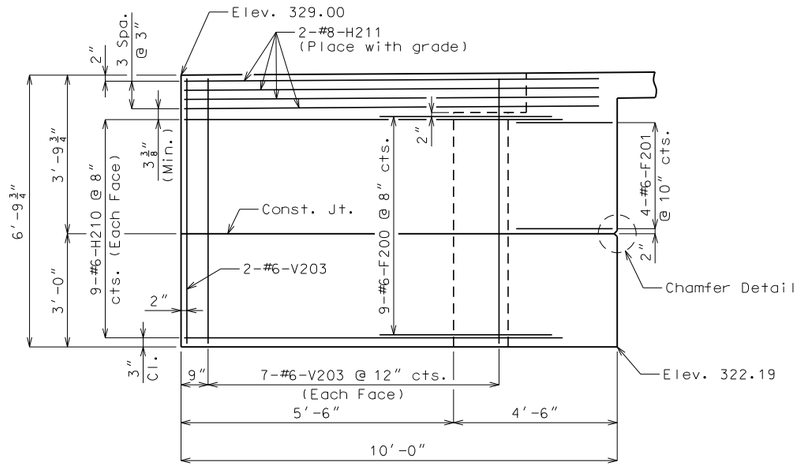
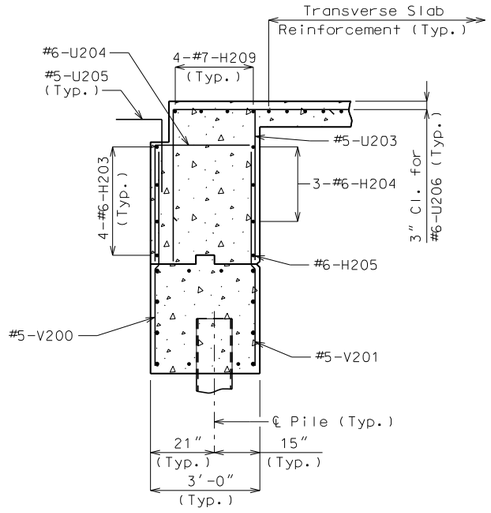


TYPICAL SECTION THRU WING

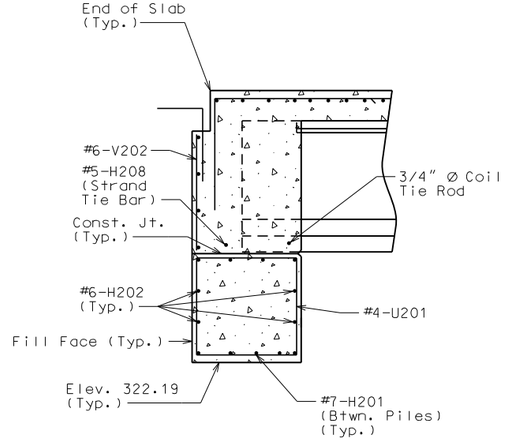
* #8-H Bars at 3" cts. (Each face)(Place with grade)



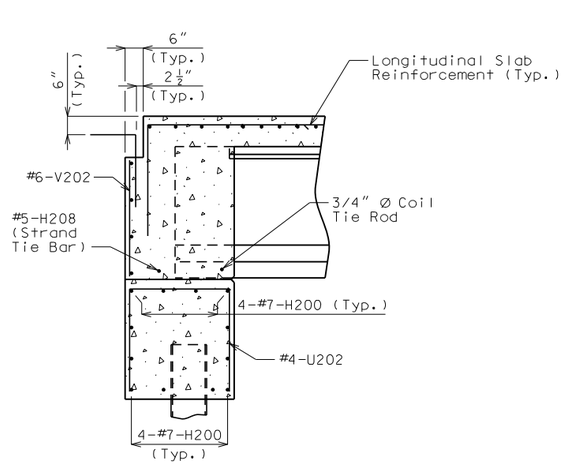
TYPICAL WINGWALL ELEVATION



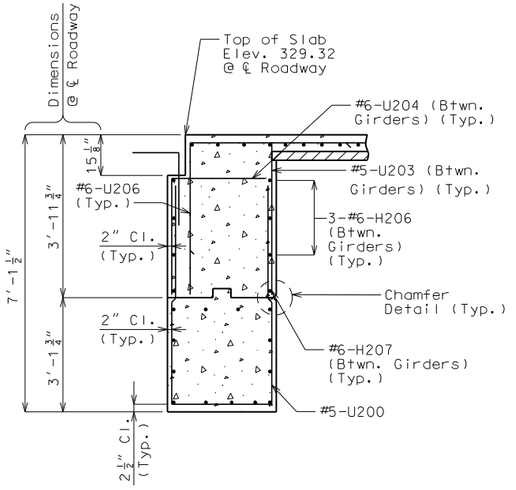
SECTION A-A



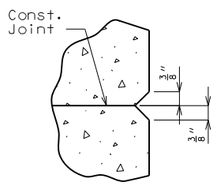
SECTION B-B



SECTION C-C



SECTION D-D



CHAMFER DETAIL

General Notes:

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

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

For reinforcement of the barrier, see Sheets No. 18 & 19.

DETAILS OF END BENT NO. 2

Detailed Jan. 2024
Checked Apr. 2024

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

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_009_J9S3606_Details of End Bent No. 2.dgn 9:15:02 AM 4/30/2024

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

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DATE PREPARED 4/30/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	9

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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
1-888-ASK-MODOT (1-888-275-6636)

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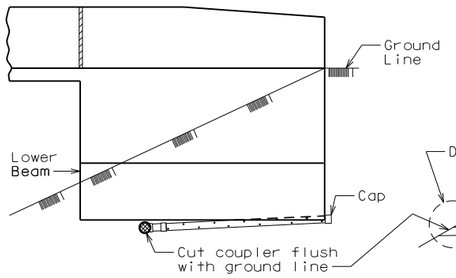
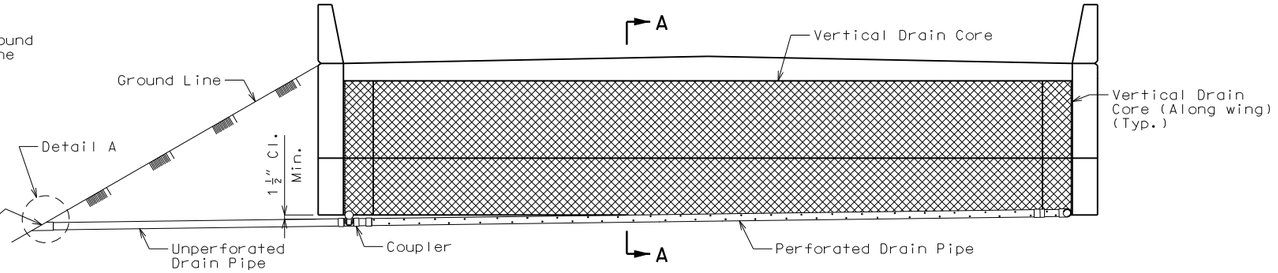
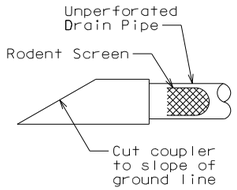


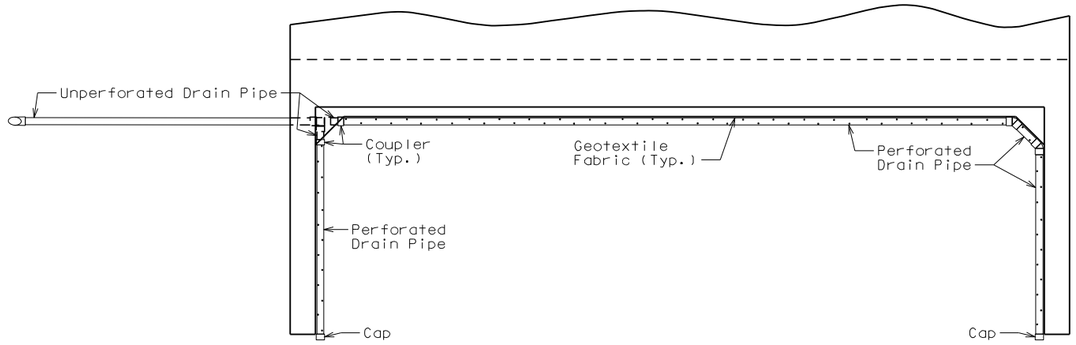
ELEVATION OF WING



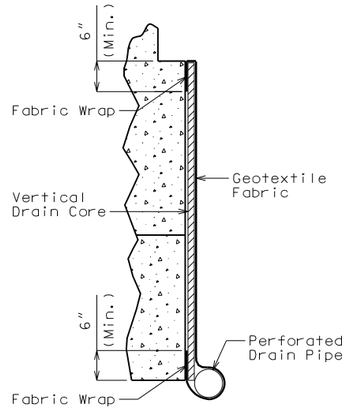
ELEVATION OF END BENT



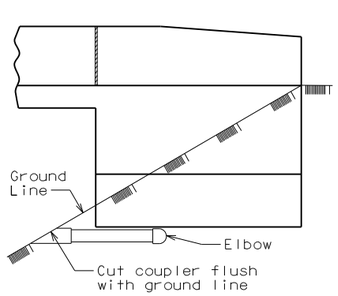
DETAIL A



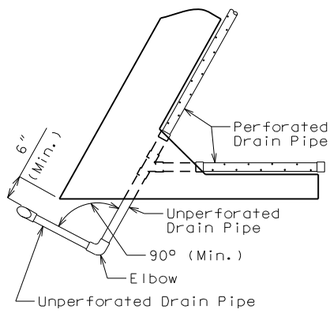
PLAN OF END BENT



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 Sep. 2022
Checked Nov. 2022

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

STATE OF MISSOURI
JASON A. DREYER
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PROFESSIONAL ENGINEER
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DATE PREPARED	
4/30/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	10
COUNTY	
BUTLER	
JOB NO.	
J9S3606	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9215	

REV.	DESCRIPTION	DATE

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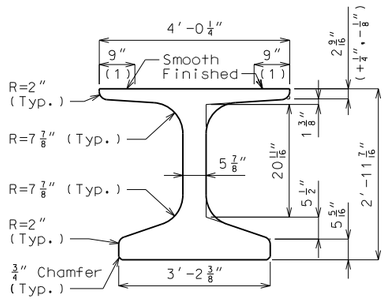
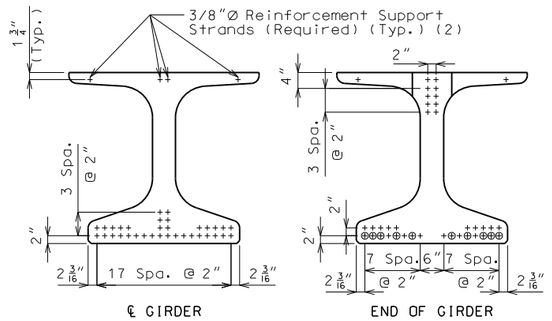
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

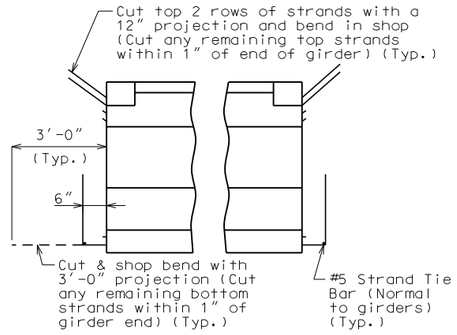
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



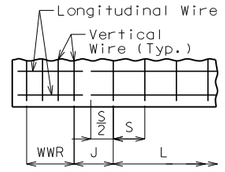
STRAND ARRANGEMENT

+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.



STRANDS AT GIRDER ENDS



WELDED WIRE PLACEMENT

S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

Bill of Reinforcing Steel

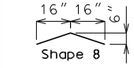
Bars Each Girder

No.	Size/Mark	Length	Shape
104	3 G1	2′-10″	8
2	4 G3	3′-10″	20

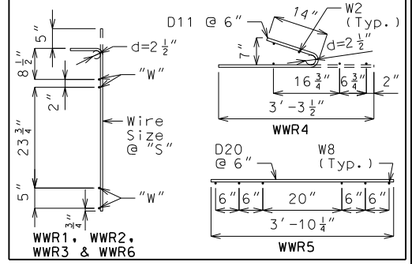
Welded Wire Each Girder

Mark	Size	S	W	L	J
WWR1	D20	4″	W8	8′-0″	6″
WWR2	D20	8″	W8	16′-0″	8″
WWR3	D20	12″	W8	29′-0″	
WWR6	D31	2″	W12	16″	2 3/4″

Bending Diagrams



Shape 20



All dimensions are out to out.

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

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

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

All bar reinforcement shall be Grade 60.

WWR shall not be epoxy coated.

General Notes:

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

Use 34 strands, 0.6″Ø Grade 270, with an initial prestress force of 1494 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

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

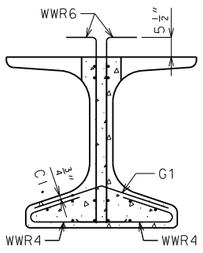
The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For Girder Camber Diagram, see Sheet No. 15.

For location of coil inserts at slab drains, see Sheet No. 14.

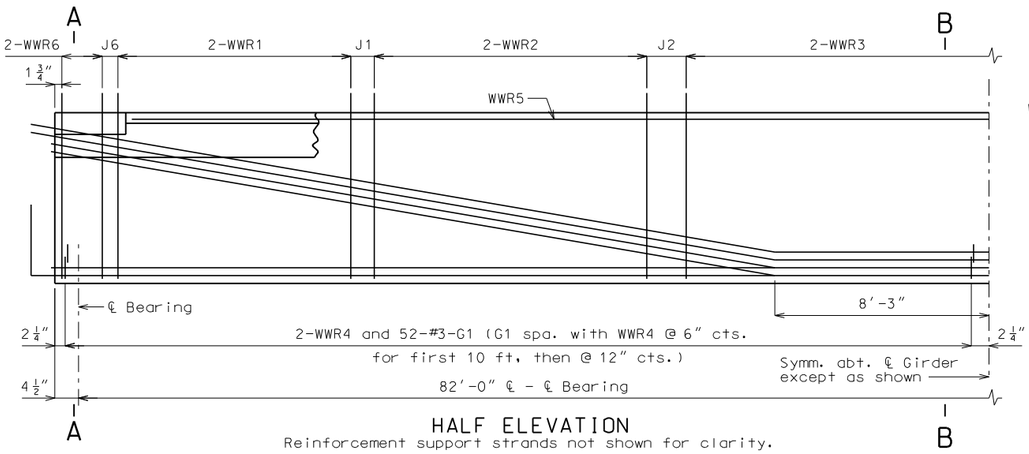
For location of coil ties at integral bents, see Sheets No. 5 & 8.

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



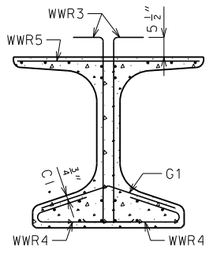
SECTION A-A

Strands not shown for clarity.



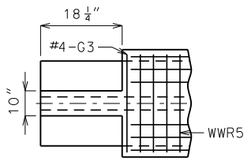
HALF ELEVATION

Reinforcement support strands not shown for clarity.

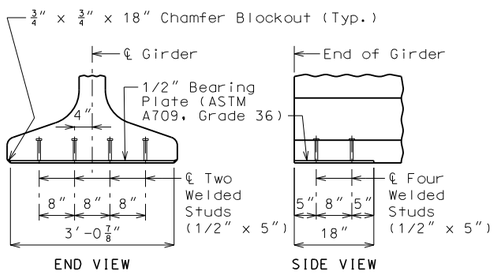


SECTION B-B

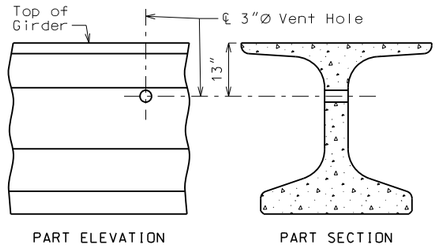
Strands not shown for clarity.



TOP FLANGE BLOCKOUT

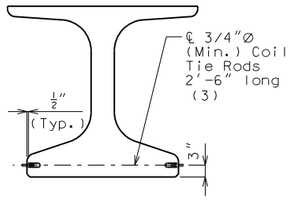


BEARING PLATE



VENT HOLE

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



COIL TIES

(3) 2′-3″ at exterior face of exterior girders at end bents

Detailed Jul. 2022
Checked Nov. 2022

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

NU-GIRDERS - SPAN (1-2)

DATE PREPARED 4/30/2024

ROUTE B | STATE MO

DISTRICT BR | SHEET NO. 11

COUNTY BUTLER

JOB NO. J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9215

DESCRIPTION | DATE | REV.

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

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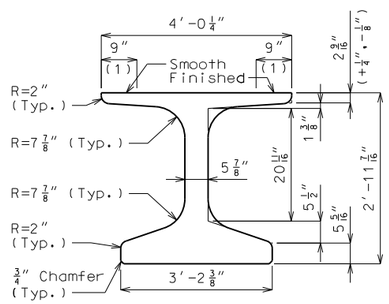
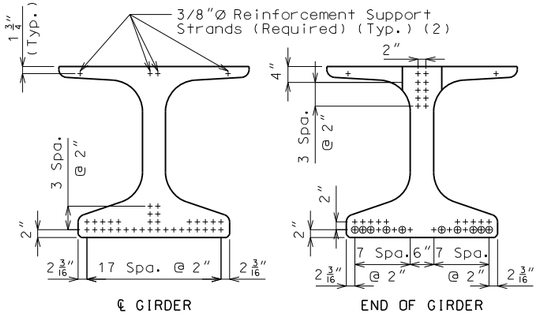
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.



DIMENSIONS

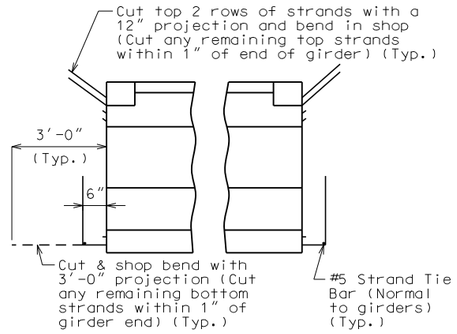
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



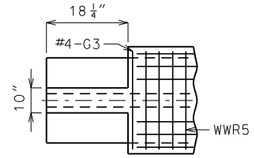
STRAND ARRANGEMENT

\+ Indicates prestressing strand.

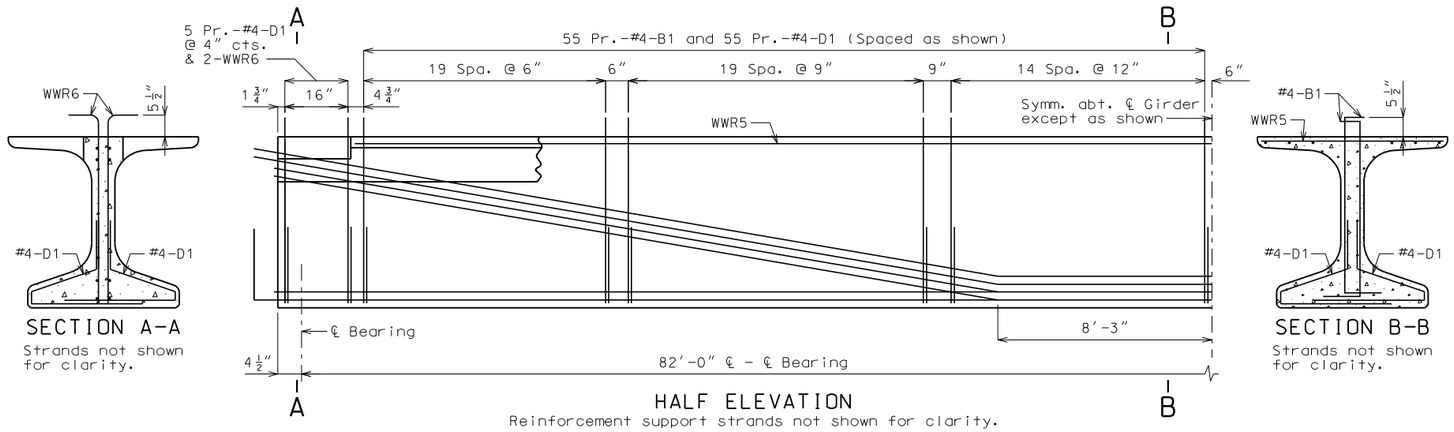
o Indicates cut & shop bend with 3′-0″ projection.



STRANDS AT GIRDER ENDS



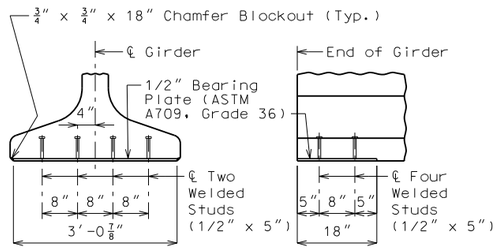
TOP FLANGE BLOCKOUT



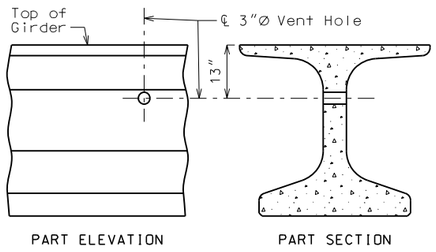
SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

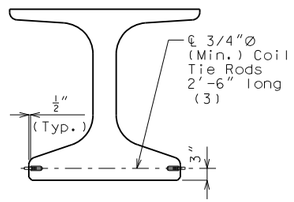


BEARING PLATE



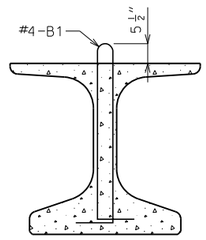
VENT HOLE

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



COIL TIES

(3) 2′-3″ at exterior face of exterior girders at end bents

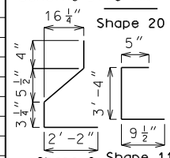


B1 BAR PERMISSIBLE ALTERNATE SHAPE

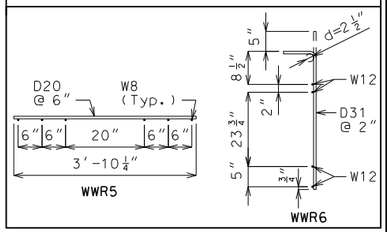
Bill of Reinforcing Steel - Each Girder

No.	Size/ Mark	Length	Shape
220	4 B1	4′-4″	11
240	4 D1	4′-0″	9
2	4 G3	3′-10″	20

Bending Diagrams



Welded Wire Reinforcement - Each Girder



All dimensions are out to out.

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

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

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

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

All B1 bars shall be epoxy coated.

General Notes:

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

Use 34 strands, 0.6″Ø Grade 270, with an initial prestress force of 1494 kips.

Pretensioned members shall be in accordance with Sec 1029.

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

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

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

For Girder Camber Diagram, see Sheet No. 15.

For location of coil inserts at slab drains, see Sheet No. 14.

For location of coil ties at integral bents, see Sheets No. 5 & 8.

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024

ROUTE B | STATE MO

DISTRICT BR | SHEET NO. 12

COUNTY BUTLER

JOB NO. J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9215

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Detailed Jul. 2022
Checked Nov. 2022

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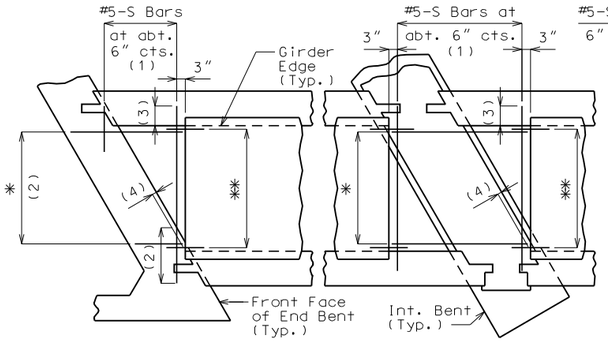
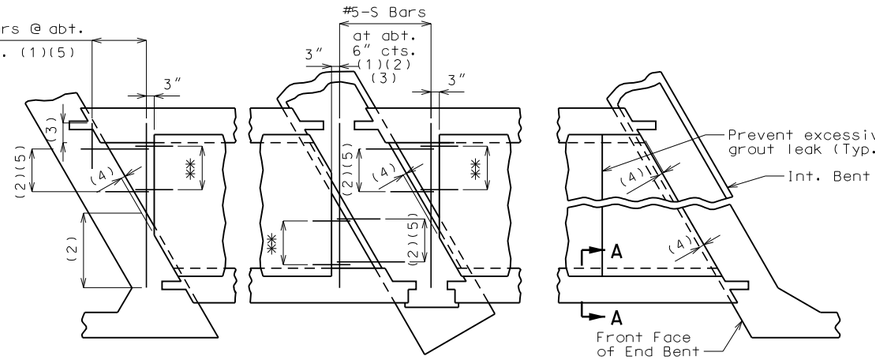
Sheet No. 12 of 27

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

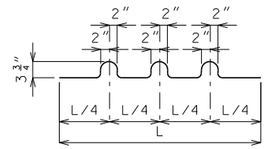




SQUARED END PANELS OR TRUNCATED END PANELS

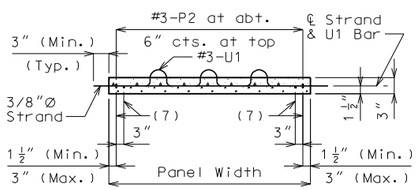
PLAN SHOWING PANEL PLACEMENT

✱ #5-S Bars at abt. 9" cts. (1)
✱✱ #3-P1 at 12" cts. (End panels only)

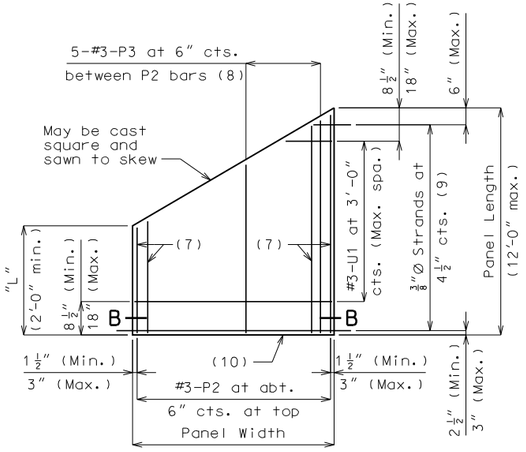


BENDING DIAGRAM FOR U1 BAR

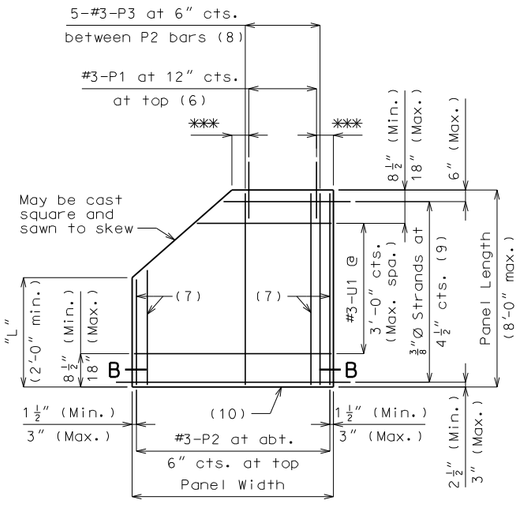
U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars.



SECTION B-B

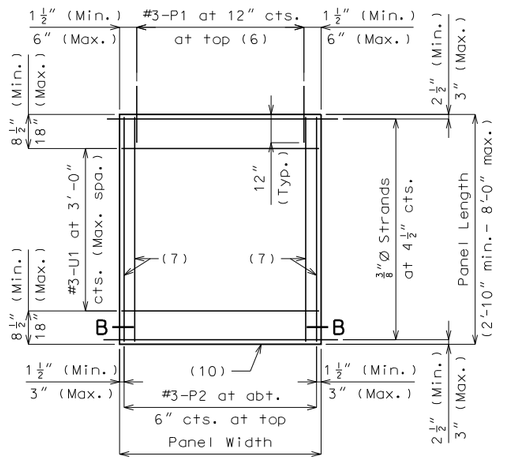


PLAN OF OPTIONAL SKEWED END PANEL



PLAN OF OPTIONAL TRUNCATED END PANEL

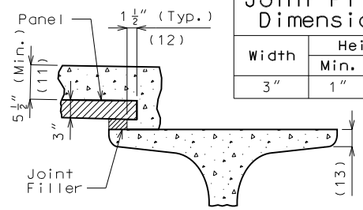
✱✱✱ 3" (Min.), 6" (Max.)



PLAN OF SQUARED PANEL

SKEWED END PANELS

Joint Filler Dimensions		
Width	Height	
	Min.	Max.
3"	1"	4"



SECTION A-A

Reference Notes:

Plan of Panel Placement:

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0", or shorter may then be debonded at the fabricator's option.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

General Notes:

Prestressed Panels:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 4,000 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

Reinforcing Steel:

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.

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

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. 15 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/2 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the girder. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

PRESTRESSED PANELS

Detailed Jan. 2024
Checked Apr. 2024

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

Sheet No. 13 of 27

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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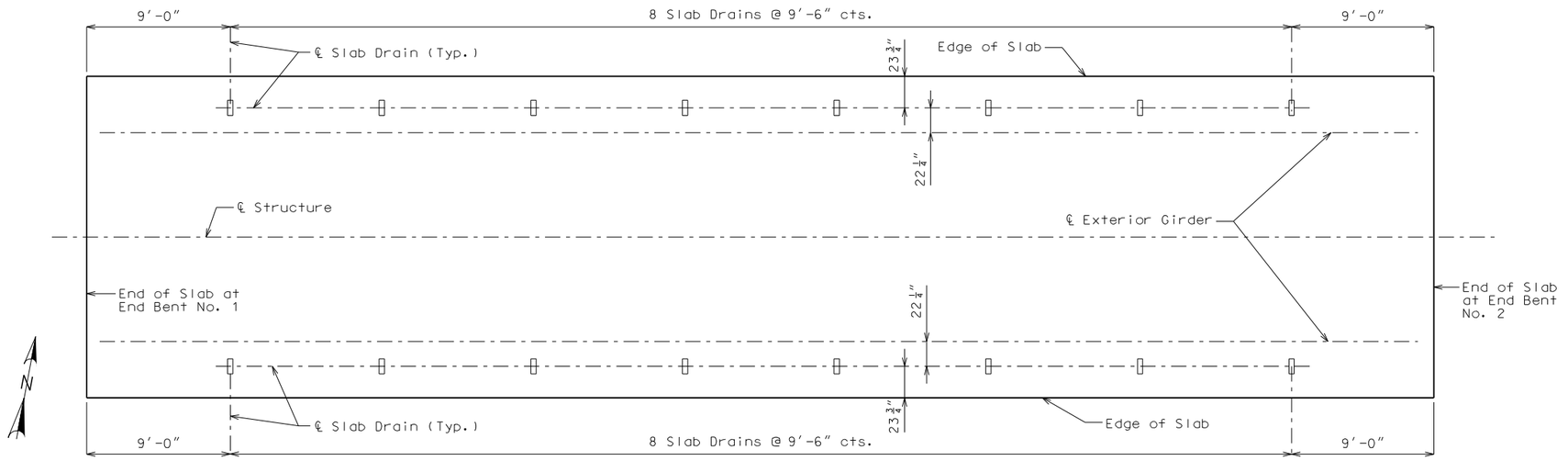
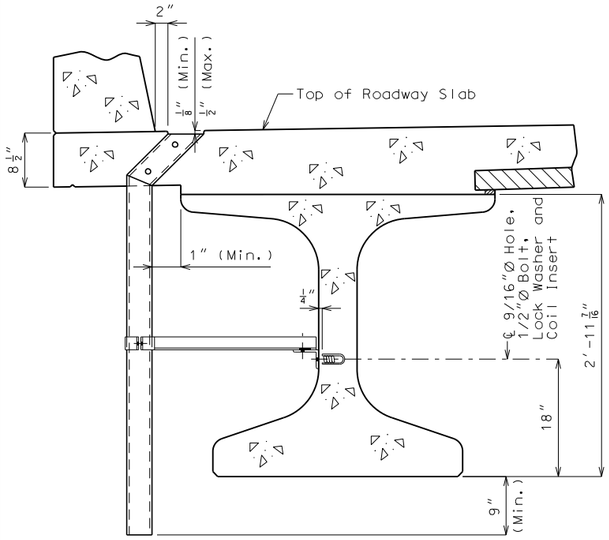
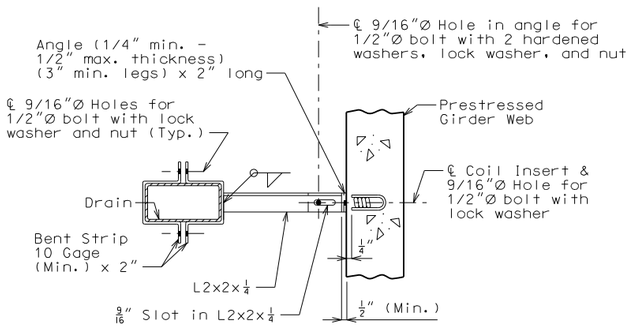


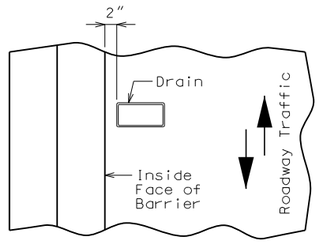
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



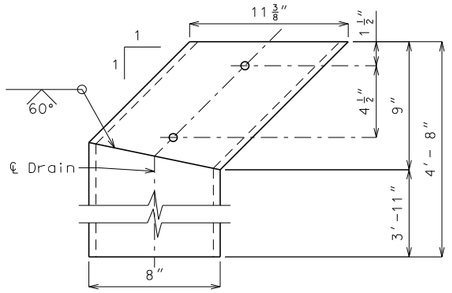
PART SECTION NEAR DRAIN



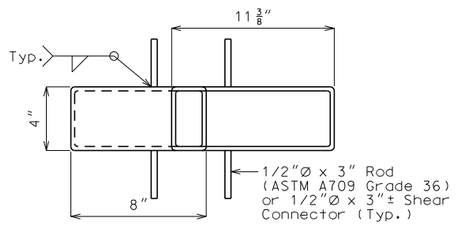
PART SECTION SHOWING BRACKET ASSEMBLY



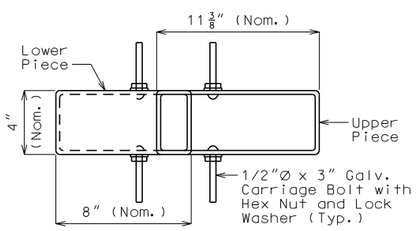
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

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

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

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

Reinforcing steel shall be shifted to clear drains.

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

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

All 1/2"Ø bolts shall be ASTM A307.

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

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

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

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

Notes for Steel Drain:

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

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

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

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

Minimum reinforced wall thickness shall be 1/4 inch.

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

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

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

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

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

SLAB DRAINS

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

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DATE PREPARED 4/30/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	14

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

DESCRIPTION	DATE

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1 South Church, Suite 700
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St. Charles, MO 63301
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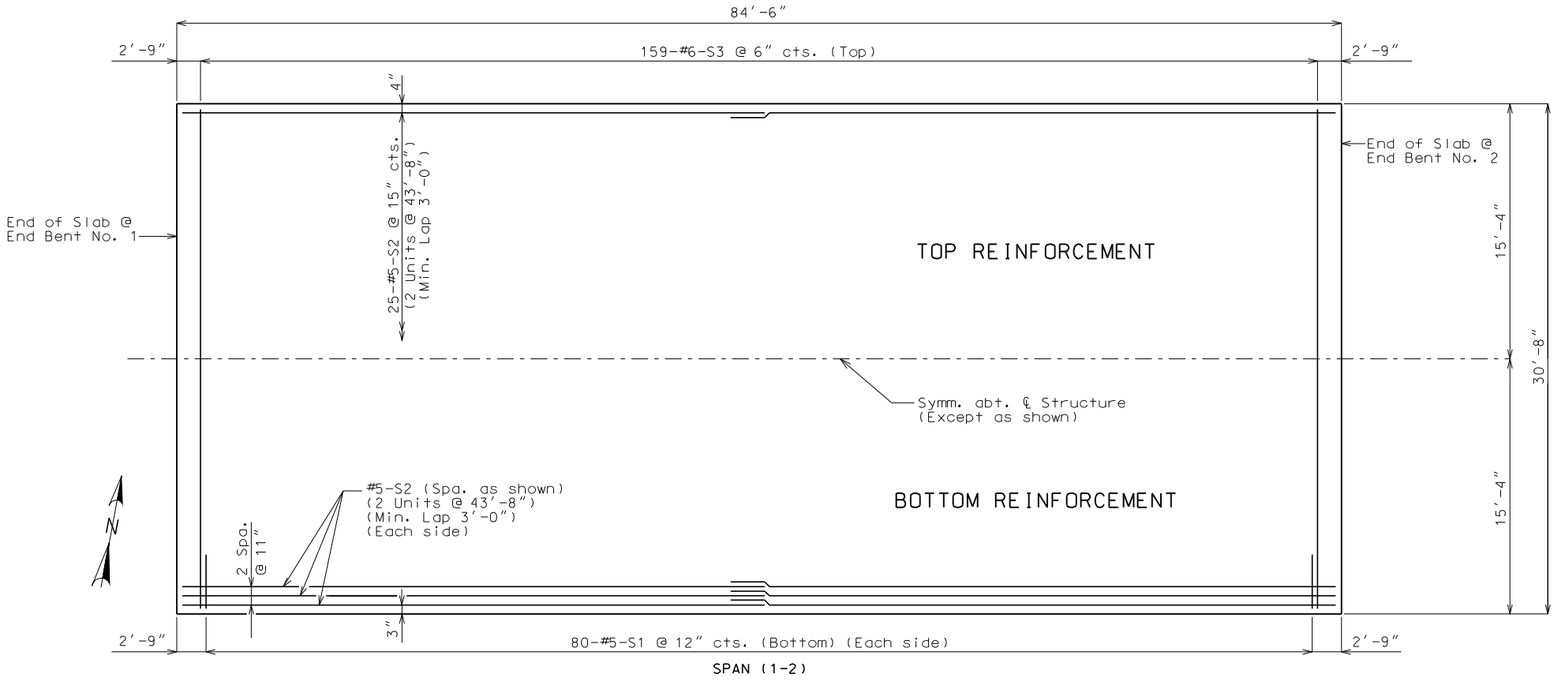
MISSOURI DESIGN FIRM PE-001166

REV.

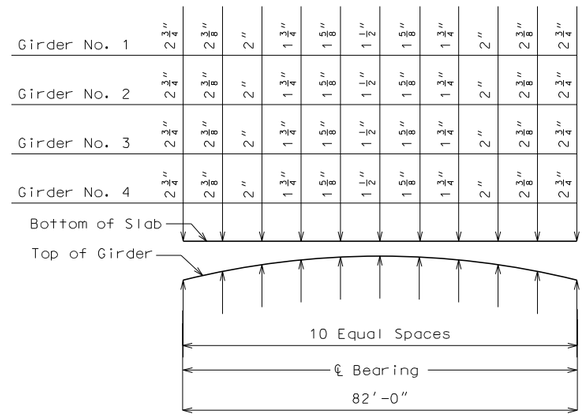
Detailed Sep. 2022
Checked Nov. 2022

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

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_014_J9S3606_Slab Drains.dgn 9:15:08 AM 4/30/2024



SPAN (1-2)

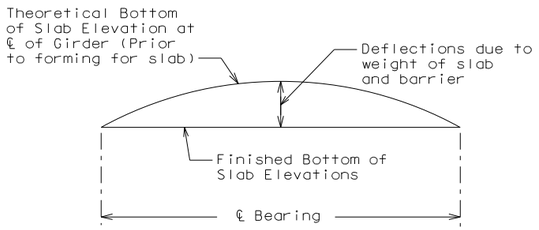


SPAN (1-2)

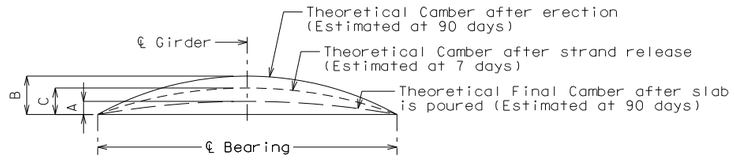
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. The haunch shall be limited to ensure the projecting girder reinforcement is embedded into slab at least 2 inches. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

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



TYPICAL SLAB ELEVATIONS DIAGRAM



GIRDER	Span (1-2)		
	A	B	C
Exterior	2 1/4″	3 7/8″	2 3/8″
Interior	2 1/4″		

GIRDER CAMBER DIAGRAM

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

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

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

Girder Number	Span (1-2) (82′-0″ ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	328.41	328.48	328.55	328.59	328.62	328.63	328.62	328.59	328.55	328.49	325.41
2	328.56	328.64	328.70	328.75	328.77	328.78	328.77	328.75	328.70	328.64	328.57
3	328.56	328.64	328.70	328.75	328.77	328.78	328.77	328.75	328.70	328.64	328.57
4	328.41	328.48	328.55	328.59	328.62	328.63	328.62	328.59	328.55	328.49	325.41

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.

General Notes:
Longitudinal slab dimensions are measured horizontally.

For details and reinforcement of barrier, see Sheets No. 17-19.

For Section Thru Slab and additional details, see Sheet No. 16.

For details of Prestressed Panels, see Sheet No. 13.

For details and locations of Slab Drains, see Sheet No. 14.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Sep. 2022
Checked Nov. 2022

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 15
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

REV.	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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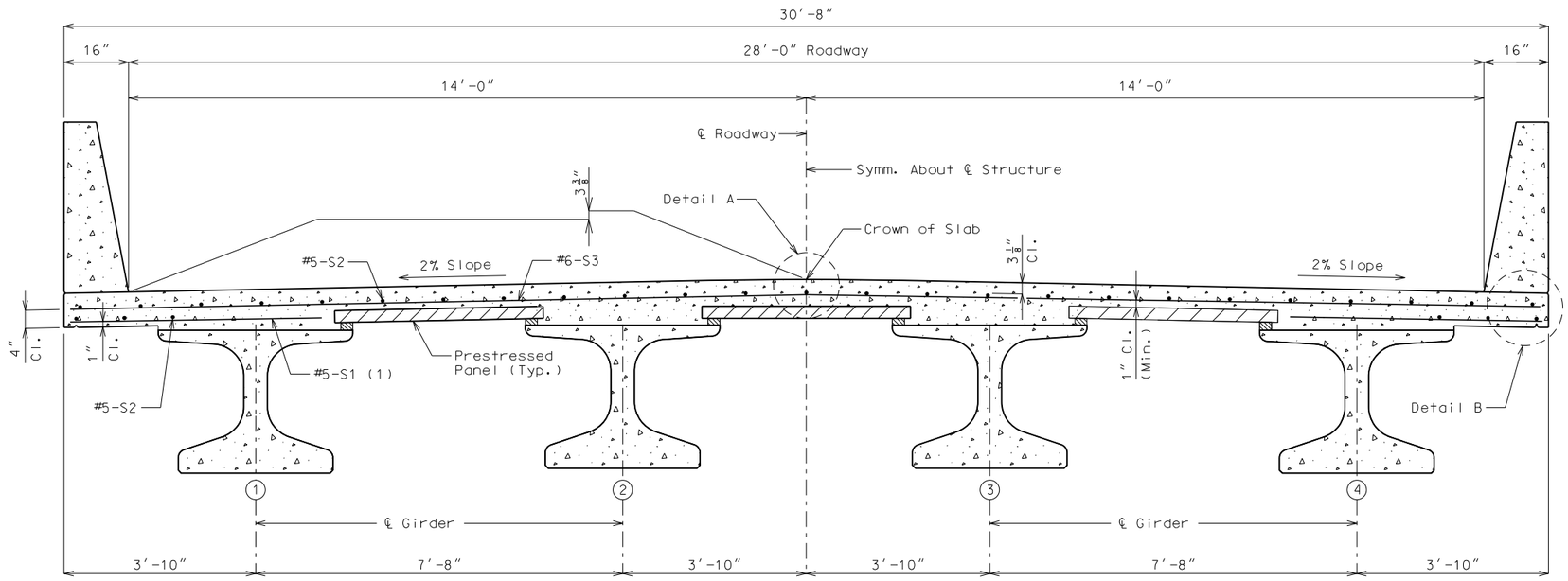
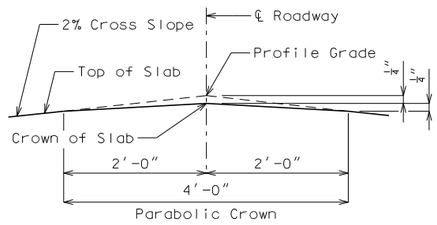
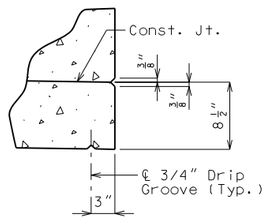


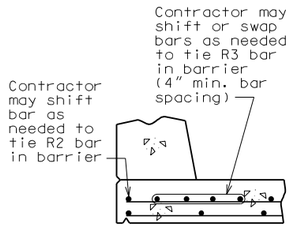
SECTION THRU SLAB



DETAIL A



DETAIL B



OPTIONAL SHIFTING TOP BARS AT BARRIER

Reference Notes:
(1) Alternate shape available, see barrier sheet.

General Notes:
For details of Prestressed Panels, see Sheet No. 13.

For Plan of Slab Showing Reinforcement, Theoretical Slab Haunching Diagram, and Theoretical Bottom of Slab Elevations, see Sheet No. 15.

For details and reinforcement of barrier, see Sheets No. 17-19.

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

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

The contractor shall pour and satisfactorily finish the roadway slab at the rate of not less than 25 cubic yards per hour.

SLAB DETAILS

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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REV.	DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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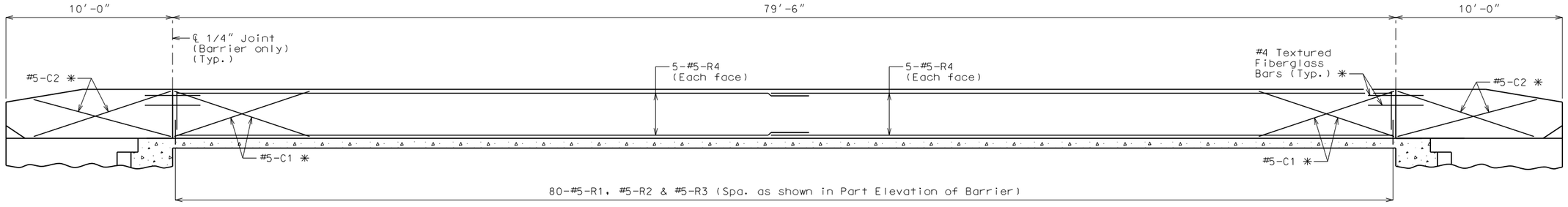
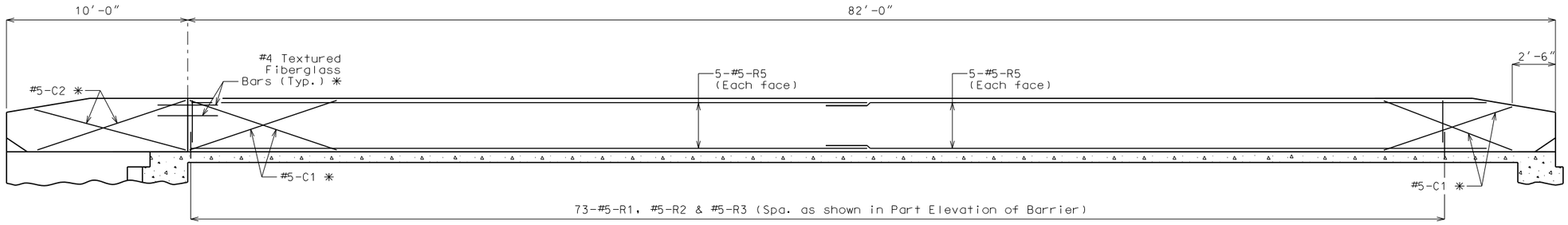


(Span 1-2)

ELEVATION OF LEFT BARRIER

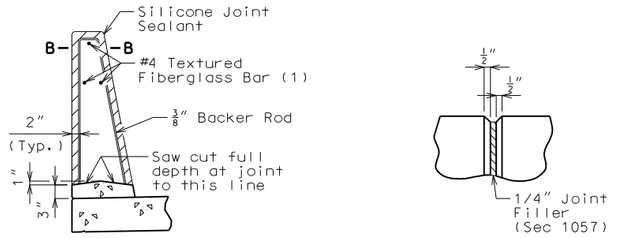
Longitudinal dimensions are horizontal.



(Span 1-2)

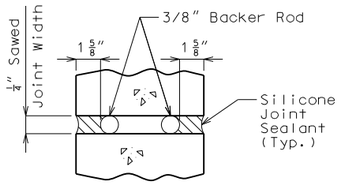
ELEVATION OF RIGHT BARRIER

Longitudinal dimensions are horizontal.

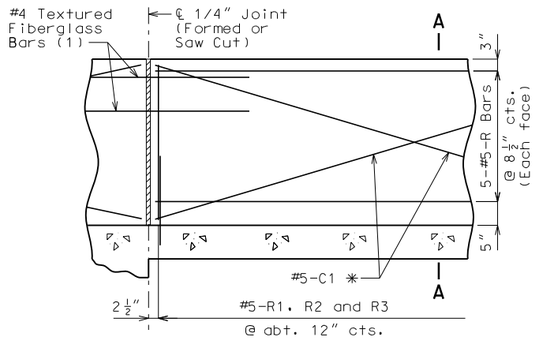


SECTION THRU SAW CUT JOINT

PART ELEVATION AT FORMED JOINT

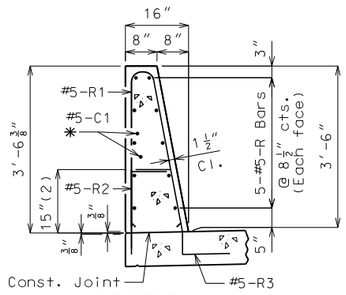


SECTION B-B



PART ELEVATION OF BARRIER

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

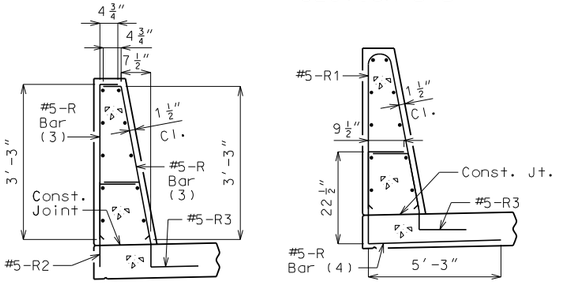


SECTION A-A

Use a minimum lap of 3′-1″ for #5 horizontal barrier bars.

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

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

(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.

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

TYPE D BARRIER

Detailed Jan. 2024
Checked Apr. 2024

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

Sheet No. 17 of 27

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	17

COUNTY BUTLER

JOB NO. J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9215

DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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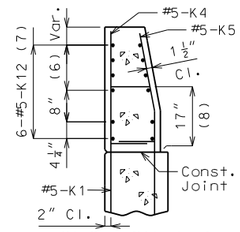
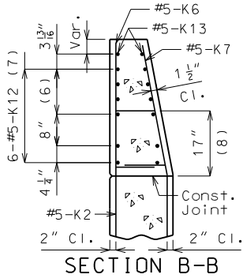
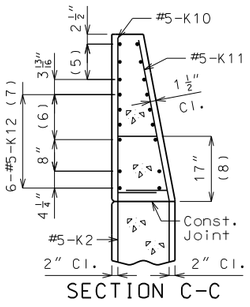


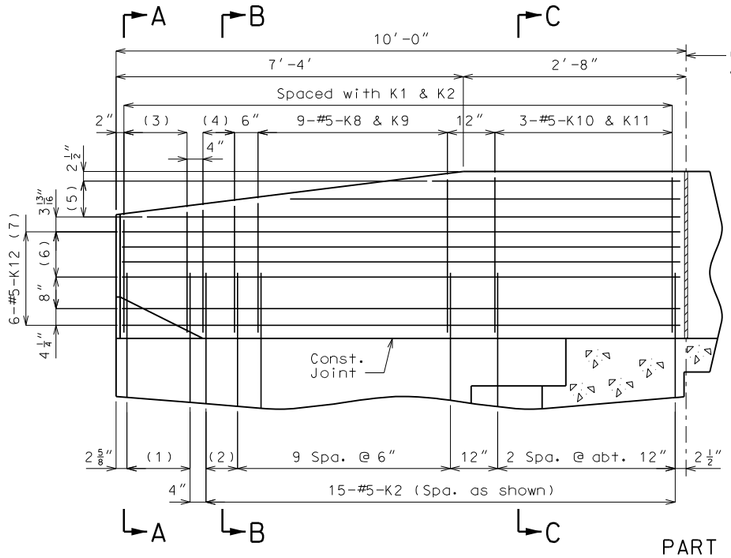
SECTION A-A

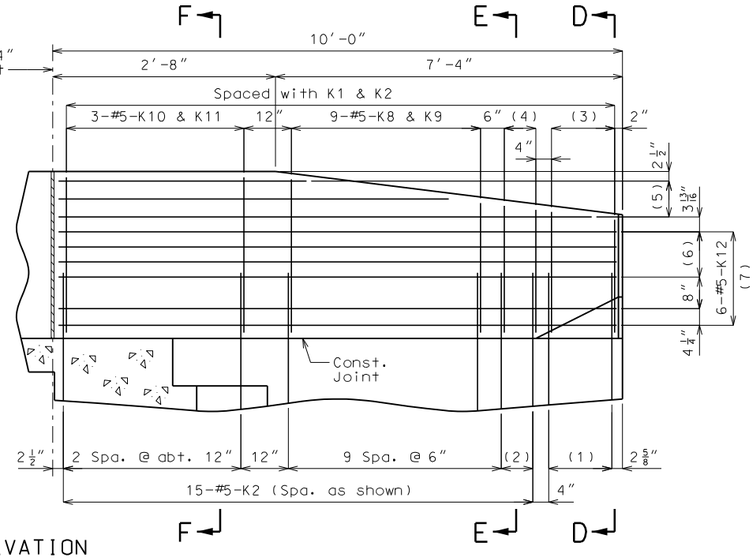


SECTION B-B

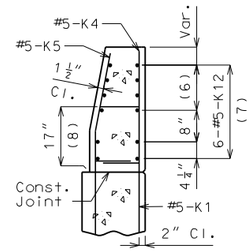


SECTION C-C

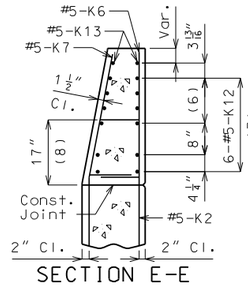




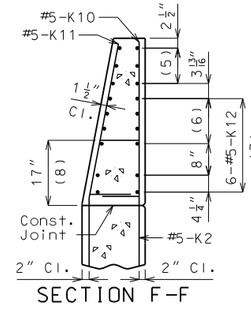
PART ELEVATION



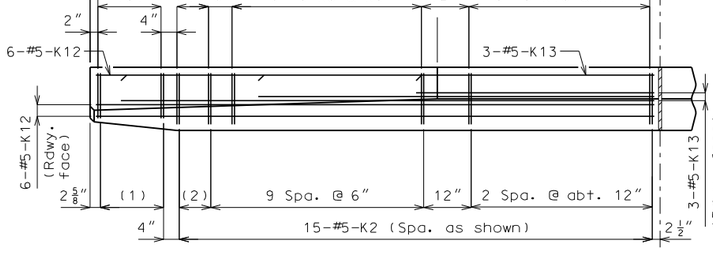
SECTION D-D

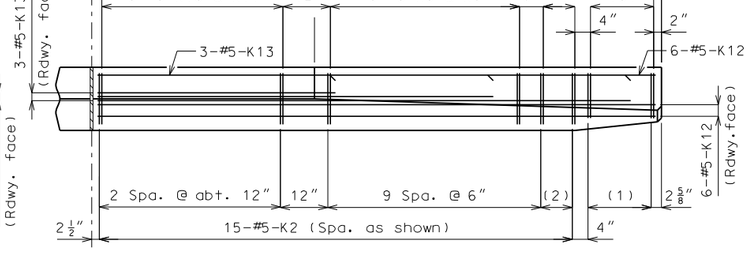


SECTION E-E

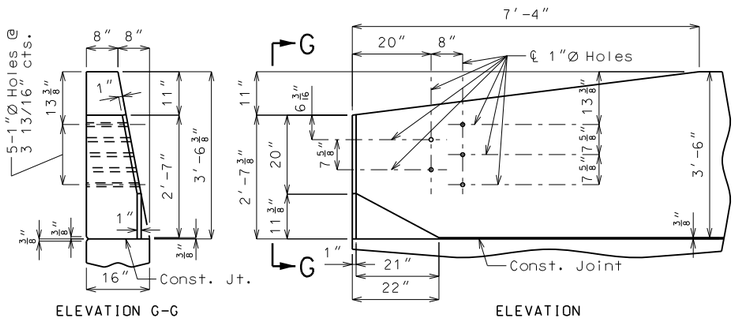


SECTION F-F

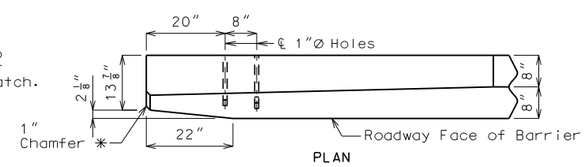




PART PLAN



ELEVATION G-G ELEVATION



PLAN

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

DETAILS OF GUARD RAIL ATTACHMENT

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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

(4) 3-#5-K6 & K7

(5) 3-#5-K13 @ 4½" cts., each face

(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

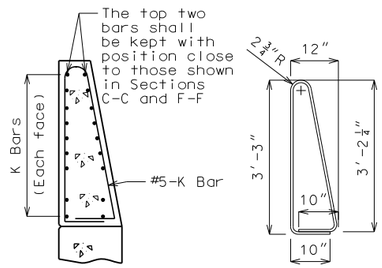
(8) To top of bar

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.



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.

TYPE D BARRIER AT END BENTS (LEFT)

Detailed Sep. 2022
Checked Nov. 2022

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	18

COUNTY BUTLER

JOB NO. J9S3606

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9215

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REV.	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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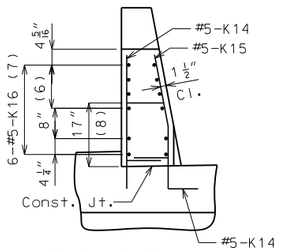
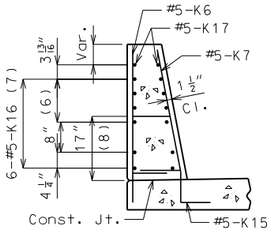
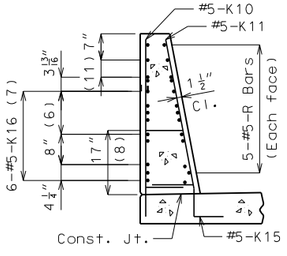


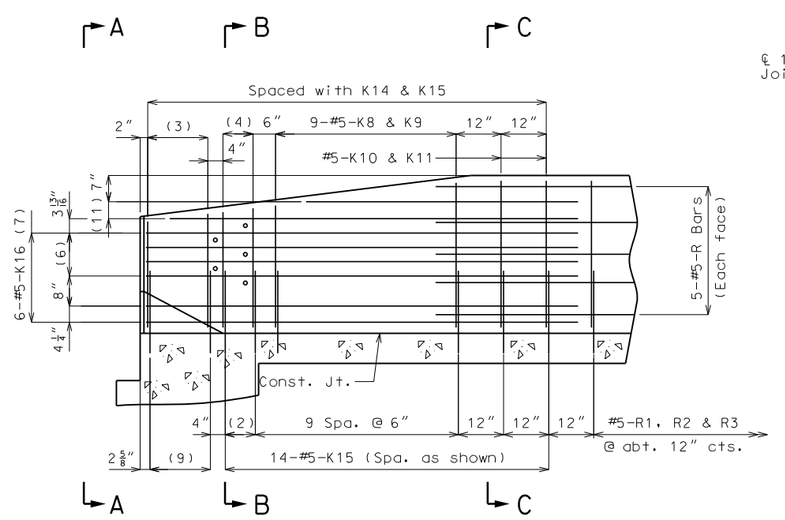
ELEVATION A-A



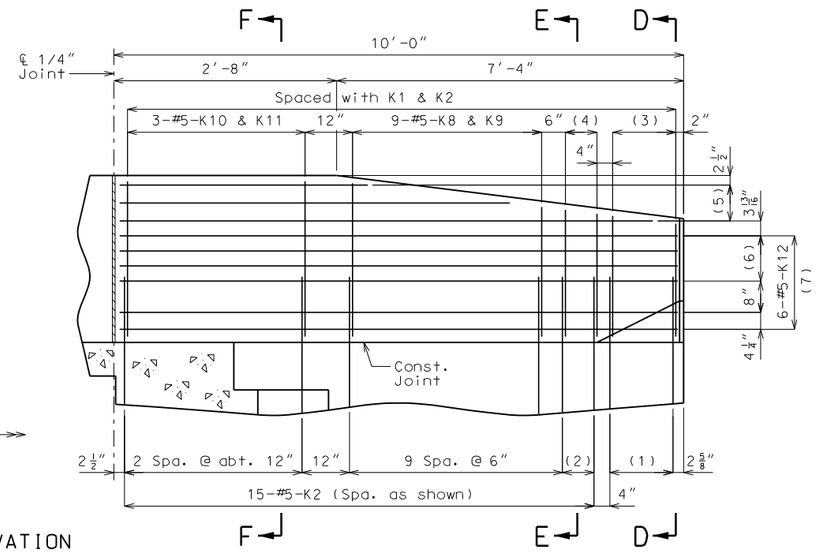
SECTION B-B

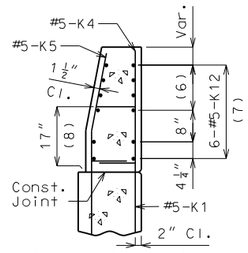


SECTION C-C

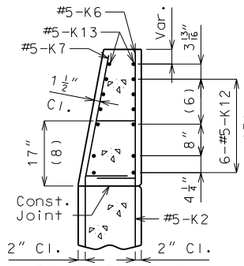


PART ELEVATION

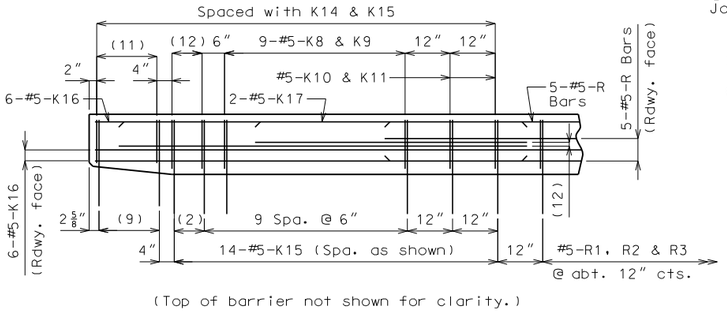




SECTION D-D

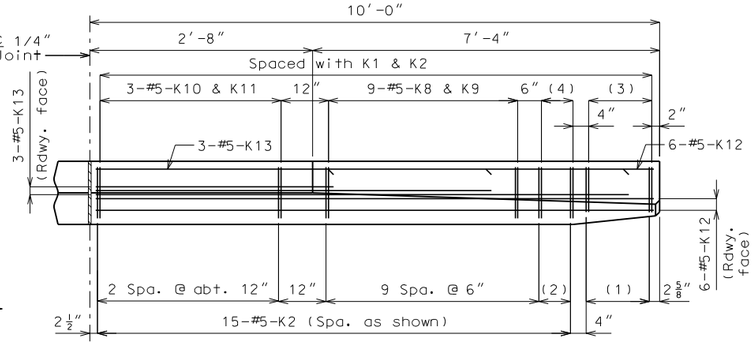


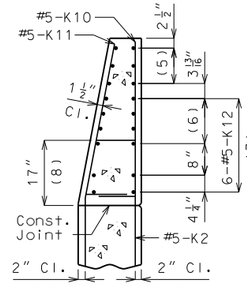
SECTION E-E



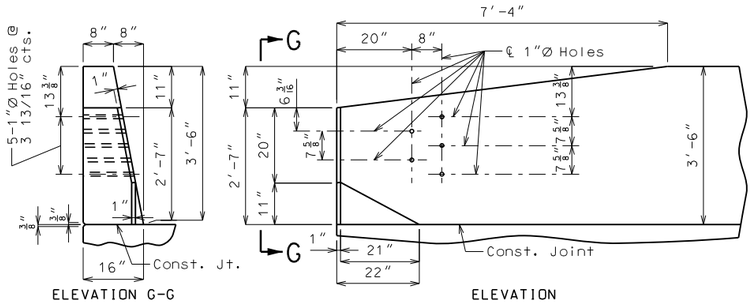
(Top of barrier not shown for clarity.)

PART PLAN





SECTION F-F



DETAILS OF GUARD RAIL ATTACHMENT

(Barrier on slab shown. For barrier on wing, see Sheet No. 18.)

(1) 5-#5-K1 @ 4" cts.
(2) 2 spaces @ 4"
(3) 5-#5-K4 & K5
(4) 3-#5-K6 & K7
(5) 3-#5-K13 @ 4 1/2" cts., each face
(6) 3 spaces @ 3 13/16"
(7) Spaced as shown, each face
(8) To top of bar
(9) 5-#5-K14 @ 4" cts.
(11) 2-#5-K17 @ 4 1/2" cts., each face
(12) 2-#5-K17 (Roadway face)

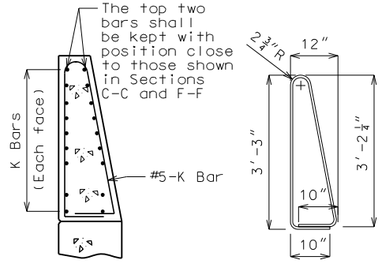
General Notes:

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.

Use a minimum lap of 3'-1" between horizontal K bars and R bars.



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.

TYPE D BARRIER AT END BENTS (RIGHT)

Detailed Jan. 2024
Checked Apr. 2024

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

Sheet No. 19 of 27

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024

ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	19

COUNTY: BUTLER
JOB NO.: J9S3606
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9215

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

DESCRIPTION | DATE | REV.

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

MoDOT

OATES ASSOCIATES

Collinsville
100 Lamer Court, Suite 1
Collinsville, IL 62234
618.345.4200

St. Louis
720 Olive, Suite 700
St. Louis, MO 63101
314.588.8281

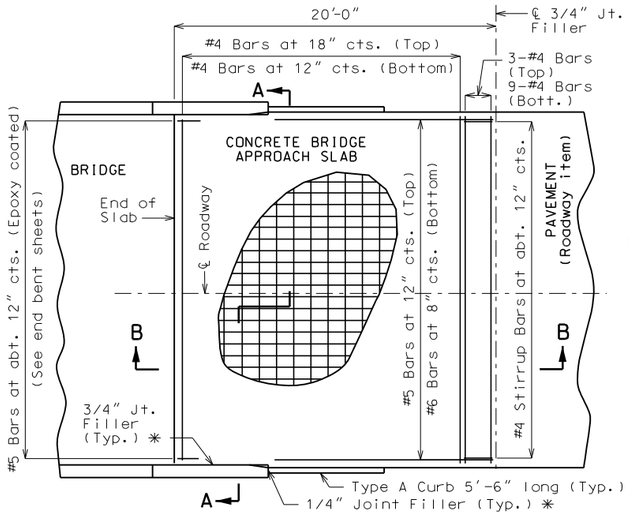
Belleville
1 South Church, Suite 700
Belleville, IL 62220
618.416.8488

St. Charles
820 South Main, Suite 309
St. Charles, MO 63301
636.493.5077

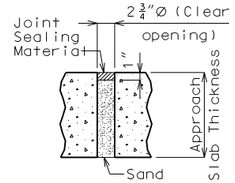
www.oatesassociates.com

MISSOURI DESIGN FIRM PE-001166

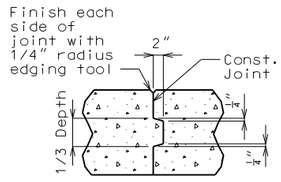
H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_019_J9S3606_Type D Barrier at End Bent (Right).dgn 9:15:14 AM 4/30/2024



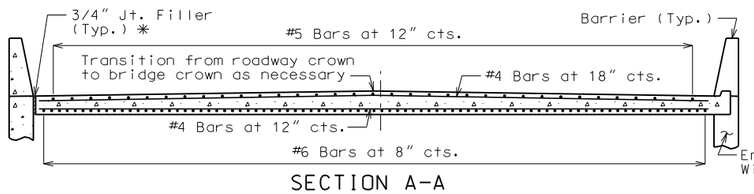
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



UNDERSEAL ACCESS HOLE DETAIL
(If required)

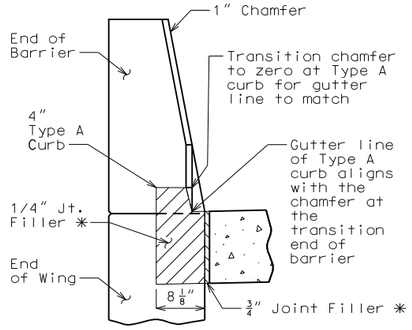


CONSTRUCTION JOINT DETAIL



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.

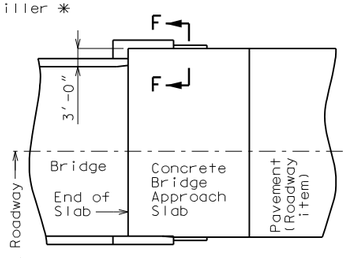
All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

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.

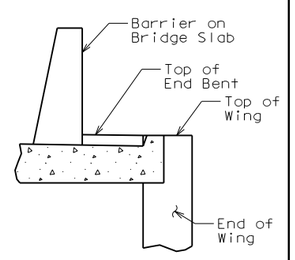
See Missouri Standard Plan 609.00 for details of Type A curb.

East approach slab and curb may need to be modified due to crash cushion foundation. Crash cushion foundation per crash cushion supplier. West crash cushion shall be mounted to approach slab. See roadway plans for locations of crash cushions.

* 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.



WEST PART PLAN
(See Part Plan of Squared Structure for details not shown)



SECTION F-F

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.

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.

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

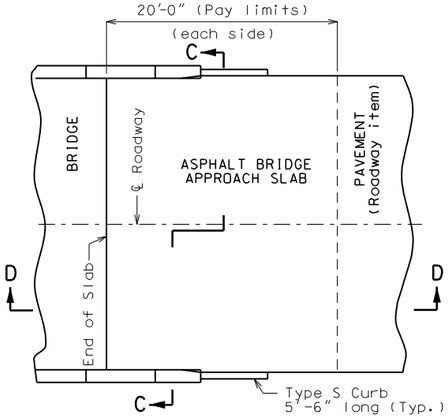
☐ Concrete Bridge Approach Slab
☐ Asphalt Bridge Approach Slab

Notes For Asphalt Slab Only:

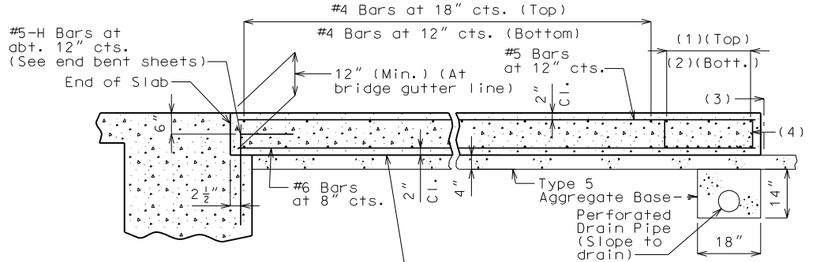
Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, underdrain and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach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

Application of tack is required between lifts per Sec 403.

Approach slab and curb may need to be modified due to crash cushion foundation. Crash cushion foundation per crash cushion supplier. See roadway plans for locations of crash cushions.

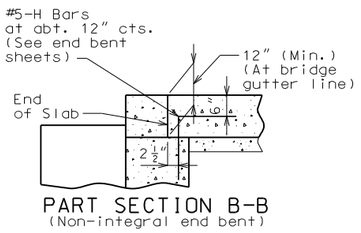


PART PLAN
(Squared structure shown, skewed structure similar)

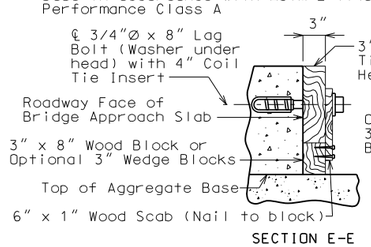


(1) 3-#4 Bars
(2) 9-#4 Bars
(3) ℄ 3/4" Jt. Filler
(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.

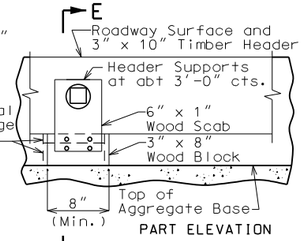
SECTION B-B
(Integral end bent)



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



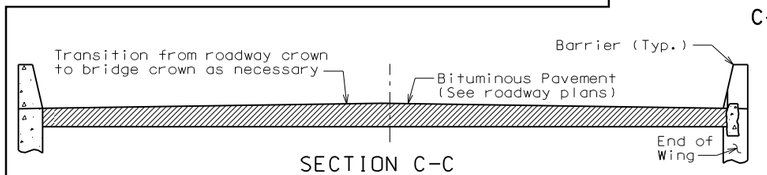
SECTION E-E



PART ELEVATION

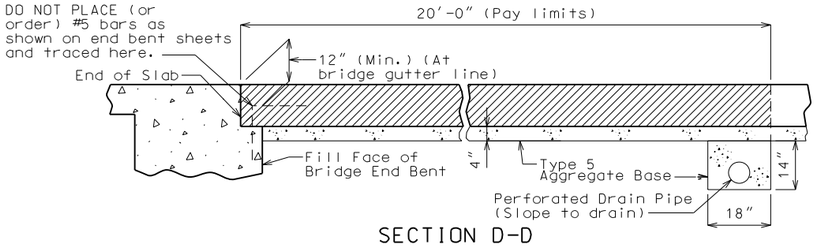
DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

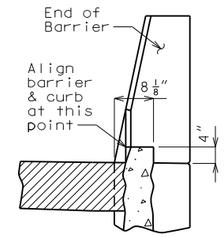


SECTION C-C

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 Sep. 2022
Checked Nov. 2022

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE | 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)

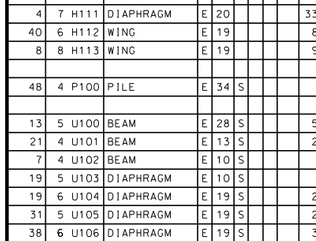
OATES ASSOCIATES
St. Louis 720 Olive, Suite 700 St. Louis, MO 63101 314.588.8181
St. Charles 820 South Main, Suite 309 St. Charles, MO 63301 636.493.0277
Collinsville 160 Lemen Court, Suite 1 Collinsville, IL 62234 618.345.4200
Belleville 1 South Church, Suite 200 Belleville, IL 62220 618.416.5468
www.oatesassociates.com
MISSOURI DESIGN FIRM PE-001166

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUPERSTR.																									
			END BENT 1																									
18	6	F100	WING	E	15					2	3.000	5	1.000	14.000		9.875		9.875		19.125		19.125		8	6	8	5	228
4	6	F101	DIAPHRAGM	E	19					8	6.000	2	7.000											11	1	10	11	66
4	6	F102	DIAPHRAGM	E	19					5	6.000	2	7.000											8	1	7	11	48
8	7	H100	BEAM	E	20					33	5.000													33	5	33	5	546
5	7	H101	BEAM	E	18					4	7.000													4	7	6	3	64
4	6	H102	BEAM	E	20					33	5.000													33	5	33	5	201
4	6	H103	DIAPHRAGM	E	20					33	5.000													33	5	33	5	201
3	6	H104	DIAPHRAGM	E	20					6	2.000													6	2	6	2	28
1	6	H105	DIAPHRAGM	E	20					4	11.000													4	11	4	11	7
3	6	H106	DIAPHRAGM	E	20					3	2.000													3	2	3	2	14
1	6	H107	DIAPHRAGM	E	20						23.000														23		23	3
9	6	H108	DIAPHRAGM	E	20					6	7.000													6	7	6	7	89
3	6	H109	DIAPHRAGM	E	20					4	2.000													4	2	4	2	19
4	5	H110	STRAND TIE	E	20					5	9.000													5	9	5	9	24
4	7	H111	DIAPHRAGM	E	20					33	5.000													33	5	33	5	273
40	6	H112	WING	E	19					8	8.000		12.000											9	8	9	6	571
8	8	H113	WING	E	19					9	6.000		12.000											10	6	10	4	221
48	4	P100	PILE	E	34	S					10.000													3	4	3	4	107
13	5	U100	BEAM	E	28	S				5	6.000	2	8.000	5	9.000									13	11	13	9	186
21	4	U101	BEAM	E	13	S				2	8.000	2	8.000	2	8.000	2	8.000							11	5	11	2	157
7	4	U102	BEAM	E	10	S						2	8.000	2	8.000									8	0	7	10	37
19	5	U103	DIAPHRAGM	E	10	S						3	5.000	2	2.000									9	0	8	10	175
19	6	U104	DIAPHRAGM	E	19	S				2	6.000	2	8.000											5	2	5	0	143
31	5	U105	DIAPHRAGM	E	19	S				2	0.000		15.000											3	3	3	2	102
38	6	U106	DIAPHRAGM	E	19	S				3	3.000	4	7.000											7	10	7	8	438
6	5	V100	BEAM	E	20					5	6.000													5	6	5	6	34
6	5	V101	BEAM	E	20					5	9.000													5	9	5	9	36
24	6	V102	DIAPHRAGM	E	20					2	6.000													2	6	2	6	90
16	6	V103	WING	E	20					6	5.000													6	5	6	5	154
16	6	V104	WING	E	20					6	9.000													6	9	6	9	162
36	5	V105	PILE	E	17					5	3.000													5	10	5	10	219
			END BENT 2																									
18	6	F200	WING	E	15					2	3.000	5	1.000	14.000		9.875		9.875		19.125		19.125		8	6	8	5	228
8	6	F201	DIAPHRAGM	E	19					5	6.000	2	7.000											8	1	7	11	95
8	7	H200	BEAM	E	20					30	5.000													30	5	30	5	497
5	7	H201	BEAM	E	18					3	11.000													3	11	5	7	57
4	6	H202	BEAM	E	20					30	5.000													30	5	30	5	183
4	6	H203	DIAPHRAGM	E	20					30	5.000													30	5	30	5	183
6	6	H204	DIAPHRAGM	E	20					3	2.000													3	2	3	2	29
2	6	H205	DIAPHRAGM	E	20						23.000														23		23	6
9	6	H206	DIAPHRAGM	E	20					6	7.000													6	7	6	7	89
3	6	H207	DIAPHRAGM	E	20					4	2.000													4	2	4	2	19
4	5	H208	STRAND TIE	E	20					5	9.000													5	9	5	9	24
4	7	H209	DIAPHRAGM	E	20					30	5.000													30	5	30	5	249
36	6	H210	WING	E	19					8	8.000		12.000											9	8	9	6	514
16	8	H211	WING	E	19					9	6.000		12.000											10	6	10	4	441
48	4	P100	PILE	E	34	S					10.000													3	4	3	4	107

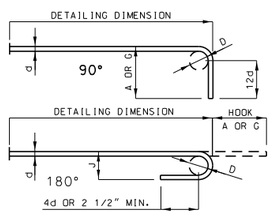
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
12	5	U200	BEAM	E	28	S				5	6.000	2	8.000	5	9.000									13	11	13	9	172
20	4	U201	BEAM	E	13	S				2	8.000	2	8.000	2	8.000	2	8.000							11	5	11	2	149
8	4	U202	BEAM	E	10	S						2	8.000	2	8.000									8	0	7	10	42
16	5	U203	DIAPHRAGM	E	10	S						3	5.000	2	2.000									9	0	8	10	147
16	6	U204	DIAPHRAGM	E	19	S				2	6.000	2	8.000											5	2	5	0	120
28	5	U205	DIAPHRAGM	E	19	S				2	0.000		15.000											3	3	3	2	92
38	6	U206	DIAPHRAGM	E	19	S				3	3.000	4	7.000											7	10	7	8	438
4	5	V200	BEAM	E	20					5	6.000													5	6	5	6	23
4	5	V201	BEAM	E	20					5	9.000													5	9	5	9	24
24	6	V202	DIAPHRAGM	E	20					2	6.000													2	6	2	6	90
32	6	V203	WING	E	20					6	5.000													6	5	6	5	308
36	5	V204	PILE	E	17					5	3.000													5	10	5	10	219
			SLAB																									
160	5	S1	SLAB	E	20					5	3.000													5	3	5	3	876
62	5	S2	SLAB	E	20					43	8.000													43	8	43	8	2824
159	6	S3	SLAB	E	20					30	5.000													30	5	30	5	7264
			TYPE D																									
			BARRIER																									
15	5	K1	BARRIER	E	27	S				3	8.000	9	250	5	375	3	2.750			5	250	1	000	8	1	7	11	124
45	5	K2	BARRIER	E	27	S				3	8.000	9	250	14	500	2	5.750			14	250	2	750	8	2	7	11	372
20	5	K4	BARRIER	E	19	S		V	4	2	4.250	10	000											3	2	3	1	66
			INCREMENT =							2	6.250	10	000											3	4	3	3	
			0.500 INCH																									
20	5	K5	BARRIER	E	14	S		V	4		8.250	9	500	18	500					4	000	18	000	3	0	2	11	63
			INCREMENT =								8.250	9	500	20	500					4	500	20	000	3	2	3	1	
			0.500 INCH																									
12	5	K6	BARRIER	E	19	S		V	4	2	6.750	10	000											3	5	3	4	42
			INCREMENT =							2	7.750	10	000											3	6	3	5	
			0.500 INCH																									
12	5	K7	BARRIER	E	21	S		V	4	2	6.625	10	000							2	6.000	6	250	3	5	3	3	41
			INCREMENT =							2	7.625	10	000							2	7.000	6	500	3	6	3	4	
			0.500 INCH																									
36	5	K8	BARRIER	E	19	S		V	4	2	8.500	10	000											3	7	3	5	138
			INCREMENT =							3	2.500	10	000											4	1	3	11	
			0.750 INCH																									
36	5	K9	BARRIER	E	21	S		V	4	2	8.500	10	000											3	7	3	5	138
			INCREMENT =							3	2.500	10	000											4	1	3	11	
			0.750 INCH																									
11	5	K10	BARRIER	E	19	S				3	3.000	10	000											4	1	4	0	46
11	5	K11	BARRIER	E	21	S				3	3.000	10	000							3	2.250	7	750	4	1	3	11	45
36	5	K12	BARRIER	E	20					9	9.000													9	9	9	9	366
18	5	K13	BARRIER	E	20			V	6	3	0.000													3	0	3	0	113
			INCREMENT =							9	0.000													9	0	9	0	
			36.000 INCH																									
5	5	K14	BARRIER	E	27	S					22.500	9	250	5	375	16	750	12	000	5	250	1	000	5	6	5	2	27
14	5	K15	BARRIER	E	27	S					22.500	9	250	17	250	5	000	12	000	17	000	3	250	5	6	5	3	77
12	5	K16	BARRIER	E	20					9	7.000													9	7	9	7	120
4	5	K17	BARRIER	E	20			V	2	5	10.000													5	10	5	10	31
			INCREMENT =							8	10.000													8	10	8	10	
			36.000 INCH																									



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

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



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

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

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

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

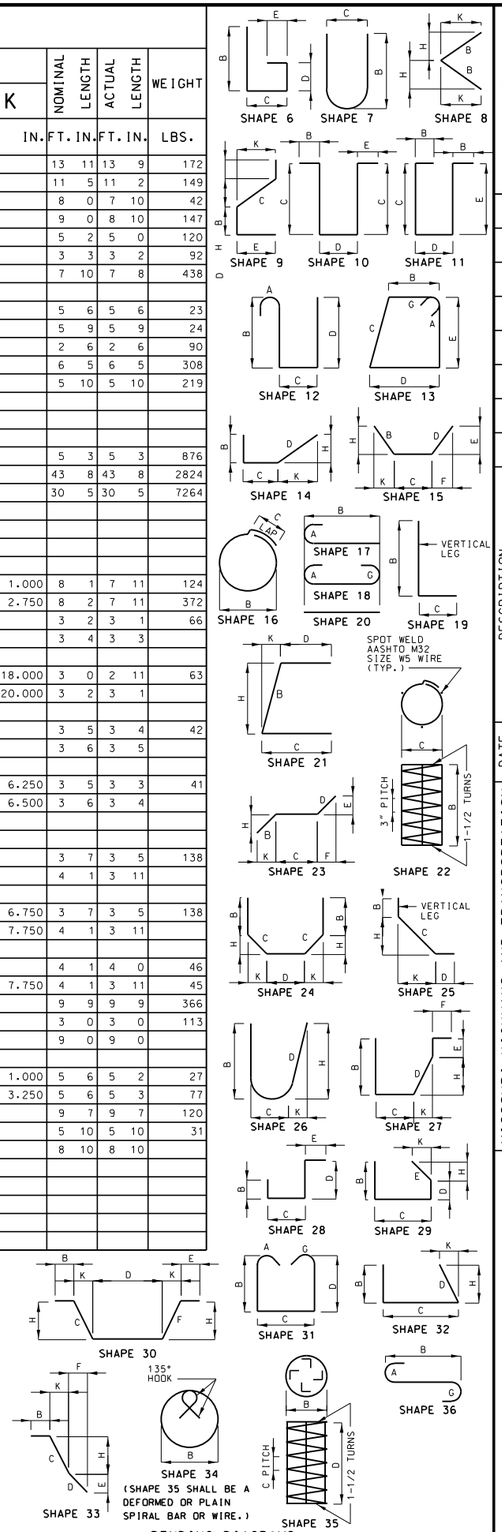
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

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

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.



BENDING DIAGRAMS

Detailed Jan. 2024
Checked Apr. 2024

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/29/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE | 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)

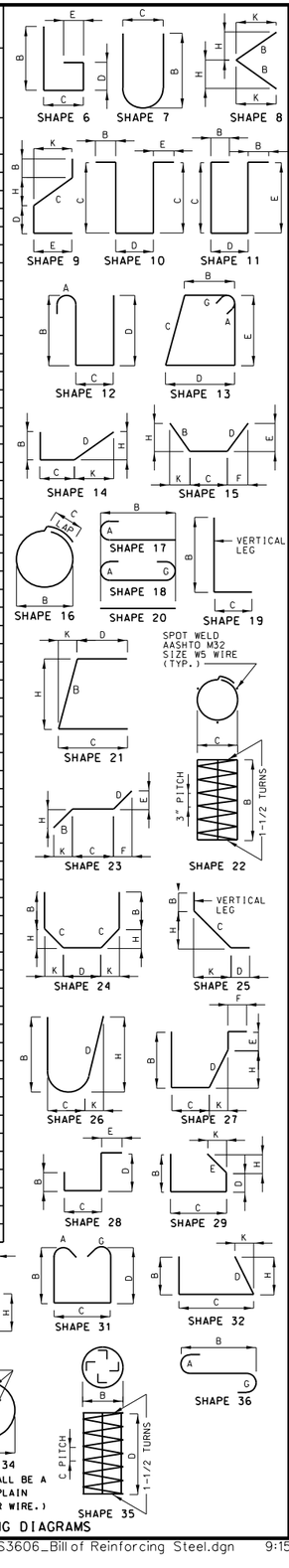
OATES ASSOCIATES
Collinsville 101 Lamer Court, Suite 1 Collinsville, IL 62234 618.345.2200
Belleville 1 South Church, Suite 200 Belleville, IL 62220 618.416.6488
St. Louis 720 Olive, Suite 700 St. Louis, MO 63101 314.588.8381
St. Charles 820 South Main, Suite 399 St. Charles, MO 63301 636.493.3277
www.oatesassociates.com
MISSOURI DESIGN FIRM PE-001166

BILL OF REINFORCING STEEL

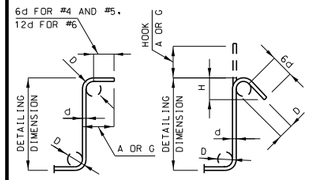
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
153	5	R1	BARRIER	E	26	S				3 3.000	5.500	3 3.625			3 3.000	6.750	6 9	6 9	1077
153	5	R2	BARRIER	E	19	S				20.500	9.500						2 6	2 5	386
153	5	R3	BARRIER	E	27	S					9.500	15.250	5.000	12.000	15.000	3.000	3 6	3 4	532
20	5	R4	BARRIER	E	20					41 2.000							41 2	41 2	859
20	5	R5	BARRIER	E	20					39 3.000							39 3	39 3	819
			SLIP FORM																12028
			BARRIER																1686
																			662
																			25782
8	5	C1	SLIP FORM	E	20					12 0.000							12 0	12 0	100
6	5	C2	SLIP FORM	E	20					7 9.000							7 9	7 9	48

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			TOTALS																
4				E															599
5				E															10807
6				E															12028
7				E															1686
8				E															662
			TOTAL	E															25782
			SLAB ON																
			CONCRETE																
			NU-GIRDER																
4				E															599
5				E															5177
6				E															12028
7				E															1686
8				E															662
			TOTAL	E															20152
			TYPE D																
			BARRIER																
5				E															5482
			TOTAL	E															5482
			SLIP FORM																
			OPTION																
5				E															148
			TOTAL	E															148

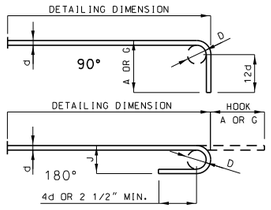


BENDING DIAGRAMS



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

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



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

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REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

Detailed Jan. 2024
Checked Apr. 2024

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

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 22
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION	DATE	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)

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166
Collinsville: 101 Lamer Court, Suite 1, Collinsville, IL 62234, 618.345.2200
St. Louis: 720 Olive, Suite 700, St. Louis, MO 63101, 314.588.8381
Belleville: 1 South Church, Suite 200, Belleville, IL 62220, 618.416.6488
St. Charles: 820 South Main, Suite 399, St. Charles, MO 63301, 636.493.5277
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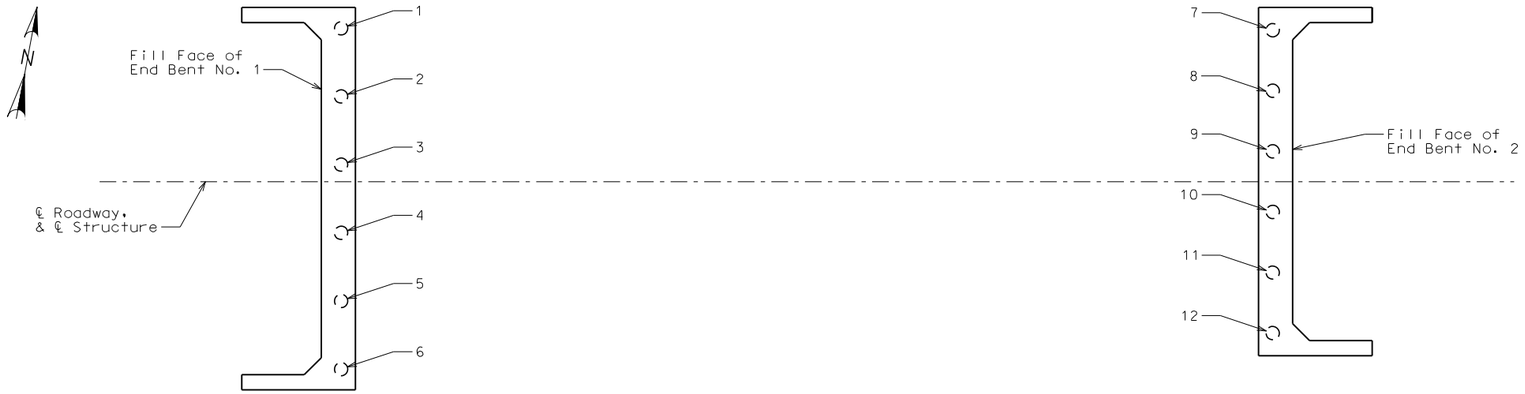

PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA

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					
5					
6					
					End Bent No. 2
7					
8					
9					
10					
11					
12					

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

This sheet to be completed by MoDOT construction personnel.

AS-BUILT PILE DATA

Detailed Jan. 2024
Checked Apr. 2024

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

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_023_J9S3606_As-Built Pile Data.dgn 1:43:55 PM 5/29/2024

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/29/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 23
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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
1-888-ASK-MODOT (1-888-275-6636)

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166
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720 Olive, Suite 700
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314.588.8391
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St. Charles, MO 63301
636.493.0277
Collinsville
108 Lanter Court, Suite 1
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618.345.2200
Belleville
1 South Church, Suite 700
Belleville, IL 62220
618.416.4488
www.oatesassociates.com

Missouri Department of Transportation
Construction and Materials

BORING NO. BH-2
Page 1 of 3

Job No.: J9S3606 **County:** Butler **Route:** Route B
Design: G0277 **Skew:** **Location:** Butler County
Bent: 1 **Logged By:** Matt Foster **Operator:** Felix Deken
Station: **Northing:** 339537.171 **Date of Work:** 05/21/20-05/21/20
Offset: Bent 1 **Easting:** 879048.876 **Depth to Water:** 15.0
Elevation: 324.9 **Requested Northing:** **Depth Hole Open:** 101
Requested Station: **Requested Easting:** **Time Change:** 0 hours
Requested Offset: **Equipment:** CME 750 ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Bent #1. Approximately 25' southeast of the southeast corner of the abutment
Drill No.: Smith & Co **Hammer Efficiency:** 93.7% **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		0.0-9.5' (CL) Clay, blueish-grey/brown, medium stiff							
5			320		100	2-2-3 (8)			LL = 41 PL = 15 MC = 25.1% Sieve Analysis Sieve # % Passing #4 100.0 #10 99.9 #40 98.4 #200 89.8
10		9.5-14.5' Clay, blueish-grey/brown, medium stiff	315		100	2-2-4 (9)			
15		▽ 14.5-19.5' Clay, blueish-gray, sandy, grey fine grained, stiff, saturated	310		100	2-2-4 (9)			
20		19.5-24.5' Clay, gray, sandy, very fine grained, stiff	305		100	2-2-4 (9)			MC = 33.8% Sieve Analysis Sieve # % Passing #4 100.0 #10 99.9 #40 99.7 #200 62.4
25		24.5-29.5' (SP) Sandy lean clay, grey, stiff 24.5-24.5' Lost hole at 24.5. Added drilling fluid	300		83	4-1-1 (3)			MC = 19.5% Sieve Analysis Sieve # % Passing #4 100.0 #10 99.8 #40 82.6 #200 1.8
30		29.5-34.5' Sand, grey, fine grained, medium dense, saturated	295		72	7-9-11 (31)			
35			290						MC = 20.9% Sieve Analysis Sieve # % Passing

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

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri East **Coordinate Proj. Factor:**
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.

LETTER BOREHOLE - MODOT 20150728.GDT - 4/11/22 12:31 - Z:\SG\GINT\PROJECT FILES\CONSULTANT FILES\J9S3606 - G0277_COMBINED.GPJ

Missouri Department of Transportation
Construction and Materials

BORING NO. BH-2
Page 2 of 3

Job No.: J9S3606 **County:** Butler **Route:** Route B
Design: G0277 **Skew:** **Location:** Butler County
Bent: 1 **Logged By:** Matt Foster **Operator:** Felix Deken
Station: **Northing:** 339537.171 **Date of Work:** 05/21/20-05/21/20
Offset: Bent 1 **Easting:** 879048.876 **Depth to Water:** 15.0
Elevation: 324.9 **Requested Northing:** **Depth Hole Open:** 101
Requested Station: **Requested Easting:** **Time Change:** 0 hours
Requested Offset: **Equipment:** CME 750 ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Bent #1. Approximately 25' southeast of the southeast corner of the abutment
Drill No.: Smith & Co **Hammer Efficiency:** 93.7% **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
35		34.5-39.5' (SP) Sand, fine grained, loose with trace fine gravel *(continued)*			78	2-3-4 (11)			3/4" 100.0 #4 97.6 #10 97.3 #40 73.5 #200 1.2
40		39.5-44.5' Sand, grey, fine grained, medium dense with trace fine gravel	285		83	7-9-11 (31)			
45		44.5-49.5' (SP) Sand, grey, fine grained, medium dense with trace fine gravel	280		89	4-6-8 (22)			MC = 21.5% Sieve Analysis Sieve # % Passing 3/4" 100.0 #4 99.5 #10 99.4 #40 98.1 #200 1.7
50		49.5-54.5' Sand, grey, medium grained, medium dense with trace fine gravel	275		72	4-9-9 (28)			
55		54.5-59.5' (SP) Sand, grey, medium-fine grained gravel, medium dense	270		83	6-8-12 (31)			MC = 19.8% Sieve Analysis Sieve # % Passing #4 100.0 #10 99.6 #40 51.8 #200 2.3
60		59.5-64.5' Sand, grey, medium-fine grained, medium dense, with clay and trace fine gravel	265		78	9-11-14 (39)			
65		64.5-69.5' (SP) Sand, grey, fine grained, dense	260		100	9-15-22 (58)			MC = 21.2% Sieve Analysis Sieve # % Passing 3/4" 100.0 #4 99.9 #10 98.9 #40 85.4 #200 4.8
70			255						

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

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri East **Coordinate Proj. Factor:**
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.

LETTER BOREHOLE - MODOT 20150728.GDT - 4/11/22 12:31 - Z:\SG\GINT\PROJECT FILES\CONSULTANT FILES\J9S3606 - G0277_COMBINED.GPJ

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 24
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE | REVISION

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

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

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166
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St. Charles 820 South Main, Suite 309 St. Charles, MO 63301 636.493.0277
Collinsville 100 Lamter Court, Suite 1 Collinsville, IL 62234 618.345.4200
Belleville 1 South Church, Suite 700 Belleville, IL 62220 618.413.4468
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Detailed Sep. 2022
Checked Nov. 2022

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

Sheet No. 24 of 27

BORING DATA

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

REV.

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_024_J9S3606_Boring Data.dgn 9:15:21 AM 4/30/2024

Missouri Department of Transportation
Construction and Materials

BORING NO. BH-2

Job No.: J9S3606 **County:** Butler **Route:** Route B
Design: G0277 **Skew:** **Location:** Butler County
Bent: 1 **Logged By:** Matt Foster **Operator:** Felix Deken
Station: **Northing:** 339537.171 **Date of Work:** 05/21/20-05/21/20
Offset: Bent 1 **Easting:** 879048.876 **Depth to Water:** 15.0
Elevation: 324.9 **Requested Northing:** **Depth Hole Open:** 101
Requested Station: **Requested Easting:** **Time Change:** 0 hours
Requested Offset: **Equipment:** CME 750 ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Bent #1. Approximately 25' southeast of the southeast corner of the abutment
Drill No.: Smith & Co **Hammer Efficiency:** 93.7% **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
70		69.5-74.5' Sand, grey, fine grained, dense *(continued)*		X	83	16-22-26 (75)			
75		74.5-79.5' (SP) Sand, grey, fine grained, dense	250	X	89	12-15-30 (70)			MC = 22.3% Sieve Analysis Sieve # % Passing #4 100.0 #10 100.0 #40 96.8 #200 4.0
80		79.5-89.5' Sand, grey, fine grained, dense	245	X	100	11-27-42 (108)			
85			240						
90		89.5-99.5' (SW) Sand, grey, coarse grained, medium dense	235	X	100	8-10-12 (34)			MC = 15.0% Sieve Analysis Sieve # % Passing 3/4" 100.0 #4 91.4 #10 67.3 #40 13.9 #200 2.8
95			230						
100		99.5-101.0' (SW) Sand, grey, medium-coarse grained, medium dense with fine-coarse gravel	225	X	67	10-11-12 (36)			MC = 17.0% Sieve Analysis Sieve # % Passing 3" 100.0 3/4" 97.4 #4 74.5 #10 67.5 #40 14.0 #200 2.2
		101.0-101.0' Boring terminated at 101'. Abandoned using drill cuttings Bottom of borehole at 101.0 feet.							

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

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri East **Coordinate Proj. Factor:**
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.

LETTER BOREHOLE - MODOT 20150728.GDT - 4/11/22 12:31 - Z:\SOG\INT\PROJECT FILES\CONSULTANT FILES\J9S3606 - G0277_COMBINED.GPJ

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 25
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

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

DESCRIPTION | DATE | REV.

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

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Detailed Sep. 2022
Checked Nov. 2022

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

BORING DATA

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

Missouri Department of Transportation
Construction and Materials

BORING NO. BH-1
Page 1 of 3

Job No.: J9S3606 **County:** Butler **Route:** Route B
Design: G0277 **Skew:** **Location:** Butler County
Bent: 2 **Logged By:** Matt Foster **Operator:** Felix Deken
Station: **Northing:** 339556.678 **Date of Work:** 05/20/20-05/20/20
Offset: Bent 2 **Easting:** 879166.348 **Depth to Water:** 20.0
Elevation: 324.4 **Requested Northing:** **Depth Hole Open:** 101
Requested Station: **Requested Easting:** **Time Change:** 0 hours
Requested Offset: **Equipment:** CME 750 ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Bent #2. West end of bridge approximately 13' west and 5' south of southwest corner
Drill No.: Smith & Co **Hammer Efficiency:** 93.7% **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		0.0-9.5' Clay, blueish gray/brown, medium stiff	320						
5				X	83	2-2-3 (8)			
10		9.5-14.5' Clay, blueish-gray/brown, medium stiff	315	X	83	2-3-4 (11)			
15		14.5-19.5' (CL) Clay, blueish-gray/brown, soft, sandy, moist	310	X	89	2-2-2 (6)			LL = 30 PL = 19 MC = 26.3% Sieve Analysis Sieve # % Passing 3/4" 100.0 #4 99.8 #10 99.7 #40 99.3 #200 63.1
20		▽ 19.5-24.5' Clay, grey, stiff, sandy, saturated	305	X	78	2-3-4 (11)			
25		24.5-29.5' Sand, gray, fine grained, very loose 24.5-24.5' Lost hole at 24.5. Added drilling fluid	300	X	44	5-1-1 (3)			
30		29.5-34.5' Sand, gray, fine grained, medium dense	295	X	72	3-5-7 (19)			
35			290						

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

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

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Missouri Department of Transportation
Construction and Materials

BORING NO. BH-1
Page 2 of 3

Job No.: J9S3606 **County:** Butler **Route:** Route B
Design: G0277 **Skew:** **Location:** Butler County
Bent: 2 **Logged By:** Matt Foster **Operator:** Felix Deken
Station: **Northing:** 339556.678 **Date of Work:** 05/20/20-05/20/20
Offset: Bent 2 **Easting:** 879166.348 **Depth to Water:** 20.0
Elevation: 324.4 **Requested Northing:** **Depth Hole Open:** 101
Requested Station: **Requested Easting:** **Time Change:** 0 hours
Requested Offset: **Equipment:** CME 750 ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Bent #2. West end of bridge approximately 13' west and 5' south of southwest corner
Drill No.: Smith & Co **Hammer Efficiency:** 93.7% **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
35		34.5-39.5' Sand, gray, fine grained, medium dense *(continued)*	285	X	78	14-14-12 (41)			
40		39.5-44.5' Sand, gray, medium dense, very fine	280	X	61	5-7-7 (22)			
45		44.5-49.5' Sand, gray, medium dense, very fine	275	X	72	7-7-10 (27)			
50		49.5-54.5' Sand, gray, medium dense, fine grained	270	X	78	8-10-11 (33)			
55		54.5-59.5' Sand, gray, medium dense, fine grained	265	X	83	6-6-10 (25)			
60		59.5-64.5' Sand, gray, medium dense, fine grained	260	X	56	7-11-11 (34)			
65		64.5-69.5' Sand, gray, dense, fine-very fine	255	X	83	13-21-22 (67)			
70									

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

Coordinate System: U.S. State Plane 1983 **Coordinate Zone:** Missouri East **Coordinate Proj. Factor:**
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STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER

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DATE PREPARED 4/30/2024
ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 26
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE | REV.

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

OATES ASSOCIATES
MISSOURI DESIGN FIRM PE-001166

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Checked Nov. 2022

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

Sheet No. 26 of 27

BORING DATA

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

H:\P\221097 - BB 1 SE District\001-J9S3606-RteB-G0277\Bridge\Final Bridge\Microstation\B_A9215_026_J9S3606_Boring Data.dgn 9:16:17 AM 4/30/2024

Missouri Department of Transportation
Construction and Materials

BORING NO. BH-1
Page 3 of 3

Job No.: J9S3606 **County:** Butler **Route:** Route B
Design: G0277 **Skew:** **Location:** Butler County
Bent: 2 **Logged By:** Matt Foster **Operator:** Felix Deken
Station: **Northing:** 339556.678 **Date of Work:** 05/20/20-05/20/20
Offset: Bent 2 **Easting:** 879166.348 **Depth to Water:** 20.0
Elevation: 324.4 **Requested Northing:** **Depth Hole Open:** 101
Requested Station: **Requested Easting:** **Time Change:** 0 hours
Requested Offset: **Equipment:** CME 750 ,Split-Spoon Sampler, NQ
Requested Elevation: **Location Note:** Bent #2. West end of bridge approximately 13' west and 5' south of southwest corner
Drill No.: Smith & Co **Hammer Efficiency:** 93.7% **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
70		69.5-74.5' Sand, gray, fine-very fine gained, dense *(continued)*	250	X	94	14-24-26 (78)			
75		74.5-79.5' Sand, gray, fine-very fine grained, very dense	245	X	83	16-24-26 (78)			
80		79.5-84.5' Sand, gray, fine very fine grained, medium dense	240	X	67	9-11-13 (37)			
85		84.5-89.5' Sand, gray, fine-very fine grained, dense	235	X	72	16-18-21 (61)			
90		89.5-99.5' Sand, gray, medium dense, fine-coarse grained	230	X	78	11-12-16 (44)			
95			225						
100		99.5-101.0' Sand, gray, dense, fine-medium grained		X	100	14-17-16 (52)			
		101.0-101.0' Boring terminated at 101'. Abandoned using drill cuttings Bottom of borehole at 101.0 feet.							

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
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KEY TO SYMBOLS - MODOT 20150728.GDT - 3/30/22 08:56 - Z:\SG\GINT\PROJECT FILES\CONSULTANT FILES\J9S3606 - G0277_COMBINED.GPJ

KEY TO SYMBOLS

Missouri Dept of Transportation

CLIENT MoDOT **PROJECT NAME** MoDOT Bridge - G0277
PROJECT NUMBER J9S3606 **PROJECT LOCATION** Butler County

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- USCS Low Plasticity Clay
- USCS Low Plasticity Sandy Clay
- USCS Poorly-graded Sand
- USCS Well-graded Sand

SAMPLER SYMBOLS

- Split-Spoon Sampler

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)
Qu - UNCONFINED COMPRESSIVE STRENGTH (PSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

Water Level at Time of Drilling
Water Level at End of Drilling
Water Level after Drilling

STATE OF MISSOURI
JASON A. DREYER
NUMBER PE-2013038971
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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ROUTE B | STATE MO
DISTRICT BR | SHEET NO. 27
COUNTY BUTLER
JOB NO. J9S3606
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9215

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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JEFFERSON CITY, MO 65102
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BORING DATA

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

Detailed Sep. 2022
Checked Nov. 2022

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

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