

DESIGN DESIGNATION

A.A.D.T. - 2021 = 1038
A.A.D.T. - 2041 = 1557
T = 5.3%
V = 55 M.P.H.

FUNCTIONAL CLASSIFICATION- RL-MAJOR COLLECTOR

NORMAL RIGHT OF WAY

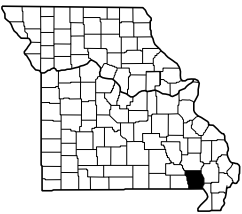
CONVENTIONAL SYMBOLS
(USED IN PLANS)

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

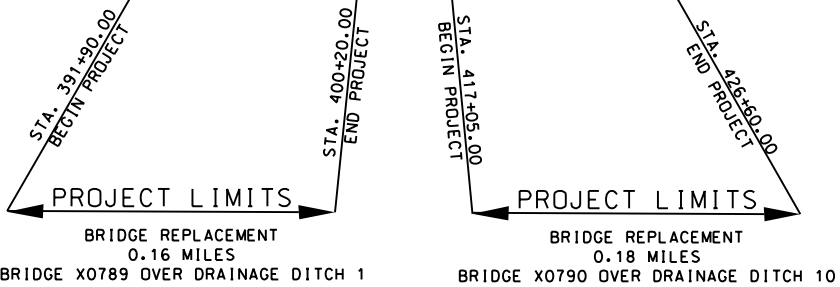
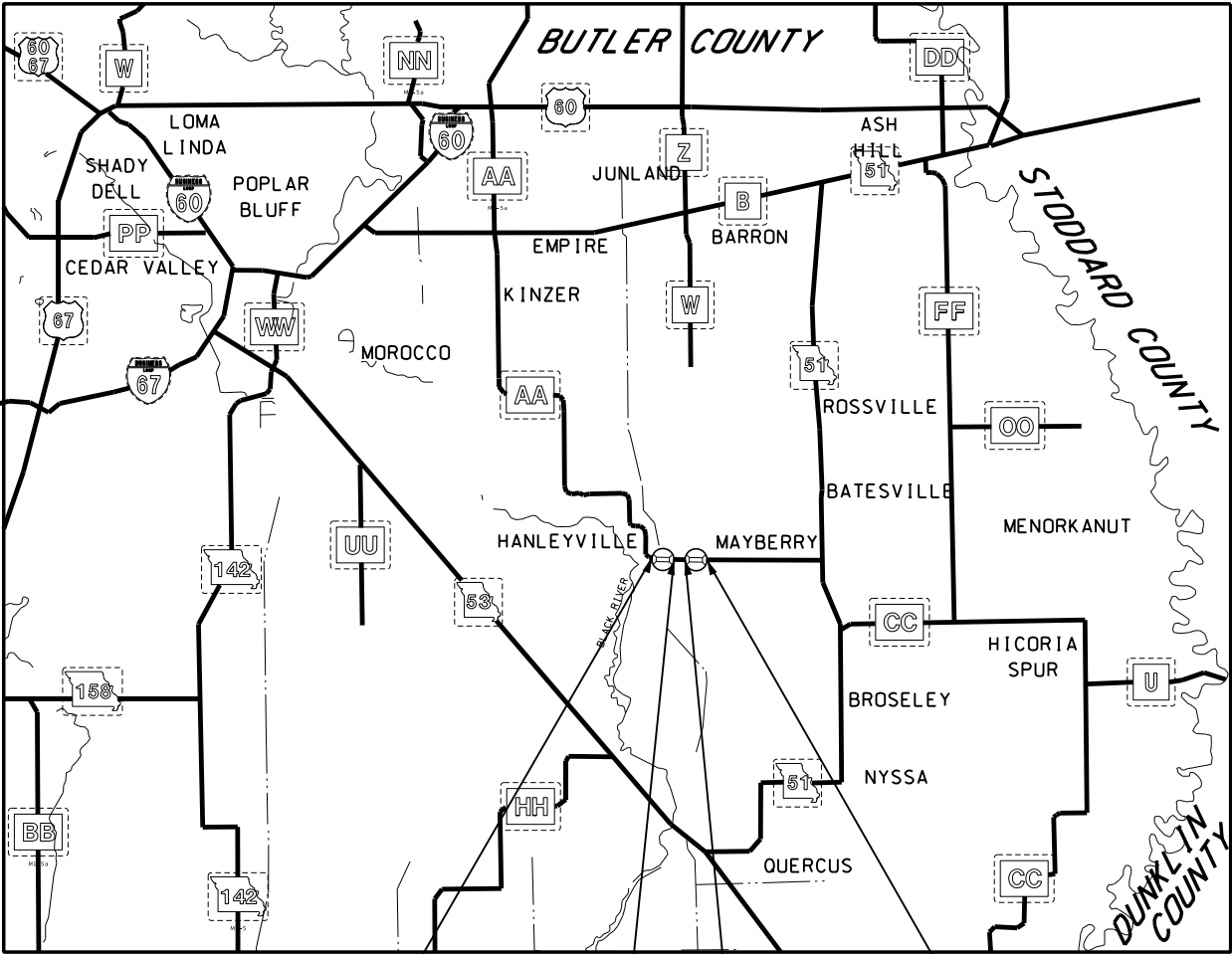
NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
CONSTRUCTION PLANS FOR PROPOSED
STATE HIGHWAY

S26 T24N R7E
S27 T24N R7E



KEY MAP
SHOWING LOCATION OF COUNTY



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

INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
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REFERENCE AND COORDINATE POINTS	6
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RIGHT OF WAY (RW)	9-10
TRAFFIC CONTROL (TC)	11-13
EROSION CONTROL (EC)	14-15
PAVEMENT MARKINGS (PM)	16-17
CROSS SECTIONS (XS)	1-14



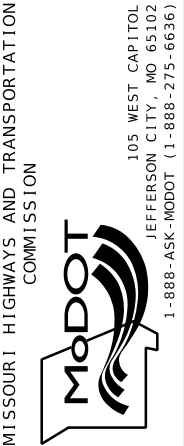
DATE PREPARED 7/11/2025	
ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 1
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID. .	
PROJECT NO. .	
BRIDGE NO. .	

DESCRIPTION	DATE

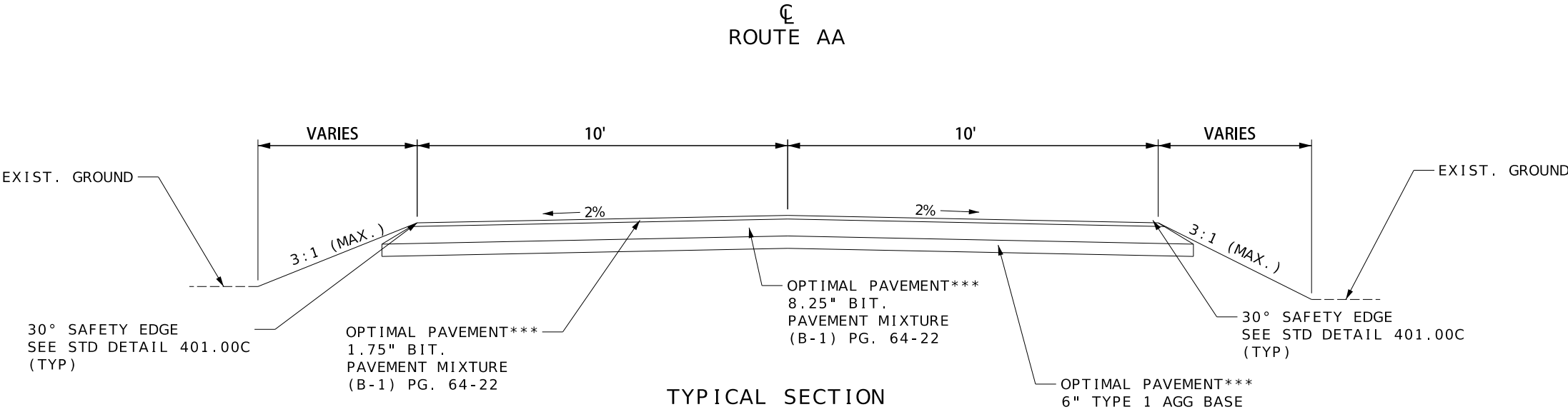
LENGTH OF PROJECT

BRIDGE A9347	
BEGINNING OF PROJECT	STA. 391+90.00
END OF PROJECT	STA. 400+20.00
APPARENT LENGTH	830 FEET
BRIDGE A9348	
BEGINNING OF PROJECT	STA. 417+05.00
END OF PROJECT	STA. 426+60.00
APPARENT LENGTH	955 FEET
EQUATIONS AND EXCEPTIONS:	

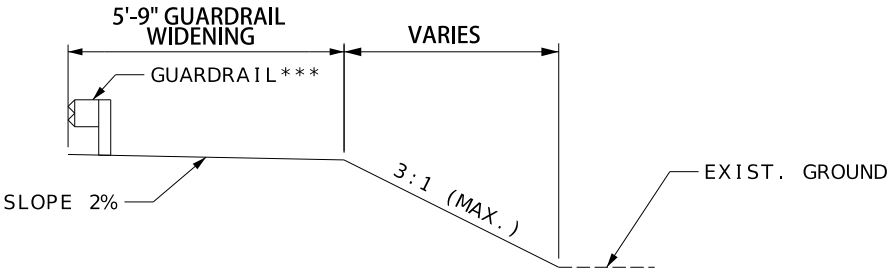
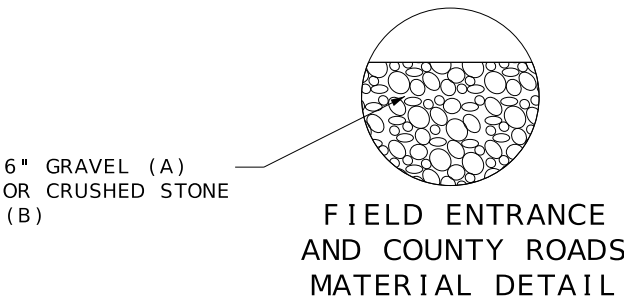
TOTAL CORRECTIONS	0.00 FEET
NET LENGTH OF PROJECT	1785 FEET
STATE LENGTH	0.34 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	2.174 ACRES



TITLE SHEET	ROUTE AA OVER DRAINAGE DITCH 1 & DRAINAGE DITCH 10
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TYPICAL SECTION
ROUTE AA
STA. 392+00 TO STA. 400+20.00
STA. 418+20.00 TO STA. 424+40.00



PROPOSED TYPICAL SECTION GUARDRAIL WIDENING RT
STA. 396+49.70 TO 398+12.95
STA. 418+56.02 TO 420+69.27

DISCLAIMER
THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEAR HEREON ASSUMES RESPONSIBILITY ONLY FOR WHAT APPEARS ON THIS PAGE, AND DISCLAIMS (PURSUANT TO SECTION 327.411 RSMO) SPECIFICATION, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE UNDERSIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS PAGE REFERS.

***NOTE: PAVEMENT AND SHOULDER OPTIONS CONSIST OF:
1.75" BIT. PAVEMENT MIXTURE (BP-1) PG64-22 OVER
8.25" BIT. PAVEMENT MIXTURE (BASE) PG64-22 ON
6" TYPE 1 AGG. BASE OR
8" JPCP WITH 10 FT. JOINT SPACING AND
1.25" DOWELS ON 6" TYPE 1 AGG. BASE

NOTE: BRIDGE APPROACH SLABS FOR BRIDGE A9347
STA. 395+29.25 TO STA. 395+51.75
AND STA. 396+41.25 TO STA. 396+60.75

BRIDGE APPROACH SLABS FOR BRIDGE A9348
STA. 420+63.39 TO STA. 420+83.84
AND STA. 421+66.70 TO STA. 421+86.15



DATE PREPARED 5/7/2025	
ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 2
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

HORNER SHIFRIN

401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103
314-531-4321 - FAX 314-531-6966
WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2024

TYPICAL SECTIONS SHEET 1 OF 1	ROUTE AA OVER DRAINAGE DITCH 1 & DRAINAGE DITCH 10
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																	EFFECTIVE: 04-01-2021																																								
SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION										SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION										ITEM NUMBER	TOTAL QTY	DESCRIPTION																			
WARNING SIGNS								TURN (SYMBOL LEFT ARROW)										GUIDE SIGNS								GORE EXIT										6122008								IMPACT ATTENUATOR 40 MPH (SAND BARRELS)													
W01-1R								TURN (SYMBOL RIGHT ARROW)										E05-2								EXIT OPEN										6122009								IMPACT ATTENUATOR 45 MPH (SAND BARRELS)													
W01-2L								CURVE (SYMBOL LEFT ARROW)										E05-2a								EXIT CLOSED										6122010								IMPACT ATTENUATOR 50 MPH (SAND BARRELS)													
W01-2R								CURVE (SYMBOL RIGHT ARROW)										G020-1								ROAD WORK NEXT XX MILES										6122012								IMPACT ATTENUATOR 55 MPH (SAND BARRELS)													
W01-3L								REVERSE TURN (SYMBOL LEFT ARROW)										G020-2								END ROAD WORK										6122014								IMPACT ATTENUATOR 60 MPH (SAND BARRELS)													
W01-3R								REVERSE TURN (SYMBOL RIGHT ARROW)										G020-4								PILOT CAR FOLLOW ME										6122017								IMPACT ATTENUATOR 65 MPH (SAND BARRELS)													
W01-4L								REVERSE CURVE (SYMBOL LEFT ARROW)										M01-5								STATE ROUTE SIGN										6122019								IMPACT ATTENUATOR 70 MPH (SAND BARRELS)													
W01-4R								REVERSE CURVE (SYMBOL RIGHT ARROW)										M03-4								CARDINAL DIRECTION										6122020								REPLACEMENT SAND BARREL													
W01-4bL								DOUBLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)										M04-8								DETOUR										6122030								IMPACT ATTENUATOR (RELOCATION)													
W01-4bR								DOUBLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)										M04-8a								END DETOUR										6123000A								TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)													
W01-4cL								TRIPLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)										M04-9L								DETOUR (LEFT ARROW)										6161008								4				ADVANCED WARNING RAIL SYSTEM									
W01-4cR								TRIPLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)										M04-9R								DETOUR (RIGHT ARROW)										6161012								BUOYS (BOATS KEEP OUT)													
W01-6								HORIZONTAL ARROW (SYMBOL)										M04-9P								STREET NAME (PLAQUE)										6161013								BUOYS (NO WAKE)													
W01-6a								HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)										M6-1								DIRECTIONAL ARROW										6161014								SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)													
W01-7								DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)										M6-3								DIRECTIONAL ARROW										6161025								CHANNELIZER (TRIM LINE)													
W01-7a								DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)										REGULATORY SIGNS										6161030								10 TYPE III MOVEABLE BARRICADE																					
W01-8								CHEVRON (SYMBOL)										R1-1								STOP										6161033								DIRECTION INDICATOR BARRICADE													
W01-8a								CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)										R1-2								YIELD										6161040								FLASHING ARROW PANEL													
W03-1								STOP AHEAD (SYMBOL)										R1-2a								TO ONCOMING TRAFFIC (PLAQUE)										6161047								TYPE III OBJECT MARKER													
W03-2								YIELD AHEAD (SYMBOL)										R1-3P								ALL WAY (PLAQUE)										6161051								WARNING LIGHT, TYPE A													
W03-3								SIGNAL AHEAD (SYMBOL)										R2-1								SPEED LIMIT XX										6161052								WARNING LIGHT, TYPE B													
W03-4								BE PREPARED TO STOP										R3-1								NO RIGHT TURN (SYMBOL)										6161053								WARNING LIGHT, TYPE C													
W03-5								SPEED LIMIT AHEAD										R3-2								NO LEFT TURN (SYMBOL)										6161055								SEQUENTIAL FLASHING WARNING LIGHT													
W04-1L								MERGE (SYMBOL FROM LEFT)										R3-3								NO TURNS										6161070								TUBULAR MARKER													
W04-1R								MERGE (SYMBOL FROM RIGHT)										R3-4								NO U-TURN (SYMBOL)										6161095								RADAR SPEED ADVISORY SYSTEM													
W04-1aL								MERGE (ARROW SYMBOL)										R3-7L								LEFT LANE MUST TURN LEFT										6161096								CHANGEABLE MESSAGE SIGN,													
W04-1aR								MERGE (ARROW SYMBOL)										R3-7R								RIGHT LANE MUST TURN RIGHT																		COMMISSION FURNISHED/RETAINED													
W05-1								ROAD/BRIDGE/RAMP NARROWS										R4-1								DO NOT PASS										6161098A								CHANGEABLE MESSAGE SIGN W/O COMM.													
W05-3								ONE LANE BRIDGE										R4-2								PASS WITH CARE																		INTERFACE, CONTRACTOR FURNISHED/RETAINED													
W05-5								NARROW LANES										R4-8a								KEEP LEFT (HORIZONTAL ARROW)										6161099								CHANGEABLE MESSAGE SIGN WITH COMM.													
W06-1								DIVIDED HIGHWAY (SYMBOL)										R4-7a								KEEP RIGHT (HORIZONTAL ARROW)																		INTERFACE, CONTRACTOR FURNISHED/RETAINED													
W06-2								DIVIDED HIGHWAY END (SYMBOL)										R5-1								DO NOT ENTER										6162000A								WORK ZONE TRAFFIC SIGNAL SYSTEM													
W06-3								TWO WAY TRAFFIC (SYMBOL)										R5-1a								WRONG WAY										6162002								TEMPORARY LONG-TERM RUMBLE STRIPS													
W07-3a								NEXT XX MILES (PLAQUE)										R6-1L								ONE WAY ARROW (LEFT)										6162004								TEMPORARY SHORT-TERM RUMBLE STRIPS													
W08-1								BUMP										R6-1R								ONE WAY ARROW (RIGHT)										6173600D								TEMPORARY TRAFFIC BARRIER													
W08-2								DIP										R6-2L								ONE WAY (LEFT)																		CONTRACTOR FURNISHED/RETAINED													
W08-3								PAVEMENT ENDS										R6-2R								ONE WAY (RIGHT)										6173602B								TEMPORARY TRAFFIC BARRIER													
W08-4								SOFT SHOULDER										R9-9								SIDEWALK CLOSED																		CONTRACTOR FURNISHED/COMMISSION RETAINED													
W08-5								SLIPPERY WHEN WET (SYMBOL)										R9-11L								SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE										6174000A								TEMP. TRAFFIC BARRIER HEIGHT TRANSITION													
W08-6								TRUCK CROSSING (WITH FLAGS)																		(ARROW RIGHT) CROSS HERE										6175010A								RELOCATING TEMPORARY TRAFFIC BARRIER													
W08-6c								TRUCK ENTRANCE										R9-11R								SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE										6176000B								TEMPORARY TRAFFIC BARRIER													
W08-7								LOOSE GRAVEL																		STOP HERE ON RED (45° ARROW)										COMMISSION FURNISHED/RETAINED																					
W08-7a								FRESH OIL/LOOSE GRAVEL										R10-6								ROAD CLOSED										6177000B								TEMP. TRAFFIC BARRIER HEIGHT TRANSITION													
W08-9								LOW SHOULDER										R11-2								ROAD CLOSED 13 & 2 MILES AHEAD										6208064A								TEMPORARY RAISED PAVEMENT MARKER													
W08-11								UNEVEN LANES										R11-3a								LOCAL TRAFFIC ONLY										9029400								TEMPORARY TRAFFIC SIGNALS													
W08-12								NO CENTER LINE										R11-4								ROAD CLOSED TO THRU TRAFFIC										9029401								TEMPORARY TRAFFIC SIGNALS AND LIGHTING													
W08-15								GROOVED PAVEMENT										CONST-3A								FINE SIGN																															
W08-15P								MOTORCYCLE (PLAQUE)										CONST-3X								SPEEDING/PASSING (PLATE)																															
W08-17								SHOULDER DROP-OFF (SYMBOL)										MISCELLANEOUS SIGNS																																							
W08-17P								SHOULDER DROP-OFF (PLAQUE)										S1								EAST/DETOUR/MO AA/STRT ARW																															
W10-1								RAILROAD CROSSING										S1								EAST/DETOUR/MO AA/LT ARW																															
W012-1								DOUBLE DOWN ARROW (SYMBOL)										S1								EAST/DETOUR/MO AA/RT ARW																															
W012-2								LOW CLEARANCE (SYMBOL)										S1								WEST/DETOUR/MO AA/STRT ARW																															
W012-2X								LOW CLEARANCE (PLAQUE)										S1								WEST/DETOUR/MO AA/LT ARW																															
W012-2a								OVERHEAD LOW CLEARANCE (FEET AND INCHES)																																																	
W012-4								LOW CLEARANCE XX FT XX IN XX MILES AHEAD																																																	
W012-5								WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD																																																	
W013-1								ADVISORY SPEED (PLAQUE)																																																	
W016-2								XXX FEET (PLAQUE)																																																	
W016-3								X MILE (PLAQUE)																																																	
W020-1								ROAD/BRIDGE/RAMP WORK AHEAD																																																	
W020-2								DETOUR AHEAD																																																	
W020-3								ROAD CLOSED AHEAD																																																	
W020-3a								ROAD CLOSED 500 FT										616-10.05								TOTAL																															
W020-5								RIGHT/CENTER/LEFT LANE CLOSED AHEAD										CONSTRUCTION SIGNS								322.5																															
W020-5a								2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD										616-10.10										TOTAL																													
W020-6a								RIGHT/CENTER/LEFT LANE CLOSED										RELOCATED SIGNS										0																													
W020-7a								FLAGGER (SYMBOL, WITH FLAGS)																																																	
W021-2								FRESH OIL																																																	
W021-5								SHOULDER WORK AHEAD																																																	
W022-1								BLASTING ZONE AHEAD																																																	
W022-2								TURN OFF 2-WAY RADIO AND PHONE																																																	
W022-3								END BLASTING ZONE																																																	
G022-1								WET PAINT (ARROW PIVOTS)																																																	

STATE OF MISSOURI

REGISTERED PROFESSIONAL ENGINEER

JOHN E. KLEIN

NUMBER 2009-00035

5/6/2025

DATE PREPARED

5/7/2025

ROUTE AA

STATE MO

DISTRICT SE

SHEET NO. 3

COUNTY BUTLER

JOB NO. J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITAL

JEFFERSON CITY, MO 65102

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

HORNER SHIFRIN

401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103

314-531-4321 FAX 314-531-6466

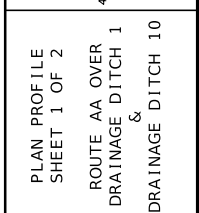
DISCIPLINE: PROFESSIONAL ENGINEERING

CERTIFICATE OF AUTHORITY # 000159

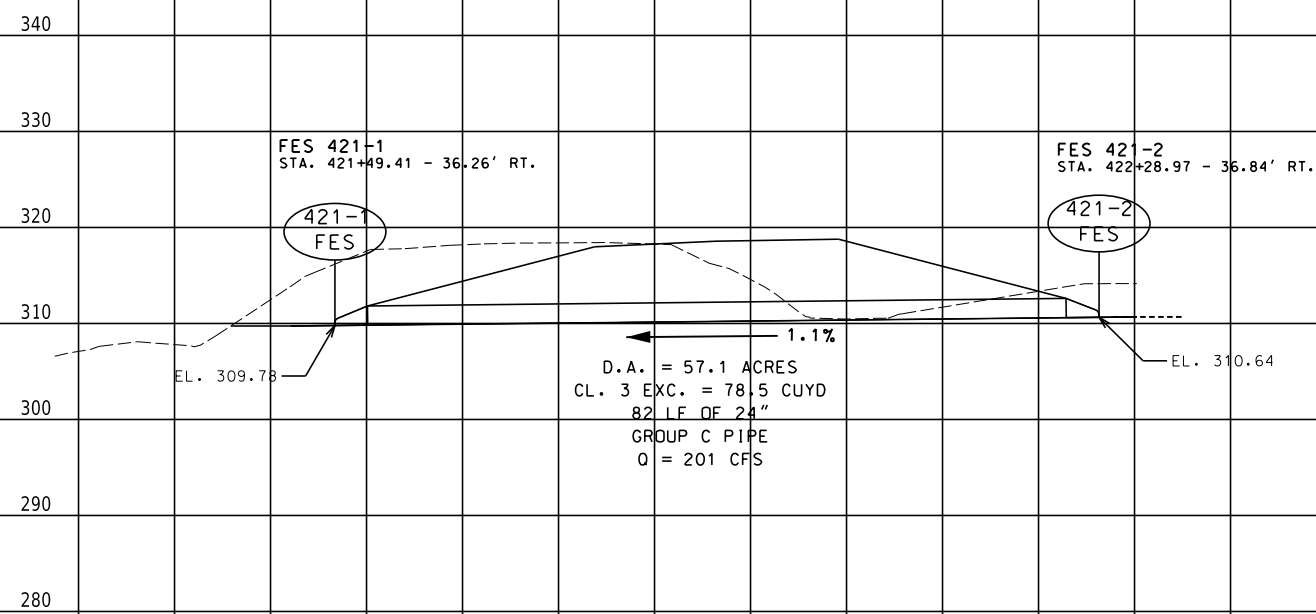
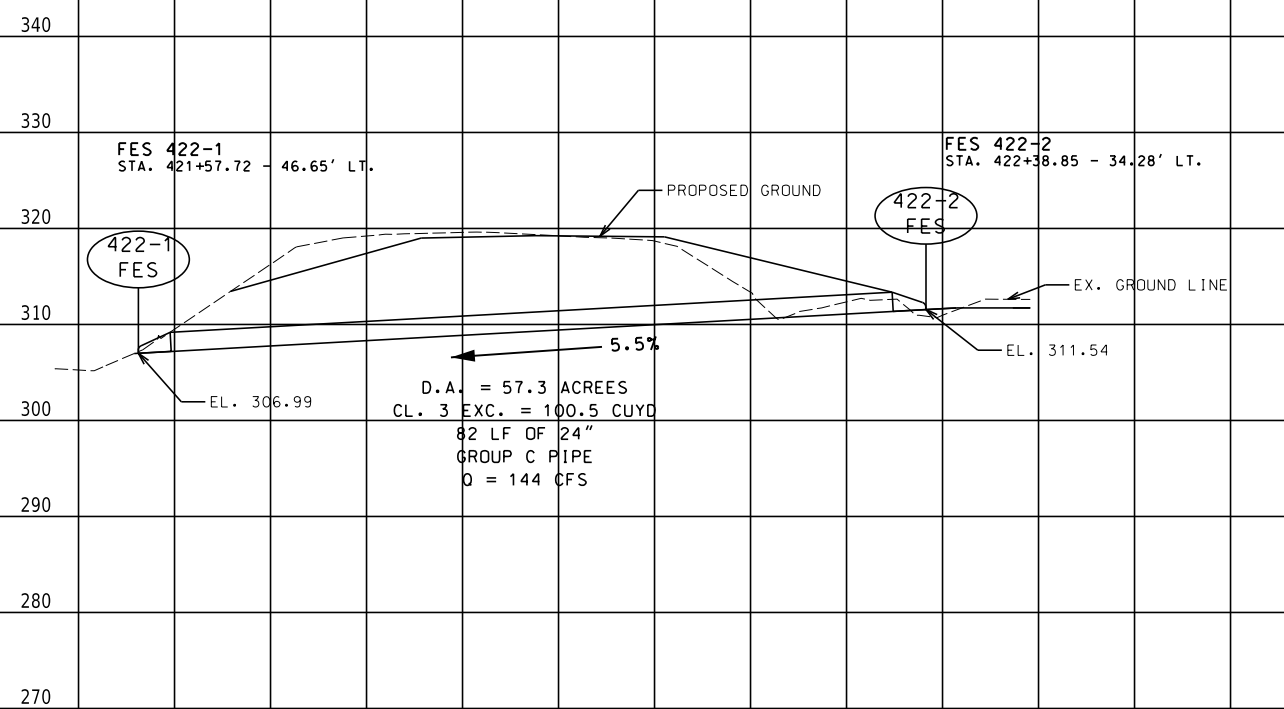
EXPIRATION DATE: DECEMBER 31, 2024

QUANTITIES SHEET 2 OF 2

ROUTE AA OVER DRAINAGE DITCH 1 & DRAINAGE DITCH 10



\\BOW\004-005 PP 1953677 11.dgn 10:10:54 AM 5/7/2025



CULVERT	PROF	ILE
SHEET	2 OF	2



5/6/2025

DATE PREPARED 5/9/

ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 8

COUNTY

JOB NO.

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION
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	.
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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

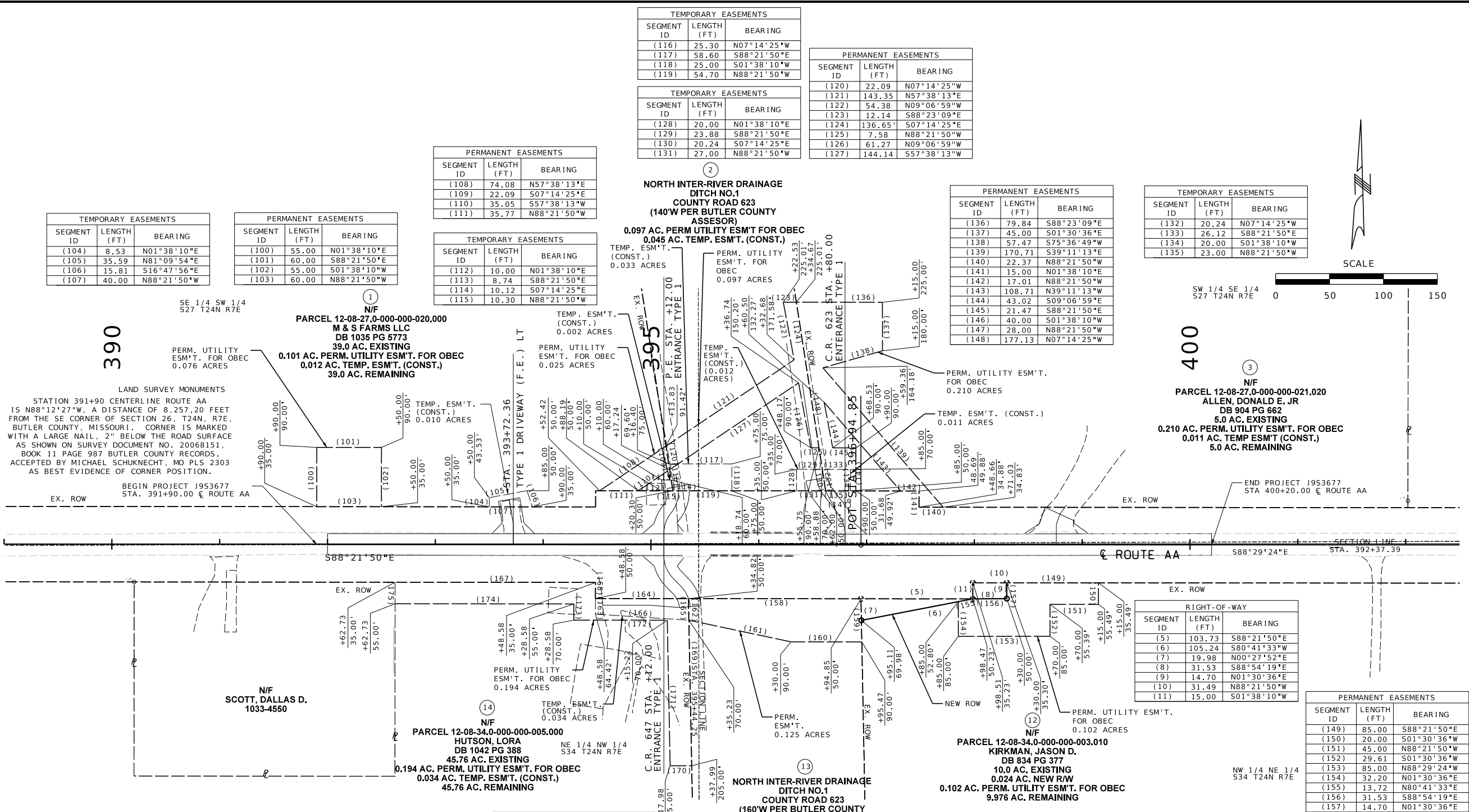


HORNOR
SHIEBIN

S-18TH ST., STE. 400 ST. LOUIS, MO 63103
314-531-4321 - FAX 314-531-6966
WWW.HORNERSHIFRIN.COM

CULVERT SECTION
SHEET 2 OF 2

ROUTE AA OVER
DRAINAGE DITCH 1
&
DRAINAGE DITCH 10



TEMPORARY EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(104)	8.53	N01°38'10"E
(105)	35.59	N81°09'54"E
(106)	15.81	S16°47'56"E
(107)	40.00	N88°21'50"W

PERMANENT EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(100)	55.00	N01°38'10"E
(101)	60.00	S88°21'50"E
(102)	55.00	S01°38'10"W
(103)	60.00	N88°21'50"W

PERMANENT EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(108)	74.08	N57°38'13"E
(109)	22.09	S07°14'25"E
(110)	35.05	S57°38'13"W
(111)	35.77	N88°21'50"W

TEMPORARY EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(112)	10.00	N01°38'10"E
(113)	8.74	S88°21'50"E
(114)	10.12	S07°14'25"E
(115)	10.30	N88°21'50"W

TEMPORARY EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(116)	25.30	N07°14'25"W
(117)	58.60	S88°21'50"E
(118)	25.00	S01°38'10"W
(119)	54.70	N88°21'50"W

TEMPORARY EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(128)	20.00	N01°38'10"E
(129)	23.88	S88°21'50"E
(130)	20.24	S07°14'25"E
(131)	27.00	N88°21'50"W

PERMANENT EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(120)	22.09	N07°14'25"W
(121)	143.35	N57°38'13"E
(122)	54.38	N09°06'59"W
(123)	12.14	S88°23'09"E
(124)	136.65	S07°14'25"E
(125)	7.58	N88°21'50"W
(126)	61.27	N09°06'59"W
(127)	144.14	S57°38'13"W

PERMANENT EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(136)	79.84	S88°23'09"E
(137)	45.00	S01°30'36"E
(138)	57.47	S75°36'49"W
(139)	170.71	S39°11'13"E
(140)	22.37	N88°21'50"W
(141)	15.00	N01°38'10"E
(142)	17.01	N88°21'50"W
(143)	108.71	N38°11'13"W
(144)	43.02	S09°06'59"E
(145)	21.47	S88°21'50"E
(146)	40.00	S01°38'10"W
(147)	28.00	N88°21'50"W
(148)	177.13	N07°14'25"W

TEMPORARY EASEMENTS		
SEGMENT ID	LENGTH (FT)	BEARING
(132)	20.24	N07°14'25"W
(133)	26.12	S88°21'50"E
(134)	20.00	S01°38'10"W
(135)	23.00	N88°21'50"W

DRIVEWAYS						
STATION	LOCATION	TYPE	GRADE	SURFACE	PIPE	REMARKS
393+72.36	LT	20' TYPE 1	13.1%	6" GR. A OR CR. ST. (B)	24" PIPE	PRIVATE ENTRANCE
395+12.00	LT	20' TYPE 1	3.7%	6" GR. A OR CR. ST. (B)	NO PIPE	PRIVATE ENTRANCE
398+76.00	LT	30' TYPE 1	8.9%	6" GR. A OR CR. ST. (B)	NO PIPE	PRIVATE ENTRANCE

COUNTY ROAD 647						
STATION	LOCATION	TYPE	GRADE	SURFACE	PIPES	REMARKS
396+20.00	RT.	20' TYPE 1	2.9%	6" GR. A OR CR. ST. (B)	NO PIPE	COUNTY ROAD 647
COUNTY ROAD 623						
STATION	LOCATION	TYPE	GRADE	SURFACE	PIPES	REMARKS
396+80.00	LT.	20' TYPE 1	3.7%	6" GR. A OR CR. ST. (B)	NO PIPE	COUNTY ROAD 623

DATE PREPARED
5/7/2025

ROUTE **AA** STATE **MO**

DISTRICT **SE** SHEET NO. **9**

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION

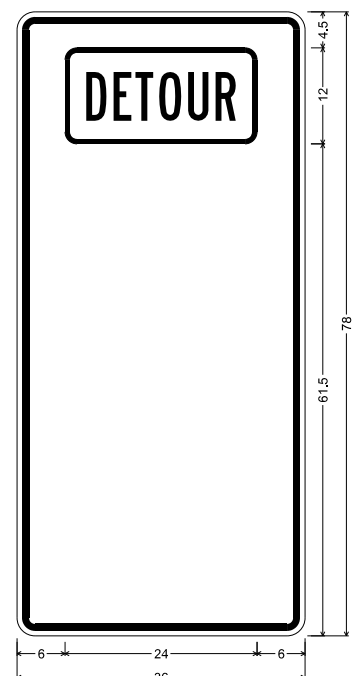
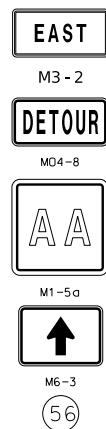
DATE

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ROW PLAN
SHEET 1 OF 2
ROUTE AA OVER
DRAINAGE DITCH 1
&
DRAINAGE DITCH 10



MO4-11-36 SHR4L1;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;
Table of letter and object lefts.

6.000

S1



5/6/2025

DATE PREPARED _____

ROUTE	STATE
AA	MO

DISTRICT	SHEET NO.
SE	11

COUNTY
BUTLER

BUTLER

JOB NO.
J9S3677

CONTRACT ID

PROJECT NO.

BRIDGE NO.

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TRAFFIC CONTROL
SHEET 1 OF 3

ROUTE AA OVER
DRAINAGE DITCH 1
&
RAINAGE DITCH 10

RAINAGE DITCH 10

1) ALL SIGNING AND ANY REQUIRED TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

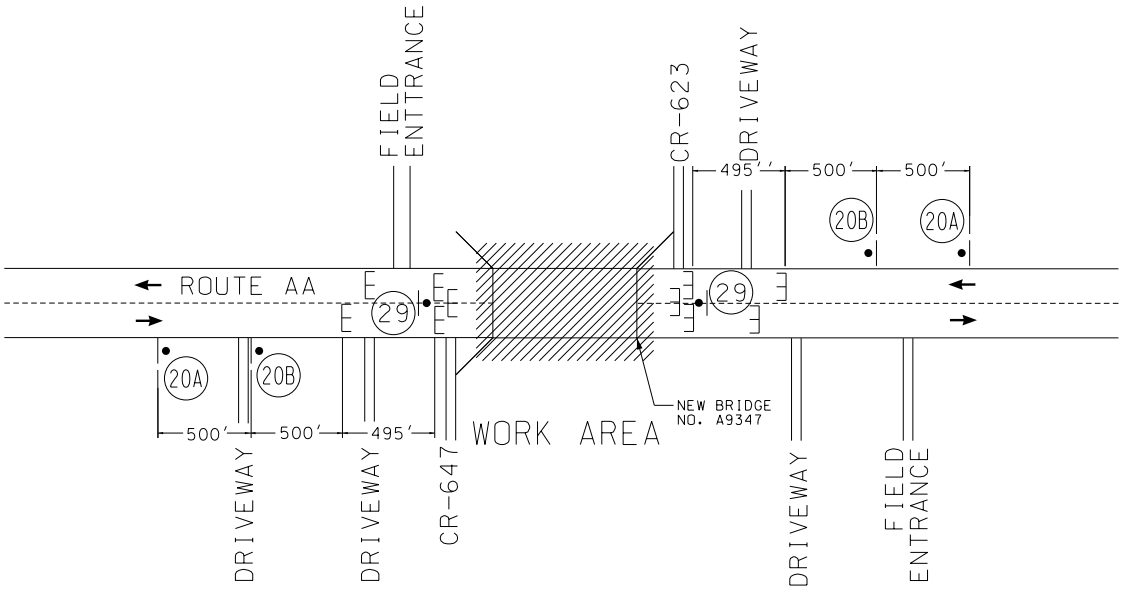
2) REFERENCE MoDOT STANDARD DRAWINGS.

3) SIGN LOCATIONS TO BE APPROVED BY ENGINEER.

4) ALL TRAFFIC CONTROL ITEMS WHICH ARE NOT INCLUDED IN THE PAY ITEMS ARE TO BE CONSIDERED INCIDENTAL.

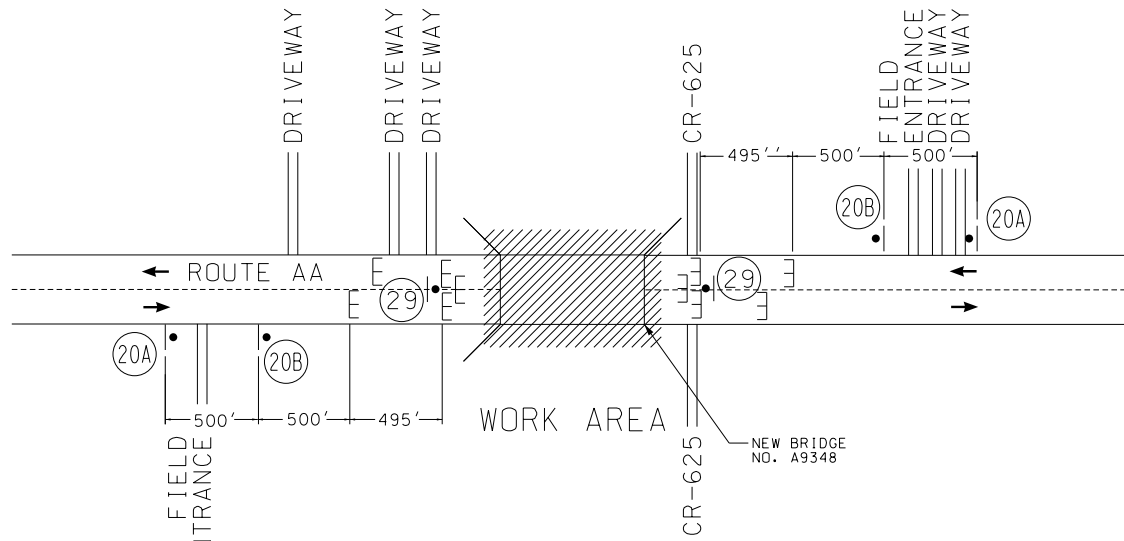
5) MAINTAIN ACCESS TO ALL ENTRANCES AT ALL TIMES.

6) DO NOT SCALE DRAWINGS. USE DIMENSIONS.



A9347 BRIDGE DETAIL

NOT TO SCALE



A9348 BRIDGE DETAIL

NOT TO SCALE

SEE SHEET 11 FOR SIGN LEGEND

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- E TYPE III BARRICADE
-  CHANGEABLE MESSAGE SIGN



DATE PREPARED 5/7/2025	
ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 13
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

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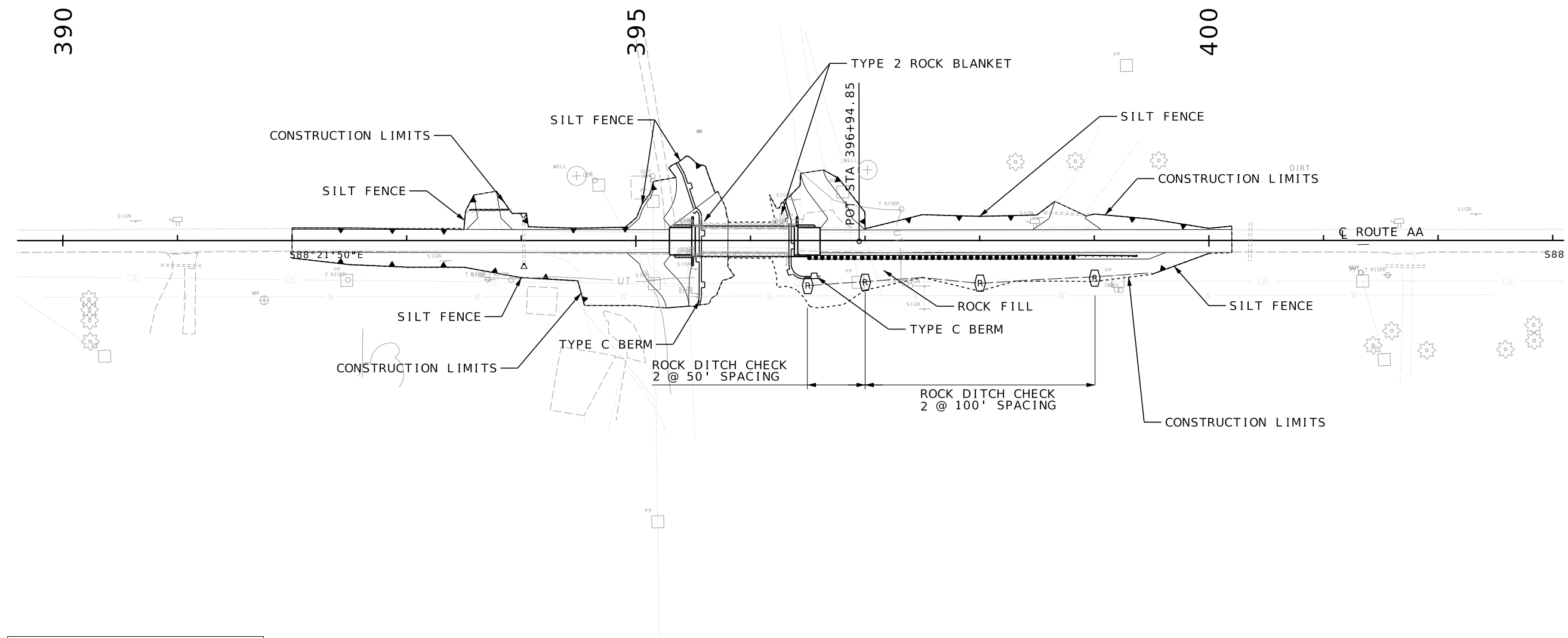


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TRAFFIC CONTROL
SHEET 3 OF 3
ROUTE AA OVER
DRAINAGE DITCH 1 &
DRAINAGE DITCH 10



TEMPORARY EROSION
CONTROL LEGEND

ROCK DITCH CHECK

TYPE C BERM

SILT FENCE



DATE PREPARED
5/7/2025

ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 14

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.
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PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE

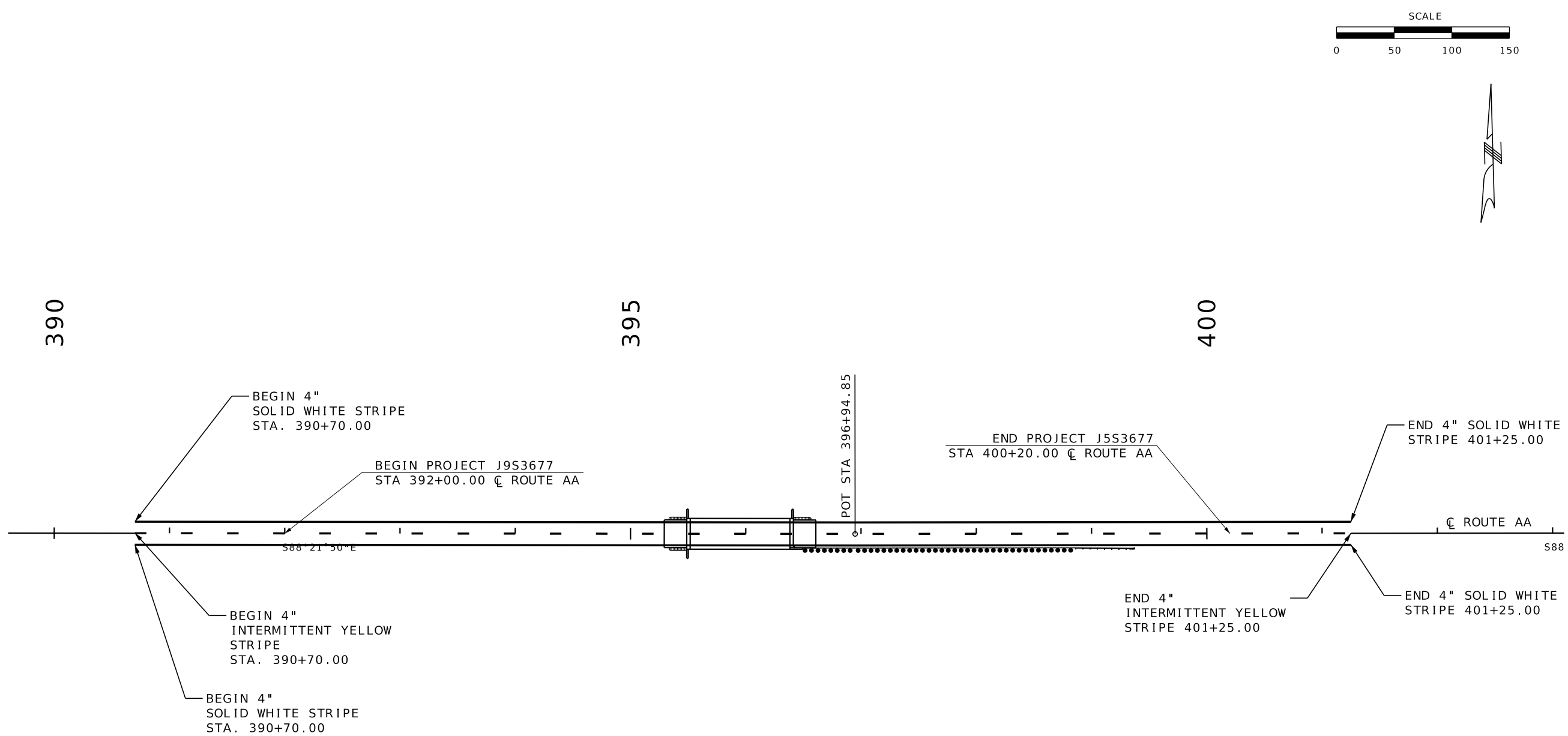
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EROSION CONTROL
SHEET 1 OF 2

ROUTE AA OVER
DRAINAGE DITCH 1 &
DRAINAGE DITCH 10



GENERAL NOTES
1. STRIPING WIDTH 4" UNLESS OTHERWISE NOTED.
2. ALL STRIPING SHALL CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).



DATE PREPARED 5/7/2025	
ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 16
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID. .	
PROJECT NO. .	
BRIDGE NO. .	

DESCRIPTION	DATE
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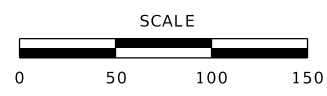
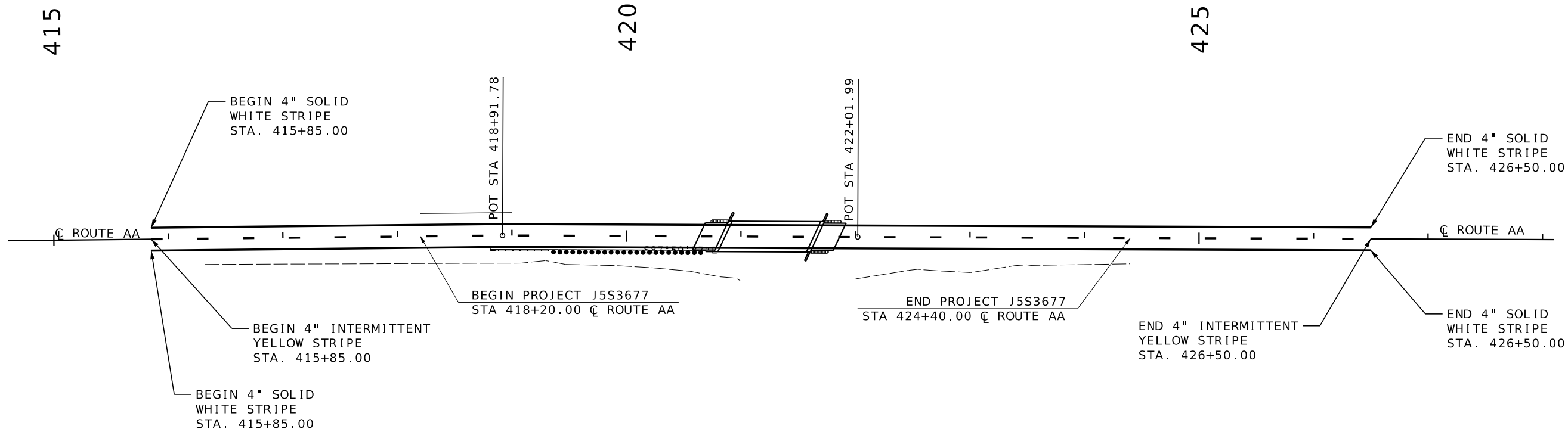
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PAVEMENT MARKING
SHEET 1 OF 2
ROUTE AA OVER
DRAINAGE DITCH 1
&
DRAINAGE DITCH 10



GENERAL NOTES
1. STRIPING WIDTH 4" UNLESS OTHERWISE NOTED.
2. ALL STRIPING SHALL CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).



DATE PREPARED 5/7/2025	
ROUTE AA	STATE MO
DISTRICT SE	SHEET NO. 17
COUNTY BUTLER	
JOB NO. J5S3677	
CONTRACT ID. .	
PROJECT NO. .	
BRIDGE NO. .	

DESCRIPTION	DATE
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PAVEMENT MARKING
SHEET 2 OF 2
ROUTE AA OVER
DRAINAGE DITCH 1
&
DRAINAGE DITCH 10

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	55		55
Removal of Bridges (X0789)	lump sum			1
Bridge Approach Slab (Minor Road)	sq. yard		108	108
Galvanized Cast-In-Place Concrete Piles (14 in.)	linear foot	300		300
Galvanized Cast-In-Place Concrete Piles (16 in.)	linear foot	410		410
Dynamic Pile Testing	each	4		4
Pile Point Reinforcement	each	20		20
Class B Concrete (Substructure)	cu. yard	42.5		42.5
Slab on Steel	sq. yard		271	271
Type H Barrier	linear foot		192	192
Reinforcing Steel (Bridges)	pound	3,520		3,520
Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound		23,640	23,640
Galvanizing Structural Steel	lump sum		1	1
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		8	8
Laminated Neoprene Bearing Pad	each		16	16

Notes:

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

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

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

All reinforcement in the cast-in-place piles at the intermediate bents is included in the substructure quantities.

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

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

Estimated Quantities for Slab on Steel

Item	Total
Class B-2 Concrete	cu. yard 82.7
Reinforcing Steel	pound 540
Reinforcing Steel (Epoxy Coated)	pound 23,710

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

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

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

Bridge deck surface may be finished with a vibratory screed.

Stay-In-Place Corrugated Steel Forms:

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

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

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

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

Hydrologic Data

Drainage Area = 31.8 mi ²
Design Flood Frequency = 50 years
Design Flood Discharge = 3059 cfs
Design Flood (D.F.) Elevation = 316.0
Base Flood (100-year)
Base Flood Elevation = 316.8
Base Flood Discharge = 3461 cfs
Estimated Backwater = 0.2 ft
Average Velocity thru Opening = 5.2 ft/s
Freeboard (50-year)
Freeboard = 2.3 ft
Roadway Overtopping
Overtopping Flood Frequency ≥ 500 years

LOCATION SKETCH

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

Foundation Data

Type	Design Data	Bent Number			
		1	2	3	4
Load Bearing Pile	Pile Type and Size	CECIP 14"	CECIP 16"	CECIP 16"	CECIP 14"
	Number	5	5	5	5
	Approximate Length Per Each	30	41	41	30
	Pile Point Reinforcement	All	All	All	All
	Min. Galvanized Penetration (Elev.)	Full Length	Full Length	Full Length	Full Length
	Est. Max. Scour Depth (100 yr.) (Elev.)	-	296.7	296.7	-
	Minimum Tip Penetration (Elev.)	287.0	276.0	276.0	287.0
	Criteria for Min. Tip Penetration	Penetration Beyond Liquefiable Layers	Scour	Scour	Penetration Beyond Liquefiable Layers
	Pile Driving Verification Method	DT	DT	DT	DT
	Resistance Factor	0.65	0.65	0.65	0.65
Minimum Nominal Axial Compressive Resistance	kip	134	222	222	134

DT= Dynamic Testing

CECIP=Closed Ended Cast-in-Place Concrete Pile

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

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

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 Edition)

Seismic Design Category = C (Seismic Details Only)

Design earthquake response spectral acceleration coefficient at 1.0 second period, $SD_1 = 0.379$ g.

Acceleration Coefficient (effective peak ground acceleration coefficient), $Sds = 0.882$ g.

Design Loading:

Vehicular = HL-93

Future Wearing Surface = 35 lb/sf

Earth = 120 lb/cf

Equivalent Fluid Pressure = 45 lb/cf

Superstructure: Simply-supported, non-composite for dead load, Continuous composite for live load

Design Unit Stresses:

Class B Concrete (Substructure, except CIP Piles) f'c = 3,000 psi

Class B-1 Concrete (Barrier and CIP Piles) f'c = 4,000 psi

Class B-2 Concrete (Superstructure, except Barrier) 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

Neoprene Pads:

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

Joint Filler:

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

Reinforcing Steel:

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

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

Traffic Handling:

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

Fabricated Steel Connections:

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

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

STATE OF MISSOURI

CARRIE BETH WRIGHT

NUMBER PE-2014017042

3/15/24

PROFESSIONAL ENGINEER

DATE

DATE PREPARED 3/15/2024

ROUTE AA STATE MO

DISTRICT BR SHEET NO. 2

COUNTY BUTLER

JOB NO. J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9347

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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GENERAL NOTES & QUANTITIES

ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)

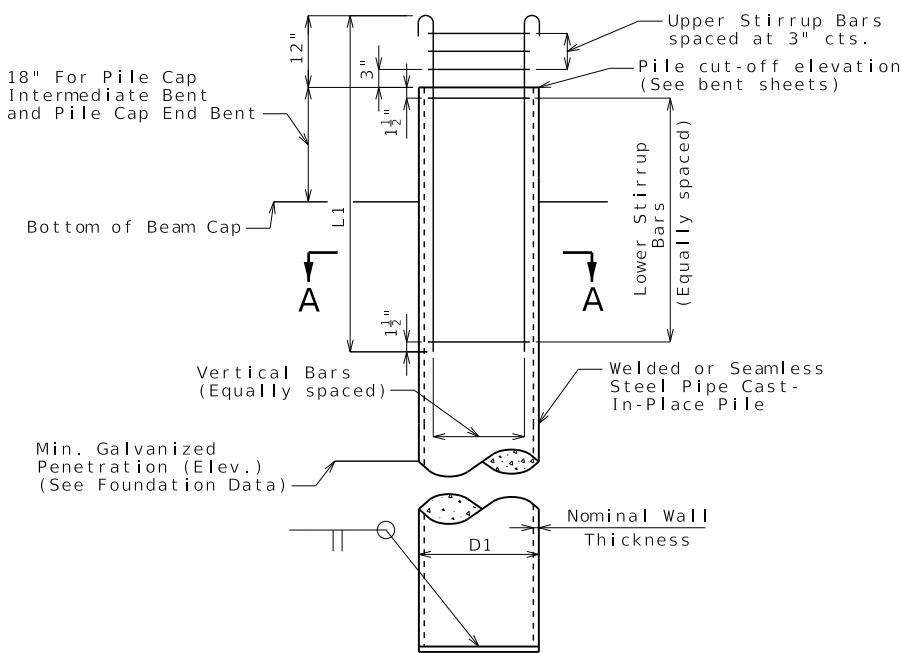
Detailed: Aug. 2023

Checked: Sept. 2023

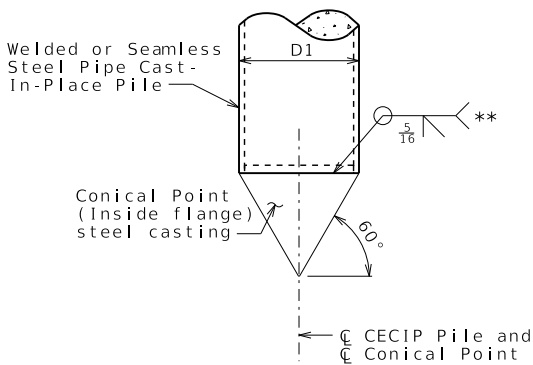
Sheet No. 2 of 33

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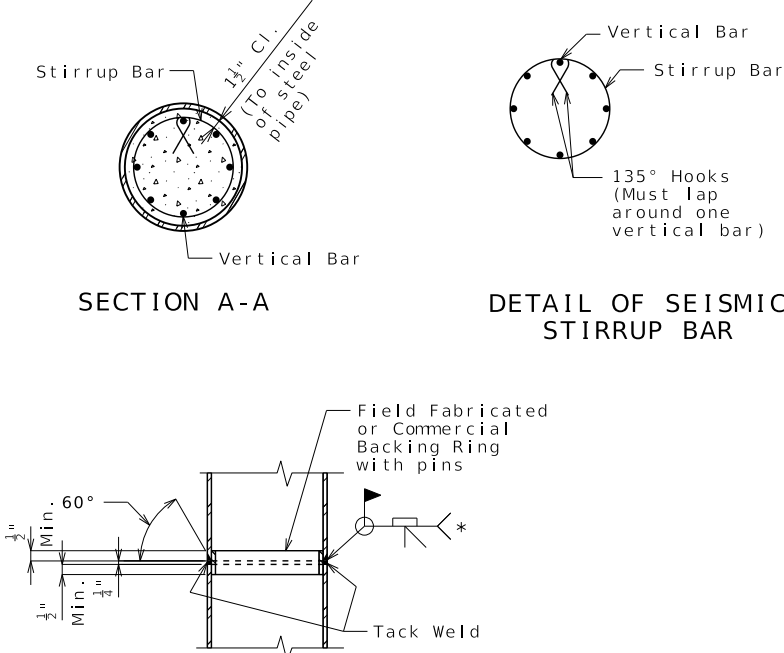


GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE WITH PILE POINT REINFORCEMENT



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.

SECTION A-A

DETAIL OF SEISMIC STIRRUP BAR

Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data				
Bent Number	1	2	3	4
D1, CECIP Pile (O.D.)	14"	16"	16"	14"
Min. Nominal Wall Thickness	0.500"	0.500"	0.500"	0.500"
Pile Point Reinforcement	CONICAL	CONICAL	CONICAL	CONICAL
Vertical Bars	6-#5-V105	6-#6-V200	6-#6-V300	6-#5-V405
L1, Length of Vertical Bars	5'-3"	5'-3"	5'-3"	5'-3"
Upper Stirrup Bars	3-#4-P100	3-#4-P200	3-#4-P300	3-#4-P400
Lower Stirrup Bars	5-#4-P100	5-#4-P200	5-#4-P300	5-#4-P400

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 for closure plate shall be ASTM A709 Grade 50.

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.

Closure plate shall not project beyond the outside diameter of the pipe pile. Satisfactory weldments may be made by beveling tip end of pipe or by use of inside backing rings. In either case, proper gaps shall be used to obtain weld penetration full thickness of pipe. Payment for furnishing and installing closure plate will be considered completely covered by the contract unit price for Galvanized Cast-In-Place Concrete Piles.

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.

Closure plate need not be galvanized.

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 bents.

For Foundation Data table, see Sheet No. 2.

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

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No. 3 of 33



DATE	
DATE PREPARED 3/8/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY BUTLER	
JOB NO. 1953677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

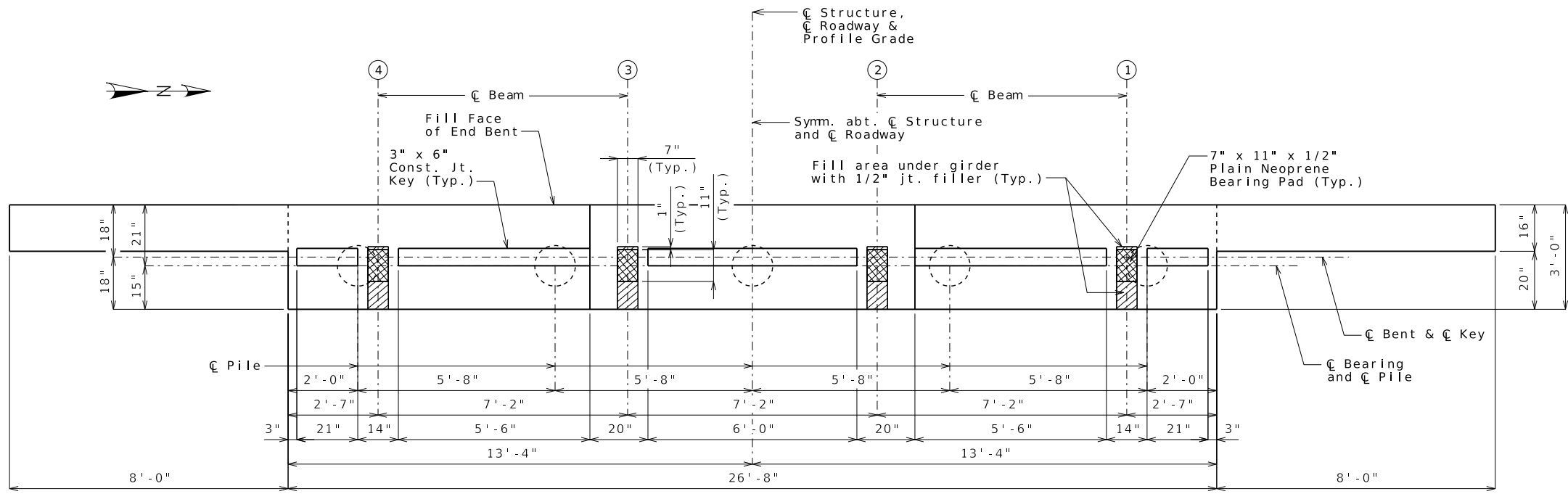
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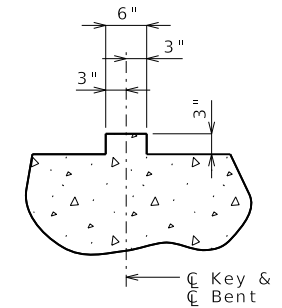
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CAST-IN-PLACE PILE DETAILS	ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)
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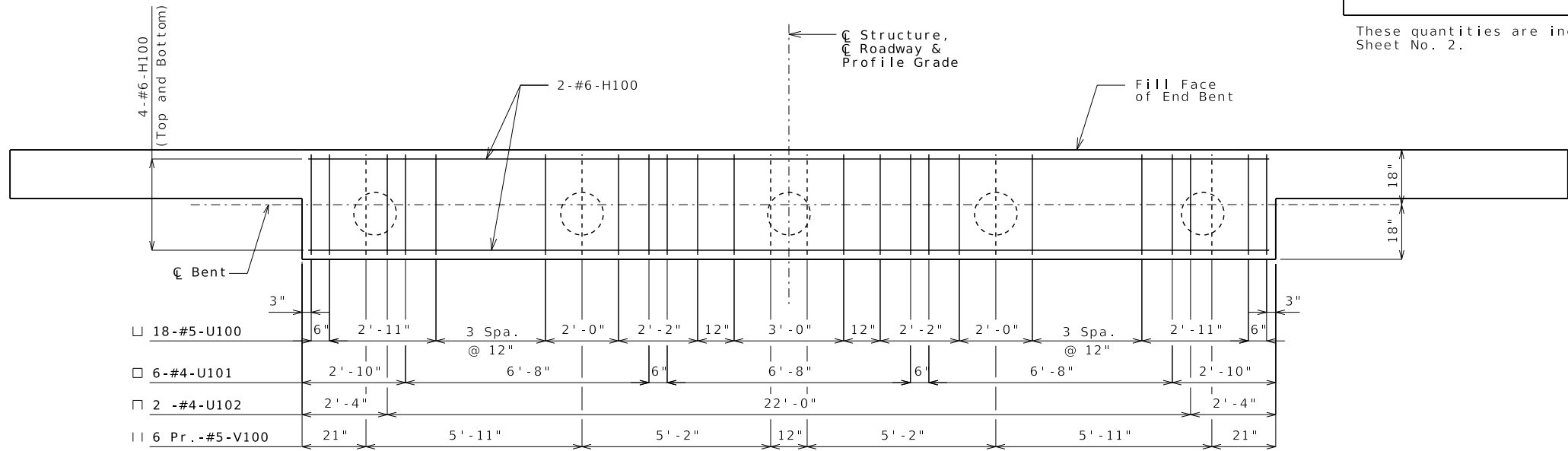
PLAN OF BEAM SHOWING DIMENSIONS



SECTION THRU KEY

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	25
Galvanized Cast-in-Place Concrete Piles (14 in.)	linear foot	150
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	11.2

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



PLAN OF BEAM SHOWING REINFORCEMENT

DETAILS OF END BENT NO. 1

Notes:
Work this sheet with Sheets No. 5 & 6.
Reinforcing steel shall be shifted to clear piles.
U-bars shall clear piles by at least 1 1/2"
For details of vertical drain at end bent, see Sheet No. 7.

Detailed: Aug. 2023
Checked: Sept. 2023



DATE	
DATE PREPARED 3/15/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 4
COUNTY BUTLER	
JOB NO. I953677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

DESCRIPTION	DATE

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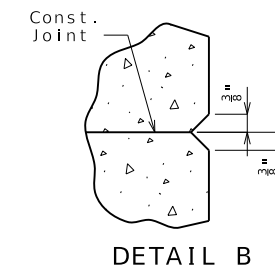
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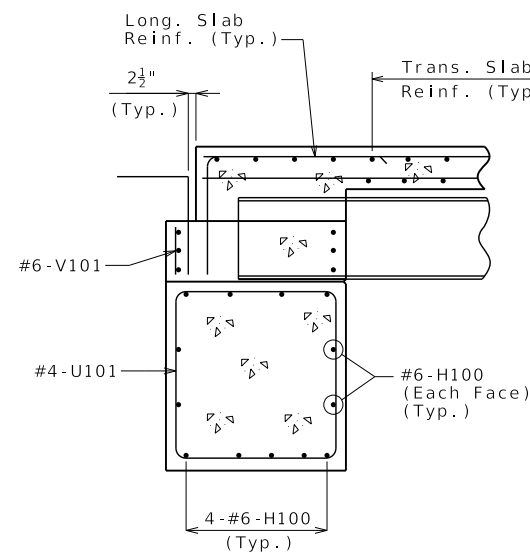
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CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

DETAILS OF END BENT NO. 1	ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)
------------------------------	--



* 3-#6-V103 @ 12" cts.
(Each Face)

* 3-#6-V103 @ 12" cts.
(Each Face)



End of Slab (Typ.)

4-#6-H100 (Typ.)

Detail B

#5-U105 (Typ.)

#6-U104 (Typ.)

4-#6-H100 (Typ.)

#5-U100

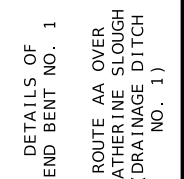
24" Cl.

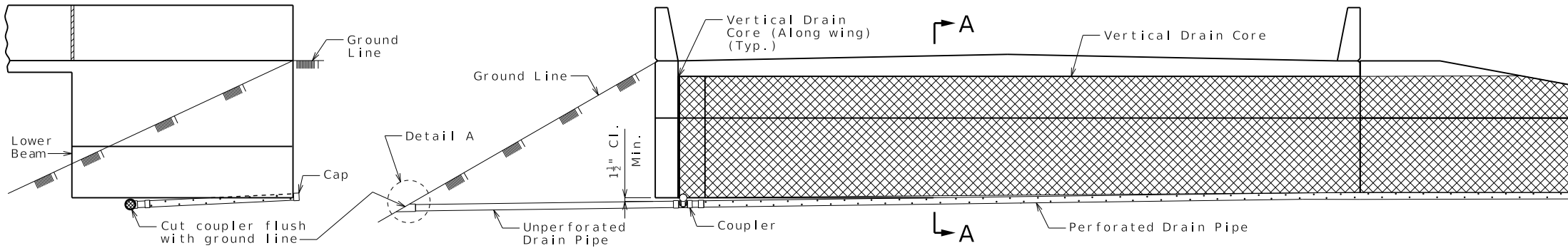
#6-H105 (Btwn. Piles) (Typ.)

SECTION D-D

For Details for Bridge Approach Slab, see
Sheet No. 25.

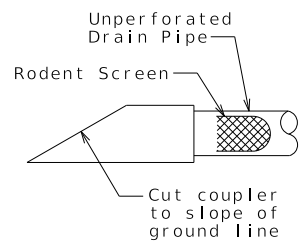
... \B_A9347_006_I9S3677_Details of End Bent 1.dgn 8:57:50 AM 3/8/2024



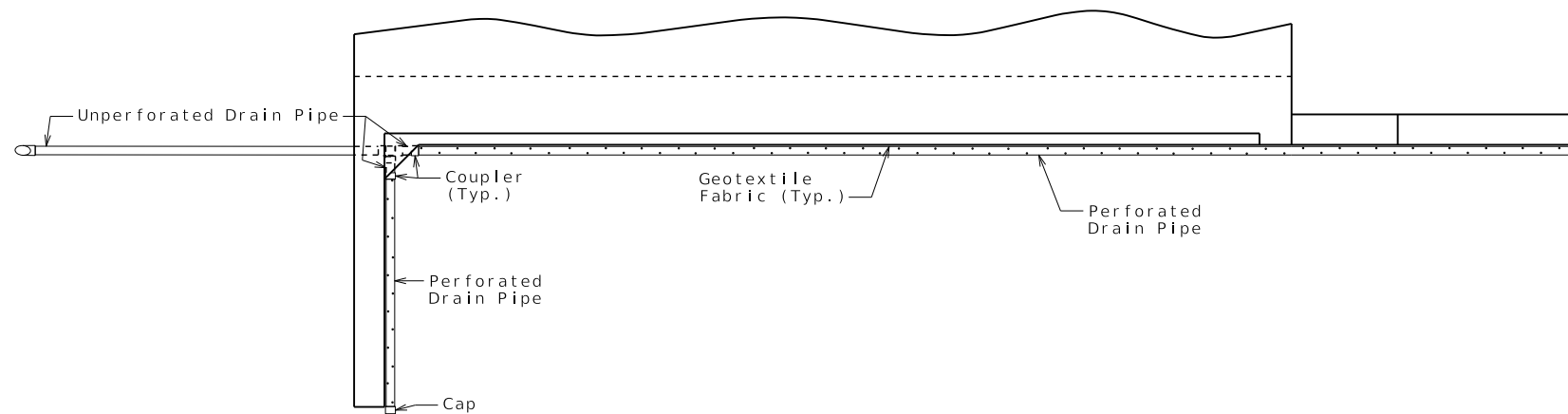


ELEVATION OF WING

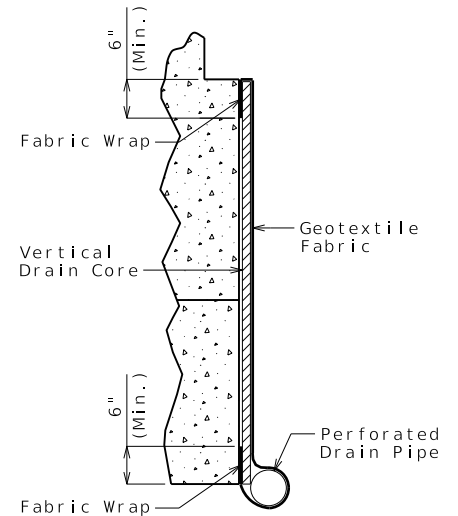
ELEVATION OF END BENT
(End Bent No. 4 shown, End Bent No. 1 Similar)



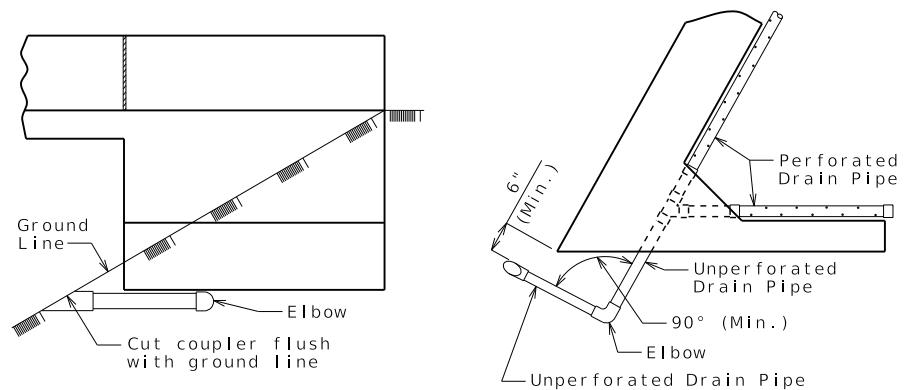
DETAIL A



PLAN OF END BENT
(End Bent No. 4 shown, End Bent No. 1 Similar)



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING

PART PLAN

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

VERTICAL DRAIN AT END BENTS



DATE _____

DATE PREPARED
3/8/2024

ROUTE AA	STATE MO
-------------	-------------

DISTRICT	SHEET NO
BR	7

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID

PROJECT NO.

BRIDGE NO.
A9347[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

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.

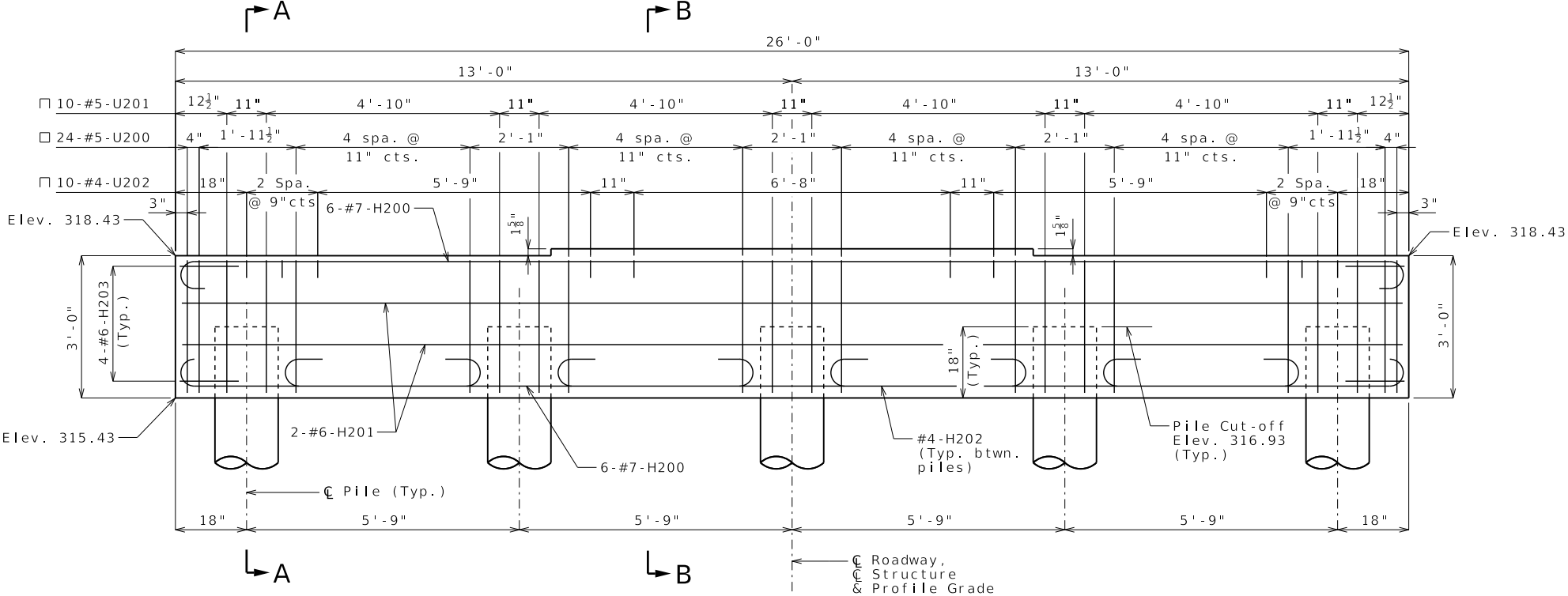
Perforated pipe shall be placed at fill face side and inside face of wings at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

Detailed: Aug. 2023
Checked: Sept. 2023

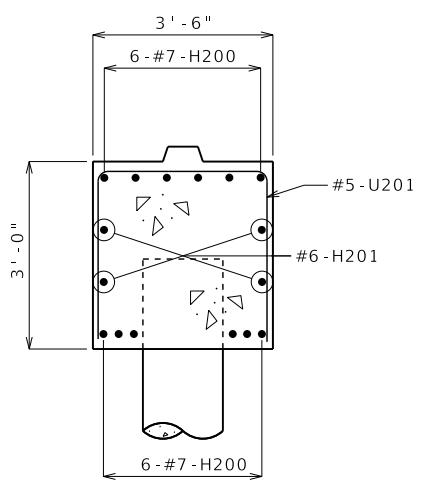
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 7 of 33

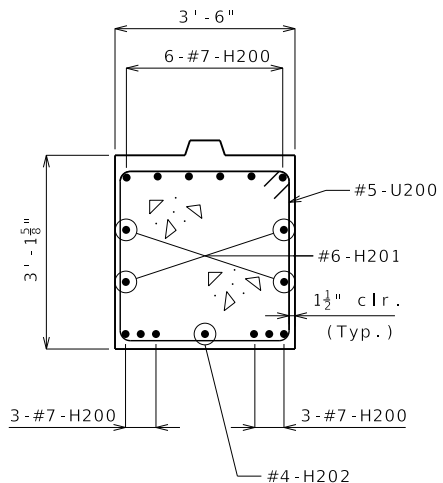
...\\B_A9347_007_J9S3677_Vertical Drain.dgn 8:57:11 AM 3/8/2024



ELEVATION
(Looking ahead station)
Note: Dowel bars and keys not shown for clarity.



SECTION A-A



SECTION B-B

Notes:
Work this sheet with Sheet No. 9.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2".
Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be 1 1/2". Nylon, PVC, or polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Galvanized Cast-in-Place Concrete Piles (16 in.)	linear foot	205
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	10.0
Reinforcing Steel (Bridges)	pound	1,760

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

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed: Aug. 2023
Checked: Sept. 2023



DATE	
DATE PREPARED 3/15/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 8
COUNTY BUTLER	
JOB NO. I953677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

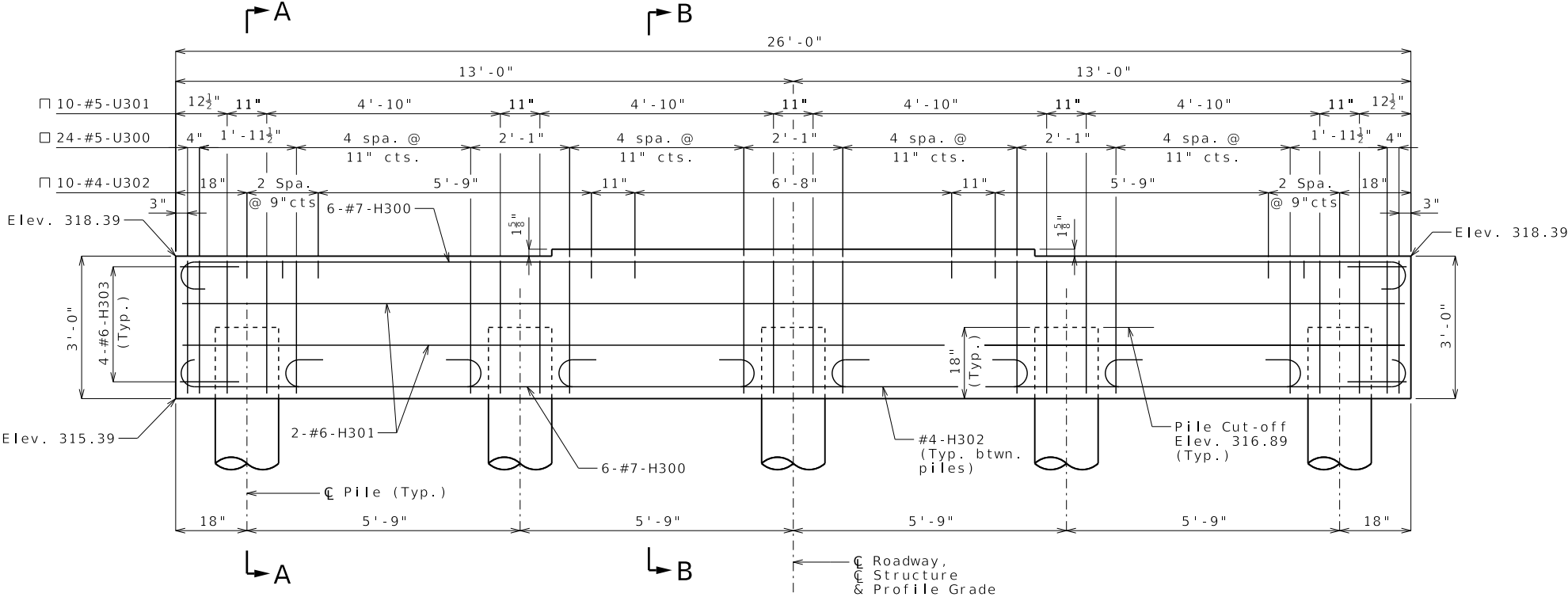
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

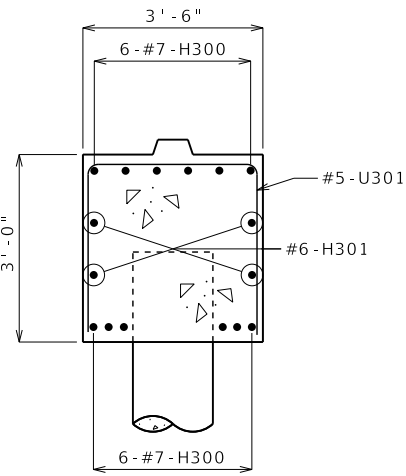
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103
314-531-4321 • FAX 314-531-6866
WWW.HORNORSHIFRIN.COM
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CERTIFICATE OF AUTHORITY: 000169
EXPIRATION DATE: DECEMBER 31, 2024

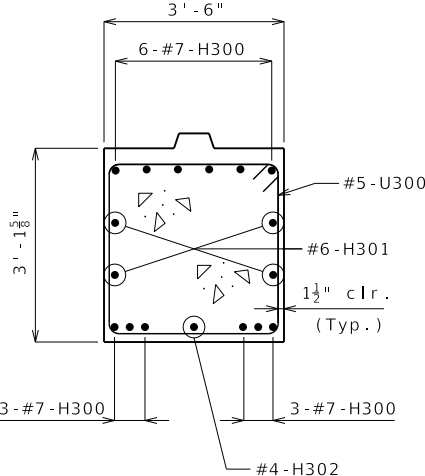
DETAILS OF
INTERMEDIATE
BENT NO. 2
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



ELEVATION
(Looking ahead station)
Note: Dowel bars and keys not shown for clarity.



SECTION A-A



SECTION B-B

Notes:
Work this sheet with Sheet No. 11.
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2".
Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be 1 1/2". Nylon, PVC, or polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Galvanized Cast-in-Place Concrete Piles (16 in.)	linear foot	205
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	10.0
Reinforcing Steel (Bridges)	pound	1,760

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

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed: Aug. 2023
Checked: Sept. 2023



DATE	
DATE PREPARED 3/15/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 10
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

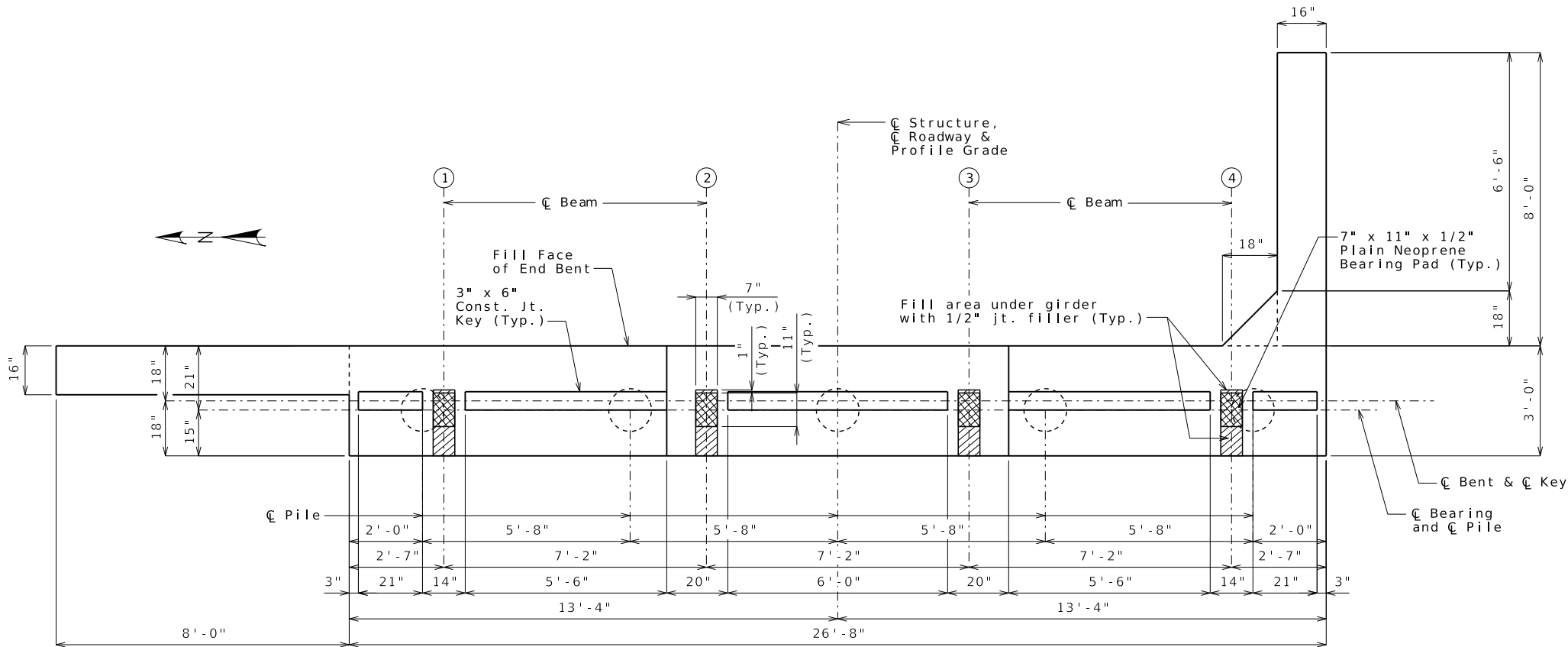
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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HORNER SHIFRIN

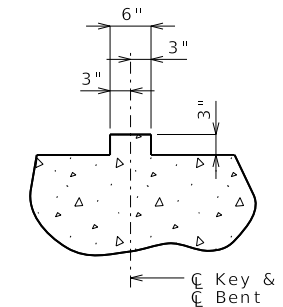
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DETAILS OF
INTERMEDIATE
BENT NO. 3
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



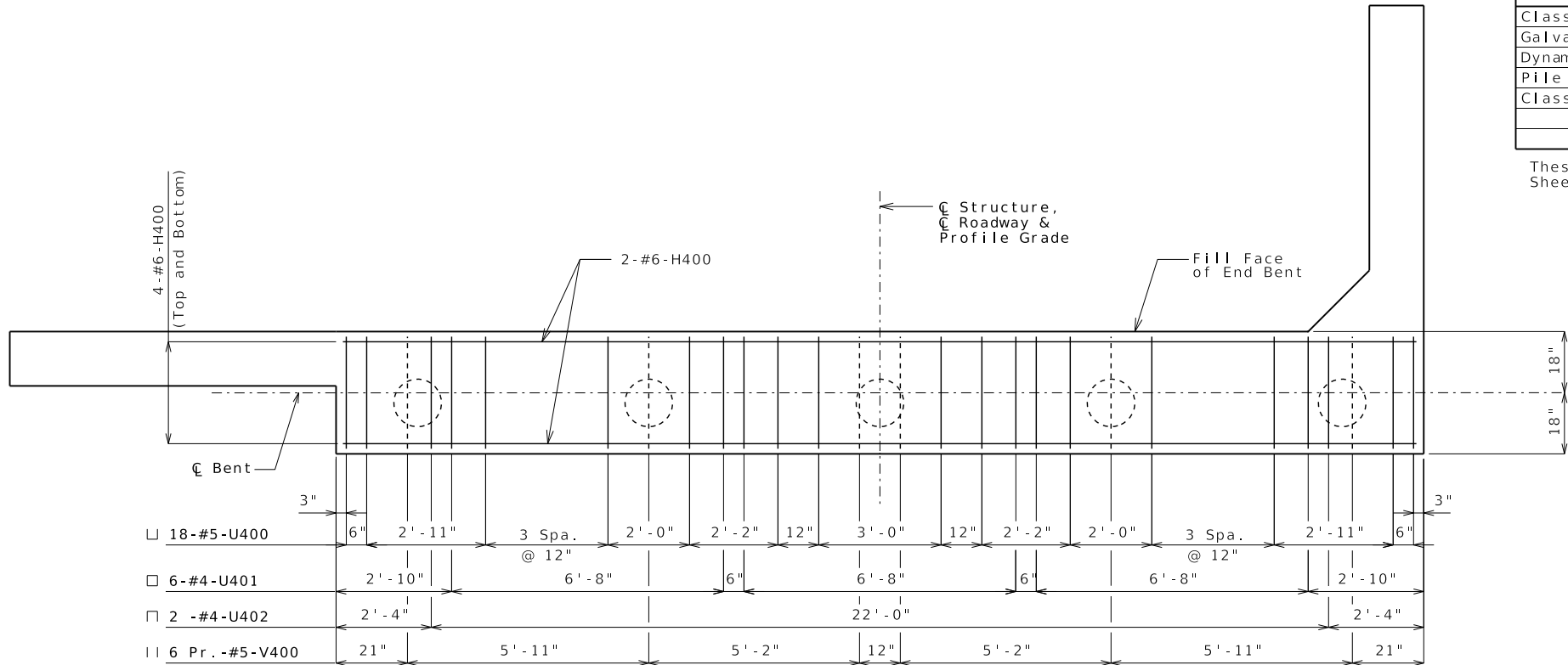
PLAN OF BEAM SHOWING DIMENSIONS



SECTION THRU KEY

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class 1 Excavation	cu. yard	30
Galvanized Cast-in-Place Concrete Piles (14 in.)	linear foot	150
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	11.3

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



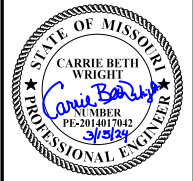
PLAN OF BEAM SHOWING REINFORCEMENT

DETAILS OF END BENT NO. 4

Notes:
Work this sheet with Sheets No. 13 & 14.
Reinforcing steel shall be shifted to clear piles.
U-bars shall clear piles by at least 1 1/2".
For details of vertical drain at end bent, see Sheet No. 7.

Detailed: Aug. 2023
Checked: Sept. 2023

Note: This drawing is not to scale. Follow dimensions. Sheet No.12 of 33



DATE	
DATE PREPARED 3/15/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 12
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

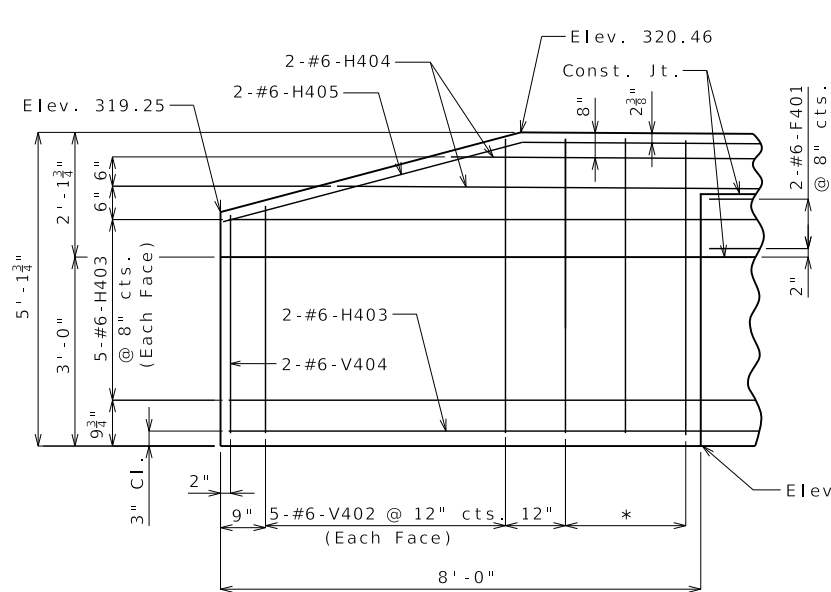
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MoDOT

HORNER SHIFRIN

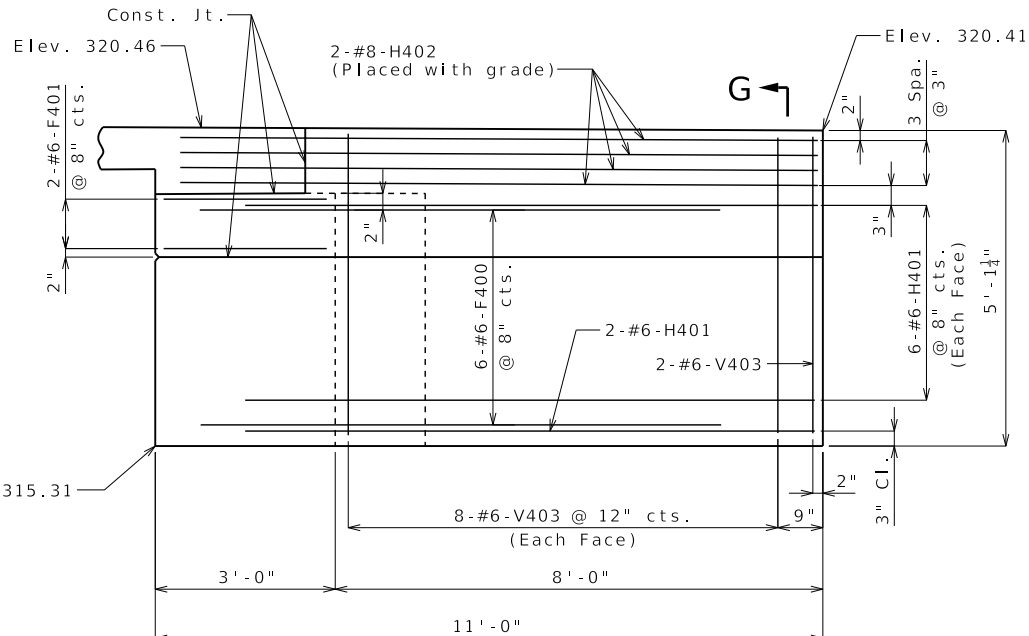
401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103
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CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

DETAILS OF END BENT NO. 4	ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)
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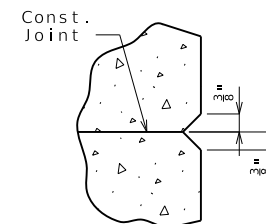


ELEVATION E-E

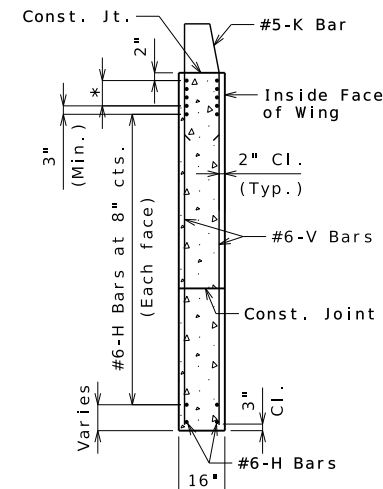
* 3-#6-V403 @ 12" cts.
(Each Face)



ELEVATION F-F

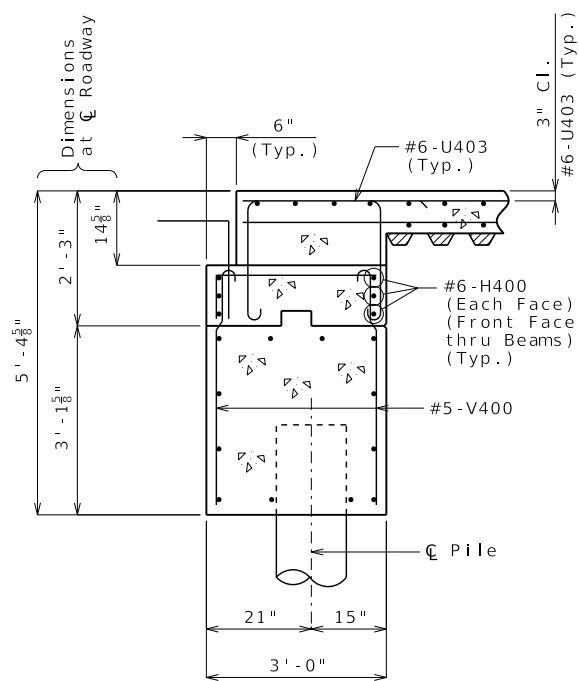


DETAIL B

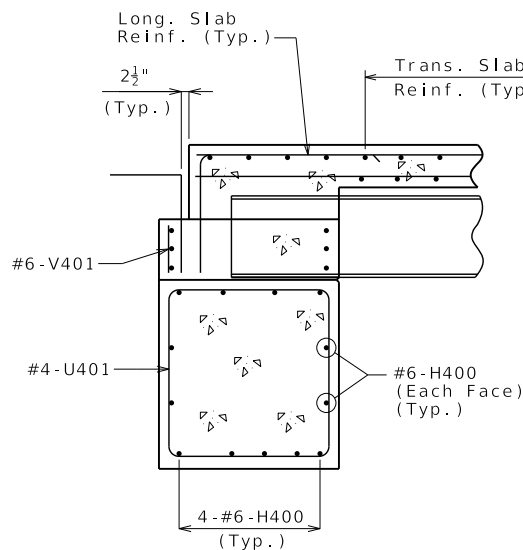


SECTION G-G

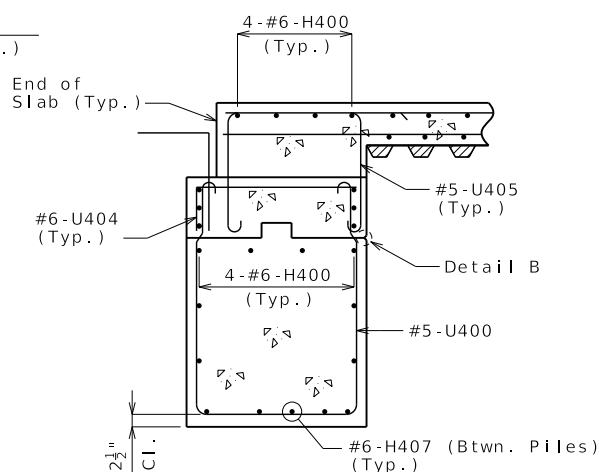
* #8-H Bars at 3" cts.
(Each face) (Place with grade)



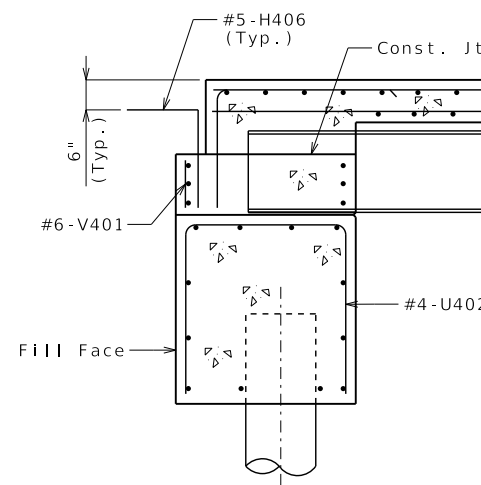
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:

Work this sheet with Sheets No. 12 & 13.

For reinforcement of the barrier at End Bents, see Sheets No. 23 & 24.

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

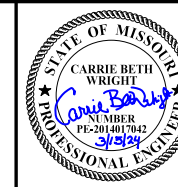
For Details for Bridge Approach Slab, see Sheet No. 25.

DETAILS OF END BENT NO. 4

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

Sheet No.14 of 33

Detailed: Aug. 2023
Checked: Sept. 2023



DATE

DATE PREPARED

3/8/2024

ROUTE AA STATE MO

DISTRICT BR SHEET NO. 14

COUNTY BUTLER

JOB NO. J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9347

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



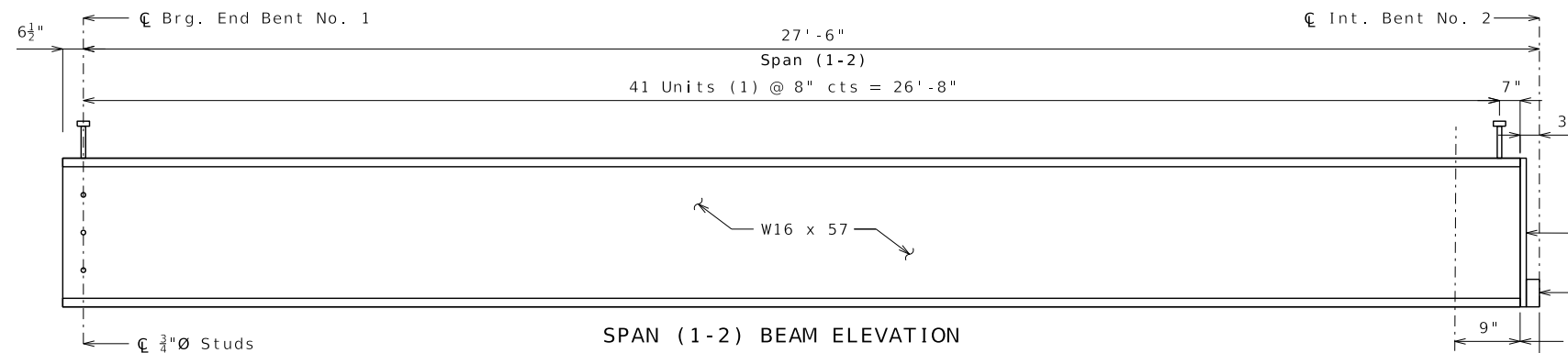
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



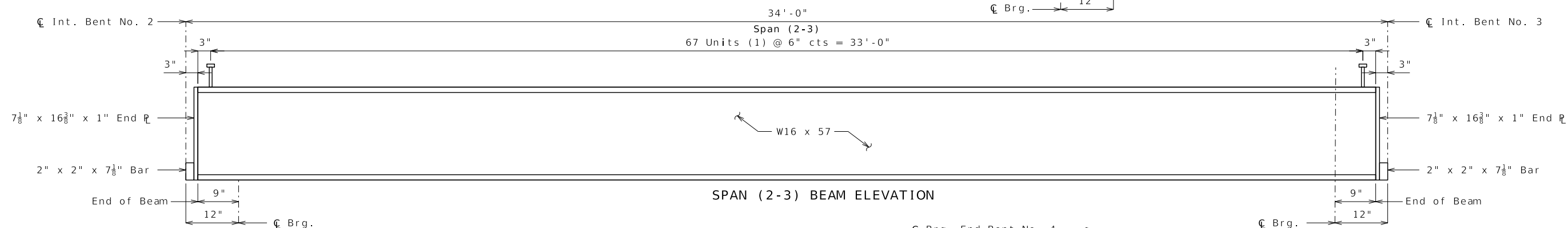
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WWW.HORNORSHIFRIN.COM
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CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

DETAILS OF
END BENT NO. 4

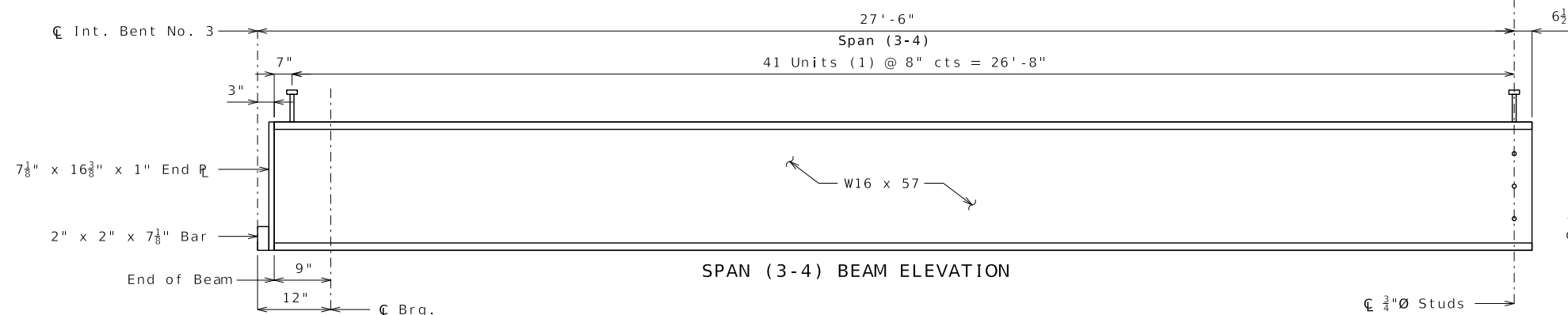
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



SPAN (1-2) BEAM ELEVATION

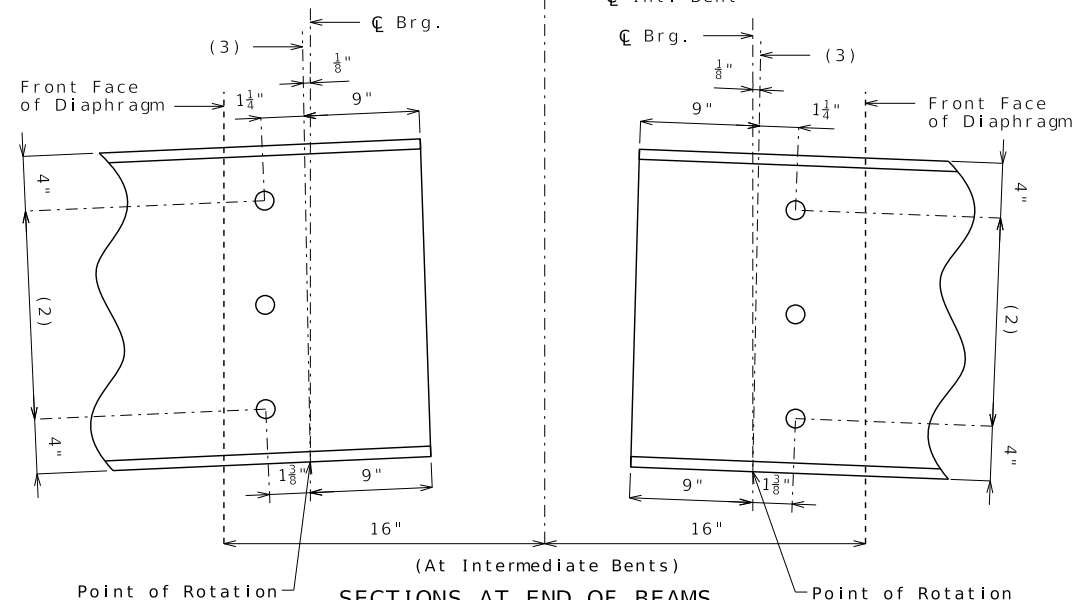
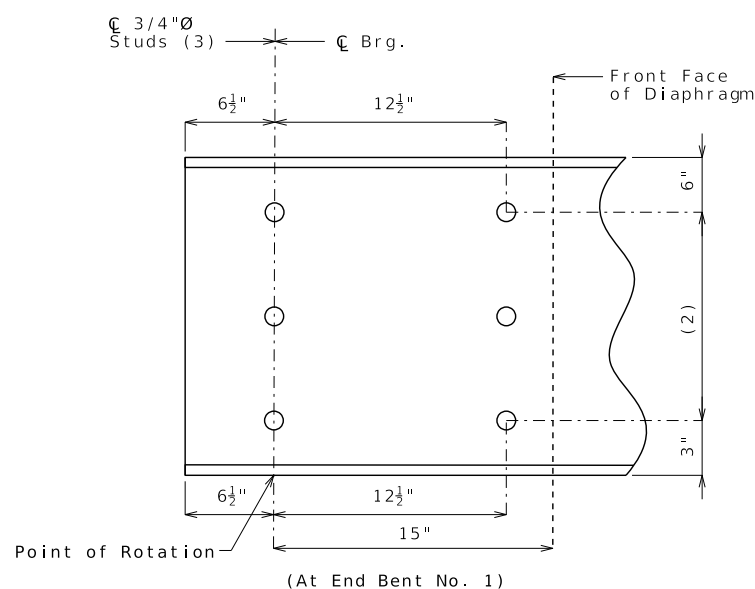


SPAN (2-3) BEAM ELEVATION

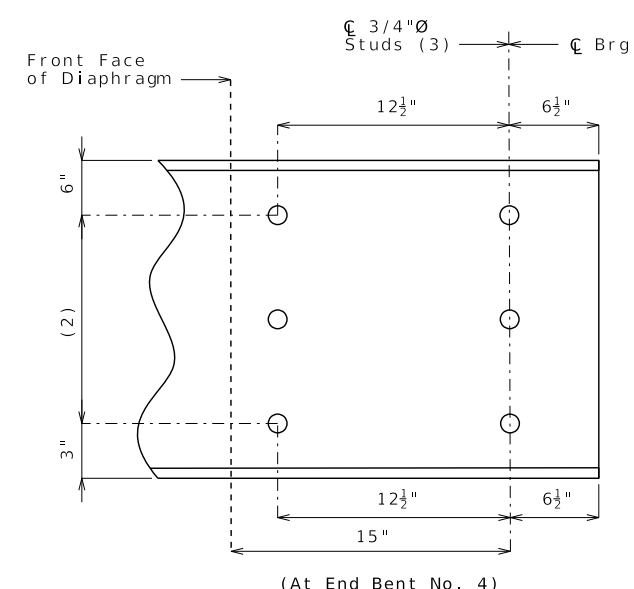


SPAN (3-4) BEAM ELEVATION

- (1) 2 studs per Unit
- (2) 3-1 1/16"Ø holes at equal spacing
- (3) Line perpendicular to the bottom of the bottom flange at the intersection of $\bar{C}$ Brg. and Point of Rotation



SECTIONS AT END OF BEAMS
STEEL DETAILS



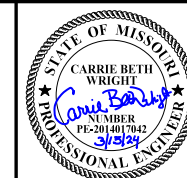
(At End Bent No. 4)

Notes:

All beams shall be subject to Notch Toughness Requirements.

Longitudinal dimensions shown in the Beam Elevations are horizontal dimensions.

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



DATE

DATE PREPARED

3/8/2024

ROUTE

AA MO

DISTRICT

BR 16

SHEET NO.

COUNTY

BUTLER

JOB NO.

J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A9347

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

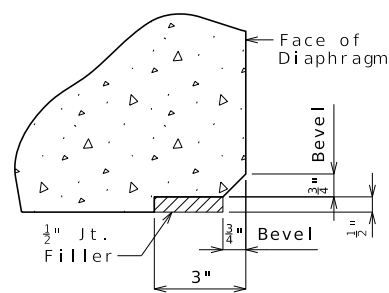
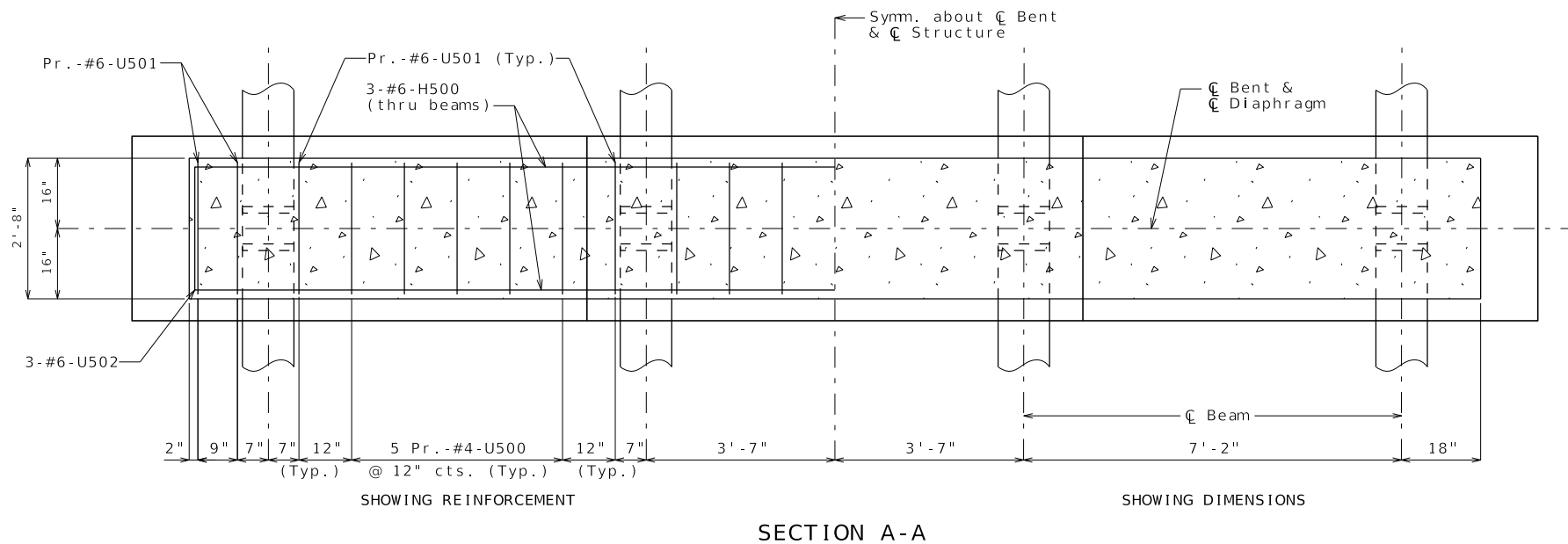
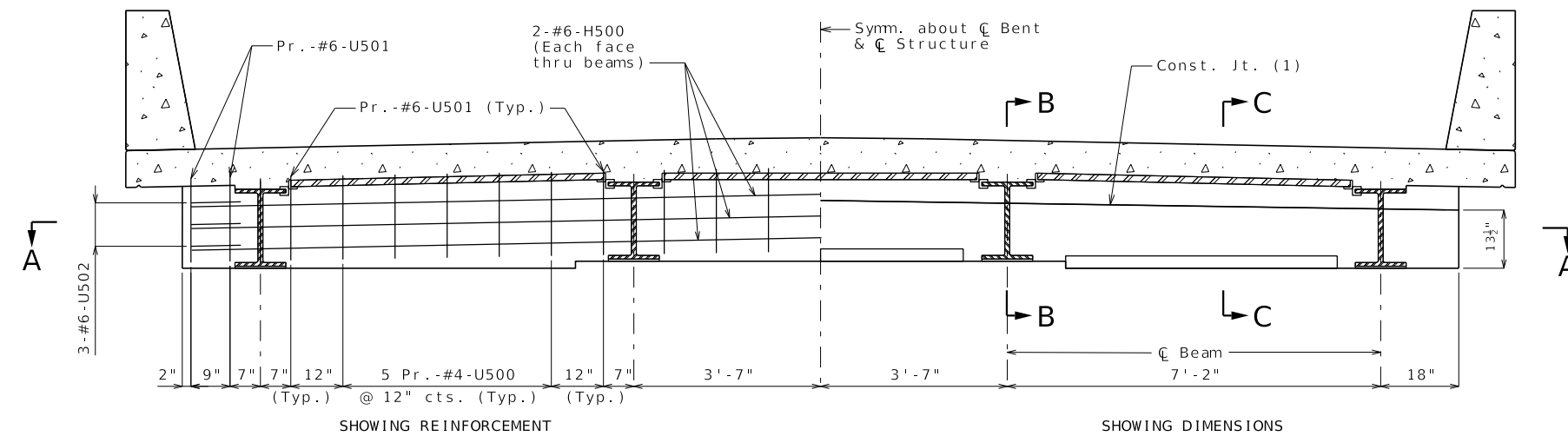
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DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

STEEL DETAILS
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)

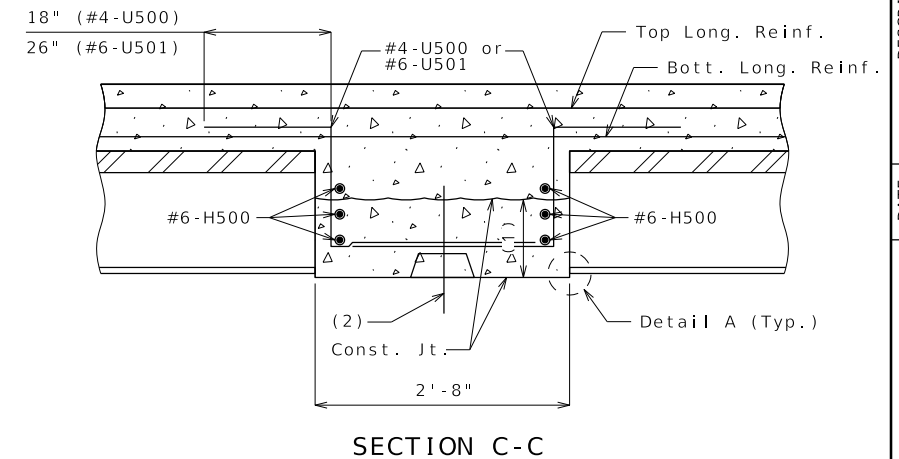
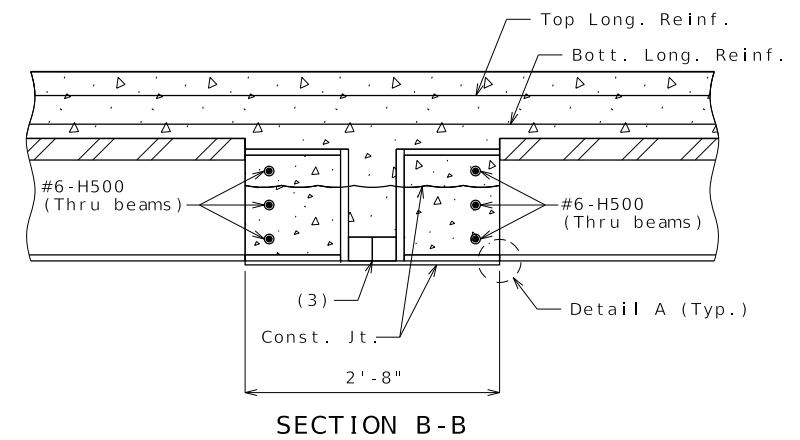
Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No.16 of 33



- (1) Varies, match roadway cross slope.
- (2) #6-D200 & #6-D300, see Sheets No. 9 & 11 for details.
- (3) Vertical face of compression blocks shall be in partial contact. Full contact throughout block height is not necessary. Vertical faces of adjacent blocks shall overlap a minimum of 1 1/2".



Notes:

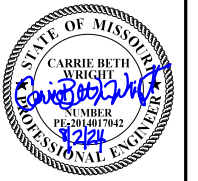
Diaphragms at Intermediate Bents shall be built vertical.

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

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

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

Diaphragms at bents shall be poured 13 1/2" from top of bent cap after all girders are in place and before any placement of deck forms. The remainder of the diaphragm shall be poured concurrently with the slab.



ATE

DATE PREPARED

ROUTE AA	STATE MO
-------------	-------------

DISTRICT	SHEET NO
BR	17

COUNTY

BUTLER

JOB NO.
1953677

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



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CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2024

DETAILS OF
DIAPHRAGMS
AT INTERMEDIATE
BENTS NO. 2 & 3
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



DATE

DATE PREPARED

3/8/2024

ROUTE AA STATE MO

DISTRICT BR SHEET NO. 18

COUNTY

BUTLER

JOB NO.

J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A9347

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

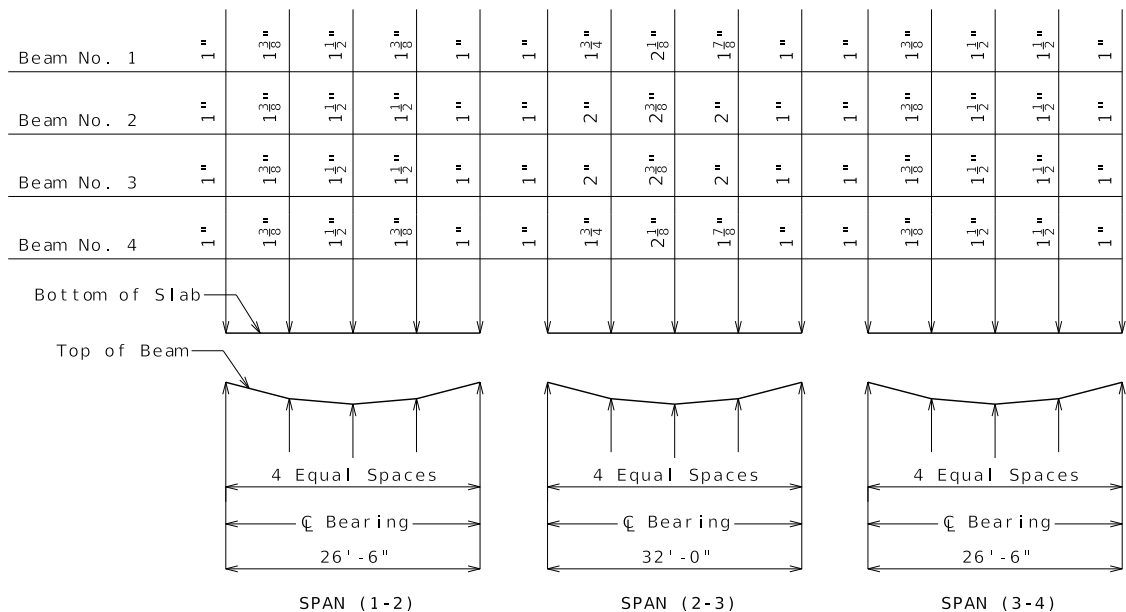


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JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



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CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

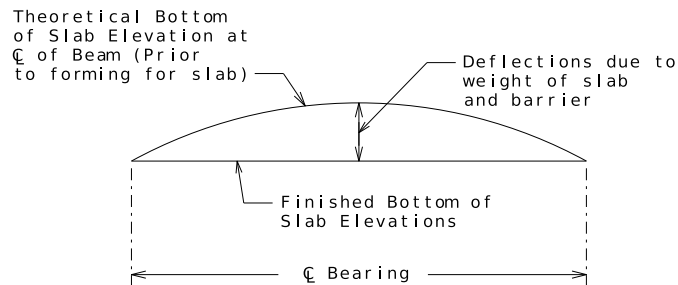
STEEL DETAILS
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



THEORETICAL SLAB HAUNCHING DIAGRAM (AFTER BARRIER PLACEMENT)

Haunching is estimated based on grade and bent elevations and Dead Load Deflection shown. If elevations or deflections in the field vary, an adjustment of the slab haunches shall be necessary in order to maintain a constant 8 1/2" slab thickness.

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



TYPICAL SLAB ELEVATIONS DIAGRAM

Theoretical Bottom of Slab Elevations at Centerline of Beam (Prior to forming for slab)															
Beam Number	Span (1-2) (26'-6" C Brg. - C Brg.)					Span (2-3) (32'-0" C Brg. - C Brg.)					Span (3-4) (26'-6" C Brg. - C Brg.)				
	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.
1	319.90	319.94	319.96	319.95	319.93	319.93	319.98	320.00	319.97	319.89	319.89	319.89	319.89	319.86	319.80
2	320.04	320.08	320.10	320.10	320.07	320.07	320.14	320.15	320.12	320.03	320.03	320.04	320.03	320.00	319.94
3	320.04	320.08	320.10	320.10	320.07	320.07	320.14	320.15	320.12	320.03	320.03	320.04	320.03	320.00	319.94
4	319.90	319.94	319.96	319.95	319.93	319.93	319.98	320.00	319.97	319.89	319.89	319.89	319.89	319.86	319.80

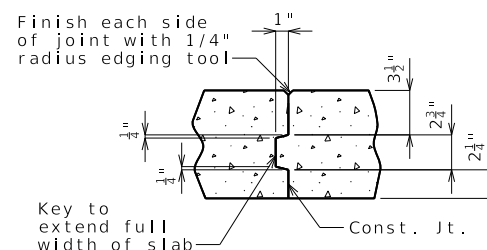
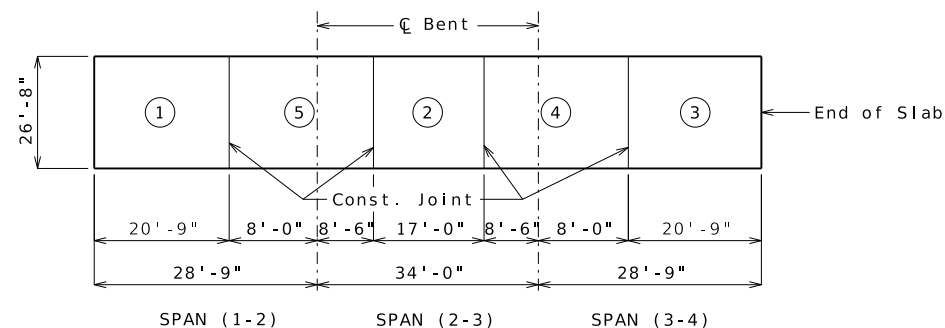
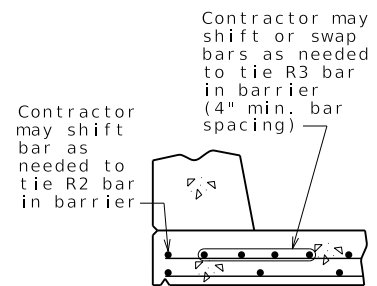
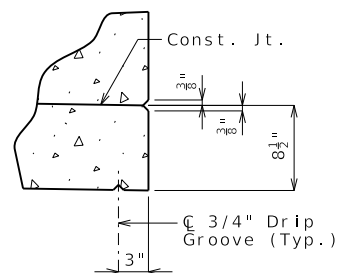
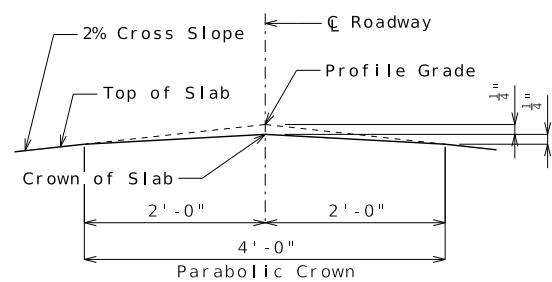
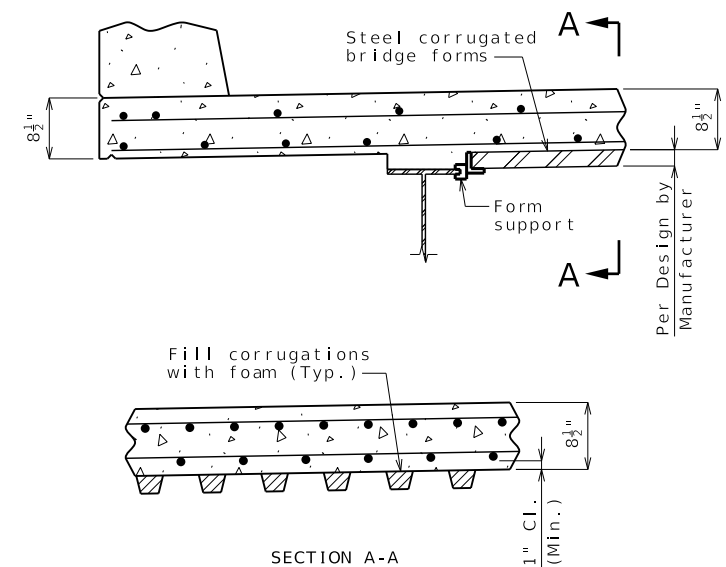
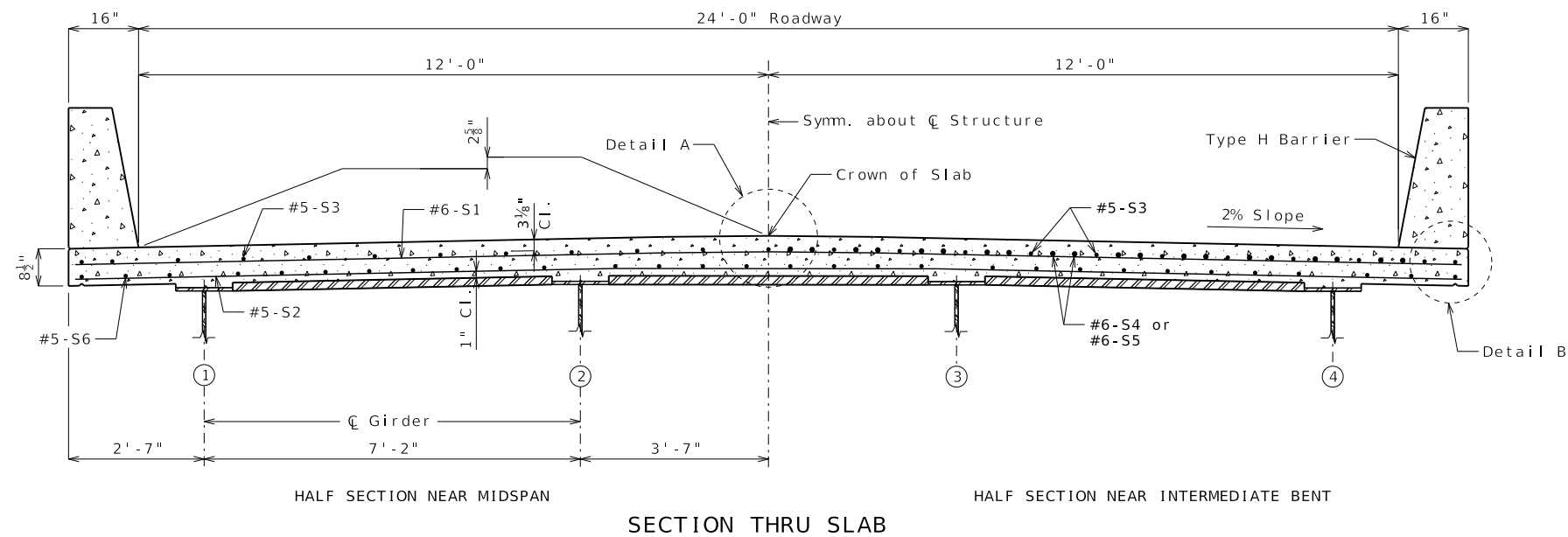
Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab including corrugated steel forms and barriers.

STEEL DETAILS

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No.18 of 33



	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.	
	Direction			With Retarder	No Retarder
Basic Sequence	1	5 + 2	4 + 3	25	25
	End to 5	1 to 4	2 to End		
Alternate "A" Pours	1 + 5 + 2	4 + 3		25	25
	End to 4	2 to End			
Alternate "B" Pours	1 + 5 + 2 + 4 + 3			25	25
	End to End				

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

SLAB DETAILS

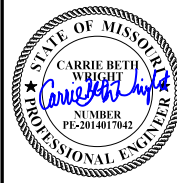
Notes:

For reinforcement of barrier not shown, see Sheets No. 22 thru 24.

For Theoretical Bottom of Slab Elevations and Theoretical Slab Haunching Diagram, see Sheet No. 18.

For Plan of Slab Showing Reinforcement, see Sheets No. 20 & 21.

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



DATE
7/2/2025

DATE PREPARED
7/1/2025

ROUTE AA	STATE MO
-------------	-------------

DISTRICT BR	SHEET NO 19
----------------	----------------

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9347

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

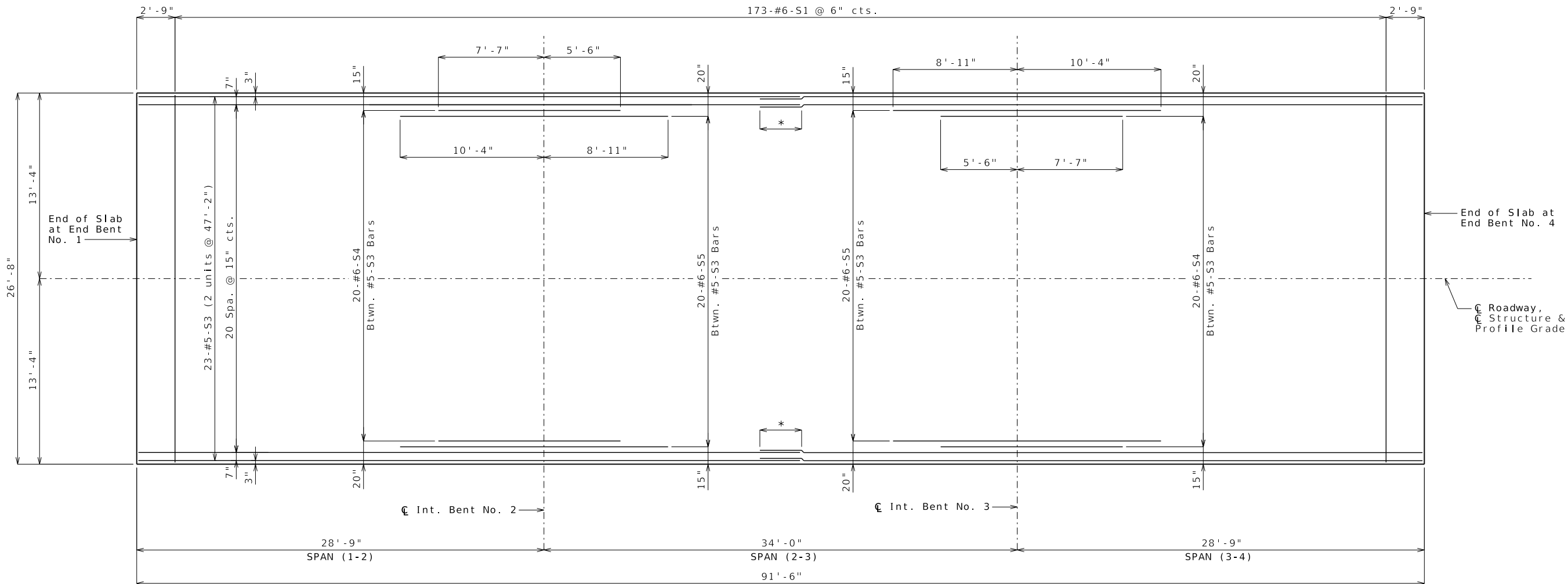
105 WEST CAPITOL
JEFFERSON CITY, MO 65102



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314-531-4321 • FAX 314-531-6966
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CERTIFICATE OF AUTHORITY: 000759
EXPIRATION DATE: DECEMBER 31, 2024

SLAB SECTION
AND DETAILS

ROUTE AA OVER
THERINE SLOUGH
DRAINAGE DITCH
NO. 1)



PLAN
* 3'-0" Min. Lap Splice (Typ.)

Notes:
Longitudinal slab dimensions are measured horizontally.
For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 19.
For Details and Reinforcement of Type H Barrier, see Sheets No. 22 thru 24.
For Theoretical Bottom of Slab Elevations and Slab Haunching Diagram, see Sheet No. 18.

SLAB PLAN SHOWING TOP REINFORCEMENT

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No. 20 of 33



DATE	
DATE PREPARED 3/8/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 20
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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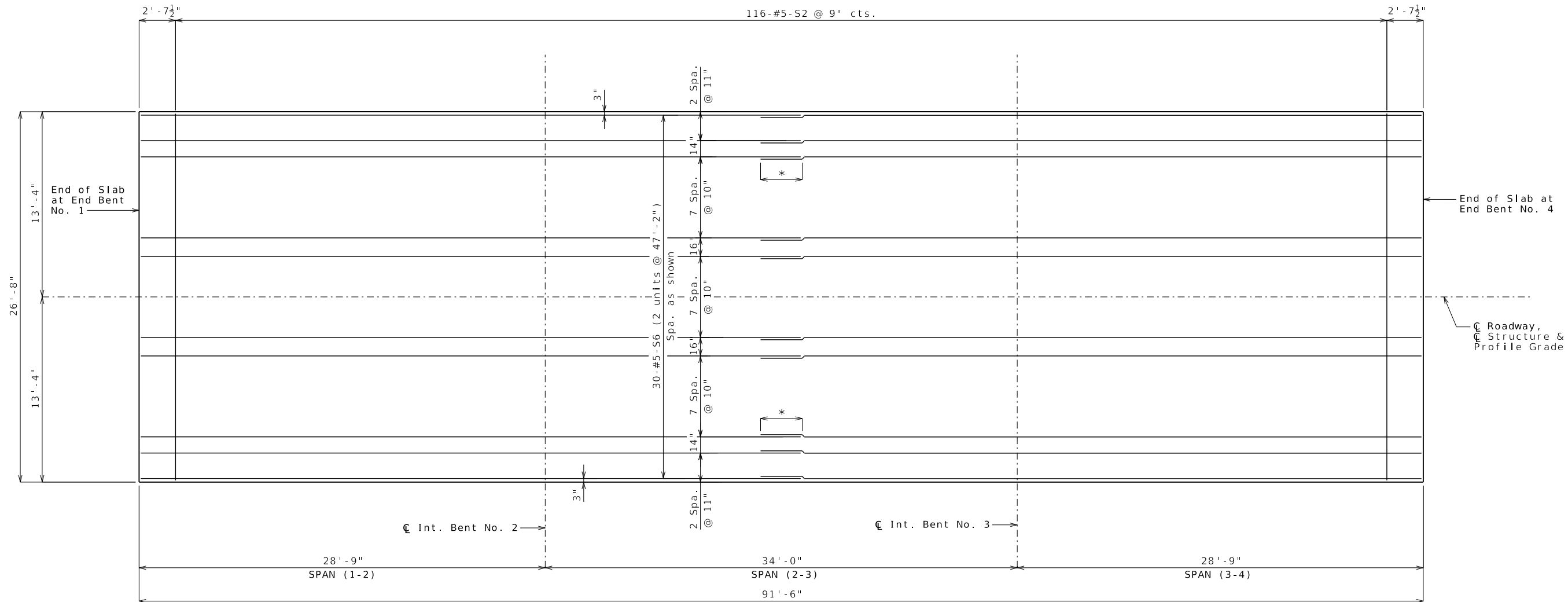
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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EXPIRATION DATE: DECEMBER 31, 2024

SLAB PLAN SHOWING TOP REINFORCEMENT

ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)



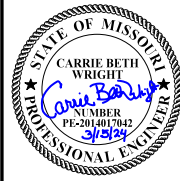
PLAN
* 3'-0" Min. Lap Splice (Typ.)

Notes:
Longitudinal slab dimensions are measured horizontally.
For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 19.
For Details and Reinforcement of Type H Barrier, see Sheets No. 22 thru 24.
For Theoretical Bottom of Slab Elevations and Slab Haunching Diagram, see Sheet No. 18.

SLAB PLAN SHOWING BOTTOM REINFORCEMENT

Detailed: Aug. 2023
Checked: Sept. 2023

Note: This drawing is not to scale. Follow dimensions. Sheet No. 21 of 33



DATE	
DATE PREPARED 3/8/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 21
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

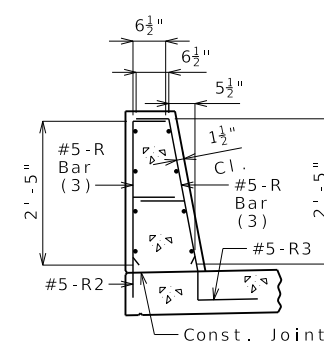
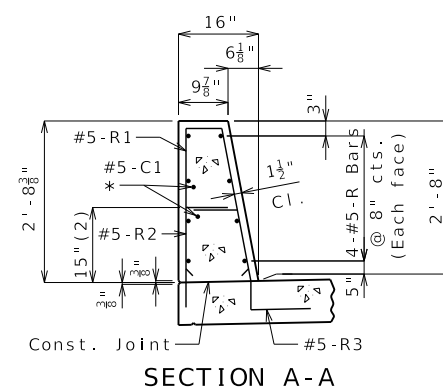
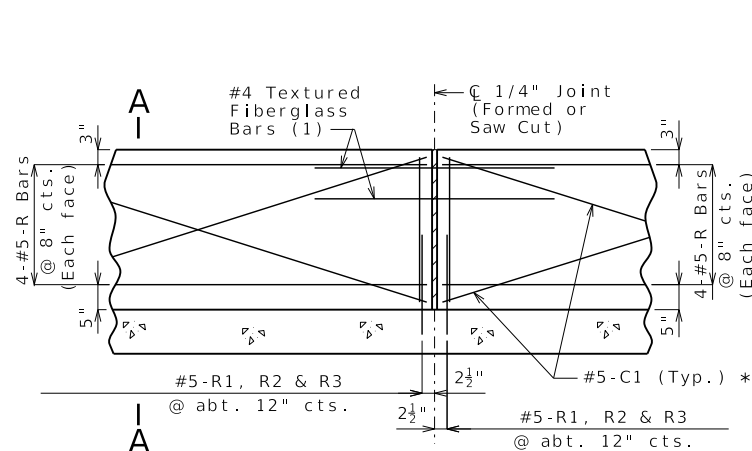
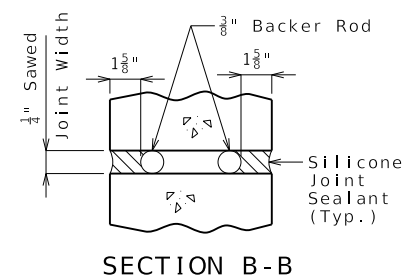
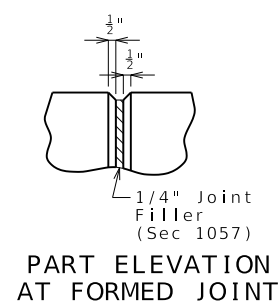
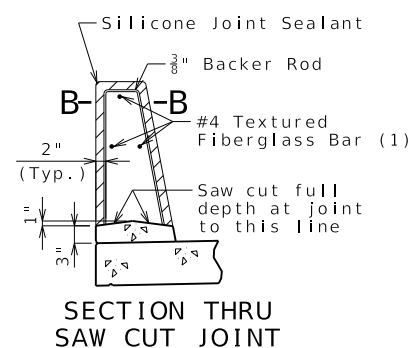
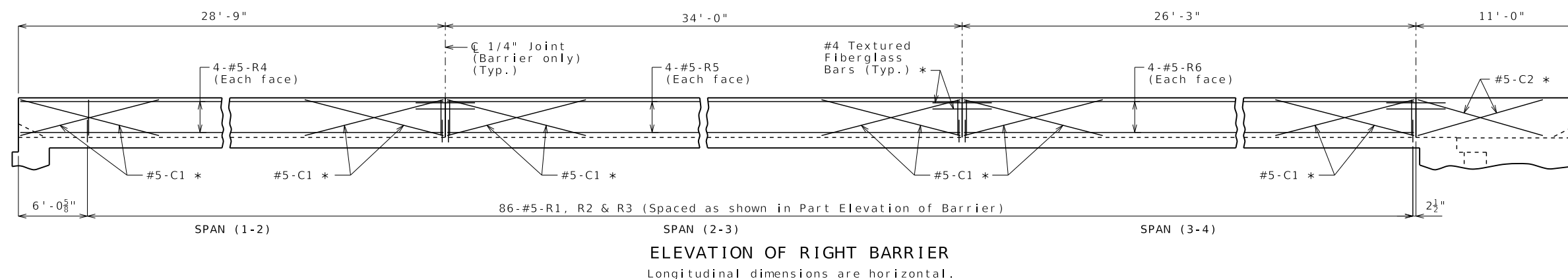
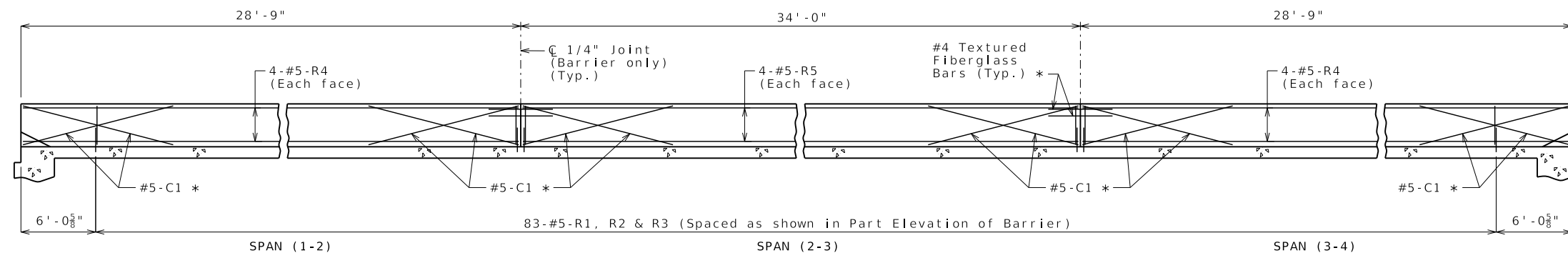
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SLAB PLAN
SHOWING BOTTOM
REINFORCEMENT
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



General Notes:

* Slip-formed option only.

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

Top of barrier shall be built parallel to grade and barrier joints (except at Right End Bent No. 4) normal to grade.

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

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

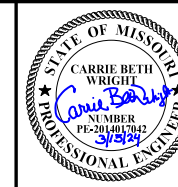
Concrete in barrier shall be Class B-1.

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

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

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

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



DATE _____

DATE PREPARED

3/8/2024

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BUT L

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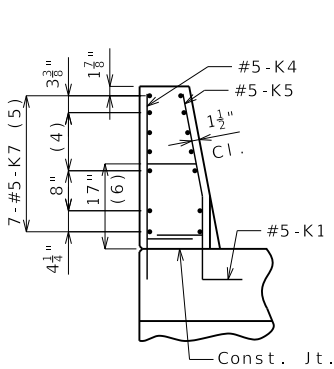
[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY MO 65102

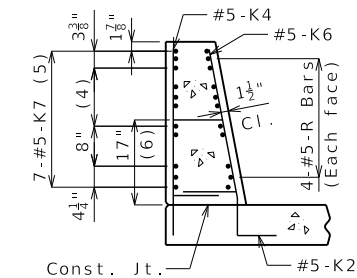
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CERTIFICATE OF AUTHORITY: 000159

TYPE H BARRIER

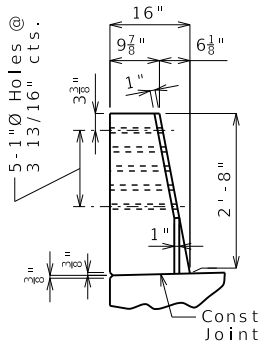
ROUTE AA OVER
KATHERINE SLOUGH
DRAINAGE DITCH



ELEVATION A-A

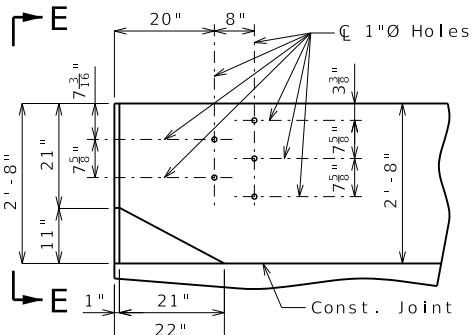


SECTION B-B

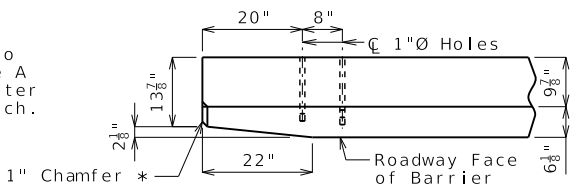


ELEVATION E-E

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

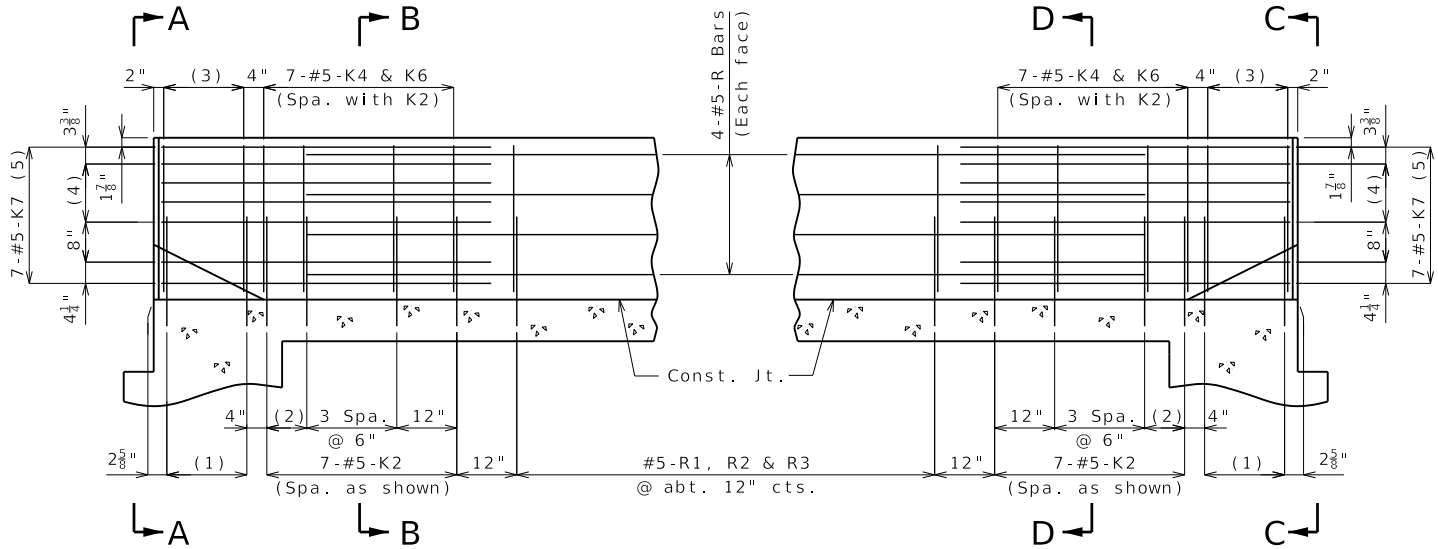


ELEVATION



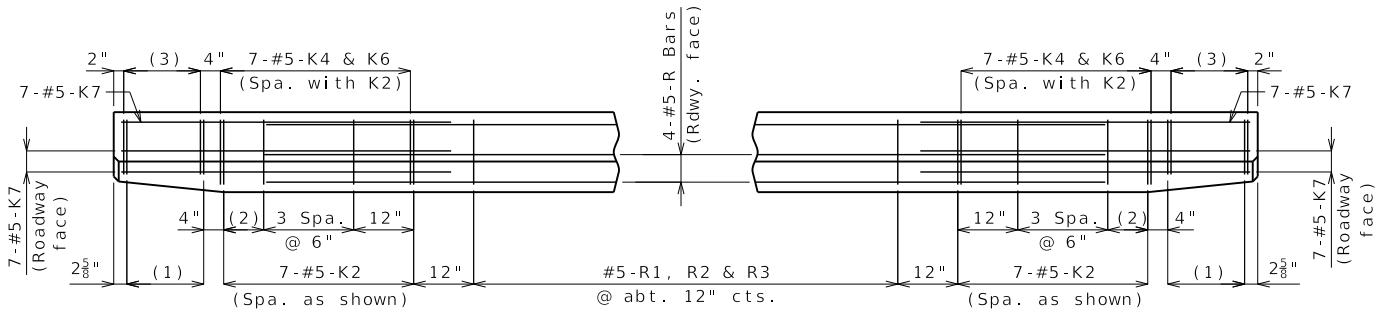
PLAN

DETAILS OF GUARD RAIL ATTACHMENT



PART ELEVATION

- (1) 5-#5-K1 @ 4" cts.
(2) 2 Spaces @ 4"
(3) 5-#5-K4 and 5-#5-K5, spaced with K1
(4) 3 Spaces @ 3 13/16"
(5) Spaced as shown, each face
(6) To top of bar



PART PLAN

General Notes:

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

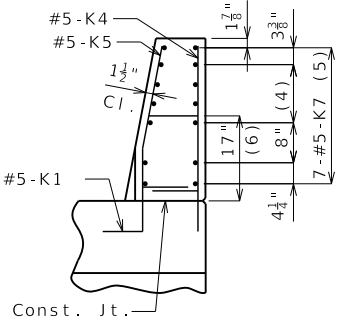
Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2".

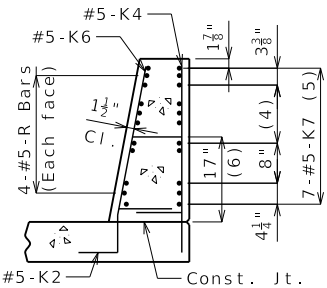
Use a minimum lap of 3'-1" between K7 bars and R bars.

TYPE H BARRIER AT END OF BENTS

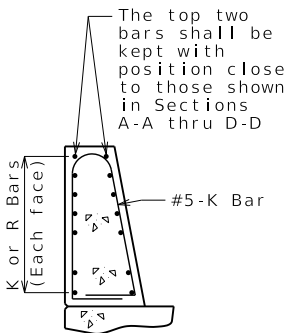
(Left barrier shown, right barrier at End Bent No.1 similar)



ELEVATION C-C



SECTION D-D

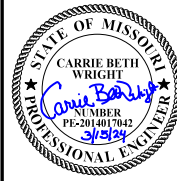


PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)

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

All dimensions are out to out.



DATE

DATE PREPARED
3/8/2024

ROUTE
AA

STATE
MO

DISTRICT
BR

SHEET NO.
23

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9347

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103

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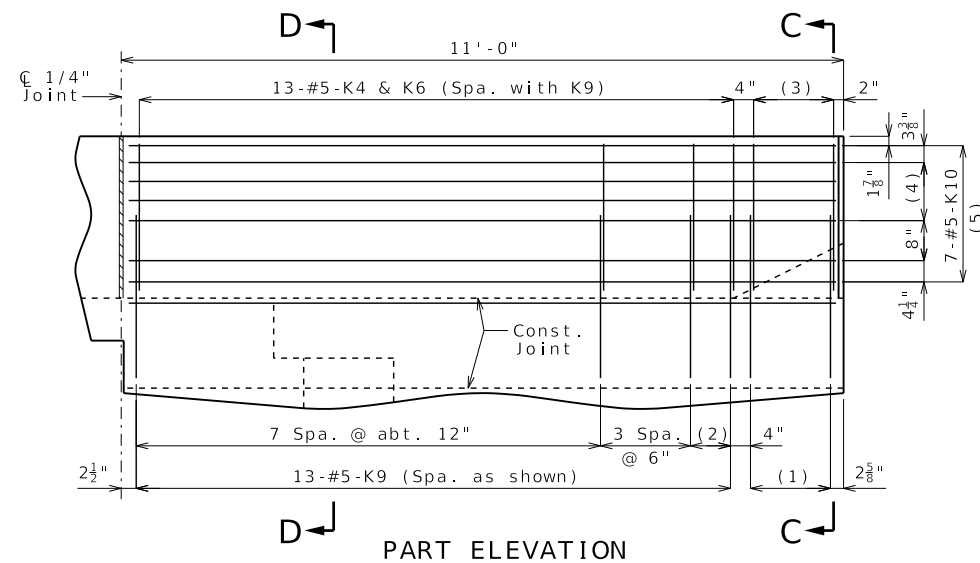
DISCIPLINE: PROFESSIONAL ENGINEERING

CERTIFICATE OF AUTHORITY: 000169

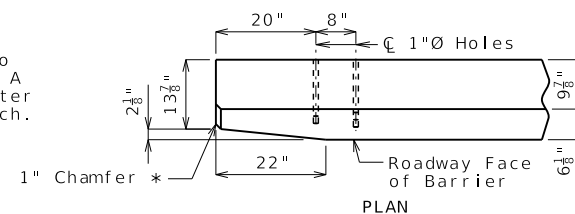
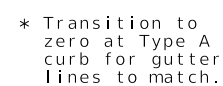
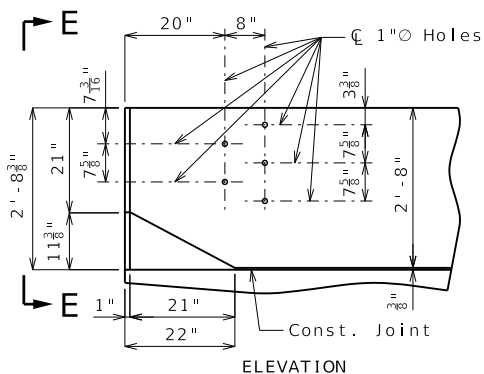
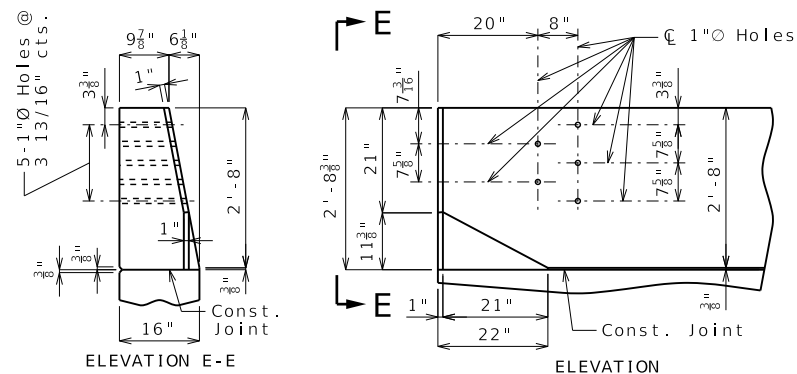
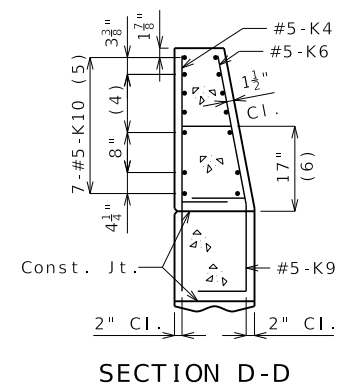
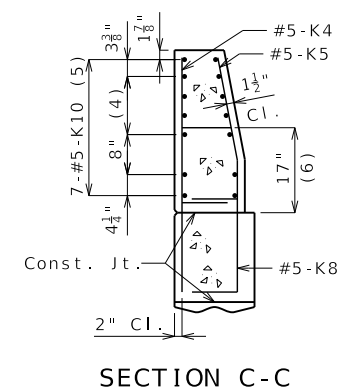
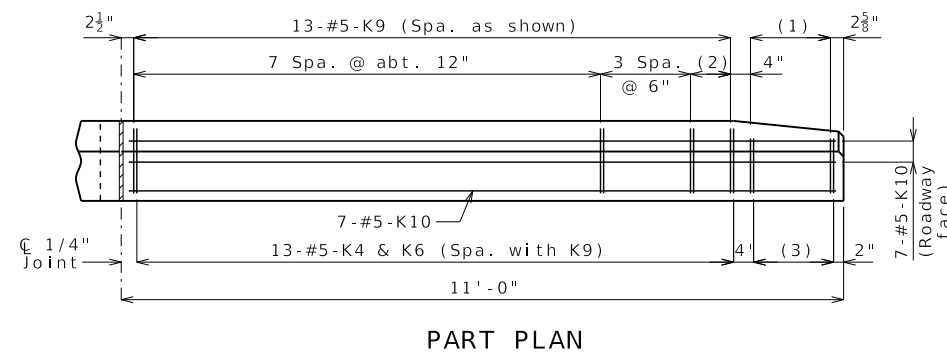
EXPIRATION DATE: DECEMBER 31, 2024

TYPE H BARRIER AT END BENTS

ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)



- (1) 5-#5-K8 @ 4" cts. (3) 5-#5-K4 and 5-#5-K5,
spaced with K8 (5) Spaced as shown, each face
- (2) 2 Spaces @ 4" (4) 3 Spaces @ $3\frac{13}{16}$ " (6) To top of bar



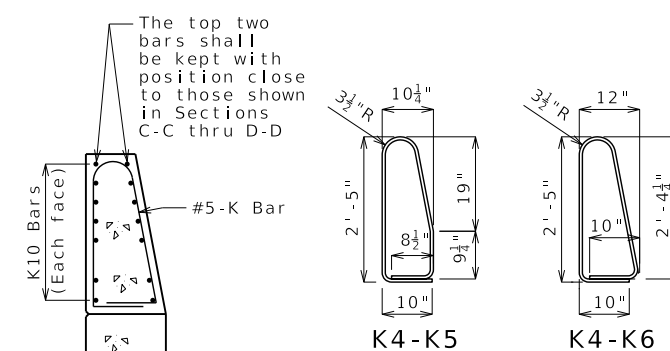
DETAILS OF GUARD RAIL ATTACHMENT

General Notes:

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

Reinforcing Steel:

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

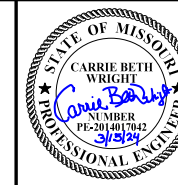


PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)

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

All dimensions are out to out.



DATE _____

DATE PREPARED
3/8/2024

ROUTE	STATE
AA	MO

DISTRICT	SHEET NO.
BR	24

COUNTY
BUTLER

JOB NO.
J9S367

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9347[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

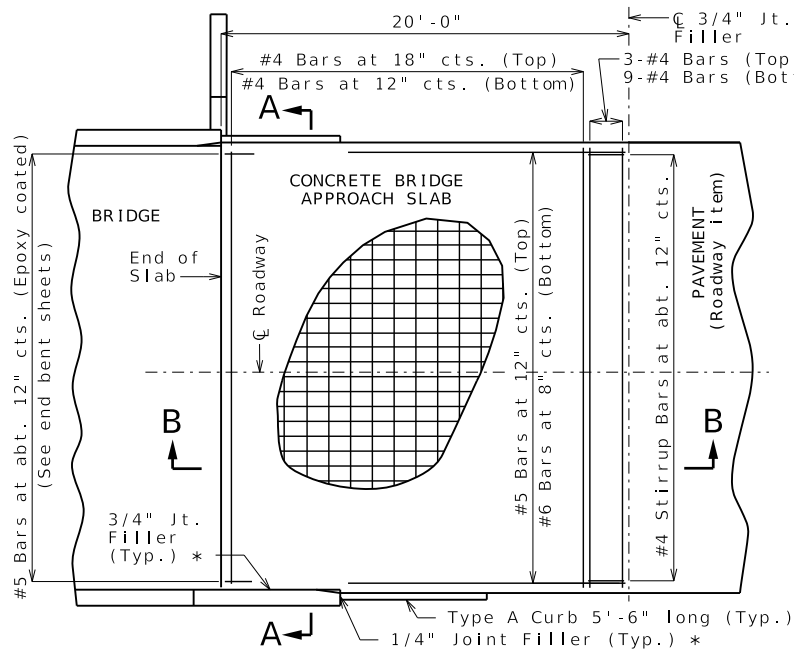
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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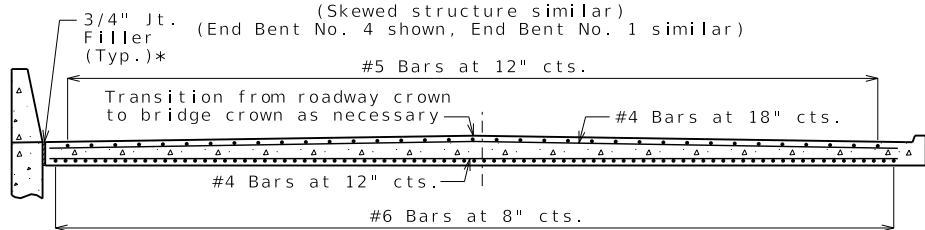
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CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2024

RIGHT TYPE H
BARRIER AT
END BENT NO. 4

ROUTE AA OVER
ATHERINE SLOUGH
DRAINAGE DITCH
NO. 1)

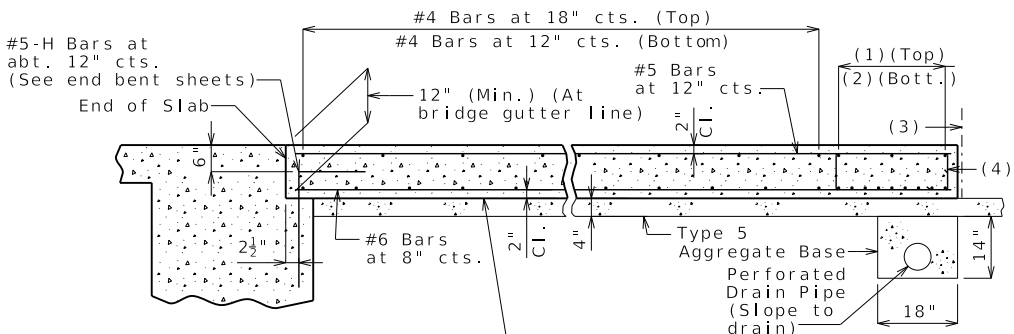


PART PLAN OF SQUARED STRUCTURE

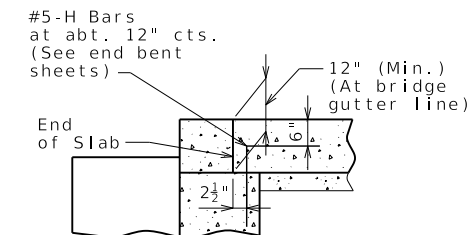


SECTION A-A

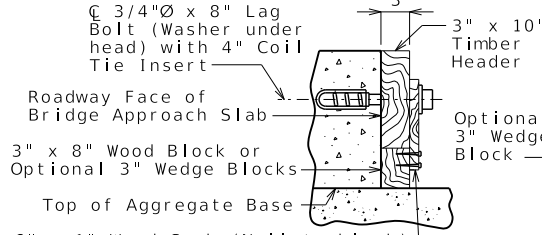
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION B-B
(Integral end bent)



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

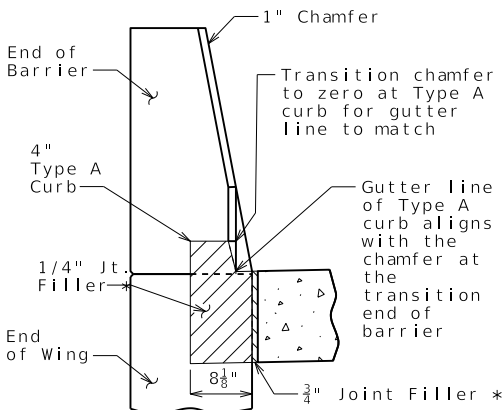


SECTION E-E

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

UNDERSEAL ACCESS
HOLE DETAIL
(If required)

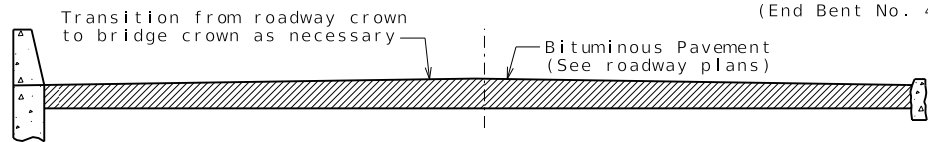
CONSTRUCTION
JOINT DETAIL



SECTION BETWEEN
CURB AND BARRIER

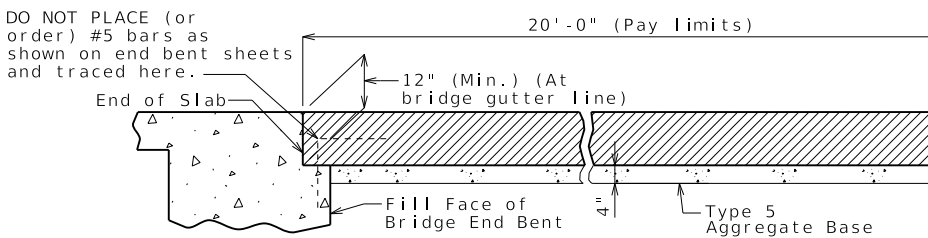
(On End Bent No. 4 Right Wing)

- (1) 3-#4 Bars
- (2) 9-#4 Bars
- (3) 3/4" Jt. Filler
- (4) #4 Stirrup Bars at 12" cts. (Roadway Item)



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

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

Notes For Concrete Slab Only:

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

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

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

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

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

Mechanical bar splices shall be in accordance with Sec 710.

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

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

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

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

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

General Notes:

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

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

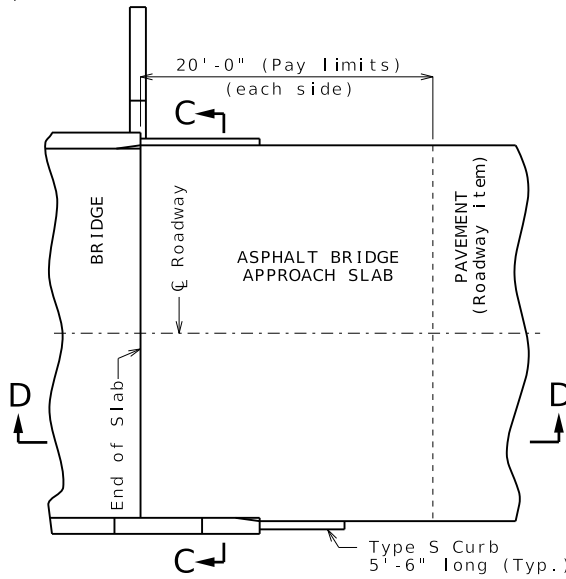
MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

- ☐ Concrete Bridge Approach Slab
☐ Asphalt Bridge Approach Slab

Notes For Asphalt Slab Only:

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

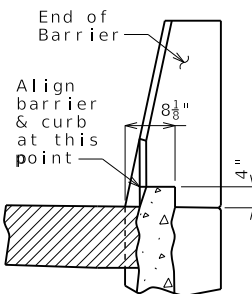
Application of tack is required between lifts per Sec 403.



PART PLAN

(Skewed structure shown, Squared structure similar)

(End Bent No. 4 shown, End Bent No. 1 similar)



SECTION D-D

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

BRIDGE APPROACH SLAB (MINOR)

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

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No.25 of 33



DATE

DATE PREPARED
3/8/2024

ROUTE AA MO

DISTRICT BR SHEET NO. 25

COUNTY BUTLER

JOB NO. I953677

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9347

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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

MoDOT

HORNER SHIFRIN

401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103

314-531-4321 • FAX 314-531-6866

WWW.HORNERSHIFRIN.COM

DISCIPLINE: PROFESSIONAL ENGINEERING

CERTIFICATE OF AUTHORITY: 000169

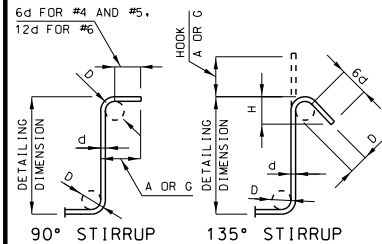
EXPIRATION DATE: DECEMBER 31, 2024

BRIDGE APPROACH SLAB (MINOR)

ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)

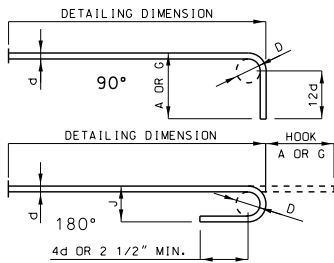
BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
										B		C		D		E		F		H					K
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
			SUBSTR.																						
			INT. BENT 2																						
18	6	D200	BEAM		20	X				2	3.000									2	3	2	3		61
12	7	H200	BEAM		18	X				25	9.000									27	5	27	5		672
4	6	H201	BEAM		20	X				25	9.000									25	9	25	9		155
4	4	H202	BEAM		18	X				3	11.000									4	11	4	11		13
8	6	H203	BEAM		10	X						1	0.000	3	3.000					5	3	4	11		59
40	4	P200	CIP PILES		34	S	X			1	0.000									3	11	3	9		100
24	5	U200	BEAM		13	S	X			3	3.000	2	9.000	3	3.000	2	9.000			12	11	12	7		315
10	5	U201	BEAM		10	S	X					2	9.000	3	3.000					8	9	8	6		89
10	4	U202	BEAM		10	S	X					0	6.000	3	3.000					4	3	4	1		27
30	6	V200	CIP PILES		17	X				5	3.000									5	11	5	11		267
			INT. BENT 3																						
18	6	D300	BEAM		20	X				2	3.000									2	3	2	3		61
12	7	H300	BEAM		18	X				25	9.000									27	5	27	5		672
4	6	H301	BEAM		20	X				25	9.000									25	9	25	9		155
4	4	H302	BEAM		18	X				3	11.000									4	11	4	11		13
8	6	H303	BEAM		10	X						1	0.000	3	3.000					5	3	4	11		59
40	4	P300	CIP PILES		34	S	X			1	0.000									3	11	3	9		100
24	5	U300	BEAM		13	S	X			3	3.000	2	9.000	3	3.000	2	9.000			12	11	12	7		315
10	5	U301	BEAM		10	S	X					2	9.000	3	3.000					8	9	8	6		89
10	4	U302	BEAM		10	S	X					0	6.000	3	3.000					4	3	4	1		27
30	6	V300	CIP PILES		17	X				5	3.000									5	11	5	11		267
			SUPERSTR.																						
			END BENT 1																						
4	6	F100	DIAPHRAGM	E	19					2	8.000	4	0.000							6	8	6	6		39
22	6	H100	BEAM/DIAPH.	E	20					26	5.000									26	5	26	5		873
28	6	H101	WING	E	20					11	2.000									11	2	11	2		470
4	6	H102	WING	E	20					6	9.000									6	9	6	9		41
4	6	H103	WING	E	15							4	2.000	4	11.375	1	0.500	4	10.000	9	1	9	1		55
24	5	H104	DIAPHRAGM	E	19					1	7.000	1	3.000							2	10	2	8		67
4	6	H105	BEAM	E	20					4	0.000									4	0	4	0		24
40	4	P100	CIP PILES		34	S				0	10.000									3	4	3	3		87
18	5	U100	BEAM	E	31	S				3	10.000	2	9.000							7	1	6	11		130
6	4	U101	BEAM	E	13	S				2	9.000	2	8.000	2	9.000	2	8.000			11	7	11	4		45
2	4	U102	BEAM	E	10	S						2	8.000	2	9.000					8	1	7	11		11
32	6	U103	DIAPHRAGM	E	19	S				1	10.000	4	7.000							6	5	6	3		300
24	6	U104	DIAPHRAGM	E	19	S				0	9.000	2	9.000							3	6	3	4		120
24	5	U105	DIAPHRAGM	E	31	S				1	10.000	2	3.000							4	7	4	5		111
12	5	V100	BEAM	E	17					3	10.000									4	5	4	5		55
16	6	V101	DIAPHRAGM	E	20					0	9.000									0	9	0	9		18



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

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

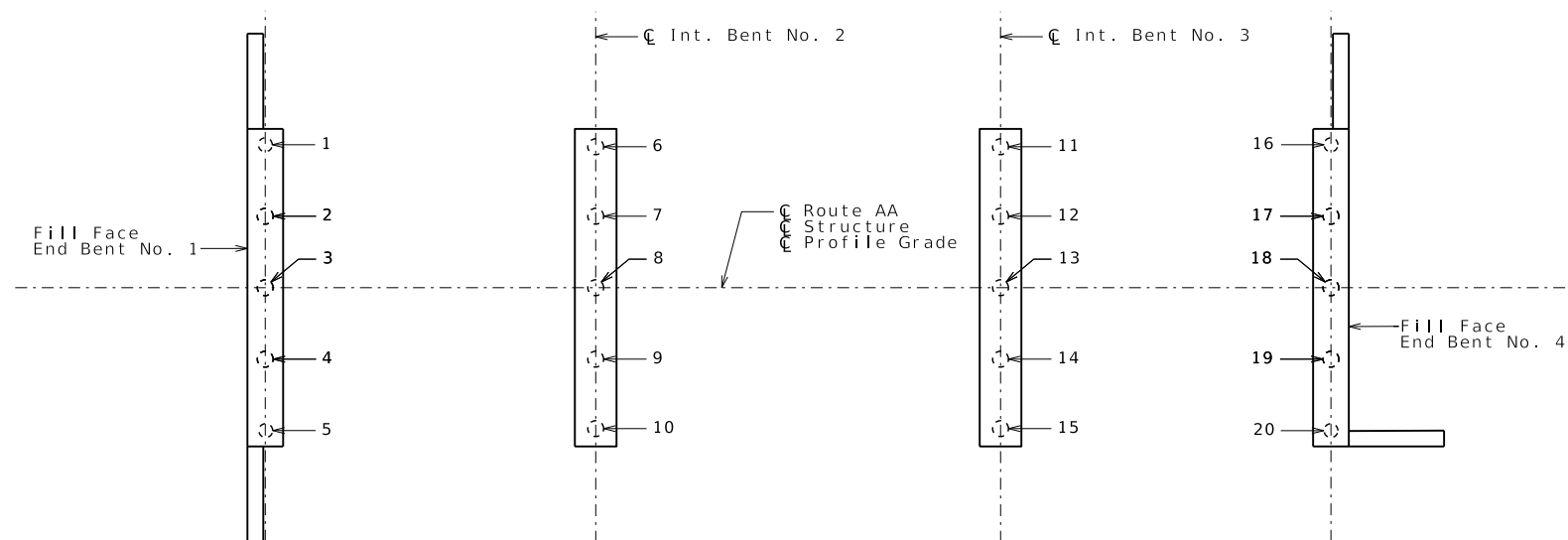


END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS A OR G	90° HOOKS J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"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

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
										B		C		D		E		F		H					K
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
20	6	V102	WING	E 20				V 4		4	9.000									4	9	4	9		
			INCREMENT = 2.500 IN							3	11.000									3	11	3	11	130	
12	6	V103	WING	E 20						4	9.000									4	9	4	9	86	
4	6	V104	WING	E 20						3	9.000									3	9	3	9	23	
30	5	V105	CIP PILES		17					5	3.000									5	10	5	10	183	
			END BENT 4																						
6	6	F400	BEAM/DIAPH.	E 9						2	3.000	5	1.500	1	2.000		3	7.500	3	7.500	8	7	8	6	77
4	6	F401	DIAPHRAGM	E 19						2	8.000	4	0.000							6	8	6	6	39	
22	6	H400	BEAM/DIAPH.	E 20						26	5.000									26	5	26	5	873	
14	6	H401	WING	E 20						9	8.000									9	8	9	8	203	
8	8	H402	WING	E 20						10	6.000									10	6	10	6	224	
12	6	H403	WING	E 20						11	2.000									11	2	11	2	201	
4	6	H404	WING	E 20				V 2		10	7.000									10	7	10	7		
			INCREMENT = 4 FT 4.000 IN							6	3.000									6	3	6	3	51	
2	6	H405	WING	E 15								4	2.000	4	11.750	1	2.500	4	10.000		9	2	9	2	28
24	5	H406	DIAPHRAGM	E 19						1	7.000	1	3.000							2	10	2	8	67	
4	6	H407	BEAM	E 20						4	0.000									4	0	4	0	24	
40	4	P400	CIP PILES		34	S				0	10.000									3	4	3	3	87	
18	5	U400	BEAM	E 31	S					3	10.000	2	9.000							7	1	6	11	130	
6	4	U401	BEAM	E 13	S					2	9.000	2	8.000	2	9.000	2	8.000			11	7	11	4	45	
2	4	U402	BEAM	E 10	S							2	8.000	2	9.000					8	1	7	11	11	
32	6	U403	DIAPHRAGM	E 19	S					1	10.000	4	7.000							6	5	6	3	300	
24	6	U404	DIAPHRAGM	E 19	S					0	9.000	2	9.000							3	6	3	4	120	
24	5	U405	DIAPHRAGM	E 31	S					1	10.000	2	3.000							4	7	4	5	111	
12	5	V400	BEAM	E 17						3	10.000									4	5	4	5	55	
16	6	V401	DIAPHRAGM	E 20						0	9.000									0	9	0	9	18	
10	6	V402	WING	E 20				V 2		4	9.000									4	9	4	9		
			INCREMENT = 3.000 IN							3	9.000									3	9	3	9	64	
24	6	V403	WING	E 20						4	9.000									4	9	4	9	171	
2	6	V404	WING	E 20						3	7.000									3	7	3	7	11	
30	5	V405	CIP PILES		17					5	3.000									5	10	5	10	183	
			INT. BENT DIAPH.																						
12	6	H500	DIAPHRAGM	E 20						24	3.000									24	3	24	3	437	
60	4	U500	DIAPHRAGM	E 28								2	2.000	1	7.000	1	6.000			5	3	5	1	204	
40	6	U501	DIAPHRAGM	E 28								2	5.000	1	7.000	2	2.000			6	2	5	10	350	
12	6	U502	DIAPHRAGM	E 10								1	2.000	2	3.500					4	8	4	4	78	
			SLAB																						
173	6	S1	SLAB	E 20						26	5.000									26	5	26	5	6864	
116	5	S2	SLAB	E 20						26	5.000									26	5	26	5	3196	
46	5	S3	SLAB	E 20						47	2.000									47	2	47	2	2263	
40	6	S4	SLAB	E 20						13	1.000									13	1	13	1	786	
40	6	S5	SLAB	E 20						19	3.000									19	3	19	3	1157	
60	5	S6	SLAB	E 20						47	2.000									47	2	47	2	2952	



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					
					Int. Bent No. 2
6					
7					
8					
9					
10					

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
					Int. Bent No. 3
11					
12					
13					
14					
15					
					End Bent No. 4
16					
17					
18					
19					
20					

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 Contractor personnel.



DATE _____

DATE PREPARED
3/8/2024

ROUTE AA	STATE MO
-------------	-------------

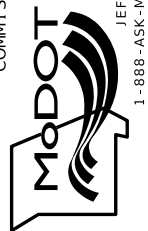
DISTRICT	SHEET NO.
BR	28

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9347[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



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DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2024

AS-BUILT
PILE DATA

ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)



Millennia Professional Services

BORING NUMBER X0789-1

PAGE 1 OF 2

CLIENT Horner & Shifrin, Inc.

PROJECT NUMBER MG22088

DATE STARTED 1/23/23 COMPLETED 1/23/23

DRILLING CONTRACTOR Smith & Co.

DRILLING METHOD Hollow Stem Auger and Mud-Rotary

LOGGED BY C. Graham CHECKED BY J. Schaeffer

NOTES Drainage Ditch No. 1

PROJECT NAME Butler County Route AA Bridges

PROJECT LOCATION Butler County, Missouri

GROUND ELEVATION 319.7 ft HOLE SIZE inches

GROUND WATER LEVELS:

▽ AT TIME OF DRILLING 15.00 ft / Elev 304.70 ft

AT END OF DRILLING --- Not available due to drilling fluid

AFTER DRILLING ---

DEPTH (ft)

GRAPHIC LOG

MATERIAL DESCRIPTION

SAMPLE TYPE NUMBER

RECOVERY % (RQD)

BLOW COUNTS (N VALUE)

POCKET PEN. (tsf)

DRY UNIT WT. (pcf)

MOISTURE CONTENT (%)

LIQUID LIMIT

PLASTIC LIMIT

PLASTICITY INDEX

FINES CONTENT (%)

0

Topsoil (12.0")

318.7

Grey, mottled with brown, lean CLAY (CL), with sand

- Bulk sample from 0-3 ft.

5

SS 1

56

2-2-3 (5)

1.5

17

10

- dark grey, trace iron deposits below 9.5 ft.

SS 2

100

1-2-3 (5)

1.75

21

23

15

8

15

Grey SILT (ML)

306.95

SS 3

100

1-2-3 (5)

0.75

30

301.95

Grey, poorly graded SAND (SP), medium- to coarse-grained

- drilling method switched to Mud-Rotary prior to sampling SS4 at 19.5 ft.

3E0TECH BH COLUMNS - GINT STD US LAB GDT - 6/6/23 15:17 - G:\PROJECT FILES\2022\MG22088 MODOT RTE AA - BUTLER COUNTY BRIDGE REPLACEMENTS\FIELD DATA\BUTLER COUNTY BRIDGE GINT.GPJ

[illegible]

	
DATE	
DATE PREPARED 3/8/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 29
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9347	
DESCRIPTION	
DATE	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
	
401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103 314-531-4321 • FAX 314-531-6986 WWW.HORNERSHIFRIN.COM DISPOSABLE CERTIFICATE OF AUTHORITY: 000159 EXPIRATION DATE: DECEMBER 31, 2024	
BORING DATA	
ROUTE AA OVER CATHERINE SLOUGH (DRAINAGE DITCH NO. 1)	

BORING NUMBER X0789-1A

PAGE 1 OF 4

MILLENNIA
PROFESSIONAL SERVICES

CLIENT	Horner & Shiffrin, Inc.	PROJECT NAME	Butler County Route AA Bridges
PROJECT NUMBER	MG22088	PROJECT LOCATION	Butler County, Missouri
DATE STARTED	5/1/23	COMPLETED	5/2/23
DILLING CONTRACTOR	Terracon	GROUND ELEVATION	319.7 ft
DILLING METHOD	Continuous Flight Auger and Mud-Rotary	HOLE SIZE	_____ inches
LOGGED BY	M. Jenkins	GROUN WATER LEVELS:	
CHECKED BY	J. Schaeffer	AT TIME OF DILLING	--- Not available due to drilling fluid
NOTES		AT END OF DILLING	--- Not available due to drilling fluid
		AFTER DILLING	---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL (9")		318.95								
5												
10												
15		Note: See Boring X0789-1 for upper material descriptions Sampling at this location began at 23.5 ft.										
20												
25		Grey, fine-grained SAND (SP)	X SS 1	89	7-8-8 (16)							



Millennia Professional Services

BORING NUMBER X0789-1A

PAGE 2 OF 4

CLIENT Horner & Shifrin, Inc.

PROJECT NAME Butler County Route AA Bridges

PROJECT NUMBER MG22088

PROJECT LOCATION Butler County, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
25		Grey, fine-grained SAND (SP) <i>(continued)</i>										
30			SS 2	78	3-6-5 (11)							
35			SS 3	100	14-21-27 (48)							
40			SS 4	100	16-29-33 (62)							
45			SS 5	78	13-16-20 (36)							
50		- grey clay layer at 49 ft.	SS 6	100	11-24-25 (49)							
		- fine-grained below 52 ft.										

GEOTECH BH COLUMNS - GINT STD US LAB.GDT - 6/6/23 15:17 - G:\PROJECT FILES\2022\MG22088.MDOT RTE AA - BUTLER COUNTY BRIDGE REPLACEMENTS\FIELD DATA\BUTTLER COUNTY GINT.GPJ

[illegible]

BORING DATA

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

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

Sheet No.30 of 33

MILLENNIA

Millennia Professional Services

BORING NUMBER X0789-1A
PAGE 3 OF 4

CLIENT Horner & Shifrin, Inc.

PROJECT NAME Butler County Route AA Bridges

PROJECT NUMBER MG22088

PROJECT LOCATION Butler County, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
55		Grey, fine-grained SAND (SP) (continued)	SS 7	100	10-15-15 (30)							
60		SS 8	78	8-9-8 (17)						2		
65		SS 9	67	2-5-6 (11)								
70		SS 10	72	10-12-12 (24)								
75		SS 11	89	8-11-13 (24)								
80	SS 12	83	9-10-9 (19)							2		
(Continued Next Page)												

Detailed: Aug. 2023
Checked: Sept. 2023

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

MILLENNIA

Millennia Professional Services

BORING NUMBER X0789-1A
PAGE 4 OF 4

CLIENT Horner & Shifrin, Inc.

PROJECT NAME Butler County Route AA Bridges

PROJECT NUMBER MG22088

PROJECT LOCATION Butler County, Missouri

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
85		- with gravel from 82 to 92 ft. Grey, fine-to-coarse-grained SAND (SW) (continued)	SS 13	89	8-10-12 (22)							
90		SS 14	89	10-12-14 (26)								
95		SS 15	56	9-11-11 (22)								
100		SS 16	0	17-13-12 (25)								
Bottom of borehole at 100.0 feet.												

Detailed: Aug. 2023
Checked: Sept. 2023

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

STATE OF MISSOURI
CARRIE BETH WRIGHT
Professional Engineer
PE-201401742
3/15/24

DATE

DATE PREPARED
3/8/2024
ROUTE AA STATE MO
DISTRICT BR SHEET NO. 31
COUNTY BUTLER
JOB NO. J9S3677
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9347
DESCRIPTION
DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
HORNER SHIFRIN
401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103
314-531-4321 • FAX 314-531-5965
WWW.HORNERSHIFRIN.COM
DESIGN PROFESSIONAL ENGINEERING
EXPIRATION DATE: DECEMBER 31, 2024

BORING DATA
ROUTE AA OVER
CATHERINE SLOUGH
(DRAINAGE DITCH
NO. 1)

[illegible][illegible]

BORING DATA	HORNER SHIFFRIN  401 S. 18TH ST. STE. 400 ST. LOUIS, MO 63103 314-431-4321 • FAX 314-431-5866 WWW.HORNERSHIFFRIN.COM DISCIPLINE: PROFESSIONAL ENGINEERING CERTIFICATE OF AUTHORITY: 000169 EXPIRATION DATE: DECEMBER 31, 2024	MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION		105 WEST CAPITAL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
		DATE	DESCRIPTION		
STATE OF MISSOURI CARRIE BETH WRIGHT  NUMBER 17-2014407042 3/19/24 PROFESSIONAL ENGINEER		DATE			
DATE PREPARED		3/8/2024			
ROUTE	AA	STATE	MO		
DISTRICT	BR	SHEET NO.	32		
COUNTY		BUTLER			
JOB NO.		J953677			
CONTRACT ID.					
PROJECT NO.					
BRIDGE NO.		A9347			

BORING DATA

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

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

Sheet No.32 of 33

Estimated Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	60		60
Removal of Bridges (X0790)	lump sum			1
Bridge Approach Slab (Minor)	sq. yard		108	108
Galvanized Cast-In-Place Concrete Piles (14 in.)	linear foot	250		250
Galvanized Cast-In-Place Concrete Piles (16 in.)	linear foot	350		350
Dynamic Pile Testing	each	4		4
Pile Point Reinforcement	each	20		20
Class B Concrete (Substructure)	cu. yard	46.9		46.9
Slab on Steel	sq. yard		245	245
Type H Barrier	linear foot		174	174
Reinforcing Steel (Bridges)	pound	3,630		3,630
Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound	19,100		19,100
Galvanizing Structural Steel	lump sum		1	1
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		8	8
Laminated Neoprene Bearing Pad	each		16	16

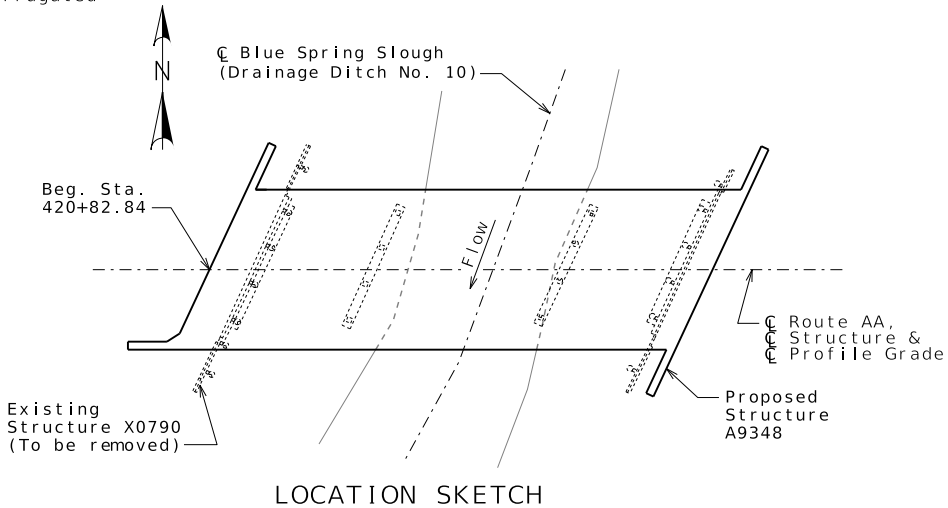
Notes:

- All concrete between the upper and lower construction joints in the end bents is included in the Estimated Quantities for Slab on Steel.
- All reinforcement in the end bents and all reinforcement in the cast-in-place piles at the end bents is included in the Estimated Quantities for Slab on Steel.
- All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Steel.
- All reinforcement in the cast-in-place piles at the intermediate bents is included in the substructure quantities.
- All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Steel.
- Structural Steel shall be galvanized in accordance with ASTM A123 and Sec. 1081.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	82.1
Reinforcing Steel	pound	540
Reinforcing Steel (Epoxy Coated)	pound	23,380

- The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for stay-in-place corrugated steel forms, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.
- Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.
- Slab shall be cast-in-place with conventional forms or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.
- Bridge deck surface may be finished with a vibratory screed.
- Stay-In-Place Corrugated Steel Forms:
- Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.
- Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.
- Form sheets shall not rest directly on the top of beam flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Welding on or drilling holes in the beam flanges will not be permitted. All steel fabrication and construction shall be in accordance with Sec 1080 and 712. Certified field welders will not be required for welding of the form supports.
- The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for beam loading.

Hydrologic Data
Drainage Area = 18.9 mi ²
Design Flood Frequency = 50 years
Design Flood Discharge = 1817 cfs
Design Flood (D.F.) Elevation = 316.5
Base Flood (100-year)
Base Flood Elevation = 317.0
Base Flood Discharge = 2034 cfs
Estimated Backwater = 0.2 ft
Average Velocity thru Opening = 4.6 ft/s
Freeboard (50-year)
Freeboard = 1.2 ft
Roadway Overtopping
Overtopping Flood Frequency => 500 years



Foundation Data					
Type	Design Data	Bent Number			
		1	2	3	4
Load Bearing Pile	Pile Type and Size	CECIP 14"	CECIP 16"	CECIP 16"	CECIP 14"
	Number ea	5	5	5	5
	Approximate Length Per Each ft	25	35	35	25
	Pile Point Reinforcement ea	All	All	All	All
	Min. Galvanized Penetration (Elev.) ft	Full Length	Full Length	Full Length	Full Length
	Est. Max. Scour Depth (100 yr.) (Elev.) ft	-	302.4	302.4	-
	Minimum Tip Penetration (Elev.) ft	291	282.0	282.0	291
	Criteria for Min. Tip Penetration	Penetration Beyond Liquefiable Layers	Scour	Scour	Penetration Beyond Liquefiable Layers
	Pile Driving Verification Method	DT	DT	DT	DT
	Resistance Factor	0.65	0.65	0.65	0.65
	Minimum Nominal Axial Compressive Resistance kip	132	221	221	132

- DT= Dynamic Testing
- CECIP=Closed Ended Cast-in-Place Concrete Pile
- Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$
- All piles shall be galvanized down to the minimum galvanized penetration (elevation).

- Pile point reinforcement need not be galvanized. Shop drawings will not be required for pile point reinforcement.
- The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) 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.
- Estimated Maximum Scour Depth (Elevation) shown is for verifying Minimum Nominal Axial Compressive Resistance using dynamic testing only where pile resistance contribution above this elevation shall not be considered.

General Notes:

- Design Specifications:
- 2020 AASHTO LRFD Bridge Design Specifications (9th Edition)
- Seismic Design Category = C (Seismic Details Only)
- Design earthquake response spectral acceleration coefficient at 1.0 second period, $SD_1 = 0.382$ g.
- Acceleration Coefficient (effective peak ground acceleration coefficient), $S_{ds} = 0.888$ g.
- Design Loading:
- Vehicular = HL-93
- Future Wearing Surface = 35 lb/sf
- Earth = 120 lb/cf
- Equivalent Fluid Pressure = 45 lb/cf
- Superstructure: Simply-supported, non-composite for dead load, Continuous composite for live load
- Design Unit Stresses:
- Class B Concrete (Substructure, except CIP Piles) $f'_c = 3,000$ psi
- Class B-1 Concrete (Barrier and CIP Piles) $f'_c = 4,000$ psi
- Class B-2 Concrete (Superstructure, except Barrier) $f'_c = 4,000$ psi
- Reinforcing Steel (Grade 60) $f_y = 60,000$ psi
- Welded or Seamless steel shell (pipe) for CIP pile (ASTM A252 Grade 3) $f_y = 45,000$ psi
- Neoprene Pads:
- Plain and Laminated Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec. 716.

- Joint Filler:
- All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.
- Reinforcing Steel:
- Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.
- Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be 1 1/2". Nylon, PVC, or polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.
- Traffic Handling:
- Structure to be closed during construction. Traffic to be maintained on other routes during construction. See Roadway Plans for traffic control.
- Fabricated Steel Connections:
- Field connections shall be made with 3/4" diameter ASTM F3125 Grade A325 Type 1 bolts and 13/16" diameter holes, except as noted.
- High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec. 106.

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No. 2 of 33



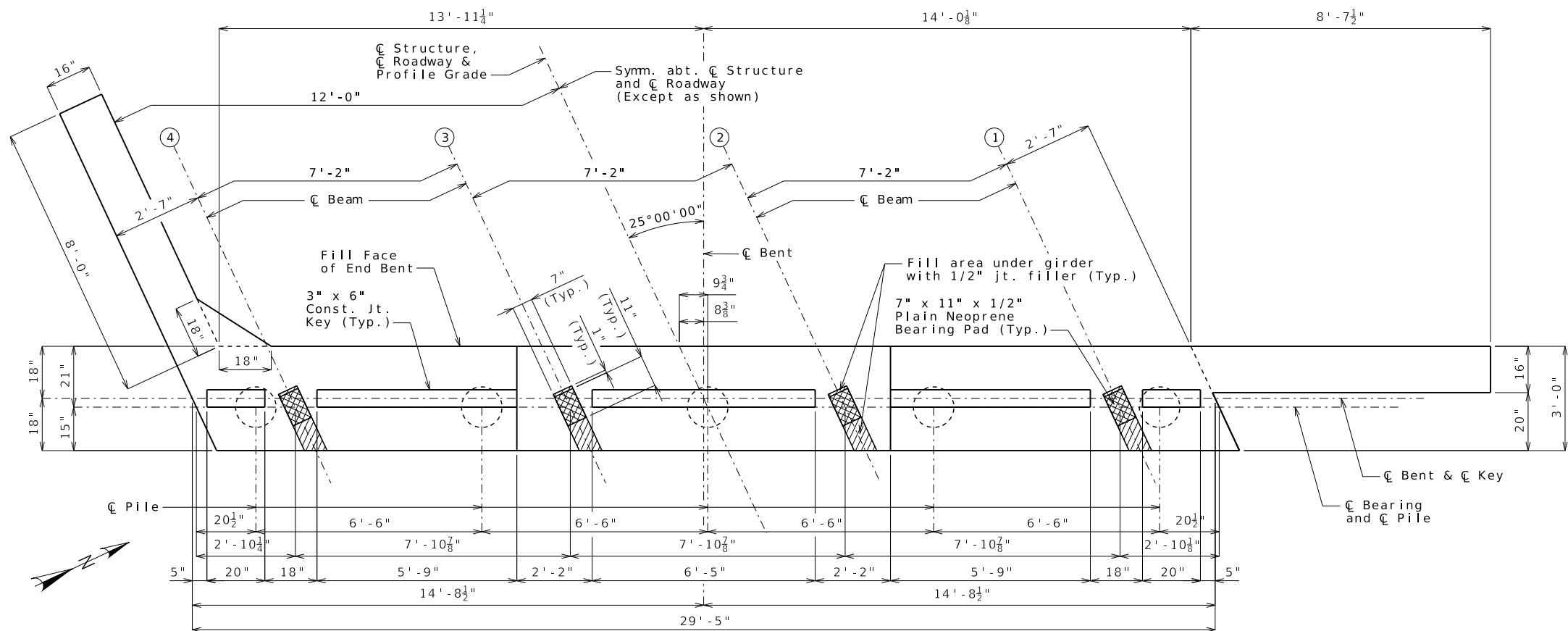
DATE	
DATE PREPARED 3/15/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO. A9348

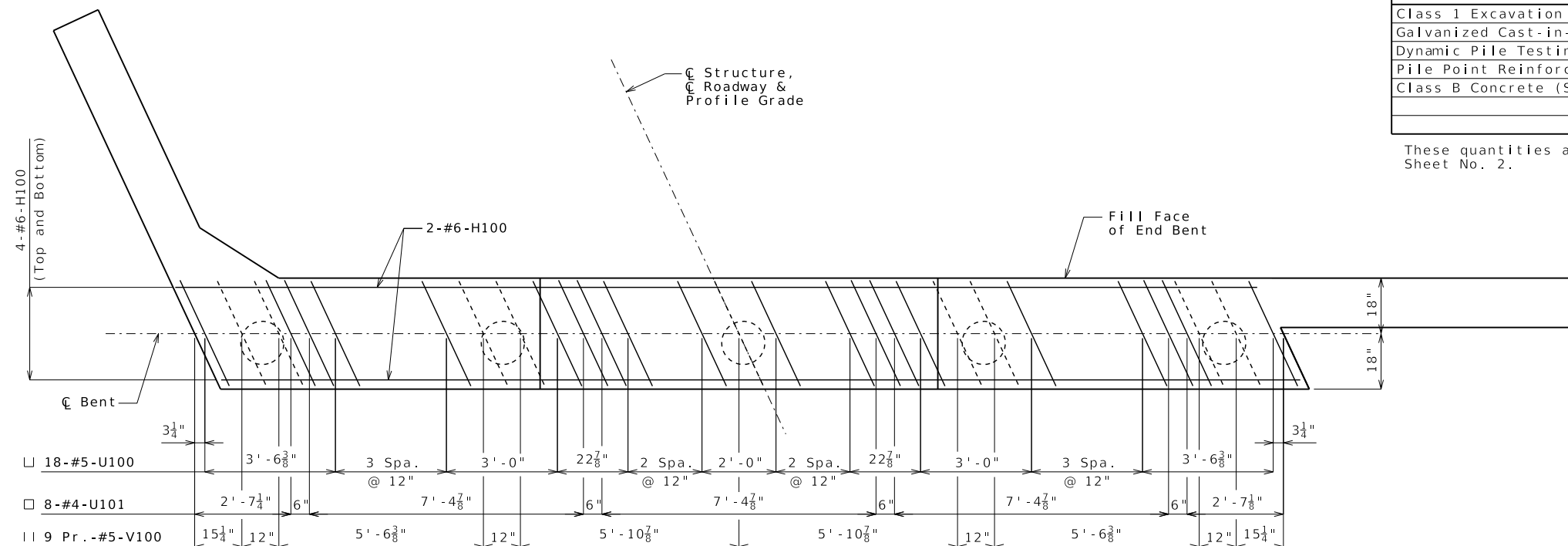
DESCRIPTION	DATE



GENERAL NOTES & QUANTITIES	ROUTE AA OVER BLUE SPRING SLOUGH (DRAINAGE DITCH NO. 10)
----------------------------	--



PLAN OF BEAM SHOWING DIMENSIONS



PLAN OF BEAM SHOWING REINFORCEMENT

DETAILS OF END BENT NO. 1

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	30
Galvanized Cast-in-Place Concrete Piles (14 in.)	linear foot	125
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	12.3

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

Notes:

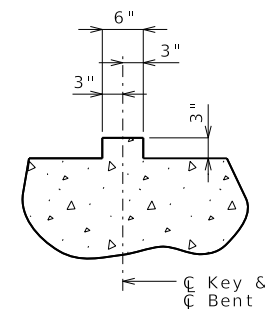
Work this sheet with Sheets No. 5 & 6.

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

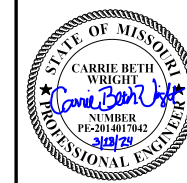
Reinforcing steel shall be shifted to clear piles.

U-bars shall clear piles by at least 1 1/2".

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



SECTION THRU KEY



DATE

DATE PREPARED

3/15/2024

ROUTE AA STATE MO

DISTRICT BR SHEET NO. 4

COUNTY BUTLER

JOB NO. J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9348

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

401 S. 18TH ST., STE. 400 ST. LOUIS, MO 63103 314-531-4321 - FAX 314-531-6866 WWW.HORNERSHIFRIN.COM

DISCIPLINE: PROFESSIONAL ENGINEERING

CERTIFICATE OF AUTHORITY: 000169

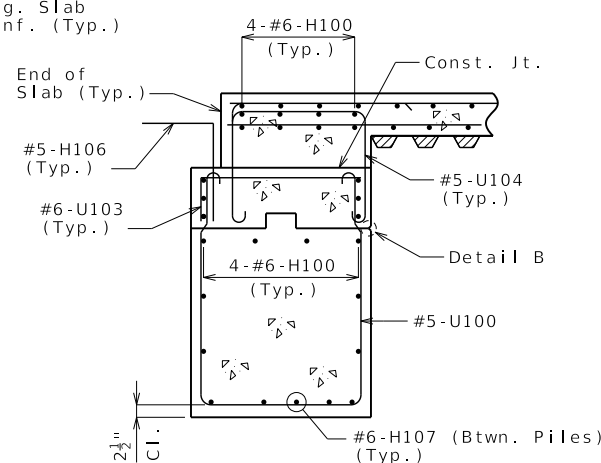
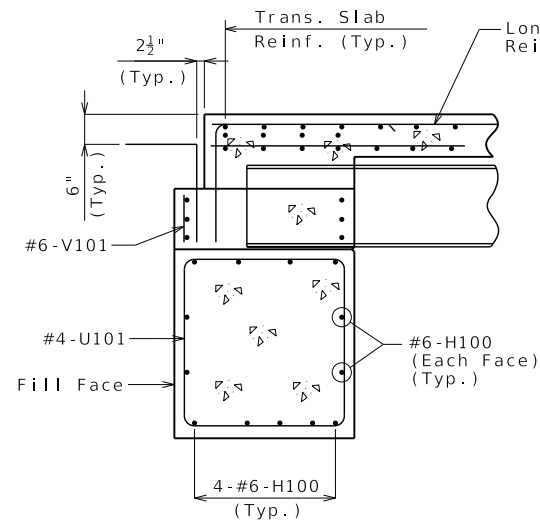
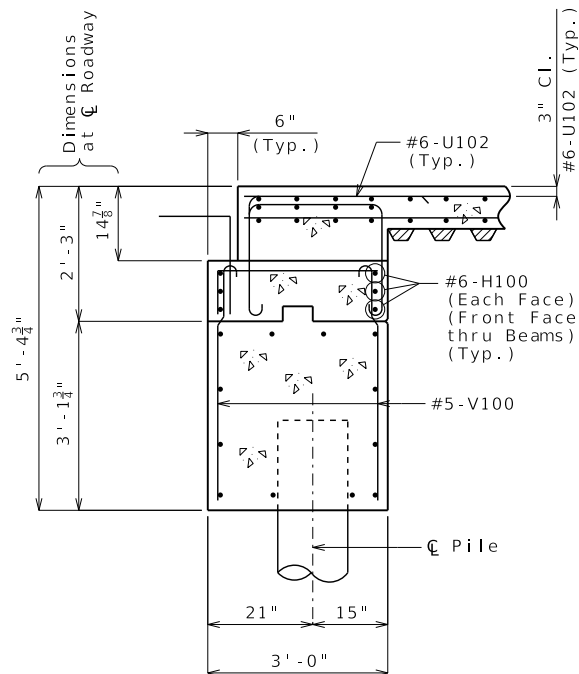
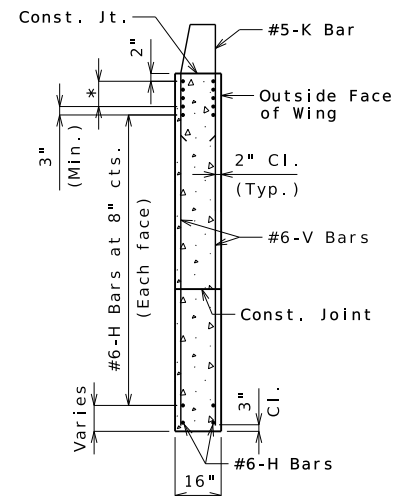
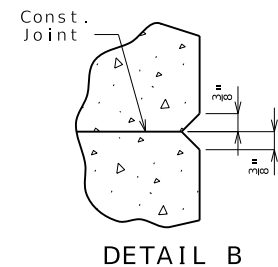
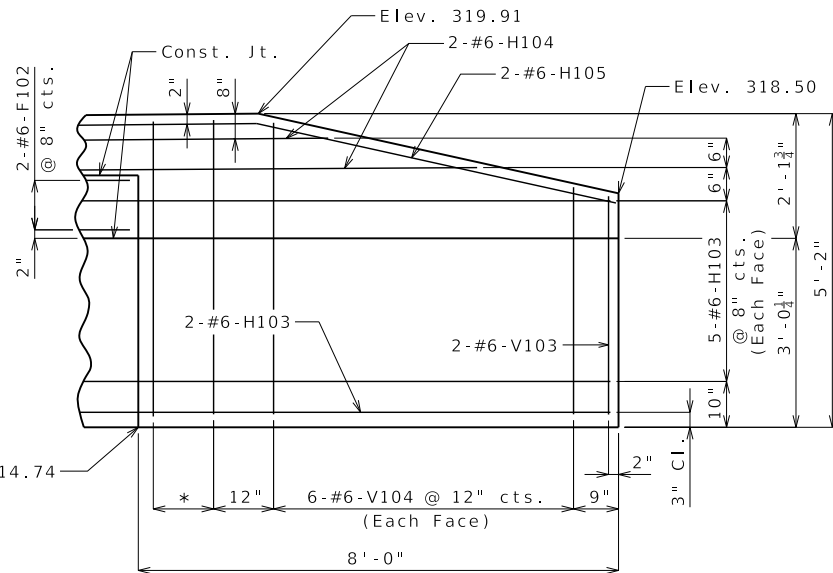
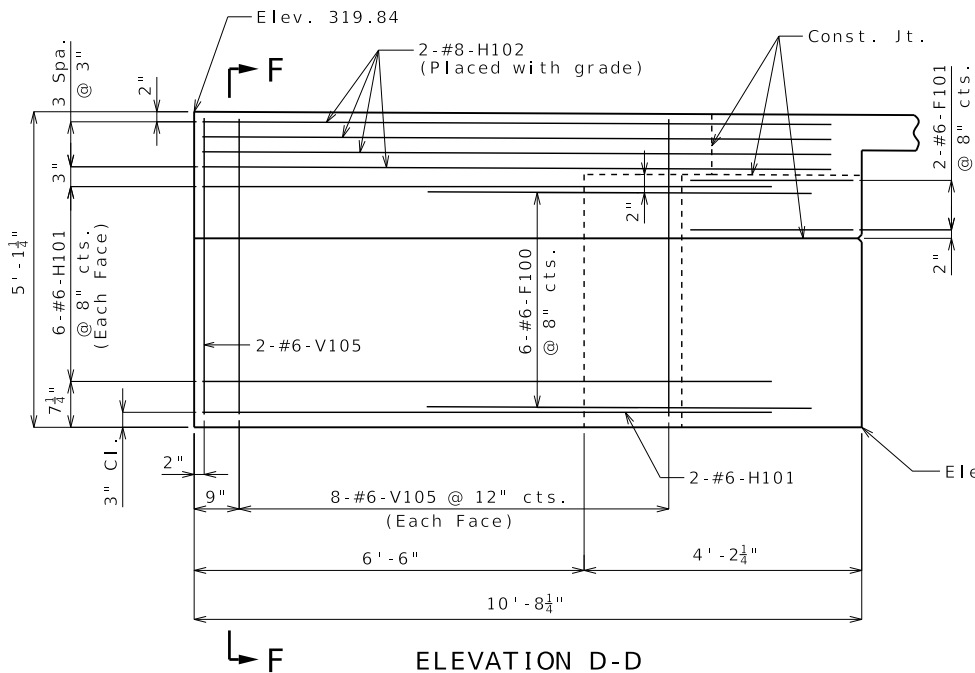
EXPIRATION DATE: DECEMBER 31, 2024

DETAILS OF END BENT NO. 1

ROUTE AA OVER

BLUE SPRING SLOUGH

(DRAINAGE DITCH NO. 10)



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

SECTION A-A

SECTION B-B

SECTION C-C

DETAILS OF END BENT NO. 1

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No. 6 of 33

Notes:

Work this sheet with Sheets No. 4 & 5.

For reinforcement of the barrier at End Bents, see Sheets No. 23 & 24.

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

For Details for Bridge Approach Slab, see Sheet No. 25.



DATE

DATE PREPARED

3/8/2024

ROUTE AA STATE MO

DISTRICT BR SHEET NO. 6

COUNTY BUTLER

JOB NO. J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9348

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



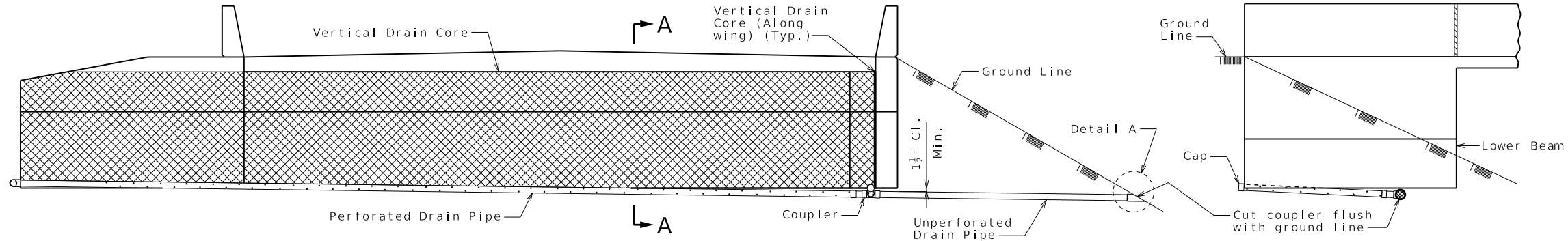
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CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

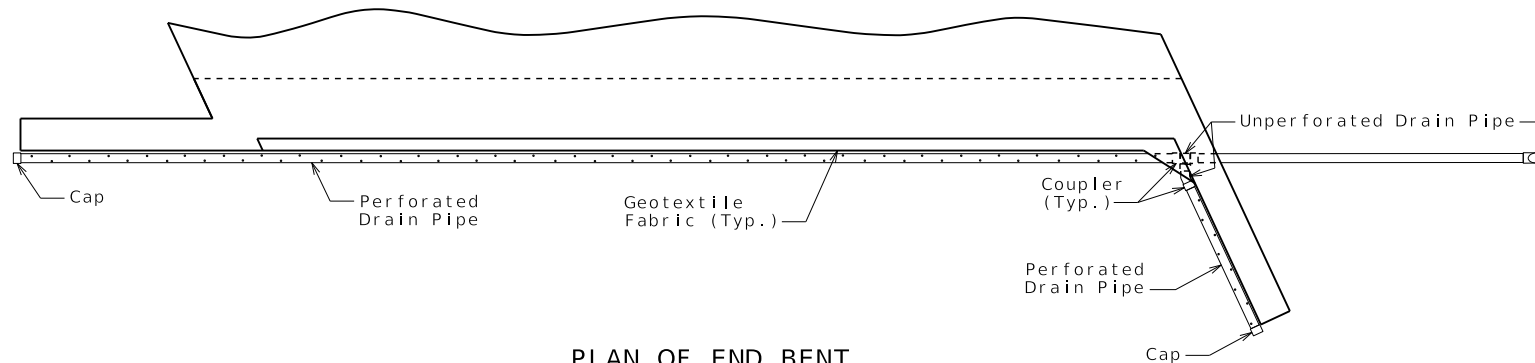
DETAILS OF
END BENT NO. 1

ROUTE AA OVER
BLUE SPRING SLOUGH
(DRAINAGE DITCH
NO. 10)

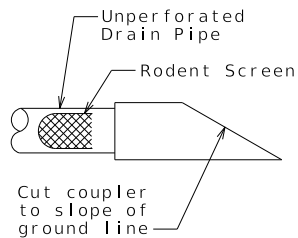


ELEVATION OF END BENT

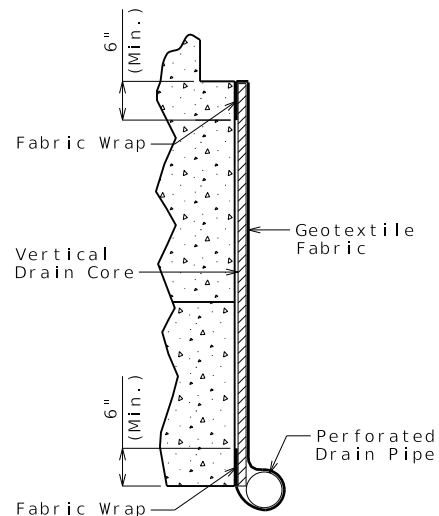
ELEVATION OF WING



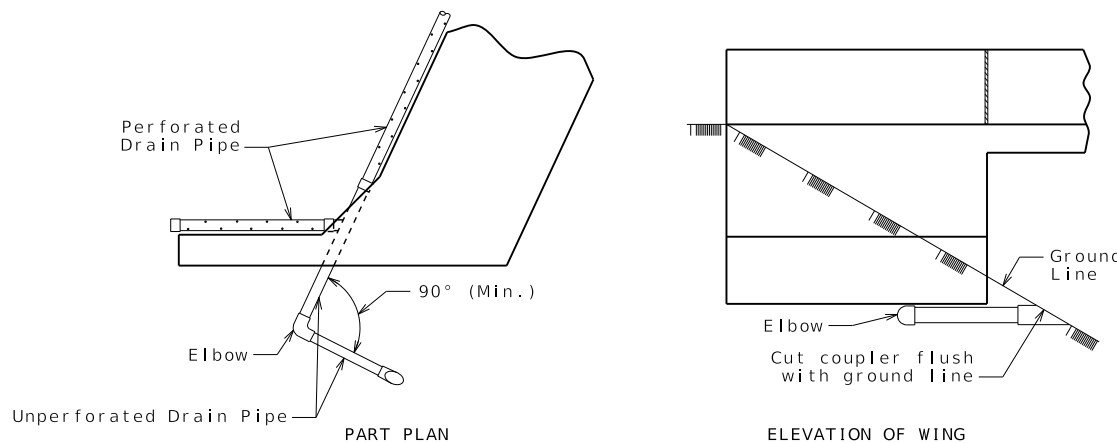
PLAN OF END BENT
(End Bent 1 shown, End Bent 4 similar)



DETAIL A



PART SECTION A-A
(Section thru wing similar)



PART PLAN

ELEVATION OF WING

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

VERTICAL DRAIN AT END BENTS

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.



DATE _____

DATE PREPARED
3/8/2024

ROUTE AA	STATE MO
DISTRICT BR	SHEET NO 7

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9348[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



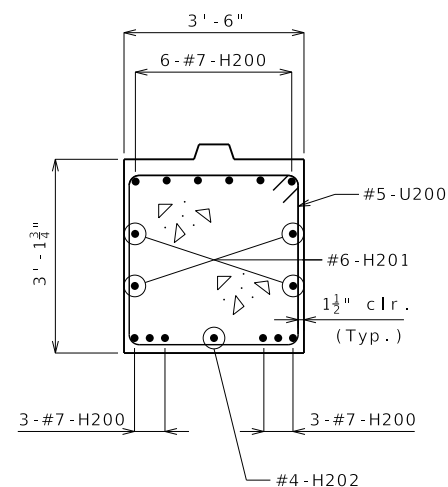
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DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2024

VERTICAL DRAIN
AT END BENTS

ROUTE AA OVER
BLUE SPRING SLOUGH
DRAINAGE DITCH
(NO. 10)



Notes:

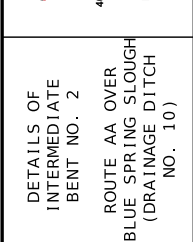
Work this sheet with Sheet No. 9.

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

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

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Galvanized Cast-in-Place Concrete Piles (16 in.)	linear foot	175
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	11.2
Reinforcing Steel (Bridges)	pound	1,820

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





DATE	
DATE PREPARED 3/8/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 10
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO. A9348

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

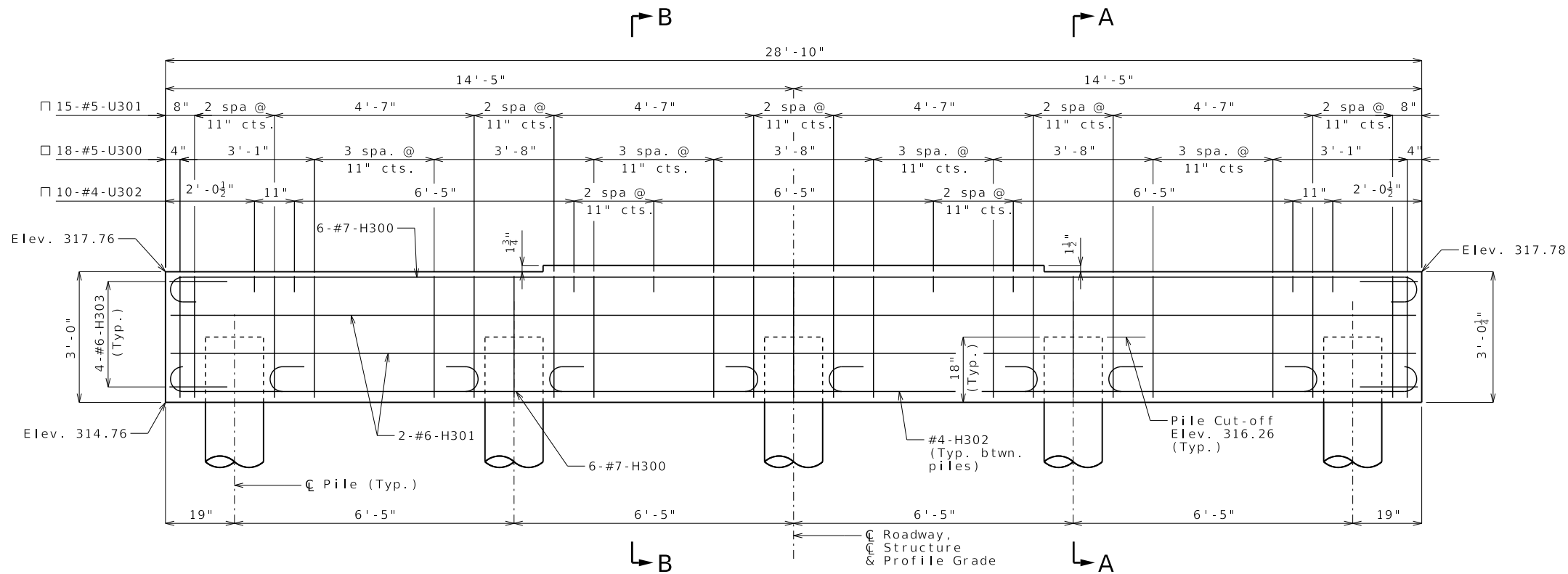


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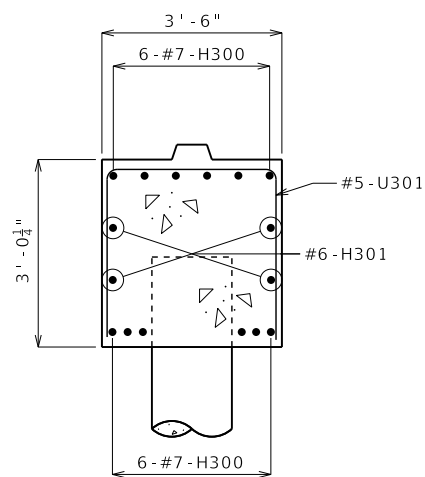


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CERTIFICATE OF AUTHORITY: 000189
EXPIRATION DATE: DECEMBER 31, 2024

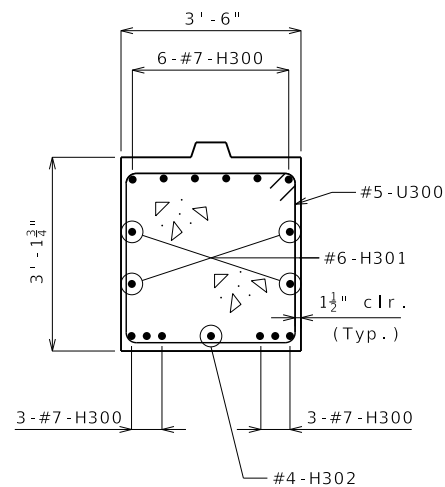
DETAILS OF INTERMEDIATE BENT NO. 3	ROUTE AA OVER BLUE SPRING SLOUGH (DRAINAGE DITCH NO. 10)
--	---



ELEVATION
(Looking ahead station)
Note: Dowel bars and keys not shown for clarity.



SECTION A-A



SECTION B-B

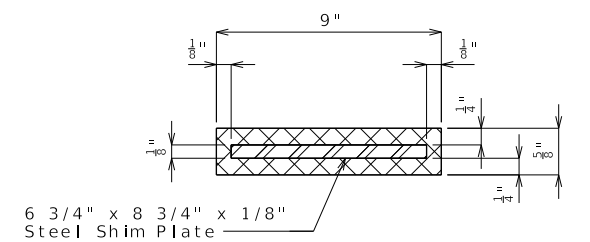
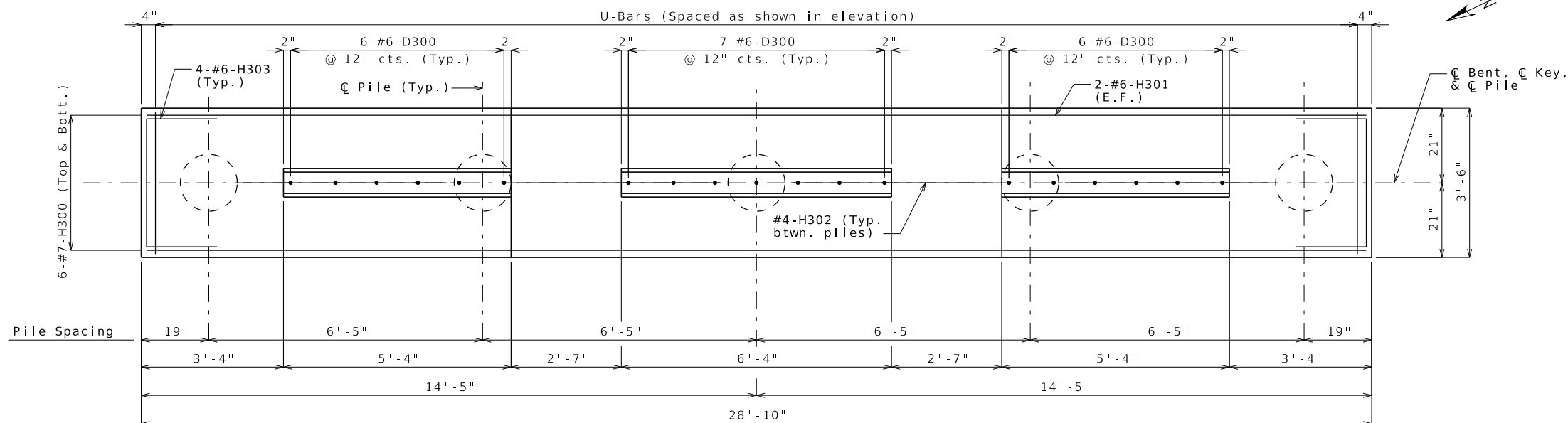
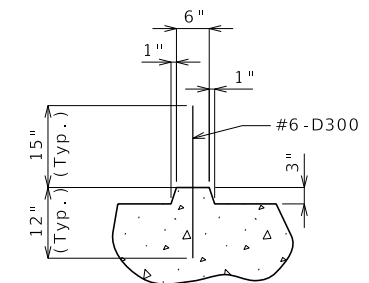
- Notes:
- Work this sheet with Sheet No. 11.
- Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2".
- Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be 1 1/2". Nylon, PVC, or polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Galvanized Cast-in-Place Concrete Piles (16 in.)	linear foot	175
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	11.2
Reinforcing Steel (Bridges)	pound	1,820

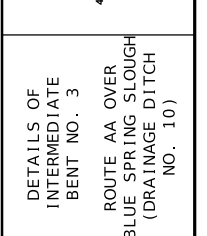
These quantities are included in the Estimated Quantities table on Sheet No. 2.

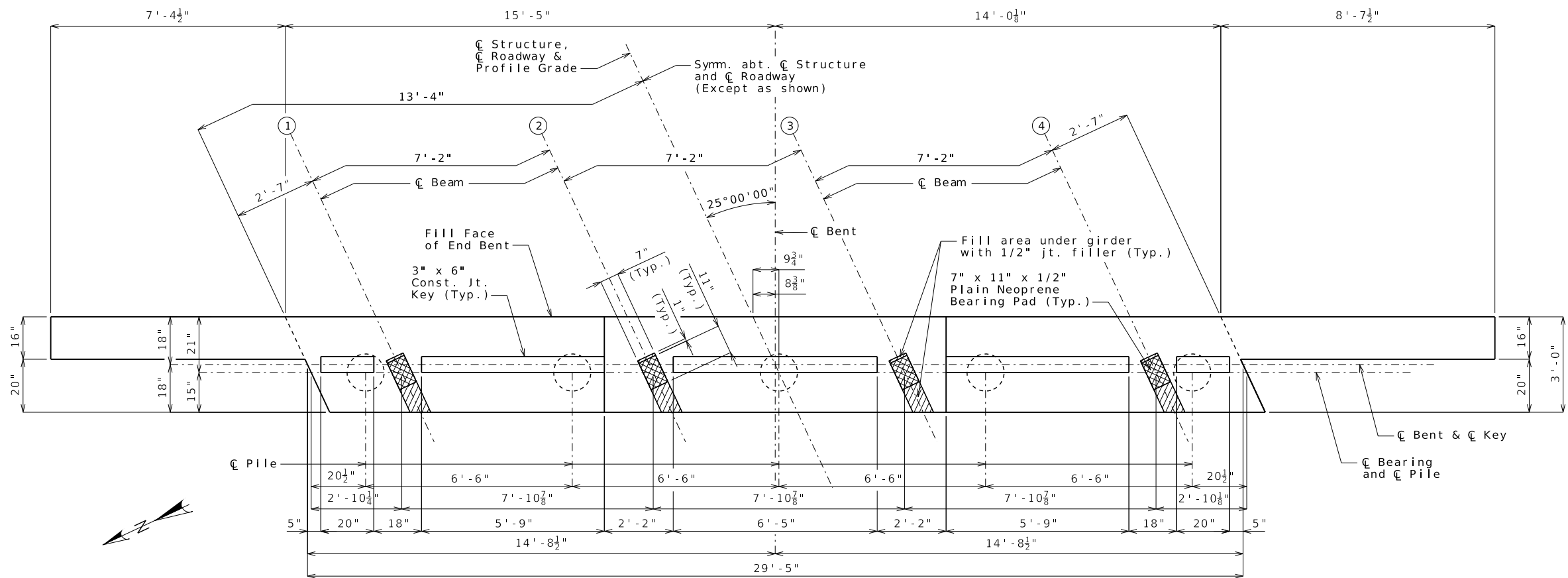
DETAILS OF INTERMEDIATE BENT NO. 3

Detailed: Aug. 2023
Checked: Sept. 2023

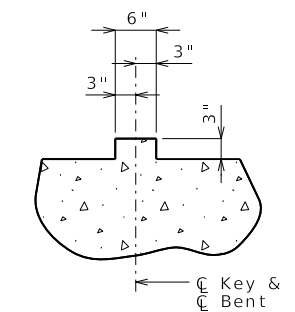


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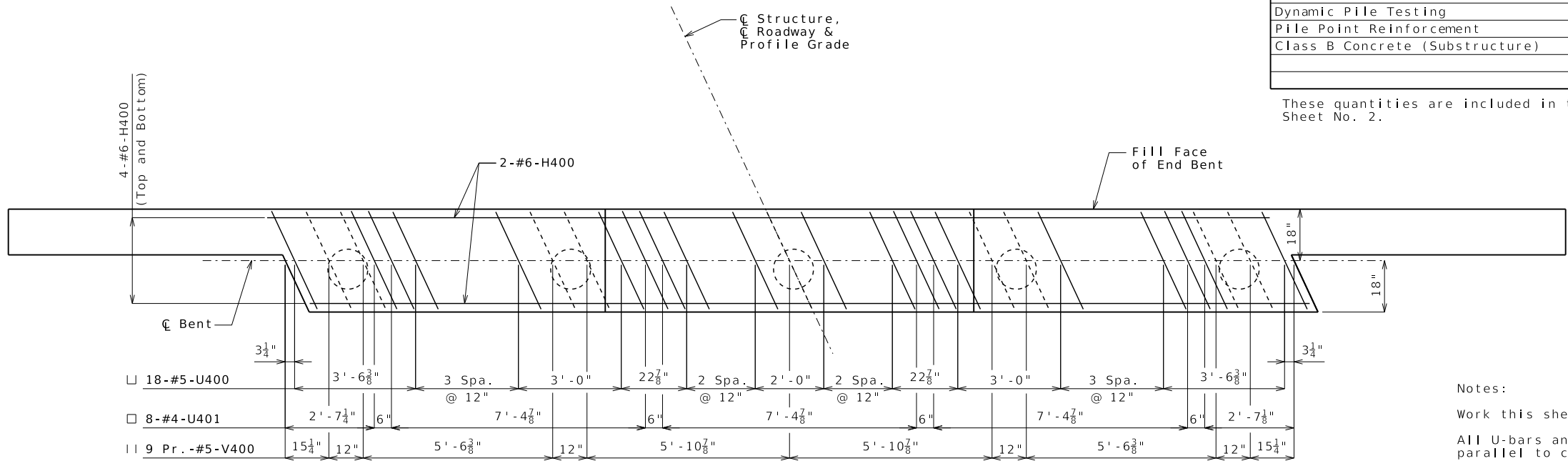
PLAN OF BEAM SHOWING DIMENSIONS



SECTION THRU KEY

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class 1 Excavation	cu. yard	30
Galvanized Cast-in-Place Concrete Piles (14 in.)	linear foot	125
Dynamic Pile Testing	each	1
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	12.2

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



PLAN OF BEAM SHOWING REINFORCEMENT

DETAILS OF END BENT NO. 4

Notes:
Work this sheet with Sheets No. 13 & 14.
All U-bars and pairs of V-bars shall be placed parallel to centerline of roadway.
Reinforcing steel shall be shifted to clear piles.
U-bars shall clear piles by at least 1 1/2".
For details of vertical drain at end bent, see Sheet No. 7.

Detailed: Aug. 2023
Checked: Sept. 2023



DATE	
DATE PREPARED 3/18/2024	
ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 12
COUNTY BUTLER	
JOB NO. J9S3677	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9348	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

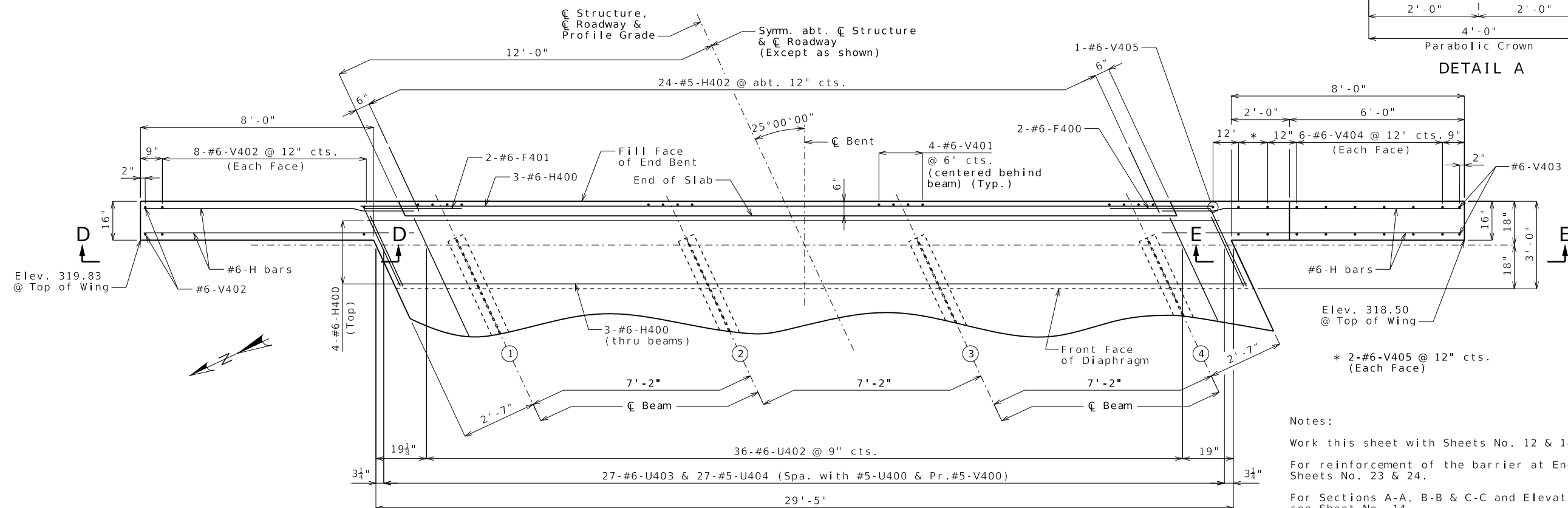
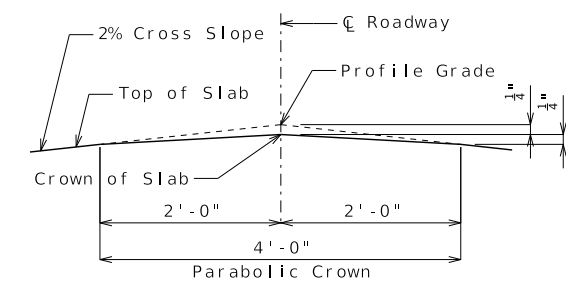
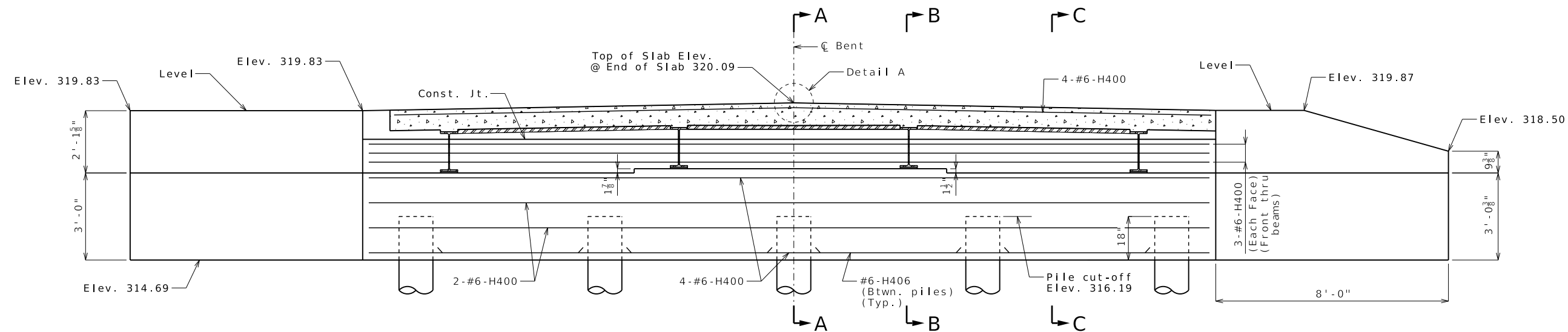
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DETAILS OF END BENT NO. 4	ROUTE AA OVER BLUE SPRING SLOUGH (DRAINAGE DITCH NO. 10)
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Notes:

Work this sheet with Sheets No. 12 & 14.

For reinforcement of the barrier at End Bents, see
Sheets No. 23 & 24.

For Sections A-A, B-B & C-C and Elevations D-D & E-E,
see Sheet No. 14.

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

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

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

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

DETAILS OF END BENT NO. 4

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No. 13 of 33



DATE _____

DATE PREPARED
3/8/2024

ROUTE	STATE
AA	MO

DISTRICT BR	SHEET NO 13
----------------	----------------

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9348[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

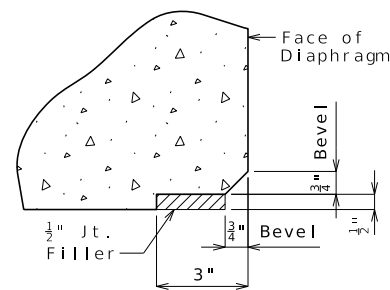
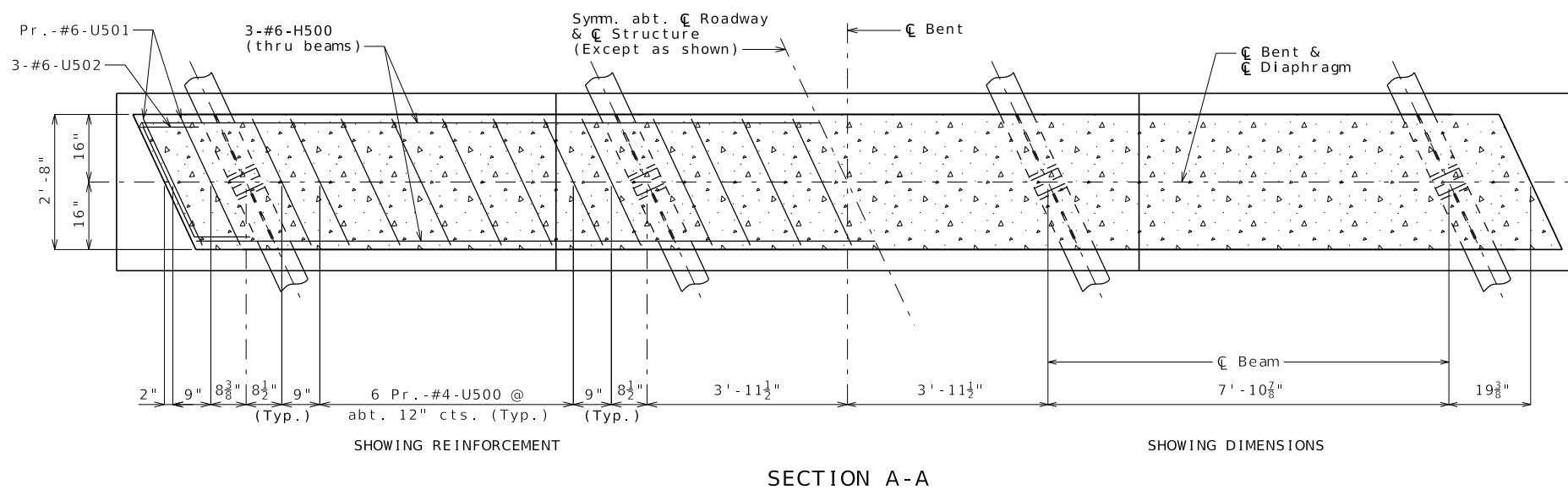
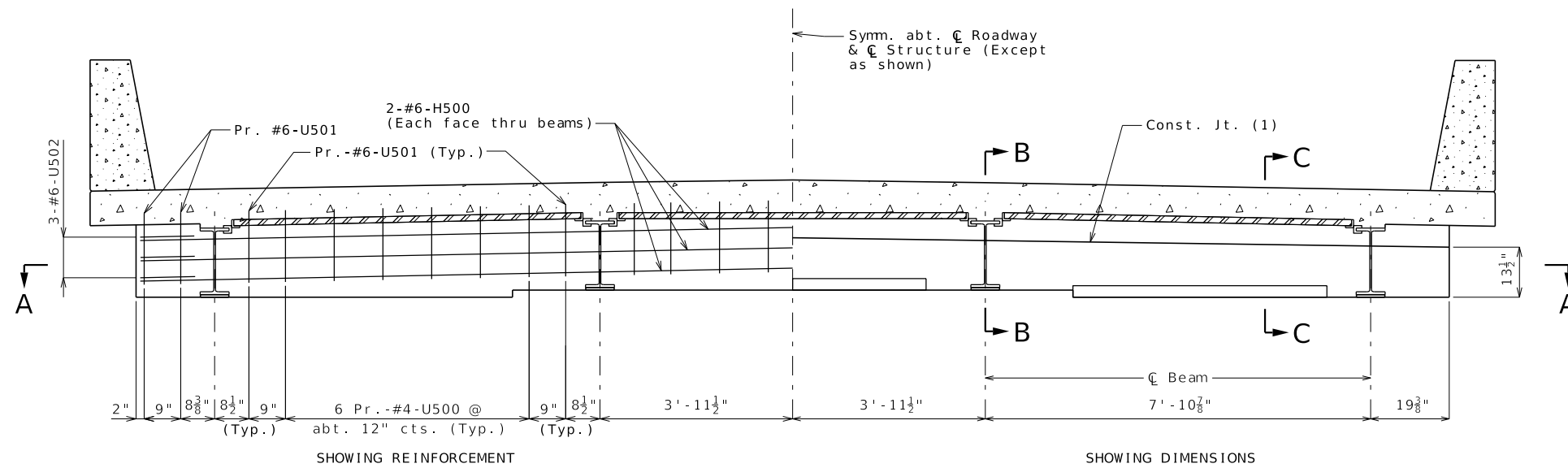
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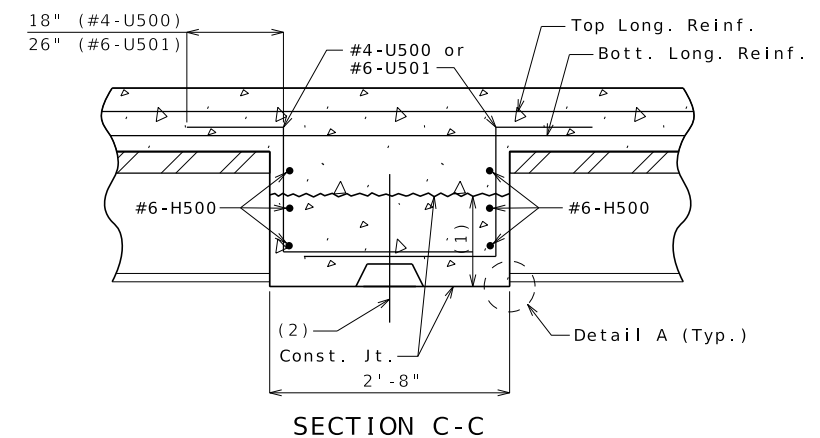
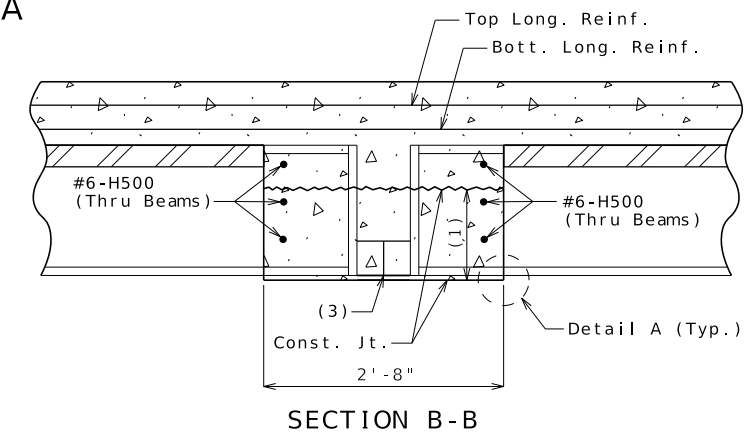
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DETAILS OF
BENT NO. 4

ROUTE AA OVER
BLUE SPRING SLOUGH
(DRAINAGE DITCH
NO. 10)



- (1) Varies, match roadway cross slope.
- (2) #6-D200 & #6-D300, see Sheets No. 9 & 11 for details.
- (3) Vertical face of compression blocks shall be in partial contact. Full contact throughout block height is not necessary. Vertical faces of adjacent blocks shall overlap a minimum of 1 1/2".



Notes:

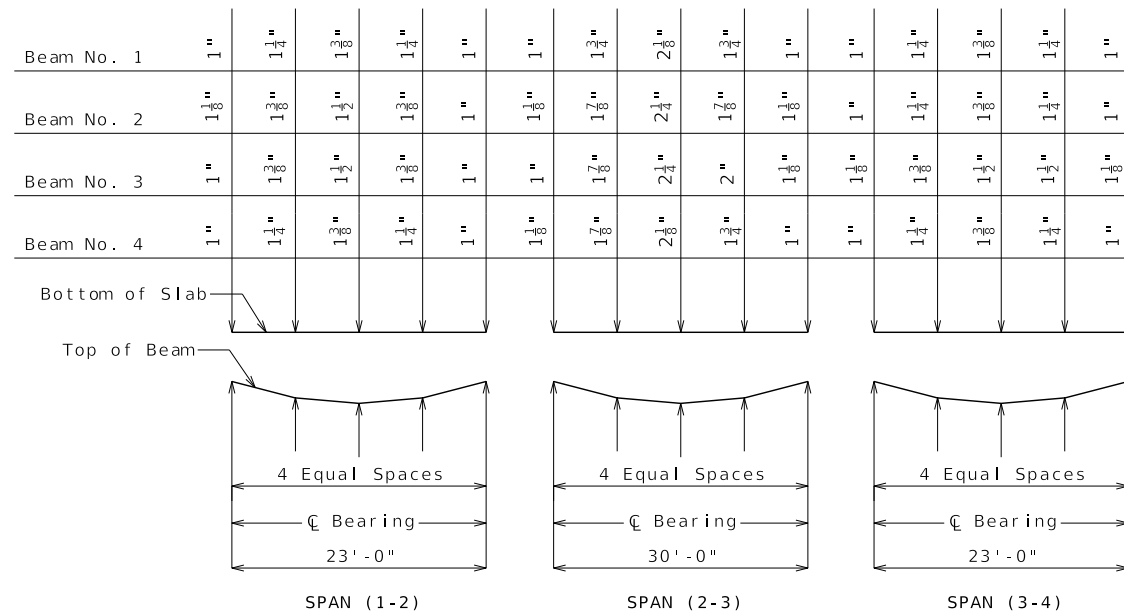
Diaphragms at Intermediate Bents shall be built vertical.

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

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

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

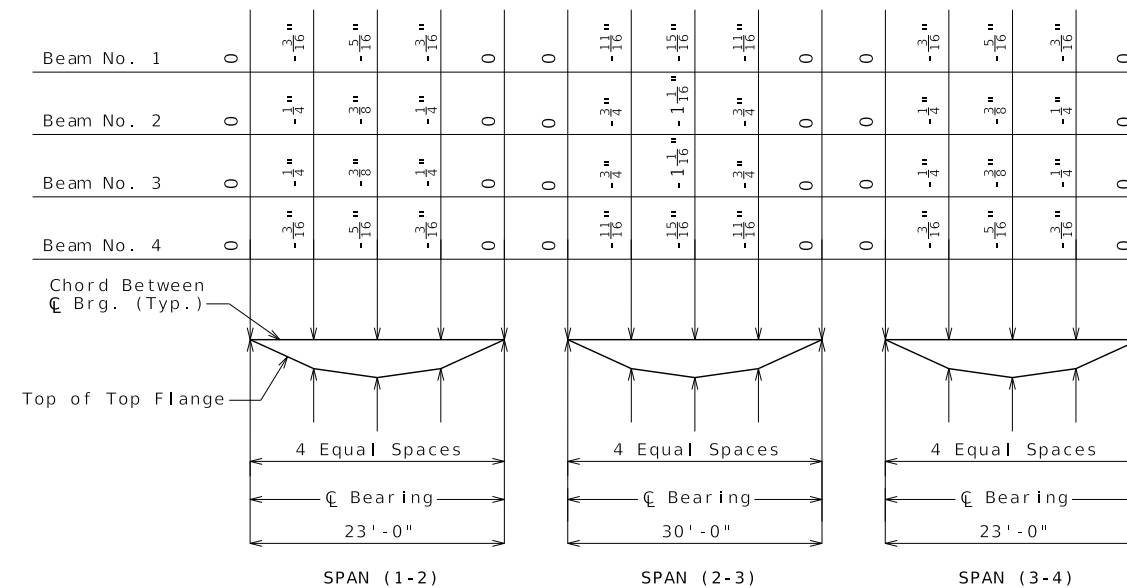
Diaphragms at bents shall be poured 13 1/2" from top of bent cap after all girders are in place and before any placement of deck forms. The remainder of the diaphragm shall be poured concurrently with the slab.



THEORETICAL SLAB HAUNCHING DIAGRAM (AFTER BARRIER PLACEMENT)

Haunching is estimated based on grade and bent elevations and Dead Load Deflection and Camber shown. If elevations, camber, or deflections in the field vary, and adjustment of the slab haunches shall be necessary in order to maintain a constant 8 1/2" slab thickness.

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

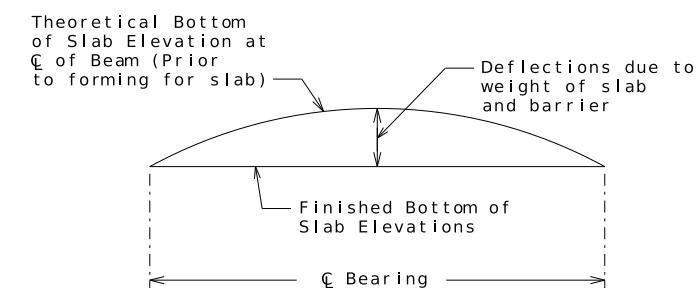


Dead load deflection includes weight of structural steel, concrete slab, and barrier.

7% of dead load deflection due to weight of structural steel.

Theoretical Bottom of Slab Elevations at Centerline of Beam (Prior to forming for slab)																
Beam Number	Span (1-2) (23'-0" C Brg. - C Brg.)					Span (2-3) (30'-0" C Brg. - C Brg.)					Span (3-4) (23'-0" C Brg. - C Brg.)					
	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.	C Brg.	.25	.50	.75	C Brg.	
1	319.25	319.28	319.30	319.30	319.29	319.29	319.34	319.36	319.32	319.26	319.25	319.26	319.24	319.22	319.18	
2	319.39	319.42	319.44	319.44	319.43	319.43	319.49	319.51	319.48	319.41	319.41	319.41	319.40	319.37	319.33	
3	319.38	319.41	319.43	319.44	319.43	319.43	319.49	319.52	319.49	319.42	319.41	319.42	319.41	319.39	319.35	
4	319.22	319.26	319.28	319.28	319.28	319.28	319.34	319.36	319.34	319.28	319.27	319.28	319.27	319.25	319.22	

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



STEEL DETAILS

Detailed: Aug. 2023
Checked: Sept. 2023

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

Sheet No. 18 of 33



DATE _____

DATE PREPARED
3/8/2024

ROUTE AA	STATE MO
DISTRICT BR	SHEET NO. 18

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9348[illegible]

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COMMISSION

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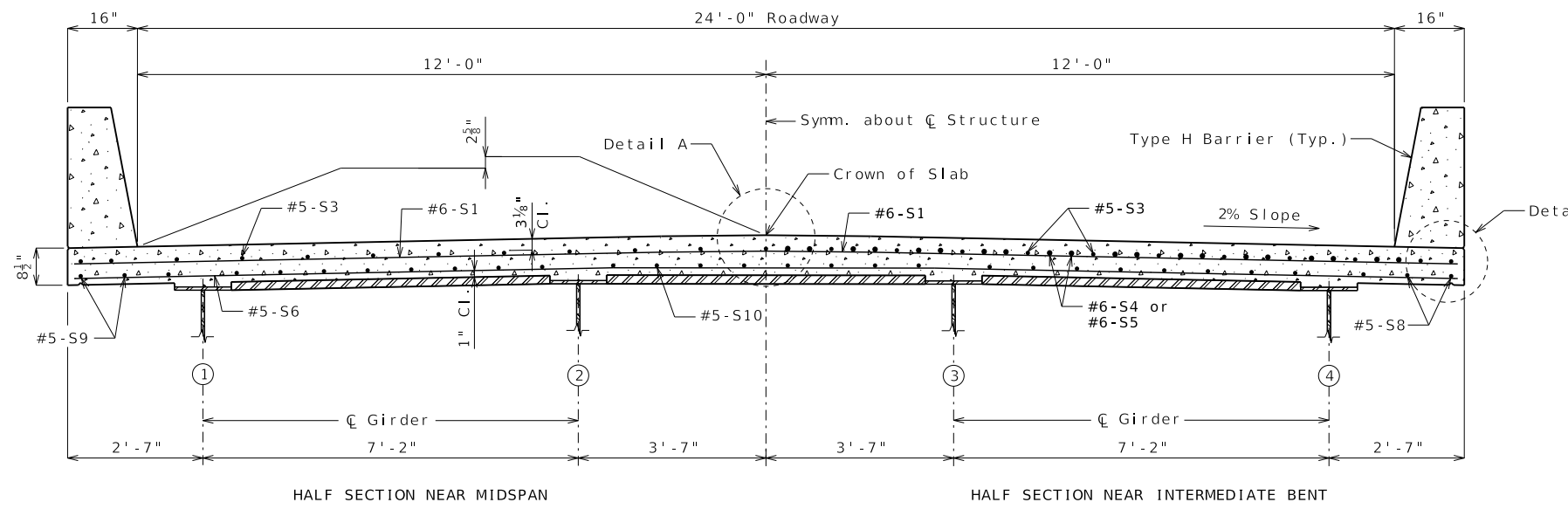
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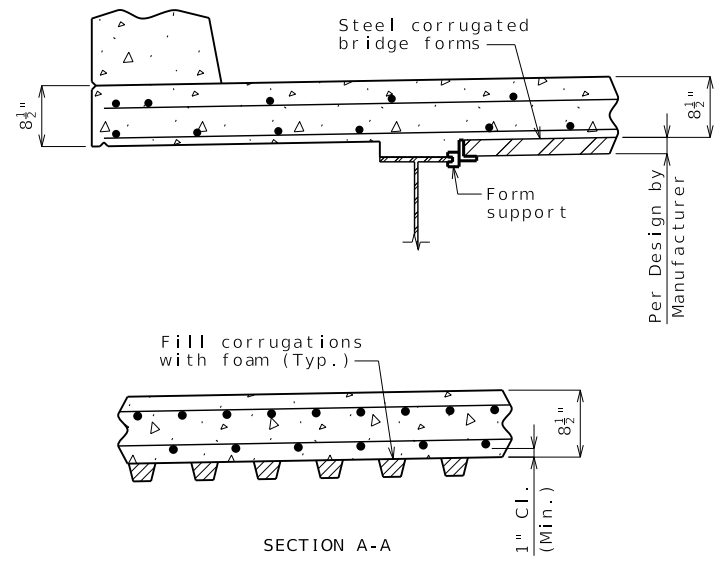
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2024

STEEL DETAILS

ROUTE AA OVER
BLUE SPRING SLOUGH
(DRAINAGE DITCH)
NO. 10)



SECTION THRU SLAB



OPTIONAL STAY-IN-PLACE FORM DETAILS

Stay-In-Place Forms:

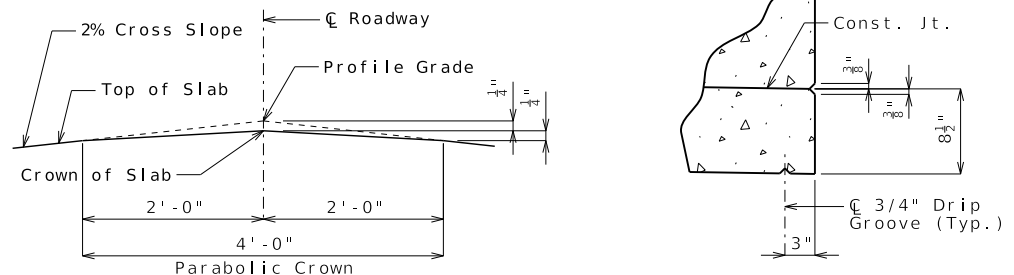
Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.

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

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

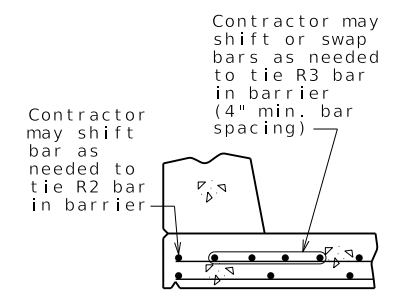
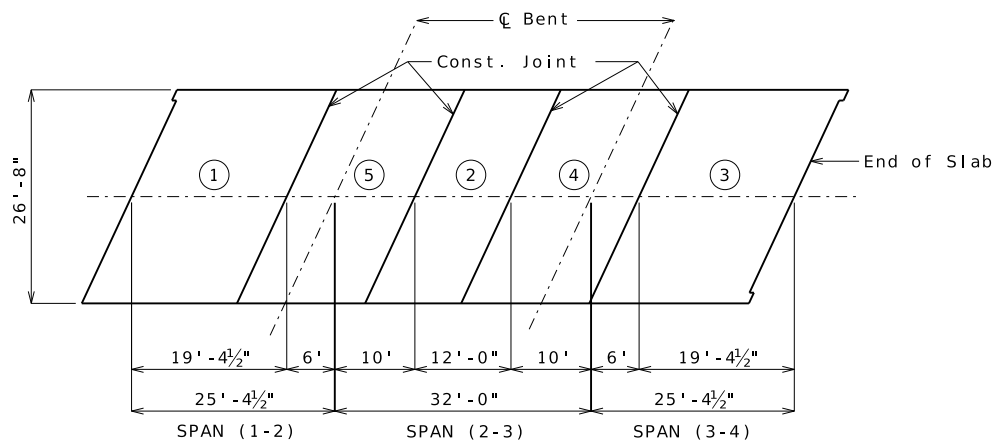
The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for beam loading.

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

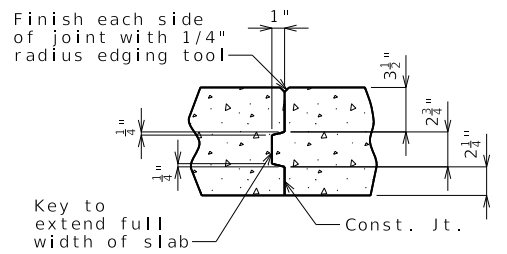


DETAIL A

DETAIL B



OPTIONAL SHIFTING TOP BARS AT BARRIER



SLAB CONSTRUCTION JOINT

SLAB DETAILS

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

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

SLAB POURING SEQUENCE

Notes:

For reinforcement of barrier not shown, see Sheets No. 22 thru 24.

For Theoretical Bottom of Slab Elevations and Theoretical Slab Haunching Diagram, see Sheet No. 18.

For Plan of Slab Showing Reinforcement, see Sheets No. 20 & 21.

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

Detailed: Aug. 2023
Checked: Sept. 2023

STATE OF MISSOURI
CARRIE BETH WRIGHT
ENGINEER
NUMBER
PE-2014817042

DATE
7/1/2025
DATE PREPARED
7/1/2025

ROUTE
AA
DISTRICT
BR

STATE
MO
SHEET NO.
19

COUNTY
BUTLER

JOB NO.
I953677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9348

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

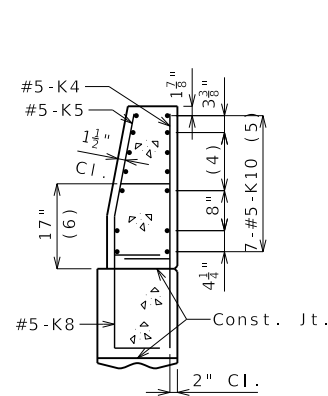
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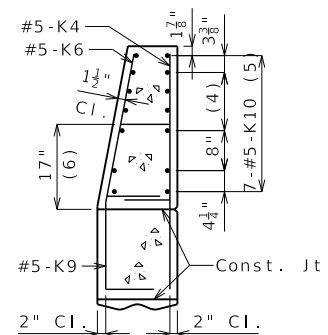
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EXPIRATION DATE: DECEMBER 31, 2024

SLAB SECTION

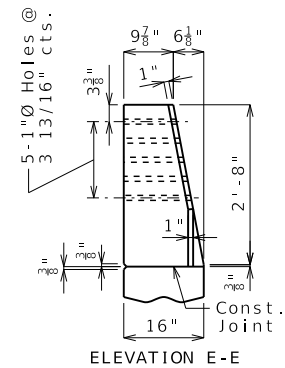
ROUTE AA OVER
BLUE SPRING SLOUGH
(DRAINAGE DITCH
NO. 10)



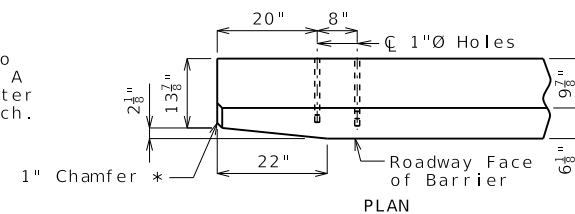
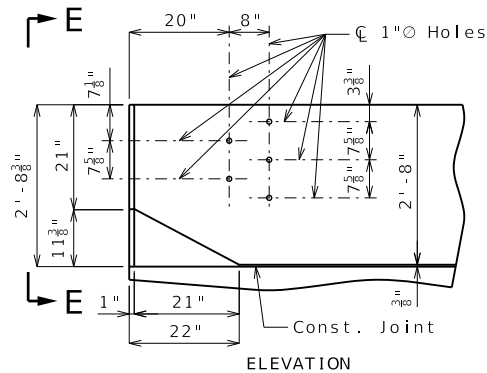
SECTION A-A



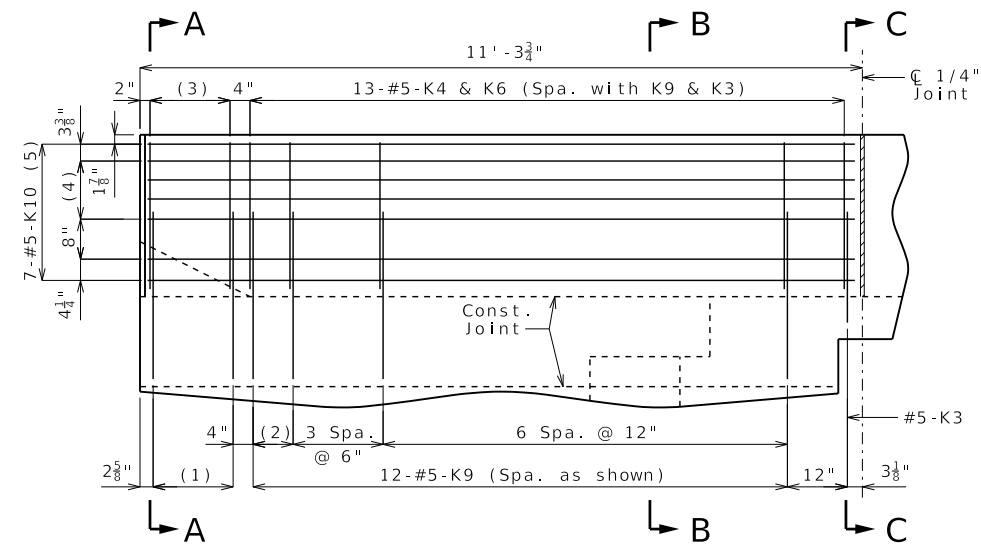
SECTION B-B



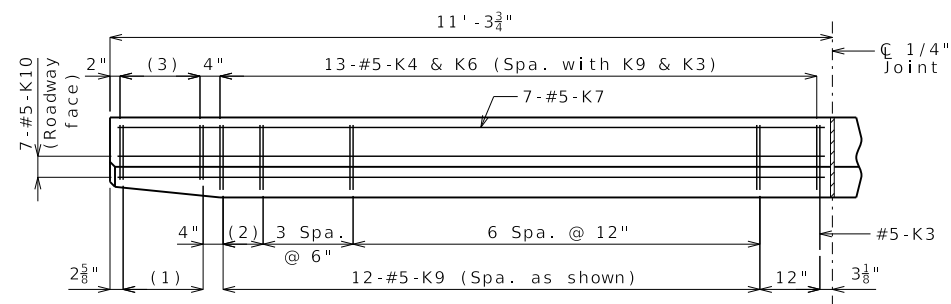
ELEVATION E-E



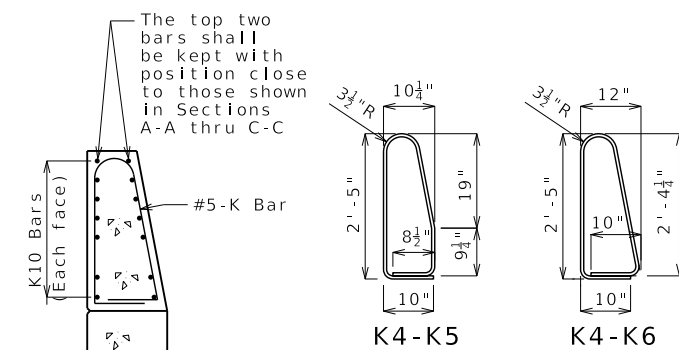
DETAILS OF GUARD RAIL ATTACHMENT



- (1) 5-#5-K8 @ 4" cts. (3) 5-#5-K4 and 5-#5-K5, spaced with K8 (5) Spaced as shown, each face
(2) 2 Spaces @ 4" (4) 3 Spaces @ $3\frac{13}{16}$ " (6) To top of bar



PART PLAN



PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)
The K4-K5 and K4-K6 bar combination may be furnished as one bar as shown, at the contractor's option.
All dimensions are out to out.

General Notes:

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

Reinforcing Steel:

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

RIGHT TYPE H BARRIER AT END BENT NO. 1

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

Sheet No. 24 of 33



DATE _____

DATE PREPARED
3/8/2024

ROUTE AA	STATE MO
-------------	-------------

DISTRICT BR	SHEET NO 24
----------------	----------------

COUNTY
BUTLER

JOB NO.
J9S3677

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9348[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
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RIGHT TYPE H
BARRIER AT
END BENT NO. 1

ROUTE AA OVER
UE SPRING SLOUGH
DRAINAGE DITCH
NO. 10)