

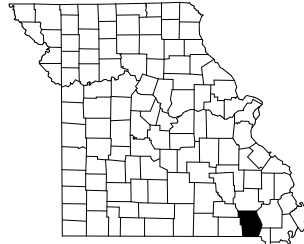
DESIGN DESIGNATION

A.A.D.T. - 2025 = 1113
 A.A.D.T. - 2045 = 1229
 D.H.V. = 9.72%
 T = 9.09%
 V = 55 M.P.H.
 D = 50%

FUNCTIONAL CLASSIFICATION-MAJOR COLLECTOR

NO NEW RIGHT OF WAY

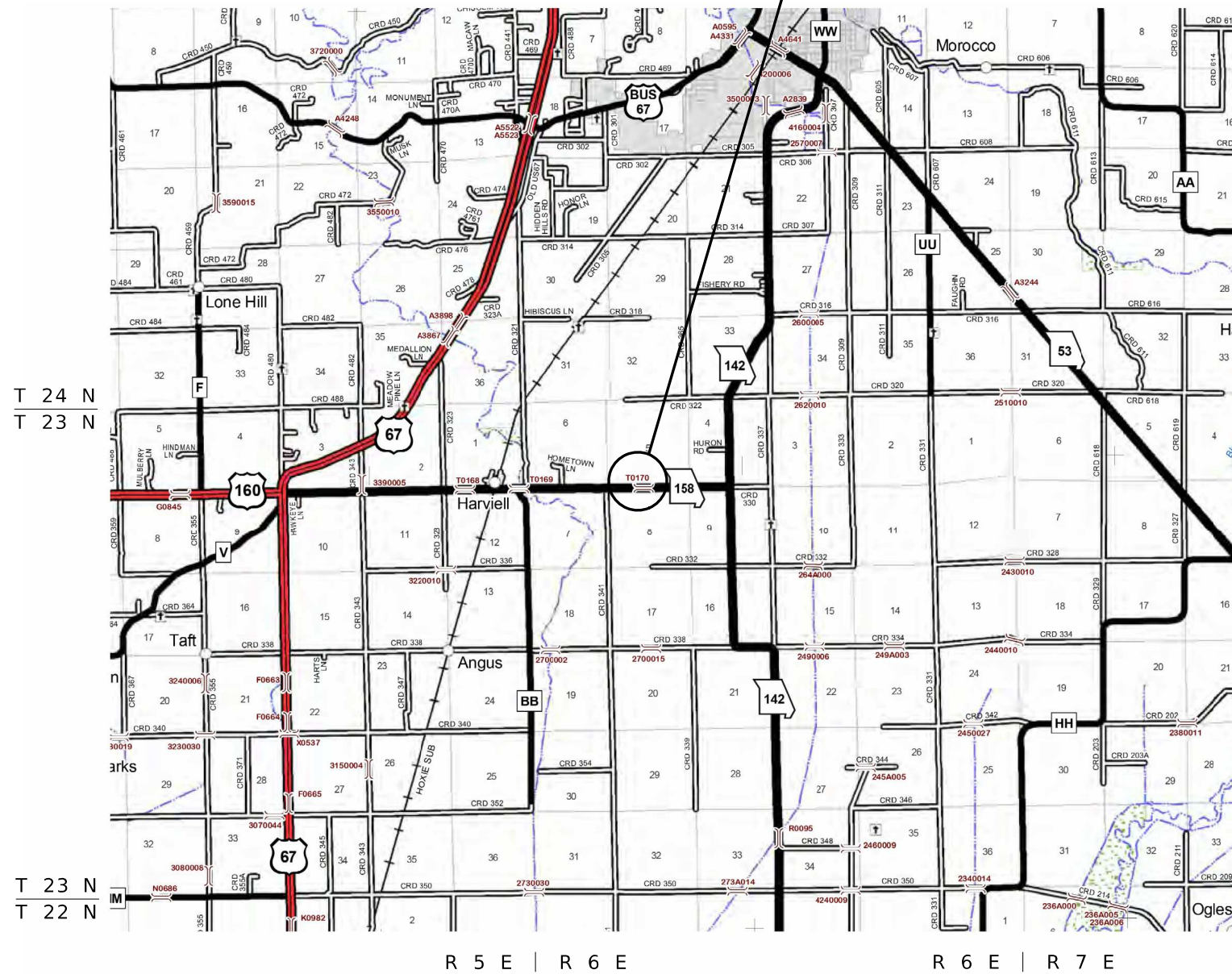
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION PLANS FOR PROPOSED STATE HIGHWAY BUTLER COUNTY



KEY MAP
 LOCATION OF BUTLER COUNTY



**PROJECT LOCATION
 BRIDGE T0170 REPLACEMENT**



**CONVENTIONAL SYMBOLS
 (USED IN PLANS)**

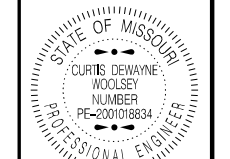
EXISTING	NEW
BUILDINGS AND STRUCTURES	
GUARD RAIL	
GUARD CABLE	
CONCRETE RIGHT-OF-WAY MARKER	
STEEL RIGHT-OF-WAY MARKER	
LOCATION SURVEY MARKER	
UTILITIES	
FIBER OPTICS	-FO-
OVERHEAD CABLE TV	-OTV-
UNDERGROUND CABLE TV	-UTV-
OVERHEAD TELEPHONE	-OT-
UNDERGROUND TELEPHONE	-UT-
OVERHEAD POWER	-OE-
UNDERGROUND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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

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
TYPICAL SECTIONS (TS) (1 SHEET)	2
QUANTITIES (QU) (2 SHEETS)	3
PLAN-PROFILE (PP)	4-5
REFERENCE POINTS (RP)	6
COORDINATE POINTS (CP)	6
SPECIAL SHEETS (SS)	7-8
TRAFFIC CONTROL SHEETS (TC)	9
EROSION CONTROL SHEETS (EC)	10
BRIDGE DRAWINGS (B)	1-17
A9426	1-17



DATE PREPARED: 8/12/2024

ROUTE	STATE
158	MO
DISTRICT	SHEET NO.
SE	1

COUNTY: BUTLER
 JOB NO.: JSE0115
 CONTRACT ID.:
 PROJECT NO.:
 BRIDGE NO.:

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 183+31.87
END OF PROJECT	STA. 191+36.03
APPARENT LENGTH	804.16 FEET
EQUATIONS AND EXCEPTIONS:	

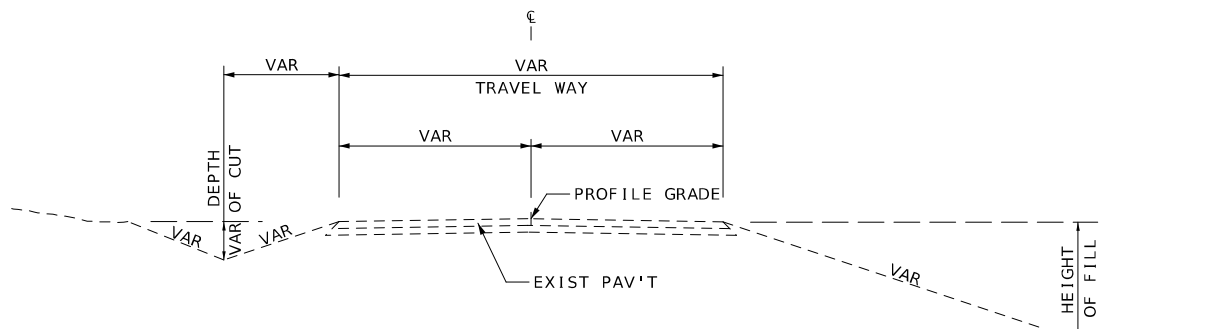
TOTAL CORRECTIONS	0.00 FEET
NET LENGTH OF PROJECT	804.16 FEET
STATE LENGTH	0.152 MILES
FOR INFORMATION ONLY	
ESTIMATED DISTURBED ACRES	1.0 ACRES

DESCRIPTION	DATE

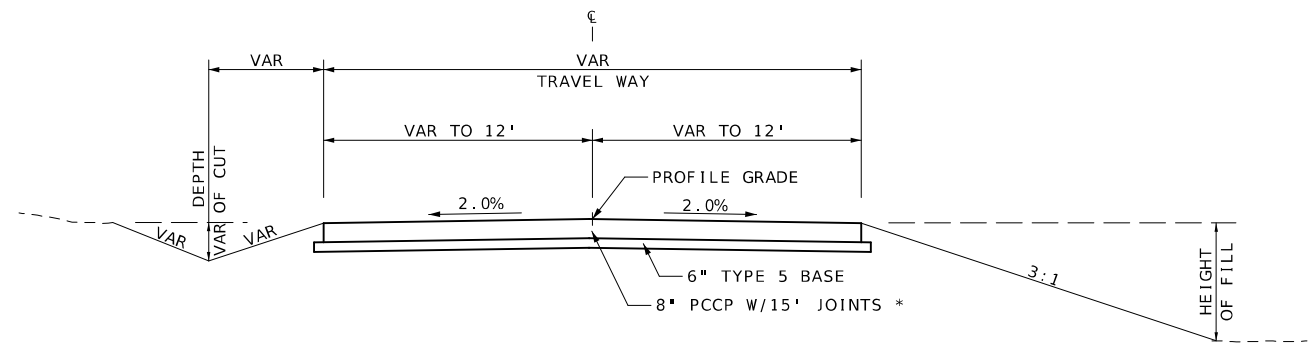
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

REV.

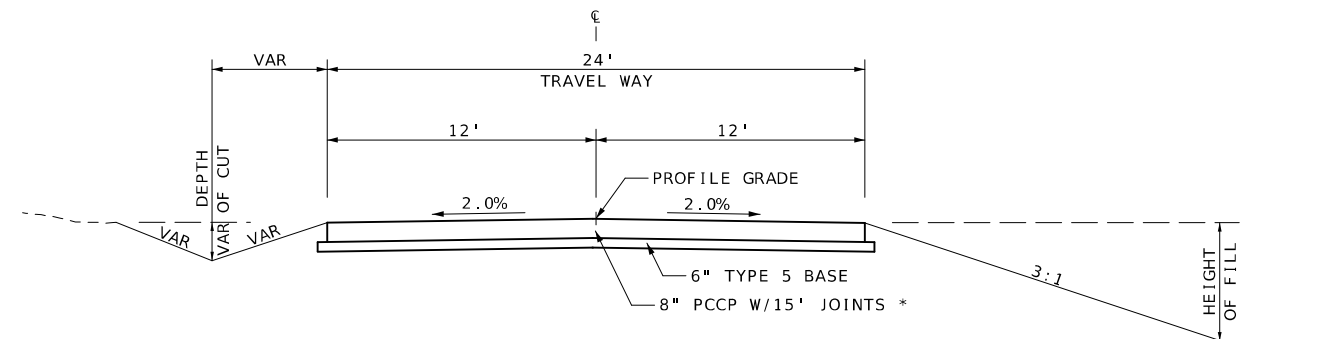


SECTION ON TANGENT
EXISTING TYPICAL SECTION RTE 158
STA 183+31.87 TO STA 191+36.03



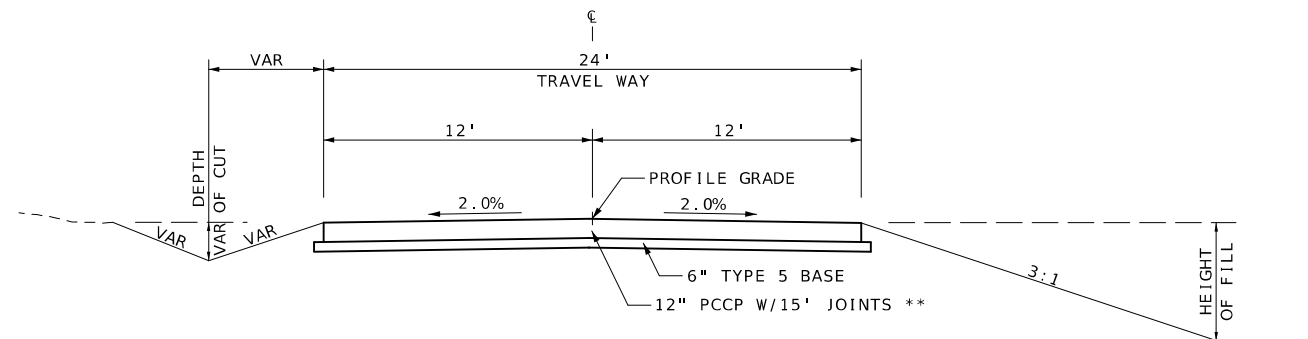
SECTION ON TANGENT
PROPOSED TYPICAL SECTION RTE 158
STA 183+31.87 TO STA 185+75.00
STA 188+00.00 TO STA 191+36.03

* OPTIONAL PVMT: 2" BP-1 OVER
8" PMBB
(PG 64-22)



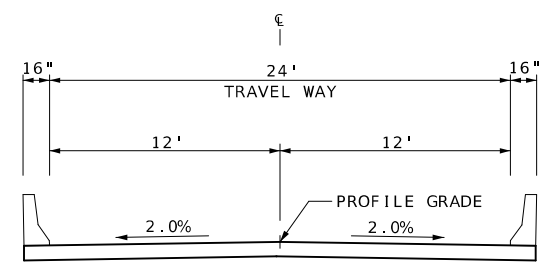
SECTION ON TANGENT
PROPOSED TYPICAL SECTION RTE 158
STA 185+75.00 TO STA 186+26.30 @ 25°SK
STA 187+49.71 @ 25°SK TO STA 188+00.00

* OPTIONAL PVMT: 2" BP-1 OVER
8" PMBB
(PG 64-22)



SECTION ON TANGENT
PROPOSED TYPICAL SECTION RTE 158
APPROACH SLAB BRIDGE A9426 ***
STA 186+26.30 @ 25°SK TO STA 186+46.30 @ 25°SK
STA 187+29.71 @ 25°SK TO STA 187+49.71 @ 25°SK

** OPTIONAL PVMT: 2" BP-1 OVER
10" PMBB
(PG 64-22)
*** SEE BRIDGE PLANS

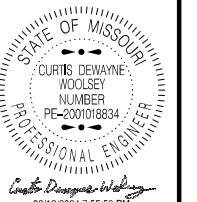


SECTION ON TANGENT
PROPOSED TYPICAL SECTION RTE 158
BRIDGE A9426 ***
STA 186+45.80 @ 25°SK TO STA 187+30.21 @ 25°SK

*** SEE BRIDGE PLANS

NOTE: MINOR GRADING MAY BE REQUIRED FOR APPROACH
SLAB (TO BE PAID FOR AS LINEAR GRADING)

DRAWING NOT TO SCALE



DATE PREPARED
8/12/2024

ROUTE **158** STATE **MO**

DISTRICT **SE** SHEET NO. **2**

COUNTY
BUTLER

JOB NO.
JSE0115

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

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

TYPICAL SECTION
SHEET 1 OF 1

MOBILIZATION - LUMP SUM 1

CONTRACTOR FURNISHED SURVEYING AND STAKING - LUMP SUM 1

REMOVAL OF IMPROVEMENTS			
SHEET	LOC	DESCRIPTION	REMARKS
	RT	ONE LANE BRIDGE SIGN	
	RT	YIELD SIGN/ONCOMING TRAFFIC SIGN	
4	LT/RT	6 OBJECT MARKERS	BR T0170
4	LT/RT	6 OBJECT MARKERS	BR T0170
	LT	YIELD SIGN/ONCOMING TRAFFIC SIGN	
	LT	ONE LANE BRIDGE SIGN	
LUMP SUM 1			

MODIFIED LINEAR GRADING CLASS 2					
SHEET	STA	STA	LOC	LINEAR GRADING CLASS 2 STA	REMARKS
4	183+31.87	191+36.03	LT & RT	8.04	BR A9426
TOTAL				8.1	

OPTIONAL PAVEMENT AND AGGREGATE BASE									
SHEET	STA	STA	DEPTH FT	WIDTH FT	LENGTH FT	OPTIONAL* PAVEMENT SY	6" TYPE 5 AGG BASE SY	GRADE 1 POROUS BACKFILL CY	REMARKS
7	183+31.87	184+75.00	0.83	20.35	143.13	323.6	323.6		E END OF BRIDGE A9426
7	184+75.00	185+75.00	0.83	22.04	100.00	244.9	244.9		E END OF BRIDGE A9426
7	185+75.00	186+26.30	0.83	24.00	51.30	136.8	136.8		E END OF BRIDGE A9426
7	187+49.71	188+00.00	0.83	24.00	50.29	134.1	134.1		W END OF BRIDGE A9426
7	188+00.00	189+00.00	0.83	22.00	100.00	244.4	244.4		W END OF BRIDGE A9426
7	189+00.00	191+36.03	0.83	20.42	236.03	535.5	535.5		W END OF BRIDGE A9426
7			6.00	24.67	5.00			27.4	E END OF BRIDGE A9426
7			6.00	24.67	5.00			27.4	W END OF BRIDGE A9426
TOTAL						1619.3	1620	55	

* OPTIONAL PAVEMENT: 10" ASPHALT PAVEMENT OR 8" PCCP

GRAVEL A OR CRUSHED STONE B					
SHEET	STA	LOC	THICK IN	GRAVEL A OR CRUSHED STONE B 1.75 TON/CY TON	REMARKS
4	186+16.74	LT	4	14.3	DRIVEWAY
4	187+41.46	LT	4	19.7	DRIVEWAY
TOTAL				34	

LOCATIONS TO BE DETERMINED BY THE ENGINEER.

GUARDRAIL								
SHEET	STA	STA	MGS BRIDGE APPROACH TRANSITION SECTION EA	MGS GUARDRAIL LF	TYPE A CRASHWORTHY END TERMINAL (MASH) EA	TYPE C ** CRASHWORTHY END TERMINAL (MASH) EA	SHAPING SLOPES CLASS III - MODIFIED MATERIAL REQUIREMENT 100FT	REMARKS
4	184+39.48	186+53.12	1	125.0	1		2.4	RT
4	186+19.68	186+40.68				1		LT(21')
4	187+22.89	187+43.89				1		LT(21')
4	187+35.33	188+49.13	1	25.0	1		1.4	RT
TOTAL			2	150	2	2	4	

**CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL AND LABOR REQUIRED TO ATTACH END TERMINAL TO THE CONCRETE BARRIER ALL COSTS ASSOCIATED WITH THIS INSTALLATION SHALL BE CONSIDERED COMPLETELY COVERED BY THE ABOVE PAY ITEM.

ROCK BLANKET									
SHEET	FROM	TO	DEPTH FT	LENGTH FT	WIDTH FT	TYPE 2 ROCK BLANKET		GEOTEXTILE FABRIC SY	REMARKS
						FURNISH CY	PLACE CY		
8	186+49.66	186+80.53	2	50.0	36.8	136.3	136.3	256.8	A-A
8	186+96.27	187+26.36	2	50.0	36.0	133.3	133.3	252.0	B-B
TOTAL						270	270	509	

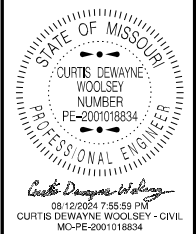
ROCK QUANTITY MAY BE OBTAINED FROM REMOVED BRIDGE DECK IF BROKEN OR CRUSHED TO MEET SPECS WITH NO EXPOSED REBAR

PAVEMENT MARKING						
STA	STA	LOCATION	STANDARD WATERBORNE		REMOVALS LF	REMARKS
			4" SOLID WHITE LF	4" INTER YELLOW LF		
176+20.80	198+65.22	RTE 158		561		
181+40.80	192+55.22	RTE 158	2229			
176+20.80	181+40.80	RTE 158			1040	DOUBLE YELLOW (520')
181+40.80	192+55.22	RTE 158			4458	WHITE (EACH SIDE)
192+55.22	198+65.22	RTE 158			1220	DOUBLE YELLOW (610')
TOTAL			2229	561	6718	

STATIONS ARE APPROXIMATE

TEMPORARY EROSION CONTROL							
SHEET	SILT FENCE LF	TYPE C BERM LF	ROCK DITCH CHECK LF	SEDIMENT REMOVAL CY	TEMP SEED AC	MULCH AC	REMARKS
10	1327	120	72	19.3	0.92	0.92	BR A9426
TOTAL	1327	120	72	20	1.0	1.0	

SEEDING AND MULCHING							
SHEET	STA	STA	LOC	SEED COOL SEASON AC	MULCH AC	REMARKS	
4	183+31.87	191+36.03	LT & RT	0.92	0.92	BR A9426	
TOTAL				1.0	1.0		



DATE PREPARED
8/12/2024

ROUTE 158 STATE MO

DISTRICT SE SHEET NO. 3

COUNTY BUTLER

JOB NO. JSE0115

CONTRACT ID.

PROJECT NO.

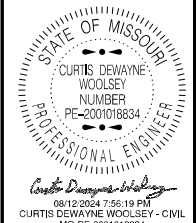
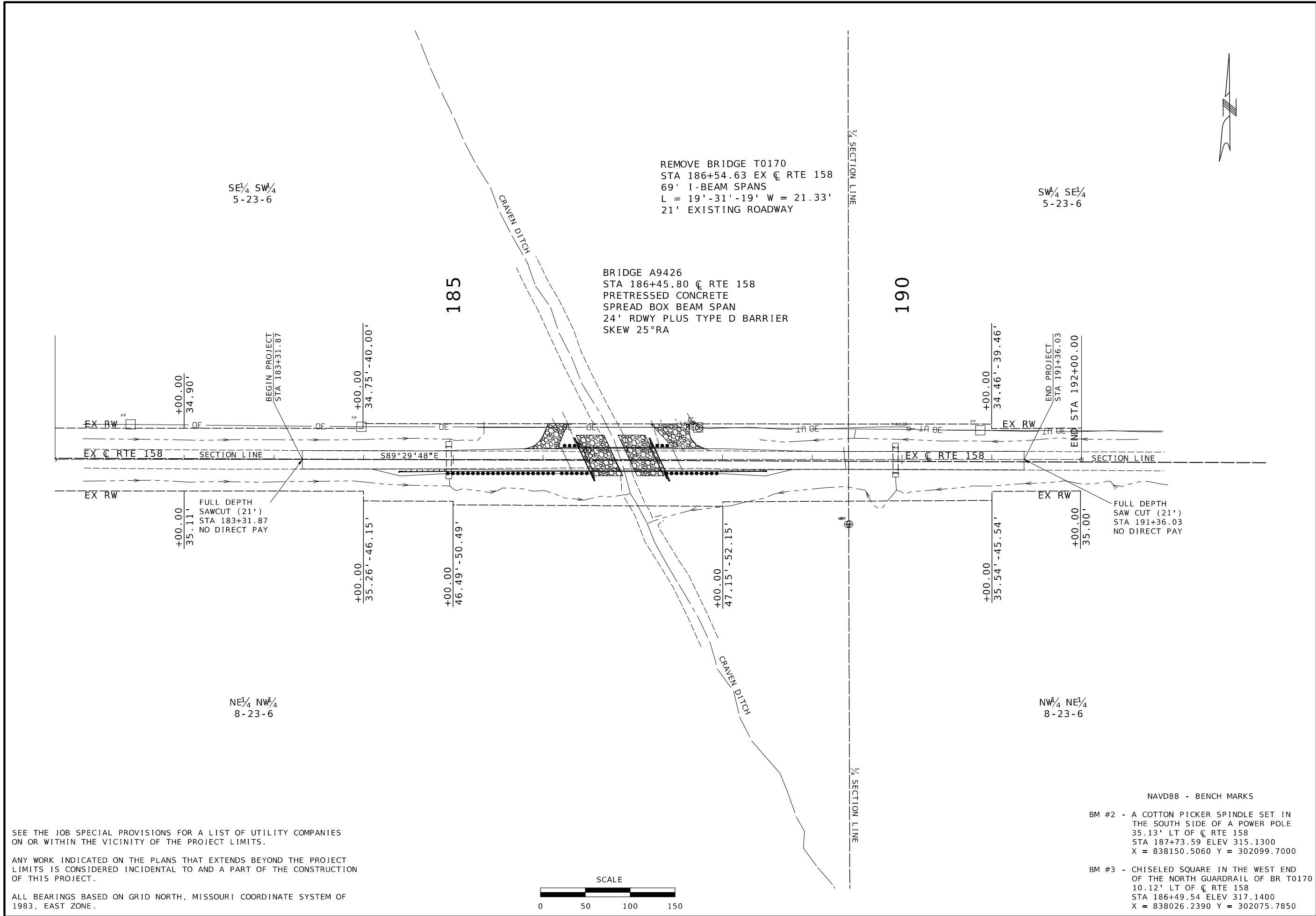
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

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



DATE PREPARED: 8/12/2024

ROUTE	STATE
158	MO
DISTRICT	SHEET NO.
SE	4

COUNTY: BUTLER
 JOB NO.: JSE0115
 CONTRACT ID.:
 PROJECT NO.:
 BRIDGE NO.:

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

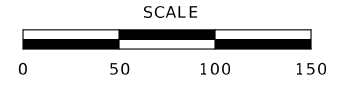
PLAN-PROFILE SHEET 1 OF 2

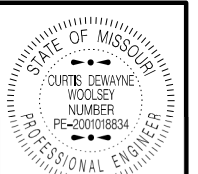
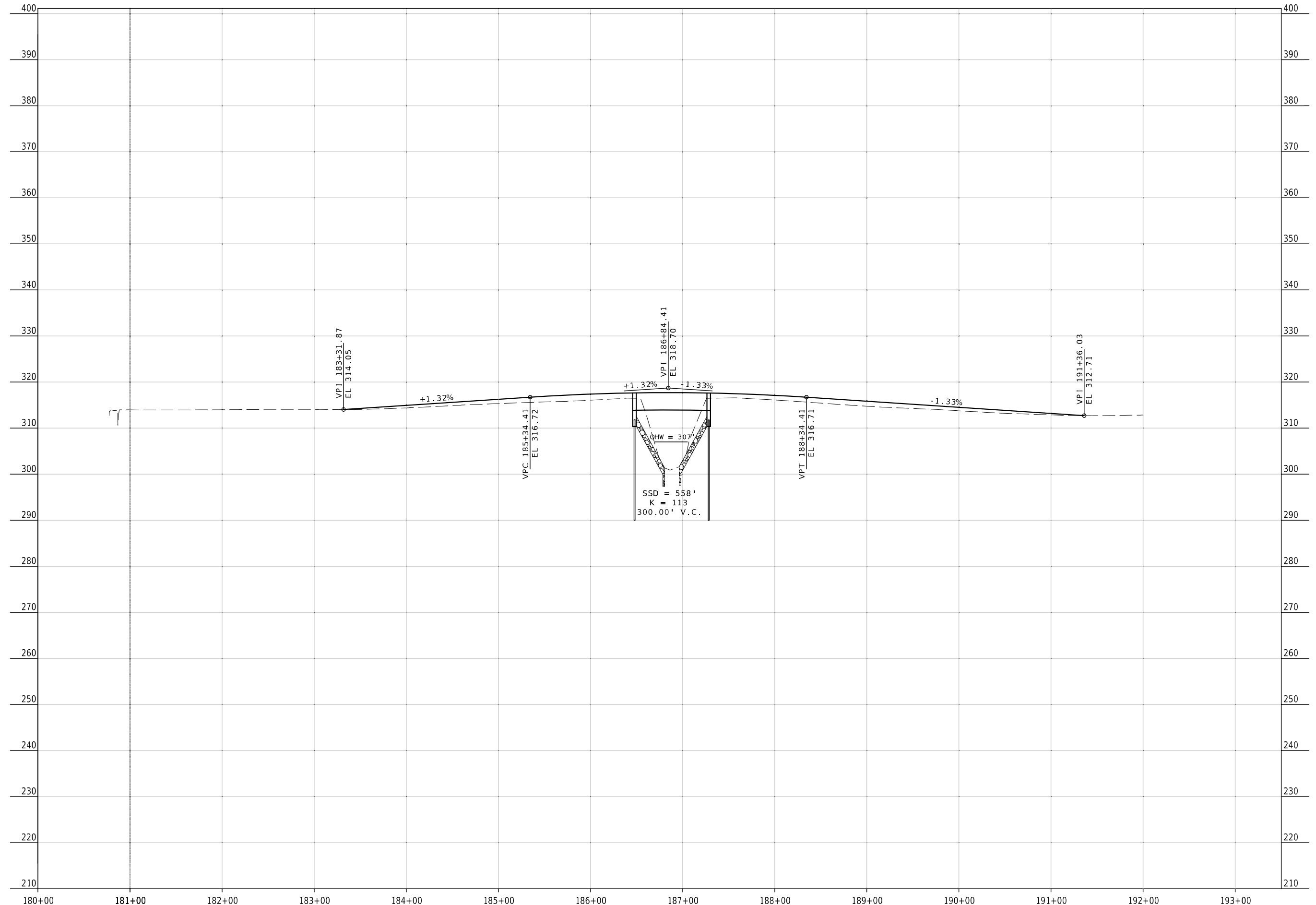
SEE THE JOB SPECIAL PROVISIONS FOR A LIST OF UTILITY COMPANIES ON OR WITHIN THE VICINITY OF THE PROJECT LIMITS.

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

ALL BEARINGS BASED ON GRID NORTH, MISSOURI COORDINATE SYSTEM OF 1983, EAST ZONE.

- NAVD88 - BENCH MARKS
- BM #2 - A COTTON PICKER SPINDLE SET IN THE SOUTH SIDE OF A POWER POLE
 35.13' LT OF C RTE 158
 STA 187+73.59 ELEV 315.1300
 X = 838150.5060 Y = 302099.7000
 - BM #3 - CHISELED SQUARE IN THE WEST END OF THE NORTH GUARDRAIL OF BR T0170
 10.12' LT OF C RTE 158
 STA 186+49.54 ELEV 317.1400
 X = 838026.2390 Y = 302075.7850





Curtis Dewayne Woolsey
 08/12/2024 7:56:26 PM
 CURTIS DEWAYNE WOOLSEY - CIVIL
 MO-PE-201018834

DATE PREPARED
8/12/2024

ROUTE	STATE
158	MO
DISTRICT	SHEET NO.
SE	5

COUNTY
BUTLER

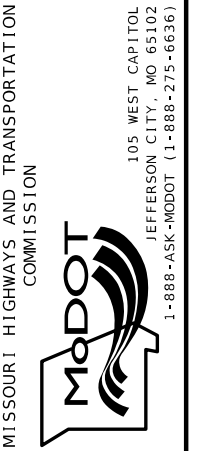
JOB NO.
JSE0115

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION



PLAN-PROFILE
 SHEET 2 OF 2

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

PROJECT COORDINATE INFORMATION

COORDINATE SYSTEM	MO SPC 1983
HORIZONTAL DATUM	MODOT GNSS NETWORK
VERTICAL DATUM	NAD83 2011
GEOID MODEL	2018
ELEVATIONS DETERMINED BY	DIFFERENTIAL LEVELING
PROJECT PROJECTION FACTOR	1.00000000

REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	MO SPC 1983
CONTROL STATION	MODP
DESIGNATION	MODOT DONIPHAN CORS ARP
CORS_ID	MODP
PID	DP2873
LATITUDE	363842.39207
LONGITUDE	904752.77641
NORTHING (M)	90112.7690
EASTING (M)	223354.0820
ZONE	EAST
PROJECT AVERAGE GRID FACTOR	1.00000000

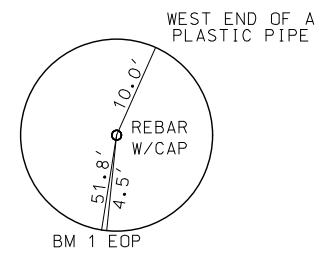
EXAMPLE OF PROJECT COORDINATE TO S.P.C.

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

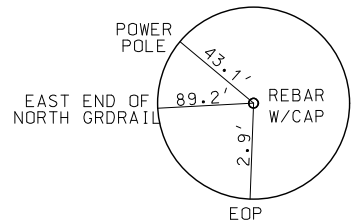
EXAMPLE: CONTROL POINT # CP100
 N 302060.6540 X 1.00000000 = N 302060.6540
 E 839648.0220 X 1.00000000 = E 839648.0220

LINEAR UNIT CONVERSION
 1 METER = 3.280833333 US SURVEY FEET (USFT)

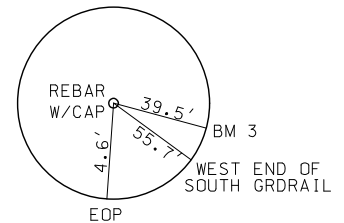
COORDINATE POINT LISTING								
SHEET NO	STATION	LOCATION	OFFSET (USFT)	MODIFIED STATE PLANE (GROUND)			DESCRIPTION	POINT ID
				NORTHING (US SURVEY FT)	EASTING (US SURVEY FT)	ELEVATION (US SURVEY FT)		
PROJECT CONTROL POINTS								
	202+71.39	RTE 158 LT	9.24	302060.65	839648.02	313.07	5/8" Rebar w/ Plastic MoDOT Cap	CP100
	186+10.25	RTE 158 LT	14.45	302077.21	838186.47	315.01	5/8" Rebar w/ Plastic MoDOT Cap	CP101
	188+09.75	RTE 158 LT	12.95	302080.46	837986.99	314.99	5/8" Rebar w/ Plastic MoDOT Cap	CP102
	177+37.30	RTE 158 LT	18.24	302091.92	837114.11	313.91	5/8" Rebar w/ Plastic MoDOT Cap	CP103
ALIGNMENTS								
	180+56.40	☉ RTE 158		302070.87	837433.04		POT	
	192+00.00	☉ RTE 158		302060.83	838576.59		POT	



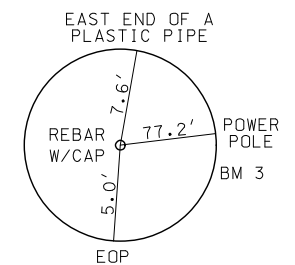
CONTROL PT #100



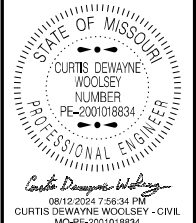
CONTROL PT #101



CONTROL PT #102



CONTROL PT #103



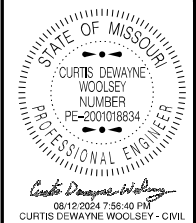
DATE PREPARED	8/12/2024	
ROUTE	158	STATE MO
DISTRICT	SE	SHEET NO. 6
COUNTY	BUTLER	
JOB NO.	JSE0115	
CONTRACT ID.		
PROJECT NO.		
BRIDGE NO.		

DESCRIPTION	
DATE	

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

REFERENCE POINTS
 CONTROL POINTS
 SHEET 1 OF 1



DATE PREPARED
8/12/2024

ROUTE
158

STATE
MO

DISTRICT
SE

SHEET NO.
7

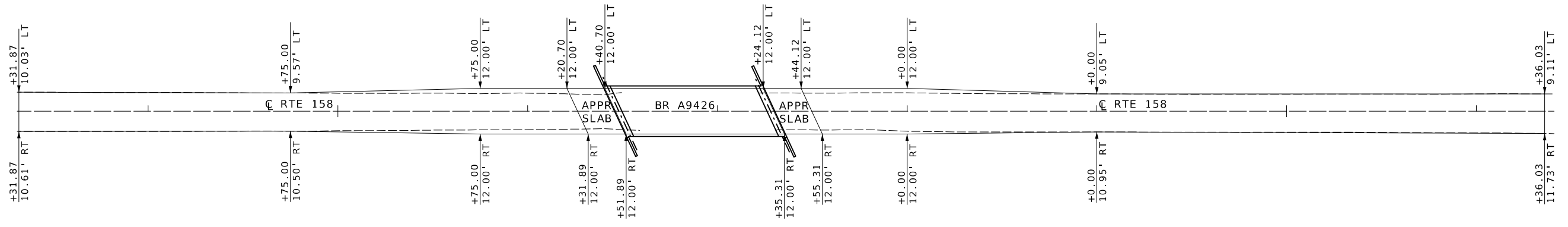
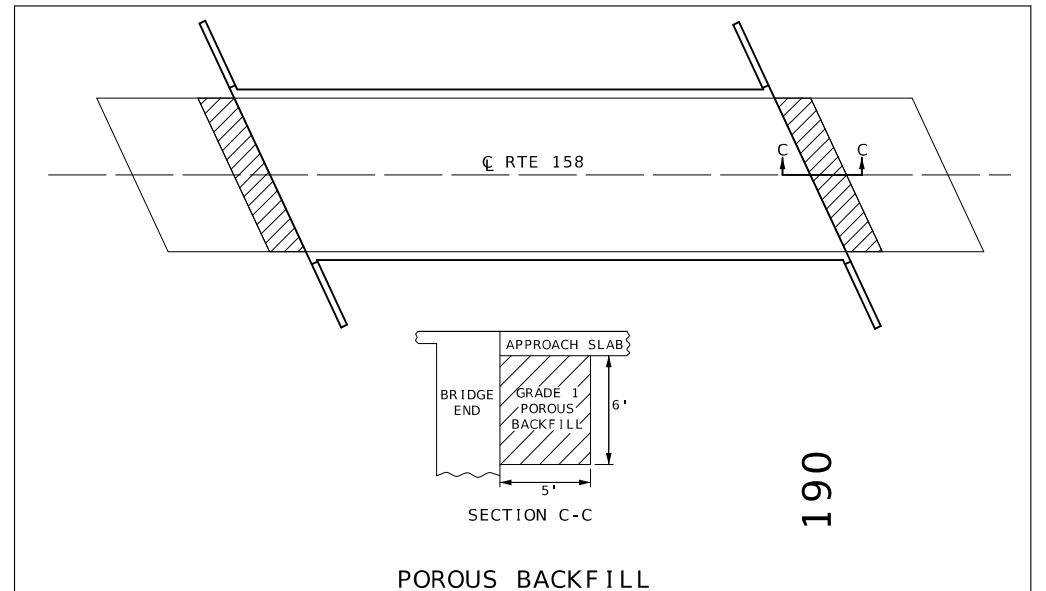
COUNTY
BUTLER

JOB NO.
JSE0115

CONTRACT ID.

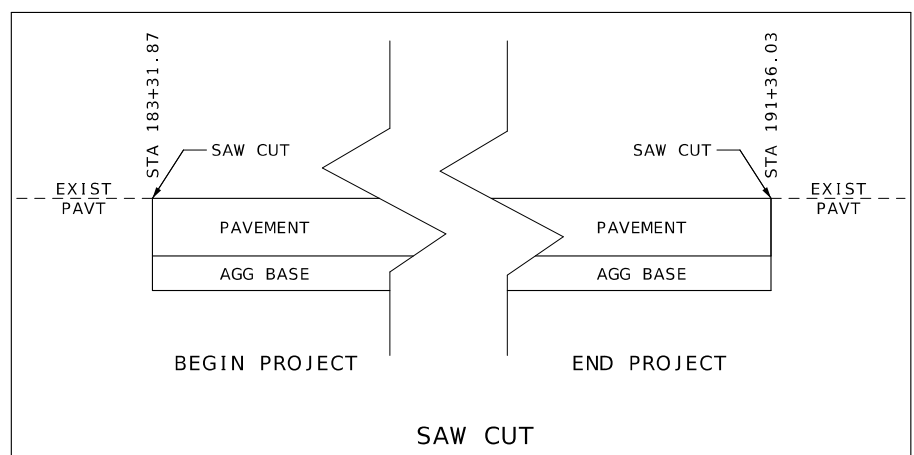
PROJECT NO.

BRIDGE NO.



PAVEMENT TRANSITION

- * OPTIONAL PAVEMENT
 - 1 3/4" BP-1 PG 64-22 OVER
 - 8 1/4" PMBB PG 64-22 OVER
 - 6" TYPE 5 AGGR
- OR
- 8" JPCP W/15' JOINTS OVER
 - 6" TYPE 5 AGGR



DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

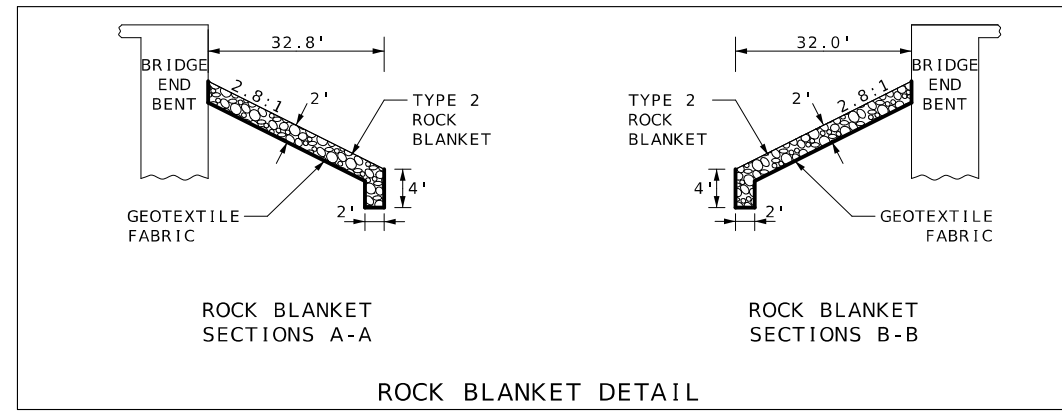
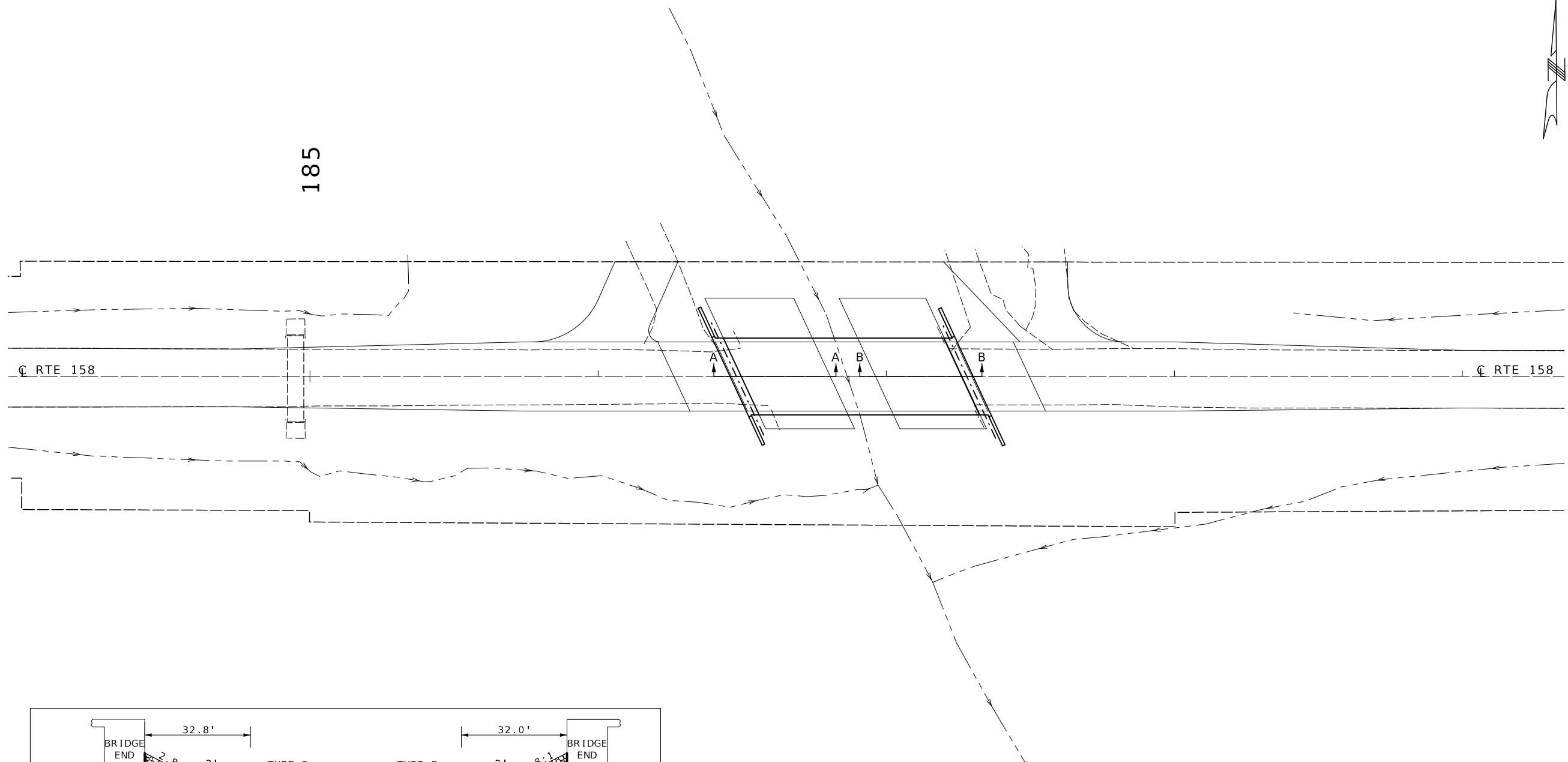
SPECIAL SHEET
SHEET 1 OF 2

NOTES:
SEE BRIDGE SHEETS FOR BRIDGE APPROACH SLAB DETAIL
NO DIRECT PAYMENT WILL BE MADE FOR ANY SAW CUTS

DRAWING NOT TO SCALE



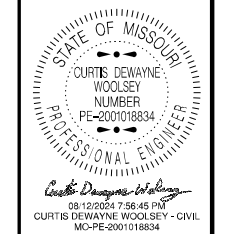
185



ROCK BLANKET						
SEC	FORE SLOPE	WIDTH (FT)	DEPTH (FT)	LENGTH (FT)	ROCK BLANKET (CY)	PERMANENT GEOTEXTILE (SY)
A-A	2.8:1	36.8	2.0	50.0	136.3	256.8
B-B	2.8:1	36.0	2.0	50.0	133.3	252.0

NOTES:
 ANY CLEARING & GRUBBING OR EARTHWORK REQUIRED FOR REMOVAL OR PLACEMENT OF PAVEMENT OR ROCK SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

DRAWING NOT TO SCALE



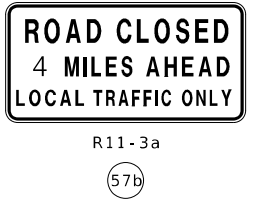
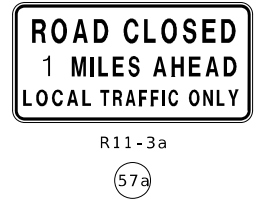
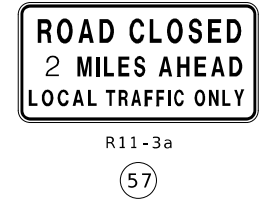
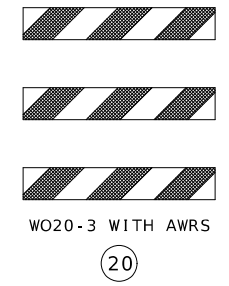
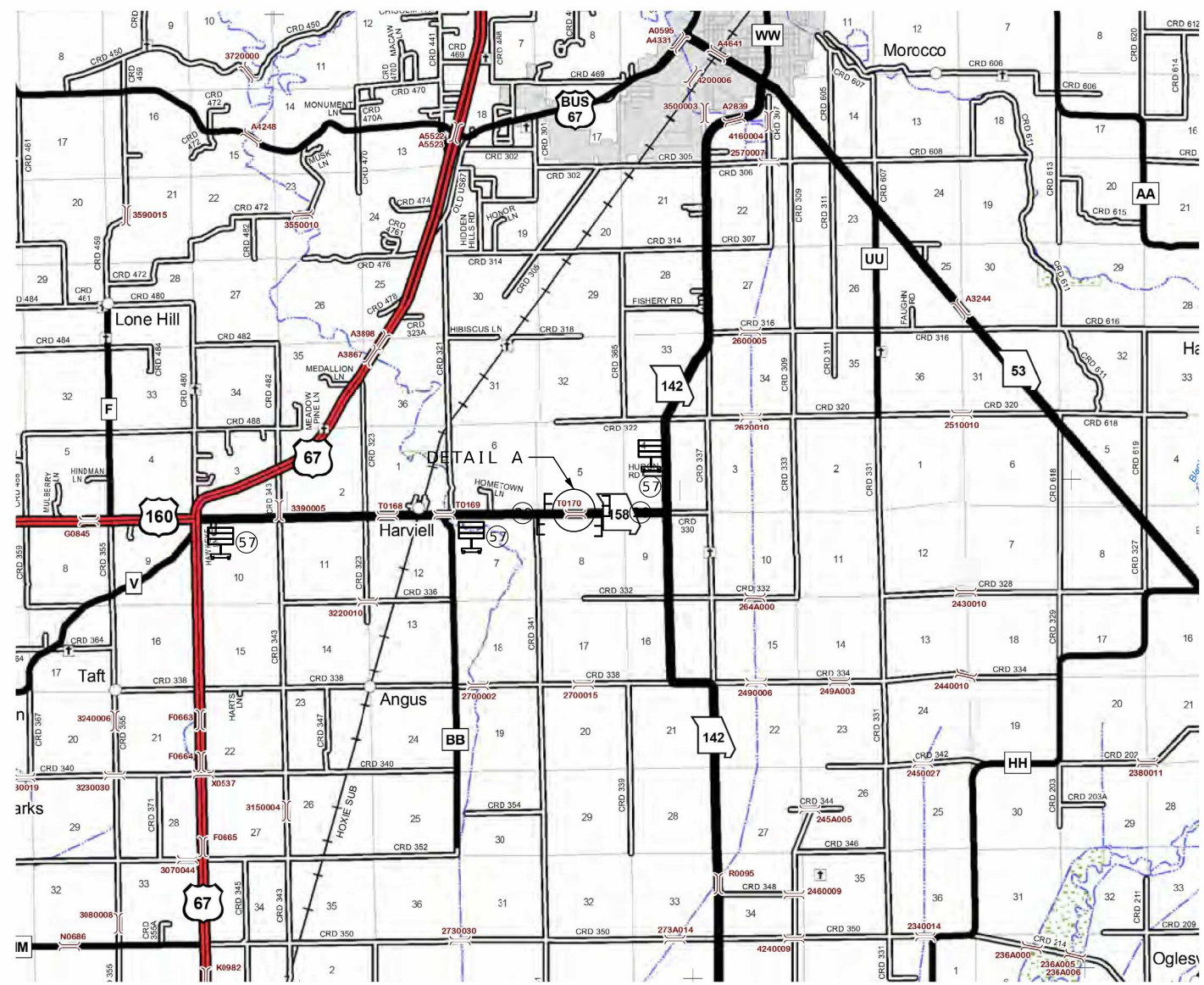
DATE PREPARED
 8/12/2024
 ROUTE 158 STATE MO
 DISTRICT SE SHEET NO. 8
 COUNTY BUTLER
 JOB NO. JSE0115
 CONTRACT ID.
 PROJECT NO.
 BRIDGE NO.

DATE	DESCRIPTION

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



SPECIAL SHEET
 SHEET 2 OF 2

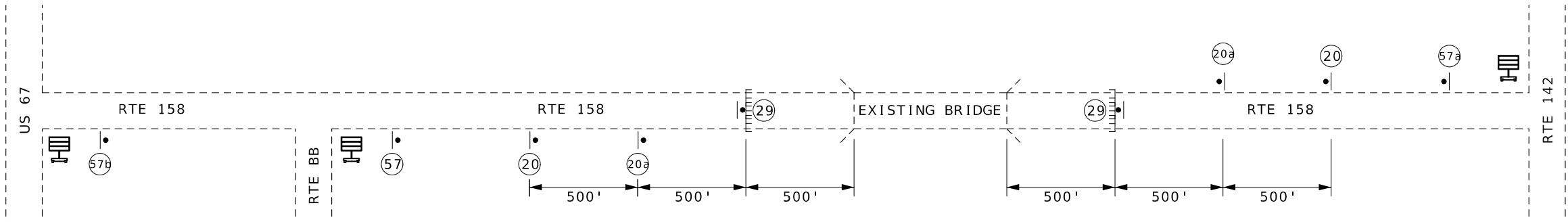


NOTES:

SIGNS SPACING IS 500FT.

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

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

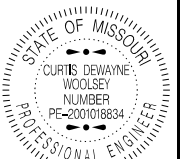


TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- ⌈ BARRICADE
- ⌈ CHANGEABLE MESSAGE BOARD

DETAIL A
WORK ZONE NEAR BRIDGE

DRAWING NOT TO SCALE



DATE PREPARED
8/12/2024

ROUTE 158 STATE MO
DISTRICT SE SHEET NO. 9

COUNTY BUTLER
JOB NO. JSE0115
CONTRACT ID.

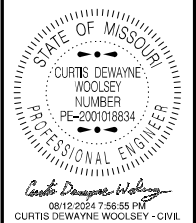
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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TRAFFIC CONTROL SHEET 1 OF 1



DATE PREPARED
8/12/2024

ROUTE	STATE
158	MO
DISTRICT	SHEET NO.
SE	10

COUNTY
BUTLER

JOB NO.
JSE0115

CONTRACT ID.

PROJECT NO.

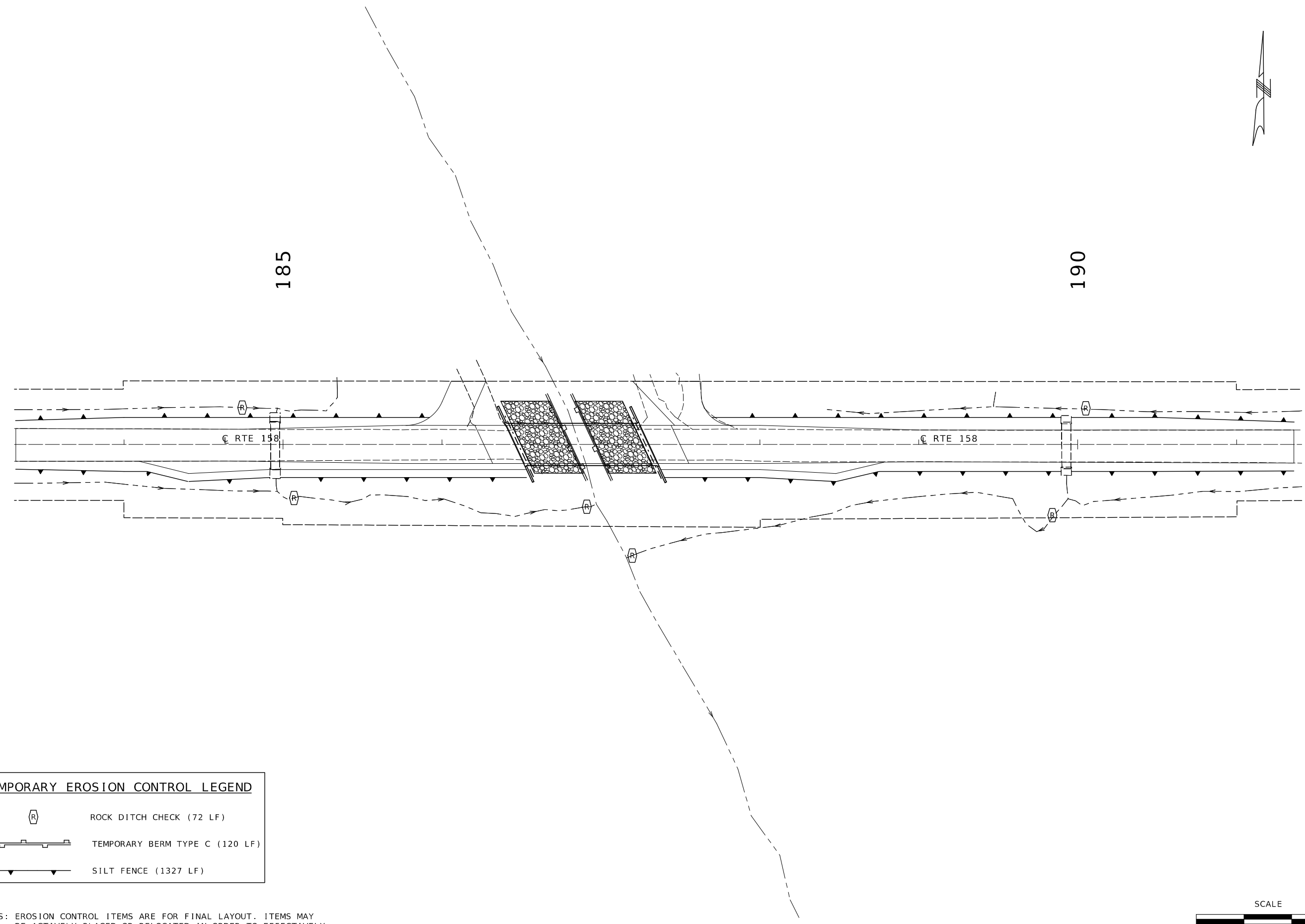
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

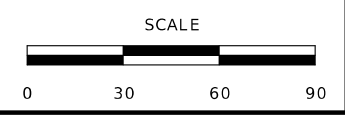
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

EROSION CONTROL
SHEET 1 OF 1



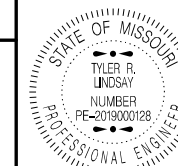
	ROCK DITCH CHECK (72 LF)
	TEMPORARY BERM TYPE C (120 LF)
	SILT FENCE (1327 LF)

NOTES: EROSION CONTROL ITEMS ARE FOR FINAL LAYOUT. ITEMS MAY BE ACTIVELY PLACED OR RELOCATED IN ORDER TO EFFECTIVELY CONTROL EROSION AND SEDIMENT DISCHARGE.



(80') PRESTRESSED CONCRETE SPREAD BOX BEAM SPAN

SEC/SUR 5 TWP 23N RGE 6E



DATE PREPARED
8/2/2024

ROUTE 158 STATE MO

DISTRICT BR SHEET NO. 1

COUNTY BUTLER

JOB NO. JSE0115

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9426

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

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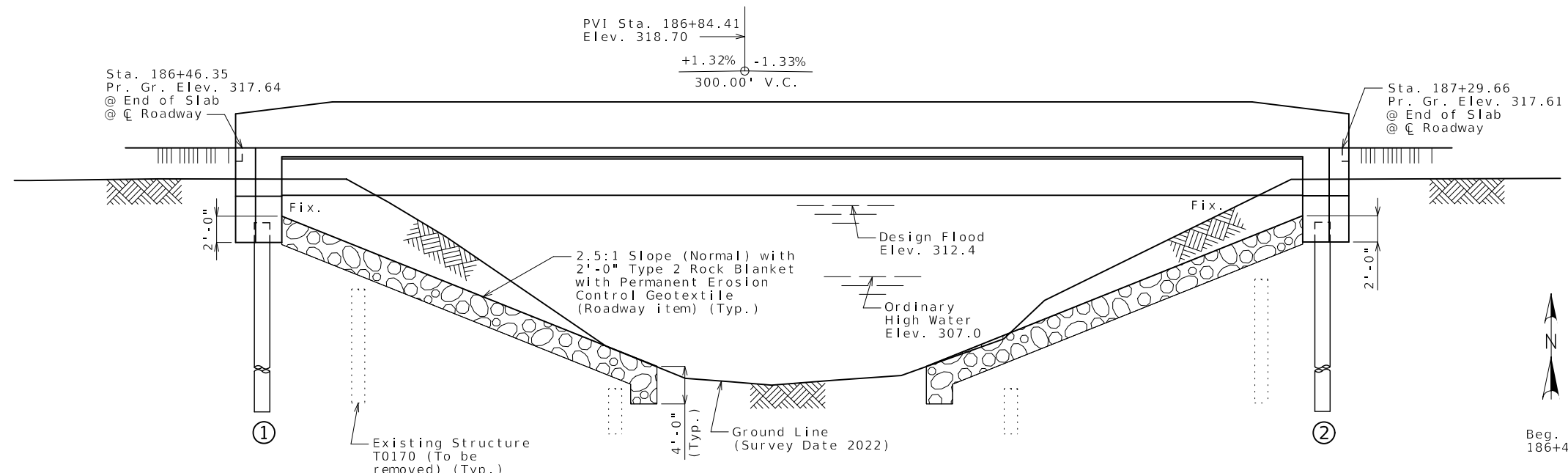
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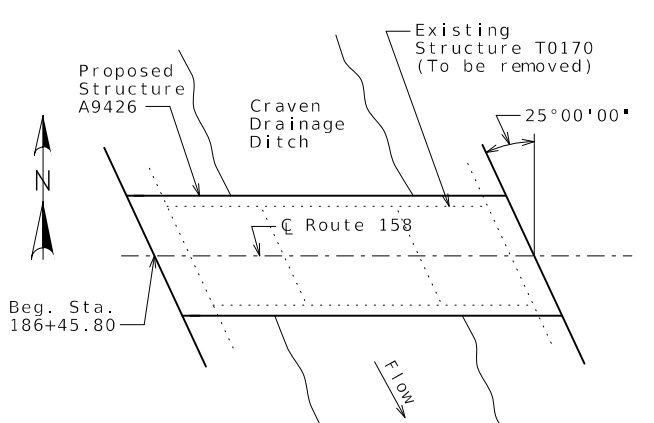
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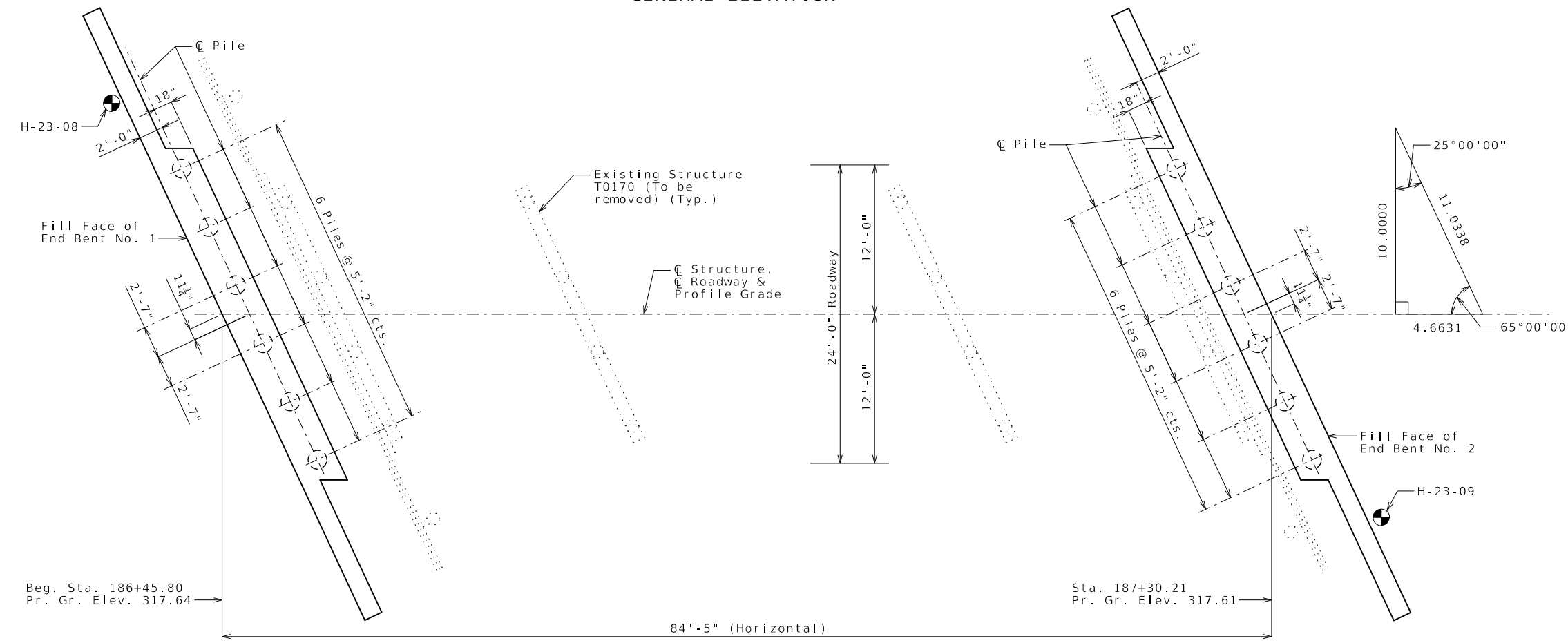


Note: Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.



GENERAL ELEVATION

LOCATION SKETCH



Indicates location of borings.
 Notice and Disclaimer Regarding Boring Log Data
 The locations of all subsurface borings for this structure are shown on the plan sheet for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet No. 17 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.
 The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

(SPAN 1-2)

PLAN

B.M. #3 -CHISELED SQUARE IN THE WEST END OF THE NORTH GUARDRAIL OF BR T0170; 10.12' LT OF C RTE 158 STA 186+49.54 ELEV 317.1400 X = 838026.2390 Y = 302075.7850
 BRIDGE: ROUTE 158 OVER CRAVEN DRAINAGE DITCH
 ROUTE 158 FROM ROUTE 67 TO ROUTE 142 ABOUT 1.1 MILES WEST OF ROUTE 142 BEGINNING STATION 186+45.80

General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
 2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)
 Seismic Design Category = C
 Design earthquake response spectral acceleration coefficient at 1.0 second period, $S_{D1} = 0.349g$
 Acceleration Coefficient (effective peak ground acceleration coefficient), $A_s = 0.386g$

Design Loading:

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

Design Unit Stresses:

Class B Concrete (Substructure, except CIP Piles) $f'c = 3,000$ psi
 Class B-2 Concrete (Superstructure, except Prestressed Beams and Barrier) $f'c = 4,000$ psi
 Class B-1 Concrete (Barrier & CIP Piles) $f'c = 4,000$ 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

For prestressed box beam stresses, see Sheet No. 8.

Neoprene Pads:

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

Joint Filler:

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

Reinforcing Steel:

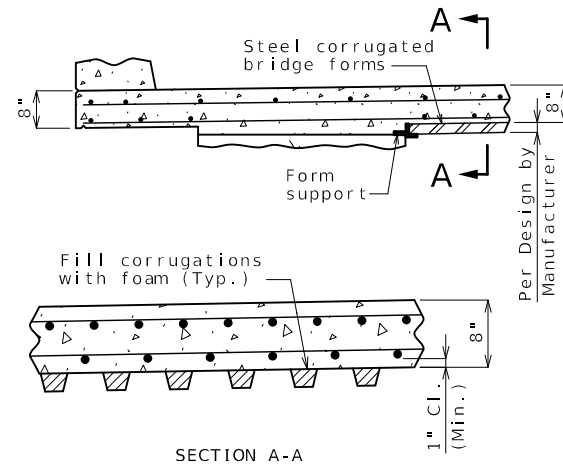
Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

Traffic Handling:

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

Miscellaneous:

Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.



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. 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 top of beam. Drilling holes in the beam 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.

Estimated Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	60		60
Removal of Bridges (T0170)	lump sum			1
Bridge Approach Slab (Minor)	sq. yard			108
Galvanized Cast-in-Place Concrete Piles (16 in.)	linear foot	360		360
Dynamic Pile Testing	each	2		2
Pile Point Reinforcement	each	12		12
Class B Concrete (Substructure)	cu. yard	35.6		35.6
Type D Barrier	linear foot		168	168
Slab on Concrete Beam	sq. yard		247	247
33 in., Prestressed Concrete Spread Box Beam	linear foot		242	242
Slab Drain	each		14	14
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		6	6

Estimated Quantities for Slab on Concrete Beam		
Item		Total
Class B-2 Concrete	cu. yard	83
Reinforcing Steel (Epoxy Coated)	pound	25,260

The table of Estimated Quantities for Slab on Concrete Beam 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. Payment for stay-in-place corrugated steel forms, conventional forms and 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.

All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete Beam.

All reinforcement in the end bents, including reinforcement in cast-in-place piling, is included in the Estimated Quantities for Slab on Concrete Beam.

Hydrologic Data	
Drainage Area = 176 mi ² (Cane Creek)	
Design Flood Frequency = < 1 year	
Design Flood Discharge = < 2,400 cfs (Cane Creek)	
Design Flood (D.F.) Elevation = 312.4	
Base Flood (100-year)	
Base Flood Elevation = 316.7	
Base Flood Discharge = 31,900 cfs (Cane Creek & Craven Ditch)	
Estimated Backwater = 0.0 ft	
Average Velocity thru Opening = 4.0 ft/s	
Freeboard (50-year)	
Freeboard = 0.0 ft	
Roadway Overtopping	
Overtopping Flood Discharge = 4,100 cfs (Cane Creek)	
Overtopping Flood Frequency = 1.5 years	
Overtopping Flood Elevation = 313.6	

Foundation Data			
Type	Design Data	Bent Number	
		1	2
Load Bearing Pile	Pile Type and Size	CECIP 16"	CECIP 16"
	Number	ea 6	ea 6
	Approximate Length Per Each	ft 30	ft 30
	Pile Point Reinforcement	ea All	ea All
	Min. Galvanized Penetration (Elev.)	ft Full length	ft Full length
	Est. Max. Scour Depth (Elev.)	ft N/A	ft N/A
	Minimum Tip Penetration (Elev.)	ft 295.00	ft 295.00
	Criteria for Min. Tip Penetration	Min. Embed.	Min. Embed.
	Pile Driving Verification Method	DT	DT
	Resistance Factor	0.65	0.65
	Minimum Nominal Axial Compressive Resistance	kip 241	kip 241

DT = Dynamic Testing

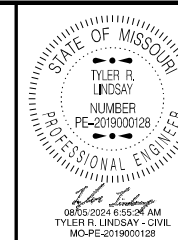
CECIP = Closed Ended Cast-In-Place concrete pile

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.



DATE PREPARED

8/2/2024

ROUTE 158 STATE MO

DISTRICT BR SHEET NO. 2

COUNTY BUTLER

JOB NO. JSE0115

CONTRACT ID.

PROJECT NO.

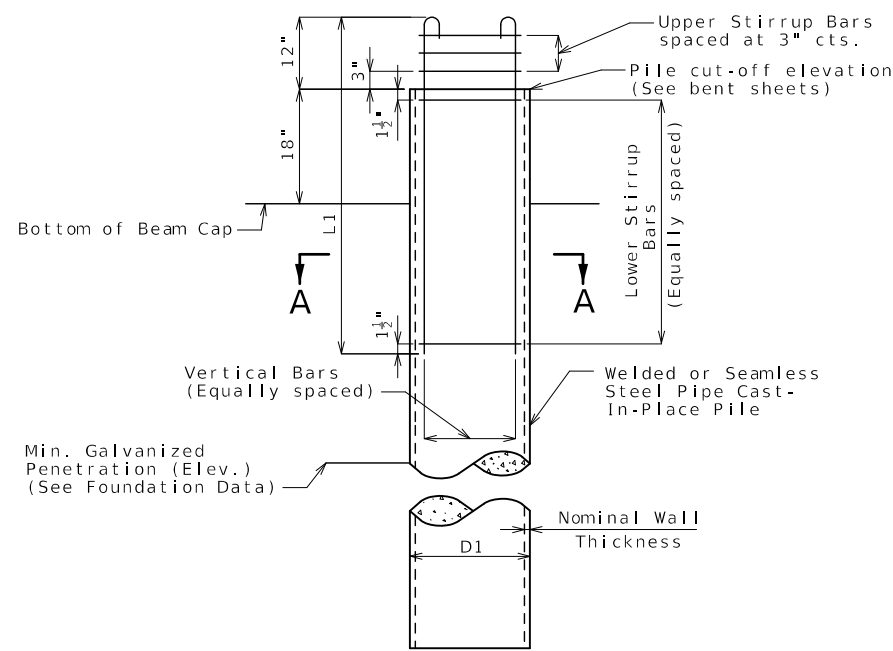
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DESCRIPTION

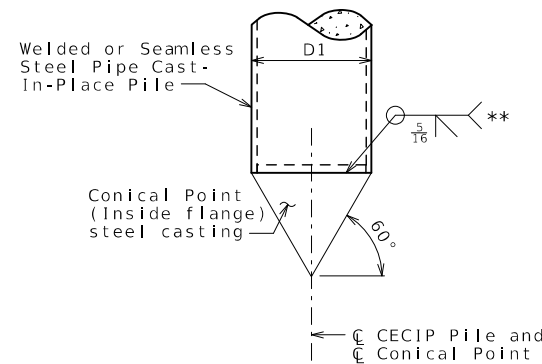
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



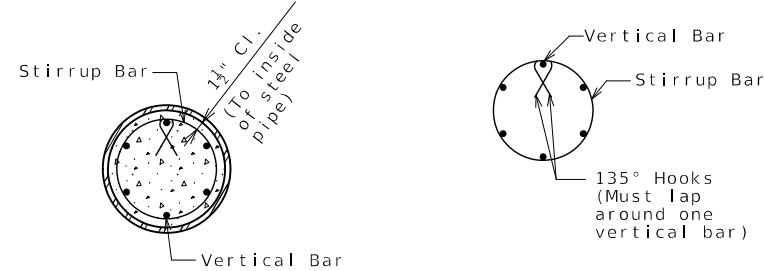


GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE



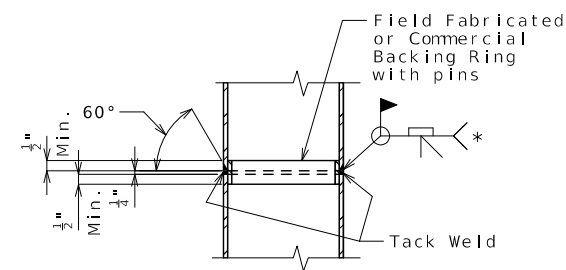
MANUFACTURED CONICAL PILE POINT

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



SECTION A-A

DETAIL OF SEISMIC STIRRUP BAR



STEEL PIPE PILE SPLICE

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

Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data		
Bent Number	1	2
D1, CECIP Pile (O.D.)	16"	16"
Min. Nominal Wall Thickness	1/2"	1/2"
Pile Point Reinforcement	Conical	Conical
Vertical Bars	6-#6-V103	6-#6-V103
L1, Length of Vertical Bars	5'-3"	5'-3"
Upper Stirrup Bars	3-#4-P100	3-#4-P100
Lower Stirrup Bars	5-#4-P100	5-#4-P100

Notes:

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

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

Steel casting for conical pile point reinforcement shall be ASTM A27 Grade 65-35.

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

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

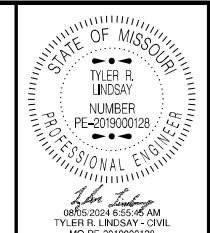
Splices of pipe for cast-in-place concrete pile shall be made watertight and to the full strength of the pipe above and below the splice to permit hard driving without damage. Pipe damaged during driving shall be replaced without cost to the state. Pipe sections used for splicing shall be at least 5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

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

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

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

For Foundation Data table, see Sheet No. 2.



DATE PREPARED
8/2/2024

ROUTE 158 STATE MO

DISTRICT BR SHEET NO. 3

COUNTY BUTLER

JOB NO. JSE0115

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9426

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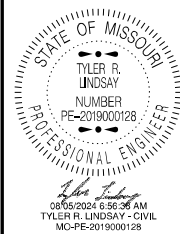
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DATE PREPARED
8/2/2024

ROUTE 158 STATE MO

DISTRICT BR SHEET NO. 4

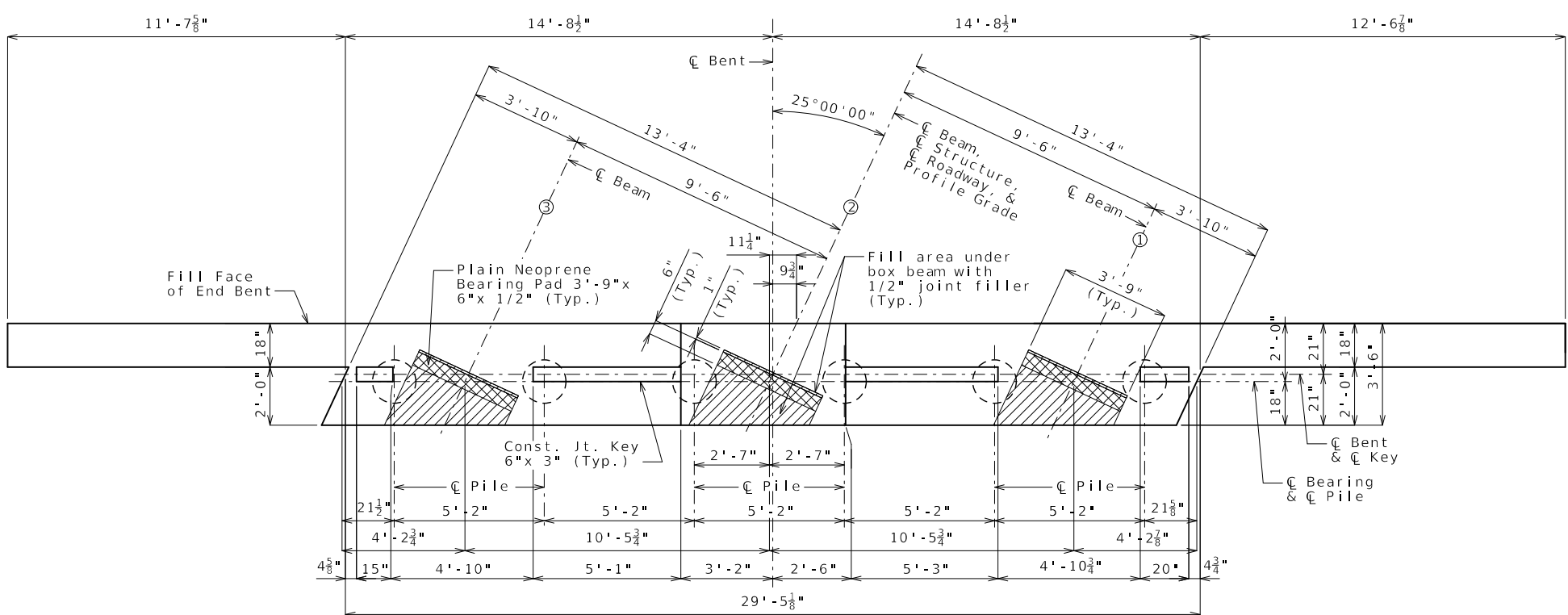
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CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9426



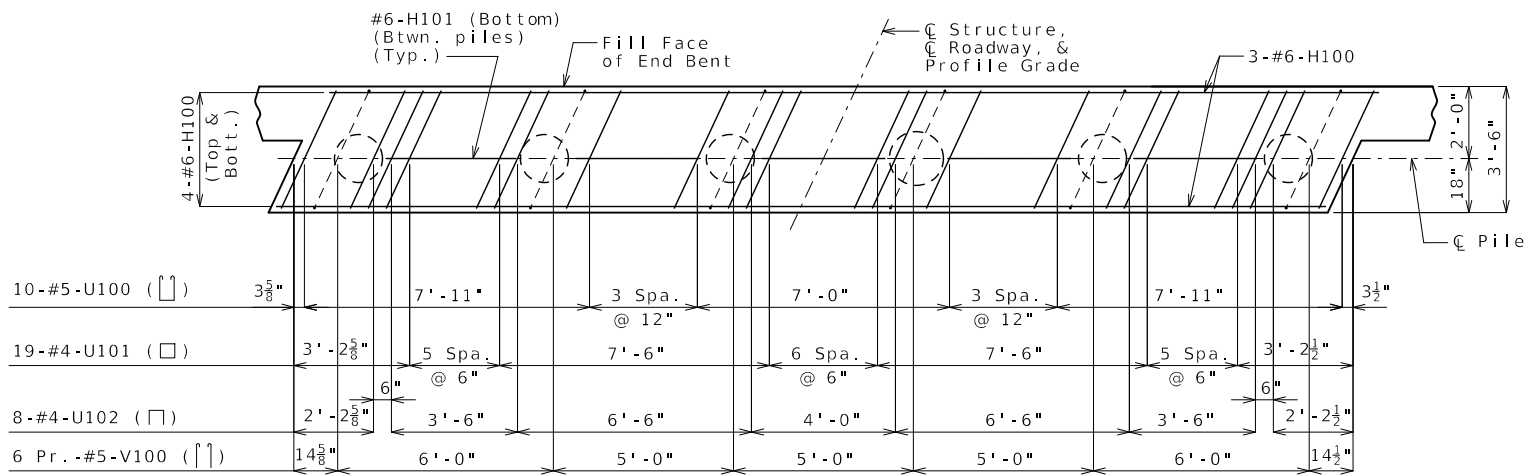
PLAN OF BEAM

Notes:

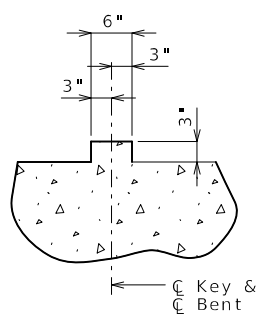
Work this sheet with Sheets No. 5 & 6.

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

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



PART PLAN OF BEAM SHOWING REINFORCEMENT
(Wing reinforcement, beam steps and keys not shown for clarity)



SECTION THRU KEY

Item		Bent No. 1	Bent No. 2
Class 1 Excavation	cu. yard	30	30
Galvanized Cast-In-Place Concrete Piles (16 in.)	linear foot	180	180
Dynamic Pile Testing	each	1	1
Pile Point Reinforcement	each	6	6
Class B Concrete (Substructure)	cu. yard	17.8	17.8

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

END BENTS NO. 1 & 2
(End Bent No. 1 shown, End Bent No. 2 similar)

DESCRIPTION	DATE



DATE PREPARED
8/2/2024

ROUTE 158 STATE MO
DISTRICT BR SHEET NO. 5

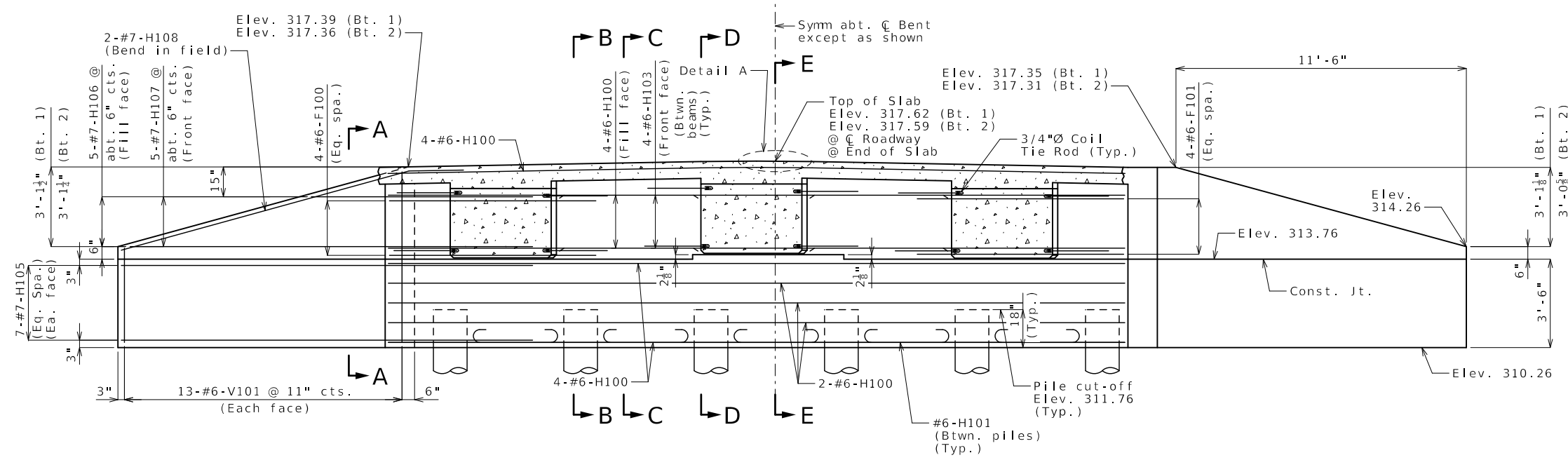
COUNTY BUTLER
JOB NO. JSE0115
CONTRACT ID.

PROJECT NO.
BRIDGE NO. A9426

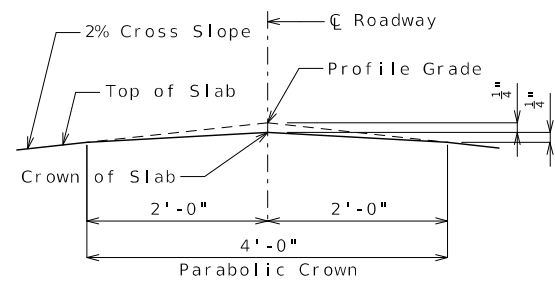
DATE	DESCRIPTION

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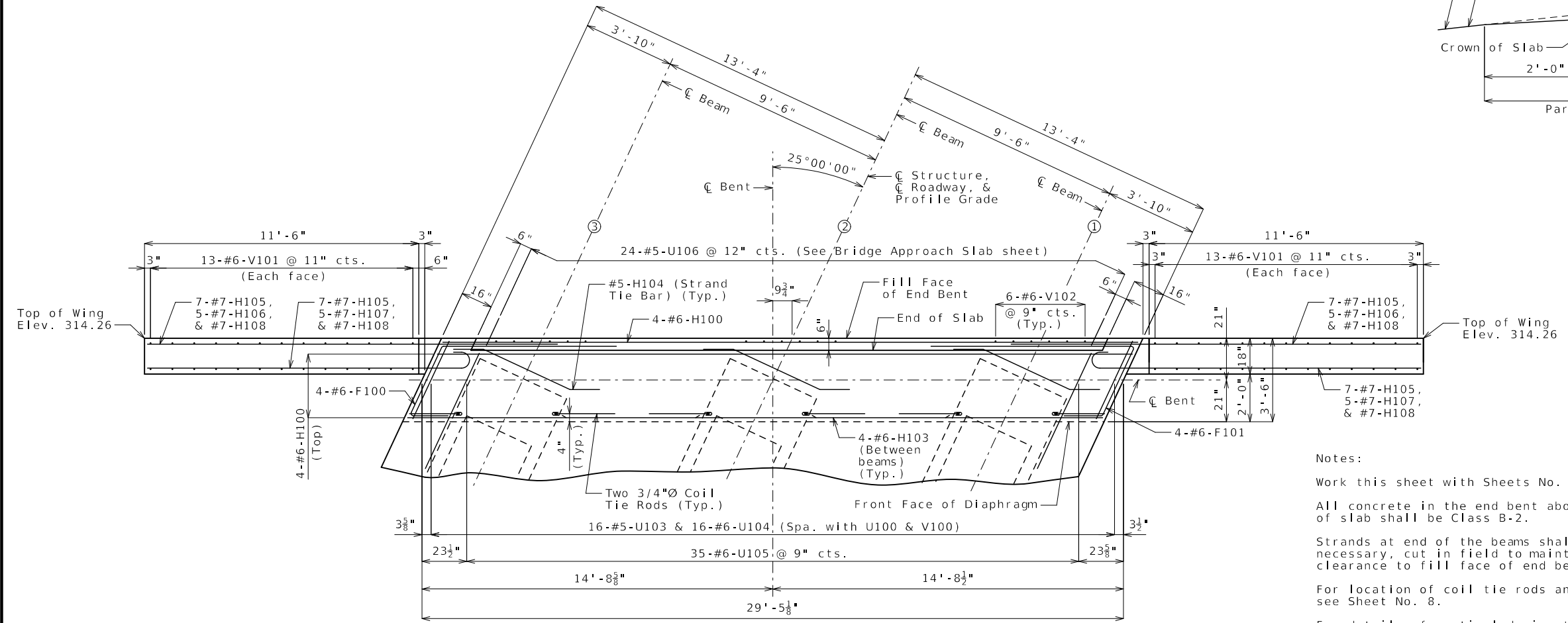
 105 WEST CAPITOL JEFFERSON CITY, MO 65102
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SECTION NEAR END BENT



DETAIL A

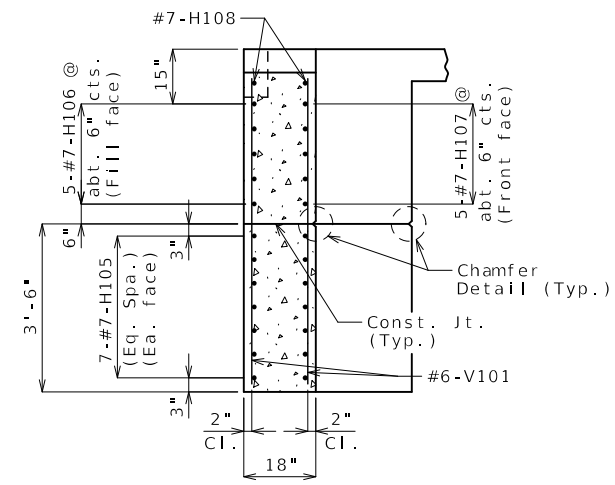


PART PLAN

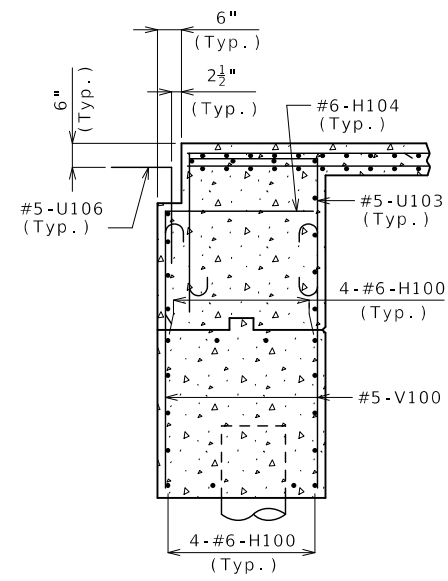
END BENTS NO. 1 & 2
(End Bent No. 1 shown, End Bent No. 2 similar)

- Notes:
- Work this sheet with Sheets No. 4 & 6.
 - All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
 - Strands at end of the beams shall be field bent or, if necessary, cut in field to maintain 1 1/2-inch minimum clearance to fill face of end bent.
 - For location of coil tie rods and #5-H104 (strand tie bar), see Sheet No. 8.
 - For details of vertical drain at end bent, see Sheet No. 7.
 - For details of bridge approach slab, see Sheet No. 13.
 - For details of Cast-in-Place Concrete Piles, see Sheet No. 3.

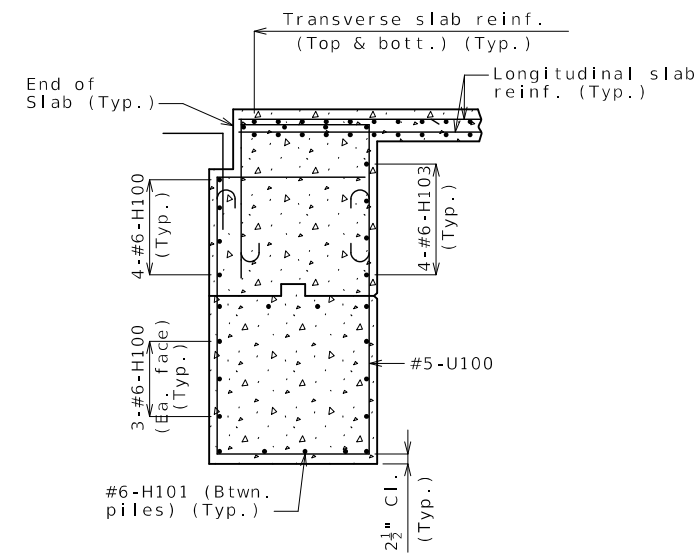
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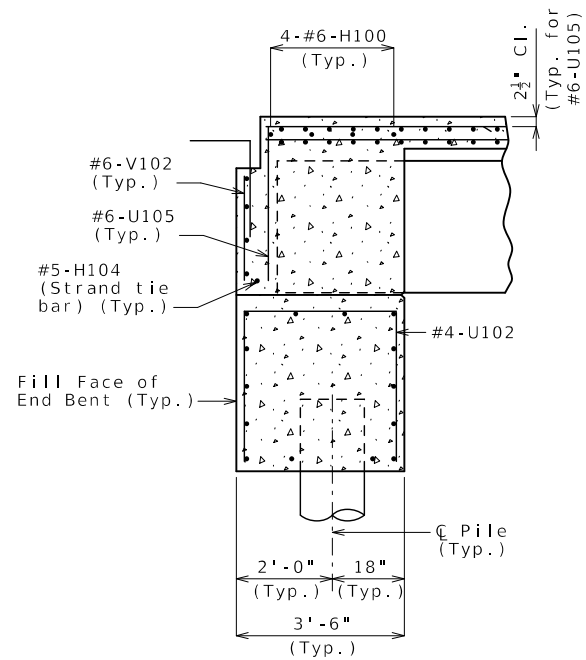
SECTION A-A
(WING)



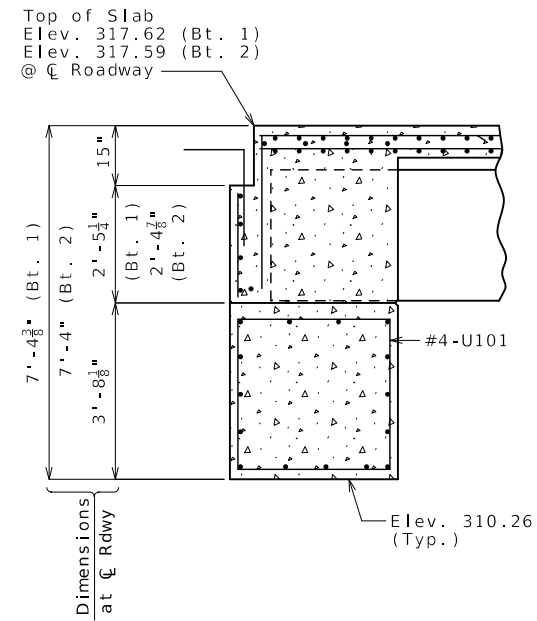
SECTION B-B



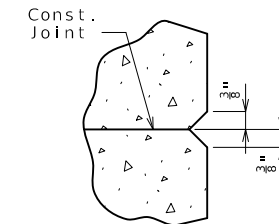
SECTION C-C



SECTION D-D

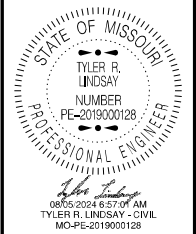


SECTION E-E



CHAMFER DETAIL

Note:
Work this sheet with Sheets No. 4 & 5.

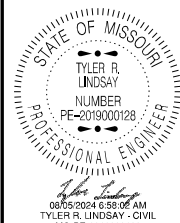


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ROUTE 158	STATE MO
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COUNTY BUTLER	
JOB NO. JSE0115	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9426	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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8/2/2024

ROUTE 158 STATE MO
DISTRICT BR SHEET NO. 7

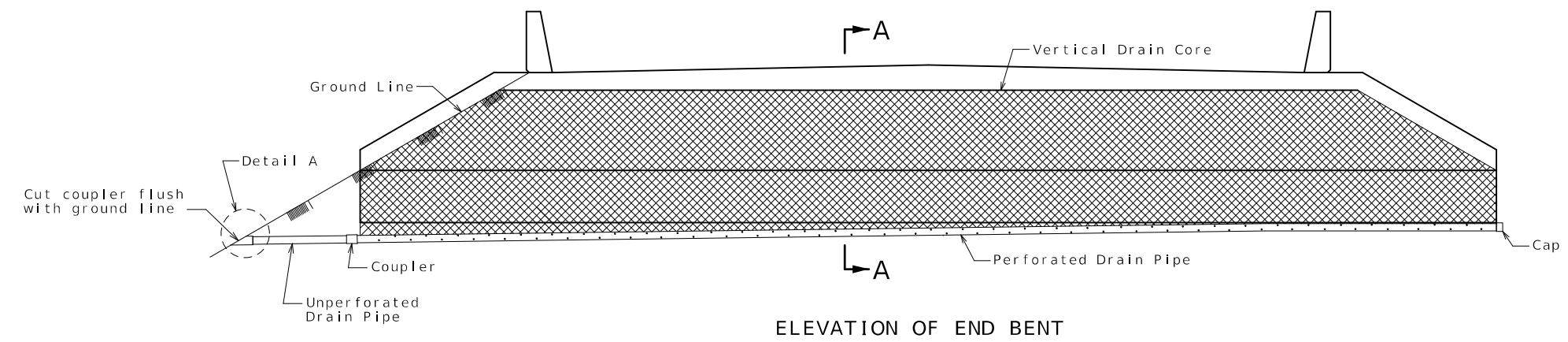
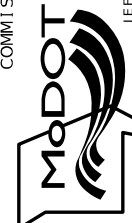
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JOB NO. JSE0115
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PROJECT NO.

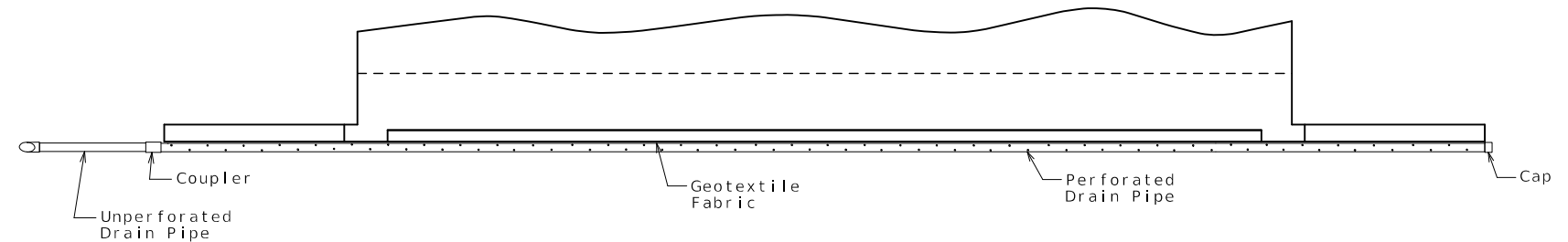
BRIDGE NO. A9426

DATE	DESCRIPTION

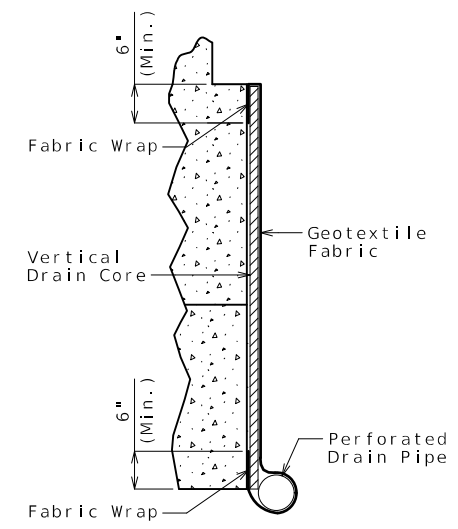
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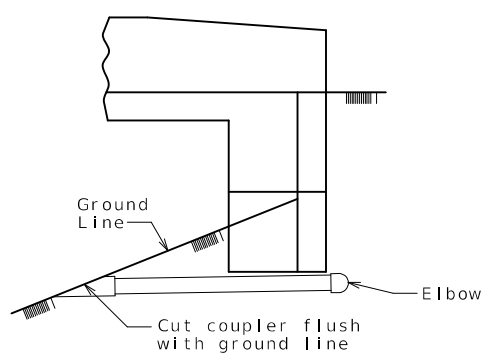
ELEVATION OF END BENT



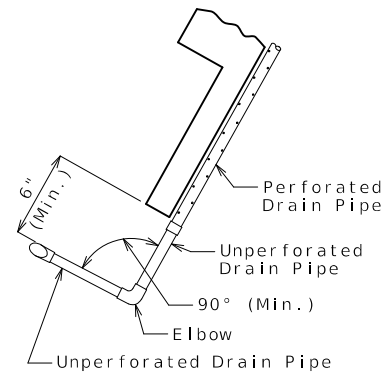
PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)

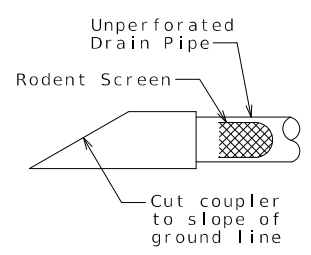


SIDE ELEVATION



PART PLAN

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



DETAIL A

General Notes:

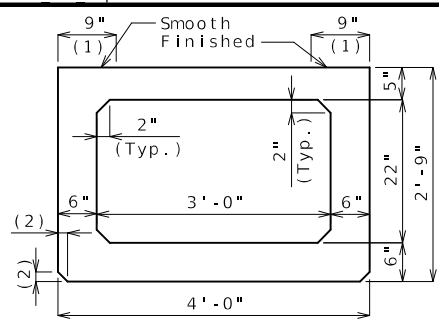
- All drain pipe shall be sloped 1 to 2 percent.
- Drain pipe may be either 6-inch diameter corrugated metallic-coated steel pipe underdrain, 4-inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch diameter corrugated polyethylene (PE) drain pipe.
- Drain pipe shall be placed at fill face of end bent and wings. The pipe shall slope to lowest grade of ground line.
- Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

VERTICAL DRAIN AT END BENTS
(Squared end bent shown, skewed end bent similar)

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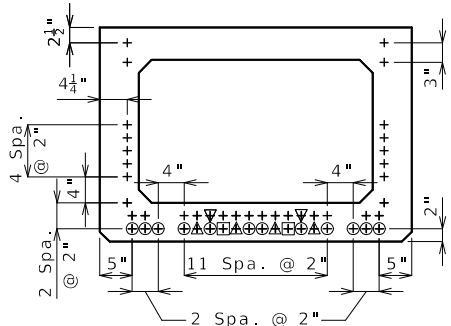
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 7 of 17



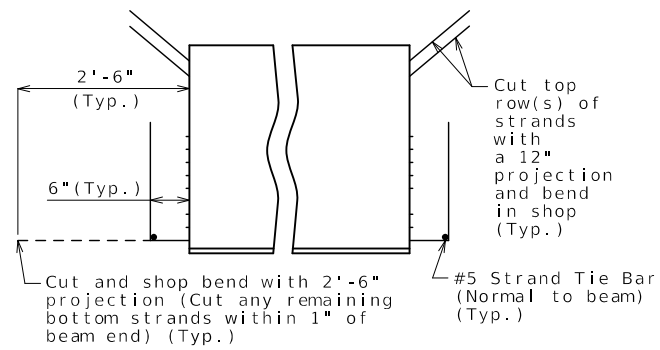
DIMENSIONS

- (1) Fabricator shall apply a bond breaker to this region.
- (2) 1½" (Typ.) (¾" Optional)



STRAND ARRANGEMENT

- All strands are fully bonded unless otherwise noted.
- + Indicates prestressing strand.
- Indicates cut and shop bend with 2'-6" projection.
- Indicates debonded for 16'-0" from end of beam.
- △ Indicates debonded for 10'-0" from end of beam.
- ▽ Indicates debonded for 2'-0" from end of beam.



STRANDS AT BEAM ENDS

BILL OF REINFORCING STEEL - EACH BEAM				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
10	5 A1	41'-8"	20	
8	4 A2	41'-5"	20	
26	4 C1	3'-7"	20	
68	5 S1	8'-4"	10S	
68	5 S2	7'-9"	51S	
68	4 S3	4'-6"	50S	
18	5 S4	8'-4"	10S	
18	5 S5	7'-4"	10S	
12	6 U1	5'-7"	10S	
6	4 U2	7'-4"	10S	

All dimensions are out to out. Use symmetry for dimensions not shown.

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

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

Minimum clearance to reinforcing shall be one inch, unless otherwise shown.

All reinforcement shall be Grade 60.
All S2 bars shall be epoxy coated.

General Notes:

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

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

Pretensioned members shall be in accordance with Sec 1029.

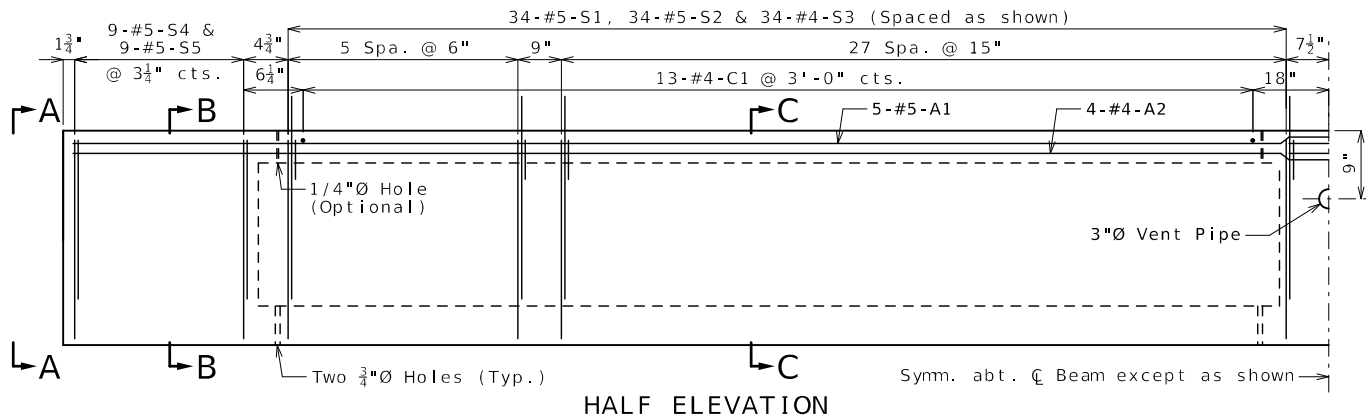
Fabricator shall be responsible for location and design of lifting devices.

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

For Beam Camber Diagram, see Sheet No. 10.

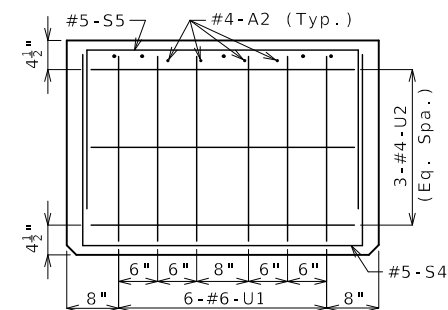
For location of coil inserts at slab drains, see Sheet No. 9.

For location of coil ties at concrete bent diaphragms, see Sheets No. 5.

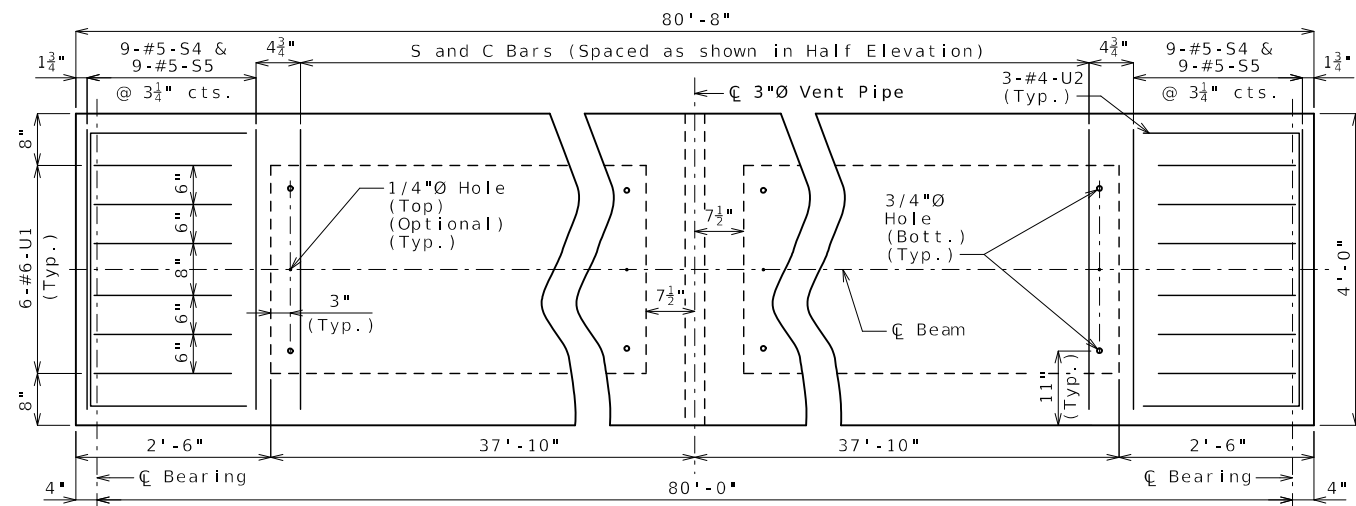


HALF ELEVATION

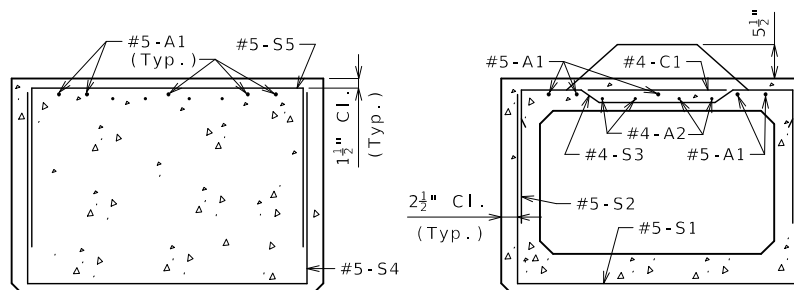
Strands not shown for clarity.



ELEVATION A-A

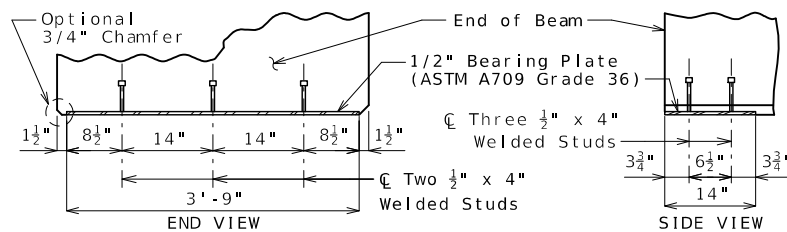


PART PLAN



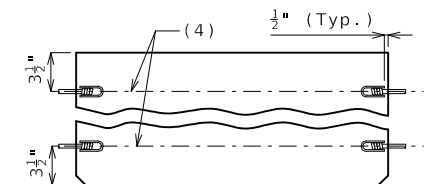
SECTION B-B

SECTION C-C



BEARING PLATE

SPREAD BOX BEAMS - SPAN (1-2)

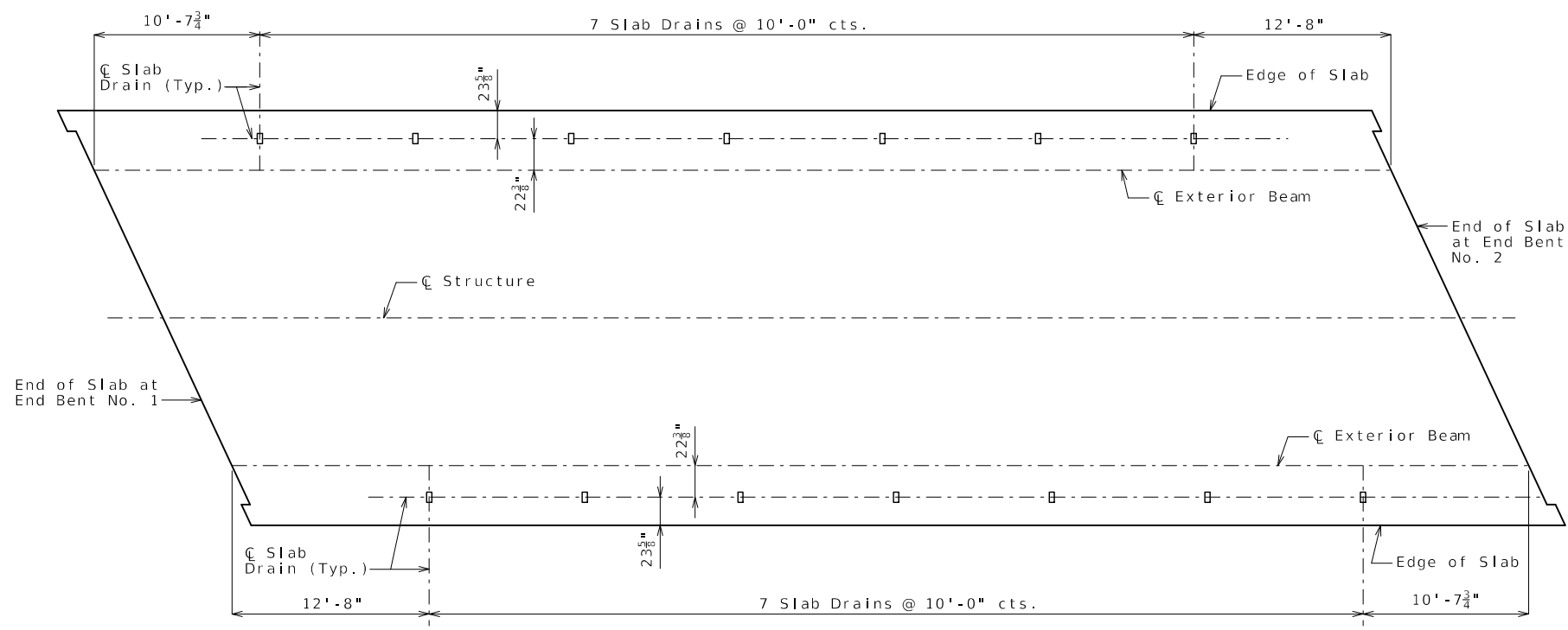


COIL TIES

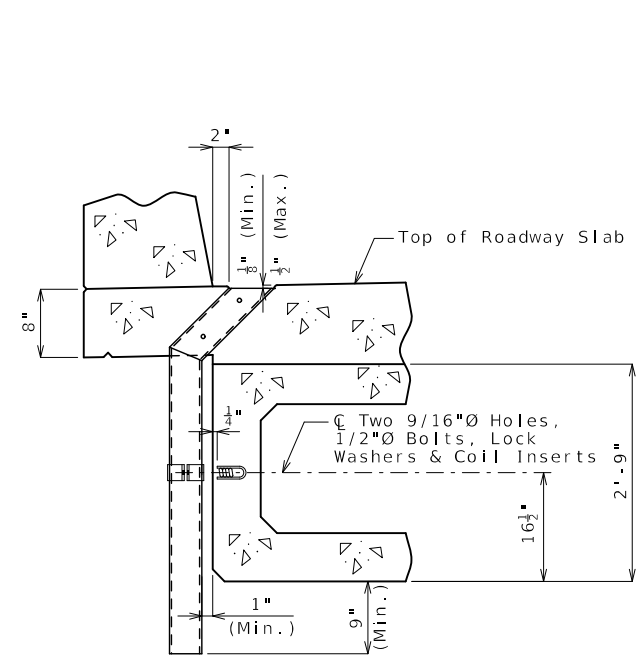
- (4) 3/4"Ø (Min.) Coil Tie Rods 2'-6" long (2'-0" long at exterior face of exterior beams)

STATE OF MISSOURI
TYLER R. LINDSAY
NUMBER PE-2019000128
PROFESSIONAL ENGINEER
DATE PREPARED: 8/2/2024
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COUNTY BUTLER
JOB NO. JSE0115
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9426

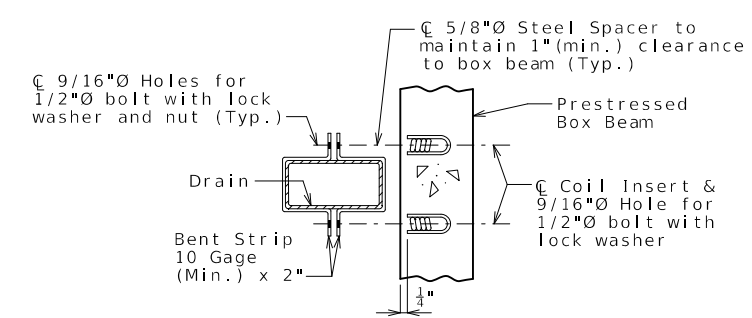
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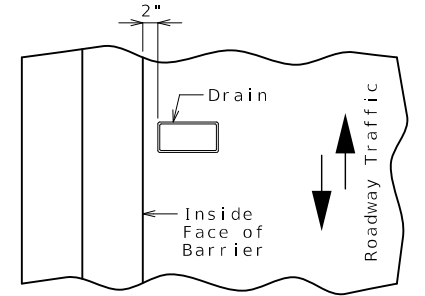
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



PART SECTION NEAR DRAIN

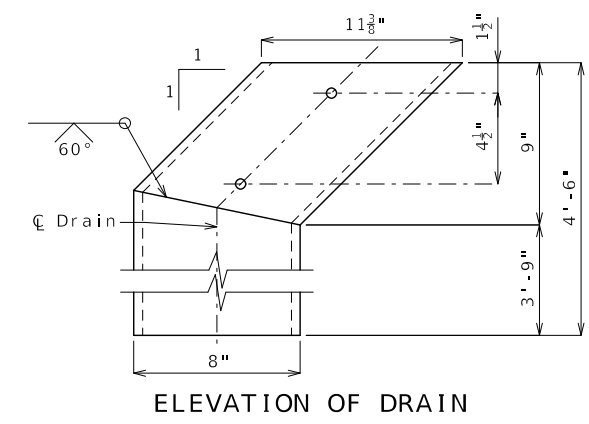


PART SECTION SHOWING BRACKET ASSEMBLY

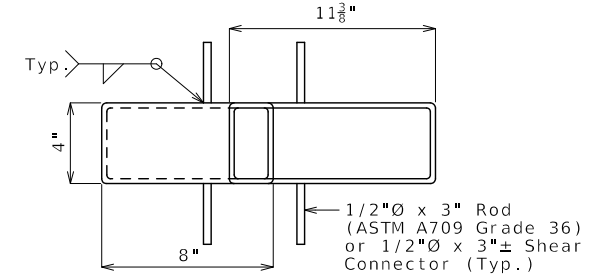


PART PLAN OF SLAB AT DRAIN

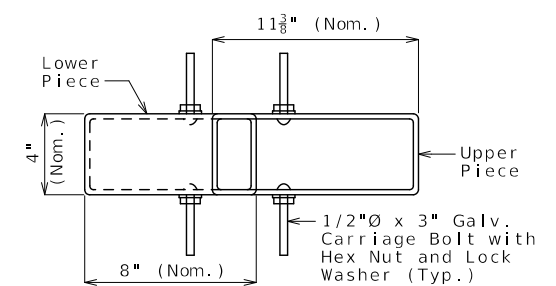
SLAB DRAINS



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

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

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

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

Reinforcing steel shall be shifted to clear drains.

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

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

All 1/2"Ø bolts shall be ASTM A307.

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

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

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

The bolts required to attach the slab drain bracket assembly to the prestressed beam shall be supplied by the prestressed beam fabricator.

Notes for Steel Drain:

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

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

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

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

Minimum reinforced wall thickness shall be 1/4 inch.

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

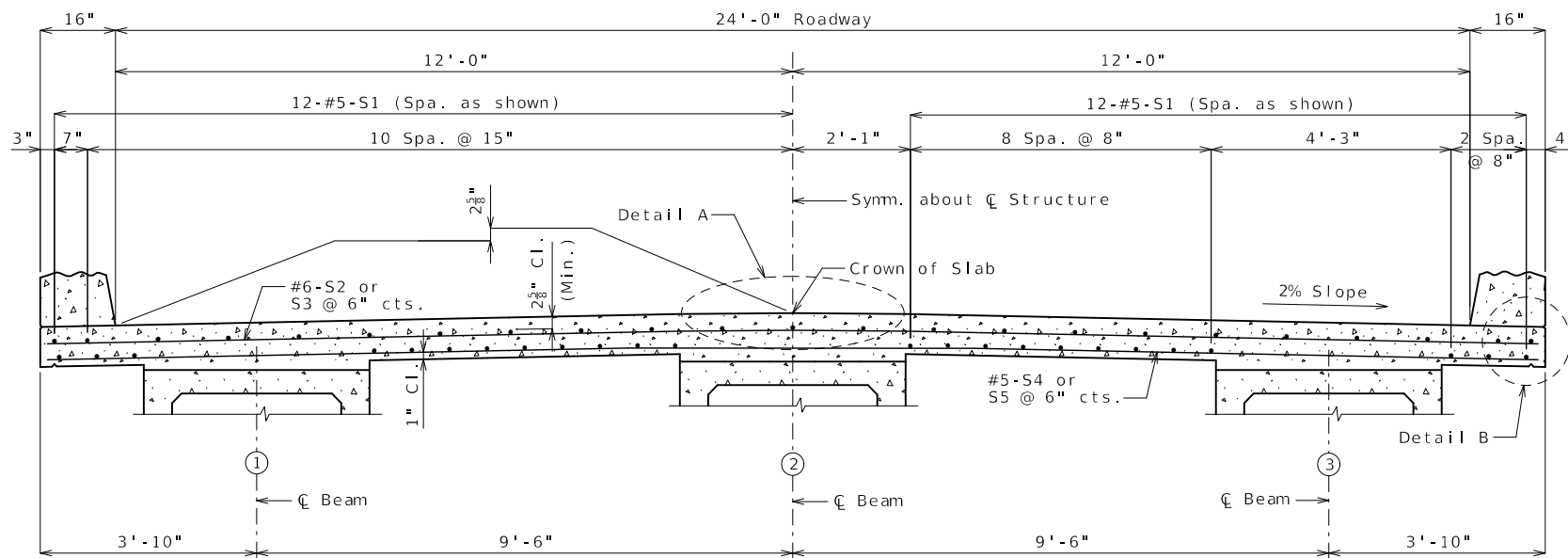
The color of the slab drain shall be gray (Federal Standard 26373). The color shall be uniform throughout the resin and any coating used.

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

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

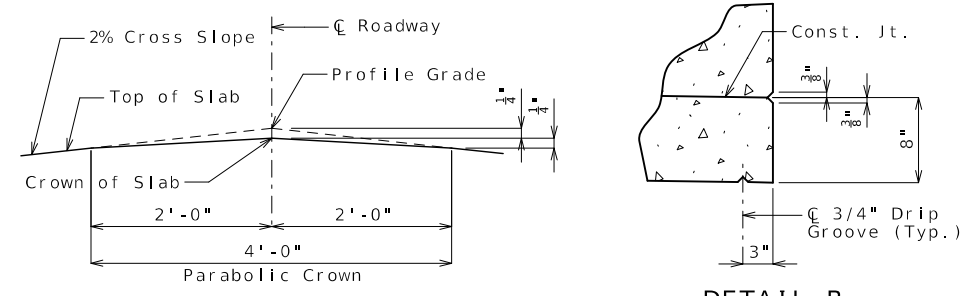
Both upper and lower drain pieces shall be rigidly connected to each other. Drain flow shall not be obstructed. Approval of the engineer is required.

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CONTRACT ID.			
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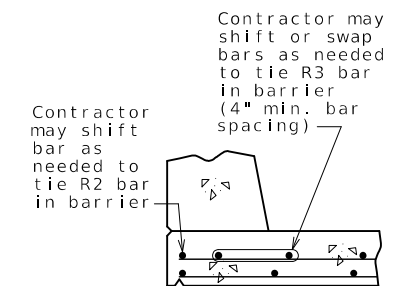
SECTION THRU SLAB

Use minimum lap of 3'-3" for #5 longitudinal bars.



DETAIL A

DETAIL B

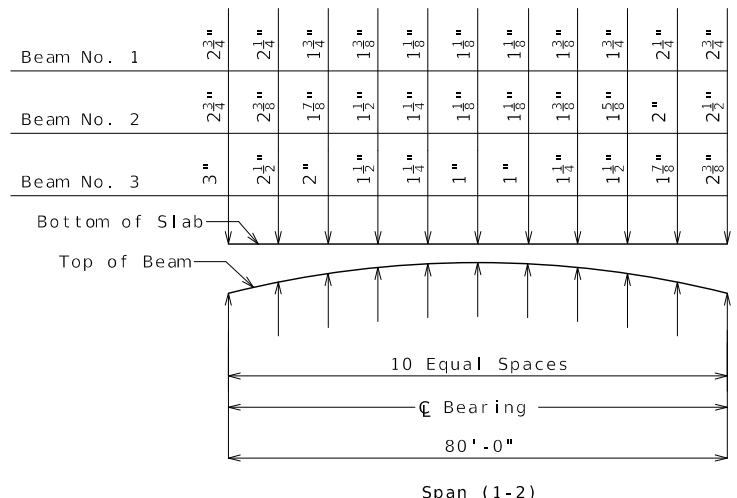


OPTIONAL SHIFTING TOP BARS AT BARRIER

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

Beam Number	Span (1-2) (80'-0" @ Brg. - @ Brg.)										
	@ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	@ Brg.
1	316.78	316.84	316.89	316.93	316.96	316.97	316.96	316.93	316.89	316.84	316.78
2	316.96	317.03	317.08	317.12	317.14	317.15	317.14	317.11	317.06	317.00	316.93
3	316.81	316.86	316.91	316.94	316.96	316.96	316.95	316.92	316.87	316.81	316.75

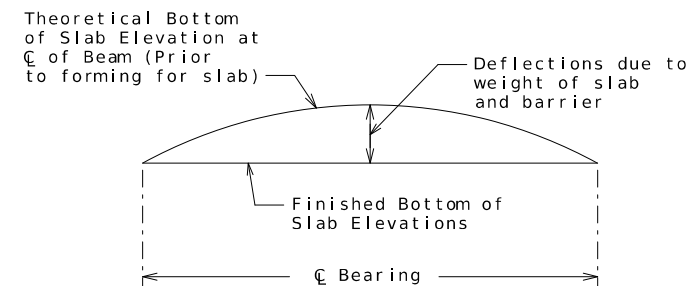
Elevations are based on a constant slab thickness of 8" and include allowance for theoretical dead load deflections due to weight of slab and barrier.



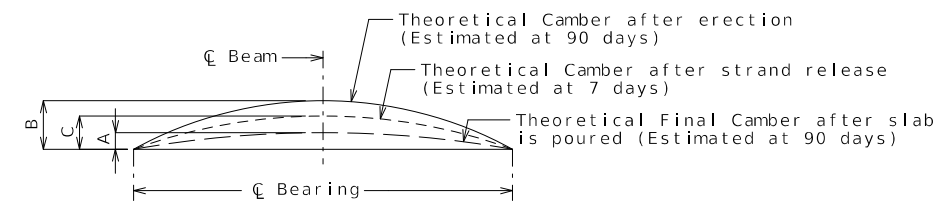
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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

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



TYPICAL SLAB ELEVATIONS DIAGRAM



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

BEAM CAMBER DIAGRAM

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

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

Notes:

For reinforcement of barrier not shown, see Sheet No. 11.

For details of optional stay-in-place forms, see Sheet No. 2.

Slab shall be poured upgrade from end to end at a minimum rate of 25 cubic yards per hour.

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

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

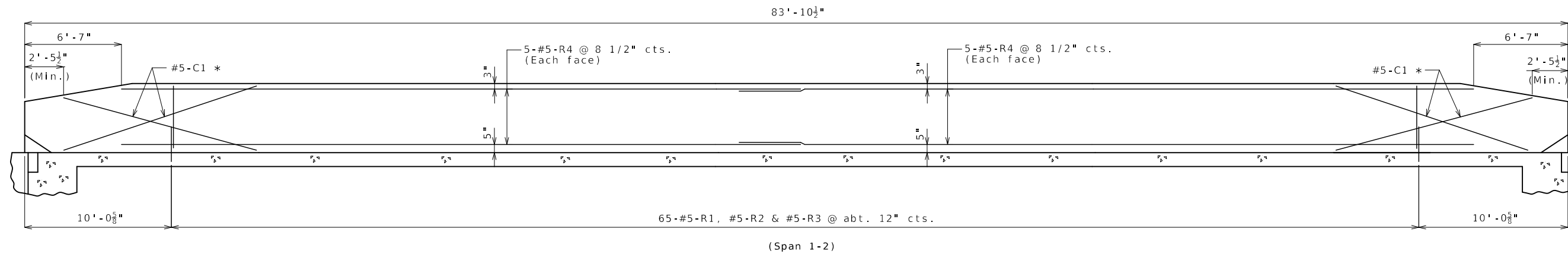
For details and locations of slab drains, see Sheet No. 9.

TYLER R. LINDSAY
 LICENSE NUMBER PE-2019000128
 PROFESSIONAL ENGINEER

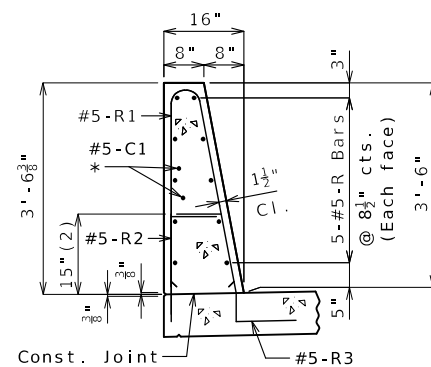
DATE PREPARED		8/2/2024	
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158	MO	BR	10
COUNTY			
BUTLER			
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CONTRACT ID.			
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BRIDGE NO.			
A9426			
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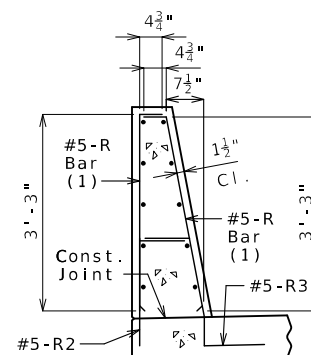
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ELEVATION OF BARRIER
 (Left barrier shown, right barrier similar)
 Longitudinal dimensions are horizontal.



SECTION A-A
 Use a minimum lap of 3'-1" for #5 horizontal barrier bars.
 The cross-sectional area above the slab is 3.52 square feet.
 (2) To top of bar



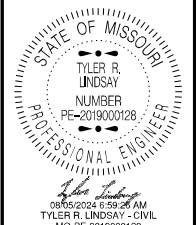
R-BAR PERMISSIBLE ALTERNATE SHAPE
 (1) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

General Notes:

- * Slip-formed option only.
- Conventional forming or slip forming may be used.
- Top of barrier shall be built parallel to grade.
- All exposed edges of barrier shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.
- Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.
- Concrete in barrier shall be Class B-1.
- Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of slab to end of slab.

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

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

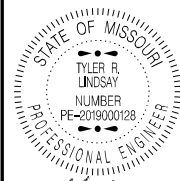


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JOB NO. JSE0115	
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BRIDGE NO. A9426	

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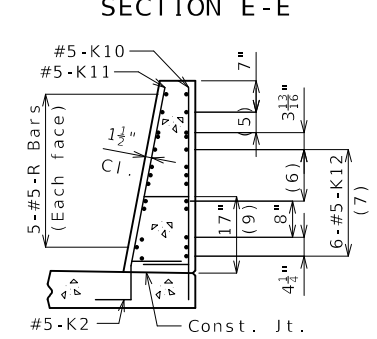
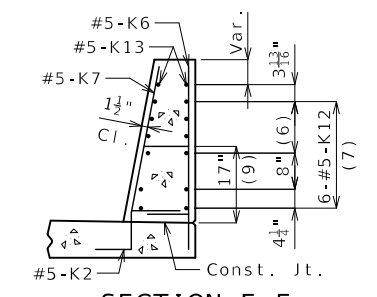
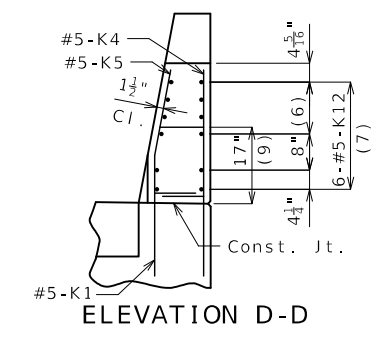
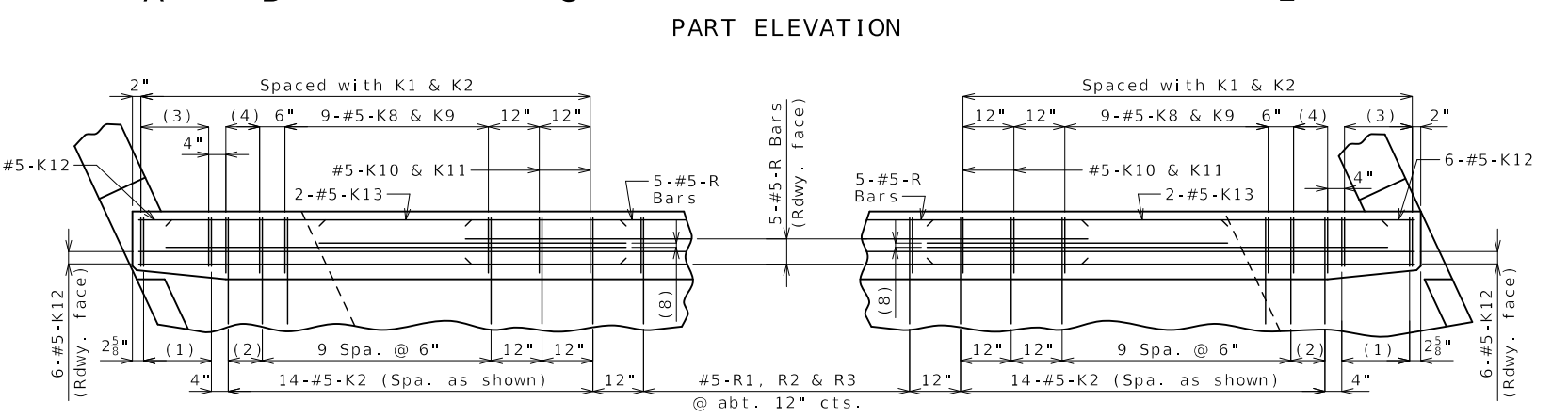
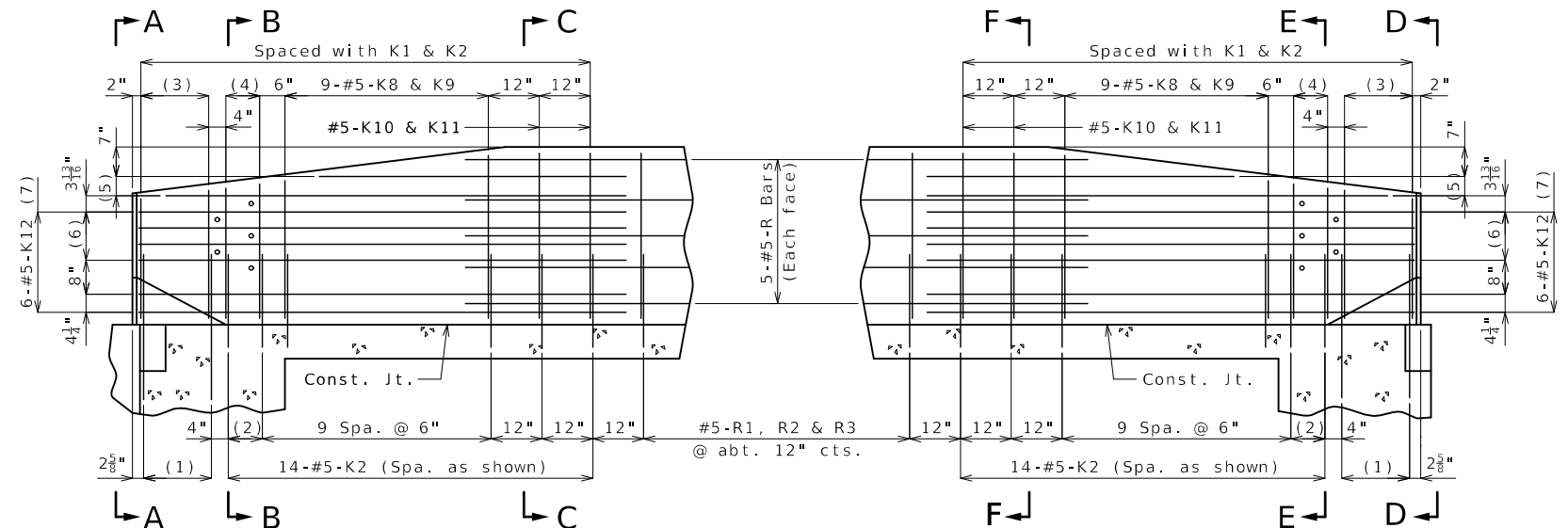
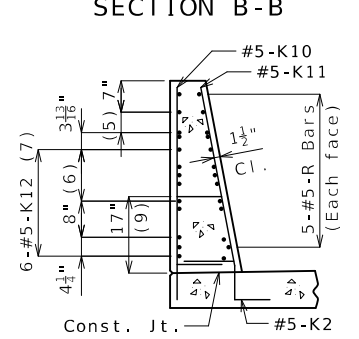
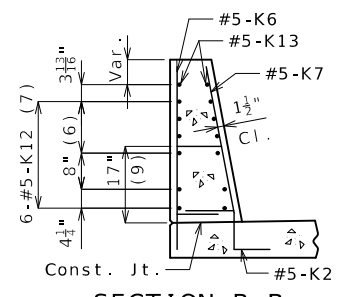
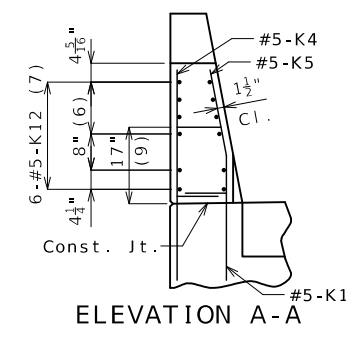
ROUTE 158 STATE MO
DISTRICT SHEET NO. BR 12

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105 WEST CAPITOL JEFFERSON CITY, MO 65102
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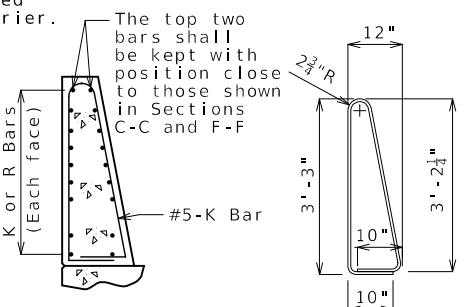


PART PLAN
(Top of barrier not shown for clarity.)

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

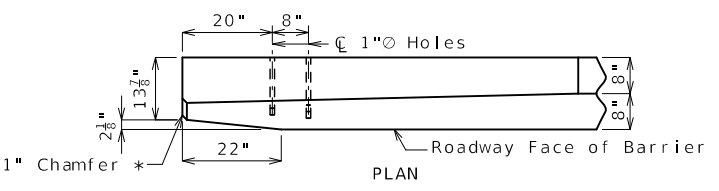
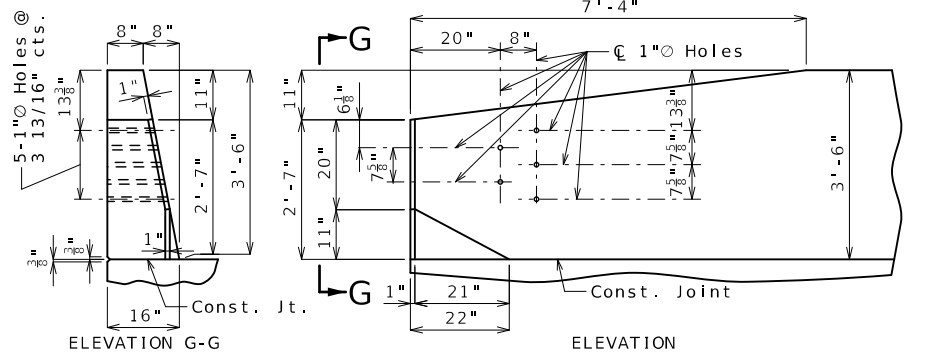
General Notes:
Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators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

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2".
Use a minimum lap of 3'-1" between horizontal K bars and R bars.



K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE
(Other K bars not shown for clarity)

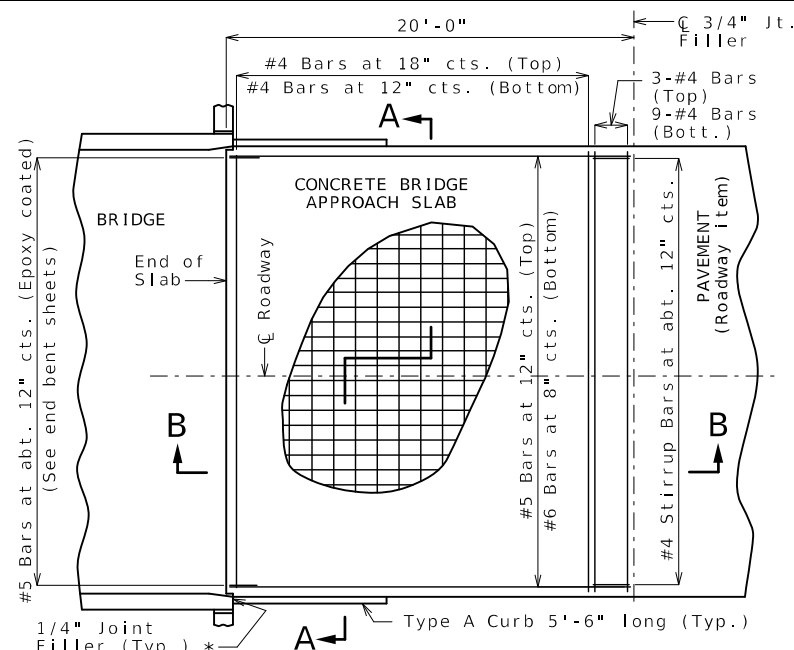
The K10-K11 bar combination may be furnished as one bar as shown, at the contractor's option.
All dimensions are out to out.



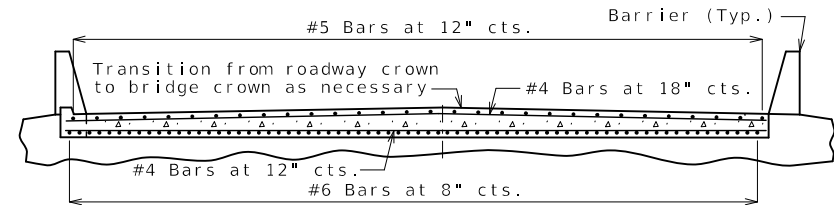
DETAILS OF GUARD RAIL ATTACHMENT

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

TYPE D BARRIER AT END BENTS
(Left barrier shown, right barrier similar)

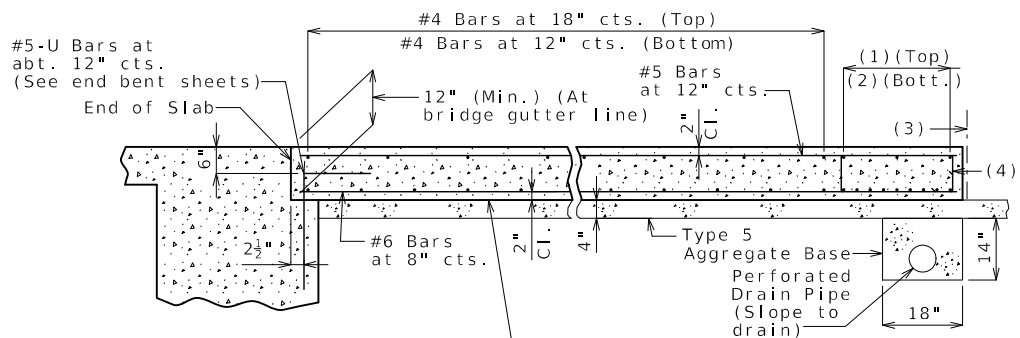


PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



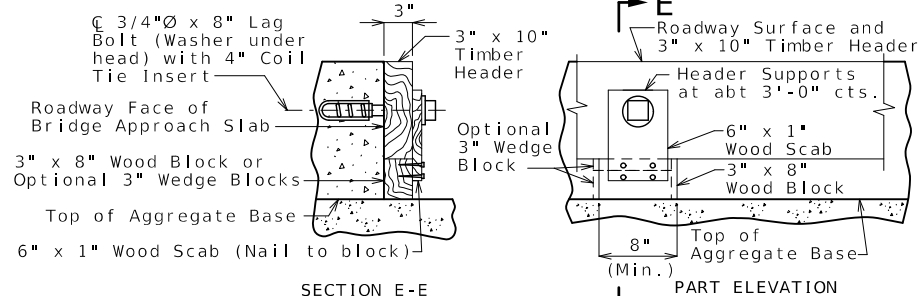
SECTION A-A

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

2 Layers of 4 Mil Polyethylene Sheetting between bridge approach slab and granular base in accordance with ASTM E 1745 Performance Class A

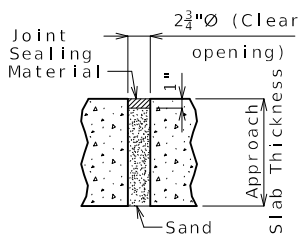


SECTION E-E

DETAILS OF TIMBER HEADER

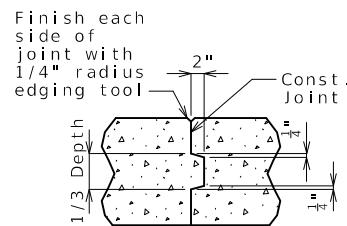
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

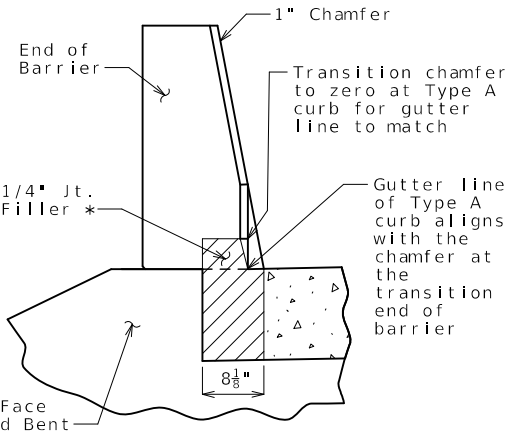


UNDERSEAL ACCESS HOLE DETAIL

(If required)



CONSTRUCTION JOINT DETAIL



SECTION BETWEEN CURB AND BARRIER

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

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 Type A curb and end of barrier and fill face with sealant in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

General Notes:

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

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

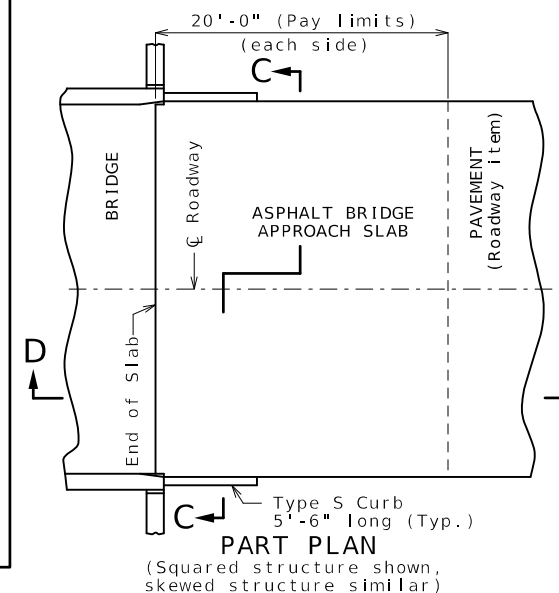
MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

- Concrete Bridge Approach Slab
- Asphalt Bridge Approach Slab

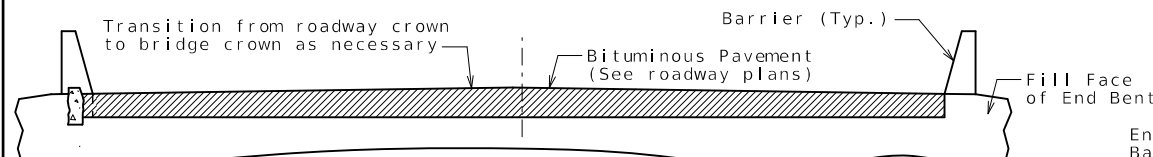
Notes For Asphalt Slab Only:

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

Application of tack is required between lifts per Sec 403.



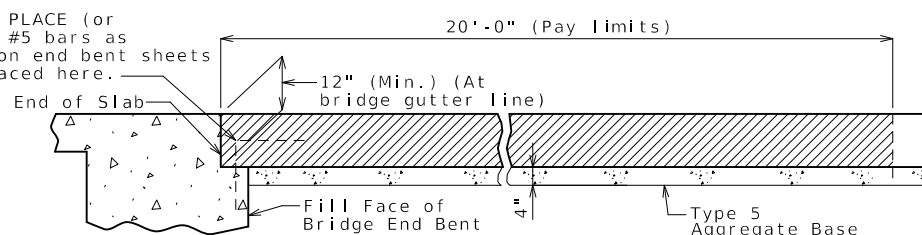
PART PLAN
(Squared structure shown, skewed structure similar)



SECTION C-C

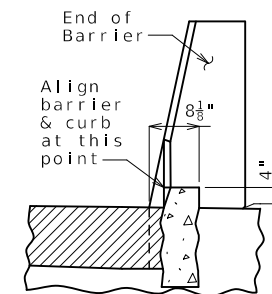
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.

DO NOT PLACE (or order) #5 bars as shown on end bent sheets and traced here.



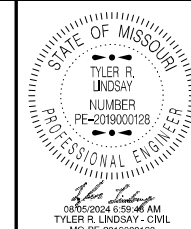
SECTION D-D

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)



4" TYPE S CURB

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



DATE PREPARED	
8/2/2024	
ROUTE	STATE
158	MO
DISTRICT	SHEET NO.
BR	13

COUNTY	
BUTLER	
JOB NO.	
JSE0115	
CONTRACT ID.	

PROJECT NO.	

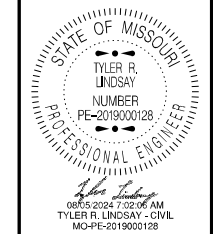
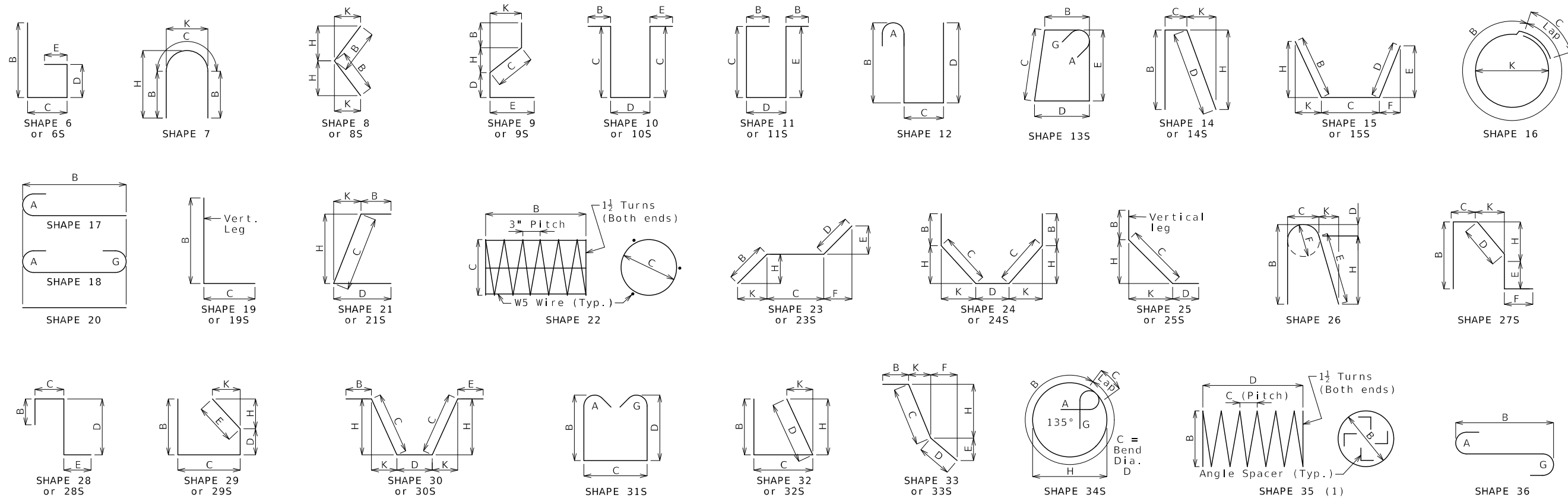
BRIDGE NO.	
A9426	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

BRIDGE APPROACH SLAB (MINOR)



DATE PREPARED 8/2/2024	
ROUTE 158	STATE MO
DISTRICT BR	SHEET NO. 14
COUNTY BUTLER	
JOB NO. JSE0115	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9426	

DESCRIPTION
DATE

Finished Bend Diameters D and Hook Dimensions

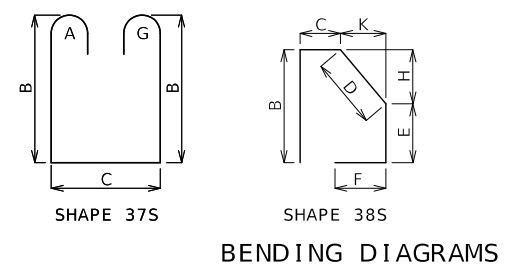
Standard Pin Bend Shapes

Size	Case	D	A or G			J
			90°	180°	180°	
#4	1	3"	8"	6"	4"	
#5	1	3 3/4"	10"	7"	5"	
#6	1	4 1/2"	12"	8 1/4"	6"	
	2	5 1/4"	14"	9 3/4"	7"	
#7	2	6"	15"	11 1/2"	8 3/4"	
	3	7"	16"	12 1/2"	9 3/4"	
#8	2	8"	17"	13 1/4"	10"	
	3	9 1/2"	19 1/2"	15 1/2"	11 3/4"	
#9	1	10 3/4"	22"	17 1/2"	13 1/4"	
#10	1	12"	24 1/2"	19 1/2"	14 7/8"	
#14	1	18 1/4"	31 1/4"	27 1/2"	21 5/8"	
#18	1	24"	41 1/2"	36 1/4"	28 1/2"	

Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G			H	J
			90°	135°	180°		
#4	2	2"	4 1/2"	4 1/2"	5"	2 5/8"	3"
	3	3"	5"	5 1/4"	6"	3"	4"
#5	2	2 1/2"	5 3/4"	5 3/4"	5 3/4"	3 3/8"	3 3/4"
	3	3 3/4"	6 1/4"	6 1/2"	7"	3 5/8"	5"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 5/8"	6"

Applicable for all grades of steel.
Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.



BENDING DIAGRAMS

All dimensions are out to out. (1) Shall be a deformed or plain spiral bar or wire.

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

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

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

Reinforcing Steel Totals (Pounds)

Size	Substructure			Superstructure			Entire Bridge	
	Plain	Epoxy	Slab	Barrier	Slip Form	Plain	Epoxy	
W5	0	0	0	0	0	0	0	
4	0	0	710	0	0	0	710	
5	0	0	9,790	4,788	100	0	14,678	
6	0	0	11,717	0	0	0	11,717	
7	0	0	3,046	0	0	0	3,046	
8	0	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	
By Type	0	0	25,263	4,788	100	0	30,151	

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Table with 14 columns: No. Req., Size/Mark, Location, Codes (C, SH, V), Dimensions (B, C, D, E, F, H, K), Nom. Length (ft in.), Actual Length (ft in.), Weight (lb). Includes sections for Superstructure, Slab, and Barrier.

Table with 14 columns: No. Req., Size/Mark, Location, Codes (C, SH, V), Dimensions (B, C, D, E, F, H, K), Nom. Length (ft in.), Actual Length (ft in.), Weight (lb). Includes sections for Barrier and Slip-Form.

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

All bars shall be Grade 60.

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

SH = Required shape, see bending diagrams.

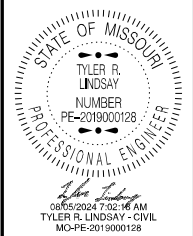
V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

For bending diagrams and steel reinforcing totals, see Sheet No. 14.

BILL OF REINFORCING STEEL

Detailed Apr. 2024
Checked June 2024

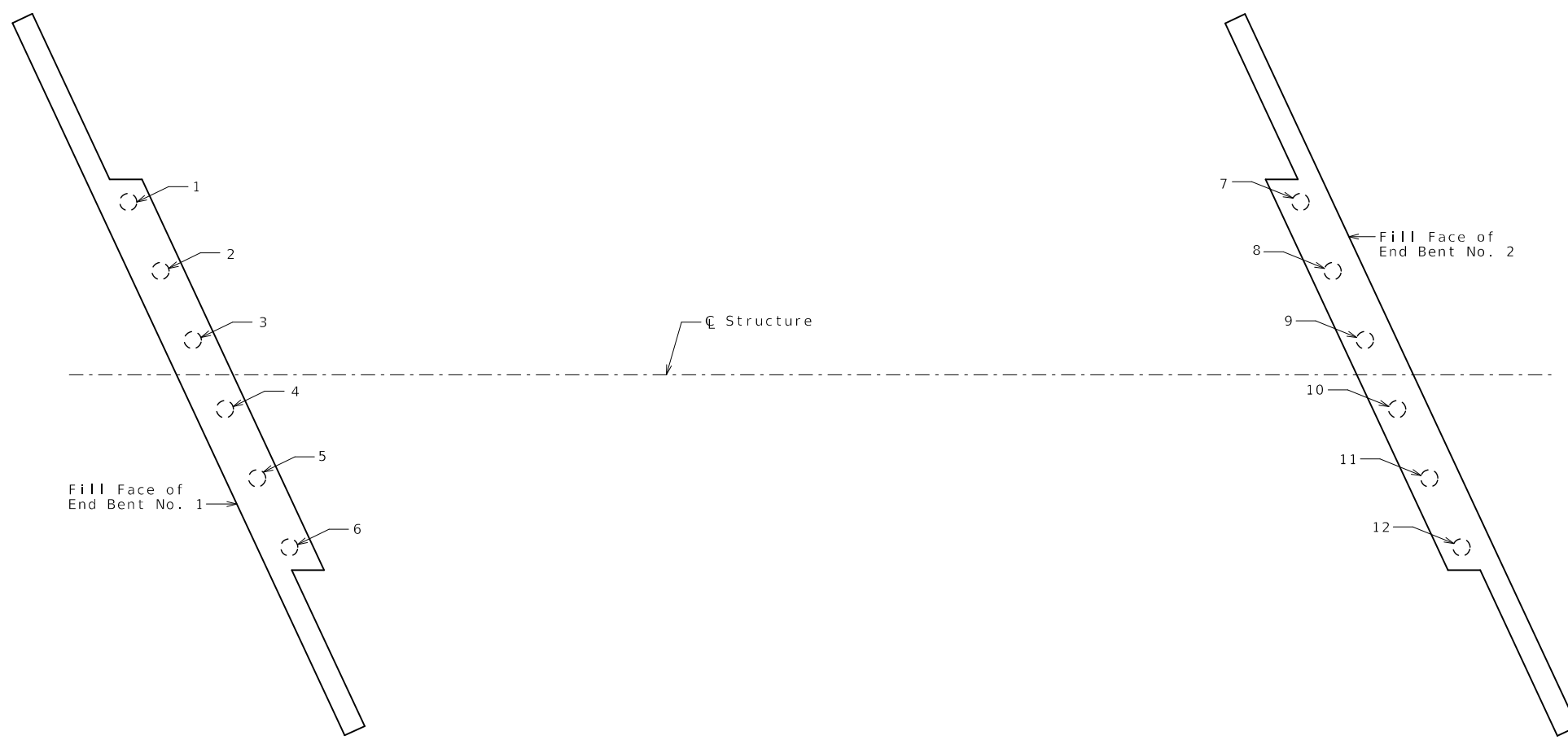
Note: This drawing is not to scale. Follow dimensions.



DATE PREPARED: 8/2/2024
ROUTE: 158 STATE: MO
DISTRICT: BR SHEET NO.: 15
COUNTY: BUTLER
JOB NO.: JSE0115
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9426

Table with 2 columns: DESCRIPTION, DATE. Includes vertical lines for description entries.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT Logo
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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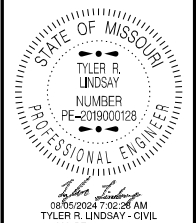
PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 1
1					
2					
3					
4					
5					
6					

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. 2
7					
8					
9					
10					
11					
12					

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

This sheet to be completed by MoDOT construction personnel.



DATE PREPARED
 8/2/2024
 ROUTE 158 STATE MO
 DISTRICT BR SHEET NO. 16
 COUNTY BUTLER
 JOB NO. JSE0115
 CONTRACT ID.
 PROJECT NO.
 BRIDGE NO. A9426

DESCRIPTION	DATE

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



DATE PREPARED
8/2/2024

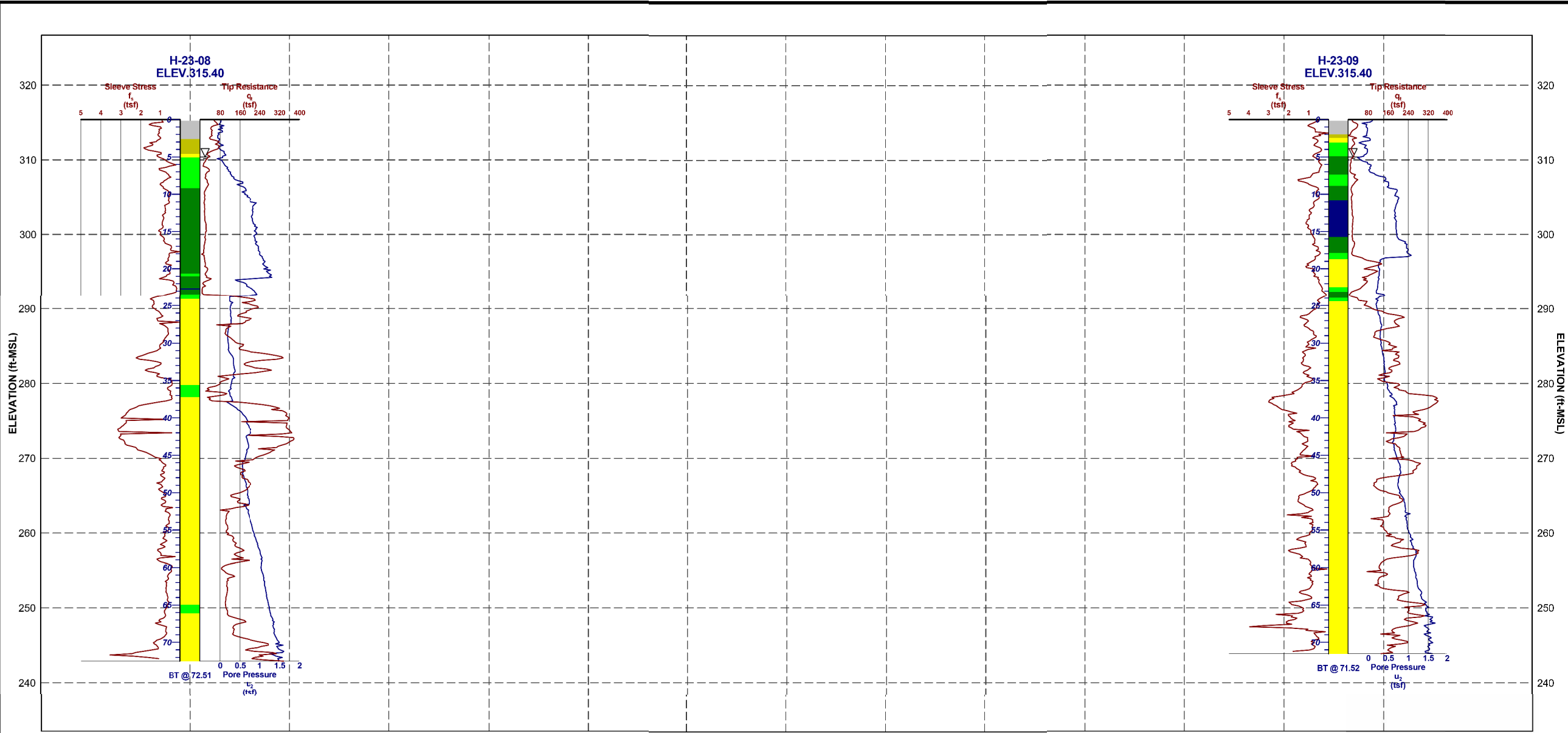
ROUTE 158 STATE MO
DISTRICT BR SHEET NO. 17

COUNTY BUTLER
JOB NO. JSE0115
CONTRACT ID.

PROJECT NO.
BRIDGE NO. A9426

DESCRIPTION	DATE

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

- Sensitive, Fine Grained Soils
- Organic Soils, Peats
- Clays-Clay to Silty Clay
- Silt Mixtures-Clay Silt to Silty Clay
- Sand Mixtures-Silty Sand to Sandy Silt
- Sands-Clean Sand to Silty Sand
- Gravelly Sand to Sand
- Very Stiff Clay to Clayey Sand
- Very Stiff Fine Grained Soils

ELECTRONIC CONE PENETROMETER SOUNDING
 C-3 SOUNDING NUMBER 123.0
 ELEVATION AT GS 123.0

SLEEVE FRICTION
 DOWNHOLE SHEAR WAVE VELOCITY 1265
 WATER LEVEL INFERRED FROM PORE PRESSURES
 WATER LEVEL MEASURED DOWNHOLE
 TIP RESISTANCE
 PORE PRESSURE
 BT CPT TERMINATION DEPTH 72.51
 XXX CPT REFUSAL

Robertson et al (1990) Q_t vs F_s - MAI = 10

SUBSURFACE PROFILE	PROJECT NUMBER	
	PROJECT: SE0115	
LOCATION: 2.0 Miles East of Harvielle	DATE	9/28/23

BORING DATA

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