

A.A.D.T. - 2025 = 3623
A.A.D.T. - 2044 = 5978
D.H.V. = 600
T = 11.8%
V = 55 M.P.H.
D = 50%
MAJOR COLLECTOR

NO RIGHT OF WAY TO BE ACQUIRED

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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

KEY MAP
LOCATION OF CASS COUNTY



DESCRIPTION	NUMBER
TITLE SHEET -----	1
TYPICAL SECTIONS (TS) (1 SHEET)----	2
QUANTITIES (QU) (3 SHEETS)-----	3
PLAN SHEET (PS)-----	4
TRAFFIC CONTROL SHEETS (TC)-----	5-6
BRIDGE DRAWINGS (B)	
A2251-----	1-15



08/21/2015 8:10:07 AM
THANKAM MATHEW - CIVIL
MO-PE-2014000056

DATE PREPARED	
8/19/2026	
ROUTE	STATE
D	MO
DISTRICT	SHEET NO.
KC	1
COUNTY	
CASS	
JOB NO.	
JKU0109	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO. A2251

[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

BEGINNING OF PROJECT	STA. 551 + 75.23
END OF PROJECT	STA. 559 + 25
APPARENT LENGTH	749.76 FEET
EQUATIONS AND EXCEPTIONS:	

TOTAL CORRECTIONS	0	FEET
NET LENGTH OF PROJECT	749.76	FEET
STATE LENGTH	0.142	MILES
FOR INFORMATION ONLY		
ESTIMATED DISTURBED ACRES	0	ACRES



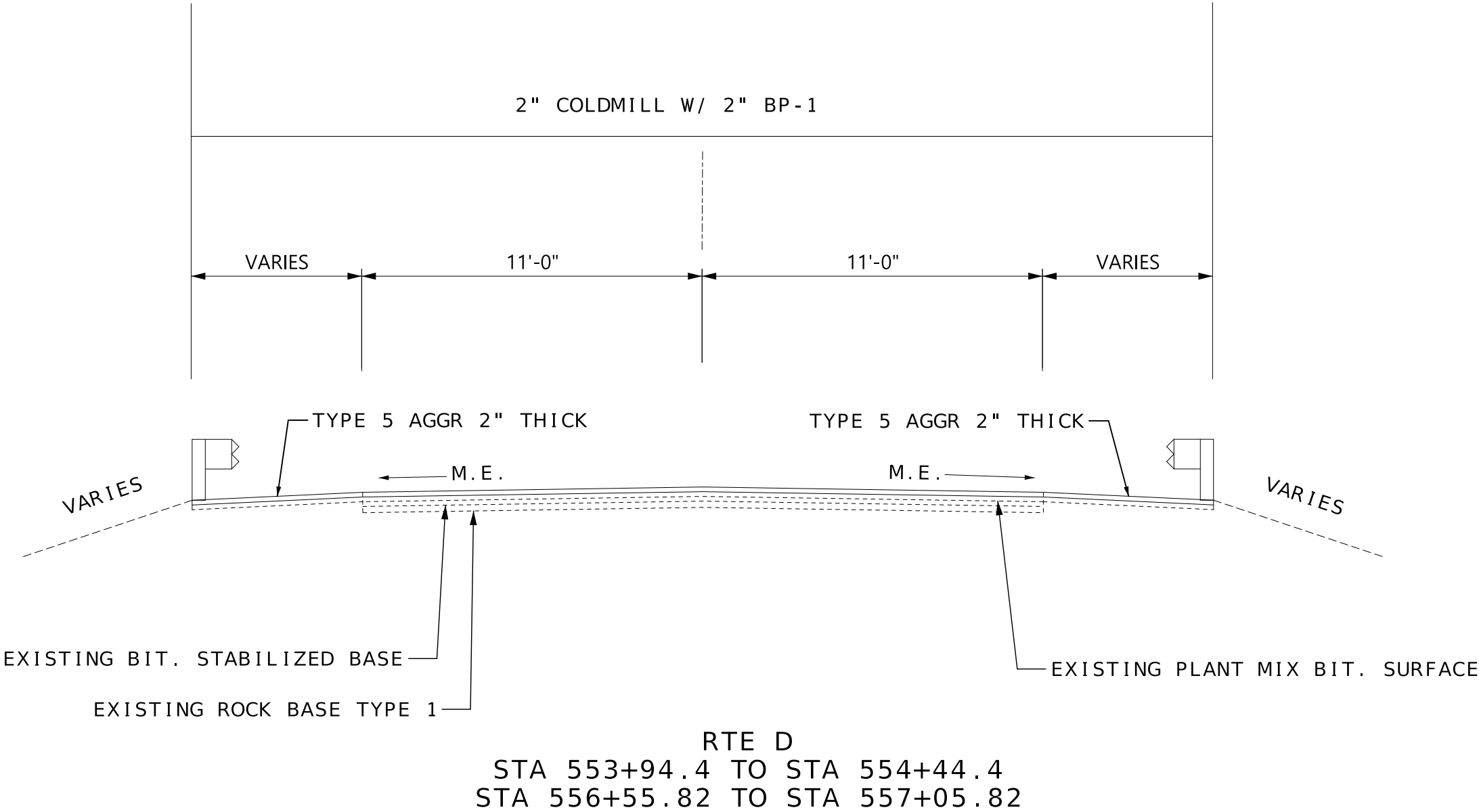
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

JEFFERSON
1-888-ASK-MODOT

TYPICAL SECTION

℄ ROUTE D



M.E. - MATCH EXISTING

ESTIMATE FACTORS	
FOR INFORMATION ONLY	
BP-1 W/ PG 64-22	1.989 TON/CY
TACK COAT	0.1 GAL/SQYD

NOT TO SCALE



DATE PREPARED	
8/24/2026	
ROUTE	STATE
D	MO
DISTRICT	SHEET NO.
KC	2
COUNTY	
CASS	
JOB NO.	
JKU0109	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A2251	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

PAVEMENT MARKING - CLASS I HIGHBUILD MARKING PAINT TYPE P BEADS						
SHEET NO	BEGIN STA	END STA	LENGTH LF	EDGELINE 4" SOLID WHITE LF	CENTERLINE 4" INT. YELLOW LF	REMARKS
4	553+94.4	556+24.39	230	460	58	RTE D - LT/RT/CTR
			SUB TOTAL	460	58	

CLEARING AND GRUBBING		
STA	STA	AREA ACRE
554+64.4	555+00	0.13
556+00	556+35.82	0.09
TOTAL		0.22
PAY TOTAL		1

TEMPORARY EROSION CONTROL							
SHEET	BEGIN STA	END STA	LOCATION	SIDE	SILT FENCE LF	SEDIMENT REMOVAL CY	REMARKS
4	554+30	555+00	RTE D	RT	70	1	NORTHWEST SIDE OF BRIDGE
4	554+27.11	555+17.11	RTE D	LT	90	1	NORTHEAST SIDE OF BRIDGE
4	555+83.11	557+23.11	RTE D	LT	140	2	SOUTHEAST SIDE OF BRIDGE
4	556+00	556+80	RTE D	RT	80	1	SOUTHWEST SIDE OF BRIDGE
PAY TOTAL					380	5	

TYPE 5 AGGR 2" THICK						
SHEET NO	BEGIN STATION	END STATION	LENGTH FT	WIDTH FT	TYPE 5 AGGR SY	REMARKS
4	553+03.25	554+47.25	144	8	128.00	RTE D - NW CORNER BR
4	554+02.64	554+84.64	82	8	72.89	RTE D - NE CORNER BR
4	556+18.75	557+00.5	82	8	72.89	RTE D - SW CORNER BR
4	556+56.14	558+38.14	144	8	128.00	RTE D - SE CORNER BR
TOTAL					402	

MOBILIZATION
1 LUMP SUM

SEEDING - COOL SEASON MIXTURES	
QUANTITY	REMARKS
0.6 ACRE	AS DIRECTED BY ENGINEER

PAVEMENT QUANTITIES								
SHEET NO.	BEG STA	END STA	LENGTH FT	WIDTH FT	2" COLD MILL SY	2" BP-1 TONS	TACK COAT GALS	REMARKS
4	553+94.4	554+44.4	50	22	122.22	13.51	12.22	RTE D - 50' BEFORE BRIDGE APPROACH
4	556+55.82	557+05.82	50	22	122.22	13.51	12.22	RTE D - 50' AFTER BRIDGE APPROACH
PAY TOTAL					245	28	25	

CONTRACTOR FURNISHED SURVEYING AND STAKING
TOTAL = 1 LUMP SUM

SUMMARY OF QUANTITIES
SHEET 1 OF 3

STATE OF MISSOURI

THANKAM MATHEW

NUMBER

PE-2014000056

PROFESSIONAL ENGINEER

08/21/2026 09:17 AM

THANKAM MATHEW - CIVIL

MO-PE-2014000056

DATE PREPARED

8/19/2026

ROUTE

D

DISTRICT

KC

STATE

MO

SHEET NO.

3

COUNTY

CASS

JOB NO.

JKU0109

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A2251

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

MoDOT

SIGN	SIZE	AREA	QTY	TOTAL	QTY	TOTAL	SIGN	DESCRIPTION	SIGN	SIZE	AREA	QTY	TOTAL	QTY	TOTAL	SIGN	DESCRIPTION	ITEM	TOTAL	EFFECTIVE: 07-01-2025		
IN.	SQ. FT.	EACH	SQ. FT.	EACH	SQ. FT.	NO.	IN.		SQ. FT.	EACH	SQ. FT.	EACH	SQ. FT.	NO.	NUMBER	QTY		DESCRIPTION				
WARNING SIGNS									GUIDE SIGNS													
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT)	E05-1	36X48	12.00						GORE EXIT	6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)		
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT)	E05-2	48X36	12.00						EXIT OPEN	6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)		
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT)	E05-2a	48X36	12.00						EXIT CLOSED	6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)		
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT)	GO20-1	60X24	10.00						ROAD WORK NEXT XX MILES	6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)		
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)	GO20-2	48X24	8.00						END ROAD WORK	6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)		
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)	GO20-4	36X18	4.50						PILOT CAR FOLLOW ME	6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)		
WO1-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT)	GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW	6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)		
WO1-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT)	GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW	6122020		REPLACEMENT SAND BARREL		
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)	GO20-5aP	36X24	6.00						WORK ZONE (PLAQUE)	6122030		IMPACT ATTENUATOR (RELOCATION)		
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)	MO4-8a	24X18	3.00	2	6.00			52	END DETOUR (SIGN #52)	6122040		WORK ZONE CRASH CUSHION (NARROW)		
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)	MO4-9L	48X36	12.00						DETOUR (LEFT)	6122041		WORK ZONE CRASH CUSHION (RELOCATION)		
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)	MO4-9R	48X36	12.00						DETOUR (RIGHT)	6123001		TRUCK MOUNTED ATTENUATOR (TMA)		
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)	MO4-9P	48X12	4.00						STREET NAME (PLAQUE)	6161012		BUOYS (BOATS KEEP OUT)		
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)	MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)	6161013		BUOYS (NO WAKE)		
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)	MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)	6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)		
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)	REGULATORY SIGNS									6161020		CHANNELIZER (DRUM-LIKE)		
WO1-8	18X24	3.00						CHEVRON (SYMBOL)	R1-1	48X48	13.25						STOP	6161022		CHANNELIZER (CONE)		
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)	R1-2	48TRI.	6.93						YIELD	6161025	10	CHANNELIZER (TRIM-LINE)		
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)	R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)	6161026		CHANNELIZER (VERTICAL PANEL)		
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)	R1-3P	30X12	2.50						ALL WAY (PLAQUE)	6161030	10	TYPE 3 MOVEABLE BARRICADE		
WO3-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)	R2-1	36X48	12.00						SPEED LIMIT XX	6161033		DIRECTION INDICATOR BARRICADE		
WO3-4	48X48	16.00						BE PREPARED TO STOP	R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)	6161040		FLASHING ARROW PANEL		
WO3-5	48X48	16.00						SPEED LIMIT AHEAD	R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)	6161047		TYPE 3 OBJECT MARKER		
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)	R3-3	36X36	9.00						NO TURNS	6161055		SEQUENTIAL FLASHING WARNING LIGHT		
WO4-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)	R3-4	48X48	16.00						NO U-TURN (SYMBOL)	6161070		TUBULAR MARKER		
WO4-1aL	48X48	16.00						MERGE (LEFT)	R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT	6161095		RADAR SPEED ADVISORY SYSTEM		
WO4-1aR	48X48	16.00						MERGE (RIGHT)	R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT	6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED		
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS	R4-1	36X48	12.00						DO NOT PASS	6161098A	2	CHANGEABLE MESSAGE SIGN WITHOUT COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED		
WO5-3	48X48	16.00						ONE LANE BRIDGE	R4-2	36X48	12.00						PASS WITH CARE	6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED		
WO5-5	48X48	16.00						NARROW LANES	R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)	6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM		
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)	R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)	6162002		TEMPORARY LONG-TERM RUMBLE STRIPS		
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)	R5-1	30X30	6.25						DO NOT ENTER			TEMPORARY TRAFFIC BARRIER, CONTRACTOR FURNISHED/RETAINED		
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)	R5-1a	36X24	6.00						WRONG WAY	6173600D		TEMP. TRAFFIC BARRIER ANCHORED, CONTRACTOR FURNISHED/RETAINED		
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)	R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)			TEMP. TRAFFIC BARRIER STIFFNESS TRANSITION CONTRACTOR FURNISHED/RETAINED		
WO8-1	48X48	16.00						BUMP	R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)	6173700B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION, CONTRACTOR FURNISHED/RETAINED		
WO8-2	48X48	16.00						DIP	R6-2L	24X30	5.00						ONE WAY (LEFT)			RELOCATING TEMPORARY TRAFFIC BARRIER		
WO8-3	48X48	16.00						PAVEMENT ENDS	R6-2R	24X30	5.00						ONE WAY (RIGHT)	6175010A		RELOCATING TEMP. TRAFFIC BARRIER ANCHORED		
WO8-4	48X48	16.00						SOFT SHOULDER	R9-9	24X12	2.00						SIDEWALK CLOSED	6175013		RELOCATING TEMP. TRAFFIC BARRIER STIFFNESS		
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)	R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE			RELOCATING TEMP. TRAFFIC BARRIER HEIGHT		
WO8-6	48X48	16.00						TRUCK CROSSING	R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE	6174000A		TEMPORARY RAISED PAVEMENT MARKER		
WO8-6c	48X48	16.00						TRUCK ENTRANCE										6175020A		TEMPORARY TRAFFIC SIGNALS		
WO8-7	36X36	9.00						LOOSE GRAVEL										9029400		TEMPORARY TRAFFIC SIGNALS AND LIGHTING		
WO8-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL	R10-6	24X36	6.00						STOP HERE ON RED (45° ARROW)	9029401				
WO8-9	48X48	16.00						LOW SHOULDER	R11-2	48X30	10.00	2	20.00			29	ROAD CLOSED					
WO8-11	48X48	16.00						UNEVEN LANES	R11-3a	60X30	12.50	4	50.00			55	ROAD CLOSED XX MILES AHEAD					
WO8-12	48X48	16.00						NO CENTER LINE									LOCAL TRAFFIC ONLY					
WO8-15	48X48	16.00						GROOVED PAVEMENT	R11-4	60X30	12.50						ROAD CLOSED TO THRU TRAFFIC					
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)	CONST-3A	60X48	20.00						FINE SIGN					
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)	CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)					
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)	MISCELLANEOUS SIGNS													
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)	SPECIAL	96X48	32.00	1	32.00			56a	ROAD CLOSED 9 MILES AHEAD					
W10-1																						

STA 553+03.25 TO STA 554+47.25 RT
STA 554+02.64 TO STA 554+84.64 LT
STA 556+18.75 TO STA 557+00.5 RT
STA 556+56.14 TO STA 558+38.14 LT

BUILD 209 CUYD TYPE 2 ROCK BLANKET
(2'-0" THICK) W/ GEOTEXTILE FABRIC
STA 556+00 TO STA 556+35.82

BUILD TEMPORARY SILT FENCE
STA 554+60 TO STA 555+00 RT

BUILD TEMPORARY SILT FENCE
STA 556+00 TO STA 556+80 RT

20' OPTIONAL BR. APPROACH SLAB
*SEE BRIDGE PLANS

NORTH LIMIT 2" MILL/FILL BP-1
STA. 553+94.4

DITCH LINE

IMPROVEMENTS BEGIN AT
STA 552+59 @ RTE D

— DITCH LINE

— 4" WHITE
STA 553+94.4 TO 556+24.82

— 20' OPTIONAL BR. APPROACH SLAB
*SEE BRIDGE PLANS

— STA 554+64.4

— BUILD TEMPORARY SILT FENCE
STA 554+27.11 TO STA 555+17.11

— BRIDGE NO.
A2251

— BUILD TEMPORARY SILT FENCE
STA 555+83.11 TO STA 557+23.11 LT

— DITCH LINE

—SOUTH LIMIT 2" MILL/FILL BP-1
STA. 556+24.82

— IMPROVEMENTS END AT
STA 558+44.39

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.

PAVEMENT SAWCUTS AT
STA 554+64.4 & STA 556+55.82

BUILD GUARDRAIL NE CORNER BRIDGE A2251
BUILD 1 BRIDGE APPROACH TRANSITION SECTION
BUILD 1 MASH CRASH END TERMINAL

BUILD 304 CUYD TYPE 2 ROCK BLANKET
(2'-0" THICK) W/ GEOTEXTILE FABRIC
STA 554+64.4 TO 555+00

BUILD GUARDRAIL SE CORNER BRIDGE A2251
BUILD 1 BRIDGE APPROACH TRANSITION SECTION
BUILD 50' MGS GUARDRAIL 6' POST
BUILD 1 MASH CRASH END TERMINAL

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.

LEGEND

 20' OPTIONAL BRIDGE APPROACH SLAB
(BRIDGE ITEM)



TYPE 2 ROCK BLANKET & PERMANENT
EROSION CONTROL GEOTEXTILE

(1) SEE STD 609.40S (SHEET NO 3)

(2) PLACE TYPE 2 ROCK BLANKET FLUSH
WITH EXISTING GROUND LINE

(3) SURFACE PREPARATION FOR PLACING
TYPE 2 ROCK BLANKET SHALL BE
SUBSIDIARY TO PAY ITEM 'PLACING
TYPE 2 ROCK BLANKET'

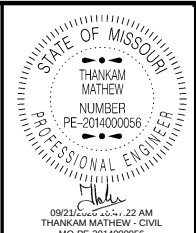
(DND)
MAILBOX AND ENTRANCES

TEMPORARY EROSION CONTROL LEGEND

 SILT FENCE

NOT TO SCALE

PLAN SHEET
SHEET 1 OF 1



DATE PREPARED

9/18/2026

ROUTE D	STATE MO
------------	-------------

DISTRICT	SHEET NO.
KC	4

COUNTY	CASS
--------	------

JOB NO.
IKU0109

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A2251

DESCRIPTION

DATE _____

MISSOURI HIGHWAYS AND TRANSPORTATION



U.I.P. AND REDECK EXISTING (50' - 66' - 50') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS (SKEW: 45° L.A.)

SEC/SUR 28 TWP 45N RGE 33W

Table Showing S2 Bar Lengths			
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
20'-3"	20'-3"	20'-3"	20'-3"

Required Lap Length For Bar Splices **	
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

** Unless otherwise shown.

General Notes:

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Seismic Performance Category A

Design Loading:

H20-44 (1965) (Existing), HS20-44 (New Construction)
35 lb/sf Future Wearing Surface
Earth - 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Fatigue Stress - Case III

Design Unit Stresses:

Class B-1 Concrete (Barrier) $f'c = 4,000$ psi
Class B-2 Concrete (End Bents & Superstructure, except Barrier) $f'c = 4,000$ psi
Reinforcing Steel (ASTM A615 Grade 60) $f_y = 60,000$ psi
Structural Steel (ASTM A709 Grade 50) $f_y = 50,000$ psi

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.

Miscellaneous:

Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface. (Roadway item)

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

Contractor shall verify all dimensions in field before finalizing the shop drawings.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

Rubblized concrete from the existing bridge deck that qualifies as clean fill may be placed on spill slopes at end bents above ordinary high water line (Roadway item).

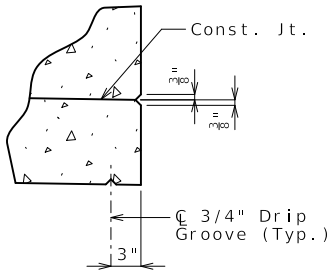
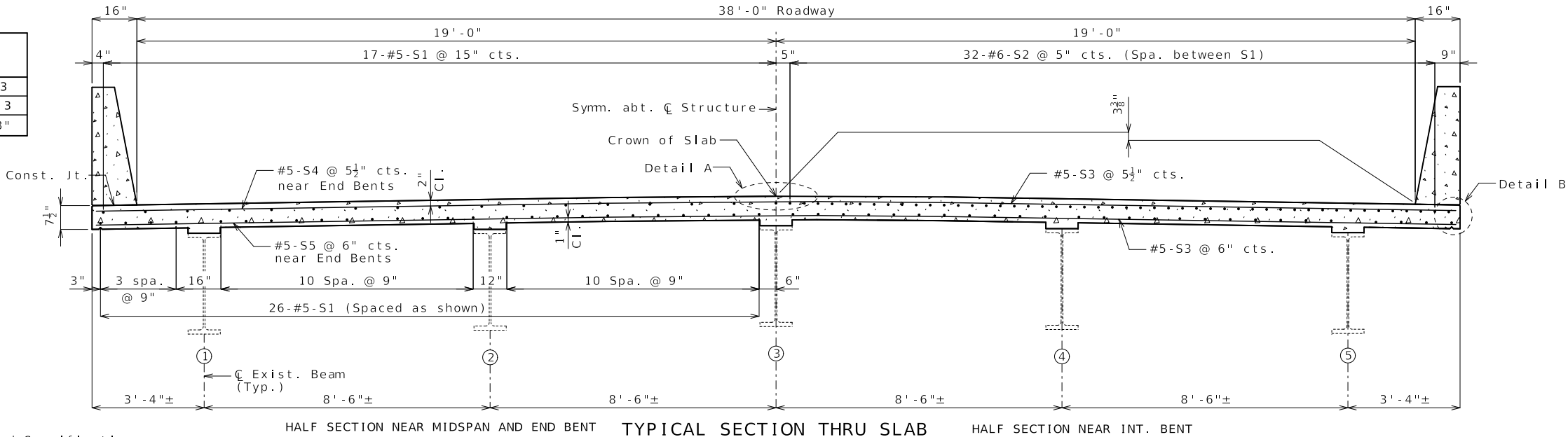
For adjusted beam deflection due to the weight of the new deck and barriers, see Bridge Electronic Deliverables.

Traffic Handling:

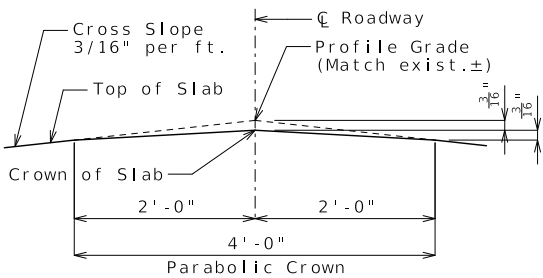
Structure to be closed during construction. See roadway plans for traffic control.

Concrete Protective Coatings:

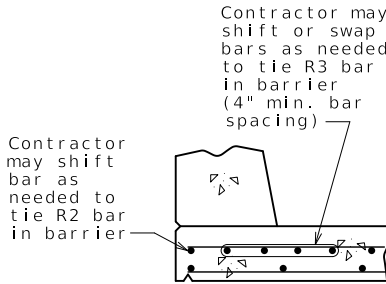
Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.



DETAIL B



DETAIL A



OPTIONAL SHIFTING
TOP BARS AT BARRIER

Estimated Quantities		
Item		Total
Removal of Miscellaneous ACM (Non-Friable)	sq. foot	19
Class 1 Excavation	cu. yard	70
Removal of Existing Bridge Deck	sq. foot	6985
Bridge Approach Slab (Minor)	sq. yard	172
Slab on Steel	sq. yard	775
Type D Barrier	linear foot	383
Substructure Repair (Formed)	sq. foot	40
Substructure Repair (Unformed)	sq. foot	9
Protective Coating - Concrete Bents and Piers (Epoxy)	linear sum	1
Shear Connectors	each	540
Strengthening Existing Beams	linear sum	1
Slab Drain	each	22
Surface Preparation for Applying Epoxy-Mastic Primer	linear sum	1
Gray Epoxy-Mastic Primer	linear sum	1
Non-Destructive Testing	linear foot	57
Vertical Drain at End Bents	each	2
Open Cell Foam Joint Seal	linear foot	55

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	193.0
Reinforcing Steel (Epoxy Coated)	pound	57,770

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.

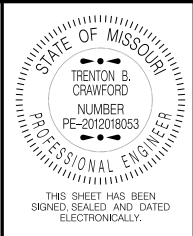
Method of forming the slab shall be in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness Class SC 4 and a finish Type I, II or III.

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

For Optional Stay-In-Place Form Details, see Sheet No. 2.

REPAIRS TO BRIDGE:
ROUTE D OVER MASSEY CREEK

ROUTE D FROM ROUTE Y TO ROUTE 58
ABOUT 1.1 MILES NORTH OF ROUTE Y
BEGINNING STATION 554+64.40± (MATCH EXISTING)



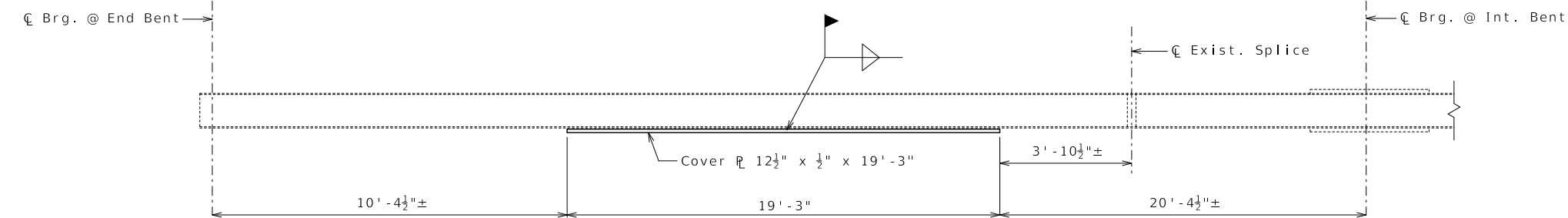
DATE PREPARED 8/7/2026	
ROUTE D	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CASS	
JOB NO. JKU0109	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A22511	

DESCRIPTION	DATE

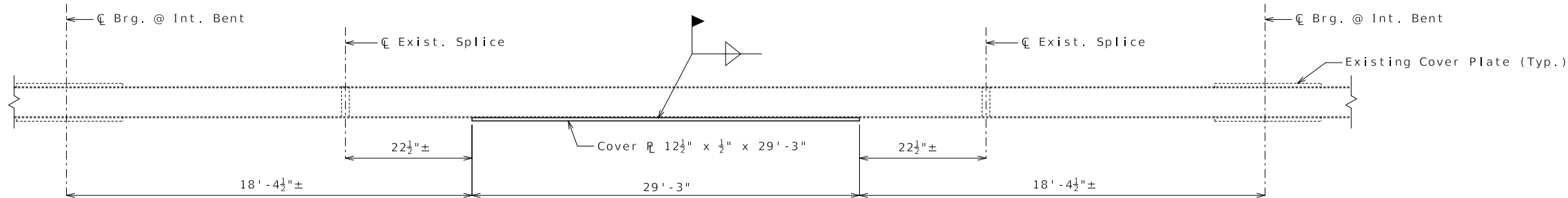
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



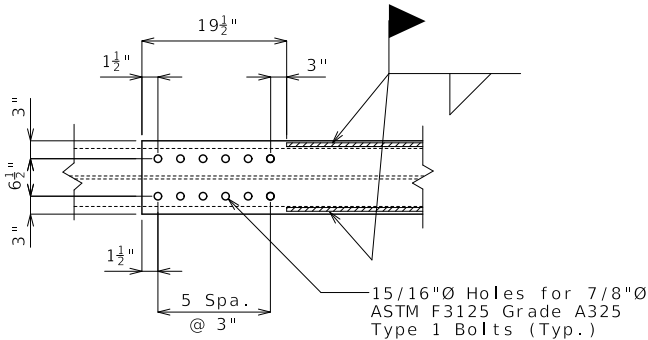
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PART ELEVATION OF EXTERIOR & INTERIOR BEAMS SHOWING COVER PLATE INSTALLATION
SPAN (1-2) AND SPAN (4-3)



PART ELEVATION OF EXTERIOR & INTERIOR BEAMS SHOWING COVER PLATE INSTALLATION
SPAN (2-3)



TYPICAL DETAIL OF THE
ENDS OF COVER PLATES
(BOTTOM VIEW)

Notes:

Beam with end-bolted cover plates shall be installed in the following sequence after existing bridge deck is removed:

1. Drill holes in cover plate and flange.
2. Clean faying surfaces. (See Special Provisions)
3. Install and tighten bolts.
4. Weld cover plate to flange.

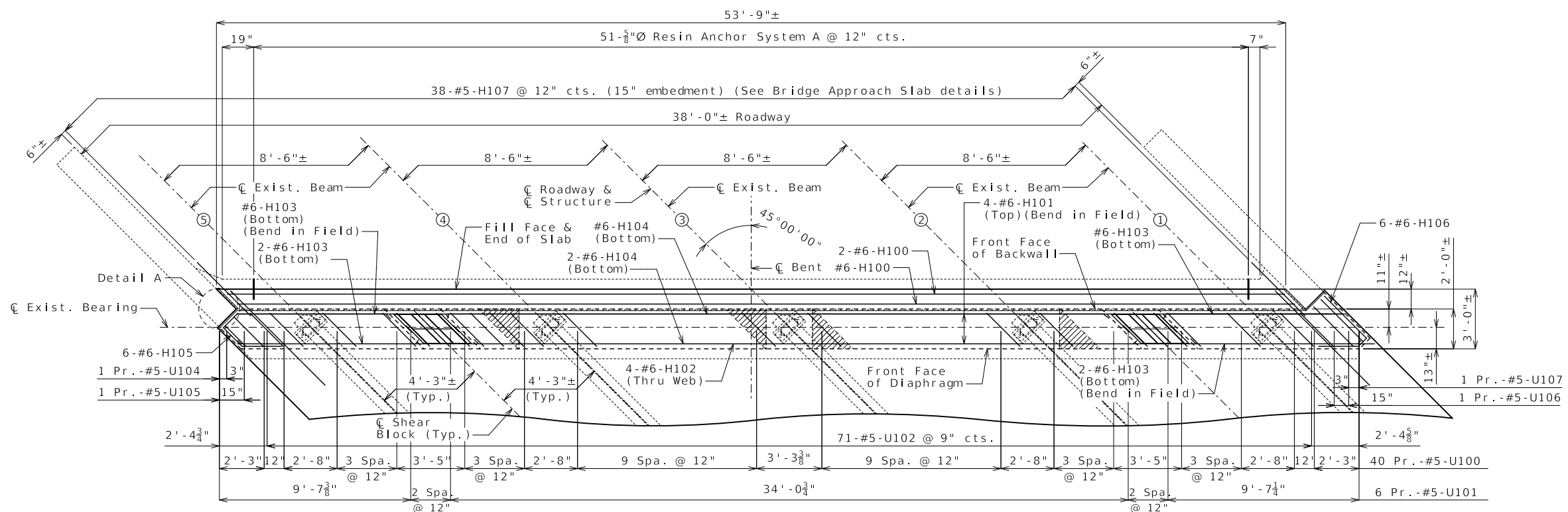
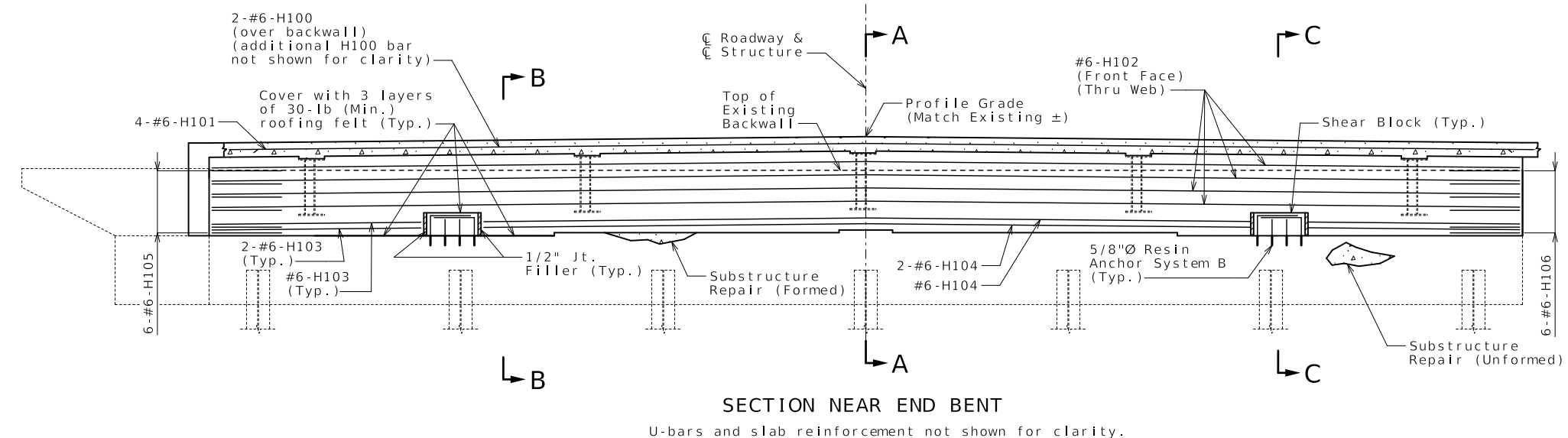
Fabricated Structural Steel shall be ASTM A709 Grade 50, except as noted.

Payment for 7204 pounds of new cover plates, complete in place, will be considered completely covered by the contract lump sum price for Strengthening Existing Beams.

Notch toughness is required for all cover plates.

Contractor shall verify all dimensions in field before finalizing the shop drawings.

STRENGTHENING EXISTING BEAMS

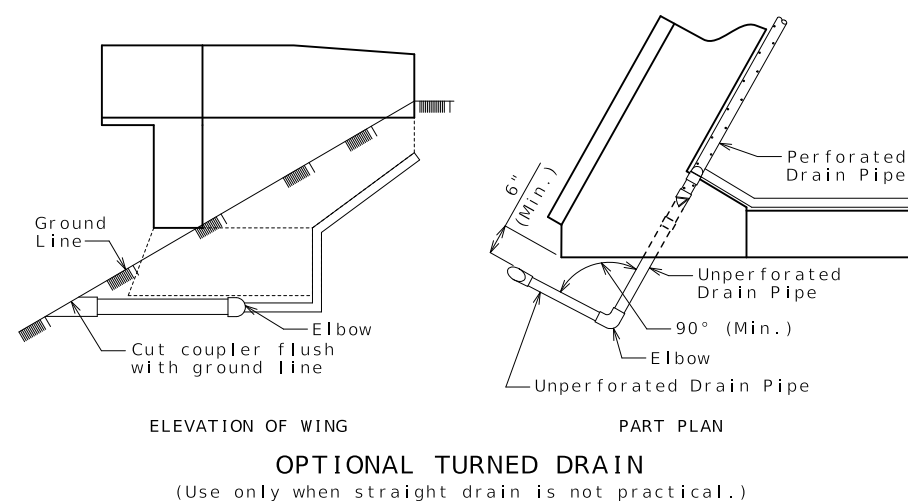
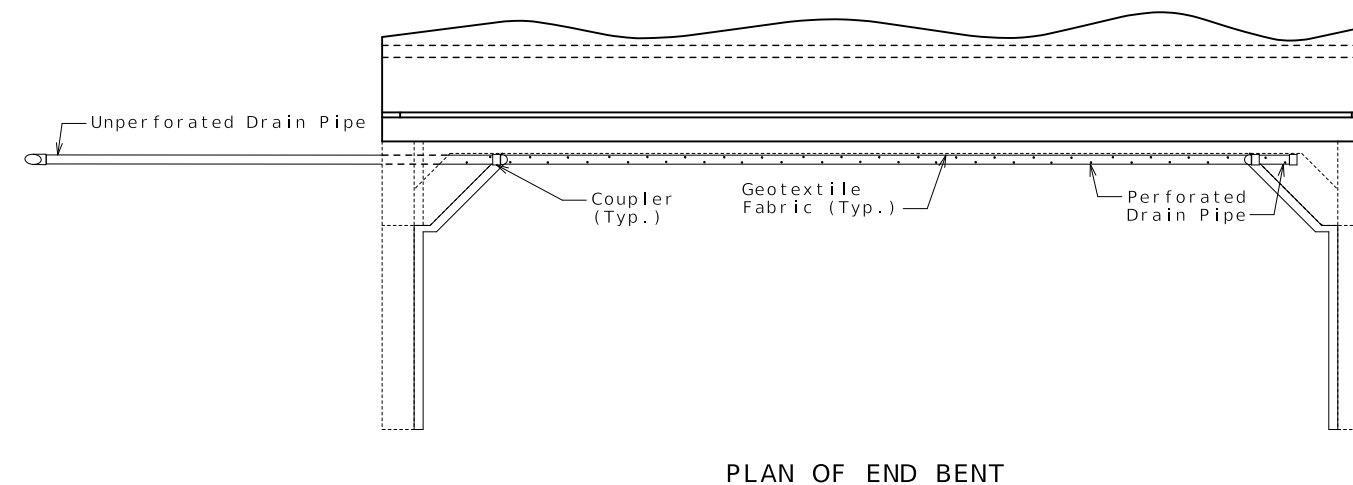
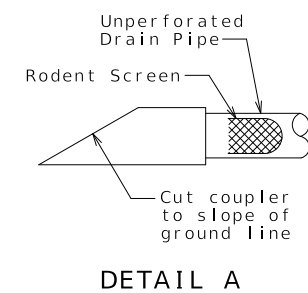
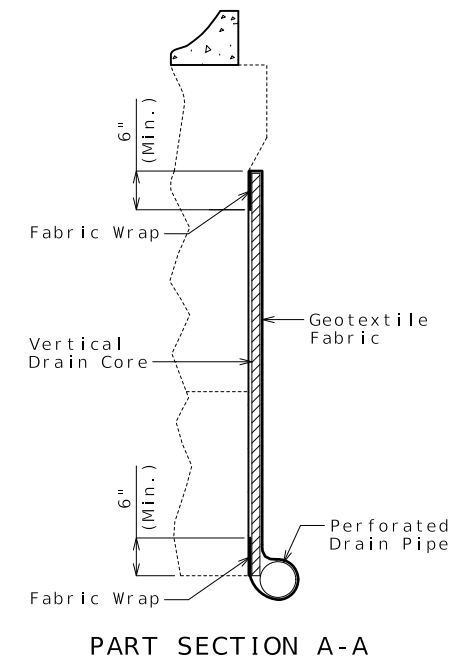
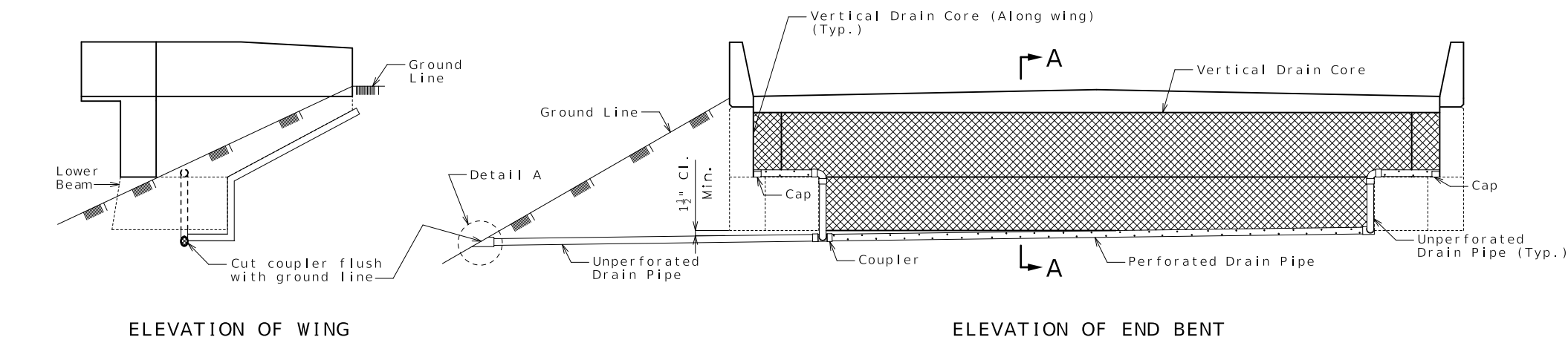


DETAILS OF END BENT NO. 1

Notes:

The H102 bars are segmented for ease of placement through beam web holes. The total bar length for H102 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-10". Actual bar segment lengths to be determined by contractor for ease of installing bars. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment length will be determined by the contractor to accommodate manufacturer's recommendations for installation and ease of construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Slab on Steel. No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.

Work this sheet with Sheet No. 5.



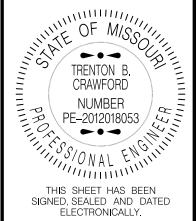
General Notes:

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. 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 at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.



DATE PREPARED

8/7/2026

ROUTE	STATE
5	MO

D	MO
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DISTRICT	SHEET NO
DD	6

BR	6
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COUNTY _____

CASS

JOB NO.

JKU0109

CONTRACT ID.

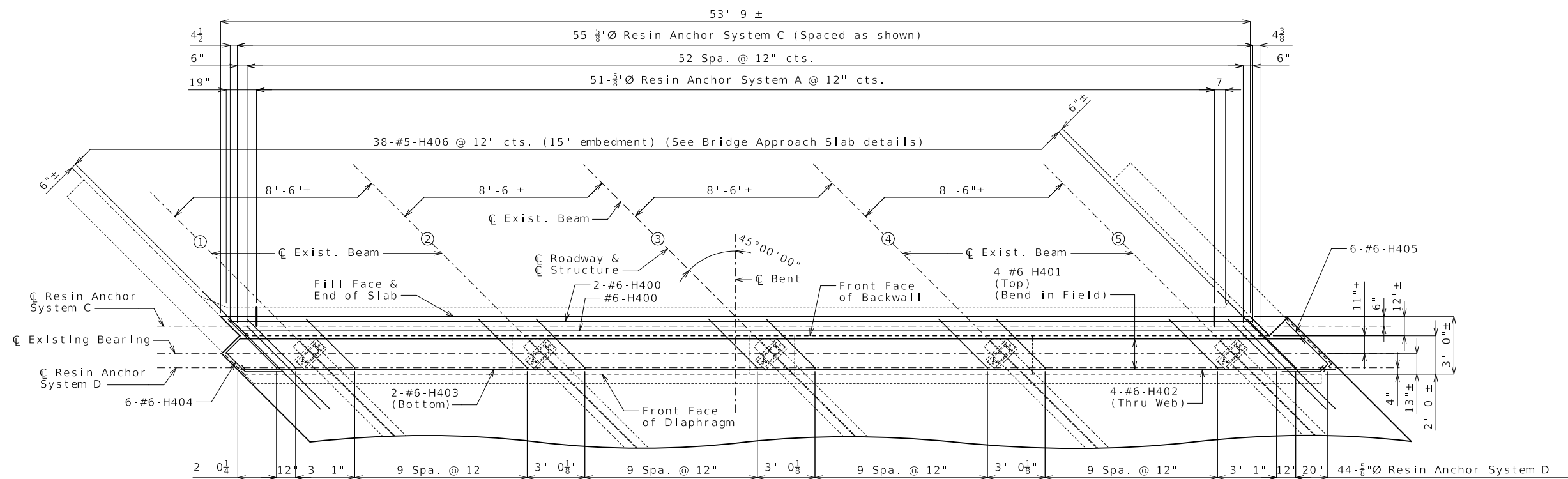
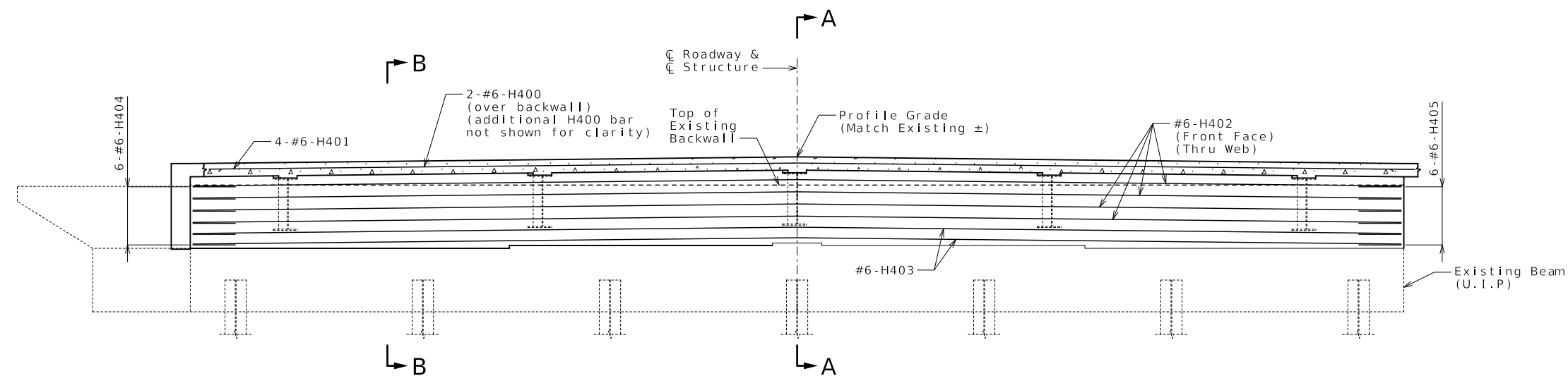
PROJECT NO.

BRIDGE NO.

A22511

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

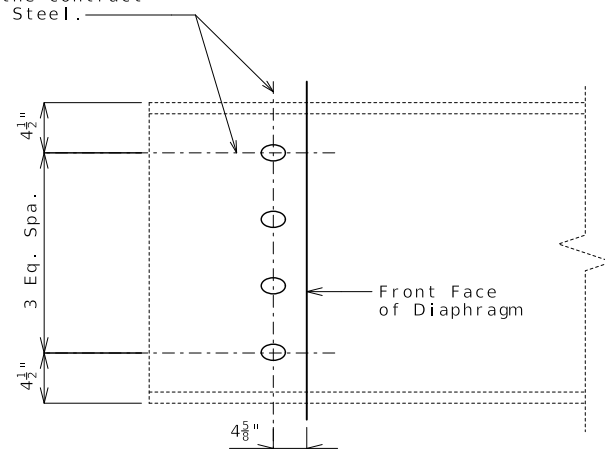
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



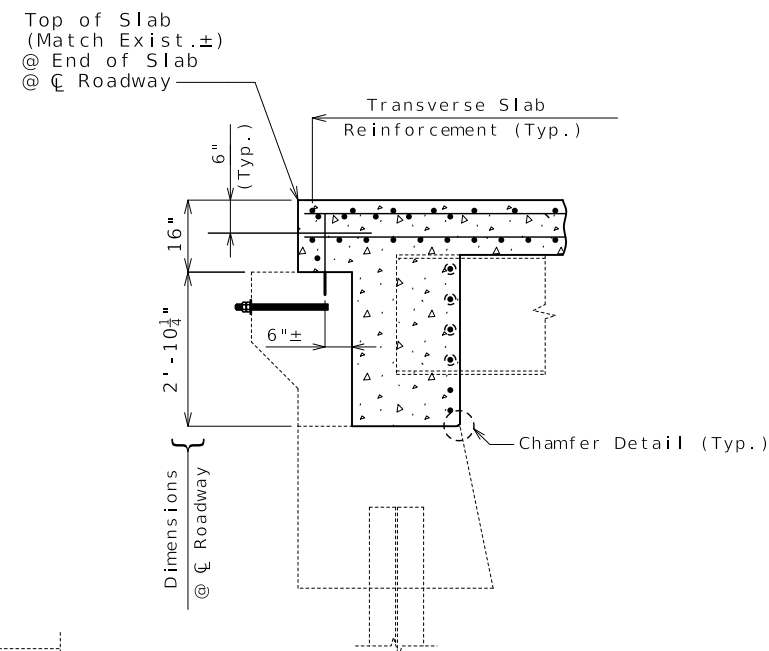
Notes:

The #6-H402 bars are segmented for ease of placement through beam web holes. The total bar length for H402 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-10". Actual bar segment lengths to be determined by contractor for ease of installing bars. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment lengths will be determined by the contractor to accommodate manufacturer's recommendations for installation and ease of construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Slab on Steel. No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.

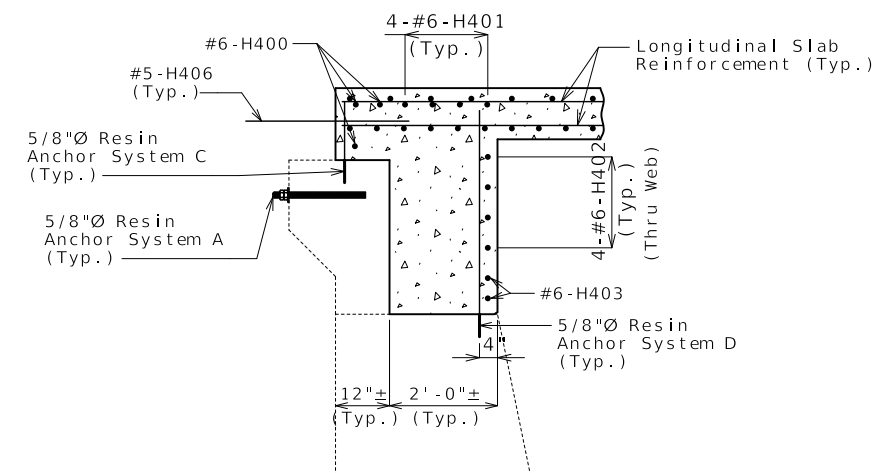
Work this sheet with Sheet No. 8.



(Dimensioned along beam)

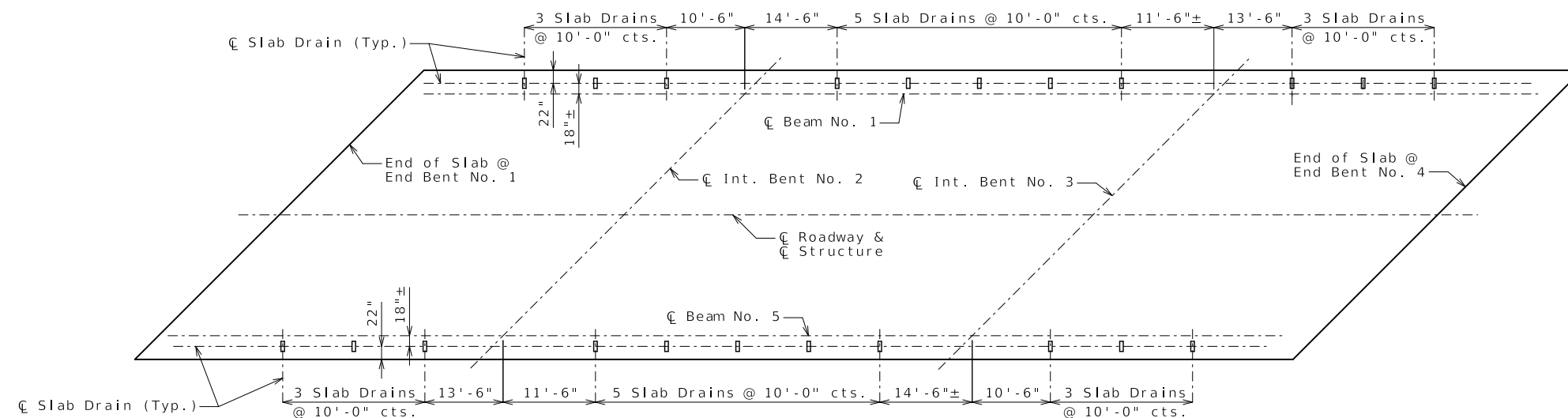


SECTION A-A

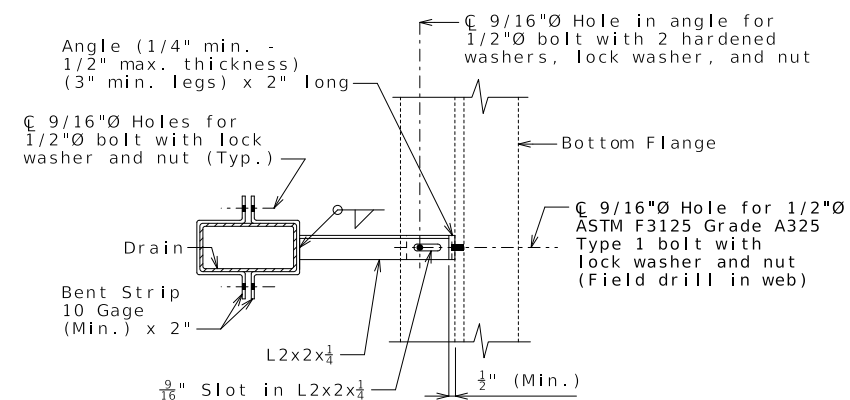
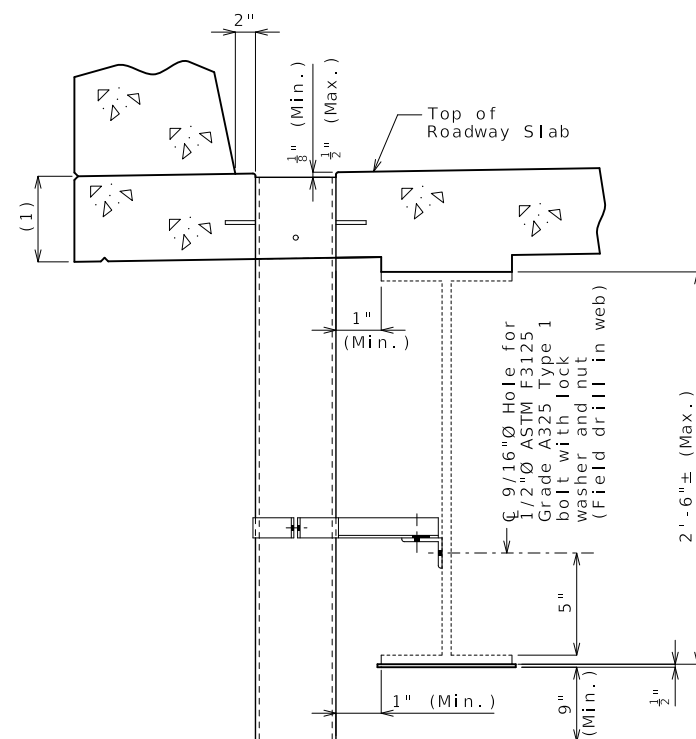


SECTION B-B

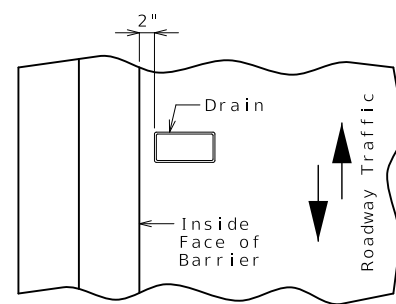
For details and reinforcement of Type D Barrier at End Bents, see Sheets No. 10 & 11.



PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

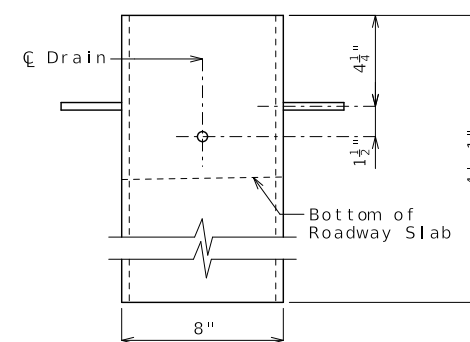


PART SECTION SHOWING BRACKET ASSEMBLY

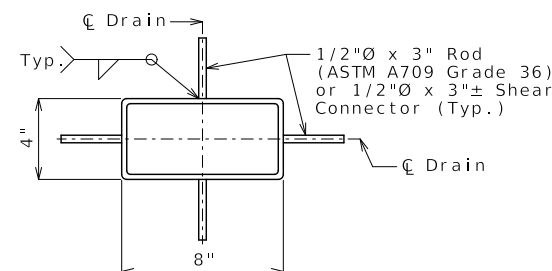


PART PLAN OF SLAB AT DRAIN

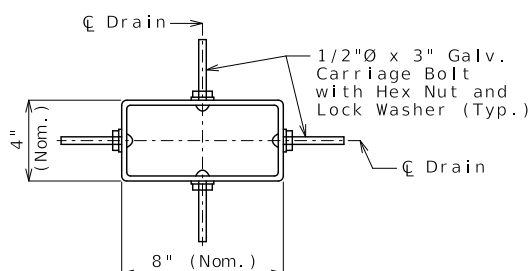
SLAB DRAINS



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 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, except as shown.

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

The bolt hole for the bracket assembly attachment shall be shifted to the minimum extent necessary to field drill in the existing web.

(1) See front sheet for slab thickness.

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".

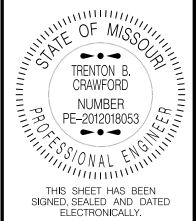
Minimum reinforced wall thickness shall be 1/4 inch.

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 recommended by the manufacturer to ensure a smooth, chip free cut.



DATE PREPARED
8/7/2026

ROUTE	STATE
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D	MO
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STRICT	SHEET NO
DD	0

BR	9
COUNTY	

COUNTY
CASS

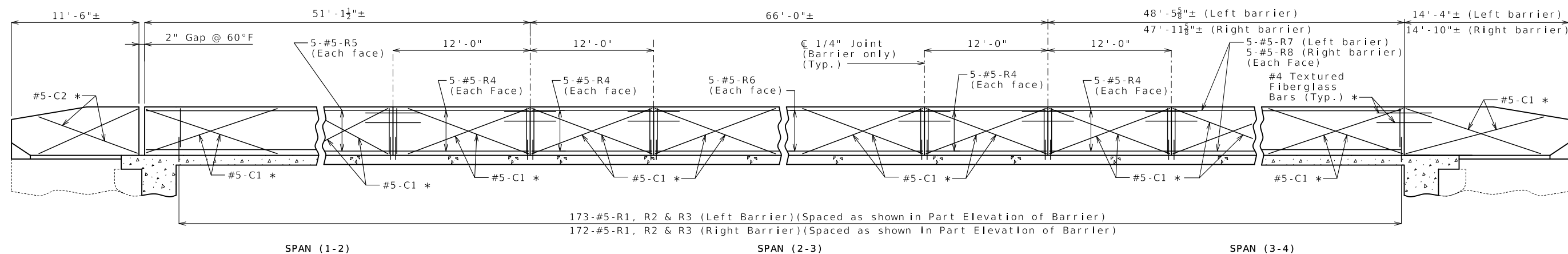
JOB NO.

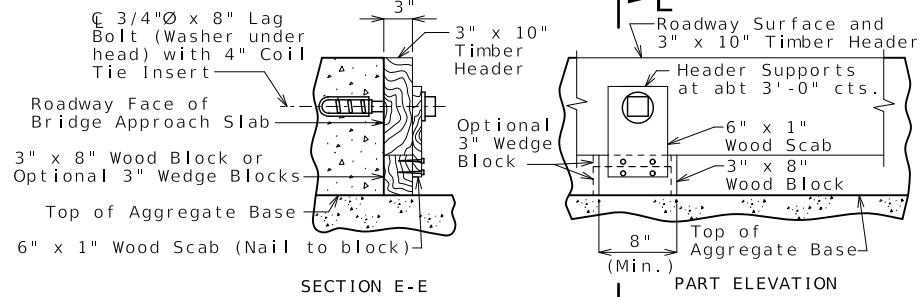
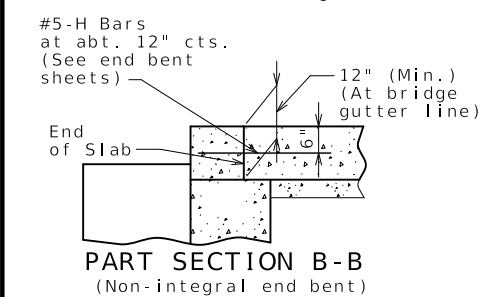
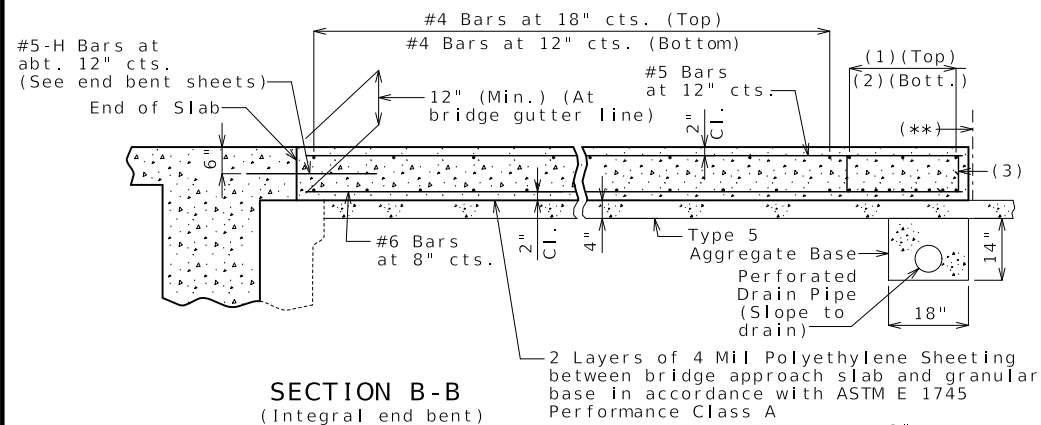
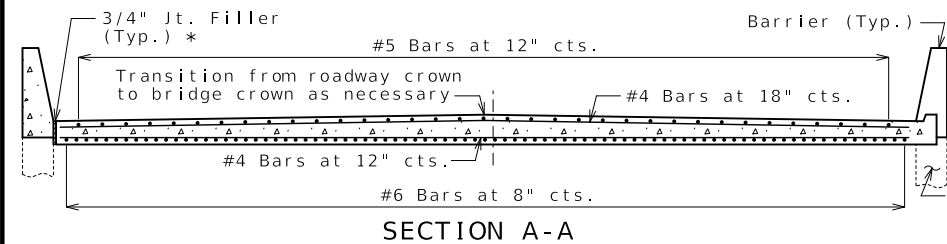
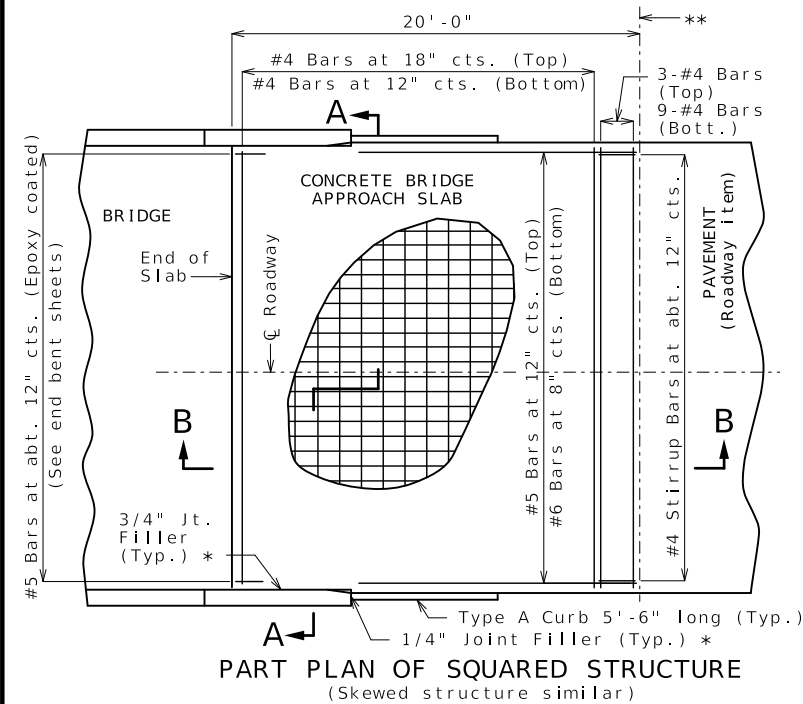
JKU0109

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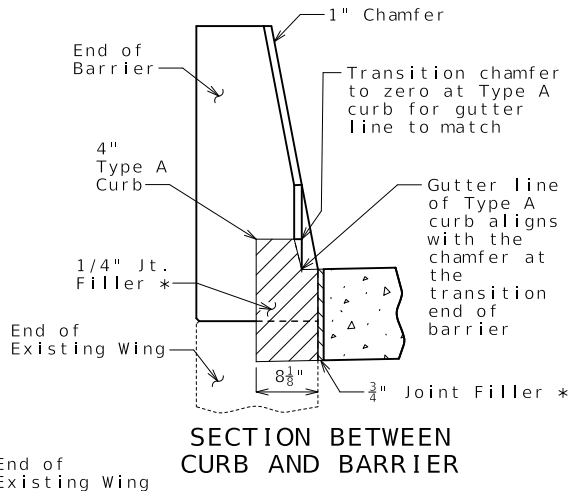
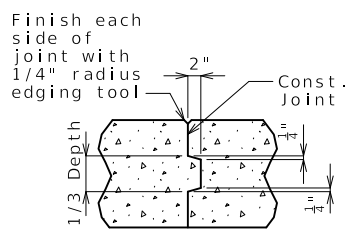
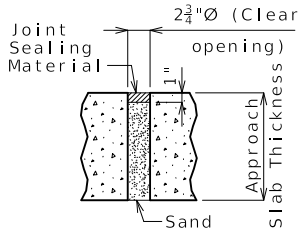
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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





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



Notes For Concrete Slab Only:

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

The reinforcing steel in the bridge approach slab shall be epoxy coated Grade 60 with $f_y = 60,000$ 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 26 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.

** $\varnothing$ Open Cell Foam Jt. Seal (End Bent No. 1) & $\varnothing$ 3/4" Jt. Filler (End Bent No. 4)

*** If asphalt option is used, the cost for Open Cell Foam Jt. Seal will be underrun.

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:

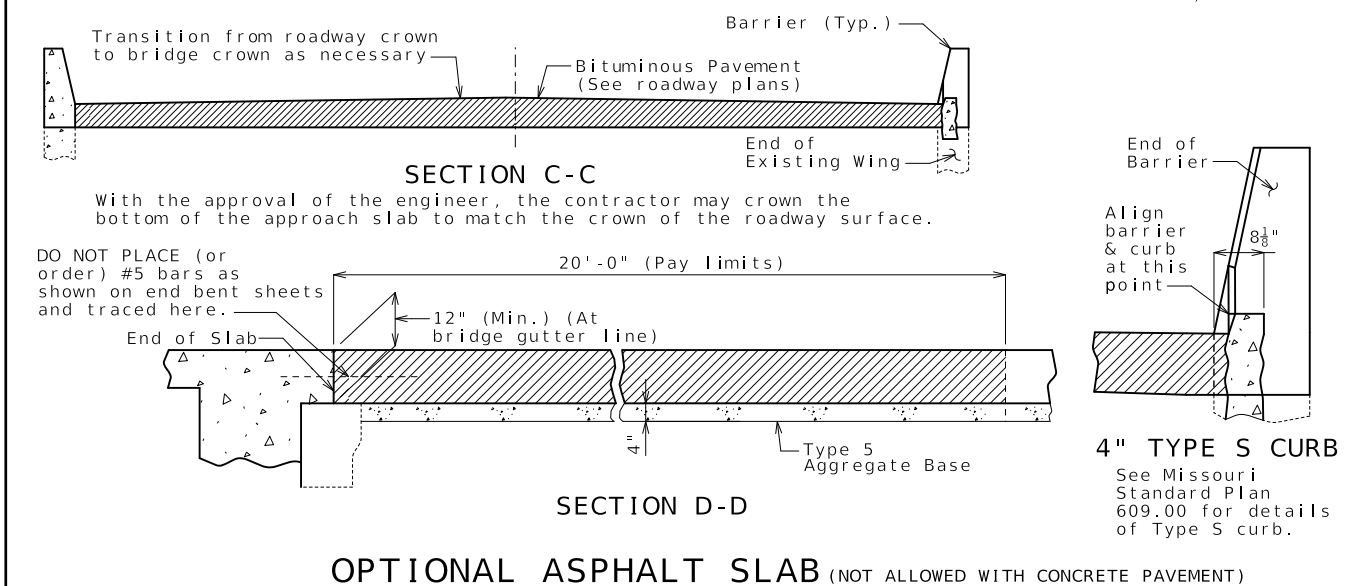
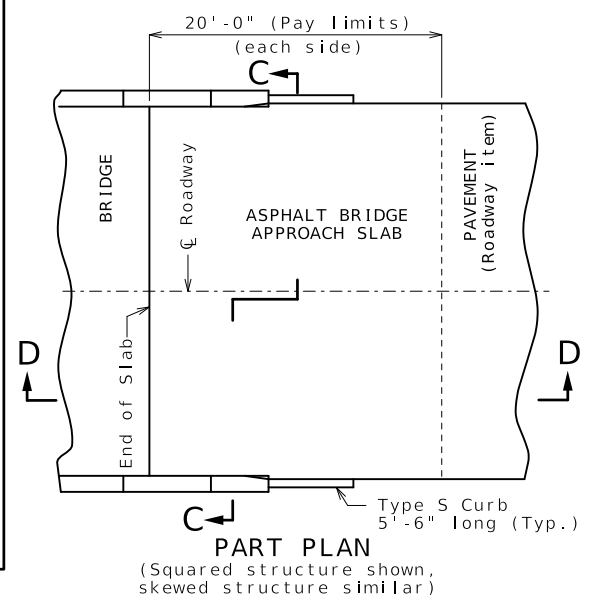
☐ Concrete Bridge Approach Slab

☐ 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.



SECTION D-D
OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

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

STATE OF MISSOURI
Trenton B. Crawford
NUMBER
PE-2012018053
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
8/7/2026

ROUTE
D

STATE
MO

DISTRICT
BR

SHEET NO.
12

COUNTY
CASS

JOB NO.
JKU0109

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A22511

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

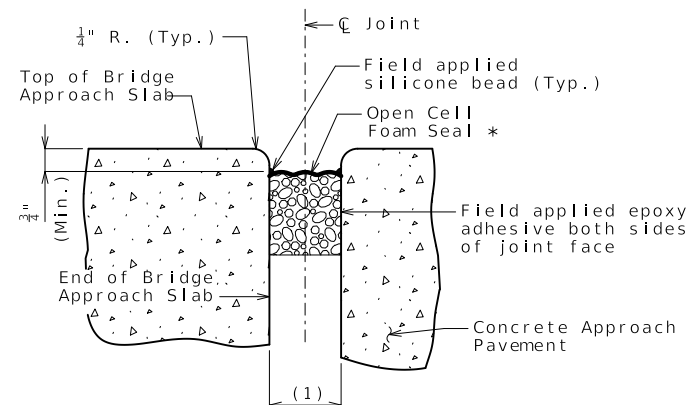
General Notes:

Open cell foam joint seal size (width and depth) shall be determined by the manufacturer. Manufacturer recommended seal size shall meet the movement and installation gap requirements and skew effect.

The open cell foam joint seal shall be installed according to the manufacturer's recommendations.

The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

(1) Allowed installation gap ($\pm$) normal to joint at roadway surface (see table)



SECTION THRU JOINT AT END
OF BRIDGE APPROACH SLAB

SKEW = 45° L.A.

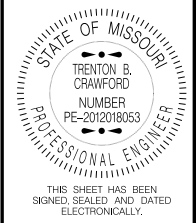
* Manufacturer's recommended size

Extend seal full width of approach slab.

Movement Parallel to Rdwy	Movement Normal to Joint	Min. Jt. Width (Normal to Joint)	Max. Jt. Width (Normal to Joint)	(1) Allowed Installation Gap ($\pm$) Normal to Joint at Roadway Surface at Air/Surface Temperature				Manufacturer	Seal Name
				@ 40°F	@ 50°F	@ 60°F	@ 70°F		
1 $\frac{3}{8}$ "	1 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "	3 $\frac{1}{2}$ "	2 $\frac{7}{8}$ "	2 $\frac{13}{16}$ "	2 $\frac{3}{4}$ "	2 $\frac{11}{16}$ "		

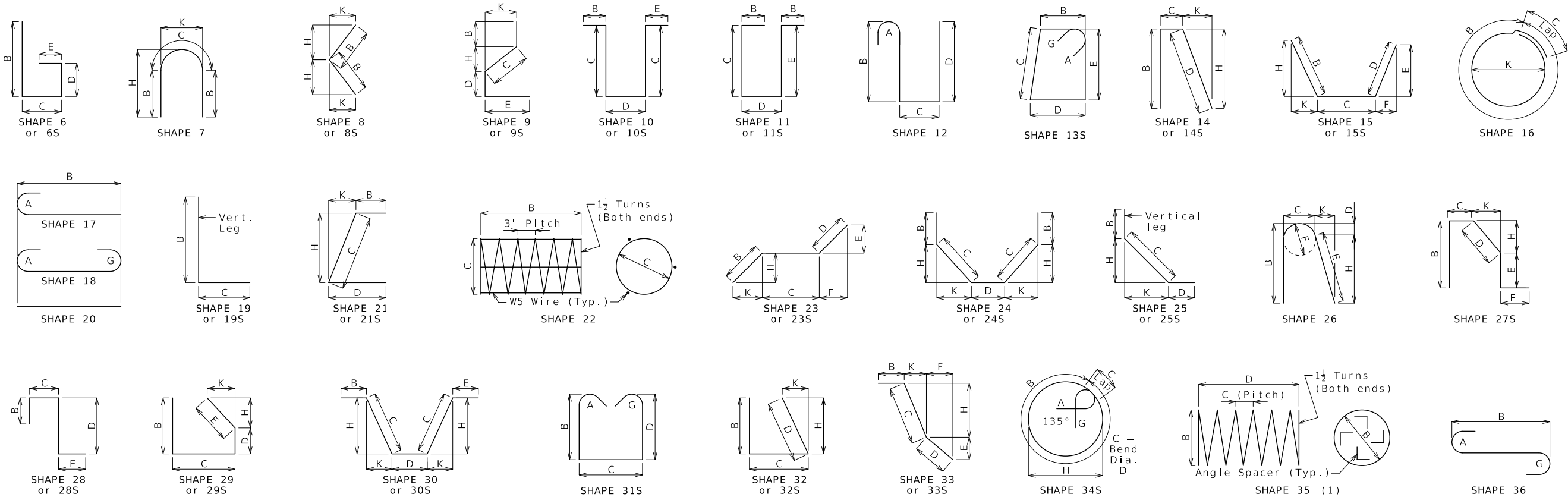
MoDOT construction personnel will record the manufacturer and seal name that was used.

OPEN CELL FOAM JOINT SEAL

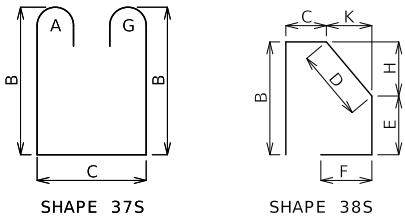


DATE PREPARED	
8/7/2026	
ROUTE	STATE
D	MO
DISTRICT	SHEET NO.
BR	13
COUNTY	
CASS	
JOB NO.	
JKU0109	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A22511	

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION



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"	
#7	2	5 1/4"	14"	9 3/4"	7"	
	3	7"	15"	11 1/2"	8 3/4"	
#8	2	6"	16"	11"	8"	
	3	8"	17"	13 1/4"	10"	
#9	1	9 1/2"	19 1/2"	15 1/2"	11 3/4"	
#10	1	10 3/4"	22"	17 1/2"	13 1/4"	
#11	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			J
			90°	135°	180°	
#4	2	2"	4 1/2"	4 1/2"	5"	2 7/8"
	3	3"	5"	5 1/4"	6"	3"
#5	2	2 1/2"	5 3/4"	5 3/4"	5 3/4"	3 3/4"
	3	3 3/4"	6 1/4"	6 1/2"	7"	3 7/8"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 7/8"
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	Coated	Slab		Barrier	Slip Form	Plain	Coated
				Plain	Coated				
By Size	W5	0	0	0	0	0	0	0	0
	4	0	0	0	48	0	0	0	48
	5	0	0	0	47,479	9,672	588	0	57,739
	6	0	0	0	10,240	0	0	0	10,240
	7	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	
By Type	0	0	0	57,767	9,672	588	0	68,027	

All superstructure reinforcing steel shall be Epoxy Coated unless otherwise specified.

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

STATE OF MISSOURI

TRENTON B. CRAWFORD

NUMBER PE-2012018053

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/7/2026

ROUTE D STATE MO

DISTRICT BR SHEET NO. 14

COUNTY CASS

JOB NO. JKU0109

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A22511

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

