

DESIGN DESIGNATION

A.A.D.T. - 2024 = 2014 (CONSTRUCTION)  
 A.A.D.T. - 2044 = 4632 (DESIGN)  
 V = 60 M.P.H.  
 T = 15.1%

FUNCTIONAL CLASSIFICATION- MINOR ARTERIAL

NO NEW R/W REQUIRED



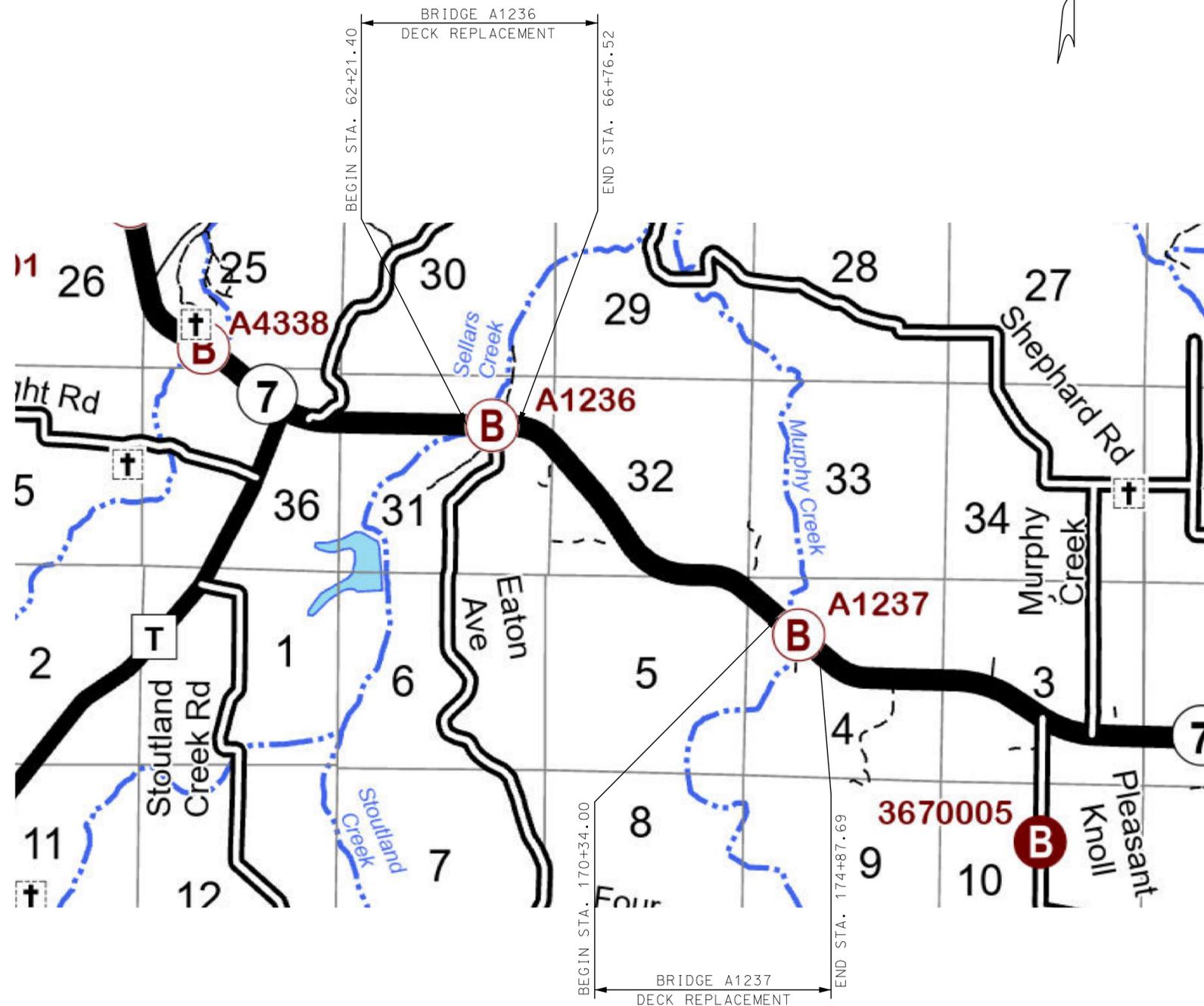
KEY MAP  
 LOCATION OF CAMDEN COUNTY

CONVENTIONAL SYMBOLS  
 (USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES	[Symbol]	[Symbol]
GUARD RAIL	[Symbol]	[Symbol]
GUARD CABLE	[Symbol]	[Symbol]
CONCRETE RIGHT-OF-WAY MARKER	[Symbol]	[Symbol]
STEEL RIGHT-OF-WAY MARKER	[Symbol]	[Symbol]
LOCATION SURVEY MARKER	[Symbol]	[Symbol]
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	[Symbol]	[Symbol]
FIRE HYDRANT	[Symbol]	[Symbol]
WATER VALVE	[Symbol]	[Symbol]
WATER METER	[Symbol]	[Symbol]
DROP INLET	[Symbol]	[Symbol]
DITCH BLOCK	[Symbol]	[Symbol]
GROUND MOUNTED SIGN	[Symbol]	[Symbol]
LIGHT POLE	[Symbol]	[Symbol]
H-FRAME POWER POLE	[Symbol]	[Symbol]
TELEPHONE PEDESTAL	[Symbol]	[Symbol]
FENCE		
CHAIN LINK	[Symbol]	[Symbol]
WOVEN WIRE	[Symbol]	[Symbol]
GATE POST	[Symbol]	[Symbol]
BENCHMARK	[Symbol]	[Symbol]

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

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

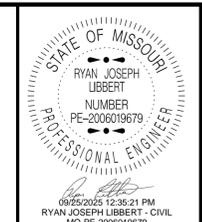


NOT TO SCALE

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) (2 SHEETS)	2
QUANTITIES (QU) (3 SHEETS)	3
PLAN SHEETS (PS)	4-5
TRAFFIC CONTROL SHEETS (TC)	6-9
EROSION CONTROL SHEETS (EC)	10-11
BRIDGE DRAWINGS (B) (20 SHEETS)	
A1236	1-10
A1237	1-10



DATE PREPARED 9/25/2025	
ROUTE 7	STATE MO
DISTRICT CD	SHEET NO. 1
COUNTY CAMDEN	
JOB NO. J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

LENGTH OF PROJECT

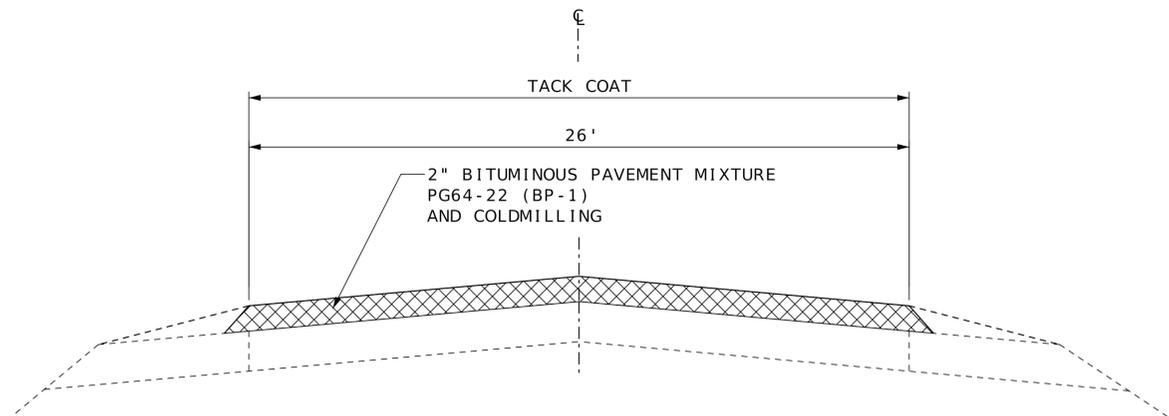
<b>BRIDGE A1236 (CAMDEN COUNTY)</b>	
BEGINNING OF PROJECT	STA. 62+21.40
END OF PROJECT	STA. 66+76.52
APPARENT LENGTH	455.12 FEET
EQUATIONS AND EXCEPTIONS:	NONE
<b>BRIDGE A1237 (CAMDEN COUNTY)</b>	
BEGINNING OF PROJECT	STA. 170+34.00
END OF PROJECT	STA. 174+87.69
APPARENT LENGTH	453.69 FEET
EQUATIONS AND EXCEPTIONS:	NONE
TOTAL CORRECTIONS	0.00 FEET
NET LENGTH OF PROJECT	908.81 FEET
STATE LENGTH	0.172 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	0.228 ACRES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

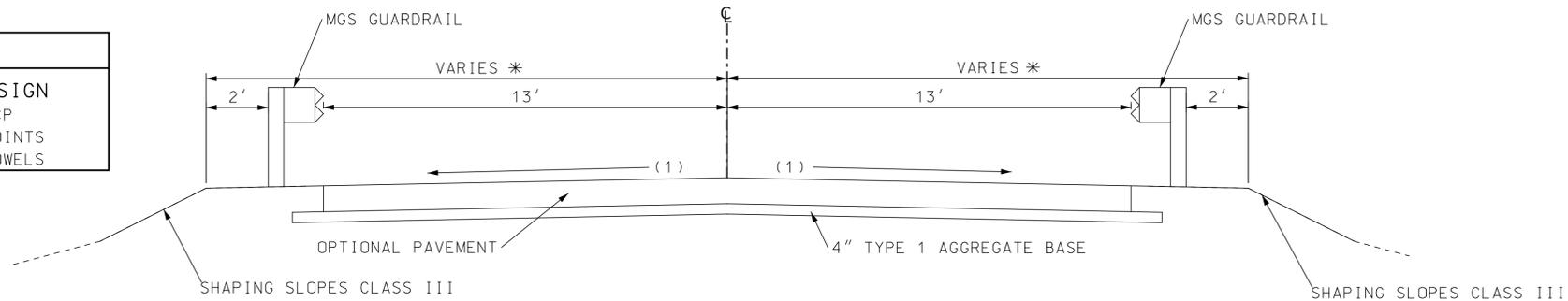
TITLE SHEET





**PROPOSED TYPICAL SECTION OF RTE 7**  
 APPROACH PAVEMENT STA. 170+34.00 TO STA. 171+34.00  
 APPROACH PAVEMENT STA. 173+87.69 TO STA. 174+87.69

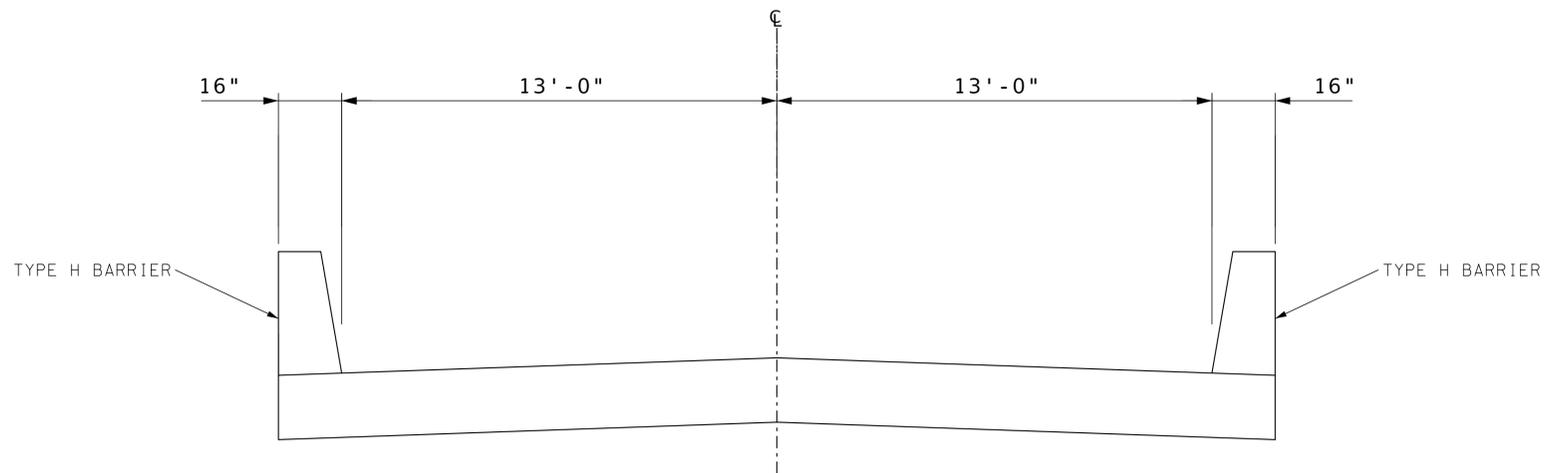
OPTIONAL PAVEMENT	
HMA DESIGN	PCCP DESIGN
2 IN. BP-1 (PG 64-22) OVER	8" PCCP 15 FT. JOINTS
8 IN. BIT BASE (PG 64-22)	1 1/4 IN. DOWELS



\* USE STANDARD GRADING LIMITS FOR CRASHWORTHY END TERMINALS AND BRIDGE APPROACH TRANSITIONS PER STD. PLAN 606.81B.

**PROPOSED TYPICAL SECTION OF RTE 7**  
 APPROACH PAVEMENT STA. 171+34.00 TO STA. 171+84.00  
 APPROACH PAVEMENT STA. 173+37.69 TO STA. 173+87.69

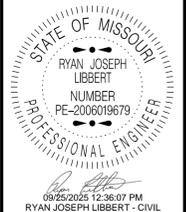
(1) TRANSITION CROSS SLOPE FROM EXISTING CROSS SLOPE TO BRIDGE DECK CROSS SLOPE



**TYPICAL SECTION THROUGH BRIDGE A1237**  
 STA. 171+84.00 TO STA. 173+37.69

ESTIMATE FACTORS
BITUMINOUS PAVEMENT MIXTURE (BP-1) = 2.000 TONS/CY
BITUMINOUS PAVEMENT MIXTURE PG64-22 (BASE) = 1.943 TONS/CY
TACK (EXIST. ASPHALT SURFACE) = 0.08 GAL/SY
TACK (COLDMILLED ASPHALT) = 0.10 GAL/SY

**TYPICAL SECTION  
SHEET 2 OF 2**



DATE PREPARED <b>9/23/2025</b>	
ROUTE <b>7</b>	STATE <b>MO</b>
DISTRICT <b>CD</b>	SHEET NO. <b>2</b>
COUNTY <b>CAMDEN</b>	
JOB NO. <b>J5P3538</b>	
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)

**TYPICAL SECTION SHEET  
SHEET 2 OF 2**



GUARDRAIL								
STATION FROM	STATION TO	LOCATION	MGS BRIDGE APPROACH TRANS. SECT. (REG. / NO CURB) EA	MGS GUARDRAIL LF	TYPE A CRASHWORTHY END TERMINAL (MASH) EA	MGS END ANCHOR EA	SHAPING SLOPES CLASS III 100F	REMARKS
62+08.90	63+71.40	ROUTE 7 - LT.	1	75.0	1		1.775	SEE SPECIAL SHEET 1
62+08.90	63+71.40	ROUTE 7 - RT.	1	137.5		1	2.025	SEE SPECIAL SHEET 1
65+26.52	67+39.02	ROUTE 7 - LT.	1	125.0	1		2.375	SEE SPECIAL SHEET 1
65+26.52	67+39.02	ROUTE 7 - RT.	1	112.5		1	1.775	SEE SPECIAL SHEET 1
170+14.46	171+76.96	ROUTE 7 - LT.	1	75.0	1		1.825	SEE SPECIAL SHEET 2
169+91.04	171+91.04	ROUTE 7 - RT.	1	112.5	1		1.775	SEE SPECIAL SHEET 2
173+30.65	174+68.65	ROUTE 7 - LT.	1	112.5		1	1.775	SEE SPECIAL SHEET 2
173+44.73	174+92.73	ROUTE 7 - RT.	1	112.5		1	1.775	SEE SPECIAL SHEET 2
TOTAL			8	862.50	4	4	15.100	
USE			8	863	4	4	15	

PAVEMENT MARKING						
STATION FROM	STATION TO	LOCATION	LENGTH (FT)	CLASS 1 PVMT MARK. PAINT, (18-MIL, TYPE P BEADS)		REMARKS
				4" YELLOW LF	4" WHITE LF	
62+21.40	63+00.40	ROUTE 7	79	19.8	158.0	WHITE EDGE LINES AND ONE INTERMITTENT YELLOW CENTERLINE
63+00.40	66+76.52	ROUTE 7	376	470.0	752.0	WHITE EDGE LINES AND ONE SOLID, ONE INTERMITTENT YELLOW CENTERLINE
170+34.00	174+87.69	ROUTE 7	454	113.5	908.0	WHITE EDGE LINES AND ONE INTERMITTENT YELLOW CENTERLINE
TOTAL				603.3	1818.0	
USE				603	1818	

CONTRACTOR FURNISHED SURVEYING AND STAKING  
1 LUMP SUM

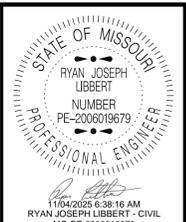
ADDITIONAL MOBILIZATION FOR SEEDING  
4 EACH

MULCHING AND SEEDING					
STATION FROM	STATION TO	LOCATION	LENGTH FT	SEEDING AND MULCHING COOL SEASON GRASSES ACRE	REMARKS
62+46.40	63+71.40	ROUTE 7	125	0.057	ESTIMATED AT 10 FT. WIDE ALONG BOTH SIDES OF ROADWAY
65+26.52	66+51.52	ROUTE 7	125	0.057	ESTIMATED AT 10 FT. WIDE ALONG BOTH SIDES OF ROADWAY
170+59.00	171+84.00	ROUTE 7	125	0.057	ESTIMATED AT 10 FT. WIDE ALONG BOTH SIDES OF ROADWAY
173+37.69	174+62.69	ROUTE 7	125	0.057	ESTIMATED AT 10 FT. WIDE ALONG BOTH SIDES OF ROADWAY
TOTAL				1 LUMP SUM	

TEMPORARY EROSION CONTROL						
STATION FROM	STATION TO	LOCATION	SEDIMENT REMOVAL CUYD	SILT FENCE LF	ALT. DITCH CHECK LF	REMARKS
62+46.40	63+71.40	ROUTE 7	2.5	250.00	20.00	SEE EROSION CONTROL SHEET 1
65+26.52	66+51.52	ROUTE 7	2.5	250.00	20.00	SEE EROSION CONTROL SHEET 1
170+59.00	171+84.00	ROUTE 7	2.5	250.00	20.00	SEE EROSION CONTROL SHEET 2
173+37.69	174+62.69	ROUTE 7	2.5	250.00	20.00	SEE EROSION CONTROL SHEET 2
TOTAL			10	1000	80	
USE			10	1000	80	

PERMANENT EROSION CONTROL								
STATION FROM	STATION TO	LOCATION	FURNISHING TYPE 2 ROCK BLANKET CUYD	PLACING TYPE 2 ROCK BLANKET CUYD	FURNISHING TYPE 1 ROCK DITCH LINER CUYD	PLACING TYPE 1 ROCK DITCH LINER CUYD	PERMANENT EROSION CONTROL GEOTEXTILE SQYD	REMARKS
63+68.40	63+71.40	ROUTE 7			3.71	3.71	24.96	DRAIN FLUMES AT WEST END OF BRIDGE A1236
171+73.96	171+91.04	ROUTE 7			3.48	3.48	22.69	DRAIN FLUMES AT WEST END OF BRIDGE A1237
172+16.00	172+42.00	ROUTE 7	80.97	80.97			103.28	ROCK BLANKET AT A1237 BENT 2 - ASSUMED AVG. DEPTH OF 4 FT.
TOTAL			80.97	80.97	7.19	7.19	150.93	
USE			81	81	7	7	151	

SUMMARY OF QUANTITIES  
SHEET 2 OF 3



DATE PREPARED  
11/3/2025  
ROUTE 7 STATE MO  
DISTRICT CD SHEET NO. 3  
COUNTY CAMDEN  
JOB NO. J5P3538  
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)

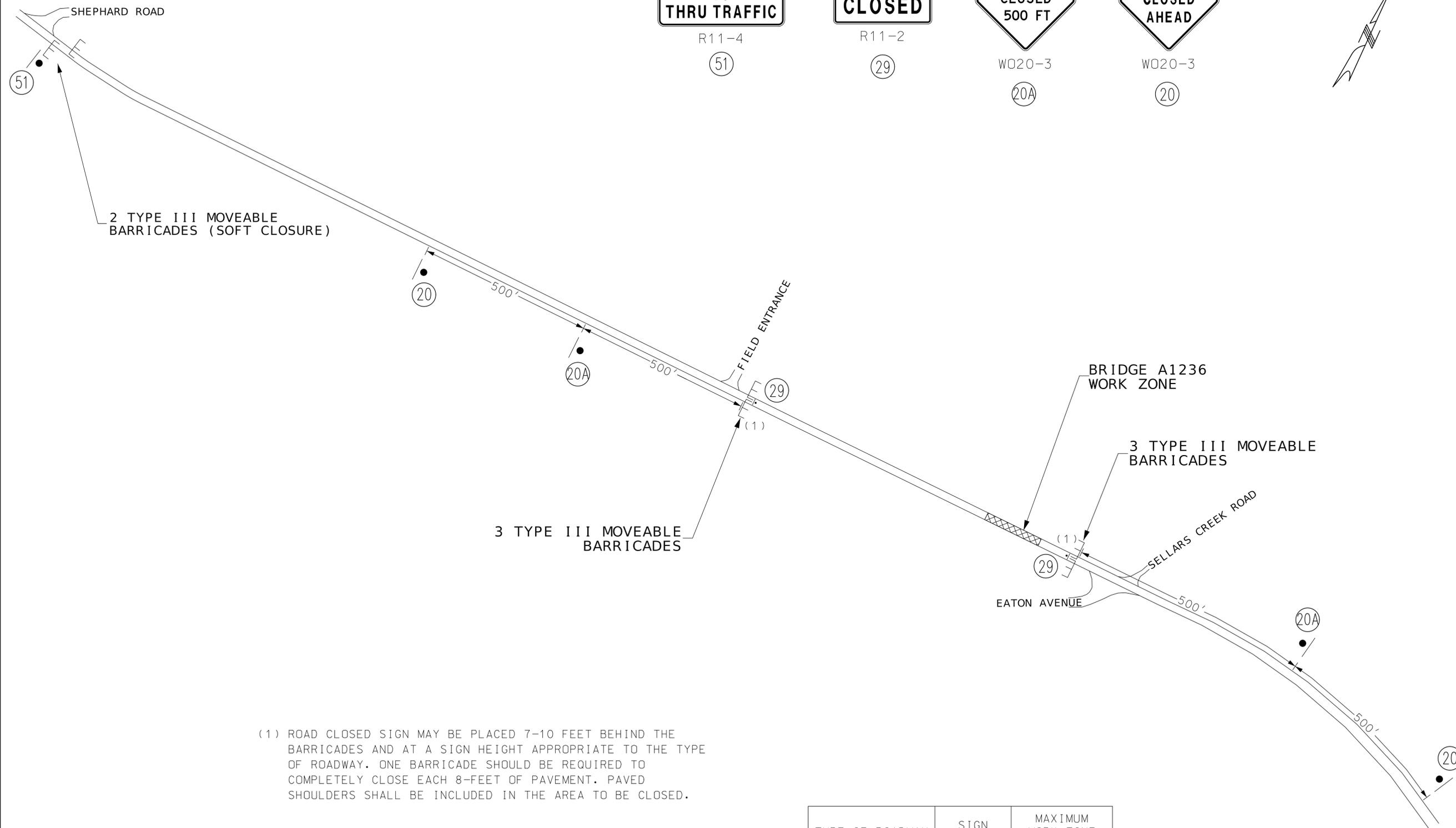
QUANTITY SHEET  
SHEET 2 OF 3











NOT TO SCALE

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

REFER TO STANDARD PLAN 610.10 FOR PLACEMENT OF BARRICADES

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

TYPE OF ROADWAY	SIGN HEIGHT	MAXIMUM WORK ZONE LENGTH (L)
URBAN	1' PORTABLE 7' POST	1 MILE
RURAL UNDIVIDED	1' PORTABLE 5' POST	3 MILES

TEMPORARY TRAFFIC CONTROL SHEET  
HIGHWAY CLOSURE  
SHEET 2 OF 4

RYAN JOSEPH LIBBERT  
NUMBER PE-2006019679  
PROFESSIONAL ENGINEER  
09/25/2025 1:20:46 PM  
RYAN JOSEPH LIBBERT - CIVIL  
MO-PE-2006019679

DATE PREPARED <b>9/23/2025</b>	
ROUTE <b>7</b>	STATE <b>MO</b>
DISTRICT <b>CD</b>	SHEET NO. <b>7</b>
COUNTY <b>CAMDEN</b>	
JOB NO. <b>J5P3538</b>	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

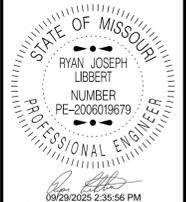
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

TRAFFIC CONTROL SHEET  
SHEET 2 OF 4









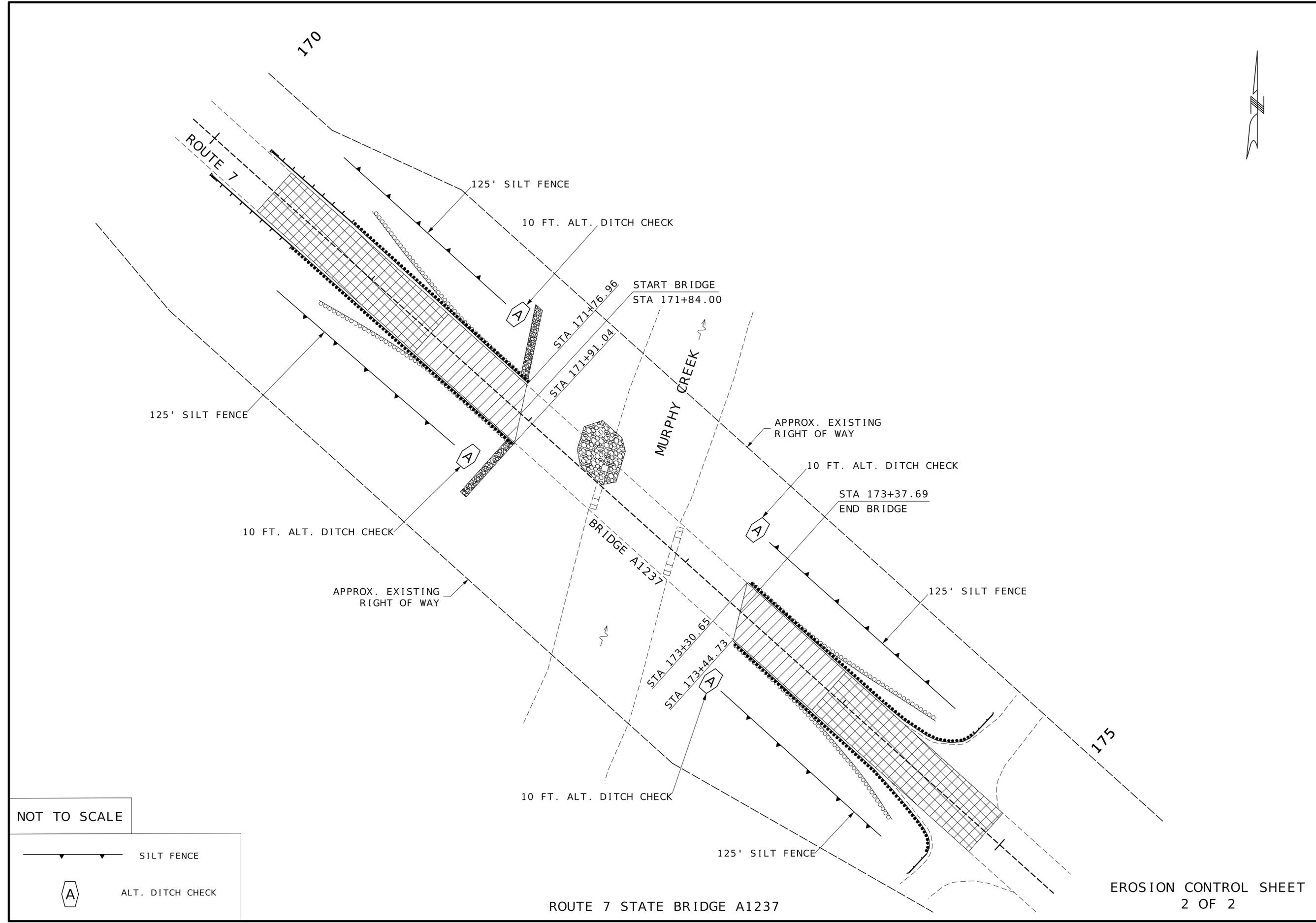
DATE PREPARED  
 9/29/2025  
 ROUTE 7 STATE MO  
 DISTRICT CD SHEET NO. 11  
 COUNTY CAMDEN  
 JOB NO. J5P3538  
 CONTRACT ID.

PROJECT NO.  
 BRIDGE NO.

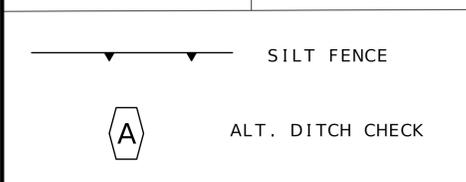
DATE	DESCRIPTION

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

EROSION CONTROL SHEET  
 SHEET 2 OF 2



NOT TO SCALE



ROUTE 7 STATE BRIDGE A1237

EROSION CONTROL SHEET  
 2 OF 2

**Table Showing S2 Bar Lengths**

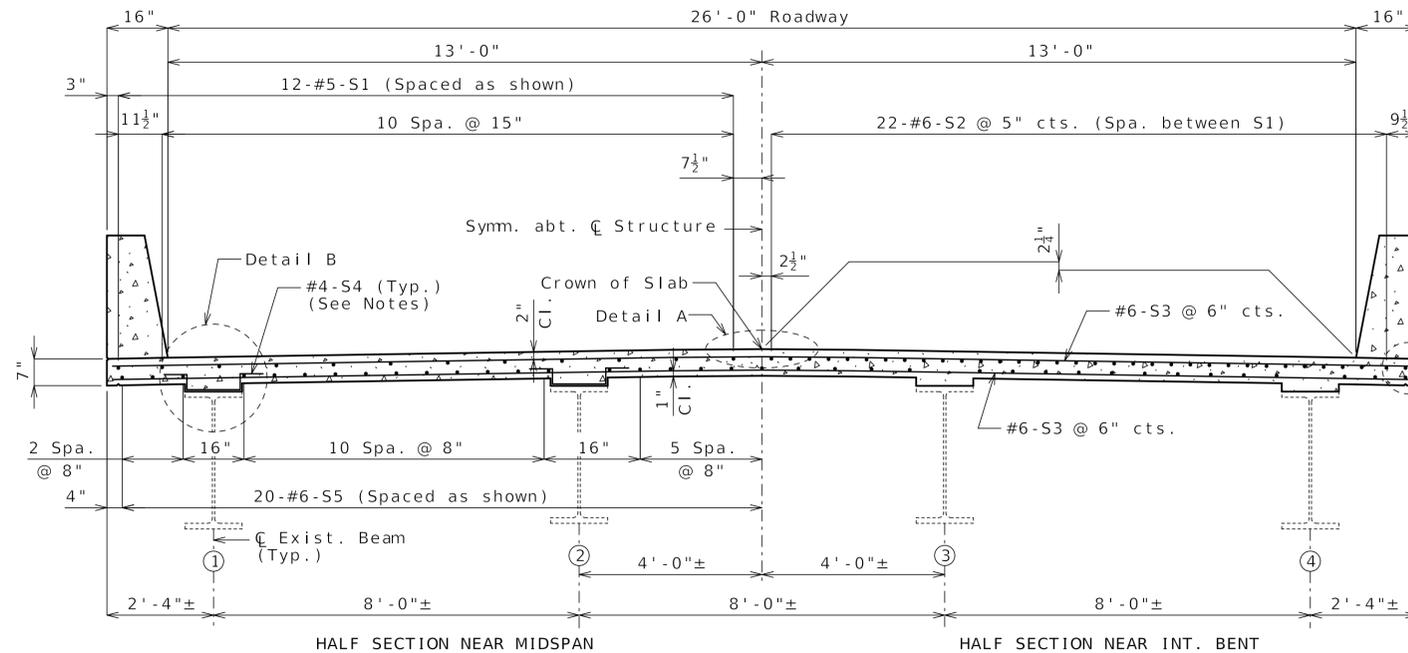
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
17'-3"	16'-9"	16'-9"	17'-3"

**Required Lap Length For Bar Splices \*\***

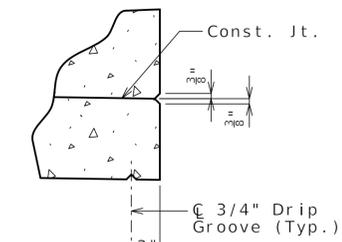
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

\*\* Unless otherwise shown.

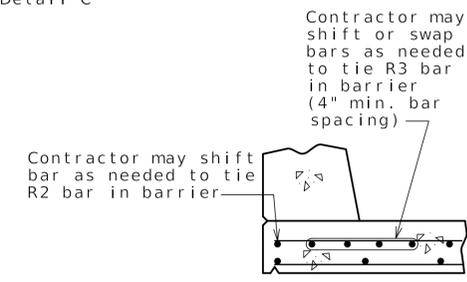
**U.I.P., REDECK AND REHABILITATE EXISTING (46'- 60'- 46') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS**



**TYPICAL SECTION THRU SLAB**



**DETAIL C**



**OPTIONAL SHIFTING TOP BARS AT BARRIER**

**General Notes:**

**Design Specifications:**

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

**Design Loading:**

H15-44 (1961) (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

**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.

#4-S4 hairpin bars to be placed at 12" cts. where dimension (A) is greater than or equal to 2" in shear connector regions. Hairpin bars may be placed at an angle to meet clearances. Estimated 470 hairpin bars required.

**Miscellaneous:**

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.

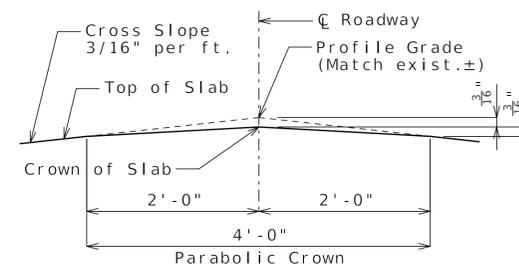
The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

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

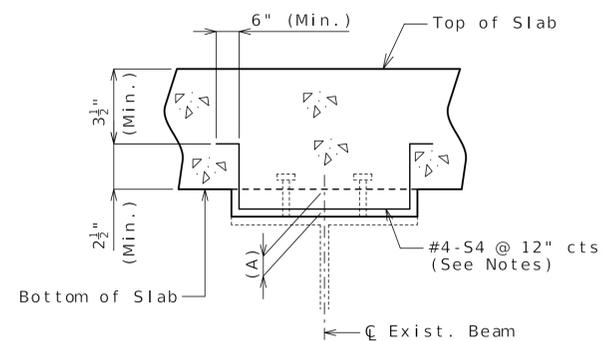
A Non-Destructive Test must be performed on all existing cover plate tension regions.

**Traffic Handling:**

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



**DETAIL A**



**DETAIL B**

Estimated Quantities		
Item		Total
Removal of Existing Bridge Deck	sq. foot	4,589
Slab on Steel	sq. yard	494
Type H Barrier	linear foot	310
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Strengthening Existing Beams	lump sum	1
Slab Drain	each	26
Non-Destructive Testing	linear foot	45

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	108
Reinforcing Steel (Epoxy Coated)	pound	45,090

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 7 OVER SELLARS CREEK**

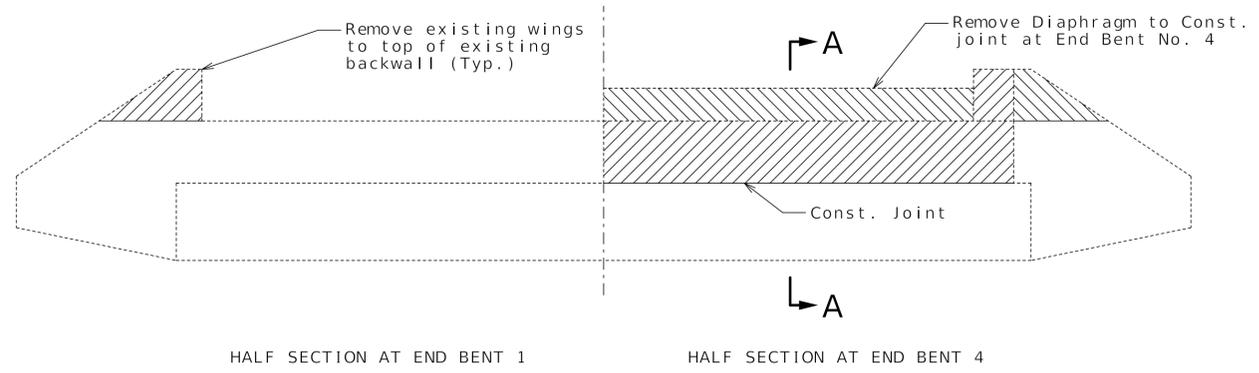
ROUTE 7 FROM ROUTE T TO ROUTE H  
ABOUT 1.1 MILES EAST OF ROUTE T  
BEGINNING STATION 63+71.4± (MATCH EXISTING)

DATE PREPARED 9/26/2025	
ROUTE 7	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CAMDEN	
JOB NO. J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A12363	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



**DETAILS OF CONCRETE REMOVAL AT END BENTS**

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Removal of Existing Bridge Deck. Vertical backwall and wingwall reinforcement to be cut off one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar.

A smooth, level surface shall be provided at End Bents No. 1 & 4 removal lines.

**General Notes:**

**Stay-In-Place Forms:**

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

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

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

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

**Pouring and Finishing Slab:**

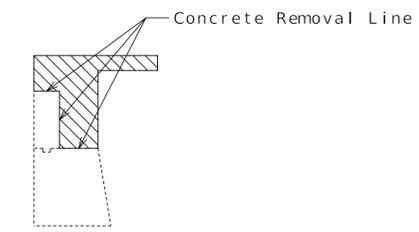
The contractor shall provide bracing necessary for lateral and torsional stability of the beams during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the beams. The cost for furnishing, installing,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

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

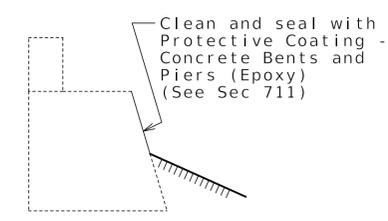
Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

**Haunching:**

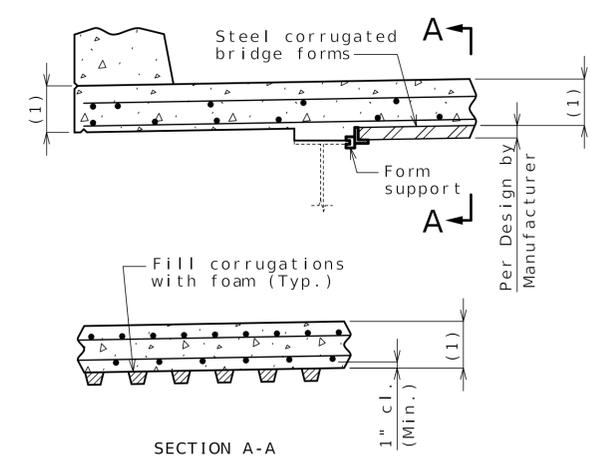
(1) Slab is to be considered a uniform thickness as shown on the plans. Haunching will vary. See front sheet for slab thickness.



**SECTION A-A**  
**DETAIL OF CONCRETE REMOVAL**  
**AT END BENT NO. 4**



**TYPICAL SECTION THRU**  
**END BENTS NO. 1 & 4 SHOWING**  
**PROTECTIVE COATING**



**OPTIONAL STAY-IN-PLACE**  
**FORM DETAILS**

DATE PREPARED	
9/26/2025	
ROUTE	STATE
7	MO
DISTRICT	SHEET NO.
BR	2
COUNTY	
CAMDEN	
JOB NO.	
J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A12363	

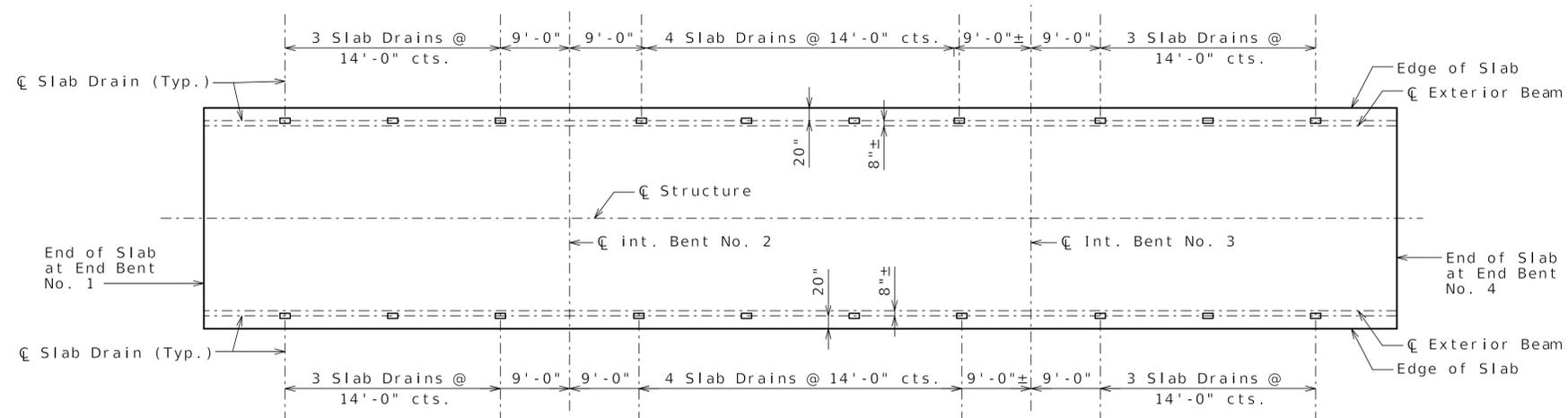
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

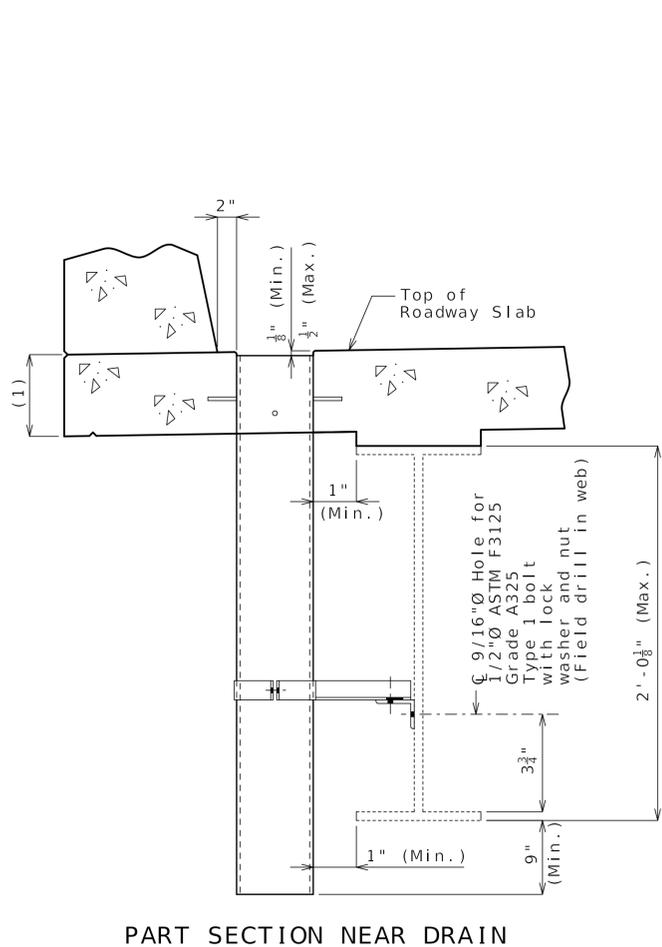
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



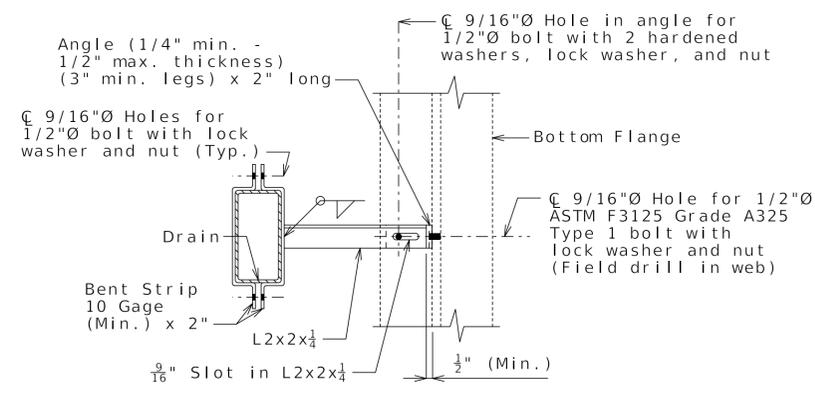




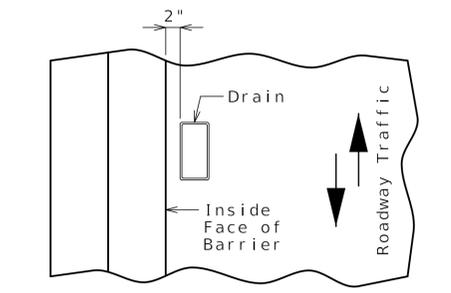
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



PART SECTION NEAR DRAIN

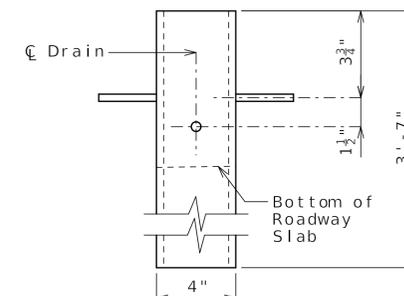


PART SECTION SHOWING BRACKET ASSEMBLY

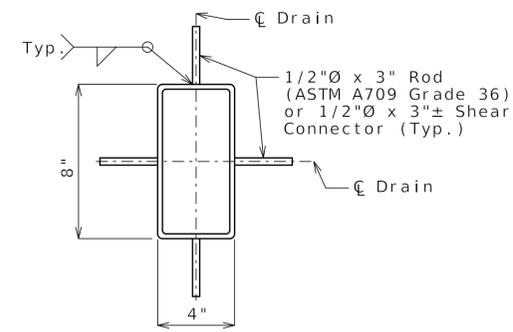


PART PLAN OF SLAB AT DRAIN

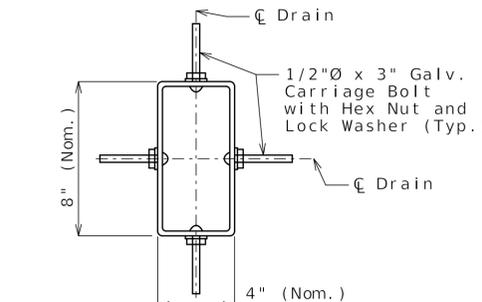
SLAB DRAINS



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 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.

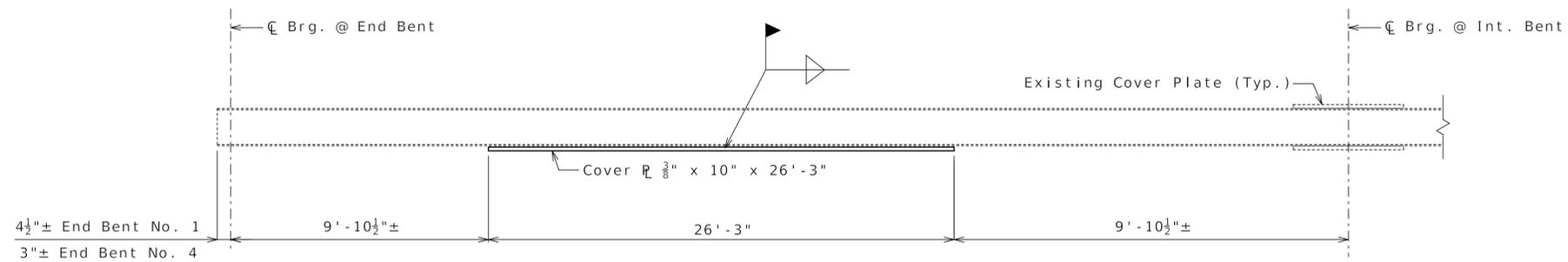
The color of the slab drain shall be gray (Federal Standard #26373). The color shall be uniform throughout the resin and any coating used.

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.

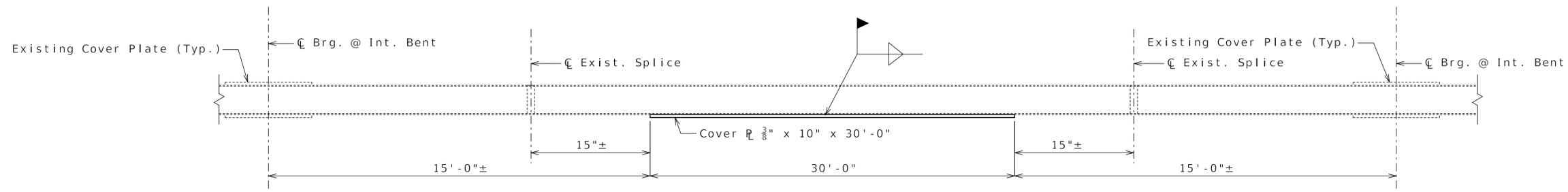
At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be recommended by the manufacturer to ensure a smooth, chip free cut.

DATE PREPARED 9/26/2025	
ROUTE 7	STATE MO
DISTRICT BR	SHEET NO. 5
COUNTY CAMDEN	
JOB NO. J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A12363	
DESCRIPTION	DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	

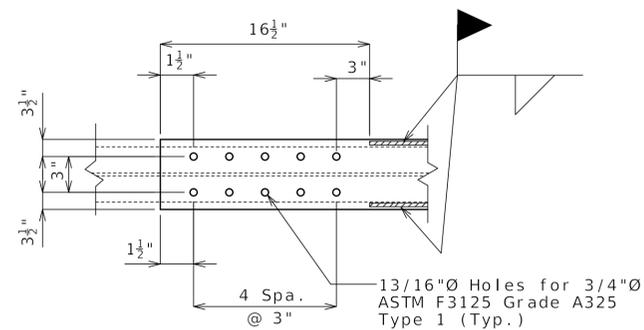




PART ELEVATION OF INTERIOR & EXTERIOR BEAM SHOWING COVER PLATE INSTALLATION  
SPAN (1-2) AND SPAN (4-3)



PART ELEVATION OF INTERIOR & EXTERIOR BEAM 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 4,211 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.

DATE PREPARED  
9/26/2025

ROUTE 7 STATE MO

DISTRICT BR SHEET NO. 6

COUNTY CAMDEN

JOB NO. J5P3538

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A12363

DESCRIPTION

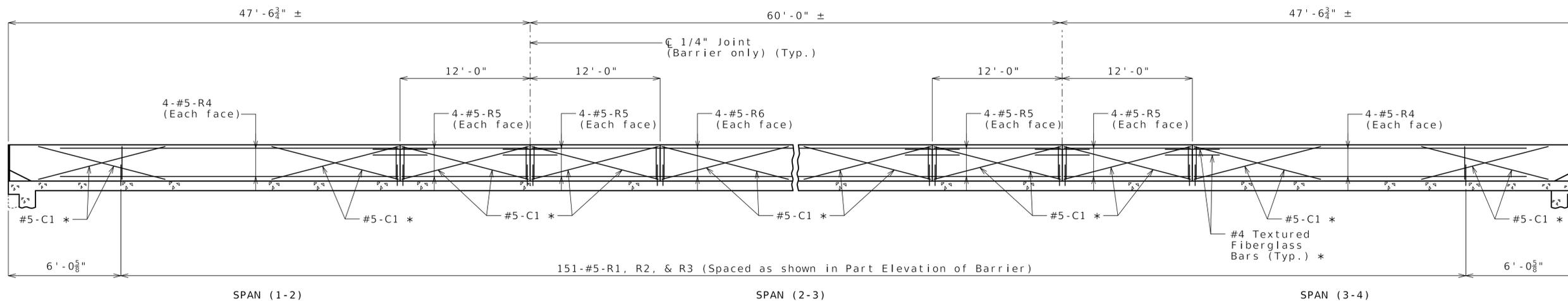
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

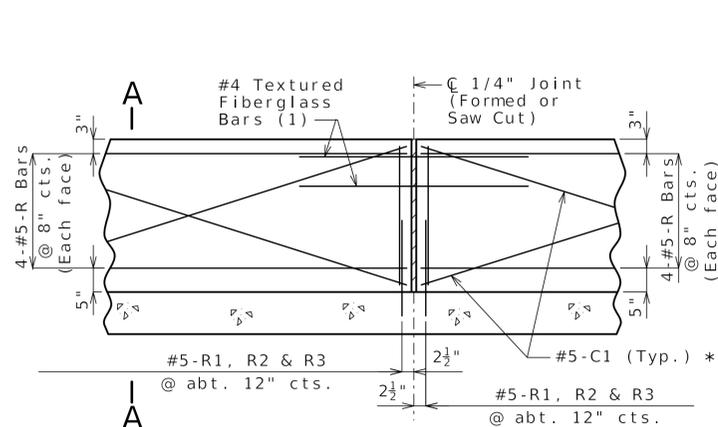
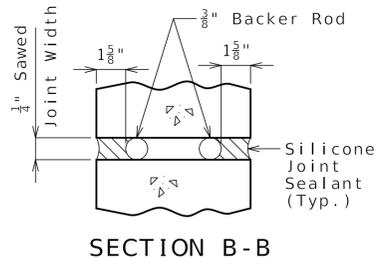
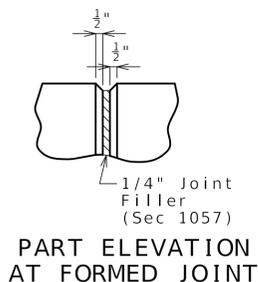
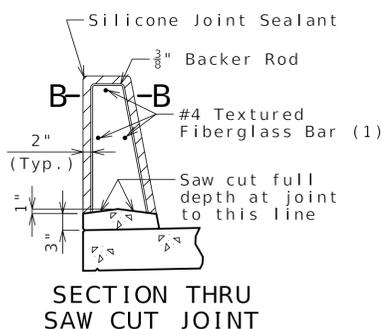
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)



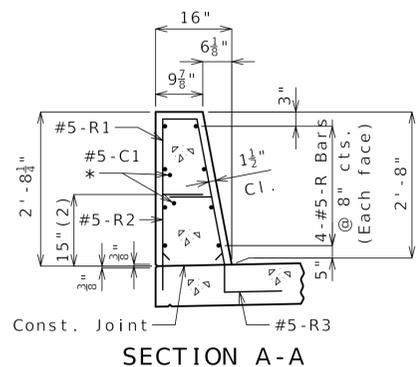
STRENGTHENING EXISTING BEAMS



**ELEVATION OF BARRIER**  
(Left barrier shown, right barrier similar)  
Longitudinal dimensions are horizontal.



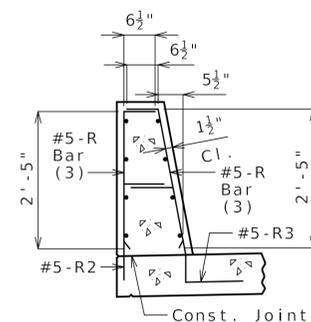
**PART ELEVATION OF BARRIER**  
(1) Four feet long, centered on joint, slip-formed option only



**SECTION A-A**  
Use a minimum lap of 2'-6" for #5 horizontal barrier bars.

The cross-sectional area above the slab is 2.89 square feet.

(2) To top of bar



**R-BAR PERMISSIBLE ALTERNATE SHAPE**

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

**General Notes:**

\* Slip-formed option only.

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

Top of barrier shall be built parallel to grade and barrier joints normal to grade.

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

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

Concrete in barrier shall be Class B-1.

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

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. Delimiters on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type H Barrier.

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

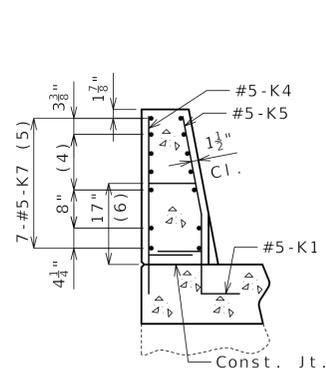
For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

DATE PREPARED 9/26/2025	
ROUTE 7	STATE MO
DISTRICT BR	SHEET NO. 7
COUNTY CAMDEN	
JOB NO. J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A12363	

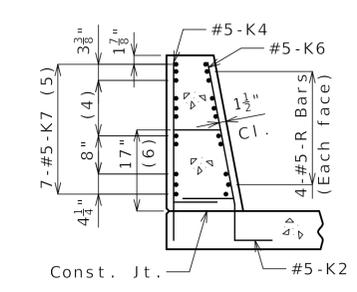
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

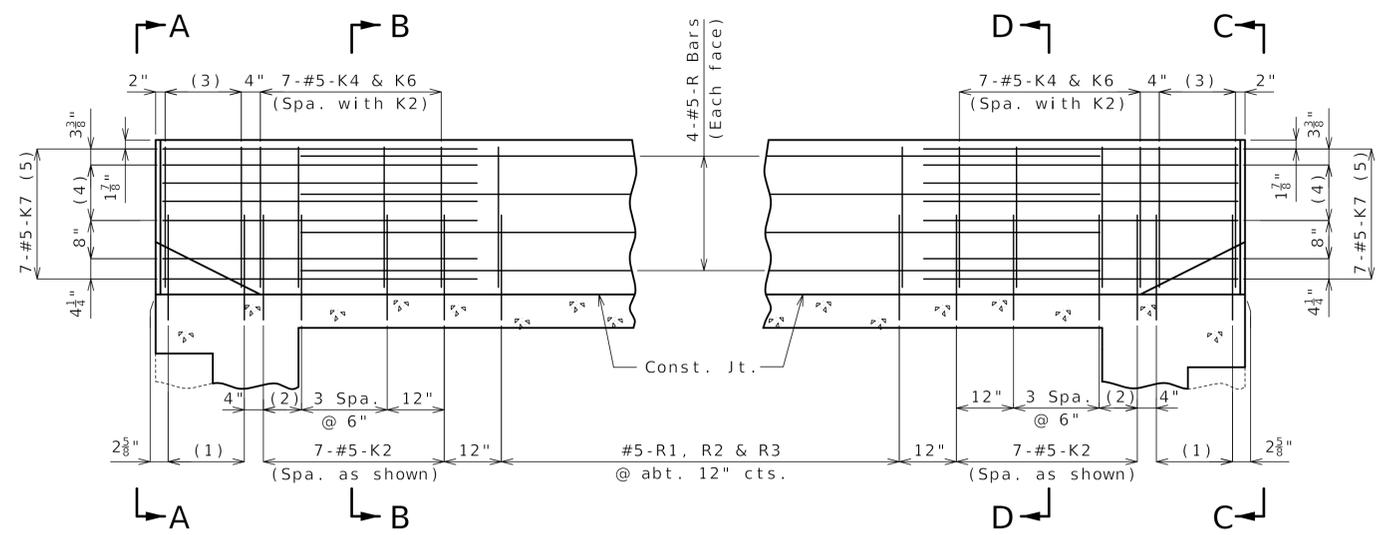
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



ELEVATION A-A

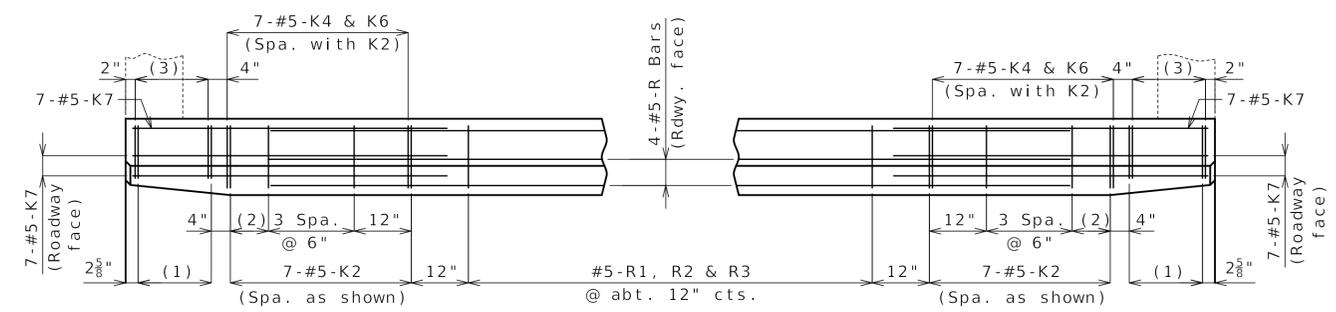


SECTION B-B

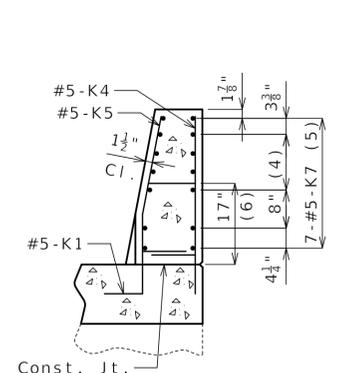


PART ELEVATION

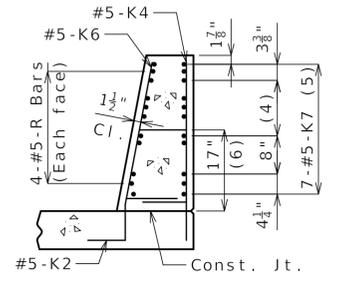
- (1) 5-#5-K1 @ 4" cts.
- (2) 2 Spacing @ 4"
- (3) 5-#5-K4 and 5-#5-K5, spaced with K1
- (4) 3 Spacing @ 3 1/8"
- (5) Spaced as shown, each face
- (6) To top of bar



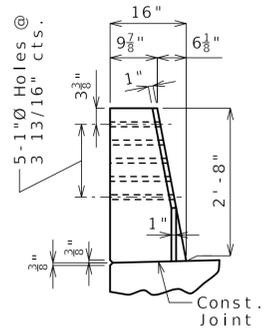
PART PLAN



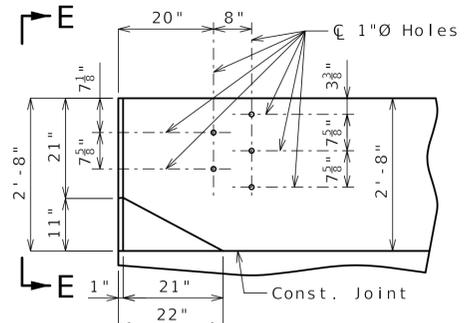
ELEVATION C-C



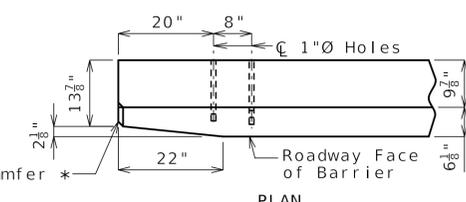
SECTION D-D



ELEVATION E-E



ELEVATION



PLAN

DETAILS OF GUARD RAIL ATTACHMENT

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

**General Notes:**

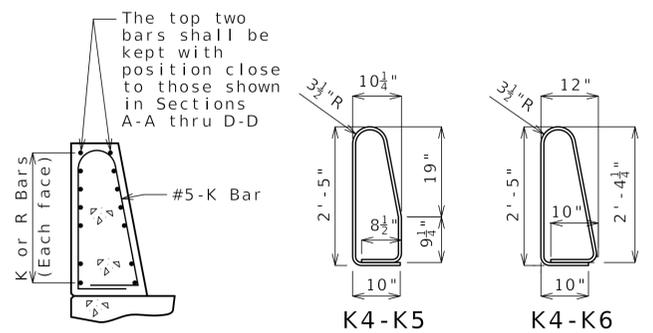
Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered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

**Reinforcing Steel:**

Minimum clearance to reinforcing steel shall be 1 1/2".  
Use a minimum lap of 2'-6" between K7 bars and R bars.

**TYPE H BARRIER AT END BENTS**

(Left barrier shown, right barrier similar)



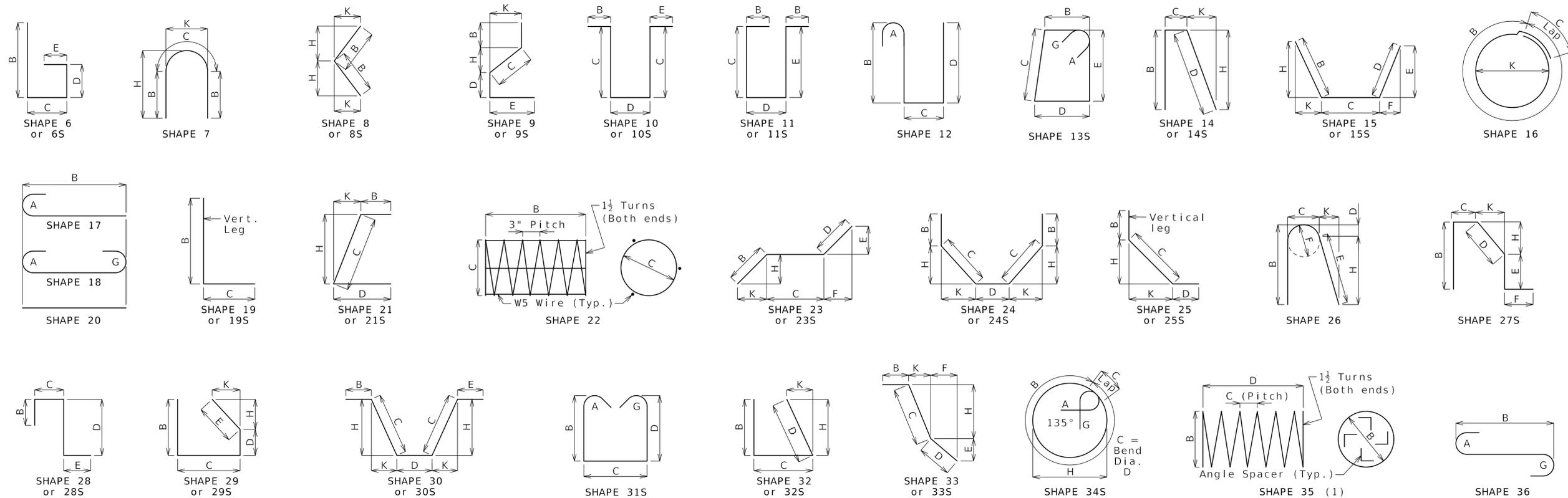
**PERMISSIBLE ALTERNATE SHAPES**

(Other K bars not shown for clarity)

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

All dimensions are out to out.

DATE PREPARED		9/26/2025	
ROUTE	STATE	7	MO
DISTRICT	SHEET NO.	BR	8
COUNTY			
CAMDEN			
JOB NO.			
J5P3538			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			
A12363			
DATE	DESCRIPTION		
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION		105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	



DATE PREPARED 9/26/2025	
ROUTE 7	STATE MO
DISTRICT BR	SHEET NO. 9
COUNTY CAMDEN	
JOB NO. J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A12363	

DESCRIPTION	DATE

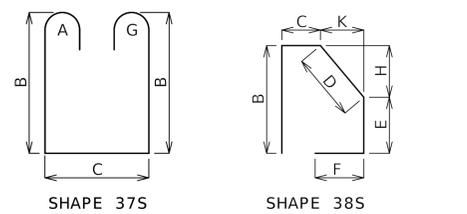
### Finished Bend Diameters D and Hook Dimensions

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 1/2"	6"
	2	5 1/4"	14"	9 3/4"	7"
#7	3	7"	15"	11 1/2"	8 3/4"
	2	6"	16"	11"	8"
#8	3	8"	17"	13 1/4"	10"
	1	9 1/2"	19 1/2"	15 1/2"	11 3/8"
#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		H	J	
			90°	135°	180°	135°	180°
#4	2	2"	4 1/2"	4 1/2"	5"	2 7/8"	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	Slip Form	Slab	Barrier	Slip Form	Plain	Epoxy
W5	0	0	0	0	0	0	0	0
4	0	0	0	576	0	0	0	576
5	0	0	0	4,043	6,685	501	0	11,229
6	0	0	0	40,468	0	0	0	40,468
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	45,087	6,685	501	0	52,273

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS



**Table Showing S2 Bar Lengths**

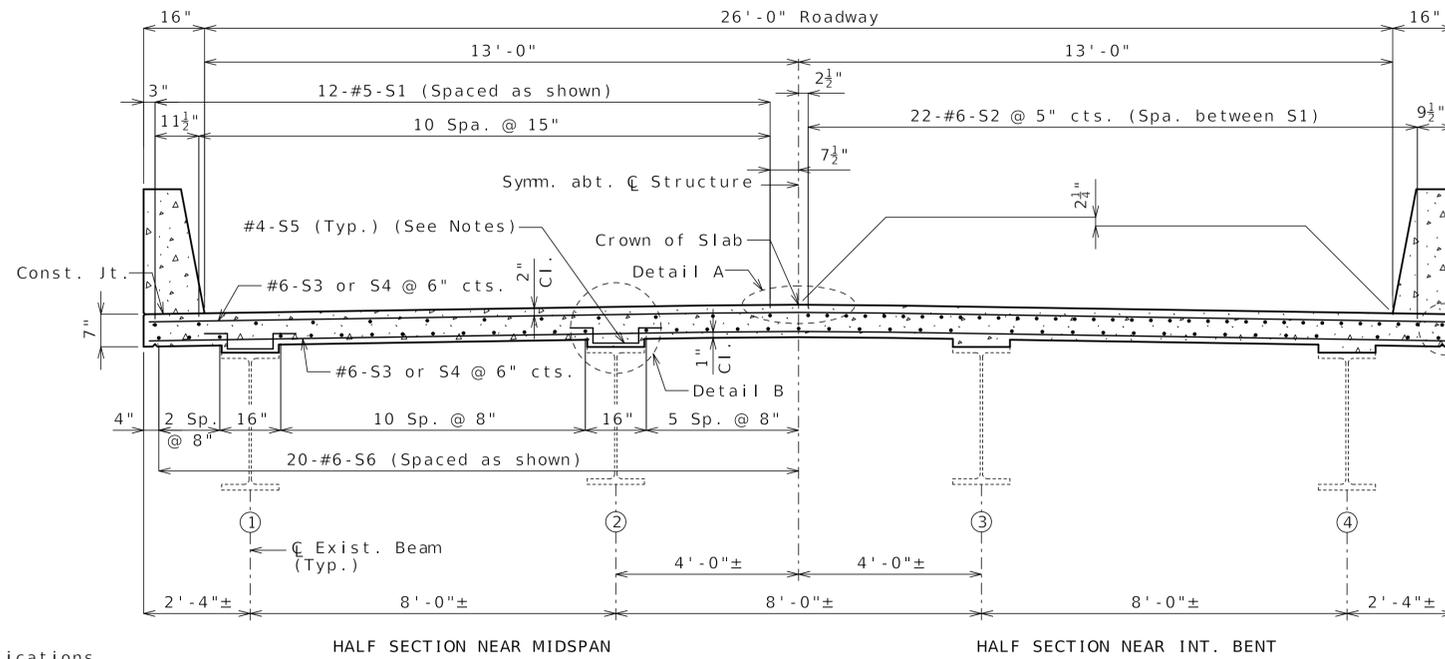
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
17'-3"	15'-9"	15'-9"	17'-3"

**Required Lap Length For Bar Splices \*\***

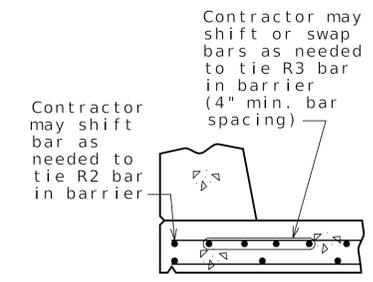
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

\*\* Unless otherwise shown.

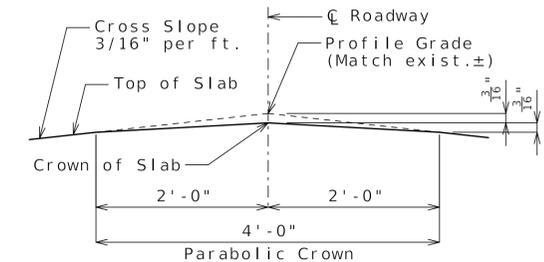
**U.I.P., REDECK AND REHABILITATE, EXISTING (45'- 60'- 45') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS (SKEW: 25°00'00" R.A.)**



**TYPICAL SECTION THRU SLAB**



**OPTIONAL SHIFTING TOP BARS AT BARRIER**

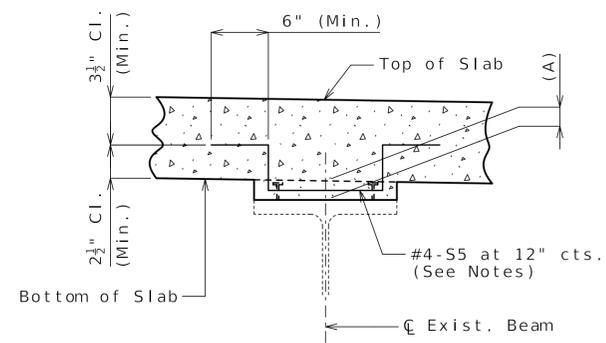


**DETAIL A**

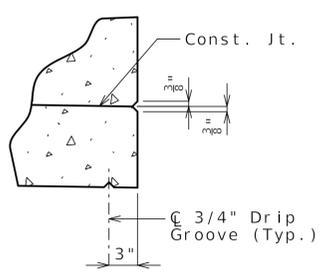
**General Notes:**

- Design Specifications:**  
 2002 AASHTO LFD (17th Ed.) Standard Specifications  
 Seismic Performance Category A
- Design Loading:**  
 H15-44 (1961) (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
- 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.
- #4-S5 hairpin bars to be placed at 12" cts. where dimension (A) is greater than or equal to 2" in shear connector regions. Hairpin bars may be placed at an angle to meet clearances. Estimated 460 hairpins required.
- Miscellaneous:**  
 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.
- 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.
- For adjusted beam deflection due to the weight of the new deck and barriers, see Bridge Electronic Deliverables.
- A Non-Destructive Test must be performed on all existing cover plate tension regions.

**Traffic Handling:**  
 Structure to be closed during construction.  
 See roadway plans for traffic control.



**DETAIL B**



**DETAIL C**

Estimated Quantities		
Item		Total
Removal of Existing Bridge Deck	sq. foot	4,547
Slab on Steel	sq. yard	490
Type H Barrier	linear foot	307
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Strengthening Existing Beams	lump sum	1
Slab Drain	each	14
Non-Destructive Testing	linear foot	45

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	108
Reinforcing Steel (Epoxy Coated)	pound	45,110

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 1, II or III.

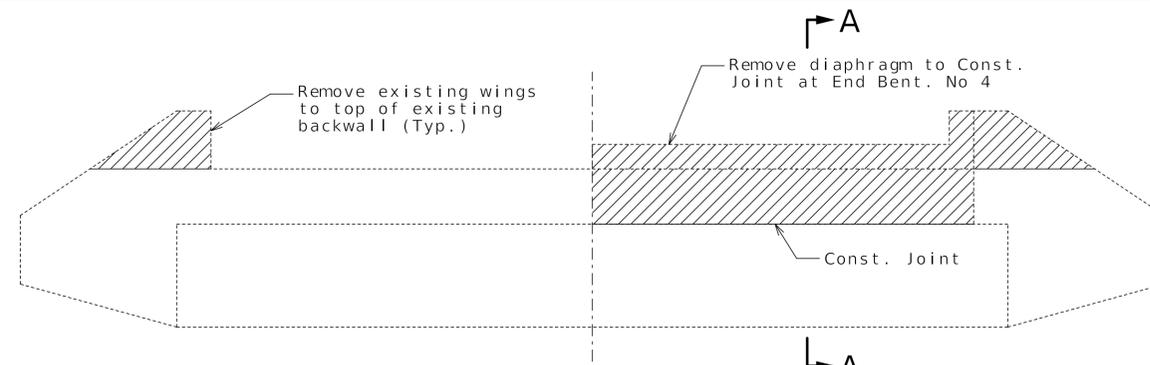
Slab shall be cast-in-place with conventional forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

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

**REPAIRS TO BRIDGE:  
 ROUTE 7 OVER MURPHY CREEK**

ROUTE 7 FROM ROUTE T TO ROUTE H  
 ABOUT 3.9 MILES NORTHWEST OF ROUTE H  
 BEGINNING STATION 171+84.0± (MATCH EXISTING)

DESCRIPTION	DATE PREPARED	9/26/2025
	ROUTE	7
	STATE	MO
	DISTRICT	BR
	SHEET NO.	1
	COUNTY	CAMDEN
	JOB NO.	J5P3538
	CONTRACT ID.	
	PROJECT NO.	
	BRIDGE NO.	A12373
DATE		
		
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		



HALF SECTION AT END BENT NO. 1      HALF SECTION AT END BENT NO. 4

**DETAILS OF CONCRETE REMOVAL AT END BENTS**

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Removal of Existing Bridge Deck. Vertical backwall and wingwall reinforcement to be cut off one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar.

A smooth, level surface shall be provided at End Bents No. 1 & 4 removal lines.

**General Notes:**

**Stay-In-Place Forms:**

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

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

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

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

**Pouring and Finishing Slab:**

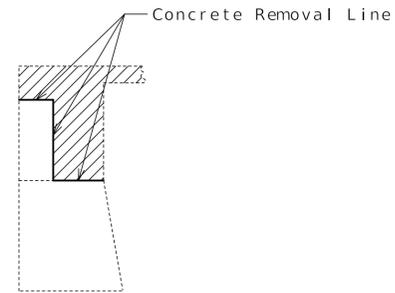
The contractor shall provide bracing necessary for lateral and torsional stability of the beams during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the beams. The cost for furnishing, installing,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

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

Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

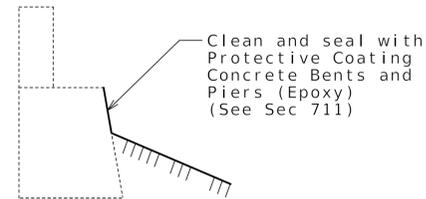
**Haunching:**

(1) Slab is to be considered a uniform thickness as shown on the plans. Haunching will vary. See front sheet for slab thickness.

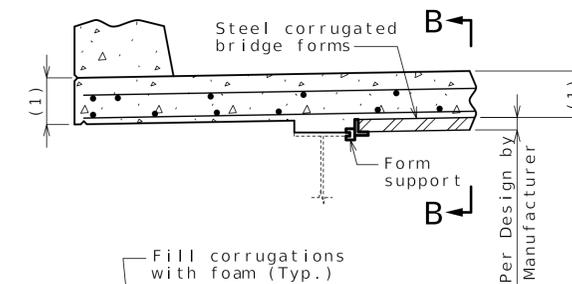


SECTION A-A

**DETAIL OF CONCRETE REMOVAL AT END BENT NO. 4**



**TYPICAL SECTION THRU END BENTS NO. 1 & 4 SHOWING PROTECTIVE COATING**



SECTION B-B

**OPTIONAL STAY-IN-PLACE FORM DETAILS**

DATE PREPARED	
9/26/2025	
ROUTE	STATE
7	MO
DISTRICT	SHEET NO.
BR	2
COUNTY	
CAMDEN	
JOB NO.	
J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A12373	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

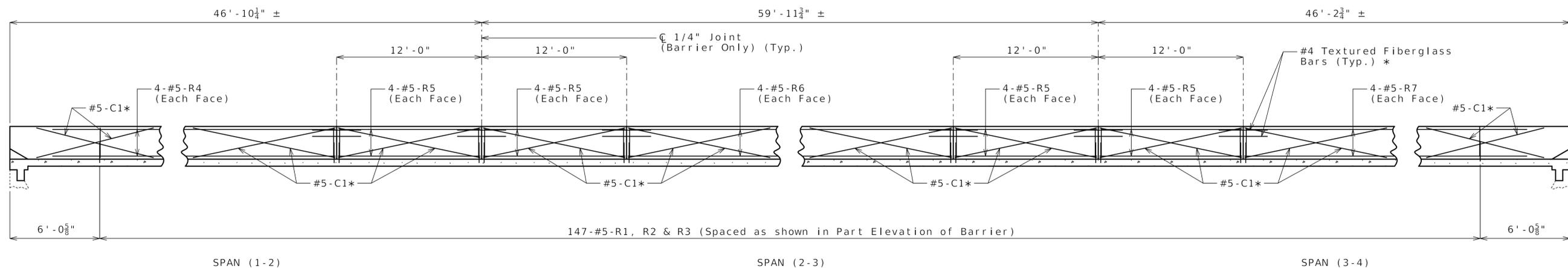
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



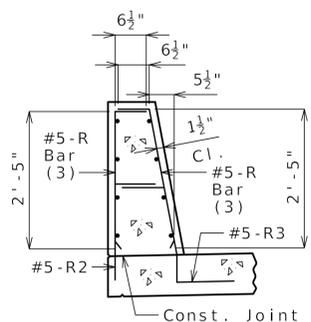
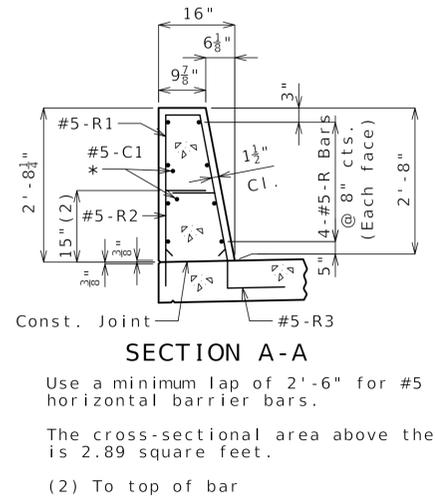
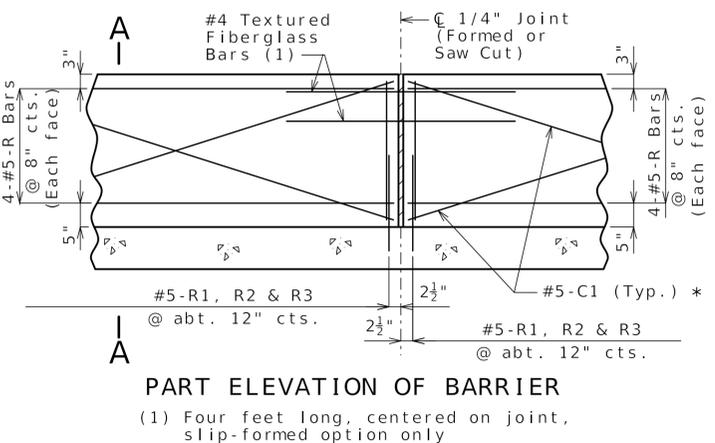
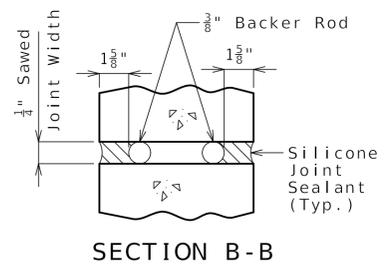
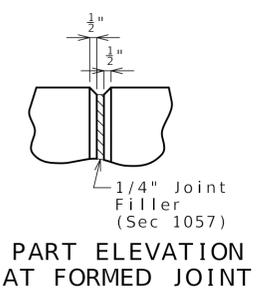
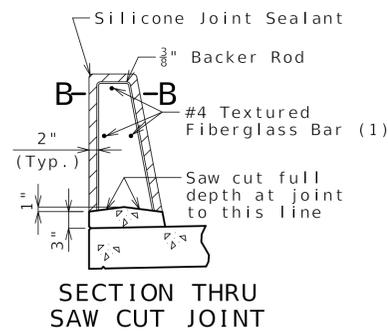








**ELEVATION OF BARRIER**  
(Left barrier shown, right barrier similar)  
Longitudinal dimensions are horizontal.



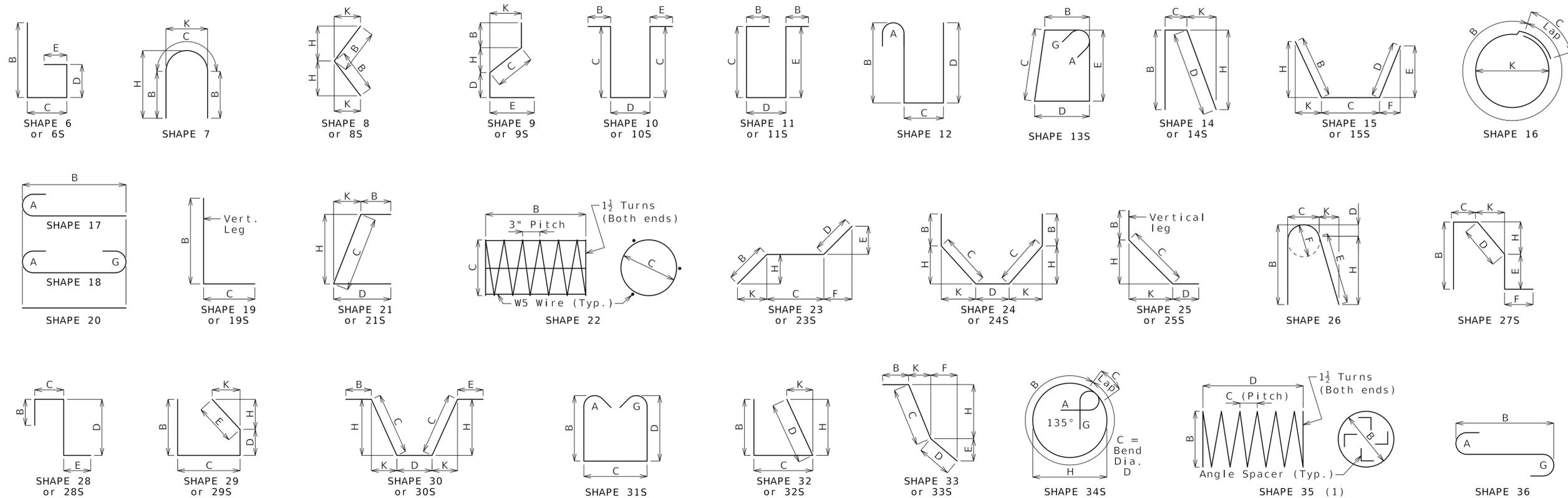
**R-BAR PERMISSIBLE ALTERNATE SHAPE**  
(3) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

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

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type H Barrier.  
Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.  
For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

DATE PREPARED 9/26/2025	
ROUTE 7	STATE MO
DISTRICT BR	SHEET NO. 7
COUNTY CAMDEN	
JOB NO. J5P3538	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A12373	
DESCRIPTION	
DATE	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
	105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)





DATE PREPARED		9/26/2025	
ROUTE	STATE	7	MO
DISTRICT	SHEET NO.	BR	9
COUNTY			
CAMDEN			
JOB NO.			
J5P3538			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			
A12373			

DESCRIPTION	DATE

### Finished Bend Diameters D and Hook Dimensions

#### Standard Pin Bend Shapes

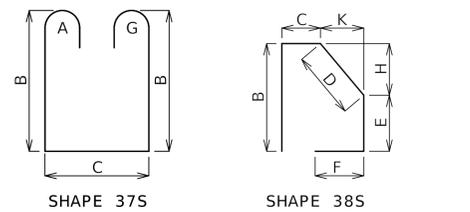
Size	Case	D	A or G		J
			90°	180°	180°
#4	1	3"	8"	6"	4"
#5	1	3 3/4"	10"	7"	5"
#6	1	4 1/2"	12"	8 1/2"	6"
	2	5 1/4"	14"	9 3/4"	7"
#7	3	7"	15"	11 1/2"	8 3/4"
	2	6"	16"	11"	8"
#8	3	8"	17"	13 1/4"	10"
	2	6"	16"	11"	8"
#9	1	9 1/2"	19 1/2"	15 1/2"	11 3/8"
#10	1	10 3/4"	22"	17 1/2"	13 1/4"
#11	1	12"	24 1/2"	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			H	J
			90°	135°	180°	135°	180°
#4	2	2"	4 1/2"	4 1/2"	5"	2 7/8"	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 3/8"	5"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 3/8"	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	Slip Form	Slab	Barrier	Slip Form	Plain	Epoxy
W5	0	0	0	0	0	0	0	0
4	0	0	0	563	0	0	0	563
5	0	0	0	4,005	6,587	501	0	11,093
6	0	0	0	40,538	0	0	0	40,538
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	45,106	6,587	501	0	52,194

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

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

