

ROUTE 6
A.A.D.T. - 2022 = 3,788
A.A.D.T. - 2042 = 4,185
T = 7.3%
V = 45 M.P.H.

FUNCTIONAL CLASSIFICATION - PRINCIPAL ARTERIAL

NO RIGHT-OF-WAY ACQUISITION

BUILDINGS AND STRUCTURES
GUARD RAIL
GUARD CABLE
CONCRETE RIGHT-OF-WAY MARKER
STEEL RIGHT-OF-WAY MARKER
LOCATION SURVEY MARKER
UTILITIES

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

KEY MAP
LOCATION OF MARION COUNTY




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

DESCRIPTION	SHEET NUMBER
TITLE SHEET -----	1
QUANTITIES (QU) (2 SHEETS) -----	3
PLAN SHEET (PL) (1 SHEET) -----	4
PROFILE SHEET (PF) (1 SHEET) -----	5
TRAFFIC CONTROL (TC) (14 SHEETS) --	6-19
BRIDGE PLANS (B) (27 SHEETS) -----	1-27

[illegible]

BEGINNING OF PROJECT	STA 339+87.00
END OF PROJECT	STA 344+44.00
APPARENT LENGTH	457.0 FEET
EQUATIONS AND EXCEPTIONS:	NONE
BRIDGE EXCEPTIONS	0.00 FEET

TOTAL CORRECTIONS	NONE
TOTAL BRIDGE EXCEPTIONS	0.0 FEET
NET LENGTH OF PROJECT	0.087 MILES
STATE LENGTH	0.087 MILES
FOR INFORMATION ONLY	
ESTIMATED DISTURBED ACRES	0.11 ACRES



STATE OF MISSOURI
EUGENE LOUIS
KUEBLER, JR.
NUMBER
PE-2071000912
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN
SIGNED, SEALED, AND
DATED ELECTRONICALLY.

DATE PREPARED	
4/2/2024	
ROUTE	STATE
6	MO
DISTRICT	SHEET NO.
NE	1
COUNTY	
MARION	
JOB NO.	
JNE0183	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO.

[illegible]

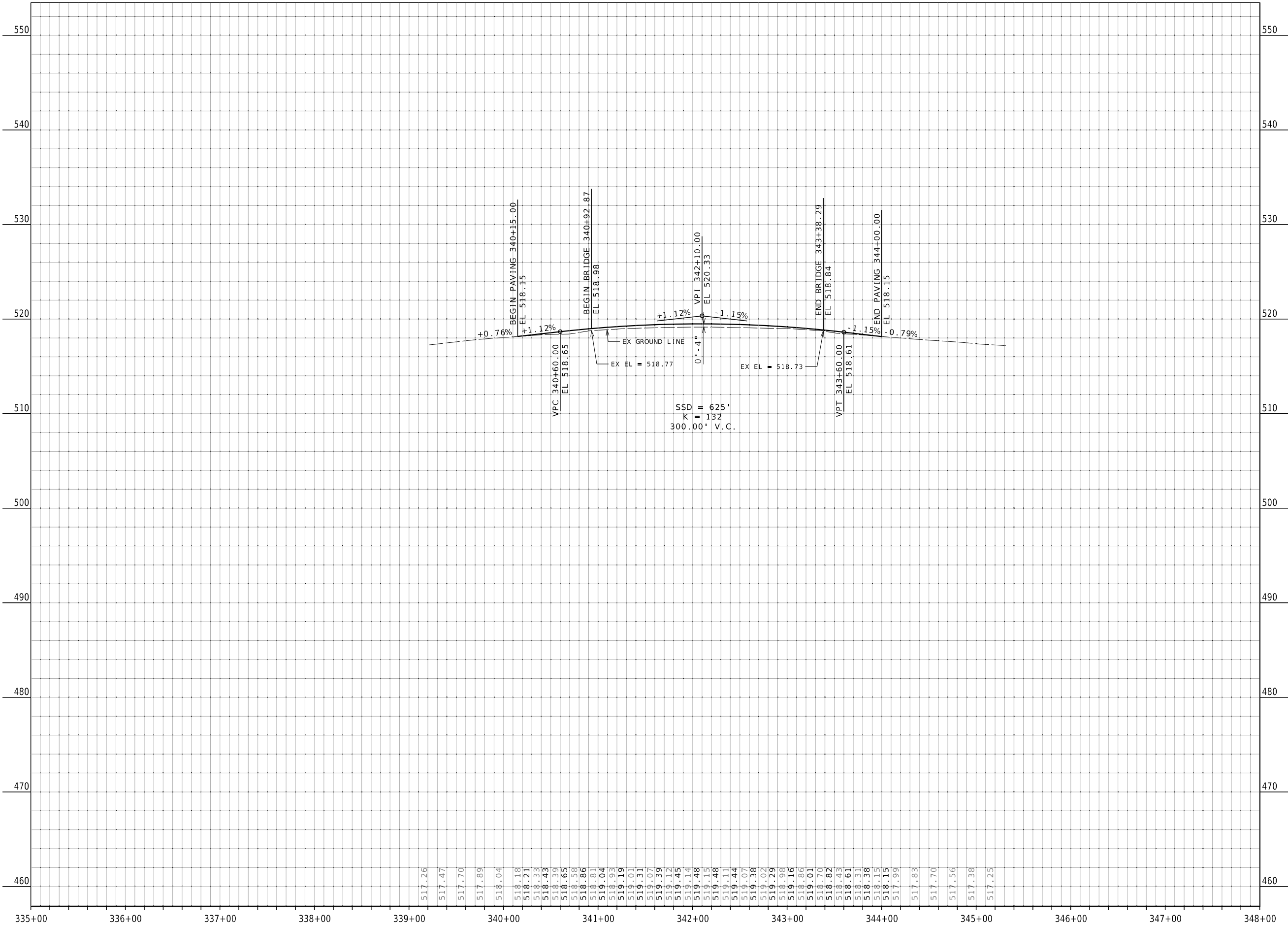
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-273-6636)

HDR
HDR Engineering, Inc.
401 S. 18th Street
Suite 300
St. Louis, MO 63105-2287
314-425-8300
Certificate of Authority: 000856

1024

ROUTE 6 BRIDGE PROFILE



THIS SHEET HAS BEEN
SIGNED, SEALED, AND
DATED ELECTRONICALLY.

DATE PREPARED
4/2/2024

ROUTE 6	STATE MO
DISTRICT NE	SHEET NO. 5

COUNTY
MARION

JOB NO.
JNE0183

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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JEFFERSON CITY, MO 65102
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314-425-8300
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

NOTES:

1. EXISTING GUIDE, WARNING AND REGULATORY SIGNS WITHIN THE WORK ZONE SHALL NOT CONFLICT WITH THE CONSTRUCTION SIGNING (SUCH AS SPEED LIMIT, BRIDGE CLEARANCE, ETC.) AND SHALL BE COVERED, REMOVED OR RELOCATED WITH NO DIRECT PAYMENT. CONSTRUCTION SIGNS SHALL NOT OBSTRUCT EXISTING SIGNS REMAINING IN PLACE.
2. ALL SPACING AND DISTANCES ARE APPROXIMATE. THEY MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS.
3. SEE STANDARD PLAN 616.10BC FOR TEMPORARY TRAFFIC CONTROL DEVICES DETAILS.
4. SEE STANDARD PLAN 620.10G FOR TEMPORARY PAVEMENT MARKING DETAILS.
5. CONSTRUCTION SIGNS NOTED AS POST-MOUNTED (POST) SHALL BE MOUNTED PER STANDARD PLAN 616.10BB.
6. THE SPEED LIMIT DURING ACTIVE CONSTRUCTION SHALL REMAIN 65 M.P.H. UNLESS OTHERWISE NOTED IN THE TRAFFIC CONTROL PLAN.
7. CONFLICTING STRIPING SHALL BE REMOVED PRIOR TO GUIDING TRAFFIC THROUGH WORK ZONES. ANY STRIPING WHICH IS DAMAGED DURING A DAYS WORK SHALL BE RE-STRIPED NO LATER THAN THE END OF THE SAME DAY.
8. ALL WARNING SIGNS SHALL HAVE A FLUORESCENT SHEETING.
9. WORDING FOR CHANGEABLE MESSAGE SIGNS SHALL BE AS APPROVED OR DIRECTED BY THE ENGINEER.
10. EXACT LOCATIONS FOR CHANGEABLE MESSAGE SIGNS SHALL BE AS DIRECTED BY THE ENGINEER.
11. MISSOURI ONE CALL (800 DIG RITE) SHALL BE CONTACTED FOR LOCATES (800-344-7483 OR 811) BEFORE BEGINNING ANY EXCAVATION OR BORING ACTIVITIES.
12. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES SHOWN ON PLANS HAVE BEEN DRAFTED FROM FIELD NOTES AND AERIAL PHOTOGRAPHY; THE COMMISSION DOES NOT WARRANT THE LOCATIONS OF THESE FACILITIES AS PRECISE. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXISTENCE AND PRECISE LOCATION OF ALL FACILITIES AND TO AVOID DAMAGE TO THEM. SEE THE JOB SPECIAL PROVISIONS FOR A LIST OF UTILITY COMPANIES ON OR WITHIN THE VICINITY OF THE PROJECT LIMITS.
13. FOR REMOVALS SEE PLANS AND REMOVAL OF IMPROVEMENTS TABLE.



WO20-1
2

BRIDGE
OR
RAMP



WO3-5
3



R2-1
4A



R2-1
4B



WO20-5
5L



WO20-5
5R



WO4-1aR
6A



WO4-1aL
6B



WO20-6a
6L



WO20-6a
6R



WO20-3
20



R2-1
25



R11-2
29



E05-1
49



MO4-8a
52



GO20-5aP
54



WO20-3
90

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATIONS NOTES:

1. REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKINGS AS NEEDED.
2. WHEN WORK IS BEING PREFORMED WITHIN THE MEDIAN, TA-5B "LONG-TERM SHOULDER CLOSURE WITH TEMPORARY TRAFFIC BARRIER" SHALL BE UTILIZED. SEE SHEET 17 FOR FURTHER DETAILS.
3. A FLASHING ARROW BOARD SHALL BE USED WHEN A FREEWAY LANE IS CLOSED. WHEN MORE THAN ONE FREEWAY LANE IS CLOSED, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH LANE.
4. ALTERNATIVE TEMPORARY TRAFFIC CONTROL SET-UPS SHOULD BE CONSIDERED WHEN REDUCTION IN CAPACITY CANNOT BE TOLERATED. SET-UPS MUST BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO IMPLEMENTATION.
5. UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY PROVIDE ADDITIONAL PROTECTIVE TRUCKS EQUIPPED WITH PROPER WARNING DEVICES.
6. TRUCK MOUNTED ATTENUATOR WITH FLASHING ARROW PANEL SHALL BE USED IN PROTECTED WORK ZONES WHEN WORKERS ARE PRESENT.
7. PROTECTIVE TRUCK AND WORK VEHICLES SHALL DISPLAY HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.
8. VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING OR STROBE LIGHTS.
9. FLASHING ARROW PANELS SHALL, AS A MINIMUM, BE TYPE B, WITH A SIZE OF 60 X 30 INCHES.

SUGGESTED SEQUENCE OF CONSTRUCTION:

1. INSTALL DETOUR SIGNING AND CLOSE ROUTE 6 OVERPASS AT US-61.
2. USE SIGNING PLAN SHOWN IN "US-61 CLOSURE ROUTE 6 BRIDGE DEMO" FOR WEEKEND CLOSURE.
3. ONCE BRIDGE IS CLOSED AND DEMOLITION IS COMPLETE, USE TA-43S ON "TRAFFIC CONTROL PLAN TYPICAL APPLICATIONS SHEET 4 OF 4" TO CLOSE RAMP PERMANENTLY THROUGH THE DURATION OF CONSTRUCTION.
4. USE ROLLING CLOSURE DESCRIBED IN WORK ZONE TRAFFIC MANAGEMENT SPECIAL PROVISION TO PLACE PROPOSED GIRDERS.
5. TYPICAL APPLICATIONS SHOWN IN PLANS TO BE USED AS NEEDED AS PROPOSED CONSTRUCTION REQUIRES.

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- FLASHING ARROW PANEL
- CHANNELIZER
- DIRECTIONAL INDICATOR BARRICADE
- TYPE III MOVEABLE BARRICADE
- CHANGEABLE MESSAGE BOARD
(CONTRACTOR FURNISHED
AND RETAINED)
- WORK AREA
- TRAFFIC USAGE

THIS SHEET HAS BEEN
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DATE PREPARED
4 / 2 / 2024

ROUTE
6

DISTRICT
NE

STATE
MO

SHEET NO.
6

COUNTY
MARION

JOB NO.
JNE0183

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

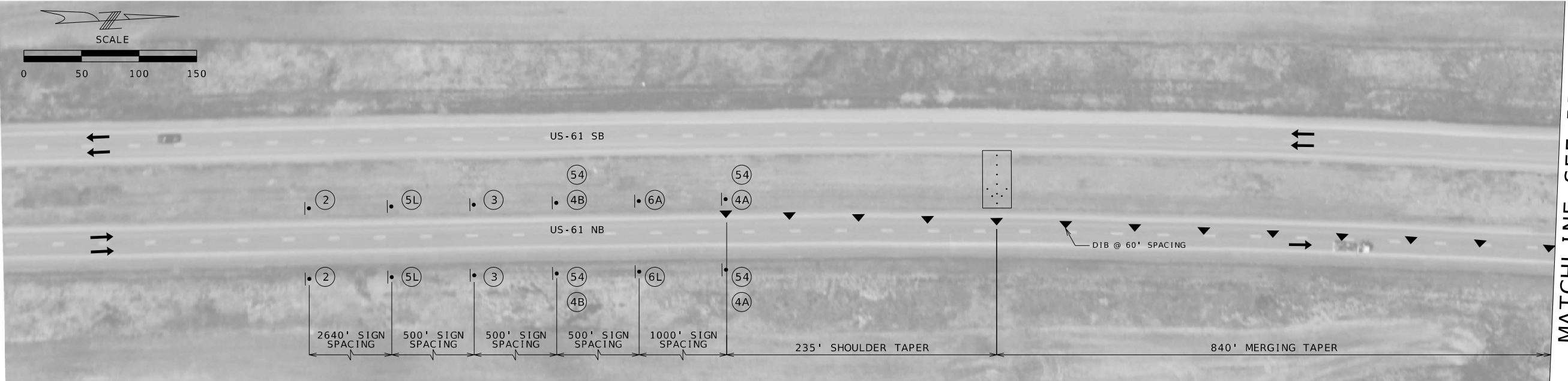
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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St. Louis, MO 63103-2267
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TRAFFIC CONTROL PLAN
GENERAL NOTES
AND LEGEND
SHEET 1 OF 1

US-61 NB AND SB CLOSURE FOR ROUTE 6 BRIDGE DEMO

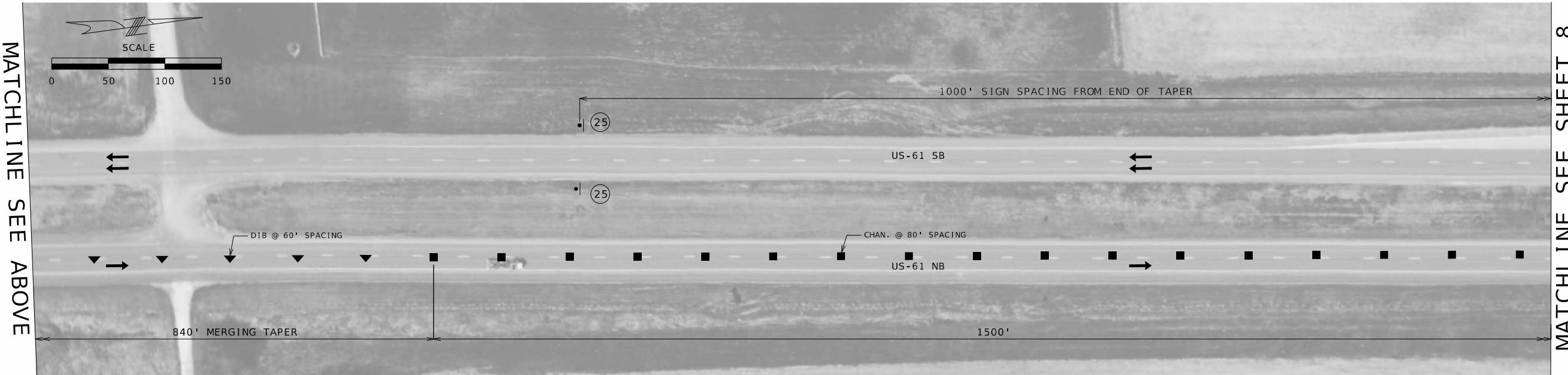


NOTES:

USE TYPICAL APPLICATION ON SHEET 16 FOR ADVANCED SIGNING FOR SPEED REDUCTION GREATER THAN 20 MPH.

SEE SHEET 18 FOR BEGIN/END OF PROJECT SIGNING. TO BE USED IN PLACE FOR DURATION OF THE PROJECT.

SEE JOB SPECIAL PROVISIONS FOR RESTRICTIONS. SEE SHEET 6 FOR LEGEND, SIGN DETAILS, AND GENERAL NOTES.



TRAFFIC CONTROL PLAN
US-61 CLOSURE
ROUTE 6 BRIDGE DEMO
SHEET 1 OF 3



DATE PREPARED
4/2/2024

ROUTE
6

STATE
MO

DISTRICT
NE

SHEET NO.
7

COUNTY
MARION

JOB NO.
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CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

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US-61 NB AND SB CLOSURE FOR ROUTE 6 BRIDGE DEMO



NOTES:
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SEE SHEET 6 FOR LEGEND, SIGN DETAILS, AND GENERAL NOTES.

TRAFFIC CONTROL PLAN
US-61 CLOSURE
ROUTE 6 BRIDGE DEMO
SHEET 2 OF 3



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DATE PREPARED

ROUTE	STATE
6	MO

DISTRICT	SHEET NO.
NE	8

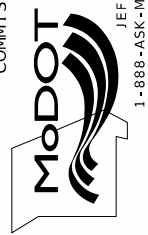
COUNTY
MARION

JOB NO.
JNE0183

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

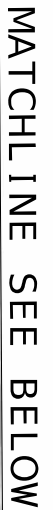
HDR Engineering, Inc.

401 S. 18th Street

Suite 300
St. Louis, MO 63103-2267
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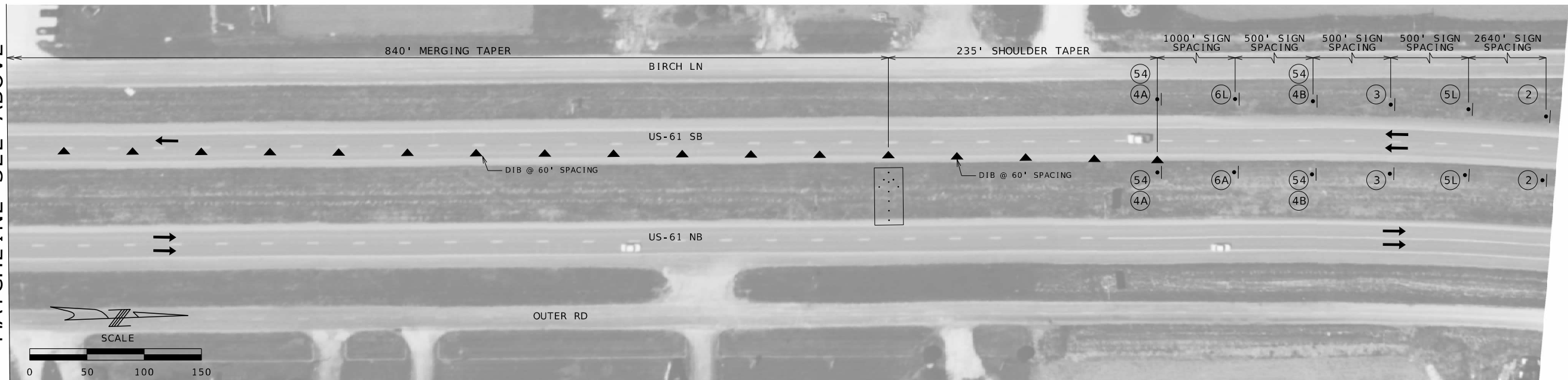
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Certificate of Authority: 000856

MATCHLINE SHEET 8



SEE JOB SPECIAL PROVISIONS FOR RESTRICTIONS.
SEE SHEET 6 FOR LEGEND, SIGN DETAILS, AND
GENERAL NOTES.

MATCHLINE SEE ABOVE



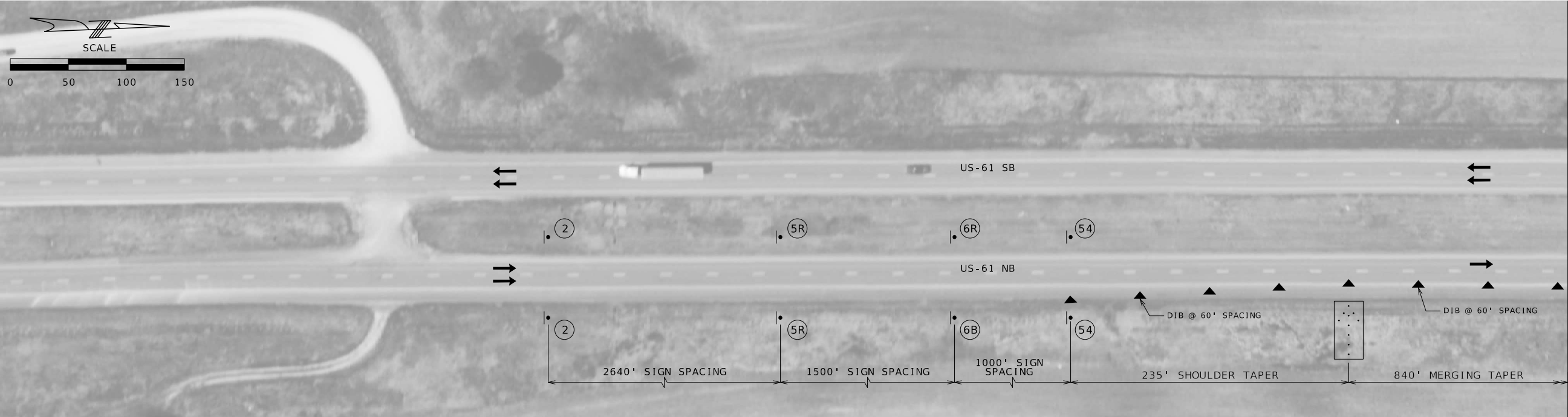
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Suite 300
St. Louis, MO 63103-2267
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Certificate of Authority: 0000

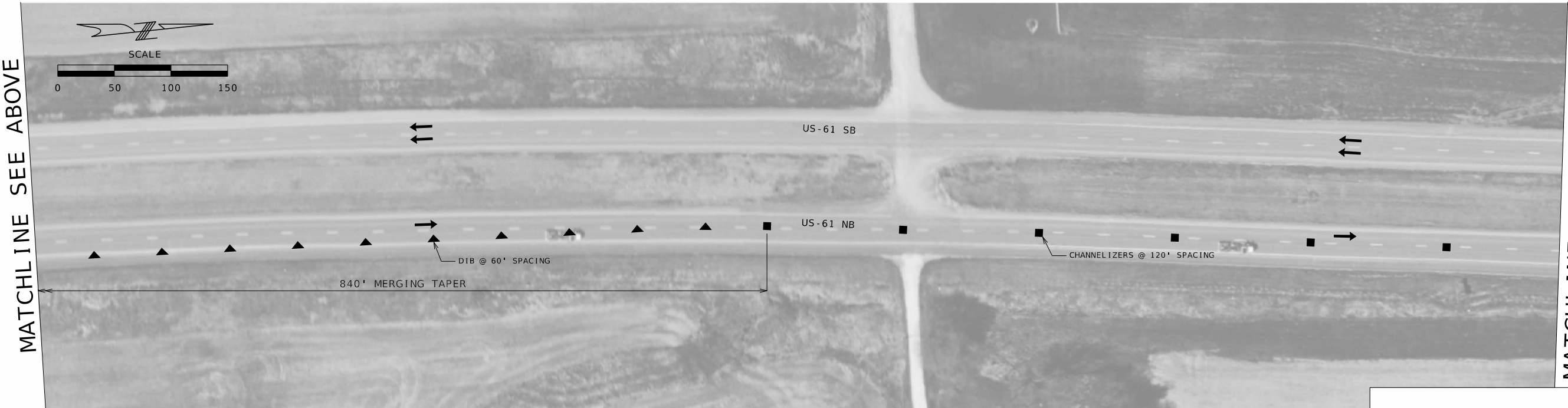


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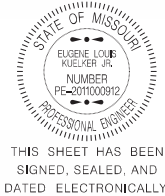
US-61 OUTSIDE LANE CLOSURE



NOTES:
SEE JOB SPECIAL PROVISIONS FOR RESTRICTIONS.
SEE SHEET 6 FOR LEGEND, SIGN DETAILS, AND
GENERAL NOTES.



TRAFFIC CONTROL PLAN
US-61 OUTSIDE LANE
CLOSURE DETAIL
SHEET 1 OF 4



THIS SHEET HAS BEEN
SIGNED, SEALED, AND
DATED ELECTRONICALLY

DATE PREPARED
4/2/2024

ROUTE	STATE
6	MO

DISTRICT
NE

SHEET NO
10

MARION

JNE0183

CONTRACT ID.

PROJECT NO.

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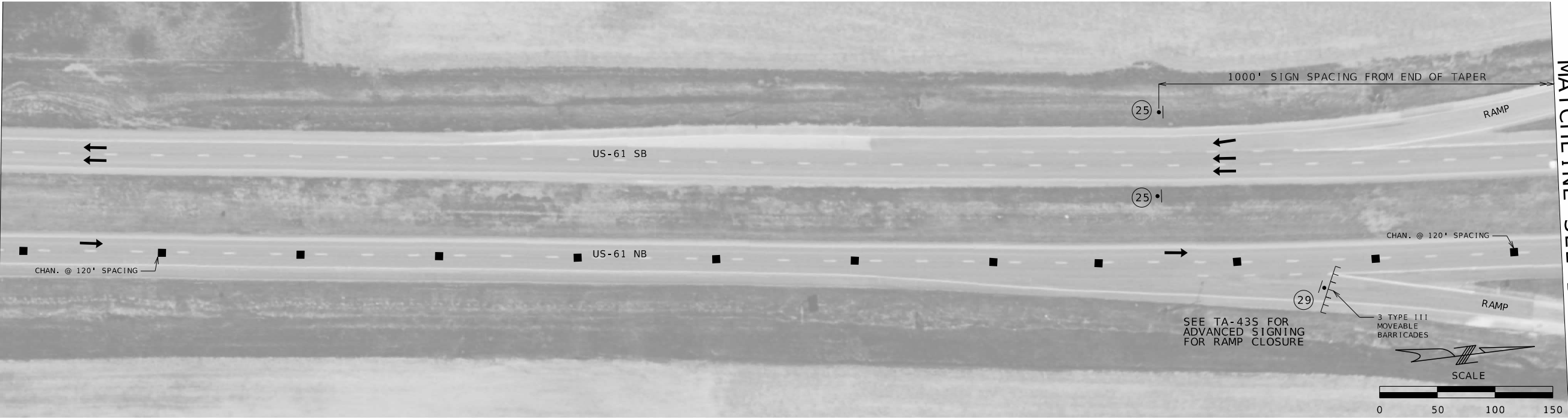
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US-61 OUTSIDE LANE CLOSURE

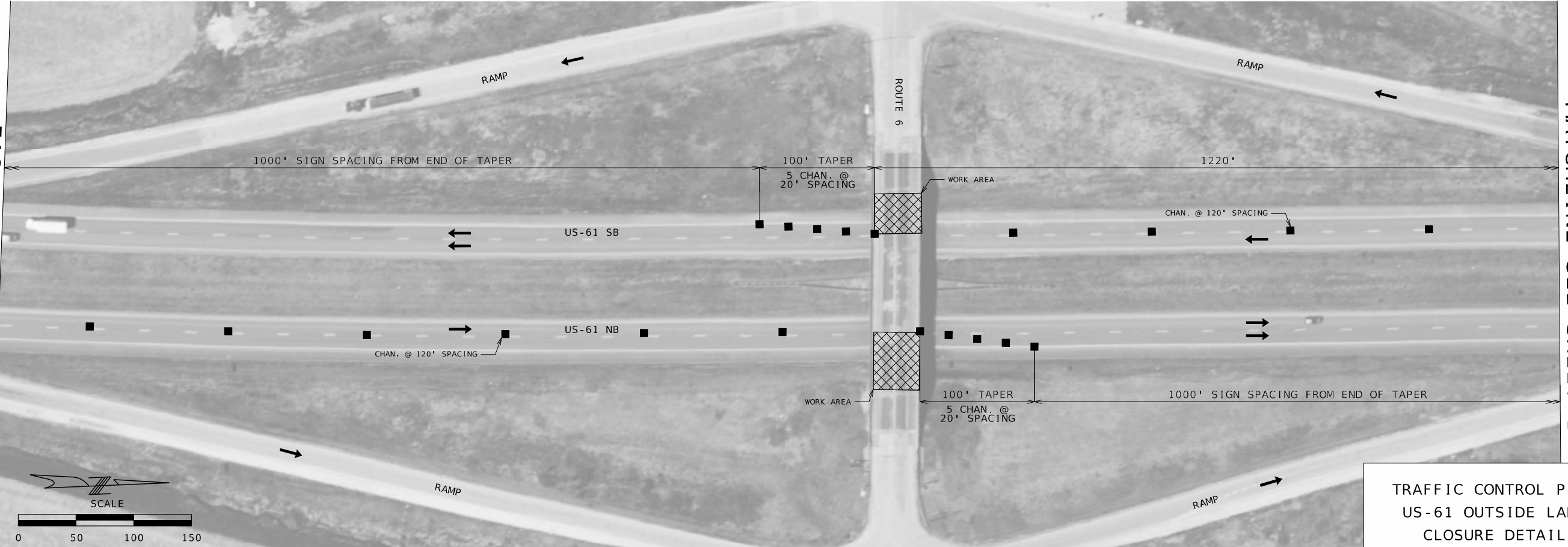
MATCHLINE SEE SHEET 10



MATCHLINE SEE BELOW

NOTES:
SEE JOB SPECIAL PROVISIONS FOR RESTRICTIONS.
SEE SHEET 6 FOR LEGEND, SIGN DETAILS, AND
GENERAL NOTES.

MATCHLINE SEE ABOVE



MATCHLINE SEE SHEET 12

TRAFFIC CONTROL PLAN
US-61 OUTSIDE LANE
CLOSURE DETAIL
SHEET 2 OF 4



THIS SHEET HAS BEEN
SIGNED, SEALED, AND
DATED ELECTRONICALLY.

DATE PREPARED
4/2/2024

ROUTE 6 STATE MO

DISTRICT NE SHEET NO. 11

COUNTY MARION

JOB NO. JNE0183

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-273-6636)

HDR Engineering, Inc.

HDR

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US-61 OUTSIDE LANE CLOSURE



NOTES:
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[illegible]

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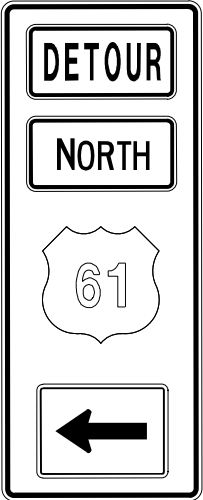
TRAFFIC CONTROL PLAN
US-61 OUTSIDE LANE
CLOSURE DETAIL
SHEET 4 OF 4



70



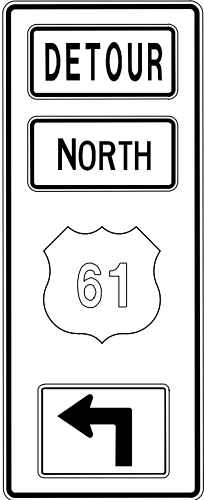
71



72



73



74



77



78



79



80



81



82

TRAFFIC CONTROL PLAN
DETOUR SIGN DETAIL
SHEET 1 OF 1

THIS SHEET HAS BEEN
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DATE PREPARED
4/2/2024

ROUTE 6	STATE MO
DISTRICT NE	SHEET NO. 15

COUNTY
MARION

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BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

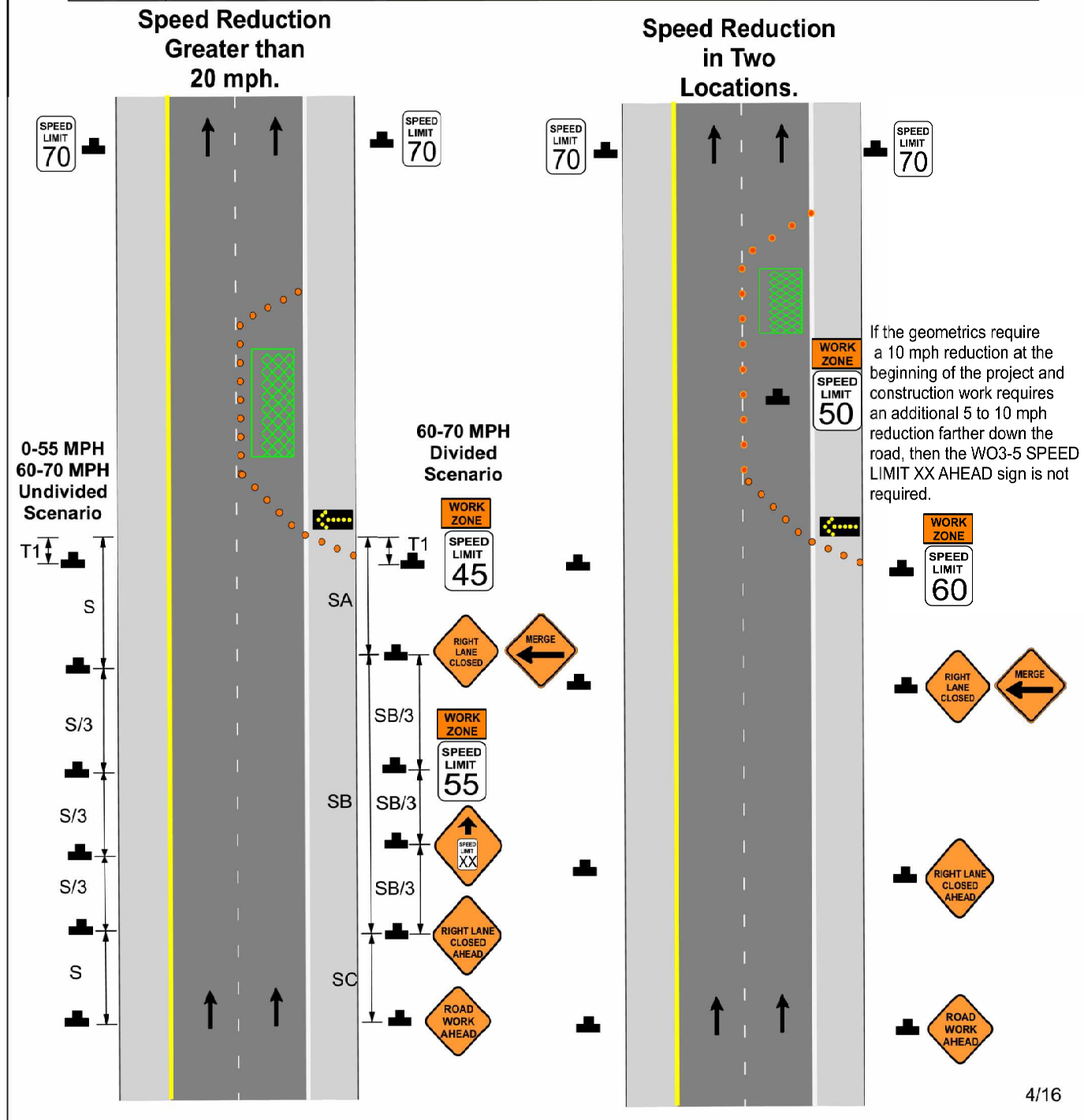
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Certificate of Authority: 000856

Figure 616.12.3.4 Work Zone "Speed Limit" Locations for Reductions Greater than 20 mph and Reduction in Two Locations

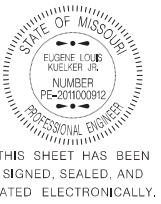
SPEED		SIGN SPACING (ft.)		TAPER LENGTH (ft.)		OPTIONAL	CHANNELIZER SPACING (ft.)
Normal Posted (mph)	Undivided (S)	Divided (S)	Shoulder (1) (T1)	Lane (2) (T2)	BUFFER LENGTH (ft.) (B)	Tapers	Buffer/ Work Areas
0-35	200	200	This typical application provides guidelines for the sequencing and location of the work zone speed limit signs. Review appropriate typical applications for signs, sign spacing, taper length, buffer length, channelizer spacing, TMA's, channelizers, flags, rumble strips, lights, AWRS, etc.				
40-45	350	500					
50-55	500	1000					
60-70	1000	SA - 1000 SB - 1500 SC - 2640					

This typical application provides guidelines for the sequencing and location of the work zone speed limit signs. Review appropriate typical applications for signs, sign spacing, taper length, buffer length, channelizer spacing, TMA's, channelizers, flags, rumble strips, lights, AWRS, etc.



4/16

TRAFFIC CONTROL PLAN
TYPICAL APPLICATIONS
SHEET 1 OF 4



DATE PREPARED
4/2/2024

ROUTE	STATE
6	MO

DISTRICT	SHEET NO.
NE	16

COUNTY
MARION

JOB NO.
JNE0183

CONTRACT ID.

PROJECT NO. _____
PAGE NO. _____[illegible]

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5102
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MO 6
975-6WEST
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MODOT



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Inc.

6

267 00085

HDF
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3103-22
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MO 63
3300
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Louis,
4-425-8
rtificate

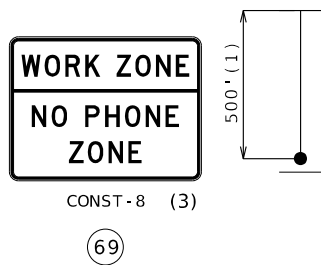
401 Sui St. 314 Cen

RM 4/2/2024

PM 4/2/2024

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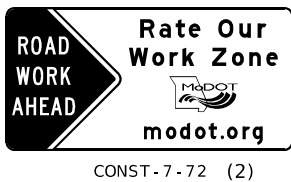
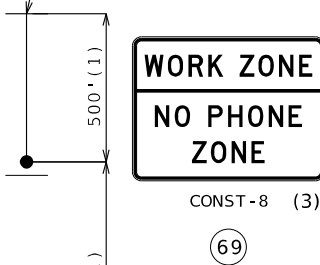
BEGIN/END OF PROJECT SIGNING



MULTI-LANE
DIVIDED

END OF PROJECT LIMITS; END OF
WORK ZONE TERMINATION AREA.

BEGINNING OF PROJECT LIMITS;
OR INITIAL WORK ZONE SIGN IF
LOCATED OUTSIDE PROJECT LIMITS.



NOTES:

SIGN GO20-1 IS REQUIRED PER EPG 616.6.56.

SIGN GO20-2 IS USED ON ALL PROJECTS WHERE SIGN GO20-1 IS USED.

OTHER SIGNS SUCH AS DETOUR OR ALTERNATE ROUTE SIGNING MAY BE USED OUTSIDE THE PROJECT LIMITS.

ANY EXISTING SIGNING THAT CONFLICTS WITH THE TRAFFIC CONTROL SINGING SHALL BE COMPLETELY COVERED OR REMOVED.

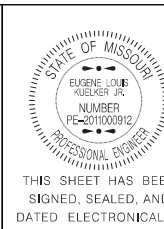
BEGIN/END OF PROJECT SIGNING TO BE USED IN PLACE THROUGHOUT THE DURATION OF THE PROJECT.

(1) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS. WHERE TRAFFIC BACKUPS ARE EXPECTED BEYOND THE ADVANCE WARNING AREA, ADDITIONAL SIGNING MAY BE NEEDED.

(2) SIGN CONST-7-72 OR CONST-7-48 IS PLACED 500 FEET BEFORE THE BEGINNING OF PROJECT LIMITS OR THE ROAD WORK AHEAD SIGN OR ROAD WORK NEXT XX MILES SIGN. IF USED, WHEN THESE SIGNS ARE LOCATED OUTSIDE OF THE PROJECT LIMITS.

(3) THE "WORK ZONE NO PHONE ZONE" SIGN IS PLACED A MINIMUM OF 500 FEET BEFORE THE ROAD WORK AHEAD SIGN.

TRAFFIC CONTROL PLAN
TYPICAL APPLICATIONS
SHEET 3 OF 4



DATE PREPARED 4/2/2024	
ROUTE 6	STATE MO
DISTRICT NE	SHEET NO. 18
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

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

HDR HDR Engineering, Inc.

401 S. 18th Street
Suite 300
St. Louis, MO 63103-2267
314-425-8300
Certificate of Authority: 000856

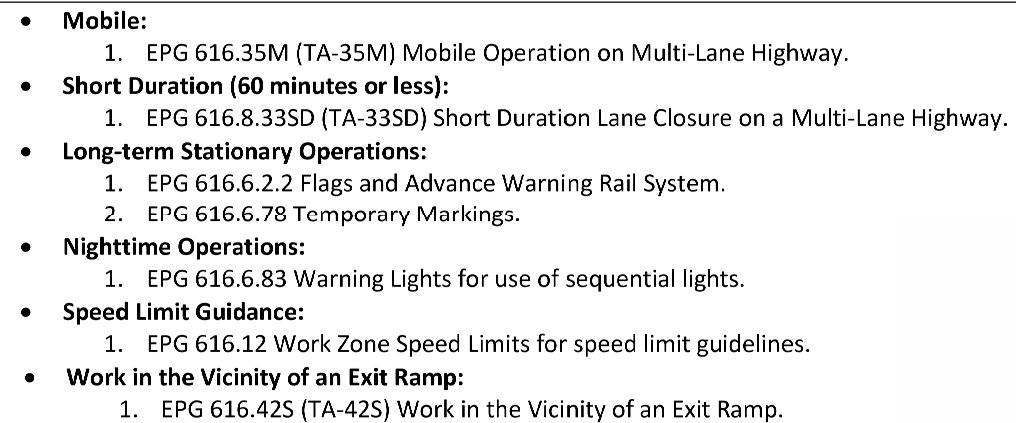
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

616.8.43S (TA-43S) Stationary Work on Ramps

DATE PREPARED	
4/2/2024	
ROUTE	STATE
6	MO
DISTRICT	SHEET NO.
NE	19
COUNTY	
MARION	
JOB NO.	
JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

- **Always use advance warning signs, flashing arrow panels, and channelizers.**
 1. Use EPG 616.33SD (TA-33SD) Short Duration Lane Closure on a Multi-Lane Highway for setting advance warning signs.
 2. Reduce channelizer spacing to no more than thirty feet at the beginning of the deceleration lane to past the gore point.
- **Always use a Protective Vehicle, and a Truck/Trailer Mounted Attenuator (TMA):**
 1. Activate high intensity rotating, flashing, oscillating, or strobe lights.
 2. Position the protective vehicle/TMA a minimum of 150 feet in advance of the work space, if possible.
 3. Operate the flashing arrow panel in arrow mode.
- **Always maintain a minimum of ten feet of driving surface. This may include a part of the shoulder if the shoulder is of adequate strength to handle the traffic.**

For other operations, refer to:



Field Notes:

**PROTECTIVE
VEHICLE
REQUIRED**

**TMA REQUIRED
WHEN WORKERS
ARE PRESENT
ON RAMP
NO DIRECT PAY**

TRAFFIC CONTROL PLAN
TYPICAL APPLICATIONS
SHEET 4 OF 4

U.I.P. AND MODIFY EXISTING SUBSTRUCTURE AND REPLACE SUPERSTRUCTURE WITH (35'-86'-86'-35')
SDCL COMPOSITE (SPANS 1 & 4) & CONTINUOUS COMPOSITE (SPANS 2 & 3) PLATE GIRDERS

SEC/SUR 11 TWP 59N RGE 6W



DATE PREPARED 3/5/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

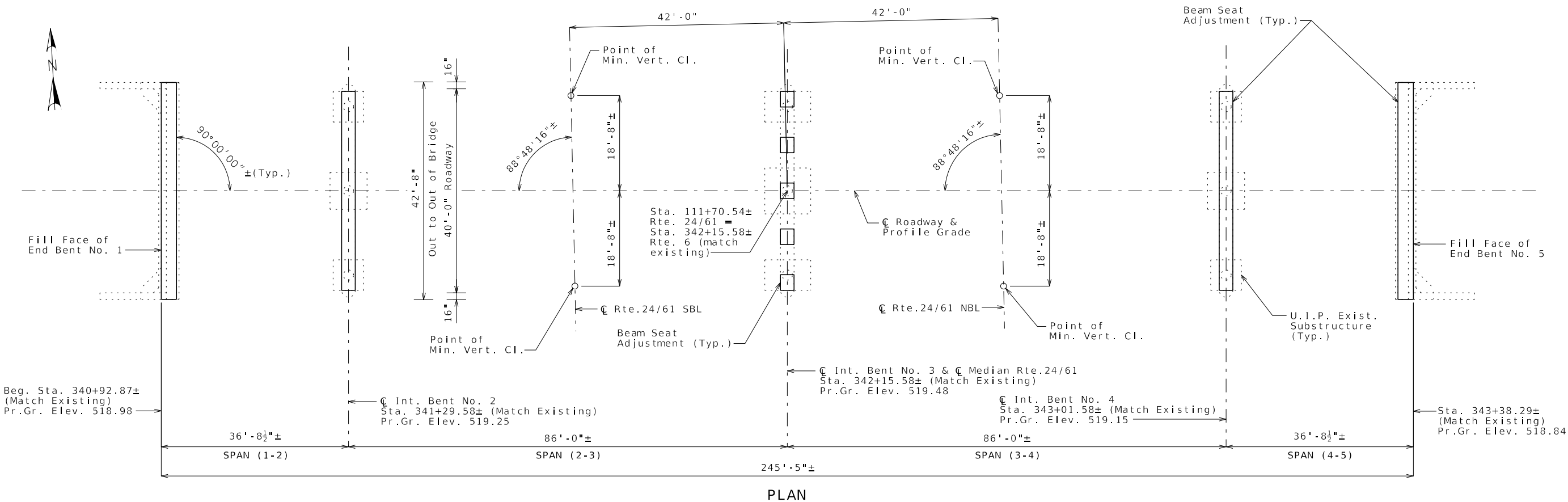
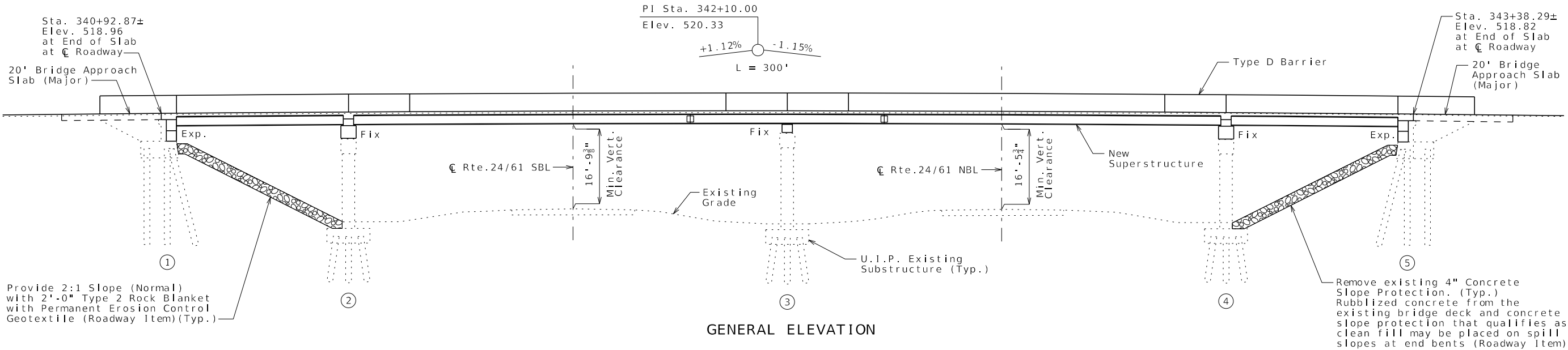
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SHORNER

401 S. 10TH ST., STE. 400 SAINT LOUIS, MO 63102
314-521-1234
www.shornerinc.com
LICENSED PROFESSIONAL ENGINEER
STATE OF MISSOURI
EXPIRATION DATE: DECEMBER 31, 2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

GENERAL PLAN
AND ELEVATION



B.M. BOLT IN HUBGUARD ON THE SOUTHWEST CORNER
OF THE BRIDGE, ELEV. 519.093

REPAIRS TO BRIDGE: ROUTE 6 OVER ROUTE 24/61
ROUTE 6 FROM ROUTE V TO ROUTE 24/61
ABOUT 4.8 MILES EAST OF ROUTE V
BEG. STA. 340+92.87± (MATCH EXISTING)

Detailed: January 2024
Checked: January 2024

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

Sheet No. 1 of 27

Estimated Quantities			
Item		Substr.	Superstr.
Removal of Miscellaneous ACM (Non-Friable)	sq. foot		24
Removal of Existing Superstructure	lump sum		1
Bridge Approach Slab (Major)	sq. yard		182
Class B Concrete (Substructure)	cu. yard	27.9	27.9
Slab on Steel	sq. yard		1,164
Type D Barrier	linear foot		539
Substructure Repair (Formed)	sq. foot	25	25
Substructure Repair (Unformed)	sq. foot	19	19
Reinforcing Steel (Epoxy Coated)	pound	5,680	5,680
Protective Coating-Concrete Bents & Piers (Epoxy)	lump sum		1
Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50	pound		254,380
Intermediate Field Coat (System G)	sq. foot		10,200
Finish Field Coat (System G)	sq. foot		2,400
Laminated Neoprene Bearing Pad	each		30
Laminated Neoprene Bearing Pad Assembly	each		5

All concrete and reinforcement above the Beam Seat Adjustment in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the Beam Seat Adjustment is included in the Estimated Quantities for Slab on Steel.

All concrete above the Beam Seat Adjustment in Intermediate Bent concrete diaphragms is included in the Estimated Quantities for Slab on Steel.

All concrete and reinforcement in the Beam Seat Adjustment will be paid for as Class B Concrete (Substructure) and Reinforcing Steel (Epoxy Coated).

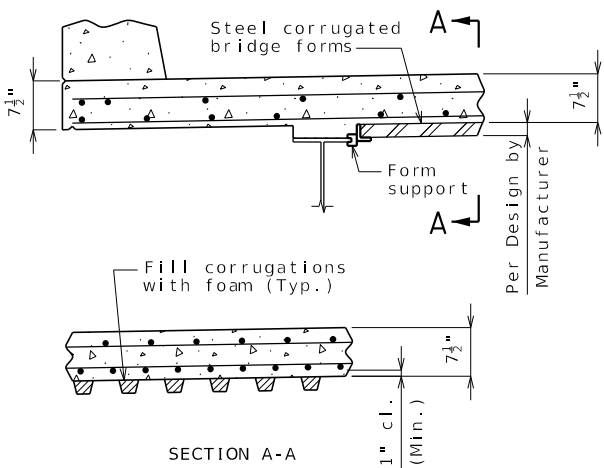
Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	290.0
Reinforcing Steel (Epoxy Coated)	pound	86,270

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

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

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



OPTIONAL STAY-IN-PLACE FORM DETAILS

GENERAL NOTES:

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

Design Loading:
H20-44 (1965), HS20-44 (New Construction)
35 lb/sf Future Wearing Surface
Earth = 120 lb/cf.
Equivalent Fluid Pressure = 45 lb/cf.(min.)
Fatigue Stress - Case II
Superstructure: Simple for dead load in Spans (1-2) and (4-5). Continuous for dead load in Spans (2-3) and (3-4).
Non-composite for dead load in all spans. Continuous composite for live load in all spans.

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi
Class B-2 Concrete (Superstructure except Barrier) f'c = 4,000 psi
Class B-1 Concrete (Barrier) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50) fy = 50,000 psi

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

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

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.

Structural Steel Protective Coatings:
Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The cost of the inorganic zinc prime coat will be considered completely covered by the contract unit price for the fabricated structural steel.

Field Coat: The color of the field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G). The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G).

At the option of the contractor, the intermediate field coat and finish field coat may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.

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.

Existing Structure:
All concrete repairs shall be in accordance with Sec 704, unless otherwise noted.

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

Contractor shall verify all dimensions in field before ordering new material.

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

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

Vertical clearance for Route 24/61 traffic during construction shall be 14'-6" minimum over a 24'-0" wide horizontal opening of the roadway in each direction.

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

Longitudinal dimensions are based on the original design plans.

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

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 girder 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 girder 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 girder loading.



DATE PREPARED 3/5/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 2

COUNTY MARION
JOB NO. JNE0183
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A21392

DESCRIPTION	DATE					

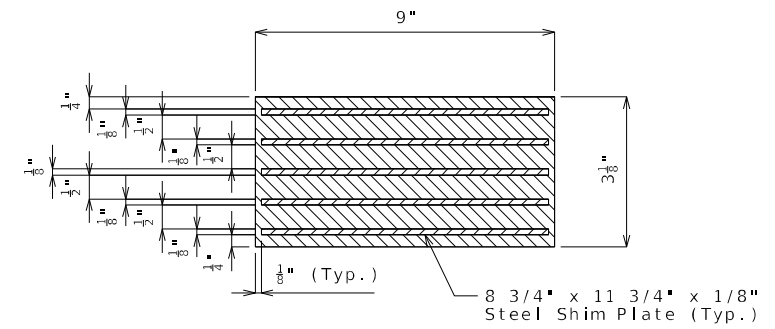
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

401 S. 10TH ST., STE. 400 SAINT LOUIS, MO 63102-2206
314.581.4330 FAX 314.581.4331 WWW.HORNIERSHIFFIN.COM
REGISTERED PROFESSIONAL ENGINEERS
EXPIRATION DATE: DECEMBER 31, 2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

GENERAL NOTES



12"

16"

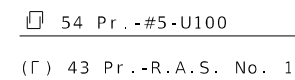
#6 Epoxy coated reinforcing bar

Top of Exist. Beam

(1)

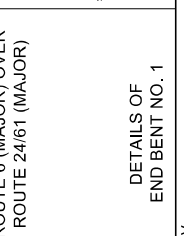
(86 required)

(1) Manufacturer's recommended
embedment length (5" min.)



* 3 Spa. @ 6"
** 3 Spa. @ 10"

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

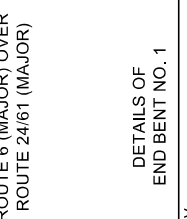


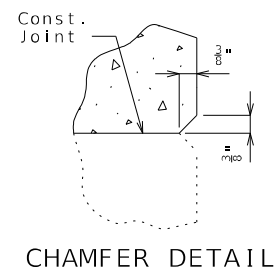
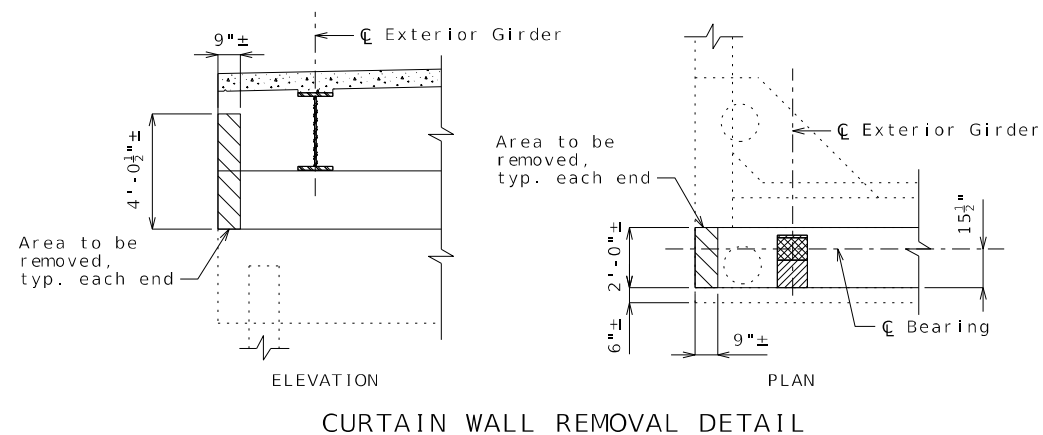
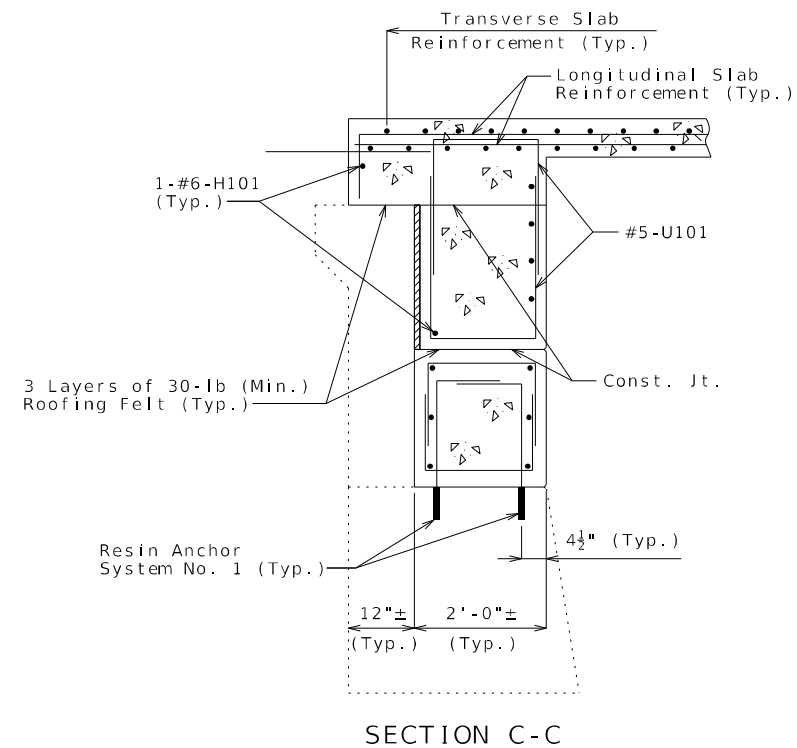
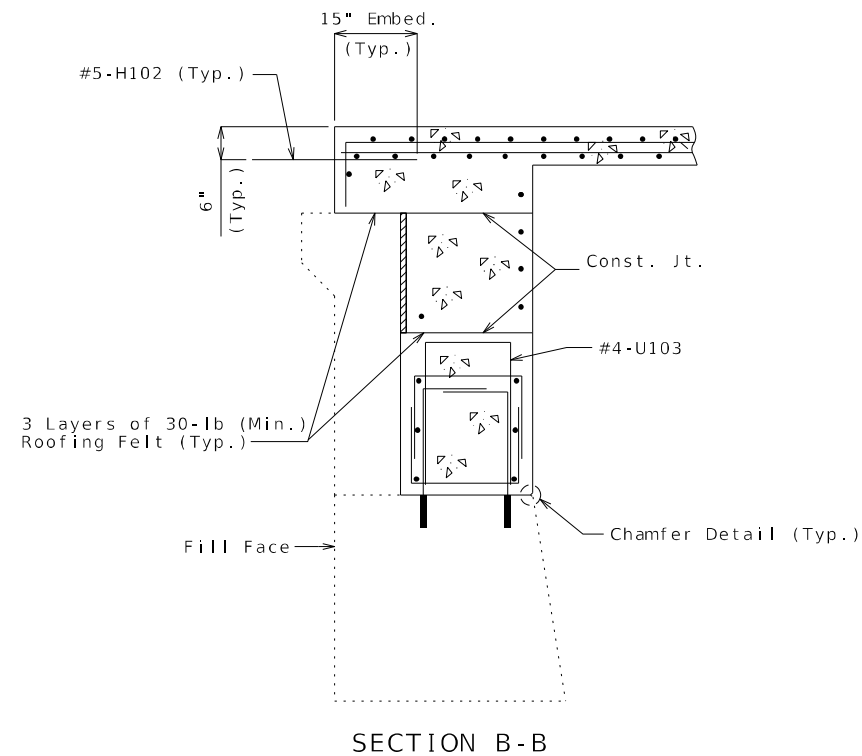
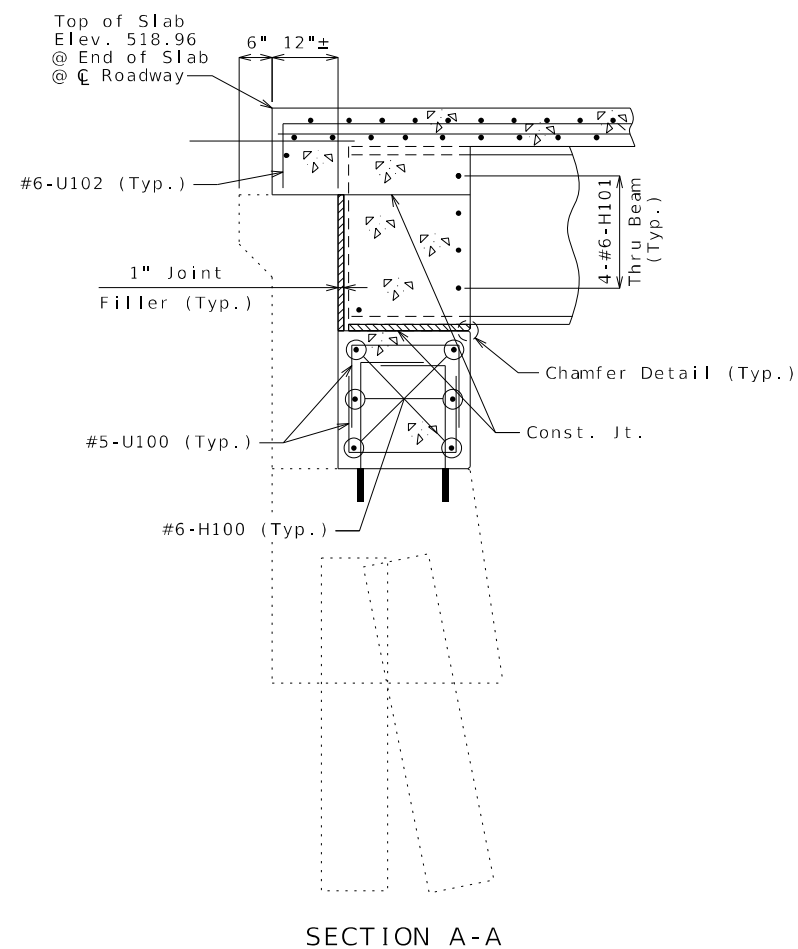


DETAILS OF END BENT NO. 1



For details of Bridge Approach Slab, see Sheet No. 25.





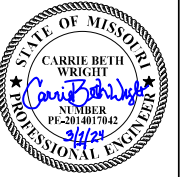
Notes:

Work this sheet with Sheets No. 3 & 4.

The cost to remove the curtain walls at each end bent will be considered completely covered by the contract unit price for Removal of Existing Superstructure.

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class B Concrete (Substructure)	cu. yard	5.3
Substructure Repair (Formed)	sq. foot	5
Reinforcing Steel (Epoxy Coated)	pound	840

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



DATE PREPARED

2 / 29 / 2024

ROUTE	STATE
-------	-------

6	MO
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SHEET NO
5

BR	5
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COUNTY
MARION

MARION
JOB NO.

JOB NO.
INE0183

CONTRACT ID.

[illegible]

PROJECT NO.

BRIDGE NO.

A21392

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

HURNER SHIFRIN
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2286
1-453-1432 • FAX 314-531-0968 • WWW.HURNERSHIFRIN.COM
DESIGNING PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000156

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

DETAILS OF
END BENT NO. 1

REV.

Detailed: January 2024
Checked: January 2024

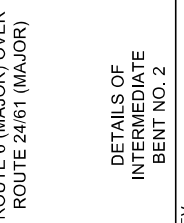
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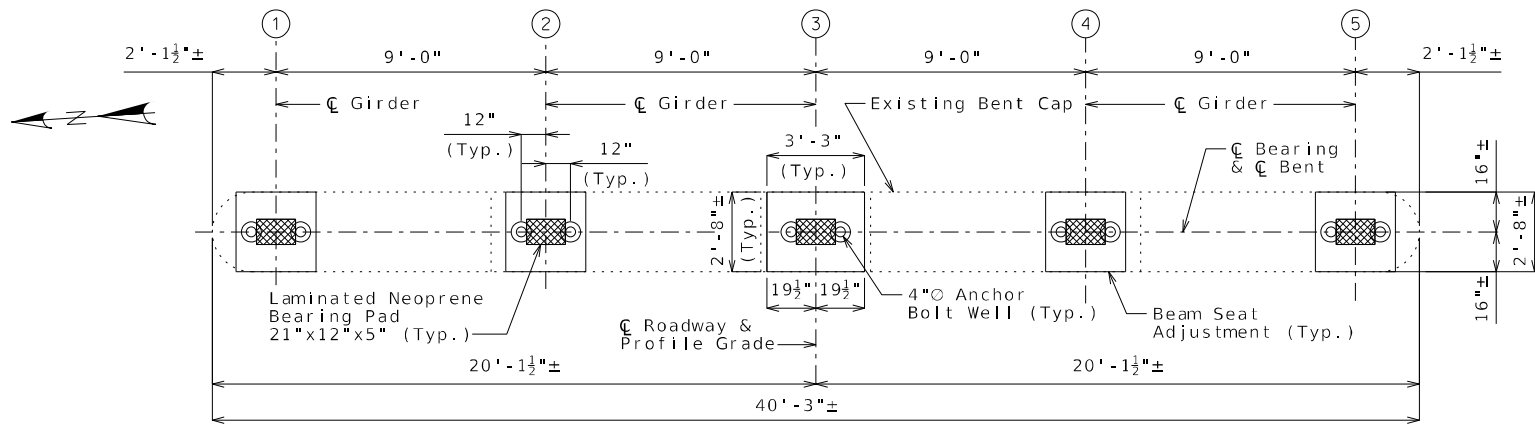
Sheet No. 5 of 27

... \B A21392_05 JNE0183 End Bent 1.dgn 3:12:12 PM 2/29/2024

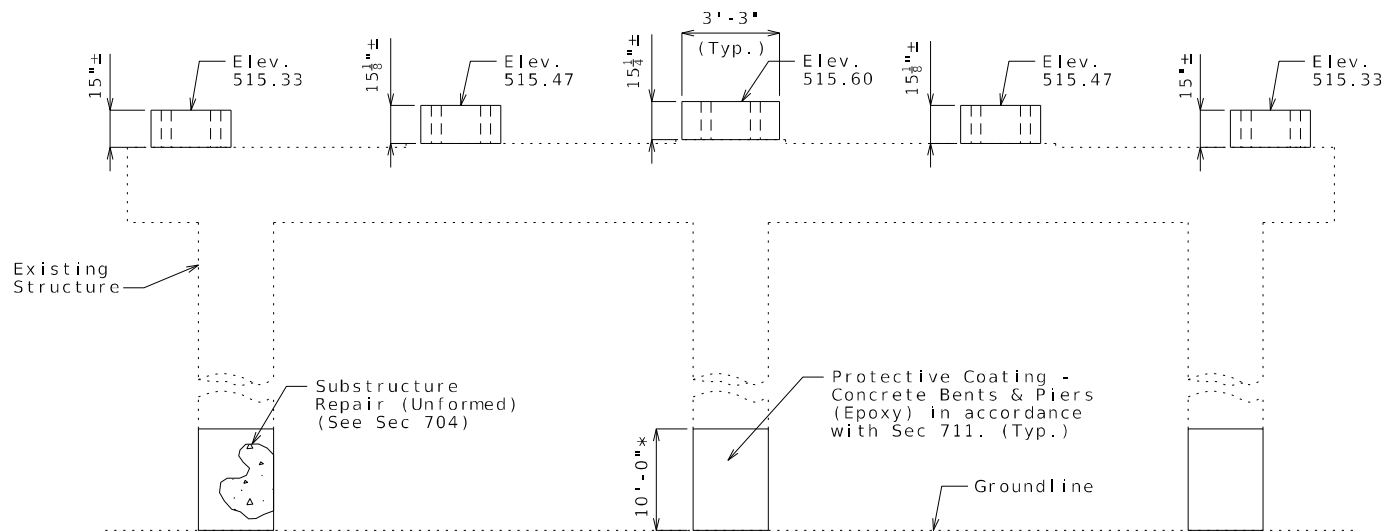


For details of diaphragm at intermediate bent, see Sheet No. 18.



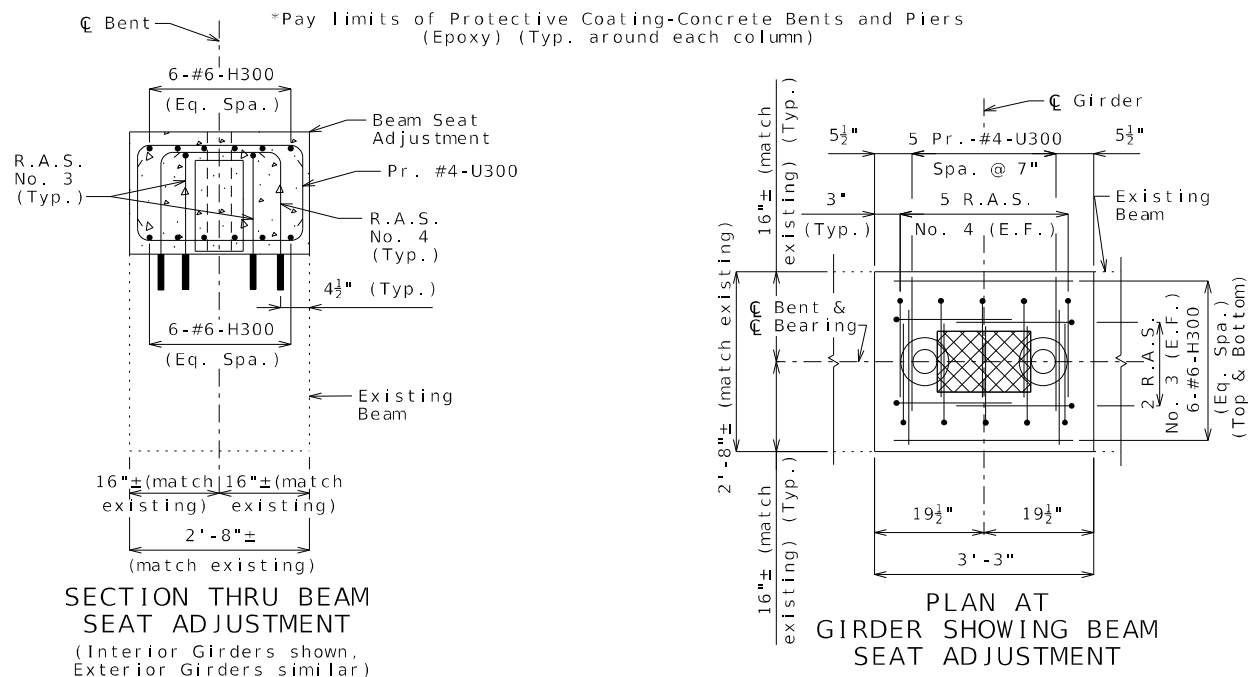


PLAN OF BEAM SEAT ADJUSTMENT SHOWING DIMENSIONS
Note: Reinforcement not shown for clarity.



ELEVATION

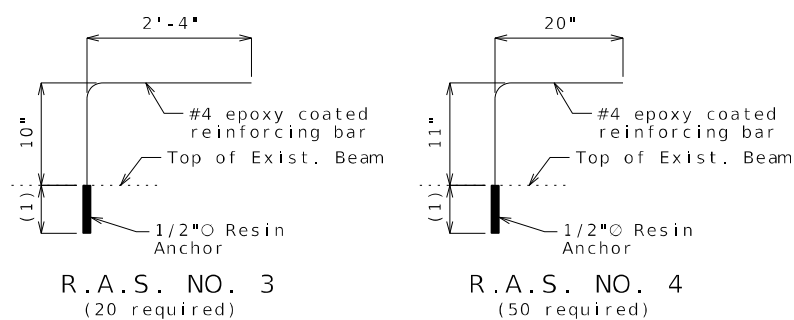
Note: Reinforcement not shown for clarity.



SECTION THRU BEAM SEAT ADJUSTMENT
(Interior Girders shown, Exterior Girders similar)

PLAN AT GIRDER SHOWING BEAM SEAT ADJUSTMENT

DETAILS OF INTERMEDIATE BENT NO. 3



(1) Manufacturer's recommended embedment length (5" min.)

Resin Anchor Notes:

R.A.S. = Resin Anchor System

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

The minimum embedment depth in concrete with $f'_c = 4,000$ psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #4 Grade 60 reinforcing bar shall be substituted for the 1/2" diameter threaded rod.

All resin anchor systems shall be spaced to clear existing reinforcing in cap to be used-in-place by a minimum of 1/2".

Notes:

For details of Laminated Neoprene Bearing Pad Assembly, see Sheet No. 14.

Beam seat adjustment heights are based on existing bridge plans and a vertical datum adjustment of -0.61'. Contractor shall adjust as necessary.

The bars shown in the Beam Seat Adjustment, except bars used with resin anchor systems, will be included in the contract unit price for Reinforcing Steel (Epoxy Coated).

All concrete in Beam Seat Adjustment shall be Class B Concrete.

Existing anchor bolts shall be removed or cut flush with existing concrete if they do not interfere with new anchor bolts. The contractor shall repair any concrete damaged in accordance with Sec 704 and fill holes with an approved grout in accordance with Sec 1066. Removal of existing anchor bolts will be considered completely covered by the contract unit price for Removal of Existing Superstructure.

All reinforcing bars in the tops of beam seat adjustments shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

Holes for anchor bolts may be drilled into the substructure.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class B Concrete (Substructure)	cu. yard	2.0
Substructure Repair (Unformed)	sq. foot	5
Reinforcing Steel (Epoxy Coated)	pound	430

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



DATE PREPARED 3/1/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 8
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

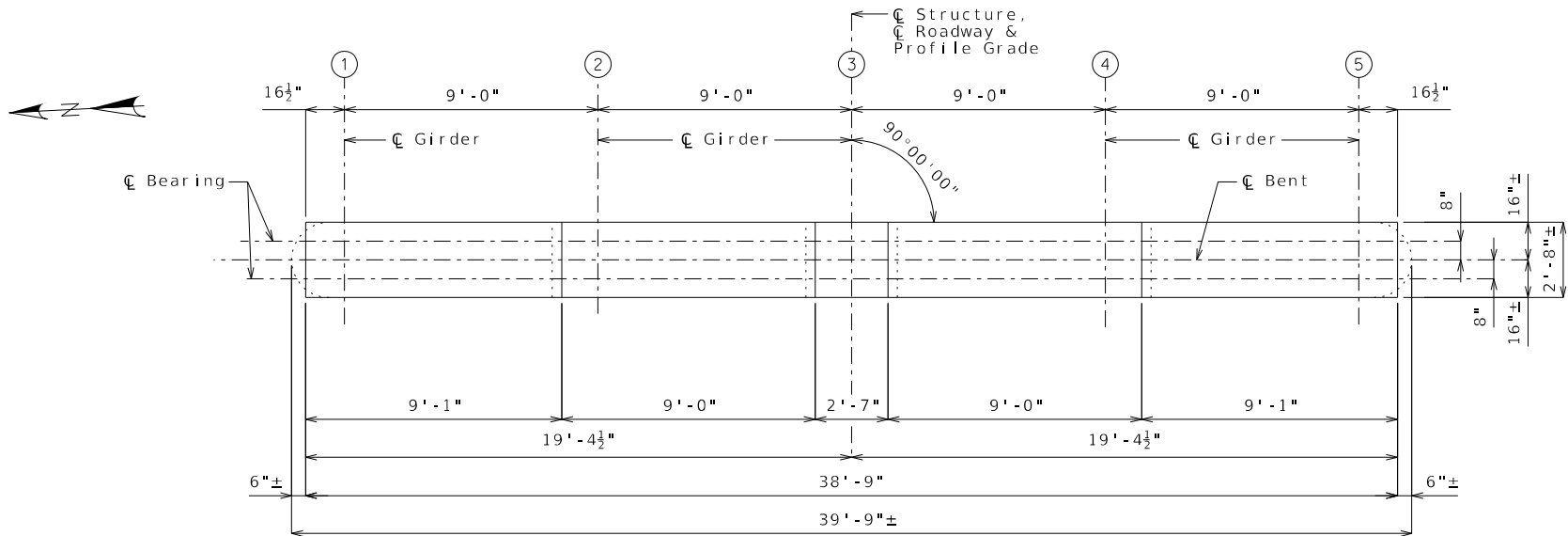
MoDOT

HORNER SHIFRIN

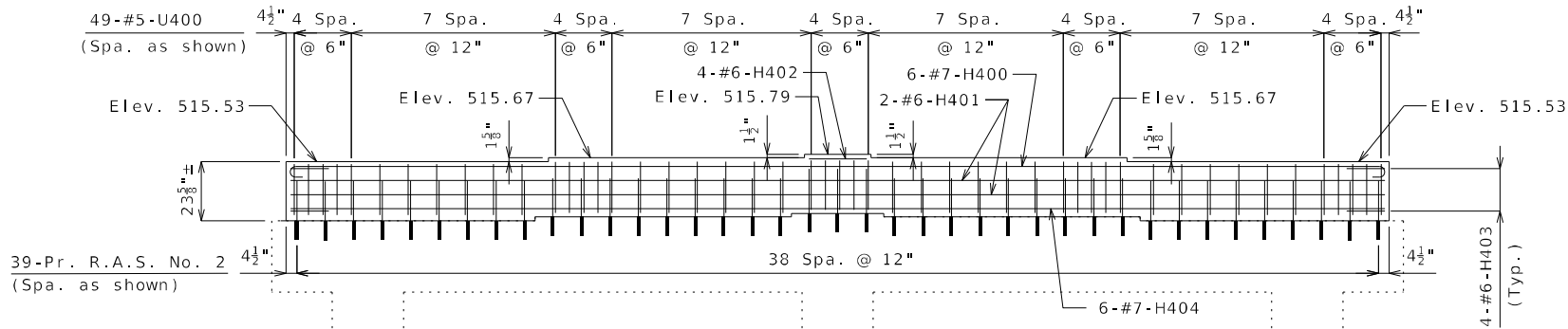
401 S. 11TH ST., SUITE 100 SAINT LOUIS, MO 63102-2286
314-531-1000
WWW.HORNER-SHIFRIN.COM
DESIGNED BY: JEFFREY L. SHIFRIN, P.E.
CHECKED BY: JEFFREY L. SHIFRIN, P.E.
DATE: 3/1/2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

DETAILS OF
INTERMEDIATE
BENT NO. 3



PLAN OF BEAM SEAT ADJUSTMENT SHOWING DIMENSIONS
Note: Reinforcement not shown for clarity.



ELEVATION

Note: Dowel bars and key not shown for clarity.

* Pay limits of Protective Coating-Concrete Bents and Piers (Epoxy) (Typ. around each column)

Resin Anchor Notes:

R.A.S. = Resin Anchor System

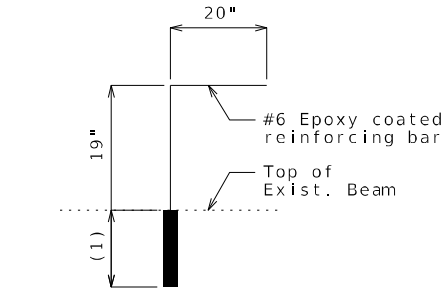
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

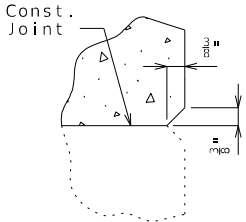
An epoxy coated #6 Grade 60 reinforcing bar shall be substituted for the 3/4" diameter threaded rod.

All resin anchor systems shall be spaced to clear existing reinforcing in cap to be used-in-place by a minimum of 1/2".

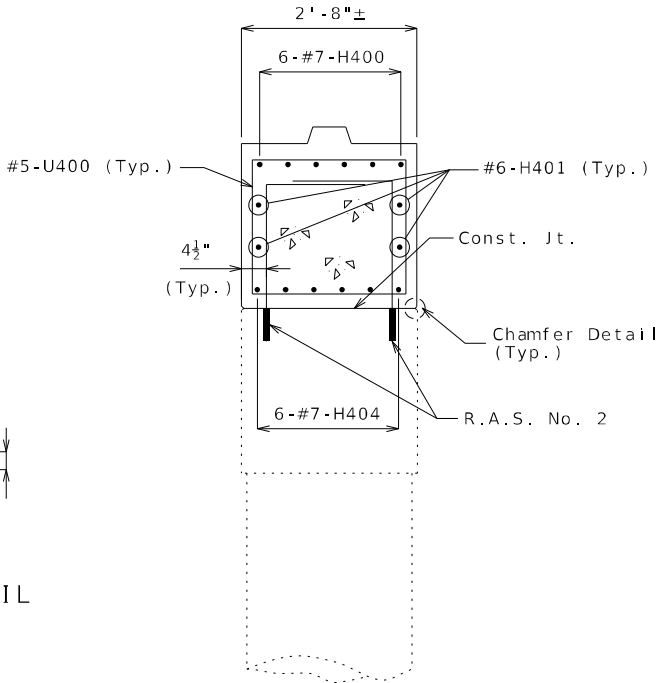


R.A.S. NO. 2
(78 required)

(1) Manufacturer's recommended embedment length (5" min.)



CHAMFER DETAIL



TYPICAL SECTION

Notes:

Work this sheet with Sheet No. 10.

The bars shown in the Beam Seat Adjustment, except bars used with resin anchor system, shall be included in the contract unit price for Reinforcing Steel (Epoxy Coated).

All concrete in Beam Seat Adjustment shall be Class B Concrete.

Existing anchor bolts shall be removed or cut flush with existing concrete. The contractor shall repair any concrete damaged in accordance with Sec 704 and fill holes with an approved grout in accordance with Sec 1066. Removal of existing anchor bolts shall be considered completely covered by the contract unit price for Removal of Existing Superstructure.

Beam seat adjustment heights are based on existing bridge plans and a vertical datum adjustment of -0.61'. Contractor shall adjust as necessary.

Substructure Quantity Table for Bent No. 4			
Item		Quantity	
Class B Concrete (Substructure)		cu. yard	7.7
Substructure Repair (Unformed)		sq. foot	10
Reinforcing Steel (Epoxy Coated)		pound	1,790

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



DATE PREPARED 2/29/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 9
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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HORNER SHIFRIN

401 S. 10TH ST., SUITE 100 SAINT LOUIS, MO 63102-2286
314-651-1000 FAX 314-651-1001
WWW.HORNER-SHIFRIN.COM
DESIGNED BY: J. B. H. DATE: 2/29/2024
CHECKED BY: J. B. H. DATE: 2/29/2024
DRAWN BY: J. B. H. DATE: 2/29/2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

DETAILS OF
INTERMEDIATE
BENT NO. 4



*** 3 Spa. @ 9"

Detailed: January 2024
Checked: January 2024

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

Sheet No. 12 of 27



Notes:

Work this sheet with Sheets No. 11 & 13.

All concrete in the End Bent above top of proposed Beam Seat Adjustment and below top of slab shall be Class B-2.

The contractor shall shift reinforcement as necessary to clear shear block by 1 1/2".

Beam Seat Adjustment shall be Class B concrete.

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

Elevations shown are based on existing bridge plan elevations, and a vertical datum shift of $-.61'$. The contractor shall be solely responsible for verification and any necessary elevation and dimension modifications prior to ordering materials and fabricating girders and bearings. See Special Provisions.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

The minimum embedment depth in concrete with $f'c = 4,000$ psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

All resin anchor systems shall be spaced to clear existing reinforcing in cap to be used-in-place by a minimum of 1/2".

An epoxy coated #6 Grade 60 reinforcing bar shall be substituted for the 3/4" threaded rod.

Top of diaphragm for End Bent No. 5 shall be formed to the crown and grade of the roadway.

Area of existing concrete to be covered with new concrete shall be prepared in accordance with Sec 704 and roughened to amplitude of 1/4" before pouring new concrete. Surface preparation of concrete will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

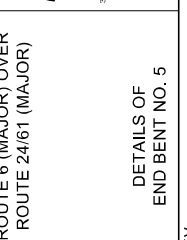
The bars shown in the Beam Seat Adjustment, except bars used with resin anchor system, shall be considered completely covered by the contract unit price for Reinforcing Steel (Epoxy Coated).

All concrete and reinforcement above the Beam Seat Adjustment shall be considered completely covered by the contract unit price for Slab on Steel.

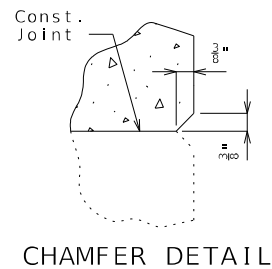
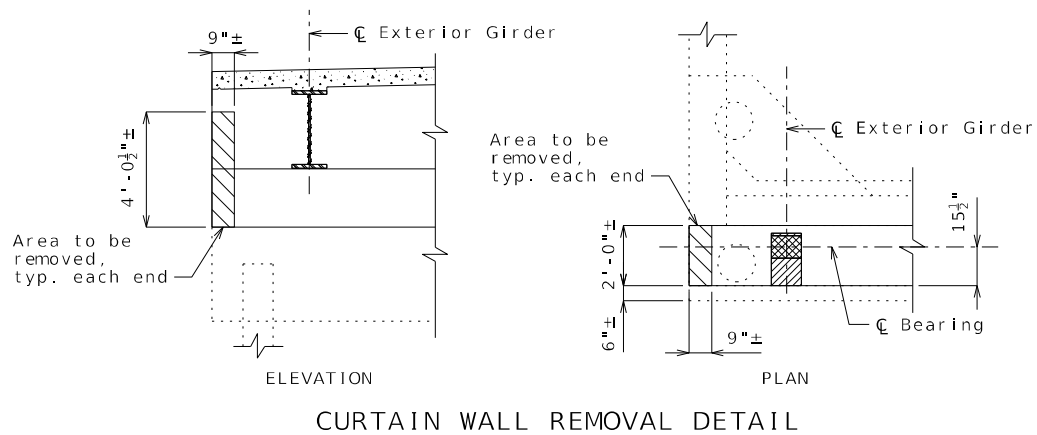
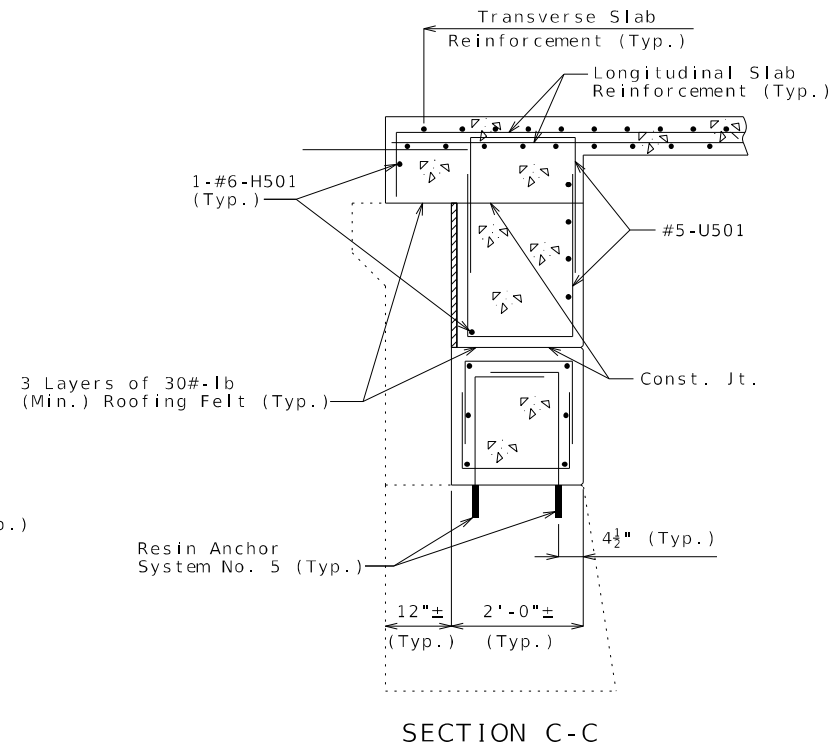
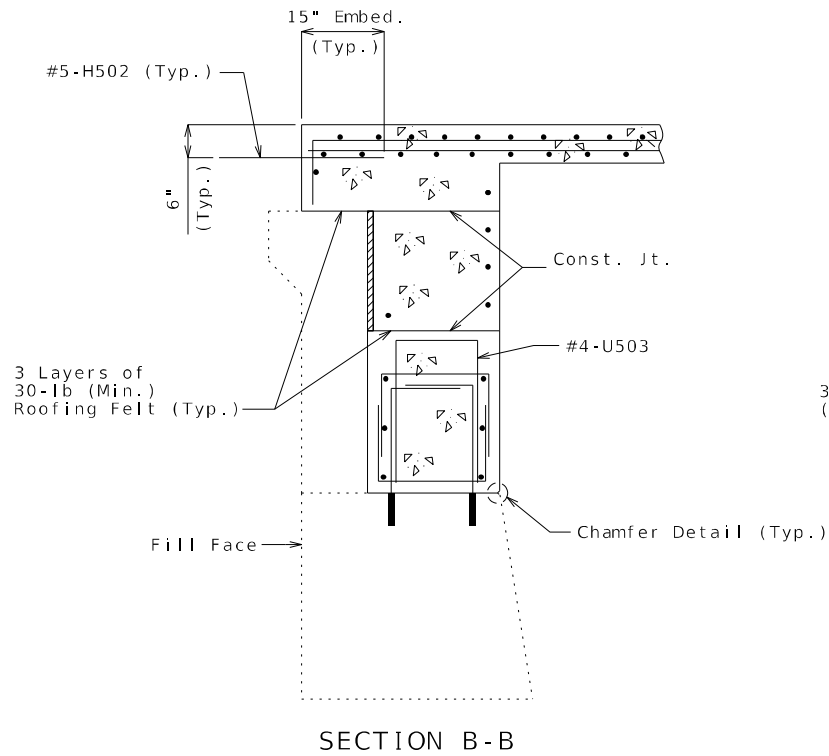
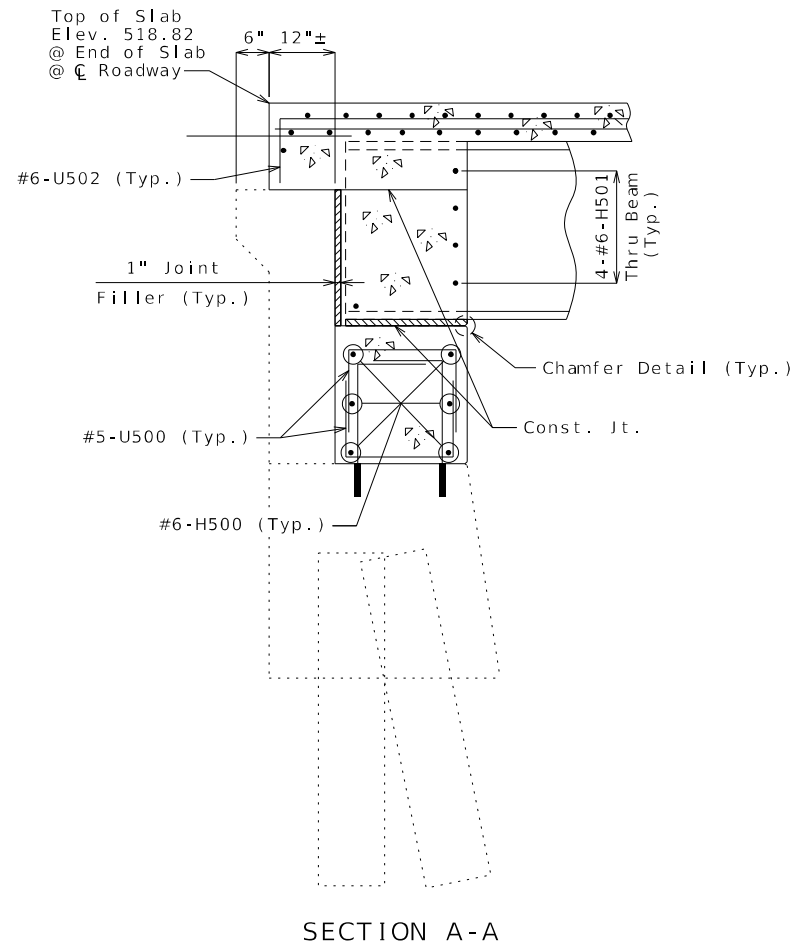
The U-bars shall be placed parallel to C Girders.

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

For details of Bridge Approach Slab, see Sheet No. 25.



REV.



Notes:

Work this sheet with Sheets No. 11 & 12.

The cost to remove the curtain walls at each end bent will be considered completely covered by the contract unit price for Removal of Existing Superstructure.

Substructure Quantity Table for Bent No. 5		
Item		Quantity
Class B Concrete (Substructure)	cu. yard	4.8
Reinforcing Steel (Epoxy Coated)	pound	820

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



DATE PREPARED 2/29/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 13
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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CERTIFICATE OF AUTHORITY: 000109
EXPIRATION DATE: DECEMBER 31, 2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

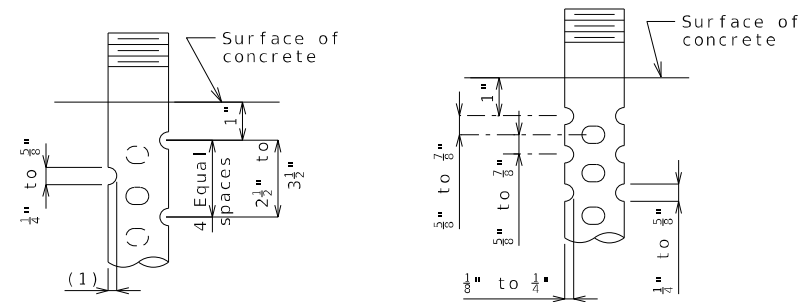
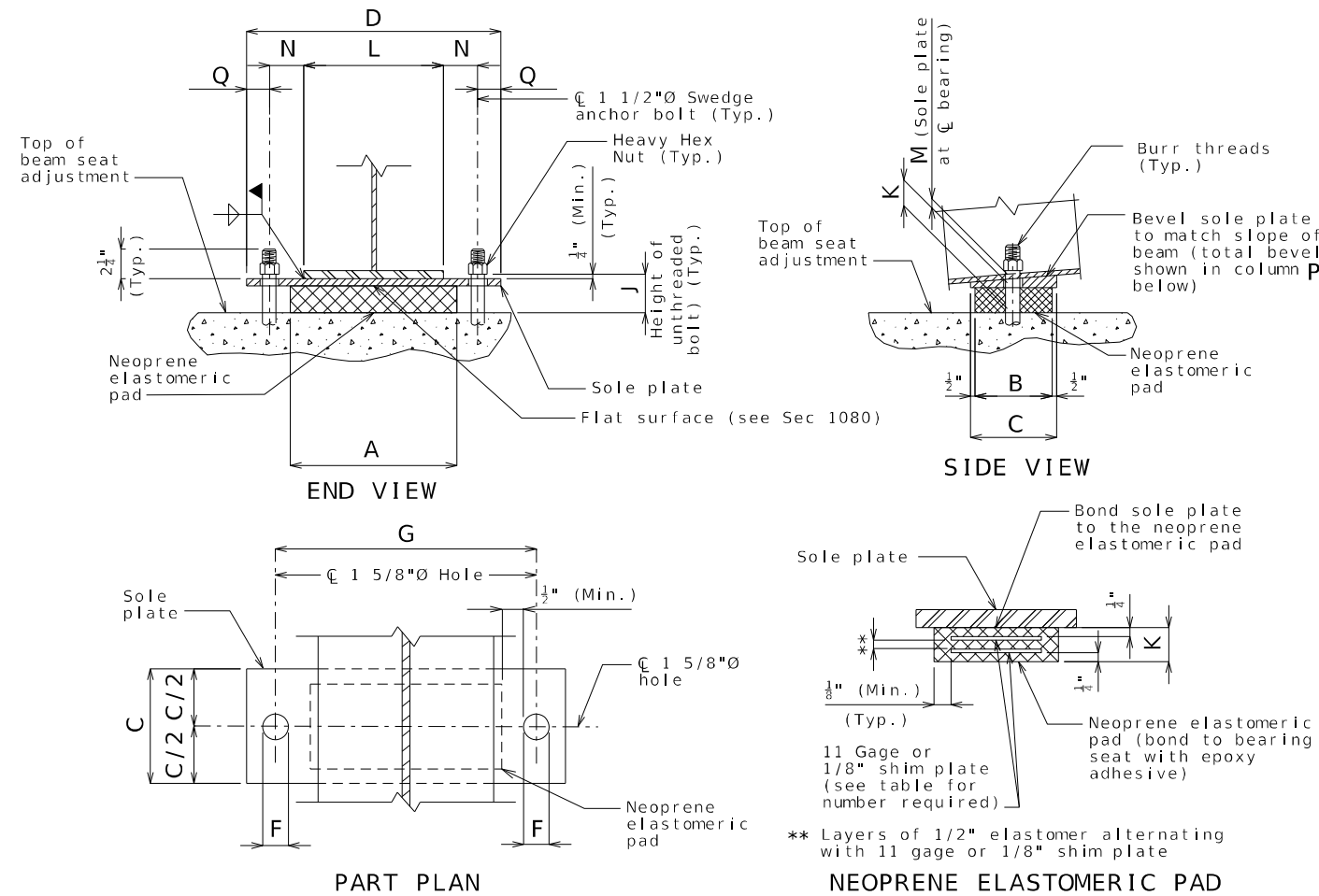
DETAILS OF
END BENT NO. 5

Detailed: January 2024
Checked: January 2024

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

Sheet No. 13 of 27

REV.



SWEDGE ANCHOR BOLT DETAILS

(1) $\frac{1}{8}$ " for $\frac{3}{4}$ " \varnothing thru $1\frac{1}{4}$ " \varnothing anchor bolts
 $\frac{1}{8}$ " to $\frac{1}{4}$ " for $1\frac{3}{8}$ " \varnothing thru $2\frac{1}{2}$ " \varnothing anchor bolts

FIXED BEARINGS														NUMBER OF SHIM PLATES *	NUMBER REQUIRED
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q		
3	21"	12"	13"	28 $\frac{1}{2}$ "	1 $\frac{5}{8}$ "	24"	6 $\frac{3}{4}$ "	5"	19"	1 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	0"	2 $\frac{1}{4}$ "	8	5

* The required shim plate shall be placed between layers of elastomer and molded together to form

TOTAL BEARINGS														5
----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	---

* The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor bolts shall be 1 1/2"Ø ASTM F1554 Grade 55 swedged bolts and shall extend 18" into the concrete with ASTM A563 Grade A Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

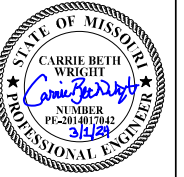
Anchor bolts and heavy hex nuts shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with Sec 1081.

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be with a minimum of two coats of inorganic film thickness of 4 mils minimum, 6 mils maximum. ASTM A709 Grade 50 and shall be coated zinc primer to provide a total dry

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

LAMINATED NEOPRENE BEARING PAD ASSEMBLY



DATE PREPARED	
3/1/2024	
ROUTE	STATE
6	MO
DISTRICT	SHEET NO.
BR	14
COUNTY	
MARION	
JOB NO.	
JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A21392	

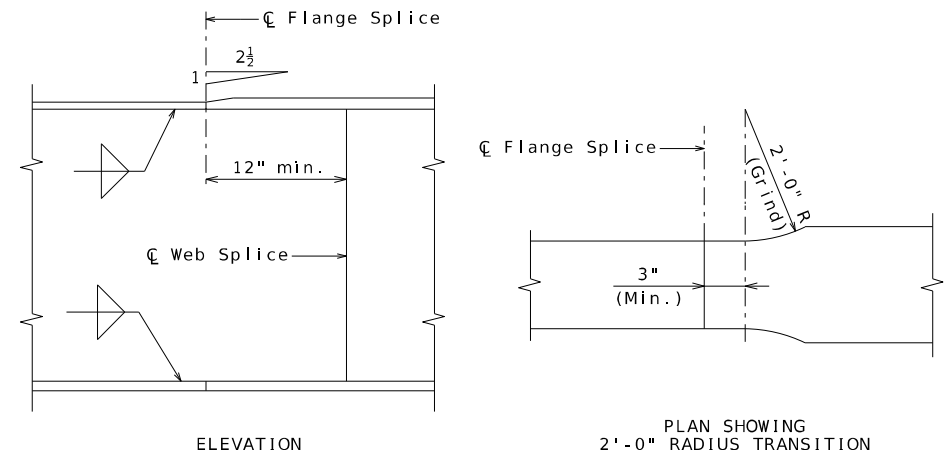


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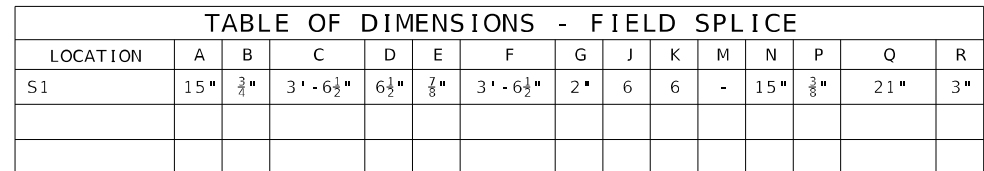
HORNER SHIFRIN

 401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2296
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 DECORATING PROFESSIONAL ENGINEERING
 CERTIFICATE OF AUTHORITY IS-000159
 EXPIRATION DATE: DECEMBER 31, 2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)




Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



Note: Work this sheet with Sheet No. 15 & 16.



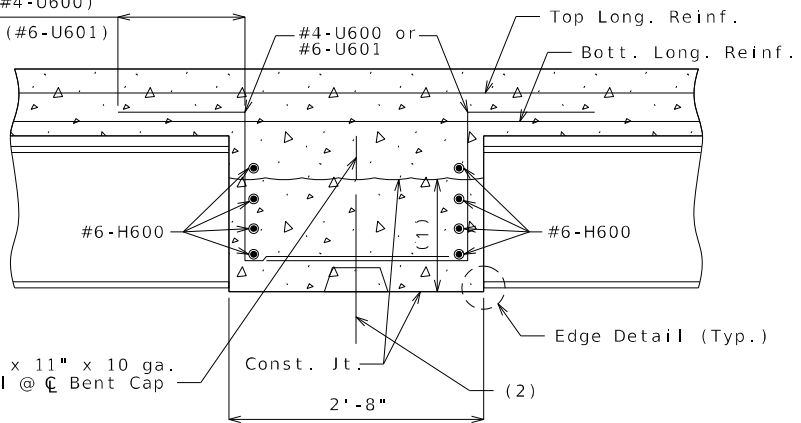
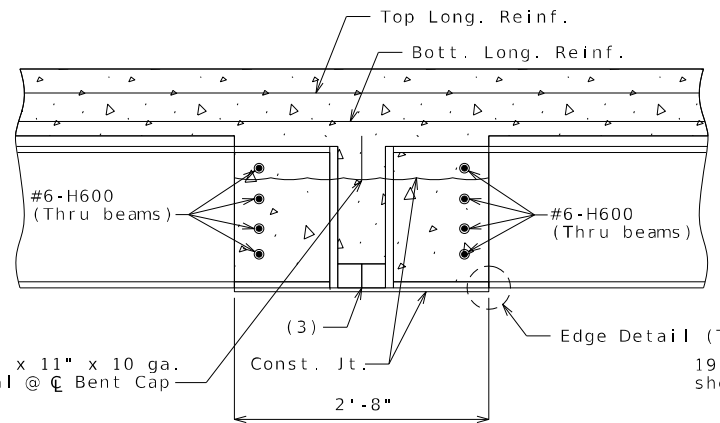
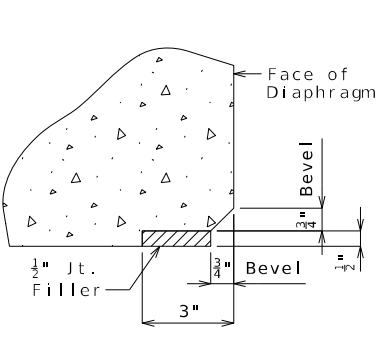
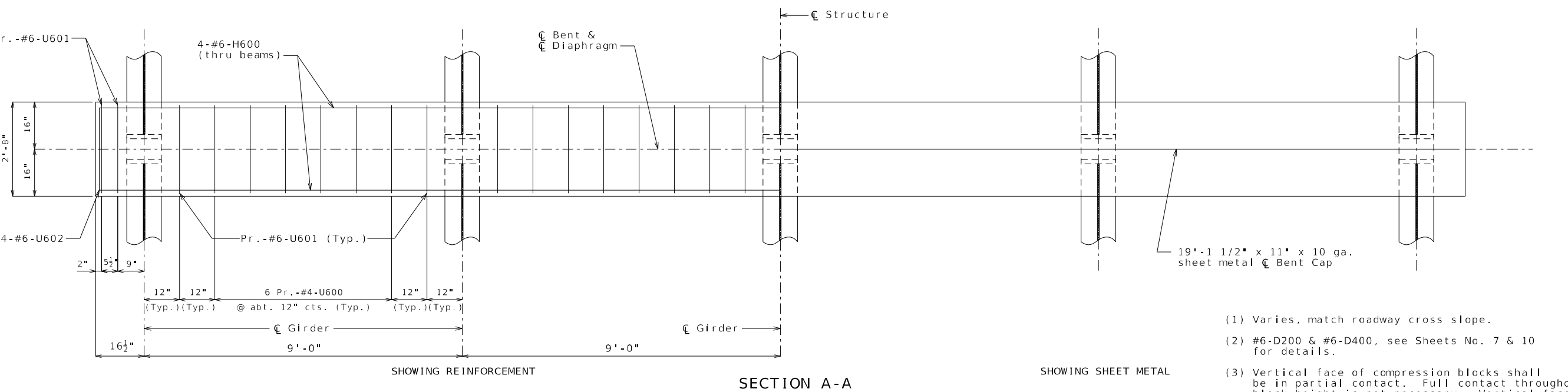
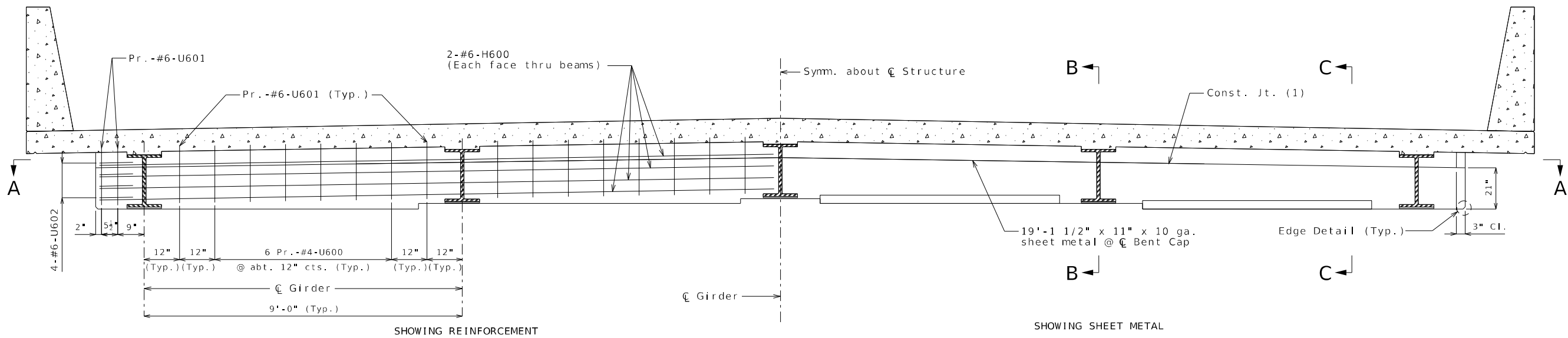
DATE PREPARED	
2/29/2024	
ROUTE	STATE
6	MO
DISTRICT	SHEET NO.
BR	17
COUNTY	
MARION	
JOB NO.	
JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A21392	

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ROUTE 24/61 (MAJOR)



- (1) Varies, match roadway cross slope.
- (2) #6-D200 & #6-D400, see Sheets No. 7 & 10 for details.
- (3) Vertical face of compression blocks shall be in partial contact. Full contact throughout block height is not necessary. Vertical faces of adjacent blocks shall overlap a minimum of 1 1/2"

Notes:

Diaphragms at Intermediate Bents shall be built vertical.

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

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

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

Sheet metal shall be in accordance with Structural Grade 40 and coating designation G165 of ASTM A653. All sheet metal costs will be considered completely covered by the contract unit price for Slab on Steel.

Diaphragms at bents shall be poured 21" min. from top of beam cap adjustment after all girders are in place and before any placement of deck forms. The remainder of the diaphragm shall be poured concurrently with the slab.

DETAILS OF DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 4

Detailed: January 2024
Checked: January 2024

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

Sheet No. 18 of 27



DATE PREPARED 2/29/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 18
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DESCRIPTION	DATE

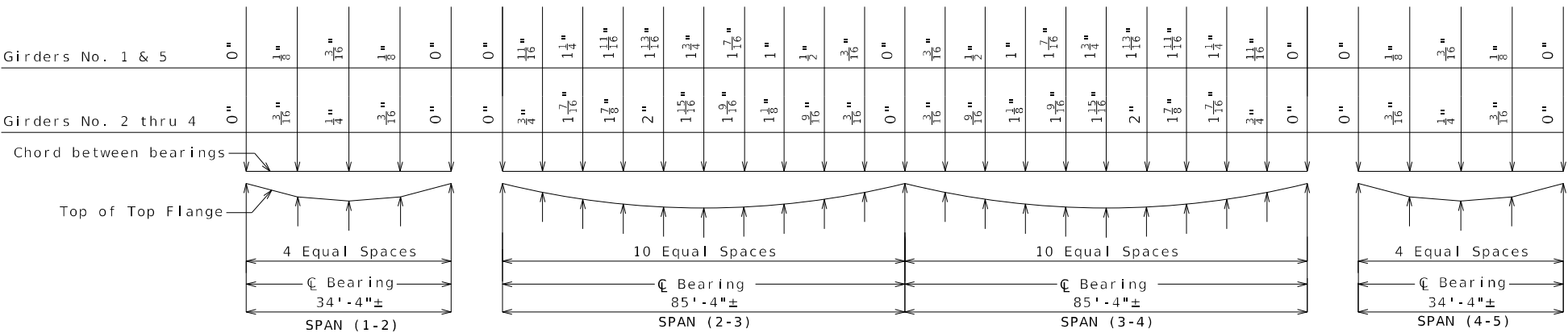
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

DETAILS OF
DIAPHRAGMS
AT INTERMEDIATE
BENTS NO. 2 & 4



DEAD LOAD DEFLECTION

Dead load deflection includes weight of structural steel, concrete slab (including stay-in-place forms) and barrier.
13% of dead load deflection is due to weight of structural steel in Spans (1-2) & (4-5).
20% of dead load deflection is due to weight of structural steel in Spans (2-3) & (3-4).

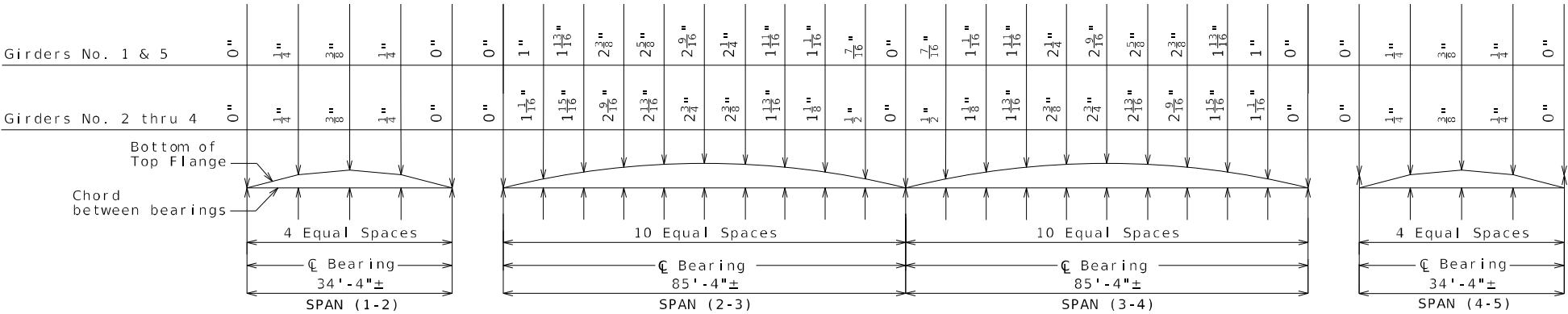
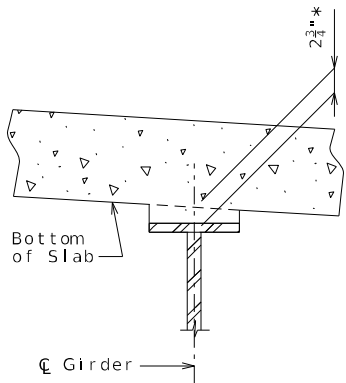


PLATE GIRDER CAMBER DIAGRAM

Camber includes allowance for vertical curve and dead load deflection due to concrete slab, stay-in-place forms, barrier and structural steel.



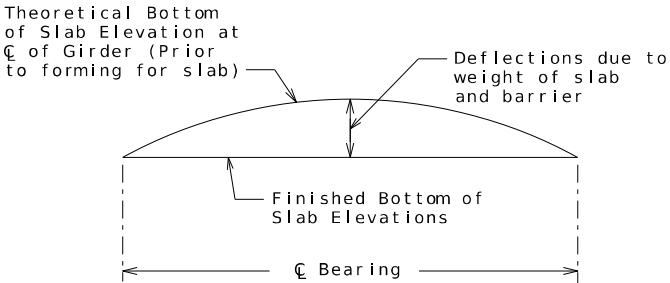
THEORETICAL SLAB HAUNCH

* Dimension (bottom of slab to top of web) may vary if girder camber after erection differs from plan camber by more than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab)											
Girder Number	Span (1-2) (34'-4"± C Brg. - C Brg.)										
	C Brg.	.25	.50	.75	C Brg.						
1 & 5	518.09	518.17	518.24	518.29	518.34						
2 & 4	518.23	518.31	518.38	518.43	518.48						
3	518.35	518.43	518.51	518.56	518.60						
Girder Number	Span (2-3) (85'-4"± C Brg. - C Brg.)										
	C Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	C Brg.
1 & 5	518.34	518.44	518.52	518.58	518.62	518.64	518.64	518.63	518.60	518.58	518.57
2 & 4	518.48	518.58	518.67	518.73	518.78	518.80	518.79	518.78	518.75	518.73	518.71
3	518.61	518.71	518.79	518.86	518.90	518.92	518.92	518.90	518.87	518.85	518.84
Girder Number	Span (3-4) (85'-4"± C Brg. - C Brg.)										
	C Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	C Brg.
1 & 5	518.57	518.57	518.58	518.60	518.60	518.59	518.56	518.51	518.44	518.35	518.25
2 & 4	518.71	518.72	518.73	518.75	518.75	518.75	518.72	518.67	518.59	518.50	518.39
3	518.84	518.84	518.86	518.87	518.88	518.87	518.84	518.79	518.72	518.62	518.51
Girder Number	Span (4-5) (34'-4"± C Brg. - C Brg.)										
	C Brg.	.25	.50	.75	C Brg.						
1 & 5	518.24	518.18	518.12	518.04	517.95						
2 & 4	518.38	518.33	518.26	518.18	518.09						
3	518.50	518.45	518.39	518.31	518.21						

Elevations are based on a constant slab thickness of 7 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including stay-in-place forms) and barrier.

STEEL DETAILS



TYPICAL SLAB ELEVATIONS DIAGRAM

Note:
Longitudinal dimensions are horizontal from centerline bearing to centerline bearing.



DATE PREPARED 2/29/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 19
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

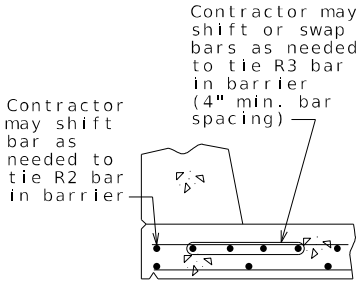
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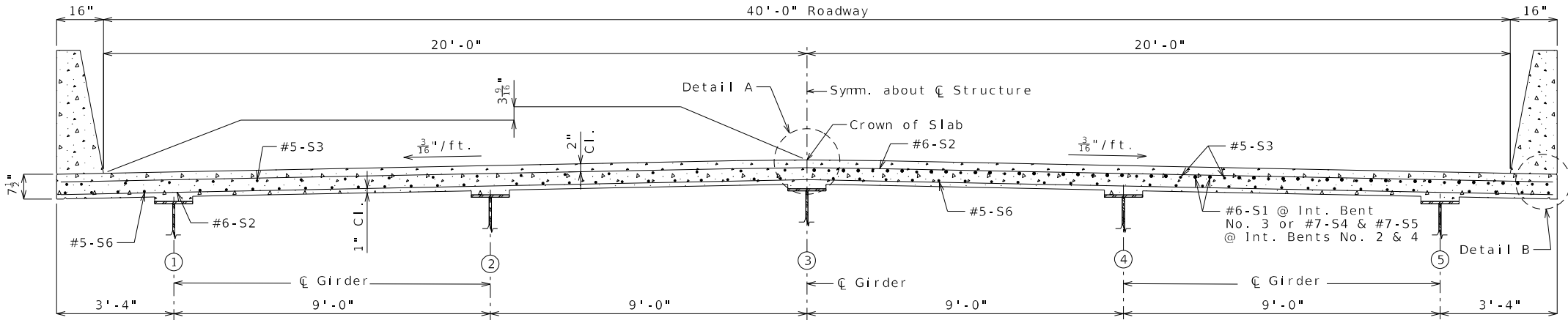
401 S. 10TH ST., SUITE 100 SAINT LOUIS, MO 63102-2286
TEL: 314.433.1000 FAX: 314.433.1001
WWW.HORNER-SHIFRIN.COM
DESIGNED BY: JEFFREY L. SHIFRIN, P.E.
CHECKED BY: JEFFREY L. SHIFRIN, P.E.
DATE: 2/29/2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

STEEL DETAILS



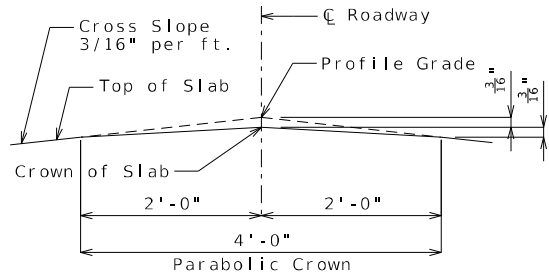
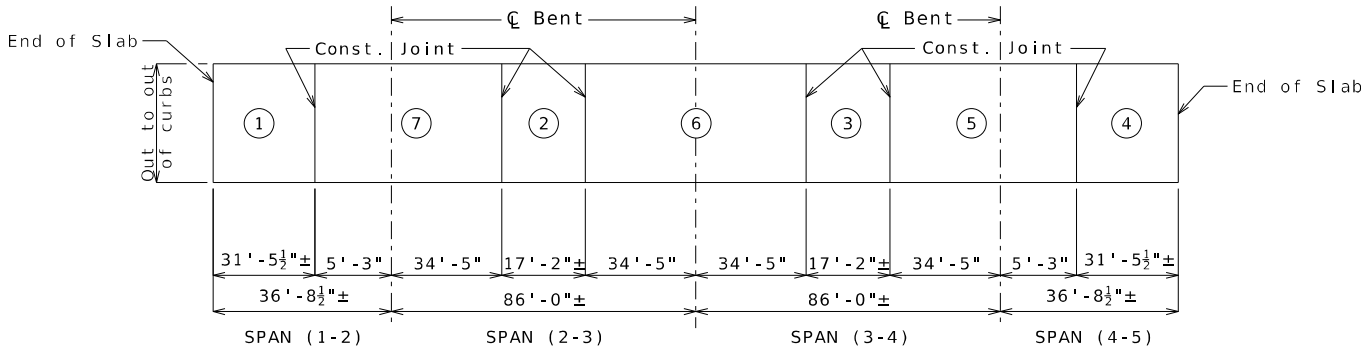
OPTIONAL SHIFTING TOP BARS AT BARRIER



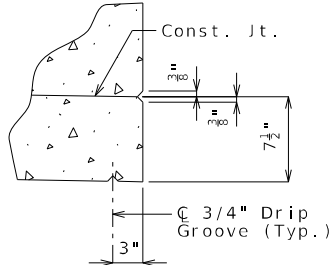
HALF SECTION NEAR MIDSPAN

SECTION THRU SLAB

HALF SECTION NEAR INTERMEDIATE BENT



DETAIL A

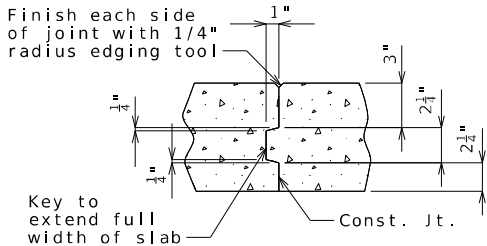


DETAIL B

	Sequence of Pours							Min. Rate of Pour Cu. Yds./Hr.		
	Direction							With Retarder	No Retarder	
Basic Sequence	1	2	3	4	5	6	7	25	25	
	Either Direction									
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.										
Alternate A Pours	1		7 + 2		6 + 3		5 + 4		26	43
	End to 7		1 to 6		2 to 5		3 to End			
Alternate B Pours	1 + 7 + 2		6 + 3			5 + 4			26	43
	End to 6		2 to 5			3 to End				
Alternate C Pours	1 + 7 + 2			6 + 3 + 5 + 4				26	43	
	End to 6			2 to End						
Alternate D Pours	1 + 7 + 2 + 6 + 3 + 5 + 4							26	43	
	End to End									

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

SLAB POURING SEQUENCE



SLAB CONSTRUCTION JOINT

Notes:

For reinforcement of barrier not shown, see Sheet No. 23.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 19.

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



DATE PREPARED 2/29/2024	
ROUTE 6	STATE MO
DISTRICT BR	SHEET NO. 22
COUNTY MARION	
JOB NO. JNE0183	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A21392	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

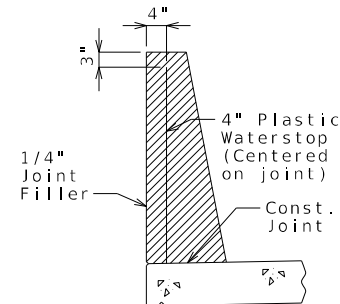
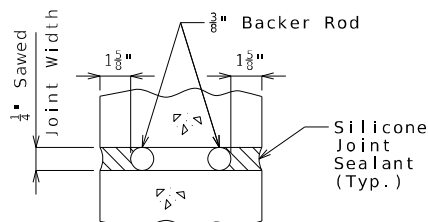
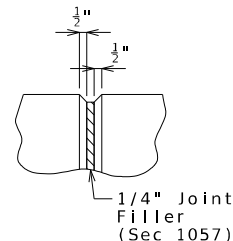
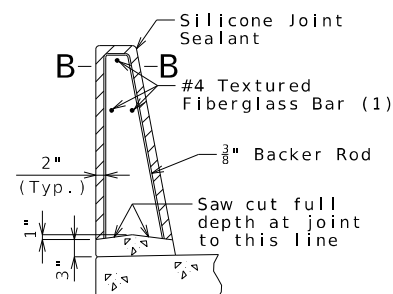
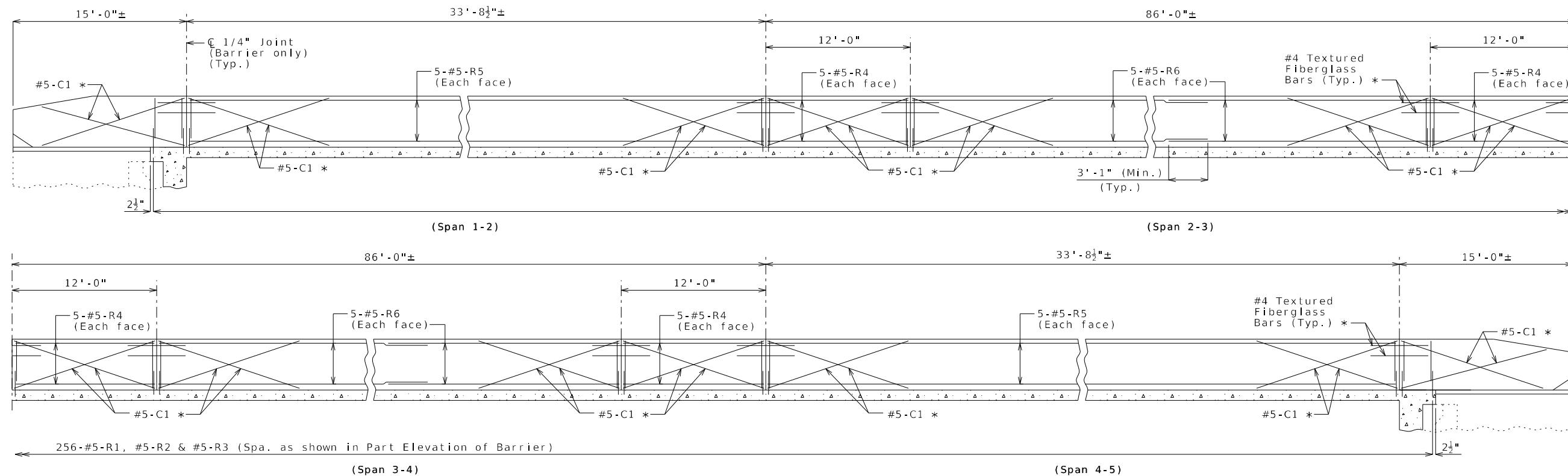
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DESIGNED BY: J. B. WRIGHT
CHECKED BY: J. B. WRIGHT
DATE: 2/29/2024

ROUTE 6 (MAJOR) OVER ROUTE 24/61 (MAJOR)	SLAB DETAILS
---	--------------



General Notes:

* Slip-formed option only.

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

Top of barrier shall be built parallel to grade and barrier joints (except at end bents) 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 D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

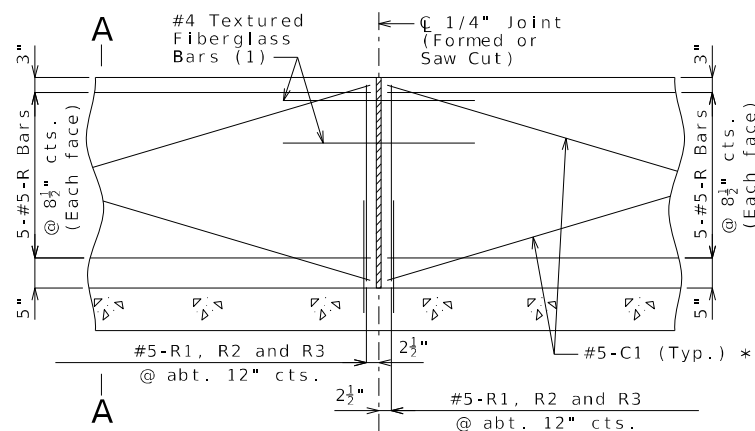
Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

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

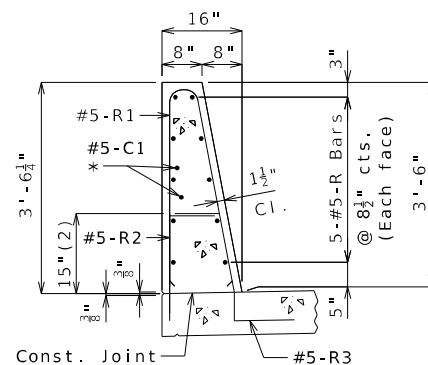
Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

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

Plastic waterstop shall not be used with saw cut joints.



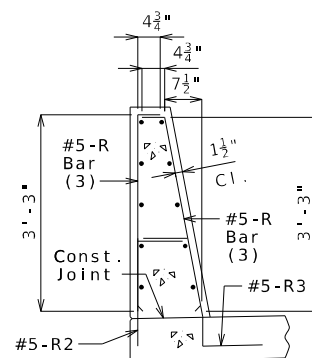
PART ELEVATION OF BARRIER



Use a minimum lap of 3'-1" for
#5 horizontal barrier bars.

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

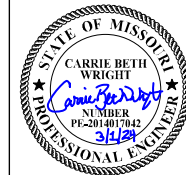
(2) To top of bar



(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.)

TYPE D BARRIER

Sheet No. 23 of 27



DATE PREPARED
2/29/2024

ROUTE	STA
-------	-----

6	MC
---	----

DISTRICT	SHEET
BB	21

BR	2.
COUNTY	

MARION

JNE0183

CONTRACT ID.

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

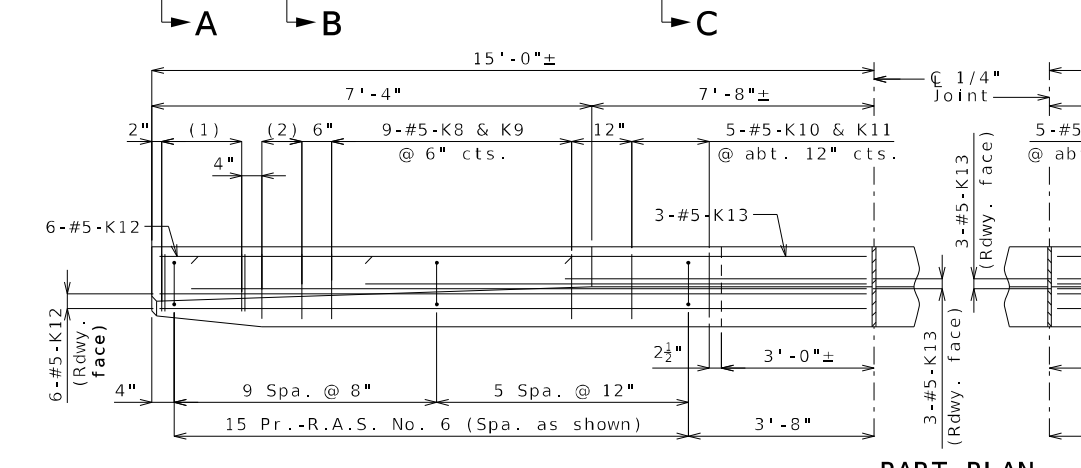
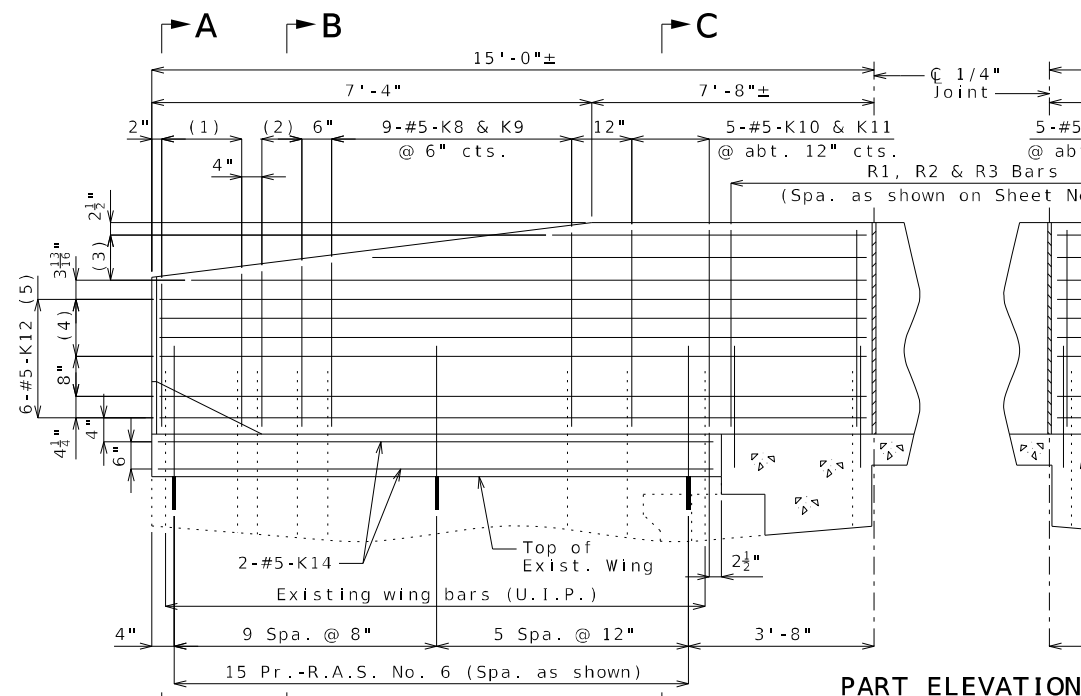
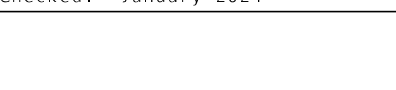
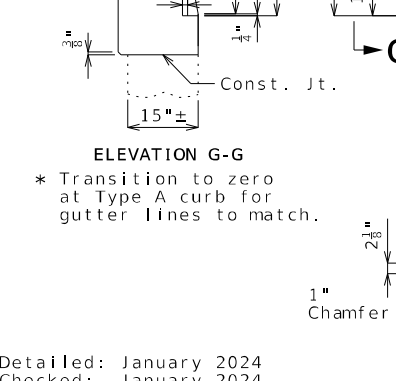
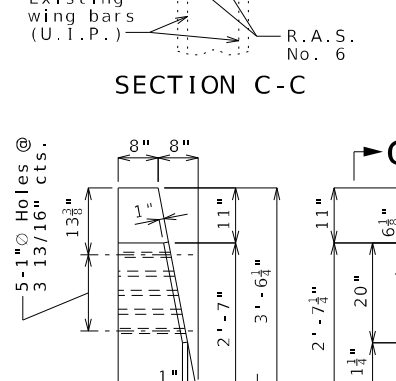
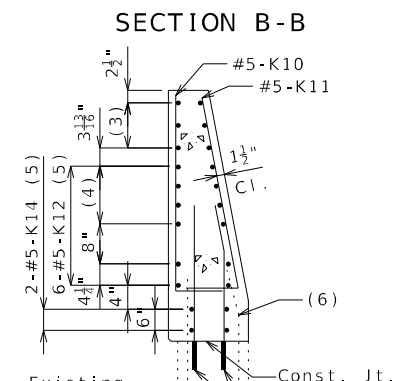
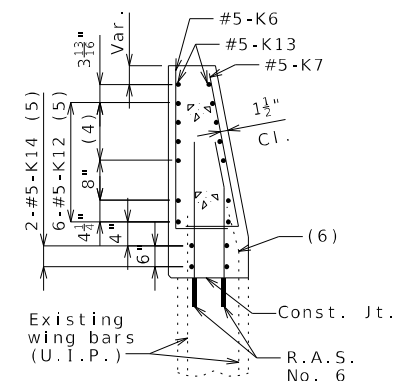
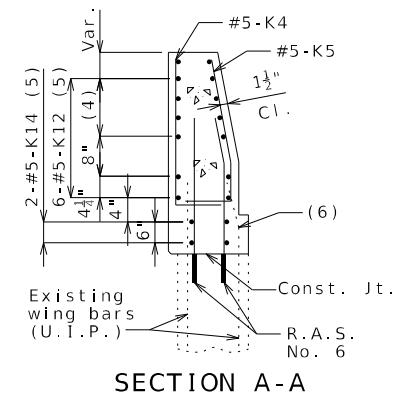
**HORNER
SHIFRIN**

461 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2936
44.57144-14.57144 FAX: 314.57144 E-MAIL: H@H-S.COM
CERTIFICATE OF AUTHORITY NO. 0007-58
DISTRICT PROFESSIONAL ENGINEERING
EXPIRATION DATE DECEMBER 31, 2024

ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)

TYPE D BARRIER

REV.



- (1) 5-#5-K4 & K5 @ 4" cts.
 - (2) 3-#5-K6 & K7 @ 4" cts.
 - (3) 3-#5-K13 @ 4 $\frac{1}{2}$ " cts., each face
 - (4) 3 spaces @ 3 $\frac{13}{16}$ "
 - (5) Spaced as shown, each face
 - (6) Bend existing vertical wing bars in field to maintain 1 1/2" cl. (min.) to face of barrier

General Notes:

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

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.

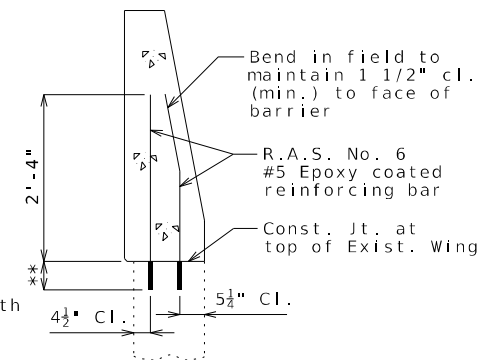
Reinforcing Steel:

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

TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

** Manufacturer's
recommended
embedment length
(5" min.)



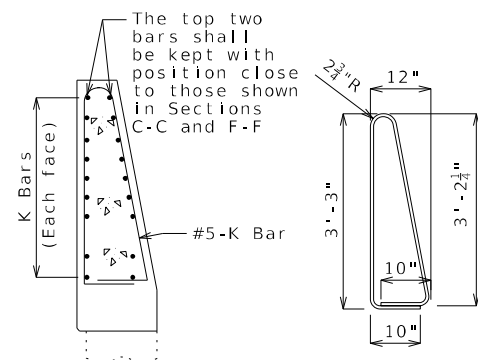
Resin Anchors:

The Contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Type D Barrier.

The minimum embedment depth in concrete with $f'_c = 4,000$ psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #5 Grade 60 reinforcing bar 2'-9" long shall be substituted for the 5/8"Ø threaded rod.



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

All dimensions are out to out.

DATE PREPARED	
2/29/2024	
ROUTE	STATE
6	MO
DISTRICT	SHEET NO.
BR	24

COUNTY
MARION
JOB NO.
JNE0183
CONTRACT ID.

PROJECT NO.
BRIDGE NO. A21392

[illegible]

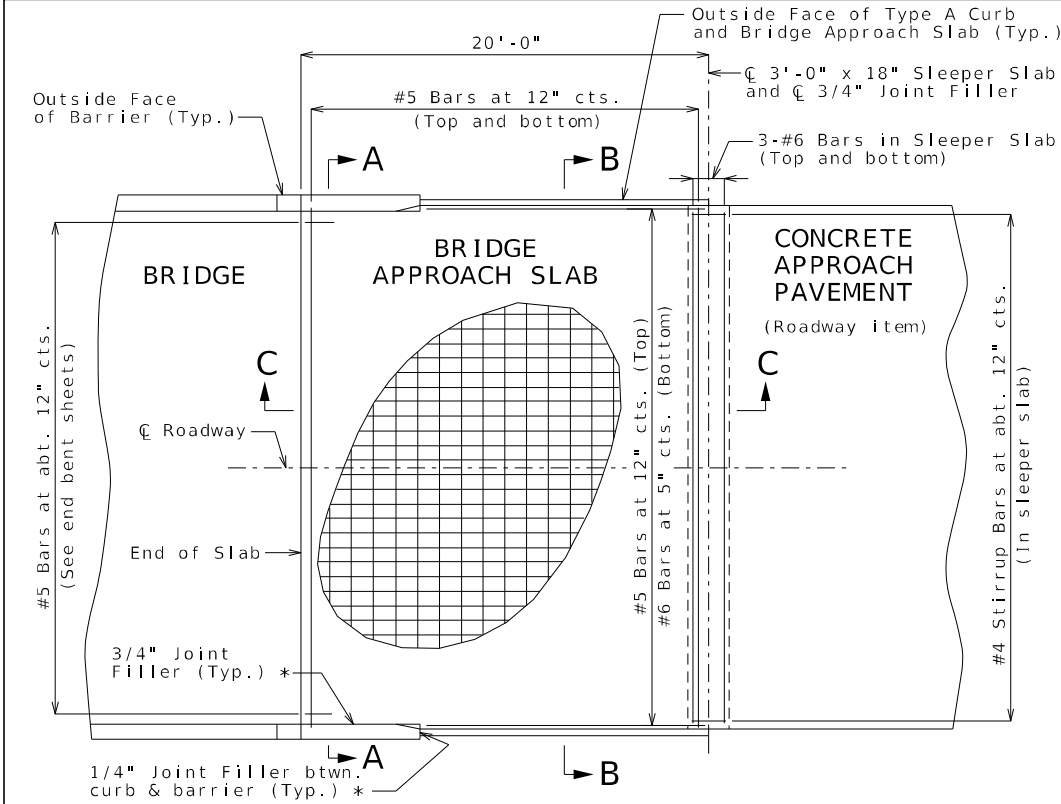
MoDOT

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

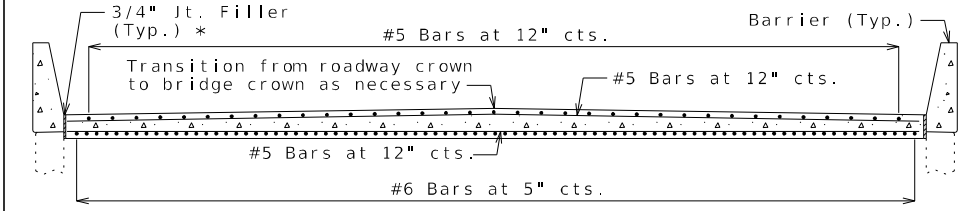
**HORNER
SHIFRIN**

401 S. 16TH ST., STE. 400 SAINT LOUIS, MO 63103-2286
314.451.4321 • FAX 314.451.4998 • WWW.HORNERSHIFRIN.COM
CREATING PROFESSIONAL ENVIRONMENTS
EXPIRATION DATE: DECEMBER 31, 2024

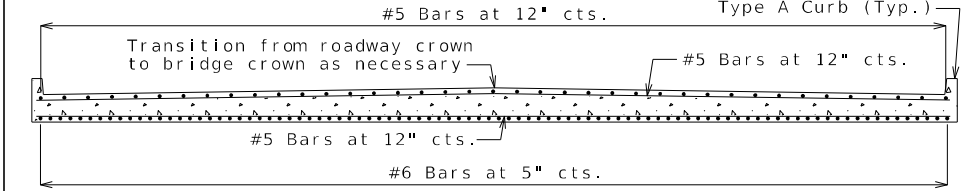
ROUTE 6 (MAJOR) OVER
ROUTE 24/61 (MAJOR)



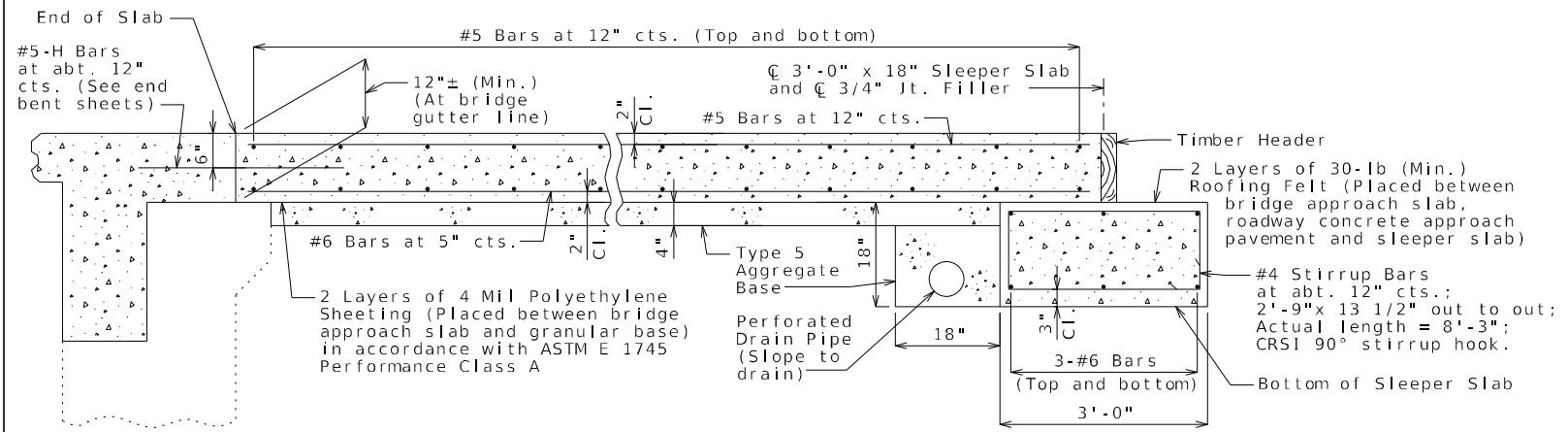
PART PLAN SHOWING REINFORCEMENT



SECTION A-A

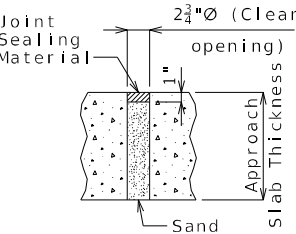


SECTION B-B

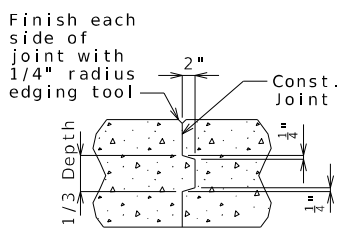


SECTION C-C

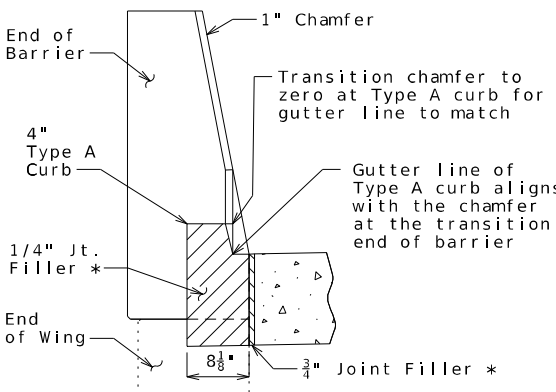
BRIDGE APPROACH SLAB (MAJOR)



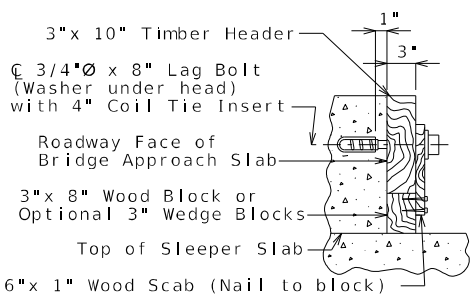
UNDERSEAL ACCESS HOLE DETAIL
(If required)



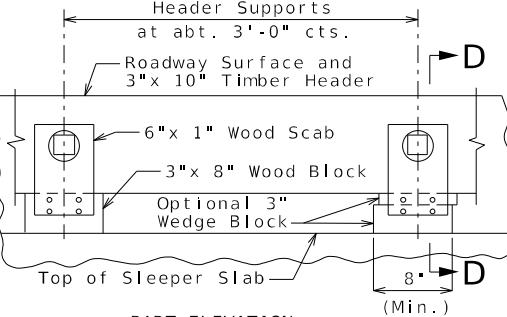
CONSTRUCTION JOINT DETAIL



SECTION BETWEEN CURB AND BARRIER



SECTION D-D



PART ELEVATION

DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

General Notes:

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

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

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.

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 29 inches for #5 bars and 44 inches for #6 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.

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

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

For concrete approach pavement details, see roadway plans.

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

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, 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 (Major) per square yard.

* 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.

STATE OF MISSOURI
CARRIE BETH WRIGHT
Professional Engineer
3428

DATE PREPARED
2/29/2024

ROUTE
6

DISTRICT
BR

COUNTY
MARION

JOB NO.
JNE0183

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A21392

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

HORNER SHIFRIN

401 S. HILL ST., SUITE 100, SAINT LOUIS, MO 63102
314-571-1000
WWW.HORNERSHIFRIN.COM
DESIGNED BY: J. B. H. / J. B. H.
CHECKED BY: J. B. H. / J. B. H.
DATE: 2/29/2024

ROUTE 6 (MAJOR) OVER ROUTE 24/61 (MAJOR)

BRIDGE APPROACH SLAB (MAJOR)

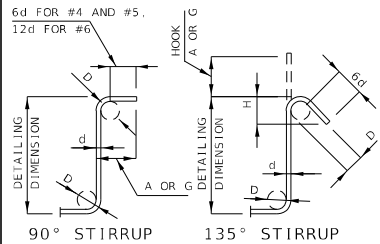
REV.

Detailed: January 2024
Checked: January 2024

Note: This drawing is not to scale. Follow dimensions. Sheet No. 25 of 27

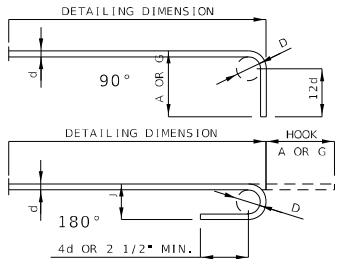
...\\B_A21392_25_JNE0183_Approach Slab.dgn 3:21:24 PM 2/29/2024

BILL OF REINFORCING STEEL																										
NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
										B		C		D		E		F		H					K	
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.
			SUBSTRUCTURE																							
			END BENT NO 1																							
	6	6 H100	BM SEAT ADJ	E	20	X				42	2.000							42	2	380						
108	5	U100	BM SEAT ADJ	E	10	S	X					1	3.000	1	9.000			4	3	451						
2	4	U103	SHEAR KEY	E	10	S	X					1	9.000	1	6.000			5	0	6						
			INT BENT NO 2																							
28	6	D200	SHEAR KEY	E	20	X				2	3.000							2	3	95						
6	7	H200	BM SEAT ADJ	E	18	X				38	5.000							40	1	492						
4	6	H201	BM SEAT ADJ	E	20	X				38	5.000							38	5	231						
4	6	H202	BM SEAT ADJ	E	20	X				2	3.000							2	3	14						
8	6	H203	BM SEAT ADJ	E	10	X						1	2.000	2	3.000			4	7	51						
6	7	H204	BM SEAT ADJ	E	20	X				38	5.000							38	5	471						
49	5	U200	BM SEAT ADJ	E	13	S	X			2	5.000	1	8.000	2	5.000	1	8.000	9	1	447						
			INT BENT NO 3																							
60	6	H300	BM SEAT ADJ	E	20	X				2	11.000							2	11	263						
50	4	U300	BM SEAT ADJ	E	10	S	X					0	11.000	2	5.000			4	3	136						
10W5	W301	BM SEAT ADJ	E	35	X					0	9.000	0	3.000	1	0.000			16	7	27						
			INT BENT NO 4																							
28	6	D400	SHEAR KEY	E	20	X				2	3.000							2	3	95						
6	7	H400	BM SEAT ADJ	E	18	X				38	5.000							40	1	492						
4	6	H401	BM SEAT ADJ	E	20	X				38	5.000							38	5	231						
4	6	H402	BM SEAT ADJ	E	20	X				2	3.000							2	3	14						
8	6	H403	BM SEAT ADJ	E	10	X						1	2.000	2	3.000			4	7	51						
6	7	H404	BM SEAT ADJ	E	20	X				38	5.000							38	5	471						
49	5	U400	BM SEAT ADJ	E	13	S	X			2	5.000	1	7.000	2	5.000	1	7.000	8	7	439						
			END BENT NO 5																							
6	6	H500	BM SEAT ADJ	E	20	X				42	2.000							42	2	380						
108	5	U500	BM SEAT ADJ	E	10	S	X					1	2.000	1	9.000			4	1	432						
2	4	U503	SHEAR KEY	E	10	S	X					1	8.000	1	6.000			4	10	6						
			SUPERSTRUCTURE																							
			END BENT NO 1																							
6	6	H101	DIAPHRAGM	E	20					42	2.000							42	2	380						
40	5	H102	DIAPHRAGM	E	20					2	6.000							2	6	104						
8	6	H103	DIAPHRAGM	E	19	S				2	10.000	1	8.000					4	6	52						
88	5	U101	DIAPHRAGM	E	10	S						2	6.000	1	8.000			6	8	589						
54	6	U102	DIAPHRAGM	E	19	S				0	10.000	5	2.000					6	0	473						



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

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



END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"
#14	18 1/4"	24 3/4"	21 3/4"	27"

NOTE: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

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

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

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

Detailed: January 2024
Checked: January 2024

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

Sheet No. 26 of 27

BILL OF REINFORCING STEEL

NO.	REQ'D.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
											B		C		D		E		F		H					K
											FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.			FT.	IN.
				END BENT NO 5																						
		6	H501	DIAPHRAGM	E	20					42	2.000							42	2	42	2	380			
		40	H502	DIAPHRAGM	E	20					2	6.000							2	6	2	6	104			
		8	H503	DIAPHRAGM	E	19	S				2	10.000	1	8.000					4	6	4	4	52			
		88	5 U501	DIAPHRAGM	E	10	S					2	6.000	1	8.000				6	8	6	5	589			
		54	6 U502	DIAPHRAGM	E	19	S				0	10.000	5	2.000					6	0	5	10	473			
				INT. BENT DIAPH.																						
		16	6 H600	DIAPHRAGM	E	20					38	5.000							38	5	38	5	923			
		96	4 U600	DIAPHRAGM	E	28	S					2	2.000	2	7.000	1	6.000		6	3	6	1	390			
		48	6 U601	DIAPHRAGM	E	28	S					2	2.000	2	7.000	2	2.000		6	11	6	7	475			
		16	6 U602	DIAPHRAGM	E	10	S					1	1.000	2	5.000				4	7	4	3	102			
				SLAB																						
		66	6 S1	SLAB	E	20					41	6.000							41	6	41	6	4114			
		656	6 S2	SLAB	E	20					42	5.000							42	5	42	5	41794			
		180	5 S3	SLAB	E	20					51	6.000							51	6	51	6	9669			
		66	7 S4	SLAB	E	20					39	9.000							39	9	39	9	5362			
		66	7 S5	SLAB	E	20					45	4.000							45	4	45	4	6116			
		312	5 S6	SLAB	E	20					43	5.000							43	5	43	5	14128			
				BARRIER																						
			K1	NOT USED																						
			K2	NOT USED																						
			K3	NOT USED																						
		20	5 K4	BARRIER	E	19	S	V	4	2	4.250	0	10.000						3	2	3	1				
				INCREMENT =						2	6.250	0	10.000						3	4	3	3	66			
				0.500 INCH																						
		20	5 K5	BARRIER	E	14	S	V	4	0	8.250	0	9.500	1	6.500		0	4.000	1	6.000	3	0	2	11		
				INCREMENT =						0	8.250	0	9.500	1	8.500		0	4.500	1	8.000	3	2	3	1		
				0.500 INCH																						
		12	5 K6	BARRIER	E	19	S	V	4	2	6.750	0	10.000							3	5	3	4			
				INCREMENT =						2	7.750	0	10.000							3	6	3	5			
				0.500 INCH																						
		12	5 K7	BARRIER	E	21	S	V	4	2	6.625	0	10.000				2	6.000	0	6.250	3	5	3	3		
				INCREMENT =						2	7.625	0	10.000				2	7.000	0	6.500	3	6	3	4		
				0.500 INCH																						
		36	5 K8	BARRIER	E	19	S	V	4	2	8.500	0	10.000							3	7	3	5			
				INCREMENT =						3	2.500	0	10.000							4	1	3	11			
				0.750 INCH																						
		36	5 K9	BARRIER	E	21	S	V	4	2	8.500	0	10.000				2	7.750	0	6.750	3	6	3	5		
				INCREMENT =						3	2.500	0	10.000				3	1.750	0	7.750	4	1	3	11		
				0.750 INCH																						
		20	5 K10	BARRIER	E	19	S				3	3.000	0	10.000						4	1	4	0			
		20	5 K11	BARRIER	E	21	S				3	3.000	0	10.000				3	2.250	0	7.750	4	1			
		48	5 K12	BARRIER	E	20					14	9.000								14	9	14	9			
		24	5 K13	BARRIER	E	20		V	8	8	0.000									8	0	8	0			
				INCREMENT =						14	0.000									14	0	14	0			
				3.0 FT 0.00 INCH																						
		16	5 K14	BARRIER	E	20					11	9.000								11	9	11	9			
		512	5 R1	BARRIER	E	26					3	3.000	0	5.500				3	3.000	0	6.750	6	10			
		512	5 R2	BARRIER	E	19	S				1	7.500	0	9.500						2	5	2	4			
		512	5 R3	BARRIER	E	27	S					0	9.500	1	3.250	0	4.000	1	0.000	1	3.000	3	5			
		80	5 R4	BARRIER	E	20					11	9.000									11	9				

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
										B		C		D		E		F		H					K	
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.
40	5	R5	BARRIER	E	20					33	5.000							33	5	33	5	1394				
80	5	R6	BARRIER	E	20					32	5.000							32	5	32	5	2705				
			SLIP FORM																							
56	5	C1	SLIP FORM	E	20					12	0.000							12	0	12	0	701				
			TOTALS																							
		W5		E																		27				
		4		E																		538				
		5		E																		41180				
		6		E																		51023				
		7		E																		13404				
			TOTAL	E																		106172				
			SLAB ON STEEL																							
		4		E																		390				
		5		E																		25183				
		6		E																		49218				
		7		E																		11478				
			TOTAL	E																		86269				
			REINFORCING STEEL (EPOXY COATED)																							
		W5		E		X																27				
		4		E		X																148				
		5		E		X																1769				
		6		E		X																1805				
		7		E		X																1926				
			TOTAL	E		X																5675				
			BARRIER																							
		5		E																		13527				
			TOTAL	E																		13527				
			SLIP FORM OPTION																							
		5		E																		701				
			TOTAL	E																		701				

6d FOR #4 AND #5,
12d FOR #6

90° STIRRUP

135° STIRRUP

DETAILING DIMENSION

DETAILING DIMENSION

STIRRUP HOOK DIMENSIONS

GRADES 40 • 50 • 60 KSI

BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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

DETAILING DIMENSION

DETAILING DIMENSION

90°

180°

4d OR 2 1/2" MIN.

END HOOK DIMENSIONS

ALL GRADES

BAR SIZE	D (IN.)	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"
#14	18 1/4"	24"	21 3/4"	27"

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
										B		C		D		E		F		H					K	
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.

6d FOR #4 AND #5,
12d FOR #6

90° STIRRUP

135° STIRRUP

DETAILING DIMENSION

DETAILING DIMENSION

STIRRUP HOOK DIMENSIONS

GRADES 40 • 50 • 60 KSI

BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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

DETAILING DIMENSION

DETAILING DIMENSION

90°

180°

4d OR 2 1/2" MIN.

END HOOK DIMENSIONS

ALL GRADES

BAR SIZE	D (IN.)	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"
#14	18 1/4"	24"	21 3/4"	27"

STATE OF MISSOURI

CARRIE BETH WRIGHT

REGISTERED PROFESSIONAL ENGINEER

31428

DATE PREPARED

2/29/2024

ROUTE 6

STATE MO

DISTRICT BR

SHEET NO. 27

COUNTY MARION

JOB NO. JNE0183

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A21392

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

HORNER SHIFRIN

401 S. 8TH ST., STE. 100 SAINT LOUIS, MO 63102-2806

314-531-1300 FAX 314-531-1301

WWW.HORNERSHIFRIN.COM

CERTIFICATE OF AUTHORITY 000109

EXPIRATION DATE DECEMBER 31, 2024

ROUTE 6 (MAJOR) OVER ROUTE 24/61 (MAJOR)

BILL OF REINFORCEMENT

NOTE:

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

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

E = EPOXY COATED REINFORCEMENT.

S = STIRRUP.

X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.

V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.

NO. EA. = NUMBER OF BARS OF EACH LENGTH.

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

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

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

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

Sheet No. 27 of 27

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2/29/2024