1 REVISED

MGS GUARDRAIL

STA	STA	ALIGNMENT	LOCATION	MGS BRIDGE APPROACH TRANSITION EACH	SHAPING SLOPES CLASS III (100 FT)	REMARKS
236+18.87	236+56.37	EXIST_I-49_MED-1	I-49 SB, LT	1	0.4	A2629 APPROACH
236+05.82	236+43.32	EXIST_I-49_MED-1	I-49 SB, RT	1	0.4	A2629 APPROACH
248+32.59	248+70.09	EXIST_I-49_MED-1	I-49 SB, LT	1	0.4	A2630 APPROACH
248+22.54	248+60.04	EXIST_I-49_MED-1	I-49 SB, RT	1	0.4	A2630 APPROACH
257+59.40	257+96.90	EXIST_I-49_MED-1	I-49 SB, LT	1	0.4	A2631 APPROACH
257+61.83	257+99.33	EXIST_I-49_MED-1	I-49 SB, RT	1	0.4	A2631 APPROACH
431+83.21	432+20.71	EXIST_I-49_NB	I-49 SB, LT	1	0.4	A2614 APPROACH
431+81.67	432+19.17	EXIST_I-49_NB	I-49 SB, RT	1	0.4	A2614 APPROACH
			TOTAL	8	3	

1 ADDED

CONTRACTOR FURNISHED SURVEYING & STAKING

1 LUMP SUM

MOBILIZATION

1 LUMP SUM

ADDITIONAL MOBILIZATION FOR SEEDING

4 EACH

PERMANENT PAVEMENT MARKING

STA / LOG MILE	STA / LOG MILE	LOCATION	LENGTH (FT)	6" INTERMITTENT WHITE CLASS 2 PAINT 25-MIL TYPE L BEADS (FT)	6" SOLID YELLOW CLASS 2 PAINT 25-MIL TYPE L BEADS (FT)	REMARKS
201+75.34	220+90.34	RT OF EXIST_I-49_MED-1 CL	1915.00	478.8		I-49 SB CENTERLINE
220+90.34	223+77.90	RT OF EXIST_I-49_MED-1 CL	287.56		287.6	I-49 SB YELLOW EDGELINE
220+90.34	225+56.64	LT OF EXIST_I-49_MED-1 CL	466.30	116.6		I-49 NB CENTERLINE
225+56.64	269+19.09	LT OF EXIST_I-49_MED-1 CL	4362.45	1090.6	4362.5	I-49 NB CENTERLINE & YELLOW EDGELINE
269+19.09	297+51.71	LT OF EXIST_I-49_MED-1 CL	2832.62	708.2		I-49 NB CENTERLINE
112.338	112.111	CL & RT OF EXIST I-49 NB CL	1198.56	299.6		I-49 NB CENTERLINE (I-49 NB LOG MILES)
271+28.55	271+93.21	RT OF EXIST_I-49_MED-1 CL	64.66		64.7	I-49 SB YELLOW EDGELINE
271+93.21	274+60.22	RT OF EXIST_I-49_MED-1 CL	267.01	66.8	267.0	I-49 SB CENTERLINE & YELLOW EDGELINE
73.225	73.322	RT OF EXIST I-49 SB CL	512.16	128.0		I-49 SB CENTERLINE
386+77.04	414+94.36	RT OF EXIST_I-49_MED-2 CL	2817.32	704.3		I-49 SB CENTERLINE
404+00.00	406+88.25	RT OF EXIST_I-49_NB CL	288.25		288.3	I-49 SB YELLOW EDGELINE
404+00.00	408+49.88	CL EXIST_I-49_NB	449.88	112.5		I-49 NB CENTERLINE
408+49.88	448+20.72	CL & RT OF EXIST_I-49_NB CL	3970.84	992.7	3970.8	I-49 NB CENTERLINE & YELLOW EDGELINE
448+20.72	461+25.30	CL & RT OF EXIST_I-49_NB CL	1304.58	326.1		I-49 NB CENTERLINE
109.031	108.915	RT OF EXIST I-49 NB CL	612.48	153.1		I-49 NB CENTERLINE
449+84.51	450+46.23	RT OF EXIST_I-49_NB CL	61.72		61.7	I-49 SB YELLOW EDGELINE
450+46.23	452+73.68	RT OF EXIST_I-49_NB CL	227.45	56.9	227.4	I-49 SB CENTERLINE & YELLOW EDGELINE
			TOTAL	5234	9530	

FLOWABLE BACKFILL

STA	LOCATION	FLOWABLE BACKFILL (CY)	REMARKS
432+33.00	RT OF EXIST_I-49_NB CL	5	FILL VOID UNDER BR A2614 END BENT 1 W/ FLOWABLE BACKFILL
434+76.29	RT OF EXIST_I-49_NB CL	5	FILL VOID UNDER BR A2614 END BENT 4 W/ FLOWABLE BACKFILL
	TOTAL	10	

SUMMARY OF QUANTITIES

SHEET 3 OF 6

STATE OF MISSOURI
SHANNON M. KELLNER
NUMBER PE-2011015763
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/28/2026

ROUTE I-49 | STATE MO

DISTRICT SW | SHEET NO. 3

COUNTY VERNON

JOB NO. JSR0274

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

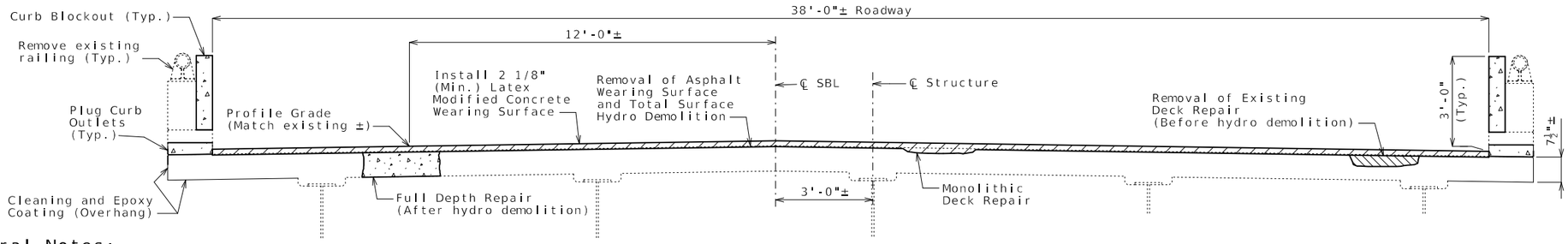
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

U.I.P. AND REHABILITATE EXISTING (60'-75'-90'-75'-60') CONTINUOUS COMPOSITE PLATE GIRDER SPANS (SKEW: 20° LA)

SEC/SUR 17 TWP 37N RGE 31W



TYPICAL SECTION THRU EXISTING DECK

General Notes:

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Bridge Deck Rating = 6

Design Loading:
HS20-44 (1965 and New Construction)

Design Unit Stresses:

Class B-1 Concrete (Curb Blockout)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure & Full Depth Repair	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Carbon Steel (ASTM A709 Grade 36)	fy = 36,000 psi

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

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

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

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

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

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

Protective Coating Limits: The surface of all existing structural steel within a distance of not less than 10 feet from the end of beam at End Bents No. 1 & 6 shall be recoated. Within these limits, items to be recoated shall include beams, diaphragms, stiffeners, bearings, and miscellaneous structural steel items.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for Recoating of Structural Steel (System G) with inorganic zinc primer. The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for Surface Preparation for Recoating Structural Steel.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for Field Application of Inorganic Zinc Primer.

Field Coat(s): The color of the field coat(s) 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 (Sytem 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).

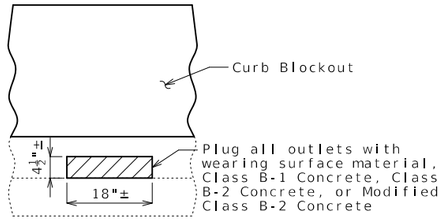
Concrete Protective Coatings:
Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

Miscellaneous:
Roadway surfacing adjacent to bridge ends shall match new bridge wearing surface (roadway item).

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.

In order to maintain grade and a minimum thickness of wearing surface as shown on plans it may be necessary to use additional quantities of wearing surface at various locations throughout the structure. The cost of furnishing and installing the wearing surface will be considered completely covered in the contract unit price, including all additional labor, materials or equipment for variations in thickness of wearing surface.



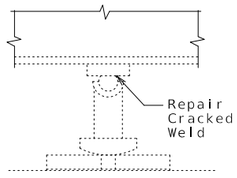
PART ELEVATION SHOWING PLUGGING OF CURB OUTLETS

New 2 1/8" Latex Modified Concrete Wearing Surface not shown for clarity.

Notes:

Cost of labor and materials required to plug existing curb outlets will be considered completely covered by the contract unit price for Plugging Existing Curb Outlets.

Estimated material required to fill all curb outlets is 2.8 cubic yards (for information only).



PART ELEVATION SHOWING WELD REPAIR AT BEARING NO. 4 AT INTERMEDIATE BENT NO. 2

Cost of performing weld repairs will be considered completely covered by the contract lump sum price for Miscellaneous Weld Repairs.

1 unit

Estimated Quantities

	Item		Total
	Removal of Miscellaneous ACM (Non-Friable)	sq. foot	34
	Total Surface Hydro Demolition	sq. yard	1496
	Removal of Asphalt Wearing Surface	sq. foot	13,466
	Removal of Existing Deck Repair	sq. foot	300
	Removal of Existing Expansion Joint & Adjacent Concrete	linear foot	87
	Removal of Existing Bearings and Anchor Bolts	each	10
**	Removal of End Diaphragms and Bearing Stiffeners	each	4
	Remove and Replace Barrier	linear foot	19
	Bridge Approach Slab (Major)	sq. yard	171
*	Supplementary Wearing Surface Material	cu. yard	20
	Latex Modified Concrete Wearing Surface	sq. yard	1501
	Diamond Grinding	sq. yard	1501
	Class B-2 Concrete	cu. yard	10.7
	Curb Blockout	linear foot	771
	Substructure Repair (Formed)	sq. foot	30
	Full Depth Repair	sq. foot	100
	Cleaning and Epoxy Coating	sq. foot	2540
	Reinforcing Steel (Epoxy Coated)	pound	780
	Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
	Fabricated Structural Carbon Steel (Misc.)	pound	2000
	Surface Preparation for Recoating Structural Steel	sq. foot	1100
	Field Application of Inorganic Zinc Primer	sq. foot	1100
	Intermediate Field Coat (System G)	sq. foot	200
	Finish Field Coat (System G)	sq. foot	200
	Miscellaneous Weld Repairs	1 each 1 lump sum	1 811
	Plugging Existing Curb Outlets	each	88
	Cored Slab Drains	each	60
	Vertical Drain at End Bents	each	2
	Laminated Neoprene Bearing Pad Assembly	each	10
	Strip Seal Expansion Joint System	linear foot	81

* Supplementary wearing surface material for monolithic deck repair will be paid for at the fixed unit price in accordance with Sec 109.

** For locations of bearing stiffeners to be removed and replaced, see Sheet No. 8.

1 REVISED

REPAIRS TO BRIDGE: ROUTE I-49 SB OVER LITTLE OSAGE RIVER

ROUTE I-49 SB FROM ROUTE TT TO ROUTE D
ABOUT 3.1 MILES SOUTH OF ROUTE TT
BEGINNING STATION 236+61.10± (MATCH EXISTING)

Detailed Sep. 2025
Checked Oct. 2025

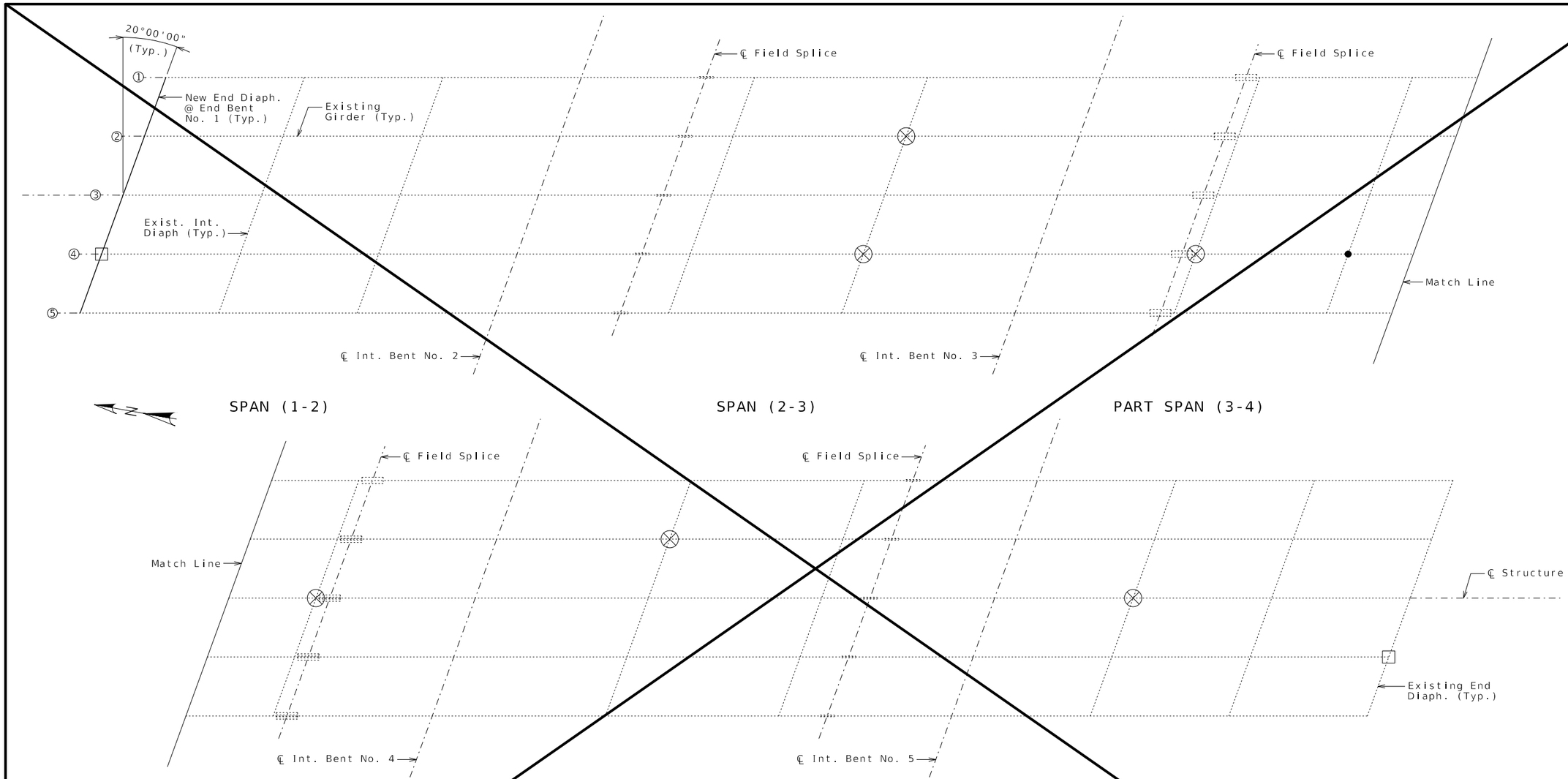
Note: This drawing is not to scale. Follow dimensions.

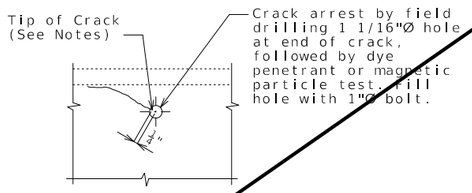
STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
02/09/2026 2:39:23 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED 2/9/2026
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY VERNON
JOB NO. JSR0274
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A26291

DESCRIPTION | DATE

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





FATIGUE CRACK REPAIR

Repair Notes:

1. For details of new end diaphragms at End Bent No. 1 and bearing stiffener replacement at End Bents No. 1 & 6, see Sheet No. 5.
2. Each location of top flange crack repair includes two diaphragm connections, one on each side of the girder web. For details of top flange crack repairs at intermediate diaphragm connection plates, see Sheet No. 9.

   All top flange crack repairs, as shown, shall be NDT tested to determine whether the cracks have turned into the girder webs. Additional work to arrest the cracks in the girder webs may be required. Final repair methods will be per the approval of the engineer.

   Cost of top flange crack repair including NDT (dye penetrant or magnetic particle) and crack arresting, if required, will be paid for by the contract lump sum price for Miscellaneous Weld Repairs.
3. Only those fatigue cracks which have propagated into the girder web need repair by drilling. Cracks that are confined entirely within the weld metal are not required to be repaired in this manner.

   Cost of fatigue crack repair including NDT (dye penetrant or magnetic particle) and crack arresting will be paid for by the contract lump sum price for Miscellaneous Weld Repairs.
4. The extent of crack repair may vary from the estimated quantity but the contract unit price shall prevail regardless of the variation.

Legend:

- ☐ Location of bearing stiffener replacement at steel end diaphragm (See Repair Note 1)
- ⊗ Location of top flange crack repair at intermediate diaphragm (See Repair Notes 2)
- ● Location of known fatigue crack repair (requiring drilling) (See Repair Note 3)

Note: Repair work described above shall not be performed under live load directly applied on slab over girder under repair.

PLAN OF STRUCTURAL STEEL SHOWING MISCELLANEOUS WELD REPAIR LOCATIONS

Detailed Oct. 2025
Checked Oct. 2025

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

1 SHEET DELETED

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
02/09/2026 2:39:40 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
2/9/2026

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	8

COUNTY
VERNON

JOB NO.
JSR0274

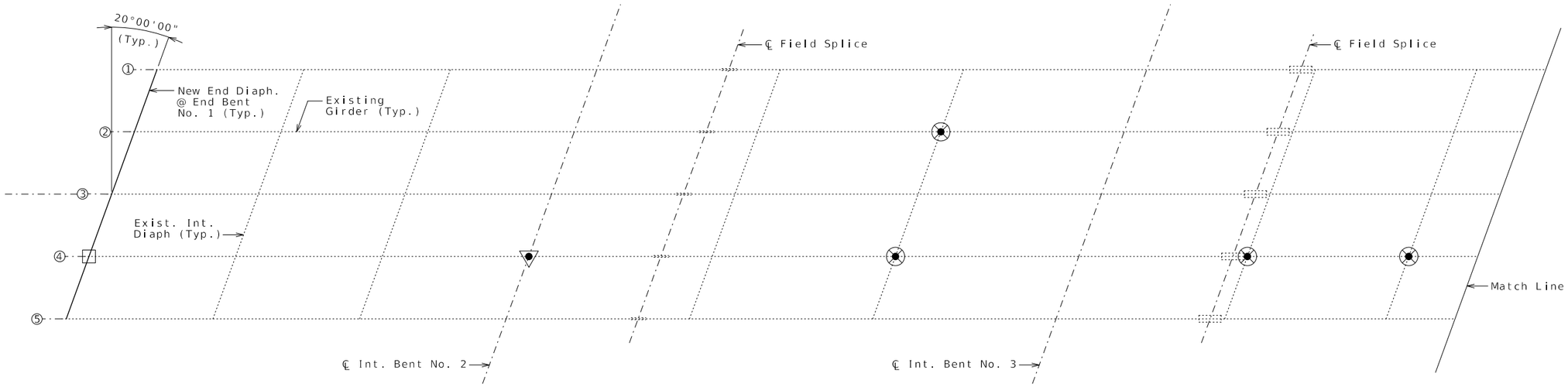
CONTRACT ID.

PROJECT NO.

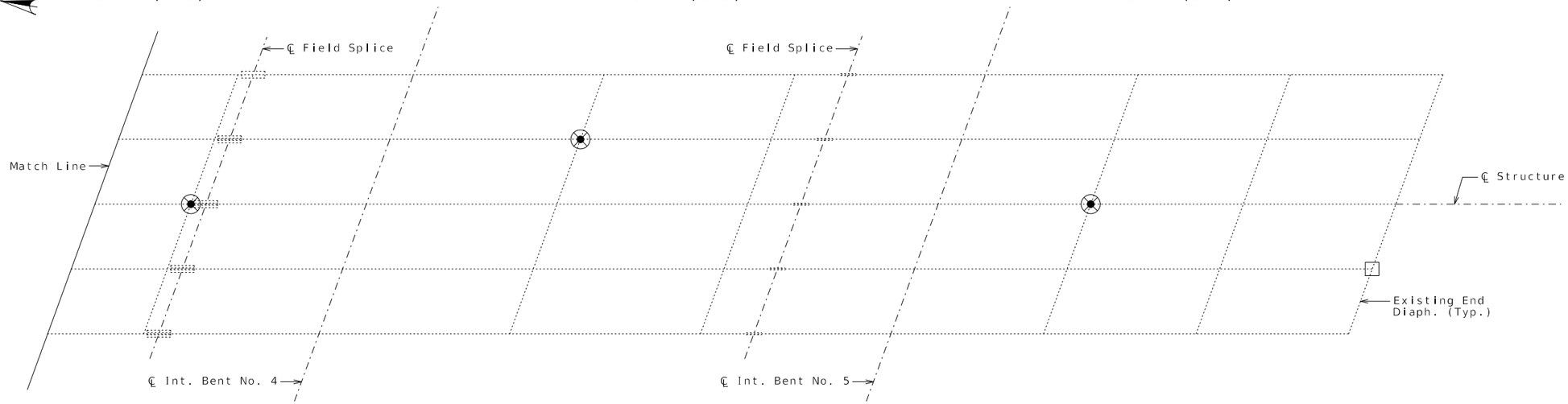
BRIDGE NO.
A26291

DESCRIPTION	DATE

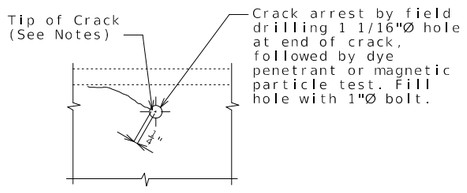
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SPAN (1-2) SPAN (2-3) PART SPAN (3-4)



PART SPAN (3-4) SPAN (4-5) SPAN (5-6)



FATIGUE CRACK REPAIR

Repair Notes:

1. For details of new end diaphragms at End Bent No. 1 and bearing stiffener replacement at End Bents No. 1 & 6, see Sheet No. 5.

2. Each location of bolted angle bracket installation includes two diaphragm connections, one on each side of the girder web. For details of bolted angle bracket installation at intermediate diaphragm connection plates, see Sheet No. 9.

   Cost of bolted angle bracket installation will be paid for by the contract unit price for Fabricated Structural Carbon Steel (Misc.).

3. All locations, as shown, shall be NDT tested to determine whether the cracks have turned into the girder webs. Additional work to arrest the cracks in the girder webs may be required. Final repair methods will be per the approval of the engineer.

   Only those cracks which have propagated into the girder web need repair by drilling. Cracks that are confined entirely within the weld metal are not required to be repaired in this manner.

   Cost of NDT (dye penetrant or magnetic particle) and crack arresting will be paid for by the contract unit price for Miscellaneous Weld Repairs.

   The extent of crack repair may vary but the contract unit price shall prevail regardless of any variation.

Legend:

- ☐ Location of bearing stiffener replacement at steel end diaphragm (See Repair Note 1)
- ⊗ Location of bolted angle bracket at intermediate diaphragm (See Repair Note 2)
- ● Location of NDT and potential crack repair (See Repair Note 3)
- ▽ Location of weld repair at bearing. See Sheet No. 1 for details.

Note: Repair work described above shall not be performed under live load directly applied on slab over girder under repair.

PLAN OF STRUCTURAL STEEL SHOWING MISCELLANEOUS REPAIR LOCATIONS

Detailed Oct. 2025
Checked Oct. 2025

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

1 SHEET ADDED

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
02/09/2026 2:40:12 PM
TIMOTHY D LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED
2/9/2026

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	8A

COUNTY
VERNON

JOB NO.
JSR0274

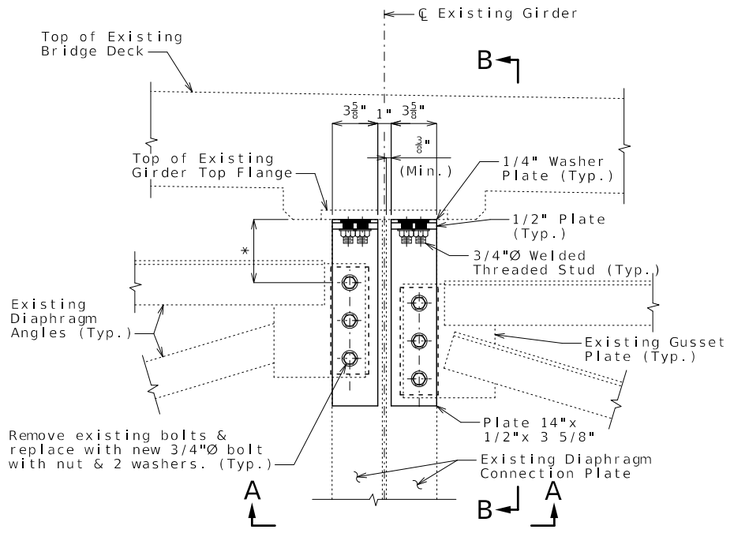
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A26291

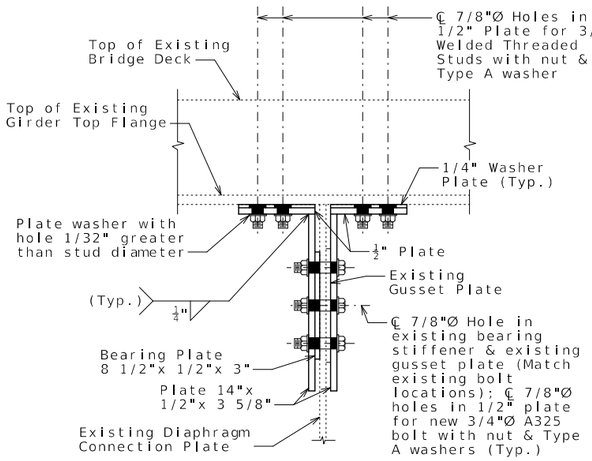
DESCRIPTION	DATE

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

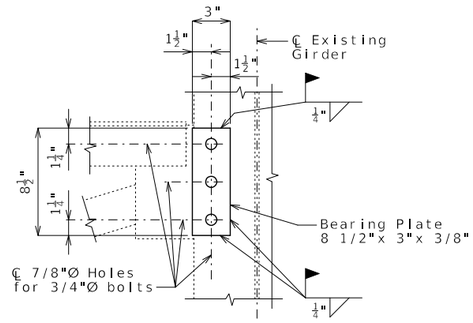


SECTION THRU GIRDER NEAR INTERMEDIATE DIAPHRAGM

* 5" Min.; 6 3/8" Max. (Verify in field)

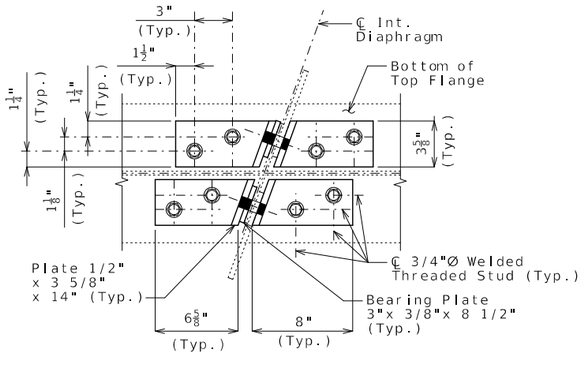


SECTION B-B

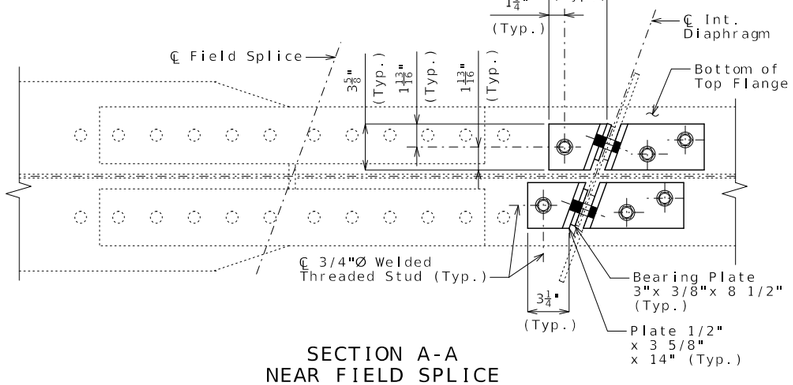


BEARING PLATE DETAIL

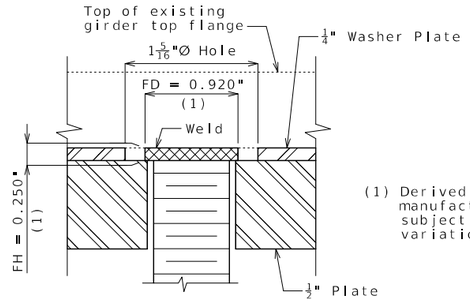
Match existing hole locations in diaphragm connection plate.



SECTION A-A



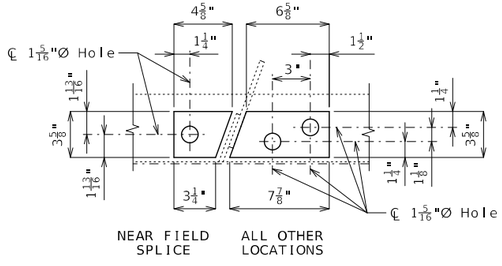
SECTION A-A NEAR FIELD SPLICE



(1) Derived from manufacturer's data, subject to field variations.

THREADED STUD CONNECTION DETAIL

Threaded stud connection shall be in accordance with Sec 712, 1037, and 1080.



WASHER PLATE DETAIL

Notes:

For locations of crack repairs at intermediate diaphragms, see Sheet No. 8.

3/4-inch diameter bolts shall be ASTM F3125 Grade A325 Type 1 bolts. Bolt, nuts, and washers shall be galvanized in accordance with ASTM A153, Class C, or mechanically galvanized in accordance with ASTM B695, Class 55.

3/4-inch diameter threaded studs shall be ASTM A108/A29 Grade C1010-C1020. Nuts on threaded stud shall be tightened to provide a tension of one-half that specified in Sec 712 for ASTM F3125 Grade A325 high strength bolt installation.

All new structural steel shall be ASTM A709 Grade 36, unless noted otherwise.

Cost of fabricating and installing the crack repair brackets, complete in place, will be considered completely covered by the contract unit price for Fabricated Structural Carbon Steel (Misc.).

The contractor shall develop a test assembly to allow for repeatedly welding threaded studs in the same manner as will be done on the existing steel, to a nominally dimensioned single ply of structural carbon steel plate so the plate can be removed for further testing.

Prior to welding any permanent threaded studs the contractor shall, before the start of new operation or change in operation, weld ten test specimens consecutively using optimal current and time. Optimal current and time shall be the midpoint of the range normally recommended by the manufacturer for production welding.

The ten test specimens shall be subject to torque and bend testing.

The torque test shall consist of fitting five welded threaded studs with a washer plate to fit around the base weld, a washer, and a nut to fit the threaded studs. The nuts shall be rotated to a snug tight condition, and using a torque wrench the nuts shall be tightened to achieve a value of bolt tension of 60% of that shown in Sec 712.7.3 for ASTM F3125 Grade A325 bolts. A threaded stud will be considered as qualified if on all test specimens the base weld remains intact with no failures or if the base weld remains intact with failure of the stud.

The bend test shall consist of five threaded welded studs bent alternately in opposite directions to an angle of 30 degrees from vertical until failure occurs. A threaded stud will be considered as qualified if on all test specimens fracture occurs in the shank of the stud and not in the weld.

Production welding of the threaded studs may proceed after one qualified torque test and one qualified bend test are achieved.

Added: Cost of materials, labor and any other incidental items required to perform the torque and bend testing will be considered completely covered by the contract unit price for Fabricated Structural Steel (Misc.).

BOLTED ANGLE BRACKETS

CRACK REPAIRS AT EXISTING DIAPHRAGM CONNECTION TO TOP FLANGE

REVISED: bolted angle brackets; bolted angle

Detailed Oct. 2025
Checked Oct. 2025

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

STATE OF MISSOURI
TIMOTHY D. LEAF
NUMBER PE-2012000778
PROFESSIONAL ENGINEER
02/09/2026 2:40:32 PM
TIMOTHY D. LEAF - CIVIL
MO-PE-2012000778

DATE PREPARED: 2/9/2026

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	9

COUNTY: VERNON
JOB NO.: JSR0274
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A26291

DESCRIPTION	DATE

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