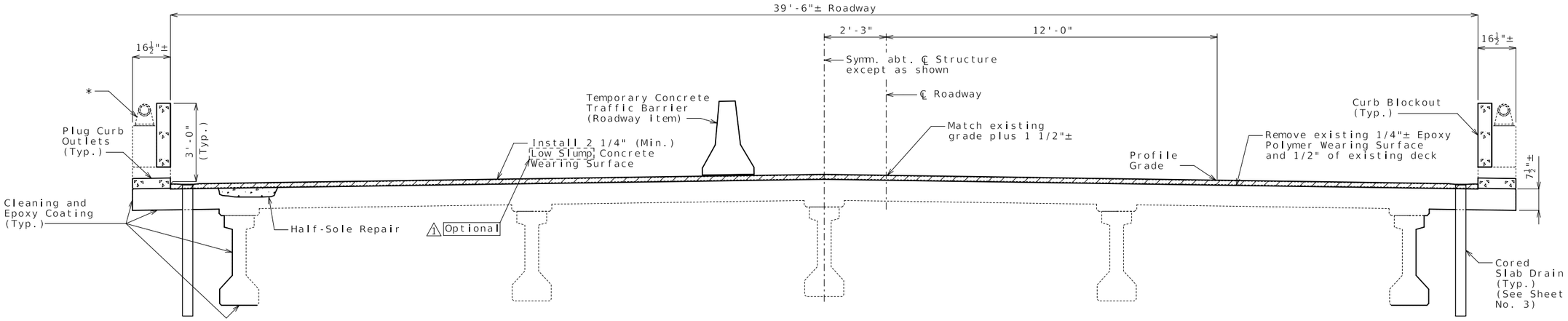
SEC/SUR 2 TWP 63N RGE 41W

U.I.P. AND REHABILITATE EXISTING (43'-57'-43') PRESTRESSED CONCRETE I-GIRDER SPANS (SKEW: 10°00'00" R.A.)



TYPICAL SECTION THRU EXISTING DECK

1 ** This work will be performed at the discretion of the engineer and will be underrun if not required.

General Notes:

Design Specifications:

2002 AASHTO LFD (17th Ed.) Standard Specifications
Bridge Deck Rating = 5

Design Loading:

HS20-44 (Existing & New Construction)

Design Unit Stresses:

Class B-2 Concrete (Half-Sole Repair) f'c = 4,000 psi

Class B-1 Concrete (Curb Blockouts) f'c = 4,000 psi

Reinforcing Steel (Grade 60) fy = 60,000 psi

Reinforcing Steel:

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

Miscellaneous:

Roadway surfacing adjacent to bridge ends shall match new bridge approach slabs (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.

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

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.

All exposed surfaces of the existing structural steel piles shall be recoated with one 6-mil thickness of aluminum epoxy-mastic primer applied over an SSPC-SP3 surface preparation in accordance with Sec 1081. The bituminous coating shall be applied one foot above and below the existing ground line and in accordance with Sec 702. These protective coatings will not be required below the normal low water line. The cost of surface preparation will be considered completely covered by the contract lump sum price for Surface Preparation for Applying Epoxy-Mastic Primer. The cost of the aluminum epoxy-mastic primer and bituminous coating will be considered completely covered by the contract lump sum price for Aluminum Epoxy-Mastic Primer.

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.

Traffic Handling:

Traffic to be maintained on structure during construction. See roadway plans for traffic control.

* Asbestos (Friability Category 11 NF) has been detected in the Insulaton compound between the top of the concrete parapet and the base of the handrail posts. Removal of the handrail and posts, or leave in place is the Contractor's option. Should the Contractor elect to remove the handrail and posts, the Contractor will be required to use an Abatement Contractor during the removal. No direct payment will be made for removal of the handrail and posts and for asbestos abatement should the Contractor choose to perform this work. Cost for the described work will be considered completely covered by the contract unit price for other items in the contract.

1 Optional

Optional Concrete Wearing Surface

Type of Concrete Wearing Surface	Type Used (✓)
Low Slump Concrete Wearing Surface	
Latex Modified Concrete Wearing Surface	

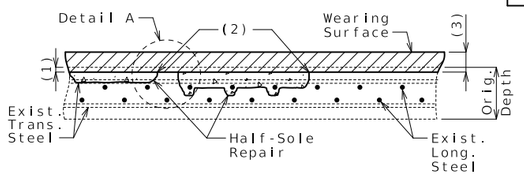
MoDOT construction personnel will complete column labeled "Type Used (✓)".

The contractor shall select one of the alternate concrete wearing surfaces listed in the table. The alternate concrete wearing surface method of measurement and basis of payment shall be in accordance with Sec 505.

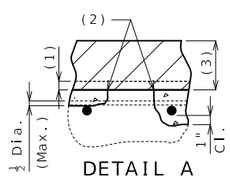
Estimated Quantities

Item		Total
Class 1 Excavation	cu. yard	70
Temporary Shoring	lump sum	1
Removal of Seal Coat or Polymer Wearing Surface	sq. foot	5693
Removal of Existing Bridge Approach Slab	sq. foot	1856
Bridge Approach Slab (Major)	sq. yard	178
Low Slump Concrete Wearing Surface	sq. yard	633
** Diamond Grinding	sq. yard	633
1 Curb Blockout	linear foot	320
** Half-Sole Repair	sq. foot	100
Cleaning and Epoxy Coating	sq. foot	2200
Plugging Existing Curb Outlets	each	38
Surface Preparation for Applying Epoxy-Mastic Primer	lump sum	1
Aluminum Epoxy-Mastic Primer	lump sum	1
Cored Slab Drains	each	22
Vertical Drain At End Bents	each	2

1 250



HALF-SOLE REPAIR



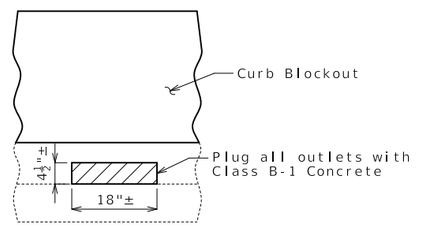
DETAIL A

Clearance around top bar and around bottom bar at the intersection of top bar shall be required when more than half the diameter of the top bar is exposed.

(1) Removal of existing 1/4"± Epoxy Polymer Wearing Surface plus 1/2" of existing deck.

(2) 1" vertical side shall be established outside the deteriorated area.

(3) 2 1/4" minimum low slump concrete wearing surface.
optional 1



PART ELEVATION SHOWING PLUGGING OF CURB OUTLETS

Notes:

Optional 1

New 2 1/4" Low Slump Concrete Wearing Surface not shown for clarity.

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 1.1 cubic yards (for information only).

REPAIRS TO BRIDGE: ROUTE I-29 NB OVER MILL CREEK

ROUTE I-29 FROM ROUTE W TO ROUTE 111
ABOUT 3.0 MILES NORTH OF ROUTE W
BEGINNING STATION 1157+99.60 ± (MATCH EXISTING)

1 REVISED

Detailed Mar. 2024
Checked May 2024

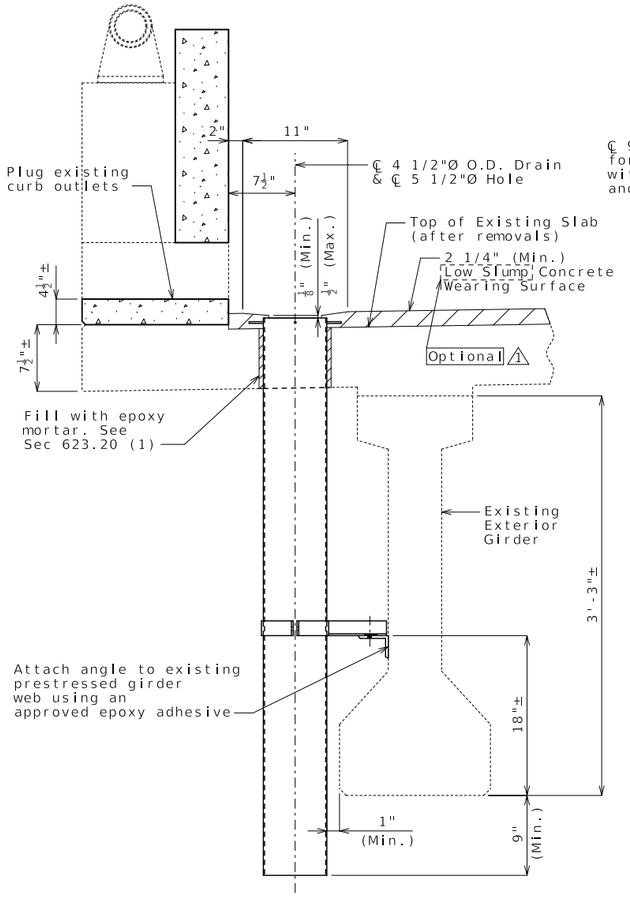
Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TYLER R. LINDSAY
NUMBER PE-2019000128
PROFESSIONAL ENGINEER
11/14/2024 12:15:25 PM
TYLER R. LINDSAY - CIVIL
MO-PE-2019000128

DATE PREPARED 11/14/2024
ROUTE I-29 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY ATCHISON
JOB NO. J1I3280
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A27143

DESCRIPTION | DATE

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

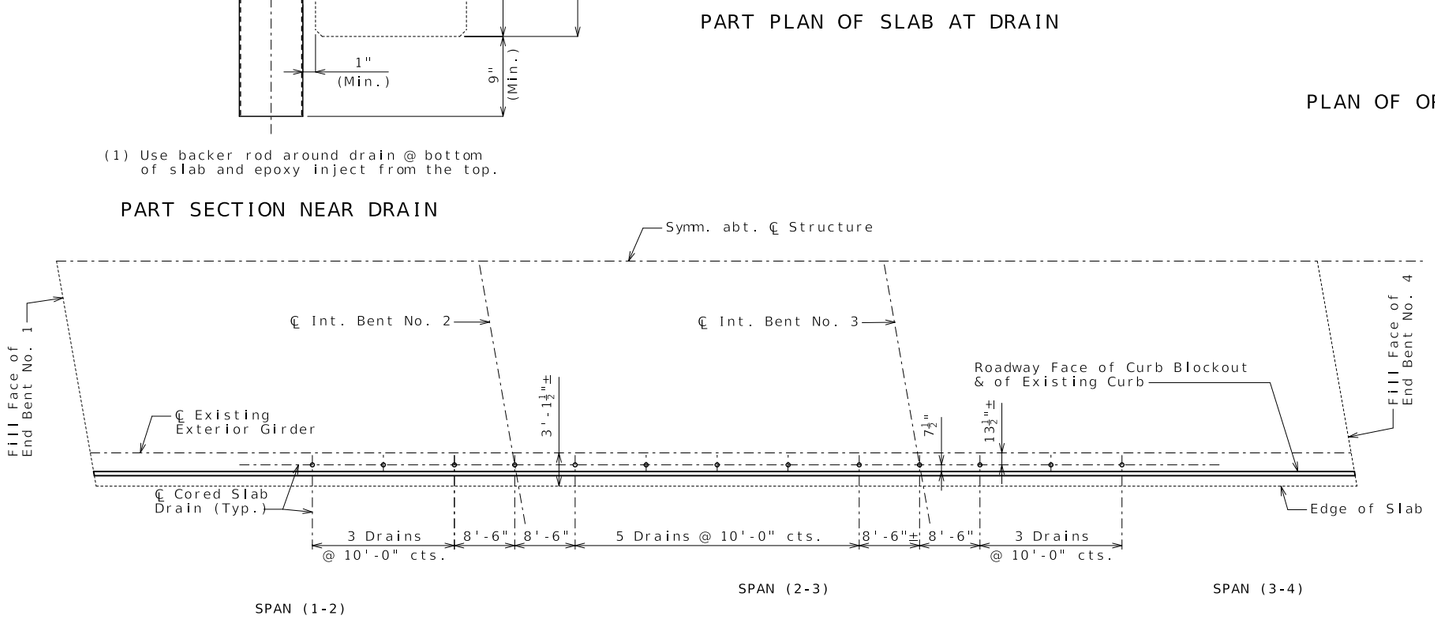


(1) Use backer rod around drain @ bottom of slab and epoxy inject from the top.

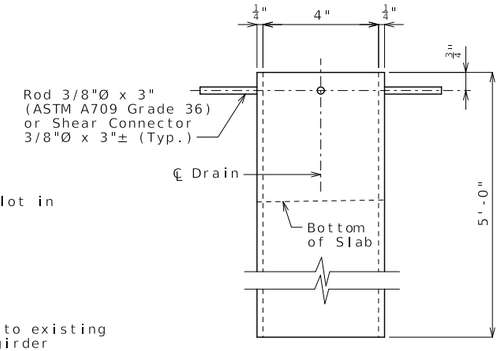
PART SECTION NEAR DRAIN

PART SECTION SHOWING BRACKET ASSEMBLY

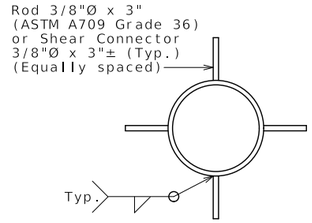
PART PLAN OF SLAB AT DRAIN



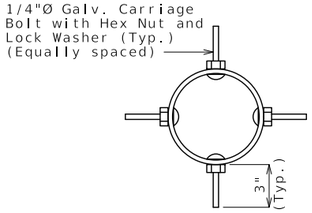
PART PLAN SHOWING CORED SLAB DRAIN LOCATIONS



ELEVATION OF DRAIN



PLAN OF DRAIN



PLAN OF OPTIONAL FRP DRAIN

General Notes:

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

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

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

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M232 (ASTM A153), Class C.

All 1/2-inch diameter bolts shall be ASTM A307, except as noted.

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

Cost of cored slab drains, complete in place, will be considered completely covered by the contract unit price for Cored Slab Drain per each.

Holes for slab drains shall be cored. Percussion drilling will not be permitted.

Slab drain locations may be shifted the minimum extent necessary to avoid slab reinforcement.

Cored slab drains shall be placed vertically.

For details of plugging existing curb outlets, see Sheet No. 1.

Notes for Steel Drain:

Slab drains shall be fabricated from 1/4-inch structural steel tubing ASTM A500 or A501.

The drains shall be galvanized in accordance with ASTM A123.

Drains shall be inserted through slab such that damage to galvanized coating is minimized.

Notes for FRP Drain:

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

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance. Care shall be taken to avoid damage to exterior coating during installation.

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

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

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

STATE OF MISSOURI
TYLER R. LINDSAY
NUMBER PE-2019000128
PROFESSIONAL ENGINEER
11/14/2024 12:15:45 PM
TYLER R. LINDSAY - CIVIL
MO-PE-2019000128

DATE PREPARED
11/14/2024

ROUTE	STATE
I-29	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
ATCHISON

JOB NO.
J1I3280

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A27143

DESCRIPTION | DATE

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

Detailed Mar. 2024
Checked May 2024

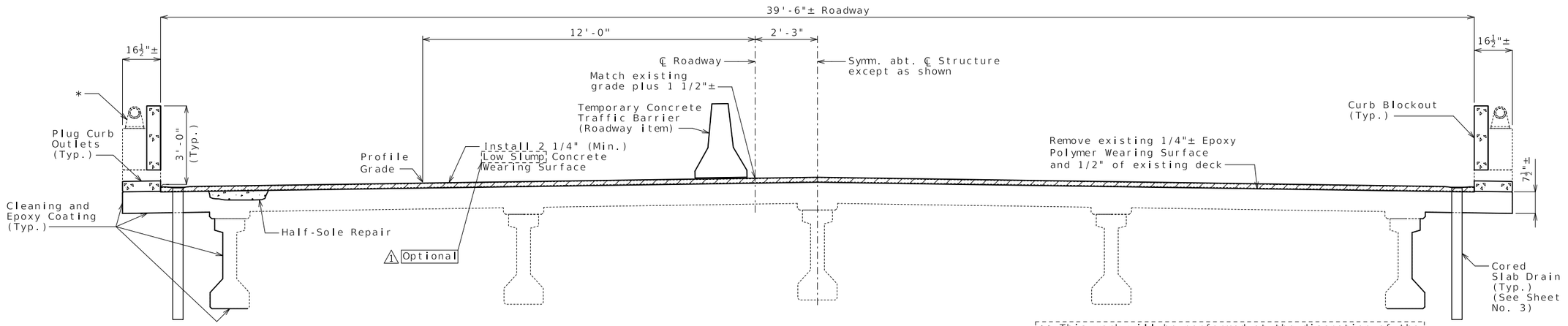
Note: This drawing is not to scale. Follow dimensions.

CORED SLAB DRAINS

1 REVISED

SEC/SUR 2 TWP 63N RGE 41W

U.I.P. AND REHABILITATE EXISTING (43'-57'-43') PRESTRESSED CONCRETE I-GIRDER SPANS (SKEW: 10°00'00" R.A.)



TYPICAL SECTION THRU EXISTING DECK

⚠ ** This work will be performed at the discretion of the engineer and will be underrun if not required.

General Notes:

Design Specifications:

2002 AASHTO LFD (17th Ed.) Standard Specifications
Bridge Deck Rating = 5

Design Loading:

HS20-44 (Existing & New Construction)

Design Unit Stresses:

Class B-2 Concrete (Half-Sole Repair) f'c = 4,000 psi

Class B-1 Concrete (Curb Blockouts) f'c = 4,000 psi

Reinforcing Steel (Grade 60) fy = 60,000 psi

Reinforcing Steel:

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

Miscellaneous:

Roadway surfacing adjacent to bridge ends shall match new bridge approach slabs (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.

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

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.

All exposed surfaces of the existing structural steel piles shall be recoated with one 6-mil thickness of aluminum epoxy-mastic primer applied over an SSPC-SP3 surface preparation in accordance with Sec 1081. The bituminous coating shall be applied one foot above and below the existing ground line and in accordance with Sec 702. These protective coatings will not be required below the normal low water line. The cost of surface preparation will be considered completely covered by the contract lump sum price for Surface Preparation for Applying Epoxy-Mastic Primer. The cost of the aluminum epoxy-mastic primer and bituminous coating will be considered completely covered by the contract lump sum price for Aluminum Epoxy-Mastic Primer.

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.

Traffic Handling:

Traffic to be maintained on structure during construction. See roadway plans for traffic control.

* Asbestos (Friability Category 11 NF) has been detected in the Insulaton compound between the top of the concrete parapet and the base of the handrail posts. Removal of the handrail and posts, or leave in place is the Contractor's option. Should the Contractor elect to remove the handrail and posts, the Contractor will be required to use an Abatement Contractor during the removal. No direct payment will be made for removal of the handrail and posts and for asbestos abatement should the Contractor choose to perform this work. Cost for the described work will be considered completely covered by the contract unit price for other items in the contract.

⚠ Optional

Optional Concrete Wearing Surface

Type of Concrete Wearing Surface	Type Used (✓)
Low Slump Concrete Wearing Surface	
Latex Modified Concrete Wearing Surface	

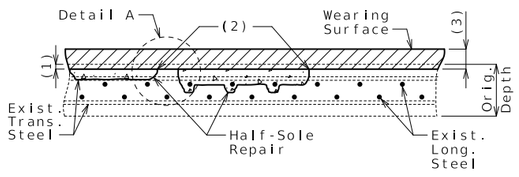
MoDOT construction personnel will complete column labeled "Type Used (✓)".

The contractor shall select one of the alternate concrete wearing surfaces listed in the table. The alternate concrete wearing surface method of measurement and basis of payment shall be in accordance with Sec 505.

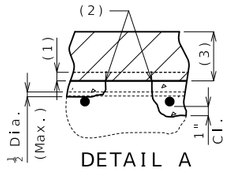
Estimated Quantities

	Item		Total
	Class 1 Excavation	cu. yard	70
	Temporary Shoring	lump sum	1
	Removal of Seal Coat or Polymer Wearing Surface	sq. foot	5693
	Removal of Existing Bridge Approach Slab	sq. foot	1856
	Bridge Approach Slab (Major)	sq. yard	178
	Low Slump Concrete Wearing Surface	sq. yard	633
**	Diamond Grinding	sq. yard	633
⚠	Curb Blockout	linear foot	320
**	Half-Sole Repair	sq. foot	100
	Cleaning and Epoxy Coating	sq. foot	2200
	Plugging Existing Curb Outlets	each	38
	Surface Preparation for Applying Epoxy-Mastic Primer	lump sum	1
	Aluminum Epoxy-Mastic Primer	lump sum	1
	Cored Slab Drains	each	22
	Vertical Drain At End Bents	each	2

⚠ 250



HALF-SOLE REPAIR



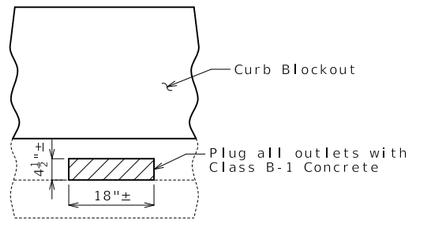
DETAIL A

Clearance around top bar and around bottom bar at the intersection of top bar shall be required when more than half the diameter of the top bar is exposed.

(1) Removal of existing 1/4"± Epoxy Polymer Wearing Surface plus 1/2" of existing deck.

(2) 1" vertical side shall be established outside the deteriorated area.

(3) 2 1/4" minimum low slump concrete wearing surface. optional ⚠



PART ELEVATION SHOWING PLUGGING OF CURB OUTLETS

Notes: Optional ⚠

New 2 1/4" Low Slump Concrete Wearing Surface not shown for clarity.

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 1.1 cubic yards (for information only).

REPAIRS TO BRIDGE: ROUTE I-29 SB OVER MILL CREEK

ROUTE I-29 FROM ROUTE W TO ROUTE E
ABOUT 3.0 MILES NORTH OF ROUTE 111
BEGINNING STATION 1158+14.40 ± (MATCH EXISTING)

STATE OF MISSOURI
TYLER R. LINDSAY
NUMBER PE-2019000128
PROFESSIONAL ENGINEER
11/14/2024 12:16:01 PM
TYLER R. LINDSAY - CIVIL
MO-PE-2019000128

DATE PREPARED 11/14/2024

ROUTE	STATE
I-29	MO
DISTRICT	SHEET NO.
BR	1

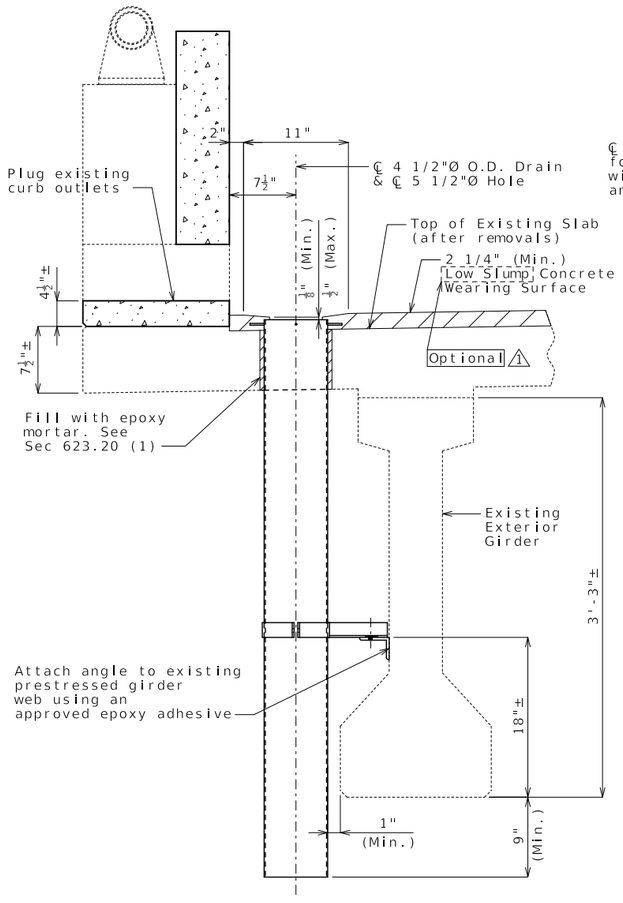
COUNTY ATCHISON
JOB NO. J1I3280
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A27144

DESCRIPTION | DATE

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

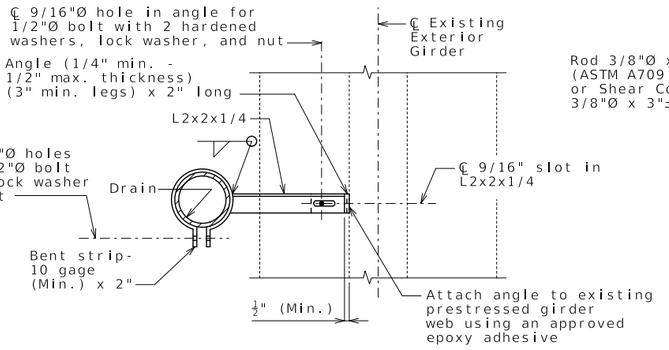
Detailed Mar. 2024
Checked May 2024

1 REVISED

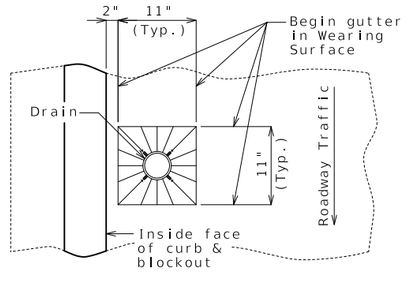


(1) Use backer rod around drain @ bottom of slab and epoxy inject from the top.

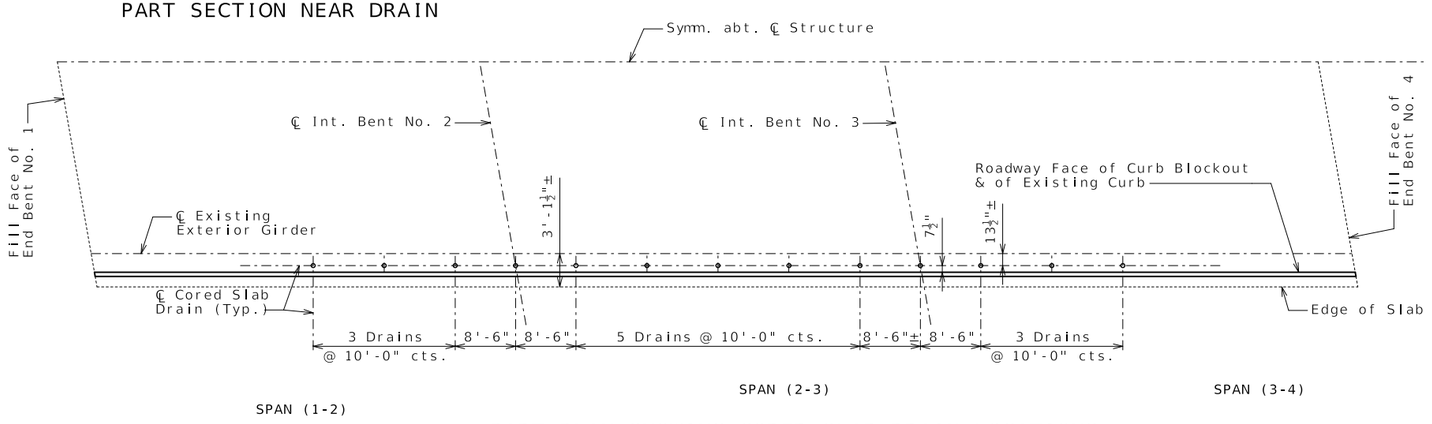
PART SECTION NEAR DRAIN



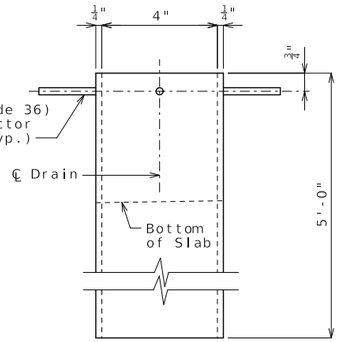
PART SECTION SHOWING BRACKET ASSEMBLY



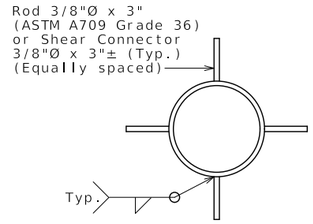
PART PLAN OF SLAB AT DRAIN



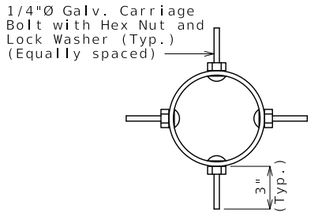
PART PLAN SHOWING CORED SLAB DRAIN LOCATIONS



ELEVATION OF DRAIN



PLAN OF DRAIN



PLAN OF OPTIONAL FRP DRAIN

General Notes:

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

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

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

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M232 (ASTM A153), Class C.

All 1/2-inch diameter bolts shall be ASTM A307, except as noted.

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

Cost of cored slab drains, complete in place, will be considered completely covered by the contract unit price for Cored Slab Drain per each.

Holes for slab drains shall be cored. Percussion drilling will not be permitted.

Slab drain locations may be shifted the minimum extent necessary to avoid slab reinforcement.

Cored slab drains shall be placed vertically.

For details of plugging existing curb outlets, see Sheet No. 1.

Notes for Steel Drain:

Slab drains shall be fabricated from 1/4-inch structural steel tubing ASTM A500 or A501.

The drains shall be galvanized in accordance with ASTM A123.

Drains shall be inserted through slab such that damage to galvanized coating is minimized.

Notes for FRP Drain:

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

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance. Care shall be taken to avoid damage to exterior coating during installation.

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

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

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

STATE OF MISSOURI
TYLER R. LINDSAY
NUMBER PE-2019000128
PROFESSIONAL ENGINEER
11/14/2024 12:16:17 PM
TYLER R. LINDSAY - CIVIL
MO-PE-2019000128

DATE PREPARED 11/14/2024

ROUTE	STATE
I-29	MO
DISTRICT	SHEET NO.
BR	3

COUNTY ATCHISON

JOB NO. J1I3280

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A27144

DATE	DESCRIPTION

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

CORED SLAB DRAINS

Detailed Mar. 2024
Checked May 2024

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

1 REVISED