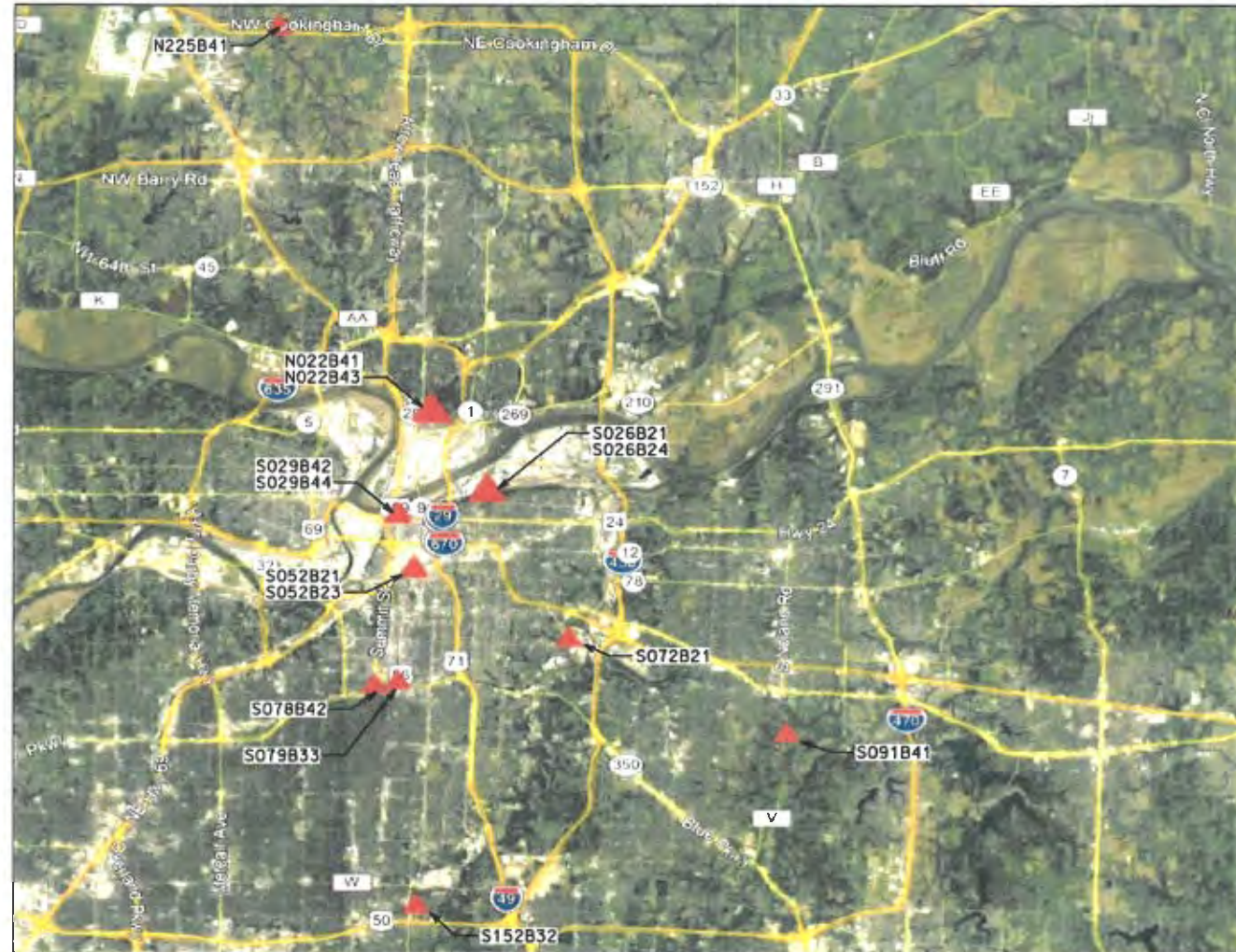


# CITY OF KANSAS CITY, MISSOURI CITY WIDE BRIDGE MAINTENANCE REPAIRS 2018-2019 KCMO PROJECT NO. 89005588



## INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES & SUMMARY OF QUANTITIES
3	BRIDGE LOCATIONS - CONCRETE CRACK REPAIRS & DECK PATCHING
4	DECK PATCHING DETAILS
5	BRIDGE CONCRETE CRACK REPAIRS & PATCHING DETAILS
6	BRIDGE CONCRETE WEARING SURFACE & TOP OF DECK CRACK REPAIR
7	BRIDGE LOCATIONS - REPLACEMENT PREFORMED COMPRESSION SEAL EXPANSION JOINT SYSTEM
8-9	DETAILS OF PREFORMED COMPRESSION SEAL EXPANSION JOINT SYSTEM
10	BRIDGE LOCATIONS - STRIP SEAL REPLACEMENT
11-13	DETAILS OF STRIP SEAL EXPANSION JOINT SYSTEM
14	BRIDGE LOCATIONS - EXPANSION JOINT CLEANOUT



DATE	3/11/19
DATE PREPARED	12/18/18
ROUTE	MO
DISTRICT	BR
SHEET NO.	1
COUNTY	JACKSON
JOB NO.	
CONTRACT ID.	
PROJECT NO.	89005588
BRIDGE NO.	

DESCRIPTION	DATE

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



### CERTIFICATION

"I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN DESIGNED, AND THESE PLANS PREPARED, TO MEET OR EXCEED THE DESIGN CRITERIA OF KANSAS CITY, MISSOURI, IN CURRENT USAGE EXCEPT AS INDICATED BELOW.

- EXCEPTIONS:
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

*Christopher Harker*  
CHRISTOPHER HARKER, P.E.  
March 11, 2019  
DATE

APPROVED BY:

*Chad Thompson*  
CHAD THOMPSON, ASST. CITY ENGINEER  
3/11/19  
DATE

*Robert W. [Signature]*  
CITY ENGINEER  
3/11/2019  
DATE

*Sherril McIntyre*  
SHERRIL MCINTYRE, DIRECTOR OF PUBLIC WORKS  
3/11/2019  
DATE

DATE

**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1468  
CERTIFICATE OF AUTHORITY NUMBER F00870024

Detailed MAR 2019  
Checked MAR 2019

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

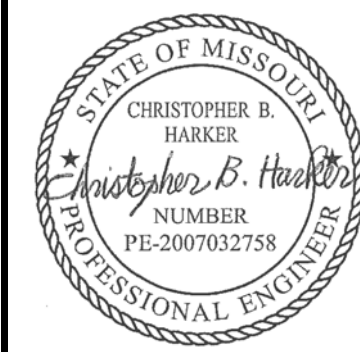
Sheet No. 1 of 14

SUMMARY OF ESTIMATED QUANTITIES

Table with 16 columns (ITEM, UNITS, BRIDGE #1-14, TOTAL) and 10 rows of construction items and their quantities across various bridge structures.

GENERAL NOTES

- Construction Specifications: 2018 Missouri Standard Specifications for Highway Construction with Contract Technical Specifications (if included in the Project Manual).
Traffic Control: Traffic control plans shall be the responsibility of the Contractor and shall conform to MUTCD.
Expansion Joint Cleanout: Expansion joint cleanout shall be performed per Contract Technical Specifications, Section 03733.
Asphalt Removal and Replacement: Asphalt repairs shall be performed per Contract Technical Specifications, Section 03611.
Deck Sealing: All work pertaining to deck sealing shall be performed per Contract Technical Specifications, Section 03731.
Curb Repair: All curb repairs shall be performed per KDOT Specifications (2015), Section 728.
Latex Modified Concrete Wearing Surface: Install latex modified concrete wearing surface full area of deck surface from end of slab to end of slab and inside curb to inside curb.



DATE 3/11/19
DATE PREPARED 12/18/18
ROUTE MO
DISTRICT BR SHEET NO. 2
COUNTY JACKSON
JOB NO.
CONTRACT ID.
PROJECT NO. 89005588
BRIDGE NO.

Table with 2 columns: DESCRIPTION, DATE. Multiple empty rows for additional notes or schedule.

KCMO Public Works
5300 Municipal Avenue
Kansas City, MO 64120



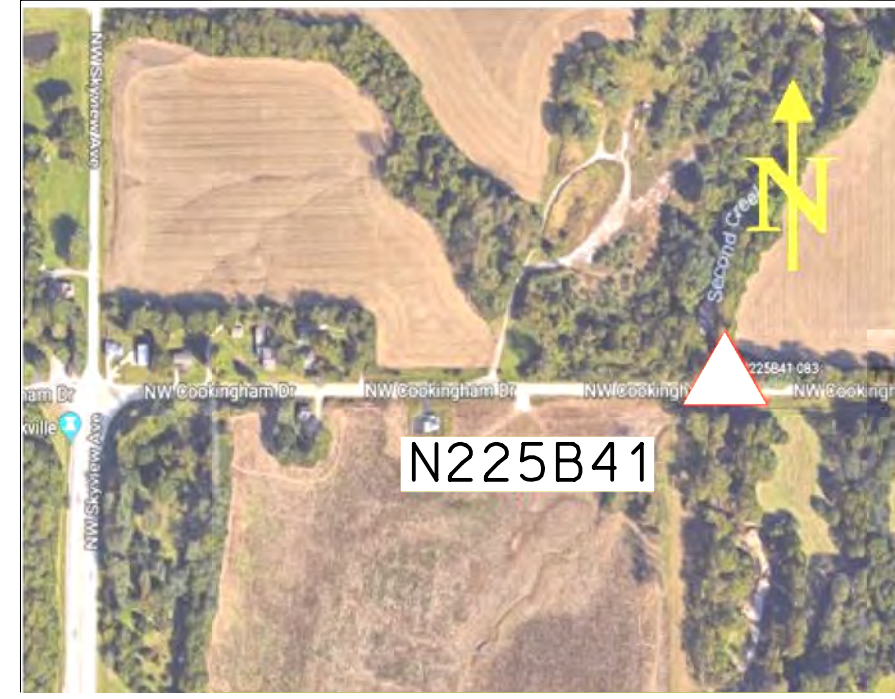
benesch
14 W. 3rd Street, SUITE 220
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816/221-4222, FAX 913/441-1488
CERTIFICATE OF AUTHORITY NUMBER F009T0024

GENERAL NOTES & SUMMARY OF ESTIMATED QUANTITIES

ESTIMATED QUANTITIES													
ITEM	UNITS	BRIDGE #1	BRIDGE #2	BRIDGE #4	BRIDGE #5	BRIDGE #8	BRIDGE #9	BRIDGE #10	BRIDGE #11	BRIDGE #12	BRIDGE #13	BRIDGE #14	SUB TOTAL
		N225B41	S026B24	S029B44	S052B21	S078B42	S079B33	S152B32	S091B41	N022B41	N022B43	S026B21	
Latex Modified Concrete Wearing Surface	S.Y.	--	--	--	--	275	--	--	--	--	--	--	275
Modified Deck Repair (No Overlay)	S.Y.	10	--	--	--	--	--	--	--	5	5	--	20
Asphalt Removal and Replacement	S.Y.	--	--	45	--	--	--	--	215	--	--	--	270
Deck Sealing	S.Y.	125	--	--	2610	--	1140	1340	--	130	145	3060	11200
Curb Repair	L.F.	--	--	--	--	360	--	--	--	--	--	--	360
Bridge Concrete Crack Repair	L.F.	--	960	--	200	--	--	--	--	--	--	--	1160



DATE	3/11/19
DATE PREPARED	12/18/18
ROUTE	--
STATE	MO
DISTRICT	BR
SHEET NO.	3
COUNTY	JACKSON
JOB NO.	
CONTRACT ID.	
PROJECT NO.	89005588
BRIDGE NO.	



Bridge #1	N225B41
Facility Carried	Cookingham Drive
Location	0.35 E of Skyview
Feature(s) Indicated	Second Creek



Bridge #2	S026B24
Facility Carried	Guinotte Ramp
Location	N Terrace Park
Feature(s) Indicated	Montgall



Bridge #4	S029B44
Facility Carried	Woodswether Road
Location	S of Missouri River
Feature(s) Indicated	BNSF Railroad Tracks



Bridge #5	S052B21
Facility Carried	Grand Avenue
Location	S of 21st Street
Feature(s) Indicated	KC Terminal Railway



Bridge #8	S078B42
Facility Carried	Bellevue Avenue
Location	At Ward Parkway
Feature(s) Indicated	Brush Creek



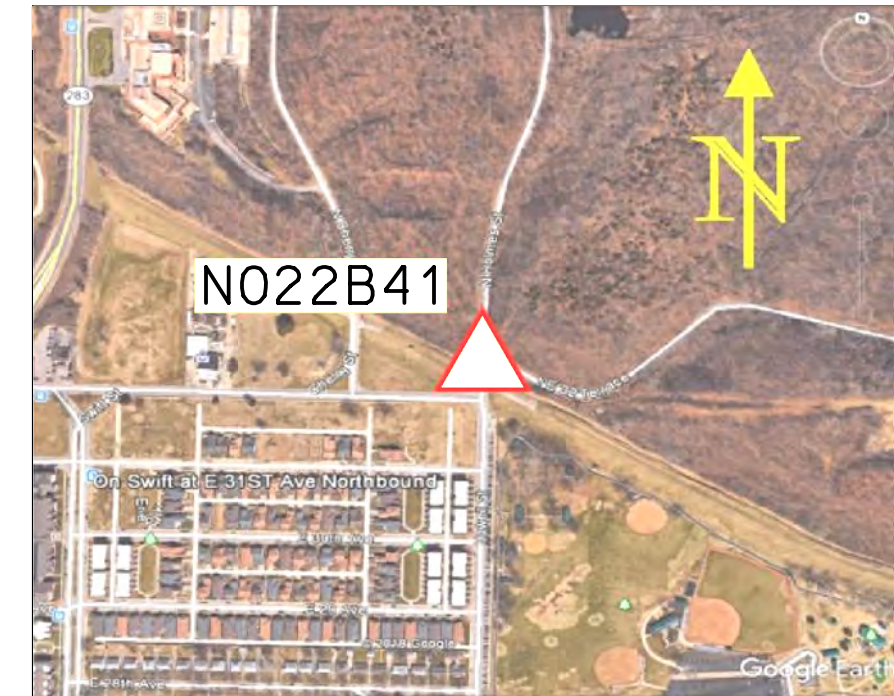
Bridge #9	S079B33
Facility Carried	JC Nichols Parkway
Location	At Ward Parkway
Feature(s) Indicated	Brush Creek



Bridge #10	S152B32
Facility Carried	99th Street
Location	E of Holmes
Feature(s) Indicated	Indian Creek



Bridge #11	S091B41
Facility Carried	56th Street
Location	0.15 E of Noland Road
Feature(s) Indicated	Union Pacific Railroad



Bridge #12	N022B41
Facility Carried	N Holmes
Location	@32nd St., Hillside Levee
Feature(s) Indicated	Rock Creek



Bridge #13	N022B43
Facility Carried	N Cherry
Location	@32nd St., Hillside Levee
Feature(s) Indicated	Rock Creek



Bridge #14	S026B21
Facility Carried	Chestnut Avenue
Location	N Terrace Park
Feature(s) Indicated	RR, Guinotte & Rochester

DESCRIPTION	
DATE	

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



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14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER F00970024

## BRIDGE LOCATIONS FOR BRIDGE CONCRETE CRACK REPAIRS AND DECK PATCHING

Detailed MAR 2019  
Checked MAR 2019

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

Sheet No. 3 of 14



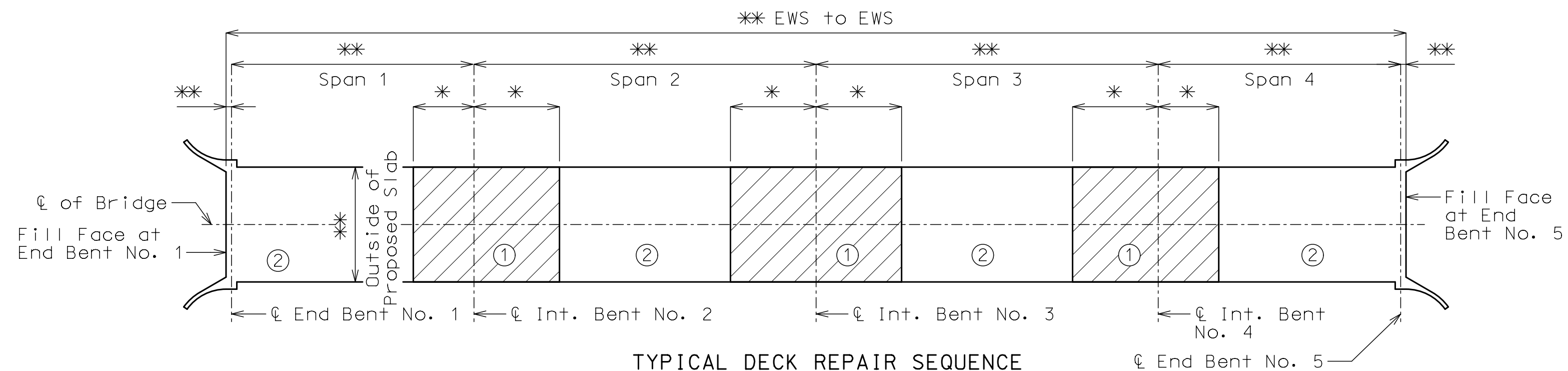
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3/11/19	
DATE PREPARED	
12/18/18	
ROUTE	STATE
—	MO
DISTRICT	SHEET NO.
BR	4
COUNTY	
JACKSON	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
89005588	
BRIDGE NO.	

DESCRIPTION
DATE

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120

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14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1468  
CERTIFICATE OF AUTHORITY NUMBER FO0970024

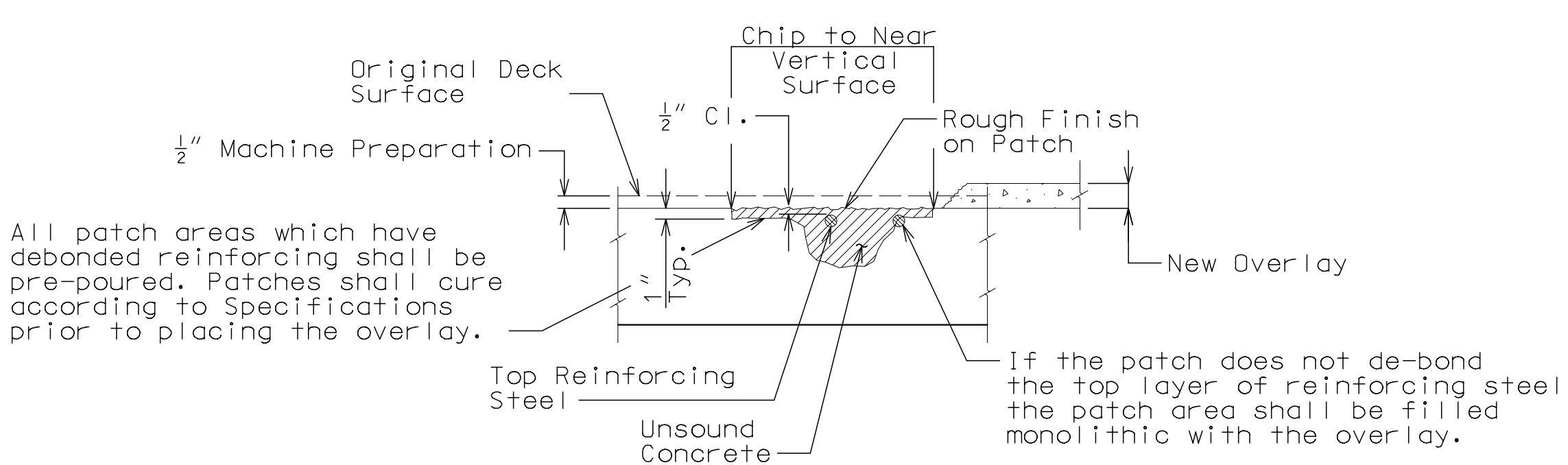
REV.



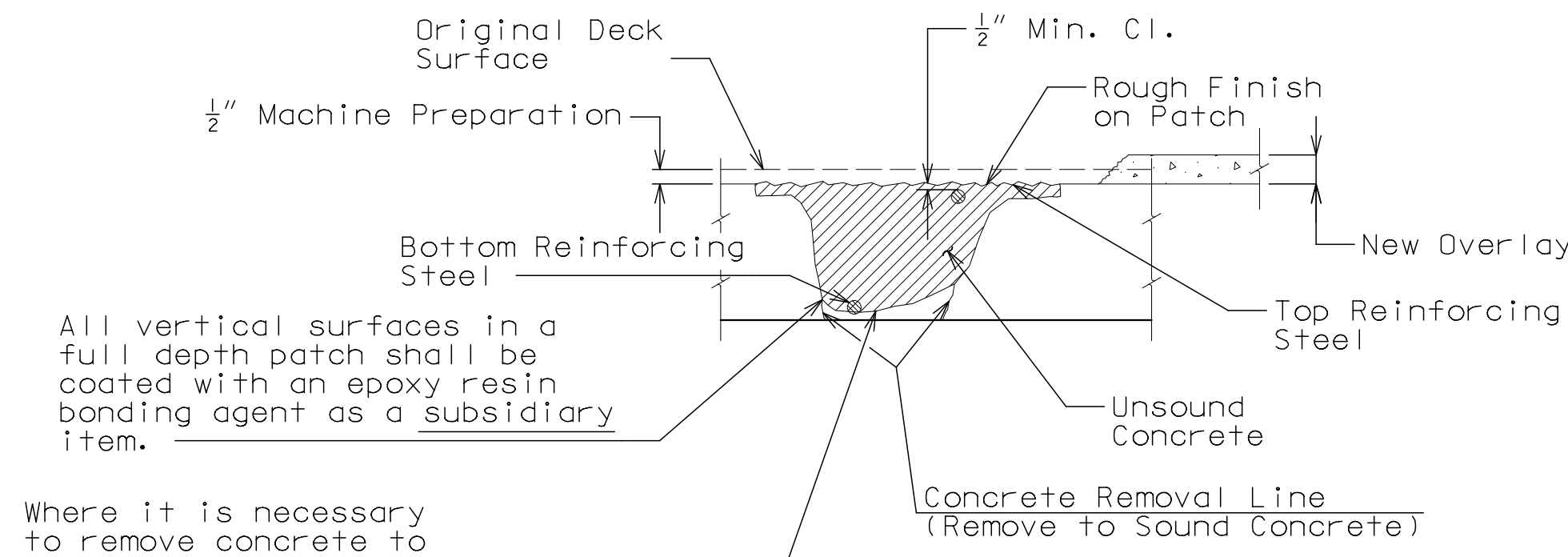
TYPICAL DECK REPAIR SEQUENCE

\* 1/4 of Span or as directed by the Engineer.  
\*\* Engineer to fill in dimensions.

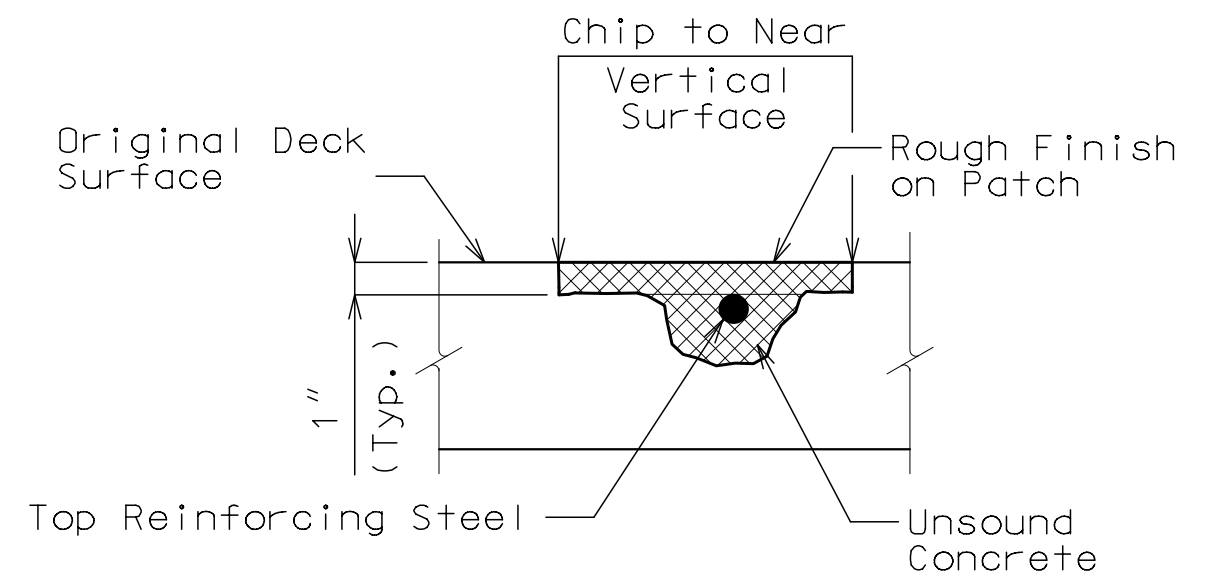
Note: Patching is to be limited to the spalled or impending spalled surfaces of the deck, box girder sides or underside, as determined by the Engineer. A significant portion of the existing concrete may be debonded or cracked, but is not to be removed unless spalling is imminent.



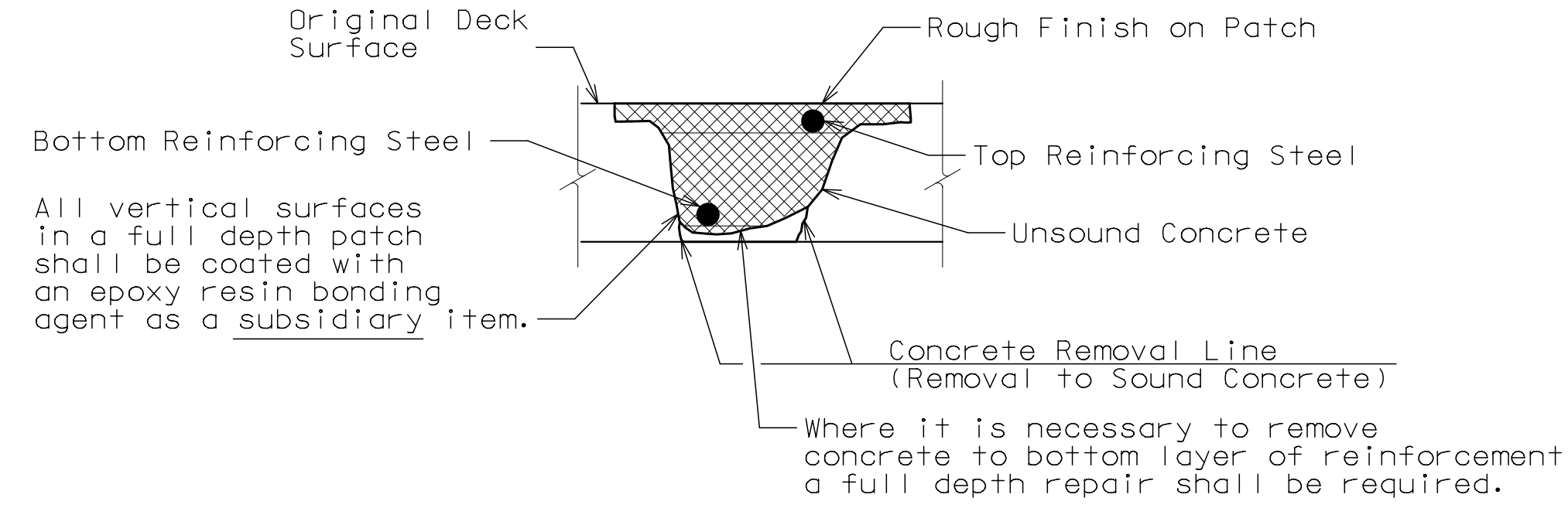
HALF SOLE REPAIR  
(WITH OVERLAY)



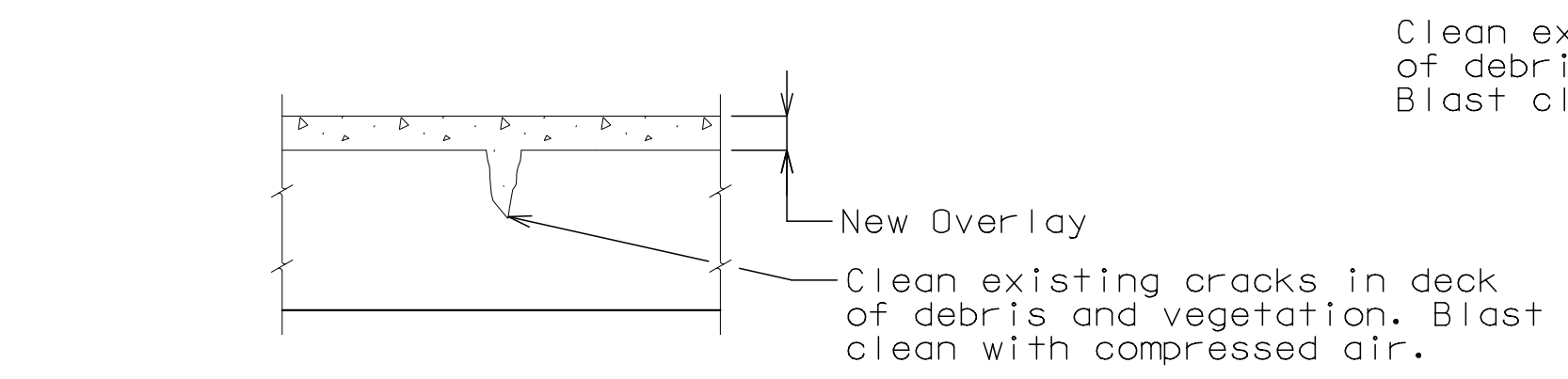
FULL DEPTH REPAIR  
(WITH OVERLAY)



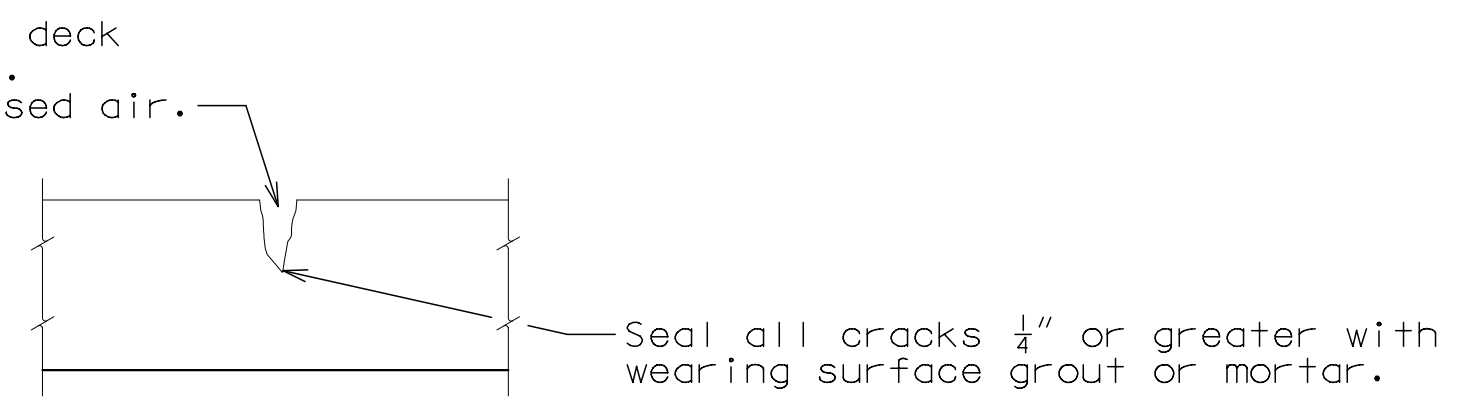
HALF SOLE REPAIR



FULL DEPTH REPAIR



CRACK SEALING DETAIL  
(WITH OVERLAY)



CRACK SEALING DETAIL

**GENERAL NOTE:**

The following additions and/or substitutions shall be made to the KCMO Standard Contract Specifications unless otherwise noted.

MINIMUM REBAR SPLICE LENGTHS	
EXISTING BAR SIZE	MINIMUM SPLICE LENGTHS (INCHES)
	EXISTING GR. 60 KSI BARS
#4	16"
#5	20"
#6	24"
#7	30"
#8	39"
#9	49"
#10	62"
#11	77"

Note: If splicing epoxy coated reinforcing steel, increase the above splice lengths by 20%.

Lap lengths are based on a Class B splice. Use the minimum splice length corresponding to the grade of the existing reinforcing in the deck.

**TYPICAL DECK PATCHING DETAILS  
(NO OVERLAY/MULTI-LAYER POLYMER CONCRETE OVERLAY)**

**REINFORCING IN BRIDGE DECK:**  
Care should be exercised to prevent cutting, stretching or damaging exposed reinforcing steel. Extreme care should be exercised to avoid breaking the bond between the reinforcing steel and concrete where bars are partially exposed yet remain anchored in sound concrete. Reinforcing steel damaged, out or deteriorated shall be replaced as directed by the Engineer. See table on this sheet for minimum splice length required. Replacement of bars damaged by the Contractor shall be subsidiary to "Modified Deck Repair (No Overlay)".

**CRACK SEALING:**  
This item shall consist of sealing any crack 1/4" or greater in the bridge superstructure with MoDOT approved wearing surface Grout or mortar. Cracks shall be blast clean with compressed air before sealing. Sealing of cracks shall be subsidiary to "Modified Deck Repair (No Overlay)".

**OVERLAY:**  
This item shall consist of cleaning the concrete surface and placing the "Overlay" to the dimensions specified on the plans. See MoDOT Specifications.

**OVERLAY CONSTRUCTION JOINTS:**  
All construction joints in the overlay and the cold joint between the overlay and the curbs shall be cleaned by sandblasting and sealed with an approved cold applied joint sealant 72 hours after placement of the overlay.

**PATCHING SEQUENCE:**  
The concrete removal shall be completed in stages, beginning with removal of deteriorated concrete in Area ①. If more than 15 longitudinal bars in Area ① are debonded for a distance of greater than 4 feet along the bars, the concrete removal shall stop and the patch area filled with MCIB "Special Aggregate Concrete SA-2". The patch shall cure a minimum of 3 days before concrete removal resumes in that area. Following the completion of work in Area ①, concrete removal may begin in Area ②. Concrete removal shall not begin in an Area ② until the patching concrete in adjacent Area ① has cured a minimum of 3 days. The maximum size of any full depth patch shall be limited to 4' x 8' in any direction. Fully debonded bars in Area ① shall be limited to the same 4' x 8' maximum patch size. All repaired concrete & overlay shall cure according to the MoDOT Specifications prior to allowing traffic on that lane.

**HALF SOLE & FULL DEPTH REPAIRS:**  
These items shall consist of removing unsound concrete and bituminous patches from the bridge deck, box girder sides or undersides cleaning reinforcing bars and filling the removed patched areas with concrete. Quantity shown is an estimate of the areas involved. The exact areas shall be determined by tapping, before, during and after chipping operation to assure that all unsound concrete has been removed. See MoDOT Specifications. Areas to be repaired will be determined by the Contractor and verified by the Engineer. Half Sole & Full Depth Repair shall be subsidiary to "Modified Deck Repair (No Overlay)".

**FULL DEPTH REPAIR:**  
Forms shall be provided to enable placement of concrete in areas of full depth removal of bridge slab. The forms may be suspended from existing reinforcing bars by wire ties or a method approved by the Engineer may be used. Full depth repair shall be subsidiary to "Modified Deck Repair (No Overlay)".

**DECK PATCHING DETAILS**

Detailed MAR 2019  
Checked MAR 2019

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

Sheet No. 4 of 14



DATE		3/11/19	
DATE PREPARED		12/18/18	
ROUTE	STATE	MO	
DISTRICT	SHEET NO.	5	
COUNTY			
JACKSON			
JOB NO.			
CONTRACT ID.			
PROJECT NO.			
8900588			
BRIDGE NO.			

DATE	DESCRIPTION

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER F00970024

**GENERAL NOTES:**

The following additions and/or substitutions shall be made to the KCMO Standard Specifications unless otherwise noted.

**1. Concrete Materials and Methods:**

For patching repair, use Planitop X by MAPEI, or approved equal. Apply per manufacturer's recommendations.

**Reinforcing Steel:**

Replacement reinforcement bars shall conform to ASTM A615, Grade 60 deformed billet steel bars (epoxy coated).

**2. Joint Sealants:**

Joint sealant shall be a multicomponent immersible polysulfide sealant, Sikadur-51 NS, polysulfide sealant or approved equal, and shall conform to MoDOT Standard Specifications, Section 1057. See the specifications for surface preparation, backing rods and primer.

**3. Concrete Rehabilitation:**

See the technical requirements for rehabilitating concrete structures in the KCMO Standard Specifications.

ICRI Technical Guideline number 310.1R-2008 shall be used as a guideline for surface preparation for all concrete repairs.

Concrete bonding agent (Weld Crete or approved equal), shall be applied to all patching and repair areas on the walls and wing walls, and shall be as specified. Application shall be in strict accordance to the written instructions by the manufacturer.

**4. Epoxy:**

Epoxy shall be Sikadur 35, Hi-Mod LV by Sika Corporation or approved equal.

**5. Construction Notes:**

Waterblast or prepare concrete as specified by manufacturer.

Wash and clean existing concrete surfaces and exposed rebars, shown in plans, prior to placement of new concrete or repair material.

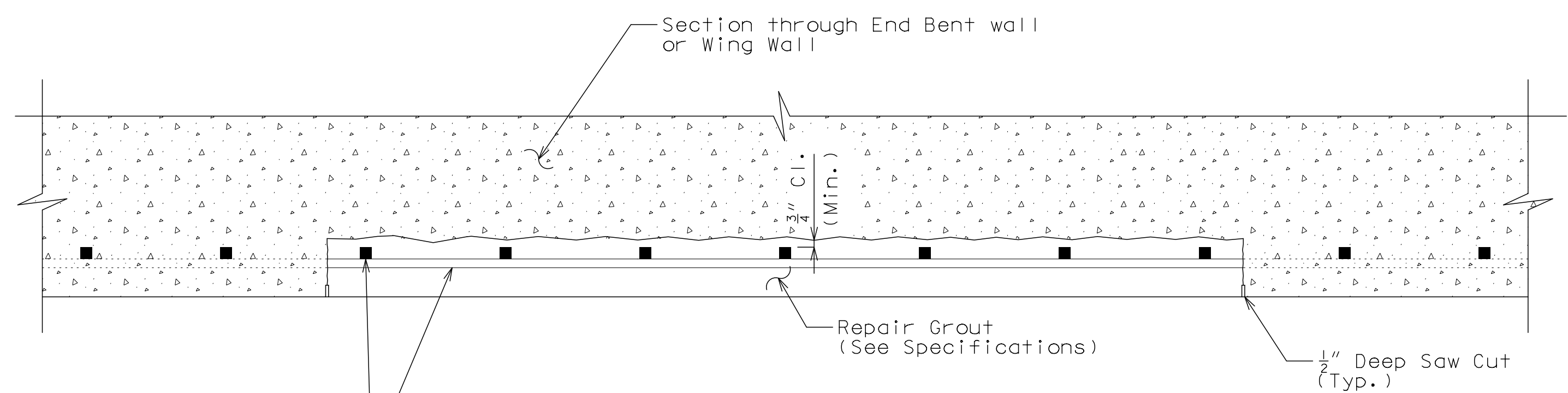
Air-dry prepared concrete surfaces prior to application of bonding material.

**6. Concrete Crack Repair Notes:**

- a. Cracks 1/4" or Less in Width: Use Epoxy Injection repair.
- b. Cracks Larger Than 1/4" in Width: Install Sonofoam Closed Cell Soft Backer-Rod and allow 1/4" minimum sealant depth. For cracks 1" or greater allow 1/2" minimum sealant depth in front of Backer-Rod.

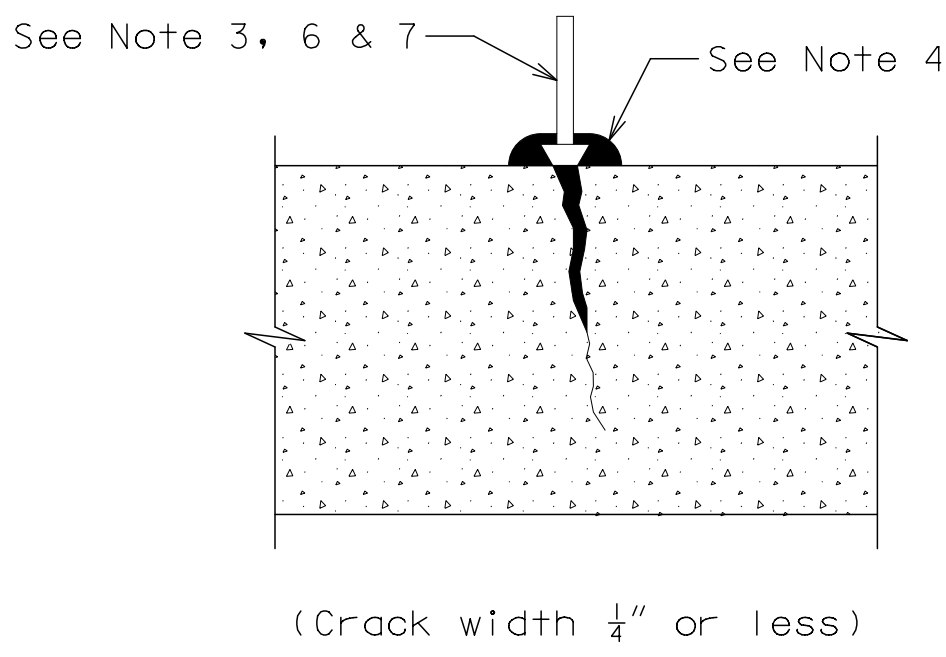
**7. Crack Repair Notes:**

- a. Clean surface 1/2" wide on each side of crack with wire brush.
- b. Remove contaminants with compressed air.
- c. Set porting devices over cracks at 8" maximum spacing.
- d. Place mixed epoxy resin capping adhesive over cracks and around each injection port, over a minimum area that is 1" wide x 1/4" thick.
- e. Allow sufficient time for epoxy resin adhesive cap seal to set before injecting.
- f. When the cap seal has cured, inject epoxy adhesive with steady pressure.
- g. Use automated injection equipment or manual method.
- h. Remove ports and grind smooth after adhesive has set.

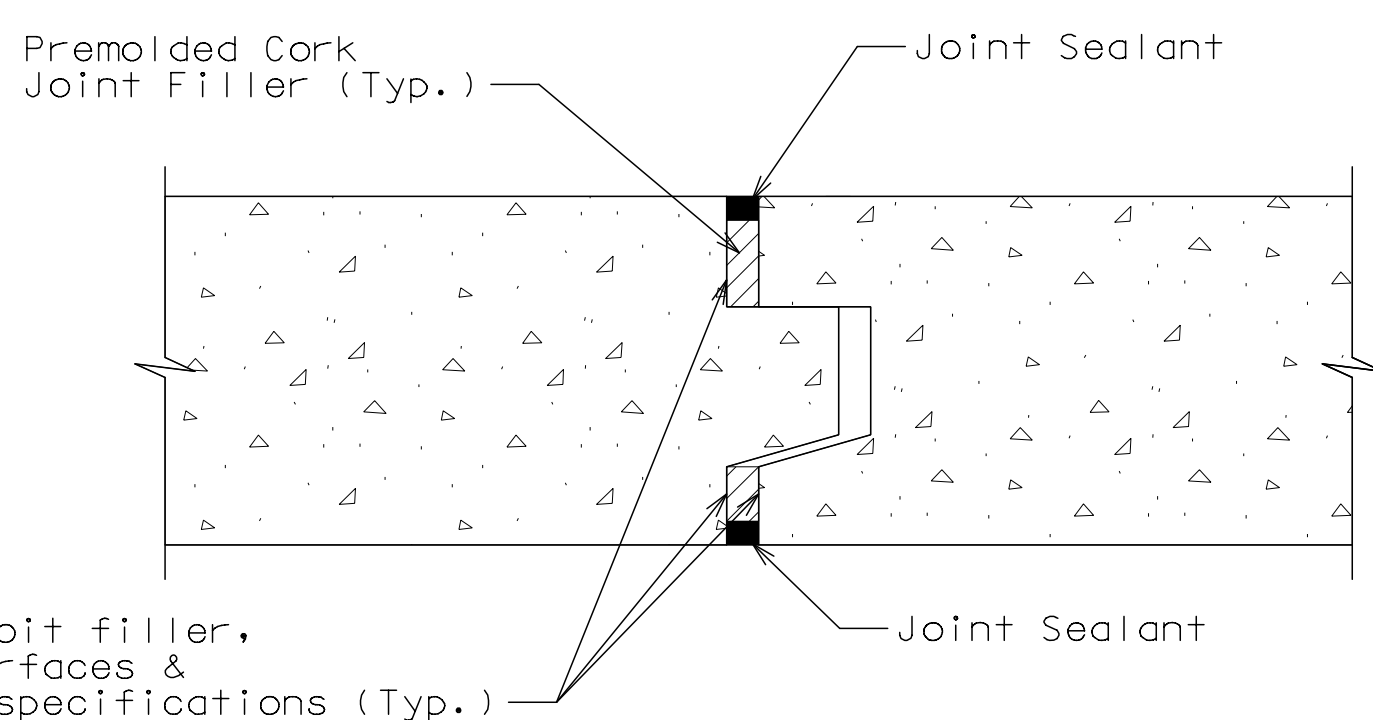


**SUBSTRUCTURE REPAIR DETAIL  
END BENT WALL OR WING WALL**

Existing Reinforcing Bars:  
Clean and remove corrosion as required (See Specifications)

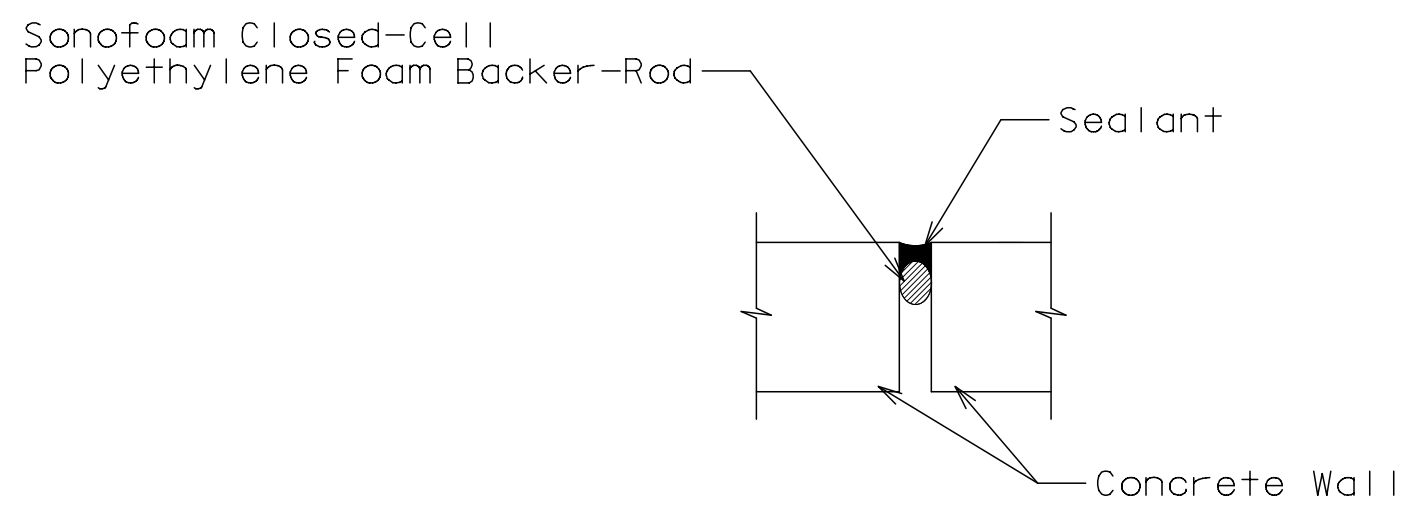


**EPOXY PRESSURE INJECTION DETAIL**



**WING WALL EXPANSION JOINT RESEAL DETAIL**

Remove existing joint filler, clean concrete surfaces & apply primer per specifications (Typ.)



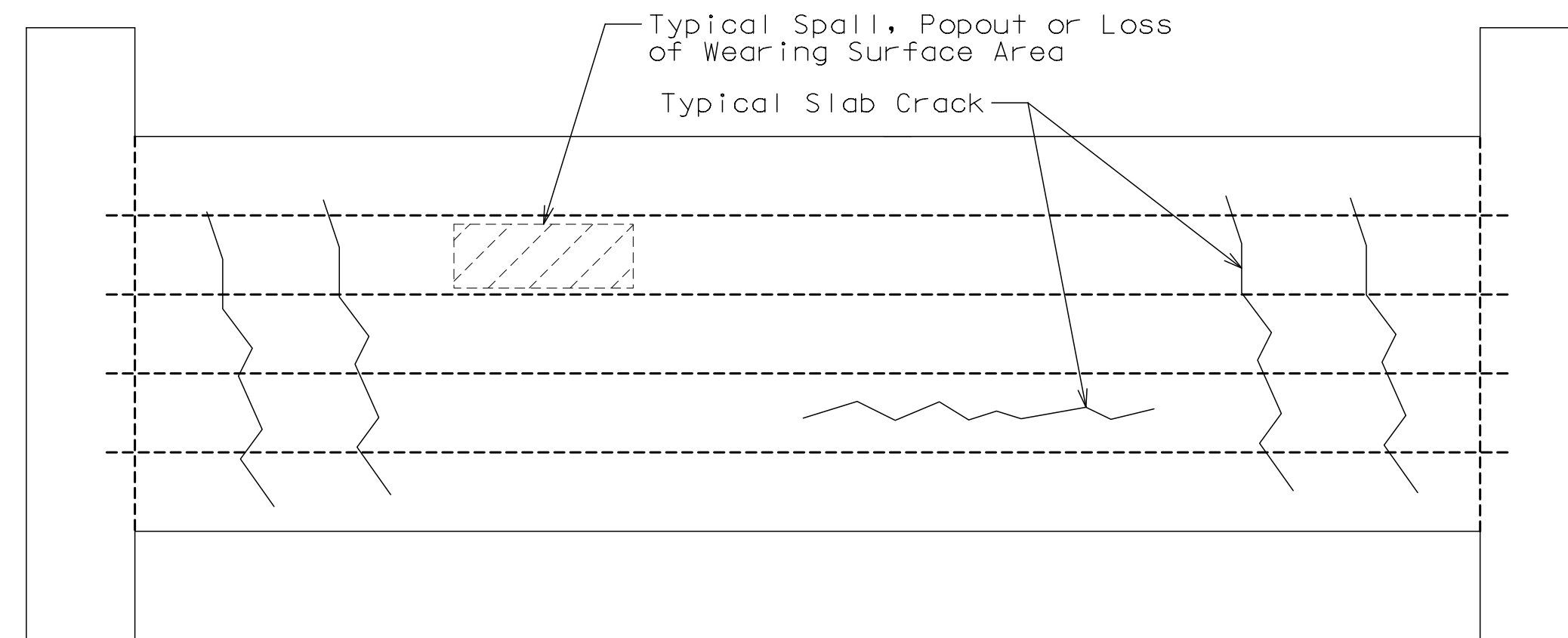
**END BENT WALL OR  
WING WALL CRACK REPAIR**  
(Crack width > 1/4")

MINIMUM REBAR SPLICE LENGTHS	
EXISTING BAR SIZE	MINIMUM SPLICE LENGTHS (INCHES)
	EXISTING GR. 60 KSI BARS
#4	16"
#5	20"
#6	24"
#7	30"
#8	39"
#9	49"
#10	62"
#11	77"

Note: If splicing epoxy coated reinforcing steel, increase the above splice lengths by 20%.

■ Lap lengths are based on a Class B splice. Use the minimum splice length corresponding to the grade of the existing reinforcing in the deck.

**BRIDGE CONCRETE CRACK REPAIRS AND PATCHING DETAILS**



BRIDGE DECK PLAN

**GENERAL NOTES:**

The following additions and/or substitutions shall be made to the KCMO Standard Specifications unless otherwise noted.

**Top of Deck Crack Repair:**

For deck cracks less than 1/16" in width, fill with an approved epoxy grout. For cracks greater than 1/16" in width but less than 1/4" in width rout the crack to a minimum of 1/4" wide x 3/8" deep. For cracks 1/4" or larger in width, routing is not required.

If routing is required, clean the routed crack with high pressure air blasting and apply Sikaflex Crack Flex Sealant or approved equal.

For larger non-routed cracks, clean the crack with pressure air blasting and apply Sika HyFlex-150 LV Sealant or HI-SPEC Hot Applied Polymeric Pavement Joint Sealant or approved equal.

**Modified Deck Repair (No Overlay):**

If the existing deck wearing surface does not have any overlay, remove the damaged surface area by cutting a square or rectangular repair area outside of the damaged area and remove the unsound concrete. Patch the area with material approved by the Engineer. Measurement and payment shall be by the square yard (S.Y.) for the completed work.



DATE		3/11/19	
DATE PREPARED		12/18/18	
ROUTE	STATE	MO	
DISTRICT	SHEET NO.	6	
COUNTY		JACKSON	
JOB NO.			
CONTRACT ID.			
PROJECT NO. 89005588			
BRIDGE NO.			

DATE	DESCRIPTION

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER FO09T0024

**BRIDGE CONCRETE WEARING SURFACE REPAIR AND TOP OF DECK CRACK REPAIR**

### ESTIMATED QUANTITIES

ITEM	UNITS	BRIDGE #2	BRIDGE #4	BRIDGE #5	BRIDGE #7	BRIDGE #10	BRIDGE #14	SUB TOTAL
		S026B24	S029B44	S052B21	S072B21	S152B32	S026B21	
Preformed Compression Seal (Gland Replacement)	L.F.	80	35	70	---	---	---	185
Preformed Compression Seal Joint System Replacement	L.F.	---	---	---	55	80	208	343



Bridge #2	S026B24
Facility Carried	Guinotte Ramp
Location	N Terrace Park
Feature(s) Indicated	Montgall



Bridge #4	S029B44
Facility Carried	Woodswether Road
Location	S of Missouri River
Feature(s) Indicated	BNSF Railroad Tracks



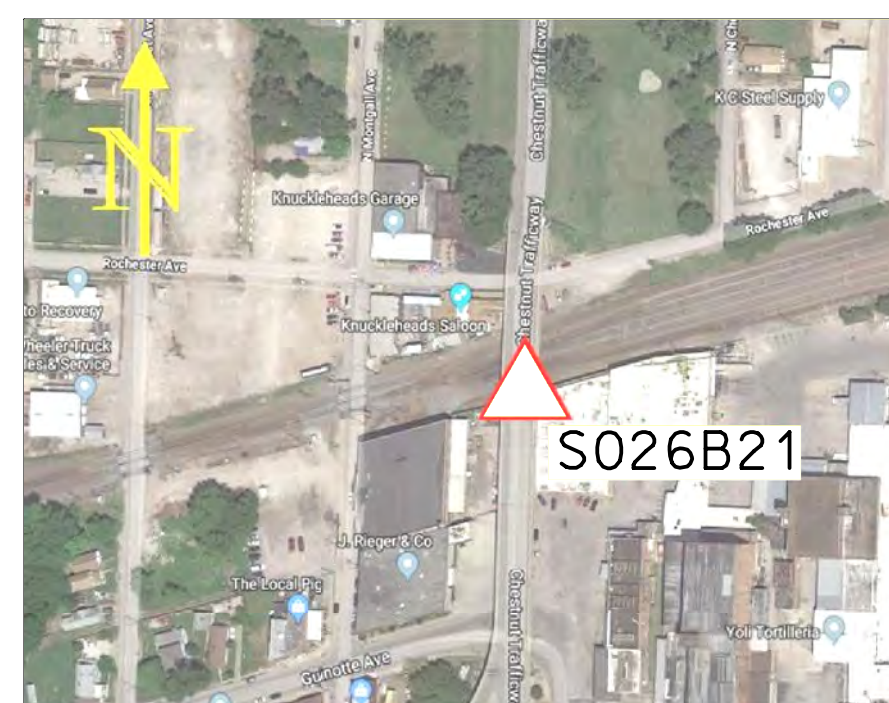
Bridge #5	S052B21
Facility Carried	Grand Avenue
Location	S of 21st Street
Feature(s) Indicated	KC Terminal Railway



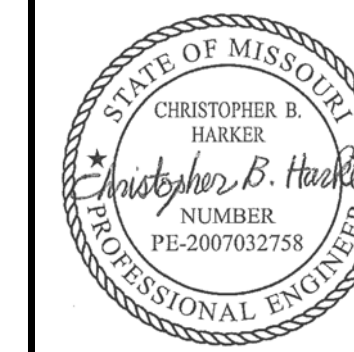
Bridge #7	S072B21
Facility Carried	Stadium Drive
Location	Near Leeds Trafficway
Feature(s) Indicated	Big Blue River



Bridge #10	S152B32
Facility Carried	99th Street
Location	E of Holmes
Feature(s) Indicated	Indian Creek



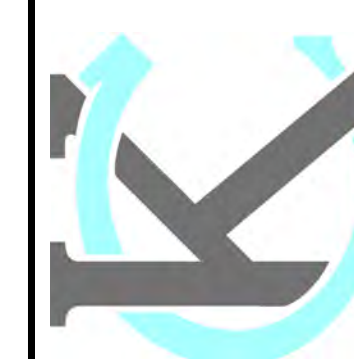
Bridge #14	S026B21
Facility Carried	Chestnut Avenue
Location	N Terrace Park
Feature(s) Indicated	RR, Guinotte & Rochester



DATE	3/11/19
DATE PREPARED	12/18/18
ROUTE	---
STATE	MO
DISTRICT	BR
SHEET NO.	7
COUNTY	JACKSON
JOB NO.	
CONTRACT ID.	
PROJECT NO.	89005588
BRIDGE NO.	

DATE	DESCRIPTION

KCMO Public Works  
 5300 Municipal Avenue  
 Kansas City, MO 64120



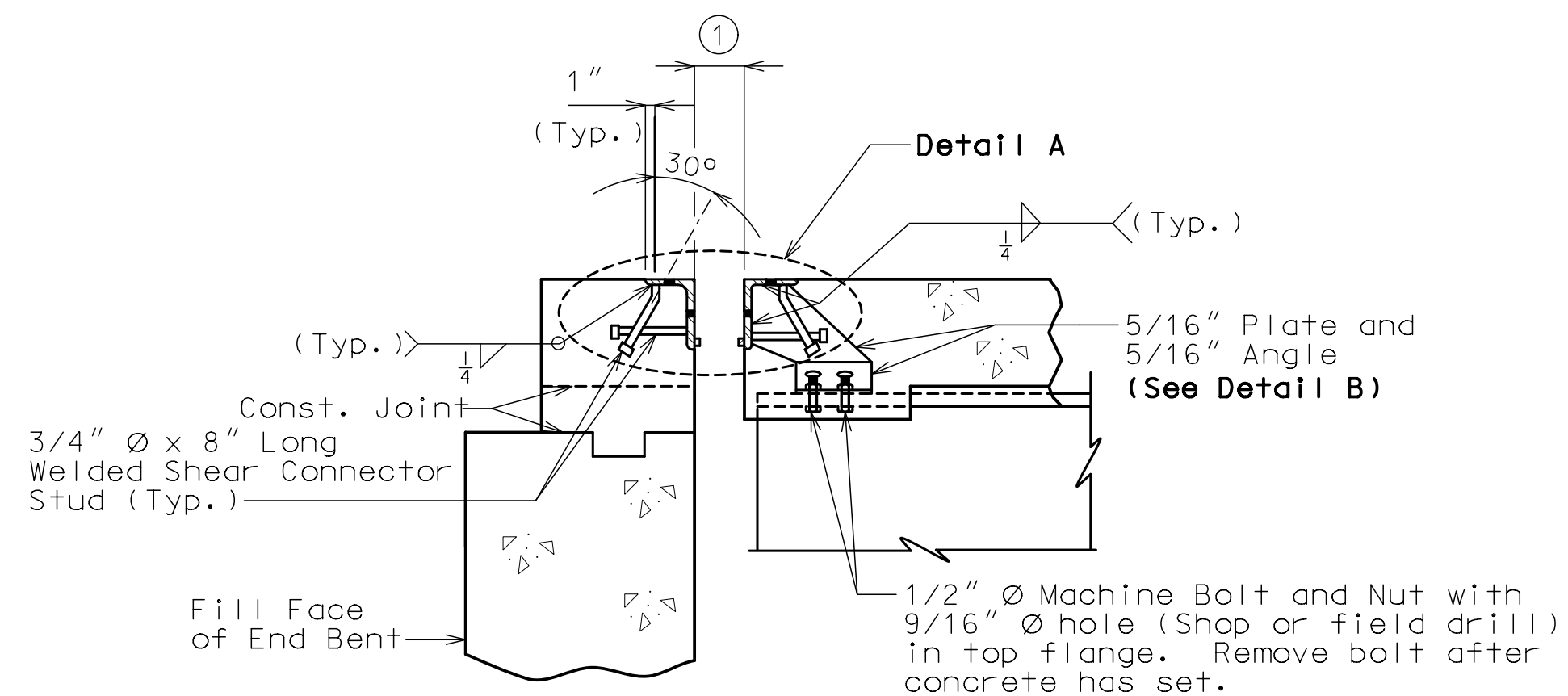
14 W. 3rd Street, SUITE 220  
 KANSAS CITY, MO 64105  
 816/221-4222, FAX 913/441-1488  
 CERTIFICATE OF AUTHORITY NUMBER FO09T0024

### BRIDGE LOCATIONS FOR REPLACEMENT PREFORMED COMPRESSION SEAL EXPANSION JOINT SYSTEM

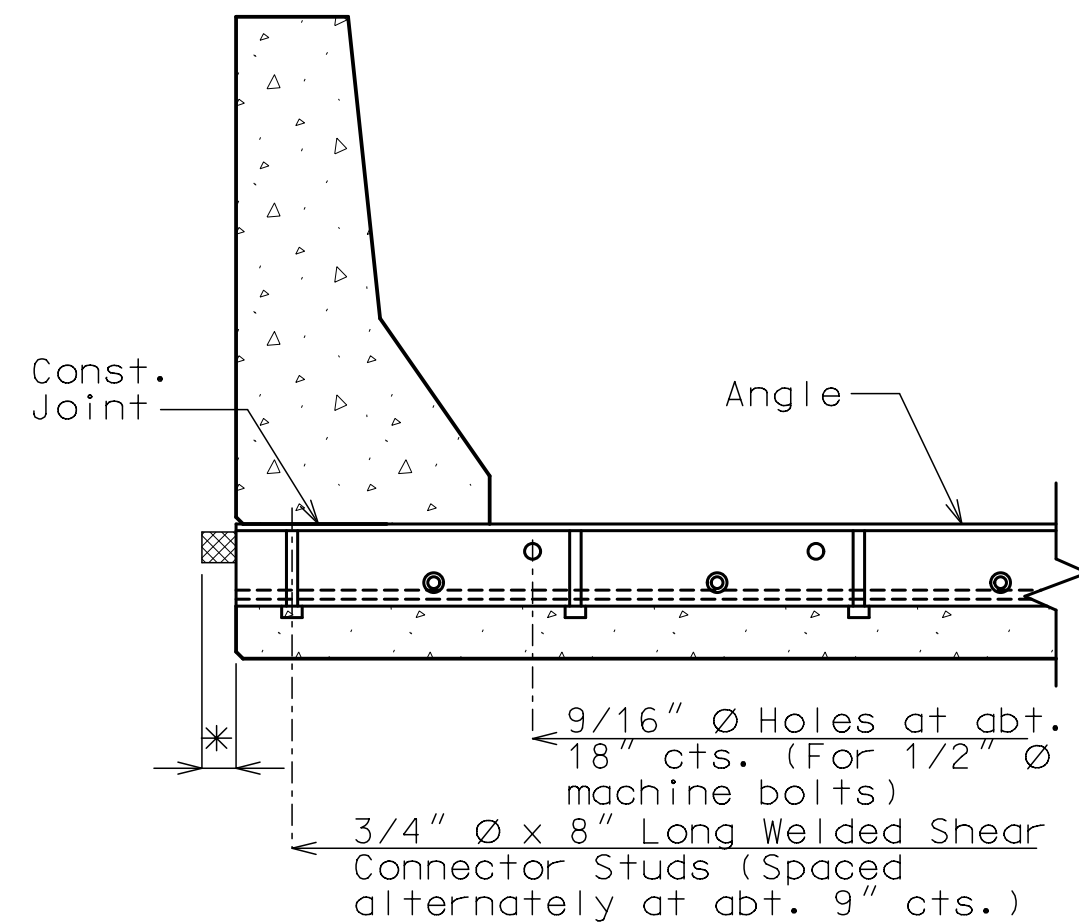
Detailed MAR 2019  
 Checked MAR 2019

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

Sheet No. 7 of 14



PART SECTION A-A



PART SECTION B-B

\* Extend preformed compression seal 3" past the edge of slab (Typ.)

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

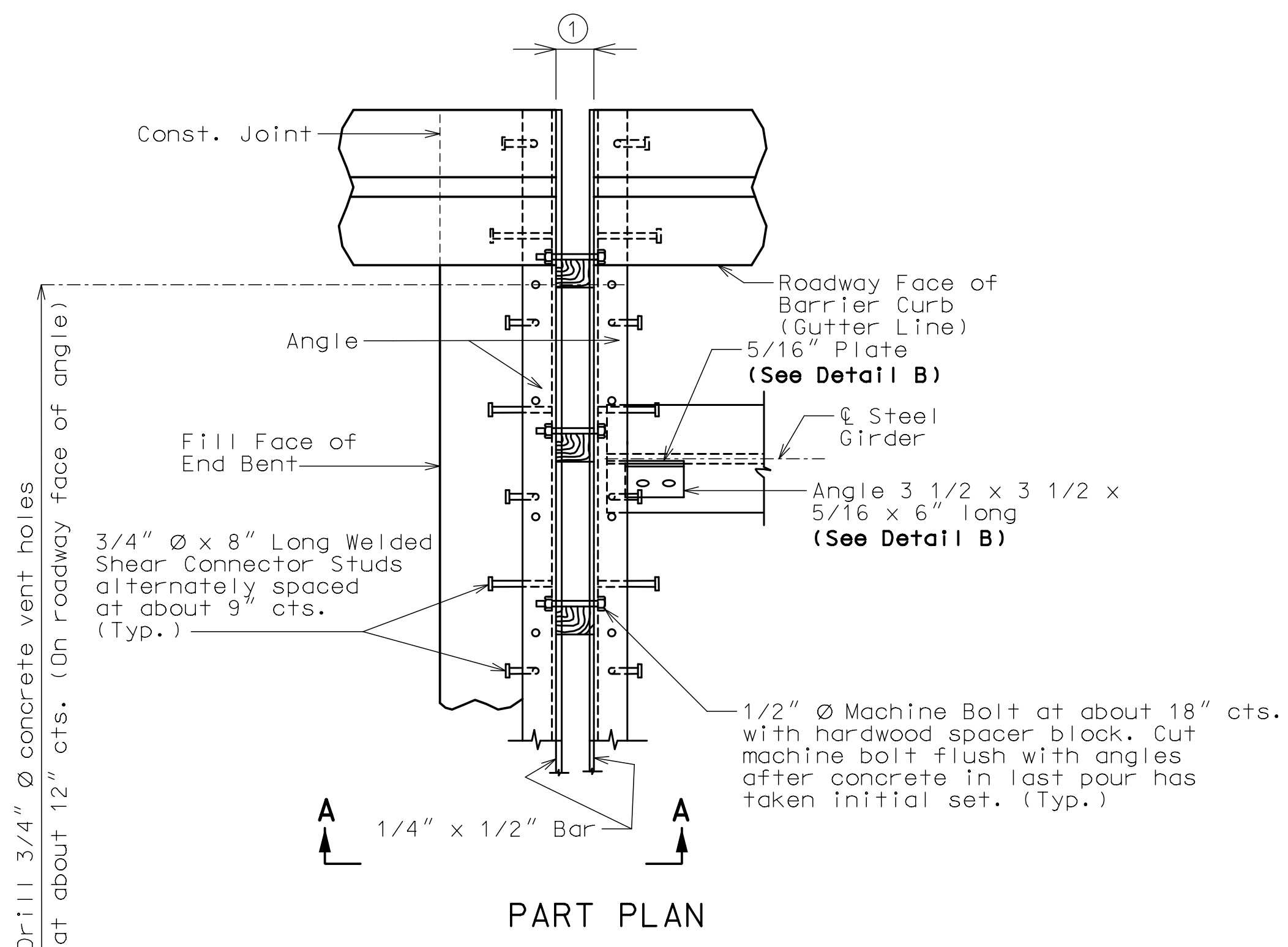
Structural steel for the expansion joint system shall be ASTM A709 Grade 36. Anchors for the expansion joint system shall be in accordance with Sec 1037. Preformed compression seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

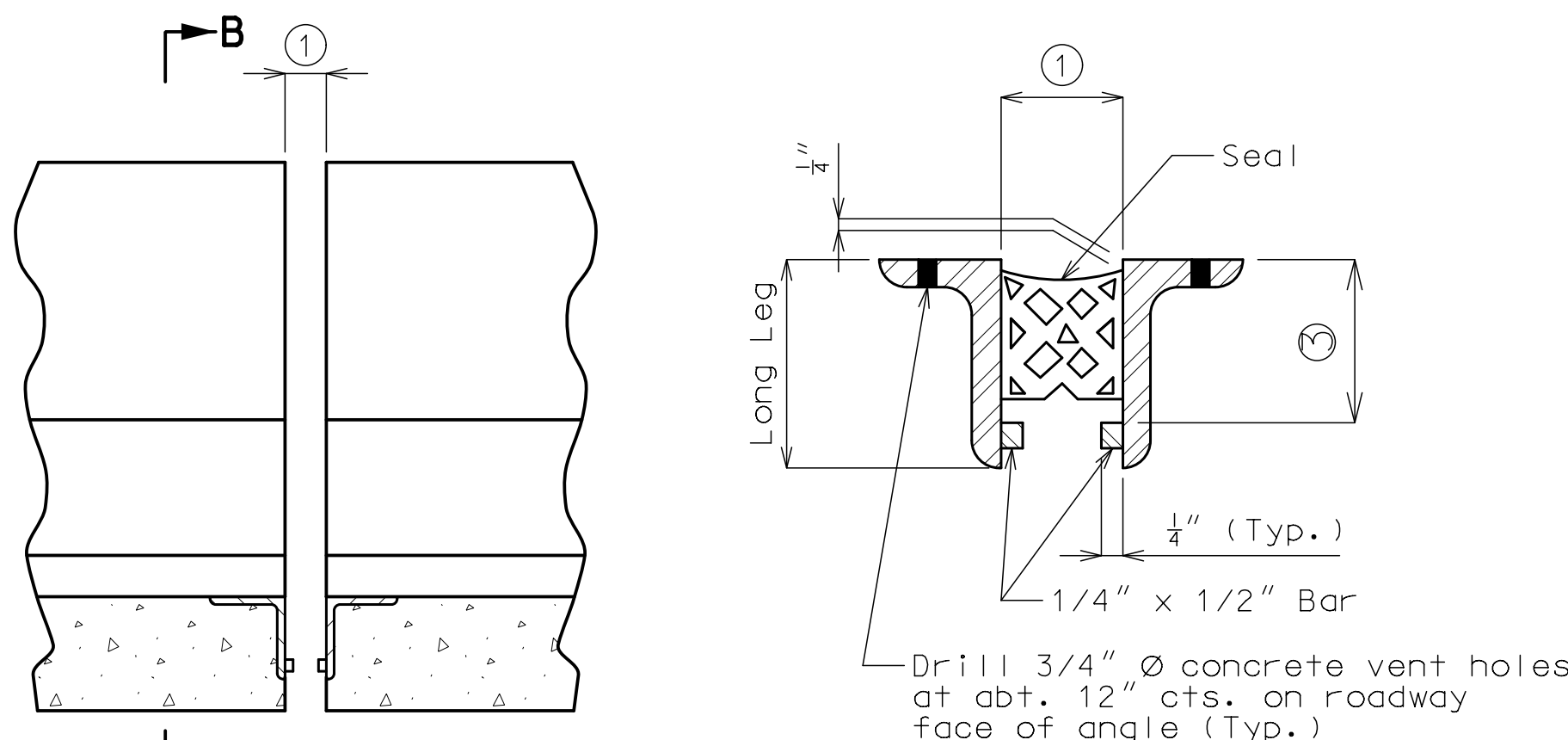
Concrete shall be forced under armor angle and around anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the angle at the expansion joint system.

Modify existing deck, slab, backwall, curbs, and girders as required to install new expansion joint system.



PART PLAN



PART CROSS SECTION THRU EXPANSION JOINT

PART ELEVATION OF BARRIER CURB

Table of Transverse Preformed Compression Seal Expansion Joint System Dimensions

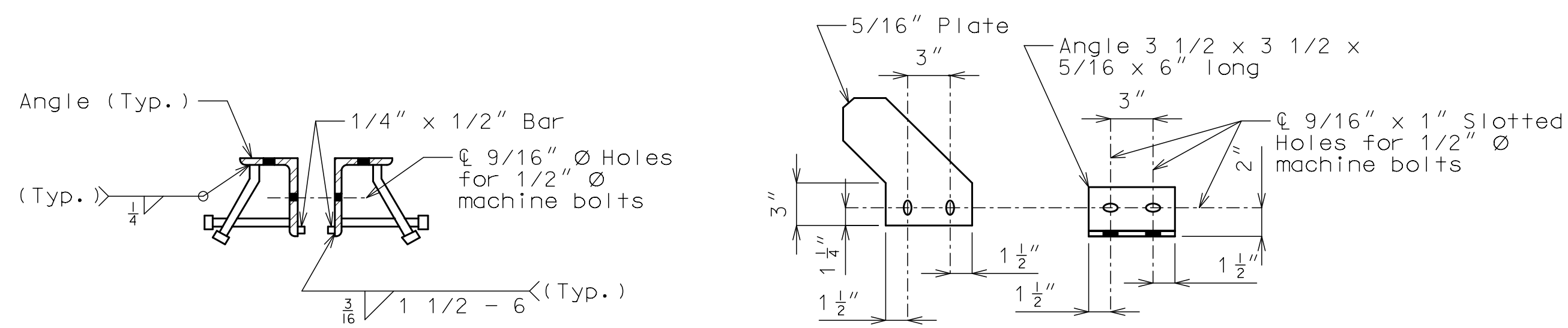
Seal Width Perpendicular to Joint	③	Movement Capacity (M ⊥ to Joint)	Min. Joint Width (⊥ to Joint)	Max. Joint Width (⊥ to Joint)	Allowed Installation Gap Normal to Joint at RDWY Surface @ Air/Surface Temperature ②				④	
					@ 40°F	@ 50°F	@ 60°F	@ 70°F		
S026B21	4.5"	Manufacturer's Recommended Height	1.80"	2.03"	3.83"	3 1/8"	3"	2 7/8"	2 3/4"	□
S029B44	3.0"	Manufacturer's Recommended Height	1.20"	1.34"	2.55"	1 15/16"	1 7/8"	1 13/16"	1 3/4"	□
S052B21	4.5"	Manufacturer's Recommended Height	1.80"	2.03"	3.83"	3 1/4"	3 1/8"	2 15/16"	2 13/16"	□
S072B21	4.5"	Manufacturer's Recommended Height	1.80"	2.03"	3.83"	2 15/16"	2 13/16"	2 11/16"	2 5/8"	□

Note: Depth of seal shall not be less than width of seal.

Size of armor angle: Vertical leg of angle shall be a minimum of Manufacturer's Recommended Height ③ + 3/4". Horizontal leg of angle shall be a minimum of 3". Minimum thickness of angle shall be 1/2".

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

④ KCMO Construction personnel will indicate the preformed compression seal expansion joint system installed.



DETAIL A

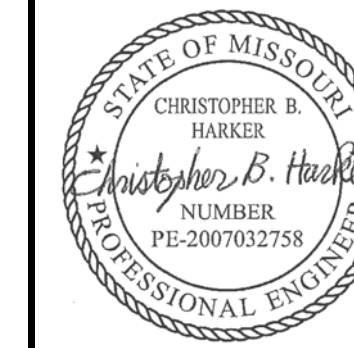
DETAIL B

DETAILS OF PREFORMED COMPRESSION SEAL EXPANSION JOINT SYSTEM AT END BENT (STEEL)

Detailed MAR 2019  
Checked MAR 2019

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

Sheet No. 8 of 14



DATE 3/11/19

DATE PREPARED 12/18/18

ROUTE MO

DISTRICT BR SHEET NO. 8

COUNTY JACKSON

JOB NO.

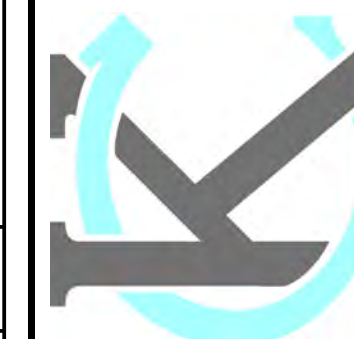
CONTRACT ID.

PROJECT NO. 89005588

BRIDGE NO.

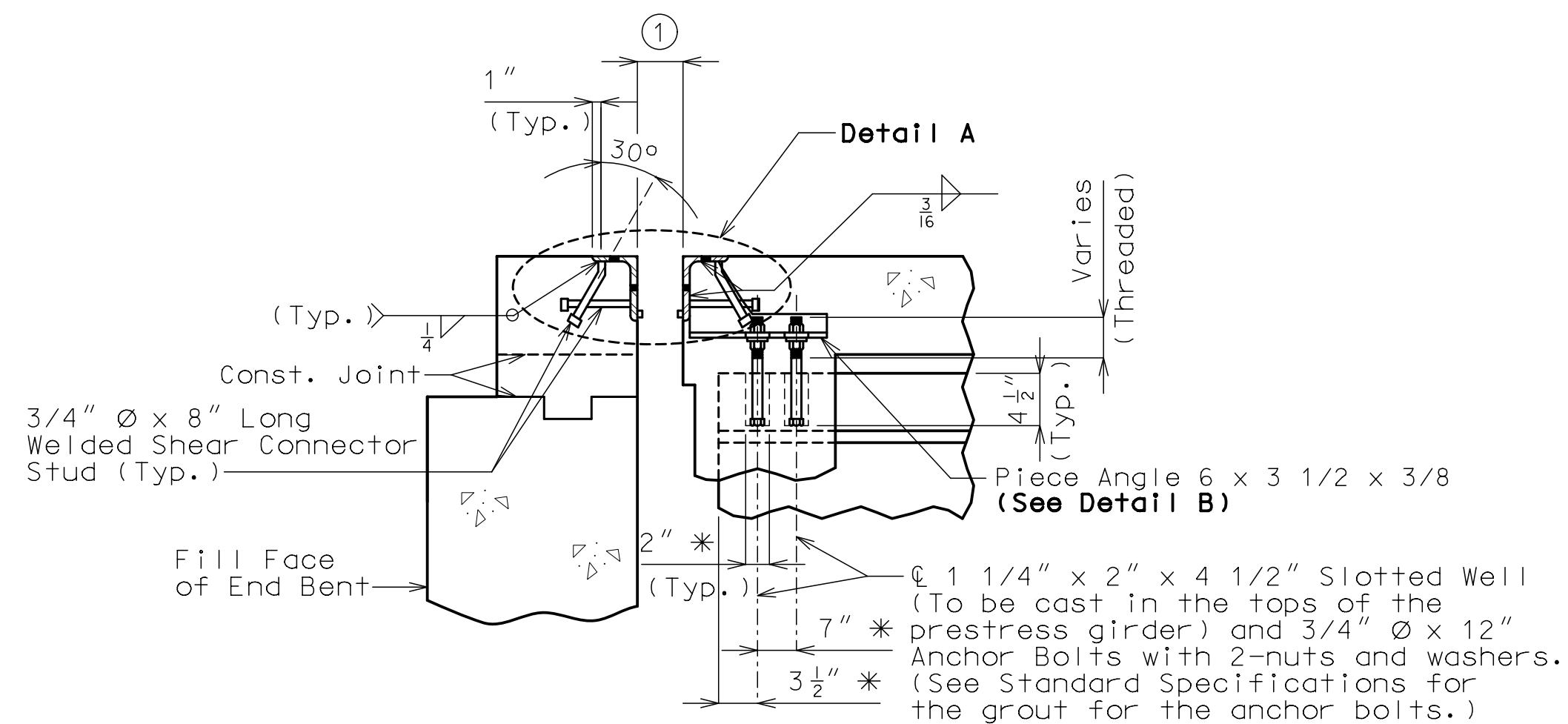
DESCRIPTION	DATE

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120

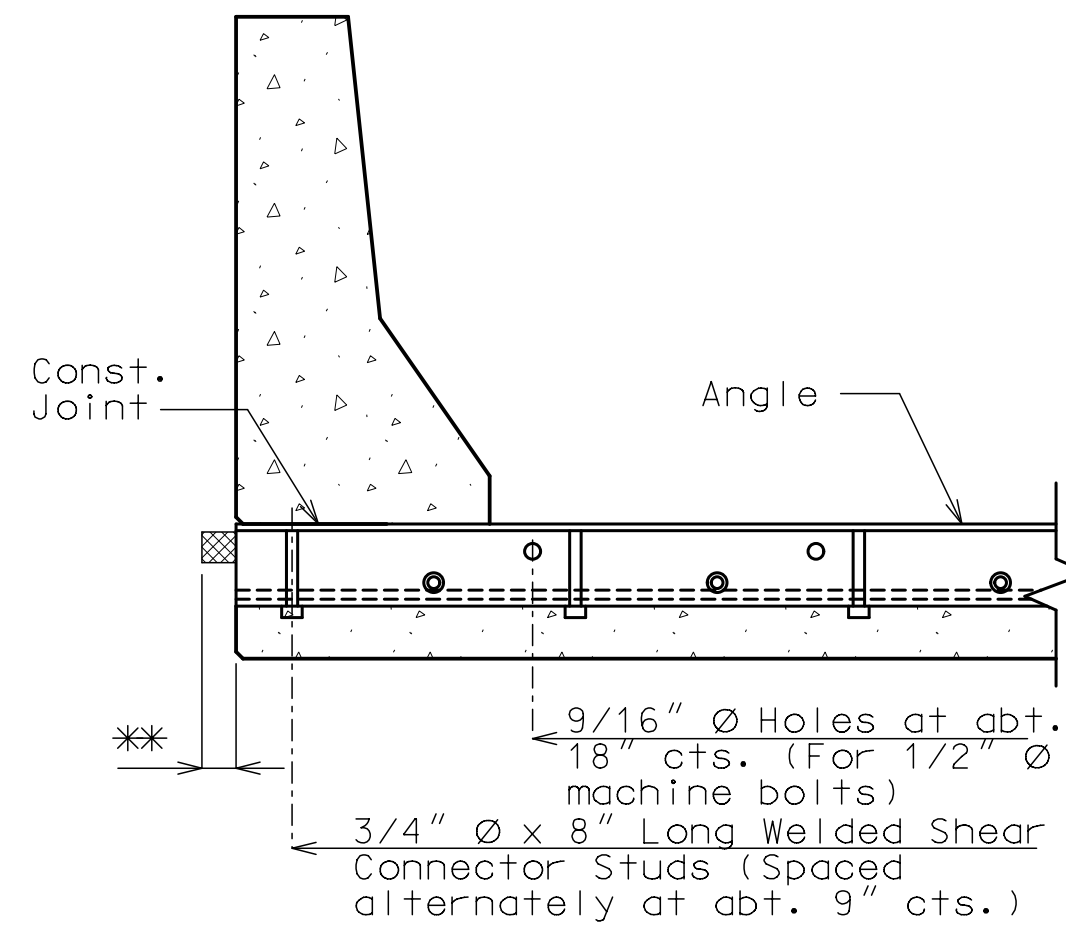


benesch  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER F00970024





**PART SECTION A-A**  
\* Dimension along  $\varnothing$  Girder



**PART SECTION B-B**

\*\* Extend preformed compression seal 3" past the edge of slab (Typ.)

**GENERAL NOTES:**

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

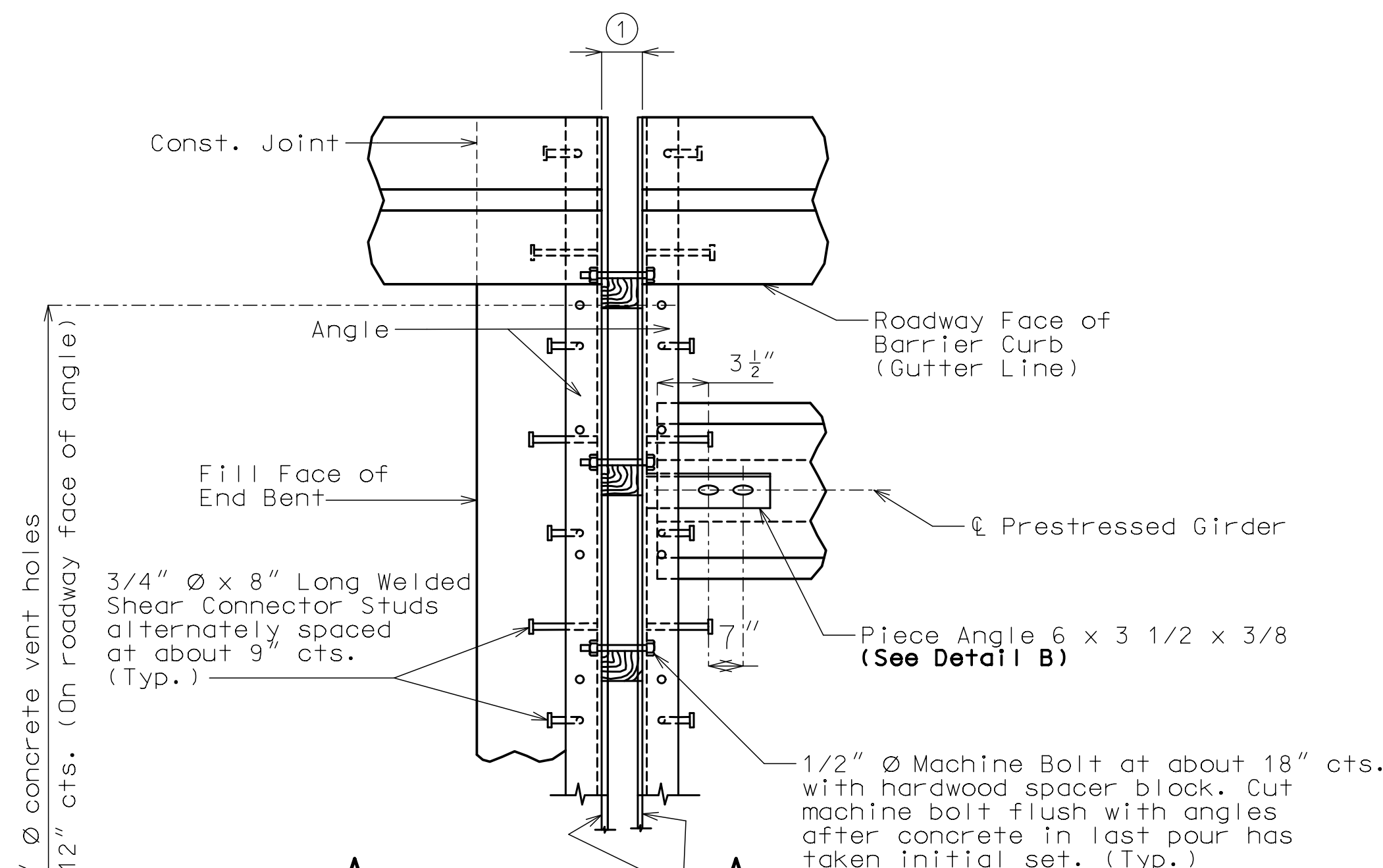
Structural steel for the expansion joint system shall be ASTM A709 Grade 36. Anchors for the expansion joint system shall be in accordance with Sec 1037. Preformed compression seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

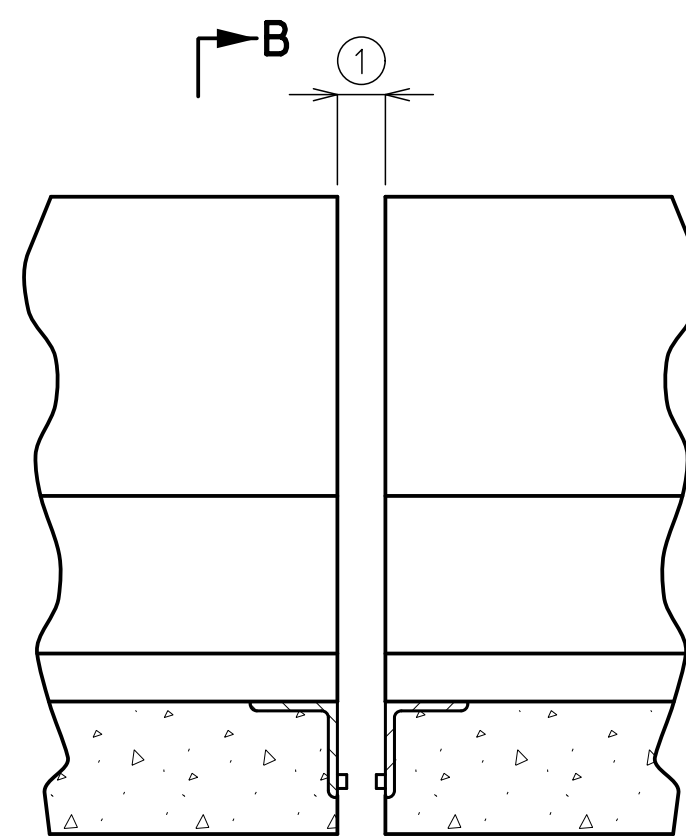
Concrete shall be forced under armor angle and around anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the angle at the expansion joint system.

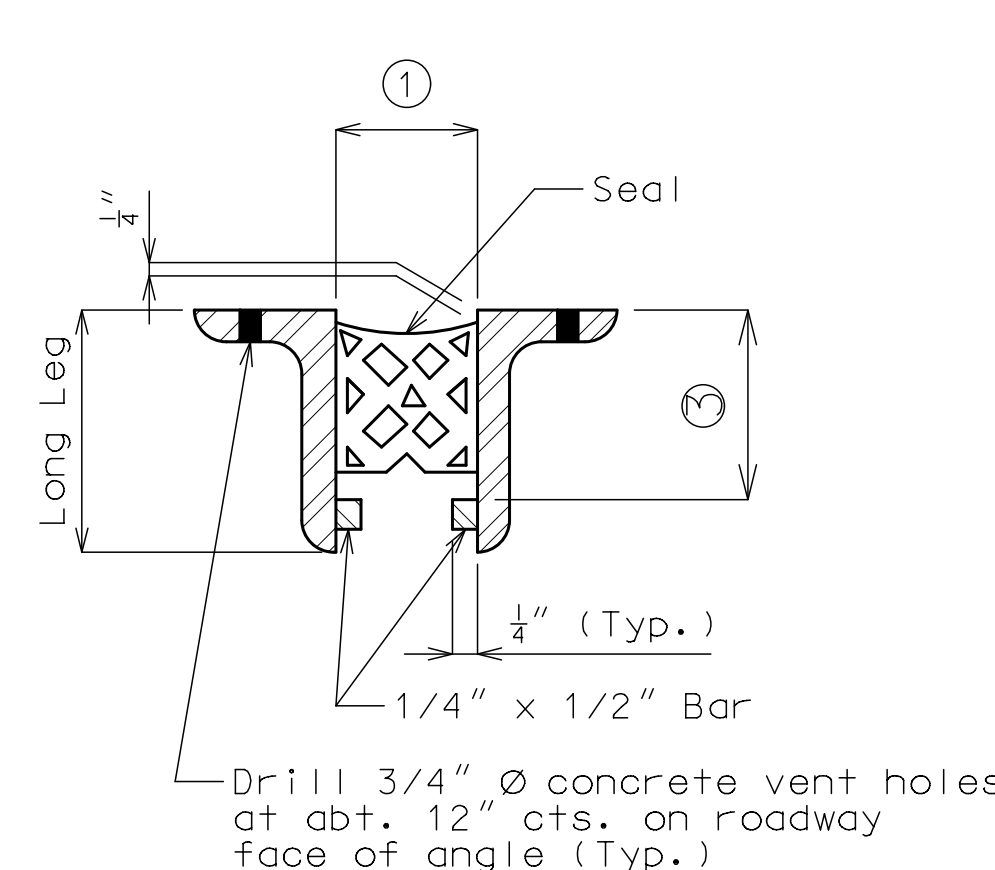
Modify existing deck, slab, backwall, curbs, and girders as required to install new expansion joint system.



**PART PLAN**



**PART ELEVATION OF BARRIER CURB**



**PART CROSS SECTION THRU EXPANSION JOINT**

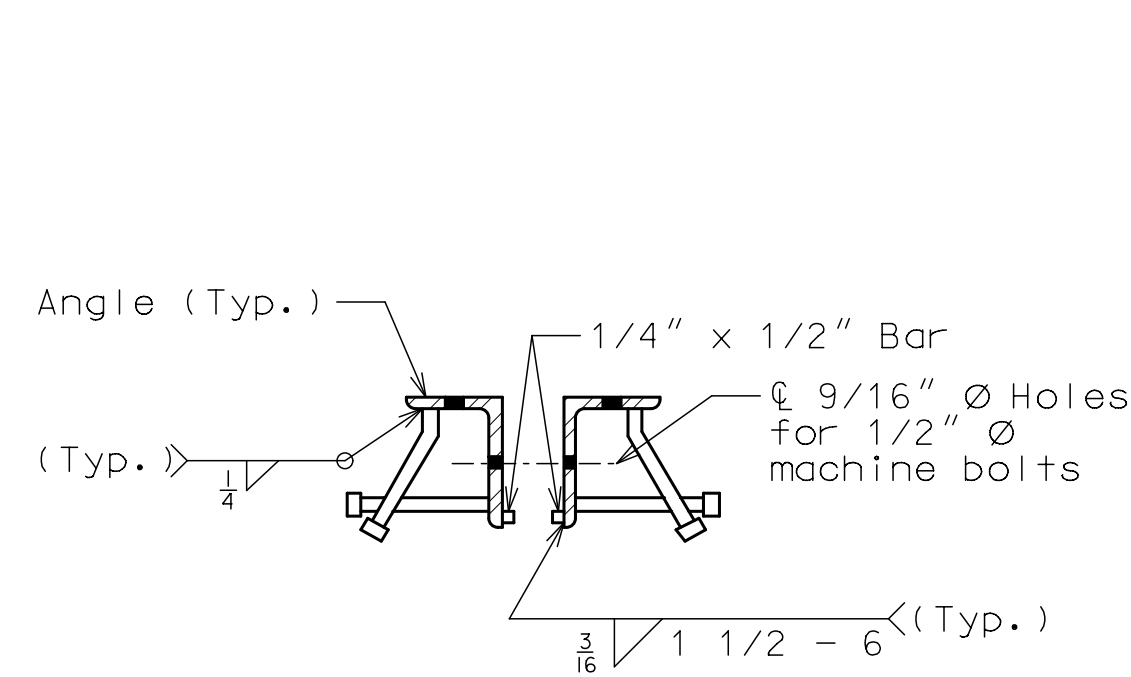
	Seal Width Perpendicular to Joint	③	Movement Capacity (M $\perp$ to Joint)	Min. Joint Width ( $\perp$ to Joint)	Max. Joint Width ( $\perp$ to Joint)	Allowed Installation Gap Normal to Joint at RDWY Surface @ Air/Surface Temperature ②				④
						@ 40°F	@ 50°F	@ 60°F	@ 70°F	
S026B24	3.0"	Manufacturer's Recommended Height	1.20"	1.34"	2.55"	1 1/8"	1 3/16"	1 3/4"	1 1/16"	□
S152B32	4.5"	Manufacturer's Recommended Height	1.80"	2.03"	3.83"	3 1/16"	2 15/16"	2 13/16"	2 1/16"	□

Note: Depth of seal shall not be less than width of seal.

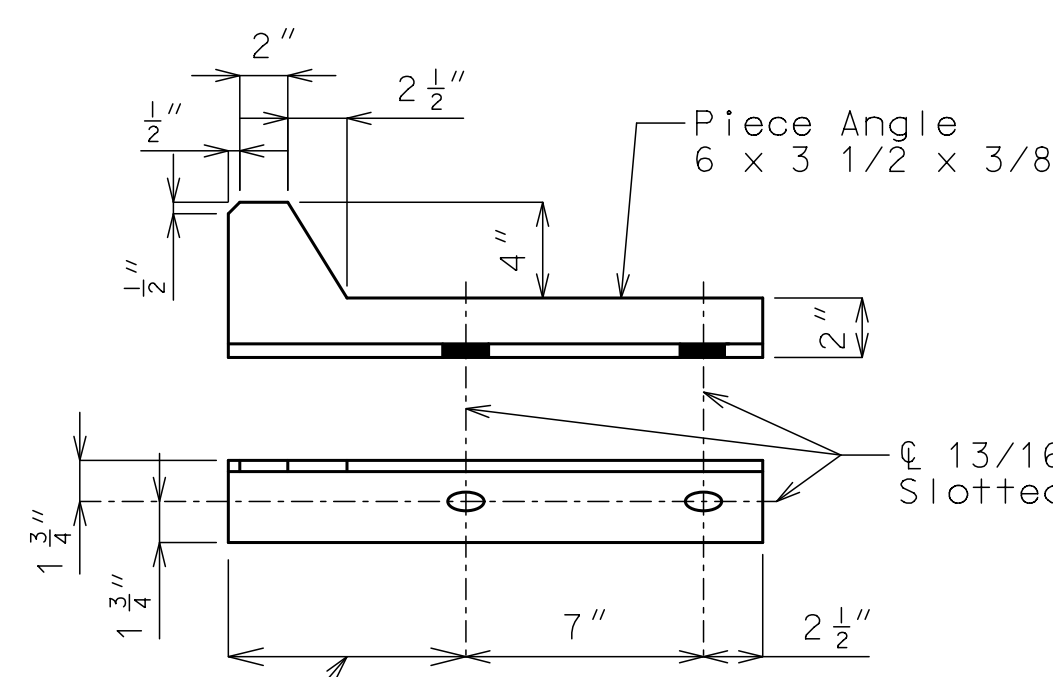
Size of armor angle: Vertical leg of angle shall be a minimum of Manufacturer's Recommended Height ③ + 3/4". Horizontal leg of angle shall be a minimum of 3". Minimum thickness of angle shall be 1/2".

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

④ KCMO Construction personnel will indicate the preformed compression seal expansion joint system installed.



**DETAIL A**



**DETAIL B**  
Contractor to determine in field

**DETAILS OF PREFORMED COMPRESSION SEAL EXPANSION JOINT SYSTEM AT END BENT (PS CONCRETE)**

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

Sheet No. 9 of 14

Detailed MAR 2019  
Checked MAR 2019



DATE		3/11/19	
DATE PREPARED		12/18/18	
ROUTE	STATE	MO	
DISTRICT	SHEET NO.	BR 9	
COUNTY		JACKSON	
JOB NO.			
CONTRACT ID.			
PROJECT NO.		89005588	
BRIDGE NO.			

DATE	DESCRIPTION

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER F00970024

ESTIMATED QUANTITIES

ITEM	UNITS	BRIDGE #6	SUB TOTAL
		S052B23	
Strip Seal (Gland Replacement)	L.F.	155	155




Bridge #6	S052B23
Facility Carried	McGee Street
Location	S of 21st Street
Feature(s) Indicated	KC Terminal Railway



DATE	3/11/19
DATE PREPARED	12/18/18
ROUTE	---
STATE	MO
DISTRICT	BR
SHEET NO.	10
COUNTY	JACKSON
JOB NO.	
CONTRACT ID.	
PROJECT NO.	89005588
BRIDGE NO.	

DATE	DESCRIPTION

KCMO Public Works  
 5300 Municipal Avenue  
 Kansas City, MO 64120

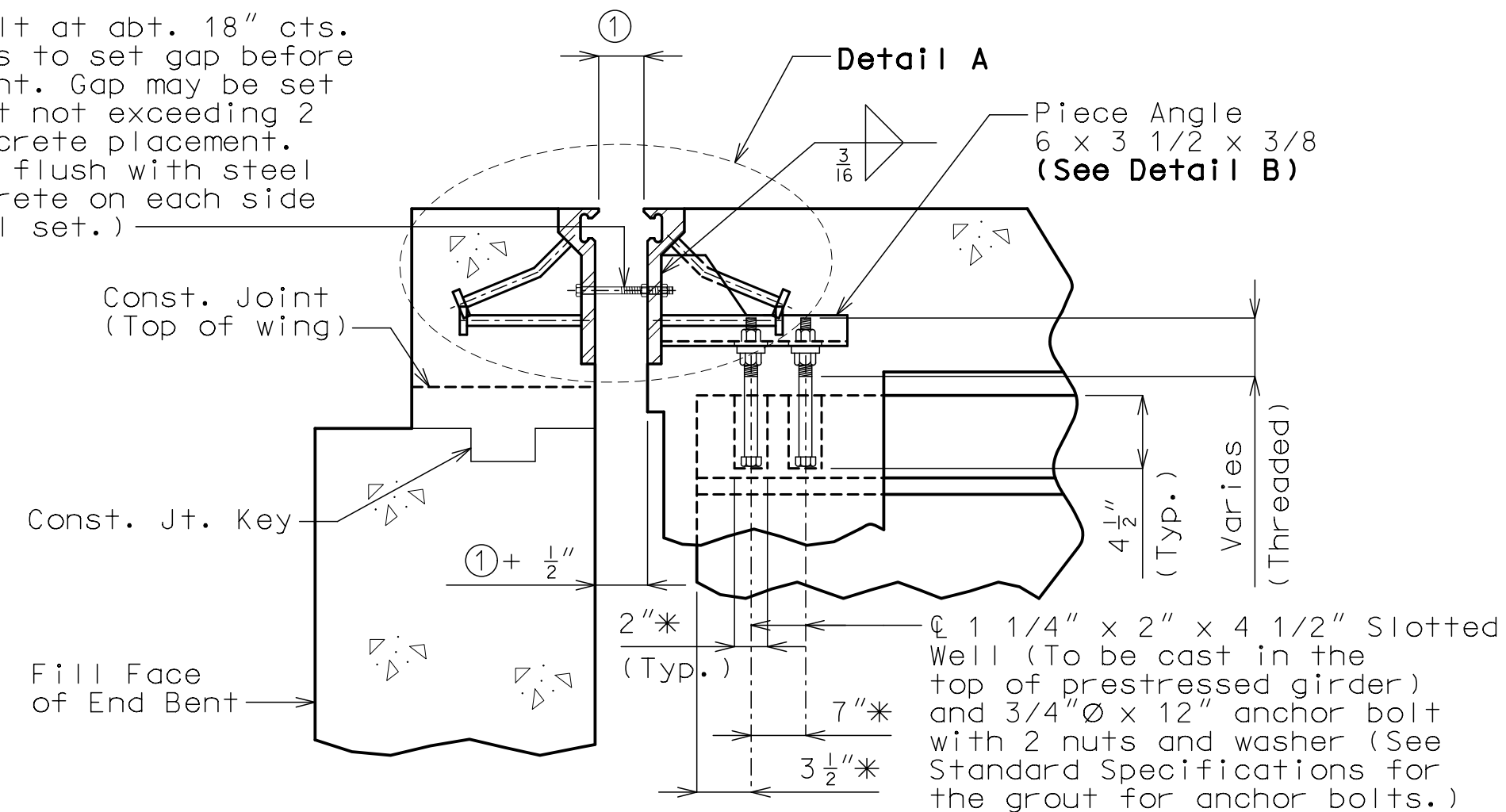


**benesch**  
 14 W. 3rd Street, SUITE 220  
 KANSAS CITY, MO 64105  
 816/221-4222, FAX 913/441-1488  
 CERTIFICATE OF AUTHORITY NUMBER F009T0024

BRIDGE LOCATIONS FOR STRIP SEAL REPLACEMENT

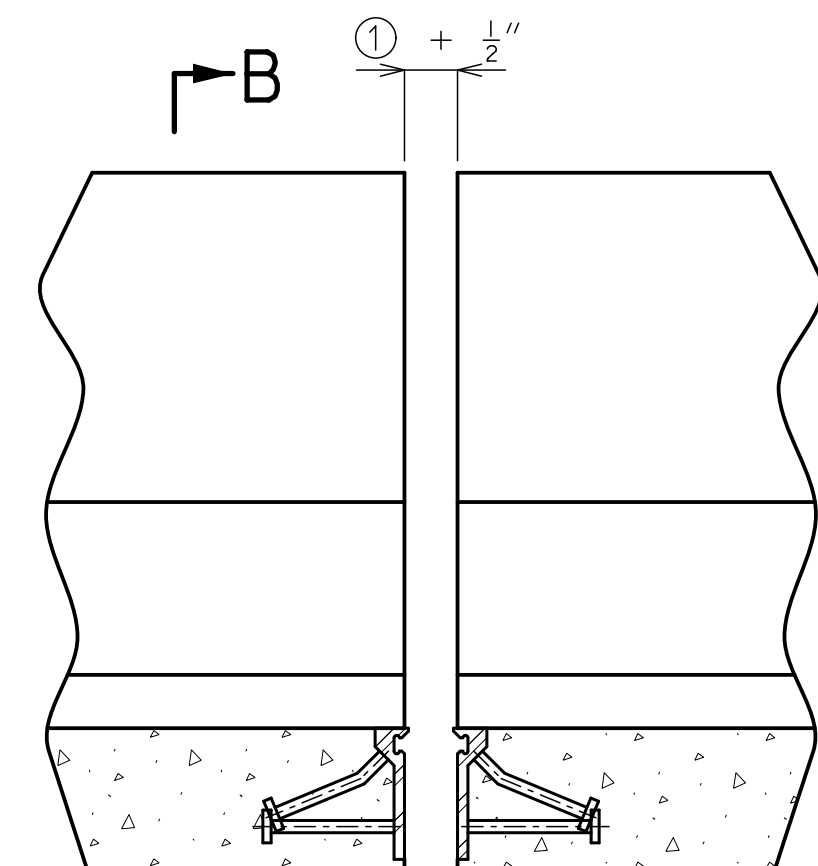


1/2"Ø Machine Bolt at abt. 18" cts. (Use two hex nuts to set gap before concrete placement. Gap may be set anytime up to but not exceeding 2 hours before concrete placement. Cut machine bolt flush with steel armor after concrete on each side has taken initial set.)

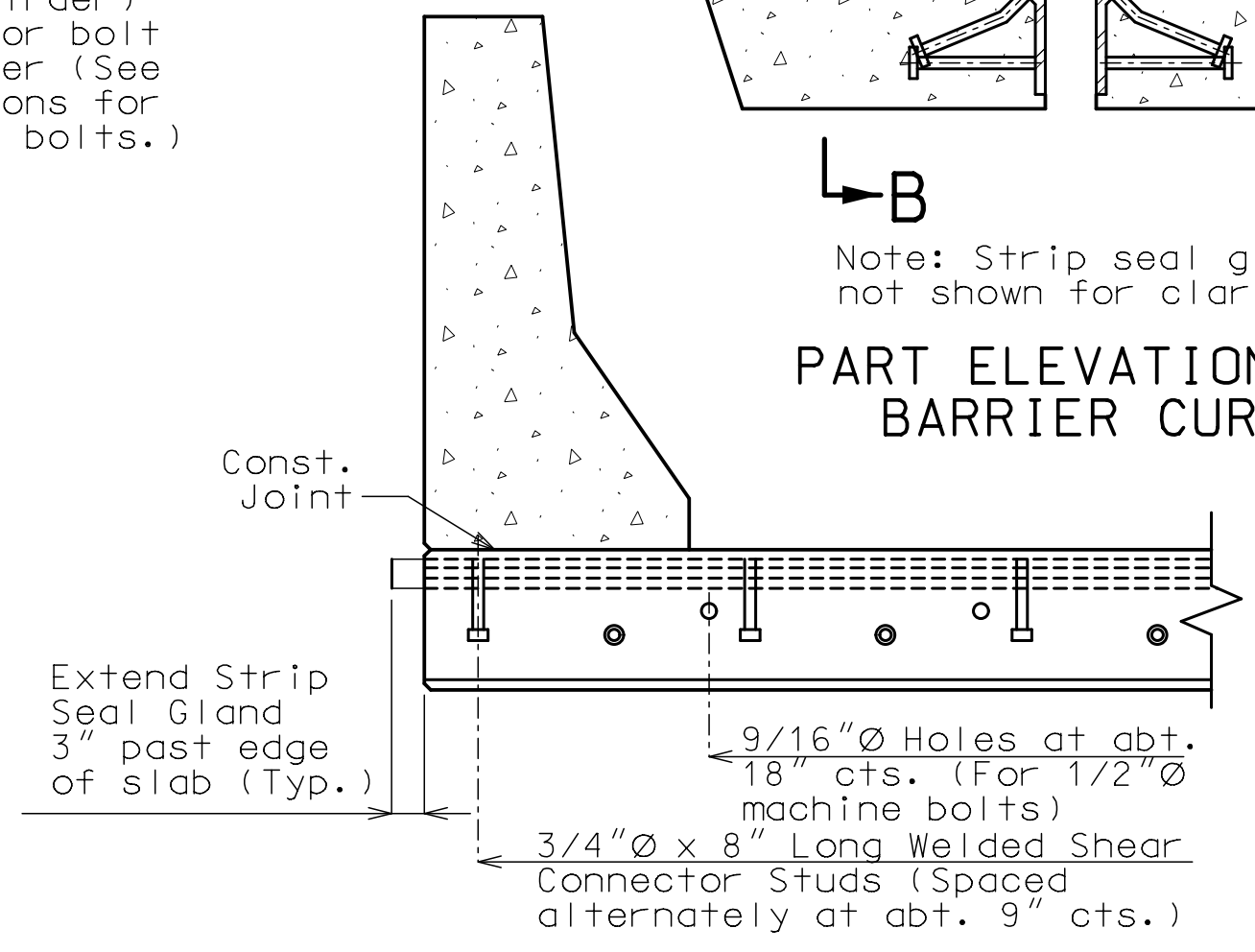


SECTION A-A

Note: Strip seal gland not shown for clarity.  
\* Dimension along  $\phi$  Girder



PART ELEVATION OF BARRIER CURB



PART SECTION B-B

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

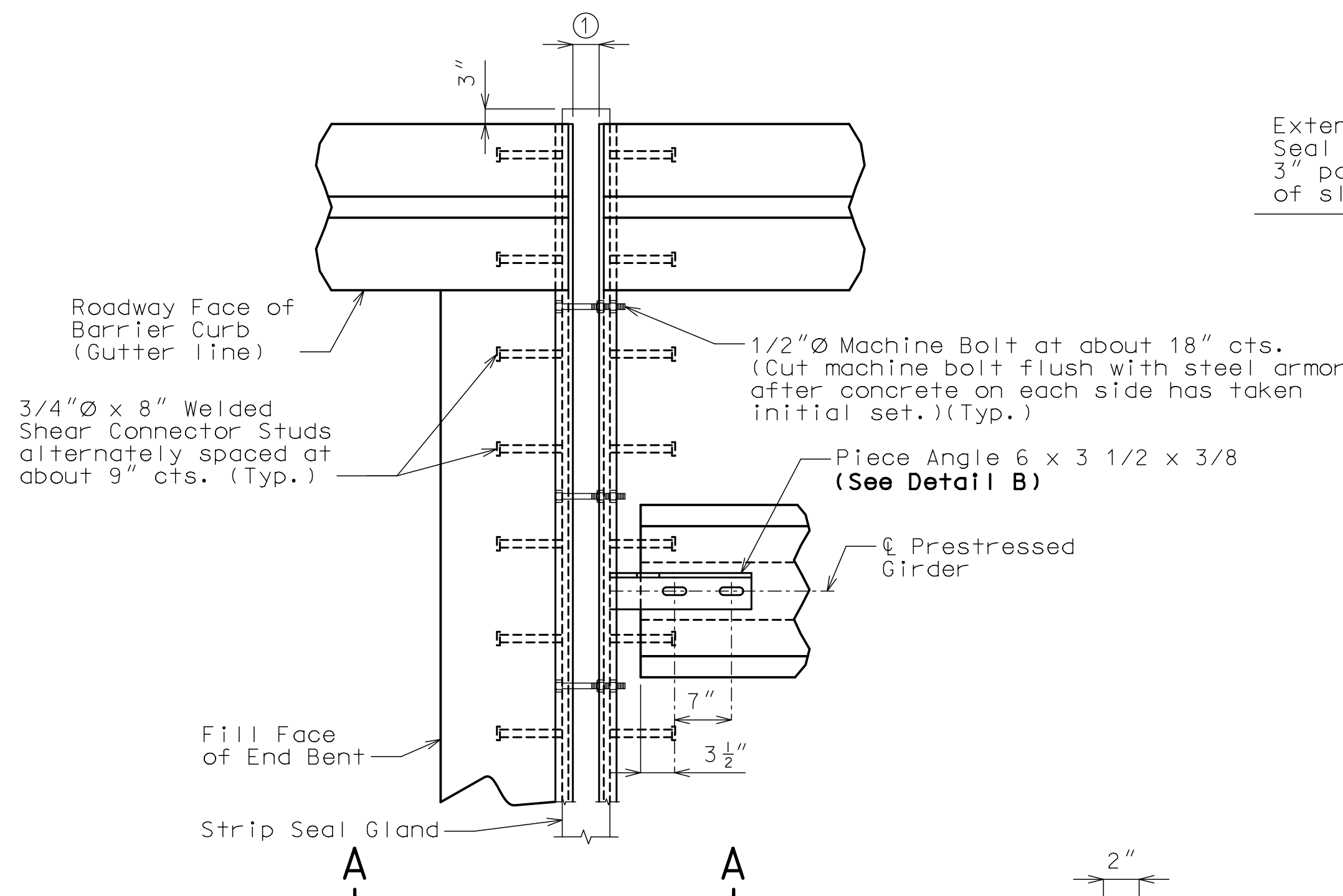
Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

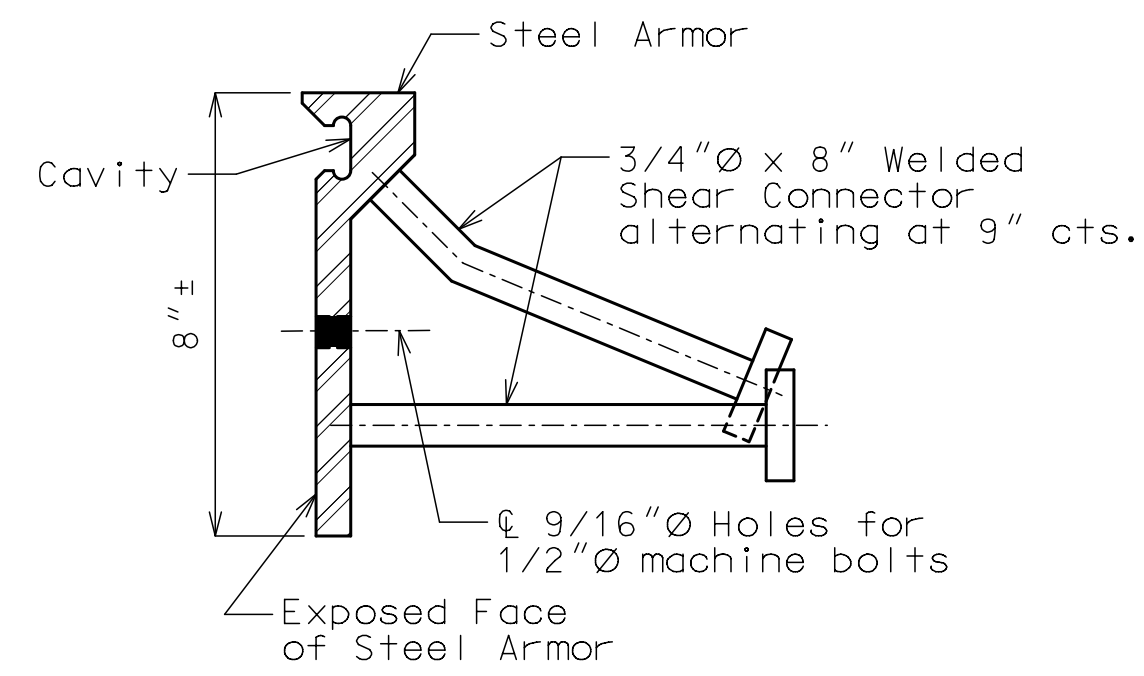
③ KCMO Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

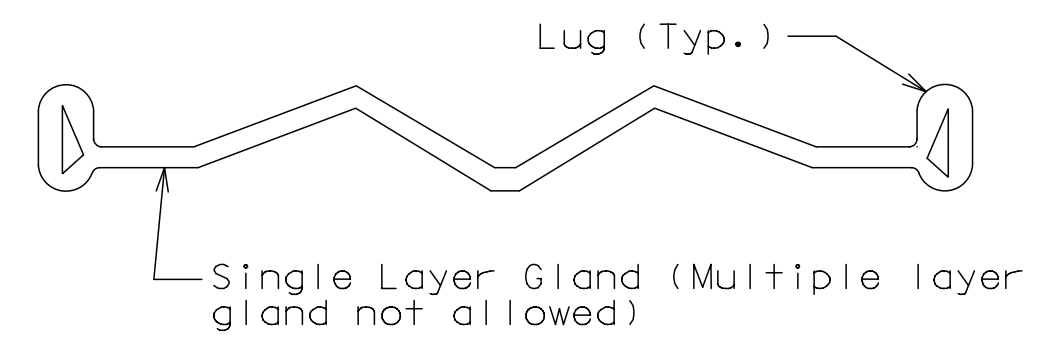
Modify existing deck, slab, backwall, curbs, and girders as required to install new expansion joint system.



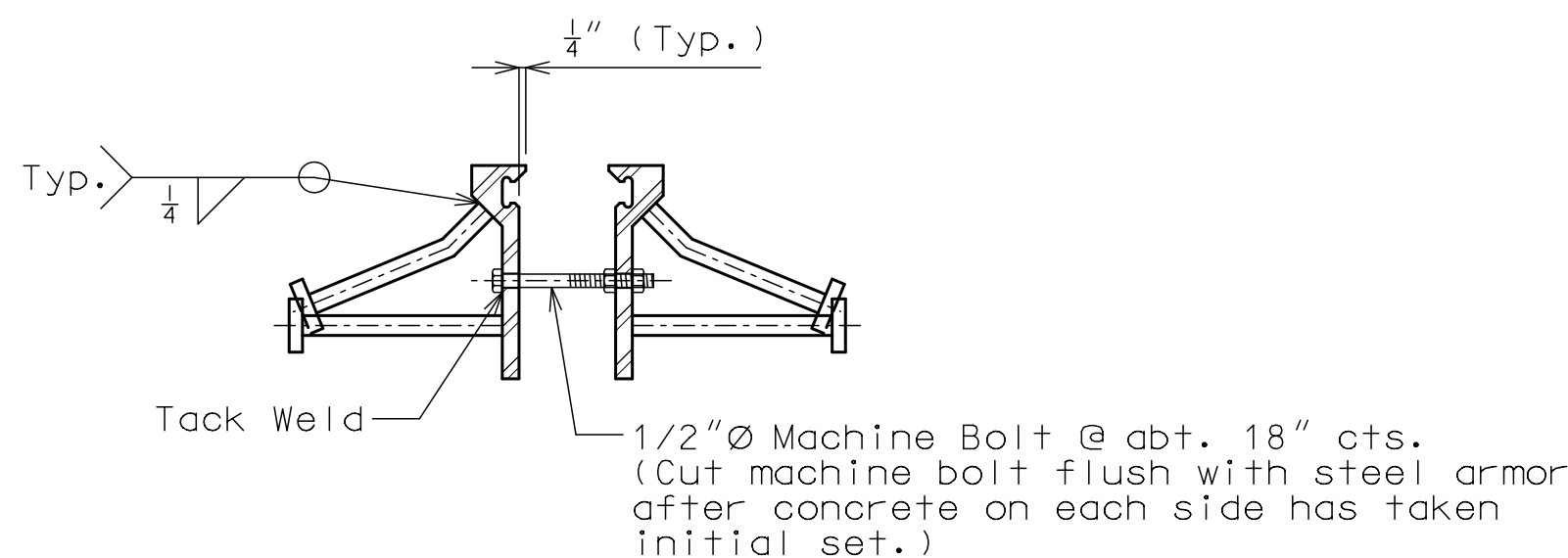
PART PLAN



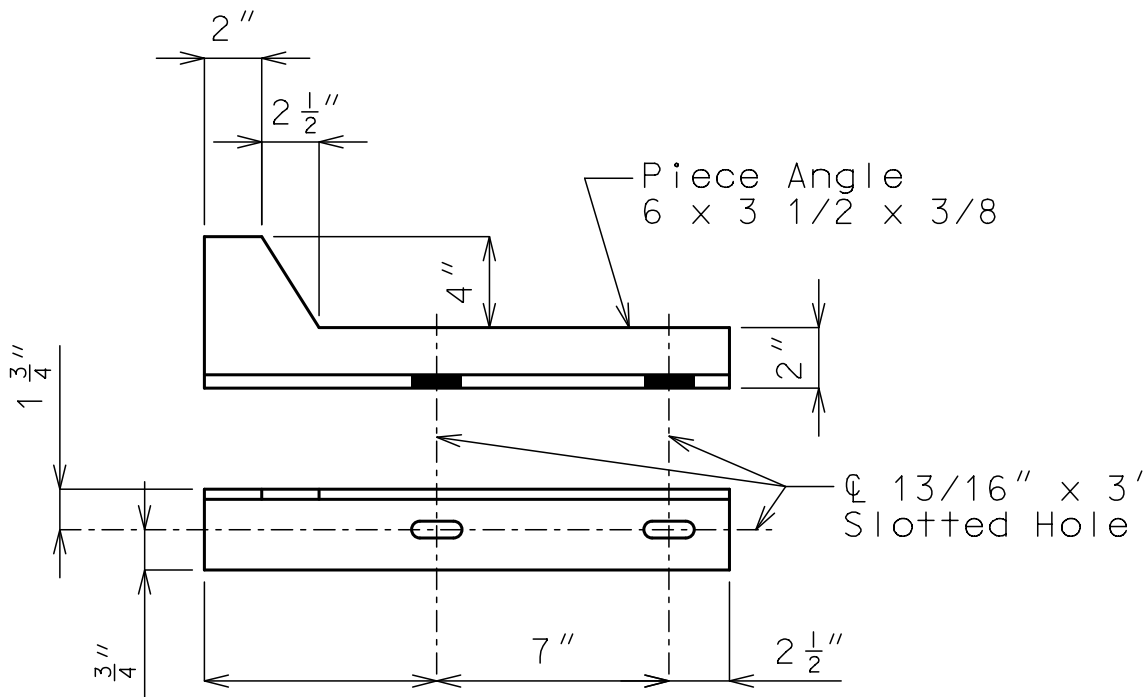
DETAIL OF JOINT ARMOR



DETAIL OF GLAND



DETAIL A



DETAIL B

Table of Allowed Transverse Strip Seal Expansion Joint System										
	Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	Allowed Installation Gap @ Air/Surface Temperature						③
				① Normal, to Joint at RDWY Surface	②					
				@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
S052B23	D S Brown	L2-400	1 3/16"	2 3/16"	2 1/8"	2"	1 7/8"	1 13/16"	1 11/16"	□

DETAILS OF STRIP SEAL EXPANSION JOINT SYSTEM AT END BENT (PS CONCRETE)

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

Sheet No. 12 of 14

Detailed MAR 2019  
Checked MAR 2019



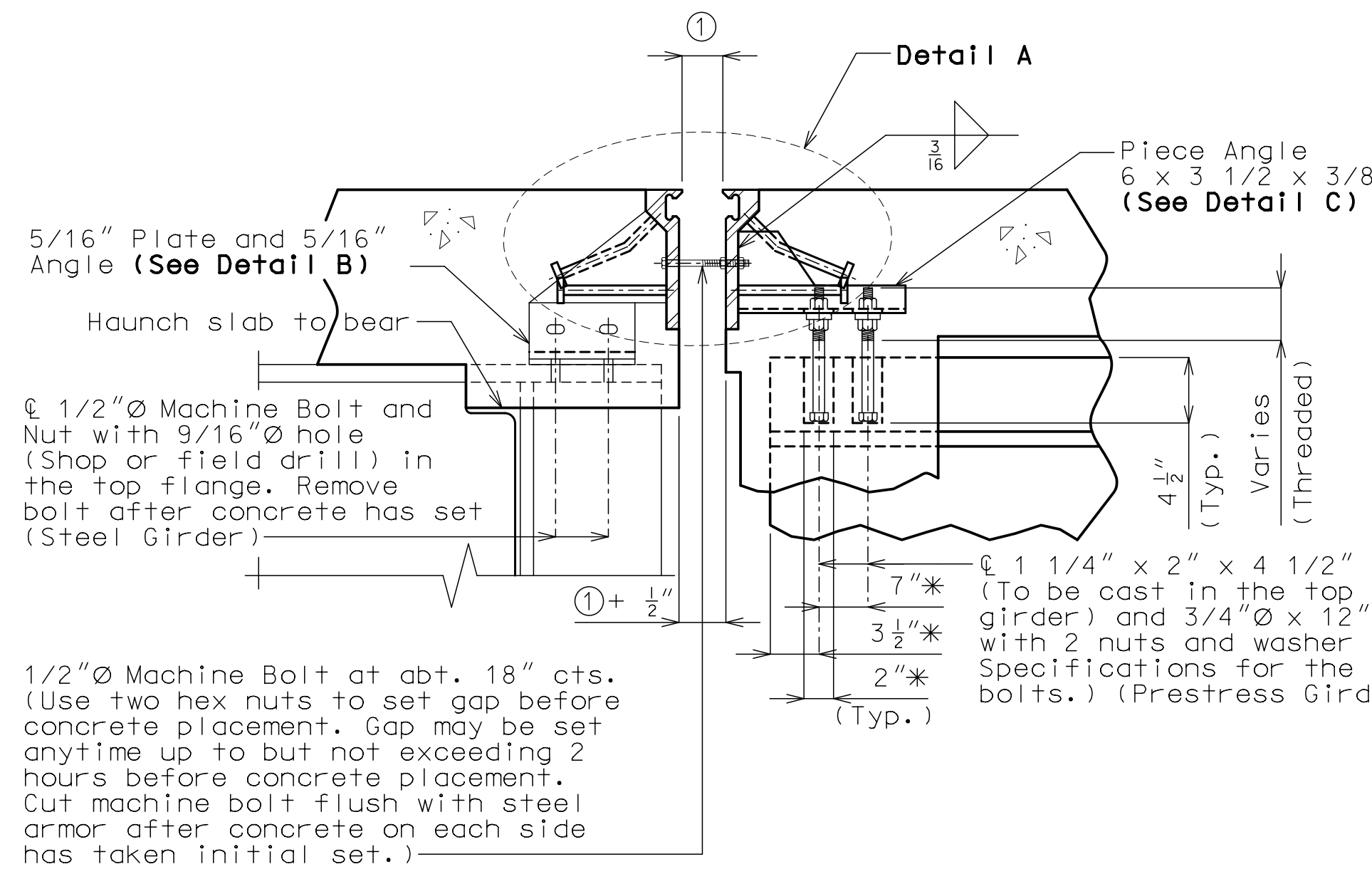
DATE		3/11/19	
DATE PREPARED		12/18/18	
ROUTE	STATE	MO	
DISTRICT	SHEET NO.	BR	12
COUNTY		JACKSON	
JOB NO.			
CONTRACT ID.			
PROJECT NO.	89005588		
BRIDGE NO.			

DATE	DESCRIPTION

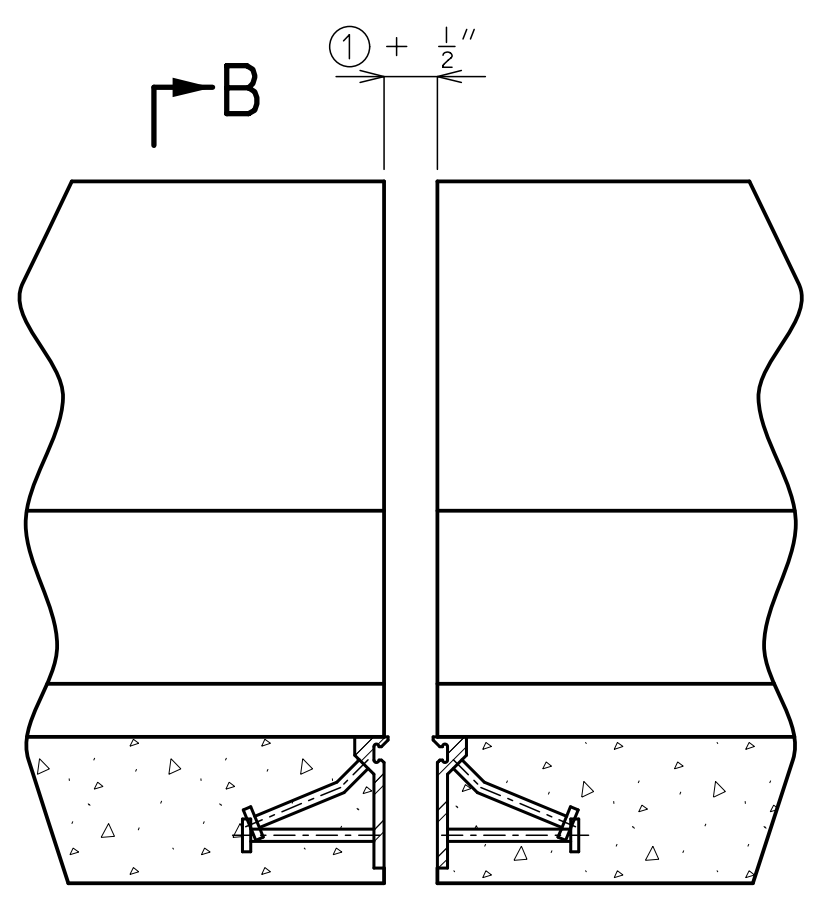
KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



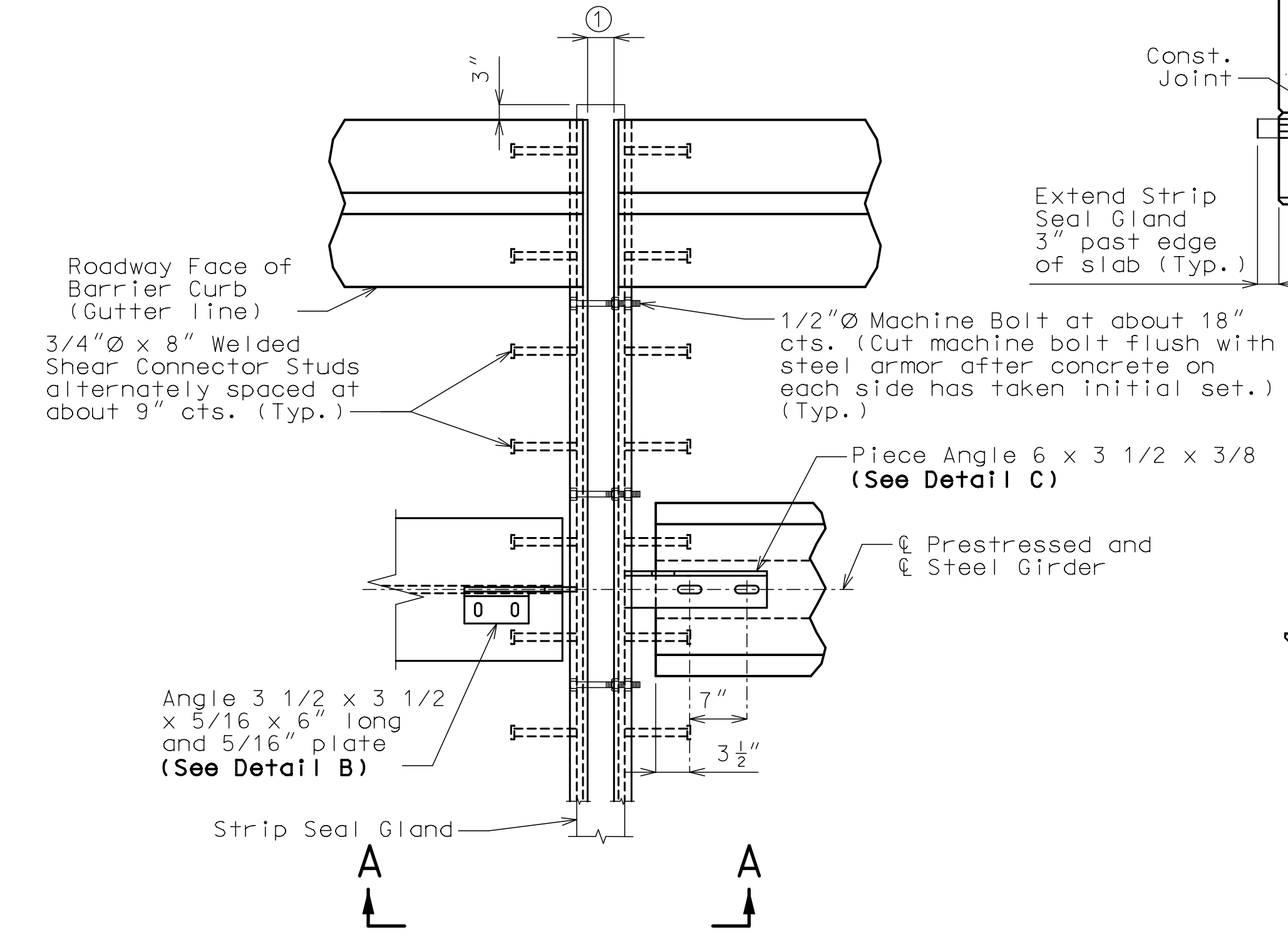
**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1468  
CERTIFICATE OF AUTHORITY NUMBER F00970024



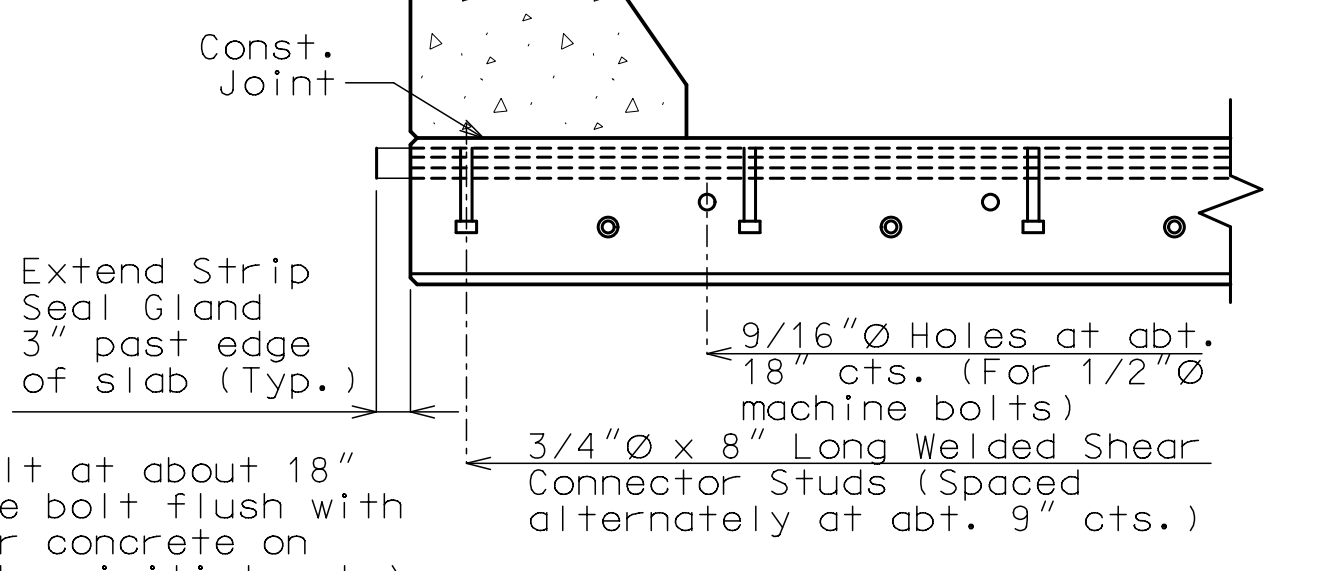
**SECTION A-A**  
Note: Strip seal gland not shown for clarity.  
\* Dimension along  $\phi$  Girder



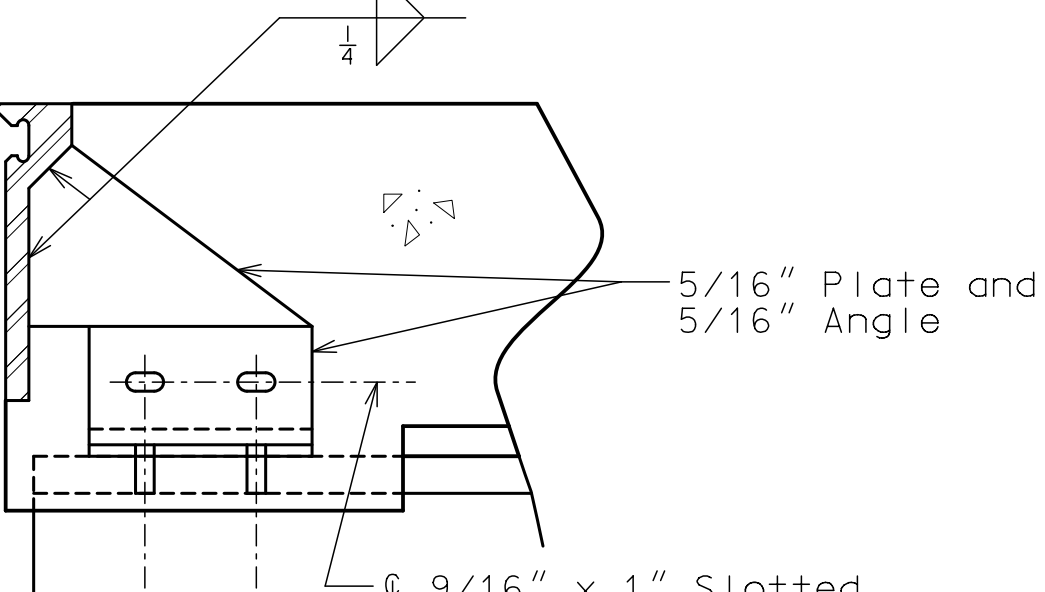
Note: Strip seal gland not shown for clarity.  
**PART ELEVATION OF BARRIER CURB**



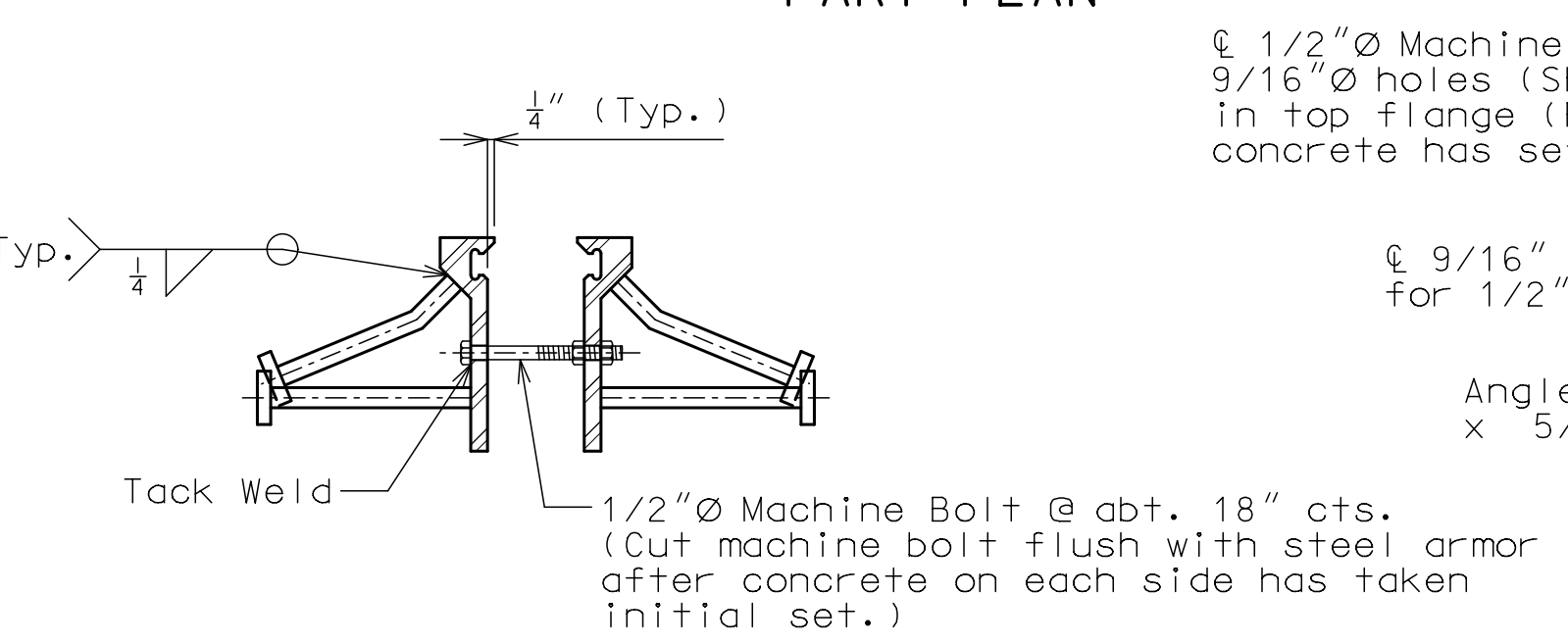
**PART PLAN**



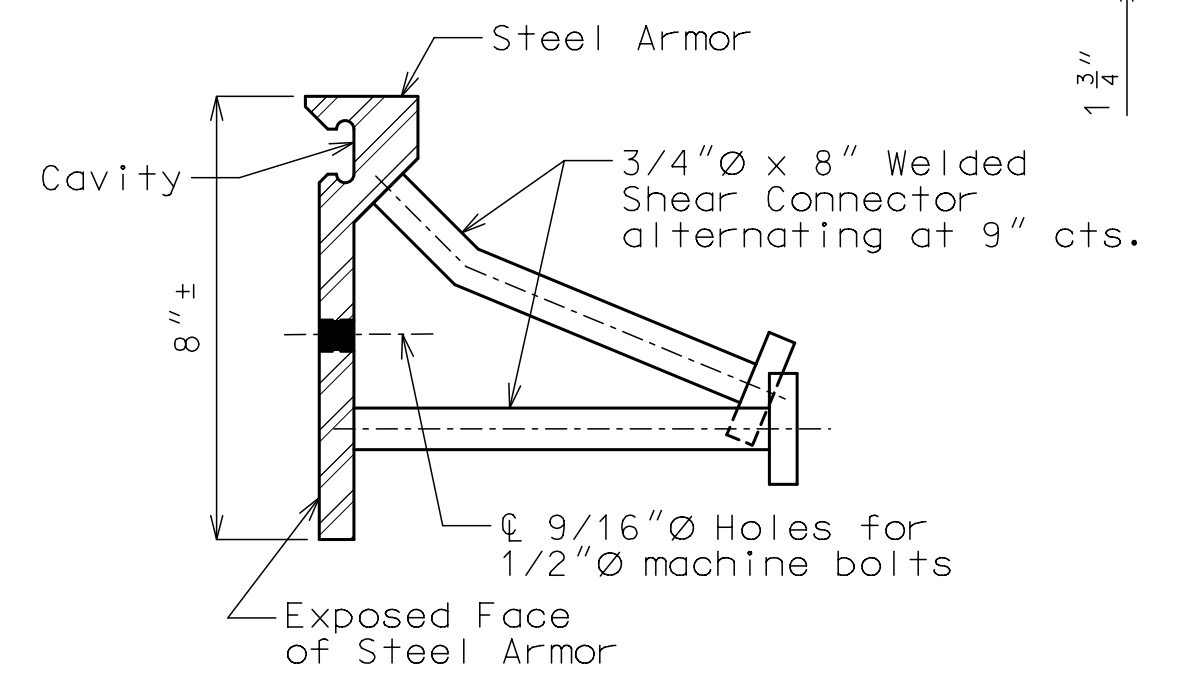
**PART SECTION B-B**



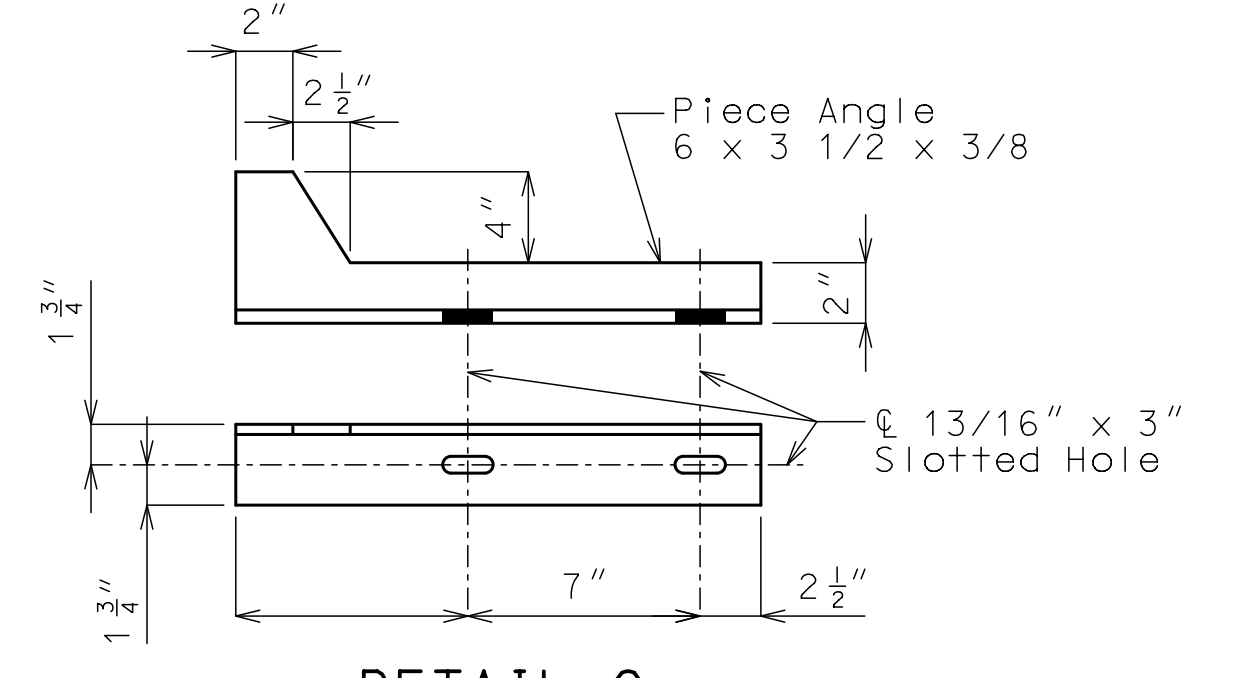
**DETAIL B**



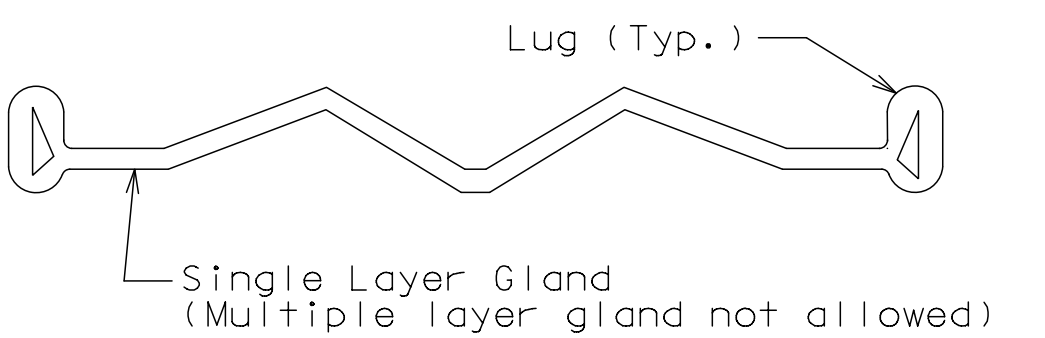
**DETAIL A**



**DETAIL OF JOINT ARMOR**



**DETAIL C**



**DETAIL OF GLAND**

**Table of Allowed Transverse Strip Seal Expansion Joint System**

	Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	Allowed Installation Gap @ Air/Surface Temperature <sup>①</sup>						<sup>③</sup>
				@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
S052B23	D S Brown	L2-400	1 5/16"	2 7/16"	2 5/16"	2 1/4"	2 3/16"	2 1/16"	2"	□

**DETAILS OF STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT (STEEL TO PS CONCRETE)**

Detailed MAR 2019  
Checked MAR 2019

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

Sheet No. 13 of 14

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER F00970024

DESCRIPTION

DATE

DATE PREPARED  
12/18/18

DATE  
3/11/19  
ROUTE  
STATE  
MO  
DISTRICT  
SHEET NO.  
BR 13  
COUNTY  
JACKSON  
JOB NO.  
CONTRACT ID.  
PROJECT NO.  
89005588  
BRIDGE NO.

ESTIMATED QUANTITIES						
ITEM	UNITS	BRIDGE #3	BRIDGE #5	BRIDGE #7	BRIDGE #9	SUB TOTAL
		S029B42	S052B21	S072B21	S079B33	
Expansion Joint Cleanout	EA.	2	3	1	2	8



Bridge #3	S029B42
Facility Carried	Bedwy-Woodswether
Location	S of Missouri River
Feature(s) Indicated	BNSF Railroad Tracks



Bridge #5	S052B21
Facility Carried	Grand Avenue
Location	S of 21st Street
Feature(s) Indicated	KC Terminal Railway



Bridge #7	S072B21
Facility Carried	Stadium Drive
Location	Near Leeds Trafficway
Feature(s) Indicated	Big Blue River



Bridge #9	S079B33
Facility Carried	JC Nichols Parkway
Location	At Ward Parkway
Feature(s) Indicated	Brush Creek



DATE	3/11/19
DATE PREPARED	12/18/18
ROUTE	--
STATE	MO
DISTRICT	BR
SHEET NO.	14
COUNTY	JACKSON
JOB NO.	
CONTRACT ID.	
PROJECT NO.	89005588
BRIDGE NO.	

DATE	DESCRIPTION

KCMO Public Works  
5300 Municipal Avenue  
Kansas City, MO 64120



**benesch**  
14 W. 3rd Street, SUITE 220  
KANSAS CITY, MO 64105  
816/221-4222, FAX 913/441-1488  
CERTIFICATE OF AUTHORITY NUMBER F009T0024

BRIDGE LOCATIONS FOR EXPANSION JOINT CLEANOUT