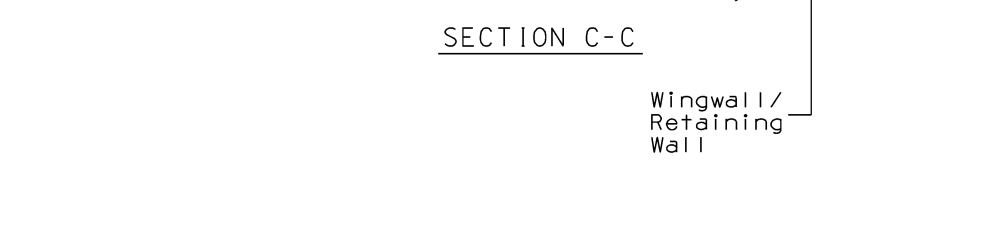
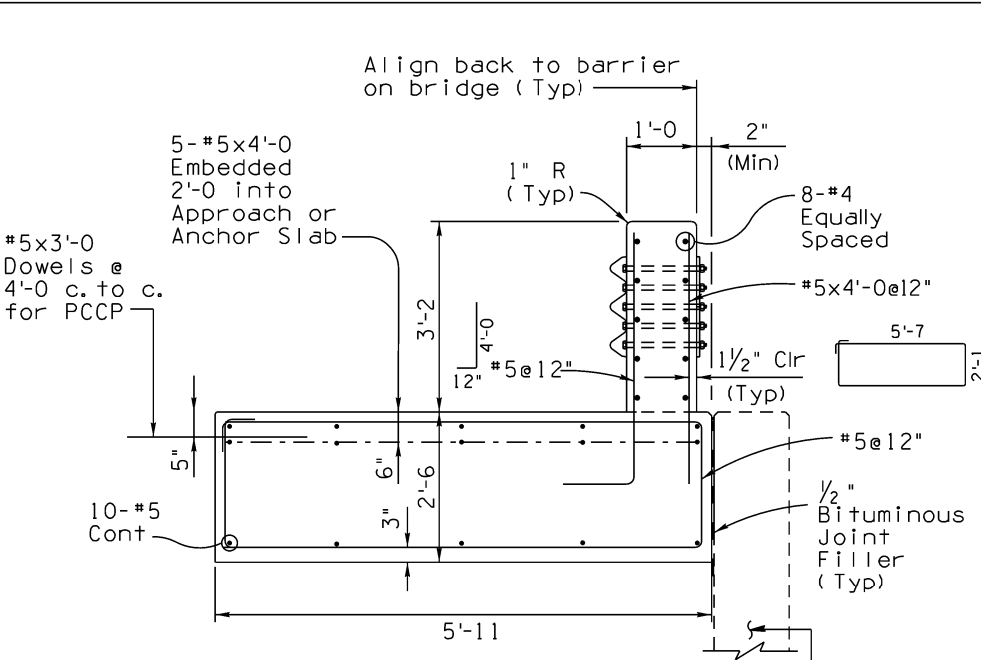
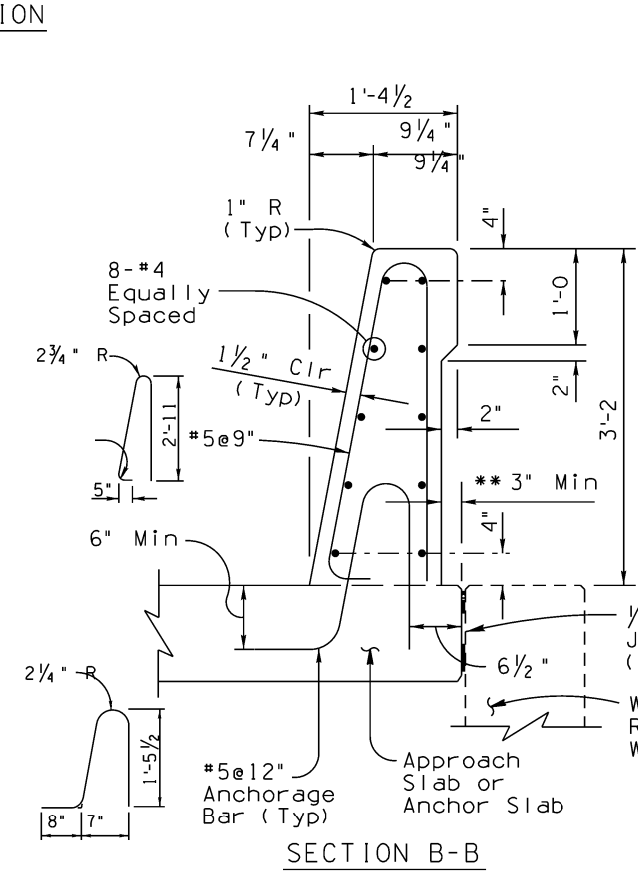
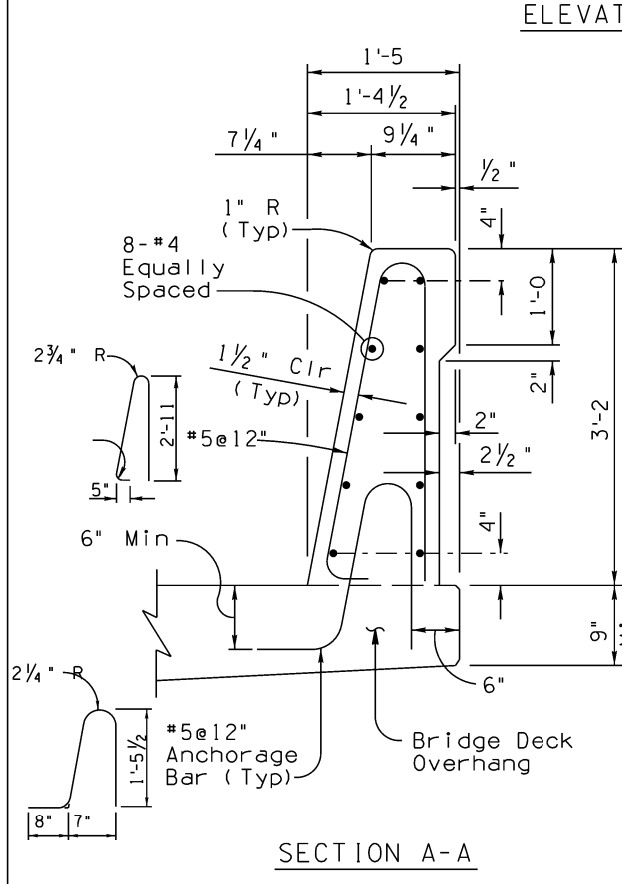
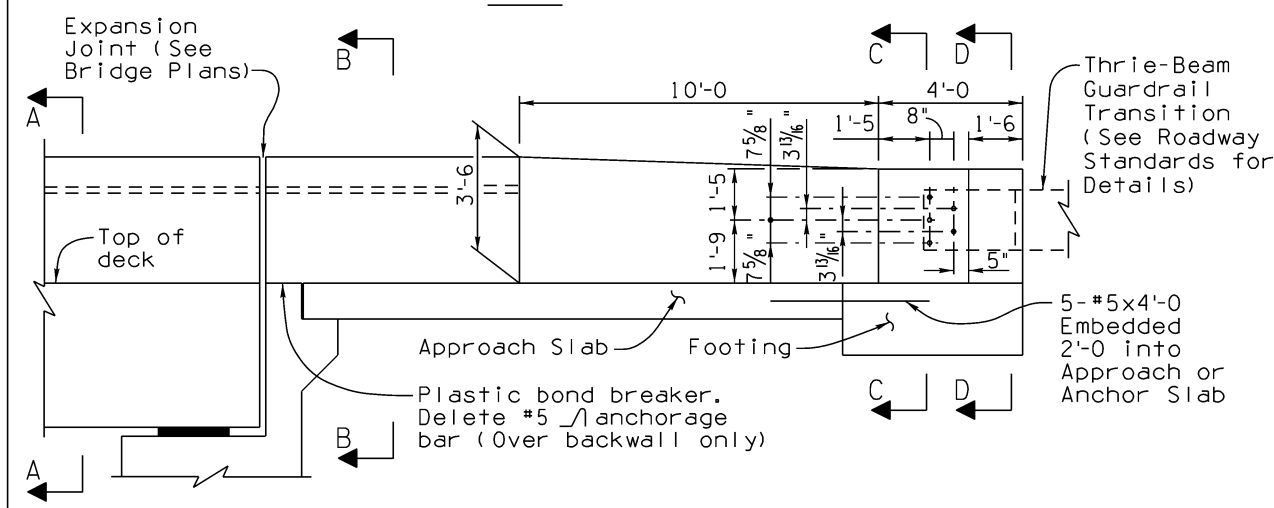
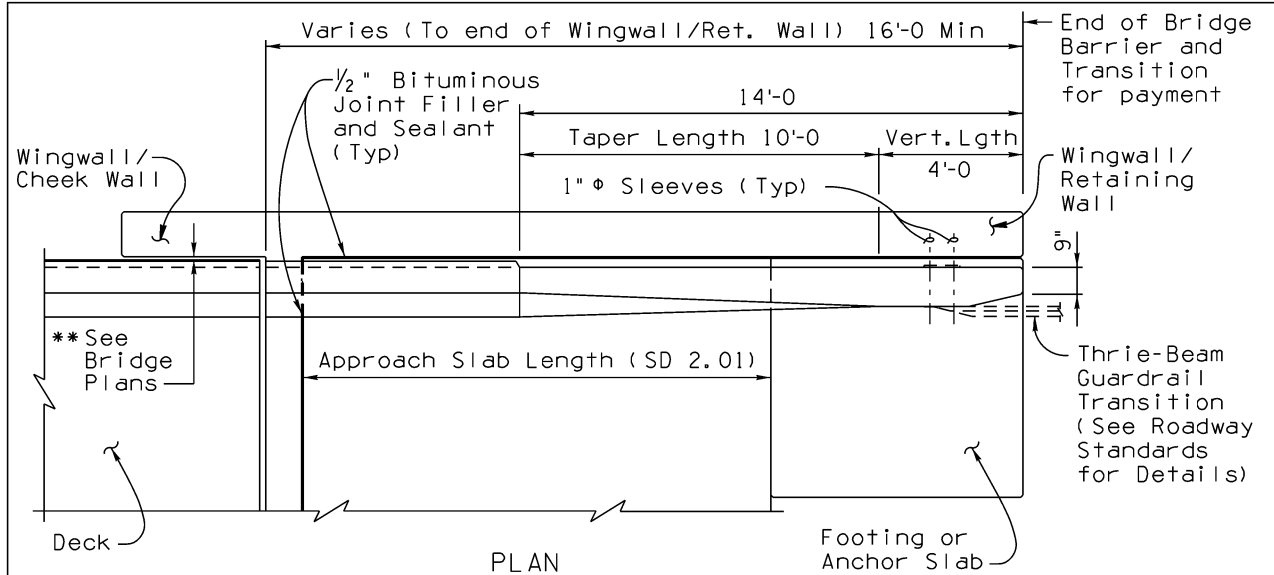


Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

PRIOR DISTRIBUTION DATE 02/23



**AC OVERLAY NOTE:**  
 This barrier was designed to allow for the concrete deck to receive an AC overlay with a thickness not exceeding 2 inches.

**GENERAL NOTES:**  
 Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.  
 Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017.

This barrier has been evaluated and approved to be of equal strength to barriers with like geometry, which were successfully crash tested to meet MASH 16 requirements for Test Level 4.

**Design Loads:**  
 Dynamic Load (For barrier Design) = 80<sup>k</sup>  
 Dynamic load is based on NCHRP 20-07(395) MASH Equivalency of NCHRP Report 350 - Approved Bridge Railings.  
 Equivalent Static Load (For footing design) = 28<sup>k</sup>  
 Footing design is based on NCHRP Report 663.

All Concrete shall be Class "S" (f'c = 4000 psi).  
 Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be epoxy coated at locations above an elevation of 4000 feet.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

All reinforcing steel shall have 2 inch clear cover unless noted otherwise.  
 Concrete barriers on continuous superstructures shall have 1/2 inch bituminous joint filler in open joints over piers.

Embed 1/2 inch, Bridge Number and Year Built, using 1 1/2 inch w x 2 inch h number impressions in concrete, located as shown at the approach end of the outside lane.

Anchorage bars and footing will be included in the pay item for the barrier (Item No. 6011151).

Omit bridge barrier transition when concrete barrier is continuous beyond the bridge.

Dimensions shall not be scaled from drawings.

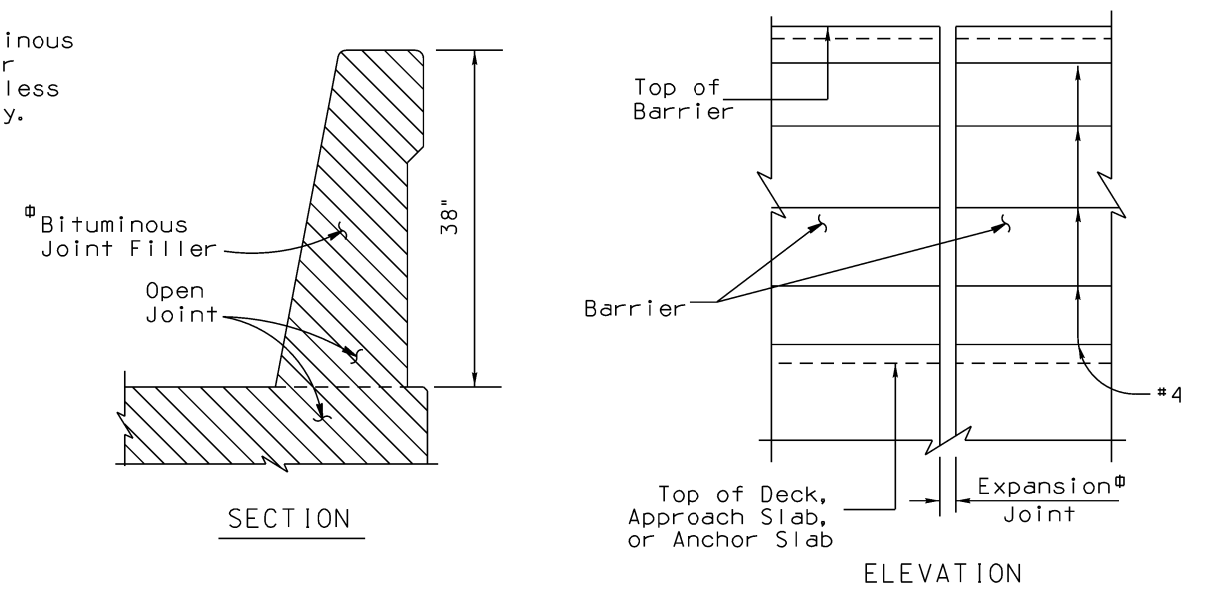
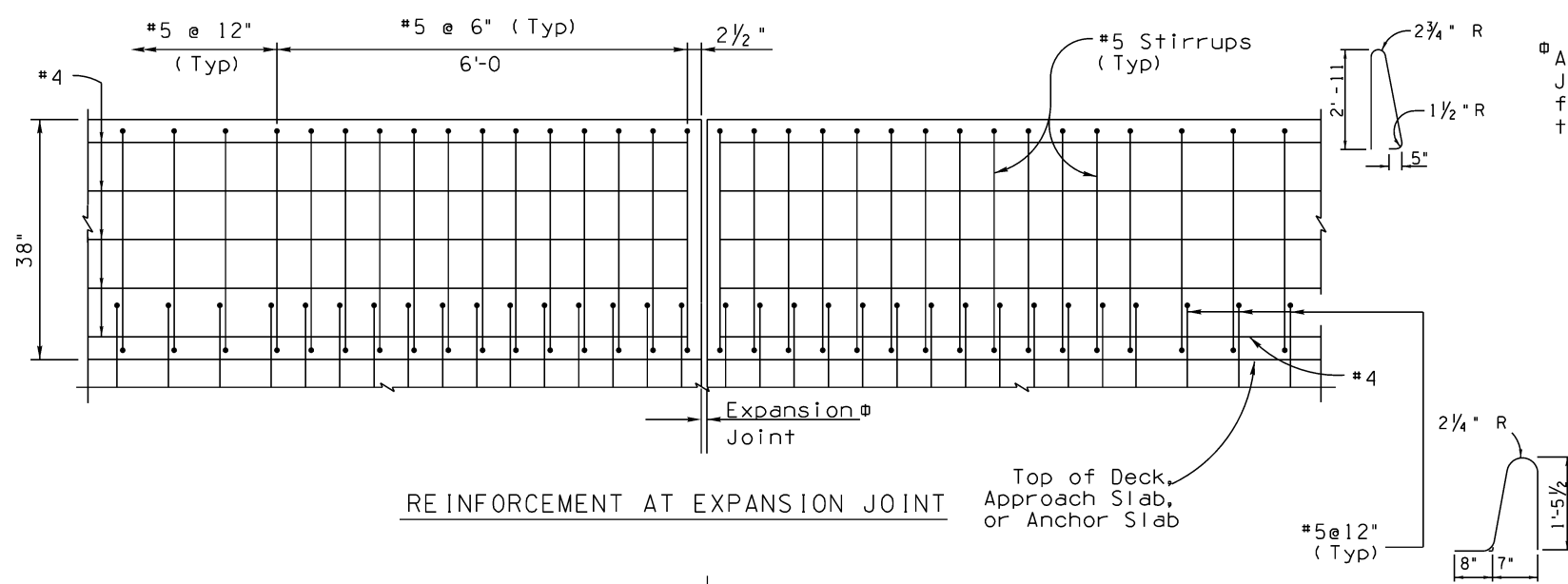
\*\* A 1 inch bituminous joint filler thickness is assumed at the cheek wall. Verify the thickness from the bridge plans.

Item	38" Single Slope Bridge Concrete Barrier and Transition
Item No.	6011150
Measurement	Linear Foot

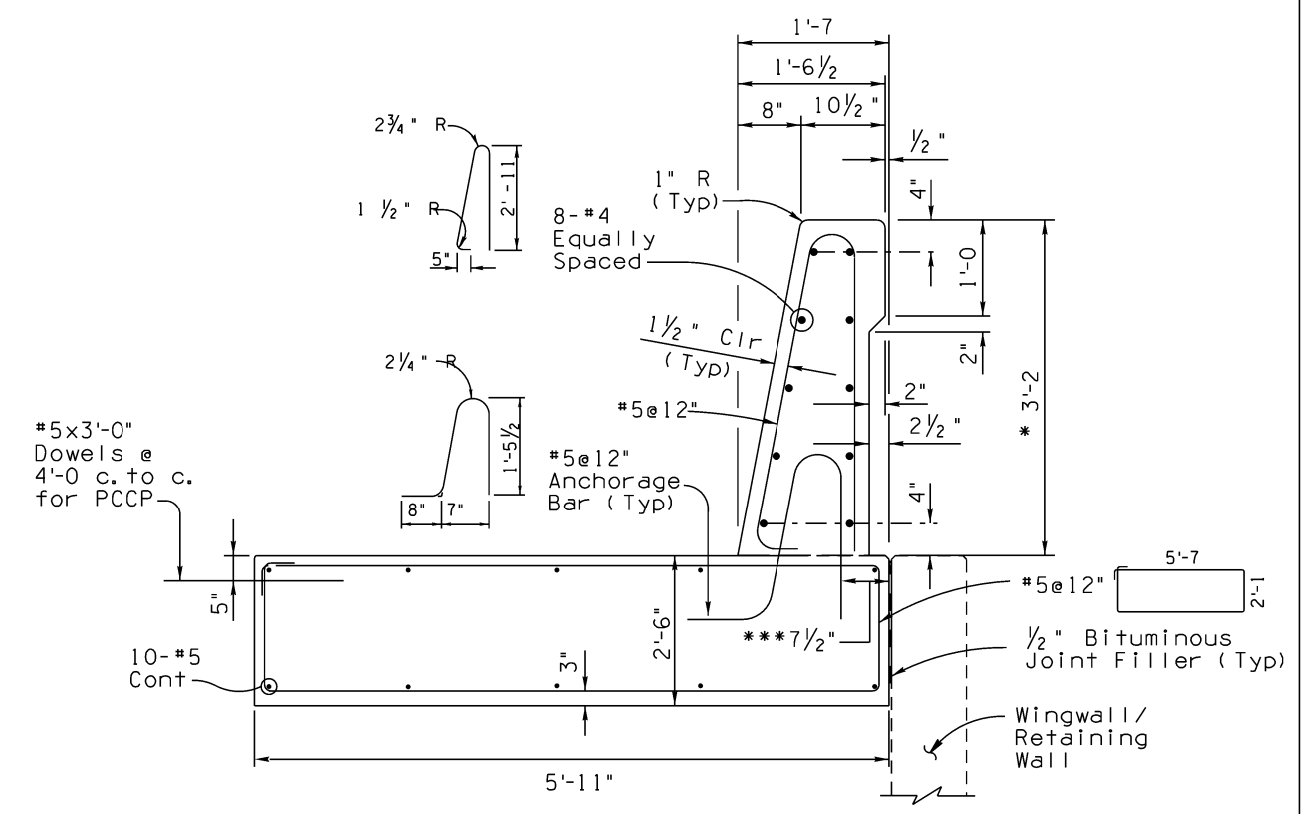
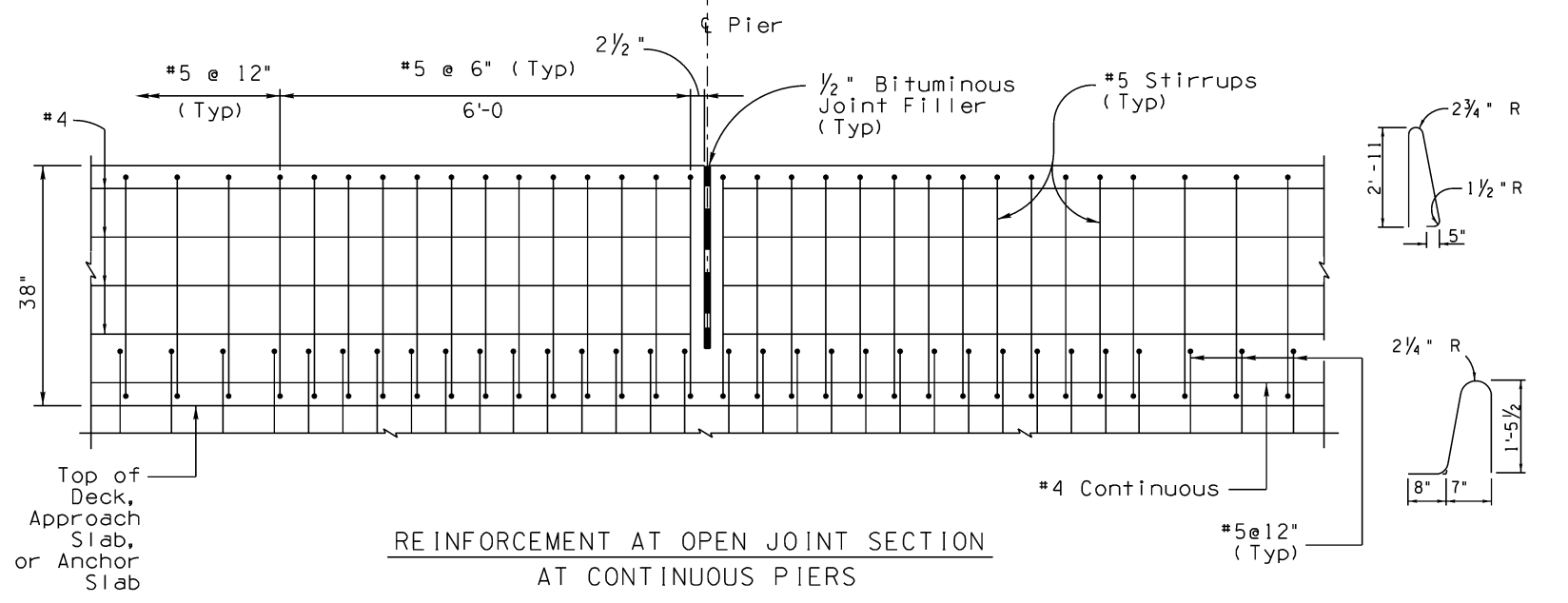
STANDARDS ENGINEER	B. SINGH
RECOMMENDED FOR APPROVAL	D. BENTON
GROUP MANAGER	
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	09/24 DATE

ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	
38" SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION	DRAWING NO. SD 1.10 (1 of 2)

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.  
 PRIOR DISTRIBUTION DATE 05/21

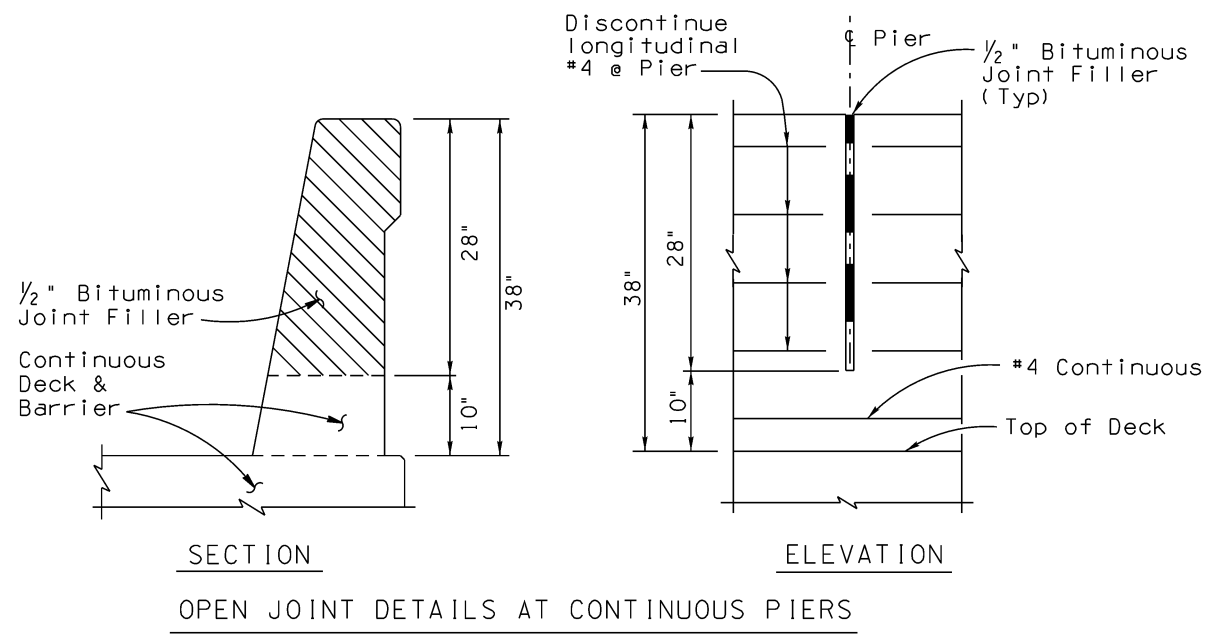


OPEN JOINT DETAILS AT EXPANSION JOINTS



\* When using barrier on footing beyond the approach slab, the minimum length of the barrier footing shall be 5'-0.

\* When concrete barrier on footing is being used for other applications, the minimum length of barrier on footing shall be 23'-0.



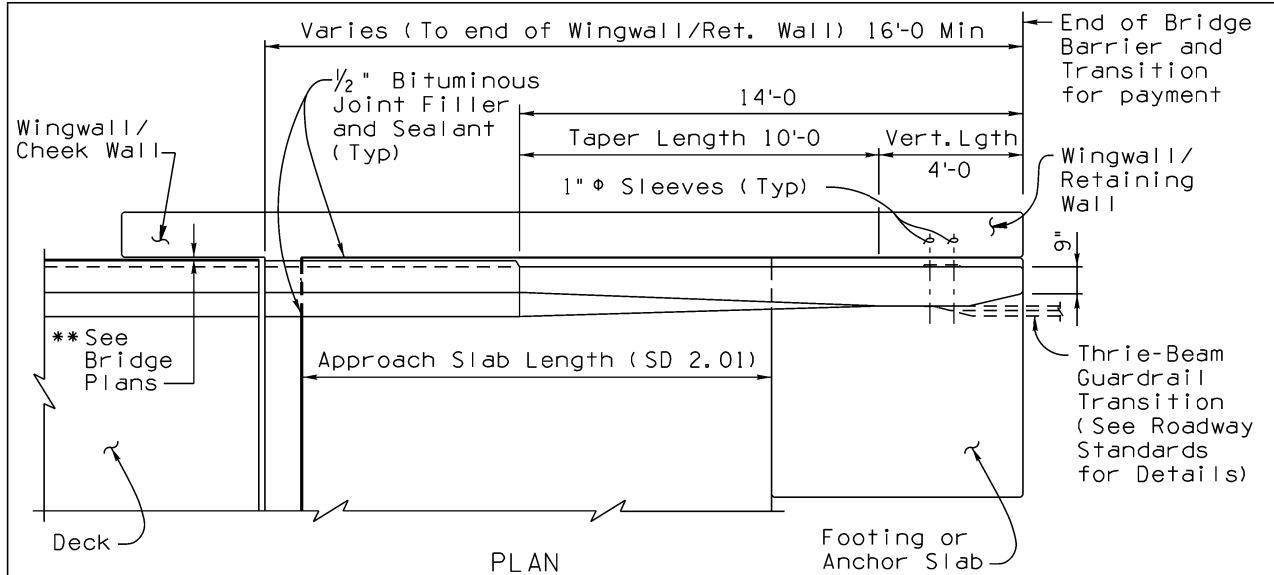
CONTINUOUS BARRIER ON FOOTING  
BARRIER HEIGHT = 38"

STANDARDS ENGINEER B. SINGH	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. BENTON		
APPROVED	38" SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION	DRAWING NO. SD 1.10 (2 of 2)
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	09/24 DATE	

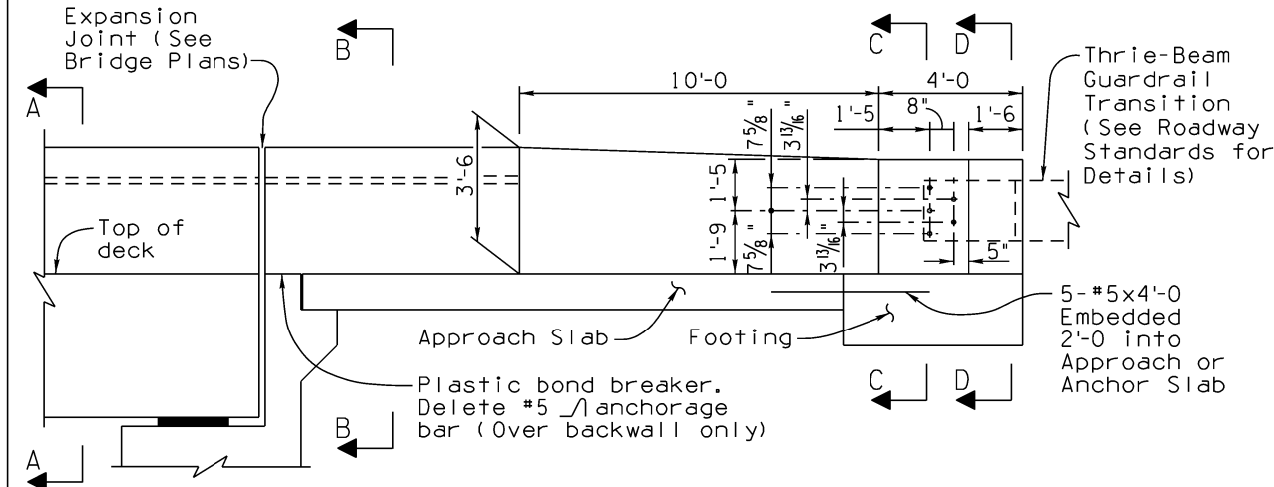
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

02/23

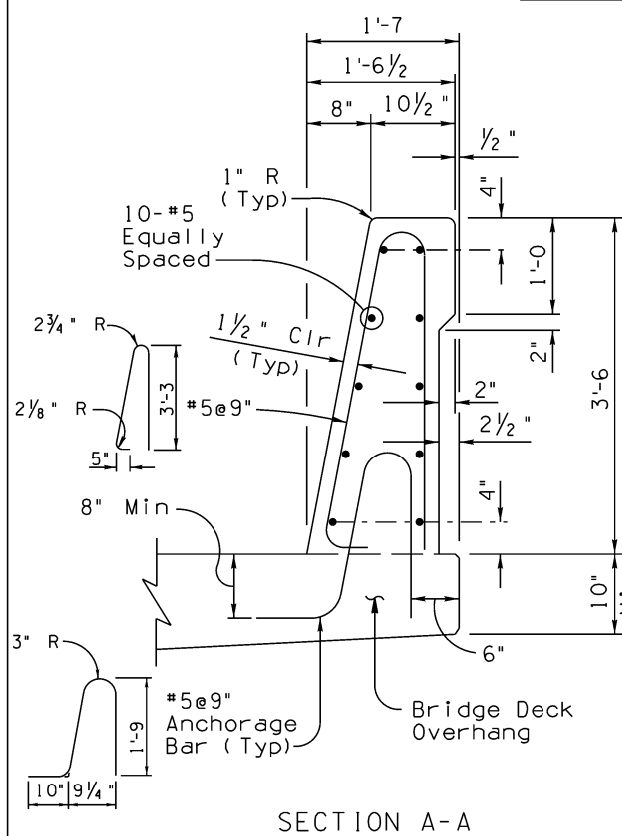
PRIOR DISTRIBUTION DATE



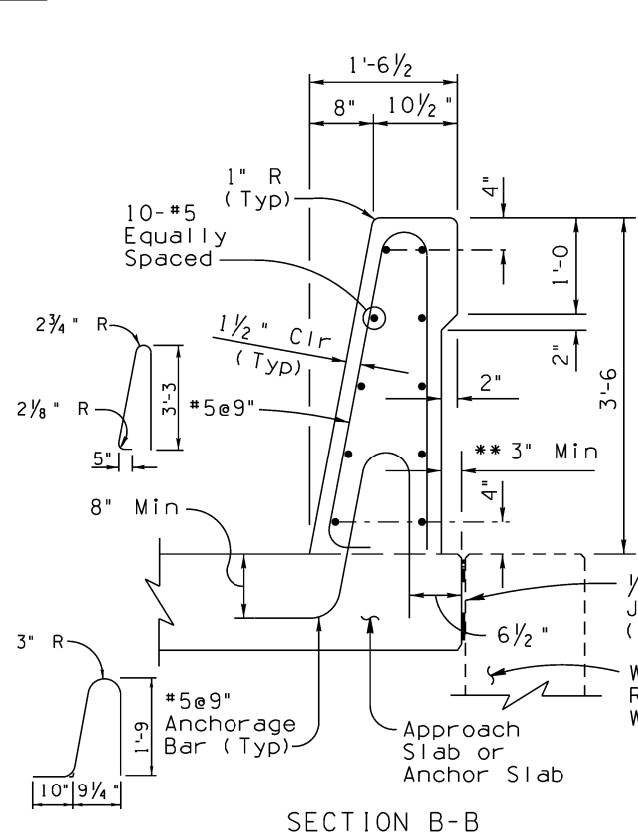
PLAN



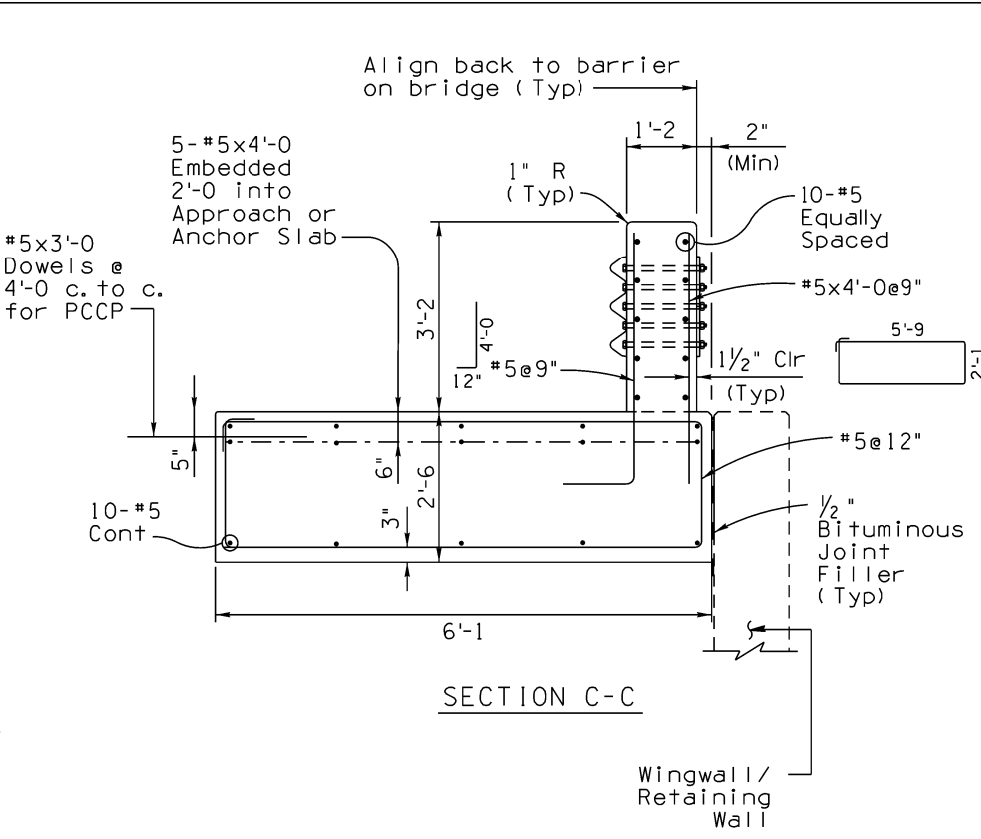
ELEVATION



SECTION A-A



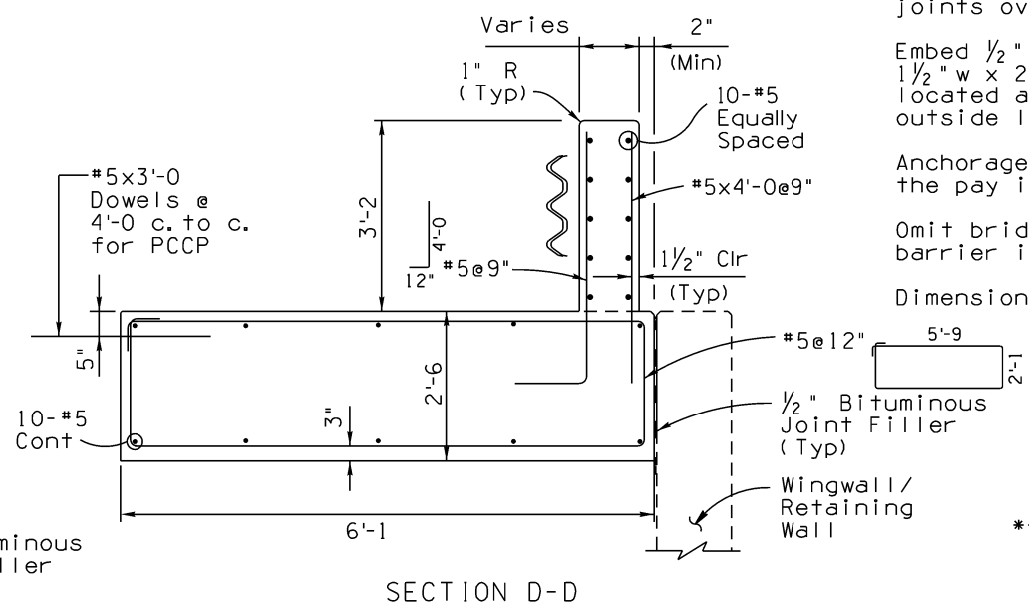
SECTION B-B



SECTION C-C

**AC OVERLAY NOTE:**

No AC overlay will be allowed on the bridge deck when the 42" single slope concrete barrier is used.



SECTION D-D

**GENERAL NOTES:**

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017.

This bridge barrier has been evaluated and approved to be of equal strength to barriers with like geometry, which were successfully crash tested to meet MASH 16 requirements for Test Level 5.

**Design Loads:**

Dynamic Load (For barrier Design) = 160<sup>k</sup>

Dynamic load is based on NCHRP 20-07(395) MASH Equivalency of NCHRP Report 350 - Approved Bridge Railings.

Equivalent Static Load (For footing design) = 28<sup>k</sup>

Footing design is based on NCHRP Web-Only Document 326

Continuous barrier on footing designed as Test Level 4 barrier system.

All Concrete shall be Class "S" (f'c = 4000 psi).

Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60. All reinforcing shall be epoxy coated at locations above an elevation of 4000 feet.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

All reinforcing steel shall have 2 inch clear cover unless noted otherwise.

Concrete barriers on continuous superstructures shall have 1/2 inch bituminous joint filler in open joints over piers.

Embed 1/2 inch, Bridge Number and Year Built, using 1 1/2 inch w x 2 inch h number impressions in concrete, located as shown at the approach end of the outside lane.

Anchorage bars and footing will be included in the pay item for the barrier (Item No. 6011151).

Omit bridge barrier transition when concrete barrier is continuous beyond the bridge.

Dimensions shall not be scaled from drawings.

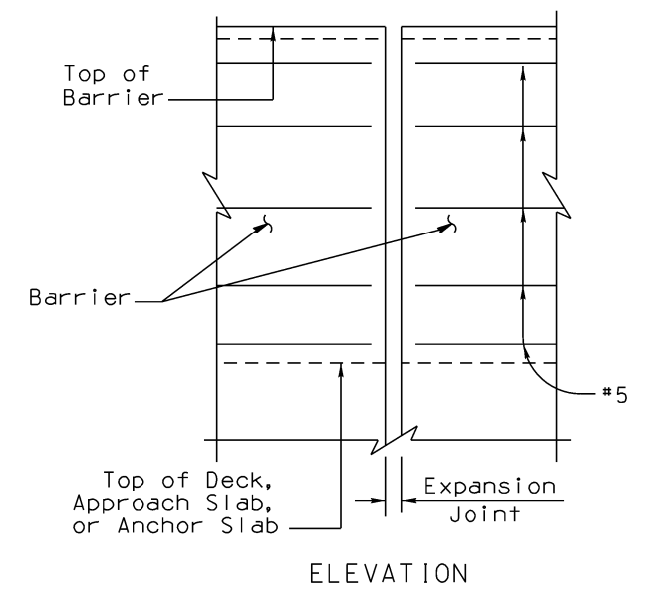
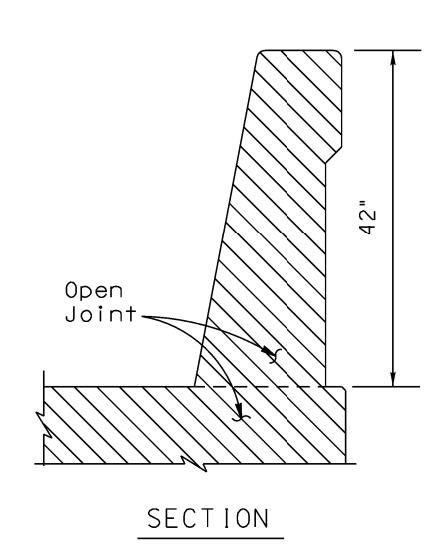
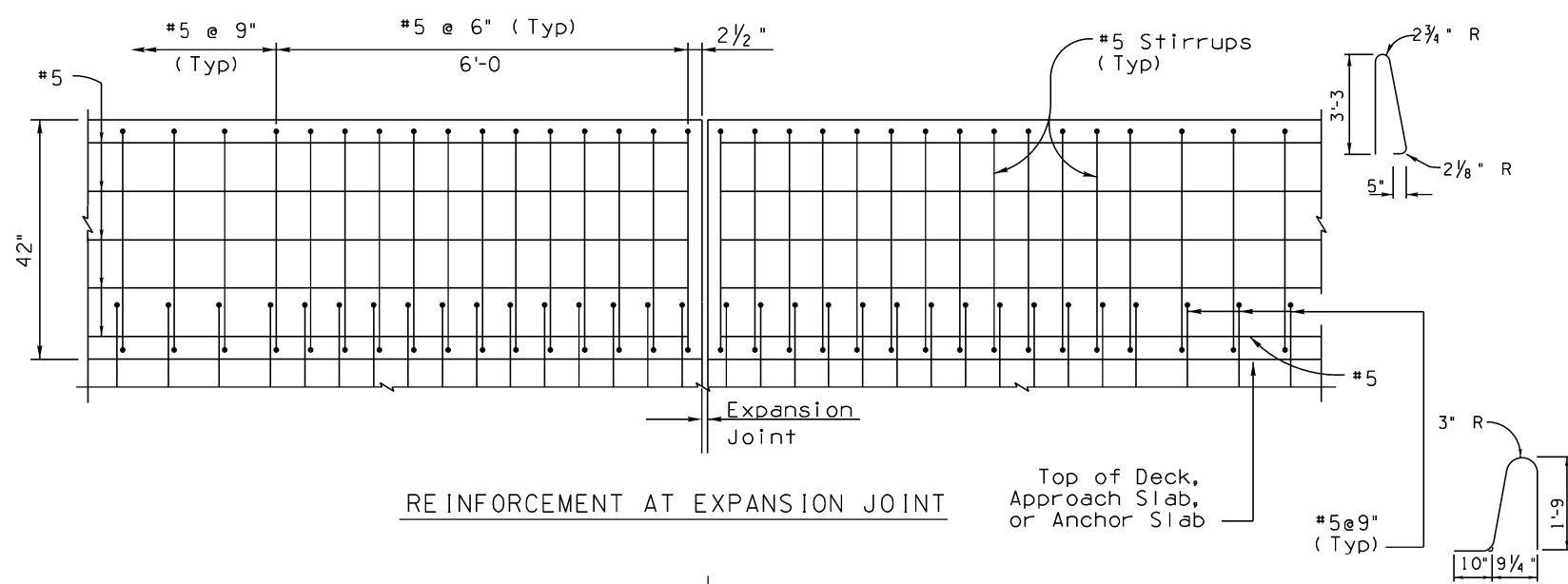
\*\* A 1 inch bituminous joint filler thickness is assumed at the cheek wall. Verify the thickness from the bridge plans.

Item	42" Single Slope Bridge Concrete Barrier and Transition
Item No.	6011151
Measurement	Linear Foot

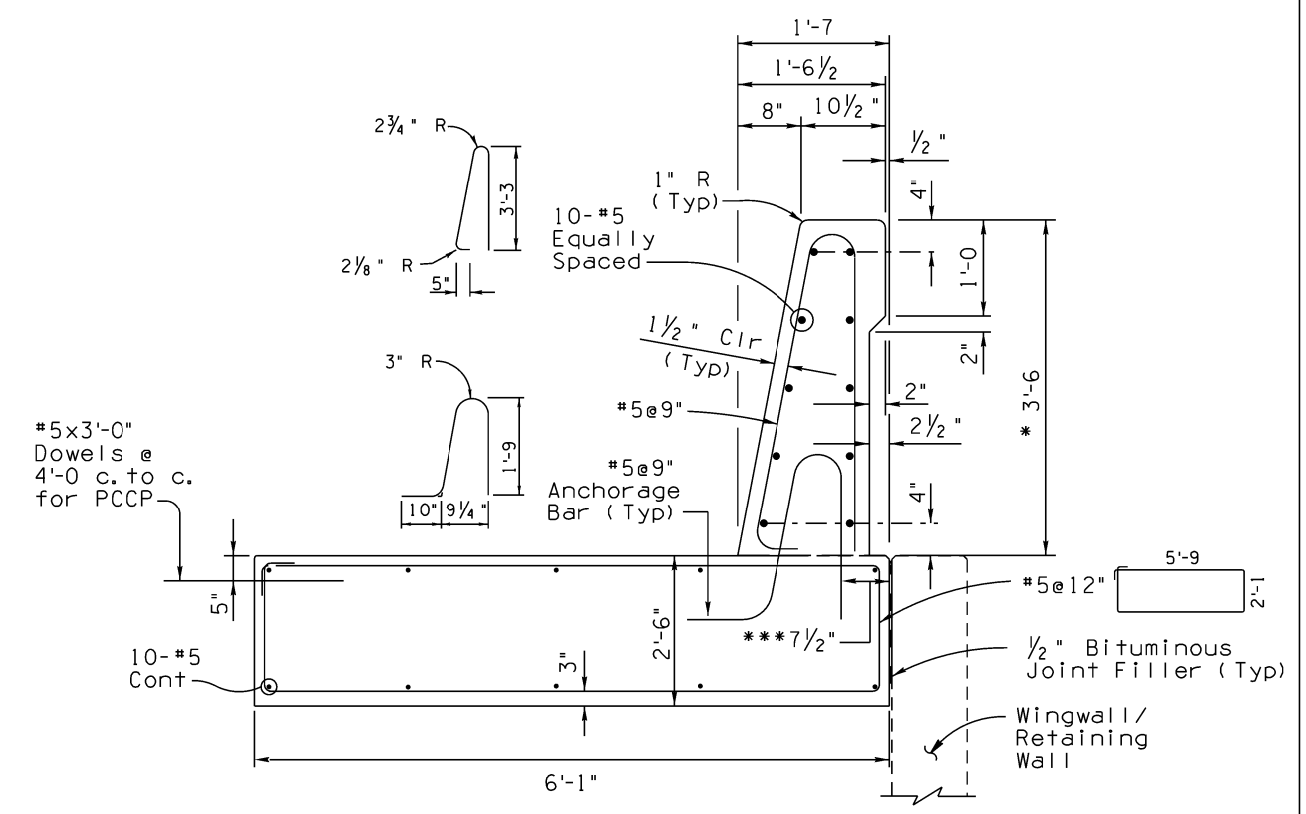
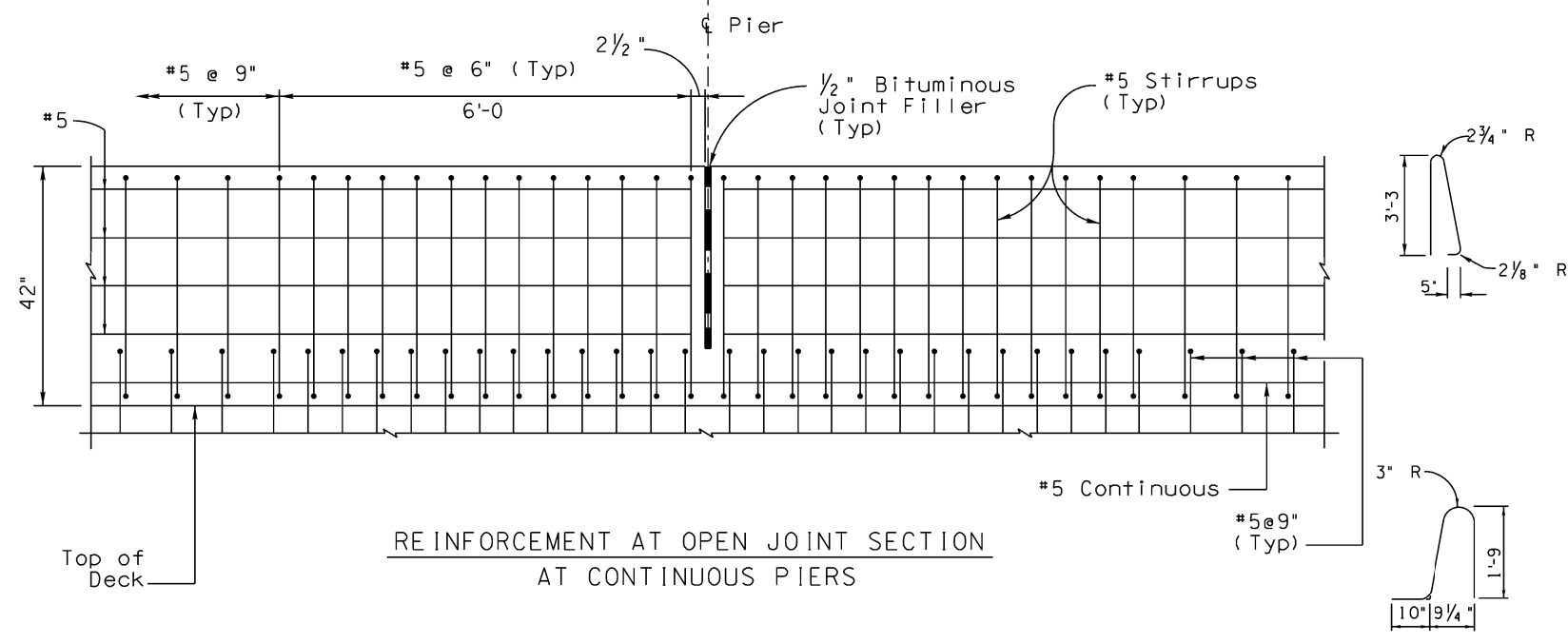
STANDARDS ENGINEER	B. SINGH
RECOMMENDED FOR APPROVAL	D. BENTON
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	09/24 DATE

ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	
42" SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION	DRAWING NO. SD 1.11 (1 of 2)

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.  
 PRIOR DISTRIBUTION DATE 05/21

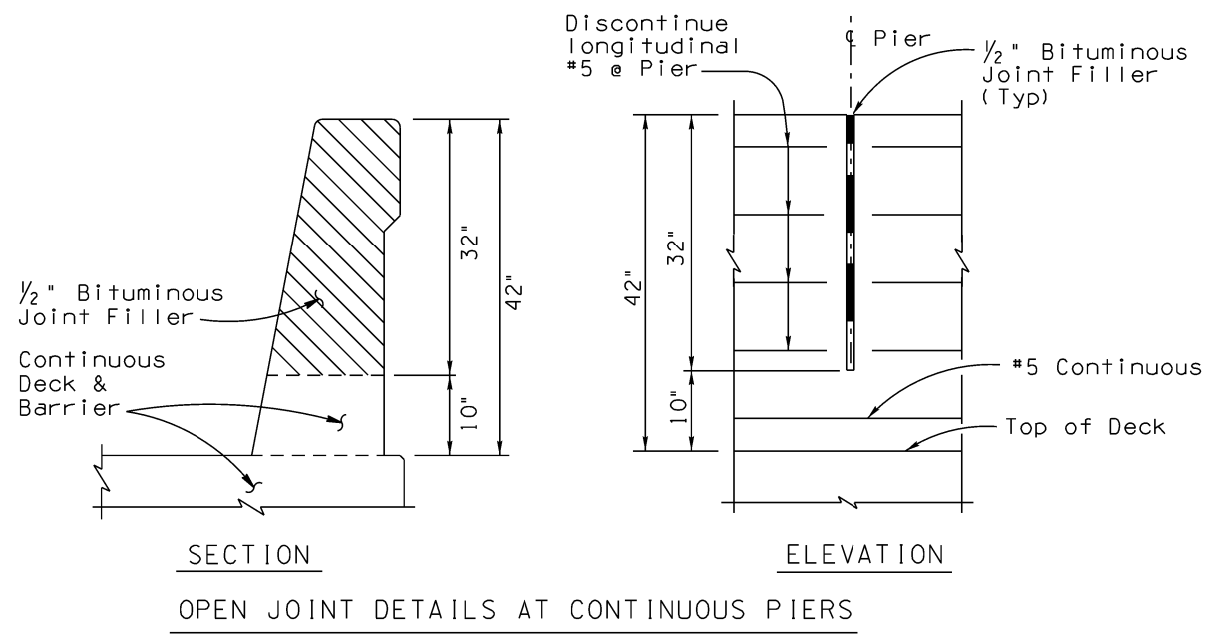


**OPEN JOINT DETAILS AT EXPANSION JOINTS**

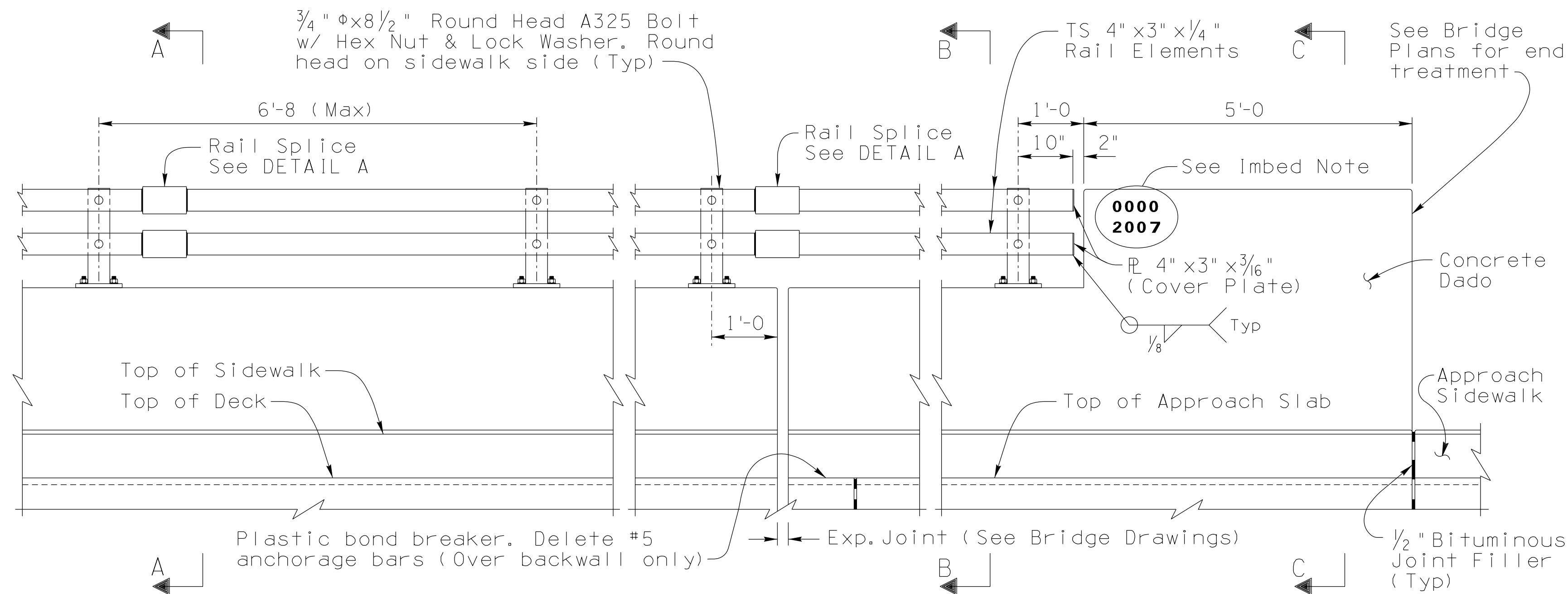


\* When using barrier on footing beyond the approach slab, or anchor slab, the minimum length of the barrier footing shall be 5'-0.

\* When concrete barrier on footing is being used for other applications, the minimum length of barrier on footing shall be 23'-0.



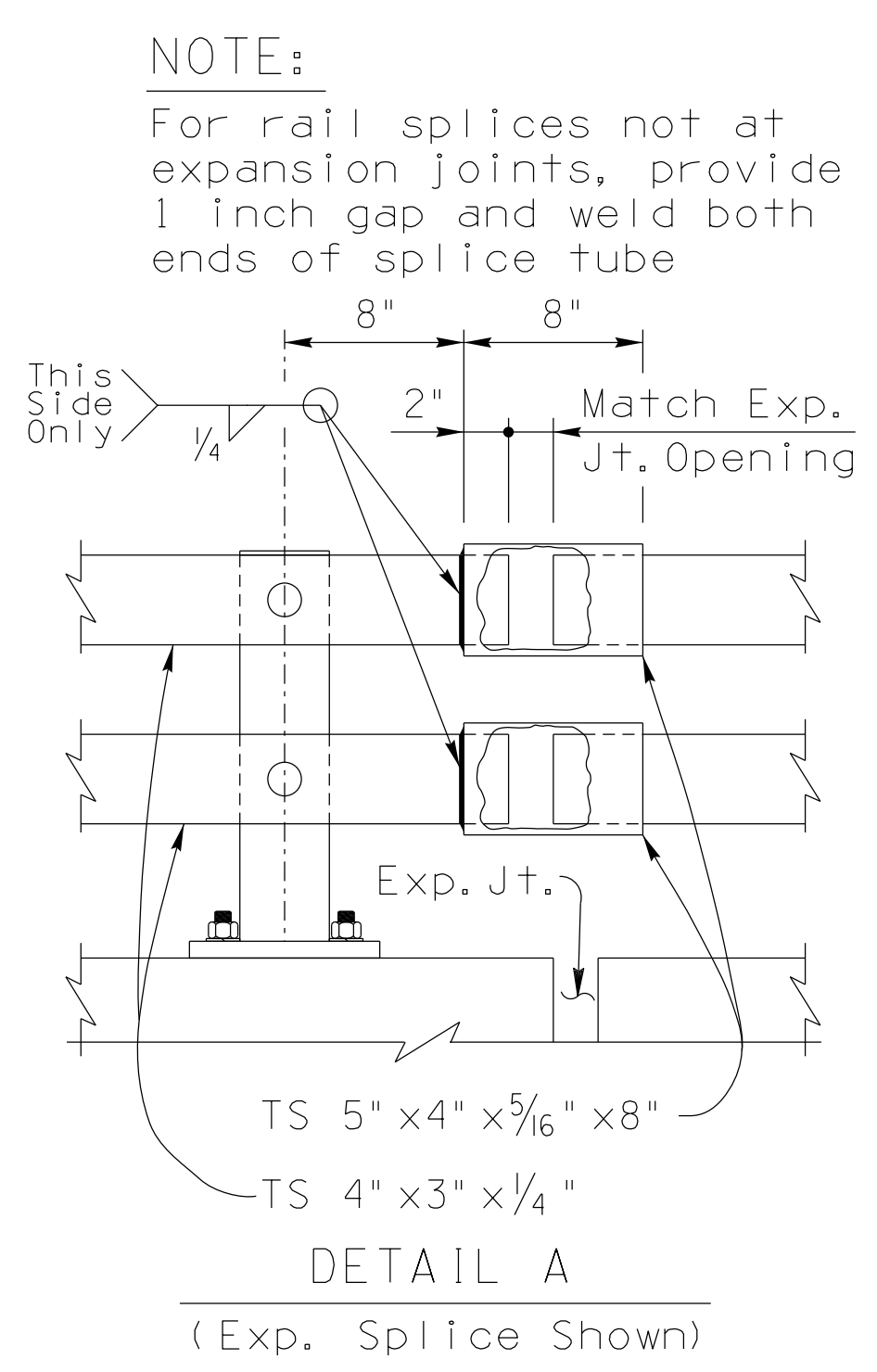
STANDARDS ENGINEER B. SINGH	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. BENTON	42" SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION	
APPROVED	STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DRAWING NO. SD 1.11 (2 of 2)
	09/24 DATE	



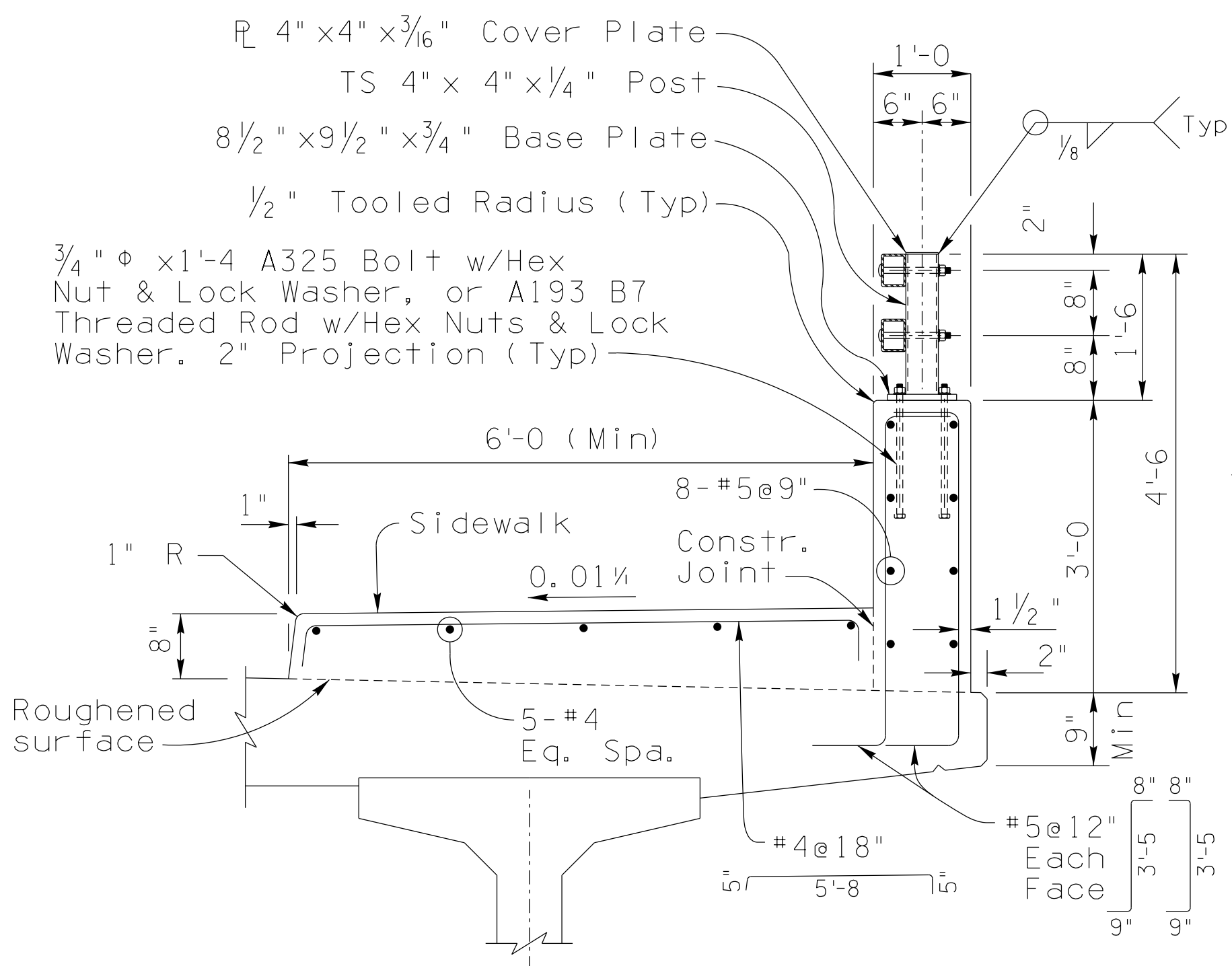
TYPICAL PANEL ELEVATION

ELEVATION AT EXP. JT.

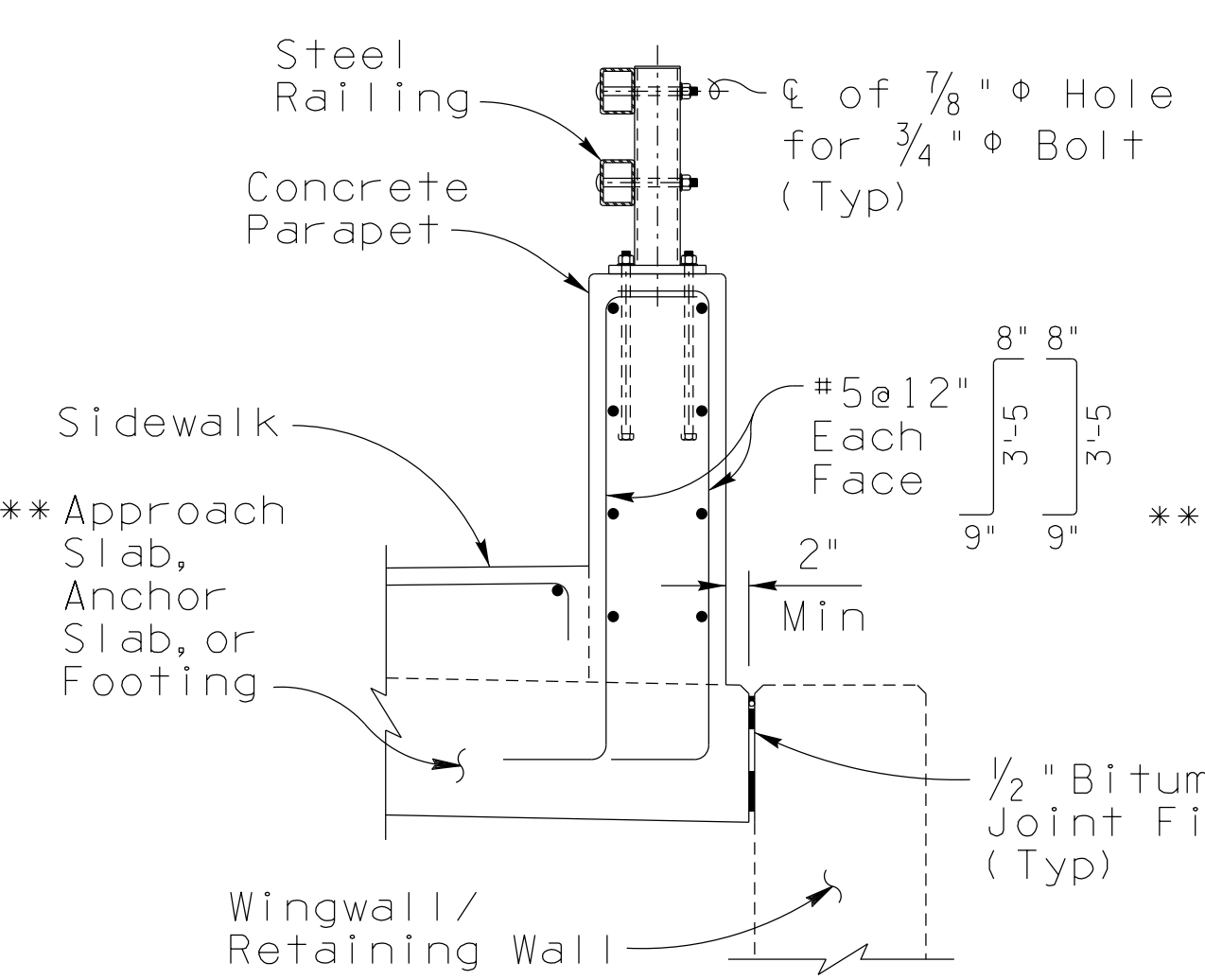
ELEVATION AT END POST



DETAIL A  
(Exp. Splice Shown)

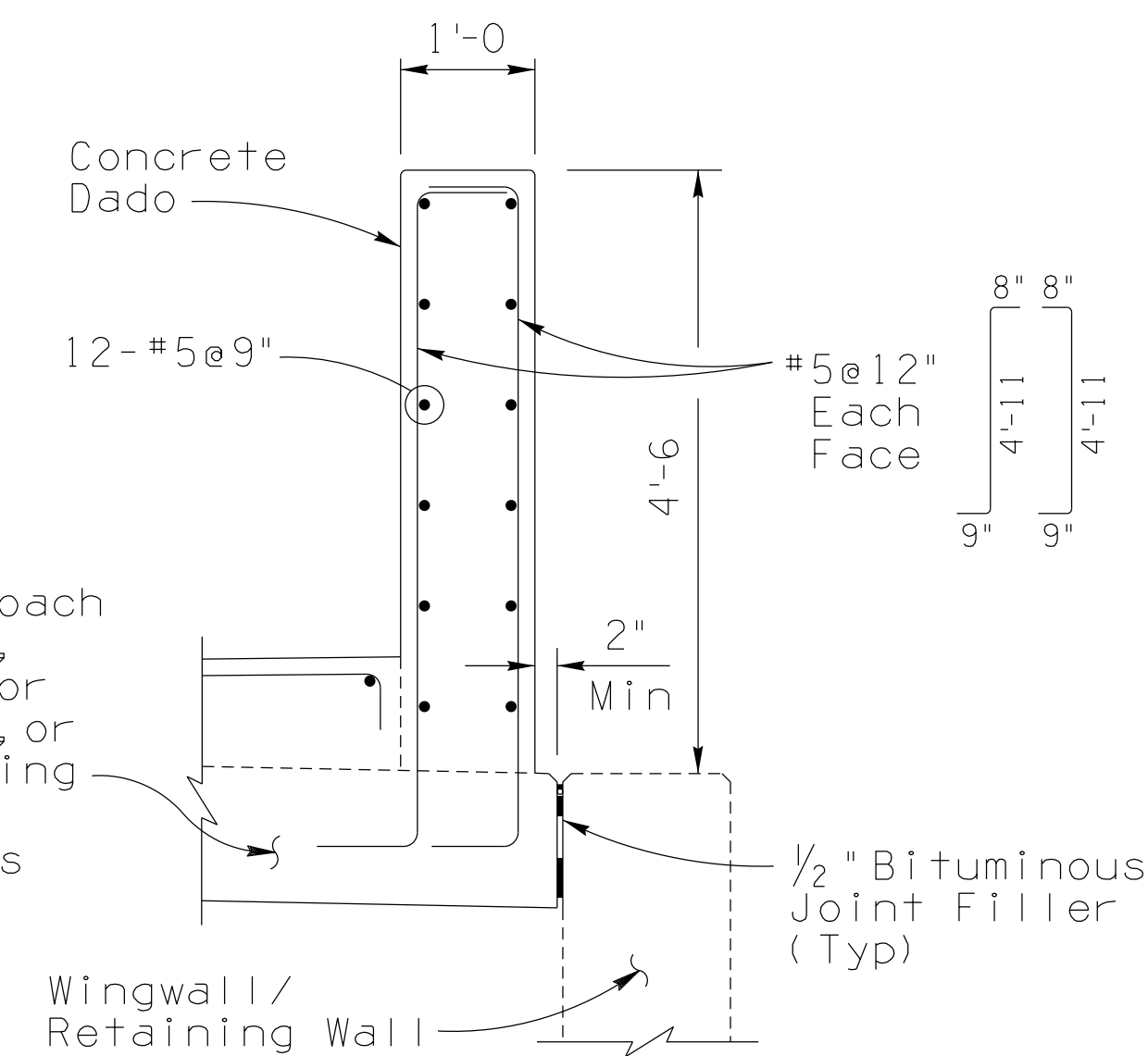


SECTION A-A



SECTION B-B

\*\* See SD 1.10 for footing details



SECTION C-C

RAILING NOTES:

See Bridge Plans for rail layout, elevation, joint locations and rail end treatments.

All exposed steel edges shall be ground smooth. All structural steel rail assembly components shall be galvanized after fabrication in accordance with ASTM A123. All galvanizing that has been damaged in handling, transportation or welding shall be repaired by the application of a paste compound of an approved zinc powder and flux.

All post bolt heads shall be on sidewalk side. All bolts, nuts and washers shall be galvanized in accordance with the requirements of ASTM A153.

For fence attachment details, see SD 1.13. (Lower rail tube is not required with fence).

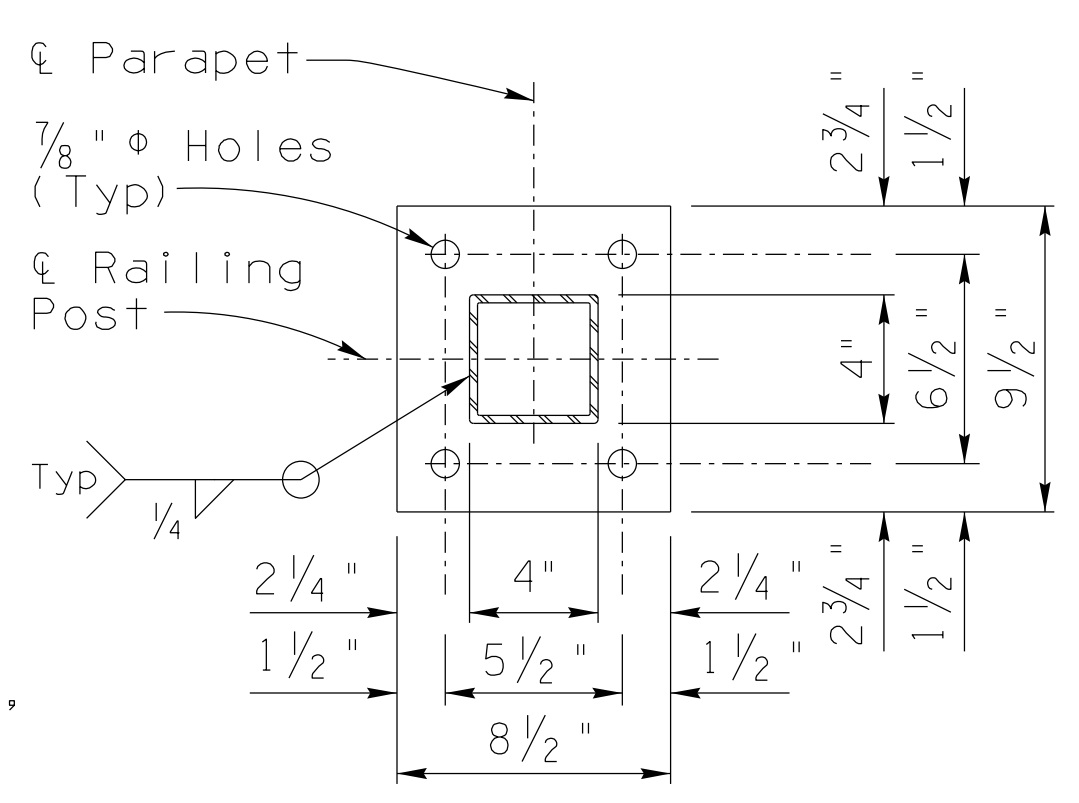
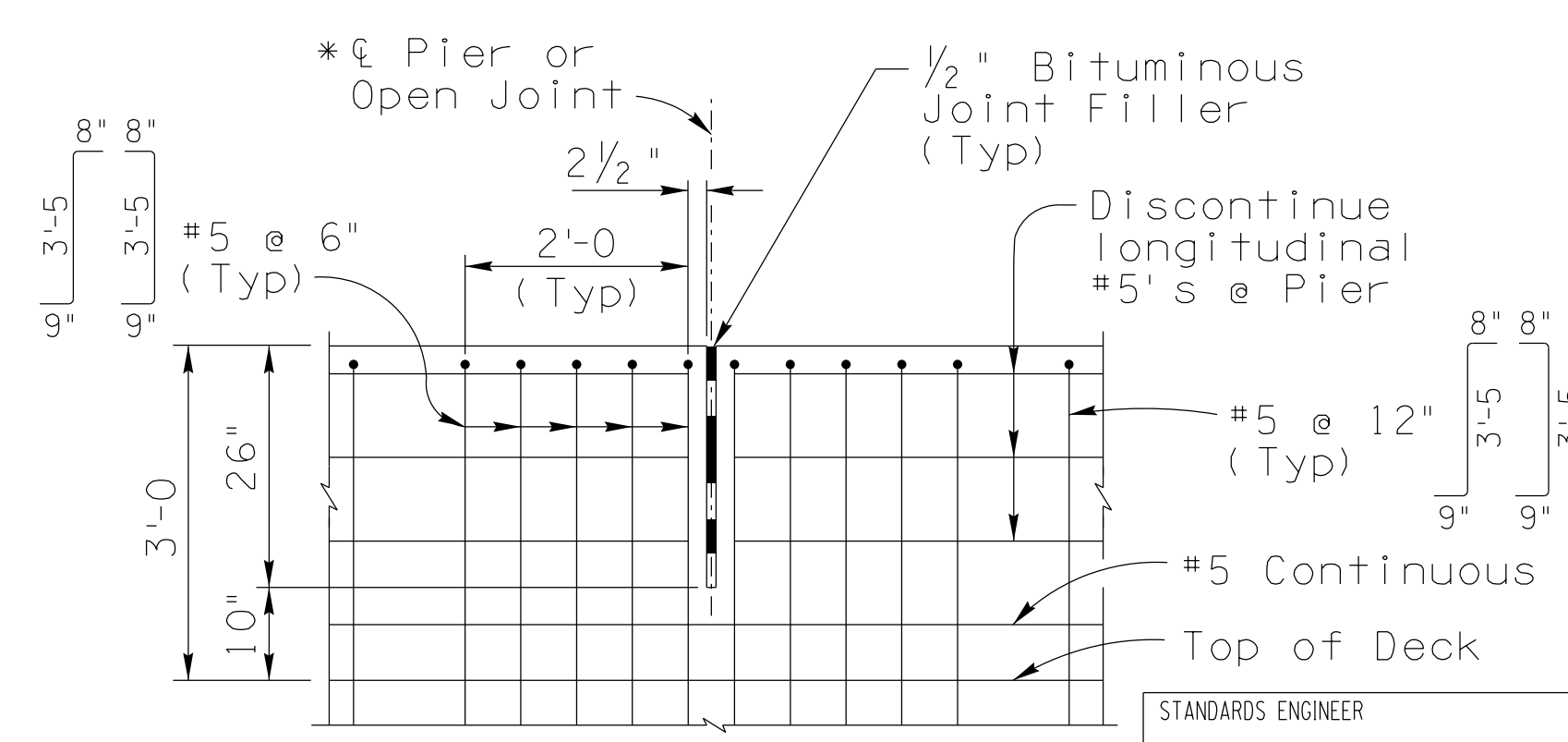


PLATE DETAIL

\* Parapet Stirrups Reinforcement at expansion joints is similar to stirrup reinforcement near open joints at continuous piers



OPEN JOINT SECTION AT CONTINUOUS PIERS ONLY

GENERAL NOTES:

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017.

This barrier has been evaluated and approved to be of equal strength to barriers with like geometry, which were successfully crash tested to meet MASH 16 requirements for Test Level 4.

Design Loads:

Dynamic Load (For barrier Design) = 80<sup>k</sup>

Dynamic load is based on NCHRP 20-07(395) MASH Equivalency of NCHRP Report 350 - Approved Bridge Railings.

Equivalent Static Load (For footing design) = 28<sup>k</sup>

Footing design is based on NCHRP Report 663.

All Concrete shall be Class "S" (f'c = 4000 psi).

Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60. All reinforcing shall be epoxy coated at locations above EL. 4000 ft.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

All reinforcing steel shall have 1/2 inch clear cover unless noted otherwise.

Structural tubing (TS) shall be ASTM A500 Grade B. All other structural steel shall conform to ASTM A36 unless noted otherwise.

All welding shall conform to the requirements of the American Welding Society, ANSI/AASHTO/AWS D1.5 Bridge Welding Code, latest Edition.

Concrete parapets on continuous superstructures shall have 1/2" bituminous joint filler in open joints over piers.

Imbed 1/2", Bridge Number and Year Built, using 1 1/2" w x 2" h number impressions in concrete, located as shown at the approach end of the outside lane.

Labor and materials for railing, parapet, dado, anchorage bars, sidewalk and PEDESTRIAN FENCE (SD 1.13) are included in the pay item (Item No. 6011132).

Dimensions shall not be scaled from drawings.

Item	Combination Pedestrian-Traffic Bridge Railing
Item No.	6011132
Measurement	Linear Foot

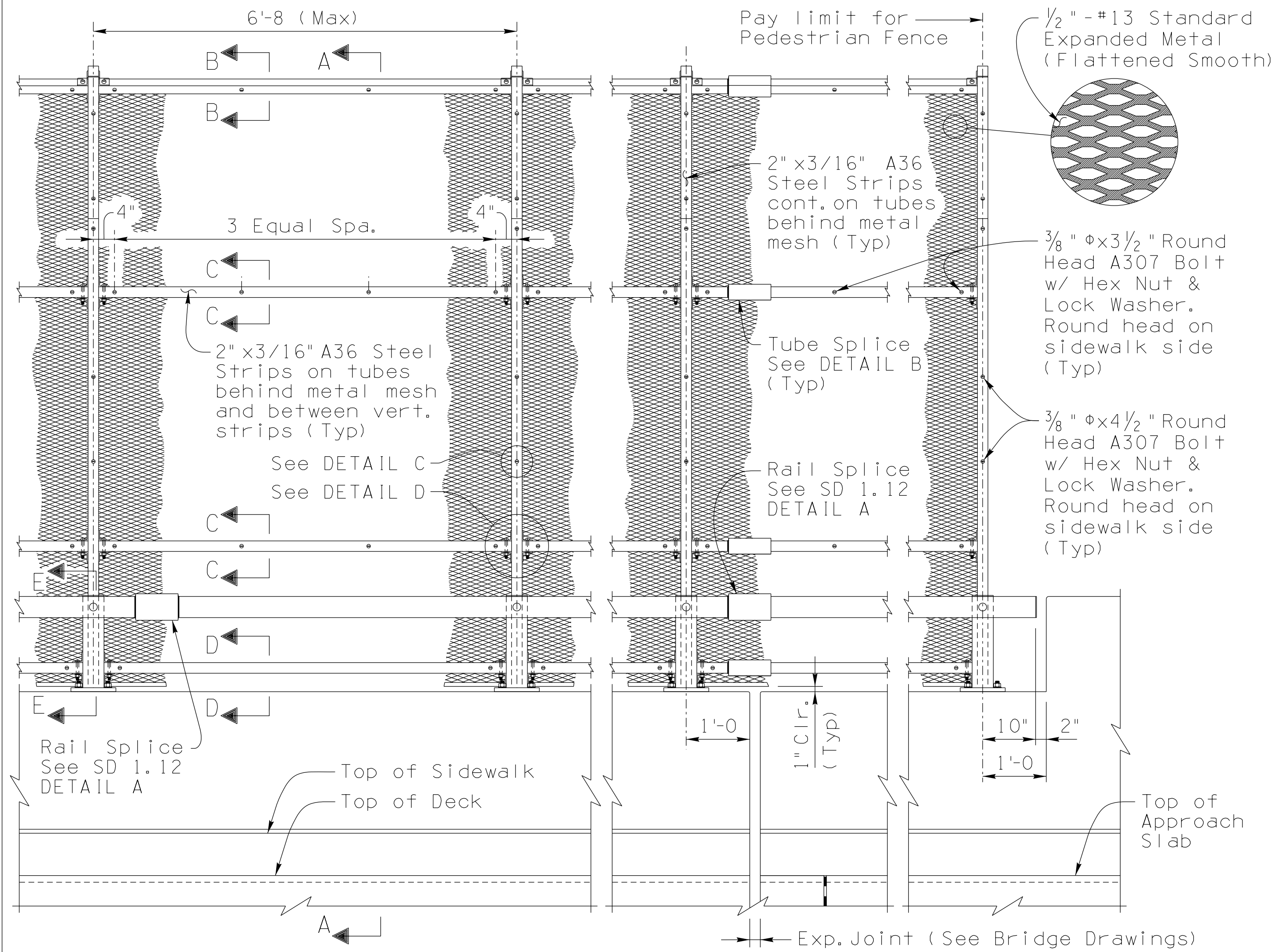
STANDARDS ENGINEER A. ALZUBI	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>
RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART	
APPROVED	COMBINATION PEDESTRIAN-TRAFFIC BRIDGE RAILING
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	
01/20 DATE	DRAWING NO. SD 1.12

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

PRIOR DISTRIBUTION DATE 03/09



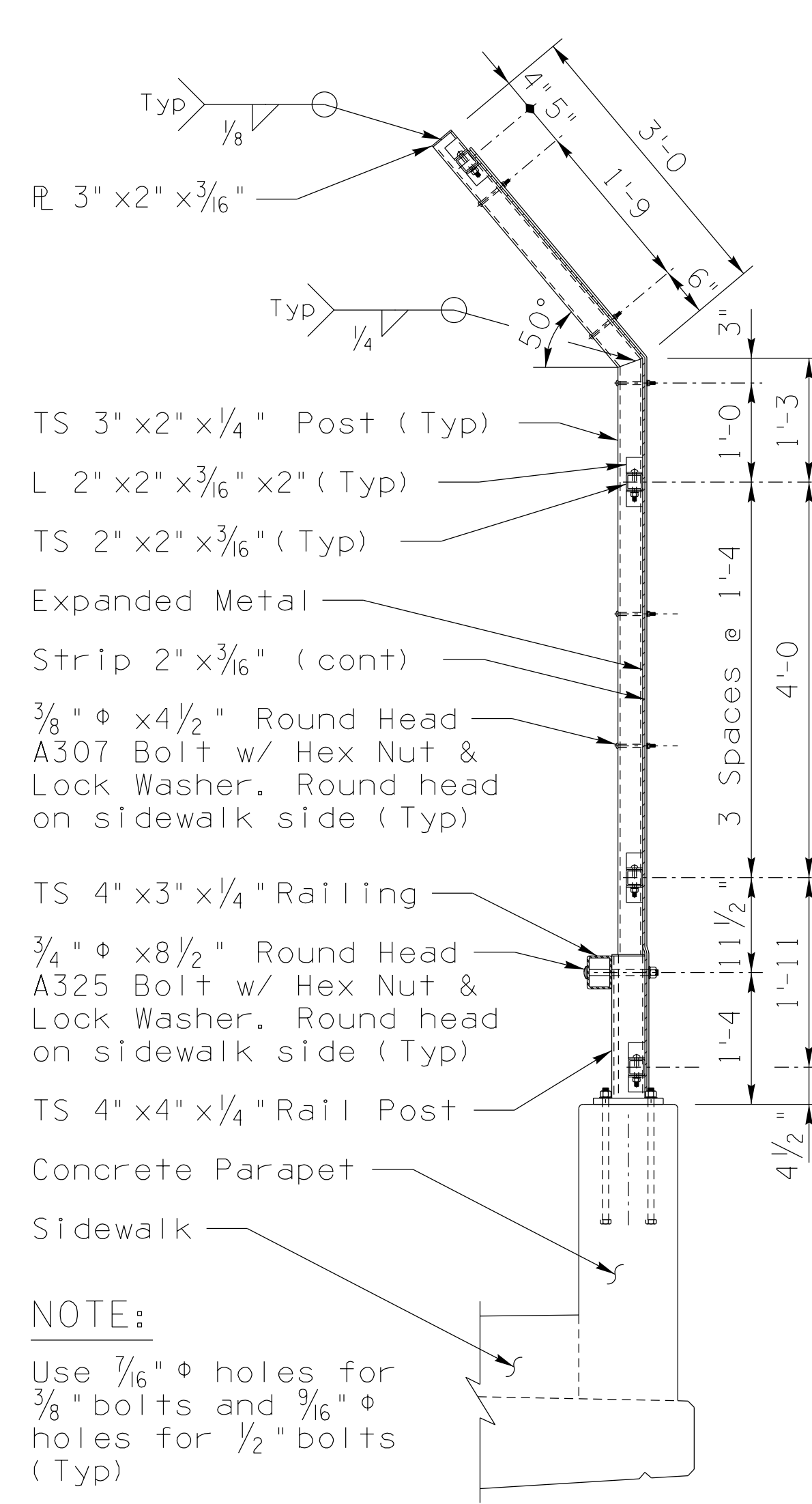
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.



TYPICAL PANEL ELEVATION

ELEVATION AT EXPANSION JOINT

ELEVATION AT END POST



SECTION A-A

**GENERAL NOTES:**

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017.

Structural tubing (TS) shall be ASTM A500 Grade B.

Expanded metal shall conform to ASTM F1267 Type II, Class 2, Grade A. Expanded metal shall be flattened smooth (No sharp edges).

All other structural steel shall conform to ASTM A36 unless noted otherwise.

All fence components and hardware shall be Galvanized.

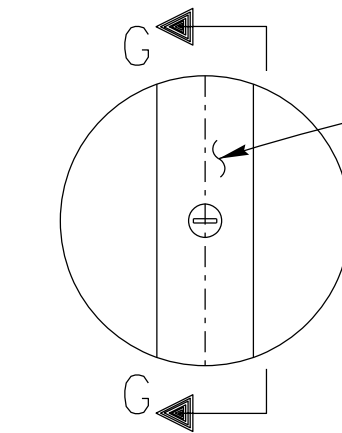
All welding shall conform to the requirements of the American Welding Society, ANSI/AASHTO/AWS D1.5 Bridge Welding Code, latest Edition.

See Bridge Drawings for location and length of pedestrian fence.

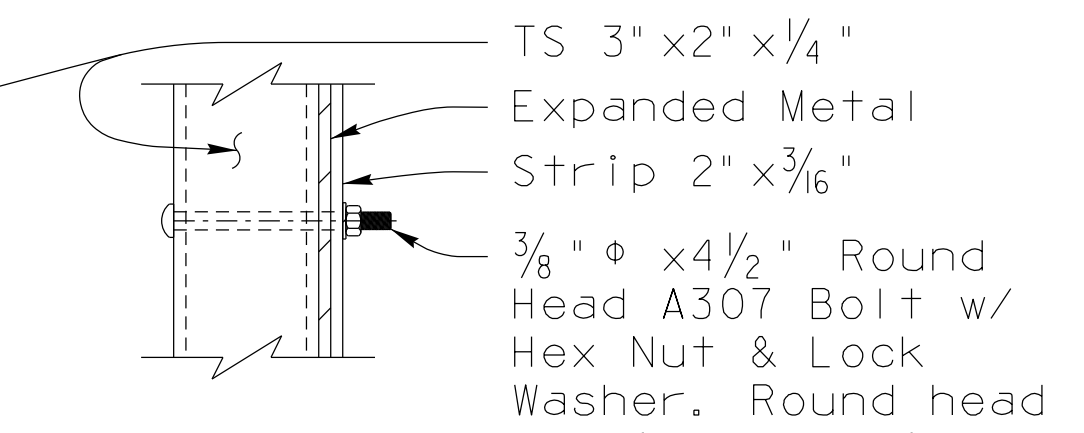
See SD 1.12 for details of concrete parapet, sidewalk, railing and applicable notes.

Dimensions shall not be scaled from drawings.

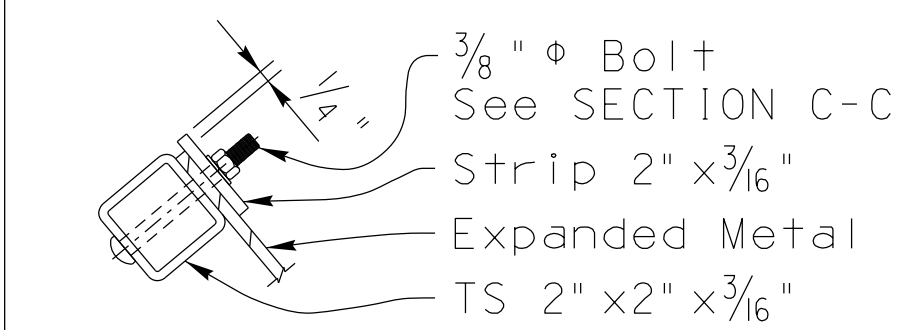
Payment for PEDESTRIAN FENCE is included in the pay item for COMBINATION PEDESTRIAN-TRAFFIC BRIDGE RAILING (SD 1.12) (Item No. 6011132).



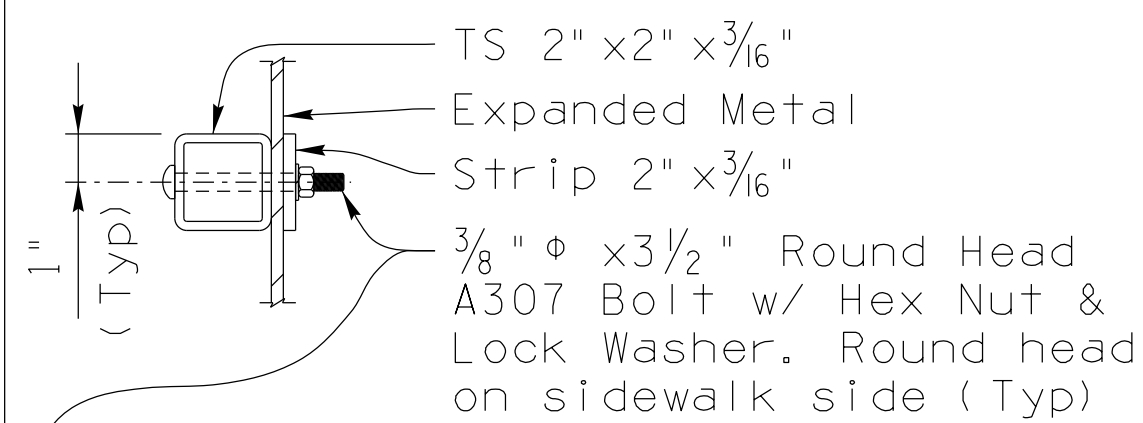
DETAIL C



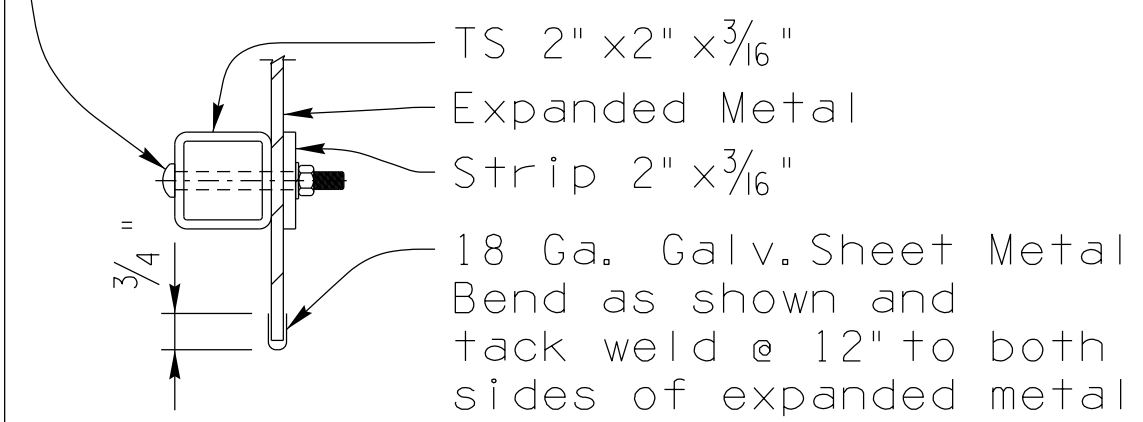
SECTION G-G



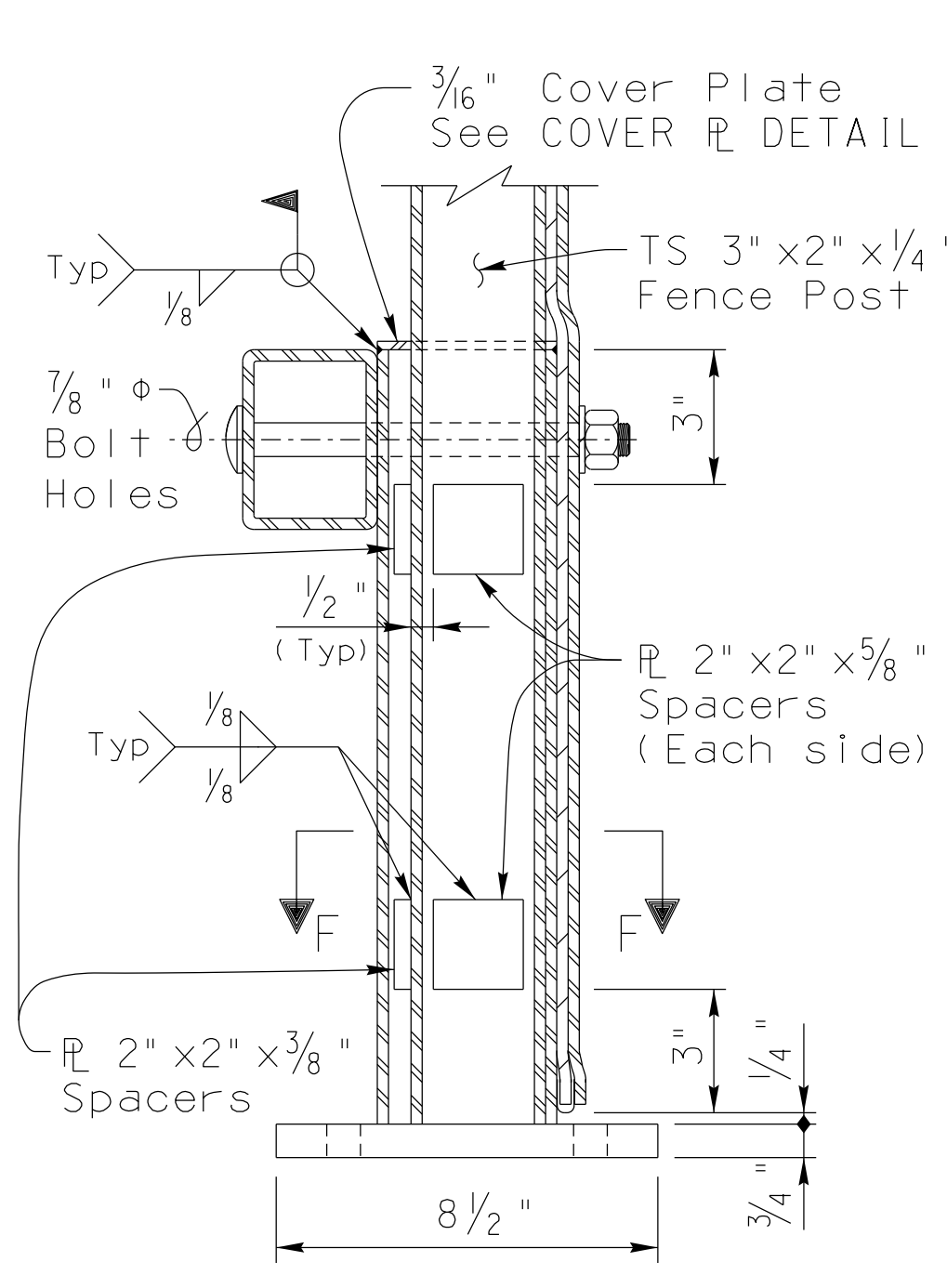
SECTION B-B



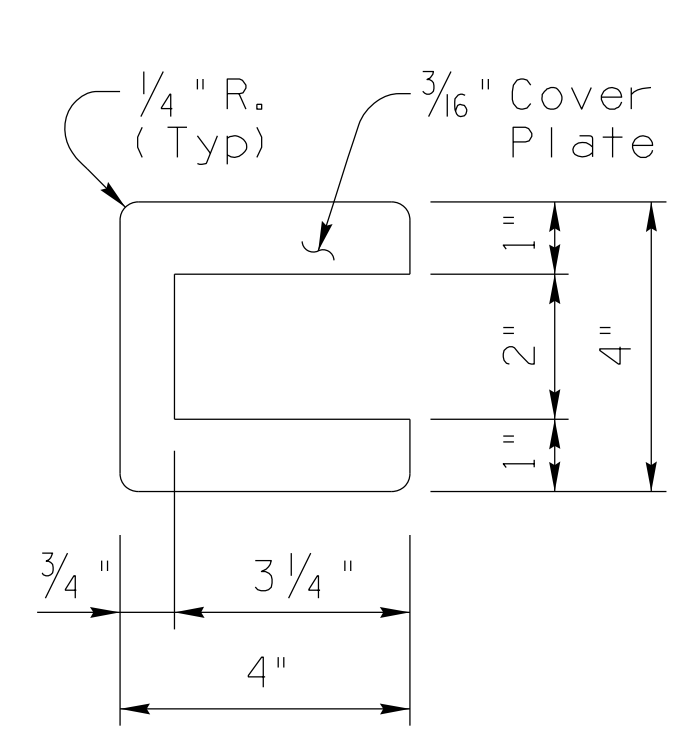
SECTION C-C



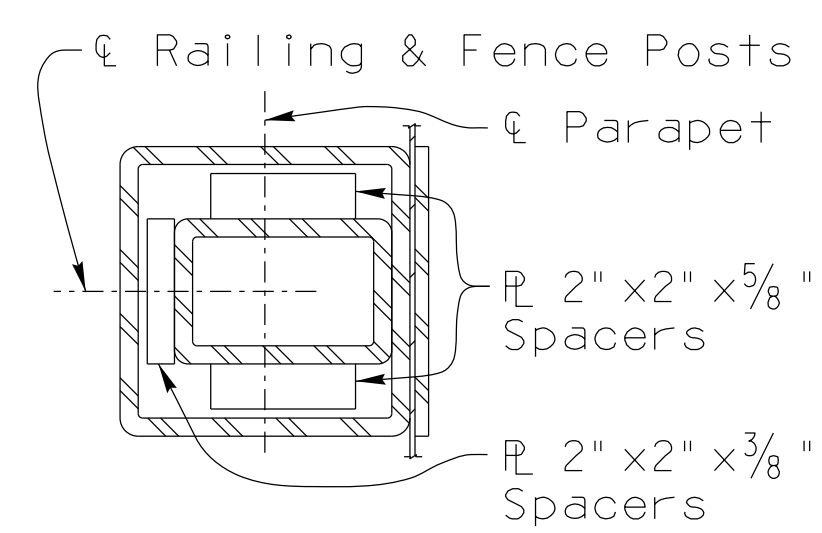
SECTION D-D



SECTION E-E

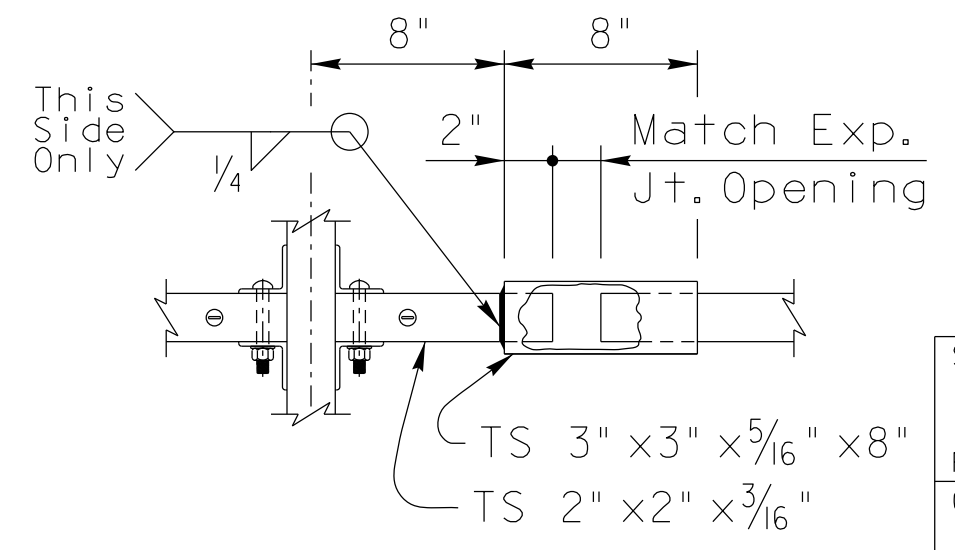


COVER  $\phi$  DETAIL

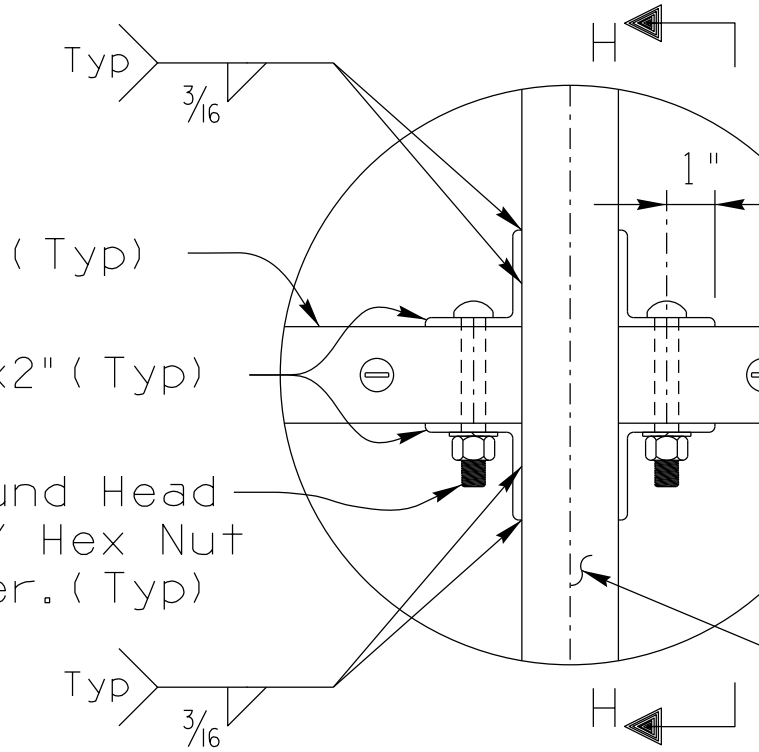


SECTION F-F

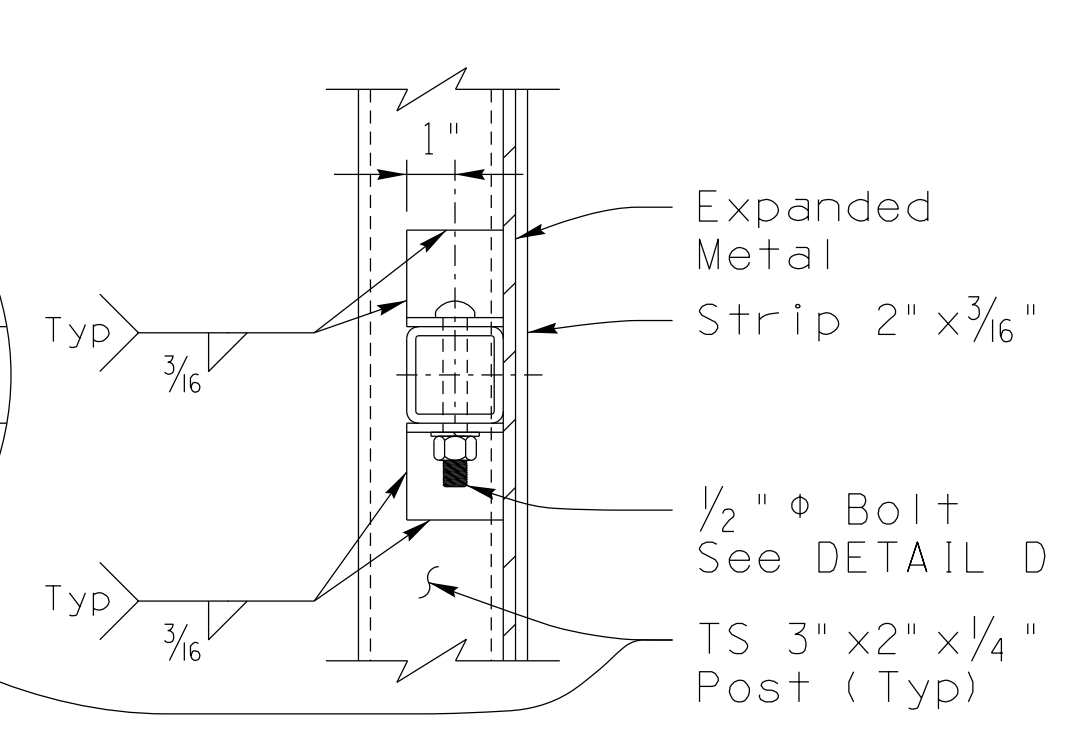
NOTE:  
 Weld cover plate to top of rail post after installing fence post



DETAIL B



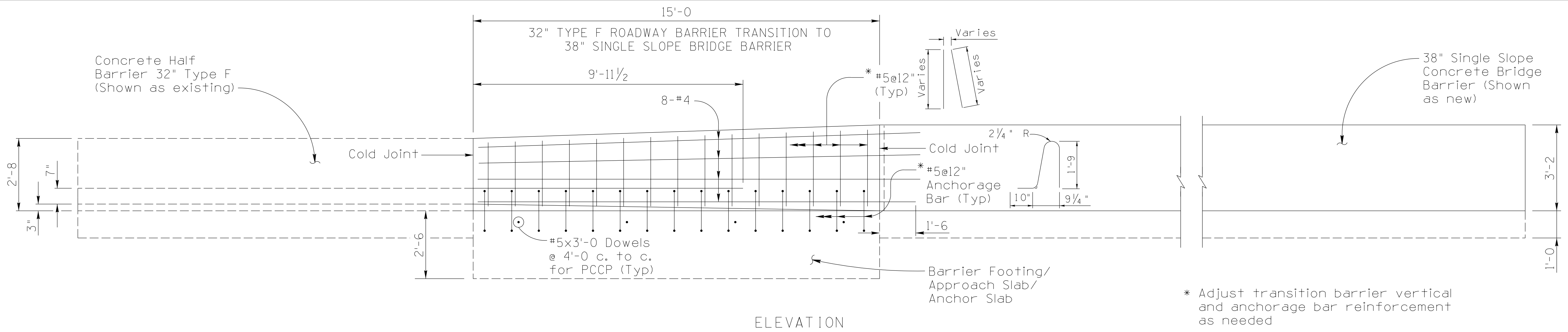
DETAIL D



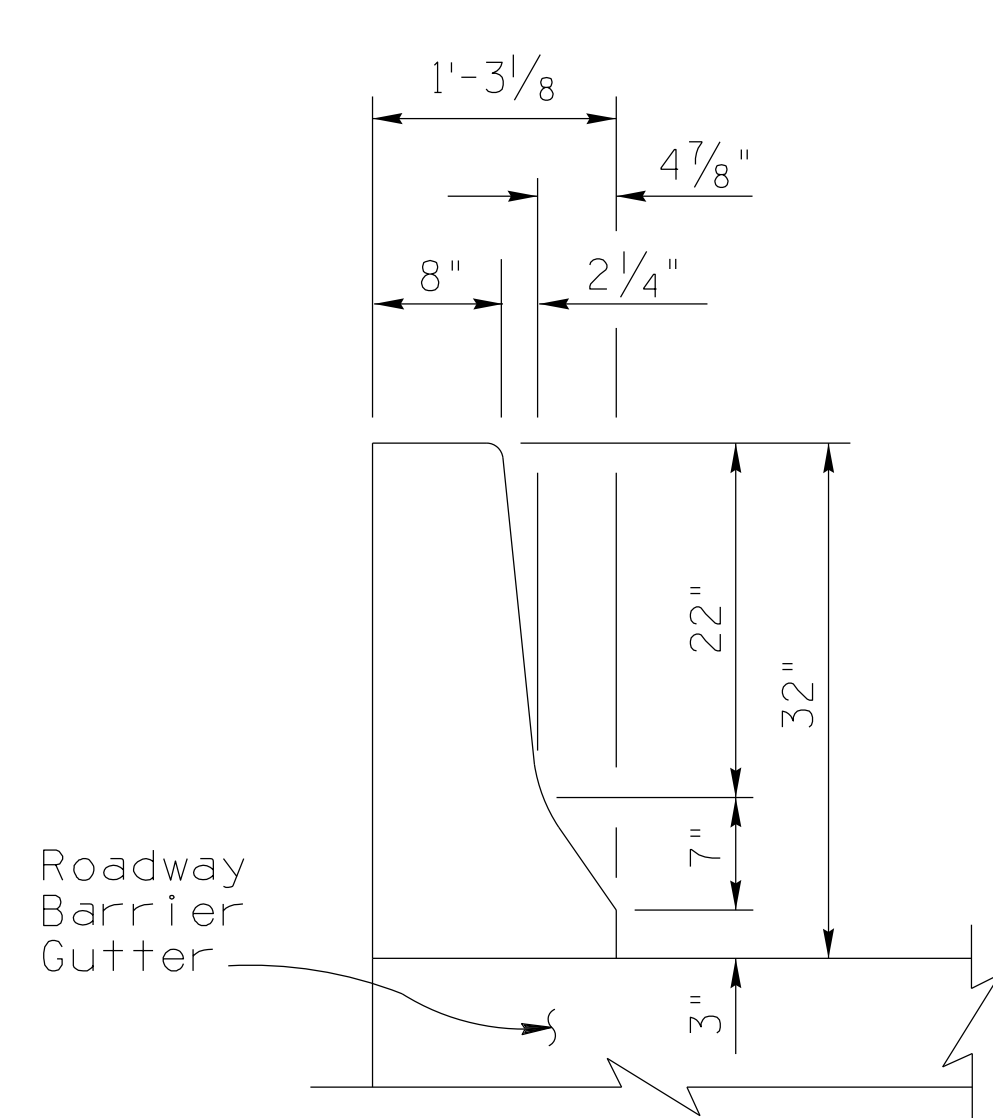
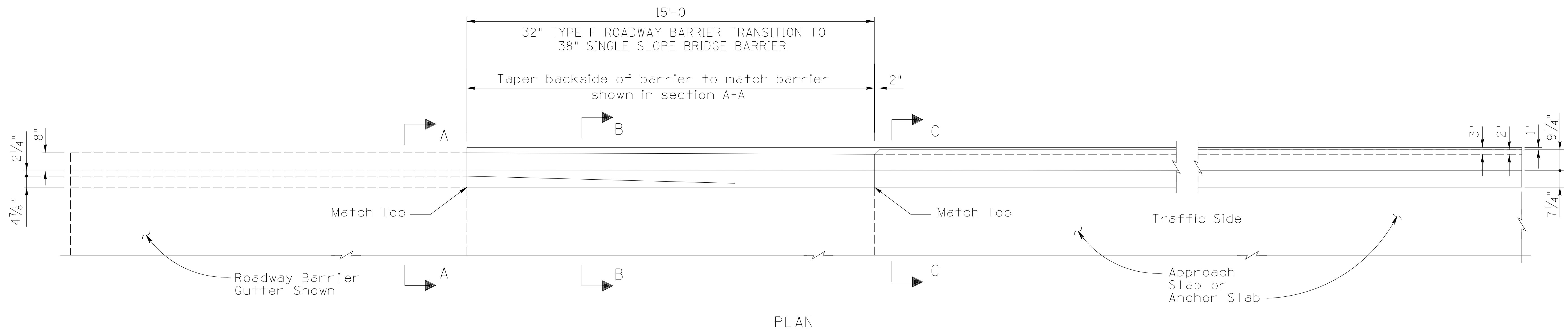
SECTION H-H

STANDARDS ENGINEER A. ALZUBI	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	DRAWING NO. SD 1.13
RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART		
APPROVED	PEDESTRIAN FENCE FOR BRIDGE RAILING SD 1.12	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	01/20 DATE	

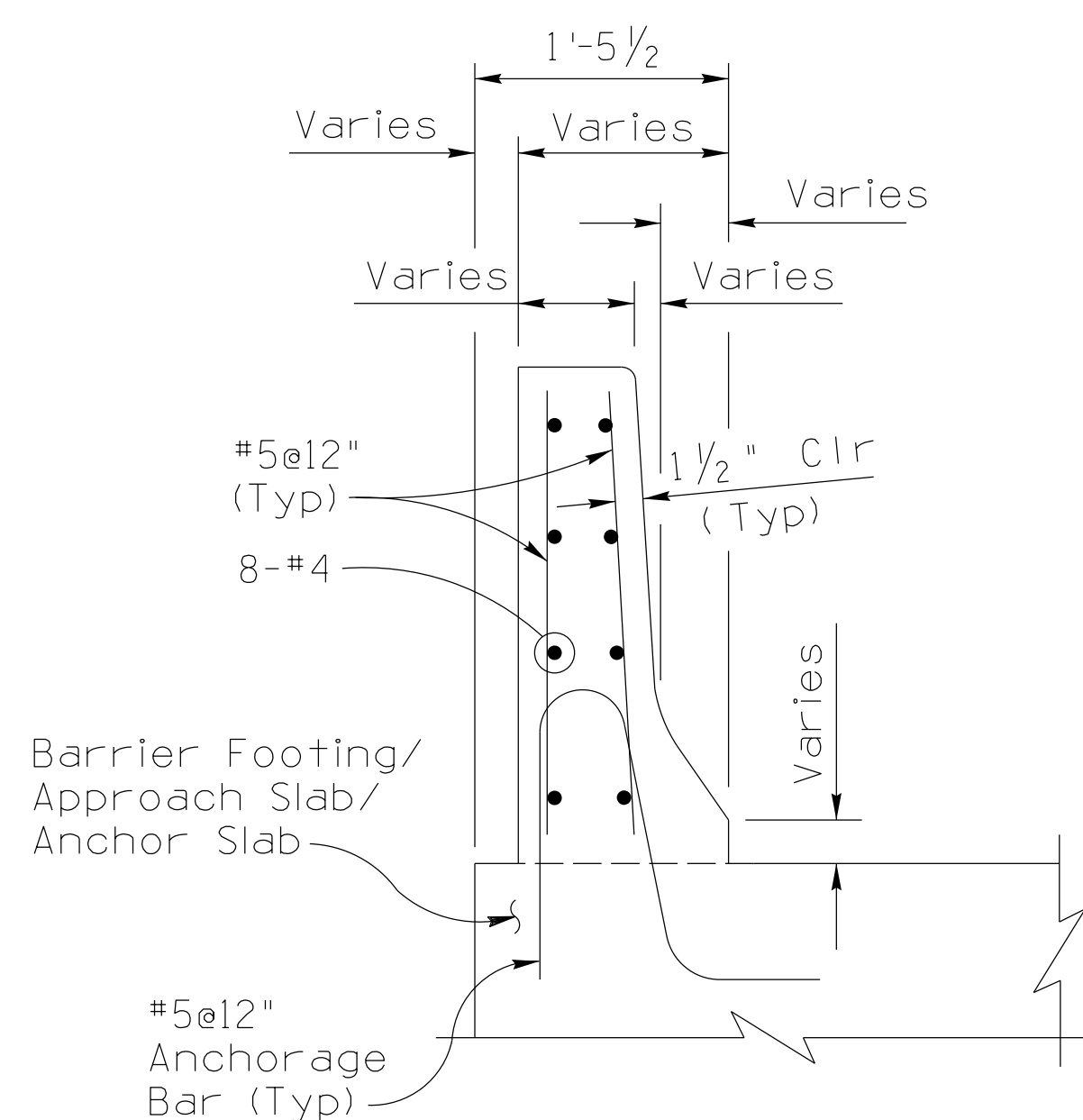
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.



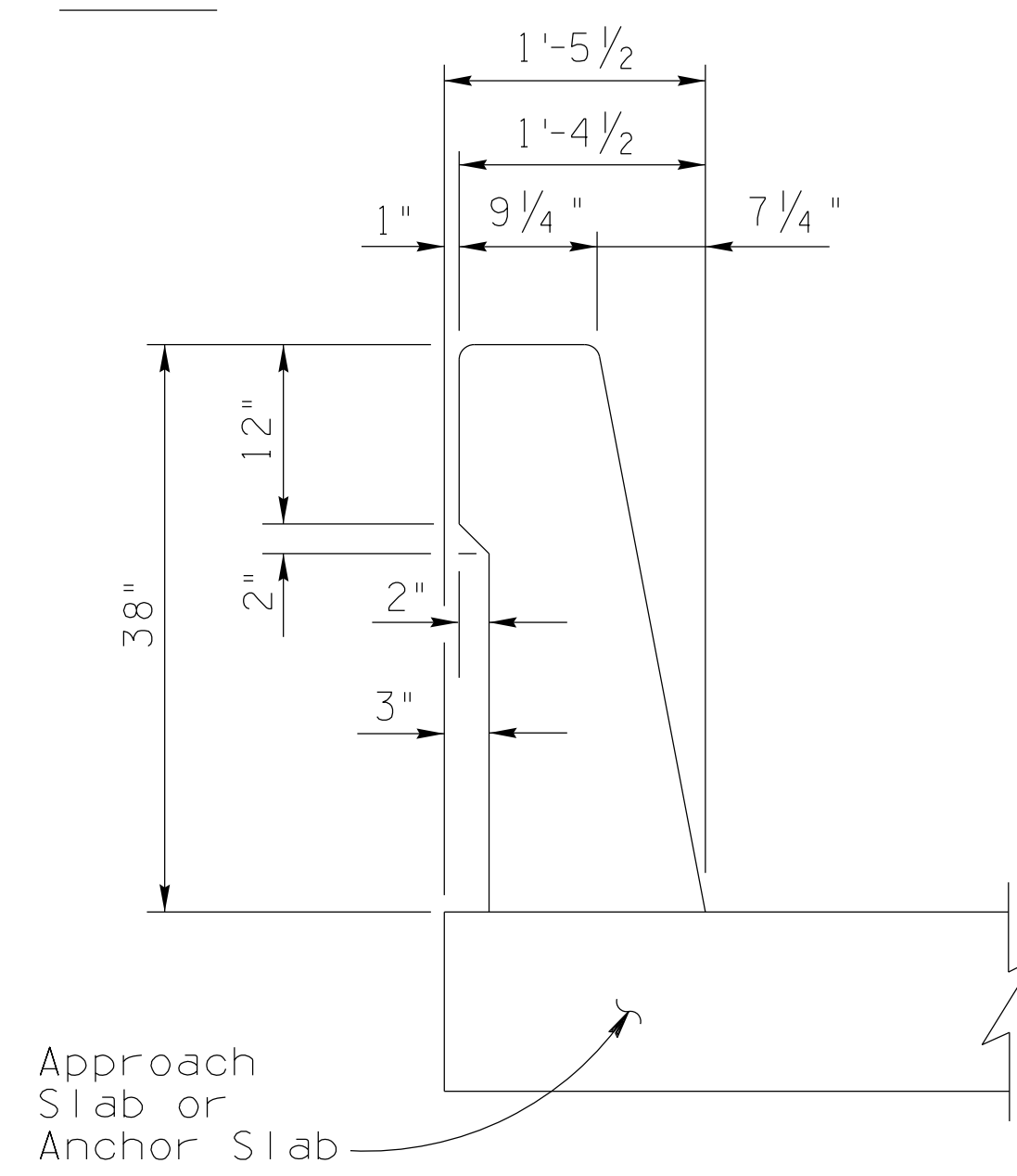
\* Adjust transition barrier vertical and anchorage bar reinforcement as needed



See Roadway Standards for reinforcement



See SD 1.10 (1 of 2) for reinforcement



See SD 1.10 (1 of 2) for reinforcement

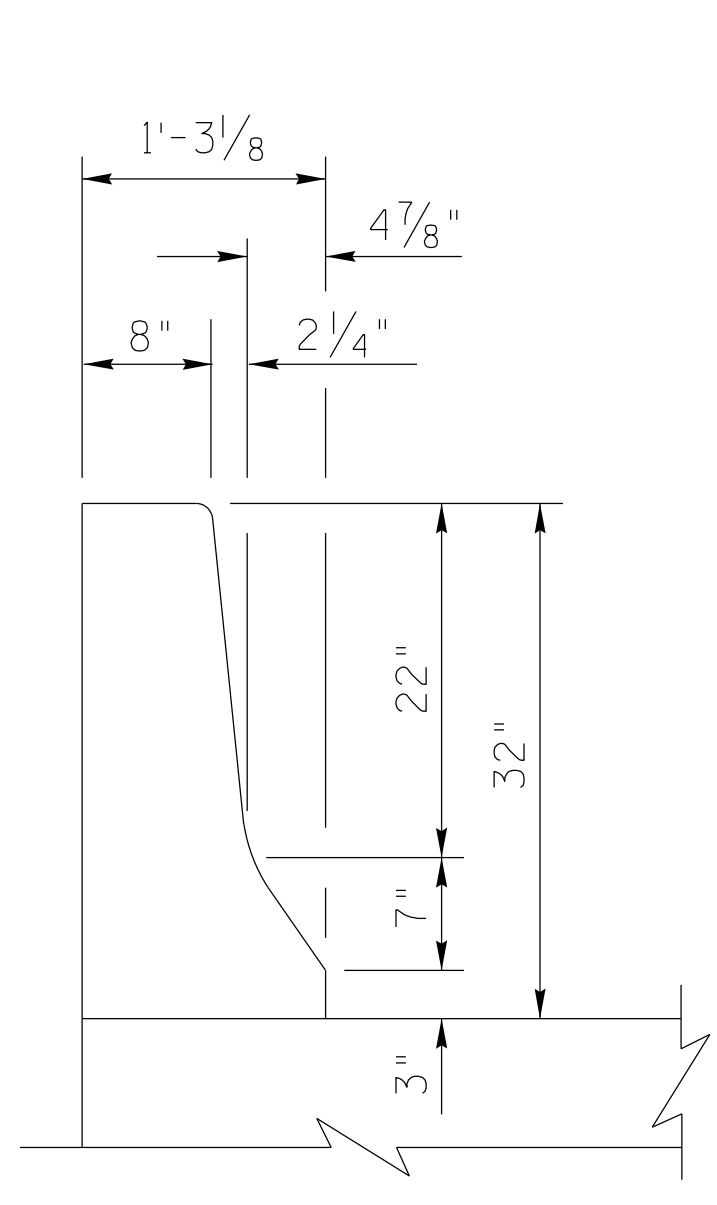
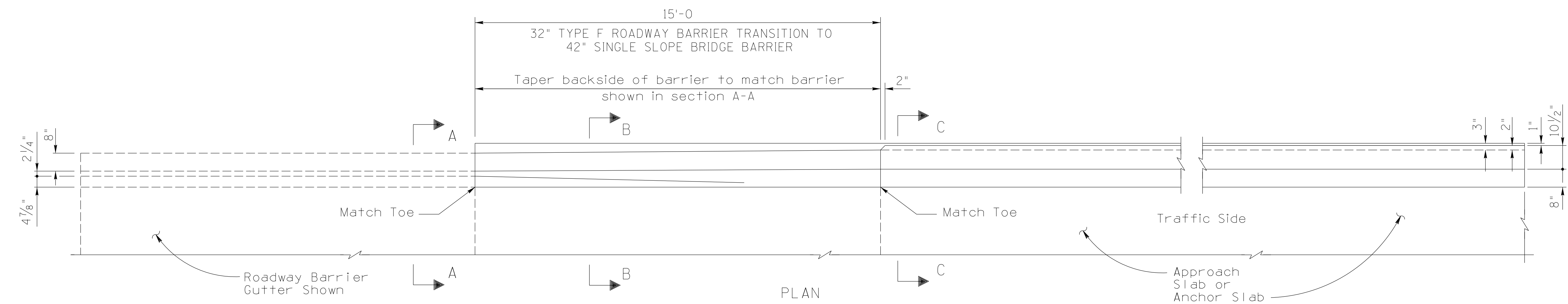
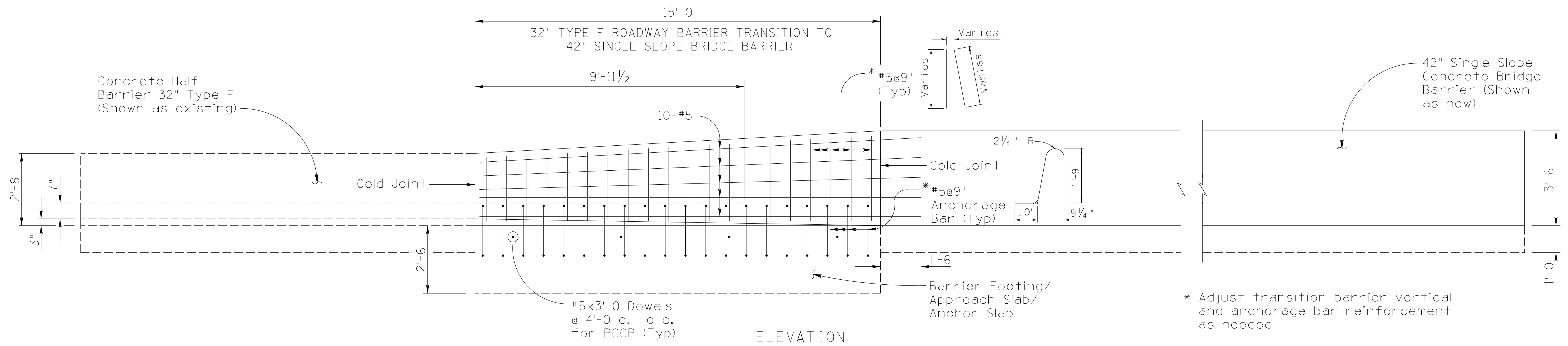
Item	32" Type F Roadway Barrier Transition To 38" Single Slope Bridge Barrier
Item No.	6011142
Measurement	Linear Foot

STANDARDS ENGINEER	A. ALZUBI
RECOMMENDED FOR APPROVAL	
GROUP MANAGER	D. EBERHART
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	01/20 DATE

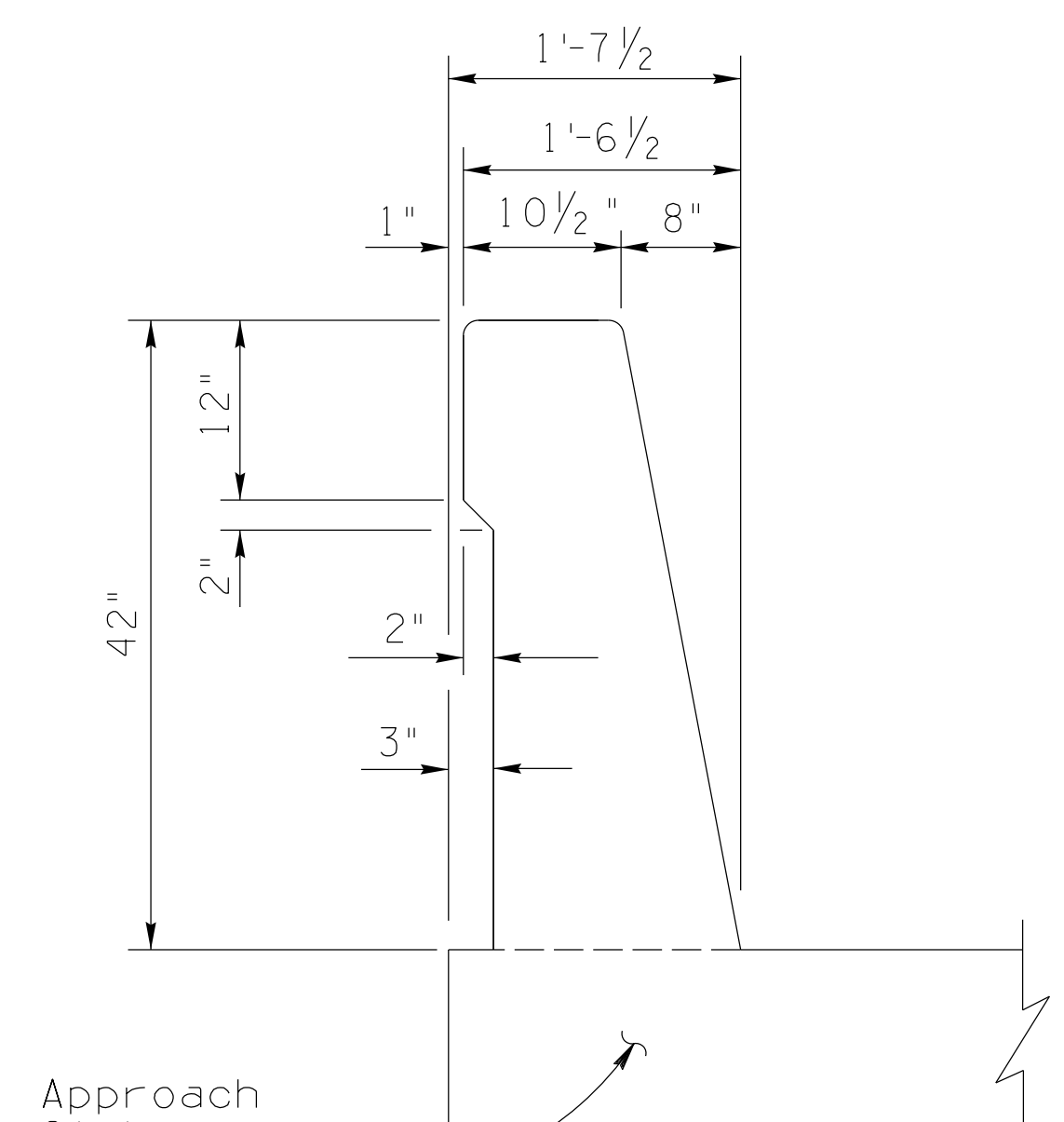
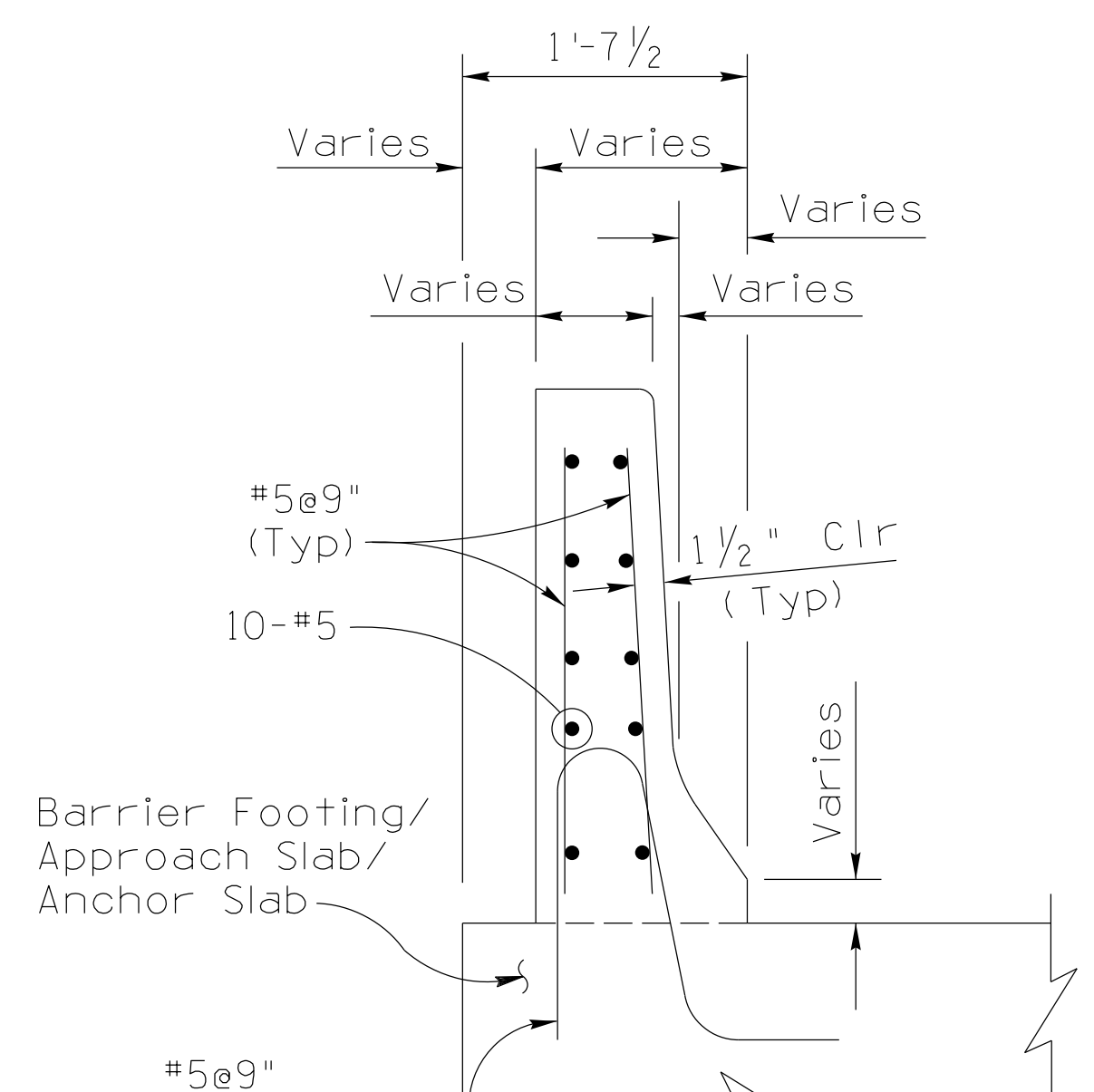
ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	
32" TYPE F ROADWAY BARRIER TRANSITION TO 38" SINGLE SLOPE BRIDGE BARRIER	DRAWING NO. SD 1.20

PRIOR DISTRIBUTION DATE

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.



See Roadway Standards for reinforcement



See SD 1.11 (1 of 2) for reinforcement

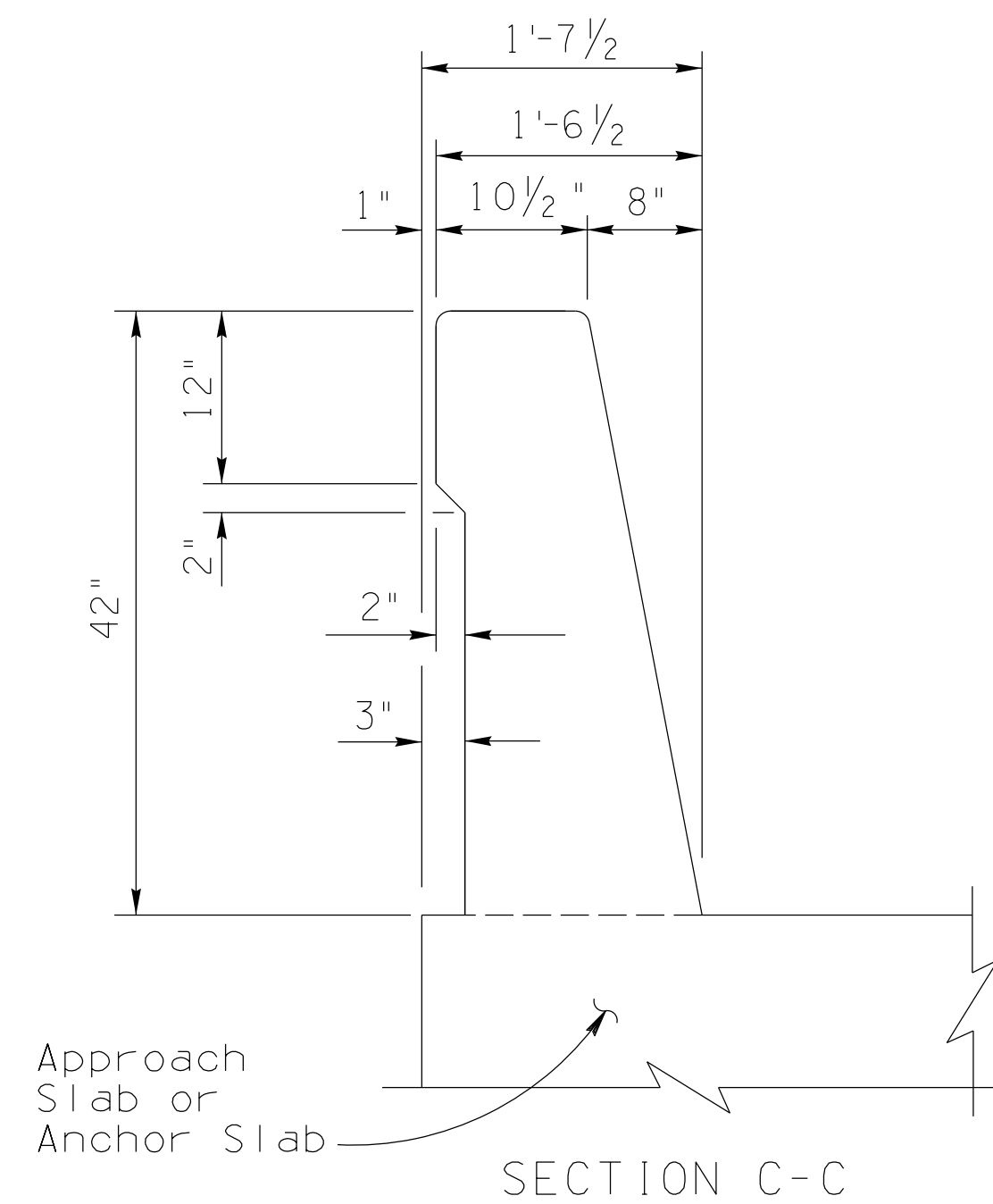
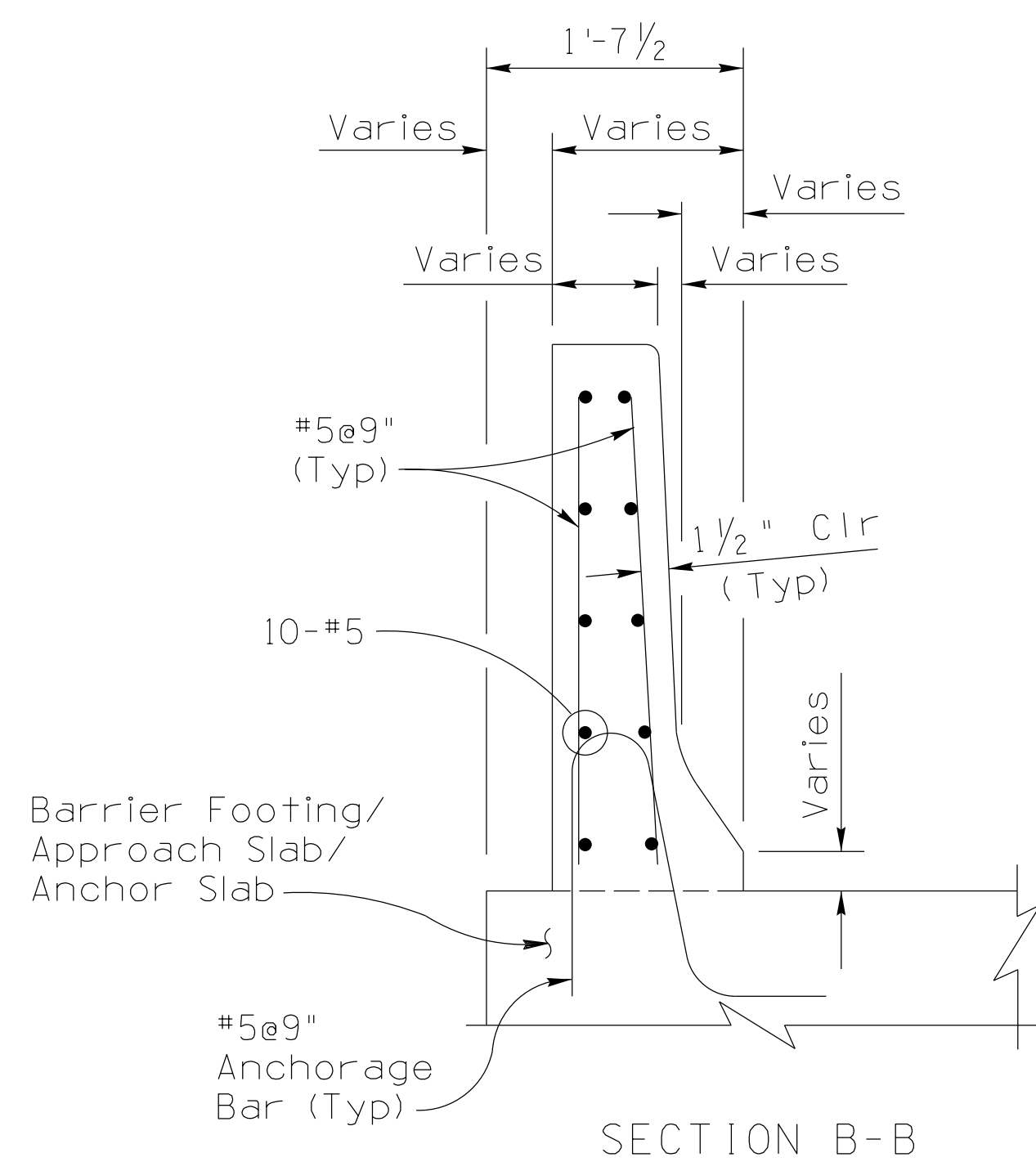
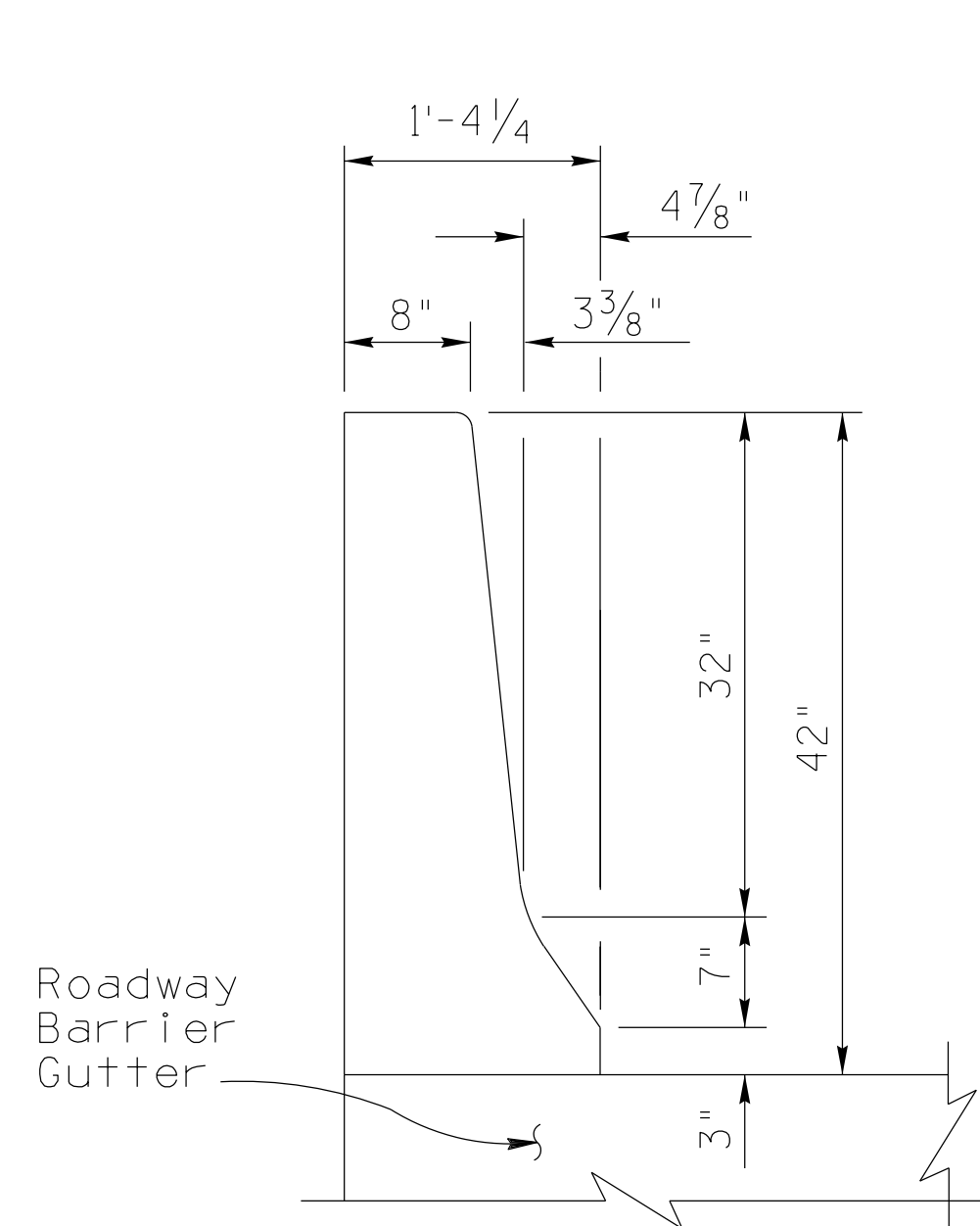
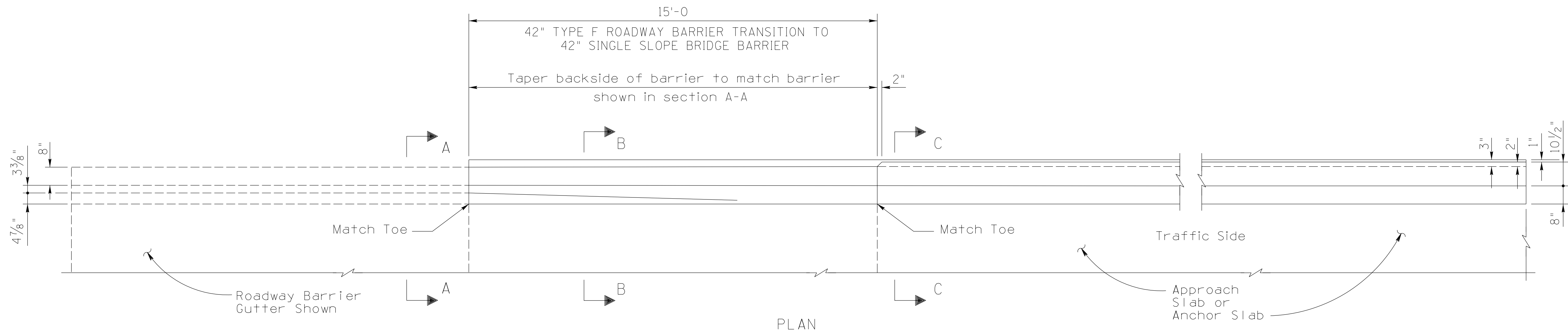
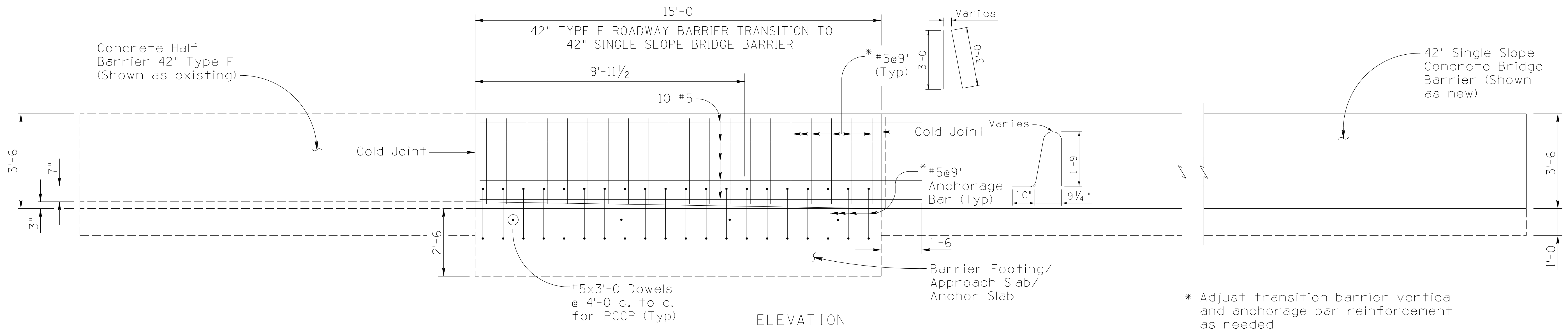
Item	32" Type F Roadway Barrier Transition To 42" Single Slope Bridge Barrier
Item No.	6011143
Measurement	Linear Foot

STANDARDS ENGINEER	A. ALZUBI
RECOMMENDED FOR APPROVAL	GROUP MANAGER
APPROVED	D. EBERHART
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	01/20 DATE

ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION <b>BRIDGE GROUP STANDARD DRAWING</b>	
32" TYPE F ROADWAY BARRIER TRANSITION TO 42" SINGLE SLOPE BRIDGE BARRIER	DRAWING NO. SD 1.21



Note to Designer:  
 The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.



Item	42" Type F Roadway Barrier Transition To 42" Single Slope Bridge Barrier
Item No.	6011144
Measurement	Linear Foot

STANDARDS ENGINEER  
 A. ALZUBI  
 RECOMMENDED FOR APPROVAL  
 GROUP MANAGER  
 D. EBERHART  
 APPROVED  
 STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION  
 DATE: 01/20

ARIZONA DEPARTMENT OF TRANSPORTATION  
 INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION  
**BRIDGE GROUP STANDARD DRAWING**

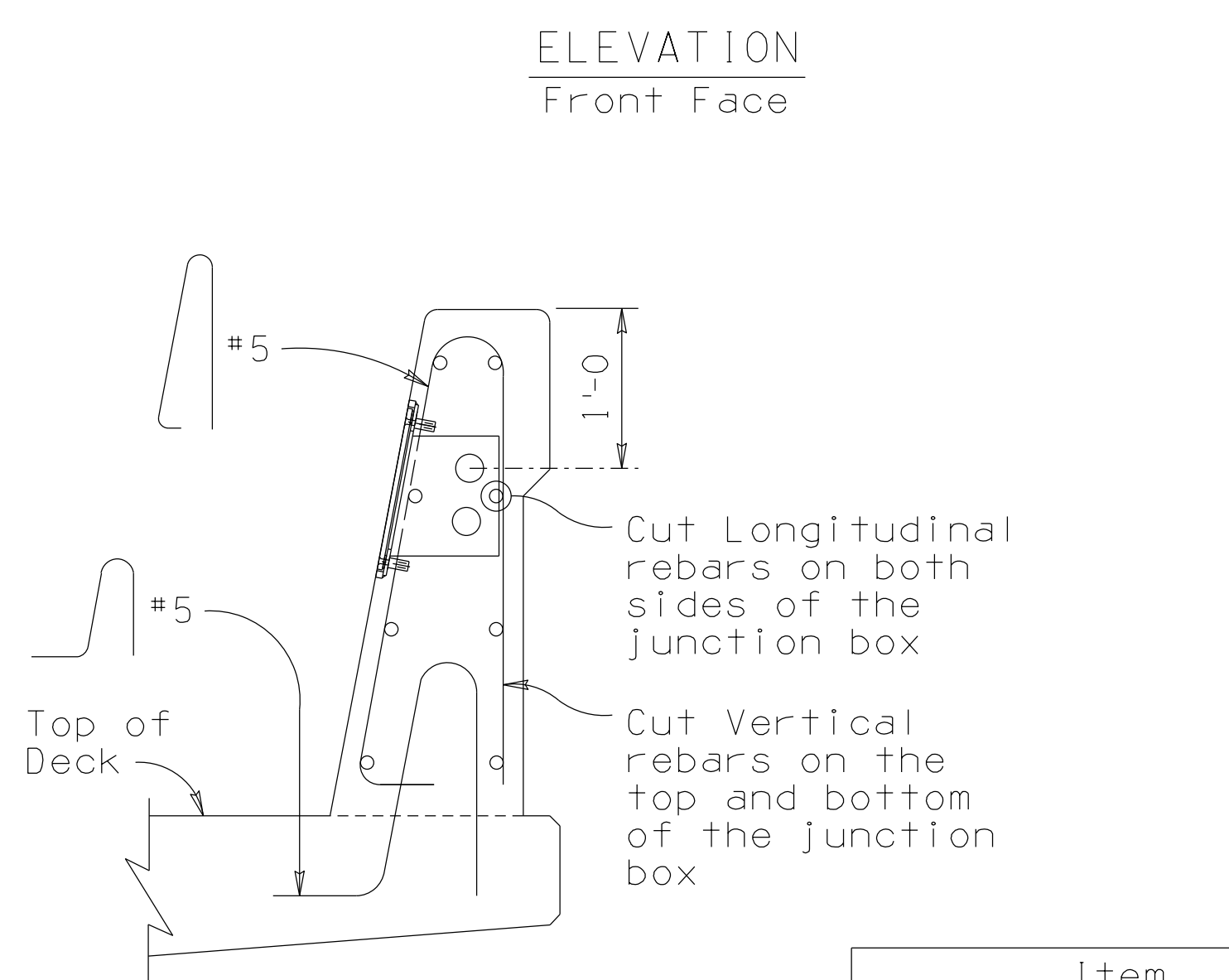
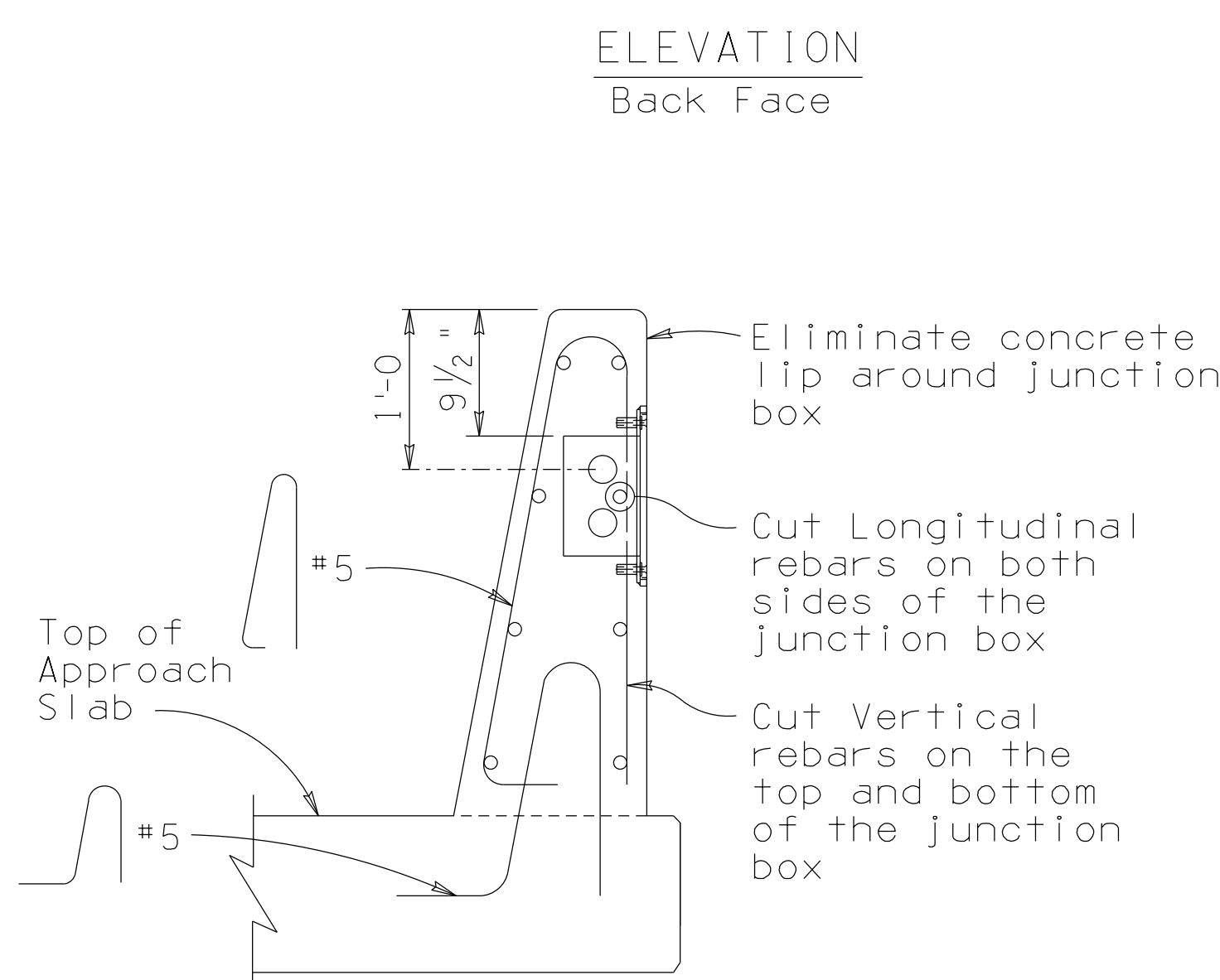
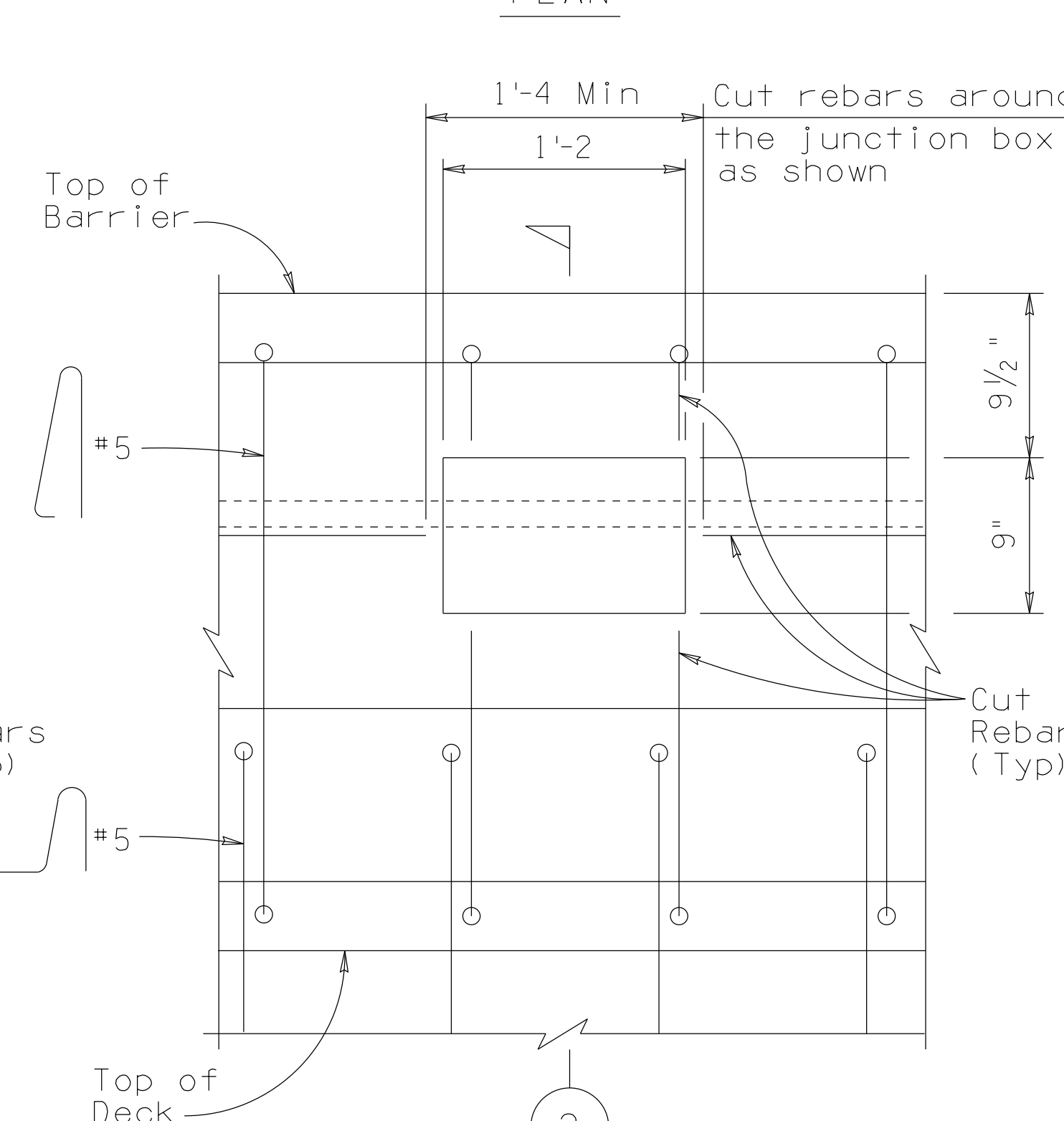
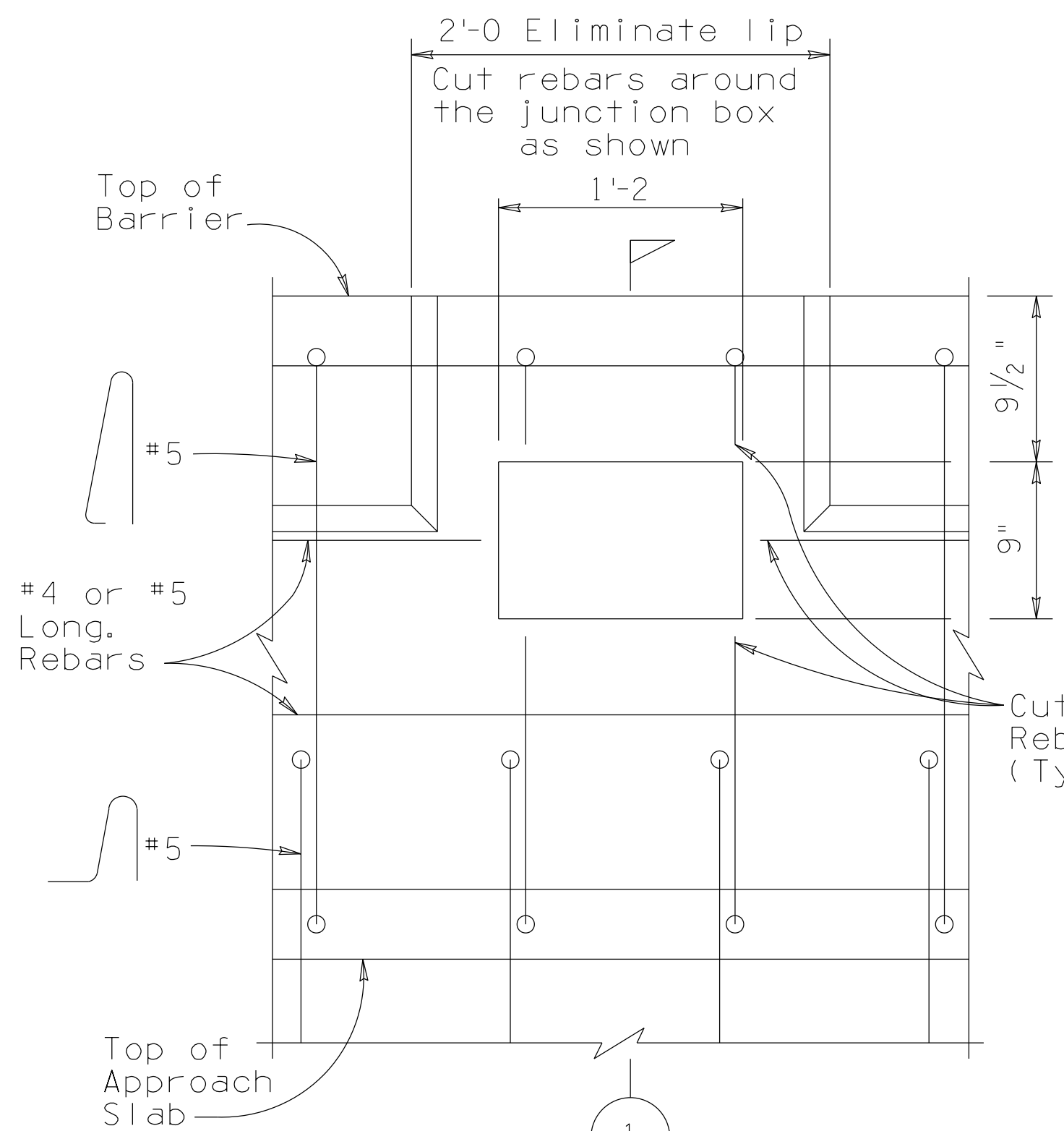
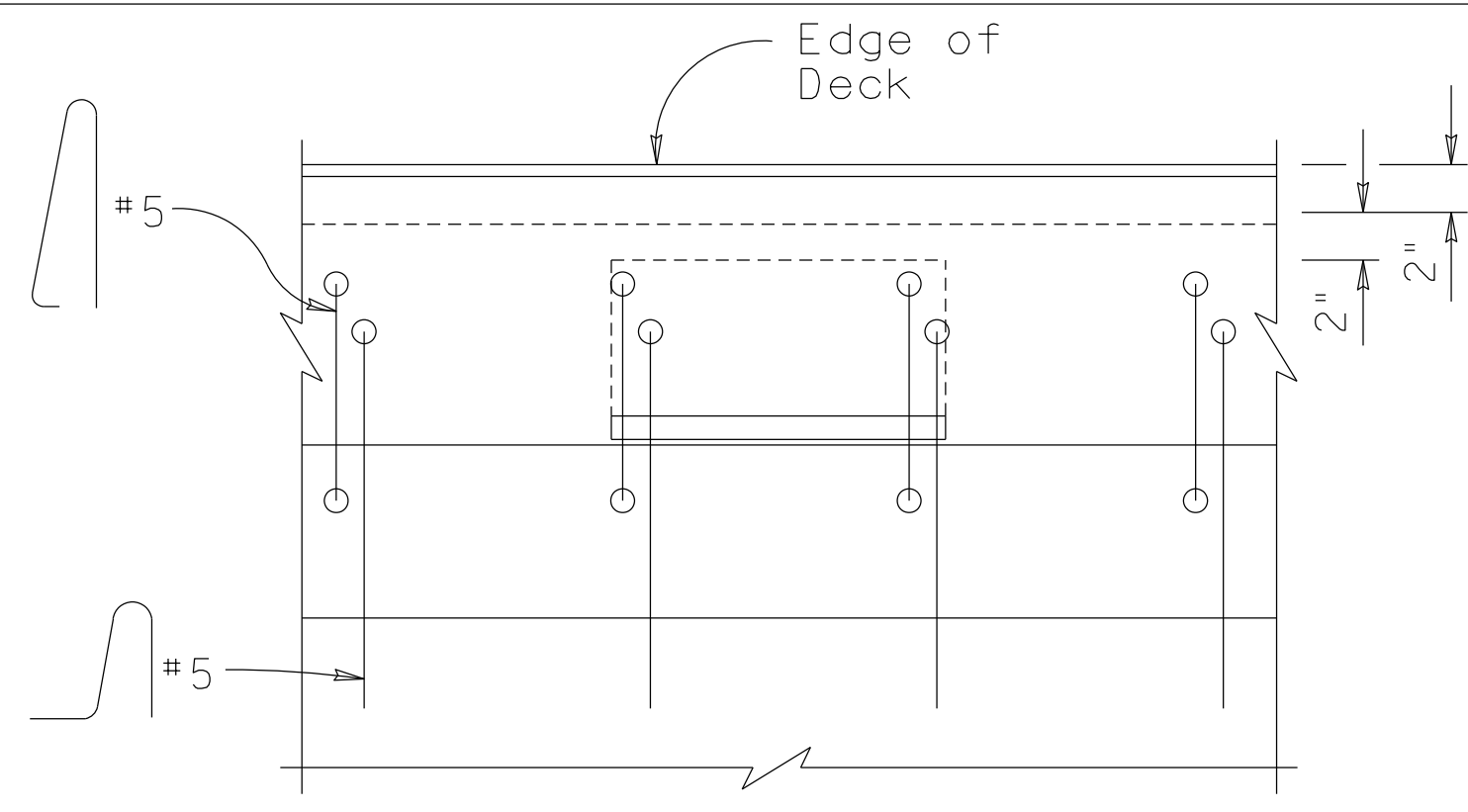
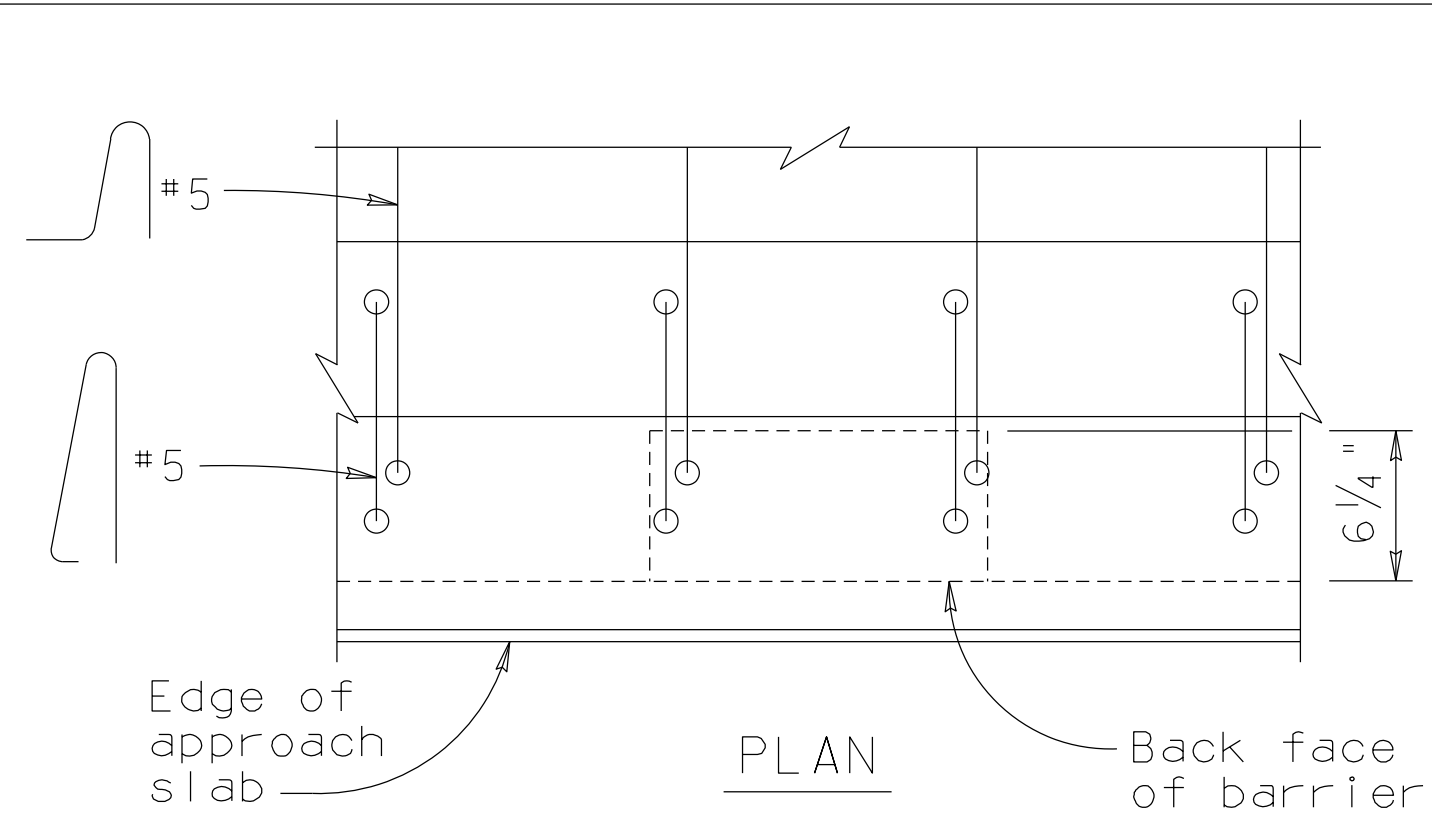
42" TYPE F ROADWAY BARRIER  
 TRANSITION TO 42" SINGLE  
 SLOPE BRIDGE BARRIER  
 DRAWING NO.  
 SD 1.22

See Roadway Standards for reinforcement

See SD 1.11 (1 of 2) for reinforcement

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

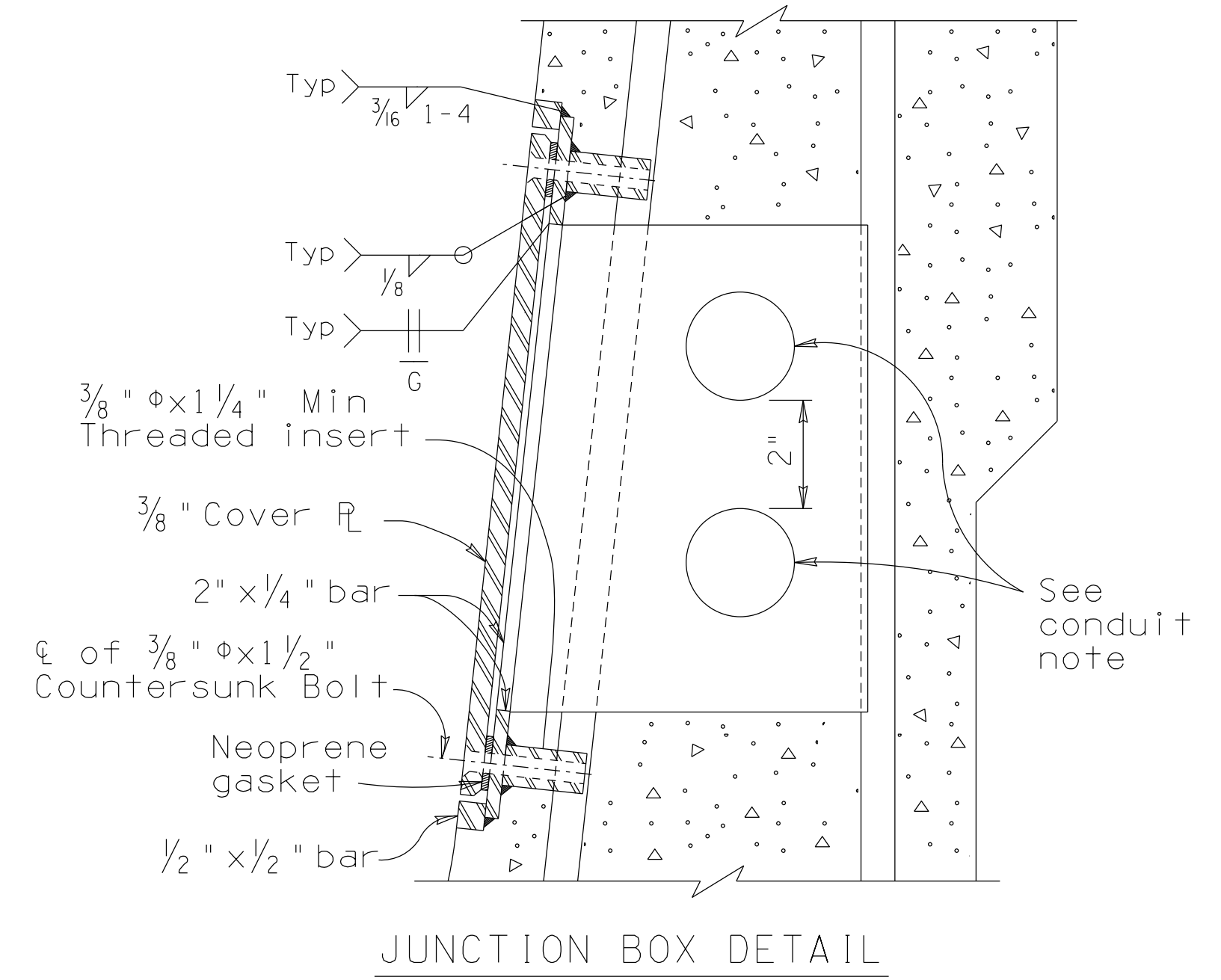
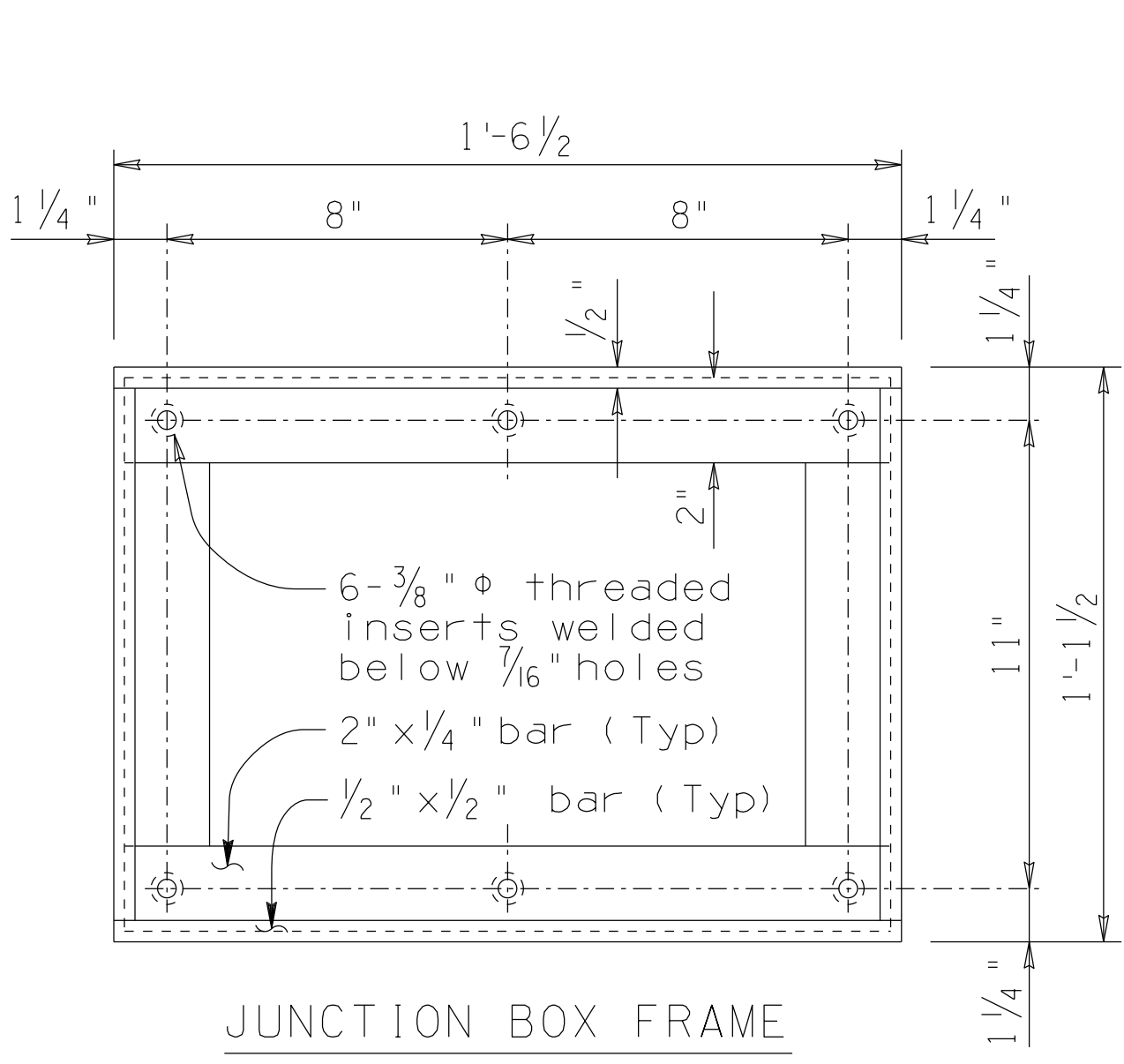
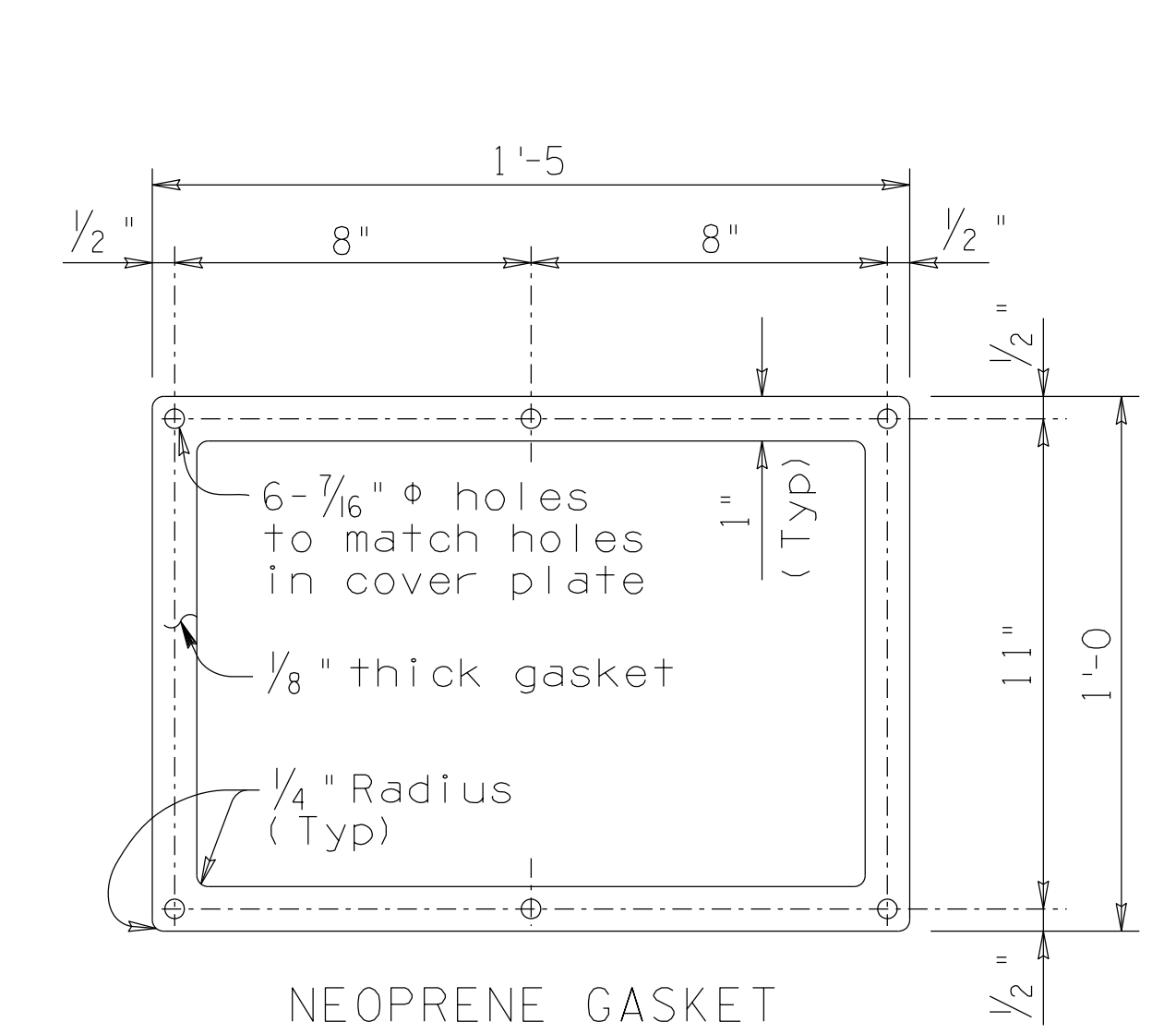
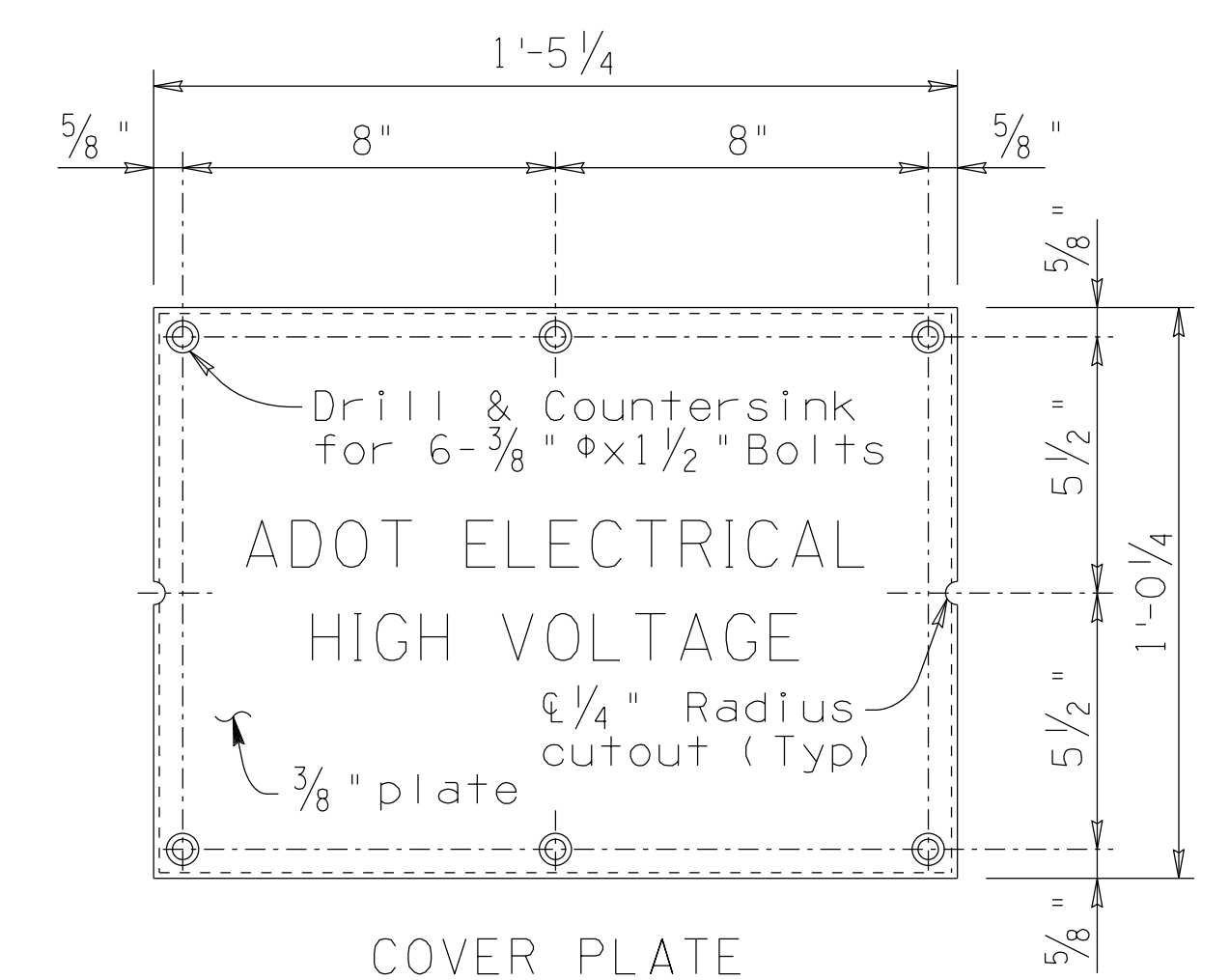
PRIOR DISTRIBUTION DATE 04/10



TYPE I JUNCTION BOX  
At Approach Transition ①

TYPE II JUNCTION BOX  
On Bridge ②

Item	Item No.	Measurement
Type I Junction Box	7320475	Each
Type II Junction Box	7320476	Each



**GENERAL NOTES:**

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition 2017.

Structural steel shall conform to ASTM A36.

All bolts shall conform to ASTM A307. Threaded inserts shall be loop type (U.N.C. thread).

All bolts, nuts and washers shall be galvanized in accordance with ASTM A153. All other steel shall be galvanized after fabrication in accordance with ASTM A123.

Chamfer all bottom edges of cover plate 1/8 inch x 45°.

Cover plate shall have 1 inch letters embedded 1/8 inch to say: "ADOT ELECTRICAL HIGH VOLTAGE".

All welding shall conform to the requirements of the American Welding Society, ANSI/AASHTO/AWS D1.5 Bridge Welding Code, latest Edition.

Dimensions shall not be scaled from drawings.

Conduit placement in bridge barrier requires pre-approval by Bridge Group.

**JUNCTION BOX NOTE:**

Junction Box is shown for 38 inch Single Slope Bridge Concrete Barrier. Details are similar for the 42 inch Single Slope Barrier.

**CONDUIT NOTE:**

A maximum of three 2-inch or two 3-inch diameter conduits will be allowed. No other configurations will be allowed.

STANDARDS ENGINEER  
A. ALZUBI  
RECOMMENDED FOR APPROVAL  
GROUP MANAGER  
D. EBERHART  
APPROVED  
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION  
DATE 01/20

ARIZONA DEPARTMENT OF TRANSPORTATION  
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION  
**BRIDGE GROUP STANDARD DRAWING**

BARRIER JUNCTION BOX

DRAWING NO.  
SD 1.30