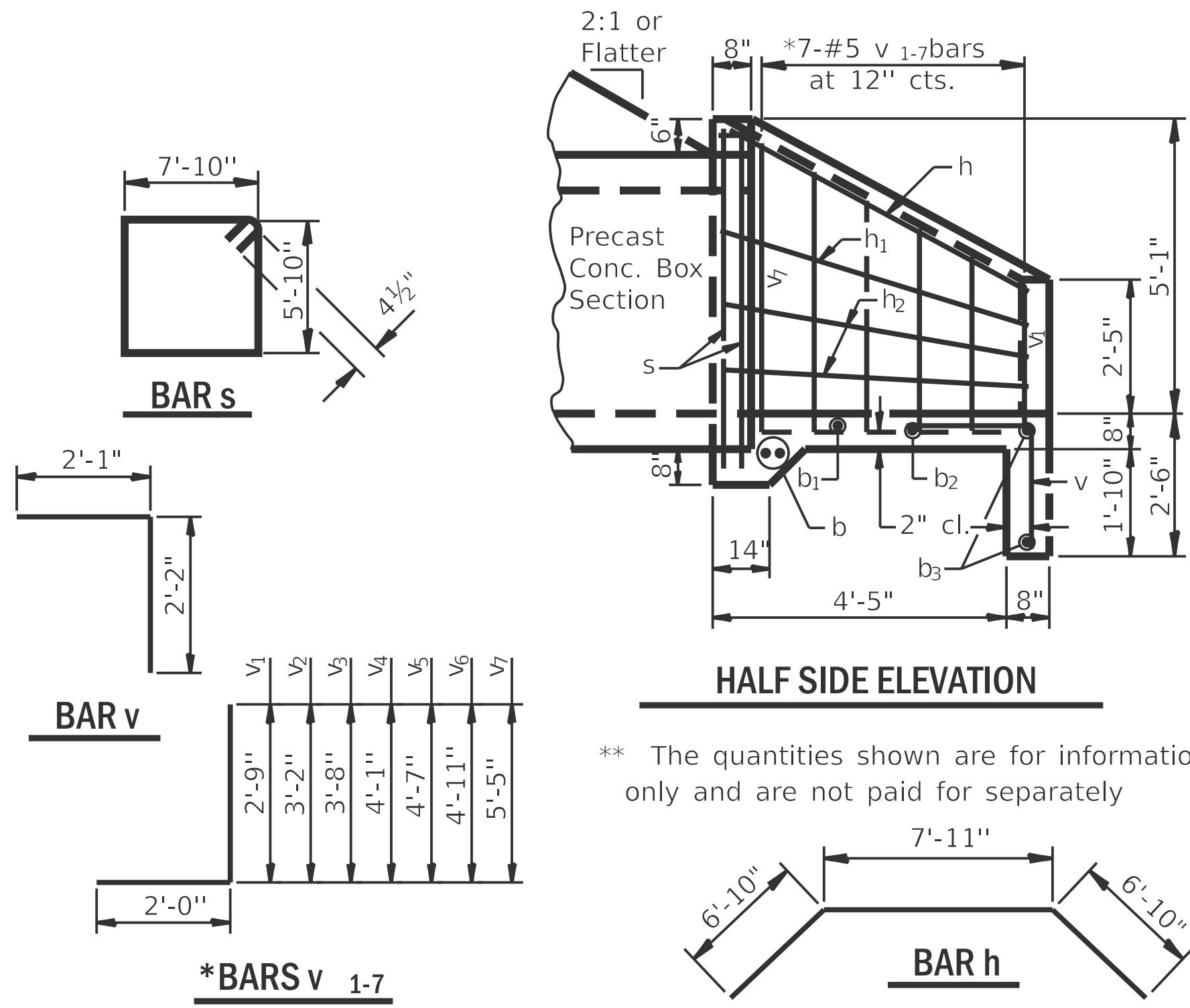
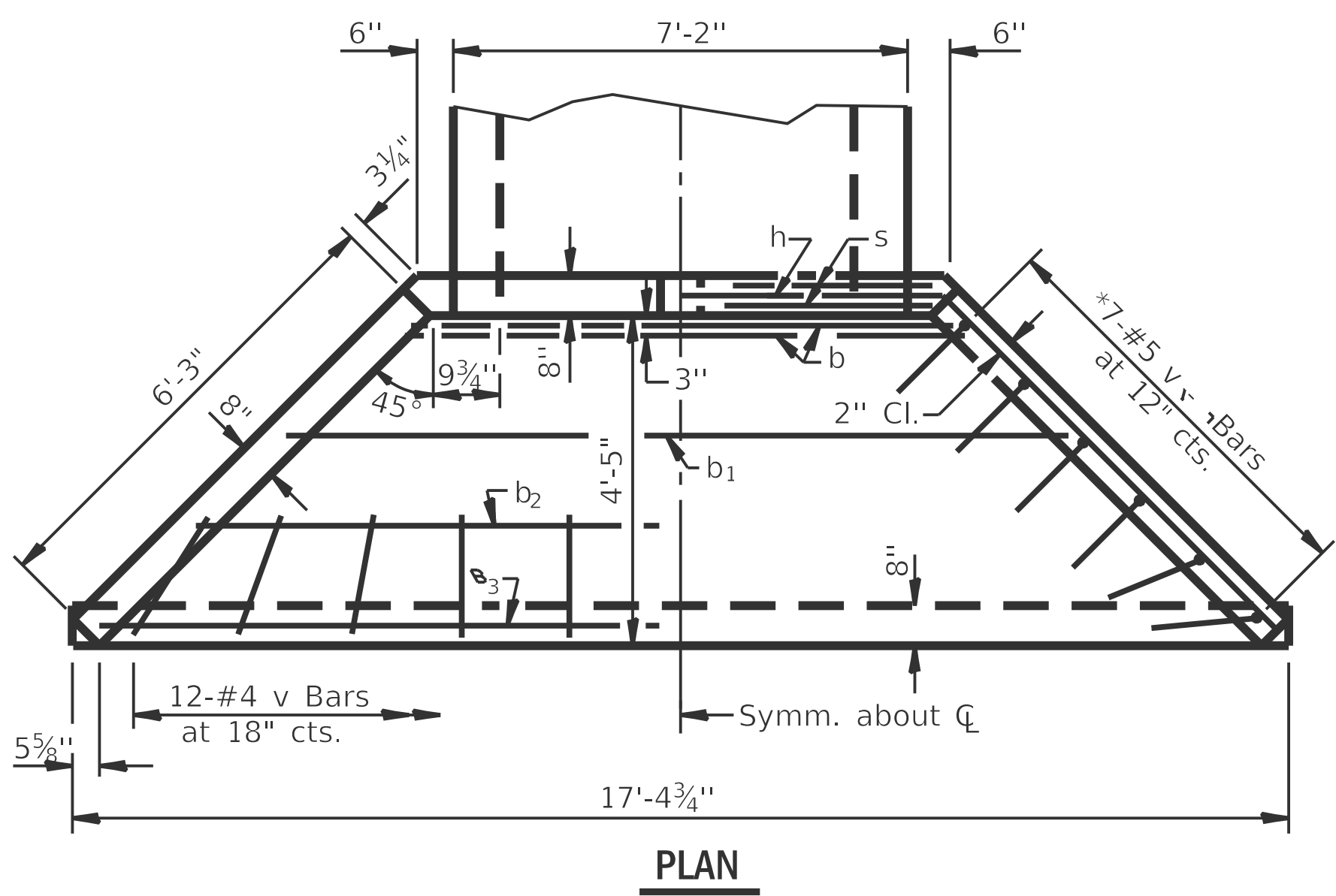
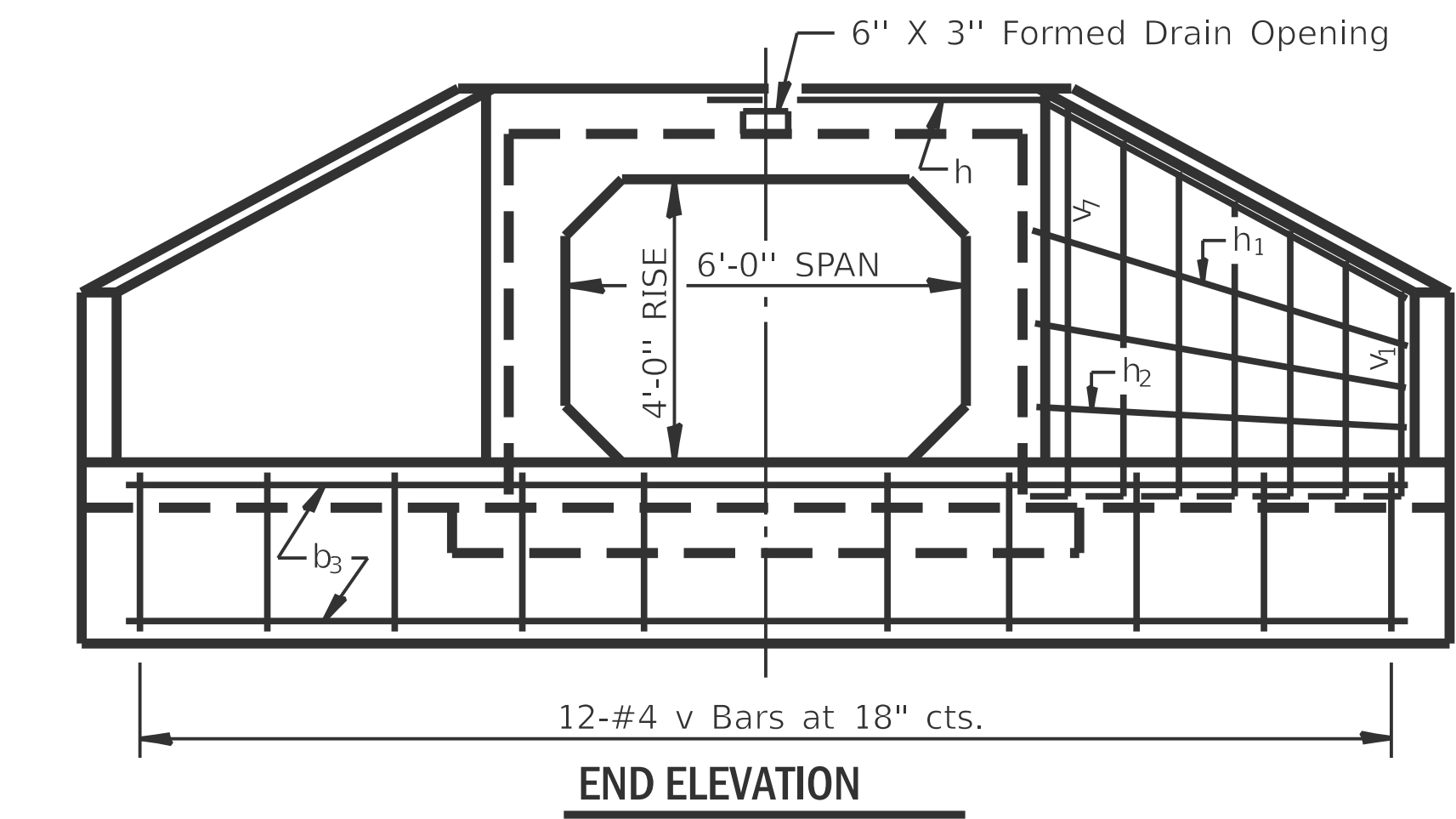


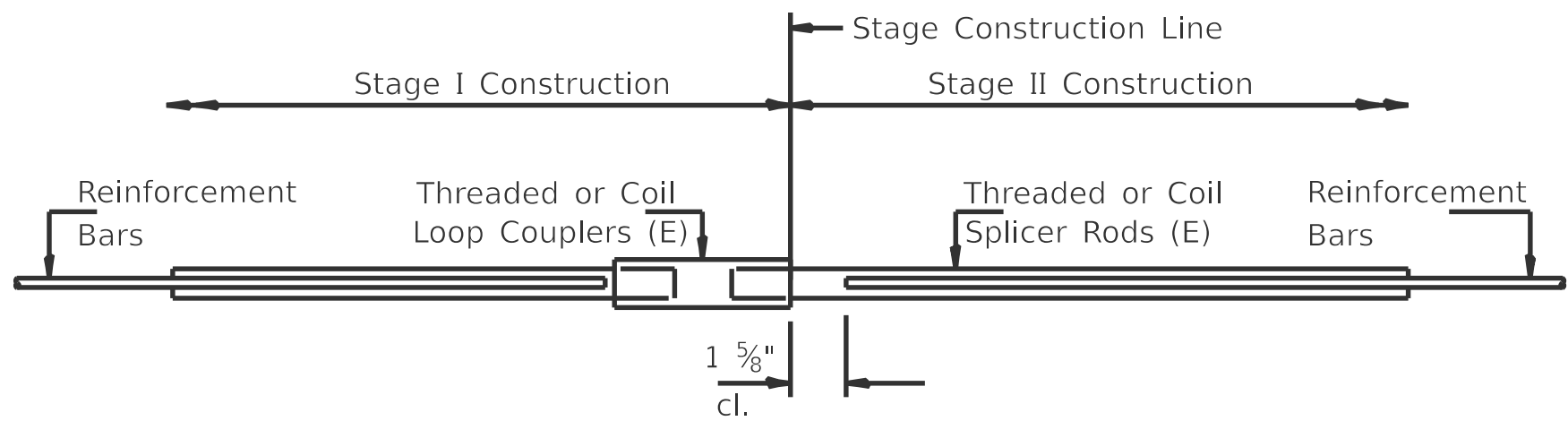


* v_1 thru v_7 bars shall be epoxy coated for rise of more than 5'-0".

GENERAL NOTES
Exposed edges shall be beveled $\frac{3}{4}$ ".
Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.

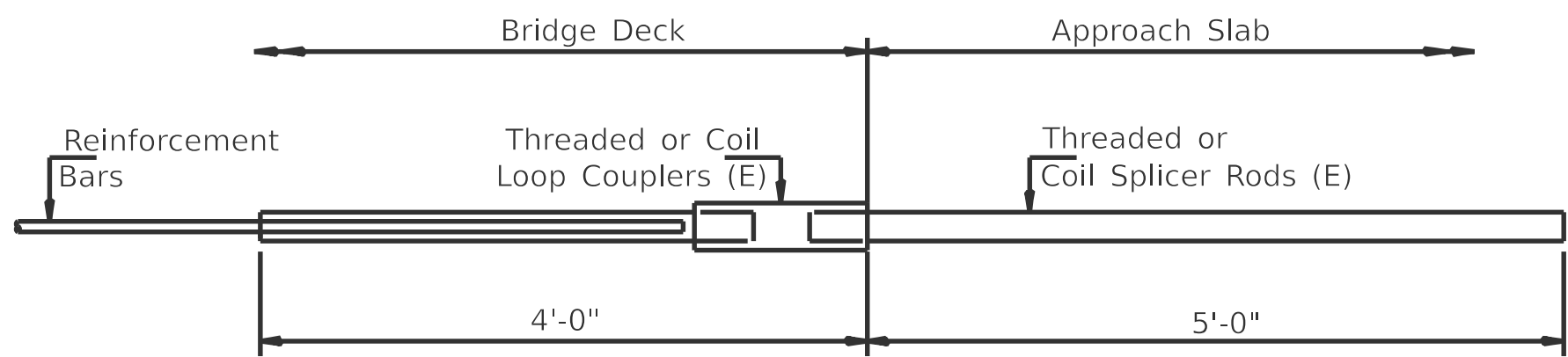
BILL OF MATERIAL				
Bar No.	Size	Length	Shape	
b	2	#5	9' - 0'	—
b ₁	1	#4	11' - 0'	—
b ₂	1	#4	13' - 0'	—
b ₃	2	#4	17' - 0'	—
h	1	#5	21' - 7'	—
h ₁	2	#4	6' - 9'	—
h ₂	4	#4	6' - 7'	—
s	2	#4	28' - 1'	—
v	12	#4	4' - 3'	—
v ₁	2	#5	4' - 9'	—
v ₂	2	#5	5' - 2'	—
v ₃	2	#5	5' - 8'	—
v ₄	2	#5	6' - 1'	—
v ₅	2	#5	6' - 7'	—
v ₆	2	#5	6' - 11'	—
v ₇	2	#5	7' - 5'	—
Concrete Box Culverts				Cu.Yds. 3.9
Reinf. Bars				Lbs. 270

**Table for one (1) headwall.



BAR SPLICER ASSEMBLY DETAIL

Bar Size	No. Assemblies Required	Location



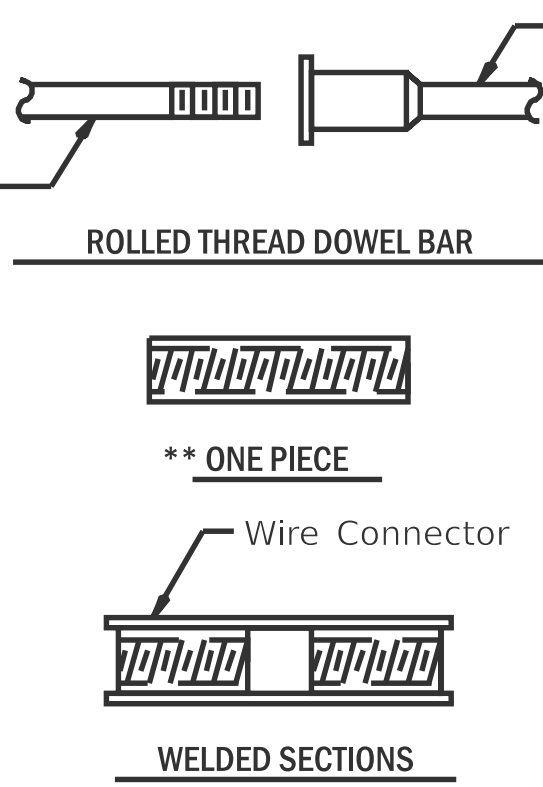
INTEGRAL ABUTMENT
BAR SPLICER ASSEMBLY DETAIL

FOR #15 BAR

Min. Capacity = 22,667 lbs- tension
Min. Pull-out Strength = 9,067 lbs- tension
No. Required =

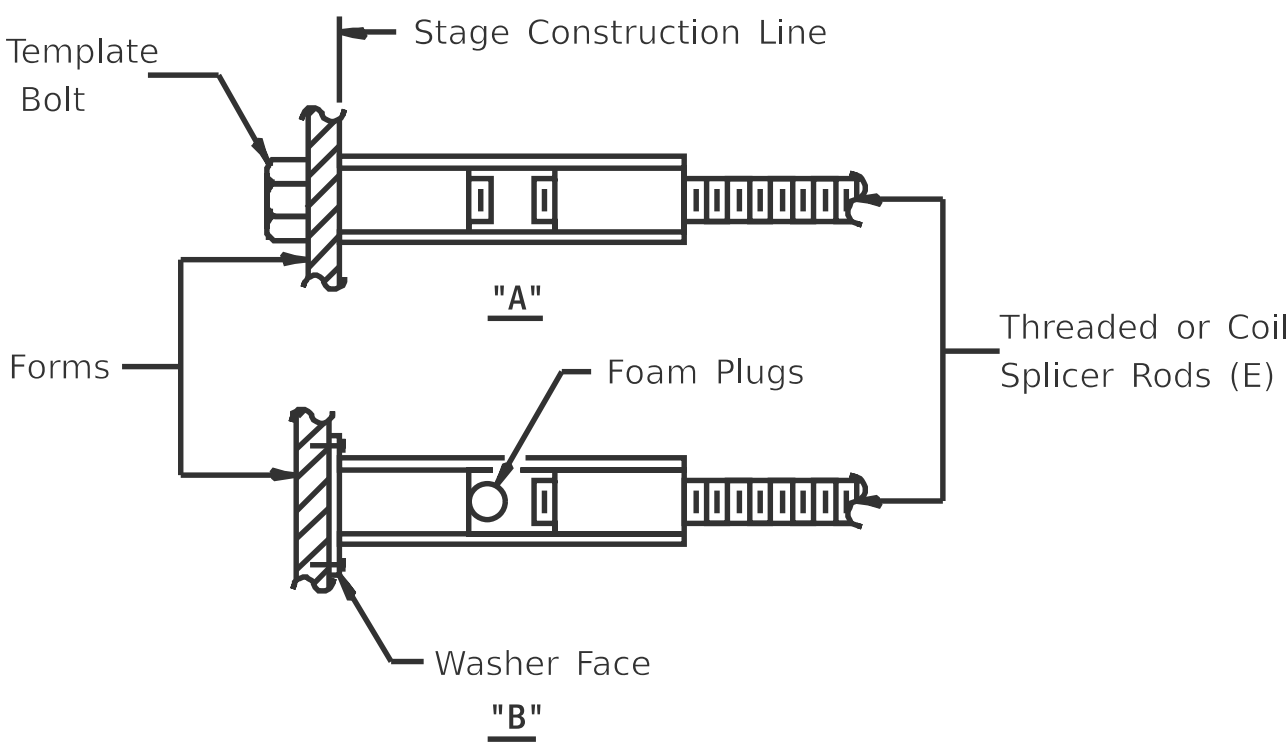
The diameter of this part is the same as the diameter of the bar spliced.

The diameter of this part is equal or larger than the diameter of bar spliced.



BAR SPLICER ASSEMBLY ALTERNATIVES

** Heavy Hex Nuts conforming to ASTM A 563M, Grade C, D or DH may be used.



INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating.

NOTES

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Splicer rods shall be of minimum 400 MPa yield strength, threaded or coiled full length.

All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.

Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

① Minimum Capacity = $1.25 \times 10^{-3} \times f_y \times A_t$
(Tension in kN)

② Minimum *Pull-out Strength = $1.25 \times 10^{-3} \times f_{s\text{allow}} \times A_t$
(Tension in kN)

Where f_y = Yield strength of lapped reinforcement bars in MPa.

$f_{s\text{allow}}$ = Allowable tensile stress in lapped reinforcement bars in MPa (Service Load)

A_t = Tensile stress area of lapped reinforcement bars (mm²).

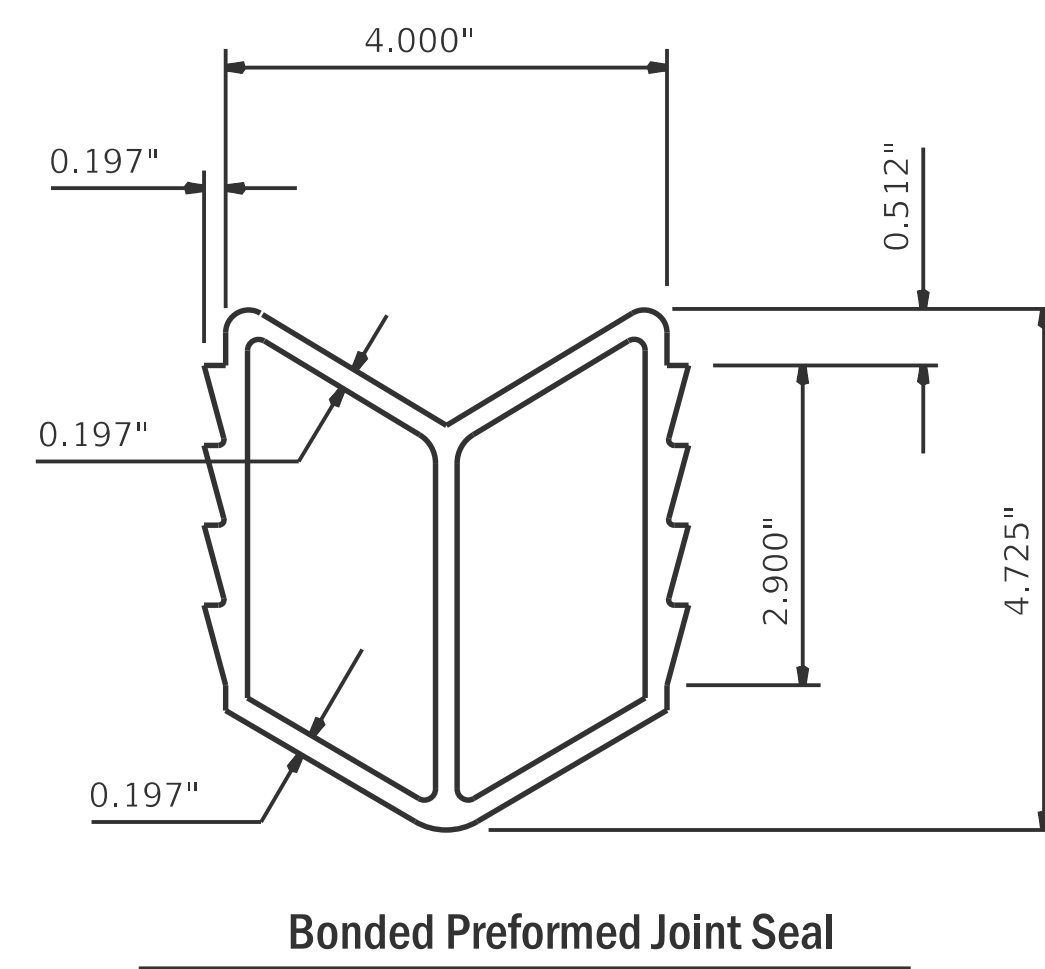
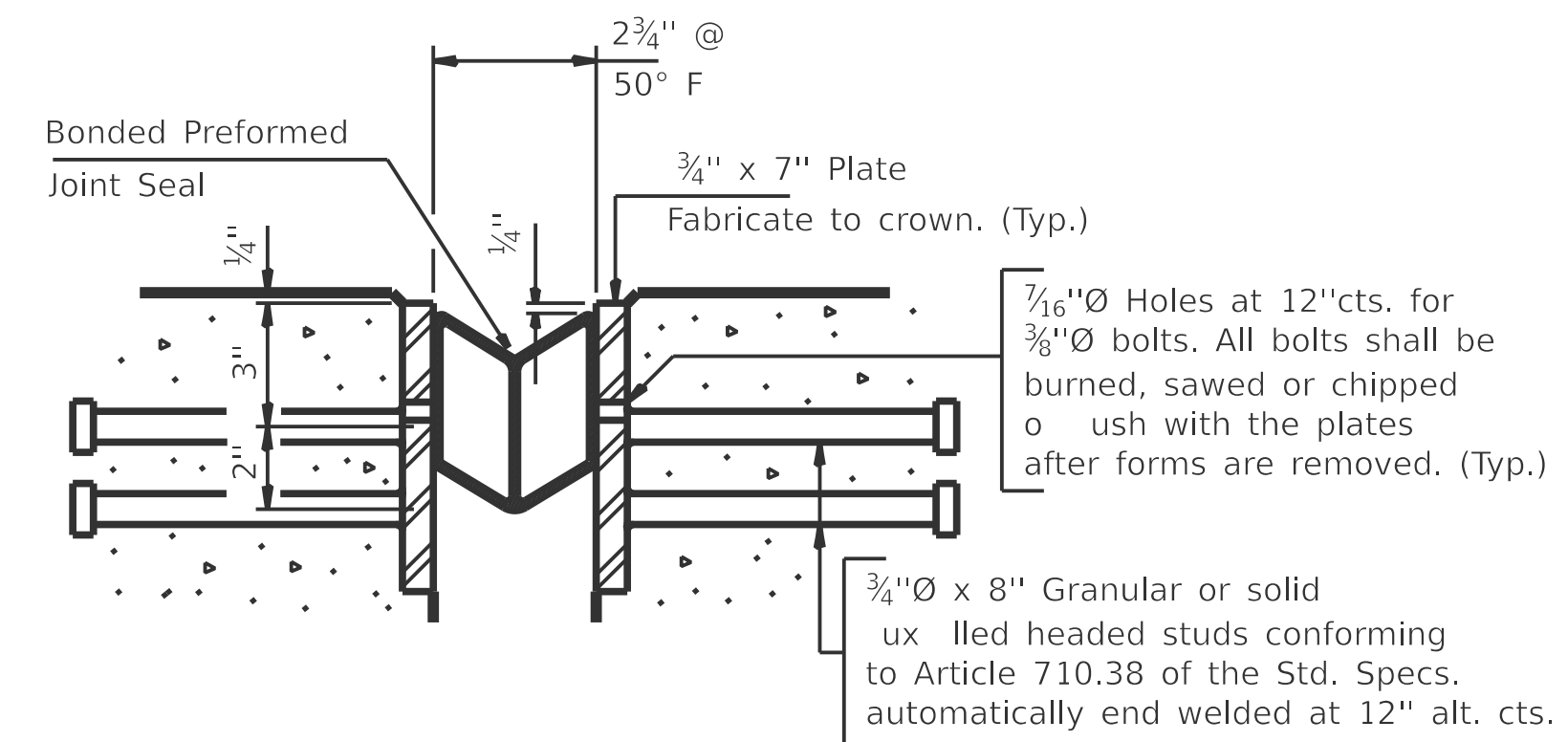
* = 28 day concrete

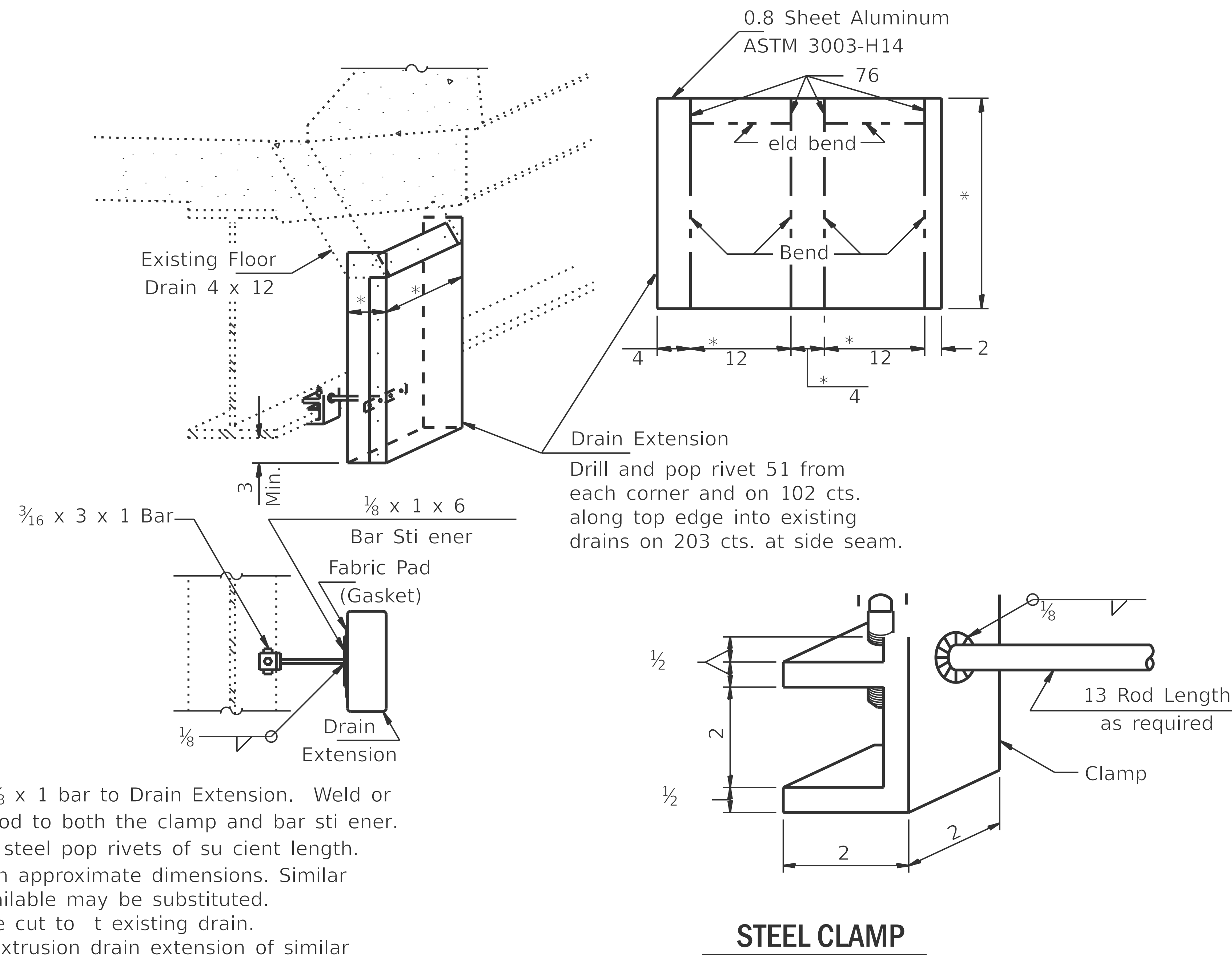
BAR SPLICER ASSEMBLIES			
Strength Requirements			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Min. Capacity lb - tension	Min. Pull-Out Strength lb - tension
#15	24"	25	9
#20	30"	36	14
#25	36"	55	24
#30	40"	80	32

BAR SPLICER ASSEMBLIES			
Strength Requirements			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Min. Capacity kN - tension	Min. Pull-Out Strength kN - tension
#15	610 mm	100	40
#20	790 mm	150	60
#25	1.04 m	250	100
#30	1.37 m	350	140

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."

All dimensions are in millimeters (mm) except as noted.





Notes: Pop rivet the 1/8 x 1 bar to Drain Extension. Weld or securely attach rod to both the clamp and bar stener. Use 3/16 stainless steel pop rivets of sufficient length. Clamp shown in approximate dimensions. Similar commercially available may be substituted. * Field measure cut to fit existing drain. An aluminum extrusion drain extension of similar dimensions may be substituted.

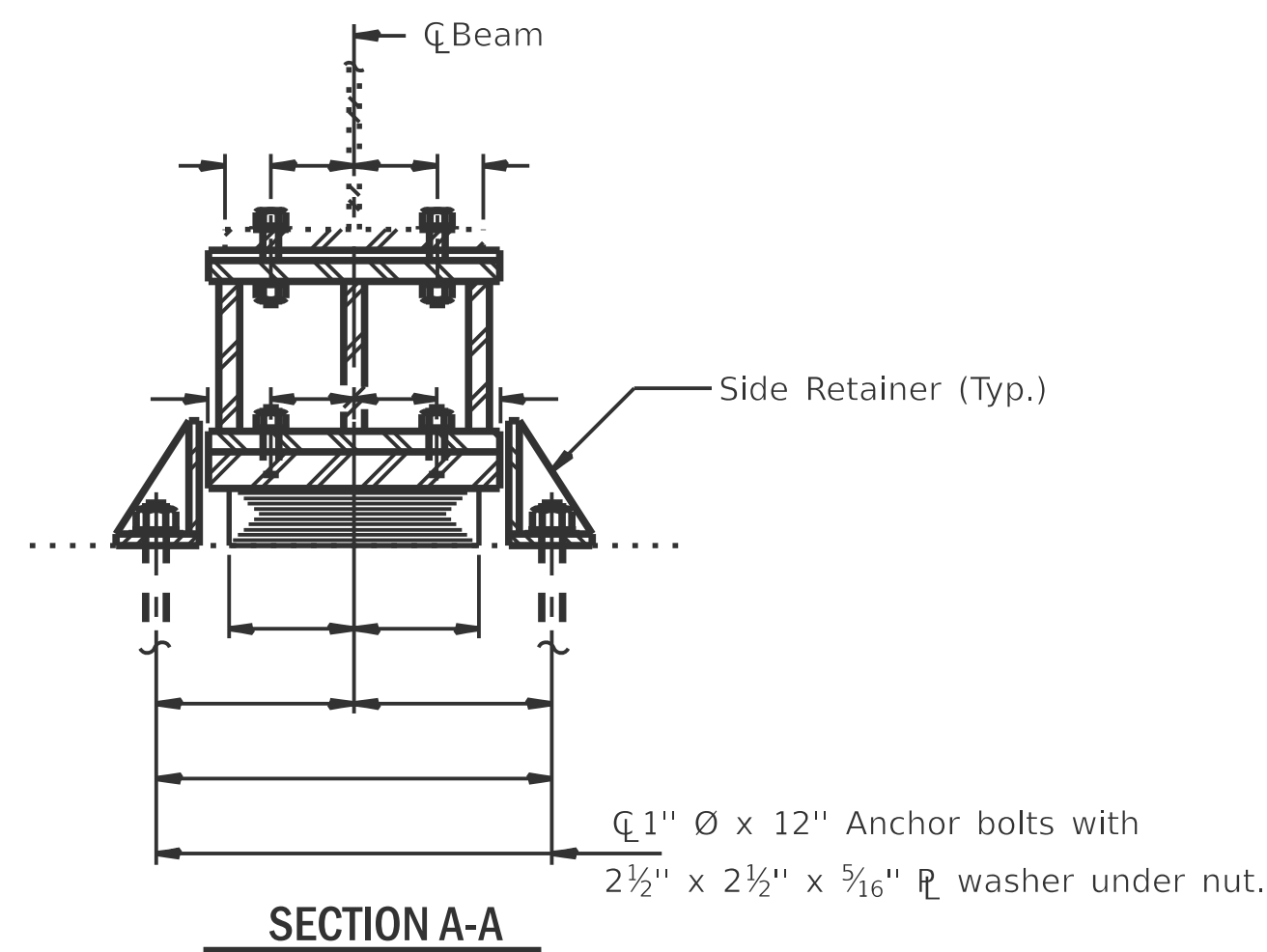
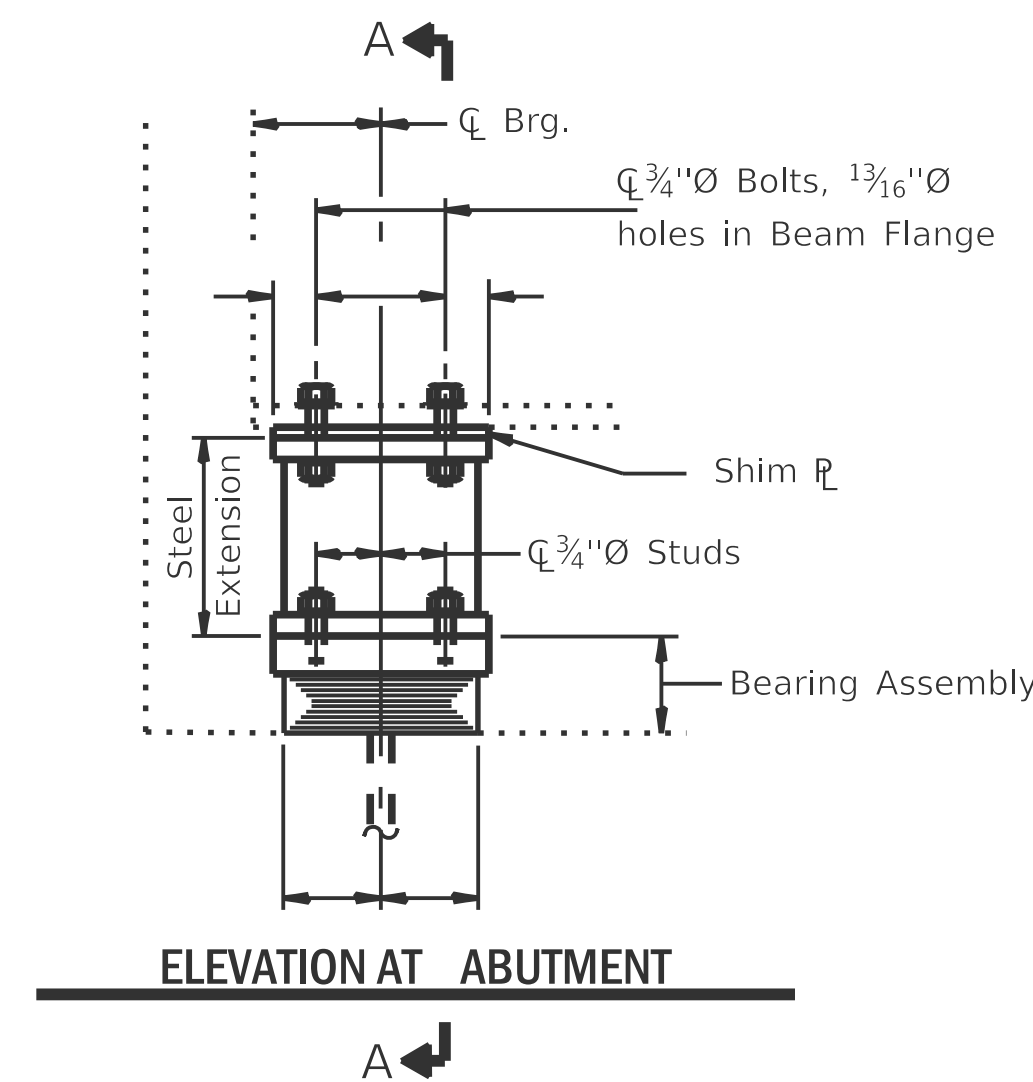
DECK DRAIN EXTENSION DETAIL

All dimensions are in inches
unless otherwise noted.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER REACTIONS

R _p	(K)	
R _t	(K)	
Imp.	(K)	
R (Total)	(K)	



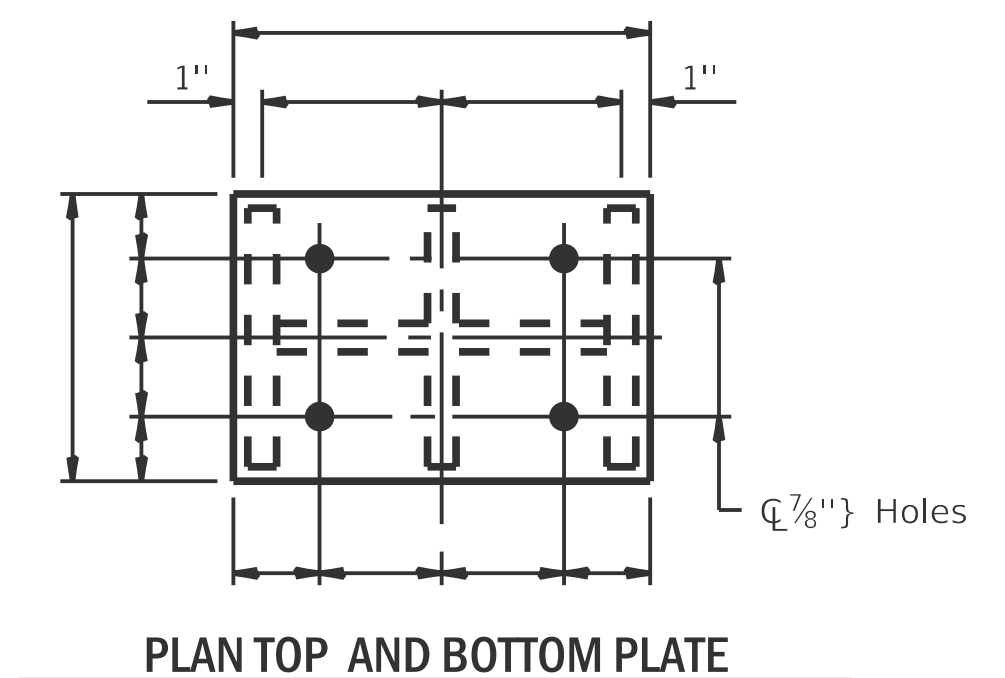
Notes: Diaphragm removal and replacement may be required to facilitate drilling holes. Cost shall be included with Furnishing and Erecting Structural Steel.

New steel extensions, side retainers, shim 's, connection bolts, and anchor bolts are included with Furnishing and Erecting Structural Steel.

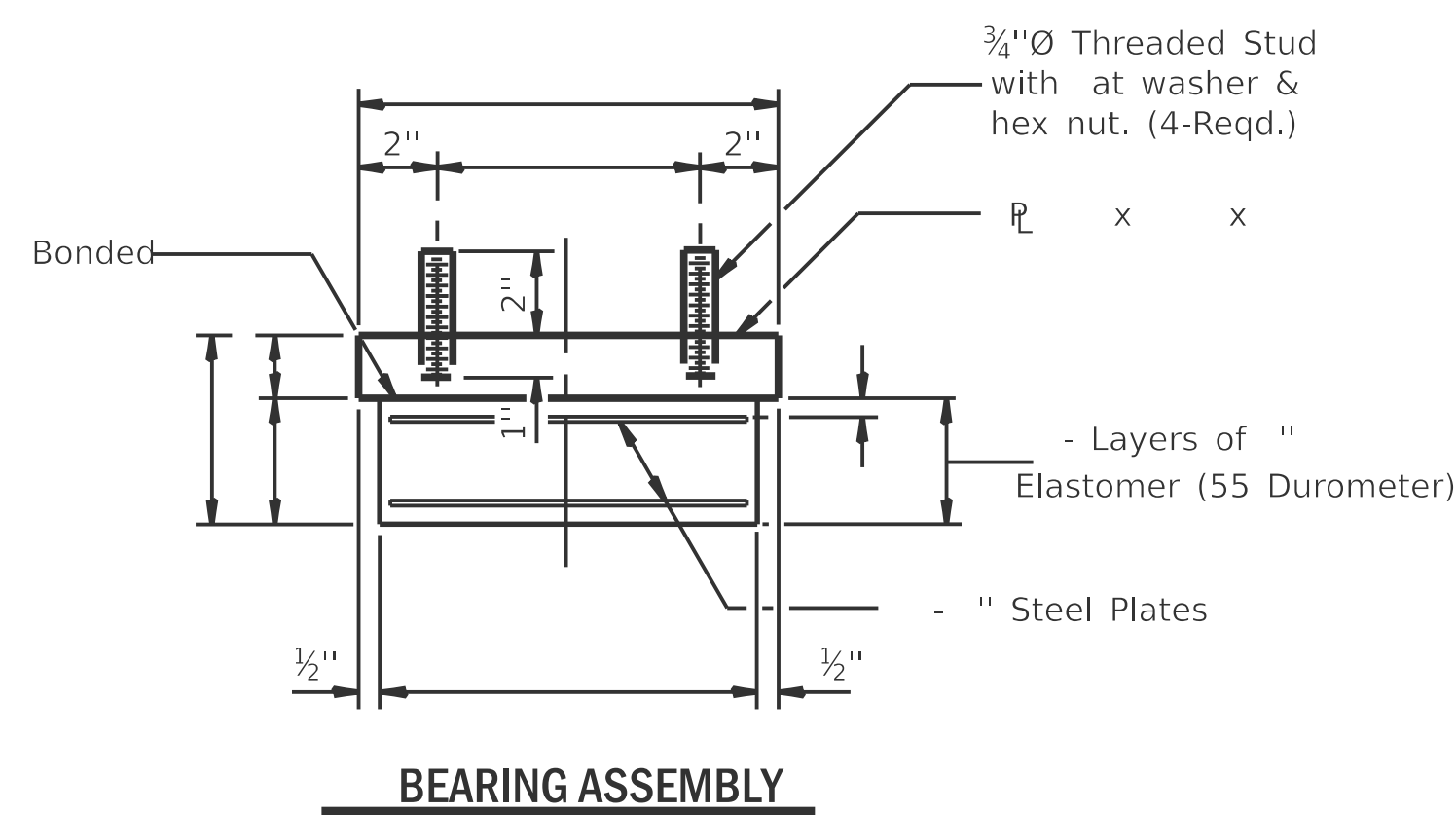
See Sheet of for Anchor Bolt installation.

Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

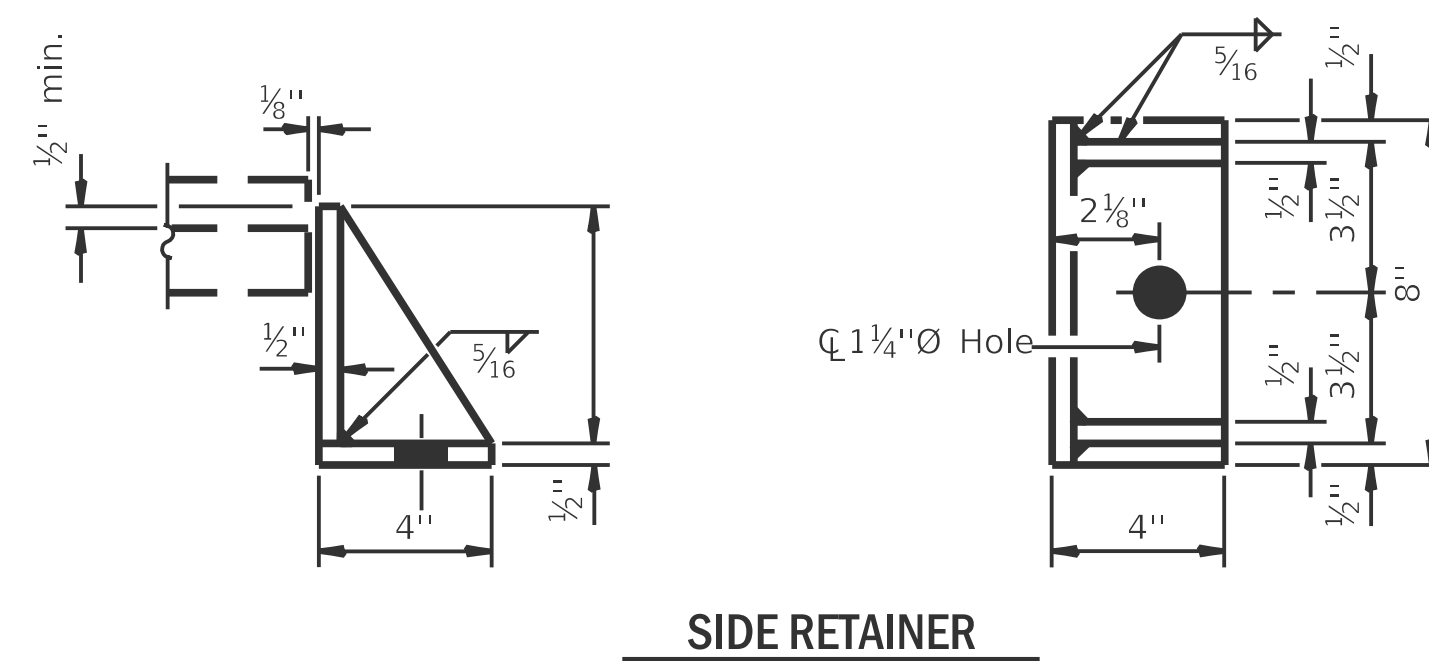
Min. jack capacity = Tons.



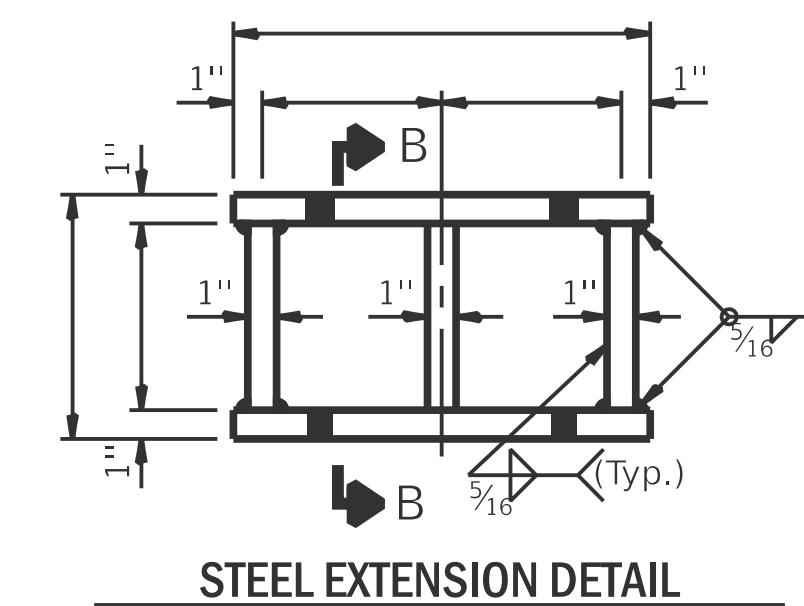
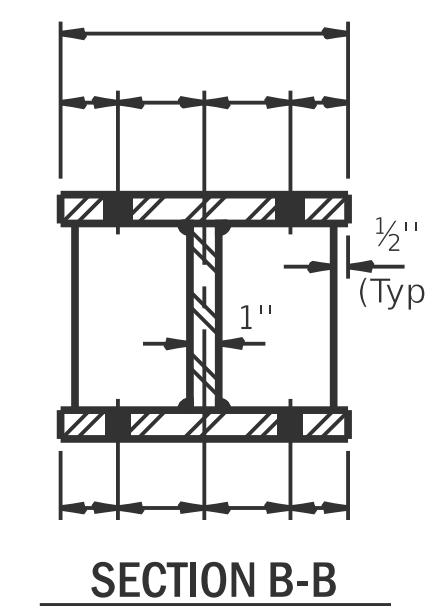
TYPE I ELASTOMERIC EXP. BRG.



Note: Shim plates shall not be placed under Bearing Assembly.



Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	

DESIGNED
CHECKED
DRAWN
CHECKED

TY/REPS 01-27-2000

EXAMINED	
	ENGINEER OF STRUCTURAL SERVICES
PASSED	
	ENGINEER OF BRIDGES AND STRUCTURES

TYI/REPS 01-27-2000

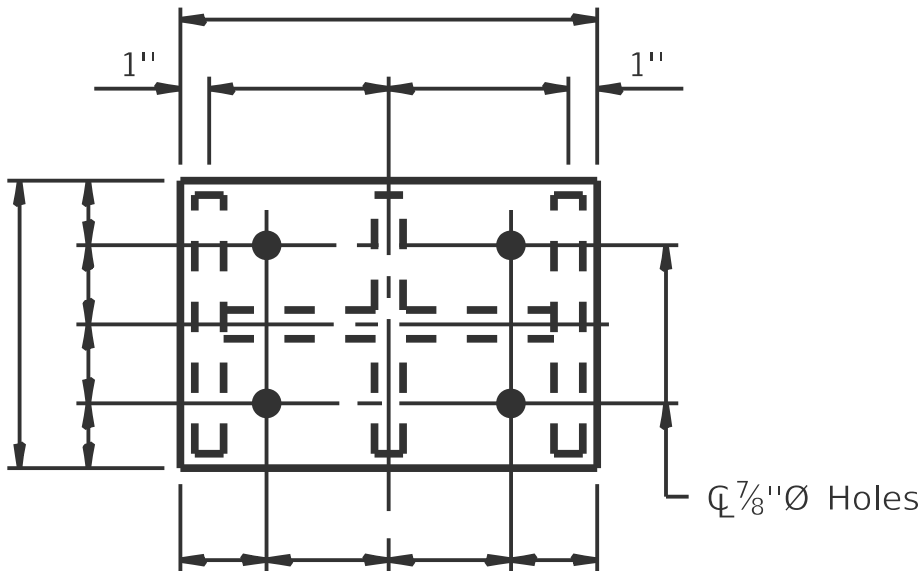
500-BRGDETAILS 001

ELASTOMERIC EXP. BEARING

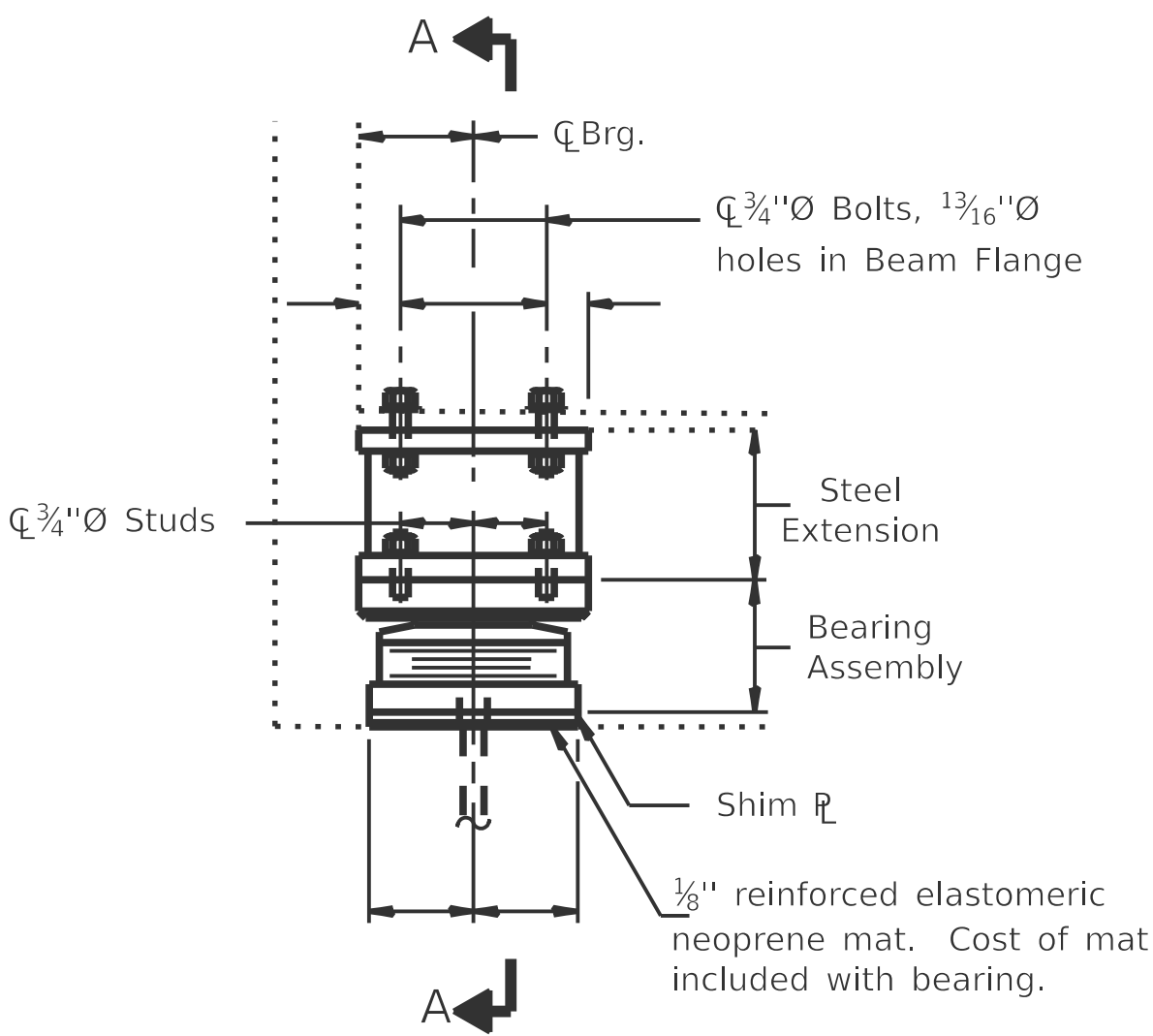
GIRDER REACTIONS

RP	(K)	
RL	(K)	
Imp.	(K)	
R (Total)	(K)	

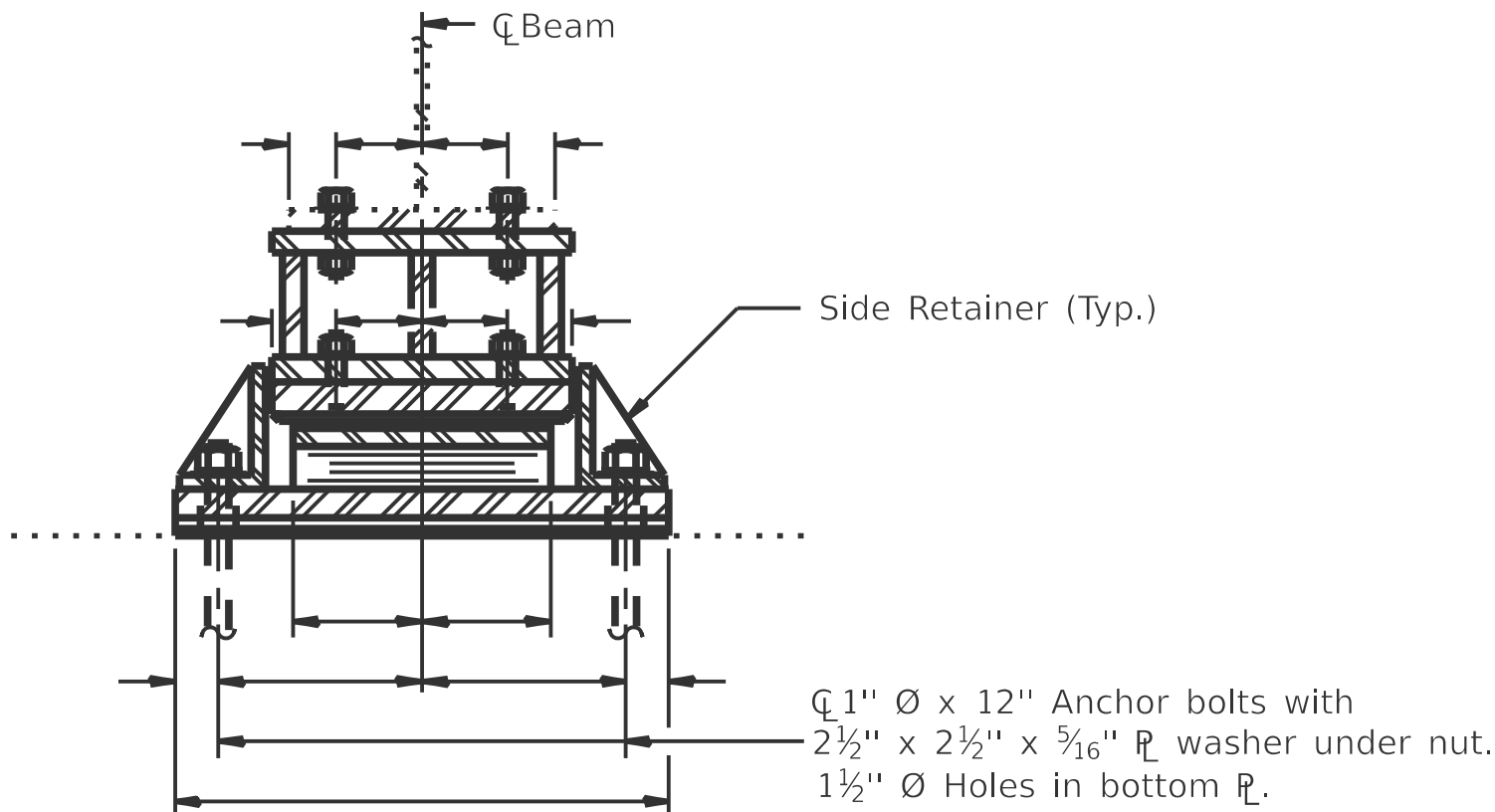
Notes: Diaphragm removal and replacement may be required to facilitate drilling holes. Cost shall be included with Furnishing and Erecting Structural Steel.
New steel extensions, side retainers, shim 's, connection bolts, and anchor bolts are included with Furnishing and Erecting Structural Steel.
See Sheet of for Anchor Bolt installation.
Prior to ordering any material, the Contractor shall verify in the eld all bearing height and shim thickness dimensions.
Min. jack capacity = Tons.



PLAN TOP AND BOTTOM PLATE

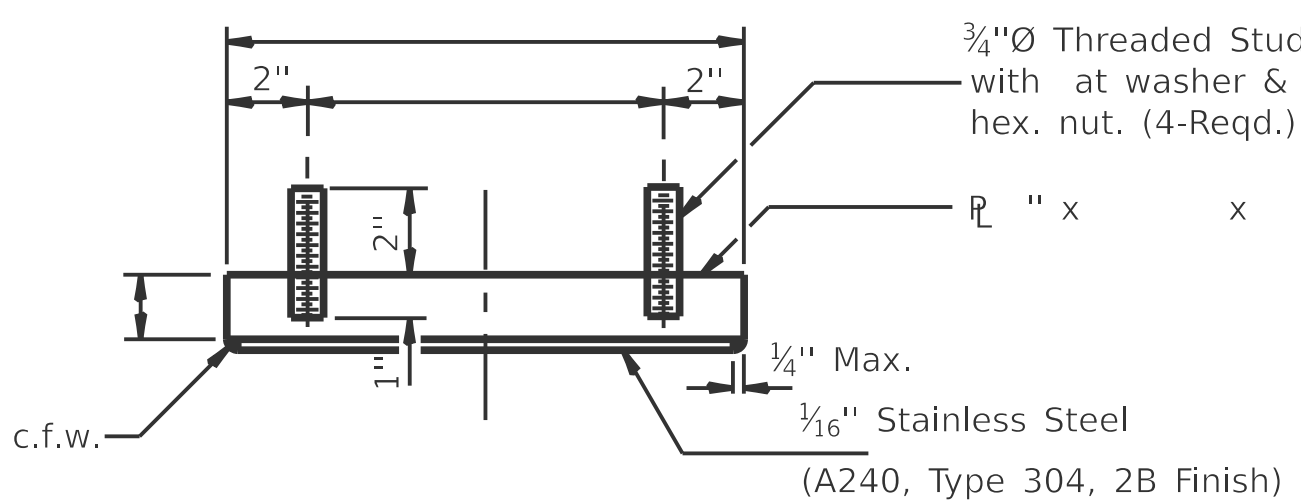


ELEVATION AT ABUTMENT

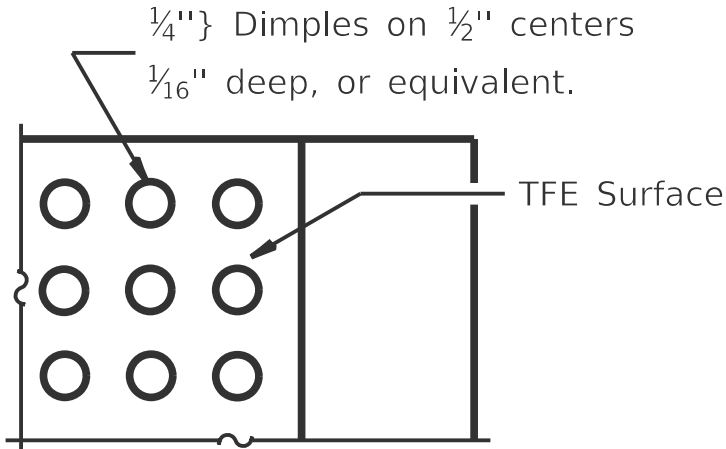


SECTION A-A

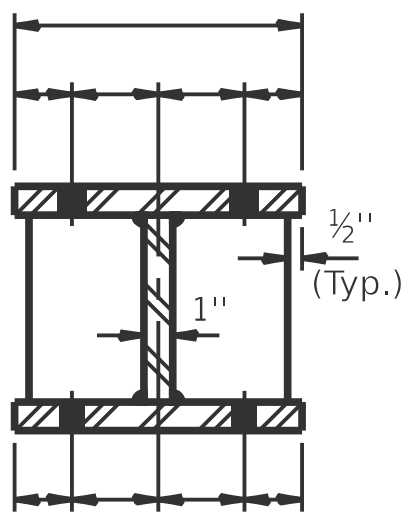
TYPE II TFE ELASTOMERIC EXP. BRG.



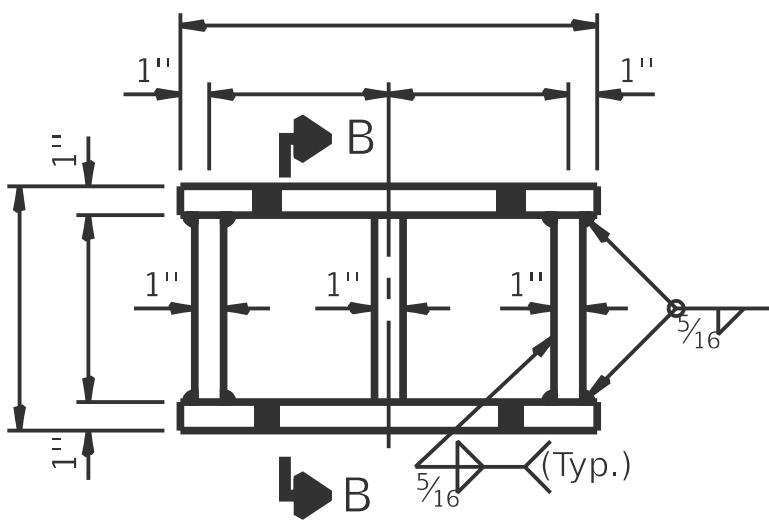
TOP BEARING ASSEMBLY



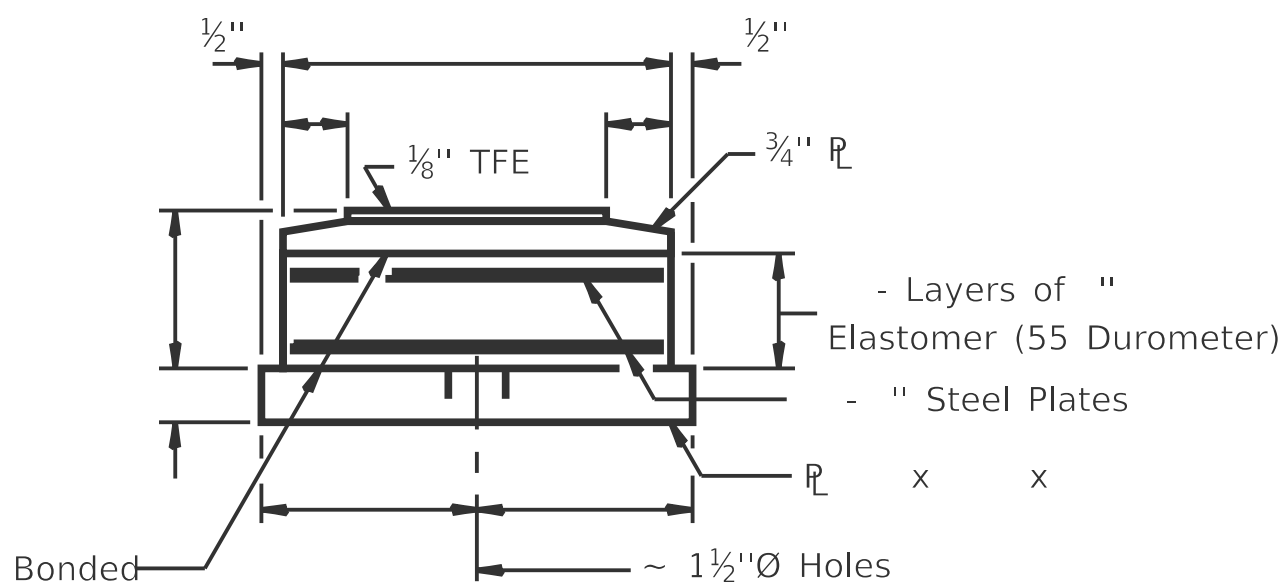
PLAN-TFE SURFACE



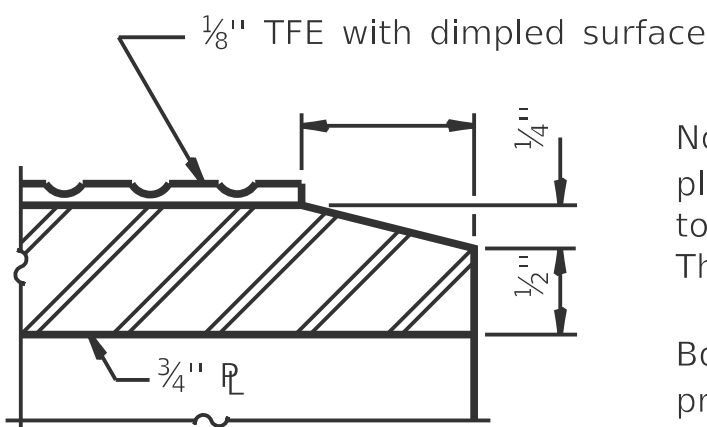
SECTION B-B



STEEL EXTENSION DETAIL



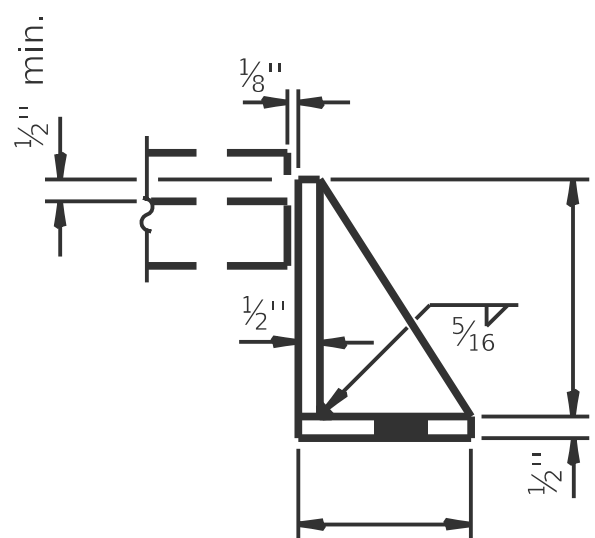
BOTTOM BEARING ASSEMBLY



SECTION THRU TFE

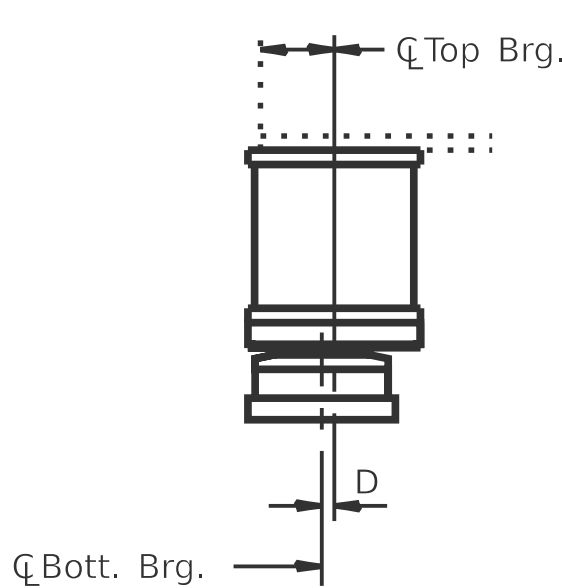
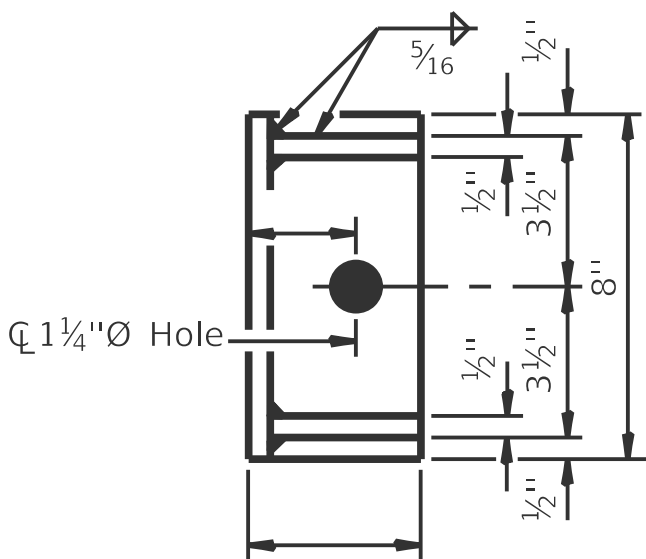
Note: The 1/8" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.

Bonding of 1/8" TFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



SIDE RETAINER

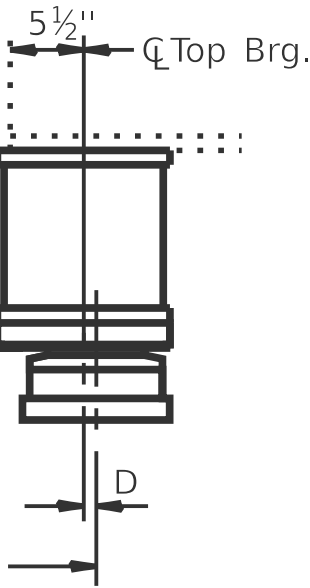
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



(Move bott. brg. away from fixed brg.) (Move bott. brg. toward fixed brg.)

SETTING ANCHOR BOLTS AT EXP. BRG.

D=1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.



BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type II	Each	

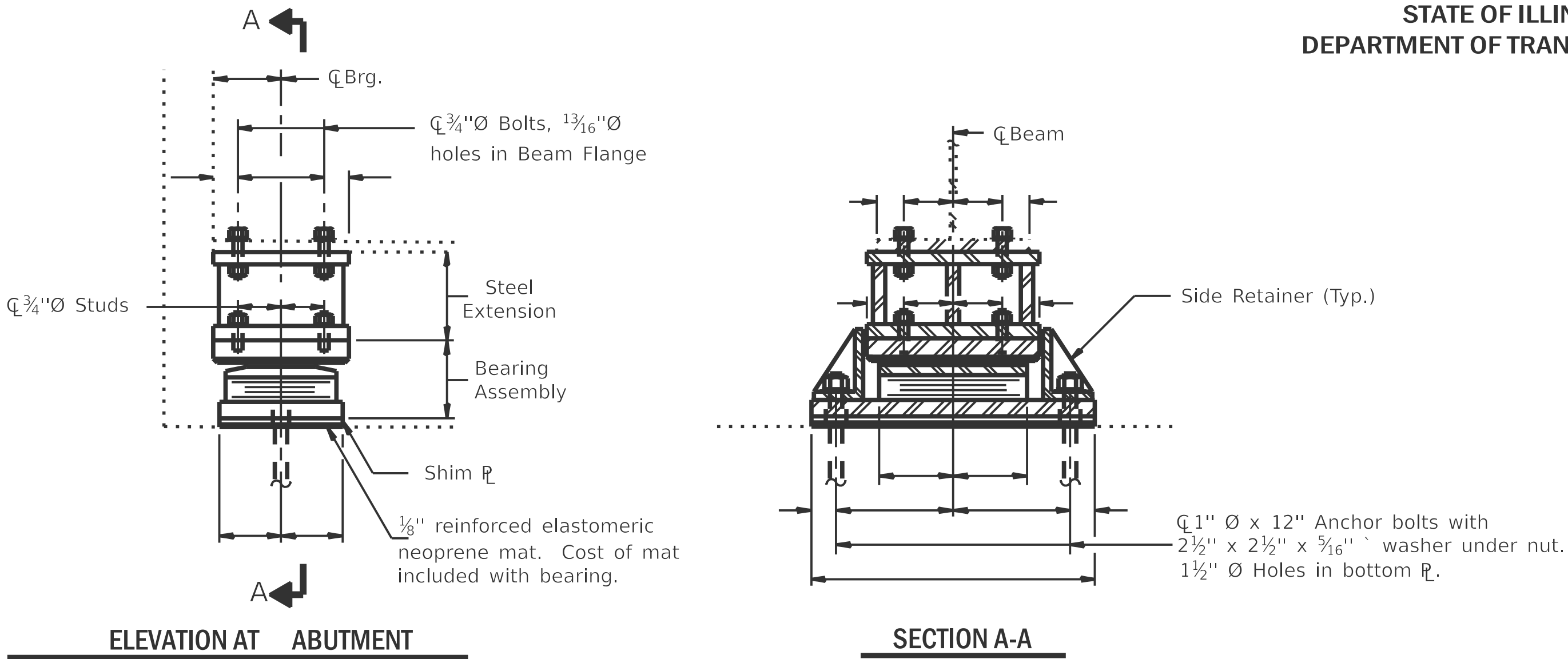
DESIGNED
CHECKED
DRAWN
CHECKED

EXAMINED
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

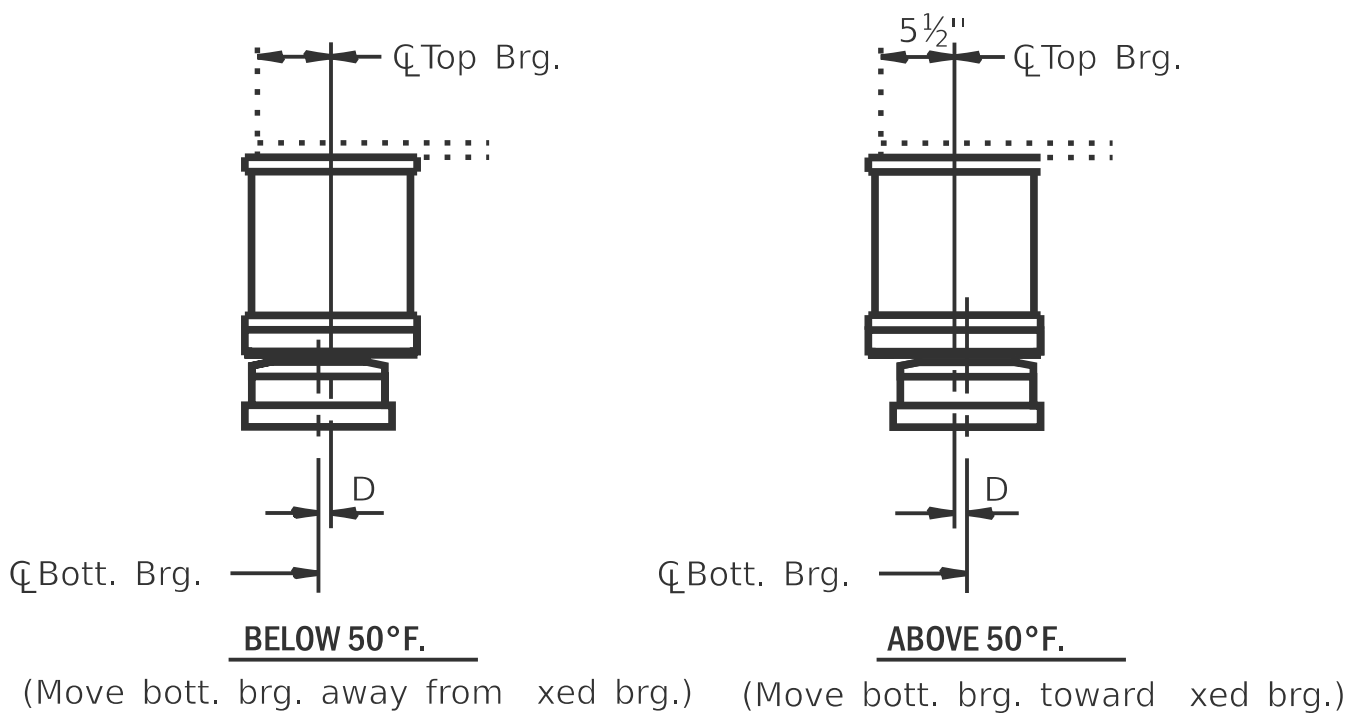
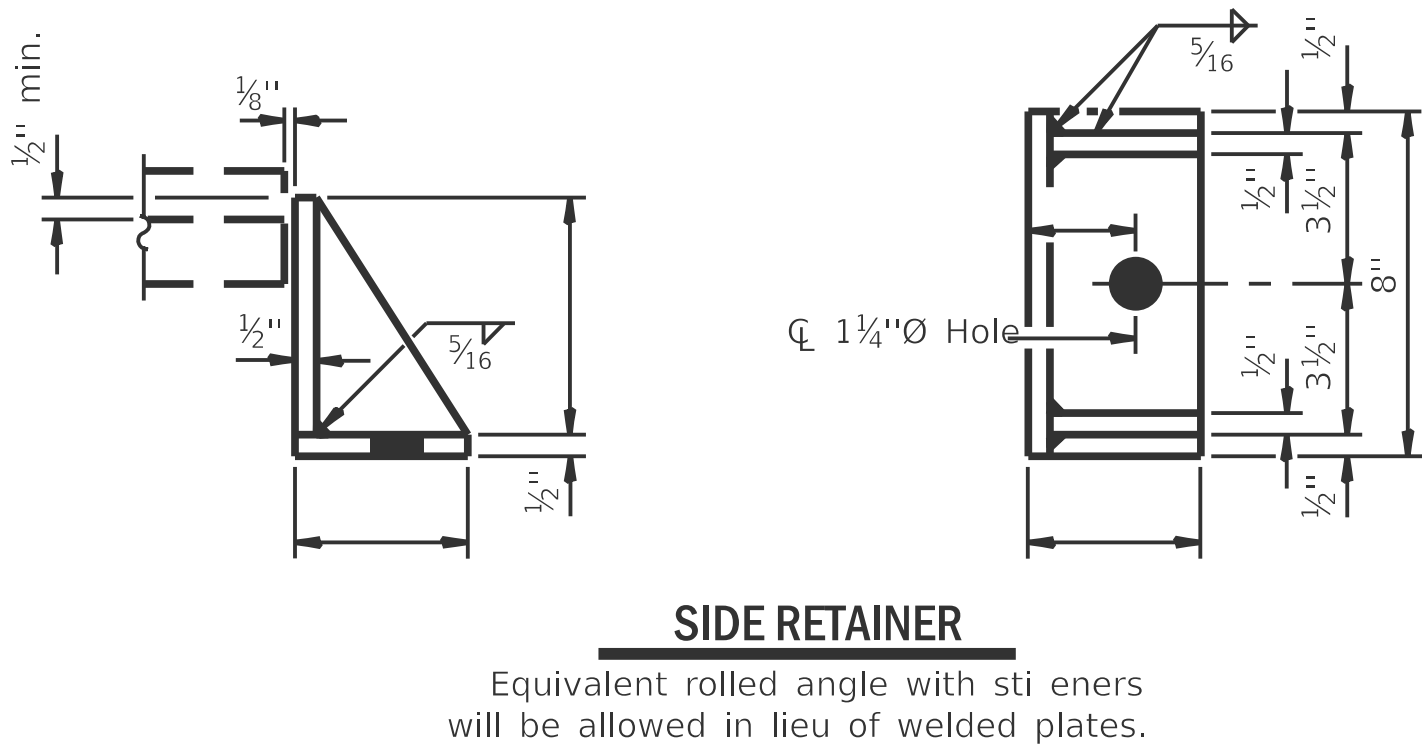
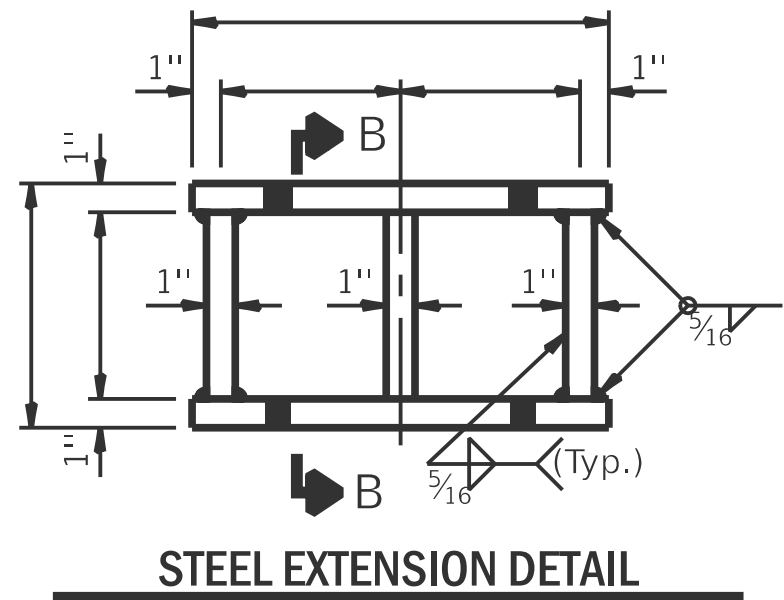
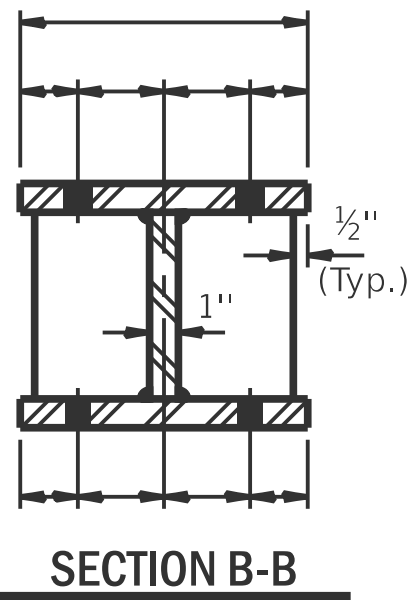
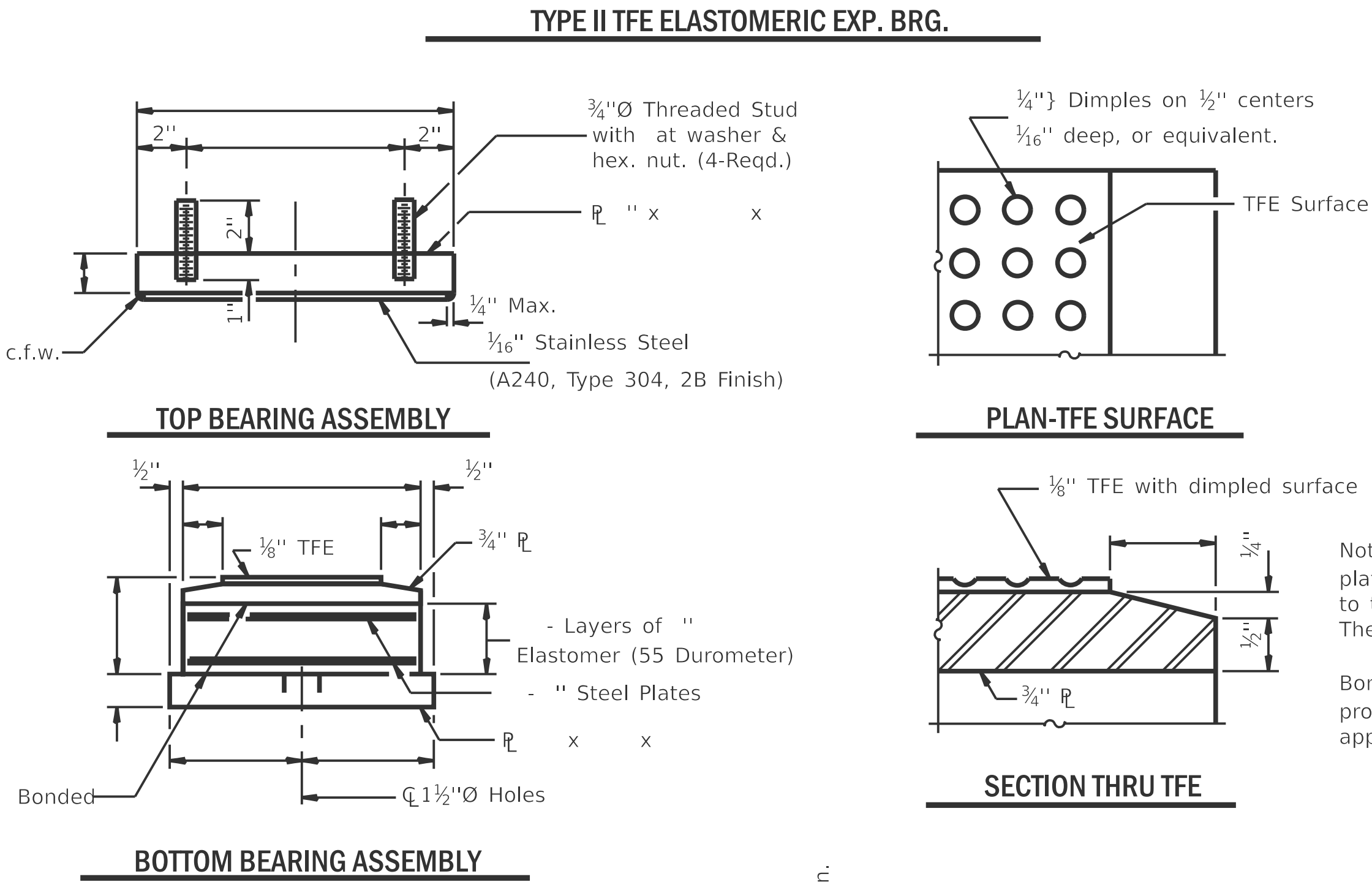
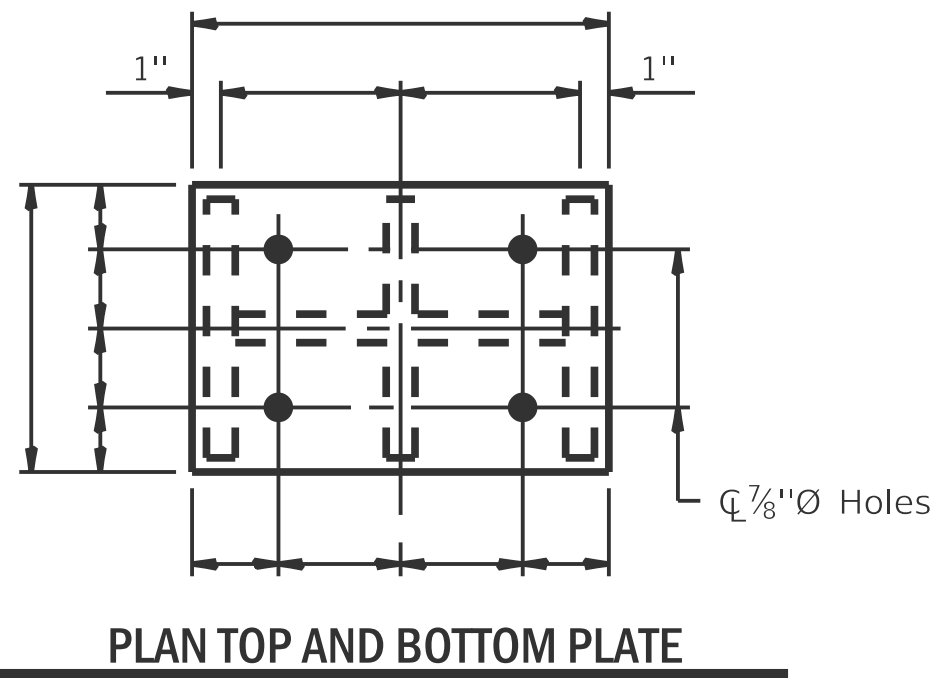
TYI/REPS 01-27-2000

GIRDER REACTIONS

R ₁	(K)	
R ₂	(K)	
Imp.	(K)	
R (Total)	(K)	



Notes: Diaphragm removal and replacement may be required to facilitate drilling holes. Cost shall be included with Furnishing and Erecting Structural Steel.
New steel extensions, side retainers, shim 's, connection bolts, and anchor bolts are included with Furnishing and Erecting Structural Steel.
See Sheet of for Anchor Bolt installation.
Prior to ordering any material, the Contractor shall verify in the eld all bearing height and shim thickness dimensions.
Min. jack capacity = Tons.

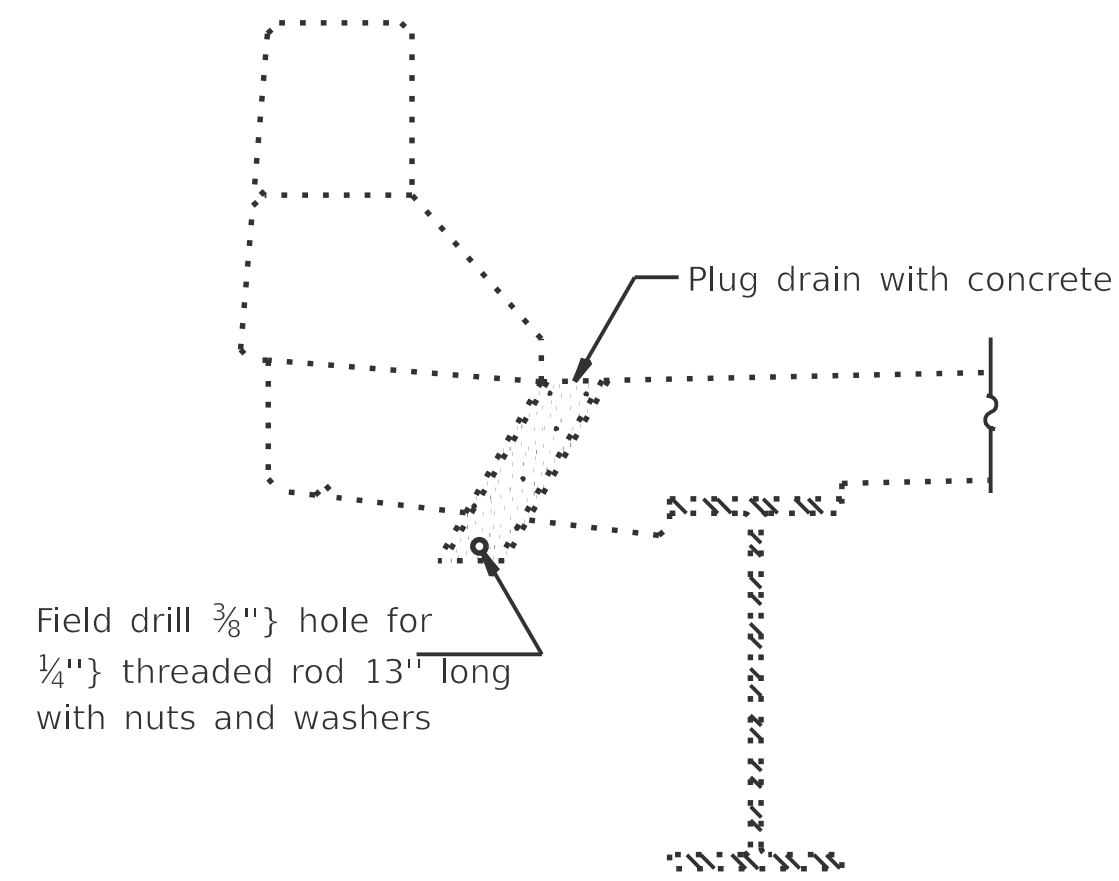


BILL OF MATERIAL		
Item	Unit	Total
Elastomeric Bearing Assembly Type II	Each	

DESIGNED
CHECKED
DRAWN
CHECKED

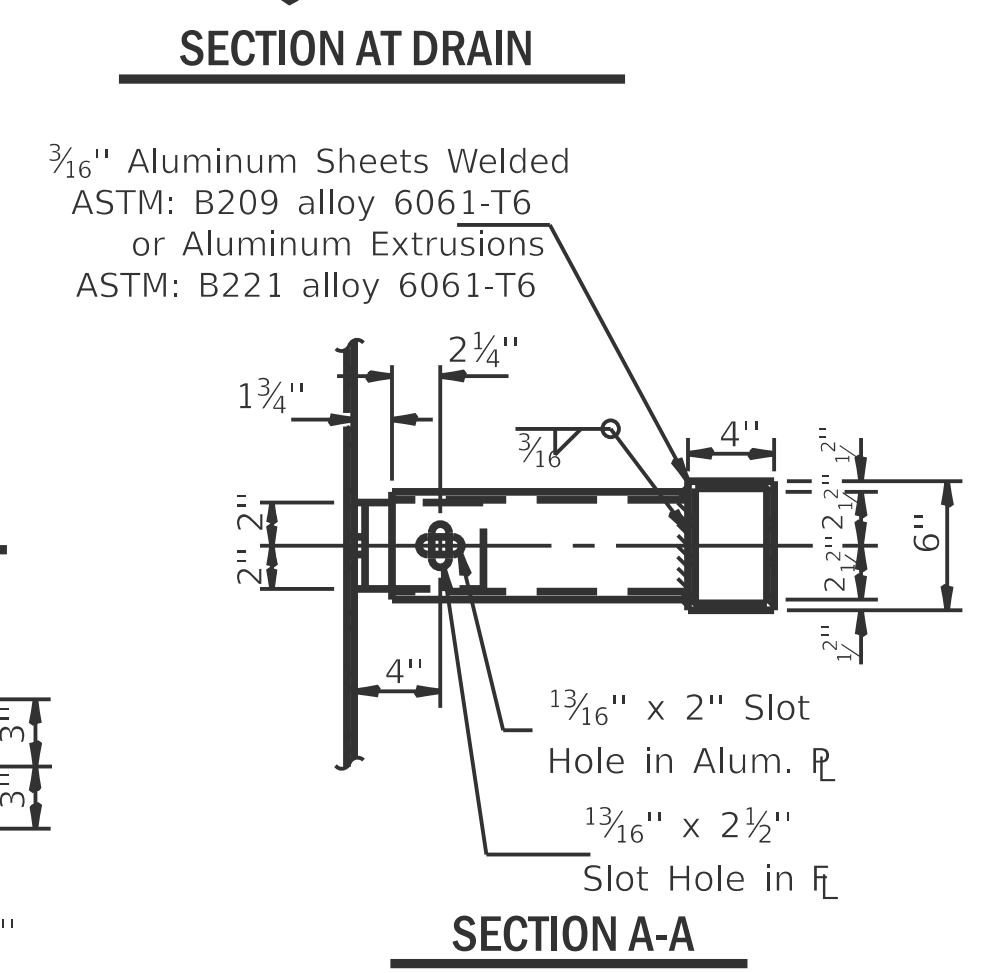
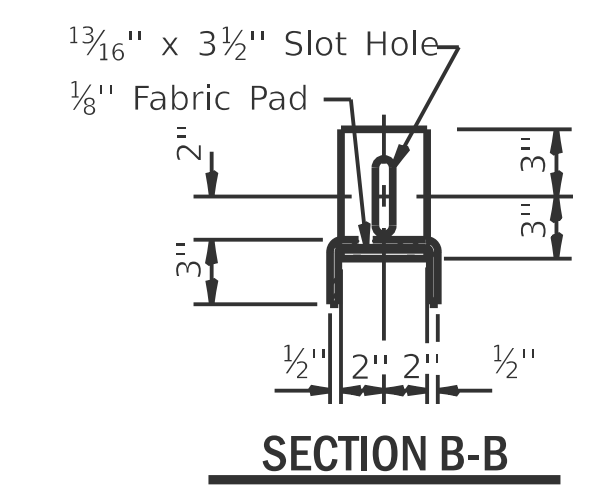
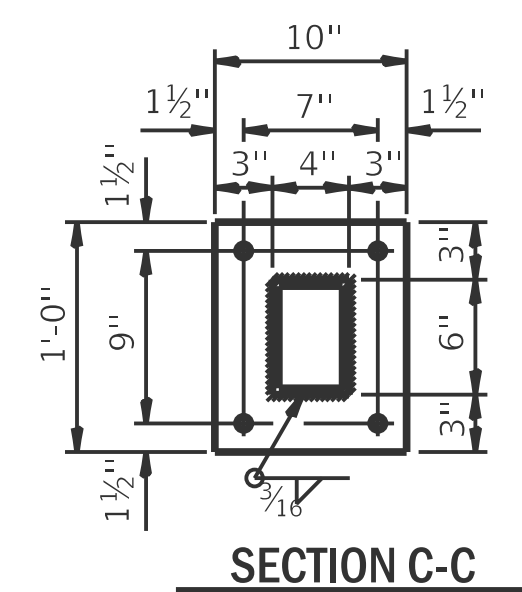
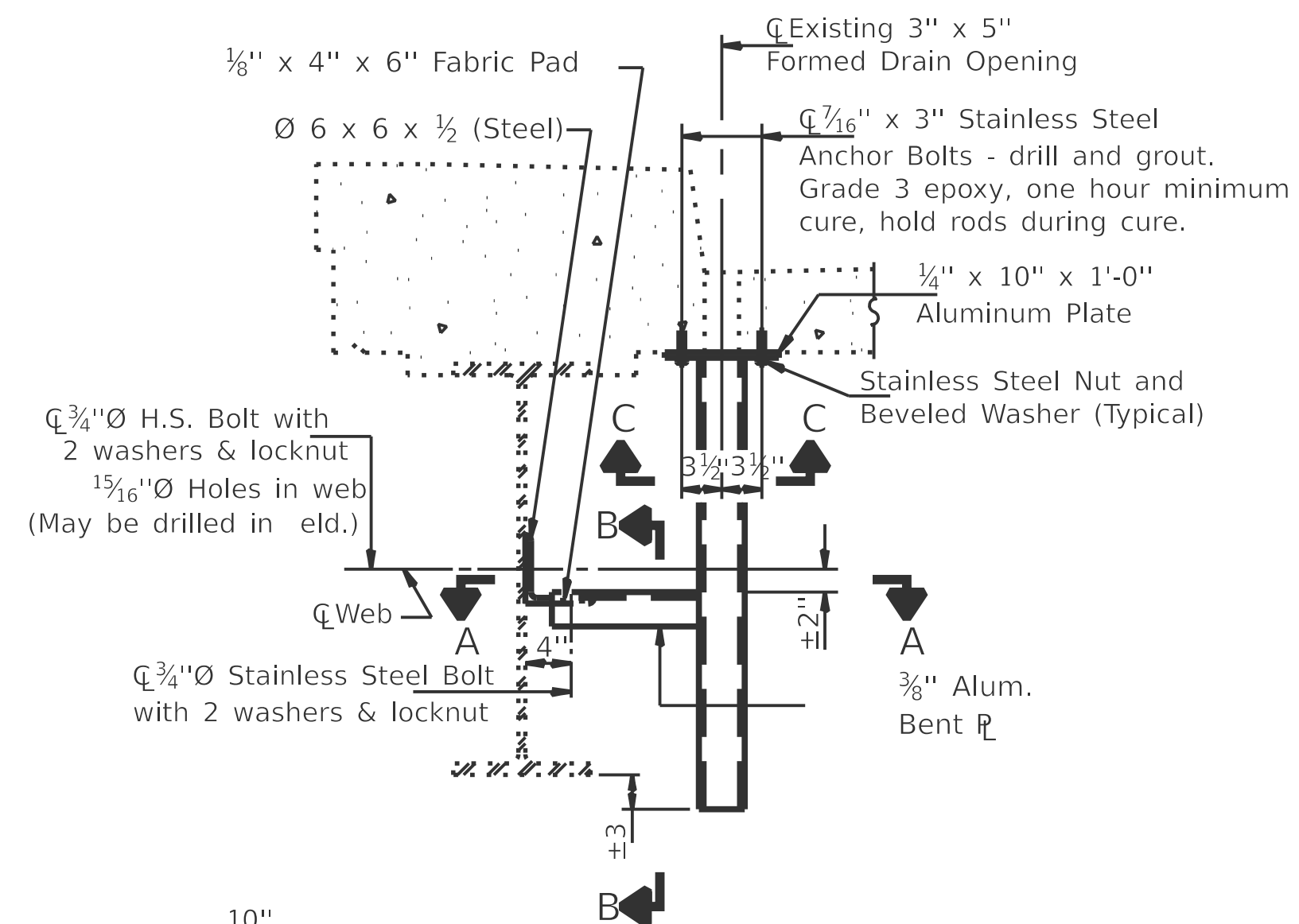
EXAMINED
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

TY/REPS 01-27-2000

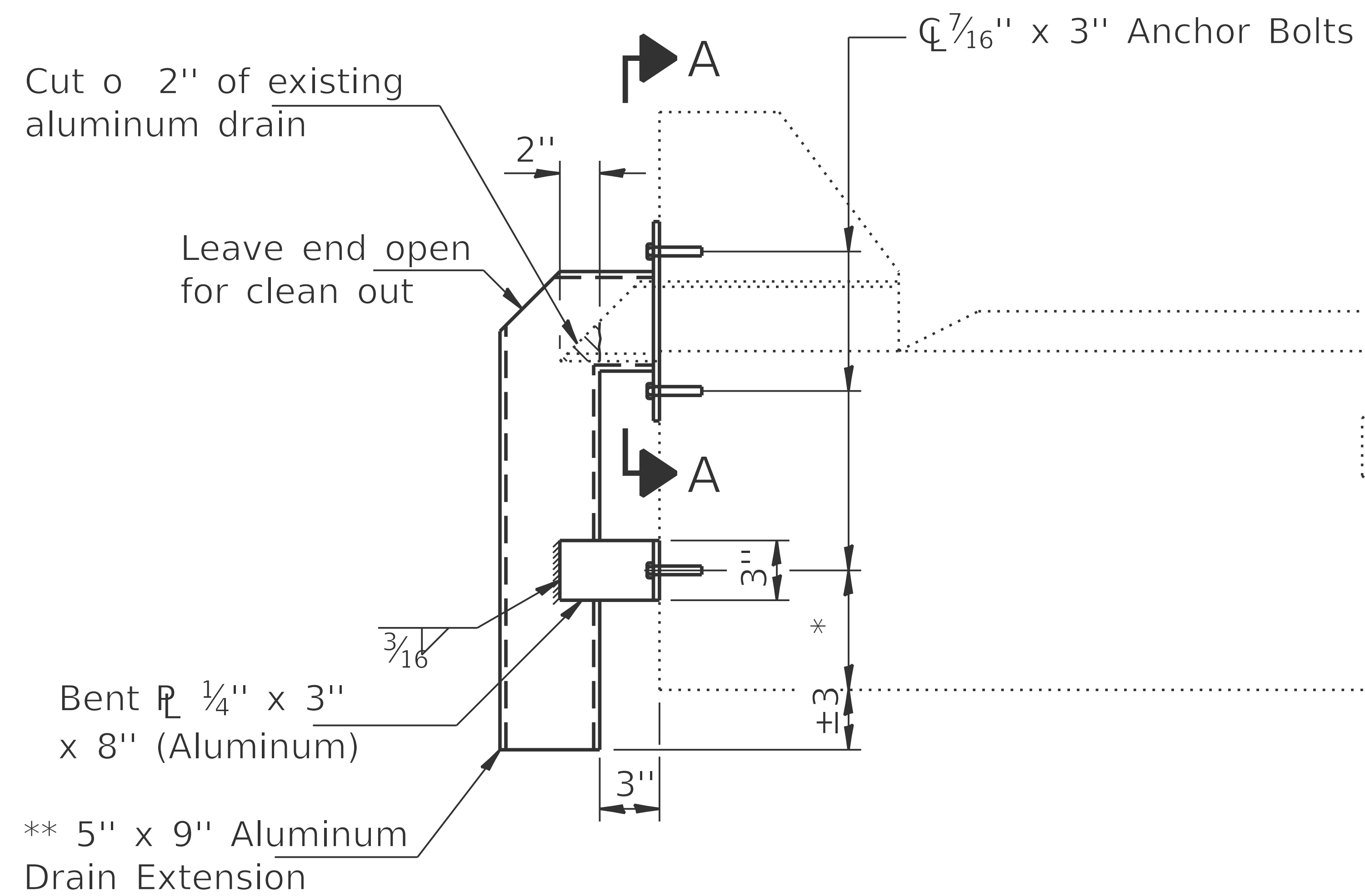


SECTION AT DRAIN



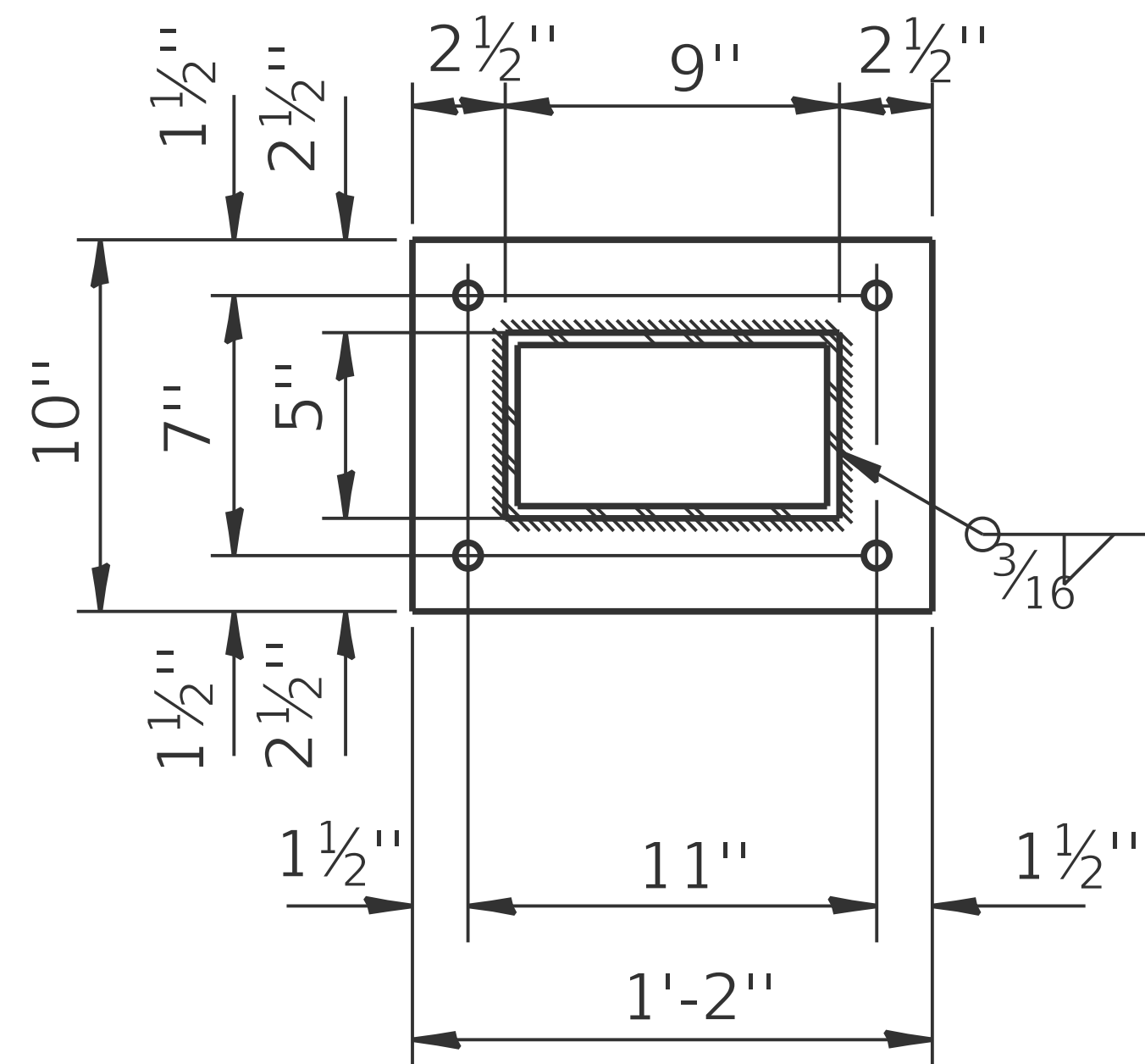


DRAIN EXTENSION DETAIL



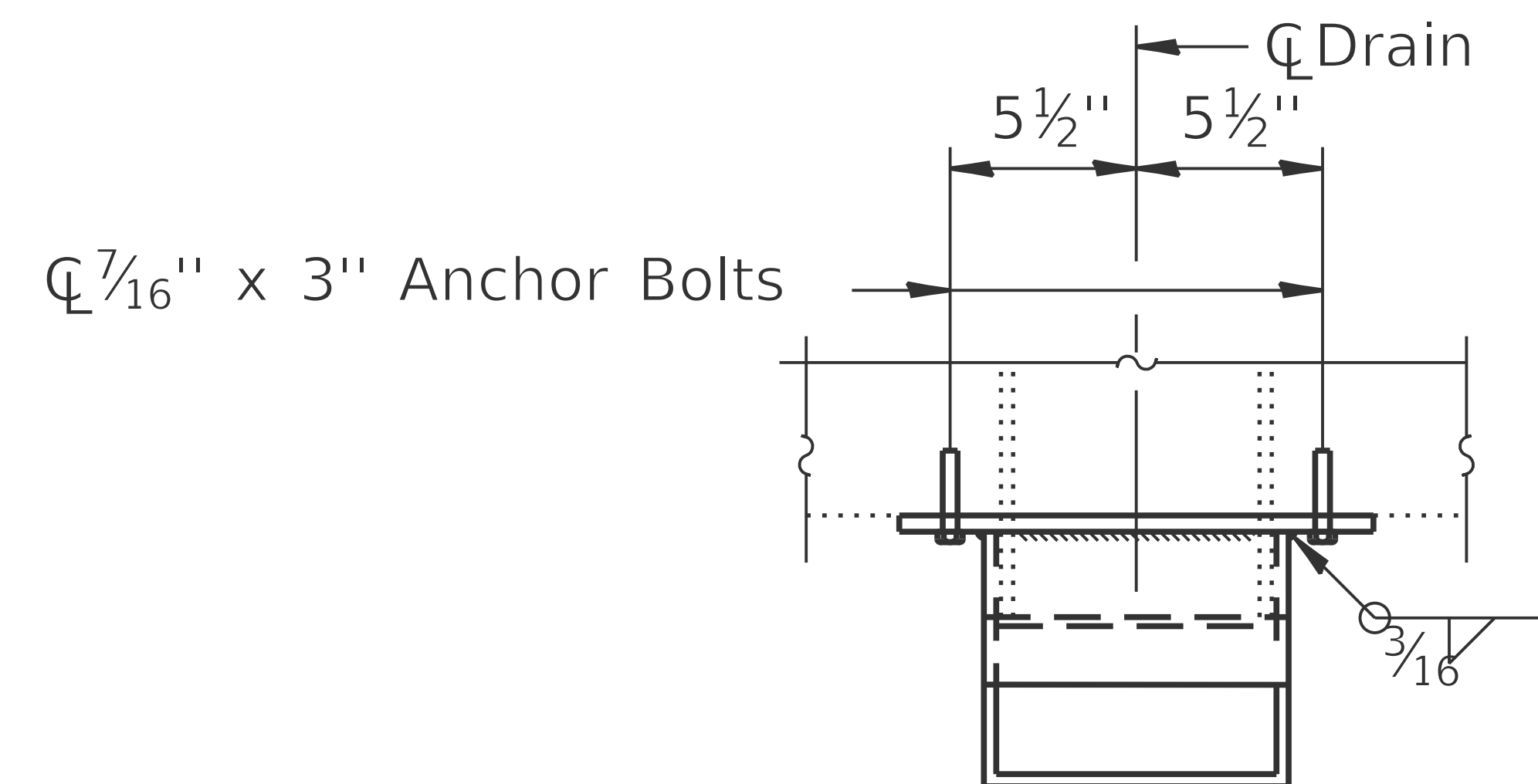
SECTION AT DRAIN

- * Designer locate to miss existing prestressing strands.
- ** $\frac{3}{16}"$ Aluminum Sheets (Welded)
ASTM: B209 alloy 6061-T6.

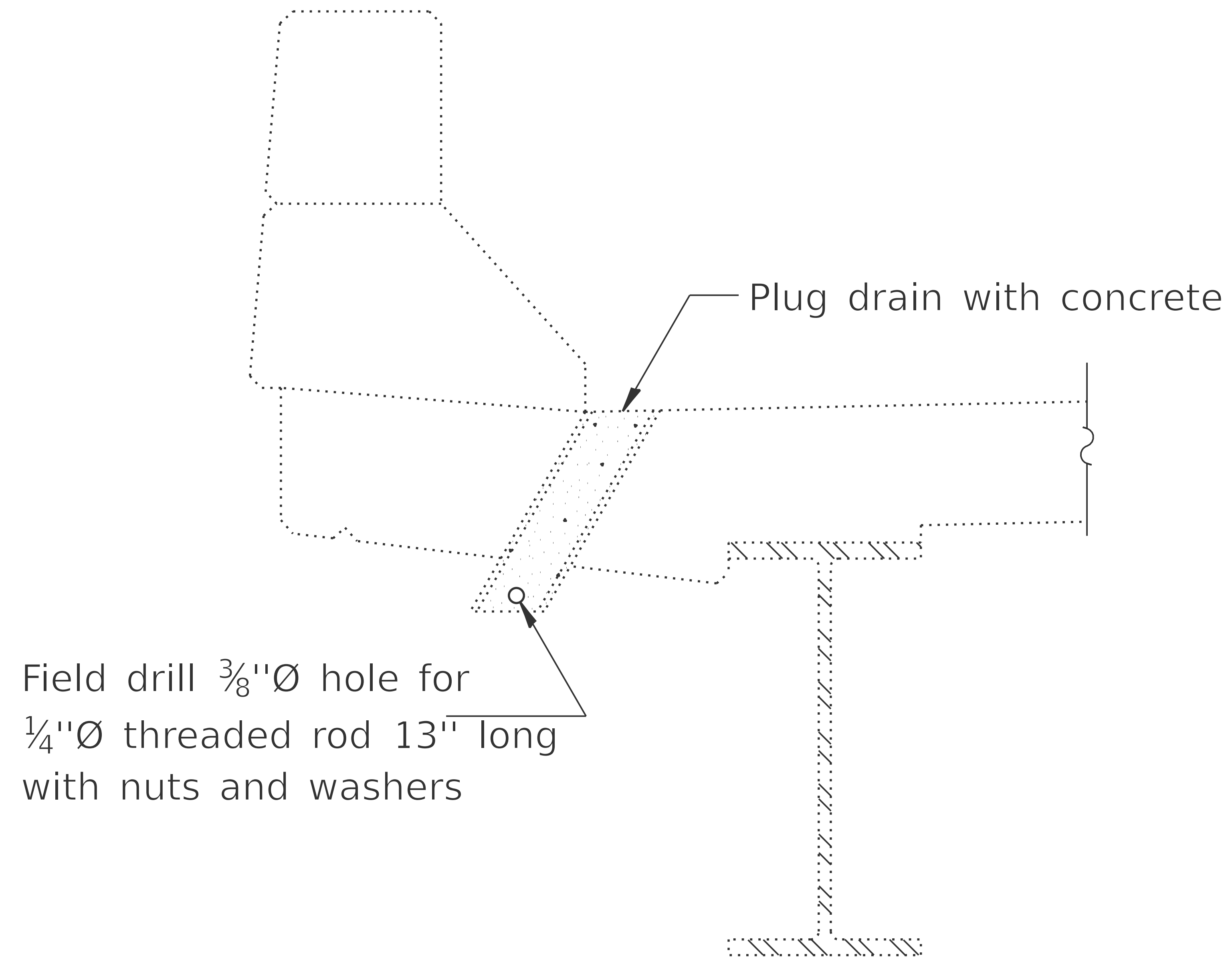


SECTION A-A

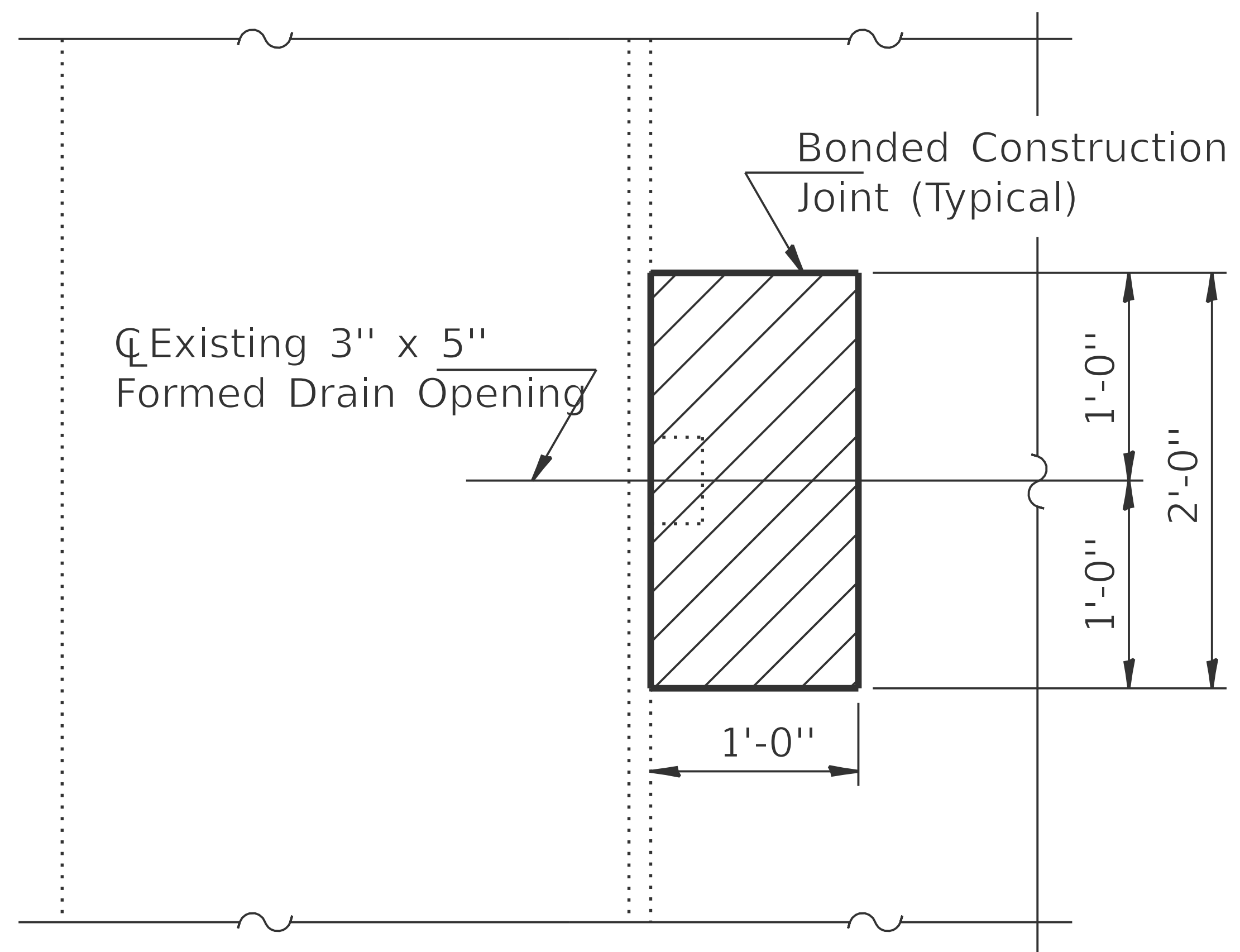
$\frac{1}{4}" \times 10" \times 1'-2"$ (Aluminum)



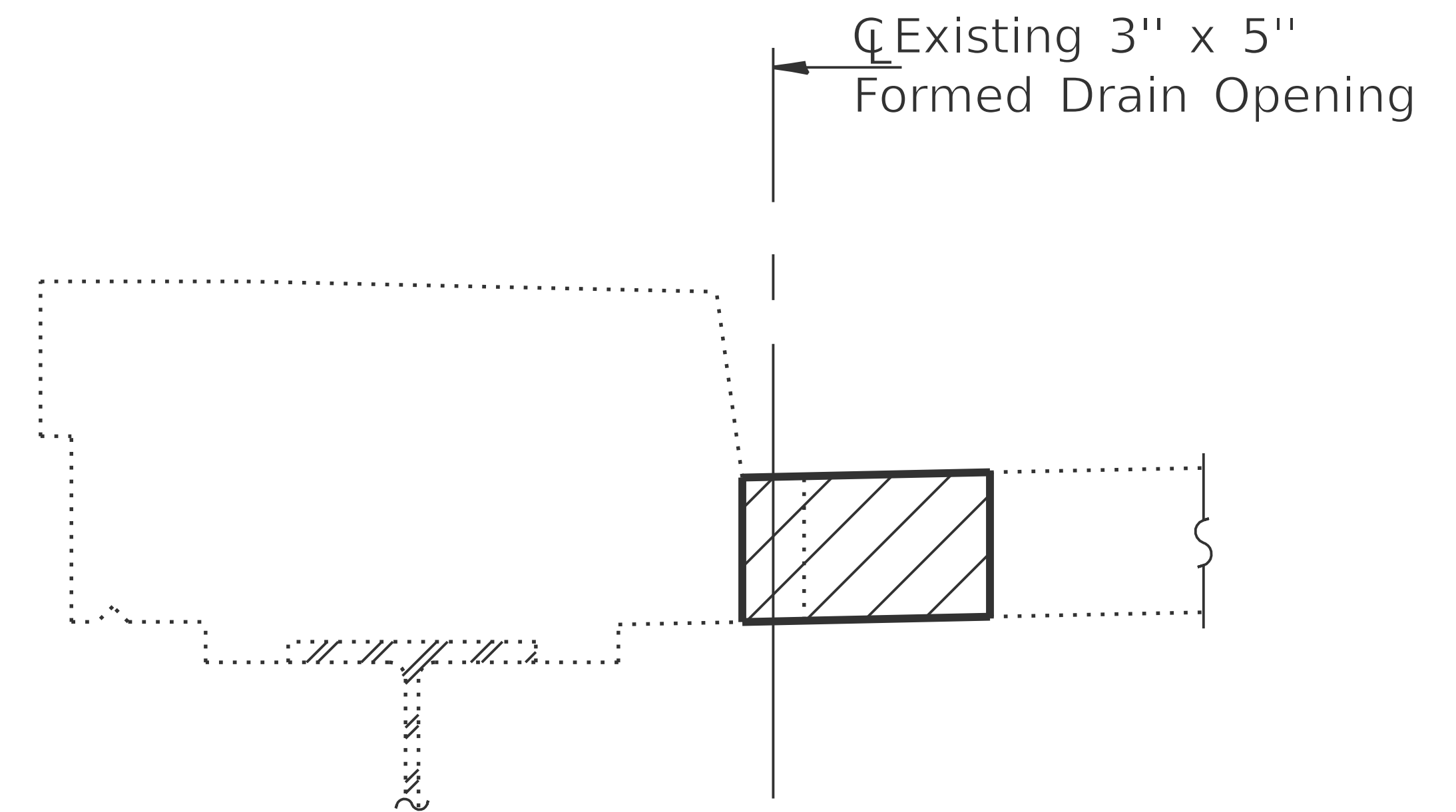
TOP PLAN



SECTION AT DRAIN

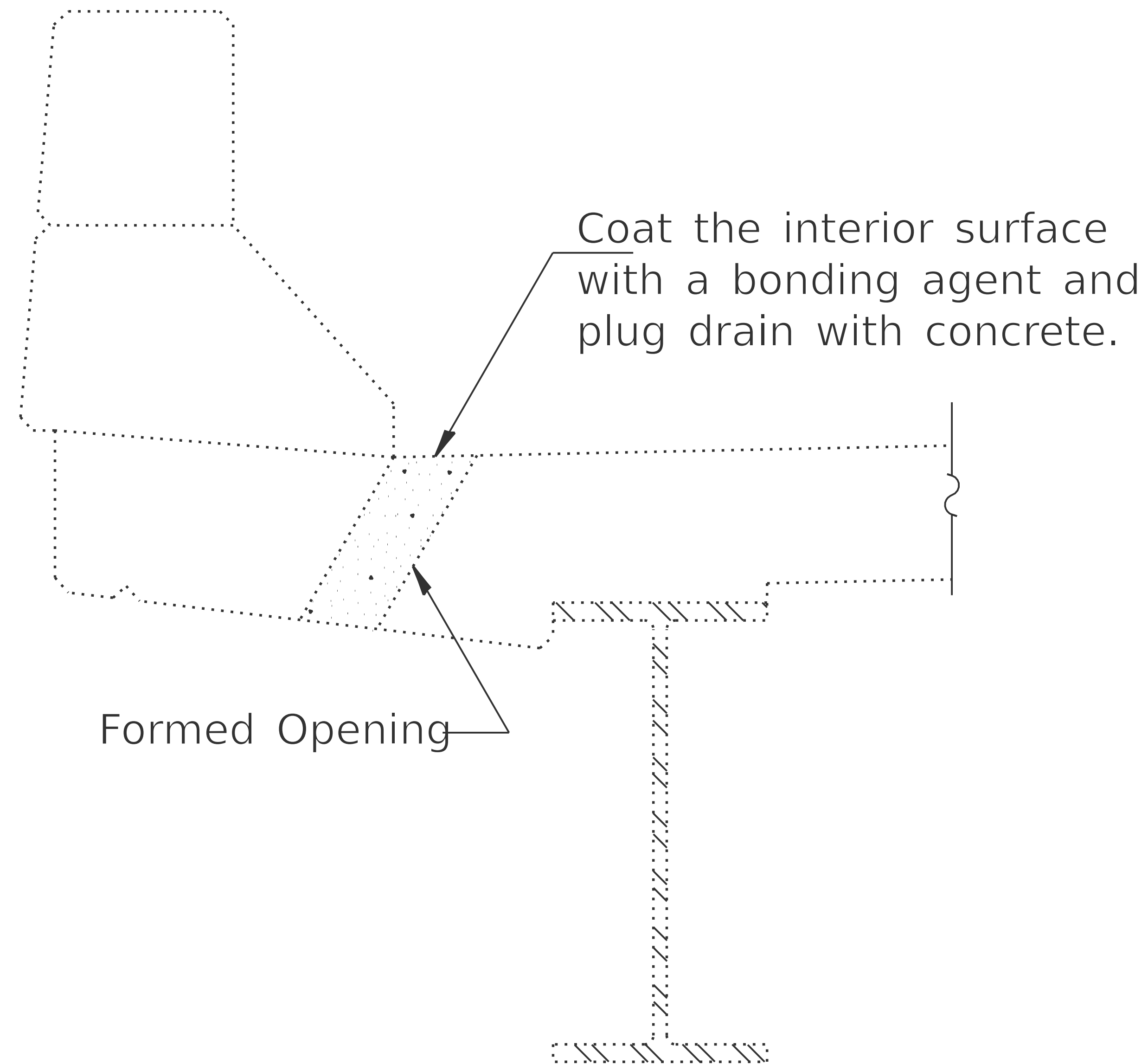


PARTIAL PLAN



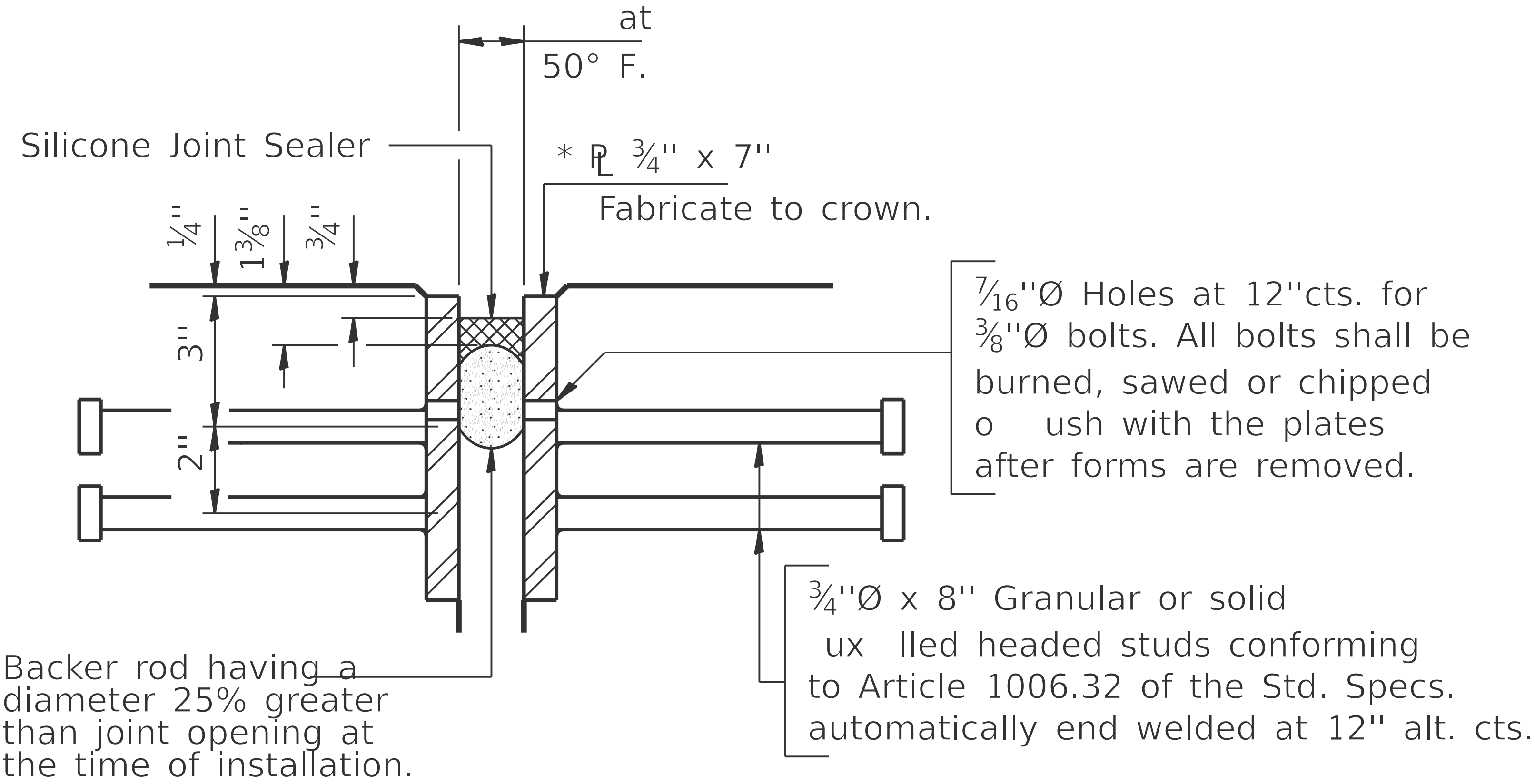
SECTION AT DRAIN

Hatched areas indicate concrete sections to be removed and replaced. Perimeters of concrete removal areas shall be saw cut $\frac{3}{4}$ " prior to the removal of concrete.



SECTION AT DRAIN





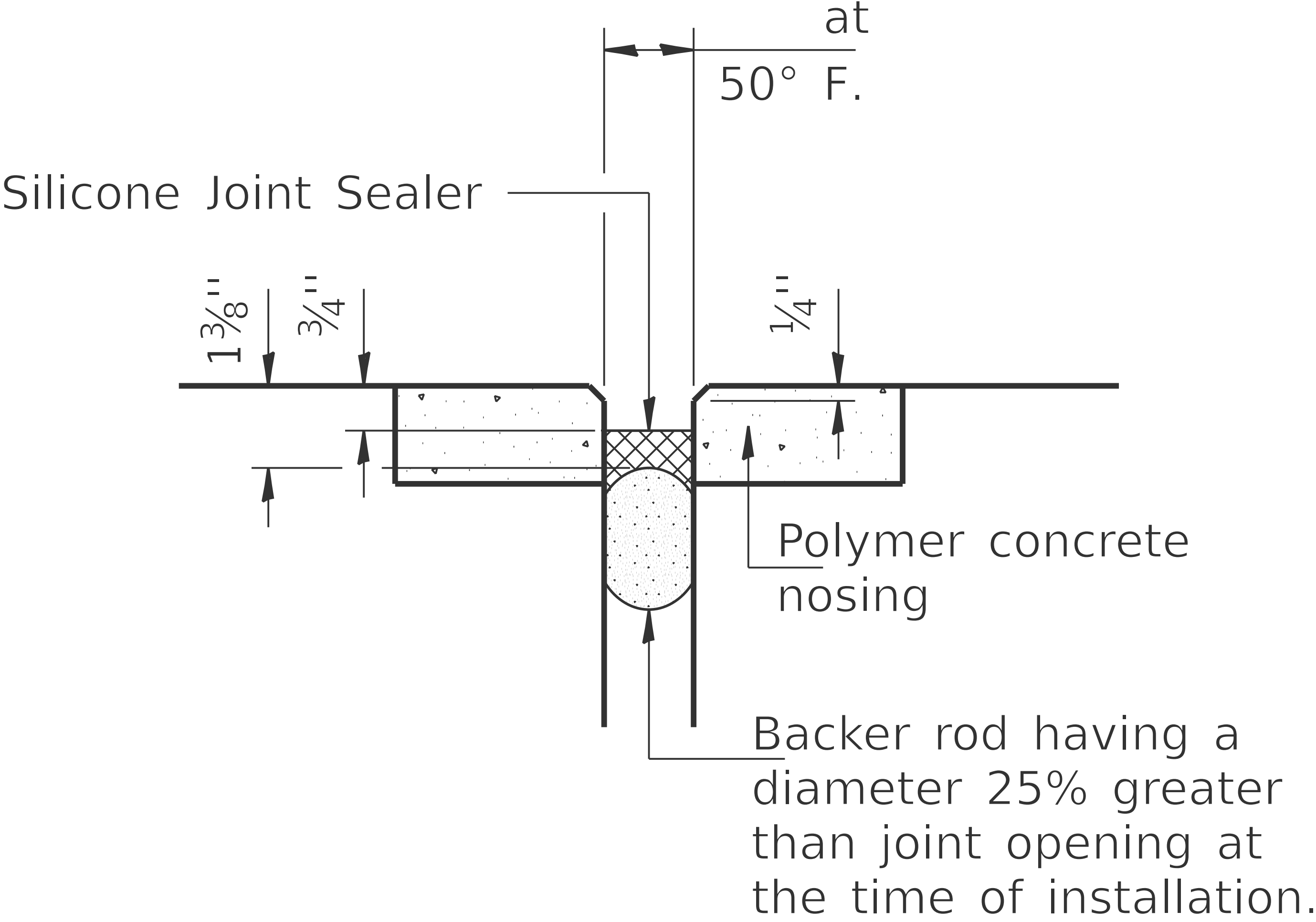
* Furnish in segments of 20 ft. maximum length. Maximum space between installed segments shall be $\frac{3}{16}$ ". Seal space with Silicone Sealant suitable for Structural Steel.

Note: After fabrication all surfaces of the steel plates shall be given one shop coat of paint specified for Structural Steel. No field painting required.

SILICONE JOINT SEALER DETAIL

DESIGN CHART

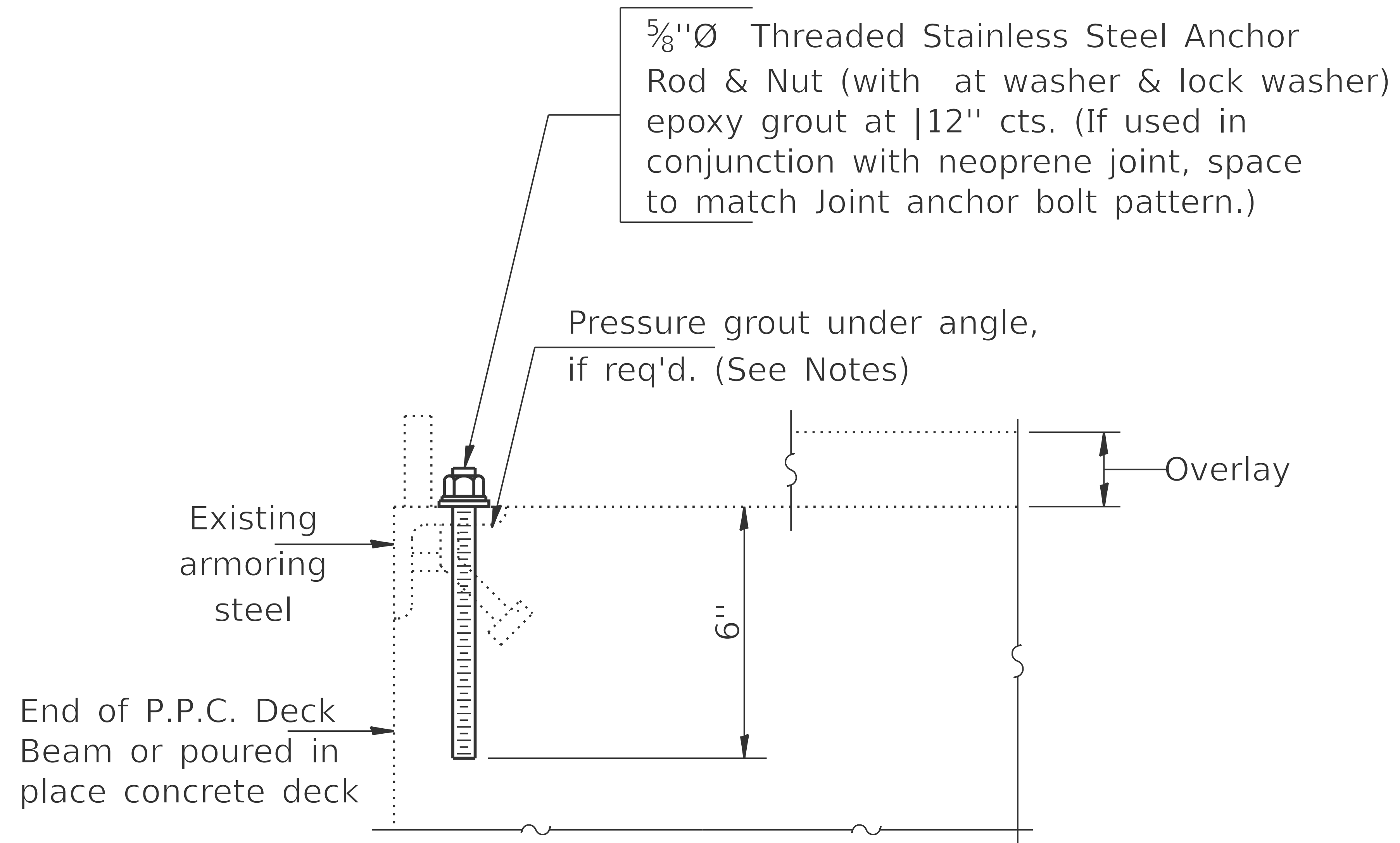
Length Contributing to Expansion	0' - 40'	40' - 80'	80' - 120'	120' - 160'	160' - 200'
Joint Opening at 50° F	1''	1½''	2''	2½''	3''



SILICONE JOINT SEALER DETAIL

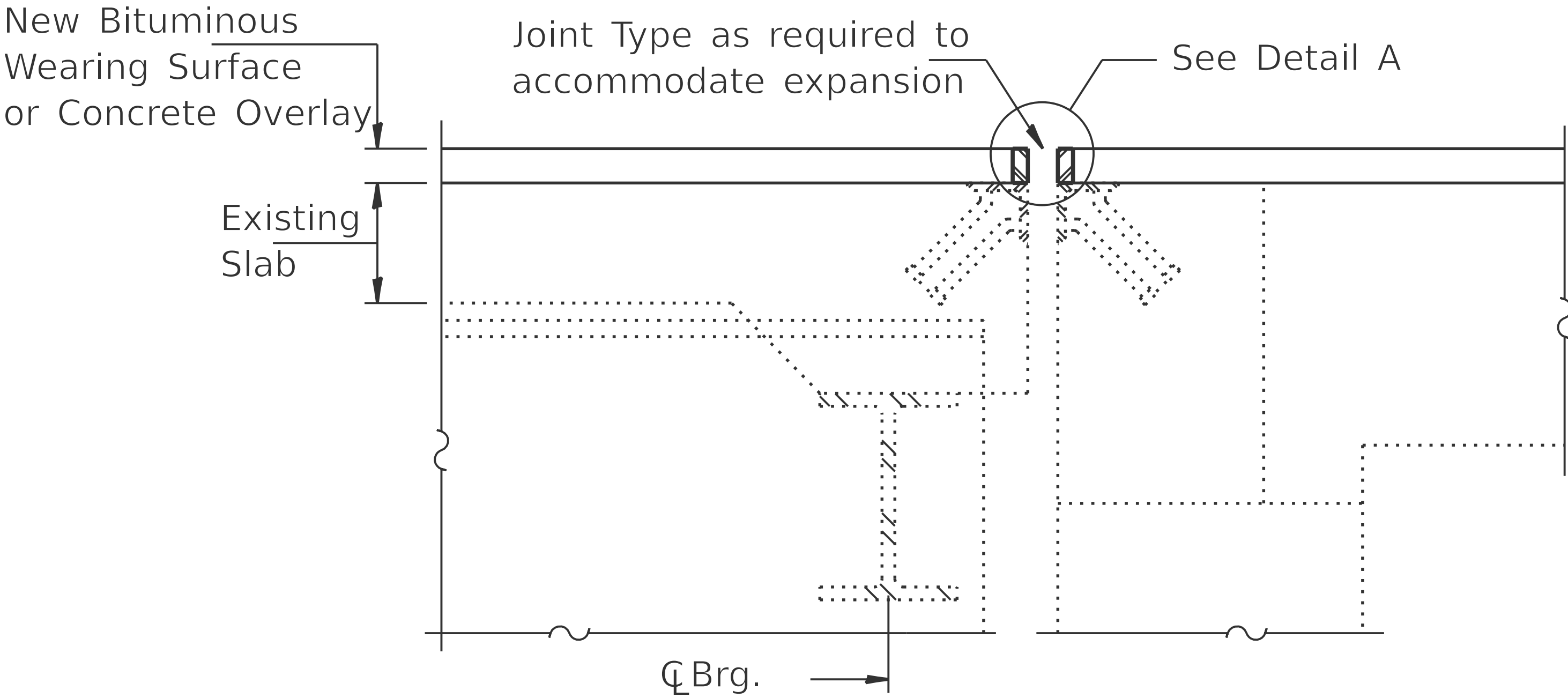
DESIGN CHART

Length Contributing to Expansion	0' - 40'	40' - 80'	80' - 120'	120' - 160'	160' - 200'
Joint Opening at 50° F	1' '	1 1/2' '	2' '	2 1/2' '	3' '

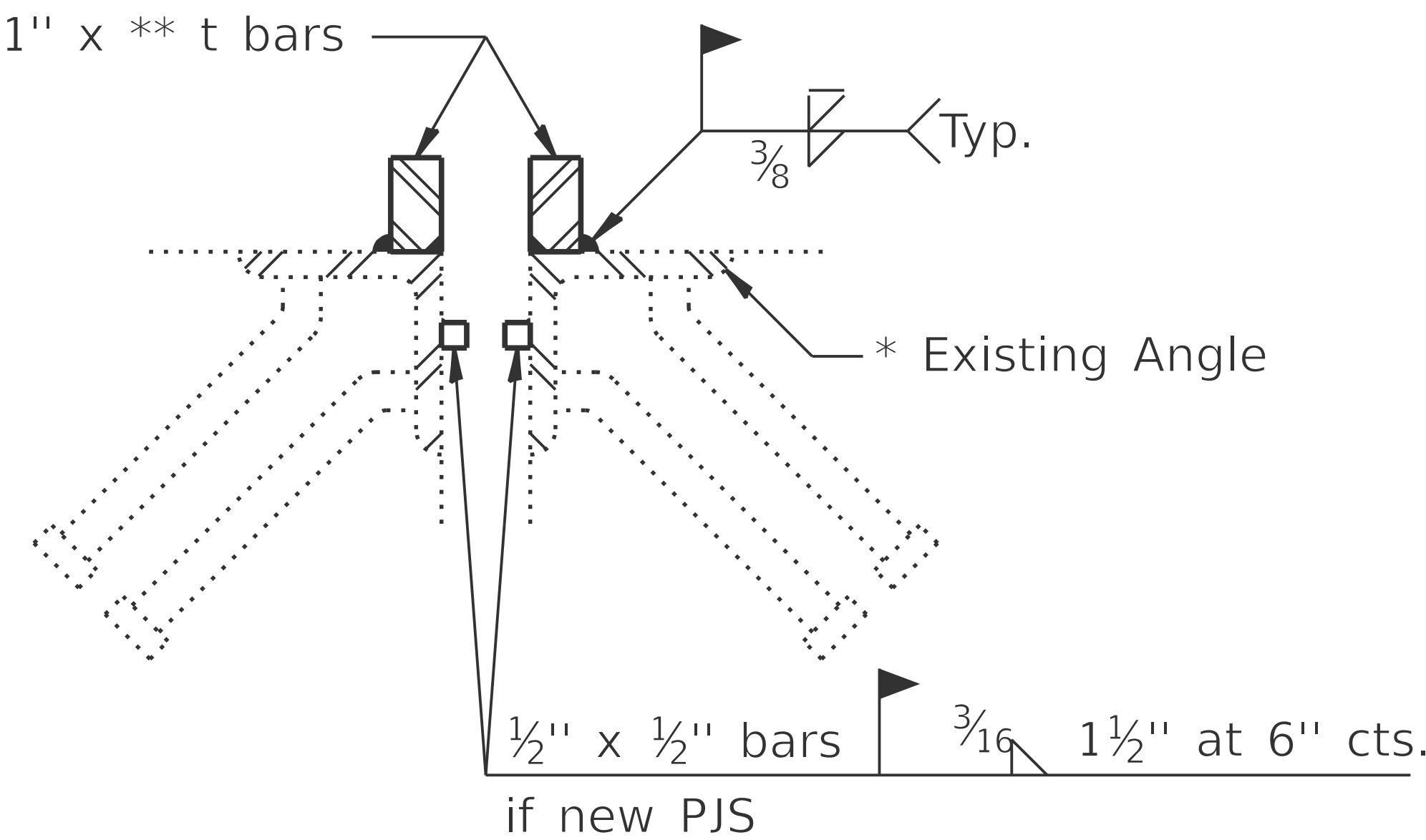


Notes: Loose angles will be bolted to the end of the deck or P.P.C. deck beams by eld drilling holes through the existing angles and epoxy grouting threaded rods into the deck.

If the existing angles sound loose after the epoxy grouted rods are in place, holes will be drilled through the angles and epoxy injected under the angles.

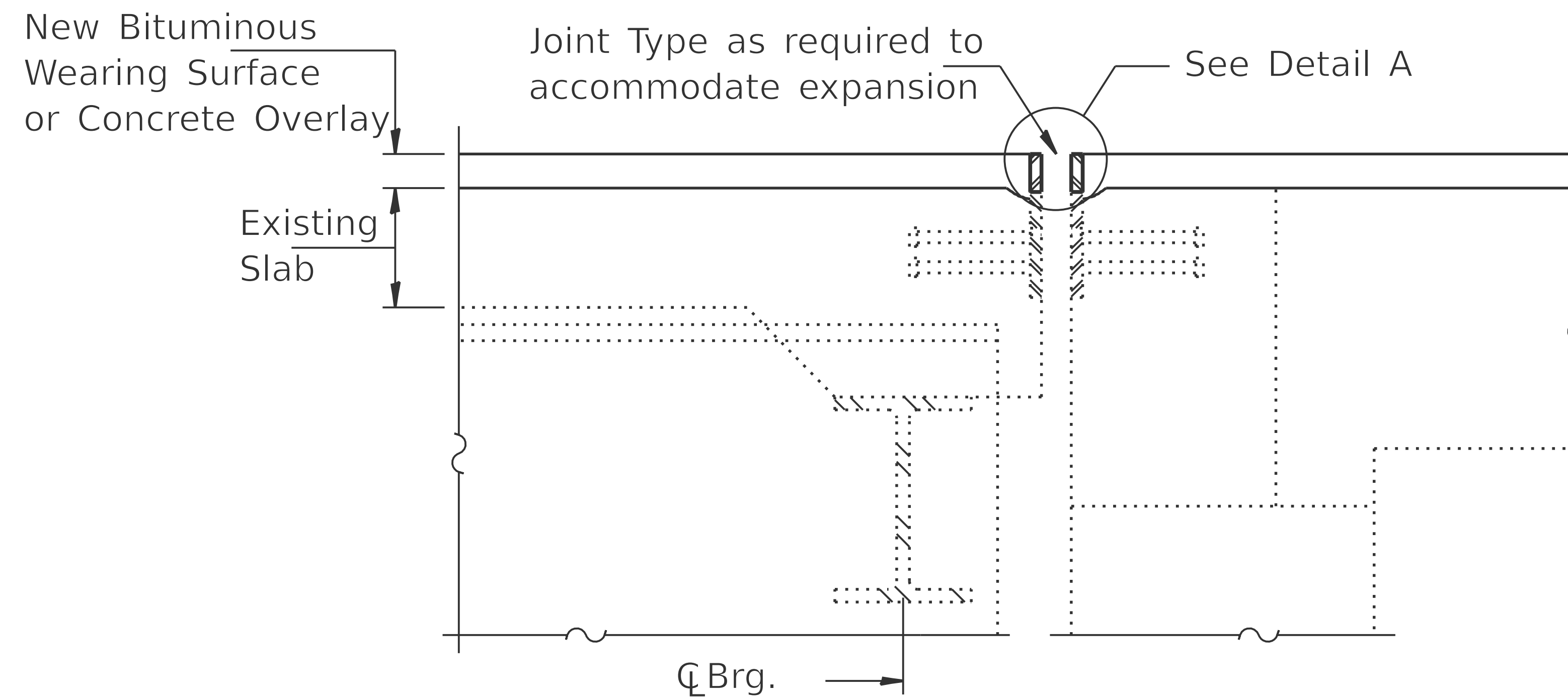


SECTION AT ABUTMENT

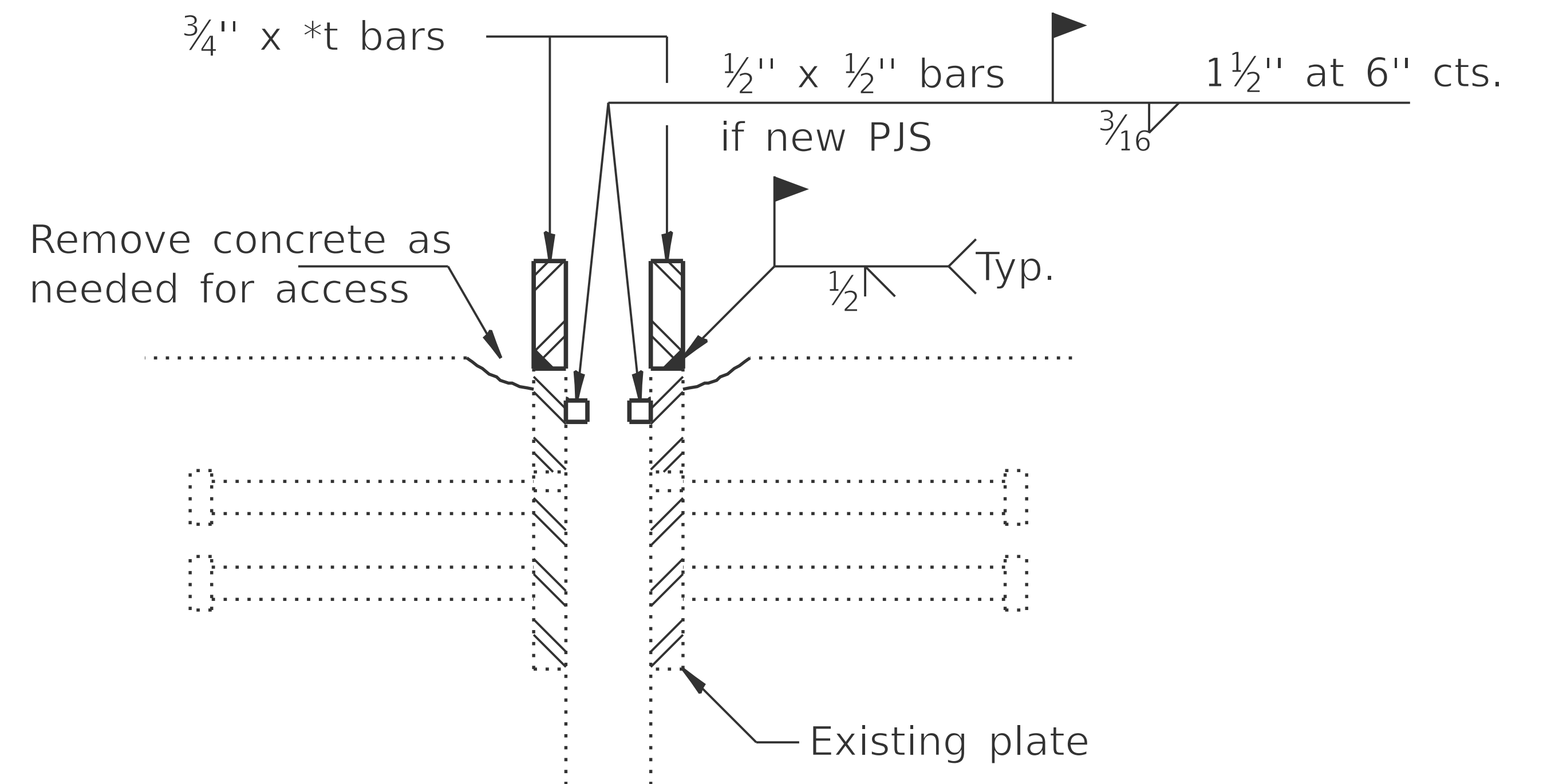


DETAIL A

- * Re-anchoring of existing angles may be required. See Figure 1.5.3-1
- ** t = Thickness of Bituminous Surface or Concrete Overlay.

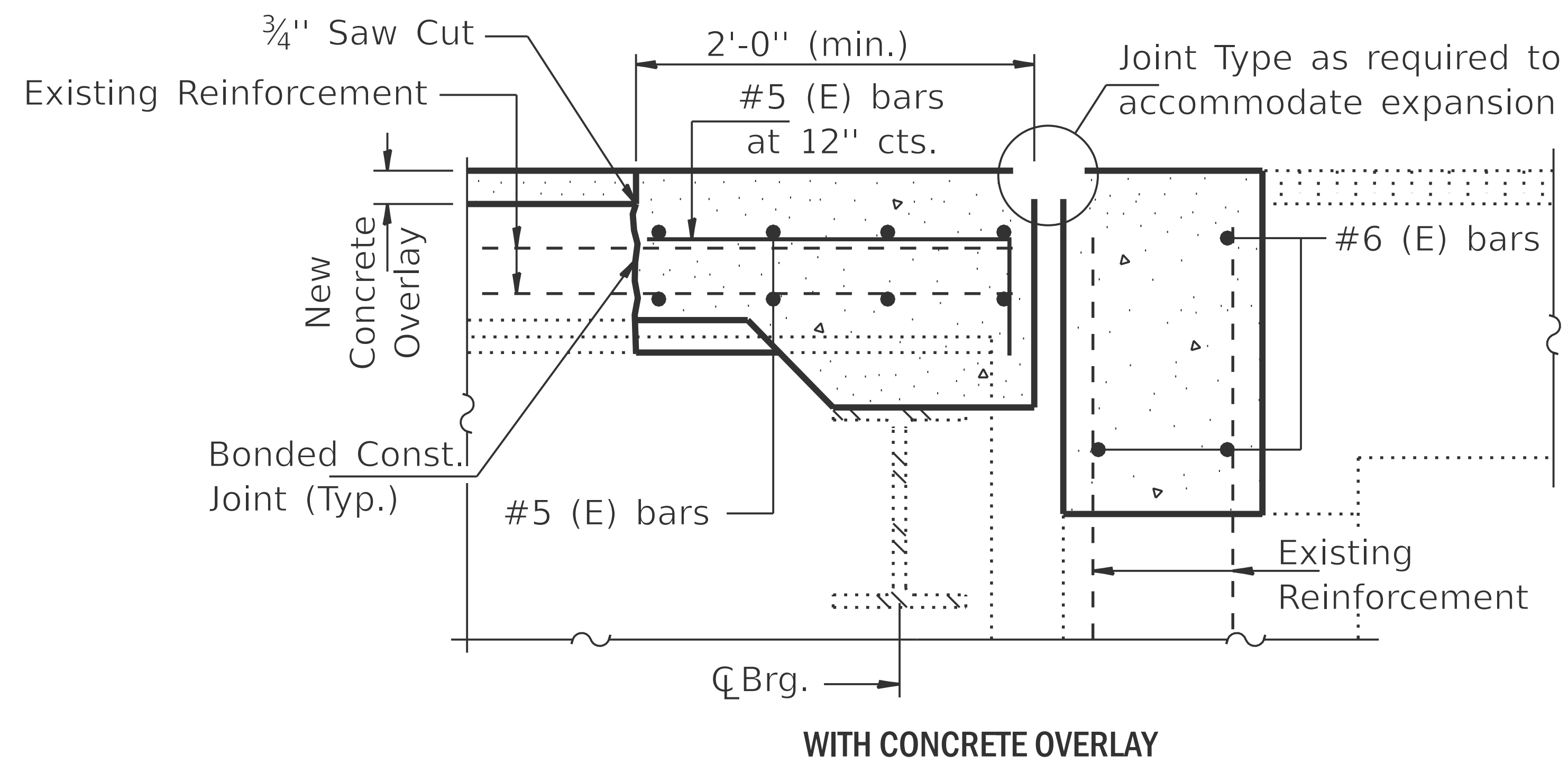
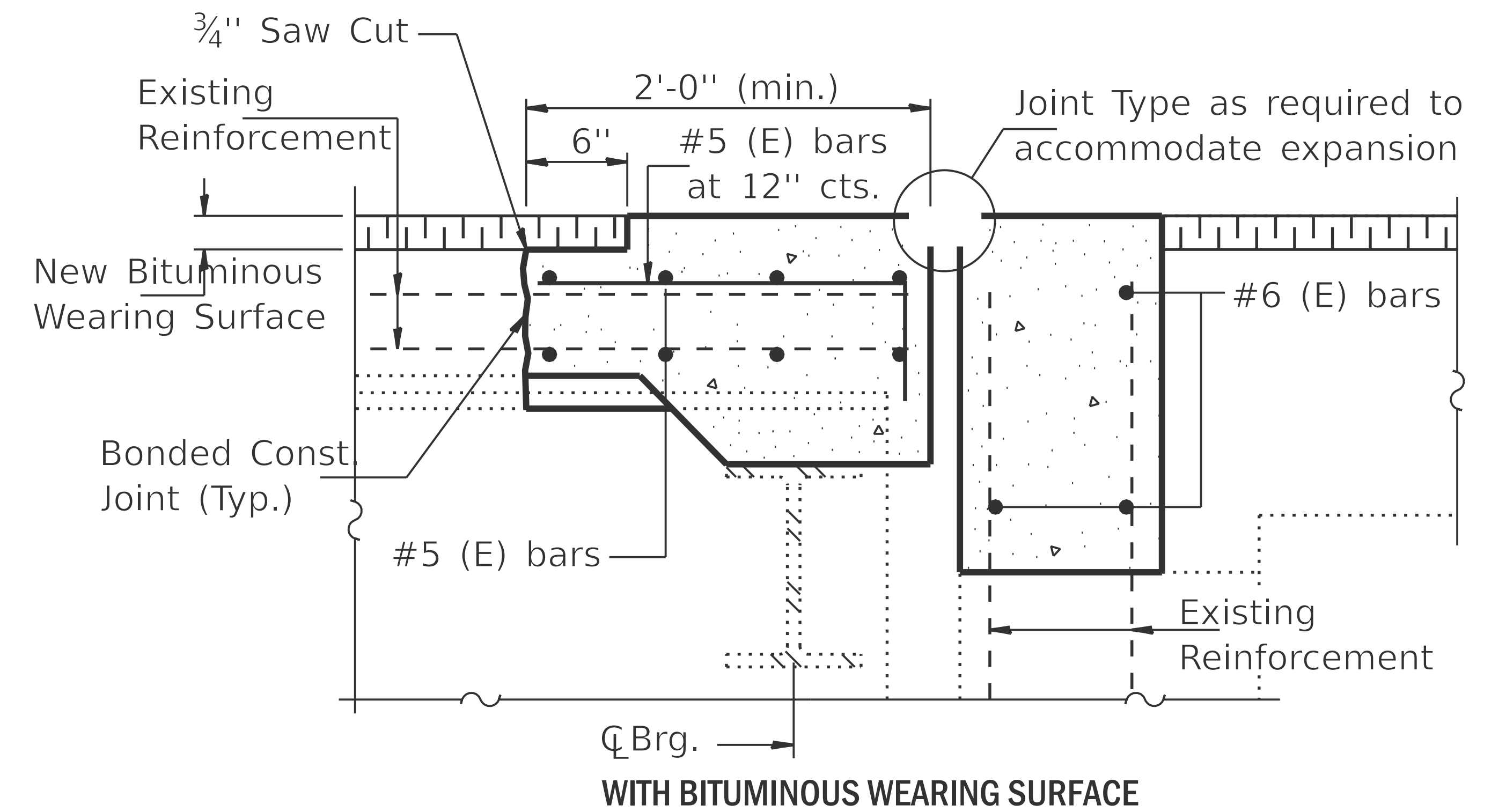
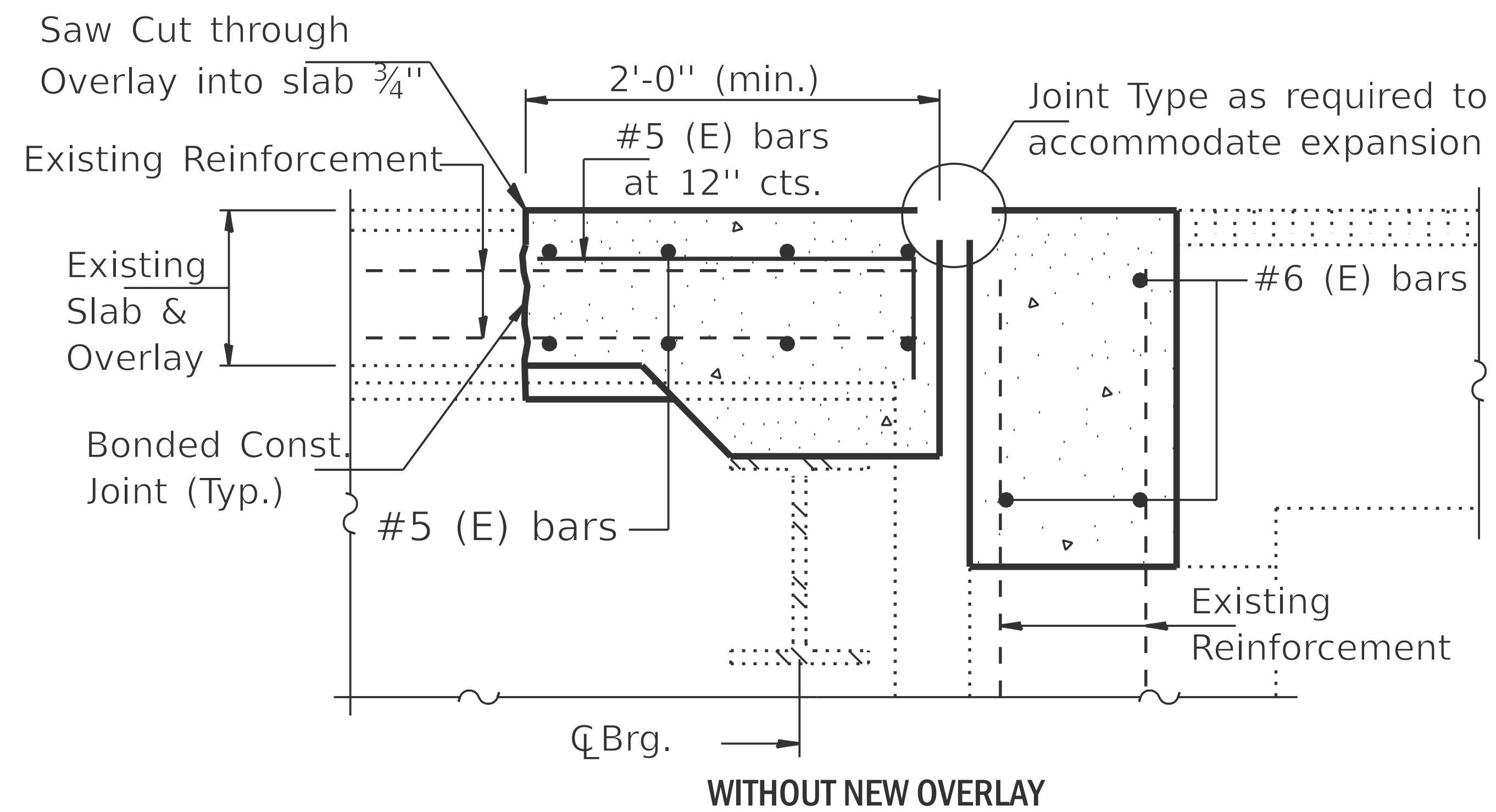


SECTION AT ABUTMENT

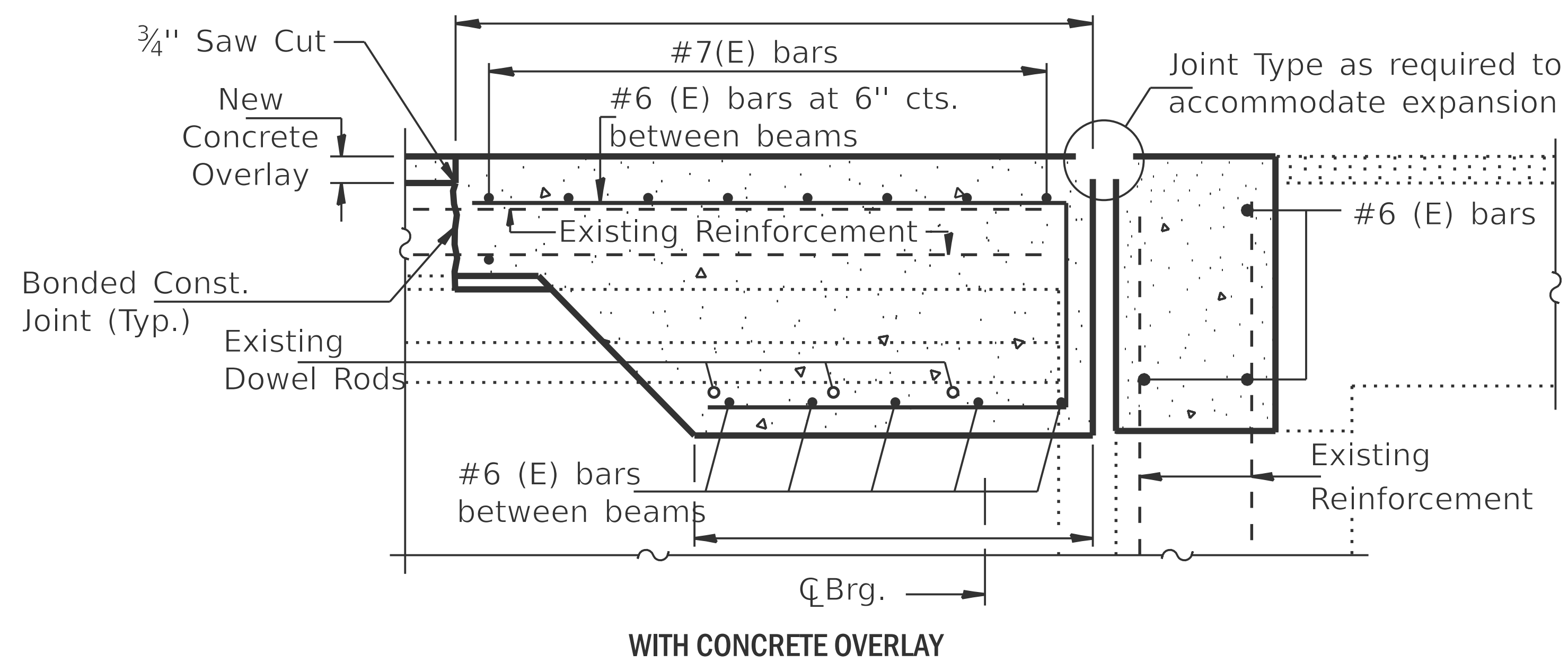
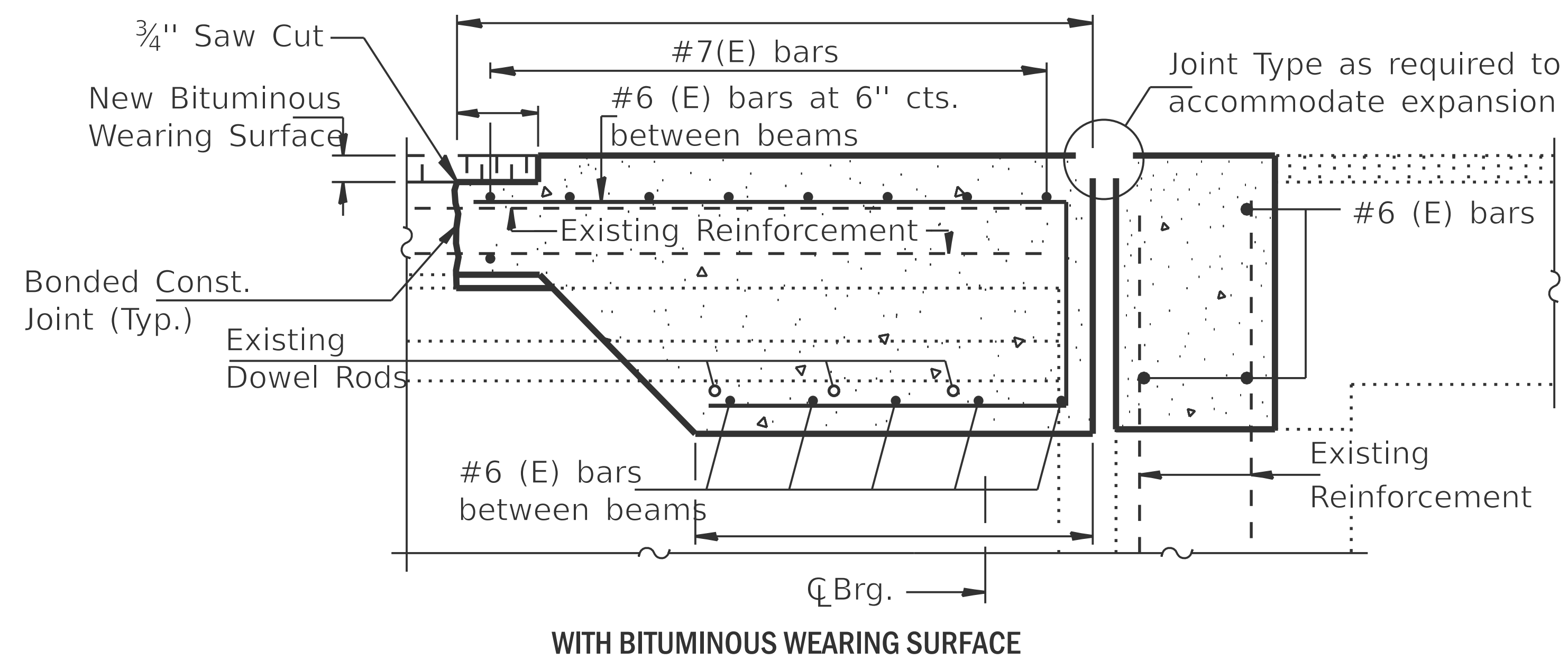
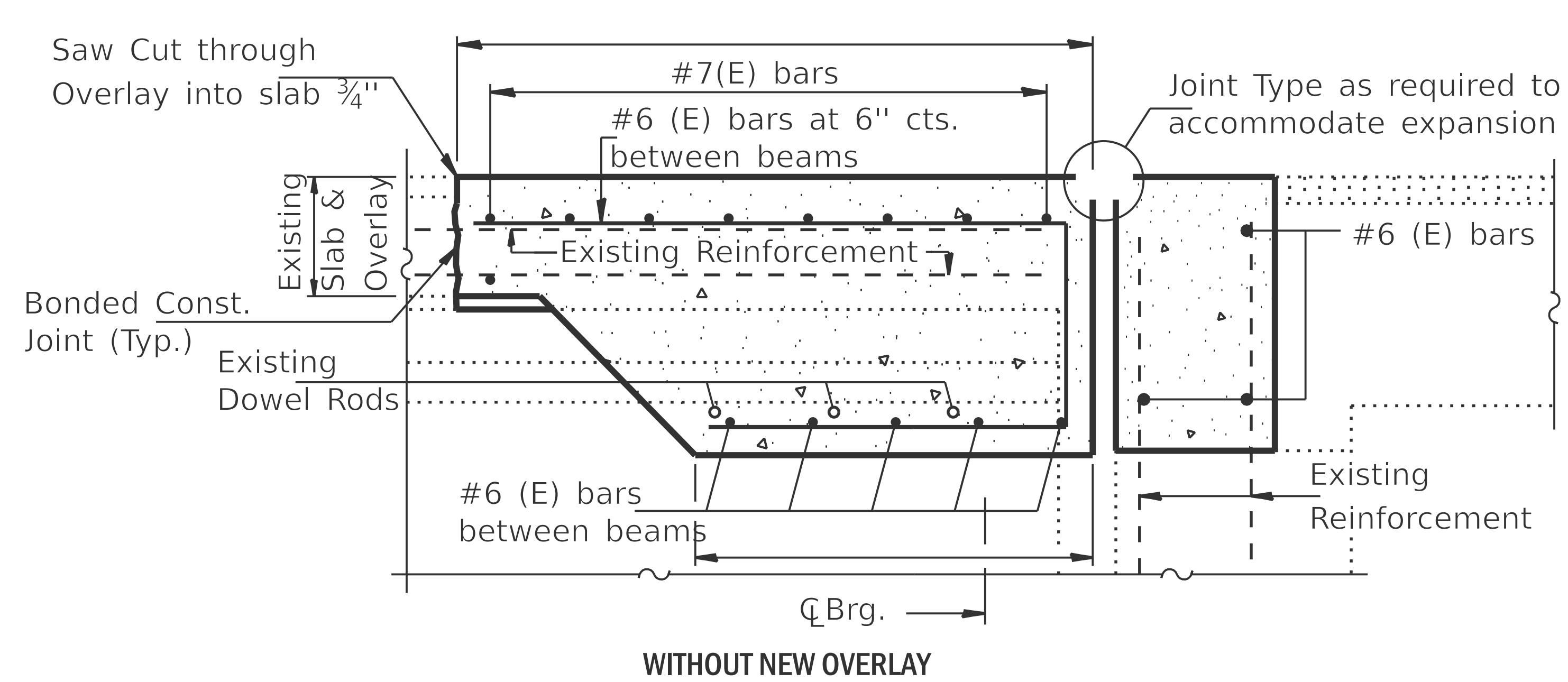


DETAIL A

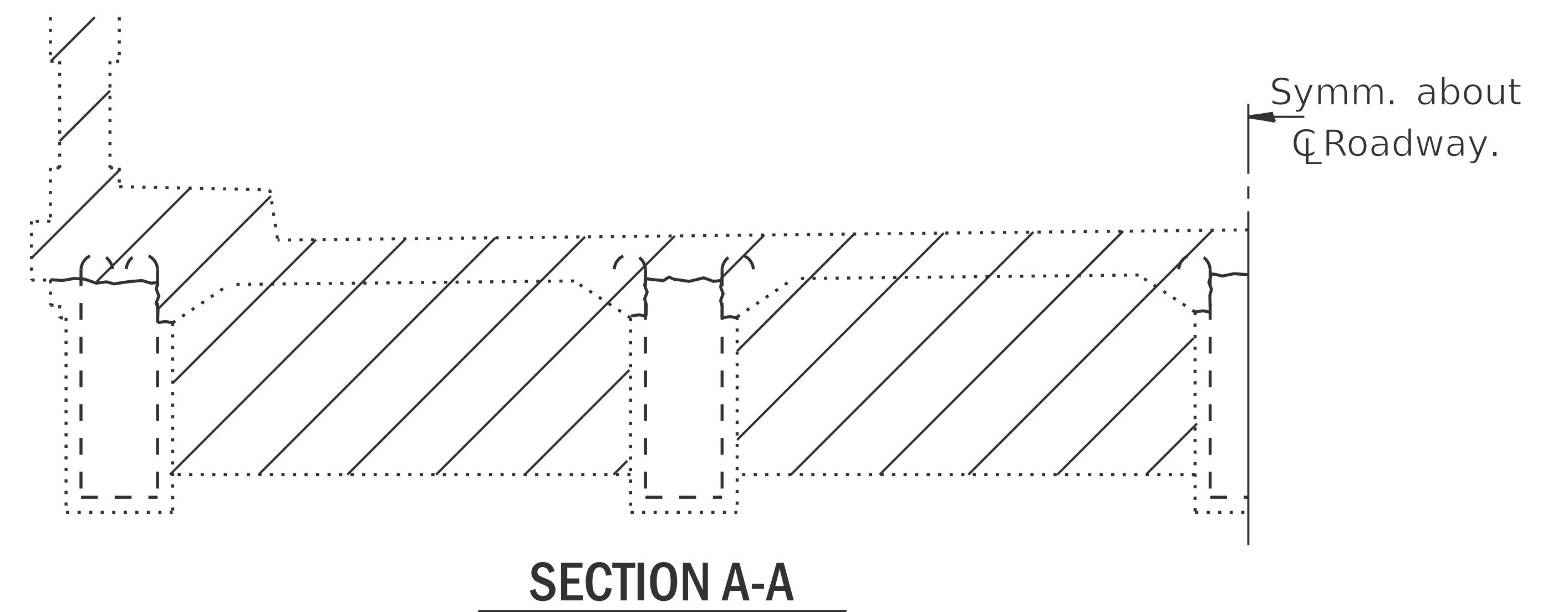
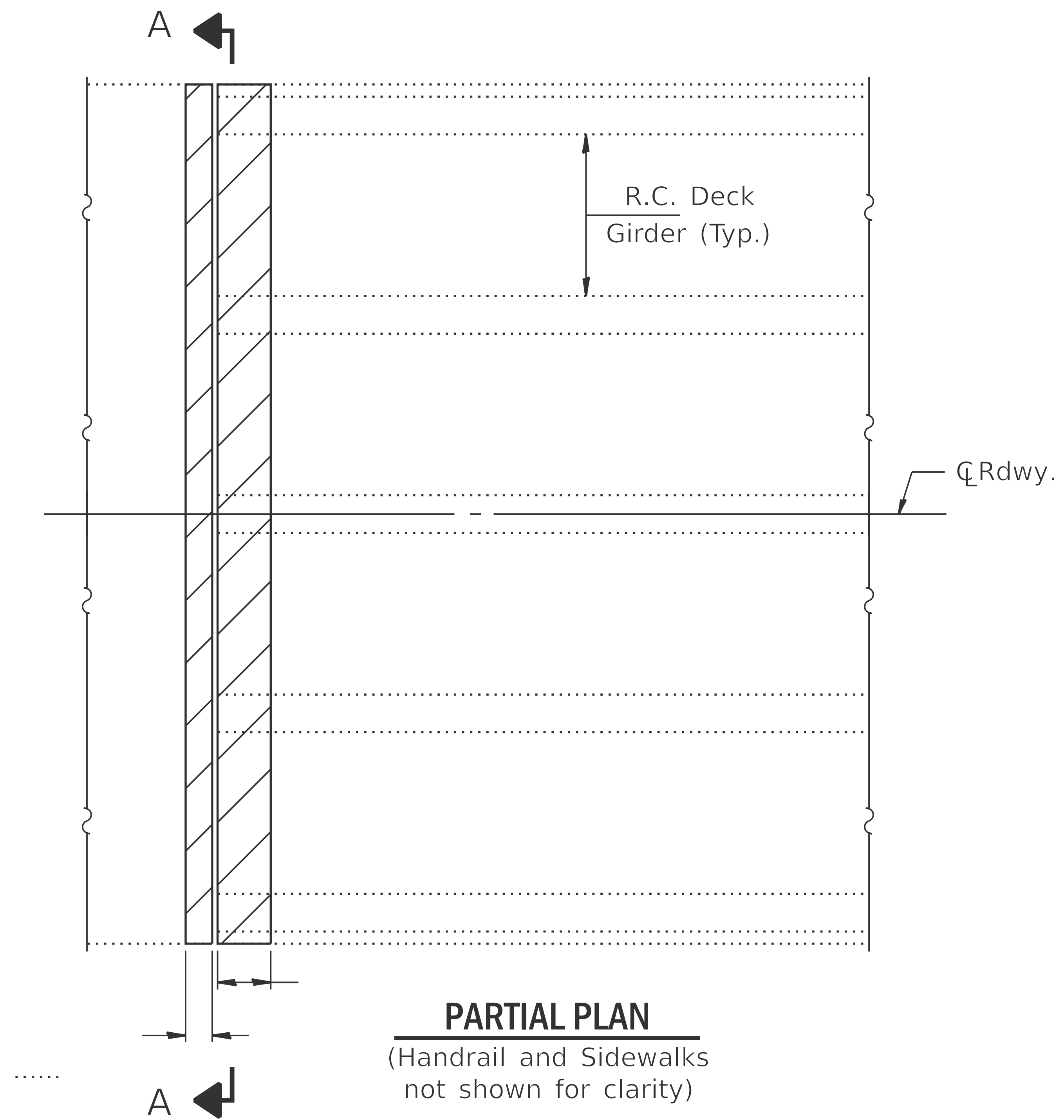
* t = Thickness of Bituminous Surface or Concrete Overlay.

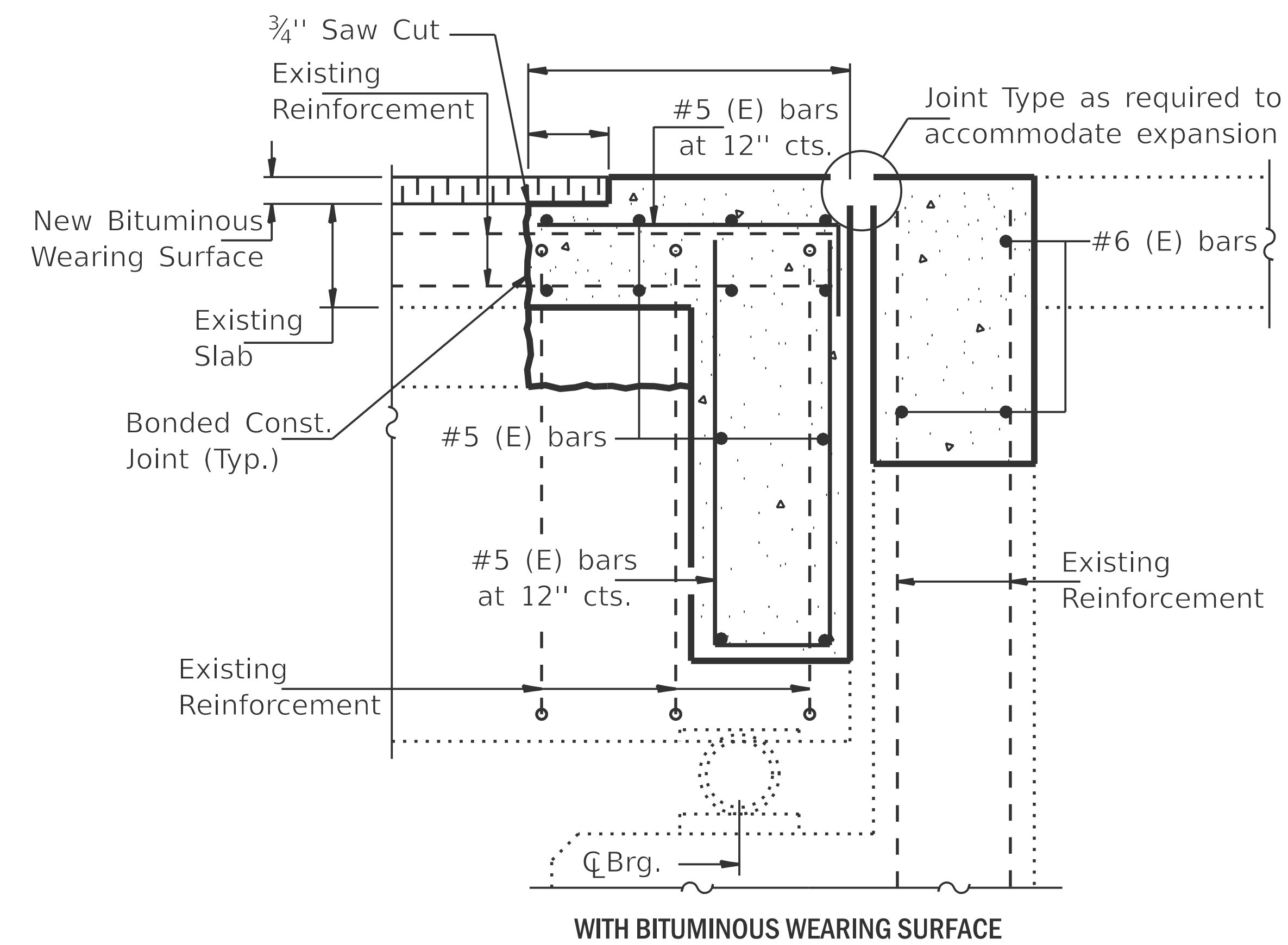
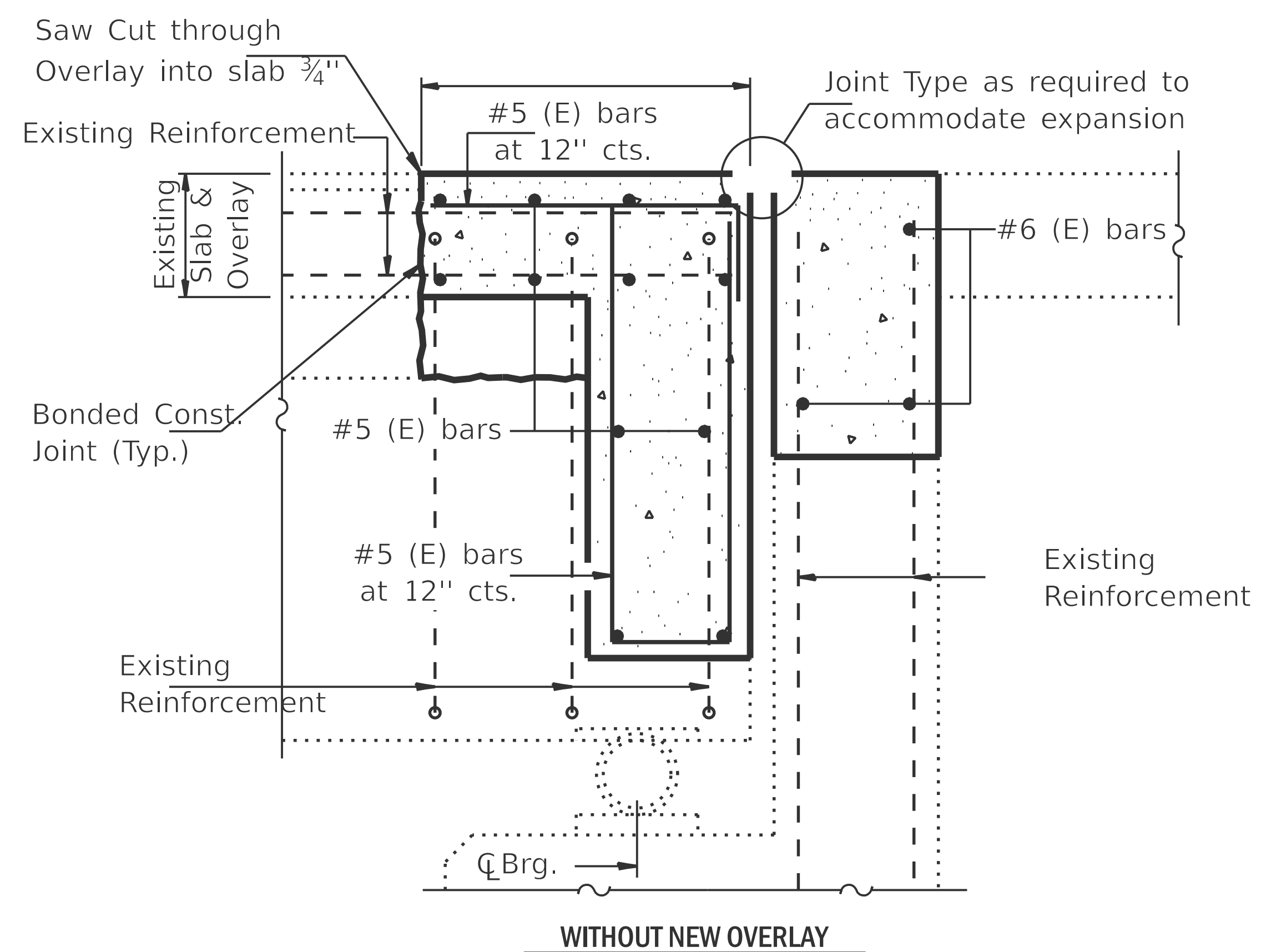


Note: Existing Reinforcement Bars shown are to be cleaned and incorporated into new construction.

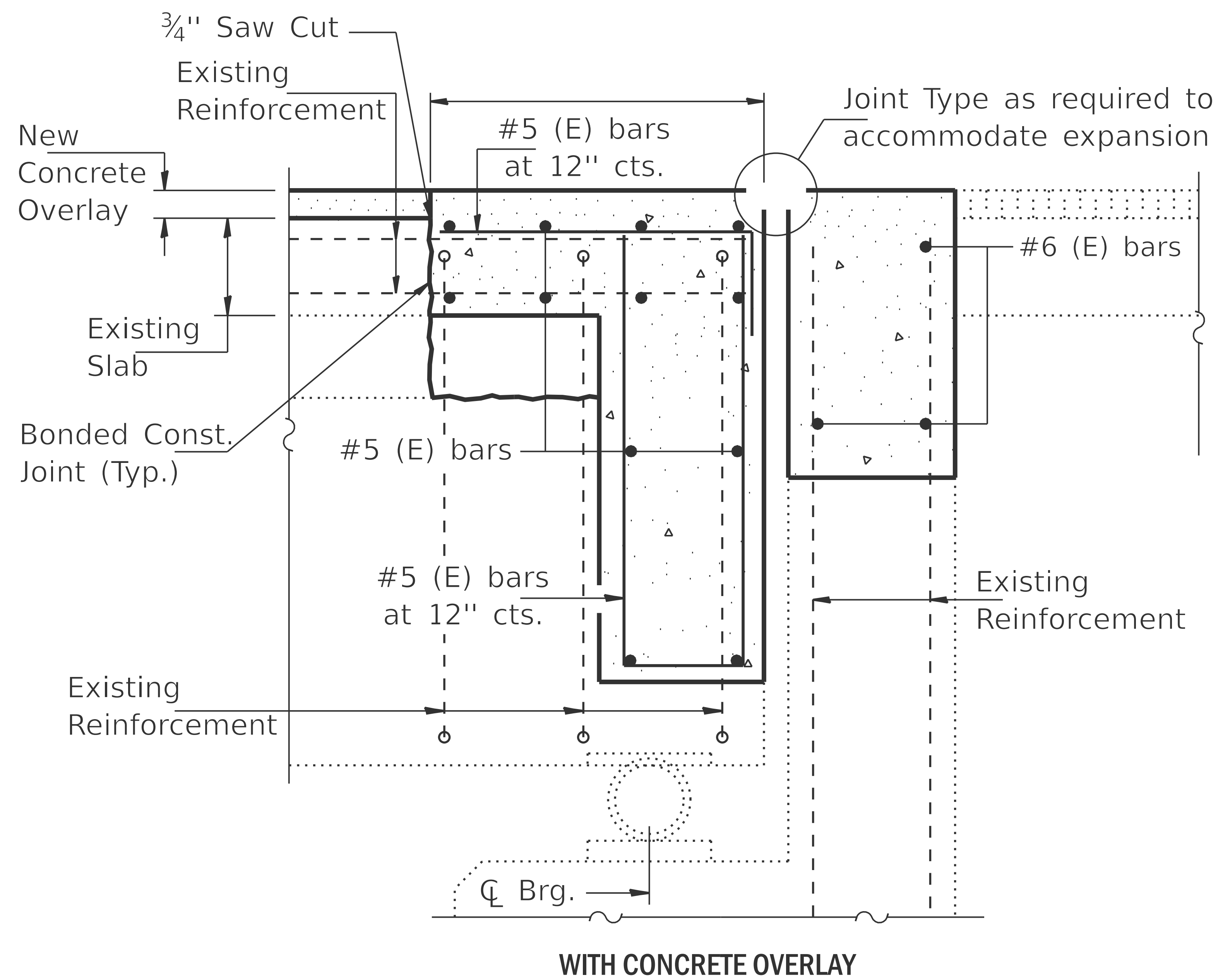


Note: Existing Reinforcement Bars and Dowell Rods shown are to be cleaned and incorporated into new construction.

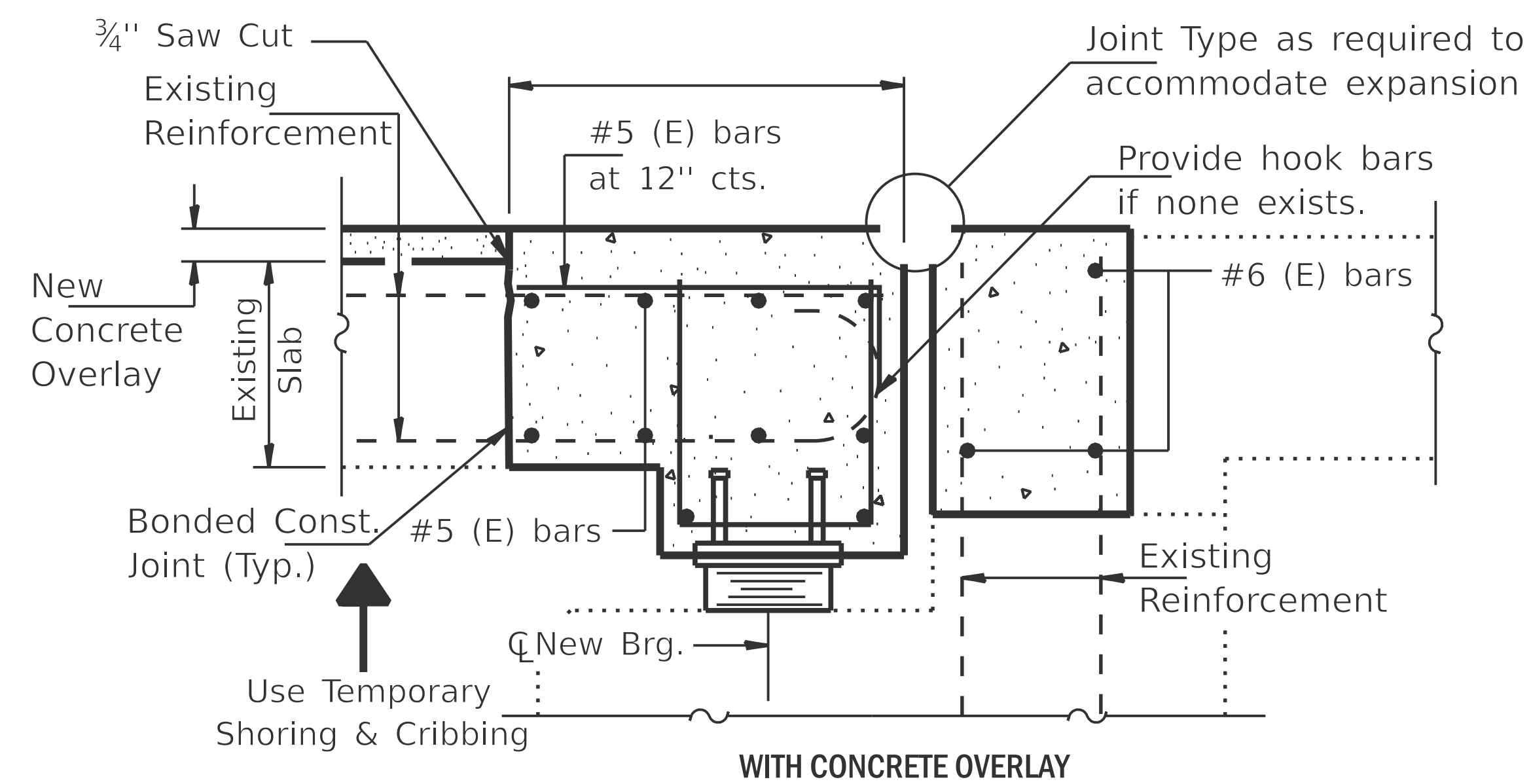
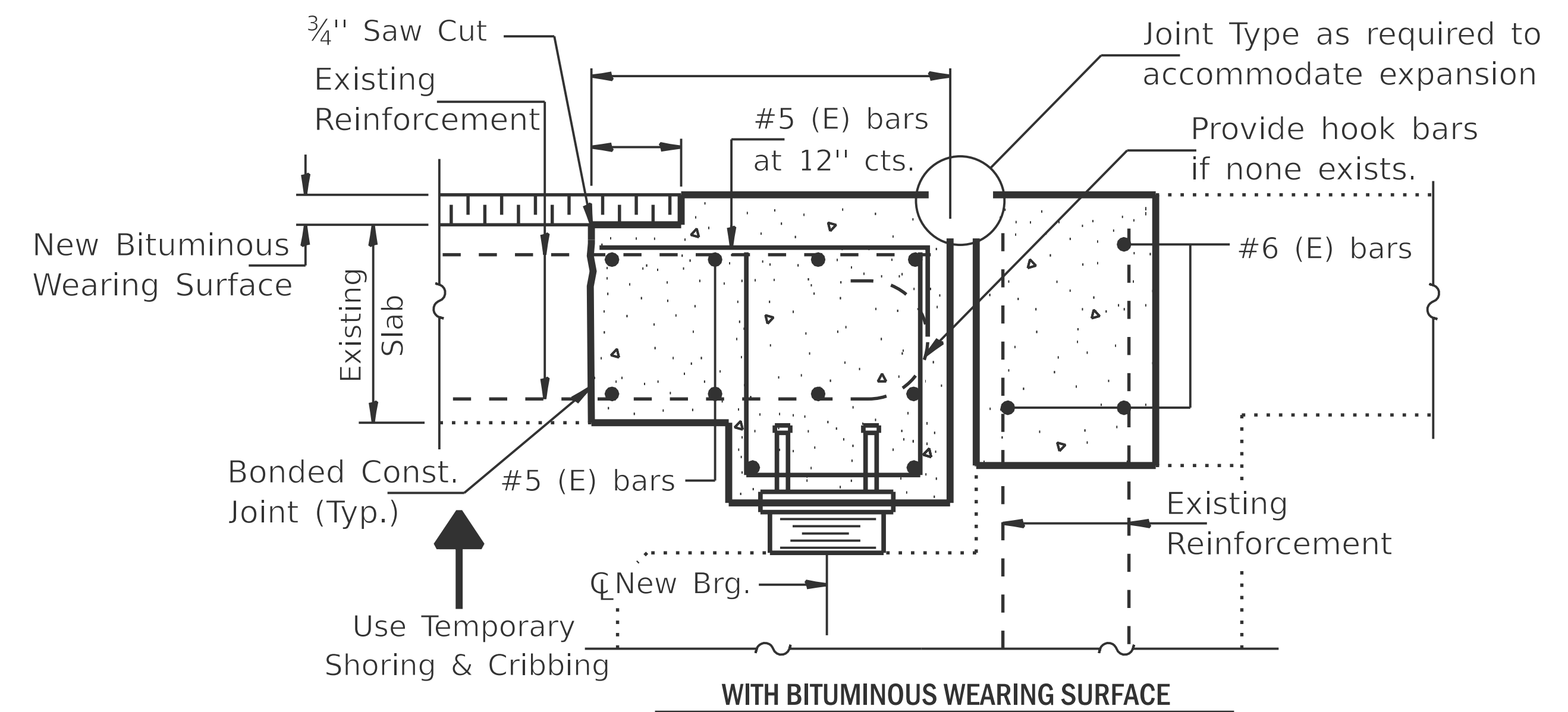
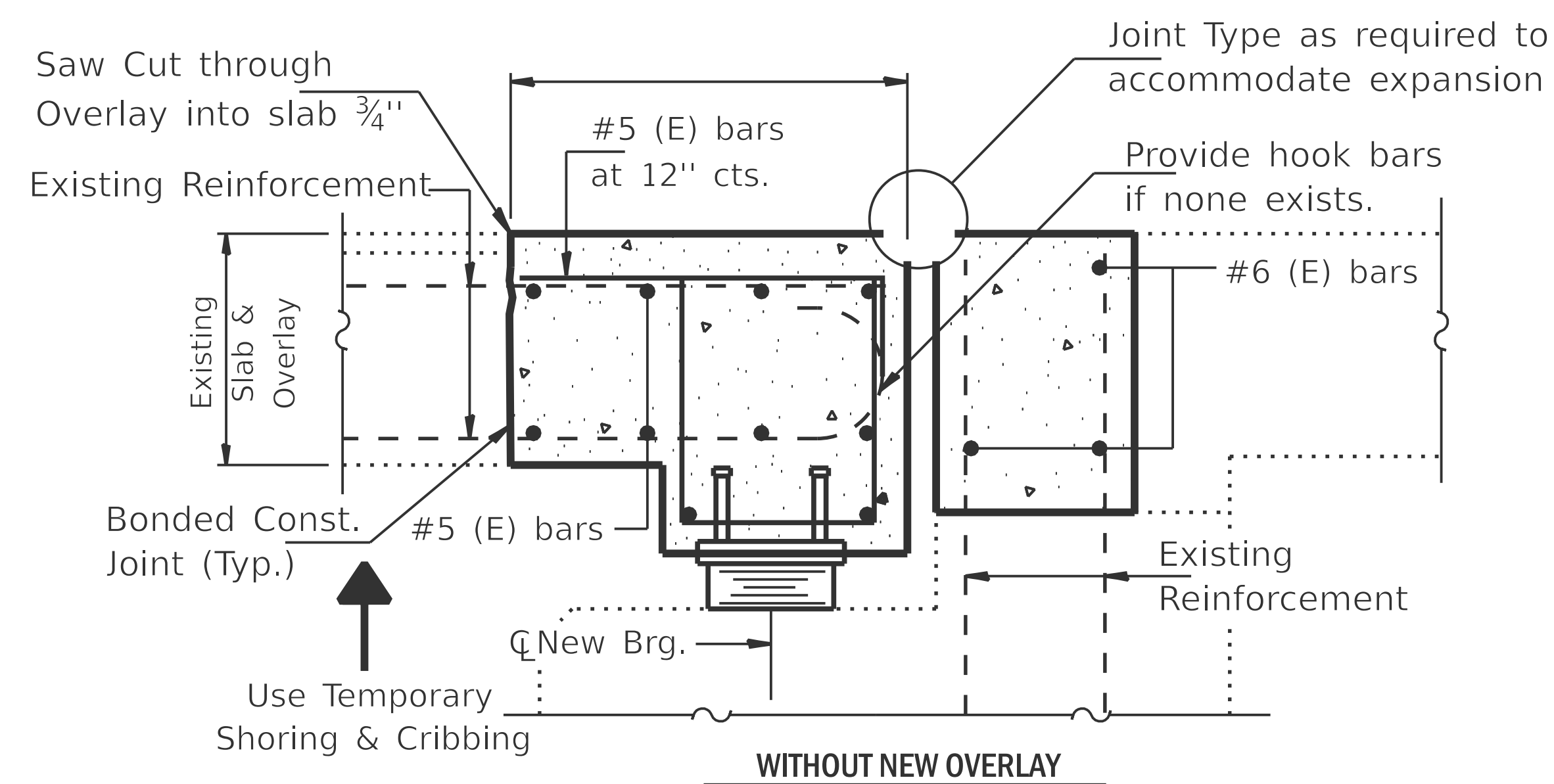




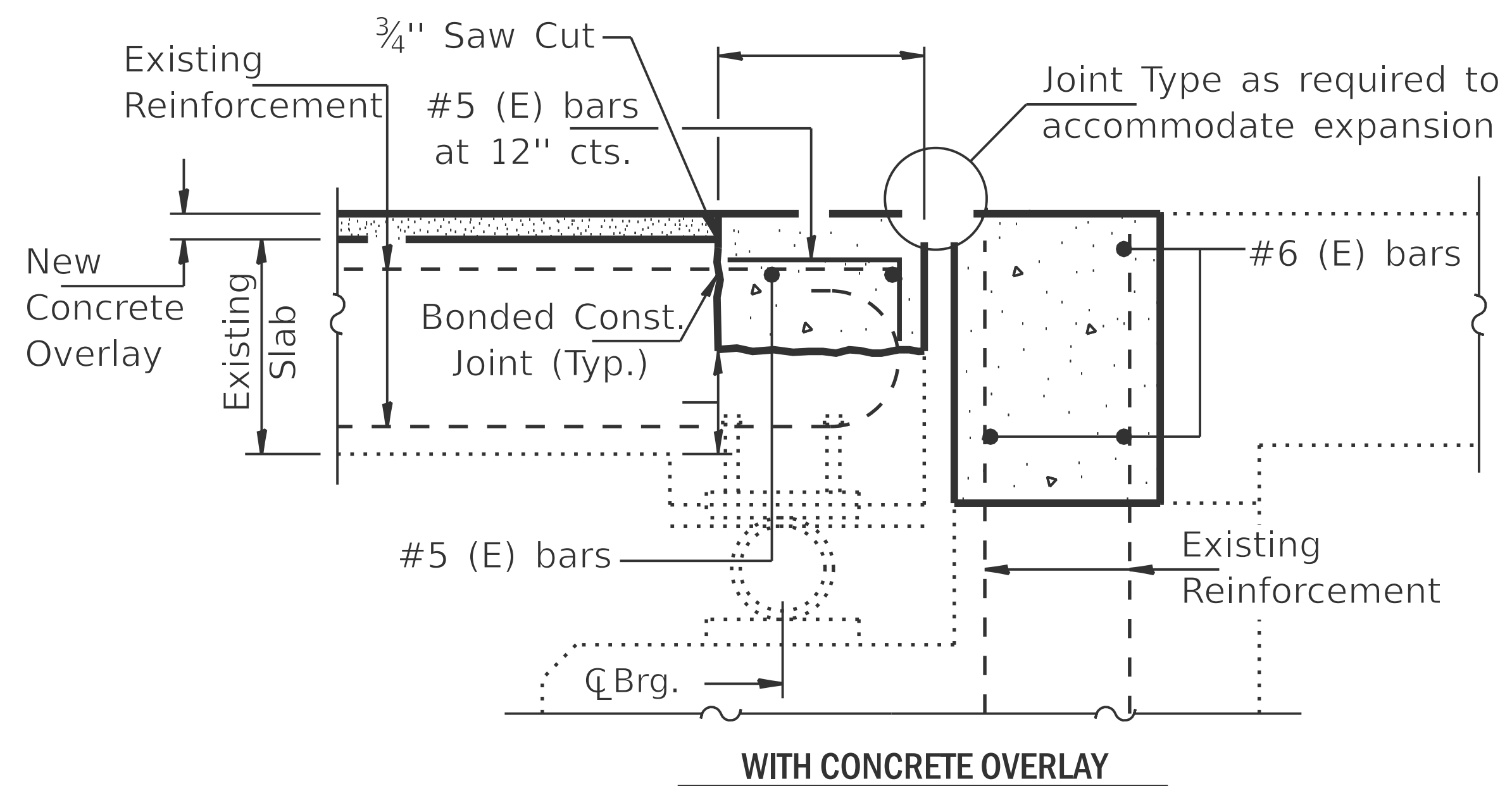
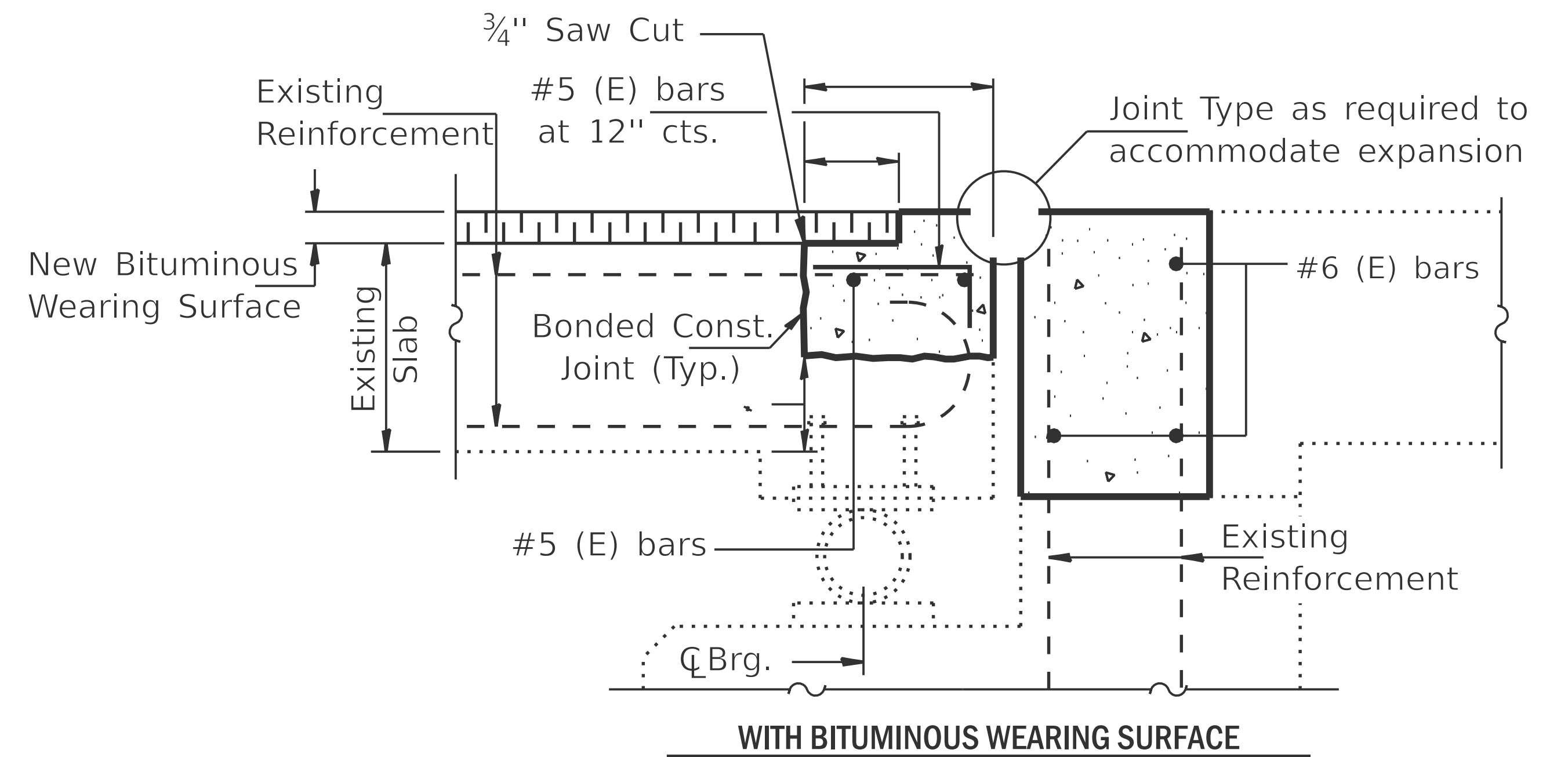
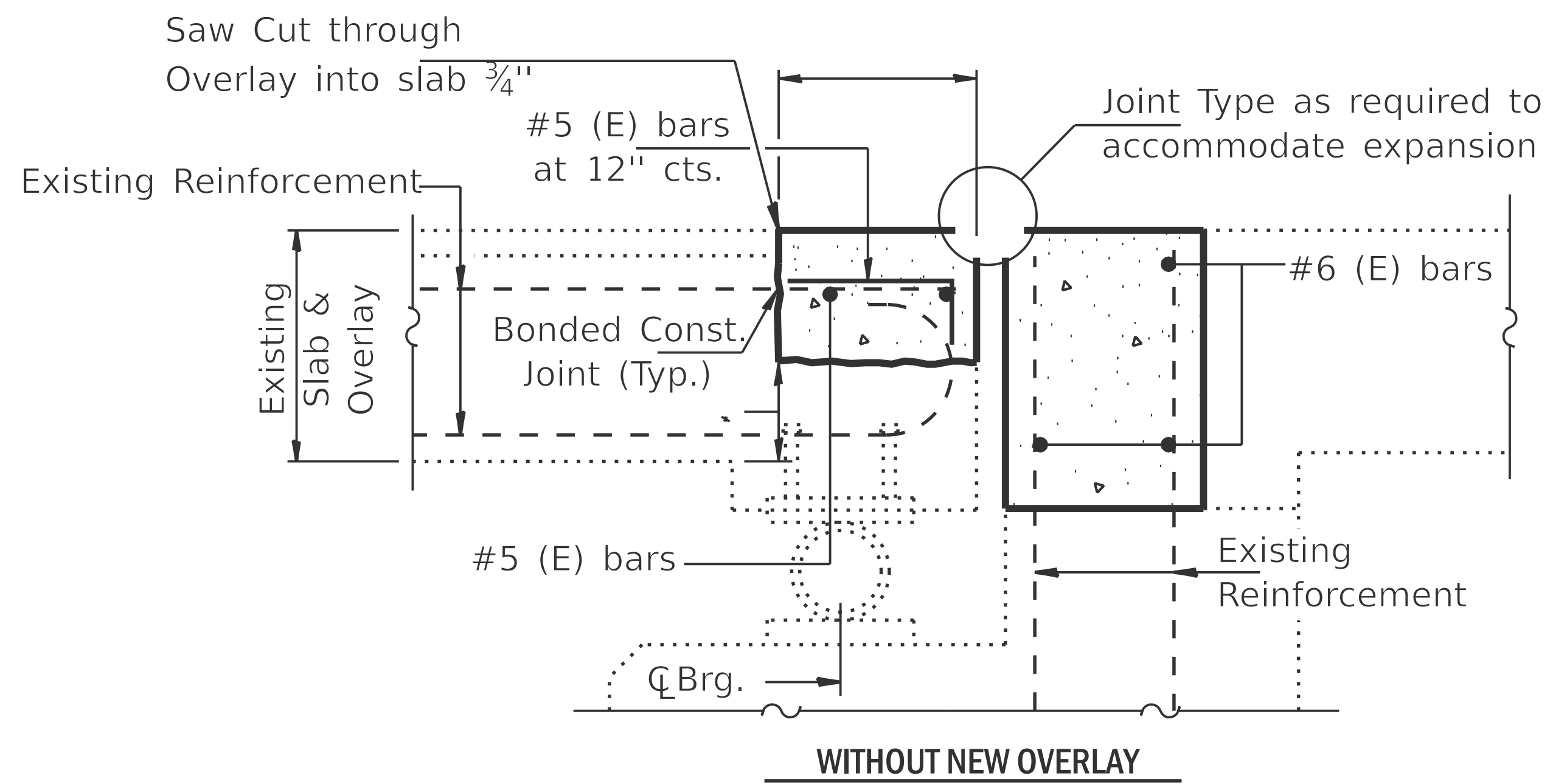
Note: Existing Reinforcement Bars shown are to be cleaned and incorporated into new construction.



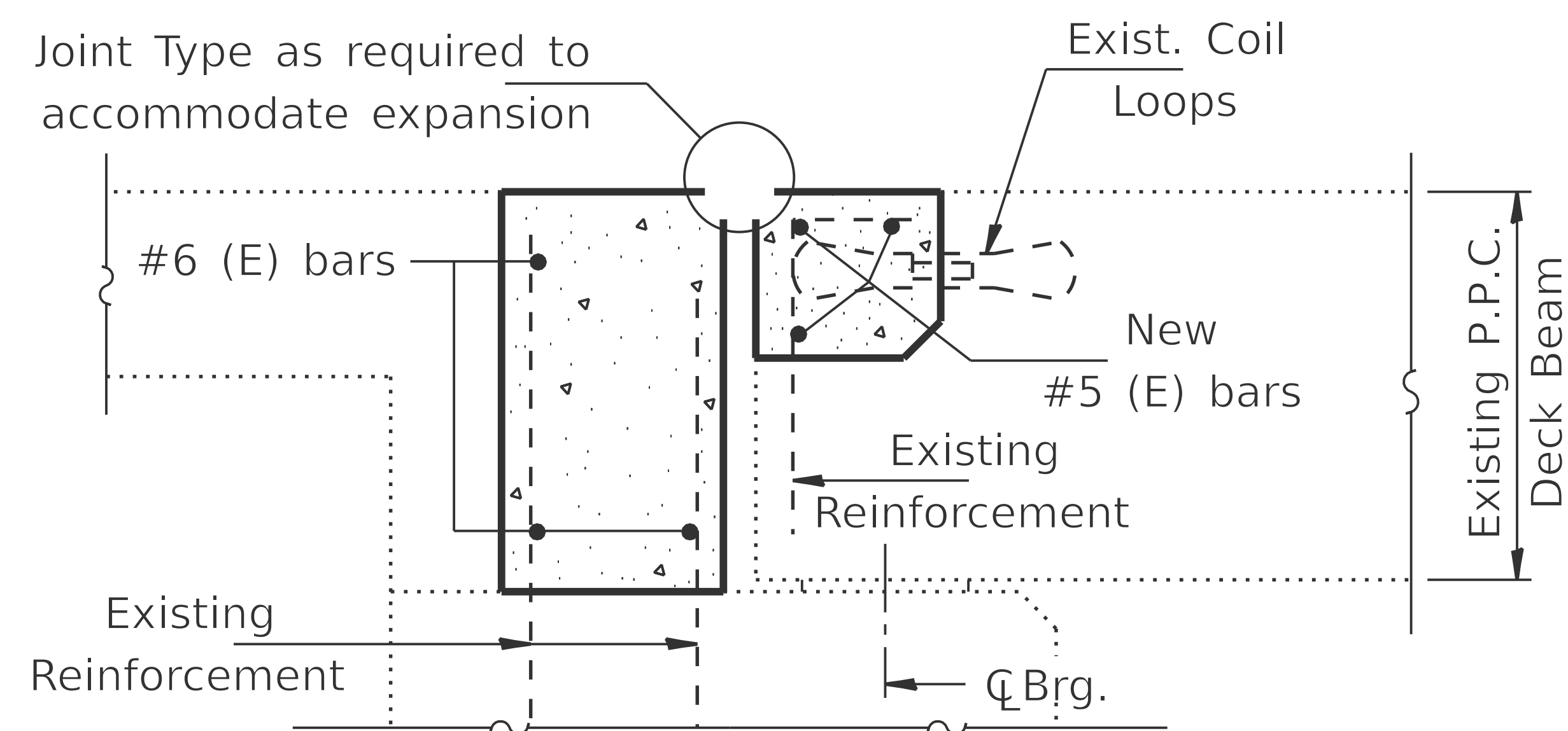
Note: Existing Reinforcement Bars shown are to be cleaned and incorporated into new construction.



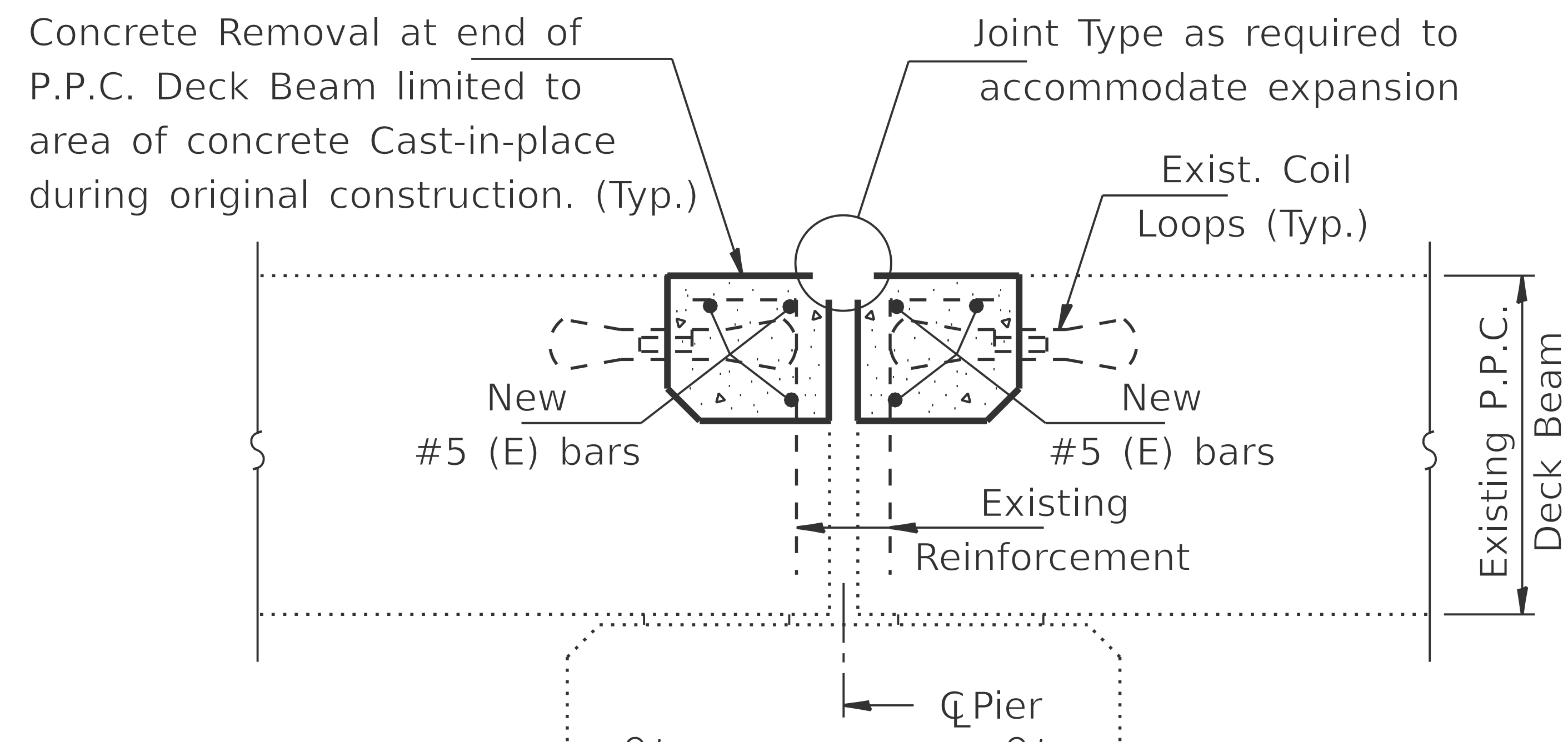
Note: Existing Reinforcement Bars shown are to be cleaned and incorporated into new construction.



* The complete replacement of the end of the slab and Temporary Shoring and Cribbing are required when the existing concrete is found to be unsound or analysis shows that remaining depth of slab is not adequate to carry loads during the joint replacement. See Figure 1.5.6-1.



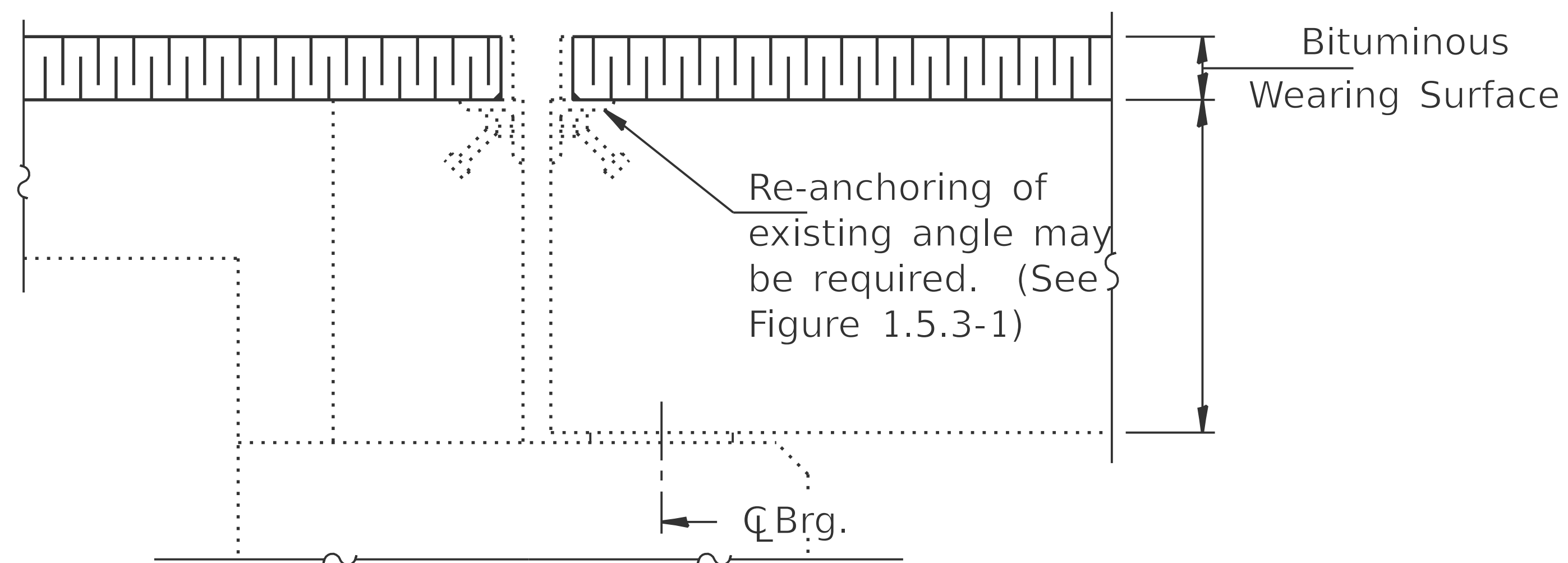
AT ABUTMENTS



AT PIERS

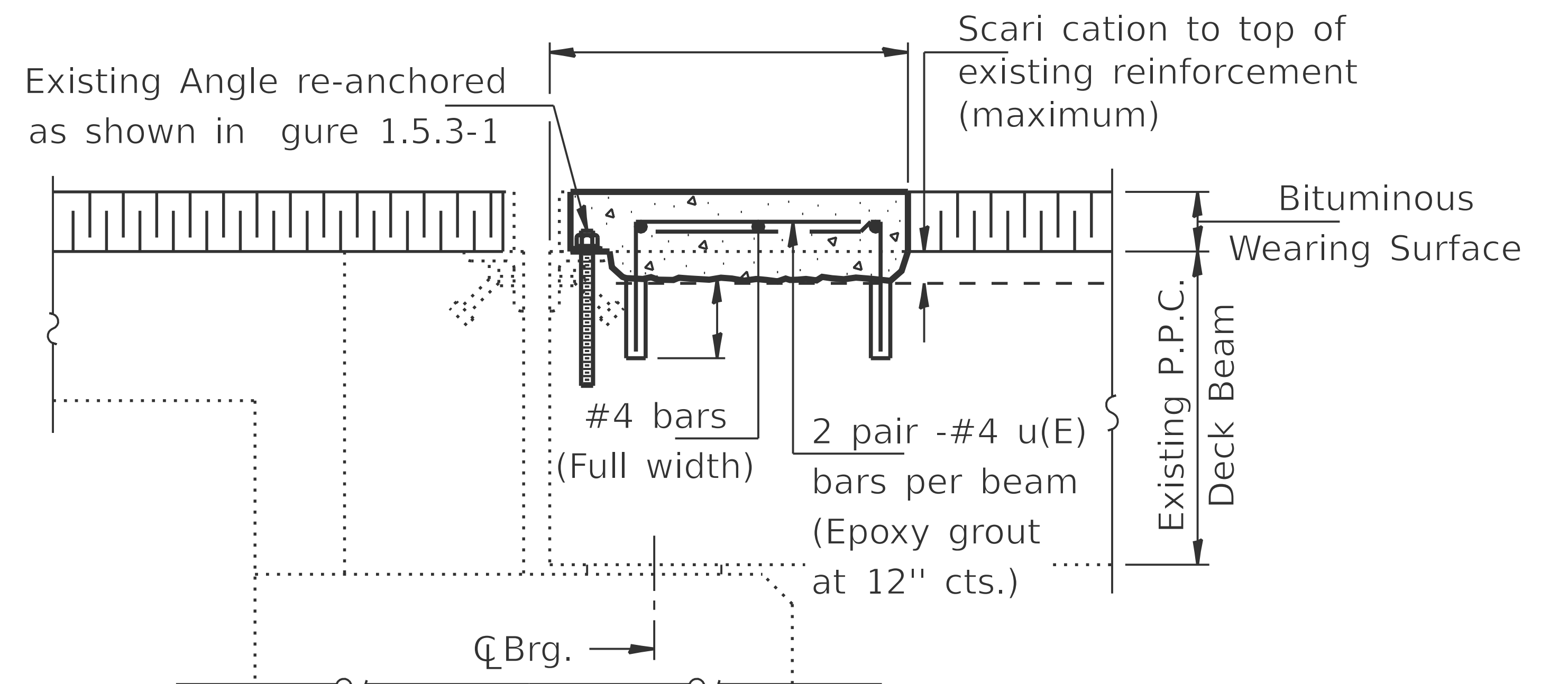
REMOVAL & REPLACEMENT

Note: Existing Reinforcement Bars and Coil Loops shown are to be cleaned and incorporated into new construction except as noted.



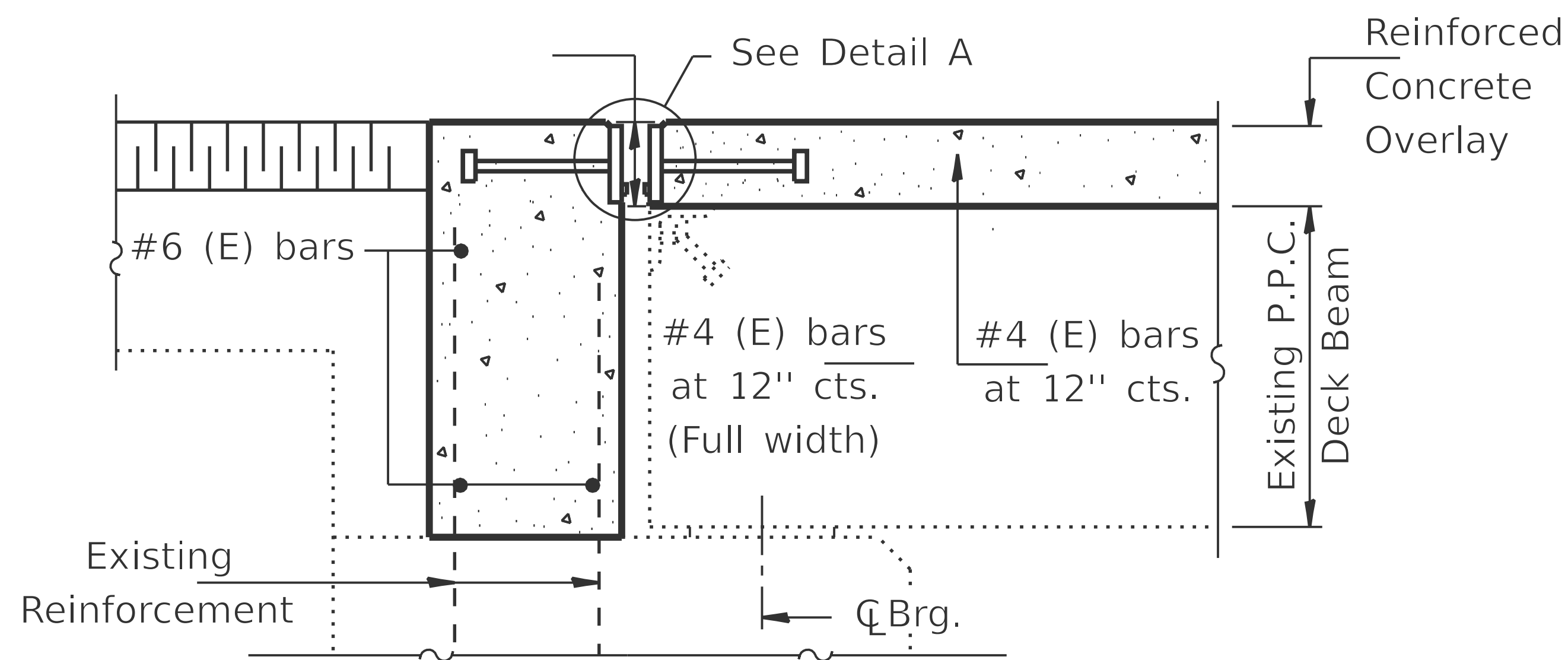
AT ABUTMENTS

(When re-anchoring is not required)



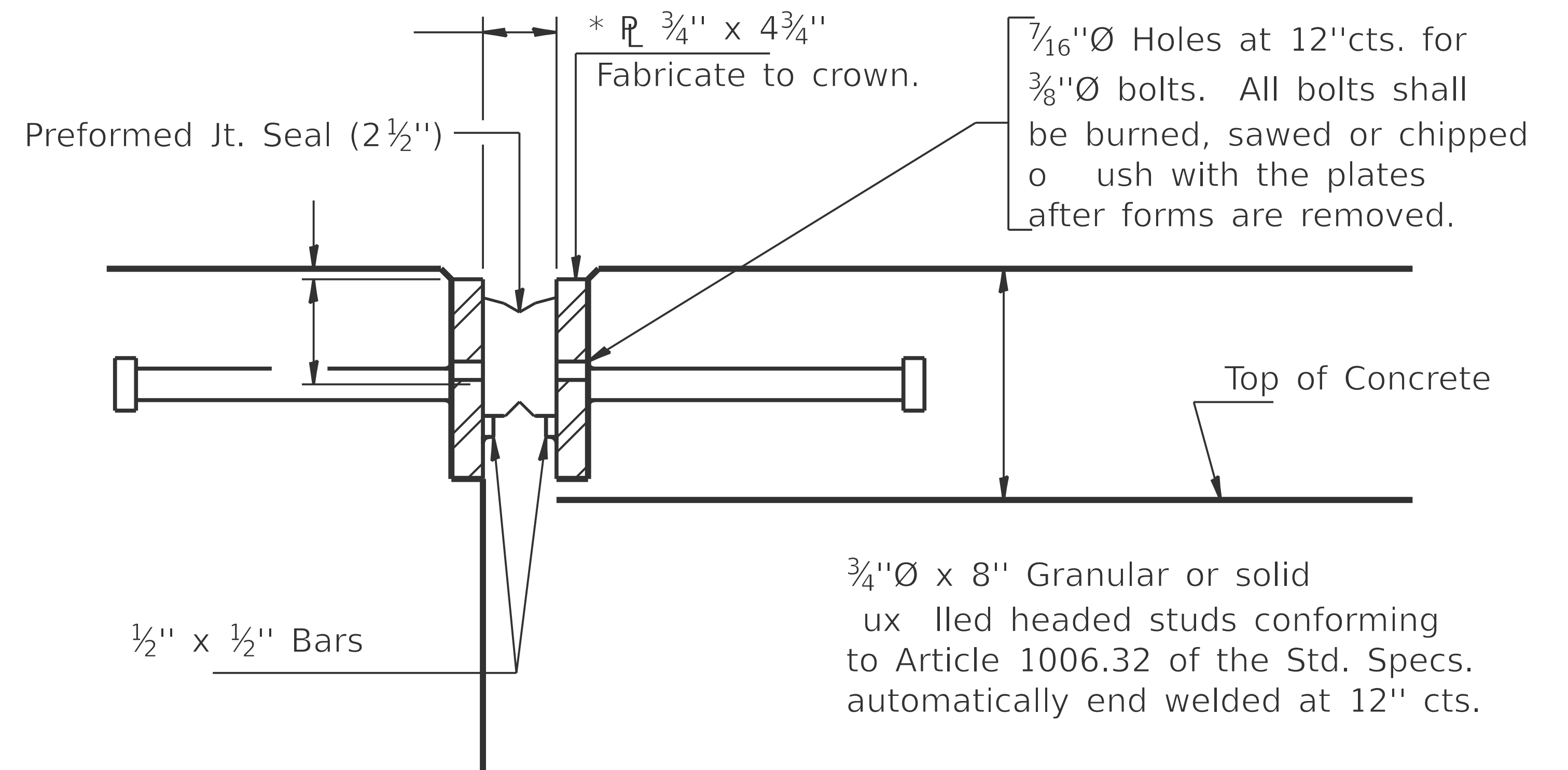
AT ABUTMENTS

(When re-anchoring is required)



SECTION AT ABUTMENT

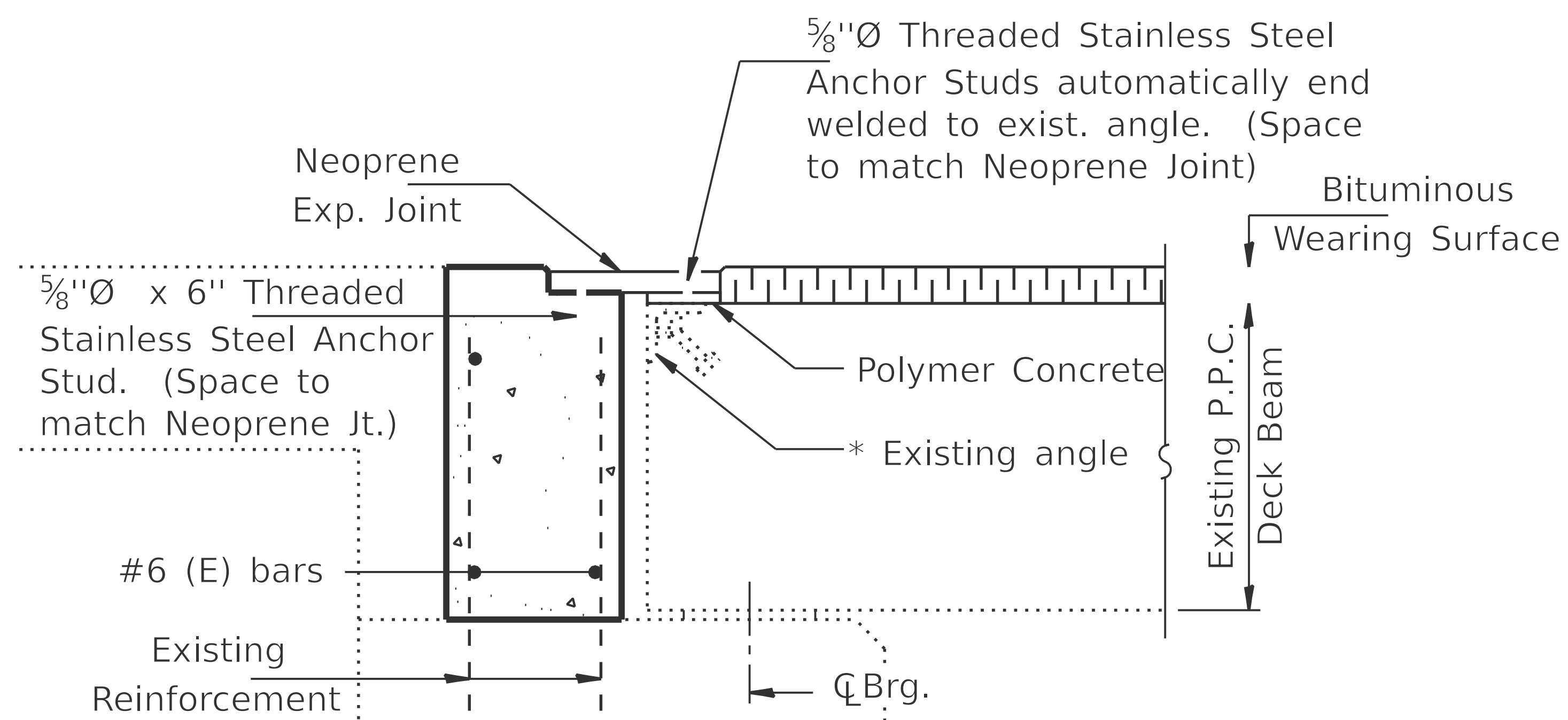
Minimum bar lap for #4 bars = 1'-4"



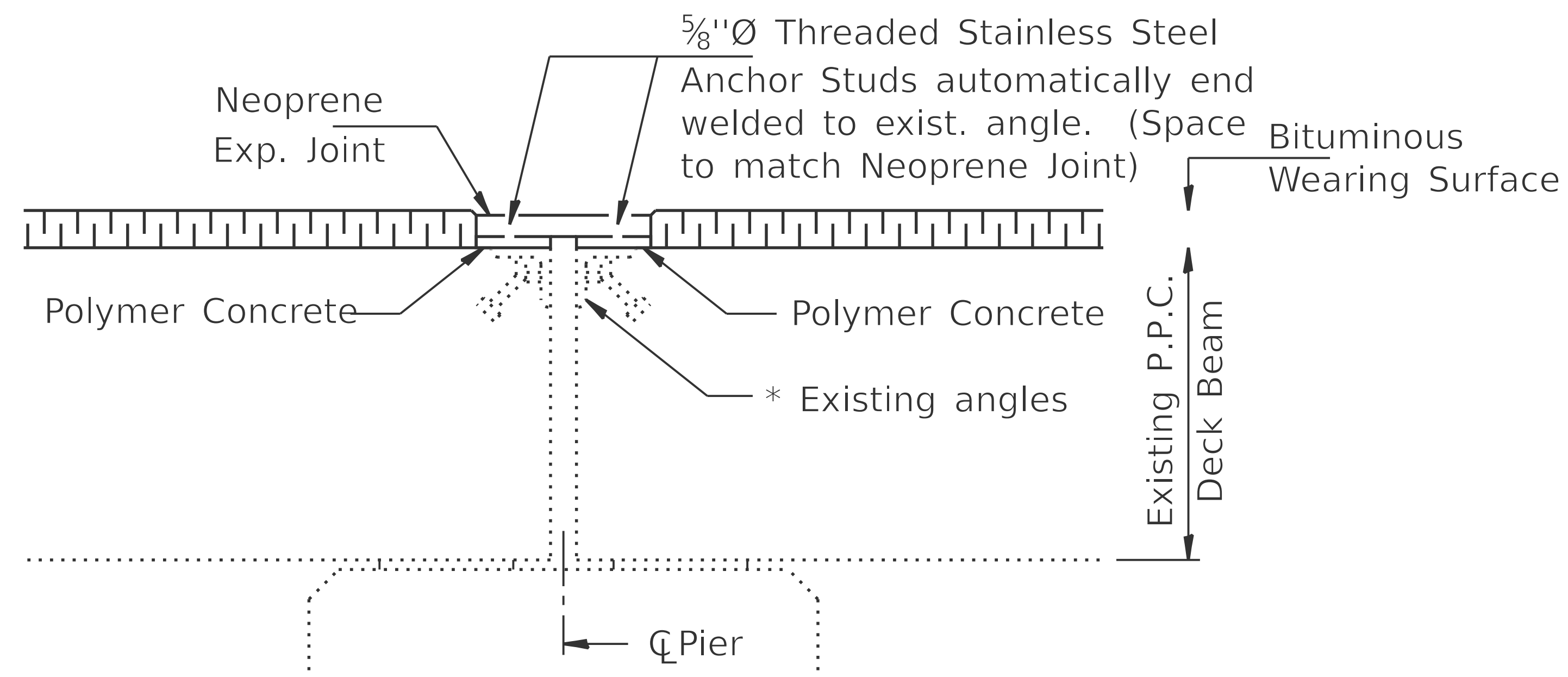
DETAIL A

* Furnish in segments of 20 ft. maximum length. Maximum space between installed segments shall be $\frac{3}{16}$ ". Seal space with Silicone Sealant suitable for Structural Steel.

Note: After fabrication all surfaces of the steel plates shall be given one shop coat of paint speci ed for Structural Steel. No eld painting required.

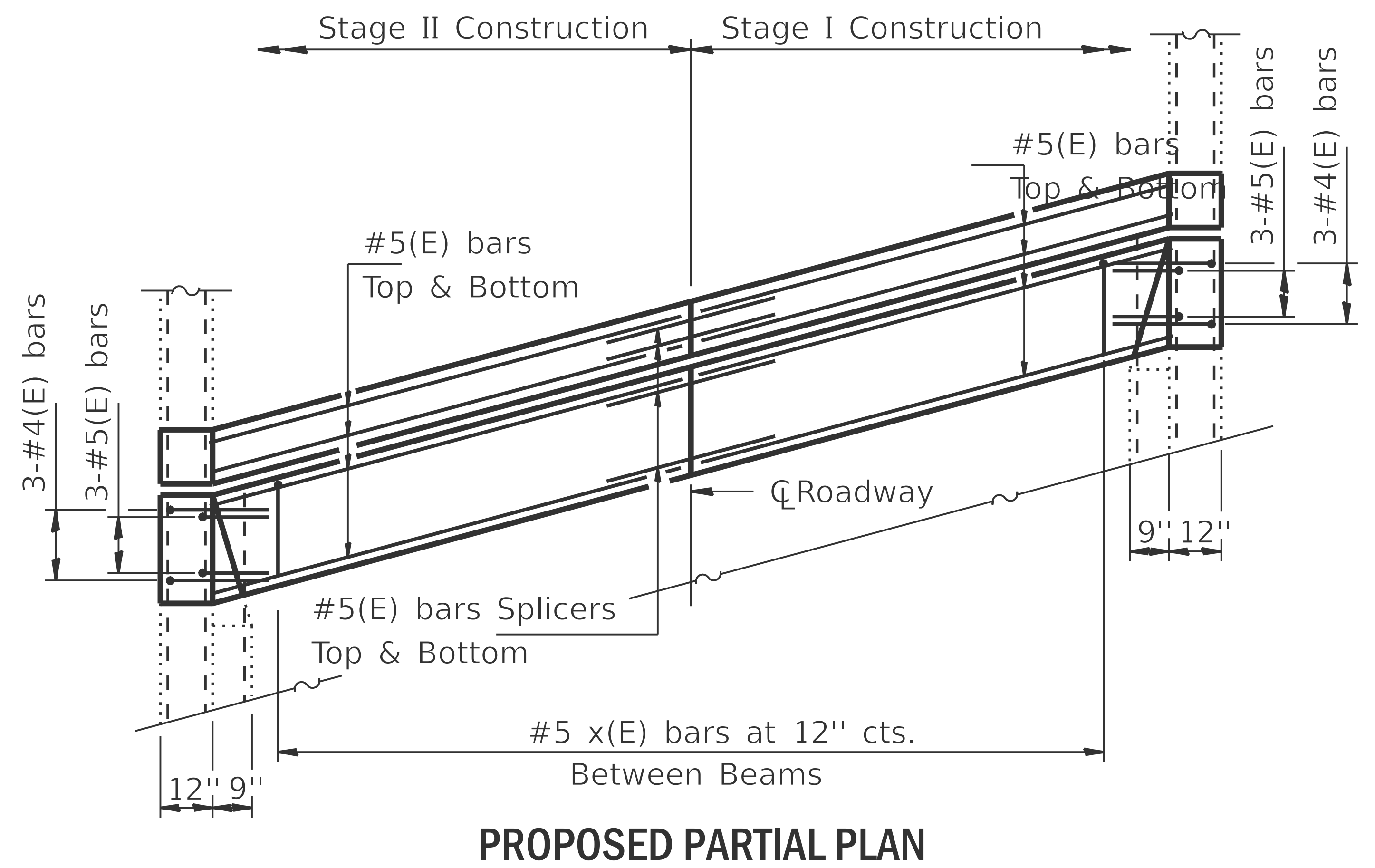
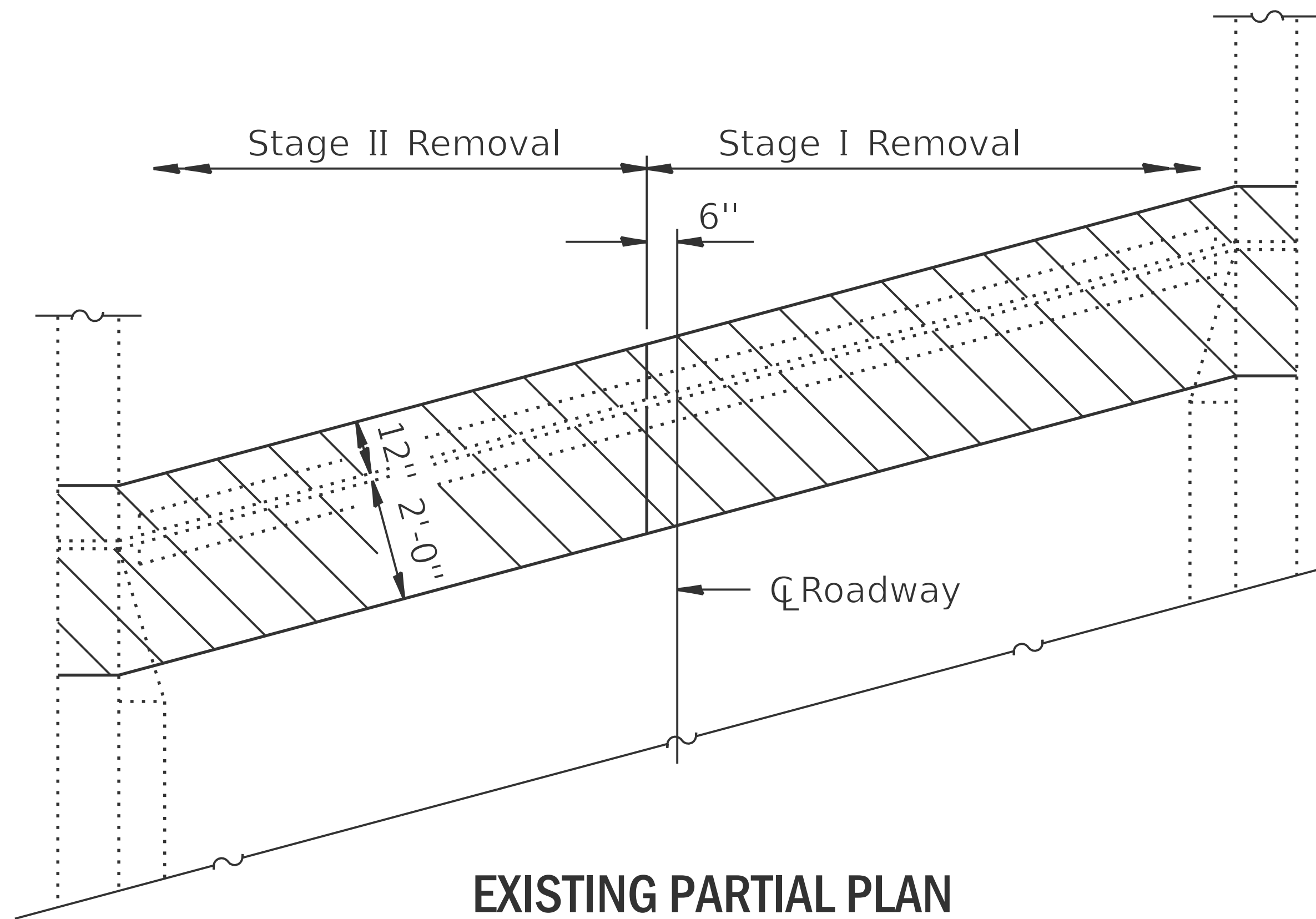


AT ABUTMENTS

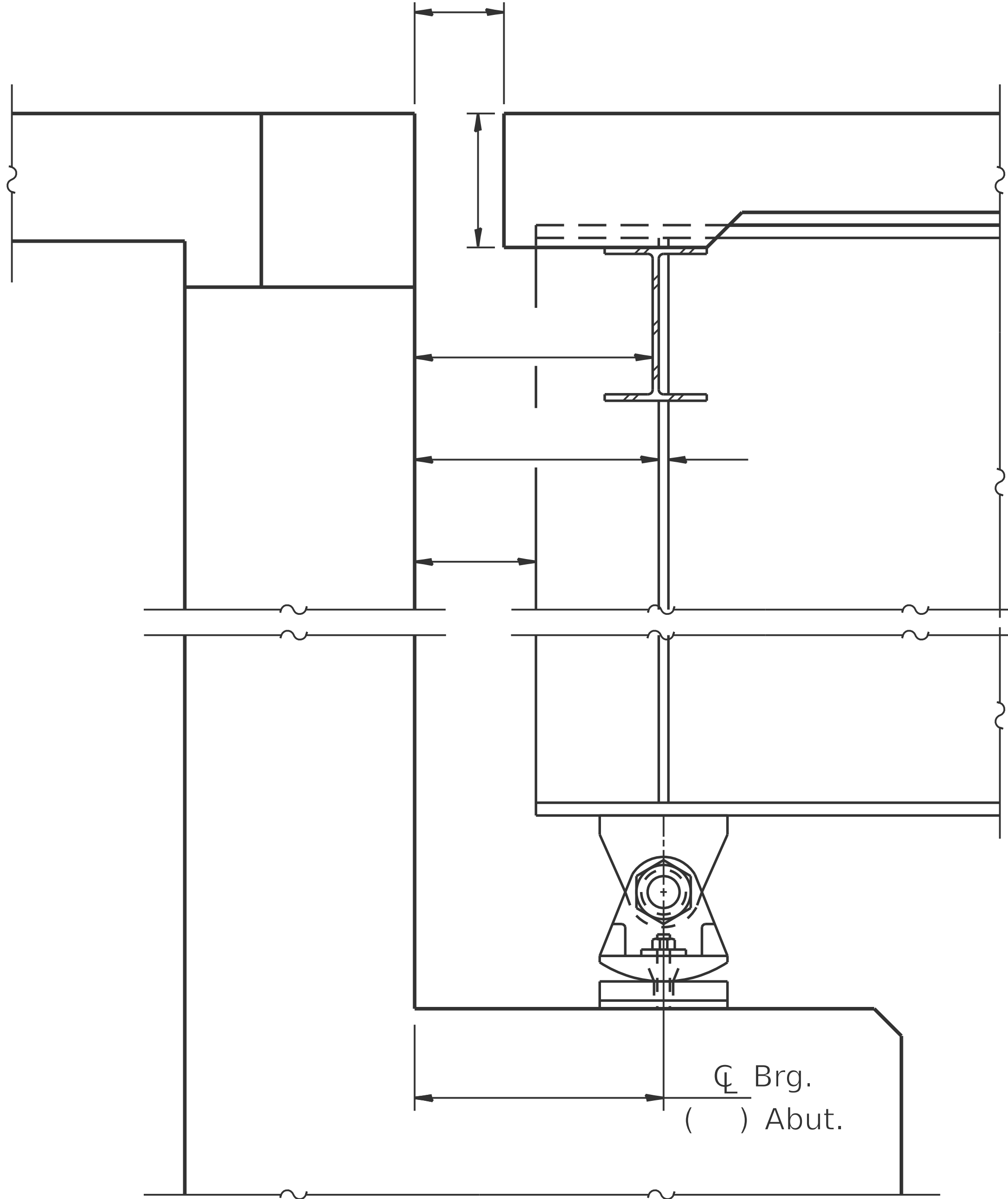


AT PIERS

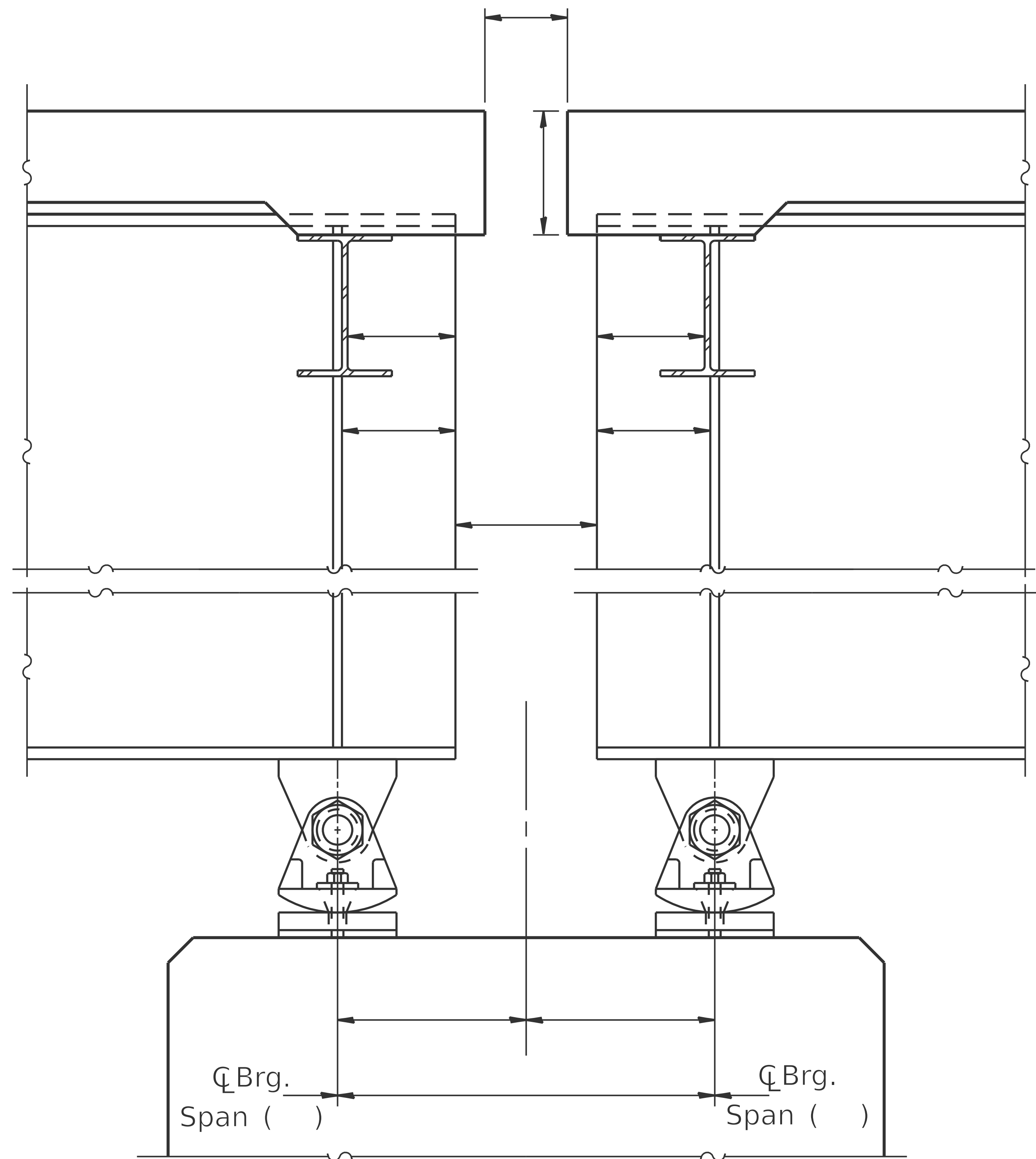
* Re-anchoring of existing expansion angles may be required. See Figure 1.5.3-1, and space $\frac{5}{8}$ " } Threaded Stainless Steel Anchor Rods to match the neoprene joint.

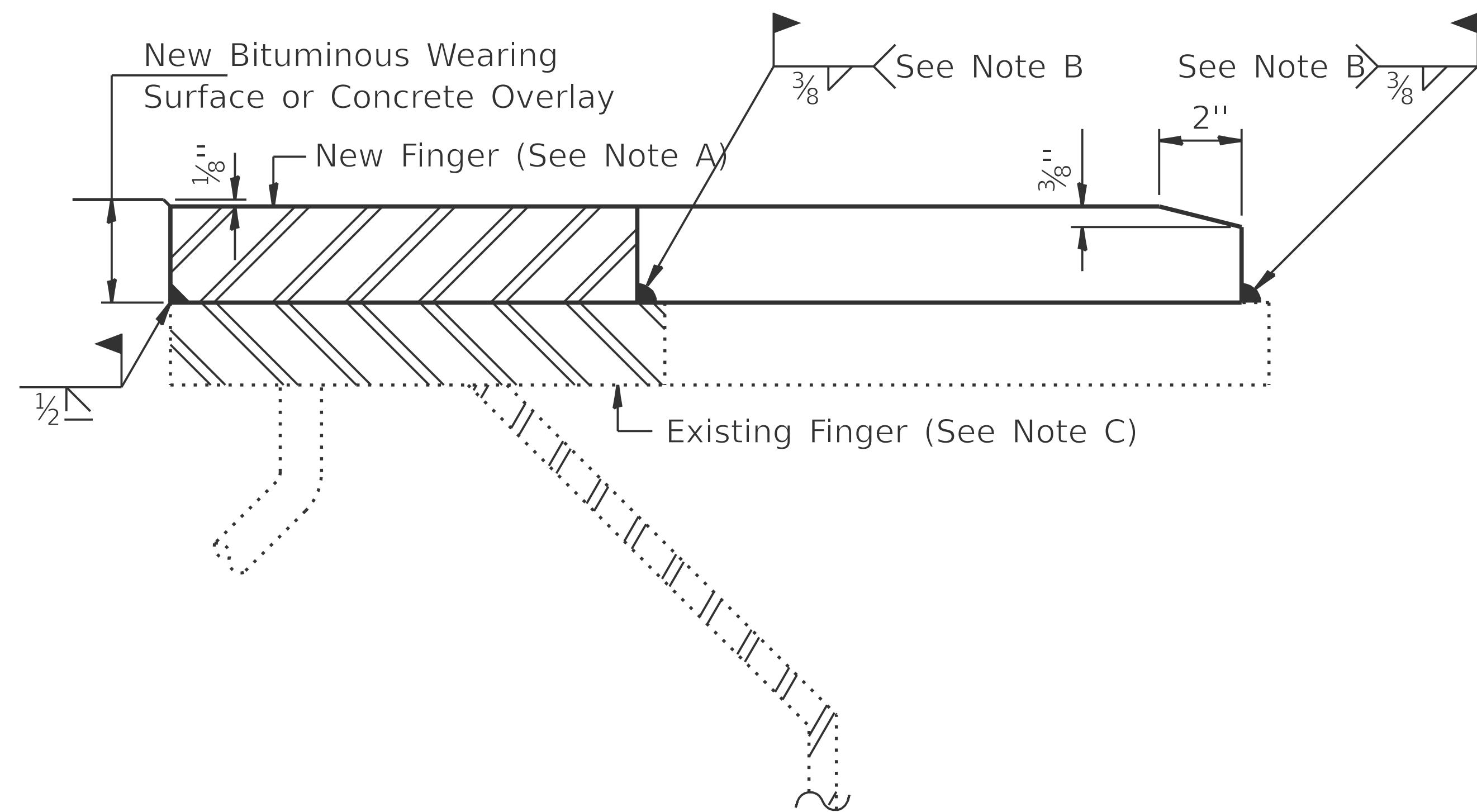


Structure No. _ _ _ _ _
Temperature _ _ _ _ _
Date _ _ _ _ _



Structure No. _____
Temperature _____
Date _____



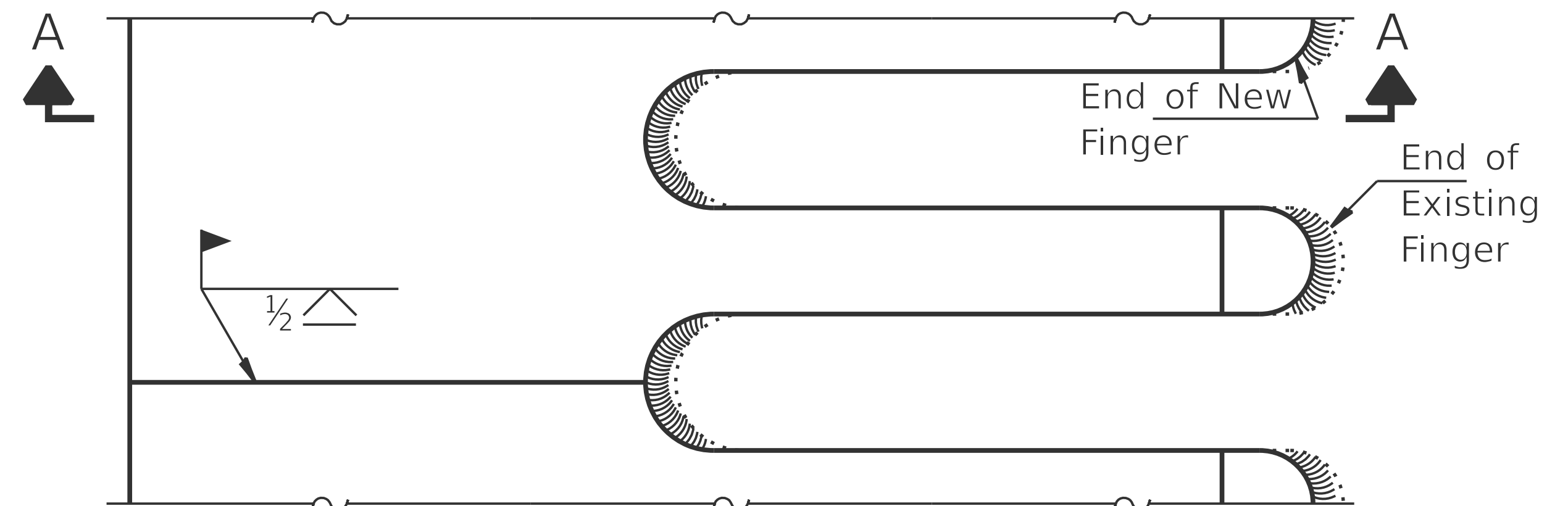


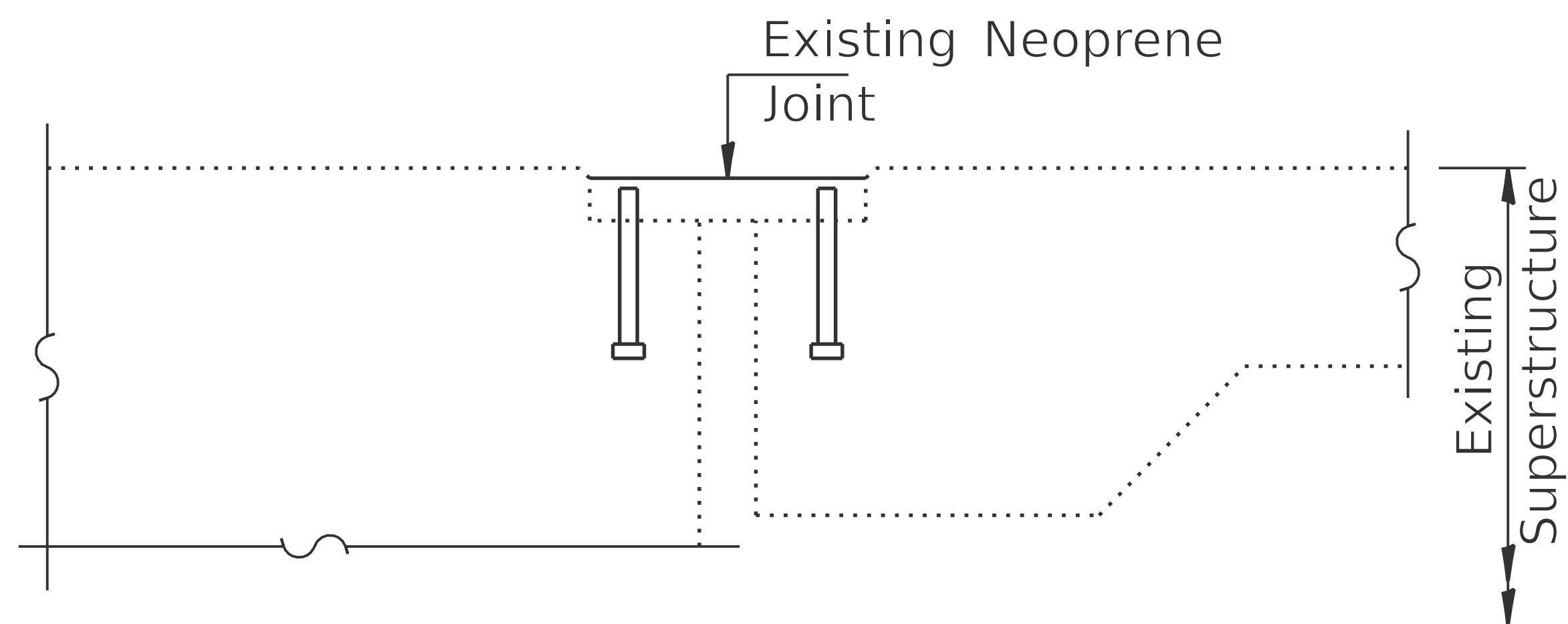
SECTION A-A

Note A:
New Finger shall be blast cleaned to SSPC SP 10 and shop painted with the inorganic zinc rich primer.

Note B:
Fillet weld sizes at ends (tips) and crotches of ngers shall vary from $\frac{3}{8}"$ near centers to $\frac{3}{16}"$ minimum near edges as new and existing plates converge.

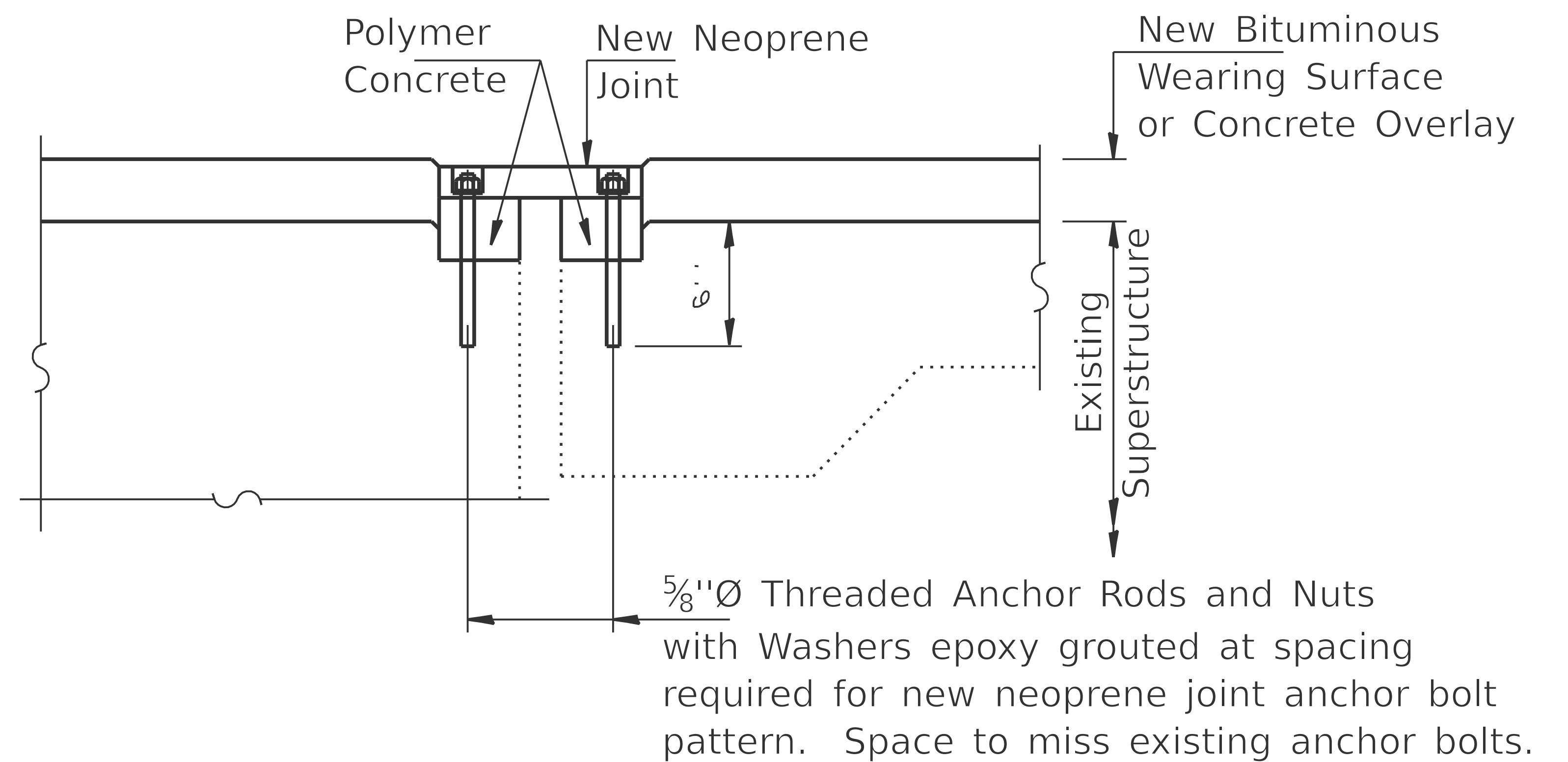
Note C:
Existing Finger widths and exact locations must be eld veri ed. A template shall be made to insure alignment. Remove foreign material that would prevent uniform contact between new and existing plates by method approved by the Engineer.





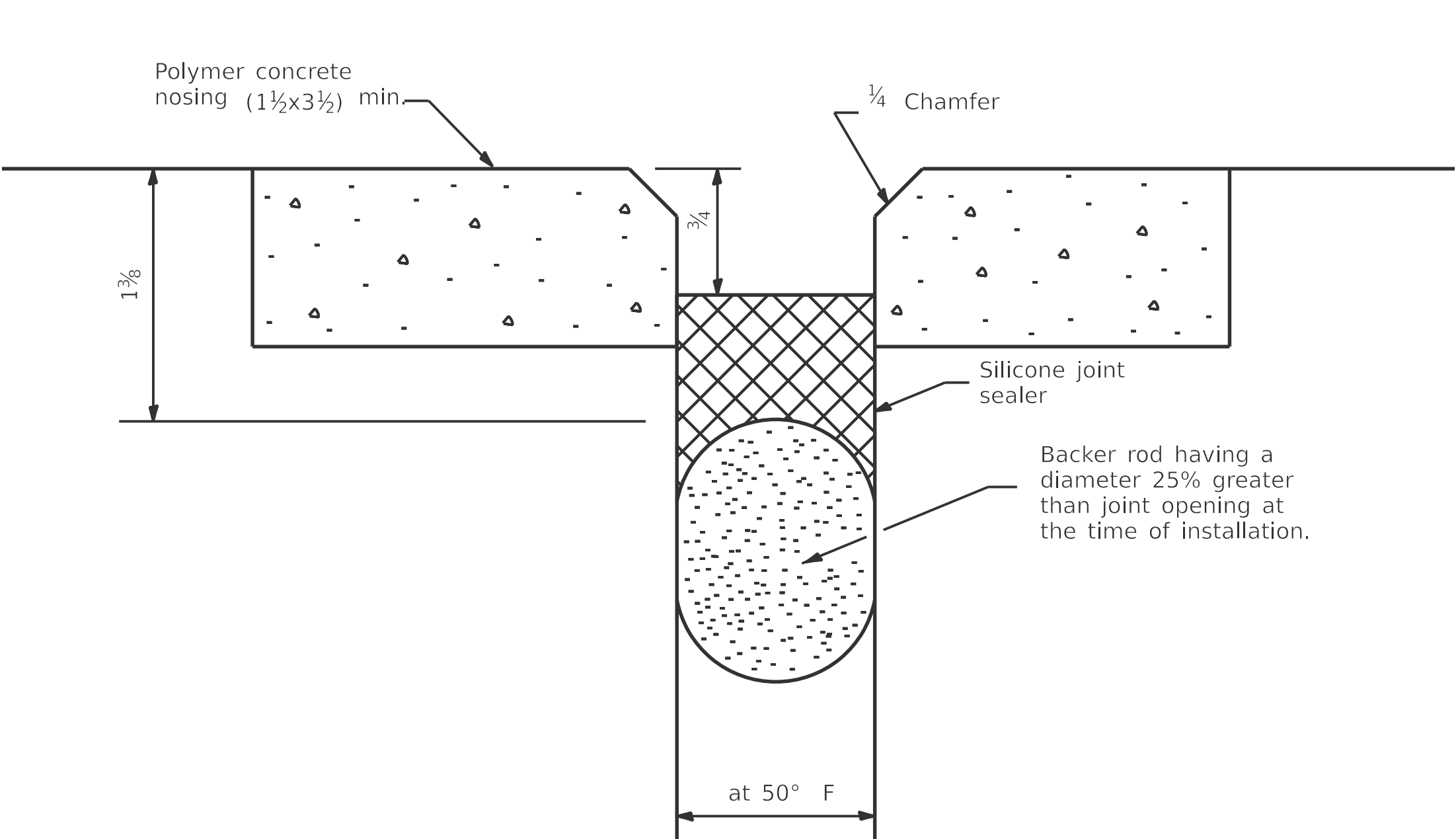
SECTION AT EXPANSION JOINT

(Showing existing neoprene joint)

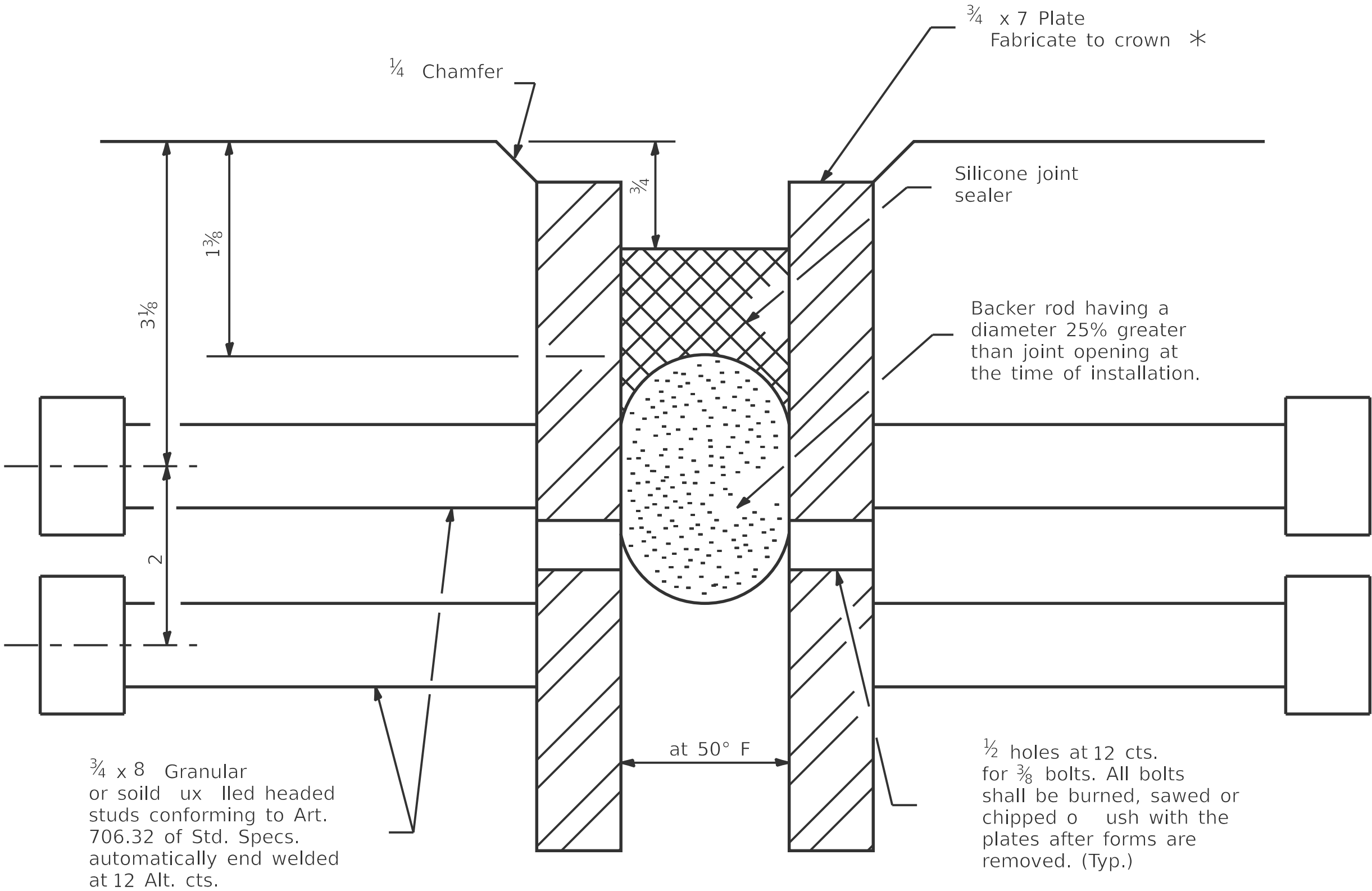


SECTION AT EXPANSION JOINT

(Showing new neoprene joint)



**SILICONE JOINT SEAL
(CONCRETE DETAILS)**



* Furnish in segments of 20 ft. maximum length. Maximum space between installed segments shall be 1/4. Seal space with Silicone Sealant suitable for Structural Steel.

**SILICONE JOINT SEAL
(STEEL DETAILS)**

All dimensions are in inches unless otherwise shown.

All dimensions are in inches unless otherwise shown.

