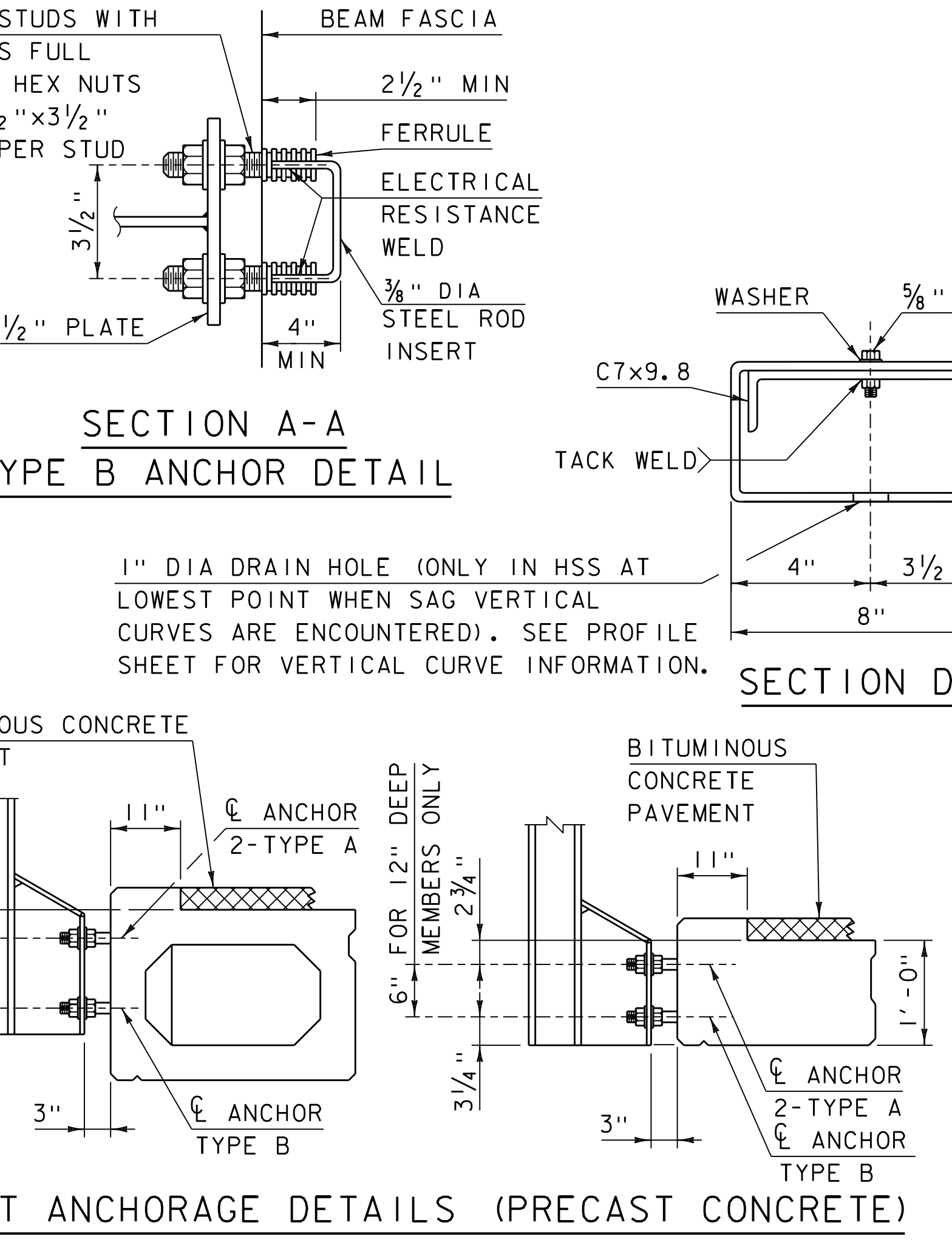
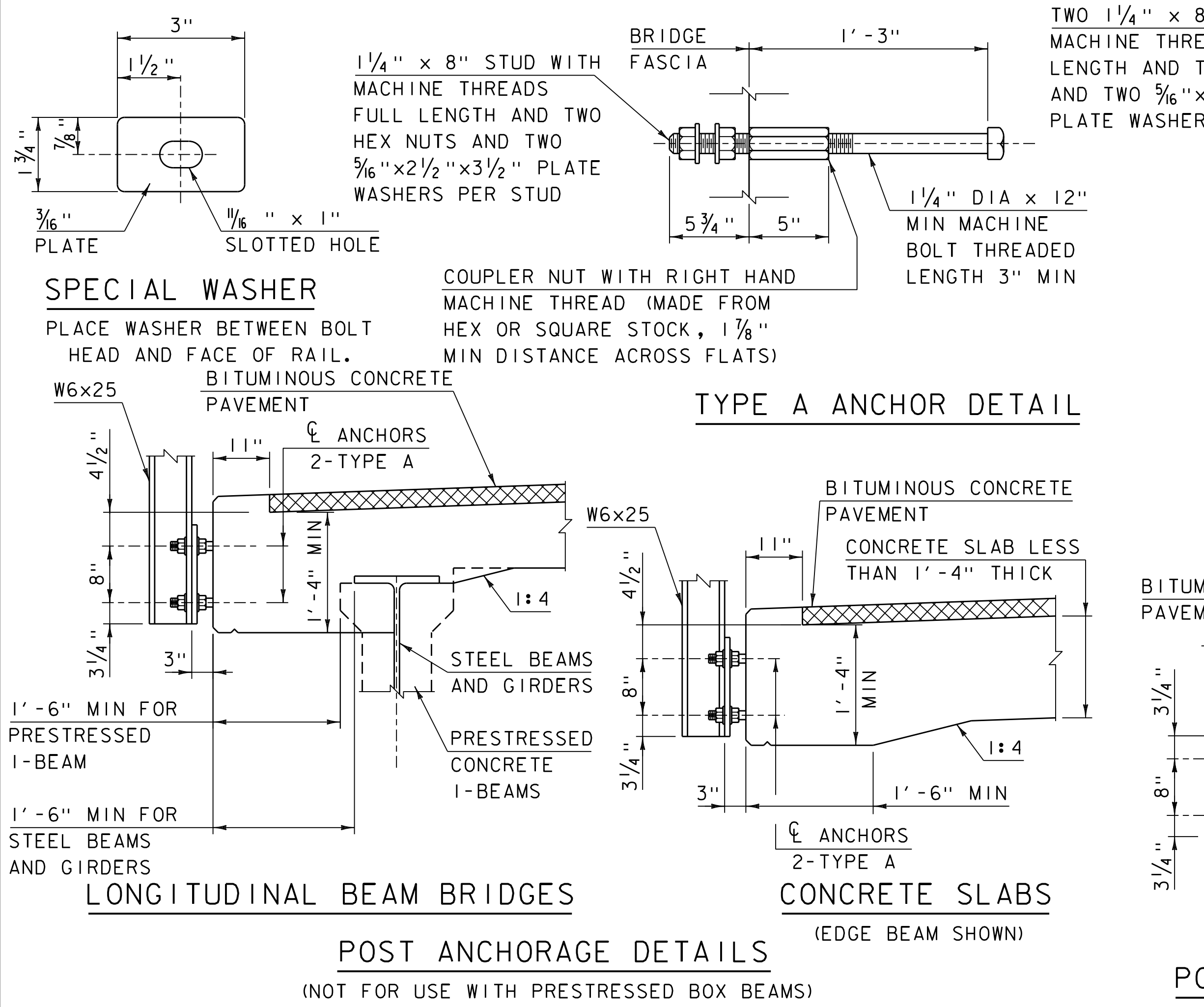


*FOR USE WITH PRESTRESSED CONCRETE BOX BEAMS:

DIMENSION ① IS 6" OR 8" DEPENDING ON BOX BEAM DEPTH. SEE PROJECT PLANS AND POST ANCHORAGE DETAILS.

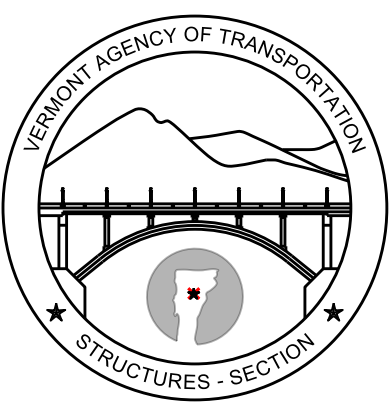
DIMENSION ② DETAILED BY FABRICATOR, SEE PROFILE AND CAMBER DETAILS. MINIMUM POST LENGTH IS 3'-6 1/2" AND MAXIMUM POST LENGTH IS 4'-1 1/4".

- NOTES:
- ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
 - PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
 - ALL POSTS SHALL BE SET NORMAL TO GRADE.
 - SPLICES FOR THE STEEL BEAM GUARDRAIL SHALL LAP IN THE DIRECTION OF TRAFFIC.
 - A RAILING JOINT SPLICE SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS.
 - SEE STANDARD DRAWING G-1 FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT.
 - THE 1/2" EXPANSION JOINT SHOWN IN THE RAILING ELEVATION IS DESIGNED FOR BRIDGE LENGTHS UP TO 80 FEET, ANY LONGER SPANS WILL HAVE TO BE MODIFIED TO ACCOUNT FOR THEIR MOVEMENT.
 - FOR RADIUS LESS THAN 950 FEET, HSS8x4 TUBES SHALL BE SHOP BENT TO FIT THE APPLICABLE CURVE.
 - THE MINIMUM DISTANCE FROM THE LAST POST TO THE END OF SLAB IS 1'-6".
 - FERRULES SHALL BE 12L14 COLD DRAWN CARBON STEEL.
 - HOLES IN RAIL FOR RAIL TUBE ATTACHMENT MAY BE FIELD DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
 - THIS RAILING HAS NOT BEEN DESIGNED TO CURRENT LOADING REQUIREMENTS OR ANALYZED TO CURRENT CRASH TEST STANDARDS.
 - THIS RAILING MAY ONLY BE USED ON BRIDGES MEETING THE FOLLOWING REQUIREMENTS:
 - THE STRUCTURE IS NOT ON THE NATIONAL HIGHWAY SYSTEM OR THE VERMONT STATE HIGHWAY SYSTEM.
 - THE STRUCTURE REQUIRES A TL-2 SERVICE LEVEL, OR LESS, PER THE VTRANS STRUCTURES DESIGN MANUAL.
 - THE ROADWAY HAS A DESIGN SPEED OF 30 MPH OR LESS
 - THE ROADWAY HAS AN ADT OF 600 VEHICLES OR LESS.



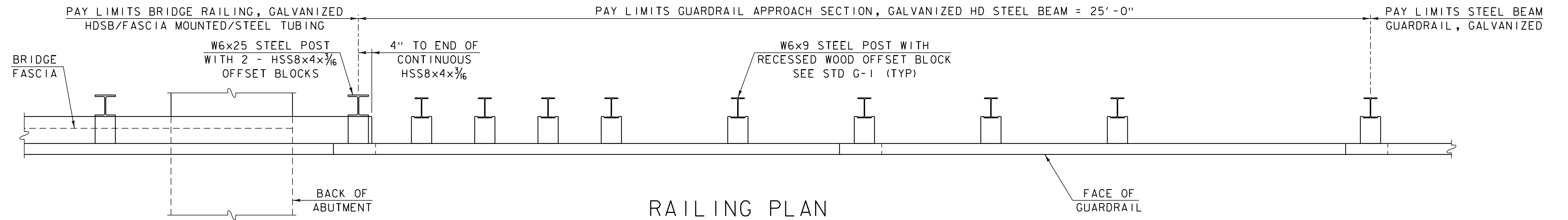
REVISIONS	
MARCH 23, 2023	ORIGINAL APPROVAL
OTHER STANDARDS REQUIRED: G-1	

BRIDGE RAILING, GALVANIZED HDSB/ FASCIA MOUNTED/ STEEL TUBING

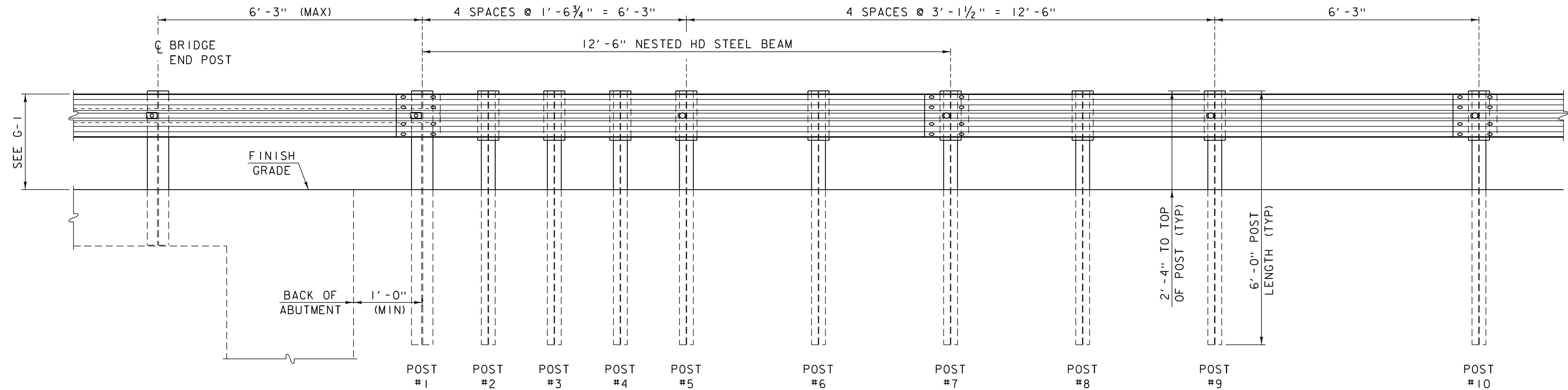


STRUCTURES DETAIL

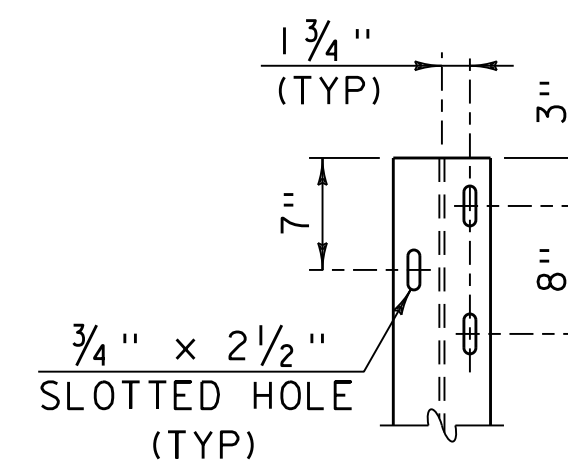
SD-367.01



RAILING PLAN



RAILING ELEVATION



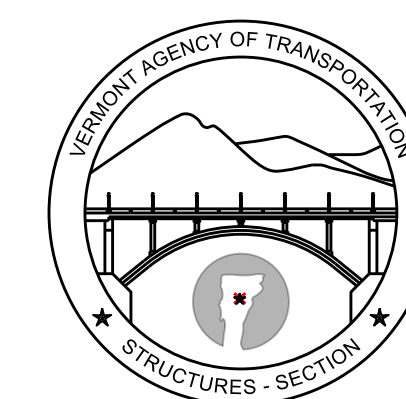
POST #1 HOLE DETAIL

NOTES:

1. PAYMENT FOR POST #1, HSS8x4x3/16 OFFSET BLOCKS AND TUBULAR BACKUP RAIL EXTENDING TO POST #1 OFF THE BRIDGE SHALL BE MADE UNDER BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING.
2. BLOCKOUTS SHALL BE RECESSED WOOD ONLY. STEEL OR PLASTIC BLOCKOUTS ARE NOT PERMITTED.
3. GUARDRAIL IS NOT ATTACHED TO POST NUMBERS 2-4, 6 AND 8. THERE SHALL BE NO GAP BETWEEN THE POSTS THAT ARE NOT ATTACHED AND THE RAIL OFFSET BLOCKS SHALL BE ATTACHED TO POST WITH STANDARD POST BOLT.
4. POSTS MAY BE SET IN DRILLED HOLES OR DRIVEN TO GRADE.
5. THIS RAILING HAS NOT BEEN DESIGNED TO CURRENT LOADING REQUIREMENTS OR ANALYZED TO CURRENT CRASH TEST STANDARDS.
6. THIS RAILING MAY ONLY BE USED ON BRIDGES MEETING THE FOLLOWING REQUIREMENTS;
 - i. THE STRUCTURE IS NOT ON THE NATIONAL HIGHWAY SYSTEM OR THE VERMONT STATE HIGHWAY SYSTEM.
 - ii. THE STRUCTURE REQUIRES A TL-2 SERVICE LEVEL, OR LESS, PER THE VTRANS STRUCTURES DESIGN MANUAL.
 - iii. THE ROADWAY HAS A DESIGN SPEED OF 30 MPH OR LESS
 - iv. THE ROADWAY HAS AN ADT OF 600 VEHICLES OR LESS.

REVISIONS	
MARCH 23, 2023	ORIGINAL APPROVAL
OTHER DETAILS OR STANDARDS REQUIRED: SD-367.01 AND G-1	

GUARDRAIL APPROACH SECTION,
GALVANIZED HDSB/ FASCIA
MOUNTED/ STEEL TUBING



STRUCTURES
DETAIL
SD-367.02

BAR 1/4"x5 1/2" W/ 7/8" Ø HOLES @ 1'-0" o/c
COUNTERBORED 2 1/4" Ø x 3/4" DEEP AS SHOWN
(SEE NOTE 8)

3/4" Ø x 2" HEAVY HEX HIGH STRENGTH BOLTS
@ 1'-0", COAT BOLT & NUT THREADS WITH
NICKEL BASED ANTI-SEIZE LUBRICANT (TYP)

CONCRETE ABOVE CONST.
JOINT WILL MATCH DECK
CONCRETE MIX DESIGN

SEE "JOINT ASSEMBLY
DETAIL" ON SD-516.11b

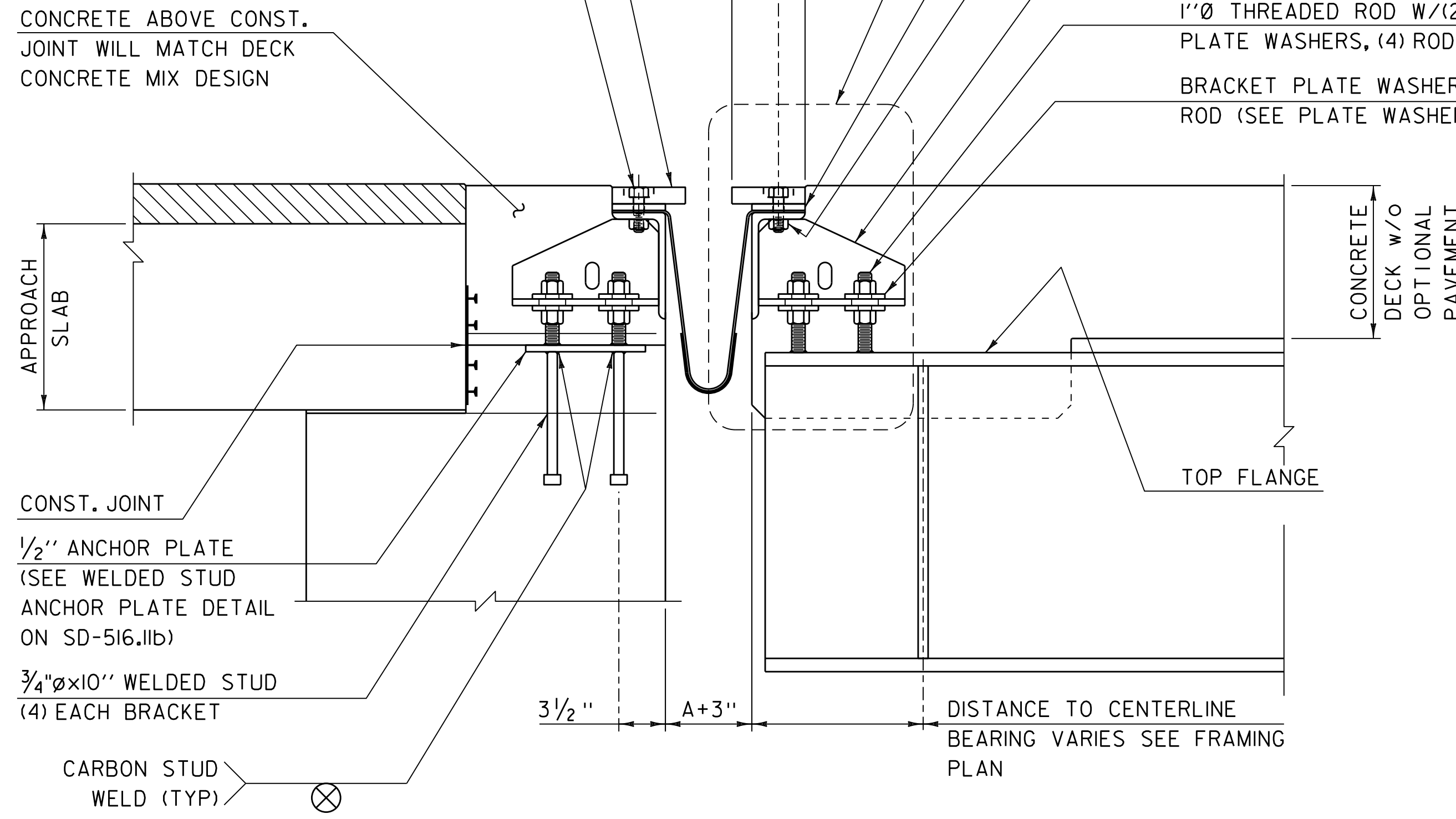
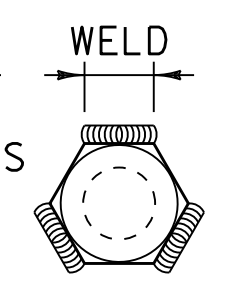
PROVIDE 1/2"x4" RISER PLATE FOR BARE
DECK BRIDGES (SEE NOTE 11)

3/4" HEAVY HEX NUT FOR EACH 3/4"
HEAVY HEX BOLT, WELD NUT ON (3)
FACES, ANTI-SEIZE LUBE END OF BOLTS

BRACKET (SEE BRACKET DETAILS)

1" Ø THREADED ROD W/(2) NUTS & (2)
PLATE WASHERS, (4) RODS EACH BRACKET

BRACKET PLATE WASHERS (2) EACH
ROD (SEE PLATE WASHER DETAIL)

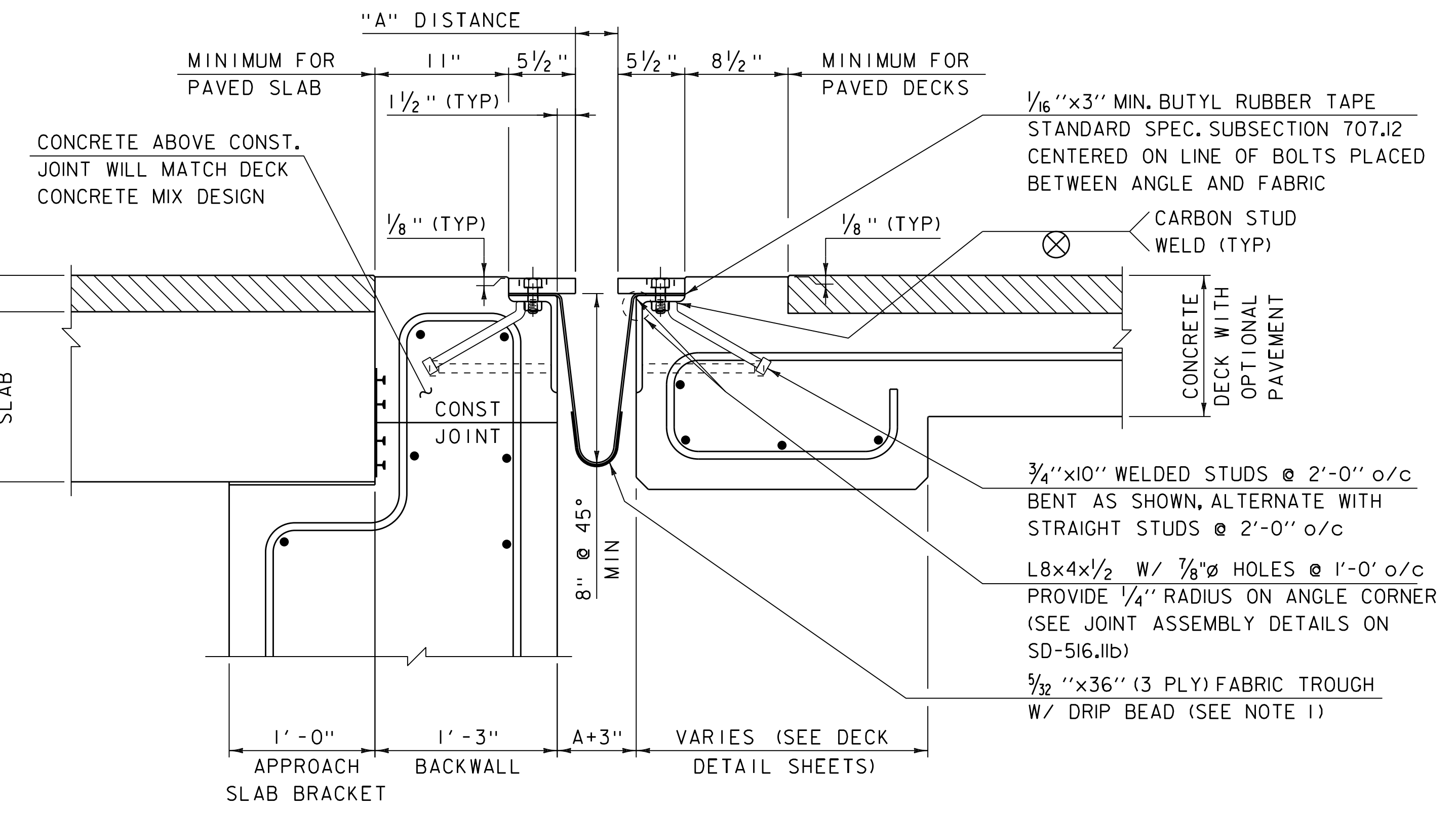


TYPICAL SECTION AT GIRDERS
SCALE 1/2" = 1'-0"

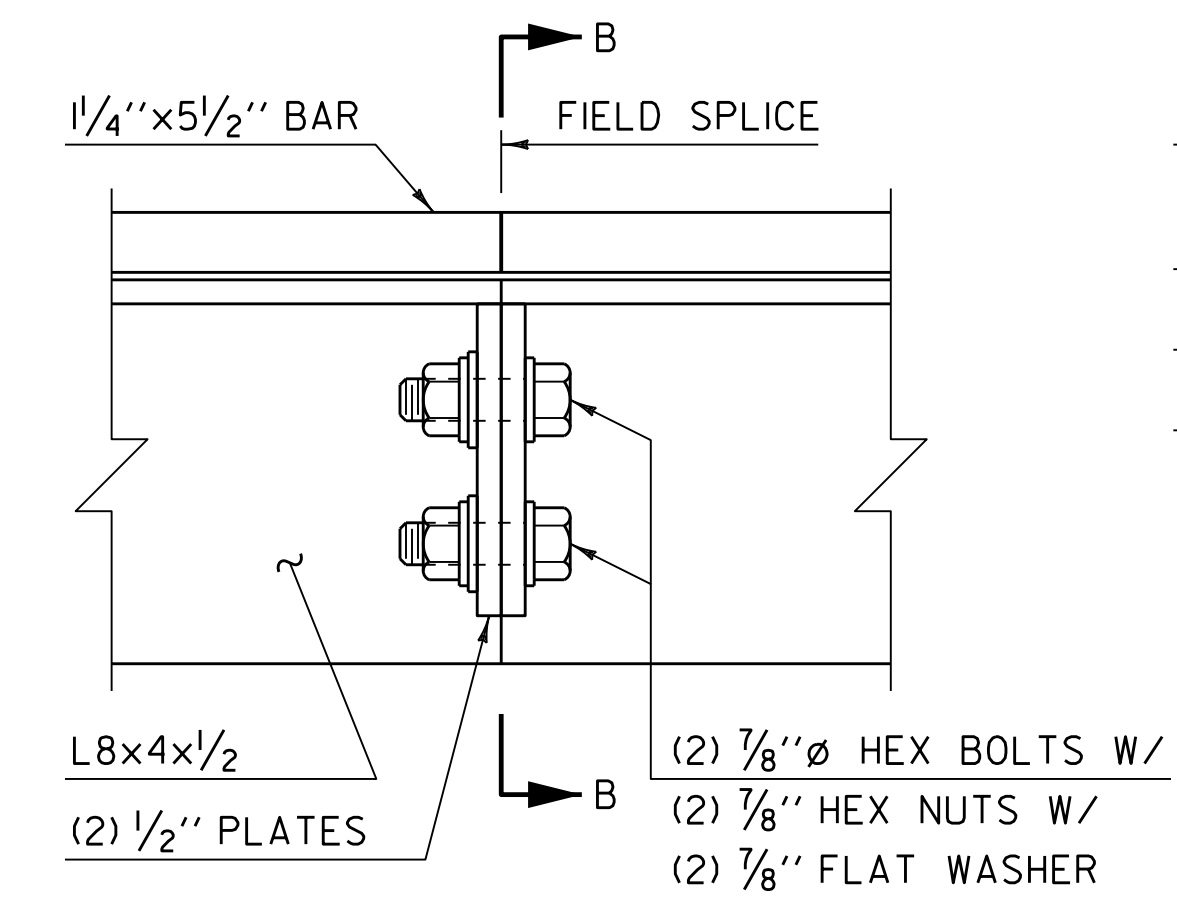
NOTES FOR ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT"

- FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION. A DRIP BEAD OF 1/4"x7" STRIP OF PREFORMED FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.
- THE EXPANSION DEVICE SHALL BE COVERED TO PROTECT THE FINISH DURING PLACING OF BRIDGE DECK CONCRETE.
- SEE "JOINT GAP DIMENSION TABLE" FOR DISTANCE "A" VALUES IN TEMPERATURE RANGE PROVIDED.
- JOINT BRACKET LENGTH "X" VARIES DEPENDENT ON THE BRIDGE SKEW ANGLE. THE BRACKET MUST BE LOCATED SUCH THAT THE THREADED RODS ARE NOT LESS THAN 1 1/2" FROM GIRDERS END OR FLANGE SIDES.
- ALL STEEL COMPONENTS SHALL BE GALVANIZED AND MEET THE REQUIREMENTS OF SUBSECTION 516.02. PRIOR TO GALVANIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A MINIMUM 1/16" INCH RADIUS. THREADED RODS SHALL CONFORM TO THE REQUIREMENTS OF 714.04.

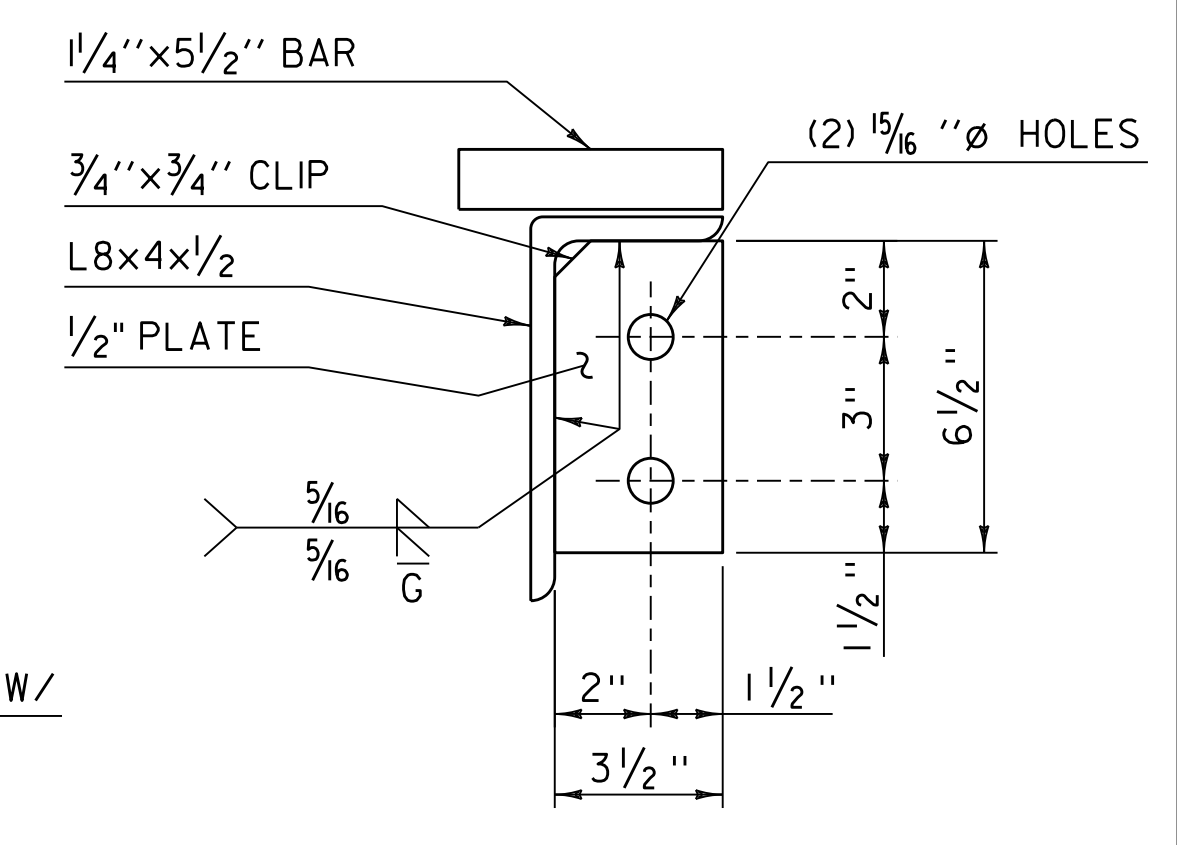
- THE 4"x8"x1/2" ANGLES MAY BE FURNISHED AS ONE CONTINUOUS PIECE OR SPLICED AS SHOWN IN THE FIELD SPLICE DETAIL WHEN SPECIFIED. THE 1/4"x5 1/2" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
- PROJECTING THREADS OF THE 3/4" Ø/BOLTS IN THE JOINT SHALL BE GREASED BY THE CONTRACTOR PRIOR TO PLACING ADJACENT CONCRETE. THIS WILL FACILITATE BOLT REMOVAL IF REQUIRED IN THE FUTURE.
- FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER (STD. SPEC. 707.04) AFTER BOLT INSTALLATION. PAYMENT FOR THE WORK SHALL BE INCIDENTAL TO ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT".
- THE EXPANSION JOINT, INCLUDING THE FABRIC TROUGH, SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT. IF THE EXPANSION JOINT HAS A FIELD SPLICE SPECIFIED, THE FABRIC TROUGH SHALL BE SHIPPED WITH ONE UNIT AND ASSEMBLED WITH THE SECOND UNIT PRIOR TO CONCRETE PLACEMENT.
- TEMPORARY SHIPPING ATTACHMENTS SHALL BE ATTACHED BY BOLTING; WELDING WILL NOT BE PERMITTED.
- BARE DECK "RISER PLATE" AS SHOWN IN "TYPICAL SECTION AT GIRDERS" DRAWING SHALL BE INCLUDED ON BRIDGES WITH BARE CONCRETE DECK SPECIFIED. RISER PLATES SHALL BE INCLUDED FOR BOTH SIDES AND MATCH THE LENGTHS OF THE 1/4"x5 1/2" BARS. THE RISER PLATE CAN BE REMOVED IF THE DECK IS MILLED IN THE FUTURE.



TYPICAL SECTION BETWEEN GIRDERS
SCALE 1/2" = 1'-0"



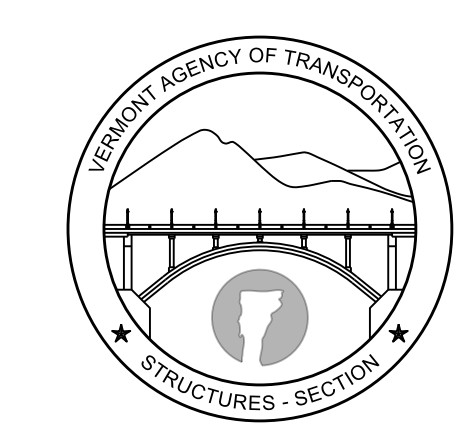
FIELD SPLICE DETAIL
SPLICE ONLY WHEN SPECIFIED ON PLANS.



SECTION "B-B"

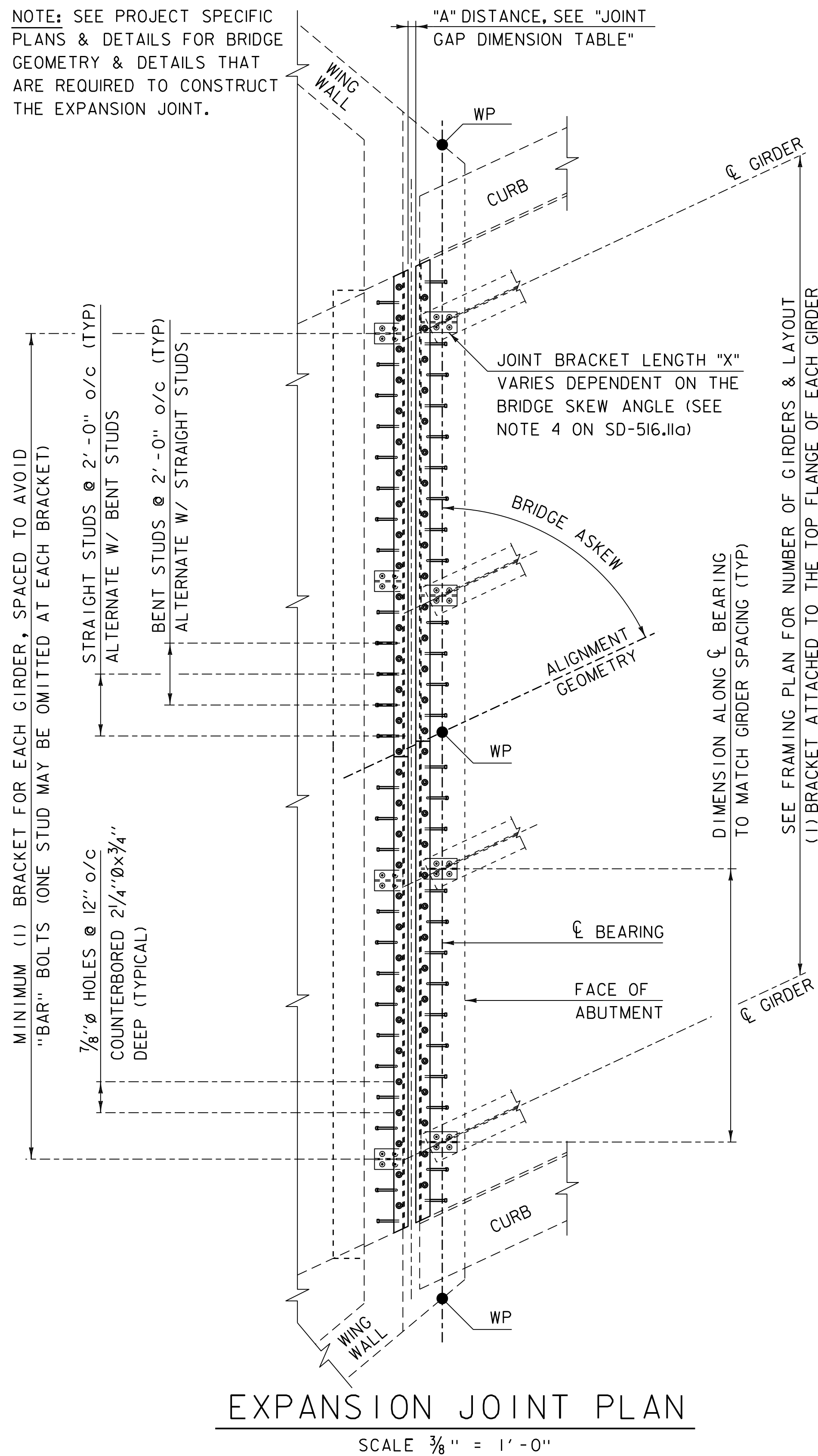
REVISIONS	
FEBRUARY 24, 2011	APPROVED FOR USE BY VAOT STRUCTURES SECTION
MARCH 23, 2023	UPDATED MATERIALS AND WELDING REQUIREMENTS

**BRIDGE EXPANSION JOINT,
VERMONT**

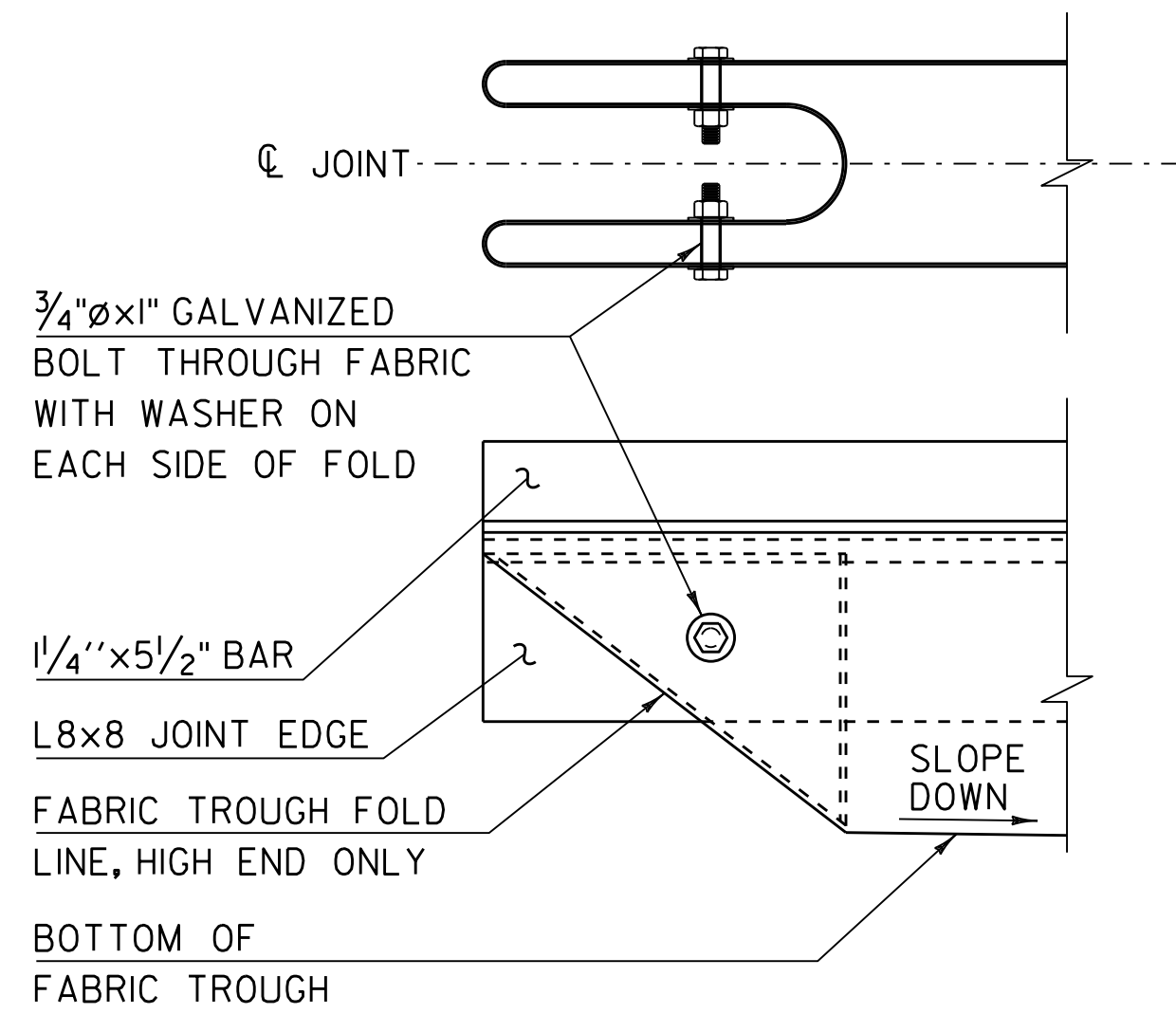


**STRUCTURES
DETAIL
SD-516.11a**

NOTE: SEE PROJECT SPECIFIC PLANS & DETAILS FOR BRIDGE GEOMETRY & DETAILS THAT ARE REQUIRED TO CONSTRUCT THE EXPANSION JOINT.



EXPANSION JOINT PLAN
SCALE 3/8" = 1'-0"



FOLDED TROUGH END DETAIL

SCALE 1/2" = 1'-0"

1. TROUGH SHALL BE FOLDED AT HIGH ENDS. TROUGH SHALL SLOPE AT MIN 2% DOWN TOWARD THE NEAREST DRAINAGE SPOUT HOPPER LOCATION.
2. BOLTS, NUTS AND WASHERS FOR FOLD SHALL MEET REQUIREMENTS OF SUBSECTION 714.04 AND SHALL BE GALVANIZED.

JOINT GAP DIMENSION TABLE						
"A" Distance (in)						
Temp (°F)	Expansion Length (ft)					
	100 - 120	>120 - 140	>140 - 160	>160 - 180	>180 - 200	
0	1 5/8	1 13/16	1 7/8	1 15/16	2 1/8	
15	1 1/2	1 5/8	1 11/16	1 3/4	1 7/8	
30	1 5/16	1 1/2	1 1/2	1 1/2	1 5/8	
45	1 3/16	1 5/16	1 5/16	1 5/16	1 7/16	
60	1 1/16	1 1/8	1 1/8	1 1/16	1 3/16	
75	15/16	1	15/16	7/8	15/16	
90	3/4	13/16	3/4	11/16	11/16	
105	5/8	11/16	9/16	7/16	1/2	

- 1) Expansion Length: Length of span, from Expansion Joint to nearest Fixed Bearing.
- 2) "A" Distance: measured distance during joint placement.
- 3) Temp: Approximate temperature of steel during joint placement.

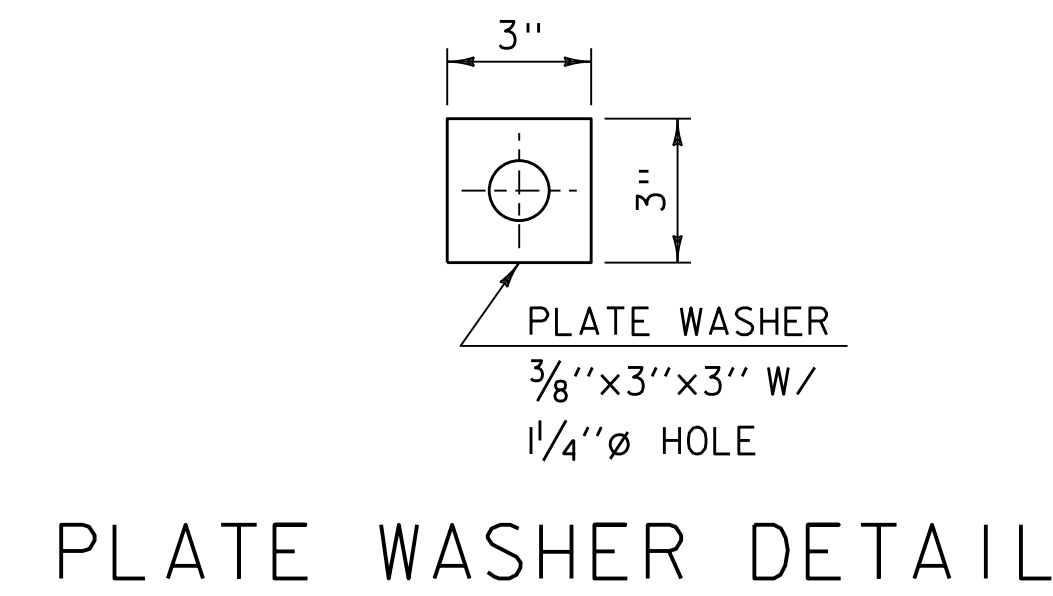
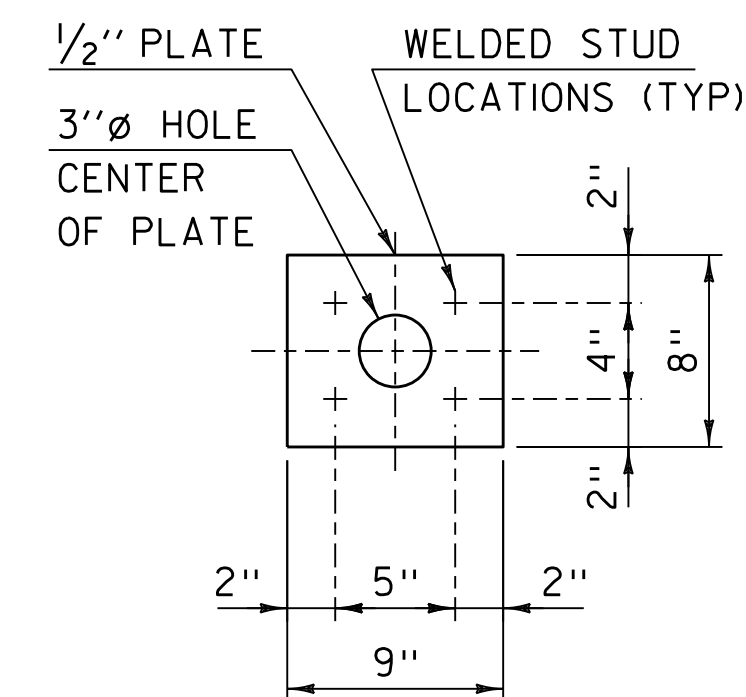


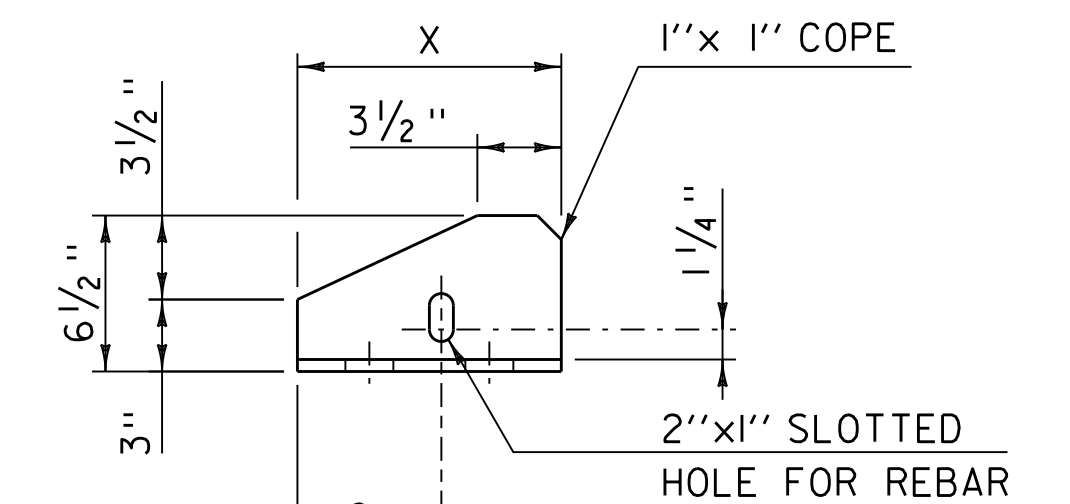
PLATE WASHER DETAIL

SCALE 3" = 1'-0"

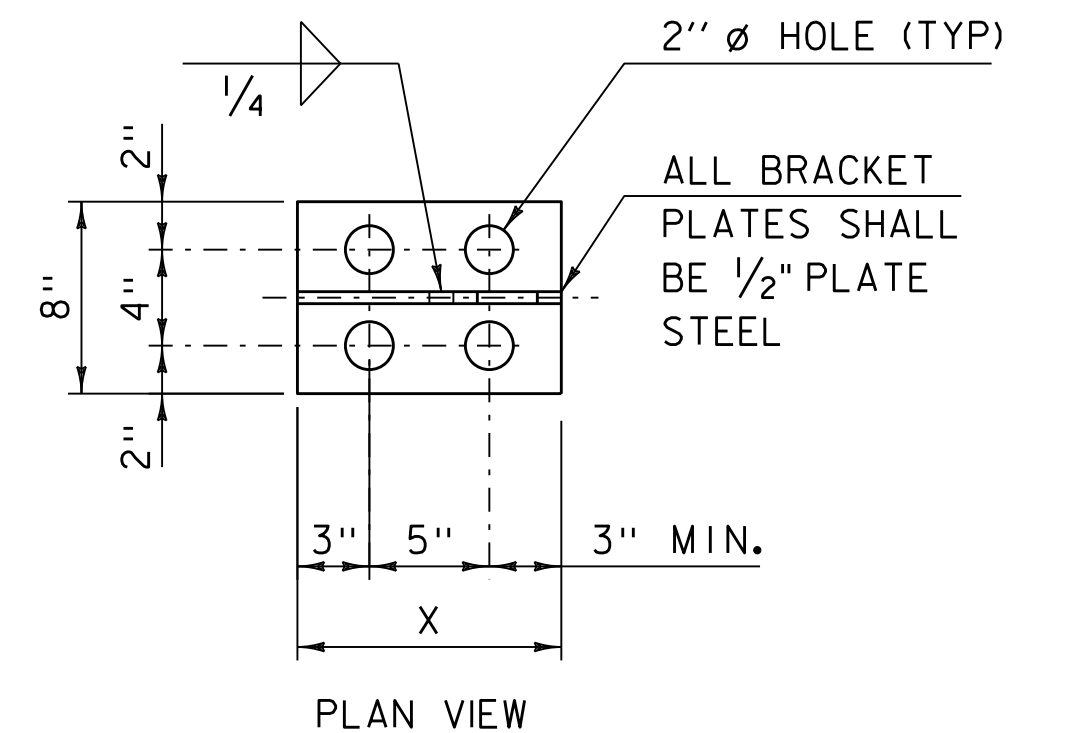


WELDED STUD ANCHOR PLATE DETAIL

SCALE 1/2" = 1'-0"



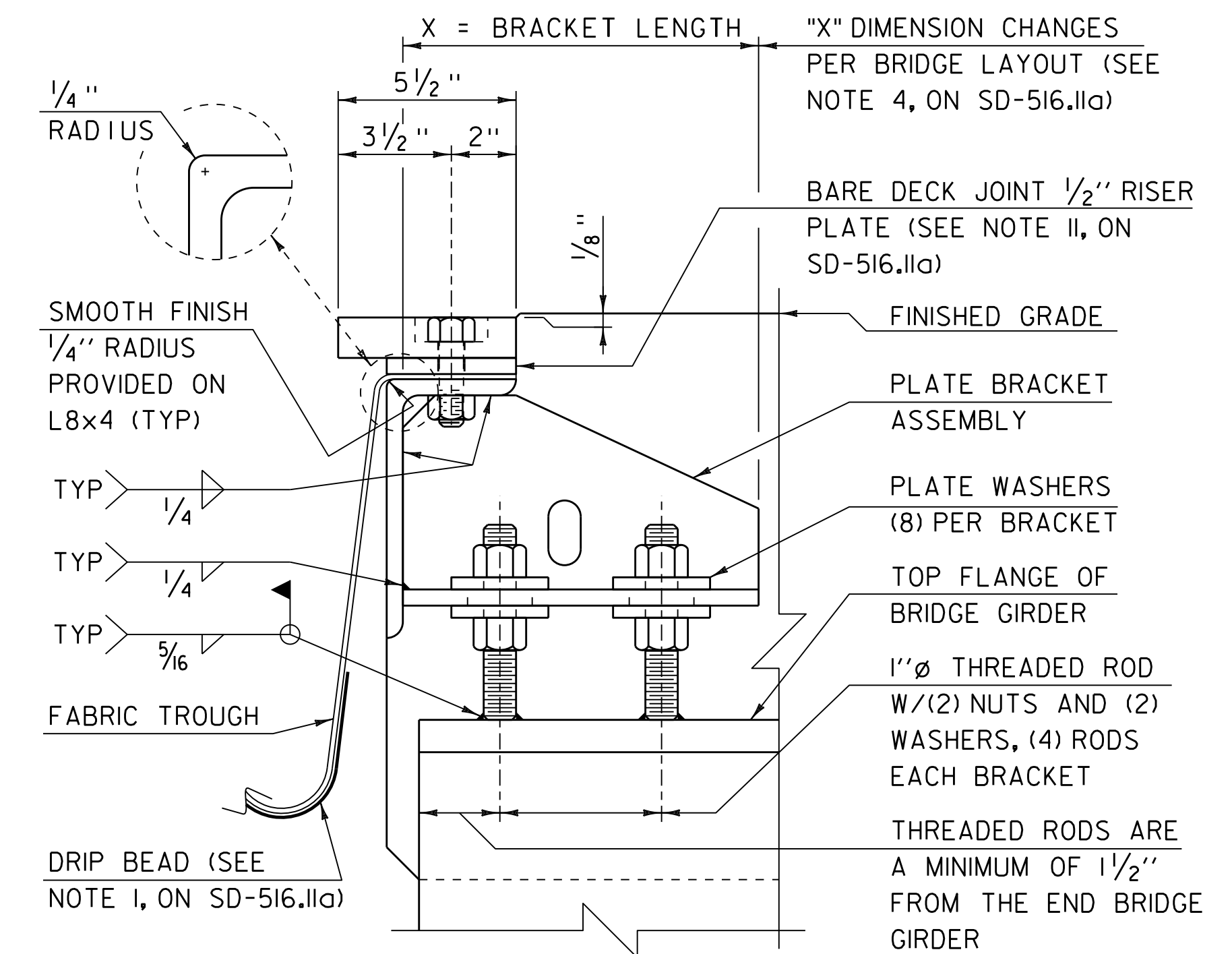
ELEVATION VIEW



PLAN VIEW

BRACKET DETAILS

SCALE 1/2" = 1'-0"

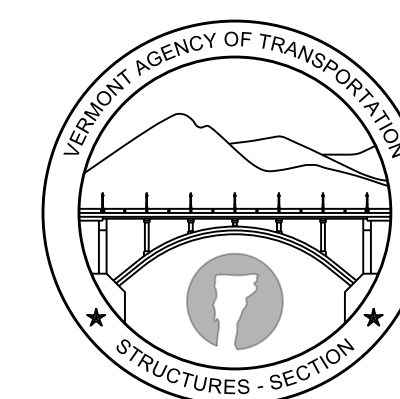


JOINT ASSEMBLY DETAIL

SCALE 3" = 1'-0"

REVISIONS	
FEBRUARY 24, 2011	APPROVED FOR USE BY VAOT STRUCTURES SECTION
MARCH 23, 2023	UPDATED MATERIALS AND WELDING REQUIREMENTS

BRIDGE EXPANSION JOINT, VERMONT



STRUCTURES DETAIL SD-516.11b