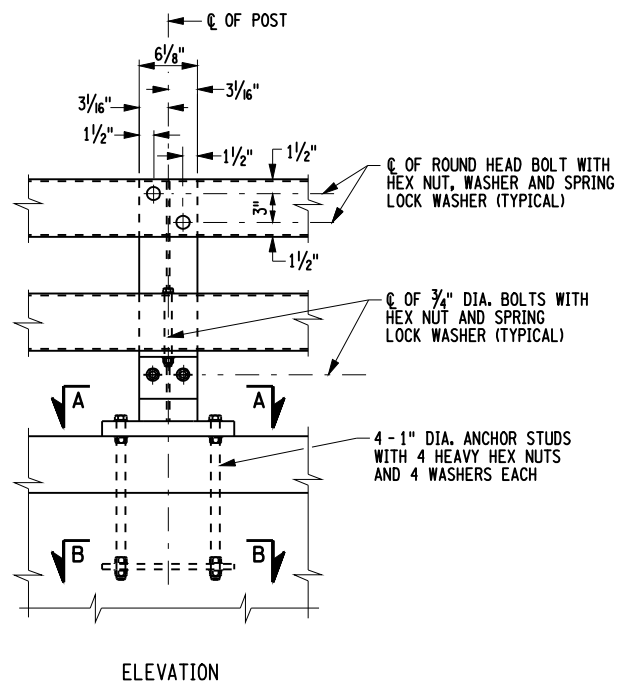
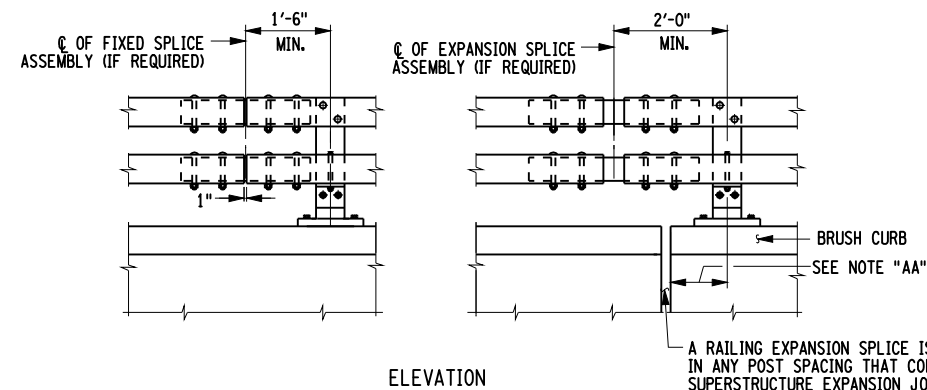


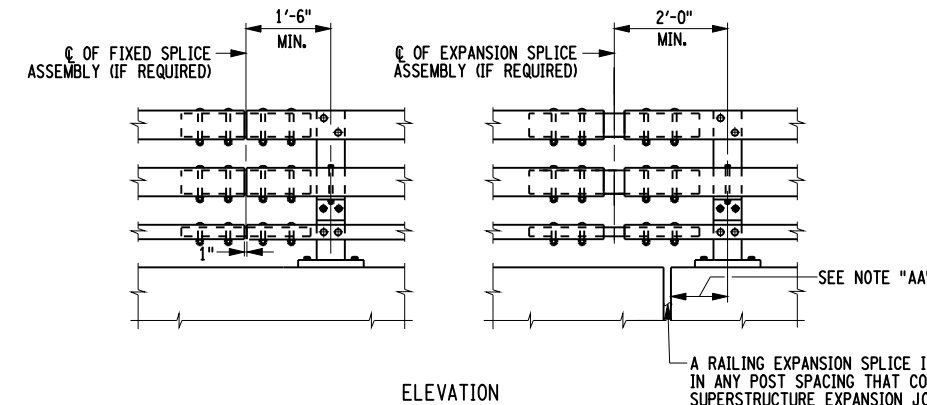
SECTION
STEEL BRIDGE RAILING
(TWO-RAIL - BRUSH CURB)



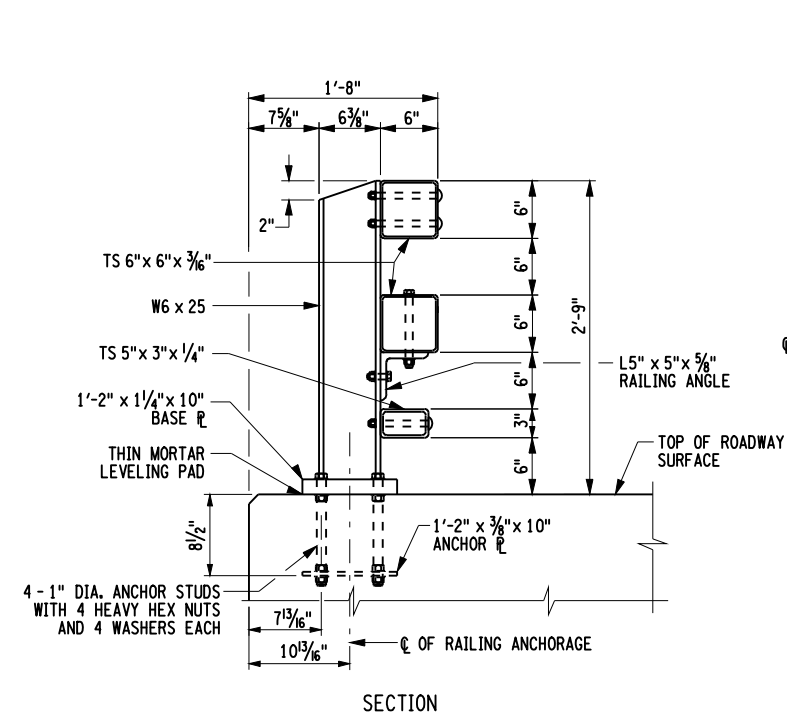
ELEVATION



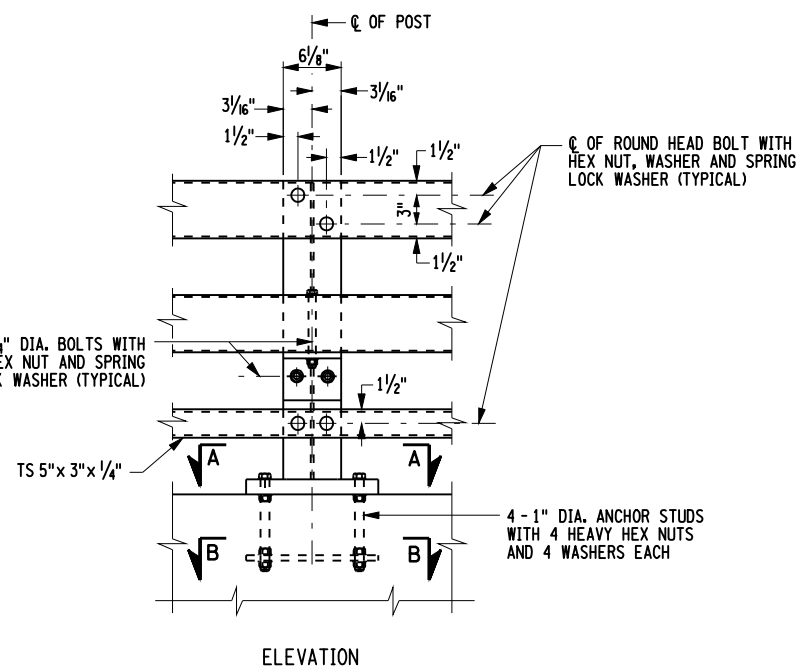
ELEVATION
STEEL BRIDGE RAILING SPLICE DETAILS
(TWO-RAIL - BRUSH CURB)



ELEVATION
STEEL BRIDGE RAILING SPLICE DETAILS
(THREE-RAIL - CURBLESS)



SECTION
STEEL BRIDGE RAILING
(THREE-RAIL - CURBLESS)



ELEVATION

DESIGNER NOTES:

NOTE "AA":
THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED. ON PRESTRESSED CONCRETE BRIDGES, THE POST SHALL BE LOCATED TO MINIMIZE ANCHOR PLATE/END BLOCK REINFORCEMENT CONFLICTS. POST SPACING SHALL BE ADJUSTED ACCORDINGLY.

THE MAXIMUM CENTER TO CENTER SPACING OF RAILING POSTS IS 8'-3". THESE RAILINGS ARE ADEQUATE FOR A TL-4 (PL-2) SERVICE LEVEL.

FOR SECTIONS A-A & B-B, SEE BD-RS7E.

FOR SPLICE DETAILS, SEE BD-RS8E.

FOR DETAILS OF RAILING ANGLE, SEE BD-RS3E.

FOR DETAILS OF ROUND HEAD BOLT, SEE BD-RS3E.

FOR TRANSITION DETAILS, SEE BD-RS4E.

NOTES:

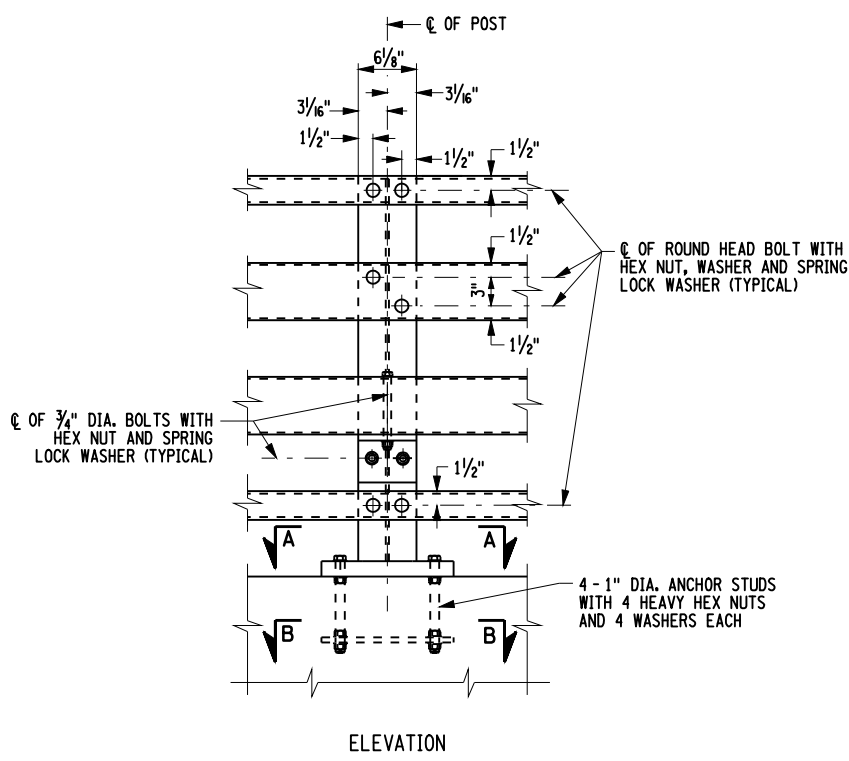
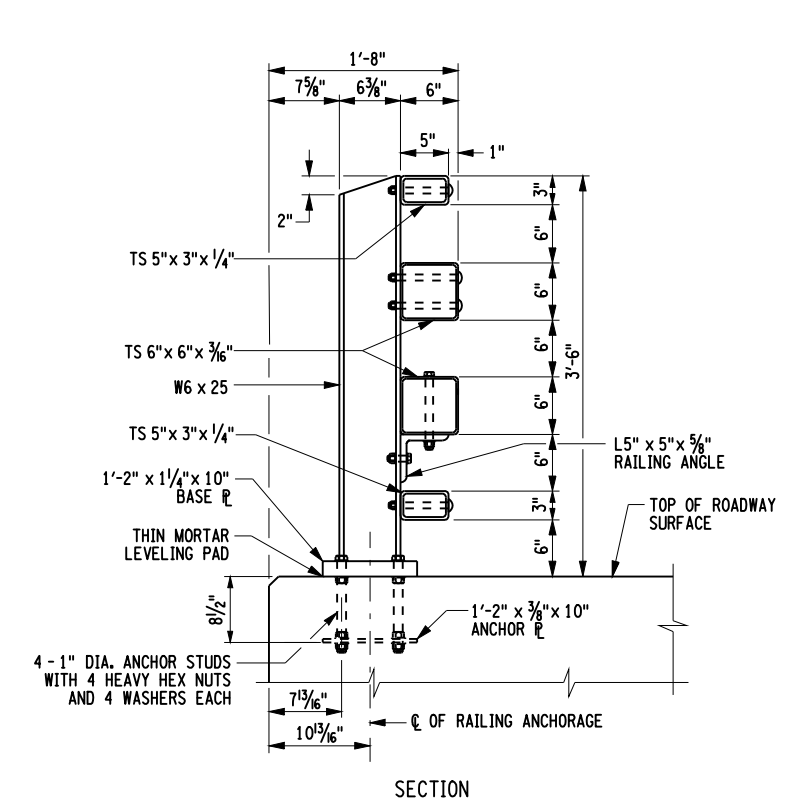
ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 568 OF THE STANDARD SPECIFICATIONS.

PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".

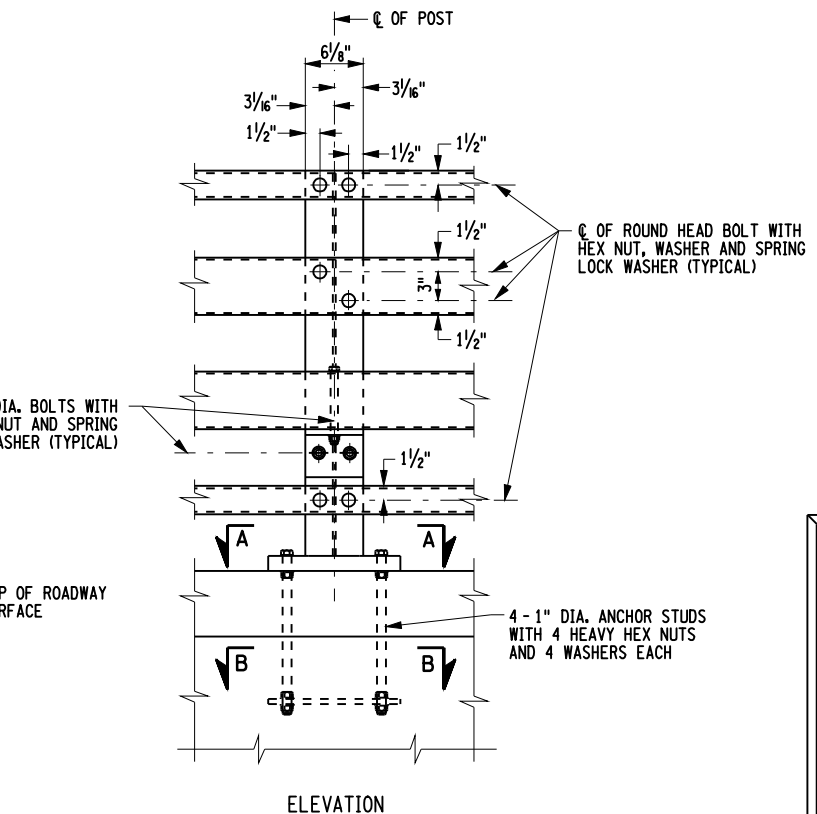
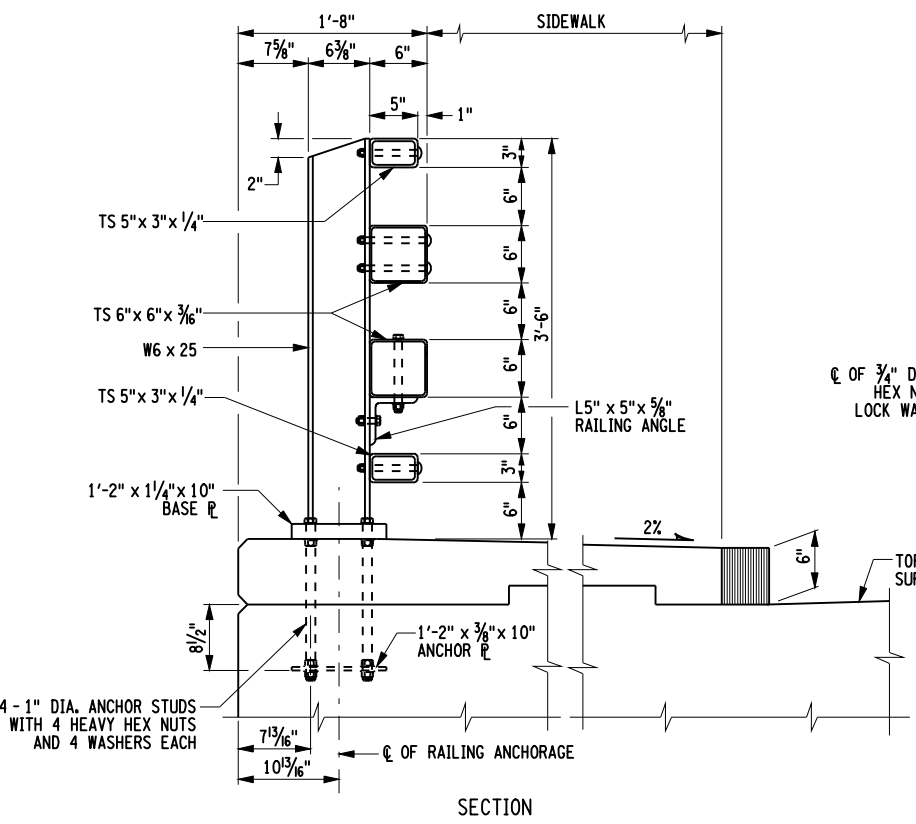
BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 ft-lb.).

DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

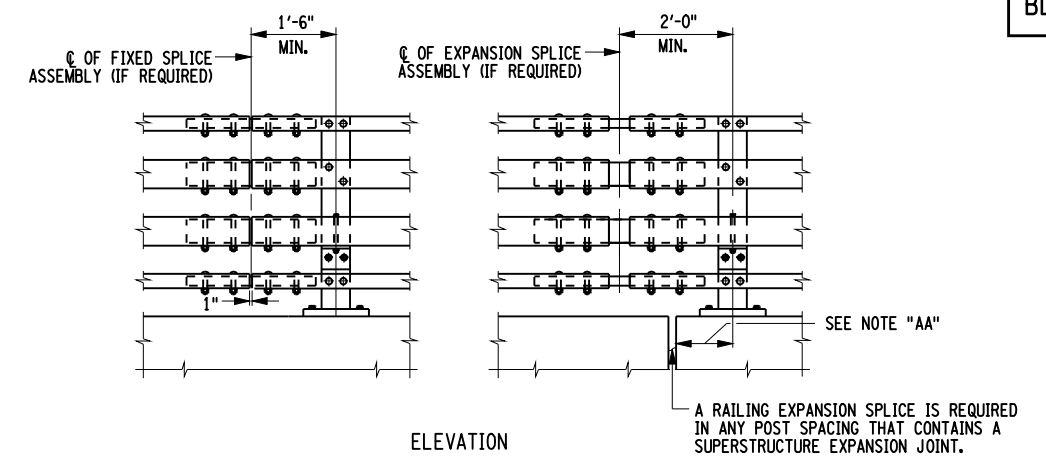
ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED		
STEEL BRIDGE RAILING TWO-RAIL AND THREE-RAIL		
APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)		ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09



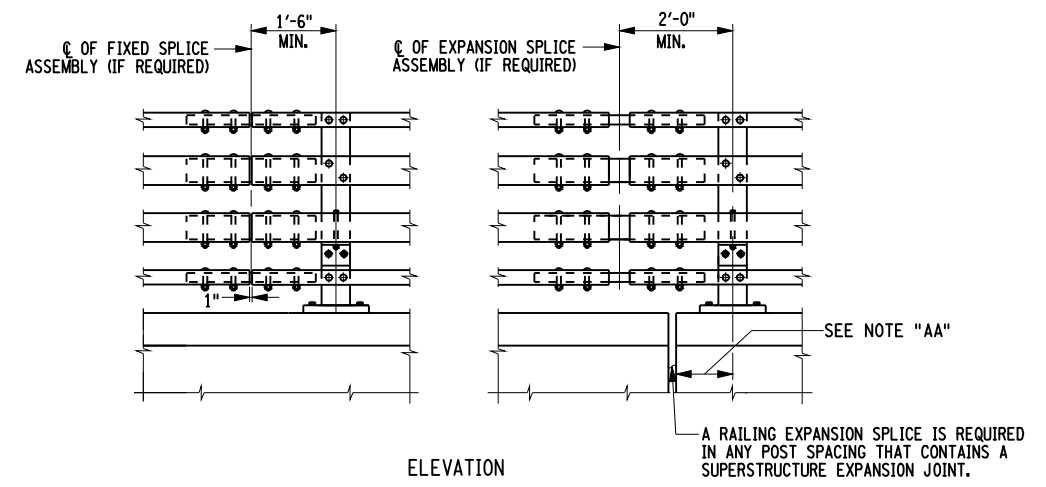
STEEL BRIDGE RAILING (FOUR-RAIL - CURBLESS)



STEEL BRIDGE RAILING (FOUR-RAIL WITH SIDEWALK)



STEEL BRIDGE RAILING SPLICE DETAILS (FOUR-RAIL - CURBLESS)



STEEL BRIDGE RAILING SPLICE DETAILS (FOUR-RAIL WITH SIDEWALK)

DESIGNER NOTES:

NOTE "AA": THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED. ON PRESTRESSED CONCRETE BRIDGES, THE POST SHALL BE LOCATED TO MINIMIZE ANCHOR PLATE/END BLOCK REINFORCEMENT CONFLICTS. POST SPACING SHALL BE ADJUSTED ACCORDINGLY.

THE MAXIMUM CENTER TO CENTER SPACING OF RAILING POSTS IS 8'-3". THESE RAILINGS ARE ADEQUATE FOR A TL-4 (PL-2) SERVICE LEVEL.

FOR SECTIONS A-A & B-B, SEE BD-RS7E.

FOR SPLICE DETAILS, SEE BD-RS8E.

FOR DETAILS OF RAILING ANGLE, SEE BD-RS3E.

FOR DETAILS OF ROUND HEAD BOLT, SEE BD-RS3E.

FOR TRANSITION DETAILS, SEE BD-RS4E.

NOTES:

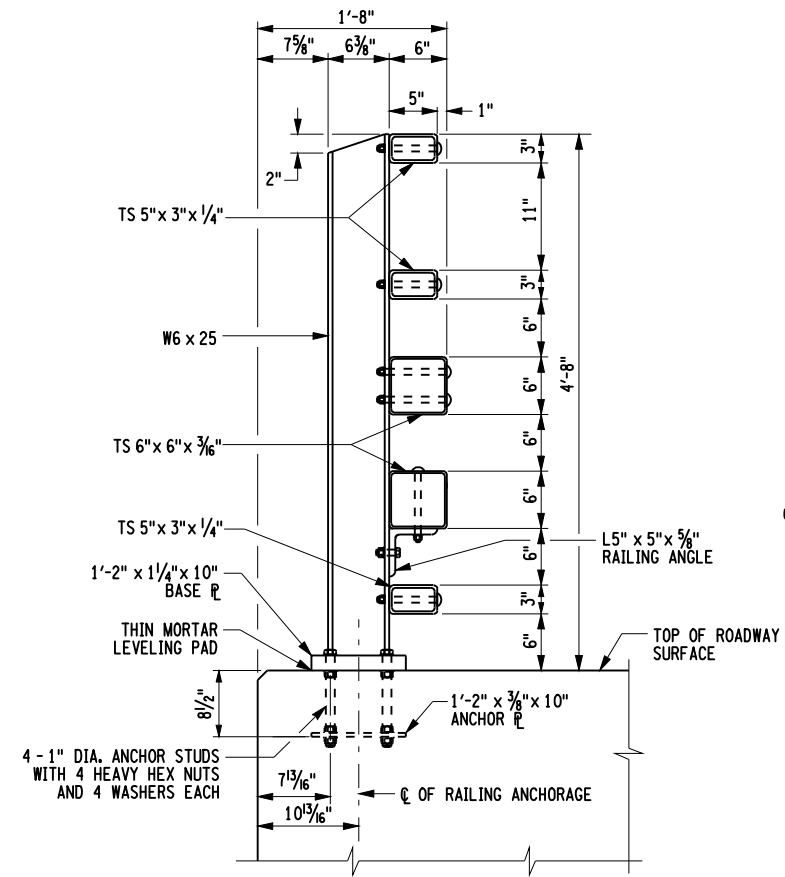
ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 568 OF THE STANDARD SPECIFICATIONS.

PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".

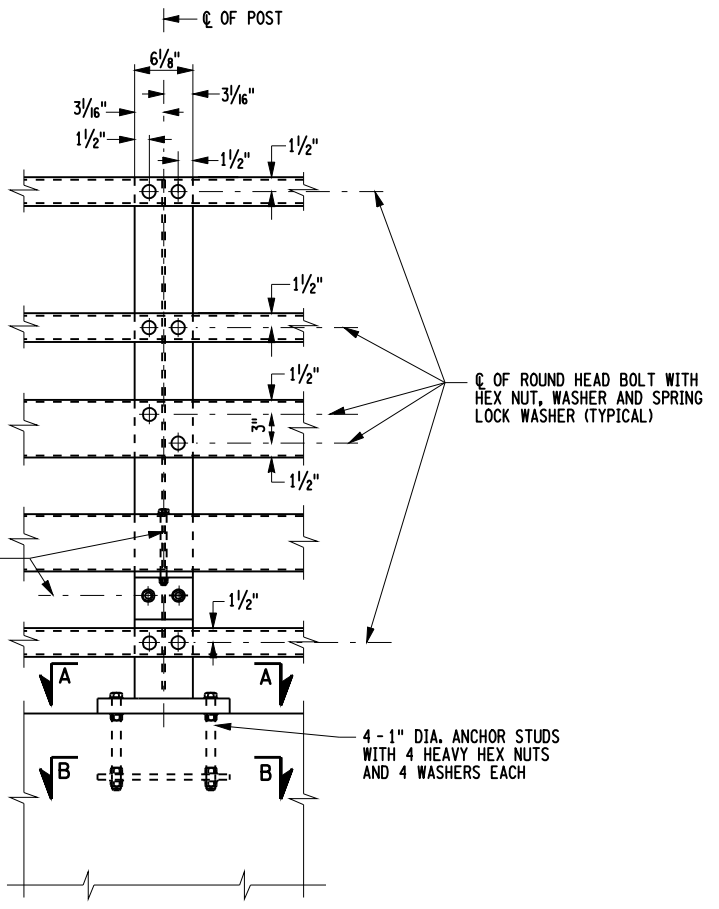
BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 ft-lb.).

DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

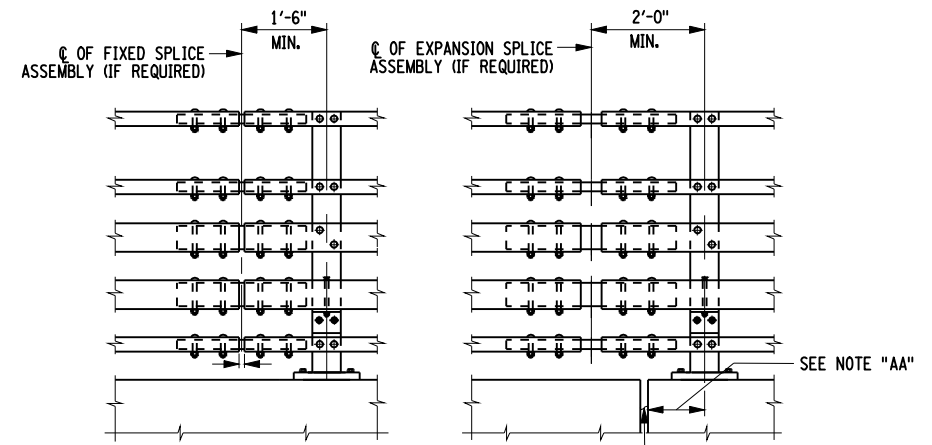
ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED		
STEEL BRIDGE RAILING FOUR-RAIL		
APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09	



SECTION



ELEVATION



ELEVATION

STEEL BRIDGE RAILING SPLICE DETAILS
(FIVE-RAIL - CURBLESS)

A RAILING EXPANSION SPLICE IS REQUIRED IN ANY POST SPACING THAT CONTAINS A SUPERSTRUCTURE EXPANSION JOINT.

STEEL BRIDGE RAILING
(FIVE-RAIL - CURBLESS)

DESIGNER NOTES:

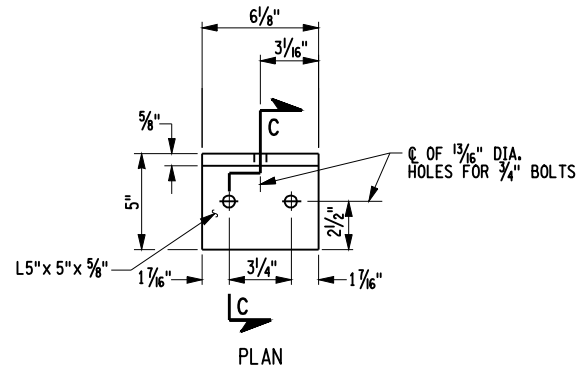
NOTE "AA":
THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED. ON PRESTRESSED CONCRETE BRIDGES, THE POST SHALL BE LOCATED TO MINIMIZE ANCHOR PLATE/END BLOCK REINFORCEMENT CONFLICTS. POST SPACING SHALL BE ADJUSTED ACCORDINGLY.

THE MAXIMUM CENTER TO CENTER SPACING OF RAILING POSTS IS 8'-3". THESE RAILINGS ARE ADEQUATE FOR A TL-4 (PL-2) SERVICE LEVEL.

FOR SECTIONS A-A & B-B, SEE BD-RS7E.

FOR SPLICE DETAILS, SEE BD-RS8E.

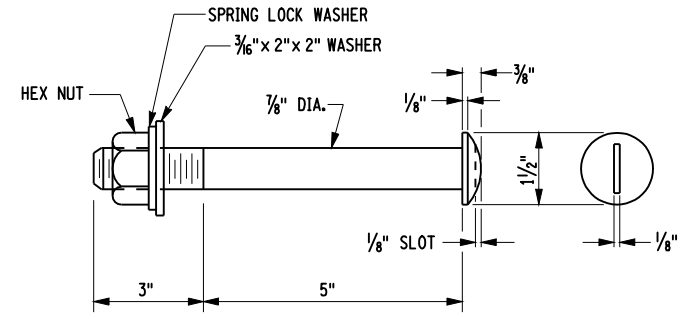
FOR TRANSITION DETAILS, SEE BD-RS4E.



PLAN

SECTION C-C

RAILING ANGLE DETAILS



ROUND HEAD BOLT

NOTES:

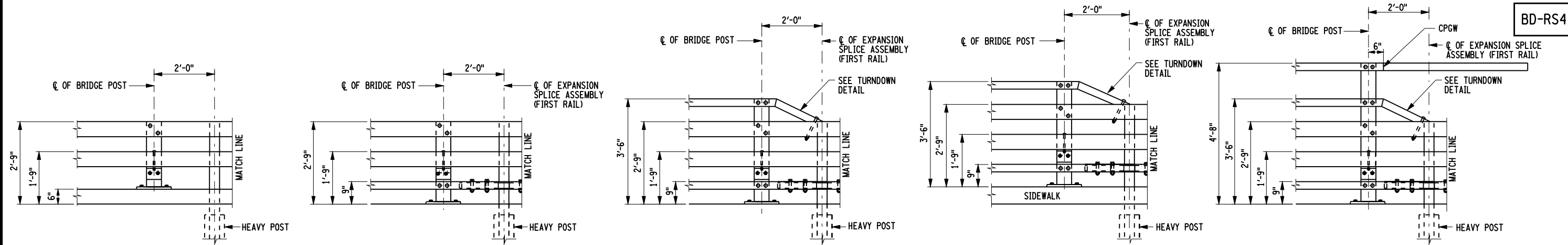
ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 568 OF THE STANDARD SPECIFICATIONS.

PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".

BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB.).

DETAILS SHOWN ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES	
REVISED		STEEL BRIDGE RAILING FIVE-RAIL FOR BICYCLES	
		APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09



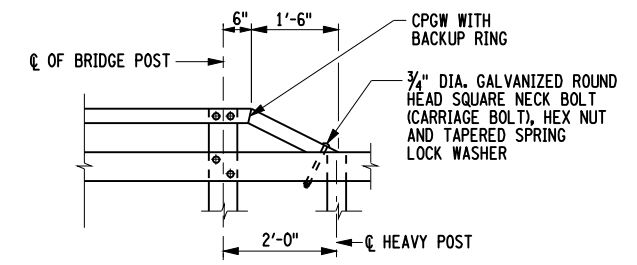
ELEVATION MATCH A1
TWO-RAIL WITH BRUSH CURB

ELEVATION MATCH A2
THREE-RAIL - CURBLESS

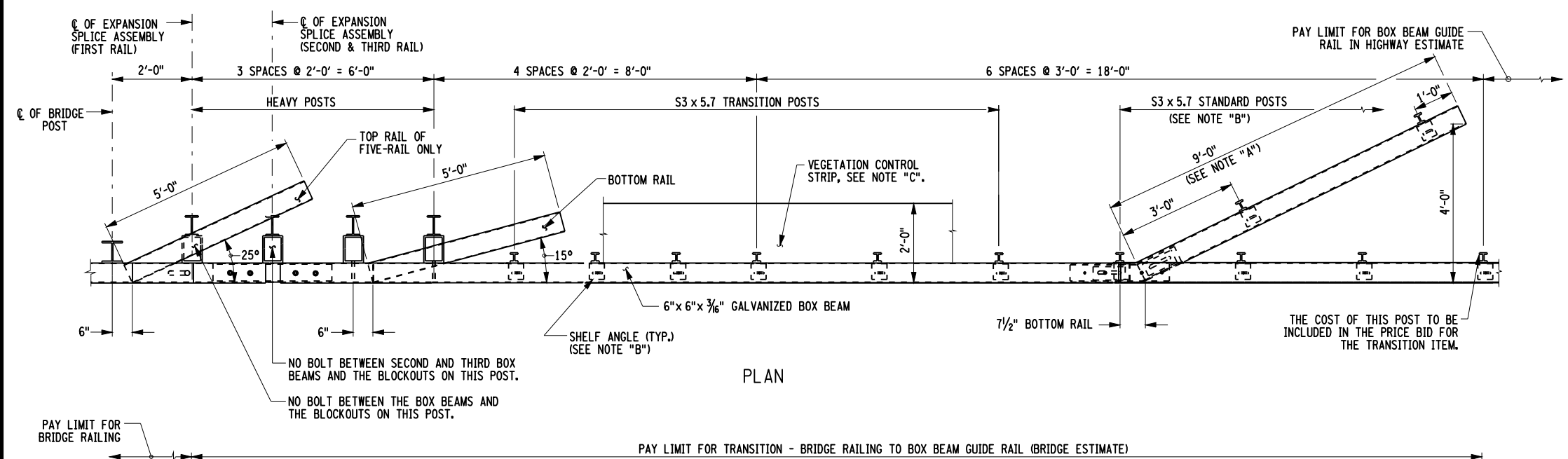
ELEVATION MATCH A3
FOUR-RAIL - CURBLESS

ELEVATION MATCH A4
FOUR-RAIL WITH SIDEWALK

ELEVATION MATCH A5
FIVE-RAIL - CURBLESS



TURNDOWN DETAIL
NOT TO SCALE



PLAN

THE DESIGNER SHALL CHECK THE CLEARANCE FROM THE SUBSTRUCTURE TO THE FIRST HEAVY POST. THIS POST MAY REQUIRE THE SPECIAL POST DETAIL, SEE BD-RS7E.

DETAILER MUST DELETE BOTTOM RAIL FROM TRANSITION FOR TWO-RAIL/BRUSH CURB (ELEVATION A1).

FOR SPLICE ASSEMBLY DETAILS, SEE BD-RS8E.

FOR TURN BACK SPLICE DETAILS, SEE BD-RC4E.

FOR TRANSITION POST AND HEAVY POST DETAILS, SEE BD-RC4E.

FOR CURB AND SHOULDER TREATMENT DETAILS, SEE CURRENT BD-AD SERIES SHEETS.

FOR ELEVATION MATCHES A6 THRU A10, SEE BD-RS6E.

IF THE VEGETATION CONTROL STRIP MUST BE PLACED SEPARATE FROM SHOULDER PAVING OPERATION, PAYMENT WILL BE MADE AS INDICATED IN THE HIGHWAY DESIGN MANUAL, SECTION 10.2.2.4.

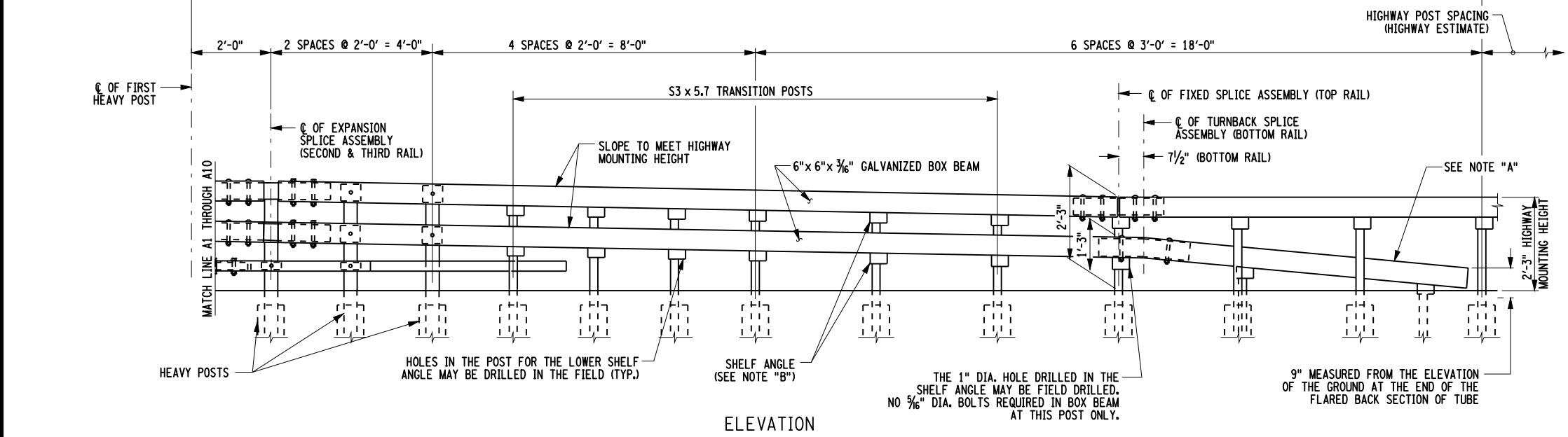
NOTES:

NOTE "A":
THE COST OF THE POSTS, SPLICE TUBE AND RAIL FOR THE LOWER TUBE FLARE SECTION IS INCLUDED IN THE PRICE BID FOR THE TRANSITION ITEM.

NOTE "B":
SEE TYPICAL RAIL TO POST CONNECTION DETAIL ON CURRENT HIGHWAY STANDARD SHEET TITLED "BOX BEAM GUIDE RAIL".

NOTE "C":
PAVE THE VEGETATION CONTROL STRIP WITH THE SAME MATERIAL AS IN THE PAVED SHOULDER. PAYMENT WILL BE MADE UNDER THE PAVED SHOULDER ITEM.

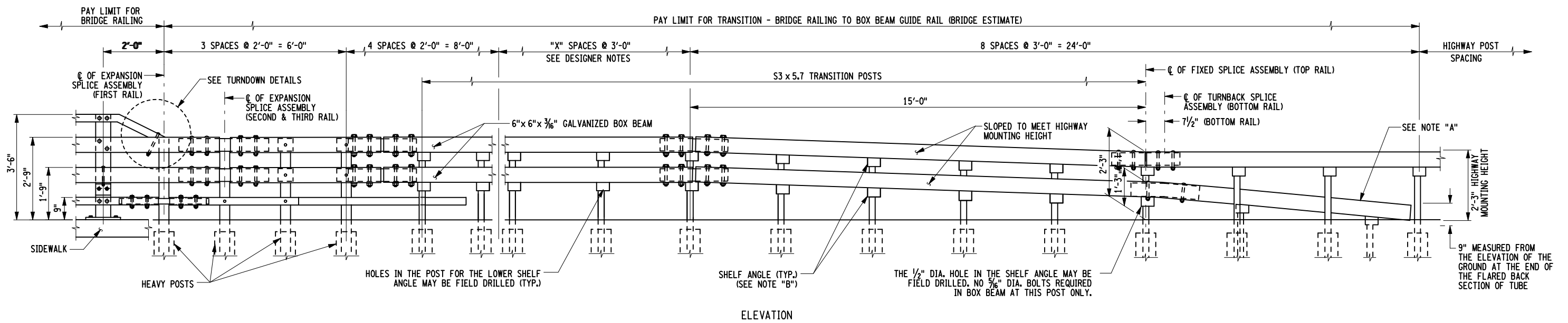
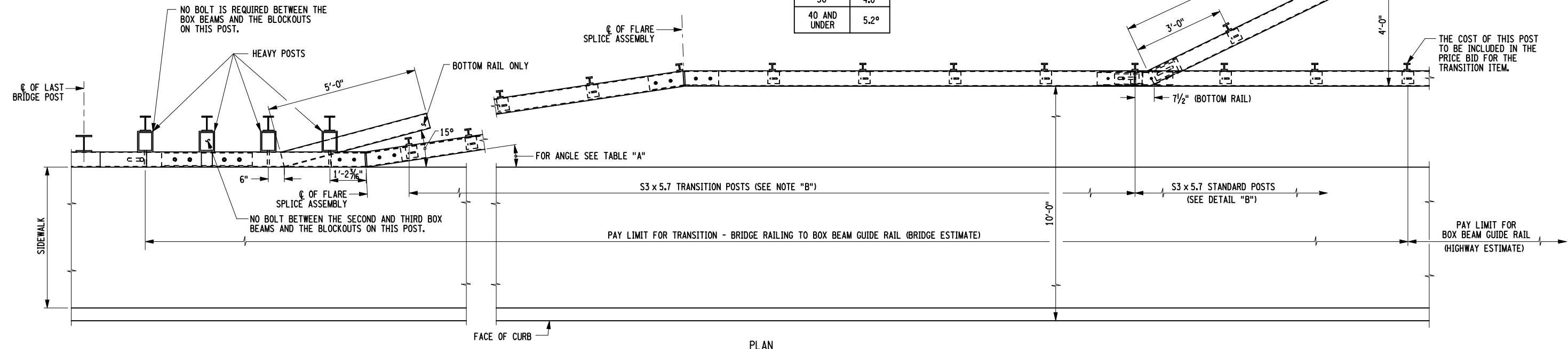
DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.



ELEVATION

ISSUED 5/01/08	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED	
STEEL BRIDGE RAILING TO BOX BEAM GUIDE RAIL TRANSITION	
APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09

TABLE A	
DESIGN SPEED (MPH)	ANGLE
60	3.4°
50	4.0°
40 AND UNDER	5.2°



FOUR-RAIL STEEL BRIDGE RAIL FLARED TRANSITION TO HIGHWAY BOX BEAM (SIDEWALK CONTINUES ON APPROACHES)

DESIGNER NOTES:

CHECK THE CLEARANCE FROM THE SUBSTRUCTURE TO THE FIRST HEAVY POST. THIS POST MAY REQUIRE THE SPECIAL POST DETAIL SHOWN ON BD-RS7E.

DETAILER MUST DELETE BOTTOM RAIL FROM TRANSITION FOR TWO-RAIL/BRUSH CURB (ELEVATION A1).

THE VALUE OF "X" DEPENDS ON DESIGN SPEED, SIDEWALK WIDTH AND VALUES FROM TABLE "A". THE DETAILER MUST REPLACE THE VARIABLES "X" AND ANGLE FROM "TABLE A" WITH ACTUAL VALUES.

ALL DIMENSIONS BETWEEN POSTS ARE MEASURED PARALLEL TO THE ROADWAY.

FOR SPLICE ASSEMBLY DETAILS, SEE BD-RS8E.

FOR TRANSITION POST AND HEAVY POST DETAILS, SEE BD-RC4E.

FOR FLARE SPLICE ASSEMBLY, SEE BD-RS7E.

FOR TURNDOWN DETAIL, SEE BD-RS4E.

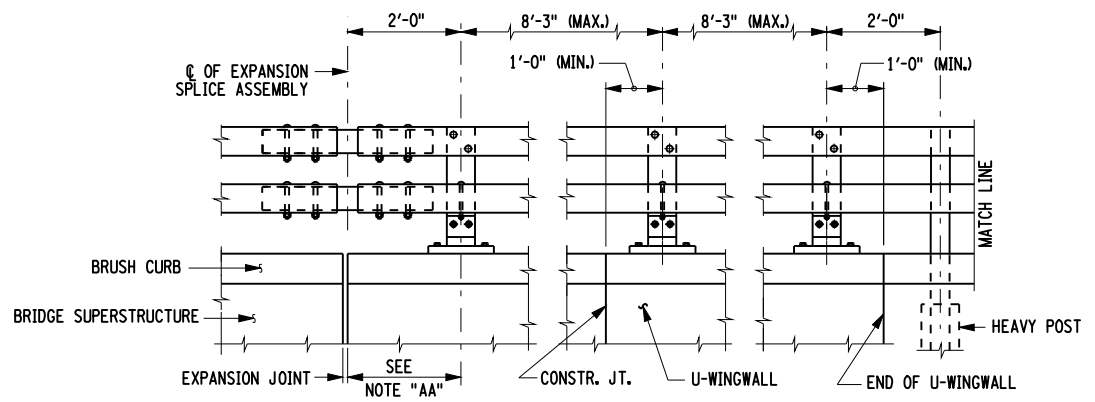
NOTES:

NOTE "A": THE COST OF THE POSTS, SPLICE TUBE AND RAIL FOR THE LOWER TUBE FLARE SECTION IS INCLUDED IN THE PRICE BID FOR THE TRANSITION ITEM.

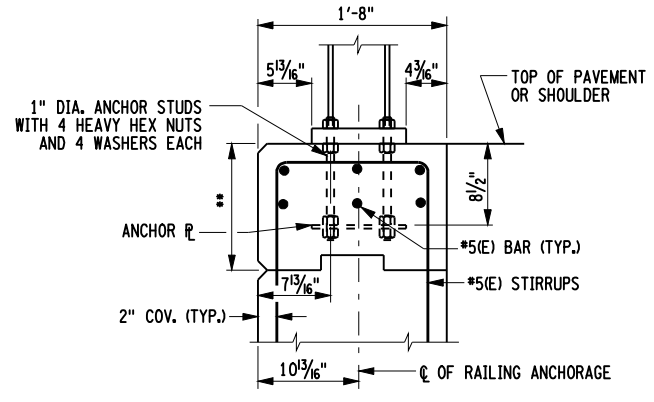
NOTE "B": SEE TYPICAL RAIL TO POST CONNECTION DETAIL ON CURRENT HIGHWAY STANDARD SHEET TITLED "BOX BEAM GUIDE RAIL".

NOTE: DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED		STEEL BRIDGE RAILING FOUR-RAIL FLARED TRANSITION TO HIGHWAY BOX BEAM
	APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09

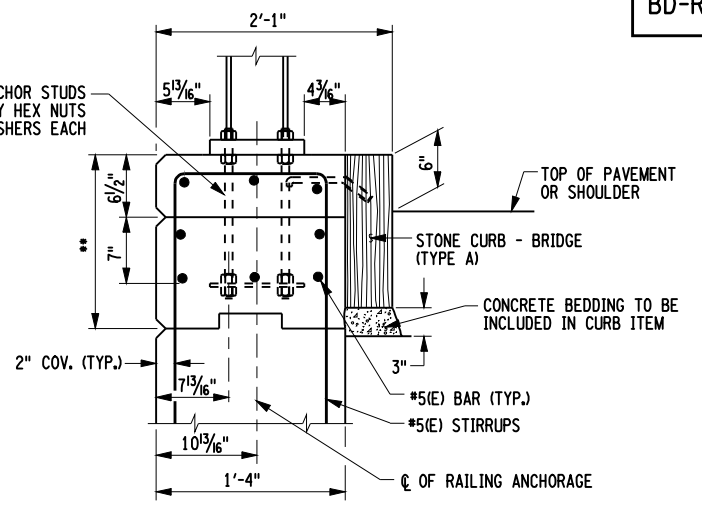


ELEVATION MATCH A6
TWO-RAIL - BRUSH CURB
ON U-WINGWALL

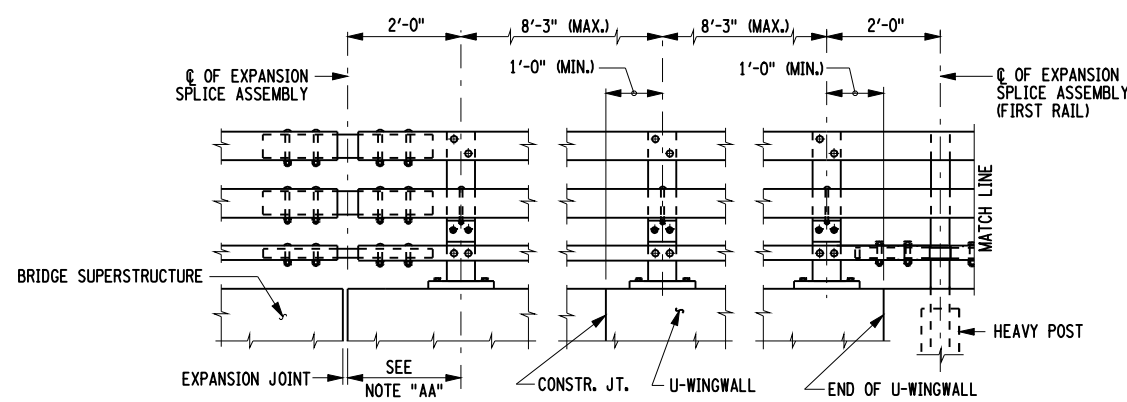


U-WINGWALL WITHOUT CURB
OR SIDEWALK

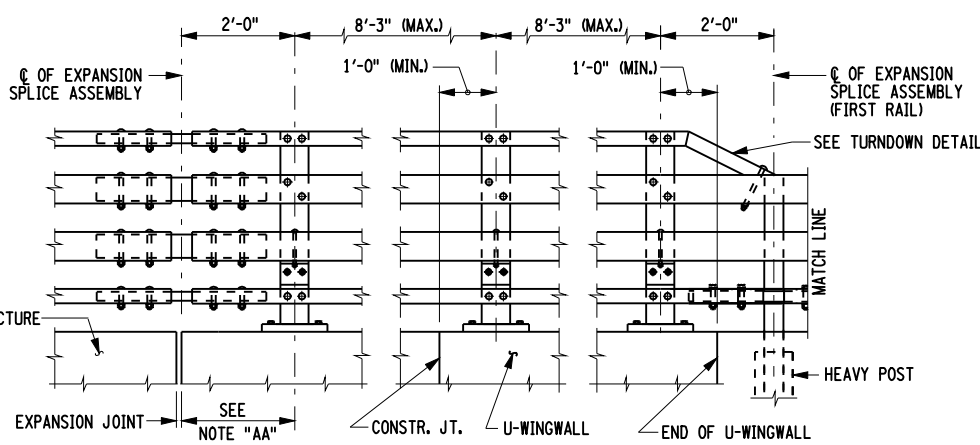
REINFORCEMENT IN U-WINGWALL
NOT SHOWN.
**DIMENSION TO MATCH THE FASCIA
DEPTH ON THE SUPERSTRUCTURE.



U-WINGWALL WITH BRUSH CURB

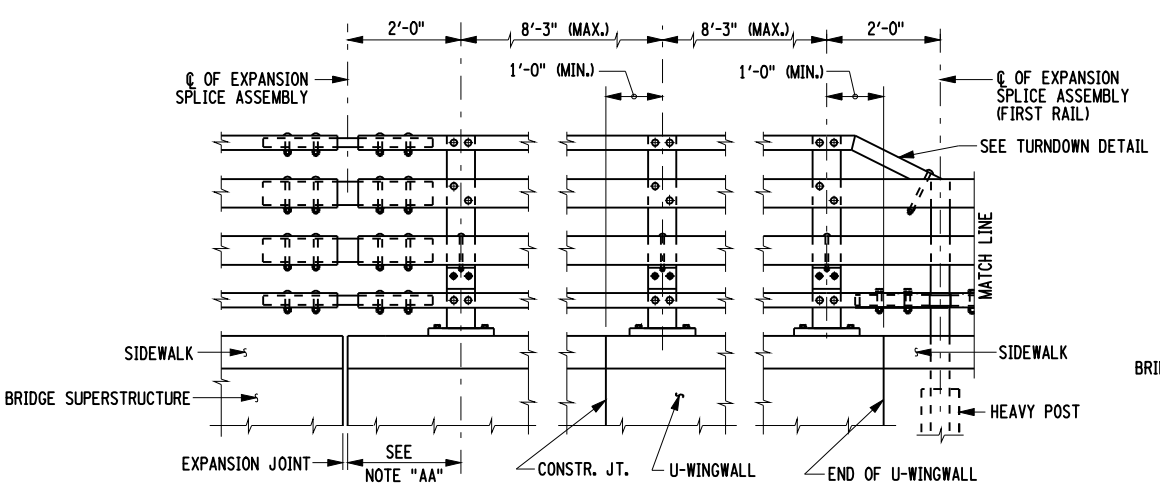


ELEVATION MATCH A7
THREE-RAIL - CURBLESS
ON U-WINGWALL

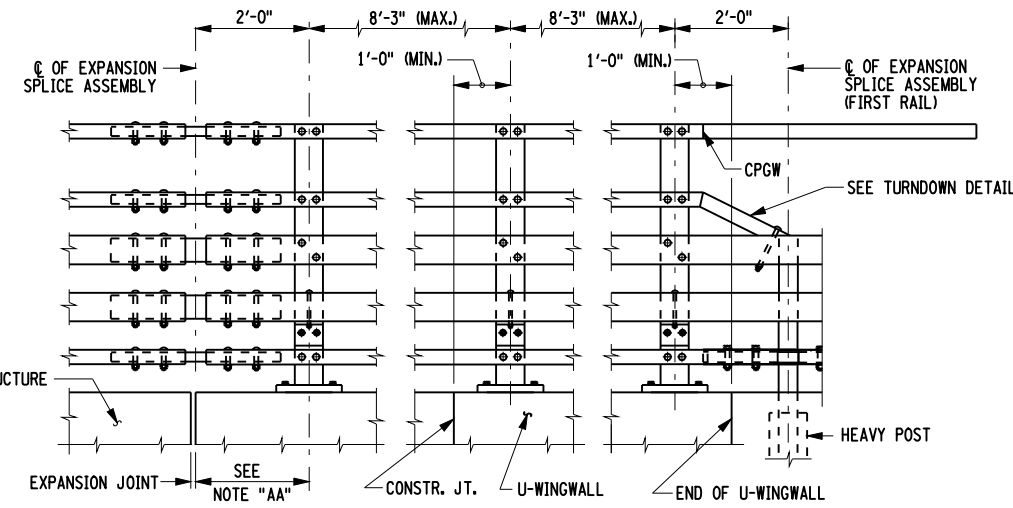


ELEVATION MATCH A8
FOUR-RAIL - CURBLESS
ON U-WINGWALL

NOTE "AA":
THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED. ON PRESTRESSED CONCRETE BRIDGES, THE POST SHALL BE LOCATED TO MINIMIZE ANCHOR PLATE/END BLOCK REINFORCEMENT CONFLICTS. POST SPACING SHALL BE ADJUSTED ACCORDINGLY.
FOR SPLICE DETAILS, SEE BD-RS8E.
FOR TURNDOWN DETAIL, SEE BD-RS4E.



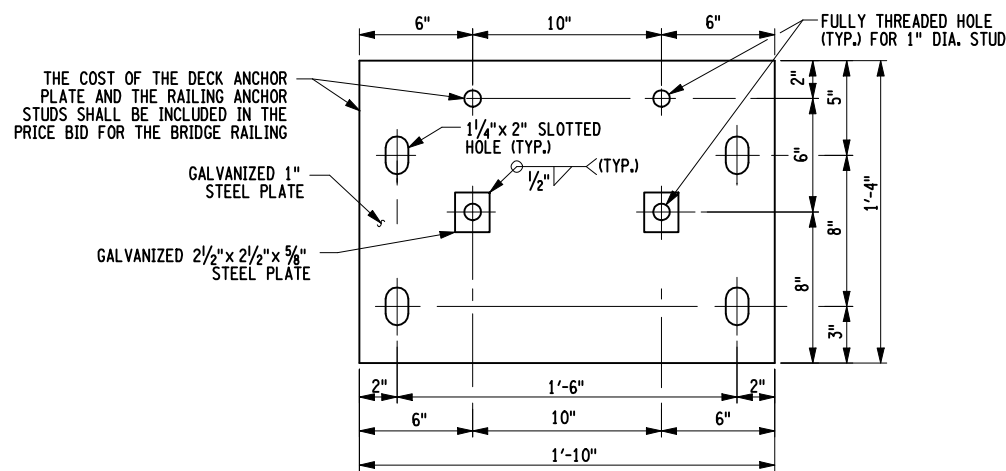
ELEVATION MATCH A9
FOUR-RAIL - SIDEWALK
ON U-WINGWALL



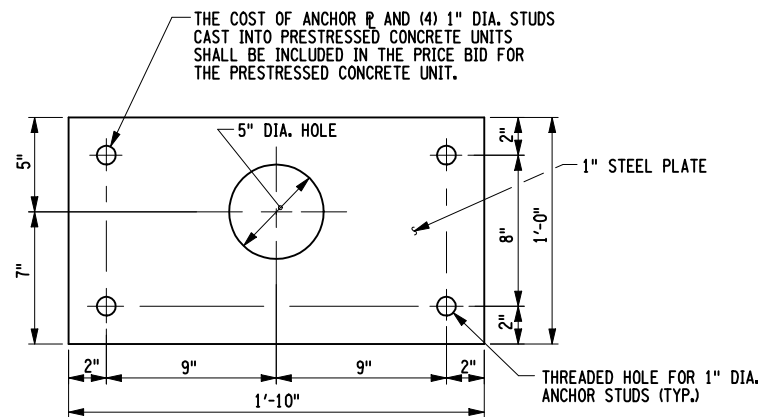
ELEVATION MATCH A10
FIVE-RAIL - CURBLESS
ON U-WINGWALL

NOTES:
(E) DENOTES EPOXY COATED BARS.
DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

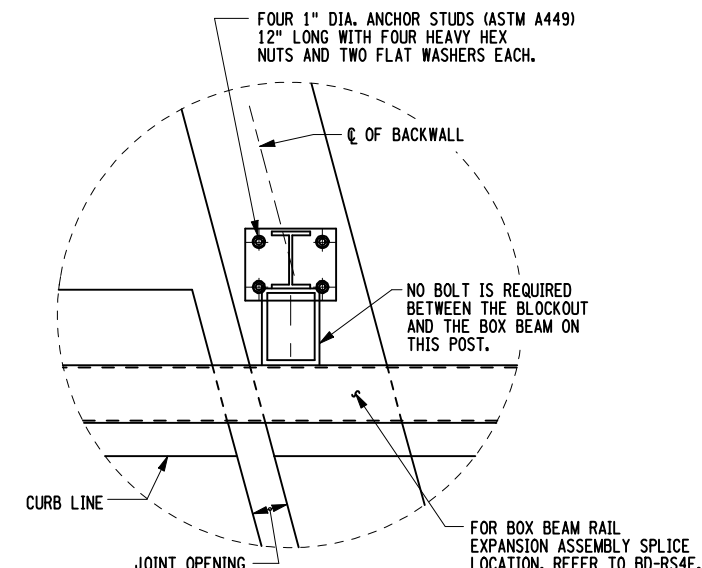
ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED		STEEL BRIDGE RAILING ON U-WINGWALLS
	APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09



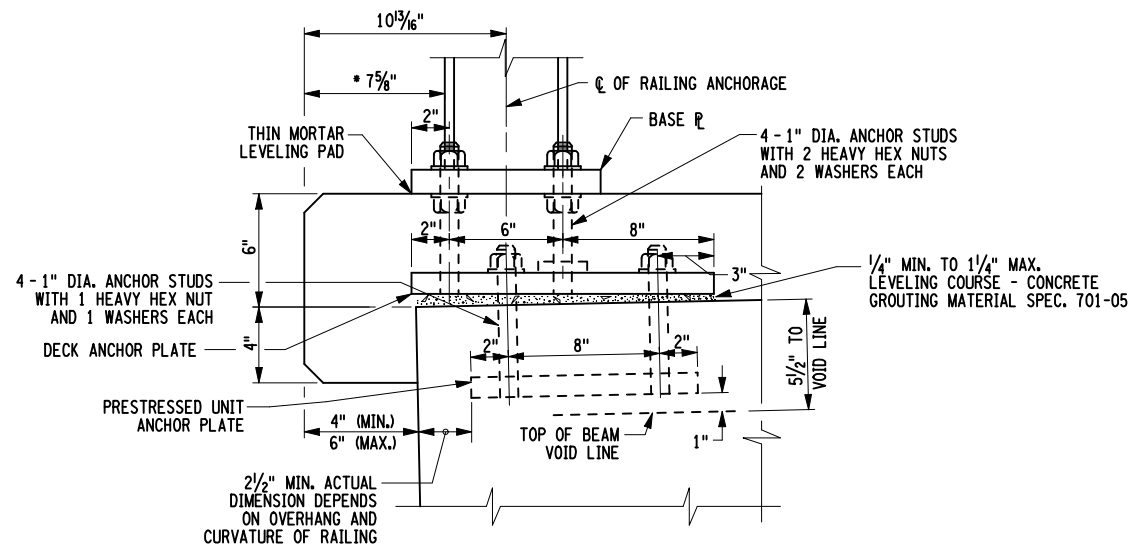
DECK ANCHOR PLATE



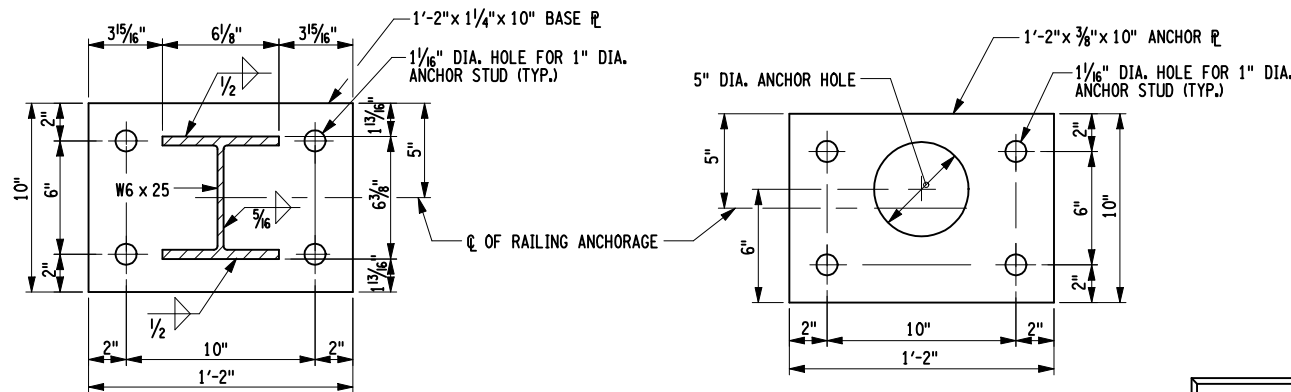
PRESTRESSED UNIT ANCHOR PLATE



SPECIAL POST DETAIL
NOT TO SCALE



STEEL BRIDGE RAILING ANCHORAGE
FOR PRESTRESSED CONCRETE BRIDGE



SECTION A-A

SECTION B-B

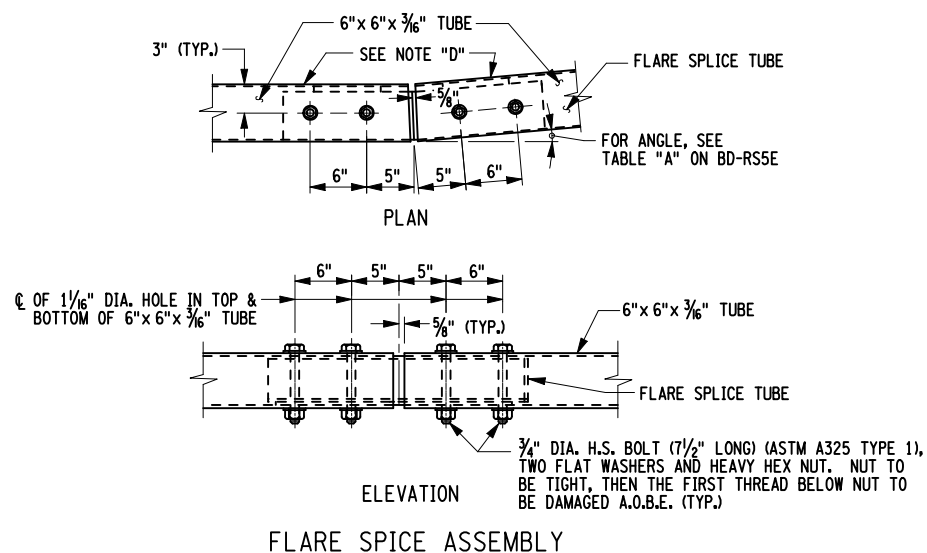
DESIGNER SHALL DETAIL ANCHOR PLATE LOCATIONS IN PRESTRESSED UNITS.

FOR DETAILS OF THE MODIFIED RAILING BASE PLATE FOR USE WITH SNOW FENCING AND PEDESTRIAN FENCING, SEE BD-FD1E AND BD-FD2E.

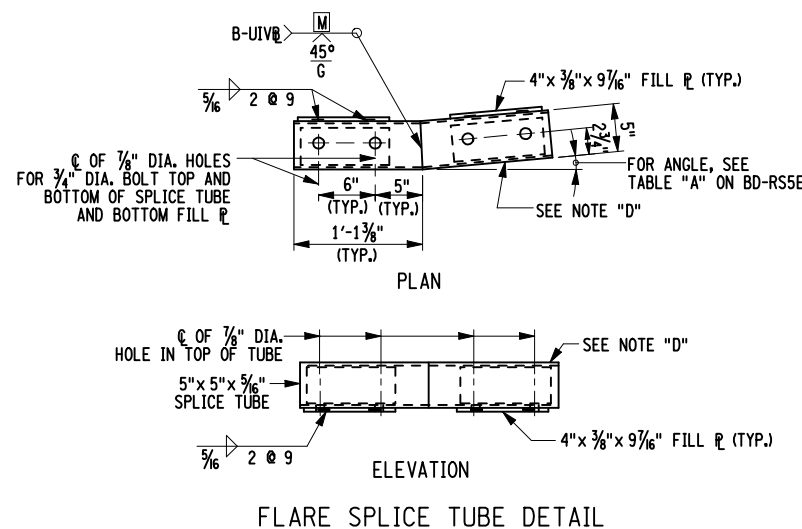
* A CURVED RAILING LAYOUT ON A STRAIGHT FASCIA SHALL USE 7 5/8" AS A MINIMUM AND INCREASE PRESTRESS UNIT ANCHOR PLATE COVER AS REQUIRED.

THESE SPLICE DETAILS SHALL BE USED ON ANY RAIL CONFIGURATION THAT REQUIRES THE FLARED TRANSITION SHOWN ON BD-RS5E.

FOR DETAILS OF SPECIAL POST, SEE BD-RC4E.
FOR LOCATIONS OF SECTIONS A-A AND B-B, SEE BD-RS1E AND BD-RS2E.



FLARE SPICE ASSEMBLY



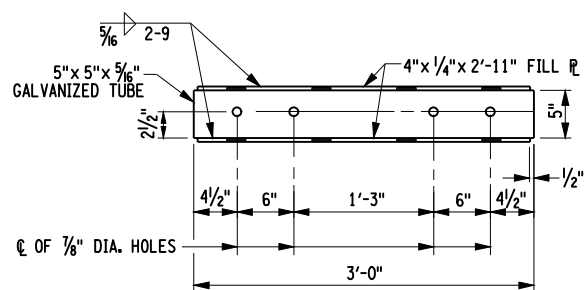
FLARE SPICE TUBE DETAIL

NOTES:

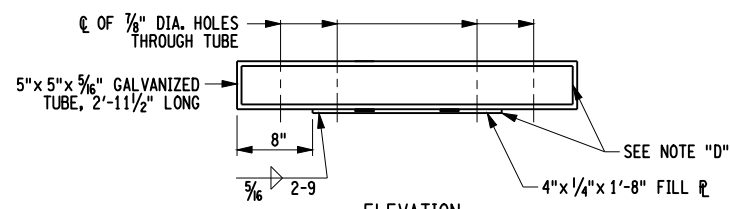
NOTE "D"
PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.

DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED		<p align="center">STEEL BRIDGE RAILING COMMON DETAILS & TRANSITION</p>
	APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09

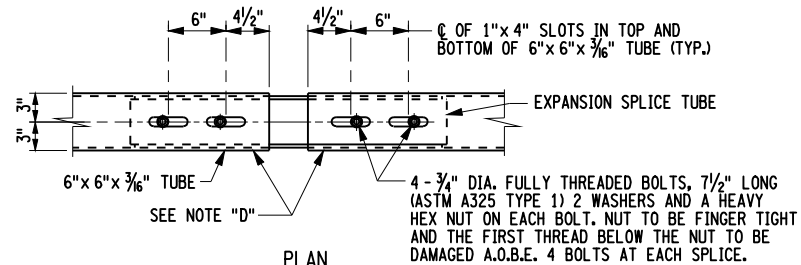


PLAN

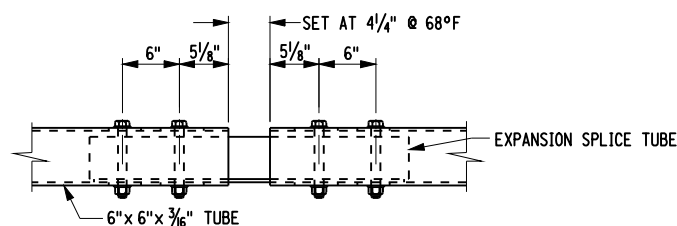


ELEVATION

EXPANSION SPLICE TUBE

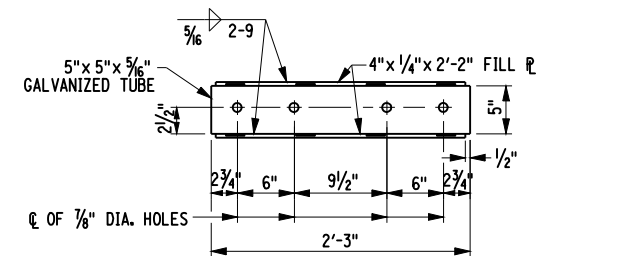


PLAN

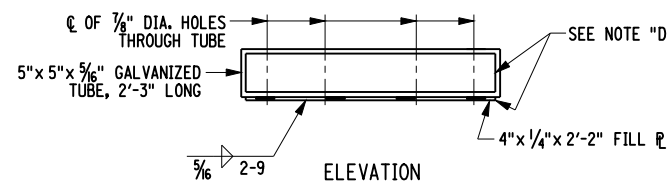


ELEVATION

EXPANSION SPLICE ASSEMBLY

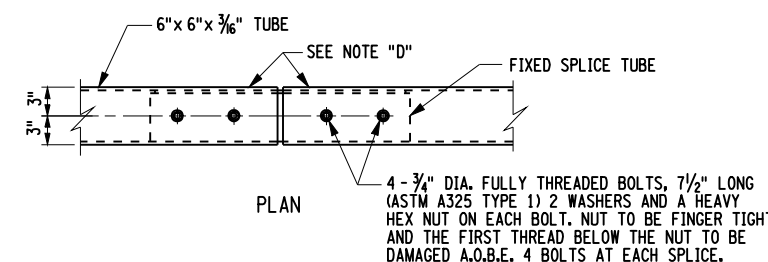


PLAN

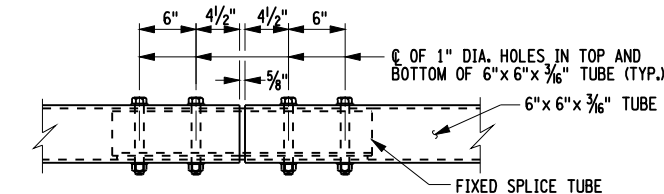


ELEVATION

FIXED SPLICE TUBE

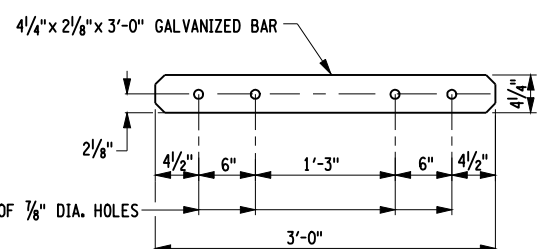


PLAN

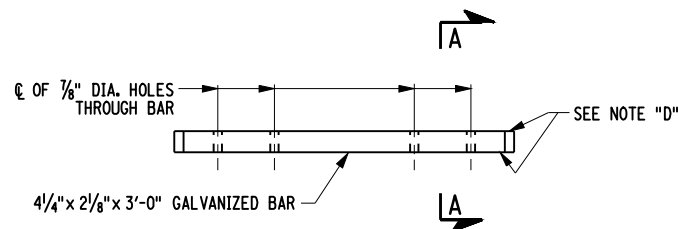


ELEVATION

FIXED SPLICE ASSEMBLY

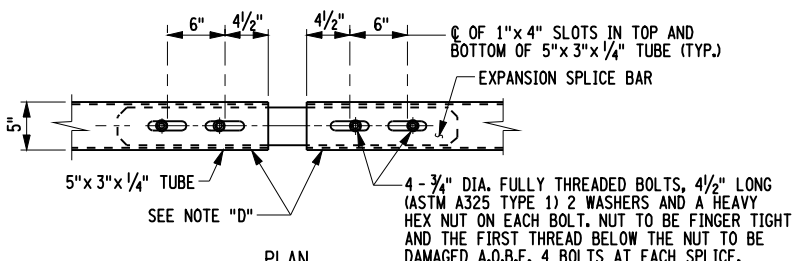


PLAN

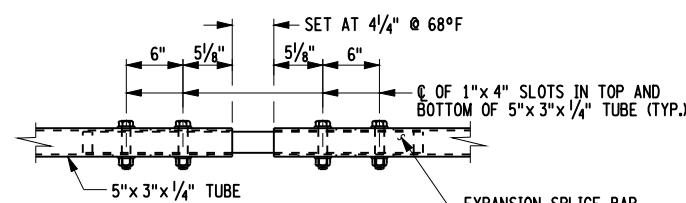


ELEVATION

EXPANSION SPLICE BAR

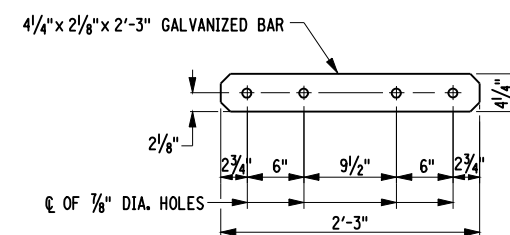


PLAN

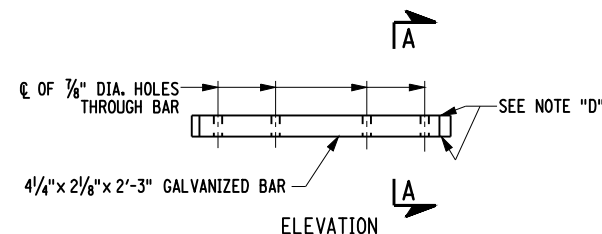


ELEVATION

EXPANSION SPLICE ASSEMBLY

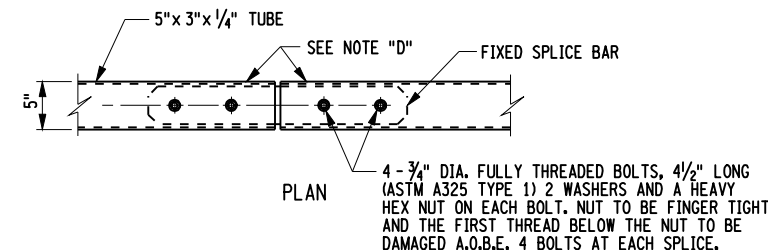


PLAN

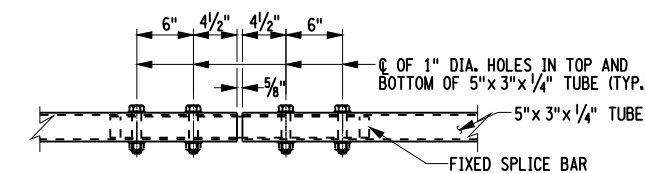


ELEVATION

FIXED SPLICE BAR

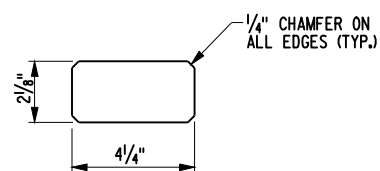


PLAN



ELEVATION

FIXED SPLICE ASSEMBLY



SECTION A-A

THE EXPANSION SPLICE ASSEMBLY DETAIL WILL ACCOMMODATE 2" OF EXPANSION OR 4/4" OF CONTRACTION. IF ADDITIONAL MOVEMENT IS ANTICIPATED, THE EXPANSION SPLICE ASSEMBLY (SPLICE TUBE LENGTH, SLOTTED HOLE AND CLEARANCE SETTING) MUST BE REDESIGNED.

NOTES:

NOTE "D": PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.

DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

ISSUED 5/01/08		STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED		
SPLICE DETAILS FOR BOX BEAMS AND RAILS ON BRIDGES AND TRANSITIONS		
APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09	