

Figure 3. Test Installation of Modified Indiana Bridge Railing with the Magnode Tru-Beam Bottom Rail Element.

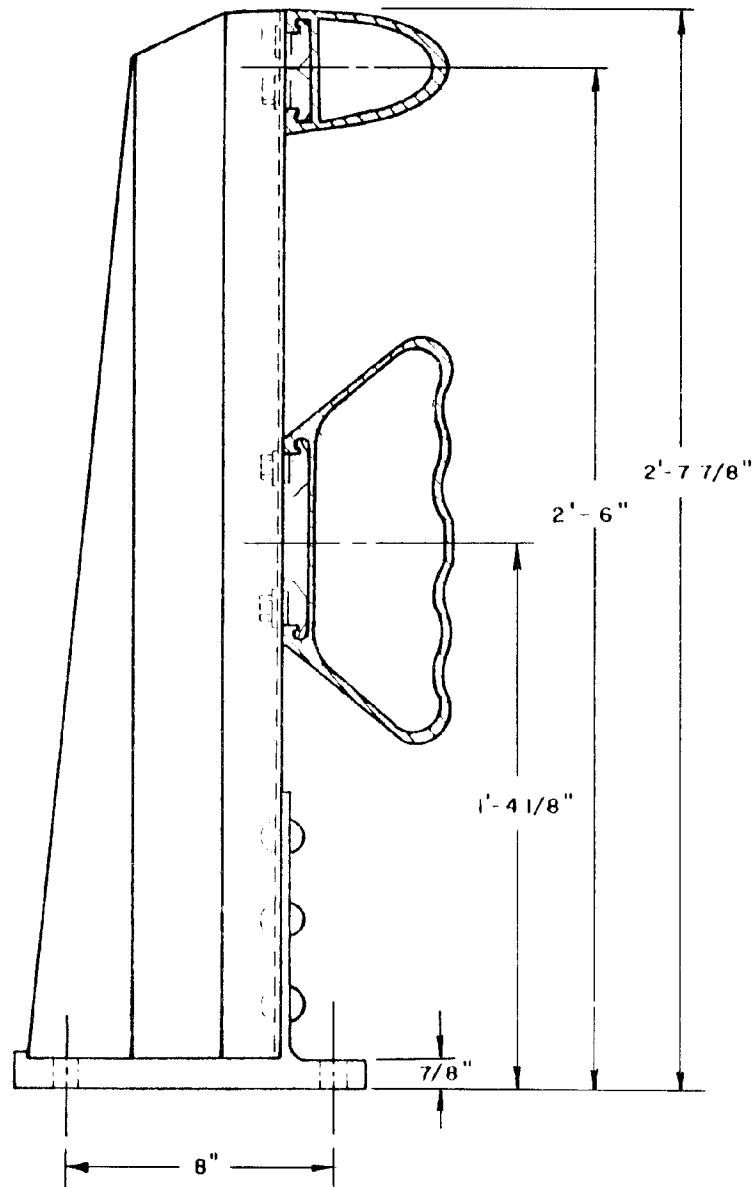


Figure B7.12. Aluminum Tru-Beam, Modified AASHTO BR5 (17,18).

| | | | |
|------------|----------|-----------|--------------|
| REL. STATE | PROJECT | SHEET NO. | TOTAL SHEETS |
| SE IN | FOOT BDI | | |

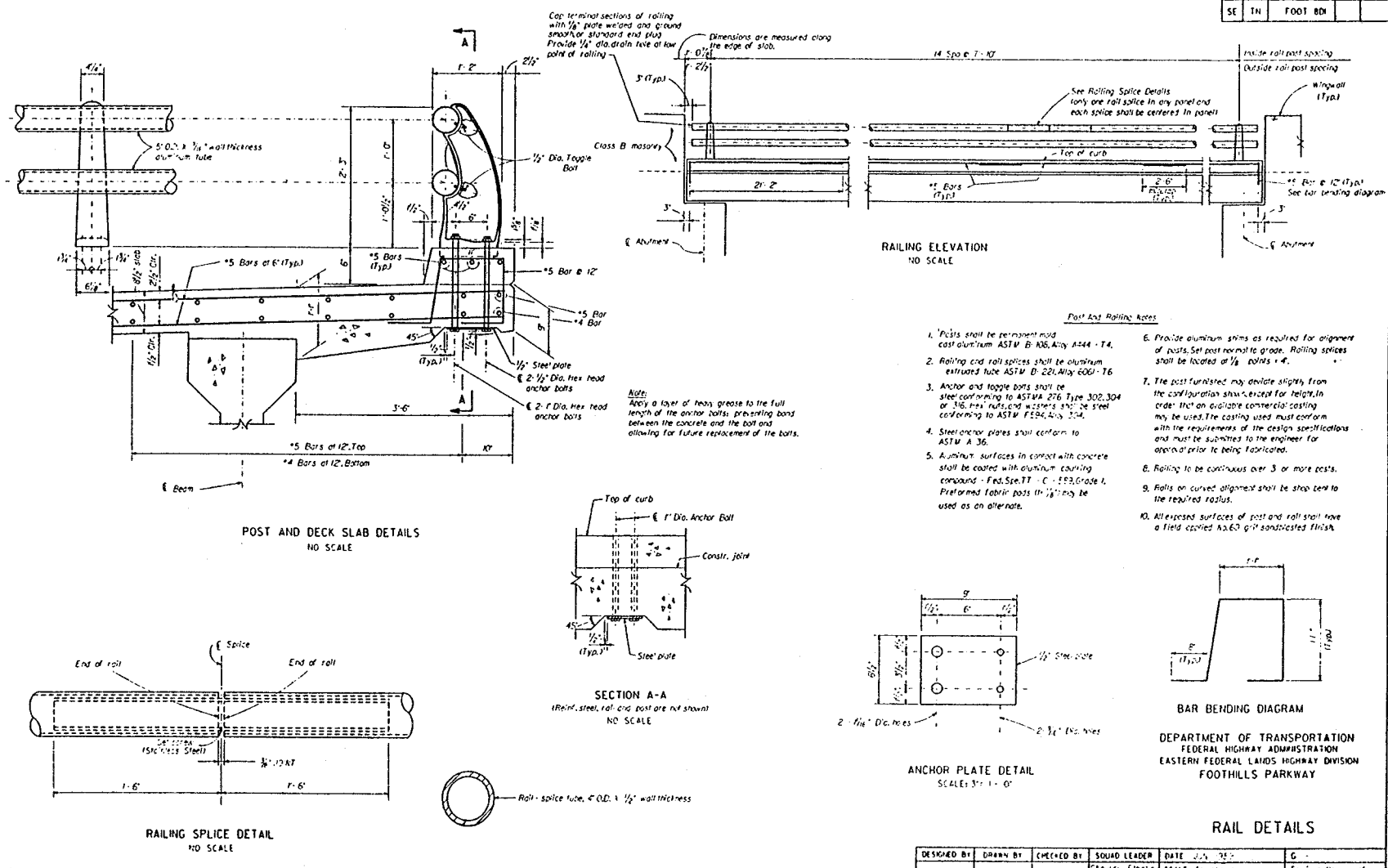


Figure B7.13. Foothills Parkway Aluminum Bridge Rail (19,20).

420

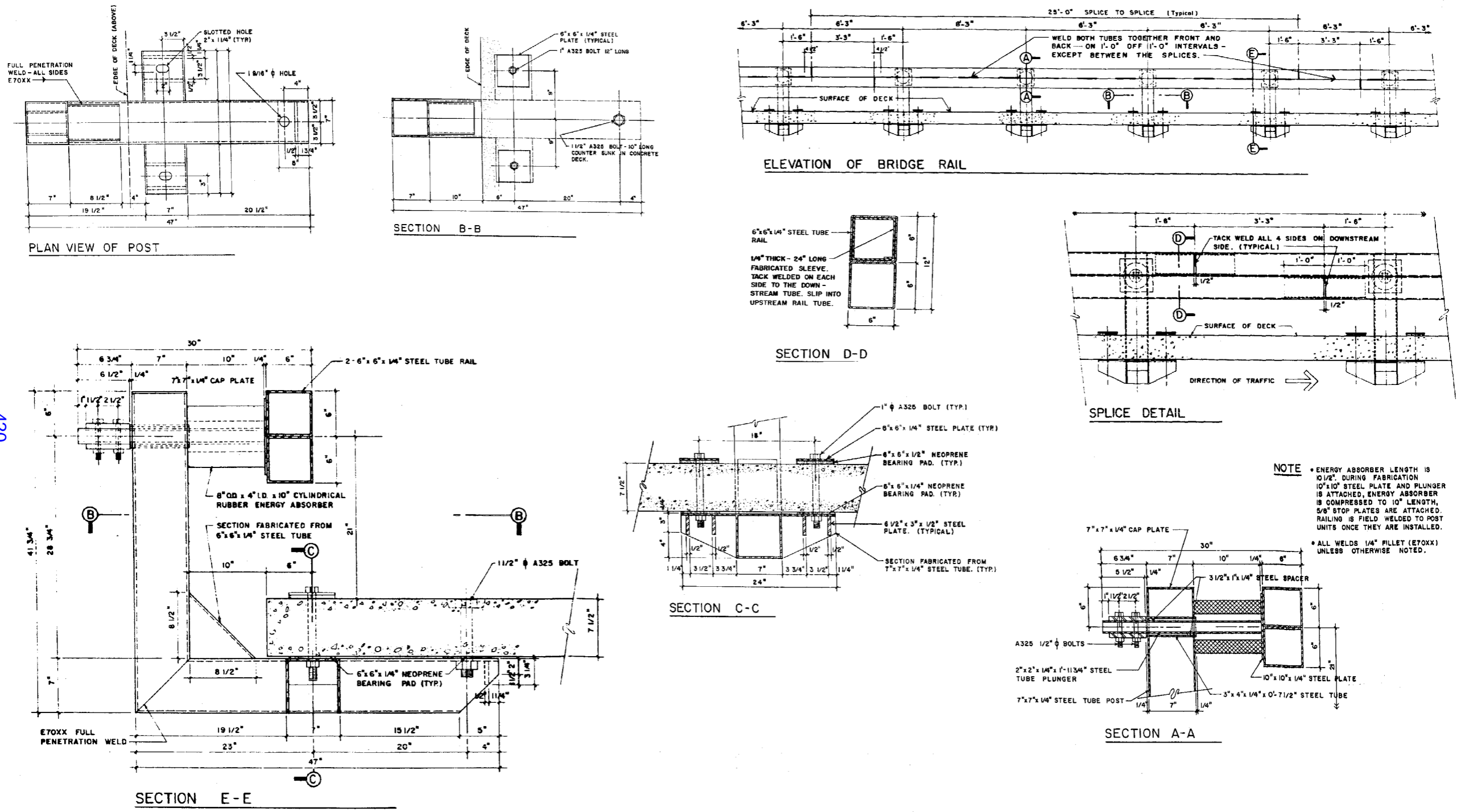


Figure B7.14. Texas Energy Absorbing Bridge Rail (21,22,23).

421

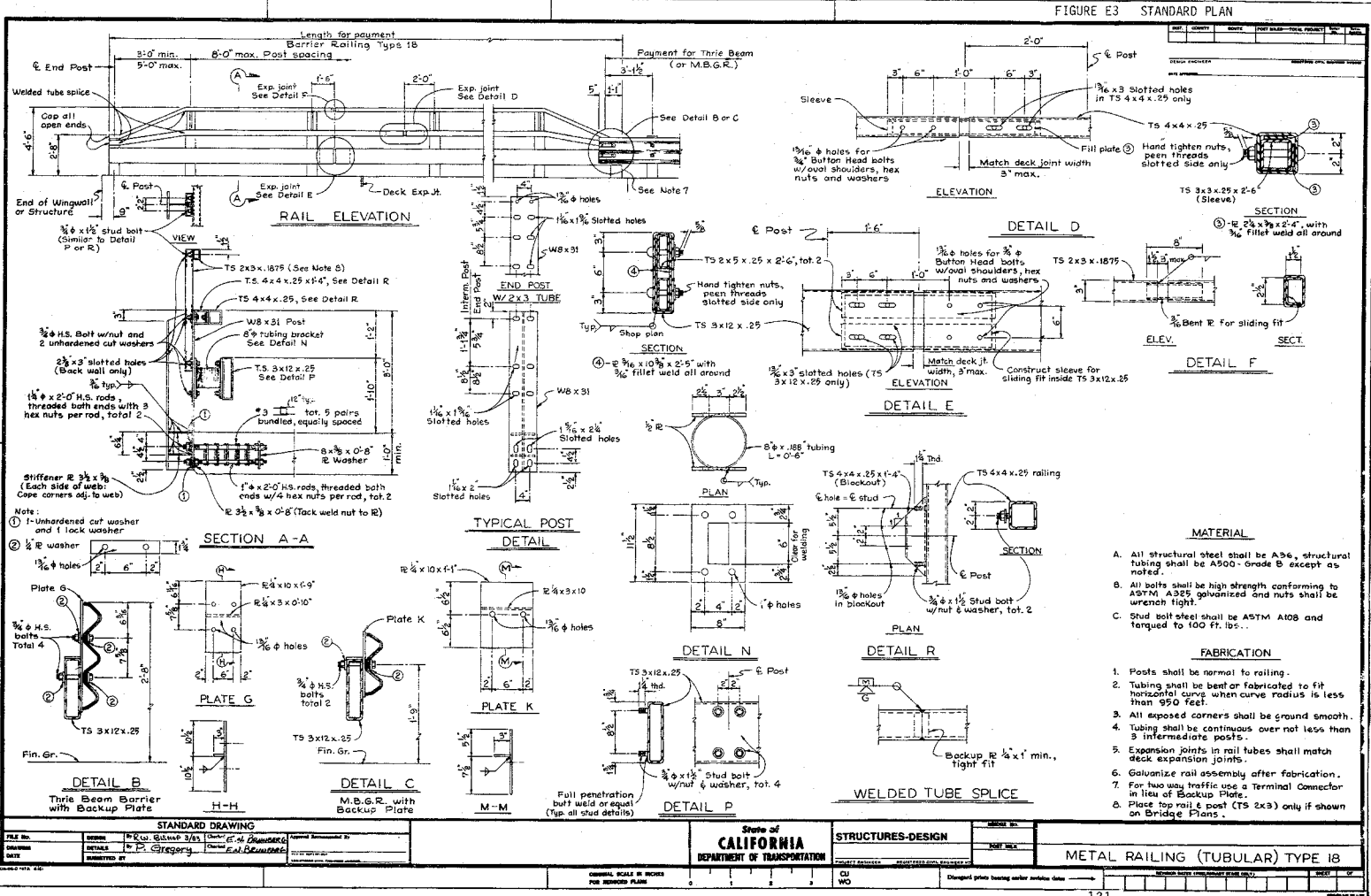


Figure B7.15. California Type 18, See-Through Collapsing Ring Bridge Railing (24,13).

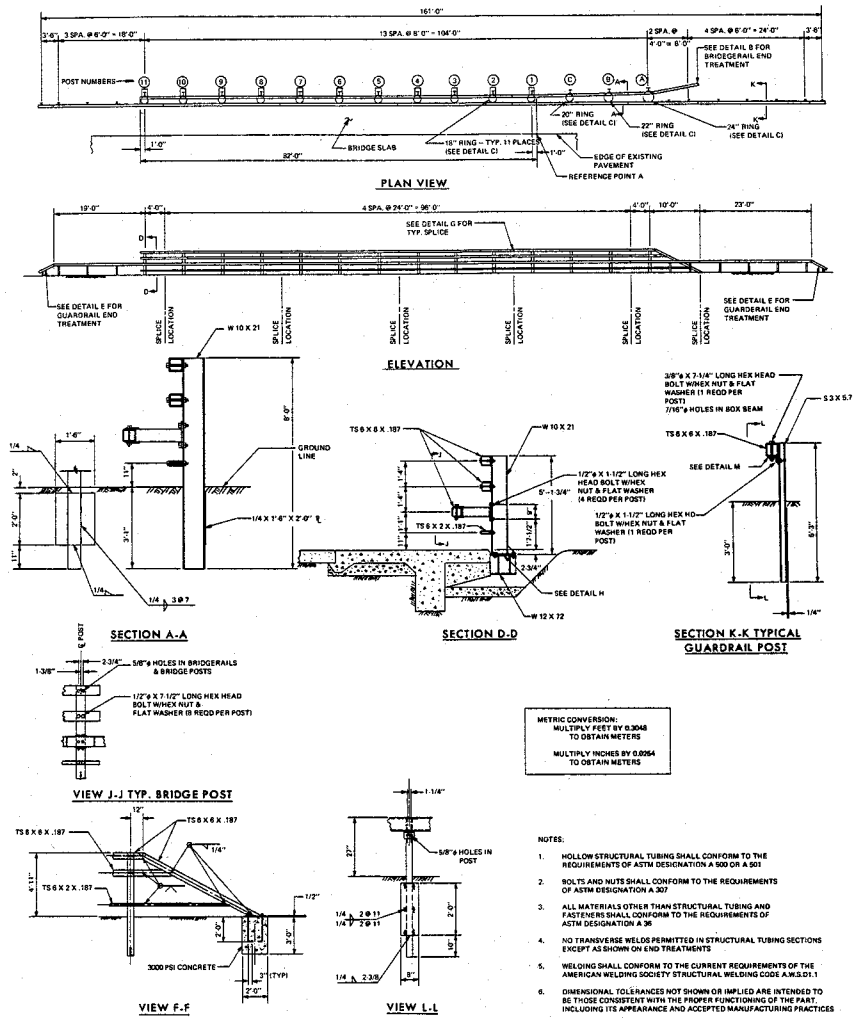


FIGURE 1. COLLAPSING RING BRIDGERAIL SYSTEM

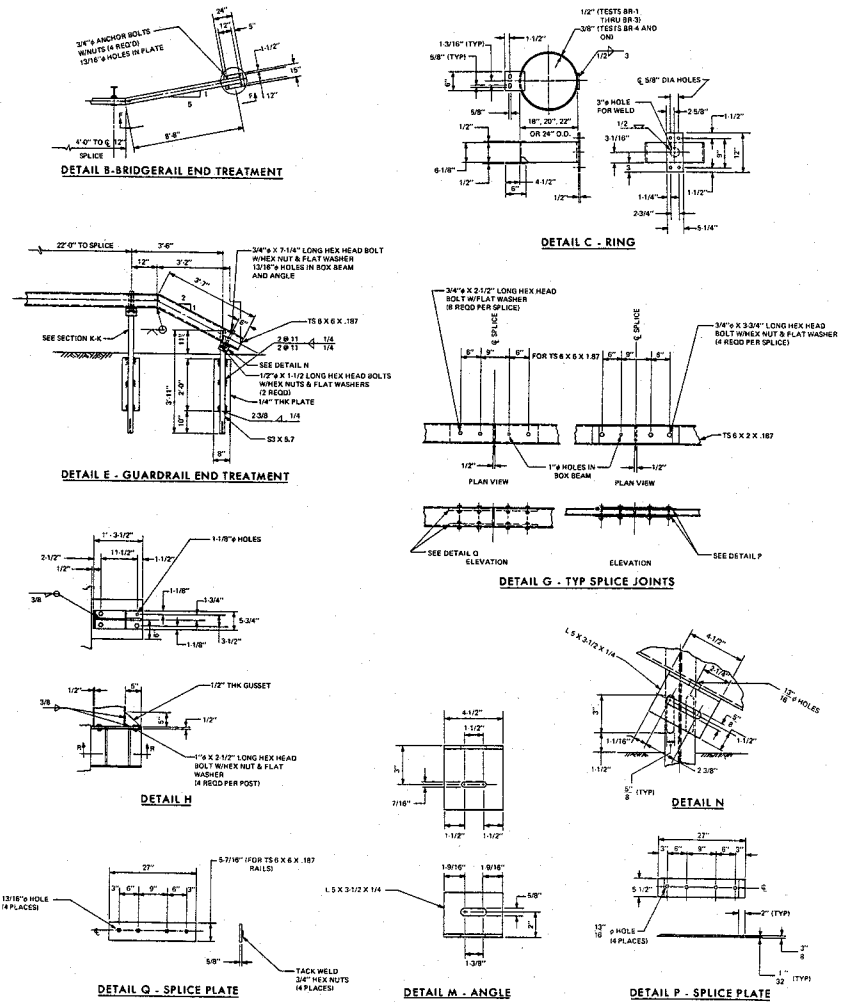
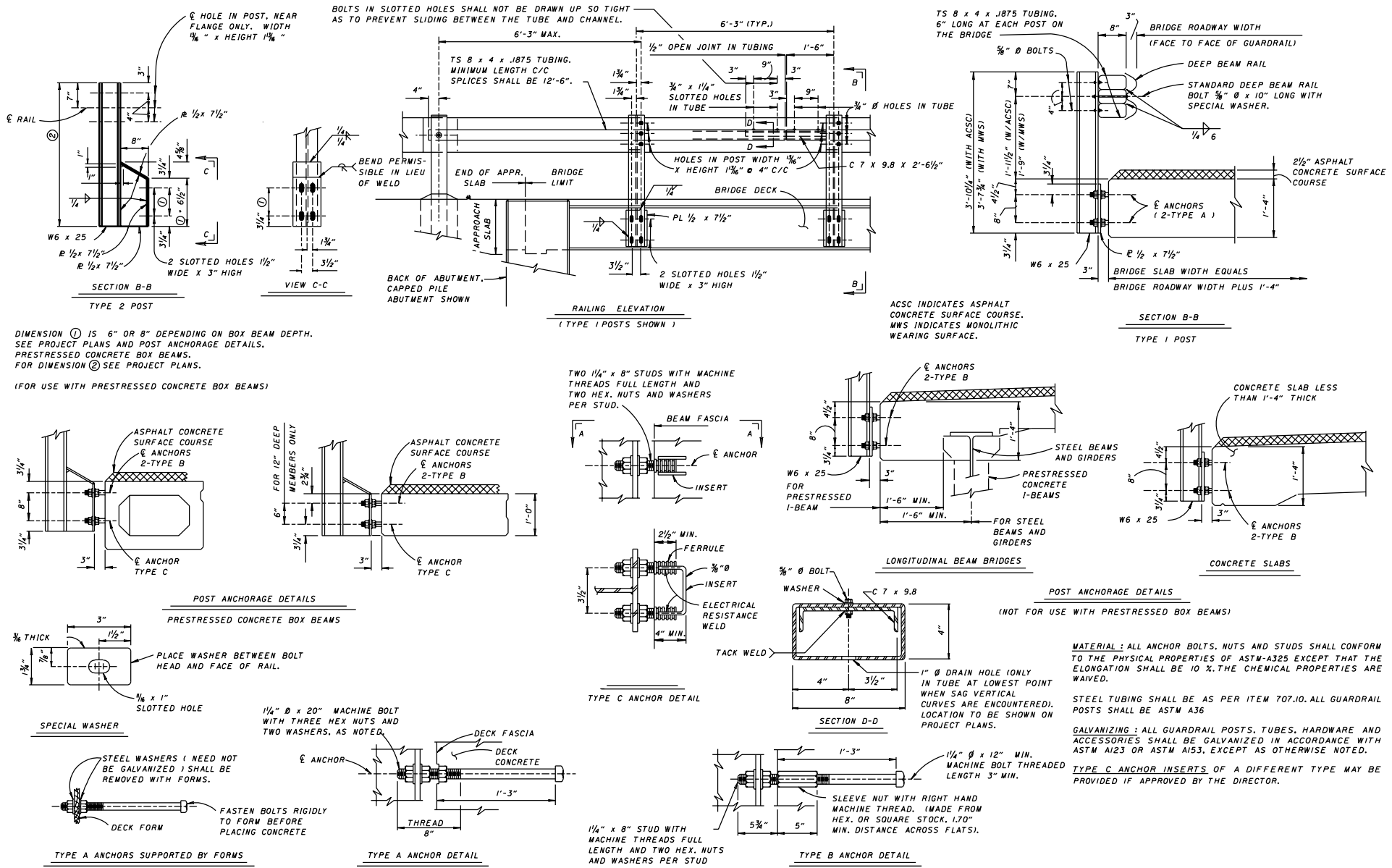


FIGURE 2. COLLAPSING RING BRIDGERAIL SYSTEM

Figure B7.16. Collapsing Ring Bridge Railing (25,26,27,28).



TYPE A ANCHORS SHOULD ONLY BE USED ON PROJECTS WHERE THE ORIGINAL ANCHORS WERE TYPE A AND ALL ANCHORS ON ANY SINGLE STRUCTURE ARE NOT BEING REMOVED OR REPLACED

MATERIAL: ALL ANCHOR BOLTS, NUTS AND STUDS SHALL CONFORM TO THE PHYSICAL PROPERTIES OF ASTM-A325 EXCEPT THAT THE ELONGATION SHALL BE 10%. THE CHEMICAL PROPERTIES ARE WAIVED.

STEEL TUBING SHALL BE AS PER ITEM 707.10. ALL GUARDRAIL POSTS SHALL BE ASTM A36

GALVANIZING: ALL GUARDRAIL POSTS, TUBES, HARDWARE AND ACCESSORIES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 OR ASTM A153, EXCEPT AS OTHERWISE NOTED.

TYPE C ANCHOR INSERTS OF A DIFFERENT TYPE MAY BE PROVIDED IF APPROVED BY THE DIRECTOR.

Figure B7.17. Ohio Box Beam Rail, W-Beam Backed up with Box Beams (6).

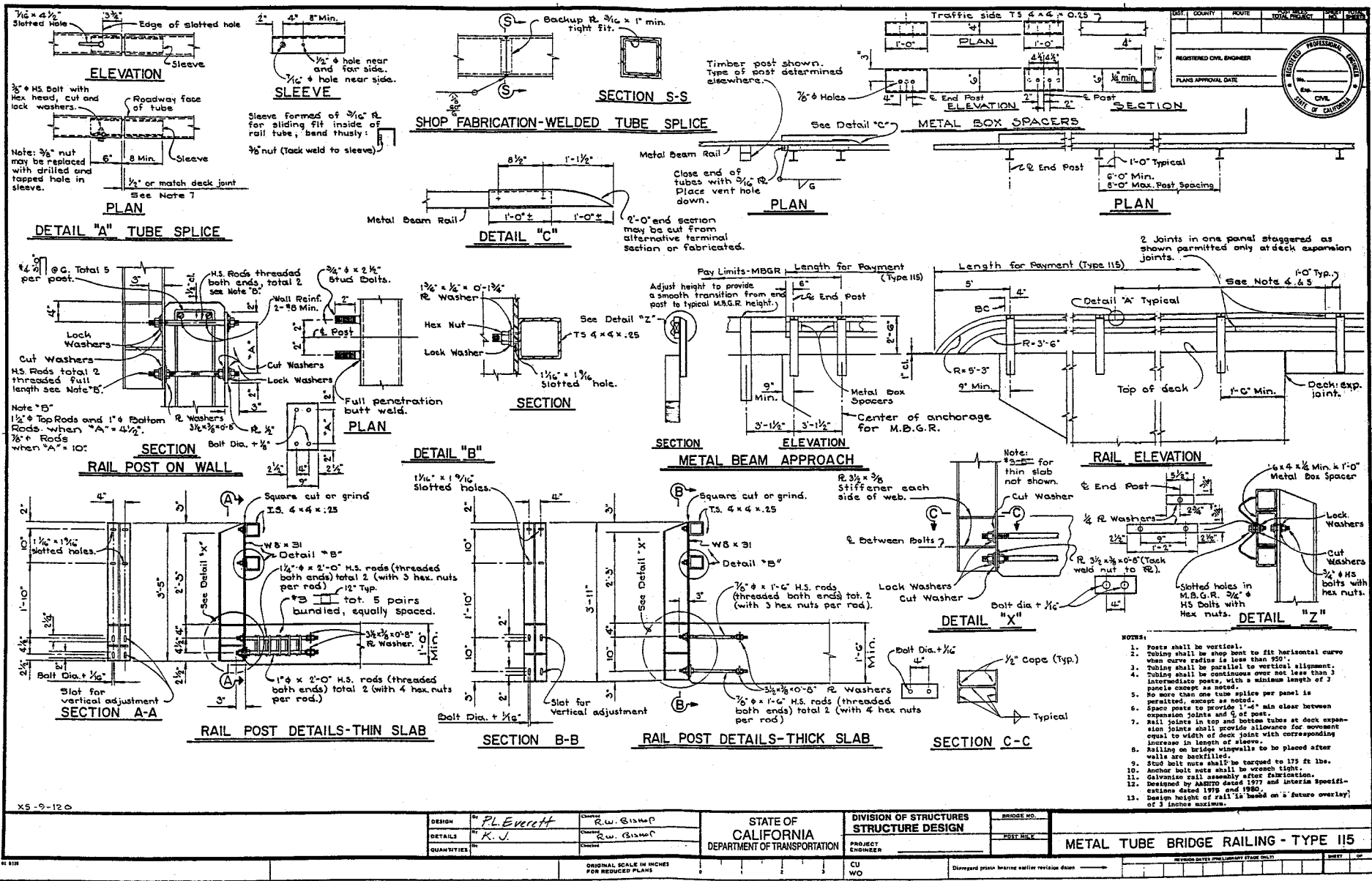
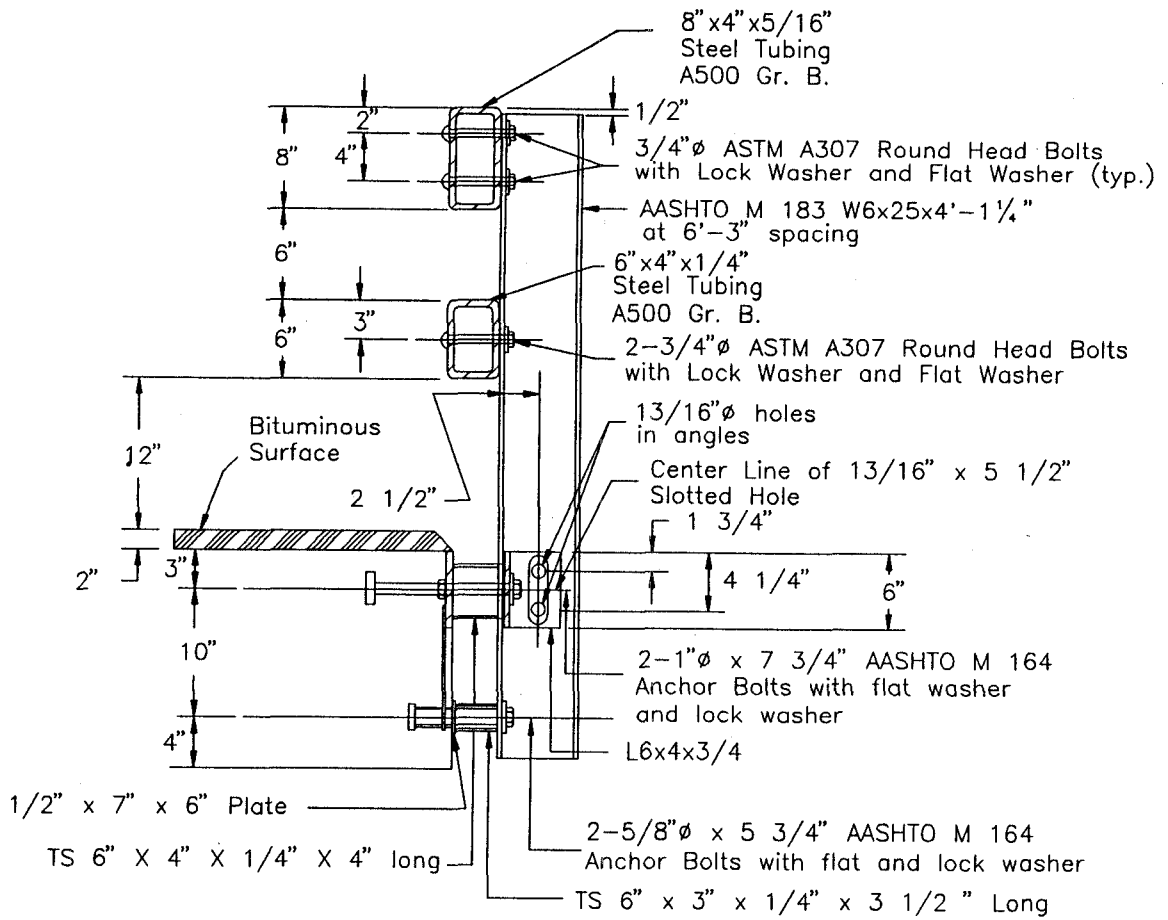
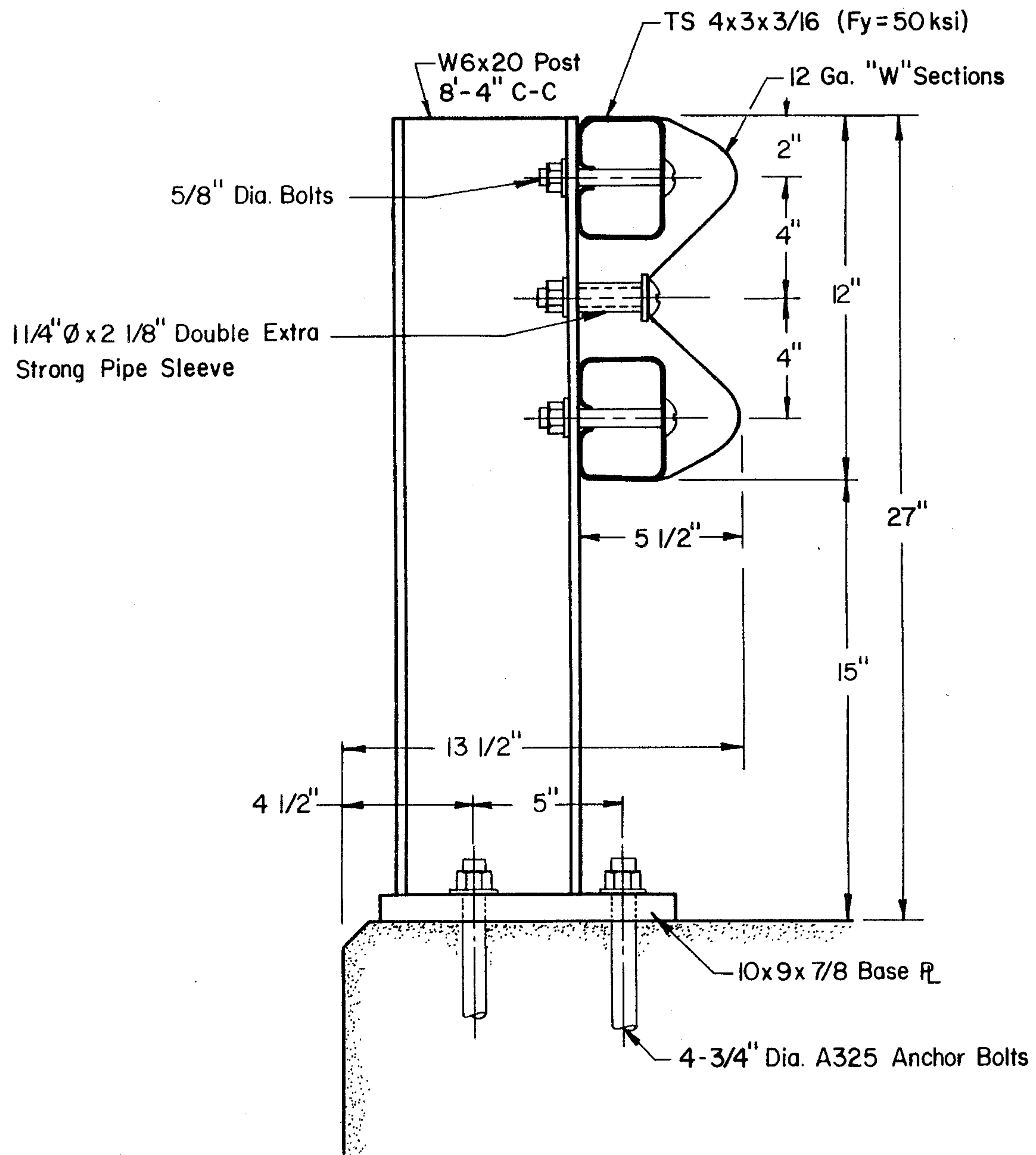


Figure B7.18. California Type 115 (29,13).



1 in = 25.4 mm
 1 ft = 0.305 m

Figure B7.19. Illinois Side-Mounted Bridge Railing (8,30).

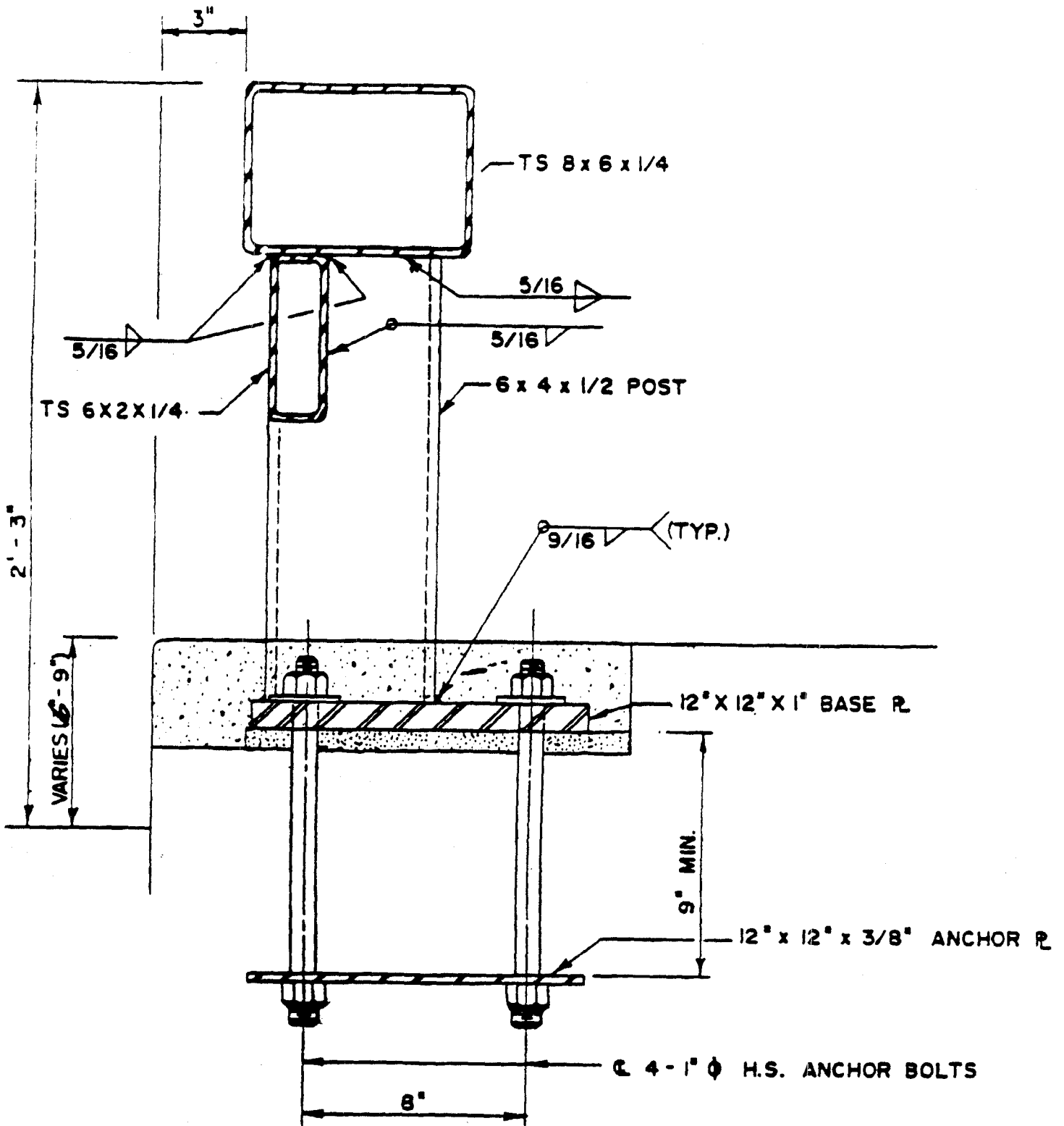


1 in. = 25.40 mm
 1 ft = 0.305 m

Scale: 2" = 1'-0"

T 101

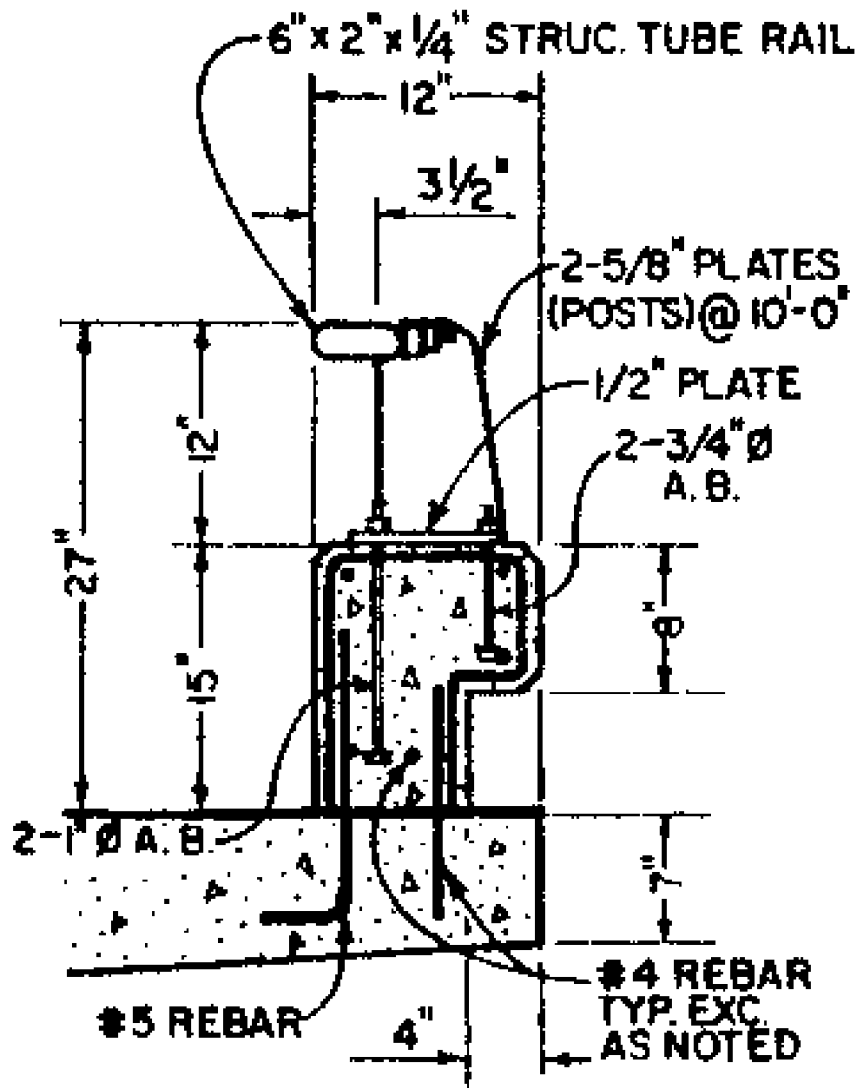
Figure B7.20. Texas T101 Bridge Railing (18,31,32,33,2).



TYPICAL POST SECTION

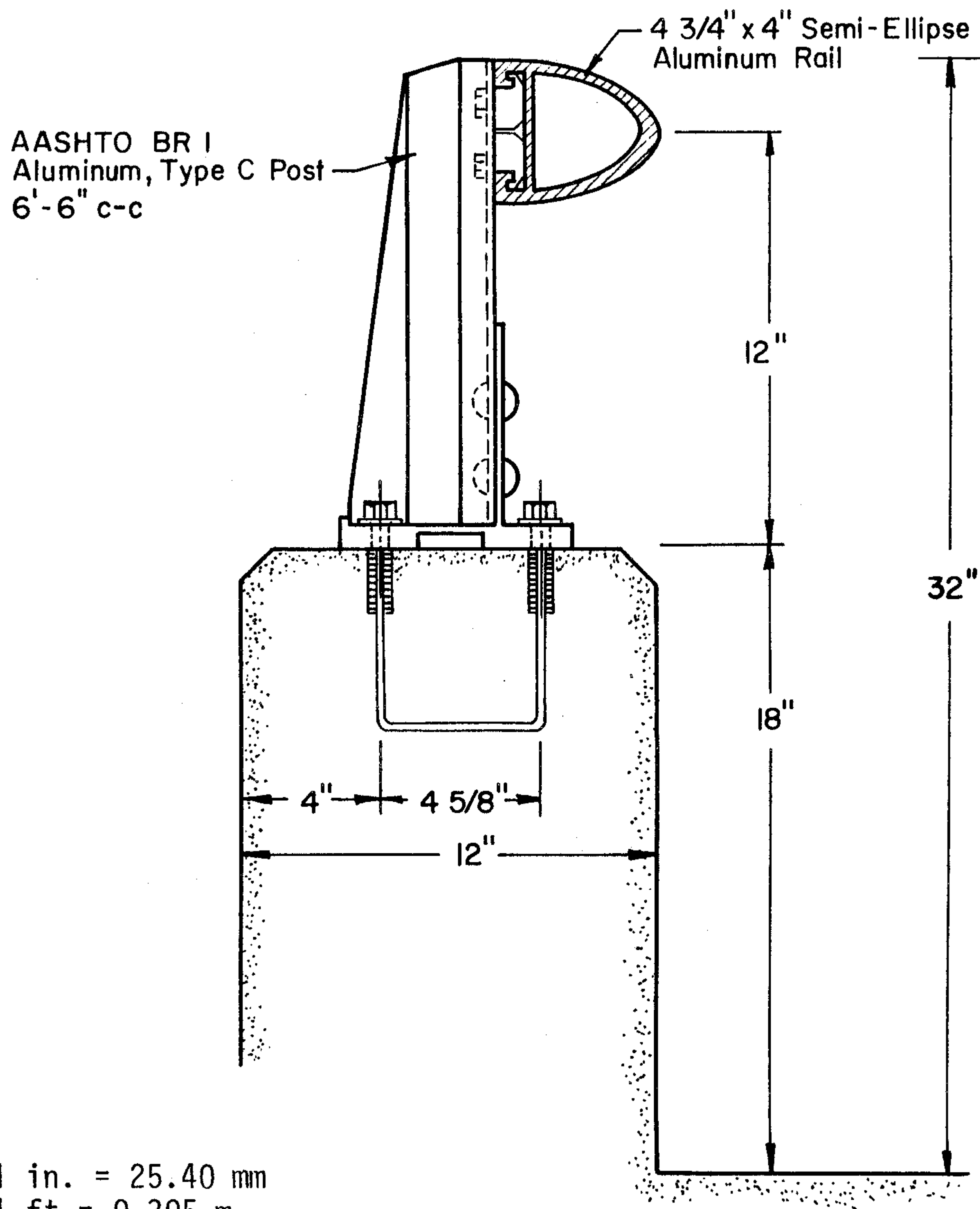
SCALE: 3" = 1'-0"

Figure B7.22. Washington D.C. Historic Bridge Rail, Curb-Mounted Retrofit (36).



TYPE 9
DEC., 1967

Figure B7.23. AASHTO BR2, California Type 9 (2, unknown, 37).



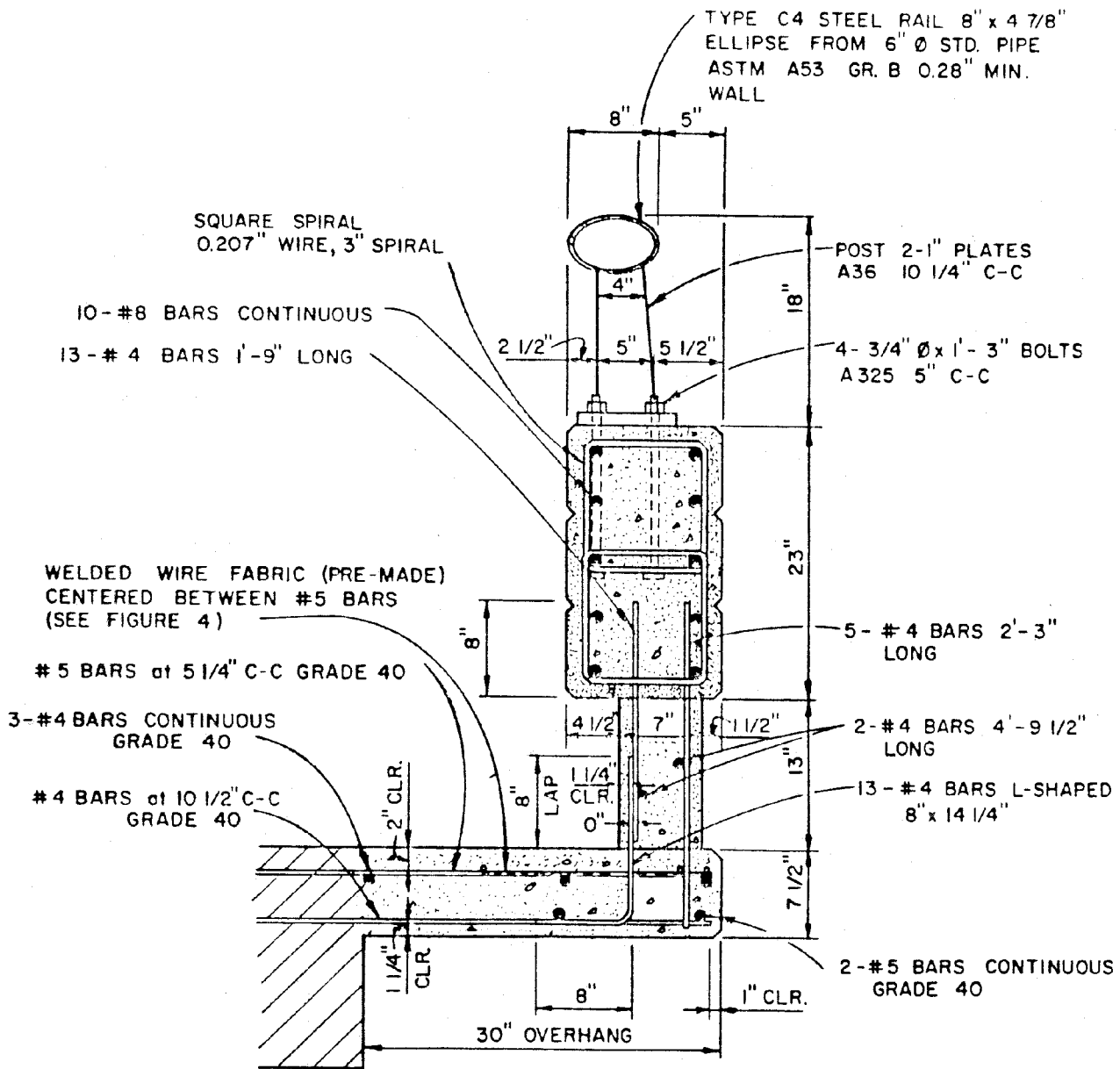
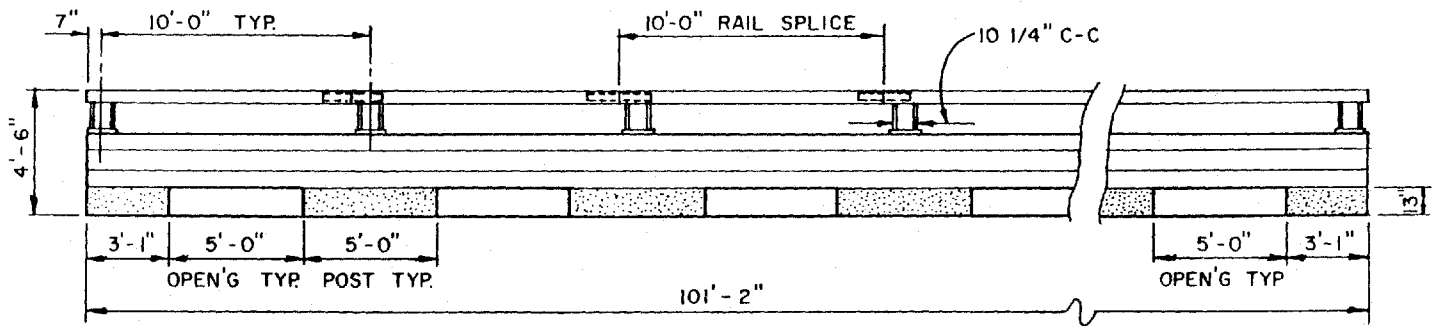
1 in. = 25.40 mm
1 ft = 0.305 m

Scale: 2" = 1'-0"

NORTH CAROLINA

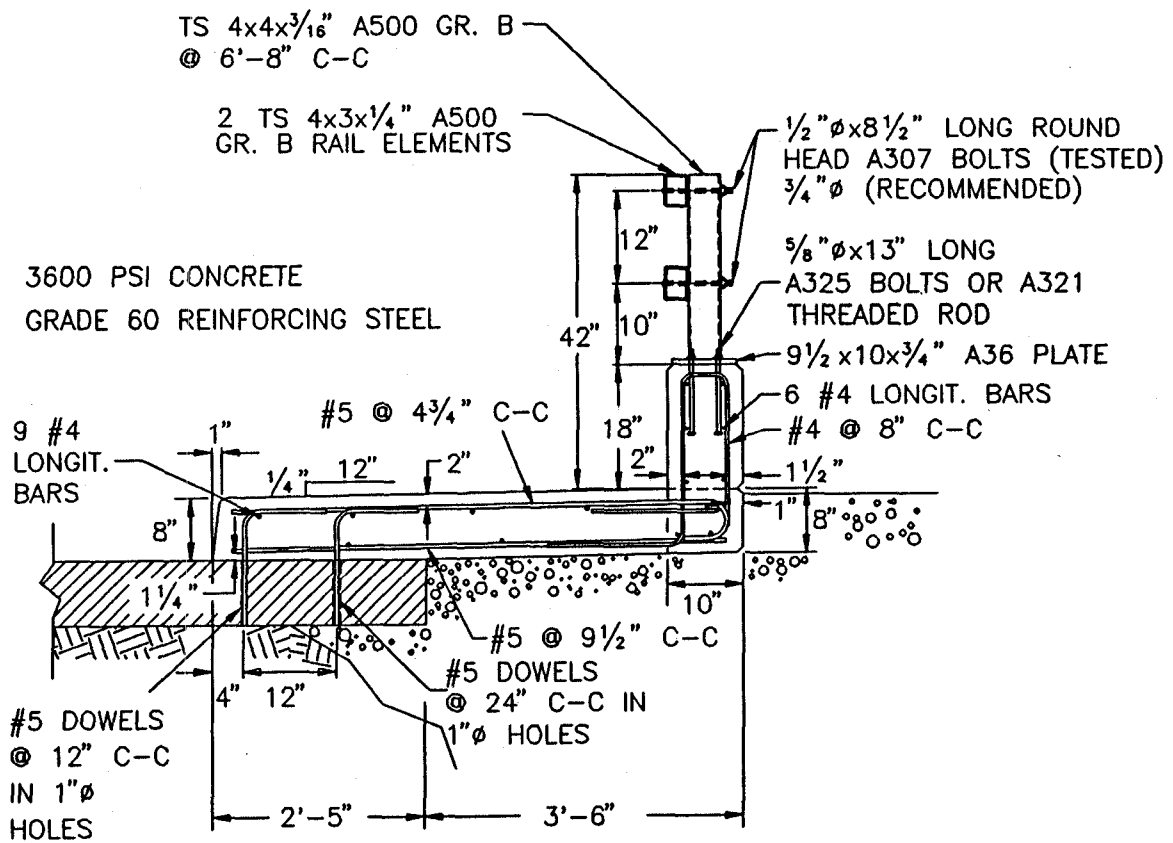
Cross Section of North Carolina One-Bar
Aluminum on Concrete Parapet.

Figure B7.24. North Carolina - Standard 1-Bar Metal Rail. (6,8,18,31,32,33).



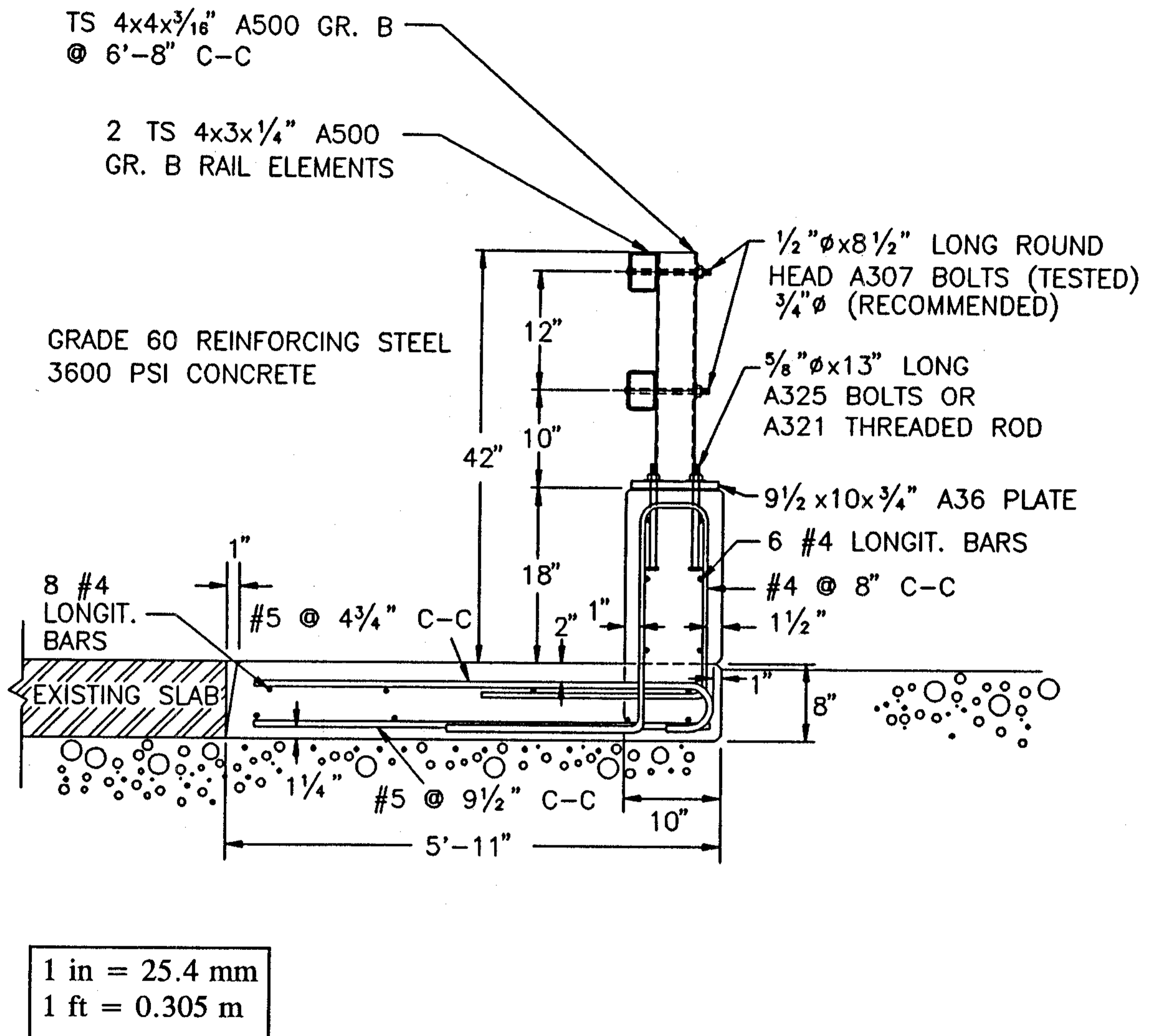
Cross Section of the Modified C202 Bridge Rail.

Figure B7.25. Modified Texas C202 Bridge Rail (38,39).



1 in = 25.4 mm
1 ft = 0.305 m

Figure B7.26. BR27D Bridge Railing with Sidewalk (8,40,41).



1 in = 25.4 mm
1 ft = 0.305 m

Figure B7.27. BR27D Flush Mounted Bridge Railing (8,40,41).

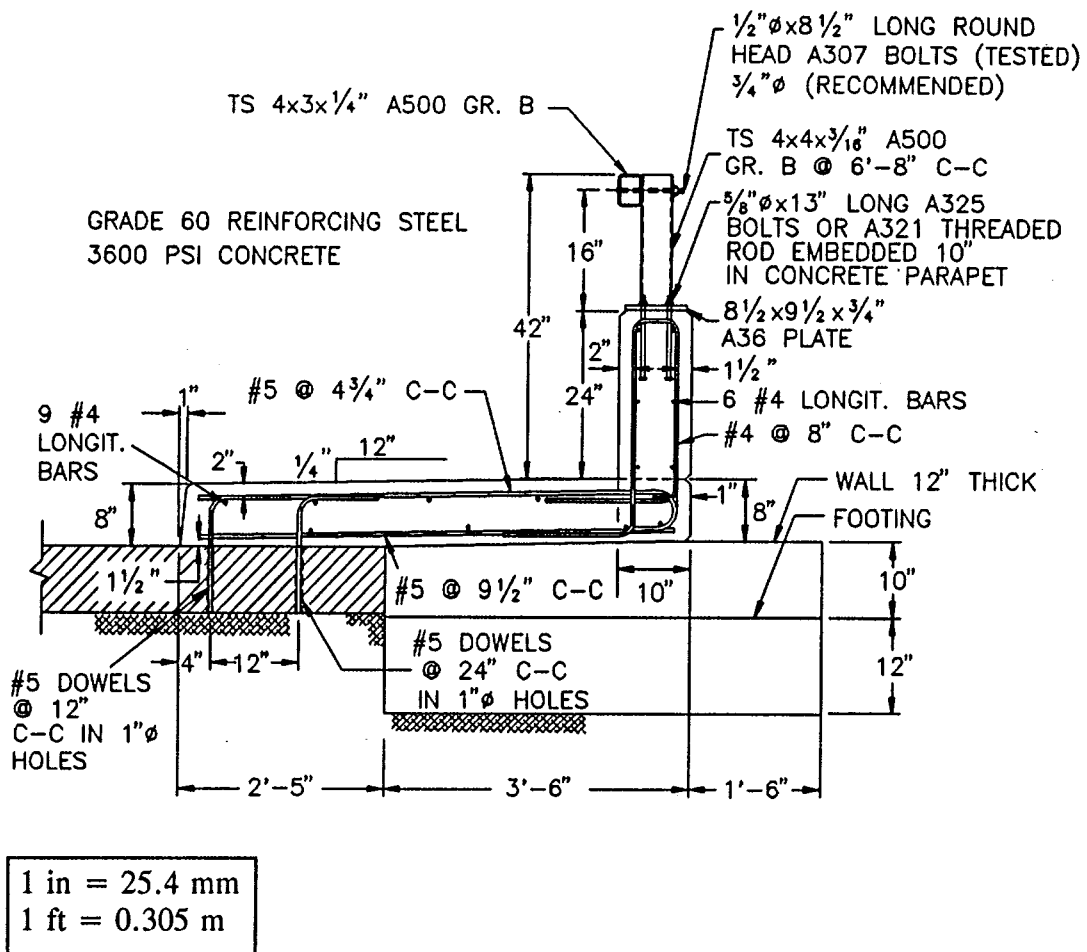


Figure B7.28. BR27C Bridge Railing with Sidewalk (8,40,42).

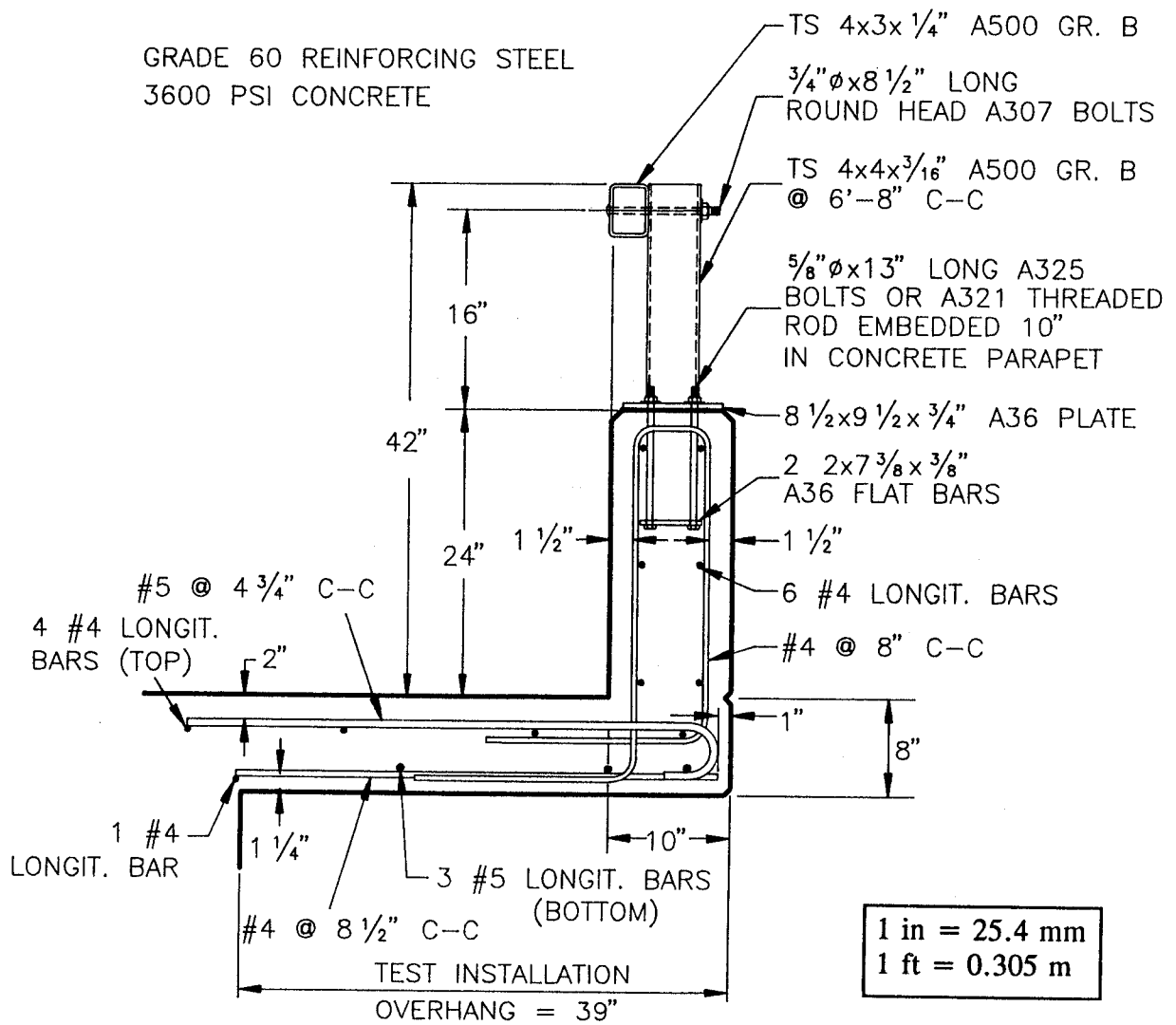


Figure B7.29. BR27C Flush Mounted Bridge Railing (8,40,42).

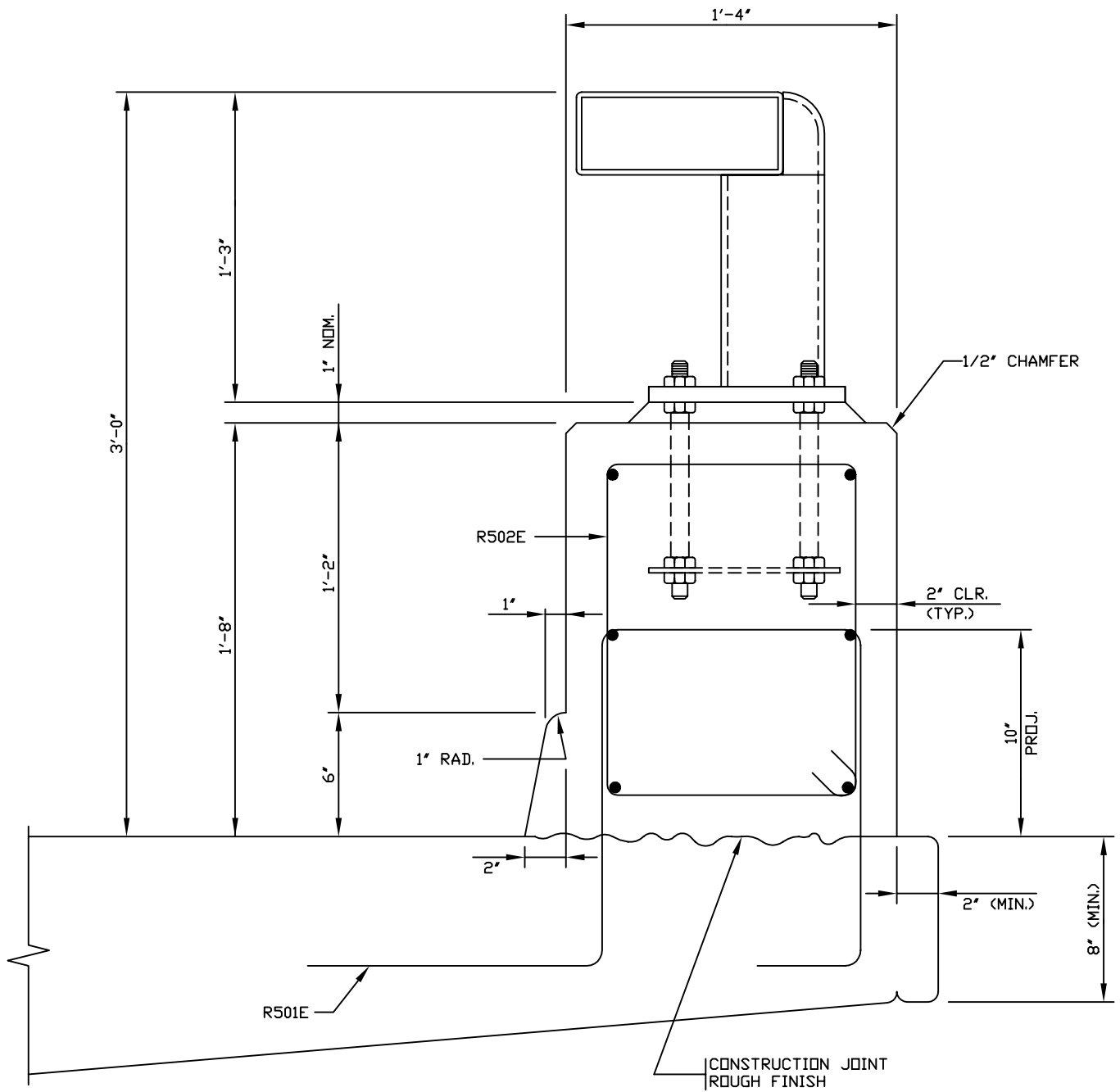
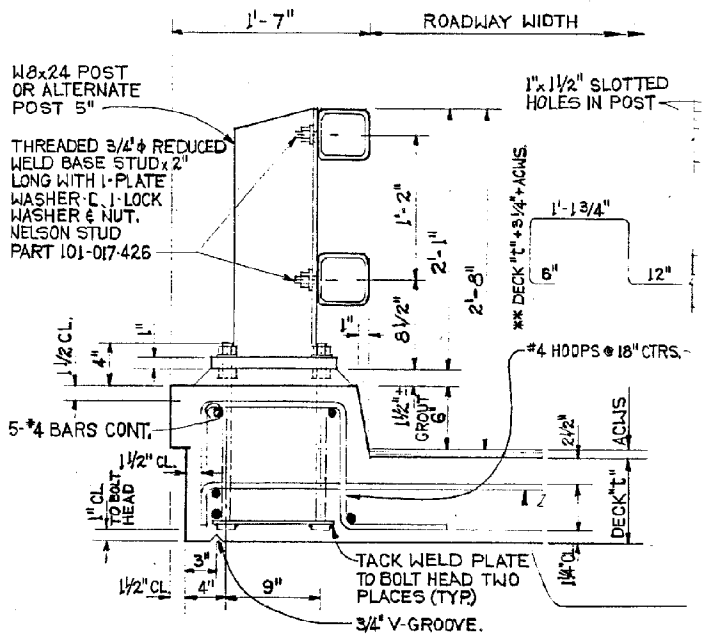
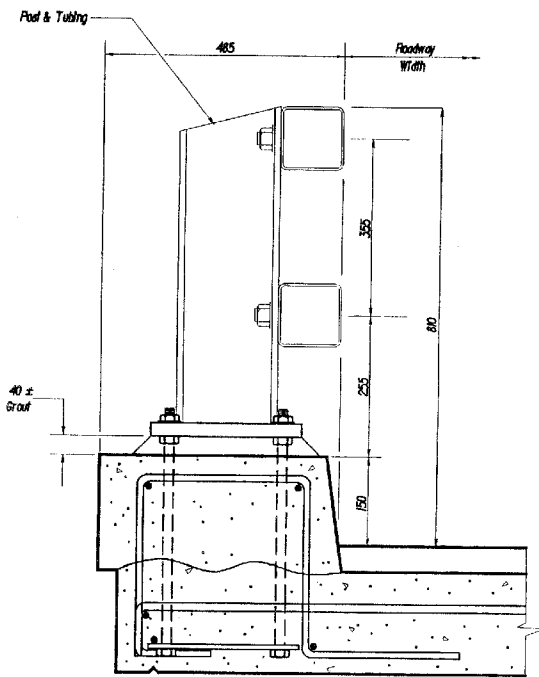


Figure B7.30. Minnesota Combination Bridge Rail, Design #3 (43).



CURB MOUNT-POST DET
1 1/2" = 1'-0" (1=8)

FIGURE D.5 Oregon 2-Tube Curb Mounted Bridge Railing



All Dimensions Shown Are mm unless Otherwise Noted.

CURB MOUNT-POST DETAIL

FIGURE D.5 2-Tube Curb-Mounted Bridge Railing

| | | |
|----------------------|------------|-------------|
| Rail Height | 810 mm | |
| Test Vehicle | 905-kg Car | 2107-kg Car |
| Impact Speed km/h | 94 | 97 |
| Impact Angle Degrees | 18.8 | 25 |

Figure B7.31. Oregon 2-Tube Curb Mounted Bridge Rail (6,7).

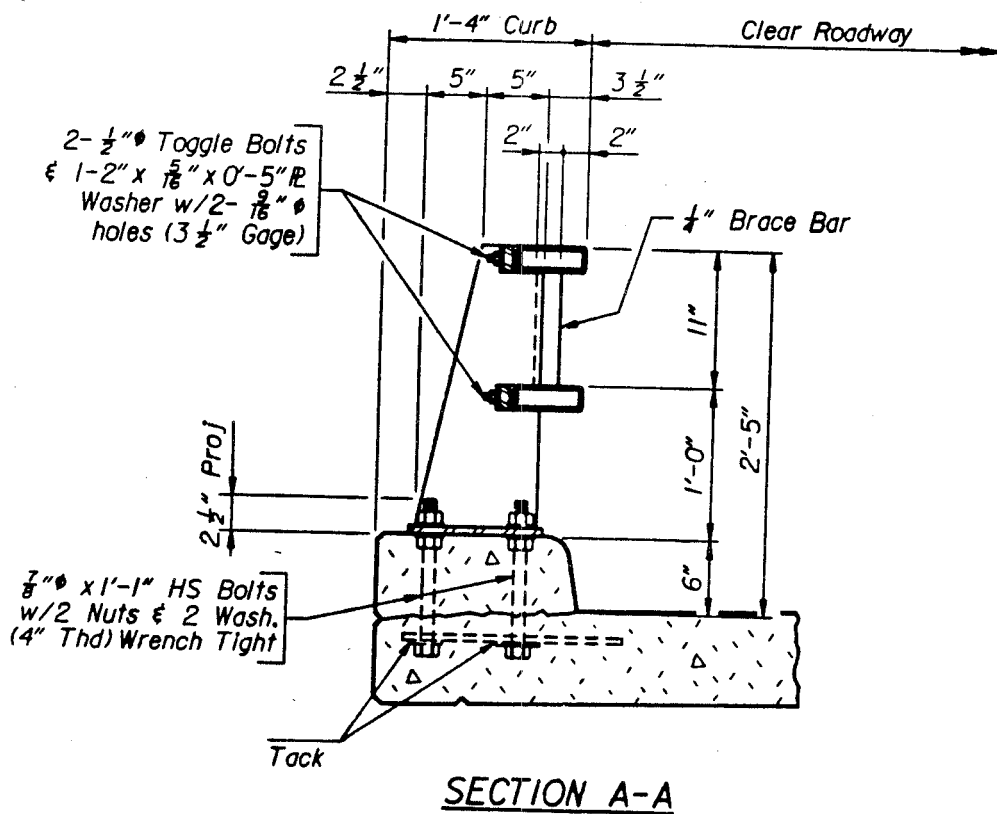
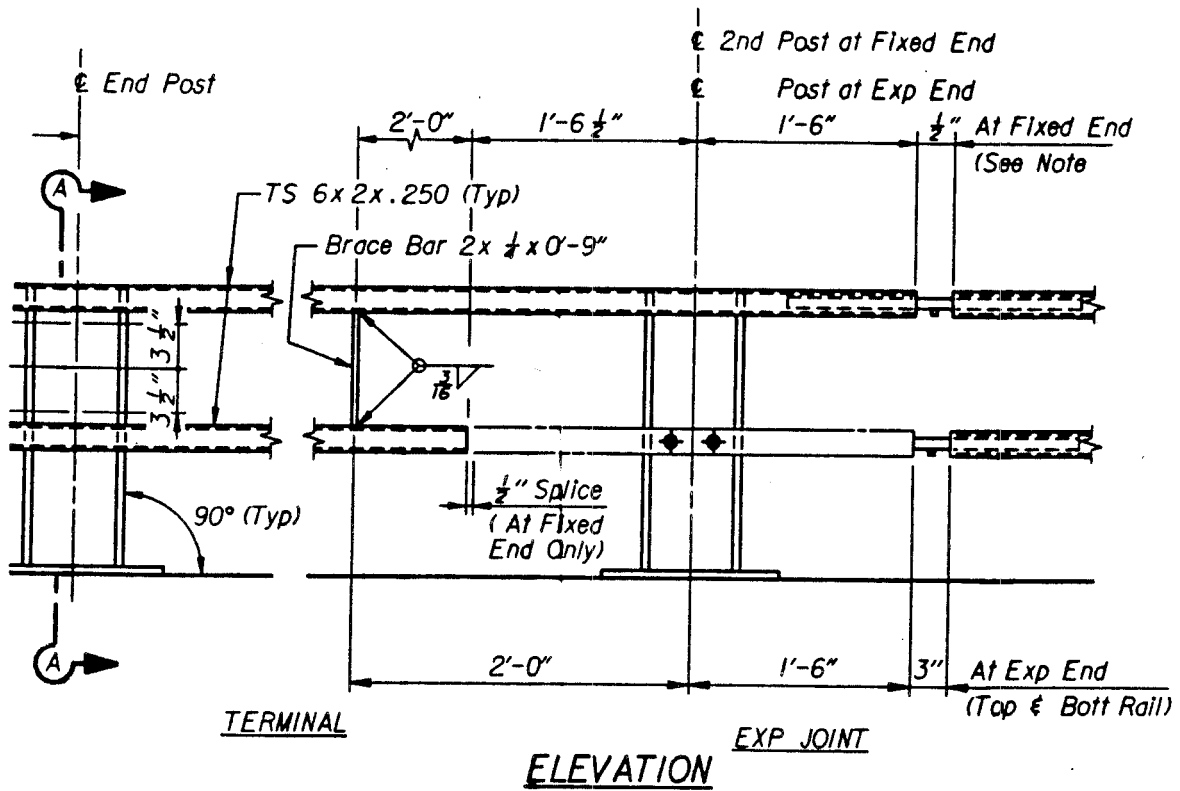


Figure B7.32. Wyoming 2-Tube, 740-mm (29") Steel Railing on 6" Curb (44,45,46).

GRADE 40 REINFORCING STEEL
3600 PSI CONCRETE

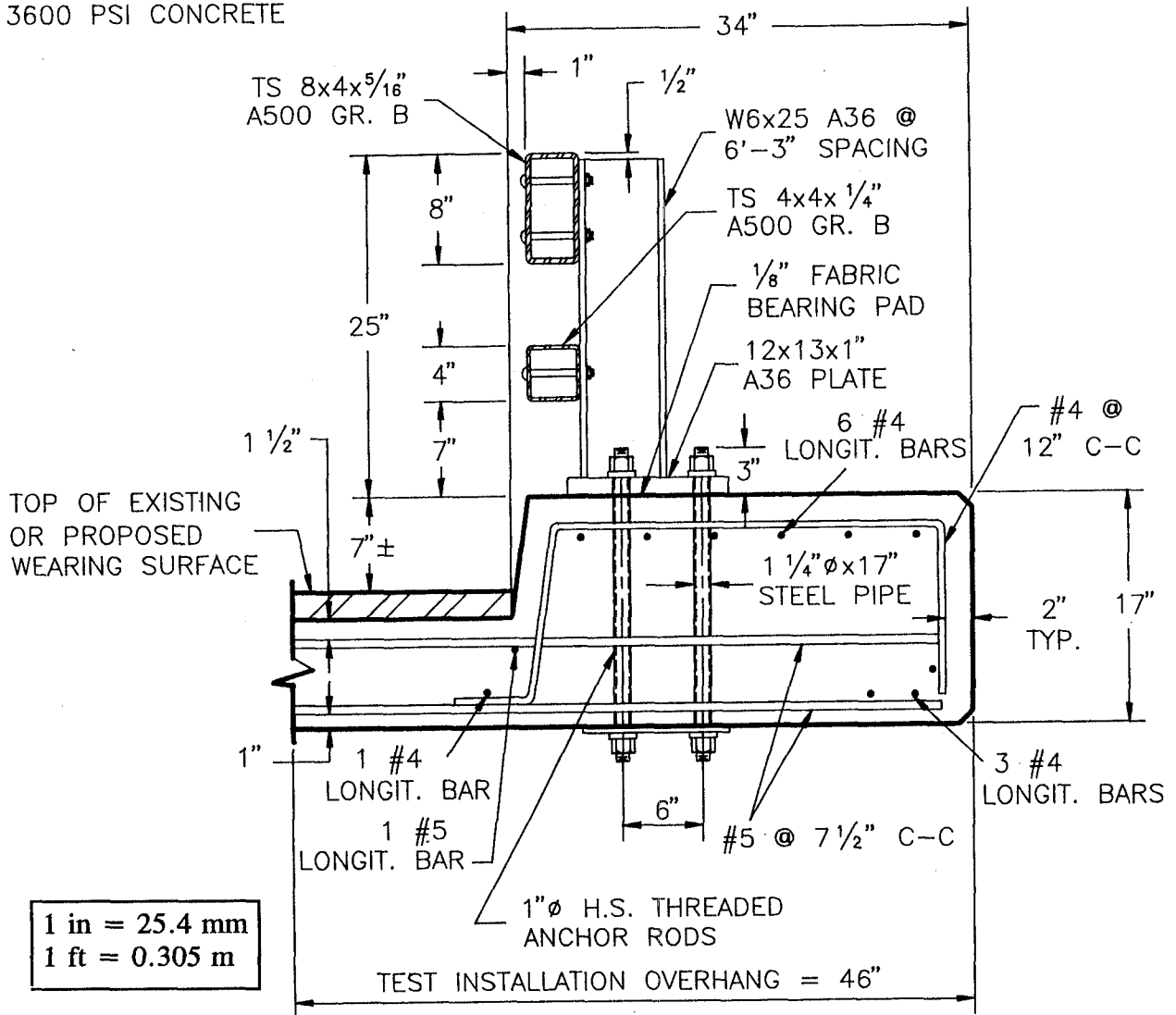
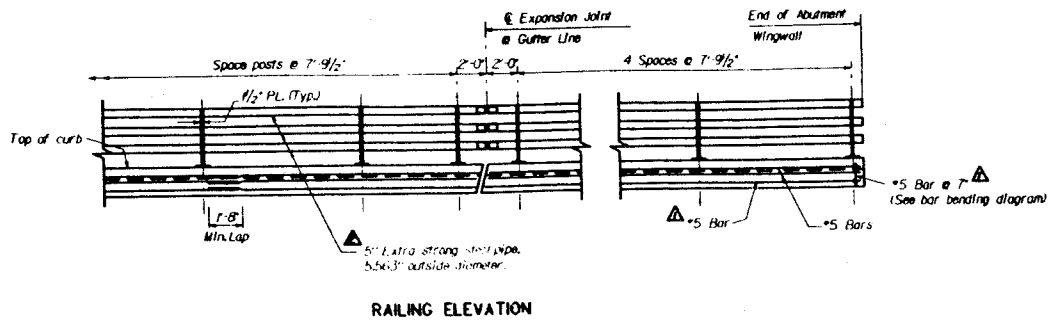
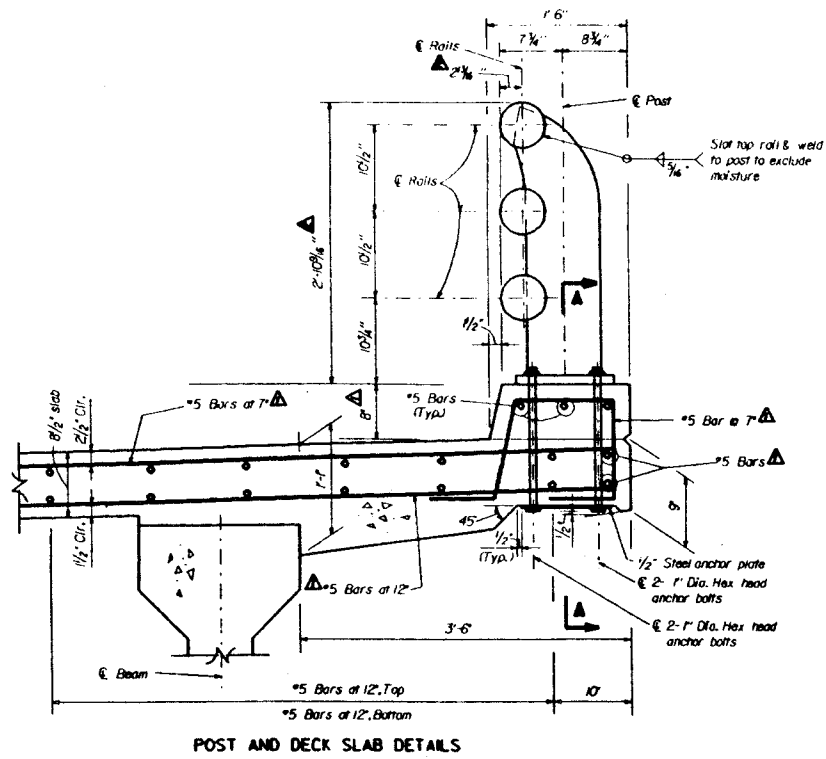


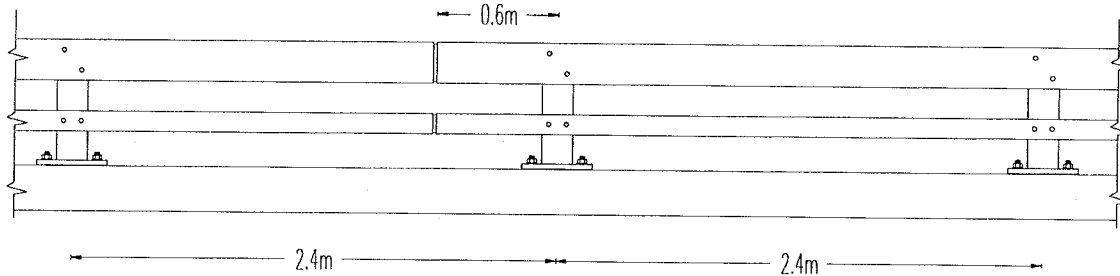
Figure B7.34. Illinois 2399 Curb-Mounted Tubular Bridge Rail (8,48,15,49).



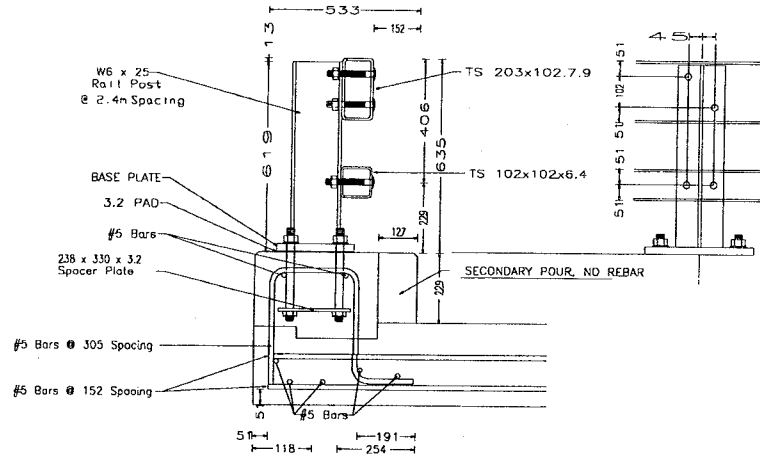
Design Details of the GWMPBR for Tests GWMP-2 and 3.

Figure B7.35. George Washington (GW) Memorial Parkway Steel Tri-Rail on Curb (50,51).

12 SPANS @ 203 mm O. C.
 0.6m OVERHANG BOTH ENDS
 TOTAL LENGTH OF INSTALLATION = 30.5m



BRIDGE RAILING ELEVATION



SECTION AT RAIL POST

Figure B7.36. New England Transportation Consortium (NETC) 2-Rail, Curb-Mounted Steel Bridge Railing (36).