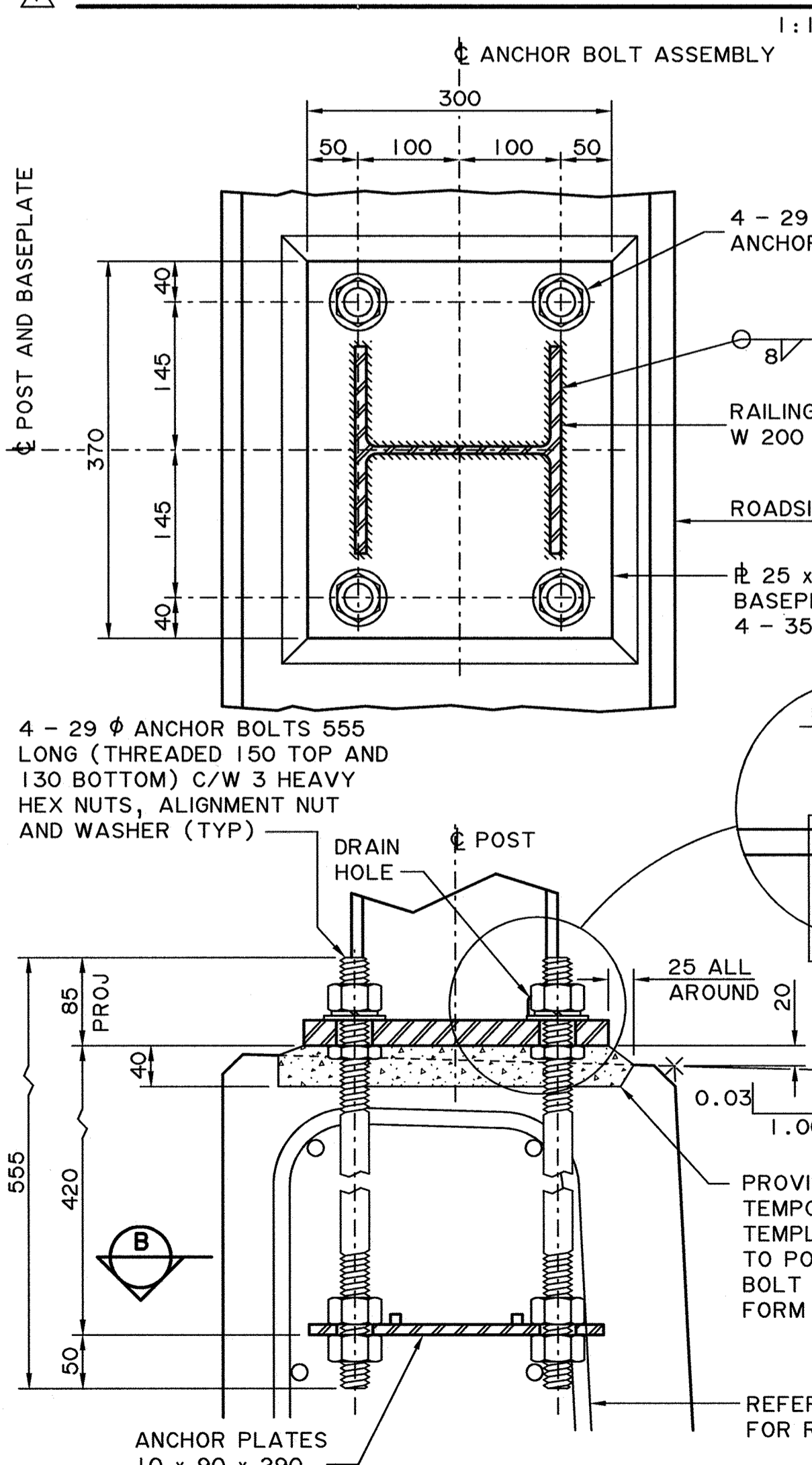
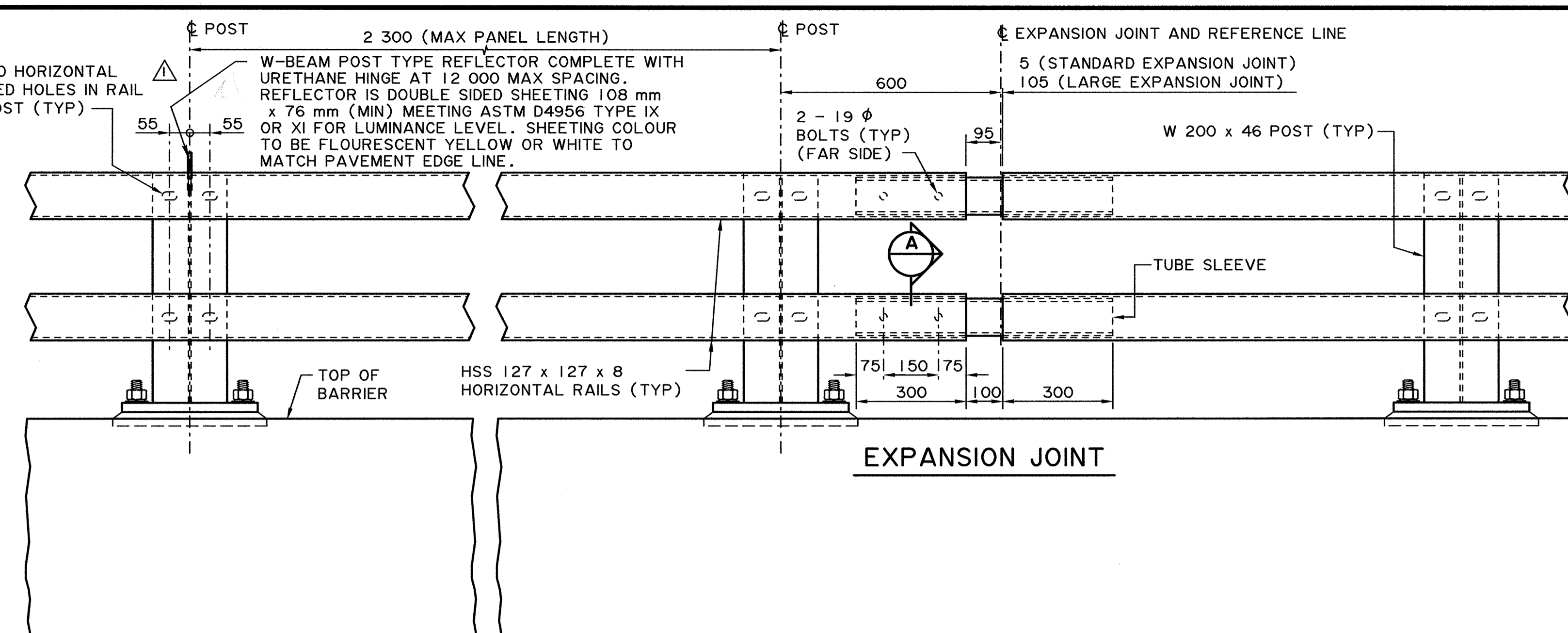


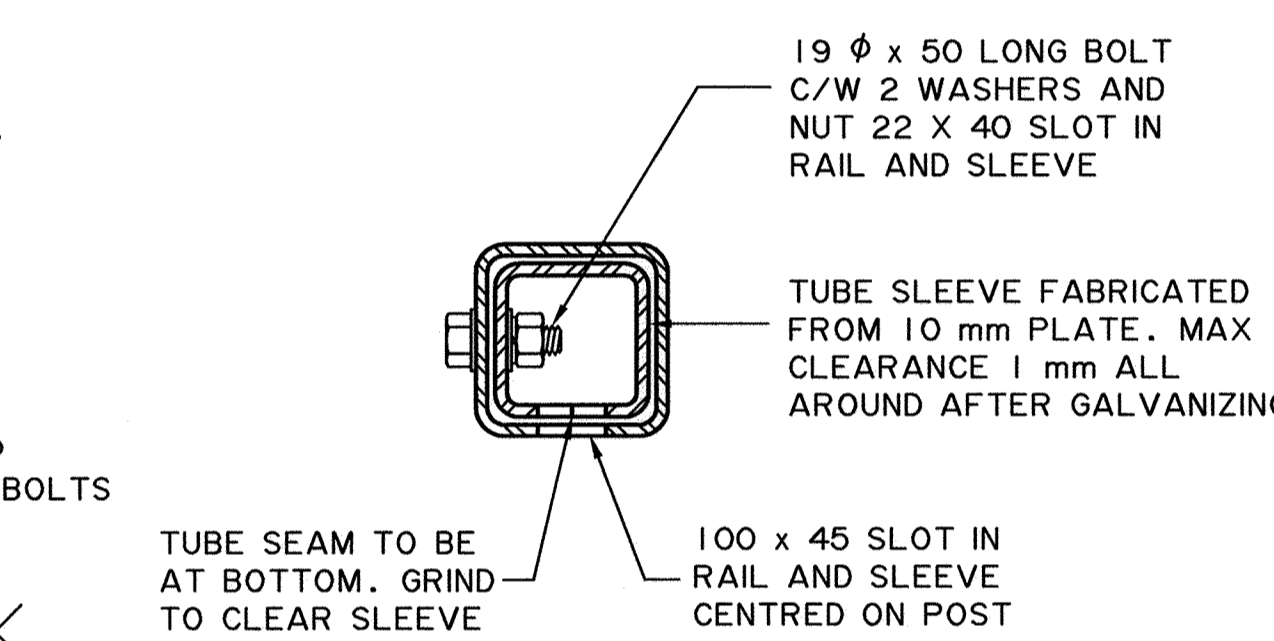
**COMBINATION BARRIER SECTION**  
1:10



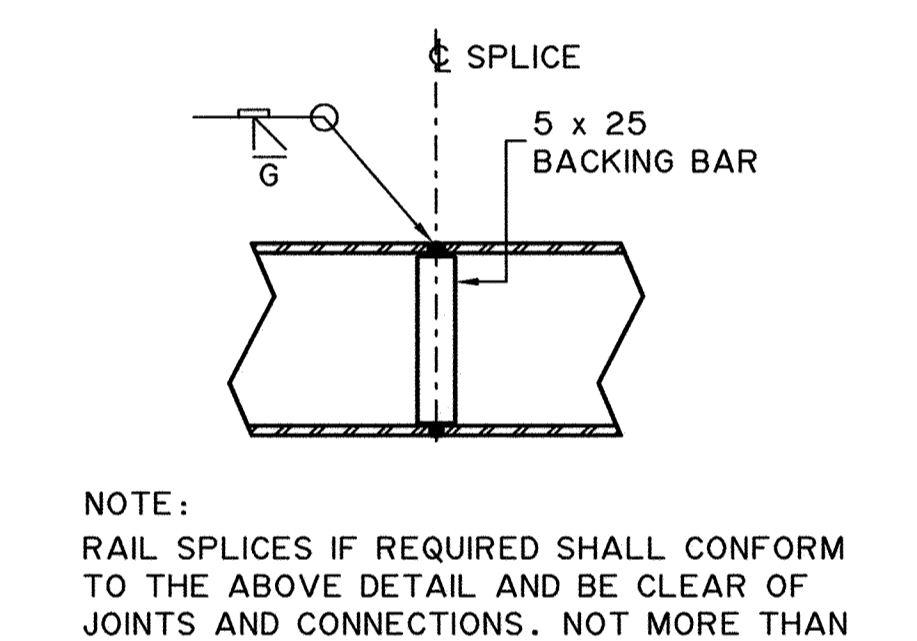
**ANCHOR BOLT ASSEMBLY DETAIL**  
1:5



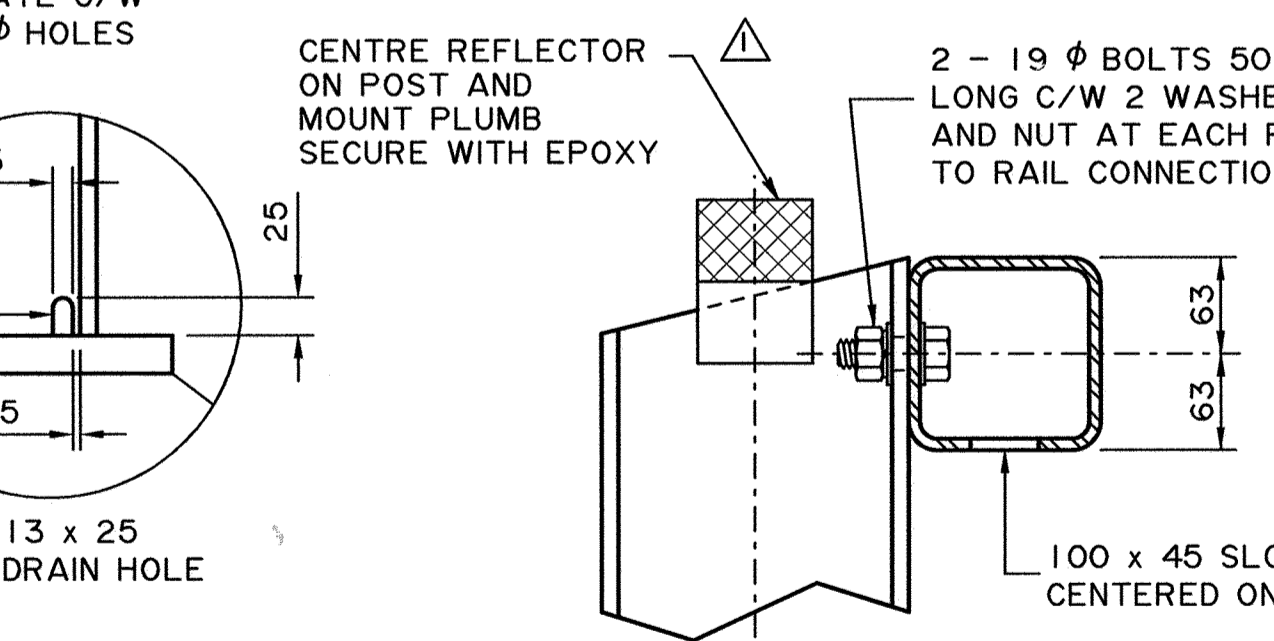
**RAIL ELEVATION**  
1:10



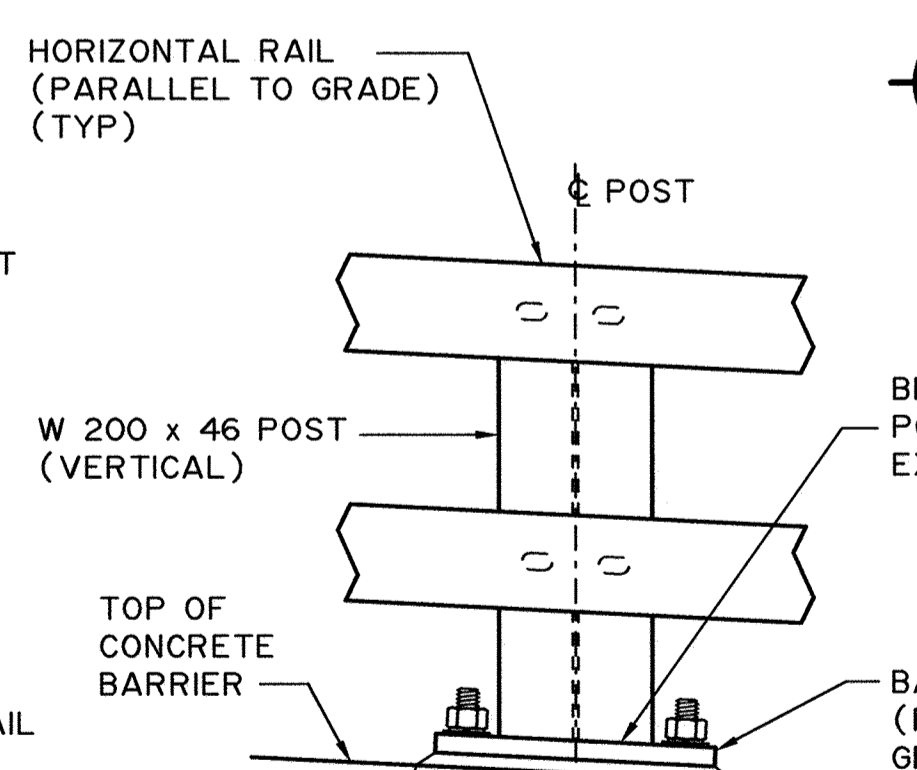
**SECTION - TUBE SLEEVE**  
1:5



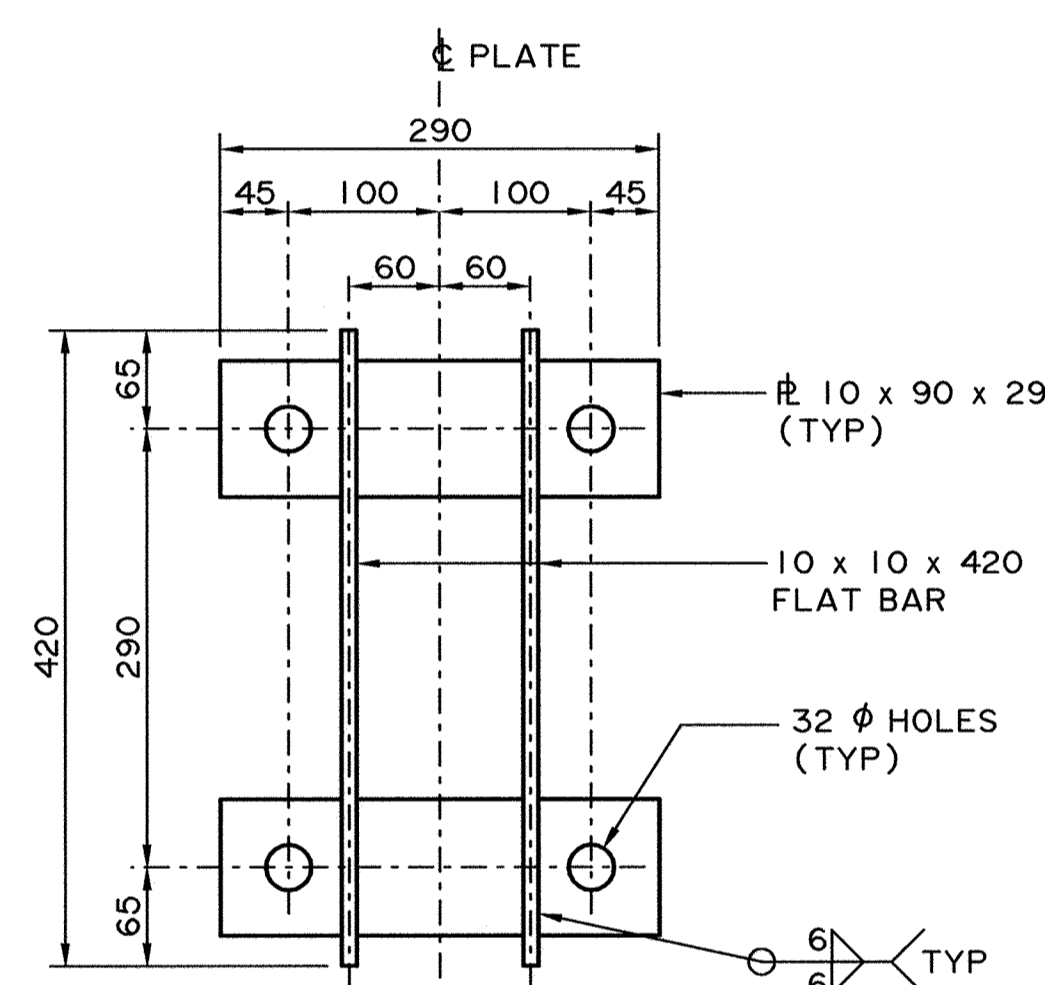
**RAIL SHOP SPLICE DETAIL**  
1:5



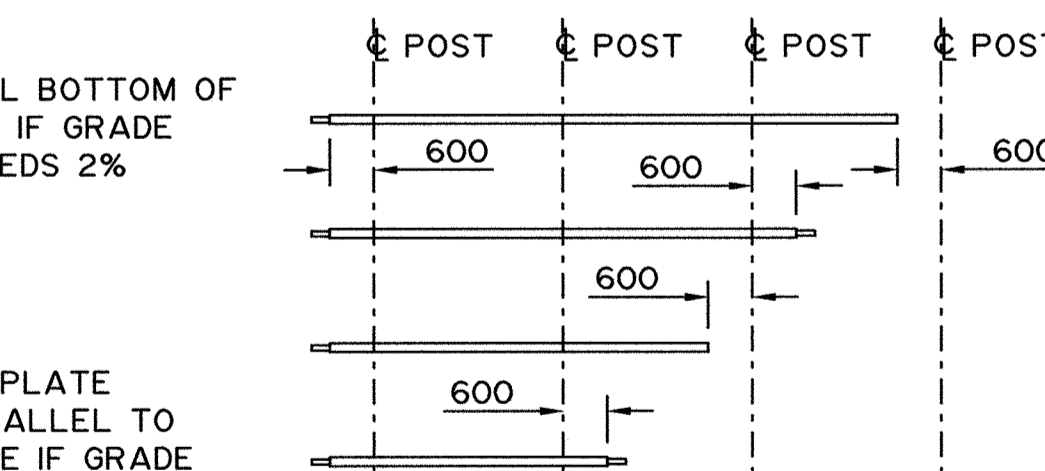
**DETAIL - POST CONNECTION**  
1:5



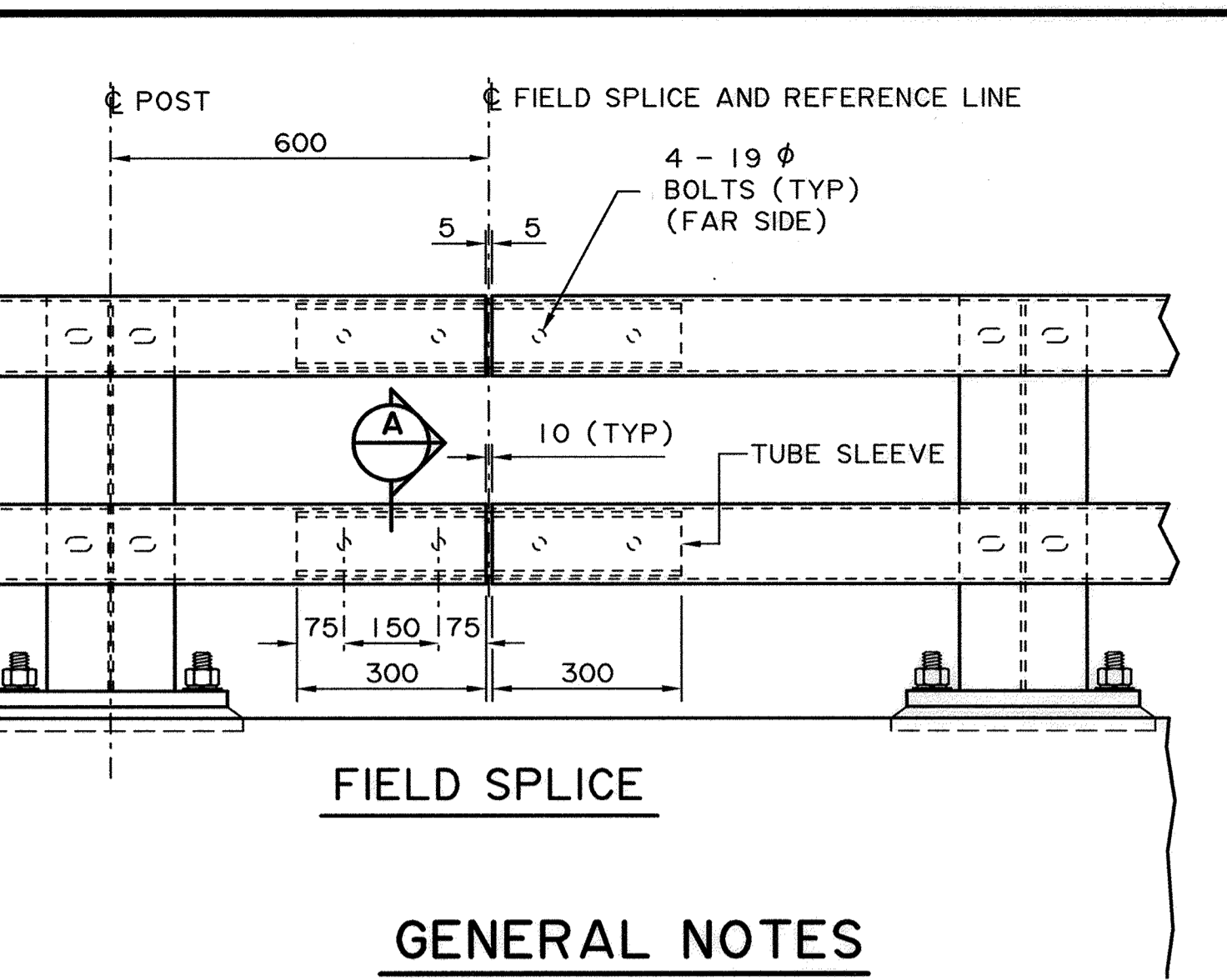
**POST BEVEL DETAIL**  
1:10



**SECTION - ANCHOR PLATE**  
1:5



**TUBE SECTION TYPES**  
(DIMENSIONS ARE TO REFERENCE LINES) NTS



**GENERAL NOTES**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. RAILING CONFIGURATION IS BASED ON A RAILING CONFIGURATION THAT HAS BEEN CRASH TESTED AND MEETS THE REQUIREMENTS OF NCHRP 350, TEST LEVEL 5 (EQUIVALENT TO PERFORMANCE LEVEL 3 OF AASHTO GUIDE SPECIFICATIONS FOR BRIDGE RAILING, 1989). THE THRIE BEAM TRANSITION MEETS THE REQUIREMENTS OF NCHRP 350, TEST LEVEL 4 (EQUIVALENT TO PERFORMANCE LEVEL 2 OF AASHTO). CHANGES MADE TO THE BARRIER ARE IN ACCORDANCE WITH CLAUSE 12.5.2.3.4 OF CAN/CSA-S6-00.
3. RAILING SHALL BE USED WITH LOWER CONCRETE BARRIER CONFIGURATION SHOWN.

**FABRICATION**

1. BRIDGERAIL SHALL CONFORM TO THE CURRENT REQUIREMENTS OF THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION SECTION 12 - BRIDGERAIL AND SECTION 14-GUARDRAIL.
2. ALL STRUCTURAL STEEL PLATE, BARS AND ROLLED SECTIONS SHALL CONFORM TO CSA-G40.20-04/G40.21-04 GRADE 350W, UNLESS NOTED OTHERWISE. GUARDRAIL POSTS SHALL CONFORM TO CSA G40.21 GRADE 300W OR ASTM A36.
3. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO G40.20-04/G40.21-04 GRADE 350W, CLASS C OR ASTM A500 GRADE C.
4. ALL ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A193 GRADE B7 UNLESS NOTED OTHERWISE. NUTS AND WASHERS SHALL CONFORM TO A194, GRADE 2H AND F436 RESPECTIVELY. GALVANIZING SHALL STRICTLY FOLLOW THE FOLLOWING PROCEDURE IN THE PRESENCE OF THE CONSULTANT:
  - BRUSH BLAST ANCHOR BOLTS TO REMOVE MILL SCALE AND OIL AFTER THREADING ENDS.
  - FLASH PICKLING NOT TO EXCEED 5 MINUTES.
  - QUICK DRY PRIOR TO HOT-DIP GALVANIZING (DO NOT STORE IN FLUX THREADING ENDS).
5. ALL BOLTED CONNECTIONS UNLESS NOTED OTHERWISE SHALL CONFORM TO ASTM A325. NUTS AND WASHERS SHALL CONFORM TO A536, GRADE DH AND F436 RESPECTIVELY.
6. ALL WELDING SHALL CONFORM TO CURRENT AWS SPECIFICATION D1.5.
7. ALL MATERIALS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123/A123M AND ASTM F2329 UNLESS NOTED OTHERWISE.
8. THE BOTTOM SURFACE OF THE BASEPLATES SHALL BE COATED WITH AN APPROVED COATING SYSTEM, SUITABLE FOR APPLICATION ON GALVANIZED STEEL, TO PREVENT CONTACT BETWEEN THE ZINC AND THE GROUT. THE COLOUR SHALL BE MEDIUM GREY.
9. TUBE SECTIONS SHALL BE FABRICATED IN THE CONFIGURATIONS SHOWN IN 'TUBE SECTION TYPES.'
10. THE MAXIMUM SPACING BETWEEN RAIL EXPANSION JOINTS SHALL BE 45 METRES, UNLESS SPECIFIED OTHERWISE ON SITE SPECIFIC DRAWINGS. RAIL EXPANSION JOINTS SHALL BE PROVIDED AT ALL DECK JOINT LOCATIONS.
11. POST BASEPLATES SHALL BE PLACED ON BEVEL IF ROADWAY GRADE EXCEEDS 2% (SEE POST BEVEL DETAIL).
12. ALL W-BEAM AND THRIE BEAM GUARDRAIL (INCLUDING THRIE BEAM TERMINAL CONNECTOR AND W-THRIE BEAM TRANSITION SECTION) SHALL HAVE A MINIMUM YIELD STRENGTH OF 345 MPa.
13. TIMBER POSTS AND SPACERS SHALL BE COAST DOUGLAS FIR OR PACIFIC COAST HEMLOCK CONFORMING TO THE STRESS GRADE "SELECT STRUCTURAL POSTS AND TIMBERS" (NLGA PARAGRAPH 131 a).

**ERECTION**

1. ALL A325 AND ANCHOR BOLTS SHALL BE TIGHTENED AN ADDITIONAL 1/3 TURN OF THE NUT PAST THE "SNUG-TIGHT" CONDITION.
2. ALL POSTS SHALL BE VERTICAL.
3. ALL DIMENSIONS ARE MEASURED PARALLEL TO TOP OF CONCRETE BARRIER AND ALONG THE CENTRELINE OF ANCHOR BOLT ASSEMBLIES.
4. LINE AND ELEVATION OF RAIL SHALL BE SET BY INSTRUMENT.

• WORK THESE DRAWINGS TOGETHER: S-1702, S-1703, S-1704 AND S-1705

WS 2012-01-18 S1702x06-RV1.DGN

	PERMIT TO PRACTICE UMA ENGINEERING LTD. PERMIT NUMBER: P 329 ORIGINAL STAMPED AND SIGNED BY: D. C. OLIVER ON: MAY 8, 2006 <small>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</small>	DESIGNER 	CHECKER 	RECOMMENDED DIRECTOR BRIDGE ENGINEERING TOM LOO	APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH ALLAN KWAN	Alberta INFRASTRUCTURE AND TRANSPORTATION <b>PL-3 DOUBLE TUBE TYPE BRIDGERAIL BRIDGERAIL DETAILS</b>
	DATE _____	DATE _____	DATE MAY 23, 2006	DATE MAY 23, 2006	DATE MAY 23, 2006	DATE MAY 23, 2006