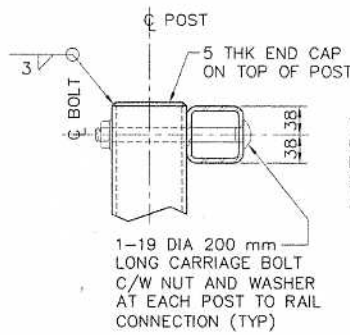
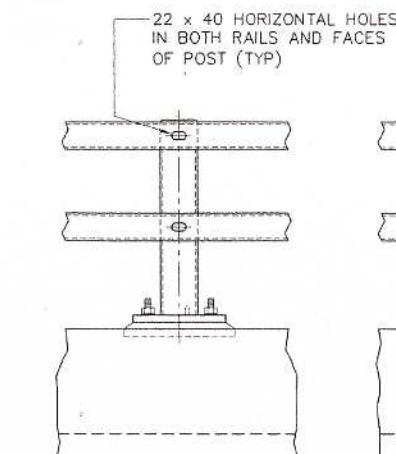
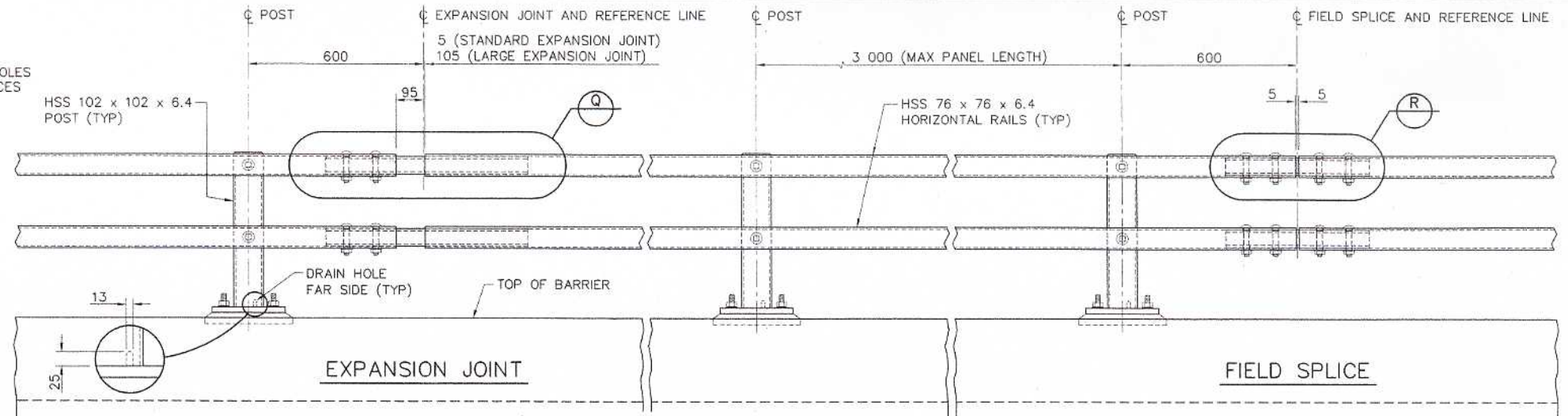


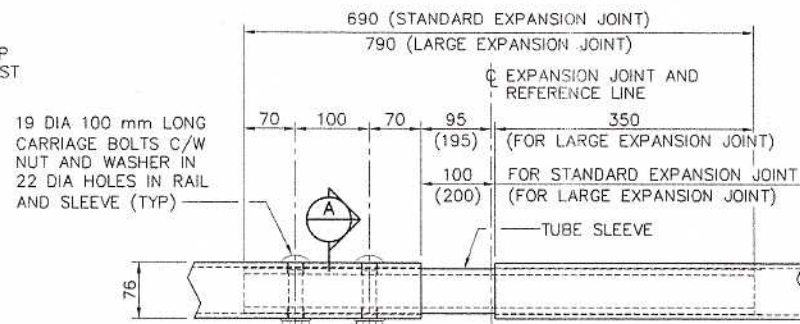
COMBINATION BARRIER SECTION
1:10



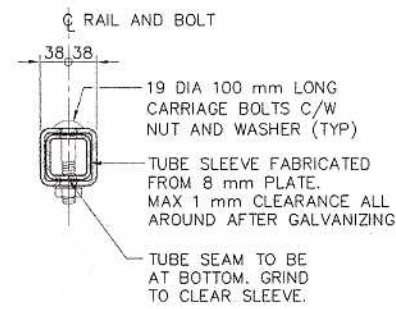
P DETAIL
1:5



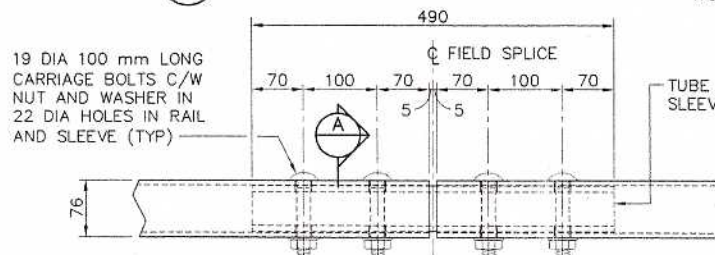
RAIL ELEVATION
1:10



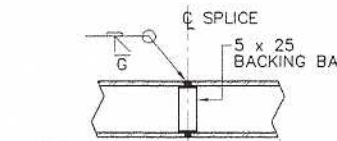
Q DETAIL - EXPANSION JOINT
1:5



A SECTION - TUBE SLEEVE
1:5

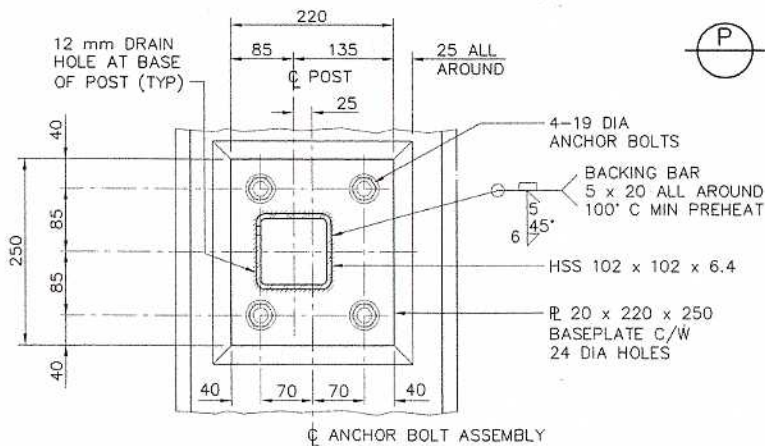


R DETAIL - FIELD SPLICE
1:5

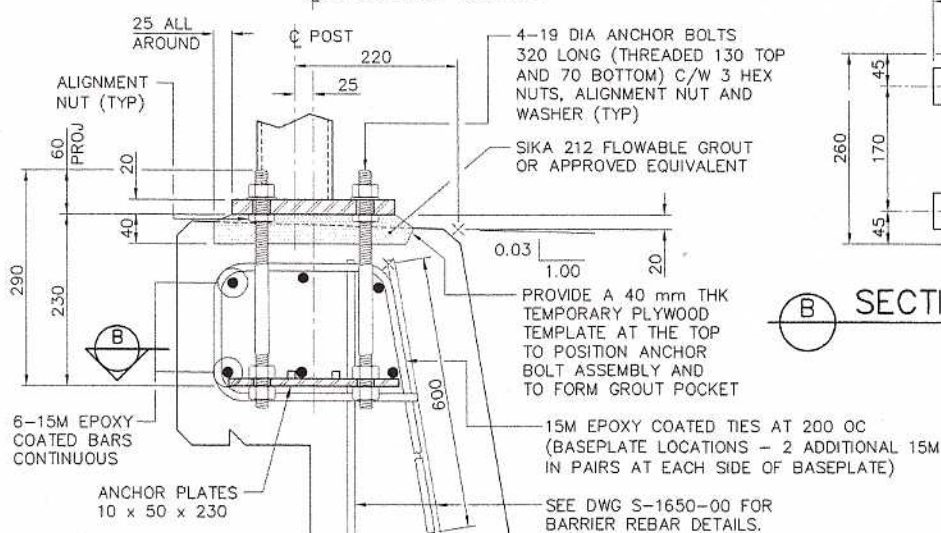


RAIL SHOP SPLICE DETAIL
1:5

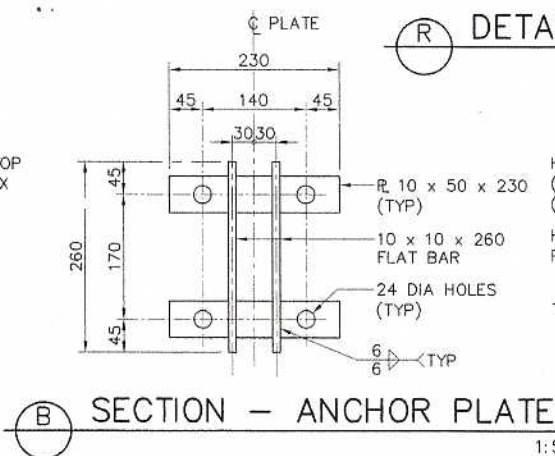
NOTE: RAIL SPLICES IF REQUIRED SHALL CONFORM TO THE ABOVE DETAIL AND BE CLEAR OF JOINTS AND CONNECTIONS, NOT MORE THAN ONE SPLICE PER TUBE SECTION.



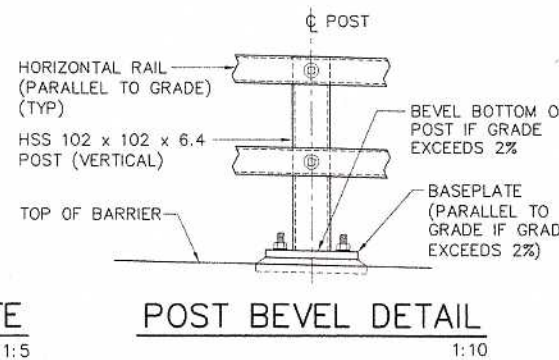
ANCHOR BOLT ASSEMBLY



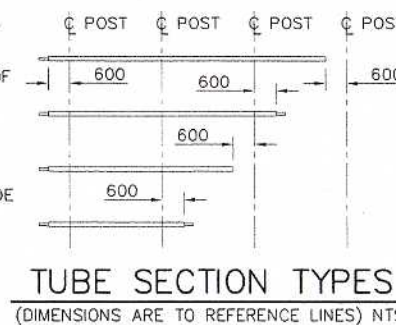
ANCHOR BOLT ASSEMBLY DETAIL
1:5



B SECTION - ANCHOR PLATE
1:5



POST BEVEL DETAIL
1:10



TUBE SECTION TYPES
(DIMENSIONS ARE TO REFERENCE LINES) NTS

GENERAL NOTES

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

FABRICATION

1. BRIDGERAIL SHALL CONFORM TO CURRENT REQUIREMENTS OF THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION SECTION 12 - BRIDGERAIL.
2. ALL STRUCTURAL STEEL PLATE AND BARS SHALL CONFORM TO CSA-G40.20-04/G40.21-04 GRADE 300W.
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. 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 OR ACID RINSE).

5. ALL CARRIAGE BOLTS SHALL CONFORM TO SAE J429 GRADE 5. NUTS AND WASHERS SHALL CONFORM TO A536, GRADE DH AND F436 RESPECTIVELY.
6. ALL WELDING SHALL CONFORM TO CURRENT AWS SPECIFICATION D1.5.
7. POST BASE PLATE SHALL BE PLACED ON BEVEL IF ROADWAY GRADE EXCEEDS 2% (SEE POST BEVEL DETAIL).
8. ALL MATERIALS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH CSA-G164-M92 UNLESS NOTED OTHERWISE.
9. 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.

10. TUBE SECTIONS SHALL BE FABRICATED IN THE CONFIGURATIONS SHOWN IN 'TUBE SECTION TYPES'.
11. 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.

ERECTION

1. ALL CARRIAGE 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-1700-06 AND S-1701-06

UMA AECO

PERMIT TO PRACTICE
UMA ENGINEERING LTD.
Signature: *D. Lepper*
Date: *May 8, 2006*
PERMIT NUMBER: P329
The Association of Professional Engineers, Geologists and Geophysicists of Alberta.

DESIGNER
PROFESSIONAL ENGINEER ALBERTA
Signature: *D. Lepper*
DATE: *4 MAY 2006*

CHECKER
PROFESSIONAL ENGINEER ALBERTA
Signature: *D. Lepper*
DATE: *May 4, 2006*

REV	DATE	REVISIONS	BY

RECOMMENDED DIRECTOR BRIDGE ENGINEERING
Signature: *Tom Leo*
APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH
Signature: *Allan...*
DATE: *May 23, 2006*

Alberta INFRASTRUCTURE AND TRANSPORTATION
PL-2 COMBINATION BARRIER BRIDGERAIL DETAILS
DATE: 2005-11-01
SHEET: 1 of 2
DRAWING: S-1700-06