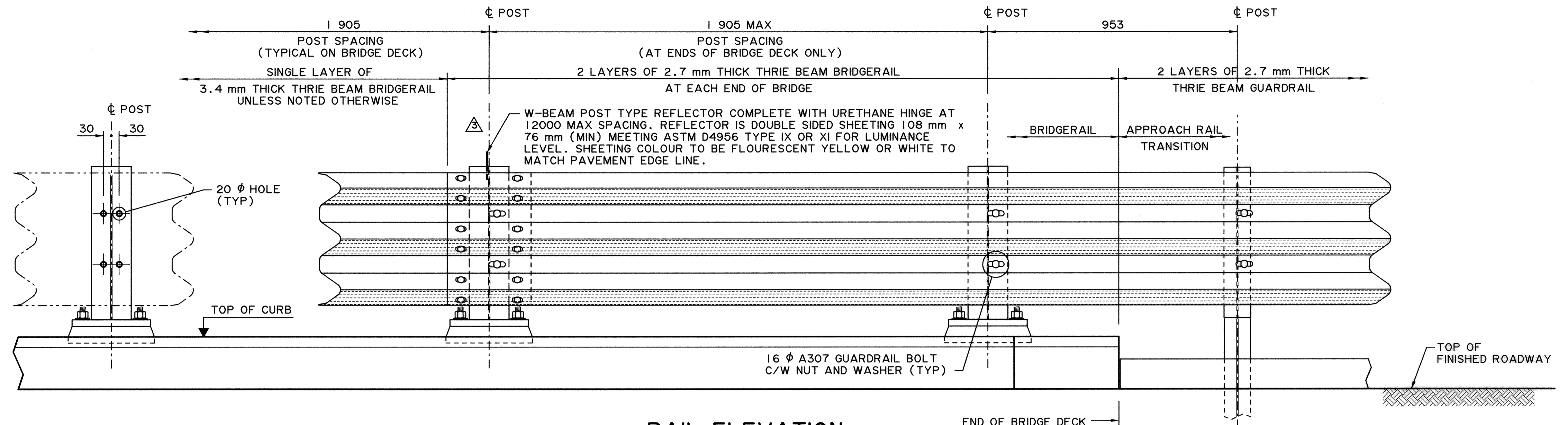


**RAIL SECTION**  
1:10



**RAIL ELEVATION**  
1:10

**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 PERFORMANCE LEVEL 2 OF THE AASHTO GUIDE SPECIFICATIONS FOR BRIDGE RAILING, 1989.
3. RAILING SHALL BE USED WITH CURB CONFIGURATION SHOWN.
4. DESIGN OF DECK AND CURB REBAR SHALL BE CARRIED OUT ON A SITE SPECIFIC BASIS TO DEVELOP THE CAPACITY OF THE BRIDGERAIL POSTS, BASED ON  $F_y = 350 \text{ MPa}$ .

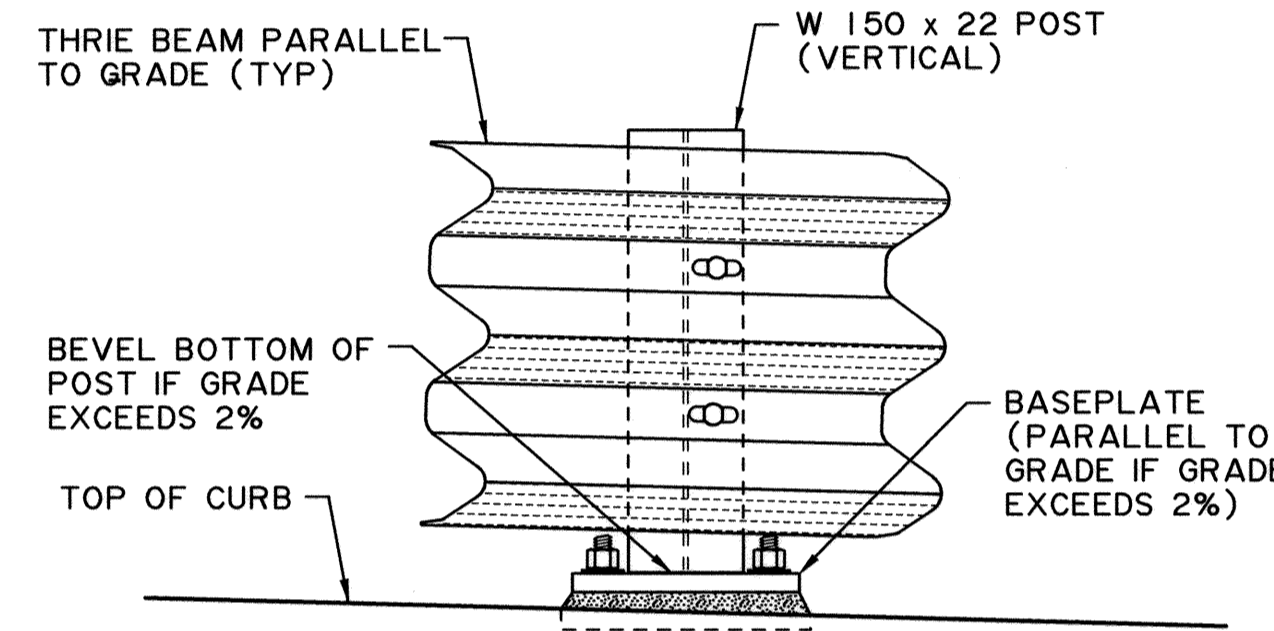
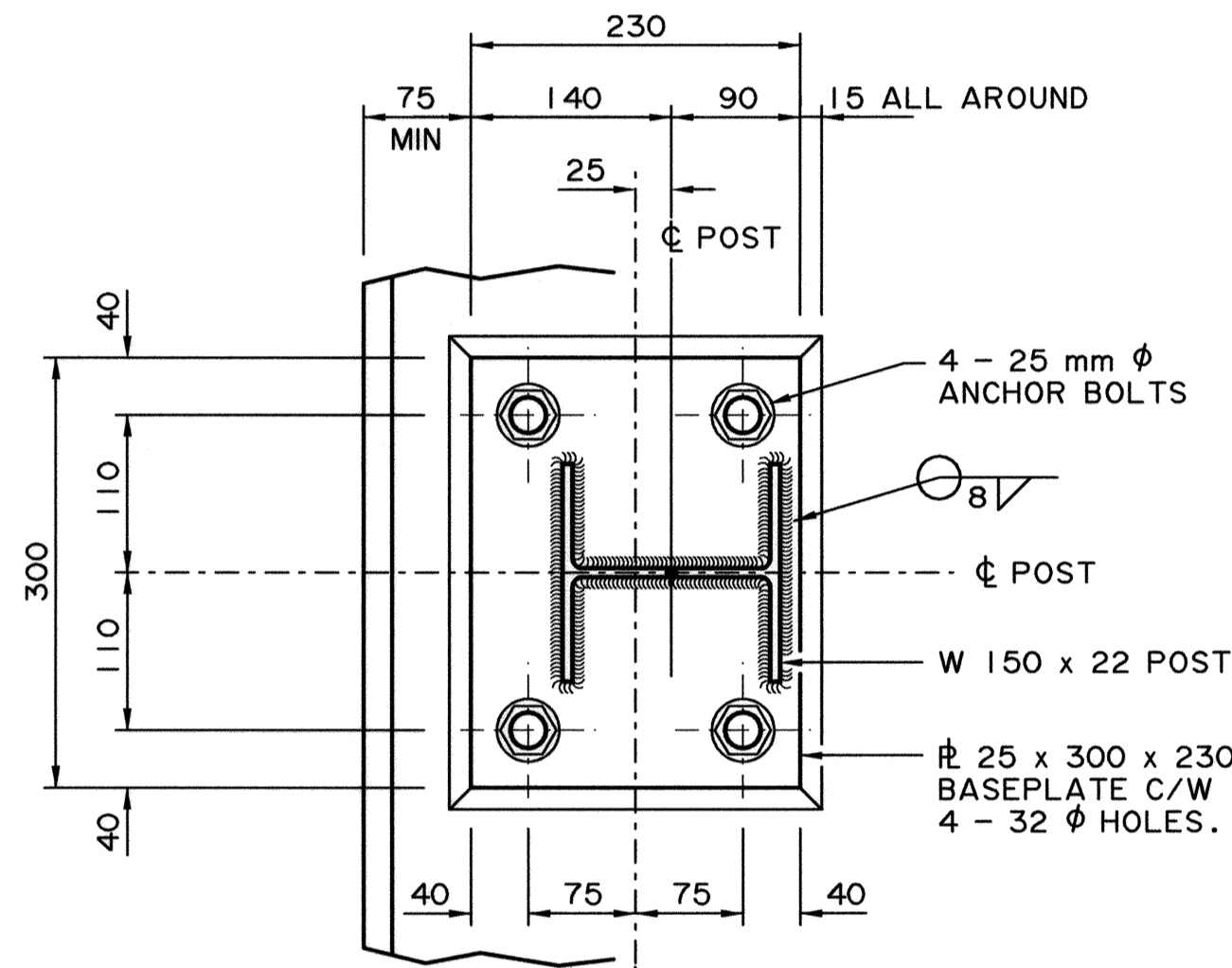
**FABRICATION**

1. BRIDGERAIL INCLUDING APPROACH RAIL TRANSITION SHALL CONFORM TO THE CURRENT REQUIREMENTS OF THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION SECTION 12 - BRIDGERAIL AND SECTION 14 - GUARDRAIL.
2. ALL PLATE STEEL AND STRUCTURAL SHAPES SHALL CONFORM TO CSA G40.21 GRADE 350W, OR ASTM A36.
3. ALL ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A193 GRADE B7 ( $F_y = 725 \text{ MPa}$ ,  $F_u = 860 \text{ MPa}$ ). ALL NUTS AND WASHERS SHALL CONFORM TO A325. GALVANIZING SHALL STRICTLY FOLLOW THE FOLLOWING PROCEDURE WITH 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).
4. 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.
5. TIMBER POSTS AND SPACERS SHALL BE COAST DOUGLAS FIR, PACIFIC COAST HEMLOCK OR LODGEPOLE PINE CONFORMING TO THE STRESS GRADE "SELECT STRUCTURAL POSTS AND TIMBERS" (NLGA PARAGRAPH 131 a).
6. ALL WELDING SHALL CONFORM TO CURRENT AWS SPECIFICATION D1.5.
7. POST BASEPLATES SHALL BE PLACED ON BEVEL IF ROADWAY GRADE EXCEEDS 2% (SEE POST BEVEL DETAIL).
8. ALL STEEL MATERIALS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 / A123M AND ASTM F2329 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.

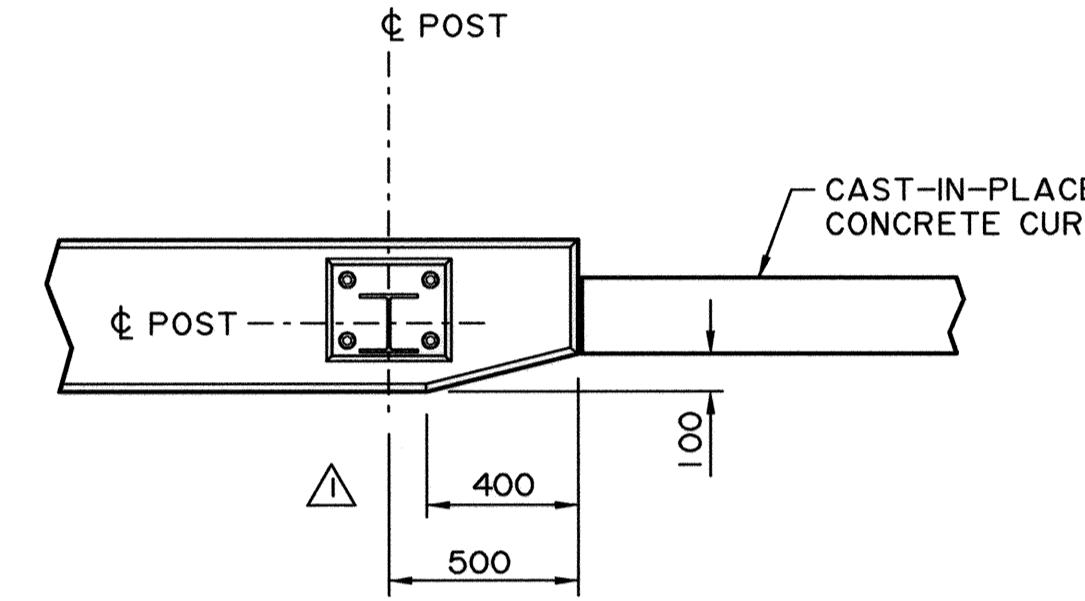
**ERECTION**

1. GUARDRAIL BOLTS SHALL BE TIGHTENED AN ADDITIONAL 1/3 TURN OF THE NUT PAST THE "SNUG-TIGHT" CONDITION EXCEPT FOR ANCHOR BOLTS WHICH SHALL BE TIGHTENED AN ADDITIONAL 1/2 TURN OF THE NUT PAST THE "SNUG TIGHT" CONDITION.
2. ALL POSTS SHALL BE VERTICAL.
3. ALL DIMENSIONS ARE MEASURED PARALLEL TO TOP OF CURB AND ALONG THE CENTRELINE OF ANCHOR BOLT ASSEMBLIES.
4. LINE AND ELEVATION OF RAIL SHALL BE SET BY INSTRUMENT.
5. ALL NON-STANDARD GUARDRAIL LENGTHS SHALL BE SAW CUT TO SUIT AND ALL NON-STANDARD GUARDRAIL HOLES SHALL BE DRILLED. FLAME CUTTING OF GUARDRAIL SHALL NOT BE ALLOWED. APPLY TWO COATS OF ZINC RICH PAINT ON AREAS DAMAGED BY SAW CUTTING OR DRILLING.

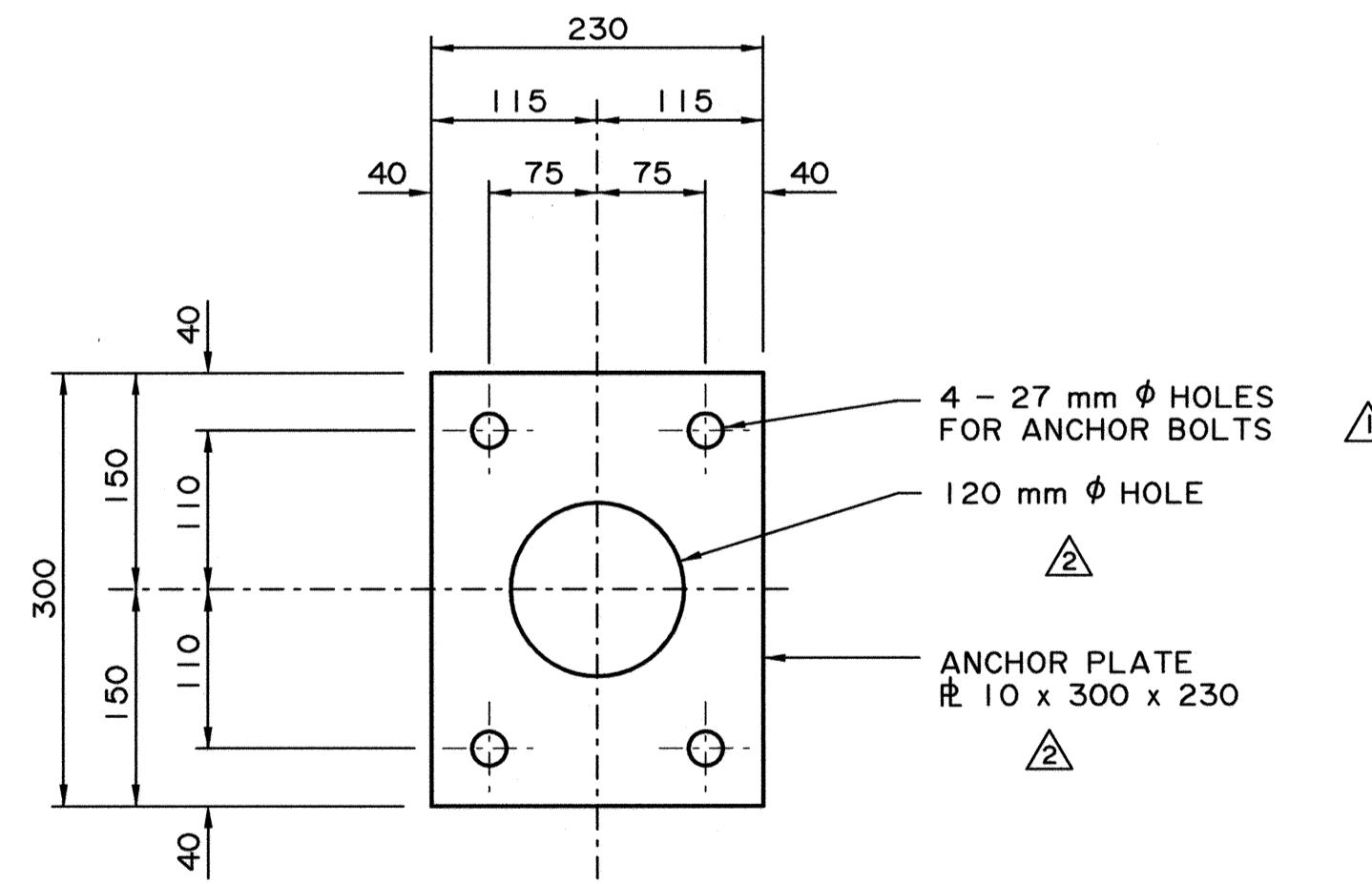
• WORK THESE DRAWINGS TOGETHER: S-1648 AND S-1649



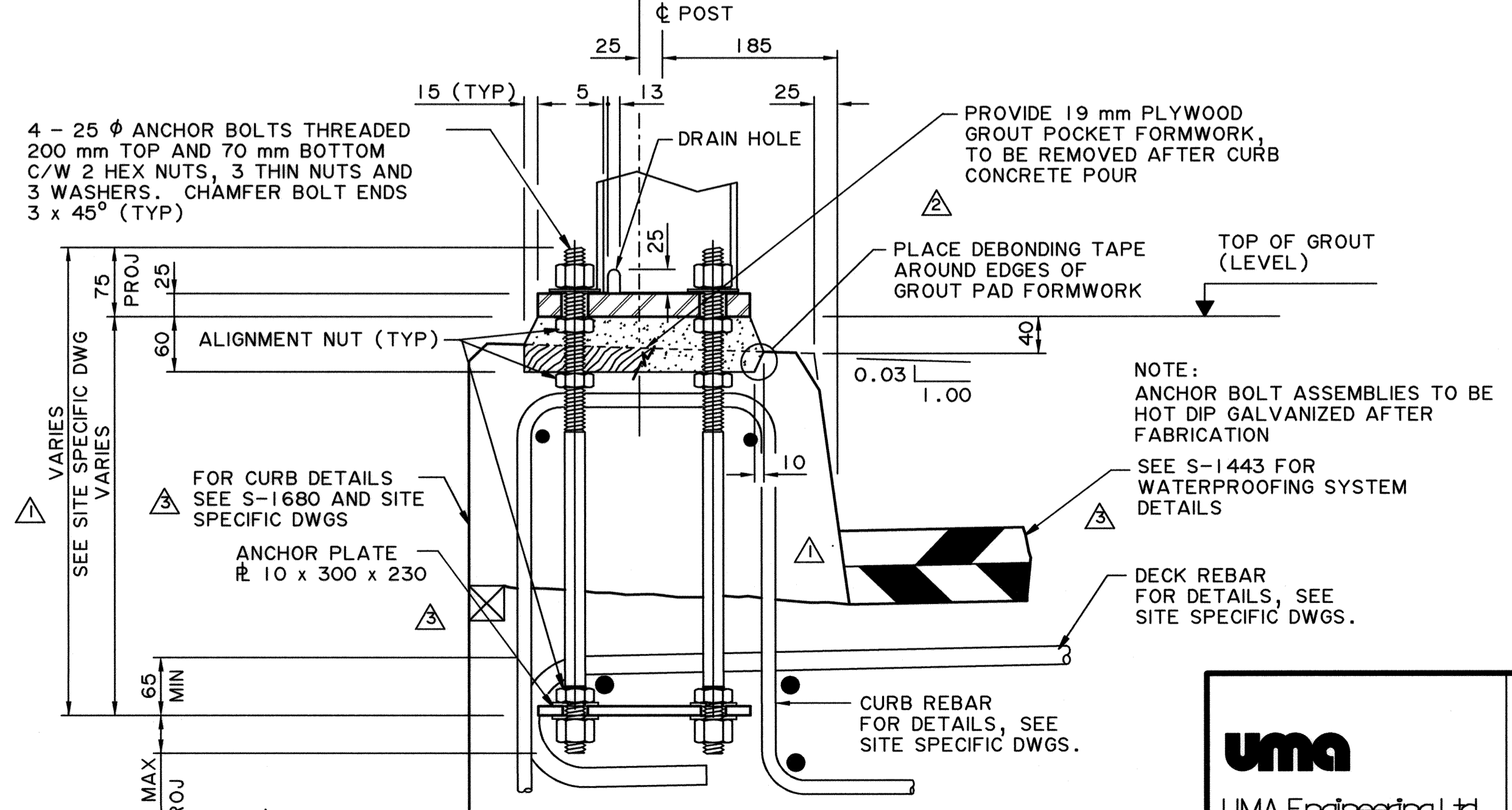
**POST BEVEL DETAIL**  
1:10



**BRIDGE CURB END DETAIL**  
1:20



**ANCHOR PLATE DETAIL**  
1:5



**ANCHOR BOLT ASSEMBLY DETAIL**  
1:5

(ANCHOR BOLT ASSEMBLY SHALL BE MINIMUM 25 CLEAR FROM BOTTOM OF DECK)

S1648X00.mxd 2015-02-23

<p>UMA Engineering Ltd. Engineers, Planners &amp; Surveyors</p>	<p>PERMIT TO PRACTICE UMA ENGINEERING LTD. PERMIT NUMBER: P 5778 ORIGINAL SIGNED AND STAMPED BY: <b>ART WASHUTA</b> ON: <b>NOVEMBER 21, 2000</b> The Association of Professional Engineers, Geologists and Geophysicists of Alberta</p>	<p>DESIGNER PROFESSIONAL ENGINEER ALBERTA ORIGINAL STAMPED AND SIGNED BY: <b>R. J. RAMSAY</b> ON: <b>NOV 21, 2000</b></p>	<p>PROFESSIONAL ENGINEER ALBERTA ORIGINAL STAMPED AND SIGNED BY: <b>D. B. SERINK</b> ON: <b>NOV 21, 2000</b></p>	<p>2012-02-23 ACP &amp; REFLECTORS SHOWN, GENERAL NOTES</p>	<p>2007-02-14 GEN NOTES, RAIL &amp; CURB HEIGHT, ANCHOR ASSEMBLY DETAIL</p>	<p>2004-03-01 GEN NOTES, CURB END &amp; ANCHOR BOLT ASSEMBLY DETAILS, RAIL SECTION</p>	<p>RECOMMENDED DIRECTOR BRIDGE ENGINEERING</p>	<p>ORIGINAL SIGNED BY <b>REG QUINTON</b></p>	<p><b>Alberta INFRASTRUCTURE</b></p> <p><b>PL-2 THRIE BEAM ON CURB BRIDGERAIL BRIDGERAIL DETAILS</b></p>
				<p>APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH</p>	<p>ORIGINAL SIGNED BY <b>TIM HAWNT</b></p>	<p>AI BAR CODE</p>	<p>DATE 2000-06-21</p>	<p>SHEET 1 of 2</p>	