

**NOTES:**

- SYSTEM CONFIGURATION MEETS THE REQUIREMENTS OF NCHRP 350.
- RAIL ELEMENTS SHALL BE HOLLOW STRUCTURAL SECTIONS GRADE 350WT, CLASS C. RAIL ELEMENT SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH IMPACT TEST REQUIREMENTS OF 27 JOULES AT TEST TEMPERATURE OF \_\_\_\_ °C. (ASTM A500 GRADE B OR C STEEL MAY BE SUBSTITUTED FOR GRADE 350WT PROVIDED THAT THE CHARPY V-NOTCH IMPACT TEST REQUIREMENTS ARE VERIFIED BY THE SUBMISSION OF TEST DOCUMENTATION).
- POSTS AND PLATES SHALL BE GRADE 350WT.
- THE NOTCH TOUGHNESS REQUIREMENTS FOR POSTS AND PLATES SHALL BE THE SAME AS THOSE SPECIFIED IN NOTE 2.
- ANCHOR STUDS, WASHERS, AND NUTS SHALL CONFORM TO ASTM A449.
- FULL THREAD STUDS FOR FASTENING GUIDE RAILS TO POST SHALL CONFORM TO ASTM A108. LOCK NUTS SHALL BE ACCORDING TO ASTM A563. WASHERS SHALL BE ACCORDING TO ASTM F436.
- RAILS SHALL BE SUPPLIED IN LENGTHS TO BE ATTACHED TO A MINIMUM OF THREE (3) POSTS EXCEPT WHEN THE WINGWALL LENGTH OF A BRIDGE WITH EXPANSION JOINTS DOES NOT PERMIT. IN THIS CASE, THE RAIL LENGTH SHALL BE ATTACHED TO TWO (2) POSTS ON THE WINGWALL.
- GALVANIZING ON MATING SURFACES OF RAILS TO HAVE UNIFORM THICKNESS NOT EXCEEDING 0.15mm TO ENSURE SLIDING FIT.
- RAILS, POSTS, RAIL SPLICES, AND END CAPS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- BOLTS, ANCHOR STUDS, PLATES, WASHERS, AND NUTS SHALL BE HOT-DIP GALVANIZED. LOCK NUTS SHALL BE ZINC PLATED ACCORDING TO ASTM-B695.
- RAILS SHALL BE PREBENT TO FOLLOW ROAD CURVATURE WHERE RADIUS IS LESS THAN 150 METRES.
- RAIL POSTS SHALL BE SET PERPENDICULAR TO GRADE.
- RAILS MAY BE CUT AS REQUIRED IN THE FIELD, CUT TO BE SURFACE TREATED WITH A ZINC TOUCH-UP SOLDER, GALVAGUARD OR AN APPROVED EQUIVALENT.
- WHEN CONNECTING TO EXISTING RAILING, RAILS MUST BE MADE CONTINUOUS AND POST SPACINGS TO BE DETERMINED WITH REFERENCE TO EXISTING POSTS.
- GROUT SHALL NOT BE USED UNDER BASE PLATES. THIN PAD OF EPOXY GROUT MAY BE USED WHEN REQUIRED FOR FILLING THE VOIDS UNDER THE BASE PLATE.
- POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT CONDITION AND GIVEN AN ADDITIONAL 1/3 OF A TURN.
- BOLTS IN RAIL SPLICES SHALL BE TIGHTENED TO A CONDITION THAT WILL ALLOW RAIL MOVEMENT.
- STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500 MPA.
- CHASES ARE REQUIRED ON HIGH AND LOW SIDE OF CROSS FALL.
- PRIOR TO ASSEMBLY, APPLY LOCTITE 242, OR APPROVED EQUIVALENT THREAD-LOCKING FLUID, TO THE BOLT THREADS AT THE NUT ENGAGEMENT AREA, PER MANUFACTURER'S SPECIFICATION.

**ADDITIONAL NOTES FOR PICKET:**

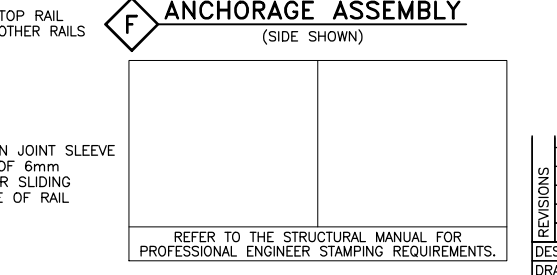
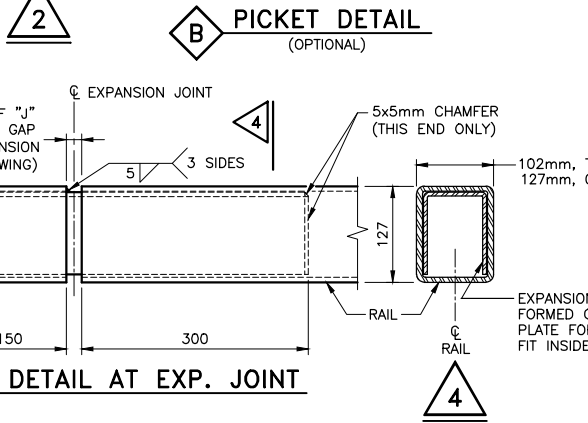
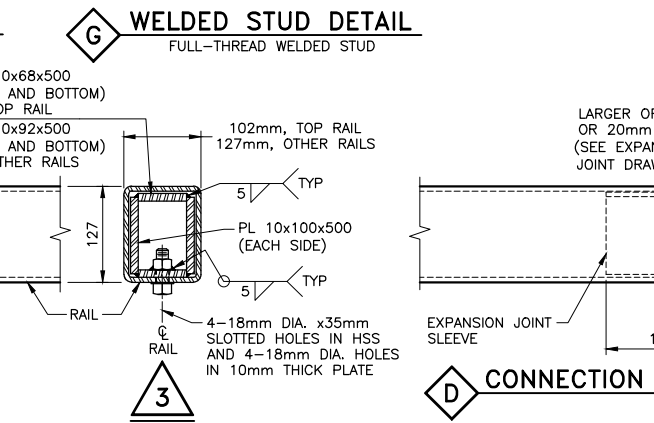
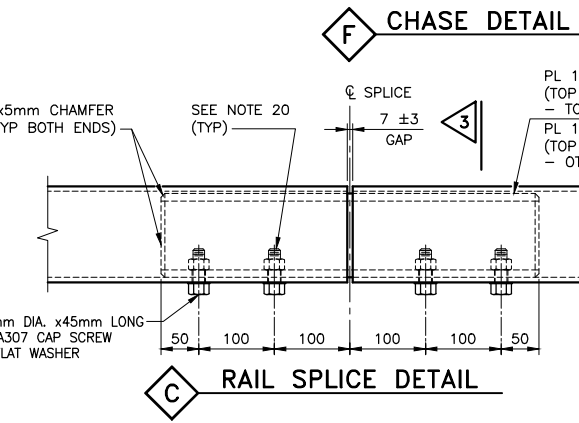
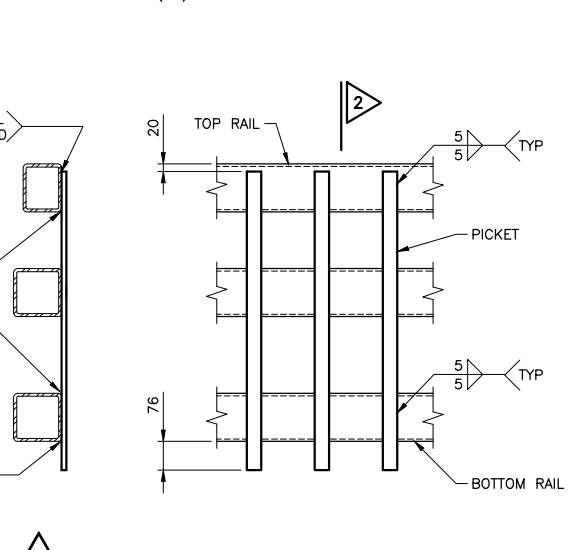
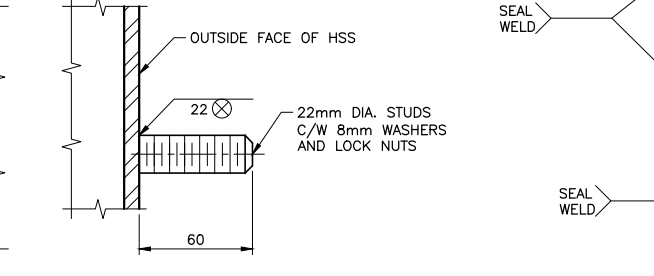
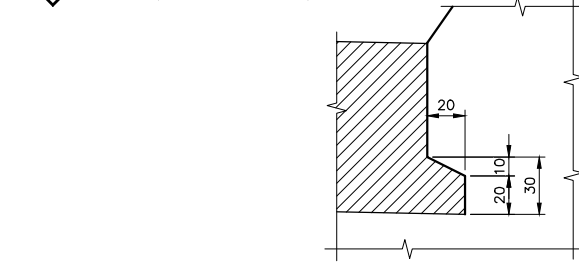
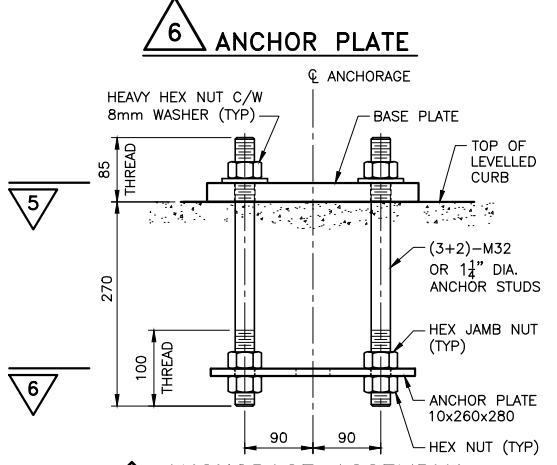
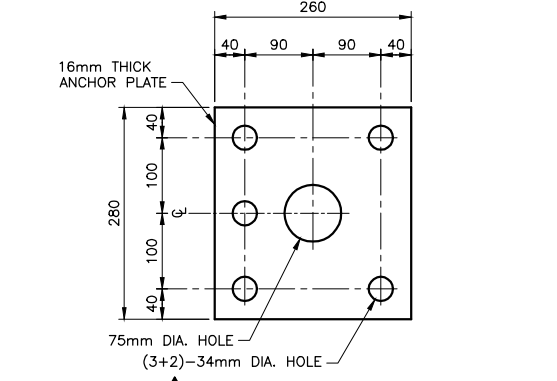
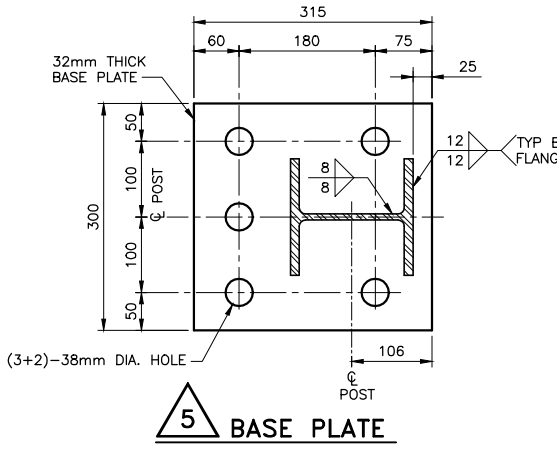
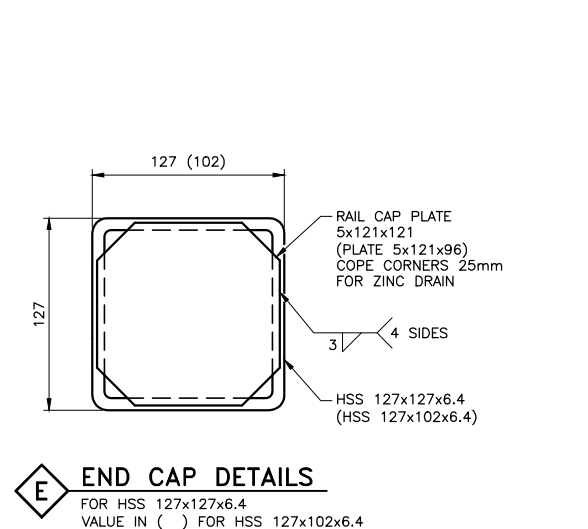
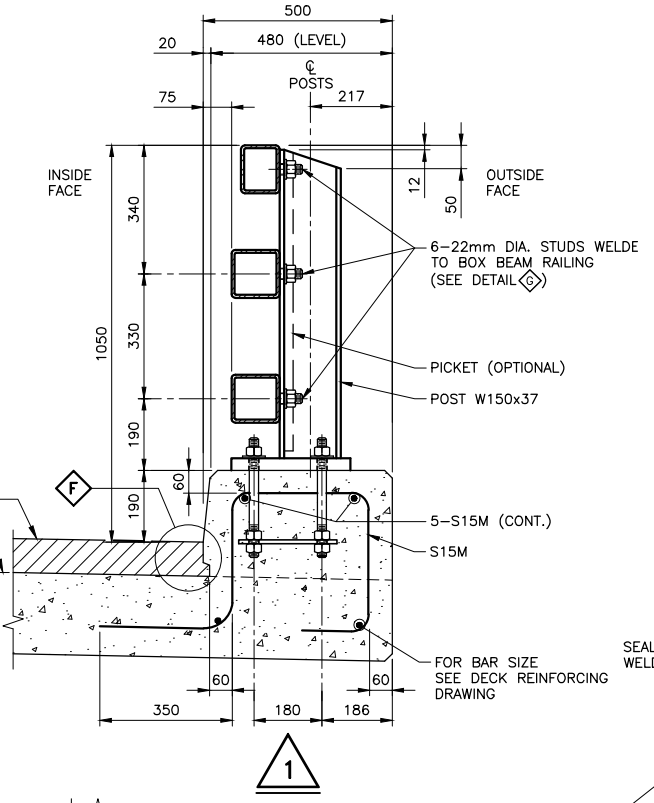
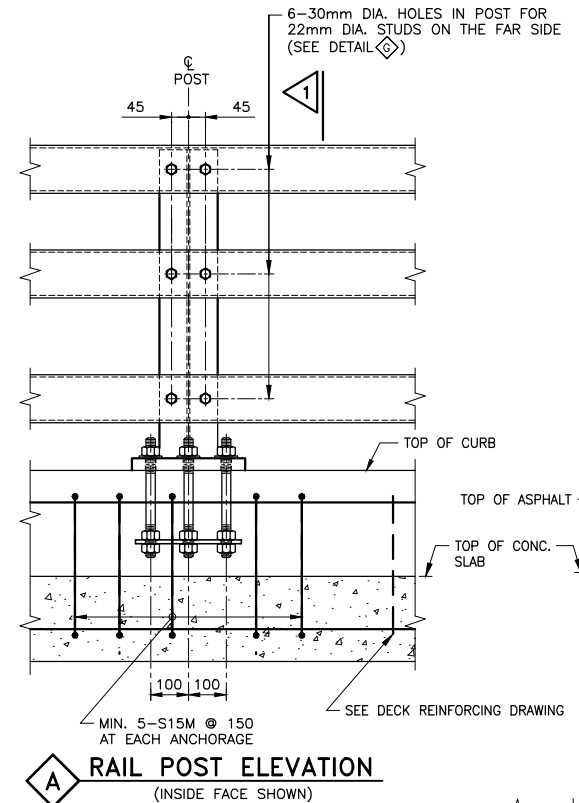
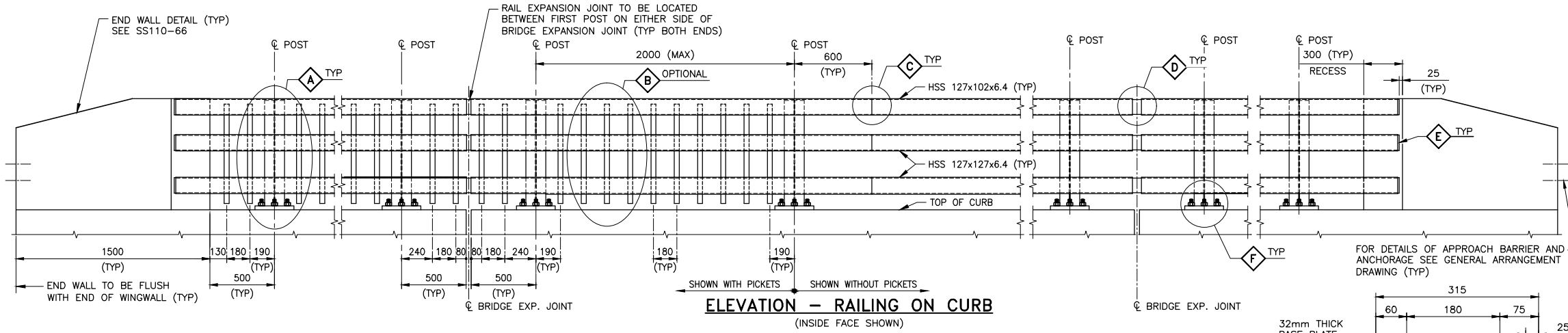
- PICKET SHALL BE 38x12 STEEL BAR GRADE 300W.
- HOT DIP GALVANIZING OF RAILING SHALL BE AFTER ADDITION OF PICKET.

**NOTES TO DESIGNER:**

- THE IMPACT TEST TEMPERATURE SHALL BE DETERMINED BY REFERRING TO CSA S6-19, TABLE 10.14 BASED ON THE MINIMUM SERVICE TEMPERATURE OF THE STRUCTURE GIVEN IN FIGURE A3.1.2.
- FOR DECK WITH GFRP REINFORCEMENT, THE EXTRA STAINLESS STEEL BARS SHOWN AT RAIL POST LOCATION SHALL BE REPLACED WITH GFRP REBARS OF EQUIVALENT STRENGTH.
- PICKETS ARE MANDATORY IF THE RAILING IS ALSO USED TO RETAIN PEDESTRIANS. DESIGNER SHALL INDICATE IF PICKETS SHALL BE USED.
- THE 'NOTES TO DESIGNER' SHALL BE DELETED FROM THIS DRAWING PRIOR TO ISSUING.

STANDARD DRAWING MAY 30, 2024	SS110-39
THREE TUBE RAILING ON CURB, TL-4 (WITH CONCRETE END WALL)	

DATE	BY	DESCRIPTION
DESIGN	-CHK	-CODE CSA-S6-19 LOAD
DRAWN	-CHK	-SITE



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