Pipe Splice Details

**Rail Cap Detail**

**Cast-In-Place & Formed HOLE ANCHOR BOLT OPTIONS**

**Construction Notes:**
- Panel lengths of railing must be a minimum of three posts except at abutment wingwalls.
- At the Contractor’s option anchor bolts may be an adhesive anchorage system. See “Material Notes.”
- Test adhesive anchors in accordance with item 405.3.3, “Test.” Test 2 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Proper damage from testing is expected.
- Tighten anchor bolts up to 50% of the ultimate capacity of the adhesive system, unless otherwise approved. Posts must be perpendicular to adjacent roadway grade.

**Material Notes:**
- Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.
- Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, “Painting Steel”. Sleeve members and anchor bolts must receive galvanizing prior to installation unless directed otherwise by Engineer.
- Anchor bolts must be 7/8” Dia ASTM A307 Gr. A, with one hardened steel washer (ASTM F436) placed under each hex nut or ASTM A307 Gr A threaded rod with one tack welded hex nut each and with one hex nut with one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements.
- Optional adhesive anchorage system must be 7/8” Dia ASTM A307 Gr. A fully threaded rod with one hex nut and one hardened steel washer (ASTM F436). Nuts must conform to ASTM A563 requirements. Drilled fully threaded rods into slab, grade walls, or curbs using a Type II, Class C, D, E, or F anchor adhesive. Anchor adhesive chosen must be able to achieve a nominal bond strength of 0.20 ksi minimum as determined according to AASHTO Material Test Method T319 and manufacturer’s published literature showing the proposed anchor adhesive’s ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, “Galvanizing”.
- Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.

**General Notes:**
- Designed according to AASHTO LRFD Specifications. Do not use this railing or bridges with expansion joints providing more than 3” movement.
- Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.
- For all rails, submit erection drawings showing section lengths, spacing, and anchor bolt setting for approval. Average weight of railing is 30 plf.

**Texas Department of Transportation**

**Bridge Division Standard**