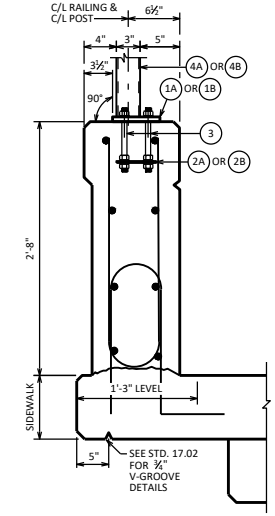
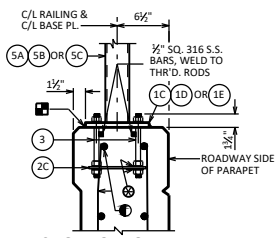


SECTION THRU PARAPET ON BRIDGE

✱ ADJUST LOCATIONS OF BARS TO ALLOW PLACEMENT OF ANCHOR ASSEMBLY FOR RAILING AND BEAM GUARD (WHEN REQ'D.).

◐ WHEN ADHESIVE ANCHORS ARE USED, FIELD BEND AND/OR DISPLACE TO AVOID HITTING LONGITUDINAL BAR WHEN DRILLING FOR ADHESIVE ANCHORS.



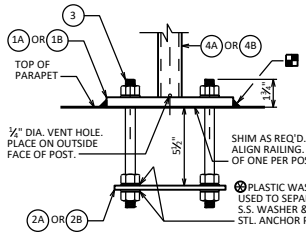
ANCHORAGE FOR END RAIL

NOTE: USE 8" THR'D. ROD AT PLATE 1D WHEN ADJ. TO BEAM GUARD ANCHOR ASSEMBLY

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.

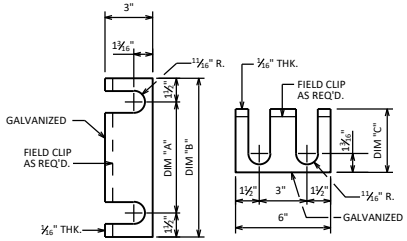
SHOP RAIL SPLICE DETAIL

(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)



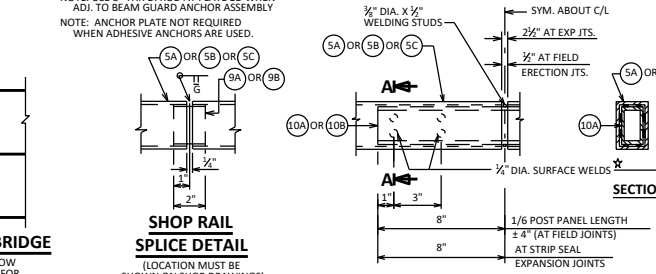
ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.



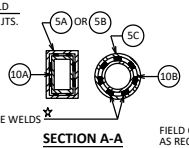
RAIL POST SHIM DETAIL

6" X 8" BASE PLATE 1A DIM "A" = 5", DIM "B" = 8", DIM "C" = 4"
6" X 10" BASE PLATE 1B DIM "A" = 7", DIM "B" = 10", DIM "C" = 5"
(2 SETS PER POST)

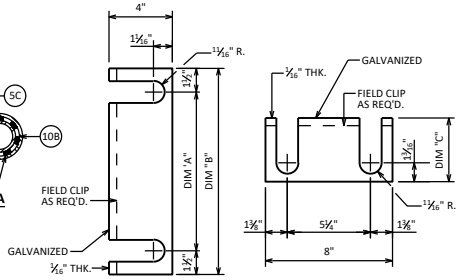


FIELD ERECTION JOINT DETAIL

✱ MIN. ⅜" FLAT SURFACE DIA. PUNCHING OR STUDS MAY BE USED AS AN ALTERNATE.

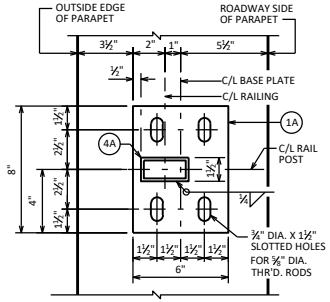


SECTION A-A



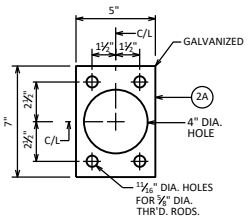
END RAIL SHIM DETAIL

8" X 1'-1" BASE PLATE 1C DIM "A" = 10", DIM "B" = 1'-1", DIM "C" = 6½"
8" X 1'-6" BASE PLATE 1D DIM "A" = 1'-3", DIM "B" = 1'-6", DIM "C" = 9"
8" X 1'-3" BASE PLATE 1E DIM "A" = 1'-0", DIM "B" = 1'-3", DIM "C" = 7½"
(2 SETS PER POST)



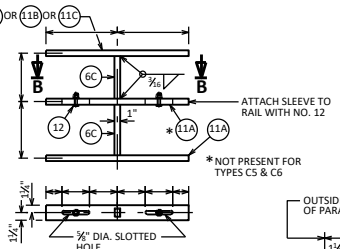
TYPICAL RAIL POST BASE PLATE

FOR 3" X 1½" X ⅜" POSTS 4A



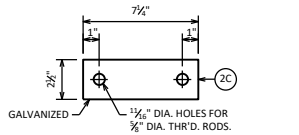
ANCHOR PLATE

FOR 3" X 1½" X ⅜" POSTS 4A



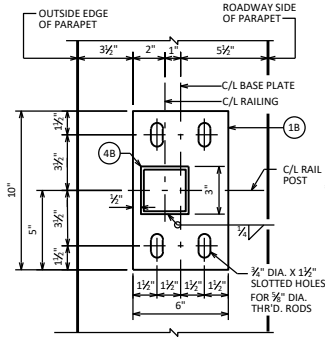
SECTION B-B

MODULAR JOINT SLEEVE DETAIL



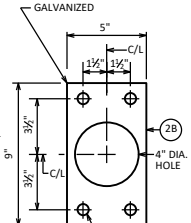
END RAIL ANCHOR PLATE

FOR END RAIL BASE PLATES 1C 1D 1E
2 REQ'D. PER END RAIL BASE PLATE



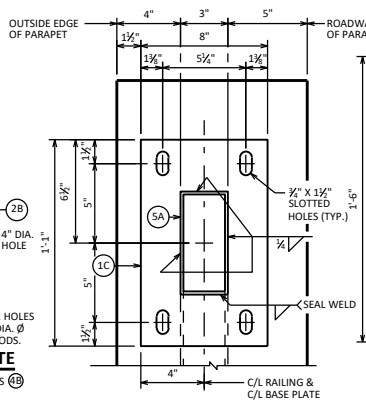
TYPICAL RAIL POST BASE PLATE

FOR 3" X 3" X 3⁄16" POSTS 4B



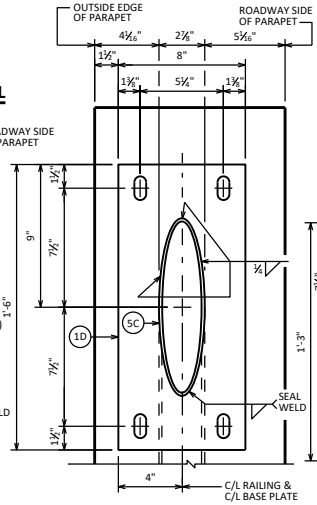
ANCHOR PLATE

FOR 3" X 3" X 3⁄16" POSTS 4B



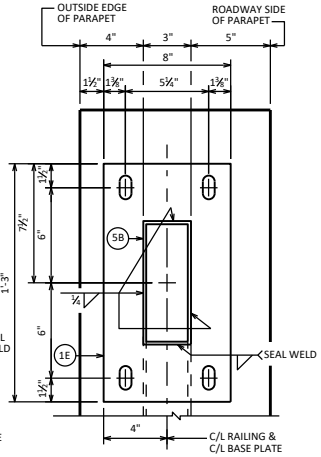
END RAIL BASE PLATE

FOR 3" X 1½" X 3⁄16" POSTS 5A



END RAIL BASE PLATE

FOR 2½" DIA. STANDARD PIPE RAIL 5C



END RAIL BASE PLATE

FOR 3" X 2" X 3⁄16" POSTS 5B

LEGEND

- 1A PLATE ⅝" X 6" X 8" WITH ¾" X 1½" SLOTTED HOLES.
- 1B PLATE ⅝" X 6" X 10" WITH ¾" X 1½" SLOTTED HOLES.
- 1C PLATE ⅝" X 8" X 1'-1" WITH ¾" X 1½" SLOTTED HOLES.
- 1D PLATE ⅝" X 8" X 1'-6" WITH ¾" X 1½" SLOTTED HOLES.
- 1E PLATE ⅝" X 8" X 1'-3" WITH ¾" X 1½" SLOTTED HOLES.
- 2A ¼" X 5" X 7" ANCHOR PLATE WITH 1³⁄₁₆" DIA. HOLES FOR THR'D. RODS NO.3.
- 2B ¼" X 5" X 9" ANCHOR PLATE WITH 1³⁄₁₆" DIA. HOLES FOR THR'D. RODS NO.3.
- 2C ¼" X 2½" X 7¼"ANCHOR PLATE WITH 1³⁄₁₆" DIA. HOLES FOR THR'D. RODS NO.3.
- 3 ⅝" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS ⅝-INCH EMBED 7" IN CONCRETE FOR RAIL POSTS. EMBED 5" IN CONCRETE FOR END RAILS. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.
- 4A STRUCTURAL TUBING 3" X 1½" X 3⁄16". PLACE VERTICAL. WELD TO NO.1 & 5.
- 4B STRUCTURAL TUBING 3" X 3" X 3⁄16". PLACE VERTICAL. WELD TO NO.1 & 5.
- 5A STRUCTURAL TUBING 3" X 1½" X 3⁄16" RAILS. WELD TO NO.1 & NO.4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- 5B STRUCTURAL TUBING 3" X 2" X 3⁄16" RAILS. WELD TO NO.1 & NO.4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- 5C STRUCTURAL TUBING 2½" DIA. (STANDARD SIZE) (2.875" O.D.). WELD TO NO.1 & 4. INSIDE OF TUBE TO BE PAINTED AT ALL FIELD ERECTION & EXPANSION JOINTS.
- 6A BAR 1" X 1" PICKETS. WELD TO NO. 5. (SPACE AT 6" MAX. C/L TO C/L SPACING). PLACE VERTICAL.
- 6B BAR 1" X 1½" PICKETS. WELD TO NO.5. (SPACE AT 6" MAX. C/L TO C/L SPACING). PLACE VERTICAL.
- 6C BAR 1" X 1½" PICKETS. WELD TO NO.11. PLACE VERTICAL.
- 7 BAR 1" X 1" . BEND TO REQUIRED RADIUS. WELD TO NO. 4 & 5.
- 8 STRUCTURAL TUBING 5" DIA. (STANDARD SIZE) (5.563" O.D.) 1½" LONG SLICES. WELD TO NO.5A.
- 9A RECTANGULAR SLEEVE FABRICATED FROM ⅜" PLATES. PROVIDE "SLIDING FIT".
- 9B CIRCULAR SLEEVE FABRICATED FROM STRUCTURAL TUBING 2" DIA. (STANDARD SIZE) (2.375" O.D.)
- 10A RECTANGULAR SLEEVE FABRICATED FROM ⅜" PLATES. (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)
- 10B CIRCULAR SLEEVE FABRICATED FROM STRUCTURAL TUBING 2" DIA. (STANDARD SIZE) (2.375" O.D.) (1'-4" @ FIELD ERECTION JTS.) (1'-4" @ STRIP SEAL EXP. JTS.)
- 11A BAR 2½" X 1" X '- ".
- 11B BAR 2½" X 1½" X '- ".
- 11C STRUCTURAL TUBING 2" DIA. (STANDARD SIZE) (2.375" O.D.) X '- ".
- 12 ½" DIA. STAINLESS STEEL BOLT WITH NUT AND LOCKWASHER.

SEE STD. 30.40 FOR PEDESTRIAN RAILING DETAILS.

NOTES

BID ITEM SHALL BE "RAILING STEEL TYPE C(1-6)", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

ALL PLATES, BARS, AND RECTANGULAR SLEEVES SHALL CONFORM TO ASTM A709 GRADE 36. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.

CUT BOTTOM OF POST TO MAKE POST VERTICAL IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTION.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

☒ CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL JOINTS AND RECESSES IN CONCRETE PARAPET ARE TO BE VERTICAL.

ALL MATERIAL (EXCEPT NO. 3 & 12) SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS. PAINT OVER GALVANIZING WITH AN APPROVED TIE COAT AND TOP COAT AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE RAILING SHALL BE PAINTED AMS STD. COLOR NO. ☐, ☐ (FILL IN COLOR NAME).

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.

VENT HOLES SHALL BE DRILLED IN POST AND RAIL MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

TOUCH-UP PAINTING TO BE DONE AT COMPLETION OF STEEL RAILING INSTALLATION TO THE SATISFACTION OF THE ENGINEER AT NO EXTRA COST.

COMBINATION RAILING DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 7-25