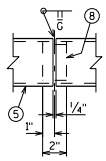
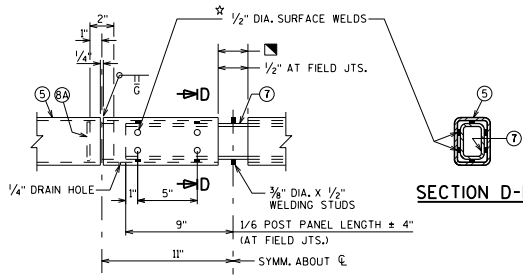


**POST SHIM DETAILS**

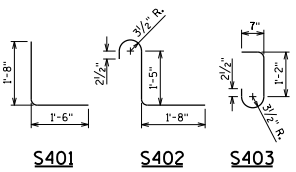


**SHOP RAIL SPLICE DETAIL**  
(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)



**FIELD ERECTION JOINT DETAIL**

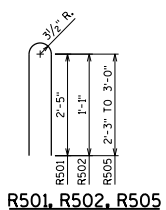
\* MIN. 3/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.



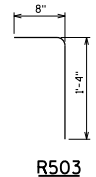
**S401**

**S402**

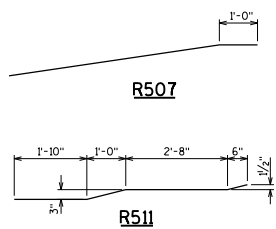
**S403**



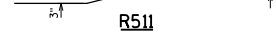
**R501, R502, R505**



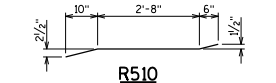
**R503**



**R507**



**R511**



**R510**

**BAR SERIES TABLE**

| MARK | NO. REQ'D. | LENGTH          |
|------|------------|-----------------|
| R505 | OF SERIES  | 5'-5" TO 6'-11" |

BUNDLE AND TAG EACH SERIES SEPARATELY.

**BILL OF BARS**

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

| BAR MARK | NO. REQ'D. | LENGTH | REV | BAR SERIES | LOCATION       |
|----------|------------|--------|-----|------------|----------------|
| S401     | X          | 3'-0"  | X   |            | PARAPET VERT.  |
| S402     | X          | 4'-1"  | X   |            | PARAPET VERT.  |
| S403     | X          | 2'-9"  | X   |            | PARAPET VERT.  |
| S404     | X          |        |     |            | PARAPET HORIZ. |
| R501     | X          | 5'-9"  | X   |            | PARAPET VERT.  |
| R502     | X          | 3'-1"  | X   |            | PARAPET VERT.  |
| R503     | X          | 1'-11" | X   |            | PARAPET VERT.  |
| R504     | X          | 3'-4"  |     |            | PARAPET VERT.  |
| R505     | X          | 6'-2"  | X   | ▲          | PARAPET VERT.  |
| R506     | X          |        |     |            | PARAPET HORIZ. |
| R507     | X          |        | X   |            | PARAPET HORIZ. |
| R508     | X          | 4'-0"  |     |            | PARAPET HORIZ. |
| R509     | X          | 5'-8"  |     |            | PARAPET HORIZ. |
| R510     | X          | 4'-0"  | X   |            | PARAPET HORIZ. |
| R511     | X          | 6'-0"  | X   |            | PARAPET HORIZ. |
| R512     | X          |        |     |            | PARAPET HORIZ. |
| R513     | X          |        |     |            | PARAPET HORIZ. |

▲ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

**NOTES**

BID ITEM SHALL BE "RAILING TUBULAR TYPE PF B-...", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN, AND PAINTING.

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.

NO. 2, NO. 7 AND NO. 8 SHALL CONFORM TO ASTM A709 GRADE 36. STRUCTURAL TUBING, NO. 1 AND NO. 5, SHALL CONFORM TO ASTM A500 GRADE B.

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

CUT BOTTOM OF POST TO MAKE POST VERTICAL IN TRANSVERSE DIRECTION.

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

FILL BOLT SLOT OPENINGS IN SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALL JOINTS IN CONCRETE PARAPET ARE TO BE VERTICAL.

AFTER FABRICATION, ALL MATERIAL, EXCEPT ANCHORAGE NO. 3 & 4 & SHIMS SHALL BE PAINTED WITH A THREE COAT ZINC-RICH EPOXY SYSTEM PER WISDOT STANDARD SPECIFICATION, SECTION 512, EPOXY SYSTEM. SHIMS SHALL BE GIVEN ONE COAT OF ZINC RICH PRIMER PAINT. THE FINISH COLOR SHALL BE AMS STD. COLOR NO. . . . .

1/4" DIA. VENT HOLES TO BE LOCATED AT LOW END OF RAILS.

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

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

SEE STD. 30.07 FOR BEAM GUARD ANCHOR ASSEMBLY DETAILS.

THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 2 (TL-2).

■ RDWY. OPENING OR 2/2" MIN. FOR STRIP SEAL EXP. JOINT & 1/2" OPENING FOR AI ABUTMENT.

**LEGEND**

- ① TS 4 x 4 x 0.25 X 1'-9 1/4" STRUCTURAL TUBING WITH 3/8" DIA. HOLES FOR BOLT NO. 6. PLACE POSTS VERTICAL IN TRANSVERSE DIRECTION. WELD TO NO. 2. PLACE POSTS NORMAL TO GRADE LINE
- ② PLATE 3/4" X 8 1/2" X 9 1/2" WITH 3/8" X 1 1/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ③ 3/8" DIA. X 1'-1" LONG ASTM A325 HEX BOLTS (GALVANIZED) WITH A325 NUT AND WASHER. 4 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. EMBED A MIN. OF 10". CHAMFER TOP OF BOLTS BEFORE THREADING.
- ④ BAR 3/4" SQ. X 7" LONG. WELD TO ANCHOR BOLTS NO. 3 (GALVANIZED).
- ⑤ TS 4 x 3 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH BOLTS NO. 6. PROVIDE 1/8" DIA. HOLE FOR NO. 6.
- ⑥ 3/4" DIA. X 9" LONG ROUND HEAD BOLTS, ASTM A307, WITH HEX. NUT AND WASHERS AND LOCK WASHER. (1 REQ'D. AT EACH RAIL TO POST LOCATION.)
- ⑦ RECTANGULAR SLEEVE FABRICATED FROM 1/4" PLATES. 1'-6" LONG.
- ⑧ RECTANGULAR SLEEVE FABRICATED FROM 1/4" PLATES. PROVIDE "SLIDING FIT" WITH MIN. OUT TO OUT DIMENSION OF 3 3/8" X 2 9/8".
- ⑨ RECTANGULAR SLEEVE FABRICATED FROM 1/4" PLATES. PROVIDE "SLIDING FIT" WITH MIN. OUT TO OUT DIMENSION OF 3 3/8" X 2 9/8" WITH 3/8" PLATE AT ONE END WELDED ALL AROUND TO BLOCK WATER.
- ⑩ 3/4" DIA. X 1'-1" LONG ROUND HEAD BOLTS, ASTM A307, WITH HEX NUT AND WASHERS

**RAILING TUBULAR TYPE 'PF' DETAILS**



APPROVED: Laura Shadewald DATE: 1-19