V-Groove in both faces & top of Concrete Curb (Equally spaced between open joints)

**NOTES:**

1. Shop Drawings are required.
2. Work this Index with Index 515-052 Bicycle/Pedestrian Railing Details (Steel) and Specification Section 515. Refer to the SPI for Design Criteria and limits of Use.
3. Materials:
   a. Steel: Galvanized after fabrication
   c. Support Bracket (Scheme 3) L-shape and Stiffener Plate: ASTM A36
   d. Bottle-guard (Schemes 1 & 3) L-shape: ASTM A36
   e. Concrete: Same as bridge deck
   f. Pre-cured Silicone Sealant: Specification Section 932
   g. Bearing Pads: Provide ƃ" Plain, Fabric Reinforced or Fabric Laminated bearing pads that meet the requirements of Specification Section 932 for Ancillary Structures.
4. See Structures Plans, Superstructure Sheets for bridge information including concrete type, deck expansion joint locations and orientations, and thermal movement.
5. Railings:
   a. For thermal movement greater than 4" (up to a maximum of 5"), clear opening between adjacent pickets, or panels at Rail Expansion Joints above Dock Joints must be reduced to 3½".
   b. For treatment of railings on skewed bridges see Index 521-427.
6. Curbs:
   a. Match open curb joints at Deck Expansion Joint locations to the deck joint dimension.
   b. Construct Concrete Curb (Scheme 2) vertical with the top surface finished level transversely. See Concrete Curb Details Sheet 3.
   c. Provide ƃ" Intermediate open joints in curbs coinciding with the ƃ" joints in the traffic railing.
7. Payment: Support bracket (Scheme 3) is incidental to the cost of railing. Curb concrete and reinforcing steel (Scheme 2) are included in the bridge deck quantities.
SCHEME 1A - DETAILS
(Adhesive Anchor Option shown)

SCHEME 1B - DETAILS
(Thru-Bolt Option)

SCHEME 1 - TYPICAL SECTION THROUGH DECK MOUNTED RAILING

SCHEME 2 - TYPICAL SECTION THROUGH CURB MOUNTED RAILING

SCHEME 3 - TYPICAL SECTION THROUGH SIDE MOUNTED RAILING (RETROFIT)

INDEX 515-051

DESCRIPTION:

REVISED
FY 2019-20
STANDARD PLANS

BRIDGE PEDESTRIAN/BICYCLE RAILING
(STEEL)

INDEX
SHEET
**DETAIL "B" EXPANSION JOINT (FIELD SPlice SIMILAR)**

- **ROUND RAILS - TOP RAIL OR HANDRAIL:**
  - * 1/4" Ø x 3/4" Pan Head Stainless Steel (Type 316 or 18-8 Alloy)
  - Set Screws along outside face of railing. Set screws must be set flush against the rail surface.
  - **Embedded length may be 1" for plug welded connection.**
  - **Increase handrail sleeve embedment to 8" for Expansion Joint openings greater than 3".**

- **INTERMEDIATE OR BOTTOM RAIL - STEEL SLEEVE DETAIL (Bottom Side Shown):**
  - Steel Sleeve:
    - 1.50 OD x 0.125 Wall for intermediate and bottom rails

**CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS**

- **BILL OF REINFORCING STEEL**
  - | MARK | SIZE | LENGTH |
  - | P  | 4 | 2'-0" |
  - | S  | 4 | As Read. |
  - | BAR 4P | | |
  - | BAR 4S | | |

**ESTIMATED CONCRETE CURB QUANTITIES (SCHEME 2):**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>CY/JP</td>
<td>60.124</td>
</tr>
<tr>
<td>Reinforcing Steel</td>
<td>LB/JP</td>
<td>4.01</td>
</tr>
</tbody>
</table>

**DETAIL "A" - SECTION AT INTERMEDIATE OPEN JOINT:**

- **INTERMEDIATE JOINT SEAL NOTE:**
  - At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.

**SCHEMES:**

- **SCHEME 1 - BOTTLE GUARD DETAIL**
  - TYPICAL SECTION THROUGH BOTTOM RAIL (Post Not Shown For Clarity)
  - #10 x 3/8" Pan Head Screws (18-8 SS) @ 2'-0" sp.

- **SCHEME 2 - CONCRETE CURB DETAILS**
  - TYPICAL SECTION THROUGH BOTTOM RAIL (Post Not Shown For Clarity)
  - #10 x 3/8" Pan Head Screws (18-8 SS) @ 2'-0" sp.

- **SCHEME 3 - BOTTLE GUARD DETAIL**
  - TYPICAL SECTION THROUGH BOTTOM RAIL (Post Not Shown For Clarity)
  - #10 x 3/8" Pan Head Screws (18-8 SS) @ 2'-0" sp.

**CROSS REFERENCE:**

- See Sheet 1 for Bridge Railing Notes.

**REVISION:**

- 11/01/16

**DESCRIPTION:**

- FY 2019-20

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**SHEET:**

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