PIECE RAILING & POSTS

Structural tube pipe and bar shall be in accordance with ASTM B221 or ASTM B422, Alloy 6061-T6. End Rail/Rail end brackets and corner brackets with maximum 45° post spacing, may be Alloy 6063-T6. Posts and End Rails shall be fabricated and installed plumb, ± 1° tolerance when measured at 3-ft above the foundation. Corners and changes in tangential longitudinal alignment, may be made continuous with a 90° bend radius or terminated at adjoining sections with a standard end cap when required. For changes in tangential longitudinal alignment greater than 45°, posts shall be positioned at a maximum distance of 2-ft each side of the corner and shall be located at the corner apex. For curved longitudinal alignments, the top and bottom rails and handrails shall be bent to match the alignment radius.

RAILING MEMBER DIMENSIONS TABLE

<table>
<thead>
<tr>
<th>MEMBER</th>
<th>DESIGNATION</th>
<th>OUTSIDE DIMENSION</th>
<th>WALL THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posts</td>
<td>2&quot; NPS (Sch. 40)</td>
<td>2.350&quot;</td>
<td>.016&quot;</td>
</tr>
<tr>
<td>Rails</td>
<td>2&quot; NPS (Sch. 40)</td>
<td>2.375&quot;</td>
<td>.016&quot;</td>
</tr>
<tr>
<td>Rail Joint/Splice Sleeves</td>
<td>1 1/4&quot; NPS (Sch. 40)</td>
<td>1.900&quot;</td>
<td>.015&quot;</td>
</tr>
<tr>
<td>Handrails</td>
<td>1 1/4&quot; NPS (Sch. 40)</td>
<td>1.925&quot;</td>
<td>.015&quot;</td>
</tr>
<tr>
<td>Handrail Support Bar</td>
<td>1 1/4&quot; Round Bar</td>
<td>1.000&quot;</td>
<td>N/A</td>
</tr>
</tbody>
</table>

BASE PLATES:

Base Plates shall be in accordance with ASTM B209, Alloy 6061-T6.

SHIM PLATES:

Shim Plates shall be aluminum in accordance with ASTM B209, Alloy 6061 or 6063. Shim plates shall be used for foundation height adjustments greater than 1/4" and localized irregularities greater than 1/8". Field trim shim plates when necessary to match the contours of the foundation. Beveled shim plates may be used in lieu of trimmed flat shim plates shown. Stacked shim plates must be bonded together with adhesive bonding material and limited to a maximum total thickness of 1/8", unless longer anchor bolts are provided for the exposed thread length.

ANCHORS:

Aluminum railing shall be finished unless otherwise noted in the Contract Documents. All nuts, bolts and washers shall be hot-dip galvanized in accordance with Section 952 of the Specifications.

ANCHOR (903.70):

Anchor bolts shall be in accordance with ASTM F1554 Grade 56. Headless anchor bolts for Adhesive Anchors shall be threaded full length. Cuffing of reinforcing steel is permitted for drilled hole installation. All anchor bolts shall have self-locking hex nuts. Tack welding of the nut to the anchor bolt may be used in lieu of self-locking nuts. All nuts shall be in accordance with ASTM A563 or ASTM A494. Flat Washers shall be in accordance with ASTM F1554 and Plate Washers (for long slotted holes only) shall be in accordance with ASTM A495 or ASTM A709 Grade 50. After the nuts have been snug tightened, the anchor bolt threads shall be distorted to prevent removal of the nuts. Distorted threads and tack welds shall be coated with a galvanizing compound in accordance with the Specifications.

REINFORCEMENT AND JOINTS:

Resilient and Neoprene pads shall be in accordance with Specification Section 932, except that testing of the finished pads shall not be required. Neoprene pads shall be 1/8" to 3/8" thick. Joints:

All fixed joints are to be welded around and ground smooth. Expansion Joints shall be spaced at a maximum of 500-ft. Field splices similar to the expansion joint detail may be approved by the Engineer to facilitate shipping and handling, but rails must be continuous across a minimum of two posts. Use the Continuity Field Splice (Detail 21V) to make the railing continuous for unforeseen field adjustments.

WELDING:

All welding in accordance with the American Welding Society Structural Welding Code (Aluminum) AWS/D1.1/D1.2 1/12 (current edition). Field metal shall either BS 1555, EN 1556 or EN 1556. Nondestructive testing of welds is not required.

FINISHING:

Complete details addressing project specific geometry, design & grading showing post and expansion joint locations must be submitted by the Contractor for the Engineer’s approval prior to fabrication of the railing. Shop drawings shall include the Specifications.

PAYMENT:

Guiderail shall be paid for under the contract unit price for Pipe Guiderail (Aluminum), LP (Item No. 115.1-1-2). Payment for the Guiderail/pipe plan quantity measured as the length along the center line of the top rail, and includes rails, posts, rail splice assembly, base plates, anchor bolts, nuts, washers, resilient and neoprene pads and all incidental materials and labor required to complete installation of the Guiderail.
TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%
TYPICAL SECTION ON CONCRETE SIDEWALK

TYPICAL SECTION ON GRAVITY WALL
(Other Retaining Walls Similar)

DETAIL "F" (OPTIONAL SHIMMING DETAIL
FOR CROSS SLOPE CORRECTION)
(Used in lieu of Beveled Shim Plates)