3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL
(42" Height shown, 48" Height Similar)

<table>
<thead>
<tr>
<th>TABLE 1 - RAILING MEMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMBER</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Top Rail Joint/Splice Sleeves</td>
</tr>
<tr>
<td>Int. &amp; Bottom Rail Post Connection Sleeve</td>
</tr>
<tr>
<td>Handrail Joint/Splice Sleeves</td>
</tr>
<tr>
<td>Handrails</td>
</tr>
<tr>
<td>Handrail Support Bar</td>
</tr>
<tr>
<td>Pickets (Type 1 Infill Panel)</td>
</tr>
<tr>
<td>Infill Panel Members (Types 2 – 5)</td>
</tr>
</tbody>
</table>

Notes:
1. Shop Drawings are required; see Specification Section 515
2. For bridge mounted railings work this Index with Index 515-051 Bridge Bicycle/Pedestrian Railing
3. Materials:
   - A. Pipe Rails and Pickets: ASTM A500 Grade B, C or D, or ASTM A53 Grade B for standard weight pipe (Schedule 40) and ASTM A36 for bars.
   - B. Structural Tube: ASTM A500 Grade A, B, C, or D or ASTM A501
   - C. Steel Plates: ASTM A36 or ASTM A509 Grade 36
   - D. U-Channels and filler plates: ASTM A36 or ASTM A411 (Grade 36).
   - E. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
   - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
     - a. Hex Head Bolts: ASTM A 307
     - 1½" diameter single bolt option, Grade 36
     - b. Four bolt option, Grade 55
     - 1½" diameter four bolt option, Grade 55
     - c. Hex Nuts: ASTM A 307
     - d. Flat Washers: ASTM A 436
     - e. Plate Washers: ASTM A 36 or ASTM A1011 (Grade 36).
     - f. Shims: ASTM B 409, Ford 6061
     - g. Bearing Pads: 1½" Plain, Fabric Reinforced or Fabric Laminated pads that meet the requirements of Specification Section 932 for Ancillary Structures.
4. Fabricate pickets and vertical panel elements parallel to the posts; except Type 2, 3 and 5 panel infills may be fabricated parallel to the longitudinal grade. Maintain a maximum clear opening of 5½" for standard installations and 3½" when a 4" sphere requirement is indicated in the data table.
5. Maximum spacing between expansion joints is 40'-0". Locate an Expansion Joint between the posts on either side of the Deck Expansion Joint.
6. Field splices are similar to the Expansion Joint Detail and may be approved by the Engineer to facilitate handling; but the top rail must be continuous across a minimum of two posts.
7. For intermediate and bottom horizontal rails, the screwed joints shown may be substituted with alternate joints shown in detail "K".
8. Make corners and changes in tangential longitudinal alignment with a 9½" bend radius or terminate adjoining sections with mitered end sections when handrails are not required.
9. For changes in tangential longitudinal alignment greater than 45°, position posts a maximum of 2'-0" each side of the corner but not at the corner apex.
10. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius.
11. Handrails are required and must be continuous at landings for:
   - A. Grades Steeper than 5%,
   - B. Three or more steps
12. Installation: Cutting of reinforcing steel is permitted for post installed anchors.
Handrail required for ramps (Handrail continuous at landings between runs)

**NOTES:**

* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.

** Contraction joints (Tooled or Saw Cut) in sidewalks do not require a 6" minimum offset.

** Expansion joints (Typ.)

ELEVATION

(Showing Outside Face of Railing with Type "A" Posts)

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%

(TYPE 1 - Picket Railing Shown, Other Types Similar)

EXPANDED ELEVATION AT CORNERS

DETIAL FOR NON-CONTINUOUS RAILING AT CORNERS

RAILINGS ON GRADES STEEPER THAN 5%

(TYPE 1 - Picket Railing Shown, Other Types Similar)
TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS

<table>
<thead>
<tr>
<th>COMPONENT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc-Coated Steel: No. 9 gage (coated wire diameter), Class 2 Coating</td>
</tr>
<tr>
<td>Aluminum-Coated Steel: No. 9 gage (coated wire diameter)</td>
</tr>
<tr>
<td>Polyvinyl Chloride (PVC) Coated Steel: No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) -- See Plans for specified color of PVC</td>
</tr>
<tr>
<td>Zinc-Coated Steel Wire - No. 9 gage with coating to match Chain-Link Fence Fabric</td>
</tr>
<tr>
<td>Zinc-Coated Steel Wire - No. 9 gage with coating to match Chain-Link Fence Fabric</td>
</tr>
</tbody>
</table>

Notations:
- Ties @ 1'-0" center (Post and End Rail)
- Ties @ 2'-0" center (Intermediate & Bottom Rail)
- Ties @ 2'-0" center (Intermediate & Bottom Rail)

Chain-Link Panel Note:
Chain-Link Fence Fabric shall be continuous along limits of railing. Splicing of Chain-Link panels using Tension Bars at 20'-0" minimum increments is permitted.
TYPE 3 - SUNSHINE INFILL PANEL

* Arc, Rays and Sun Segment may be formed in a single panel from 1/2" steel plate pattern cut with laser or plasma CNC, welded to a 1x1x1/2 Angle Border or the 3x1x1/2 Channel Border shown.

NOTES:
1. See Plans for Infill Panel Option required.
NOTES:
1. See Plans for Infill Panel Type required.

DETAIL "5A"

PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)

DETAIL "5B"
PANEL END CONNECTION
(Expansion Joint Shown, Sides Similar)

REPEATING PATTERN DETAIL
FOR PERFORATED PANEL

SECTION C-C
PANEL/SPlice CONNECTION

TYPE 5 - PERFORATED INFILL PANEL
TYPICAL SECTION ON CONCRETE SIDEWALK (Case I)

TYPICAL SECTION ON RETAINING WALL (Case II)

TYPICAL SECTION ON STEPS & STAIRS (Case III)

TYPICAL SECTION FOR 4-BOLT ANCHORAGE (Case IV)

Anchor Bolt Table

<table>
<thead>
<tr>
<th>CASE</th>
<th>STRUCTURE TYPE</th>
<th>DIMENSIONS</th>
<th>ANCHOR LENGTH</th>
<th>ANCHOR SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Unreinforced Concrete</td>
<td>6&quot; x 1-1/2&quot;</td>
<td>9&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>IIa</td>
<td>Reinforced Concrete</td>
<td>4&quot; x 4&quot;</td>
<td>9&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>IIIb</td>
<td>Gravity Wall Index 400-011</td>
<td>3-1/2&quot;</td>
<td>1-1/2&quot;</td>
<td>1-1/2&quot;</td>
</tr>
<tr>
<td>III</td>
<td>Step Cheekwall</td>
<td>4-1/4&quot; x 4-1/4&quot;</td>
<td>9&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>IV</td>
<td>Varies</td>
<td>5&quot; x 5&quot;</td>
<td>5&quot;</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

* Embedment length "C" may be reduced to 9" for the 42" height railings for Case IIb, when the post spacing does not exceed 5'-0".

** When required; measured from top of sidewalk.