connection Detail "K" is utilized.

(3) 1" NPS (Sch. 40) non-slit rail sleeves may be substituted when welded
(2) 0.188" wall thickness permitted for rails with post spacings less than 5'-9".
(1) Alloy 6061-T6 or 6063-T52 & T6 may be substituted for Alloy 6063-T5.

Handrail Joint/Splice Sleeves

Top Rail Joint/Splice Sleeves

Intermediate & Bottom Rail

End Hoops

Top Cap Rail Inner Sleeve

3" Round Top Cap Rail

ALTERNATIVE BOTTOM & INTERMEDIATE RAIL SECTION FOR TYPE 3, 4 & 5 RAILINGS

TABLE 1 - RAILING MEMBERS

<table>
<thead>
<tr>
<th>MEMBER</th>
<th>ALLOY</th>
<th>DESIGNATION</th>
<th>OUTSIDE DIMENSION</th>
<th>WALL THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posts</td>
<td>6061-T6</td>
<td>RT 2x2x.125</td>
<td>2.00&quot; x 2.00&quot;</td>
<td>0.125&quot;</td>
</tr>
<tr>
<td>Top Rail</td>
<td>6061-T6</td>
<td>2½&quot; NPS (Sch. 10)</td>
<td>2.875&quot;</td>
<td>0.120&quot;</td>
</tr>
<tr>
<td>2½ Round Top Cap Rail</td>
<td>3.000&quot;</td>
<td>0.125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End Hoops</td>
<td>6063-T5</td>
<td>2½&quot; NPS (Sch. 10)</td>
<td>2.875&quot;</td>
<td>0.120&quot;</td>
</tr>
<tr>
<td>3.00 OD x 6.125 Wall</td>
<td>3.000&quot;</td>
<td>0.125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Rail Joint/Splice Sleeves</td>
<td>6063-T5</td>
<td>2½ OD x 12.125 Wall</td>
<td>2.500&quot;</td>
<td>0.125</td>
</tr>
<tr>
<td>Top Cap Rail Inner Sleeve</td>
<td>2.800&quot;</td>
<td>0.090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate &amp; Bottom Rail</td>
<td>6061-T6</td>
<td>RT 2x2x.250</td>
<td>2.00&quot; x 2.00&quot;</td>
<td>0.250&quot;</td>
</tr>
<tr>
<td>Int. &amp; Bottom Rail Post Connection Sleeve</td>
<td>6063-T5</td>
<td>1.50 OD x 0.125 Wall (3)</td>
<td>1.500&quot;</td>
<td>0.137</td>
</tr>
<tr>
<td>Handrail Joint/Splice Sleeves</td>
<td>6063-T5</td>
<td>1&quot; NPS (Sch. 40)</td>
<td>1.315&quot;</td>
<td>0.137</td>
</tr>
<tr>
<td>Handrails</td>
<td>6061-T6</td>
<td>1½&quot; NPS (Sch. 80)</td>
<td>1.900&quot;</td>
<td>0.145</td>
</tr>
<tr>
<td>Handrail Support Bar</td>
<td>6061-T6</td>
<td>1½&quot; Round Bar</td>
<td>0.750&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>Pickets (Type 1 Infill Panel)</td>
<td>6061-T6</td>
<td>3½&quot; Round Bar</td>
<td>0.750&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>(Infill Panel Members (Types 2 - 5))</td>
<td>6063-T5</td>
<td>Varies (See Details)</td>
<td>Varies</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 1 NOTES:
(1) Alloy 6061-T6 or 6063-T52 & T6 may be substituted for Alloy 6063-T5.
(2) 0.188" wall thickness permitted for rails with post spacings less than 5'-9".
(3) 1" NPS (Sch. 40) non-slit rail sleeves may be substituted when welded
connection Detail "K" is utilized.
**TYPE 1 - PICKET INFILL PANEL**

* Picket Spacing of 6¼" centers is based on a 3½" NPS for standard applications. When shown in the Contract Plans a 4½" picket spacing may be required. If an alternate design is used, maintain a maximum clear opening of 53½" for standard installations and 3½" for special conditions.

**TYPE 2 - CHAIN-LINK (Continuous Infill Panel)**

**NOTES:**
1. See Plans for Infill Panel option required.

---

**TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS**

<table>
<thead>
<tr>
<th>COMPONENT INFORMATION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>ASTM</th>
<th>COMPONENT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain-Link Fence Fabric (2&quot; mesh with twisted bottom and knuckled top selvages)</td>
<td>A 392</td>
<td>Zinc-Coated Steel - No. 9 gage (coated wire diameter), Class 2 Coating</td>
</tr>
<tr>
<td>Chain-Link Fence Fabric (2&quot; mesh x No. 9 Gage)</td>
<td>A 491</td>
<td>Aluminum-Coated Steel - No. 9 gage (coated wire diameter)</td>
</tr>
<tr>
<td>Ties @ 1'-0&quot; center (Post &amp; End Rail)</td>
<td>F 668</td>
<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>Ties @ 2'-0&quot; center (Intermediate &amp; Bottom Rail)</td>
<td>F 626</td>
<td>Zinc-Coated Steel Wire - No. 9 gage with coating to match Chain-Link Fence Fabric.</td>
</tr>
<tr>
<td>Tension Bars</td>
<td>F 626</td>
<td>&quot;&quot; (min. thickness) x 2'-3&quot; (min. height) Steel Bars</td>
</tr>
<tr>
<td>Miscellaneous Fence Components</td>
<td>F 626</td>
<td>Zinc-Coated Steel</td>
</tr>
</tbody>
</table>

**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.
NOTES:

1. See Plans for Infill Panel Option required.

SECTION A-A

DETAIL "3A" INTERMEDIATE RAIL/RAY CONNECTION

DETAIL "3B" BOTTOM RAIL/RAY CONNECTION

DETAIL "3C" RAY/ARC CONNECTION

SECTION C-C

DETAIL "4A" PANEL/SPLICE CONNECTION

SECTION A-A

DETAIL "4A" PANEL/RAIL CONNECTION (Top Shown, Bottom Similar)

SECTION B-B

PANEL END CONNECTION AT POST WITH EXPANSION JOINT

PANEL/RAIL CONNECTION INTERMEDIATE RAIL/RAY DETAIL "3C"

BAR (RAYS) SQUARE

Holes @ 5" sp. Ƌ" x Ƌ" Panel Mullion

Panel

Typ. 4" Max.

Gap Varies

Head Screws (18-8 SS) @ 1'-0" sp.

Screws Similar

Opening

Expansion Joint

Panel Width

End Panel 1"

Joint Rail Expansion

Expansion Joint

Seal Weld mitered corners at Rail

Cornes at Rail

Rail Expansion Joint

Channel 1x1½\(\text{Arc}\)

Type 3 - Sunshine Infill Panel

Type 4 - Broadway Infill Panel

1" (PBR) 1½ (SHBR) (Typ.)

2½ (PBR) 3½ (SHBR) (Typ.)

4" Max. 1-2" (PBR) Panel Width (Typ.)

Panel Height

Radial Center

Gap Varies

TYPE 3 - SUNSHINE INFILL PANEL

TYPE 4 - BROADWAY INFILL PANEL

NOTES:

ON GRADES

PANEL ADJUSTMENT FOR RAILINGS ON GRADES

PANEL END CAP

PANEL/RAIL CONNECTION (Continuous Top Rail)

ARC/POST CONNECTION DETAIL "3D"

 Expansions Joints

Expansion Joint

Seal Weld mitered corners at Rail

Seal Weld mitered corners at Rail Expansion Joints

Types 3-8

TYPES 3 - SUNSHINE INFILL PANEL

TYPES 4 - BROADWAY INFILL PANEL

1. See Plans for Infill Panel Option required.
TYPE 5 - PERFORATED INFILL PANEL

Perforated Panel (0.04" Min.)
Panel Mullion
Channel 3x6x5/8

SECTION A-A

Seal welding mitered corners is permitted

REPEATING PATTERN DETAIL FOR PERFORATED PANEL

DETAIL "5A"

PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)

Inside Face of Rail
#10 x 1/2" Pan Head Screws (18-8 SS) @ 2'-0" sp.
Perforated Panel (0.04" Min.)
0.8" Filler Strip
Channel 3x6x5/8 (Typ.)

DETAIL "5B"

PANEL END CONNECTION
(Expansion Joint Shown, Sides Similar)

Inside Face of Post
#10 x 1/2" Pan Head Screws (18-8 SS) @ 1'-0" sp.
Perforated Panel (0.04" Min.)
Expansion Joint Opening
Channel 3x6x5/8 (Typ.)
0.8" Filler Strip
Perforated Panel (Typ.)
Panel Mullion

SECTION C-C

PANEL/SPlice CONNECTION
DESCRIPTION:

1 - 3/8" Ø C-I-P Hex Head Anchor Bolts, or 1 - 3/8" Ø Headless Anchor Bolts set with an Adhesive Bonding Material System in accordance with Specification Sections 416 and 937. Self-Locking Hex Nut & Washer. Place Anchor Bolts perpendicular to Base ℅ & FAQs for Grades < 8.33% (Ramps) with flat washer. Place anchor bolts plumb for grades > 8.33%. (Stairs) with flat washer & beveled washer, or leveling channel. —

ANCHOR BOLT TABLE

<table>
<thead>
<tr>
<th>CASE</th>
<th>STRUCTURE TYPE</th>
<th>&quot;A&quot; (Min.)</th>
<th>&quot;B&quot; (Min.)</th>
<th>&quot;C&quot; (Min.)</th>
<th>C.I.P Hex Head Bolt</th>
<th>Adhesive Anchor</th>
<th>ANCHOR LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unreinforced Concrete</td>
<td>6&quot;</td>
<td>1'-2&quot;</td>
<td>9&quot;</td>
<td>10'7&quot;</td>
<td>11&quot;</td>
<td>3/8&quot; Ø</td>
</tr>
<tr>
<td>IIa</td>
<td>Reinforced Concrete</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>9&quot;</td>
<td>10'7&quot;</td>
<td>11&quot;</td>
<td>3/8&quot; Ø</td>
</tr>
<tr>
<td>IIb</td>
<td>Gravity Wall</td>
<td>45°</td>
<td>31/2&quot; @ top</td>
<td>1'-6&quot;</td>
<td>1'-11/2&quot;</td>
<td>1'-2&quot;</td>
<td>3/8&quot; Ø</td>
</tr>
<tr>
<td>III</td>
<td>Step Cheekwall</td>
<td>45°</td>
<td>45°</td>
<td>9&quot;</td>
<td>10'7&quot;</td>
<td>11&quot;</td>
<td>3/8&quot; Ø</td>
</tr>
</tbody>
</table>

* Embedment length "C" may be reduced to 9" for the 42" height railings for Case 1b, when the post spacing does not exceed 5'-0".