**EXPANSION JOINT DETAIL**
(Raised Sidewalk expansion joints are to coincide with ½” open joints in Concrete Barrier)

RAISED SIDEWALK NOTES:
1. When a 42” Vertical Shape is used with a precast coping, increase Bars 4C to Bars 5C or provide Bars 4C @ 4” spacing within 6’-0” of Expansion Joints.
2. Construct the expansion joints, V-Grooves and face of coping plumb.
3. Provide Class II concrete for slightly aggressive environments or Class IV for moderately or extremely aggressive environments.
4. Dowel Load Transfer Devices will be hot-dip galvanized ASTM A 36 smooth round bar, or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
5. Construct ½” Expansion Joints in raised sidewalk and C-I-P copings perpendicular or radial to the Gutter Line. Provide at 30’-0” maximum intervals as shown.
6. Shear Keys in Junction Slab are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 3º to 45º from horizontal.
7. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
8. Construct ½” V-Grooves in raised sidewalk and C-I-P coping at 30’-0” maximum intervals as shown. Space V-Grooves equally between ½” Expansion Joints and/or Begin or End Raised Sidewalk. V-Groove locations are to coincide with V-Groove locations in the Concrete Barrier.
9. Spacing shown is along the Gutter Line.
10. For Precast Coping only, provide Dowel Bars 4D embedded 1’-0” and extend 9” above the top of MSE wall panels. Field cut reinforcing must coincide with V-Groove locations in the Concrete Barrier.
11. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
12. Finish Sidewalks in accordance with Specification Section 932.
13. When 32” Vertical Shape is required, see Indexes 51-620 and 51-621 for Bullet Railings.
14. The following indexes contain details of the interaction of the retaining wall at approach slabs:
   - Index 400-090 – Approach Slabs (Flexible Pavement Approaches)
   - Index 400-091 – Approach Slabs (Rigid Pavement Approaches)

**PARTIAL PLAN VIEW**
(Precast Coping Shown, C-I-P Coping Similar) (Concrete Barrier not shown for Clarity)

**PARTIAL ELEVATION VIEW**
(Precast Coping & Raised Sidewalk Reinforcing not shown for Clarity)
(Precast Coping Shown, C-I-P Coping Similar)

**STANDARD PLANS**
CONCRETE BARRIER/RAISED SIDEWALK
WALL COPING
ESTIMATED QUANTITIES FOR PRECAST COPING

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete (Precast Coping)</td>
<td>CY/LF</td>
<td>0.095</td>
</tr>
<tr>
<td>Concrete (C-I-P Raised Sidewalk)</td>
<td>CY/LF</td>
<td>0.232</td>
</tr>
<tr>
<td>Reinforcing Steel (Precast Coping)</td>
<td>LB/LF</td>
<td>23.90</td>
</tr>
<tr>
<td>Reinforcing Steel (C-I-P Raised Sidewalk)</td>
<td>LB/LF</td>
<td>13.50</td>
</tr>
<tr>
<td>Additional Rein. @ Expansion Joints</td>
<td>LB</td>
<td>32.04</td>
</tr>
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</table>

The above concrete quantities are based on a Type D Concrete Curb (See Note 2).

NOTES:
1. Actual width varies depending on type of Retaining Wall used.
2. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 5'-11" dimension is based on a 32" Vertical Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
3. Trim end of Bars ST and SX to clear construction joint for 42" Vertical Shape.
4. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.
5. Contractor to maintain stability of precast coping prior to junction slab completion.
6. When the air gap between the precast coping extension and retaining wall exceeds 2½", fill gap with Full depth Expanded Polystyrene to provide a maximum 2½" air gap.

The above concrete quantities are based on a Type D Concrete Curb (See Note 2).

NOTES:  See Sheet 4 for Elevation View of End Transition.

END VIEW OF 32" VERTICAL SHAPE END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars SS, Bars ST and Bars SX). (Precast Coping Shown, C-I-P Coping Similar)

NOTE: See Sheet 4 for Elevation View of End Transition.

TYPICAL SECTION THRU PRECAST COPING WITH C-I-P RAISED SIDEWALK AND RETAINING WALL AT EXPANSION JOINTS

(32" Vertical Shape Shown, 42" Vertical Shape Similar)

NOTES:
1. Actual width varies depending on type of Retaining Wall used.
2. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 5'-11" dimension is based on a 32" Vertical Shape with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
3. Trim end of Bars ST and SX to clear construction joint for 42" Vertical Shape.
4. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.
5. Contractor to maintain stability of precast coping prior to junction slab completion.
6. When the air gap between the precast coping extension and retaining wall exceeds 2½", fill gap with Full depth Expanded Polystyrene to provide a maximum 2½" air gap.
# ESTIMATED QUANTITIES FOR C-I-P COPING

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>CY/LF</td>
<td>0.326</td>
</tr>
<tr>
<td>Reinforcing Steel (Typical) excluding Bars ST, SX and SS (Typ.)</td>
<td>LB/LF</td>
<td>35.38</td>
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<tr>
<td>Additional Rein. @ Expansion Joints (Steel Dowels)</td>
<td>LB</td>
<td>32.04</td>
</tr>
</tbody>
</table>

The above concrete quantities are based on a Type D Concrete Curb on a level Retaining Wall (See Note 1).
REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B and 5S will be a minimum of 2'-2".
4. Lap splice Bars 5A with Bars 4C. Lap splices will be a minimum of 2'-2".
5. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 2'-0".
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 2'-0", and reinforcing size must be increased to #5 bars (Bars 5C).
7. The Contractor may use deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.

* See Sheet 3 Note 3.