EXPANSION JOINT DETAIL

**Raised Sidewalk expansion joints are to coincide with 3/8" 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 5B 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 3/8" Expansion Joints in raised sidewalk and C-I-P copings perpendicular or radial to the Gutter Line. Provide at 90'-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 3" to 45" from horizontal.
7. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
8. Construct 3/8" V-Grooves in raised sidewalk and C-I-P coping at 30'-0" maximum intervals as shown. Spacing shown is along the Gutter Line.
9. Field cut reinforcing as required to maintain minimum cover (Typ.)
10. For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extend 9" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the build-up concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
11. Finish Sidewalks in accordance with Specification Section 522.
12. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
   - Index 400-090 - Approach Slabs (Flexible Pavement Approaches)
   - Index 400-091 - Approach Slabs (Rigid Pavement Approaches)

CROSS REFERENCE: For Detail "B", see Sheet 4.
**Special Height Bicycle Railing**

Additional Rail required for Special Height Bicycle Railing

Pedestrian/Bicycle Railing

**END VIEW OF 32' VERTICAL SHAPE END TRANSITION FOR GUARDRAIL ATTACHMENT**

(Showing Bars ST, Bars ST and Bars SX)  (Precast Coping Shown, C-I-P Coping Similar)

**NOTES:** See Sheet 4 for End Transition Elevation.

---

**ESTIMATED QUANTITIES FOR PRECAST COPING**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>Concrete (Precasting)</td>
<td>CY/LF</td>
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<tr>
<td>Concrete (C-I-P Raised Sidewalk)</td>
<td>CY/LF</td>
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<tr>
<td>Reinforcing Steel (Precasting) excluding Bars ST, 5X and 5S (Typ.)</td>
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<td>Reinforcing Steel (C-I-P Raised Sidewalk) (Typ.)</td>
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<tr>
<td>Additional Reinf. @ Expansion Joints (Steel Dowels)</td>
<td>LB</td>
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The above concrete quantities are based on a Type D Concrete Curb (See Note 2).

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**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. Any air gap between the precast coping extension and retaining wall exceeds 25"; fill gap with full depth Expanded Polystyrene to provide a maximum 25" air gap.
7. For Bullet Railings, see Index 515-021 and 515-022.
8. Begin placing Railing Bars ST and SX at the railing end and proceed toward Retaining Wall to avoid conflict with guardrail bolt holes. If required, adjustments to the bar spacing for Bars ST and SX shall be made immediately adjacent to Begin or End Bridge Cut, shift and rotate Bars ST and SX as required to maintain cover in End Transition.
Concrete Reinforcing Steel (Typical) excluding Bars 5T, 5X and 5S (Typ.)

UNIT QUANTITY
Coping
6" 45° 35.38
Coping
6" 32.04

Estimated Quantities for C-I-P Coping

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<tr>
<th>ITEM</th>
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<tr>
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<tr>
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<tr>
<td>Additional Rein. @ Expansion Joints (Steel Shoew)</td>
<td>LB</td>
<td>32.04</td>
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Notes:
1. Match roadway curb shape (Type) and height. See Roadway Plans and Index 520-001. 6'-6" dimension is based on a 42" 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 Beginning or End Retaining Wall.
2. If slip forming is used, submit shop drawings for approval showing 3" side cover with the Typical Section dimensions adjusted.
3. Begin placing Railing Bars ST and 5X at the railing end and proceed toward Retaining Wall to avoid conflict with guardrail bolt holes. If required, adjustments to the bar spacing for Bars ST and 5X shall be made immediately adjacent to Beginning or End Retaining Wall. Cut, shift and rotate Bars ST and 5X as required to maintain cover in End Transition.
4. Top of C-I-P Coping (Cont. Joint Required) (Alternates with Bars ST) (Type Varies)
5. Top of Travel Lane or Shoulder Bars 5A @ 6" sp. (Max.)
6. Optional Shear Key @ Joint
7. Top of Railing End Transition Bars 5T @ 1'-0" sp. (Typ.)
8. Spacing 1'-0" = 5'-0" Bars 5S @ 1'-0" sp. (Typ.)
9. Top of THREES-Beam Terminal Connector Bolts
10. 1" Ø Dowel Transfer Devices at Expansion Joints (Typ.)
11. Top of C-I-P Coping (Cont. Joint Required) (Alternates with Bars ST) (Type Varies)
12. Optional Keyway
15. Expanded Polystyrene (3/4) Side
16. Construction Joint Permitted
17. Buildup for Stepped MSE Wall Panels (1'-0" Min., 11/2" Max.)
18. Buildup for Stepped MSE Wall Panels (1'-0" Min., 11/2" Max.)
19. Buildup for Stepped MSE Wall Panels (1'-0" Min., 11/2" Max.)
20. Buildup for Stepped MSE Wall Panels (1'-0" Min., 11/2" Max.)
21. Buildup for Stepped MSE Wall Panels (1'-0" Min., 11/2" Max.)
22. Buildup for Stepped MSE Wall Panels (1'-0" Min., 11/2" Max.)

Revision: 1/1/18

FY 2020-21
STANDARD PLANS
INDEX 521-620
SHEET 3 of 4

Concrete Barrier/Raised Sidewalk
-Wall Coping

42" Vertical Shape
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

<table>
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</tr>
<tr>
<td>Reinforcing Steel</td>
<td>LB/LF</td>
<td>23.38</td>
</tr>
</tbody>
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VERTICAL SHAPE

END TRANSITION ELEVATION FOR 32" VERTICAL SHAPE
(Guardrail Not Shown For Clarity)

STIRRUP BAR ST
To Be Field Cut (7 of each required per Railing End Transition)

STIRRUP BAR SX
To Be Field Cut (7 of each required per Railing End Transition)

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are cut 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 will be a minimum of 2'-2".
5. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 7'-8".
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 5'-8", 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.