EXPANSION JOINT DETAIL

(Junction Slab expansion joints are to coincide with 2" open joints in Traffic Railing)

CROSS REFERENCE: For Detail "A", see Sheet 2.

JUNCTION SLAB NOTES:

1. APPLICATIONS: This junction slab is only applicable for a TL-4 crash test rating. For TL-4 crash test rating increase Expansion Joint Spacing to 60'-0" minimum and provide Bars 5C at 6" spacing within 6'-0" of Open Joints for precut coping with the 42" F-Shape Traffic Railing.

2. CONSTRUCTION REQUIREMENTS: Construct the Junction Slab level transversely and expansion joints plumb; do not construct the Junction Slab or C.I.P. coping perpendicular to the roadway surface. Slip forming is not permitted.

3. Provide Class II concrete for moderately aggressive environments or Class IV for moderate or extremely aggressive environments.

4. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 924.

5. Construct 1/2" Expansion Joints in junction slabs and C.I.P. copings plumb and perpendicular to the Gutter Line. Provide at 90'-0" maximum intervals as shown. Provide 3" mortar plugs in open joints at the base of traffic railings to contain runoff.

6. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 930.

7. Construct 1/2" V-Grooves in junction slabs and C.I.P. copings perp. and perpendicular to the Gutter Line. Provide at 30'-0" maximum intervals as shown. Provide 3" mortar plugs in open joints at the base of traffic railings to contain runoff.

8. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 930.

9. Construct 1/2" V-Grooves in junction slabs and C.I.P. corings plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 2" Expansion Joints and/or Begin or End Junction Slab. V-Grooves are to coincide with V-Grooves in the Traffic Railing.

10. Shoulder or Roadway Pavement is required on top of the junction slab for its entire length on the traffic side of the Traffic Railing. See Typical Sections on Sheet Nos. 2 and 3 for details.

11. Spacing shown is along the Gutter Line. Spacing for non-curved or skewed sections is to be determined by the designer.

12. On MSE Walls provide Dowel Bars 40 and extend to 7" above the top of retaining wall panel. Field cut as required to maintain 2" minimum cover to the top of the build-up concrete. See Wall Company Drawings for number and spacing of Dowel Bars 40.

13. Mark this Index with the following:

- Index No. 420 - Traffic Railing - (32" F-Shape)
- Index No. 425 - Traffic Railing - (42" F-Shape)

14. The following Indexes contain details of the intersection of the retaining wall at approach slabs:

- Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)
- Index No. 20910 - Approach Slabs (Flexible Pavement Approaches)

15. The following Indexes contain details of the intersection of the retaining wall at approach slabs:

- Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)
- Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)

16. Work this Index with the following:

- Number and spacing of Dowel Bars 40.

17. For TL-4 crash test rating increase Expansion Joint Spacing to 60'-0" minimum and provide Bars 5C at 6" spacing within 6'-0" of Open Joints for precut coping with the 42" F-Shape Traffic Railing.

18. On MSE Walls provide Dowel Bars 40 and extend to 7" above the top of retaining wall panel. Field cut as required to maintain 2" minimum cover to the top of the build-up concrete. See Wall Company Drawings for number and spacing of Dowel Bars 40.

19. Mark this Index with the following:

- Index No. 420 - Traffic Railing - (32" F-Shape)
- Index No. 425 - Traffic Railing - (42" F-Shape)

20. The following Indexes contain details of the intersection of the retaining wall at approach slabs:

- Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)
- Index No. 20910 - Approach Slabs (Flexible Pavement Approaches)
### Partial End View of Traffic Railing End Transition for Guardrail Attachment (Showing Bars 5V and Bars 5S) (Precast Coping Shown, C.I.P. Coping Similar)

**NOTE:** See Index No. 420 and Index No. 425, Detail "A" for details.

#### Central Interim Design Standard

**Estimates of Quantities for Precast Coping**

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<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>Concrete (Precast Coping Only)</td>
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<tr>
<td>Concrete (Precast Barrier &amp; Coping)</td>
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<tr>
<td>Concrete (C.I.P. Junction Slab)</td>
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<tr>
<td>Reinforcing Steel (Precast Coping &amp; Traffic Railing)</td>
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<td>Reinforcing Steel (C.I.P. Junction Slab)</td>
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<tr>
<td>Additional Reinf. @ Expansion Joints</td>
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<td>21.36</td>
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(These above concrete quantities are based on a max. superelevation of 6.25% and a 32" F-Shape Traffic Railing.)

### Typical Section Thru Precast 32" F-Shape Traffic Railing, Coping & C-I-P Junction Slab

**Junction Slab Notes:**
1. Match Cross Slope of Travel Lane or Shoulder.
2. The 32" dimension corresponds to a maximum superelevation of 6.25%. For steeper superelevations increase this dimension to match roadway superelevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
4. Minimum length of Junction Slab between expansion joints is 30'.
5. 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.
6. Contractor to maintain stability of precast coping/traffic railing prior to junction slab completion.
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE</th>
<th>PRECAST COPING &amp; 32&quot; W. F. SHAPE</th>
<th>COPING</th>
<th>C-I-P</th>
<th>Precast</th>
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<tbody>
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<td>4'-8&quot;</td>
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<td>5'-10&quot;</td>
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1" Ø Dowel Smooth Bar 2'-0" 2'-0" 7'-0"

**STIRRUP BAR 5P**

9'-6" (Precast Only), 8'-0" (Precast or C-I-P Railing)

**STIRRUP BAR 4N**

5S, 5C, 5F & 5S

**BAR 4A**

**STIRRUP BAR 5V2**

**REINFORCING STEEL NOTES:**

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion and open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B & 5S will be a minimum of 2'-0".
4. For Precast Copings only, lap splice Bars 4A with Bars 5C at alternate Bars 4A for C-I-P Copings.
5. The Contractor may use either full length Bars 4A or lap splice with Bars 5C at alternate Bars 4A for C-I-P Copings.
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-45" (32" F-Shape) or 1'-7" (42" F-Shape).
7. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 4'-8".
8. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

**ESTIMATED QUANTITIES FOR C.I.P. COPING**

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<tr>
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<tr>
<td>Additional Rein. @ Expansion Joint</td>
<td>LB/FT</td>
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(The above concrete quantities are based on a max. super-elevation of 6.25%, beneath a 32" F-Shape Traffic Railing.)

**REVISIONS**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3D dimension corresponds to a maximum super-elevation of 6.25%. For steeper super-elevations increase this dimension to match roadway super-elevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
4. Minimum length of Junction Slab between expansion joints is 30'-0".
5. Section No. 430 & 425 for additional Traffic Railing Details.
6. Contractor to maintain stability of precast coping prior to junction slab completion.

**OPTIONAL C.I.P. JUNCTION SLAB KEYWAY**

**JUNCTION SLAB NOTES:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3D dimension corresponds to a maximum super-elevation of 6.25%. For steeper super-elevations increase this dimension to match roadway super-elevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
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5. See Index No. 430 & 425 for additional Traffic Railing Details.
6. Contractor to maintain stability of precast coping prior to junction slab completion.

**F-SHAPE TRAFFIC RAILINGS**

**BILL OF REINFORCING STEEL**

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**TYPICAL SECTION THRU C.I.P. TRAFFIC RAILING & JUNCTION SLAB (PRECAST COPING OPTIONAL)**

**REINFORCING STEEL NOTES:**

1. Match Cross Slope of Travel Lane or Shoulder.
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4. Minimum length of Junction Slab between expansion joints is 30'-0".
5. See Index No. 430 & 425 for additional Traffic Railing Details.
6. Contractor to maintain stability of precast coping prior to junction slab completion.

**F-SHAPE TRAFFIC RAILINGS**

**WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB**

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**Options:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3D dimension corresponds to a maximum super-elevation of 6.25%. For steeper super-elevations increase this dimension to match roadway super-elevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
4. Minimum length of Junction Slab between expansion joints is 30'-0".
5. See Index No. 430 & 425 for additional Traffic Railing Details.
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**OPTIONAL C.I.P. JUNCTION SLAB KEYWAY**

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**F-SHAPE TRAFFIC RAILINGS**

**WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB**

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5. See Index No. 430 & 425 for additional Traffic Railing Details.
6. Contractor to maintain stability of precast coping prior to junction slab completion.

**F-SHAPE TRAFFIC RAILINGS**

**WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB**

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**Options:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3D dimension corresponds to a maximum super-elevation of 6.25%. For steeper super-elevations increase this dimension to match roadway super-elevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
4. Minimum length of Junction Slab between expansion joints is 30'-0".
5. See Index No. 430 & 425 for additional Traffic Railing Details.
6. Contractor to maintain stability of precast coping prior to junction slab completion.

**REVISIONS**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3D dimension corresponds to a maximum super-elevation of 6.25%. For steeper super-elevations increase this dimension to match roadway super-elevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
4. Minimum length of Junction Slab between expansion joints is 30'-0".
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**F-SHAPE TRAFFIC RAILINGS**

**WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB**

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**Options:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3D dimension corresponds to a maximum super-elevation of 6.25%. For steeper super-elevations increase this dimension to match roadway super-elevation.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade.
4. Minimum length of Junction Slab between expansion joints is 30'-0".
5. See Index No. 430 & 425 for additional Traffic Railing Details.
6. Contractor to maintain stability of precast coping prior to junction slab completion.
CROSS REFERENCES:
1. For Detail "A" see Sheet 1.
2. For "Expansion Joint Detail" see Sheet 1.
3. For "Junction Slab Notes" see Sheet 1.

PLAN VIEW
(Skewed Approach Slab shown, Perpendicular Approach Slab similar)
(Traffic Railing reinforcement not shown, except for Bars 7P1 & 4V1)

PARTIAL PLAN VIEW OF GUARDRAIL TRANSITION AT BEGIN OR END RETAINING WALL
(Precast Coping shown, C.I.P. Coping similar)
(Traffic Railing reinforcement not shown, except for Bars 7P1 & 4V1)

PARTIAL PLAN VIEW OF COPING WITH CURB
(Precast Coping shown, C.I.P. Coping similar)
(Traffic Railing reinforcement not shown, except for Bars 4P5, 4R3, 7P1 & 4V1)