Coping

"Open Joint in Precast"

DESCRIPTION:

Open joints in Concrete Barrier

10'/24'/20'/18' (See Note 5)

Shear Key

for details)

1" Ø Dowel Load Transfer

REVISION

M in.

3"

Index 400-091 - Approach Slabs (Rigid Pavement Approaches)

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

Drawings for number and spacing of Dowel Bars 4D.

Field cut reinforcing as required to maintain minimum cover (Typ.)

Spacing Bars 4V1

6" Spacing (Typ.) (See Note 9)

2" V-Groove (See Note 7 & Detail "M")

1/2" Open Joint in Precast Coping

30'-0" Max. (See Note 7)

3/4" Expansion Joint Spacing — 30'-0" Min. (36" Single-Slope), 60'-0" Min. (42" Single-Slope), 90'-0" Max. (See Note 4)

PARTIAL PLAN VIEW FOR 36" SINGLE-SLOPE CONCRETE BARRIER

(Precast Coping Shown, C-I-P Coping Similar) (Concrete Barrier not Shown for Clarity)

PARTIAL ELEVATION VIEW

(Precast Coping and Junction Slab Reinforcing not Shown for Clarity)

(Precast Coping Shown, C-I-P Coping Similar)

Concrete Barrier/Junction Slab

SINGLE SLOPE CONCRETE BARRIERS

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

1. Match Cross Slope of Travel Lane or Shoulder.
2. Vary Joint Slab slope based on roadway cross slope to maintain a minimum 6" asphalt thickness at the edge of the slab as shown.
3. For Rigide Pavement (Concrete), Joint Slab may be thickened to match finished grade. Vary the Joint Slab slope to maintain a minimum 1'-6" thickness at the edge of the slab.
4. For Asphalt, Shoulder or roadway Pavement will be SuperPave Structural asphalt. Vary the Joint Slab slope to maintain a minimum 6" asphalt thickness at the edge of the slab.
5. Minimum length of Joint Slab between expansion joints is 30'-0".
6. At Contractor's option, mechanical couplers may be used to splice reinforcing.
7. Complete details, including reinforcement lengths are required in the Shop Drawings. Provide mechanical couplers in accordance with Specification Section 415. Mechanical couplers shall develop 125% of the bar yield strength.
8. When the air gap between the precast coping extension and retaining wall exceeds 2-1/2", fill gap with full depth Expanded Polystyrene to provide a maximum 2-1/2" air gap.
9. Angle varies = 0° min., 25° max.

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**CONCRETE BARRIER/JUNCTION SLAB - WALL COPING**

**SYMBOLS:**

- C-I-P: Concrete-In-Place
- MSE: Mechanically Stabilized Earth

**INDEX:**

- FY 2019-20
- STANDARD PLANS

**CONCRETE BARRIER/JUNCTION SLAB - WALL COPING**

**SINGLE-SLOPE CONCRETE BARRIERS**

**TYPICAL SECTION THRU PRECAST 36" SINGLE-SLOPE CONCRETE BARRIER AND COPING WITH C-I-P JUNCTION SLAB**

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**FLY 2019-20**

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**LAST REVISION:** 3/11/18

**DESCRIPTION:**

**REVISED BY:**

**CONTRACTOR:**

**LAST REVIEWED:**

**PRODUCT:**

**SUPPLIERS:**

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**DRAWN:**

**DRAWN BY:**

**CHECKED:**

**CHECKED BY:**

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**PLAN - RAILING END TRANSITION  (Showing Bars V and S)**

**DETAIL "A"**

**= PRECAST COPING**

**= C-I-P COPING**

**DETAIL "A"**

**= SHOWING LOCATIONS OF 1/2" V-GROOVES AND 1/2" PREFORMED EXPANSION JOINT FILLER**

**PRECAST COPING**

**C-I-P COPING**

**PARTIAL END VIEW OF CONCRETE BARRIER END TRANSITION FOR GUARDRAIL ATTACHMENT**

**Precast Coping Shown, C-I-P Coping Similar**

---

**PLAN - RAILING END TRANSITION (Showing Bars P and S)**

---

**SINGLE-SLOPE CONCRETE BARRIERS**

**TYPICAL SECTION THRU PRECAST 36" SINGLE-SLOPE CONCRETE BARRIER AND COPING WITH C-I-P JUNCTION SLAB**

---

**NOTES:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. Vary Joint Slab slope based on roadway cross slope to maintain a minimum 6" asphalt thickness at the edge of the slab as shown.
3. For Rigide Pavement (Concrete), Joint Slab may be thickened to match finished grade. Vary the Joint Slab slope to maintain a minimum 1'-6" thickness at the edge of the slab.
4. For Asphalt, Shoulder or Roadway Pavement will be SuperPave Structural asphalt. Vary the Joint Slab slope to maintain a minimum 6" asphalt thickness at the edge of the slab.
5. Minimum length of Joint Slab between expansion joints is 30'-0".
6. At Contractor's option, mechanical couplers may be used to splice reinforcing.
7. Complete details, including reinforcement lengths are required in the Shop Drawings. Provide mechanical couplers in accordance with Specification Section 415. Mechanical couplers shall develop 125% of the bar yield strength.
8. When the air gap between the precast coping extension and retaining wall exceeds 2-1/2", fill gap with full depth Expanded Polystyrene to provide a maximum 2-1/2" air gap.
9. Angle varies = 0° min., 25° max.

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**REVISED BY:**

**CHECKED BY:**

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**DRAWN:**

**DRAWN BY:**

**CHECKED:**

**CONTRACTOR:**

**LAST REVIEWED:**

**PRODUCT:**

**SUPPLIERS:**

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**PLAN - RAILING END TRANSITION  (Showing Bars V and S)**

**DETAIL "A"**

**= PRECAST COPING**

**= C-I-P COPING**

**DETAIL "A"**

**= SHOWING LOCATIONS OF 1/2" V-GROOVES AND 1/2" PREFORMED EXPANSION JOINT FILLER**

**PRECAST COPING**

**C-I-P COPING**

**PARTIAL END VIEW OF CONCRETE BARRIER END TRANSITION FOR GUARDRAIL ATTACHMENT**

**Precast Coping Shown, C-I-P Coping Similar**

---

**PLAN - RAILING END TRANSITION (Showing Bars P and S)**

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**SINGLE-SLOPE CONCRETE BARRIERS**

**TYPICAL SECTION THRU PRECAST 36" SINGLE-SLOPE CONCRETE BARRIER AND COPING WITH C-I-P JUNCTION SLAB**

---

**NOTES:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. Vary Joint Slab slope based on roadway cross slope to maintain a minimum 6" asphalt thickness at the edge of the slab as shown.
3. For Rigide Pavement (Concrete), Joint Slab may be thickened to match finished grade. Vary the Joint Slab slope to maintain a minimum 1'-6" thickness at the edge of the slab.
4. For Asphalt, Shoulder or Roadway Pavement will be SuperPave Structural asphalt. Vary the Joint Slab slope to maintain a minimum 6" asphalt thickness at the edge of the slab.
5. Minimum length of Joint Slab between expansion joints is 30'-0".
6. At Contractor's option, mechanical couplers may be used to splice reinforcing.
7. Complete details, including reinforcement lengths are required in the Shop Drawings. Provide mechanical couplers in accordance with Specification Section 415. Mechanical couplers shall develop 125% of the bar yield strength.
8. When the air gap between the precast coping extension and retaining wall exceeds 2-1/2", fill gap with full depth Expanded Polystyrene to provide a maximum 2-1/2" air gap.
9. Angle varies = 0° min., 25° max.

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**LAST REVISION:** 3/11/18

**DESCRIPTION:**

**REVISED BY:**

**CHECKED BY:**

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**DRAWN:**

**DRAWN BY:**

**CHECKED:**

**CONTRACTOR:**

**LAST REVIEWED:**

**PRODUCT:**

**SUPPLIERS:**

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**PLAN - RAILING END TRANSITION  (Showing Bars V and S)**

**DETAIL "A"**

**= PRECAST COPING**

**= C-I-P COPING**

**DETAIL "A"**

**= SHOWING LOCATIONS OF 1/2" V-GROOVES AND 1/2" PREFORMED EXPANSION JOINT FILLER**

**PRECAST COPING**

**C-I-P COPING**

**PARTIAL END VIEW OF CONCRETE BARRIER END TRANSITION FOR GUARDRAIL ATTACHMENT**

**Precast Coping Shown, C-I-P Coping Similar**

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**PLAN - RAILING END TRANSITION (Showing Bars P and S)**

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**SINGLE-SLOPE CONCRETE BARRIERS**

**TYPICAL SECTION THRU PRECAST 36" SINGLE-SLOPE CONCRETE BARRIER AND COPING WITH C-I-P JUNCTION SLAB**

---

**NOTES:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. Vary Joint Slab slope based on roadway cross slope to maintain a minimum 6" asphalt thickness at the edge of the slab as shown.
3. For Rigide Pavement (Concrete), Joint Slab may be thickened to match finished grade. Vary the Joint Slab slope to maintain a minimum 1'-6" thickness at the edge of the slab.
4. For Asphalt, Shoulder or Roadway Pavement will be SuperPave Structural asphalt. Vary the Joint Slab slope to maintain a minimum 6" asphalt thickness at the edge of the slab.
5. Minimum length of Joint Slab between expansion joints is 30'-0".
6. At Contractor's option, mechanical couplers may be used to splice reinforcing.
7. Complete details, including reinforcement lengths are required in the Shop Drawings. Provide mechanical couplers in accordance with Specification Section 415. Mechanical couplers shall develop 125% of the bar yield strength.
8. When the air gap between the precast coping extension and retaining wall exceeds 2-1/2", fill gap with full depth Expanded Polystyrene to provide a maximum 2-1/2" air gap.
9. Angle varies = 0° min., 25° max.
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

MARK SIZE LENGTH PRECAST COPING FOR SINGLE-SLOPE C-I-P COPING FOR SINGLE-SLOPE

(36") (42") (36") (42")
A 5 5'-3" 5'-5" 7'-9" 8'-0"
B1 5 11'-6" 9'-6" AS REQD. AS REQD.
B2 5 AS REQD. AS REQD. AS REQD. AS REQD.
C 5 4'-10" 4'-10" N/A N/A
F 5 4'-10" 4'-10" 4'-10" 4'-10"
L 5 4'-5" 4'-5" 4'-5" 4'-5"
P 4 5'-11" N/A 5'-11" N/A
P 5 N/A 7'-0" 7'-0" N/A
S 4 11'-6" N/A AS REQD. AS REQD.
S 5 6'-6" N/A 9'-6" AS REQD. AS REQD.
V1 4 5'-0" N/A 5'-9" N/A
V1 5 N/A 6'-4" N/A 6'-4"
I" Ø Dowel Smooth Bar 2'-0" 2'-0" 2'-0" 2'-0"

See Table

STIRRUP BAR
4P (36") 5P (42")

STIRRUP BAR
4V1 (36") 5V1 (42")

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 & 6S will be a minimum of 2'-2".
4. For Precast Copings only, lap splice Bars 5A with Bars 5C. Lap splices will be a minimum of 2'-2".
5. The Contractor may use either full length Bars 5A or lap splice with Bars 5C at Bars 5A for C-I-P Copings.
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-7½" for 36" Single-Slope or 1'-4½" for 42" Single-Slope.
7. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 4'-8".
8. When approved by the Engineer, the Contractor may use deformed Welded Wire Reinforcement (WWR) meeting the requirements of Specification Section 93.
9. Contractor may use a single #5 stirrup in lieu of two bars for 4P and 4V1.

ESTIMATED QUANTITIES FOR C-I-P

ITEM UNIT QUANTITY (36") QUANTITY (42")
Concrete CY/LF 0.376 0.420
Reinforcing Steel (Typical) (Inclues Bars 5C & 5F) LB/LF 62.45 82.17
Additional Reinf. @ Expansion Joint (Steel Dowels) LB 21.36 21.36

(The above concrete quantities are based on a max. super elevation of 6.25%)

TYPICAL SECTION THRU C-I-P CONCRETE BARRIER WITH C-I-P JUNCTION SLAB AND C-I-P COPING

PRECAST COPING SIMILAR WITH C-I-P BUILDUP

NOTES:
1. Match Cross Slope of Travel Lane or Shoulder.
2. Vary the Junction Slab slope based on the roadway cross slope to maintain a minimum 6" asphalt depth at the edge of the slab.
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" for 36" Single-Slope or 60'-0" for 42" Single-Slope.
5. Contractor to maintain stability of precast coping prior to junction slab completion. In the shop drawings, show reinforcement for optional extension required for stability, shipping and handling. Maintain 2" minimum concrete cover.
6. If slip forming is used, submit shop drawings for approval showing 2½" side cover with the Typical Section dimensions adjusted.

ESTIMATED QUANTITIES FOR C-I-P

ITEM UNIT QUANTITY (36") QUANTITY (42")
Concrete CY/LF 0.376 0.420
Reinforcing Steel (Typical) (Inclues Bars 5C & 5F) LB/LF 62.45 82.17
Additional Reinf. @ Expansion Joint (Steel Dowels) LB 21.36 21.36

(The above concrete quantities are based on a max. super elevation of 6.25%)

CONCRETE BARRIER/JUNCTION SLAB

BILL OF REINFORCING STEEL

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521-610

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