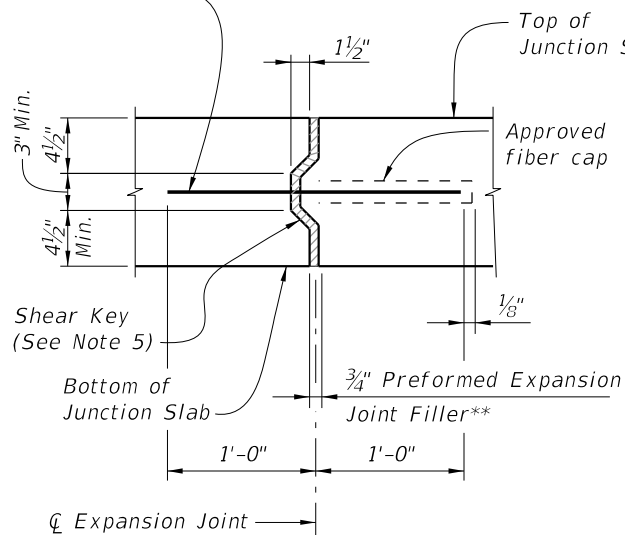


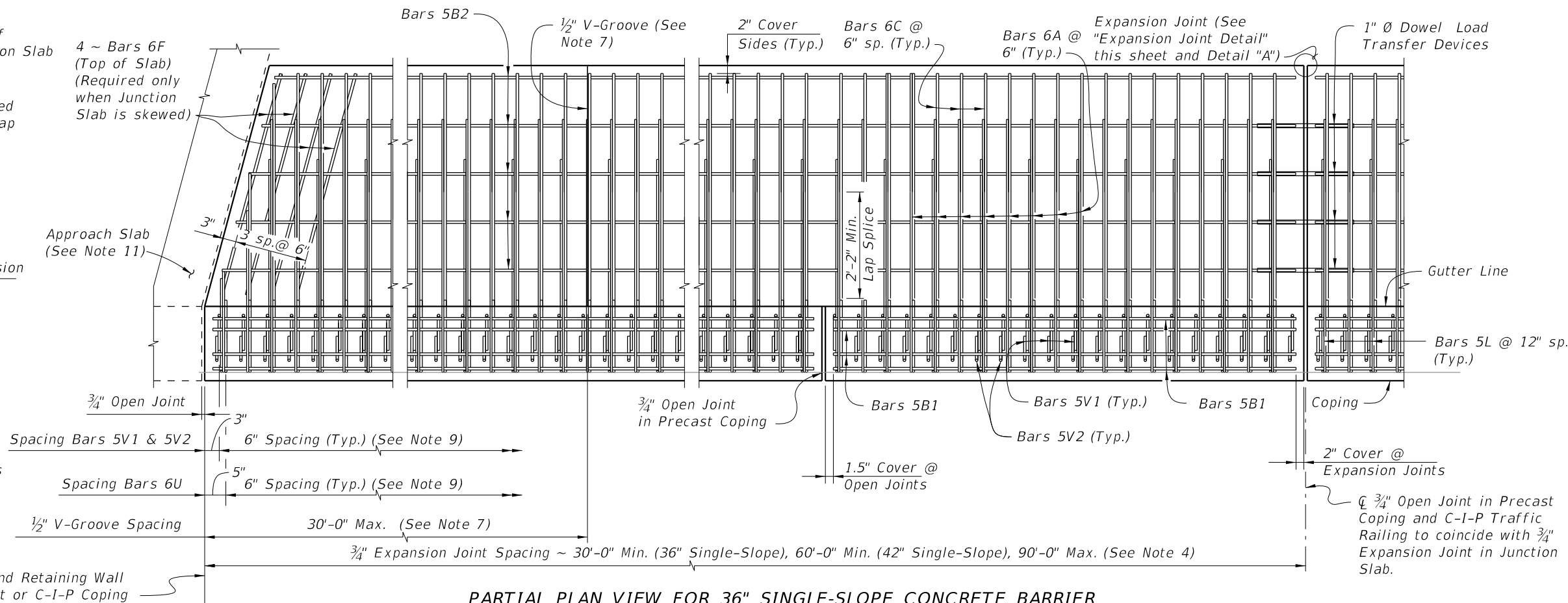
1" Ø FRP Dowel Load Transfer Devices (See Typical Sections for details)



EXPANSION JOINT DETAIL

(Junction Slab expansion joints are to coincide with 3/4" open joints in Concrete Barrier)

** Stay-In-Place Plastic Preformed Bond Breakers are permitted to form joints.

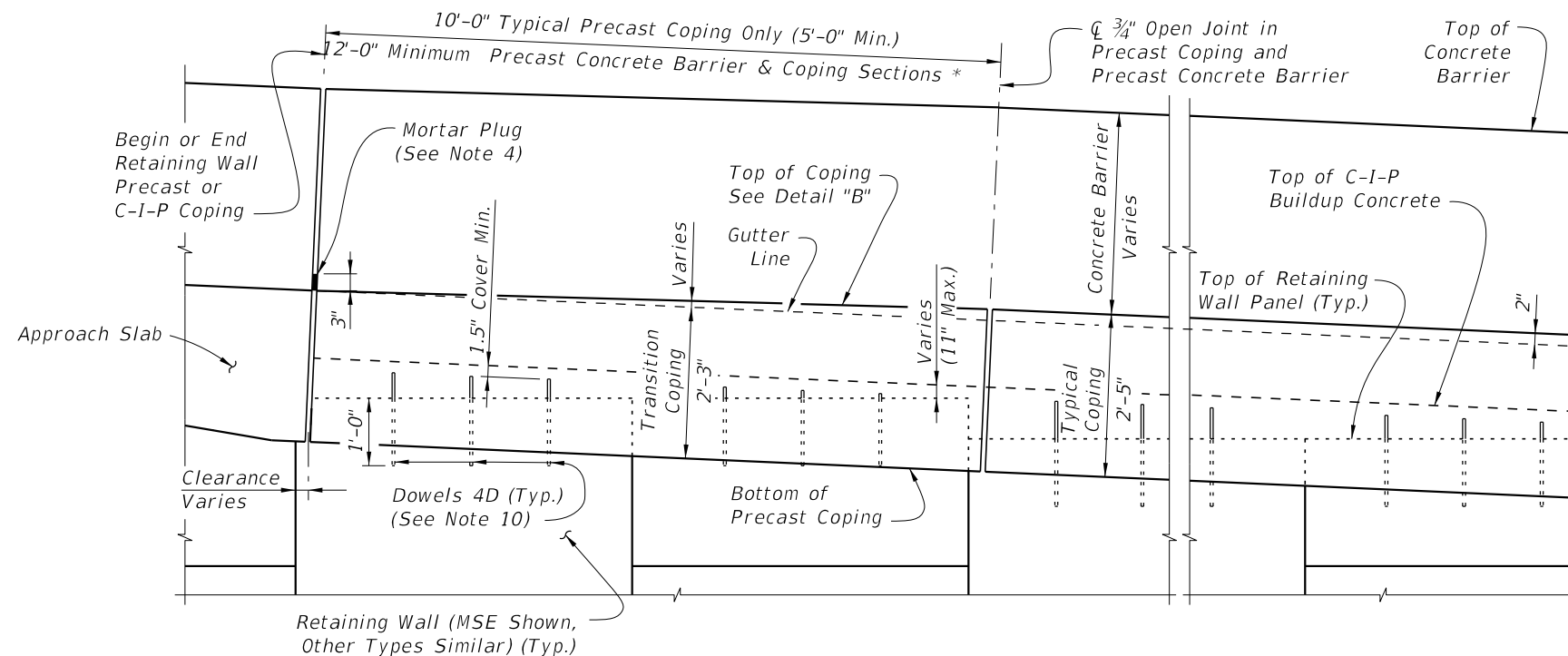


PARTIAL PLAN VIEW FOR 36" SINGLE-SLOPE CONCRETE BARRIER
(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
(Precast Coping Shown, C-I-P Coping Similar) (Concrete Barrier not Shown for Clarity)

CROSS REFERENCE: For Detail "A", see Sheet 2.
For Detail "B", see Sheet 3.

JUNCTION SLAB NOTES:

- Construct the expansion joints, V-Grooves and face of coping plumb.
- Provide Class II concrete.
- Dowel Load Transfer Devices will be 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.
- Construct 3/4" Expansion Joints in junction slabs and C-I-P copings plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown. Provide 3"x3" Mortar plugs in open joints at the base of Concrete Barriers to contain runoff.
- Shear Keys in Junction Slab are required. Tongue Slope on Shear Key must be constant and between 5° to 45° from horizontal.
- Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
- Construct 1/2" V-Grooves in junction slabs and C-I-P copings at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Concrete Barrier.
- Shoulder or Roadway Pavement is required on top of the junction slab for its entire length on the traffic side of the Concrete Barrier. See Typical Sections on Sheets 2 and 3 for details.
- Spacing shown is along the Gutter Line.
- For Precast Coping only, provide Dowel Bars 4D embedded 1'-0" and extended 9" above the top of MSE wall panels. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
- 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)
- Junction slabs with rigid pavement: the two inch increase in concrete barrier height is not required.
- There are two options to accommodate the 2" height transitions :
A. Raise the top of coping elevation 2" and mount either a 36" or 42" standard barrier on top
B. Transition the height of the concrete barrier by gradually extending the toe and back of the barrier 2" while keeping the top of coping elevation even with the gutterline elevation.
- The barrier construction joint must be at the interface of the coping and the barrier base. Embed the V bars a minimum of 9" below the construction joint.
- For embedded conduit and junction boxes, see Index 630-010.



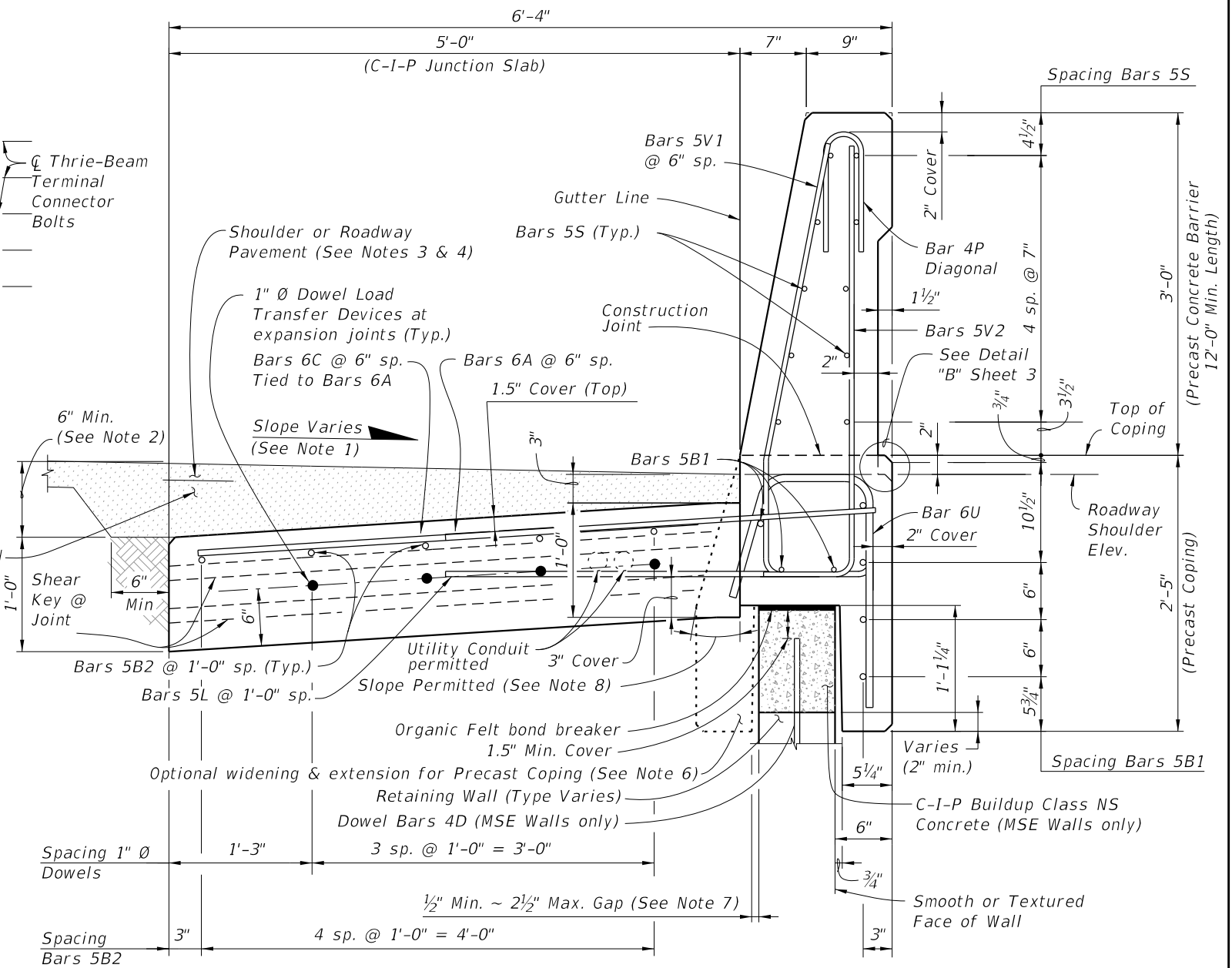
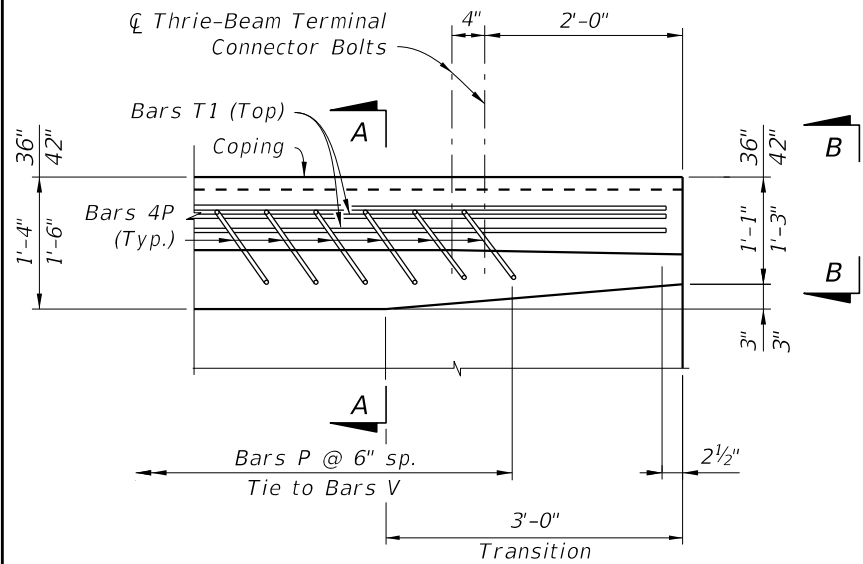
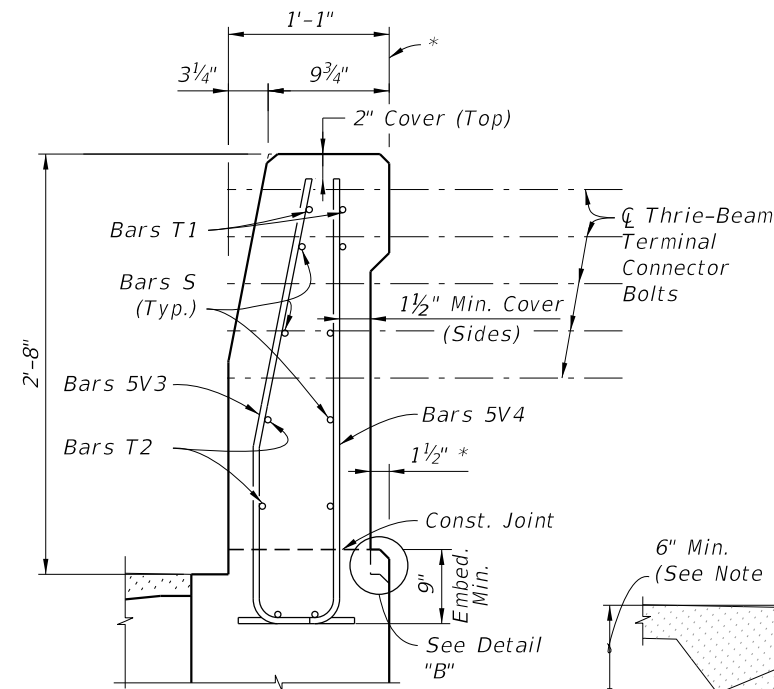
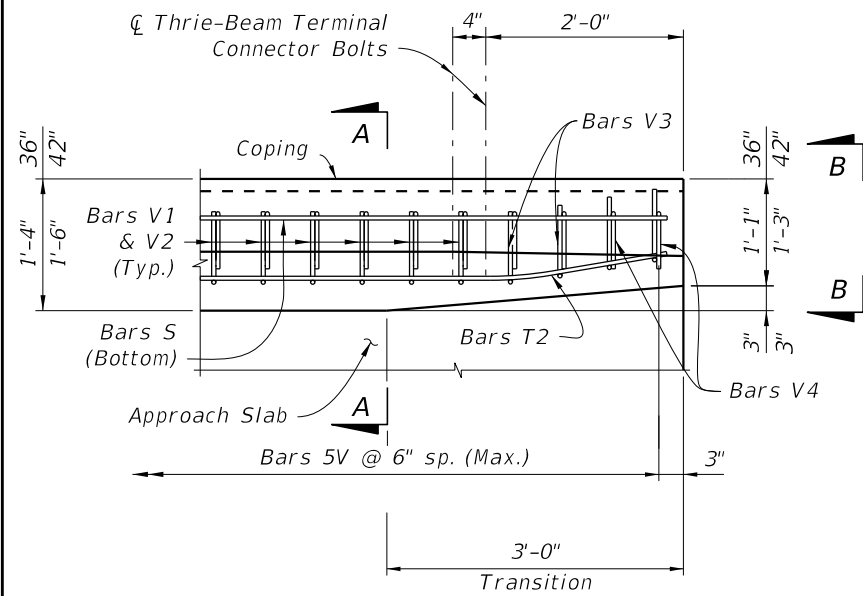
PARTIAL ELEVATION VIEW
(Precast Coping and Junction Slab Reinforcing not Shown for Clarity)
(Precast Coping Shown, C-I-P Coping Similar)

* C-I-P End Section must be ≥ 12'-0".

SINGLE-SLOPE CONCRETE BARRIERS

| | | | | | | |
|---------------------------|--------------|--|------------------------------|---|---------|--------|
| LAST REVISION 11/01/21 | DESCRIPTION: | | FY 2023-24 STANDARD PLANS | CONCRETE BARRIER/JUNCTION SLAB - WALL COPING (FRP) | INDEX | SHEET |
| | | | | | 521-611 | 1 of 4 |

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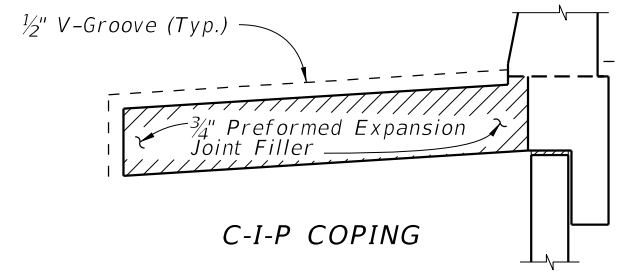
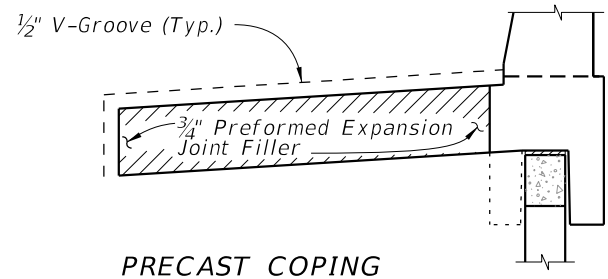


*** Transition the Concrete Barrier Height to 32" as shown in Index 521-427 or 521-428. See Note 9.

PLAN - RAILING END TRANSITION (Showing Bars P and T1)

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

RAILING END TRANSITION DETAILS ***



DETAIL "A"

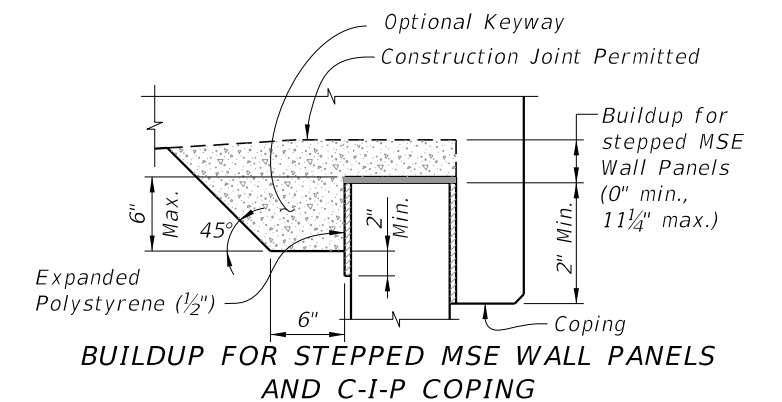
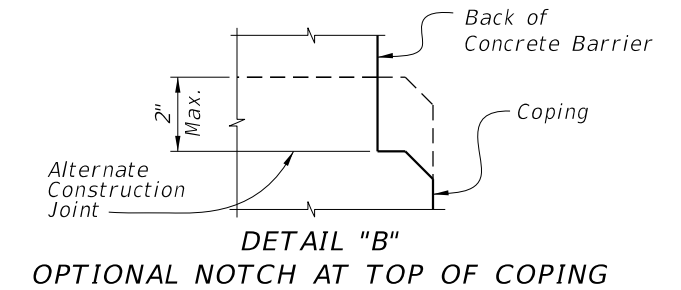
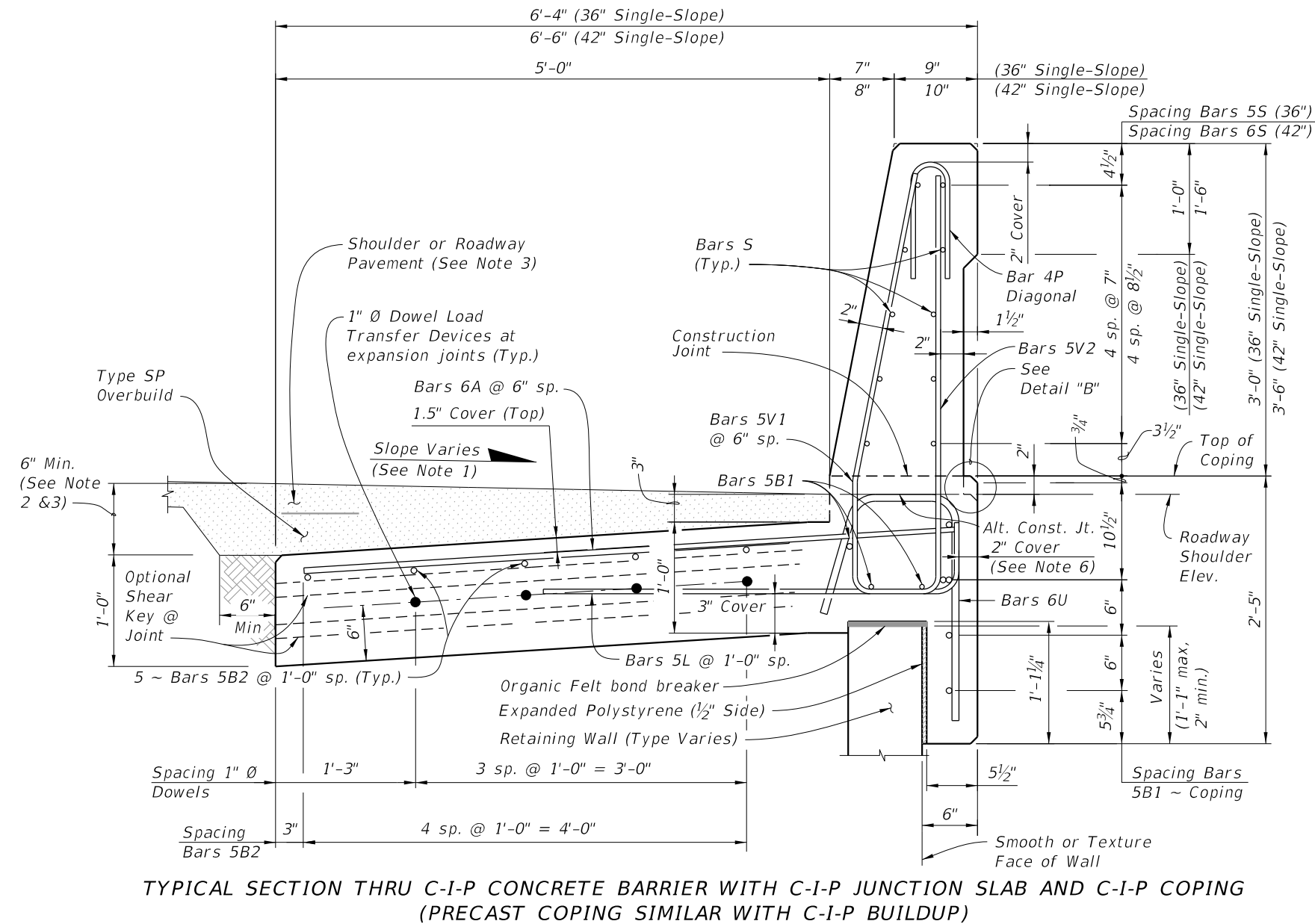
(Showing Locations of 1/2" V-Grooves and 3/4" Preformed Expansion Joint Filler)

NOTES:

1. Match Cross Slope of Travel Lane or Shoulder.
2. Vary Junction Slab slope based on roadway cross slope to maintain a minimum 6" asphalt depth at the inside edge of the slab as shown.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finished grade. Vary the Junction Slab slope to maintain a minimum 1'-6" asphalt thickness at the inside edge of the slab.
4. See Roadway Plans for asphalt shoulder, roadway pavement and overbuild.
5. Minimum length of Junction Slab between expansion joints is 30'-0".
6. Contractor to maintain stability of precast coping/Concrete Barrier prior to junction slab completion. In the Shop Drawings, show reinforcement for optional extension required for stability, shipping and handling. Maintain 1 1/2" minimum concrete cover.
7. 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.
8. Angle varies ~ 0° min., 25° max.
9. The height of the concrete barrier at the guardrail connection is 32" from the riding surface for all pavement types. See Index 534-001 for connection details.
10. 2" cover allows for 1/2" variance due to slip forming.

SINGLE-SLOPE CONCRETE BARRIERS

| | | | | | | | |
|---------------------------|----------|--------------|--|------------------------------|---|---------|--------|
| LAST REVISION 11/01/22 | REVISION | DESCRIPTION: | | FY 2023-24 STANDARD PLANS | CONCRETE BARRIER/JUNCTION SLAB - WALL COPING (FRP) | INDEX | SHEET |
| | | | | | | 521-611 | 2 of 4 |



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 inside edge of the slab.
3. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finish grade. Vary the Junction Slab slope to maintain a minimum 1'-6" thickness at the inside edge of the slab.
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 1.5" minimum concrete cover.
6. 2" cover allows for 1/2" variance due to slip forming.

ESTIMATED QUANTITIES FOR C-I-P

| ITEM | UNIT | QUANTITY | |
|--|-------|----------|-------|
| | | (36") | (42") |
| Concrete | CY/LF | 0.376 | 0.420 |
| GFRP (excludes Bars 6C & 6F) | LF/LF | 69.42 | 72.41 |
| Additional Reinf. @ Expansion Joint (Dowels) | LF | 8.00 | 8.00 |

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

SINGLE-SLOPE CONCRETE BARRIERS

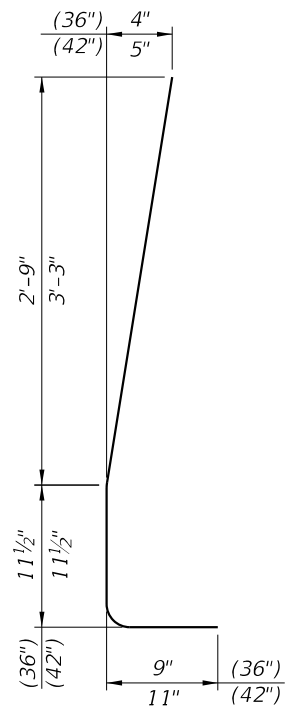
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|---------------------------|--------------|--|--------------------------------------|---|---------|--------|
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| | | | | | 521-611 | 3 of 4 |

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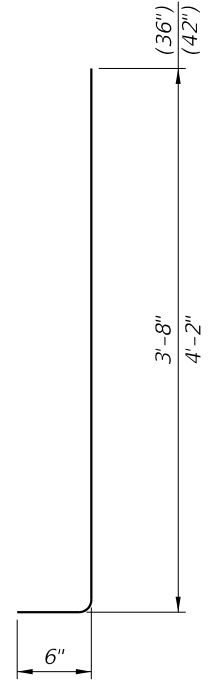
FRP BENDING DIAGRAMS

FRP REINFORCING

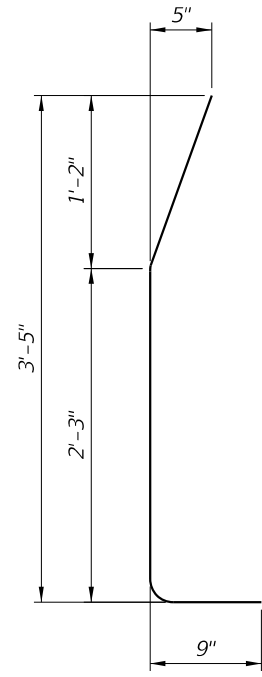
| MARK | SIZE | LENGTH | | | |
|------------|------------|---------------------------------|----------|-------------------------------|----------|
| | | PRECAST COPING FOR SINGLE-SLOPE | | C-I-P COPING FOR SINGLE-SLOPE | |
| | | (36") | (42") | (36") | (42") |
| A | 6 | 5'-3" | 5'-5" | 7'-10" | 8'-0" |
| B1 | 5 | 11'-6" | 9'-6" | AS REQD. | AS REQD. |
| B2 | 5 | AS REQD. | AS REQD. | AS REQD. | AS REQD. |
| C | 6 | 4'-10" | 4'-10" | N/A | N/A |
| F | 6 | 4'-10" | 4'-10" | 4'-10" | 4'-10" |
| L | 5 | 4'-5" | 4'-5" | 4'-5" | 4'-5" |
| P | 4 | 2'-7" | 2'-7" | 2'-7" | 2'-7" |
| S | 5 | 11'-6" | N/A | AS REQD. | N/A |
| S | 6 | N/A | 9'-6" | N/A | AS REQD. |
| T1 | 5 | 6'-1" | N/A | 6'-1" | N/A |
| T1 | 6 | N/A | 9'-6" | N/A | 9'-6" |
| T2 | 5 | 6'-1" | N/A | 6'-1" | N/A |
| T2 | 6 | N/A | 6'-1" | N/A | 6'-1" |
| U | 7 | 4'-4" | 4'-6" | 4'-4" | 4'-6" |
| V1 | 5 | 4'-6" | 5'-2" | 4'-6" | 5'-2" |
| V2 | 5 | 4'-3" | 4'-8" | 4'-3" | 4'-8" |
| V3 | 5 | 4'-2" | 4'-2" | 4'-2" | 4'-2" |
| V4 | 5 | 3'-11" | 3'-11" | 3'-11" | 3'-11" |
| 1" Ø Dowel | Smooth Bar | 2'-0" | 2'-0" | 2'-0" | 2'-0" |



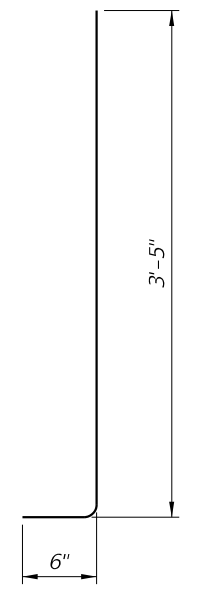
STIRRUP BAR 5V1



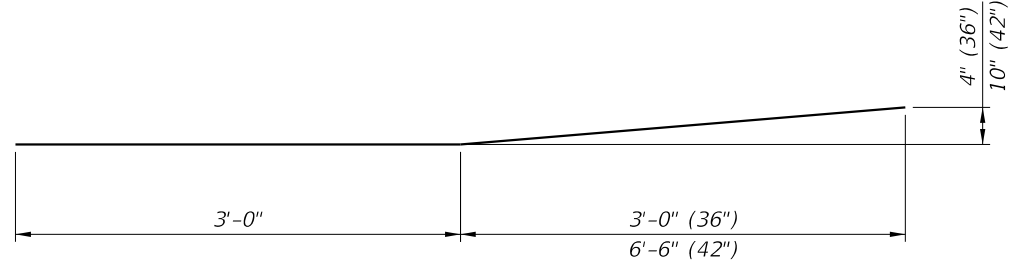
STIRRUP BAR 5V2



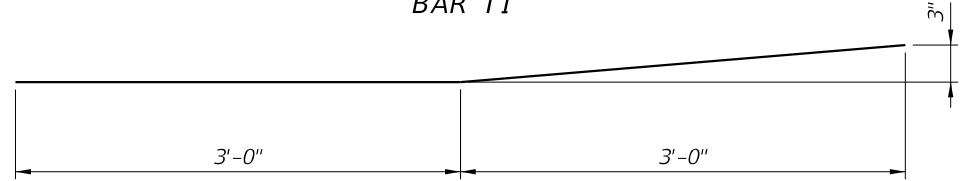
STIRRUP BAR 5V3



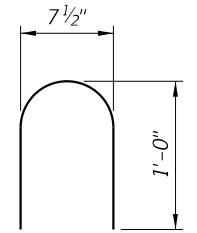
STIRRUP BAR 5V4



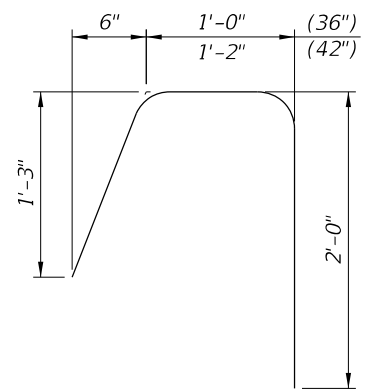
BAR T1



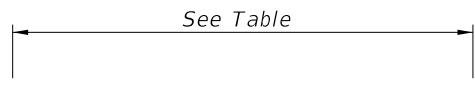
BAR T2



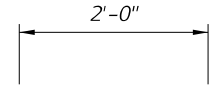
STIRRUP BAR 4P



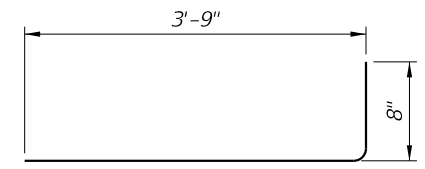
BAR 6U



BARS 6A, 5B1, 5B2, 6C, 6F, 5S, & 6S



1" Ø DOWEL



BARS 5L

REINFORCING STEEL NOTES:

- All bar dimensions in the bending diagrams are out to out.
- All reinforcing at expansion and open joints will have a 1.5" minimum cover.
- Lap splices for Bars 5B & 5S will be a minimum of 2'-2".
- For Precast Copings only, lap splice Bars 6A with Bars 6C. Lap splices will be a minimum of 2'-5".
- The Contractor may use either full length Bars 7A or lap splice with Bars 6C at Bars 5A for C-I-P Copings.
- Contractor may use a single #5 stirrup in lieu of two bars for 5P and 5V1.
- FRP Bars can not be field bent.

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