PRECAST SEGMENT TO SEGMENT TONGUE & GROOVE TRANSVERSE JOINTS

SECTION A-A (2" Cover - Thin Wall Detail)

SECTION A-A (3" Cover - Thin Wall Detail)

Note:
Bottom Slab Joints in Type B Boxes may be single tongue & groove joints as shown in Section A-A when the Top Slab Joints are oriented as shown in Schematic "A".

ALTERNATE BOTTOM SLAB TRANSVERSE JOINT TYPICAL SECTION
(DOUBLE-SIDED TONGUE & GROOVE JOINT)
(All reinforcing not shown for clarity)

NOTE:
At the Contractor's option when the box culvert reinforcing utilizes WWR, extend wall and slab reinforcing into the joint and bend to maintain cover in lieu of 4"x4" ~ W4.0xW4.0 WWR at joint. Transverse wire in tongue may be cut at corners of box to allow bending of the WWR.

TWO-PIECE PRECAST SEGMENT ADDITIONAL JOINT DETAILS
(TYPE B BOX)
**New Precast Box Culvert**

- Filter Fabric wrapped around construction joint
- Outside Face of Wall/Slab
- Longitudinal reinforcing
  - Mechanical couplers or 2'-0" extension of precast box reinforcing
  - Equivalent reinforcing to C-I-P design shown in plans

**Cast-In-Place (C-I-P) Transition**

- 4'-0" (Typ.)

**Splice**

- Existing Box Culvert to remain
- Inside Face of Wall/Slab
- Longitudinal bottom slab reinforcing
- Circumferential bottom slab reinforcing
- Cutoff wall reinforcing (Typ.)
- Thickness of C-I-P bottom slab in plans (Tb)
- Mechanical couplers or 1'-6" Min. bar extension (full length bar extension or adhesive bonded dowel bars with 1'-0" embedment permitted)

**Face of Precast End Segment**

- Precast Box Culvert
- Face of Precast End Segment
- (As per Plans)

**SECTION D-D**

- C-I-P Toe Slab & Cutoff Wall Details and Connection to Precast Box
  - Provide additional 4" depth of cutoff wall at no additional cost.

**SECTION B-B**

- Top slab to Wall Joint (Keyed Joint)
  - Bend bottom reinforcing as required to maintain cover at joint
- Type D-3 Filter Fabric (full length of horizontal joint)
- #4 Stirrups @ 1'-0" Max. spacing

**SECTION E-E**

- Exterior Wall/Slab Transition Detail for Precast Extension
  - Type I Connection shown, Type II Connection similar

**INDEX**

- 01/01/12
- FY 2018-19
- 400-291
PIPE BLOCKOUT DETAILS:

1. Cut box culvert reinforcement as required to maintain 2" cover.
2. For Precast Sections construct opening a minimum of 1'-6" away from any box to box joint, except opening may be a minimum of 1'-0" away from joint when at least 2'-0" of clearance to the box to box joint is provided on the opposite side of the pipe opening.
3. Pipe blockout diameter to be 6" greater than pipe outside diameter.
4. See Drainage Plans for size, placement, and invert elevation.

SECTION I-I
(Showing additional blockout reinforcing only)

Provide 50% of vertical reinforcing cut by blockout on each side of pipe at each face (Typ.)

PIV BLOCKOUT NOTES:
1. Blockout details are for guide only.
2. The use of mechanical couplers is required.
3. Field cut vertical bars to maintain clearance.
4. Concrete Blockout to be placed below or above C-I-P Cut off Wall.

SECTION F-F
(Headwall, Toe Slab and Cutoff Wall Reinforcing not shown for clarity)

C-I-P END CAP DETAILS AND CONNECTION TO PRECAST BOX

PIV BLOCKOUT NOTES:
1. Use mechanical coupler or adhesive bonded dowel or increase longitudinal bar extension with 90° hook (Typ.).
2. Match inside edge of Precast Box (Typ.)
3. Provide concrete transition to haunch at inlet of box culvert (Typ.)
4. Pre Cast Box Culvert - As per Plans

Blhw (Index 400-289)

For 2" Cover:
Blhw = 6" (Index 400-289)
For 3" Cover:
Blhw = 8" (Index 400-289)

Inside vertical wall reinforcing (See C-I-P design in plans)
**LINK SLAB TYPICAL SECTION**

(Multiple Barrel Culvert shown, Single Barrel Culvert similar)

* Install dowels with an Adhesive Bonding Material System in accordance with Specification Section 416. The Contractor may substitute mechanical couplers in lieu of adhesive bonded dowels. Shift dowels to clear box culvert reinforcing.

**CODE REVISIONS:**

**DESCRIPTION:**

**PRECAST CONCRETE BOX CULVERTS**

**SUPPLEMENTAL DETAILS**

**BILL OF REINFORCING STEEL**

**REINFORCING STEEL BENDING DIAGRAMS**

**NOTES:**

1. All bar dimensions are out to out.
2. Lap splice length for Bars 4M is 1'-4" minimum.

**DESIGN NOTE:**

1. Link Slab required when joint openings from differential settlement exceed \( \frac{1}{2} \)" as determined in Link Slab Note 1.

**NOTE:**

1. Estimated quantities are based on the plan area of precast box slabs, and are provided for information only. No additional payment will be made for Link Slabs where these are required for the precast box culverts.