COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
DRAWINGS
FOR
BRIDGE CONSTRUCTION
OF
STATE ROUTE 2007 SECTION 02B
IN BEDFORD COUNTY

SCOPE OF WORK (OVERVIEW):
● PRECAST BOX CULVERT REPLACEMENT

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PREPARED BY:
DISTRICT 9-0 BRIDGE UNIT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BEDFORD COUNTY
S.R. 2007 SECTION 02B
SEGMENT 0240 OFFSET 0000
SR 2007-02B STATION 786+31
OVER CHAPMANS RUN
22'-0" x 7'-0" PRECAST R.C. BOX CULVERT REPLACEMENT

RECOMMENDED BY:
RALPH J. DESTEFANO, P.E.
DISTRICT BRIDGE ENGINEER
S - 26681
GENERAL NOTES

**DESIGN SPECIFICATIONS:**
- ASHTO-LRFD BRIDGE DESIGN SPECIFICATIONS, THIRD EDITION, 2004 AND AS SUPPLEMENTED IN DESIGN MANUAL, PART II, SECTION 8, 2006 (INCLUDING LATEST REVISIONS).
- DESIGN IN ACCORDANCE WITH THE LRFD LOAD RESISTANCE FACTOR DESIGN METHOD.
- LIVE LOAD DISTRIBUTION IS BASED UPON CM-4 DISTRIBUTION FACTOR METHOD.

**LIVE LOAD DATA:**
- PHM-3 OR PH-2 (200 K DESIGN LOAD WITH ASHTRON GROUP-I LOADS).

**GENERAL:**
- PROVIDES MATERIALS AND PERFORMANCE IN ACCORDANCE WITH SPECIFICATIONS PUBLICATION 400-2001, ASHTO/AWS/D1.1/D1.1M-2001 (ASCII 360-2001). USE STANDARD SPECIFICATION FOR ZINC COATING (HOT DIP) ON IRON AND STEEL. AASHTO-D111 - STANDARD SPECIFICATION FOR ZINC COATING (HOT DIP) ON IRON AND STEEL. ASTM 325 - STANDARD SPECIFICATION FOR ZINC COATING (HOT DIP) ON IRON AND STEEL. ASTM 477 - STANDARD SPECIFICATION FOR ZINC COATING (HOT DIP) ON IRON AND STEEL. ASTM 635 - STANDARD SPECIFICATION FOR ZINC COATING (HOT DIP) ON IRON AND STEEL. ASTM 860 - STANDARD SPECIFICATION FOR GALVANIZED STRUCTURAL STEEL. ASTM M111 - STANDARD SPECIFICATION FOR GALVANIZED COATINGS OF STRUCTURAL STEEL.

**NOTES:**
- ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8510-0001 GIVEN FOR INFORMATION ONLY.
- ALTERNATE RALPH J. DESTEFANO
- USE EPOXY-COATED STEEL REINFORCEMENT BARS IN THE PRECAST BOX CULVERT, PRECAST REINFORCED CONCRETE BOX CULVERT WALLS. PRIOR TO PLACING THE COARSE AGGREGATE, REMOVE ANY PROTECTIVE COATINGS, BOLTERS, OR CEMENT.

**SEQUENCE OF CONSTRUCTION**

1. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE ESO PLAN.
2. INSTALL PROTECTIVE HOUSING AT LIMITS OF EXCAVATION TO PROTECT PAVING FROM BEING DISTURBED.
3. PLACE TEMPORARY ROADWAY AS SHOWN ON S. S. 6. PLAN.
4. EXCAVATE AND INSTALL 36" CROSS PIPE FOR TEMPORARY STREAM DIVERSION.
5. INSTALL PROTECTIVE HOUSING AT LIMITS OF EXCAVATION TO PROTECT PAVING FROM BEING DISTURBED.
6. INSTALL THE TEMPORARY ROADWAY AND SHIFT TRAFFIC ON TO THE TEMPORARY ROAD.
7. INSTALL THE EXISTING STRUCTURE.
8. REMOVE PROTECTIVE HOUSING AT LIMITS OF EXCAVATION TO PROTECT PAVING FROM BEING DISTURBED.
9. INSTALL TEMPORARY ROADWAY AND SHIFT TRAFFIC ON TO THE TEMPORARY ROAD.
10. INSTALL THE EXISTING STRUCTURE.
11. REMOVE PORTION OF TEMPORARY DIVERSION SYSTEM AND BACKFILL 36" CROSS PIPE WITH FILL MATERIAL.
12. INSTALL THE EXISTING STRUCTURE.
13. REMOVE PORTION OF TEMPORARY DIVERSION SYSTEM AND BACKFILL 36" CROSS PIPE WITH FILL MATERIAL.
14. SWITCH TRAFFIC TO RUN ON PRECAST BOX CULVERT.
15. COMPLETE REMOVAL AND REPAIR OF EXISTING STRUCTURE.
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**COMMENCEMENT OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION**

**BEDFORD COUNTY**

S.R. 2007 SECTION 09A
SEGMENT 0240 OFFSET 0000
SR 2007-028 STATION 7846+31
OVER CHAPMAN'S RUN
22'-0" X 7'-0" PRECAST R.C. BOX CULVERT
GENERAL NOTES AND QUANTITIES

**NOTES:**
1. ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8510-0001 GIVEN FOR INFORMATION ONLY.
2. INCLUDES 36" CROSS PIPE FOR TEMPORARY STREAM DIVERSION.
3. INCLUDES GALVANIZED STEEL, INCLUDES IN BRIDGE Structure ITEM. FOR ALTERNATE DESIGN, INCLUDED IN BRIDGE STRUCTURE LUMP SUM ITEM 8510-0001.
4. SEE CONTRACT SPECIAL PROVISIONS.
**Box Culvert Plan**

- **Scale:** 2" = 1'-0" (FEET)
- **Plan View:**
  - Dimensions: 22'-0" x 7'-0"
  - Precast Concrete Box Culvert
  - Box Culvert Plan & Section

**Typical Structure Section**

- **Scale:** None
- **Inside Face of Box Culvert:**
  - 8'-0" (TYP.) @ 6" (E.F.)
  - Inside Face
  - Weep Hole Detail
  - Weep Hole Reinforcement
  - Typical Baffle Plan

**Notes:**

- For General Notes & Quantities, see Sheet 3.
- For Headwall Details, see Sheet 10.
- For Cutoff Wall Details, see Sheet 9.
- For Additional Connection Details, see Sheet 6.
- For General Plan & Elevation, see Sheet 2.
- For Stake-Out Plan, see Sheet 4.

**Commonwealth of Pennsylvania**

**Department of Transportation**

**Bedford County**

**S.R. 2007 Section 02B**

**Segment 0240 Offset 0000**

**SR 2007-02B Station 786+31**

**Over Chapman's Run**

22'-0" x 7'-0" Precast R.C. Box Culvert

**Box Culvert Plan & Section**

- **Scale:** 2" = 1'-0" (FEET)
- **Section A-A**
  - Typical Baffle Plan
  - Box Culvert Plan
  - Weep Hole Reinforcement
  - Inside Face
  - Weep Hole Detail

**Limitations:**

- Membrane Waterproofing at Sides of Precast Concrete Box Segment Joints (2'-0" WIDE). Place this before Top Slab Waterproofing.

**Materials:**

- Geotextile, Class 1, See PUB. 408, SEC. 1001.3(c) & (d.) at each weep hole.
- No. 8 coarse aggregate and 3'-1" openings at each weep hole.
- Limits of membrane waterproofing over entire Top Slab.

**Additional Details:**

- For Limits of Membrane Waterproofing at Sides of Precast Concrete Box Segment Joints, see Sheet 10.
- For Headwall Details, see Sheet 9.
- For Cutoff Wall Details, see Sheet 6.

**Revisions:**

- S.R. 2007 Previously Known as L.R. 05011
POST TENSIONING NOTES

- PROVIDE 1 1/2" OVERSIZED LOW RELAXATION PRESTressing STRAINS (DIAMETER = 0.52 IN., AREA = 0.167 SQ. IN.) HAVING A YIELD STRENGTH OF 70 KSI.

- TENSION STRANDS MIXED AS A POUND OF 24,000 PSI POUND. FOR STRANDS, TENSION TO 2/3 OF SEGMENT LENGTH, POST TENSION 3 SEGMENTS AT ONE TIME. MAX. ALLOWABLE LOAD PER STRAND = 24,000 PSI.

- PROVIDE ALL POST-TENSIONING CONNECTION DETAILS OF PRECAST BOX SEGMENTS ON SHOP DRAWINGS. SUBMIT CONNECTION DESIGN AND DETAILS FOR APPROVAL DURING SHOP DRAWING REVIEW. IN ACCORDANCE WITH BC-798M. DESIGN MUST BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN PENNSYLVANIA. DO NOT USE DELAYING WAX CONNECTIONS EXCEPT AS NOTED.

- MAXIMUM PRECAST SEGMENT LENGTH IS 8'-0".

- PROVIDE ATTACHMENTS IN EACH INSIDE CONNER FOR PULLING ADJACENT BOX SEGMENTS DURING PLACEMENT, PRIOR TO POST-TENSIONING.

- REINFORCEMENT SHOWN IS TYPICAL FOR ALL SEGMENTS AND IS BASED ON THE DESIGN CONDITIONS OUTLINED IN THE GENERAL NOTES. THE FABRICATOR IS RESPONSIBLE FOR ADDITIONAL REINFORCEMENT REQUIRED FOR HANDLING, TRANSPORTATION, AND INSTALLATION.

- FOR ADDITIONAL DETAILS AND INSTRUCTIONS, SEE BC-798M.

- PRECAST BOX CONSTRUCTION

NOTES:

- 1. NO BOLT THROUGH CONNECTIONS CAN BE USED. EITHER SHIP LAP OR KEYWAY JOINTS CAN BE USED. NO FLUSH BUTT JOINTS.

- 2. ONE ROW OF JOINT SEALING MATERIAL EACH FACE. NO FLUSH BUTT JOINTS.

- 3. ONE (1) ROW OF JOINT SEALING MATERIAL EACH FACE. NO FLUSH BUTT JOINTS.

- 4. FOR T < 11", USE SHIP LAP DETAIL.

- 5. Mandatory: Use protective board over connection plates when handling, transportation and installation. Provide additional reinforcement based on 7'-10" segment lengths.

- USE GALVANIZED STRAP CONNECTIONS EXCEPT AS NOTED.

- PROVIDE OVERSIZED LOW RELAXATION PRESTressing STRAINS (DIAMETER = 0.52 IN., AREA = 0.167 SQ. IN.) HAVING A YIELD STRENGTH OF 70 KSI.

- TENSION STRANDS MIXED AS A POUND OF 24,000 PSI POUND. FOR STRANDS, TENSION TO 2/3 OF SEGMENT LENGTH, POST TENSION 3 SEGMENTS AT ONE TIME. MAX. ALLOWABLE LOAD PER STRAND = 24,000 PSI.

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- MAXIMUM PRECAST SEGMENT LENGTH IS 8'-0".

- PROVIDE ATTACHMENTS IN EACH INSIDE CONNER FOR PULLING ADJACENT BOX SEGMENTS DURING PLACEMENT, PRIOR TO POST-TENSIONING.
NOTE:
- Bottom slab of precast end section shall be post-tensioned to precast box sections after connection straps are installed.

For end section reinforcement, see Sheet 6.
For cutoff wall details, see Sheet 9.
For typical baffle reinforcement, see Sheet 5.

SECTION C-C
SCALE: 1" = 1'-0"

SECTION B-B
SCALE: 1" = 1'-0"

UPSTREAM END SECTION PRECAST ELEVATION
SCALE: 1" = 1'-0"

UPSTREAM END SECTION PRECAST PLAN
SCALE: 1/8" = 1'-0" FEET

UPSTREAM END SECTION PRECAST FOLD-OUT
SCALE: 1" = 1'-0" FEET

NOTES:
- End section duct locations in bottom slab to match culvert duct locations. See typical precast box section, Sheet 6.
NOTE:

1. Bottom slab of precast end section shall be post tensioned to precast box sections after connection straps are installed.

S.R. 2007 PREVIOUSLY KNOWN AS L.R. 05011

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BEDFORD COUNTY
S.R. 2007 SECTION 02B
SEGMENT 0240 OFFSET 0000
SR 2007-02B STATION 784+31
OVER CHAPMANS RUN
22'-0" x 7'-0" PRECAST R.C. BOX CULVERT
DOWNSTREAM END SECTION DETAILS

NOTE:

1. Bottom slab of precast end section shall be post tensioned to precast box sections after connection straps are installed.
OVER CHAPMANS RUN
22'-0" x 7'-0" PRECAST R.C. BOX CULVERT
CUTOFF WALL DETAILS

NOTE:
* FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 11.

SECTION F-F
SCALE 1/4" = 1'-0"