

1 **(April 1, 2013)**
2 **Precast Reinf. Conc. Box Culvert**

3 **Design Criteria**

4 The Contractor shall design the precast reinforced concrete box culvert including all
5 precast reinforced concrete attachments to the box culverts such as headwalls and
6 baffles, in accordance with the AASHTO LRFD Bridge Design Specifications, latest
7 edition and current interims in effect on the Bid advertising date. The design
8 vehicular live load shall be HL-93.
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10 Concrete for precast reinforced concrete box culverts, including all precast
11 reinforced concrete attachments to the box culverts, shall attain a minimum 28 day
12 compressive strength of 4,000 psi. Concrete cover from the face of any concrete
13 surface to the face of any steel reinforcement shall be 1 inch minimum.
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15 **Submittals**

16 The Contractor shall submit six sets of shop drawings, with two sets of supporting
17 design calculations, to the Engineer in accordance with Sections 6-01.9 and 6-
18 02.3(28)A. In addition to items 1 through 6 under the Section 6-02.3(28)A
19 requirements for shop drawing content, the following shop drawing details shall
20 also be submitted:
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- 22 1. Erection and backfill procedure.
- 23
- 24 2. Complete, site specific, itemized bar list for all reinforcing steel.
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26 **Culvert Section Fabrication**

27 The Contractor shall fabricate the elements of the precast reinforced concrete box
28 culvert in accordance with Section 6-02.3(28), and the shop drawings as approved
29 by the Engineer.
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31 The precast reinforced concrete box culvert fabricator shall notify the Washington
32 State Department of Transportation Materials and Fabrication Inspection Section at
33 least five working days in advance of beginning fabrication of the precast elements
34 for this project.
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36 The Contractor may strip forms from precast reinforced concrete box culvert
37 sections after the concrete reaches a minimum compressive strength of 3,000 psi,
38 provided the precast reinforced concrete box culvert remains in the casting bed
39 until the concrete reaches a minimum compressive strength of 70 percent of the
40 final design strength specified in the shop drawing and design calculation submittal.
41 All damage from stripping is the Contractor's responsibility.
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43 The Contractor shall pick, move, and store the precast reinforced concrete box
44 culvert elements in the cast position until the concrete reaches a minimum
45 compressive strength equal to the final design strength specified in the shop
46 drawing and design calculation submittal.
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48 Prior to shipping, the precast reinforced concrete box culvert fabricator shall furnish
49 the Inspector a complete documentation package for each culvert. The
50 documentation package shall include the following information for each culvert:
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- 52 1. Concrete batch tickets

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2. Concrete cylinder break results.
3. Material certifications.
4. Copies of all changes from the Plans and Specifications.

The following information shall be legibly and permanently marked on one inside face of each element by indentation, waterproof paint, or other means approved by the Engineer:

1. Box section span and rise dimensions, minimum and maximum design earth cover dimensions, and vehicular live load for design (HL-93).
2. WSDOT Contract Number and date of fabrication.
3. Name or trademark of the fabricator.

Culvert Excavation and Bedding Preparation

All excavated material shall be disposed of in accordance with Section 2-09.3(1)D.

If water is present within the excavation, the Contractor shall dewater the excavated area before placing the bedding material. The Contractor shall submit a dewatering plan to the Engineer for approval, and shall not begin culvert excavation until receiving the Engineer's approval of the dewatering plan.

The culvert bedding, consisting of the backfill elements shown in the Plans, shall be placed and compacted in accordance with Section 7-08.3(1)C.

Culvert Erection

The Contractor shall erect and backfill precast reinforced concrete box culverts in accordance with the erection sequence specified in the shop drawings as approved by the Engineer, and the construction equipment restrictions specified in Section 6-02.3(25)O.

Elastomeric gaskets shall be installed at all joints between precast elements, and shall be in full contact with both precast elements at the joint prior to the remainder of the joint being completely filled with grout that conforms to Section 9-20.3(3).