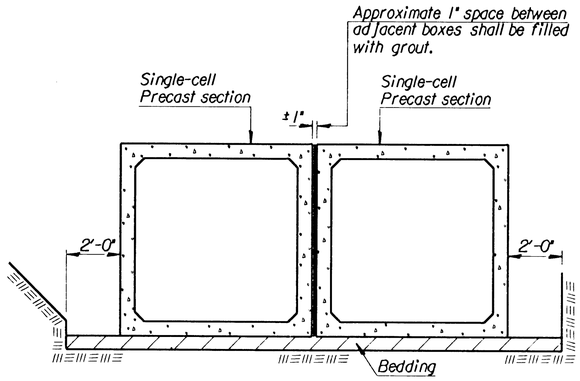
FHWA REGION NO.	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
7	KANSAS	87-U-1362-01	1993	61A	149

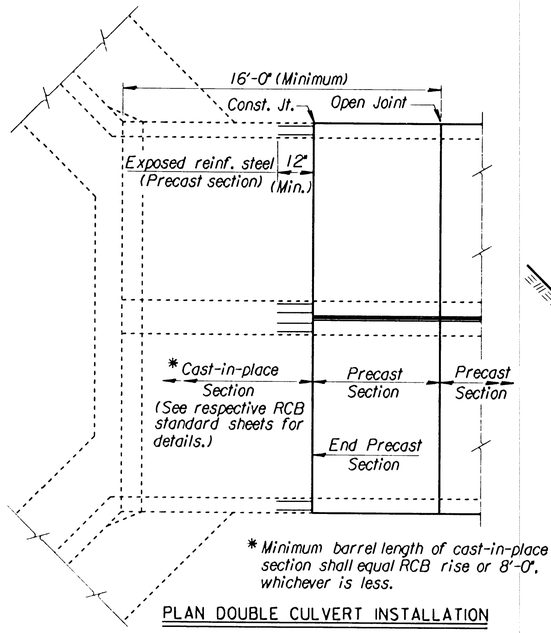


TYPICAL SINGLE-CELL INSTALLATION DETAILS

(Double culvert shown.)

NOTE: See "Bridge Excavation" sheet, (Std. No. 100), for excavation details and basis of payment.

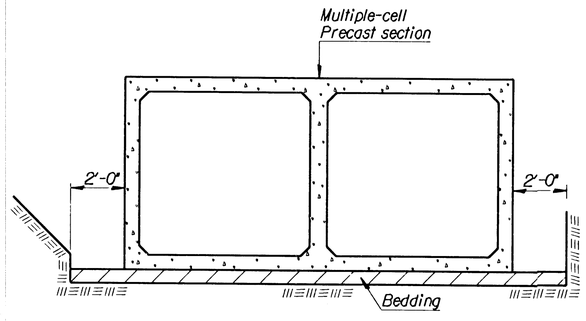
NOTE: Minimum length of precast section shall be 4'-0".



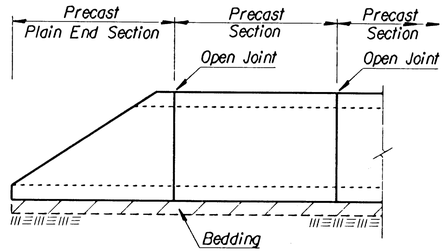
* Minimum barrel length of cast-in-place section shall equal RCB rise or 8'-0", whichever is less.

PLAN DOUBLE CULVERT INSTALLATION

(End unit using combination of cast-in-place and precast sections.)

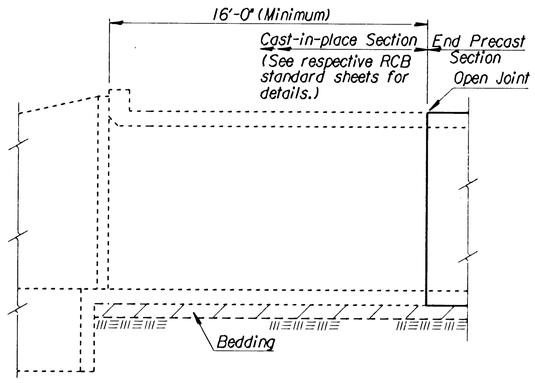


TYPICAL MULTIPLE-CELL INSTALLATION DETAILS



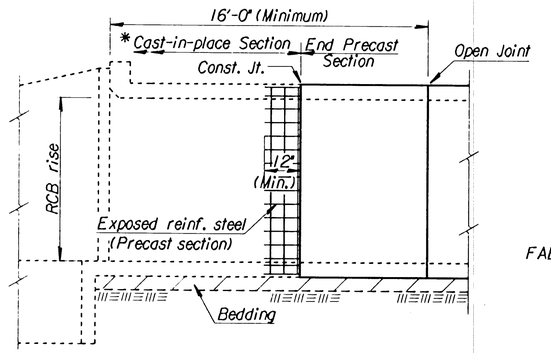
ELEVATION AT PRECAST END SECTION

(Precast End Sections are permitted where straight wings are shown in the plans or at the downstream end for single cell RCB with a rise of six feet or less.)



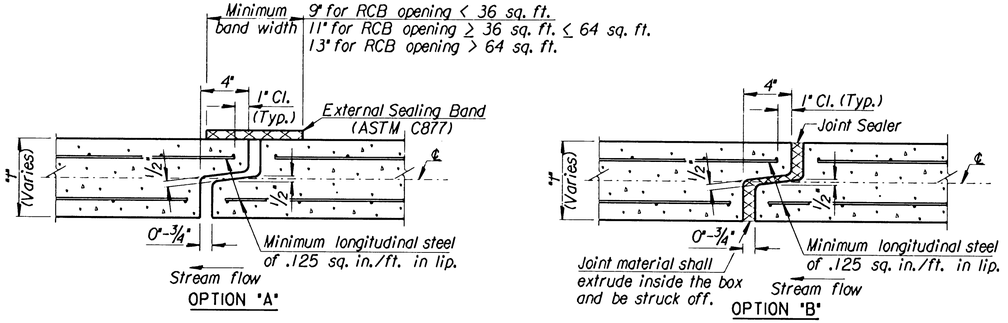
ELEVATION AT HEADWALL

(End unit using cast-in-place construction.)



ELEVATION AT HEADWALL

(End unit using combination of cast-in-place and precast sections.)



OPEN JOINT DETAIL

GENERAL NOTES

PRECAST BOX CULVERTS: Precast box culverts shall be constructed at the locations shown in the plans and according to the requirements shown on this sheet. When approved by the Engineer, precast box culverts may be constructed in lieu of cast-in-place box culverts.

Unless otherwise approved by the Engineer, cast-in-place collars shall be required at horizontal and vertical changes in RCB alignment. Cast-in-place end sections and wingwalls are required except as noted on this sheet. Cast-in-place sections may be required at the direction of the Engineer at junctions of drainage structures.

SPECIFICATIONS: Single-cell Precast Concrete Box Culverts shall conform to the requirements of the following specifications except as noted. Multiple-cell Precast Boxes shall be designed in accordance with the criteria used to develop the single-cell precast boxes. (See Appendices of ASTM Specifications C789 and C850 and the latest AASHTO Specifications.)

Condition	Min. Fill	AASHTO	Equiv. ASTM
2 Ft. or more fill	2 Ft.	M259, Table 2	C789, Table 2
Less than 2 Ft. fill	0 Ft.	M273, Table 2	C850, Table 2

Exceptions and additions to the requirements listed in the above specifications include the following:

1) The minimum member thickness shall be not less than 3/4 the thickness of the corresponding member of an equivalent KDOT Standard cast-in-place rigid frame box culvert but not less than 6". (When calculating the minimum thickness of the bottom slab, deduct 1/2" from the cast-in-place thickness before factoring by 3/4.)

2) Clearances to reinforcing shall be a minimum of 1 1/4" from all faces except when the depth of fill is less than 2.0 ft. in which case the clearance in the top of the top of slab shall be 2 1/2".

3) Epoxy coated reinforcing shall be used in the top slab when the fill at the shoulder line is 6' or less.

4) One of the following combinations of steel reinforcement may be used:
   (a) 1 or 2 layers of mesh or
   (b) 1 layer of mesh and 1 layer of reinforcement bars or
   (c) 1 layer of reinforcement bars.
   The reinforcement shall be developed in accordance with applicable parts of Section B of the latest AASHTO Specifications.

5) Longitudinal reinforcing for shrinkage and temperature requirements shall be a minimum of .06 sq. in. per foot in each face, except at joint. (See "Open Joint Detail".)

6) The transverse steel areas in each face shall be a minimum of 0.192 sq. in. per linear foot of barrel.

7) The maximum shear reinforcement spacing in the longitudinal direction shall be 6 inches.

8) Welding will not be allowed on reinforcing bars or steel fabric, except that the original welding required to manufacture wire fabric is acceptable.

Cast-in-place concrete work shall be done in accordance with the KDOT Specifications and KDOT's "Guidelines for Structural Design and Detail of Reinforced Concrete Box Culverts". Class AAA Concrete and Grade 60 Reinforcing Steel shall be used for the cast-in-place construction.

GENERAL NOTES Cont'd.

FABRICATION: Prior to fabrication, the Contractor shall furnish shop drawings to the Engineer for review. Shop drawings shall detail all phases of construction including layout, joint details, lifting devices, casting methods, construction placement and details of any cast-in-place segments or transitions that may be required. The weights of the precast sections and proposed transportation methods shall be noted on the shop drawings. Copies of overheight and overload permits, when required, shall be submitted with the shop drawings.

CONSTRUCTION REQUIREMENTS: Foundation preparation shall be in accordance with KDOT Specifications except that a minimum 6 inch thickness of granular bedding or 3 inch seal course shall be provided. Choice of bedding shall be at the Contractor's option.

Precast concrete box culvert shall be laid with the groove end of each section up-grade, and the sections shall be tightly joined. Joint shall be sealed with an approved bituminous mastic material or sealing band and applied in accordance with the recommendations of the manufacturer. Lifting holes shall be plugged with a precast plug, sealed and covered with mastic or mortar.

MEASUREMENT and BASIS OF PAYMENT: Measurement shall be as per KDOT Specifications. Payment shall be limited to Contract plan quantities and shall include cast-in-place sections, collars, and end sections.

NO.	DATE	REVISIONS	BY	APP'D
1	9-3-92	Revised Gen. Notes & detail notes.	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE BOX CULVERT DETAILS

STD. NO. 31

FHWA APPROVAL	9-21-92	APP'D	KENNETH F HURST
DESIGNED	DETAILED CADD/PF	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK. RAM	QUAN.CK.	TRACE CK.

61A

Plotted By : sae
Plot File : /usr2/stand/031x00x00.dgn
Plot Date : 09-OCT-1992 10:40
Std. Base File : /usr2/stand/031x00x00.dgn
Server File : /usr2/
Server : witch
View: PLOT1