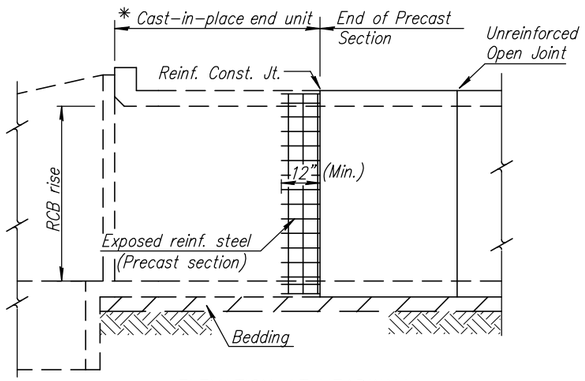
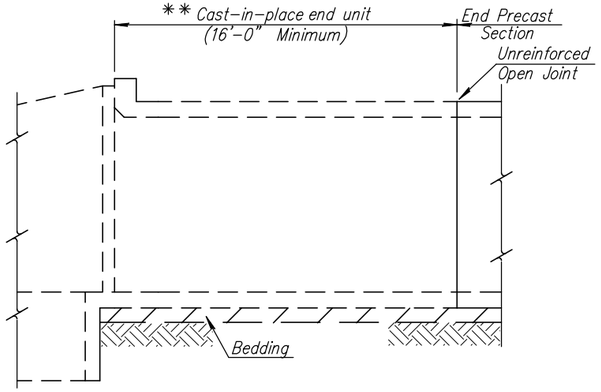
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-84392	2006	5	7



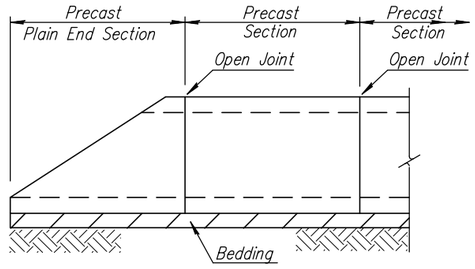
ELEVATION AT HEADWALL

* Minimum barrel length of cast-in-place end unit shall equal the RCB rise or 8'-0", whichever is less. This length can be used when the joint between the cast-in-place end unit and the pre-cast section is reinforced as shown.



ELEVATION AT HEADWALL

** Minimum barrel length of cast-in-place end unit shall be 16'-0" when using an unreinforced open joint at the end of the precast section.



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.)

GENERAL NOTES

PRECAST BOX CULVERTS: If precast boxes are specified, construct them at the locations shown in the plans and according to the requirement shown on this sheet. When approved by the Engineer, precast box culverts may be used in lieu of cast-in-place box culverts. If the Contractor chooses the precast option, use the cast-in-place quantities as the cost basis. This cost includes all labor equipment, material and incidentals necessary to complete the installation.

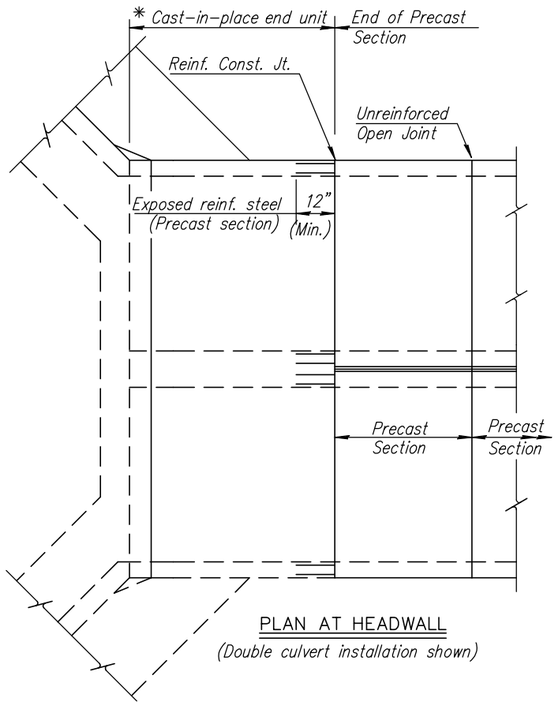
Unless otherwise approved by the Engineer, use cast-in-place collars at horizontal and vertical changes in RCB alignment. Use cast-in-place end sections and wingwalls except as noted on this sheet. The Engineer may require cast-in-place sections at junctions of drainage structures.

SPECIFICATIONS: Single-cell Precast Concrete Box Culverts shall conform to the requirements of the following specification. The design of the precast units shall conform to the current "AREMA Manual for Railway Engineering".

The design live load for the culvert shall be the Cooper E80. The specific design requirements for the precast box culvert units are contained in Chapter 8, Part 16, "Design and Construction of Reinforced Concrete Box Culverts", AREMA Manual for Railway Engineering. The minimum concrete strenth use in the design shall be $F_C' = 4{,}000$ psi.

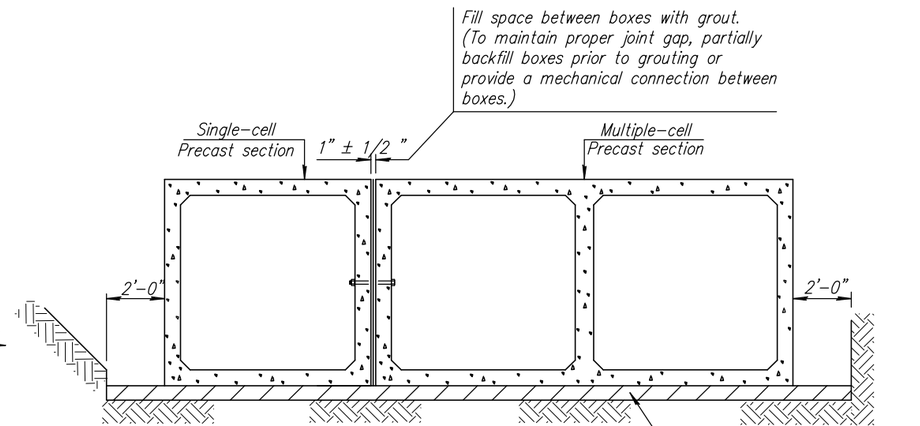
The design shall be sealed by a licensed engineer from the state of Kansas.

Couples shall be subsidiary to "5'x3' Reinforced Concrete Box Culvert (Precast)".

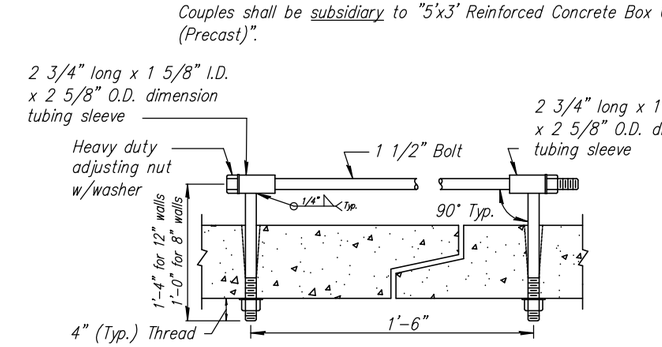


PLAN AT HEADWALL

(Double culvert installation shown)

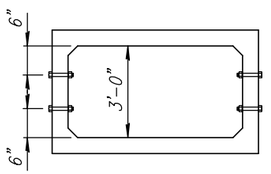


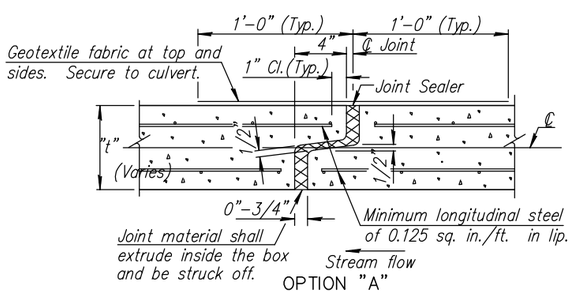
TYPICAL INSTALLATION DETAILS



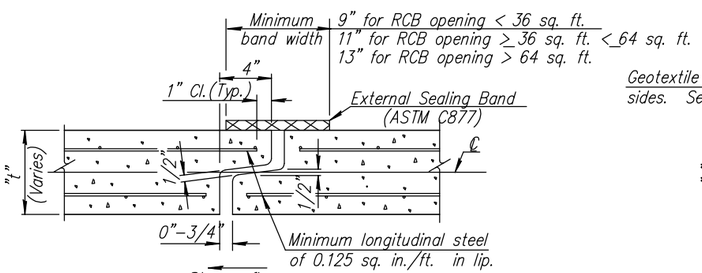
HEAVY DUTY (H.D.) COUPLER

Bolts to be A-36 1 1/2" diameter. Bolts, nuts, washers and sleeves to be zinc plated. Washers to be 3 1/2" O.D. x 7 guage. Ship with nuts and washers placed on bolts. Install 4 couplers per joint, as shown.



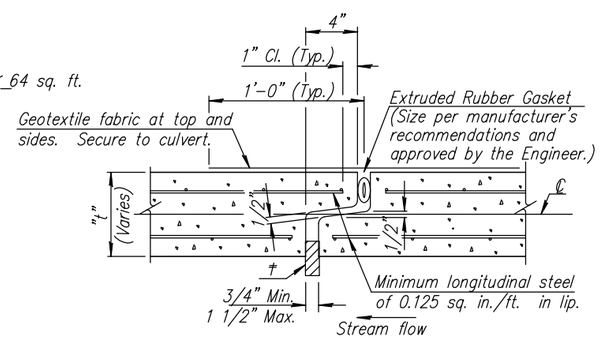


OPTION "A"



OPTION "B"

OPEN JOINT DETAIL



OPTION "C"

† Insert temporary, 3/4"-1" wide, hardwood wedges to prevent over-compressing gasket.

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NO.	DATE	REVISIONS	BY	APP'D
7	11-10-05	Added Coupler details	JRA	JRA
6	10-19-04	Concrete - Class to Grade	RAM	KFH
5	07-31-01	Revised Notes	RAM	KFH
4	11-03-00	Revised ASTM / Added Note	RAM	KFH
3	12-20-96	Revised CIP end unit details.	RAM	KFH
2	1-17-95	Revised general notes	LRR	KFH
1	6-22-94	Added option 'C' & revised notes	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE BOX CULVERT DETAILS

~~BR031~~

FHWA APPROVAL	8-06-01	APP'D	KENNETH F. HURST
DESIGNED	DETAILED PF	QUANTITIES	CADD
DESIGN CK.	DETAIL CK. RAM	QUAN. CK.	CADD CK.

5 7