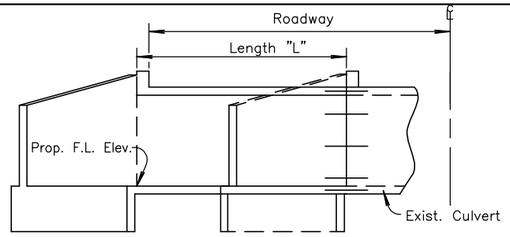
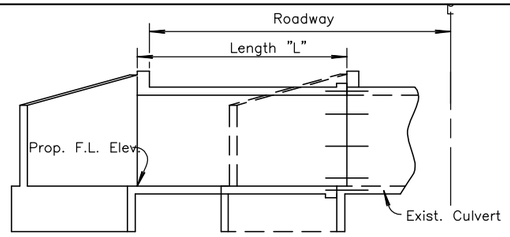
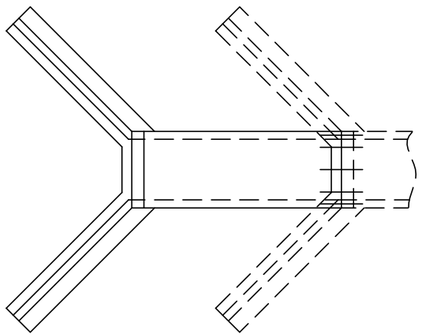
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| KANSAS | 87N-0135-01 | 2005 | 59 | 137 |



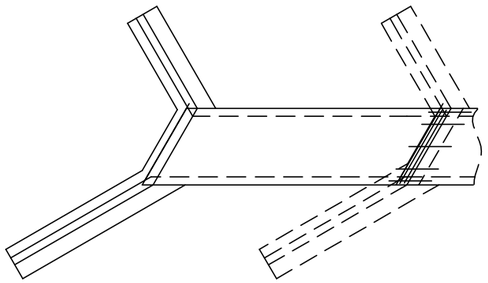

TYPICAL SECTION
(Flared Wings)



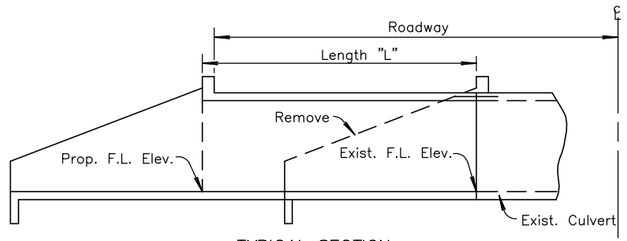

TYPICAL SECTION
(Skewed Structure)



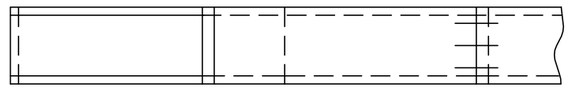
TYPICAL PLAN
(Flared Wings)



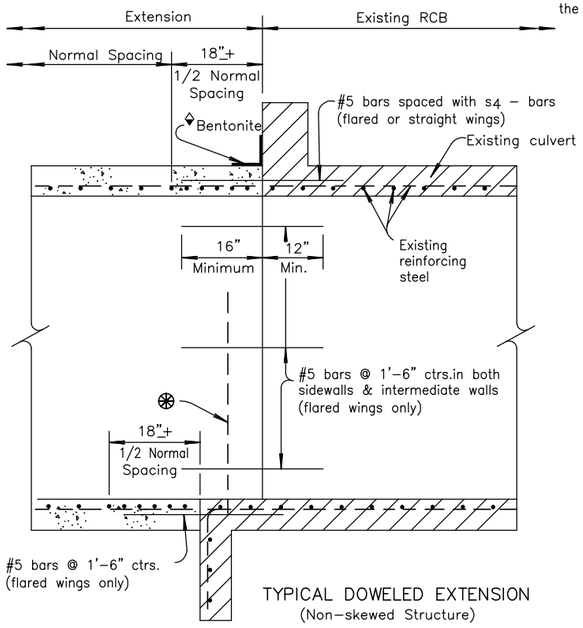
TYPICAL PLAN
(Skewed Structure)



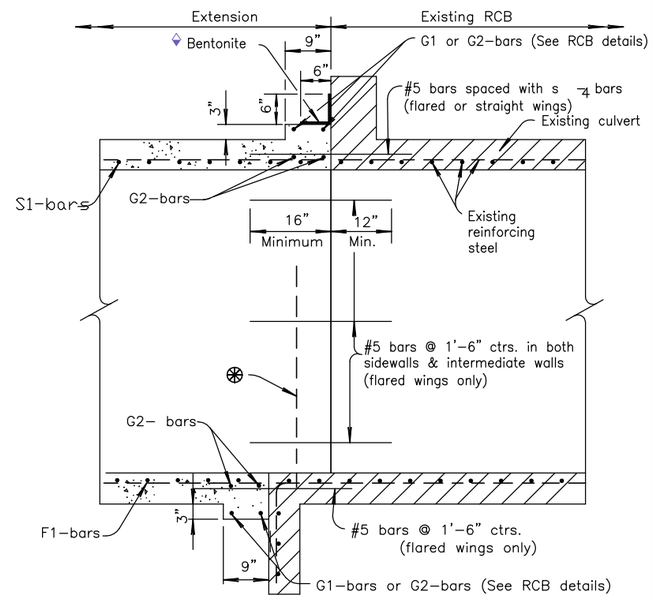

TYPICAL SECTION
(Straight Wings)



TYPICAL PLAN
(Straight Wings)




TYPICAL DOWELED EXTENSION
(Non–skewed Structure)




TYPICAL DOWELED EXTENSION
(Skewed Structure)

## GENERAL NOTE

Dimensions of existing structures shall be checked in the field prior to starting the new construction. Interior walls of multiple box extensions need not be the same thickness as the existing walls.

All existing concrete surfaces adjacent to new concrete shall be thoroughly cleaned by brushing, and soaked with water immediately prior to placing the new concrete.

All work and material necessary for installing the dowel bars shall be Subsidiary to the bid item "Reinforcing Steel".

Grouting of bars shall meet the Standard Specifications of the Kansas Department of Transportation. Locate dowel bars near the center of walls and slabs. For non–skewed boxes " $s_1$" and " $f_1$" bars shall be placed at 1/2 normal spacing for the first 18".

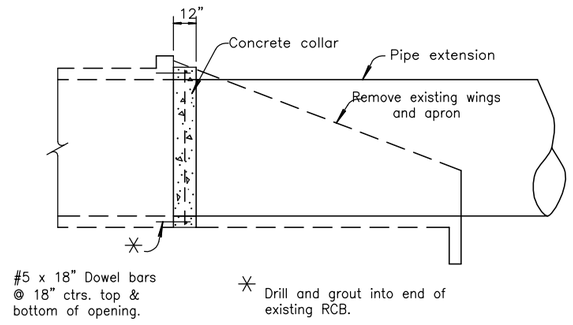
Straight Wing Extensions:

Remove existing wings and wing aprons. Remove top of hubguard if necessary to clear new construction. A minimum of 24" length of the existing wing and floor steel shall be left intact and shall be cleaned and straightened to bond into the new concrete. Dowels (#5 deformed bars) shall be inserted across the top of box as shown in sketch. Butt extensions against existing culvert. This work shall be Subsidiary to the bid item "Grade 4.0 Concrete".

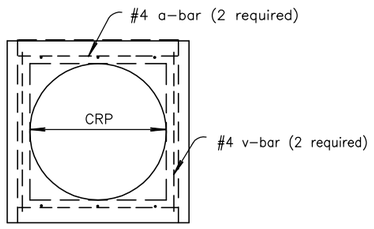
Flared Wing Extensions:

Remove top of hubguard, if necessary, to clear new construction. Dowels (#5 deformed bars) shall be inserted in top, bottom, sides and intermediate walls, as shown in sketch. Butt extensions against existing culvert.

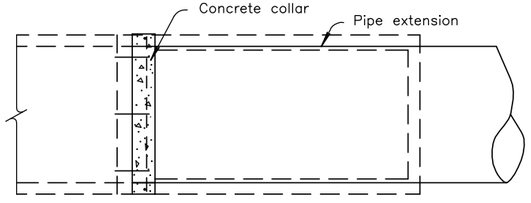
If the existing wingwall has an open vertical joint that interferes with the installation of the dowels, remove part of the wingwall to clear construction. This work shall be subsidiary to the bid item "Grade 4.0 Concrete".




SIDE VIEW




END VIEW




TOP VIEW

## CONSTRUCTION OF COLLAR

NOTE: All Labor, Equipment, Materials, and Incidentals necessary to complete the concrete collar shall not be paid for directly but shall be considered Subsidiary to the individual pipe bid item.

| Station | Size Exist. R.C.B. | Size C.R.P. Extension | Ext. Length | | End Section | |
|---|---|---|---|---|---|---|
| | | | Lt. | Rt. | Lt. | Rt. |
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◆NOTE: The joint between the RCB extension and the existing structure shall be protected by a bentonite based system as shown when the following conditions exist:

1. Fill depth over the joint is 2 feet or less.
2. Lateral location of the joint is 20 feet or less from edge of pavement.
3. RCB span is equal to or greater than 8 feet. The bentonite shall be placed on the exterior walls and top slab and shall conform with the requirements of the Special Provision for "Bridge Backwall Protection System".

All materials and labor required for this work shall be Subsidiary to the bid item "Grade 4.0 Concrete".

⊛ If the existing footings are left in place, dowel any vertical reinforcing steel located in the new walls into the existing footing. For rigid frame boxes, this may require additional #5 dowel bars to splice to the exterior vertical bars in the walls.

Quantities on this sheet are included in Summary of Quantities, Sh. No. 83

| Station | Size Exist. R.C.B. | Roadway | | Length "L" | | Grade 4.0 Conc. Cu. Yds. | Reinf. Steel Lbs. | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | Lt. | Rt. | Lt. | Rt. | | | |
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| NO. | DATE | REVISIONS | BY | APP'D |
|---|---|---|---|---|
| 5 | 4–30–02 | Rev. concrete from class to grade | S.W.K. | J.O.B. |
| 4 | 4–18–01 | Revised general note | R.J.S. | J.O.B. |
| 3 | 12–5–00 | Rev. general note flared wing ext. | R.J.S. | J.O.B. |

KANSAS DEPARTMENT OF TRANSPORTATION

# TYPICAL CULVERT EXTENSIONS

RD080 9/1/00

| | | | |
|---|---|---|---|
| FHWA APPROVAL 2–1–2005 | | APP'D Anthony A. Alrobaire | |
| DESIGNED B.A.H. | DETAILED B.A.H. | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. |