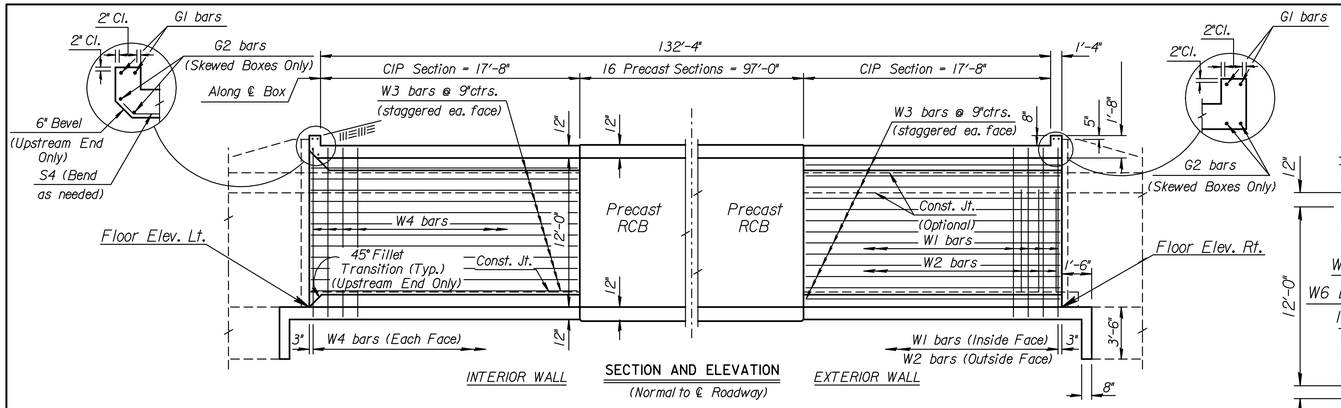
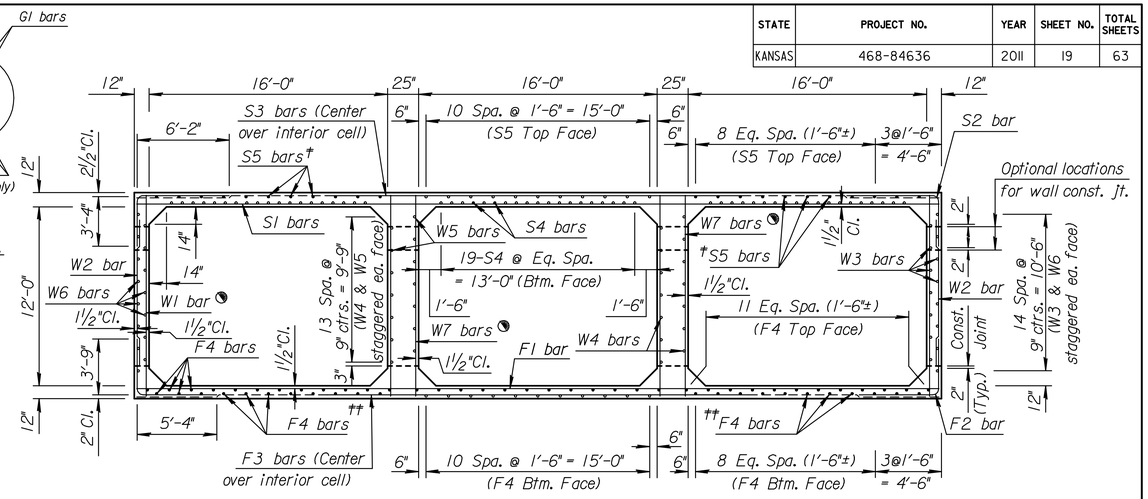
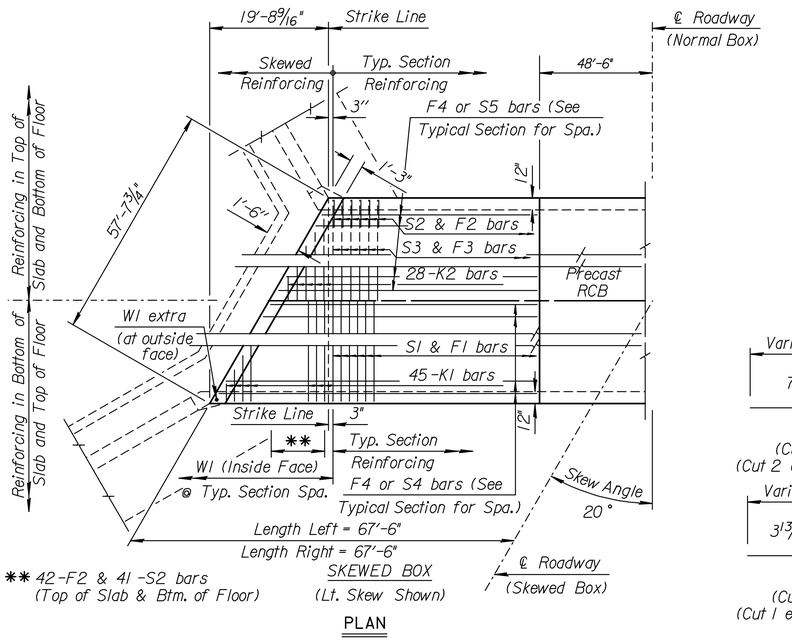
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| KANSAS | 468-84636 | 2011 | 19 | 63 |

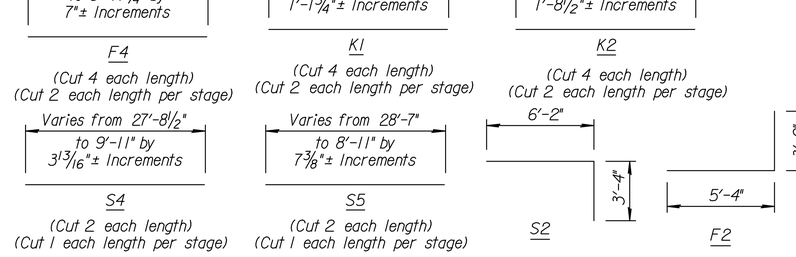



TYPICAL SECTION




PLAN




BENDING DIAGRAM

All Dimensions are out to out of bars.

Note: At the contractor's option and expense, S1, F1 and K1 bars may be spliced at an interior wall. See Table for required splice lengths.

℄ See RCB Auxillary Details for Optional Splice.
† Place when S3 bar extends to exterior walls.
†† Place when F3 bar extends to exterior walls.
Note: Use only cast-in-place construction at this location.

## GENERAL NOTES

DESIGN SPECIFICATION: AASHTO Specifications, 1983 Edition
DESIGN LOADING: HS20-44
UNIT STRESSES: Grade 4.0 Concrete f'c = 4,000 p.s.i.
Reinforcing Steel fy = 60,000 p.s.i.
FILL HEIGHT: Unless otherwise noted, the Design Fill Height is measured from the riding surface at the culvert and includes the surfacing.
CONCRETE: Use concrete conforming to Grade 4.0 Concrete. Bevel all exposed edges with a ¾" triangular molding. Where Grade 4.0(AE) is specified, place this concrete in the top slab above the Construction Joint.
REINFORCING: Use reinforcing steel conforming to ASTM A615, Grade 60. All dimensions relative to reinforcing steel are to the centerline of the bar unless otherwise noted.
EXCAVATION: Excavation for culverts less than bridge length shall not be paid for directly but shall be subsidiary to Grade 4.0 Concrete. Excavation for RCB bridges shall be paid for as Class III Excavation.
FOUNDATION STABILIZATION: The Foundation Stabilization quantity has been calculated to the limits shown on the "RCB Auxiliary Details" sheet. The depth may be increased by the Engineer. The Contractor may underrun Foundation Stabilization under the barrel if founded on firm material and with the Engineer's approval. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.
QUANTITIES: The quantities shown in the Culvert Summary include apron and/or soil saver quantities when they are required by the plans. Payment for additional quantities that result from including a seal course and/or a floating apron, as a change in the original plans, shall be made at the unit price bid for the various items involved.
GRANULAR BACKFILL (WINGWALLS): The Engineer may require special backfill procedures. See the "Auxiliary Details" sheet.
STRIKE LINE: Construct the wingwalls and that portion of the RCB outside the Strike Line level. Construct the wingwall footings with the culvert floor. See the wingwall detail sheets.
PAYMENT: The RFB Bridge shall be paid for as "RFBB (3-16'x12') (Sta. 4574+35)". All costs required to build the RFBB per plan shall be included in the Linear Foot bid item.

## CULVERT SUMMARY

⧗ For design purposes ONLY. Do NOT use for Construction

| Stage | Floor Elev. Lt. | Floor Elev. Rt. | Crown Gr. Elev. | ⧗ Design Fill Ht. | Skew RT | Left Wings | Right Wings | Scour Apron | Soil Saver | Concrete Barrel (Cu.Yds.) | Concrete Wings (Cu.Yds.) | Concrete Soil Saver (Cu.Yds.) | Concrete Total (Cu.Yds.) | Reinf. Steel (Gr. 60) Barrel (Lbs.) | Reinf. Steel (Gr. 60) Wings (Lbs.) | Reinf. Steel (Gr. 60) Soil Saver (Lbs.) | Reinf. Steel (Gr. 60) Total (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1253.73 | 1272.30 | 2 | 20 | | FLARED | YES | NO | 140.7 | 73.8 | ---- | 214.5 | 24,390 | 5,765 | ----- | 30,155 |
| 3 | 1254.25 | | 1272.30 | 2 | 20 | FLARED | | NO | YES | 140.7 | 48.8 | 89.6 | 279.1 | 24,390 | 5,431 | 2,345 | 32,166 |

✱ See Bending Diagram

## BAR SCHEDULE (Reinforcing shown is for one stage of construction only)

| F1 Size | F1 Spa. | F1 No. | F1 Length | F2 ✱ Size | F2 ✱ Spa. | F2 ✱ No. | F2 ✱ Length | F3 Size | F3 Spa. | F3 No. | F3 Length | F4 Size | F4 No. | F4 Length | S1 Size | S1 Spa. | S1 No. | S1 Length | S2 ✱ Size | S2 ✱ Spa. | S2 ✱ No. | S2 ✱ Length | S3 Size | S3 Spa. | S3 No. | S3 Length | S4 Size | S4 No. | S4 Length | S5 Size | S5 No. | S5 Length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 5" | 22 | 53'-11" | 7 | 7½" | 62 | 9'-1" | 8 | 7½" | 15 | 53'-11" | 4 | 72 | ✱ | 6 | 5" | 22 | 53'-11" | 7 | 7½" | 62 | 9'-6" | 8 | 7½" | 15 | 53'-11" | 4 | 57 | ✱ | 4 | 33 | ✱ |

| K1 Size | K1 Spa. | K1 No. | K1 Length | K2 Size | K2 Spa. | K2 No. | K2 Length | W1 Size | W1 Spa. | W1 No. | W1 Length | W2 Size | W2 Spa. | W2 No. | W2 Length | W3 Size | W3 No. | W3 Length | W4 Size | W4 No. | W4 Length | W5 Size | W5 No. | W5 Length | W6 Size | W6 No. | W6 Length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 5" | 90 | ✱ | 8 | 7½" | 56 | ✱ | 5 | 10" | 46 | 13'-6" | 5 | 7½" | 62 | 9'-9" | 4 | 15 | 8'-11" | 4 | 14 | 15'-1" | 4 | 14 | 21'-8" | 4 | 15 | 28'-3" |

| W7 Size | W7 Spa. | W7 No. | W7 Length | G1 Size | G1 No. | G1 Length | G2 Size | G2 No. | G2 Length |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 10" | 92 | 13'-6" | 7 | 2 | 57'-4¾" | 9 | 2 | 57'-4¾" |

| Minimum Splice Lengths | |
|---|---|
| #4 | 1'-4" |
| #5 | 1'-8" |
| #6 | 2'-0" |
| #7 | 2'-6" |
| #8 | 3'-3" |

† For Information Only

## SUMMARY OF QUANTITIES †

| | | |
|---|---|---|
| Concrete (Grade 4.0) | 493.6 | C.Y. |
| Concrete (Grade 4.0)(AE) | --- | C.Y. |
| Reinforcing Steel (Gr. 60) | --- | Lbs. |
| Reinforcing Steel (Gr.60)(Epoxy Coated) | 62,321 | Lbs. |
| Class III Excavation | N/A | C.Y. |
| Foundation Stabilization | 267 | C.Y. |
| Concrete for Seal Course (Set) | 1 | C.Y. |
| Granular Backfill (Wingwalls) (Set) | 1 | C.Y. |

| NO. | DATE | REVISIONS | BY | APP'D |
|---|---|---|---|---|

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 35-87-7.82(823) Sta. 4574+35.00
TRIPLE 16 ft x 12 ft RFB
(20°SKEW RT.)

~~BR 3.16.12 F~~ Sedgwick Co.

| FHWA APPROVAL | 6-5-91 | APP'D | KENNETH F. HURST |
|---|---|---|---|
| DESIGNED | DETAILED | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN.CK. | TRACE CK. |

Plot Location:
Plotted By: cp
Files: A:\2010\0229\3@16x12Modified1.dgn
Plot Date: 26-JUL-2011 11:42