**Concrete Dimensions:**

\[ \text{C } = \frac{3.000}{1+0.500} + \frac{0.000}{2.000} = 1.500 \]
\[ \text{K = } 3.000 \]
\[ \text{L = } 6.000 \]
\[ \text{W = } 8.984 \]
\[ \text{H = } 3.000 \]
\[ \text{A = } 15.097 \]

**Definitions:**

- \( R \) = Culvert pipe
- \( L \) = Length of culvert pipe runner on curb (feet)
- \( W \) = Width of culvert box (feet)
- \( T \) = Thickness of culvert wall (feet)
- \( H \) = Height of culvert above top of top slab (feet)
- \( C \) = Height of curb above top of top slab (feet)
- \( \theta \) = Culvert skew
- \( L_1 \) = Inside length of culvert box (feet)
- \( L_2 \) = Outside length of culvert box (feet)
- \( U \) = Thickness of culvert wall (feet)
- \( S \) = Interior width of culvert span (feet)
- \( A \) = Area of culvert
- \( B \) = Horizontal offset of tip of wing from face of toewall (feet)
- \( K \) = Constant values for use in formulas

**Calculations for Flared End Plan:**

- **Determining wing wall pipe spacing:**
  \[ \text{Pw#1 longest wing pipe runner} = (D_1 + L_3 - one L_3 space) (K_2) - (2.063') \]

- **Establishing pipe runner lengths and sizes:**
  \[ \text{Test: } (Pc) > (19.000') \]

**Concrete Dimensions:**

\[ \text{w = } H + T + C - 0.250 = (15.097') + (0.500') - (0.250') = 16.000' \]
\[ \text{K = } 3.000 \]

**Example Calculations for SETB-FW-S Standard**

- **Example of Flared End Plan:**
  \[ \text{Test: } (1.750') < (3.292') \]

**Concrete Dimensions:**

\[ \text{w = } H + T + C - 0.250 = (15.097') + (0.500') - (0.250') = 16.000' \]
\[ \text{K = } 3.000 \]

**Example of Wing Wall Elevation:**

- **Determining wing wall pipe spacing:**
  \[ \text{Pw#1 shortest wing pipe runner} = (D_1) (K_2) - (2.063' end of pipe clearance) \]

**Concrete Dimensions:**

\[ \text{w = } H + T + C - 0.250 = (15.097') + (0.500') - (0.250') = 16.000' \]
\[ \text{K = } 3.000 \]

**Example of Flared End Plan:**

- **Determining wing wall pipe spacing:**
  \[ \text{Pw#1 longest wing pipe runner} = (D_1 + L_3 - one L_3 space) (K_2) - (2.063') \]

**Concrete Dimensions:**

\[ \text{w = } H + T + C - 0.250 = (15.097') + (0.500') - (0.250') = 16.000' \]
\[ \text{K = } 3.000 \]

**Example of Wing Wall Elevation:**

- **Determining wing wall pipe spacing:**
  \[ \text{Pw#1 shortest wing pipe runner} = (D_1) (K_2) - (2.063' end of pipe clearance) \]

**Concrete Dimensions:**

\[ \text{w = } H + T + C - 0.250 = (15.097') + (0.500') - (0.250') = 16.000' \]
\[ \text{K = } 3.000 \]

**Example of Flared End Plan:**

- **Determining wing wall pipe spacing:**
  \[ \text{Pw#1 longest wing pipe runner} = (D_1 + L_3 - one L_3 space) (K_2) - (2.063') \]

**Concrete Dimensions:**

\[ \text{w = } H + T + C - 0.250 = (15.097') + (0.500') - (0.250') = 16.000' \]
\[ \text{K = } 3.000 \]
| Culvert Station | No. | Sta | Size at | Overall Length | | | No. | Sta | Size at | Overall Length | | | No. | Sta | Size at | Overall Length | | | No. | Sta | Size at | Overall Length | | | No. | Sta | Size at | Overall Length | | | No. | Sta | Size at | Overall Length |
|----------------|-----|-----|---------|----------------|---|---|-----|---------|---|---|-----|---------|---|---|-----|---------|---|---|-----|---------|---|---|-----|---------|
|                 |     |     |         |                |   |   |     |         |   |   |     |         |   |   |     |         |   |   |     |         |   |   |     |         |
| Shaggy's Creek (Rt) | 15 | 0.00' | 8.00' | 15.097' | 0.300' | 8 | 0.233' | 17.783' | 3.000 | 4 | 2.250' | 9.000' | 4.034' | 3 | 3.182' | 9.545' | 2.685' | 2 | 5.638' | 8.208' | 3.479' | 2.604' | 4 | 103.635' | 3" | 33.000' |
| Sta 157+40 (Lt) | 18 | 0.00' | 8.00' | 18.283' | 0.300' | 8 | 0.233' | 17.783' | 3.000 | 4 | 2.250' | 9.000' | 4.034' | 3 | 3.182' | 9.545' | 2.685' | 2 | 5.638' | 8.208' | 3.479' | 2.604' | 4 | 103.635' | 3" | 33.000' |

**Notes:**
- **PIPE RUNNER LAYOUT:**
- Left forward culvert skew shown, actual culvert skew may be opposite hand.
- Quantities shown are for one structure end if Lt or Rt. Quantities shown are for two structure ends if Both.
- If the outermost wing pipe runner is a non-sliding pipe runner, consider the next outermost wing pipe runner as the shortest.
- **SPECIAL NOTE:**

This table is to be filled out by the culvert specifier and provides information for the construction details and quantities of pipe runners.

An Excel 2010 spreadsheet is used in completing this table. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

Note that the tabular quantities are given for estimating purposes only. It is likely that these quantities will change due to field conditions. Therefore, all dimensions must be verified by the Contractor in the field prior to fabrication of the safety end treatment components.

**NOT A STANDARD**

**NOT FOR INCLUSION IN THE PLANS**

**EXAMPLE OF COMPLETED SHEET 3 OF 3 SETB-FW-S STANDARD**

**EXAMPLE ONLY**