

# 40° SKEW VARIABLE BRIDGE WIDTH 2:1 FILL SLOPES WINGS SKEWED 25% FROM ROADWAY TO BREASTWALL

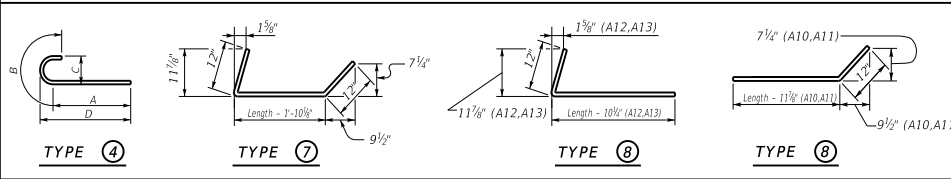
Bill of Reinforcement

| MARK  | A1     | A2                | A3                                      | A4     | A5                                       | A6               | A7                | A8                                                     | A9           | A10                    | A11 | A12 | A13 | A14 | A15 | A16  | A17  | A18  |
|-------|--------|-------------------|-----------------------------------------|--------|------------------------------------------|------------------|-------------------|--------------------------------------------------------|--------------|------------------------|-----|-----|-----|-----|-----|------|------|------|
| TYPE  | Str.   | Str.              | Str.                                    | Str.   | Str.                                     | 4                | Str.              | Str.                                                   | Str.         | 8                      | 8   | 8   | 8   | 7   | 7   | Str. | Str. | Str. |
| SIZE  |        |                   | #5                                      | #5     | #5                                       |                  |                   |                                                        | #5           | #5                     | #5  | #5  | #5  | #5  | #5  | #5   | #5   | #5   |
| H     | ft.    | ft.               | ft.                                     | ft.    | ft.                                      | ft.              | ft.               | ft.                                                    | ft.          | ft.                    | ft. | ft. | ft. | ft. | ft. | ft.  | ft.  | ft.  |
| 15-16 | 85+Nb= | 10 11 8 12 85+Nb= | 7 11 8 12 24 26 7 24 38 7 24 17 10 +Lb= | 63+Nb= | 9 9 11 12 8 1/2 1 10 0 11 3/4 8 6 69+Nb= | 5 4 11 12 63+Nb= | 6 12 10 12 69+Nb= | 12 10 12 14 39 4 14 37 6 14 27 6 14 21 11 14 14 1 +Lb= | 14 12 5 +Lb= | 2 42 10 2 25 9 138 5 9 |     |     |     |     |     |      |      |      |
| 13-14 | 76+Nb= | 9 10 8 12 76+Nb=  | 7 10 8 12 22 23 0 22 33 5 22 17 1 +Lb=  | 55+Nb= | 8 8 3 12 6 11 1 3 0 8 7 3 61+Nb=         | 5 4 11 12 55+Nb= | 6 10 10 12 61+Nb= | 10 10 12 12 34 4 12 32 6 12 18 6 12 18 11 12 14 1 +Lb= | 12 12 5 +Lb= | 2 37 10 2 22 9 122 5 9 |     |     |     |     |     |      |      |      |
| 11-12 | 67+Nb= | 8 9 8 12 67+Nb=   | 6 9 8 12 20 20 5 20 28 3 20 16 4 +Lb=   | 48+Nb= | 7 7 1 12 5 10 1/2 1 2 0 7 6 2 54+Nb=     | 5 4 11 12 48+Nb= | 5 8 10 12 54+Nb=  | 8 10 12 10 29 4 10 27 6 10 16 6 10 16 11 10 14 1 +Lb=  | 10 12 5 +Lb= | 2 32 10 2 20 9 108 5 9 |     |     |     |     |     |      |      |      |
| 9-10  | 59+Nb= | 7 8 8 12 59+Nb=   | 5 8 8 12 18 16 10 18 24 1 18 15 7 +Lb=  | 41+Nb= | 6 6 1 12 5 1 1 0 0 6 5 4 47+Nb=          | 5 4 11 12 41+Nb= | 5 6 10 12 47+Nb=  | 6 10 12 8 25 4 8 23 6 8 13 6 8 13 11 8 14 2 +Lb=       | 8 12 5 +Lb=  | 2 28 10 2 17 9 94 5 9  |     |     |     |     |     |      |      |      |
| 7-8   | 49+Nb= | 6 7 2 12 49+Nb=   | 5 7 2 12 16 14 1 16 18 6 16 14 7 +Lb=   | 34+Nb= | 5 5 7 12 4 8 1/2 0 10 0 5 4 11 40+Nb=    | 5 4 11 12 34+Nb= | 5 4 10 12 40+Nb=  | 4 10 12 6 20 4 6 18 6 6 11 5 6 11 11 6 14 2 +Lb=       | 6 12 5 +Lb=  | 2 23 10 2 15 9 80 5 9  |     |     |     |     |     |      |      |      |
| 5-6   | 41+Nb= | 5 6 2 12 41+Nb=   | 5 6 2 12 14 10 6 14 14 4 14 13 10 +Lb=  | 27+Nb= | 5 5 7 12 4 8 1/2 0 10 0 5 4 11 33+Nb=    | 5 4 11 12 27+Nb= | 5 2 10 12 33+Nb=  | 2 10 12 4 16 4 4 14 6 4 8 5 4 8 11 4 14 2 +Lb=         | 4 12 5 +Lb=  | 2 19 10 2 12 9 66 5 9  |     |     |     |     |     |      |      |      |

Table of Dimensions

| H     | W   | N   | M2  | M3  | T2  | T3    | L2  | L3    | S2  | S3    |
|-------|-----|-----|-----|-----|-----|-------|-----|-------|-----|-------|
| ft.   | ft. | ft. | ft. | ft. | ft. | ft.   | ft. | ft.   | ft. | ft.   |
| 15-16 | 12  | 0   | 5   | 0   | 23  | 4 3/4 | 26  | 9     | 30  | 5 3/4 |
| 13-14 | 11  | 0   | 4   | 6   | 20  | 2 3/4 | 23  | 2 3/4 | 26  | 4 3/4 |
| 11-12 | 10  | 0   | 4   | 0   | 17  | 3/4   | 20  | 8     | 22  | 2 3/4 |
| 9-10  | 9   | 0   | 3   | 6   | 14  | 6 3/4 | 17  | 1 1/2 | 18  | 1 1/4 |
| 7-8   | 7   | 6   | 2   | 9   | 11  | 4     | 14  | 3 1/2 | 14  | 9 1/4 |
| 5-6   | 6   | 6   | 2   | 3   | 8   | 9 1/2 | 10  | 9     | 11  | 5 1/2 |

Reinforcement Details



Quantities

| H  | Concrete*<br>C.Y.  | Reinforcement<br>LBS. |
|----|--------------------|-----------------------|
| 5  | 24.9H(0.71xLb) =   | 2378H(52.8xLb) =      |
| 6  | 27.11H(0.78xLb) =  | 2378H(52.8xLb) =      |
| 7  | 38.74H(0.93xLb) =  | 3585H(68.7xLb) =      |
| 8  | 41.47H(1.01xLb) =  | 3585H(68.7xLb) =      |
| 9  | 57.31H(1.19xLb) =  | 5417H(91xLb) =        |
| 10 | 60.57H(1.27xLb) =  | 5417H(91xLb) =        |
| 11 | 77.63H(1.41xLb) =  | 7970H(120.4xLb) =     |
| 12 | 81.4H(1.49xLb) =   | 7970H(120.4xLb) =     |
| 13 | 101.07H(1.64xLb) = | 11721H(161xLb) =      |
| 14 | 105.36H(1.71xLb) = | 11721H(161xLb) =      |
| 15 | 129.56H(1.86xLb) = | 16006H(198.6xLb) =    |
| 16 | 134.44H(1.93xLb) = | 16006H(198.6xLb) =    |

\*Concrete quantities computed using 21" beam depth on 1/2" pad & Variable Bridge Width

ABUTMENT SKEW CORRECTION FACTOR (SCF) = 1.305

NUMBER OF BARS TO ADD (Nb) = Bridge Width (feet) x SCF (round up to nearest whole number)

LENGTH OF ABUTMENT TO ADD (Lb) = Bridge Width (feet) x SCF (convert decimal to architectural)

## GENERAL NOTES

**SPECIFICATIONS:** Construct abutments according to the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction. Abutments are designed for side by side box beams as detailed in Standard Drawings BDP-001 through BDP-012, current edition. Dimensions may be adjusted to allow for any out to out bridge width. Abutments are also adequate for Std. Dwg. slabs or steel beam superstructures.

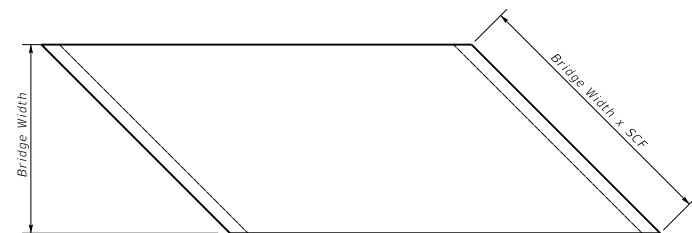
**FOUNDATION PRESSURE:** Construct abutment footings on solid rock bearing material that can support a pressure of 8000 psf service or 10,800 psf strength factored as recommended by a geotechnical engineer.

**WING LENGTHS:** Calculated assuming 21" superstructure depth and stream bank elevation at top of footing.

**FOOTING ELEVATION:** Construct bottom of footing below the anticipated scour elevation. (This typically entails embedding the footings 1'-0" to 2'-0" into rock and pouring concrete directly against cut rock faces, as recommended by geotechnical engineer.)

**NOTE:** Distances to bars shown are clear dimensions unless otherwise noted.

**MATERIAL SPECIFICATIONS:**  
Concrete, Class "A" = 3500 psi  
Steel Reinforcement = Grade 60



PLAN OF SUPERSTRUCTURE SLAB

KENTUCKY  
DEPARTMENT OF HIGHWAYS  
40° SKEW VARIABLE  
WIDTH ABUTMENT  
25% SKEWED WINGS

STANDARD DRAWING NO. BSA-038

SUBMITTED *B. J. Allen* 02-26-20  
DIRECTOR DIVISION OF STRUCTURAL DESIGN  
APPROVED *B. J. Allen* 02-26-20  
STATE ENGINEER DATE