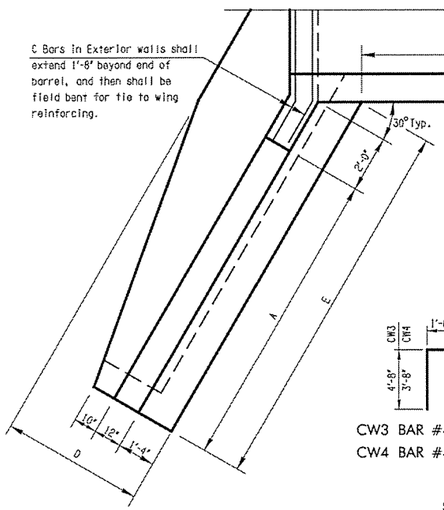
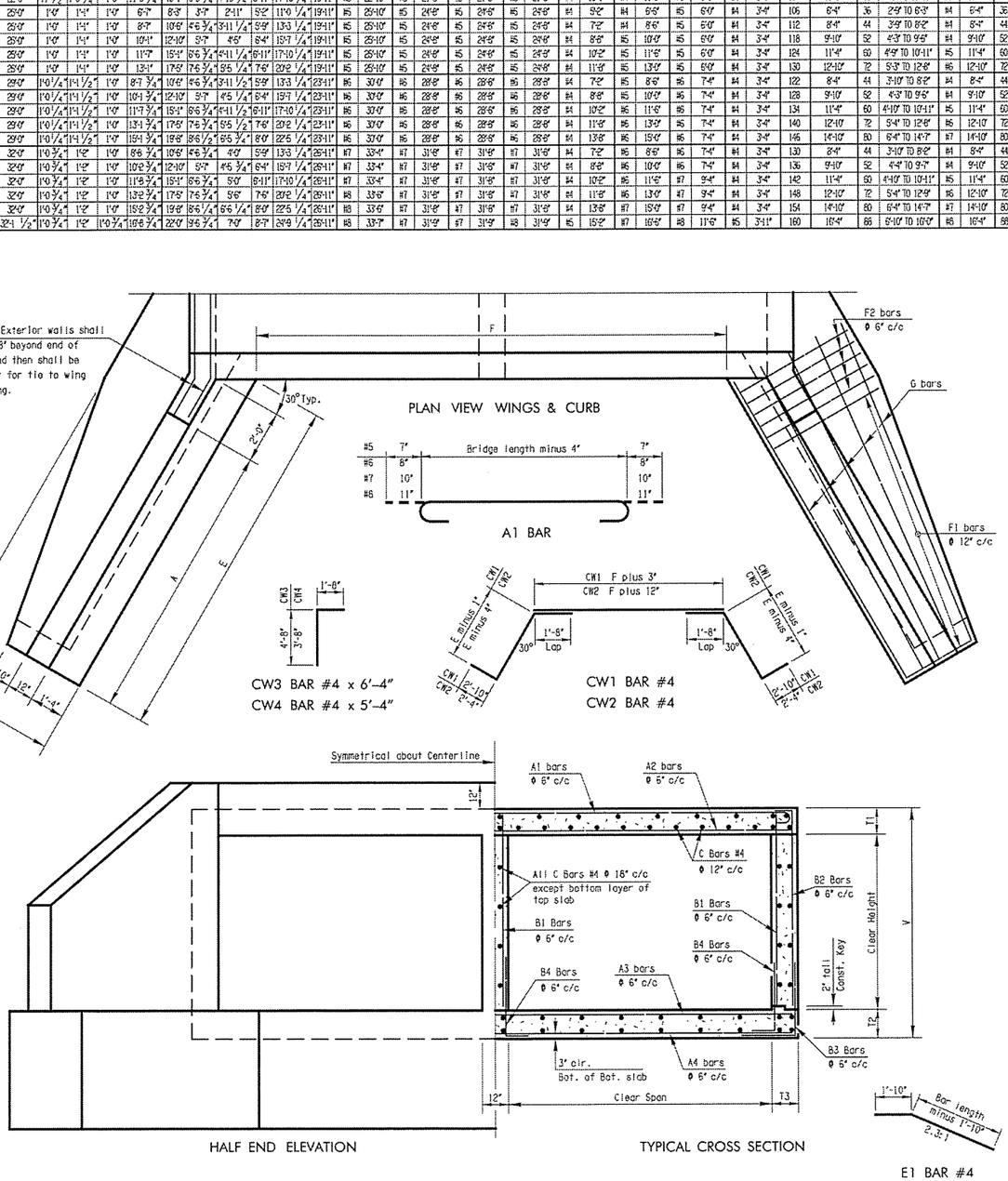
| Design No. | Clear Span | Clear Height | Bridge Length | DIMENSIONS | | | | | | | | BARREL REINFORCING | | | | | | | | | | | | | | | | WING REINFORCING (4 WINGS) | | | | | | | | | | | | | | | | | | CURTAIN WALL REINFORCING | | CURB REINFORCING | | QUANTITIES * | | Design No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | BARREL | | | | WINGS | | | | A1 BARS | | A2 BARS | | A3 BARS | | A4 BARS | | B1 BARS | | B2 BARS | | B3 BARS | | B4 BARS | | C BARS | 12-D1 BARS | D2 BARS | | 12-D3 BARS | D4 BARS | | D5 BARS | | D6 BARS | | 8-E1 BARS | E2 BARS | | E3 BARS | F1 BARS | | 40-F2 BARS | G BARS | 8-CW1 BARS | 8-CW2 BARS | CW3 BARS | CW4 BARS | 4-H1 BARS | H2 BARS | CONC. (CY) | REINF. (LBS) | |
| | | | | T1 | T2 | T3 | V | A | B | C | D | E | F | SIZE | LENGTH | SIZE | LENGTH | SIZE | LENGTH | SIZE | LENGTH | SIZE | LENGTH | SIZE | LENGTH | SIZE | LENGTH | SIZE | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | SIZE | LENGTH | NO. | SIZE | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | BARREL | WINGS | |
| 1 | 9'-6" | 4'-6" | 22'-0" | 11½" | 1'-0¾" | 1'-0" | 8'-6¼" | 8'-3" | 3'-7" | 2'-10½" | 5'-2" | 11'-0 ¼" | 16'-11" | #5 | 22'-10" | #5 | 21'-8" | #5 | 21'-8" | #5 | 21'-8" | #4 | 5'-1" | #4 | 5'-5" | #5 | 6'-0" | #4 | 3'-4" | 95 | 6'-3" | 36 | 2'-9" TO 6'-2" | #4 | 6'-3" | 36 | #4 | 5'-4" | 96 | #4 | 3'-8" | 10'-6" | 24 | 2'-9" TO 7'-9" | 24 | 9'-11" | 72 | 2'-10" TO 4'-5" | 4'-10" | 40 | 10'-8" | 48'-0" | 47'-3" | 92 | 90 | 21'-8" | 46 | 2.15 | 31.3 | 334,504 | 3040 | 1 |
| 2 | 9'-6" | 6'-6" | 22'-0" | 11½" | 1'-0¾" | 1'-0" | 8'-6¼" | 10'-6" | 4'-5¾" | 3'-10¾" | 5'-9" | 13'-3 ¼" | 16'-11" | #5 | 22'-10" | #5 | 21'-8" | #5 | 21'-8" | #5 | 21'-8" | #4 | 7'-1" | #4 | 8'-5" | #5 | 6'-0" | #4 | 3'-4" | 102 | 8'-3" | 44 | 3'-9" TO 8'-1" | #4 | 8'-3" | 44 | #4 | 6'-4" | 112 | #4 | 3'-8" | 13'-1" | 32 | 2'-8" TO 9'-7" | 32 | 12'-2" | 88 | 2'-10" TO 5'-4" | 5'-5" | 40 | 12'-11" | 52'-6" | 51'-9" | 102 | 100 | 21'-8" | 46 | 2.37 | 40.2 | 354,544 | 3730 | 2 |
| 3 | 9'-6" | 8'-0" | 22'-0" | 11½" | 1'-0¾" | 1'-0" | 10'-0¼" | 12'-10" | 5'-7" | 4'-4 ½" | 6'-4" | 15'-7 ¼" | 16'-11" | #5 | 22'-10" | #5 | 21'-8" | #5 | 21'-8" | #5 | 21'-8" | #4 | 8'-7" | #4 | 9'-11" | #5 | 6'-0" | #4 | 3'-4" | 108 | 9'-9" | 52 | 4'-3" TO 9'-5" | #4 | 9'-9" | 52 | #4 | 6'-10" | 128 | #4 | 3'-8" | 15'-6" | 40 | 2'-9" TO 11'-11" | 40 | 14'-6" | 104 | 2'-10" TO 5'-10" | 6'-0" | 40 | 15'-3" | 57'-2" | 56'-5" | 110 | 110 | 21'-8" | 46 | 2.54 | 49.6 | 370,576 | 4440 | 3 |
| 4 | 9'-6" | 9'-6" | 22'-0" | 11½" | 1'-0¾" | 1'-0" | 11'-6¼" | 13'-1" | 6'-6¾" | 4'-10¾" | 6'-11" | 17'-10 ¼" | 16'-11" | #5 | 22'-10" | #5 | 21'-8" | #5 | 21'-8" | #5 | 21'-8" | #4 | 10'-1" | #4 | 11'-5" | #5 | 6'-0" | #4 | 3'-4" | 114 | 11'-3" | 60 | 4'-9" TO 10'-10" | #5 | 11'-3" | 60 | #5 | 7'-4" | 144 | #5 | 4'-1" | 18'-1" | 48 | 2'-8" TO 14'-2" | 40 | 16'-9" | 120 | 2'-10" TO 6'-4" | 6'-7" | 48 | 17'-6" | 61'-6" | 60'-11" | 120 | 118 | 21'-8" | 46 | 2.71 | 59.9 | 386,608 | 5890 | 4 |
| 5 | 11'-0" | 4'-6" | 25'-0" | 1'-0" | 1'-1" | 1'-0" | 6'-7" | 8'-3" | 3'-7" | 2'-11" | 5'-2" | 11'-0 ¼" | 19'-11" | #5 | 25'-10" | #5 | 24'-8" | #5 | 24'-8" | #5 | 24'-8" | #4 | 5'-2" | #4 | 6'-6" | #5 | 6'-0" | #4 | 3'-4" | 106 | 6'-4" | 36 | 2'-9" TO 6'-3" | #4 | 6'-4" | 36 | #4 | 5'-5" | 96 | #4 | 3'-8" | 10'-8" | 24 | 2'-9" TO 7'-9" | 24 | 9'-11" | 72 | 2'-10" TO 4'-9" | 4'-10" | 40 | 10'-8" | 51'-0" | 50'-3" | 98 | 96 | 24'-8" | 52 | 2.43 | 32.4 | 366,885 | 3160 | 5 |
| 6 | 11'-0" | 6'-6" | 25'-0" | 1'-0" | 1'-1" | 1'-0" | 8'-7" | 10'-6" | 4'-5¾" | 3'-11 ¼" | 5'-9" | 13'-3 ¼" | 19'-11" | #5 | 25'-10" | #5 | 24'-8" | #5 | 24'-8" | #5 | 24'-8" | #4 | 7'-2" | #4 | 8'-6" | #5 | 6'-0" | #4 | 3'-4" | 112 | 8'-4" | 44 | 3'-9" TO 8'-2" | #4 | 8'-4" | 44 | #4 | 6'-5" | 112 | #4 | 3'-8" | 13'-1" | 32 | 2'-8" TO 9'-7" | 32 | 12'-2" | 88 | 2'-10" TO 5'-4" | 5'-5" | 40 | 12'-11" | 55'-6" | 54'-9" | 106 | 106 | 24'-8" | 52 | 2.66 | 41.3 | 386,925 | 3650 | 6 |
| 7 | 11'-0" | 8'-0" | 25'-0" | 1'-0" | 1'-1" | 1'-0" | 10'-1" | 12'-10" | 5'-7" | 4'-5" | 6'-4" | 15'-7 ¼" | 19'-11" | #5 | 25'-10" | #5 | 24'-8" | #5 | 24'-8" | #5 | 24'-8" | #4 | 8'-8" | #5 | 10'-0" | #5 | 6'-0" | #4 | 3'-4" | 118 | 9'-10" | 52 | 4'-3" TO 9'-6" | #4 | 9'-10" | 52 | #4 | 6'-10" | 128 | #4 | 3'-8" | 15'-6" | 40 | 2'-9" TO 11'-11" | 40 | 14'-6" | 104 | 2'-10" TO 5'-10" | 6'-0" | 40 | 15'-3" | 60'-2" | 59'-5" | 116 | 116 | 24'-8" | 52 | 2.82 | 50.7 | 417,957 | 4560 | 7 |
| 8 | 11'-0" | 9'-6" | 25'-0" | 1'-0" | 1'-1" | 1'-0" | 11'-7" | 13'-1" | 6'-6¾" | 4'-11 ¼" | 6'-11" | 17'-10 ¼" | 19'-11" | #5 | 25'-10" | #5 | 24'-8" | #5 | 24'-8" | #5 | 24'-8" | #4 | 10'-2" | #5 | 11'-5" | #5 | 6'-0" | #4 | 3'-4" | 124 | 11'-4" | 60 | 4'-9" TO 10'-11" | #5 | 11'-4" | 60 | #5 | 7'-5" | 144 | #5 | 4'-1" | 18'-1" | 48 | 2'-8" TO 14'-2" | 40 | 16'-9" | 120 | 2'-10" TO 6'-4" | 6'-7" | 48 | 17'-6" | 64'-8" | 63-11" | 126 | 124 | 24'-8" | 52 | 2.99 | 61.0 | 436,239 | 6010 | 8 |
| 9 | 11'-0" | 11'-0" | 25'-0" | 1'-0" | 1'-1" | 1'-0" | 13'-1" | 17'-6" | 7'-6¾" | 5'-5 ¼" | 7'-6" | 20'-2 ¼" | 19'-11" | #5 | 25'-10" | #5 | 24'-8" | #5 | 24'-8" | #5 | 24'-8" | #4 | 11'-8" | #5 | 13'-0" | #5 | 6'-0" | #4 | 3'-4" | 130 | 12'-10" | 72 | 5'-3" TO 12'-8" | #6 | 12'-10" | 72 | #6 | 5'-3" TO 12'-8" | 80 | #6 | 7'-11" | 18'-6" | 56 | 2'-8" TO 16'-6" | 48 | 19'-1" | 144 | 2'-10" TO 7'-1" | 7'-2" | 48 | 19'-10" | 68'-4" | 68'-7" | 134 | 134 | 24'-8" | 52 | 3.16 | 72.6 | 454,521 | 8260 | 9 |
| 10 | 13'-0" | 8'-6" | 28'-0" | 1'-0 ¼" | 1'-1 ½" | 1'-0" | 8'-7 ¾" | 10'-6" | 4'-5¾" | 3'-11 ½" | 5'-9" | 13'-3 ¼" | 23'-1" | #6 | 30'-0" | #6 | 28'-8" | #6 | 28'-8" | #6 | 28'-8" | #4 | 7'-2" | #5 | 8'-6" | #6 | 7'-4" | #4 | 3'-4" | 122 | 8'-4" | 44 | 3'-10" TO 8'-2" | #4 | 8'-4" | 44 | #4 | 6'-5" | 112 | #4 | 3'-8" | 13'-1" | 32 | 2'-8" TO 9'-7" | 32 | 12'-2" | 88 | 2'-10" TO 5'-4" | 5'-5" | 40 | 12'-11" | 52'-6" | 52'-9" | 116 | 114 | 28'-8" | 60 | 3.03 | 42.7 | 565,593 | 3990 | 10 |
| 11 | 13'-0" | 8'-0" | 29'-0" | 1'-0 ¼" | 1'-1 ½" | 1'-0" | 10'-1 ¾" | 12'-10" | 5'-7" | 4'-5 ¼" | 6'-4" | 15'-7 ¼" | 23'-1" | #6 | 30'-0" | #6 | 28'-8" | #6 | 28'-8" | #6 | 28'-8" | #4 | 8'-8" | #5 | 10'-0" | #6 | 7'-4" | #4 | 3'-4" | 128 | 9'-10" | 52 | 4'-3" TO 9'-6" | #4 | 9'-10" | 52 | #4 | 6'-10" | 128 | #4 | 3'-8" | 15'-6" | 40 | 2'-9" TO 11'-11" | 40 | 14'-6" | 104 | 2'-10" TO 5'-10" | 6'-0" | 40 | 15'-3" | 64'-2" | 63'-5" | 124 | 124 | 28'-8" | 60 | 3.20 | 52.1 | 583,875 | 4700 | 11 |
| 12 | 13'-0" | 9'-6" | 29'-0" | 1'-0 ¼" | 1'-1 ½" | 1'-0" | 11'-7 ¾" | 15'-1" | 6'-6¾" | 4'-11 ¼" | 6'-11" | 17'-10 ¼" | 23'-1" | #6 | 30'-0" | #6 | 28'-8" | #6 | 28'-8" | #6 | 28'-8" | #4 | 10'-2" | #6 | 11'-5" | #6 | 7'-4" | #4 | 3'-4" | 134 | 11'-4" | 60 | 4'-10" TO 10'-11" | #5 | 11'-4" | 60 | #5 | 7'-5" | 144 | #5 | 4'-1" | 18'-1" | 48 | 2'-8" TO 14'-2" | 40 | 16'-9" | 120 | 2'-10" TO 6'-4" | 6'-7" | 48 | 17'-6" | 68'-8" | 67'-11" | 134 | 132 | 28'-8" | 60 | 3.37 | 62.6 | 623,271 | 6160 | 12 |
| 13 | 13'-0" | 11'-0" | 29'-0" | 1'-0 ¼" | 1'-1 ½" | 1'-0" | 13'-1 ¾" | 17'-6" | 7'-6¾" | 5'-5 ¼" | 7'-6" | 20'-2 ¼" | 23'-1" | #6 | 30'-0" | #6 | 28'-8" | #6 | 28'-8" | #6 | 28'-8" | #4 | 11'-8" | #6 | 13'-0" | #6 | 7'-4" | #4 | 3'-4" | 140 | 12'-10" | 72 | 5'-4" TO 12'-8" | #6 | 12'-10" | 72 | #6 | 5'-4" TO 12'-8" | 80 | #6 | 7'-11" | 18'-6" | 56 | 2'-8" TO 16'-6" | 48 | 19'-1" | 144 | 2'-10" TO 7'-1" | 7'-2" | 48 | 19'-10" | 73'-4" | 72'-7" | 142 | 142 | 28'-8" | 60 | 3.53 | 74.0 | 644,307 | 8410 | 13 |
| 14 | 13'-0" | 13'-0" | 29'-0" | 1'-0 ¼" | 1'-1 ½" | 1'-0" | 15'-1 ¾" | 19'-8" | 8'-6½" | 6'-5 ¼" | 8'-6" | 22'-5 ¼" | 23'-1" | #6 | 30'-0" | #6 | 28'-8" | #6 | 28'-8" | #6 | 28'-8" | #4 | 13'-8" | #6 | 15'-0" | #6 | 7'-4" | #4 | 3'-4" | 146 | 14'-10" | 80 | 6'-4" TO 14'-7" | #7 | 14'-10" | 80 | #7 | 6'-4" TO 14'-7" | 88 | #7 | 9'-4" | 23'-1" | 64 | 2'-7" TO 18'-9" | 56 | 21'-4" | 160 | 2'-10" TO 7'-5" | 7'-8" | 56 | 22'-1" | 77'-10" | 77'-1" | 152 | 150 | 28'-8" | 60 | 3.75 | 81.7 | 671,019 | 11620 | 14 |
| 15 | 14'-6" | 6'-6" | 32'-0" | 1'-0 ¾" | 1'-2" | 1'-0" | 8'-6 ¾" | 10'-6" | 4'-5¾" | 4'-0" | 5'-9" | 13'-3 ¼" | 26'-1" | #7 | 33'-4" | #7 | 31'-8" | #7 | 31'-6" | #7 | 31'-6" | #4 | 7'-2" | #5 | 8'-6" | #6 | 7'-4" | #4 | 3'-4" | 130 | 8'-4" | 44 | 3'-10" TO 8'-2" | #4 | 8'-4" | 44 | #4 | 6'-5" | 112 | #4 | 3'-8" | 13'-1" | 32 | 2'-8" TO 9'-7" | 32 | 12'-2" | 88 | 2'-10" TO 5'-4" | 5'-5" | 40 | 12'-11" | 62'-6" | 61'-9" | 122 | 120 | 31'-6" | 66 | 3.37 | 43.6 | 762,705 | 4110 | 15 |
| 16 | 14'-6" | 8'-0" | 32'-0" | 1'-0 ¾" | 1'-2" | 1'-0" | 10'-2 ¾" | 12'-10" | 5'-7" | 4'-5 ¾" | 6'-4" | 15'-7 ¼" | 26'-1" | #7 | 33'-4" | #7 | 31'-8" | #7 | 31'-6" | #7 | 31'-6" | #4 | 8'-8" | #6 | 10'-0" | #6 | 7'-4" | #4 | 3'-4" | 136 | 9'-10" | 52 | 4'-4" TO 9'-7" | #4 | 9'-10" | 52 | #4 | 6'-11" | 128 | #4 | 3'-8" | 15'-6" | 40 | 2'-9" TO 11'-11" | 40 | 14'-6" | 104 | 2'-10" TO 5'-10" | 6'-0" | 40 | 15'-3" | 67'-2" | 66'-5" | 130 | 130 | 31'-6" | 66 | 3.54 | 53.3 | 763,741 | 4820 | 16 |
| 17 | 14'-6" | 9'-6" | 32'-0" | 1'-0 ¾" | 1'-2" | 1'-0" | 11'-3 ¾" | 15'-1" | 6'-6¾" | 5'-0" | 6'-11" | 17'-10 ¼" | 26'-1" | #7 | 33'-4" | #7 | 31'-8" | #7 | 31'-6" | #7 | 31'-6" | #4 | 10'-2" | #6 | 11'-5" | #7 | 9'-4" | #4 | 3'-4" | 142 | 11'-4" | 60 | 4'-10" TO 10'-11" | #5 | 11'-4" | 60 | #5 | 7'-5" | 144 | #5 | 4'-1" | 18'-1" | 48 | 2'-8" TO 14'-2" | 40 | 16'-9" | 120 | 2'-10" TO 6'-4" | 6'-7" | 48 | 17'-6" | 71'-8" | 70'-11" | 140 | 138 | 31'-6" | 66 | 3.70 | 63.6 | 837,028 | 6270 | 17 |
| 18 | 14'-6" | 11'-0" | 32'-0" | 1'-0 ¾" | 1'-2" | 1'-0" | 13'-2 ¾" | 17'-5" | 7'-6¾" | 5'-6" | 7'-6" | 20'-2 ¼" | 26'-1" | #8 | 33'-8" | #7 | 31'-8" | #7 | 31'-6" | #7 | 31'-6" | #4 | 11'-8" | #6 | 13'-0" | #7 | 9'-4" | #4 | 3'-4" | 148 | 12'-10" | 72 | 5'-4" TO 12'-8" | #6 | 12'-10" | 72 | #6 | 5'-4" TO 12'-8" | 80 | #6 | 8'-0" | 18'-6" | 56 | 2'-8" TO 16'-6" | 48 | 19'-1" | 144 | 2'-10" TO 7'-1" | 7'-2" | 48 | 19'-10" | 76'-4" | 75'-7" | 148 | 148 | 31'-6" | 66 | 3.87 | 75.2 | 900,688 | 8540 | 18 |
| 19 | 14'-6" | 13'-0" | 32'-0" | 1'-0 ¾" | 1'-2" | 1'-0" | 15'-2 ¾" | 19'-8" | 8'-6½" | 6'-5 ¼" | 8'-0" | 22'-5 ¼" | 26'-1" | #8 | 33'-8" | #7 | 31'-8" | #7 | 31'-6" | #8 | 31'-6" | #5 | 13'-8" | #7 | 15'-0" | #7 | 9'-4" | #4 | 3'-4" | 154 | 14'-10" | 80 | 6'-4" TO 14'-7" | #7 | 14'-10" | 80 | #7 | 6'-4" TO 14'-7" | 88 | #7 | 9'-0" | 23'-1" | 64 | 2'-7" TO 18'-9" | 56 | 21'-4" | 160 | 2'-10" TO 7'-5" | 7'-8" | 56 | 22'-1" | 80'-10" | 80'-1" | 156 | 156 | 31'-6" | 66 | 4.09 | 88.6 | 959,920 | 11740 | 19 |
| 20 | 14'-6" | 14'-0" | 32'-1 ½" | 1'-0 ¾" | 1'-2" | 1'-0 ¾" | 16'-8 ¾" | 22'-0" | 9'-6¾" | 7'-0" | 8'-7" | 24'-9 ¼" | 26'-1" | #8 | 33'-7" | #7 | 31'-9" | #7 | 31'-9" | #8 | 31'-9" | #5 | 15'-2" | #7 | 16'-5" | #8 | 11'-6" | #5 | 3'-11" | 160 | 16'-4" | 88 | 6'-10" TO 16'-0" | 96 | #8 | 16'-4" | 88 | #8 | 6'-10" TO 16'-0" | 96 | #8 | 9'-6" | 200 | #8 | 8'-3" | 25'-6" | 72 | 2'-8" TO 21'-1" | 56 | 23'-6" | 176 | 2'-10" TO 8'-0" | 8'-3" | 56 | 24'-5" | 88'-6" | 84'-9" | 166 | 166 | 31'-9" | 66 | 4.34 | 102.7 | 1132.304 | 15660 | 20 |

* Wing Quantities include Wing footings, Curtain walls and Curbs







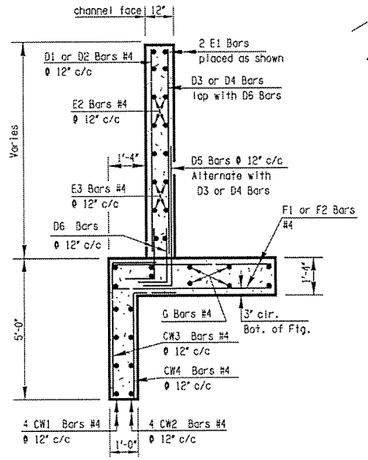






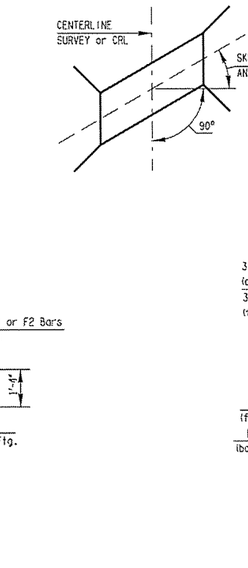
DESIGN DATA

Class 'AA' Concrete f'c = 4000 psi
Reinforcing Steel (Grade 60) fy = 60000 psi
Loading: HS 20
Design: Load Factor Design




SECTION THRU WING

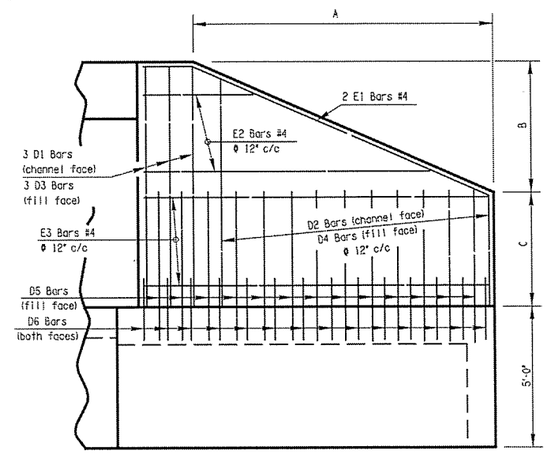
NOTE: If rock is encountered during excavation for curtain walls, the curtain walls will be keyed a minimum of 6" into the rock.







The skew angle is defined as the angle between the line of the structure crossing feature and a line perpendicular to the centerline survey or the CRL (Stationing Line) measured at the centerline station of the structure.




WING ELEVATION

NOTES:
All construction and materials shall be in accordance with the current Oklahoma Standard Specifications.

All concrete edges shall have a 1½" chamfer unless otherwise shown or noted. All chamfer strips shall be sized lumber.

All reinforcing steel shall have 2" clearance unless otherwise shown or noted.

Roughen surface at all Construction Joints.

BECKHAM COUNTY — SAND CREEK

| | | |
|---|---|---|
| Design | J.S.N. | 09/15 |
| Drawn | J.R.J. | 10/15 |
| Checked | M.W.G. | 03/16 |
| Approved | J.S.N. | 03/16 |
| Consultant | CED #7 | |

# BOX CULVERT DETAILS

STATE/JOB No. 30047(04) Sheet No. 7