## BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE - 110' BRIDGE

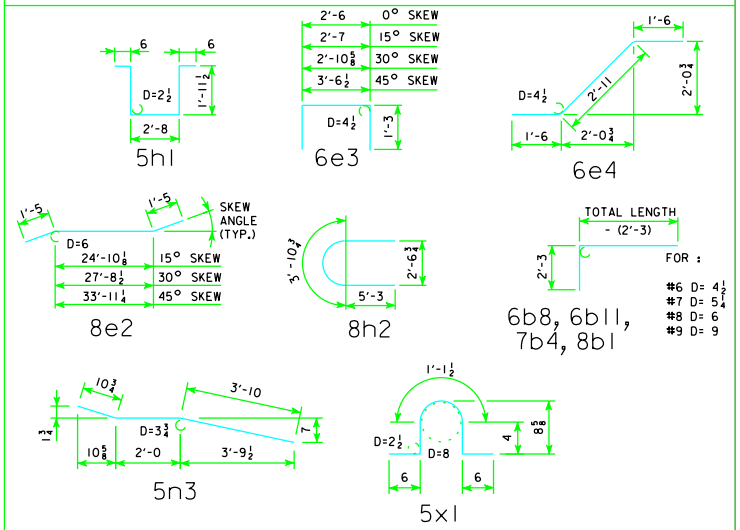
| LOCATION \ SKEW | SHAPE | BAR | 0° NO. | 0° LENGTH | 0° WEIGHT | 15° NO. | 15° LENGTH | 15° WEIGHT | 30° NO. | 30° LENGTH | 30° WEIGHT | 45° NO. | 45° LENGTH | 45° WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLAB LONGITUDINAL BOTTOM | | 8a1 | 31 | 23'-3 | 1925 | 31 | 23'-3 | 1925 | 31 | 23'-3 | 1925 | 31 | 23'-3 | 1925 |
| SLAB LONGITUDINAL BOTTOM | | 9a2 | 31 | 35'-9 | 3769 | 31 | 35'-9 | 3769 | 31 | 35'-9 | 3769 | 31 | 35'-9 | 3769 |
| SLAB LONGITUDINAL BOTTOM | | 8a3 | 31 | 32'-2 | 2663 | 31 | 32'-2 | 2663 | 31 | 32'-2 | 2663 | 31 | 32'-2 | 2663 |
| SLAB LONGITUDINAL BOTTOM | | 9a4 | 32 | 30'-6 | 3319 | 32 | 30'-6 | 3319 | 32 | 30'-6 | 3319 | 32 | 30'-6 | 3319 |
| SLAB LONGITUDINAL BOTTOM | | 8a5 | 16 | 39'-0 | 1667 | 16 | 39'-0 | 1667 | 16 | 39'-0 | 1667 | 16 | 39'-0 | 1667 |
| SLAB LONGITUDINAL BOTTOM, AT RAIL | | 9a6 | 8 | 39'-3 | 1068 | 8 | 39'-3 | 1068 | 8 | 39'-3 | 1068 | 8 | 39'-3 | 1068 |
| SLAB LONGITUDINAL BOTTOM, AT RAIL | | 9a7 | 4 | 39'-2 | 533 | 4 | 39'-2 | 533 | 4 | 39'-2 | 533 | 4 | 39'-2 | 533 |
| SLAB LONGITUDINAL BOTTOM, AT RAIL | | 8a8 | 8 | 22'-9 | 486 | 8 | 22'-9 | 486 | 8 | 22'-9 | 486 | 8 | 22'-9 | 486 |
| SLAB LONGITUDINAL BOTTOM, AT RAIL | | 8a9 | 4 | 23'-0 | 246 | 4 | 23'-0 | 246 | 4 | 23'-0 | 246 | 4 | 23'-0 | 246 |
| SLAB LONGITUDINAL TOP | | 8b1 | 31 | 12'-6 | 1035 | 31 | 12'-6 | 1035 | 31 | 12'-6 | 1035 | 31 | 12'-6 | 1035 |
| SLAB LONGITUDINAL TOP | | 10b2 | 31 | 26'-4 | 3513 | 31 | 26'-4 | 3513 | 31 | 26'-4 | 3513 | 31 | 26'-4 | 3513 |
| SLAB LONGITUDINAL TOP | | 10b3 | 31 | 23'-7 | 3146 | 31 | 23'-7 | 3146 | 31 | 23'-7 | 3146 | 31 | 23'-7 | 3146 |
| SLAB LONGITUDINAL TOP | | 7b4 | 31 | 21'-7 | 1368 | 31 | 21'-7 | 1368 | 31 | 21'-7 | 1368 | 31 | 21'-7 | 1368 |
| SLAB LONGITUDINAL TOP | | 10b5 | 32 | 24'-6 | 3374 | 32 | 24'-6 | 3374 | 32 | 24'-6 | 3374 | 32 | 24'-6 | 3374 |
| SLAB LONGITUDINAL TOP | | 6b6 | 16 | 28'-6 | 685 | 16 | 28'-6 | 685 | 16 | 28'-6 | 685 | 16 | 28'-6 | 685 |
| SLAB LONGITUDINAL TOP, AT RAIL | | 6b8 | 8 | 27'-2 | 327 | 8 | 27'-2 | 327 | 8 | 27'-2 | 327 | 8 | 27'-2 | 327 |
| SLAB LONGITUDINAL TOP, AT RAIL | | 10b9 | 8 | 25'-3 | 870 | 8 | 25'-3 | 870 | 8 | 25'-3 | 870 | 8 | 25'-3 | 870 |
| SLAB LONGITUDINAL TOP, AT RAIL | | 6b10 | 4 | 21'-10 | 132 | 4 | 21'-10 | 132 | 4 | 21'-10 | 132 | 4 | 21'-10 | 132 |
| SLAB LONGITUDINAL TOP, AT RAIL | | 6b11 | 8 | 30'-8 | 369 | 8 | 30'-8 | 369 | 8 | 30'-8 | 369 | 8 | 30'-8 | 369 |
| SLAB LONGITUDINAL TOP, AT RAIL | | 10b12 | 8 | 17'-6 | 603 | 8 | 17'-6 | 603 | 8 | 17'-6 | 603 | 8 | 17'-6 | 603 |
| SLAB TRANSVERSE, BOTTOM | | 6c1 | 107 | 26'-10 | 4313 | 107 | 27'-9 | 4460 | 96 | 26'-10 | 3870 | 86 | 26'-10 | 3467 |
| SLAB TRANSVERSE ENDS, BOTTOM | | 6c2 | - | - | - | - | - | - | 24 | VARIES | 579 | 44 | VARIES | 970 |
| SLAB TRANSVERSE, TOP | | 5d1 | 107 | 26'-10 | 2995 | 107 | 27'-9 | 3097 | 96 | 26'-10 | 2687 | 86 | 26'-10 | 2407 |
| SLAB TRANSVERSE ENDS, TOP | | 5d2 | - | - | - | - | - | - | 24 | VARIES | 402 | 44 | VARIES | 674 |
| SLAB, TRANSVERSE AT ABUTMENT | | 8e1 | 18 | 26'-10 | 1290 | - | - | - | - | - | - | - | - | - |
| SLAB, TRANSVERSE AT ABUTMENT | | 8e2 | - | - | - | 18 | 27'-8 | 1330 | 18 | 30'-7 | 1470 | 18 | 36'-9 | 1767 |
| SLAB, HAIRPINS, AT ABUTMENT | | 6e3 | 60 | 5'-0 | 451 | 60 | 5'-1 | 459 | 60 | 5'-5 | 489 | 60 | 6'-1 | 549 |
| SLAB, DIAGONALS, AT ABUTMENT | | 6e4 | 60 | 5'-11 | 534 | 60 | 5'-11 | 534 | 60 | 5'-11 | 534 | 60 | 5'-11 | 534 |
| PIER CAP HOOPS | | 5h1 | 32 | 7'-7 | 254 | 32 | 7'-7 | 254 | 48 | 7'-7 | 380 | 48 | 7'-7 | 380 |
| PIER CAP ENDS | | 8h2 | 4 | 14'-5 | 154 | 4 | 14'-5 | 154 | 4 | 14'-5 | 154 | 4 | 14'-5 | 154 |
| PIER CAP, BOTTOM LONGITUDINAL | | 8h3 | 8 | 23'-10 | 510 | 8 | 24'-8 | 527 | 8 | 27'-6 | 588 | 8 | 33'-8 | 720 |
| PIER CAP, TOP LONGITUDINAL | | 8h4 | 4 | 26'-10 | 287 | 4 | 27'-9 | 297 | 4 | 30'-11 | 331 | 4 | 37'-11 | 405 |
| TOP OF SLAB, TRANSVERSE, AT RAIL | | 5j1 | 212 | 8'-6 | 1880 | 212 | 8'-6 | 1880 | 212 | 8'-6 | 1880 | 210 | 8'-6 | 1862 |
| WING, VERTICAL | | 5m1 | 40 | 4'-5 | 185 | 40 | 4'-5 | 185 | 40 | 4'-5 | 185 | 40 | 4'-5 | 185 |
| WING, HORIZONTAL BACK FACE | | 5n1 | 24 | 6'-8 | 167 | 24 | 6'-8 | 167 | 24 | 6'-8 | 167 | 24 | 6'-8 | 167 |
| WING, HORIZONTAL TRAFFIC FACE | | 5n3 | 24 | 6'-9 | 169 | 24 | 6'-9 | 169 | 24 | 6'-9 | 169 | 24 | 6'-9 | 169 |
| PAVING BLOCK LIFTING HOOPS | | 5x1 | 8 | 2'-10 | 24 | 8 | 2'-10 | 24 | 8 | 2'-10 | 24 | 8 | 2'-10 | 24 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| SUB TOTAL - LBS. | | | | | 44,311 | | | 44,635 | | | 45,007 | | | 45,532 |
| OPEN RAIL - SEE LIST ON RAIL SHEET J24-41-06 | | | | | 7261 | | | 7261 | | | 7261 | | | 7261 |
| TOTAL - LBS. WITH MONOLITHIC PIER CAP AND OPEN RAIL | | | | | 51,572 | | | 51,896 | | | 52,268 | | | 52,793 |
| TOTAL - LBS. WITH NON-MONOLITHIC PIER CAP AND OPEN RAIL<br>SAME AS ABOVE EXCEPT ALL "h" BARS DELETED | | | | | 50,367 | | | 50,664 | | | 50,815 | | | 51,134 |

## ESTIMATED QUANTITIES FOR SUPERSTRUCTURE - 110' BRIDGE

| ITEM | | SKEW | WITH MONOLITHIC PIER CAP 0° | 15° | 30° | 45° | WITH NON-MONOLITHIC PIER CAP 0° | 15° | 30° | 45° |
|---|---|---|---|---|---|---|---|---|---|---|
| OPEN RAIL | *STRUCTURAL CONCRETE (BRIDGE) C.Y. | | 192.3 | 192.9 | 195.2 | 199.9 | 188.1 | 188.5 | 190.3 | 194.1 |
| | REINFORCING STEEL | LBS. | 51,572 | 51,896 | 52,268 | 52,793 | 50,367 | 50,664 | 50,815 | 51,134 |
| OPEN RAIL | | LIN. FT. | 242.0 | 242.2 | 242.9 | 244.5 | 242.0 | 242.2 | 242.9 | 244.5 |

* INCLUDES 4 WINGS @ 0.68 C.Y. EACH AND 2 TEMPORARY PAVING BLOCKS; EXCLUDES RAIL CONCRETE.

## BENT BAR DETAILS




NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

REVISED 07-09 -- OPEN RAIL REINF. QTYS. CHANGED WHICH CHANGED TOTAL REINF. QTYS.

07-09
LATEST REVISION DATE

APPROVED BY BRIDGE ENGINEER

Iowa Department of Transportation
Highway Division

STANDARD DESIGN - 24' ROADWAY, 3 SPAN BRIDGES

# CONTINUOUS CONCRETE SLAB BRIDGES

NOVEMBER, 2006

SUPERSTRUCTURE DETAILS
110'-0 BRIDGE

J24-11-06