

**PILE BENT NOTES:**

THESE PIER BENTS ARE DESIGNED FOR USE WITH STANDARD H44-07 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES IN LOCATIONS WHERE ICE AND DRIFT CONDITIONS ARE NOT SEVERE.

PIER PILES ARE TO BE DRIVEN TO THE DESIGN BEARING VALUE W/O IMPACT.

FOR DETAILS OF TRESTLE PILES, TYPES 1, 2 AND 3, SEE STANDARD P10A.

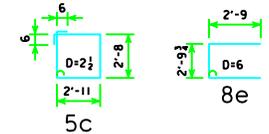
DETAILS SHOWN FOR CONCRETE PILES. FOR ORIENTATION OF STEEL PILES, SEE STANDARD P10A.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

**REINFORCING BAR LIST AND ESTIMATED QUANTITIES - PER PILE BENT**

| BAR                        | SHAPE       | 9 PILE BENT |        | 11 PILE BENT |       | 13 PILE BENT |        | 15 PILE BENT |        | 17 PILE BENT |     | 19 PILE BENT |        |      |        |        |      |
|----------------------------|-------------|-------------|--------|--------------|-------|--------------|--------|--------------|--------|--------------|-----|--------------|--------|------|--------|--------|------|
|                            |             | NO.         | LENGTH | WEIGHT       | NO.   | LENGTH       | WEIGHT | NO.          | LENGTH | WEIGHT       | NO. | LENGTH       | WEIGHT | NO.  | LENGTH | WEIGHT |      |
| 9a                         |             | 8           | 5'1"-8 | 1405         | 8     | 5'1"-8       | 1405   | 6            | 5'1"-8 | 1054         | 6   | 5'1"-8       | 1054   | 4    | 5'1"-8 | 703    |      |
| 8b                         |             | 8           | 5'1"-8 | 1104         | 8     | 5'1"-8       | 1104   | 8            | 5'1"-8 | 1104         | 8   | 5'1"-8       | 1104   | 8    | 5'1"-8 | 1104   |      |
| 5c                         |             | 50          | 12'-2  | 634          | 42    | 12'-2        | 533    | 50           | 12'-2  | 634          | 58  | 12'-2        | 736    | 50   | 12'-2  | 634    |      |
| 8e                         |             | 4           | 8'-4   | 89           | 4     | 8'-4         | 89     | 4            | 8'-4   | 89           | 4   | 8'-4         | 89     | 4    | 8'-4   | 89     |      |
| ④ REINFORCING STEEL (L.B.) |             |             |        | 3232         |       |              | 3131   |              |        | 2881         |     |              | 2983   |      |        | 2881   | 2607 |
| STRUCTURAL CONCRETE (CY)   | ② PILE TYPE | 1, 2        |        | -----        | ----- |              | -----  | 19.8         |        | -----        |     | 19.7         | -----  |      | 19.6   | -----  |      |
|                            |             | 3           |        | 20.4         | 20.4  |              | 20.4   | 20.4         |        | 20.4         |     | 20.4         |        | 20.4 |        | -----  |      |
|                            |             |             |        |              |       |              |        |              |        |              |     |              |        |      |        |        |      |

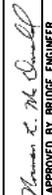
**BENT BAR DETAILS**



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

| C-C ABUTMENT BEARING | FRICTION BEARING PILING             |                |                               |                                 | FRICTION OR POINT BEARING PILING    |                |                               |                                 |
|----------------------|-------------------------------------|----------------|-------------------------------|---------------------------------|-------------------------------------|----------------|-------------------------------|---------------------------------|
|                      | P10A TYPE 1 OR 2                    |                |                               |                                 | P10A TYPE 3                         |                |                               |                                 |
|                      | NUMBER OF TRESTLE PILES AND SPACING | ① "K" (INCHES) | DES. PILE BRG.(TONS) W/IMPACT | DES. PILE BRG.(TONS) W/O IMPACT | NUMBER OF TRESTLE PILES AND SPACING | ① "K" (INCHES) | DES. PILE BRG.(TONS) W/IMPACT | DES. PILE BRG.(TONS) W/O IMPACT |
| 138'-10              | 15 PILES @ 3'-6 CTRS.               | 14             | 29                            | 27                              | 9 PILES @ 6'-1 1/2 CTRS.            | 16             | 48                            | 44                              |
|                      | 13 PILES @ 4'-1 CTRS.               | 16             | 33                            | 31                              | 11 PILES @ 4'-10 1/2 CTRS.          | 18             | 39                            | 36                              |
| 151'-4               | 15 PILES @ 3'-6 CTRS.               | 14             | 30                            | 28                              | 9 PILES @ 6'-1 1/2 CTRS.            | 16             | 50                            | 47                              |
|                      | 13 PILES @ 4'-1 CTRS.               | 16             | 35                            | 32                              | 11 PILES @ 4'-10 1/2 CTRS.          | 18             | 41                            | 38                              |
| 163'-10              | 17 PILES @ 3'-0 1/2 CTRS.           | 14             | 29                            | 27                              | 11 PILES @ 4'-10 1/2 CTRS.          | 16             | 45                            | 42                              |
|                      | 15 PILES @ 3'-6 CTRS.               | 16             | 33                            | 31                              | 11 PILES @ 4'-10 1/2 CTRS.          | 18             | 45                            | 42                              |
| 176'-4               | 19 PILES @ 2'-8 1/2 CTRS.           | 14             | 27                            | 26                              | 11 PILES @ 4'-10 1/2 CTRS.          | 16             | 47                            | 44                              |
|                      | 15 PILES @ 3'-6 CTRS.               | 16             | 35                            | 32                              | 13 PILES @ 4'-1 CTRS.               | 18             | 40                            | 37                              |
| 188'-10              | 19 PILES @ 2'-8 1/2 CTRS.           | 14             | 29                            | 27                              | 11 PILES @ 4'-10 1/2 CTRS.          | 16             | 49                            | 46                              |
|                      | 15 PILES @ 3'-6 CTRS.               | 16             | 36                            | 34                              | 13 PILES @ 4'-1 CTRS.               | 18             | 42                            | 39                              |
| 201'-4               | *19 PILES @ 2'-8 1/2 CTRS.          | 14             | 33                            | 31                              | 13 PILES @ 4'-1 CTRS.               | 16             | 48                            | 45                              |
|                      | 19 PILES @ 2'-8 1/2 CTRS.           | 16             | 33                            | 31                              | 15 PILES @ 3'-6 CTRS.               | 18             | 41                            | 39                              |
| 213'-10              | 19 PILES @ 2'-8 1/2 CTRS.           | 16             | 34                            | 32                              | 13 PILES @ 4'-1 CTRS.               | 16             | 50                            | 47                              |
|                      | 19 PILES @ 2'-8 1/2 CTRS.           | 16             | 36                            | 34                              | 15 PILES @ 3'-6 CTRS.               | 18             | 43                            | 41                              |
| 226'-4               | 19 PILES @ 2'-8 1/2 CTRS.           | 16             | 36                            | 34                              | 15 PILES @ 3'-6 CTRS.               | 16             | 45                            | 43                              |
|                      | 19 PILES @ 2'-8 1/2 CTRS.           | 16             | 36                            | 34                              | 15 PILES @ 3'-6 CTRS.               | 18             | 45                            | 43                              |
| 243'-0               | *19 PILES @ 2'-8 1/2 CTRS.          | 16             | 37                            | 35                              | 15 PILES @ 3'-6 CTRS.               | 16             | 47                            | 45                              |
|                      | 19 PILES @ 2'-8 1/2 CTRS.           | 16             | 37                            | 35                              | 17 PILES @ 3'-0 1/2 CTRS.           | 18             | 42                            | 40                              |

- ① SEE STANDARD P10A FOR "K" DIMENSION.
- ② CONCRETE QUANTITIES SHOWN HAVE HAD THE VOLUME OF EMBEDDED PILES DEDUCTED FOR TYPES 1 AND 2 BASED ON 0.8 FT<sup>3</sup> PER FOOT OF EMBEDMENT. THE CONCRETE QUANTITIES FOR TYPE 3 PILES DO NOT REQUIRE REDUCTION FOR PILE EMBEDMENT.
- ③ FOR ESTIMATING PILE LENGTHS AND FOR DETERMINING ACTUAL PILE LENGTHS IN FIELD.
- ④ SEE SHEET H44-24-07 FOR STEP REINFORCING STEEL QUANTITIES AND DETAILS.
- \* TYPE 2 ONLY.

|                      |  |  |                  |
|----------------------|--|--|------------------|
| LATEST REVISION DATE | <br>APPROVED BY BRIDGE ENGINEER |  <b>Iowa Department of Transportation</b><br>Highway Division                       |                  |
|                      |  | STANDARD DESIGN - 44' ROADWAY, THREE SPAN BRIDGE<br><b>PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES</b><br>HL93 SUPERSTRUCTURE      MARCH, 2007      HS25 SUBSTRUCTURE |                  |
|                      |  | <b>PILE BENT DETAILS</b><br>30° SKEW   | <b>H44-43-07</b> |