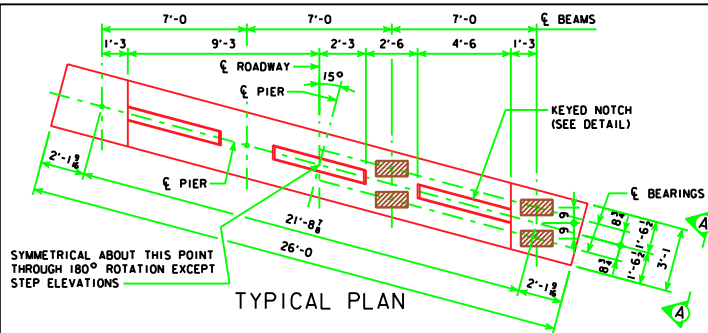
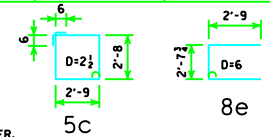


## REINFORCING BAR LIST AND ESTIMATED QUANTITIES - PER PILE BENT

|               |                                                                                     | 6 PILE BENT    |         |        | 7 PILE BENT |         |        | 8 PILE BENT |         |        | 9 PILE BENT |         |        | 10 PILE BENT |         |        |
|---------------|-------------------------------------------------------------------------------------|----------------|---------|--------|-------------|---------|--------|-------------|---------|--------|-------------|---------|--------|--------------|---------|--------|
| BAR           | SHAPE                                                                               | NO.            | LENGTH  | WEIGHT | NO.         | LENGTH  | WEIGHT | NO.         | LENGTH  | WEIGHT | NO.         | LENGTH  | WEIGHT | NO.          | LENGTH  | WEIGHT |
| 6a            |  | 6              | 25'-8"  | 524    | 6           | 25'-8"  | 524    | 6           | 25'-8"  | 524    | 6           | 25'-8"  | 524    | 4            | 25'-8"  | 349    |
| 8b            |  | 8              | 25'-8"  | 548    | 8           | 25'-8"  | 548    | 8           | 25'-8"  | 548    | 8           | 25'-8"  | 548    | 8            | 25'-8"  | 548    |
| 5c            |  | 22             | 11'-10" | 272    | 20          | 11'-10" | 247    | 23          | 11'-10" | 284    | 26          | 11'-10" | 321    | 20           | 11'-10" | 247    |
| 8e            |  | 4              | 8'-2"   | 87     | 4           | 8'-2"   | 87     | 4           | 8'-2"   | 87     | 4           | 8'-2"   | 87     | 4            | 8'-2"   | 87     |
| ④             | REINFORCING STEEL (LB.)                                                             | 1431           |         |        | 1406        |         |        | 1443        |         |        | 1480        |         |        | 1231         |         |        |
| STRUCTURAL ②  |                                                                                     | PILE TYPE      |         |        |             |         |        |             |         |        |             |         |        |              |         |        |
| CONCRETE (CY) |                                                                                     | 1 <sub>2</sub> |         |        | -----       |         |        | 8.8         |         |        | 8.8         |         |        | 8.8          |         |        |
|               |                                                                                     | 3              |         |        | 9.2         |         |        | 9.2         |         |        | 9.2         |         |        | 9.2          |         |        |

## BENT BAR DETAILS



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

| P-PIA ABUTMENT BEARING | FRICTION BEARING PILING                                                                                          |                      |                               |                                   | FRICTION OR POINT BEARING PILING                                                                 |                      |                               |                                   |
|------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------|----------------------|-------------------------------|-----------------------------------|
|                        | P-PIA TYPE 1 OR 2                                                                                                |                      |                               |                                   | P-PIA TYPE 3                                                                                     |                      |                               |                                   |
|                        | NUMBER OF TRESTLE PILES AND SPACING                                                                              | ① "K" (INCHES)       | DES. PILE BRG.(TONS) W/IMPACT | DES. PILE ③ BRG.(TONS) W/O IMPACT | NUMBER OF TRESTLE PILES AND SPACING                                                              | ① "K" (INCHES)       | DES. PILE BRG.(TONS) W/IMPACT | DES. PILE ③ BRG.(TONS) W/O IMPACT |
| 138'-10                | 9 PILES @ 2'-10 1/2 CTRS.<br>8 PILES @ 3'-3 1/4 CTRS.<br>10 PILES @ 2'-6 1/2 CTRS.<br>8 PILES @ 3'-3 1/4 CTRS.   | 14<br>16<br>14<br>16 | 30<br>34<br>28<br>35          | 27<br>31<br>26<br>32              | 6 PILES @ 4'-7 CTRS.<br>6 PILES @ 4'-7 CTRS.<br>6 PILES @ 4'-7 CTRS.<br>7 PILES @ 3'-10 CTRS.    | 16<br>18<br>16<br>18 | 45<br>45<br>47<br>40          | 41<br>41<br>43<br>37              |
| 151'-4                 | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 163'-10                | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 176'-4                 | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 188'-10                | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 201'-4                 | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 213'-10                | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 226'-4                 | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |
| 243'-0                 | 10 PILES @ 2'-6 1/2 CTRS.<br>10 PILES @ 2'-10 1/2 CTRS.<br>9 PILES @ 2'-6 1/2 CTRS.<br>9 PILES @ 2'-10 1/2 CTRS. | 14<br>16<br>14<br>16 | 31<br>34<br>32<br>36          | 28<br>31<br>30<br>33              | 7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS.<br>7 PILES @ 3'-10 CTRS. | 18<br>16<br>16<br>18 | 43<br>43<br>46<br>46          | 40<br>40<br>42<br>42              |

① SEE STANDARD P-PIA 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 H24-17-06 FOR STEP REINFORCING STEEL QUANTITY AND DETAILS.

\* TYPE 2 ONLY.

## PILE BENT NOTES:

THESE PIER BENTS ARE DESIGNED FOR USE WITH STANDARD H24-06 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 P-PIA.

DETAILS SHOWN FOR CONCRETE PILES. FOR ORIENTATION OF STEEL PILES, SEE STANDARD P-PIA.

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

|                               |                                                         |                                                       |                |
|-------------------------------|---------------------------------------------------------|-------------------------------------------------------|----------------|
| LATEST REVISION DATE          | <i>Thomas L. McQuinn</i><br>APPROVED BY BRIDGE ENGINEER | Iowa Department of Transportation<br>Highway Division |                |
|                               |                                                         | STANDARD DESIGN - 24' ROADWAY, THREE SPAN BRIDGE      |                |
|                               |                                                         | PRETENSIONED PRESTRESSED<br>CONCRETE BEAM BRIDGES     |                |
|                               |                                                         | HL93 SUPERSTRUCTURE                                   | DECEMBER, 2006 |
| PILE BENT DETAILS<br>15° SKEW |                                                         | H24-43-06                                             |                |