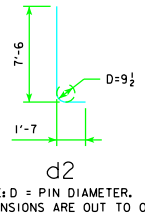
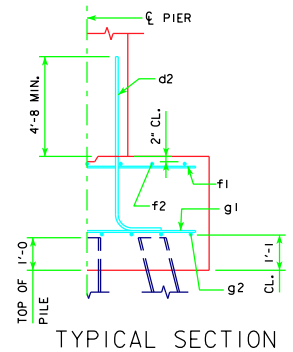
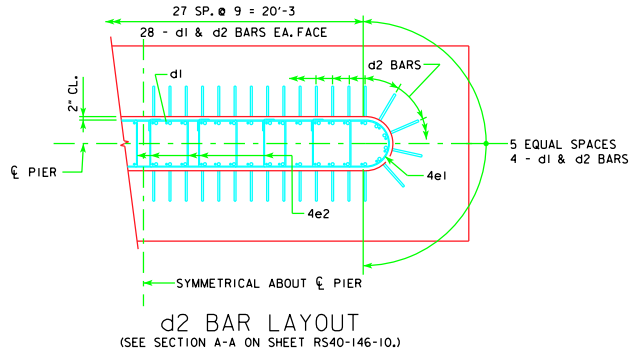


| H IN FT. | ℄ - ℄ ABUT. BRG. | PILING (HP10x57) |                    |                         | FOOTING SIZE   |
|----------|------------------|------------------|--------------------|-------------------------|----------------|
|          |                  | NO. & LAYOUT     | ① DES. BRG. (TONS) | ② LRFD DES. BRG. (KIPS) |                |
| 16 TO 18 | 160'-0           | 10A              | 74                 | 215                     | 4' x 8' x 27'  |
|          | 180'-0           | 11A              | 75                 | 216                     |                |
|          | 200'-0           | 12A              | 73                 | 211                     |                |
|          | 220'-0           | 13A              | 75                 | 218                     |                |
|          | 240'-0           | 14A              | 75                 | 216                     | 4' x 10' x 27' |
|          | 260'-0           | 14B              | 75                 | 219                     |                |
|          | 280'-0           | 16A              | 73                 | 212                     | 4' x 11' x 27' |
|          | 300'-0           | 16C              | 73                 | 210                     |                |
|          | 320'-0           | 17B              | 74                 | 212                     |                |
|          | 340'-0           | 18A              | 73                 | 211                     |                |
| 19 TO 21 | 160'-0           | 11A              | 73                 | 210                     | 4' x 8' x 27'  |
|          | 180'-0           | 12A              | 71                 | 206                     |                |
|          | 200'-0           | 12B              | 74                 | 214                     |                |
|          | 220'-0           | 13B              | 75                 | 218                     |                |
|          | 240'-0           | 14B              | 73                 | 210                     | 4' x 10' x 27' |
|          | 260'-0           | 15A              | 74                 | 215                     |                |
|          | 280'-0           | 16A              | 75                 | 217                     | 4' x 11' x 27' |
|          | 300'-0           | 16C              | 74                 | 215                     |                |
|          | 320'-0           | 17B              | 75                 | 217                     |                |
|          | 340'-0           | 18A              | 75                 | 216                     |                |
| 22 TO 24 | 160'-0           | 11B              | 74                 | 213                     | 4' x 9' x 27'  |
|          | 180'-0           | 12B              | 72                 | 208                     |                |
|          | 200'-0           | 12C              | 75                 | 218                     |                |
|          | 220'-0           | 14A              | 74                 | 213                     |                |
|          | 240'-0           | 14B              | 75                 | 215                     | 4' x 10' x 27' |
|          | 260'-0           | 15A              | 75                 | 220                     |                |
|          | 280'-0           | 16C              | 72                 | 207                     | 4' x 11' x 27' |
|          | 300'-0           | 16C              | 75                 | 219                     |                |
|          | 320'-0           | 18A              | 73                 | 211                     |                |
|          | 340'-0           | 19A              | 74                 | 213                     |                |
| 25 TO 27 | 160'-0           | 11C              | 75                 | 217                     | 4' x 10' x 27' |
|          | 180'-0           | 12C              | 73                 | 212                     |                |
|          | 200'-0           | 13B              | 74                 | 213                     |                |
|          | 220'-0           | 14A              | 75                 | 218                     |                |
|          | 240'-0           | 15A              | 73                 | 211                     | 4' x 11' x 27' |
|          | 260'-0           | 16A              | 73                 | 212                     |                |
|          | 280'-0           | 16C              | 73                 | 211                     | 4' x 12' x 29' |
|          | 300'-0           | 17B              | 74                 | 214                     |                |
|          | 320'-0           | 18A              | 74                 | 215                     |                |
|          | 340'-0           | 19A              | 75                 | 216                     |                |
| 28 TO 30 | 160'-0           | 12C              | 71                 | 204                     | 4' x 10' x 27' |
|          | 180'-0           | 12C              | 75                 | 217                     |                |
|          | 200'-0           | 13B              | 75                 | 218                     |                |
|          | 220'-0           | 14B              | 73                 | 210                     |                |
|          | 240'-0           | 15A              | 74                 | 215                     | 4' x 11' x 27' |
|          | 260'-0           | 16A              | 75                 | 216                     |                |
|          | 280'-0           | 16C              | 74                 | 215                     | 4' x 12' x 29' |
|          | 300'-0           | 17B              | 75                 | 218                     |                |
|          | 320'-0           | 18A              | 75                 | 218                     |                |
|          | 340'-0           | 19B              | 75                 | 218                     |                |
| 31 TO 33 | 160'-0           | 12C              | 73                 | 209                     | 4' x 13' x 29' |
|          | 180'-0           | 12D              | 75                 | 217                     |                |
|          | 200'-0           | 13C              | 75                 | 218                     |                |
|          | 220'-0           | 14B              | 74                 | 214                     |                |
|          | 240'-0           | 15A              | 75                 | 219                     | 4' x 10' x 27' |
|          | 260'-0           | 16B              | 75                 | 218                     |                |
|          | 280'-0           | 16C              | 75                 | 218                     | 4' x 11' x 27' |
|          | 300'-0           | 18A              | 73                 | 211                     |                |
|          | 320'-0           | 19A              | 74                 | 214                     |                |
|          | 340'-0           | 20A              | 74                 | 214                     |                |
| 34 TO 36 | 160'-0           | 12D              | 72                 | 209                     | 4' x 12' x 29' |
|          | 180'-0           | 13C              | 73                 | 211                     |                |
|          | 200'-0           | 14B              | 71                 | 204                     |                |
|          | 220'-0           | 14B              | 75                 | 218                     |                |
|          | 240'-0           | 16A              | 73                 | 211                     | 4' x 11' x 27' |
|          | 260'-0           | 17A              | 74                 | 214                     |                |
|          | 280'-0           | 17B              | 74                 | 213                     | 4' x 12' x 27' |
|          | 300'-0           | 18A              | 74                 | 214                     |                |
|          | 320'-0           | 19B              | 75                 | 215                     | 4' x 12' x 29' |
|          | 340'-0           | 20A              | 75                 | 216                     |                |

| H<br>IN<br>FT. | ℄ - ℄<br>ABUT.<br>BRG. | PILING (HP10x57) |                          |                                | FOOTING SIZE   |
|----------------|------------------------|------------------|--------------------------|--------------------------------|----------------|
|                |                        | NO. &<br>LAYOUT  | ① DES.<br>BRG.<br>(TONS) | ② L/RFD<br>DES. BRG.<br>(KIPS) |                |
| 37 TO 40       | 160'-0                 | 12D              | 74                       | 215                            | 4' x 11' x 27' |
|                | 180'-0                 | 14B              | 69                       | 199                            |                |
|                | 200'-0                 | 14B              | 72                       | 209                            |                |
|                | 220'-0                 | 15A              | 74                       | 214                            |                |
|                | 240'-0                 | 16A              | 75                       | 216                            | 4' x 12' x 27' |
|                | 260'-0                 | 17A              | 75                       | 218                            |                |
|                | 280'-0                 | 17B              | 75                       | 217                            | 4' x 12' x 29' |
|                | 300'-0                 | 18A              | 75                       | 217                            |                |
|                | 320'-0                 | 19B              | 75                       | 219                            | 4' x 13' x 29' |
|                | 340'-0                 | 20B              | 75                       | 218                            |                |

| FOOTING SIZE   | REINFORCING STEEL (ONE FOOTING) |                      |        |                 | TOTAL<br>WEIGHT<br>(LB.) | STRUCTURAL<br>CONCRETE<br>(CY) |
|----------------|---------------------------------|----------------------|--------|-----------------|--------------------------|--------------------------------|
|                | BAR                             | NO., SIZE & SPACING  | LENGTH | WEIGHT<br>(LB.) |                          |                                |
| 4' x 8' x 27'  | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            | 3248                     | 32.0                           |
|                | f1                              | 27 - #5 @ 1'-0"      | 7'-8   | 216             |                          |                                |
|                | f2                              | 8 - #5 @ 1'-0"       | 26'-8  | 223             |                          |                                |
|                | g1                              | 27 - #6 @ 1'-0"      | 7'-8   | 311             |                          |                                |
|                | g2                              | 13 - #6 @ 0'-7 1/2"  | 26'-8  | 521             |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 27 - #5 @ 1'-0"      | 8'-8   | 244             |                          |                                |
|                | f2                              | 9 - #5 @ 1'-0"       | 26'-8  | 250             |                          |                                |
| 4' x 9' x 27'  | g1                              | 29 - #6 @ 0'-11      | 8'-8   | 378             | 3370                     | 36.0                           |
|                | g2                              | 13 - #6 @ 0'-8 1/2"  | 26'-8  | 521             |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 27 - #5 @ 1'-0"      | 9'-8   | 272             |                          |                                |
|                | f2                              | 10 - #5 @ 1'-0"      | 26'-8  | 278             |                          |                                |
|                | g1                              | 28 - #7 @ 0'-11 1/2" | 9'-8   | 553             |                          |                                |
|                | g2                              | 13 - #6 @ 0'-9 1/2"  | 26'-8  | 521             |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
| 4' x 10' x 27' | f1                              | 27 - #5 @ 1'-0"      | 10'-8  | 300             | 4083                     | 44.0                           |
|                | f2                              | 11 - #5 @ 1'-0"      | 26'-8  | 306             |                          |                                |
|                | g1                              | 27 - #9 @ 1'-0"      | 10'-8  | 979             |                          |                                |
|                | g2                              | 13 - #6 @ 0'-10 1/2" | 26'-8  | 521             |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 27 - #5 @ 1'-0"      | 11'-8  | 329             |                          |                                |
|                | f2                              | 12 - #5 @ 1'-0"      | 26'-8  | 334             |                          |                                |
|                | g1                              | 31 - #9 @ 0'-10 1/2" | 11'-8  | 1230            |                          |                                |
| 4' x 12' x 27' | g2                              | 13 - #6 @ 0'-11 1/2" | 26'-8  | 521             | 4391                     | 48.0                           |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 29 - #5 @ 1'-0"      | 11'-8  | 353             |                          |                                |
|                | f2                              | 12 - #5 @ 1'-0"      | 28'-8  | 359             |                          |                                |
|                | g1                              | 33 - #9 @ 0'-10 1/2" | 11'-8  | 1309            |                          |                                |
|                | g2                              | 19 - #8 @ 0'-7 1/2"  | 28'-8  | 1454            |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 29 - #5 @ 1'-0"      | 12'-8  | 383             |                          |                                |
| 4' x 12' x 29' | f2                              | 13 - #5 @ 1'-0"      | 28'-8  | 389             | 5787                     | 55.9                           |
|                | g1                              | 35 - #9 @ 0'-10      | 12'-8  | 1507            |                          |                                |
|                | g2                              | 20 - #8 @ 0'-7 1/2"  | 28'-8  | 1531            |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 29 - #5 @ 1'-0"      | 13'-8  | 413             |                          |                                |
|                | f2                              | 14 - #5 @ 1'-0"      | 28'-8  | 419             |                          |                                |
|                | g1                              | 35 - #9 @ 0'-10      | 13'-8  | 1626            |                          |                                |
|                | g2                              | 20 - #8 @ 0'-8 1/2"  | 28'-8  | 1531            |                          |                                |
| 4' x 14' x 29' | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            | 5966                     | 60.1                           |
|                | f1                              | 29 - #5 @ 1'-0"      | 13'-8  | 413             |                          |                                |
|                | f2                              | 14 - #5 @ 1'-0"      | 28'-8  | 419             |                          |                                |
|                | g1                              | 35 - #9 @ 0'-10      | 13'-8  | 1626            |                          |                                |
|                | g2                              | 20 - #8 @ 0'-8 1/2"  | 28'-8  | 1531            |                          |                                |
|                | d2                              | 64 - #9 AS SHOWN     | 9'-1   | 1977            |                          |                                |
|                | f1                              | 29 - #5 @ 1'-0"      | 13'-8  | 413             |                          |                                |
|                | f2                              | 14 - #5 @ 1'-0"      | 28'-8  | 419             |                          |                                |

- ① FOR DETERMINING ACTUAL PILE LENGTHS IN FIELD.  
② FOR ESTIMATING PILE LENGTHS USING AASHTO LRFD SPECIFICATIONS.

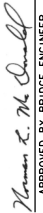


## FOOTING NOTES:

THESE FOOTINGS ARE DESIGNED AND DETAILED TO BE USED WITH THE CAP AND COLUMN DETAILS OF THE TEE PIERS AS SHOWN ON SHEET RS40-146-10.

BATTER PILES IN EXTERIOR ROWS 1:4 IN THE DIRECTION SHOWN.

STEEL PILING USED AS POINT BEARING SHALL HAVE A MINIMUM DISTANCE OF APPROXIMATELY 10 FEET FROM BOTTOM OF FOOTING TO TOP OF BEARING ROCK. THE PILE LAYOUTS ARE SUCH THAT THE DISTANCE CENTER TO CENTER OF ADJACENT PILING SHALL NOT EXCEED 8'-0".

|                      |                                                                                       |                                                                                                                                                    |             |
|----------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| LATEST REVISION DATE |  |  <b>Iowa Department of Transportation</b><br>Highway Division |             |
|                      |                                                                                       | STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES<br><b>ROLLED STEEL BEAM BRIDGES</b><br>JUNE, 2010                                                    |             |
|                      |                                                                                       | TEE PIER - 75 TON<br>STEEL PILE FOOTINGS<br>30° SKEW - SHEET 1                                                                                     | RS40-151-10 |