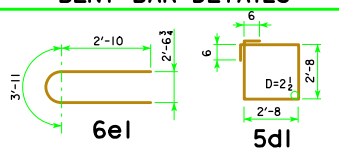


BILL OF REINFORCING STEEL - ONE PIER

| BRIDGE LENGTH MARKSKEW SHAPE | 70'-0" BRIDGE | | | 80'-0" BRIDGE | | | 90'-0" BRIDGE | | | 100'-0" BRIDGE | | | 110'-0" BRIDGE | | | 120'-0" BRIDGE | | | 130'-0" BRIDGE | | | 140'-0" BRIDGE | | | 150'-0" BRIDGE | | | | | |
|---------------------------------|---------------|---------|--------|---------------|---------|--------|---------------|---------|--------|----------------|---------|--------|----------------|---------|--------|----------------|---------|--------|----------------|---------|--------|----------------|---------|--------|----------------|---------|--------|----|---------|-----|
| | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | NO. | LENGTH | WEIGHT | | | |
| 6cl 0° | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 | 10 | 29'-10" | 448 |
| 15° | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 | 10 | 30'-11" | 464 |
| 30° | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 | 10 | 34'-6" | 518 |
| 45° | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 | 20 | 22'-6" | 676 |
| 5dl 0° | 20 | 11'-8" | 244 | 23 | 11'-8" | 280 | 26 | 11'-8" | 317 | 26 | 11'-8" | 317 | 20 | 11'-8" | 244 | 22 | 11'-8" | 268 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 |
| 15° | 26 | 11'-8" | 317 | 23 | 11'-8" | 280 | 26 | 11'-8" | 317 | 26 | 11'-8" | 317 | 20 | 11'-8" | 244 | 22 | 11'-8" | 268 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 |
| 30° | 26 | 11'-8" | 317 | 23 | 11'-8" | 280 | 34 | 11'-8" | 414 | 34 | 11'-8" | 414 | 29 | 11'-8" | 353 | 22 | 11'-8" | 268 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 | 24 | 11'-8" | 292 |
| 45° | 32 | 11'-8" | 390 | 30 | 11'-8" | 365 | 34 | 11'-8" | 414 | 34 | 11'-8" | 414 | 29 | 11'-8" | 353 | 32 | 11'-8" | 390 | 35 | 11'-8" | 426 | 35 | 11'-8" | 426 | 35 | 11'-8" | 426 | 35 | 11'-8" | 426 |
| 6el ALL | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 | 6 | 9'-7" | 86 |

BENT BAR DETAILS



ESTIMATED QUANTITIES - ONE PIER

| BRIDGE LENGTH | SKEW | 70'-0" | 80'-0" | 90'-0" | 100'-0" | 110'-0" | 120'-0" | 130'-0" | 140'-0" | 150'-0" |
|--------------------------|------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
| | | 0° | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 |
| 15° | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 |
| 30° | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 |
| 45° | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 |
| REINFORCING STEEL (LBS.) | | | | | | | | | | |
| 0° | 778 | 814 | 851 | 851 | 778 | 802 | 826 | 826 | 826 | 826 |
| 15° | 867 | 830 | 867 | 867 | 794 | 818 | 842 | 842 | 842 | 842 |
| 30° | 921 | 884 | 1018 | 1018 | 957 | 872 | 896 | 896 | 896 | 896 |
| 45° | 1152 | 1127 | 1176 | 1176 | 1115 | 1152 | 1188 | 1188 | 1188 | 1188 |
| PIILING (NO.) | | | | | | | | | | |
| ALL | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 12 | 12 | 12 |

TYPICAL NUMBERS OF PILES AND SPACINGS AND FACTORED PIER LOADS

| BRIDGE LENGTH | 70'-0" | 80'-0" | 90'-0" | 100'-0" | 110'-0" | 120'-0" | 130'-0" | 140'-0" | 150'-0" |
|--|-------------------------|-------------------------|------------------------|------------------------|------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
| TYP. NO. OF PILES | 7 | 7 | 8 | 9 | 10 | 11 | 12 | 12 | 12 |
| TYP. PILE SPACES @ 0° | 6 SPA. @ 4'-9" | 6 SPA. @ 4'-9" | 7 SPA. @ ABOUT 4'-1(-) | 8 SPA. @ ABOUT 3'-7(-) | 9 SPA. @ 3'-2 | 10 SPA. @ ABOUT 2'-10(+) | 11 SPA. @ ABOUT 2'-7(+) | 11 SPA. @ ABOUT 2'-7(+) | 11 SPA. @ ABOUT 2'-7(+) |
| TYP. PILE SPACES @ 15° | 6 SPA. @ ABOUT 4'-11(+) | 6 SPA. @ ABOUT 4'-11(+) | 7 SPA. @ ABOUT 4'-3(-) | 8 SPA. @ ABOUT 3'-8(+) | 9 SPA. @ ABOUT 3'-3(+) | 10 SPA. @ ABOUT 2'-11(+) | 11 SPA. @ ABOUT 2'-8(+) | 11 SPA. @ ABOUT 2'-8(+) | 11 SPA. @ ABOUT 2'-8(+) |
| TYP. PILE SPACES @ 30° | 6 SPA. @ ABOUT 5'-6(-) | 6 SPA. @ ABOUT 5'-6(-) | 7 SPA. @ ABOUT 4'-8(+) | 8 SPA. @ ABOUT 4'-1(+) | 9 SPA. @ ABOUT 3'-8(-) | 10 SPA. @ ABOUT 3'-3(+) | 11 SPA. @ ABOUT 3'-0(-) | 11 SPA. @ ABOUT 3'-0(-) | 11 SPA. @ ABOUT 3'-0(-) |
| TYP. PILE SPACES @ 45° | 6 SPA. @ ABOUT 6'-9(-) | 6 SPA. @ ABOUT 6'-9(-) | 7 SPA. @ ABOUT 5'-9(+) | 8 SPA. @ ABOUT 5'-0(+) | 9 SPA. @ ABOUT 4'-6(-) | 10 SPA. @ ABOUT 4'-0(+) | 11 SPA. @ ABOUT 3'-8(-) | 11 SPA. @ ABOUT 3'-8(-) | 11 SPA. @ ABOUT 3'-8(-) |
| PI, STRENGTH I DESIGN LOAD FOR PIER (KIPS) | 688 KIPS | 757 KIPS | 834 KIPS | 918 KIPS | 1000 KIPS | 1097 KIPS | 1192 KIPS | 1292 KIPS | 1404 KIPS |

- ① THIS TYPICAL NUMBER OF PILES MAY NEED TO BE MODIFIED DEPENDING ON SELECTED PILE TYPE AND SIZE, HEIGHT, AND RESISTANCE. IF THE NUMBER OF PILES IS DIFFERENT THAN IN THE TABLE FOR THE BRIDGE LENGTH, THE NUMBER OF 5dl BARS AND OTHER QUANTITIES NEED TO BE CHECKED AND ADJUSTED AS NEEDED. PILES 10 INCHES AND 12 INCHES IN SIZE MUST BE SPACED 2'-6 OR MORE, PILES 14 INCHES IN SIZE MUST BE SPACED 2'-11 OR MORE, AND PILES 16 INCHES IN SIZE MUST BE SPACED 3'-4 OR MORE.
- ② MAXIMUM PILE SIZE AT THIS SPACING IS 14 INCHES.
- ③ MAXIMUM PILE SIZE AT THIS SPACING IS 12 INCHES.
- ④ STRENGTH I PIER DESIGN LOAD INCLUDES DYNAMIC LOAD ALLOWANCE (IM), AND PIER CAP WEIGHT IS BASED ON 45° SKEW. USE THIS PU FOR DETERMINING NUMBER OF PILES AND PILE LENGTH.

PIER NOTES:

- FOR SKEWED BRIDGES BOTTOM OF PIER CAP IS TO BE SLOPED TO COMPENSATE FOR GRADE. THEREFORE BOTTOM OF CAP ELEVATIONS WILL BE REQUIRED AT THE C OF ROADWAY AND AT EACH EXTERIOR PILE.
- THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.
- THE PIER PILES ARE TO BE DRIVEN TO FULL PENETRATION, IF PRACTICABLE, BUT IN NO CASE TO A BEARING VALUE LESS THAN THE PILE BEARING REQUIRED FOR EACH BRIDGE LENGTH AS SHOWN ON THIS SHEET. ADDITIONAL DRIVING CAPACITY MAY BE REQUIRED THROUGH SCOURABLE LAYERS. REFER TO GENERAL PLAN NOTES FOR ADDITIONAL INFORMATION.
- THE CONCRETE QUANTITIES ARE BASED ON THE USE OF TYPE 3 PILING. IF TYPE 1 OR TYPE 2 IS USED, THE CONCRETE QUANTITIES MAY BE ADJUSTED TO ACCOUNT FOR THE CONCRETE DISPLACED BY THE PILING.
- ALL REINFORCING STEEL IS TO BE GRADE 60.
- PIER PILING WAS DESIGNED FOR HL-93 LOADING WITH AN ALLOWANCE FOR 20 LBS. PER SQ. FT. FUTURE WEARING SURFACE.

REVISED 06-13 - REVISION FOR LRFD PILE DESIGN.

| | | |
|-------------------------------|-----------------------------|--|
| 06-13 LATEST REVISION DATE | APPROVED BY BRIDGE ENGINEER | STANDARD DESIGN - 30' ROADWAY, 3 SPAN BRIDGES CONTINUOUS CONCRETE SLAB BRIDGES NOVEMBER, 2006 |
| | | NON-MONOLITHIC PIER CAP DETAILS ALL BRIDGES |
| | | J30-26-06 |
| | | SHEET 2 OF 2 |