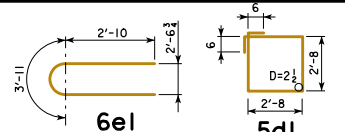


## BILL OF REINFORCING STEEL - ONE PIER

BRIDGE LENGTH MARK/SKEW/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			
6c1 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
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
6e1 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	
30°	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	
REINFORCING STEEL (LBS.)		778	814	851	851	778	802	826	826	826
0°		867	830	867	867	794	818	842	842	842
15°		921	884	1018	1018	957	872	896	896	896
30°		1152	1127	1176	1176	1115	1152	1188	1188	1188
45°										
PILING (NO.)	ALL	7	8	9	9	10	11	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"
① TYP. NO. OF PILES	7	8	9	9	10	11	12	12	12
TYP. PILE SPACES @ 0°	6 SPA. @ 4'-9"	7 SPA. @ ABOUT 4'-1(-)	8 SPA. @ ABOUT 3'-7(-)	8 SPA. @ ABOUT 3'-7(-)	② 9 SPA. @ 3'-2"	③ 10 SPA. @ ABOUT 2'-10(+)	④ 11 SPA. @ ABOUT 2'-7(+)	⑤ 11 SPA. @ ABOUT 2'-7(+)	⑥ 11 SPA. @ ABOUT 2'-7(+)
TYP. PILE SPACES @ 15°	6 SPA. @ ABOUT 4'-11(+)	7 SPA. @ ABOUT 4'-3(-)	8 SPA. @ ABOUT 3'-8(+)	8 SPA. @ ABOUT 3'-8(+)	② 9 SPA. @ ABOUT 3'-3(+)	② 10 SPA. @ ABOUT 2'-11(+)	③ 11 SPA. @ ABOUT 2'-8(+)	④ 11 SPA. @ ABOUT 2'-8(+)	⑤ 11 SPA. @ ABOUT 2'-8(+)
TYP. PILE SPACES @ 30°	6 SPA. @ ABOUT 5'-6(-)	7 SPA. @ ABOUT 4'-8(+)	8 SPA. @ ABOUT 4'-1(+)	8 SPA. @ ABOUT 4'-1(+)	9 SPA. @ ABOUT 3'-8(-)	② 10 SPA. @ ABOUT 3'-3(+)	③ 11 SPA. @ ABOUT 3'-0(-)	④ 11 SPA. @ ABOUT 3'-0(-)	⑤ 11 SPA. @ ABOUT 3'-0(-)
TYP. PILE SPACES @ 45°	6 SPA. @ ABOUT 6'-9(-)	7 SPA. @ ABOUT 5'-9(+)	8 SPA. @ ABOUT 5'-0(+)	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(-)
④ PU, 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 P10L 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 5d1 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 P10L PILE SIZE AT THIS SPACING IS 14 INCHES.
- ③ MAXIMUM P10L 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.

08-2020 LATEST REVISION DATE   APPROVED BY BRIDGE ENGINEER	
	STANDARD DESIGN - 30' ROADWAY, 3 SPAN BRIDGES <b>CONTINUOUS CONCRETE SLAB BRIDGES</b> NOVEMBER, 2006
	<b>NON-MONOLITHIC PIER CAP DETAILS ALL BRIDGES</b>

**J30-26-06**  
 SHEET 2 OF 2

 REVISED 05-2014; CHANGED THE NUMBER OF PILES AND THE PILE SPACINGS FOR THE 80' & 90' BRIDGE LENGTHS.  
 REVISED 09-2020; UPDATED BRIDGE ENGINEER SIGNATURE.