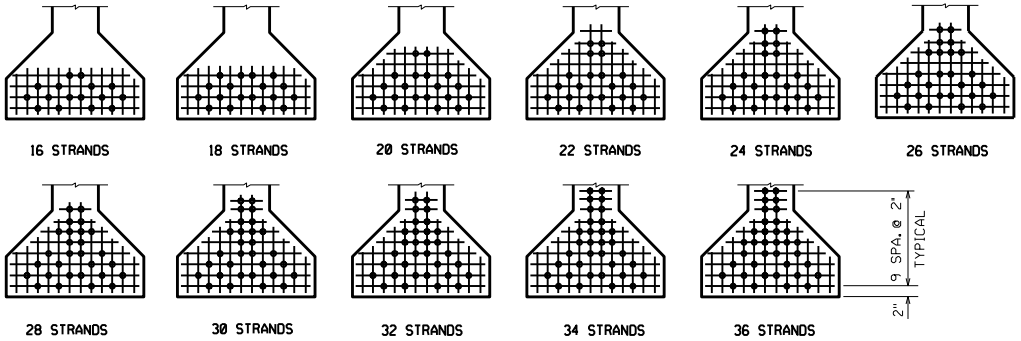
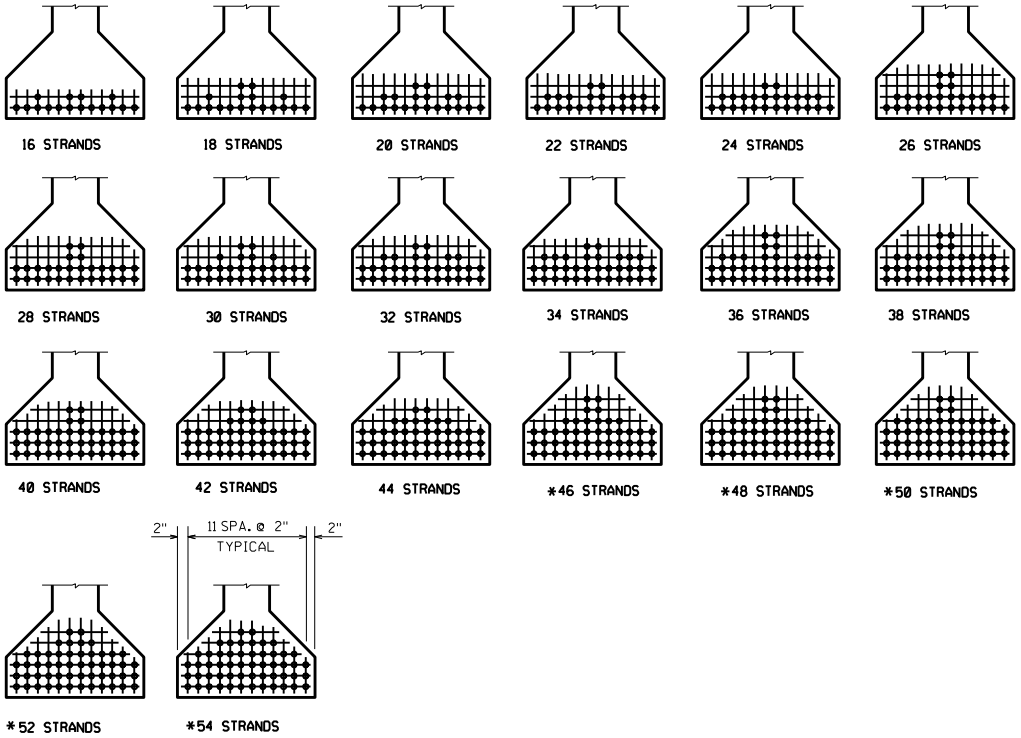


STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF 0.5" DIA. AND 0.6" DIA. STRANDS



ARRANGEMENT AT ℄ SPAN - FOR GIRDERS WITH DRAPED 0.5" DIA. AND 0.6" DIA. STRANDS

*0.5" DIA. STRANDS ONLY

54" GIRDER

A = 789 SQ. IN.

r^2 = 330.46 IN.^{2}

y_T = 29.27 IN.

y_B = -24.73 IN.

I = 260,730 IN.^{4}

S_T = 8,908 IN.^{3}

S_B = -10,543 IN.^{3}

WT. = 822 #/FT.

PRE-TENSION

f'_s = 270,000 P.S.I

f_s = 0.75 X 270,000 = 202,500 P.S.I for low relaxation strands.

Pi PER 0.5" DIA. STRAND = 0.1531 X 202,500 = 31.00 KIPS

Pi PER 0.6" DIA. STRAND = 0.217 X 202,500 = 43.94 KIPS

$$\frac{y_B}{r^2} = \frac{-24.73}{330.46} = -0.07484 \text{ IN./IN.}^2$$

$$f_B \text{ (Init.)} = \frac{(4)}{(3)} \text{ (K/Sq. In.)}$$

(COMPRESSION IS POSITIVE)

N NO. STRANDS	(1) e_s (inches)	(2) $(1+\frac{e_s y_B}{r^2})$	(3) (A/(2)) (sq. in.)	(4) P(Init.) = $A_s f_s$ 0.5" DIA. STRANDS (KIPS)	(4) P(Init.) = $A_s f_s$ 0.6" DIA. STRANDS (KIPS)	(5) f_B (Init.)=(4)/(3) 0.5" DIA. STRANDS (K/Sq. In.)	(5) f_B (Init.)=(4)/(3) 0.6" DIA. STRANDS (K/Sq. In.)
STANDARD PATTERNS FOR UNDRAPED STRANDS							
16	-20.23	2.514	313.84	496	703	1.580	2.240
18	-19.84	2.485	317.51	558	791	1.757	2..491
20	-19.13	2.432	324.42	620	879	1.911	2.709
22	-18.37	2.375	332.21	682	967	2.053	2.911
24	-17.55	2.313	341.12	744	1055	2.181	3.093
26	-17.18	2.286	345.14	806	1143	2.335	3.312
28	-17.02	2.274	346.97	868	1230	2.502	3.545
30	-16.33	2.222	355.09	930	1318	2.619	3.712
32	-16.23	2.215	356.21	992	1406	2.785	3.947
34	-15.54	2.163	364.77	1054	1494	2.889	4.096
36	-15.50	2.160	365.28	1116	1582	3.055	4.331
STANDARD PATTERNS FOR DRAPED STRANDS							
16	-22.23	2.664	296.17	496	703	1.675	2.374
18	-21.84	2.634	299.54	558	791	1.863	2.641
20	-21.73	2.626	300.46	620	879	2.064	2.926
22	-21.64	2.619	301.26	682	967	2.264	3.210
24	-21.57	2.614	301.84	744	1055	2.465	3.495
26	-21.19	2.586	305.10	806	1143	2.642	3.746
28	-21.16	2.584	305.34	868	1230	2.843	4.028
30	-20.99	2.571	306.88	930	1318	3.031	4.295
32	-20.85	2.560	308.20	992	1406	3.219	4.562
34	-20.73	2.551	309.29	1054	1494	3.408	4.830
36	-20.39	2.526	312.35	1116	1582	3.573	5.065
38	-20.31	2.520	313.10	1178	1670	3.762	5.334
40	-20.23	2.514	313.84	1240	1758	3.951	5.602
42	-20.06	2.501	315.47	1302	1846	4.127	5.852
44	-19.91	2.490	316.87	1364	1933	4.305	6.100
46	-19.60	2.467	319.82	1426		4.459	
48	-19.48	2.458	320.99	1488		4.636	
50	-19.37	2.450	322.04	1550		4.813	
52	-19.19	2.436	323.89	1612		4.977	
54	-19.03	2.424	325.50	1674		5.143	

54" PRETENSIONED GIRDER DESIGN DATA

BUREAU OF STRUCTURES

APPROVED: Bill Oliva

DATE: 7-16