

45W" GIRDER

A = 692 SQ. IN.
 $r^2 = 258.70 \text{ IN.}^2$
 $y_T = 24.26 \text{ IN.}$
 $y_B = -20.74 \text{ IN.}$
 $I = 178,971 \text{ IN.}^4$
 $S_T = 7,377 \text{ IN.}^3$
 $S_B = -8,629 \text{ IN.}^3$
 WT. = 721 #/FT.

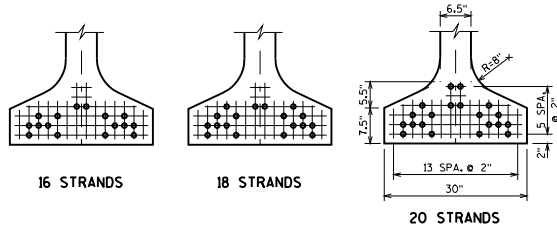
PRE-TENSION

$f'_s = 270,000 \text{ P.S.I.}$
 $f_s = 0.75 \times 270,000 = 202,500 \text{ P.S.I.}$
 for low relaxation strands

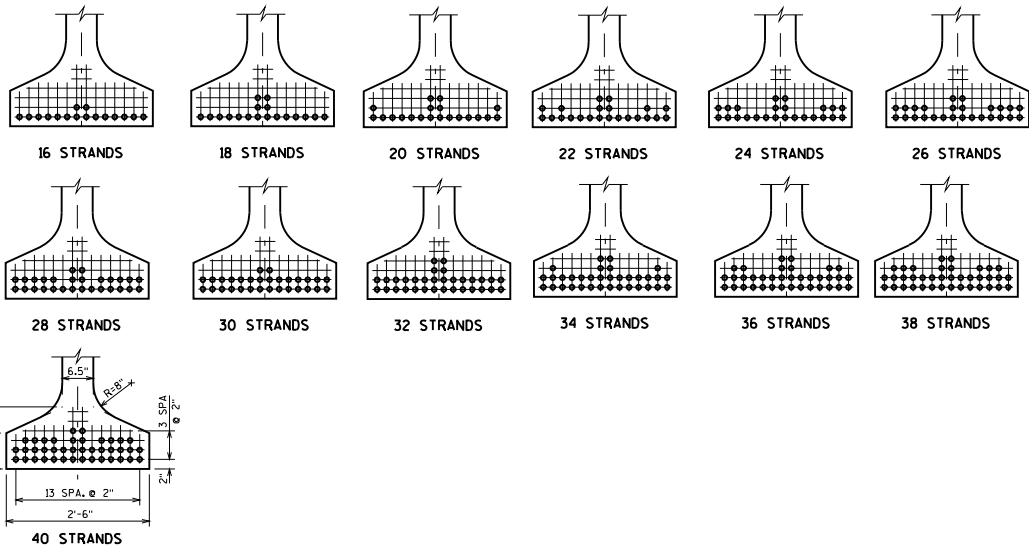
PI PER 0.6" ϕ STRAND = $0.217 \times 202,500 = 43,94 \text{ KIPS}$

$$\frac{y_B}{r^2} = \frac{-20.74}{258.70} = -0.08017 \text{ in/in}^2$$

$$f_B (\text{init.}) = \frac{A_s f_s}{A} (1 + \frac{e_s y_B}{r^2})$$



STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF 0.6" ϕ STRANDS



ARRANGEMENT AT $\frac{1}{4}$ SPAN - FOR GIRDERS WITH DRAPED 0.6" ϕ STRANDS

(COMPRESSION IS POSITIVE)

NO. STRANDS	e_s (inches)	$P(\text{init.}) = A_s f_s$ (KIPS)	$f_B (\text{init.})$ (K/sq.in.)
STANDARD STRAND PATTERNS FOR UNDRAPED STRANDS			
16	-16.24	703	2.339
18	-15.85	791	2.596
20	-15.14	879	2.812
STANDARD STRAND PATTERNS FOR DRAPED STRANDS			
16	-18.49	703	2.521
18	-18.07	791	2.799
20	-17.94	879	3.097
22	-17.83	967	3.394
24	-17.74	1055	3.693
26	-17.66	1143	3.991
28	-17.60	1230	4.285
30	-17.54	1318	4.583
32	-17.24	1406	4.840
34	-17.09	1494	5.117
36	-16.96	1582	5.395
38	-16.85	1670	5.674
40	-16.74	1758	5.950

45W" PRESTRESSED GIRDER DESIGN DATA

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION
 STRUCTURES DEVELOPMENT SECTION

APPROVED: Scot Becker DATE: 7-09