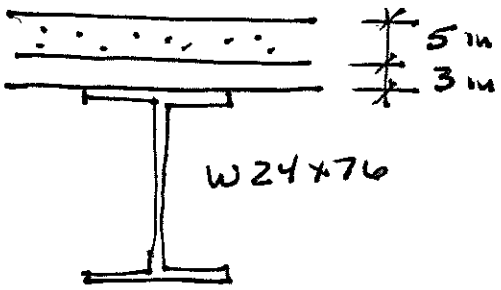
21.



$b_{eff} = \frac{28}{4} = 7 ft = 84 in.$ *

$= 10'$

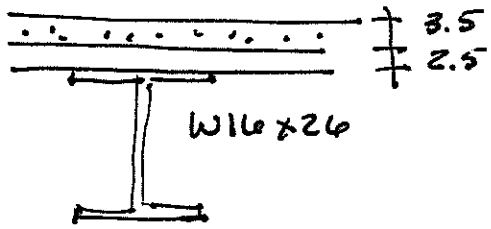
$Y_2 = 6.0 in \quad \Sigma Q_n = 393 k \rightarrow PNA\ \#6$

Table 3-20 $I_{LB} = 3980\ in^4$

$w = 3.4\ k/ft.$

$$\Delta = \frac{5}{384}\frac{3.4(28)^4(1728)}{29000(3980)} = \underline{0.407\ in.}$$

22.



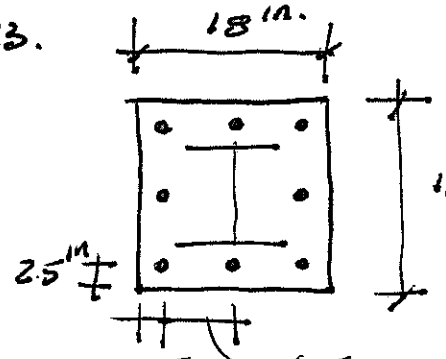
$Y_2 = 5.5 in. \quad \Sigma Q_n = 384^k \quad PNA\ \#1$

$I_{LB} = 985\ in^4$ TABLE 3-20

$w = 2.1\ k/ft$

$$\Delta = \frac{5}{384}\frac{2.1(24)^4(1728)}{(29000)(985)} = 0.549\ in.$$

23.



W10x68 $A_s = 20.0\ in^2$; #8 bar $A_{sr} = 0.79\ in^2$

$A_{sr} = 8(.79) = 6.32\ in^2$

$A_c = 18(18) - 20.0 - 6.32 = 298\ in^2$

$P_o = 50(20.0) + 60(6.32) + 0.85(5)(298)$

$= 2650\ k$

$I_{sy} = 134\ in^4$; $I_{sr} = 2\left(3(0.79)(6.5)^2\right) = 200\ in^4$

$$I_c = \frac{18(18)^3}{12} - 134 - 200 = 8410\ in^4$$