PROB # 8.8

$$\phi V_n = \phi V_c + \phi V_s$$

$$\phi V_c = \phi 2\sqrt{f'_c}\, b_w d$$

$$= (0.75)(2\sqrt{4000})(12)(25)$$

$$= 28,460 \text{ lbs}$$

$$\phi V_s = \phi A_v f_y \frac{d}{s}$$

$$= (0.75)(2 \times 0.11)(60,000)\left(\frac{25}{10}\right)$$

$$= 24,750 \text{ lbs}$$

$$\phi V_n = 28,460 + 24,750 = \boxed{53,210 \text{ lbs}}$$

✓ gcm≦

PROB # 8.9

$$\phi V_n = \phi V_c + \phi V_s$$

$$\phi V_c = \phi 2\sqrt{f'_c}\, b_w d$$

$$= (0.75)(2\sqrt{4000})(5)(29.5)$$

$$= 13,993 \text{ lbs}$$

$$\phi V_s = \phi A_v f_y \frac{d}{s}$$

$$= (0.75)(0.20)(60,000)\left(\frac{29.5}{6}\right)$$

$$= 44,250 \text{ lbs}$$

$$\phi V_n = 13,993 + 44,250$$

$$= \boxed{58,243 \text{ lbs}}$$

✓ gcm≦

PROB# 8.21

Spacing limitations (Code 11.5.4.1)
s = 12.000 in (Code 11.5.4.1)
s = 24.0 in (Code 11.5.4.1)
These limits are reduced by half when Vs exceeds 91073.597 lbs (Code

Spacing for minimum reinforcement (Code 11.5.5.3)
s = 17.600 in
s = 18.552 in

Vs = 29663.202 lbs. (Shearing force carried by stirrups)
s = 10.680 in. (Required stirrup spacing)
maximum s permitted = 10.680 in. (Use s = 10.0 in))

PROB# 8.22

Spacing limitations (Code 11.5.4.1)
s = 13.500 in (Code 11.5.4.1)
s = 24.0 in (Code 11.5.4.1)
These limits are reduced by half when Vs exceeds 81966.237 lbs (Code

Spacing for minimum reinforcement (Code 11.5.5.3)
s = 39.200 in
s = 41.320 in

Vs = 65150.215 lbs. (Shearing force carried by stirrups)
s = 9.747 in. (Required stirrup spacing)
maximum s permitted = 9.747 in. (Use s = 9.0 in))