

1/2" ϕ LAG SCREW: $D_r = 0.371"$ (root diameter)

MAIN MEMBER $L_M = 1.5"$

$G = 0.42$ SPF

$$F_{em} = F_{eL} = \frac{6100G^{1.75}}{\sqrt{D_r}} = 2847$$

SIDE MEMBER $L_s = 1.5"$

$G = 0.55$ SP

$$F_{es} = F_{eL} = 4209$$

Mode II (11.3-3 NDS)

$$Z = \frac{K_1 D L_s F_{es}}{R_d}$$

$$= \frac{.345 \times .371 \times 1.5 \times 4209}{4.5}$$

$$\boxed{= 180 \text{ lbs}}$$

$$R_d = 3.6 K_o$$
$$= 4.5$$

$$K_o = (1 + 9/90 \times .25)$$
$$K_o = 1.25$$

$$D = D_r = 0.371$$

$$F_{es} = 4209$$

$$L_s = 1.5$$

$$K_1 = \frac{\sqrt{R_e + 2R_e^2(1 + R_e + R_e^2) + R_e^2 R_e^3} - R_e(1 + R_e)}{(1 + R_e)}$$

$$R_e = F_{em} / F_{es} = 0.676$$

$$R_e = L_M / L_s = 1$$

$$K_1 = .345$$