$$I_x = \frac{bh^3}{12} \qquad I_y = \frac{b^3h}{12} \qquad I_{xy} = 0$$

$$W_x = \frac{bh^2}{6} \qquad W_y = \frac{b^2h}{6}$$

$$I_x = I_y = \frac{\pi d^4}{64} \qquad I_{xy} = 0 \qquad I_p = \frac{\pi d^4}{32}$$

$$W_x = \frac{\pi d^3}{32} \qquad W_p = \frac{\pi d^3}{16}$$

$$I_x = I_y = \frac{\pi(d_{išor}^4 - d_{vid}^4)}{64} \qquad I_{xy} = 0 \qquad I_p = \frac{\pi(d_{išor}^4 - d_{vid}^4)}{32}$$

$$W_x = W_y = \frac{\pi(d_{išor}^4 - d_{vid}^4)}{32d_{išor}} \qquad W_p = \frac{\pi(d_{išor}^4 - d_{vid}^4)}{16d_{išor}}$$

$$I_{x1} = I_x + a^2A$$

$$I_{y1} = I_y + b^2A$$

$$I_{xy} = I_{xy} + abA$$

$$W_x = \frac{I_x}{|y_{\max}|} \qquad W_y = \frac{I_y}{|x_{\max}|}$$

$$W_p = \frac{I_p}{\rho_{\max}}$$

$$\sigma_\theta = \frac{F_n}{A_\theta} \qquad \tau_\theta = \frac{F_t}{A_\theta}.$$

$$A = A_\theta \cos\theta$$

$$\sigma_\theta = \sigma \cos^2\theta$$

$$\tau_\theta = \frac{\sigma}{2}\sin 2\theta$$

$$\varepsilon = \frac{\sigma}{E} = \frac{N}{EA} \qquad \varepsilon_s = -\nu \cdot \varepsilon \qquad \varepsilon = \frac{N}{EA} + \alpha_t \cdot \Delta T$$

$$w_k = \sum_{i=1}^{n} \Delta L_i = \sum_{i=1}^{n} \varepsilon_i L_i = = \sum_{i=1}^{n} \frac{\sigma_i L_i}{E_i} = \sum_{i=1}^{n} \frac{N_i L_i}{E_i A_i}$$

$$W = \frac{1}{2} F \Delta L \qquad U = \frac{N^2 L}{2EA}$$

$$y = \frac{q \cdot L^2}{8H} \qquad H = \frac{q \cdot L^2}{8y}$$

$$\sigma = \frac{qL^2}{8yA} \le \sigma_{all} \qquad q_g = \rho A g$$

$$\varepsilon_1 = \frac{1}{E}(\sigma_1 - \upsilon(\sigma_2 + \sigma_3))$$

$$\varepsilon_2 = \frac{1}{E}(\sigma_2 - \upsilon(\sigma_1 + \sigma_3))$$

$$\varepsilon_3 = \frac{1}{E}(\sigma_3 - \upsilon(\sigma_1 + \sigma_2))$$

$$F_{cr} = \frac{\pi^2 E I_{\min}}{(\mu L)^2}$$

$$\sigma_{cr} = \frac{\pi^2 E}{\lambda^2} \qquad \lambda = \frac{\mu L}{i_{\min}}$$

$$T = \frac{P}{\omega} = \frac{30P}{\pi \cdot n} \qquad T = G\theta I_p \qquad \tau_k = \frac{T\rho_k}{I_p}$$

$$\varphi = \theta L = \frac{T}{GI_p} L \qquad \theta = \frac{T}{GI_p}$$

$$\sigma = \frac{M_x}{I_x} y \qquad \tau_k = \frac{Q|S_k|}{Ib_k}$$