At the support: $z := 0ft$

For Case 3, from Appendix C for $0 < z < \alpha L$:

$$\theta(z) := \frac{T \cdot L}{G_s \cdot J} \cdot \left[(1-\alpha) \cdot \frac{z}{L} + \frac{a}{L} \cdot \left(\sinh\left(\frac{\alpha \cdot L}{a}\right) \div \tanh\left(\frac{L}{a}\right) - \cosh\left(\frac{\alpha \cdot L}{a}\right)\right) \cdot \sinh\left(\frac{z}{a}\right) \right]$$

$$\frac{T \cdot L}{(G_s \cdot J)} = 0.28$$

$$\theta'(z) := \frac{T \cdot L}{(G_s \cdot J)} \cdot \left[\frac{(1-\alpha)}{L} + \frac{1}{L} \cdot \left(\sinh\left(\frac{\alpha \cdot L}{a}\right) \div \tanh\left(\frac{L}{a}\right) - \cosh\left(\alpha \cdot \frac{L}{a}\right)\right) \cdot \cosh\left(\frac{z}{a}\right) \right]$$

$$\theta''(z) := \frac{T}{(G_s \cdot J)} \cdot \left(\sinh\left(\frac{\alpha \cdot L}{a}\right) \div \tanh\left(\frac{L}{a}\right) - \cosh\left(\alpha \cdot \frac{L}{a}\right)\right) \cdot \frac{1}{a} \cdot \sinh\left(\frac{z}{a}\right)$$

$$\theta'(0') = 0.0119\,ft^{-1}$$

$$\theta'''(z) := \frac{T}{(G_s \cdot J)} \cdot \left(\sinh\left(\frac{\alpha \cdot L}{a}\right) \div \tanh\left(\frac{L}{a}\right) - \cosh\left(\alpha \cdot \frac{L}{a}\right)\right) \cdot \frac{1}{a^2} \cdot \cosh\left(\frac{z}{a}\right)$$

$$\frac{(1-\alpha)}{L} = 0.0441\,ft^{-1}$$

$$\sinh\left(\frac{\alpha \cdot L}{a}\right) \div \tanh\left(\frac{L}{a}\right) = 29.50$$

All normal stresses are zero at the pinned ended support.

$$\cosh\left(\alpha \cdot \frac{L}{a}\right) = 29.51$$

$V_{sup} := R \qquad V_{sup} = 0.83\,kips$

Flange stress, due to beam action: $\tau_{bf} := \frac{V_{sup} \cdot Q_f}{I_x \cdot t_f}$ $\qquad \tau_{bf} = 0.14\,ksi$ $\qquad \cosh\left(\frac{z}{a}\right) = 1.00$

Web stress, due to beam action: $\tau_{bw} := \frac{V_{sup} \cdot Q_w}{I_x \cdot t_w}$ $\qquad \tau_{bw} = 0.26\,ksi$

Flange stress, due to St. Venant torsion: $\tau_{tf} := G_s \cdot t_f \cdot \theta'(z)$ $\qquad \tau_{tf} = 4.53\,ksi$

Web stress, due to St. Venant torsion: $\tau_{tw} := G_s \cdot t_w \cdot \theta'(z)$ $\qquad \tau_{tw} = 4.97\,ksi$

Flange stress, due to warping torsion: $\tau_{w1} := -\frac{E_s \cdot S_{w1} \cdot \theta'''(z)}{t_f}$ $\qquad \tau_{w1} = 0.02\,ksi$

Flange stress, due to warping torsion: $\tau_{w2} := -\frac{E_s \cdot S_{w2} \cdot \theta'''(z)}{t_f}$ $\qquad \tau_{w2} = 0.02\,ksi$

Web stress, due to warping torsion: $\tau_{w3} := -\frac{E_s \cdot S_{w3} \cdot \theta'''(z)}{t_w}$ $\qquad \tau_{w3} = 0.01\,ksi$

Note: The stresses are not necessarily additive, but for simplicity and conservatism, I will add all the stresses.

Flange stress: $f_{vf} := \tau_{tf} + \tau_{w1} + \tau_{bf}$ $\qquad f_{vf} = 4.7\,ksi$ $\qquad F_v(h, t_w) = 12.0\,ksi$

Web stress: $f_{vw} := \tau_{tw} + \tau_{bw} + \tau_{w3}$ $\qquad f_{vw} = 5.2\,ksi$ $\qquad \boxed{\text{if}\left(\max(f_{vf}, f_{vw}) \le F_v(h, t_w), OK, NG\right) = \text{"O.K."}}$