

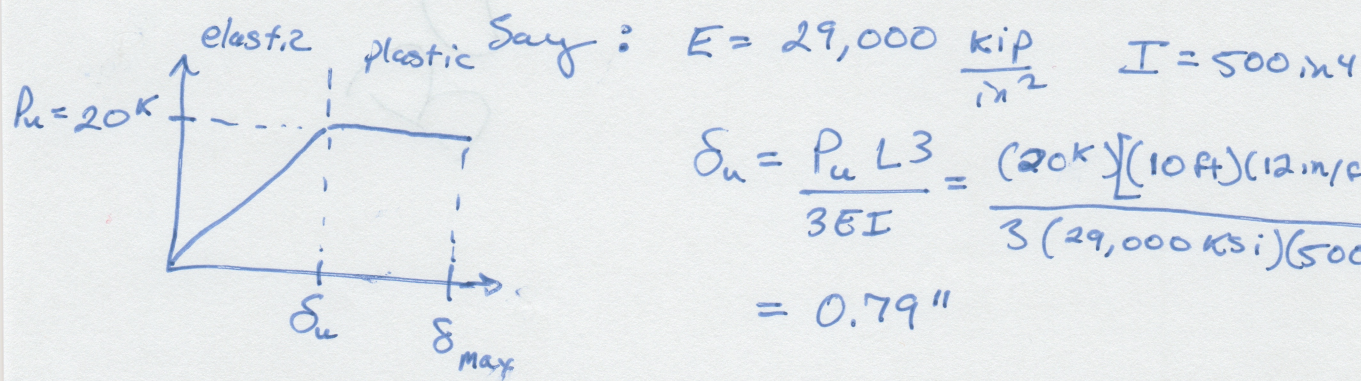
$$W = 40 \text{ kip}$$

$$V = 3 \text{ mph} = 53 \text{ m/s}$$

$$KE = \frac{1}{2} \left( \frac{40 \text{ kip}}{386 \text{ m/s}^2} \right) (53 \text{ m/s})^2 = 27.4 \text{ kip-in}$$

$$M_u = 200 \text{ kip-ft}$$

$$\text{If } L = 10 \text{ ft}, P_u = \frac{M_u}{L} = \frac{200 \text{ kip-ft}}{10 \text{ ft}} = 20 \text{ kip}$$



$$\delta_u = \frac{P_u L^3}{3EI} = \frac{(20 \text{ K}) [(10 \text{ ft})(12 \text{ in/ft})]^3}{3(29,000 \text{ ksi})(500 \text{ in}^4)} = 0.79''$$

$$\delta_{\max} = \frac{U}{P_u} + \frac{\delta_u}{2} = \frac{KE}{P_u} + \frac{\delta_u}{2} = \frac{27.4 \text{ kip-in}}{20 \text{ K}} + \frac{0.79''}{2}$$

$$\delta_{\max} = 1.77''$$