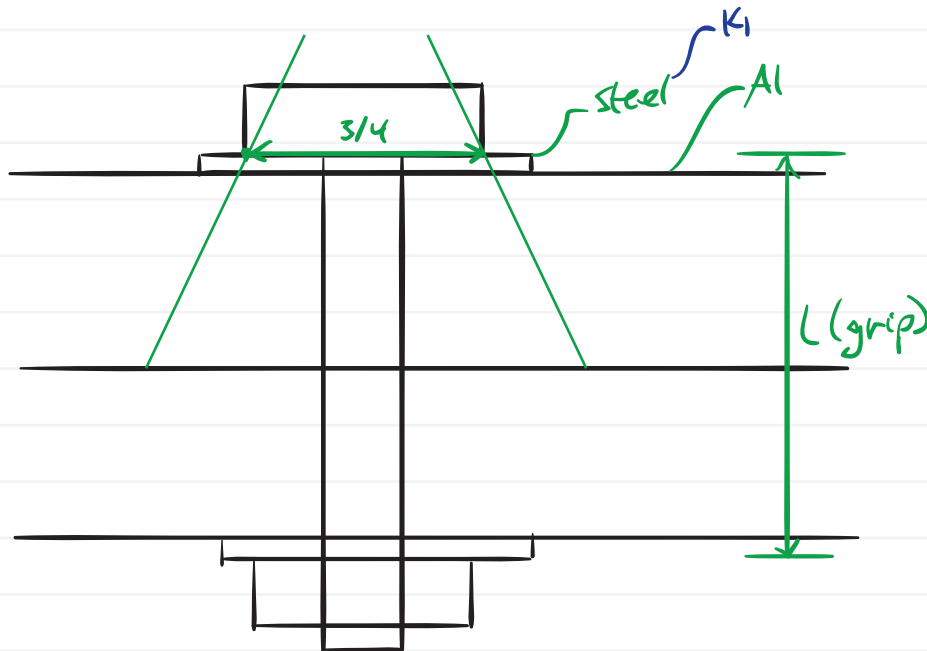


8-17

20 | 1/2

Bolt length

$$d = \frac{1}{2} \text{ in.} \quad L = 2 \cdot 2 + 2 \cdot 0.095 = 4.19 \text{ in}$$



$$L_{\min} = L + \frac{7}{16} = 4.6275 \text{ in} \xrightarrow{\text{round}} 4.75 \text{ in}$$

Bolt stiffness

$$\text{Using table 8-7, } L_T = 2(0.5) + \frac{1}{4} = 1.25 \text{ in}$$

$$l_d = L - L_T = 4.75 - 1.25 = 3.5 \text{ in}$$

$$l_t = L - l_d = 4.19 - 3.5 = 0.69 \text{ in}$$

$$A_d = \pi d^2 / 4 = \pi (0.5)^2 / 4 = 0.1963 \text{ in}^2$$

$$A_t = 0.1419 \text{ in}^2$$

$$k_b = \frac{A_d A_t}{A_d l_t + A_t l_d} E = 1.322 \text{ Mlbf/in}$$

Member stiffness

2/

$$(8-20) \quad k_1 = 89.70 \text{ M/lf/in}$$