

### Limit State 7 – Flexural Yield on Support Side

$$M_u = R_u \cdot e_7$$

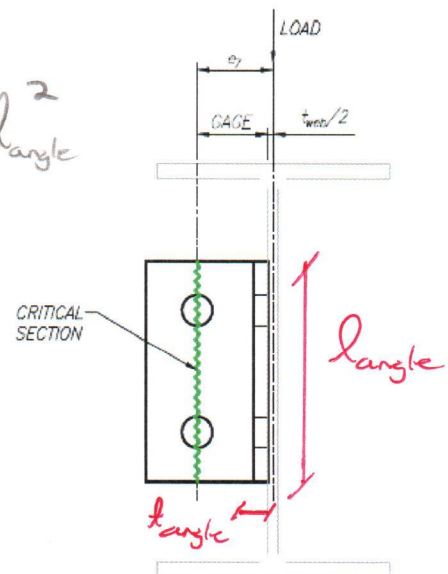
$$e_7 = \text{gage} + \frac{t_{web}}{2}$$

$$Z_{gross} = \frac{1}{4} t_{angle} \cdot l_{angle}^2$$

$$\phi_b = .90$$

$$M_n = F_y Z_{gross}$$

$$\phi M_n = .90 M_n$$



### Limit State 8 – Flexural Rupture on Support Side

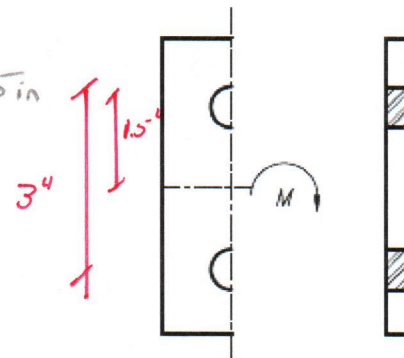
2-Bolt Setup

$$M_n = F_u Z_{net}$$

$$Z_{net\ 2\ bolt} = Z_{gross} - 2 \cdot t_{angle} \cdot (\overset{\text{std hole}}{d_{bolt}} + \overset{\text{damage}}{1/16} + 1/16) \cdot 1.5\text{ in}$$

$$\phi M_n = .75 M_n$$

$$\phi = .75$$

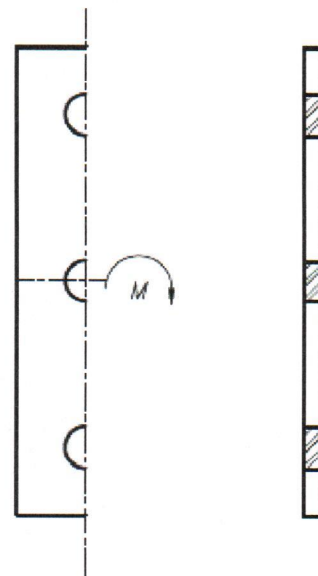


## 3-Bolt Setup

$$M_n = F_u Z_{net}$$

$$Z_{net\ 3bolt} = Z_{gross} - 2 \cdot t_{angle} \cdot (d_{bolt} + \frac{1}{16} + \frac{1}{16}) \cdot 3'' - \dots$$

$$\dots 2 \cdot t_{angle} \left( \frac{d_{bolt} + \frac{1}{16} + \frac{1}{16}}{2} \right) \cdot \frac{d_{bolt} + \frac{1}{16} + \frac{1}{16}}{4}$$

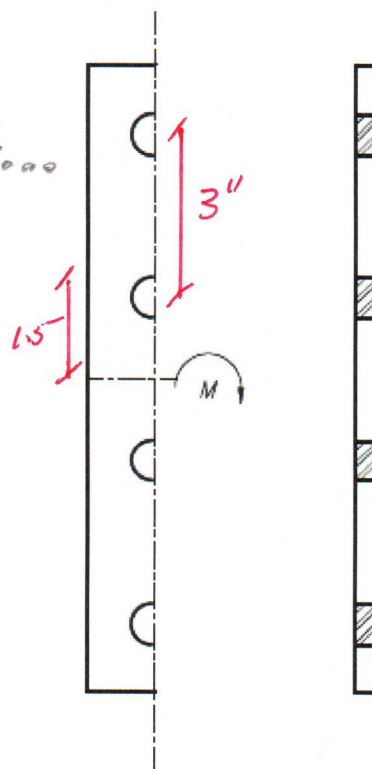


## 4-Bolt Setup

$$M_n = F_u Z_{net}$$

$$Z_{net\ 4bolt} = Z_{gross} - 2 \cdot t_{angle} \cdot (d_{bolt} + \frac{1}{16} + \frac{1}{16}) \cdot 1.5'' - \dots$$

$$\dots 2 \cdot t_{angle} \cdot (d_{bolt} + \frac{1}{16} + \frac{1}{16}) \cdot 4.5''$$



Limit State 9 –

sff