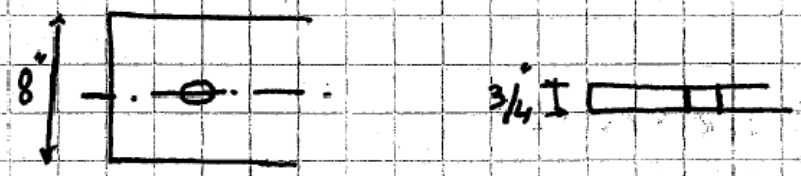
1. PL $8 \times 3/4"$, single line $7/8"$ bolts standard



$$A_g = 8 \times \frac{3}{4} = 6.0 \text{ in}^2$$

$$A_n = 6 - 1\left(\frac{7}{8} + \frac{1}{8}\right) \times \frac{3}{4} = 5.25 \text{ in}^2$$

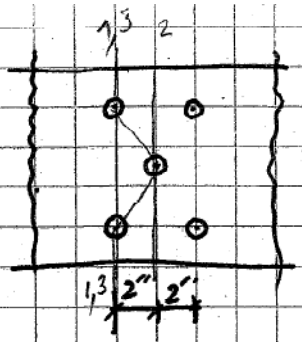
4. L $4 \times 4 \times 1/2$

$3/4"$ bolts standard

$$A_g = 3.75 \text{ in}^2$$

$$A_n = 3.75 - 2\left(\frac{3}{4} + \frac{1}{8}\right) \times \frac{1}{2} = 2.875 \text{ in}^2$$

8.



3/4" bolts

$b_1 = 10 - 2\left(\frac{3}{4} + \frac{1}{8}\right) = 8.25"$

$b_2 = 10 - 1\left(\frac{3}{4} + \frac{1}{8}\right) = 9.125"$

$b_3 = 10 - 3\left(\frac{3}{4} + \frac{1}{8}\right) + 2 \times \frac{4}{4 \times 3}$

$= 8.042"$

$\therefore b_e = b_n = 8.042"$