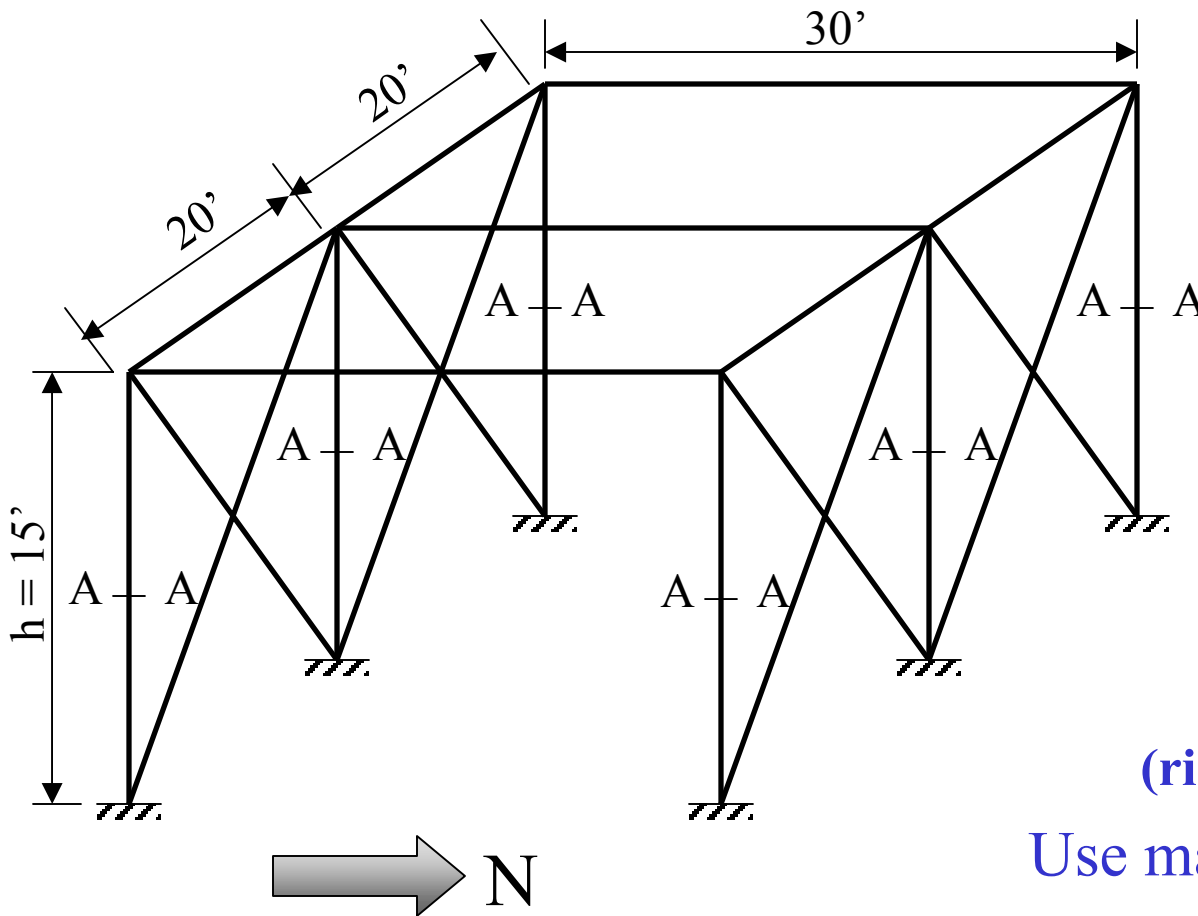


# Bracing Homework Assignment

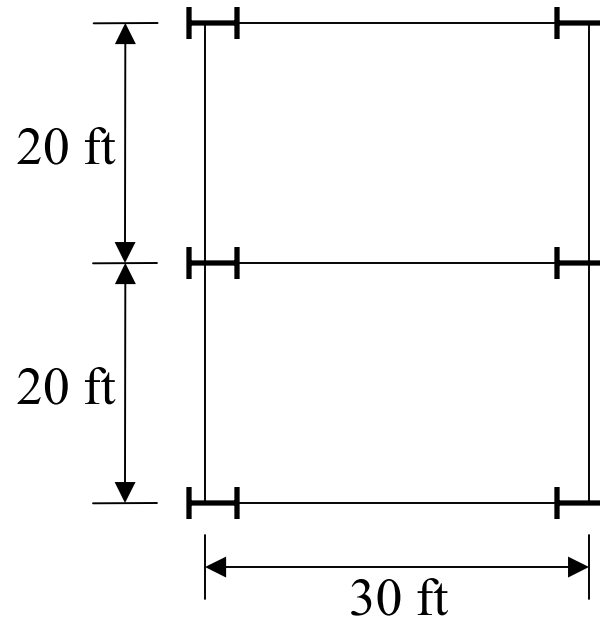
Suppose you're designing the frame shown below to have equal stiffness in the N-S and E-W directions. Determine the required diameter of the braces. Calculate the Natural Frequencies of the Frame in the N-S & E-W directions.



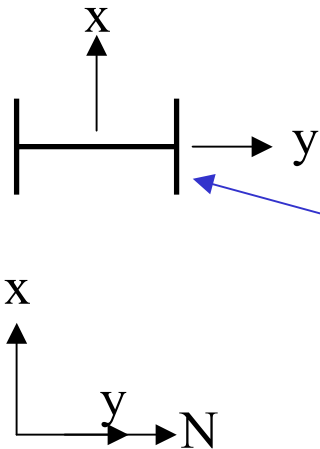
*Please state any assumptions you make.*

(rigid roof assumed)

Use mass of roof = 30 lb/ft<sup>2</sup>



→  $N$



### Section A-A

**W10x30 sections**

$$I_x = 170 \text{ in}^4$$

$$I_y = 16.7 \text{ in}^4$$

$$E_s = 29,000 \text{ ksi}$$

**For the Braces use:**

$$E_s = 29,000 \text{ ksi}$$

$$A = ?$$