

BRACE STIFFNESS REQUIREMENT

JAY

8

$$\beta_{REQ'D} = \frac{4P}{L}$$

relative brace

or

$$\beta_{REQ'D} = \frac{16P}{L}$$

single point brace



$$\beta = \frac{4P}{L}$$



$$\beta = \frac{8P}{L}$$



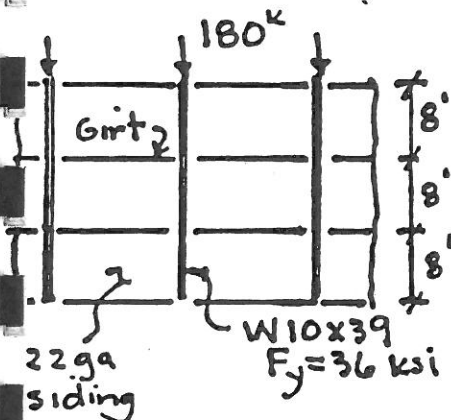
$$\beta = \frac{12P}{L}$$

more braces
require more
stiffness?!

No.

The derivation assumes that the unbraced length provided is just sufficient to permit a load P on the column. When there are more braces than necessary to permit the column to support the load, it is conservative to use the permissible unbraced length rather than the actual unbraced length in the formulas for $\beta_{REQ'D}$.

EXAMPLE 6A - Redo example 6 with a W10x39 column



$$P_{allow} = 213 \text{ kips (AISC Column Tables)}$$

$$L = 8'$$

so unbraced length could be greater than 8'. From the column load tables, the unbraced length corresponding to 180 kips is 13'. Therefore

$$\beta_{REQ'D} = \frac{4P}{L} = \frac{4(180)}{13} = 55 \text{ k/ft}$$

(In Ex. 6 $\beta = 90 \text{ k/ft}$ when $L = 8'$ was used)