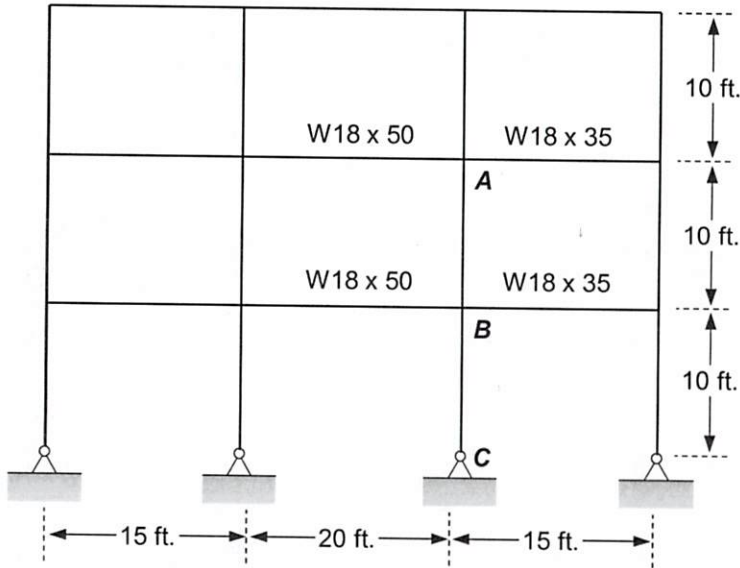


Classroom Problem 4.7-5: The ridge frame shown below is unbraced. Each member is oriented so that its web is in the plane of the frame. Determine the effective length factor K_x for columns **AB** and **BC**. All the columns are **W18 x 130**.



FROM TABLE 1-1

W18 x 35 $I_x = 510 \text{ in}^4$

W18 x 50 $I_x = 800 \text{ in}^4$

W18 x 130 $I_x = 2,460 \text{ in}^4$

COLUMN AB

JOINT A $G_A = \frac{\sum I_c/L_c}{\sum I_g/L_g} = \frac{2(2,460 \text{ in}^4/10 \text{ ft})}{800 \text{ in}^4/20 \text{ ft} + 510 \text{ in}^4/15 \text{ ft}} = 6.62$

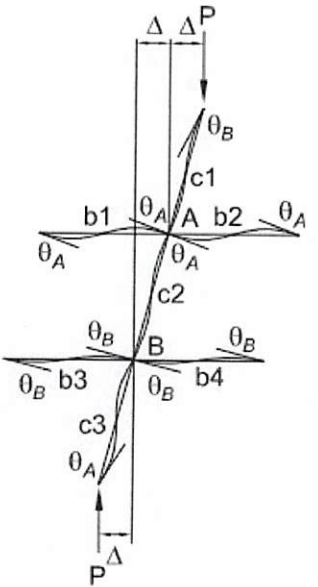
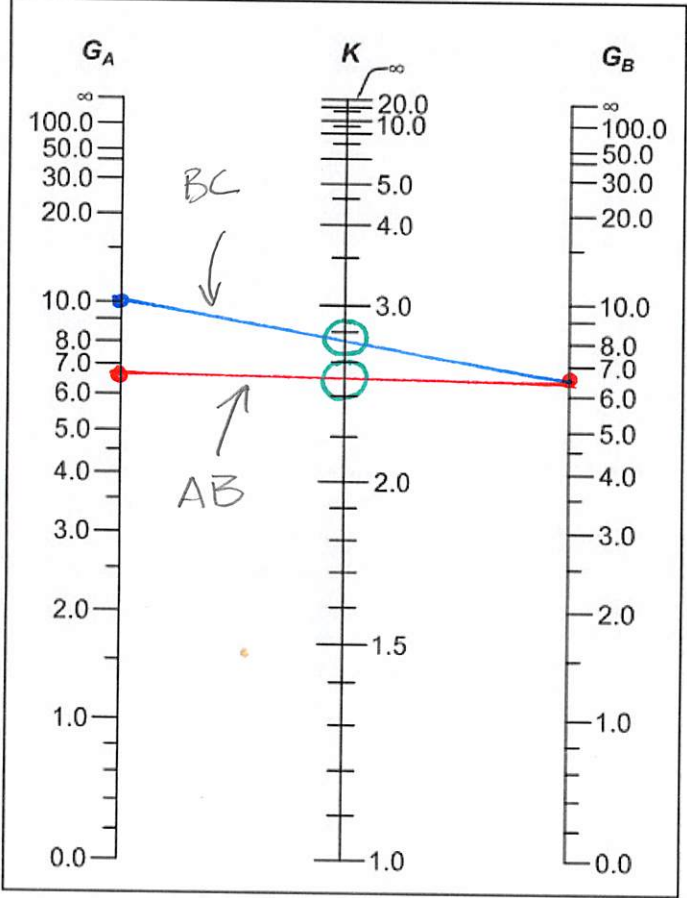
JOINT B

$G_B = G_A$ * FROM ALIGNMENT CHART FIGURE C-A-7.2

JOINT C

$G_C = 10.0$

Classroom Problem 4.7-5: The ridge frame shown below is unbraced. Each member is oriented so that its web is in the plane of the frame. Determine the effective length factor K_x for columns **AB** and **BC**. All the columns are **W18 x 130**.



COLUMN AB

$K_x = 2.5$

COLUMN BC

$K_x = 2.75$

Fig. C-A-7.2. Alignment chart—sidesway uninhibited (moment frame).