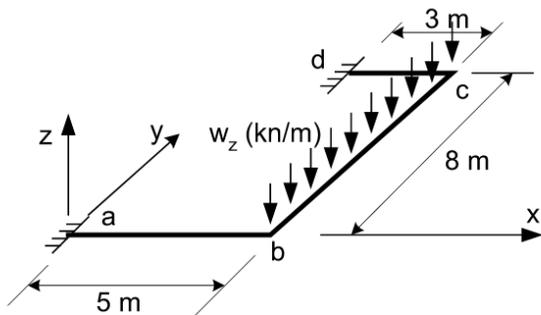


**Verification Problem 1:**

**Notes:**

- 1) The load  $W_y = 15$  kN/m is a vertical distributed load along the length of the member, which you will need to convert to equivalent amounts of distributed load in the local  $x'$  and  $y'$  axis of the member.

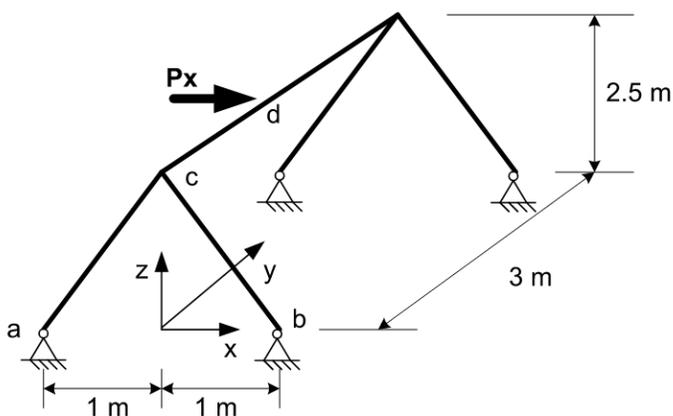
**Verification Problem 2:**



**Notes:**

- 1) The structure consists of a horizontal grid of rectangular tubular members measuring 100 x 300 mm square. The members are all oriented with their tall dimension parallel to the global  $z$ -axis (vertical direction). The tubular members have the following properties:  $A = 11,000$  mm $^2$ ,  $I_{major} = 1.06 \times 10^8$  mm $^4$ ,  $I_{minor} = 1.74 \times 10^7$  mm $^4$ ,  $J = 5.29 \times 10^7$  mm $^4$
- 2) Members are steel with  $E = 200$  kN/mm $^2$  and  $\nu = 0.3$ .
- 3) The load  $W_z = 5$  kN/m is a vertical distributed load along the length of the member.

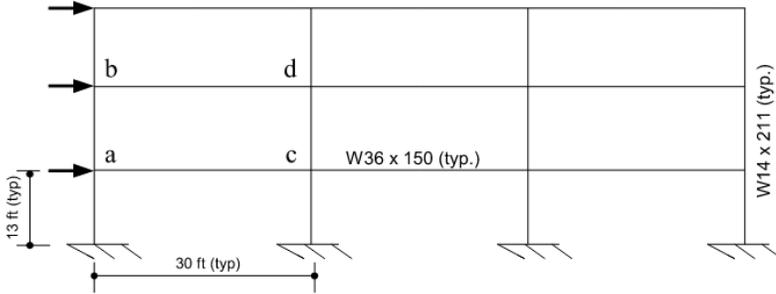
**Verification Problem 3 – Swing Set:**



**Notes:**

- 1) The structure is built with round 75 mm diameter tubular members have the following properties:  $A = 1,430$  mm $^2$ ,  $I = 1.26 \times 10^6$  mm $^4$ ,  $J = 2.52 \times 10^6$  mm $^4$
- 2) Members are steel with  $E = 200$  kN/mm $^2$  and  $\nu = 0.3$ .
- 3) The load  $P_x = -4.5$  kN

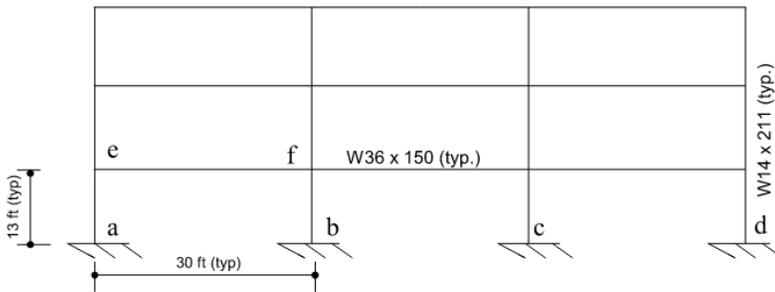
**Verification Problem 4:**



**Notes:**

- 1) Members are steel with  $E = 30,000 \text{ k/in}^2$  and  $\nu = 0.3$ .
- 2) The applied lateral load at each floor is  $P_x = 9.5 \text{ kips}$
- 3) Base your analysis on centerline dimensions (i.e., ignoring finite joint size effects).

**Verification Problem 5:**

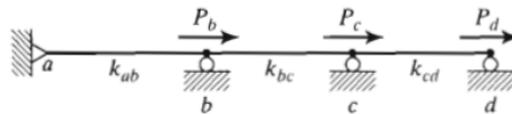


**Notes:**

- 1) This is the same structure as for Problem 4.
- 2) For this problem, do NOT include member shear deformations.

Perform an analysis where you apply a vertical settlement of  $\Delta = -1 \text{ inch}$  to the support at point b. Report the following information from this analysis.

**Verification Problem 6:**



**Problem 11.18**

**Notes:**

- 1) This problem is same as the 1<sup>st</sup> problem of Assignment 4.
- 2)  $K_{ab} = K_{cd} = 1$
- 3)  $P_b = 1$ ,  $P_d = 1$ , and  $P_c = 0$

Find the condition number for the cases did in the assignment i.e.  $K_{bc} = 1 \times 10^4, 1 \times 10^9, 1 \times 10^{16}$ . Report the following information from this analysis.