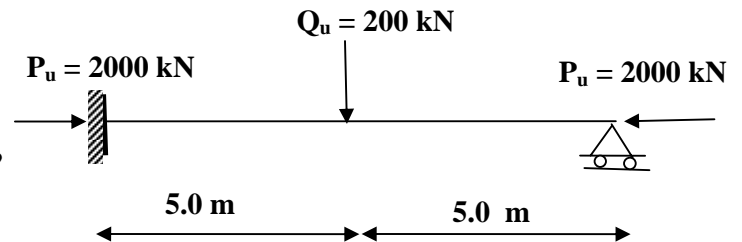


CE 473 : Steel Structures

Assignment: 7 Strength of Beam-Columns

Problem 1:

The shown beam-column is subjected to bending about x-x axis, due to the given factored concentrated load. Lateral bracing is provided for both flanges only at supports and mid span. Does W360 x 134 satisfy the LRFD requirements?



Problem 2:

The shown fixed base frame is subjected to the given ultimate loads, and has the shown sections. The top and bottom flange of the beam is laterally supported at ends, and the top flange is laterally supported and at intervals equal 4m, while the columns are laterally supported at 5m from ground.

If the straining actions are given as follows;

For Beam:

$$M_{\text{left}} = -300 \text{ kN.m}$$

$$M_{\text{right}} = -330 \text{ kN.m}$$

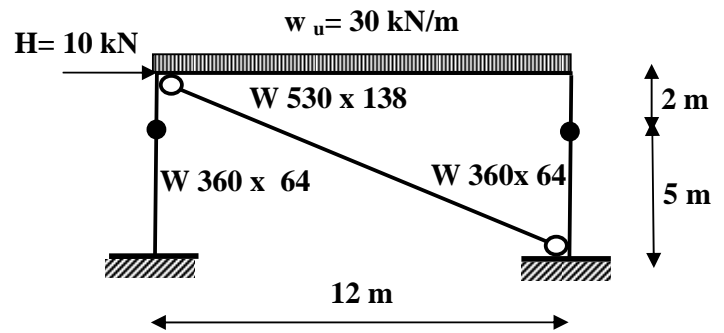
$$P_u = 72 \text{ kN (compression)}$$

For right column;

$$M_{\text{top}} = -330 \text{ kN.m}$$

$$M_{\text{bottom}} = 175 \text{ kN.m}$$

$$P_u = 600 \text{ kN (compression)}$$



Check the safety of both the beam and right column for the given straining actions.