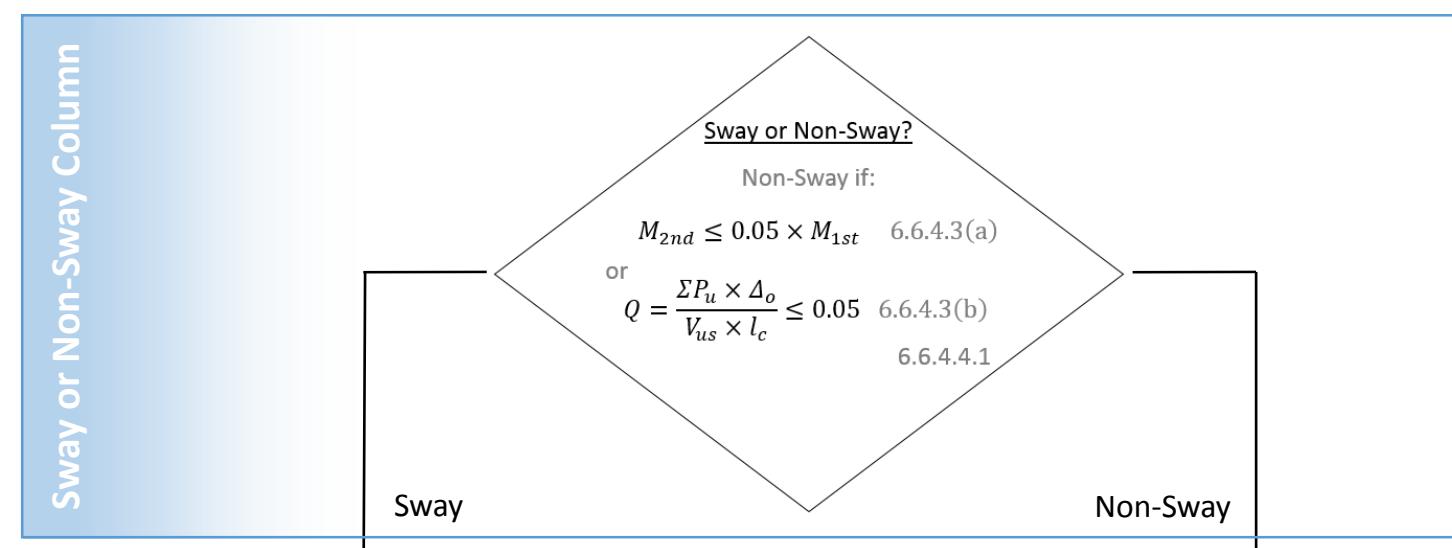


FlowChart for Determining Column Slenderness Effects

spcolumn

Sway or Non-Sway Column



Considering Slenderness?

Considering Slenderness?

Neglect slenderness if:

$$\frac{k \times l_u}{r} \leq 22 \quad 6.2.5a$$

Considering Slenderness?

Neglect slenderness if:

$$\frac{k \times l_u}{r} \leq 34 + 12 \left(\frac{M_1}{M_2} \right) \quad 6.2.5b$$

$$\frac{k \times l_u}{r} \leq 40 \quad 6.2.5c$$

Slenderness Effects at Column Ends

Slenderness Effects at Column Ends

- Moment Magnification Method:

$$M = M_{ns} + \delta_s M_s \quad 6.6.4.6.1$$

$$\delta_s = \begin{cases} \frac{1}{1-Q} \\ \frac{1}{1-\frac{\sum P_u}{0.75 \sum P_c}} \end{cases} \quad 6.6.4.6.2$$

$$Q = \frac{\sum P_u \times \Delta_o}{V_{us} \times l_c} \quad 6.6.4.3(b)$$

$$P_c = \frac{\pi^2 (EI)_{eff}}{(kl_u)^2} \quad 6.6.4.4.2$$

$$(EI)_{eff} = \begin{cases} \frac{0.4 E_c I_g}{1 + \beta_{ds}} \\ \frac{0.2 E_c I_g + E_s I_{se}}{1 + \beta_{ds}} \\ \frac{E_c I}{1 + \beta_{ds}} \end{cases} \quad 6.6.4.4.4$$

or

 - Elastic 2nd Order Analysis 6.7
 - Inelastic 2nd Order Analysis 6.8

Slenderness Effects at Column Ends

Not Applicable

Slenderness Effects along Column Length

Slenderness Effects along Column Length

- Moment Magnification Method:

$$M_c = \delta M \quad 6.6.4.5.1$$

$$\delta = \frac{C_m}{1 - \frac{P_u}{0.75 P_c}} \geq 1.0 \quad 6.6.4.5.2$$

$$P_c = \frac{\pi^2 (EI)_{eff}}{(kl_u)^2} \quad 6.6.4.4.2$$

$$(EI)_{eff} = \begin{cases} \frac{0.4 E_c I_g}{1 + \beta_{dns}} \\ \frac{0.2 E_c I_g + E_s I_{se}}{1 + \beta_{dns}} \\ \frac{E_c I}{1 + \beta_{dns}} \end{cases} \quad 6.6.4.4.4$$

$$\beta_{dns} = \frac{P_{u,sustained}}{P_u}$$

$$C_m = \begin{cases} 0.6 + 0.4 \frac{M_1}{M_2} \\ 1 \end{cases} \quad 6.6.4.5.3$$

or

 - Elastic 2nd Order Analysis R6.7.1.2
 - Inelastic 2nd Order Analysis R6.8.1.3

Lateral Stability

