

5.15.67

Note Title

5/15/2007

Exam Friday 10:30 - 12:30 (here)

Concrete

Ch.1 Intro - Q

Ch 2 (2.1, 2.2, 2.4)

Ch 3 (3.1 - 3.10)

Ch 4 (4.1 - 4.4)

Ch 8 (8.1 - 8.10)

Ch 9 Columns - Q

(Flexure) - M_n

Concrete
Beam Analysis

+ Design

Beams / Shear

Steel

Beams { Ch 8 8.1 - 8.3, 8.5, 8.6
Ch 9 9.1 - 9.9
Ch 10 10.2 and 10.3

Tension Ch 3 3.1 - 3.5
Ch 4 4.1 - 4.3

Column Ch 5 5.1 - 5.10
Ch 6 6.1 - 6.2

Correction to 10-18

$$P_s = 30 \text{ k}$$

$$P_u = 1.6 (30 \text{ k}) = 48 \text{ k}$$

$$\begin{aligned} \text{Required } I : \quad I &\geq \frac{PL^3}{48ED} = \frac{(30 \text{ k})L^3}{48E\Delta} = 4966 \text{ in}^4 \end{aligned}$$

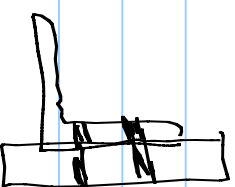
Example Questions

① The shear lag factor accounts for:

- (a) the increase in strength resulting from a staggered bolt pattern
- (b) the increase in strength resulting from using a larger # of bolts
- (c) the decrease in strength resulting from a welded connection
- (d) the decrease in strength resulting from an eccentrically loaded connection

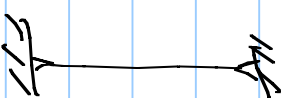
$U \rightarrow$ tension members

$$\phi P_n = F_u A_n$$



② Which of the following will always increase the strength of a steel column?

- (a) provide bracing in the strong axis
- (b) provide bracing in the weak axis
- (c) use steel with a higher yield strength
- ~~(d) make the column longer~~



③

If you are checking a deflection limit state, you would use

- (a) service loads to compute the Δ
- (b) factored loads to compute the Δ
- (c) both service + factored loads

⑦

Column capacity $P_n = \alpha \phi [(A_g - A_s) f_c + A_s f_y]$ (1.85)

What does α represent

- (a) type of stirrups (spiral vs. tied)
- (b) spalling outside of stirrup cage
- (c) eccentric loading of column
- (d) a fish

~~(a)~~

$\alpha + c$