Date Assigned: Monday, Feb 8, 2016
Date Due: Monday, Feb 15, 2016

Assignment No. 4 (100 pts.) - Beam Flexure Design Problems

Design the following simply supported rectangular beams as shown below for the critical flexural moment(s) using the ultimate strength approach and serviceability from ACI 318:

(a) $w_l, (w_d + w_{sd})$

- $w_l = 1000 \text{ lb/ft}$
- $w_{sd} = 1800 \text{ lb/ft}$
- $f'c = 3 \text{ ksi}$
- $f_y = 60 \text{ ksi}$

(b) $P_1$

- $P_l = 45 \text{ k (Live)}$
- $w_d = \text{self wt only}$
- $f'c = 5 \text{ ksi}$
- $f_y = 60 \text{ ksi}$

(c) $P_1$

- $P_l = 110 \text{ k (Dead)}$
- $w_d = \text{self wt only}$
- $f'c = 5 \text{ ksi}$
- $f_y = 60 \text{ ksi}$

(d) $(w_d + w_{sd})$

- $P_l = 10 \text{ k (Live)}$
- $w_{sd} = 2.0 \text{ k/ft}$
- $f'c = 4 \text{ ksi}$
- $f_y = 60 \text{ ksi}$