Problem 1:
Design a rectangular reinforced concrete beam to resist a total moment $M_u$ of 400 kips-ft. (This includes the moment due to beam self weight). Architectural consideration requires that the beam width ($b$) be 16 in, and overall height ($h$) of 28 in. Use $f'_c = 4000$ psi, and $f_y = 60,000$ psi.

Problem 2: For the beam designed in Problem 1, if the main reinforcement were incorrectly placed so that the actual effective depth were 22 in., would the beam be adequate?

Problem 3: Design the simply supported one-way reinforced concrete slab as shown in Fig. The service live load is 200 psf. Use $f'_c=4000$ psi and $f_y = 60,000$ psi. Sketch your design.