

Design of Slab in SAP2000

- WD = 50 LB/ft, WL = 60 lb/ft,
- F'C = 4 ksi, Fy = 60 ksi,
- hf = 6", B15 x 12

Steps:

- Unit kft-F
- New model = grid
 - X = 7, Y = 2, Z = 1; spacing
 - X = 10,
 - Y = 25
- Option >
 - Preference
 - Concrete ACI-2003

Define:

- Define > Material,
 - Concrete, modify.
 - Fy = fys = 60ksi,
 - f'c = 4ksi
- Define > frame section.
 - Add rectangular, name B15 * 12.
Reinforcement,
 - Beam clear cover top = bottom = 2.5"
 - Name = slab
- Define > Area sections,
 - Asec 1 modify,
 - thickness bending = membrane = 6".
- Define > load cases, add live load.
- Define > add default combo check concrete,
 - Convert to user check boxes.
- Draw > quick draw area, draw the area.

Flat Slab

- Draw > quick draw frame draw beam, B15 x 12
- Select edge points at both ends

Assign

- Assign > joint restrained, hinge support.
- Select beams
- Assign > frame > insertion point, select slab
- Select slab
- Assign > area load
 - Uniformly Distributed Load
- Analyze > set analysis uses,
 - Select Slab
- Analyze > run analysis model,
 - Do No run
 - Run now
- Unit K-is

One Way Slab

Display:

- Display > deformed shape,
 - Select UDCON2
 - Drag the mouse over the slab & find max deflation
- Display > show forces stresses
 - Area UDCON2
 - Design steel,
 - Bottom face,
 - Area/ Select max value
- Display > show forces stresses
 - Area Ast 2
 - Select max value
- Display > show forces stresses

Two Way Slab

- Area too face
 - Select max value
- Display > show forces stresses
 - Area Ast 1
- Display > concrete frame design
 - Select design combo
 - Select UDCON1, UDCON2

Design:

- Design > concrete frame design
 - Start design/checks
- Design > Concrete frame design
 - Verify all members passed
- All members should pass otherwise increase beam size to pass
- Design > concrete frame design > display design/np Select longitudinal reinforcement
- For beam, for both upper and lower face, select max value & for column select max value and calculate No. of bars