

CENG 6504 - Concrete Structures [3]

Flexural analysis and design of two-way floor systems: Direct design and equivalent frame methods; punching shear and combined transfer of shear and moment at slab-to-column connections; design of slab shear reinforcement; deflections in two-way floor systems. Analysis and design of slender columns: General method based on 2nd order non-linear analysis; simplified methods based on nominal stiffness and nominal curvature; ultimate limit state of instability (buckling) induced by structural deformation; biaxial bending, analysis of rectangular sections using transformed square cross sections of unit-length side. Strut-and-tie models; flow of forces through D-regions; selection of appropriate reinforcement details. Design of reinforced concrete structures to resist earth-quake induced forces: capacity design rules; design of structural walls, frames, beam-column joints, and foundations.