1.051 Structural Engineering Design

Recitation 5 – Part II

Introduction to Slab Systems

Classification of Slabs

- 1-way slabs
- 2-way slabs

Types of 2-way Slab Systems

- Flat plate
- Flat slab
- Waffle slab (Stratton Student Center, MIT)
- Two-way slabs with two-way beams (conventional framing)
- Two-way slabs with band beams*

Characteristics of Selected Systems

- **Flat Plate System**

  a) 15 to 20 foot spans
  b) light gravity loads (e.g. apartment buildings)
  c) economical due to low-cost formwork

- **Flat Slab System**

  a) 20 to 30 foot spans
  b) higher gravity loads than flat plates (e.g. office buildings)
  c) use of drop panels to reduce shear stresses (both direct and moment induced) at column

- **Waffle Slab System**

  a) 20 to 35 foot spans
  b) high gravity loads (e.g. industrial buildings)
  c) high stiffness and small deflections
  d) expensive due to high-cost formwork

* *band beams are wide and shallow so as to permit passage of services*