ARCH 614. Study Guide for Quiz 10

This guide is not providing “answers” for the conceptual questions. It is a list of topical concepts and their application you should be familiar with. It is an aid to help prepare for the quiz.

Covers material of Lectures 21, 22 & 23

☐ Constituents to make concrete
☐ Behavior in compression vs. tension of concrete
☐ Design methodology
☐ Load and Resistance Factor Design
☐ Working loads
☐ Factored loads
☐ Resistance Factors
☐ “Design” values vs. “Capacity”
☐ Density of materials and relation to weight
☐ Load types (and directions) (like D, L, S ...)
☐ Load combinations
☐ Minimum Design Loads & Requirements
☐ Serviceability and limits
☐ Creep
☐ “composite”
☐ Transformed section
☐ Depth of the Whitney stress
☐ Moment capacity (or ultimate strength) vs. nominal moment (or strength)
☐ Factored design moment (or shear or ...)
☐ Design stress in reinforcement
☐ Design stress in concrete
☐ Effective depth vs. depth of a beam
☐ Reinforcement grades
☐ Reinforcement ratio
☐ Under-reinforced vs. over-reinforced
☐ Purpose of minimum reinforcement area requirement
☐ Use of Strength Design Curves (Rn)
☐ Purpose of stirrup requirement when concrete capacity is available
☐ Shrinkage
☐ Cracks
☐ Concrete cover and purpose
☐ Clear span
☐ #3 bar (meaning of the numeral)
☐ Why bars need space between/around them
☐ Purpose of compression reinforcement
☐ T-section behavior and stresses in flange
☐ One-way slabs design and “unit” strip
☐ One-way shear (load & strength)
☐ Stirrup strength
☐ Why torsional shear stirrups are “closed”
☐ Why development length is necessary
☐ Location of maximum shear in beams
☐ Torsional (shear) stress (and where maximum occurs)
☐ Design vs. analysis