ARCH 331. Study Guide for Quiz 6

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 19, 20, 21 & 22

- ☐ Constituents to make concrete
- ☐ Construction: cast-in-place, prestress, post-tension, ... & finishing/casting terms
- ☐ 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 (28-day)
- ☐ Effective depth vs. depth of a beam
- ☐ Reinforcement grades
- ☐ Reinforcement ratio
- ☐ Under-reinforced vs. over-reinforced
- ☐ Purpose of minimum reinforcement area requirement
- ☐ Why development length is necessary
- ☐ Use of Strength Design Curves (R_n)
- ☐ Depth with respect to span length and shape
- ☐ Purpose of stirrup requirement when concrete capacity is available
- ☐ Shrinkage
- ☐ Cracks
- ☐ Concrete cover and purpose
- ☐ Clear span / span length
- ☐ #3 bar (meaning of the numeral)
- ☐ Why bars need space between/around them
- ☐ Purpose of compression reinforcement
- ☐ T-section behavior and stresses in flange
- ☐ Precast load tables
- ☐ One-way slabs design and "unit" strip
- ☐ One-way shear vs. two-way shear (load & strength)
- ☐ Stirrup strength
- ☐ Location of maximum shear in beams
- ☐ Why torsional shear stirrups are "closed"
- ☐ Torsional (shear) stress (and where maximum occurs)
- ☐ Shear stress in round, rectangular, open and closed thin-walled sections
- ☐ Development/embedment length
- ☐ I transformed, I-cracked, E as a function of weight and cracking
- ☐ Minimum thicknesses for deflection control
- ☐ Plate vs. Flat Slab
- ☐ Openings redistribute stress (or cause concentrations) and increase deflections
- ☐ Openings should be reinforced for stresses and deflection control
- ☐ Continuous beam or slab analysis with coefficients
- ☐ Composite construction
- ☐ Space frame behavior
- ☐ Space frame supports and loads
- ☐ Folded plate behavior
- ☐ Folded plate buckling and stiffness requirements
- ☐ Design vs. analysis