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ARCH 331. Study Guide for Quiz 4

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 11, 12, 13 & 14

Allowable Stress Design		Shallow foundations: spread, wall, mat
Load and Resistance Factor Design		Deep foundations: piles, pile caps, gra
Working loads		beams
Factored loads		Horizontal spanning levels and collectors
Resistance Factors		Load distribution for slab supports
"Design" values vs. "Capacity"		Parts of retaining walls & types
Factor of Safety		
Density of materials and relation to weight		Loads on retaining walls (gravity, friction, equivalent fluid pressure, bearing pressure)
Static vs. dynamic loads		Factor of safety of sliding and
Wind and dynamic response terms &		overturning
behavior		Triangular or trapezoid shape of bearing
Load types (and directions) (like D, L, S)		pressure & relation to location of centroid of load
Load combinations for ASD, LRFD		Wind load tracing and bracing
Load patterns		configurations
Building codes vs. structural design codes vs. material standards		Lumber vs. engineered timber characteristics
Minimum Design Loads & Requirements		Various strengths (directionality, wood type, etc.)
Serviceability and limits		Timber design methodologies and obtaining allowed stresses (duration, multiple member use)
Design vs. analysis		
Actions vs. reactions		Creep
Load tracing & tributary width (vs. area)		Nominal dimensions of timber
Concentrated loads		Maximum bending stress (& location
Distributed loads – uniform / non-		along length and in cross section)
uniform		Maximum shear stress (& location along length and in cross section)
w vs. W		
Equivalent center of load area		Maximum shear stress by beam shape (proper equations)
Equivalent Force Systems		4 1 1
Rafter, joist, girder, decking, pilasters,		Stress types in beams
bearing walls, shear walls		Self-weight

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Deflections & superpositioning (+ <i>units</i>)	Combined bending and compression –
Use of Beam Diagrams and Formulas	interaction
Lateral buckling (and bracing)	P-Δ effect
Equivalent distributed load based on a	Eccentricity
maximum moment	Connection stresses
Use of Load Tables	Design vs. analysis
Decking, joist types, laminated arches,	Bolt designations
stressed-skin panels, box sections, trusses, lamellas	Effective net area
Depth with respect to span length and shape	Connection types
	Nail load capacity charts
Timber construction types	Bolt capacity charts and relation to wood
Column stability factor, F _{CE} & 1/d	strengths
1/d limit for timber	Single vs. double shear
Effective length, K & bracing	Stresses in built-up beam sections and the connectors
Beam-Columns	