QUIZ 1 – SITE WORK
SOIL PROBLEMS

SUB-SURFACE WATER

DRainage Tile Installation

Topsoil
Fine Gravel
Coarse Gravel
Drain Tile
Footing

Wall
Waterstop
Slab

6" Min.
EXISTING WALL
NEEDLE BEAM
HOLE CUT IN WALL

WALE
SHORED EARTH
SHEET PILING

UNDERPINNING

NEW FOOTING

NEEDLING
MAT FOOTING
Used for heavy loads and low bearing soil capacity
Drilled Pile

Drilled shaft filled with concrete

Friction between pile and soil
MASONRY OR CONCRETE RETAINING WALL

- Gravel
- Compacted Fill
- Weep Holes
- Frost Line
QUIZ 2 - CONCRETE
CONCRETE JOINTS (PLAN)

- Column
- Control Joints
- Isolation Joints
- Wall
- Sidewalk
- Curb

Isolation Joints

Diagram showing various elements of a concrete joint plan.
<table>
<thead>
<tr>
<th>Type of Admixture</th>
<th>Ingredients</th>
<th>Principal Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerators</td>
<td>Calcium chloride</td>
<td>Speed up setting time</td>
</tr>
<tr>
<td>Air-entraining agents</td>
<td>Resins, fats, and oils</td>
<td>Resist freezing action</td>
</tr>
<tr>
<td>Retarders</td>
<td>Starches, sugars, and acids</td>
<td>Slow down setting time</td>
</tr>
<tr>
<td>Waterproofing</td>
<td>Stearate compounds</td>
<td>Decrease permeability</td>
</tr>
<tr>
<td>Water-reducing</td>
<td>Organic compounds</td>
<td>Reduce water content</td>
</tr>
<tr>
<td>Workability agents</td>
<td>Powdered silicas and lime</td>
<td>Improve workability</td>
</tr>
</tbody>
</table>
PROCEDURE FOR SLUMP TEST

Figure 1.13
POOR PRACTICE

GOOD PRACTICE

PLACING CONCRETE IN FORMS
CONCRETE PLANKS
LIGHTWEIGHT CONCRETE PLANKS
NAILABLE CONCRETE PLANKS
TONGUE & GROOVE CONCRETE PLANKS

WOOD NAILER
DOVETAIL ANCHOR

PRECAST CONCRETE JOIST SYSTEMS
NUMBER SYSTEM

- MILL
- BAR SIZE
- TYPE OF STEEL (BILLET)
- GRADE
  SECOND BAR EQUALS GRADE 60

LINE SYSTEM

REINFORCING BAR
LARGE AGGREGATE (ECONOMICAL)

SMALL AGGREGATE (LESS ECONOMICAL)

LARGE + SMALL AGGREGATE (MOST ECONOMICAL)

AGGREGATE COMBINATIONS
QUIZ 3 - MASONRY
GYPSUM BLOCKS

Dimensions:
- Height: 12"
- Width: 3" and 4"
- Depth: 2" and 3"
- Length: 30"

Inside face: prisms, etched clear, ribbed, sculptured, or fluted with or without glass fiber insert.

Outside faces: clear, ribbed, sculptured, opaque or smooth.


Rectangular 3 3/4" x 11 3/4"

Glass block
CONCRETE BLOCK SHAPES

2-CORE STRETCHER WITH TYPICAL DIMENSIONS

3 CORE STRETCHER

2- OR 3-CORE CORNER BLOCK

JAMB BLOCK

WINDOW JAMB BLOCK

LINTEL BLOCK
**Surfaces of a Brick**

- **Cull**: Top surface.
- **Bed**: Bottom surface.
- **Side**: Left or right surface.
- **End**: Front or back surface.

**Brick Positions and Courses**

- **Header Course**: Topmost horizontal course.
- **Stretcher**: Used in both header and stretcher courses.
- **Bull Header**: Horizontal course with half of brick visible.
- **Rowlock Course**: Course with two bull headers and two stretchers.
- **Shiner Course**: Course with two stretchers and one bull header.
- **Soldier**: Vertical course with two stretchers.
- **Sailor Course**: Course with two stretchers and one soldier.
BRICK BONDING PATTERNS

- Flemish Bond
- English Bond
- Cross Bond (English, Flemish, or Dutch)
- Header Every 6th Course
- Common Bond (Running Bond if no Headers)
- 1/3 Running Bond (Solid or Cavity Walls)
- Mesh Reinforcing Every 6th Course
- Stacked Bond (Solid or Cavity Wall)
Masonry joints which shed water:

- Weathered
- Round rodded
- Flush
- "V"-shaped

Masonry joints (interior use or exterior use in dry climates) that do not shed water:

- Beaded
- Troweled
- Raked
- Stripped
- Squeezed or extruded

Common mortar joints:
QUIZ 4 - WOOD
Sanded Grades

APA

Grade of veneer on panel back
Grade of veneer on panel face
Species Group number
Exposure durability classification

EXTERIOR

Mill number
Product Standard governing manufacture

000
PS 1-83

(Also available in Groups 1, 3 and 4)

Unsanded Grades

APA

RATED SHEATHING

32/16 15/32 INCH

SIZED FOR SPACING

EXPOSURE 1

000
PS 1-83 C-D NER-108

National Evaluation Service report number
LUMBER CUTTING

PLAINSAWED

ALTERATE

RADIAL

COMMON

QUARTERSAWED (RIFT CUT)
QUIZ 5 – METALS
The following list of metals is arranged in order of galvanic activity. Each metal can be corroded by all that follow it; for example, lead is corroded by brass, and gold is virtually corrosion-proof. In general, metals far apart on the list should not be placed in contact with each other.

1. Aluminum
2. Zinc
3. Iron and Steel
4. Stainless Steel
5. Tin
6. Lead
7. Brass
8. Copper
9. Bronze
10. Gold
RIBBED
CORRUGATED
CELLULAR
FLAT RIBBED

STEEL DECKING
QUIZ 6 – THERMAL AND MOISTURE PROTECTION
SLOPE

CONCRETE WALL

BITUMINOUS COATING

SOIL FILL

GRANULAR FILL

CONCRETE SLAB

VAPOR SEAL

DRAIN TILE

GRANULAR FILL

DAMP PROOFED WALL.
ROOF INSULATION

1" Ø AIR VENTS
16" O.C.

8" BATT INSULATION WITH VAPOR BARRIER

2" INSULATION SHEATHING

3½" BATT INSULATION WITH VAPOR BARRIER
Pitches for various roofing materials:

- Tile & Slate
- All types of shingles & metals
- Asphalt strip shingles
- Asphalt roll roofing
- Bituminous roofs & metals that are soldered or welded

Note! Not to scale.
FLASHING DETAILS

CONCEALED RIDGE FLASHING

EXPOSED RIDGE FLASHING

CONCEALED VALLEY FLASHING

EXPOSED VALLEY FLASHING

SCREW WITH NEOPRENE WASHER

METAL FLASHING

SHINGLES

4" MIN.

SHINGLES

CLEATS @ 2" O.C.

METAL FLASHING

VEE CRIMP

5" MIN.

BRICK

CRICKET

CAP FLASHING

BASE FLASHING

ROOFING

SHEATHING

FIREPLACE FLASHING
GRAVEL STOP

ROOFING

4" MIN.

METAL GRAVEL STOP

HOLD DOWN CLEAT

GRAVEL STOP
STANDING SEAM

BATTEN SEAM

FLAT-LOCKED SEAM

METAL ROOFING DETAILS
<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>Uses</th>
<th>R Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose fill</td>
<td>Glass or mineral wool*, vermiculite, perlite</td>
<td>Wall cavities and flat air spaces such as attics</td>
<td>4” thick = 3.90</td>
</tr>
<tr>
<td>Batt or Blanket</td>
<td>Glass or mineral wool* enclosed by paper or aluminum—vapor barriers available</td>
<td>Air spaces in framed walls, floors, and ceilings</td>
<td>3-1/2” thick = 11.00</td>
</tr>
<tr>
<td>Board or Sheet</td>
<td>Cork, glass or mineral fibers, paper pulp</td>
<td>Wall sheathing and rigid roof insulation</td>
<td>1” thick = 2.75</td>
</tr>
<tr>
<td>Reflective</td>
<td>Aluminum foil often in combination with layers of paper and air spaces</td>
<td>Roof, wall, and floor insulation plus vapor barrier</td>
<td>1” air space with 2 reflective surfaces = 1.39</td>
</tr>
<tr>
<td>Foam</td>
<td>Plastics, spray type, or panels</td>
<td>Sheathing, irregular spaces</td>
<td>1” panel = 6.00</td>
</tr>
</tbody>
</table>

*Rock, slag, or glass, but not asbestos
QUIZ 7 – DOORS, WINDOWS AND GLASS
<table>
<thead>
<tr>
<th>Door Label</th>
<th>Fire Rating in Hours</th>
<th>Location in Structure</th>
<th>Glazing Permitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>Fire walls separating buildings or fire areas within a building</td>
<td>None</td>
</tr>
<tr>
<td>B</td>
<td>1-1/2</td>
<td>Vertical enclosures—fire stairs and elevators</td>
<td>100 sq. in./leaf</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(4” min. dimension)</td>
</tr>
<tr>
<td>C</td>
<td>3/4</td>
<td>Corridors and partitions</td>
<td>1296 sq. in./light</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(54” max. dimension)</td>
</tr>
<tr>
<td>D</td>
<td>1-1/2</td>
<td>Exterior walls—severe fire exposure</td>
<td>None</td>
</tr>
<tr>
<td>E</td>
<td>3/4</td>
<td>Exterior walls—moderate fire exposure</td>
<td>720 sq. in./light</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(54” max. dimension)</td>
</tr>
</tbody>
</table>

Table 6.1
LOCKSET TYPES

- CYLINDRICAL LOCK
- UNIT LOCK
- RIM LOCK
- MORTISE LOCK
QUIZ 8 – FINISH WORK
PLASTER WALL
2 x 4 STUDS
WOOD BASE
WOOD STRIP FLOORING
BUILDING PAPER
SUB FLOOR
TOENAIL THRU TONGUE (BLIND NAILING)
SPACE FOR EXPANSION OF WOOD FLOOR
WOOD STRIP FLOOR @ BASE
QUIZ 9 – VERTICAL TRANSPORTATION
ELECTRIC ELEVATOR

HYDRAULIC ELEVATOR
<table>
<thead>
<tr>
<th>Height in Floors</th>
<th>Small</th>
<th>Average</th>
<th>Prestige</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5</td>
<td>200-250</td>
<td>300-350</td>
<td>350-400</td>
<td>200</td>
</tr>
<tr>
<td>5-10</td>
<td>300-350</td>
<td>350-500</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>10-15</td>
<td>500</td>
<td>500-700</td>
<td>700</td>
<td>350-500</td>
</tr>
<tr>
<td>15-25</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td>25-35</td>
<td>—</td>
<td>1000</td>
<td>1,000</td>
<td>500</td>
</tr>
<tr>
<td>35-45</td>
<td>—</td>
<td>1,000-1,200</td>
<td>1,200</td>
<td>700-800</td>
</tr>
<tr>
<td>45-60</td>
<td>—</td>
<td>1,200-1,400</td>
<td>1,400-1,600</td>
<td>800-1,000</td>
</tr>
<tr>
<td>over 60</td>
<td>—</td>
<td>—</td>
<td>1,800</td>
<td>1,000</td>
</tr>
</tbody>
</table>
QUIZ 10 – BUILDING CODES
QUIZ 11 – SUSTAINABLE DESIGN