Building Construction Engineering II

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Contents:

- Plastering
- Wall tiling
- Floors
- Painting
- Decoration and internal partitions
- Lightweight roofing
- Clay roofing tiles
- Carpentry works, windows & doors
- Insulation and joints works

Outcomes

1. Ability to identify and design the required activities for finishing a building (plastering, painting, tiling,…)
2. Ability to identify and design the required activities for decoration works
3. Ability to identify and design the required activities for carpentry works
4. Ability to identify and design the required activities for joints and insulation works

Evaluation criteria:

- **Midterm exam: 35%**
- **Project, presentation: 20%**
- **Final exam: 45%**

Timetable

Subject	Week
-Plastering and wall tiling	1 & 2
-Floors	3 & 4
-Decoration works	5 - 7
-Lightweight roofing	8 & 9
-Clay roofing	10 - 12
-Carpentry works	13 - 14
-Insulation works	15
-Joints works	16
-Final Exam	16

Introduction

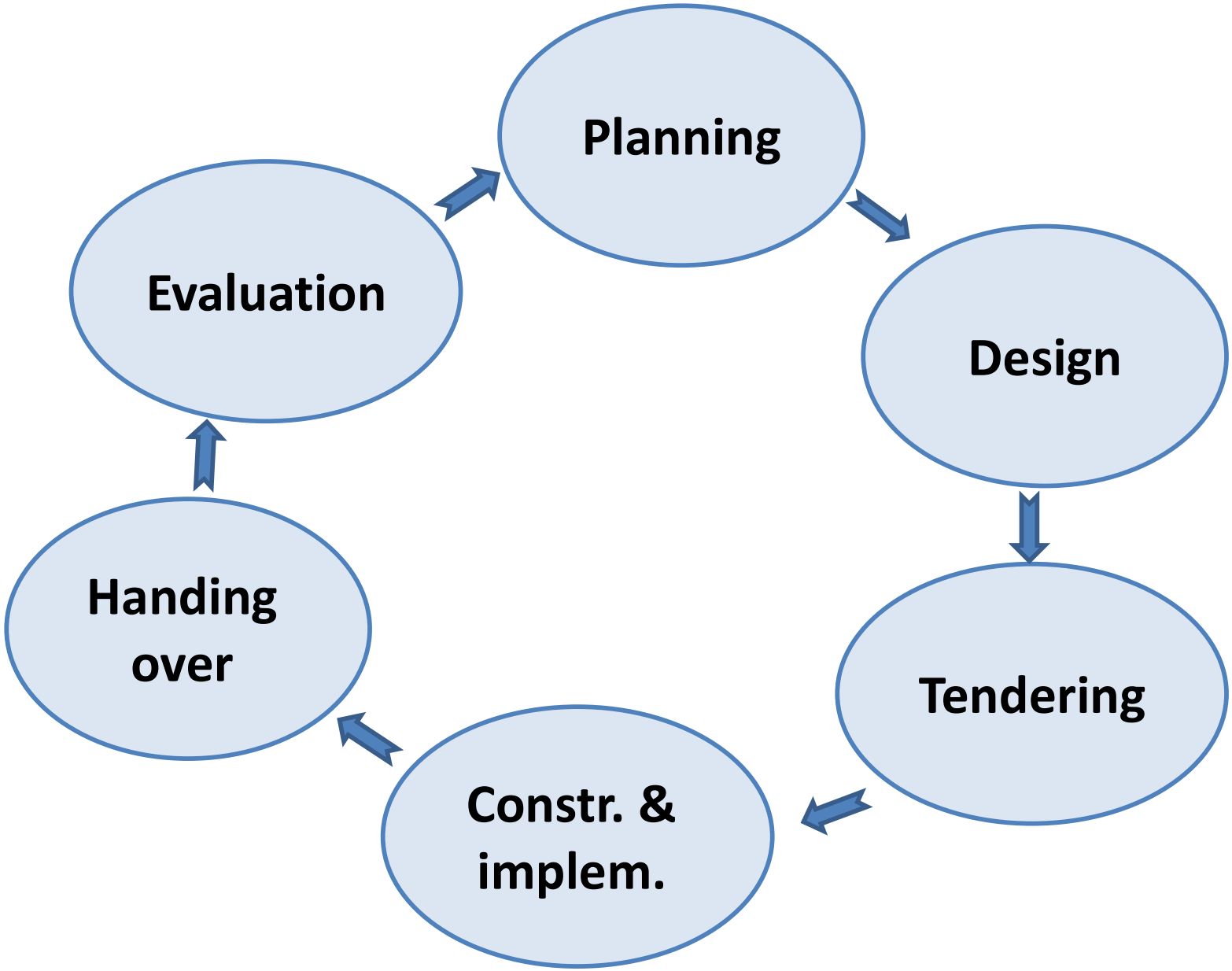
❑ The needs for buildings….Why?

- As a shelter from rain, snow, wind and sun
- Level and dry platforms for the daily activities
- Within,.. a need for air which is warmer, cooler, more or less humid than outdoors
- Control the light than it is offered by the natural world
- The need for services which provide energy, communications, water,…

❑ **To satisfy these needs**….we need buildings (Gathering different materials and assembling them into constructions called…buildings)

Constraints on building construction

- Occupational and health safety…Health codes
- Fire codes
- Plumbing codes
- Electrical codes
- Regulations of building contracts and labor union
- Local authorities (Municipalities) regulations



Cycle process-Building Construction

Construction materials

- ❑ Cost,
- ❑ Application,
- ❑ Engineering capabilities,
- ❑ Adaptability

Factors of determination

(Ability to deal with changes and conditions in an efficient and effective manner)

When built….they are here to stay

Giza (2500 B.C.)

Dubai (2010 A.D.)

Wood:

- Common building material
- Relatively inexpensive
- Takes long time to burn before strength is lost (native wood)

Steel

- Carbon and iron ore mixture

- Excellent in tensile, shear and compressive strength

- Loses its strength as temperature increases

Concrete:

- Portland cement, gravel, sand and water(mixture)

- Excellent in compressive strength

- As contains some moisture…

Heat causes moisture to expand…
causes cracks in concrete

- Can be molded

Masonry

- Brick, concrete block, stone

General steps in building construction

- **Reconnaissance visit to the site**

What things do I need to look for ?

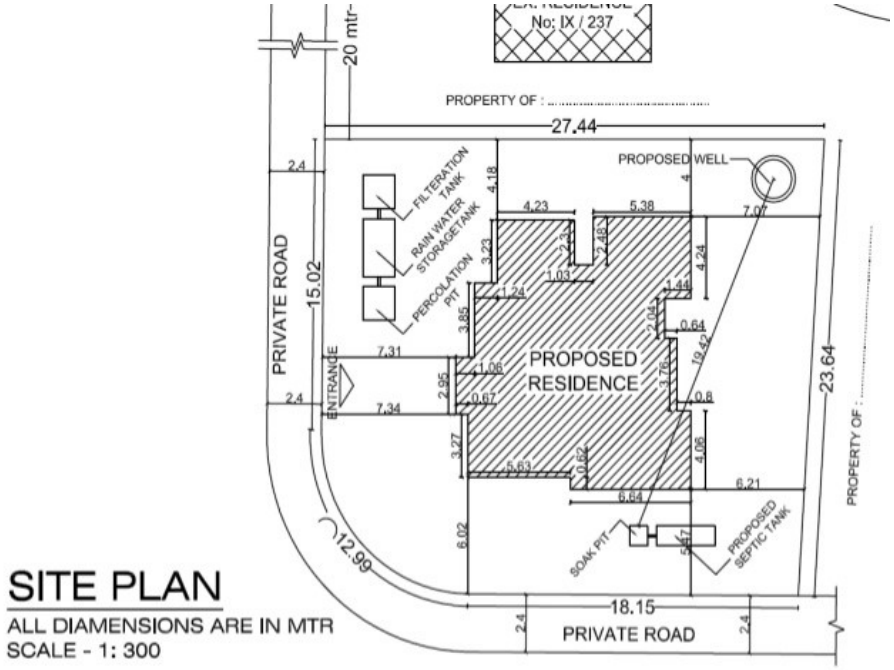
- Visual inspection of the site

- Gathering sufficient information

- **Site survey (Topography of the site)**

- **Soil investigations (bearing capacity: type of foundations)**

- **Preparing drawings, bill of quantities, specifications,..etc.**



- **Approval from concerned authorities**

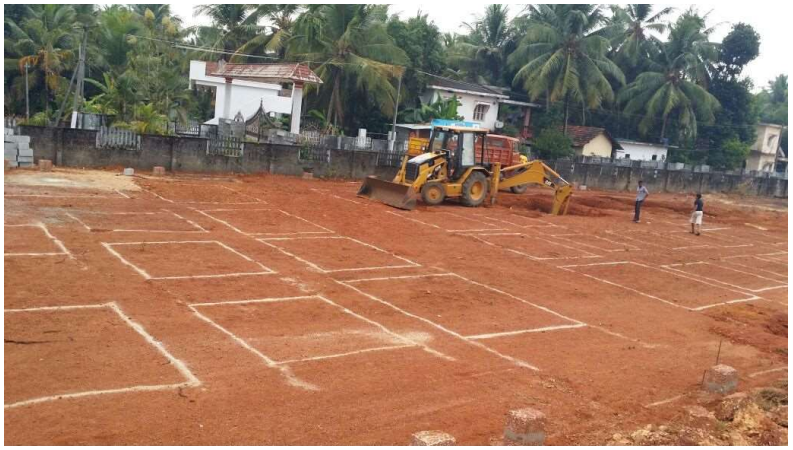
- **Preparing the layout of the site**

(location of the construction, storage, site offices accommodation)

- **Removing the top soils to (reducing levels), fixing a benchmark**

- **Fixing the outline of the building setting out, centerlines of footings & columns**

➢ Excavation of foundations



➢ Blinding concrete for foundations

- **Formworks, steel works and casting - foundations**

- **Fixing columns starters bars- columns necks**

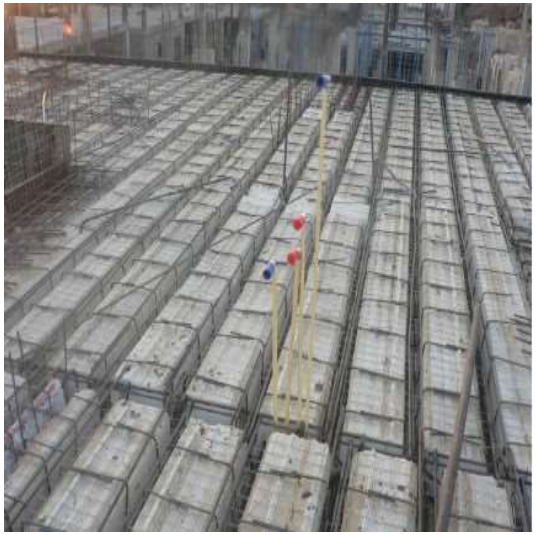
- **Curing foundations & necks by asphalt, backfilling around foundations**

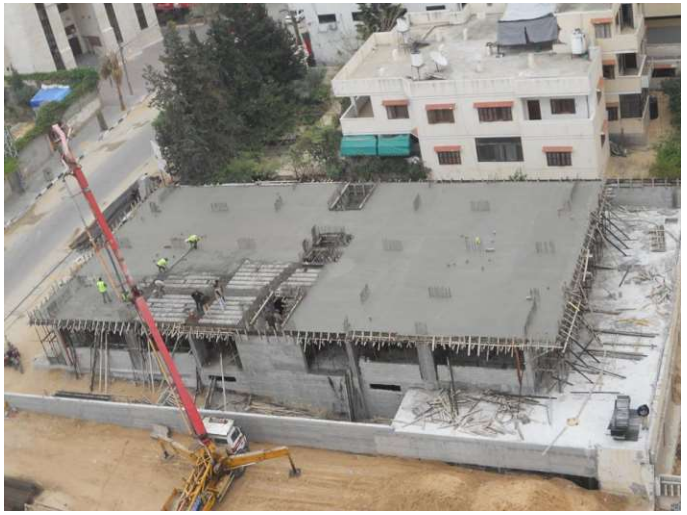
➢ Tie beam works

➢ Slab on hard core

➢ Column works

- **Slabs (formworks, steel works, ribs, and casting of concrete)**





- **Slabs (formworks, steel works, ribs, and casting of concrete)**