BASICS

- building – basic human need
- at first on the basis of trial and error
- as a profession - 19th century (using calculations, experiment to verify theories and other scientific tools)
- definition of civil engineering
- civil engineer
- construction engineering

- civil engineering specializations:

  structural engineering

  transportation engineering

  hydraulic engineering

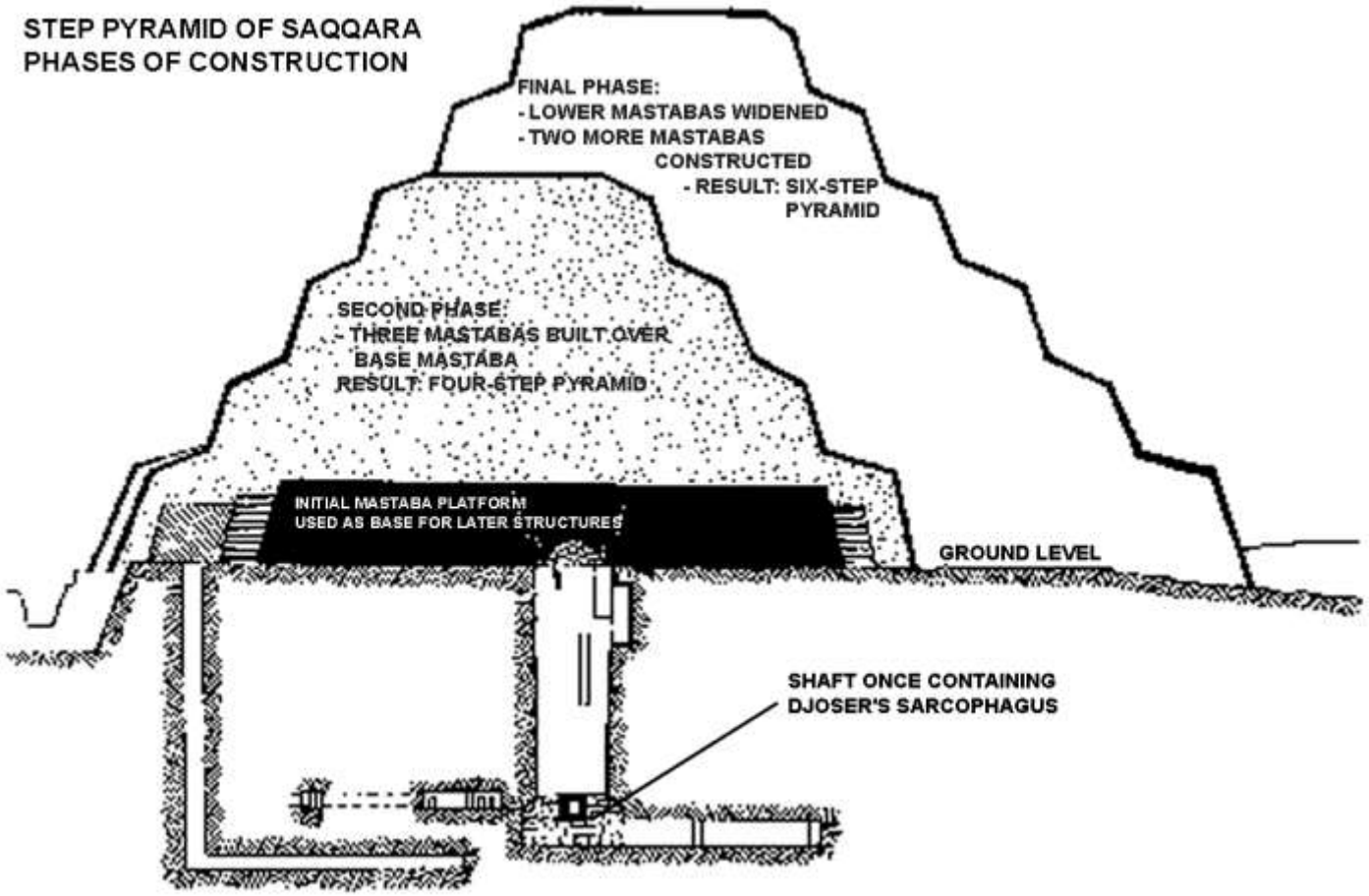
  sanitary/environmental engineering

  geotechnical engineering

  surveying

- Imhotep
- **Step(ped) pyramid**
- Location: Sakkhara (Egypt)
- Height: 62m
- Time: about 2600 B.C.
- Material: limestone

Construction phases



Construction materials

traditional – wood, stone, earth/mud, ice, straw, pozzolana, iron, (brick)....

- natural, found in surrounding

modern – steel, concrete (plain, reinforced, prestressed), glass, aluminium, plastics...

-artificial, have to be produced

- Steel – alloy (carbon, iron)
- H. Bessemer – process
- Fuller – steel frame/skeleton (Flatiron building)
- Concrete – mixture
- versatile material
- reinforced concrete – tensile and compressive strength

Henry Bessemer
(1813-1898)

Flatiron Building


The signal that never sleeps.

Building materials

Building material is any material which is used for construction purposes. Any naturally occurring substances, such as clay, rocks, sand, and wood, even twigs and leaves, can be used to construct buildings. Apart from naturally occurring materials, many man-made products are in use, some more and some less synthetic. The initial economic cost of building materials is the purchase price. This is often what governs decision making about what materials to use. Sometimes people take into consideration the energy savings or durability of the materials and see the value of paying a higher initial cost in return for a lower lifetime cost.