EWC 201: CONSTRUCTION MATERIALS

Lecture 1:

Introduction

Rationale -- why is important for EWC students?

Materials for Civil Engg. Constructions

Bldg. Materials for Developing Countries

How does a Project Works

Tender Document

Technical Specifications

Introduction

What is civil engineering?

What are the works of civil engineers?

Where do the civil engineers work in Bangladesh?

What is the rationale of this course? – EWC 201 course

- Why do we need this course for civil engineers?
- What is the necessity of this course material for highway/civil engineers?
- What is the importance of study of materials for civil engineers?
- Materials course is of utmost importance for civil/highway engineers – justify

Materials for Civil Engineering Constructions:

Five groups of all Construction Materials are,

- Materials occupying main volume,-- brick, aggregates
    - imparts stability and strength
- Materials for binding, -- cement, bitumen
    - Stability, strength, allowable deformation
- Materials for reinforcement, -- MS bar, Geo-textile
    - Added strength, size reduction
- Materials for protection, -- plaster, coats
    - Prevents deterioration
- Materials for decoration, -- boards, papers, facing materials
    - Improves aesthetic quality

Materials for Construction in Developing Countries:

- Locally available material, surki, gangoo etc
- Low grade materials, local aggregates, bricks

Projects in the Construction Sector

Tender Document

Tender documentation for construction projects. A **tender** is a submission made by a prospective supplier in response to an invitation to **tender**. It makes an offer for the supply of goods or services. **Tender documents** are prepared to seek **tenders** (offers).

Tenders documents may include:

- A letter of invitation to tender.
- The form of tender.
- Preliminaries: including pre-construction information and site waste management plan (if required).
- The form of contract, contract conditions and amendments. This might include a model enabling amendment for building information modelling (BIM), making a BIM protocol a contractual document.
- A tender pricing document (or contract sum analysis on design and build projects).
- Employer's information requirements for BIM.
- Design drawings, and perhaps an existing building information model.
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- Specifications.
  - Genaral
  - Technical

Terms to be used in the Technical Specifications of a Tender Document in Constructions:

Standard:

Defn.: Standard is a document that has been developed and established within the consensus principles of a 'society' and that meets the approval requirements of the society's procedures and regulations.

Standards are used by –

- Individuals
- Companies
- Scientists
- Engineers
- Architects
- designers,
- Govt. agencies

Examples of Standards:

- ASTM
- BS/BSTI
- IS
- JIS

Specification:

Defn.: Specification is a precise statement of a set of requirements to be satisfied by a material, product, system or service that indicates the procedures for determining whether each of the requirements is satisfactory.

Specification requirements are –

- Numerical
- appropriate units
- limits and tolerances

Specification agencies:

- National—BSTI
- International – ASTM, AASHTO, BS, IS, JIS

Test Method:

Defn.: Test method is a definite procedure for the identification, measurement and evaluation of one or more qualities, characteristics or properties of a material, product, system or service that produces a test result

Test methods used in Bangladesh:

- National: BDS – by BSTI
- International: ASTM, BS, ISO etc.
