Construction Method, Material Selection, Fire Prevention & Building Security System

For Project 9a: Board 4; For Project 9b: Part 4

Issued by:
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1. Construction Method

• Which method would you like to utilize? Conventional, IBS or Combination

• Justify why you would like to proceed with that method?

• What is the advantages and disadvantages of such method?

• Elaborate the construction process using the proposed method
2. Material Selection / Component Consideration

- Focus on substructure and superstructure

Common Building Components

- Basic Building Components
- Super Structure
- Substructure
2. Material Selection / Component Consideration

- Focus on substructure and superstructure
2. Material Selection / Component Consideration

Substructure

• The substructure is the lower portion of the building, which is located below ground level which transmits the load of the superstructure to the sub soil.

• it includes

• Foundations
2. Material Selection / Component Consideration

Diagram:
- **Foundation**
  - Shallow
    - Spread
    - Combined
    - Strap
    - Mat / Raft
  - Deep
    - Pile
    - Pier
    - Well / Caissons
2. Material Selection / Component Consideration

Super Structure

- The superstructure is that part of the building which is above the ground and which serves the purpose of building's intended use.
- It includes
  - Plinth
  - Wall and columns
  - Beams
  - Arches
  - Roofs and slabs
  - Lintel and arches
  - Chajjas
  - Parapet
  - Steps and stairs
2. Material Selection / Component Consideration

**Substructure:**
1. Type of foundation

**Superstructure:**
1. Roof
2. Roof structure
3. Wall, column, beam and slab
4. Ceiling
5. Window
6. Door

*You must give justification on each selection of material/component*
3. Fire prevention & control system

Focus on 2 elements:

1. **Passive Fire Protection** – the design of the buildings, structure, components and their installation

i.e: fire-resistance rated walls, fire-resistant glass, fire-resistance rated floors, closures (fire dampers), firestops, signage system (fire exit, keep clear, fire blanket, fire alarm call point, fire action plan etc)
1. Construction Method

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3. Fire prevention & control system

2. Active Fire Protection – an integral part of fire protection

i.e.: Portable extinguishers, Alarm detection, Automatic fire detectors, Hose reels & hydrants, Sprinkler system, Pressurised escape route, Smoke extraction & ventilation
3. Fire prevention & control system

1. Portable Fire Extinguishers
3. Fire prevention & control system

2. Alarm Detection

- Alarm bell
- Break-glass call button

1.5 m above floor level
3. Fire prevention & control system

3. Hose Reel

Fire hose reel
What is this?
3. Fire prevention & control system

4. External Hydrant

Recommendations for installation of external hydrants:
- The hydrant valves should attach to a ring system of supply with more than one source from the water authority’s main
- Maximum spacing of 150 m apart, next to road
- Maximum 70 m distance from building entry
- A maximum distance of 6 m to a building
3. Fire prevention & control system

5. Sprinkler System
4. Building Security System

Objective:

• To control intruders from entering the buildings or the properties

• To protect valuable belongings which the effectiveness is dependable on the building design
4. Building Security System

1. Outer Perimeter control
2. Access control
3. Intrusion detection (alarm)
4. Video Monitoring
4. Building Security System

1. Outer Perimeter control

Man-made structural protective barriers (such as fences, walls, floors, roofs, grills, bars, roadblocks, signs, or other construction) used to protect a facility's potential access ways, restrict, channel, or impede progress.
4. Building Security System

2. Access Control

Way of restricting entrance to a property, a building, or a room to authorized persons. Access control is a matter of who, where, and when.

- **Magnetic Card Reader**
- **Proximity Card Reader**
- **Smart Card Reader**
- **Biometric: fingerprint**
- **Biometric: hand geometry**
- **Biometric: face recognition**
4. Building Security System

3. Intrusion detection (alarm)
Includes many types of sensors and alarm systems.
4. Building Security System

4. Video Monitoring (CCTV)
Very popular and vital building security system.
There are 7 types of CCTV cameras:
Indoor camera
Outdoor camera
IR Day/Night Camera
Dome Camera
Bullet Camera
Vandal Proof Camera
Hidden Camera