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**17/ENG03/061**

**Civil Engineering   
Engineering Drawing**

**SECTION A**

1. Write short but informative notes on any three
2. **Types of staircase**
   1. Straight Stairs
   2. L shaped Stairs
   3. U shaped Stairs
   4. Winder Stairs
   5. Spiral Stairs
   6. Curved Stairs
   7. Storage Stairs

**A straight staircase**: is the most common and affordable style available. Pre-cut risers the vertical parts of the staircase are available in lumber yards home stores and many builders use these because of their simplicity

**L-shaped stairs**: are another common style of staircase. They are basically a straight staircase with a turn, either in the middle or closer to one end or the other. L-shaped stairs are appealing for a variety of reasons, primarily because they are more visually appealing.

**U-shaped staircases**: generally consist of two flights of stairs that go in opposite directions with a landing at the switchback. These are also more visually interesting than a straight staircase. Moreover, they take up less linear floor space and can be handy for a corner design.

**Winder stairs**: are a lot like an L-shaped staircase, except that there is no landing. Instead, the stairs are continuous, taking on a wedge shape as they make the turn. These have been far less common in contemporary homes and are typically found in older residences

**Spiral staircases:** are still considered more of a novelty style. True spiral stairs have one central post to which all the radiating steps are attached, as they spiral upward through a space in the floor above. Because of their contact nature, they are typically found in beach houses and compact city dwellings because of the small amount of space they require

**Curved staircase:** is a design statement. They do not form a circle as spiral or circular staircases do, and instead, are meant to be a major design feature. Easy to traverse, the curve is usually gentle and is an elegant choice for any style of home. This type of staircase is said to be the most difficult to construct and, consequently, one of the most expensive.

**Storage Stairs:** Large or small, almost any home can use more storage and the often-overlooked area underneath the stairs can be turned into valuable space for stashing necessities. The most common way to do this is by building cabinets underneath the risers instead of simply walling off the space. A second way is to turn each riser into a drawer, which is the best option when you can’t make full use of the void underneath the staircase.

1. **Types of Doors and windows**

**Types of Windows**

(a) Casement windows   
(b) Bay windows  
(c) Corner windows

(d) Clear storey windows   
(e) Gable windows   
(f) Sky light windows   
(g) Dormer windows   
(h) Ventilators

**Casement windows**: are common types of windows, provided in the outer walls. They are provided over 50 to 75 mm sill concrete at a height of 750 to 900 mm from floor level.

**Bay windows**: are provided on the projected portion of walls.

**Corner windows**: are provided in the corner of a room. They need heavy lintels. Corner post of window should be strong enough to take load due to deflection of lintel and impact load from the shutters.

**Clear story windows**: are provided when the height of the room is much more than adjacent room/verandah. It is provided between the gap of low height room and the top of room with greater height.

**Gable windows**: are provided in the gable portion of the building. They are required in the stair cases or in the halls with gable walls.

**Sky light windows**: are provided on a sloping roof. It projects above the top sloping surface. The common rafters are to be trimmed suitably.

**Dormer windows**: are vertical windows on the sloping roof.

**Ventilators**: are provided close to roof level or over the door frames. They help in pushing out exhaust air. They may be provided with two split and separated glasses or with hung shutters.

**Types of Doors**

1. **Battened and Ledged Doors**
2. **Framed and Panelled Doors**
3. **Flush Doors**
4. Louvered Doors
5. **Revolving Doors**
6. **Swing Doors**
7. **Sliding Doors**

**Battened and Ledged Doors**: Battens are 100 mm to 150 mm wide and 20 mm thick wooden boards. Their length is that of door opening. The battens are connected by horizontal planks, known as ledges of size 100 to 200 mm wide and 30 mm thick. Usually three ledges are used one at top, one at bottom and the third one at mid-height. This is the simplest form of door and the cheapest also. Battens are secured by tongued and grooved joint.

**Framed and Panelled Doors:** This type of door consists of vertical members, called styles and horizontal members called rails. The styles and rails are suitably grooved to receive panels. The panels may be of wood, A.C. sheet, glasses etc. The panels may be flat or of raised type to get good appearance. These are very commonly used doors. They may be of single shutter or of double shutter.

**Flush Doors**: The shutters of these doors are made of plywood or block boards. They are of uniform thickness. These shutters are available with different attractive veneer finishes. The time consumed in making such doors at site is quite less. These doors are suitable for interior portion of a building. Nowadays flush doors are commonly used in residential and office buildings.

**Louvered Doors**: Whenever privacy as well as ventilation is required such doors can be used. Louvers are the glass, wooden or A.C. sheet strips fixed in the frame of shutter such that they prevent vision but permit free passage of air. The doors may be fully or partially louvered. Such doors are commonly used for public bathrooms and latrines.

**Revolving Doors**: It consists of a centrally placed pivot to which four radiating shutters are attached. The central pivot is supported on ball bearing at the bottom and has a bush bearing at the top. The shutters may be partly or fully made up of glass. A circular space of entrance is provided within which shutters rotate. As shutters rotate they give entrance on one side and exit on other side. These doors are preferred in public buildings like stores, banks, hotels, theatres where continuous use of doors is necessary. They are very much required in entrance to air conditioned public buildings.

**Swing Doors**: Swing door has its shutter attached to the frame by means of double action springs. Hence shutter can move both inward and outward. They may be single shuttered or double shuttered. Such doors are preferred in offices and banks. Since these doors can open on both sides it is desirable to provide glass panels or peep holes to enable user to see the persons from other side.

**Sliding Doors**: In this type of doors, shutter slides on the sides. For this purpose runners and guide rails are provided. Sliding shutters may be one, two or even three. Such doors are used in banks, offices etc.

1. **Site Planning**

Site planning is the art of arranging structures on the land and shaping the spaces between, an art linked to architecture, engineering, landscape architecture, and city planning. Site planning in architecture and landscape architecture refers to the organizational stage of the landscape design process.

1. Differentiate between any four
   1. **BEME and BOQ**

Bill of Quantities also referred to as BOQ, is a document formulated in the construction industry to specify materials, labors, and their cost. It serves as a communication tool between client, consultant & the contractor. It is usually prepared by a cost consultant or a surveyor. Primarily there are two types of BOQs.

Bill of Engineering Measurement and Evaluation (BEME) also referred to as 'Bill'; is a tool. Used before, during and post-construction to assess and value the cost of construction works.

* 1. **Septic tank and soak away**

A soak away is a hole dug in the ground and filled with rubble and coarse stones, designed to disperse water back into the surrounding ground without flooding. A septic tank has two chambers and is buried underground in the same way as a cesspit.

* 1. **Sections and Elevations**

Elevation of any structure is the front view that is how you see a side of a structure when you are standing in the front. Section is the view obtained after cutting the structure, for example sectional view of a room cut into two will show us the thickness of the wall, may be the doors and windows.

* 1. **Architectural and Civil engineering drawing**

Architectural drawings are of buildings and have a style or used to have a distinct lettering style which depicted architectural design. Civil drawings are generally not buildings but other structures like bridges, streets, roads, pipelines, sidewalks and land layouts, civil drawings generally are less artistic.

1. You have been appointed as the Civil Engineer by Mr. Lawrence to construct a building. Highlight ten out of your copious responsibilities from the beginning to the end of the project that will ensure timely completion of the project. Assuming that the client has not appointed any architect.
   1. **Ensuring Material Delivery on Time**

It is the civil engineer responsibility to ensure material delivery on time. So that, construction work progress doesn’t hamper due to the shortage of materials.

To ensure materials on time, you can’t order all the required materials at a time. You can’t order those materials which will be required immediately.

Suppose you planned to construct 2nd- Floor slab. So you will need Mild steel bar for that slab only. If your order Rod for 3rd-Floor slab also, you will block a huge amount of money which can be used for another purpose. This is not so economical. So, Order for materials which are really needed.

* 1. **Follow Land Use Law & Regulation**

The civil engineer must also be certain to follow land use laws and regulations every step of the way. This is extremely important as one who does not abide by such rules and regulations may find that the project is stalled, either temporarily or permanently. Therefore, a specific duty of a civil engineer is to know the pertinent land use laws and regulations and to follow them consistently. Liaise with relevant authority’s that have jurisdiction over projects and ensure project compliance with authority expectations and complete documentation (permits, authorizations etc.) as required.

* 1. **Ensuring Safety of the Project**

As construction deaths and injuries often occur. It has been another Key responsibility of a civil engineer to ensure safety in a building construction project. Although many companies have their separate safety inspector, you, as a civil site engineer, should be conscious more about the safety of your building construction project.

* 1. **Reporting and Billing**

Another key responsibility of a civil site engineer is, to prepare or review project’s reports and contractors’ bills.

Which reports you will prepare mostly depend on the rules of the project management team or the company.

* 1. **Supervise Construction Crew**

The civil engineer is ultimately responsible for all construction projects and for making sure those projects are completed correctly. This requires civil engineers to hire and supervise construction crews and visit construction sites often to make sure are proceeding on time and on budget

* 1. **Formalize Contractor Appointment**

There are various types of works that need to be done in a building construction project such as civil works, plumbing works, electrical works, painting works, etc. All of these works are done by separate contractors. Although contractor’s selection process is done by the project manager, you as a civil site engineer need to raise your hand to speed up the contractor selection for different work item of the project.

* 1. **Handle routine contract administration**

Manage the contract tender process, including assessment of tenders and the presentation of contractor recommendations of clients.

**SECTION B**

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FLOOR PLAN



store

kitchen

sitting room

Verenda

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