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**17/ENG03/044**

**CVE 312**

**TEST A**

1. First of all, the plot of land is searched for and acquired in a location that is best suited for building construction processes, noting that it has all desirable facilities nearby after some appropriate site planning considering all factors affecting it. It is the most important step in building construction.
2. After selecting proper land for building, personally create building designs or get help and advice from an architect, prepare the floor plans and building requirements, number of flats, rooms, based on the owner’s requirements and budget. Then after, determine the structural details of the reinforcements to be used.
3. After, planning and structural detailing completed these details are transferred to the building estimator. The building estimator will estimate the material quantity, quantity of different items of work, and prepare an abstract sheet that shows the cost of building construction. Of course, after getting appropriate permissions from building and construction authorities.
4. Builders or contractors for construction must be chosen carefully as it is a major factor for securing building construction quality and timely construction of work. In the contract document, all the work-related details must be clearly stated. The contract document should cover layout and work details along with the payment methods, time scales and costs.
5. The construction site must is cleaned before the work is executed. This work involves the removal of roots of trees, debris and leveling ground area. Then the foundation of building ground is excavated with the help of excavating machines as per the building dimension specified in drawings.
6. After the foundation work is done ground beam formwork preparation is started and poured with concrete. Over the plinth beam, masonry work is started and space between foundation and plinth beam filled with soil. The columns are built up to slab level and the frame for further construction is prepared.
7. As column and beam framework is completed, masonry work is started with different materials such as bricks, concrete blocks, fly ash bricks, etc. according to building drawing. The lintel is constructed on the door and window to support the masonry work over it.
8. Then the formwork is started to construct slab resting on the column and beam. Over slab formwork, slab reinforcement is placed as per slab detailed drawing, after that door window frames are fixed at their specified position given in drawing.

**Architectural Drawings** are taken as basic type of drawings. **Architect drawings** or as we call it **preliminary design drawin**g, is a set of drawing that **does not** represent structural design, but only as general layout and planning for civil engineers (structural and geotechnical) to build on, **While**,

**Civil Engineering Drawings** or **site drawing**, is a type of technical drawing that shows information about grading, landscaping, or other site details. These drawings are intended to give a clear picture of all things in a construction site to a civil engineer. General civil drawings comprises many set of drawings of which architectural drawings and structural drawings have prime importance apart from several other drawings like firefighting drawings, plumbing drawing, electrical drawings etc.,

**Working Drawing** is used to describe the complete set of drawing information needed for the manufacture and assembly of a product based on its design. An essential element of a working drawing is the parts list, or ***bill of materials*** (abbreviated BOM). The purpose of the BOM is to identify all parts, both standard and nonstandard, used in an assembly. **While,**

**Presentation Drawing** is any of a set of design **drawings** made to articulate and communicate a design concept or proposal.  Presentation drawing is more creative & aesthetical for approval from client.

**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. Sectional view also depends on from which view you are seeing the structure. It can be a top view or a side view. E.g. a building cut into two parts, such that its roof is removed, its sectional view is from top. **While,**

**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. Elevations are more an architectural drafting device used to illustrate a facade-to show things as the eye sees them. Elevations are usually indicated in the plan view with a directional callout.

**Septic Tank** is simply a self-contained system of tanks that are used to collect effluent and store solid waste and wastewater. Solid waste is broken down by bacterial activity in the first tank. This partially treated effluent then flows to the second chamber to undergo further natural biological action. It’s then stored within the tank until it overflows into either a drainage field, or a soak away, where bacteria in the soil will further break down the waste. **While,**

**Soak Away** doesn’t involve any kind of tank, but is simply a hole in the ground that has been filled with coarse stones and rubble. This combination of stones and rubble enables surface water to disperse into the earth rather than sitting on top of the ground.

**SITE PLANNING**

Site planning is a design tool used to determine an appropriate development outcome, based on an analysis of the development site’s constraints. The opportunities and constraints inherent to a site and the response to a program/design brief are analyzed and documented in an overall site planning document that should accompany a development application. Good site planning therefore starts with a comprehensive analysis of the site, within the immediate and regional context. The “whole of site” approach encompasses broader decisions regarding building orientation/ placement on site, including location of associated structures and infrastructure such as access and circulation arrangements. Thorough site planning assists with:

– Guiding the development concept,

– Improving development outcomes through improvements in sustainability and design quality.

– Economic sustainability and cost benefits – A considered site design will reduce demolition, construction and operation costs of buildings;

– Social Sustainability – Addressing the needs of the local community will provide improved quality of life, local vitality and enhance community identity;

– Environmental Sustainability – Ensuring the proposal minimizes impact or even enhances environmental impacts; and

– Better Planning and Urban Design Outcomes – Achieving a development that integrates with the desired surrounding built form and landscape character.

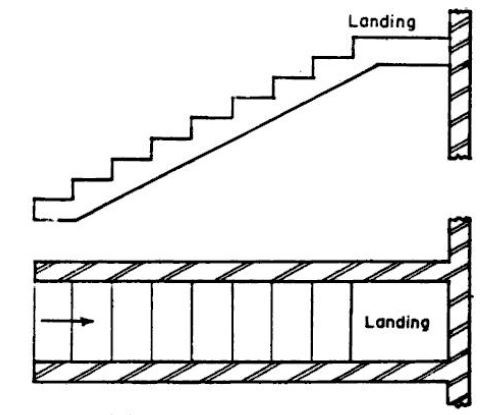
**TYPES OF STAIRCASE**

A stair is a set of steps leading from one floor of a building to another, typically inside the building. The room or enclosure of the building, in which the stair is located is known as staircase. The opening or space occupied by the stair is known as a stairway.

Stairs can be broadly classified into three types:

1. Straight stairs
2. Turning stairs
3. Continuous stairs

**STRAIGHT STAIRS;** generally for small houses, available width is very retractable. So, this type of straight stairs are used in such conditions which runs straight between two floors. This stair may consists of either one single flight or more than one flight with a landing.



**TURNING STAIRS**

Turning stairs are sub classified as:

1. Quarter turn stairs
2. Half turn stairs ( dog legged stairs)
3. Three – quarter turn stairs
4. Bifurcated stairs

Quarter turn stairs

A quarter turn stair is the one which changes its direction either to the right or to the left but where the turn being affected either by introducing a quarter space landing or by providing winders. In these type of stairs the flight of stair turns 90 degrees art landing as it rises to connect two different levels. So it is also called as L-stair. They can be further subdivided into; Newel Quarter Turn Stairs and Geometrical Quarter Turn Stairs.

Half turn stairs

In case of half turn stairs its direction reversed, or changed for 180o. Such stairs are quite common. Again these are three types;

Dog-legged stairs, Open newel half turn stairs, and Geometrical half turn stairs.

Three quarter turn stairs

The direction of stairs changed three times with its upper flight crossing the bottom one in the case of three quarter turn stairs. These stairs are may either be newel or open newel type. This type stairs are generally used when the vertical distance between two floors is more and as well as length of the stair room is limited.

Bifurcated stairs

Bifurcated stairs are commonly used in public building at their entrance hall. This has a wider flight at the bottom, which bifurcates into two narrower flights, one turning to the left and other to the right, at landing.it may be either of newel type with a newel post or of geometrical type with continuous stringer and hand rails.

**CONTINUOUS STAIRS;** This type of stairs neither have any landing nor any intermediate newel post. They are geometric in shape. They are subdivided into the following types, Circular or Spiral stairs and Helical stairs

**TYPES OF DOORS AND TYPES OF WINDOWS**

**DOORS;** The door is a moving mechanism which is more like a barrier made of wood, stone, metal, glass, paper, leaves, hides, or a combination of materials.

Types of Doors

There are many kinds of doors with different purposes. Doors are largely defined by the materials they are made from. Also, door classification varies due to the mechanism and usage.

Followings are the classifications of doors:

*Considering Material Used*;

* Wooden Door
* Metal Door
* UPVC Door

*Considering the Mechanism & Usage*;

* Sliding Door
* Composite Door
* Swinging Door
* Revolving Door
* Folding Door

Different Types of Door Based on the Material Used

*Wooden Door*

The wooden door is the top choice for the homeowners. A wooden door can be custom made which has decorative yet functional design options. Most of the wooden doors open in a swinging system.

*Metal Door*

As the name suggests, metal door is made of metal. It has a prolonged functional life with high dimensional accuracy and eminent corrosion resistance. It's more like a barricade type which can withstand storm and earthquake.

*UPVC Door*

UPVC door is a replacement for a wooden door. It is made of a fully recyclable material, in keeping with our green living either like plastic, glass or bamboo. It has various types e.g. gold, solid or platinum.

Different Types of Doors Based on the Mechanism & Usage

*Sliding Door*

Sliding door opens crosswise by sliding which is parallel to the wall. It has a horizontal mechanism. Slide door is also known as "Patio Door". It is usually considered a single unit which consists two-panel sections. A sliding door is usually made of wood, aluminum, stainless steel but it appears in its best form when it is made from UPVC plastic glass.

*Composite Door*

A composite door is a new invention which is depicted with the modernistic door technology. Lately, it has become the alternative to wooden, steel or UPVC door. It's not made from a single substance. Instead, it is made using a combination of material like PVC, wood, muffled foam and glass reinforced plastic (GRP). In most cases, it is made from fiberglass.

*Swinging Door*

The swinging door is a simplified and easy technique. It is mainly a swinging hurdle that will close the entrance to a room or building or vehicle. Swinging on a double hinge. it opens in either direction as automated. Sometimes it can swing open in both directions. Mostly, a swinging door is made of steel, metal, aluminum or solid MDF glass.

*Revolving Door*

A revolving door consists of three or four stiff upright sections hanging on a mid-shaft and rotates around a vertical axis. It allows a large number of people to pass in and out only by a gentle push. A revolving door is called "Door without Draft or Air" because it averts drafts and air pressure.

*Folding Door*

Folding door ajar by folding back in sections. It is also known as "Bi-fold Door". Most of them are made of either wood, bamboo, aluminum or PVC.

**WINDOWS;** A window is defined as an opening in a wall of a building to serve one or more of the functions like natural light, natural ventilation and vision.

Types of Windows

Various windows used may be classified on the basis of materials used, types of shutters, types of openings of shutters and the position of windows. Timber, steel and aluminum are commonly used to make window frames. Depending upon the position of windows, they may be classified as:

(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

1. **Casement windows** are common type 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.
2. **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.

1. **Clear storey 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.
2. **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.
3. **Sky light windows** are provided on a sloping roof. It projects above the top sloping surface. The common rafters are to be trimmed suitably.
4. **Dormer windows** are vertical windows on the sloping roof.
5. **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.

SECTION B

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**FLOOR PLAN**



store

kitchen

sitting room

Verenda

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