

LECTURE NOTES:

The Construction Process

Introduction

The person or group that wants a building erected and who will pay for the total cost of the building is referred to as the client. The client often knows in broad terms what he wants, he may often have an idea about its shape and appearance. It is the designer's job to prepare drawings that will meet the clients requirements and those of the regulating authorities. In many instances this work will be performed entirely by an architect, but frequently it involves the design skills of a structural engineer.

Basic Presentation Procedure

- Scale
- A sensible scale should be adopted for a general arrangement drawing.
- With a suitable scale, the complexity of a building element could be easy to grasp e.g. 1:50 - For simple wall and slab detail
- Grid lines

These are used to identify the elements you are describing. They are usually not as thick as the border lines.

- Plans, elevation and sections should be clearly defined
- Sections through plans should be taking looking to the left and upwards
- Reinforcement should be in heavy lines
- Bars should be called up once only being on the plan or elevation
- Bars should be called up separately for each unit and not repeated where a similar bar is used in another unit of the same diagram.
- Bars should be referred to in their likely order of placing to make the steel reinforcement fixers job easy.
- Each drawing should start from bar mark 1

Covers should be shown on the section where it varies from one unit to another on a diagram

- Standard abbreviations should be used in calling up the reinforcement bars e.g. B – bottom, R- mild steel, Y – high yield, stgd.- staggered
- Bars should be called up in the following manner. Number required/type of steel/diameter or size/bar mark/spacing required /location/ abbreviations e.g. 20Y1201-150T
- In slabs distribution reinforcement is provided at right angle to the main reinforcement bars
- In beams links are provided along the span even when not required for shear to act as stirrups, so as to make handling of reinforcement simpler to minimize shrinkage cracking and help maintain required concrete cover

Dimensions, Notes and Titles

- Effective communication is basic in the construction industry and the designer must learn to make his requirements clear to all
- Overall sheet planning is necessary before dimensions, notes and titles can be applied to a drawing

- The purpose of dimensioning is to define size and location of the various materials and components
- Overall readability, conciseness, completeness and accuracy must be foremost in any dimensioning system
- Dimensions should be read across the sheet and are usually placed at the bottom, vertical dimensions must be readable from the right hand side.
- Basically there are 3 dimension lines: the line closest to the building should describe its small elements e.g. door widths and window openings.
- Notational systems include a number of items: room names, identification of materials, reference marks for scheduling and titles for complete drawings and their parts.
- It is a good practice to group notes that apply around the construction to which they refer.
- The spacing between notes must be greater than the spacing between the individual lines
- For greater legibility and neatness notes can be aligned at the left to present an even margin.
- When notes contain nomenclature, it is important that the same terminology be used throughout.

Working or Construction Drawing

- Communication among members of the design team must be open, free, continuous and complete
- Working drawings are the graphical communication between the designer and the contractor
- The working drawing must be clear and concise, its production should be aimed at an easy flow of information to the contractor on the job site.
- They are legal documents that impose various obligations on the parties to the contract.
- Some of the items to be considered on the floor plan of a building project are:
 - All necessary dimensions
 - Window symbols and door swings
 - Stair symbols and notes
 - Window and door identification marks
 - Built in cabinets, shelves and rods in closets
 - All structural features
 - Slopes in floors
 - Correct symbols
- It is important that the plan be accurately made, for so many other drawings are traced directly from it in part or whole.

Foundation Plans

- The foundation system entail only a small part of the total project. It provides a firm, stable, fully designed base for the entire structure.
- The foundation helps distribute both the dead weight and live loads imposed on it.
- The foundation plan reflects the overall character of the building, for the buildings visible elements must be carried down and firmly attached to the earth underlying the structure.
- The foundation plan is the basics of the design of the structural framework of the building. The grid is laid out for all columns extending through the building and applies as well to the footing foundations beneath the columns.