4

INTRODUCTION TO CONSTRUCTION WORK

4.1 INTRODUCTION

The structure of the building is divided into two parts. The sub-structure and the super structure. The lower portion of the building which transmits the load of the super structure to the foundation soil is called sub-structure and the portion of the building which is above the substructure is called super structure. The weight of superstructure is borne by the foundation hence the foundation should be strong enough to carry the load of the super structure.

4.2 OBJECTIVES

After going through this lesson you will be able to:

- describe the working of various equipments used in construction work;
- explain the importance of foundation;
- explain about the super structure and its importance;
- enumerate the type of construction;
- describe the method of laying out the proposed construction plan.

4.3 REQUIREMENTS OF FOUNDATION

1. The foundation of sub-structure distributes the load of the building evenly

on the soil in such a way that at not below the foundation the soil pressure exceeds the maximum allowable bearing capacity of soil.

2. It helps in strengthening the building against the lateral forces caused due to tornado, earthquake, etc.
3. It provides strong surface for the construction of proposed structure.
4. To provide safety to the structure from flow of water and seepage.

4.4 AIM OF SUPERSTRUCTURE

The aim of providing super-structure is to provide support in the construction of building as per designed plan and various members of super-structure such as columns and beams are designed to provide strength for carrying the dead load and live load expected to come on the various parts of the structure in a safe and well distributed manner.

4.5 TYPES OF CONSTRUCTION

Construction can be of following types:

1. Building development/construction
2. Road construction
3. Electricity distribution
4. Water supply structure
5. Sewerage construction
6. Drains etc.

4.6 AIM OF SITE INSPECTION

Aims of site inspectoin are:

1. Inspection of site for foundation.
2. Behaviour of soil near proposed wall and thickness of layers of soil deposits.
3. Changes in soil behaviour and in depth of water Table.
4. Direction of flow of water and its drainage
5. Movement in earth layer due to any reason if any.

4.7 SITE CLEARANCE

Before starting any construction work it becomes necessary to clear the place from the unwanted grass, jungles, trees and plants etc. In case of any hill like appearance on the ground, that too needs to be cleared of the excess earth and if there is a pit, it is required to be filled up. This total job is called site clearance. Only after the site clearance lay out of the structure at site can be planned. At the time of clearing of the site it should be remembered that any plant whose girth is more than 30 cm above the ground is designated as tree, and no tree can be removed without taking permission from the appropriate authority.

In this way clearance of site of the unwanted jungles, shrubs, trees etc. and keeping of felled trees at a distance away upto 10 m or more forms the part of the agreement of the contractor for which payment are required to be made and all these things are written in the agreement paper, which is required for explaining the terms and conditions.

4.8 LAYING OUT THE BUILDING PLAN AT SITE FOR FOUNDATION

The total load of all the wall etc. including that of the beams and columns final come on the ground which is called foundation soil. Engineers at site and design office decide the size of foundation for their foundation i.e. depth, length and breadth etc. and type of foundation.

4.8.1 Work Methodology

1. In the layout plan you will observe the size of construction in the plot and also the distances which should be left out of construction from the boundaries. This is called set back distance from the boundary wall. This is clearly shown in the layout plan.
2. It is required to draw line on the ground of the proposed construction. It is done by putting lime powder along a string stretched along the proposed line of construction. These lines extend at least one meter away from the actual end lines and they are called reference lines. They remain even after the earth digging or cutting is over for foundation work.

3. A bench Mark pillar is also constructed at site which gives the level of plinth and foundation etc. permanently. Water level marks are used for this purpose. This bench mark is required to be secured till the end of the construction.

4. The map will be kept in proper orientation with respect to the site. Generally the longest wall of the building is considered as base line. Refer Plate No. 3, Plate No. 4, Plate No. 5.

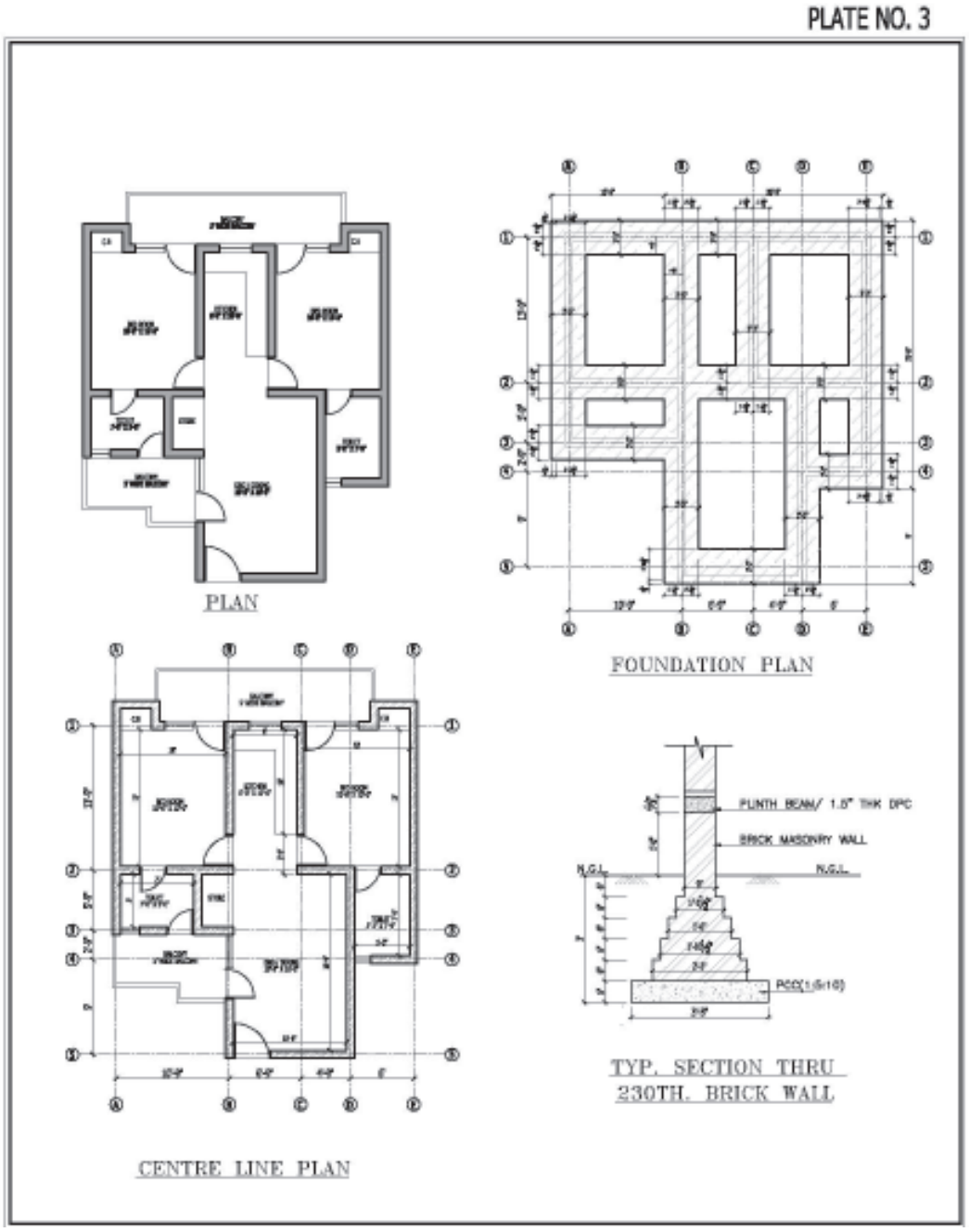


Fig. 4.1

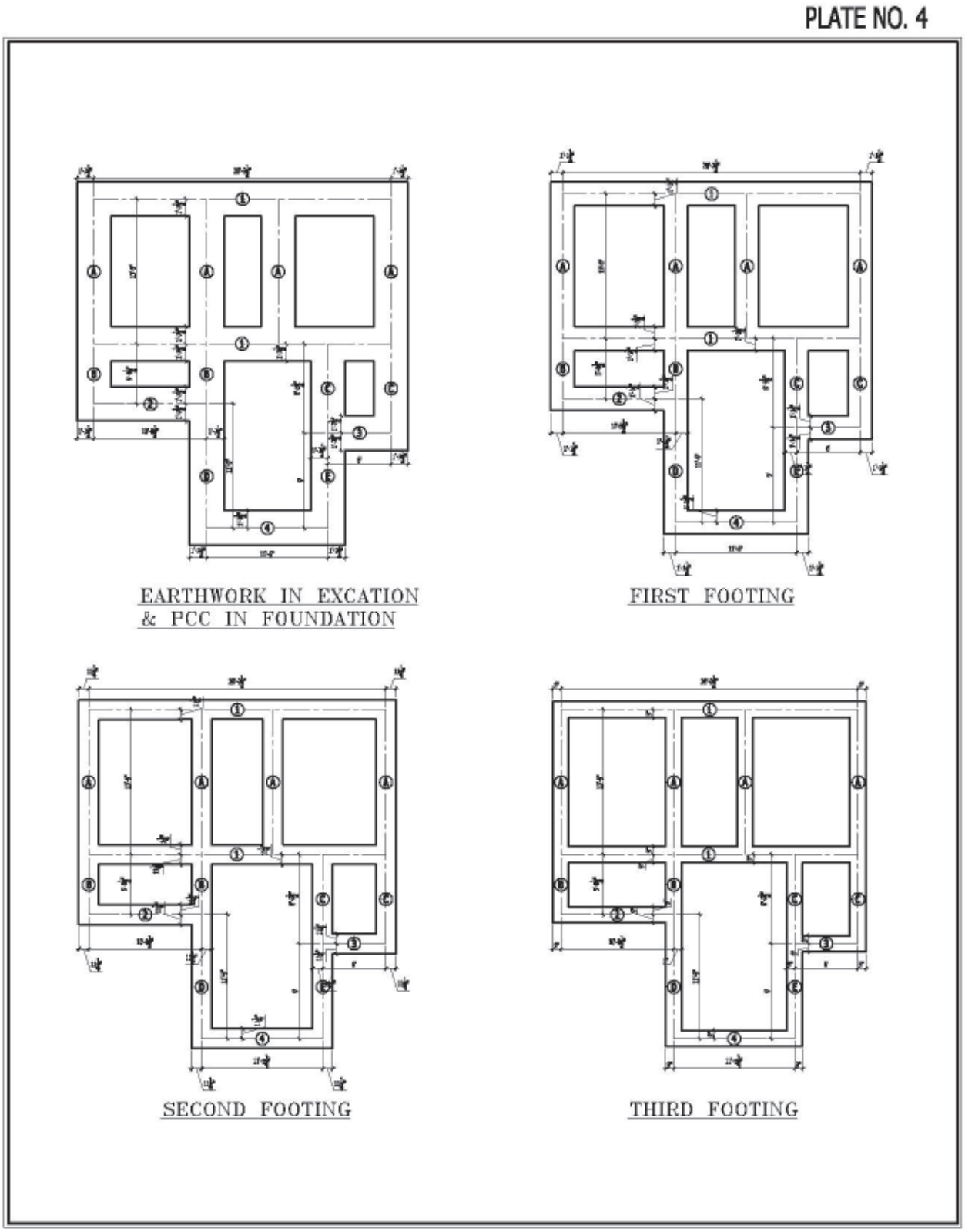
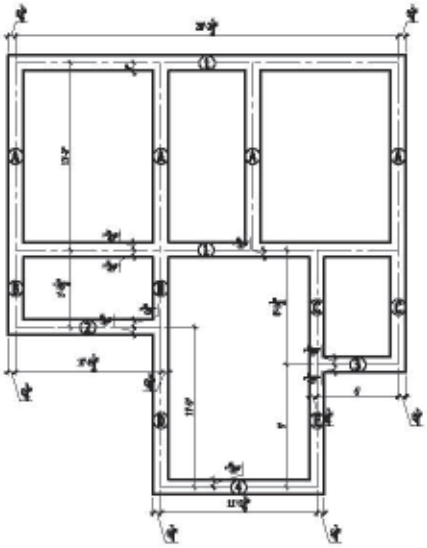


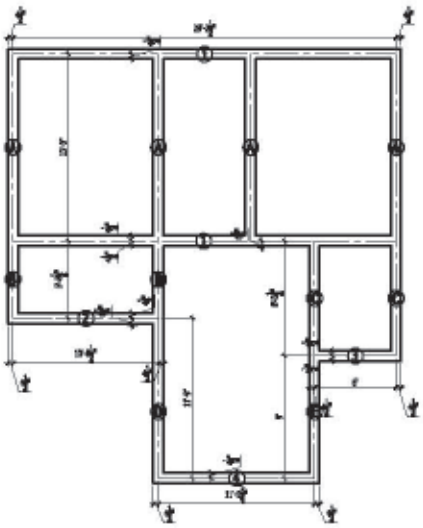
PLATE NO. 4
EARTHWORK IN EXCATION
& PCC IN FOUNDATION
FIRST FOOTING
SECOND FOOTING
THIRD FOOTING

Fig. 4.2

PLATE NO. 5



FORTH FOOTING



PLINTH WALL ABOVE FOOTING
& DAMP PROOF COURSE

Fig. 4.3

5. Now after leaving the set back distance from the first wall limit from the boundary, the line parallel to wall will be plated on the ground depending upon the set back distance. In this fashion all the four sides of the building will be laid on the ground.
6. After plotting the first corner other remaining corners are also plotted on the ground.
7. For plotting the 90^{o} angle on the ground either cross staff is used or Pythagoras Theorem is used (3, 4 & 5).
8. After this all the centre line will be extended up to 1.0 to 2.0 m as per the direction of the Engineer and guide pillars are required to be constructed.

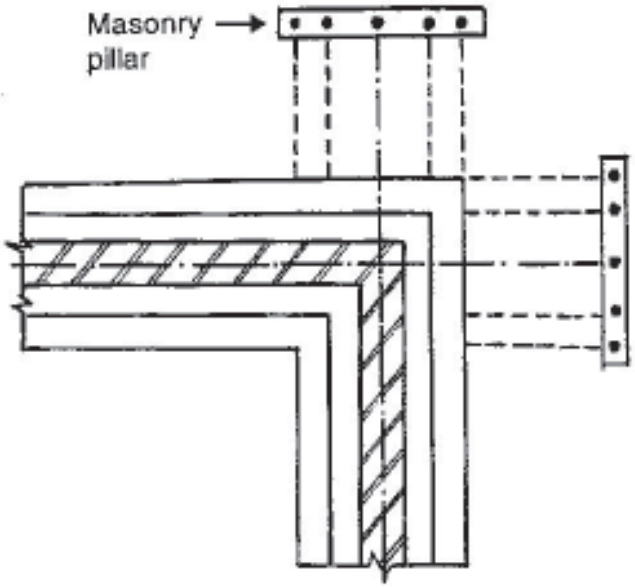


Fig. 4.4: Use of Masonry pillars

The height of the masonry pillars will be equal to the height of the plinth. The level of the floor is called plinth level.

9. All the lengths and distances are measured with the help of standard chain or tape (steel)

4.9 WHAT HAVE YOU LEARNT

- Requirement of foundation is extremely important and its use and construction should be according to design.

- Similarly the use of super-structure above G.L. is also very important.
- Methods of laying out the foundation plan of building are many.
- Guide pillars are very important for laying the building plan at the site.

4.10 TERMINAL QUESTIONS

1. What is the use of any structure in the foundation?
2. What do you understand by the Plinth level?
3. Why General Tape or string is not used for measurement?
4. What do you understand by guide pillars?