

UNIT

2

Chain Surveying**Learning Objectives**

After studying this unit, the student will be able to understand

- Chain surveying and purpose of the equipment
- Studying the metric chain and reading the length.
- Types of survey stations and survey lines and their purpose
- Conventional signs used in chain surveying and recording field notes in the field book.
- Various types of obstacles we need to overcome in the process of measuring distance between two points.
- Methods of calculating area of a given piece of land with irregular boundary.

2.0 Introduction

Chain surveying is the simplest and the most accurate kind of surveying. In this the area is divided into network of triangles since the triangle is the only figure which can be plotted without any angular measurements. Chain surveying is adopted in the following situations.

- 1) When the ground is flat and with simple details.

- 2) When the area to be surveyed is small.
- 3) When large scale mapping is desired.

2.1 Purpose and Principle of Chain Survey

Chain surveying has the following purposes.

- 1) To collect necessary data for exact description of the land.
- 2) To calculate the area of the plot
- 3) To prepare the plan of the site
- 4) To demarcate the boundaries of the land
- 5) For division of land into smaller units.

Principle of chain surveying:

The triangle is the simplest figure that can be plotted from the lengths of its sides. Based on this, the principle of the chain surveying is to divide the area into a network of well conditioned triangles. The error will be least in plotting a triangle is when no angle of the triangle is less than 30° and more than 120° . Such triangles are called well conditioned triangles. Chain surveying is also called as chain triangulation.

2.2. Equipments Used in Chain Surveying and their Functions

The following equipments are used in chain surveying

- 1) Chain
- 2) Tape
- 3) Ranging rod
- 4) Offset rod
- 5) Cross staff
- 6) Arrows
- 7) Pegs
- 8) Plumb bob etc.

1. Chain: This is an instrument used for measuring distance. There are four types of chains.

- i) Metric chain.
- ii) Engineer's Chain.
- iii) Gunter Chain.
- iv) Revenue chain.

(i) Metric chain: In metric system the chains of 20m and 30m are commonly used. The chain is made with galvanized steel wire of 4mm diameter. Each meter is divided into 5 links of 20mm length. It is provided with brass handles on either ends. The tallies are fixed at every 5m length and small brass rings are provided at every meter length. The chain is shown in the fig 2.1.

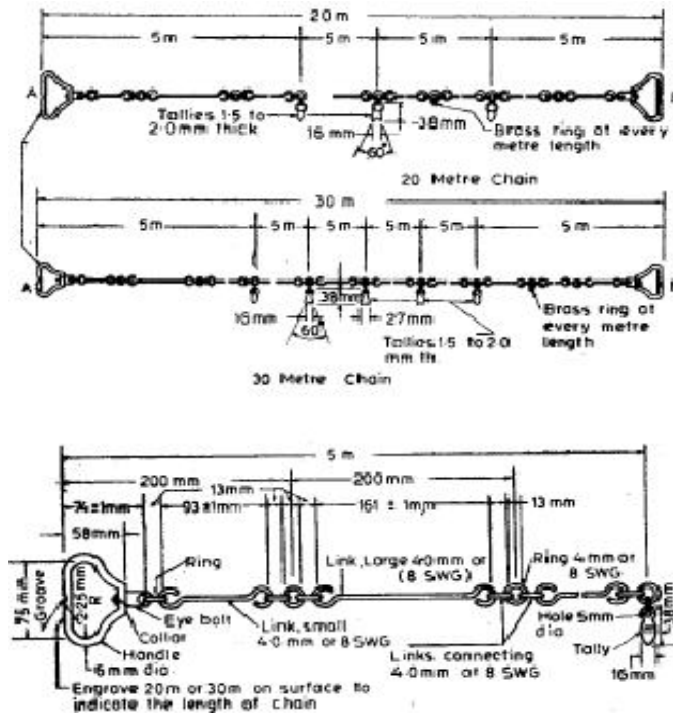


Fig. 2.1

(ii) Engineer's chain: The Engineer's chain is 100ft length and made of 100 links.

(iii) Gunter chain: It is 66 feet long and having 100 links. It is useful for measuring the distance in miles and areas in acres. 10 square Gunter chain = 1 acre = 4840 sq. yards.

(iv) Revenue chain: This chain is of 33ft length and is divided into 16 links.