

STUDY AND USE OF SURVEYING AND LEVELING INSTRUMENTS

Surveying is defined as the art of determining the relative positions of various points above, on or below the surface of the earth.

The ultimate object of survey is to prepare a map or plan using the data obtained through the survey. The collection of data by linear and angular measurements and elevation difference is called the field work. The processing of data plotting and computation of area and volume are called office work.

Use of agricultural survey

Surveying is primarily divided into two types.

- (1) Plane surveying
- (2) Geodetic surveying

Agricultural surveying is the simplest form of plane surveying. With the use of survey, the boundaries of fields can be correctly located and area can be accurately computed. Land leveling and grading may be perfectly done if the differences in elevations are known. Alignments of canals for irrigation and drainage can be effectively done by proper surveying. Surveying plays a vital role in soil conservation measures like contour bunding, graded bunding, bench terracing construction of farm ponds and percolation ponds etc. In addition to this, surveying plays a key role in laying underground pipe line system, alignment of irrigation channels, drainage systems, farm roads and farmstead construction etc.

For linear and angular measurements in the plains, chain, compass and plane table surveys are used with necessary instruments. To determine the difference in elevation a dumpy level is used. The details of instruments used in each survey are given below:

1. Chain survey

1. Chain and Tape
2. Cross Staff
3. Ranging rods
4. Offset Rods
5. Arrows

2. Compass Survey

1. Prismatic Compass
2. Chain
3. Ranging Rods
4. Offset Rods

3. Plane Table Survey

1. Plane Table with Tripod Stand
2. Alidade
3. Trough Compass
4. 'U' frame with plumb bob
5. Spirit Level
6. Chain
7. Ranging Rods

4. Leveling

1. Dumpy Level
2. Tripod Stand
3. Telescopic Metric Staff