

CIVIL ENGINEERING DEPARTMENT

INTEGRAL UNIVERSITY LUCKNOW

Basic Survey Field Work

The history of surveying started with plane surveying when the first line was measured. Today the land surveying basics are the same but the instruments and technology has changed. The surveying equipment's used today are much more different than the simple surveying instruments in the past. The land surveying methods too have changed and the surveyor uses more advanced tools and techniques in Land survey. Civil Engineering survey is based on measuring, recording and drawing to scale the physical features on the surface of the earth. The surveyor uses instruments for measuring, a field book for recording and now a days surveying software's for plotting and drawing to scale the site features in civil engineering survey. The surveying Leveling techniques are aided by instruments such as theodolite, Level, tripods, tapes, chains, telescopes etc and then the surveying engineer drafts a report on the proceedings.

S.NO	APPARATUS NAME	IMAGE	DISCRIPTION
1.	TOTAL STATION		Total station is a combination of Electromagnetic Distance Measuring Instrument and electronic theodolite. It is also integrated with microprocessor, electronic data collector and storage system. The instrument can be used to measure horizontal and vertical angles as well as sloping distance of object

2-

CHAIN AND TAPE



The length of the survey lines are measured with the help of tape or chain. Chain is what you can say rough and tough instrument, but in case of tape it needs to be taken care by supervisor. Chain surveying is considered to be the simplest method of surveying in which measurements are taken in the field and other supplementary works like plotting calculations are carried out in office.

3-

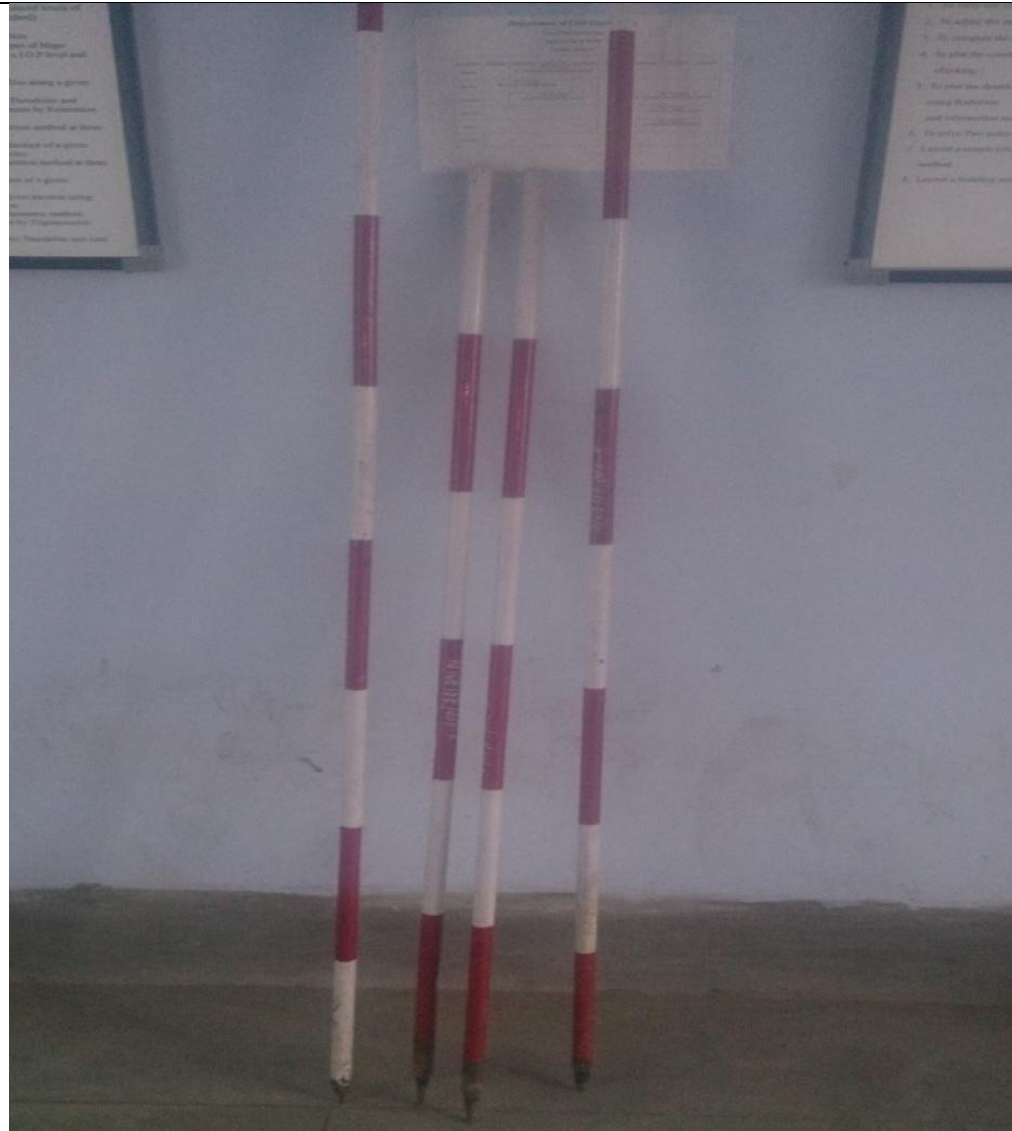
**PRISMATIC
& SURVEYOR
COMPASS**



Compass surveying is a type of surveying in which the directions of surveying lines are determined with a magnetic compass. The compass is generally used to run a traverse line. The compass calculates bearings of lines with respect to magnetic north. The included angles can then be calculated using suitable formulas in case of clockwise and anti clockwise traverse respectively.

4-

RANGING RODS



Ranging rod is an surveying instrument used for marking the position of stations and for sightings of those stations as well as for ranging the straight lines. Now a days these are made of metallic materials only. These are usually 3cm in diameter and 2 m or 3 m long.

5-

I.O.P. LEVEL



An **I.O.P level** is an optical instrument used to establish or check points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and so transfer, measure and set heights.

6-

DUMPY LEVEL



A **dumpy level** is an optical instrument used to establish or check points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and so transfer, measure and set heights.

7-

AUTO LEVEL



A **auto level** is an optical instrument used to establish or check points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and so transfer, measure and set heights.

8-

**DIGITAL AUTO
LEVEL**



Digital levels improve standards for levelling on construction sites and general surveying tasks. They are simple to use, take measurements quickly, and minimize human error, while the integrated programs enhance levelling work.

9-

VERNIER THEODOLITE



The Vernier Theodolite is also known as a transit. In a transit theodolite. A **theodolite** is a precision instrument for measuring Angles in the Horizontal and vertical planes.

10-

DIGITAL THEODOLITE



Digital Theodolites serve as a vital surveying instrument and are widely used in surveying for the measurement of horizontal and vertical angles. Theodolites also determine the relative location, and are extremely useful in navigation and meteorology.