

Plane Table Survey

It is the graphical method of survey in which the field observations and plotting proceed simultaneously. It is a means of making a manuscript map in the field while the ground can be seen by the Surveyor without intermediate steps of recording and transcribing field notes.

Instruments used

The following instruments are used in plane Table Survey.

1. The plane Table with levelling head having arrangements for
 - (a) Rotation about vertical axis and
 - (b) Clamping in any required direction.
2. Sight Rule
3. Measuring Tape (20m or 30m)
4. Plumbing Fork

Instruments used

5. Plum bob
6. Sprit Level
7. Divider
8. Drawing Paper
9. Paper clips or pins
10. Pencil and Rubber.

WORKING OPERATIONS

Three operations are needed

a. Fixing :

Fixing the table to the tripod stand

b. Setting :

i) Levelling the table

ii) Centring

iii) Orientation

c. Sighting the points.

LEVELLING

For small scale work, levelling is done by estimation. For work of accuracy, an ordinary spirit level may be used. The table is levelled by placing the level on the board in two positions at the right angles and getting the bubble central in both directions.

CENTERING

The Table should be so placed over the station on the ground such that the point plotted on the sheet corresponding to the Station occupied should be exactly over the Station on the ground. The operation is known as centring of the plane table. Plumbing fork is used for this purpose.

ORIENTATION

Orientation is the process of putting the plane-table into some fixed direction so that the line representing a certain direction on the plan/drawing sheet is parallel to that direction on the ground. This is essential condition to be fulfilled when more than one instrument station is to be use.

If orientation is not done, the table will not be paralleled to itself at different positions resulting in an overall distortion of the map.

There are two main methods of orienting the Plane-table:-

- a. Orientation by means of Compass.
- b. Orientation by back sighting.

SIGHTING THE POINTS

Once, the table has been set, i.e. when levelling, centring and orientation has been done, the points to be located are sighted through the sight rule. The sight rule is kept pivoted about the plotted location of the instrument station and is turned so that the line of Sight passes and bisects the signal at the point to be plotted.

SIGHTING THE POINTS

A ray is then drawn from the instrument Station along the edge of the sight rule. Similarly, the rays to other points to be sighted are drawn. The points are finally plotted on the corresponding rays either by intersection or by radiation as described in the following.

METHODS (SYSTEM) OF PLANE-TABLING

Methods of Plane-tabling can be divided into four distinct heads:-

1. Radiation
2. Intersection
3. Traversing
4. Resection

Plane Table Survey

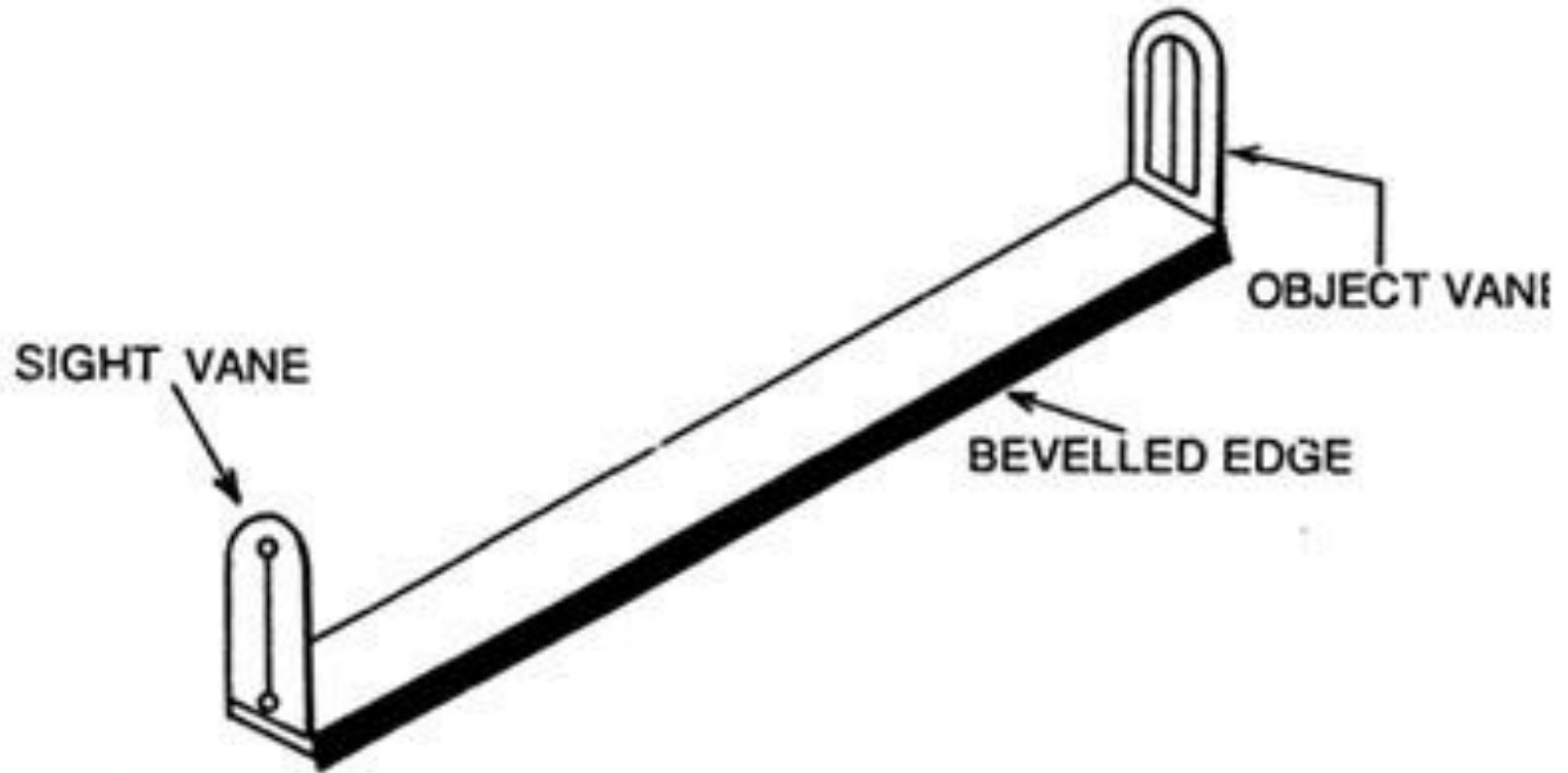
A Plane Table provides a solid and flat surface to make field drawings, charts and maps

A tripod is needed so that an even surface can be achieved on uneven ground



Spirit/bubble levels are used to get horizontal





Alidade with components

Advantages and Disadvantages of Plane Table Surveying

Advantages

- It is simple and cheaper than the theodolite survey.
- It is most suitable for small scale maps.
- No great skill is required to produce a satisfactory map.
- It is useful in magnetic areas where compass may not be used.
- The mistakes in writing field books are eliminated.

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DISADVANTAGES OF PLANE TABLE SURVEYING

- **It is not intended for very accurate work.**
- **It is not suitable in monsoon.**
- **It is essentially a tropical instrument.**
- **Due to heaviness, it is inconvenient to transport.**
- **Since there are so many accessories, there is likelihood of them being lost.**

- For Map of Scale 1:1000

Formula area = $625 \times B / C$

Where B is the planimetre reading for a square having sides 25 m and C is the reading for the plot where area is required to be calculated

- For scale 1:1000

1 metre on the map = 1000 metres on the ground

100 Cm on the map = 1000 metres on the ground

1 cm on the map = $1000/100$ metres on the ground

That is 1 cm = 10 metre on the map

For 2.5 cm = 10×2.5 m

= 25 metre

For a square having 2.5 cm side means each side is 25 m

Therefore the area = 25×25 m = 625 sq. metres