RAMA UNIVERSITY

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FACULTY OF RNGINEERING AND TECHNOLOGY (DEPARTMENT OF CIVIL ENGINEERING)

PLANE TABLE SURVEYING (INTRODUCTION)

- A plane table surveying is a graphical method of surveying. In this method of surveying, field observation and plotting are done simultaneously helping the surveyor to compare the plotted details with actual features of the ground.
- The plane tabling is generally adapted for surveys in which high precision is not required. It is mainly employed for small-scale or medium size mapping.
- Geometrical conditions of site are manuscript in the map sheet using plane table and alidade after that topographic details are arranged on the map.
- Surveying industrial areas where compass survey fails to perform.
- Used to fill in details between stations fixed by triangulation method or theodolite traversing method.
- It is simple and cheaper than theodolite survey. It is most suitable for small scale maps. •
- The plan is drawn by the surveyor in the field, while the area to be surveyed is before his eyes. Therefore, there is no possibility of omitting the necessary measurements.

PLANE TABLE SURVEYING (INTRODUCTION)

In this method of surveying a table top, similar to drawing board fitted on to a tripod is the main instrument.

A drawing sheet is fixed on the table top, the observation are made to the objects, distance are scaled down and the objects are plotted in the field itse

Since the plotting is made in the field itself, there is no chance of omitting any necessity measurement in surveying .

However the accuracy achieved in this type of surveying is less.

Hence this type of surveying is used for filling up details between the survey stations previously fixed by others method.

Purpose of plane table surveying

In case of plane table survey, the measurements of survey lines of the traverse and their plotting to a suitable scale are done simultaneously on the field. Following are the purposes in which the plane table survey is found to be useful:

I. Compass survey cannot be carried out with success in industrial areas of the town. Plane table survey will be the best alternative in such cases.

II. For preparing plans on a small scale, plane table survey proves to be speedy, easy and accurate.

III. The city or town has expanded within two or three decades and it is required to plot the developed area on the previously plotted plan of the existing area.

IV. This type of surveying is used for filling up details between the survey stations previously fixed by others method.

V. Field notes of the measurements are not required, and thus the errors in booking are eliminated.

VI. The correctness of plotted work can be checked by check observations in the field.

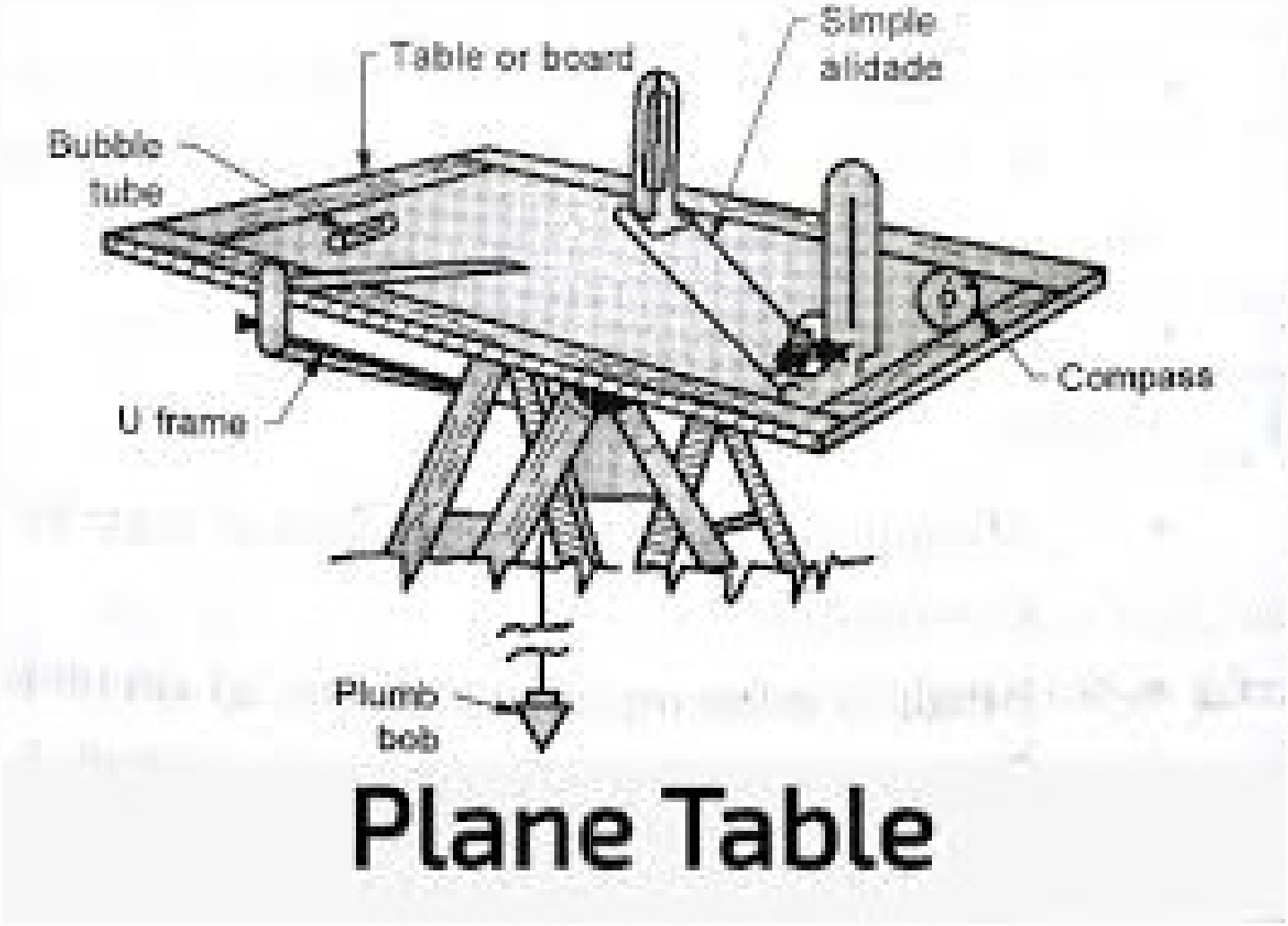
VII. The reduced levels of points other than the station points of known elevations may be found out with the help of a tangent clinometer.

PURPOSE OF PLANE TABLE SURVEYING

PRINCIPLE OF PLANE TABLE SURVEY

- Plane table surveying is based on the principle that lines drawn during plotting always lie parallel to the corresponding lines actually present on the ground.
- The law of plane tabling is parallelism, meaning the rays drawn from stations to items on the paper are parallel to the lines in the stations to the objects on the ground.
- The relative positions of these objects on the ground are represented with their own plotted positions about the paper and lie on the respective rays.
- The table is always placed at each of the successive stations parallel into the position it occupied in the starting station. Plane tabling is a graphical way of surveying.
- The fieldwork and plotting are done simultaneously, and this survey doesn't involve using a field book(measurement book).
- Plane table survey is mainly acceptable for filling insider details when traversing is done with the theodolite.
- Sometimes traversing with a plane table might also be done. However, this survey is recommended for the work where great accuracy isn't required.
- As the fixing and fitting arrangement of this instrument is not perfect, most accurate work cannot be expected.
- For example, let us consider four ground stations A, B, C and D which on joining provides a rectangle ABCD. This has been plotted on a sheet of paper at a scale by plane table surveying. Here, the sides AB, BC, CD and DA are plotted in such a way that they are parallel to the sides actually available on the ground.

PRINCIPLE OF PLANE TABLE SURVEY



EQUIPMENT USED IN PLANE TABLE SURVEYING

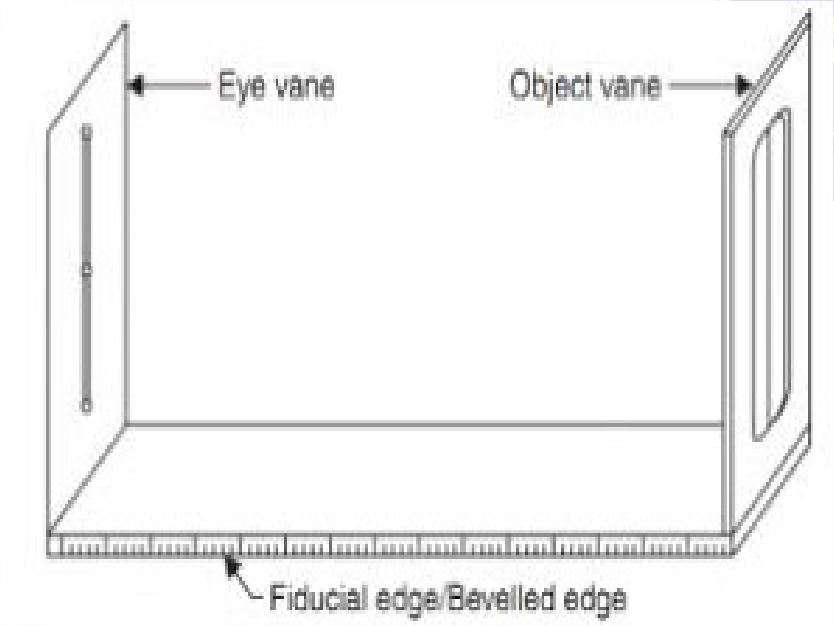
Drawing Board

- The board may be mounted on a tripod with a leveling head or a ballad-socket arrangement in such a fashion that it can be leveled and revolved about a vertical axis and may be clamped in any position.

Alidade

- The alidade is a ruler with a sight line attached and is used on the plane table for bisecting the object, drawing rays, direction lines, etc.

- One of the sight vanes is provided with a narrow rectangular slit. While other is provided with a central vertical hair or wire.



EQUIPMENT USED IN PLANE TABLE SURVEYING

ALIDADE

- Depending on the type of line of sight there are two types of alidade:

a) Plain alidade
b) Telescope alidade

PLAIN ALIDADE

- A sight vane is provided at each end of the ruler. The vane with the narrow slit serves as eye vane and the other wide with wide slit and having a thin wire at its centre serves as object vane.

- The two vanes are provided with hinges at the ends of ruler so that when not in use they can be folded on the ruler.

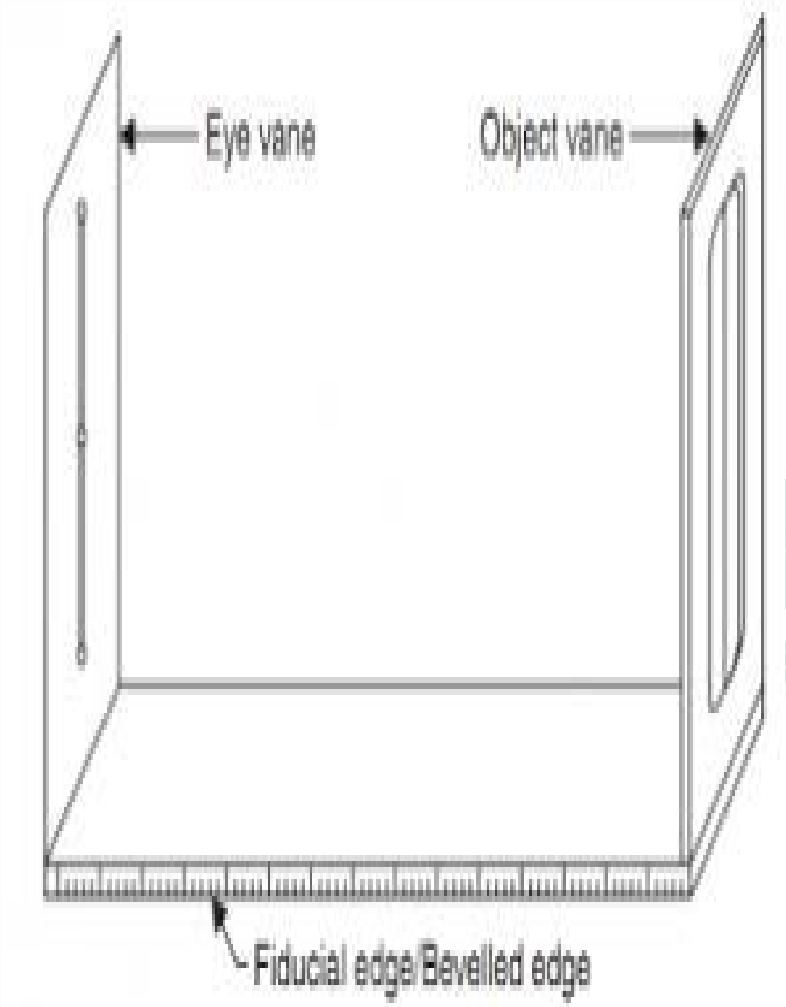
- Plane alidade is not suitable for the surveying in hilly areas as the inclination of the line of sight in this case is limited.

TELESCOPE ALIDADE

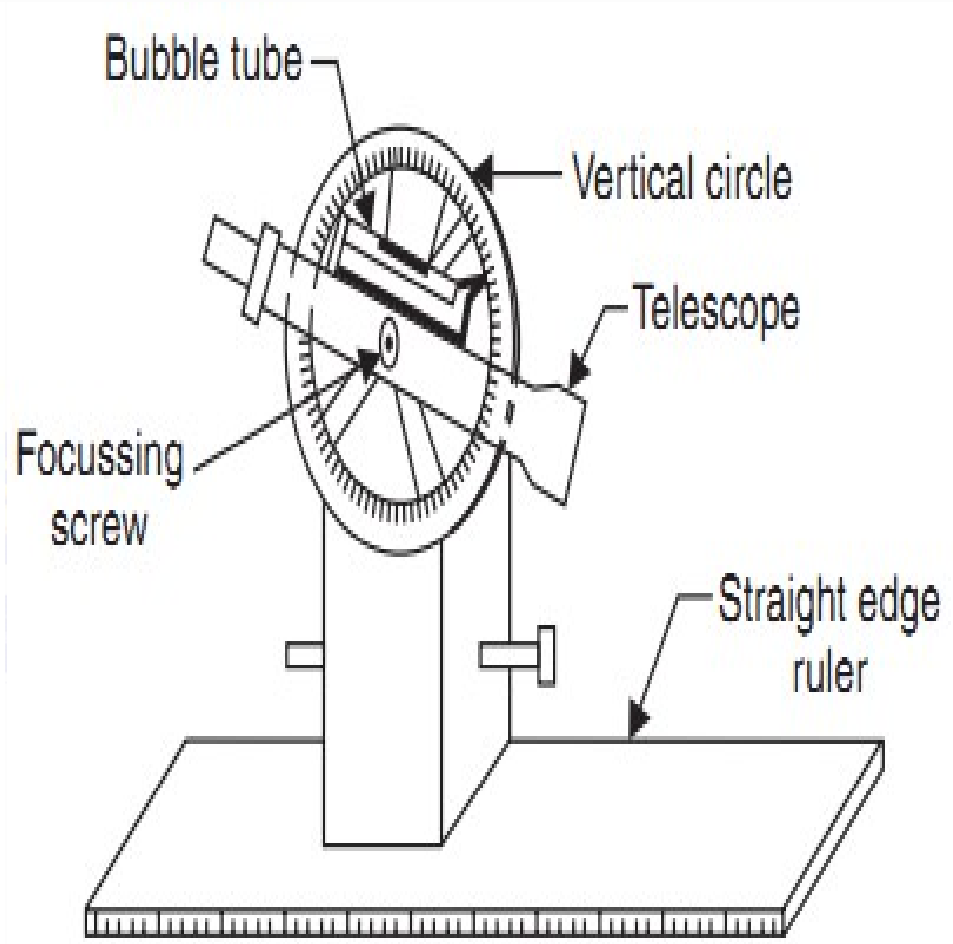
- It consist of telescope mounted on a column fixed to the ruler. The line of sight through the telescope is kept parallel to the beveled edge of the ruler .

- The telescope is provided with the level tube and vertical graduation arc. If horizontal sight is required bubble in the level tube is kept at the centre. If inclined sight are required vertical graduation helps in noting the inclination of the line site.
- By providing telescope the range and the accuracy of line of sight is increased

EQUIPMENT USED IN PLANE TABLE SURVEYING



Plain alidade



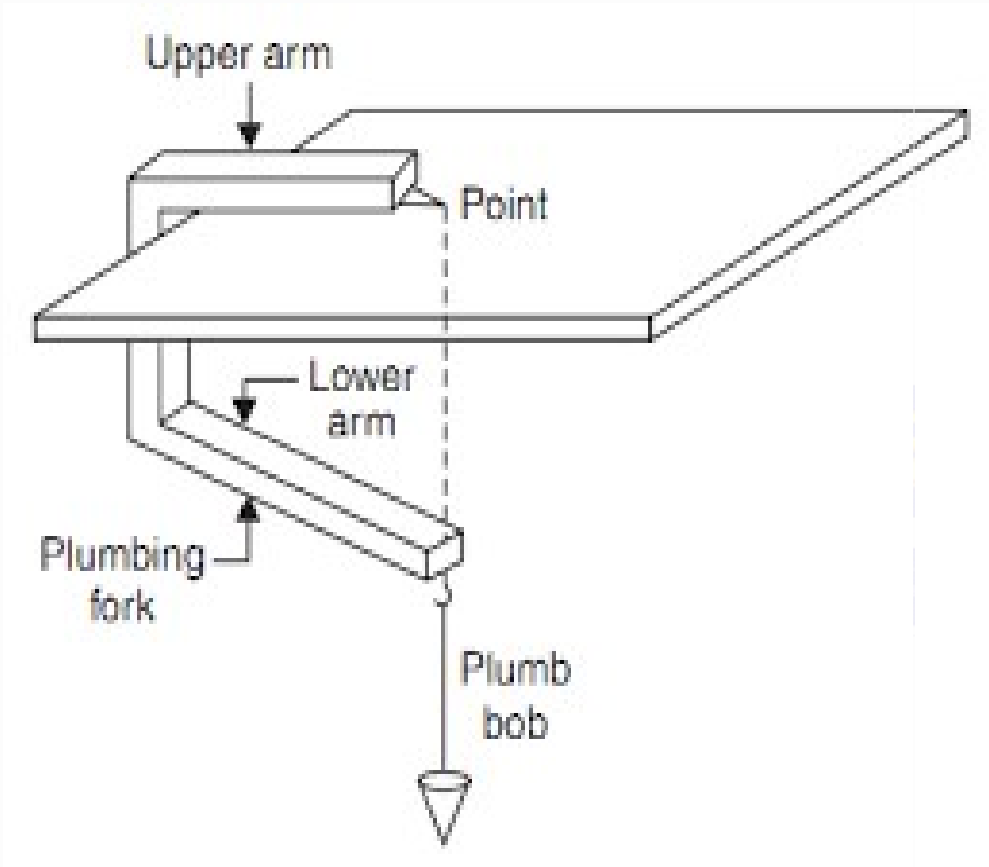
Telescope Alidade

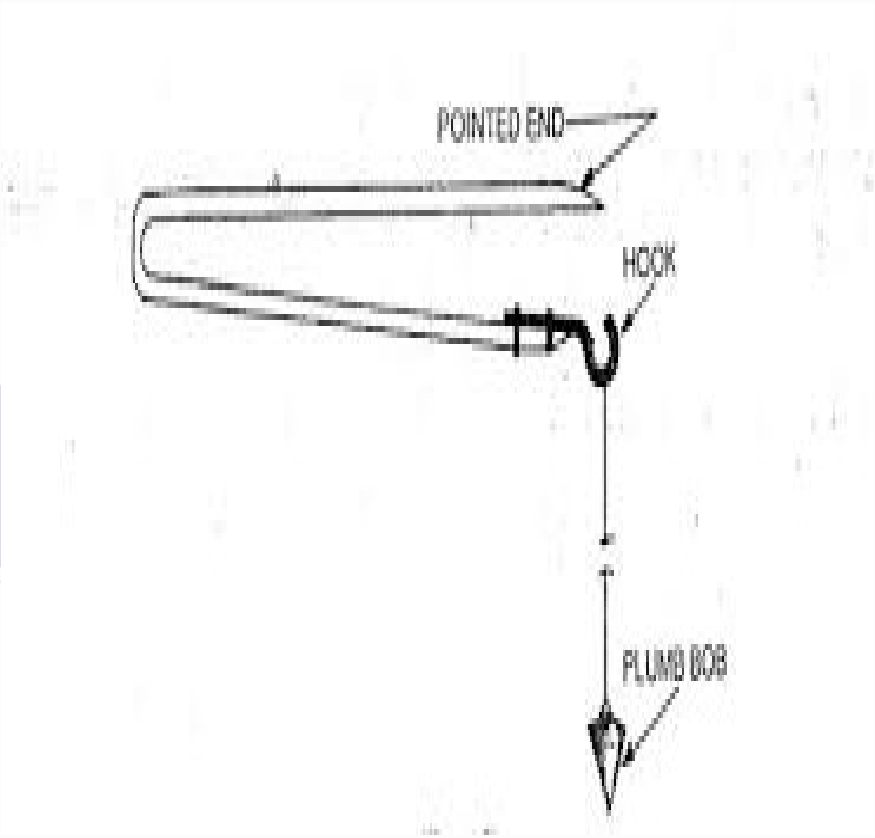
EQUIPMENT USED IN PLANE TABLE SURVEYING

PLUMBING FORK WITH PLUMB BOB

- Plumbing fork is a U-shaped metal frame with an upper horizontal arm and a lower inclined arm.
- The upper arm is provided with a pointer, whereas the lower arm is provided with a hook.
- When the plumbing fork is kept on a plane table along with a plumb bob is suspended by the hook, then the plumb line moves through the end of the pointer in the upper arm.
- At the start of the plane table survey, plumb bob helps in moving a ground station to the drawing sheet,& later on, it assists in transferring station positions on drawing sheets into the ground.
- The plumbing bob helps in transferring the ground point to the drawing and vice versa.

EQUIPMENT USED IN PLANE TABLE SURVEYING





PLUMBING FORK WITH PLUMB BOB

THANK YOU