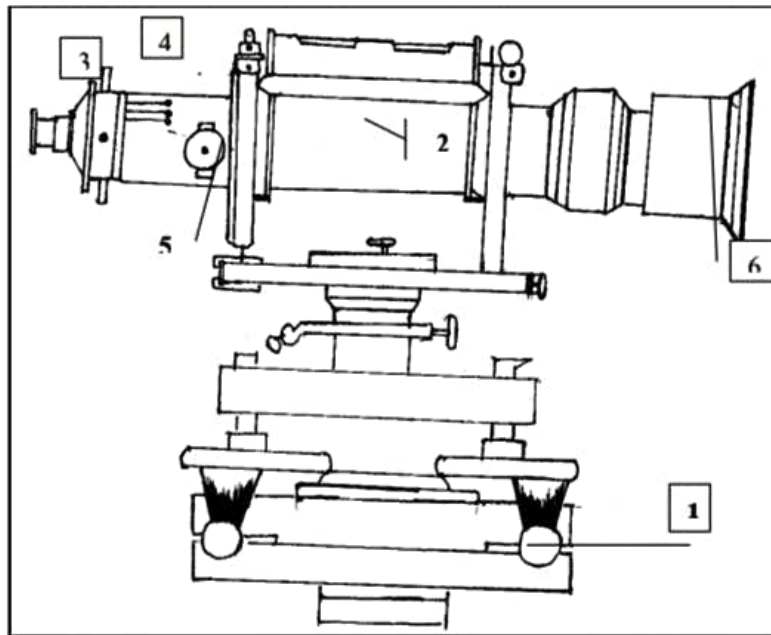


OBJECTIVE: Study of components of dumpy level and leveling staff.

INSTRUMENTS: A level and leveling staff.

FIGURE:



- | | |
|------------------|-------------------|
| 1. Leveling head | 4. Diaphragm |
| 2. Telescope | 5. Focusing screw |
| 3. Eye-piece | 6. Ray-shade |

The Major Components Of A Dumpy Level

TELESCOPE:

It contains of two metal tubes, one of which slides within the other one-tube carries the object glass and the second one carries eyepiece and diaphragm.

FOCUSSING SCREW:

The telescope is focused by turning the focusing screw either forward or backward.

BUBBLE TUBES:

The telescope is attached with two bubble tubes. One is longitudinal and the other is cross bubble tube. These two are placed at right angles to each other.

DIAPHRAGM:

It carries cross hairs.

TRIBRACH & TRIVET:

The telescope with vertical spindle is supported by two parallel triangular plates. The upper plate is called tribrach and the lower plate is called trivet

FOOT SCREWS:

By turning the foot screws, the tribrach can be raised or lowered to bring the bubble to the center of its run.

LEVELLING STAFF:

THE LEVELLING STAFF:

It is used for measuring the vertical distance of the points above or below the horizontal line of sight. The different staves in use are

1. Sop with telescope staff
2. Folding staff
3. Solid staff
4. Target staff

SOP WITH TELESCOPE STAFF:

It is usually arranged in three telescopic lengths. The staff is 4m long when fully extended. The top length 12.5m is solid slides into the central box of length 12.5m, which again slides in the bottom box of 1.50m long. The staff is provided with brass spring catches to keep the extended length in position.

The meter numerals are marked on the left side and are pointed in red. The decimeter numerals are marked on the right side and are pointed in black.

The background is painted in white. The smallest division on this staff is 5mm. The graduations are marked erect and are seen inverted when viewed through the telescope.

FOLDING STAFF:

It is made of well-seasoned timber such as deodar, blue pine or aluminum. It is 4m long, 75mm wide, 18mm thick. It has two lengths of 2m each which are connected at the middle by a hinge so that the upper portion can be folded over the lower one. The minimum division on the staff is 5mm.

The lengths of meter in numerals are marked on the left and painted in black. The entire background is painted in white. The graduations are inverted and hence when viewed through the telescope, they appear erect.

SOLID STAFF:

It consists only one length and is usually 3m long. It is also graduated in divisions of 5mm. This is used for precise leveling work.

TARGET STAFF:

It consists of two lengths, one sliding over the other. It is graduated from top downwards. The target is equipped with vernier, which is adjusted by the staff man. The target is to be moved along the rod until its center is bisected by the line of sight. The target is then clamped and reading is taken. Target staves are used when the sights are long, say more than 100m.
