Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Second Year)

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Unit: III

Module Name: Clinometer compass: construction, working and uses

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NOTES:

The Clinometer Compass

The clinometer compass is a composite instrument in which the clinometer part (Clino = inclination and meter = measurement) is used to measure the amount of inclination or the amount of dip in a vertical plane while the compass part is used to measure the direction in a horizontal plane.

Construction

the instrument consists of a metallic, circular flat box having a glass top. inside the box, there is a circular graduated dial showing the outer circle reading from 0- 360° for recording strike and dip directions and the inner circle reading from 0- 90° which is used for measuring the amount of dip or inclination.

at the center of the dial there is a pivot over which a magnetic needle with a distinctly marked north and is balanced to freely rotate in a horizontal plane only, while below the magnetic needle there is a dip indicator in the form of a pendulum frame and it is suspended on the same pivot to rotate freely in the vertical plane only.

a brass bridge is attached to the outside of the box connecting n-s directions in such a way that the bridge can be kept either in the same plane of that of the box or it can be brought in a vertical position perpendicular to the plane of the box. finally there is a screw attached outside the box in order to arrest the movement of the magnetic needle and the dip indicator.

Working

In order to obtain the **strike direction** one has to hold the clinometer compass vertically with the brass bridge indicator shows 0° in the inner scale so that all the points below the brass bridge are at the same level. When this is achieved draw a ray (using chalk/pencil) along the bridge to get the strike direction of the bed.

Strike of an inclined bed is the intersection of the bed on a horizontal plane and while recording the strike direction, the clinometer compass should be held horizontally with the north end of the dial pointing in the direction of strike line or the bridge has to be aligned along the strike line. The reading shown on the outer whole circle scale by the marked end of the magnetic needle gives the strike direction

To measure the direction of True dip, which is perpendicular to the strike direction along the slope, hold the clinometer compass in a horizontal plane exactly perpendicular to the strike direction with the NORTH end of the dial in the direction of the slope and note the reading on the outer circular scale as indicated by the marked end of the magnetic needle.

This will give the true dip direction. Finally while measuring the amount of dip or inclination, the clinometer compass is held in a vertical plane and the long edge of the bridge is placed along the maximum slope direction which coincides with the true dip direction i.e., always at right angle with respect to the strike direction. The amount of dip is shown on the inner circle scale by the central hair line of the pendulum frame of the dip indicator.

Uses

- A clinometer compass is used to find the strike direction, dip direction and amount of dip of inclined beds.
- To find strike direction of linear bodies like dykes, faults, joints.
- To locate oneself in the field or any other feature in the vicinity using a map.