

VIVEKANANDA COLLEGE THAKURPUKUR KOLKATA-700063

NAAC ACCREDITED 'A' GRADE



Topic: Basic Concept of Surveying and Survey Equipment: Prismatic Compass

Course Title: Thematic Mapping and Surveying

Paper: 4

Unit: Number 8

Semester: 2nd

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Name of the Department: Geography

COMPASS SURVEY

OBJECT: Study of Prismatic Compass & to determine fore and back bearing of survey line AB, BC, CA

Included Angles.

INSTRUMENTS:

Tripod, Prismatic Compass, Ranging rods, Measuring Tapes, Wooden Pegs, Hammer.

THEORY:

Fore Bearing: The bearing of a line measured in the direction of progress of survey is called fore bearing.

Back Bearing: The bearing of a line measured in the opposite direction of progress of survey is called fore bearing.

PROCEDURE:

TEMPORARY ADJUSTMENTS OF A PRISMATIC COMPASS

The Prismatic Compass is set up at a point say station A.

The following temporary adjustments are needed to be carried out at each set Up of Instrument

Centering:

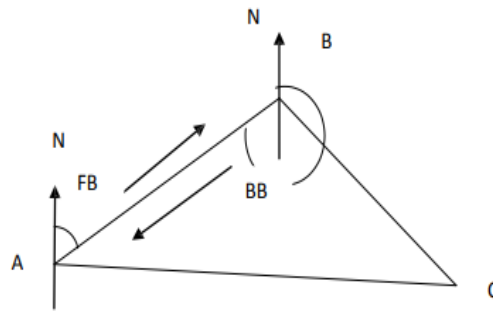
Centering is the process of keeping the instrument exactly over the station. It is carried out by dropping a piece of stone so that it falls on the top of the pegs fixed at station point.

Leveling: Prismatic compass is leveled by means of ball and socket arrangement so that the graduated ring may swing freely.

Focusing the prism: The reflecting prism is adjusted to the eye sight of the observer by rising or lowering then stud until the graduations are seen sharp and clear.

CALCULATION OF FORE AND BACK BEARING

- Suppose the bearing of line AB, BC, CA of a triangle is to be observed. Set up the instrument at station A and carry out all the temporary adjustments. Fix the ranging rod at B.
- Turn the prismatic compass until the ranging rod at station B is bisected by the horse hair when seen through the vertical slit above the prism.
- When the needle comes to rest bisect ranging rod at B exactly and note the reading. The reading observed is the Fore bearing of line AB i.e. Angle measured with respect to north.
- Now shift the prismatic compass at station B perform all temporary adjustments and from station B bisect station A towards backward, the reading observed in prismatic compass is the Back Bearing of line AB.
- Now from the same setup of the instrument Bisect station C and note down the reading of prismatic compass as fore bearing of line BC. Transfer the instrument to station C to obtain back bearing of line BC. Similarly observe Fore Bearing and back bearing of line CA.
- Check the Difference of Fore bearing and back bearing of each line it should be equal to 180 degree



OBSERVATION TABLE

STATION	LINE	LENGTH	F.B	B.B	DIFFERENCE	ANGLE	CORRECTION	CORRECTED ANGLE

TO FIND INCLUDED ANGLES

Included Angles of a triangle are calculated from observed FB and BB of line AB,BC,CA

Included angle is determined by following formula

$$\angle = \text{Back Bearing of Previous Line} - \text{Fore Bearing of next line}$$

i.e. for triangle ABC

$$\angle A = \text{BB of CA} - \text{FB of AB}$$

$$\angle B = \text{BB of AB} - \text{FB of BC}$$

$$\angle C = \text{BB of BC} - \text{FB of CA}$$

Check: Sum of all included angles Should be Equal to $(2n-4) \times 90^\circ$

CONCLUSION:

ASSIGNMENT: Q1).What is local attraction? How it is detected?