

Distance

In surveying, the distance between two points is understood to mean horizontal distance.

Methods of determining distance depending upon:

1. The precision required.
2. The cost.

Taping or chaining: The common method of determining distance is by direct measurement with tape.

Direct measurement: the most precise and most common method of determining distance on survey is made with tape.

Stadia method: indirect means of determining distance.

Taping

The operation of measuring horizontal or inclined distances with a tape.

Equipment:

The tapes commonly used by the surveyor are: steel tape, metallic tape, Chain, invar tape.

- Steel tape usually employed 30m, 50m, 100m long and is graduated in m, cm, and mm.
- The metallic tape is a ribbon waterproofed fabric into which is woven small brass wires to prevent its stretching.
- Invar tape for very precise measurement. Invar is a composition of steel and nickel which is affected but little by temperature changes.

- Arrows, pins: employed to mark the ends of the tape during the process of chaining between two points.
- Range poles: are used as temporary signals to indicate the location of points or the direction of lines.
- Plumb bob: used so that the point can be seen from almost directly above.

Taping on smooth level ground:

The procedure depends upon the required precision and the purpose of the survey.

	Method	Usual Precision	Use
1	Pacing	1/100 to 1/200	Reconnaissance small-scale
2	Stadia	1/300 to 1/1000	Location of details
3	Ordinary taping	1/1000 to 1/5000	Traverse
4	Precision taping	1/10000 to 1/30 000	Traverse of city
5	Base-line taping	1/100000 to 1/1000000	triangulation
6	Electronic measurement	1/300000	

The following represent the usual practice when the measurements are of ordinary precision (say 1/5000):

- The tape is supported throughout its length, and the only requirement is that the distance between two fixed points.
- One range pole is placed behind the distant point to indicate its location.
- Fix a pin station with zero of the tape at the point of beginning.

- By signals held the range pole and marking the distant point. (Making sure that tape is straight) and so the process is repeated.

Distance = no. of pins \times length of tape + remain dis.