Principles of Surveying

Surveying is the process of finding the relative position of various points on the surface of the earth by measuring distance among them and setting up a map to any reasonable scale. Various methods of surveying are established on very simple fundamental principles. The surveying basic principles can be stated under two aspects.

Principles of Surveying

1. To locate the position of a point by measurement from two reference points
2. To work from whole to part

Importance of Surveying

The knowledge of surveying is advantageous in many phases of engineering. Surveying is of vital importance in any engineering project. Some of the basic importance of Surveying is discussed below.

- The first necessity in surveying is to prepare a plan and a section of an area to be covered by the project. From these prepared maps and sections the best possible alignment, amount of earthwork and other necessary details depending upon the nature of the project can be calculated.
- The planning and design of all Civil Engineering projects such as railways, highways, tunneling, irrigation, dams, reservoirs, waterworks, sewerage works, airfields, ports, massive buildings, etc. are based upon surveying measurements.
- During execution of the project of any magnitude is constructed along the lines and points established by surveying.
- The measurement of land and the fixation of its boundaries cannot be done without surveying.
- The economic feasibility of the engineering feasibility of a project cannot be properly ascertained without undertaking a survey work.
- The execution of hydrographic and oceanographic charting and mapping requires.
- Surveying is used to prepare a topographic map of a land surface of the earth.

Uses of Surveying

Surveying is the scientific technique to determine the position of points and angles & distances between them. The process of surveying is used to fulfill various purposes. It is necessary for making map, planning a project etc. To accomplish all civil engineering works or projects successfully, surveying is used.

Uses of Surveying

Some of the numerous functions of surveying are given below.

- Topographical maps showing hills, rivers, towns, villages, forests etc. are prepared by surveying.
- For planning and estimating new engineering projects like water supply and irrigation schemes, mines, railroads, bridges, transmission lines, buildings etc. surveying is required.
- Cadastral Map showing the boundaries a field houses and other properties are prepared by surveying.
- Engineering map showing the position of engineering works like roads, railways, buildings, dams, canals etc. are prepared through surveying.
- To set out a work and transfer details from map to ground knowledge of surveying is used.
- For planning navigation routes and harbors, marine and hydro-graphic surveying are used.
- To help military strategic planning, military maps are prepared by surveying.
- For exploring mineral wealth, mine survey is necessary
- To determining different strata in the earth crust, geological surveys are required
- Archaeological surveys are used to unearth relics of antiquity.

Fig: Topographical map of United States. Source:media1.britannica.com

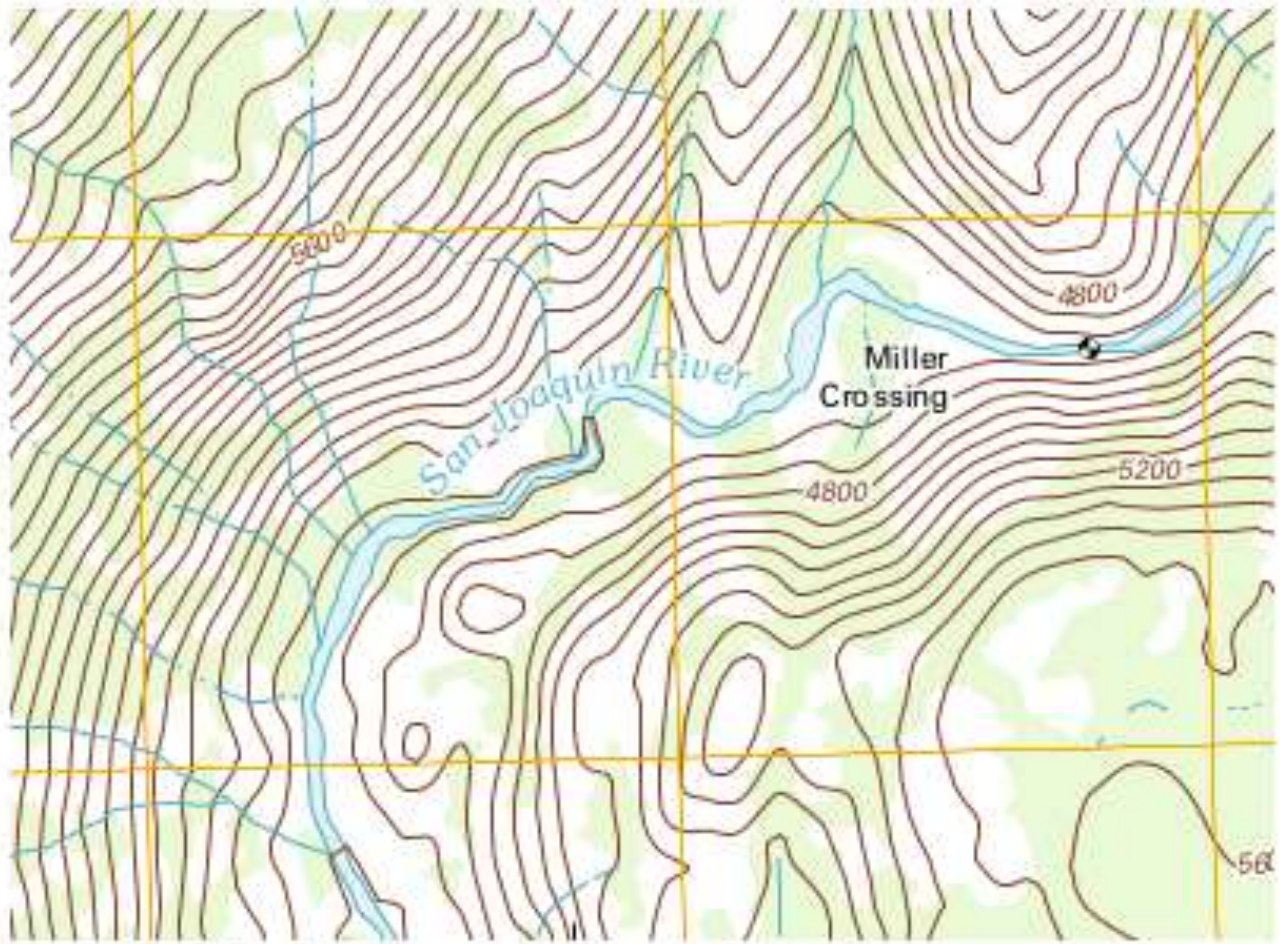

Fig: Contour map.Source:stack.imgur.com