

# SHORE LINE SURVEY AND SOUNDING

## shore line survey?

The shore line surveys consist of:

- (i) Determination or delineation of shore lines,
- (ii) Location of shore details and prominent features to which soundings may be connected,
- (iii) Determination of low and high water lines for average spring tides,

The determination or delineation of shore lines is done by traversing along the shore and taking offsets to the water edge by tape, or stadia or plane table. If the river is narrow, both the banks may be located by running a single line of traverse on one bank. For wide rivers, however, transverse may be run along both the banks. The traverse should be

Connected at convenient intervals to check the work. Thus, the Fig. two traverses XY and X – Y-- along the two opposite shores may be checked by taking observations from A and B to the points C and D. When the instrument is at B, angles ABC and ABD can be measured. From the measured length of AB and the four angles, the length CD can be calculated. If this agrees with the measured length of CD, the work is checked. Sometimes, a triangulation net is run along a wide river. In sea shore survey, buoys anchored off the shore and light houses are used as reference points and are located by triangulation.

In the case of tidal water, it is necessary to locate the high and low water lines. The position of high water line may be determined roughly from shore deposits and marks on rocks. To determine the high water line accurately, the elevation of mean high water of ordinary spring tide is determined and the points are located on the shore at that elevation as in direct method of contouring. The low water line can also be determined similarly. However, since the limited time is available for the survey of low water line, it is usually located by interpolation from soundings.

## **Sounding and the methods employed in sounding.**

The measurement of depth below the water surface is called sounding. This corresponds to the ordinary spirit leveling in land surveying where depths are measured below a horizontal line established by a level. Here, the horizontal line or the datum is the surface of water, the level of which continuously goes on changing with time. The object of making soundings is thus to determine the configuration of the sub aqueous source. As stated earlier, soundings are required for:

- (i) Making nautical charts for navigation;
- (ii) Measurement of areas subject to scour or silting and to ascertain the quantities of dredged material;
- (iii) Making sub-aqueous investigations to secure information needed for the construction, development and improvement of port facilities.

For most of the engineering works, soundings are taken from a small boat. The equipment needed for soundings are:

- (i) Sounding boat
- (ii) Sounding rods or poles
- (iii) Lead lines
- (iv) Sounding machine
- (v) Fathometer.

### **Sounding boat**

A row-boat for sounding should be sufficiently roomy and stable. For quiet water, a flat bottom boat is more suitable, but for rough water round-bottomed boat is more suitable. For regular soundings, a row boat may be provided with a well through which sounds are taken. A sounding platform should be built for use in smaller boat. It should be extended far enough over the side to prevent the line from striking the boat. If the currents are strong, a motor or stream launch may be used with advantage.

### **Sounding rods or poles**

A sounding rod is a pole of a sound straight-grained well seasoned tough timber usually 5 to 8 cm in diameter and 5 to 8 metres long. They are suitable for shallow and quiet waters. An arrow or lead shoe of sufficient weights fitted at the end. This helps in holding them upright in water. The lead or weight should be of sufficient area so that it may not sink in mud or sand. Between soundings it is turned end for end without removing it from the water. A pole of 6 m can be used to depths upto 4 meters.