

bankments another stake at 90 feet or more may be put in. These will serve to define the line of Cross Sections and be useful for future reference, should the centre stakes be removed. The numbers of the centre stakes should be marked on the west side of the 60 feet stakes, and the distance from the centre line should be marked on all the stakes on the sides facing the centre line.

Cross
Section
Stakes.

17. The levels on these Cross Sections should be taken in the same manner as those on the longitudinal line, always commencing on a Bench Mark, and using the same Datum, the levels should be continued through a series of Cross Sections (taking care to enter the number of station and distance from centre line, north or south, opposite each point taken), till another Bench Mark is reached, on which a level must be taken to test the accuracy of the whole series, and so on to the next Bench Mark.

Levels.

18. In all Cross Sections a level should be taken on each side of centre line, immediately under or over the edge of road bed, to facilitate the calculations of areas; that is to say, if the base of cuttings be 30 feet and embankments 18 feet, levels should be taken at 15 feet from the centre line, in the one case, and nine feet in the other. Levels should also be taken at every point where there is a sudden change in the surface of the ground.

19. When these field operations are completed, the Datum of each Cross Section will be reduced to *formation level* on the Centre line at the point where each Cross Section is taken; and the relative heights of all points on the Cross Section, above or below this level, will be computed, and entered, together with the distances from the Centre Line, in a Book (form No. 3) prepared for that purpose, and of which an example is here given. In some cases it may be more convenient to take the levels for Cross Sections from the Plugs driven on the centre line; but in every instance they must be reduced to *formation level as a Datum*, and so recorded in Book No. 3. All distances must be made on horizontal lines, and measurements and calculations of every kind must be made with as much accuracy as possible.

Datum of
Cross Sec's.

Section
Book.