

<b>OFFICE OF STATE AID ROAD CONSTRUCTION</b>			S.O.P. NO. SA II-1-65
<b>STANDARD OPERATING PROCEDURES</b>			Page 1 of 2
Subject: S.O.P. SETTING SLOPE STAKES			Distribution A, B, C, D, E
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PURPOSE: To Standardize Procedures for Setting Slope Stakes.

1. OFFICE PREPARATION OF NOTES:

- 1.1. Prior to slope staking, the County Engineer should prepare slope stake books. The slope stake book will show the subgrade elevations of the centerline and each shoulder, considering the crown slope and super elevation, (if applicable), and the "constant" distance(s) to the subgrade shoulder line for fill sections and the "constant" distance(s) to a point on the back slope at the same elevation as the subgrade shoulder for cut sections. When books are prepared and grade computations performed with care much time will be saved during slope staking.
- 1.2. If the plans are provided with plotted cross sections, the tentative location of the slope stake may be determined. The cross sections will show the approximate cut or fill and the distance from centerline to the slope stake. If desired, it is helpful to make a very light entry in the slope stake book of the cut or fill and distance from centerline as shown on the section. These figures will probably prove not to be correct, but they will provide a fast reference for the first trial shot, and oftentimes the values will fit field conditions. These trial values provide a check of field work because a wide variation in the trial shot and actual shot is usually caused by an error in computations or an incorrect rod reading.

2. SLOPE STAKING FOR EMBANKMENTS:

- 2.1. Slope stakes for embankment sections are to be set at the toe of the slope and marked to show the vertical distance between the ground at the point where the stake is driven and the subgrade elevation of the shoulder line. In setting slope stakes for embankment sections the following method shall be used:
  - 2.1.1. The slope stake shall be set by taking trial readings at right angles to the centerline until a point is found; the distance from the centerline to which is equal to the slope ratio times the height of fill, plus the distance from the centerline to the subgrade shoulder line.
  - 2.1.2. The fill which is marked on the slope stake is to be the fill from the elevation of the ground at the point where the stake is set to the subgrade shoulder elevation.

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3. SLOPE STAKES FOR CUTS:

- 3.1. Slope stakes for cuts are the stakes set at the point of intersection of the back slope with the natural ground. They are to be marked to show the vertical distance (cut) from the elevation of the ground at the point where the stake is driven to the elevation of the point on the back slope opposite the subgrade shoulder.
- 3.2. In determining the point to set the slope stake it will first be necessary to determine the horizontal distance from the centerline to the point on the back slope which has the same elevation as the subgrade shoulder. This distance, plus the distance obtained by multiplying the cut times the backslope ratio, must be equal to the measured distance from the point to centerline. The slope stake is to be set at this point, and the cut from the elevation at this point to the elevation of the point on the backslope opposite the subgrade shoulder elevation is to be marked on the stake.

4. MARKING AND DRIVING SLOPE STAKES:

The cut or fill should be marked on the front side (side facing the centerline) and near the top of the slope stake. The distance from the centerline to slope stake should be marked on the back of the stake. The slope ratio should be marked under the cut or fill.

Both vertical (cuts or fills) and horizontal distances should be shown to the nearest 0.1 foot.