Slope Stake Survey Verification for Inspectors

Before beginning earthwork construction, the extremities of the cuts and fills must be identified for equipment operators. Slope stakes establish the intersection of either the top of cut or the toe of fill with the natural ground. They also reference the centerline location and quantify the depth of material to be excavated or placed. Slope stakes should remain in place until the slopes are completed, inspected and permanently seeded.

Survey Stake on Kobernik 2 Slide Project on US101

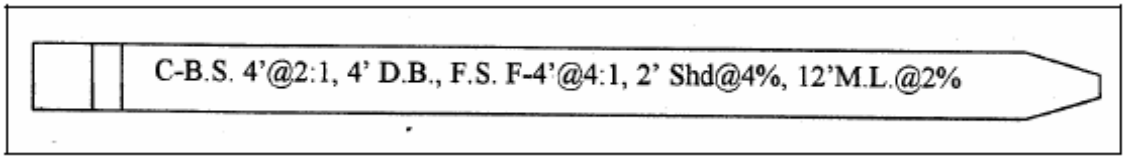
The Inspector's role in reading slope stakes is to verify the sections match the plans and are in the correct location. Basic tools can be used to ensure the location makes sense. If in doubt, step back and reassess. Like carpentry – measure twice cut once!

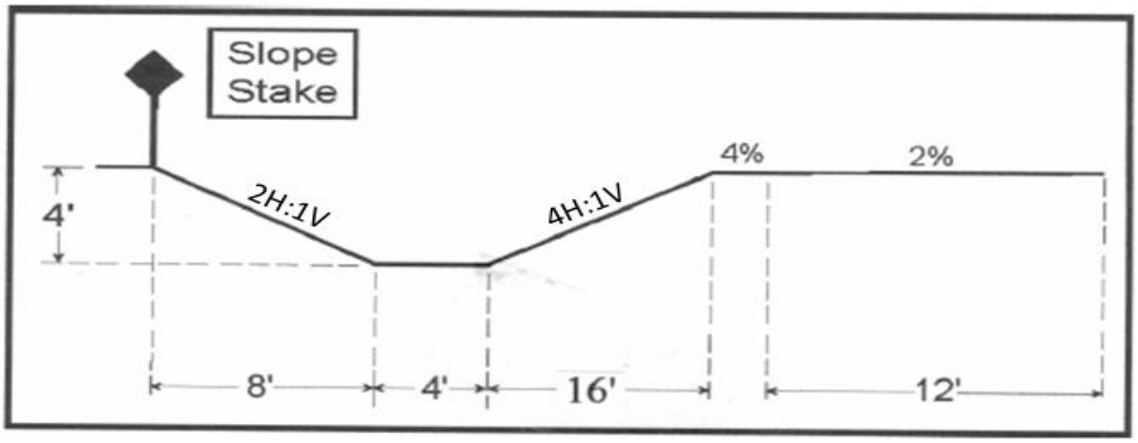
If more information is needed, ODOT provides a *Survey Verification* class for Inspectors.

Reading Slope Stakes

Every surveyor has their own system for writing slope stakes. To be sure the information on the stake is clear, check with the surveyor for a description. Examples of slope stakes and how to read them are provided as a guide on the next two pages.

Example 1 *(Graphics and description from Indiana DOT)*:

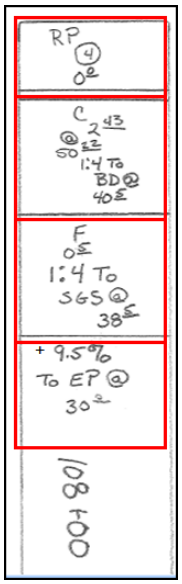


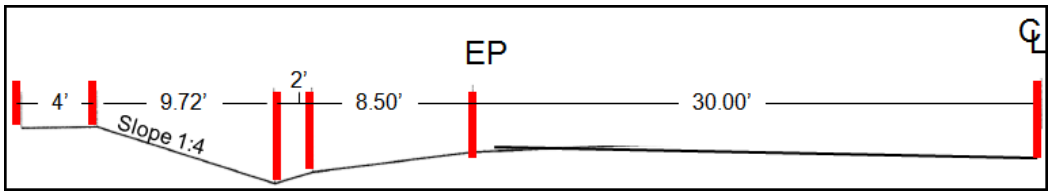


Starting at the slope stake, the following steps are taken:

1) Cut the back slope 4' deep at a 2:1 slope.
2) Grade a 4' ditch bottom.
3) Go up the foreslope 4' at a 4:1 slope.
4) Go 2' at a 4% slope for the shoulder.
5) Go 12' at a 2% slope to the centerline.

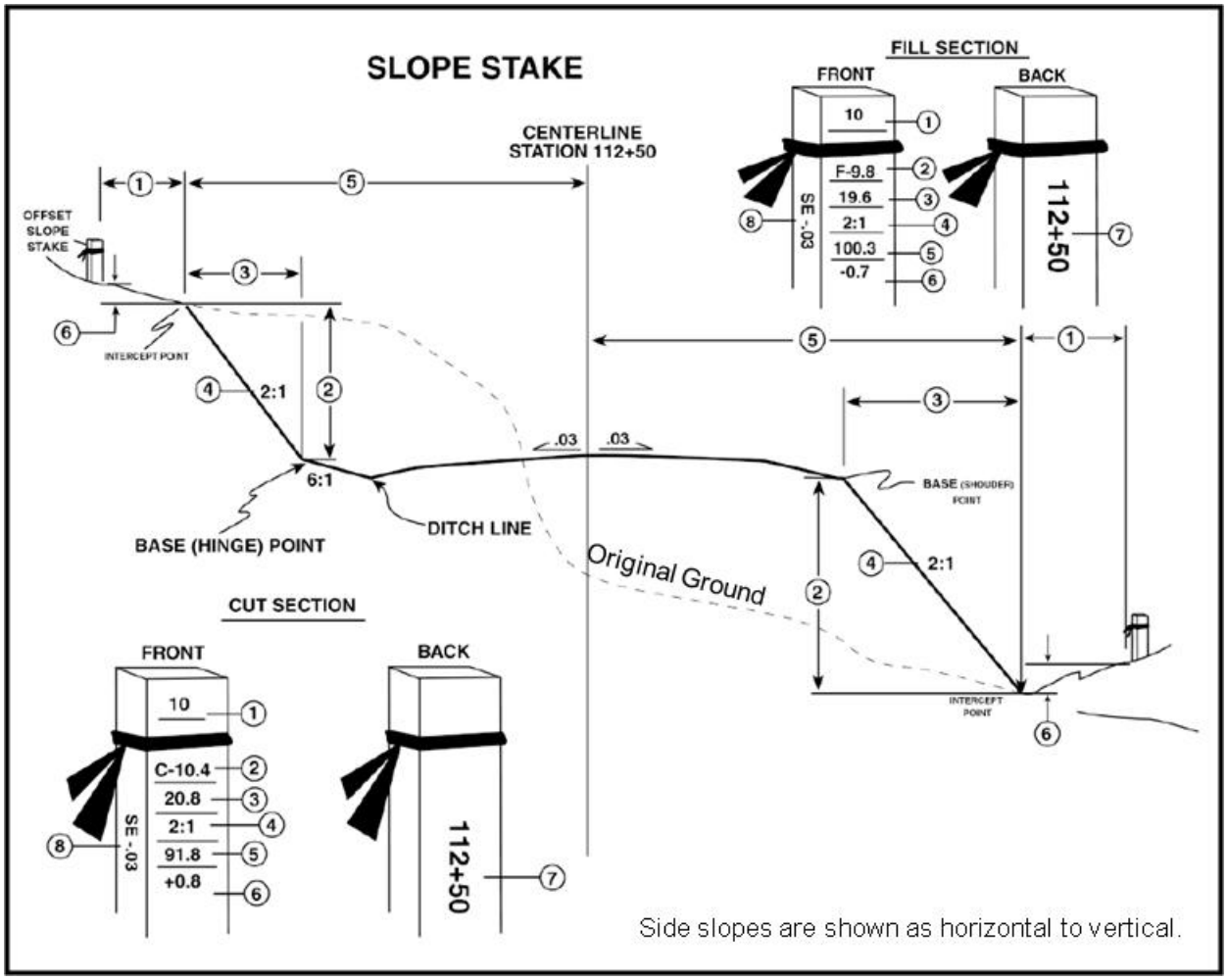
Example 2 *(Excerpted from the General Inspection Training Presentation)*:





1) Reference Point – 4' offset.
2) Begin a Cut of 2.43' at a distance of 50.22' from centerline at 1V:1H to Bottom of Ditch at 40.50' from centerline.
3) Begin a Fill of 0.5' at a 1V:4H to Subgrade Shoulder at 38.50' from centerline.
4) Fill at 9.5% to the Edge of Pavement at 30.0' from centerline.

Example 3 ***(Graphics from North Carolina DOT)***



Cut Section	Fill Section
① From the reference point (RP or offset slope stake) go out 10' to the catch point (intercept point).	① From the reference point (RP or offset slope stake) go out 10' to the catch point (intercept point).
② From the catch point, cut 10.4' vertical,	② From the catch point, fill 9.8' vertically,
③ over a distance of 20.8' horizontal,	③ over a horizontal distance of 19.6',
④ on a 2H:1V slope.	④ on a 2H:1V slope.
⑤ The distance from the catch point to the centerline is 91.8'.	⑤ The distance from the catch point to the centerline is 100.3'.
⑥ The difference in elevation between the RP and the catch point is 0.8'.	⑥ The difference in elevation between the RP and the catch point is -0.7'.