

OJT Training Module Cover Sheet

Title: 602 How to use soil augers, push probes, and back saver probes correctly.

Type: Skill Knowledge

Performance Objective: Trainee will be able to ...

- Properly use soil augers, push probes, and back saver probes as used in their soil survey area to acquire soil samples efficiently and minimize the risk of injury or repetitive stress disorder.

Target Proficiency:

Awareness Understanding Perform w/ Supervision
 Apply Independently Proficiency, can teach others

Trainer Preparation:

- Trainer should be familiar with the assigned reading/review material in the lesson plan that follows.
- Be familiar with various hand tools available and commonly used for acquiring soil for observation and sampling in your survey area.
- Wear clothing, footwear, and hand protection appropriate to the use of manual excavation tools.
- Have basic awareness of proper bending, lifting, and equipment carrying procedures to prevent injury.

Special Requirements:

- Initiate an external learning request with a SF-182 in Aglearn for this activity. Instructions and a template are located on the training webpages for OJT modules.
- Understanding and awareness of potential hazards of underground utilities and services which may be encountered and compromised with minimal effort within 60 inches of the soil surface.
- Familiarity with local procedures to obtain underground utility location services, such as "Call Before You Dig", "Call 811", "CBYD", or similar local services, as appropriate.

Prerequisite Modules:

- 606 How to locate and safely avoid pipelines and other utilities.

Notes:

These basic considerations and procedures should be practiced with all hand excavations or penetrations into the soil in which tools could damage infrastructure or result in personal injuries, such as electrocution or stress injuries.

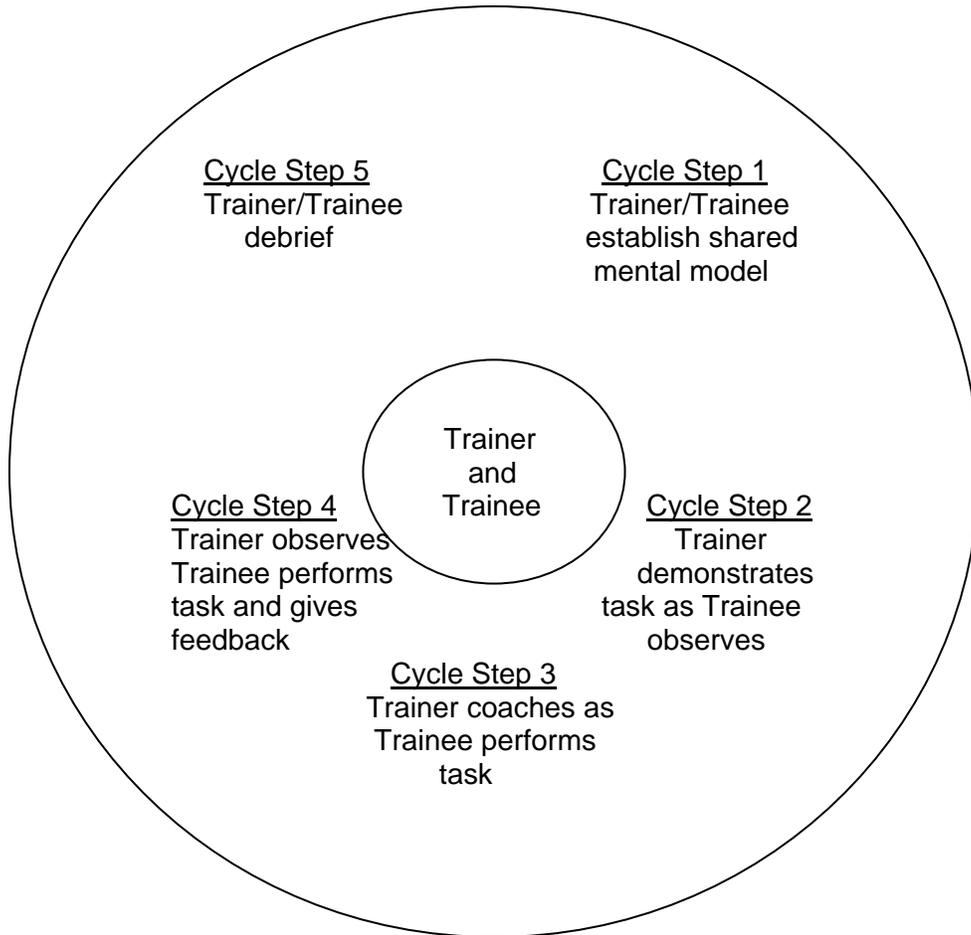
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The Five-Step OJT Cycle for Procedural Training (Skill)



OJT Module Lesson

Title: **602 How to use soil augers, push probes, and back saver probes correctly.**

WHAT	WHY, WHEN, WHERE, HOW, SAFETY, QUALITY
<p>Cycle step 1</p>	<p>Trainer and trainee access via the internet and read/review:</p> <ul style="list-style-type: none"> • Soil Survey Manual, Chapter 4: <ul style="list-style-type: none"> ○ Equipment <ul style="list-style-type: none"> ▪ Tools for Examining the Soil <p>Review typical site conditions in your survey area, noting the potential safety hazards.</p> <p>Point out and discuss the hazards of underground utilities and services which may be encountered and compromised with minimal effort within 200 cm of the soil surface. These may include, but are not limited to, direct burial high voltage lines, domestic or livestock water lines, petroleum gas distribution lines, communication cables, and irrigation system pipes. Discuss when it is appropriate to contact the local utility locating service, such as “Call Before You Dig” and “Call 811.” Proceed only if it can be reasonably assumed that no hazards exist.</p> <p>Review any safety pamphlets available in the soil survey office demonstrating safe lifting procedures.</p>
<p>Cycle step 2</p>	<p>Do the following:</p>
<p>1. Identify type and parts of each soil-examination tool needed to perform required task in your survey area.</p>	<p>Identify the parts of the various probes and augers available to the trainee, discussing purpose and proper care, cleaning, and storage.</p> <p>A push probe, back saver, or soil auger may be needed, depending on the purpose for obtaining the soil sample and availability of the tool. A push probe is for a shallow sampling depth (25 cm or less). It is used where only a small amount of soil for sampling or observation is needed. For deeper sampling, a back saver probe can be used to a depth of approximately 75 cm. Sampling and access to soil involving larger volumes, small gravel, or depths of 0.5 meter to 2 meters require a soil auger.</p>

<p>2. Demonstrate use of the tool appropriate to the task in your survey area.</p> <ul style="list-style-type: none">-Push probe-Back saver probe-Soil auger	<p>Push Probe: Place bit of tool against soil, avoiding or removing surface roots and rock fragments. Grasping both sides of T-bar handle, square shoulders, lock elbows straight, and center weight over the probe. Press the probe into the soil by bending at the knees, allowing body weight to be transferred to the probe. Insert the probe only to the depth equal to the length of the soil core cylinder. Extract the probe by reversing the procedures, keeping the back straight and lifting with the legs. Extract soil core from the cylinder using knife or appropriate tool for the probe. If it is necessary to go to greater depth, the process can be repeated a second or third time up to the length of the probe tool. When extracting the soil from the core for examination, care is needed to avoid cutting yourself on the cylinder slot or cutting tip.</p> <p>Back Saver Probe: Like the soil probe, the back saver probe is designed to use body weight, but it also involves applying foot pressure for the insertion of a soil probe to greater depths or into soil material that is denser than the material that can be extracted with a push probe. In addition, the back saver allows for the lifting force used to extract the probe to remain low and focused on the legs rather than the arms and back. As with the push probe, initial insertion is made using body weight passed through arms with locked elbows. Insert only to the depth equivalent to the length of the core section. The probe is removed with lifting force applied through legs. Soil is removed from the core and examined, again avoiding cuts from the tip or cylinder slot. The second insertion for next depth is similar to the first. The probe is inserted into the first hole, the center rod is released, and the handle of the back saver probe is lifted no more than the length of the cylinder core, allowing the tool length to be extended. The friction catch on the extension rod is re-engaged and body weight is applied to the probe. If more weight is necessary than can be applied through the shoulders, foot force can be carefully applied. However, do not stand, balance, or jump on the probe to achieve insertion. Doing so can result in falling or impact injuries and/or damage to the probe. Once the probe has been inserted to the depth of the probe cylinder, extraction is achieved again, lifting with the legs only. Once you are standing upright, release the friction catch on the rod, allowing the upper part of the probe to slide back down the extension rod. Release the catch</p>
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	<p>and lift with the legs. Repeat the processes as necessary to achieve the maximum depth capacity of the back saver probe.</p> <p>Bucket Auger: The bucket auger is the tool that soil scientists most commonly use to extract soil samples at depths below approximately 25 cm for examination and sampling. It has advantages in that it acquires larger volumes of sampling material, can be used in drier or more dense soils, and works in soils containing moderate amounts of small gravel, roots, and weakly cemented pans. The initial hole for a bucket auger should be made with a spade or sharpshooter, which can cut through surface roots and vegetation and thus provide a pilot hole for the auger. The bits on the bucket, if kept sharp, are designed to provide cutting action with a minimum of downward force. The length of the rod section of the auger should be sized so that the T-bar handle is at the height of the shoulders or lower. Stand at approximately an arm's length away from the initial hole with feet spread to shoulder width. Place the auger into the pilot hole and, grasping the T-bar handle near the ends, twist the auger clockwise three to four half-turns, filling the bucket but avoiding mixing of the sample which can be the result of too many turns. Observe the soil rising within the cylinder of the bucket and stop once the soil reaches the top of the cylinder. Extract the auger by grasping the extension rod and lifting with the legs; keep your back straight. Carefully remove the soil from the auger by tapping the bucket end on the ground or removing it from the top of the cylinder by hand (demonstrate). Bag or place sample on the ground as appropriate. Repeat the process, making sure not to overfill the cylinder and thus making extraction difficult. Continue until desired depth is reached. When extensions are used, care is needed to prevent raising long probe lengths into trees or utility wires. If the auger is 2 inches or more in diameter, consideration should be given to refilling the bore hole because of the need to prevent injury to children or livestock and restore the appearance of the site, or meeting landowner requirements.</p>
<p>Cycle step 3</p>	<p>Have the trainee demonstrate the use of the push probe, back saver probe, and bucket auger as appropriate for your survey area, explaining the steps and reasons for the techniques.</p>
<p>Cycle step 4</p>	<p>Have the trainee repeat the steps without interruption, observing the trainee's work for proper technique and attention to personal safety. Observe</p>

	the work for proper consideration of surroundings, potential hazard of utilities, and awareness of co-workers in the carrying, swinging, and handling of the probes and augers.
Cycle step 5	Answer any questions. Repeat any steps as necessary.

OJT Module Lesson Measurement of Learning

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WHAT	WHY, WHEN, WHERE, HOW, SAFETY, QUALITY
Describe proper use of soil probes and augers and the purposes of each.	During project activities, assign this task to the trainee. Sign off on performance when target proficiency is achieved.

SF-182

Trainee and/or supervisor access Aglearn to verify completion of the module via its SF-182.