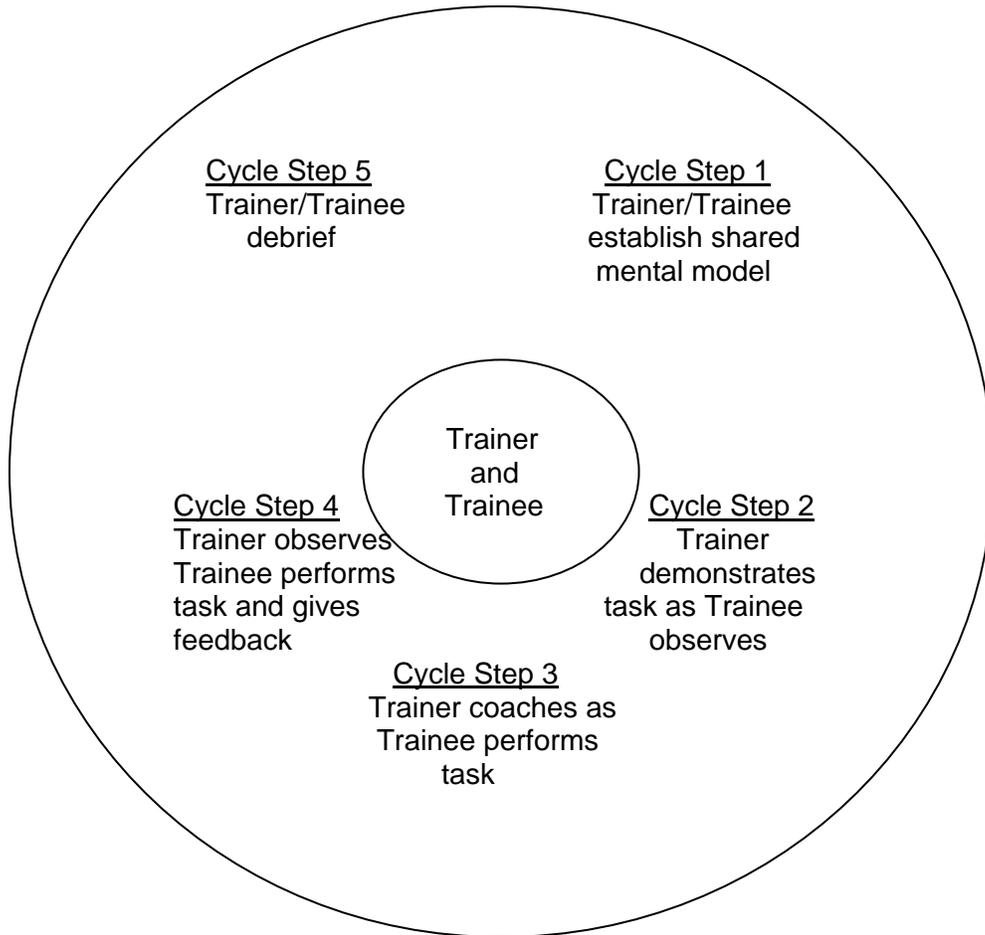


OJT Training Module Cover Sheet

Title: 603 How to use shovels, spades, and pickaxes correctly.
Type: <input checked="" type="checkbox"/> Skill <input type="checkbox"/> Knowledge
Performance Objective: Trainee will be able to ... <ul style="list-style-type: none">• Use shovels, spades, and pickaxes to expose soil for examination, minimizing the risks of encountering buried utilities, sustaining injury, and repetitive stress disorder.
Target Proficiency: <input type="checkbox"/> Awareness <input type="checkbox"/> Understanding <input type="checkbox"/> Perform w/ Supervision <input checked="" type="checkbox"/> Apply Independently <input type="checkbox"/> Proficiency, can teach others
Trainer Preparation: <ul style="list-style-type: none">• 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 by soil scientists for digging examination pits to observe and sample soils.• 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: <ul style="list-style-type: none">• 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 normal hand-dug excavations.• 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: <ul style="list-style-type: none">• 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 potentially damage infrastructure or result in personal injuries, such as electrocution or stress injuries.
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Approved by: Marc Crouch

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



OJT Module Lesson

Title: **603 How to use shovels, spades, and pickaxes 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 local 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-excavation tool and the appropriate use of each.</p>	<p>Identify the parts of the various shovels, spades, and pickaxes available to the trainee, discussing purpose and proper care, cleaning, and storage. Digging tools have a service life that is usually more affected by care and cleaning than by frequency of use. Examine the handles for splintering and splitting, and examine the blades for fatigue cracks and damage to cutting surfaces. Clean tools of soil after use and protect them from rusting and exposure to the elements.</p> <p>Shovels, spades, and pickaxes are frequently used to excavate a hole or pit for the purpose of examining and sampling the soil. Awareness of site conditions and proper ergonomic tool use reduces the hazard of cutting into buried utilities and the risk of injury by electrocution, impact, and repetitive stress disorder. Because of the close proximity of</p>

	<p>the user to the cutting blades of these tools, there is an extreme hazard for the user should gas, water, or electrical utilities be cut during excavations.</p> <p>Shovel vs. Spade vs. Pickax: Though shovels and spades are similar in general appearance, their primary purpose and most efficient use differ. Shovels are significantly curved across the blade, have a handle that is angled primarily for lifting and moving soil from one place to another, and yet have some utility in cutting soil loose. Conversely, spades are flatter across the blade and the handle and cutting blade, or tongue, are in straighter alignment, facilitating greater efficiency in cutting soil loose. Because of its shape, however, a spade is less efficient in removing the soil from the hole. A pickax, by contrast, has the cutting blade oriented perpendicular to the handle and is effective only for loosening compacted or dense soil.</p>
<p>2. Demonstrate use of the tool appropriate to the task.</p> <ul style="list-style-type: none"> -Shovel -Spade (tile) -Sharpshooter (spade) -Pickax 	<p>Shovel: Shovels are designed to be filled with soil when the blade is slid between loosened soil and a floor or bit bottom, or when foot pressure is used to cut soil loose and remove it from the hole in a single motion. Use care when filling or tossing soil aside to prevent hitting and causing injury to co-workers.</p>  <p>Spade: A tile spade is designed primarily to cut soil from a vertical face of a pit or trench. Cutting force is applied by pressure of one foot on the top of either of the two treads on the blade. If using a spade on the face of a deep hole, use care not to cave the edge or to fall into the excavation. Do not stand or jump on the spade with both feet on the treads.</p>  <p>Sharpshooter: The sharpshooter, regular and Montana, is similar to the tile spade in use but generally has a longer, more rounded blade or "tongue," which facilitates easier cutting in drier or gravelly soils. The sharpshooter can be used with the arms to shave or shape the face of an excavation. It can be thrown down with arm force into the soil to achieve the cut, but this should be done with care. Repetitive stress injury to hands, wrists, and elbows may result from this use. The sharpshooter is also used in place of</p> 

	<p>augers to remove narrow cores from the soil for observation. The sharpshooter and tile spade are generally shorter in overall length than spades and have “D” handles, providing better control of the direction of force being applied and easier removal when the tool is sliced into dense or sticky soil.</p> <p>Pickax: The pickax is used to loosen compact or dry soil for removal with a shovel. The force to cut and loosen the soil is achieved by swinging the pick in an overhead fashion to penetrate the blade or point into the soil and then apply torque against the handle to pry the soil loose. Use extreme care when swinging the pickax overhead to avoid striking co-workers. Do not swing the pickax from side to side as a glancing blow to the soil can result in the tool being deflected and striking the user or can cause the grip to be lost, after which the tool can fly wildly toward others in the vicinity.</p> 
Cycle step 3	Have the trainee demonstrate the use of the shovels, spades, picks, and similar excavation tools, explaining the steps and reasons for the techniques.
Cycle step 4	Have the trainee repeat the steps without interruption, observing the trainee’s work for proper technique and attention to personal safety. Observe the work for proper consideration of surroundings, potential hazard of utilities, and awareness of co-workers in the carrying, swinging, and handling of the excavation tools.
Cycle step 5	Answer any questions. Repeat any steps as necessary.

OJT Module Lesson Measurement of Learning

Title: 603 How to use shovels, spades, and pickaxes correctly.

WHAT	WHY, WHEN, WHERE, HOW, SAFETY, QUALITY
Describe and use shovels, spades, and pickaxes, and give 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.