

Agricultural Construction (II)

Unit II — Oxy-Gas and Other Cutting/Welding Processes

Instructor Guide

The instructor should explain the performance-based assessment activity format at the beginning of the unit. Students will work toward completing the competencies necessary to perform the activity as they progress through the unit material. The assessment activity will be due at the completion of the unit.

1. Explain the performance-based assessment activity format at the beginning of the unit: At the completion of the unit, students will perform a series of welds and cuts, identify welding and cutting equipment, and answer questions about welding and cutting equipment and procedures. Welds and cuts will be determined by the instructor and announced at the time of the performance-based assessment activity.
2. Use or adapt the job sheets found in the unit to assess student competency at welding and cutting with the oxyacetylene outfit and cutting with air carbon-arc and plasma-arc equipment. Review or supplement these activities as needed, based on student mastery of the procedures and equipment the students will be using. **NOTE: Students should only complete this performance-based activity if they have mastered all the relevant competencies and have the instructor's permission to perform the activity.**
3. Assign the performance-based assessment activity. The student handout can be used as an outline for the activity or adapted as desired.
 - a. Because this unit focuses on oxyacetylene procedures, the activity, as it is written, also focuses on oxyacetylene procedures and equipment. Add or substitute air carbon-arc or plasma-arc equipment and procedures as needed. For additional air carbon-arc and plasma-arc cutting information and activities, see also *Agricultural Construction Volume III*, Unit I—Oxy-Gas and Other Cutting/Welding Processes: Arc Cutting and Plasma-Arc Cutting.
 - b. Information and directions for the student handout as it is currently written are listed at the end of this instructor guide.
 - c. Section II requires some advance setup by the instructor.
4. This activity will help prepare students for the oxyacetylene portion of the Agricultural Mechanics Career Development Event.
 - a. Refer to the *Missouri CDE Handbook* for guidelines regarding Career Development Events. The *Missouri CDE Handbook* is available from the Missouri Department of Elementary and Secondary Education at http://www.dese.mo.gov/divcareered/ag_cde_guidelines.htm.
 - b. Previous years' agricultural mechanics events can be found at <http://web.missouri.edu/~pavt0689/statecon.html>, accessed January 17, 2012.
5. Have students turn in their welds and cuts and completed handouts.
6. The final assessment score will be based on the student's ability to safely and correctly perform the assigned procedures and on the accuracy of responses to the identification and written assessment portions of the activity.

7. **ADDITIONAL ACTIVITY:** Create a display board using the students' work. Possible display board themes include the following: each student's best work using the oxyacetylene outfit, the best example of each type of procedure performed by the class, and the best work of the week.

Section I: Welding and Cutting

1. Have students perform a series of welds and cuts that they have mastered as part of the instructional activities for this unit.

Section II: Identification

1. Select 10 parts of the oxyacetylene or plasma-arc outfit or items of related equipment that have been discussed in class.
2. Label the parts or items with tags A through J.
3. Have students identify the parts on their handouts.

Section III: Written Assessment

1. Have students answer questions about oxyacetylene or plasma-arc procedures, equipment, or safety. Multiple-choice and short-answer questions are suggested.
2. The answers to the questions (and the questions) on the student handout are listed below.

Answers to Written Assessment:

1. Open the acetylene tank valve _____ so it can be shut off quickly.
[c (1/2 turn)]
2. Which of the following should be used to properly light the torch?
[b (Spark lighter)]
3. To weld a butt joint in the horizontal position with an oxyacetylene outfit, which choice is the correct work angle and travel angle?
[a (5- to 10- degree work angle and a 5- to 10-degree travel angle)]

Complete the following short-answer questions.

4. List four ways to avoid burns when using oxyacetylene equipment. (Each answer is worth 1 point for a maximum value of 4 points.)

[Students should list four of the following five answers:]

- a. Use tongs or pliers to handle hot metal.*
- b. Never point the torch toward another person when lighting it.*
- c. Never hand another person a hot piece of metal or a hot torch.*
- d. The word "HOT" should be written on metal that cannot be moved to a storage area to warn other students not to touch it.*
- e. Keep hands away from the flame.]*

5. List three methods to identify torch tips. (Each answer is worth 1 point for a maximum value of 3 points.)

[Students should the following three answers:]

- a. By the tip size stamped on the torch end of each tip*
- b. By the drill size listed in the manufacturer's information*
- c. By the diameter of the hole in the end of the tip]*