

# Lesson Plans for Module 28101-13

## INTRODUCTION TO MASONRY

**Module One (28101-13)** provides information about basic masonry materials, tools, techniques, and safety precautions; explains how to mix mortar by hand and lay masonry units; and describes the skills, attitudes, and abilities of successful masons.

### Objectives

#### Learning Objective 1

- Describe modern masonry materials and techniques.
  - a. Explain how concrete masonry units (CMUs or block) are used in construction.
  - b. Explain how clay masonry units (brick) are used in construction.
  - c. Explain how stone is used in construction.
  - d. Describe how mortar and grout are used in masonry construction.
  - e. Describe how wall structures are created using masonry units.

#### Learning Objective 2

- Recognize the basic safety precautions when working with masonry materials.
  - a. List basic safety practices.
  - b. Describe personal protective equipment used in masonry.

#### Learning Objective 3

- Explain how to mix mortar and lay masonry units.
  - a. Explain how to mix mortar.
  - b. Describe how to lay masonry units.

#### Learning Objective 4

- Describe the skills, attitudes, and abilities needed to be a successful mason.
  - a. Identify the skills of a successful mason.
  - b. Identify the attitudes of a successful mason.
  - c. Identify the abilities of a successful mason.
  - d. Explore career ladders and advancement possibilities in masonry.

#### Learning Objective 5

- Summarize how to be connected to the industry through an organization like SkillsUSA.
  - a. Understand the program, curriculum, and SkillsUSA championships.
  - b. Understand SkillsUSA membership.
  - c. Understand the National Program of Work Standards.

### Performance Tasks

#### Performance Task 1 (Learning Objective 2)

- Put on eye protection and respiratory protection.

#### Performance Task 2 (Learning Objective 3)

- Properly mix mortar by hand.

#### Performance Task 3 (Learning Objective 3)

- Properly spread mortar using a trowel.

### Teaching Time: 12.5 hours

(Five 2.5-hour classroom sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

### Before You Begin

As you prepare for each session, allow sufficient time to review the course objectives, content, visual aids (including the PowerPoint® presentation), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Using your access code, download the Module Examinations and Performance Profile Sheets from [www.nccerirc.com](http://www.nccerirc.com). The passing score for submission into NCCER's Registry is 70 percent or above for the Module Examination; performance testing is graded pass or fail.



## Safety Considerations

This module requires that trainees demonstrate the ability to properly mix mortar by hand and lay masonry units. Safety is paramount in the masonry trade and safe habits and practices must be emphasized whenever possible. Performance Tasks must be completed under your supervision. Each trainee must use required PPE and follow safe tool practices and procedures.

### Classroom Equipment and Materials

Whiteboard/chalkboard  
Markers/chalk  
Pencils and paper  
*Masonry Level One* PowerPoint®  
Presentation Slides  
LCD projector and screen  
Computer  
Copies of the Module Examination and Performance Profile Sheets  
Vendor-supplied videos/DVDs showing mortar mixing and spreading, and laying masonry units (optional)  
TV/DVD player

### Equipment and Materials for Laboratories and Performance Testing

A variety of commonly used sizes, shapes, and weights of concrete masonry units  
A variety of concrete brick, a concrete pre-faced and precast unit, a concrete manhole and catch basin unit, insulated block, and a variety of architectural blocks  
A variety of standard brick, hollow masonry units, and architectural units  
Photos of buildings constructed of different types of stone and manufactured stone veneer  
Copies of *CFR 1926.20*, *CFR 1926.21*, and *CFR 1926.32*  
Several types of eye and face protection  
Several types of respiratory protection  
Gloves  
Hard hats  
Eye protection  
Hearing protection  
Safety shoes  
Respiratory protection  
Basic brick trowels  
Sand  
Cement, lime, or masonry cement and recipe  
A supply of water  
Mortar boxes  
Shovels  
Wheelbarrows  
Mortarboards or mortar pans  
Water hose with spray nozzle  
Stiff brushes  
2 × 4 boards  
Cement blocks  
Brick  
Mason's level

### Additional Resources and References

This module presents thorough resources for task training. The following resource material is suggested for further study:

*Bricklaying: Brick and Block Masonry*. Reston, VA: Brick Industry Association.

*Building Block Walls: A Basic Guide for Students in Masonry Vocational Training*. 1988. Herndon, VA: National Concrete Masonry Association.

*Concrete Masonry Handbook*. Skokie, IL: Portland Cement Association.

*Concrete Masonry Shapes and Sizes Manual* CD-ROM. Herndon, VA: National Concrete Masonry Association.

*Hot & Cold Weather Masonry Construction Manual*. 1999. Herndon, VA: National Concrete Masonry Association.

*Installation Guide for Adhered Concrete Masonry Veneer*, Third Edition. 2012. Washington, DC: Masonry Veneer Manufacturers Association.

SkillsUSA Professional Development Resources. <http://www.skillsusa.org/store/curricula.html>

There are a number of online resources available for trainees who would like more information on materials, tools, and techniques used by masons, as well as basic safety precautions and the skills, attitudes, and abilities exhibited by successful masons. A search for additional information may be assigned as homework to interested trainees.

# INTRODUCTION TO MASONRY

The lesson plan for this module is divided into five 2.5-hour sessions. Each session includes 10 minutes for administrative tasks and one 10-minute break.

## SESSION ONE

Session One introduces modern masonry materials.

1. Show Session One PowerPoint® presentation slides.
2. Provide an overview of different types of concrete masonry units, clay masonry units, and stone.
3. Describe cement-lime mortars, masonry cement, preblended mortars, and grout, as well as their properties, and uses.
4. Discuss the advantages of masonry walls.

## SESSION TWO

Session Two introduces basic safety precautions and personal protective equipment used in masonry.

1. Show Session Two PowerPoint® presentation slides.
2. Explain basic safety precautions and PPE needed when working with masonry materials.
3. Set up stations with various types of eye and respiratory protection. Explain the features of each type of eye and respiratory protection and have trainees put on each one. Note the proficiency of each trainee. This laboratory corresponds to Performance Task 1.

## SESSION THREE

Session Three introduces the basic elements of bricklaying.

1. Show Session Three PowerPoint® presentation slides.
2. Explain the personal relation between a mason and a masonry unit as being a craft. Describe tools and equipment used to mix and spread mortar, and lay brick.
3. Set up workstations with materials needed to mix mortar by hand. Under your supervision, have trainees mix mortar. Make sure the trainees wear appropriate personal protective equipment. Note the proficiency of each trainee. This laboratory corresponds with Performance Task 2.
4. Under your supervision, have trainees lay masonry units. Make sure the trainees wear appropriate personal protective equipment. Note the proficiency of each trainee. This laboratory corresponds with Performance Task 3.



## INTRODUCTION TO MASONRY

### SESSION FOUR

Session Four introduces trainees to the skills, attitudes, and abilities of a successful mason.

1. Show Session Four PowerPoint® presentation slides.
2. Describe the skills that a successful mason needs.
3. Have trainees discuss the features of a good attitude, including dependability, responsibility, adaptability, pride, and ethics. Also have trainees discuss the personal abilities that a mason must have.
4. Provide a brief overview of the stages of skill recognized by masons' organizations.
5. Explain the SkillsUSA program, curriculum, and championships. Define the National Program of Work Standards and how they assist in carrying out the plan of action for a SkillsUSA chapter.

### SESSION FIVE

Session Five is a review and testing session. Have trainees complete the module Review Questions and Trade Terms Quiz. (Alternatively, these may be assigned as homework at the end of Session Four.) Answer any questions that trainees may have.

1. Have trainees complete the Module Examination. Any outstanding performance testing must be completed during this session.
2. Record the testing results on Training Report Form 200, and submit the report to your Training Program Sponsor.