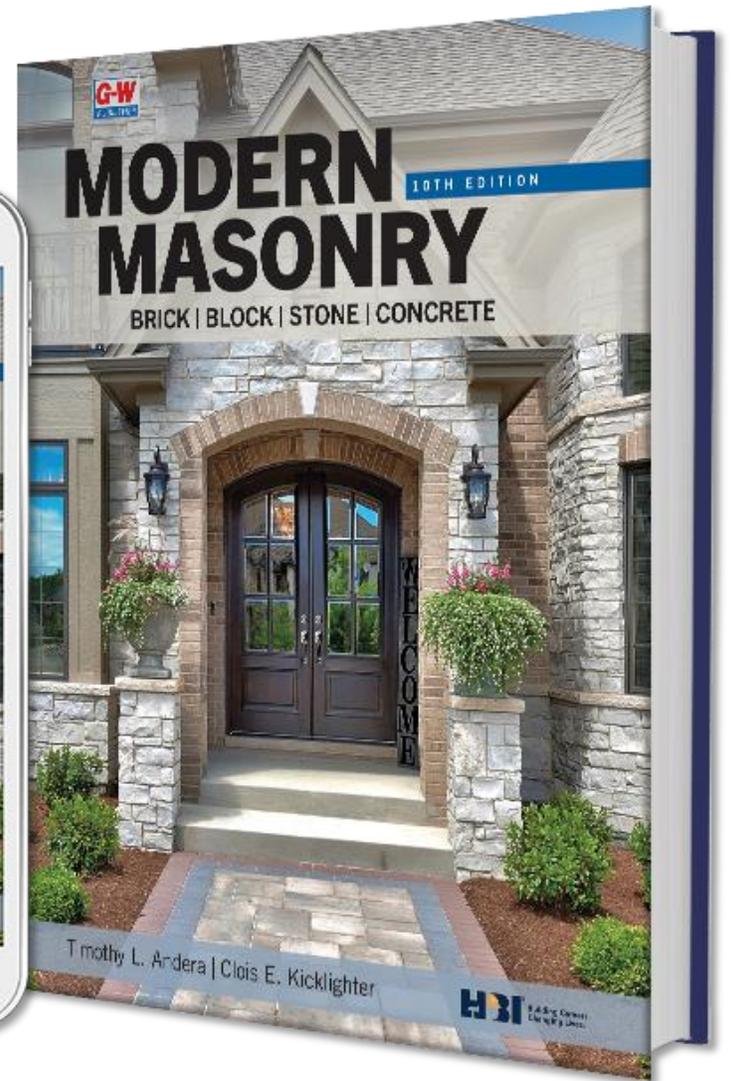
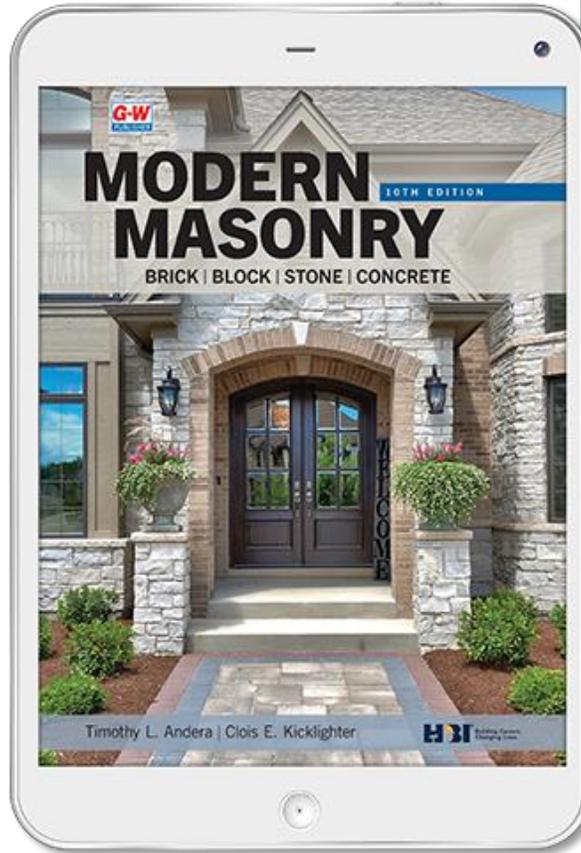


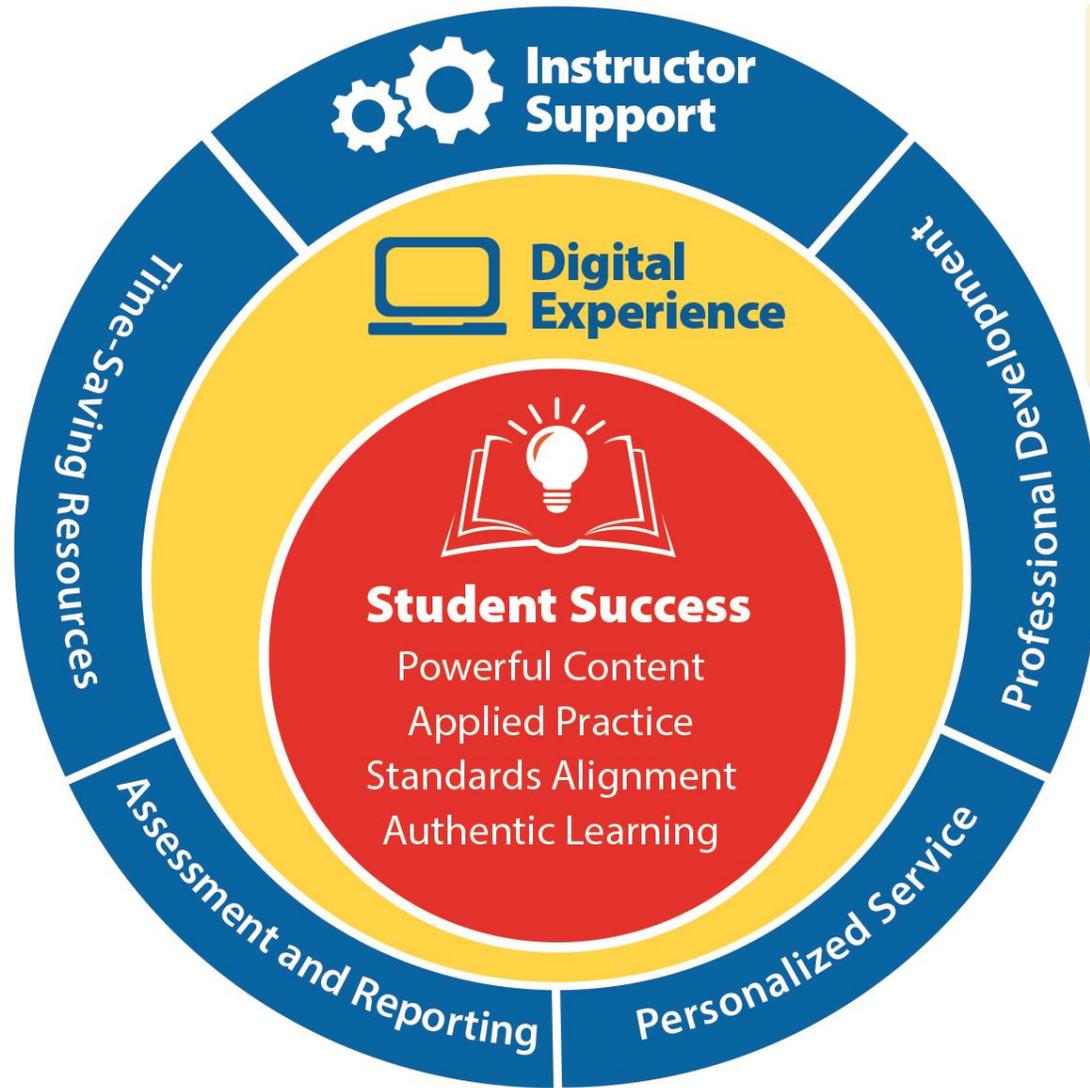
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## Resource Materials

### Instructor's Materials

- [Release Notes \(Updated 10/29/2024\)](#)
- [Introduction](#)
- [HBI Correlation](#)
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- [Virtual Toolbox Answer Key](#)

### Chapter Resources

- [Download All Chapter Resources](#)

Chapter Resources available individually

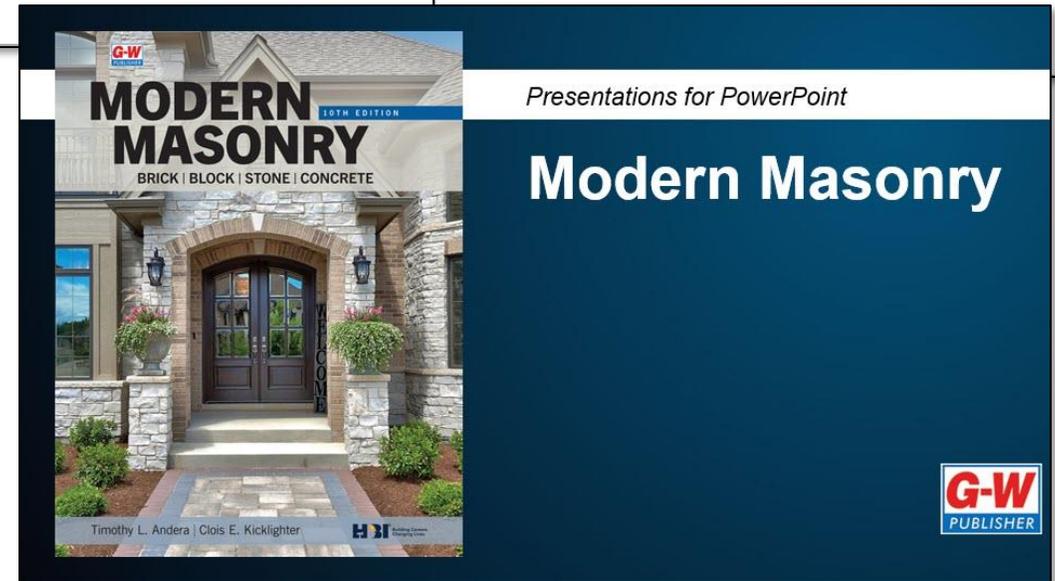
## 1 Careers in the Masonry Industry

### 1 Resources

- [Answer Key](#)
- [Lesson Plan](#)

### 1 Presentations

- [Instructor's Presentation](#)
- [Instructor's Presentation for PowerPoint](#)



*Presentations for PowerPoint*

## Modern Masonry

**Lesson Plans, PowerPoint Presentations, and Answer Keys**



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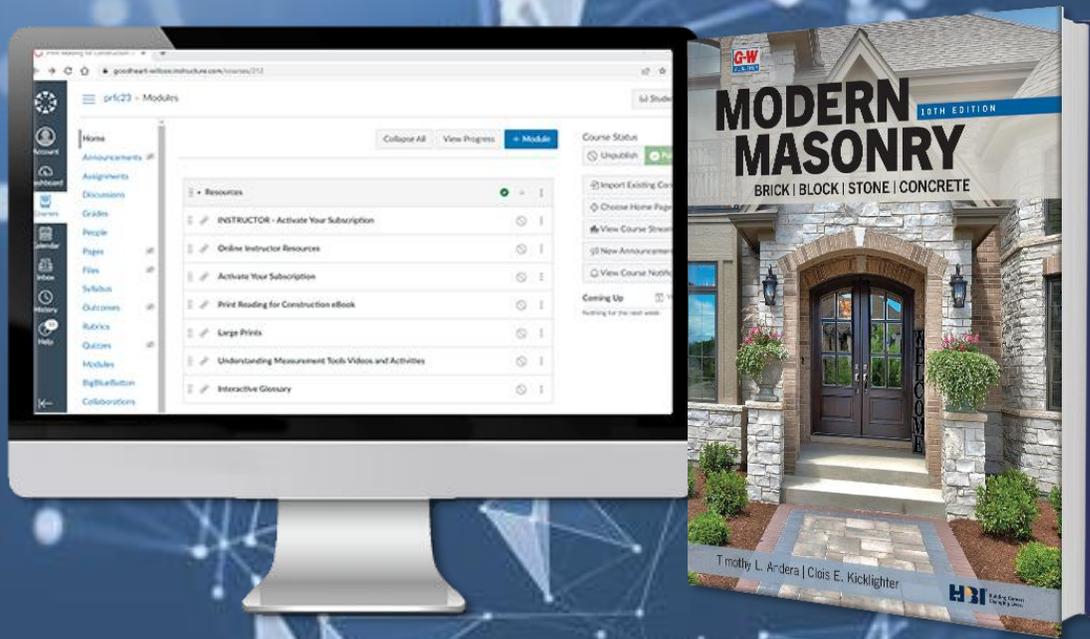
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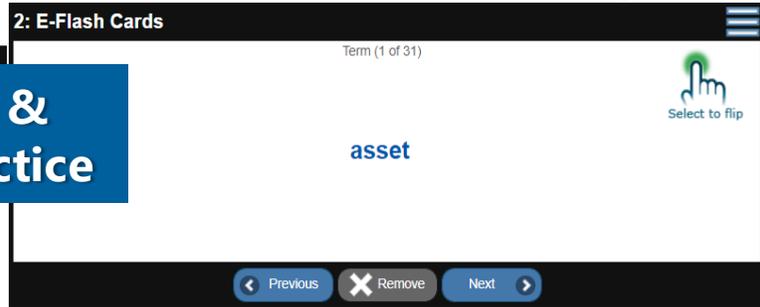
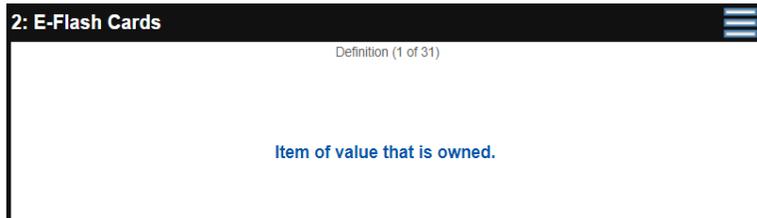
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Select a point value. Choose the term that matches the definition.

Score: 800

<input checked="" type="radio"/> 100	100	100	100
200	200	200	200
300	<input checked="" type="radio"/> 300	300	300
400	400	400	<input checked="" type="radio"/> 400

**Definition:** Act of giving money, goods, or services to meet the needs of others and support important causes that are important to an individual.

- pay yourself first
- variable expense
- recordkeeping
- philanthropy

[Check Answer](#)

## Interactive Activities

Name:

Date:

Class:

### Chapter 1: Careers in the Masonry Industry

Carefully read Chapter 1 of the text and answer the following questions.

1. Good health and \_\_\_\_ are important qualities for masons to have.

- A. strength
- B. eyesight
- C. manual dexterity
- D. All are correct.

Answer:

2. Masons must be able to estimate \_\_\_\_.

- A. volumes
- B. weights
- C. quantities
- D. All are correct.

Answer:

3. The term \_\_\_\_ has traditionally referred to the craft of building with bricks.

- A. construction
- B. masonry
- C. carpentry
- D. blocking

Answer:

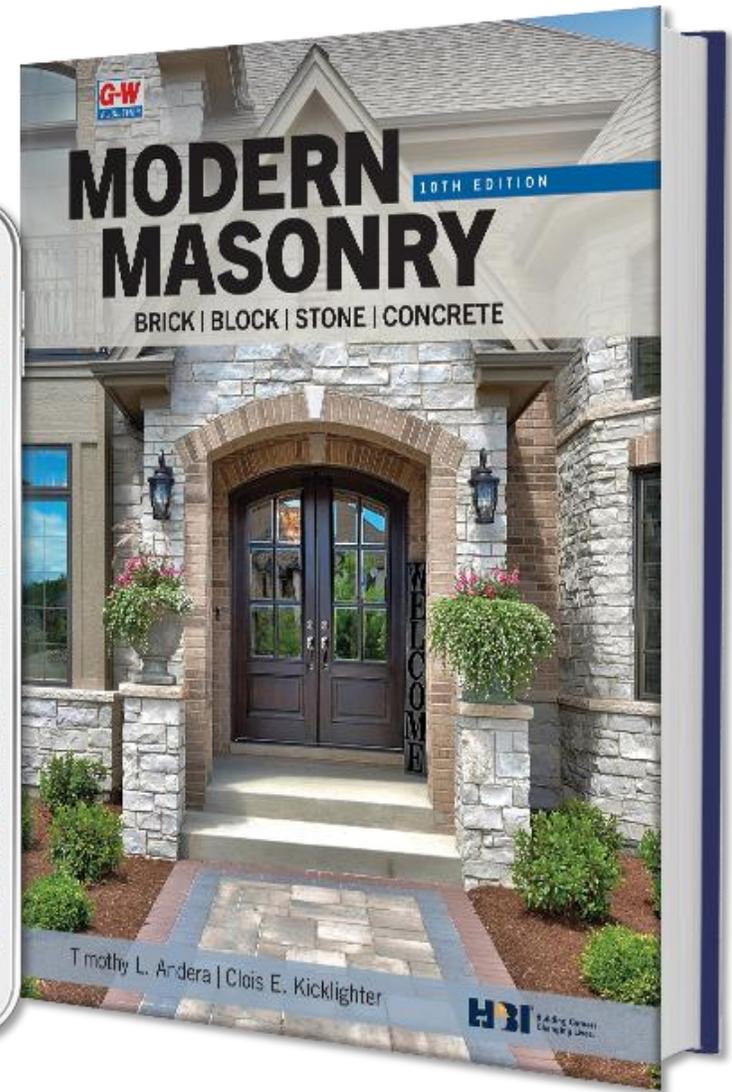
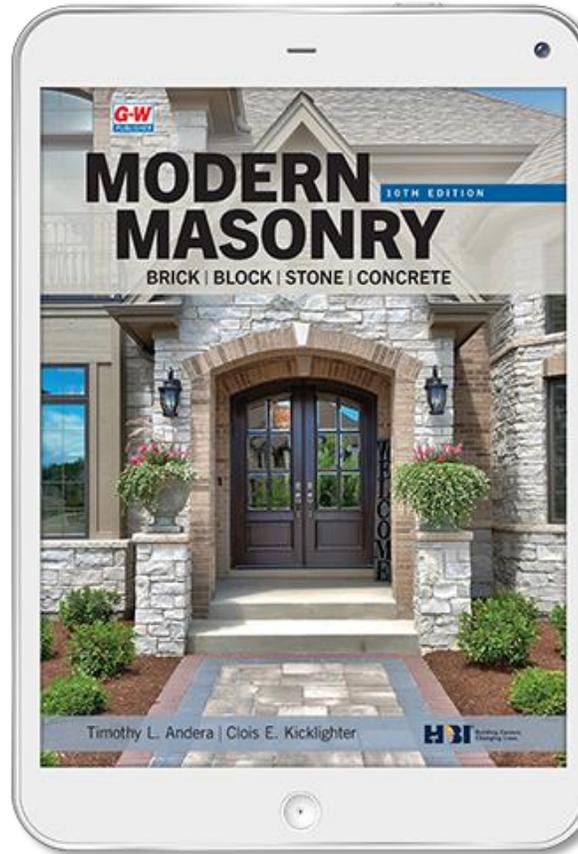
4. Cement masons work with \_\_\_\_.

- A. brick
- B. concrete
- C. stone

## Lab Workbook Activities

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by Timothy L. Andera and Clois E. Kicklighter

# Brief Contents

## Section 1—Succeeding on the Job

1 Careers in the Masonry Industry .....	3
2 Job Performance, Leadership, Ethics, and Entrepreneurship .....	15

## Section 2—Introduction to Masonry

3 Tools and Equipment .....	25
4 Safety.....	53
5 Print Reading.....	72
6 Math for Masonry Careers.....	95

## Section 3—Materials

7 Clay Masonry Materials.....	115
8 Concrete Masonry Units.....	156
9 Stone.....	178
10 Mortar and Grout.....	191
11 Anchors, Ties, and Reinforcement.....	208

## Section 4—Techniques

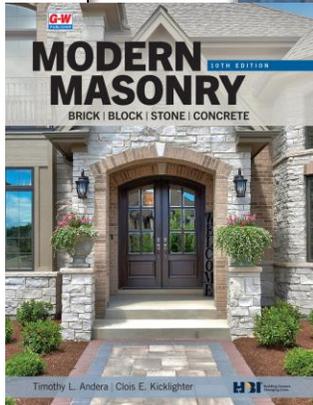
12 Laying Brick.....	225
13 Laying Block.....	263
14 Stonemasonry.....	290

## Section 5—Construction Details

15 Foundation Systems.....	313
16 Wall Systems.....	331
17 Paving and Masonry Construction Details .....	375

## Section 6—Concrete

18 Concrete Materials and Applications .....	397
19 Form Construction .....	417
20 Concrete Flatwork and Formed Shapes .....	446



# Student Textbook



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## CHAPTER 1

# Careers in the Masonry Industry

### LEARNING OUTCOMES

After studying this chapter, you will be able to:

- 1.1-1 Describe the personal qualifications required for masonry work.
- 1.2-1 Describe the types of work in the masonry field.
- 1.3-1 Identify career preparation activities that can aid in obtaining a masonry job.
- 1.4-1 Recognize advancement opportunities.
- 1.5-1 Prepare an effective résumé and letter of application.

### TECHNICAL TERMS

apprentice	journeyman	project manager
contractor	mason tender	superintendent
foreman	networking	

### Introduction

Masonry offers a rewarding career for people who have an interest in working with tools and materials. Masons, or bricklayers, are skilled workers who understand basic principles and practices relating to the construction industry. Masons play an important role in building homes, schools, and commercial structures. They can be proud of their skill and the fact that they can produce something that people need.

There are many benefits to being a professional mason. The work produced is functional, long-lasting, and a benefit to others. Each job is different, so the work never becomes boring. Masonry work offers the opportunity to be independent and creative while working in an outdoor environment. Masonry work offers a good salary and opportunities for advancement. See **Figure 1-1**.

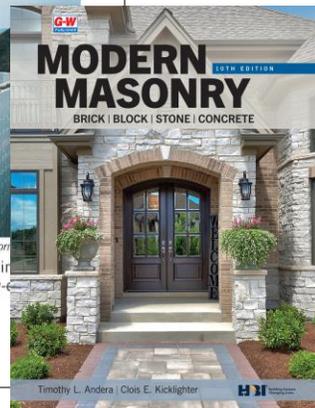
### 1.1 Personal Qualifications

Certain physical qualifications are required to become a mason. Good health and strength are important because the work is strenuous. A mason works outdoors much of the time and must be able to lift heavy loads, bend, reach, and kneel. Masons need good hand-eye coordination and balance. Good eyesight is also essential. Masons must be able to work



LiteForm

**Figure 1-1.** Cement masons are placing concrete in insulated basement wall form to create an energy-efficient home. Most of their work is performed outdoors.

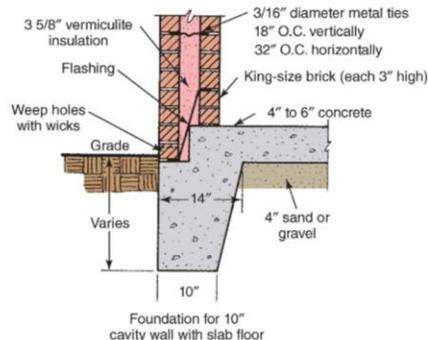


# Chapter-Opening Material





Portland Cement Association  
**Figure 13-47.** Rectangular anchors or ties are used in cavity wall construction to bond the wythes together.

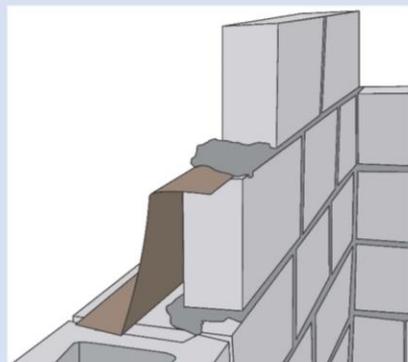


Goodheart-Willcox Publisher  
**Figure 13-48.** A typical cavity wall foundation detail for slab floor construction.

**PROCEDURE**

**Laying a 10" Concrete Block Cavity Wall**

1. Lay down a full bed of mortar for the inside wythe. This bed joint must be watertight.
2. Place the blocks for the first course of the inside wythe. Be sure all head joints are solid and watertight.
3. Position the flashing over the top edge of the first inside course and rest it on the foundation (under the outside wythe). Embed the flashing with mortar between the first and second course of the inside course. See **Figure 13-49**.
4. Lay the first course of the outside wythe, allowing a 2" continuous air space between the wythes. The flashing will be beneath this course. Maintain weep holes between every second or third block. Insert wick or another acceptable material. Keep the cavity clean as the work proceeds up to the second course.



Portland Cement Association  
**Figure 13-49.** Flashing should be used to prevent moisture from entering the inner wall from the cavity. Note how the flashing is embedded in the mortar joint.

**Trade Tip**

Cotton sash cord is the most common material used for creating weep holes. If the cotton cords are removed to leave weep holes, stainless steel wool can be placed in holes to ensure that insects and dirt cannot enter the holes. Plastic tubing can also be used to install weep holes.

5. Lay the second outer course with full bed and head joints. Be sure all joints and holes are filled with mortar. Do not allow any mortar to fall into the cavity. Mortar can be spread about 1/2" back from the edge of the cavity to reduce the chance of falling into the cavity. Another method is to angle the mortar back to reduce the mortar along the outer edge. If rigid insulation is to be used in the wall, install it now. The insulation should be placed against the inside
6. Position unit ties or continuous joint reinforcement over the second course of the two wythes. Embed the joint reinforcement within the mortar joint under the third course on the inside wythe.
7. Lay the third outer course with the reinforcement embedded in the mortar joint.
8. Place a board on the ties or reinforcement to catch mortar droppings as the next course is laid. It can be

**Chapter 5 Workplace Skills**  
**Continuing Education with Print Reading**

Learning the language of print reading can be a very enjoyable activity. This chapter will give you the basics to recognizing the different symbols and lines used by architects and designers. To become proficient in print reading, advanced classes are offered through apprenticeship programs, community college courses, and management training activities. Being promoted into management positions will require advanced training and leadership skills. Continuing education beyond

**Code Note**

According to International Residential Code (IRC) **R403.1.6**, anchor bolts shall be positioned not more than 1' from the outside of the masonry wall and spaced a maximum of 6' apart. The anchor bolts shall be 1/2" in diameter and imbedded a minimum of 7" into the concrete wall or grout cavity.

**Foundation Anchorage**

**Safety Note**

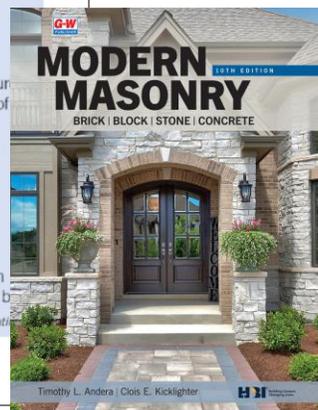
Before using muriatic acid, read the manufacturer's instructions and the SDS document. Follow manufacturer's specifications for mixing, applying, cleaning, and disposing of leftover solution. Wear appropriate PPE, safety glasses, approved rubber gloves, protective boots, and clothing as specified. When mixing, pour the acid into the water, not the water into the acid.

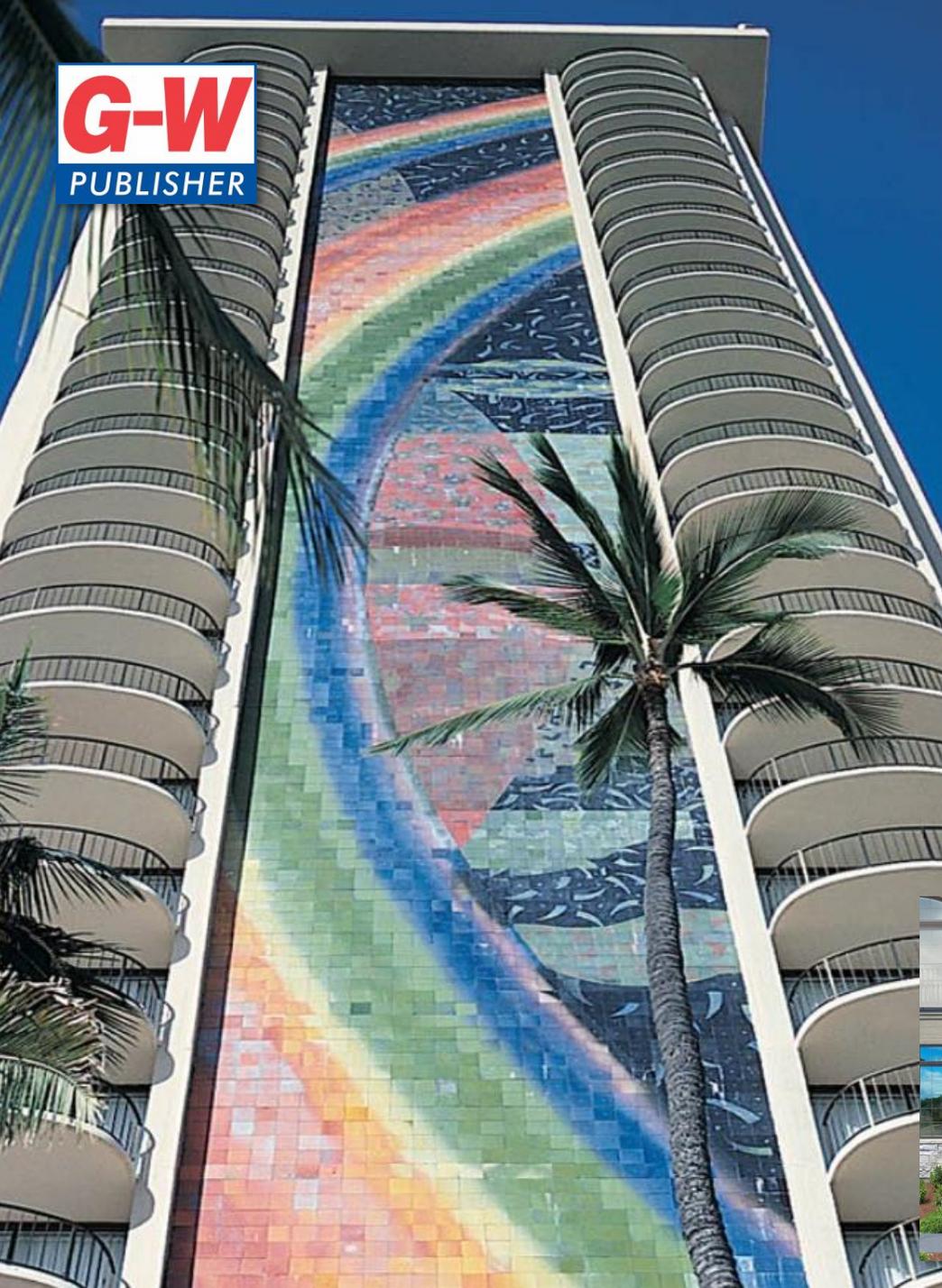
**Green Note**

**Environmental Impact of Brick Manufacture**

The heat for most kilns in brick manufacturing plants is generated by burning natural gas, which generates significant carbon emissions. Many manufacturing plants are now using bio-based fuel resources, such as methane or sawdust. Burning methane produces fewer emissions than burning natural gas. Adding sawdust to the raw materials used to manufacture brick also reduces the use of fossil fuels. The sawdust burns in the firing process.

**Special Features**





## Chapter Review

### Summary

- Planning and site preparation are crucial to the success of a project. Labor costs, material costs, and weather can affect the success or failure of a company.
- Concrete masonry walls include solid masonry walls, hollow masonry walls, cavity walls, composite walls, veneered walls, reinforced concrete masonry walls, and grouted masonry walls.
- Blocks should never be moved after they have been laid.
- Mortar is generally bedded only on the outside edges of concrete blocks.
- Form full head joints on both ears (end edges) of each block to be laid.
- Blocks can be cut with a brick hammer and blocking chisel or with a masonry saw.
- Control joints are continuous vertical joints built into concrete masonry walls to prevent cracking.
- A cavity wall consists of two walls (wythes) separated by a continuous air space. The wythes are tied together with noncorroding metal ties that are embedded in the mortar.
- A composite wall is two wythes bonded together with masonry, mortar, or grout.
- Wall surfaces must be kept clean during construction because concrete splatters are difficult to remove. Mortar smears and droppings should be removed as they occur.

### Know and Understand

Answer the following questions using the information provided in this chapter.

- True or False?** Weather does not affect the potential success of a company.
- Premixed mortar should be purchased in \_\_\_\_\_ lb bags for residential sites.
  - 20
  - 50
  - 80
  - 3000
- \_\_\_\_\_ walls are two-wythe walls that allow each wythe to react independently to stress.
  - Solid masonry
  - Hollow masonry
  - Composite
  - Cavity
- The primary objective of \_\_\_\_\_ is to provide an attractive, durable exterior surface that prevents the entrance of moisture.
  - solid masonry
  - veneer
  - composite
  - cavity
- True or False?** A trowel can be loaded from the side of the board.

- A typical sand and gravel mixture is \_\_\_\_\_ in.
  - 28
  - 40
  - 45
  - 52
- Any structural masonry wall should be \_\_\_\_\_ in.
  - 4'
  - 1'
  - 12'
  - 6'
- If block masonry is used for a wall, the blocks should be \_\_\_\_\_ in.
  - rem
  - cre
  - exp
  - shri
- True or False?** Concrete masonry blocks should be laid with the long edge facing the exterior.
- \_\_\_\_\_ walls are made of concrete blocks with a hollow center.
  - A t
  - A c
  - Ru
  - Ac

14 Section I Succeeding on the Job

- A \_\_\_\_\_ supervises the work of a foreman or multiple foremen and makes major decisions about the construction project.
  - journeyman
  - contractor
  - superintendent
  - supervisor
- The \_\_\_\_\_ is responsible for the whole job and who runs the business.
  - foreman
  - project manager
  - superintendent
  - contractor
- What is the goal of networking?
  - To aid in finding job opportunities
  - To develop a résumé
  - To develop a letter of application
  - To aid in developing a job application
- A résumé \_\_\_\_\_.
  - should never be fewer than three pages long
  - should not contain information about your position
  - should always be created from scratch
  - should contain personal accomplishments
- A letter of application should include \_\_\_\_\_.
  - keywords for the employer to search
  - where you heard about the job
  - work history
  - references

### Analyze and Apply

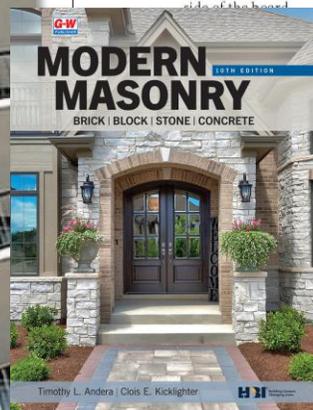
- List at least two student organizations aspiring masons can join.
- What would be the beginning salary for a new apprentice if the beginning journeyman's salary was \$25 per hour?
- Upon successful completion of the program, what award does the apprentice receive?

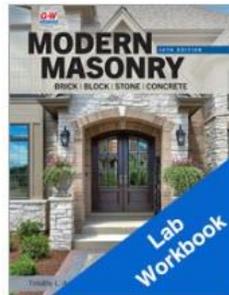
### Critical Thinking

- Your school masonry program is expanding, and your teacher has requested you to serve on the Faculty Search Committee. As the Masonry Student Representative, create at least five questions to ask the different applicants for the new teaching position.
- Your teacher has informed you about a possible position at XYZ Masonry Company.
  - Part 1. Develop at least five questions you should ask the masonry company if contacted by them for an interview.
  - Part 2. After developing the questions, practice answering these questions with a classmate in your masonry program.
- Research your local community to determine what you would need to do to seek an apprenticeship with a local contractor. Develop a procedure list to discuss with your instructor.

### Activities

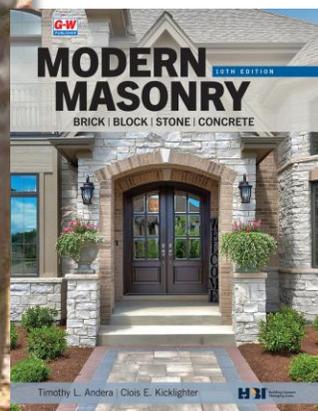
- (ELA) Search online to find a sample job application that you can download free, or one with which you can practice online. Fill out the application as if you were applying for a job as a mason.
- (ELA) Team up with another student and role-play an interviewing process for a masonry job. Both students should research potential interview questions on job search websites.
- (ELA) Research training and certifications offered by the International Masonry Institute and other masonry associations. Write a brief report summarizing these offerings.





Chapter Review ▼

- Chapter 1 Review
- Chapter 2 Review
- Chapter 3 Review
- Chapter 4 Review
- Chapter 5 Review
- Chapter 6 Review
- Chapter 7 Review
- Chapter 8 Review
- Chapter 9 Review
- Chapter 10 Review
- Chapter 11 Review



Name:

Date:

Class:

### Chapter 10: Mortar and Grout

Carefully read Chapter 10 of the text and answer the following questions.

1. Which of the following is the term for the bonding agent that ties masonry units into a strong, well-knit, weathertight structure?

- A. Mortar
- B. Glue
- C. Grout
- D. Cement

Answer:

2. Basic mortar includes what three materials?

- A. Portland cement, hydrated lime, and sand
- B. Portland cement, burned gypsum, and sand
- C. Masonry cement, hydrated lime, and grout
- D. Masonry cement, quicklime, and sand

Answer:

3. True or False? One function of mortar is to make up for the difference in sizes of units.

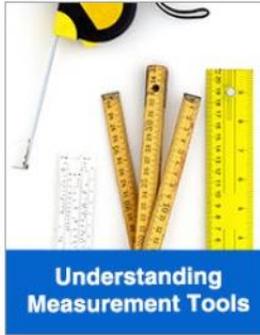
Answer:

4. Material properties of mortar that influence the structural performance of masonry are listed below. Which of the following is the *least* important?

- A. Bond strength
- B. Compressive strength
- C. Elasticity
- D. Workability



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Understanding Measurement Tools Videos and Activities



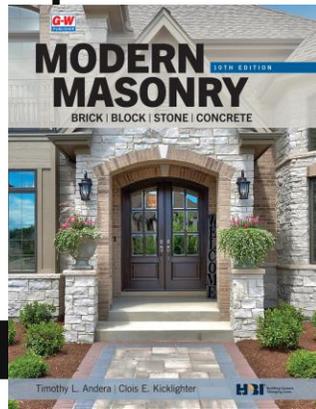
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- [Marking Tools Activity](#)
- [Cutting Tools Activity](#)
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- [Concrete Tools and Equipment Activity 3](#)
- [Personal Protective Equipment Activity](#)

### Cutting Tools Activity E-Flash Cards



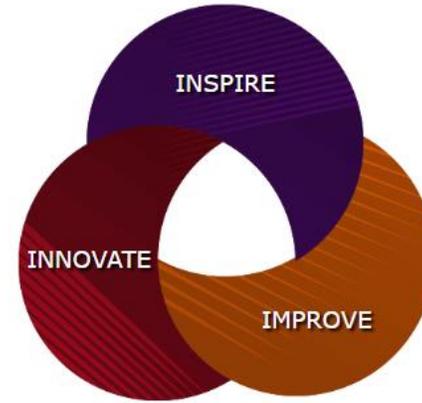
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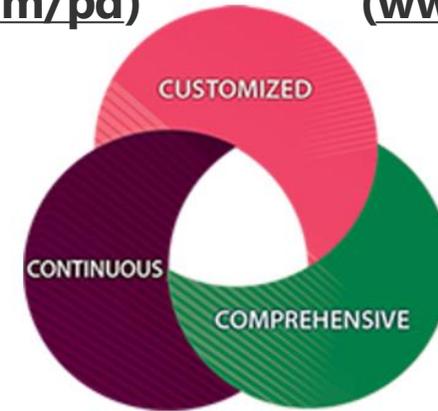
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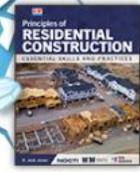
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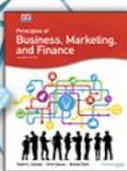
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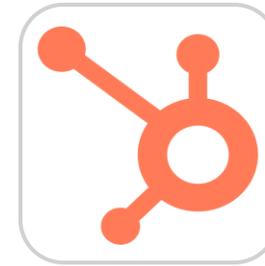


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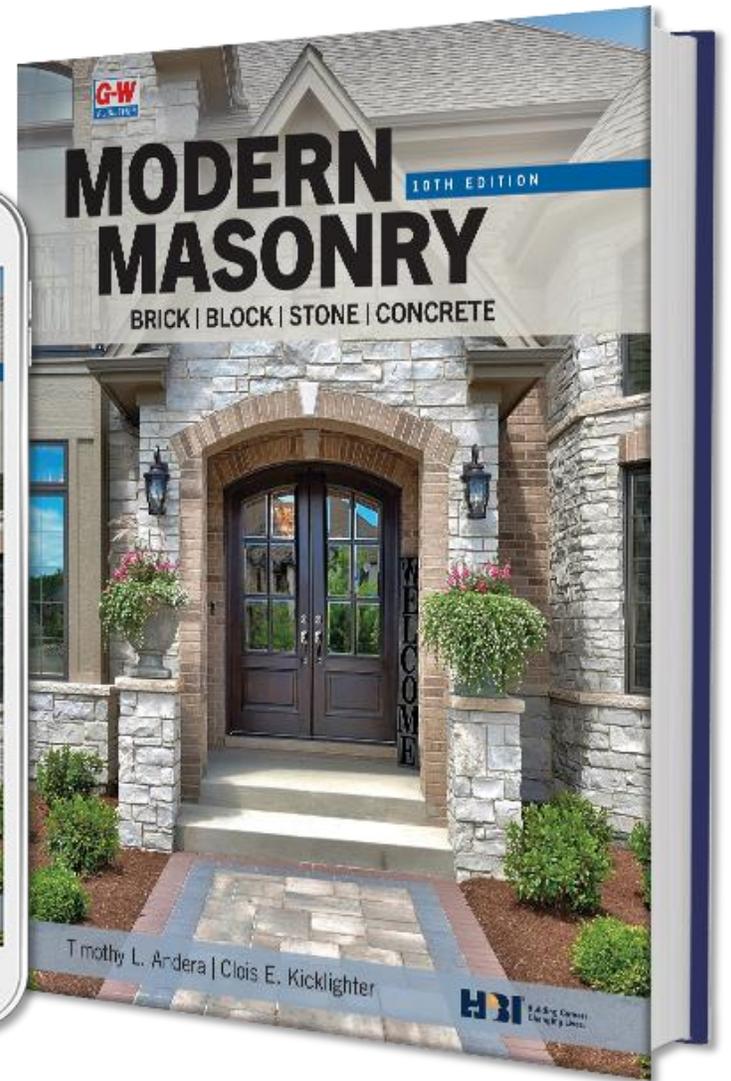
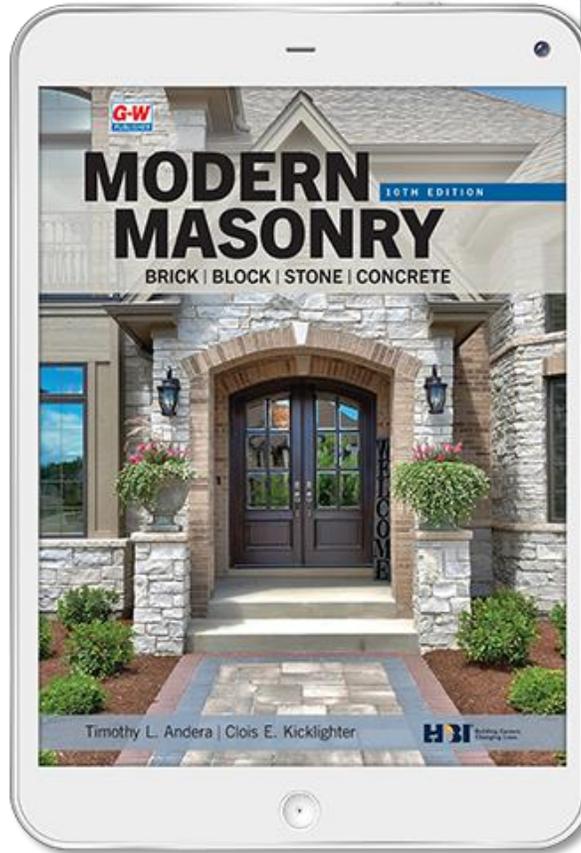
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