

Construction Terminology

Unit: Core Applied Skills

Problem Area: Basic Construction Skills

Lesson: Construction Terminology

- **Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

- 1 Explain general construction terminology.
- 2 Explain green construction terminology.

- **Resources.** The following resources may be useful in teaching this lesson:

“Construction Terms Terminology,” *Construction Jargon.com*. Accessed Feb. 17, 2012. <http://www.constructionjargon.com/>.

Iano’s Backfill. Accessed Feb. 17, 2012. <http://www.ianosbackfill.com/>.

“LEED for Neighborhood Development,” *U.S. Green Building Council*. Accessed Feb. 17, 2012. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2122>.

- **Equipment, Tools, Supplies, and Facilities**

- ✓ Overhead or PowerPoint projector
- ✓ Visual(s) from accompanying master(s)
- ✓ Copies of sample test, lab sheet(s), and/or other items designed for duplication
- ✓ Materials listed on duplicated items
- ✓ Computers with printers and Internet access
- ✓ Classroom resource and reference materials



■ **Key Terms.** The following terms are presented in this lesson (shown in bold italics):

- ▶ construction
- ▶ energy-efficient appliances
- ▶ energy-efficient living
- ▶ energy-efficient windows
- ▶ general contractor
- ▶ global warming
- ▶ green construction
- ▶ green roof
- ▶ insulation
- ▶ ozone layer
- ▶ portable
- ▶ solar panel
- ▶ stationary
- ▶ sustainable building
- ▶ wind turbine

■ **Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Hand each student an $8\frac{1}{2} \times 11$ -inch piece of paper. Instruct the student to divide the paper the 11-inch way into three columns and to label the top of the left column “K,” the middle column “W,” and the right column “L.” “K” is what the student knows, “W” is what he or she wants to know, and “L” is what he or she learned. The topic is general construction terminology. This can include any terms related to any division of construction. Have the student fill in the “K” and “W” columns. When all the students have completed the first two columns, teach the lesson. Then, have the students complete the final column (“L”) and update the “K” and “W” columns, if necessary. Discuss with the class their “KWLs.” Use VM–A through VM–J during the discussion.

CONTENT SUMMARY AND TEACHING STRATEGIES

Objective 1: Explain general construction terminology.

Anticipated Problem: What is general construction terminology?

- I. General construction terminology
 - A. **Construction** is the planning and assembly of a structure or nonstructure through the means of many different work skills. Because construction is so broad and encompasses so many areas of skilled technical work, understanding terminology can seem overwhelming. All construction workers must become familiar with the terminology they will encounter on a daily basis. Certain terms may apply only to certain specialties, whereas others will apply to many or all areas. A **general contractor** (a person or firm that hires and works with subcontractors on projects) must acquire at least a working knowledge of the terminology used in a variety of specialties.
 - B. The following are some common construction-related fields for which one may choose to learn the basic terminology:
 1. Agriculture
 2. Architecture
 3. Carpentry
 4. Cement/masonry
 5. Drywall
 6. Electrical
 7. Engineering
 8. Gutters and siding
 9. HVAC
 10. Landscaping and hardscaping
 11. Metals and welding
 12. Painting
 13. Plumbing
 14. Roofing
 15. Surveying

- C. Tools and equipment serve an infinite number of purposes in construction, whether a job is a simple home project or a very technical project. Literally thousands of different tools and pieces of equipment may be found on or around a construction site. Each will serve a specific purpose but can often be used in dozens of situations.
1. Tools and equipment can be either power or manual.
 2. Tools and equipment can be further designated as **portable** (capable of being transported or moved from site to site) or **stationary** (meant to remain in a fixed location).
 3. Tools, equipment, and related materials are also categorized by their functions. The following categories encompass examples of the most common items used in the construction world today. Many of these may also be considered multipurpose, as they perform more than one specific job.
 - a. Adhesives—duct tape, electrical tape, masking tape, wood glue, multipurpose glue
 - b. Clamping/securing devices—C-clamps, bench-vise, vise-grip pliers, screw-clamps
 - c. Cleaning/polishing equipment and materials—cleaning solvent and tank, buffing tool, penetrating oil
 - d. Cutting/forming tools—scissors, saw, utility knife, press brake, pipe cutter, pipe bender, tin snips, diagonal cutter
 - e. Drilling/boring tools—portable drill, drill press, tap and die, brace and bit
 - f. Fastening devices—impact, screwdriver, pliers, hammer, nail gun, riveter
 - g. Leveling materials—chalk line, level, plumb bob, square
 - h. Measuring tools—tape measure, steel rule, ruler, yardstick, micrometer, caliper, scale, gauge finder, feeler gauge
 - i. Testing tools—multimeter, continuity tester, compression tester, stud finder
 4. Tools, equipment, and related materials are also categorized by their construction specialties.
 - a. Surveying—stakes, tripod, level, plumb bob, transit, 100-foot tape, surveying wheel
 - b. Masonry—concrete forms, trowel, float, mixer, rebar
 - c. Carpentry—lumber, sheathing, fasteners, truss, joist and joist hanger, lintel
 - d. HVAC (heating, ventilation, and air conditioning)—sheet metal, tin snips, air conditioner, furnace, copper pipe, torch, flux, solder, insulation
 - e. Plumbing—PVC (polyvinylchloride)—PVC primer and cement, soft and rigid copper tubing, compression fittings
 - f. Roofing—shingles, roofing nails, tar paper
 - g. Electrical—circuit breaker, electrical metallic tubing (conduit), wire conductor, electrical box and cover, duplex receptacle, keyless lamp holder

Teaching Strategy: Use class discussion, lecture, and notes to present this objective. Present VM–A through VM–I, introduced during the Interest Approach, for review. End with a question-and-answer period and the assignment of LS–A.

Objective 2: Explain green construction terminology.

Anticipated Problem: What is green construction terminology?

II. Green construction terminology.

- A. **Green construction** is the creation of a structure that will be environmentally friendly and energy efficient throughout its life cycle. Another name for green construction is **sustainable building**.
1. With our quickly growing population, natural resources are being consumed at an all-time high. Conservation of natural resources is vital to the continuing support of life on earth. Using materials that require less energy consumption will help save or extend the life of our most precious resources.
 2. In addition, the burning of fossil fuels is destroying the earth's **ozone layer** (the layer of the earth's atmosphere that protects life from the sun's radiation). This contributes to **global warming** (a rise in the earth's average surface temperature over time).
- B. There are many green materials and practices that can help reduce the impact of structures on energy and the environment. Which are chosen often depends on the size, shape, and location of a structure. Some examples follow.
1. Green roof—A **green roof** is a roof composed of living and nonliving things, including plants and décor, rather than human-made building materials. A green roof helps absorb heat during warm summer months and reduces water runoff. Because of the absorption of the sun's energy, the structure below is affected less by the heat, resulting in decreased use of air conditioning and less wasted energy.
 2. Solar panel—A **solar panel** is a device used to absorb the energy from the sun's bright light and convert it into electricity. This is another example of how we can use the sun's immense energy.
 3. Wind turbine—A **wind turbine** is a device that converts wind energy into mechanical energy, which can then be used to make electricity. Wind turbines range from those that are part of wind farms producing vast amounts of electrical power to those for individual homeowners.
 4. Energy-efficient windows—**Energy-efficient windows** are windows that more efficiently maintain indoor temperature by preventing outside heat or cold from entering a structure and by preventing inside heated or cooled air from escaping. Much of this is done by reflecting energy. An energy-efficient window is typically sealed with a gas inside to act as a buffer zone between the two different temperature areas.

5. Energy-efficient appliances—**Energy-efficient appliances** are items of household equipment utilizing technology that requires much less energy for them to complete their tasks. These appliances include air conditioners, furnaces, water heaters, stoves, ovens, microwaves, televisions, computers, dishwashers, and other devices.
 6. Insulation—**Insulation** is material that blocks the transfer of heat. Insulation will keep the heat indoors in cold weather and outdoors in hot weather. Many new types of insulation have been developed in the recent years that help conserve energy. Insulation is available as rolls, batts, spray, or foam.
 7. Energy-efficient living—**Energy-efficient living** is the use of items or practices that conserve water, electricity, heat, conditioned air, and other energy resources. The government offers many incentives to individuals utilizing energy-efficient practices, appliances, and methods.
- C. As discussed earlier, many jobs are related to construction. Equivalent jobs are usually available in green construction; however, they involve the use of practices, materials, and equipment that conform to codes, regulations, and standards established to protect the environment and preserve our natural resources.

Teaching Strategy: Use class discussion, lecture, and notes to present this objective. Present VM–J, introduced during the Interest Approach, for review. End with a question-and-answer period.

- **Review/Summary.** Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. If a textbook is being used, questions at the ends of chapters may also be included in the Review/Summary.
- **Application.** Use the included visual master(s) and lab sheet(s) to apply the information presented in the lesson.
- **Evaluation.** Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is provided.

■ **Answers to Sample Test:**

Part One: Matching

1. a
2. e
3. f
4. c
5. d
6. b

Part Two: Completion

1. Portable
2. Answers will vary. See I.B.1–15.
3. stationary
4. Insulation
5. energy-efficient living
6. green roof

Part Three: True/False

1. F
2. T
3. F
4. F
5. F
6. T

Construction Terminology

► Part One: Matching

Instructions: Match the term with the correct definition.

- | | |
|-------------------------|-----------------------|
| a. sustainable building | d. construction |
| b. solar panel | e. global warming |
| c. ozone layer | f. general contractor |

- ____ 1. Another name for green construction
- ____ 2. A rise in the earth's average surface temperature over time
- ____ 3. A person or firm that hires and works with subcontractors on projects
- ____ 4. The layer of the earth's atmosphere that protects life from the sun's radiation
- ____ 5. The planning and assembly of a structure or nonstructure through the means of many different work skills
- ____ 6. A device used to absorb the energy from the sun's bright light and convert it into electricity

► Part Two: Completion

Instructions: Provide the word or words to complete the following statements.

1. _____ tools and equipment are capable of being transported or moved from site to site.
2. Three examples of common construction-related fields are _____, _____, and _____.
3. Tool and equipment meant to remain in a fixed location are said to be _____.



4. _____ is material that blocks the transfer of heat.
5. The use of items or practices that conserve water, electricity, heat, conditioned air, and other energy resources is called _____.
6. A roof composed of living and nonliving things, including plants and décor, rather than human-made building materials is called a _____.

► **Part Three: True/False**

Instructions: Write T for true or F for false.

- ____ 1. Energy-efficient appliances require much less energy but usually do not function as well as appliances demanding more energy.
- ____ 2. Vise-grip pliers and C-clamps are both examples of tools used for securing purposes.
- ____ 3. Green construction offers few jobs that are equivalent to those usually available in traditional construction.
- ____ 4. A plumb bob and a level are examples of fastening tools and equipment.
- ____ 5. Sustainable construction uses practices that have negative effects on the environment.
- ____ 6. Roofing, drywall, plumbing, and painting are all areas of construction.

COMMON CONSTRUCTION-RELATED FIELDS

- ◆ Agriculture
- ◆ Architecture
- ◆ Carpentry
- ◆ Cement/masonry
- ◆ Drywall
- ◆ Electrical
- ◆ Engineering
- ◆ Gutters and siding
- ◆ HVAC
- ◆ Landscaping and hardscaping
- ◆ Metals and welding
- ◆ Painting
- ◆ Plumbing
- ◆ Roofing
- ◆ Surveying

BUILDING AND CONSTRUCTION TOOLS



SURVEYING



Plumb Bob

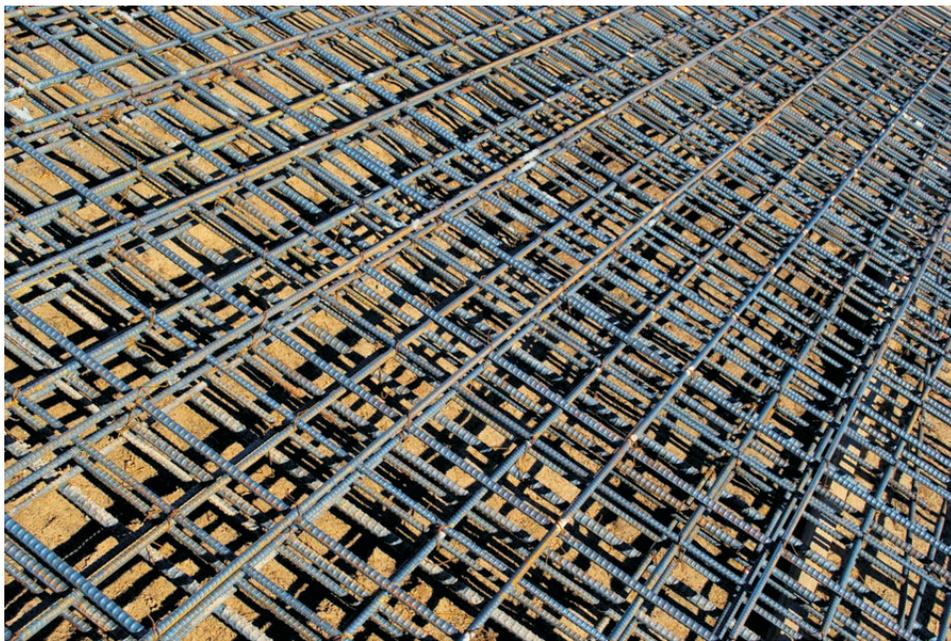


Surveying Wheel

MASONRY



Smoothing Concrete with Float



Reinforcing Rebar for Concrete

CARPENTRY



Applying Sheathing



Building Trusses for Roof

HVAC (HEATING, VENTILATION, AND AIR CONDITIONING)



Ventilation Pipes



Worker Sweating Copper with
Torch, Flux, and Solder

PLUMBING



Soft Copper Tubing



Copper Fittings

ROOFING



Green Asphalt Shingle Lined up on Orange Chalkline with Roofing Nails and Hammer



Fixing Roof—Tar Paper

ELECTRICAL



Duplex Receptacle, Wire, Lamp Holder with Switch, Armored Cable



Circuit Breaker

ENERGY EFFICIENCY AND SUSTAINABILITY



Solar Panels on a House



Residential Wind Turbines

Construction Terminology

Purpose

The purpose of this activity is to further investigate terminology related to construction-related fields.

Objectives

1. Choose a construction-related field.
2. Research terminology common to the field by using the Internet or the Home Builders Pro Calculations application downloaded to an iPad.
3. Find, define, sketch, and write about two industry-specific terms.

Materials

- ◆ lab sheet
- ◆ VM-A
- ◆ paper
- ◆ writing utensil
- ◆ computer with Internet access and/or iPad

Procedures

1. Select a construction field of choice, and write the name of that specialty as the title at the top of your paper. Divide the front of your paper into four boxes (excluding the title). Label the boxes as follows:
 - a. Term
 - b. Definition
 - c. Sketch
 - d. Sentence using the term
2. Divide the back of your paper into four boxes, and label them the same way.
3. Find two terms related to the construction field you selected. Then, fill in the boxes for each term.
4. Present the terms to the entire class.
5. Hang your paper on a wall for future reference. This can be called a “word wall” to help in remembering terminology.