

MASONRY

PURPOSE

To evaluate each competitor's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of masonry.

ELIGIBILITY

Open to active NYS SkillsUSA members enrolled in programs with masonry or bricklaying as the occupational objective.

CLOTHING REQUIREMENTS

NYS SkillsUSA Construction Attire:

- White crew neck short- sleeved T-shirt
- work pants or jeans
- leather or steel toed work shoes
- safety glasses or goggles, (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)

***Note:* Contestants must wear their contest clothing to the contest orientation meeting. Also bring #2 pencil, resume, safety assurance form and conference program.**

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
 - a. Tenders
 - b. Hose
 - c. Three 55-gallon water drums
 - d. Mortar pans, boards, pails, and wheelbarrows
 - e. Hoes
 - f. Square-nosed, short-handled shovels
 - g. Sand
 - h. Masonry mixes or ready-mixed mortar
 - i. Resin paper or suitable area covering
2. Supplied by the competitor:
 - a. One trowel
 - b. Two levels (24" and 48")
 - c. One "S" jointer
 - d. Long jointer
 - e. One brick hammer
 - f. Two 6-foot folding rules (one modular, one standard)
 - g. One carrying bag
 - h. One pencil
 - i. One square
 - j. One brush
 - k. One brick chisel
 - l. Line and line blocks
 - m. All competitors must create a one-page resume. See "Resume Requirement" below for guidelines.

RESUME REQUIREMENT

Competitors must create a one-page resume to submit at Orientation.

DEVICES

Cell phones or other electronic devices not approved by the NYS Chairperson will be collected by the contest chair during the competition. Chairpersons will announce their acceptance by listing it on their standard or at the orientation meeting. In case of emergencies advisors should allow the competitors to take their phones to the contest areas.

If the competitor uses their device in a manner which compromises the integrity of the competition, the competitor's score may be penalized.

SCOPE OF THE COMPETITION

The competition is defined by industry standards as determined by the NYS SkillsUSA Championships technical committee, comprised of the North Carolina Masonry Contractors Association, Oldcastle, Bon Tool Co., Brick Industry Association, Brick Industry Association SE Region, E/Z Grout Corp., Marshalltown Co., Mason Contractors Association of America, National Concrete Masonry Association and SPEC MIX Inc.

KNOWLEDGE PERFORMANCE

All competitors are required to take the SkillsUSA professional development test at orientation.

The competition will include a written exam assessing mastery of brick masonry techniques including but not limited to safety; identification and usage of hand tools, power tools, measuring tools and equipment; and blueprint reading.

SKILL PERFORMANCE

The competition will include a skills performance assessing the competitor's ability to safely construct a composite brick and block project.

COMPETITION GUIDELINES

1. Competitors will construct a project or wall system using brick or brick and block, according to project specifications and drawings, within an allotted time.
2. The project will include components of the most frequently used details in residential and commercial masonry construction. In addition, the assessment will also include the vital elements of quality workmanship.

STANDARDS AND COMPETENCIES

* Considered essential competencies.

** Should be mastered at the journeyman level.

All other items are considered supplemental.

M 1.0 — Practice safe brick and masonry techniques according to industry standards as set forth by the SkillsUSA technical committee

- 1.1. Choose proper tools and materials. *
- 1.2. Perform work in a reasonable amount of time as determined by the instructor and/or industry standards. *
- 1.3. Lay-up masonry products in an accurate and professional manner. **

- 1.4. Load and unload materials as directed. *
- 1.5. Cleanup work areas properly and thoroughly. *

M2.0— Model safety standards according to and following OSHA regulations

- 2.1. Demonstrate appropriate safety precautions when performing all tasks. *
- 2.2. Demonstrate awareness of potential hazards when performing all tasks. *
- 2.3. Accept responsibility for the safety of other workers. *
- 2.4. Keep work areas neat and organized. *
- 2.5. Wear proper safety equipment and clothing. *
- 2.6. Follow prescribed OSHA standards.

M3.0—Use hand tools and equipment according to industry standards as set forth by the SkillsUSA technical committee

- 3.1. Cut masonry safely around others*
- 3.2. Place mortar cautiously in the mortar pan or on the mortar board. *
- 3.3. Keep tools out of the paths of other people working on the job. *
- 3.4. Handle tools properly. *

M4.0— Identify and use basic hand tools used in brick masonry according to industry standards as set forth by the SkillsUSA technical committee

- 4.1. Demonstrate an understanding of the specific uses of each hand tool. *
- 4.2. Practice the safety rules for each hand tool. *
- 4.3. Identify quality tools. *
- 4.4. Store and care for hand tools. *

M5.0— Use measuring tools according to industry standards as set forth by the SkillsUSA technical committee

- 5.1. Use and maintain a modular ruler and a spacing ruler.
- 5.2. Set and use a story pole.
- 5.3. Power tool identification and usage.

M6.0— Identify and use masonry power tools according to industry standards as set forth by the SkillsUSA technical committee

- 6.1. Demonstrate the specific uses of each power tool. *
- 6.2. Practice the safety rules for each power tool. *
- 6.3. Maintain power tools.
- 6.4. Set up power tools correctly. *

M7.0— Use equipment according to industry standards as set forth by the SkillsUSA technical committee

- 7.1. Identify equipment used in masonry. *
- 7.2. Correctly use each piece of equipment.
- 7.3. Store, maintain and repair all equipment.
- 7.4. Inspect, assemble, and disassemble rigging and scaffolding properly.

M8.0— Use masonry levels according to industry standards as set forth by the SkillsUSA technical committee

- 8.1. Use a 24" and 48" level for plumbing and leveling. **

8.2. Care for and maintain a level. *

M 9.0 — Possess an appropriate knowledge of the fundamental theories in masonry

- 9.1. Demonstrate knowledge of trade terminology.
 - 9.1.1. Identify terms used in masonry. **
 - 9.1.2. Incorporate trade terminology into oral communication relating to masonry tasks. **
- 9.2. Demonstrate knowledge of basic math.
 - 9.2.1. Add, subtract, multiply and divide with whole numbers, decimals, and fractions. *
 - 9.2.2. Figure proportions to mix masonry materials according to specifications. *
 - 9.2.3. Compute percentages to estimate and determine material requirements, work performed, schedules and costs. *
 - 9.2.4. Express answers relative to the trade. *
- 9.3. Read blueprints.
 - 9.3.1. Read basic drawings and sketches and understand the information contained in them. *
 - 9.3.2. Know the meanings of basic architectural symbols and abbreviations. *
 - 9.3.3. Use a builder's level relative to a benchmark. *

M 10.0 — Use materials and methods according to industry standards as set forth by the SkillsUSA technical committee

- 10.1. Use masonry materials with accuracy.
 - 10.1.1. Arrange masonry materials for efficient use. *
 - 10.1.2. Place mortar pans properly. *
 - 10.1.3. Temper or shake-up mortar with proper shovels. *
- 10.2. Use hod-carrying.
 - 10.2.1. Arrange masonry materials for efficient use. *
 - 10.2.2. Place mortar pans properly. *
 - 10.2.3. Temper or shake-up mortar with proper tools. *
- 10.3. Use trowels properly.
 - 10.3.1. Manipulate a trowel properly. **
 - 10.3.2. Cut and roll and cut and cup mortar to load trowel properly. **
 - 10.3.3. Spread and furrow the mortar properly. **

M 11.0 — Prepare mortar according to industry standards as set forth by the SkillsUSA technical committee

- 11.1. Follow correct safety practices when mixing mortar.
- 11.2. Proportion mortar ingredients for specific mixes. *
- 11.3. Mix mortar manually with hoe and mortar box. *
- 11.4. Mix mortar with a mortar mixer. *

M 12.0 — Demonstrate bonding methods according to industry standards as set forth by the SkillsUSA technical committee

- 12.1. Possess knowledge of different types of bonding used in masonry construction. *
- 12.2. Lay out bond. * *
- 12.3. Determine coursing. **

M13.0—Use tool and point joints according to industry standards as set forth by the SkillsUSA technical committee

- 13.1. Use tool concave joints. **
- 13.2. Use a tool rake, weather, V-jointer, grapevine and struck joints.
- 13.3. Perform cut/rough joints.
- 13.4. Tuck-point a wall properly. *
- 13.5. Brush and touch up a wall. *

M14.0— Clean brick and structural tile according to industry standards as set forth by the SkillsUSA technical committee

- 14.1. Follow correct procedures for keeping masonry work clean. *
- 14.2. Follow correct procedures in cleaning brick and structural tile. *
- 14.3. Follow correct procedures for rubbing and tuck-pointing concrete block and slag block. *
- 14.4. Clean and tuck-point stonework.

M15.0—Lay brick and blocks according to industry standards as set forth by the SkillsUSA technical committee

- 15.1. Lay straight brick wall.
 - 15.1.1. Lay bricks at the rate of 75–100 bricks per hour. *
 - 15.1.2. Attach a line block and line pins to a wall. **
 - 15.1.3. Set a trig. **
 - 15.1.4. Lay brick to a line while holding bond. **
 - 15.1.5. Throw a full head joint. **
- 15.2. Lay straight block wall.
 - 15.2.1. Spread bed joints and throw on full head joints for block units. *
 - 15.2.2. Lay block units to the line. *
- 15.3. Build the brick corner.
 - 15.3.1. Lay out a wall in preparation for building a brick corner. *
 - 15.3.2. Construct a rack-back lead. *
 - 15.3.3. Construct an outside and inside corner lead (+ or – 1/16"). *
- 15.4. Lay the block corner.
 - 15.4.1. Lay out a wall in preparation for building a block corner. *
 - 15.4.2. Install wire reinforcements in bed joints. *
 - 15.4.3. Build a block corner to a specified height. *
- 15.5. Lay brick veneer wall.
 - 15.5.1. Determine the type of brick to be used.
 - 15.5.2. Bond the wall. *
 - 15.5.3. Scale each course. *
 - 15.5.4. Lay brick in mortar to scale. *
 - 15.5.5. Secure wall with ties at desired intervals. *
 - 15.5.6. Point and joint the wall. *
- 15.6. Lay brick masonry cavity wall.
 - 15.6.1. Determine width of cavity and type of brick to be used. *
 - 15.6.2. Construct components of the wall in the proper sequence. *
 - 15.6.3. Spread mortar to achieve the required bond without getting mortar into the cavity*.

- 15.6.4. Install wall ties that join the exterior and interior widths together into a single cavity wall. **
- 15.6.5. Install flashings and construct weep holes so that they effectively drain moisture from cavities. **
- 15.6.6. Construct and maintain the cavity during construction so that the air space provides insulation. **
- 15.7. Lay single Wythe brick (load-bearing wall using units at least 5" wide).
 - 15.7.1. Determine the type of brick to be used.
 - 15.7.2. Bond the wall. *
 - 15.7.3. Scale each course. *
 - 15.7.4. Lay brick in mortar to scale. *
 - 15.7.5. Secure wall with ties at desired intervals. **
 - 15.7.6. Point and joint the wall. *
- 15.8. Lay a brick and block composite wall.
 - 15.8.1. Determine the type of brick and block to be used.
 - 15.8.2. Bond the wall. *
 - 15.8.3. Scale each course. *
 - 15.8.4. Lay brick and block in mortar to scale. *
 - 15.8.5. Secure wall with ties at desired intervals. *
 - 15.8.6. Point and joint the wall. *

M 16.0 — Construct fireplaces and chimneys according to industry standards as set forth by the SkillsUSA technical committee

- 16.1. Identify various components of a fireplace. **
- 16.2. Build a fireplace according to plans. **
- 16.3. Identify various components of a chimney. **
- 16.4. Build a one-flue chimney from given plans. **

M 17.0 — Construct arches, columns, and piers according to industry standards as set forth by the SkillsUSA technical committee

- 17.1. Demonstrate knowledge of architectural features including aesthetic trims, course designs, period, and antique applications. *
- 17.2. Construct an arch using given plans. **
- 17.3. Construct a column using given plans. *
- 17.4. Construct a pier using given plans. *

M18.0—Lay floors, pavers, and stairs according to industry standards as set forth by the SkillsUSA technical committee

- 18.1. Lay floors according to given plans. *
- 18.2. Lay pavers according to given plans. *
- 18.3. Lay stairs according to given plans. **
- 18.4. Concrete work. **

M 19.0 — Prepare footings according to industry standards as set forth by the SkillsUSA technical committee

- 19.1. Lay out footings properly. *
- 19.2. Place rebar properly. *

19.3. Place and rough finish concrete properly. *

M 20.0 — Lay out and establish foundations according to industry standards as set forth by the SkillsUSA technical committee

20.1. Lay out and establish grades for foundation. *

20.2. Establish corners and lay out concrete blocks according to a specific bonding plan. *

20.3. Lay foundation wall to joist and brick shelf height. *

20.4. Waterproof foundation wall. *

20.5. Install flashing, anchor bolts, termite shield and weep holes. *