



# PLUMBING

## PURPOSE

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

## ELIGIBILITY

Open to active NYS SkillsUSA members enrolled in programs with residential plumbing 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. All necessary supplies and appliances required for the project
  - b. Tank and tips will be provided
2. Supplied by the competitor:
  - a. Hard Hat
  - b. Safety Glasses
  - c. 16' Tape Measure
  - d. 8" Torpedo Level
  - e. #430 Channel Lock Pliers
  - f. 4- or 6-Way Screwdriver
  - g. 16OZ Claw Hammer
  - h. 10" Pipe Wrench
  - i. 8" Adjustable Wrench
  - j. Work Gloves
  - k. Utility Knife
  - l. Torch Head (turbo) For 14OZ Propane Tank
  - m. Wood Cutting Saw
  - n. Plastic Cutting Saw
  - o. 16OZ Plumb Bob
  - p. Striker
  - q. Copper Tubing Cutters ½"-1"
  - r. Hack Saw with Blade
  - s. Copper Cleaning Tool
  - t. #2 Pencil
  - u. Cordless Drill With ½" Chuck, Battery, & Charger
  - v. 2 White Rags
  - w. 5 ¼", 4", 2 ½", 1" Hole Saws

### 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 set by the current industry technical standards.

### **KNOWLEDGE PERFORMANCE**

All competitors are required to take the NYS SkillsUSA professional development test online.

The competition will include a written test to assess the general knowledge of residential plumbing standards and competencies.

### **SKILL PERFORMANCE**

The competition includes a testing station with a series of changes designed to test the ability to perform jobs or skills selected from the following list of competencies as determined by the SkillsUSA Championships technical committee.

### **COMPETITION GUIDELINES**

All piping will be visually inspected and may be tested for leaks.

### **STANDARDS AND COMPETENCIES**

#### **PLB 1.0 — Perform basic plumbing tasks using appropriate tools and equipment**

- 1.1. Identify and use basic hand tools, power tools and equipment
  - 1.1.1. Measure lines to the nearest 1/16" with a ruler/tape measure
  - 1.1.2. Cut out an opening for various pipes and fixtures
- 1.2. Demonstrate proper use of hangers and supports

#### **PLB 2.0 — Read and interpret blueprints and perform measurements and calculations**

- 2.1. Read the architect's scale
- 2.2. Read and develop an isometric sketch of a plumbing system
- 2.3. Determine measurements from a manufacturer's specifications/rough-in drawing

- 2.4. Properly lay-out rough-in locations
- 2.5. Interpret riser diagrams

### **PLB 3.0 — Perform proper plumbing systems rough-in**

- 3.1. Properly install DWV systems
  - 3.1.1. Label a cross-section of a P-trap
  - 3.1.2. Identify the proper fittings required for a DWV system
  - 3.1.3. Calculate the slope required for drainage lines
  - 3.1.4. Install proper venting
  - 3.1.5. Install cleanouts
  - 3.1.6. Rough-in plumbing fixtures
  - 3.1.7. Perform DWV rough-in inspection test
- 3.2. Properly install water supply systems
  - 3.2.1. Determine proper pipe sizing for hot and cold-water systems
  - 3.2.2. Rough-in water supply lines for plumbing fixtures and appliances
  - 3.2.3. Perform approved water pressure tests
- 3.3. Identify and perform the proper joining method for given piping material
  - 3.3.1. Join steel and CSS pipe and fittings
  - 3.3.2. Join cast iron pipe and fittings
  - 3.3.3. Join copper tube and fittings
  - 3.3.4. Join plastic pipe and fittings
- 3.4. Identify types of fittings
- 3.5. Identify size of fittings

### **PLB 4.0 — Install plumbing fixtures, appliances, and appurtenances**

- 4.1. Install fixture supply stops
- 4.2. Install water supplies
- 4.3. Install appropriate traps
- 4.4. Install a faucet/valve
- 4.5. Install a drain assembly
- 4.6. Install the fixture level, plumb and secure
- 4.7. Install appropriate relief valves

### **PLB 5.0 — Perform plumbing systems service and repair**

- 5.1. Replace a section of damaged water supply pipe
- 5.2. Repair damaged DWV pipe
- 5.3. Repair a leaking faucet
- 5.4. Repair a leaking shower valve
- 5.5. Replace a water closet fill valve
- 5.6. Replace a trap
- 5.7. Clear obstructions from a drain
  - 5.7.1. Clear obstructions from a drain
  - 5.7.2. Clear obstructions from a water closet drain
  - 5.7.3. Clear obstructions from a main drain line

### **PLB 6.0 — Perform plumbing tasks in a safe environment**

- 6.1. Keep your work area clean and safe
- 6.2. Understand and apply OSHA regulations that involve plumbing practices
- 6.3. Use appropriate safety apparel for the task being performed
  - 6.3.1. Wear appropriate safety glasses, hard hats, work boots, respirators, ear protection, back and knee protection, etc., for a given situation
- 6.4. Demonstrate safe piping installation practices
  - 6.4.1. Demonstrate correct procedure per piping material manufacturer instructions provided
- 6.5. Demonstrate proper use of GFI in potentially hazardous conditions
- 6.6. Demonstrate safe use of power and hand tools
- 6.7. Maintain proper ventilation when working with chemicals and other potentially hazardous materials

### **PLB 7.0 — Employability**

- 7.1. Exhibit personal skills such as attendance, time management, individual responsibility, and teamwork
- 7.2. Practice good customer relations
- 7.3. Fill out a job application completely and legibly
- 7.4. Maintain professional conduct and appearance
  - 7.4.1. Demonstrate polite, attentive attitude
  - 7.4.2. Wear neat, clean clothing and be well groomed
- 7.5. Respect the property of both your customer and employer