



# 21ST ANNUAL **TERRITORIAL COMPETITION**

## CONTEST DESCRIPTION DOCUMENT

### 15 - PLUMBING

#### Post-Secondary Level

(NOTE: Scope may change without notice)

#### PURPOSE OF THE CHALLENGE

**DURATION: 6 HOURS**

To assess the contestant's knowledge and skills in the installation of a plumbing system with high regard to the aspects of quality workmanship, proficiency of pipe joinery techniques and accuracy of work within as specified time frame.

#### SKILLS AND KNOWLEDGE TO BE TESTED

Mathematical problem solving, safe work practices, proper use of tools, correct pipe assembly techniques, blueprint and/or specification interpretation ability and a strong positive work ethic

#### CONTEST DESCRIPTION

Tasks that may be performed during the contest:

- Applying mathematical concepts involving parallel, 60, 45, 22 ½ ° offsets.
- Interpreting and applying the blueprint specifications, product specifications and shop drawings.
- Submit isometric drawings and material list for assessment • Assembly of various pipe and fitting systems.
- Interpreting NRC plumbing code (2015 edition)
- Copper – soft soldering (lead free with water based flux), press fit
- Plastic PVC drainage using System 15 One Step cement

- Bending of copper tube using mechanical benders
- Apply safe work practices
- All dimensions shall be in millimeters
- All dimensions will be taken from the designated centreline or benchmarks (datum lines)

## ESSENTIAL SKILLS

Essential skills are used in nearly every job to varying degrees. They provide a foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. Good Essential Skills will help you understand and remember concepts introduced in technical training. The level of Essential Skills required for most trades is as high or higher that for many office jobs.

Of the nine skills that have been identified and validated as key essential skills for the workplace, this contest involves the following:

- |                                     |                     |                                     |                    |                                     |                     |
|-------------------------------------|---------------------|-------------------------------------|--------------------|-------------------------------------|---------------------|
| <input type="checkbox"/>            | Continuous Learning | <input type="checkbox"/>            | Numeracy           | <input checked="" type="checkbox"/> | Thinking            |
| <input type="checkbox"/>            | Digital             | <input checked="" type="checkbox"/> | Oral Communication | <input type="checkbox"/>            | Working with Others |
| <input checked="" type="checkbox"/> | Document Use        | <input checked="" type="checkbox"/> | Reading Text       | <input type="checkbox"/>            | Writing             |

## EQUIPMENT, TOOLS, SUPPLIES, AND CLOTHING

### SUPPLIED BY CONTESTANT:

Note: No other tools than the tools listed below will be allowed into competition area

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Metal rules metric</li> <li>• IPT Red Hand Book (NTC will check for private notes in it)</li> <li>• Measuring tape in millimeters (25 mm wide recommended)</li> <li>• 9" torpedo levels</li> <li>• 8-inch standard utility pliers or equivalent</li> <li>• Plastic pipe cutters for up to 3" (manual)</li> <li>• Plastic pipe reamer 3", 2", 1 1/2"</li> <li>• 10-inch or 12-inch metal saw with spare blades, or equivalent</li> <li>• Adjustable wrenches (8" and 12" recommended) or</li> </ul> | <ul style="list-style-type: none"> <li>equivalent</li> <li>• Tube cutters for 3/16" to 1 1/8" diameter copper tube or equivalent</li> <li>• Mini pipe cutter or equivalent</li> <li>• 16-ounce hammer or equivalent</li> <li>• 1/2 round steel file and or flat smooth file with a handle</li> <li>• Plumb bob</li> <li>• Pencils / soapstone / markers / erasers</li> <li>• Paper</li> <li>• Utility knife</li> <li>• Striker</li> <li>• Copper de-burring tool</li> <li>• Assorted screw drivers</li> </ul> |
|---|---|

- Hex and or spud 14-inch wrench
- Tool box maximum dimensions: Height 16" length 30" width 16" (4.5 cu.feet)
- Centre punch
- Chalk line
- NRC Plumbing Code 2015

### **SUPPLIED BY COMMITTEE:**

- Tri-stands
- Soldering torches (B tank turbo)
- 2 ft levels
- Adhesives
- Teflon
- Threading compound
- Soldering paste
- Flux brushes
- 1/2" and 3/4" cleaning brushes
- Sand cloth
- Isometric paper
- (Non-programable) Pocket calculator
- Lever style bender for 5/8" O.D. copper (6 benders will be there for competitors to share)
- Tape Measure (Metric) & Imperial
- Cordless Drill 1/2" • Cordless Drill 1/2"
- #21R 6" Bit Tip
- 2 ft carpenters square
- Combination squares

### **SAFETY REQUIREMENTS**

Contestants must wear appropriate clothing and personal protective equipment; safety boots, safety glasses, hearing protection and gloves. The contestant must address the dangers of long hair, jewelry, etc.

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules may be required to undertake a second safety workshop.

### **POINT BREAKDOWN / 100 TOTAL**

|  |     |
|--|-----|
| Accuracy of Installation Approximately | 50% |
| Quality of Workmanship Approximately   | 30% |
| Piping Pressure Test Approximately     | 20% |

- Full marks for dimension within 2mm
- Half marks for dimension within 3 to 4 mm
- Point deduction per material request 10 points
- All dimensions shall be in millimeters
- All dimensions will be taken from the designated centerline and benchmark
- Completion time will be utilized for a tiebreaker

## **TECHNICAL COMMITTEE MEMBERS - JUDGES**

**Tech Chair- TBA**

**Judges- TBA**