

# Provincial Scope Document

*WELDING (Secondary)2024*

**NOTE:**

**Check in time: 3:00 pm, April 16, 2023 - contest area - orientation.**

**Contest Start: 6:00 am April 17, 2023 - check is 5:50 am**

**Contest Length: 5 hrs. including 30 min Lunch Break**

**Location- Tradex Abbotsford B.C**

**April 16-17, 2024.**

**Sponsors: Lincoln Electric, Barry Hamel, University of the Fraser Valley, Brenco Industries, Cascadia Metals.**

## **Purpose of the Challenge:**

Assess the contestant's ability in the field of welding. Contestants must demonstrate their knowledge in reading drawings and interpreting welding symbols, and mastery of the main welding processes used in today's industry.

## **Skills & Knowledge to be tested:**

Based on technical drawings and welding processes, contestants will be assessed on the assembly and welding of projects in all positions.

<i>Secondary</i>
Shielded Metal Arc Welding (SMAW)
Gas Metal Arc Welding (GMAW).

## Flux Core Arc Welding (FCAW)

### THEORY

The theory portion of the contest is limited to the knowledge required to complete practical work. These knowledge requirements are included in the contest for assessment purposes and involve the following aspects:

<ul style="list-style-type: none"><li>• Reading and interpret assembly drawings</li></ul>	<ul style="list-style-type: none"><li>• Adjusting welding machines</li></ul>
<ul style="list-style-type: none"><li>• Interpret and apply welding symbols</li></ul>	<ul style="list-style-type: none"><li>• Follow safety regulations.</li></ul>
<ul style="list-style-type: none"><li>• Use knowledge of basic metals and filler metals</li></ul>	

### *Note:*

Measurements are shown in Metric (mm) or Imperial (fractions)  
All orientations, instructions and drawings are to be given in English

Students will be expected to:

- Start and use the welding equipment supplied by the organizer, following the appropriate safety regulations.
- Check that the dimensions of the materials are in accordance with the material list and the prints/drawings.
- Prepare the materials by filing where appropriate.
- Assemble the materials in accordance with the drawings provided.
- Utilize their practical skills in drawing interpretation.
- Demonstrate an ability to read blueprints and interpret welding symbols.
- Have a working knowledge of electrode classification and identification.
- The practical and theoretical components for secondary competitors are based on sections from Foundation Level 1, 2 training, including SMAW, GMAW and FCAW.

### Contest Description:

#### TASKS:

##### *Secondary*

Welding on Mild steel structures may include some or all:

SMAW: 1G, 2G, 3G, plate.

Root: E43010 (E6010) 3.2mm (1/8"), 4.0mm (5/32") dia.

Fill and cap: E49018 (E7018)

3.2mm (1/8") 4.0mm (5/32") dia.

Filletts: 2F, 3F, E43010 (E6010) 3.2mm (1/8"), 4.0mm (5/32") dia. E49018 (E7018) 3.2 and 4.0mm (1/8 and 5/32")

GMAW: 2F, 3F (vertical up/down), 1G, 2G, 3G

FCAW: 2F, 3F

### **JOINTS CAN BE PLATES AND/OR PIPE OR BOTH**

#### **Basic Materials:**

##### *Secondary*

Low- carbon steel:

Plate thicknesses: 6.4 - 9.5mm (1/4 - 3/8")

Pipes: Sch 40 or Sch 80

Diameter: 50 to 100mm (2" to 4")

#### **FILLER MATERIALS**

SMAW = E43010 (E6060) 3.2 and 4.0mm, (1/8" and 5/32")

E49018 (E7018) 3.2 and 4.0mm  
(1/8" and 5/32")

GMAW = ER490S6 (ER70S6) 0.9mm (0.035")

FCAW = ER4901T-9 (E71T-9) 1.2 mm (0.045)

#### **SHIELDING GASES**

GMAW= 75% Ar + 25% CO<sub>2</sub>

#### **Safety Requirements:**

Safety awareness/requirements will be always maintained within Worksafe BC standards. A contestant will not be allowed to compete without the safety equipment noted on this scope document.

#### **Clothing / Equipment / Tools / Materials**

*Clothing (to be provided by the contestant):*

- Appropriate work clothes.
- CSA-approved steel-toed boots.
- Welding gloves.
- Safety glasses.
- Ear plugs or protectors.
- Helmet, #10 and/or #11 and/or #12 lens.
- Speed lenses are permitted.

*Note: Contestants are expected to follow all safety requirements as per Worksafe BC.*

***Provided by the Skills Canada Provincial Tech Committee***

- Drawings and instructions
- All materials required to assemble and complete projects
- Return shipping label
- Welding machines and accessories
- Scrap plate
- All filler materials
- Grinders (preparation of materials only)
- Shielding gas (75-25)

***Provided by the contestant and is limited to the following tools:***

• Protective gear listed previously	• Chipping hammer
• Measuring tape, millimeters/inches	≡ Steel wire brush
≡ Soap stone	≡ dividers
• Lead pencil	• Ball peen hammer
• Centre punch	• Pliers/side cutter
• Cold chisel	• Vice grips (standard)
• 12” Combination square set	• Magnet(s)
• Fillet weld gauge	• 10-inch mill file, bastard cut
Toolbox to contain the above items	

**Judging:**

**EVALUATION WILL BE BASED ON THE FOLLOWING:**

<i>Secondary</i>
SMAW
GMAW

FCAW
GENERAL WORKMANSHIP
SAFETY

Judging will take place at the location on the return shipping label. Judges shall be from industry and educational institutions; however, they will not have a student participating in the competition. 100% of the marks will be based on the carbon steel project.

- **ADDITIONAL INFORMATION WILL BE PROVIDED DURING CONTEST ORIENTATION**
- **The tech committee reserves the right to modify competition drawings up to 30% from original, prior to competition time.**

#### Technical Committee:

##### BC Technical Chairs:

Pat McGurk ([Pat.McGurk@ufv.ca](mailto:Pat.McGurk@ufv.ca))

Matt Olafson ([Matt.Olafson@ufv.ca](mailto:Matt.Olafson@ufv.ca))

##### Technical Committee members:

David Duruy, John Sutton, Scott Stanley, John Jacques

**Skills Canada BC reserves the right to update contest information. Please check the website for changes.**