

Regional Scope Document

WELDING (Secondary)2023

Contest Length: 5 hrs

Check in time 8:00 am (contest area) - Contest start: 8:30 am (Alternate start times to be determined by Regional Host)

8:00 - 8:30 Review Scope document, Contest rules and Project drawing.
(Coaches can be present during orientation but are not to assist competitors once competition packages have been presented)

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

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 C Level training, including SMAW, GMAW and FCAW.

Contest Description:

TASKS: Competitors may be required to perform some or all of the following *Secondary*

Welding on Mild steel structures:

SMAW: 1G, 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.

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

E49018 (E7018) 3.2mm (1/8"), 4.0mm (5/32") dia.

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

FCAW: 2F

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% CO₂

Safety Requirements:

Competitor safety is paramount. Competitors must know how to safely use the supplied equipment. Competitors deemed unfamiliar with the tools and processes by the Regional Tech Host will not be allowed to compete.

Safety awareness/requirements will be maintained within Worksafe BC standards at all times. 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;

Provided by the organizing committee

- Welding machines and accessories; Drawings and
- instructions;
- All basic materials required to complete projects; Scrap plate; All
- filler materials;
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Provided by the contestant and is limited to the following tools:

• Protective gear listed previously	• Chipping hammer
• Measuring tape, millimetres/inches	• Steel wire brush
• Soap stone	• dividers
• Lead pencil	• Ball peen hammer
• Centre punch	• All-purpose pliers/side cutter
• Cold chisel	• Vice grips (standard)
• 12" Combination square (45° / 90°)	• 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

Judges shall be from industry and educational institutions; however they will not have a student participating in the contest.

ADDITIONAL INFORMATION WILL BE PROVIDED DURING CONTEST ORIENTATION

Advisors, instructors, etc. are not permitted to speak to their contestants during the competitions.

ALL CONTEST MATERIALS, INCLUDING DRAWINGS MUST REMAIN AT THE CONTEST SITE FOR THE DURATION OF THE CONTEST.

Technical Committee:

BC Technical Chairs:

Pat McGurk (Pat.McGurk@ufv.ca)

Technical Committee members:

Al Sumal Kyle Bramhoff
John Jaques William Small

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