

# Skills Canada National Competition

## SCOPE DOCUMENT

SCOPE DOCUMENT	
<b>Competition Year</b>	2012
<b>Competition location</b>	Edmonton, AB
<b>Trade Number</b>	10
<b>Trade Name</b>	Welding
<b>Level</b>	Secondary and Post-Secondary

### 1. INTRODUCTION

#### 1.1 Purpose of the challenge

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

#### 1.2 Contest duration

12 hours: spread over two days, 6 hours a day.

#### 1.3 Skills and knowledge to be tested

The assembly and welding work will be assessed based on the technical plans and welding processes specified in the projects.

### 2. CONTEST DESCRIPTION

2.1 The documents that will be provided and the dates when they will become available to the competitors.

DOCUMENT	DATE POSTED ON THE WEB SITE
Isometric drawing	February 15, 2012

## 2.2 Tasks that the competitors may have to perform during the contest.

### THEORETICAL ELEMENTS

The contest's theoretical portion is limited to the knowledge required to execute the practical work. These elements are integrated into the contest for evaluation purposes, and include the following skills:

- interpretation of plans
- interpretation of welding symbols
- knowledge of base metals and filler metals
- adjustment of welding machines
- workplace safety rules

Notes:

All measurements are shown in metric.

All instructions and plans will be provided in English and French.

### PRACTICAL TASKS

#### Secondary

- Shielded metal arc welding (SMAW, mild steel)
- Gas metal arc welding (GMAW, mild steel)

#### Post-secondary

- Shielded metal arc welding (SMAW, mild steel)
- Gas metal arc welding (GMAW, mild steel)
- Flux cored arc welding (FCAW, mild steel)
- Gas tungsten arc welding (GTAW, stainless steel and aluminum)

## 2.3 TASKS:

The following types of joints and positions **may** be included.

Secondary	Post-secondary
Assemble and weld on mild steel structures.	
<b>SMAW , GMAW</b>	<b>SMAW, GMAW, FCAW, GTAW</b>
Plate: 1G, 2G, 3G,  Fillet Weld: 1F, 2F, 3F, 5F  Pipe: 1G, 2G	Plate: 1G, 2G, 3G, 4G  Fillet Weld: 1F, 2F, 3F, 4F 5F  Pipe: 1G, 2G, 3G,
	<b>GTAW</b>
	Pipe: 1G, 2G, 5G, 6G  Sheet: 1G, 2G, 3G, 4G,  Fillet: 1F, 2F, 3F, 4F, 5F
	Welding assembly on stainless steel and aluminum structures

### 3. EQUIPMENT, MATERIALS, CLOTHING

#### 3.1 Equipment and materials provided by Skills/Compétences Canada

- Welding machines and accessories for Post Secondary competition: Lincoln Electric Inverter V311TACDC, with foot pedal control and Power Wave S350/PF10M Dual Feeders Package.
- Welding machines and accessories for Secondary competition: Power Wave S350/PF10M Dual Feeders Package. All equipment can be view at [www.lincolnelectric.ca](http://www.lincolnelectric.ca)

#### Secondary materials

- Low carbon steel
- Plate thickness: 3 – 9.5 mm
- Pipe thickness: 2.03 – 9.5 mm
- Diameter: 42.2 - 100 mm
- Filler materials
  - SMAW = E4918, 2.4 and 3.2 mm
  - SMAW = E4310, 3.2 mm or E4311, 3.2 mm
  - GMAW = ER49S-6, 0.9 mm
- Shielding gas
  - GMAW = 75% Ar + 25% CO<sub>2</sub>

#### Post-secondary materials

- Low carbon steel
- Plate thickness: 3-9 mm
- Pipe thickness: 4.8 – 9.5 mm
- Diameter: 25 - 100 mm
- Stainless steel: (1.6), (2.4) and (3.2 mm)
- Aluminium: (1.6), (2.4) and (3.2 mm)
- Filler materials
  - SMAW = E4918, 2.4 and 3.2 mm
  - SMAW = E4310, 3.2 mm or E4311, 3.2 mm
  - GMAW = (ER49S-6), 0.9 mm
  - FCAW = E491T-9-CH, 1.2 mm
  - GTAW = ER308, (1.6), (2.4) and (3.2 mm)
  - GTAW = ER4043, (1.6), (2.4) and (3.2 mm)
- Shielding gas
  - GMAW / FCAW = 75% Ar + 25% CO<sub>2</sub>
  - GTAW = Argon
- Tungsten:  
Competitors may bring their own Tungsten Except Thoriated type  
Cerium and zirconium will be provided.

- Plans and instructions
- Set or practice materials
- All basic materials required to complete projects
- Foot control (pedal) for the GTAW process
- All filler materials
- Aluminium solvent (cleaner) to be provided

### 3.2 Equipment and materials that must be provided by the contestants.

- Helmet, #10, 11 or 12 lens
- Speed lenses (optional)
- Measuring tape, millimetres
- Soap Stone
- Centre punch
- Scriber
- Cold chisel
- 12" combination square (45° / 90°)
- Welding gauge
- Chipping hammer
- Steel and stainless steel wire brushes
- Dividers
- Protractor gauge
- Digital level
- Ball peen hammer
- All-purpose pliers / side cutters
- Vice grip AND C-CLAMS
- Magnet bracket
- Files
- Water spray bottle (e.g. Windex bottle)
- Face SHEILD
- **No JIGS (ANGLE IRON ETC...)**
- **NO GRINDERS (TO BE PROVIDED AT COMPETITION)**

### 3.3 Mandatory clothing

- Appropriate work clothes

#### 4. SAFETY REQUIREMENTS

##### 4.1 Personal protective equipment (PPE) that contestants must bring:

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Safety goggles     | <input checked="" type="checkbox"/> CSA approved safety shoes | <input type="checkbox"/> Latex gloves    |
| <input type="checkbox"/> Safety gloves                 | <input checked="" type="checkbox"/> Welding helmet            | <input type="checkbox"/> Dust mask       |
| <input type="checkbox"/> Safety helmet                 | <input checked="" type="checkbox"/> Welder's gloves           | <input type="checkbox"/> Leather gloves  |
| <input checked="" type="checkbox"/> Hearing protection | <input type="checkbox"/> Respiratory protection               | <input type="checkbox"/> No PPE required |

Contestants who do not have the required protective gear will not be allowed to participate in the contest

#### 5. EVALUATION

##### 5.1 Marking

MARKING	/1000
SECONDARY	
Day 1 – Drawing: CS 1a - 6 hours	500
Day 2 - Drawing: CS 2a - 6 hours	500
POST-SECONDARY	
Day 1 – Drawing: CPS 1a - 2 hours	170
Day 1-Drawing: CPS 1b – 2 hours	165
Day 1 – Drawing: CPS 1c – 2 hours	165
Day 2 – Drawing: CPS 2a	500

## 6. ADDITIONAL INFORMATION

### 6.1 Consecutive interpretation

If consecutive interpretation services are required on site, the provincial or territorial offices must notify the Skills/Compétences Canada National Secretariat at least one month before the competition or these services cannot be guaranteed.

### 6.2 Tie

If there is a tie between two contestants, the one with the highest mark on the second day will win.

### 6.3 Contest rules

Refer to the Competition general rules for clarifications.

## 7. MEMBERS OF THE NATIONAL TECHNICAL COMMITTEE

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