



2021 TERRITORIAL SKILLS COMPETITION

#10 – Welding (Secondary & Post Secondary)

Date: April 24th, 2020

Location: Yukon College

Duration of contest: 8:30am to 4:30pm

CONTEST INTRODUCTION

This competition will be assessing the contestant's ability in the trade 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. Contest duration will be 5 hours. Post-secondary competitors will be completing on two projects and secondary competitors will be completing one 5 hour project. The assembly and welding work will be assessed based on the technical plans and welding processes specified in the projects.

SKILLS AND KNOWLEDGE TO BE TESTED

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 (engineering drawing)
- 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.

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, mild steel, stainless steel and aluminum)

Secondary	Post-secondary
Assemble and weld mild steel structures:	
SMAW , GMAW	SMAW, GMAW, FCAW
Plate: 1G, 2G, 3G, Fillet Weld: 1F, 2F, 3F,4F, 5F Pipe may or may not be included	Plate: 1G, 2G, 3G, 4G Fillet Weld: 1F, 2F, 3F, 4F, 5F Pipe: 1G, 2G, 3G, 5G,6G
	Assemble and weld stainless steel, carbon steel and aluminum structures: GTAW / GTAW Pulse
	Plate: 1G, 2G, 3G, 4G Fillet: 1F, 2F, 3F, 4F, 5F Pipe: 1G, 2G, 3G, 5G,6G

PROJECT DESCRIPTION

Please see attached blue prints **examples** from 2020.

Post-Secondary - https://www.skillscompetencescanada.com/wp-content/uploads/2020/01/SCNC20-10PS-Day1_BI.pdf

https://www.skillscompetencescanada.com/wp-content/uploads/2020/01/SCNC20-10S-Day2-Truck-PAGE-1-3-ONLY_BI.pdf

Secondary – https://www.skillscompetencescanada.com/wp-content/uploads/2020/01/SCNC20-10S-Day1-RAVEN_BI1.pdf

OR https://www.skillscompetencescanada.com/wp-content/uploads/2020/01/SCNC20-10S-Day2-Truck-PAGE-1-3-ONLY_BI.pdf

EQUIPMENT, MATERIAL, CLOTHING

Equipment and material provided by Skills Canada Yukon:

- Cerium, and E3 types electrodes
- Cups and collets.
- Tungsten sharpener
- Plans and instructions
- Set or practice materials
- All basic materials required to complete projects
- Foot control (pedal) for the GTAW process
- All filler materials
- Aluminum solvent (cleaner) will be provided
- Angle grinder
- Grinding disc
- Welding machines and accessories for Post Secondary competition: Miller Diverson 180 AC/DC, with foot pedal control and PipeWorx Multi Process units.
- Welding machines and accessories for Secondary competition: Pipeworx 400 Multi Process Units.
- All equipment can be view at www.millerwelds.com
- Competitor can use any function on the machines. Competitor will be orientated on the basic capability of the machine.

Secondary materials

- Low carbon steel
 - Plate thickness: 3 – 9.5 mm
 - Pipe wall thickness: 3.56 – 6.02 mm
 - Pipe Diameter: 42.2 – 114.3 mm
- Filler materials
 - SMAW = E4918, 2.4 and 3.2 mm
 - SMAW = E4310, 3.2 mm or E4311, 3.2 mm
 - GMAW = ISO B-G49A SC G6 (ER49S-6), 0.9 mm
- Shielding gas
 - GMAW = 75% Ar + 25% CO₂

Post-secondary materials

- Low carbon steel
 - Plate thickness: 3 mm - 9.5 mm
 - Pipe wall thickness: 3.56 mm – 6.02 mm
 - Diameter: 42.2 mm – 114.3 mm
- Aluminum: 3.2 mm
- Filler materials
 - SMAW = E4918, 2.4 mm and 3.2 mm
 - SMAW = E4310, 3.2 and 2.5 mm or E4311, 3.2 and 2.5 mm
 - GMAW = ISO B-G49A SC G6 (ER49S-6), 0.9 mm
 - FCAW = E491T-9-CH, 1.2 mm
 - GTAW = ISO B-G49A SC G3 (ER49S-3), 1.6 and 2.4 and 3.2 mm
 - GTAW = ER4043, 2.4 and 3.2 mm
- Shielding gas
 - GMAW / FCAW = 75% Ar + 25% CO₂
 - GTAW = Argon

Equipment and material provided by the competitor:

- Tungsten
- Helmet, #10, 11 or 12 lens
- Speed lenses (optional)
- Soap Stone / markers
- 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 or level
- Ball peen hammer
- All-purpose pliers / side cutters
- Vice grip AND C-CLAMPS
- Magnet bracket
- Files/ with handles
- Wedges
- Water spray bottle (e.g. Windex bottle)
- Wrap-A-Round
- Grinders are not permitted
- Hacksaw
- Measuring tape metric
- Metric ruler
- Magnetic work light.
- Trigger clamps
- Picks

Grinders will be provided in a grinding booth

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

Required clothing (Provided by the competitor)

- Appropriate work clothes and PPE (No Synthetics)

SAFETY REQUIREMENTS

Personal protective equipment (PPE) provided by Skills Canada Yukon

- Hearing protection
- Safety glasses
- Rubber gloves
- Clear face shield

Personal protective equipment (PPE) provided by competitors:

- CSA approved safety shoes
- Welding helmet
- Welder's gloves

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

EVALUATION CRITERIA

POINT BREAKDOWN	/100
SECONDARY	
Drawing 1	100
POST-SECONDARY	
Drawing 1	50
Drawing 2	50

TECHNICAL COMMITTEE INFORMATION

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