



**April 13, 2017**  
**20<sup>th</sup> ANNUAL SKILLS MANITOBA COMPETITION**  
**CONTEST DESCRIPTION**

**CONTEST NAME:** Welding

**CONTEST NO:** 10

**LEVEL:**

Secondary / Post Secondary

**CONTEST LOCATION:** Red River College

Notre Dame Campus, 2055 Notre Dame Avenue – B160

**NOTE:**

Secondary level: Maximum 1 competitor per school.

Post-Secondary level: Maximum 2 competitors per school

**CONTEST START TIME AND DURATION:**

8:00 AM – 2:00 PM (5 hour competition time)

11:00 AM- 12:00 PM (1 hour Mandatory lunch)

**PURPOSE OF CHALLENGE:**

Assess the competitor's competence in the welding trade. Competitors must demonstrate their ability to read plans, interpret welding symbols and display their mastery of the manual welding processes and procedures commonly used in industry.

## **SKILLS AND KNOWLEDGE TO BE TESTED:**

Relying on technical drawings, contestants will be assessed on the assembly and welding procedures based on various projects in all positions using multiple processes.

### **Practical Component of projects:**

#### **Secondary**

- Shielded metal arc welding (SMAW).
- Gas metal arc welding (GMAW)
- Blueprint reading

#### **Post-secondary**

- Shielded metal arc welding (SMAW).
- Gas metal arc welding (GMAW).
- Gas tungsten arc welding (GTAW).
- Blueprint reading

### **Theory component:**

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

- Interpret drawings;
- Interpret welding symbols;
- S.M.A.W welding;
- G.M.A.W welding;
- G.T.A.W welding;
- Knowledge of basic and auxiliary metals;
- Set up of welding machines;
- Demonstrate the use of hand tools;
- Safety regulations;

## **Materials and processes to be used**

### **Secondary**

Mild steel (SMAW and GMAW)

### **Post-secondary**

Mild steel (SMAW, GMAW, and GTAW)

Stainless steel (GTAW)

Aluminum (GTAW)

### **Tasks:**

**Secondary-** May consist of some or all of the following processes and procedures

GMAW /SMAW - 1G, 2G, 3G, 4G, 5G pipe or plate (vert. up/down)

GMAW/ SMAW - 1F, 2F, 3F, 4F, 5F pipe or plate (vert. up/down)

Root: E6010/6011 - 1/8" electrode

Fill and cap: E6010/6011 or E7018 – 3/32" or 1/8" electrode

Fillets: 1F, 2F, 3F, 4F and 5F - E7018 - 3/32" or 1/8" electrode

Fillets: 1F-E7024 1/8 electrode

### **Basic Materials- Secondary**

#### **Low-grade carbon steel**

Thicknesses:

Plate: 3.18 mm - 9.5 mm (1/8" - 3/8")

Pipe: 3.18 mm - 6.35 mm (1/8" - 1/4") Diameters: 50 mm – 100 mm (2" - 4")

#### **Filler Materials**

##### **SMAW**

E48018 (E7018) 2.4 and 3.2 (3/32" - 1/8")

E41010 (E6010) 2.4 and 3.2 (3/32" - 1/8")

E41011 (E6011) 2.4 and 3.2 (3/32" -1/8")

E41024 (E7024) 2.4 and 3.2 (3/32" - 1/8")

## **GMAW**

ER480S-6 (ER70S-6) 0.9mm (.035)

### **Tasks:**

**Post Secondary-** May consist of some or all of the following processes and procedures

GMAW /SMAW - 1G, 2G, 3G, 4G, 5G pipe or plate (vert. up/down)

GMAW/ SMAW - 1F, 2F, 3F, 4F, 5F pipe or plate (vert. up/down)

Root: E6010/6011 - 1/8" electrode

Fill and cap: E6010/6011 or E7018 – 3/32" or 1/8" electrode

Fillets: 1F, 2F, 3F, 4F and 5F - E7018 - 3/32" or 1/8" electrode

### **Basic Materials- Post Secondary**

#### **Low-grade carbon steel**

Thicknesses:

Plate: 3.18 mm - 9.5 mm (1/8" - 3/8")

Pipe: 3.18 mm - 6.35 mm (1/8" - 1/4") Diameters: 50 mm – 100 mm (2" to 4")

#### **Stainless Steel 308L**

Thickness: 1/16 "- 1/8"

#### **Aluminum 5356**

Material thickness: 14gauge - 10 gauge

### **Filler Materials**

#### **SMAW**

E48018 (E7018) 2.4 and 3.2 (3/32" - 1/8")

E41010 (E6010) 2.4 and 3.2 (3/32" - 1/8")

E41011 (E6011) 2.4 and 3.2 (3/32" -1/8")

GMAW ER480S-6 (ER70S-6) 0.9mm (.035)

GTAW R480S-3 (R70S-3) 1.6 and 2.4 (1/16" and 3/32")

ER308L or ER316L (1/16" and 3/32")

5356 (3/32")

## **Pre-requisites**

Contestants entered in this competition must have mastered the fundamentals of manual welding procedures and processes commonly used in industry. They must also possess an extensive comprehension of reading blueprints and the ability to interpret welding symbols.

**Note:** All measurements are shown in Standard

### **PLEASE NOTE**

**All contestants must be entered in or have completed an approved welding course consisting of at least 8 welding credits as set out from Manitoba Education.**

## **POINT BREAKDOWN (1000 POINTS)**

### **Secondary**

Project 1 – 1000 points

### **Post-Secondary**

Project 1 – 750 points

Project 2 – 250 points

## **EQUIPMENT, TOOLS, SUPPLIES AND CLOTHING:**

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

- CSA-approved steel-toed boots;
- Leather welding jacket;
- Welding gloves (2 categories, G.T.A.W and G.M.A.W)
- Safety glasses;
- Ear plugs or protectors;
- Welding helmet, #10 #11 and/or #12 lens.

**Note:**

Contestants who do not have the required protective gear will not be allowed to participate in the contest. Safety glasses and steel toed boots must be worn at **ALL** times.

**Tools and accessories (to be provided by the contestant)**

- Tool box
- Measuring tape (standard)
- Soap stone (chalk)
- Lead pencil, felt or other markers.
- Centre punch
- Cold chisel
- 12" square - combination
- Fillet weld gauge
- Chipping hammer
- Steel wire brush
- Needle point compass
- 16 ounce ball peen hammer
- adjustable wrench
- All-purpose pliers (for G.M.A.W)
- Vice grips
- Files

All other personal hand tools must first be approved by the organizing committee.

**Materials provided by the organizing committee**

- Welding machines and accessories
- Instructions, welding plans and procedures
- All basic materials required to complete projects
- Set of practice materials
- Electrodes, filler rods, welding wire, and welding gas

### **Additional notes:**

- JUDGES SHALL BE FROM INDUSTRY AND EDUCATIONAL INSTITUTIONS
- JUDGES CANNOT HAVE ONE OF THEIR STUDENTS IN THE CONTEST
- ADDITIONAL INFORMATION WILL BE GIVEN DURING CONTEST ORIENTATION
- CONTEST DRAWINGS (isometric only) WILL BE AVAILABLE FROM SKILLS MANITOBA AFTER FEB 20, 2017.
- ADVISORS, INSTRUCTORS, ETC., ARE NOT PERMITTED TO TALK TO THEIR CONTESTANTS DURING THE COMPETITIONS.
- THE USE OF CELLULAR PHONES, TEXTING OR ANY OTHER COMMUNICATION DEVICES IS STRICTLY PROHIBITED DURING COMPETITION. ANYONE CAUGHT USING SUCH A DEVICE WILL BE AUTOMATICALLY ELIMINATED FROM THE CONTEST.
- I-PODS, MP3 PLAYERS OR ANY OTHER KIND OF MUSIC DEVICE ARE PROHIBITED DURING COMPETITION.
- JUDGES DECISIONS ARE FINAL

### **NATIONAL COMPETITION ELIGIBILITY:**

- A mark of **70% or higher** must be scored by the gold medalist in each contest in order to attend the National Skills Competition

### **THE IMPORTANCE OF ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES;**

Essential skills are used in nearly every job and at different levels of complexity. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. Good Essential Skills means you will understand and remember concepts introduced in technical training. The level of Essential Skills required for most trades is as high as or higher than it is for many office jobs.

The following 9 skills have been identified and validated as key essential skills for the workplace:

Numeracy, Oral Communication, Working with Others, Continuous Learning, Reading Text, Writing, Thinking, Document Use, Digital.

Essential Skills required for Welding: Document Use, Numeracy

**FOR MORE INFORMATION PLEASE CONTACT TECHNICAL COMMITTEE MEMBERS:**

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