



CONTEST DESCRIPTION

# Sheet Metal Work

POST-SECONDARY

## Table of Contents

<b>1</b>	<b>THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY</b> .....	<b>2</b>
<b>2</b>	<b>CONTEST INTRODUCTION</b> .....	<b>2</b>
<b>3</b>	<b>CONTEST DESCRIPTION</b> .....	<b>3</b>
<b>4</b>	<b>EQUIPMENT, MATERIAL, CLOTHING</b> .....	<b>4</b>
<b>5</b>	<b>HEALTH AND SAFETY</b> .....	<b>6</b>
<b>6</b>	<b>ASSESSMENT</b> .....	<b>7</b>
<b>7</b>	<b>CONTEST SPECIFIC RULES</b> .....	<b>7</b>
<b>8</b>	<b>ADDITIONAL INFORMATION</b> .....	<b>7</b>
<b>9</b>	<b>NATIONAL TECHNICAL COMMITTEE MEMBERS</b> .....	<b>9</b>

## 1 THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

In response to the evolving labour market and changing skill needs, the Government of Canada has launched the new Skills for Success (*former Essential Skills*) model defining nine key skills needed by Canadians to participate in work, in education and training, and in modern society more broadly. SCC is currently working with Employment and Social Development Canada (ESDC) to bring awareness of the importance of these skills that are absolutely crucial for success in Trade and Technology careers. Part of this ongoing initiative requires the integration and identification of the Skills for Success in contest descriptions, projects, and project documents. The next phase and very important aspect of our Skills for Success (SfS) initiative is to provide a *Skills Report Card* to each competitor at the Skills Canada National Competition. The purpose of the report card is to inform the competitor about their current level of nine identified Skills for Success based on their competition scores. With this knowledge, the competitor will be made aware which skill may require improvement. Full implementation is expected in the next Skills Canada National Competition.

The following 9 skills have been identified and validated as key skills for success for the workplace in the legend below:

<sup>1</sup>Numeracy, <sup>2</sup>Communication, <sup>3</sup>Collaboration, <sup>4</sup>Adaptability, <sup>5</sup>Reading, <sup>6</sup>Writing, <sup>7</sup>Problem Solving, <sup>8</sup>Creativity and Innovation, <sup>9</sup>Digital

These Skills for Success have been identified in section 2.4 and/or 3.2 of your Contest Description and if applicable, in your Project and supporting documents.

## 2 CONTEST INTRODUCTION

### 2.1 Description of the associated work role(s) or occupation(s)

[https://www.skillscompetencescanada.com/en/skill\\_area/sheet-metal-work/](https://www.skillscompetencescanada.com/en/skill_area/sheet-metal-work/)

### 2.2 Purpose of the Challenge

To enable students to demonstrate their skills work with sheet metal.

### 2.3 Duration of contest

12 hours

### 2.4 Skills and Knowledge to be tested.

Sheet metal layout and fabrication skills will be tested.

### 3 CONTEST DESCRIPTION

#### 3.1 List of documents produced and timeline for when competitors have access to the documents on the Skills/Compétences Canada website

DOCUMENT	DATE OF DISTRIBUTION
Project (orthographic drawings)	January 2022

#### 3.2 Tasks that may be performed during the contest

- Simple layout
- Triangulation from plan and triangulation from elevation (side view)<sup>5</sup>
- Simple radial line development with parallel openings
- Square, polygon or round rain caps
- 90° round on round tees
- Round elbows and offsets (Non-reducing except for BE – SE)
- Any of the following rectangular fittings (All changes in size must occur on the cheeks)<sup>1</sup>
  - Offsets, Elbows, Y-Branches and Take-off

Methods of Fastening and Joining<sup>7</sup> (any of the following):

- Rivets
  - Pop and Solid
- Sheet metal screws
- Nuts and bolts
- Welding
  - MIG and Spot (Resistance)
- Grooved seams
- Single and double seams
- Standing Seams
- Lap and spot
- Hammerlock (Round or rectangular)
- BE – SE slip
- Pittsburgh (Irish) lock
- Slip and drive
- Standing “T” or C.P.R.
- Elbow seam
- Wired edge

*Skills for Success – <sup>1</sup>Numeracy, <sup>5</sup>Reading, <sup>7</sup>Problem Solving*

## 4 EQUIPMENT, MATERIAL, CLOTHING

### 4.1 Equipment and material provided by Skills/Compétences Canada

- MIG welders c/w 0.025" wire and 25% CO2 / 75% Argon (1 for 4 comp.)
- Welding Curtains
- Flat metal table for welding and grinding (1 for 4 comp.)
- Welding helmets (1 for 4 comp.)
- Scrap Metal Bin
- Brooms (2)
- Standard hand brake – (1 for all comp.)
- Box and pan brake – (1 for all comp.)
- Blowhorn stakes (2 for all comp.)
- Hollow mandrel stakes (2 for all comp.)
- Rotary combination machines (Burring, Turning, Elbow, Beading) (1 per 2 comps.)
- 2" x 36" rolls (1 for all comp.)
- Hand groovers
- Pop rivet and guns (2 for all comp.)
- 30" x 72" work surface (1 per comp.)
- Stake holders (2 for all comp.)
- 20-to-16-gauge CR Steel
- 26-to-16-gauge galvanized iron
- 16 oz. cooper and/or brass
- Wire brush
- Drafting Tables
- 36" T-square
- Drafting Equipment package (1 per competitor)
- Rulers 48"
- Framing Squares
- Locking Grip "C" Clamp Pliers
- Locking Grip Needle Nose Pliers
- Locking Vise Grip
- 20v cordless drills
- 4 1/2" angle grinder and grinding disks
- Cutting discs
- Flapper disc
- 1/4" drill bits
- 3/16" drill bits
- 1/8" drill bits
- Measuring Tape 25'

- Rivet Gun

**Note:** Some equipment listed above may not be available

**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.**

#### 4.2 Equipment and material provided by the competitor

- Screwdrivers (Standard and Robertson)
- Aviation snips (left and right cutting)
- Combination snips
- Dividers (2 sets)
- Trammel points
- Marking gauge
- Tape measure
- Hand seamers (folding pliers)
- C-clamp vice grips (2 sets)
- Standard vice grips (2 sets)
- Flat file
- Markers
- Half round file
- 12" rule
- Center punch
- Scratch awl
- Mallet
- Body hammer
- Tinnerns hammer
- Protractor
- Adjustable wrench
- Hacksaw
- Combination square
- Calculator
- These hand tools are recommended as a basic set. This list may be augmented by the competitor, but certain specialized tools or other products may be subject to approval by the National Technical Committee and therefore may not be allowed for use in competition.

#### 4.2.1 Toolboxes Guidelines

One of the objectives of SCC is the sustainability of the Competition. As a result, the toolboxes brought by Competitors will be restricted to the following maximum specifications.

The Competitor toolbox must not exceed 3 meters<sup>3</sup> in volume. It can be multiple toolboxes, but the total of all toolboxes must not exceed the maximum volume indicated. There is no exception to this rule. If the Competitor toolbox is larger than what is indicated, the Competitor with the guidance of the NTC, will need to remove items from the toolbox and those items will not be used during the competition. All tools must fit inside one or more toolboxes. Tools outside of a toolbox will not be permitted.

#### 4.3 Required clothing provided by the competitor

- Proper working attire (i.e., long sleeves and pants)

### 5 HEALTH AND SAFETY

#### 5.1 Safety program

SCC has implemented a comprehensive safety program as health and safety is an integral part of our competitions. Our safety program includes guidelines and procedures to make the work environment in each skill area safer.

##### 5.1.1 Safety manual

As part of our program a safety manual has been created to monitor and document health and safety within each skill area. It includes a definite plan of action designed to prevent accidents. The safety manual will be provided for every skill and these instructions must be followed and respected by all participants and officials at the SCNC.

##### 5.1.2 Safety workshop

During orientation, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety, and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

#### 5.2 COVID-19 Protocol

The COVID-19 guidelines will be shared as soon as they are available. The COVID-19 guidelines will be subject to change based on the BC COVID-19 guidelines in place at the time of the competition.

**5.3** List of required personal protective equipment (PPE) provided by Skills/Compétences Canada

- Face Shield
- Hearing protection
- Safety Glasses

**5.4** List of required personal protective equipment (PPE) provided by the competitor

- CSA approved safety shoes

**Note:** Competitors who do not have the required protective equipment will not be allowed to participate in the competition

## 6 ASSESSMENT

### 6.1 Point breakdown

**Note:** This list is subject to change.

TASKS	/100
<b>Measured</b>	
Critical Dimensions	25
Layout	15
Material Usage	5
<b>Judgement</b>	
MIG Welding	10
Seams, Edges and Fasteners	30
Overall Appearance	15

## 7 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during the competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Use of technology	<ul style="list-style-type: none"> <li>• Cell phones will not be allowed inside competition areas</li> </ul>

## 8 ADDITIONAL INFORMATION

### 8.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise



Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service may not be guaranteed.

## 8.2 Ties

- Tiebreaker #1: The competitor with the highest score in the Seams, Edges and Fasteners criteria will be declared the winner.
- Tiebreaker #2: The competitor with the highest score in the Critical Dimensions criteria will be declared the winner.
- Tiebreaker #3: The competitors with the highest score in the Overall Appearance criteria will be declared the winner.

## 8.3 Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, NTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

## 8.4 Competition rules

Refer to the competition rules of the Skills Canada National Competition which can be found on our website.

## 9 NATIONAL TECHNICAL COMMITTEE MEMBERS

MEMBER ORGANIZATION	NAME
New Brunswick	Josh Dufour
Quebec	André Poirier
Ontario	Jeffrey Goheen – Co-Chair
Manitoba	Bryan Lodge
Saskatchewan	TJ King – Chair
Alberta	Jason Wright
British Columbia	Jud Martell

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve ([nathaliem@skillscanada.com](mailto:nathaliem@skillscanada.com)).