

# SCOPE DOCUMENT

<b>Competition Year</b>	<u>2024</u>
<b>Competition location</b>	Abbotsford, BC
<b>Trade Number</b>	14
<b>Trade Name</b>	Sheet Metal Work
<b>Level</b>	Post-Secondary

## 1. INTRODUCTION

### 1.1 Purpose of the Challenge.

To enable apprentices to demonstrate skills working with sheet metal

### 1.2 Duration of contest.

8 hours

### 1.3 Skills and Knowledge to be tested.

Sheet metal layout and fabrication skills

## 2. CONTEST DESCRIPTION

### 2.1 List of documents produced and timeline for when competitors have access to the documents.

DOCUMENT	DATE OF DISTRIBUTION VIA WEBSITE
Isometric drawing	TDB

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

#### 2.2.1 Layout Skills

- Triangulation to develop pattern from given plan or elevation view
  - Develop plan view from given elevation
  - Develop elevation view from given plan view
- Radial line development .
- Square, polygon or round rain caps
- Tee branches
- 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)
  - Offsets
  - Elbows

- Y---Branches
- Take---offs

### **2.2.2 Methods of Fastening and Joining**

- Rivets
  - Pop
  - Solid
- Sheet metal screws
- Nuts and bolts
- Welding
  - GMAW
  - SMAW
  - Spot (Resistance)
- Grooved seams
- Single and double 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
- Wire edge

## **3. EQUIPMENT, MATERIAL, CLOTHING**

### **3.1 Equipment and material provided by BC Skills (\* items to be borrowed or donated by Trade schools or Contractors)**

- \*MIG welder c/w .030” or .025” wire and 25% CO<sub>2</sub>/ 75% Argon (1 of for competition)
- \*SMAW welder c/w 1/8” or 3/32” 7018 rods (1 of for competition)
- Welding Curtains
- \*Flat metal table for welding and grinding (1 for 4 comp.)
- \*Welding helmets (1 for 4 comp.)
- Face shields
- Scrap Metal Bin
- Brooms (2)
- \*Standard hand brake – 16 gauge rec. (1 for all comp.)
- \*Box and pan brake – 16 gauge rec. (1 for all comp.)
- \*3’ foot shear – 16 gauge rec. (1 for all comp.)
- \*Funnel (blow horn) stakes (2 for all comp.)
- \*Hatchet (knife) stakes (2 for all comp.)

- \*Bevel edge square stakes (2 for all comp.)
- \*Double seaming stakes (2 for all comp.)
- \*Hollow mandrel stakes (2 for all comp.)
- \*Deep throat comb. rotary machine c/w wheels (1 for 4 comp.)
- \*Easy edger (1 for 4 comp.)
- \*2" x 36" rolls (2 for all comp.)
- \*Hand groovers
- \*Pop riveters (2 for all comp.)
- \*1/4" and 5/16" hex screw chucks
- 3' x 6' work surface (1 per comp.)
- 110V power bar (1 per comp.)
- \*Bench vise (1 for 4 comp.)
- \*30" bar folders (1 for all comp.)
- Stake-holders (2 for all comp.)
- 4 1/2" angle grinders c/w flexible pads and discs (2 for all comp.)
- Unishers or equivalent – 16 gauge CRS cap. (2 for all comp.)
- \*Beverly shear (1)
- Cordless drills c/w drill bits (2 for all comp.)
- \*Framing squares (1 per comp.)
- \*18 gauge stainless steel
- \*16 --- 12 gauge CRS
- \*20 to 26 gauge galvanized iron
- 1 1/2 lb. solid rivets
- \*#8 x 1/2" and #10 x 3/4" TEK screws
- \*16 oz. cooper
- \*Sheet brass
- \*Copper/brass polisher (Brasso) and rags

### 3.2 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 vise grips (2 sets)
- Standard vise grips (2 sets)
- Flat file
- Half round file
- 12" rule
- Center punch
- Scratch awl
- Mallet

- Body hammer
- Tinnerns hammer
- Protractor
- Adjustable wrench
- Hacksaw
- Combination square
- These hand tools are recommended as a basic set. The competitor may augment this list but certain specialized tools or other products may be subject to approval by the committee.

### 3.3 Required clothing (Provided by competitor)

- Proper welding attire (i.e. Long sleeves and pants)

## 4. SAFETY REQUIREMENTS

### 4.1 List of required personal protective equipment (PPE) provided by competitors

- Safety Glasses
- Hearing protection
- CSA approved Safety shoes
- Welding gloves

### 4.2 List of required personal protective equipment (PPE) provided by

BC Skills (\* items to be borrowed or donated by Trade schools or Contractors)

- \*Welding helmet

## 5. ASSESSMENT

### 5.1 The Layout and Shop portions of the competition will count equally

**5.1.1** Point breakdown for the Lay out portion of the competition. NOTE: A 10-point penalty will be applied if a competitor requests an extra copy of the drawing.

Pattern: Accuracy and completeness	40 points
Plan View: Accuracy and completeness	20 points
Elevation View: Accuracy and completeness	10 points
Neatness:	10 points
Total	80 points

**5.1.2** Point breakdown for the Shop portion of the competition. NOTE: A 10-point penalty will be applied for each extra piece of material.

Wired edge	25 points
Double Seam	25 points
Groove Seam	15 points

Rivets	10 points
Forming of Body	10 points
Finished Appearance	15 points
Total	100 points

### 5.1.3 Point breakdown for the

Welding	20 points
Total	20 points

## 6. ADDITIONAL INFORMATION

### 6.1 Tie (No ties are allowed)

In the event of a tie, the competitor with the fastest time on the shop project will be placed higher in the ranking.

### 6.1 Competition rules

Please refer to the competition rules of the BC SkillsCanada Provincial Competition.

## 7. BC TECHNICAL COMMITTEE MEMBERS

Trade School	Name	Email address
SMWTC Chair	Jud Martell	judmartell@smwtcs.ca
BCIT	Erich Moeller	erich_moeller@bcit.ca
Okanagan College	Antonio Henriques	ahenriques@okanagan.bc.ca
Camosun College	James Miller	james@smwia276.ca
Century Plumbing and	Bruce Proudfoot	bruce@centurymechanical.ca