



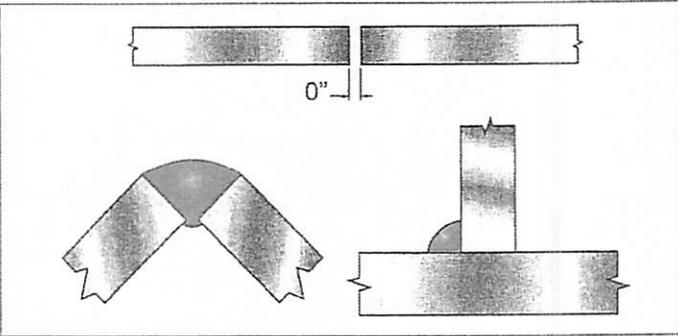


Welding Procedure Specification

WPS 103

WPS No. WPS 103 Revision 3 Date 01/03/2023 By CRV  
 Authorized By GH Date 5/15/2011 Prequalified   
 Welding Process(es) GTAW Type: Manual  Machine  Semi-Auto  Auto   
 Supporting PQR(s) Prequalified

**JOINT**  
 Type T-Joint / Corner  
 Backing Yes  No  Single Weld  Double Weld   
 Backing Material N/A  
 Root Opening 0 Root Face Dimension 0  
 Groove Angle 30-90 Radius (J-U) N/A  
 Back Gouge Yes  No   
 Method N/A



**BASE METALS**  
 Material Spec. 3003 to 3003  
 Type or Grade \_\_\_\_\_ to \_\_\_\_\_  
 Thickness: Groove ( ) Unlimited - N/A  
 Fillet (in ) Unlimited - \_\_\_\_\_  
 Diameter (Pipe, ) N/A - N/A

**POSITION**  
 Position of Groove All Fillet All  
 Vertical Progression:  Up  Down

**FILLER METALS**  
 AWS Specification A5.10  
 AWS Classification ER4043

**ELECTRICAL CHARACTERISTICS**  
 Transfer Mode (GMAW):  
 Short-Circuiting  Globular  Spray   
 Current: AC  DCEP  DCEN  Pulsed   
 Other N/A  
 Tungsten Electrode (GTAW):  
 Size 3/32" - 1/8" Type EWCe2

**SHIELDING**  
 Flux N/A Gas 100%Argon  
 Composition 100%Argon  
 Electrode-Flux (Class) \_\_\_\_\_ Flow Rate 15-25 CFH  
N/A Gas Cup Size 3/8" Min. (#6)

**TECHNIQUE**  
 Stringer or Weave Bead Stringer  
 Multi-pass or Single Pass (per side) Multiple/Single  
 Number of Electrodes 1  
 Electrode Spacing: Longitudinal N/A  
 Lateral N/A  
 Angle N/A  
 Contact Tube to Work Distance N/A  
 Peening N/A  
 Interpass Cleaning \_\_\_\_\_

**PREHEAT**  
 Preheat Temp., Min. 60 Deg.F  
 Thickness Up to 3/4" Temperature N/A  
 Over 3/4" to 1-1/2" N/A  
 Over 1-1/2" to 2-1/2" N/A  
 Over 2-1/2" N/A  
 Interpass Temp., Min. N/A Max. N/A

**POSTWELD HEAT TREATMENT** PWHT Required   
 Temp. N/A Time N/A

WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	GTAW	ER4043	1/16"	AC	100-175	N/A	4-8 ipm	AC Bal. 65-75%EN AC Hz. 60 - 120
All	GTAW	ER4043	3/32"	AC	100-175	N/A	4-8 ipm	AC Bal. 65-75%EN AC Hz. 60 - 120



# SkillsUSA Welding Sculpture

Contestant #: \_\_\_\_\_

<b>Scoresheet Totals</b>		
<b>Category Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Weld Test</b> This test to be administered by MTC Faculty.		100
<b>Notebook</b> Judges score notebook based on formatting and contents. This includes verification letter, photos, and drawings.		200
<b>Interview</b> Judges score interviews based on knowledge and presentation. This includes professional conduct, flow of content, knowledge of project, and level of detail.		200
<b>Sculpture Project</b> Judges score the project based on fit up, welding, cutting and creativity. This includes forming technique, amount/function/quality of welds, function/quality of cuts, and level of difficulty/creativity/originality in the design.		500
<b>Total Points Scored:</b>		Out of 1000



# SkillsUSA Welding Sculpture

Contestant #: \_\_\_\_\_

<b>Sculpture Project</b>	<b>Judges:</b>	
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Metal Forming</b> The project should be formed to match the theme of the design.		50
<b>Weld: Fit and Function</b> The weld joints should be fit properly and serve a function to the overall design.		50
<b>Weld: Quantity</b> Welded components should be incorporated as much as possible.		50
<b>Weld: Quality</b> Welds should demonstrate skill and professionalism.		50
<b>Cutting: Function</b> Cuts should be incorporated to serve the function and theme of the overall design.		50
<b>Cutting: Quality</b> Cuts should demonstrate skill and professionalism.		50
<b>Design: Difficulty</b> The project should exemplify skill and professionalism.		50
<b>Design: Material Usage</b> The project should incorporate various materials and processes in innovative ways.		50

# SkillsUSA Welding Sculpture

Contestant #: \_\_\_\_\_

<b>Interview</b>		<b>Judges:</b>	
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>	
<b>Presentation/Professionalism</b> The student should begin with a greeting, explain the project in detail, answer questions in a professional manner (make eye contact, speak clearly), and end with a closing statement.		50	
<b>Knowledge of Project</b> The student should be knowledgeable about the project, and able to answer questions regarding design, fabrication, and methods used in construction.		100	
<b>Level of Detail</b> The student should be very detailed in responses. All questions should be answered fully.		50	
<b>Total Points Scored:</b>		Out of 200	
<b>Comments:</b>			



# SkillsUSA Welding Sculpture

Contestant #: \_\_\_\_\_

<b>3F SMAW T-Joint</b>		<b>Judge:</b>
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>7018 1/4" Fillet Quality</b> The weld must tie into each plate with no evidence of incomplete fusion, undercut, porosity, or slag inclusions. The profile of the bead should be as flat as possible and uniform for the entirety of the joint.		25
<b>7018 1/4" Fillet Size</b> The weld shall have equal 1/4" legs.		25
<b>7018 3/8" Fillet Quality</b> The weld must tie into each plate with no evidence of incomplete fusion, undercut, porosity, or slag inclusions. The profile of the bead should be as flat as possible and uniform for the entirety of the joint.		25
<b>7018 3/8" Fillet Size</b> The weld shall have equal 3/8" legs.		25
<b>Total Points Scored:</b>		Out of 100
<b>Comments:</b>		

## Welding Sculpture State Competition Schedule - March 26<sup>th</sup> and 27<sup>th</sup>

<b>Time</b>	<b>Item</b>	<b>Item Description</b>
March 26 <sup>th</sup>		
5:00pm – 6:00pm	Welcome/Registration/Welding Shop Walkthrough	Welcome competitors to the competition, ensure all are present, conduct a review of the competition rules in WTC room 106  Competitors can get familiar with their workstation that they will use at the competition.
6:00pm – 7:00 pm	Welding Competition	Welding Sculpture competition competitors will begin the welding Project.  Upon completion competitors clean up the area and move the project to the judging area.
7:00p.m. – 7:30p.m.	Final Booth Check	Competitors will have their booth checked to verify it has been properly cleaned and they can move all personal equipment back to their vehicle.
7:30p.m.	Adjourn	
March 27 <sup>th</sup>		
10:00a.m. – 12:00p.m.	Sculpture Interviews	Competitors will present their sculpture projects to the judges. Judges will also have a series of questions for the competitors.
1:00 p.m. - 2:00 p.m.	Lunch from Hudson's BBQ	
2:30pm – 3:00p.m.	Awards and Adjourn	

# SC SkillsUSA Welding Fabrication

Team # \_\_\_\_\_

Scoresheet Totals		
Category Item	Points Scored	Points Possible
<b>Judge #1</b> This judge scored the team's GMAW Quality, Teamwork, and overall project dimensions.		400
<b>Judge #2</b> This judge scored the team's SMAW Quality, Safety Practices, and Project Distortion.		400
<b>Overall Appearance</b> Both judges score this category together. The finished assembly shall have a professional appearance. All welds should match the given procedure and the finished assembly should have no deviation from the provided drawing.		200
<b>Total Points Scored:</b>		Out of 1000

# SC SkillsUSA Welding Fabrication

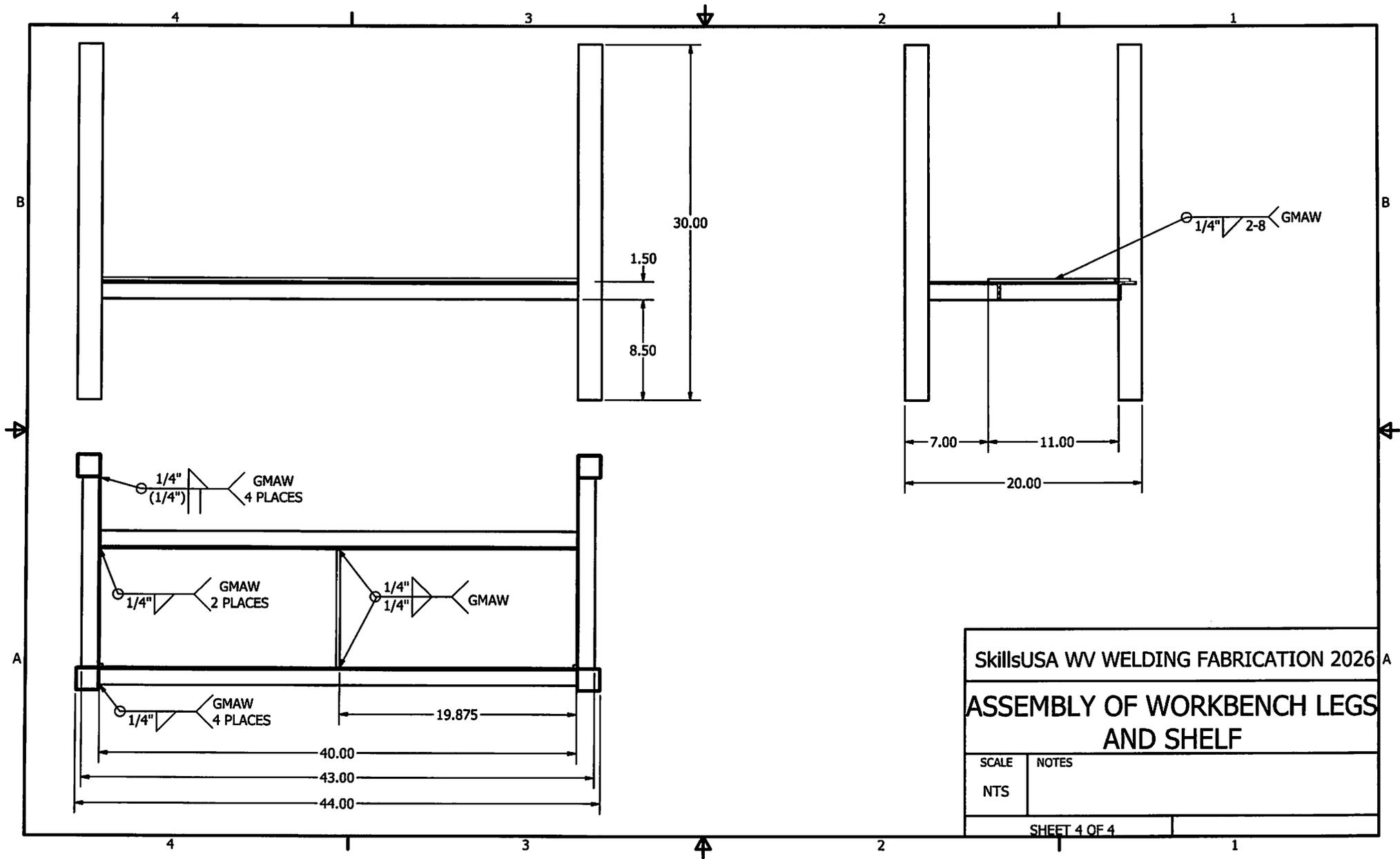
Team # \_\_\_\_\_

<b>Judge # 2:</b>		
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Teamwork</b> The team should divide work evenly. Each member should contribute to the success of the team and work in a professional manner.		100
<b>GMAW Quality</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, or porosity. Welds must meet the specified sizes.		200
<b>Project Dimensions</b> The finished assembly must measure in accordance with the provided drawing.		100
<b>Total Points Scored:</b>		Out of 400
<b>Comments:</b>		

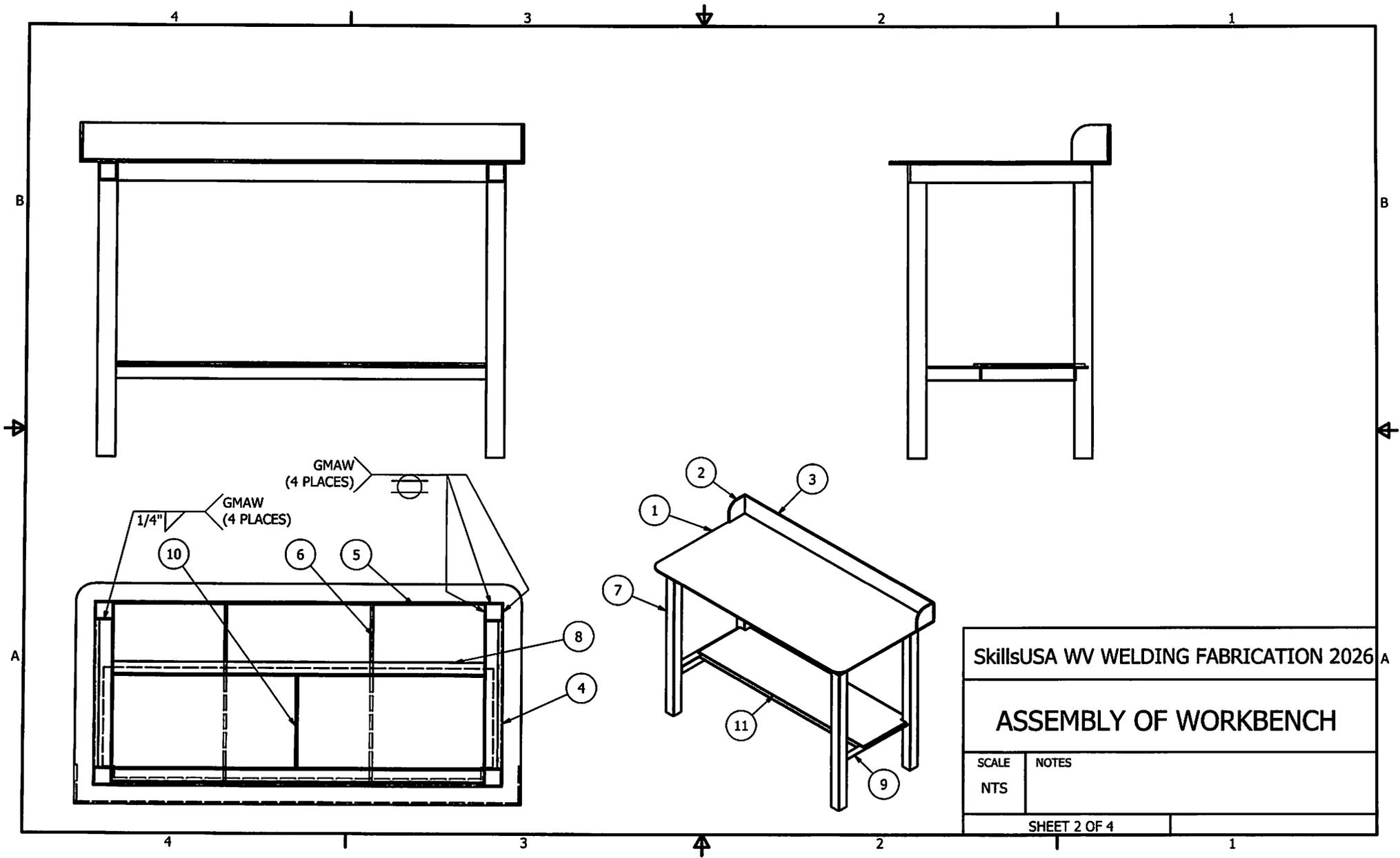
# SC SkillsUSA Welding Fabrication

Team # \_\_\_\_\_

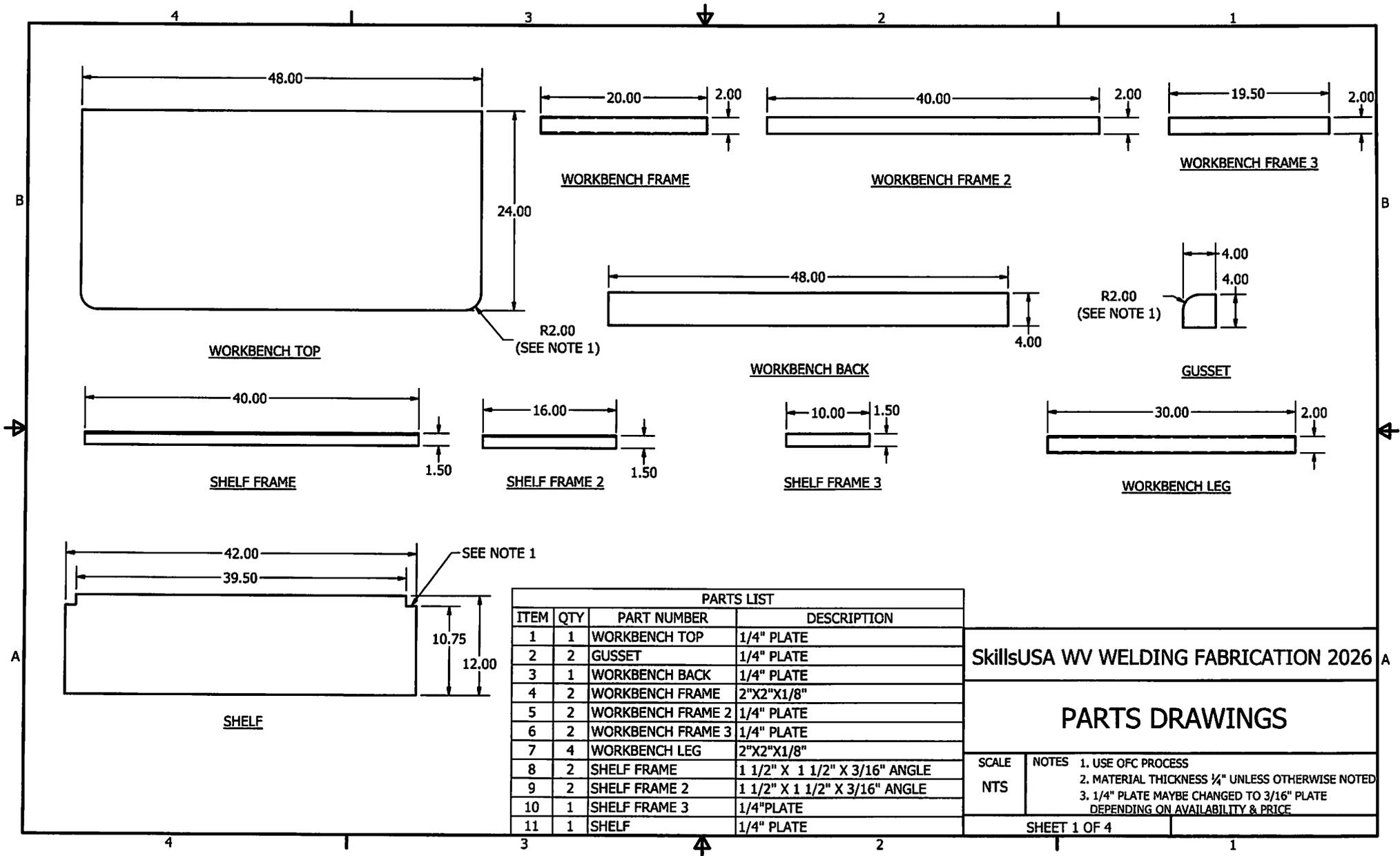
<b>Judge # 1:</b>		
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Safety</b> Appropriate PPE shall be worn AT ALL TIMES. Safe work practices shall also be employed. Contestants shall conduct themselves in a professional manner.		100
<b>SMAW Quality</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		200
<b>Distortion</b> The finished assembly must have square corners and not have excessive welding or finishing to accommodate inaccurate measurements.		100
<b>Total Points Scored:</b>		Out of 400
<b>Comments:</b>		







SkillsUSA WV WELDING FABRICATION 2026 A	
<b>ASSEMBLY OF WORKBENCH</b>	
SCALE	NOTES
NTS	
SHEET 2 OF 4	



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	WORKBENCH TOP	1/4" PLATE
2	2	GUSSET	1/4" PLATE
3	1	WORKBENCH BACK	1/4" PLATE
4	2	WORKBENCH FRAME	2"X2"X1/8"
5	2	WORKBENCH FRAME 2	1/4" PLATE
6	2	WORKBENCH FRAME 3	1/4" PLATE
7	4	WORKBENCH LEG	2"X2"X1/8"
8	2	SHELF FRAME	1 1/2" X 1 1/2" X 3/16" ANGLE
9	2	SHELF FRAME 2	1 1/2" X 1 1/2" X 3/16" ANGLE
10	1	SHELF FRAME 3	1/4" PLATE
11	1	SHELF	1/4" PLATE

SkillsUSA WV WELDING FABRICATION 2026 A

### PARTS DRAWINGS

SCALE: NTS  
 NOTES: 1. USE OFC PROCESS  
 2. MATERIAL THICKNESS 1/4" UNLESS OTHERWISE NOTED  
 3. 1/4" PLATE MAYBE CHANGED TO 3/16" PLATE DEPENDING ON AVAILABILITY & PRICE

## Welding Fabrication State Competition Schedule – March 26<sup>th</sup> & 27<sup>th</sup>

<b>Time</b>	<b>Item</b>	<b>Item Description</b>
March 26 <sup>th</sup>		
5:00pm – 7:30pm	Welding Shop Walkthrough	Competitors can get familiar with their workstation that they will use at the competition.
March 27 <sup>th</sup>		
8:00 – 8:30 a.m.	Welcome/Roll Call	Welcome competitors to the competition, ensure all are present, conduct a review of the competition rules.
8:30 a.m. – 1:00 p.m.	Team Fabrication Competition	<p>Complete the fabrication project from the prints and materials provided.</p> <p>Teams continue working on project upon completion competitors clean up the area and move the project to the judging area.</p>
1:00 p.m. - 2:00 p.m.	Lunch from Hudson's BBQ	
2:00p.m. – 2:30p.m.	Final Booth Check and Move to Awards	<p>Competitors will have their booth checked to verify they it has been properly cleaned and they can move all personal equipment back to their vehicle.</p> <p>They will then proceed to the auditorium for Awards</p>
2:30pm – 3:00p.m.	Awards and Adjourn	

**SC SkillsUSA Welding Singles**  
**Competitor # \_\_\_\_\_**

<b>Scoresheet Totals</b>		
<b>Category Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Steel Welding Project</b> Steel assembly welded from a blueprint using SMAW and FCAW.		<b>400</b>
<b>Aluminum Welding Project</b> Aluminum assembly welded from a blueprint using GTAW.		<b>400</b>
<b>Cutting Project</b> Steel plate cut to specified dimensions using OFC.		<b>200</b>
<b>Total Points Scored:</b>		<b>Out of 1000</b>

# SC SkillsUSA Welding Singles

## Competitor # \_\_\_\_\_

<b>Cutting Project Judge:</b>		
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<p><b>End Cut</b> Cuts should be straight and square with minimal dross sticking to plate that is easily removed, and edges should be sharp, not rounded. Cuts should also have a smooth kerf face with minimal notching. All dimensions of completed product should measure in accordance with supplied print. No grinding is allowed.</p>		<b>50</b>
<p><b>Circle Cut</b> Cuts should be straight and square with minimal dross sticking to plate that is easily removed, and edges should be sharp, not rounded. Cuts should also have a smooth kerf face with minimal notching. All dimensions of completed product should measure in accordance with supplied print. No grinding is allowed.</p>		<b>50</b>
<p><b>Square Cut</b> Cuts should be straight and square with minimal dross sticking to plate that is easily removed, and edges should be sharp, not rounded. Cuts should also have a smooth kerf face with minimal notching. All dimensions of completed product should measure in accordance with supplied print. No grinding is allowed.</p>		<b>50</b>
<p><b>Slot Cut</b> Cuts should be straight and square with minimal dross sticking to plate that is easily removed, and edges should be sharp, not rounded. Cuts should also have a smooth kerf face with minimal notching. All dimensions of completed product should measure in accordance with supplied print. No grinding is allowed.</p>		<b>50</b>
<b>Total Points Scored:</b>		<b>Out of 200</b>

# SC SkillsUSA Welding Singles

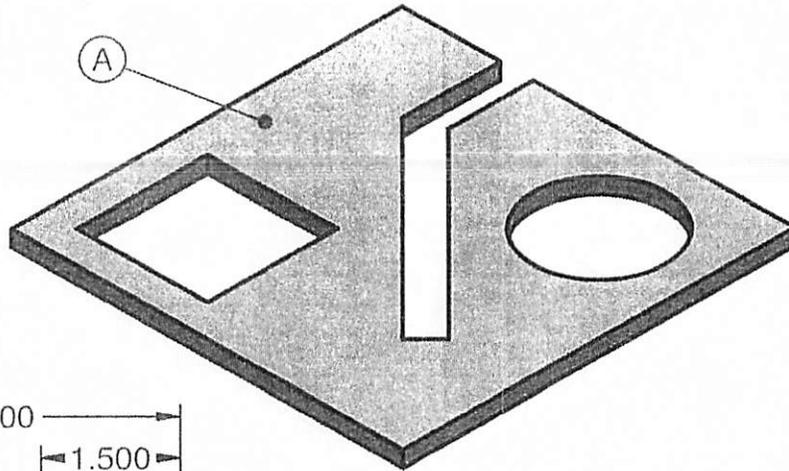
**Competitor #** \_\_\_\_\_

<b>Aluminum Welding Project Judge:</b>		
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Weld # 1</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or contamination. Welds must meet the specified sizes.		<b>50</b>
<b>Weld # 2</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or contamination. Welds must meet the specified sizes.		<b>50</b>
<b>Weld # 3</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or contamination. Welds must meet the specified sizes.		<b>50</b>
<b>Weld # 4</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or contamination. Welds must meet the specified sizes.		<b>50</b>
<b>Weld # 5</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or contamination. Welds must meet the specified sizes.		<b>50</b>
<b>Weld # 6</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or contamination. Welds must meet the specified sizes.		<b>50</b>
<b>Project Dimensions</b> The finished assembly must measure in accordance with the provided drawing.		<b>50</b>
<b>Overall Appearance</b> The finished assembly shall have a professional appearance. All welds should match the given procedure and the finished assembly should have no deviation from the given drawing.		<b>50</b>
<b>Total Points Scored:</b>		<b>Out of 400</b>

# SC SkillsUSA Welding Singles

## Competitor # \_\_\_\_\_

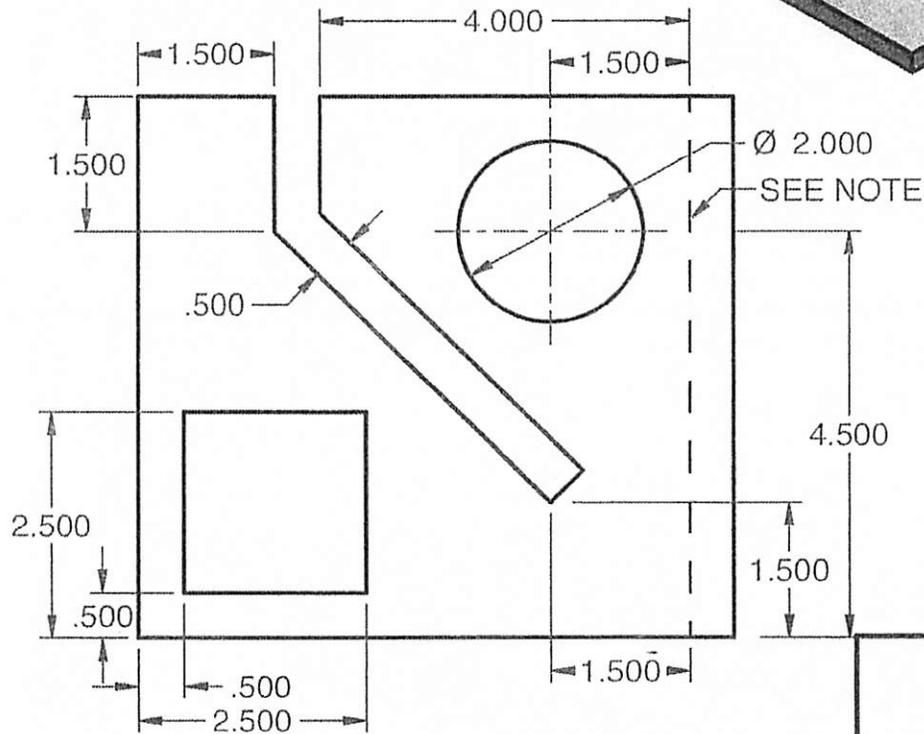
<b>Steel Welding Project Judge:</b>		
<b>Inspection Item</b>	<b>Points Scored</b>	<b>Points Possible</b>
<b>Weld # 1</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		50
<b>Weld # 2</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		50
<b>Weld # 3</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		50
<b>Weld # 4</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		50
<b>Weld # 5</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		50
<b>Weld # 6</b> The weld must tie into each side with no evidence of incomplete fusion, undercut, porosity, or slag inclusion. Welds must meet the specified sizes.		50
<b>Project Dimensions</b> The finished assembly must measure in accordance with the provided drawing.		50
<b>Overall Appearance</b> The finished assembly shall have a professional appearance. All welds should match the given procedure and the finished assembly should have no deviation from the given drawing.		50
<b>Total Points Scored:</b>		Out of 400



Item	Qty.	Description
A	1	0.25 x 6 x 6.5

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

NOTE: PERFORM A SQUARE CUT ALONG DASHED LINE



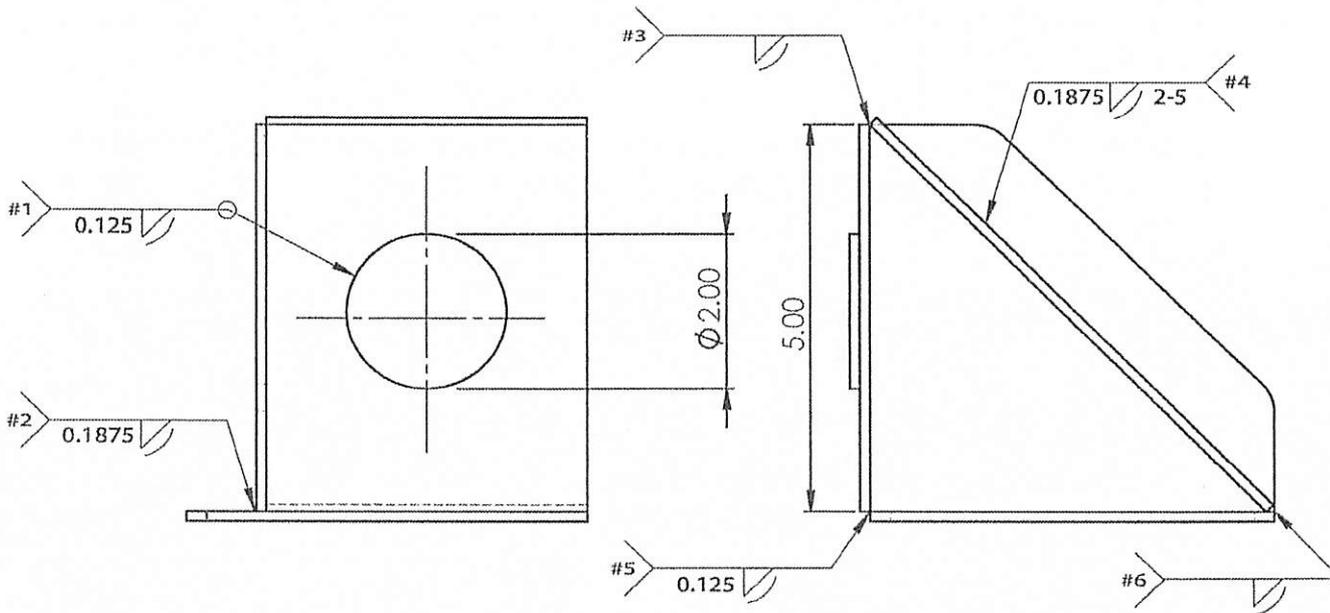
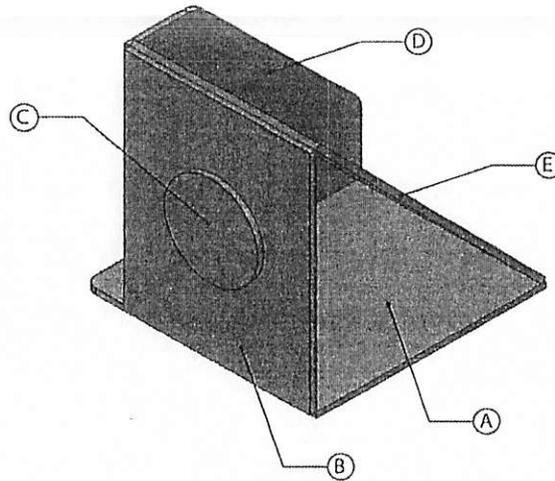
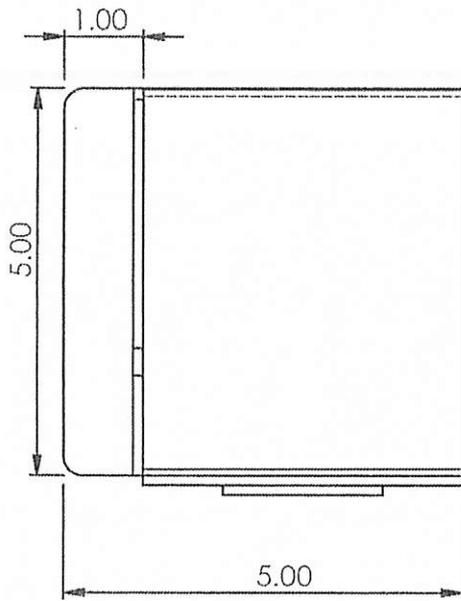
SkillsUSA  
Welding Contest

TITLE  
**PAC or OFC**

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES

SIZE  
**A**

SHEET 1 OF 1



ID	QTY.	DESC.
A	1	0.125 x 5 x 5
B	1	0.125 x 4 x 5
C	1	0.125 x 2 Dia.
D	1	0.125 x 5 x 5 Gusset
E	1	0.125 x 4 x 7

**ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED**

1. TACK COMPLETE ASSEMBLY IN ANY POSITION.
2. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
3. ALL VERTICAL WELDS TO BE WELDED IN THE UPHILL PROGRESSION.
4. NO POST WELD CLEANING ALLOWED

TITLE: STATE



Welding Contest

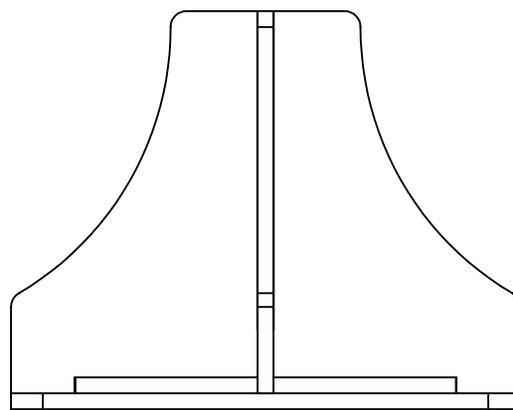
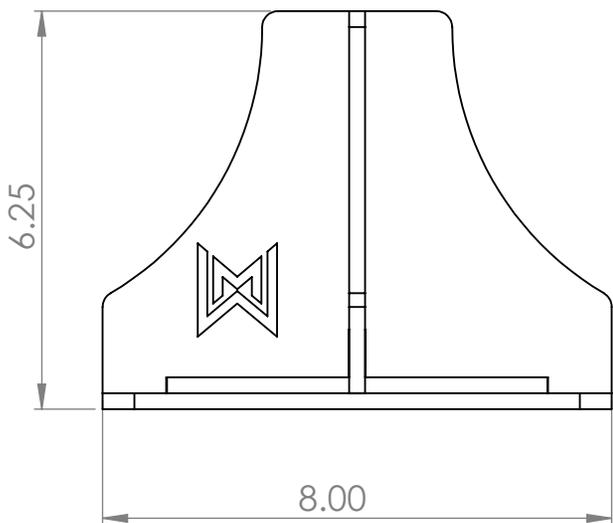
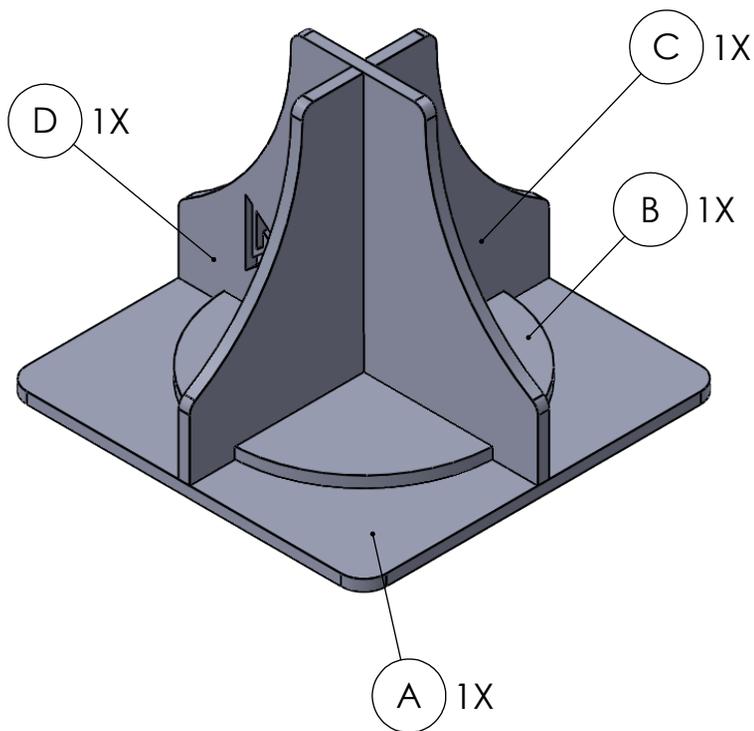
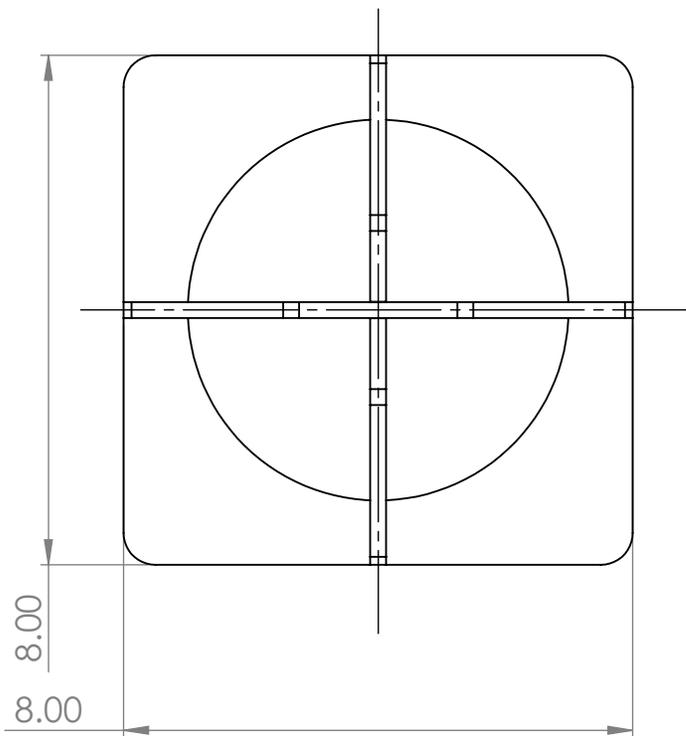
DWG. NO.

GTAW - Aluminum

STATE SUSAT

SHEET 1 OF 1

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### Suggestion Notes.

1. Tack the complete project up before performing any welds.
2. Place tack welds on all corners joining any member meeting that corner.
3. To further challenge your abilities plate A should remain in the flat position during welding.
4. Pay attention to weld sequence in order to cover up starts/stops and provide a visually appealing project.

TITLE:

**Steel Practice  
Project**

DWG. NO.

**WS\_ST1-4-14**

## Welding Singles State Competition Schedule - March 26<sup>th</sup> & 27<sup>th</sup>

<b>Time</b>	<b>Item</b>	<b>Item Description</b>
March 26 <sup>th</sup>		
5:00pm – 7:30pm	Welding Shop Walkthrough	Competitors can get familiar with the workstation they will use during the competition.
March 27 <sup>th</sup>		
8:00 – 8:30 a.m.	Welcome/Roll Call	Welcome competitors to the competition, ensure all are present, conduct a review of the competition rules.
8:30 a.m. - 1:00 p.m.	Welding Competition	Welding Singles competitors will begin FCAW/GMAW/SMAW Project. Upon completion they will proceed to Aluminum Project
1:00 p.m. - 2:00 p.m.	Lunch from Hudson's BBQ	
2:00p.m. – 2:30p.m.	Final Booth Check and Move to Awards	Competitors will have their booth checked to verify it has been properly cleaned and they can move all personal equipment back to their vehicle.
2:30pm – 3:00p.m.	Awards and Adjourn	



**MIDLANDS**  
TECHNICAL COLLEGE

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SCHOOL OF  
ADVANCED MANUFACTURING  
AND SKILLED TRADES