Individual Welding Competition – Skills USA, Utah 2023

This post provides a majority of information for this competition, however, please continue to look for follow-up posts that will include any updates or changes to the competition as it occurs.

Any inquiries- please reach out to Kevin Lannoch, at kevin_lannoch@lincolnelectric.com.

Schedule & Rotations:

Pre-Contest Meeting/Written Exam	Thurs, Mar 23th , 4:30 – 6:00 PM	**SLCC Welding Lab** 1060 N. Flyer Way Salt Lake City, UT 84116 (More Parking Info to Follow)
Welding Contest	Fri, Mar 24th , 7:15 AM – 12:30 PM	**SLCC Welding Lab** 1060 N. Flyer Way Salt Lake City, UT 84116 (More Parking Info to Follow)

Please plan on arriving no later than 7:00 AM, as we will have a meeting prior to the start of the competition. The competition's rotations (exact rotations will be released in a subsequent post) will begin promptly at 7:30 AM. If you are late, you will start at the current rotation and **WILL NOT** be allowed to make up the station.

CLOTHING REQUIREMENT

Class I: Competition Specific — Welding | Welding Fabrication

a) Official SkillsUSA khaki long-sleeve work shirt (100% cotton as per OSHA regulations)
b) Khaki pants (100% cotton as per OSHA regulations)
c) Black, brown, or tan leather work shoes

These regulations refer to clothing items that are pictured and described at: www.skillsusastore.org.

NOTE: Competitors MUST wear their official competition clothing to the competition orientation meeting. Failure to do so at the competition and contest will result in a point deduction.

EQUIPMENT AND MATERIALS

Welding Equipment (will be provided)

a) GMAW
b) FCAW
c) SMAW
d) GTAW
e) OFC

Filler Material (to be provided by Lincoln Electric)

a) GMAW: ER70S-6 .035"

b) FCAW: E71T-1 .045”
c) SMAW: E7018 1/8” & E6010 1/8”
d) GTAW: ER4043 1/16” & 3/32”

Base Material (will be provided)

a) Steel Project Kit to be provided by Weldermade
b) Aluminum Project Kit to be provided by Weldermade

For additional practice kits, please visit weldermade.com.

Supplied by the competitor

a) Hearing and/or ear protection
b) Welding gloves — full length (gauntlet) for SMAW, GMAW and FCAW
c) Welding gloves — appropriate for GTAW
d) Welding cap/beanie
e) Welding helmet with appropriate filter plate/lens and protective cover lens for tacking and welding; auto darkening filter plate/lens permissible. Spare filter plate and cover lens.
f) Cutting goggles — with shade 5 lens/cover lens for OFC/PAC; helmet with shade 5 capability permissible; face shield headgear with shade 5 permissible. Spare filter and cover lens.
g) Pocket calculator
h) Fillet weld gauge — standard set
i) Lead pencil and/or ballpoint pen
j) Soapstone with or without holder or silver streak pencil
k) Scribe without magnet
l) Compass
m) Protractor
n) Combination square set or speed square
o) 10-foot (3.1 meters) minimum steel tape measure
p) 16-ounce (.45 kilogram) ball peen hammer
q) Center punch
r) Cold chisel
s) 11R or 10-inch (254 millimeters) vise grips
t) 6-inch (152 millimeters) side cutting pliers or diagonal cutting pliers
u) 6-inch (152 millimeters) needle nose pliers – welpers permissible
v) Chipping hammer
w) Carbon steel wire brush
x) Stainless steel wire brush
y) Friction lighter (striker) and tip cleaner
z) All competitors must create a one-page resume. See “Resume Requirement” below for guidelines**.**

NOTE: Only items (a.-y.) below may be used during the competition. Using any tools other than those listed items (a.-y.) below will result in a points deduction for each infraction throughout the competition. Powered Tools of any type and cellphones are prohibited in the contest. Any questions regarding tools must be asked at the orientation prior to the competition

RESUME REQUIREMENTS

Competitors MUST create a one-page resume to submit online. Please submit this no later than 7:00 AM on March 24th, 2023. Please email to kevin_lannoch@lincolnelectric.com . Failure to submit a resume will result in a point reduction. Your resume must be saved as a PDF file type using file name format of "Last Name_First Name." For example, "Amanda Smith" would save her resume as Smith_Amanda.

PROHIBITED DEVICES

Cell phones and powered tools are **NOT** allowed in the competition area

Penalties for Prohibited Devices

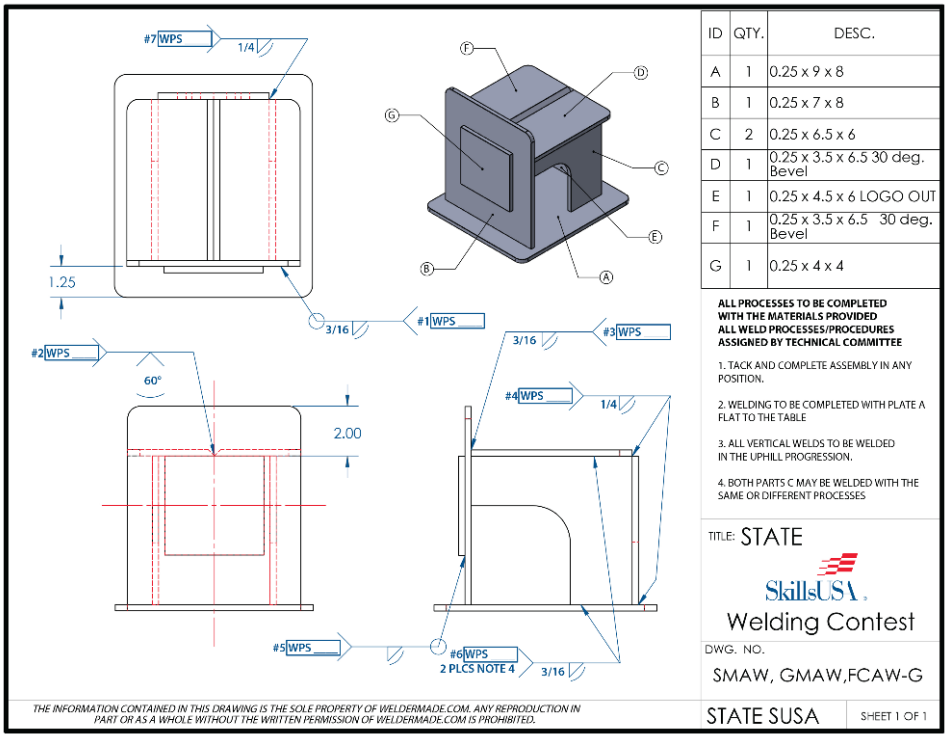
If a competitor's electronic device makes noise or if the competitor is seen using it at any time during the competition, judges will document and review. If confirmed that the competitor used the device in a manner which compromised the integrity of the competition, the competitor's scores may be canceled.

COMPETITION GUIDELINES

1. Competitors must correctly use the welding equipment during the competition. This also includes following all safety guidelines during the competition; including the wearing of uniform, safety glasses, and closed-toe shoes at all times. The judges may stop a competitor at any section of the competition if they deem a competitor's manner to be hazardous to either themselves or others. Such a stoppage shall be documented as a warning. If the competitor is warned a second time, he or she may be disqualified for that section of the competition.
2. As soon as the competitors enter the competition area — as defined by the welding lab— no communication shall occur between the competitors or between the competitors and anyone else, except as directed by the competition chair, technical committee members or judges. Any such communication may result in the competitor being disqualified from that section of the competition.
3. Time limits and rotations will be established during the competition orientation. This competition will be testing GMAW-Carbon Steel , FCAW-Carbon Steel, SMAW-Carbon Steel, GTAW-Aluminum, Oxy Fuel Cutting-Carbon Steel, & Written Exam.
4. Welding and cutting instructions will be provided to the competitors and specified on the Welding Procedure Specifications (WPS).
5. Once the part has been tacked up, it must stay on its base during all welding. The infraction will result in a point deduction, if they're caught rotating it.
6. Contestants must remain at their work station until the end of each rotation and then promptly go to the next station.
7. Contestants must remain at their work station until the end of each rotation and then promptly go to the next station. If a contestant finishes early during a rotation, they are to remain at their work station. Infractions will result in a point deduction. Contestants are allowed to keep a water bottle with them throughout the competition. (See full list of what's allowed above)
8. Evaluation of the completed project will be judged visually based on included criteria.

STEEL PRINT

This will be the print used for the competition on Friday. Students will be provided copies with specified welds.



ID	QTY.	DESC.
A	1	0.25 x 9 x 8
B	1	0.25 x 7 x 8
C	2	0.25 x 6.5 x 6
D	1	0.25 x 3.5 x 6.5 30 deg. Bevel
E	1	0.25 x 4.5 x 6 LOGO OUT
F	1	0.25 x 3.5 x 6.5 30 deg. Bevel
G	1	0.25 x 4 x 4

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED
ALL WELD PROCESSES/PROCEDURES ASSIGNED BY TECHNICAL COMMITTEE

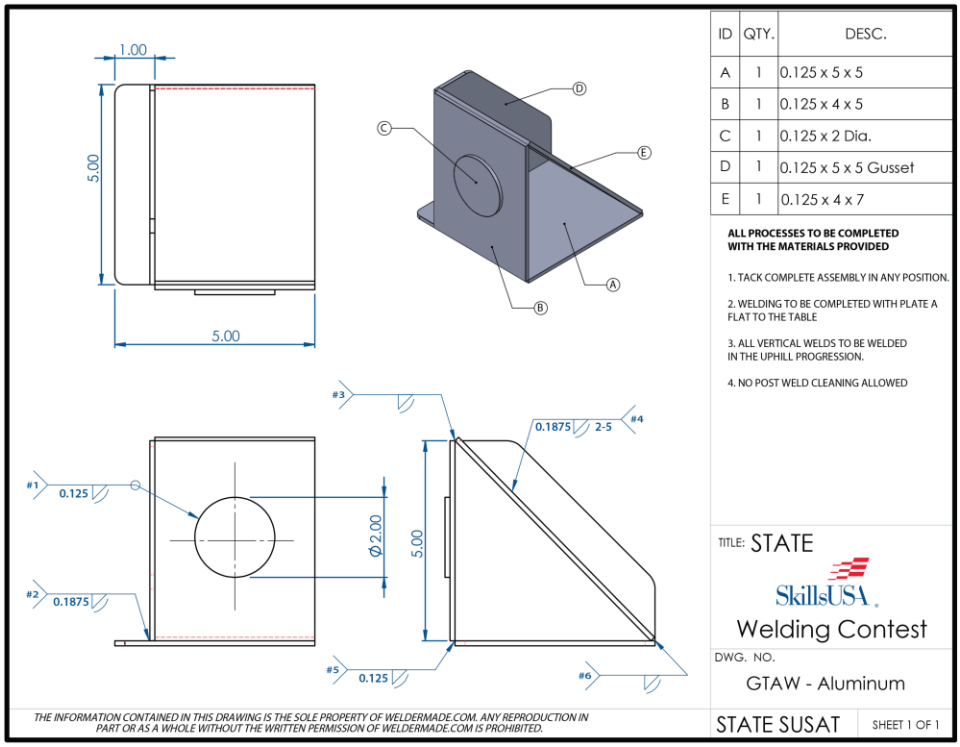
1. TACK AND COMPLETE ASSEMBLY IN ANY POSITION.
2. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
3. ALL VERTICAL WELDS TO BE WELDED IN THE UPHILL PROGRESSION.
4. BOTH PARTS C MAY BE WELDED WITH THE SAME OR DIFFERENT PROCESSES

TITLE: STATE
SkillsUSA Welding Contest
DWG. NO.
SMAW, GMAW,FCAW-G

STATE SUSA SHEET 1 OF 1

ALUMINUM PRINT

This will be the print used for the competition on Friday. Students will be provided copies with specified welds.



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

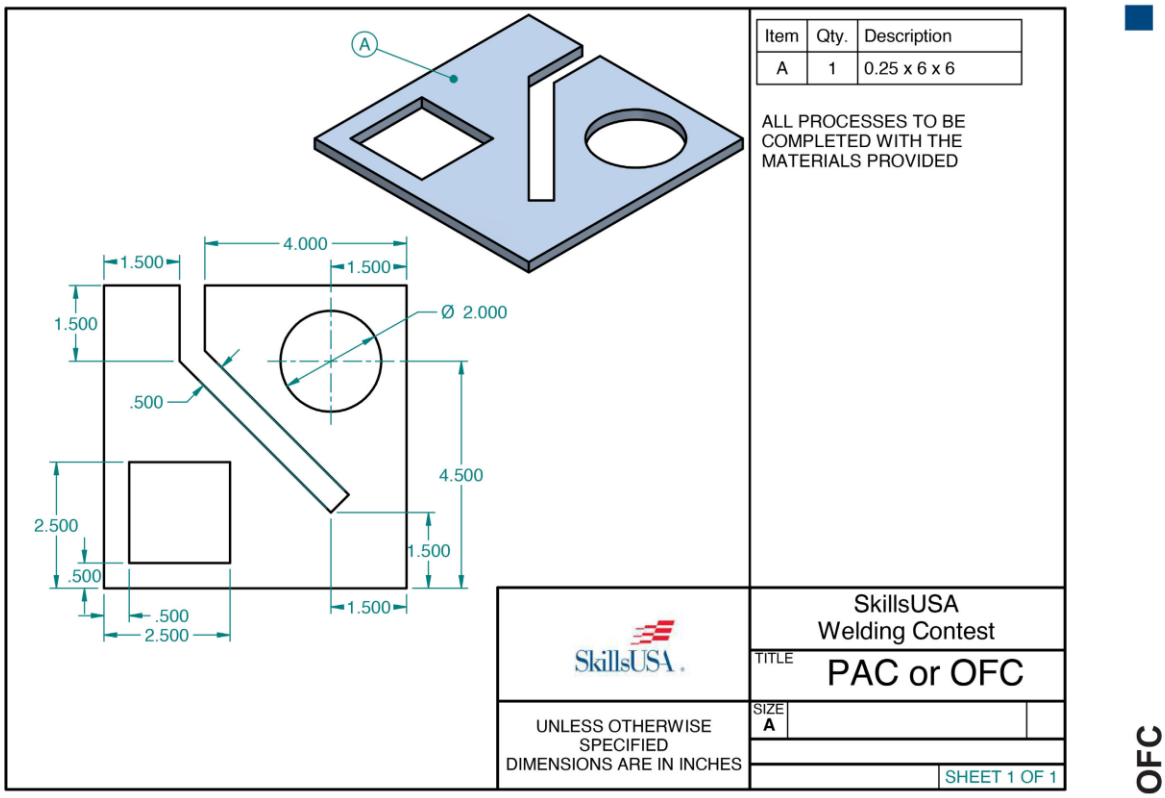
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

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
SkillsUSA Welding Contest
DWG. NO.
GTAW - Aluminum

STATE SUSAT SHEET 1 OF 1

OFC PRINT



SCORING BREAKDOWN

	Weight
GMAW Widget	17.50%
FCAW Widget	17.50%
SMAW Widget	17.50%
GTAW Widget	17.50%
Oxy-Fuel Widget	15.00%
Written Exam	15.00%
TOTAL WEIGHT	100.00%

WPSs

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Welding Procedure Specification

WPS 108

WPS No. WPS 108 Revision 1 Date 3/19/2022 By NP

Authorized By EN Date 3/19/2022 Prequalified ■

Welding Process(es) FCAW-G Type: Manual ☐ Machine ☐ Semi-Auto ■ Auto ☐

Supporting PQR(s) Prequalified

JOINT

Type T-Joint, Butt, Flanged

Backing Yes ☐ No ■ Single Weld ■ Double Weld ■

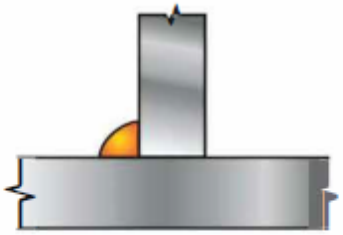
Backing Material N/A

Root Opening 0 Root Face Dimension N/A

Groove Angle N/A Radius (J-U) N/A

Back Gouge Yes ☐ No ■

Method N/A



BASE METALS

Material Spec. A-36 to A-36

Type or Grade to

Thickness: Groove ( )Unlimited - N/A

Fillet (in)Unlimited -

Diameter (Pipe,) N/A - N/A

FILLER METALS

AWS Specification A5.20

AWS Classification E71T-1

SHIELDING

Flux N/A

Electrode-Flux (Class) N/A

Gas

Composition 75%Argon/25%CO2

Flow Rate 35-45 CFH

Gas Cup Size 1/2" - 3/4"

PREHEAT

Preheat Temp., Min. N/A

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

POSITION

Position of Groove All Fillet All

Vertical Progression: ■ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting ☐ Globular ☐ Spray ☐

Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐

Other N/A

Tungsten Electrode (GTAW):

Size N/A Type N/A

TECHNIQUE

Stringer or Weave Bead Both

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 1/2" to 3/4"

Peening N/A

Interpass Cleaning Chip slag and wire brush

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	FCAW-G	E71T-1M	0.045	DCEP	200-260	24-26	5-12	WFS:340-500ipm
RECOMMENDED SETTINGS:								
1F&2F	FCAW-G	E71T-1M	0.045	DCEP	260	26	5-12	WFS:500ipm
4F	FCAW-G	E71T-1M	0.045	DCEP	220	24	5-12	WFS:380ipm
3F	FCAW-G	E71T-1M	0.045	DCEP	200	24	5-12	WFS:340ipm

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Welding Procedure Specification

WPS 104

WPS No. **WPS 104** Revision **2** Date **3/20/2022** By **NP**

Authorized By **EN** Date **3/20/2022** Prequalified ■

Welding Process(es) **GMAW-S** Type: Manual ☐ Machine ☐ Semi-Auto ■ Auto ☐

Supporting PQR(s) **Prequalified**

JOINT

Type **T-Joint**

Backing Yes ☐ No ■ Single Weld ■ Double Weld ■

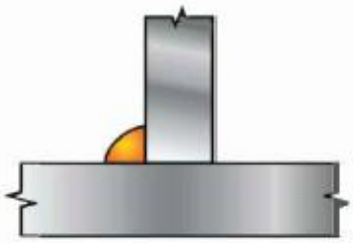
Backing Material **N/A**

Root Opening **N/A** Root Face Dimension **N/A**

Groove Angle **N/A** Radius (J-U) **N/A**

Back Gouge Yes ☐ No ■

Method **N/A**



BASE METALS

Material Spec. **A 36** to **A 36**

Type or Grade to

Thickness: Groove ( ) **N/A** - **N/A**

Fillet (in) **Unlimited** -

Diameter (Pipe,) **N/A** - **N/A**

FILLER METALS

AWS Specification **A5.18**

AWS Classification **ER70S-6**

SHIELDING

Flux **N/A**

Electrode-Flux (Class) **N/A**

Gas **M20-ArC-10**

Composition **75%Argon/25%CO2**

Flow Rate **35-45 CFH**

Gas Cup Size **1/2" - 3/4"**

PREHEAT

Preheat Temp., Min. **N/A**

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**

POSITION

Position of Groove **All** Fillet **All**

Vertical Progression: ■ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting ■ Globular ☐ Spray ☐

Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐

Other **N/A**

Tungsten Electrode (GTAW):

Size **N/A** Type **N/A**

TECHNIQUE

Stringer or Weave Bead **BOTH**

Multi-pass or Single Pass (per side) **Single**

Number of Electrodes **1**

Electrode Spacing: Longitudinal **N/A**

Lateral **N/A**

Angle **N/A**

Contact Tube to Work Distance **1/4" to 3/8"**

Peening **N/A**

Interpass Cleaning **Chip slag and wire brush**

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	GMAW	ER70S-6	0.035"	DCEP	90-150	16-20	6-8 ipm	WFS 140-300 ipm

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Welding Procedure Specification

WPS 101

WPS No. **WPS 101** Revision **3** Date **3/21/2022** By **NP**

Authorized By **GH** Date **3/15/2022** Prequalified ■

Welding Process(es) **SMAW** Type: Manual ☐ Machine ☐ Semi-Auto ☐ Auto ☐

Supporting PQR(s) **Prequalified**

JOINT

Type **Butt / T-Joint**

Backing Yes ■ No ☐ Single Weld ■ Double Weld ☐

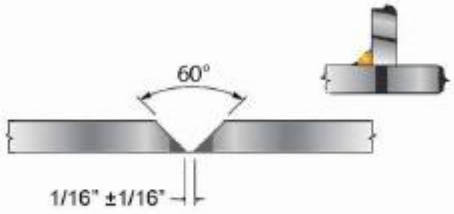
Backing Material **A-36**

Root Opening **1/16" ±1/16"** Root Face Dimension **0" - 1/8"**

Groove Angle **60 Deg.** Radius (J-U) **N/A**

Back Gouge Yes ☐ No ■

Method **N/A**



BASE METALS

Material Spec. **A-36** to **A-36**

Type or Grade to

Thickness: Groove (in) **1/8** - **3/4**

Fillet ( ) **Unlimited** -

Diameter (Pipe,in) **4** - **Unlimited**

FILLER METALS

AWS Specification **A5.1**

AWS Classification **E-7018**

SHIELDING

Flux **N/A**

Gas **N/A**

Composition **N/A**

Flow Rate **N/A**

Gas Cup Size **N/A**

Electrode-Flux (Class) **N/A**

PREHEAT

Preheat Temp., Min. **N/A**

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**

POSITION

Position of Groove **1G,2G,3G,4G** Fillet **1F,2F,3F,4F**

Vertical Progression: ■ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting ☐ Globular ☐ Spray ☐

Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐

Other **N/A**

Tungsten Electrode (GTAW):

Size **N/A** Type **N/A**

TECHNIQUE

Stringer or Weave Bead **Both**

Multi-pass or Single Pass (per side) **Single / Multiple**

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 **Chip slag and wire brush**

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	SMAW	E-7018	3/32	DCEP	70-110	N/A	4-10 ipm	
			OR					
All	SMAW	E-7018	1/8	DCEP	90-150	N/A	4-10 ipm	

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Welding Procedure Specification

WPS 106

WPS No. **WPS 106** Revision **2** Date **3/20/2022** By **NP**

Authorized By **GH** Date **3/15/2022** Prequalified ■

Welding Process(es) **SMAW** Type: Manual ■ Machine □ Semi-Auto □ Auto □

Supporting PQR(s) **Prequalified**

JOINT

Type **T-Joint / Butt**

Backing Yes □ No ■ Single Weld ■ Double Weld □

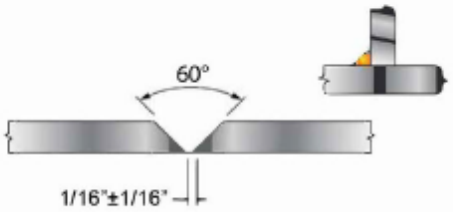
Backing Material **N/A**

Root Opening **1/16"±1/16"** Root Face Dimension **N/A**

Groove Angle **60°** Radius (J-U) **N/A**

Back Gouge Yes □ No ■

Method **N/A**



BASE METALS

Material Spec. **A-36** to **A-36**

Type or Grade to

Thickness: Groove (in) **N/A** - **N/A**

Fillet ( ) **Unlimited** -

Diameter (Pipe, in) **N/A** - **N/A**

FILLER METALS

AWS Specification **A5.1**

AWS Classification **E-6010**

SHIELDING

Flux **N/A**

Electrode-Flux (Class) **N/A**

Gas **N/A**

Composition **N/A**

Flow Rate **N/A**

Gas Cup Size **N/A**

PREHEAT

Preheat Temp., Min. **N/A**

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**

POSITION

Position of Groove **All** Fillet **All**

Vertical Progression: ■ Up □ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting □ Globular □ Spray □

Current: AC □ DCEP ■ DCEN □ Pulsed □

Other **N/A**

Tungsten Electrode (GTAW):

Size **N/A** Type **N/A**

TECHNIQUE

Stringer or Weave Bead **Both**

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 **Chip slag and wire brush**

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	SMAW	E-6010	1/8	DCEP	90-115	N/A	4-10 ipm	

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Welding Procedure Specification

WPS 103

WPS No. **WPS 103** Revision **2** Date **03/20/2022** By **NP**

Authorized By **GH** Date **3/15/2022** 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 □

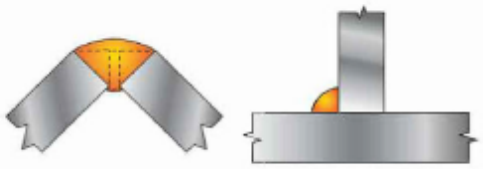
Backing Material **N/A**

Root Opening **N/A** Root Face Dimension **N/A**

Groove Angle **N/A** Radius (J-U) **N/A**

Back Gouge Yes □ No ■

Method **N/A**



BASE METALS

Material Spec. **5052** to **5052**

Type or Grade to

Thickness: Groove ( ) **Unlimited** - **N/A**

Fillet (in) **Unlimited** -

Diameter (Pipe,) **N/A** - **N/A**

FILLER METALS

AWS Specification **A5.10**

AWS Classification **ER4043**

SHIELDING

Flux **N/A**

Electrode-Flux (Class) **N/A**

Gas **100%Argon**

Composition **100%Argon**

Flow Rate **15-25 CFH**

Gas Cup Size **3/8" Min. (#6)**

PREHEAT

Preheat Temp., Min. **N/A**

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**

POSITION

Position of Groove **All** Fillet **All**

Vertical Progression: ■ Up □ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting □ Globular □ Spray □

Current: AC ■ DCEP □ DCEN □ Pulsed □

Other **N/A**

Tungsten Electrode (GTAW):

Size **3/32"** Type **EWCe2**

TECHNIQUE

Stringer or Weave Bead **Stringer**

Multi-pass or Single Pass (per side) **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

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	3/32"	AC	100-175	N/A	4-8 ipm	AC Bal. 65-75%EN
								AC Hz. 60 - 120

JUDGING GUIDELINES

'A'=YES it meets this criteria

'B' = NO it does NOT meet this criteria

FCAW FINAL

Assembley Questions

1	Has surface slag, spatter, and smoke been removed from all of the joints and surrounding areas?
2	Is the Project Assembled In Accordance to the Drawing?
3	Does the overall workmanship display consistency among all welds? (ALL WELDS MUST BE GENERALLY CONSISTENT WITH NO SIGNIFICANT DISCONTUNITUIES)
4	Weld #_____ Crater Cross Section. All craters should be filled to provide the specified weld size, except for the end of intermittent fillet welds outside of their effective length. Are the weld craters completely filled to the weld size?
5	Weld #_____ Overall bead width not to exceed 1/16 in. variation in width (from max to min) for any weld face. Does the weld meet this requirement?
6	Weld #_____ Porosity. No visible porosity is acceptable. Does the Weld Meet this Requirement?
7	Weld #_____ Undercut. Not to exceed 1/32 in depth for a total accumulated length of 1/2in. Does the weld meet this requirement?
8	Weld #_____ Undersized Welds. Weld Size not to be larger by anything greater than 1/16 in. anywhere along the weld length and no smaller than specified on the drawing. Does the weld size meet this requirement?
9	Weld #_____ Weld Profiles. Fillet welds can be slightly concave, flat, or slightly convex with the crown not to exceed 3/32 in. above flat Groove Welds can be flush with an even crown not to exceed 3/32 in. Does this weld meet this requirement?
10	Weld #_____ Weld/Base metal Fusion. Complete fusion shall exist between base and weld metal. Does the weld display complete fusion with no cold lap?
11	Weld #_____ There shall be no Arc Marks outside the weld area. Does the weld meet this requirement?
12	All other Fillet Welds Undersized Welds. Weld Size not to be larger by anything greater than 1/16 in. anywhere along the weld length and no smaller than specified on the drawing. Do all remaining fillet welds meet this requirement?

NOTE: This Final criteria is designed to follow AWD D1.1 table 6.1 Visual Inspection criteria as a start, but much more difficult. Picking three top performing welds requires that the evaluation is more strict than code. We hope to eventually add tiers of quality to these questions that fall in line with the World Skills Welding Scoring Criteria which is extremely strict to be able to seperate near perfect welds to determine a rank. In the future as competition welding performance improves over time these questions will evolve.

Was there a safety infraction? BE SURE TO NOTE The Competitor Number and Explain the safety violation on the Safety Infraction Sheet.

'A'=YES it meets this criteria

'B' = NO it does NOT meet this criteria

GMAW FINAL

Assembley Questions	1	Has surface slag, spatter, and smoke been removed from all of the joints and surrounding areas?
	2	Is the Project Assembled In Accordance to the Drawing?
	3	Does the overall workmanship display consistency among all welds? (ALL WELDS MUST BE GENERALLY CONSISTENT WITH NO SIGNIFICANT DISCONTUNITUIES)
	4	Weld #_____ Crater Cross Section. All craters should be filled to provide the specified weld size, except for the end of intermittent fillet welds outside of their effective length. Are the weld craters completely filled to the weld size?
	5	Weld #_____ Overall bead width not to exceed 1/16 in. variation in width (from max to min) for any weld face. Does the weld meet this requirement?
	6	Weld #_____ Porosity. No visible porosity is acceptable, Does the Weld Meet this Requirement?
	7	Weld #_____ Undercut. Not to exceed 1/32 in depth for a total accumulated length of 1/2in. Does the weld meet this requirement?
	8	Weld #_____ Undersized Welds. Weld Size not to be larger by anything greater than 1/16 in. anywhere along the weld length and no smaller than specified on the drawing. Does the weld size meet this requirement?
	9	Weld #_____ Weld Profiles. Fillet welds can be slightly concave, flat, or slightly convex with the crown not to exceed 3/32 in. above flat. Groove Welds can be flush with an even crown not to exceed 3/32 in. Does this weld meet this requirement?
	10	Weld #_____ Weld/Base metal Fusion. Complete fusion shall exist between base and weld metal. Does the weld display complete fusion with no cold lap?
	11	Weld #_____ There shall be no Arc Marks outside the weld area. Does the weld meet this requirement?
	12	All other Fillet Welds Undersized Welds. Weld Size not to be larger by anything greater than 1/16 in. anywhere along the weld length and no smaller than specified on the drawing. Do all remaining fillet welds meet this requirement?

NOTE: This Final criteria is designed to follow AWD D1.1 table 6.1 Visual inspection criteria as a start, but much more difficult. Picking three top performing welds requires that the evaluation is more strict than code. We hope to eventually add tiers of quality to these questions that fall in line with the World Skills Welding Scoring Criteria which is extremely strict to be able to separate near perfect welds to determine a rank. In the future as competition welding performance improves over time these questions will evolve.

Was there a safety infraction? BE SURE TO NOTE The Competitor Number and Explain the safety violation on the Safety Infraction Sheet.

'A'=YES it mees this criteria

'B' = NO it does NOT meet this criteria

SMAW FINAL

1	Has surface slag, spatter, and smoke been removed from all of the joints and surrounding areas?
2	Is the Project Assembled In Accordance to the Drawing?
3	Does the overall workmanship display consistency among all welds? (ALL WELDS MUST BE GENERALLY CONSISTENT WITH NO SIGNIFICANT DISCONTUNITUIES)
4	Weld #_____ Crack Propagation. Any crack is unacceptable. Are there no visible cracks? (Yes= "Yes, there are no visible cracks)
5	Weld #_____ Crater Cross Section. All craters should be filled to provide the specified weld size, except for the end of intermittent fillet welds outside of their effective length. Are the weld craters completely filled to the weld size?
6	Weld #_____ Overall bead width not to exceed 1/16 in. variation in width (from max to min) for any weld face. Does the weld meet this requirement?
7	Weld #_____ Porosity. No visible porosity is acceptable, Does the Weld Meet this Requirement?
8	Weld #_____ Undercut. Not to exceed 1/32 in depth for a total accumulated length of 1/2in. Does the weld meet this requirement?
9	Weld #_____ Undersized Welds. Weld Size not to be larger by anything greater than 1/16 in. anywhere along the weld length and no smaller than specified on the drawing. Does the weld size meet this requirement?
10	Weld #_____ Weld Profiles. Fillet welds can be slightly concave, flat, or slightly convex with the crown not to exceed 3/32 in. above flush. Groove Welds can be flush with an even crown not to exceed 3/32 in. Does this weld meet this requirement?
11	Weld #_____ Weld/Base metal Fusion. Complete fusion shall exist between base and weld metal. Does the weld display complete fusion with no cold lap?
12	Weld #_____ There shall be no Arc Marks outside the weld area. Does the weld meet this requirement?

Assembley Questions

NOTE: This Final criteria is designed to follow AWD D1.1 table 6.1 Visual Inspection criteria as a start, but much more difficult. Picking three top performing welds requires that the evaluation is more strict than code. We hope to eventually add tiers of quality to these questions that fall in line with the World Skills Welding Scoring Criteria which is extremely strict to be able to seperate near perfect welds to determine a rank. In the future as competition welding performance improves over time these questions will evolve.

Was their a safety infraction? BE SURE TO NOTE The Competitor Number and Explain the safety violation on the Safety Infraction Sheet.

'A'=YES it meets this criteria

'B' = NO it does NOT meet this criteria

GTAW FINAL

NOTE: This Final criteria is designed to follow AWD D1.1 table 8.1 Visual inspection criteria as a start, but much more difficult. Picking three top performing welds requires that the evaluation is more strict than code. We hope to eventually add tiers of quality to these questions that fall in line with the World Skills Welding Scoring Criteria which is extremely strict to be able to separate near perfect welds to determine a rank. In the future as competition welding performance improves over time these questions will evolve. At the National championships, we see too many GTAW projects in pieces on the burn in table. This GTAW scoring rubric emphasizes completion. Once the trend of incomplete GTAW projects changes, this criteria will stress less on the completion of welds.

Assembley Questions	1	Is the Project Assembled In Accordance to the Drawing?
	2	Was the order of operations followed?
	3	The GTAW Project should show no post weld wire brushing, does this project display no post weld wire brushing?
	4	Weld #_____ Placed in the proper Location?
	5	Weld #_____ Proper Size and Length?
	6	Weld #_____ Overall bead width not to exceed 1/32 in. variation in width (from max to min) for any weld face. Does the weld meet this requirement?
	7	Are all present welds free from porosity? No visible porosity is acceptable, Do the Welds Meet this Requirement?
	8	Weld #_____ Crater Cross Section. All craters should be filled to provide the specified weld size, except for the end of intermittent fillet welds outside of their effective length. Are the weld craters completely filled to the weld size?
	9	Did Welder complete _____ Number of welds or more?
	10	Did Welder complete _____ Number of welds or more?
	11	Did Welder complete _____ Number of welds or more?
	12	FOR PROJECTS THAT HAVE _____ OR MORE WELDS COMPLETED (For projects with less weld, or it has been wirebrushed, the answer is NO. "Touchdowns" are when the tungsten is touched to the workpiece or the filler metal and an indication can be visible as long as no post wirebrushing is performed. Is the project free from any "touchdowns"?

Was there a safety infraction? BE SURE TO NOTE The Competitor Number and Explain the safety violation on the Safety Infraction Sheet.

Figure 1 – OFC Go, No-go Gauge.

'A'=YES it mees this criteria

'B' = NO it does NOT meet this criteria

OFC FINAL

NOTE: This scoring criteria uses go-no go gauges to measure the cut. The Gauge is cut 0.1 in. to either side of the line. You may find you need to eliminate or add questions.

1	Does the cut angle stay within +- 5 degrees in any location along its entire length? (Use angle finder tool)
2	Does the cut quality of the BEVEL face display minimal undulations that do not exceed an inconsistency greater than 1/32 in?
3	Does the cut quality of the LARGE SHAPE face display minimal undulations that do not exceed an inconsistency greater than 1/32 in?
4	Does the cut quality of the SMALL SHAPE face display minimal undulations that do not exceed an inconsistency greater than 1/32 in?
5	Does the cut quality of the THIRD SHAPE face display minimal undulations that do not exceed an inconsistency greater than 1/32 in?
6	Does the cut stay inside the diameter of the Go / no-go gauge for The Large SHAPE?
7	Does the cut stay inside the diameter of the Go / no-go gauge for The Small SHAPE?
8	Does the cut stay inside the diameter of the Go / no-go gauge for The THIRD SHAPE?
9	Does the Go / no-go gauge fit inside of the Large Shape?
10	Does the Go / no-go gauge fit inside of the Small Shape?
11	Does the Go / no-go gauge fit inside of the THIRD SHAPE?
12	Is the Bevel accuracy along its length Straight to within no more than a variation of 1/8 in.? (Set two parallel lines along the entire length of the bevel and no point should fall outside that window)

Was their a safety infraction? BE SURE TO NOTE The Competitor Number and Explain the safety violation on the Safety Infraction Sheet.