Welding

CONTEST DATE & LOCATION: Refer to the Kansas State Championships Conference Packet

PURPOSE: To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of Welding

ELIGIBILITY: Open to active SkillsUSA members enrolled in programs with welding as the occupational objective

CLOTHING REQUIREMENT: STRICT ENFORCEMENT of PPE (Personal protective equipment) will be observed during the welding competition. All issues concerning inadequate or inappropriate PPE must be resolved during the allowed check-in time for each student. If the issue cannot be resolved during this time period, the student will not be allowed to compete. Please review the list of PPE requirements for this will be strictly enforced.

Students are required to wear the Official SkillsUSA Kansas T-shirt and blue jeans (no tears, holes, or bagginess, rolled up pant legs or frayed jeans) clean and neat with appropriate LEATHER BOOTS for contest. Students may wear the Official SkillsUSA Khaki work shirt and pants (both the shirt and pants must be 100 percent cotton); black, brown or tan leather high-top work boots (no shoes of any kind, leather or otherwise). PLEASE review the new guidelines in the Technical Standard concerning the dress code. Compliance with this dress code will be assessed in the final score for each student. Denim or FRC Pants will be permitted.

** Safety glasses with side shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)*

Official SkillsUSA blue work shirt attire

NOTE: The Official Kansas State T-shirt will be mailed to schools prior to the competition.

ATTENTION!!!!!!!

STRICT ENFORCEMENT OF PPE (Personal protective equipment) WILL BE OBSERVED DURING THE 2018 WELDING COMPETITION.

ALL ISSUES CONCERNING INADEQUATE OR INAPPROPIATE PPE MUST BE RESOVLED DURING THE ALLOWED CHECK-IN TIME FOR EACH STUDENT. IF THE ISSUE CANNOT BE RESOLVED DURING THIS TIME PERIOD, THE STUDENT **WILL NOT** BE ALLOWED TO COMPETE. PLEASE REVIEW THE LIST OF PPE REQUIREMENTS FOR THIS WILL BE STRICTLY ENFORCED.

- Each student contestant is assigned a specific check-in time this is the time listed on the schedule sheet provided by Skills USA Kansas.
- Prior to the contestant's check-in time they are welcome to wait in the designated gathering area in the Ade-Wifco RCIC building.
    - The designated gathering area will be accessed by following the signs around the back of the building. Do not enter the main entrance of the building!!! UPDATE: Due to the possibility of rain on Tuesday/Wednesday and the potential for mud on the north side of the building please use the main front entrance to the building. AW106 will be used as a gathering point before and after the contest.
- You will not check-in prior to your assigned time.
- A contest judge will come get each group of 4 contestants from the gathering area at the designated time.
- This time slot will be the only opportunity for the student to enter the competition.

- Contestants will not be able to return to the check-in area after the contest. Advisors will be allowed to join their students during check-in and take all un-needed equipment and gear back to the gathering area. After the contest contestants will be allowed to return to the gathering area to pick up their stuff.
- Once contestants leave the check-in area for the written test they are to have no further contact with their advisor.
- Contestants not having the required PPE during check-in will not be allowed to enter the contest at a later time.
- **No communication devices will be allowed in the competition area.**

Contest Format

1. Check-In (25 minutes) – Contest begins for the contestant (5 minute rotation time)
2. Written Test (25 minutes) (5 minute rotation time)
3. GMAW Process (25 minutes) (5 minute rotation time)
4. SMAW Process (25 minutes) (5 minute rotation time)
5. FCAW Process (25 minutes) (5 minute rotation time)
6. Oxy-Fuel Cutting (25 minutes) (5 minute rotation time)
7. GTAW Process (25 minutes) (5 minute rotation time)

PLEASE REVIEW THE NEW GUIDELINES PROVIDED BY SKILLSUSA (see skillsusastore.org ref. #101-12xx) CONCERNING THE DRESS CODE.

COMPLIANCE WITH THIS DRESS CODE WILL BE ASSESSED IN THE FINAL SCORE FOR EACH STUDENT. DENIM OR FRC PANTS WILL BE PERMITTED.

Welding Schedule Set:

TIME	CONTESTANT #	STUDENT	SCHOOL/COLLEGE
6:00 am			
6:30 am			
7:00 am			
7:30 am			
8:00 am			
8:30 am			
9:00 am			

KANSAS STATE CHAMPIONSHIPS (KSC) CONTEST UPDATE

9:30 am			
10:00 am			
10:30 am			
11:00 am			
11:30 am			

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TOOLS / SAFETY EQUIPMENT

No communication devices will be allowed in the competition area.

No contact by teachers or coaches during the competition.

Each contestant will supply the following safety equipment:

- ☐ Welding cap/beanie
- ☐ Hearing and/or ear protection
- ☐ Eye protection (must have side shields or fit over prescription glasses)
- ☐ Welding Jacket, Leather Cape Sleeves (and bib) or FR Welding Shirt (Long sleeved t-shirt, flannel shirts, or "heavy" button front shirts will not be acceptable if it isn't designed for welding don't try it!!!)
- ☐ Full length jeans without holes
- ☐ Leather boots
- ☐ Welding gloves—full length (gauntlet) for SMAW, GMAW, and FCAW
- ☐ Welding gloves — appropriate for GTAW
- ☐ 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
- ☐ Cutting goggles—with shade 5 lens/cover lens for OFC/PAC; helmet with shade 5 capability permissible; face shield head gear with shade 5 permissible. Spare filter and cover lens
- ☐ Pocket calculator – Not for weld settings
- ☐ Fillet weld gauges—standard set
- ☐ Lead pencil
- ☐ Soap stone (with or without holder) or silver pencil
- ☐ Sharpie type marker
- ☐ Scribe with or without magnet

- ☐ Compass
- ☐ Protractor
- ☐ Combination square set
- ☐ 10-foot (3.1 meters) minimum steel tape measure
- ☐ 16-ounce (.45 kilogram) ball peen hammer
- ☐ Center punch
- ☐ Cold chisel
- ☐ 11R or 10-inch (254 millimeters) vise grips
- ☐ 6-inch (152 millimeters) side cutting pliers or diagonal cutting pliers
- ☐ 6-inch (152 millimeters) needle nose pliers – welpers permissible
- ☐ Chipping hammer
- ☐ Stainless steel wire brush for GTAW
- ☐ Carbon steel wire brush for SMAW
- ☐ Friction lighter (striker) and tip cleaner
- ☐ A one-page résumé to submit in hard copy format at check-in. Failure to do so will result in a 10-point penalty.

  PPE will be strictly enforced

All tools will be placed into a bucket that is provided by the contest committee during check in.

Only the tools on the list above are allowed into the contest.

No copies of the pre-test or outside notes are allowed.

Slide-rulers with welding settings, welding guides and other information are not allowed.

Each contestant will be given a set of welding /cutting print and welding procedures before the start of each portion of the contest.

All students are required to wear the Skills T-shirts or contest official dress for the competitions.

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DEMONSTRATION:

AWS SENSE WPS WILL BE USED FOR WELDING PARAMETERS. PLEASE REVIEW THESE DOCUMENTS WITH YOUR STUDENTS PRIOR TO THE WELDING COMPETITION.

Each student will be expected to demonstrate the following process:

PROCESS	POSITION	EQUIPMENT
GENERAL KNOWLEDGE TEST		#2 Pencil
**Test will include 50 multiple choice questions covering GMAW, GTAW, SMAW, FCAW, welding symbols and general welding knowledge. This will also be used as the tie breaker for the contest.		
GMAW-S	2F, 3F, 4F, 1G, 2G, 3G	Millermatic 252
***SHORT-CIRCUIT WITH AR/CO2 75/25*		
SMAW	2F, 3F, 4F, 1G, 2G, 3G	Lincoln Invertec 275S
*** E6010 AND 7018 WILL BE USED ON THIS EXAM*		
FCAW	2F, 3F, 1G, 2G, 3G	Millermatic 252
***E71T-1 WITH AR/CO2 75/25*		
OXY-FUEL CUTTING	*FLAT*	*Victor Performer Cutting Torch with*
***Acetylene Fuel Gas*		Edge style Regulators
GTAW	2F, 3F, 1G, 2G	Lincoln Square-wave 200
**All consumables will be provided		

All projects will have blueprint provided with a tolerance of +/- 1/16" unless otherwise noted on the individual blueprint or feature.

IMPORTANT:

WHILE WELDING, BASE PLATE DESIGNATED "A" MUST REMAIN IN THE HORIZONTAL AND IN FULL CONTACT WITH WELDING TABLE. ONE WARNING WILL BE GIVEN BEFORE THE LOSS OF POINTS.

CONTESTANTS DEMONSTRATING UNSAFE BEHAVIOR WILL BE STOPPED BY THE FLOOR JUDGE AND PREVENTED FROM MOVING FORWARD IN THAT INDIVIDUAL PORTION OF THE CONTEST. THIS WILL BE DOCUMENTED ON THE SCORE SHEET AS TO WHY THE CONTESTANT WAS STOPPED.

KANSAS STATE CHAMPIONSHIPS (KSC) CONTEST UPDATE

TEACHERS, ADVISORS, ADMINISTRATORS OR COACHES WILL NOT HAVE ANY CONTACT WITH THE COMPETITORS DURING THE COMPETITION AFTER THEY MOVE FROM CHECK-IN AND ONTO THE WRITTEN TEST.

THERE WILL BE NO COMMUNICATION DEVICES ALLOWED AFTER THE STUDENT CHECKS IN. SIMPLY PUT, IF CAUGHT – YOU ARE DISQUALIFIED.

NOTE: Any questions concerning the operation of the equipment used during this competition should be direct to:

Miller – www.millerwelds.com

Byron Nield
byron.nield@millerwelds.com
316-665-2439

Millermatic 252 - https://www.millerwelds.com/files/owners-manuals/O230693L_MIL.pdf

Lincoln Electric – www.lincolnelectric.com

Andrew Lochotzki -
andrew_lochotzki@lincolnelectric.com
913.302.2107

Invertec 275S – http://www.lincolnelectric.com/assets/servicenavigator-public/lincoln3/im802.pdf

Squarewave 200 - http://www.lincolnelectric.com/assets/servicenavigator-public/lincoln3/imt10296.pdf

ESAB/Victor – www.esabna.com

Mike Cook
mike.cook@esab.com
405-740-1210

Victor Oxy-Fuel Torches W/Edge Regulators -
http://www.esabna.com/shared/documents/litdownloads/56-3260.pdf

AWS SENSE WPS WILL BE USED FOR WELDING PARAMETERS. PLEASE REVIEW THESE DOCUMENTS WITH YOUR STUDENTS PRIOR TO THE WELDING COMPETITION.

SkillsUSA

Welding Procedure Specification

WPS 101

WPS No. **WPS 101** Revision **3** Date **4/21/2013** By **NP**

Authorized By **GH** Date **5/15/2011** 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 ☐

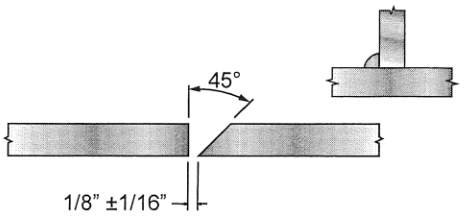
Backing Material **A-36**

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

Groove Angle **45 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**

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

Gas **N/A**

Composition **N/A**

Flow Rate **N/A**

Gas Cup Size **N/A**

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**

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	

SkillsUSA

Welding Procedure Specification

WPS 103

WPS No. **WPS 103** Revision **2** Date **04/20/2013** By **NP**

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 / Groove**

Backing Yes ☐ No ■ Single Weld ■ Double Weld ☐

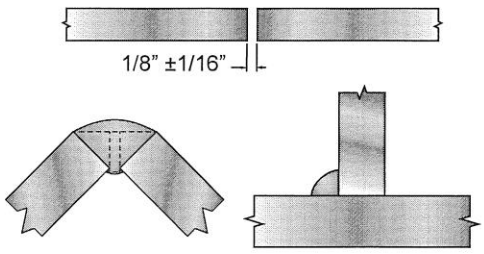
Backing Material **N/A**

Root Opening **0** Groove Root Face Dimension **0**

Angle **30-90** Radius (J-U) **N/A**

Back Gouge Yes ☐ No ■

Method **N/A**



BASE METALS

Material Spec. **308** to **308**

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 **ER308**

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. **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**

POSITION

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

Vertical Progression: ■ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting ☐ Globular ☐ Spray ☐

Current: DCEN ■ DCEP ☐ AC ☐ 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) **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

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	ER308	1/16	DCEN	70 - 110	N/A	4-8 ipm	
All	GTAW	ER308	3/32"	DCEN	110-125	N/A	4-8 ipm	

SkillsUSA

SkillsUSA

Welding Procedure Specification

WPS 104

WPS No. **WPS 104** Revision **2** Date **06/20/2015** By **NP**

Authorized By **EN** Date **6/20/2015** 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 ■

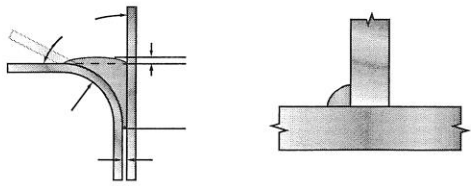
Backing Material **N/A**

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

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

Flow Rate **35-45 CFH**

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

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**

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 **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 **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 140-35 0 ipm

SkillsUSA

Welding Procedure Specification

WPS 108

WPS No. **WPS 108** Revision **1** Date **4/19/2016** By **NP**

Authorized By **EN** Date **4/19/2016** 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 ■

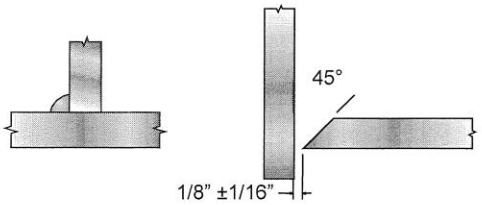
Backing Material **N/A**

Root Opening **0-3/16 in.** 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**

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**

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"**

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**

PREHEAT

Preheat Temp., Min. **60 Deg.F**

Thickness	Temperature
Up to 3/4"	**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	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

SkillsUSA

Welding Procedure Specification

WPS 106

WPS No. **WPS 106** Revision **2** Date **4/20/2012** By **NP**

Authorized By **GH** Date **5/15/2011** Prequalified ■

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

Supporting PQR(s) **Prequalified**

JOINT

Type **T-Joint**

Backing Yes ☐ No ■ Single Weld ■ Double Weld ☐

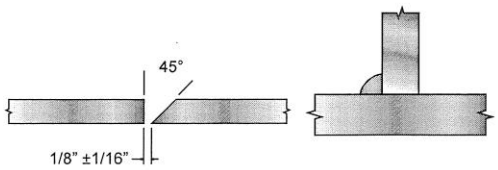
Backing Material **N/A**

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 (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. **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**

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	