

SkillsUSA

2010 Contest Projects

Welding

Click the “Print this Section” button above to automatically print the specifications for this contest. Make sure your printer is turned on before pressing the button.

Welding

The Contestants must make a one minute extemporaneous presentation to a panel of Judges. No notes allowed. The topic of the presentation is "How SkillsUSA has affected your life"



WELDING CONTEST 2010

CONTESTANT INSTRUCTIONS

Welcome to the 2010 Skills USA Championships. On Wednesday all College/Post Secondary contestants are to report to the contest area at 8:00 A.M. The contest starts at 8:30 AM prompt. On Thursday all High School contestants are to report to the contest area at 8:00 A.M. Secondary contestants will begin the contest at 8:30 AM prompt. Each contest day we will break at noon for a ½ hour lunch period. The contest will end at 4:00 PM each day. The contest floor is open to spectators both Wednesday and Thursday. **Contestants must wear the official VICA uniform. Failure to do so will result in a clothing penalty. Contestants may not have cell phones in the contest area.**

You will be divided into three groups. Each group will have Committee Escorts. One group will start at the OFC/Visual Inspection area, another will start in the SMAW/GTAW area, and the third will start in the FCAW/GMAW area. Every 2 hours' you will be rotated to a new station. Three judges will be at each station and will judge you as you go through their station. You are not allowed to ask the judges any questions related to the contest. Should you have any equipment problems notify a judge who will contact one of the equipment manufacturer's representatives.

In the OFC/Visual Inspection area half of you will go to the Visual Inspection area and half will go to the OFC area. When you are in the OFC area, layout and cut your project. The correct tip pressures will be set at each station. There is no need for you to make any adjustments. You will have one hour to complete the project. After one hour there will be a 15 minute break where you will be moved to the Visual Inspection area, and those that had been in the Visual Inspection area will be moved to the OFC area. At the SMAW area you have one hour to complete the project. After one hour you will have a 15 minute break where you will be required to switch the machine over to GTAW. You will then have one hour to complete the GTAW project. When you are finished with the GTAW project change the machine back to the SMAW process. At the FCAW/GMAW area you will complete two projects. You have one hour to complete the FCAW project. After one hour you will have a 15 minute break where you will be required to change over the machine and complete the second GMAW project. When you are finished with the GMAW project change the machine back to the FCAW process. The welding procedure will indicate in what positions the welds are to be made. Do not turn the project to weld flat. Welds made in the wrong position will receive no points. **You are not allowed to quench your projects until they have been completely welded. Quenching the project before you have completely welded it will result in a loss of points. Make sure the smoke extractors are directly over the arc so they can properly extract the fumes. If the fumes are not being captured you will be stopped and told to reposition the vent duct.**

When you have finished the contest make sure you stop at the scoring table (the table with the sign on it) to receive some materials from us.

There will be a critique of the contest Friday morning at 8:30 A.M. Contestants are not required to be at the critique. The critique will be immediately followed by a Workshop sponsored by the American Welding Society. Please make every effort to attend. You should receive from Skills USA a comparison of your score to the maximum score for each scoring area. Any Safety violations will also be noted.

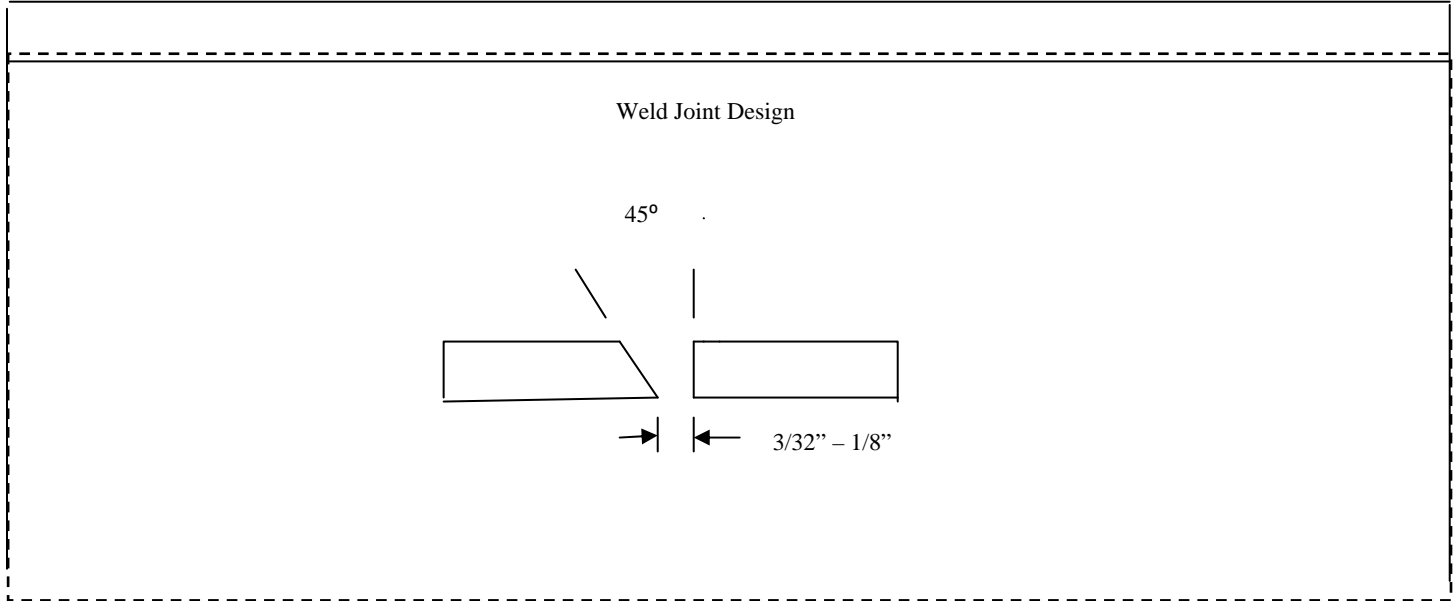
You will now take a job related quiz. Upon completion of the quiz you are to take the quiz, and the pencil if we have loaned it to you, to the table to my right if you are a High School student, and the table to my left if you are a College/Post secondary student. We will accept your resumes when you get in line.

Each table is staffed by three ladies where you are to give your oral presentation. The presentation will be scored and will count in your final score.

Eugene G. Hornberger
Welding Contest Chairman

WELDING PROCEDURE SPECIFICATION

Company Name :	WELD SKILLS USA	By:	
Welding Procedure Specification No.	WPS-101	Revision No. :	0
Date :	June 9, 2009	Supporting PQR No.(s)	Prequalified
Welding Process(es)	SMAW	Type(s) :	Manual



BASE METALS		
Specification Type or Grade: A 36		
to Specification Type or Grade: A 36		
or		
Chem Analysis and Mech. Prop:		
To Chem Analysis and Mech. Prop:		
Thickness Range:		
Base Metal:	Groove: 1/8" to and including 3/4"	Fillet: unlimited
Pipe Dia. Range :	Groove: 4" and over	Fillet: unlimited
Other:		

FILLER METALS	Root	Fill
Specification	A 5.1	A5.1
AWS Classification	E-6010	E-7018
Filler Metal F-No.	3	4
Weld Metal Analysis A-No.	NA	NA
Weld Metal Thickness Range:		
Groove	1/8" to 3/16"	1/8" to 3/4"
Fillet	Unlimited	Unlimited
Electrode-Flux Classification	NA	NA
Flux Trade Name	NA	NA
Consumable Insert	NA	NA
Other	NA	NA

POSITIONS	POST WELD HEAT TREATMENT		
Position(s) of Groove : Secondary-Horizontal	Temperature: No PWHT		
Position(s) of Groove : College Post Secondary-Vertical	Time:		
Position(s) of Fillet : NA			
Welding Progression: Vertical up	GAS		
PREHEAT	Percent Composition		
Preheat Temperature Min.: 60° F	Gas(es)	Mixture	Flow Rate
Interpass Temp. Max.: Not Controlled	Shielding	NA	
Preheat Maintenance : Ambient room temperature	Trailing	NA	
	Backing	NA	

ELECTRICAL CHARACTERISTICS
Current: DCEP Amperage Range : root 40 – 70, Fill 90-150 Voltage Range NA
Tungsten Electrode Size and Type : NA
Mode of Metal Transfer for GMAW : NA
Electrode Wire Feed Speed Range : NA

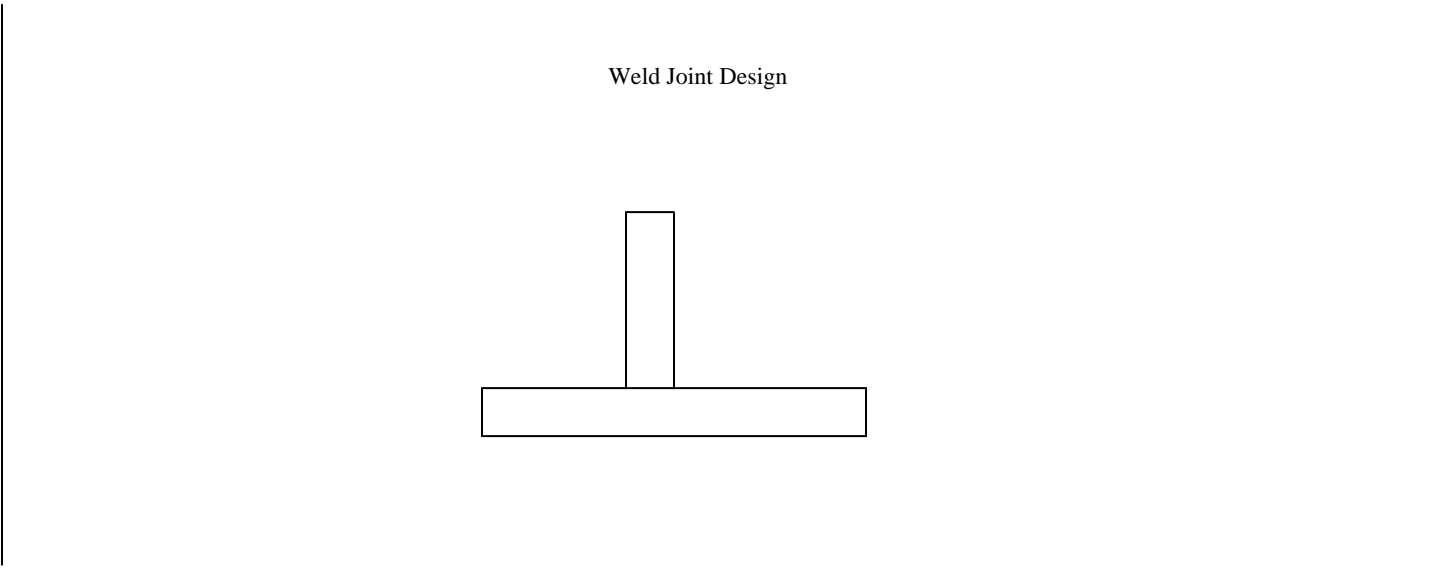
TECHNIQUE
String or Weave Bead: String and weave
Orifice or Gas Cup Size NA
Initial and interpass cleaning Chip slag and wire brush between passes
Methods of Back Gouging : NA
Oscillation : NA
Contact Tube To Work Distance: NA
Multiple or Single Pass per Side : Multiple
Multiple or Single Electrodes: Single
Travel Speed Range 4 – 8 ipm
Peening : None
Other : NA

Welding Parameters

Weld layers	Process	Filler Metal		Polarity	Current		Travel speed
		Classification	Diameter		Amperage	Voltage	
Root	SMAW	E-6010	3/32"	DCEP	40 – 70	NA	4 – 8 ipm
Fill	SMAW	E-7018	1/8"	DCEP	90 – 150	NA	4 – 8 ipm

WELDING PROCEDURE SPECIFICATION

Company Name :	Skills USA	By:	
Welding Procedure Specification No.	WPS-102	Revision No. :	0
Date :	June 9, 2009	Supporting PQR No.(s)	Prequalified
Welding Process(es)	FCAW	Type(s) :	Semiautomatic



BASE METALS		
Specification Type or Grade: A-36		
to Specification Type or Grade: A-36		
Or		
Chem Analysis and Mech. Prop: NA		
To Chem Analysis and Mech. Prop:		
Thickness Range:		
Base Metal:	Groove: NA	Fillet: Unlimited
Pipe Dia. Range :	Groove: NA	Fillet: NA
Other:		

FILLER METALS		
Specification	A 5.20	
AWS Classification	E71T-1	
Filler Metal F-No.	NA	
Weld Metal Analysis A-No.	NA	
Weld Metal Thickness Range:		
Groove	NA	
Fillet	Unlimited	
Electrode-Flux Classification	NA	
Flux Trade Name	NA	
Consumable Insert	NA	
Other	NA	

POSITIONS		POST WELD HEAT TREATMENT		
Position(s) of Groove : NA		Temperature: No PWHT		
Position(s) of Fillet : All positions Base plate flat		Time:		
Welding Progression: Vertical up				
		GAS		
PREHEAT		Percent Composition		
Preheat Temperature Min.: 60°F		Gas(es)	Mixture	Flow Rate
Interpass Temp. Max.: Not controlled		Shielding	Ar CO ₂	75% 25%
Preheat Maintenance : Ambient room temperature		Trailing	NA	40 – 45 cfh
		Backing	NA	

ELECTRICAL CHARACTERISTICS	
Current: DCEP Amperage Range : V & OH 150 - 200 , F & H 200 - 250, Voltage Range V&OH 24 - 26, F&H 26 - 28	
Tungsten Electrode Size and Type : NA	
Mode of Metal Transfer for GMAW : NA	
Electrode Wire Feed Speed Range : 330 – 600 ipm	

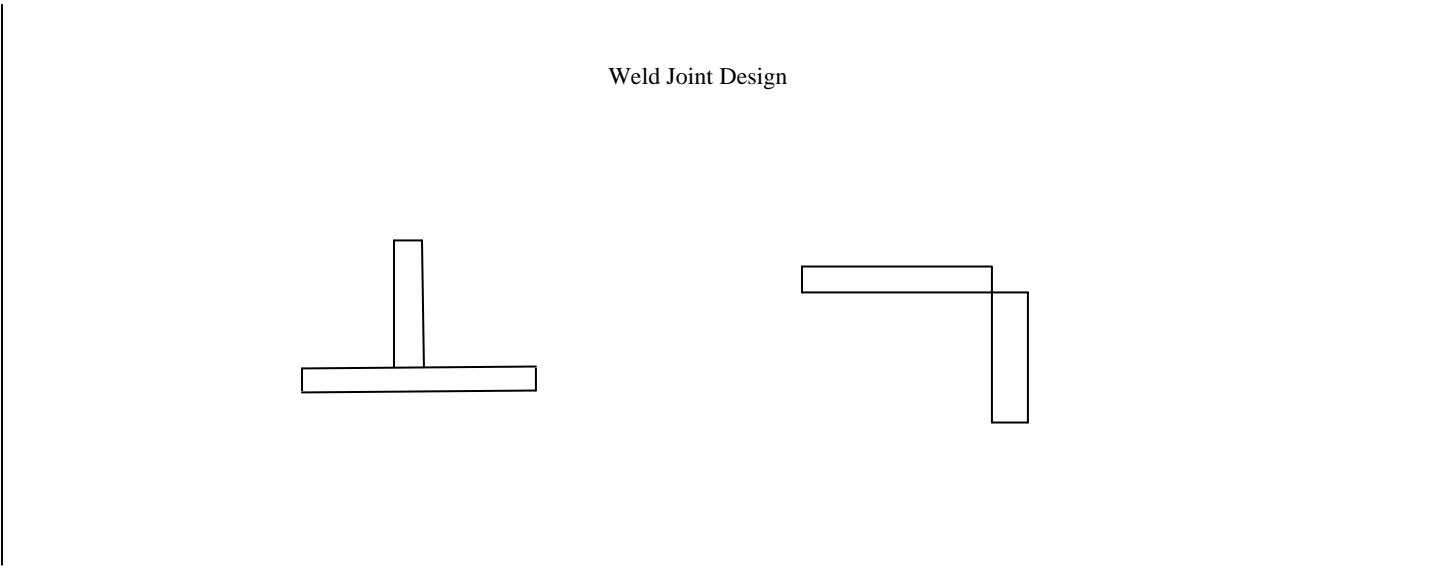
TECHNIQUE	
String or Weave Bead: String or weave	
Orifice or Gas Cup Size ½" minimum	
Initial and interpass cleaning Chip slag and wire brush between passes	
Methods of Back Gouging : NA	
Oscillation : NA	
Contact Tube To Work Distance ½"	
Multiple or Single Pass per Side : Single	
Multiple or Single Electrodes: Single	
Travel Speed Range 6 – 8 ipm	
Peening : None	
Other : NA	

Welding Parameters

Weld layers	Process	Filler Metal		Polarity	Current		Travel speed
		Classification	Diameter		Amperage	Voltage	
All V&OH	FCAW	E71T-1	.045"	DCEP	150-200	24-26	6 – 8 ipm
All F & H	FCAW	E71T-1	.045"	DCEP	200 – 250	26 – 28	6 – 8 ipm

WELDING PROCEDURE SPECIFICATION

Company Name :	SKILLS USA WELDING	By:	
Welding Procedure Specification No.	WPS-103	Revision No. :	0
Date :	June 9, 2009	Supporting PQR No.(s)	Prequalified
Welding Process(es)	GTAW	Type(s) :	Manual



BASE METALS		
Specification Type or Grade: 6061T-6		
to Specification Type or Grade: 6061T-6		
Or		
Chem Analysis and Mech. Prop: NA		
To Chem Analysis and Mech. Prop: NA		
Thickness Range:		
Base Metal:	Groove: NA	Fillet: unlimited
Pipe Dia. Range :	Groove: NA	Fillet: unlimited
Other:		

FILLER METALS		
Specification	A 5.10	
AWS Classification	ER 4043	
Filler Metal F-No.	NA	
Weld Metal Analysis A-No.	NA	
Weld Metal Thickness Range:		
Groove	NA	
Fillet	Unlimited	
Electrode-Flux Classification	NA	
Flux Trade Name	NA	
Consumable Insert	NA	
Other	NA	

POSITIONS	POST WELD HEAT TREATMENT		
Position(s) of Groove : NA	Temperature: No PWHT		
Position(s) of Fillet : All positions Base Plate Flat	Time:		
Welding Progression: Vertical up			
	GAS		
PREHEAT	Percent Composition		
Preheat Temperature Min.: 60° F	Gas(es)	Mixture	Flow Rate
Interpass Temp. Max.: Not controlled	Shielding	Ar	99.99% 10 – 15 cfh
Preheat Maintenance : Ambient room temperature	Trailing	NA	
	Backing	NA	

ELECTRICAL CHARACTERISTICS			
Current: AC	Amperage Range : 110 - 150	Voltage Range NA	
Tungsten Electrode Size and Type : 3/32" EWP			
Mode of Metal Transfer for GMAW : NA			
Electrode Wire Feed Speed Range : NA			

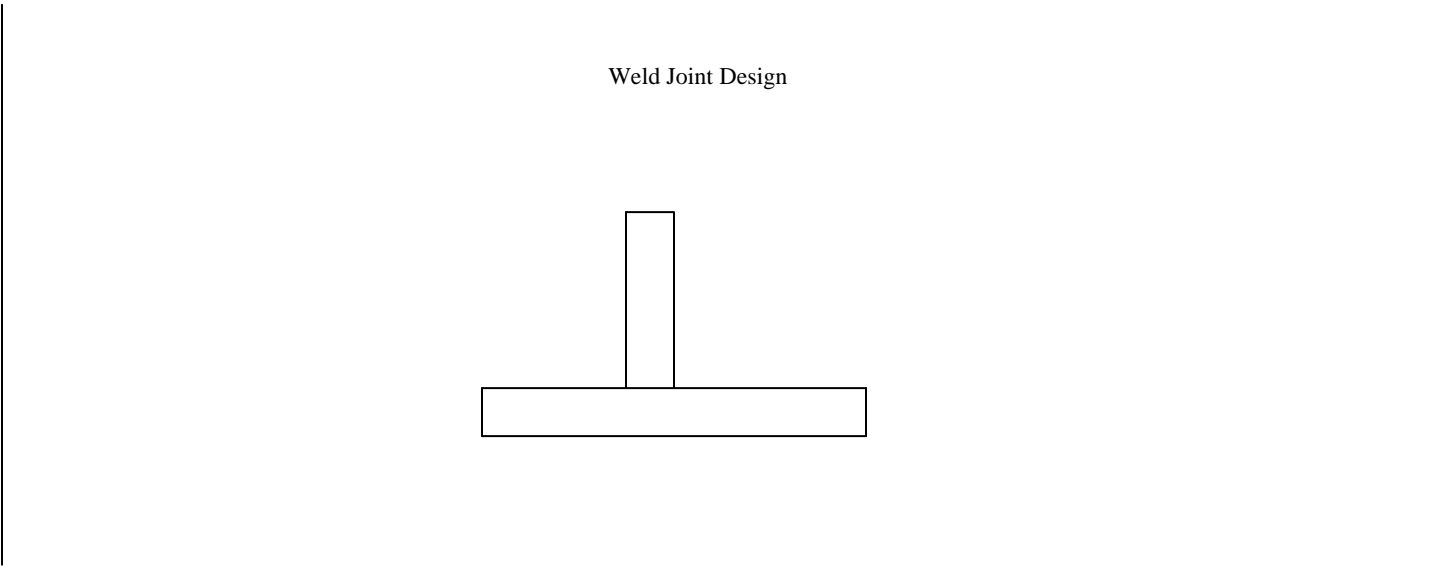
TECHNIQUE	
String or Weave Bead: String	
Orifice or Gas Cup Size 3/8" Minimum	
Initial and interpass cleaning Wire brush with stainless steel wire brush or abrade with Scotch Brite© before welding. Wire brush with stainless Steel wire brush between passes.	
Methods of Back Gouging : None	
Oscillation : NA	
Contact Tube To Work Distance NA	
Multiple or Single Pass per Side : Single	
Multiple or Single Electrodes: Single	
Travel Speed Range 4 – 8 ipm	
Peening : NA	
Other : NA	

Welding Parameters

Weld layers	Process	Filler Metal		Polarity	Current		Travel speed
		Classification	Diameter		Amperage	Voltage	
All	GTAW	ER 4043	3/32	AC	110 – 150	NA	4 – 8 ipm

WELDING PROCEDURE SPECIFICATION

Company Name :	Skills USA	By:	
Welding Procedure Specification No.	WPS-104	Revision No. :	0
Date :	June 9, 2009	Supporting PQR No.(s)	Prequalified
Welding Process(es)	GMAW	Type(s) :	Semiautomatic



BASE METALS		
Specification Type or Grade: A-36		
to Specification Type or Grade: A-36		
Or		
Chem Analysis and Mech. Prop: NA		
To Chem Analysis and Mech. Prop:		
Thickness Range:		
Base Metal:	Groove: NA	Fillet: Unlimited
Pipe Dia. Range :	Groove: NA	Fillet: NA
Other:		

FILLER METALS		
Specification	A 5.18	
AWS Classification	ER70S-6	
Filler Metal F-No.	NA	
Weld Metal Analysis A-No.	NA	
Weld Metal Thickness Range:		
Groove	NA	
Fillet	Unlimited	
Electrode-Flux Classification	NA	
Flux Trade Name	NA	
Consumable Insert	NA	
Other	NA	

POSITIONS	POST WELD HEAT TREATMENT		
Position(s) of Groove : NA	Temperature: No PWHT		
Position(s) of Fillet : All positions Base Plate Flat	Time:		
Welding Progression: See Drawing			
	GAS		
PREHEAT	Percent Composition		
Preheat Temperature Min.: 60°F	Gas(es)	Mixture	Flow Rate
Interpass Temp. Max.: Not controlled	Shielding	Ar CO ₂	75% 25% 40 – 45 cfh
Preheat Maintenance : Ambient room temperature	Trailing	NA	
	Backing	NA	

ELECTRICAL CHARACTERISTICS
Current: DCEP Amperage Range : 90 – 150 Voltage Range : 17 - 19
Tungsten Electrode Size and Type : NA
Mode of Metal Transfer for GMAW : Short Circuiting
Electrode Wire Feed Speed Range : 330 – 600 ipm

TECHNIQUE
String or Weave Bead: String or weave
Orifice or Gas Cup Size ½" minimum
Initial and interpass cleaning: wire brush between passes
Methods of Back Gouging : NA
Oscillation : NA
Contact Tube To Work Distance ½"
Multiple or Single Pass per Side : Single
Multiple or Single Electrodes: Single
Travel Speed Range 6 – 8 ipm
Peening : None
Other : NA

Welding Parameters

Weld layers	Process	Filler Metal		Polarity	Current		Travel speed
		Classification	Diameter		Amperage	Voltage	
All	GMAW	ER70S-6	.035"	DCEP	90 – 150	17 – 19	6 – 8 ipm

NOTES

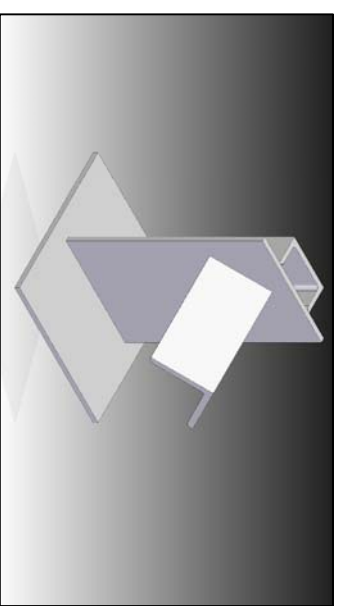
- ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
- ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE

USE WPS# 102

ALL VERTICAL WELDS TO BE UPHILL

ALL WELDS TO BE COMPLETED WITH PLATE "A" FLAT ON TABLE
TACK COMPLETE ASSEMBLY BEFORE WELDING



ID	QTY	DESCRIPTION
D 1	1	1/4 X 6 X 10 CARBON STEEL
C 1	1	3 X 50# X 10 Channel
B 1	1	5/16 X 3 X 3 X 6 ANGLE
A 1	1	1/4 X 8 X 8 Carbon Steel

DWG TITLE
2010 SKILLSUSA
WELDING CHAMPIONSHIPS

WELDING CHAMPIONSHIPS

2010 SKILLSUSA

SIZE

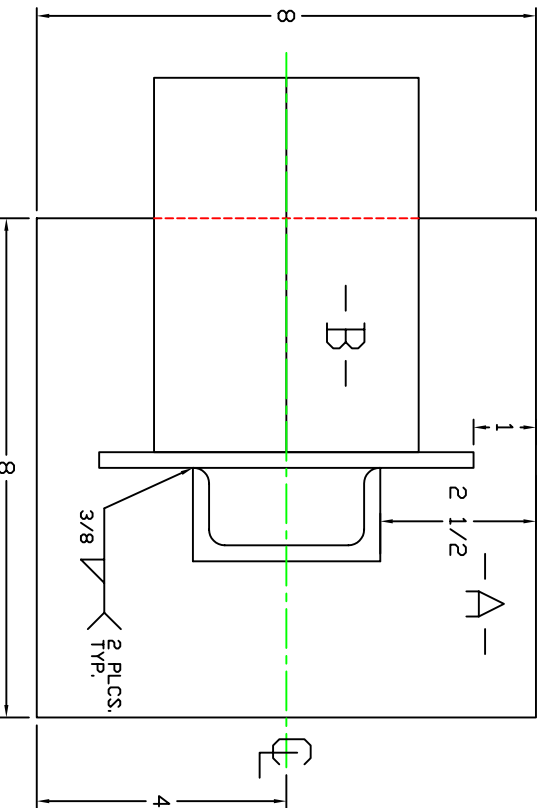
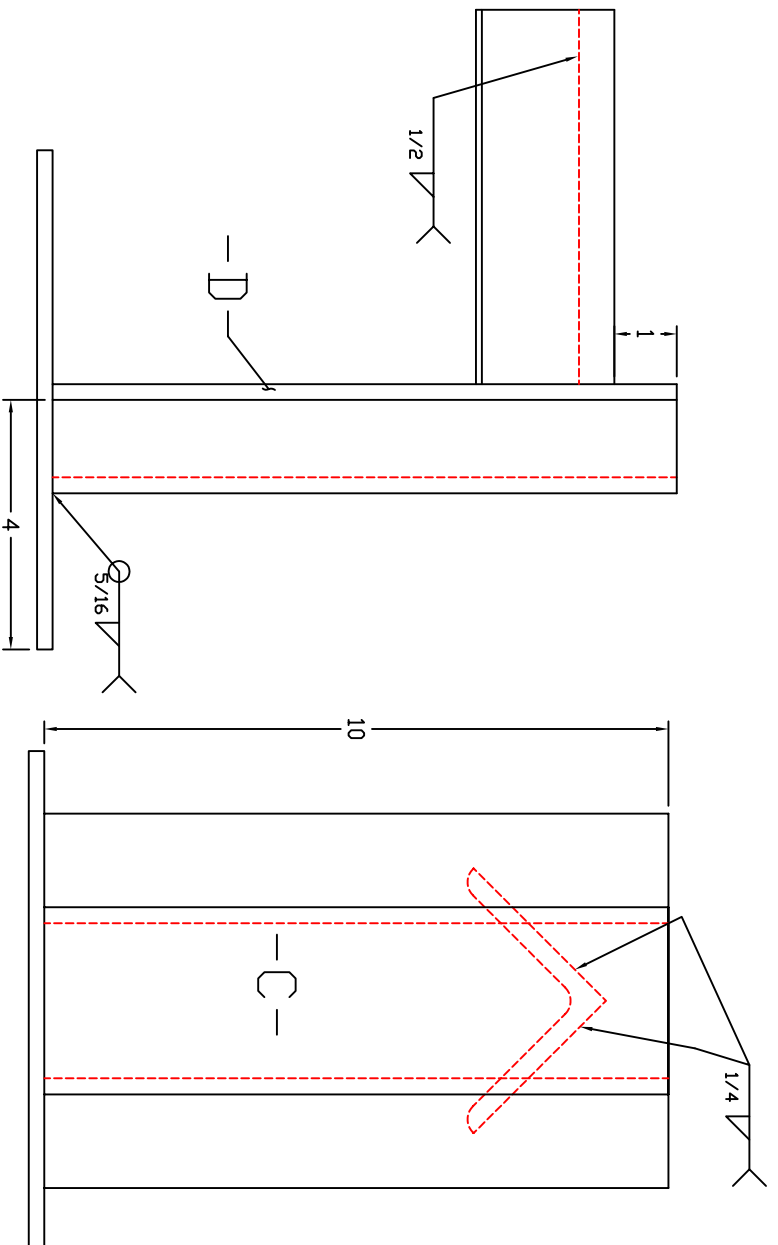
A

FCFAW-1



SCALE
NONE

COLLEGE/POST SECONDARY



NOTES

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- ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

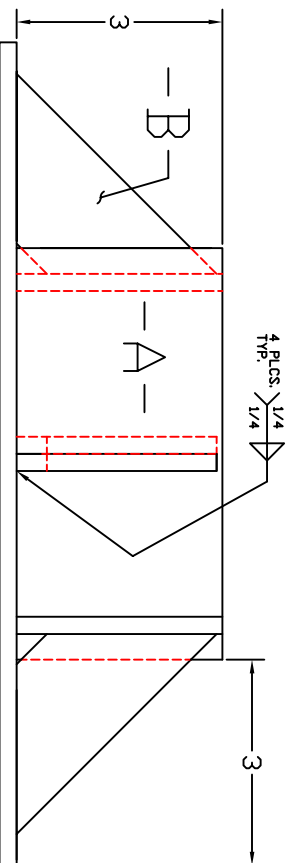
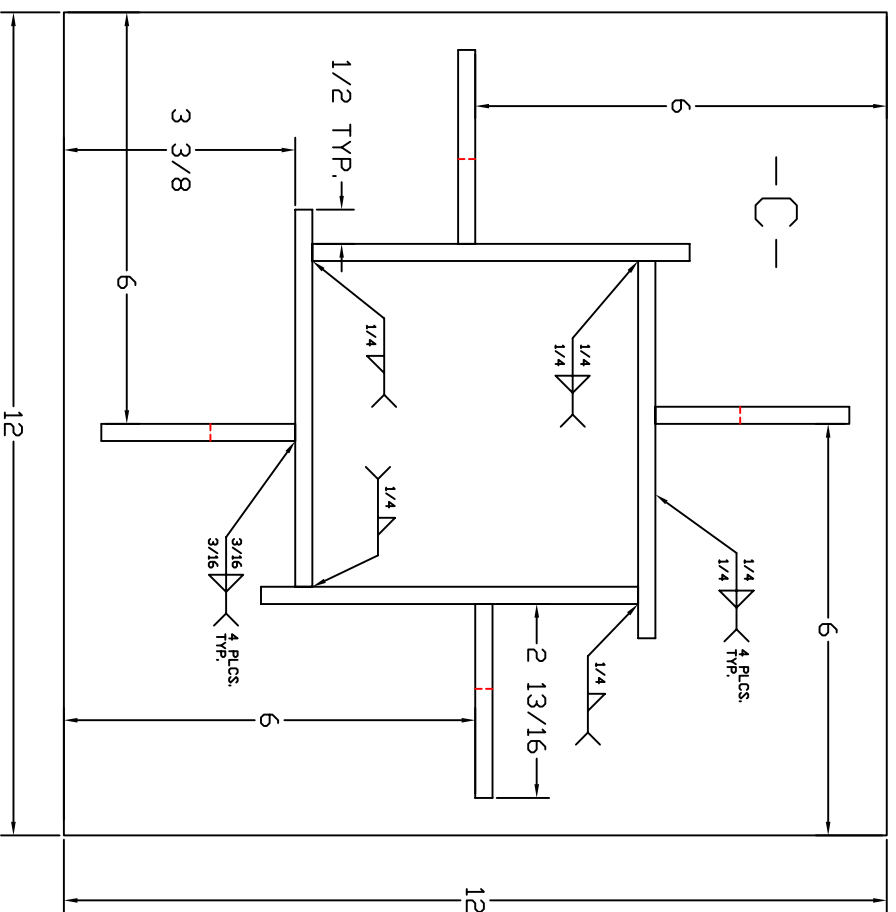
PROCEDURE

USE WPS# 104

VERTICAL WELDS TO BE UPHILL

ALL WELDS TO BE COMPLETED WITH PLATE "C" FLAT ON TABLE

TACK AND WELD IN ANY SEQUENCE



ID	QTY	DESCRIPTION
C	1	1/4 X 12 X 12 PLATE
B	4	1/4 X 1-3/4 X 4-1/8 BAR STOCK
A	4	1/4 X 3 X 5.5 Carbon Steel

DWG TITLE
2010 SKILLSUSA
WELDING CHAMPIONSHIPS

SIZE

A GMAW-1



SCALE
NONE

COLLEGE/POST SECONDARY

NOTES

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 -ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE

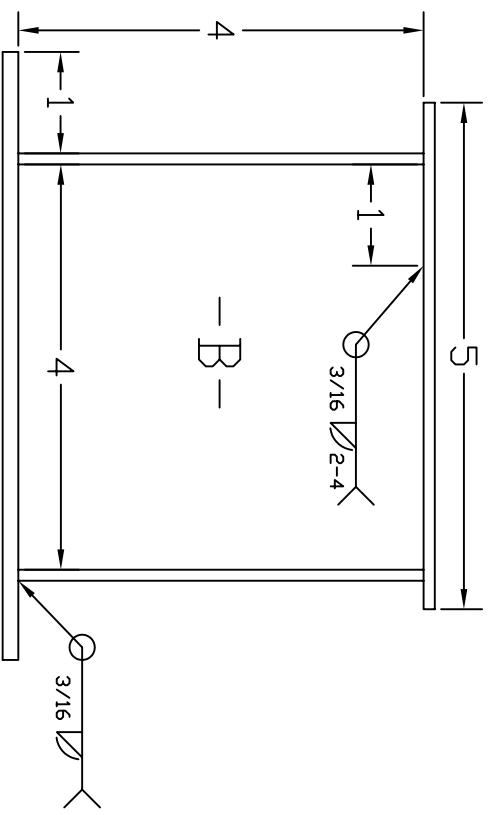
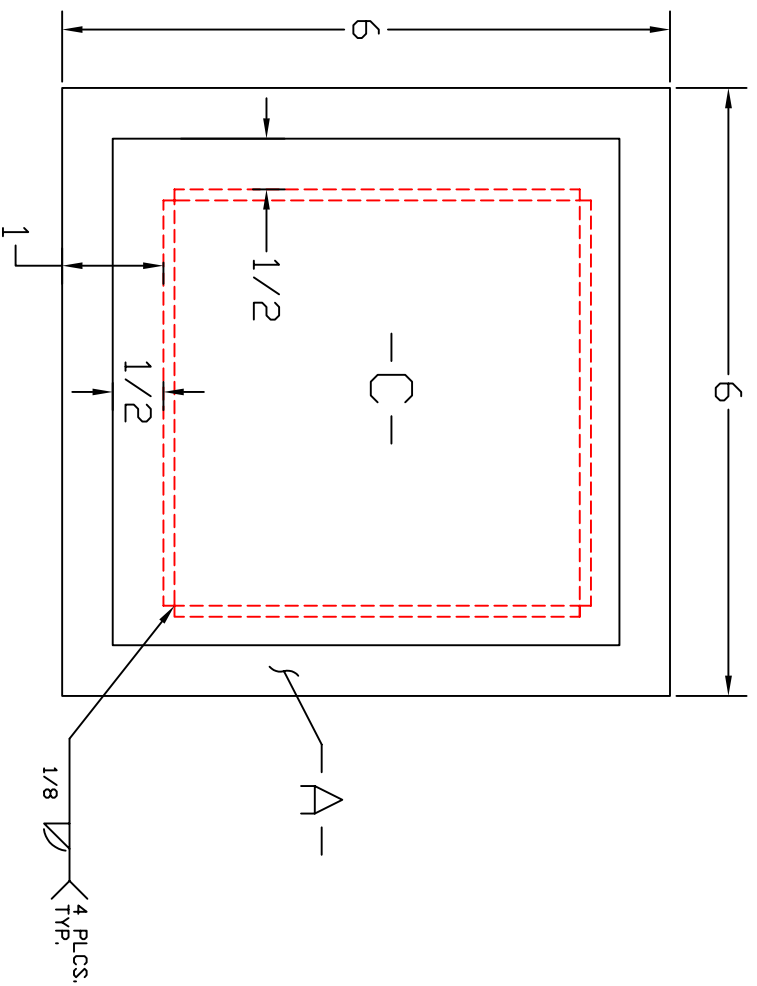
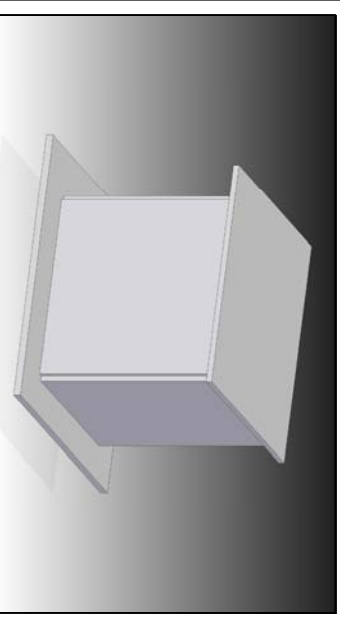
USE WPS# 103

ALL VERTICAL WELDS TO BE UPHILL

ALL WELDS TO BE COMPLETED WITH PLATE "A" FLAT ON TABLE

NO POST CLEANING

TACK COMPLETE ASSEMBLY BEFORE WELDING



ID	QTY	DESCRIPTION
C	1	1/8 X 5X5 ALUMINUM
B	4	1/8 X 4X4 ALUMINUM
A	1	1/8" X 6X6 ALUMINUM

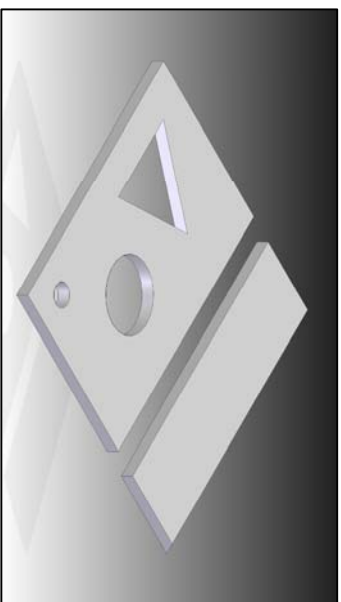
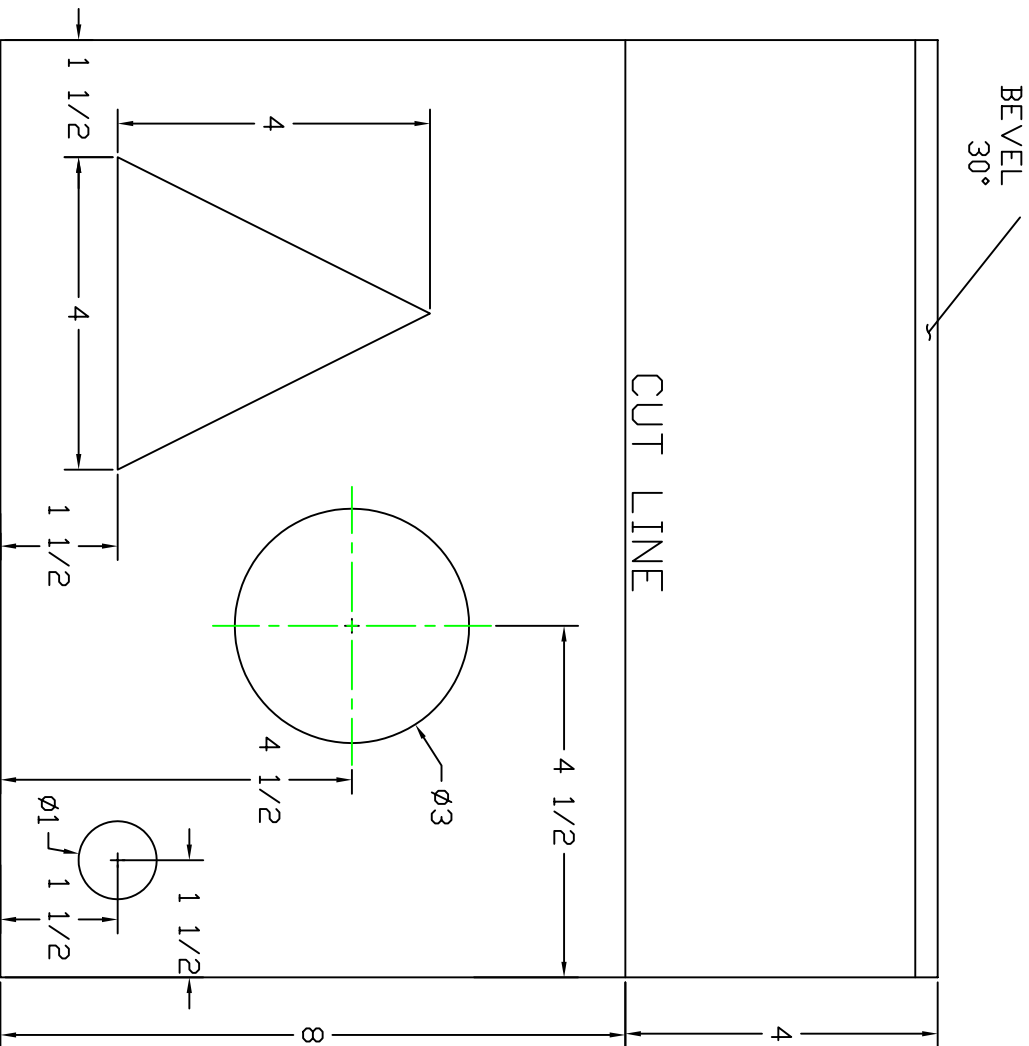
DWG TITLE
 2010 SKILLSUSA
 WELDING CHAMPIONSHIPS

SCALE NONE
 SIZE A
 GTAW
 SkillsUSA
 COLLEGE/POST SECONDARY

NOTES

- ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
- ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE



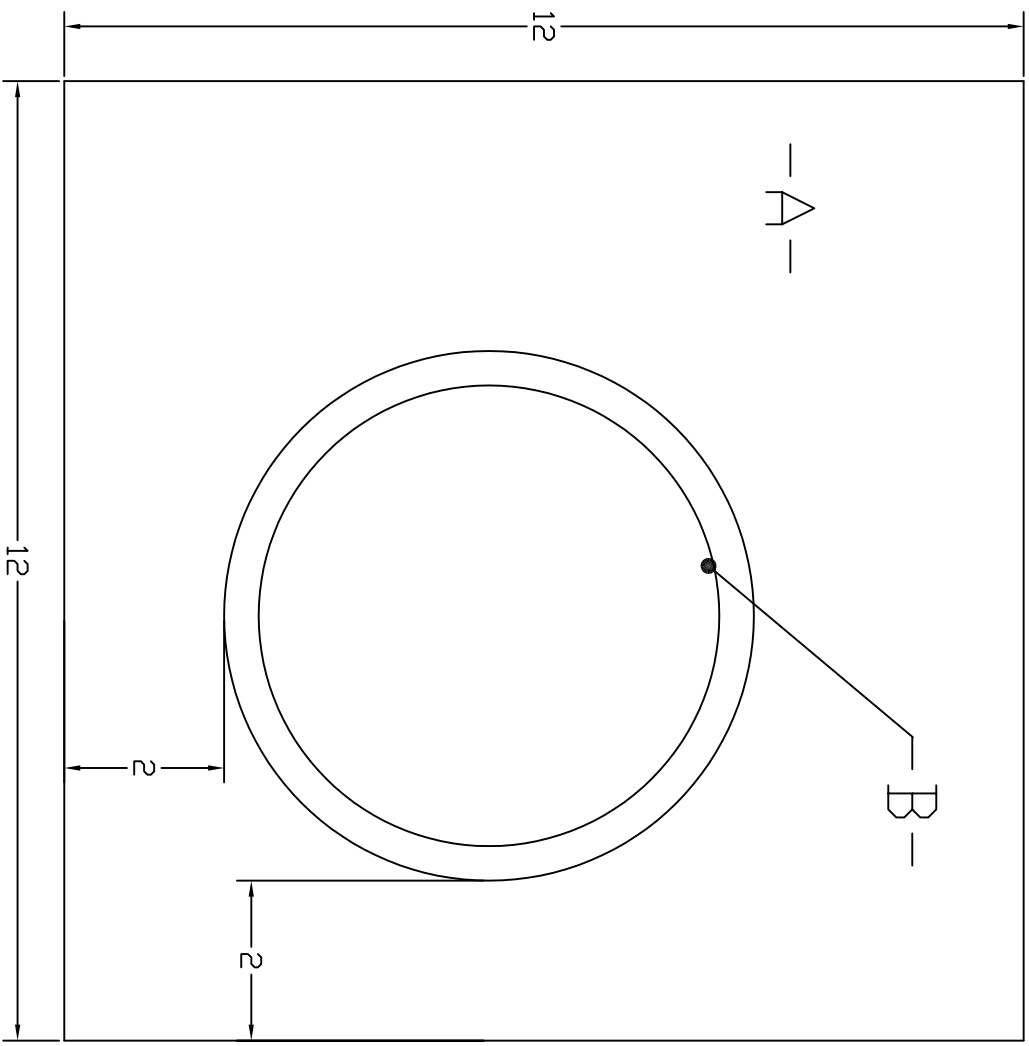
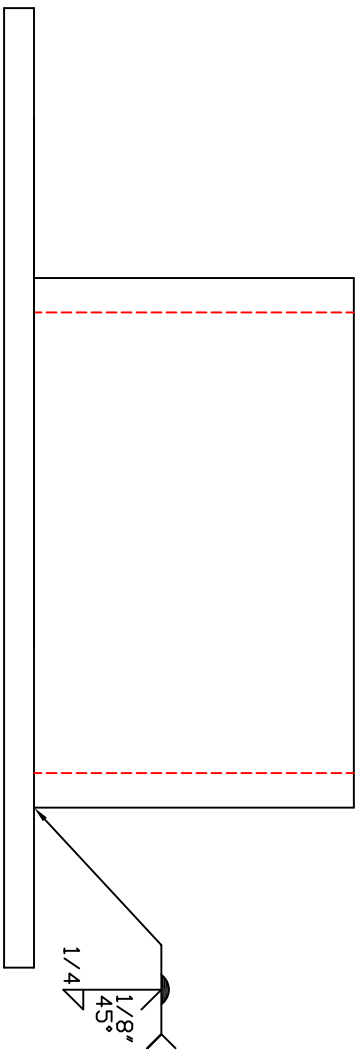
A	1	1/2 X 12 X 12 CARBON STEEL
ID	QTY	DESCRIPTION
DWG TITLE		

2010 SKILLSUSA
WELDING CHAMPIONSHIPS

SIZE: A

SCALE: NONE

COLLEGE / POST SECONDARY



NOTES

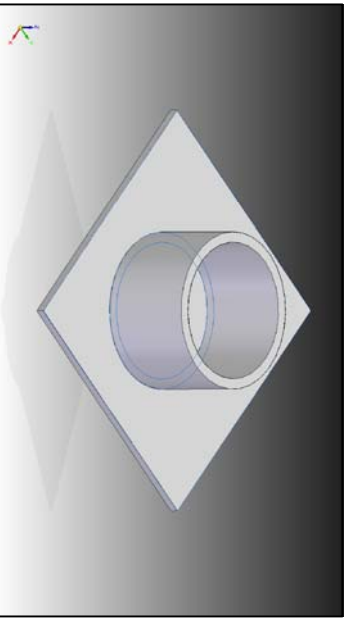
-ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
 -ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE

USE WPS# 101

TACK COMPLETE ASSEMBLY IN ANY POSITION BEFORE WELDING

WELD TO BE COMPLETED WITH BASE PLATE 'A' FIXED IN THE OVERHEAD POSITION WITH PIPE 'B' AXIS (VERTICAL) EXTENDING TO THE FLOOR.



B	1	6" Sch. 40 Pipe 45° Bevel One Edge
A	1	1/2" X 12" X 12"
ID QTY DESCRIPTION		
DWG TITLE		

2010 SKILLSUSA
 WELDING CHAMPIONSHIPS

SIZE: A
 SCALE: NONE
 SMAW COLLEGE
 SkillsUSA.

NOTES

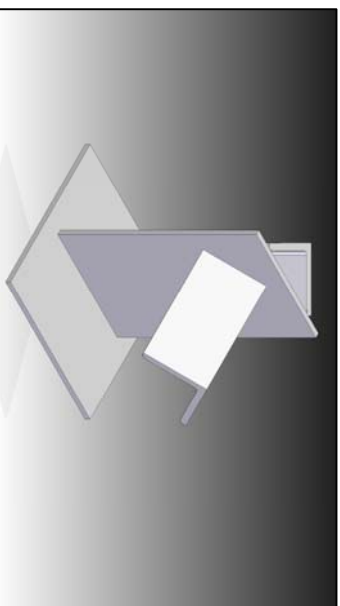
- ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
- ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE

USE WPS# 102

ALL VERTICAL WELDS TO BE UPHILL

ALL WELDS TO BE COMPLETED WITH PLATE "A" FLAT ON TABLE
TACK COMPLETE ASSEMBLY BEFORE WELDING



ID	QTY	DESCRIPTION
D	1	1/4 X 6 X 10 CARBON STEEL
C	1	5/16 X 3 X 3 X 10 ANGLE
B	1	5/16 X 3 X 3 X 6 ANGLE
A	1	1/4 X 8 X 8 CARBON STEEL

DWG TITLE
2010 SKILLSUSA
WELDING CHAMPIONSHIPS

WELDING CHAMPIONSHIPS

SIZE

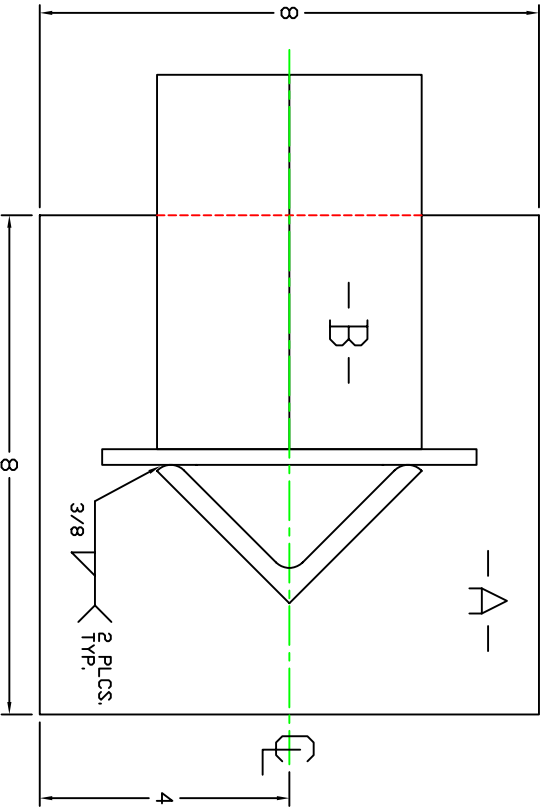
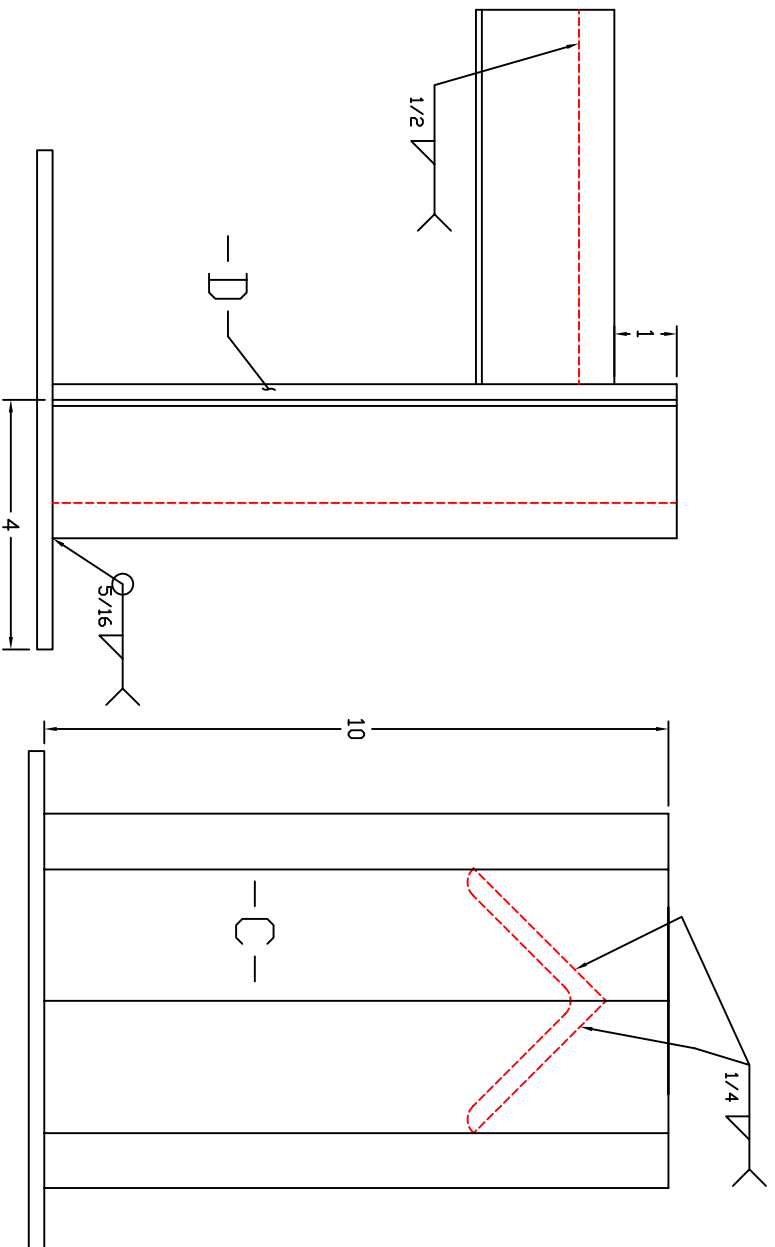
A

FCAW-1



SCALE
NONE

HIGH SCHOOL



NOTES

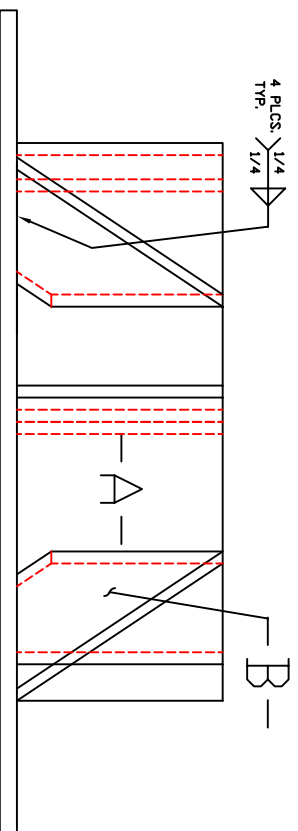
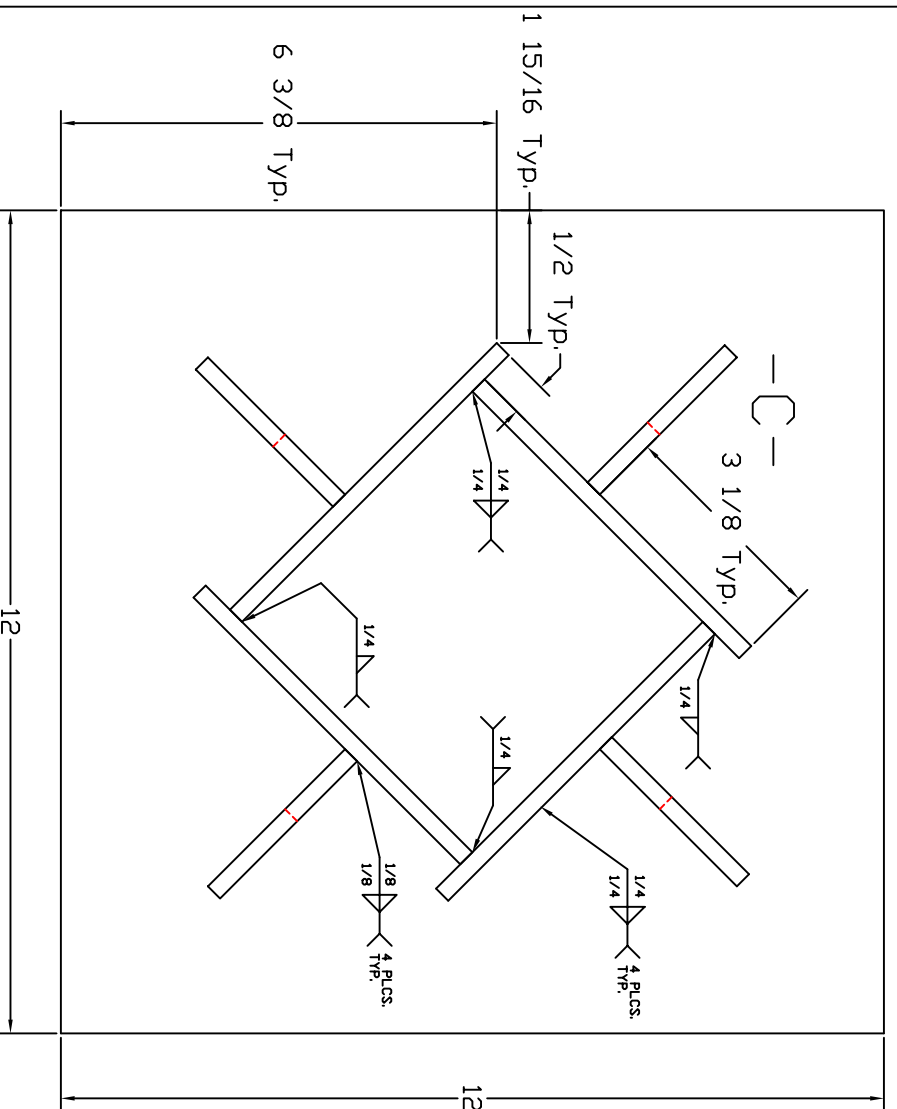
-ALL DIMENSIONS ARE INCHES
UNLESS OTHERWISE SPECIFIED.
-ALL PROCESSES TO BE
COMPLETED WITH THE MATERIALS
PROVIDED

PROCEDURE

USE WPS# 104

VERTICAL WELDS TO BE
DOWNHILL

ALL WELDS TO BE COMPLETED
WITH PLATE "C" FLAT ON TABLE
TACK AND WELD IN ANY SEQUENCE



ID	QTY	DESCRIPTION
C	1	1/4 X 12 X 12 PLATE
B	4	1/4 X 1-3/4 X 4-1/8 BAR STOCK
A	4	1/4 X 3 X 5.5 Carbon Steel

DWG TITLE
2010 SKILLSUSA
WELDING CHAMPIONSHIPS

SIZE
A

SCALE
NONE

HIGH SCHOOL

GMAW-1 SKILLSUSA.

NOTES

-ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
 -ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE

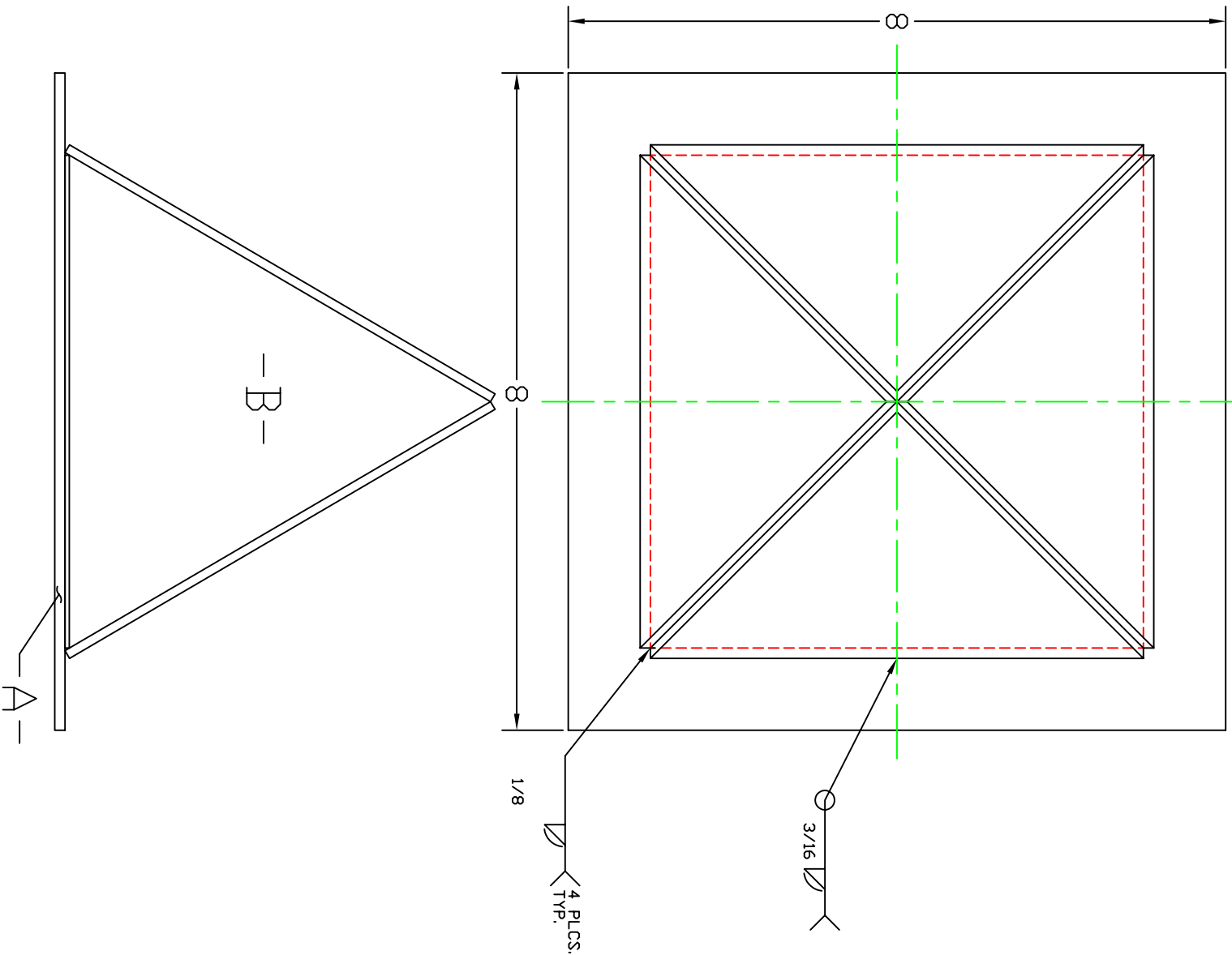
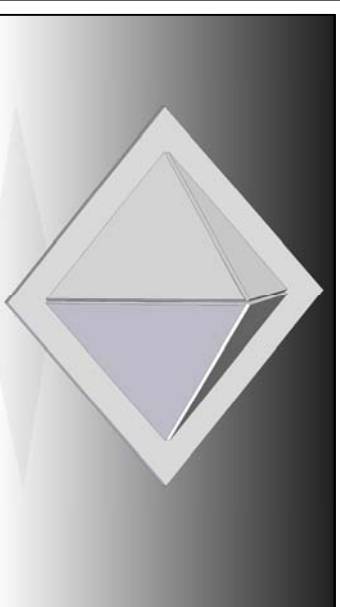
USE WPS# 103

ALL VERTICAL WELDS TO BE UPHILL

ALL WELDS TO BE COMPLETED WITH PLATE "A" FLAT ON TABLE

NO POST CLEANING

TACK COMPLETE ASSEMBLY BEFORE WELDING



ID	QTY	DESCRIPTION
B	4	1/8 X 6X6X6 ALUMINUM
A	1	1/8" X 8 X 8 ALUMINUM

DWG TITLE
 2010 SKILLSUSA
 WELDING CHAMPIONSHIPS

SCALE NONE HIGH SCHOOL

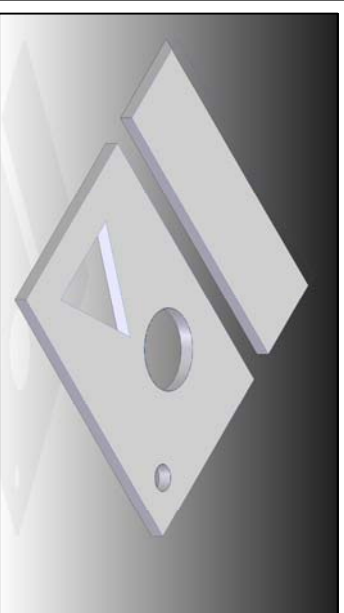
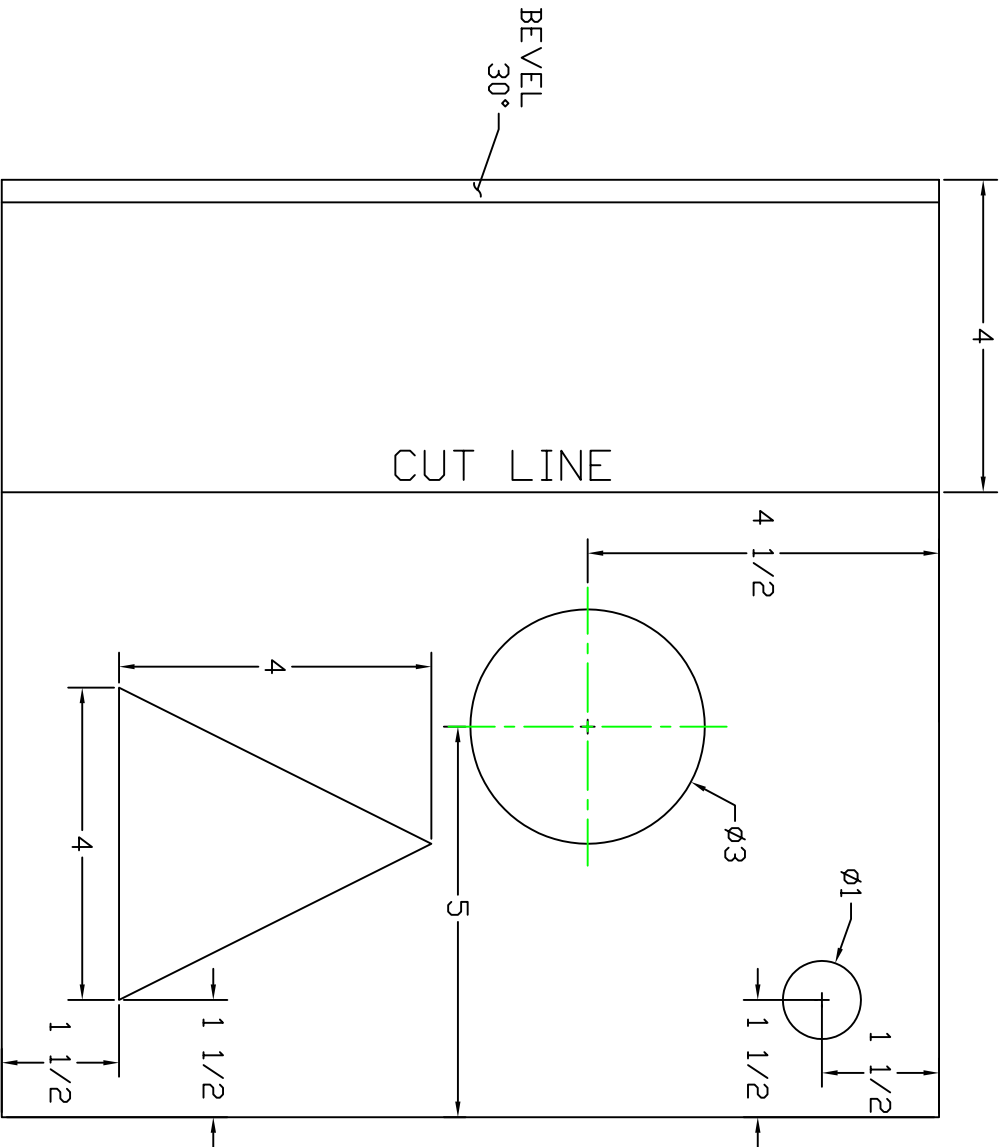
SIZE A

GTAW

NOTES

- ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
- ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE



ID	QTY	DESCRIPTION
A 1	1	1/2 X 12 X 12 CARBON STEEL

DWG TITLE

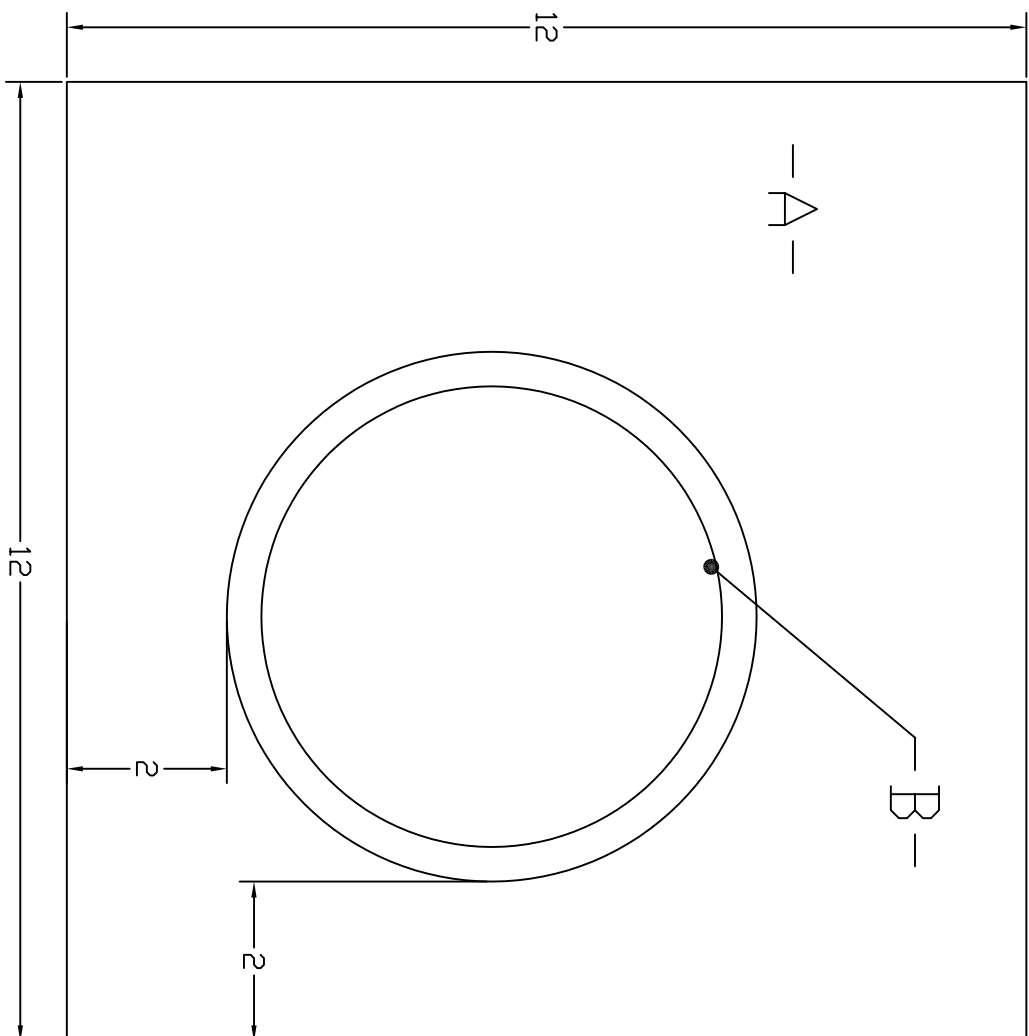
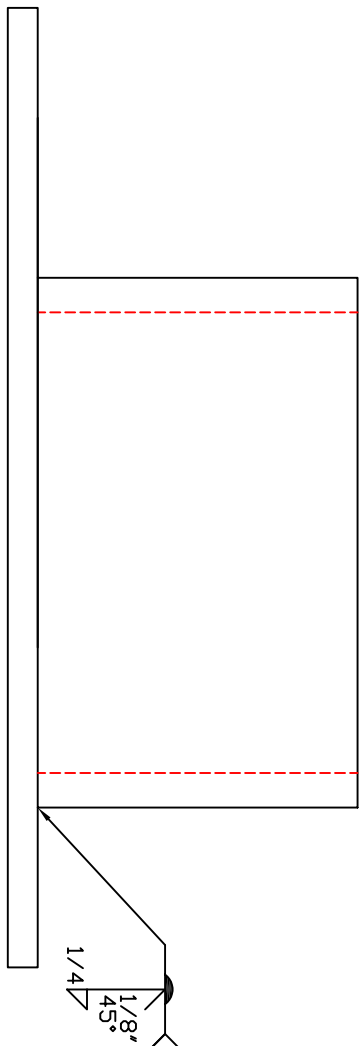
2010 SKILLSUSA
WELDING CHAMPIONSHIPS

SIZE

A DFC

SCALE NONE HIGH SCHOOL





NOTES

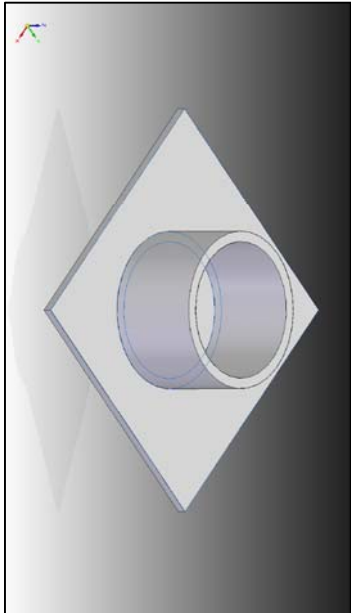
- ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE SPECIFIED.
- ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

PROCEDURE

USE WPS# 101

TACK COMPLETE ASSEMBLY IN ANY POSITION BEFORE WELDING

WELD TO BE COMPLETED WITH BASE PLATE 'A' FIXED IN THE VERTICAL POSITION WITH PIPE 'B' AXIS EXTENDING HORIZONTALLY.



ID	QTY	DESCRIPTION
B	1	6" Sch. 40 Pipe 45° Bevel One Edge
A	1	1/2" X 12" X 12" Plate

DWG TITLE
2010 SKILLSUSA

WELDING CHAMPIONSHIPS

SIZE
A SMAW SkillsUSA.

SCALE
NONE HIGH SCHOOL