

Skills USA Welding Fabrication Competition Update – 2015

State Welding Fabrication Winners:

Congratulations on your accomplishments thus far. Please review these guidelines for the national competition in June. Now is the time to brainstorm, practice, and design your project to be built. Your team will have 6.5 hours to complete your project. Keep in mind your team & project will be judged throughout your 6.5 hours. Manage your time wisely. **Please note prints of your design must be ready to turn in at orientation. (See items supplied by teams)**

- **Project Theme:**

- Smoker

- **Material List Supplied by Committee:**

- Qty. 2 – 4' x 4' 10 ga. mild steel
- Qty. 1 – 4' x 8' 3/4"x9 flattened expanded steel
- Qty. 3 – 1" x 1" x 1/8" x 10' angle iron
- Qty. 2 – 1-1/2"x1-1/2"x1/8" x 10' angle iron
- Qty. 1 – 2" continuous (piano) hinge 2' long
- Qty. 2 – 3" casters (ridged)
- Qty. 1 – 3/8" cold rolled round stock 10' long
- Qty. 1 – 1" Sch. 40 Blk. Pipe 18" long
- Qty. 1 – 4" Stove Pipe Black iron 3' long
- Qty. 2 – 12"x12"x 18 ga. mild steel
- Qty. 2 – 2-1/2" spring-loaded draw latch
- Qty. 16 ea. – 5/16"-18 UNC x 1-1/2" machine bolts and nuts
- Qty. 32 – 5/16" flat washers

- **Welding Consumables Supplied by Committee:**

- .035 Hobart GMAW Consumable (ER70S-6)
- .045 Hobart FCAW Consumable (E71T-1)
- 3/32" Lincoln Electric ER70S-2 GTAW Filler Rods
- 3/32" Lincoln Electric E7018 SMAW Electrodes
- 1/8" Lincoln Electric E7018 SMAW Electrodes
- 3/32" Lincoln Electric E6010 SMAW Electrodes
- 1/8" Lincoln Electric E6010 SMAW Electrodes

- **Minimum Project Requirements:**

- 5 Individual SMAW Welds of 3" or greater (Two 3F vertical up welds required)
- 5 Individual GMAW Welds of 3" or greater (Two 3F vertical up welds required)
- 5 Individual GTAW Welds of 3" or greater (Two 3F vertical up welds required)
- 5 Individual FCAW Welds of 3" or greater (Two 3F vertical up welds required)
- 5 Individual OFC Cuts of 5" or greater
- 10 Drilled Holes made using the supplied Mag Drills
- 80% of Total Weight of Material is required for project.
- The smoker must be equipped with a chip pan and a fire pan.
- The smoker must be equipped with a hinged door that latches.
- The smoker must have a minimum volume of 6 cubic feet.
- The smoker must have a minimum of four racks providing a total of 900 square inches of cooking area.

- ***Judging Overview:***

Category	Points	Judging Detail
Safety	75	Each safety infraction will be a 5pt deduction
SMAW	100	5 required welds will be judged on joint fit-up, size, contour and appearance
GMAW	100	5 required welds will be judged on joint fit-up, size, contour and appearance
GTAW	100	5 required welds will be judged on joint fit-up, size, contour and appearance
FCAW	100	5 required welds will be judged on joint fit-up, size, contour and appearance
OFC	100	5 required cuts will be judged on angle, appearance, dimension, bottom edges slag free and cuts free of chipping marks (Cuts must be judged prior to any cleaning, grinding, etc)
TEAMWORK	100	Students will be judged on equal participation, team communication and ability to work together
FABRICATION	150	10 critical dimensions will be judged for accuracy. Overall appearance and functionality is also scored
ORAL EXPLANATION	50	2-5 minute oral explanation of the project design and team's preparation. This will be conducted in the welding booth
WELD DRAWINGS		Minimum requirements for Blueprint: Title Block, Proper Critical Dimensions, No Tolerances, Proper Welding Symbols, Proper Finishing Symbols, Proper Views to Fabricate the project, Proper Sub Assembly Drawings
WRITTEN TEST	75	The 3 individual test scores are averaged for your team's total score
MATERIAL USAGE	50	If the team's scrap material weighs 0-5lbs, the team will receive all 50pts. For each lb of material over 5 lbs, the team will be docked points based on the total scrap weight

- ***Items that must be supplied by Teams:***

- All Personal Protective Equipment
- Hearing and/or ear protection
- Welding helmet with appropriate filter plate/lens and protective cover plate/lens in a flip or slide front. Auto darkening shields are permissible
- Spare spatter and filter lenses/plates for arc welding helmet and oxyacetylene goggles
- Drill bits needed to complete the project (Spares will be provided if needed)
- Blueprints – See “Blue print requirements” below
- Résumé
- **Students are not permitted to bring any power tools or templates.**
- Teams may bring own hand tools but are not needed to complete the project.
 - See Welding Fabrication National Standards for more information.

- **Blue print Requirements:**
 - 11 x 17 size paper printed in the Landscape mode
 - No bindings or covers
 - Title block in lower right hand corner with space titled Team #.
 - ***Your team number will be recorded*** by the SkillsUSA staff when you turn in your prints.
 - No school name or identifying marks on the print
 - Max of 10 pages – You must have overall dimensions of the finished product included within the drawings you submit.
 - All Welds ***MUST*** have appropriate weld symbols included to show where the required welds and weld processes will be used on the parts
 - All prints will be submitted to the committee in a PDF format on a USB type drive. (The drive will not be returned to the team)
 - A blueprint can be neatly hand drawn if the team does not have access to design software. However, an electronically scanned pdf copy is still required.
 - (3) paper copy submissions per group to be turned in to the committee. You must provide your own copies to use in the contest.
 - Do NOT roll up paper copies

- **Tools Supplied by Committee to each team:**

- Welding Machines
 - Lincoln Electric Aspect 375 used for SMAW/GTAW
 - Miller Electric Millermatic 350P for GMAW/FCAW
- Environmental Equipment
 - 1 Environmental Extraction Unit per team(Miller Electric or Lincoln Electric)
- Harris Calorific OFC Torch
- Materials from Bill of materials
- Two 4 ½” Metabo grinders
- 3 cutting disks, 3 grinding disks and 3 sanding disks per team
- Oxyacetylene goggles
- Grinding face shields
- Tool boxes consisting of the following tools:

Tool	Quantity
Calculator	1
Clamp - 12" Bar Type	1
Clamp - 24" Bar Type	1
Hammer - 3# (Short Handle)	1
Hammer - Chipping	2
Level - 24" Bubble Type	1
Measuring Tape - 25'	3
Pliers - Channel Lock (Large)	1
Pliers - Channel Lock (Small)	1
Pliers - Diagonal Wire Cutters	1
Pliers - Lineman's (Large)	1
Pliers - Needle Nose (Large)	1
Pliers - Slip Joint (large)	1
Pliers - Slip Joint (Small)	1
Screwdrivers - Flat Blade (Various Sizes)	5
Screwdrivers - Phillips Head (Various Sizes)	3
Square - Framing	1

Tin Snips	1
Vise Grips - 10WR (Regular Type)	1
Vise Grips - 11R (Short C-Clamp Type/Without feet)	2
Vise Grips - 11SP (Short C-Clamp Type/With feet)	2
Vise Grips - 18SP (Long C-Clamp Type/With feet)	2
Wrench - 8" Adjustable	1
Wrench - Set - Combination 1/4" to 7/8" (10 pcs)	1

- **Other tools:**

- There will be a limited number of Milwaukee Mag Drills provided for drilling. Teams must use the drills when they are available. **To ensure that you have the correct drill bit size, you should provide your own drill bits.** Backup drill bits will be made available of various sizes but quantities may be limited.
- There will be a limited number of Metabo Chop saws provided. Teams must share and use the saws when they are available.

- **Other Information:**

- When fabricating, sometimes parts and/or steel pieces are not supplied with the correct dimensions. If the dimensions are different than your prints, “on the job” corrections must be made. Notify the judges if materials are not the correct dimensions prior to any material prep. The judges will take that into consideration when judging.

- **Safety:**

- Face shields must be worn while grinding
- Helmets or oxyacetylene goggles must be worn while cutting
- Welding jackets must be worn while welding
- Safety glasses must be worn at all times
- Only one grinder and one welding machine may be used at a time due to close proximity of teammates and only one piece of environmental equipment
- Grinding sparks on the welding equipment or other people will result in a deduction in points
- Environmental equipment must be used at all times when welding. Points will be deducted for improper use.