



2022 Welding: Structural Welding Competition

FACT SHEET

Project Manager

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For questions related specifically to the structural welding competition, contact Chris M. Weber, (504) 458-2306 or chrisweber@abcbayou.com. For all event questions, contact Jarrell Jackson, National Craft Championships Director, (202) 595-1789 or jackson@abc.org.

Specific Competition Eligibility

The structural welding practical performance test includes one welding process – SMAW. Welders may not be certified in the structural welding processes used in the structural welding practical performance test longer than six months from the date of the National Craft Championships. Also refer to overall eligibility requirements listed in the guidebook.

Online Exam

Important news for 2022 - The online exam must be completed before competitors arrive on site. Exceptions will be made for extreme circumstances with prior approval of the NCC Director via email. If an exception is granted, the makeup exam will take place Tuesday, March 15, 8:30-11 a.m., and be proctored on site by NCCER. Only those competitors with prior approval from the NCC Director will be allowed to take the test on site. All competitors must sit for the online exam or face disqualification from the NCC. The online exam continues to make up 25% of one's overall competition score.

Competitors will complete the online exam at a local NCCER Accredited Training Sponsor or Assessment Center. It is the responsibility of the sponsor organization to schedule test sessions directly with NCCER by emailing a request to: NCCTest@nccer.org, with the subject line Schedule NCC Test.

NCCER will contact the sponsoring organization to provide access to the online test in NCCER's Testing System. Information on accessing the testing system will be provided, including requirements for the testing proctor.

All exams/tests are based on the standardized craft training process. In addition to the knowledge and skills required for each competition, all competitors should have completed the NCCER Core Curriculum modules. A nonprogrammable calculator will be provided as part of the online exam, but no reference materials are permitted.

Practical Performance Test Description

Each competitor will perform tasks utilizing knowledge and skills applicable to structural welding, torch set-up and breakdown, oxy-fuel cutting, weldment assembly and reading detail drawings.

Welding Task: Structural Welding

Each competitor will be issued coupons for this portion of the test. The task will be judged in the 3G—all uphill progression—and 4G position using 3/8" thick plates with E-6010 electrodes for the root pass and E-7018 for the filler and 2-stringer cap. The AWS—QC7-93 will be used for judging the structural welding practical performance test. The judges will inform the competitors regarding the steps they expect the competitors to follow during the procedure and answer any questions on the day of the competitor practical performance test site orientation as well as the morning of the test. Judge(s) will stencil the coupon with the competitor's number when each declares they are finished. The finished coupon cannot be removed from their individual work areas until the judges and the project manager give approval.

Welding Task: Torch Set-Up

Each competitor will have all the necessary parts to completely assemble and use an oxyfuel-cutting rig. The judges must witness the assembly and disassembly of the oxyfuel-cutting rig. Each competitor should be prepared to answer any questions the judges have in reference to their oxyfuel-cutting rig. The oxyfuel-cutting rig also will be used during the torch usage task, so use of the torch will be judged as well.

Welding Task: Torch Usage

Each competitor will be given a detail drawing and be required to read and interpret the drawing. Each competitor also will be given an equal amount of 3/8" thick carbon steel plate material to measure, mark and cut using the oxyfuel-cutting rig. Dimensional accuracy, weld quality and proper length/pitch comprise the judging criteria for this portion of the test. The finished pieces cannot be removed from their individual work areas until the judges and project manager give approval.

Lastly, safety, work planning and housekeeping will be judged as a high priority during the test as well as disassembly/clean-up. These also are identified on the following structural welding sample score sheet.

Knowledge and Skills Required

The knowledge and skills for this competition are based on the following levels of the NCCER Welding curriculum:

- 29106-15 Weld Quality
- 29110-15 Joint Fit-Up and Alignment
- 29201-09 Welding Symbols
- 29107-15 SMAW – Equipment and Set-up
- 29112-15 SMAW Open V Groove Welds
- 29105-15 Base Metal Preparation
- 29102-15 Oxyfuel Cutting
- 29202-09 Reading Detail Drawings
- 29108-15 Shielded Metal Arc Electrodes
- 29109-15 SMAW - Beads and fillet welds
- 29101-15 Welding Safety
- Application of OSHA Safety Standards
- 29111-15 SMAW groove welds with backing
- Core Curriculum

Competitors will be required to perform the following 3G (uphill progression) and 4G welding positions during the test: 3/8" plate carbon steel using E6010 electrodes for the root and E7018 electrodes for filler and 2-stringer cap.

Tools Required

Each competitor should bring only the tools listed below to the competition. Tools may be examined prior to the practical performance test and additional tools **not on this list** will be stored until the competition has concluded. If a tool, necessary to complete the practical performance test, is not listed, the National Craft Championships Committee will provide it. If you use or prefer to use a self-darkening lens in your welding hood, be sure to bring either replacement batteries and/or lenses as these are not available.

- Appropriate 100% cotton, long-sleeved shirt
- Welding helmet with a minimum #10 filter lenses (Hard hat attachment hoods or head-mounted, ratchet-type welding hoods are acceptable.)
- Leather gauntlet-type welding gloves (SMAW)
- Ear protection (earplugs)
- Cutting goggles with a minimum #5 filter lens
- Friction lighter (striker)
- Chipping hammer
- Combination or tri-square
- Hand brush C/S
- 6" or 9" channel-lock pliers
- 10-inch or 12-inch adjustable wrench
- 12-inch half-round file with handle
- Soapstone (flat or round)
- 2 to 3 lb. hammer
- 6' tape measure
- Leather work shoes or boots.
- **Optional items that are allowed but not required**
- Leather sleeves
- Leather rod pouch.
- Knee pads

NCC-furnished tools/equipment

- 4 ½” angle grinder safe use and inspection requirements. Guard must be in place and secured.
- Handle must be in place.
- Cord must be inspected prior to use and can't be frayed or have exposed wires.
- Grinder must be unplugged prior to removing and/or installing grinding discs or wire wheels.
- Fume extraction unit must be used while welding but can be turned off when no welding is taking place.
- Face shield for grinding and buffing, approved hard hat and ear plugs.

Sample Score Sheet

The following sample score sheet is provided to give competitors an example of the criteria that may be included in the practical performance test. However, this score sheet is only a sample and not intended to act as a study guide in preparation or to imply specific criteria that will be judged during the actual practical performance test.

**ABC National Craft Championships
Structural Welding Sample Score Sheet**

Judging Criteria	Competitor Identification Numbers						
	Maximum Points						
Root pass – 3G							
Fill passes – 3G							
Cap – overall appearance - 3G							
Root pass – 4G							
Fill passes – 4G							
Cap – overall appearance - 4G							
Oxy-fuel set-up							
Oxy-fuel breakdown							
Dimensions of cuts							
Weld symbols							
Overall fabrication							
Quality of workmanship, proper use of tools and equipment							
Project disassembly							
SUB-TOTAL							
Safety-housekeeping							
Use of PPE							
Use of power tools							
SUB-TOTAL							
TOTAL SCORE							