

2022

NATIONAL
CRAFT
CHAMPIONSHIPS

PRESENTED BY



2022 Electrical: Residential/Commercial Competition FACT SHEET

Project Manager

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Specific Competition Eligibility

The electrical competition has no competition-specific eligibility requirements. Please refer to overall eligibility requirements listed in the guidebook.

Special Competition Announcement

The conduit-bending portion of the electrical practical performance test will be conducted on Tuesday, March 15, 2022 from 2 PM to 4 PM, during the competitor practical performance test site orientation. **All tools to complete this portion of the exam will be provided. Competitors will be required to wear hardhats (provided by ABC), safety glasses, gloves (ABC will provide glasses and gloves, but competitors may prefer their own) and boots (competitors must bring their own boots), which must be worn during this portion of the competition.**

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 is permissible as part of the online exam, but no reference materials are permitted.

Practical Performance Test Description

Each competitor, over a two-day period, will perform three tasks utilizing knowledge and skills applicable to conduit bending (work boots or shoes must be worn during all tasks), utilizing all facets of industrial/commercial construction, and utilizing knowledge and skills applicable to industrial applications.

Electrical Task: Residential-Commercial Construction

Working on a plywood wall, 6 feet, 6 inches by 4 feet, the competitor may be required to install an electrical meter, disconnect switch and electrical panels with circuit breakers. The project is to be

connected to power with a flexible cord and plug connector to a 120-volt, three-wire power source utilized by judges. The competitor will install electrical metallic tubing and metal boxes. **All hand tools will be provided.**

Knowledge and Skills Required

The knowledge and skills for this competition are based on the **2017 National Electrical Code** and all levels of the NCCER Electrical curriculum 2017 revisions. It is strongly recommended that competitors have a working knowledge equivalent to a third-year apprentice.

- Electrical Safety
- Hand Bending
- Fasteners and anchors
- Electrical Theory One
- Electrical Theory Two
- Electrical Test Equipment
- Introduction to National Electrical Code®
- Raceways, Boxes and Fittings
- Conductors
- Introduction to Electrical Blueprints
- Wiring: Commercial and Industrial
- Alternating Current
- Motors: Theory and Application
- Grounding
- Conduit Bending
- Load Calculations – Feeders and Services
- Practical Applications of Lighting
- Boxes and Fittings
- Conductor Installations
- Cable Tray
- Conductor Terminations and Splices
- Installation of Electric Services
- Circuit Breakers and Fuses
- Contactors and Relays
- Electric Lighting
- Calculations—Branch Feeders and Circuits
- Conductor Selection and Calculations
- Overcurrent Protection
- Raceway, Box and Fitting Fill Requirements
- Wiring Devices
- Distribution Equipment
- Standby and Emergency Systems
- Basic Electronic Theory
- Fire Alarm Systems

Tools

Each competitor will be provided with the needed tools. Listed below are examples of the tools provided by NCC. No other tools will be allowed.

- Medium and large screwdrivers straight
- Medium Phillips
- Wire strippers
- VOM Meter
- Channel locks
- Awl or center punch
- Claw hammer
- Utility knife
- Romex stripper
- 9-inch lineman pliers
- Diagonal-cutting pliers
- Keyhole saw
- EMT conduit reamer
- EMT Benders
- Rigid bender
- Pencils- Sharpe marker
- Basic, non-programmable calculator
- 25' Tape Measure
- Hacksaw
- Torpedo Level
- Tool pouch and belt
- Hard Hat, gloves and safety glasses

Please be aware of the hazards associated with the above tools:

- All hand tools should be used for their intended purpose.
- Hazards include cuts, scrapes, crush, pinch and puncture.
- Hazards particular to the conduit threader include cuts, crush, pinch, scrapes and snagging of loose clothing.
- Gloves must be worn when cutting, sawing or threading conduit.
- No loose clothing should be worn when using the power threader.

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 Electrical Sample Score Sheet

Judging Criteria	Competitor Identification Numbers				
	Maximum Points				
Use of materials					
Grounding					
Placement					
Follow prints/plans					
NEC					
Accuracy					
Terminations of conductors and cables					
Proper circuiting and device makeup					
Trim out of devices and conductors					
Panel					
Devices					
Installation of devices					
Operation					
Sequence of work					
Care and use of tools					
Proper use of fasteners					
General – ability to follow directions, quality of workmanship, neatness, best use of time and					
Project disassembly					
SUBTOTAL:	160				
Safety – housekeeping					
Use of hard hat					
Use of safety glasses					
Use of power tools					
Proper footwear					
SUBTOTAL:	40				
GRAND TOTAL:	200				
Tie Breaker #1					
Tie Breaker #2					