

13TH PROVINCIAL SKILLS COMPETITION

2010 SKILLS CANADA NEWFOUNDLAND AND LABRADOR



ELECTRICAL WIRING

Scope document

Post - Secondary Level

March 26th , 2010 – Seal Cove Campus (College of the North Atlantic)

Duration of Contest: 6hrs.

PURPOSE OF THE CHALLENGE

Assess the contestant's skills and abilities performing various installation tasks in the field of residential and construction electrical wiring.

SKILLS AND KNOWLEDGE TO BE TESTED

Throughout the final contest, contestants can expect to be evaluated in one, two, three or all of the following areas:

- written examination (25 questions based on the Canadian Electrical Code)
- installing residential, commercial wiring and control systems;
- installing branch circuit components;
- installing heating equipment and controls;
- Trouble shooting using test instruments

PRE-REQUISITITES

Contestants must demonstrate mastery of the following technical skills:

- measuring and marking dimensions on a work surface using scale plans and drawings based on the metric or imperial measuring system;
- measuring and accurately marking the location of outlets and tapping holes in control panels;
- installing and trouble-shooting electrical equipment, cables and wiring
- installing conduit, tubing and raceways;
- measuring and bending tubing and conduit;
- measuring, sawing, drilling, tapping and deburring metals and plastics;
- assembling components using screws, staples and bolts;
- wiring and connecting electrical components;
- Identifying and marking conductors according to plans and drawings.
- NOTE: During the competition competitors will be required to complete a troubleshooting exercise using a meter and proper troubleshooting techniques. The competitor will be assigned a time to complete this task.

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Contestants must demonstrate mastery of the following theoretical skills:

- reading, interpreting and executing plans, drawings, diagrams and schemas in compliance with standards;
- reading, interpreting and executing manufacturer's technical specifications for the electrical components to be installed;
- knowledge of electrical materials and construction electricity work methods;
- knowledge of basic electrical circuits;
- knowledge of basic electrical devices and equipment;
- knowledge of occupational health and safety regulations;
- knowledge and application of electrical code requirements in Canada and installation to comply with Canadian Electrical Code Book.

EQUIPMENT, TOOLS, SUPPLIES, CLOTHING

The equipment and materials used during the contest are standard items commonly used in the electrical trade in Canada.

Contestants must have the following tools in their toolkits:

- Supplies for drawing and writing, i.e., pencil, eraser, measuring tape (metric), etc.
- Punch
- Set of screwdrivers (robertson, flat and philips)
- Electrician's pliers (linesman pliers)
- Cutting pliers (diagonal)
- Knife
- Needle-nose pliers
- Hammer
- Adjustable wrench (crescent wrench)
- Set of hex wrenches
- Wood bits, 1/2 - 5/8 - 3/4;
- Black electrical tape
- 1 set manual hole punches for 1/2", 3/4", 1" conduit (Not hydraulic)
- Tapping screwdriver (6/32 - 8/12 - 10/32 - 10/24 - 1/4x20).
- Tape dispenser (wire numbers)
- Fish Tape
- File or conduit reamer
- Hacksaw
- Torpedo level
- Multi-meter
- Adjustable pliers (pump pliers)
- Cordless drill (battery operated), or power drill to handle **any and all** drilling procedures.
- Set metal drill bits
- Manual pipe bender, EMT 1/2(OFF-SET [one operation] are not allowed)
- 120 volt portable heat gun complete with 5-15R male cord

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Tools and equipment cont.

Contestants may bring tools other than those listed above. Of course, those tools will have to be approved by the judges. A workbench and ladder will be provided at each workstation. Each contestant will have access to a 120-volt 15A outlet for the portable heat gun and battery charger.

Note: Competitors must have a copy of Canadian Electrical Code 2009 Edition

Safety

Contestants must bring: CSA-approved safety gear (hard hat, safety boots, goggles, leather gloves). Safety equipment **must be** worn at the competition site e.g.; hard hats, safety boots and safety glasses at all times and goggles when drilling. Contestants **must** wear the required safety gear and comply with occupational health and safety regulations in order to compete. Contestant's clothing **must** be neat and clean – torn clothing is not allowed.

PROJECT COMPETITION

Project competition and material list

The Provincial Technical Committee (PTC) will be responsible for making a project competition, judging criteria and a material list to comply with Canadian Electrical Code Book.

POINT BREAKDOWN / TOTAL 100

A Written examination	10 points
B Equipment and component installation	18 points
C Operation	35 points
D Cable installation	10 points
E Tubing and conduit installation	10 points
F Compliance with health and safety rules	8 points
G Fault Finding	9 points

Tie breaker ----- Time it takes to complete tasks.

TECHNICAL COMMITTEE

Felix Slaney *Chair*
Randy Rice
Kevin Biles
Chris Moss

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