



12th TERRITORIAL SKILLS COMPETITION - SCOPE DOCUMENT

18 – ELECTRICAL WIRING Post-Secondary Level

DURATION: 6 HOURS

SKILLS AND KNOWLEDGE TO BE TESTED

CONTEST SCHEDULE

- 1) Contestants are required to sign in at 8:30 a.m. at Sir John Franklin High School, Yellowknife. Contest starts at 9:00 am at Sir John Franklin High School.
- 2) Any late arrivals will not be allowed any extra time.
- 3) From 12:00 p.m. to 1:00 p.m., you will be allowed to take a 1-hour lunch break.
- 4) The project must be completed by 4:00 p.m.

You have 6 hours to complete the contest so time should not be a factor. The contest is not a race, and the first person done will not necessarily be the winner. If the time limit has expired, you will be marked on all that you have completed. Judging will commence when all contestants have left the contest area after the time limit has expired.

This package contains all the information you need regarding the competition. There are no hidden tricks! The contest will consist of a practical test only. For the practical part, the assigned project is to be installed exactly as shown. You will be assigned a specific workstation at which you will do your project. All your work will be done at this station. If at any time you must leave your workstation, just inform one of the competition monitors. If you must leave the competition area, (i.e. to use the washrooms), you must be accompanied by a monitor and you must checkout with the chairperson and check-in again upon your return.

There will be no talking to any person outside of the competition area. “Coaching” of any kind from your advisor, teachers, friends or any other source is strictly prohibited! If you have any questions regarding the assigned project or any of the procedures, please ask the judges or monitors only.

Failure to comply with any of the competition rules could result in the disqualification of the contestant, and you will be removed from the building for the remainder of the contest.

All contestants must work in a safe and orderly manner. The competition monitors are there to observe your working habits and will be recording any infractions that may occur. Keep your workstations neat and tidy at all times to prevent any accidents from occurring. Marks will be deducted for any infractions.

This installation must meet all code requirements based on the 2006 CANADIAN ELECTRICAL CODE, PART 1, 20th EDITION. You will be allowed to use your own copy for referenced during the contest. Upon completion of your work, you will clean up your workstation, (pipe, papers, wire scraps, etc...), and place all your garbage in the box for your materials. Next you will notify a monitor that you are finished. After signing out, you must leave the contest area. The judging process will commence after all competitors are completed or the time limit has expired.

The contest will consist of the assigned project. You have 6 hours to complete the task.

Each contestant will receive his or her own copy of the contest instructions. The instructions will contain a drawing of the layout you must follow, written instructions as to how it is to work, and a complete list of all the materials you will need for the contest. Some blank sheets of paper will also be provided if you wish to do any rough work of drawings during the contest.

All of the measurements used must be exactly as indicated in the specifications and on the drawings you will be given. You will be allowed to tolerance of **plus or minus 2mm** on your measurements.

All equipment, boxes, devices, etc. to be used for this project are supplied. No outside materials will be allowed.

Any of the devices that you are to install on boxes, such as switches, lamp-holders, and receptacles, shall be mounted so that all the wires are pushed back in the box and the mounting screws all the way in, to hold the device in place.

NEATNESS: Part of your final mark is based on the neatness of your installation when completed. In the event of a tie score neatness could decide the winner.

C.E.C. Rule #2-108: CLASS OF WORKMANSHIP.

Careful attention shall be paid to the mechanical execution of the work in connection with any electrical installation and any installation that has been badly arranged or poorly executed, either generally or in any particular way, will not be accepted by the inspection department.

All required clothing and equipment must be as specified in the technical specification or marks will be deducted. A tool check will be done and marks will be deducted if your list is not complete. If this poses a problem for you, please see the chairperson immediately. If you wait till the day of the competition it will be too late.

INSTRUCTIONS AND INFORMATION

- 1.1 Work safety rules must be respected during the competition. The monitors will verify and record these habits throughout the contest.
Competitors who commit safety violations or are guilty of improper use of tools lose the points relative to one or the other or both of these elements of evaluation, according to the case.
- 1.2 Read this document carefully.
- 1.3 This exam is not a speed test. However, the contest must be completed in 6 hours.
- 1.4 No talking is allowed between competitors.
- 1.5 Competitors will immediately report any damage during the competition to the monitors.
- 1.6 The winner is the candidate who accumulates the most points out of 1000 points. In case of a tie, the candidate who completed the contest in the least time will be declared the winner.

DESCRIPTION OF CONTEST

The competitor will proceed with project installation using the lay-out drawing in Annex 1A or Annex 1B matching your work area (plywood section on the right, Annex 1A or plywood section on the left, Annex 1B). The competitor shall respect the electrical diagram (Annex 2) for the flush mounted installation. The electrical symbols are in Annex 3. The list of materials that you my need are in Annex 4. The installation shall respect the rules and regulations of the Canadian Electrical Code 2006, 20th Edition.

Surface mounted installation

- All conduit installation is to be done with EMT.

Notes:

- Installation of boxes must exactly respect the dimensions indicated. The height is always reassured from the floor.
- Box location for lighting circuits must conform to the plan and all installations must be according to neatness and the norms of the Canadian Electrical Code.
- All lighting wiring in the studded part will be made of non-metallic cable NMD90.

Notes:

- Annex 1A and Annex 1B respectively represent the plan for a working area with the surface mounting on the right side for Annex 1A and for a working area with the surface mounting on the left side for Annex 1B.
- No power will be available during the contest
- The candidate must ensure that all breakers are in OFF position at the end of the contest.
- For the studded part of the installation, the finished surface will be a drywall 12 mm (1/2") thick.
- For the evaluation at completion of the test, all circuits must be working and well identified on the distribution panel
- Electrical symbols are found in Annex 3
- Any use of couplings on the EMT conduit will result in the loss of 10 points from your score for each coupling used.
- If you find that you need another length of conduit, a deduction of 10 marks from your score will result.
- Please advise monitor of any broken or missing material.

CONTEST PROCEDURE

This contest is not a speed test. Therefore, if time allows (the examination last 6 hours), you are allowed to redo any skills that you think will improve your marks.

All the following steps must be completed according to the electrical plan and diagram, neatness and the rules and regulations of the Canadian Electrical Code 2006, 20th edition.

The different steps, not necessarily in this order, consist of:

- Box location and installation
- Cable and conductor run between boxes and distribution panel

- Staple installation on cable
- Execute the following operations on the conduits:
 - Cut and ream the conduits
 - 90° angle bend
 - Saddle bend
 - Offset shall be done at each end of conduit entering a box
- No couplings shall be allowed on the conduits (any use of couplings will result in lost points)
- Install strap on conduit
- Install conduits to boxes and on the wall
- Using the fish wire, if necessary, pass the wire into the conduit
- Cut the conductors accordingly
- Connect conductors to devices and equipment such as switches, light fixtures, duplex receptacles, flexible cord, distribution panel
- Install all accessories, switch plates, and duplex plates
- Connect the conductors to distribution panel
- Properly identify circuit breakers on panel
- Clean and place work post
- Ensure that breakers are in OFF position

End of contest

When you have completed the contest, you must immediately advise the monitor and are strictly obliged to hand in your test and installation plan and leave the competition area.

EQUIPMENT, TOOLS, SUPPLIES, AND CLOTHING

TO BE ANNOUNCED... CHECK BACK REGULARLY

SAFETY REQUIREMENTS

ALL SAFETY RULES MUST BE OBSERVED:

You are required to wear appropriate safety equipment during the practical test. Remember you will be monitored on your working habits and marks will be deducted if you are found to be working in an unsafe manner.

When you are done your project, you must clean up your workstation area and report to an official to sign out. Do not just leave!

POINT BREAKDOWN / 1000 TOTAL

The points allowed for the completion of the different skills examined in the test are allocated as follows:

Function	300
Measurement	200
Installation of equipment	100

Installation of wiring system	150
Safety (electrical & personal)	100
Wiring (connections and looms)	100
Choice and use of materials	50

TOTAL **1 000**

ANY GRIEVANCE MUST BE FILED WITH THE TECHNICAL COMMITTEE CHAIRPERSON WITHIN 15 MINUTES OF THE CONTEST COMPLETION. AFTER WHICH, THE DECISION OF THE JUDGES IS FINAL. THE RESULTS WILL BE ANNOUNCED AT THE AWARDS CEREMONY ONLY!

TECHNICAL COMMITTEE MEMBERS - JUDGES

Mark Campbell, Rene Mercredi – Co-Technical Chairs
BHP Billiton Inc. Yellowknife