Electrical Hazards

**181.**(1) Except where otherwise required by this Regulation, electrical work performed on or near electrical transmission or distribution systems shall be performed in accordance with the document entitled “Electrical Utility Safety Rules” published by the Infrastructure Health and Safety Association and revised 2014. O. Reg. 627/05, s. 4; O. Reg. 443/09, s. 5; O. Reg. 345/15, s. 22.

(2) Sections 182, 187, 188, 189, 190, 191 and 193 do not apply to electrical work that is performed on or near electrical transmission or distribution systems if the work is performed in accordance with the document referred to in subsection (1). O. Reg. 627/05, s. 4.

**182.**(1) No worker shall connect, maintain or modify electrical equipment or installations unless,

(a) the worker holds a certificate of qualification issued under the *Ontario College of Trades and Apprenticeship Act, 2009*, that is not suspended, in the trade of,

(i) electrician — construction and maintenance, or

(ii) electrician — domestic and rural, if the worker is performing work that is limited to the scope of practice for that trade; or

(b) the worker is otherwise permitted to connect, maintain or modify electrical equipment or installations under the *Ontario College of Trades and Apprenticeship Act, 2009* or the *Technical Standards and Safety Act, 2000*. O. Reg. 627/05, s. 4; O. Reg. 88/13, s. 2.

(2) A worker who does not meet the requirements of clause (1) (a) or (b) may insert an attachment plug cap on the cord of electrical equipment or an electrical tool into, or remove it from, a convenience receptacle. O. Reg. 627/05, s. 4.

**183.**Every reasonable precaution shall be taken to prevent hazards to workers from energized electrical equipment, installations and conductors. O. Reg. 627/05, s. 6.

**184.**(1) No person, other than a person authorized to do so by the supervisor in charge of the project, shall enter or be permitted to enter a room or other enclosure containing exposed energized electrical parts. O. Reg. 627/05, s. 7.

(2) The entrance to a room or other enclosure containing exposed energized electrical parts shall be marked by conspicuous warning signs stating that entry by unauthorized persons is prohibited. O. Reg. 627/05, s. 7.

**185.**(1) Electrical equipment, installations, conductors and insulating materials shall be suitable for their intended use and shall be installed, maintained, modified and operated so as not to pose a hazard to a worker. O. Reg. 627/05, s. 7.

(2) For greater certainty, the regulations made under section 113 of the *Electricity Act, 1998* apply to electrical equipment, installations, conductors and insulating materials and to temporary wiring installations on projects. O. Reg. 627/05, s. 7.

**186.**Electrical equipment, installations and conductors that are not to be used for the purpose for which they were designed shall be,

(a) removed; or

(b) left in an electrically non-hazardous condition by being disconnected, de-energized, tagged and,

(i) grounded, in the case of power lines,

(ii) locked out, in the case of electrical equipment. O. Reg. 627/05, s. 7.

**187.**Tools, ladders, scaffolding and other equipment or materials capable of conducting electricity shall not be stored or used so close to energized electrical equipment, installations or conductors that they can make electrical contact. O. Reg. 627/05, s. 7.

**188.**(1) This section applies unless the conditions set out in clauses 189 (a) and (b) are satisfied. O. Reg. 627/05, s. 7.

(2) No object shall be brought closer to an energized overhead electrical conductor with a nominal phase-to-phase voltage rating set out in Column 1 of the Table to this subsection than the distance specified opposite to it in Column 2.

TABLE

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| --- | --- | --- |
| Item | Column 1  Nominal phase-to-phase voltage rating | Column 2  Minimum distance |
| 1. | 750 or more volts, but no more than 150,000 volts | 3 m |
| 2. | more than 150,000 volts, but no more than 250,000 volts | 4.5 m |
| 3. | more than 250,000 volts | 6 m |

O. Reg. 627/05, s. 7; O. Reg. 345/15, s. 23.

(3) Subsections (4) to (9) apply if a crane, similar hoisting device, backhoe, power shovel or other vehicle or equipment is operated near an energized overhead electrical conductor and it is possible for a part of the vehicle or equipment or its load to encroach on the minimum distance permitted under subsection (2). O. Reg. 627/05, s. 7.

(4) A constructor shall,

(a) establish and implement written measures and procedures adequate to ensure that no part of a vehicle or equipment or its load encroaches on the minimum distance permitted by subsection (2); and

(b) make a copy of the written measures and procedures available to every employer on the project. O. Reg. 627/05, s. 7.

(5) The written measures and procedures shall include taking the following precautions to protect workers:

1. Adequate warning devices, visible to the operator and warning of the electrical hazard, shall be positioned in the vicinity of the hazard.

2. The operator shall be provided with written notification of the electrical hazard before beginning the work.

3. A legible sign, visible to the operator and warning of the potential electrical hazard, shall be posted at the operator’s station. O. Reg. 627/05, s. 7.

(6) Before a worker begins work that includes an activity described in subsection (3), the employer shall provide a copy of the written measures and procedures to the worker and explain them to him or her. O. Reg. 627/05, s. 7.

(7) The worker shall follow the written measures and procedures. O. Reg. 627/05, s. 7.

(8) A competent worker, designated as a signaller, shall be stationed so that he or she is in full view of the operator and has a clear view of the electrical conductor and of the vehicle or equipment, and shall warn the operator each time any part of the vehicle or equipment or its load may approach the minimum distance. O. Reg. 627/05, s. 7.

(9) Section 106 also applies with respect to the signaller designated under subsection (8). O. Reg. 627/05, s. 7.

**189.**Section 188 does not apply if,

(a) under the authority of the owner of the electrical conductor, protective devices and equipment are installed, and written measures and procedures are established and implemented, that are adequate to protect workers from electrical shock and burn; and

(b) the workers involved in the work use protective devices and equipment, including personal protective equipment, and follow written measures and procedures that are adequate to protect workers from electrical shock and burn. O. Reg. 627/05, s. 7.

**190.**(1) This section applies if work is to be done on or near energized exposed parts of electrical equipment or of an electrical installation or conductor. O. Reg. 627/05, s. 7.

(2) Anemployer shall,

(a) establish and implement written measures and procedures for complying with this section to ensure that workers are adequately protected from electrical shock and burn; and

(b) make a copy of the written measures and procedures available to every worker on the project. O. Reg. 627/05, s. 7.

(3) The worker shall follow the written measures and procedures. O. Reg. 627/05, s. 7.

(4) Subject to subsection (9), the power supply to the electrical equipment, installation or conductor shall be disconnected, locked out of service and tagged in accordance with subsection (6) before the work begins, and kept disconnected, locked out of service and tagged while the work continues. O. Reg. 627/05, s. 7.

(5) Hazardous stored electrical energy shall be adequately discharged or contained before the work begins and shall be kept discharged or contained while the work continues. O. Reg. 627/05, s. 7.

(6) The following rules apply to the tagging of the power supply under subsection (4):

1. The tag shall be made of non-conducting material and shall be installed so as not to become energized.

2. The tag shall be placed in a conspicuous location and shall be secured to prevent its inadvertent removal.

3. The tag shall indicate,

i. why the equipment, installation or conductor is disconnected,

ii. the name of the person who disconnected the equipment, installation or conductor,

iii. the name of the person’s employer, and

iv. the date on which the equipment, installation or conductor was disconnected.

4. The tag shall not be removed unless it is safe to do so. O. Reg. 627/05, s. 7.

(7) A worker, before beginning work to which this section applies, shall verify that subsections (4) and (5) have been complied with. O. Reg. 627/05, s. 7.

(8) If more than one worker is involved in work to which this section applies, a means shall be provided to communicate the purpose and status of,

(a) the disconnecting, locking out and tagging of the electrical equipment, installation or conductor; and

(b) the discharging and containment of any hazardous stored electrical energy. O. Reg. 627/05, s. 7.

(9) Locking out is not required under subsection (4) if,

(a) in the case of a conductor, it is adequately grounded with a visible grounding mechanism;

(b) in the case of equipment or an installation,

(i) the power supply is less than 300 volts, the equipment or installation was not manufactured with provision for a locking device for the circuit breakers or fuses, and a written procedure has been implemented that is adequate to ensure that the circuit is not inadvertently energized, or

(ii) the power supply is 300 or more volts but not more than 600 volts, the equipment or installation was not manufactured with provision for a locking device for the circuit breakers or fuses, a written procedure as to how work is to be done has been implemented and the work is supervised by a competent worker to ensure that the circuit is not inadvertently energized. O. Reg. 627/05, s. 7.

**191.**(1) This section applies instead of section 190 if work is to be done on or near energized exposed parts of electrical equipment or of an electrical installation or conductor and,

(a) it is not reasonably possible to disconnect the equipment, installation or conductor from the power supply before working on or near the energized exposed parts;

(b) the equipment, installation or conductor is rated at a nominal voltage of 600 volts or less, and disconnecting the equipment, installation or conductor would create a greater hazard to a worker than proceeding without disconnecting it; or

(c) the work consists only of diagnostic testing of the equipment, installation or conductor. O. Reg. 627/05, s. 7.

(2) Subsection (10) applies, in addition to subsections (3) to (9), if the equipment, installation or conductor is nominally rated at,

(a) greater than 400 amperes and greater than 200 volts; or

(b) greater than 200 amperes and greater than 300 volts. O. Reg. 627/05, s. 7.

(3) Only a worker who meets the requirements of clause 182 (1) (a) or (b) shall perform the work. O. Reg. 627/05, s. 7.

(4) The constructor shall,

(a) ensure that written measures and procedures for complying with this section are established and implemented, so that workers are adequately protected from electrical shock and burn; and

(b) make a copy of the written measures and procedures available to every employer on the project. O. Reg. 627/05, s. 7.

(5) Before a worker begins work to which this section applies, the employer shall provide a copy of the written measures and procedures to the worker and explain them to him or her. O. Reg. 627/05, s. 7.

(6) The worker shall follow the written procedures. O. Reg. 627/05, s. 7.

(7) A worker shall use mats, shields or other protective devices or equipment, including personal protective equipment, adequate to protect the worker from electrical shock and burn. O. Reg. 627/05, s. 7.

(8) If the electrical equipment, installation or conductor is rated at a nominal voltage of 300 volts or more, an adequately equipped competent worker who can perform rescue operations, including cardiopulmonary resuscitation, shall be stationed so that he or she can see the worker who is performing the work. O. Reg. 627/05, s. 7.

(9) Subsection (8) does not apply if the work consists only of diagnostic testing of the equipment, installation or conductors. O. Reg. 627/05, s. 7.

(10) In the case of equipment or of an installation or conductor described in subsection (2), a worker shall not perform the work unless the following additional conditions are satisfied:

1. The owner of the equipment, installation or conductor has provided the employer and the constructorwith a record showing that it has been maintained according to the manufacturer’s specifications.

2. A copy of the maintenance record is readily available at the project.

3. The employer has determined from the maintenance record that the work on the equipment, installation or conductor can be performed safely without disconnecting it.

4. Before beginning the work, the worker has verified that paragraphs 1, 2 and 3 have been complied with. O. Reg. 627/05, s. 7.

**192.**All tools, devices and equipment, including personal protective equipment, that are used for working on or near energized exposed parts of electrical equipment, installations or conductors shall be designed, tested, maintained and used so as to provide adequate protection to workers. O. Reg. 627/05, s. 7.

**193.**(1) A worker who may be exposed to the hazard of electrical shock or burn while performing work shall use rubber gloves,

(a) that are adequate to protect him or her against electrical shock and burn;

(b) that have been tested and certified in accordance with subsection (2), if applicable; and

(c) that have been air tested and visually inspected for damage and adequacy immediately before each use. O. Reg. 627/05, s. 7.

(2) Rubber gloves rated for use with voltages above 5,000 volts AC shall be tested and certified to ensure that they can withstand the voltages for which they are rated,

(a) at least once every three months, if they are in service;

(b) at least once every six months, if they are not in service. O. Reg. 627/05, s. 7.

(3) Rubber gloves shall be worn with adequate leather protectors and shall not be worn inside out. O. Reg. 627/05, s. 7.

(4) Leather protectors shall be visually inspected for damage and adequacy immediately before each use. O. Reg. 627/05, s. 7.

(5) Rubber gloves or leather protectors that are damaged or not adequate to protect workers from electrical shock and burn shall not be used. O. Reg. 627/05, s. 7.

(6) Workers shall be trained in the proper use, care and storage of rubber gloves and leather protectors. O. Reg. 627/05, s. 7.

**194.**(1) A switch and panel board controlling a service entrance, service feeder or branch circuit shall meet the requirements of this section. O. Reg. 627/05, s. 7.

(2) A switch and panel board shall be securely mounted on a soundly constructed vertical surface and shall have a cover over uninsulated parts carrying current. O. Reg. 627/05, s. 7.

(3) A switch and panel board shall be located,

(a) in an area where water will not accumulate; and

(b) within easy reach of workers and readily accessible to them. O. Reg. 627/05, s. 7.

(4) The area in front of a panel board shall be kept clear of obstructions. O. Reg. 627/05, s. 7.

(5) A switch that controls a service entrance, service feeder or branch circuit providing temporary power,

(a) shall not be locked in the energized position; and

(b) shall be housed in an enclosure that can be locked and is provided with a locking device. O. Reg. 627/05, s. 7.

**195.**All electrical extension cords used at a project shall have a grounding conductor and at least two other conductors. O. Reg. 627/05, s. 7.

**195.1**(1) Cord-connected electrical equipment or tools shall have a casing that is adequately grounded. O. Reg. 627/05, s. 7.

(2) All cord connectionsto electrical equipment or tools shall be polarized. O. Reg. 627/05, s. 7.

(3) Subsections (1) and (2) do not apply to cord-connected electrical equipment or tools that are adequately double-insulated and whose insulated casing shows no evidence of cracks or defects. O. Reg. 627/05, s. 7.

(4) Subsection (1) does not apply to a portable electrical generator in which the electrical equipment or tools are not exposed to an external electric power source if the casing of portable electrical equipment or tools connected to the generator is bonded to a non-current-carrying part of the generator. O. Reg. 627/05, s. 7.

**195.2**When a portable electrical tool is used outdoors or in a wet location,

(a) if the source of power is an ungrounded portable generator having a maximum output of 1.8 kilowatts or less, a ground fault circuit interrupter of the Class A type shall be located in the cord feeding the tool, as close to the tool as possible;

(b) in all other cases, the tool shall be plugged into a receptacle protected by a ground fault circuit interrupter of the Class A type. O. Reg. 627/05, s. 7.

**195.3**(1) Defective electrical equipment and tools that may pose a hazard shall be immediately disconnected, removed from service and tagged as being defective. O. Reg. 627/05, s. 7.

(2) The cause of a ground fault or the tripping of a ground fault circuit interrupter shall be immediately investigated to determine the hazard and corrective action shall be taken immediately. O. Reg. 627/05, s. 7.