GENERAL ELECTRICAL REQUIREMENTS

WORKING ON LOW VOLTAGE ELECTRICAL EQUIPMENT

WORKING ON HIGH VOLTAGE ELECTRICAL EQUIPMENT

WORKING ON DE-ENERGIZED HIGH VOLTAGE POWER SYSTEMS

MINIMUM SEPARATION DISTANCE TO BE MAINTAINED FROM ENERGIZED HIGH VOLTAGE ELECTRICAL EQUIPMENT AND CONDUCTORS

TREE PRUNING AND FALLING NEAR ENERGIZED CONDUCTORS

CONTROL SYSTEMS

ELECTROFISHING

19.1 Definitions

In this Part

"apprentice utility arborist" means a worker who is not yet a certified utility arborist but has completed a course of instruction recognized by the certifying authority;

"approved" as applied to electrical equipment, means that the equipment meets the requirements of the Electrical Safety Regulation;

"certified utility arborist" means a person who has completed a course of instruction, has a minimum of 1,200 hours of practical experience and is certified by an authority acceptable to the Board;

"conductor" means a wire, cable or other metal component installed for the purpose of conveying electric current from one piece of equipment to another or to ground;

"control system" means a manual, remote, automatic or partially automatic system for controlling the operation of equipment;

"damp location" means an exterior or interior location that is subject to condensation of moisture in, on or adjacent to portable electrical equipment;

"electrical equipment" includes machinery, plant, works, wires, pipes, poles, conduits, apparatus, appliances and equipment, designed or used, or intended for use, for or in connection with generation, transmission, supply, distribution or use of electrical energy for any purpose;

"electrical worker" means a person who meets the requirements of the Electrical Safety Regulation for installing, altering or maintaining electrical equipment;

"electrofishing" means the capture or control of fish by the use of electrical equipment;

"exposed", as applied to electrical equipment or conductors, means that the conductor or a part of the equipment is

(a) electrically connected to a source of voltage difference or electrically charged to have a voltage different from that of earth,

(b) not guarded or insulated in an approved manner, and

(c) in a location where a person or any tool, equipment or material the person is touching or using might come closer than a safe distance away from the conductor or part;

"hardwired" means the electrical connection of components within a system by means of electrical conductors so that the only way the system can be modified is by changing the connections;

"high voltage" means a potential difference (voltage) of more than 750 volts between conductors or between a conductor and ground;

"isolated" means that normal sources of energy have been disconnected by opening and securing all associated switches, and that mechanical equipment has been rendered and secured non-operative by disconnecting, stopping, depressurizing, draining, venting or other effective means;

"low voltage" means a potential difference (voltage) from 31 to 750 volts inclusive, between conductors or between a conductor and ground;

"mimic display" means a symbolic representation of the configuration and status of all or part of a power system, complete with device designations;

"power system" means all plant and equipment essential to the generation, transmission or distribution of electricity, including any plant or equipment that is out of service, being constructed or being installed;

"safety protection guarantee" means an assurance that a power system or part of the power system is isolated and will remain isolated;

"safety watcher" means a qualified person whose sole task is to observe the activity when equipment, vegetation or material will be moved relative to energized electrical equipment or conductors, and signal in a clear and predetermined manner to stop the movement whenever contact

with electrical equipment, conductors or guarding appears probable, or whenever conditions prevent the watcher from having a clear view of the movement relative to the electrical equipment;

"service room" means a room or space in a building provided to accommodate building service equipment, and meeting the requirements of the *BC Building Code* or other applicable legislation;

"vault" means an isolated enclosure, either above or below ground, with fire-resisting walls, ceilings and floors for the purpose of housing transformers and other electrical equipment;

"wet location" means an exterior or interior location in which uncontrolled liquid may drip, splash or flow on or against portable electrical equipment.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

19.2 Electrical qualifications

Repealed. [B.C. Reg. 312/2003, effective October 29, 2003.]

19.3 Poles and structures

(1) Before a worker climbs or is supported by a pole or structure, or before any work is done that will affect its stability,

(a) the pole or structure must be tested for soundness and stability, and

(b) if there is any doubt as to soundness or stability, the pole or structure must be effectively supported before any wires or cables are changed, and the supports must be left in place until workers are clear of the pole or structure.

(2) A worker must not climb or be on a pole or structure supported laterally by pike poles only.

19.4 Obstructions on poles

(1) Mailboxes, signs, clotheslines, or other obstructions are prohibited on or close to poles on which workers are required to work.

(2) Tags authorized by the owner which are placed on a pole for identification purposes must be less than 1.7 m (5.5 ft) above grade, on the side of the pole which a climbing worker will face.

19.5 Informing workers

A worker must be informed of the potential electrical hazards before being permitted to do work in proximity to energized electrical conductors or equipment.

Note: If excavating near underground utilities, refer to the excavation requirements in Part 20 (Construction, Excavation and Demolition).

19.6 Service rooms

If practicable, service rooms and electrical vaults must be used only for the purpose for which they were intended.

19.7 Space around equipment

(1) Passageways and working space around electrical equipment must be kept clear of obstructions, be arranged so as to give authorized persons ready access to all parts requiring attention, and not be used for storage.

(2) Flammable material must not be stored or placed close to electrical equipment.

19.8 Testing equipment

(1) Electrical testing equipment may be used if it meets the requirements of

(a) *CSA Standard C22.2 No. 160-M1985 (Reaffirmed 1992), Voltage and Polarity Testers*, or

(b) *CSA Standard CAN/CSA-C22.2 No. 231 Series-M89, CSA Safety Requirements for Electrical and Electronic Measuring and Test Equipment*.

(c) Repealed. [B.C. Reg. 312/2003, effective October, 29, 2003.]

(2) Electrical testing equipment not meeting a standard specified in subsection (1) may be used if it has

(a) fusing or circuitry designed to protect the operator in the event of a fault resulting from inadvertent misuse of the meter, or a fault on the circuit

being tested,

(b) clearly and unambiguously marked measurement ranges,

(c) lead wire insulation rated to the maximum voltage reading of the meter,

(d) lead wires that are not cracked or broken, and having a current carrying capacity (ampacity) that meets or exceeds the maximum current measurement of the meter, and

(e) a minimum exposure of metal on lead wire probes.

(3) Appropriate safe work procedures must be established and followed for testing electrical equipment and circuits.

[Amended by B.C. Reg. 312/2003, effective October 29, 2003.]

19.9 Insulated elevating work platform

(1) In this section, *"elevating work platform"* has the same meaning as in section 13.1.

(2) The employer must ensure that, at least once every 12 months,

(a) an insulated elevating work platform intended for use by a worker is dielectrically tested in accordance with section 5.3.4 of *CSA Standard CAN/CSA-C225-10 Vehicle-mounted aerial devices*, and

(b) the insulating capability of the platform referred to in paragraph (a) is certified by the testing agency.

(3) If an insulated elevating work platform does not pass the testing required by subsection (2),

(a) the platform must be considered non-insulated, and

(b) the employer must ensure that

(i) any markings or identification on the platform indicating insulated capability are removed or effectively covered over,

(ii) the platform's inspection and maintenance records indicate the platform is non-insulated,

(iii) the platform's operation and maintenance manuals are revised to indicate the platform is non-insulated, and

(iv) before using the platform, workers are informed the platform is non-insulated.

[Enacted by B.C. Reg. 312/2012, effective February 1, 2013.]

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19.10 Disconnection and lockout

(1) Low voltage electrical equipment must be completely disconnected and locked out as required by this regulation before starting work on it.

(2) Except as specified in subsection (3), if it is not practicable to completely disconnect low voltage electrical equipment, work must be performed by qualified and authorized workers and in accordance with written safe work procedures which

(a) require the use of personal protective equipment and voltage-rated tools, appropriate to the hazards and risks associated with the voltage at which the electrical equipment is operating,

(b) provide that, if practicable, uncontrolled liquid is not permitted close to any worker working on the equipment, and

(c) if applicable, control the use of metal ladders, wooden ladders with wire reinforced side rails, metal scaffolds or metal work platforms.

(3) Work must not be done on energized parts of electrical equipment associated with lighting circuits operating at more than 250 volts-to-ground without the prior written permission of the Board.

[Amended by B.C. Reg. 312/2012, effective February 1, 2013.]

19.11 Warning signs

(1) Before completing installation and after energizing low voltage electrical equipment, conspicuous signs visible to workers must be placed close to the equipment stating "Danger, Energized Equipment".

(2) Repealed. [B.C. Reg. 312/2003, effective October 29, 2003.]

[Amended by B.C. Reg. 312/2003, effective October 29, 2003.]

19.12 Working close to energized equipment

(1) Uninsulated, energized parts of low voltage electrical equipment must be guarded by approved cabinets or enclosures unless the energized parts are in a suitable room or similar enclosed area that is only accessible to qualified and authorized persons.

(2) Each entrance to a room and other guarded location containing uninsulated and exposed, energized parts must be marked with a conspicuous warning sign limiting entry to qualified and authorized persons.

(3) If uninsulated energized parts are not guarded with approved cabinets or enclosures

(a) suitable barriers or covers must be provided if a worker unfamiliar with the hazards is working within 1 m (3.3 ft) of the uninsulated, energized parts, or

(b) the worker must be informed of the potential hazards, and provided with and follow appropriate written safe work procedures.

19.13 Identification of controls

Each electrical distribution switch, circuit breaker and control must be clearly marked to indicate the equipment it serves.

19.14 Grounding portable equipment

(1) Repealed. [B.C. Reg. 312/2003, effective October 29, 2003.]

(2) Portable electrical equipment having double insulation or equivalent protection, and so marked, need not be grounded.

(3) Portable electrical equipment, required to be grounded and not permanently connected to the wiring system, must be effectively grounded by the use of approved cords and polarized plugs inserted in grounded polarized receptacles.

[Amended by B.C. Reg. 312/2003, effective October 29, 2003.]

19.15 Ground fault circuit interrupters

(1) When used outdoors or in a wet or damp location, portable electrical equipment, including temporary lighting, must be protected by an approved ground fault circuit interrupter of the class A type installed at the receptacle or on the circuit at the panel, unless another acceptable means of protection is provided.

(2) A ground fault circuit interrupter must not be used in place of grounding except as permitted by the Electrical Safety Regulation.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

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19.16 Isolation and lockout

(1) High voltage electrical equipment must, if practicable, be completely isolated, grounded, and locked out as required by this Regulation before starting work on it.

(2) If it is not practicable to completely isolate high voltage electrical equipment,

(a) written safe work procedures acceptable to the Board must be followed,

(b) two or more qualified and authorized persons must be present while the work is being done, unless the procedures being followed under paragraph (a) specifically permit the work to be done by one person,

(c) appropriate electrical protective equipment, including rubber blankets, hoses, hoods, gloves and live line tools must be selected, used, stored, tested, and maintained in accordance with a standard acceptable to the Board, and

(d) the use of metal ladders, wire reinforced side rail wooden ladders, metal scaffolds or metal work platforms must be in accordance with the procedures established under paragraph (a).

19.17 Warning signs

(1) Before completing installation and after energizing high voltage electrical equipment, conspicuous signs visible to workers must be placed close to the equipment stating "Danger -- Energized Equipment".

(2) Repealed. [B.C. Reg. 312/2003, effective October 29, 2003.]

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19.18 Isolation and lockout

(1) Before working on a power system that for reasons of safety must be de-energized, the worker in charge must ensure that the part of the system being worked on is isolated and grounded, and locked out as required by this Regulation.

(2) Barriers or distinctive identification must be used to differentiate high voltage electrical equipment which has been de-energized for safety reasons from similar energized equipment at the work location if lack of such identification would result in undue risk to workers.

(3) If it is impracticable to lock out a power system or part of the power system

(a) the boundaries of the power system or part must be clearly defined,

(b) written work procedures governing the issue of safety protection guarantees, and which address the requirements of sections 19.19 to 19.23, must be followed, and

(c) all major equipment used to establish safety protection guarantees must be uniquely identified at a conspicuous place on or near the equipment.

19.19 Person in charge

(1) One person must be assigned at any one time the exclusive authority as the person in charge to establish the conditions for, and to issue safety protection guarantees for, the power system or a part of it.

(2) The person in charge must

(a) ensure that the status of the power system or assigned part of the power system is accurately represented on a mimic display,

(b) maintain a log of switching details, safety protection guarantees and operational events, and

(c) authorize the commencement of any work on the power system or assigned part of it.

(3) There must be an effective communication system between the person in charge and the workers doing the work.

(4) Only a worker specifically authorized by the owner may receive a safety protection guarantee or do work on the power system.

19.20 Switching sequences

If a switching sequence requires the operation of 3 or more devices, a written switching order must be prepared and followed.

19.21 Isolating devices

(1) Isolating devices used for safety protection guarantees must provide for visual verification of the opening of the isolation point.

(2) Lockable isolating devices must be locked in the position or condition required to protect workers before work commences under a safety protection guarantee.

(3) A distinctive "DO NOT OPERATE" tag must be placed securely on each isolating device used for a safety protection guarantee.

19.22 Grounding and blocking

(1) After a safety protection guarantee is in effect, the equipment to be worked on must be tested to verify isolation before grounding and blocking begins.

(2) After testing to verify isolation, the person at the worksite responsible for each crew must verify that required grounding and blocking devices are in place before work begins.

(3) Grounding and blocking of any equipment that may be hazardous to workers must be carried out as close as practicable to the worksite.

(4) If grounding and blocking is not safe or practicable, written safe work procedures acceptable to the Board must be followed.

(5) Grounding and blocking devices may be removed for the purpose of conducting tests.

19.23 Multiple authorities

If a safety protection guarantee involves 2 or more power systems, or 2 or more persons in charge of different parts of a system, appropriate written procedures must be established and followed to ensure that any safety protection guarantee will be effective.

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19.24 Informing workers about high voltage electrical equipment and conductors

Before a person starts work close to high voltage electrical equipment or conductors that are exposed or that might become exposed during work at a workplace, the person must be informed of

(a) the existence, location and voltage of the high voltage electrical equipment and conductors, and

(b) the work arrangements and procedures to be followed to ensure compliance with this Part.

[Enacted by B.C. Reg. 312/2010, effective February 1, 2011.]

19.24.1 Minimum approach distance when working close to exposed electrical equipment and conductors

(1) Subject to section 19.24.2, or unless otherwise permitted by this Part, if exposed electrical equipment or conductors at a workplace have a voltage within a range set out in Column 1 of Table 19-1A, the following must remain at least the distance from the exposed electrical equipment and conductors that is set out in Column 2 opposite that range of voltage:

(a) a person working at the workplace;

(b) a tool, a machine, material or equipment at the workplace.

(2) If practicable, an employer must ensure that a tower crane operating at a workplace that has exposed electrical equipment or conductors that have a voltage within a range set out in column 1 of Table 19-1A is equipped with a zone-limiting device that prevents the crane from operating in the relevant minimum approach distance to the exposed electrical equipment or conductors set out opposite in column 2.

Table 19-1A

Column 1 **Voltage**	**Column 2** **Minimum approach distance for working close to exposed electrical equipment or conductors**	
Phase to phase	**Metres**	**Feet**
Over 750 V to 75 kV	3	10
Over 75 kV to 250 kV	4.5	15
Over 250 kV to 550 kV	6	20

[Enacted by B.C. Reg. 312/2010, effective February 1, 2011.]
[Amended by B.C. Reg. 223/2022, effective March 1, 2023.]

19.24.2 Minimum clearance distance when passing under exposed electrical equipment and conductors

(1) This section applies in the circumstances where a person working at a workplace is moving or is involved in moving equipment under exposed electrical equipment or conductors and is not performing any work other than work related to moving the equipment.

(2) Unless otherwise permitted by this Part, in the circumstances set out in subsection (1), if exposed electrical equipment or conductors have a voltage within a range set out in Column 1 of Table 19-1B, the following must maintain at least the clearance distance from the exposed electrical equipment and conductors that is set out in Column 2 opposite that range of voltage:

(a) a person moving or involved in moving the equipment under the exposed electrical equipment or conductor;

(b) the equipment that a person referred to in paragraph (a) is moving;

(c) the load carried by the equipment referred to in paragraph (b).

Table 19-1B

Column 1 **Voltage**	**Column 2** **Minimum clearance distance for passing under exposed electrical equipment or conductors**	
Phase to phase	**Metres**	**Feet**
Over 750 V to 75 kV	2	6.5
Over 75 kV to 250 kV	3	10
Over 250 kV to 550 kV	4	13

[Enacted by B.C. Reg. 312/2010, effective February 1, 2011.]

19.25 Assurance in writing

(1) If the minimum distance in Table 19-1A cannot be maintained because of the circumstances of work or the inadvertent movement of persons or equipment, an assurance in writing on a form acceptable to the Board and signed by a representative of the owner of the power system, must be obtained.

(2) The assurance must state that while the work is being done the electrical equipment and conductors will be displaced or rerouted from the work area, if practicable.

(3) If compliance with subsection (2) is not practicable the assurance must state that the electrical equipment will be isolated and grounded, but if isolation and grounding is not practicable the assurance must state that the electrical equipment will be visually identified and guarded.

(4) The safeguards specified in the assurance must be in place before work commences and effectively maintained while work is taking place.

(5) If guarding is used,

(a) neither equipment nor unqualified persons may touch the guarding, and

(b) a safety watcher must be designated, or range limiting or field detection devices acceptable to the Board must be used.

(6) The assurance must be available for inspection at the workplace, as close as practicable to the area of work, and must be known to all persons with access to the area.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

19.26 Assurance not practicable

(1) If exposed high voltage electrical equipment and conductors cannot be isolated, rerouted or guarded, work must not be done within the minimum distance in Table 19-1A until the following precautions are taken:

(a) the area within which equipment or materials are to be moved must be barricaded and supervised to restrict entry only to those workers necessarily engaged in the work;

(b) a safety watcher must be designated;

(c) a positive means must be provided for the safety watcher to give a clear, understandable stop signal to workers in the area, and the watcher must give the stop signal by no other means.

(2) While equipment is in motion in an area in proximity to energized electrical equipment or conductors, no person other than the equipment operator may touch any part of the equipment or the material being moved by it.

(3) No person may move a load or any rigging line from its position of natural suspension if it is in proximity to an energized electrical conductor or equipment.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]
[Amended by B.C. Reg. 188/2011, effective February 1, 2012.]

19.27 Specially trained

(1) A worker who has taken a course of instruction approved by the Board may work up to the adjusted limits of approach in Table 19-2 when all the following conditions apply:

(a) the high voltage electrical equipment is energized to a potential of not more than 75kV;

(b) the Board has determined that rerouting, de-energizing or guarding of the equipment is not practicable for the type of work being performed;

(c) the work is not being done for the owner of the power system;

(d) the work is of a type that must be done regularly;

(e) the worker follows written safe work procedures acceptable to the Board.

(2) A qualified electrical worker may work closer than the limits specified in Table 19-2 provided the worker is authorized by the owner of the power system and uses procedures acceptable to the Board.

Table 19-2: Adjusted limits of approach

Voltage Phase to phase	Minimum distance		
		Metres	Feet
Over 750 V to 20 kV	**0.9**	3	
Over 20 kV to 30 kV	**1.2**	4	
Over 30 kV to 75 kV	**1.5**	5	

19.28 Emergency work

(1) Sections 19.24 to 19.27 do not apply to emergency actions close to energized high voltage electrical equipment or conductors carried out by workers who have undergone a course of instruction approved by the Board.

(2) During emergency actions, all reasonable precautions must be taken to control the hazards including, where practicable,

(a) restricting entry into the area within which equipment or materials are to be moved to workers necessarily engaged in the work,

(b) designating a safety watcher,

(c) when equipment is in motion, preventing a person other than the equipment operator from touching any part of the equipment or the material being moved by it, and

(d) requiring the equipment operator to operate the controls from the seat provided on the equipment, or from a metal stand that is integral with the frame of the equipment and clear of the ground, or from a metallic mat bonded to the frame of the machine and located on the ground beside the machine.

19.29 Authorization by owner

Qualified workers and workers under their direct supervision may work within the minimum distances to energized high voltage electrical equipment and conductors, as specified in Table 19-1A and Table 19-2, when authorized by the owner of the power system and using work procedures acceptable to the Board.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

19.30 Preliminary inspection

(1) Before commencing tree pruning or falling close to energized high voltage overhead conductors, the worksite must be inspected by a qualified person, authorized by the owner of the power system, to identify any hazardous areas, including situations where any part of a tree to be pruned or felled is within the applicable minimum distance from an energized conductor as specified in Table 19-1A, or may fall within that distance.

(2) Immediately before commencing work, an inspection must be performed by a qualified person to verify the results of the initial inspection done under subsection (1) are still valid.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

19.31 Work in a hazardous area

Tree pruning or falling must not commence in a hazardous area until

(a) an assurance is issued by the owner of the power system that any reclose feature is disabled, and

(b) workers are informed of the voltages of the conductors.

19.32 Qualifications

Tree pruning or falling within the minimum distances in Table 19-1A from overhead energized high voltage conductors must be carried out by a worker authorized by the owner of the power system to do such work.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

19.33 Site crew requirements

Tree pruning or falling is not permitted within the minimum distances in Table 19-1A from overhead high voltage energized conductors, unless

(a) a certified utility arborist or a qualified electrical worker is present at the site and directing the work, and

(b) at least one additional qualified person, trained in appropriate emergency rescue procedures, is present.

[Amended by B.C. Reg. 312/2010, effective February 1, 2011.]

19.34 Limits of approach

(1) Subject to section 19.34.1, a certified utility arborist and any conductive tool must not be closer to an energized high voltage conductor than the applicable limit of approach in column B of Table 19-3.

(2) An apprentice utility arborist, except as provided in subsection (3), and any tool being used must not be closer to an energized high voltage conductor than the applicable limit of approach in column C of Table 19-3, or to any vegetation that is closer than the column C limit or that could swing closer while being cut.

(3) An apprentice utility arborist may work up to the limit of approach permitted for a certified utility arborist in subsections (1) and (5) if the apprentice utility arborist is in the presence of and under the direct supervision of a certified utility arborist.

(4) Vegetation closer to an energized high voltage conductor than the applicable limit in column B of Table 19-3 must be cut using approved insulated tools.

(5) An insulated tool acceptable to the Board may be used by a certified utility arborist

(a) up to the limit of approach in column A of Table 19-3, and

(b) from an insulated aerial device to remove vegetation closer than the limit of approach in column A of Table 19-3 up to but not touching an energized high voltage conductor of 75 kV or less.

(6) Vegetation touching an energized high voltage conductor or within the applicable limit in column A of Table 19-3 for a conductor at a potential of 75 kV or more may be removed only if

(a) the line is isolated and grounded by a qualified electrical worker, or

(b) the vegetation is removed by a qualified electrical worker who

(i) is authorized by the owner of the power system to remove the vegetation, and

(ii) uses insulated tools and work methods approved under the authorization referred to in subparagraph (i).

(7) Vegetation encroaching past the limits of approach in column B of Table 19-3 that cannot be removed using an insulated aerial device must be restrained from encroaching past the limit of approach in column A before removal.

(8) A tree must be topped before being felled, or other precautions must be taken to prevent the tree or any part of it from falling closer than the limit of approach in column A of Table 19-3.

[Amended by B.C. Reg. 312/2012, effective February 1, 2013.]

Table 19-3: Limits of approach for utility arborists

Voltage range	A. Insulated tool limit for certified utility arborists		B. Work limit for certified utility arborists		C. Work limit for apprentice utility arborists	
Phase to phase	**Metres**	Feet	**Metres**	Feet	**Metres**	Feet
Over 750 V to 20 kV	**0.3**	1	**0.9**	3	**3**	10
Over 20 kV to 30 kV	**0.5**	1.5	**1.2**	4	**3**	10
Over 30 kV to 75 kV	**0.9**	3	**1.5**	5	**3**	10
Over 75 kV to 250 kV	**2.1**	7	**3**	10	**4.5**	15
Over 250 kV to 325 kV	**2.6**	8.5	**4.5**	15	**6**	20
Over 325 kV to 550 kV	**3.7**	12	**6**	20	**6**	20

19.34.1 Crossing the neutral conductor

(1) In this section:

"cross the neutral conductor" means to move the platform of an insulated aerial device through the space between the neutral conductor of a power system and one or more overhead conductors;

"overhead conductor" means an energized high voltage conductor that is immediately above the neutral conductor of a power system.

(2) This section applies if

(a) a certified utility arborist is on the platform of an insulated aerial device and intends to prune or remove vegetation in accordance with section 19.34,

(b) it is not practicable, because of terrain or other obstacles, to position the insulated aerial device in a location that is on the same side of an overhead conductor as the vegetation to be pruned or removed, and

(c) in order to move the platform of the insulated aerial device to the location described in paragraph (b), the certified utility arborist who is on the platform must cross the neutral conductor.

(3) A certified utility arborist who is crossing the neutral conductor in the circumstances set out in subsection (2) may come closer to an overhead conductor than the limits of approach under section 19.34(1), but only if all of the requirements of this section are met.

(4) A certified utility arborist must not cross the neutral conductor unless

(a) the employer of the certified utility arborist has implemented written safe work procedures to ensure that all of the requirements of this section are met,

(b) the certified utility arborist has been trained in the work procedures referred to in paragraph (a),

(c) the certified utility arborist has demonstrated to the satisfaction of the employer that the certified utility arborist has the knowledge and ability necessary to cross the neutral conductor in accordance with

(i) the work procedures referred to in paragraph (a), and

(ii) the requirements of this section, and

(d) the certified utility arborist is satisfied that the clearance distances under subsection (5) (b) can be maintained at all times during the crossing.

(5) When the certified utility arborist is crossing the neutral conductor,

(a) the certified utility arborist must not perform any work other than work related to crossing the neutral conductor,

(b) if an overhead conductor has a voltage within a range set out in column 1 of Table 19-4, the following must maintain at least the clearance distance from the overhead conductor that is set out in column 2 opposite that range of voltage:

(i) the certified utility arborist;

(ii) the platform and the boom of the insulated aerial device;

(iii) any tool or device that is in or on the platform of the insulated aerial device, and

(c) a safety watcher who meets the requirements of subsection (6) must be present on the ground to assist the certified utility arborist in maintaining the clearance distances required under paragraph (b) of this subsection.

(6) The requirements for the purposes of subsection (5)(c) are as follows:

(a) the safety watcher must be trained in the work procedures referred to in subsection (4)(a);

(b) the safety watcher must have demonstrated to the satisfaction of the employer that the safety watcher knows

(i) the clearance distances that must be maintained under subsection (5)(b),

(ii) how to use the lower controls of the insulated aerial device, and

(iii) the procedure for rescuing a worker from the platform of the insulated aerial device.

(7) An apprentice utility arborist may work up to the limits of approach permitted for a certified utility arborist under this section if

(a) the apprentice utility arborist is in the presence of and under the direct supervision of a certified utility arborist,

(b) the certified utility arborist meets all of the requirements of subsections (4)(b) to (d), and

(c) the apprentice utility arborist complies with all of the requirements of subsections (4) and (5) and for this purpose, those subsections apply as if the apprentice utility arborist were a certified utility arborist.

Table 19-4

Column 1 **Voltage**	Column 2 **Minimum clearance distance from overhead conductor when crossing the neutral conductor**	
Phase to phase	**Metres**	**Feet**
Over 750 V to 20 Kv	0.60	2.0
Over 20 kV to 30 kV	0.75	2.5
Over 30 kV to 75 kV	0.90	3.0

[Enacted by B.C. Reg. 312/2012, effective February 1, 2013.]

19.35 Tree pruning and falling equipment

(1) An insulated tool must be used, stored, tested and maintained as required by section 19.16(2)(c).

(2) An insulated hand tool and insulated aerial device must be maintained in a clean condition and be dielectrically tested to a standard acceptable to the Board.

Note: An insulated aerial device is not considered an insulated tool.

19.36 General requirements

(1) A control system must be designed, installed, operated and maintained in accordance with a standard acceptable to the Board.

(2) Only qualified and authorized persons may design, install, operate and maintain a control system.

(3) When designing a control system, the types of potential system failure and the effects of failures on the control system and the controlled equipment must be analysed.

(4) Where practicable and required to minimize risk to workers, a control system must be designed so that

(a) the controlled equipment cannot be inadvertently activated,

(b) an effective basic diagnostic capability is incorporated,

(c) hardwired emergency stop devices are provided at operator stations, and

(d) operator controls other than emergency stop devices can be activated at only one station at a time.

(5) A control system must be used to prevent automatic startup after a power interruption or low voltage occurrence, if automatic startup in such circumstances is likely to create a hazard to workers.

(6) A control system must, where practicable, be designed so that the controlled equipment does not create a hazard to workers if the system fails or is shut down.

(7) Equipment operated by a new or altered control system must not be used until the control system has been thoroughly checked and tested to verify that it will function in the intended manner.

(8) The employer must ensure there is up-to-date documentation which is readily available to affected workers describing the design, installation, operation and maintenance of a control system.

(9) Control system hardware must be protected from circumstances that could adversely affect the performance of the system including mechanical damage, vibration, extreme temperatures or humidity levels, high electromagnetic field levels, and power disturbances.

(10) Written safe work procedures must be developed for the use of equipment operated by a control system, including lockout procedures as required by this Regulation.

19.37 Programmable control systems

(1) The documentation provided for a programmable control system must include a copy of the control program that will allow the equipment to be reprogrammed if necessary to ensure the safe operation of the system.

(2) Only qualified and authorized persons may have access to the installed control system software.

19.38 Automatic control systems

Where practicable and required to prevent a hazard to workers, a control system must be designed so that during an automatic sequence

(a) the operator may make an emergency stop of the controlled equipment,

(b) the operator may, if safe, be allowed manual control of the equipment, and

(c) the sequence will abort when a protective timer completes its assigned time without an expected event occurring.

19.39 Remote control systems

(1) The maximum distance from which the operator may control equipment operated by a remote control system must be specified by the manufacturer.

(2) Written safe work procedures must be established

(a) that specify the maximum distance from which the operator is allowed to remotely control the equipment, and

(b) to ensure that workers remain at a safe distance from remotely controlled moving parts, and any remotely controlled mobile machine.

19.40 Wireless remote control

A wireless remote control system must incorporate

(a) error checking to prevent the controlled equipment from responding to corrupt data, and

(b) identification coding methods to prevent a transmitter other than the designated transmitter from operating the equipment.

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19.41 General requirements

The employer must ensure that

(a) only certified workers trained in a course acceptable to the Board conduct electrofishing operations,

(b) workers are provided with a statement of their responsibilities and written safe work procedures, and

(c) workers are trained in and are knowledgeable of their responsibilities and work procedures.

19.42 Equipment approval

Repealed. [B.C. Reg. 381/2004, effective January 1, 2005.]

19.43 Manufacturer's instructions

(1) Repealed. [B.C. Reg. 312/2003, effective October 29, 2003.]

(2) Safe operating procedures from the manufacturer must be readily available for electrofishing equipment.

[Amended by B.C. Reg. 312/2003, effective October 29, 2003.]