

Hydro-Québec Distribution  
**SAFETY**  
Standards



ALIMENTER  
L'AVENIR





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## **Preface**

*Hydro-Québec Distribution Safety Standards (D.25-05)* set out the minimum standards to be followed at work. These standards apply to all employees and contractors who work on the Distributor's infrastructure and metering equipment on customers' premises.

Constant efforts must be made to ensure that all safety standards are strictly followed on a daily basis and thus reduce the number of accidents.

These standards are mandatory and everyone concerned must pull together, because working on the power grid is inherently risky.

Strict adherence to these standards will lead to the best occupational health and safety outcomes.

Thanks to your efforts, we can carry out our mission safely.



**Daniel Richard**

President, Hydro-Québec Distribution

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## ***Note to Readers***

This document will be posted on the Vice-Présidence – Réseau de distribution’s *Prévention au travail* [workplace safety] intranet site. The information provided here has been taken from by-laws, regulations, guidelines and standards in effect at the time of publication.

Any change to the contents of these standards must be approved in writing by the manager of the unit concerned.

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## ***General Rules***

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## ***Work Organization***

### **101-1 Planning**

When you are asked to supervise or perform work, plan it out first to determine the order of operations and the safety rules that apply.

1. After a preliminary visit to the jobsite, the manager, crew leader or work planner passes on the information to the work supervisor, who briefs employees, using a layout plan to indicate specifics, identify hazards and assign tasks.

NB Safety measures forms and, when applicable, the associated lockout placards, must be used, as set out in the *Work Safety Code*.

2. You must have the collective protection equipment and safety devices you need for the task.
3. You must have the personal protective equipment (PPE) you need for the task.
4. If necessary, ask to have on hand a supervisor who is familiar with the particular *Work Safety Code* safety regime.

## **101-2 Briefing workers**

Conveying instructions is an important step in doing a job. It enables the supervisor to describe the type of work and how it is to be done, and to explain the specific task assigned to each employee. Difficulties that could arise are also discussed at this point.

Brief employees as follows:

1. Describe the type and sequencing of work.
2. Explain to employees individually the task that has been assigned to them according to their experience and skills.
3. Discuss difficulties that could arise and the work methods to use.
4. Help identify task-related hazards and how to determine means of eliminating or managing them.
5. Help implement safety measures.
6. Promote on-the-job safety.
7. Make sure everyone understands the tasks to be done.

## **101-3 Access to a Hydro-Québec TransÉnergie substation**

If you have access to areas of 34.5 kV and under outside traffic areas, always get in touch with Hydro-Québec TransÉnergie's telecontrol centre, whether or not you are working under a *Work Safety Code* safety regime.

## **101-4 Preparing the work area**

The work area is the physical place where assigned tasks are performed. It is cordoned off by means of collective protection equipment (where applicable), allowing employees to work in complete safety. All steps related to preparing the work area must be completed before work begins.

Note 1. For work on a pole, the employee on the ground must keep a constant watch as the work area is being prepared.

Note 2. Refer to Guideline B.6-01, *Aménagement du poste de travail* [preparing the work area].

## **101-5 Abuse**

### **101-5.1 Abuse by another person**

Hydro-Québec will not tolerate any form of verbal, physical or sexual harassment or abuse on the part of a customer, contractor, member of the public, employee or anyone else.

Before going to a customer's premises, check the databases or work document to see whether there is an act-of-violence code in the customer's file, as set out in the abuse-prevention procedure.

### **101-5.2 Access to premises with a dog**

#### **101-5.2.1 General**

Follow these rules:

1. Avoid all physical contact with a dog.

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2. First, study your surroundings so you can control any risk and are ready to react to any imminent danger.
3. Before entering the premises, make your presence known by making a noise (honking horn, ringing doorbell, whistling, etc.) or a visual sign.
4. Look for all the places the dog could get through to you (dog door, patio door, etc.).

### **101-5.2.2 Risk management**

Check whether the dog is tied up, in a cage or loose.

1. Risk of physical contact with the dog
  - a. If the customer is there, ask to have the dog locked up until you have left the premises.
  - b. If the customer is not there, assess the situation and if you feel it is hazardous, notify your manager before doing anything else.
2. Work to be done inside
  - a. Hold the door firmly or stand aside while knocking or ringing, to give yourself time to react and get out of the dog's way.
  - b. If necessary, ask the customer to lock the dog up until you have left the premises.

### **101-6 No drinking on the job**

When working on or near the distribution system or driving heavy vehicles, you must have a blood alcohol level of zero.

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## ***General Risk Prevention***

### **102-1 Wearing body ornaments**

It is forbidden on the job at any time to wear body ornaments (earrings, necklaces, visible piercings, bracelets, watches, rings, etc.), except for medical bracelets.

### **102-2 Personal protective equipment**

#### **General requirements**

1. Always use the personal protective equipment (PPE) at your disposal to ensure your health, safety and physical well-being. Arc flash protection, when required, must be rated at 8 cal/cm<sup>2</sup> or more.
2. Make sure your PPE (rubber insulating gloves, for example) is in good condition and checked in accordance with company guidelines.
3. Handle and store your PPE properly, so as to maintain its integrity. For some work areas not specified here (garages, traffic areas, offices, etc.), PPE requirements are set locally.
4. Comply with guidelines posted in any work area. PPE must be selected from the list approved by the provincial health and safety committees.
5. Occasional visitors, such as delivery personnel or guided tour participants, are not required to wear all the PPE.

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They must be accompanied and remain outside the danger zone where PPE is mandatory.

### Specific requirements

1. The PPE to be worn depends on the hazard and type of work involved.

#### 102-2.1 Overhead and underground work areas

The PPE below is mandatory when preparing the work area, doing the job and during switching operations.

Preparing work area, doing job and switching
Hard hat
Safety footwear
Safety goggles
Work gloves <sup>1,2</sup>
Flame-resistant suit
Fall arrester <sup>1</sup>
Hearing protectors <sup>1</sup>
High-visibility clothing (road right-of-way) <sup>1</sup>
Disposable flame-resistant coveralls <sup>1</sup>
Half-face respirator <sup>1,3</sup>
Face shield <sup>1</sup>
Conductive clothing (induction due to high-voltage lines) <sup>1</sup>

1. Mandatory where hazards and needs of task demand.
2. For pole work involving a bucket truck, climbing irons or a ladder, gauntlet-cuff gloves must be worn whenever the work method requires leather gloves.
3. You must pass a mask adjustment test before using a half-face respirator.

### **102-2.2 Working on metering facilities**

The PPE listed below is mandatory for metering, collection and theft employees when working on a metering facility.

<b>Preparing work area and doing job</b>
Hard hat
Safety footwear
Safety goggles
Work gloves <sup>1</sup>
Flame-resistant suit
High-visibility clothing (road right-of-way) <sup>1</sup>
Hearing protectors <sup>1</sup>
Fall arrester <sup>1</sup>
Face shield <sup>1</sup>
Dog barrier <sup>1</sup>

1. Mandatory where hazards and needs of task demand.

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## **102-2.3 Facilities belonging to Hydro-Québec TransÉnergie, a customer or a private producer**

The PPE listed below is mandatory when working on such facilities.

Traffic control	Work
Hard hat	Hard hat
Safety footwear	Safety footwear
Safety goggles	Safety goggles
Flame-resistant suit <sup>1</sup>	Work gloves <sup>1</sup>
Hearing protectors <sup>1,2</sup>	Flame-resistant suit <sup>1</sup>
	Hearing protectors <sup>1,2</sup>

1. Mandatory where hazards and needs of task demand.
2. Mandatory in specifically identified locations.

## **102-2.4 Meter reading**

The PPE listed below is mandatory for meter readers.

Walking shoes
Dog barrier

### **102-2.5 Industrial customers**

The PPE listed below is mandatory when visiting industrial customers.

Hard hat
Safety footwear
Safety goggles <sup>1</sup>
Other PPE, as required by situation

1. Mandatory where hazards and needs of task demand.

### **102-2.6 Vehicles (loading and unloading), dock, shop, warehouse or yard (except pedestrian areas)**

The PPE listed below is mandatory when loading or unloading vehicles.

<b>Walking around vehicle on dock or in shop, warehouse, or yard</b>	<b>Working in truck box<sup>2</sup> on dock or in shop, warehouse, or yard</b>
Hard hat	Hard hat
Safety footwear	Safety footwear
Safety goggles <sup>1</sup>	Safety goggles
	Work gloves <sup>3</sup>
	Flame-resistant suit <sup>3</sup>

1. Mandatory in specifically identified locations.
2. Long pants and a long-sleeved shirt are mandatory, unless a flame-resistant suit is worn.
3. Mandatory where hazards and needs of task demand.

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## 102-2.7 Using a chain saw

The PPE listed below is mandatory when using a chain saw.

On ground	From bucket truck
Hard hat	Hard hat
Safety footwear	Safety footwear
Safety goggles	Safety goggles
Work gloves	Work gloves
Flame-resistant suit	Flame-resistant suit
Hearing protectors <sup>1</sup>	Fall arrester
Gaiters (safety chaps)	Hearing protectors <sup>1</sup>

Working on pole
Hard hat
Safety footwear
Safety goggles
Work gloves
Flame-resistant suit
Fall arrester
Hearing protectors <sup>1</sup>
Gaiters (safety chaps)
Safety jacket
Steel lanyards

1. Mandatory where hazards and needs of task demand.

### **102-2.8 Projects and services**

The PPE listed below is mandatory when doing outdoor inspections.

Hard hat
Safety footwear
Flame-resistant suit <sup>1</sup>
Safety goggles <sup>1</sup>
Work gloves <sup>1</sup>
High-visibility clothing (road right-of-way) <sup>1</sup>
Other PPE, as required by situation

1. Mandatory where hazards and needs of task demand.

### **102-2.9 Using cable grips**

Barb-resistant gloves are mandatory when handling cable grips.

### **102-2.10 Taking measurements**

The PPE listed in Section 102-2.1, Overhead and underground work areas, are mandatory when taking measurements on a medium-voltage line using a telescopic stick.

### **102-3 Communications**

Using a cell phone in a work area is prohibited, except for safety reasons or work purposes.

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### **102-4 Site tidiness**

#### **102-4.1 Waste**

1. Never throw waste from one level to another.
2. Clear away waste
  - a. before it accumulates;
  - b. using appropriate containers.

#### **102-4.2 Traffic routes**

Keep traffic routes, paths and all work areas or sites in general

1. free of obstruction;
2. free of traces of oil or grease;
3. sprinkled with sand or another abrasive to prevent skidding and falls;
4. well lit.

### **102-5 Working at heights**

#### **102-5.1 General**

1. If you are exposed to a risk of falling more than 3 m (10 ft.) from your work position (position of your feet), you must wear a safety harness.
2. The equipment used must be standardized by the functional unit responsible.

3. Visually inspect your safety harness and fall arrester before each use:
  - a. There must be no visible sign of surface damage (cuts on straps or belts, damaged fibres or strands, etc.).
  - b. Safety snaps, carabiners (snap hooks) and safety pawls must be in good condition.
  - c. The seams on straps, belts and harnesses must be in good condition.
4. Visually check the retractable lanyard before each use:
  - a. The shock absorber of a retractable lanyard must always be kept in its enclosure.
  - b. The metal enclosure over the retractor of a retractable lanyard must be properly in place.
  - c. Pull out and retract the retractable lanyard several times to check that the locking mechanism is working correctly.
  - d. The retractor on the retractable lanyard plate must be able to pivot 360°.
  - e. Never lubricate any part of a retractable lanyard.
5. When working with others at different heights, follow these rules:
  - a. Stay out of the line of fall of a tool or a piece of equipment.
  - b. Temporarily stop all activity while there is someone working below who might be exposed to falling objects.

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6. Store the harness so that its components remain in good condition and undamaged (not left in bucket, no tools on top of it, etc.).

### **102-5.2 Fall protection**

#### **Bucket truck**

The following safety mechanisms are required:

1. Safety harness
2. Lanyard with shock absorber
3. Standard extensions, if needed
4. Proper anchor point

NB Always fasten your retaining clip to the anchor point before getting into the bucket. Never remove your retaining clip before getting out of the bucket.

#### **Wood pole**

1. The following safety mechanisms are required:
  - a. Safety harness with belt
  - b. Fall arrester
  - c. Retractable lanyard with shock absorber
2. When you are less than 600 mm (24 in.) from the top of pole and there is nothing to block the lanyard (hardware, conductor, etc.), take one of the following measures:
  - a. Wind the retractable lanyard around the pole (choking it), in addition to using the fall arrester.

- b. Attach the self-locking carabiner (snap hook) of the retractable lanyard to an approved anchor point (such as an anchor point designed for a lifeline kit).
  - c. Use the lifeline kit.
3. When the pole is equipped with hardware or obstacles that keep the fall arrester from getting within 600 mm (24 in.) of the top of the pole, the measures listed above are not required.

NB Return hardware used to prevent an actual fall for full inspection. The shock absorber must be discarded.

### **102-5.3 Portable ladders**

1. Portable ladders must
  - a. be inspected frequently and kept in excellent condition;
  - b. rest on a solid base with both rails supported at the top;
  - c. be held firmly in place by another employee if ladder length exceeds 9 m (30 ft.);
  - d. if not solidly attached at the ends, be inclined so that the horizontal distance between the foot of the ladder and the vertical plane of its upper support is equal to approximately one quarter of the ladder's length from the base to the upper support point;
  - e. be protected against any slippage of the feet or jolt that might upset it;

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- f. if used near electrical conductors, be made of a nonconductive material;
  - g. be long enough so that you do not have to stand on the top two rungs;
  - h. when used as means of access, extend at least 900 mm (36 in.) beyond the top level and be secured firmly in place;
  - i. if they can't be attached firmly in place, be held by another employee when in use.
2. If the ladder is resting on low-voltage conductors, you must be attached to both a separate neutral conductor or wire and a rung of the ladder.
  3. For any work at a height of 3 m (10 ft.) or more, you must be attached to a rung of the ladder.

### **102-5.4 Scaffolding**

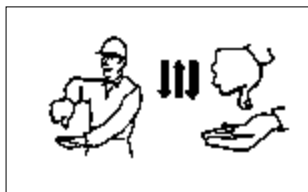
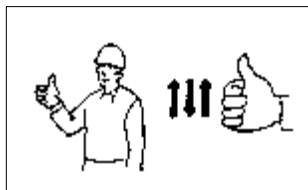
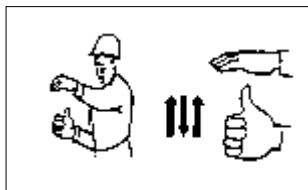
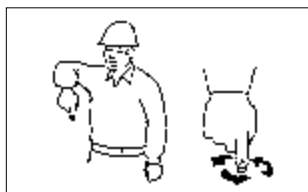
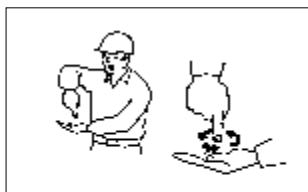
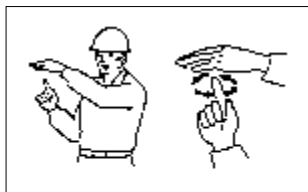
1. Scaffolding must always
  - a. rest on solid ground or footings;
  - b. be equipped with a railing when used at heights of more than 3 m (10 ft.) above the ground.
2. For work near a medium-voltage system, the top section of scaffolding must be made of nonconductive materials.

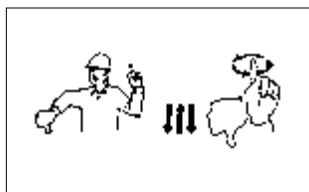
**102-6 Lifting devices**

1. Operators must be directed when lowering outriggers they cannot see from the operating controls.
2. The maximum load that may be lifted safely must be indicated on all lifting devices.
3. Lifting devices must not
  - a. exceed the maximum load permitted;
  - b. be subject to sudden movements.
4. Before giving an order to lift a load, the signaler must make sure that all cables, slings and lifting beams are properly attached to the load.
5. Operators must not allow anyone to hang onto a hook or sling suspended from a lifting device.
6. The operator or signaler must make sure that no one is below the load at any time.
7. When the operator's field of vision is obstructed during a maneuver, a signaler must
  - a. observe the movement of the device or load and guide the operator;
  - b. communicate with the operator using a standard, well-defined signal code or a communications system where conditions so require or the operator deems it necessary.

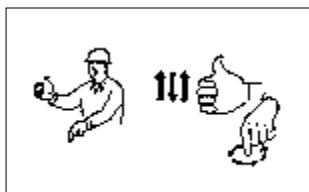
## 102

8. Operators must obey all stop signals and stop the vehicle or maneuver if they can no longer see the signaler.
9. Hooks used for hoisting loads and hooks attached to slings must have a safety catch.

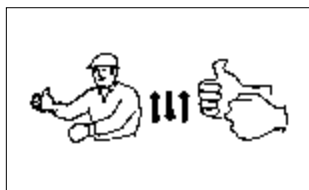
*Lower boom**Lower boom slowly**Raise boom**Raise boom slowly**Lower load**Lower load slowly**Raise load**Raise load slowly*



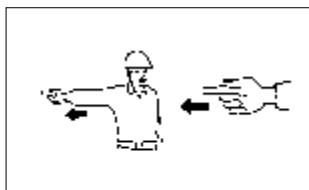
*Lower boom and raise load*



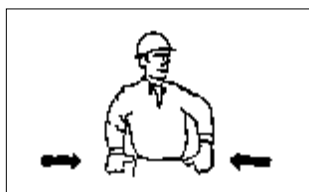
*Raise boom and lower load*



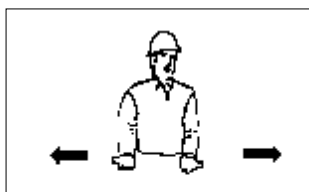
*Raise boom and hold load*



*Swing load in direction shown by finger*



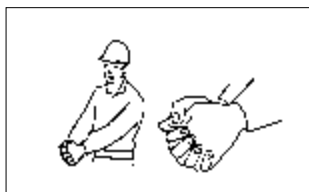
*Retract boom*



*Extend boom*



*Emergency stop*



*Dog everything (pause)*

10. You must use appropriate, standard lifting devices to handle
  - a. overhead equipment (overhead transformer rated 100 kVA or less, remotely monitored voltage transformers, circuit breakers, etc.);
  - b. underground equipment (pad-mounted transformer, submersible switch, etc.).

NB A lifting yoke must be used to install or remove a regulator, capacitor banks or an overhead transformer rated 167 kVA or more, and for some work underground.

## **102-7 Tools**

### **General**

1. Use a hand line with a safety hook to raise or lower equipment and supplies.
2. Wear climbing-iron guards when walking on the ground or going up and down a ladder.
3. Use only appropriate, approved rulers to measure on or near live conductor.
4. Use appropriate, approved tools, instruments and equipment.
5. Notify your immediate superior of any defective tool or equipment.

### **Use**

1. Check that all tools and equipment are in good condition before each use.
2. Follow the manufacturer's instructions and Hydro-Québec guidelines in effect when using tools, instruments and equipment.
3. Never alter tools, instruments or equipment without authorization from the functional unit responsible.
4. Before using any equipment covered by a maintenance program, check that it has been maintained properly.

### **Storage and transportation**

1. Store and carry tools and equipment in the appropriate containers to prevent damage.
2. Never carry portable power tools by their power cords.

### **Portable power tools**

1. Portable power tools must have plugs with a grounding prong and be plugged into a grounded outlet, or must be double-insulated.
2. Unplug portable power tools by their plug after use and during cleaning and maintenance.

## ***Electrical Risk Prevention***

### **103-1 Approach distance**

The minimum approach distance is the clearance that there must be at all times between a live component and any conductive or nonconductive item you are wearing, carrying or using. This distance prevents you from inadvertently getting dangerously close due to an unintended movement or underestimation of the required distance.

#### **50 V AC or higher or 120 V DC or higher to 750 V**

Live-line work is permitted with appropriate rubber insulating gloves.

Live-line work with leather gloves is *prohibited*.

NB Rubber insulating gloves must be worn with the appropriate leather over-gloves at all times.

#### **750–5,000 V**

**Rubber-glove method.** Working from a bucket is permitted, provided you follow the recognized work method.

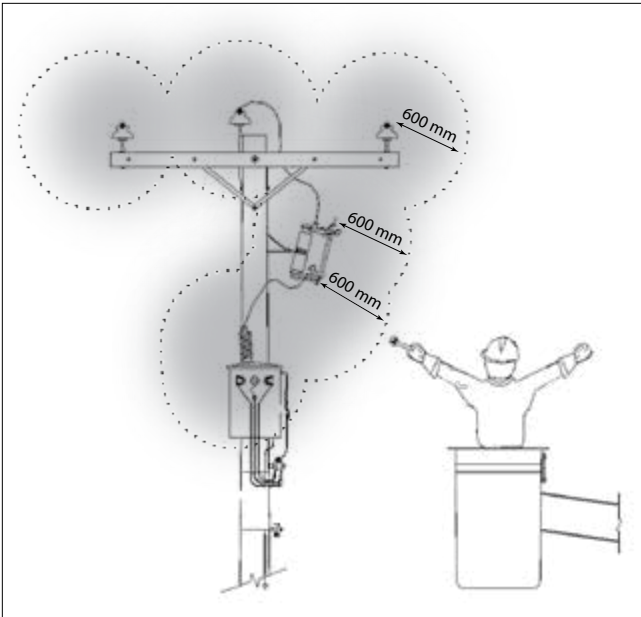
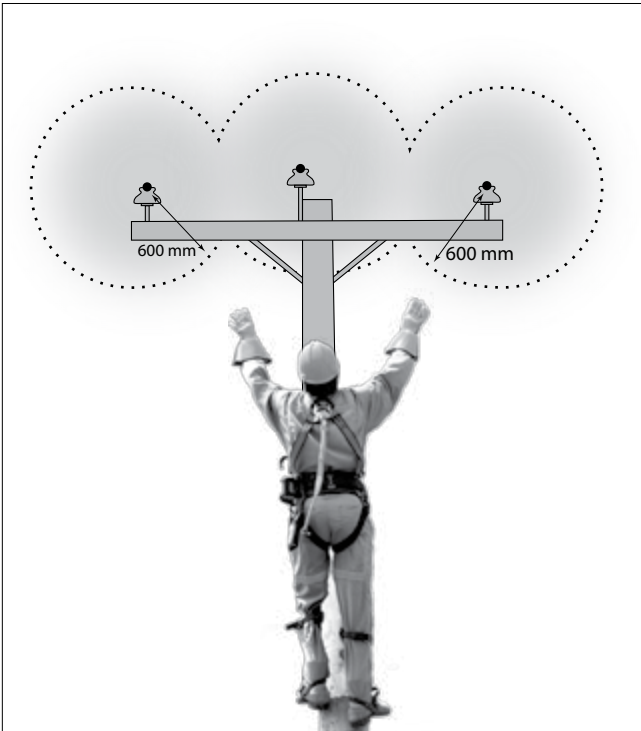


Illustration of approach distance from bucket for 5,000–27,000-V line: 600 mm. For a 27,000–44,000-V line, the approach distance is 900 mm.



*Illustration of approach distance from pole for 5,000–27,000-V line:  
600 mm.*

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**Hot-stick method.** Working on a pole or from a bucket is permitted, provided you follow the recognized work method and maintain a minimum approach distance of **300 mm (12 in.)**.

**Bare-hand method.** Working bare-hand near a live, uninsulated part is permitted, provided you maintain a minimum approach distance of **300 mm (12 in.)**.

### **5,000–27,000 V**

**Rubber-glove method.** Working from a bucket is permitted, provided you follow the recognized work method.

**Hot-stick method.** Working on a pole or from a bucket is permitted, provided you follow the recognized work method and maintain a minimum approach distance of **600 mm (24 in.)**.

**Bare-hand method.** Working bare-hand near a live, uninsulated part is permitted, provided you maintain a minimum approach distance of **600 mm (24 in.)**.

### **27,000–44,000 V**

**Rubber-glove method.** *Not allowed*

**Hot-stick method.** Working on a pole or from a bucket is permitted, provided you follow the recognized work method and maintain a minimum approach distance of **900 mm (36 in.)**.

**Bare-hand method.** Working bare-hand on a pole, from a bucket or near a live, uninsulated part is permitted, provided you maintain a minimum approach distance of **900 mm (36 in.)**.

**44,000 V or higher**

Bare-hand method. Working bare-hand on a pole, from a bucket or near a live, uninsulated part is permitted, provided you maintain a minimum approach distance. (See table below.)

69 kV	1,200 mm	(48 in.)
120 kV	1,500 mm	(60 in.)
160 kV	2,000 mm	(78 in.)
230 kV	2,900 mm	(114 in.)
300 kV	3,650 mm	(144 in.)
700 kV	6,250 mm	(246 in.)

**103-2 Electrical induction**

1. Follow these standards and guidelines:
  - a. B.41.12 M 1040, *Règles encadrant les travaux sur les lignes aériennes de distribution hors tension en présence d'induction* [rules respecting work on de-energized overhead distribution lines where induction is present]
  - b. TET-SEC-N-0004, *Mise à la terre des véhicules, réservoirs, pièces d'équipement lors de manipulation et des appareils en entreposage dans les installations de transport de la division Hydro-Québec Trans-Énergie* [grounding vehicles, tanks and parts when handling and devices in storage in Hydro-Québec TransÉnergie transmission facilities]

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2. Bucket trucks or vans used when working on risers or overhead facilities near transmission lines at Hydro-Québec TransÉnergie substations must be equipped with braided bonding conductors to eliminate hazards due to electrical induction.

### **103-3 Insulating shields**

Where you cannot maintain the minimum approach distance, you must install an insulating shield and maintain a clearance of 150 mm (6 in.) between yourself and the insulating shield at all times.



**103-3.1 General**

When working on live electrical equipment, use appropriate, approved insulating shields.

1. Install insulating shields whenever it is impossible to comply with the minimum approach distance.
2. Set up and adjust insulating shields so as to adequately cover the system components to be insulated.
3. Plan each task so as to maintain a clearance while working of at least 150 mm (6 in.) between insulating shields and any uninsulated part of your body or conductive material you are handling. However, if need be, you may touch the insulating shields with the appropriate live-line tools and equipment.
4. Regularly reassess the position of insulating shields as the work progresses.
5. Install insulating shields when using a bucket truck above live medium-voltage conductors.
6. Remain below live medium-voltage conductors at all times when working with climbing irons (climbers), even if insulating shields have been installed, unless the conductors have been moved beforehand using recognized work methods.
7. Be under constant watch when working within 600 mm (24 in.) of insulating shields. At greater distances, observation is not required.

### 103-3.2 Equipment selection

#### Insulating-shield classes

Class	Flexible shield	Rigid shield
0	1,000 V	—
1	7,500 V	—
2	17,000 V	14,600 V
3	26,500 V	26,400 V
4	36,000 V	36,600 V

1. The class of insulating shields used to cover live **low-voltage** or **permanently grounded** conductors and equipment must provide a level of electrical insulation greater than or equal to the phase-to-ground voltage of the medium-voltage system.
2. The class of insulating shields used to cover live **medium-voltage** conductors and equipment must provide a level of electrical insulation greater than the nominal system voltage, no matter which work method is used.

Thus, only Class 3 and 4 insulating shields may be used on a medium-voltage system. But Class 2 rigid insulating shields may be used and installed on a stretch of 14.4/24.9-kV polyphase line or 14.4-kV single-phase line to make a jobsite safe at a third party's request. That equipment is still standard for this type of task.

NB The nominal system voltage is the line-to-line voltage for a polyphase system or the line-to-ground voltage for a single-phase system.

**103-3.3 Inspection and storage of insulating shields**

1. Visually check insulating shields before each use for the following defects or damage:
  - a. Holes or foreign bodies adhering to the material
  - b. Missing reminder date for the next dielectric strength test
  - c. Missing class label
  - d. Defects or damage
  - e. Part used to secure the insulating shield missing
  - f. Dirt or foreign matter
2. For flexible insulating shields, also check for the following:
  - a. Cuts or abrasions penetrating more than a quarter of the shield's thickness
  - b. Cracks or discoloration
3. Dielectric strength must be tested at the frequencies specified in the inspection standard.
4. Follow these storage rules for insulating shields:
  - a. Store in such a way that they maintain their original shape.
  - b. Store in a dry location, without constant exposure to sunlight or fluorescent light.
  - c. Do not store near a heat source.

## **103-4 Checking for voltage in a facility**

### **103-4.1 Conventional method**

Use an approved voltage detector for the appropriate voltage classes to check for voltage in distribution facilities (zero-voltage check).

NB Test the detector before and after each use to make sure it is working properly.

### **103-4.2 Alternate methods**

#### **103-4.2.1 Overhead system**

If the capacitive voltage detector detects voltage, perform a zero-voltage check using an approved resistive (real) voltage detector (e.g., VAT-2009).

If it is impossible to perform a zero-voltage check using an approved resistive (real) voltage detector, the measures below must be taken to ensure no voltage is present:

1. Visually inspect the protected area to ensure that all energy-isolating devices (e.g., disconnect switches, cutouts, switches or jumpers) are in the open position.
2. Visually inspect the electrical circuit in question to ensure it has not been energized by another line or a customer facility.
3. Check the insulator strings at the disconnect points.
4. Perform a zero-energy check at the secondary terminals of distribution transformers.

### **103-4.2.2 Underground system**

If it is impossible to do a zero-voltage check with an approved voltage detector, first identify the cable to be checked and then proceed using one of the following methods:

1. Use a grounded hydraulic cable cutter or cable-spiking tool – These tools must be used in accordance with guidelines M 10-2206 and M 07-2113 found in Volume B.41.22.
2. Other methods – Zero-energy checks may be performed by any other means included in an agreement with the relevant health and safety committees, in consultation with the CPSS [provincial health and safety committee].

### **103-5 Installing a ground rod**

When a ground rod has to be installed near a pole without replacing it, make sure there is no underground infrastructure (electrical equipment, water line, gas line, etc.) at that location. Each situation is different and must be assessed on a case-by-case basis. If in doubt, contact Info-Excavation.

### **103-6 Temporary grounds**

#### **103-6.1 General**

1. Grounding sets must have a high enough rating to maintain short-circuit current and low impedance, in order to limit the voltage to which employees could be exposed.

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2. Grounding sets must be used to protect employees from the following:
  - a. Accidental resupply
  - b. Induced current or voltage
  - c. Current originating from lightning
3. Maintaining the proper approach distances, install standard temporary grounding sets whenever work is to be done on a de-energized medium-voltage electrical component.
4. Always treat an ungrounded electrical component as live and maintain approach distances.

### **103-6.2 Equipment selection**

1. The gauges of conductors for temporary grounding sets for medium-voltage facilities are as follows:
  - a. 35 mm<sup>2</sup> (2 AWG CU), able to carry fault currents of 12 kA for 15 cycles (maximum)
  - b. 50 mm<sup>2</sup> (1/0 AWG CU), able to carry fault currents of 12 kA for 36 cycles
2. To estimate the length of grounding conductor required, allow 1.2 to 1.5 times the distance between the connection points.
3. Handle grounding sets with care.
4. Do not drop grounding sets, to avoid damaging them or getting them dirty (dust, etc.).

### **103-6.3 Visual check of temporary grounds before use**

Visually check grounding set components, particularly the following points:

1. Condition of protective sheath
2. Inspection date
3. Condition of thermoshields
4. General condition of clamps (jaws, studs and ferrules)
5. Condition of grounding studs (if any)
6. Condition of conductor (cut or damaged strands)
7. Position of clamp jaws, which must be locked fully into place when clamp is closed

### **103-6.4 Storing temporary grounding sets**

When storing grounding sets inside a vehicle, coil them individually and placed them in a canvas bag or box marked "MALT" (the French abbreviation for ground).

### **103-6.5 Maintaining temporary grounding sets**

1. Grounding sets must be maintained once every three years, or once every two years in saline environments.
2. Maintenance includes parts inspection, preliminary measurement of electrical resistance and quality control.

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### **103-6.6 Installing a temporary grounding set**

1. Locate the component to be worked on.
2. Check for voltage (zero-energy check).
3. Comply with the minimum approach distance or install an insulating shield.
4. Connect the grounding clamp to the common neutral. (This is the only step that can be done by hand.)
5. Connect the clamp to the component using an appropriate, approved method.
6. Secure the grounding set if located in a traffic area or if other employees are within cable whipping distance.
7. Never use a temporary grounding set as a shunt between two conductors.
8. Always install temporary grounding sets when work is to be done in the metering compartment of a metal-clad substation.

### **103-6.7 Grounding vehicles**

1. When conductors are installed or removed near or above live system components or conductors rated 750 V or higher, the conductors, truck and trailer must be grounded. All lifting or pulling equipment (auger crane, bucket, cable-pulling truck, winch carrier, etc.) must be grounded at all times, except for bucket trucks with an insulated lower boom.

2. For work where induction is present, see Section 103-2.
3. Use a standard dual fixed point to extend two grounding sets, if necessary.

### **103-6.8 Grounding where a capacitor is present**

Wait at least five minutes before grounding any part of a system component or line connected to capacitors.

### **103-7 Marking off the work area in a Hydro-Québec TransÉnergie facility**

While work is being done, all or part of the work area must be cordoned off using standard equipment.

#### **103-7.1 At ground level**

1. Cordon off the work area clearly at ground level by means of the following markers:
  - a. Green flags at the entrance
  - b. Red tape, cordons with red flags or mesh around the perimeter
2. The flags on the cordon must be spaced approximately 2 m (6.5 ft.) apart.
3. The footprint to be cordoned off depends on the type of work and equipment used.

### **103-7.2 At heights**

1. Cordon off the work area clearly by means of the following markers:
  - a. Red flags along the sides of the work area if there are live components nearby, unless they are out of reach
  - b. Red flags along the top if there are live components above the work area, unless they are out of reach
2. The positioning and number of flags depend on the type of work.
3. To mark off a line feeder, put up four red flags (two on either side).

### **103-8 Switches rated 750 V or less on customer's premises**

Customers are usually responsible for switching on their own premises, but Hydro-Québec employees may operate some switches by arrangement with the customer. Before opening or closing a switch rated 750 V or less, proceed as follows:

1. Get the customer's verbal permission.

NB Whenever changing a meter, or interrupting or restoring service, you can do any switching required without requesting permission if the customer is absent and the meters are accessible.
2. Remove any objects from on top of the switch.
3. Check the condition of the switch.

4. Shed the load.
5. Make sure that the switch door is closed tight.
6. Stand so you are not facing the switch and throw it with your left hand.
7. If you are wearing a face shield, face the switch as you operate it.



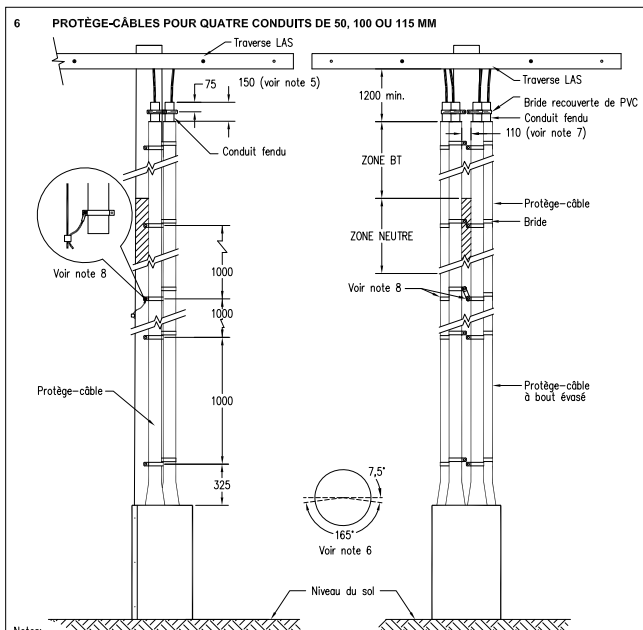
## ***Overhead Supports***

### **104-1 Wood poles**

1. If several employees have to go up or down the same pole, each must be properly secured while another one climbs up or down.
2. Work and maintenance on steel or concrete poles is performed in the same way as on a wood pole.

### **104-2 Risers**

1. You may wear climbers to get to riser connections where live cables are covered with metal cable guards.
2. Be sure you have sufficient, standard-compliant clearance before climbing a pole with climbers. (See figure below.)



## Notes:

5- Les protège-câbles doivent être aboutés en nombre suffisant pour amener la hauteur du dernier protège-câble à 150 mm sous la séparation des phases des câbles souterrains.

6- La zone maximale pour l'installation des conduits d'Hydro-Québec et des tiers est de 165°.

7- Un espacement de 110 mm est nécessaire à cet endroit pour y installer au besoin un ancrage d'auban.

8- Pour l'installation de la mise à la terre des protège-câbles, voir l'article 4.

		<p align="center"><b>PROTÈGE-CÂBLES</b> <b>SUR UN POTEAU EN BOIS</b></p>	N°: <b>05-1110</b>	
	<p align="center">2013-03-26</p>		ACCESSOIRES	Volume: <b>B.41.21</b>
Elaboration: Santiago Pineiro, ing.	Autorisation administrative:	LIAISONS AÉROSOUTERRAINES	Résultat: <b>B</b>	Page: <b>4 de 4</b>

*Clearance required*

## Live-Line Tools

### **105-1 Visual check and maintenance before use**

1. Hot sticks must be visually inspected and their dielectric test dates checked before use. For the visual inspection, look for the following defects in particular.

Defect	What to do
Dirt build-up	Clean the hot stick
Covered with scratches	
Parts missing or loose (bolt, nut, etc.)	
Nicks where dirt could build up	Return hot stick to accredited workshop for corrective maintenance
Broken fibres or splitting	
Fitting or seal missing	
Signs of tracking	
Grip-All clampstick: More than 3 mm ( $\frac{1}{8}$ po) between hook and latch	Return to tool shop attendant for inspection and adjustment

2. Do not use hot sticks with any of the above defects and always clean dirty hot sticks before use.
3. Transport hot sticks properly, to avoid getting them dirty or damaging them.

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4. Remove any substance, like oil, grease or a chemical, as soon as possible with a paper towel or clean cloth, and clean the hot stick with standard products. After cleaning, wipe the hot stick with a silicone-soaked cloth.

## ***Rubber Insulating Gloves***

### **106-1 Visual check and maintenance before use**

1. Always check that rubber insulating gloves and leather over-gloves are in good condition and check the dielectric test date before each use.
2. Store rubber insulating gloves in an appropriate bag when not in use.
3. Visually check Class 3 rubber insulating gloves using a glove inflator or a hand pump (as taught) to do an air test before starting work and, if in doubt, while working.
4. To check Class 2 and lower rubber insulating gloves, roll up each glove and look for holes or cracks as it inflates.

### **106-2 Using rubber insulating gloves**

Wear appropriate, approved rubber insulating gloves and approved leather over-gloves for protection against mechanical hazards in the following cases:

1. Doing medium-voltage live-line work using the rubber-glove method (Class 3)
2. Installing or removing a pole that could come into contact with live conductors or components at 750 V or higher (Class 2 or higher)

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3. Operating a three-pole loadbreak switch (Class 2 or higher)
4. Doing live-line work or instrument checks on 50-V or higher conductors (50-V AC or higher or 120-V DC or higher) (appropriate class)
5. Using a Chamberland tool (Class 2 or higher)
6. Working on line hardware whose insulator is connected directly to a live conductor (Class 2 or higher)
7. Installing and replacing live meters (appropriate class)

Never wear rubber insulating gloves for handling operations, except when absolutely necessary in special cases.

## ***Emergency Response Measures***

### **107-1 Incidents requiring emergency response**

#### **107-1.1 Communication**

##### **107-1.1.1 Radio communication (ASTRO radio)**

1. In an emergency, call over the mobile radio using the Mayday international distress signal or any other means deemed effective.
2. "Mayday" repeated three times means the call for assistance is top priority because a human life is at stake. All vehicles equipped with a mobile radio should have an In Case of Emergency sticker affixed to the dashboard. After using the Mayday distress signal, wait for confirmation that the message has been received.

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**ASTRO radio  
communication**

- Press the EMER button.  
Press and hold the PTT button.
1. Say "Mayday" three times.
  2. State your name three times.
  3. State your location:
    - Structure number
    - Nearest street address
  4. State the nature of the accident.
  5. State what you need (line to open, if necessary).
  6. Confirm when help has arrived.
- 

**107-1.1.2 Telephone communication**

If you do not have a mobile radio, phone the designated distribution control centre. See the EN CAS D'URGENCE [IN CASE OF EMERGENCY] sticker for the number to call. Follow this procedure:

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**Telephone  
communication**

- Call the designated distribution control centre.
1. Say "Mayday" three times.
  2. State your name three times.
  3. State your location:
    - Structure number
    - Nearest street address
  4. State the nature of the accident.
  5. State what you need (line to open, if necessary).
  6. Confirm when help has arrived.
-

### 107-1.1.3 Metering, collection, theft and meter reading

If you do not have a mobile radio, use a cell phone.

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**Emergency numbers**

---

911

or

310-4141

Cell: \*4141

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### 107-1.1.4 In case of abuse

Report any abuse to your immediate superior, who will call Sécurité industrielle, internally at 0-800-1212 or from outside, on the public phone system, at 1 877 816-1212.

## 107-1.2 Emergency response

If a person requires emergency assistance in the event of an accident, an emergency rescue must be performed.

### 107-1.2.1 Rescue on overhead lines

1. Communicate with the victim.
2. Tell the victim to wait for help.
3. Call for help using the Mayday signal.
4. Eliminate any danger for the victim and the rescuer.
5. Hook the descent control device onto the rope holder on your belt.

NB When a chain saw is being used on a pole, take along shears to cut the steel lanyard.

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6. Climb the pole using an appropriate fall arrester.
7. If the victim is unconscious, remove his or her climbers.
8. Attach the rope's snap hook to the dorsal D-ring on the victim's body harness.
9. Install the descent control device, making sure the snap hook is on top.
10. Make sure the rope is locked into position.
11. Cut the safety strap on the victim's fall arrester and/or retractable lanyard, and any lifeline.
12. Lower the victim to the ground.
13. Move the victim to a safe place.
14. Give first aid (CPR, if necessary).
15. Transfer the victim by ambulance.

### **107-1.2.2 Rescue in underground chambers**

1. Assess the surroundings:
  - a. Is there fire or smoke?
  - b. Is there electricity?
  - c. Is there water?
  - d. Is there natural gas?
  - e. What are the person's conditions?
2. Assess the victim.
3. Call "Mayday" three times.

4. Eliminate all hazards (for victim and rescuer) in the following situations:
  - a. Fire or smoke
  - b. Electricity
  - c. Water
  - d. Natural gas
  - e. Person's conditions
5. Free the victim.
6. Resuscitate the victim.
7. Give first aid (CPR, if necessary).
8. Assemble rescue equipment.
9. Get the victim out of the underground chamber.
10. Transfer the victim by ambulance.

### **107-1.3 Electrical incident**

If a person has an accident involving electricity, ask the following questions:

- Did the victim feel current pass through his or her body?
- Did the victim get stuck to the current source?
- Did the victim lose consciousness?
- Was the victim thrown back by the shock?

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- Does the victim have burn marks on the skin at the points of contact (AC systems)?
- Is the victim pregnant?

If the answer to any of these questions is yes, the victim must be taken to a hospital emergency department, accompanied by a witness to the accident.

### **107-2 Accident management**

If you have an on-the-job accident, notify your immediate supervisor as soon as possible.

The employer must notify the trade union authorities as provided by law and the collective agreement.

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***Vehicles and Traffic Control***

200



## ***Driving a Vehicle***

### **201-1 General obligations**

1. When using a bucket, follow these steps before moving the lift:
  - a. Position the truck on a firm surface, so as to optimize work on the grid.
  - b. Apply the parking brake.
  - c. Chock the wheels.<sup>1</sup>
  - d. Position the four outriggers properly. They must be firmly supported on solid ground, with their minimum extension mark showing. The truck must be level for maximum stability.
  - e. Always use outrigger pads.
2. Never operate a road vehicle carrying a load not placed, secured or covered in accordance with the *Highway Safety Code and Cargo Securement Standards Regulation* or allow anyone else to do so.
3. Always try to park the truck so as to be able to start in a forward direction.
4. Always maintain sufficient clearance near electrical facilities.

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1 Wheels must be chocked whenever a heavy vehicle is parked.

5. When you back up, have a signaler direct you if your vehicle's movement could endanger you, another employee or the general public. If you are alone, get out of the vehicle and to make sure there is no one and nothing behind it.
6. Driving and resting hours for heavy-vehicle drivers
  - a. Log driving and working hours, as well as other information required, in a logbook kept in the vehicle.
  - b. Make a logbook entry in the following cases:
    - You go beyond a 160 km radius from your home base.
    - You are unable to return to your home base for eight consecutive hours of rest.
    - You work/drive more than 13 hours.
    - The permit to deviate applies.<sup>1</sup>
  - c. A heavy-vehicle driver may not work and drive more than 14 hours within 24 hours or just drive more than 13 hours within the same period. A driver must have 10 hours of rest every 24 hours, including 8 consecutive hours.
  - d. A driver may not work more than 70 hours in a seven-day cycle.

---

<sup>1</sup> Hydro-Québec has a permit to deviate from the driving and resting hours in certain situations that affect public health and safety.

## **Vehicle Check**

### **202-1 General obligations**

1. You are responsible for checking your vehicle before going on the road and for reporting any defect that arises while you are out.
2. The predeparture check is a visual and auditory check of some of the accessible components of the vehicle.
3. Fill out and maintain a predeparture check and defect report log (*Vérification avant départ et rapport de déféctuosité*) and keep it in the vehicle.
4. Conduct a predeparture check during your normal work shift, in accordance with the *Act Respecting Owners, Operators and Drivers of Heavy Vehicles*. Two types of defects may be found during checks:
  - a. Minor defects are not an immediate threat to road users' safety but may, in some cases, quickly become more serious. After they are discovered and logged, they must be repaired within 48 hours.
  - b. Major defects are an immediate threat to road users' safety. Never drive a vehicle with a major defect or let anyone else drive it.

## **202-2 Special obligations**

### **202-2.1 Predeparture check for light vehicles (GVWR under 4,500 kg)**

Check the following components and systems before going on the road.

Tires	Horn
Service brakes	Windshield wipers and fluid
Parking brake	Lights and signals

### **202-2.2 Predeparture check for heavy vehicles (GVWR of 4,500 kg or over)**

Check the following parts and systems before going on the road.

Service brakes	Frame side and cross members
Parking or emergency brake	Horn
Steering mechanism	Windshield wipers and fluid
Suspension	Emergency equipment
Lights and signals	Rear-view mirrors
Tires	Coupling
Wheels	Tie-down system

### **202-2.3 Checking hydraulic equipment on heavy vehicles (GVWR of 4,500 kg or over)**

Carry out the following inspections and tests of hydraulic equipment if you are driving the vehicle.

No.	Component	Daily	Weekly
1	Oil level/leaks	Inspect	Inspect
2	Safety alarms	Inspect	Inspect
3	Bucket support	Inspect	Inspect
4	Linkage system (boom and jib)	Inspect	Inspect
5	Upper and lower control levers	Test operation	Test operation
6	General condition of equipment	Inspect	Inspect
7	Axle locks	Inspect	Inspect
8	Condition of anchors	Inspect	Inspect
9	Identification of control levers and capacity chart	Inspect	Inspect
10	Check valves	Test	Test
11	Condition of masts and other insulation components	Inspect	Inspect
12	Condition of extinguishers (pins, pressure, etc.)	—	Inspect
13	Winch cable (fuse)	Inspect part normally used before each use	Inspect part normally used before each use
14	Winch cable	Test before each use	Test before each use

NB When you change vehicles, perform each stage of the inspection thoroughly to identify any problems that might adversely affect safety.



## ***All-Terrain Vehicles or Watercraft***

### **203-1 Conditions of use**

You may drive all-terrain vehicles (quads or snowmobiles) only under the following conditions:

1. You have the ability and knowledge required to use the vehicle safely.
2. You must wear the following personal protective equipment (in addition to the standard equipment):
  - a. Firmly secured motorcycle or snowmobile helmet
  - b. Safety goggles, face shield or visor designed to be worn with the helmet
3. Never wear a scarf or any other clothing that could get caught in the vehicle's mechanisms, tree branches or similar snags.
4. When traveling on a frozen lake or river (by snowmobile, by quad or on foot), always remain on marked, monitored trails.

## **203-2 Travel by water**

Boats are to be used to transport employees across a lake or river only when there is no overland access or to reach an island. Take the following safety measures:

1. Fill in the trip plan and make arrangements with the dispatcher on duty.
2. There must always be at least two people (driver included) when traveling by water.
3. Everyone aboard must wear a commercial life jacket.
4. Everyone aboard must wear a thermal protection suit (Mustang immersion suit) when the water temperature is below 15°C.
5. The manager must check that the boat and equipment comply with all the provisions of an approved agreement.
6. The boat driver must have a pleasure craft operator card issued by the Canadian Coast Guard.
7. The boat must meet the following conditions:
  - a. Be registered or have a small commercial vessel license
  - b. Have a capacity plate indicating the load capacity (weight of load to be carried, including people and equipment, not to exceed 75% of load capacity)
  - c. Be at least 5 m (16 ft.) long and have sufficient reserve buoyancy

- d. Have a proper engine suitable for the water and boat
  - e. Have an anchor, buoyant heaving line at least 15 m (50 ft.) long, a whistle, two oars, a fire extinguisher and a bailer or manual bilge pump (in accordance with the Small Vessel Regulations, CRC, c. 1487, Part V)
  - f. Be equipped with navigation lights for periods of restricted visibility
8. The mean height of waves must not exceed the freeboard. (Freeboard is the distance between the level of the water outside the loaded boat and the top of the deck or side midway along the boat.)
9. Only two people may be aboard a boat towing another boat (one containing equipment, for example).



## Traffic Control

### **204-1 General**

1. Special traffic control is required when work is carried out on or beside public roads or private roads open to public vehicle traffic.
2. For work at heights, the work area also includes the space needed for booms to move above the road.
3. If the work obstructs a sidewalk, a temporary passage at least 1 m (3.5 ft.) wide must be set up and well marked at the side of the roadway.

### **204-2 Signaler's role**

1. If the work area cannot be seen from the prescribed distance, stand at the minimum distance indicated in the following table to signal its presence.

Minimum stopping sight distance								
Basic speed (km/h) <sup>1</sup>	40	50	60	70	80	90	100	110
Minimum stopping sight distance (m)	45	65	85	110	140	170	200	240

1. Basic speed = Speed indicated on speed limit sign with white background (P-70) plus 10 km/h.

2. More than one signaler is needed if the work area is 25 m (82 ft.) or longer. In that case, a signaler must stand at each end of the work area and, if necessary, a third may stand in the middle. They must be able to communicate with each other.
3. One or more signalers are also needed for traffic control in the following cases:
  - a. Traffic must come to a stop near a work area.
  - b. Traffic must be reduced to a single lane alternating directions, in accordance with regulations.
  - c. The work area is at the bottom of a hill or in a curve where it cannot be seen from the prescribed distance.
4. A signaler must always follow these rules:
  - a. Wear fluorescent yellow-green clothing made of opaque fabric with retroreflective strips.
  - b. Wear a yellow-green fluorescent hard hat.
  - c. Stand facing the traffic on the shoulder or in the closed lane, at a point where traffic can be easily directed, abiding by the visibility distances shown in the table.
  - d. Direct traffic using clear, standard signals.
  - e. When working at night, stand in a lighted area so as to be visible from the prescribed distance.

The crew leader must make sure that the signalers provide the expected services.

***Hydro-Québec is responsible at all times for applying and enforcing traffic control when performing work.***

**204-3 Most common road signs**

Transports  
Québec



DESSIN NORMALISÉ

SIGNALISATION DES TRAVAUX  
DE COURTE DURÉE

NORME

Série

V

Chapitre

4

Numéro

TCD 001

Date

Déc. 2007

## ENTRAVE DE L'ACCOTEMENT



V (km/h)	E (m)	B (m)
80 et moins	10	50
70	10	75
80 et 90	15	100
100	20	125

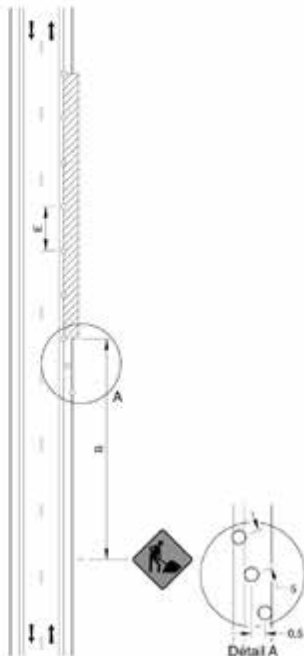
V : Vitesses affichées sur le panneau à fond blanc P-79 pour le valeur «E».  
Pour la valeur «B», «V» correspond à la vitesse affichée sur les panneaux à fond orange T-70.

- E : Espacement des repères visuels  
B : Espacement des panneaux

① Les cônes sont interdits sur les autoroutes.

## Notes :

- l'aire de travail doit être comprise entre le bord de la voie et 3 m à l'extérieur de la voie de circulation;
- les côtes sont en mètres.



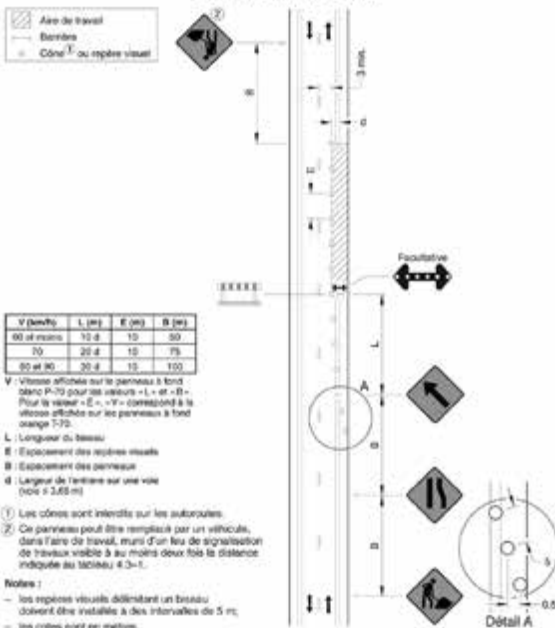
Version	V
Chapitre	4
Revisé	TCD 002
Date	Déc. 2007

## DESSIN NORMALISÉ

**SIGNALISATION DES TRAVAUX  
DE COURTE DURÉE –  
ROUTE À DOUBLE SENS  
DE CIRCULATION**

 Transports  
**Québec**
**NORME**
**ENTRAVE PARTIELLE DE LA VOIE DE DROITE  
DÉGAGEMENT DE 3 m**

	Aire de travail
	Barrière
	Cône T ou repère visuel





## DESSIN NORMALISÉ

 SIGNALISATION DES TRAVAUX  
 DE COURTE DURÉE –  
 ROUTE À DOUBLE SENS  
 DE CIRCULATION

## NORME

Série

V

Chapitre

4

Numéro

TCD 003

Date

Déc. 2007

 ENTRAVE PARTIELLE DE LA VOIE DE DROITE  
 EMPÎTEMENT DANS LE SENS INVERSE


V (km/h)	L (m)	E (m)	D (m)
60 et moins	10 et	10	50
70	20 et	10	75
80 et 90	30 et	15	100

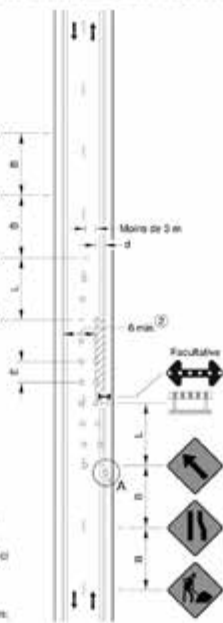
V : Vitesse affichée sur le panneau à fond blanc  
 P-75 pour les valeurs « L » et « E ». Pour la  
 valeur « E », « V » correspond à la vitesse  
 affichée sur les panneaux à fond orange T-75.

- L : Longueur du panneau  
 E : Espacement des repères visuels  
 D : Espacement des panneaux  
 d : Largeur de l'emprise sur une voie (voies < 3,65 m)

- (1) Les cônes sont interdits sur les autoroutes.  
 (2) Lorsque l'accrochement est carrossable, celui-ci  
 peut être inclus dans le calcul des 5 m.

## Notes :

- les repères visuels obstruant un biseau  
 doivent être installés à des intervalles de 5 m;
- les côtes sont en mètres.



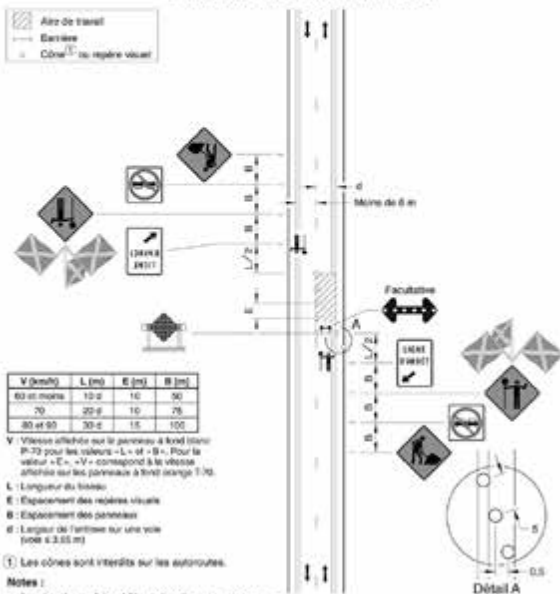
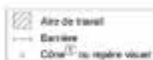


## DESSIN NORMALISÉ

 SIGNALISATION DES TRAVAUX  
 DE COURTE DURÉE –  
 ROUTE À DOUBLE SENS  
 DE CIRCULATION

NORME

Série	V
Chapitre	4
Numéro	TCD 005
Date	Déc. 2007

 ALTERNANCE  
 UTILISATION D'UN SIGNALEUR


V
Chapitre 4
Numéro TCD 006
Date Déc. 2007

DESSIN NORMALISÉ
SIGNALISATION DES TRAVAUX DE COURTE DURÉE – ROUTE À DOUBLE SENS DE CIRCULATION

Transports  
Québec

NORME



Voies
V
Chapitre
4
Norme
TCO 012
Date
Déc. 2007

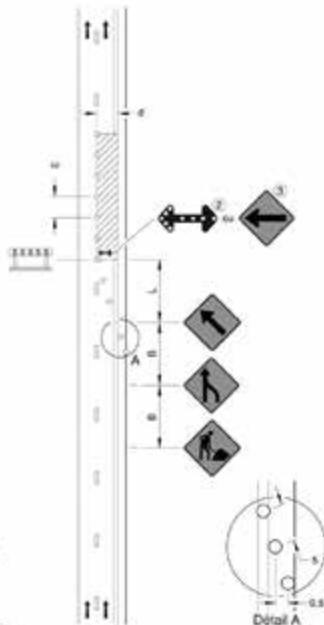
## DESSIN NORMALISÉ

**SIGNALISATION DES TRAVAUX  
DE COURTE DURÉE –  
ROUTE À 3 OU 4 VOIES CONTIGÜES**

 Transports  
**Québec**
**NORME**

## ENTRAVE DE LA VOIE DE DROITE

	Aire de travail
	Barrière
	Cône T ou repère visuel



V (km/h)	L (m)	E (m)	B (m)
60 et moins	10-e	10	50
70	20-e	10	75
80 et 90	30-e	15	100

V : vitesse affichée sur le panneau à fond blanc P-70 pour les vitesses « L » et « S ». Pour la valeur « E », « V » correspond à la vitesse affichée sur les panneaux à fond orange T-35.

L : longueur du blocus

E : Espacement des repères visuels

B : Espacement des panneaux

d : Largeur de l'emprise sur une voie (voie à 3,56 m)

① Les cônes sont interdits sur les autoroutes.

② Requise sur les chemins où V = 90 km/h.

③ Requise sur les chemins où V < 90 km/h.

## Notes :

- les repères visuels délimitant un blocus doivent être installés à des intervalles de 5 m;
- les cônes sont en mètres.

Code	V
Chapitre	4
Numéro	TCD 020
Date	Déc. 2007

## DESSIN NORMALISÉ

**SIGNALISATION DES TRAVAUX  
DE COURTE DURÉE –  
ROUTE À 4 VOIES SÉPARÉES**

 Transports  
**Québec**
**NORME**
**ENTRAVE DE LA VOIE DE DROITE**

	Aire de travail
	Barrière
	Cône T ou repère visuel

V (km/h)	L (m)	E (m)	B (m)
60 et moins	10 d	10	50
70	20 d	10	75
90 et 90	30 d	15	100
100	40 d	20	125

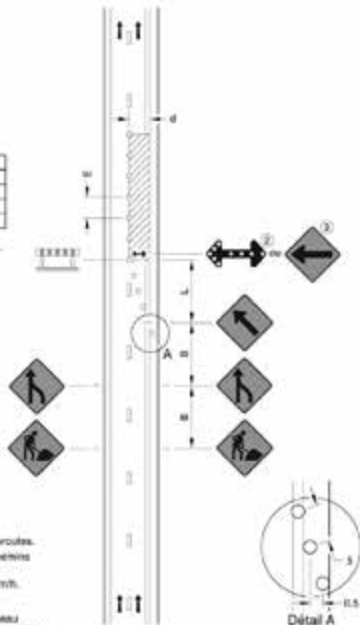
V : Vitesse affichée sur le panneau à fond blanc P-70 pour les routes à L + 40.  
 Pour la valeur = 0, + V correspond à la vitesse affichée sur les panneaux à fond orange T-70.

L : Longueur du blois

E : Espacement des repères visuels

B : Espacement des panneaux

d : Largeur de l'obstacle sur une voie  
 (voir 3.55 m)



① Les cônes sont interdits sur les autoroutes.

② Requise sur les autoroutes et les chemins ou V à 90 km/h.

③ Requise sur les chemins où V = 90 km/h.

**Notes :**

- les repères visuels délimitant un blois doivent être installés à des intervalles de 5 m.
- les côtes sont en mètres.

Niveau
V
Chapitre
4
Norme
TCD 090
Date
Déc. 2004

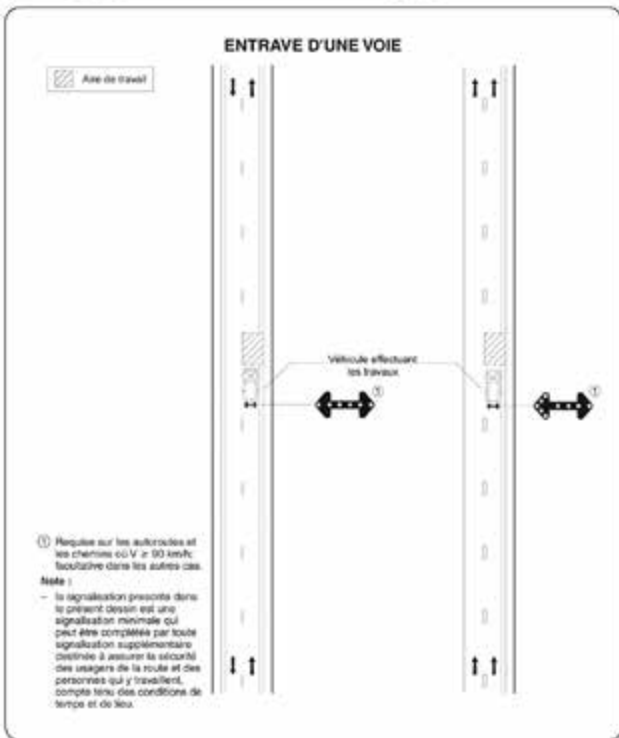
## DESSIN NORMALISÉ

SIGNALISATION DES TRAVAUX  
DE MOINS DE 15 MINUTES  
IMPRÉVISIBLES ET NON  
PROGRAMMABLES

Transports  
Québec



NORME




**NORME**
**DESSIN NORMALISÉ**
**SIGNALISATION DES TRAVAUX  
 DE COURTE DURÉE  
 DANS UNE INTERSECTION –  
 ROUTE À 4 VOIES SÉPARÉES**

Série

V

Circuit

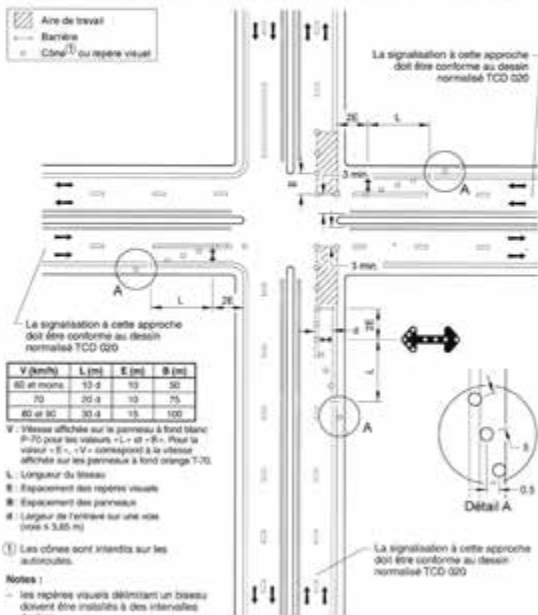
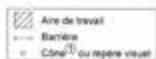
4

Norme

TCD 025

Date

Déc. 2007

**ENTRAVE DE LA VOIE DE DROITE  
 AIRES DE TRAVAIL DE CHAQUE CÔTÉ DE L'INTERSECTION**


## QUARTIER RÉSIDENTIEL (HQ-1)

V (km/h)	L (m)	E (m)	B (m)
50 et moins	10	5	10

V : Vitesse affichée par le panneau  
"Limite de vitesse"

L : Longueur du biseau

E : Espacement des repères visuels

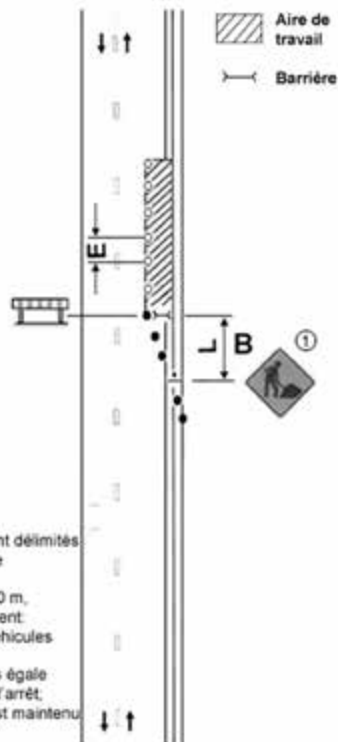
B : Espacement du panneau

V(km/h)	DMVA(m)
30	45
40	65
50	85

① Facultatif

## Notes :

- sans marquage ni panneau;
- 50 km/h et moins;
- là où le stationnement est permis en bordure de la route;
- aire de travail et biseau obligatoirement délimités par des repères visuels et une barrière dans les chemins publics ayant une chaussée d'une largeur supérieure à 10 m, mais uniquement lorsque, simultanément:
  - il y circule en moyenne au plus 3 véhicules par minute dans les deux sens;
  - la distance de visibilité est au moins égale à la distance minimale de visibilité d'arrêt;
  - le nombre de voies de circulation est maintenu

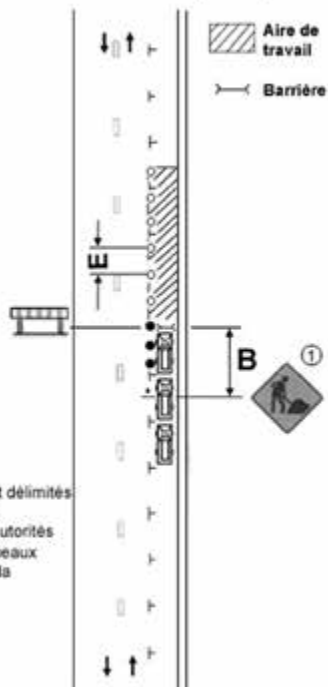


## ESPACES DE STATIONNEMENT (HQ-2)

B (m)	E(m)
10	5

**B** : Espacement du panneau

**E** : Espacement des repères visuels



① Facultatif

**Notes :**

- aucune entrave de la circulation;
- aire de travail et biseau obligatoirement délimités par des repères visuels et une barrière;
- lorsque c'est possible, demander aux autorités compétentes de faire installer des panneaux "Défense de stationner" en bordure de la route ou du trottoir.

TRAVAUX DE MOINS DE 15 MINUTES  
IMPRÉVISIBLES ET NON PROGRAMMABLES (HQ-3)  
Utilisation de fusées de sécurité

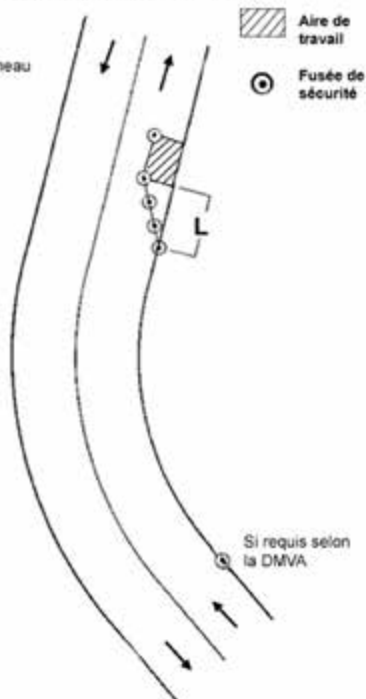
V (km/h)	L (m)
90	30

V : Vitesse affichée par le panneau  
"Limite de vitesse"  
L : Longueur du biseau

V(km/h)	DMVA(m)
90	200

**Note :**

- la signalisation prescrite dans le présent dessin est une signalisation minimale qui peut être complétée par toute signalisation supplémentaire destinée à assurer la sécurité des usagers de la route et des personnes qui y travaillent, compte tenu des conditions de temps et de lieu.
- les fusées utilisées doivent être ramassées lorsque les travaux sont terminés.



NB For more details, see *Highway Safety Code, Volume V, Traffic Control Devices*.



---

## ***Overhead System***

300



## ***Switching***

### **301-1 General**

Before doing any switching where there are strings of porcelain insulators, check their condition using the appropriate instrument (if necessary), following the guidelines in effect.

### **301-2 On a cutout or single-pole disconnect switch**

When operating a cutout and/or a single-pole disconnect switch, always visually check the condition of components and use one of the following tools, as needed:

1. Disconnect stick at least 3.65 m (12 ft.) long
2. Telescopic hot stick
3. Chamberland tool to close a cutout, wearing Class 2 or higher rubber insulating gloves
4. Loadbreak tool when opening a cutout without using the link-break lever, or when opening a single-pole disconnect switch under load

### **301-3 On a three-pole loadbreak switch**

When operating a three-pole loadbreak switch, always visually check the condition of components and use rubber insulating gloves:

1. Class 2 or higher (25 kV and under)
2. Class 3 or higher (34.5 kV)

## ***De-energizing Transformers***

### **302-1 General**

When work is being done on the medium-voltage part of a transformer, the transformer must be de-energized.

### **302-2 De-energizing single-phase transformers and three-phase wye transformer banks**

Follow these steps to de-energize single-phase transformers and three-phase wye transformer banks:

1. Open cutouts with a hot stick at least 3.65 m (12 ft.) long.
2. Disconnect medium-voltage jumpers with a Grip-All clampstick:
  - a. From a bucket. Use a hot stick at least 1.82 m (6 ft.) long.
  - b. Wearing climbers. Use a hot stick at least 3.04 m (10 ft.) long.
3. Use a multimeter to check for voltage (zero-energy check) on the LV side at the bottom of the transformer secondary down-leads or on the LV system in order to respect the approach distances.
4. Install grounding sets on the LV side or disconnect the LV down-leads at the grid connection point.

## 302

For remotely monitored voltage transformers, capacitor bank transformers and MILE (intelligent power line maintenance) instrument transformers, just open cutouts (Step 1) and disconnect medium-voltage jumpers (Step 2). Steps 3 and 4 are not necessary since voltage return is impossible.

### **302-3 De-energizing three-phase delta, open-delta or wye transformer banks with a floating neutral**

To de-energize three-phase delta, open-delta or wye transformer banks with a floating neutral, proceed as follows:

1. Open cutouts with a disconnect stick at least 3.65 m (12 ft.) long.
2. Disconnect medium-voltage jumpers with a hook stick:
  - a. From a bucket. Use a stick at least 1.82 m (6 ft.) long.
  - b. Wearing climbers. Use a stick at least 3.04 m (10 ft.) long.
3. Use a multimeter to check for voltage (zero-energy check) on the LV side at the bottom of the transformer secondary down-leads or on the LV system in order to respect the approach distances (do not measure between a phase and the ground).

4. Install grounding sets on the LV side or disconnect the LV down-leads at the grid connection point.
5. Touch the H1 transformer terminals using a hot stick equipped with a temporary ground (simple contact with the ground is sufficient to cancel out the capacitor effect).

### **302-4 Low-voltage voltage rise**

Before working on the LV side of a delta, open-delta or wye configuration with a floating neutral, make sure the cutouts are all open or all closed so as to control voltage rises on the LV side.



## ***Installing Transformers on Poles Without Conductors***

One or more transformers may be installed on poles without conductors after you have made sure that pole installation criteria are met (proper depth, straight pole, right fill material, etc.).



## ***Low-Voltage Live-Line Work***

### **304-1 General**

Before making an LV connection on a customer's premises or on an LV line, make sure there is no other voltage source and no short circuit between phase conductors or between a phase conductor and ground.

### **304-2 Weather**

Follow these rules respecting work on the LV overhead system when rain, snow or wet snow is falling:

1. Live-line work is allowed during light precipitation.
2. Live-line work is prohibited during heavier precipitation.
3. All live-line work is prohibited during storms, lightning, thunder or high winds.
4. Dead-line work is allowed.

# 304

## **304-3 Crew composition**

Line workers who have qualified for the job after their initial training must follow the rules in the table below in order to become certified.

Crew composition for LV work		
2-member crew	3-member crew	
1 single-bucket lift	1 double-bucket lift	2 single-bucket lifts
1 qualified or certified line worker on ground	1 qualified or certified line worker on ground	1 qualified or certified line worker on ground
1 certified line worker in LV section	1 certified line worker in LV section	1 certified line worker in LV section
	1 qualified line worker in LV section	1 qualified line worker in LV section

## **304-4 Using a ladder at mid-span on live LV lines**

1. Do not strip live non-bundled polyethylene-insulated conductors until a mid-span support has been installed.
2. Do not strip live twisted conductors.
3. Do not rest ladders against the following components:
  - a. Conductors thinner than 4 CU or 4 ACSR, or telecommunication cables
  - b. Live bare or covered (WP) non-bundled conductors

NB You may rest a ladder against live multiplex or separate conductors only if they are polyethylene-insulated.

## ***Medium-Voltage Work***

### **305-1 General**

Follow these safety rules before starting work and while working:

1. Obtain a hold order for the line in question.
2. Before doing any work where there are strings of porcelain insulators, check their condition using the appropriate instrument (if necessary), following the guidelines in effect.
3. Carry out only one step of the work at a time, and on only one phase at a time.
4. Do not use two work methods at the same time.
5. Check the condition of the conductor to be moved and of any components in adjacent spans that could come into contact with it.
6. Make sure that the work is well coordinated and that all employees concerned can communicate with each other.
7. When working on the medium-voltage system under the work permit, where there is an isolation point
  - a. with the floating knife disconnect tool, work on the same span is prohibited;

## 305

- b. with a floating dead-end insulator (except for conductor replacement), work on the same span is allowed under the following conditions:
  - the floating dead-end insulator should be as close as possible to the pole and no more than 1.3 m (4.5 ft.) from it;
  - the phases should be least 1 m (3.5 ft.) apart;
  - once the conductors have been cut at the disconnect point, they must be folded back and secured;
  - the floating dead-end insulator must not be installed on a slack span.
8. Do not mount a wood pole that has one or more electrical conductors attached or fixed to it when a moving vehicle is unreeling the conductors on the ground.

### **305-2 Weather**

Follow these safety rules in bad weather:

1. Live-line work is prohibited when it is raining or hailing, or when there are buildups of snow or wet snow.
2. All live-line work is prohibited during storms, lightning, thunder or high winds, when you could lose control of the situation.

3. Live-line work is prohibited in fog resulting in poor visibility of spans and adjacent poles.
4. If there is any precipitation, you must wear rubber insulating gloves of Class 2 or higher for switching (25-kV and under systems).
5. For switching, use a hot stick at least 3.65 m (12 ft.) long and wipe it first with a silicone-soaked cloth.
6. The loadbreak tool may be used.

### **305-3 Crew composition**

Line workers who have qualified for the job after their initial MV live-line training must follow the rules in the table below in order to become certified.

<b>Crew composition for MV work</b>		
2-member crew	3-member crew	
1 single-bucket lift	1 double-bucket lift	2 single-bucket lifts
1 qualified or certified line worker on ground	1 qualified or certified line worker on ground	1 qualified or certified line worker on ground
1 certified line worker in MV section	1 certified line worker in MV section	1 certified line worker in MV section
	1 qualified line worker in MV section	1 qualified line worker in MV section

### **305-4 Rubber-glove and hot-stick methods**

The following principles apply to work using the rubber-glove and hot-stick methods.

<b>Principle</b>	<b>Title and statement</b>	<b>Application</b>
1	<b>Insulating quality of protective equipment</b> The insulating quality of protective equipment must be checked by the appropriate means.	Common
2	<b>Voltage class of cover-up</b> The voltage class of the cover-up used must correspond to the highest voltage level being worked on.	Common
3	<b>Mechanical stress prohibited on cover-up</b> Cover-up must not be subjected to mechanical stress when conductors are being moved with a jib or when stored.	Common
4	<b>Constant watch on the ground</b> For MV live-line work, the employee on the ground must keep a constant watch on those doing the job.	Common
5	<b>Proper installation of cover-up</b> Any adjacent live or dead components that might be touched must be isolated with cover-up.	Common

Principle	Title and statement	Application
6	<p><b>Safe use of shunt</b></p> <p>When installing a shunt, use the right instrument to make sure the current is flowing through the shunt before cutting the conductor being bypassed.</p> <p>When removing a shunt, use the right instrument to make sure the current is flowing through the jumper before removing the bypass shunt.</p> <p>If a cutout has to be bypassed, install the shunt using the hot-stick method, with a Grip-All clampstick.</p> <p>Attention: It is prohibited to bypass a cutout for a transformer or transformer bank.</p>	Common
7	<p><b>Controlling the jumper or conductor</b></p> <p>Always keep control over the live or dead conductor or jumper you are working on.</p>	Common
8	<p><b>Moving a conductor safely</b></p> <p>If moving the conductor the required distance means moving the bucket, then move the conductor only by using a jib equipped with a roller wireholder or tools intended for that purpose.</p>	Common
9	<p><b>Using cables and slings</b></p> <p>Use link sticks to isolate any cables or slings.</p>	Common
10	<p><b>Safely energizing components</b></p> <p>Use the hot-stick method to energize any component or permanently grounded device. Never use the rubber-glove method.</p>	Common

Principle	Title and statement	Application
11	<p><b>Protection for first and second contact points</b></p> <p>When using the rubber-glove method to perform live-line work, use the appropriate protective equipment at your disposal to protect first and second contact points against electric shocks.</p>	Rubber-glove method
12	<p><b>Glove-changing procedure</b></p> <p>With the rubber-glove method, put on protective equipment on first contact point on your arrival in the MV work area.</p> <p>After properly installing the protective equipment, you can do the work on the pole wearing leather gloves, provided you meet the following conditions:</p> <ol style="list-style-type: none"> <li>1. Leave the MV work area.</li> <li>2. Take a break.</li> <li>3. Confirm any change of work sequence or method to the employee on the ground.</li> <li>4. Change from rubber insulating gloves to leather gloves, or vice versa.</li> <li>5. Plan and perform the next task.</li> </ol> <p>Always maintain an approach distance from a live component and a clearance of 150 mm (6 in.) from cover-up.</p> <p>It is prohibited to remove rubber insulating gloves when a live conductor is in the jib's wireholder, because the approach distance cannot be respected.</p>	Rubber-glove method

Principle	Title and statement	Application
13	<p><b>Respecting the approach distance</b></p> <p>When using the hot-stick method to perform live-line work, maintain approach distances at all times. For the 25-kV system, the minimum approach distance is 600 mm (24 in.) between a live component and the most exposed uninsulated part of the body. For the 34.5-kV system, the approach distance is 900 mm (36 in.).</p> <p>If it is impossible to maintain the approach distance from a given system component, isolate the conductors with appropriate cover-up or move them.</p>	Hot-stick method
14	<p><b>Disconnecting grounding sets when wearing climbers</b></p> <p>When doing live-line work wearing climbers, disconnect the grounds of equipment, guys and the neutral. Isolate or clear the neutral, if necessary.</p>	Hot-stick method



## ***Employee Qualifications***

Employees must meet the following requirements:

1. Line workers must receive all the training related to other activities (ISO 14001, CPR, spills, rolling stock, etc.).
2. Line workers must follow internal and external rules and regulations governing their work (for example, *Work Safety Code*).



## Line workers' work table

	Dead-line work			Performing inspections, securing approach distances and switching, except for control boxes	Doing low-voltage live-line work		Switching with loadbreak tool	Installing conductor cover-up to secure work areas close to lines	Working during an outage	Doing live-line work from 2.4 kV to 34.5 kV	Maintaining equipment and switching control boxes	Acting as first responders	Installing and removing mobile overhead transformer substations	Working with induction	Trouble-shooting and crew leader
	Building grid	Installing and removing conductors	Installing and removing equipment		120/240 V	347/600 V									
Class 5	Allowed	Allowed	Allowed	Allowed Constant watch	Never alone Allowed if certified	Never alone Allowed if certified	Never alone Allowed if certified	Never work alone Allowed if certified	Allowed (see D.18-02, s. 4.2)	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Class 7	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Assessment of acquired skills															
Class 10	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Not alone while earning certification Constant watch	Allowed	Not allowed	Not allowed	Not allowed	Not allowed
Class 14	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed	Allowed	Allowed	Allowed Constant watch	Not allowed
Assessment of acquired skills															
Class 19	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Permis	Permis	Allowed	Allowed Constant watch	Not allowed
Class 23	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed
Crew leader, Class 27	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed



## ***Chain Saw Work***

### **307-1 General**

1. When using a chain saw, take care to avoid endangering other employees who may be in the work area.
2. When cutting a wood pole from a bucket truck, the chain saw must be attached to a hand line.
3. Stay away from conductors when using a chain saw.
4. Use axes on the ground only.
5. Shout a warning if a branch is about to fall.

### **307-2 Using a chain saw**

1. A portable chain saw must be equipped with a chain brake and a device to apply it.
2. Do not start a chain saw unless the chain brake has been applied.
3. Apply the chain brake whenever you are not holding the chain saw firmly and when carrying it from one place to another.
4. A chain saw must have a vibration-dampening system for the front and back handles.
5. Never fill up a chain saw when it is hot or if there is a risk of fire or explosion.

6. Rest a chain saw against a sturdy surface when cold starting.
7. Never start up a chain saw less than 3 m (10 ft.) away from where it was filled up.
8. Never use a chain saw above shoulder height.
9. Turn the engine off before changing or adjusting the saw's chain.
10. Maintaining, adjusting and using a chain saw must be done safely.
11. When using a chain saw, you must have access to an extinguisher or other device that can extinguish an early-stage fire.
12. When using a chain saw, hold it firmly with both hands and stand with both feet firmly planted on a solid footing.

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## ***Underground System***

400



## ***Access to Underground Facilities***

### **401-1 General**

1. Before accessing an underground structure, make sure a check has been done to determine its exact location.
2. Before entering an underground facility, you must first be informed of the condition of the electrical components and of any problems with the facility. This information can usually be found in the *Demande d'accès* [access request] form you are provided before going to the facility. But in some unforeseen situations, the information may be passed on verbally by someone having the knowledge to interpret it and create an access request for the facility on the requester's behalf. The name of the resource person who checked the corporate system and provided the information about the facility must be entered on the form.
3. Fill in the *espaces clos* [confined spaces] section in the *Demande d'accès* [access request] form.
4. A Concession is needed before opening an underground structure containing medium-voltage lines.

## 401

5. Work may be done from outside the structure when abnormal conditions create restraints, as long as safety measures are taken.
6. Follow all steps in preparing a work area when working in an underground structure.
7. All live system components that become accessible to the general public must be closely supervised or made safe.
8. All accessories used to access a live system component must be made of standard nonconductive material.
9. Two people are required to handle a movable shield of an indoor feeder.
10. When opening the cover of an underground chamber or moving heavy objects (like a transformer), use the standard tools for the job and avoid bumping into live components.
11. Make sure cables are secured before undoing or cutting ties.
12. Do not climb onto cables, junctions, connections or supports.
13. Do not move junctions or connections on XLPE cables (live medium-voltage).
14. Be sure to apply specific safety measures that could limit access to a facility.

15. Be sure to have rescue equipment (winch and gantry), as well as a fire extinguisher and first-aid kit, in the work area.

### **401-2 Underground chambers**

1. Fill in the *espaces clos* [confined spaces] section in the *Demande d'accès* [access request] form.
2. Maintain constant (visual or auditory) contact with the people working in an underground chamber.
3. When working in a transformer vault, remember that transformers there may be hot, even under normal operating conditions.
4. To avoid any risk of burns and work safely, never touch the transformer if you perceive high heat. Always use the personal and collective protective equipment at your disposal.
5. When working in a confined space, you must have a ladder available at all times.

### **401-3 Pad-mounted substations**

1. Opening the doors of a switching and protection substation is prohibited if crackling is heard inside.
2. The removal of permanent screens from a switching and protection substation is prohibited unless protective barriers have been installed first.



## ***Switching***

1. When switching SF<sub>6</sub>-insulated equipment, check to make sure there is gas present and throw the switch from outside the chamber using an appropriate, approved hot stick.
2. Never open the doors to a live transformer with an uninsulated front panel.
3. When switching equipment with an uninsulated front panel, maintain a clearance of 3 m (10 ft.) and use an appropriate, approved hot stick.
4. When switching pad-mounted equipment, visually check the condition of the components and use the appropriate hot stick.
5. When switching using a crank, you must wear at least Class 2 rubber insulating gloves or use the standard tool, but there is no approach distance to maintain from the equipment.



## ***Low-Voltage Work***

### **403-1 General**

When work is to be done on de-energized LV conductors, temporary grounding sets must be installed. If that is not possible, treat conductors as live, wear rubber insulating gloves and use appropriate, approved nonconductive tools.

### **403-2 Live-line work**

#### **403-2.1 General**

Wear appropriate, approved rubber insulating gloves and use nonconductive tools in the following cases:

1. Doing live-line work on underground cables at 750 V or less
2. When there is a possibility of contact with live components

NB If several employees are needed to do the work, all must wear rubber insulating gloves.

## 403

### **403-2.2 Before starting work**

Before starting LV live-line work, make sure of the following:

1. No 600-V ground leakage
2. Nonconductive mat on hand
3. No metallic structure nearby
4. Stable connection (install connection immobilizer or, only if that is impossible, have another employee immobilize the connection)
5. No voltage from the customer installation
6. Energizing and voltage conversion (600 V to 347/600 V) at the connection point have been properly carried out ahead of time
7. Neutrals connected to a multiway connector of the same gauge as the conductors are clearly identified
8. When connecting a customer, the customer's connection point is at least 650 mm (26 in.) above the ground
9. Equipment used to perform the work meets the maintenance program standards in effect

**403-2.3 While working**

Follow the rules listed below when doing LV live-line work.

**General**

1. Start work on the load side when hooking up a customer.
2. Connect the neutral first and disconnect it last when connecting or disconnecting live wires.
3. Treat the conductor as live until you have determined that there is no voltage.
4. Handle only one conductor at a time.
5. Make sure there is no second point of contact.
6. Finish working on the end of the line before energizing it.

**Live-line work**

1. Connection and disconnection (120/240 V and 347/600 V)

Live-line work at 120/240 V is allowed if the load is 400 A or less on a secondary connector with a copper contact surface. On a connector with an aluminum contact surface, the load must be 50 A or less.

Live-line work at 347/600 V or 600 V is not allowed on lines carrying a load. This is to prevent damage to certain three-phase facilities, for instance.

## 403

2. Parallel connections (120/240 V and 347/600 V)

The precautionary limit of 400 A does not apply to this type of work, given that there are two voltage sources at the same level and in phase. When connecting or disconnecting a line, the load will be carried by the second source.

3. Working with a jumper (120/240 V and 347/600 V)

The precautionary limit of 400 A applies to this type of work, given that the jumper used is limited to a load of 400 A.

4. PILC cable (120/240 V and 347/600 V)

You may disconnect a live PILC cable, but not reconnect it.

## ***Medium-Voltage Work***

### **404-1 Capacitive effect of cables**

The capacitive effect of underground cables must be eliminated by eliminating their electric charge before working on their core.

### **404-2 Commissioning**

Follow these steps before commissioning a facility:

1. Make sure the work is finished and the grounding sets have been removed.
2. Check that the facility is in an adequate state by, as applicable:
  - a. Identifying the proper position
  - b. Matching phases

### **404-3 Testing with surge generators**

1. During dielectric tests, set up a safety perimeter respecting the approach distance of 600 mm (24 in.) around the connection point of the facility's generator.

## 404

2. Ground all (surge and pulse) generators before supplying them with power or connecting them to the grid.
3. Use a hook stick with grounds installed to connect or disconnect generator connection points.

## ***Installing and Removing Cables***

### **405-1 General**

1. No one may be inside any structure being used as a pull site when pulling (installing or removing) a cable and where the pulling line is under tension.
2. When the pulley of the pulling vehicle is moving (winch in traction), it must be totally inaccessible to employees. If it is not, the pulley must be made inaccessible by installing a physical barrier in the pull site's pulling area.
3. The employees on the pull and cable-reel site must remain in constant communication while a line is being pulled (installed or removed).
4. For grounding the vehicle, see Section 103-6.7



## ***Employee Qualifications***

Employees must meet the following requirements:

1. Cable workers must receive all the training related to other activities (ISO 14001, CPR, spills, rolling stock, etc.).
2. Cable workers must follow internal and external rules and regulations governing their work (for example, *Work Safety Code*).

Note 1. First-year cable workers must never work alone when checking matches between MDGSR Concession records and the grid and interpreting pulling plans.

Note 2. Cable workers will receive training and be able to install and remove meters.



## Cable workers' work table

	Building grid	Installing and removing cables	Installing grounds	Doing low-voltage live-line work	Doing underground switching and inspections	Riser interface		Performing dielectric tests	Switching with loadbreak tool	Installing auxiliary sources (gensets and mobile transformers)	Doing thermography and partial discharge inspections)	Trouble-shooting	Working with induction	Working during an outage
						Doing overhead switching	Installing and removing jumpers							
Class 5	Allowed	Allowed	Allowed Constant watch	Allowed once de-energized	Allowed Constant watch	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Allowed (see D.18-03, s. 4.2)
Class 7	Allowed	Allowed	Allowed	Never alone Allowed if certified	Allowed	Allowed Constant watch	Not allowed	Not allowed	Allowed Constant watch Allowed if certified	Not allowed	Not allowed	Not allowed	Not allowed	Allowed
Assessment of acquired skills														
Class 10	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed Constant watch Allowed if certified	Allowed	Allowed Constant watch	Not allowed	Not allowed	Not allowed	Allowed
Class 14	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Not allowed	Allowed Constant watch	Allowed
Assessment of acquired skills														
Class 19	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Not allowed	Allowed Constant watch	Allowed
Class 23	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed
Crew leader, Class 27	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed Constant watch	Allowed



## ***Bare-Hand Work on Underground System***

### **407-1 General**

1. Before starting excavations, mark off the safety corridor on the ground.
2. When excavating within the safety corridor, decide whether or not supervision or other specific measures are required.
3. If excavating within the safety corridor below the warning tape, near direct-burial cables or cables in non-encased conduits, obtain a Concession and supervise closely. The work must be done manually. A Concession is also required if an encased duct bank containing cables must be broken.
4. Cables must be supported when any excavation within the safety corridor is below their depth.
5. All filling within the safety corridor below the warning tape level must be carried out in accordance with the standards and under the supervision of the employees concerned.



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***Metering***

500



## ***Work Organization***

### **501-1 Preparing the work area**

1. Before entering the premises, assess the risk based on local conditions, clutter and lighting, and act accordingly. In case of imminent danger, postpone the work to a later date and report the situation.
2. Before starting work, report any problems that could endanger you or the public to your immediate superior.
3. When working on live or dead metering equipment, use appropriate, approved protective devices.
4. Prepare the planned metering facility work area so the work can be done safely.
5. Follow these rules:
  - a. Know the voltage class of the metering facility on which you are to work and take steps to protect yourself against electrical hazards.
  - b. Live-line work is allowed during light precipitation.
  - c. Live-line work is prohibited when it is raining or hailing, or when there are buildups of snow or wet snow.

- d. All live-line work is prohibited during storms, lightning, thunder or high winds, when you could lose control of the situation.
- e. Assess your physical surroundings by checking access, lighting and workspace.
- f. Determine the location of the main disconnect switches at the metering facility where you will be working.
- g. Cordon off the work area using standard equipment to keep out unauthorized people when other work is being done nearby or there is a danger to the public, the customer or anyone working there.
- h. Keep the work area free of any temporary or permanent obstacles in front of the metering facility components that you are going to be working on.
- i. Make sure there is enough clearance to remain at the required approach distance.
- j. Visually check the condition of metering facility components that you are going to be working on.
- k. When working near hazardous materials, follow the customer's special instructions.
- l. Make sure you are aware of any safety measures specific to the facility.

6. Always wear a face shield in the following situations:
  - a. Supply-side opening or closing a service box switch or a load-side disconnect switch of the metering facility
  - b. Opening the cover or door of live equipment:
    - Switch
    - Disconnect switch
    - Splitter box
    - Sequence box
    - Transformer compartment of a low-voltage metal-clad substation
  - c. Metering (doing zero-energy check, checking voltage or amperage, etc.) inside the following devices:
    - Switch
    - Disconnect switch
    - Splitter box
    - Sequence box
    - Transformer compartment of a low-voltage metal-clad substation
  - d. Any work inside a sequence box (opening and closing circuit disconnect switches, removing and putting back service entrance conductors at the meter terminals)

## 501

- e. Isolating current transformer bus bars in a live transformer box

### **501-2 Performing work**

1. Tasks must be performed by a crew of at least two qualified people in the following cases:
  - a. Working at heights
  - b. Working in confined spaces
  - c. Working in isolated areas where it is impossible to follow the *Démarche de plan de route* [trip plan] procedure
  - d. Working at medium and high voltage
  - e. Doing an installation or modification in the transformer compartment of a low-voltage metal-clad substation
2. Working in a metal-clad substation or at medium or high voltage is permitted only in following cases:
  - a. Load side of the test terminal box in the meter box
  - b. Load side of the lockable knife switch if it is in the de-energized box or connecting chamber
  - c. Connecting the circuit analyzer to the test terminal box in the meter box
  - d. Visually checking a low-voltage metal-clad substation

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### **501-3 Controlling and finishing work**

When the work has been completed, follow these steps:

1. Remove collective protection equipment (temporary grounding sets, etc.) or have it removed.
2. Affix the stickers specified in Section 503-2, Identification of metal-clad substations.



## ***General Risk Prevention***

### **502-1 Communication**

1. Always have a means of communication available: mobile radio, cell phone or any other means deemed effective.
2. When the means of communication is not working, while you are working or traveling in remote or isolated areas, etc., follow the *Démarche de plan de route* [trip plan] procedure.



## ***Electrical Risk Prevention***

### **503-1 Special features of low- and medium-voltage metal-clad substations without Lexan protectors**

1. Always respect the approach distances.
2. Never take any measurements in transformer compartments.
3. When working at medium-voltage metal-clad substation, do not open the transformer compartment door without following the appropriate procedure (*Protocole d'ouverture de la porte de la cellule de transformation de mesurage – Intervention poste blindé moyenne tension*).

### **503-2 Identification of metal-clad substations**

#### **503-2.1 Principle**

1. Standard stickers are to be used to identify metal-clad substations so it is easy to tell low-voltage from medium-voltage ones.
2. Metering transformer identification sheets inside meter boxes are to be used so transformer compartment doors do not have to be opened to check transformer numbers.

### **503-2.2 Before working on a metal-clad substation**

1. Make sure metal-clad substations are properly identified. If they are not, determine the type of metering by one of the following means:
  - a. Reading the single-line diagram
  - b. Checking the supply voltage
  - c. Reading the dials (customer display) on metal-clad substations
  - d. Reading the nameplates
2. Then compare the data gathered with the information in the customer's file and follow these steps:
  - a. Affix the right stickers in the right place.
  - b. Affix or update the transformer identification sheet.

NB If you cannot perform any of these steps, stop work and notify your immediate superior.

### 503-2.3 Placing stickers

#### Attention – Live Bus Bars sticker

(item no. 1080528)



This sticker is used on metal-clad low-voltage substations. It must be affixed to the transformer compartment.

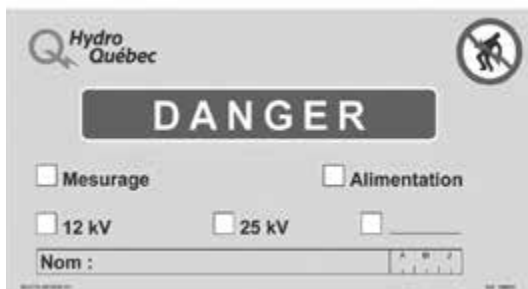


*Low-voltage metal-clad substation*

# 503

## Danger sticker

(item no. 1080633)



This sticker is used on medium-voltage metering transformer compartments. It indicates that it is a medium-voltage substation and specifies the voltage level.



Front view of MV metal-clad substation

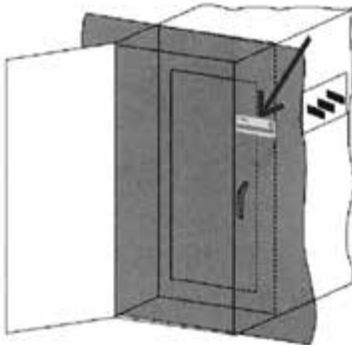
**Do Not Open When Live sticker**

(item no. 1080526)



This sticker is used at medium voltage. It should be affixed in these locations:

1. Where the door of the metering transformer compartment opens to indicate that it must never be opened when the substation is live



*Connecting chamber, MV metal-clad substation*

## 503

2. On the rear panel of the metal-clad substation giving access to the metering transformers to indicate that it must never be removed when the substation is live



*Rear view of MV metal-clad substation*

### **503-3 Work on equipment with bolted covers**

1. You must not remove a bolted cover to get to conductors and other live, bare components of circuits rated 750 V when equipment is live. A bolted cover may only be removed, if necessary, when the equipment has been de-energized.
2. Live equipment must not be opened unless it has a hinged door or cover.

## ***Switching***

### **504-1 Operating a switch**

1. Do not operate switches rated above 750 V.
2. Do not operate switches in a metal-clad substation or off-grid substation, regardless of its voltage.

### **504-2 Working in a customer's electric room**

When working in an electric room, make sure the door is unlocked and the access routes are clear.



## ***Low-Voltage Work***

### **505-1 General**

When working on a low-voltage metering facility, take the following steps:

1. Check the voltage level of the metering facility.
2. Visually check that the components on which you are to work are in good condition.
3. Use a standard multimeter to make sure permanently grounded components are at the same potential.
4. Make sure the facility's ground is in good condition.

### **505-2 Low-voltage dead-line work**

When working on a de-energized low-voltage metering facility, follow these steps:

1. Use an approved, standard voltage detector (multimeter) to check for voltage (zero-energy check).
2. Supply side
  - a. Lock out the service box in the open position.

## 505

3. Load side
  - a. Keep the lines' disconnect switches open, if necessary, depending on the type of LV metering used.
  - b. Lock out devices that could be supplied by another power source.
  - c. Formally identify and lock out out-of-sight disconnect switches. When a device is not lockable, affix an *Autoprotection* [self-protection] tag.

When working on a de-energized low-voltage metal-clad substation, in addition to taking the steps set out in paragraphs 1, 2 and 3 above, you must install temporary grounding sets on the load side, following the appropriate work method (*Pose des mises à la terre temporaires en basse tension*).

If necessary, a lockout box can be used to lock out the equipment for low-voltage work.

### **505-3 Low-voltage live-line work**

The following work may be done live:

1. Installing, replacing, interrupting or restoring
  - a. 120/240-V single-phase plug-in meters and controllers;
  - b. 120/208-V polyphase plug-in meters;
  - c. 120/240-V meters on an A sequence box with removable jumpers;

- 
- d. 120/240-V meters in a sequence box with rigid jumpers;
  - e. 120/240-V meters on a Type A box with forked-type jumpers;
  - f. 120/240-V Type A meters above a switch or panel.
2. Isolating current transformer terminals in a transformer box.



## ***Medium- and High-Voltage Work***

### **506-1 General**

1. When working on facilities at medium or high voltage, take steps to respect the approach distances and eliminate any accidental contact with live bus bars and conductors.
2. Never work on live components in the area between the metering transformers and the part line side of the lockable knife switch.
3. Follow the *Work Safety Code* by calling in qualified Hydro-Québec employees.
4. Open the lockable knife switch to de-energize the area between the switch and the test terminal box of the meter box before working on conductors or metering equipment there.

### **506-2 Dead-line work**

When working on a de-energized medium- or high-voltage metering facility, follow these steps:

1. Use an approved, standard voltage detector to check for voltage (zero-energy check).

2. Supply side

- a. Lock out the disconnect switch in the open position.
- b. Install temporary grounding sets following the method for work at medium voltage (*Pose des mises à la terre temporaires en moyenne tension*).

3. Load side

- a. Keep the line disconnect switches open.
- b. Lock out devices that could be supplied by another power source.
- c. Formally identify and lock out out-of-sight disconnect switches.
- d. Install temporary grounds following the method for work at medium voltage (*Pose des mises à la terre temporaires en moyenne tension*).

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## ***Meter Reading***

600



## ***Preventing Falls when Accessing Meters***

### **601-1 Accessories required**

When reading meters, always use the proper accessories for your work environment:

1. Holster or shoulder strap for carrying your handheld computer
2. Boots with or without crampons
3. Nonslip soles

### **601-2 General**

1. Make sure you can get to the meter to do your job.
2. Be very sure at all times that you are in no danger of physical harm by slipping or falling.
3. Follow the “stop-think-act” method on every customer visit: ***stop, think*** about the work environment and ***act accordingly***.

## 601

### **601-3 Rules**

1. Wear the required and appropriate accessories (wet or icy surfaces, etc.).
2. Always do your rounds as instructed, follow any special instructions displayed on the handheld computer about how to get to meters and update them, as necessary.
3. Before entering the premises, assess the risk based on local conditions, clutter and lighting, and act accordingly.
4. Adapt your way of walking according to your physical condition, the environment and the weather.
5. Keep your hands free at all times (wear shoulder strap, etc.).
6. Hold on to stairway handrails, no matter what the conditions.
7. Abide by working hours, including break times and meal times.

### **601-4 Unsafe access**

Never take risks or get into circumstances that could put you in danger. When in doubt, report in. Always report any difficult or unsafe access you encounter on your rounds.

Never insist on getting to the meter if the access is

1. mostly knee-deep snow;
2. icy;
3. icy or snow-covered stairs.



## ***Procedure for Getting to Meter with Dog Nearby***

### **602-1 General**

1. Avoid all physical contact with a dog.
2. Check out your surroundings as you introduce yourself in order to be in total control and ready to react to any imminent danger.
3. Pay attention to the dog's body language.

Once you are aware there is a dog, use the system or tool you have at hand to enter the **ACH** code (*attention au chien/ beware of dog*) in the customer's file.

### **602-2 Getting to a meter with a dog nearby**

1. Once the warning sound is triggered by the ACH code, anticipate the dog by looking for it on the customer's premises or in the surrounding area.
2. Before entering the premises, make your presence known by making a noise (honking horn, ringing doorbell, whistling, etc.) or a visual sign.
3. Look for all the places the dog could get through to you (dog door, patio door, etc.).

## 602

4. When the dog is there, visually check the area to give yourself time to react, depending on the circumstances.

### **602-3 Risk management**

First check whether the dog is tied up, in a cage or loose.

1. Risk of physical contact with a dog
  - a. If you can talk to the customer, ask to have the dog locked up until you have left the premises.
  - b. If you can't talk to the customer, you must be in total control of your environment, otherwise postpone the meter reading to a later date.
2. Meter is indoors
  - a. Hold the door firmly or stand aside while knocking or ringing, to give yourself time to react and get out of the dog's way.
  - b. Ask the customer to lock the dog up until you have left the premises.

### **602-4 Checking, maintaining and storing the dog barrier**

1. Follow these steps before starting your workday:
  - a. Visually check that the opening mechanism, ribs and fabric of the dog barrier are in good condition.

- b. Test the dog barrier to see that it works:
  - Insert it into its sheath
  - Arm it
  - Deploy it
  - Make sure it instantly opens fully
2. A defective dog barrier must be replaced immediately.
3. Pay special attention to the following points when storing the dog barrier:
  - a. Do not put it away wet. Let the mechanism dry out before storing.
  - b. Do not jam it into the sheath to avoid breaking the ribs and preventing it from operating properly.
  - c. Do not place anything on top of it.
  - d. Do not keep it in the car in winter.



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***Commercial Work  
and Business Customers***

700



## ***Visiting Customer Facilities***

Follow these rules when visiting customer facilities:

1. Comply with customer safety standards.
2. Determine the risks to personal safety (hazardous materials, dust, asbestos, etc.).
3. Wear safety goggles when inspecting lighting.
4. Do not enter ceiling crawlspaces that contain asbestos.



## ***Preparing the Work Area***

1. Before starting work, report any problems that could endanger you or the public to your immediate superior.
2. Technical employees who work on a live or de-energized voltage and current recorder must use appropriate, approved protective devices and prepare the planned metering facility work area so the work can be done safely.
3. Follow these rules:
  - a. Find out the voltage class of the metering facility on which the work is to be done and take steps to protect yourself against electrical hazards in compliance with standards CSA Z462 and ULC-S801.
  - b. Do not work on a metering facility when there is a risk of an imminent thunderstorm.
  - c. Assess your physical surroundings by checking access, lighting and workspace.
  - d. Locate the main disconnect switches of the electrical installation or equipment on which the voltage and current recorder is to be installed.

- e. Cordon off the work area using standard equipment to keep out unauthorized people, when other work is being done nearby or there is a danger to the public, the customer or anyone working there.
- f. Be sure to keep the work area free of any temporary or permanent obstacles in front of the electrical facility or components you are going to be working on.
- g. Make sure there is enough clearance to remain at the required approach distances.
- h. Visually check the condition of components that you are going to work on.
- i. When working near hazardous materials, follow the customer's special instructions.
- j. Make sure you are aware of any safety measures specific to the facility.

## ***Doing Work***

### **703-1 Determining where to install voltage and current recorders**

#### **703-1.1 General**

1. When opening an electrical cabinet panel or door and installing voltage and current clamps, maintain the approach distance for electric arc hazards.
2. The recorder must be handled only once all the current and voltage clamps are installed, or when the recorder is not in contact with an electrical facility.

#### **703-1.2 Installation on Hydro-Québec equipment (metering cabinet)**

Commercial technicians must comply with ULC S801 and call in qualified Hydro-Québec employees (metering) to install voltage and current recorders (voltage and current clamps).

#### **703-1.3 Installation on customer equipment**

Commercial technicians must comply with CSA Z462 and call in qualified customer employees or customer contractors to install voltage and current recorders (voltage and current clamps).



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## ***Off-Grid Systems***

800



## ***Personal Protective Equipment***

PPE must be chosen, used and maintained as set out in Section 102-2.



## **Work Area**

Before starting any work on the grid, organize the overhead and underground work areas following Guideline B.6-01, *Aménagement du poste de travail – Réseaux aérien et souterrain* [preparing the work area – overhead and underground system].



## ***Live-Line Tools***

Check and maintain live-line tools as set out in Section 105.



## ***Work on the Installations Boréal Grid in Nunavik***

All work on the grid must be performed on de-energized components.

NB Tests may be done on live components.



## ***Work in Facilities Similar to Those of Hydro-Québec Production or Hydro-Québec TransÉnergie***

When working in such facilities, follow the guidelines and safety standards in effect in the divisions concerned.



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## References

1. B.6-01, *Aménagement du poste de travail – Réseaux aérien et souterrain* [preparing the work area – overhead and underground system]
2. B.41-11, *Norme de construction du réseau aérien* [overhead system construction standard]
3. B.41.12, *Maintenance du réseau aérien de distribution* [maintenance of the overhead distribution system]
4. B.41.12 M 1040, *Règles encadrant les travaux sur les lignes aériennes de distribution hors tension en présence d'induction* [rules respecting work on de-energized overhead distribution lines where induction is present]
5. B.41.13, *Méthode de construction et de dépannage du réseau aérien* [overhead system construction and repair methods]
6. B.41.14, *Outillage et instrumentation* [equipment and instrumentation]
7. B.41.21, *Normes de construction – Réseau souterrain* [construction standards – underground system]
8. B.41.22, *Norme de maintenance – Réseau souterrain* [maintenance standard – underground system]
9. B.45.2-03, *Inspection et vérification des composants électriques du réseau de distribution souterrain au moyen de la thermographie* [inspection and testing of electrical components of the underground distribution system using thermography]

10. C.36-03, *Modalités d'application de la concession* [rules for applying concessions]
11. CL.13-01, *Procédure d'installation et d'enlèvement des enregistreurs de courant et de tension* [voltage and current recorder installation and removal procedure]
12. CAN/CSA C-225-00, *Vehicle-Mounted Aerial Devices*.
13. CSA Z462, *Workplace Electrical Safety*.
14. D.18-02, *Affectation du monteur ou de la monteuse en développement* [assigning line workers in training]
15. D.18-03, *Affectation du jointeur ou de la jointeuse en développement* [assigning cable workers in training]
16. D.21-02, *Prévention de la consommation d'alcool en milieu de travail* [preventing drinking on the job]
17. D.24-09, *Technique de travail sous tension en moyenne tension sur le réseau aérien* [method for medium-voltage live-line work on the overhead system]
18. D.24-10, *Implantation de la technique de travail au contact en moyenne tension sur le réseau aérien* [using the rubber-glove method in medium-voltage live-line work on the overhead system]
19. D.24-16, *Installation de mises à la terre portatives sur le réseau de distribution moyenne tension* [installing temporary grounding sets on the medium-voltage distribution system]
20. D.24-19, *Choix du régime de travail pour l'exécution des travaux sous tension et hors tension sur les lignes aériennes moyenne et haute tension* [selecting the safety regime for live-line and dead-line work on medium- and high-voltage overhead lines]

21. D.24-21, *Vérification d'absence de tension dans les installations moyenne tension de distribution* [checking for voltage in medium-voltage distribution facilities]
22. E.21-10, *Service d'électricité en basse tension* [low-voltage electricity service]
23. F.12-01, *Travaux en hauteur dans les postes de mesure* [working at heights in metering substations]
24. F.12-03, *Protocole d'ouverture de la porte de la cellule de transformation de mesure – Intervention poste blindé moyenne tension* [procedure for opening the metering transformer compartment doors – working at medium-voltage metal-clad substations]
25. F.12-07, *Aménagement du poste de travail* [preparing the work area]
26. F.22-01, *Mesure de l'électricité en moyenne et haute tension* [electricity metering for medium-and high-voltage installations]
27. F.41-01, *Prévention des chutes lors de l'accès aux compteurs* [preventing falls when accessing meters]
28. F.41-02, *Accès aux compteurs en présence d'un chien* [getting to a meter with a dog nearby]
29. FT 205 PCMAN, *Nacelle articulée* [articulated bucket]
30. Gouvernement du Québec. *Safety Code for the Construction Industry*. Québec: Éditeur officiel.
31. Gouvernement du Québec. *Act Respecting Owners, Operators and Drivers of Heavy Vehicles*. Québec: Éditeur officiel.
32. Gouvernement du Québec, Ministère des Transports. *Highway Safety Code, Volume V, Traffic Control Devices*. Québec: Éditeur officiel.

33. Gouvernement du Québec. *Regulation Respecting Occupational Health and Safety*. Québec: Éditeur officiel.
34. Gouvernement du Québec. *Regulation Respecting Forestry Operations*. Québec: Éditeur officiel.
35. M 05-2102, *Interventions de maintenance sur les interrupteurs submersibles isolés au SF<sub>6</sub>* [maintenance work on SF<sub>6</sub>-insulated submersible switches]
36. M 09-2100, *Exigences relatives aux travaux basse tension sous tension sur le réseau souterrain de distribution* [requirements respecting low-voltage live-line work on the underground distribution system]
37. M10-2206, *Vérification d'absence de tension des câbles MT à l'aide d'une cisaille hydraulique* [checking MV lines for voltage using a hydraulic cutter head]
38. ME 2210, *Installation et enlèvement d'un branchement à mi-portée au moyen d'une échelle* [installing and removing a connection at mid-span using a ladder]
39. O EI 1020, *Vérification et maintenance des gants isolants* [checking and maintaining rubber insulating gloves]
40. O EI 2010, *Utilisation, vérification et maintenance des équipements de protection électrique* [using, checking and maintaining electrical protective equipment]
41. TET-SEC-N-0004, *Mise à la terre des véhicules, réservoirs, pièces d'équipement lors de manipulation et des appareils en entreposage dans les installations de transport de la division Hydro-Québec TransÉnergie* [grounding vehicles, tanks and parts when handling and devices in storage in Hydro-Québec TransÉnergie transmission facilities]
42. CAN/ULC-S801: *Standard on Electric Utility Workplace Electrical Safety for Generation, Transmission and Distribution*.

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## **Feedback Form**

If you have any comments about these standards or questions about how to interpret them, please fill in the form below and send it to the Unité – Prévention au travail [work safety unit].

We will acknowledge receipt and the provincial health and safety committee concerned will be notified.

Your request will be reviewed, and any changes will be incorporated the next time the standards are updated.

Name \_\_\_\_\_

Title \_\_\_\_\_

Comments  Interpretation

Section and paragraph \_\_\_\_\_

Description \_\_\_\_\_

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**Tear off and send this form to the address below:**

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