



Canadian Guidelines  
for Safe Excavation  
in the Vicinity of the  
Bell Network

2018

**Bell**

## Introduction

Canada's largest telecommunications company, Bell Canada, provides its customers with all their telecommunications needs, including telephone services, wireless communications, high-speed internet, digital television and voice over IP. Our customers depend on these services at home and at work. They rely upon uninterrupted service to make phone calls, use the internet, manage banking transactions, monitor alarm systems, watch television, and most importantly communicate with emergency services and medical care.

Bell's network consists of buried service wires, copper and fibre optic cables. These cables are placed in a variety of ways: aerial, direct buried, in conduit and in structures. Other facilities include manholes, pedestals, hand-wells, cross-connect boxes, and poles. When the network is damaged, it is costly to everyone involved. It is critical that we all work to protect and maintain the integrity of the Bell Network.

These guidelines for safe excavation are to ensure the protection of the network and the safety of the general public.

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## 1. General Conditions

This document contains Bell's required practices and is current as of the date created. Bell reserves the right to change procedures and processes with respect to its network. Contractor/excavators must also follow all regulations and legislation applicable to their work. Prior to commencing any excavation, contractors/excavators must obtain all municipal approvals and utility locates and maintain these on site.

Excavation shall be carried out in accordance with:  
The applicable Provincial Occupational Health and Safety Act (OH&S) and any regulations that apply under such Act including regulations for construction projects.

## 2. Definitions

### Alternate Locate Agreement

A written agreement between the contractor/excavator and the utility outlining agreed upon terms and conditions for excavation around the Bell utilities. **Currently Alternate Locate Agreements are only available in Ontario.**

### Bell Network

Facilities owned and operated by Bell including direct buried cables, conduits, duct structures, manholes, pedestals, hand-wells, cross-connect boxes, and poles.

### Contractor / Excavator

An individual, company, corporation, partnership, public agency or other entity that digs, bores, trenches, grades, excavates or breaks ground with mechanical equipment, explosives or hand tools.

### Excavation

Any work operation or activity on or under the existing surface that involves disturbance or displacement of the ground.

### Excavation Area

The area identified by the contractor/excavator in which the excavation will take place.

### Hand-Digging

Breaking ground using a shovel or spade not including picks, bars, metal stakes or other earth piercing devices.

### Bell Locate

Comprised of two parts:

- A written report/sketch depicting and describing Bell's Network
- Physical identification on the ground i.e. locate field marks, in the form of orange paint and/or flags. All Bell Locates are performed by an approved Bell Locator (i.e.: locates requested through One Call / Info Excavation or Click Before You Dig)

### Bell Locator

A preferred and approved vendor/technician meeting all Bell requirements as specified in completing Bell Locate requests.

### Locate Area / Locate Limits

The north, south, east or west geographical boundaries of the locate, as identified on the locate sheet. The contractor/excavator may not dig outside the locate area without obtaining a locate for the excavation area.

### Locate Clearance

A clearance is a response from the Bell Locate Centre or a Bell Locator, which indicates that there is no buried or underground network in the located area where the excavation work will be carried out. Bell Screening Centre will issue a locate clearance based on the digging conditions the contractor has provided about their excavation. It remains the responsibility of the contractor to abide by the conditions (area, work operation, depth, equipment) that were provided about their excavation. A further locate must be requested if a different excavation tool is to be used

### Mechanical Excavation Equipment

Any powered excavator, earthmover, and earth piercing equipment including hand-held augers, picks, bars, metal stakes, pins or any other device used to disturb, displace, or break the ground.

### Tolerance Zone

The corridor created by one meter on either side of the locate field marks or one meter on the outside edge of the marked limits of the underground structure.

### Trenchless Excavation

A method used for the installation of an underground infrastructure by directional drilling /boring /percussion drilling or any other means of insertion into the ground.

### Vacuum-Excavation

The use of pressurized water or compressed air to loosen soil from around the Bell Network, followed by suctioning to remove the soil. Bell must pre-approve the use of this technique for each contractor/excavator. Reference to hand-digging within these guidelines includes approved vacuum excavation methods.

### 3. Bell Confined Space Entry for Approved Contractors (Only)

All contractors seeking entry into a Bell confined space, must adhere to the Bell prequalification/entry process, and follow all legal requirements within the jurisdiction, as well as procedures outlined in the Bell Health and Safety Guidelines for Contractors.

Contractors must call for permission to enter any Bell confined space.

| Atlantic         |   |
|------------------|---|
| Nova Scotia      | 1-877-779-3737                            |
| After Hours      | 1-800-561-9680                            |
| New Brunswick    | 1-877-748-2315                            |
| After Hours      | 1-888-658-7444                            |
| Newfoundland     | 1-877-748-2315                            |
| After Hours      | 1-800-561-9680                            |
| PEI              | 1-877-748-2315                            |
| After Hours      | 1-888-658-7444                            |
| Central          |   |
| Quebec           | 1-800-567-6892                            |
| After Hours      | 1-800-567-6892                            |
| Ontario          | 1-877-249-6495                            |
| After Hours      | 1-877-249-6495                            |
| West             |   |
| Alberta          | 1-877-249-6495                            |
| British Columbia | 1-877-249-6495                            |
| Manitoba         | 1-877-249-6495                            |
| After Hours      | 1-877-249-6495<br>(All Western Provinces) |

## 4. Requesting a Locate

### 4.1 Prior to excavating, the contractor/excavator – **MUST call for a locate:**

| Prov. | Requesting a Locate  | Phone Number   | E-mail                  | Days Locate Valid |
|-------|----------------------|----------------|-------------------------|-------------------|
| NS    | Info Excavation      | 1-844-224-8344 | info-ex.com             | 14                |
| NB    | Info Excavation      | 1-844-224-8344 | info-ex.com             | 30                |
| NL    | Info Excavation      | 1-844-224-8344 | info-ex.com             | 30                |
| PEI   | Info Excavation      | 1-844-224-8344 | info-ex.com             | 30                |
| QC    | Info Excavation      | 1-800-663-9228 | info-ex.com             | 30                |
| ON    | Ontario One Call     | 1-800-400-2255 | on1call.com             | 60                |
| AB    | Alberta One Call     | 1-800-242-3447 | alberta1call.com        | 30                |
| BC    | BC One Call          | 1-800-474-6886 | bconecall.ca            | 14                |
| MB    | Click Before You Dig | 1-800-940-3447 | clickbeforeyoudigmb.com | 14                |

When requesting a locate, be prepared to:

- Request only the area that will actually be excavated during the timeframe of the locate
  - Include the company contact information, phone number, address, alternate contact and the contact information for a representative who will be on site
  - Provide information describing the nature of the work, the expected start date, and a request for a site meet when required
  - Non-emergency requests for locates should be made as early as possible. Provide at least five (5) business days prior to the start of the excavation
  - Provide any additional information as required
- 4.2** Contractor/excavators must obtain the completed locate sheet (or clearance number where applicable) prior to commencing any excavation. It is the law in some provinces
- 4.3** Emergency locates are for the loss of essential services or if there is danger to the public. Emergency locates must be called into the locate request

centre, and your request will be actioned within a minimum of two hours. The excavation crew must remain on site

- 4.4** Alternate Locate Agreement: A contractor/excavator working under an Alternate Locate Agreement is still required to comply with the practices and procedures in this document including requesting a locate. **Currently Alternate Locate Agreements are only available in Ontario**
- 4.5** Locates are required when removing sidewalk bays (sections) and curbs
- 4.6** A locate is not required when removing surface layer asphalt material only, but is required when breaking or removing the road bed, road base, or underlying materials
- 4.7** A locate will be provided within the standard number of business days (unless another date has been negotiated). Notwithstanding this, the contractor/excavator should provide as much lead time as possible for planning purposes



**Please Note: Not all utilities are members of One Call / Info Excavation or Click before You Dig. It is the responsibility of the contractor/excavator to contact non member utilities directly**

### **4.8** Locate/ Revalidate Timeframes (Quebec Only)

- Locates are valid for the period identified on the locate request and must be renewed before the locate expires. This applies to upcoming work as well as current activities
- When requesting a revalidation of the locate:
  - Choose “with” or “without” field marks
  - If the work has not yet begun, you may request revalidation without field marks to shorten the response time from infrastructure owners
  - Once your project has begun, you will have your original locate sheet with measurements which will allow you to refresh your field marks

- In Québec, requesting revalidation or relocate with field marks:
  - Bell will not send a locator
  - In order to refresh your field marks prior to starting your work, refer to your original locate sheet
  - It is the contractor/excavators responsibility to hire Bell's approved locate service provider - Promark-Télécon at 1-888-347-3637 (private sector) at your own expense
  - It is the contractor/excavators responsibility to maintain the marks for the life of the project
  - The locate service provider will contact the contractor/excavator when required to meet on site or will provide a locate sheet by e-mail

## 5. The Locate

- 5.1** The contractor/excavator is responsible for reviewing the locate field marks and the locate sheet to verify the information provided covers the excavation area. If it does not, the contractor/excavator should contact the Bell locator directly for clarification
- 5.2** If there is a discrepancy between the locate field marks and the locate sheet or visible network that is not identified on the locate, the contractor/excavator must contact the Bell locator and obtain clarification prior to commencing excavation
- 5.3** Contractor/excavator must maintain the completed locate sheet on site prior to commencing and during any excavation activities
- 5.4** The Bell Locator will mark the site at regular intervals with orange paint and or flags. In addition:
- The locate field marks should clearly indicate the centre line of the individual cables and/or the outside edge of a structure
  - Individual cables should have one field mark
  - Multiple cables should have one field mark if they are in the same trench
  - Multiple cables should have more than one field mark if they are placed in different trenches
- 5.5** The Bell Locator will issue a locate sheet including a sketch that details the underground network within the locate area/locate limit. The sketch will include:
- The number and location of cables/conduits/duct structures
  - A description of the locate area/locate limit
- 5.6** Bell Screening Centre will issue a locate clearance based on the digging conditions the contractor has provided about their excavation. It remains the responsibility of the contractor to abide by the conditions (area, work operation, depth, equipment) that were provided about their excavation. A further locate must be requested if a different excavation tool is to be used
- 5.7** Upon arrival at the excavation site, and prior to work commencing it is the responsibility of the contractor/excavator to ensure that the locate sheets match the work area identified. If a discrepancy is found, contact the locate company for a new locate

**5.8** It is the responsibility of the contractor/excavator to maintain the marks within the work area. Where applicable, a new locate or remark may be required

## **6. 6. Locate Limits/Accuracy**

**6.1** The contractor/excavator **shall not** work outside the locate area/locate limit without obtaining additional locates for the extended area. Ensure the locate sheet covers the entire work area where excavation is to occur. If you need to work outside the locate limits, you are responsible to contact the locate request centre for a new locate

**6.2** A locate is accurate if the Bell Network is identified within the work area and is found within one metre on either side of the field marks. This area is recognized as the "tolerance zone"

**6.3** Electronic line locating is not precise and cables can deviate from their marked position. **For this reason, the contractor/excavator must first fully expose the network by hand before using any mechanical excavation equipment within the tolerance zone**

**6.4** Depth may vary and is not indicated in any way to the contractor/excavator. It is the contractor/excavator's duty to hand dig to the full depth of excavation

## 7. Excavation

### 7.0 Precautions to Take Before Commencing Excavation

- 7.0.1 Never excavate without the locate sheet on site. It is required to determine the location and type of network that is within the path of excavation
- 7.0.2 Always hand-dig to fully expose the Bell Network and never use mechanical equipment when crossing the network or encroaching within one meter on either side of the locate field marks
- 7.0.3 Never assume the depth of the underground network as the depth may vary even across short distances. The contractor/excavator must hand-dig to the full depth of the excavation exposing the indicated Bell Network
- 7.0.4 At no time is a contractor/excavator allowed to reposition, dismantle, or tamper with any Bell Network

### 7.1 Test Holes

#### 7.1.0 Never assume the depth of the underground network

- 7.1.1 The contractor/excavator must dig test holes to expose the underground network on all sides whenever crossing it or working within the tolerance zone parallel to Bell's Network. The test holes must be left open along the entire length of the excavation until the work operation has been completed

### 7.2 Commencing Excavation

Once test holes have been completed and the identified network, as depicted on the locate, has been fully exposed, excavation with mechanical equipment can take place in accordance with the following procedures:

- 7.2.0 Mechanical excavation equipment should only be used in parallel to the exposed Bell Network and must not be used closer than 0.3 metres (1 foot) in any direction from the exposed network

- 7.2.1 The contractor/excavator must exercise extreme caution when working around Bell cables

- 7.2.2 Small, hand-held jackhammers or other hand tools may be used to break concrete or asphalt on road and or sidewalk surfaces as long as they are used carefully. Concrete below the road surface layers should be removed with **extreme caution**. On occasion, Bell's network may be encased in the roadbed, road base, or underlying materials

- 7.2.3 **Road saws should not be used to cut across locate field marks** as the depth of the network may vary even across short distances. Saw cuts must be made outside of the tolerance zone. The contractor/excavator can then hand tunnel from the side towards the locate field marks, to determine the location and depth of the network

- 7.2.4 Mechanical excavating equipment should only be used with extreme caution to remove broken asphalt or concrete

### 7.3 Vacuum Excavation

- 7.3.0 Locates must be obtained prior to commencing any excavation including vacuum excavation. This equipment can only be used by qualified operators who are trained in its safe use in the vicinity of the Bell Network

- 7.3.1 Approved vacuum excavation may be used as an alternative to hand-digging to the full depth of excavation. Vacuum-excavation is recognized by Bell for being a safe excavation method (refer to the locate request centre web site for additional information)

#### 7.3.2 Guidelines/Requirements

- The maximum water pressure to be used in the vicinity of buried Bell Network during excavation shall not exceed 17250 kPa (2500 psi). Within the tolerance zone the water pressure shall be reduced to a maximum of 10350 kPa (1500 psi)
- The wand shall never remain motionless during excavation. Aiming directly at the network must be avoided at all times. A distance of 20 cm (8") shall be maintained between the end of the pressure wand nozzle, the network, and/or the subsoil
- All pressure measurements are to be taken at the vacuum excavation machine, truck or pump



- The nozzle must never be inserted into the subsoil while excavating above the network
- Only use vacuum excavation equipment that has been specifically designed for use around buried network
- An alternating multi-stream neoprene tipped nozzle must be used with the vacuum excavation unit to ensure that a concentrated stream of water is not directed at the buried network
- A device capable of stopping the excavation on demand, such as a trigger or valve, must be installed on the wand
- **If heated water is used during excavation, the temperature of the water shall never exceed 115 F (45 C)**

**7.3.3** The use of high pressure water equipment in an occupied duct is not permitted

#### 7.4 Frozen Ground Excavation

Using Hydro Vacuum is a Canadian Common Ground Alliance practice. The preferred method for excavating within the tolerance zone around any underground utility in frozen ground, is to use a hydrovac with heated water not exceeding 45C at the wand tip. Conventional excavation methods pose a risk to buried facilities if the facility is surrounded by frozen ground. The use of conventional mechanical excavation equipment can not only damage plant via direct contact but can also move the frozen ground encasing plant; potentially causing damage

#### 7.5 Directional Bores / Torpedoes and Trenchless Excavation

Directional bores and torpedoes are excellent excavation tools but working with them involves certain risks. Because the equipment operator cannot visually follow the progress of the tools, contractor/excavators are required to:

- Dig test pits to the full depth of the excavation to expose all of the Bell Network in the path of boring/torpedoing equipment
- Expose the top and sides and then hand tunnel underneath to ensure that there are no conflicts with the work operation
- Leave all test pits open to monitor the equipment's progress
- Backfill once the boring or torpedoing work is finished

#### 7.6 Use of Heavy Equipment

- No heavy equipment can be permitted on top of Bell manholes and structures without going through Bell Engineering for a proper load bearing protection plan. Contact your local Bell Engineering area prime for further information

- No heavy vibrating equipment can be used within 10 metres of a Bell manhole/structure. All work operations must be sent to Bell Engineering for a proper protection drawing/plan
- When a Bell manhole lid has been removed, there can be no driving with any type of equipment over the Bell infrastructure, this could result in a damage

#### 7.7 Supporting Underground Structures

**7.7.0** Never undermine the Bell Network. Cables may be encased in heavy concrete or clay tile structures and the unsupported weight of these may cause the network to collapse or slide down into the excavation site

- Operational guidelines for supporting underground structures can be obtained from the Bell Engineering team

**7.7.1** When trenching parallel and in proximity to Bell's network, the contractor/excavator is required to place supports along the entire length of the excavation area to prevent the network from collapsing

**7.7.2** When blasting in proximity to Bell's network:

- Bell Engineering must to be notified prior to the blasting operation. Overhead and underground networks must be identified and protected within the blast area
- Operational guidelines for blasting can be obtained from the Bell Engineering team

#### 7.8 Backfilling

- Excavation where the Bell Network has been exposed must be backfilled with clean fill or granular material
- Always backfill to provide support under the Bell Network
- Never leave sharp materials near the network, as this could eventually wear through the protective outer layer and cause service failures in the future
- Backfilling should be performed without using tamping equipment directly on the exposed Bell Network

**8. Personal and Public Safety (contact information see page 20)**

**8.1** Members of the excavating community have the greatest responsibility to ensure their own safety and that of the public. When working around the Bell Network, it is important to understand and recognize any potential risks and act accordingly

**8.2** The Bell Network consists of two main types of cables, copper and fibre optic. Each of these has its own potential hazards. Avoid touching or handling these cables if they have been damaged

- Fibre optic cable is made from a combination of plastic and glass. Each fibre is about as thick as a human hair. Due to its delicate structure, a small piece of the fibre could break off on one's hands or gloves. These fragments could cause serious injury if they were to enter one's eyes. Never look directly into the end of a damaged fibre optic cable. A laser light is transmitted through the fibre optic cable and can cause irreparable damage to the retina. Fibre optic cable is enclosed in a rigid metal sheath that can also be very sharp and dangerous
- Copper cable may consist of lead or poly outer sheath, but the inner layer has an aluminum sheath with very sharp edges and may cause injury if not handled correctly. It is recommended that you do not touch or move the cable/s, however, if required to handle a damaged cable/s, always wear protective leather gloves. Further, some of Bell's copper network carries significant electric current and the contractor/excavator must take precautions accordingly

**8.3** Any damaged cable/s should remain exposed, however, the pit should be securely covered and barricaded, to ensure the safety of the public while work is in progress or if a site is left unattended. This will ensure that no one handles the damaged cable/s and, more importantly, that no one falls into the pit

**9. Colour Code for Locate Field Marks**

| Colour | Type of Facility/Indicator  | Munsell Notations   |
|--------|---|---|
| Red    | Electric – Power line, cables, conduit & lighting cables  | Safety Red 7.5R 4.0/14  |
| Yellow | Gas, Oil, Steam, Petroleum, Compressed air, Gases and other hazardous liquid or gaseous materials | Safety Yellow 5.0Y 8.0/12   |
| Blue   | Potable Water   | Safety Blue 2.5P.B  |
| Orange | Communications-Alarm, Cable, TV, Signal Lines, Cables & Conduit                                   | Safety Orange 5.0YR 6.0/15  |
| Green  | Sewer and Drain Lines   | Safety Green 7.5G 4.0/9   |
| Purple | Reclaimed/treated water, irrigation & slurry Lines  |   |
| Pink   | Temporary survey markers  |   |
| White  | Proposed excavation   | Proper paint for contractor/ excavators and homeowners to show the proposed work area |

## 10. To Report a Damage

| Province | Phone Number to Call |
|----------|----------------------|
| NS       | 1-866-425-4268       |
| NB       | 1-844-224-8344       |
| NL       | 1-877-748-2315       |
| PEI      | 1-844-224-8344       |
| QC       | 1-800-663-9228       |
| ON       | 1-844-225-5550       |
| AB       | 1-800-242-3447       |
| BC       | 1-800-474-6886       |
| MB       | 1-800-940-3447       |

Provide the exact municipal address and nearest intersection, phone number of an affected customer, or a fixed reference point, such as a hydro pole number. The locate request (if applicable) number for excavation is also required

- 10.1 NEVER bury the damaged network no matter how minor the damage may appear
- 10.2 NEVER leave the excavation pit open to the public. Place barricades and protective plates as required
- 10.3 Do not handle the damaged cable
- 10.4 Bell will notify the contractor/excavator when all network restoration is complete

## 11. Canadian Common Ground Alliance:

Bell is proud to support the Canadian Common Ground Alliance. Guides and tools available at <http://www.canadiancga.com>

- Tools available:
  - DVD's (for safe excavation methods)
  - List of best practices
  - Excavation checklist
- Best practices include:
  - Planning & Design
  - Locating and Marking
  - Excavation
  - Mapping
  - Compliance
  - Public Education
  - Reporting and Evaluation

**Personal safety starts with you and public safety depends on you!**

NOTES: