

Ontario

# **Guidelines for Safe Excavation in the Vicinity of the Bell Network**

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## 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 cables 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. Excavators must also follow all regulations and legislation applicable to their work. Prior to commencing any excavation, excavators must obtain all municipal approvals and utility locates and maintain these on site.

Excavation shall be carried out in accordance with:

- The Occupational Health and Safety Act (OH&S) and Regulations that apply under this Act including Regulations for Construction Projects.

## **2. Definitions**

### **Alternate Locate Agreement**

Means permission to excavate, subject to terms and conditions outlined by a written agreement between the contractor or excavator and the utility.

### **Bell Network**

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

### **Contractor or 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 excavator in which the work operation will take place.

### **Hand-Digging**

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

### **Locate**

Physical identification on the ground, i.e. locate field marks, and the associated locate sheet or clearance sheet indicating the position and type of the underground network. Locate field marks for Bell will be in the form of orange paint, flags, and/or stakes.

### **Locate Area / Locate Limit**

The North, South, East, West geographical boundaries of the locate as identified on the locate sheet beyond which the excavator may not dig.

### **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.

**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 excavator. Reference to hand-digging within these Guidelines includes approved vacuum excavation methods.

### 3. Bell Confined Space Entry

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.

Ontario..... 1 – 877 – 249 – 6495

## 4. Requesting a Locate

- 4.1 Prior to digging, driving stakes, or using any other excavating methods, the excavator

### **MUST contact the One Call Centre for a locate... IT'S FREE!**

When requesting a locate, the excavator should 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. Estimated lead time for locate requests is listed on page 22. Provide at least five (5) business days prior to the start of the excavation.
- 4.2 Excavators must obtain the completed locate sheet or clearance number prior to commencing any excavation. It is the law in some provinces.
- 4.3 Emergency locates are for the loss of essential service or if there is danger to the public. Emergency locates must be called into the One Call Centre and the locate service provider will respond within a minimum of two hours or as soon as possible. The excavation crew must remain on site.
- 4.4 Alternate Locate Agreements: An excavator working under an Alternate Locate Agreement is still required to comply with the practices and procedures in this document including requesting a locate. This process is currently available in the Province of Ontario **Only!**
- 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 The locate service provider will provide a locate within the number of business days listed on page 22 under the heading of “**General Guidelines for locates**” of the request unless another date has been negotiated. Notwithstanding this, excavators should provide as much lead time as possible for planning purposes.

**Not all utilities are members of the One Call Centre, listed on page 20. It is the responsibility of the excavator to contact non-member utilities directly.**

## 5. The Locate

- 5.1** The 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 excavator should contact the locate service provider 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 excavator must contact the locate service provider and obtain clarification prior to commencing excavation.
- 5.3** Excavators must maintain the completed locate sheet on site prior to commencing any excavation activities.
- 5.4** The locate service provider will mark the site at regular intervals with orange paint, flags, and/or stakes. 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 trench lines.
- 5.5** The locate service provider will issue a locate sheet including a sketch that details the underground network within the locate area/locate limit. The sketch will include:
- the location of the network with tie-in measurements from the
    - edge of straight fixed reference points, such as curbs, sidewalks, etc
    - centre of curved fixed reference points, such as fire hydrants, poles etc
  - the number of cables/conduits/duct structures
  - a description of the locate area/locate limit.
- 5.6** Bell's screening centre or the locate service provider will issue a clearance number where there is no underground network in the vicinity of the proposed excavation. This clearance number sheet must be kept on site for future reference. Bell's screening centre will also issue a

clearance when hand digging is involved. Upon arrival at the excavation site prior to beginning the excavation, the excavator checks for readily visible signs of underground facilities, such as pedestals, risers, meters, new trench lines and service feeds and will contact One Call prior to starting their excavation for a new locate if such facilities are found.

- 5.7** Paint marks may fade and flags/stakes may be moved or removed. The excavator shall maintain the locate field marks during the life of the project to ensure that they remain clear and visible.

## 6. Locate Limit/Accuracy

- 6.1 The excavator **shall not** work outside the locate area/locate limit without obtaining additional locates for the extended area.
- 6.2 A locate is accurate if the cable or structure is found within one meter 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 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 excavator.

## 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 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 excavator must be prepared to hand-dig to the full depth of the excavation exposing the indicated Bell network.
- 7.0.4 At no time is an excavator allowed to reposition, dismantle, or tamper with any Bell network.

### 7.1 Commencing Excavation

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

- 7.1.0 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.
- 7.1.1 The excavator must exercise extreme caution when working around high priority cables.
- 7.1.2 Small, hand-held jackhammers or other hand tools may be used to break concrete or asphalt on road 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.
- 7.1.3 **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 and the excavator

can then hand tunnel from the side towards the locate field marks to determine the location and depth of the network.

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

## **7.2 Test Holes**

### **7.2.0 Never assume the depth of the underground network.**

- 7.2.1** The 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 until the work operation has been completed.

## **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.

### **7.3.2**

- The maximum water pressure to be used in the vicinity of buried Bell network during excavation shall be 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.

**7.3.4** Frozen Ground Excavation – Using Hydro Vacuum

As accepted by the ORCGA Best Practice

A preferred method for excavating within the tolerance zone around any underground utility in frozen ground is to use a hydrovac designed and built for this purpose.

Conventional excavation methods in frozen ground 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 frozen ground encasing plant; potentially causing damage. The best practice for excavating in the tolerance zone in frozen ground is to use a hydrovac with heated water not exceeding 45 degrees C at the wand tip. This is currently the practice used by many vacuum excavators.

**7.4 Directional Bores and Torpedoes**

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, 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.

**7.5 Supporting Underground Structures**

**7.5.0** 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.

- Supports should be placed at no greater than 1.5 metres (5 ft) intervals.

- Operational guidelines for supporting underground structures can be obtained from Bell.

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

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

- Bell must 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 Bell.

## **7.6 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

- 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 risk 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 and 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 could 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. Always wear leather protective gloves when required to handle a damaged cable. Further, some of Bell's copper network carries significant electric current and excavators must take precautions accordingly.
- 8.3** Any damaged cable 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 and, more importantly, that no one falls into the pit.

## **9. When a Damage Occurs**

**9.1** Immediately call **1-844-225-5550** and report the damage.

- Select the “calling to report a damage” option.
- 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 number for excavation is also required.

**9.2** NEVER bury the damaged network no matter how minor the damage may appear.

**9.3** NEVER leave the excavation open to the public. Place barricades and protective plates as required.

**9.4** Do not handle the damaged cable.

**9.5** Bell will notify the excavator when all network restoration is complete.

## 10.0 CONTACT - for locate requests

Ontario One Call Centre 1-800-400-2255 [www.on1call.com](http://www.on1call.com)

### 10.1 General Guidelines for locates

	Notice prior to Locate request	Locate completion timeframe
Ontario	5 days	5 days

**11. Report a Bell damage contact:**

**Ontario office**

1-844-225-5550

**12. Canadian Common Ground Alliance:**

To learn more about Damage Prevention Best Practices, visit the Canadian Common Ground Alliance (CanadianCGA) website at:

**Canadian Common Ground Alliance Membership:**

Canadian Common Ground Alliance

**CCGA – [www.canadiancga.com](http://www.canadiancga.com)**

**OR**

Ontario Regional Common Ground Alliance

**ORCGA – [www.orcga.ca](http://www.orcga.ca)**

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

**NOTES:**

### 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
<b>Orange</b>	<b>Communications- Alarm, Cable, TV, Signal Lines, Cables &amp; Conduit</b>	<b>Safety Orange 5.0YR 6.0/15</b>
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 excavators/contractors and homeowners to show the proposed work area

