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| **Department:** | **Construction** | **Safe Work Procedure** |  |
| **Subject:** | **Digging Around Underground Utilities**  |

**Digging around Underground Utilities**

**Background:**

Excavating around underground utilities is a daily task for many employees. The potential for serious injury or death to yourself and the public is great if proper safe work procedure and OSH regulations are not followed. Owners’ of utilities have independent rules of approach and procedures. Knowing and conforming to these rules is essential for maintaining a safe work environment. These rules and regulations have been developed in response to incidents in the past to prevent reoccurrences.

**Worksafe BC OSH regulation 20.79 Underground utilities**

(1) Before excavating or drilling with powered tools and equipment, the location of all underground utility services in the area must be accurately determined, and any danger to workers from the services must be controlled.

(2) Excavation or drilling work in proximity to an underground service must be undertaken in conformity with the requirements of the owner of the service.

(3) Pointed tools must not be used to probe for underground gas and electrical services.

(4) Powered equipment used for excavating must be operated so as to avoid damage to underground utility services, or danger to workers.

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

**Hazards:**

Damage to underground utilities is the main cause of exposure to hazards. Knowing what underground facilities are located in or near you digging jobsite is essential if dangerous, deadly, or destructive accidents are to be avoided. These hazards include: electricity, gas, fire, water, chemicals, toxic atmospheres, biohazards, asbestos exposure, disruptions of essential services etc. Other hazards associated with excavation of underground utilities include working with mobile equipment, confined spaces, working in excavations even overhead hazards. Awareness and application of procedures specific to these hazards should be followed.

**PPE Required:**

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| * Hard hat
 | * Eye & ear protection
 | * Safety boots
 | * Hi-vis vest or coveralls
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**Pre Set-Up:**

**Call before you dig:** Contact **BC ONE CALL,** a non profit organization developed to coordinate the availability of information on underground facilities. BC one call service is available 24/7 365 days a year. They are available for emergency response.

* When you contact BC ONE CALL:
	+ Contact 3 full work days prior to excavation
	+ Use “fax locate request” form when convenient
	+ Provide exact location, start date and details of planned excavation
	+ Register with BC1Call for a personal identity number
* BC ONE CALL will:
	+ Use their mapping system to locate your dig site and identify all utilities near the site.
	+ Provide a numbered reference BC1Call ticket and transmit the information about the proposed activity to the member companies with facilities in the work area
	+ Advise you to contact any owners of facilities, in the proposed excavation area, who are not members of BC1Call
	+ Inform you of your liabilities
* Member companies will then contact you about:
	+ Where their facilities and abandoned facilities are buried in the proposed excavation area.
	+ Rules and regulations regarding excavation around their utilities
	+ Any permits required to comply with their rules and regulations – you must then apply directly to the owner of the utility for the specified permits
	+ Clearance to dig if they have no facilities in the work zone

**Compile all information received from utilities in a Pre Excavation file or Pre X**

**Pre Excavation File or Pre X;**

* Must be on site before disturbing ground
* Should have a dimensional site plan of all utilities in the excavation area
* Includes clearance from member utility owners whose facilities are not in the excavation area
* Contains necessary permits to conform with the rules and regulations of concerned utilities
* Has an expiry date, work must commence within 10 days of start date or the application process must be repeated

**Mark Utilities:**

* Have a trained and qualified locater find and mark all utilities in the work zone
* Some utility owners will have their own locater physically mark and document their facilities on site
* Use universally accepted colours for marking utilities
* Repaint and maintain all marks for the duration of the job

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| Red | electric power lines, cables, conduit, and lighting cables |
| Orange | telecommunication, alarm or signal lines, cables, or conduit |
| Yellow | natural gas, oil, steam, petroleum, or other gaseous or flammable material |
| Green | sewers and drain lines |
| Blue | drinking water |
| Violet | reclaimed water, irrigation, and slurry lines |
| Pink | temporary survey markings, unknown/unidentified facilities |
| White | proposed excavation limits or route |

**Procedure: The Dig**

**Hand Expose Zone:** Most facility owners conform to the following hand dig exposure zone. This recommended hand expose zone applies to all buried facilities except high-pressure pipelines. Know the specific limits of exposure for the utility you are excavating

* The hand expose zone is a distance 1 metre either side of the locate marks
* Excavation with mechanical equipment must not proceed until the buried facility has been hand exposed and is clearly visible
* High pressure pipelines require permits which provide specific directions regarding excavation

**Hydrovacing:**

* Is faster and easier than hand digging
* is an acceptable substitute to hand digging for exposing many utilities
* is still considered mechanical excavation and pre X is required

**Digging with Mechanical Equipment:**

* No excavating around a utility should occur without a spotter
* Establish acceptable signals between spotter and operator
* Spotter must be visible to the operator stand in a safe location clear of the swing zone
* Spotter is responsible for directing and signalling the operator when the operator’s view of the utility is obstructed.
* Hand dig when necessary to expose the utility
* Know safety procedures for working in excavations

**If damage is caused to a Utility:**

* Turn off all equipment
* Eliminate all sources of ignition
* Radio “Nanaimo One Emergency” with details of service damage
* Evacuate crews and bystanders to a safe distance
* Follow the instructions of Emergency Personnel
* Assist as requested

Worksafe BC OHSR **4.18 Notification of utilities** states:

“An employer, whose work activities result in a hit or damage to a pipeline, buried electrical cable or other such utility must notify the owner of the utility without delay.”

**Summary:**

Digging around underground utilities is dangerous because the hazards are not obvious or clear. These procedures have been developed to allow workers to identify hazards and complete their work in a safe manner. The rules, regulations and procedures involved here were created to prevent the mistakes of the past from happening in the future.

* Know the Worksafe BC regulation 20.79 excavation of underground utilities
* Do not dig without a PRE X
* Be aware of hazards associated with underground utilities
* Wear your hard hat, safety glasses, gloves, work boots and high visibility clothing
* Use hand exposure methods
* Keep eye contact and maintain communication with machine operators
* Notify the owner of a utility of damage.

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| **Revised: 2010-Jul-19** | **Approved by: Dave Benere** |