	GROUND DISTURBANCE All-A0A-00-000-HST-0005	Retention Code: CG01 - CA
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Document History

Date	Approved by	Change Summary
February 2020	David Reaich	Usability Mapped- Issued for Use

About this Standard.

Purpose

The purpose of this standard provides the requirements to manage work involving ground disturbance.

1. Ground Disturbance Overview.

Ground Disturbance

Ground disturbance includes any activity that results in the disturbance of the earth, for example:

- Drilling
- Excavating
- Clearing
- Grading
- Pile driving
- Tunneling
- Topsoil stripping.



NOTE: Includes crossing buried pipelines or other buried infrastructure off a portion of permanently graveled road.



NOTE: For National Energy Board (NEB) lines - includes crossing buried pipelines or other buried infrastructure at a location off the travelled portion of a public highway.

Ground Disturbance does not include

Ground disturbance does not include the following activities:

- Agricultural cultivation to a depth less than 45 cm
- Routine, minor road maintenance
- Hand digging to a depth of less than 30 cm, that does not permanently remove cover over a buried facility
- Use of Low Ground Pressure Equipment (e.g. ATV, Argo).

Defenses Required

Defenses are required to address the following examples as needed:

- Unsafe atmospheres
- Open excavations and unstable ground
- Equipment movement and SIMOPS and/or concurrent operations
- Contaminated soil
- Electrocutation/shock.

2. Ground Disturbance Planning

2.1. Permit and Approval Requirements.

Ground Disturbance Permit Required

A permit is required for work activities defined as ground disturbance and may include a Work Permit or Pre-Job Hazard Assessment as defined by local operating areas. The permit includes:

- Hazards and associated defenses
- Steps used to identify and mark underground facilities
- Distance that must be maintained by mechanical equipment
- Communication system between spotter and mechanical equipment
- Pipeline sizes, pressures and contents as required, include SDS.

Ground Disturbance Approval


An approval is required prior to conducting any ground disturbance as follows:

Approval Type	Obtain From	Situation
Crossing Agreement	Third Party Facility Owner	Agreement to cross underground facilities between facility owner and the company conducting the ground disturbance.
Proximity Agreement	Third Party Facility Owner	Agreement when working within 30 m of another company's above- or below-ground facilities.
Ground Disturbance Permit	Permit office or as per local procedure	Permit allowing ground disturbance activities. Generally used in situations where the company is the underground facility owner and the one conducting the ground disturbance.

Ground Disturbance Checklist

A checklist is used with a work permit as a final check prior to starting work and aids with pre-job discussions. The checklist is a final verification that includes:

- Line locate drawing review
- Ensuring all documentation is available and reviewed
- Daylighting is completed as required
- Provincial one-call and buried facility owner notification is complete.

 **NOTE:** The CPC Ground Disturbance Checklist or equivalent may be used.

2.2.Third Party Approval

Crossing Agreement Required

A Crossing Agreement is required prior to crossing a pipeline with a vehicle, mobile equipment, or new underground facilities.

A crossing agreement obtained from a pipeline owner must contain the following information:

- Placement of new facilities / equipment in relation to existing facilities
- Support requirements for exposed facilities
- Distance to maintain between underground facilities
- Distance to keep mechanical equipment and protection requirements for UG facilities (i.e. swamp mats)
- Backfill notification and inspection requirements
- Crossing inspection report requirements.
- Frequency of travel and equipment type.



NOTE: In **Alberta**, approval is not required if the vehicle/equipment is used for farming purposes, the vehicle is an Off-Highway vehicle defined in the traffic Safety Act or the vehicle is classified as a passenger vehicle rated <3/4 ton.



NOTE: For **NEB lines**, approval is not required when the crossing is for agricultural activities and the loaded axel weight is within approved limits, and the crossing has not been identified as a location where agricultural activity could impair pipeline safety.

Proximity Agreement

A Proximity Agreement is required when working within 30 meters of another company's above- or below-ground facilities and requires:

- Type of work and equipment permitted
- Notification timeline and process.


2.3. Notification Requirements


Provide notification to a facility owner

When proposing to conduct ground disturbance in proximity to a buried facility, provide notification to a facility owner including:

- Work, search or controlled areas
- Scope of work
- Schedule of work (begin and end date)

Notification must be made a minimum of 2 working days and not more than 7 working days before commencing the ground disturbance.


 **NOTE:** Notification is commonly performed through provincial One-Call systems; however, if facility owner does not subscribe to One-Call, an alternative method must be used.

 **NOTE:** For NEB licenses utilities, NEB notification must be received by the facility owner a minimum of 3 working days before ground disturbance start.

Facility owner Actions

Upon receiving notification to conduct a ground disturbance, the facility owner will complete the following actions:

- Provide underground facility information within the ground disturbance work area plus 30 meters
- Respond to the request within 3 working days
 - Schedule permitting and/or site walk down as necessary
 - Inform requestor with written safety requirements
 - Clearly mark the underground facilities with explanation.
- Within 21 working days (10 working days for NEB)
 - Provide reason if refusing to provide consent
 - Provide conditions of consent
 - Clearly mark the underground facilities
 - Provide locate report and explanation of any significant markings.
- Inspect all exposed pipe prior to any backfilling.

 **NOTE:** For NEB regulated lines, the pipeline owner must come to site to locate and mark and provide report to locate initiator.

2.4. Underground Utility Search

Search for
Underground
Utilities

Search for underground utilities in the ground disturbance work area plus 30 meters by reviewing the following records:

- Survey plans and land titles
- Provincial regulator and NEB records
- One-Call system
- Facility road signs
- Operations personnel
- Surface Land Department
- As-built drawings
- Line Locator search.



NOTE: The process of accounting for all lines in the area must be employed. Positively verify all potential sources of underground utilities.



NOTE: In areas where all reasonable steps have been taken to ensure no underground facilities exist, a risk-based approach may be taken with respect to line location and obtaining a third party to locate lines.

Search may not be
Required

An underground utility search may not be required in the following examples:

- Areas where no historical ground disturbance has occurred
- Returning to an abandoned site with no signs of new activity
- Tree planting using only hand equipment.

Line Locating &
Marking

Line Locating and marking of underground utilities in the work area and within 30 meters as follows:

- Use the One-Call system
- Ensure all lines are accounted for
- Use color coded stakes and paint to mark underground facility locations.


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Provincial One-Call System

Provincial One-Call System and notification timeline:

Province	Phone Number	Notice Required
Alberta	1-800-242-3447	2 days
British Columbia	1-800-474-6886	3 days
NEB	Through Provincial One-Call	3 days

	NOTE: Not all companies are registered with Provincial One-Call Systems
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3. Field Execution of Ground Disturbance

3.1. Daylighting Requirements.

Daylighting is Required

Daylighting is required when:


- Mechanical excavation is planned within 5 m of an underground facility
- To allow for visible inspection of an underground facility.

 **NOTE:** Daylighting is not required if maintaining a distance >5 m from an underground facility.

Facility Owner

The facility owner or designee must be contacted before daylighting to arrange exposure or confirm acceptable exposure methods such as:

- Hand exposure and hydrovac
- Method to identify the facility's depth, size and direction
- Potential damage to coatings and methods of soil disposal when using air or water.

 **NOTE:** Use bonding mats and associated procedures if hydrovacating buried electrical lines.

Exposed facilities


Exposed facilities must be protected to prevent damage from slough-in material or objects falling in the daylight hole.

All daylight holes must be marked to distinguish them from other excavations.

3.2. Mechanical Excavation

Mechanical Excavation >5 m from underground facility

Mechanical excavation may be used up to the edge of a right of way (ROW) or up to 5 m from an underground utility.

 **NOTE:** If the ground disturbance and search area is free from underground facilities, the work may proceed without the presence of a ground disturbance supervisor.

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Mechanical
Excavation <5 m >1
m from underground
facility

If mechanical excavation is required within 5 meters of an underground facility, but not closer than 1-meter (3 meters for NEB-regulated lines) daylighting of the facility is required and:

- Work must be completed under the direct supervision of a CPC Ground Disturbance Supervisor
- If contact with an underground facility is possible, the GD Supervisor must direct the equipment operator and spotter
- Supervisor and spotter will remain visible to equipment operator.

Mechanical
Excavation <1 m >30
cm from
underground facility

Mechanical excavation may be undertaken < 1 meter but > 30 cm from an underground facility provided that:

- The facility is an electrical cable that has been grounded and isolated
- The facility is a pipeline that has been depressurized
- The work is under the direct supervision of the GD supervisor and facility owner.



NOTE: If a line is to be abandoned and removed, excavation may be done closer than 30 cm.



CAUTION: Excavation within 1 meter of an underground facility that is pressurized or energized requires a documented risk assessment and specific work procedure.

Angle Crossing

Angle crossings may be necessary when unable to cross utilities, pipelines, or cables at 90 degrees. The following process applies:

- Locate center line of new underground facility on the ROW
- Daylight the crossing point.
- Daylight and mark existing pipeline.

Do not use mechanical excavation within 1 m of the existing pipeline except under direct visual supervision of the GD supervisor.

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Entering trenches or excavations

Before entering a trench or excavation, the GD Supervisor must ensure workers are protected from cave-ins and sloughing as follows:

- Cut back walls reducing vertical height to less than 1.5 m in Alberta, or 1.2 meters in British Columbia
- Shore and back-slope excavations per provincial regulations
- For trenches with depth greater than 1.5 m in Alberta, or 1.2 meters in British Columbia, establish a safe entry and egress point within 8 meters of the worker
- If a ladder is used for entry/exit, it must extend 1 meter from the top of the trench.



CAUTION: when shoring and sloping is not practical, temporary protective structures must be installed, maintained and dismantled at the specifications of a P.Eng. for as long as access and egress is required.



NOTE: Freezing, grouting, and/or stabilizing must be designed and approved by a P.Eng.



NOTE: OHS regs must be followed to avoid danger of wall collapse.

Spotter

A spotter is required for all ground disturbance in proximity to underground facilities such as when work occurs in the ROW of a facility or within 5 meters of a facility when no ROW exists.

A spotter must be competent in:

- Ground disturbance Life Saving Rule
- Surface staking and line locating practices
- Signaling and communication processes
- Emergency processes
- Soil conditions.

4. Inspection and Backfilling

Facility Inspection requirements

The CPC ground disturbance supervisor will oversee facility inspection requirements as follows:

- Complete crossing inspection report
- Complete pipeline excavation inspection form (for CPC operating pipelines)
- Contact facility owner of third-party facilities prior to backfilling.

Third Party Facilities

Once notified, the facility owner for third party pipelines will:

- Inspect their facility for damage
- Provide written record of the inspection.



NOTE: If facility owner cannot be contacted, document the steps made to request a backfill inspection.



NOTE: If a backfill is required before facility owner inspection, it is recommended an inspection be completed by a third party.

Backfill Material

Backfill material consists of:

- Spoil removed from the excavation during exposure operations
- Specific procedures outlined in the crossing agreement.



NOTE: Hydrovac test points must be backfilled with appropriate fill based on landowner approval.



NOTE: Ensure backfill material is free from rocks or debris that may damage underground facilities.

5. Contacting an Underground Facility

If contact is made

An immediate stop work, and activation of applicable emergency plans will occur if contact is made that results in:

- Puncture or crack in the facility
- Scratch, gouge, flattening or dent on the surface
- Damage to the protective coating or insulation.



WARNING: If a line contact is suspected but requires additional verification, all work will cease until directed by the CPC Construction Supervisor.



WARNING: If contact is made but no damage is evident, an inspection is required.

Reporting requirements

The following reporting is required:

- CPC GD Supervisor is notified immediately
- CPC GD supervisor will notify provincial regulator and facility owner.

NEB reporting requirements

When working near NEB-regulated lines, reporting requirements are as follows:

- Contact or damage
- Construction of NEB facility without owner consent or board authorization
- Ground disturbance in the controlled area without owner or board authorization
- Crossing pipeline with a vehicle or mobile equipment without consent of owner
- Work completed that does not comply with NEB pipeline damage prevention regulations.

References.

Reference the following documents as required:

Document Name	Document ID
Crossing Inspection Report Form	
Ground Disturbance Checklist/Permit.	
Crossing Checklist.	
Confined Space Entry Code of Practice	
Pipeline Act and Regulations and/or other applicable governing body	