



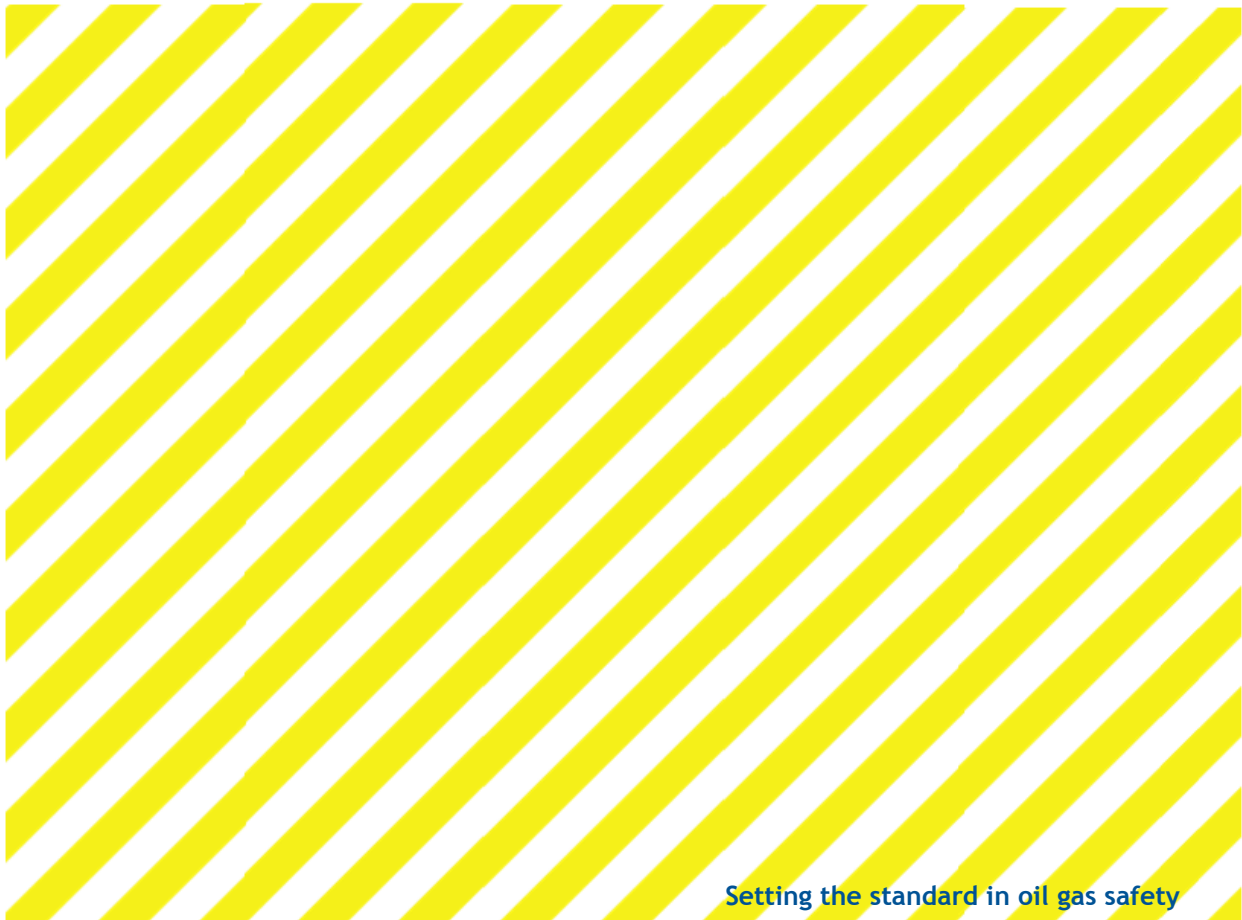
# **GROUND DISTURBANCE AND DAMAGE PREVENTION**

## A Program Development Guideline

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- Canadian Association of Petroleum Producers (CAPP)
- Canadian Energy Pipeline Association (CEPA)
- Explorers and Producers Association of Canada (EPAC)
- Petroleum Services Association of Canada (PSAC)

## ABOUT ENERGY SAFETY CANADA

Energy Safety Canada is the upstream oil and gas industry's advocate and leading resource for the continuous improvement of safety performance. Our mission is to help companies achieve their safety goals by providing practices, assessment, training, support, metrics and communication.

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This document as well as future revisions and additions, is available from:

Energy Safety Canada  
5055 11 Street NE  
Calgary, Alberta T2E 8N4

TF 1 800 667 5557  
T 403 516 8000  
F 403 516 8166

[EnergySafetyCanada.com](http://EnergySafetyCanada.com)



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## PREFACE

### PURPOSE

This guideline has been written specifically for the oil and gas industry with the intended goal of preventing damage to all buried facilities.

This guideline will provide assistance and guidance to users in the development of an effective Ground Disturbance Damage Prevention Program (GDDPP) that will have a positive impact on worker safety, public safety, the protection of the environment, and preservation of the integrity of buried facilities.

This guideline replaces the Drilling and Completions Committee (DACC) sanctioned Ground Disturbance and Damage Prevention Industry Recommended Practice (IRP) Volume 17 - 2009.

### INTENDED AUDIENCE

This guideline is intended for use by, but not limited to, the following:

- Buried facility owners who need to establish conditions for those working near buried facilities to ensure the integrity of their facilities
- Project owners who need to impose conditions on those who are undertaking ground disturbance activities on their behalf
- Ground disturbers responsible for conducting ground disturbance activities and demonstrating due diligence
- Others involved in the ground disturbance process such as regulators, one-call centres, locators and trainers whose practices support the ground disturbance

### LIMITATIONS

This guideline has been developed with reference to industry related publications. However, it is not exhaustive. The reader should defer to published standards and applicable legislation for further guidance. This document is intended as a guideline and not as a compliance standard.

### DETAILS ON SPECIFIC TASK AND PROCEDURES

This guideline does not provide a comprehensive procedure on the specific tasks required to execute a ground disturbance. These must be addressed through existing organization-specific procedural documents applicable to the GDDPP. Specific details may vary according to jurisdiction; users shall ensure that procedures are appropriate for their scope of work and work locations. Owners, prime contractors, employers, and workers should be aware of all applicable regulatory requirements and their responsibilities under occupational health and safety legislation.

Ground disturbers must be familiar with and follow regulatory requirements as well as the specific requirements of buried facility owners.

## **SPECIFIC REGULATORY REQUIREMENTS**

The ground disturbance damage prevention process is a shared responsibility of all involved stakeholders; however, there are regulatory agencies that have differing requirements measuring compliance of the same or similar ground disturbance damage prevention process.

It must be noted that these regulatory requirements are the minimum standard required, and many operators/owners of buried facilities impose stricter requirements for workers conducting ground disturbance activities near their buried facilities.

Each provincial and federal occupational health and safety (OHS) jurisdictional authority has a well-established occupational health and safety regulatory framework. The OHS legislation in each jurisdiction defines the responsibilities for employers, supervisors and workers to work safety and follow safe work practices. It is the employer's legal obligation to ensure current regulatory requirements are adhered to. This includes the required qualifications and competencies of all supervisors and workers.

## **REVISION PROCESS**

Energy Safety Canada (ESC) Guidelines are developed by industry for industry. ESC acts as an administrator and publisher.

Each ESC Guideline is reviewed on a three year cycle. Technical issues or changes may prompt a re-evaluation and review of this ESC Guideline in whole or in part. For details on the ESC Guideline creation and revision process, visit the ESC website at [EnergySafetyCanada.com](http://EnergySafetyCanada.com).

## **CONTRIBUTORS**

ESC would like to acknowledge the contributions of the members of the CAPP Damage Prevention Committee, whose expertise and dedication were instrumental in the development of this document.

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## 1.0 Introduction

The prevention of damage to buried facilities positively impacts worker safety, public safety, protection of the environment and preservation of the integrity of the underground infrastructure that provides goods and services essential to today's society.

Ground disturbance activities present a considerable risk to the large network of underground infrastructure throughout Canada and must be managed in a manner that will minimize the potential of damage that can impact workers, the general public, and the environment.

Unwanted contact with a buried facility has the potential for the following negative consequences:

- Injury or death to workers/the public
- Environmental consequences
- Interruption of critical services
- Buried facility and other equipment damage
- Production loss
- Corporate reputation loss

Typical hazards for ground disturbances include, but are not limited to:

- Excavation stability
- Shoring
- Entering and leaving an excavation
- Fall hazards
- Confined spaces
- Presence of hydrocarbon vapours or fumes, or other gases, e.g. H<sub>2</sub>S
- Presence of buried electrical facilities or overhead power lines
- Potential for unknown obstructions or buried facilities not located
- Interaction between workers and machinery
- Changing conditions such as job scope, personnel, weather, etc.
- Human behaviour
- Areas of historical, archaeological, or environmental significance

Organizations shall consider the development of a Ground Disturbance Damage Prevention Program to ensure that owners, operators, stakeholders and those working in close proximity of buried facilities or performing ground disturbance activities are aware of the risks and associated hazards of conducting this type of activity.

This guideline will assist organizations to develop a ground disturbance damage prevention program that will improve safety performance, minimize environmental impact, protect the general public and workers, and provide provision for increased public awareness.

The GDDPP can be developed separately by owners, operators and those involved in ground disturbance activities. However, prior to conducting a ground disturbance, all involved stakeholders should align processes and procedures to ensure that the necessary controls are in place.

Each stakeholder shall consider developing its own customized ground disturbance damage prevention program based on their scope of operations, role in ground disturbance activities and associated regulatory requirements.

It is suggested that the development of the ground disturbance damage prevention program utilize the same method of setting SMART goals:

**Specific:** A document that clearly identifies the six “W” questions.

- Who: Who is involved?
- What: What do I want to accomplish?
- Where: Identify the location
- When: Establish the time frame
- Which: Identify requirements and constraints
- Why: Specific reasons, purpose or benefits of accomplishing the goal

**Measurable:** Establish concrete criteria to be used for measuring the success of executing to the identified expectations.

**Achievable:** The expectations should fall within the realm of what is reasonable and practical to achieve success.

**Realistic:** To be realistic, this must represent an objective toward which everyone is willing and able to work.

**Timely:** Without timelines, it would be difficult to engage in any continuous improvement process.

Ground disturbance activities require a planned approach to ensure hazards are identified and mitigated, so that work is executed in a manner that meets or exceeds the prescribed requirements.



## 1.1 Description of Ground Disturbance Operations

The term “ground disturbance” has been adopted by industry to replace the term “excavation”. This is because there are many activities, other than excavation, that disturb the ground. Ground disturbance requires a systematic approach that should include: planning, verification, execution of procedures and inspection.

### 1.1.1 What is Ground Disturbance?

Ground disturbance is any work, operation or activity, on or under the existing surface, resulting in a disturbance or displacement of the soil, but not if the disturbance or displacement is a result only of:

- a) Routine, minor road maintenance;
- b) Agricultural cultivation to a depth of less than 45 cm below the ground surface over a pipeline;
- c) Hand digging to a depth of no more than 30 cm below the ground surface;

As long as it does not permanently remove cover over a buried facility.

Ground disturbances can include, but are not limited to, the following:

- Digging
- Excavation
- Trenching
- Ditching
- Tunnelling
- Boring/drilling/pushing
- Auguring
- Topsoil stripping
- Land levelling/grading
- Plowing to install underground infrastructure
- Tree planting
- Clearing and stump removal
- Sub-soiling
- Blasting/use of explosives
- Quarrying
- Grinding and milling of asphalt/concrete
- Seismic exploration
- Driving fence posts, bars, rods, pins, anchors, signs or pilings
- Crossing of buried pipelines or other underground infrastructure by heavy loads

## 1.2 Framework for a Damage Prevention and Ground Disturbance Program

Ground disturbance damage prevention programs are intended to reduce the frequency and potential severity of preventable damages. Although the content of a ground disturbance damage prevention program may vary in size and scope according to the specific operations of individual companies, any ground disturbance damage prevention program shall include, at a minimum, the following components:

- Purpose and Scope
- Planning
- Public Awareness
- Technical Requirements
- Inspection and Auditing
- Training and Competencies
- Document Management
- Program Review

## 1.3 Why is Damage Prevention and Ground Disturbance Important?

Canada has an extensive, complex, and necessary urban and rural network of underground infrastructure. These buried facility systems supply goods and services necessary to ensure today's society functions effectively and efficiently.

Whether installing a large diameter pipeline in a rural setting, or installing a fence post in the backyard, there exists a potential to damage an existing buried facility. The consequences of such damages are described in the Introduction.

## 1.4 Digging Community

The digging community is comprised of anyone who engages in or is responsible for a ground disturbance activity, including but not limited to:

- Homeowners
- Ranchers
- Farmers
- Equipment operators
- Excavation contractors
- Home builders
- Landscapers
- Fencing contractors
- Operators/owners of buried facilities



- Consultants
- Land surveyors
- Developers
- Municipalities
- Provincial departments
- Federal departments
- Railways



## 2.0 Background

### 2.1 Stakeholders Involved in Ground Disturbance Activities

As with most safety issues, there are shared responsibilities among the personnel involved and all parties must have a clear understanding of their responsibilities. The roles related to ground disturbance activities and broader roles identified by OHS legislation are represented in the summary diagram in Figure 1.

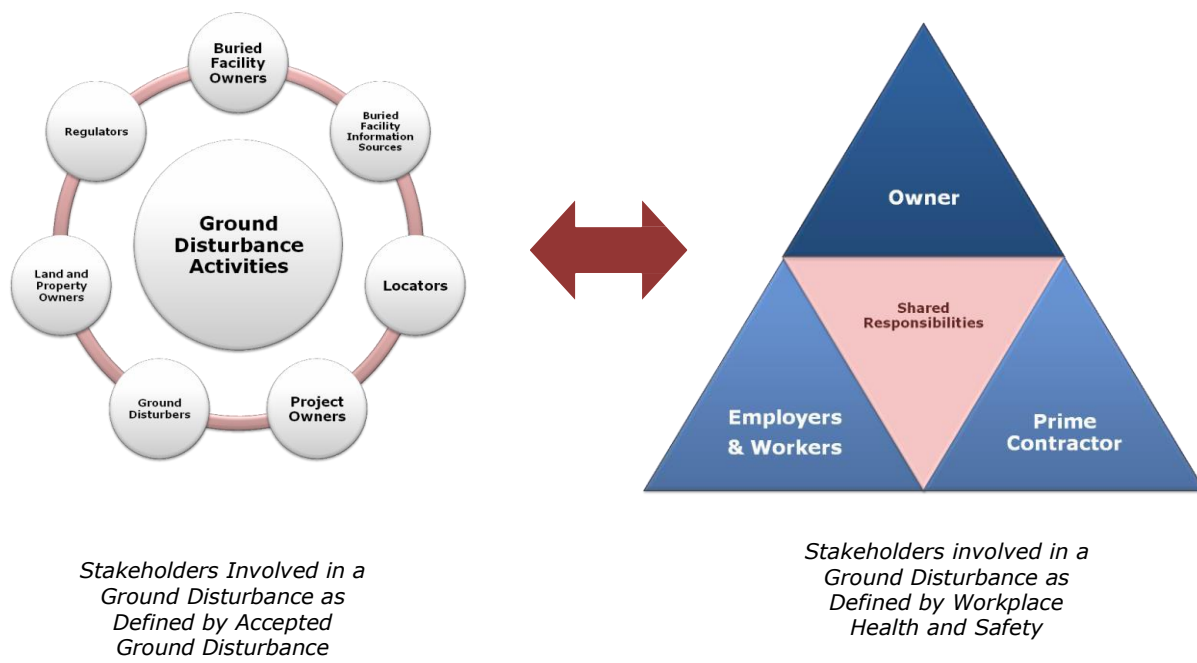


Figure 1: Ground Disturbance Stakeholders

### 2.2 Ground Disturbance Issues and Challenges

The following issues and challenges can affect buried facility damage prevention efforts and may contribute to injuries, fatalities, environmental damage, and loss of vital services. These are important considerations for project owners, ground disturbers, and buried facility owners when addressing the practices recommended in this document.

### **2.2.1 Peak Workload**

Ground disturbance notifications are often received on Mondays with a request to conduct work in the next few days. Lack of pre-planning creates peak workloads for locators and buried facility owners that may result in rushed work. This increases the potential for human error and buried facility damage.

### **2.2.2 Seasonal Workload**

Ground disturbance activity levels follow annual weather patterns with most work scheduled to avoid frozen ground, crop damage, poor weather seasons, or other general periods of low construction efficiency. This impacts those who are required to have trained workers available to handle the periods of high ground disturbance activity.

### **2.2.3 Locating Practices**

The locator may have an impact on the quality of the locate itself. A successful locate requires the application of technical knowledge, multiple skill sets, appropriate resources and experience.

### **2.2.4 Unlocatable Buried Facilities**

Critical to the damage prevention process is the ability to accurately locate the position of buried facilities. Limitations of current technology and types of buried facility materials sometimes make this difficult or even impossible to determine.

### **2.2.5 Abandoned or Unregistered Buried Facilities**

In some cases, buried facility owners delete the records of abandoned facilities, making identification more difficult. Often this means that locating personnel are unlikely to be looking for facilities because they are unaware of them.

The presence of abandoned facilities may cause delays due to confusion (such as possible hits on adjacent live lines) and increased ground disturbance costs. Damage to abandoned or unregistered facilities has caused safety risks to ground disturbance personnel, environmental consequences and unanticipated repair costs.

### **2.2.6 Inaccurate Buried Facility Owner Records**

Inaccurate or out-of-date buried facility owner records hamper the ability to locate buried facilities. Challenges to damage prevention efforts are caused by differing practices among facility owners and other industries regarding as-built drawings, mapping practices, and details of original construction configurations, as well as asset transfers and changes to facilities.

### **2.2.7 Emergency Ground Disturbance**

When circumstances require an emergency ground disturbance, the one-call centre and facility locating processes are sometimes bypassed, placing ground disturbers and emergency personnel at risk.

## 2.2.8 Urban Sprawl

Many buried facilities were installed years ago in rural or low-population areas. Although these facilities were suitable for original conditions, they are sometimes not ideal for new conditions due to higher population and increased surface activity. Protecting these existing facilities presents new challenges.

Ground disturbance practices in urban areas differ from those in rural areas due to the close proximity of other buried facilities, work space congestion, and nearby activity levels such as traffic. Each of these has impact on damage prevention practices.

## 2.2.9 Conflicting and Inconsistent Regulatory Requirements

Each jurisdiction has its own requirements governing ground disturbance and damage prevention. The specific requirements may vary and sometimes conflict between municipal, provincial, and federal requirements related to buried facilities and ground disturbance practices. For buried facility owners, locators, and excavators, these variations may cause confusion and inefficiencies in safe performance of ground disturbance activities.

### 2.2.10 Human Error

The entire damage prevention process depends on accurate handling, communication of ground disturbance information and execution of required procedures. Human errors and omissions of any step within the ground disturbance damage prevention process may result in buried facility damage.

### 3.0 Ground Disturbance Responsibilities and Accountabilities

Accountabilities and responsibilities shall be clearly defined for the overall ground disturbance damage prevention program to ensure that the required commitments are measurable and achievable with the necessary resources allocated.

Each stakeholder shall be responsible to identify and document specific roles and responsibilities within their ground disturbance damage prevention program, for example:

- Owner responsibilities
- Ground disturbance supervisor responsibilities
- Ground disturber responsibilities
- Buried facility owner responsibilities
- Line locator responsibilities
- One-call membership and response

There are a number of stakeholders that may be involved or impacted by a ground disturbance. These are shown in Figure 2.



Figure 2: Key Stakeholders Involved in the Ground Disturbance Process

The primary parties involved in the ground disturbance process are as follows:

- Project owners - can include agents of owners, ground disturbance supervisors/inspectors, buried facility owners, land owners, and private individuals
- Ground disturbers - can include contractors, workers, buried facility owners, land owners, and private individuals
- Buried facility owners - can include owners' inspectors and supervisors
- Locators (organization or third party)

Secondary parties involved in the ground disturbance process are as follows:

- Regulators - can include the following:
  - OHS agencies such as Alberta Employment and Immigration, WorkSafe BC, Saskatchewan Labour
  - Energy regulators such as Alberta Energy Regulator (AER), B.C. Oil and Gas Commission (BCOGC), Saskatchewan Economy, National Energy Board (NEB)
  - Other agencies such as Forestry, Environment, Municipalities, and Department of Fisheries and Oceans (DFO)
  - Buried facility information sources - can include one-call centres, land titles, maps, operators/owners, private information sources, public information sources, regulators, utility companies, and visual indicators
- Land and property owners - are those who may be impacted by a ground disturbance and can include land owners, right-of-way holders, and other surface development owners

### 3.1 Regulatory Responsibilities

Depending on the type of buried facility, project owners, ground disturbers and buried facility owners have well defined regulatory responsibilities and shall ensure that a ground disturbance damage prevention program identifies and addresses those responsibilities specific to their operations. For example, in the case of pipelines, the AER and the NEB have regulations for licensed pipelines related to damage prevention and public awareness programs.

Equally important are the minimum requirements defined by OHS legislation on the management of worksites for worker safety. In addition, other entities also impose obligations on buried facility owners, project owners, and ground disturbers, such as federal and provincial departments and municipalities.

See Appendix 1 for a summary of legislation, regulations, and industry guidelines/standards relevant to buried facilities.



## 3.2 Project Owner Responsibilities

Owners of projects involving ground disturbance activities have the following general responsibilities:

- Ensuring that project design is done by qualified, competent consultants or employees
- Ensuring that the project design minimizes the potential conflict with existing buried facilities
- Ensuring that prevention of future damage to any new buried facilities is a design criterion
- Ensuring that all required written approvals and permissions are in place
- Designating a prime contractor, if necessary
- Ensuring that contract documents include an appropriate ground disturbance code of practice
- Ensuring that accurate as-built records are created

## 3.3 Ground Disturbance Supervisor Responsibilities

Individuals overseeing ground disturbances are called ground disturbance supervisors, who are employees or contractors deemed to be competent by the project owner. They are responsible for ensuring that ground disturbance activities are completed as required by the ground disturbance damage prevention program, applicable regulations, and the terms and conditions of all project-specific agreements and approvals.

Ground disturbance supervisors' responsibilities include, but are not limited to, the following:

- Completing and maintaining their required training and certifications
- Reviewing pre-ground disturbance documentation, including any written approvals, and addressing deficiencies
- Ensuring that all buried facility locate requests have been made, including those to non-members of a one-call centre
- Maintaining and managing the locates provided
- Initiating and managing the safe exposure of buried facilities
- Witnessing hand exposure, if required
- Reviewing and communicating hazard assessments and work procedures before and during the ground disturbance process with all affected workers
- Issuing required work authorization documentation
- Facilitating pre-job and tailgate meetings
- Supervising all ground disturbance activities as per the defined scope of work, ground disturbance damage prevention program, and written approvals/permissions
- Supervising the use of mechanical excavation equipment within the specific limits of approach to buried facilities, if required

- Ensuring that contractors are not subject to the pressure to conduct work below acceptable standards when completing their assigned work responsibilities
- Inspecting backfill, if required
- Ensuring required notifications for backfill inspection are completed
- Completing and submitting required documentation

Ground Disturbance Supervisors may also be called Ground Disturbance Inspectors.

### 3.4 Ground Disturber Responsibilities

Ground disturber responsibilities include the following:

- Complying with all regulatory requirements
- Complying with the terms and conditions of all written approvals, work authorization documents, and checklists
- Ensuring that workers are competent in ground disturbance procedures
- Confirming that all required buried facility locates have been requested
- Understanding the locates provided and their documentation
- Managing the locates
- Hand exposing buried facilities as required by regulations and that may be in conflict with a ground disturbance
- Conducting pre-job and tailgate meetings
- Supporting exposed buried facilities where required/identified by the buried facility owner
- Backfilling the exposed buried facilities in compliance with the terms and conditions of any written approval
- Reporting any damage caused or found

### 3.5 Buried Facility Owner Responsibilities

Buried facility owners' responsibilities include:

- Maintaining buried facility rights-of-way and signage, as per regulations
- Having a system in place to receive and respond to notifications of intent to disturb the ground near their buried facilities (i.e. one-call registration)
- Ensuring that the one-call database and mapping are up to date and correctly identify the location of the owner's buried facilities
- Providing any assistance the ground disturber may require to comply with regulatory requirements, to ensure the safety of workers conducting ground disturbance activities, and to prevent any damage to buried facilities

- Ensuring that a competent locator identifies and marks the location and approximate horizontal alignment of the buried facilities
- Ensuring that locates are documented, that the ground disturber has a copy of locate documentation, and that locate documentation is kept on file for a minimum of two years or the life of the pipe for federally regulated pipelines

In the case of regulated pipelines, the buried facility owner is required to have a ground disturbance supervisor present at the time a pipeline is being exposed and must be contacted before backfilling an exposed pipeline. The crossing agreement or locate documentation may identify this requirement for other types of buried facilities.

### 3.6 Buried Facility Owner as Ground Disturber

Where a buried facility owner is the ground disturber and is undertaking a ground disturbance near their own buried facility with their own personnel, the facility owner must also fulfil the responsibilities of the ground disturber.

In these cases, the buried facility owner must establish the required processes to ensure worker safety and protection of the buried facility from damage. This may include the following:

- Issuing an approval in writing, which may include a ground disturbance permit or checklist that outlines the terms and conditions under which the ground disturbance will be done
- Ensuring that employees who are to undertake the ground disturbance are familiar with the applicable regulations, the owner's policies and procedures, and are competent to fulfil their responsibilities as a ground disturber

### 3.7 Locator Responsibilities

Buried facility owners are responsible for locating their buried facilities when notified of a proposed ground disturbance. They may choose to use their own locators or hire a contract locator to provide locates. A contract locator may be hired by ground disturber team to locate all buried facilities within the area of proposed exploration. In that situation, the owners of affected buried facilities may be requested to confirm the locates and or locate results.

In all cases, locators are responsible for, but not limited to the following:

- Completing and maintaining their required training and certifications
- Ensuring they are qualified and competent to perform required locates
- Recognizing when a locate is beyond their expertise and asking for help
- Completing their tasks in a timely and safe manner, as per acceptable locating practices, buried facility owner requirements, and client requirements

- Identifying and marking the approximate horizontal alignment of all buried facilities within the search area of the proposed ground disturbance
- Producing documentation of the locate (drawing) and ensuring the ground disturber understands the locate and its documentation
- Advising the ground disturber of any limitations, identified discrepancies or concerns with respect to the locate provided and any specific action the ground disturber should take regarding the located facilities

## 4.0 Ground Disturbance Damage Prevention

### 4.1 Key Elements for Preventing Damage

The following is an overview of the key elements necessary to have an effective buried facility damage prevention process.

- Buried facility owners require a comprehensive ground disturbance damage prevention program
- Buried facility owners are members of one-call centres in the areas in which they have buried facilities (including active, out-of-service, and abandoned facilities)
- One-call centres maintain accurate mapping data files that reflect which facility owners have buried facilities in the area of a proposed ground disturbance
- A notice of intent to excavate in an identified area is made to the appropriate one-call centre, in advance of a ground disturbance
- One-call centres analyse ground disturbance notifications and notify potentially affected members with facilities in the ground disturbance area
- Ground disturbers notify identified non-member companies
- Buried facilities are accurately located and marked before ground disturbance activities begin
- Confirmation of notification to the buried facility owner is made prior to ground disturbance activities starting
- Formal agreements and approvals are obtained from buried facility owners prior to commencing ground disturbance work
- Ground disturbers comply with all required and identified safe ground disturbance requirements

#### 4.1.1 The “Dig Safely” Approach to Damage Prevention

The “dig safely” approach, which began as a damage prevention education program sponsored by the Common Ground Alliance, is beneficial and includes the following components:

- Call before you dig!
- Wait the required amount of time for all locates to be done
- Respect and manage the marks
- Reference all available information regarding buried facilities
- Hand expose, where and as required

- Conduct ground disturbance activities in the safest practical manner
- Support and protect exposed facilities where required
- Report any damage caused or found
- Dig safely!

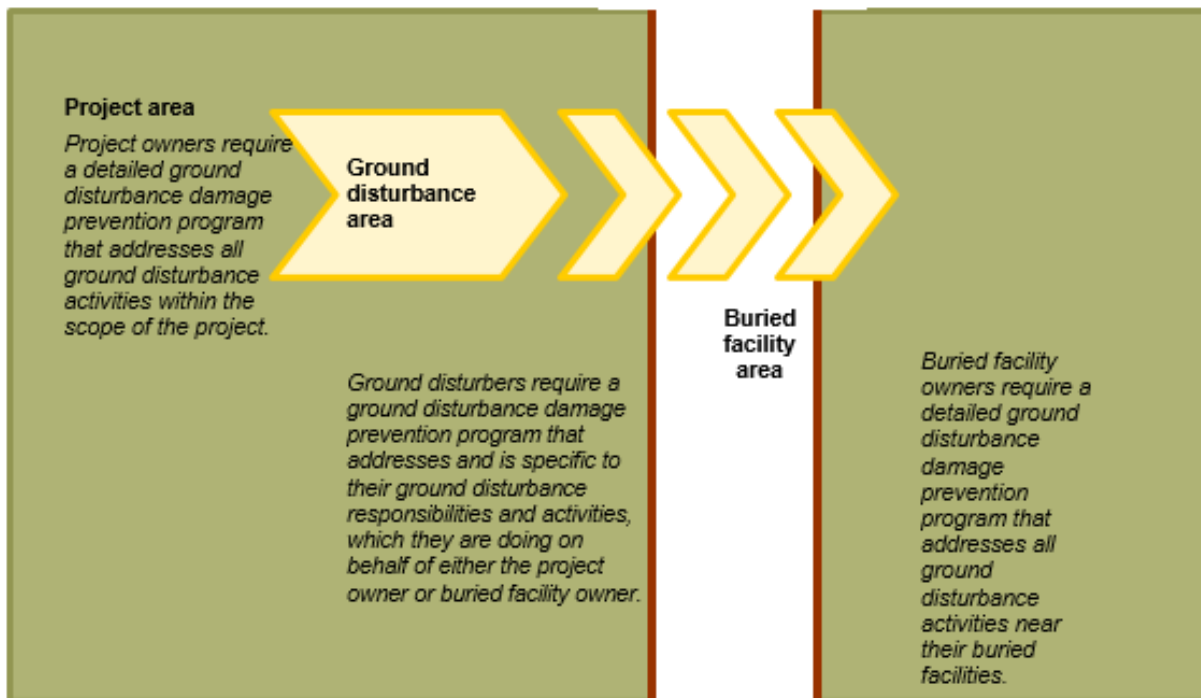


Figure 3: Damage Prevention Requirements

## 4.2 Management Commitment to Damage Prevention

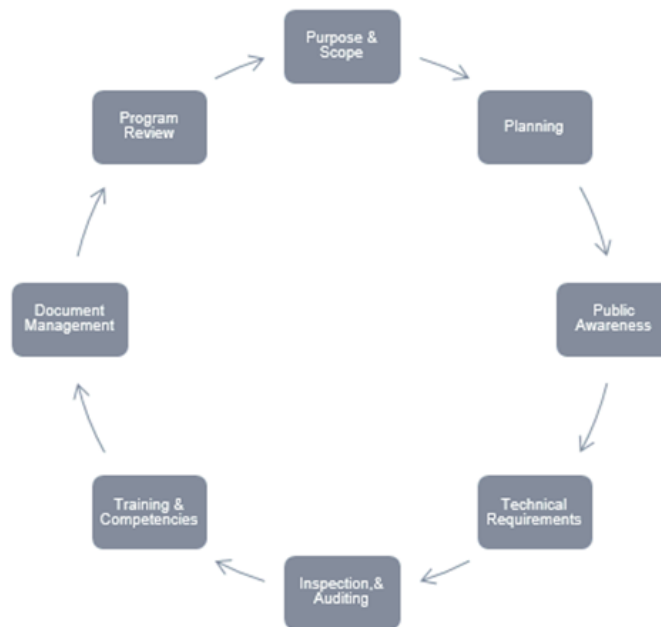
Management commitment to ground disturbance damage prevention is the first vital step towards achieving safe and effective ground disturbance practices for an organization. An organization's management team must demonstrate their clear commitment to the ground disturbance damage prevention program. This involves communicating their goals and expectations to all staff, allocating the necessary resources to implement that commitment, and clearly defining the scope, purpose and expectations of the ground disturbance damage prevention program.

Organizations shall establish processes for communicating this commitment and the resources available for ground disturbance activities to all that are involved. The communication processes required can be aligned with existing management communication mechanisms.

A ground disturbance damage prevention program can be developed as a separate distinct program, process and procedure, or an organization can develop its program within other management systems, programs and procedures. For example, ground disturbance procedures can be developed within the safety management system, operations management system or other processes. However, strong consideration shall be given to the integration of systems and programs to ensure the most efficient utilization of resources and ensuring the most effective approach.

### 4.3 Components of a Ground Disturbance Prevention Program

A ground disturbance damage prevention program is a systematic approach to the planning, implementation and monitoring of all ground disturbance activities. The ground disturbance damage prevention program consists of a set of processes organized in a logical sequence as shown in Figure 4, below.



**Figure 4: Overall Ground Disturbance Damage Prevention Program**

### 4.3.1 Key Elements of a Ground Disturbance Damage Prevention Program

The following key elements are required for an effective buried facility damage prevention program:

- Purpose and Scope
- Planning
- Public Awareness
- Technical Requirements
  - Pre-Job Planning
  - Researching the Work Area
  - Sources of Searchable Information
  - Multiple Buried Facilities
  - Notifications
  - Line Locating
  - Conducting Hazard Assessment
  - Pre-Job Review
  - Authorization
  - Supervision, Surveillance and Monitoring
  - Exposure and Mechanical Excavation
  - Inspection and Backfill
  - Inspection, Auditing and Evaluation
  - Training and Competencies
  - Document Management
  - Program Review



## 5.0 Ground Disturbance Damage Prevention Program

### 5.1 Purpose and Scope

The purpose of the ground disturbance damage prevention program is to ensure that the policies, plans, practices and procedures required to prevent damage to buried facilities are developed, implemented and executed and measured.

The guidelines presented in this development guideline are intended only to outline the minimum requirements for a ground disturbance damage prevention program. It is the responsibility of each organization to develop its own operations-specific ground disturbance damage prevention program for undertaking ground disturbance activities. Suggested additional content is listed below.

- 
- Establish corporate policy and priority
  - Develop ground disturbance code of practice
  - Complete pre-ground disturbance planning
  - Locate buried facilities
  - Manage site safety
  - Conduct ground disturbance operations
  - Complete end-of-project review and documentation

### 5.2 Planning

The development and content of a ground disturbance damage prevention program shall require the identification of:

- Risks, hazards, their mitigation plans and/or controls
- Regulatory requirements
- Accountabilities and responsibilities
- Documentation requirements
- Communication plans (internal and external)

An organization shall establish a documented process for ground disturbance hazard identification, risk assessment and development of mitigation plans. The hazards of ground disturbance activities should be identified based on the anticipated ground disturbance activities and operations of the organization. Proven success in this area has been through the involvement of the workers in the hazard identification process.

An organization should identify regulatory agencies and industry requirements based on its operations and ensure compliance through a regular review process.

### 5.3 Public Awareness

Public awareness and understanding of buried facility operations is a key component to the safe operation of buried infrastructure.

Public awareness programs are an important factor in establishing communications and providing necessary information to assist the public understand the buried facility network and the services they provide.

The public awareness program should address the needs of different audiences within the community and be flexible enough to change as your operations change or the public's need for information changes.

A public awareness process is an important component of any ground disturbance damage prevention program and is about building relationships with all stakeholders. It should communicate the organization's safety message, emergency contact information and other important information required for the community at large.

### 5.4 Technical Requirements

An organization must document its ground disturbance damage prevention process, which shall include, but not be limited to, the following technical requirements:

- a) Pre-Job Planning
  - Correct scope of work and the identification of the work activities
  - Risk assessment of the particular task and location
  - Identification of the associated hazards and mitigations
  - Required personnel including competency, qualifications and skill sets
  - Equipment and tools
  - Field level hazard identification and controls prior to the start of all work activities and when new job steps are introduced

b) Researching the Work Area

Before beginning, anyone proposing to undertake a ground disturbance shall take all reasonable precautions to determine if there are buried facilities within the proposed work area.

Specific to pipelines, regulations define the search area as 30 metres beyond the limits of the proposed ground disturbance. In the case of other types of buried facilities, recommended search areas shall include the limits of the proposed ground disturbance and a reasonable area beyond those limits.

Evidence of other active operations such as seismic operations, temporary surface facilities, road construction, or land owner activities must be investigated to determine the potential impact on the proposed ground disturbance.

c) Sources of Searchable Information

- One-call centres
- Easements or caveats registered against certificates of title
- Regulatory agency maps, e.g., AER, BCOGC, etc.
- Commercial data/mapping services
- Municipal/rural utility companies
- As-builts, facility plot-plan, or pipeline maps
- Survey plans (Legal and/or IOP - Individual Ownership Plan)
- Buried facility owner-operations personnel
- Land owners and/or residents
- Visual indicators

d) Multiple Buried Facilities

Both the project owner and the buried facility owner must ensure that, where multiple buried facilities exist, each buried facility is identified and clearly marked. For example, where there are multiple pipelines in the same right-of-way - especially for pipelines of the same diameter or for multiple buried facilities in a common trench - extra attention shall be applied to identify the owner of each facility.

e) Notifications

I. Timelines

If it has been established that buried facilities exist within the search areas, the party proposing to undertake the ground disturbance must notify the owners of those buried facilities and the one-call centre of their intent to disturb the ground.

This notification shall occur at least two full working days and not more than ten working days before the ground disturbance takes place. This timeline may differ depending which Provincial One-Call service provider is being contacted and/or the terms and conditions of crossing agreements and may vary depending on the regulatory jurisdiction. For example, NEB regulations require three working days' notice.

## II. One-Call Service Providers

One-Call centres receive requests for locates for proposed ground disturbances from the ground disturber. They then notify those of their members whose buried facilities could be in conflict with the proposed ground disturbance.

Individuals placing a locate request with a one-call centre will be given a ticket number for future reference and advised of those members that will be notified on their behalf. If the information required for the processing of a locate request changes, the requesting individual shall contact the one-call centre and provide the changed information with the ticket number, and the one-call centre will forward the new or corrected information to its affected members.

One-call centres may also be used to advise members of damage to their buried facilities, although it remains the responsibility of the party who damaged the facility to notify the owner of the damaged facility directly.

Click Before You Dig will take you to all One-Call service providers for North America. Select the province you are operating in and the required information will be displayed.

## III. Non One-Call Service Provider Members

Not all buried facilities are registered with one-call centres. Registration of buried facilities with one-call centres is sometimes voluntary. Even where legislation requires registration, unregistered buried facilities may still exist.

Never assume the one-call centre will be aware of all buried facilities present. For this reason, the ground disturber must identify all buried facilities and contact any owners of buried facilities that are found but not registered with the local One-Call centre.

Owners of these unregistered buried facilities must be notified of the proposed ground disturbance and requested to identify and mark the approximate horizontal alignment of their facilities that may be in conflict with the proposed ground disturbance. The same information provided to the one-call centre shall be provided to non-members of the one-call centre.

Several additional steps shall be taken in communicating with non-members of one-call centres:

- Obtain documentation that the locate request has been placed and received
- Obtain a contact name and phone number for the buried facility owner (and if different establish an emergency contact name and phone number)
- Establish the date and time that the facility owner's locator will be on site to identify and mark the locations of affected buried facilities
- Determine whether or not the facility owner is required by the regulator or wishes to be on site during the exposure or crossing of that owner's facilities

**Note:** In cases where the buried facility owner has not responded within the required timeframe, the ground disturber has the right to review the situation with the responsible regulator to determine a suitable course of action.

f) Line Locating and Marking

The locating and marking of buried facilities is a key part of the damage prevention process and shall be considered in any ground disturbance damage prevention program.

I. Buried Facilities Requiring Locates

All known buried facilities within the limits of, and for some distance beyond the limits of, a proposed ground disturbance must be located. The distance beyond the limits of the proposed ground disturbance may be defined by regulation.

II. Locator Qualifications and Role

A qualified, competent locator shall be used to provide locates. The Canadian Association of Pipeline and Utility Locating Contractors (CAPULC) have endorsed the Underground Facility Locator (UFL) Field Task Competency Manual as an accepted model within their associated membership. For further details contact CAPULC. There are other training organizations that offer Line Locator training.

Before providing a locate, a locator shall obtain all available information for the buried facilities to be located and should discuss the project with a knowledgeable representative of the ground disturber and/or facility owner. This discussion will help identify any site-specific hazards, emergency response plans, access restrictions, marking materials and standards and extent of the ground disturbance.

When locators identify and mark the locations of buried facilities, they shall document the locates provided, give a copy to the ground disturber and keep a copy for their records. This documentation may be referred to as a "locate plot plan," a "locate sketch/drawing," or a "locate slip." It is important that the ground disturber

understand that it is the locate marks that are documented, not the actual location of the buried facility. See Appendix 5 for a sample locate drawing.

As a general rule, locators will not provide the depth of a facility. However, it is reasonable to expect locators to advise ground disturbers if they suspect that a buried facility is deeper or shallower than might be expected and about any identified discrepancies, limitations on, or concerns about the locates provided. In addition, if locators are aware of the existence of non-metallic buried facilities (i.e., plastic pipes with no tracer wire), they shall bring this to the attention of the ground disturber.

### III. Locate Lifespan

The ground disturber shall keep all warning signs or markers visible and legible for the duration of the ground disturbance and shall replace or relocate them if necessary to ensure successful and safe completion of the work.

The Alberta Common Ground Alliance (ABCGA) provides the following guidance:

*If a ground disturber does not commence a proposed ground disturbance within 14 calendar days of the date locates were provided, the ground disturber must request new locates.*

*If a ground disturber has commenced a proposed ground disturbance within 14 calendar days of the date locates were provided but has not completed the ground disturbance, the locates are valid for 30 calendar days from the date they were provided, subject to the following conditions:*

- a) *The locate marks remain visible or the ground disturber has provided more permanent references or the ground disturber has exposed the buried facilities in conflict with the proposed ground disturbance and documented their actual location;*
- b) *The ground disturber's activity at the site has not been interrupted, except for:*
  - i. *Maximum 4 calendar day periods over weekends, or*
  - ii. *Any period of time where weather situations dictate longer interruptions or interruptions during the week provided that during such interruptions the site must be monitored by a competent person and such monitoring must be documented; and*
- c) *The ground disturber has not completed a ground disturbance within the extended period of 30 days from the date locates were provided, the ground disturber must refresh the locate request with the original one-call provider.*

On receipt of this locate refresh, the one-call provider shall notify individual operators of buried facilities. The individual operators of buried facilities shall, in consultation with the ground disturber, determine whether a new locate is required or the lifespan of the existing locate can be extended. This time period shall be determined by the ground disturber and buried facility owner.

For large or long term projects, it is expected that the ground disturber will break the project into sections when placing locate requests to better coordinate the provision of locates with the progress of the ground disturbance.

If at any time the ground disturber is of the opinion that the locate marks are not adequate for the successful and safe completion of the work, the ground disturber must request new locates.

#### IV. Marking Colour Codes

The American Public Works Association (APWA) developed a uniform colour code for the temporary marking of buried facilities (see Appendix 6 for a copy of this colour code, which is also available at [www.apwa.net](http://www.apwa.net)). This colour coding system enhances worker safety and minimizes damage during ground disturbances.

The Canadian Association of Geophysical Contractors (CAGC) has developed a best practice for seismic operations flagging to avoid confusion with the APWA Uniform Colour Code. Refer to Appendix 7 for a copy of this CAGC best practice or visit their website.

In situations where a contract locator has been retained by a member of a geophysical exploration program team member to locate all buried facilities within the area of the program, the locator will mark all buried facilities with yellow flagging (preferably high visibility, lemon, or fluorescent colours) that is a distinctly different colour from any in the APWA Uniform Colour Code. When the owners of the marked buried facilities confirm the locates done by the contract locator they may add their own locate marks in accordance with the APWA Uniform Colour Code or they may confirm the locates done by the contract locator in writing.

Locate documentation shall identify any site-specific deviations from the APWA Uniform Colour Code and this information is to be communicated to all parties involved in the ground disturbance. Any time a different colour system is used to mark buried facilities, those colours are to be communicated to all workers on site.

g) Conducting Hazard Assessment

Assessing hazards is vital to pre-job planning and hazard control shall be considered within the code of practice. A pre-job risk assessment must be done before ground disturbance activities begin. This process shall be completed in accordance with the ground disturber's hazard assessment practices.

Typical hazards for ground disturbances include, but are not limited to:

- Excavation stability
- Shoring
- Entering and leaving
- Fall hazards
- Confined spaces
- Presence of hydrocarbon vapours or fumes, or other gases (H2S)
- Presence of buried electrical facilities or overhead power lines
- Potential for unknown obstructions of buried facilities not located
- Moving excavation equipment
- Vehicular traffic movement
- Interaction between workers and machinery
- Changing conditions such as job scope, personnel, weather, etc.
- Human behaviour
- Areas of historical, archaeological, or environmental significance

A suggested hazard review flowchart is shown in Figure 5, which provides guidance for addressing identified hazards and serves as a reminder of an employer's obligations under OHS legislation.



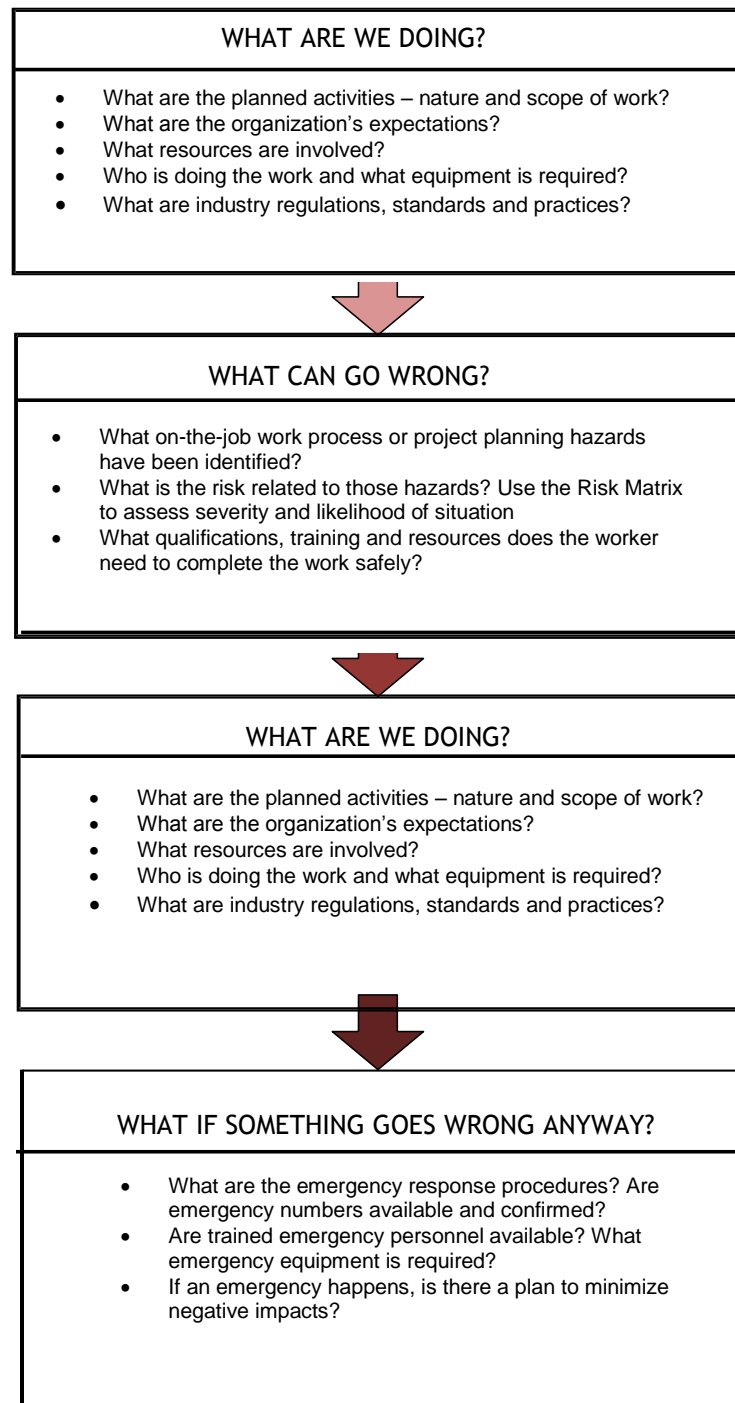


Figure 5: Suggested Hazard Review Flowchart

## h) Pre-Job Review

Buried facility damage prevention requires the involvement of many people who depend on each other to take a genuine interest in ensuring a successful outcome. The accurate and timely exchange of information among all affected parties is an important factor to successful application of ground disturbance practices. Buried facilities at a worksite are a potential safety hazard. As such, buried facility owners, project owners, and ground disturbers shall co-operate to ensure that a plan is in place for managing site safety, ensuring ground disturbance activities on site are being co-ordinated, and ensuring responsibilities are clearly communicated to affected workers. This plan for operations shall also include a method for ensuring that applicable legislation and regulations are identified, stakeholders are aware of them, and procedures are followed to ensure compliance.

### I. Pre-Job Meetings

A pre-job meeting covering all safety and procedure aspects of the ground disturbance job shall be conducted with all parties.

Meeting topics should include, but are not limited to, the following:

- The identity of the prime contractor
- The appropriate chain of command to follow
- Orientation requirements (particularly reminding workers of their right and obligation to refuse unsafe work)
- A review of potential hazards, safe work practices and procedures, work permit requirements, etc.
- Ground Disturbance methods (mechanical, hydrovac, etc.)
- Excavation/dig plan (marked-up line locate drawing or survey plan)
- Approach distances (overhead, mechanical equipment, spoil piles, etc.)
- Traffic control, road signs, barricades, etc.
- Equipment crossing, ramps, rig mats, etc.
- Equipment or other restrictions
- Locating and marking
- Land access restrictions
- An explanation of the construction sequence
- Personal protective equipment
- Emergency procedures including contact numbers, evacuation and muster protocols, first aid/injured worker planning, etc.
- Actual incident and near miss reporting procedures, including notification and action to be carried out if damage occurs
- All workers must be provided a site orientation
- New workers or crews that arrive at the worksite must also be provided with an orientation and review all required documentation

## II. Tailgate Meetings

Tailgate meetings should be held daily and to address issues such as the following:

- Buried facilities that will be encountered that day
- Ongoing hazard assessments
- Changes in work procedures or scope of job activities

### i) Authorization

Ground disturbance activities undertaken in close proximity to, or that cross over, existing buried facilities have the potential to cause damage. In some cases, regulations mandate that written approval is requested and obtained from the buried facility owner. This approval will contain specific information such as responsibilities, conditions or limitations and, once agreed, will form a contract between the two parties.

The process of requesting and receiving this agreement must be completed prior to commencing work. It is important that the ground disturber ensures that all licences, permits, and approvals have been obtained and are available prior to commencing work.

These permits, licenses, and approvals may vary by jurisdiction, buried facility regulator, type of facility being crossed, and the work being undertaken.

An important aspect of the ground disturbance damage prevention program is the development of a tool to ensure that the requirements of written approvals are met and to ensure hazard management for ground disturbance activities is in place.

### I. Work Authorization Issued by Buried Facility Owners

Buried facility owners use differing methods for providing permission for ground disturbance activities to be conducted in close proximity to their buried infrastructure. Whatever method is utilized by a particular buried facility owner, it is important to remember that no ground disturbance work must commence without this authorizing documentation being issued.

Examples:

- Stand-alone specific ground disturbance permit
- Existing safe work permit system
- Combination of both

## II. Work Authorization Requirements

Before the buried facility owner or their representative issues an authorization document, they shall confirm that all pre-ground-disturbance activities are complete and any formal agreements or approvals are in place.

The document can then be issued and shall include the following:

- A review of the requirements as outlined in the crossing agreements/approvals
- A review of hazard identification, assessment and controls
- A confirmation that the content of the permit has been communicated to all affected workers on site

This document may be in the form of a checklist and can also be used as a due diligence/quality control mechanism for the ground disturbance supervisor and ground disturbers. See Appendix 2 for a sample ground disturbance permit/checklist.

**Note:** Often, a ground disturbance occurs where the buried facility owner is the ground disturber. In this case, the pipeline regulations still require that written approval be provided by the facility owner to the workers conducting ground disturbance activities. An authorization document (permit/checklist) often serves this purpose.

## III. Agreements

Before the start of any ground disturbance activity - even on a registered right-of-way - all applicable permits, licenses, and approvals or consent must be obtained, copies provided to all parties involved, and be available on site. These permits, licenses, and approvals may vary by jurisdiction, buried facility regulator, type of facility being crossed, and the work being undertaken.

The project owner shall obtain any necessary written approvals as per jurisdictional requirements, which may include approvals for actual crossings, as well as proximity, encroachment, right of entry, right of access, and reciprocal agreements (including high or low pressure pipeline, road, rail, river, cable crossings, etc.). Regulations require that approvals be in writing. Verbal approval is not acceptable.

See Appendix 4 for a customizable sample Facility Crossing Agreement.

*i. Contents of a Crossing Agreement/Approval*

The crossing agreement/approval should include the following critical information:

- Angle and direction for placement of facilities within the ground disturbance area in relation to any existing facilities
- Proper supporting of exposed facilities
- Horizontal and vertical separation to be maintained between buried facilities
- Notification timeframes for locates, if different from the regulations
- Hand expose zone requirements
- Limits of approach distances for mechanical excavation equipment, if different from the regulations
- Backfill material requirements and cathodic test leads
- Notification time frame required for an inspection before backfilling

*ii. Cautions about Agreements*

Each buried facility owner may have different specifications, technical requirements, and conditions in their agreements. Crossing agreements must be understood by the ground disturbance supervisor.

Most facility crossing agreements do not provide for changes to be made by personnel at the site level. No dealings between the two parties shall change the agreement unless it is in writing and signed by the same parties that signed the original agreement.

**j) Exposure and Mechanical Excavation**

There are many regulatory and industry parameters identifying when and how a buried facility must be exposed.

There are also many regulatory and industry parameters identifying when and where mechanical excavation can or cannot be used in proximity to buried facilities.

It is important that each organization identifies which requirements apply to its operations. It will identify requirements based on operations, regulations, and industry best practices. These should be included in the ground disturbance damage prevention program.

It is imperative that organizations conducting ground disturbance activities understand that owners may have requirements that exceed those set by regulators, and clarification must be sought from these owners to ensure that all requirements are being met, prior to work commencing.

Integral to ground disturbance is the initial hand exposure and identification of facilities followed by the subsequent ground disturbances. Therefore, these topics shall be considered in the ground disturbance code of practice.

### I. Hand Expose Zones

Buried facilities shall be exposed using non-destructive ground disturbance techniques acceptable to the owner of the buried facility before mechanical excavation equipment is used within the hand expose zones. Hand expose zones vary based on jurisdiction, regulator, and owner as well as type of facility.

In addition, the requirements for hand expose zones based on jurisdiction and type of facility may be augmented by more stringent requirements of the crossing agreement. Therefore, conflicting requirements are not uncommon, such as the following examples:

- The hand expose zone for provincially regulated pipelines is 5 m versus 3 m for federally regulated pipelines
- The hand expose zone for other types of buried facilities is typically 1 m
- Most written approvals for ground disturbances near pipelines impose stricter limits of approach for mechanical excavation than the regulations

Some owners of buried electrical facilities have instituted a 2 m or 3 m hand expose zone for different types of cables (e.g. oil filled, high voltage, etc.). Locate documentation should identify these situations.

Many, if not all, require hand exposure before mechanical excavation equipment enters the right-of-way. Where there are conflicts, the most stringent of standards shall be followed.

### II. Other Exposure/Ground Disturbance Requirements

Ground disturbers must identify and follow other related OHS regulatory requirements, including the following:

- Shoring trenches and excavations against cave-in
- Ensuring safe entry and exit by ladder
- Monitoring for the presence of toxic flammable gases, as required
- Ensuring the proper slope of walls (within limits)
- Keeping edges of excavations free of loose soil, debris, spoil piles and material stockpiles
- Obtaining work authorization documentation, as required
- Taking care when the machine approaches the outer limits of the hand expose zone or the limits of approach

There are no maximum limits on the extent of hand exposure required. Buried facilities shall be exposed as needed to confirm their orientation, depth, material, and alignment. Care needs to be taken not to damage facilities when hand exposing. Probes are not recommended for use and shall be used only with the written permission of the buried facility owner.

Where a proposed ground disturbance will be parallel to an existing buried facility and within the hand expose zone, the buried facility shall be exposed at intervals that will be set by the owner of the buried facility. The required exposure intervals should be included in the buried facility owner's approval or locate documentation.

Where a proposed ground disturbance will take place in a buried facility right-of-way, the buried facility should be hand exposed before the ground in the right-of-way is disturbed. Additional exposures should be made any time there may be a change in direction of the ground disturbance or the buried facility, and at any location the locator has advised the ground disturber of locate limitations.

**Notes:** Probing deeper than 300 mm is considered to be a ground disturbance. Hand exposure requirements should be extended to the proposed depth of the excavation or directional drilling path.

### III. Mechanical Equipment Use after Hand Exposure

A spotter should be used whenever mechanical equipment is working near a buried facility. After the buried facility has been exposed, mechanical equipment must not be used within 600 mm of an exposed pipeline or the distance specified in the crossing agreement (whichever is greater), except under the direct supervision of a representative of and with permission of the buried facility owner.

Soil in an excavation must be stabilized to prevent cave-ins as per OHS legislation.

#### k) Inspection and Backfill

Inspection prior to, during, and on completion of any project is a key component to the project's success. The ground disturber shall verify any inspection requirements with the buried facility owner to ensure compliance.

Backfilling and the completion of post-ground-disturbance records occur at the end of the ground disturbance process but are nevertheless important activities that must be considered in the GDDPP.

A ground disturber exposing any part of a pipeline as required by the regulations must notify the owner at least 24 hours before backfilling the pipeline. Where specified by the crossing agreement or regulator, the backfill of an exposed buried facility must be inspected by the buried facility owner. All written records of such inspections shall be maintained for the useful life of the buried facility.

When inspection by the buried facility owner cannot be obtained, ground disturbers must be able to demonstrate that they have made all reasonable efforts to do so. In these cases, the excavation may be backfilled provided the condition of the facility is documented with a backfill inspection report and photographs. However, such action shall only be taken after consulting with the regulator.

For other types of buried facilities, the locate documentation will advise ground disturbers if they are to contact the facility owner for a backfill inspection before backfilling. See Appendix 8 for a sample of a backfill inspection report.





## 6.0 Inspection, Auditing and Evaluation

Inspection procedures ensure the ground disturbance processes and procedures are being performed according to planned requirements and ensure compliance with regulatory requirements.

Auditing/evaluations ensure the overall program processes are adequate and are being followed across all ground disturbance activities.

An organization shall establish a process or processes to:

- Audit documentation (authorization/permits)
- Conduct field evaluations (ground disturbance execution, line locating, hydrovac)
- Conduct auditing/evaluations of the ground disturbance damage prevention program
- Update the program
- Correct discrepancies
- Communicate learnings

## 7.0 Training and Competency

To be able to carry out their ground disturbance responsibilities properly and safely, stakeholders in the process must have the required competencies. Their level of competence shall be assessed, and training provided to update their knowledge and skills as required. This assessment of competence and requirement for training shall be considered during development of a ground disturbance damage prevention program.

An organization must have a documented process to determine the competency of ground disturbance workers that clearly defines the required skills, knowledge, and experience required to execute the ground disturbance damage prevention program.

### 7.1 Evaluation of Competency

All workers involved in ground disturbance activities must be competent in performing the duties for which they are responsible. Competence is more than having taken a training program; it also means having a combination of knowledge and practical experience.

Employers shall be able to justify the basis on which they deem any worker to be competent using the following criteria:

- Adequate qualifications - defined as some type of qualification, earned through a certified education program, training course, etc., or a combination of education and practical experience.
- Suitable training - defined as training that is appropriate to the tasks, equipment, etc., that will be performed or used and which also includes minimum safety training as per OHS legislation.
- Sufficient experience - defined as the experience required to perform work safely without supervision or with only minimal supervision.

### 7.2 Required Competencies

Personnel involved in a ground disturbance shall be trained on the ground disturbance damage prevention program and any other associated regulations, practices and procedures.

Ground Disturbers shall have sufficient training to understand and follow any specific ground disturbance damage prevention programs, or related processes or procedures imposed by project owners or buried facility owners. Ground disturbance supervisors/inspectors will require an increased level of training to qualify them for their specific ground disturbance tasks.

An initial risk analysis should be done for each task in the ground disturbance process to determine that appropriate practices, procedures, training, and competency requirements are developed.



## 7.3 Competency Based Training

Employers must provide training to a level appropriate to a worker's responsibilities. The training provided to workers involved in ground disturbances shall, as a minimum, cover the following:

- Any regulation agency required ground disturbance damage prevention program training that apply to the activities they will be doing
- Any industry specific associated ground disturbance damage prevention program training that apply to the activities they will be doing
- The minimum requirements of any corporate ground disturbance damage prevention program as outlined in this section the guideline

It is recommended that the regulatory and industry component of the competency based training be satisfied in part, with the completion of the following:

- Alberta Common Ground Alliance (ABCGA) 101 and 201 Standards

## 8.0 Document Management

For companies to demonstrate due diligence regarding ground disturbances, they require documented evidence verifying the implementation of the ground disturbance damage prevention program. Therefore, companies must maintain records for regulated facilities and shall consider keeping records of the activities in the vicinity of non-regulated facilities. The records have the following purposes:

- To help manage an effective program
- To demonstrate compliance with regulatory standards
- To allow for consistent measurement against corporate operating standards
- To provide documentation in case of legal proceedings

The facility owner, project owner, or their representative may audit or request copies of ground disturbers' documentation including, but not limited to, the following:

- Hazard assessments of the worksite
- Tailgate or toolbox meeting minutes
- Locate requests and locate documentation
- Worker training records for verification of competency

It is recommended that key documentation associated with the ground disturbance process be retained on file, in a centralized database for future reference, for example:

- Line locate drawings
- Survey plans
- Red line drawings
- As-built information
- Backfill inspections
- Regulatory agency related documents

## 9.0 Program Review

A ground disturbance damage prevention program is meant to be a living document and as such, companies should have a process for the continuous improvement of the document. It shall be reviewed and modified as necessary to ensure that it takes into account any changes in regulatory requirements, company policy or governance, or new technological development. Companies may benefit from assigning the revision process to a person or department to ensure that revisions are completed without undue delay.

The management leadership team of an organization that undertakes ground disturbances shall provide the required level of leadership and ensure compliance with the corporate ground disturbance damage prevention program. To do so they shall ensure that all components of the ground disturbance damage prevention program (e.g., policies, practices, procedures, etc.) are adequate and are communicated to and implemented by all parties involved in ground disturbances. In particular, they shall ensure that all workers involved in executing ground disturbance activities know the potential hazards and the controls in place to mitigate them.

To help ensure that the ground disturbance damage prevention program is effective as developed and implemented, monitoring and review should be part of the program.

## 10.0 Contact with a Buried Facility

Organizations shall develop a notification process identifying the necessary notification requirements based on the regulatory agency having authority over the work being completed. This process may include: internal, external, regulatory, and industry notification, should a buried facility be damaged during work or damage to a buried facility is found.

Organizations shall have a process in place that identifies the severity and potential severity of the incident to determine the required level of investigation.

Where incidents are investigated it is recommended they be completed using root cause analysis. In some cases, it may be required to provide other agencies with damage caused/found data and investigation findings.

### 10.1 Emergency Response Procedure for Contact with a Buried Facility

The ground disturber must have an effective emergency response procedure for contact with a buried facility and ensure that it is communicated to all parties on the worksite. This emergency response procedure shall guide actions and provide contact information for all types of emergencies related to the type and location of the buried facility involved in the emergency.

The emergency response procedure must meet all regulatory requirements and shall take into account that most regulations clearly require ground disturbance activities to be stopped immediately when contact is made with a buried facility during a ground disturbance that results in any of the following:

- A puncture or crack in the facility
- A scratch, gouge, flattening, dent or damage of the surface of the facility
- In the case of fibre-optic cables, severing, bending or kinking
- Damage to the protective coating

### 10.2 Reporting Contact with a Buried Facility

In case of unwanted contact with a buried facility, the ground disturber must immediately stop work and report the incident to the buried facility owner, including the contact location and the kind of damage that resulted. This reporting is required so the buried facility owner can assess any damage and suspend the operation of the buried facility if required.

If a ground disturber is unable to contact the buried facility owners, they should notify the applicable regulator having jurisdiction rather than taking no action.

Regulations in British Columbia, Alberta and Saskatchewan require buried facility owners to immediately notify the appropriate regulator of contact and damage to their buried facility. This may also include notification to the required OH&S group.

**Note:** In cases where a ground disturbance has been stopped due to contact, the ground disturbance must not begin again until approved by the buried facility owner. Depending on the type and severity of the incident, approval from regulators may also be required before start-up. If the ground must be further disturbed to repair a damaged facility, an emergency locate request shall be placed through the one-call centre to notify other potentially affected buried facility owners.

### 10.3 Pipeline Owner Emergency Response Plan

Pipeline owners may be required to prepare, maintain, and submit for approval, a corporate or site-specific emergency response plan (ERP) by the responsible regulator. In such cases, pipeline owners shall ensure that:

- Their organization is capable of responding to emergency situations
- Workers are aware of emergency notification and response procedures

## 11.0 Contractor Selection

Organizations that retain the services of the contractors (vendors) to perform ground disturbance activities shall have a contractor selection and management process. This process shall be able to evaluate the capabilities of the vendor to conduct the work in the safest possible manner and will remain compliant with all specific regulatory, industry, and facility owner requirements.

Project owners should consider the following procedure when prequalifying and selecting contractors for ground disturbance activities:

1. Evaluate the contractor's capabilities, certifications, and qualifications. Does the contractor have a method to evaluate employee competence? Is the contractor able to demonstrate the competence of their employees to the buried facility owner?
2. Evaluate the contractor's practices and procedures for the activities they are undertaking. Does the contractor have an acceptable code of practice? Does the contractor have an understanding of the work requirements?
3. Evaluate the contractor's capabilities and controls to deal with the risks that are part of the job.

Decide if the contractor is suitable for the ground disturbance work based on these evaluations.



## Appendix A: References and Standards

Document Title
CSA Z247 Damage Prevention
CSA Z662 Oil & Gas Pipeline System
Alberta OH&S Act, Regulations and Code
British Columbia OH&S Regulations
Saskatchewan OH&S Act and Regulations
Alberta Energy Regulator - Pipeline Act and Rules
British Columbia Oil & Gas Commission
Saskatchewan ECON - Pipeline Act
National Energy Board - Damage Prevention Regulations
CSA Z247 - Damage Prevention for the Protection of Underground Infrastructure Canadian Association of Pipeline and Utility Locating Contractors (CAPULC)
British Columbia Common Ground Alliance - Recommended Practice for Damage Prevention
Alberta Common Ground Alliance - The Damage Prevention Process
Work Safe BC - Prevention of Damage to Buried Facilities in BC
Canadian Common Ground Alliance

# Appendix B: Safe Work Permit Examples

Location: \_\_\_\_\_ Company Rep: \_\_\_\_\_

Date: \_\_\_\_\_ Contractor: \_\_\_\_\_

Scope of Work: \_\_\_\_\_

Record Confirmation		Yes	No	N/A
1.	Have you obtained all information as required for the GD Package? e.g. <input type="checkbox"/> Landowner Info <input type="checkbox"/> Legal Survey Plans <input type="checkbox"/> GD Package request form <input type="checkbox"/> Completed Crossing Agreement <input type="checkbox"/> Cert of Title <input type="checkbox"/> Abadata Mapping <input type="checkbox"/> ERCB baseline map <input type="checkbox"/> Systems Map <input type="checkbox"/> As Built <input type="checkbox"/> Standing Report <input type="checkbox"/> ERCB PL100 <input type="checkbox"/> Pipeline Alignment Maps <input type="checkbox"/> Site Specific Maps (plot plans) <input type="checkbox"/> Travel/Direction Map <input type="checkbox"/> Aerial Photographs Other: _____			
2.	Have all buried facility owner/operators been contacted, scope of work reviewed, and records confirmed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Have underground facilities been discussed with the <b>landowner</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Have all known pipelines, power lines and utility lines been identified for the dig area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Have any discrepancies in information been verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Locations		Yes	No	N/A
6.	Is line locator trained and certified?	<input type="checkbox"/>	<input type="checkbox"/>	
7.	Has the GD Supervisor requested locator best suited to perform successful sweep of work site?	<input type="checkbox"/>	<input type="checkbox"/>	
8.	Has the ground disturbance area been swept by approved line locators to identify known & unknown buried facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Has the area been swept twice for areas where piles or anchors are to be installed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Has owner of line being crossed, inspected line locations prior to excavation starting? Reference # _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Has the line locator provided a drawing confirming the results of their locating process?	<input type="checkbox"/>	<input type="checkbox"/>	

Visual Inspection		Yes	No	N/A
12.	Has the surrounding area been checked visually for facility marker signs and others, including but not limited to: <input type="checkbox"/> Vegetation changes / growth <input type="checkbox"/> Cut Lines <input type="checkbox"/> Right of Ways <input type="checkbox"/> Wells / Tanks / Buildings / Conduit <input type="checkbox"/> Ground settling from previous work <input type="checkbox"/> Frozen ground <input type="checkbox"/> Water Logged <input type="checkbox"/> Facility Markers <input type="checkbox"/> Vents	<input type="checkbox"/>		

Pre-Disturbance		Yes	No	N/A
13.	Have ALL licenses/written approvals been obtained? Reference # _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Has Provincial One Call service been notified? Reference # _____	<input type="checkbox"/>		
15.	Have all <b>Non-Provincial One-Call</b> members been notified? Please List: _____ _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Have all pipelines, power lines, cables or utilities cables being crossed, been identified at the crossing point and crossing signs been put in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	Are there any discrepancies between the information supplied and line locates?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.	Has the line locating information been reviewed by the GD supervisor and Equipment operator(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	Has a copy of the lone locator drawing been added to the GD package for reference?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	Do you understand the information provided by the line locator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	Have third party line crossing owners been given required notice (min <b>48 hours</b> )?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	Have all conditions of the crossing agreements been met?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	Is fencing required around excavations?	<input type="checkbox"/>	<input type="checkbox"/>	
24.	Has a Pre-Job safety meeting been completed with GD Supervisor or designate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25.	Is the Ground Disturbance supervisor or designate present during the exposure of lines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26.	Is the owner of foreign underground facilities present when exposing their lines? Name _____	<input type="checkbox"/>	<input type="checkbox"/>	
27.	Have all equipment operators been notified that no mechanical excavation is permitted within <b>5 meters</b> of the line to be crossed until the line has been hand exposed or hydrovaccod and is clearly visible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28.	Have all equipment operators been informed that no mechanical excavation is permitted within <b>1.5 Meters</b> of the exposed facility, without direct owner company supervision?		<input type="checkbox"/>	
29.	Have all known underground facilities been hand exposed or hydrovaccod within <b>5.0 meters</b> of the excavation area? Including pilling and anchor point's etc.	<input type="checkbox"/>		<input type="checkbox"/>
30.	Have all know facilities being crossed been hand exposed or hydrovaccod to the depth of construction grade?	<input type="checkbox"/>		

Other		Yes	No	N/A
31.	Have all necessary work permit(s) been completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32.	On live active sites etc. have pile holes/anchor points been pre-hydrovaccod to a depth of <b>3 meters</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33.	Visual confirmation undertaken to ensure pre-hydrovaccod holes for pilling etc. are free from obstruction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34.	On live active sites, was consideration given to; hydrovaccing verses traditional excavation methods?	<input type="checkbox"/>	<input type="checkbox"/>	



**This permit DOES NOT allow workers to enter a trench/excavation. (See Confined Space Entry Practice)**

**This permit is considered VOID if the Ground Disturbance Supervisor changes or the scope of work changes.  
If any item is check NO, please give detailed explanation below.**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GD Supervisor	_____	_____	_____
	(Print Name)	(Signature)	(Date)
Alternate GD Supervisor	_____	_____	_____
	(Print Name)	(Signature)	(Date)
Contractor Supervisor	_____	_____	_____
	(Print Name)	(Signature)	(Date)
Equipment Operator (where applicable)	_____	_____	_____
	(Print Name)	(Signature)	(Date)



## Appendix C: Contact Information for One-Call Centres

The web portal <http://www.clickbeforeyoudig.com/> offers a one-window approach to web-based locate requests. The web-based locates are quickly overtaking the traditional phone-in and faxed requests. The person requesting the locate is never placed on hold, they can make their request 24hrs/day and include drawings, sketches, photos or any electronic attachment with their request.

Accessing the link above will take you to all One-Call service providers for North America. Select the Province you are operating in and the required information will be displayed.

For reference the individual service providers are listed below, this information may change, it is recommended that you access the service providers through the web portal provided.

One-call centre	Phone number	Fax number	Website	Notice required
B.C. One Call	1-800-474-6886	604-451-0344	<a href="http://www.bconecall.bc.ca">www.bconecall.bc.ca</a>	3 full working days
Alberta One-Call	1-800-242-3447	1-800-940-3447	<a href="http://www.alberta1call.com">www.alberta1call.com</a>	2 full working days
Sask 1st Call	1-866-828-4888	1-866-455-5559	<a href="http://www.sask1stcall.com">www.sask1stcall.com</a>	2 full working days
Ontario One Call	1-800-400-2255	1-800-400-8876	<a href="http://www.on1call.com">www.on1call.com</a>	1 week
Info-Excavation (Quebec One- Call)	1-800-663-9228	1-800-441-3323	<a href="http://www.info-ex.com">www.info-ex.com</a>	3 full working days
Dig Line (St. John, NB) Operated by Info- Excavation	1-866-344-5463	1-800-441-3323	<a href="http://www.info-ex.com">www.info-ex.com</a>	2 full working days

## Appendix D: Sample Crossing Agreement Form

**\*\*This sample crossing agreement is customizable for your needs. Anything in red ink should be customized to your situation. \*\***

### Sample Crossing Agreement

This agreement, made this **DAY** of **MONTH, YEAR**

Inclusive of Schedules A, B, C and D, as applicable

BETWEEN

**YOUR COMPANY FULL NAME**

Hereinafter referred to as "**COMPANY NAME**"

AND

**FACILITY OWNER FULL NAME**

Hereinafter referred to as "**APPLICANT**"

WHEREAS:

- i. **Company Name** operates under the jurisdiction of the **AER/NEB/other regulator(s)** and **X legislation**, which states that **written permission from the pipeline company is required** for construction of a facility across, on, along or under an existing right of way; excavation using explosives or power-operated equipment over the right of way; operation of a vehicle or mobile equipment across a right of way, outside the travelled portion of a highway or public road; excavation using explosives or power-operated equipment within the 30-metre safety zone (**NEB EXAMPLE**).
- ii. The **Applicant** proposes to construct facilities, henceforth known as "subject crossing facilities", located in the geographic region described in Schedule A, henceforth known as the Crossing Area.
- iii. The rights of way and/or Facilities of the respective parties intersect in the Crossing Area.
- iv. This Agreement exists to define the rights and liabilities of the respective parties, with respect to the Crossing Area, under terms and conditions defined in Schedule A.
- v. **Company Name** has reviewed the drawings (Schedule B) provided for the proposed facility construction and agrees that the proposed Facilities will not interfere unreasonably with **Company Name** rights and the **Applicant** may construct the Facilities in accordance with the terms and conditions of this present Agreement.
- vi. This Agreement and the rights and obligations of the parties herein shall be governed and construed according to the laws of the province in which the work is to occur, in this case **ENTER PROVINCE NAME HERE**.

**LOCATION OF CROSSING AREA**

Enter the legal description of the Crossing Area here.

**NOTICES**

Company Name:

Name of Representative:

Address – Corporate Office:

Phone:

Fax:

Applicant Name:

Name of Applicant Representative:

Address – Corporate Office:

Phone:

Fax:

**FIELD REPRESENTATIVE**

Company Name:

Name of Representative:

Address – Corporate Office:

Phone:

Fax:

Applicant Name:

Name of Applicant Representative:

Address – Corporate Office:

Phone:

Fax:

**The parties listed below, in signing this Agreement, have caused this Agreement to be duly executed.**

**COMPANY NAME**

**APPLICANT NAME**

Per: \_\_\_\_\_

Per: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_



## Schedule A

### Mutually Agreed-To Terms and Conditions

Schedule A forms part of the Master Facility Crossing Agreement

BETWEEN

**COMPANY NAME**

AND

**APPLICANT**

Dated this **X** day of **MONTH, YEAR**

#### 1. CONSENT

**Company Name** hereby agrees that the **Applicant** is permitted to perform the work agreed upon in the terms and conditions of this Agreement on the **Applicant's** Facility in the Crossing Area.

#### 2. COMPLIANCE

The respective parties governed by this Agreement agree to comply at all times with any and all applicable codes, statutes, laws, regulations, permits, licenses, orders and directives of any governmental authority throughout the duration that the Agreement is in force. The minimum acceptable technical standards shall apply to the Facilities and the **Applicant** shall ensure that the location, operation and maintenance of the Facilities do not cause **Company Name** pipeline system to be out of compliance with any authority, having jurisdiction over any part or the whole of the **Company Name/Grantor's** pipeline system.

#### 3. TERM

This Agreement signifies that the respective parties agree to be governed by this Agreement, including Schedule B, for a period of two (2) years indicated above OR upon proper abandonment or removal of all Facilities, belonging to **Company Name** and/or **Applicant**, from the Crossing Area and the completion of any reclamation work required by applicable laws. This Agreement shall expire and a revised Crossing Agreement shall be required to continue with proposed activities, should all activities not be completed within the two-year timeframe.

#### 4. POSITION OF FACILITY

- i. **Company Name** shall retain the upper position in the Crossing Area;
- ii. At a minimum, a distance of 30 cm shall be maintained between the external surfaces of the underground Facilities; and,
- iii. **Any other requirement regarding the position of the Facility.**

## 5. CONDITIONS

- i. This Agreement shall be distributed by **Applicant** to all of its designated contractors and subcontractors on site. The Agreement shall be available to inspectors upon request.
- ii. The controlled area shall extend 30 m from the centre of the pipeline in either direction.
- iii. **Company Name** has the right to have a representative present to inspect the work of the **Applicant** in the Crossing Area.
- iv. The **Company Name** inspector must be satisfied that the **Company Name** pipelines are located exactly and all crossing approval conditions are met and planned safeguards are present, prior to commencing work in the controlled area surrounding the Crossing Area.
- v. The **Applicant** shall complete a record of inspection once the Company Name inspector deems the site adequate and ready for work; clause 6, Inspections, for further detail.
- vi. The **Applicant** shall notify **Company Name** 72 hours before commencing work on the Crossing Area; acceptable notification methods include by telephone/telecommunications or written notice, hand delivered or by mail.
- vii. The **Applicant** shall ensure that the work design is appropriate for the Crossing Area and the work to be completed.
- viii. The **Applicant** shall first fully expose the **Company Name** facility by hand digging, before proceeding to excavate within 5 m of the Crossing Area. The **Applicant** shall not use or permit the use of an excavating machine within 1.5 m of either side of any **Company Name** facility unless otherwise agreed to.
- ix. The **Applicant** shall do everything necessary to ensure that **Company Name's** cathodic protection of its pipeline or any part thereof is not damaged or adversely affected as a result of work conducted by **Applicant**, **Applicant's** operations, or subsequent application of cathodic protection by **Applicant** to the **Applicant's** facility. **Applicant** shall install where necessary not less than two (2) coated wired-test lead systems at the nearest reasonable access, of a design acceptable to **Company Name**. The **Applicant** shall bear the whole cost of providing installation and maintenance of any such cathodic protection. Notwithstanding the foregoing, cathodic protection shall not be required where **Applicant** installs a plastic or other non-metal facility.
- x. Should the **Company Name** facility suffer contact damage or other damage as a result of the **Applicant's** work, the **Applicant** shall notify **Company Name** forthwith and its repair shall be carried out as directed by **Company Name**, at **Applicant's** cost.
- xi. **Applicant** shall notify, by telephone or in person, **Company Name** of its intent to cover the facility and request **Company Name** inspection, at least 24 hours prior to covering. That 24 hour period excludes Saturdays, Sundays and Statutory Holidays.
- xii. **Applicant** shall cover the **Company Name** facility with at least **X cm** of select backfill material prior to commencing backfilling operations. **Applicant** shall compact the fill material in **X cm** layers, or such greater depth specified by **Company Name's** Field Representative (if applicable).
- xiii. **Applicant** shall restore the surface of the Crossing Area to normal as soon as possible after the completion of work in the Crossing Area.
- xiv. Other conditions specific to your company/situation

**\*\*The following are optional sections and suggested topics to address, depending on the job at hand. Edit to reflect your company's activities.\*\***

## 6. INSPECTION

- i. Inspector present for Company Name
- ii. Fees for inspections
- iii. Notify before blasting
- iv. Record of inspection
- v. When to inspect



## 7. CONSTRUCTION

- i. Temporary fencing requirements
- ii. Machine excavation prohibited within X m of facility
- iii. Exposure by hand digging to within X cm
- iv. Fill material on pipeline – requirements
- v. Supports and shoring requirements
- vi. Backfill material agreements and requirements
- vii. Drawings provided

## 8. UTILITY CROSSINGS

- i. Visible fence around excavation site
- ii. Support fittings (anchors, etc.)
- iii. Minimum clearances
- iv. Cable installation
- v. Temporary construction road requirements i.e. how much above the pipeline? 1.5 m?

## 9. REMEDY ON DEFAULT

In the case of default by the **Applicant** in carrying out any of the provisions in this Agreement, **Company Name** may give notice thereof to the **Applicant**. If the Applicant fails to commence to remedy such default within 15 days after receipt of such notice and diligently complete such remedy thereafter, **Company Name** may take such steps as are appropriate to remedy such default and Applicant shall be liable for and shall pay all reasonable costs and expenses incurred by **Company Name** in remedying the default.

## 10. LIABILITY & INDEMNITY

- i. Liability
  - a. **Company Name** does not assume any liability for inconvenience or loss of income due to obstructions including but not limited to pipeline maintenance, access and emergency situations created by **Company Name**.
  - b. **Applicant** shall be liable to **Company Name** for all loss, damages, and expense which **Company Name** may suffer, sustain, pay or incur by reason of any matter or thing arising out of or attributable to any act or omission of **Applicant**, its servant, agents, contractors, or employees, in respect of **Applicant's** use of the Crossing Area or by reason of this agreement; or
  - c. **Company Name** shall be liable to **Applicant** for all loss, damages and expenses which the Applicant may suffer, sustain, pay, or incur by reason of any matter or thing arising out of or attributable to any act or omission of **Company Name**, its servants, agents, contractors or employees, in respect of **Company Name's** use of the Crossing Area or by reason of this Agreement.
- ii. Indemnity
  - a. **Applicant** shall indemnify **Company Name** against all actions, proceedings, claims, demands and costs which may be brought against or suffered by **Company Name** or which it may sustain, pay or incur by reason of any matter or thing arising out or attributable to any act or omission of **Applicant**, its servants, agents, contractors or employees in respect of **Applicant's** use of the Crossing Area or by reason of this Agreement.
  - b. **Company Name** shall indemnify **Applicant** against all actions, proceedings, claims, demands and costs which may be brought against or suffered by **Applicant** or which it may sustain, pay or incur by reason of any matter or thing arising out or attributable to any act or omission of **Company Name**, its servants, agents, contractors or employees in respect of **Company Name's** use of the Crossing Area or by reason of this Agreement.

**11. INSURANCE¶**

- i. → Without in any way limiting the liability of either party under this Agreement, each party shall obtain and keep in force during the term of this Agreement, comprehensive general liability insurance, covering liability for bodily injury and property damage arising from Work contemplated by this Agreement. The limit of this insurance shall not be less than five million dollars (\$5,000,000) inclusive, for any one occurrence, unless otherwise agreed by the parties in writing. This policy shall provide coverage for liability assumed under this Agreement. ¶
- ii. → A party upon request of the other party, shall furnish written documentation, satisfactory to the requesting party, evidencing the required coverage. ¶
- iii. → As an alternative to the five million dollar policy of comprehensive general liability insurance referred to in Subclause 11(i), if acceptable to the other party, a party may self-insure against the risks normally covered by such a policy. ¶

**12. ASSIGNMENT¶**

Neither party shall assign or transfer this Agreement or the rights and privileges hereby granted without the written consent of the other party, and such consent shall not be unreasonably withheld. Together with any request for such consent, the party intending to assign or transfer this Agreement shall give to the non-assigning party notice of its intent by registered mail.¶

**13. FURTHER WORK¶**

Installation of any Facility other than those shown on attached Schedule B shall require a separate Facility Crossing Agreement. However, if emergency work is required in the Crossing Area, the party affected shall commence the necessary work and shall forthwith give the other party's Field Representative verbal notice of the emergency and necessary work, in addition to written notice, delivered by hand, mailed, or sent by telecommunication. ¶

**14. MISCELLANEOUS¶**

Include any further information specific to your situation. ¶

¶

Description of Work: ¶

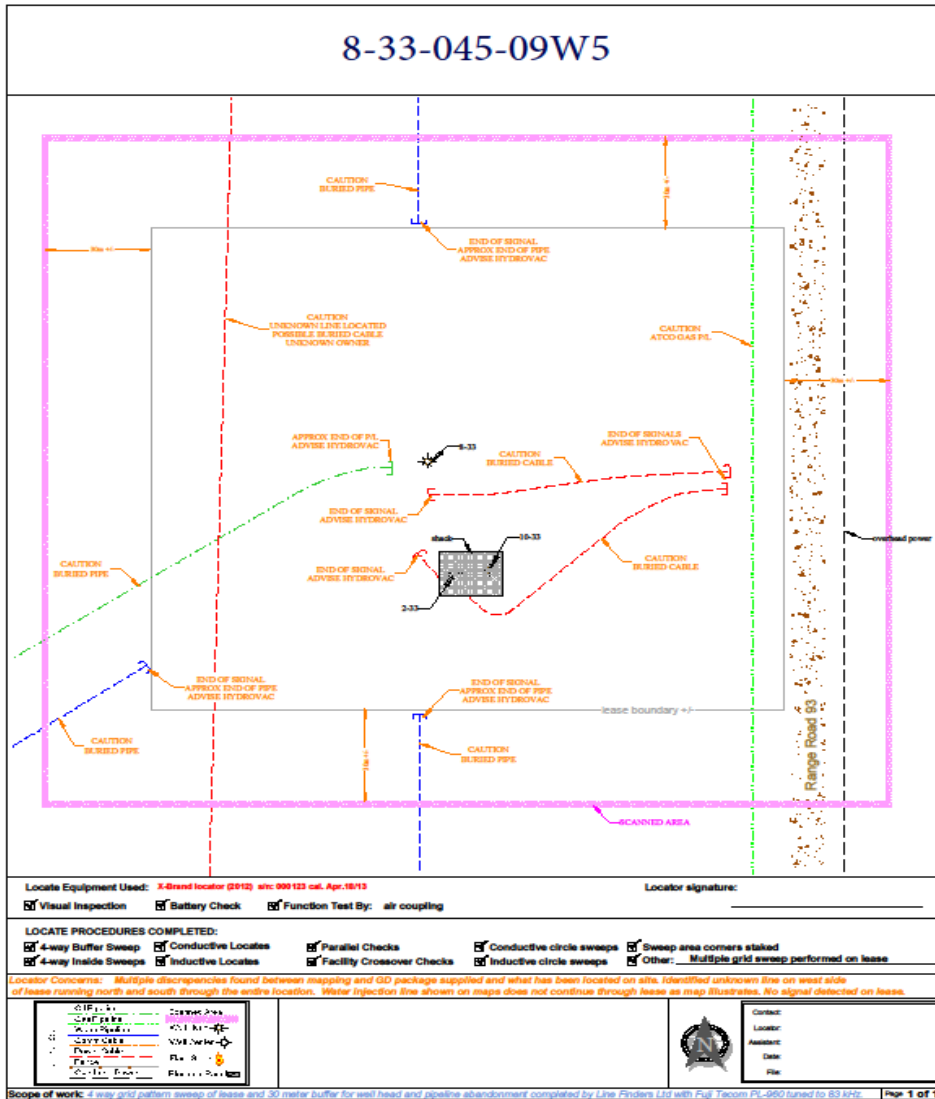
**DOCUMENT THE DETAILS OF THE APPLICANT'S PROJECT. ¶**

¶

**Schedule B -- Drawings¶**

**DOCUMENT THE DETAILS OF THE APPLICANT'S DRAWINGS¶**

# Appendix E: Sample Locate Drawing



## Appendix F: Uniform Colour-Code for Marking Buried Facilities (American Public Works Association – APWA)

Limits of proposed excavation*	White
Temporary survey markings	Pink
Electrical power lines, cables, conduits, and ducts or lighting wires and cables	Red
Gas, oil, petroleum, steam, or gaseous material	Yellow
Telephone, communications, cable TV, alarm or signal lines, wires, cable conduits or ducts	Orange
Water lines or pipes	Blue
Sanitary sewer, storm sewer, culvert or drain lines	Green
Irrigation, reclaimed water, slurry lines or pipes	Purple








\*The person proposing the ground disturbance is encouraged to mark the limits of job sites with white flags. Stakes or paint may be used to provide the locators and project personnel with an accurate understanding of the proposed construction area. In winter conditions, black may be used rather than white.

# Appendix G: CAGC Seismic Flagging

## SEISMIC FLAGGING COLORS









Designed to avoid confusion with International Color Code

---


	<b>ORANGE GLOW</b> diagonal stripes 2x ORANGE or 50/50 Seismic Line location 20 or 30 receiver includes access arrows, etc.	
	<b>PINK GLOW</b> diagonal stripes 2x PINK or 50/50 Seismic Line location 30 source includes access arrows etc.	
	<b>YELLOW GLOW</b> diagonal stripes 2x YELLOW or 50/50 Seismic hazard location	
 <b>SEISMIC Flagging</b>	 <b>SEISMIC</b>	Red Glow Seismic Source Point location  Pin Flag
 <b>SEISMIC Flagging</b>	 <b>SEISMIC</b>	Lime Glow Seismic Receiver Point location  Pin Flag

---

**INTERNATIONAL COLOR CODE FOR MARKING BURIED FACILITIES**

	WHITE	Proposed Excavation
	PINK	Temporary Survey Markings
	RED	Electric Power Lines, Cable Conduit and Lighting Cables
	YELLOW	Gas, Oil, Petroleum and Gaseous Materials
	ORANGE	Telephone, Cable TV, Communication, Alarm and Signal
	BLUE	Potable Water
	GREEN	Sanitary Sewers, Storm Sewers and Drain Lines
	PURPLE	Reclaimed Water, irrigation and Slurry Lines

**NOTE:**  
To avoid conflicts flagging with "SEISMIC" may be used as alternative to striped flagging for marking line location if other local users have used striped flagging.



# Appendix H: Sample Backfill Inspection Report

Company Performing Crossing:			Contractor Performing Crossing:		
LSD of Crossing:			Pipeline Crossing Ref. #:		
# of lines being crossed:					
YES	NO	N/A			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all Lines being crossed been primed and double taped?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the pipe and coating free from damage prior to backfilling?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all cathodic leads been properly bonded and the bonds properly coated?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the pipe supported so that settling will not damage the pipe or coating?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the backfill material free from; boulders, rocks, frozen lumps or other objects that could cause damage to the pipe, coating or cable?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has the backfill material been compacted evenly within the trench?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has the "top-soil" been replaced satisfactorily?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Within facilities, has yellow warning tape reading, "caution buried cable" been installed 300mm above the cable?		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	External crossing, company rep. on site during 'hand exposure'?		Name: (print)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	External crossing, company rep. conducted inspection of exposed pipe?		Name: (print)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is current information (drawings/site plans etc) accurate and current?		

Within facilities has the "TECK" installation been protected by?  Red Concrete  Red Blocks  Treated Lumber

Existing Buried Facilities									
Pipeline License #	Pipeline #	Pipeline Status	O.D. (mm)	W.T. (mm)	Depth Of Cover (m)	Pipeline Material	Coating Type	Insulated (y/n)	Service
		<input type="checkbox"/> Operating <input type="checkbox"/> Abandoned <input type="checkbox"/> Discont'd				<input type="checkbox"/> Steel <input type="checkbox"/> Fiberglass <input type="checkbox"/> HDPE <input type="checkbox"/> Other:		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Gas <input type="checkbox"/> Crude <input type="checkbox"/> Salt Water <input type="checkbox"/> LVP <input type="checkbox"/> Condensate <input type="checkbox"/> Other:
		<input type="checkbox"/> Operating <input type="checkbox"/> Abandoned <input type="checkbox"/> Discont'd				<input type="checkbox"/> Steel <input type="checkbox"/> Fiberglass <input type="checkbox"/> HDPE <input type="checkbox"/> Other:		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Gas <input type="checkbox"/> Crude <input type="checkbox"/> Salt Water <input type="checkbox"/> LVP <input type="checkbox"/> Condensate <input type="checkbox"/> Other:
		<input type="checkbox"/> Operating <input type="checkbox"/> Abandoned <input type="checkbox"/> Discont'd				<input type="checkbox"/> Steel <input type="checkbox"/> Fiberglass <input type="checkbox"/> HDPE <input type="checkbox"/> Other:		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Gas <input type="checkbox"/> Crude <input type="checkbox"/> Salt Water <input type="checkbox"/> LVP <input type="checkbox"/> Condensate <input type="checkbox"/> Other:

Newly Installed Pipeline/Facilities									
Facility Owner (NAME)	Pipeline Status	O.D. (mm)	W.T. (mm)	Depth Of Cover (m)	Pipeline Material	Coating Type	Insulated (y/n)	Service	
	<input type="checkbox"/> Operating <input type="checkbox"/> New				<input type="checkbox"/> Steel <input type="checkbox"/> Fiberglass <input type="checkbox"/> HDPE <input type="checkbox"/> Other:		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Gas <input type="checkbox"/> Crude <input type="checkbox"/> Salt Water <input type="checkbox"/> LVP <input type="checkbox"/> Condensate <input type="checkbox"/> Other:	
	<input type="checkbox"/> Operating <input type="checkbox"/> New				<input type="checkbox"/> Steel <input type="checkbox"/> Fiberglass <input type="checkbox"/> HDPE <input type="checkbox"/> Other:		<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Gas <input type="checkbox"/> Crude <input type="checkbox"/> Salt Water <input type="checkbox"/> LVP <input type="checkbox"/> Condensate <input type="checkbox"/> Other:	

(Surface)

Newly constructed facility

**Notes:**

1. Mark up sketch as required.
2. Attach photo, digital print or digital picture.
3. Attach additional documents as required. (including copies of change/alteration drawings)
4. Sketch in additional lines as necessary

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**(Ensure Min. 300mm Separation)**



# Appendix I: Evaluation Ground Disturbance Damage Prevention Program

## 1. Introduction

### a. SWP

The organization has developed a ground disturbance damage prevention program to meet or exceed the requirements of Federal and Provincial regulatory agencies and Occupational Safety Act, and industry associations. The requirements of a GDDPP shall apply to all work undertaken where there is a disturbance of the ground.

The GDDPP outlines the necessary requirements for conducting ground disturbance activities in the safest practical manner, minimizing the potential for damaging a buried facility and reducing the potential for personal injury, damage to equipment and the environment.

### b. GDDPP Evaluation Program

Using this guide will allow the organization to verify compliance, quality and effectiveness of the GDDPP. It will allow for a detailed assessment of all the components essential for successful and safe ground disturbance activities.

#### i. Evaluation Objectives

- To establish the degree of GDDPP program compliance with company, industrial, federal and provincial agency regulations and requirements
- To identify areas of required improvement and recommend corrective action to remedy those areas
- To acknowledge and emphasize the strengths in the GDDPP

#### ii. Standards

The following criteria will govern the organization's GDDPP evaluation program:

- The evaluation must be a useful tool
- The evaluation must promote the involvement and participation of all affected personnel
- The evaluation should be flexible in application, but should not devalue basic evaluation methodology
- The evaluation must be user friendly

- The evaluation must be sensitive enough to take into account other safety programs and activities
- The evaluation must be credible and the concept must be familiar to and accepted by management

### iii. Scope

The GDDPP Evaluation Program is specific to the ground disturbance activities undertaken by the organization.

### iv. Evaluation Process

- Examination of Documentation
- Interviews
- Observation of activities
- Findings, Analysis and Judgment
- Report Preparation (draft & final)

## 2. Evaluation Methodology

The evaluation methodology consists of the following steps:

- Pre-evaluation preparation
- Documentation review
- Interviews
- Field assessment/observations
- Verification of findings
- Draft report preparation
- Pre-issue meeting
- Final GDDPP evaluation report



### a. Pre-Evaluation Preparation

Good communication with the stakeholders and professional conduct of the evaluators are essential for a good start to the evaluation and its successful completion. To assist in this area consider and complete the following activities before starting the evaluation:

- Contact the stakeholder
- Arrange meeting with the stakeholder
- Determine scope and constraints
- Assign team members, if necessary
- Determine evaluation resources
- Produce a work schedule

### b. Documentation Review

Documentation review is one of the most important steps in this evaluation process. The evaluator(s) must verify that all required and available documentation was used as reference prior to undertaking the work.

### c. Interviews

The evaluator(s) will interview personnel and contractors that were/are involved with undertaking the project/task. This may include, but not be limited to the following:

- Project Leader
- Area Superintendent
- Site Representative
- Area Foreman
- Contractor Spread Boss
- GD Site Representative
- Operator
- Equipment Operator
- Line Locating Representative
- Hydrovac Representative

**d. Field Assessment/Observations**

The field assessment/observation section of the SWP Evaluation Program will provide the Evaluator(s) with the following information:

- Visual confirmation that all key components of the SWP are being engaged
- Verification that documentation is being correctly referenced
- Confirmation that all persons involved are aware of organization requirements
- Verification of hazard identification and controls are engaged

**e. Verification of Findings**

The Evaluator(s) will generally use the following methods to verify the effectiveness and implementation of the GDDPP.

- Documentation quality checks
- Interviews with staff
- Field examination of Safe Work Permits

**f. Draft Report**

The Evaluator(s) will analyze all the information to identify strengths and weaknesses of the GDDPP. The evaluation findings will include recommendations and corrective actions for identified areas of non-compliance. In addition the evaluator(s) will identify areas of merit to ensure recognition of activities that exceed expectations.

**g. Pre-Issue Meeting**

The evaluator(s) will conduct a review of the draft report with all stakeholders prior to circulation. This will allow for error correction and missing information relevant to the report.

**h. Final SWP Evaluation Report**

The Evaluator(s) will produce and distribute the final report.

### 3. Evaluation Questionnaire

The following format is for interviewing employees, contractors and consultants etc., regarding all ground disturbance activities.

*Format*

There are specific questions and verification statements for all components of the GDDPP.

The GDDPP Evaluation Questionnaire has three parts:

Preparation Instructions

To optimize the time and effort of everyone involved, preparation instructions will help to focus the interview questions and eliminate questions not relevant for the planned interview.

Evaluation Questions

Evaluation questions identify each sub-element activities and measure current activity performance. Each question will have a:

- Potential (P) score which measures program existence and,
- Compliance (C) score which indicates program compliance and effectiveness.

Verification Questions

For all element activities, the evaluator(s) must verify the existence, consistent application, implementation and compliance to the ground disturbance SWP.

*Method*

D = Documentation is reviewed and/or attached

I = Interviews are conducted with employees (management & worker) and contractors, etc.

O = Field observations are made of GDDPP procedures and activities

Question	P Score	Verification	Method (D/I/O)	Evaluators Comments	C - Score
<input type="checkbox"/> YES					
<input type="checkbox"/> NO					
<input type="checkbox"/> YES					
<input type="checkbox"/> NO					
				% =	



#### 4. SWP Evaluation Questionnaire

Successful implementation of the GDDPP requires that management establish basic expectations, criteria and responsibilities for ground disturbance activities, together with a program of support and continuous improvement. Program success requires both management support and commitment.

Program support focuses on the allocation of technical and financial resources necessary to meet the organization's expectations concerning the GDDPP. Program commitment focuses on management's dedication to comply with, and improve, the overall approach for safe ground disturbance practices and behaviors.

The interview process should provide the evaluator(s) with the necessary information and verification to award points that reflect current activity. Full point allocation would allow the evaluator(s) to confirm the following sub-element statements. Less than potential point assignment requires the evaluator(s) to document reasons in the "comment" section.

1.1 Ground Disturbance Standard	100
2.1 Safe Work Practice	70
3.1 Ground Disturbance Documentation	305
4.1 Training/Qualification	120
5.1 Site Work	175
6.1 Program Review	60
<b>Total Points</b>	<b>830</b>

#### Section 1

##### 1.1 Ground Disturbance Standard - total of 110 points awarded because...

- 1.1.1 Individuals are aware of an organizational standard that describes the purpose, strategy, and management's responsibilities.
- 1.1.2 Individuals are aware of the requirement to comply with government regulations.
- 1.1.3 The workforce is aware of their areas of responsibility.
  - **5 points** for management's responsibility
  - **5 points** for supervisor's responsibility
  - **5 points** for workers responsibility
- 1.1.4 Individuals know of the training requirements.
- 1.1.5 Individuals know of a ground disturbance systems review process.

- 1.1.6 Individuals are aware of a company ground disturbance program.

## Section 2

### 2.1 Safe Work Practice - 80 points awarded because...

- 2.1.1 Workers are aware of a GDDPP.
- 2.1.2 Individuals know the process requirements for undertaking ground disturbance activities.
- 2.1.3 Individuals know the supervision requirements for ground disturbance.
- 2.1.4 Individuals were informed of the GDDPP, by;
- 2 points for distributing copies
  - 2 points for posting at work sites
  - 3 points discussing with employees
  - 3 points access on organization “web” page
  - 10 points for Training

## Section 3

### 3.1 Ground Disturbance Documentation - 310 points awarded because...

- 3.1.1 Individuals are aware of precautionary measures prior to commencing ground disturbance activities.
- 3.1.2 Individuals know of the safe work permit document identifying precautionary measures taken.
- 3.1.3 Individuals are aware of the sections within the permit:
- 5 points Record confirmation
  - 5 points Line locating
  - 5 points Visual inspections
  - 5 points Pre-disturbance work
  - 5 points Other areas
- 3.1.4 Individuals are aware of the necessary documentation to be referenced prior to undertaking ground disturbance activities.
- 5 points company systems map
  - 5 points legal Survey Plans
  - 5 points AER Baseline map (Alberta only)
  - 5 points Certificate of Title
  - 5 points ACCUMAP/Abadata/GIS (electronic mapping systems)
  - 5 points Crossing agreements
- 3.1.5 A system is in place to provide Locator drawings.
- 5 points Site sketch computer/hand generated
  - 5 points Approximate measurements shown
  - 5 points Locating Methods indicated on drawing
  - 5 points Locating equipment used indicated on drawing
  - 5 points Site sketch has tracking system indicated on drawing

- 3.1.6 Individuals know the requirement of notifying the Provincial One-Call service.
  - **10 points** Reference number indicated on the safe work permit
- 3.1.7 Individuals know of the requirement for completing a hazard assessment prior to the task being started.
- 3.1.8 Responsible individuals record safety requirements associated with the hazard prior to the task being started.
- 3.1.9 Responsible individuals clearly communicate all safety requirements to the workers.
- 3.1.10 Individuals know of the requirement to complete the safe work permit for ground disturbance prior to the task commencing.
- 3.1.11 Responsible individual clearly communicates the precautionary measures required to all individuals associate with the activity prior to the task commencing.
- 3.1.12 Individuals are aware that site inspections will take place.
- 3.1.13 Individuals know that any deficiencies must be corrected in a timely manner.

## **Section 4**

### **2.1 Training/Qualification - 120 points awarded because...**

- 4.1.1 All individuals know that a ground disturbance orientation training process is in place.
  - **10 points** Employee
  - **10 points** Contractor
  - **10 points** Consultants
- 4.1.2 All individuals know that a process to train individuals is in place.
  - **10 points** Supervisory training
  - **10 points** Non-supervisory training
- 4.1.3 All individuals know that line locators are adequately trained.

## **Section 5**

### **5.1 Site Work - 170 points awarded because...**

- 5.1.1 All individuals know all known buried facilities on the job site must be correctly identify and marked.
- 5.1.2 All individuals responsible know the minimum reference material required.
  - **5 points** AER Baseline map (Alberta only)
  - **5 points** Company systems map
  - **5 points** Certificate of Title
  - **5 points** Legal Survey Plans
  - **5 points** Abadata/Electronic/GIS mapping
  - **5 points** Provincial One-Call
  - **5 points** Crossing Agreements
- 5.1.3 All individuals know the following precautionary measures:
  - **5 points** Identification Colour Code
  - **5 points** Line Marking Method

- **10 points** Exposure Methods

- 5.1.4 Notifications to companies with buried facilities close to the job site are completed by the responsible person.
- 5.1.5 Responsible person notifies companies should a line contact occur.
- 5.1.6 Responsible person notifies regulatory agencies should a line contact occur.
- 5.1.7 Does the responsible person know the internal notification process should a line contact occur.

**Section 6**

**6.1 Program Review - 60 points awarded because...**

- 6.1.1 Management and supervisors know the process that facilitates a review of the GDDPP.
- 6.1.2 Is management involved with review process?
- 6.1.3 Is management aware of the process to communicate the results of the review?

Location		Date		Page		of	
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1.1 Ground Disturbance Standard				90 Points			
Question			P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score	
1.1.1	Is the worker(s) aware of company ground disturbance standard?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
1.1.2	Are the workers aware of the requirement to comply with government regulations?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
1.1.3	Is the workforce aware of their areas of responsibility?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10				
	1. Management responsibilities?		5				
	2. Supervisor responsibilities?		5				
	3. Employee Responsibilities?		5				
	4. Working Groups?		5				
1.1.4	Do the workers know of the training requirements for ground disturbance?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
1.1.5	Is the worker(s) aware of a program to review the ground disturbance process?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10				
1.1.6	Do the worker(s) know of the company ground disturbance program?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10				
					% =	100	



Location		Date		Page		of	
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2.1 Safe Work Practice				Points			
Question			P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score	
2.1.1	Are the workers aware of a GDDPP?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
2.1.2	Do the worker(s) know of the process requirements to undertake the ground disturbance activity?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10				
2.1.3	Do the workers know the supervision requirements for ground disturbance?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10				
2.1.4	Where the workers informed about the GDDPP and how?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10				
	1. Distributing copies of the GDDPP?		2				
	2. Posting it at work sites?		2				
	3. Discussing GDDPP with employees?		3				
	4. Access on organization "web" page?		3				
	5. Training		10				
% =						70	

Location		Date		Page		of	
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3.1 Ground Disturbance Documentation				Points			
Question			P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score	
3.1.1	Are the workers aware of the precautionary measures necessary prior to commencing work?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
3.1.2	Are the workers aware of the safe work permit that identifies the precautionary measures undertaken?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
3.1.3	Are the workers aware of the safe work permits sections?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20				
	1. Record confirmation?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5				
	2. Locations?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5				
	3. Visual Inspection?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5				
	4. Pre-Disturbance?	<input type="checkbox"/> YES <input type="checkbox"/> NO	3				
	5. Other?	<input type="checkbox"/> YES <input type="checkbox"/> NO	2				
% =						80	





Location		Date		Page		of	
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3.1 Ground Disturbance Documentation					Points
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score
3.1.4	Are the workers aware of the necessary reference documentation?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
	1. Company Systems Map?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	2. Legal Survey plan (pipeline or lease)?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	3. AER Baseline drawing (Alberta only)?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	4. Certificate of Title? Or Land Standing Report? (crown land)	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	5. Accumap/Abadata/GIS (electronic mapping system)?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	6. Crossing agreements for P/L construction projects?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
% =					50

Location		Date		Page		of	
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3.1 Ground Disturbance Documentation					Points
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score
3.1.5	Do the worker(s) know Line locator drawings must be provided <del>provided</del> ?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
	1. Computer generated/hand drawn?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	2. Approximate measurements shown?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	3. Locating Methods indicated on drawing?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	4. Locating equipment used indicated on drawing?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	5. Site sketch has tracking system indicated on drawing?	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
% =					45

Location		Date		Page		of	
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3.1 Ground Disturbance Documentation					Points
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score
3.1.6	Do the worker(s) know of the requirement to notify the Provincial One-Call service?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
	1. Is the Reference number indicated on the safe work permit?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10		
% =					30



Location		Date		Page		of	
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3.1 Ground Disturbance Documentation					Points	
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score	
3.1.7	Do the workers know of the requirements of completing a hazard assessment, prior to the task being started?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20			
3.1.8	Do the worker(s) record their finding of the assessment prior to the task being started?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20			
3.1.9	Are the hazards clearly communicated to all the workers involved in the task?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
3.1.10	Does everyone involved know of the safe work permit associated this activity?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
3.1.11	Is the information captured on this document clearly communicated to all individuals associate with the task?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
3.1.12	Are individuals aware of a system or process that facilitates site inspections for ground disturbance?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20			
3.1.13	Do the individuals know that any deficiencies must be corrected in a timely manner?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
					% =	100

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4.1 Training/Qualification					Points	
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score	
4.1.1	Do the worker(s) know that there is an orientation system or process in place, for:	<input type="checkbox"/> YES <input type="checkbox"/> NO	30			
	1. Employees	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
	2. Contractors	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
	3. Consultants	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
4.1.2	Do the worker(s) know if a system or process is in place to train individuals to the requirements of ground disturbance?	<input type="checkbox"/> YES <input type="checkbox"/> NO	30			
	1. Supervisory training	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
	2. Non-Supervisory Training	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
4.1.3	Do all individuals know that line locators must be adequately trained?	<input type="checkbox"/> YES <input type="checkbox"/> NO	10			
					% =	120



Location		Date		Page		of	
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5.1 Site Work				Points	
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score
5.1.1	Do individuals know that all known buried facilities on the job site must be located and marked?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
5.1.2	Do all individuals know of the minimum reference material required?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
	1. AER Baseline map (Alberta only)	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	2. Company systems map	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	3. Certificate of Title	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	4. Legal Survey Plans	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	5. Abadata/Electronic/GIS mapping	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	6. Provincial One-Call	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	7. Crossing Agreements – P/L Const.	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
% =					75

Location		Date		Page		of	
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5.1 Site Work				Points	
Question		P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score
5.1.3	Are the site individuals aware of the following precautionary measures?				
	1. Identification Colour Code	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	2. Line Marking Method	<input type="checkbox"/> YES <input type="checkbox"/> NO	5		
	3. Exposure Methods	<input type="checkbox"/> YES <input type="checkbox"/> NO	10		
5.1.4	Does the responsible person notify companies with buried facilities close to the job site?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
5.1.5	Does the responsible person know of the process to notify companies should a line contact occur?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
5.1.6	Does the responsible person know which regulatory agencies should be notified when a line contact occurs?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
5.1.7	Does the responsible person know of the internal notification process should a line contact occur?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20		
% =					100



Location		Date		Page		of	
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6.1 Program Review				Points	
Question	P/ Score	Method (D/I/O)	Evaluators Comments	C/ Score	
6.1.1 Does Management and supervisors know the process that facilitates a review of the GDDPP?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20			
6.1.2 Is management involved with the review process?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20			
6.1.3 Is management aware of the process to communicate the results of the review?	<input type="checkbox"/> YES <input type="checkbox"/> NO	20			
				% =	60

Location		Date		Page		of	
<b>Information/statement sheet</b>							
Interviewee Name (Please Print)				Interviewee Signature			
Evaluator Name (Please Print)				Evaluator Signature			



## Appendix J: Glossary

ABCGA	Alberta Common Ground Alliance
AER	Alberta Energy Regulator
APWA	American Public Works Association.
Buried Facility	Anything below ground used in the collection, storage, transmission, or distribution of water, storm water, or sewage; electronic, telephonic, or telegraphic communications; cable television; electrical energy; oil, natural gas, steam, petroleum products, chemicals, and other substances; and includes, but is not limited to, pipes, conduits, ducts, cables, wires, manholes, catch basins, and attachments to these items.
Buried Facility Owner	The physical or registered owner.
Buried Facility Operator	The physical entity authorized to legally operate and maintain the buried facility.
CAPULC	Canadian Association of Pipeline and Utility Locating Contractors.
Common Ground Alliance (CGA)	Furtheres the work begun by the Common Ground Task Force established by the United States Department of Transportation (DOT) in 1998; the Task Force’s work product, entitled the Common Ground Study, provided a guide to underground utility damage prevention best practices in use throughout the United States and Canada.
Competent	For the purpose of this IRP, “competent” is defined in Section 2 of this IRP.
Controlled Area or Safety Zone	The area within 30 m either side of a provincially regulated pipeline is a controlled area. The area within 30 m of the right of way of a federally regulated pipeline is a safety zone. The pipeline operator must be notified of any intent to disturb the ground within the controlled area or safety zone and the ground disturber must request locates.

Ground Disturbance  
Damage Prevention  
Program

Specific to this guideline, ground disturbance damage prevention program means a document giving methods developed to assist compliance with acts and regulations in the performance of work. To accomplish this, the ground disturbance damage prevention program may include both voluntary measures and those required by law with the intent of providing practical guidance on ways to achieve compliance with different legislative authorities.

Crossing  
Agreement

In the buried facility industry, an approval is known as a crossing agreement; a crossing agreement is issued any time a third party proposes to undertake a ground disturbance within a buried facility right-of-way or within 5 m of a pipeline that is not in a right-of-way (CAUTION: within 30 m for federally regulated pipelines) to define the terms and conditions under which the ground disturbance may take place. Crossing agreements are also used internally between different operating divisions of the same organization. The agreement must at least follow the laws of the jurisdiction, but can and will set out even more stringent standards that must be complied with by the party wishing to create the ground disturbance. Note that a crossing agreement is referred to in regulations as an approval and does not mean physically crossing one facility over/under another. This applies whenever working within the distance described in the regulations. This glossary also contains definitions of internal, external, and written approvals as well as proximity, reciprocal, right-of-access, and right-of-entry agreements for other types of executed documents.

Damage  
Notification

Notification of any damage to a buried facility, either caused or found, regardless of severity, reported to the owner of the buried facility, who shall investigate the damage, take remedial action as required, and report the damage to appropriate regulatory agencies as required.

Emergency  
Locate Request

A locate request placed before the start of a ground disturbance to correct any abnormal condition that constitutes a clear and present danger to life, health, or property by reason of escaping gas or petroleum products, breaks, or defects in a buried facility, including the disruption of essential services, or by reason of any disaster of natural or artificial causes.

Emergency  
Response Plan  
(ERP)

A plan that prepares for all emergencies and details the appropriate response to each type of incident.

Employer	<p>An “employer” is typically defined in OHS legislation as: (a) a person who is self-employed in an occupation, (b) a person who employs one or more workers,</p>
Encroachment	<p>(c) a person designated by an employer as the employer’s representative</p> <p>(d) a director or officer of a corporation who oversees the occupational health and safety of the workers employed by A use (e.g. human activity such as temporary workspace), structure, facility or other physical improvement that intrudes onto a right-of-way or in proximity thereto.</p>
Encroachment Agreement	<p>A written approval that allows a party to create a ground disturbance within the buried facility owner’s right-of-way.</p>
Ground Disturbance	<p>Any work, operation, or activity that results in a disturbance of the earth including excavating, digging, trenching, plowing, drilling, tunnelling, augering, backfilling, blasting, topsoil stripping, land levelling, peat removing, quarrying, clearing, and grading, but does not include the following:</p> <p>(a) except as otherwise provided in subclause (b), a disturbance of the earth to a depth of less than 300 mm that does not result in a reduction of the earth cover over the pipeline to a depth that is less than the cover provided when the pipeline was installed;</p> <p>(b) agricultural cultivation to a depth of less than 45 cm below the surface of the ground;</p> <p>(c) any work, operation, or activity that is specified in the regulations not to be a ground disturbance.</p>
Ground Disturbance Supervisor	<p>The above definition is from the Alberta Pipeline Act. Given that some buried facilities may not have 300 mm cover, it would be prudent to consider any disturbance of the ground, regardless of depth, as a ground disturbance.</p> <p>An employee, a consultant, or a contractor the organization has deemed competent by formal examination or certification and has sufficient knowledge and experience to competently serve as the ground disturbance supervisor for ground disturbance activities.</p>

Ground Disturber	The person or organization proposing to undertake a ground disturbance.
Hand Exposure	Non-destructive excavation techniques acceptable to the owner of the buried facility, to the extent that its buried facilities shall be exposed as needed to confirm their orientation, depth, material, and alignment.
Hand Expose Zone	The distance from the locate marks within which mechanical excavation equipment shall not be used until the buried facility has been hand exposed. Under the Alberta Pipeline Act and Regulation, the hand expose zone for pipelines is 5 m. For federally regulated pipelines, the hand expose zone is 3 m. For all other types of buried facilities, the hand expose zone is 1 m.
Land Owner	A person or organization in whose name a certificate of title has been issued pursuant to the Land Titles Act, or, if no certificate has been issued, the Crown or other body administering the land.
Markers	Wooden stakes or laths, wire or biodegradable pin flags, paint, chalk, stake chasers (fiber clusters), or other materials used to indicate the approximate horizontal alignment of a buried facility.
NEB	National Energy Board.
OGC	British Columbia Oil and Gas Commission
OHS	Occupational health and safety.
Pipeline	<p>A pipe used to convey a substance or combination of substances but does not include the following:</p> <ul style="list-style-type: none"> <li>(a) a pipe used to convey water other than water used in connection with an oilfield facility, or other matter authorized under provincial or federal pipeline regulations;</li> <li>(b) a pipe used to convey gas, if the pipe is operated at a maximum pressure of 700 kilopascals or less, and is not used to convey gas in connection with a facility, scheme, or other matter authorized under provincial or federal pipeline regulations;</li> <li>(c) a pipe used to convey sewage.</li> </ul>



When defined by provincial OHS legislation, worksites are required to have a prime contractor if there are two or more employers involved in work at the worksite at the same time. The prime contractor for a work site is:

Prime Contractor

- (a) the contractor, employer, or other person who enters into an agreement with the owner of the worksite to be the prime contractor, or
- (b) if no agreement has been made or no agreement is in force, the owner of the work site.

Proximity Notification or Agreement

This notification allows a party to create a ground disturbance within the 30m proximity of the owner's buried facility. In some instances an agreement may be required by the buried facility owner. This agreement is very similar to a crossing agreement but removes the confusion of the term 'crossing'. This notification and/or agreement is also utilized for providing direction and specifications for ground disturbances that are not related to installing a buried

Reciprocal Agreement

A written approval that provides specifications that both parties will mutually adhere to when creating a ground disturbance; these agreements are completed by facility owners that are commonly working back and forth on each other's rights-of-way.

Right-of-Access Agreement

A written approval that provides the terms and conditions for entry into property not owned by the party creating the ground disturbance; could apply to land, a right-of-way owned by an organization, a county road ditch, etc. It is common to have several right-of-access agreements.

Search Area

The Alberta Pipeline Act and Regulation require that anyone proposing to undertake a ground disturbance take all precautions necessary to determine whether or not a pipeline exists within the limits of the proposed ground disturbance and for an additional 30 m area surrounding the limits of the proposed ground disturbance. If, during the course of a ground disturbance, the limits of the ground disturbance increase, the 30 m area will also expand to match that increase and maintain a 30 m undisturbed area beyond the ground disturbance that has been searched for the presence of pipelines. For other types of buried facilities, there are no specific search area requirements, but the prudent ground disturber would request locates for an area larger than the limits of the proposed ground disturbance.

Visible  
Indicators

Any visible indication that another party has created a ground disturbance in the area, such as vegetation changes, scarring of the land, vehicle tracks, soil changes, buildings, above-ground facilities, etc.

Written  
approval

A document provided to a ground disturber by the owner of a buried facility that establishes the terms and conditions under which the ground disturbance will take place. There are many situations where written approval before a ground disturbance is required:

- (a) any time a ground disturbance is proposed within a pipeline right-of-way or within 5 m of a pipeline that is not in a right-of-way,
- (b) any time a ground disturbance is proposed within the right-of-way of any other type of buried facility where that right-of-way is in favour of the owner of the facility,
- (c) any time a ground disturbance is proposed within a highway right-of-way, and
- (d) any time a ground disturbance is proposed within a municipal road allowance or utility right-of-way.

Written approvals may take many forms depending on the industry and the owner of the buried facility. Municipalities may use a ground disturbance permit process in conjunction with a right-of-access agreement.

**CALGARY**

T 403 516 8000 5055 11 Street NE  
F 403 516 8166 Calgary, AB T2E 8N4

**NISKU**

T 780 955 7770 1803 11 Street  
F 780 955 2454 Nisku, AB T9E 1A8

**FORT MCMURRAY**

T 780 791 4944 Box 13 - 8115 Franklin Avenue  
F 780 715 3945 Fort McMurray, AB T9H 2H7

**BRITISH COLUMBIA**

T 250 785 6009 2060 - 9600 93 Avenue  
F 250 785 6013 Fort St. John, BC V1J 5Z2

**SASKATCHEWAN**

T 306 842 9822 208 - 117 3 Street  
F 306 337 9610 Weyburn, SK S4H 0W3

[Info@EnergySafetyCanada.com](mailto:Info@EnergySafetyCanada.com)  
Enrolment Services and Certificate of Recognition:  
1 800 667 5567

[EnergySafetyCanada.com](http://EnergySafetyCanada.com)

