



THE

DAMAGE PREVENTION PROCESS

IN

ALBERTA

ROLES, RESPONSIBILITIES AND EXPECTATIONS

OF THE STAKEHOLDERS IN THE PREVENTION OF

DAMAGE TO BURIED FACILITIES

Previously published as “CALL BEFORE YOU DIG”
Guidelines for Safe Excavations in Alberta

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ALBERTA DAMAGE PREVENTION COUNCIL

The Alberta Damage Prevention Council (ADPC), formerly the Alberta Utility Coordination Council (AUCC) is a committee of stakeholders in the damage prevention process within the Alberta Chapter, Canadian/American Public Works Association. Council members include representatives from local damage prevention committees, stakeholder industry associations, facility operators, contract locators, regulatory agencies, training organizations and the one-call centre.

The ADPC Training Standards Committee is responsible for the content of ADPC Standard 101, Ground Disturbance – Hazard Awareness and ADPC Standard 201, Ground Disturbance – Supervisory training programs.

Membership in the ADPC is open to any one or any group with an interest in the prevention of damage to buried facilities. New members are always welcome.

Mission Statement

In the spirit of cooperation, this Council is dedicated to the minimizing of damages caused to utilities from unauthorized contacts and to promotion of safe working environments for all agencies involved in development and construction.

Purposes

The purposes of the ADPC are:

- to serve as a focal point for action by the Chapter in the utility location, coordination and damage prevention fields,
- to serve as the communication link and foster cooperation among the various local utility coordination committees,
- to foster a cooperative approach to the resolution of problems between the digging community and the operators of buried, surface and aerial utilities,
- to sponsor, promote and participate in educational and training programs related to the prevention of damage to utilities,
- to establish and maintain liaison with other related interest groups,
- to analyze and evaluate publications, programs and services which are of interest or concern to its members,
- to promote membership in the Council and in the Chapter,
- to promote membership in and use of Alberta One-Call,
- to develop program suggestions for Chapter meetings and conferences and
- to conduct activities that advance the purposes of the Council and enhance the quality of services provided to its members.

Activities

The ADPC hosts two well-attended Damage Prevention and Safety Seminars in the spring of every even numbered year. One is held in Red Deer, the other at various locations around the province.

Maintaining the currency of these guidelines is a significant ADPC activity.

INTRODUCTION

The prevention of damage to buried facilities will have a positive impact on 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.

No responsible operator of buried facilities wants to have those facilities damaged and no responsible member of the digging community wants to damage buried facilities. These are common expectations from which a damage prevention process that is fair, reasonable, practical, based on best practices and supported and endorsed by the stakeholders has developed. The process is a "work in progress" that has evolved and will continue to evolve and improve over time.

PURPOSE

These guidelines have been prepared by the stakeholders in the damage prevention process to explain the roles, responsibilities and expectations of all parties involved in preventing damage to buried facilities when ground disturbances take place near buried facilities. They should be considered in conjunction with applicable acts, regulations and codes such as:

- Alberta Gas Distribution Act
- Alberta Mines and Minerals Act
 - Alberta Exploration Regulation
- Alberta Municipal Government Act
- Alberta Occupational Health and Safety Act
 - Alberta Occupational Health and Safety Regulation
 - Alberta Occupational Health and Safety Code
- Alberta Pipeline Act
 - Alberta Pipeline Regulation
- Alberta Safety Codes Act
 - Alberta Electrical Utility Code
- National Energy Board Act
 - National Energy Board Pipeline Crossing Regulations, Parts I and II

It is important to understand that regulatory requirements are minimum standards. Many operators of buried facilities impose stricter requirements on ground disturbers working near their buried facilities.

The information in these guidelines will be of interest and assistance to anyone planning to excavate or disturb the ground in Alberta. It is applicable to homeowners as well as to contractors.

It will also be of interest and assistance to any operator of buried facilities in the province.

Cautionary Note

It must be stressed that acceptance of and compliance with these guidelines is not universal among the operators of buried facilities or the digging community. These guidelines, through the frequent use of the word “should”, suggest the direction in which the damage prevention process in Alberta is moving, driven by the interests of worker safety, public safety, protection of the environment and preservation of the integrity of the underground infrastructure.

Future Developments

As has happened with safety, prevention of damage to buried facilities is gradually becoming part of the corporate cultures of individual stakeholder organizations, part of how their businesses are conducted on a daily basis.

As stakeholder awareness and acceptance of the expectations, roles and responsibilities in the damage prevention process increases, these guidelines will be revised from time to time to reflect the evolution of the process.

BEST PRACTICES

The Common Ground Study of One-Call Systems and Damage Prevention Best Practices, sponsored by the United States Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, as authorized by the Transportation Equity Act for the 21st Century (TEA 21) was published on 30 June 1999.

The study, which took place between the fall of 1998 and the spring of 1999, involved over 160 volunteers, with expertise in damage prevention, from all stakeholder groups in the damage prevention process, working in teams to identify, define and agree on more than 130 best practices in the areas of:

- buried facility planning and design,
- one-call centre operations,
- locating and marking buried facilities,
- excavation,
- mapping of buried facilities,
- compliance with regulations,
- public education and awareness programs and
- reporting and evaluation of damages.

The non-profit organization, Common Ground Alliance, was established following the publication of the Common Ground Study to ensure that the energy and momentum developed during the study were maintained, to ensure that the best practices identified remain current and to identify, validate, publish and promote the adoption of new best practices. The ADPC is a Regional Partner of the Common Ground Alliance.

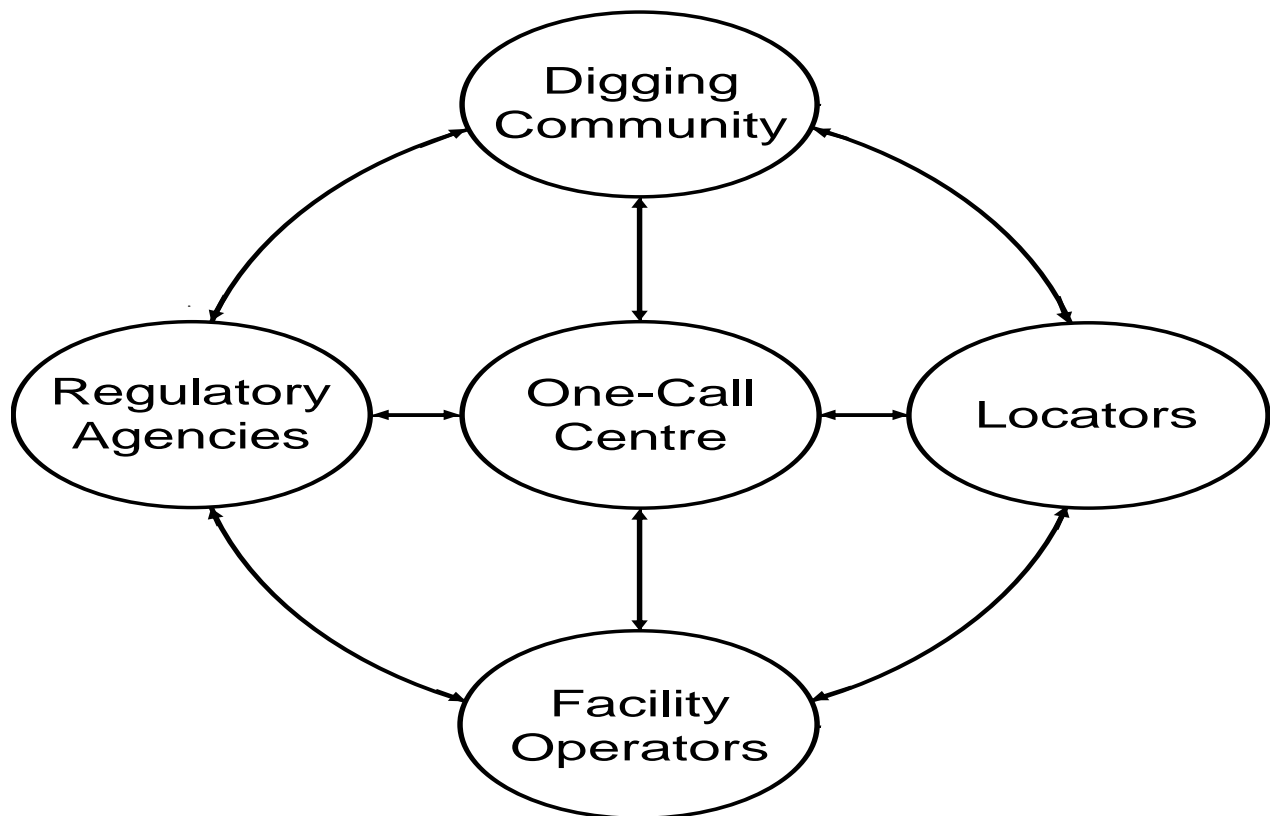
The Common Ground Study and the efforts of the Common Ground Alliance with respect to best practices establish a blueprint for the evolution of the damage prevention process in Alberta. Any member of any stakeholder group can use the current list of best practices to benchmark and monitor their adoption of best practices. The published best practices may be subject to some modification to suit the particular circumstances in Alberta.

Information on best practices can be found on the Common Ground Alliance web site, www.commongroundalliance.com.

THE DAMAGE PREVENTION PROCESS

The prevention of damage to buried facilities has many stakeholders who are mutually dependent upon the successful execution of one another's roles in the overall process.

The interrelationships of the various stakeholder groups are best illustrated graphically. With the exception of the one-call centre, all the stakeholder groups shown can be divided into sub-groups.



The basic premises of a good and effective damage prevention process are that all operators of buried facilities are registered with the one-call centre and that it is always best to “Call Before You Dig”.

Damage prevention is a responsibility shared among the stakeholders. The exchange of accurate and timely information during the process, together with a genuine interest by all stakeholders for a successful outcome is critical.

DAMAGE TO BURIED FACILITIES

Damage to a buried facility means any physical damage caused by unauthorized contact that results in a cost or a service disruption.

Damages to buried facilities are usually preventable and most often occur due to a breakdown in the damage prevention process. The responsibility for preventing ground disturbance damage to buried facilities is shared by all stakeholders and includes elements such as planning, effective use of the one-call centre, accurate and timely identification, locating and marking of buried facilities, adherence to safe and best ground disturbance practices, proper installation of buried facilities, training, consequences for non-compliance and strong public awareness and education programs.

Why is Prevention of Damage Important?

Alberta has a very extensive and complex underground infrastructure of pipes and cables valued in the billions of dollars that has been built over the last century. These buried systems supply goods and services that are essential to the functioning of today's society.

Every time a member of the digging community disturbs the ground, there is a risk of damage to buried facilities. The possible consequences of damaging a buried facility include:

- loss of life
- personal injury
- environmental contamination
- evacuation of residential areas
- explosion, fire, flood or toxic gas escape
- disruption of essential services
- inconvenience to the public
- third party property damage
- damage to construction equipment
- contractor down time and loss of production
- loss of product and revenue
- costs to rehabilitate injured workers
- costs to repair damaged facility
- costs to rehabilitate environment
- costs to repair or replace construction equipment
- police, fire and ambulance costs
- lawsuits
- medical costs
- legal costs
- administration costs
- increased WCB assessments
- increased insurance premiums
- reduced credibility with public
- reduction in ground disturber's ability to be competitive
- fines
- jail terms

Damages that may not pose a threat to worker or public safety can cause vital facility outages for homes, businesses, financial institutions, hospitals, air traffic control operations, and emergency service providers.

Every time a buried facility is damaged by ground disturbance activities, some of these consequences will become evident. When buried facilities are damaged, Albertans, as individuals, as taxpayers, as customers of the operators of the facilities or as purchasers of construction services, directly or indirectly pay for the damages.

Like safety, the prevention of damage to buried facilities is everyone's business.

BURIED FACILITIES

The total length of the buried infrastructure network in Alberta is not known, although speculation would put it in excess of 2,000,000 km. The installation of buried facilities has been going on in Alberta for almost 100 years and only rarely are existing buried facilities removed. For the most part they are abandoned in place when they are no longer of use and once abandoned evidence of their existence may have been removed from the records.

This underground network increases in complexity and extent every year as more and different types of facilities are installed every day.

For the purposes of these guidelines, a buried facility is anything below ground for use in the collection, storage, transmission, or distribution of:

- potable water
- reclaimed water
- irrigation water
- sewage
- storm water
- electronic communications
- telephonic communications
- telegraphic communications
- cablevision
- electrical energy
- oil
- natural gas
- steam
- petroleum products
- chemicals
- other substances

Facilities themselves include:

- pipes
- conduits
- culverts
- wires
- cables
- tanks
- fibre optics
- duct banks
- manholes
- catch basins
- valve chambers
- attachments to above

There are other types of structures such as foundations, anchors and poles, which rely on the soil support for their performance, that are beyond the scope of these guidelines.

Buried Facility Operators

Buried facility operators are those with the right to bury facilities in public road allowances, public rights of way, utility rights of way and highway rights of way. Buried facility operators may also

have buried facilities within private property. They may own a particular buried facility or they may have administrative or operational control of it. Buried facility operators include public utilities, cooperative utilities, municipal utilities, oil and gas production and transmission entities, trunk sewer and water entities and government departments.

As a general statement, buried facility operators provide or transport goods and services for customers or end users.

Privately Owned Buried Facilities

One of the current challenges to the damage prevention process is the issue of privately owned facilities. Privately owned facilities are best described as those that have been designed and installed and are maintained by a landowner or the landowner's agent solely for that landowner's benefit.

Landowners, in this sense, include homeowners, farmers, ranchers, schools, colleges, universities, shopping centres, office parks, trailer parks, condominium and townhouse complexes, hospitals, military bases, exhibition parks, manufacturing complexes and other privately owned developments.

Many of these developments have their own internal sewer, water, telephone, cable TV, communication, electric and gas distribution systems, which, although ultimately connected to the various "utility" systems, are not considered the responsibility of those "utilities". The "utilities" refer to these as customer owned facilities.

Homeowners, for example, may have lawn sprinkler systems or telephone or electric lines running from the main building supplied by the "utilities" to other buildings such as garages or sheds. Sewer and water services from the property line to a residential building are owned by the landowner, not the agency that supplies water or collects sewage.

In rural Alberta, many landowners have private sewage disposal systems, which might include septic tanks and tile beds, and water wells, which might include a significant amount of buried piping. These too are privately owned facilities.

THE DIGGING COMMUNITY

The digging community comprises anyone who engages in or is responsible for a ground disturbance, including, for example:

- homeowners
- farmers
- ranchers
- equipment operators
- excavation contractors
- home builders
- landscapers
- fencing contractors
- operators of buried facilities
- consultants
- land surveyors
- developers
- municipalities
- provincial departments
- federal departments
- railways

The ultimate decision as to whether or not a backhoe's bucket teeth penetrate the ground rests with the operator of that backhoe. If the operator is not aware of what buried facilities are in the

area of the ground disturbance and exactly where they are before disturbing the ground there is a great risk of damage to buried facilities and the potential consequences of that damage.

GROUND DISTURBANCES

The Alberta Pipeline Act defines a ground disturbance as any work, operation or activity that results in a disturbance of the earth except:

- cultivation less than 450 mm in depth or
- a disturbance of the earth less than 300 mm in depth provided it does not reduce the earth cover over a buried pipeline to a height less than that provided when the pipeline was installed.

Agricultural activities such as subsoil aeration and mechanical rock picking are considered ground disturbances if they disturb the earth to a depth of 450mm or more.

The Alberta Occupational Health and Safety Code states that ground is disturbed if a work operation or activity on or under the existing surface results in a disturbance or displacement of the soil, but not if the disturbance or displacement is a result only of:

- routine, minor road maintenance or
- cultivation to a depth of less than 450 mm below the ground surface over a pipeline or
- hand digging to a depth of not more than 300 mm below the ground surface, so long as it does not permanently remove cover over a buried facility.

In urban areas and on private property, many buried facilities are within 300 mm of the ground surface. Street light wires are often just below the sidewalk. Telephone and electrical duct banks in downtown cores may be just under the asphalt. Telephone and cable TV services to residences may have minimal cover.

The ground surface may have been recontoured, after a buried facility was installed, without a facility operator's knowledge, reducing the depth of cover to less than might be expected.

For the purposes of these guidelines, the protection of buried facilities and the safety of workers and the general public, a ground disturbance should be considered to be any disturbance of the earth, regardless of depth.

Activities that disturb the ground include:

- digging
- excavation
- trenching
- plowing pipe or cable
- vertical drilling
- hydrovacing
- horizontal directional drilling
- vertical and horizontal augering
- tunnelling, boring or pipe pushing
- cutting fire breaks
- ditch shaping
- grading and land contouring
- topsoil stripping
- land levelling
- tree planting
- blasting and vibroseis
- mechanical rock picking
- subsoil aeration or stabilization
- driving fence posts
- driving bars, rods, pins or anchors

Vehicles and Equipment Crossing Pipelines

Although not technically a ground disturbance, the unrestricted crossing of pipelines with vehicles and equipment does have the potential to cause damage to pipelines. The Alberta Pipeline Regulation prohibits the operation of vehicles or equipment across a pipeline at any location that is not within the upgraded and traveled portion of a highway or public road without approval in writing from the owner/operator of the pipeline unless:

- the vehicle or equipment is used for farming operations,
- the vehicle is an off-highway vehicle, or
- the vehicle is a private passenger vehicle with a nominal chassis rating of not more than $\frac{3}{4}$ of a ton.

IF YOU INTEND TO DISTURB THE GROUND

If the ground disturbance is to take place within a public road allowance, provincial highway right of way or utility right of way, the ground disturber may be required to obtain an excavation permit or written permission before disturbing the ground. If the ground disturbance is to install new facilities, line assignments may have to be obtained from the authority having jurisdiction over the right of way prior to construction.

Whether the ground disturbance is to take place on public or private land, the Alberta Occupational Health and Safety Code requires that all buried facilities potentially in conflict with the ground disturbance be identified and their horizontal alignments marked before the ground disturbance begins.

Sources of information on what buried facilities might be at the site of a proposed ground disturbance include:

- Alberta One-Call,
- signs or markers in the area,
- Alberta Energy Resources Conservation Board - high pressure pipeline records.
- Alberta Agriculture and Rural Development, Rural Utilities Branch - low pressure gas distribution pipeline records,
- Land Titles Office - certificates of title - to determine if a right of way, easement or caveat is registered against the property,
- local landowners or occupants and
- visual evidence of cut lines, changes in vegetation, land depression or scarring, buildings or existing surface facilities.

The requirement to have the locations of all buried facilities marked applies to the entire digging community, not just contractors. Making arrangements to have locates done should be part of the job planning process.

ALBERTA ONE-CALL

The mission of Alberta One-Call Corporation is to prevent damage to buried facilities through education, advocacy, public awareness and dependable, cost-effective communication and exchange of information between members and those who intend to disturb the ground.

Alberta One-Call is a province-wide, non-profit private corporation with over 635 members who operate the majority of buried facilities in the province and wish to be easily accessible to the digging community. Membership is voluntary and not all operators of buried facilities are members. It is the ground disturber's responsibility to determine if other facility operators have buried facilities in the area and to notify them directly.

Alberta One-Call provides a communication service that allows anyone who plans to disturb the ground in Alberta to notify, at no charge, the members of Alberta One-Call of the intent to disturb the ground and to request that the potentially affected members identify and mark the locations of their buried facilities in the area of the proposed ground disturbance before the ground disturbance takes place.

The one-call centre is accessible toll-free at 1-800-242-3447. It receives by phone and processes locate requests between 6:00 a.m. and 6:00 p.m. during the months March through October and between 8:00 a.m. and 4:00 p.m. during the months November through February, Monday through Friday, except holidays. The operators of buried facilities in Alberta require at least two full working days notice of any intended ground disturbance.

After hours and on holidays, only emergency locate requests are processed.

Alberta One-Call voice records all incoming calls and retains the tapes for three years. Copies of all notifications to members are retained for seven years.

Locate requests may also be submitted by fax at 1-800-940-3447, using the appropriate forms, or through Alberta One-Call's web site, www.alberta1call.com at any time of day or night. Fax forms may be obtained by calling 1-800-242-3447. Press 4 and follow the instructions.

Locate requests received by fax or through the web site after hours or on holidays will be processed on the next business day.

Making the Call

When a locate request is placed with Alberta One-Call, customer service representatives (CSRs) obtain information from the caller and enter it into a computer terminal in a preset sequence. The information required to process a locate request includes:

- telephone number where the caller can be reached during business hours,
- caller's name, company affiliation and address,
- site location by municipality and street address or by rural legal land description,
- type of work being done,
- approximate depth of ground disturbance,
- type of property - public or private,
- who the work is being done for,
- estimated time required to do the locates and
- date by which locates need to be completed.

Given the location of the site, Alberta One-Call's computer will search its databases and identify those members who have indicated they have buried facilities in that area.

The CSR will advise the caller which members will be notified and give the caller a ticket number

which identifies the locate request and should be retained for future reference.

A locate request phone call lasts about 4.5 minutes. Once the call is completed the CSR releases the ticket and the affected members are notified immediately by the computer.

The placing and processing of a locate request is very easy for both the caller and the CSR if the caller is prepared and has the information required at hand. Preparation is the key. Frequent users of the one-call system are encouraged to fill in the Excavation Site Information Form before making the call. These forms are available at no charge and may be obtained from Alberta One-Call at 403-531-3700.

RESPONSIBILITIES OF FACILITY OPERATORS ON RECEIVING A LOCATE REQUEST

When the operators of buried facilities receive a locate request they assess the information on the ticket and determine whether or not the proposed ground disturbance will be in conflict with their facilities.

The expectation is that locates will be performed within the 2 full working days advance notice period. At a minimum Buried facility operators are expected to contact the ground disturber within the 2 full working days advance notice period and either advise the ground disturber that there is no conflict or make arrangements for a mutually acceptable time to meet on site to identify and mark the locations of the buried facilities.

If a facility operator advises a ground disturber that no locate is required, the ground disturber should request confirmation in writing for his protection.

Operators of buried facilities or their agents will identify and mark the locations of their facilities with paint, stakes or flags at no charge to the ground disturber and should provide the ground disturber with documentation of the locate performed.

THE LOCATOR

Locators provide a direct field communication link between operators of buried facilities and ground disturbers. They can advise and assist a ground disturber in his approach to dealing with buried facilities at the site.

The better the information a locator has with respect to a ground disturber's plans, the better he or she is able to do his or her job. The ground disturber should, therefore, send someone who is knowledgeable about the project to meet the locator on site.

Locators will not enter buildings, site offices or trailers to find the ground disturber. The ground disturber must be available to meet the locator at the location given to the operators of the buried facilities in the locate request.

LOCATE MARKS

Locate marks, be they paint, stakes or flags, should be in sufficient quantity and close enough together to clearly identify the horizontal alignment of the buried facilities.

While locating equipment is becoming increasingly more sophisticated and accurate, parallel facilities, overhead facilities and nearby reinforced concrete structures all affect their accuracy.

Locating is thus part art and part science and locate marks are approximate only.

Locators should identify and mark the locations of abandoned facilities whenever possible. They should also identify the number of facilities the ground disturber can expect to find whenever that information can be determined.

Locators will not give depth but should warn the ground disturber if they suspect a particular facility is deeper or shallower than might normally be expected.

The marking of the locations of buried facilities in Alberta follows the Uniform Color Code introduced by the American Public Works Association and partially recognized in Canadian Standards Association C22.3 No. 7-94, Underground Systems.

WHITE	Limits of proposed excavation
PINK	Temporary survey marks
RED	Electric power lines, cables, conduits and ducts or lighting wires and cables
YELLOW	Gas, oil, petroleum, steam or gaseous materials
ORANGE	Telephone, cable TV, communications, alarm or signal lines, wires, cables, conduits or ducts
BLUE	Potable water lines or pipes
GREEN	Sanitary sewer, storm sewer, culvert or drain lines
PURPLE	Irrigation, reclaimed water or slurry lines or pipes

Where facilities are marked with a single line of paint, flags or stakes, the marks indicate the approximate centreline of the facility. Where facilities are marked with parallel lines connected with an arrow or chevron, the marks indicate either the approximate trench width of the original installation or the approximate outside limits of the facility.

LOCATE DOCUMENTATION

The documentation of locates performed is proof that the locator understands the scope or extent of the ground disturbance, that the locates have been done and that the ground disturber understands what has been located, and must be kept on site. It should be in the possession of and understood by the person actually disturbing the ground.

Documentation should provide sufficient information to allow the re-establishment of the locate marks should that ever be necessary and should include any special requirements the facility operator might have with respect to that particular ground disturbance.

Locators and ground disturbers may choose to take and retain photographs of locates for their further protection.

LIFESPAN OF LOCATES

Locates are valid for as long as the locate marks are visible but generally for not more than 14 calendar days from the date they were provided. Locates may be valid for 30 calendar days from the date they were provided subject to certain conditions' being met.

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's presence at the site remains evident during such interruptions (e.g. fencing, barricades, signage, equipment on site, job shack, evidence of work in progress).

If a ground disturber has not completed a ground disturbance within the extended period of 30 calendar days from the date locates were provided, the ground disturber must request new locates.

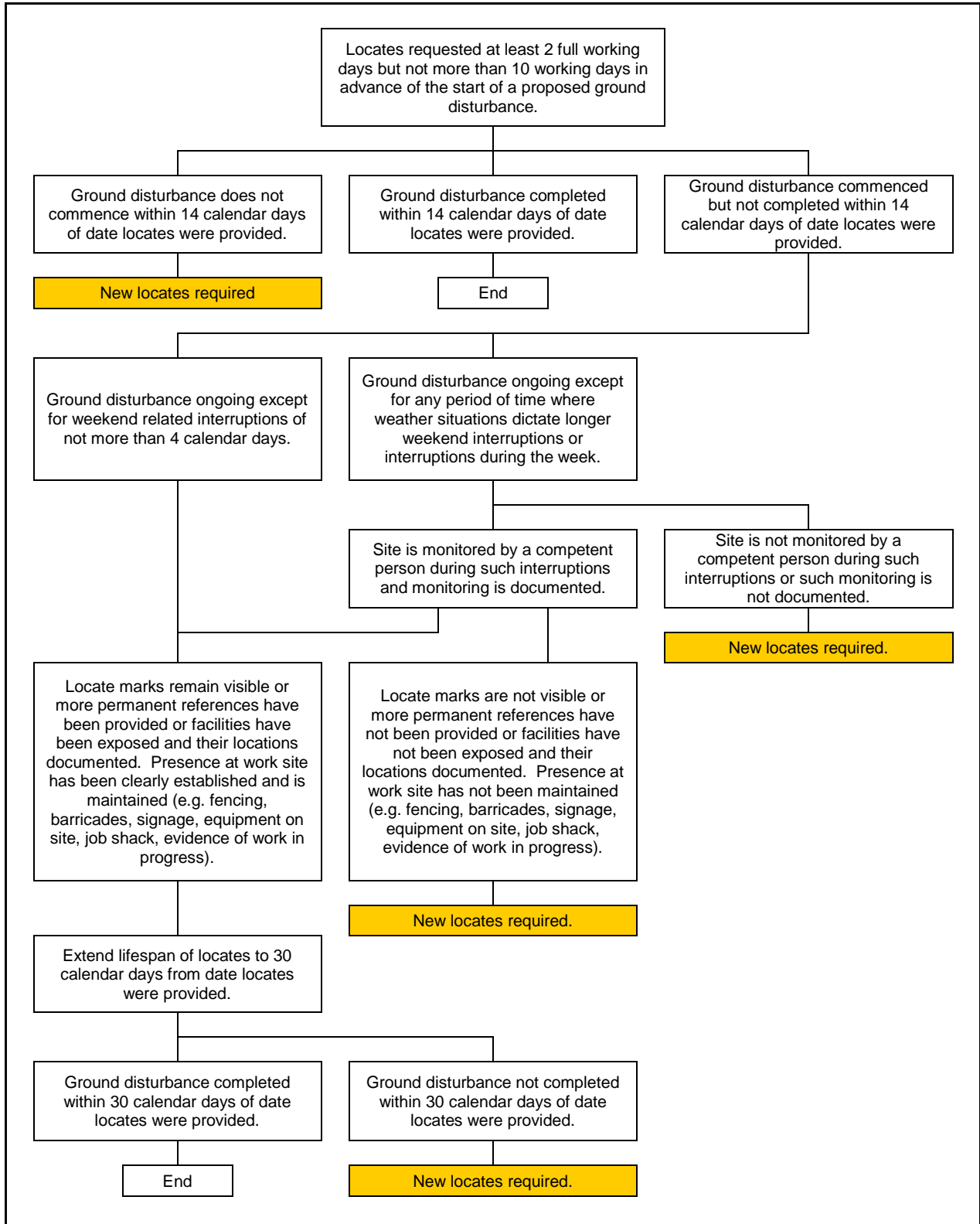
On receipt of a request for new locates, individual operators of buried facilities, in consultation with the ground disturber, will determine whether a new locate is required or the lifespan of the existing locate can be extended.

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.

The following flow chart of work site scenarios explains the lifespan of locates.

Lifespan of Locates - Worksite Scenarios



RESPONSIBILITIES OF GROUND DISTURBERS AFTER LOCATES HAVE BEEN DONE

Notifying Alberta One-Call and the operators of buried facilities who are not members of the one-call centre is only the first step for the ground disturber in fulfilling his or her responsibilities in the damage prevention process.

The locate marks provided by the operators of buried facilities are temporary and if they will be disturbed or destroyed by the ground disturber's activities, the ground disturber must provide more permanent or offset marks or references that will not be disturbed.

Each facility operator is responsible for ensuring that its buried facilities are properly marked. When one facility operator indicates that the proposed work is not in conflict with its facilities this does not mean that other facilities are not in conflict. The ground disturber must ensure that all buried facilities in potential conflict with the ground disturbance have been marked before beginning to disturb the ground.

Once the locations of all buried facilities have been marked the ground disturber must not use mechanical excavation equipment within the hand expose zone until the buried facilities have been hand exposed and are clearly visible.

During his or her work, the ground disturber must support and protect any exposed facility and notify the facility operator if contact is made with a facility or a previously damaged facility is found.

Some facility operators require that exposed facilities be inspected prior to backfilling. If backfill inspection is required, this information as well as the required advance notice and contact information will be included in the locate documentation.

The ground disturber is requested to remove locate stakes and flags when work is completed. This will avoid confusion for other ground disturbers who may be working in the area at a later time, reduce the chances of livestock eating locate flags and reduce damage to agricultural, particularly grass cutting, equipment.

HAND EXPOSE ZONES

The hand expose zone is a distance 1 m each side of the locate marks within which excavation with mechanical equipment must not take place until the buried facility has been hand exposed and is clearly visible. This hand expose zone applies to all buried facilities except pipelines and some buried electrical facilities.

The hand expose zone for pipelines is 5 m.

Some operators of buried high voltage electrical facilities have implemented hand expose zones greater than 1 m. Locate documentation will advise the ground disturber of any such specific instances.

HAND EXPOSURE

Hand exposure means the physical exposure of buried facilities using non-destructive excavation techniques acceptable to the operator of the buried facility.

Normally, the hand exposure process would begin at or near the location marks and work down and outwards into the hand expose zone until the buried facility is found.

If the ground disturber has made a reasonable attempt to hand expose a buried facility but cannot find it, he or she should contact the facility operator directly for help. Once the buried facility has been hand exposed and is clearly visible, the ground disturber may use mechanical equipment within the hand expose zone provided he or she takes great care to ensure the facility is not damaged.

From a practical perspective, mechanical equipment may be used to remove asphalt or concrete surface materials in the hand expose process. Once the hard surface material is removed, non-destructive excavation techniques acceptable to the operator of the buried facility must be used.

SPECIAL SITUATIONS

Not all situations will be covered by the preceding guidelines. There are exceptions and special situations.

Charges for Locates

As a rule, the operators of buried facilities do not charge for identifying and marking the locations of their buried facilities. However, should the ground disturber's schedule require that locates, other than emergency locates, be done outside normal working hours, there may be a charge to the ground disturber to cover the cost of overtime.

Ground disturbers that abuse the damage prevention process by placing frequent requests for locates where no ground disturbance is taking place or planned within the 14 day lifespan of locates may ultimately incur charges from the operators of the buried facilities.

Most facility operators charge for locating customer owned facilities.

Emergency Locate Requests

An emergency locate request is defined as "a locate request placed prior to the commencement 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".

The expectation is that locators will respond to emergency locate requests in urban areas within 1 hour of the locate request's being placed and within 2 hours in rural areas.

Priority Locate Requests

A priority locate request is defined as "a locate request placed prior to the commencement of a ground disturbance to effect a repair or replacement of a defective buried facility in the situation where there is no present or immediate danger to life, health or property but where there is some urgency".

The expectation is that locators will respond to priority locate requests within the requested time frame.

Ground Disturbance Parallel to a Buried Facility

Quite often, construction activities such as road construction or curb and gutter replacement require a ground disturbance to be conducted parallel to a buried facility.

In this situation, the ground disturber should contact the operator of the buried facility for advice on how to proceed. The facility operator may require the ground disturber to hand expose the facility in several locations to determine its true alignment before allowing the ground disturber to encroach on the hand expose zone with mechanical equipment.

The ground disturber is cautioned that buried facilities, particularly shallow utilities - telephone, cable TV, electric and natural gas distribution - are not necessarily installed in a straight alignment.

Direct Bury Trunk or Toll Fibre Optic Cables

Direct bury trunk or toll fibre optic cables are major communications cables that have been installed by plowing-in. They are not in a conduit or a duct structure.

Operators of direct bury trunk or toll fibre optic cables may require that an inspector be on site during hand exposure and/or crossing activities. Any such requirement will be included in the locate documentation together with advance notice and contact information.

Frozen Ground

The hand exposure of buried facilities in frozen ground may pose some problems to the ground disturber. The fact that the ground is frozen does not mean that buried facilities do not have to be hand exposed and visible before a ground disturbance takes place.

In situations where the ground is frozen, the ground disturber has a choice of thawing the ground or using non-destructive excavation techniques acceptable to the operator of the buried facility.

If the choice is to thaw the ground, the procedures used must be acceptable to the operator of the buried facility. The ground disturber should not partially thaw the ground, excavate, and then reapply thawing procedures at a lower elevation.

The use of hydrovac equipment to expose buried facilities in frozen ground may be acceptable to the operator of a buried facility.

In an emergency situation, or in a situation where it is neither possible nor practical to thaw the ground, the ground disturber should contact the facility operator for advice on how to proceed.

Hazardous Situations

If either the ground disturber or the operator of a buried facility determines that a proposed ground disturbance may create a hazardous situation for workers or the general public or threaten the integrity of a buried facility, the ground disturber and the facility operator need to discuss the situation and develop a mutually acceptable solution.

Pipelines

Pipelines, within the province, transporting fossil fuels such as natural gas, oil and natural gas liquids, water supply and disposal lines or any other pipelines or other buried facilities associated with an energy related project and within the meaning of a “pipeline” under the Alberta Pipeline Act are under the jurisdiction of the Alberta Energy and Utilities Board.

Pipelines that cross a provincial or national boundary are regulated by the National Energy Board.

There are minor differences between the provincial and federal regulations but their intents are similar.

The requirements in this section are only applicable to provincially and federally regulated pipelines.

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.

The National Energy Board’s Pipeline Crossing Regulations are currently in the process of revision. Significant changes can be expected. Implementation is unlikely before 2010.

The Alberta Pipeline Act and Regulation further require that anyone proposing to undertake a ground disturbance search an area of 30 m beyond the limits of the proposed ground disturbance for the presence of pipelines.

A pipeline right of way has specific boundaries within which the pipeline operator has the right to construct pipelines and control activity. If the proposed ground disturbance is within the pipeline right of way, the ground disturber must obtain written approval from and/or enter into a crossing or proximity agreement with the pipeline operator.

Mechanical excavation equipment may not be used within 5 m of a provincially regulated pipeline until the pipeline has been hand exposed and is clearly visible. Mechanical equipment may not be used within 600 mm of the exposed pipeline except under the direct supervision of the pipeline operator.

Mechanical excavation equipment may not be used within 3 m of a federally regulated pipeline until the pipeline has been hand exposed and is visible.

The construction of haul or access roads and the movement of vehicles or equipment along or across a pipeline right of way, other than in the upgraded and traveled portion of a highway or public road, have the potential to damage pipelines. Advance written permission and approval for this type of activity must be obtained from the pipeline operator.

Written permission from the operator of a pipeline to undertake activities near a pipeline may take the form of a crossing agreement or proximity agreement. These often impose stricter conditions on the ground disturber than the minimum regulatory requirements.

Energized Power Cables

Hand exposure of energized or live high voltage cables must not be undertaken until the electric power facility operator has been consulted for advice and assistance.

The Alberta Electrical and Utility Code places an obligation on the electric facility operator to ensure that the exposure of energized power cables is done safely. The facility operator must determine if direct supervision is required or if the work will be done in a safe manner without direct supervision, which will depend on the expertise and reliability of the ground disturber and the type of buried electrical cable involved. The ground disturber may be required to participate in specific training or orientation by the electric facility operator.

In some special situations, the hand expose zone for buried electric facilities may be greater than 1 m. The ground disturber will be advised of these situations by the locator and in the locate documentation.

Homeowners

It is just as important for homeowners to have locates done for fencing, tree planting or landscaping projects as it is for major contractors involved in sewer and watermain installations. Some of the shallow utility residential services may be less than 300 mm below the ground.

As a rule, homeowners do not have to meet with locators unless there is a problem with access to the property. Locators usually leave completed locate documentation in the homeowner's mail box or on the door.

Homeowners in urban municipalities own the sewer and water services on their property. Municipalities, as a general rule, will not locate them. Homeowners may also own the electric power line from the meter to the building. The electric utility may not locate it or may charge to locate it. In some areas of the province, cable TV and telephone utilities may not locate residential services.

The expectation is that, with the exception of sewer and water service connections, the gas, electric, telephone and cable TV utilities will identify and mark the locations of residential services to the principal building. Generally, they will not locate or will charge to locate customer owned facilities.

Major Projects

If a proposed project is of sufficient size or scope that the ground disturber suspects that a locator will require more than one hour to identify and mark the locations of buried facilities, the ground disturber should request locates at least 5 full working days in advance of the proposed activity and provide an estimate of the time required to complete the locates. This will allow the operators of the buried facilities a reasonable amount of time to schedule their locators.

Private Property

The challenges to the damage prevention process presented by privately owned and customer owned buried facilities are identified in the section of these guidelines on buried facilities. As a general rule, the utilities will not locate them.

Unfortunately, many privately owned buried facilities have been installed with little or no thought given to a future need to locate them. There may be no records of their installation and they may be very difficult to locate.

Any contractor planning to undertake a ground disturbance on private property should make special provisions for identifying and locating privately owned and customer owned buried facilities.

It may be necessary for the property owner or the ground disturber to engage a contract locator to identify and mark the locations of such buried facilities.

Transportation and Utility Corridors (TUCs)

In the mid-1970s, the Government of Alberta established Transportation and Utility Corridors (TUCs) in and around both Calgary and Edmonton to ensure coordinated development for long term objectives. Their purpose is to provide space for future ring road development, to accommodate facilities such as oil and gas pipelines, electric transmission lines and utility distribution systems such as sewer, water, gas, telephone, cable TV and power and to serve as open space areas in an urban setting.

If a ground disturbance is to take place within a TUC, written authorization is required before any ground disturbance occurs.

For further information contact Alberta Infrastructure and Transportation in Edmonton at 780-422-1202 or visit their web site www.tuc.gov.ab.ca.

Utility Rights Of Way (URWs)

In many municipalities it has become necessary to install the shallow utilities in a utility right of way across residential properties. Unfortunately, most homeowners are not aware of the existence of a utility right of way on their properties.

Because the operators of the facilities buried within the utility right of way must have access to the right of way for maintenance and repair purposes, property owners are restricted as to what they can build and plant on a utility right of way.

Property owners should check their certificates of title for utility rights of way and contact the local municipality to determine what restrictions have been placed on their use of the land.

Modifying Locate Requests

Sometimes conditions on a site change after a ground disturber has requested locates. Several procedures have been established to accommodate changes in a cooperative manner.

Cancellations

If the proposed work is cancelled or delayed before locates have been done, the ground disturber should advise Alberta One-Call, and any affected operators of buried facilities who are not registered with Alberta One-Call, as soon as possible to minimize unnecessary work done by locators.

Extended Work Sites

If, after locates have been done, a project is extended beyond the limits marked by locators, the ground disturber must request additional locates.

Revisions

If a ground disturber wishes to change some of the information given to Alberta One-Call when a locate request was made, he or she should contact Alberta One-Call and give the CSR the ticket number and the new information.

Marking Limits of Job Site

Ground disturbers are encouraged to mark the limits of job sites in white. Flags, stakes or paint may be used to provide the locators with an accurate understanding of the extent of the proposed ground disturbance. Paint marks on roadways should not exceed 40 mm x 450 mm but should be close enough together to clearly define the limits of the site.

In winter conditions, black or black and white are more appropriate colour choices.

FIELD PROBLEMS

Occasionally, a ground disturber or a locator may experience problems during the locating process. Alberta One-Call may be able to assist in the resolution of these problems.

Failure to Respond to Locate Requests

If a member of Alberta One-Call has been notified of a locate request and has not contacted the ground disturber within the 2 full working days advance notice period or has failed to mark the locations of buried facilities as arranged, the ground disturber should contact Alberta One-Call. Alberta One-Call will contact the offending member to expedite a response.

If the facility operator is not registered with Alberta One-Call, the ground disturber should contact the facility operator directly.

If a member of Alberta One-Call frequently fails to contact the ground disturber within the 2 full working days notice period or frequently fails to mark the locations of buried facilities as arranged, the ground disturber should file a written complaint with Alberta One-Call. The management of Alberta One-Call will investigate the problem and assist in its resolution.

Members of Alberta One-Call sign a User's Agreement with Alberta One-Call which requires them to respond to each locate request by establishing contact with the ground disturber. It is expected that the individual facility operators will advise the ground disturber whether or not a locate is actually required.

STAKEHOLDER RESPONSIBILITIES

Each of the stakeholder groups in the damage prevention process has roles and responsibilities, which, when recognized, accepted and fulfilled, will enhance the process and have a positive impact on worker safety, public safety, protection of the environment and preservation of the integrity of the buried infrastructure.

Regulatory Agencies

Regulatory agencies have the authority, responsibility and obligation to enforce regulations and ensure compliance with them. With respect to the damage prevention process, the regulatory agencies should:

- recognize, accept and promote to the other stakeholders that the prevention of damage to buried facilities will have a positive impact on worker safety, public safety, protection of the environment and preservation of the integrity of society's essential buried infrastructure,
- ensure compliance with regulatory requirements through active education and enforcement programs,
- cooperate and collaborate with the other stakeholder groups to develop regulatory requirements that are fair, reasonable, based on best practices, compatible with industry best practices and acceptable to all the stakeholder groups and
- support and participate in damage prevention organizations.

Municipalities

Municipalities have the authority, responsibility and obligation to manage public road allowances and rights of way and have management tools such as policies, bylaws, development agreements, subdivision agreements and right of way access agreements available for that purpose. As part of that management process, which can enhance the damage prevention process, they should:

- develop, implement and enforce a formal line assignment procedure, through which horizontal and vertical zones within various road or street configurations are allocated to the various types of buried facilities,
- require that any buried facility, including their own, installed in a public road allowance or right of way be registered with the one-call centre,
- require that land developers maintain required depths of bury for existing buried facilities,
- foster coordination of capital projects among the operators of buried facilities
- require the submission of certified, spatially accurate as-built records of all buried facility installations on both public and private property and
- support and participate in damage prevention organizations.

Operators of Buried Facilities

The operators of buried facilities have an obligation to provide sufficient information to anyone undertaking a ground disturbance to allow the ground disturber to complete his or her work safely and in compliance with the governing regulations. The operators of buried facilities should:

- install facilities in accordance with best practices and governing regulations,
- ensure their buried facilities are locatable,
- maintain spatially accurate and up-to-date as-built records of both live and abandoned facilities,
- correct records when errors are found,
- generate a respect for the integrity of their facilities on the part of the digging community by being active participants in the damage prevention process,
- make the prevention of future damage to their buried facilities a criterion in their:
 - design process,
 - installation process,
 - records management process,
 - claims process and
 - purchases of construction and locating services,
- adopt best practices related to damage prevention,
- develop an awareness of and respect for the digging community's concerns and the constraints under which the digging community does business,
- respond to locate requests in a timely manner,
- ensure locators are competent,
- ensure locates are documented,
- audit the performance of contract locators, if used, and employee locators,
- conduct root cause analyses on all damage incidents,
- submit damage incident reports to the province-wide database,
- be proactive in damage prevention process educational activities,
- register with the one-call centre,
- cooperate with the other stakeholders in the damage prevention process and

- support and participate in damage prevention organizations.

The Digging Community

The digging community has an obligation to undertake ground disturbances in a prudent manner and to safeguard the health and safety of workers and the public. The digging community should:

- recognize that there are inherent dangers in disturbing the ground,
- request, in a timely manner, that the operators of buried facilities identify and mark the locations of their facilities that could be in conflict with a ground disturbance before the ground disturbance takes place,
- pre-mark limits of ground disturbance in white,
- meet with locators when practical to explain the scope and extent of the ground disturbance,
- respect the locate marks,
- manage the locates,
- ensure operators of excavation equipment have copies of and understand the locate documentation,
- hand expose buried facilities in conflict with a ground disturbance before using mechanical excavation equipment within the hand expose zone,
- support and protect exposed facilities to the satisfaction of the facility operator,
- report any damage, caused or found, to the operator of the facility,
- report inaccurate locates and near misses to the operator of the buried facility,
- backfill exposed facilities with care,
- ensure workers are adequately trained in ground disturbance procedures and the damage prevention process,
- develop and implement safe work procedures for undertaking a ground disturbance,
- maintain a list of facility operator contact numbers on site,
- develop and implement a ground disturbance check list,
- cooperate with the other stakeholders in the damage prevention process and
- support and participate in damage prevention organizations.

Locators

By the nature of their role in the damage prevention process, locators can have a significant influence on the success of a ground disturbance. The key elements of a “good” locate are:

- adequate training,
- suitable equipment,
- adequate records and
- adequate time.

If any one or more of these elements is missing, the quality of the locate will suffer.

Locators have an obligation to provide sufficient information to anyone undertaking a ground disturbance to allow the ground disturber to complete his or her work safely and in compliance with the governing regulations. Locators should:

- understand the nature, purpose and scope of a proposed ground disturbance,
- identify and mark the locations of all facilities, potentially in conflict with a proposed ground disturbance, in accordance with governing regulations, industry practice and best practices,
- mark the locations of buried facilities adequately to show the horizontal alignment,
- advise the ground disturber of any special conditions, concerns or requirements,
- provide documentation of the locates performed to the ground disturber,
- ensure locate documentation is adequate to allow the re-establishment of the locate marks,
- ensure that the ground disturber understands the locates, their limitations and the documentation,
- perform locates safely,
- report any record errors found to the operator of the buried facility,
- recognize and accept that they have three sets of customers to satisfy:
 - the operators of the buried facilities,
 - the digging community and
 - the one-call centre,
- support and participate in damage prevention organizations.

One-Call Centre

The primary functions of the one-call centre include communication, education and advocacy. It should:

- provide a dependable, cost-effective communication service between those who intend to disturb the ground and the operators of buried facilities potentially affected by a proposed ground disturbance,
- develop, implement and maintain operating procedures that incorporate best practices, accommodate specific jurisdictional requirements and balance the needs, wants and desires of the stakeholder groups,
- function as the interface between the digging community and the operators of buried facilities – the hub of the damage prevention process,
- promote the identification, validation and adoption of damage prevention best practices,
- facilitate the evolution and improvement of the damage prevention process,
- undertake educational, public awareness and damage prevention programs,
- foster cooperation and collaboration among all stakeholders in the damage prevention process,
- develop and manage a province-wide database of damage incident statistics and
- support and participate in damage prevention organizations.

KEEPING THE GUIDELINES CURRENT

The information in these guidelines is current as of the date of issue. As improvements are made in the buried facility damage prevention process, changes in the guidelines will be required from time to time.

Any suggestions or comments on these guidelines are welcome and will enhance their usefulness and acceptability. Comments should be addressed to:

Alberta Damage Prevention Council
3407, 5605 Henwood St SW
Calgary, AB T3E 7R2

Phone 1-877-832-2372 (ADPC)
Email info@albertadamageprevention.com