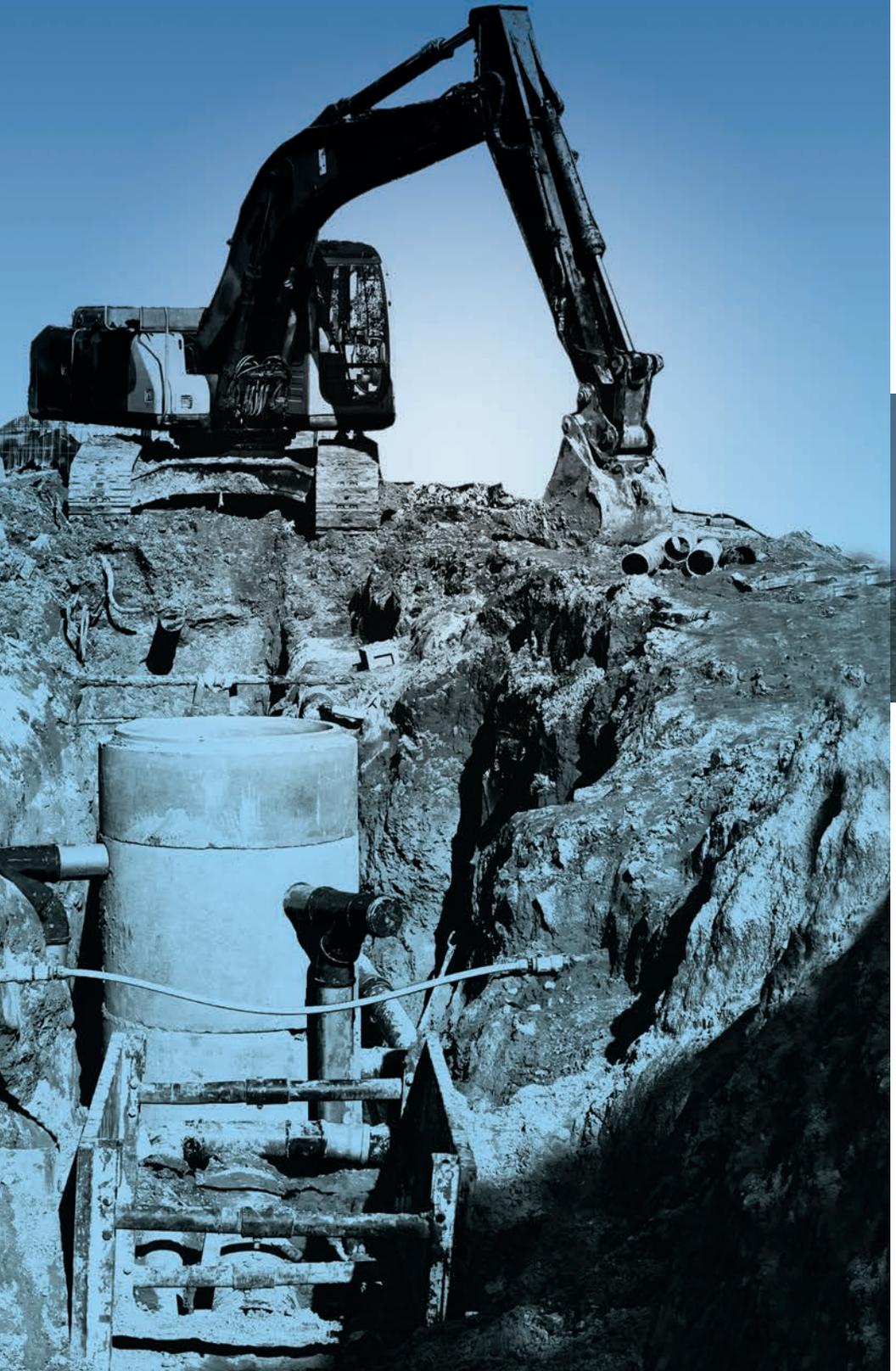


## 3-0 Locating and Marking Best Practices



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### 3-1: Use of Records

**Practice Statement:** Locators utilize on-site facility records at all times.

**Practice Description:** Facility locators use on-site records at all times. Facility records can indicate approximate location, number of facilities and access points for buried facilities within a requested area. The use of facility owner supplied records is an effective method of identifying facilities as part of the locating process.

When as-built/as-constructed records are not available on-site but there exists an electromagnetic or alternative technique to physically locate the facility, the locate should be completed by the available technique and verified where possible with the owner.

When records are not available on-site and electromagnetic techniques cannot be used (example; no tracer wire) or when as-built/as-constructed records are available on-site but there exists no electromagnetic or alternative technique to physically locate the facility, it may be necessary to delay the completion of the locate while archives are accessed, requiring immediate notification of all parties. It can be useful for the locator to have a locate process checklist to prompt the use of records at all times when on site.

### 3-2: Record Corrections

**Practice Statement:** If a locator becomes aware of an error or omission, then the locator provides information for the updating of records that are in error or to add new facilities.

**Practice Description:** During the course of a locating activity, a locator may become aware of errors, damages to electromagnetic facilities or omissions. Methods should be in place to notify a owner of that error, damage or omission. The observations are submitted to the appropriate person or department. The method and timing of notification is determined by the owner and includes the following information:

- Name (and company if contracted),
- Contact phone number of the individual(s) submitting change,
- Location (either address or reference points),
- Size and type of facility,
- Nature of the error, damage or omission, and
- Sketch of the change in relation to the other facilities.

Errors, omissions and damages, may include, but are not limited to, missing or non-existent records, misdrawn records, damaged or nonexistent electromagnetic facilities to physically locate the facility, changes to referenced surface features, changes during construction at the job site,

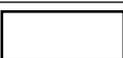
repair or abandonment of facilities and delays in posting new records. Failure to note errors or omissions when found could result in damages to the facility at a later date. Additionally, 3.1, Use of Records must be considered in conjunction with this Best Practice.

### 3-3: Colour Code

**Practice Statement:** Buried utilities should be marked using the APWA Uniform Colour Code.

**Practice Description:** The uniform colour code developed by the American Public Works Association (APWA) for marking buried utilities is used and understood by contractors, locators and utility owners throughout the North American Continent. These colours are endorsed by the Canadian Standards Association in CSA S250-11 and specified by Ontario’s Electrical Safety Authority (ESA) and should be used to mark all buried utilities.

These colours are related to specific types of underground facilities as follows:

Colour	Type of Facility/Indicator
	Red - Electric power lines, cables, conduits and lighting cables
	Yellow - Gas, oil, steam, petroleum or gaseous materials
	Orange - Communication, alarm or signal lines, cables or conduit
	Blue - Potable Water
	Green - Sewers and drain lines
	Pink - Temporary survey markings
	Purple - Reclaimed water, irrigation and slurry lines
	White - Proposed excavation

### 3-4: Locating Multiple Facilities

**Practice Statement:** A single, qualified locator used for multiple facilities.

**Practice Description:** It should be noted that this best practice does not suggest that all facilities be located by a single locator, but rather that conditions may exist in which locating multiple facilities with a single locator may reduce the likelihood of errors and resulting damage (e.g., multiple facilities with the same owner or multiple facilities that are marked with the same or similar colour codes).

This practice is currently being employed by a number of facility owners to enhance safety and is employed when determined to be advantageous by the owner. The use of a single locator to mark multiple facilities may provide several advantages to both the facility and the excavating communities. Among these advantages are:

- More responsive service to the excavation community,
- Better communication with the excavating community (fewer points of contact),
- Improved safety due to less traffic on the road,
- Improved worker safety,
- Reduced environmental impact, and
- Maps of multiple facilities.

The use of a single locator to carry out locate requests for multiple facilities may simplify communications, with fewer links needed between excavator and locator.

### **3-5: Training**

**Practice Statement:** Locators are properly trained and training is documented.

**Practice Description:** Minimum training guidelines and practices are adopted for locator training. These guidelines and practices include the following:

- Understanding System Design/Prints/Technology
- Understanding Construction Standards and Practices for all Types of Facilities
- Equipment Training and Techniques
- Plant Recognition Training
- Theory of Locating
- Daily Operations
- Facility Owner/Excavator Relationships and Image
- Workplace Safety Insurance Act and Occupational Health & Safety Act requirements
- Understanding of company safety procedures
- Written and Field Testing
- Field Training
- Refresher Training

Documentation of all training is maintained to ensure that facility locators have been properly trained.

### 3-6: Locator and Public Safety

**Practice Statement:** Locates are performed safely.

**Practice Description:** It is the responsibility of the owner and locator to establish when and how the underground facility will be identified. All hazards associated with performing a locate are identified. Appropriate measures conforming to federal, provincial, local and industry standards are established. Employees are made aware of these hazards and properly trained in worker safety standards.

The following items should be considered as part of assessing and mitigating hazards on the job site when performing a locate:

- Communication between locator and other personnel at the job site
- Locator should be aware of safety requirements and written emergency procedures to be followed on the project where applicable or establish his/her own.
- Traffic control considerations, including vehicular movement and pedestrian activity
- Trip and fall hazards
- Sources of energy (overhead and other)
- Environmental factors

### 3-7: Locate Quality

**Practice Statement:** A visual inspection is completed during the locating process.

**Practice Description:** This inspection includes the following:

- All facilities within a owner's service area (to evaluate the scope of the locate request),
- Identification of access points,
- Identification of potential hazards, and
- Assurance that plant facilities shown on available records match those of the site.

The primary reason for a visual inspection is to determine if there are facilities placed that are not on record. It is very important that visual inspections be completed in areas of new construction, where records may not indicate the presence of a facility. The visual inspection is necessary because the time it takes for a facility placed in the field to be placed on permanent records varies by owner and location. Evidence of a facility not on record includes, but is not limited to, poles, dips, enclosures, pedestals (including new cables found within the pedestals), valves, meters, risers, and manholes.

### 3-8: Excavation Site Conditions

**Practice Statement:** Facilities are adequately identified for conditions.

**Practice Description:** Facility locators match markings to the existing and expected surface conditions. Markings may include one or any combination of the following: paint, chalk, flags, stakes, brushes or offsets. Paint marks will be a length of 30 cm to 90 cm and approximately 3 cm wide. Proper training for all facility locators includes properly identifying the varying surface and environmental conditions that exist in the field and what marking methods should be used.

Conditions that can affect markings are rain, snow, vegetation, high traffic, construction, etc.

Field marks should be placed at a minimum of 3 m intervals and at any directional changes. When placing marks in the field, the centreline of the facility is to be marked. Facility structures greater than 40 cm/16 inches should have the edges of the facility marked denoting the width of the plant or structure in addition to the centreline. See examples below:

Greater Than 40cm/16"	40cm/16" or less	Greater Than 40cm/16"	40cm/16" or less
GM	GM	BT	BT

### 3-9: Locate Status

**Practice Statement:** Positive response is provided to facility locate requests.

**Practice Description:** All facility locate requests result in a positive response from the owner to the excavator. A positive response, agreeable to all parties, may include one or more of the following:

- Markings or documentation left at the job site, call back, email, fax or automated response system or other electronic media transmission.

- A positive response allows the excavator to know whether all facility owners have marked the requested area prior to the beginning of the excavation.

### 3-10: Multiple Facilities in "Joint Use" Trench

**Practice Statement:** Multiple facilities in a "joint-use" trench are marked individually and with corridor markers.

**Practice Description:** In general, the number of facilities marked on the surface equal the number of facilities buried below. All facilities within the

same trench should be individually marked and identified. In situations where two facilities share the same colour code (such as telephone and CATV) both facilities should be identified and the marks placed parallel, but with enough separation so that they may be readily identified. In circumstances where the total number of lines buried in the same trench by a single owner may not be readily known, a corridor marker is used. The corridor mark indicates the width of the facility.

### **3-11: Locate Method Preference**

**Practice Statement:** When locating electro-magnetically, active/conductive locating is preferable to passive/inductive locating.

**Practice Description:** The preferred method of actively applying a signal onto a facility is to use direct connection. Direct connection is the process of connecting a direct lead from the transmitter to the target facility and connecting a ground lead from the transmitter to a ground point in order to complete a circuit. This process provides the strongest signal on the line and is less likely to spill to adjacent facilities than other methods of applying a signal. This method allows a greater range of frequency and power output options. It is good practice to use the lowest frequency possible at the lowest power output possible to complete the locate. If direct connection is not possible, use of an induction clamp (coupler) is the most effective method of applying a locate signal onto the target conductor. This method is more limiting for the choices of frequency and power outputs than direct connection. Using an induction clamp is not as effective at transmitting a signal as direct connection, can only be used within certain frequency ranges, and must use a higher power output. The least preferred method is induction or broadcast mode on a transmitter. This usually results in a weak signal that will spill to any conductor in the area.

When using any of the above three methods, the locator should trace the entire line from the point of signal application through the proposed work area.

#### **Origin/Rational**

It is very important that locators do not apply a signal application to a line, walk out to the work area and begin locating. This can lead to picking up signal on facilities other than the target line. Tracing continuously from the point of signal application to the end of the work area improves the accuracy of the locate.

Notable exceptions may include utility "Transmission" situations, where signal application opportunities may be limited (e.g. fiber optic networks, transmission pipelines and long distance power conductors). In these situations, to ensure that a reliable locate is achieved, attention should be paid to ensure a suitable signal launch is achieved. Subsequently, careful reference to distant locate signal characteristics should be made.

### 3-12: Facility Identification

**Practice Statement:** The owner is identified.

**Practice Description:** The owner of a facility is identified by markings at the time the facility is located. This practice facilitates a positive response for all located facilities within the requested area.

In situations where two facilities share the same colour code (such as telephone or CATV) both facilities should be identified. During completion of the locate the facility material type and size, when available, should be identified on the locate form.

### 3-13: Communications

**Practice Statement:** Communication is established amongst all parties.

**Practice Description:** Notification services, facility owners and excavators all have clearly defined processes to facilitate communication between all parties. If the complexity of a project or its duration is such that a clear and precise understanding of the excavation site is not easily conveyed in writing on a locate request, then a pre-location meeting is scheduled. This pre-location meeting is on-site to establish the scope of the excavation. If requested by either party, written documentation between the excavator and the locator should include:

- Date, Name, Company,
- Contact numbers for all parties,
- List and the limits of the dig areas to be excavated,
- Schedule for both marking and excavating the areas, and
- Follow up agreements that might be necessary.

Any changes to the areas that are to be located are in writing and include all parties responsible for the excavation and marking of the excavation sites. Locators also schedule site meetings if the complexity of the markings requires further explanation.

### 3-14: Locate Report

**Practice Statement:** A written report which may be referred to as the Locate Report or Buried Plant Locate Report or Locate Sheet should be issued by the locator in order to provide details and instructions for the locate and to confirm that the locate has been completed.

**Practice Description:** In order to complete the locate process it is necessary to provide sufficient information that parties relying on this for excavation purposes will be able to correctly interpret the marks in the field and be aware of the instructions, warnings and limitations of the locate. This information should be provided in a Locate Report that is legible and that groups similar types of information in a logical and consistent order.

While the exact appearance, formatting, inclusions, exclusions and order of elements may vary in a Locate Report these should be similar to and consistent with the following generic format, even in emergency situations where all information provided is hand written.

Primary locate sheet illustrated in Fig.1 should always be placed first and contain the following information (refer to [www.canadiancga.com](http://www.canadiancga.com) for full size version, and Appendix C – How To Read a Locate Sheet):

[LSP logo] <b>1</b> <b>Primary Locate Sheet</b> [LSP company name & address] [LSP phone / fax / email; minimum of 2]		Page <b>2</b> of _____ <b>Request No.</b> <b>3</b>
Utilities Owners Present <b>5</b>		Request Type: <b>4</b> Excavation Date (dd/mm/yyyy) <b>6</b> Revised Excav. Date (dd/mm/yyyy) <b>7</b> Category: <input type="checkbox"/> Homeowner <input type="checkbox"/> Contractor <b>8</b> <input type="checkbox"/> Project
Requested by: <b>9</b>	Company: <b>10</b>	Phone: <b>11</b> Fax/Email: <b>12</b>
Locate address <b>13</b>		City: <b>14</b> Date Requested: <b>15</b>
Type of work: <b>16</b>		Site Meet Requested <input type="checkbox"/> <b>17</b> Appointment Date: _____
Dig Area Description: <b>18</b>		Requestor Remarks: <b>19</b>
Dig area outlined using: <input type="checkbox"/> Paint <input type="checkbox"/> Stakes <input type="checkbox"/> Flags <input type="checkbox"/> Offset Flags <input type="checkbox"/> Sketch <input type="checkbox"/> Other <b>20</b> <b>WARNINGS AND CAUTIONS</b> (per Utility Owner's Guidelines, see examples below)		
Warning: Should Sketch and markings not coincide, excavator must obtain a new locate. Caution: Locates provided are valid for a limited time frame. See attached Disclaimer for the specific Utility Owner's Guidelines. <b>21</b> Caution: Any changes to location or nature of work require new locate. Caution: Privately owned services within the located area have not been marked - check with service/property owner.		
<b>LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE</b>		
Records Referenced: <b>22</b>	Excavator shall notify & receive a clearance from Utility Prior to Excavation for the following: <input type="checkbox"/> Third Party Notification _____	
Locator's Warnings: <input type="checkbox"/> Altered Limits <input type="checkbox"/> Unlocatable utilities <b>23</b> <input type="checkbox"/> Other _____	<b>25</b>  Apply Sticker Here if Required	
Locator Remarks: <b>24</b>		
Method of Field Marking: <input type="checkbox"/> Paint <input type="checkbox"/> Stakes <input type="checkbox"/> Flags <input type="checkbox"/> Offset Flags <input type="checkbox"/> Other <b>26</b>		
Documents given to be used with this locate: <b>27</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Locator name/ID#: _____ Start/End time: <b>28</b> / _____ Date: _____ [insert expiry criteria]	<input type="checkbox"/> Fax <input type="checkbox"/> Left on Site <input type="checkbox"/> Emailed Accepted By: _____ Signature: <b>29</b>
<b>30</b> A copy of this Primary Locate Sheet and Auxiliary Locate Sheet(s) must be in possession of the Excavator during work operations.		

**Figure 1 Primary Locate Sheet**

1. Title "Primary Locate Sheet" [must be added at top left/center of sheet]. Name and address of locate service provider (LSP) providing locate. LSP contact information [minimum of 2]. LSP logo.
2. Page number and total number of pages [must be added at top right of sheet].
3. Request number or unique identifier of the locate.

4. Request type, e.g. Std., Emerg.
5. Names of Utility Owners that the LSP has been requested to locate.
6. Excavation date as originally requested.
7. Revised excavation date, if agreed to.
8. Category or classification of party requesting the locate.
9. Name of person submitting locate request.
10. Name of company or party requesting locate [acceptable entries include homeowner, tenant, self-employed and similar designations].
11. Contact phone number for party requesting the locate.
12. Fax number or email address for party requesting the locate.
13. Address where excavation is to take place [highway marker, survey plan or GPS coordinates acceptable where street address not available].
14. Name of municipality where excavation is to take place.
15. Date the original locate request was made.
16. Type of intended work or method of excavation.
17. Request for a site meeting prior to locate, with agreed date if applicable.
18. Dig area description by party requesting locate.
19. Remarks or additional description of work provided by party requesting locate.
20. Method of field marking area where excavation will take place.
21. General warnings and cautions on use and validity of locate [should be positioned on sheet to divide information provided at time of request from information provided by locator].
22. Utility and site records available to locator at time of locate.
23. Site specific warnings and cautions issued by locator.
24. Remarks about circumstances affecting locate issued by locator.
25. Site specific warnings and cautions from utility owners.
26. Method used by locator to field mark utility positions.
27. List of documents or additional information attached to locate report.
28. Name or ID# of locator. Date of issue. Start and end time of locate. Notice of expiry date or period.
29. Method used to deliver locate report to party requesting locate. Name and signature of person receiving locate report.
30. Regulatory warnings about use of locate information [should be positioned at bottom of sheet].

Auxiliary locate sheet(s) illustrated in Fig. 2 should be placed after the primary locate sheet (refer to [www.canadiancga.com](http://www.canadiancga.com) for full size version):

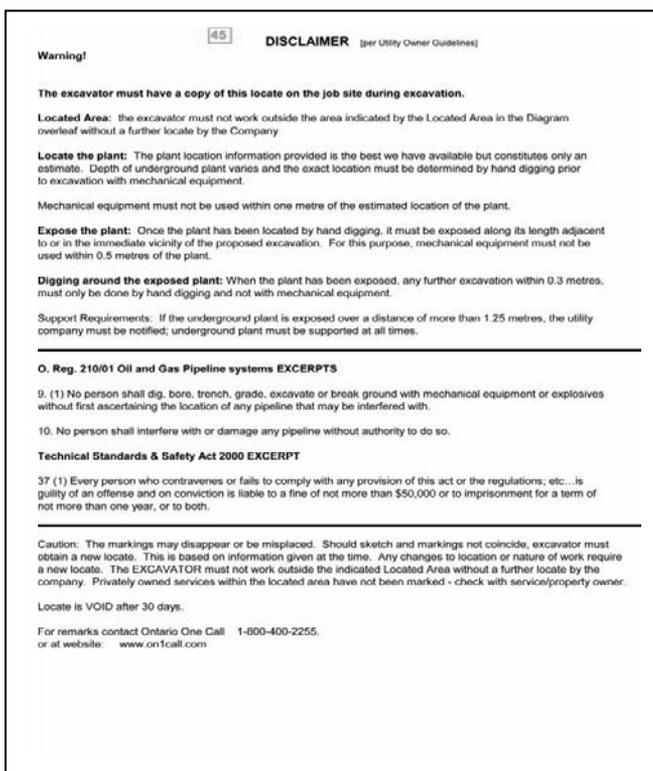
<div style="display: flex; justify-content: space-between;"> <span>[31] [LSP logo]</span> <div style="text-align: center;"> <b>Auxilliary Locate Sheet</b>  <small>[LSP company name]  [LSP phone / fax / email; minimum of 2]</small> </div> </div>		Page <span>[32]</span> of <span>    </span> <b>Request No.</b> <span>[33]</span> <hr/> Date Located: <span>[34]</span> <small>(dd/mm/yyyy) [insert expiry criteria]</small>
Utilities Marked: <input type="checkbox"/> Gas <input type="checkbox"/> Water <input type="checkbox"/> Hydro <input type="checkbox"/> Telecom <input type="checkbox"/> Street Lighting <input type="checkbox"/> Sewer <input type="checkbox"/> Other _____	[35]	
FROM: _____ [36] TO: _____ FROM: _____ TO: _____		
<b>LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE</b> <b>LOCATED AREA HAS BEEN ALTERED AS PER:</b> [37]		
<b>[38] LEGEND</b> <small>[example]</small> Building Line — BL— Fence Line — FL— Face of Curb — CL— Road Edge — RE— Property Line — PL— Locate Area — LA— Driveway — DW— Catch Basin CB Sidewalk SW Demarcation DM Railway ——— Pole O Flush to Grade Pedestal FTG Pedestal X Bell Buried Cable — B— Bell Conduit — C— Bell buried Service Wire —BSW— Manhole MH Bell Fibre Optic Cable —FO— Gas Main —GM— Gas Service —GS— Gas Valve Hydrant O Transformer ▲ Hydro —H— Hydro Pole X Street light Cable —SL—	[39] Hand dig cautiously within 1m as measured horizontally from the field markings to avoid damaging the underground utilities. If you damage the plant, you may be held liable. <b>If you damage underground plant, contact the utility owner immediately.</b> <b>Depth varies and MUST be verified by hand digging or vacuum excavation.</b> <div style="text-align: right; margin-top: 100px;">[40]</div> <div style="text-align: right; margin-top: 20px;">[42] SKETCH NOT TO SCALE</div>	
[43] THIS FORM VALID ONLY WITH Primary Locate Sheet <small>Any privately owned services within the located area have not been marked- check with service/property owner</small>		
A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the possession of the Excavator during work operations. Should sketch and markings not coincide, excavator must obtained a new locate. [44]		

**Figure 2 Auxiliary Locate Sheet**

31. Title "Auxiliary Locate Sheet" [must be added at top left/center of sheet]. Name and address of locate service provider (LSP) providing locate. LSP contact information [minimum of 2]. LSP logo.
32. Page number and total number of pages [must be added at top right of sheet].
33. Request number or unique identifier of locate.
34. Date of issue. Notice of expiry date or period.
35. List of utilities marked by locator.
36. Written description of limits of locate, i.e. area covered by this sheet of locate report.

37. Instructions on use and validity of locate. Specific warning by locator that limits of locate have been altered since original request.
38. Legend describing symbols used on sketch.
39. Instructions on excavation methods in vicinity of locate marks.
40. Sketch of marks placed by locator.
41. Directional indicator, e.g. north arrow, to provide orientation of sketch.
42. Warning sketch is not to scale.
43. Warning auxiliary sheet is only valid in combination with primary locate sheet.
44. Regulatory warnings about use of locate information [should be positioned at bottom of sheet]

Instructions sheet, an example is illustrated in Fig. 3, should be placed after the auxiliary locate sheets (refer to [canadiancga.com](http://canadiancga.com) for full size version):



**FIGURE 3 Disclaimer**

45. Title of sheet, e.g. "Instructions" or "Disclaimer" [should be placed at top of sheet with instructions from utility owners and/or regulators below].

### 3-15: Damage Investigation and Reporting

**Practice Statement:** A damaged facility is investigated and reported as soon as possible after occurrence of damage.

**Practice Description:** Any time that damage occurs, a proper investigation is performed and the result of the investigation reported. This is to determine the root cause and any additional factors that may have contributed to the damage. The information gathered from damage investigations is essential in preventing future damages.

### 3-16: Workload Planning

**Practice Statement:** Forecasting/planning for predictable workload fluctuations is an integral part of all operating practices. A responsive plan is developed for dealing with unpredictable fluctuations.

**Practice Description:** Facility owners and/or their representatives develop methods to sufficiently forecast and plan for future workloads in order that ticket requests may be completed in a timely manner. This will ensure that adequate personnel and equipment will be available to complete all locate requests. It should be noted that this practice does not involve limiting the number of locate requests from excavators.

### 3-17: The Located Area

**Practice Statement:** The Located Area is properly established and identified on the Locate Form.

**Practice Description:** The Located Area shall be identified by a North, South, East and West boundary and shall be outlined and labelled on the sketch of the locate form. Fixed objects or measurements from fixed objects such as building lines and curbs may be used to define the Located Area. Where practicable, the Locator is expected to create limits that are at least one metre from any additional facilities, creating a “buffer zone” around the Located Area. In all cases, the scope and type of work to be performed must be clearly understood by the Locator prior to establishing the Located Area. Markings and sketched facilities shall not extend beyond the Located Area either on the locate sheet or in the field.

### 3-18: Identification of Demarcation Point

**Practice Statement** – When applicable, the locator will indicate the demarcation point of the facility owner’s plant on the locate sheet where this point is not at the point of building entry. This position will be marked on the locate sheet with a circled ‘DM’ symbol (as below).



**Practice Description** - When locating and marking the underground plant of the facility owner, the locator shall indicate the demarcation point of the facility being located on the locate sheet. This symbol (as above) shall be placed on top of, or as near as reasonable to, the actual physical demarcation point of the facility being located. The demarcation point is the limit of utility owned facilities. The excavator should be aware that customer or privately owned facilities may exist beyond this point. The symbol and definition should be clearly shown in the legend on the locate sheet.

### **3-19: Alternate Locate Agreements**

**Practice Statement:** Alternate Locate Agreements (ALA's) may be used providing the Facility owner and Excavator agree on the terms and conditions.

**Practice Description:** Alternate Locate Agreements (ALA's) are contractual agreements between a Facility owner and an Excavator that allows the Excavator to proceed with their excavation work without receiving a traditional field locate. The Facility owner determines the terms and conditions of the ALA, including the depth, location, method of excavation and/or type of excavation. The intent of an ALA is to ensure underground facilities are protected from damage by limiting the scope of work to the point that a field locate is not required, thus reducing demand on existing locate providers and eliminating wait times and administration for Excavators. The details of such an agreement must be stated in writing and available on the project for review upon request of the regulator, or Facility owner's representative. Such an agreement must be communicated in writing as well to the JHSC or Health & Safety representative on the project where applicable. It is the responsibility of the Excavator to ensure that all Facility owners are requested to locate and mark their service. It is also the Excavator's responsibility to ensure that an ALA, where applicable and implemented, will not impede any safe operations regarding the other utilities not covered by that ALA and that the Health and Safety of the workers and Public Safety are safeguarded at all times. It is the Excavator's duty to ensure that the excavation work is carried out in compliance with the legislative requirements and in accordance with the ALA as stipulated between the Excavator and the Facility owner in question when and where applicable. It is the Facility owner's duty to ensure that the ALA terms and conditions will provide a level of safety equivalent to the standard locate process.

### **3-20: Marking of Newly Installed Facilities**

**Practice Statement:** Markings are placed immediately after construction to identify the location of newly installed facilities.

**Practice Description:** Newly installed facilities are often at risk as Locators and Excavators may not be aware of the recent installation, especially if the installation has taken place immediately before or after the completion

of a locate. Markings such as paint and or special flags warning that new facilities have been installed should be placed as soon as the construction is completed. This practice increases the chances of the Excavator or Locator being made aware of the installation which can reduce the chances of the facilities being damaged.

### **3-21: Requirements for a Valid Locate**

**Practice Statement:** A valid locate requires that the marks on the ground are sufficient for the purpose required; there is a completed locate report by an authorized party; the conditions of the locate have not changed; and the locate has not expired.

**Practice Description:** The primary components of a locate, except in the case of a clearance or alternate locate agreement (ALA), are the marks on the ground and the corresponding locate report that together correctly identify the position of underground infrastructure. For a locate to be valid the marks must be preserved and be sufficiently observable for their intended purpose. Since it is the owner's responsibility to mark its underground infrastructure and issue appropriate instructions, warnings and limitations to the excavating party, a locate is not considered to be valid unless it has been issued by the owner or a party authorized to act on the owner's behalf. For each portion of area to be excavated, the marking process must be complete and the located area defined and documented in the form of a locate report for that portion of the locate to be considered valid. If circumstances occur that cause a change after the locate report has been issued, such as the introduction of new underground infrastructure within the located area, or if a surface feature used for offset measurements is altered, those portions of the located area affected by the change are no longer considered valid. The validity of the locate expires as stated on the locate report. A locate report must contain sufficient information and instructions so that parties relying on it will be able to correctly interpret the marks in the field and identify the limits of the located area. Locate reports are usually generated by using templates or pre-printed forms and it may not always be possible or appropriate to complete every part of these forms. However, except in the case of a clearance or ALA, the following minimum information is necessary for the locate to be considered valid:

- Name of the party who requested the locate
- Address or coordinates of the excavation site
- Request number or unique identifier of the locate
- Limits of the located area
- Underground infrastructure marked or cleared
- Method of marking
- Locate sketch
- Date that the locate report is issued

- Date or period after which the locate will expire
- Total number of pages issued
- Name or ID# of the party issuing the locate report

Validity of the locate is also affected by one or more of the following conditions:

1. Marks on the ground conflict with the locate report – if the marks on the ground do not match the sketch or other information contained in the locate report then that portion within the located area affected by this condition is no longer valid.
2. Discovery of an error – if there is an error or omission that affects the accuracy, identification or interpretation of the marks then that portion within the located area affected by this condition is no longer valid.
3. Unlocated underground infrastructure – the presence of underground infrastructure that has not been marked or cannot be marked until it is found by excavation creates a circumstance where the limits of the located area should be adjusted to exclude the portion of area affected by this condition. If this is not done then that portion within the located area affected by this condition is no longer valid.
4. Clearances – in situations where a dig area is clear of an owner’s underground infrastructure there will be no marks on the ground and a valid locate requires only a locate report in the form of a written statement to this effect.
5. Alternate Locate Agreement – in situations where an ALA has been issued there will be no marks on the ground and a valid locate requires only that the conditions for the ALA have been met and the ALA has not expired.

### 3-22: Quality Assurance

**Practice Statement:** Owners should have a Quality Assurance (QA) program in place for assessing the accuracy of locating and marking facilities.

**Practice Description:** The process of conducting QA audits on locates is a critical component to the protection of underground facilities. The recommended components listed below are meant to provide general guidelines for auditing the work of locators. The QA program is a valuable component in the damage investigation process.

- Conduct random field audits
- Check accuracy of markings against minimum tolerances
- Check accuracy and completeness of the locate report
- Measure timeliness as defined by Regulations.
- Check the legibility of the completed locate report
- Verify the most up-to-date records were used to complete the locate

- Check evidence of communication with the excavator when required (e.g. altering dig area)
- Communicate results of the audit to applicable personnel
- Analyze audit results for trends

### **3-23: Alternative Locate Method(s)**

**Practice Statement:** When electromagnetic methods of locating prove inconclusive or ineffective alternative methods accepted by the facility owner can be utilized.

**Practice Description:** In cases where underground infrastructure cannot be located using electromagnetic means, alternative methods accepted by the facility owner, such as Ground Penetrating Radar, or Acoustic locating, etc. may be used. It is important to note that these technologies are not effective in all areas or conditions, due to particular site or soil conditions. Users of these technologies should be competent to operate the associated equipment.

### **3-24: Electronic and Paper Locate Report Format**

**Practice Statement:** Electronic and/or paper Locate Reports are acceptable formats.

**Practice Description:**

Electronic Locate Report

- Device should be operable
- Recommend no less than a 7" (diagonal) screen / tablet to view electronic locate reports
- Viewing screen should be free of defect
- Each page of the Locate report should be legible and viewable in its entirety
- All pages of the Locate report should be accessible at all times

Paper Locate Reports

- Minimum size 8 ½" X 11"
- Locate report should be legible and free of defect
- All pages of the Locate report should be accessible at all times